Supporting Information

for

Base-catalyzed switchable reactivity of *N*-acyl-α-aminonitriles: oxidative decyanation to imides and hydrolysis to amides in batch and flow

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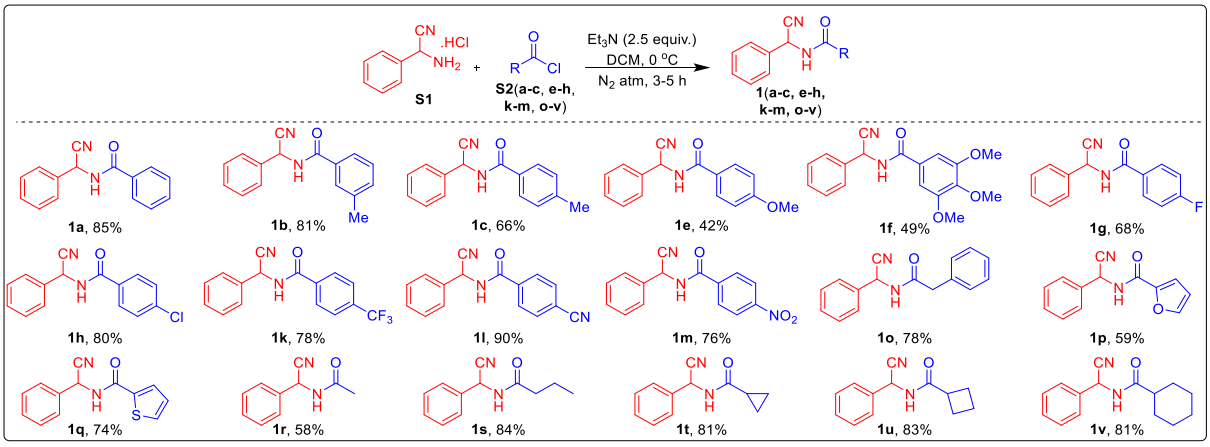
1. General information

A Bruker 400 MHz, 500 MHz spectrometer and 400 MHz of Varian mercury and Jeol spectrometer was employed to acquire ^{1}H NMR spectra, while a Bruker 100 MHz, 125 MHz and 100 MHz of Varian mercury and Jeol spectrometer was utilized for ^{13}C NMR spectra. Parts per million (ppm) denotes chemical shift (δ) values, whereas hertz (Hz) indicates coupling constants (*J*). The spectra were obtained utilizing $CDCl_3$ as the solvent. ^{1}H NMR chemical shifts are calibrated to tetramethylsilane (TMS, 0 ppm), while ^{13}C NMR shifts are referenced to $CDCl_3$ (77.0 ppm). The reaction's development was tracked via TLC utilizing Merck pre-coated TLC sheets. The melting points of compounds were ascertained utilizing a digital melting point instrument (Model 935) from Deep Vision Electronics PVT. LTD and Fargo instruments. High Resolution Mass Spectrometry (HRMS) was analyzed using Agilent G6230B Accurate Mass TOF and HRMS (QTOF-ESI) on JMS-700 spectrometer. EPR studies were performed by using JEOL Model JES FA200 ESR Spectrometer. LC-MS studies were performed by using Thermo Scientific TSQ Quantum Ultra. Continuous flow setups such as T-shaped mixers were purchased from Sanko Seiki company, stainless tubes, and peeks were purchased from Idex Health & science. Harvard syringe pumps model-11 elite were used for the reaction and Alicat scientific for mass flow controller. Column chromatography was conducted on 100-120 mesh silica gel utilizing hexane/ethyl acetate as the eluent, with solvents employed without additional distillation. All commercial chemicals were acquired from Hyma, TCI and BLD.

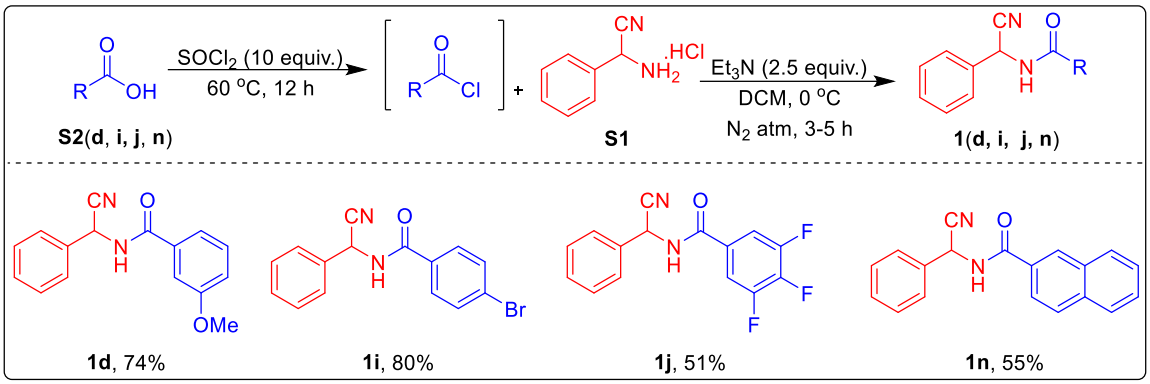
2. Experimental procedures

2.1. General experimental procedure (A) for synthesis of *N*-acyl *α*-aminonitriles



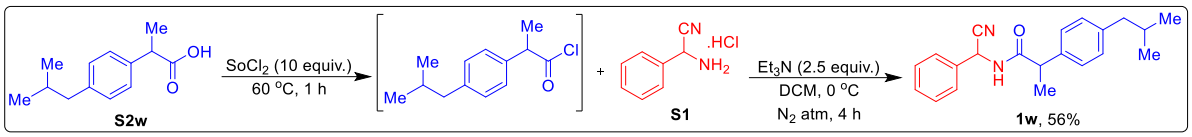
To a solution of 2-amino-2-phenylacetonitrile **S1** (1.0 equiv.) in DCM, triethylamine (2.5 equiv.) was added and stirred at 0-5 °C in nitrogen atmosphere for 10~15 mins. To this stirred reaction mixture acid chlorides **S2a-c**, **S2e-h**, **S2k-m** and **S2o-v** (1.5 equiv.) in DCM was added and continued stirring at 0~5 °C in nitrogen atmosphere for 3~5 h. After the completion of the reaction, DCM was evaporated under rotary vacuum. Then the crude product was diluted with water (30 mL) followed by extraction with ethyl acetate (3 x 20 mL). The obtained organic layer was given brine wash (20 mL), dried over Na_2SO_4 and concentrated under rotary vacuum. The obtained crude was purified using column chromatography by eluting ethyl acetate/ hexane at 15-20% to obtain the pure *N*-acyl *α*-aminonitriles **1(a-c, e-h, k-m, o-v)** in 42-90% yields.

2.2. General experimental procedure (B) for synthesis of *N*-acyl *α*-aminonitriles



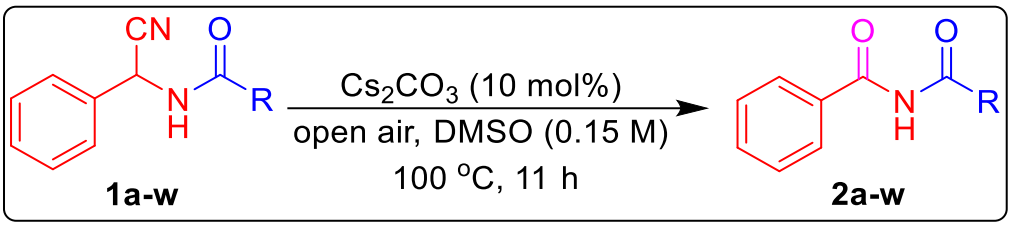
To a 100 mL round bottom flask charged with benzoic acid **S2d**, **S2i, S2j** and **S2n** in nitrogen atmosphere, thionyl chloride (10.0 equiv.) was added at 0 °C and stirred for 12 h in 60 °C. After complete formation of aroyl chloride confirmed by thin layer chromatography, excess $SOCl_2$ was removed in rotary vacuum under nitrogen atmosphere. To this reaction mixture 2-amino-2-phenylacetonitrile **S1** (1.0 equiv.) and triethylamine (2.5 equiv.) in DCM was added and stirred at 0~5 °C in nitrogen atmosphere for 3~5 h. After the completion of the reaction, DCM was evaporated under rotary vacuum. Then the crude product was diluted with water (30 mL) followed by extraction with ethyl acetate (3 x 20 mL). The obtained organic layer was given brine wash (20 mL), dried over Na_2SO_4 and concentrated under rotary vacuum. The obtained crude was purified using column chromatography by eluting ethyl acetate/ hexane at 15-20% to obtain the pure *N*-acyl *α*-aminonitriles **1(d, i, j, n)** in 51-80% yields.

2.3. General experimental procedure (C) for synthesis of *N*-(cyano(phenyl)methyl)-2-(4-isobutylphenyl)propenamide (1w)



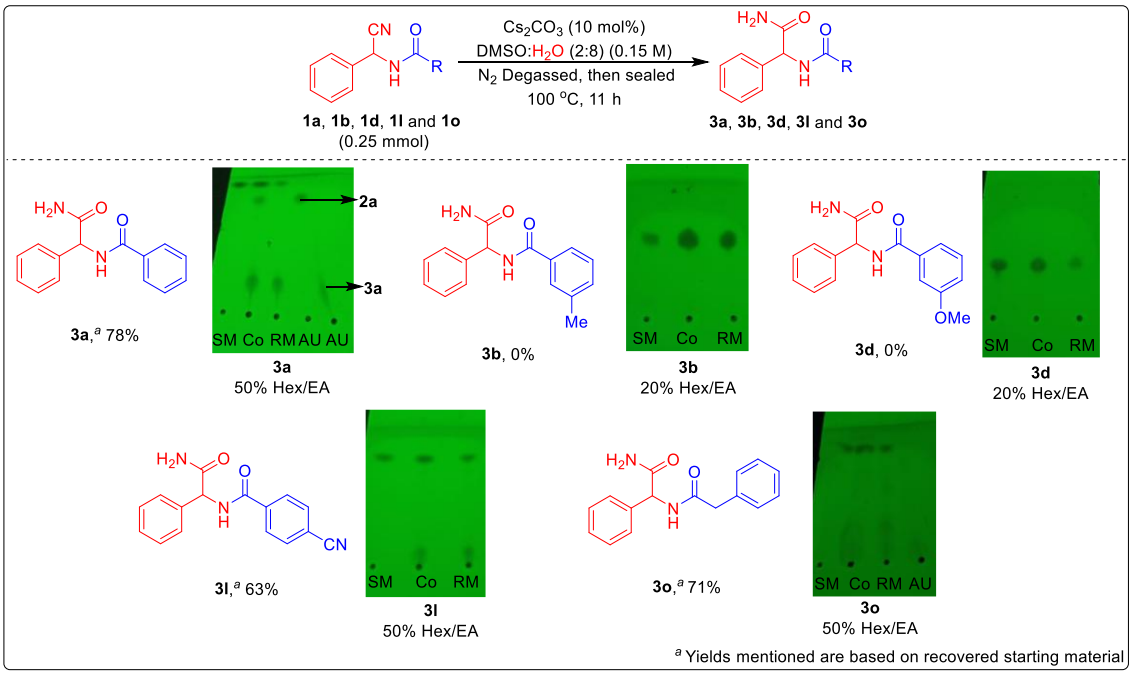
To a 100 mL round bottom flask charged with **S2w** in nitrogen atmosphere, thionyl chloride (10.0 equiv.) was added at 0 °C and stirred for 1 h in 60 °C. After complete formation of acyl chloride confirmed by thin layer chromatography, excess $SOCl_2$ was removed in rotary vacuum under nitrogen atmosphere. To this reaction mixture 2-amino-2-phenylacetonitrile **S1** (1.0 equiv.) and triethylamine (2.5 equiv.) in DCM was added and stirred at 0~5 °C in nitrogen atmosphere for 4 h. After the completion of the reaction, DCM was evaporated under rotary vacuum. Then the crude product was diluted with water (30 mL) followed by extraction with ethyl acetate (3 x 20 mL). The obtained organic layer was given brine wash (20 mL), dried over Na_2SO_4 and concentrated under rotary vacuum. The obtained crude was purified using column chromatography by eluting ethyl acetate/ hexane at 15-20% to obtain the pure compound **1w** in 56% yield.

2.4. General experimental procedure (D) for synthesis of acyclic imides under batch process



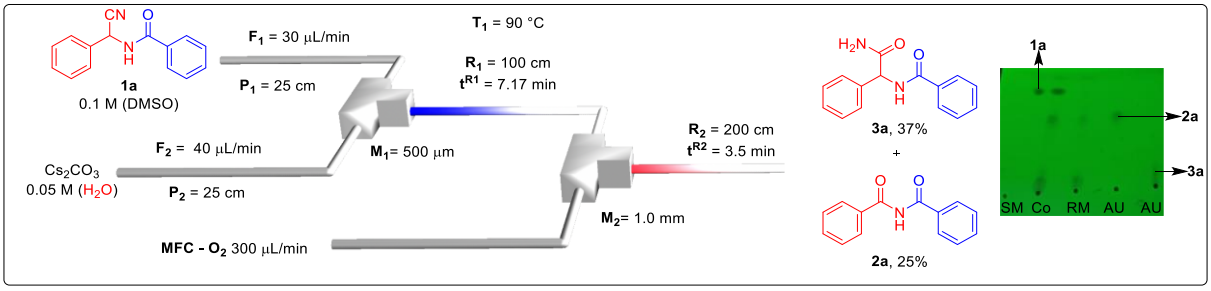
A 15 mL vial was charged with **1a-w** (0.5 mmol), DMSO (0.15 M) in 3.3 mL and Cs_2CO_3 (10 mol%). The reaction mixture was allowed to stir at 100 ºC under open air until the completion of reaction by TLC chromatography (11 h). The reaction mixture was cooled to room temperature, diluted with 10 mL of water. The water layer was extracted with (3 x 15 mL) of ethyl acetate and the combined ethyl acetate layer was given brine wash (1 x 20 mL). The final ethyl acetate layer was dried over Na_2SO_4 and concentrated under reduced pressure to the get crude compound. The obtained crude was purified using column chromatography by eluting ethyl acetate/ hexane at 20-25% to afford pure acyclic imides **2a-2w** in 48-89% yields.

2.5. General experimental procedure (E) for the synthesis of amides under batch process



A 15 mL sealed tube was charged with **1a, 1b**, **1d**, **1l** and **1o** (0.25 mmol), DMSO (0.15 M) in 1.7 mL and Cs_2CO_3 (10 mol%). The reaction mixture was allowed to stir at 100 ºC under sealed condition until 11 h. The reaction mixture was cooled to room temperature, diluted with 10 mL of water. The water layer was extracted with (3 x 15 mL) of ethyl acetate and the combined ethyl acetate layer was given brine wash (1 x 20 mL). The final ethyl acetate layer was dried over Na_2SO_4 and concentrated under reduced pressure to the get crude compound. The obtained crude was purified using column chromatography by eluting ethyl acetate/ hexane at 60-70% to afford pure amides **3a, 3l** and **3o** in 63-78% yields.

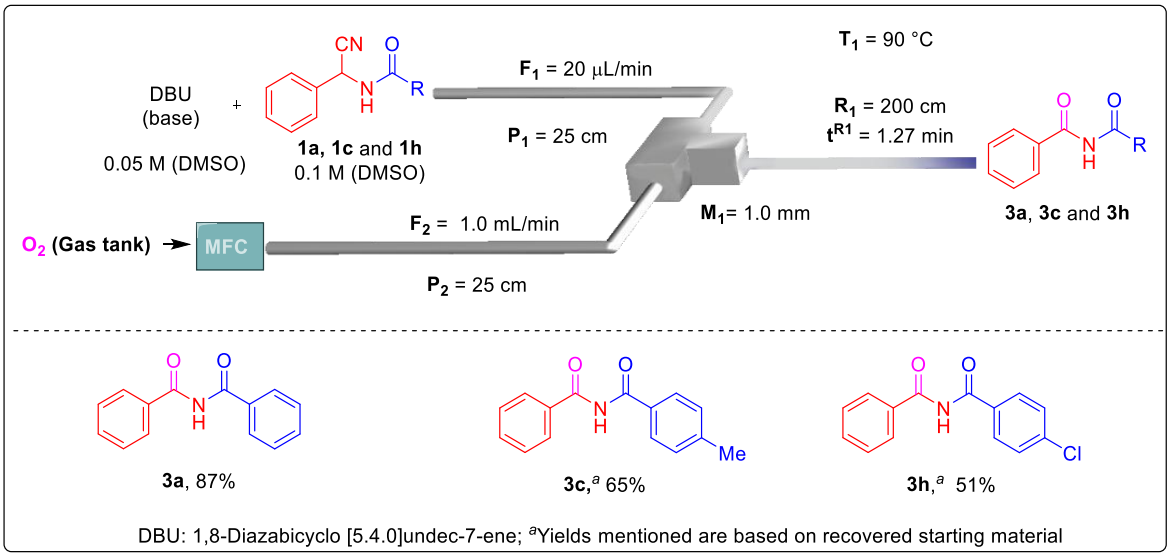
2.6. Investigation of imide synthesis under continuous-flow conditions with cat. Cs_2CO_3



A microreactor system consist of two T-shaped micromixers (M_1, M_2), and two precooling units

P_1 (inner diameter = 800 µm, length L = 25 cm), P_2 (inner diameter = 800 µm, length L = 25 cm), A solution of **1a** (0.1 M in DMSO) (flow rate: F_1 =20 µL/min) and a solution of Cs_2CO_3 (0.05 M in H_2O) (flow rate: F_2 =40 µL/min) were introduced into M_1 (Φ = 500 µm). The resulting solution was passed through microtubing (R_1= 100 cm, Φ = 800 µm) by syringe pumps. and was mixed with O_2 (flow rate: F_2 =1.0 mL/min) were introduced into M_1 (Φ = 1.0 mm) by a mass flow controller. The resulting solution from R_1 and gas was passed through microtubing (R_1= 200 cm, Φ = 1.0 mm, 1.3 mL) with a reaction temperature of 90 °C. After a steady state was reached, the solution was collected for 45 minutes in a vial. The resulting solution was extracted with ethyl acetate (3 mL x 5), and the organic layer was combined and washed with brine solution (5 mL). The organic layer was dried over anhydrous $MgSO_4$, filtered, and concentrated under a vacuum. The obtained crude was purified using column chromatography by eluting ethyl acetate/ hexane to obtain **3a** in 37% and **2a** in 25% yields, respectively.

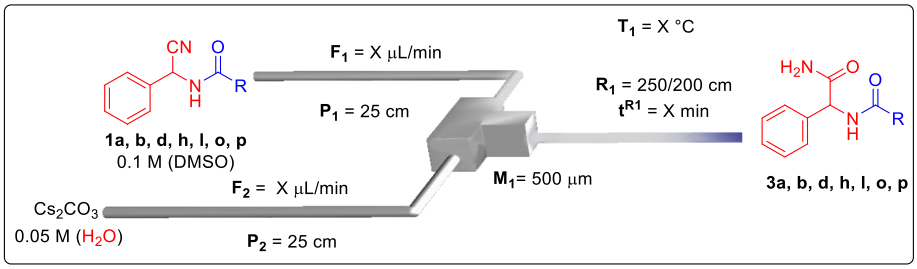
2.7. Investigation and scope of imides under continuous-flow conditions with cat. DBU



A microreactor system consists of one T-shaped micromixer (M_1), one microtube reaction (R_1), two precooling units P_1 (inner diameter Φ = 800 µm, length L = 25 cm), P_2 (Φ= 800 µm, length L= 25 cm). A solution of **1a** (0.1 M in DMSO), DBU (0.05 M in DMSO) (flow rate: F_1 =20 µL/min) and O_2 (flow rate: F_2 =1.0 mL/min) were introduced into M_1 (Φ = 1.0 mm) by syringe pumps and Mass flow controller The resulting solution and gas was passed through microtubing (R_1= 200 cm, Φ = 1.0 mm, 1.3 mL) with a reaction temperature of 90 °C. After a steady state was reached, the solution was collected for 45 minutes in a vial. The resulting

solution was extracted with ethyl acetate (3 mL x 5), and the organic layer was combined and washed with brine solution (5 mL). The organic layer was dried over anhydrous $MgSO_4$, filtered, and concentrated under a vacuum. The obtained crude was purified using column chromatography by eluting ethyl acetate/ hexane at 20-25% to obtain **3a** in 87% yield. This methodology is also extended for the scope **1c** and **1h** to obtain **3c** and **3h** at 65% and 51% yields, respectively.

3. Table S1. Reaction parameter studies for amides under continuous-flow method[ab]



entry	flow rate 1 (µL)	flow rate 2 (µL) Base	temperature (°C)	residence time (min)	result[b] (%)
1	20	30	100	25.1	65
2	20	40	100	20.9	80[c]
3	**20**	**40**	**90**	**20.9**	**76[a]**
4	20	40	80	20.9	65
5	20	50	90	17.9	79[c]
6	10	40	90	25.1	65

A continuous flow system consists of two reagents delivering units (P_1, and P_2, Φ= 800µm, length L= 25 cm) T-shaped micromixer (M_1, Φ = 500 µm), one microtube reactor (R_1= 250 cm, Φ = 800 µm). [a]Reaction was performed under standard optimized conditions (F_1 = 20 µL/min, F_2 = 40 µL/min) and the product was collected for 45 min. [b]Isolated yield. [c]Clotting the reactor.

4. Experimental procedure (F) for amides (3a, 3d and 3p) under continuous-flow method

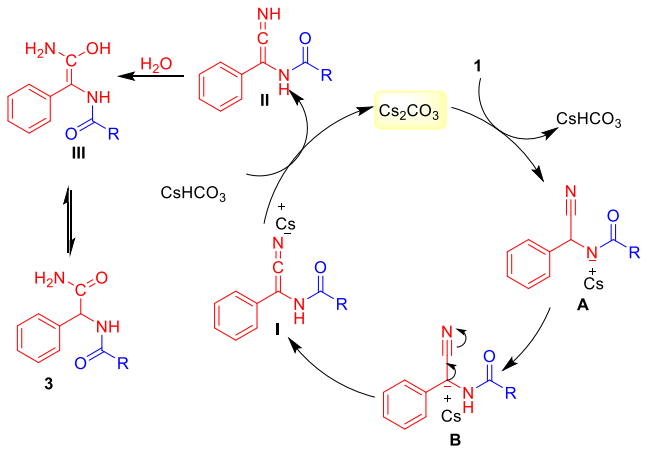
A microreactor system consists of one T-shaped micromixer (M_1), one microtube reaction (R_1), two precooling units P_1 (inner diameter Φ = 800 µm, length L = 25 cm), P_2 (Φ= 800 µm, length L= 25 cm). A solution of **1a, 1d** and **1p** (0.1 M in DMSO) (flow rate: F_1 =20 µL/min) and a solution of Cs_2CO_3 (0.05 M in H_2O) (flow rate: F_2 =40 µL/min) were introduced into M_1 (Φ =

500 µm) by syringe pumps. The resulting solution was passed through microtubing (R_1= 250 cm, Φ = 800 µm, 1255 mL) with a reaction temperature of 90 °C. After a steady state was reached, the solution was collected for 45 minutes in a vial. The resulting solution was extracted with ethyl acetate (3 mL x 5), and the organic layer was combined and washed with brine solution (5 mL). The organic layer was dried over anhydrous $MgSO_4$, filtered, and concentrated under a vacuum. The obtained crude was purified using column chromatography by eluting ethyl acetate/ hexane at 60-70% to afford **3a**, **3d**, and **3p** in 60-76% yields.

5. Experimental procedure (G) for amides (3b, 3h, 3l and 3o) under Continuous-flow method

A microreactor system consists of one T-shaped micromixer (M_1), one microtube reaction (R_1), two precooling units P_1 (inner diameter Φ = 800 µm, length L = 25 cm), P_2 (Φ= 800 µm, length L= 25 cm). A solution of **1b, 1h, 1l and 1o** (0.1 M in DMSO) (flow rate: F_1 =20 µL/min) and a solution of Cs_2CO_3 (0.05 M in H_2O) (flow rate: F_2 =40 µL/min) were introduced into M_1 (Φ = 500 µm) by syringe pumps. The resulting solution was passed through microtubing (R_1= 200 cm, Φ = 1.0 mm, 1.3 mL) with a reaction temperature of 90 °C. After a steady state was reached, the solution was collected for 45 minutes in a vial. The reaction time will be 21.6 min. The resulting solution was extracted with ethyl acetate (3 mL x 5), and the organic layer was combined and washed with brine solution (5 mL). The organic layer was dried over anhydrous $MgSO_4$, filtered, and concentrated under a vacuum. The obtained crude was purified using column chromatography by eluting ethyl acetate/ hexane at 60-70% to afford **3b**, **3h**, **3l** and **3o** in 33-60% yields.

6. Plausible reaction mechanism for the synthesis of amides



Scheme S1. Plausible mechanism

7. TLC for substrate scope

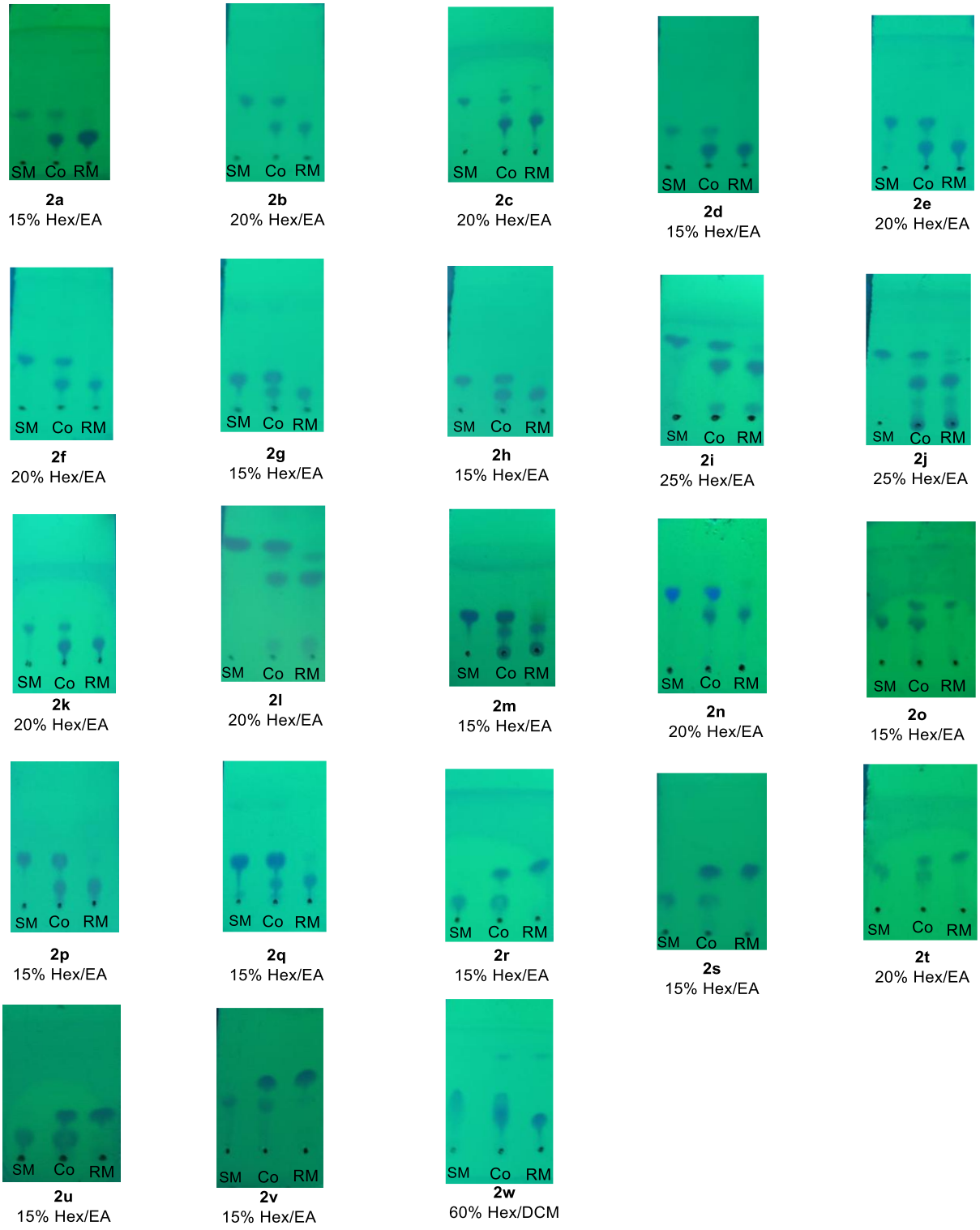
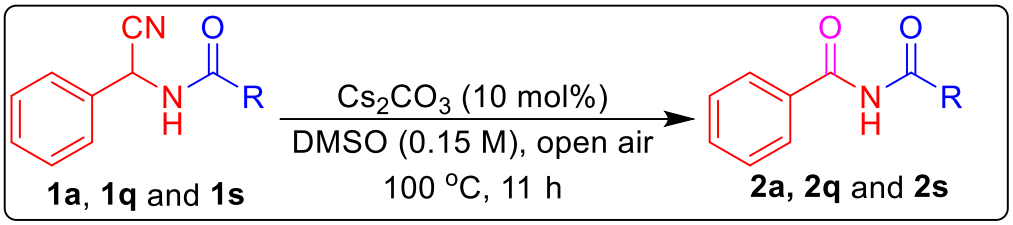
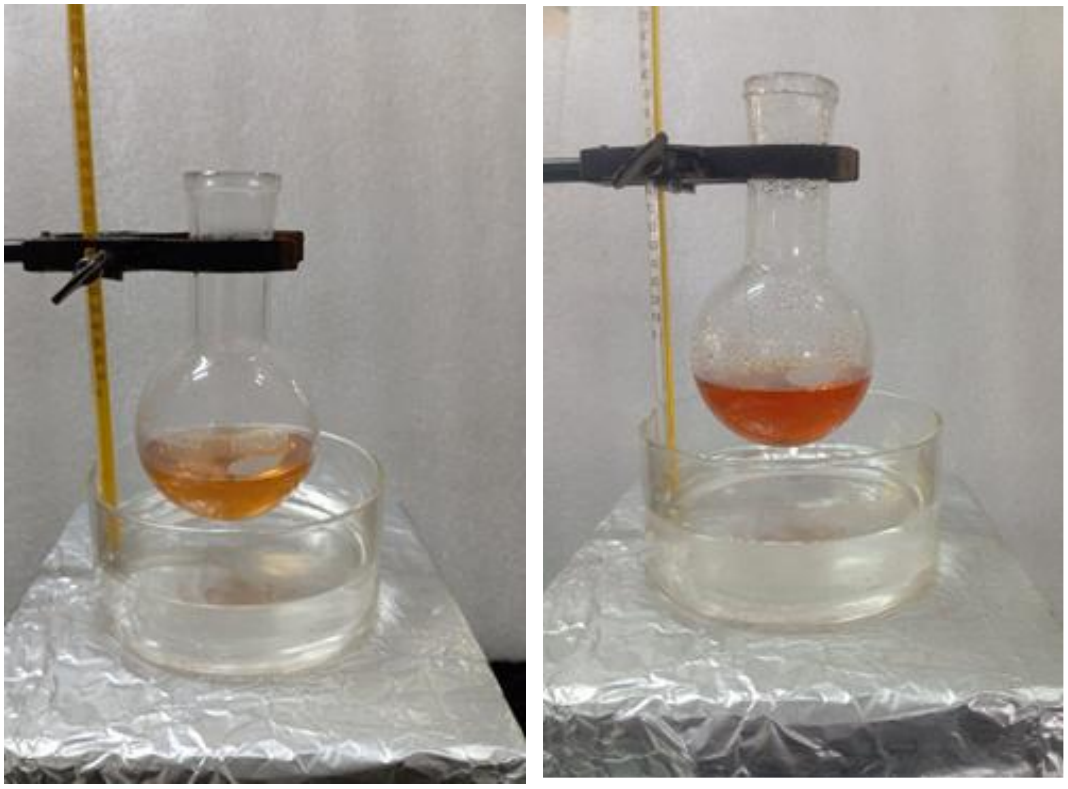


Fig. S1. TLCs for Substrate Scope **2a-2w**

8. Gram-scale synthesis of acyclic imides and experimental setup



A 100 mL RB flask was charged with **1a**, **1q** and **1s** (1.0 g), DMSO (0.15 M) and Cs_2CO_3 (10 mol%). The reaction mixture was allowed to stir at 100 ºC under open air until the completion of reaction by TLC chromatography (11 h). The reaction mixture was cooled to room temperature, diluted with 100 mL of water. The water layer was extracted with (3 x 150 mL) of ethyl acetate and the combined ethyl acetate layer was given brine wash (2 x 100 mL). The final ethyl acetate layer was dried over Na_2SO_4 and concentrated under reduced pressure to the get crude compound. The obtained crude was purified using column chromatography by eluting ethyl acetate/ hexane at 20-25% to afford pure acyclic imides **2a**, **2q** and **2s** in 82%, 72% and 85% yields.



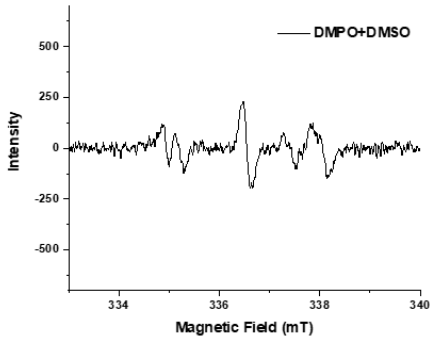
A **B**

Fig. S2. Experimental setup for gram scale synthesis of acyclic imides. A) At the start of the reaction; B) after completion of the reaction.

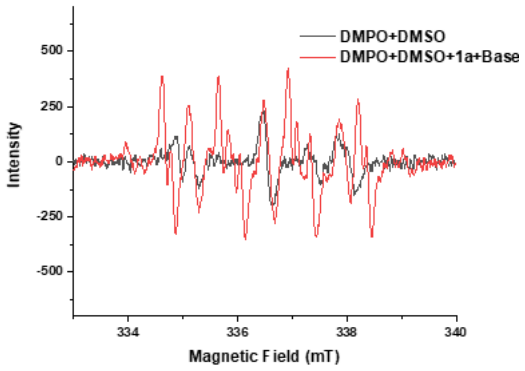
9. EPR-studies

Spectra were recorded under three conditions: (i) DMPO in DMSO, (ii) DMPO with substrate **1a** and base in DMSO, and (iii) DMPO with substrate **1a** in DMSO. In the stacked spectra, the signal marked (*) corresponds to DMPO, while the feature labeled (Φ) arises from its oxidized adduct, consistent with trapping of superoxide species.

(i).



(ii).



(iii).

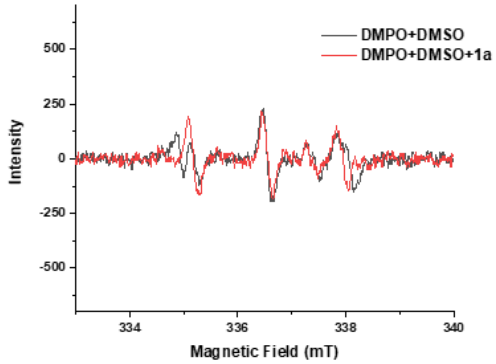


Fig. S3. EPR studies for trapping superoxide radical with DMPO

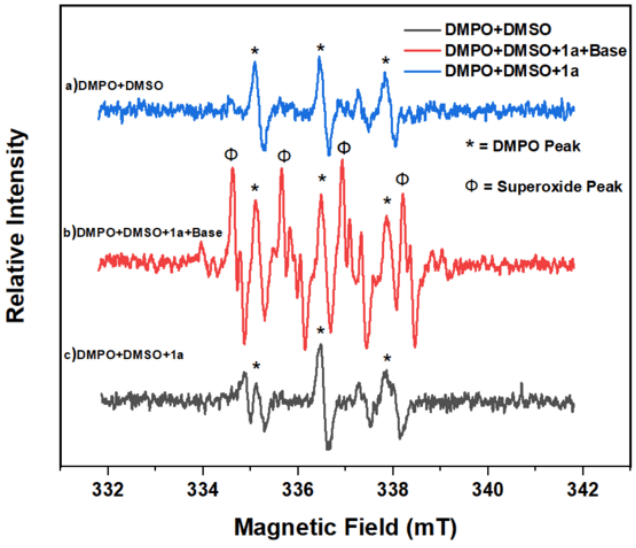
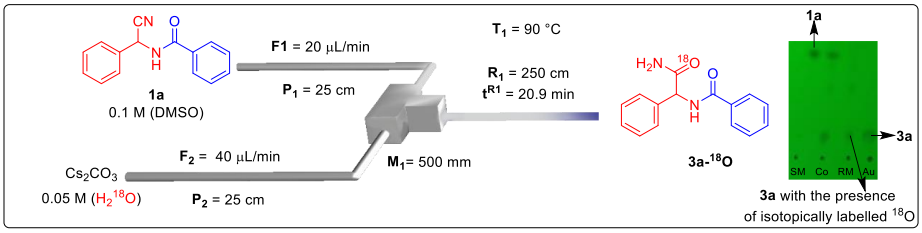


Fig. S4. Stacked EPR Spectra: [a] EPR spectra of DMSO heated for 1 h at 100 °C and cooled to room temperature and then added a solution of DMPO (0.1 mol/L). [b] EPR spectra of **1a** (0.1 mmol), Cs_2CO_3 (10 mol%) in 0.15 M of DMSO stirred and heated for 1 h at 100 °C and cooled to room temperature and then added a solution of DMPO (0.1 mol/L). [c] EPR spectra of **1a** (0.1 mmol) in 0.15 M of DMSO stirred and heated for 1 h at 100 °C and cooled to room temperature and then added a solution of DMPO (0.1 mol/L).

10. Isotopic labelling ($H_2{}^{18}O$) experiments for amides under continuous-flow conditions



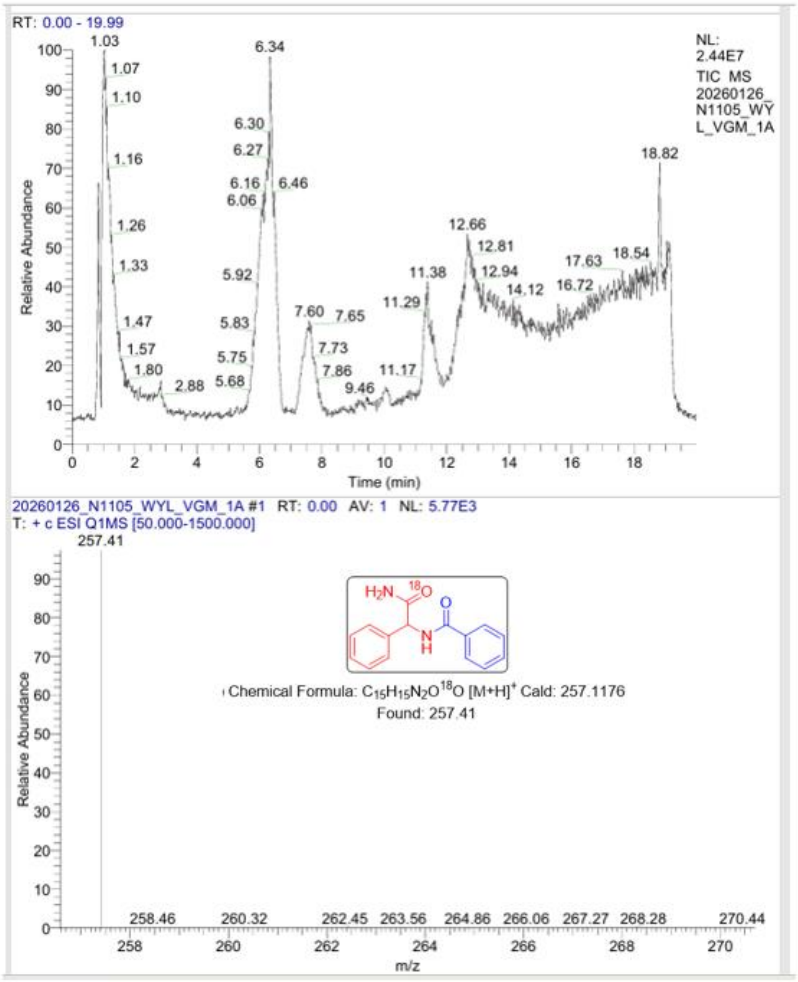
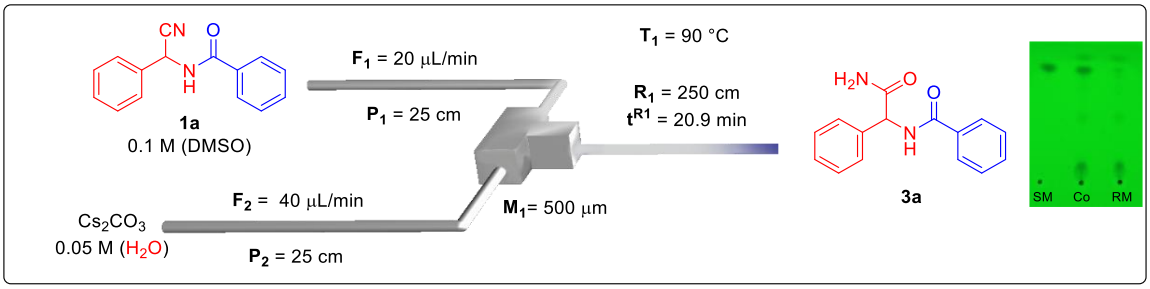


Fig. S5. LC-MS data for $H_2{}^{18}O$-labelled reaction in the continuous-flow process.



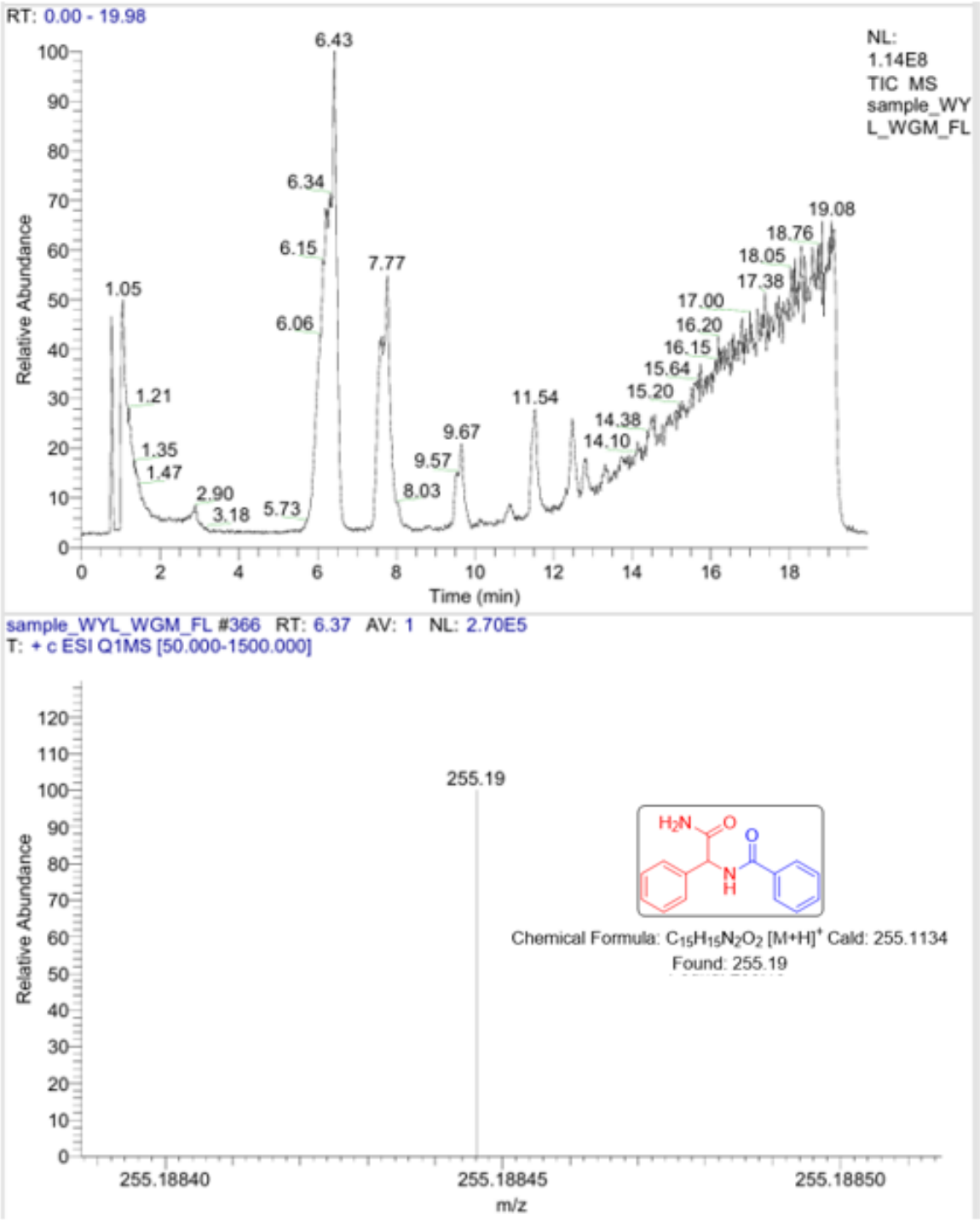
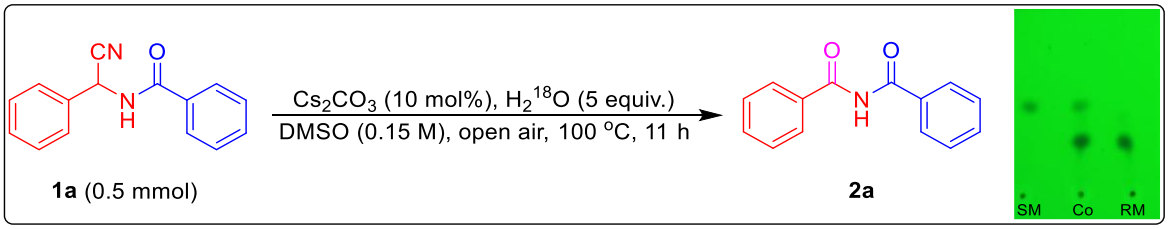


Fig. S6. LC-MS data of H_2O reaction in the continuous flow-process.



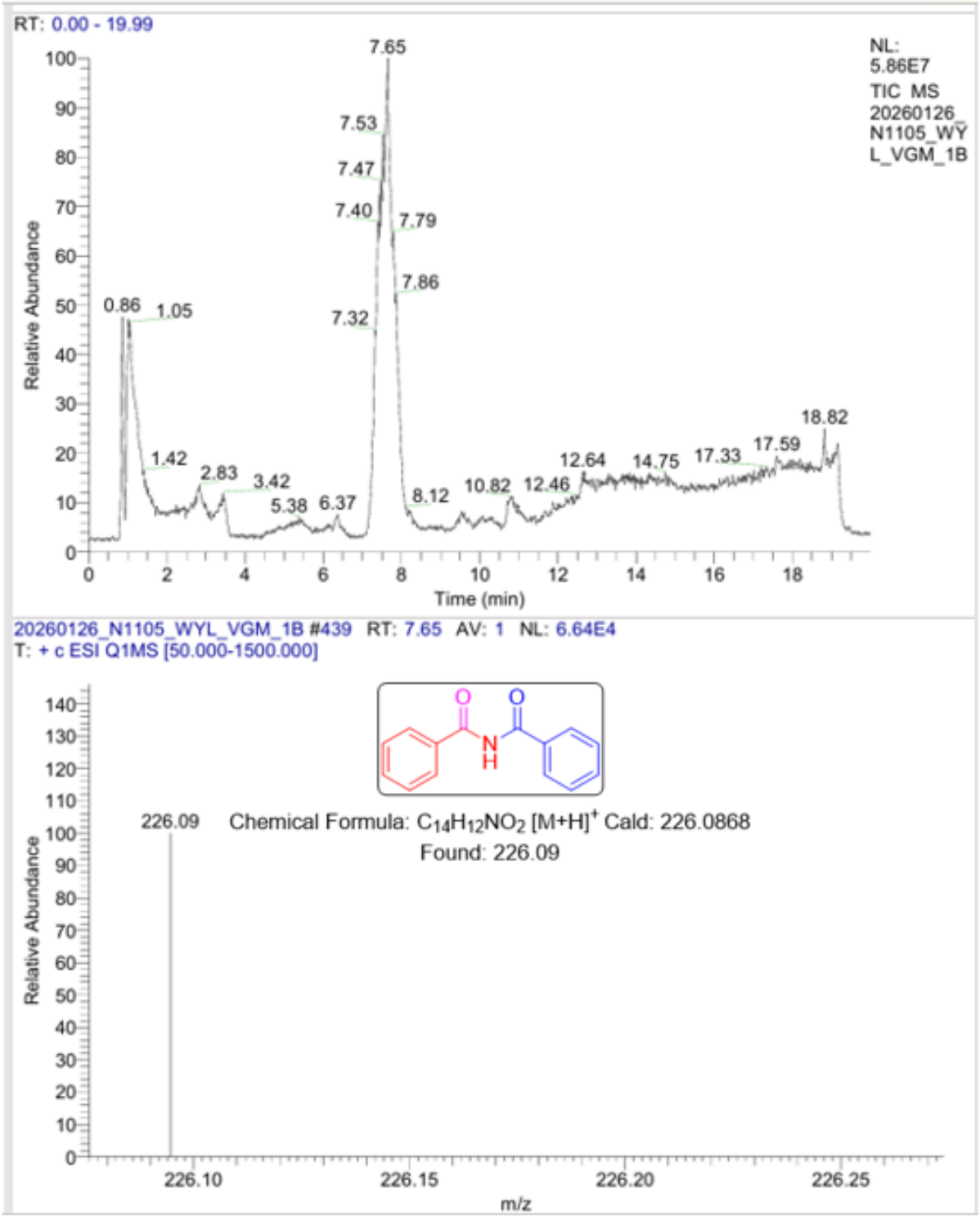
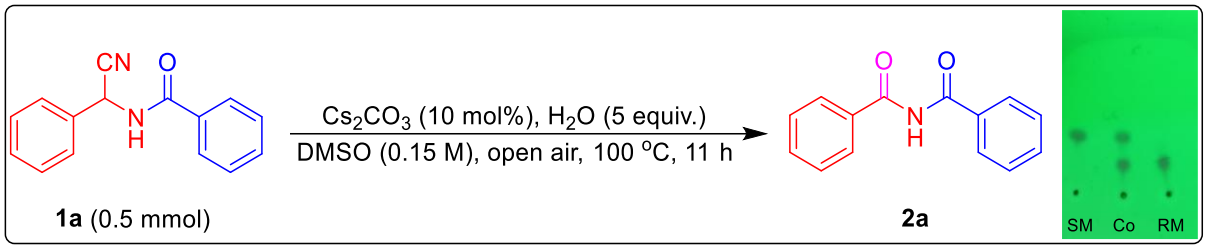


Fig. S7. LC-MS data for $H_2{}^{18}O$-labelled reaction in the batch process.



1a (0.5 mmol)

2a

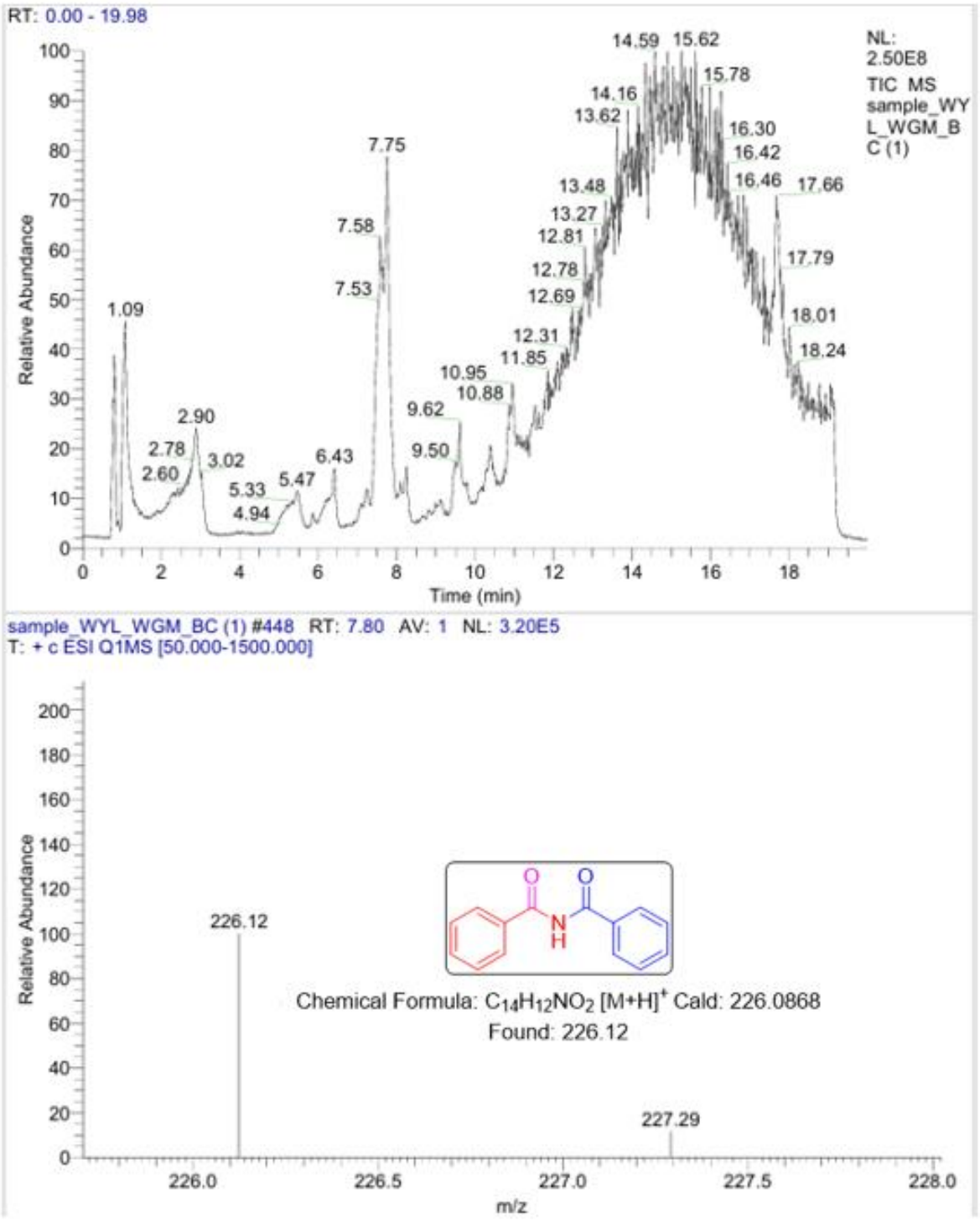
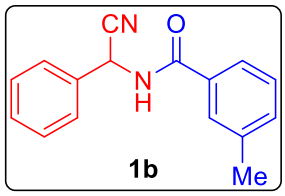


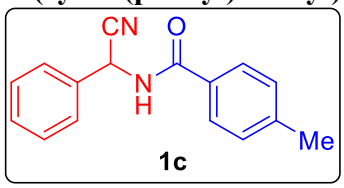
Fig. S8. LC-MS data of H_2O reaction in the batch process.

11. Spectral characterization

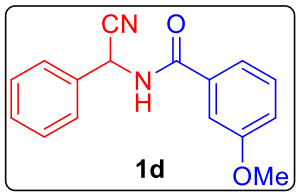
***N*-(cyano(phenyl)methyl)-3-methylbenzamide (1b).** The title compound was prepared according to the general procedure **(A)** on a 2.0 mmol scale to obtain as a pale-yellow solid (406 mg, yield = 81%); Mp. 140-142 °C; ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.57 (s, 1H), 7.54 (d, *J* = 7.6 Hz, 1H), 7.50-7.48 (m, 2H), 7.40-7.35 (m, 3H), 7.33-7.22 (m, 3H), 6.26 (d, *J* = 8.4 Hz, 1H), 2.32 (s, 3H). ^{13}C{^{1}H} NMR ($CDCl_3$, 100 MHz): δ 167.01, 138.77, 133.41, 133.32, 132.45, 129.59, 129.44, 128.70, 128.18, 127.16, 124.46, 117.68, 44.57, 21.34. HRMS (ESI) calculated for $C_{16}H_{14}N_2ONa$ $[M+Na]^+$: 273.1004 found 273.1003.



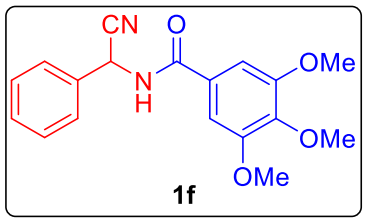
***N*-(cyano(phenyl)methyl)-4-methylbenzamide (1c).** The title compound was prepared according to the general procedure **(A)** on a 2.0 mmol scale to obtain as a pale-yellow solid (331 mg, yield = 66%); Mp. 131-133 °C; ^{1}H NMR (500 MHz, $CDCl_3$) δ 7.67 (d, *J* = 8 Hz, 2H), 7.49 (dd, *J* = 6.7, 2.7 Hz, 2H), 7.39-7.37 (m, 3H), 7.33-7.27 (m, 1H), 7.19 (d, *J* = 8 Hz, 2H), 6.27 (d, *J* = 8.5 Hz, 1H), 2.37 (s, 3H). ^{13}C{^{1}H} NMR (126 MHz, $CDCl_3$) δ 166.71, 143.12, 133.34, 129.52, 129.44, 129.37, 129.31, 127.42, 127.07, 117.64, 44.44, 21.50. HRMS (ESI) calculated for $C_{16}H_{14}N_2ONa$ $[M+Na]^+$: 273.1004 found 273.1013.



***N*-(cyano(phenyl)methyl)-3-methoxybenzamide (1d).** The title compound was prepared according to the general procedure **(A)** on a 2.0 mmol scale to obtain as a pale-yellow solid (395 mg, yield = 74%); Mp. 188-190 °C; ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.49-7.46 (m, 2H), 7.38-7.35 (m, 3H), 7.34-7.33 (m, 1H), 7.30-7.24 (m, 3H), 7.05-7.01 (m, 1H), 6.26 (d, *J* = 8.4 Hz, 1H), 3.76 (s, 3H). ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$) δ 166.67, 159.94, 133.88, 133.33, 129.85, 129.622, 129.44, 127.16, 119.30, 118.83, 117.65, 112.72, 55.54, 44.64. HRMS (ESI) calculated for $C_{16}H_{13}N_2O_2$ $[M-H]^-$: 265.0977 found 265.0994.

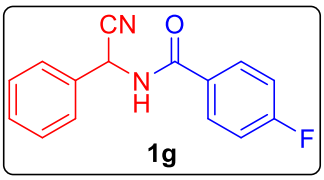


***N*-(cyano(phenyl)methyl)-3,4,5-trimethoxybenzamide (1f).** The title compound was prepared according to the general procedure **(A)** on a 2.0 mmol scale to obtain as white solid (320 mg, yield = 49%); Mp. 192-194 °C; ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.56-7.53 (m, 2H), 7.47-7.42 (m, 3H), 7.01 (s, 2H), 6.81 (d, *J* = 8.4 Hz, 1H), 6.35 (d, *J* = 8.4 Hz, 1H), 3.88 (s, 6H), 3.87 (s, 3H). ^{13}C{^{1}H} NMR ($CDCl_3$, 100 MHz): δ 166.22, 153.25,



141.80, 133.30, 129.56, 129.38, 127.55, 127.07, 117.61, 104.88, 60.88, 56.37, 44.63. HRMS (ESI) calculated for $C_{18}H_{17}N_2O_4$ [M-H]$^-$: 325.1188 found 325.1199.

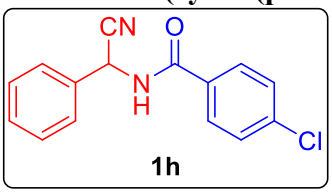
***N*-(Cyano(phenyl)methyl)-4-fluorobenzamide (1g).** The title compound was prepared



1g

according to the general procedure **(A)** on a 2.0 mmol scale to obtain as a pale-yellow solid (346 mg, yield = 68%); Mp. 166-170 °C; ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.78 (dd, *J* = 8.4, 5.6 Hz, 2H), 7.49 (dd, *J* = 6.2, 2.2 Hz, 2H), 7.39 (d, *J* = 3.2 Hz, 4H), 7.05 (t, *J* = 8.4 Hz, 2H), 6.25 (d, *J* = 8 Hz, 1H). ^{13}C{^{1}H} NMR (101 MHz, $CDCl_3$) δ 166.12 (d, J_{CF} = 83.93 Hz), 164.02, 133.143, 129.92 (d, J_{CF} = 9.19 Hz), 129.63, 129.42, 128.58 (d, J_{CF} = 3.13 Hz), 127.11, 117.58, 115.88 (d, J_{CF} = 22.11), 44.63. ^{19}F NMR (376 MHz, $CDCl_3$) δ -106.06. HRMS (ESI) calculated for $C_{15}H_{11}N_2OFNa$ [M+Na]$^+$: 277.0747 found 277.0750.

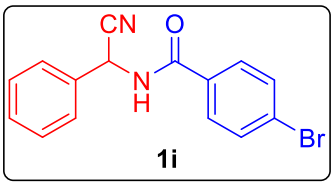
4-Chloro-*N*-(cyano(phenyl)methyl)benzamide (1h). The title compound was prepared



1h

according to the general procedure **(A)** on a 2.0 mmol scale to obtain as a white solid (435 mg, yield = 80%); Mp. 169-172 °C; ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.70 (d, *J* = 8.4 Hz, 1H), 7.51-7.49 (m, 2H), 7.42-7.40 (m, 3H), 7.37 (d, *J* = 8.4 Hz, 2H), 7.18 (d, *J* = 8 Hz, 1H), 6.25 (d, *J* = 8 Hz, 1H). ^{13}C{^{1}H} NMR (101 MHz, $CDCl_3$) δ 165.72, 138.93, 133.01, 130.74, 129.71, 129.47, 129.07, 128.83, 127.12, 117.45. HRMS (ESI) calculated for $C_{15}H_{11}N_2OClNa$ [M+Na]$^+$: 293.0452 found 293.0452.

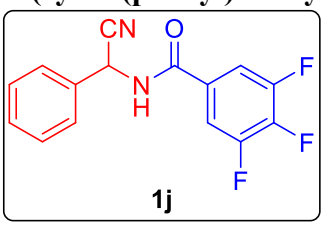
4-bromo-*N*-(cyano(phenyl)methyl)benzamide (1i). The title compound was prepared



1i

according to the general procedure **(B)** on a 2.0 mmol scale to obtain as a white solid (507 mg, yield = 80%); Mp. 168-172 °C; ^{1}H NMR (500 MHz, $CDCl_3$) δ 7.64 (d, *J* = 8.5 Hz, 2H), 7.56 (d, *J* = 7.5 Hz, 2H), 7.51 (s, 2H), 7.42 (s, 3H), 7.02 (s, 1H), 6.27 (d, *J* = 8 Hz, 1H). ^{13}C{^{1}H} NMR (126 MHz, $CDCl_3$) δ 165.71, 132.95, 132.06, 131.17, 129.74, 129.49, 128.91, 127.45, 127.12, 117.35, 44.66. HRMS (ESI) calculated for $C_{15}H_{11}N_2OBrNa$ [M+Na]$^+$: 336.9947 found 336.9939.

***N*-(cyano(phenyl)methyl)-3,4,5-trifluorobenzamide (1j).** The title compound was prepared

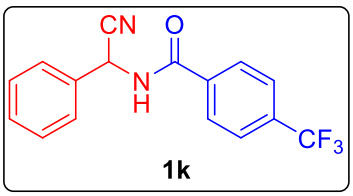


1j

according to the general procedure **(B)** on a 2.0 mmol scale to obtain as a white solid (297 mg, yield = 51%); Mp. 176-177 °C; ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.54-7.53 (m, 2H), 7.48-7.45 (m, 5H), 6.72 (d, *J* = 7.6 Hz, 1H), 6.26 (d, *J* = 8 Hz, 1H). ^{13}C{^{1}H} NMR

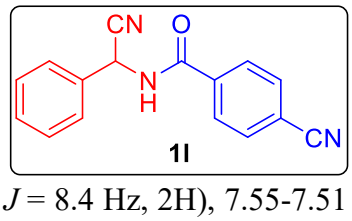
($CDCl_3$, 100 MHz): δ 163.43, 152.50 (dd, J_{CF} = 10.4, 3.2 Hz), 149.97 (dd, J_{CF} = 10, 3.6 Hz), 143.90 (t, J_{CF} = 15 Hz), 141.31 (t, J_{CF} = 15 Hz), 132.58, 129.92, 129.57, 128.22, 127.08, 117.04, 112.20 (dd, J_{CF} = 16.2, 6.7 Hz), ^{19}F NMR (376 MHz, $CDCl_3$) δ 44.89. -131.19, -152.73. HRMS (ESI) calculated for $C_{15}H_8N_2OF_3$ $[M-H]^-$: 289.0589 found 289.0604.

***N*-(cyano(phenyl)methyl)-4-(trifluoromethyl)benzamide (1k).** The title compound was prepared according to the general procedure **(A)** on a 2.0 mmol scale to obtain as a white solid (475 mg, yield = 78%); Mp. 136-138 °C; ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.89 (d, J = 8.4 Hz, 2H), 7.69 (d, J = 8.4 Hz, 2H), 7.55-7.51 (m, 2H), 7.47-7.42 (m, 3H), 7.03 (d, J = 8 Hz, 1H), 6.30 (d, J = 8.4 Hz, 1H). ^{13}C{^{1}H} NMR ($CDCl_3$, 100 MHz): δ 165.43, 135.73 (d, J_{CF} = 1.3 Hz), 134.46, 134.13, 133.80, 132.92, 130.57, 129.92, 129.63, 127.93, 127.20, 125.93 (q, J_{CF} = 3.7 Hz), 124.87, 122.15, 117.30, 44.84. ^{19}F NMR (376 MHz, $CDCl_3$) δ -63.01. HRMS (ESI) calculated for $C_{16}H_{10}N_2OF_3$ $[M-H]^-$: 303.0745 found 303.0764.



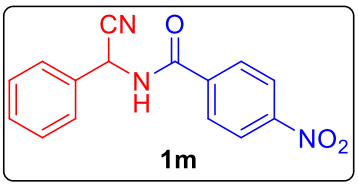
1k

4-cyano-*N*-(cyano(phenyl)methyl)benzamide (1l). The title compound was prepared according to the general procedure **(A)** on a 2.0 mmol scale to obtain as a yellow solid (471 mg, yield = 90%); Mp. 173-175 °C; ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.90 (d, J = 8.4 Hz, 2H), 7.73 (d, J = 8.4 Hz, 2H), 7.55-7.51 (m, 2H), 7.46-7.43 (m, 3H), 7.08 (d, J = 8 Hz, 1H), 6.29 (d, J = 8 Hz, 1H). ^{13}C{^{1}H} NMR ($CDCl_3$, 100 MHz): δ 164.77, 136.23, 132.69, 132.57, 129.88, 129.55, 128.04, 127.12, 117.63, 117.07, 116.05, 44.81. HRMS (ESI) calculated for $C_{16}H_{11}N_3ONa$ $[M+Na]^+$: 284.0800 found 284.0822.



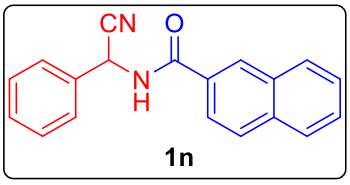
1l

***N*-(Cyano(phenyl)methyl)-4-nitrobenzamide (1m).** The title compound was prepared according to the general procedure **(A)** on a 2.0 mmol scale to obtain as a yellow solid (428 mg, yield = 76%); Mp. 159-162 °C; ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.58 (d, J = 4 Hz, 1H), 7.54-7.50 (m, 4H), 7.40 (d, J = 4 Hz, 3H), 7.07 (dd, J = 8.6, 4.6 Hz, 2H), 6.27 (d, J = 8.4, 1H). ^{13}C{^{1}H} NMR (101 MHz, $CDCl_3$) δ 161.13, 136.69, 133.11, 131.70, 129.62, 129.59, 129.41, 127.98, 127.13, 117.47, 44.44. HRMS (ESI) calculated for $C_{15}H_{11}N_3O_3Na$ $[M+Na]^+$: 304.0692 found 304.0685.



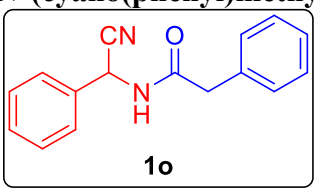
1m

***N*-(cyano(phenyl)methyl)-2-naphthamide (1n).** The title compound was prepared according to the general procedure **(B)** on a 2.0 mmol scale to obtain as a white solid (317 mg, yield = 55%); Mp. 171-174 °C; ^{1}H NMR (400 MHz, $CDCl_3$) 8.28 (s, 1H), 7.83-7.78 (m, 4H), 7.57-7.53 (m, 3H), 7.51-7.47 (m, 1H), 7.43-7.29 (m, 4H), 6.36 (d, *J* = 8.4 Hz, 1H). ^{13}C{^{1}H} NMR ($CDCl_3$, 100 MHz): δ 166.81, 135.08, 133.30, 132.41, 129.57, 129.54, 129.37, 129.01, 128.68, 128.27, 128.16, 127.74, 127.11, 126.95, 123.40, 117.58, 44.68. HRMS (ESI) calculated for $C_{19}H_{13}N_2O$ $[M-H]^-$: 285.1028 found 285.1023.



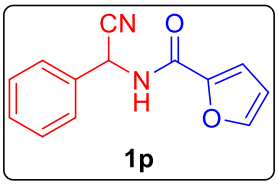
1n

***N*-(cyano(phenyl)methyl)-2-phenylacetamide (1o).** The title compound was prepared according to the general procedure **(A)** on a 2.0 mmol scale to obtain as a white solid (392 mg, yield = 78%); Mp. 132-134 °C; ^{1}H NMR (500 MHz, $CDCl_3$) δ 7.36-7.27 (m, 8H), 7.21 (d, *J* = 7 Hz, 2H), 6.67 (d, *J* = 8 Hz, 1H), 6.04 (d, *J* = 8.5 Hz, 1H), 3.55 (s, 2H). ^{13}C{^{1}H} NMR ($CDCl_3$, 126 MHz) δ 170.56, 133.69, 133.06, 129.49, 129.34, 129.33, 129.13, 127.67, 126.83, 117.39, 44.07, 42.93. HRMS (ESI) calculated for $C_{16}H_{14}N_2ONa$ $[M+Na]^+$: 273.1004 found 273.1015.



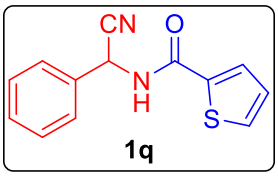
1o

***N*-(cyano(phenyl)methyl)furan-2-carboxamide (1p).** The title compound was prepared according to the general procedure **(A)** on a 2.0 mmol scale to obtain as a white solid (268 mg, yield = 59%); Mp. 101-102 °C; ^{1}H NMR (500 MHz, $CDCl_3$) δ 7.51-7.49 (m, 2H), 7.43 (s, 1H), 7.40-7.39 (m, 4H), 7.18 (d, *J* = 3.5, 1H), 6.50 (s, 1H), 6.26 (d, *J* = 8.5 Hz, 1H). ^{13}C{^{1}H} NMR (126 MHz, $CDCl_3$) δ 157.34, 146.27, 145.01, 133.07, 129.55, 129.34, 127.08, 117.29, 116.26, 112.48, 43.66. HRMS (ESI) calculated for $C_{13}H_9N_2O_2$ $[M-H]^-$: 225.0664 found 225.0659.



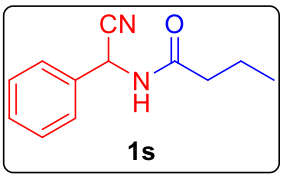
1p

***N*-(Cyano(phenyl)methyl)thiophene-2-carboxamide (1q).** The title compound was prepared according to the general procedure **(A)** on a 2.0 mmol scale to obtain as a white solid (380 mg, yield = 74%); Mp. 154-158 °C; ^{1}H NMR (400 MHz, $CDCl_3$) δ 8.29 (d, *J* = 8, 2H), 7.97 (d, *J* = 8.4, 2H), 7.50 (d, *J* = 33.2, 4H), 6.94 (s, 1H), 6.30 (d, *J* = 7.6, 1H). ^{13}C{^{1}H} NMR (101 MHz, $CDCl_3$) δ 164.53, 150.19, 137.82, 132.57, 130.03, 129.67, 128.61, 127.20, 124.04, 117.02, 44.93. HRMS (ESI) calculated for $C_{13}H_{10}N_2OSNa$ $[M+Na]^+$: 265.0406 found 265.0400.



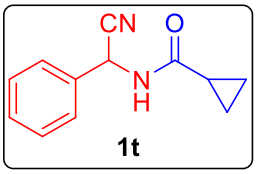
1q

***N*-(Cyano(phenyl)methyl)butyramide (1s).** The title compound was prepared according to the general procedure **(A)** on a 2.0 mmol scale to obtain as a white solid (340 mg, yield = 84%); Mp. 70-72 °C; ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.44-7.38 (m, 5H), 6.75 (d, *J* = 7.6 Hz, 1H), 6.05 (d, *J* = 8.4, 1H), 2.21-2.17 (m, 2H), 1.69-1.60 (m, 2H), 0.92 (t, *J* = 7.4, 3H). ^{13}C{^{1}H} NMR (101 MHz, $CDCl_3$) δ 172.54, 133.35, 129.47, 129.33, 126.97, 117.61, 43.90, 37.86, 18.85, 13.63. HRMS (ESI) calculated for $C_{12}H_{14}N_2ONa$ $[M+Na]^+$: 225.0998 found 225.0993.



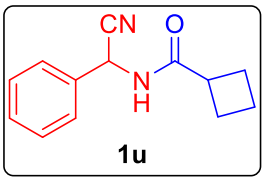
1s

***N*-(Cyano(phenyl)methyl)cyclopropanecarboxamide (1t).** The title compound was prepared according to the general procedure **(A)** on a 2.0 mmol scale to obtain as a white solid (325 mg, yield = 81%); Mp. 158-161 °C; ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.45-7.40 (m, 5H), 6.69 (d, *J* = 8, 1H), 6.08 (d, *J* = 8.4, 1H), 1.45-1.38 (m, 1H), 1.07-0.98 (m, 2H), 0.87-0.77 (m, 2H). ^{13}C{^{1}H} NMR (101 MHz, $CDCl_3$) δ 173.23, 133.38, 129.50, 129.36, 127.02, 117.62, 44.20, 14.42, 8.27, 8.11. HRMS (ESI) calculated for $C_{12}H_{12}N_2ONa$ $[M+Na]^+$: 223.0841 found 223.0834.



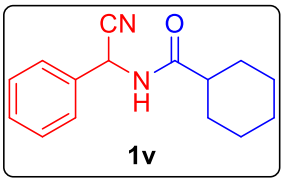
1t

***N*-(Cyano(phenyl)methyl)cyclobutanecarboxamide (1u).** The title compound was prepared according to the general procedure **(A)** on a 2.0 mmol scale to obtain as a white solid (357 mg, yield = 83%); Mp. 144-146 °C; ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.40-7.35 (m, 5H), 6.86 (d, *J* = 8 Hz, 1H), 6.01 (d, *J* = 8.4, 1H), 3.04 (p, *J* = 8.5, 1H), 2.28-2.17 (m, 2H), 2.16-2.06 (m, 2H), 1.99-1.90 (m, 1H), 1.87-1.82 (m, 1H). ^{13}C{^{1}H} NMR (101 MHz, $CDCl_3$) δ 174.54, 133.43, 129.39, 129.27, 126.94, 117.72, 43.89, 39.18, 25.13, 25.12, 18.20. HRMS (ESI) calculated for $C_{13}H_{14}N_2ONa$ $[M+Na]^+$: 237.0998 found 237.0994.



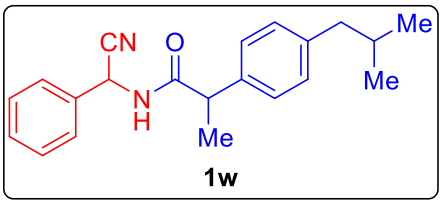
1u

***N*-(Cyano(phenyl)methyl)cyclohexanecarboxamide (1v).** The title compound was prepared according to the general procedure **(A)** on a 2.0 mmol scale to obtain as a white solid (395 mg, yield = 81%); Mp. 159-163 °C; ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.42-7.39 (m, 5H), 6.61 (d, *J* = 7.6 Hz, 1H), 6.09 (d, *J* = 8.4, 1H), 2.16 (tt, *J* = 11.8, 3.3, 1H), 1.88-1.77 (m, 4H), 1.67 (s, 1H), 1.48 -1.38 (m, 2H), 1.29-1.17 (m, 3H). ^{13}C{^{1}H} NMR (101 MHz, $CDCl_3$) δ 175.44, 133.51, 129.40, 129.31, 126.86, 117.67, 44.87, 43.72, 29.42, 29.25, 25.56, 25.52, 25.49. HRMS (ESI) calculated for $C_{15}H_{18}N_2ONa$ $[M+Na]^+$: 265.1311 found 265.1303.



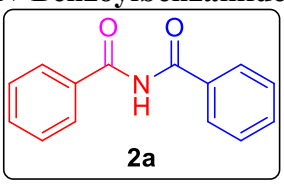
1v

***N*-(cyano(phenyl)methyl)-2-(4-isobutylphenyl)propenamide (1w).** The title compound was prepared according to the general procedure **(C)** on a 2.0 mmol scale to obtain as a white solid (362 mg, yield = 56%); Mp. 88-90 °C; ^{1}H NMR (500 MHz, $CDCl_3$) δ 7.35-7.33 (m, 2H), 7.31-7.26 (m, 2H), 7.21-7.20 (m, 1H), 7.18-7.08 (m, 4H), 6.50 (s, 1H), 6.06-6.02 (m, 1H), 3.60 (q, *J* = 7, 1H), 2.44 (dd, *J* = 7, 2.5 Hz, 2H), 1.88-1.79 (m, 1H), 1.51-1.49 (m, 3H), 0.90-0.87 (m, 6H). ^{13}C{^{1}H} NMR (126 MHz, $CDCl_3$) δ 173.98, 173.88, 141.07, 141.04, 137.54, 137.25, 133.19, 133.13, 129.78, 129.72, 129.34, 129.22, 129.19, 129.09, 127.19, 127.18, 126.74, 126.43, 117.51, 117.29, 30.13, 30.11, 22.34, 22.32, 22.28. HRMS (ESI) calculated for $C_{21}H_{23}N_2O$ [M-H]$^-$: 319.1810 found 319.1811.



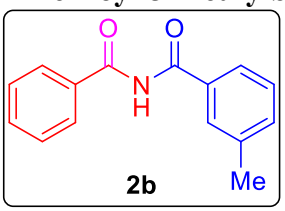
1w

***N*-Benzoylbenzamide (2a).**[1] The title compound was prepared according to the general procedure **(D)** on a 0.5 mmol scale to obtain as a white solid (98 mg, yield = 87%); Mp. 156-157 °C; ^{1}H NMR (400 MHz, $CDCl_3$) δ 9.29 (s, 1H), δ 7.84 (d, *J* = 8 Hz, 4H), 7.56 (t, *J* = 7.4 Hz, 2H), 7.45 (t, *J* = 7.6 Hz, 4H). ^{13}C{^{1}H} NMR (101 MHz, $CDCl_3$) δ 166.69, 133.39, 133.04, 128.80, 128.05.



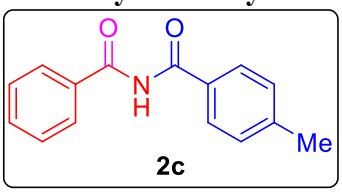
2a

***N*-Benzoyl-3-methylbenzamide (2b).**[2] The title compound was prepared according to the general procedure **(D)** on a 0.5 mmol scale to obtain as a white solid (91 mg, yield = 76%); Mp. 133-134 °C; ^{1}H NMR (400 MHz, $CDCl_3$) δ 9.13 (s, 1H), δ 7.85 (d, *J* = 7.2 Hz, 2H), 7.67 (s, 1H), 7.63 (d, *J* = 7.2 Hz, 1H), 7.58 (t, *J* = 7.4 Hz, 1H), 7.47 (t, *J* = 7.6 Hz, 2H), 7.40-7.33 (m, 2H), 2.40 (s, 3H). ^{13}C{^{1}H} NMR (101 MHz, $CDCl_3$) δ 166.58, 138.86, 133.87, 133.46, 133.36, 133.02, 128.82, 128.70, 128.64, 128.00, 124.92, 21.36.



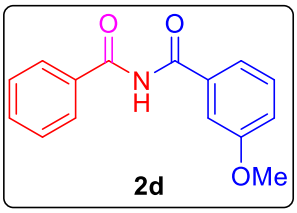
2b

***N*-Benzoyl-4-methylbenzamide (2c).**[2] The title compound was prepared according to the general procedure **(D)** on a 0.5 mmol scale to obtain as a white solid (100 mg, yield = 83%); Mp. 121-123 °C; ^{1}H NMR (400 MHz, $CDCl_3$) δ 9.00 (s, 1H), δ 7.85 (d, *J* = 7.6 Hz, 2H), 7.76 (d, *J* = 8.4 Hz, 2H), 7.59 (t, *J* = 7.4 Hz, 1H), 7.49 (t, *J* = 7.6 Hz, 2H), 7.27 (t, *J* = 7.2 Hz, 2H), 2.42 (s, 3H). ^{13}C{^{1}H} NMR (101 MHz, $CDCl_3$) δ 166.57, 166.27, 144.01, 133.51, 133.01, 130.49, 129.55, 128.84, 128.07, 127.96, 21.66.



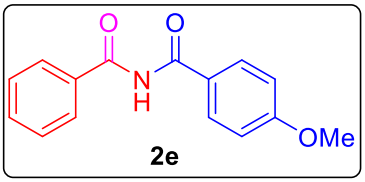
2c

***N*-Benzoyl-3-methoxybenzamide (2d).**[3] The title compound was prepared according to the general procedure **(D)** on a 0.5 mmol scale to obtain as a white solid (96 mg, yield = 75%); Mp. 132-134 °C; ^{1}H NMR (400 MHz, $CDCl_3$) δ 9.24 (s, 1H), δ 7.83 (d, *J* = 7.6 Hz, 2H), 7.56 (t, *J* = 7.2 Hz, 1H), 7.45 (t, *J* = 7.6 Hz, 2H), 7.39-7.33 (m, 3H), 7.09 (d, *J* = 7.2 Hz, 1H), 3.81 (s, 3H). ^{13}C{^{1}H} NMR (101 MHz, $CDCl_3$) δ 166.68, 166.19, 159.93, 134.75, 133.41, 133.02, 129.84, 128.78, 128.03, 119.72 119.25, 113.21, 55.52.



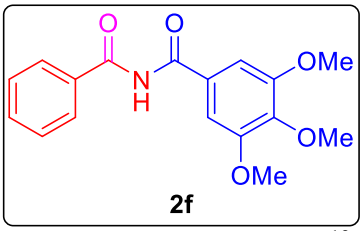
2d

***N*-Benzoyl-4-methoxybenzamide (2e).**[2] The title compound was prepared according to the general procedure **(D)** on a 0.5 mmol scale to obtain as a white solid (102 mg, yield = 80%); Mp. 122-123 °C; ^{1}H NMR (400 MHz, $CDCl_3$) δ 9.20 (s, 1H), δ 7.83 (t, *J* = 4.4 Hz, 4H), 7.54 (t, *J* = 7.4 Hz, 2H), 6.92 (d, *J* = 8.8 Hz, 2H), 3.83 (s, 3H). ^{13}C{^{1}H} NMR (101 MHz, $CDCl_3$) δ 167.01, 166.05, 163.52, 133.61, 132.88, 130.39, 128.72, 128.03, 125.40, 114.01, 55.43.



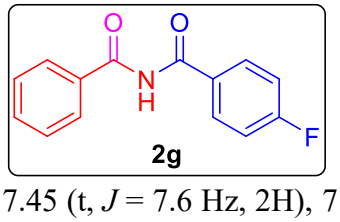
2e

***N*-Benzoyl-3,4,5-trimethoxybenzamide (2f).** The title compound was prepared according to the general procedure **(D)** on a 0.5 mmol scale to obtain as a white solid (90 mg, yield = 57%); Mp. 174-175 °C; ^{1}H NMR (400 MHz, $CDCl_3$) δ 9.24 (s, 1H), δ 7.82 (d, *J* = 7.6 Hz, 2H), 7.57 (t, *J* = 7.4 Hz, 1H), 7.46 (t, *J* = 7.6 Hz, 2H), 7.10 (s, 2H), 3.89 (s, 3H), 3.87 (s, 6H). ^{13}C{^{1}H} NMR (101 MHz, $CDCl_3$) δ 167.81, 166.08, 153.25, 142.37, 133.60, 132.92, 128.70, 128.28, 128.12, 105.61, 60.97, 56.39. HRMS (ESI) calculated for $C_{17}H_{17}NO_5Na$ $[M+Na]^+$: 338.0998 found 338.0990.



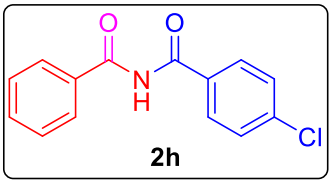
2f

***N*-Benzoyl-4-fluorobenzamide (2g).**[1] The title compound was prepared according to the general procedure **(D)** on a 0.5 mmol scale to obtain as a white solid (90 mg, yield = 74%); Mp. 137-140 °C; ^{1}H NMR (400 MHz, $CDCl_3$) δ 9.30 (s, 1H), δ 7.90-7.83 (m, 4H), 7.57 (t, *J* = 7.2 Hz, 1H), 7.45 (t, *J* = 7.6 Hz, 2H), 7.12 (t, *J* = 8.4 Hz, 2H). ^{13}C{^{1}H} NMR (101 MHz, $CDCl_3$) δ 166.85 (d, J_{CF} =3.53 Hz), 166.09, 164.34, 133.20, 133.14, 130.92, 130.83, 129.54 (d, J_{CF} = 3.13 Hz), 128.80, 128.08, 115.90 (d, J_{CF} = 22.22). ^{19}F NMR (376 MHz, $CDCl_3$) δ -104.9.



2g

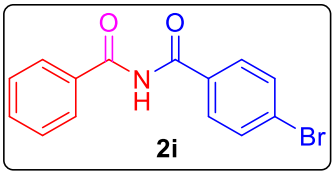
***N*-Benzoyl-4-chlorobenzamide (2h).**[2] The title compound was prepared according to the general procedure **(D)** on a 0.5 mmol scale to obtain as a white solid (86 mg, yield = 66%); Mp. 140-141 °C; ^{1}H NMR (400 MHz, $CDCl_3$) δ 9.19 (s, 1H), δ 7.84 (d, *J* = 7.6 Hz, 2H), 7.78 (d, *J* = 8.4



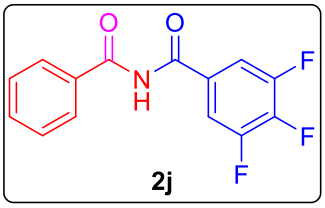
2h

Hz, 2H), 7.58 (t, J = 7.4 Hz, 1H), 7.49-7.42 (m, 4H). $^{13}C\{^1H\}$ NMR (101 MHz, $CDCl_3$) δ 166.57, 166.22, 139.42, 133.19, 133.04, 131.70, 129.60, 129.01, 128.82, 128.02.

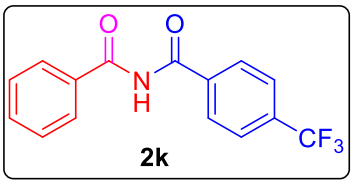
***N*-Benzoyl-4-bromobenzamide (2i).**[2] The title compound was prepared according to the general procedure **(D)** on a 0.5 mmol scale to obtain as a white solid (95 mg, yield = 62%); Mp. 132-134 °C; ^1H NMR (400 MHz, $CDCl_3$) δ 9.07 (s, 1H), 7.85 (d, J = 7.6 Hz, 2H), 7.71 (d, J = 8 Hz, 2H), 7.62-7.59 (m, 3H), 7.49 (t, J = 7.6 Hz, 2H). $^{13}C\{^1H\}$ NMR (101 MHz, $CDCl_3$) δ 166.46, 166.38, 133.29, 133.03, 132.21, 132.06, 129.70, 128.92, 128.07, 128.02.



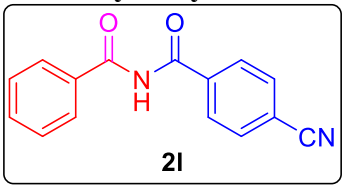
***N*-Benzoyl-3,4,5-trifluorobenzamide (2j).** The title compound was prepared according to the general procedure **(D)** on a 0.5 mmol scale to obtain as a white solid (73 mg, yield = 52%); Mp. 165-169 °C; ^1H NMR (400 MHz, $CDCl_3$) δ 9.18 (s, 1H), 7.85 (d, J = 7.6 Hz, 2H), 7.63 (t, J = 7.4 Hz, 1H), 7.53-7.50 (m, 4H). $^{13}C\{^1H\}$ NMR (101 MHz, $CDCl_3$) δ 166.62, 164.72, 152.38 (dd, J_{CF} = 10.45, 3.4 Hz), 149.86 (dd, J_{CF} = 10.40, 3.5 Hz), 144.21 (t, J_{CF} = 15.3 Hz), 141.62 (t, J_{CF} = 15.2 Hz), 133.54, 132.57, 128.93, 128.11, 113.19 (dd, J_{CF} = 16.46, 6.66 Hz).^{19}F NMR (376 MHz, $CDCl_3$) δ -131.57, -152.09. HRMS (ESI) calculated for $C_{14}H_8NO_2F_3Na$ $[M+Na]^+$: 302.0399 found 302.0398.



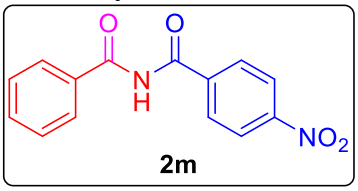
***N*-Benzoyl-4-(trifluoromethyl)benzamide (2k).**[3] The title compound was prepared according to the general procedure **(D)** on a 0.5 mmol scale to obtain as a white solid (93 mg, yield = 63%); Mp. 135-138 °C; ^1H NMR (400 MHz, $CDCl_3$) δ 9.09 (s, 1H), 7.94 (d, J = 8 Hz, 2H), 7.88 (d, J = 7.6 Hz, 2H), 7.74 (t, J = 8.4 Hz, 2H), 7.62 (t, J = 7.4 Hz, 1H), 7.51 (t, J = 7.6 Hz, 2H). $^{13}C\{^1H\}$ NMR (101 MHz, $CDCl_3$) δ 166.62, 166.21, 136.80, 134.36 (q, J_{CF} = 33.0 Hz), 132.72, 129.00, 128.57, 128.02, 125.76 (q, J_{CF} = 3.7 Hz), 123.46 (q, J_{CF} = 273.7 Hz). ^{19}F NMR (376 MHz, $CDCl_3$) δ -63.14.



***N*-Benzoyl-4-cyanobenzamide (2l).**[4] The title compound was prepared according to the general procedure **(D)** on a 0.5 mmol scale to obtain as a white solid (67 mg, yield = 53%); Mp. 130-133 °C; ^1H NMR (400 MHz, $CDCl_3$) δ 9.27 (s, 1H), 7.89 (dd, J = 14.2, 7.8 Hz, 4H), 7.75 (d, J = 7.6 Hz, 2H), 7.62 (t, J = 7.2 Hz, 1H), 7.50 (t, J = 7.4 Hz, 2H). $^{13}C\{^1H\}$ NMR (101 MHz, $CDCl_3$) δ 166.85, 166.31, 137.48, 133.62, 132.47, 132.39, 129.01, 128.81, 128.10, 117.79, 116.14.

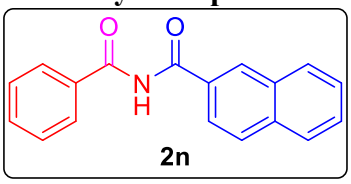


***N*-Benzoyl-4-nitrobenzamide (2m).**[2] The title compound was prepared according to the general procedure **(D)** on a 0.5 mmol scale to obtain as a bright yellow solid (65 mg, yield = 48%); Mp. 178-181 °C; ^{1}H NMR (400 MHz, $CDCl_3$) δ 9.16 (s, 1H), 8.31 (d, *J* = 8.8 Hz, 2H), 7.96 (d, *J* = 8.8 Hz, 2H), 7.88 (d, *J* = 7.6 Hz, 2H), 7.64 (t, *J* = 7.4 Hz, 1H), 7.52 (t, *J* = 7.6 Hz, 2H). ^{13}C{^{1}H} NMR (101 MHz, $CDCl_3$) δ 166.88, 166.06, 150.07, 139.18, 133.73, 132.31, 129.32, 129.09, 128.05, 123.79.



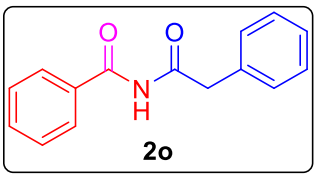
2m

***N*-Benzoyl-2-naphthamide (2n).**[1] The title compound was prepared according to the general procedure **(D)** on a 0.5 mmol scale to obtain as a white solid (82 mg, yield = 59%); Mp. 158-160 °C; ^{1}H NMR (400 MHz, $CDCl_3$) δ 9.17 (s, 1H), 8.38 (s, 1H), 7.95-7.87 (m, 6H), 7.59 (dt, *J* = 15, 7.2 Hz, 3H), 7.51 (t, *J* = 7.6 Hz, 2H). ^{13}C{^{1}H} NMR (101 MHz, $CDCl_3$) δ 166.60, 166.56, 135.44, 133.42, 133.11, 132.42, 130.54, 129.27, 129.11, 128.89, 127.15, 123.90.



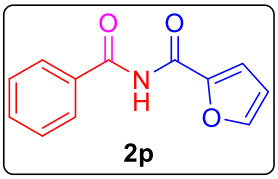
2n

***N*-(2-Phenylacetyl)benzamide (2o).**[5] The title compound was prepared according to the general procedure **(D)** on a 0.5 mmol scale to obtain as a white solid (95 mg, yield = 79%); Mp. 140-144 °C; ^{1}H NMR (400 MHz, $CDCl_3$) δ 9.13 (s, 1H), 7.85 (d, *J* = 7.2 Hz, 2H), 7.58 (t, *J* = 7.4 Hz, 1H), 7.44 (t, *J* = 7.8 Hz, 2H), 7.37-7.27 (m, 5H), 4.31 (s, 2H). ^{13}C{^{1}H} NMR (101 MHz, $CDCl_3$) δ 174.23, 165.66, 133.75, 133.25, 132.62, 129.84, 128.95, 128.61, 127.81, 127.21, 43.97.



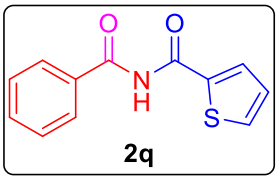
2o

***N*-Benzoylfuran-2-carboxamide (2p).**[2] The title compound was prepared according to the general procedure **(D)** on a 0.5 mmol scale to obtain as a white solid (78 mg, yield = 72%); Mp. 128-131 °C; ^{1}H NMR (400 MHz, $CDCl_3$) δ 9.36 (s, 1H), 7.87 (d, *J* = 7.2 Hz, 2H), 7.59 (t, *J* = 9.4 Hz, 2H), 7.49 (t, *J* = 7.6 Hz, 2H), 7.37 (d, *J* = 3.6 Hz, 1H), 6.60 (dd, *J* = 3.2, 1.6 Hz, 1H). ^{13}C{^{1}H} NMR (101 MHz, $CDCl_3$) δ 165.19, 155.00, 146.57, 145.37, 133.33, 133.13, 128.92, 127.78, 118.05, 113.30.



2p

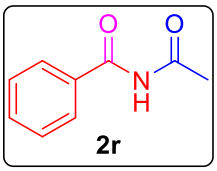
***N*-Benzoylthiophene-2-carboxamide (2q).**[2] The title compound was prepared according to the general procedure **(D)** on a 0.5 mmol scale to obtain as a white solid (90 mg, yield = 77%); Mp. 128-130 °C; ^{1}H NMR (400 MHz, $CDCl_3$) δ 9.28 (s, 1H), 7.84 (d, *J* = 3.6 Hz, 1H), 7.63 (d, *J* = 4.8 Hz, 1H), 7.54 (t,



2q

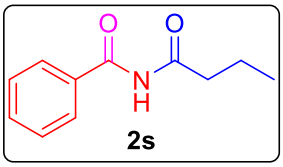
J = 7.2 Hz, 1H), 7.43 (t, J = 7.6 Hz, 2H), 7.12 (t, J = 4.4 Hz, 1H). $^{13}C\{^1H\}$ NMR (101 MHz, $CDCl_3$) δ 166.68, 160.16, 137.68, 133.51, 133.42, 132.97, 131.36, 128.71, 128.18, 128.06.

***N*-Acetylbenzamide (2r).**[2] The title compound was prepared according to the general procedure **(D)** on a 0.5 mmol scale to obtain as a white solid (73 mg, yield = 89%); Mp. 130-133 °C; ^1H NMR (400 MHz, $CDCl_3$) δ 9.18 (s, 1H), 7.89 (d, J = 7.2 Hz, 2H), 7.59 (t, J = 7.4 Hz, 1H), 7.48 (t, J = 7.6 Hz, 2H), 2.60 (s, 3H). $^{13}C\{^1H\}$ NMR (101 MHz, $CDCl_3$) δ 173.91, 165.90, 133.24, 132.68, 128.95, 127.82, 25.65.



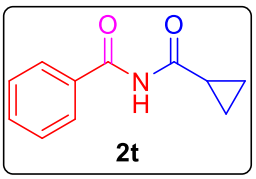
2r

***N*-Butyrylbenzamide (2s).**[6] The title compound was prepared according to the general procedure **(D)** on a 0.5 mmol scale to obtain as a white solid (84 mg, yield = 87%); Mp. 121-123 °C; ^1H NMR (400 MHz, $CDCl_3$) δ 9.14 (s, 1H), 7.91 (d, J = 8 Hz, 2H), 7.59 (t, J = 7.4 Hz, 1H), 7.49 (t, J = 7.8 Hz, 2H), 2.99 (t, J = 7.2 Hz, 2H), 1.74 (dd, J = 14.6, 7.4 Hz, 2H), 1.02 (t, 7.6 Hz, 3H). $^{13}C\{^1H\}$ NMR (101 MHz, $CDCl_3$) δ 176.64, 165.73, 133.13, 132.87, 128.90, 127.80, 39.50, 17.55, 13.73.



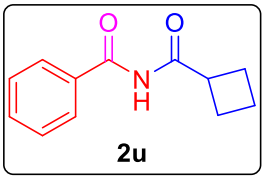
2s

***N*-(Cyclopropanecarbonyl)benzamide (2t).**[7] The title compound was prepared according to the general procedure **(D)** on a 0.5 mmol scale to obtain as a white solid (75 mg, yield = 79%); Mp. 146-150 °C; ^1H NMR (400 MHz, $CDCl_3$) δ 9.25 (s, 1H), 7.90 (d, J = 7.6 Hz, 2H), 7.59 (t, J = 7.4 Hz, 1H), 7.49 (t, J = 7.4 Hz, 2H), 3.13-3.07 (m, 1H), 1.20-1.19 (m, 2H), 1.11-1.02 (m, 2H). $^{13}C\{^1H\}$ NMR (101 MHz, $CDCl_3$) δ 177.66, 166.22, 133.11, 128.84, 127.89, 14.55, 11.13.



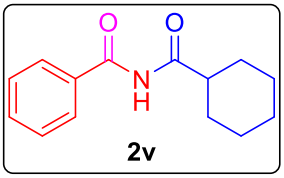
2t

***N*-(Cyclobutanecarbonyl)benzamide (2u).** The title compound was prepared according to the general procedure **(D)** on a 0.5 mmol scale to obtain as a white solid (86 mg, yield = 84%); Mp. 152-154 °C; ^1H NMR (400 MHz, $CDCl_3$) δ 8.86 (s, 1H), 7.88 (d, J = 8 Hz, 2H), 7.59 (t, J = 7.2 Hz, 1H), 7.49 (t, J = 7.6 Hz, 2H), 4.07 (p, J = 8.4 Hz, 1H), 2.43-2.30 (m, 4H), 2.10-1.98 (m, 2H), 1.96-1.86 (m, 1H). $^{13}C\{^1H\}$ NMR (101 MHz, $CDCl_3$) δ 178.23, 165.39, 133.07, 132.83, 128.83, 127.89, 40.60, 24.59, 17.97. HRMS (ESI) calculated for $C_{12}H_{13}NO_2Na$ $[M+Na]^+$: 226.0838 found 226.0833.



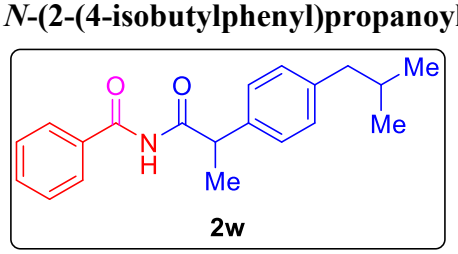
2u

***N*-(Cyclohexanecarbonyl)benzamide (2v).**[5] The title compound was prepared according to the general procedure **(D)** on a 0.5 mmol scale to obtain as a white solid (96 mg, yield = 83%); Mp. 158-162 °C; ^{1}H NMR (400 MHz, $CDCl_3$) δ 8.81 (s, 1H), 7.87 (d, *J* = 7.2 Hz, 2H), 7.59 (t, *J* = 7.4 Hz, 1H), 7.49 (t, *J* = 7.8 Hz, 2H), 3.39 (tt, *J* = 11.2, 3.2 Hz, 1H), 1.99 (d, *J* = 12.4 Hz, 2H), 1.84-1.80 (m, 2H), 1.72 (d, *J* = 12.8 Hz, 2H), 1.54-1.21 (m, 4H), 1.30-1.21 (m, 1H). ^{13}C{^{1}H} NMR (101 MHz, $CDCl_3$) δ 179.19, 165.42, 133.08, 128.92, 127.73, 44.54, 28.93, 25.88, 25.60.



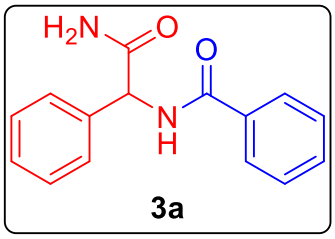
2v

***N*-(2-(4-isobutylphenyl)propanoyl)benzamide (2w).** The title compound was prepared according to the general procedure **(D)** on a 0.5 mmol scale to obtain as a white solid (113 mg, yield = 73%); Mp. 128-130 °C; ^{1}H NMR (400 MHz, $CDCl_3$) δ 8.66 (s, 1H), 7.70-7.68 (m, 2H), 7.54 (t, *J* = 7.4 Hz, 1H), 7.41 (t, *J* = 7.8 Hz, 2H), 7.30 (d, *J* = 8 Hz, 2H), 7.12 (d, *J* = 8 Hz, 2H), 4.67 (q, *J* = 7 Hz, 1H), 2.45 (d, *J* = 7.2 Hz, 2H), 1.90-1.80 (m, 1H), 1.55 (d, *J* = 7.2 Hz, 3H), 0.89 (d, *J* = 6.4 Hz, 6H). ^{13}C{^{1}H} NMR (100 MHz, $CDCl_3$) δ 176.03, 165.05, 140.91, 137.38, 133.00, 132.97, 129.59, 128.79, 127.77, 127.60, 46.10, 45.02, 30.13, 22.36, 18.69. HRMS (ESI) calculated for $C_{20}H_{22}NO_2$ [M-H]$^{-}$: 308.1651 found 308.1674.



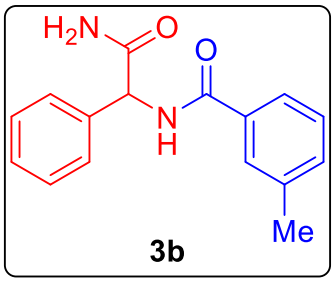
2w

***N*-(2-amino-2-oxo-1-phenylethyl)benzamide (3a).** The title compound was prepared according to the general procedure **(F)** on a 0.09 mmol scale to obtain as a white solid (17.4 mg, yield = 76%); Mp. 189-191 °C; ^{1}H NMR (400 MHz, DMSO-*d*$_6$) δ 8.68 (d, *J* = 8 Hz, 1H), 7.92-7.86 (m, 2H), 7.68 (s, 1H), 7.53-7.51 (m, 3H), 7.46 (t, *J* = 7.4 Hz, 2H), 7.35 (t, *J* = 7.2 Hz, 2H), 7.31-7.27 (m, 1H), 7.23 (s, 1H), 5.62 (d, *J* = 8 Hz, 1H). ^{13}C{^{1}H} NMR (101 MHz, DMSO-*d*$_6$) δ 171.64, 165.91, 138.77, 133.92, 131.38, 128.23, 128.20, 127.59, 127.49, 127.46, 56.80. HRMS (ESI) calculated for $C_{15}H_{14}N_2O_2Na$ [M+Na]$^{+}$: 277.0947 found 277.0941.



3a

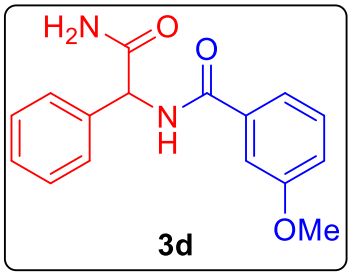
***N*-(2-amino-2-oxo-1-phenylethyl)-3-methylbenzamide (3b).** The title compound was prepared according to the general procedure **(G)** on a 0.09 mmol scale to obtain as a white solid (14.6 mg, yield = 60%); Mp. 185-187 °C; ^{1}H NMR (400 MHz, DMSO-*d6*) δ 8.58 (d, *J* = 8 Hz, 1H), 7.71 (s, 1H), 7.67-7.63 (m, 2H), 7.50-7.47 (m, 2H), 7.35-7.24 (m, 5H), 7.20 (s, 1H), 5.58 (d, *J* = 8 Hz, 1H), 2.33 (s, 3H). ^{13}C{^{1}H}



3b

NMR (101 MHz, DMSO-*d6*) δ 172.14, 166.44, 139.20, 137.96, 134.29, 132.41, 128.69, 128.57, 128.46, 127.96, 127.88, 125.18, 57.19, 21.30. HRMS (ESI) calculated for $C_{16}H_{16}N_2O_2Na$ $[M+Na]^+$: 291.1109 found 291.1096.

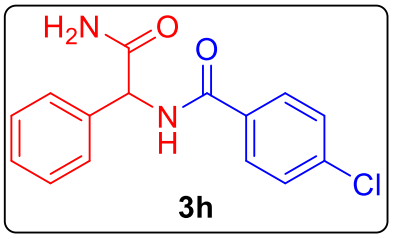
***N*-(2-amino-2-oxo-1-phenylethyl)-3-methoxybenzamide (3d).** The title compound was



3d

prepared according to the general procedure **(F)** on a 0.09 mmol scale to obtain as a white solid (17.5 mg, yield = 68%); Mp. 134-136 °C; ^{1}H NMR (400 MHz, DMSO-*d6*) δ 8.72 (d, *J* = 8 Hz, 1H), 7.69 (s, 1H), 7.50 (td, *J* = 8.1, 1.2 Hz, 3H), 7.45-7.44 (m, 1H), 7.39-7.33 (m, 3H), 7.31-7.27 (m, 1H), 7.26 (s, 1H), 7.09 (ddd, *J* = 8.2, 2.6, 0.8 Hz, 1H), 5.62 (d, *J* = 8 Hz, 1H), 3.80 (s, 3H). ^{13}C{^{1}H} NMR (101 MHz, DMSO-*d6*) δ 171.62, 165.69, 159.08, 138.72, 135.37, 129.33, 128.22, 127.49, 119.83, 117.35, 112.67, 56.84, 55.28. HRMS (ESI) calculated for $C_{16}H_{16}N_2O_3Na$ $[M+Na]^+$: 307.1053 found 307.1046.

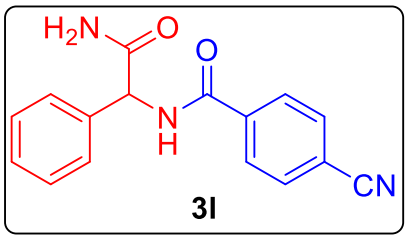
***N*-(2-amino-2-oxo-1-phenylethyl)-4-chlorobenzamide (3h).** The title compound was



3h

prepared according to the general procedure **(G)** on a 0.09 mmol scale to obtain as a white solid (10.4 mg, yield = 33%); Mp. 237-238 °C; ^{1}H NMR (400 MHz, DMSO-*d6*) δ 8.80 (d, *J* = 8 Hz, 1H), 7.90-7.88 (m, 2H), 7.65 (s, 1H), 7.50-7.47 (m, 3H), 7.46 (s, 1H), 7.33-7.29 (m, 2H), 7.27-7.23 (m, 1H), 7.19 (s, 1H), 5.56 (d, *J* = 8 Hz, 1H). ^{13}C{^{1}H} NMR (101 MHz, DMSO-*d6*) δ 171.97, 165.43, 139.01, 136.60, 133.12, 130.09, 129.82, 128.72, 128.66, 127.98, 57.36. HRMS (ESI) calculated for $C_{15}H_{13}ClN_2O_2Na$ $[M+Na]^+$: 311.0563 found 311.0549.

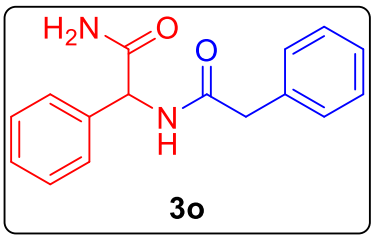
***N*-(2-amino-2-oxo-1-phenylethyl)-4-cyanobenzamide (3l).** The title compound was prepared



3l

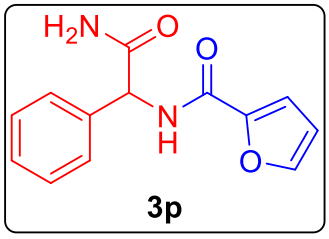
according to the general procedure **(G)** on a 0.09 mmol scale to obtain as a white solid (10.1 mg, yield = 40%); Mp. 220-221 °C; ^{1}H NMR (400 MHz, DMSO-*d6*) δ 9.05 (d, *J* = 8 Hz, 1H), 8.05-7.98 (m, 2H), 7.92 (d, *J* = 8.4 Hz, 2H), 7.69 (s, 1H), 7.49 (d, *J* = 7.2 Hz, 2H), 7.35-7.26 (m, 3H), 7.22 (s, 1H), 5.59 (d, *J* = 8 Hz, 1H). ^{13}C{^{1}H} NMR (101 MHz, DMSO-*d6*) δ 171.82, 165.26, 138.78, 138.43, 132.82, 132.68, 129.05, 128.70, 128.05, 118.79, 114.11, 57.52. HRMS (ESI) calculated for $C_{16}H_{13}N_3O_2Na$ $[M+Na]^+$: 302.0905 found 302.0892.

***N*-(2-amino-2-oxo-1-phenylethyl)-2-phenylacetamide (3o).** The title compound was prepared according to the general procedure **(G)** on a 0.09 mmol scale to obtain as a white solid (13.3 mg, yield = 55%); Mp. 235-236 °C; ^{1}H NMR (400 MHz, DMSO-*d6*) δ 8.59 (d, *J* = 8 Hz, 1H), 7.65 (s, 1H), 7.36 (d, *J* = 7.2 Hz, 2H), 7.27 (t, *J* = 7.4 Hz, 2H), 7.21-7.20 (m, 4H), 7.16-7.13 (m, 1H), 7.09 (s, 1H), 5.35 (d, *J* = 8 Hz, 1H), 3.50 (s, 1H). ^{13}C{^{1}H} NMR (101 MHz, DMSO-*d6*) δ 172.11, 170.15, 139.61, 136.88, 129.52, 128.66, 128.58, 127.44, 126.73, 56.49, 42.27. HRMS (ESI) calculated for $C_{16}H_{16}N_2O_2Na$ $[M+Na]^+$: 291.1109 found 291.1109.



3o

***N*-(2-amino-2-oxo-1-phenylethyl)furan-2-carboxamide (3p).** The title compound was prepared according to the general procedure **(F)** on a 0.09 mmol scale to obtain as a white solid (13.1 mg, yield = 60%); Mp. 184-186 °C; ^{1}H NMR (400 MHz, DMSO-*d6*) δ 8.33 (d, *J* = 7.6 Hz, 1H), 7.85 (s, 1H), 7.74 (s, 1H), 7.47 (d, *J* = 7.6 Hz, 2H), 7.35 (t, *J* = 7.4 Hz, 2H), 7.30-7.27 (m, 2H), 7.24 (d, *J* = 3.2 Hz, 1H), 6.63-6.62 (m, 1H), 5.54 (d, *J* = 7.6 Hz, 1H). ^{13}C{^{1}H} NMR (101 MHz, DMSO-*d6*) δ 171.27, 156.87, 147.18, 145.37, 138.72, 128.31, 127.59, 127.17, 114.14, 111.93, 55.77. HRMS (ESI) calculated for $C_{13}H_{12}N_2O_3Na$ $[M+Na]^+$: 267.0740 found 267.0731.



3p

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13. Copies of ^{1}H, ^{13}C, ^{19}F spectra and HRMS data

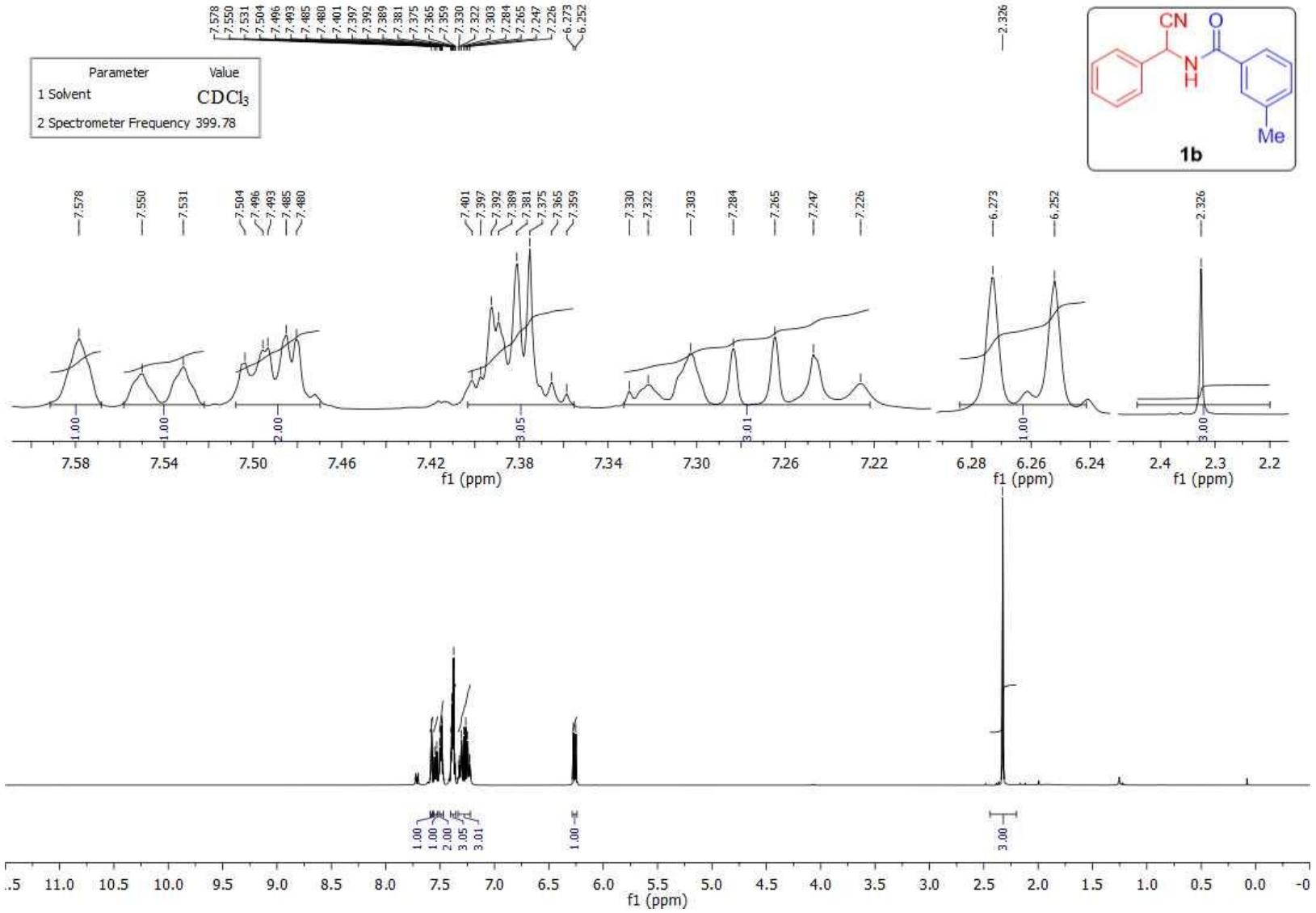


Fig. S9. ^{1}H NMR spectra of *N*-(cyano(phenyl)methyl)-3-methylbenzamide **(1b).**

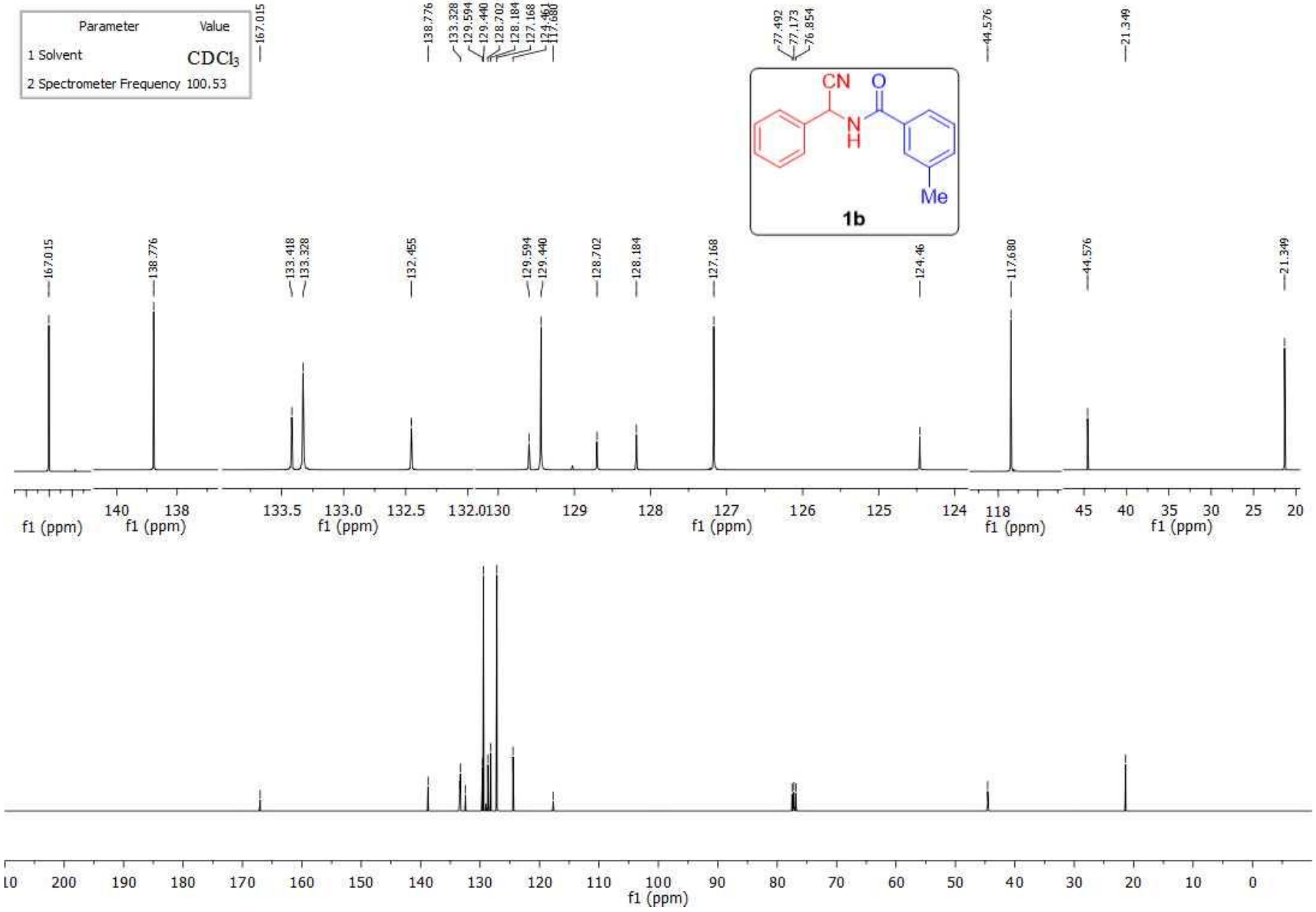


Fig. S10. ^{13}C NMR spectra of *N*-(cyano(phenyl)methyl)-3-methylbenzamide **(1b).**

Sample Name	VG P2 35_MeOH_Positive	**Position**		**Instrument Name**	CY-E-HRMS-01
User Name		**Inj Vol**	Unknown / Injection Program	**InjPosition**	
Sample Type	Sample	**IRM Calibration Status**	Success	**Data Filename**	VG P2 35_MeOH_Positive.d
ACQ Method	TEST.m	**Comment**		**Acquired Time**	10/4/2025 11:48:49 AM (UTC+05:30)

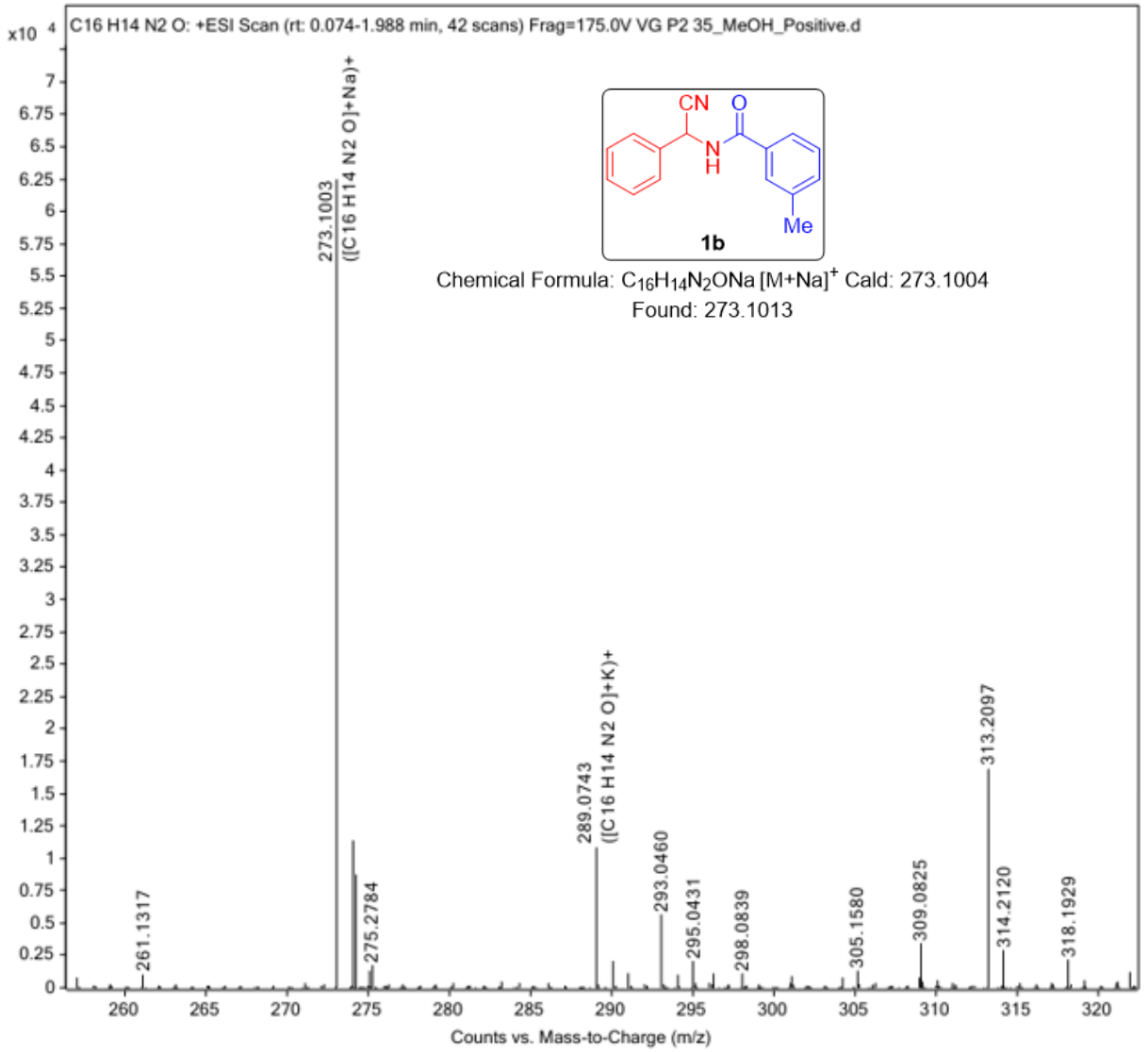


Fig. S11. HRMS data of *N*-(cyano(phenyl)methyl)-3-methylbenzamide **(1b).**

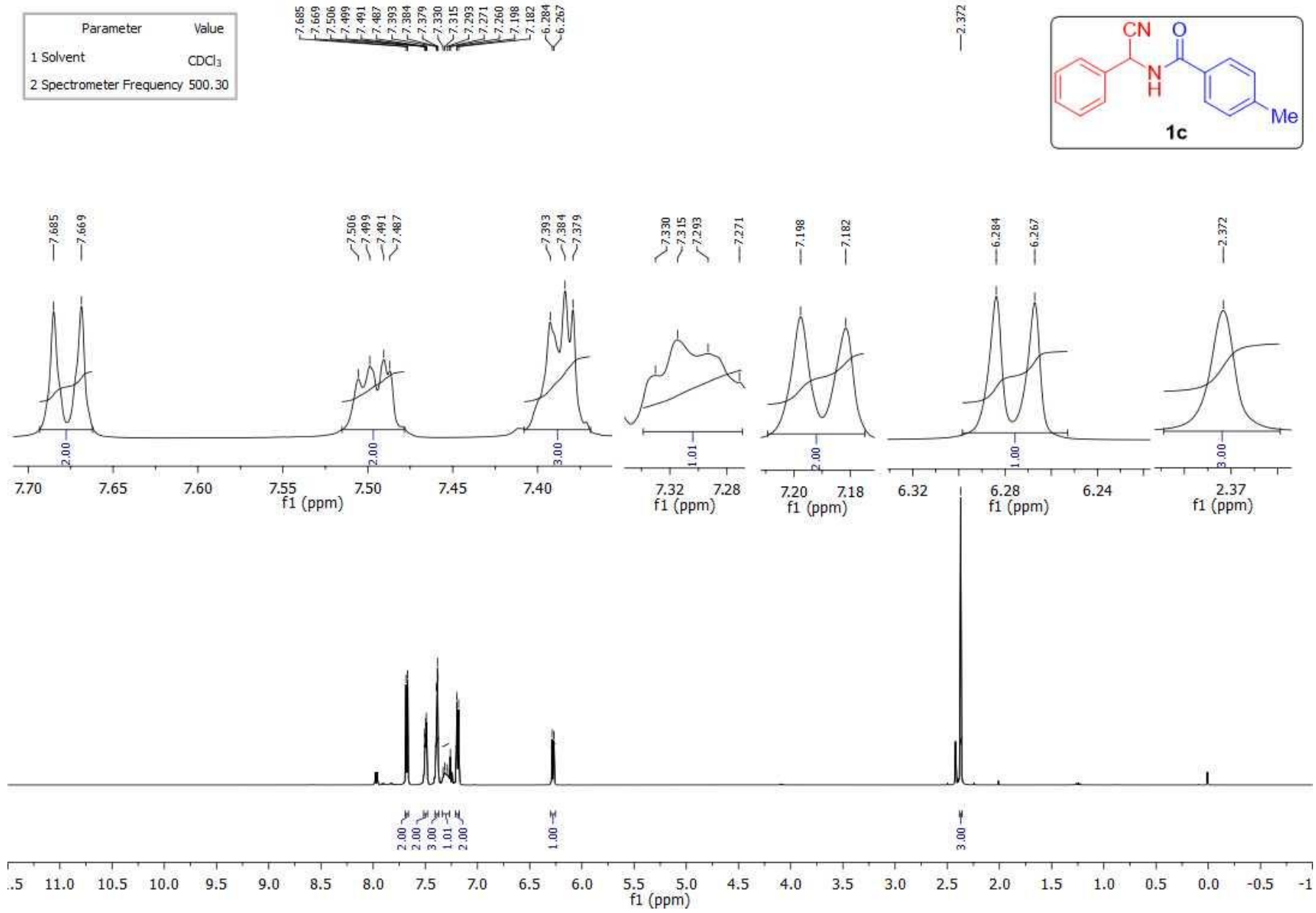


Fig. S12. [1]H NMR spectra of *N*-(cyano(phenyl)methyl)-4-methylbenzamide **(1c).**

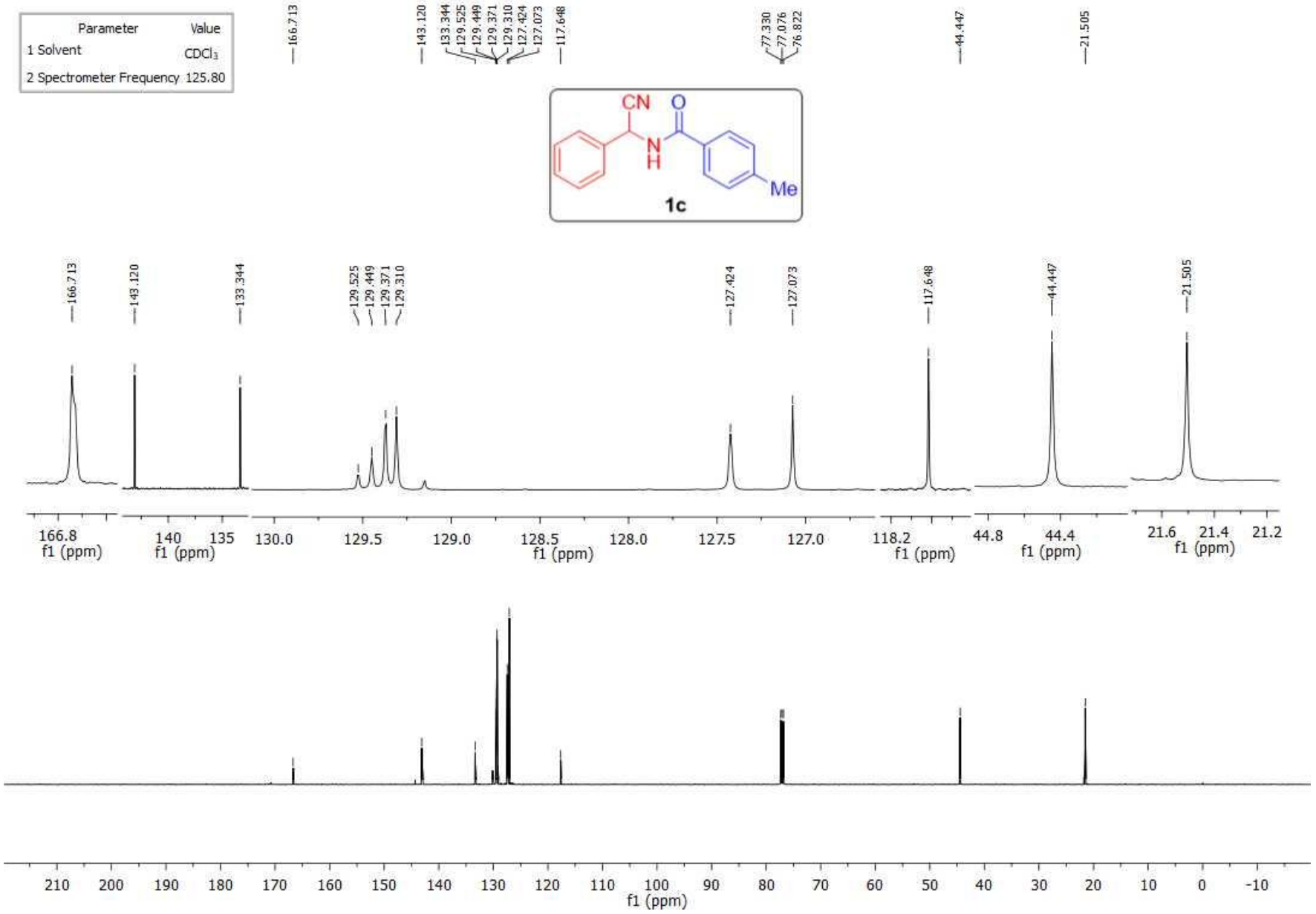


Fig. S13. ^{13}C NMR spectra of *N*-(cyano(phenyl)methyl)-4-methylbenzamide **(1c).**

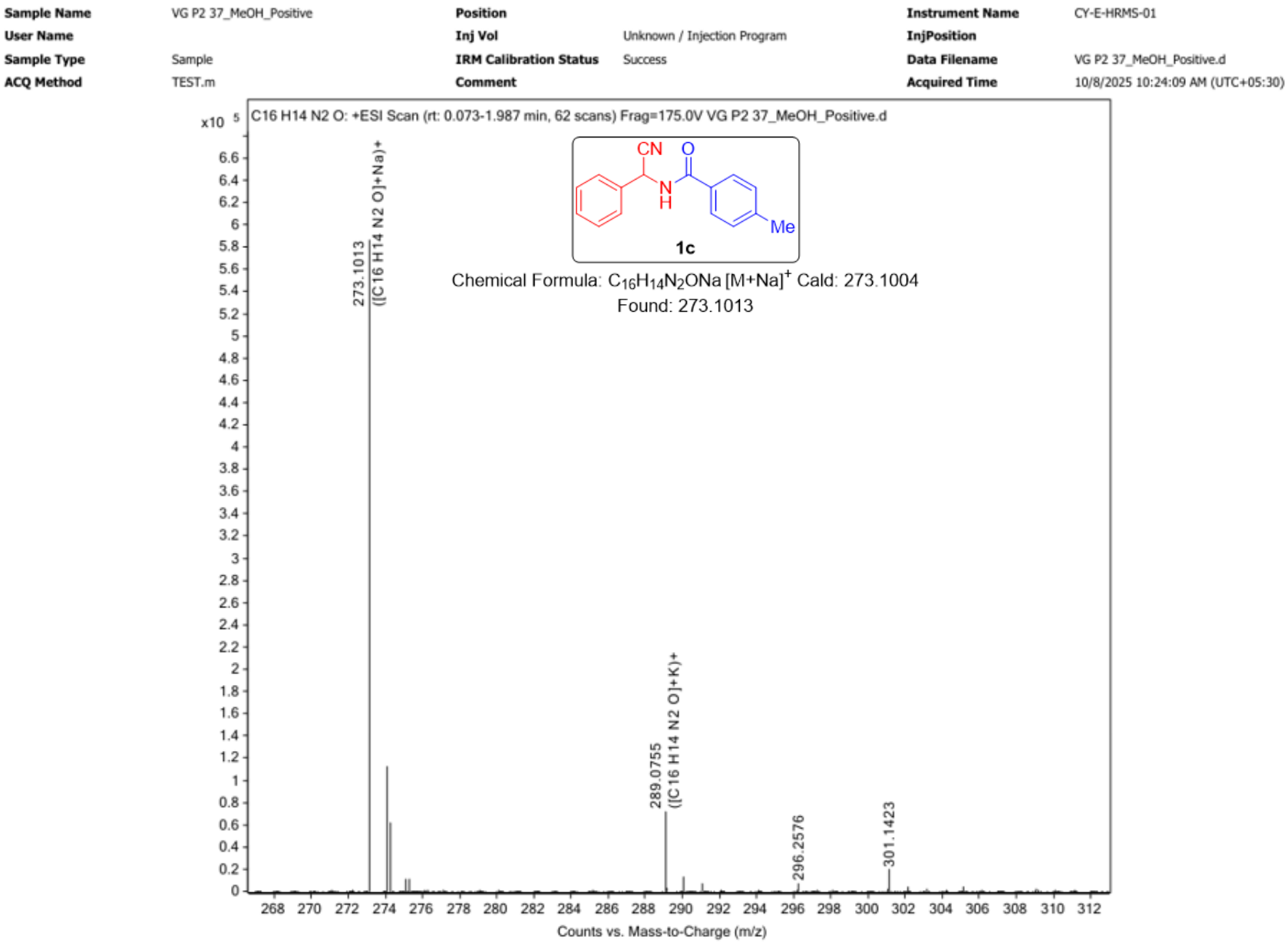


Fig. S14. HRMS data of *N*-(cyano(phenyl)methyl)-4-methylbenzamide **(1c).**

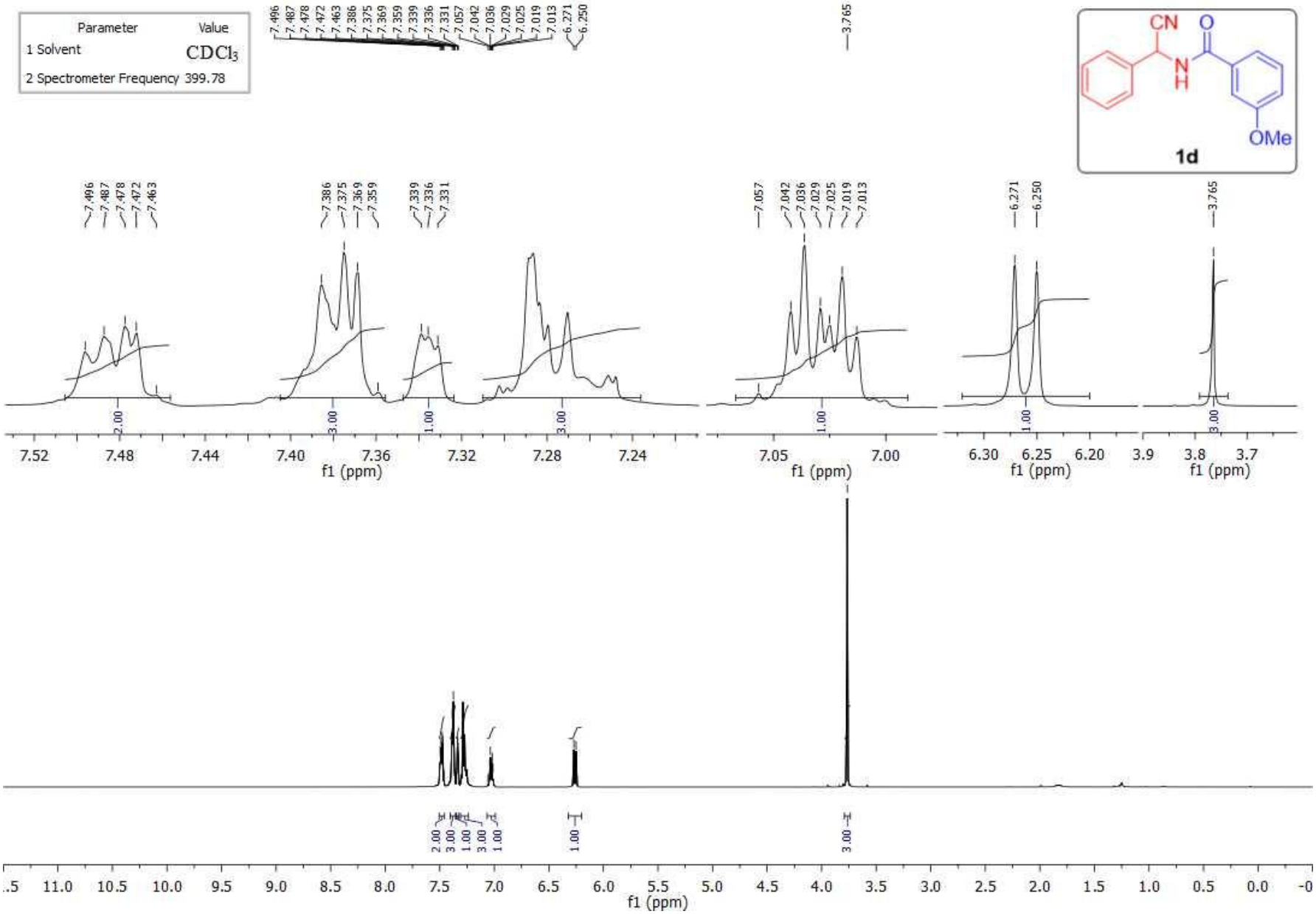


Fig. S15. [1]H NMR spectra of *N*-(cyano(phenyl)methyl)-3-methoxybenzamide **(1d).**

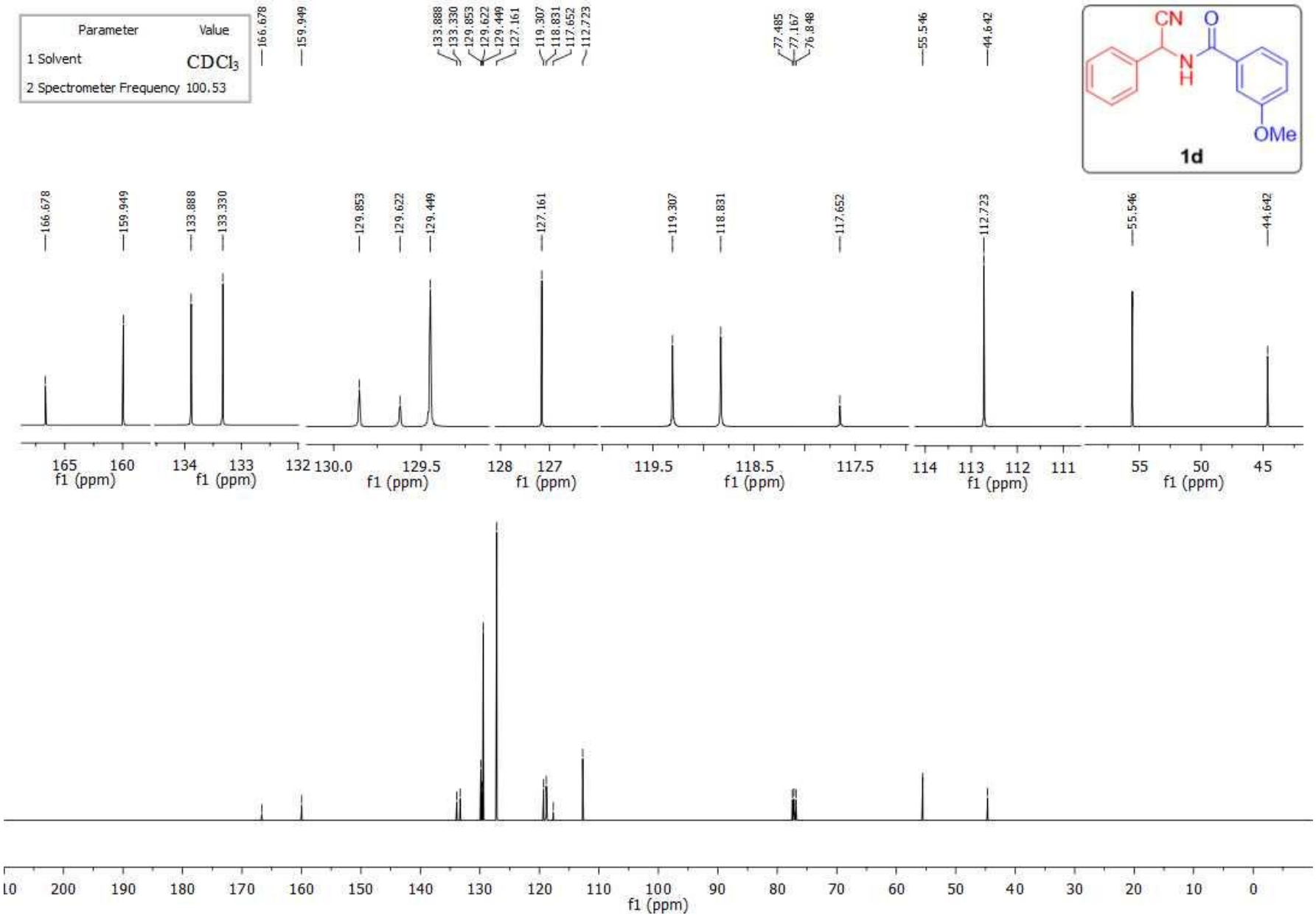


Fig. S16. ^{13}C NMR spectra of *N*-(cyano(phenyl)methyl)-3-methoxybenzamide **(1d).**

Sample Name	VG P2 36_MeOH_Negative	**Position**		**Instrument Name**	CY-E-HRMS-01
User Name		**Inj Vol**	Unknown / Injection Program	**InjPosition**	
Sample Type	Sample	**IRM Calibration Status**	Success	**Data Filename**	VG P2 36_MeOH_Negative.d
ACQ Method	TEST.m	**Comment**		**Acquired Time**	10/4/2025 2:54:27 PM (UTC+05:30)

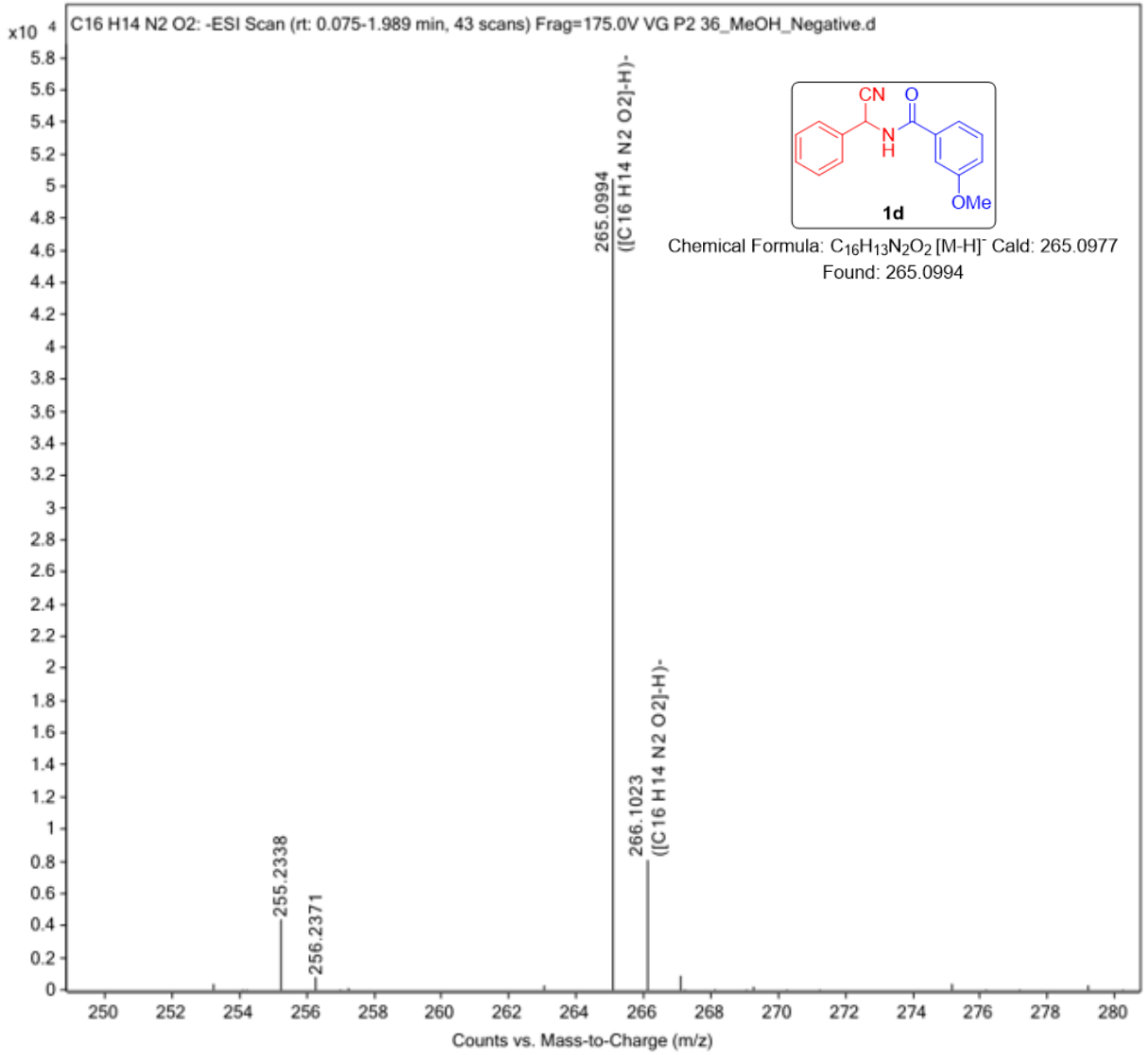


Fig. S17. HRMS data of *N*-(cyano(phenyl)methyl)-3-methoxybenzamide **(1d).**

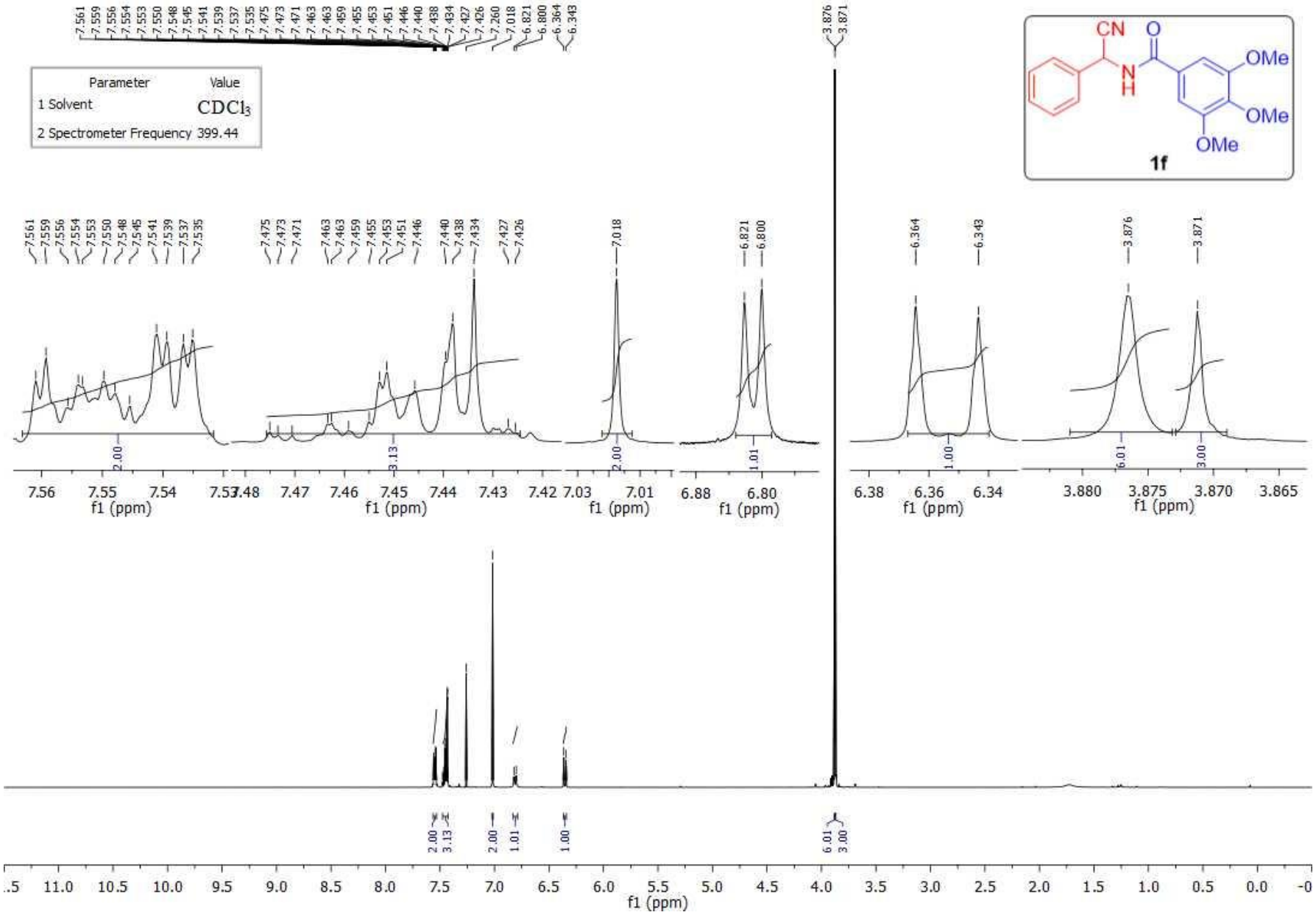


Fig. S18. [1]H NMR spectra of *N*-(cyano(phenyl)methyl)-3,4,5-trimethoxybenzamide **(1f).**

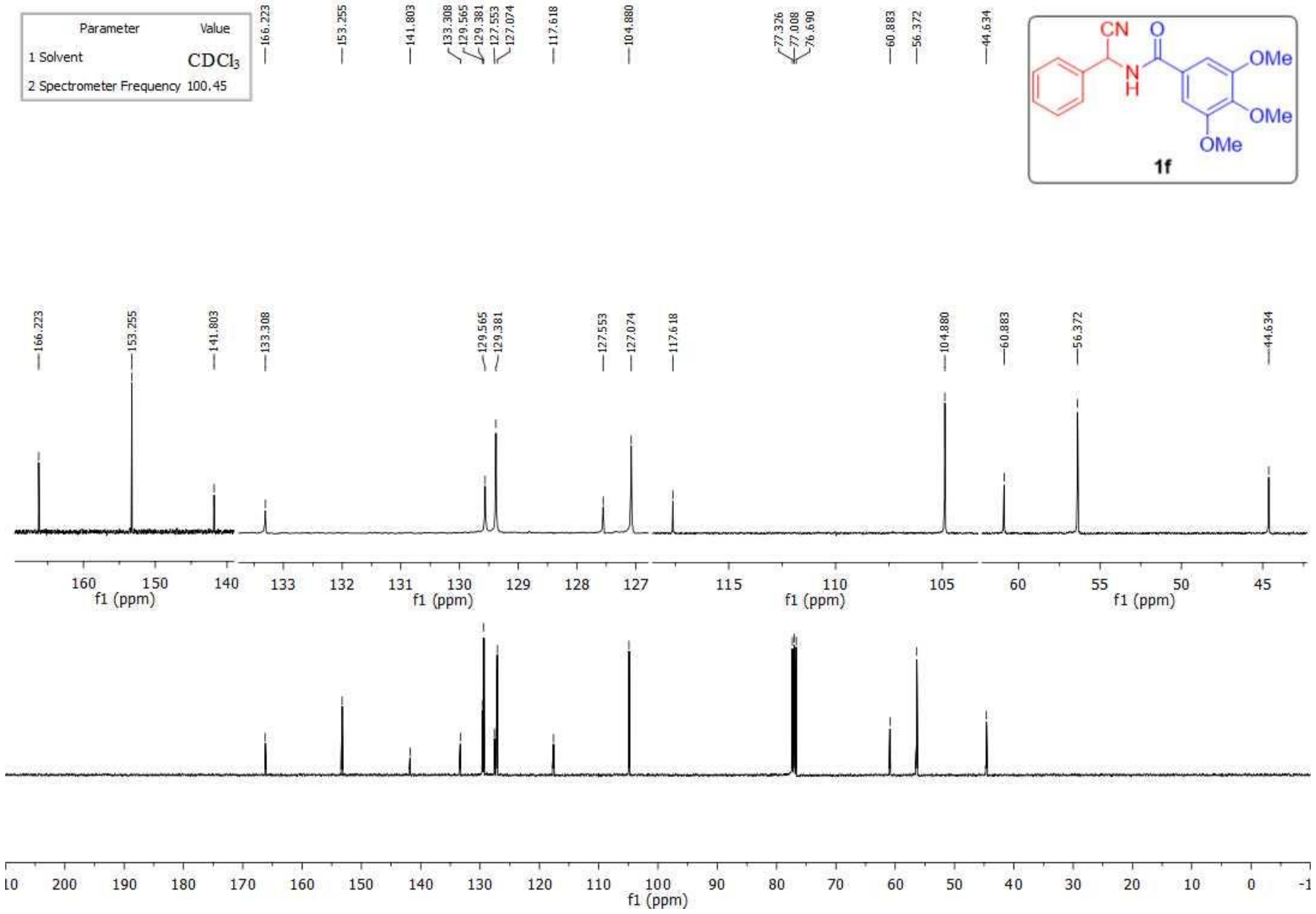


Fig. S19. ^{13}C NMR spectra of *N*-(cyano(phenyl)methyl)-3,4,5-trimethoxybenzamide **(1f).**

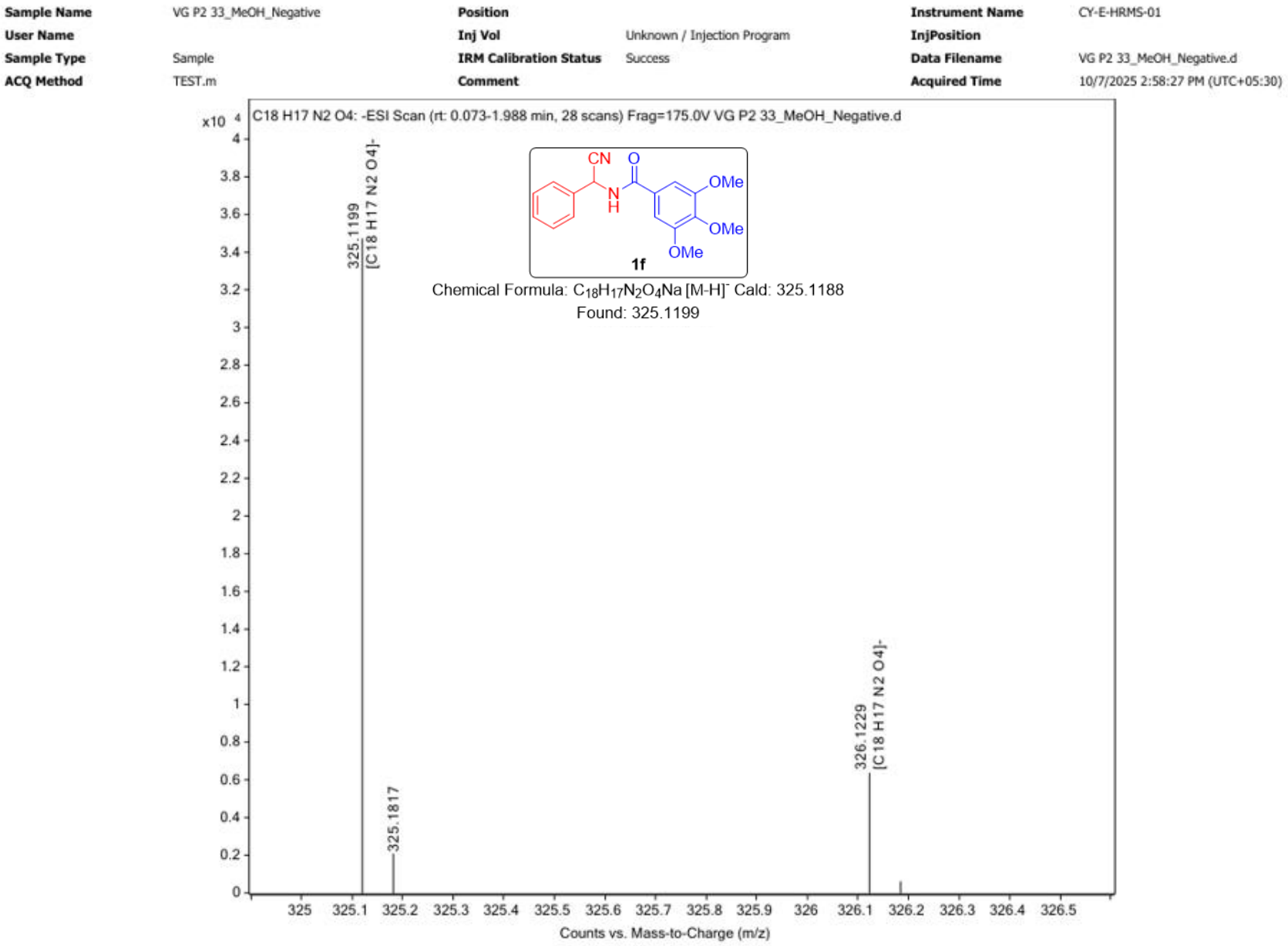


Fig. S20. HRMS data of *N*-(cyano(phenyl)methyl)-3,4,5-trimethoxybenzamide **(1f).**

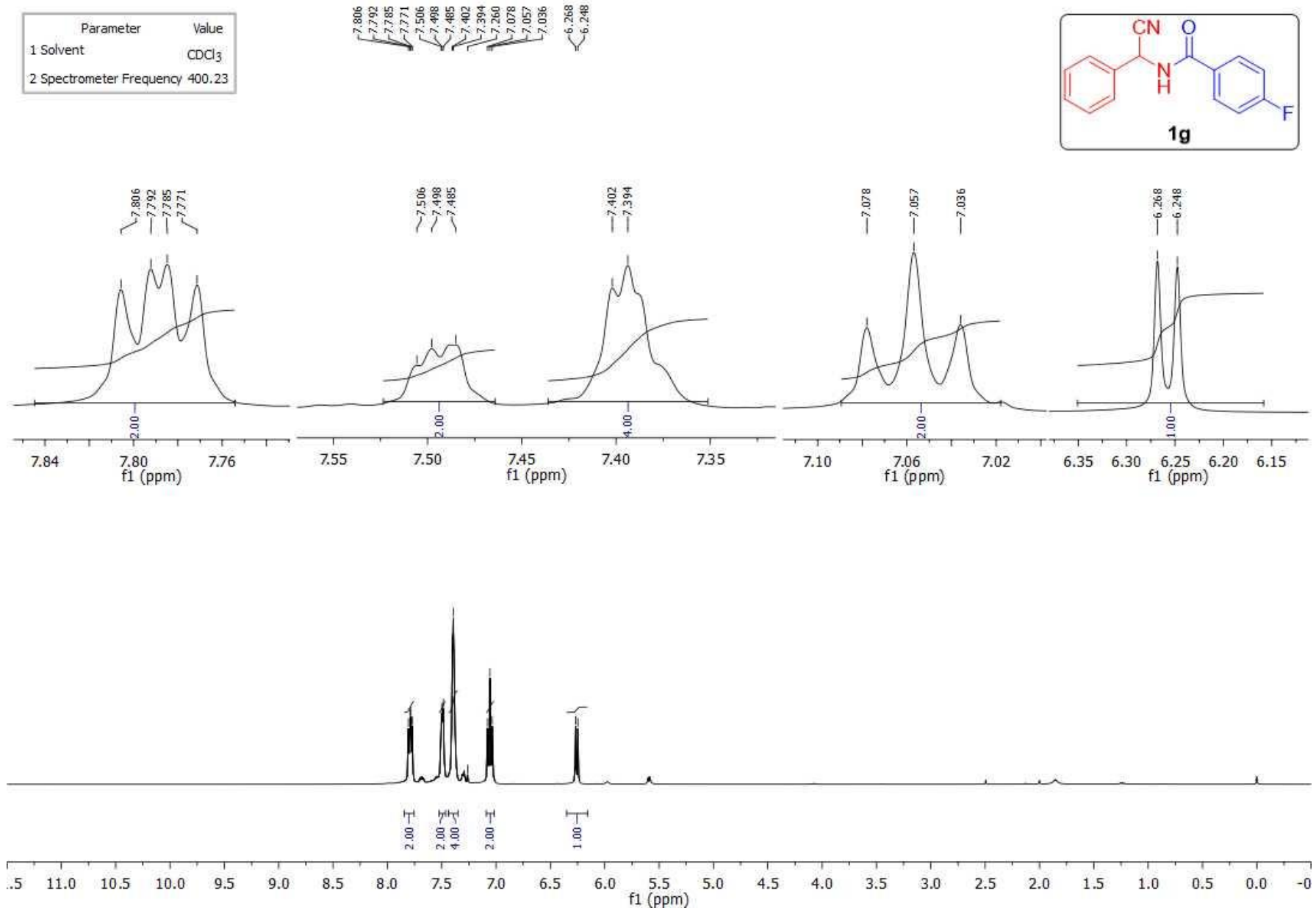


Fig. S21. [1]H NMR spectra of *N*-(cyano(phenyl)methyl)-4-fluorobenzamide **(1g).**

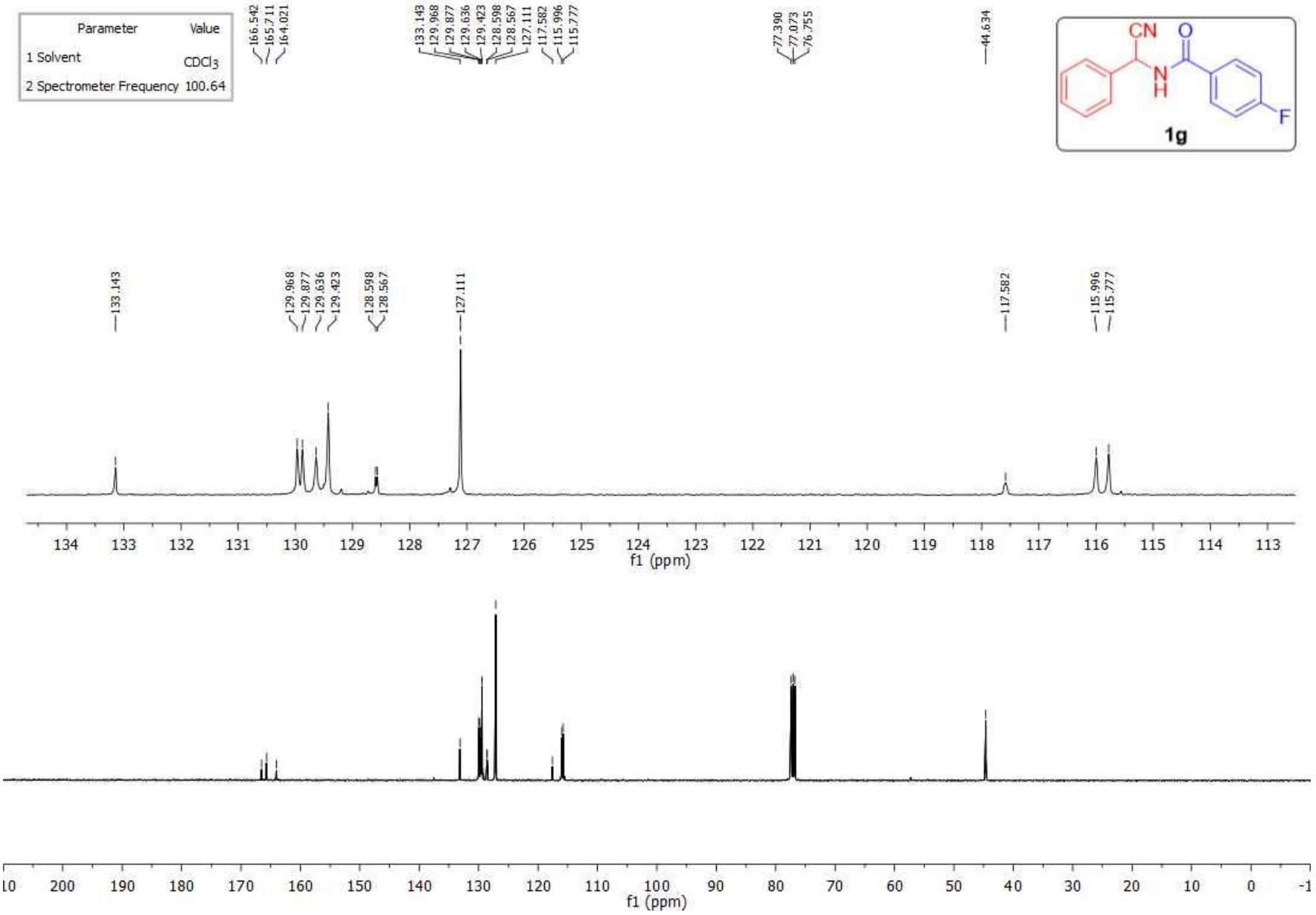


Fig. S22. ^{13}C NMR spectra of *N*-(cyano(phenyl)methyl)-4-fluorobenzamide **(1g).**

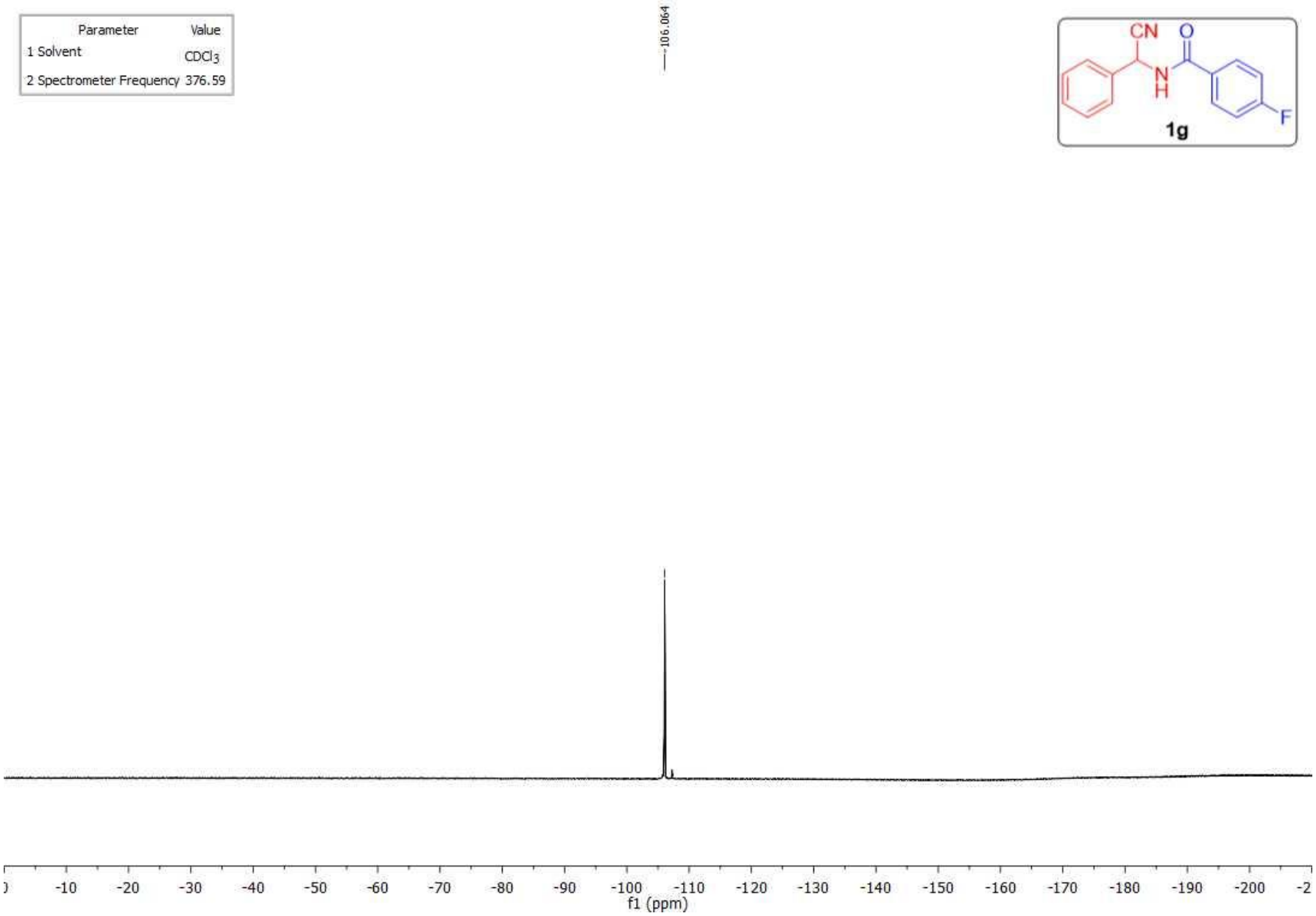


Fig. S23. ^{19}F NMR spectra of *N*-(cyano(phenyl)methyl)-4-fluorobenzamide **(1g).**

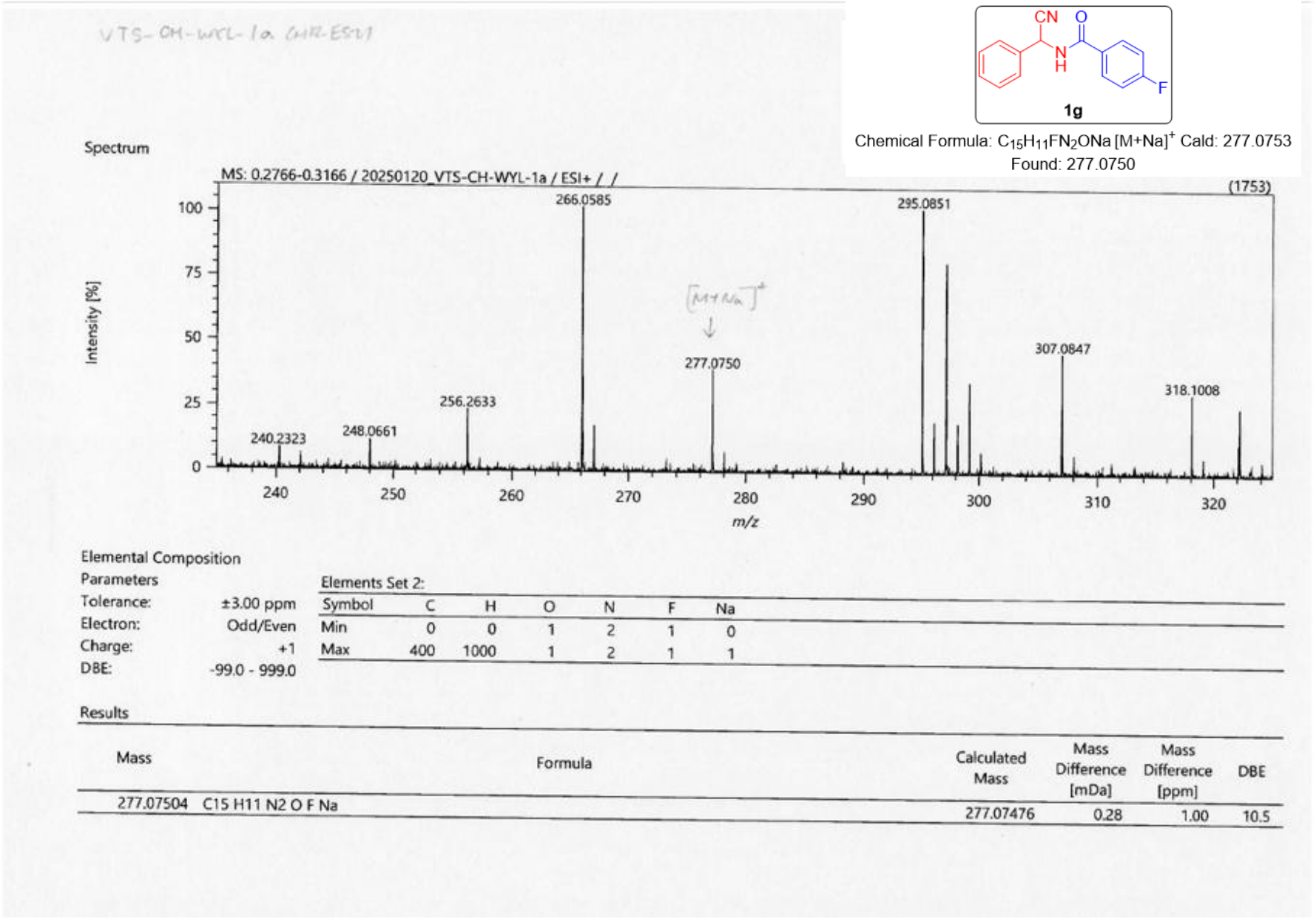


Fig. S24. HRMS data of *N*-(cyano(phenyl)methyl)-4-fluorobenzamide **(1g).**

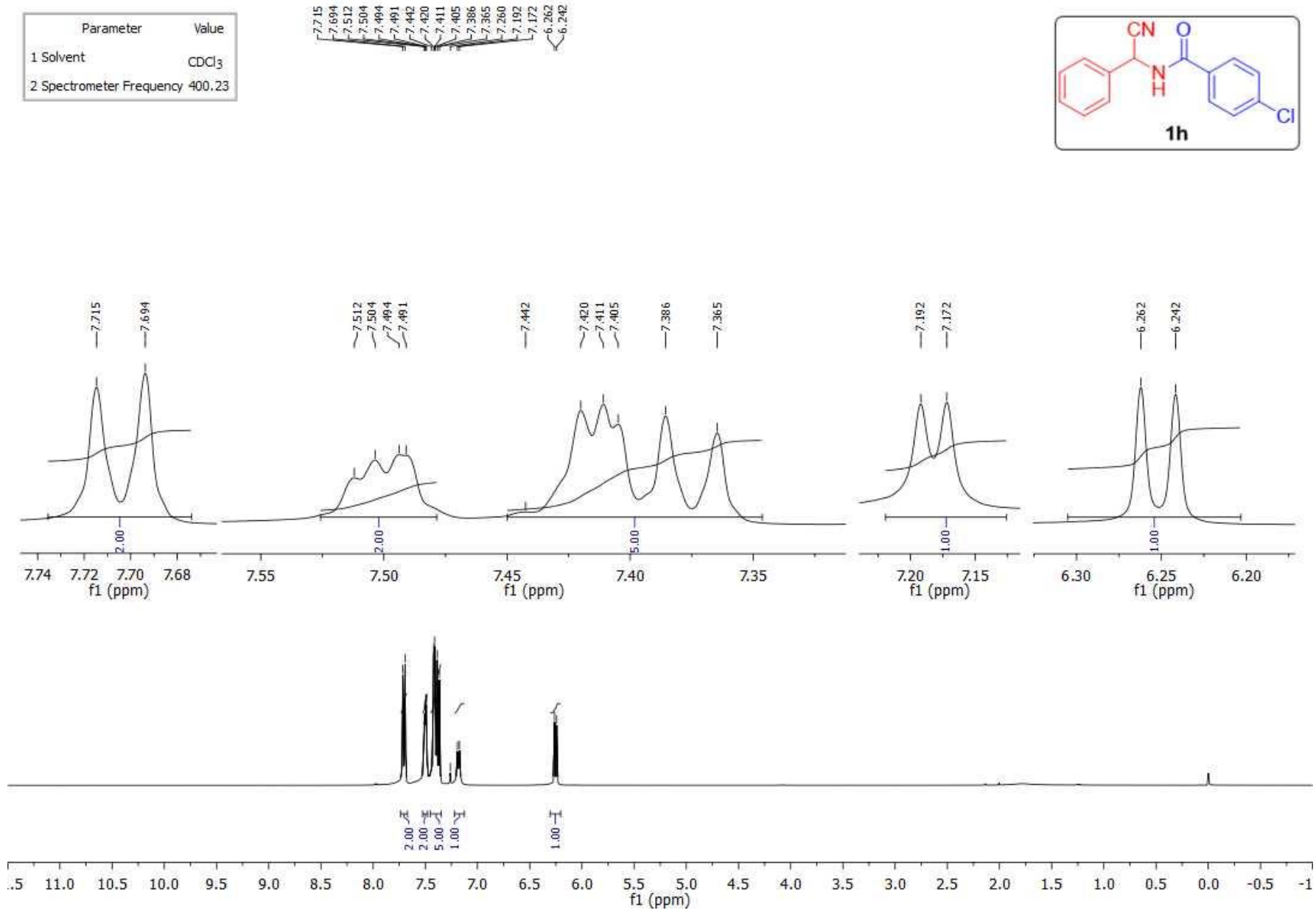


Fig. S25. [1]H NMR spectra of 4-chloro-*N*-(cyano(phenyl)methyl)benzamide **(1h).**

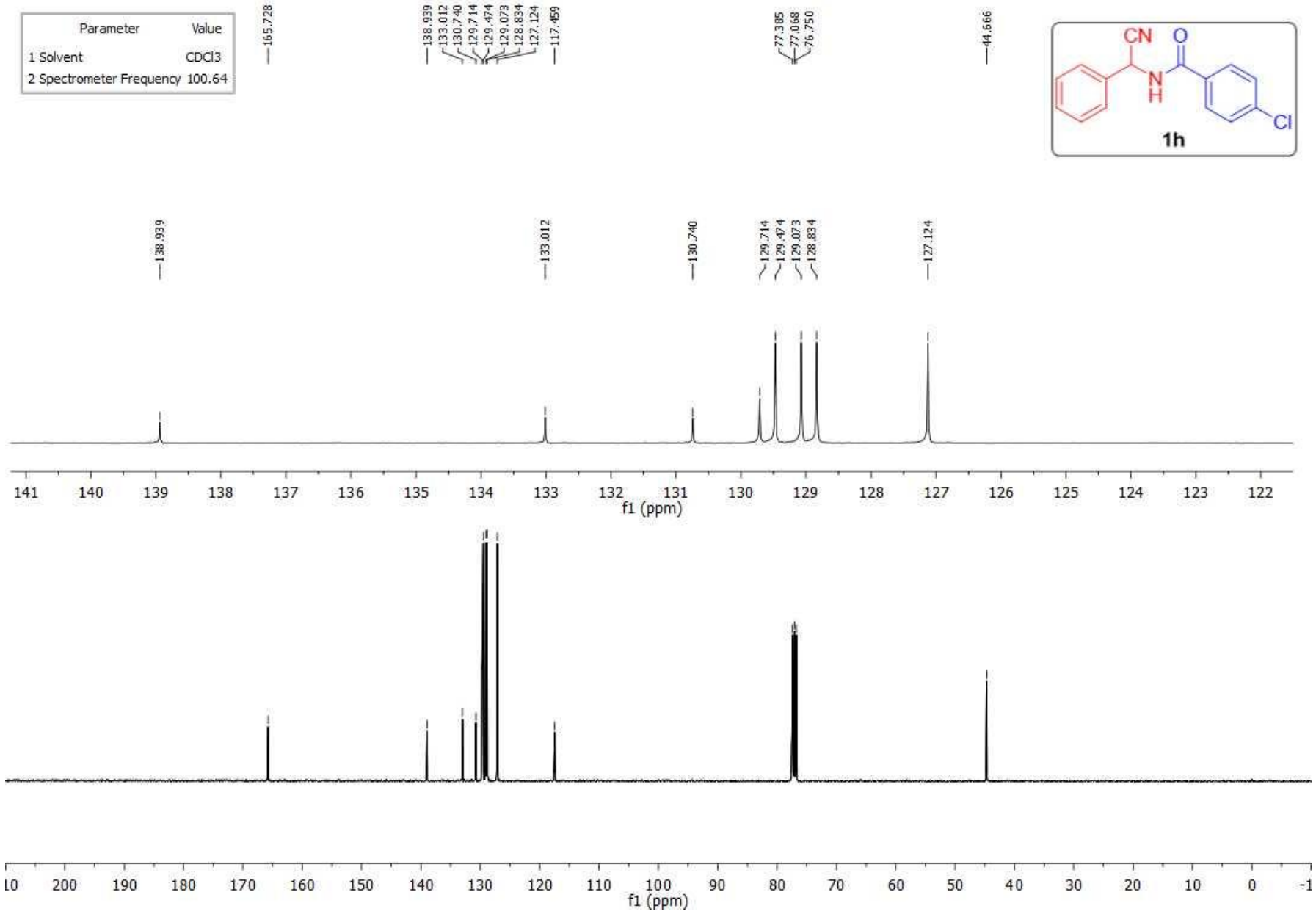


Fig. S26. ^{13}C NMR spectra of 4-chloro-*N*-(cyano(phenyl)methyl)benzamide **(1h).**

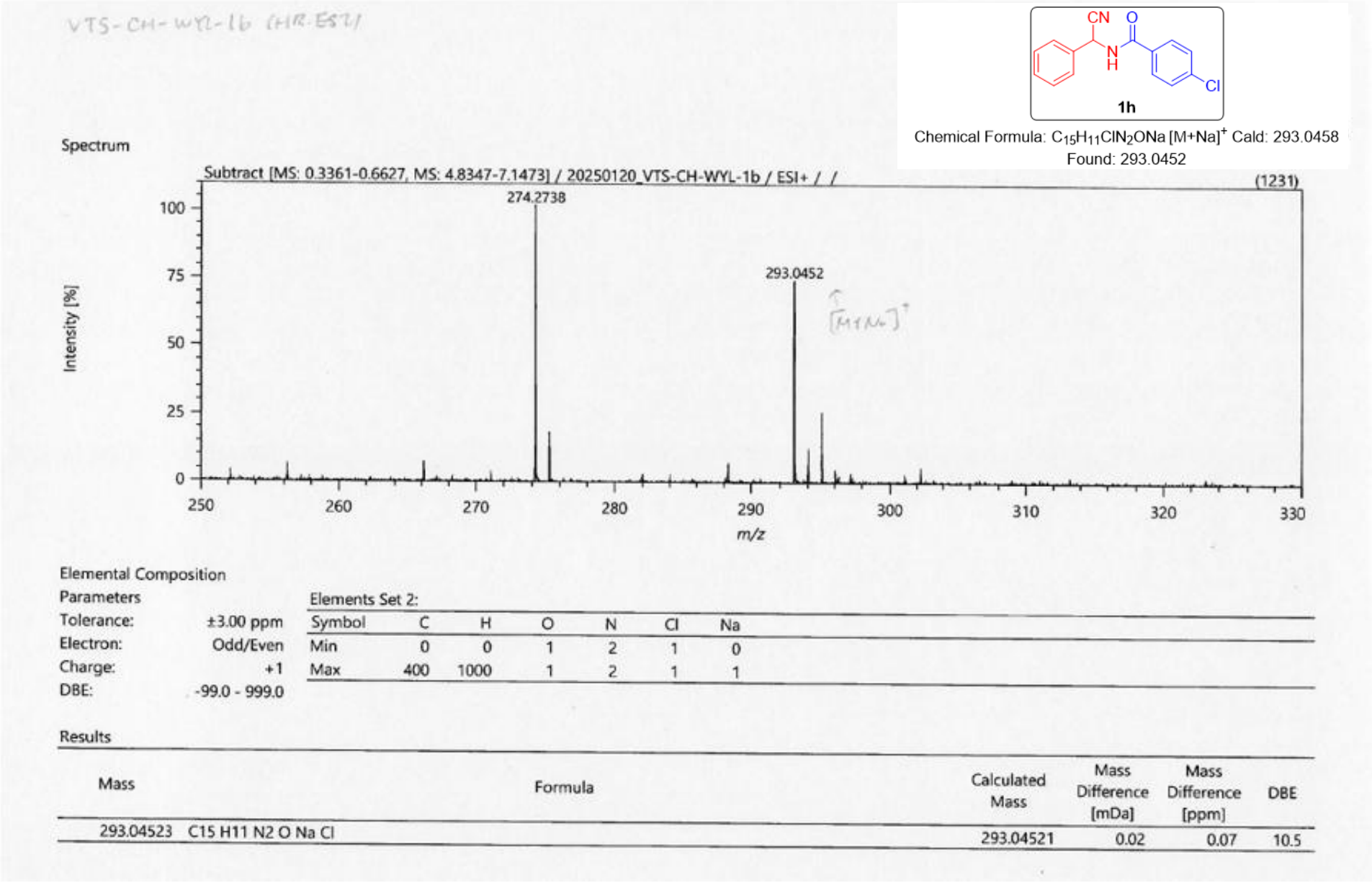


Fig. S27. HRMS data of 4-chloro-*N*-(cyano(phenyl)methyl)benzamide **(1h).**

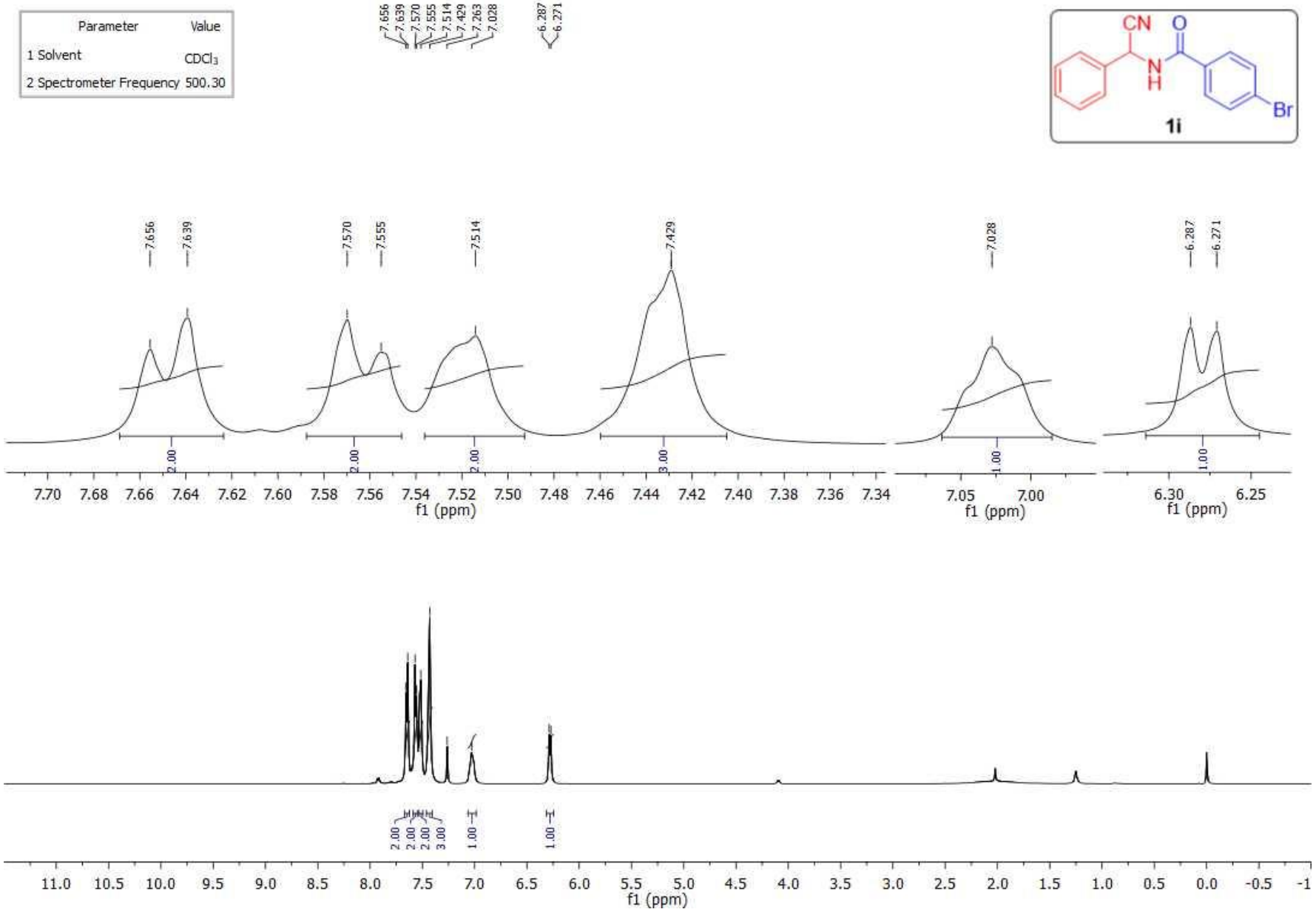


Fig. S28. [1]H NMR spectra of 4-bromo-*N*-(cyano(phenyl)methyl)benzamide **(1i).**

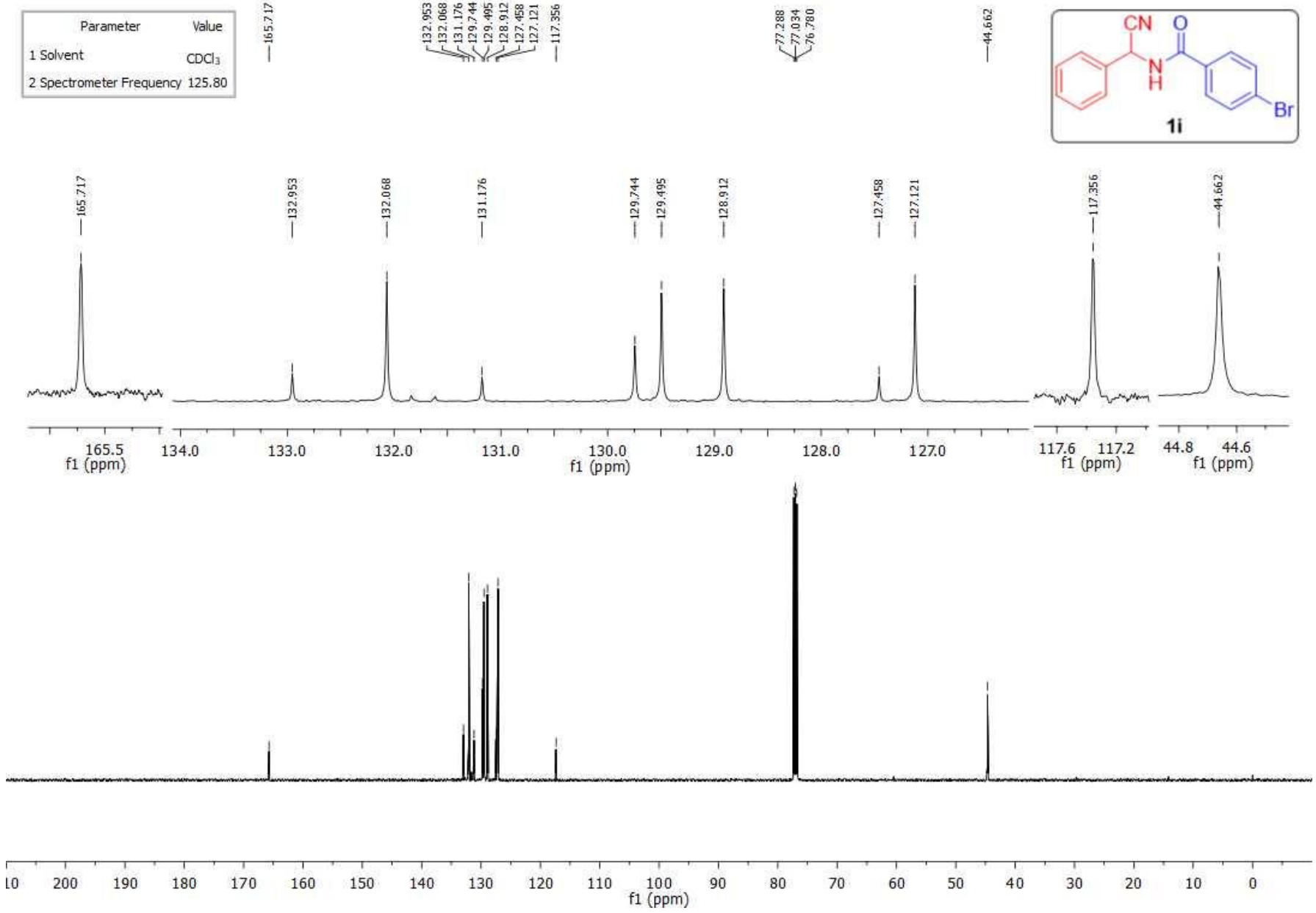


Fig. S29. ^{13}C NMR spectra of 4-bromo-*N*-(cyano(phenyl)methyl)benzamide **(1i).**

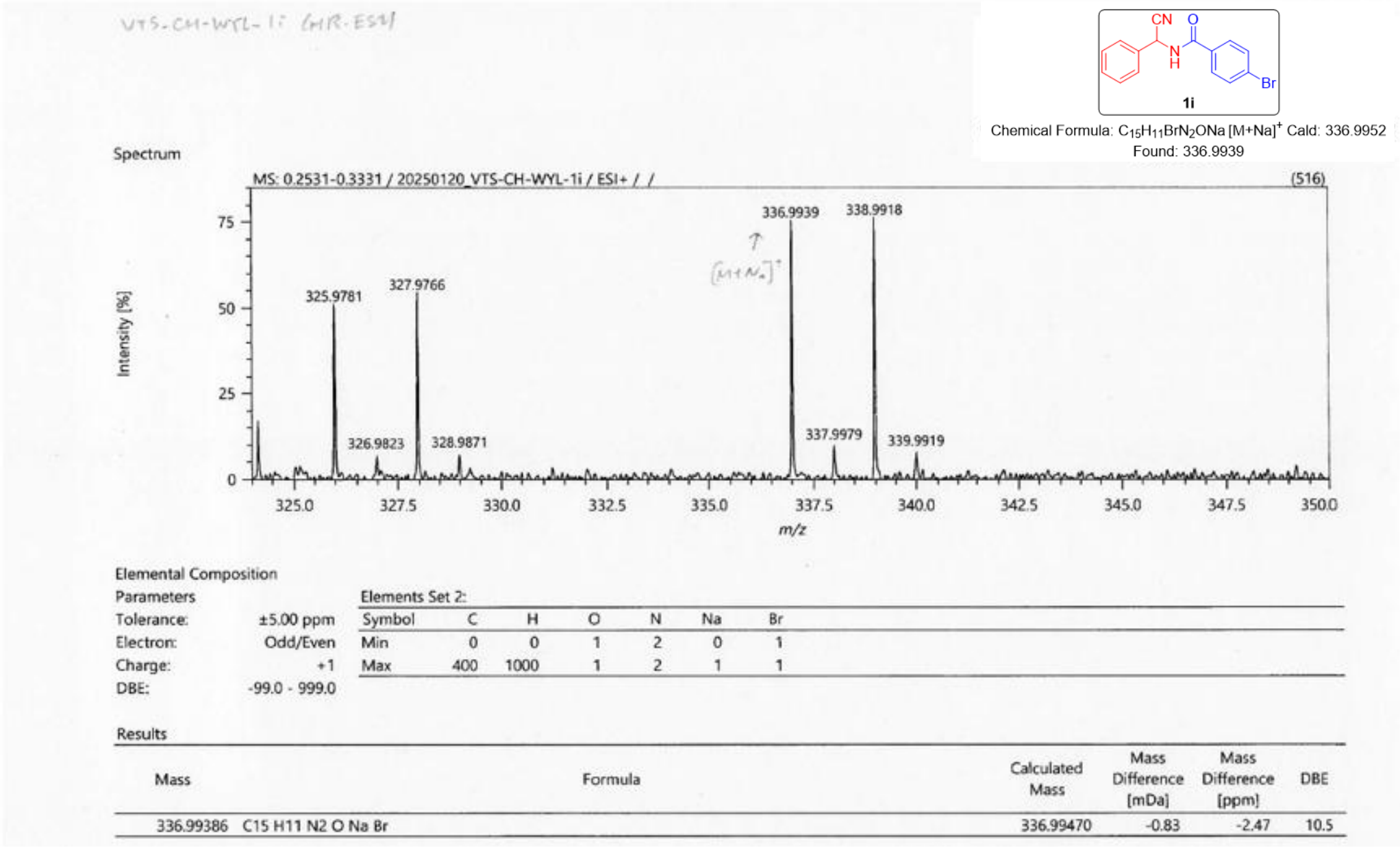


Fig. S30. HRMS data of 4-bromo-*N*-(cyano(phenyl)methyl)benzamide **(1i).**

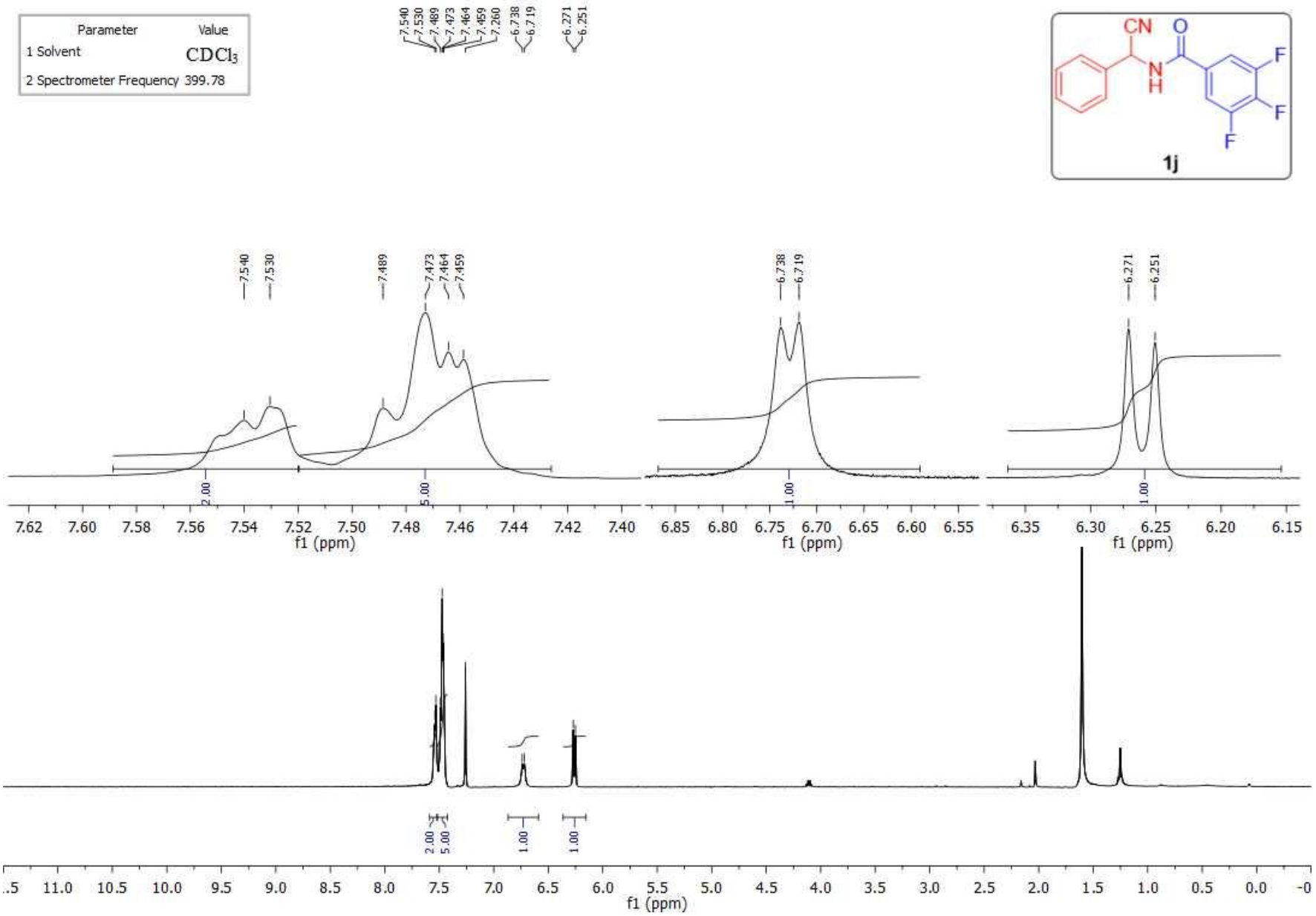


Fig. S31. [1]H NMR spectra of *N*-(cyano(phenyl)methyl)-3,4,5-trifluorobenzamide **(1j).**

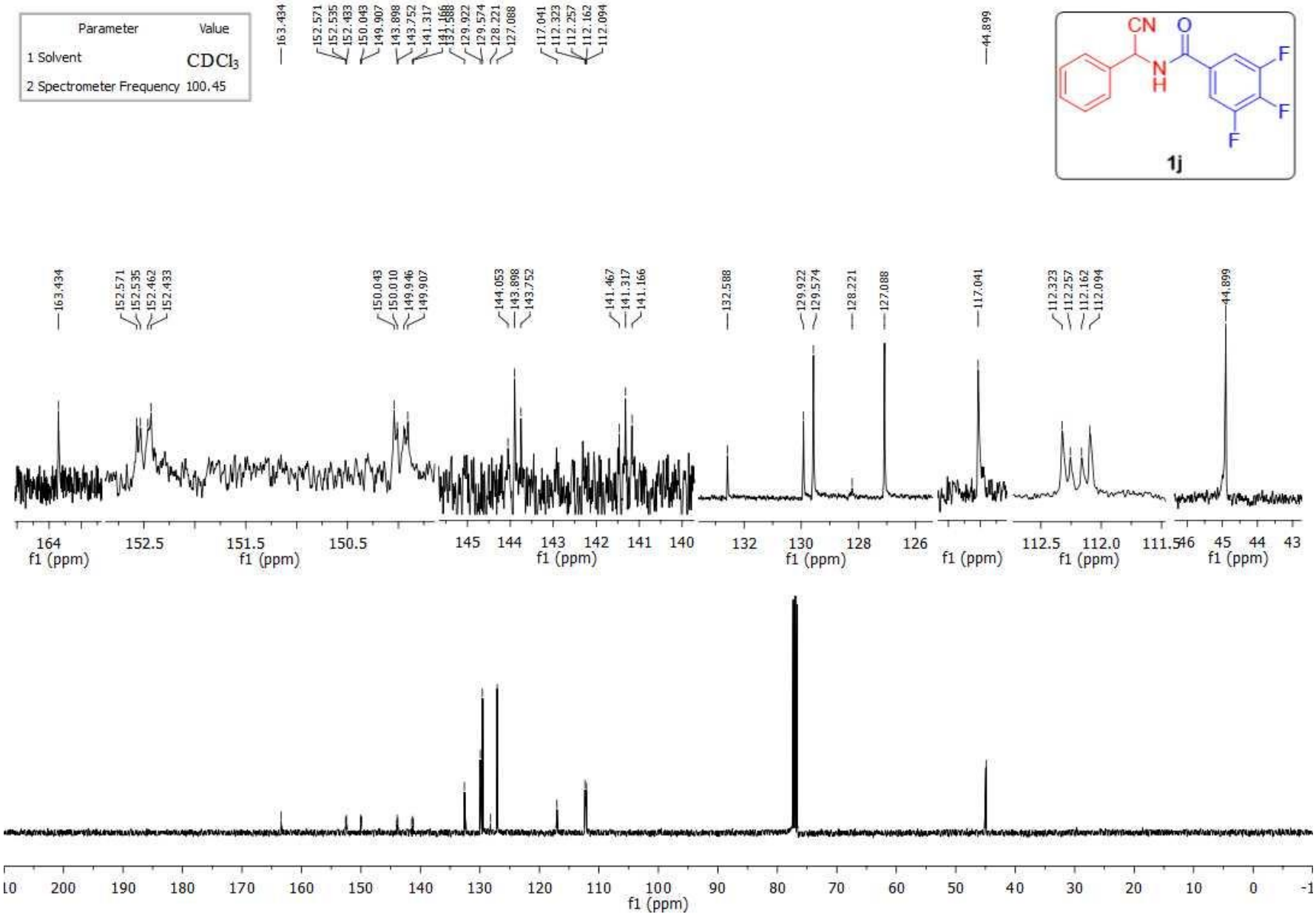


Fig. S32. ^{13}C NMR spectra of *N*-(cyano(phenyl)methyl)-3,4,5-trifluorobenzamide **(1j).**

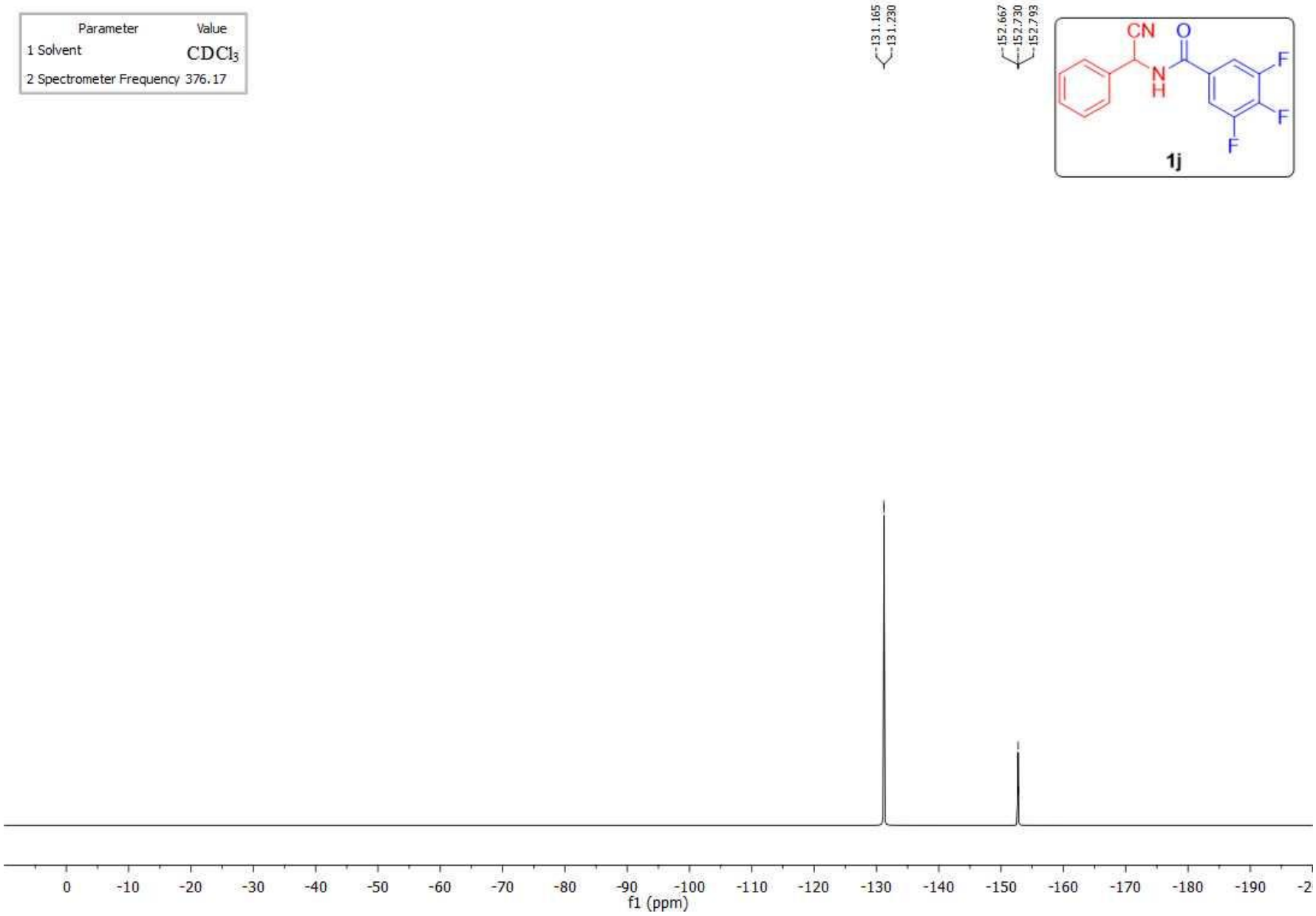


Fig. S33. ^{19}F NMR spectra of *N*-(cyano(phenyl)methyl)-3,4,5-trifluorobenzamide **(1j).**

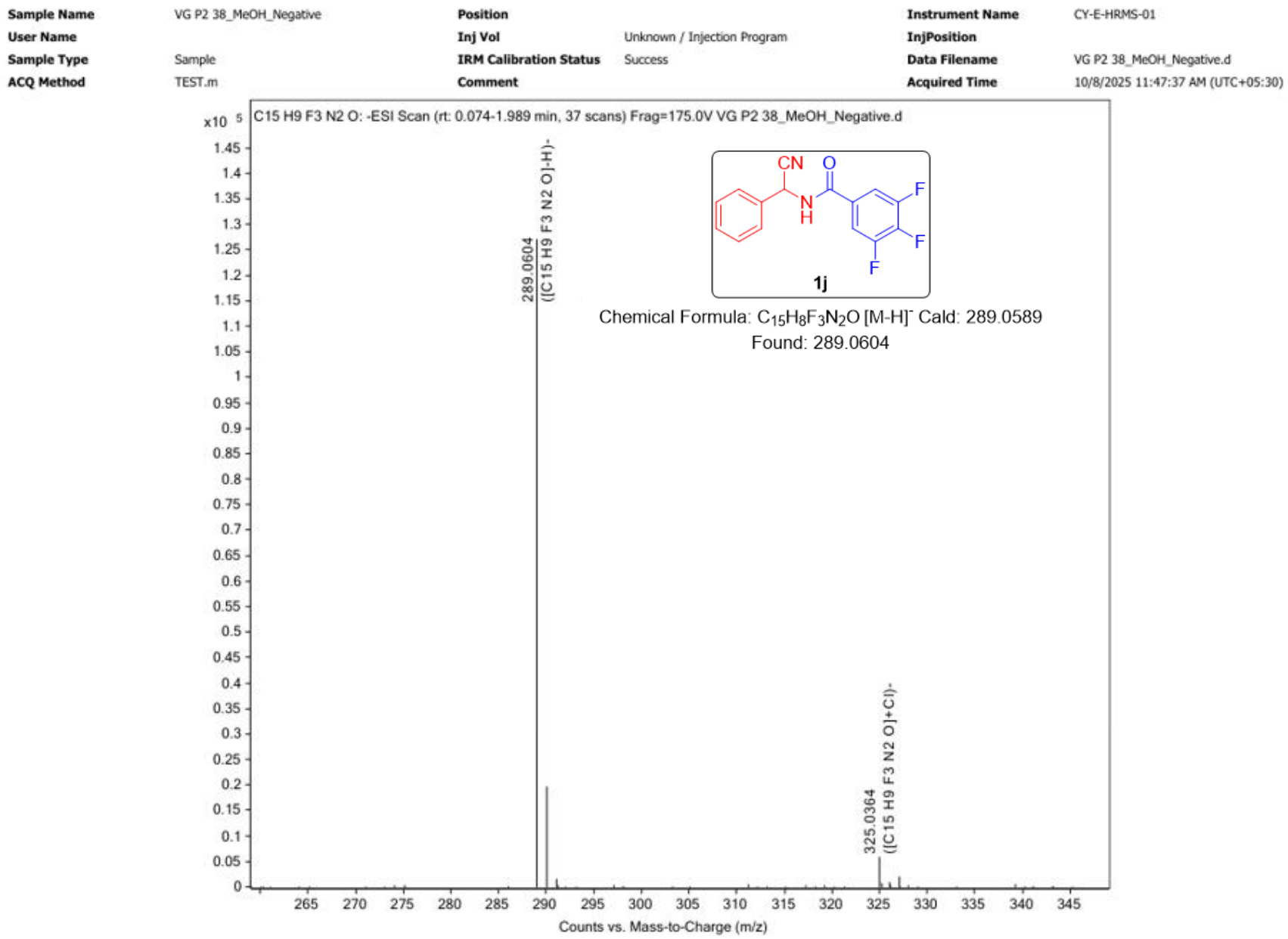


Fig. S34. HRMS data of *N*-(cyano(phenyl)methyl)-3,4,5-trifluorobenzamide **(1j).**

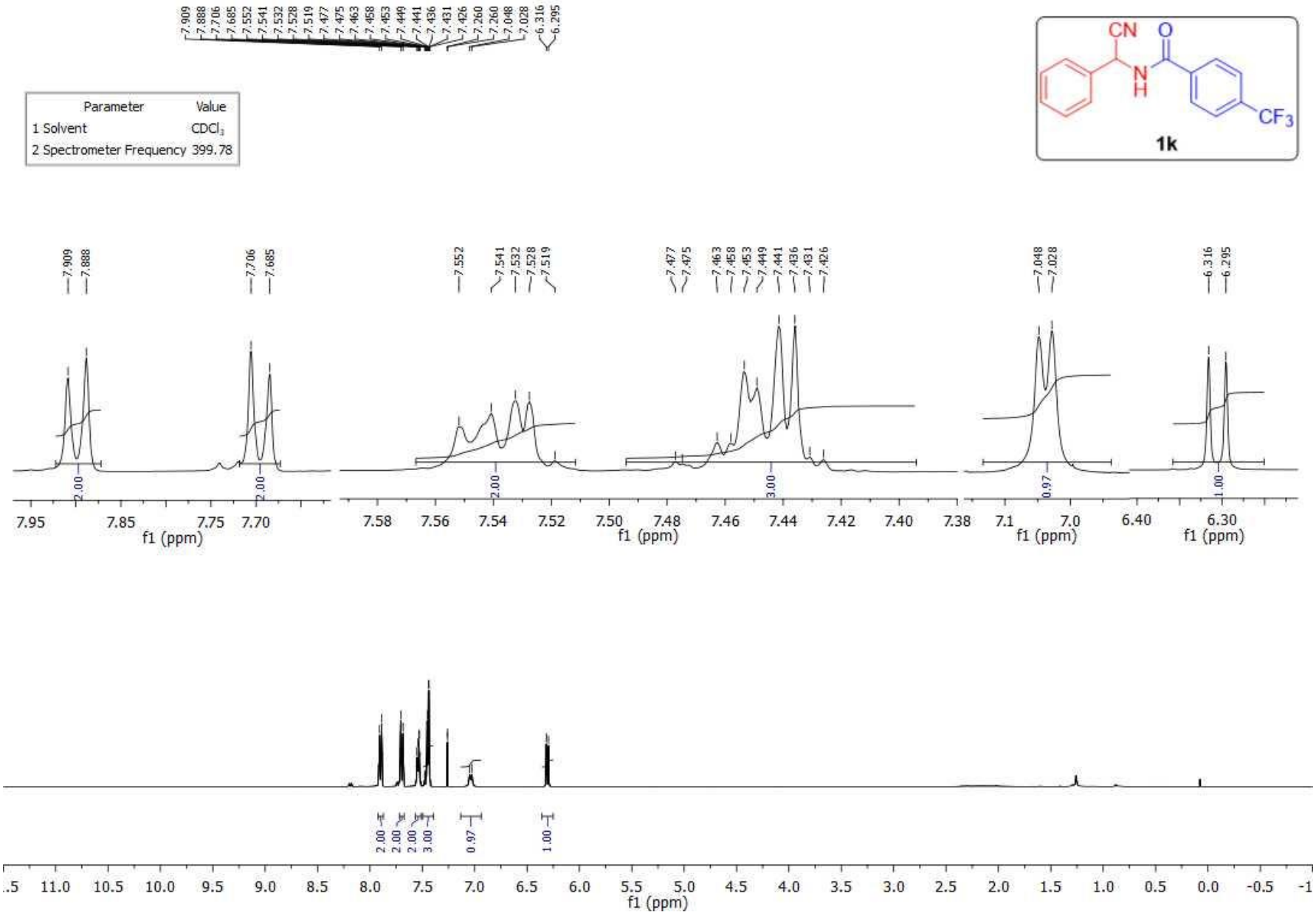


Fig. S35. [1]H NMR spectra of *N*-(cyano(phenyl)methyl)-4-(trifluoromethyl)benzamide **(1k).**

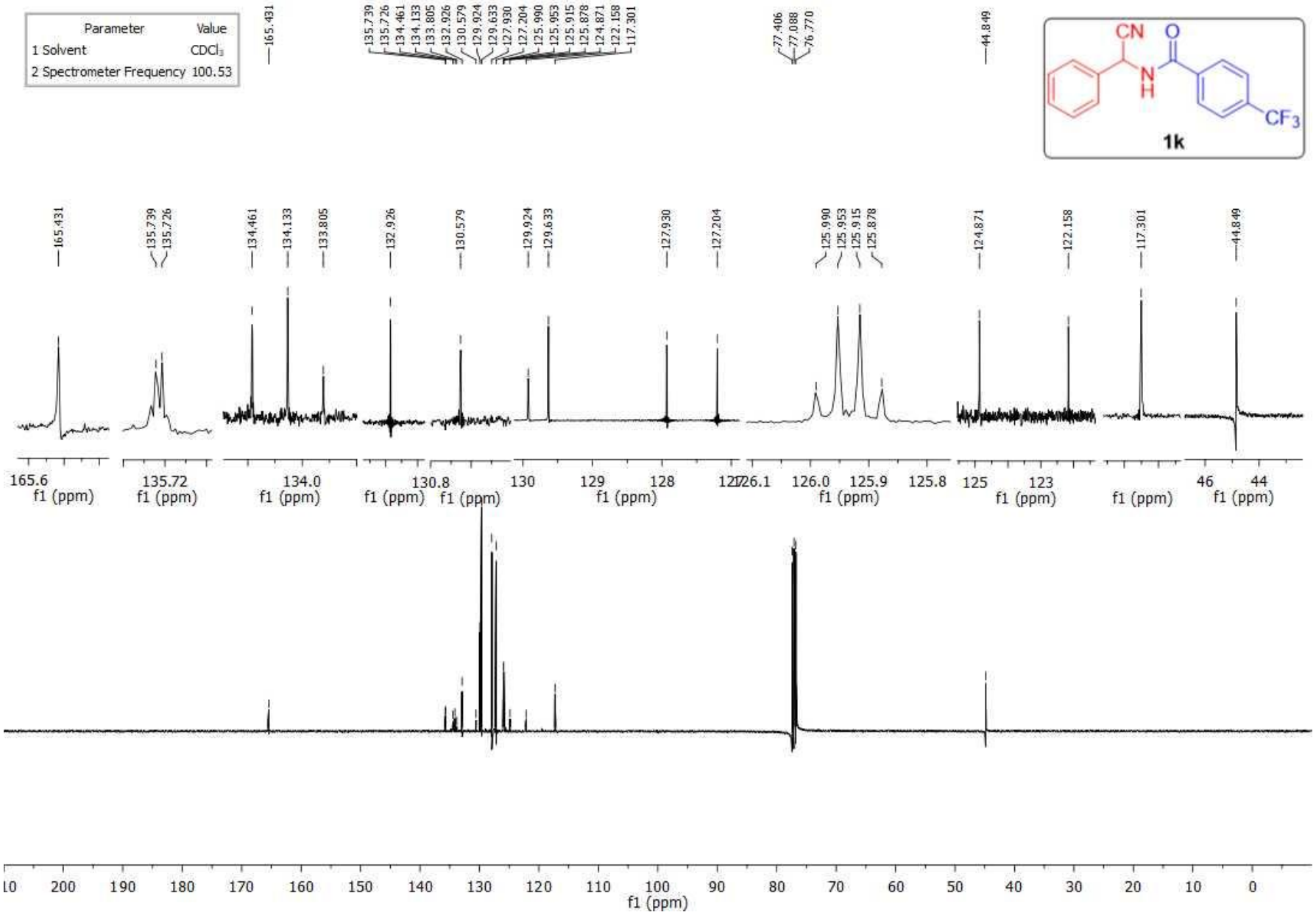


Fig. S36. ^{13}C NMR spectra of *N*-(cyano(phenyl)methyl)-4-(trifluoromethyl)benzamide **(1k).**

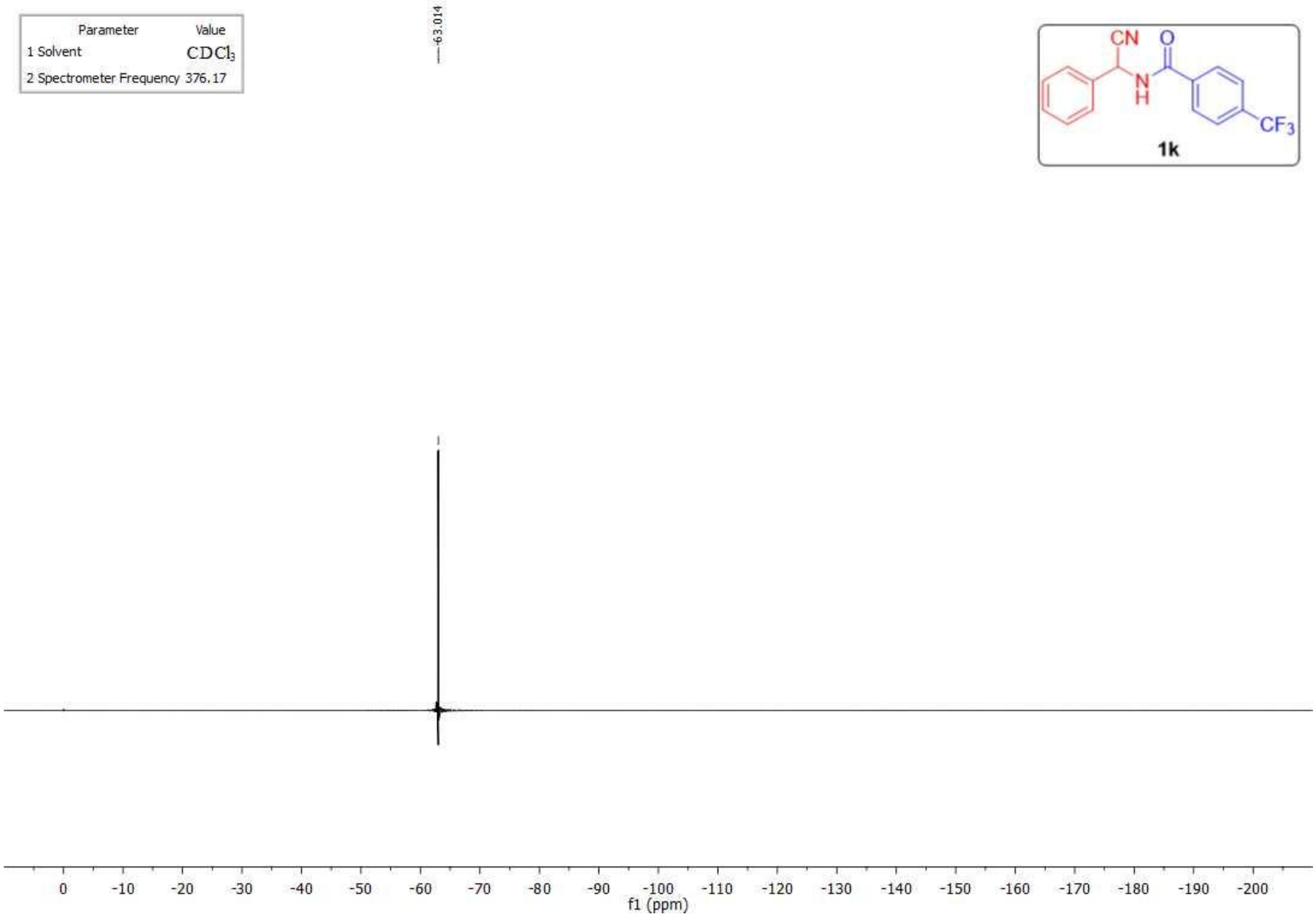


Fig. S37. ^{19}F NMR spectra of *N*-(cyano(phenyl)methyl)-4-(trifluoromethyl)benzamide **(1k).**

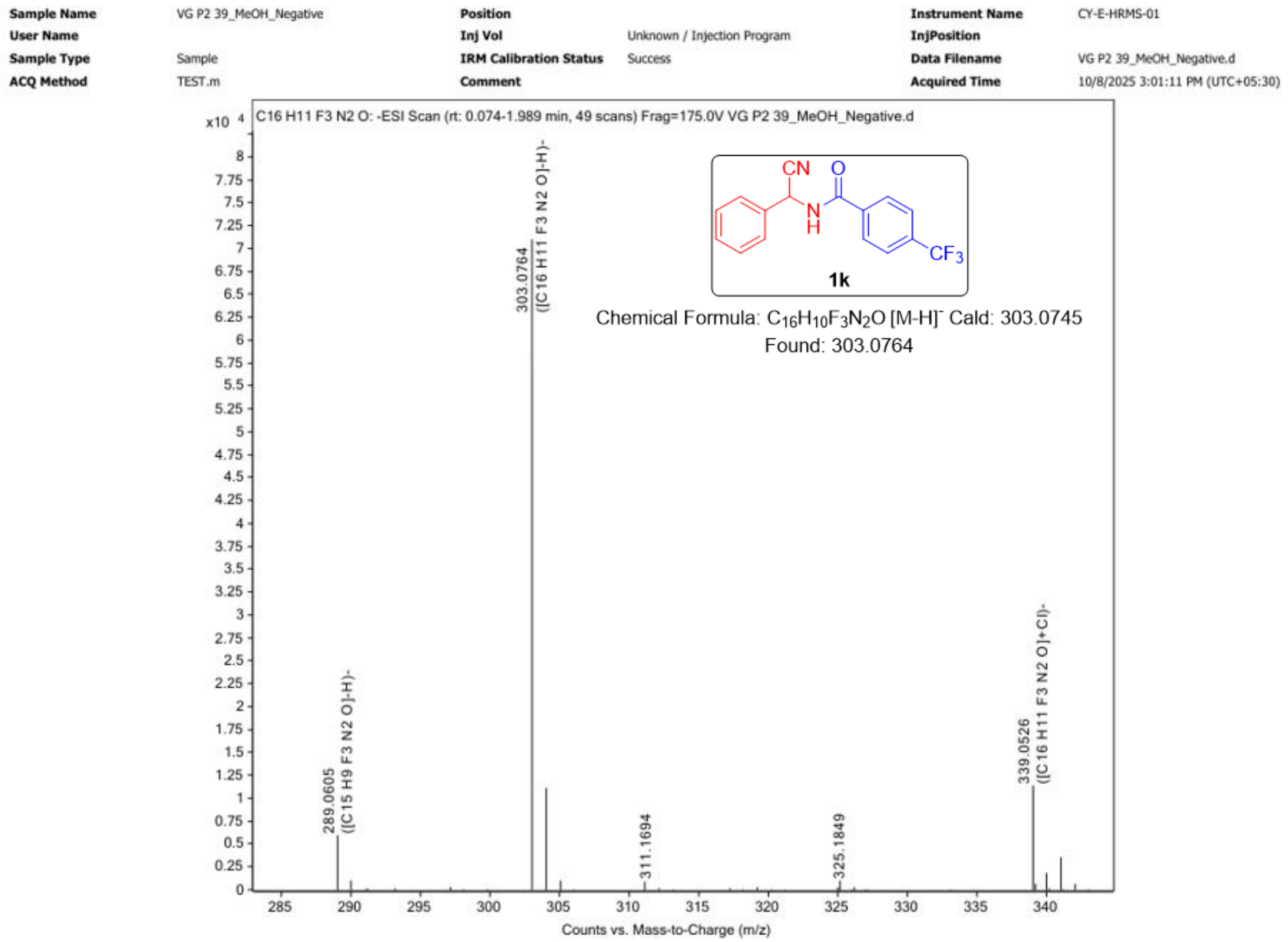


Fig. S38. HRMS data of *N*-(cyano(phenyl)methyl)-4-(trifluoromethyl)benzamide **(1k).**

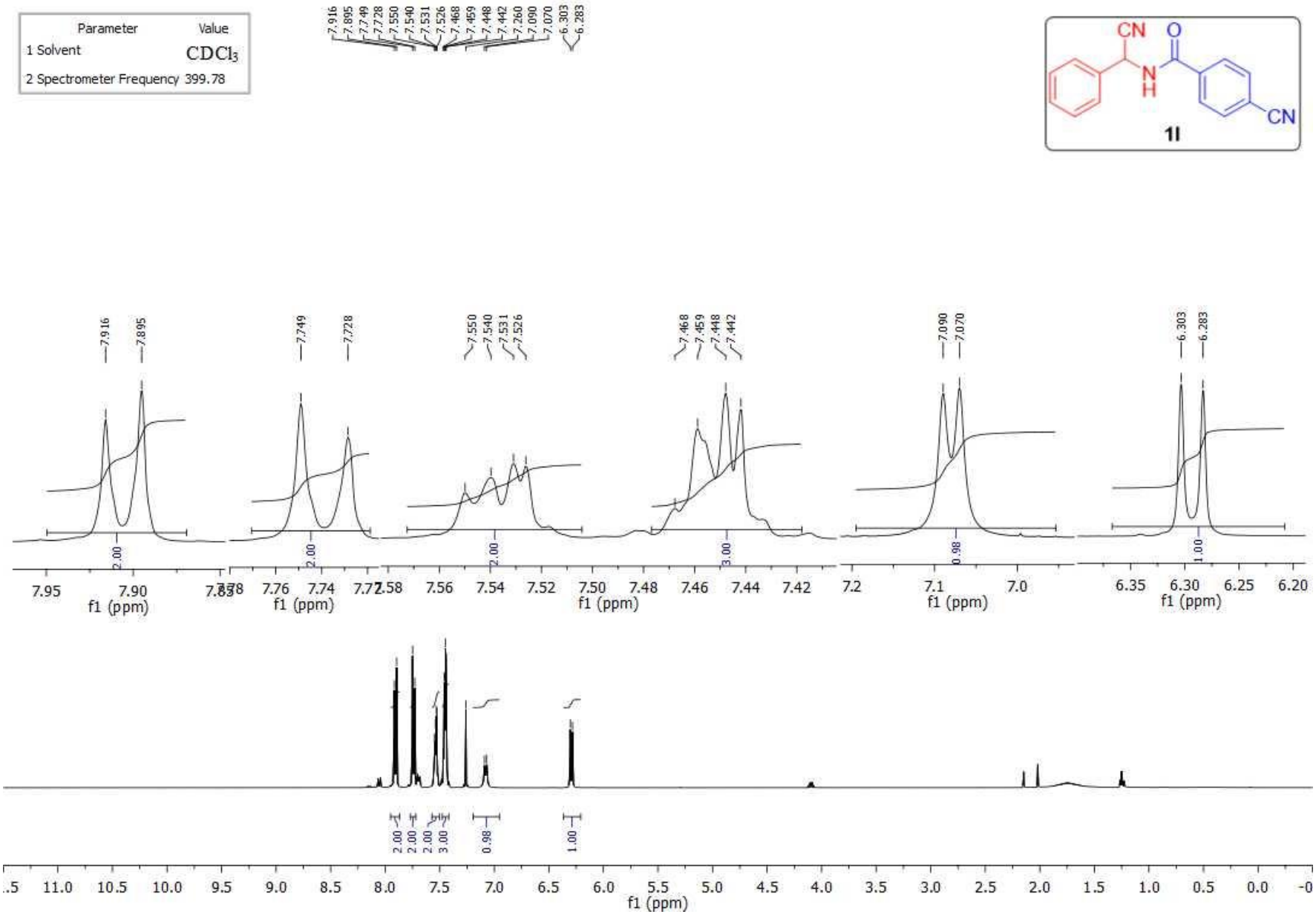


Fig. S39. ^{1}H NMR spectra of 4-cyano-*N*-(cyano(phenyl)methyl)benzamide **(1l).**

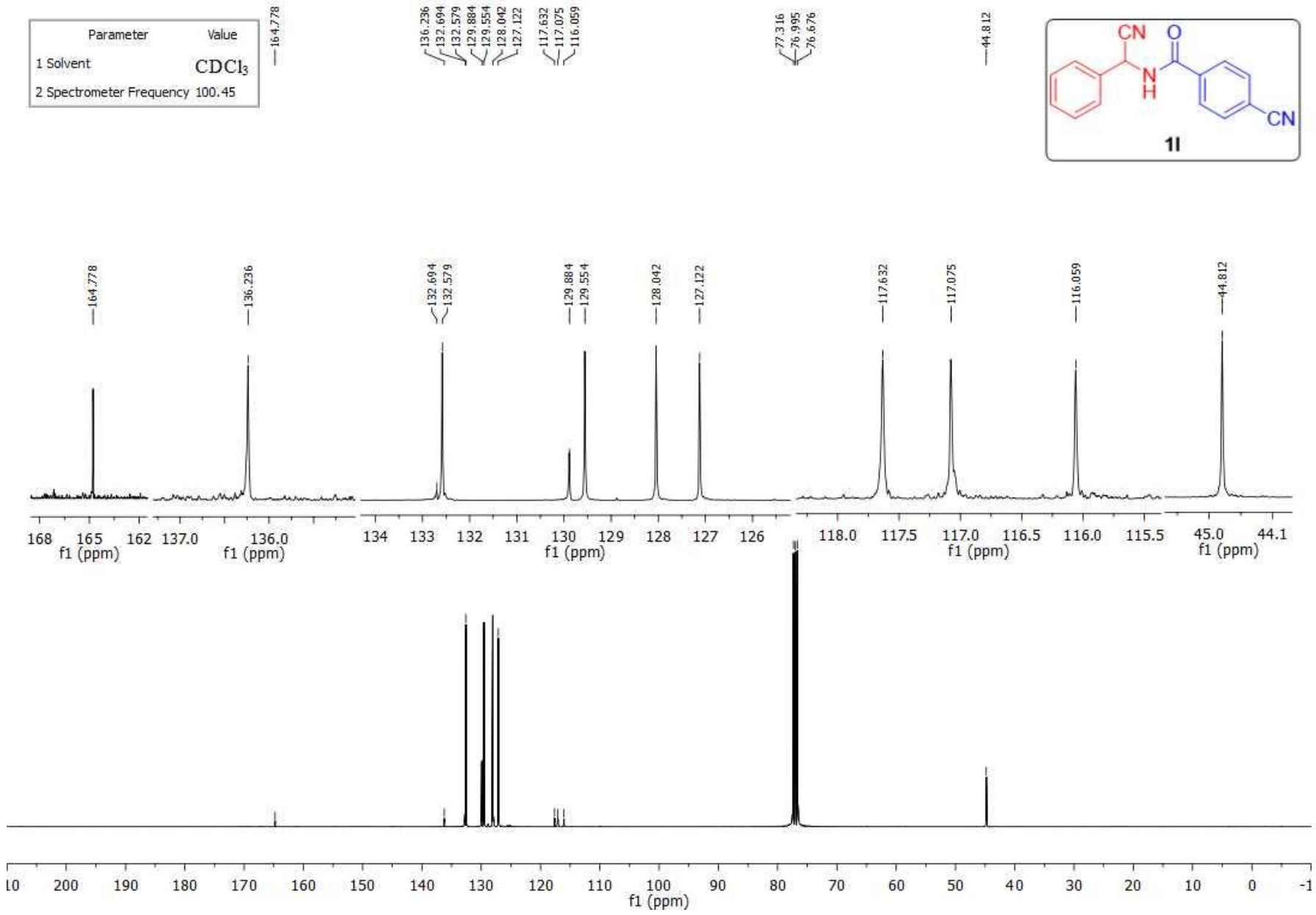


Fig. S40. ^{13}C NMR spectra of 4-cyano-*N*-(cyano(phenyl)methyl)benzamide **(1l).**

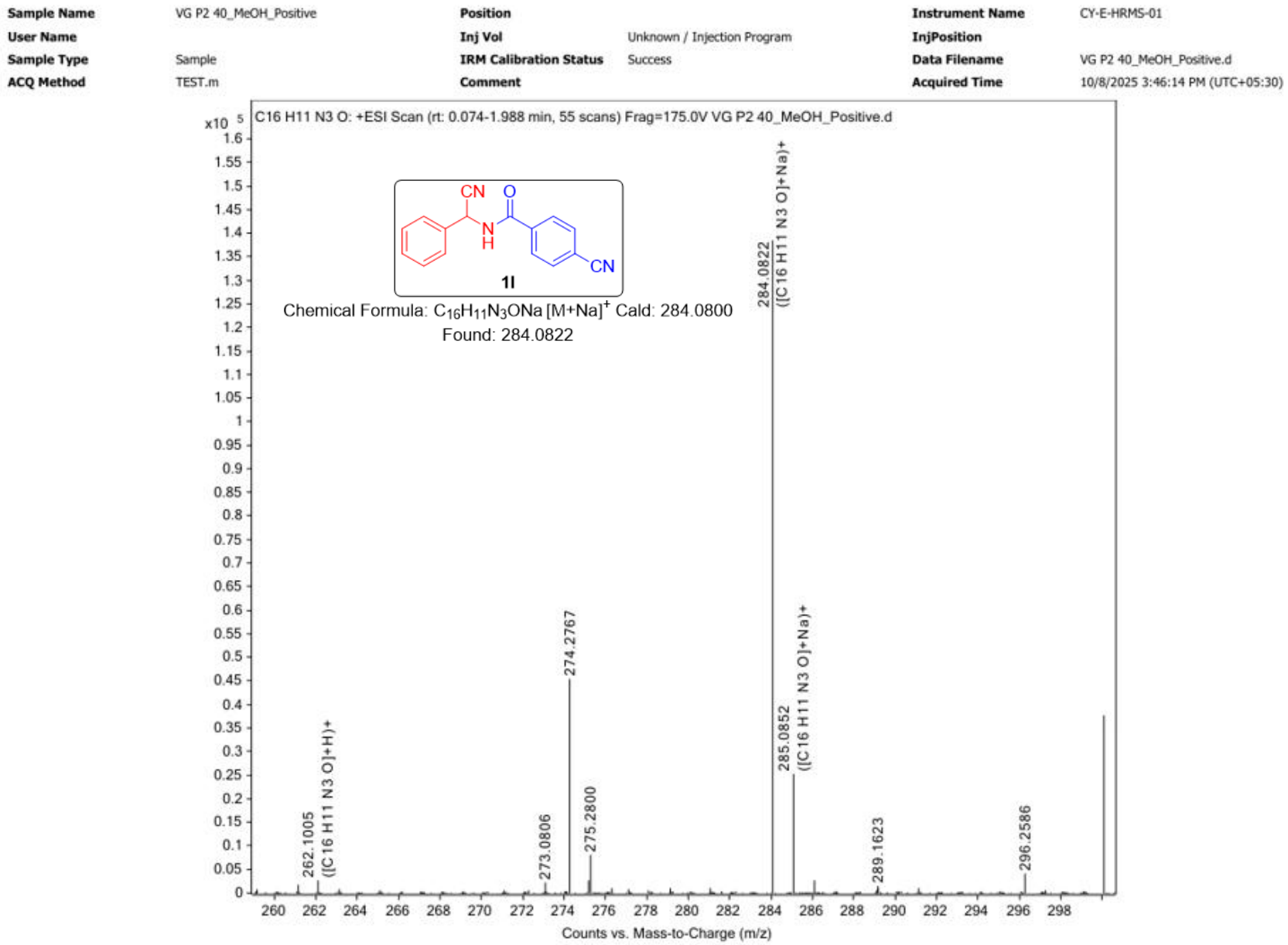


Fig. S41. HRMS data of 4-cyano-*N*-(cyano(phenyl)methyl)benzamide **(1l).**

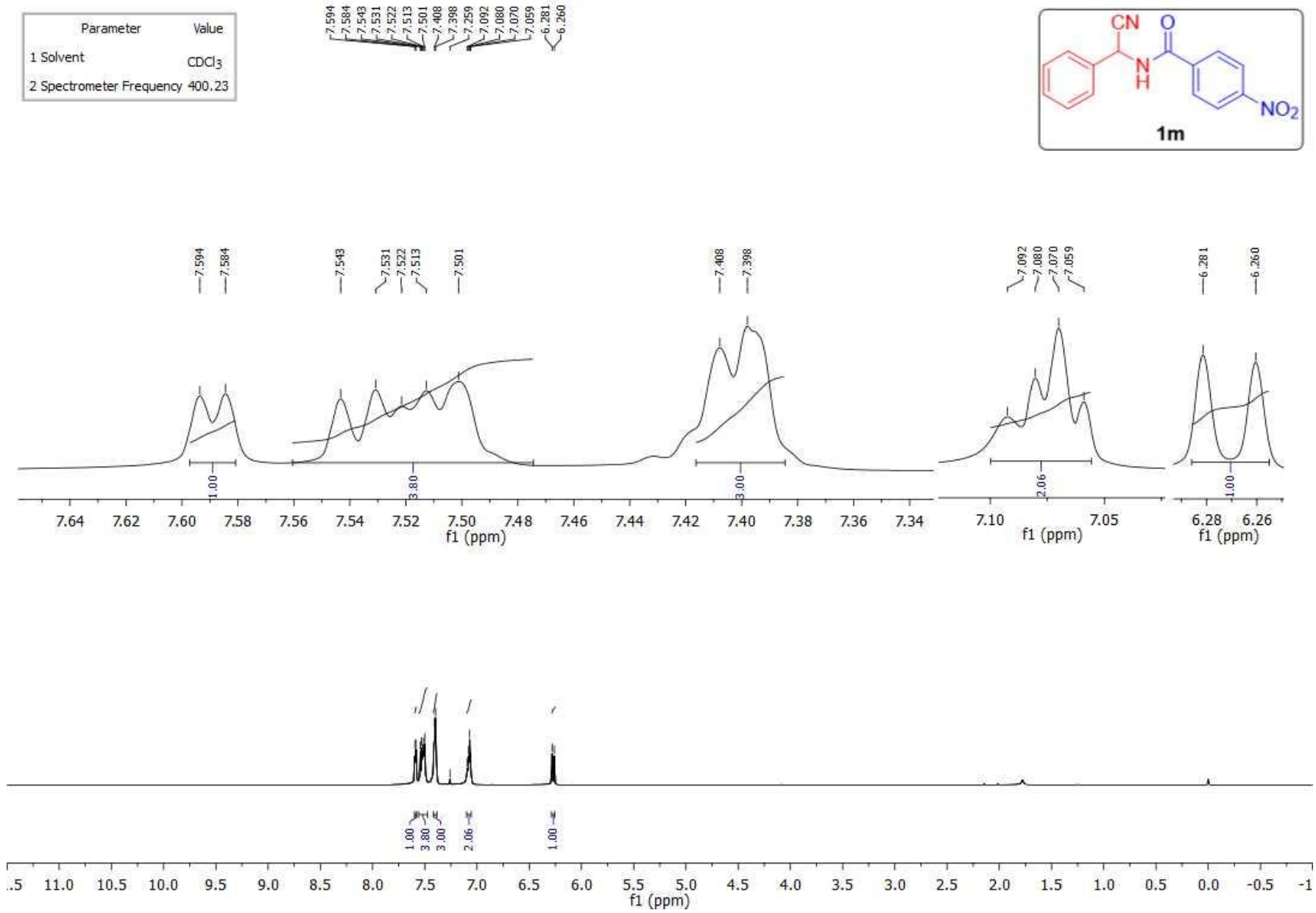


Fig. S42. [1]H NMR spectra of *N*-(cyano(phenyl)methyl)-4-nitrobenzamide **(1m).**

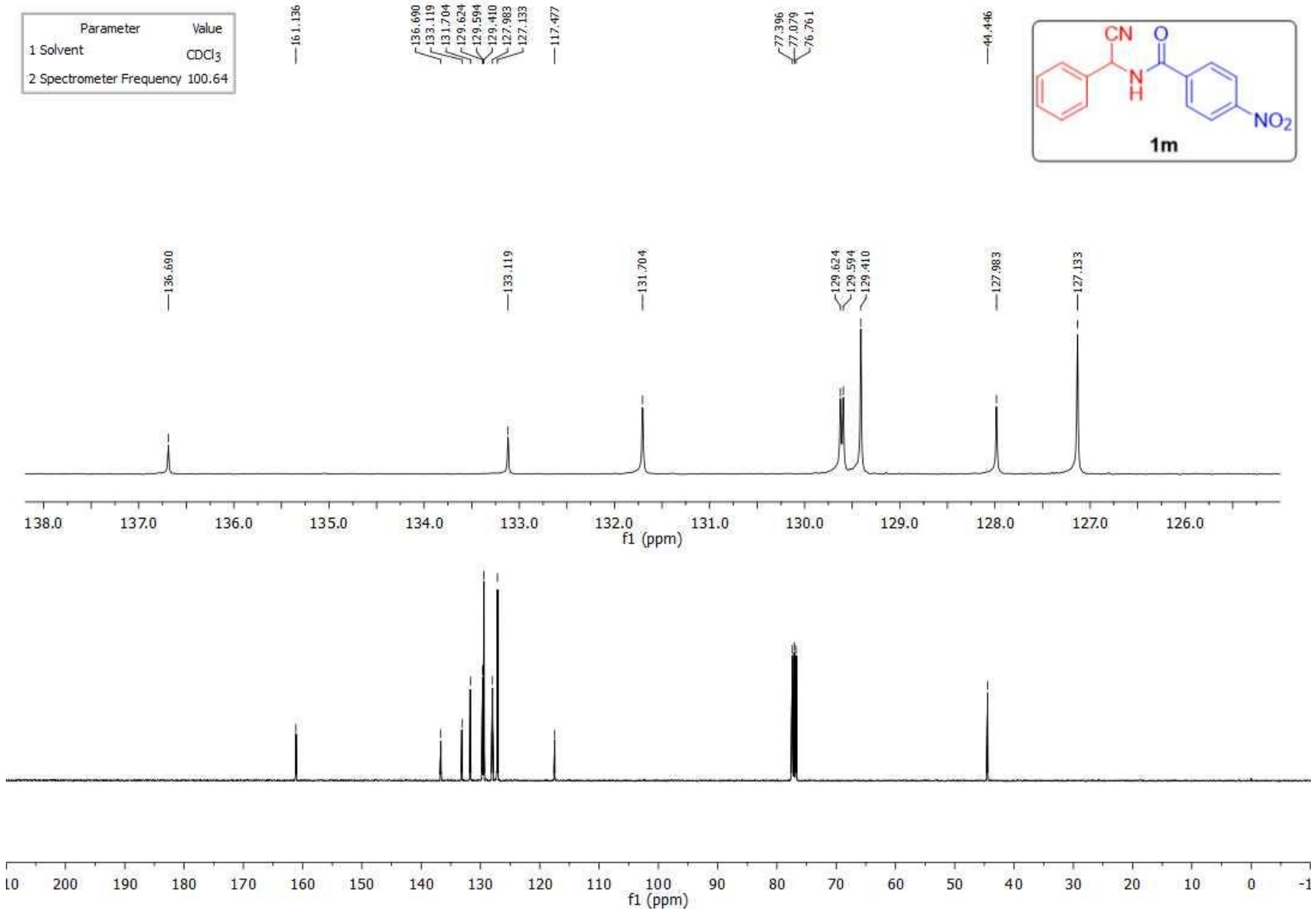


Fig. S43. ^{13}C NMR spectra of *N*-(cyano(phenyl)methyl)-4-nitrobenzamide **(1m).**

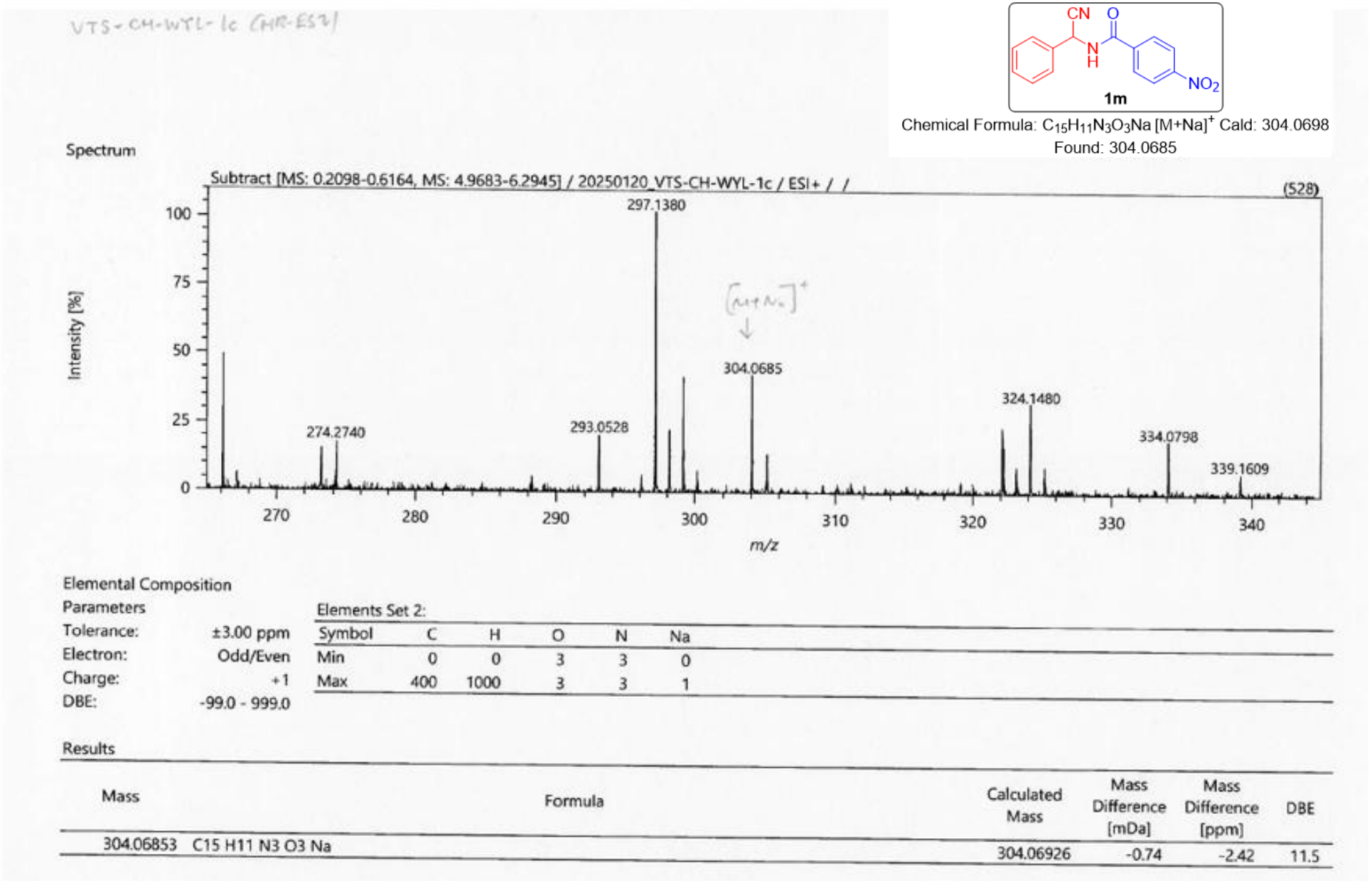


Fig. S44. HRMS data of *N*-(cyano(phenyl)methyl)-4-nitrobenzamide **(1m).**

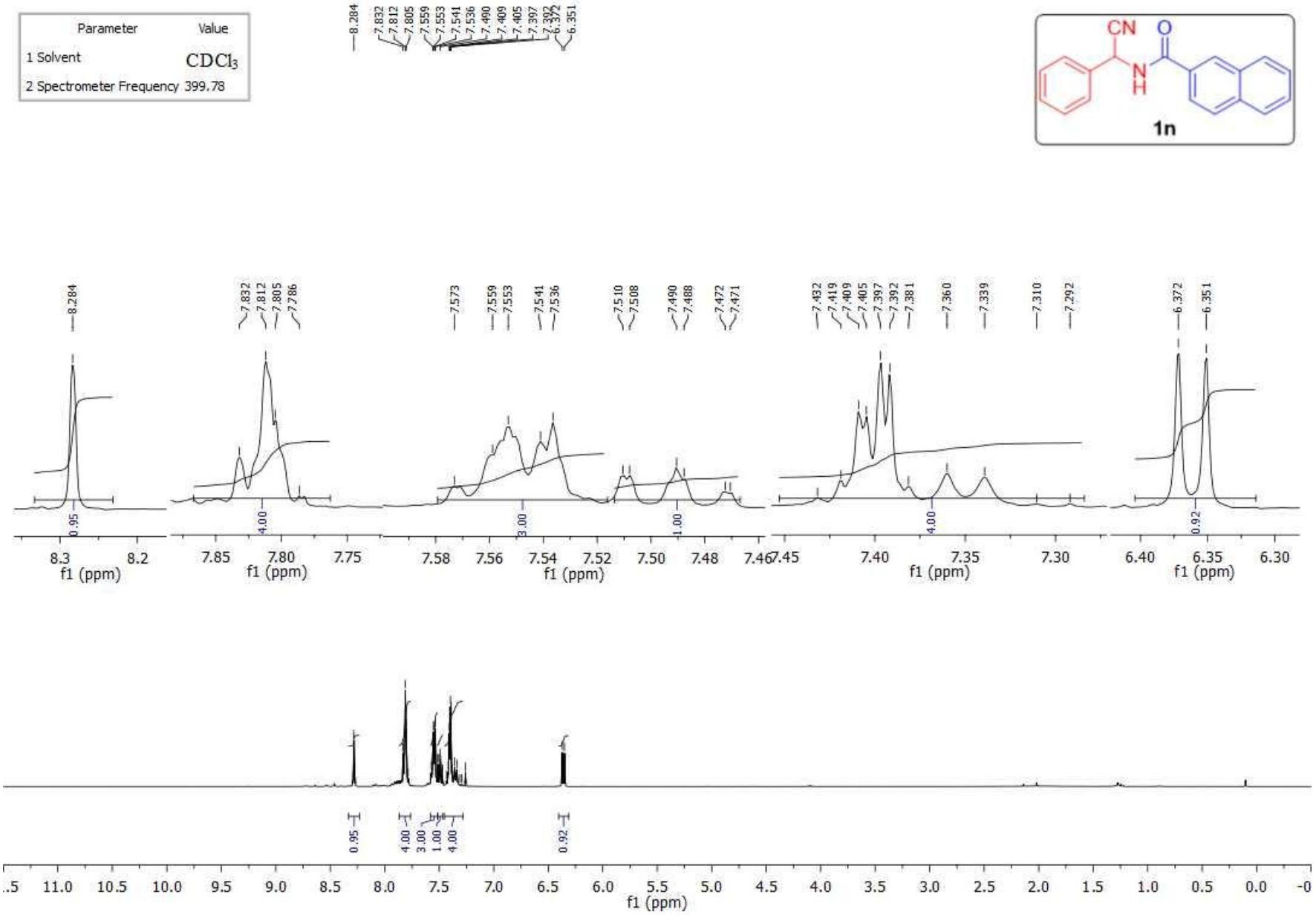


Fig. S45. [1]H NMR spectra of *N*-(cyano(phenyl)methyl)-2-naphthamide **(1n).**

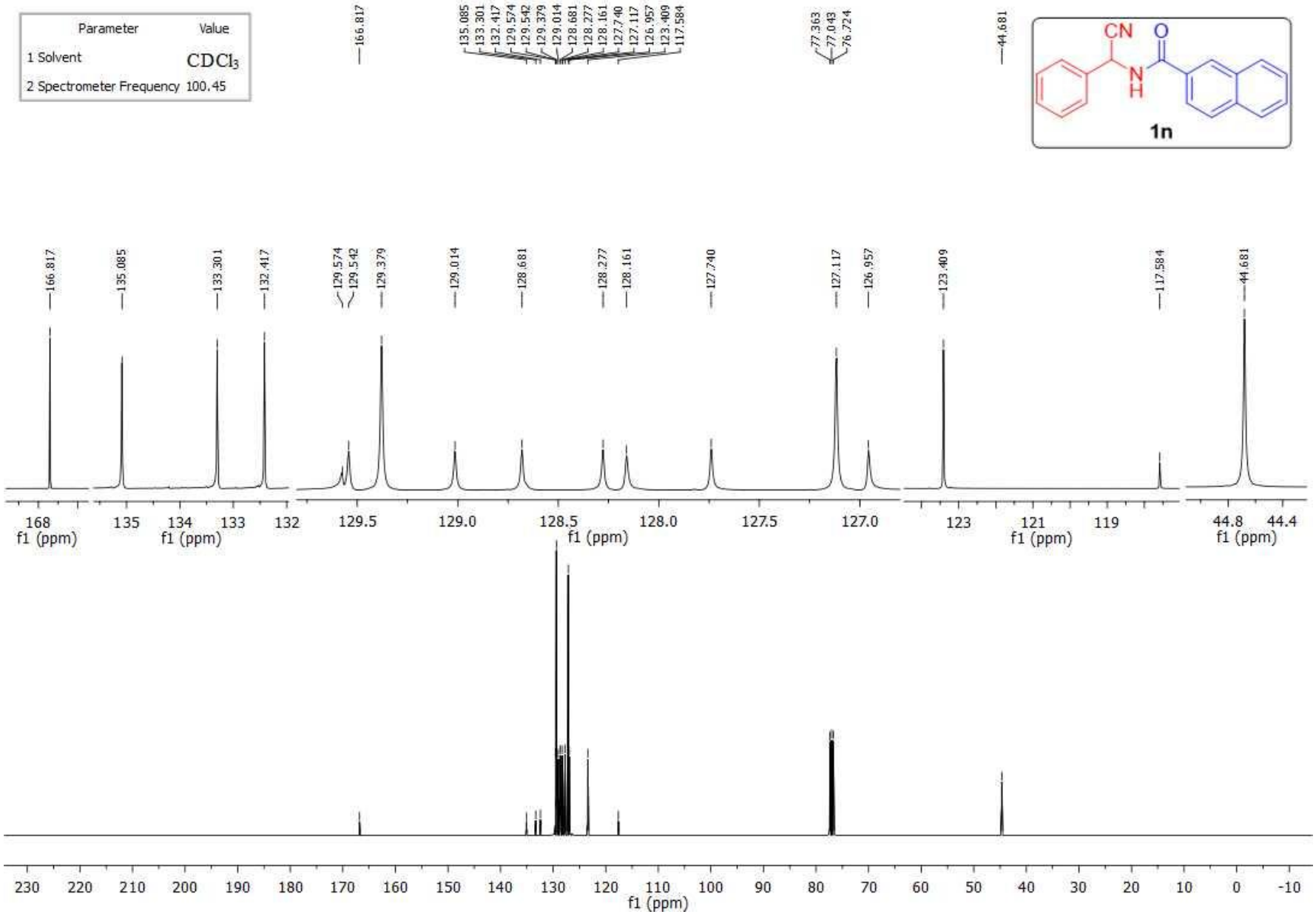


Fig. S46. ^{13}C NMR spectra of *N*-(cyano(phenyl)methyl)-2-naphthamide **(1n).**

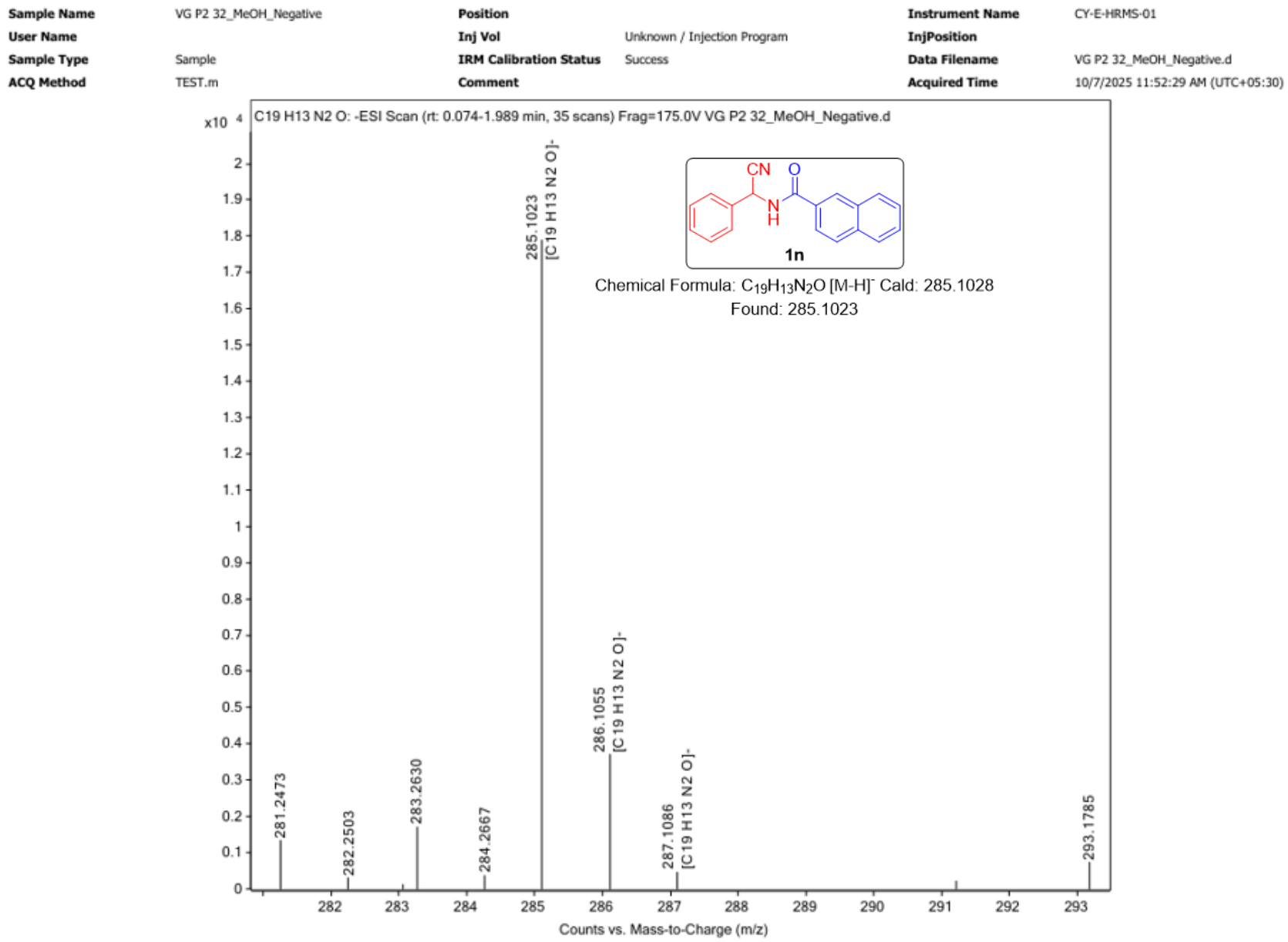


Fig. S47. HRMS data of *N*-(cyano(phenyl)methyl)-2-naphthamide **(1n).**

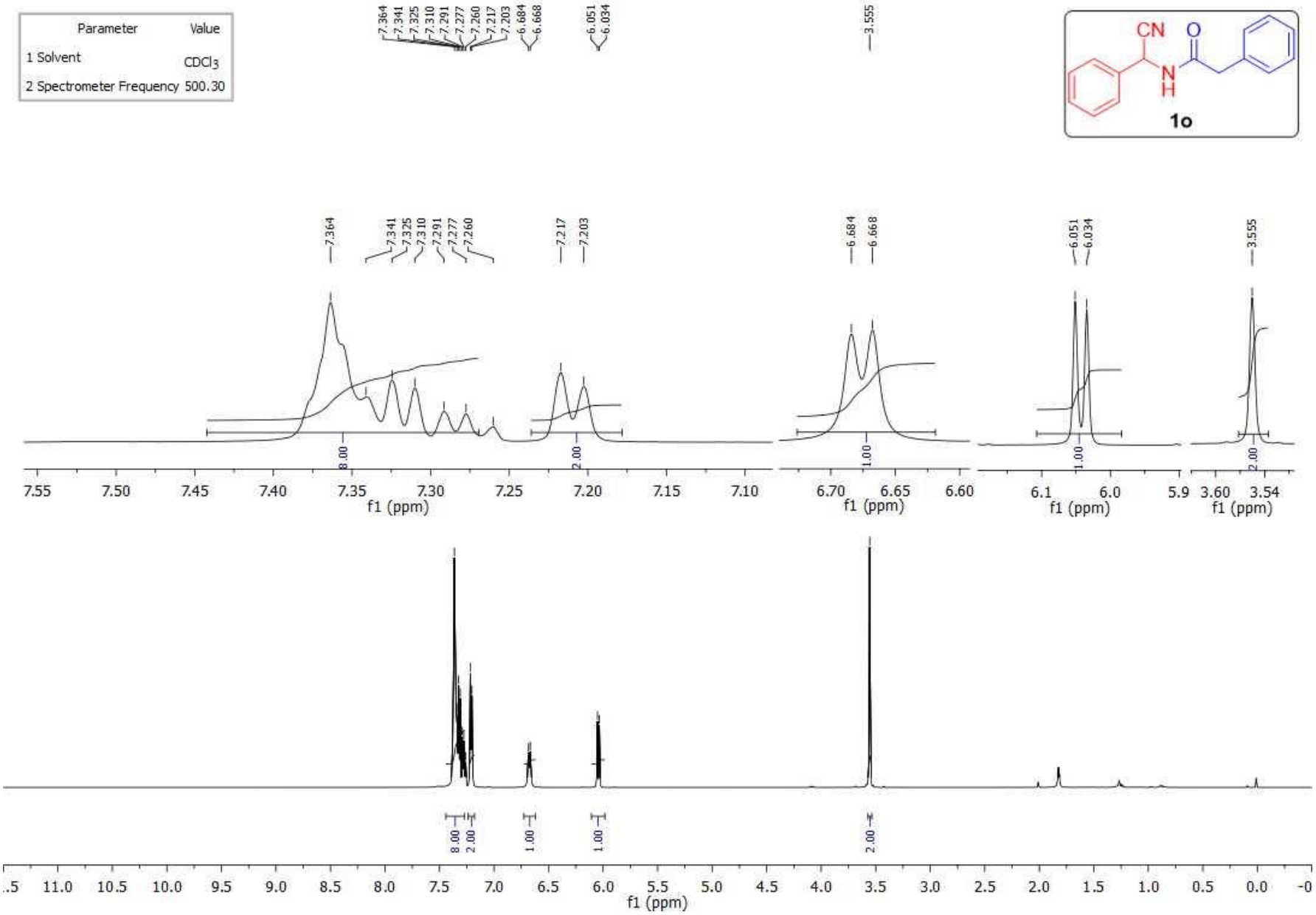


Fig. S48. [1]H NMR spectra of *N*-(cyano(phenyl)methyl)-2-phenylacetamide **(1o).**

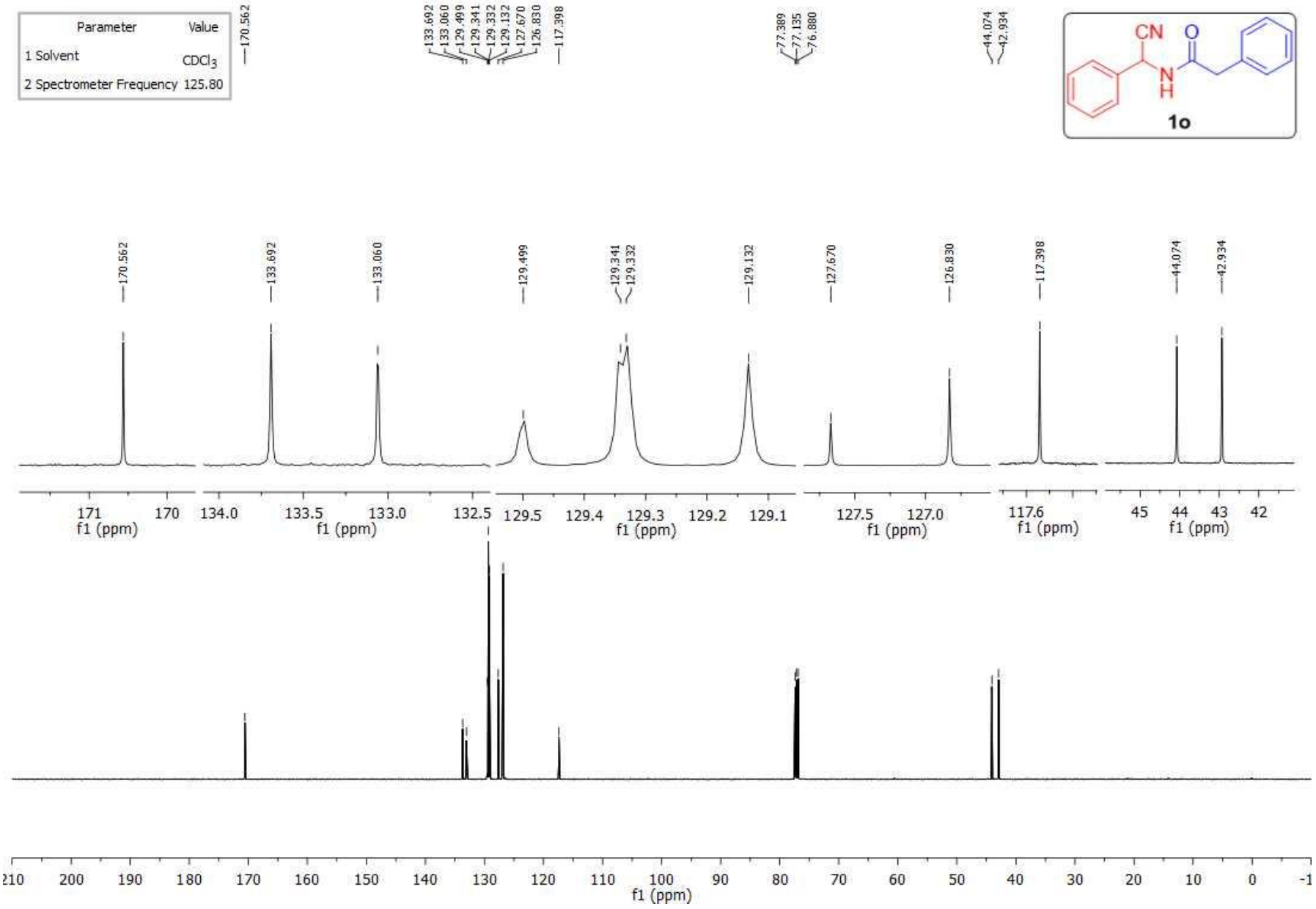


Fig. S49. ^{13}C NMR spectra of *N*-(cyano(phenyl)methyl)-2-phenylacetamide **(1o).**

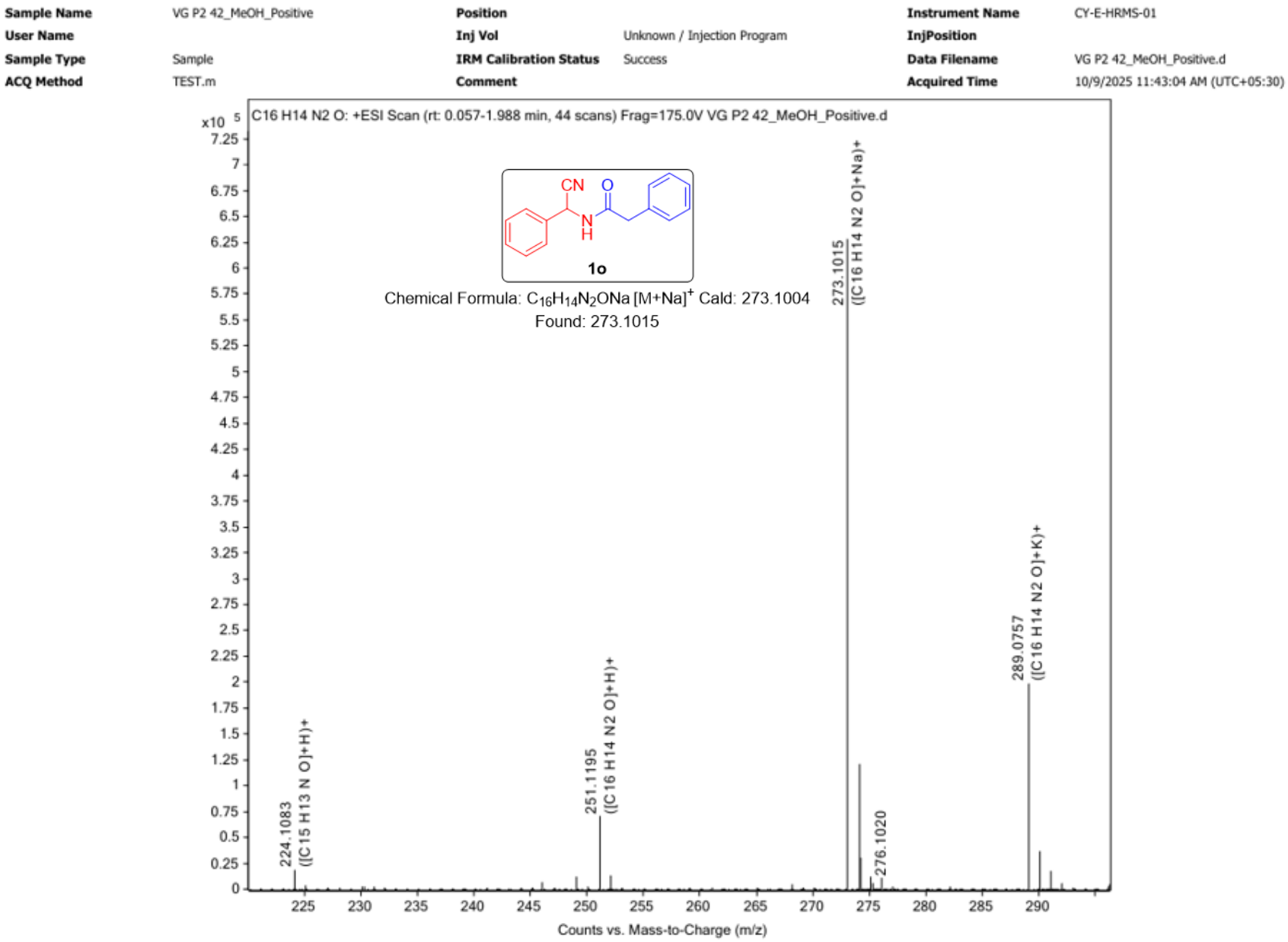


Fig. S50. HRMS data of *N*-(cyano(phenyl)methyl)-2-phenylacetamide **(1o).**

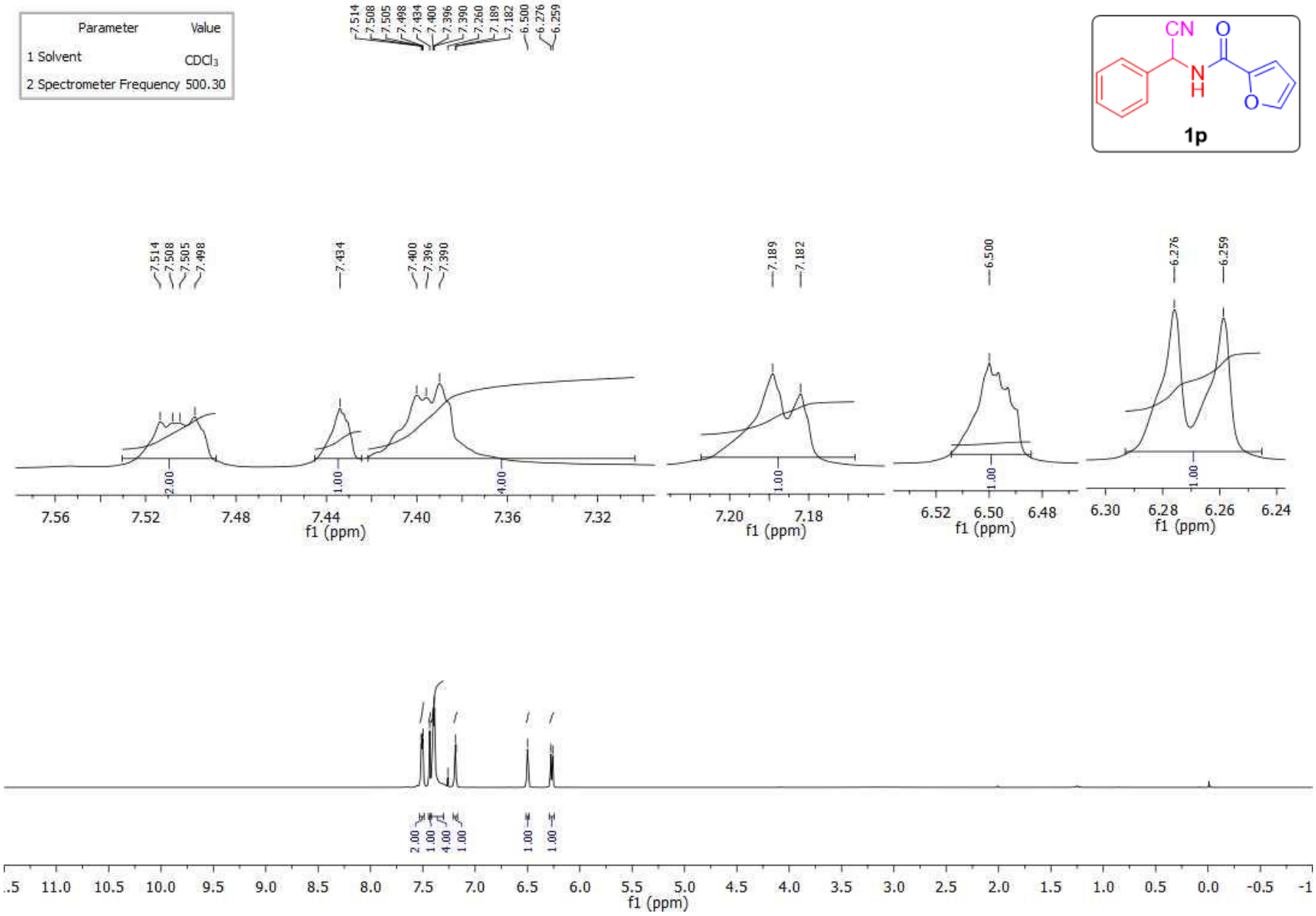


Fig. S51. [1]H NMR spectra of *N*-(cyano(phenyl)methyl)furan-2-carboxamide **(1p).**

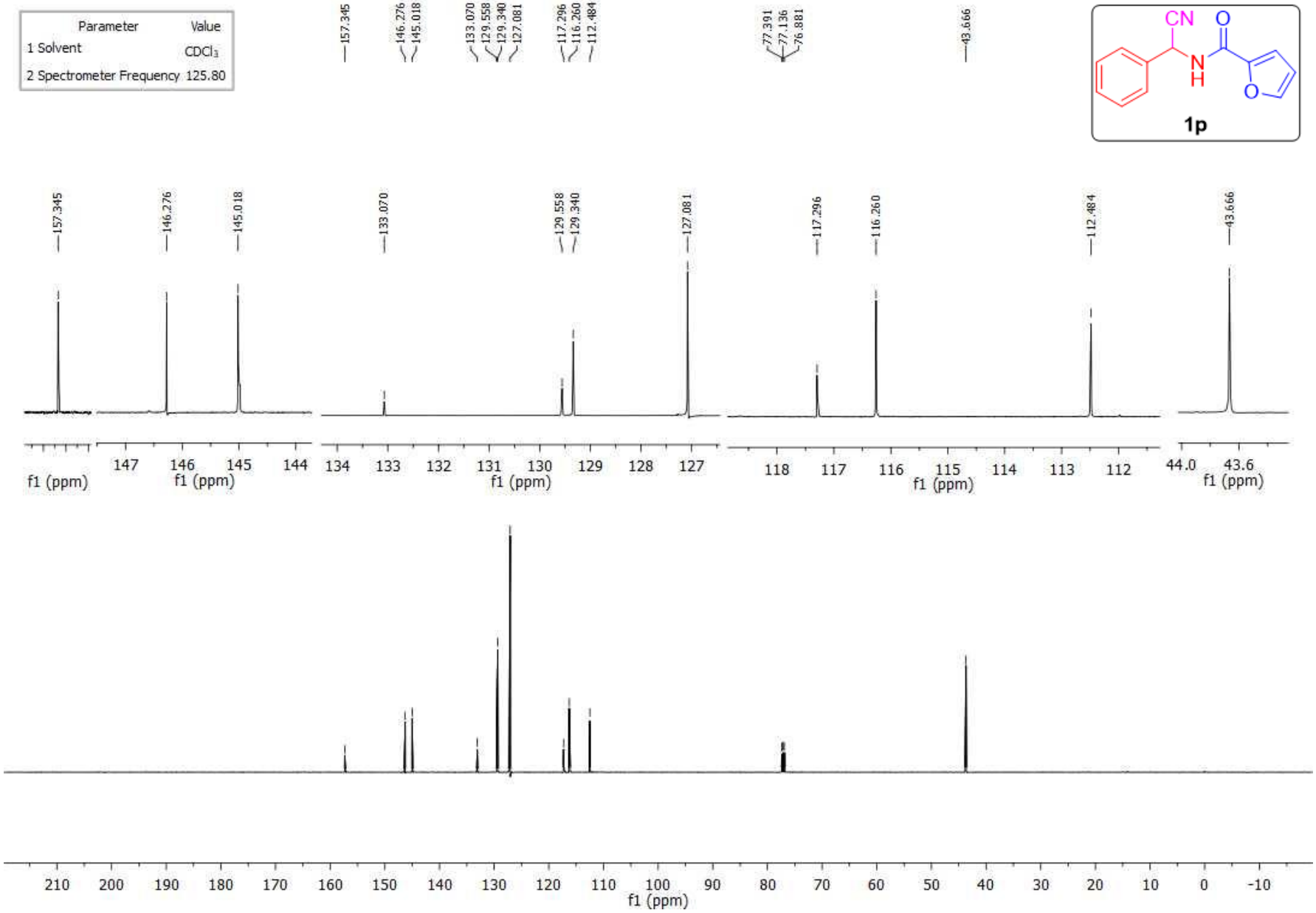


Fig. S52. [1]H NMR spectra of *N*-(cyano(phenyl)methyl)furan-2-carboxamide **(1p).**

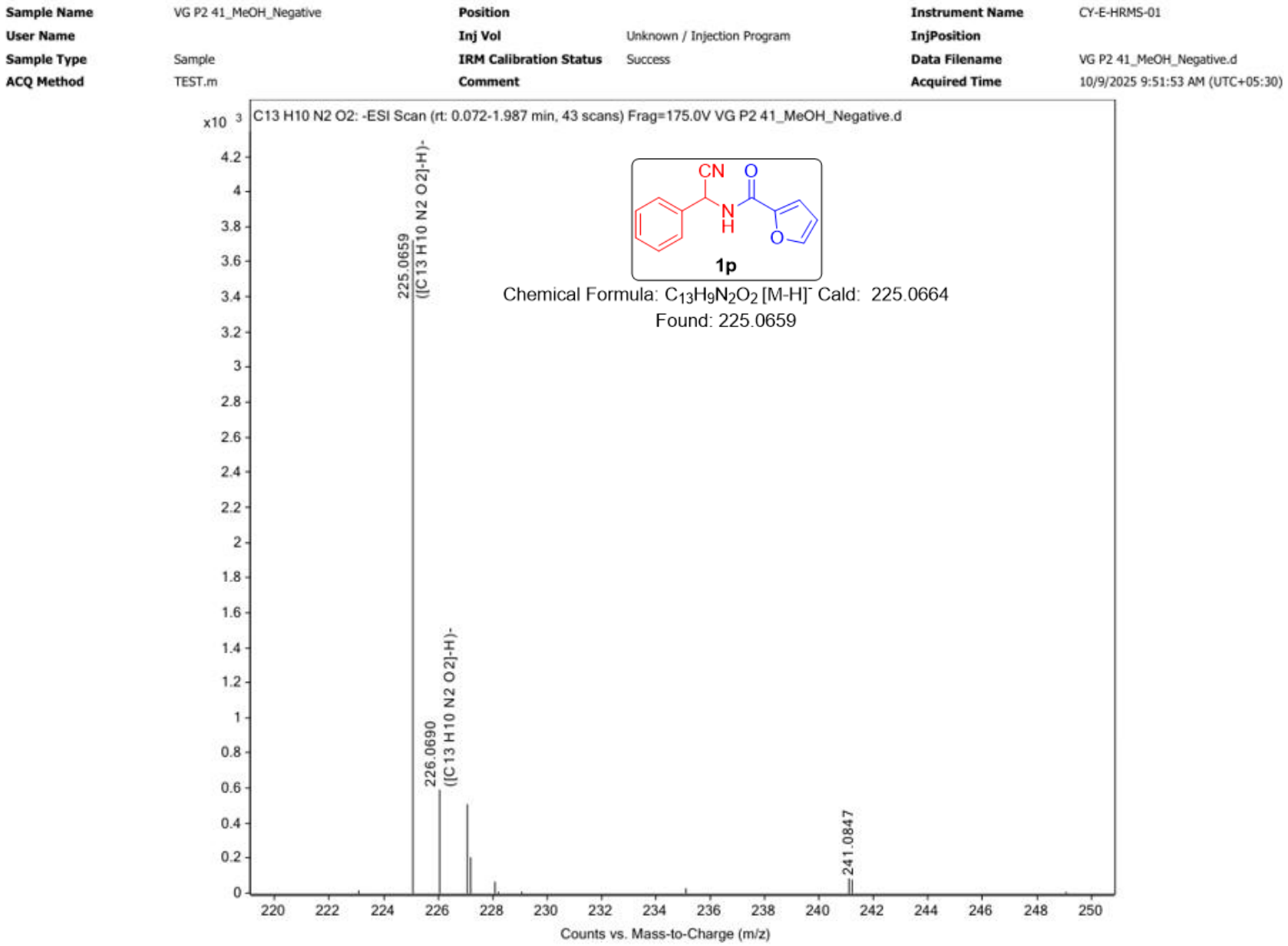


Fig. S53. HRMS data of *N*-(cyano(phenyl)methyl)furan-2-carboxamide **(1p).**

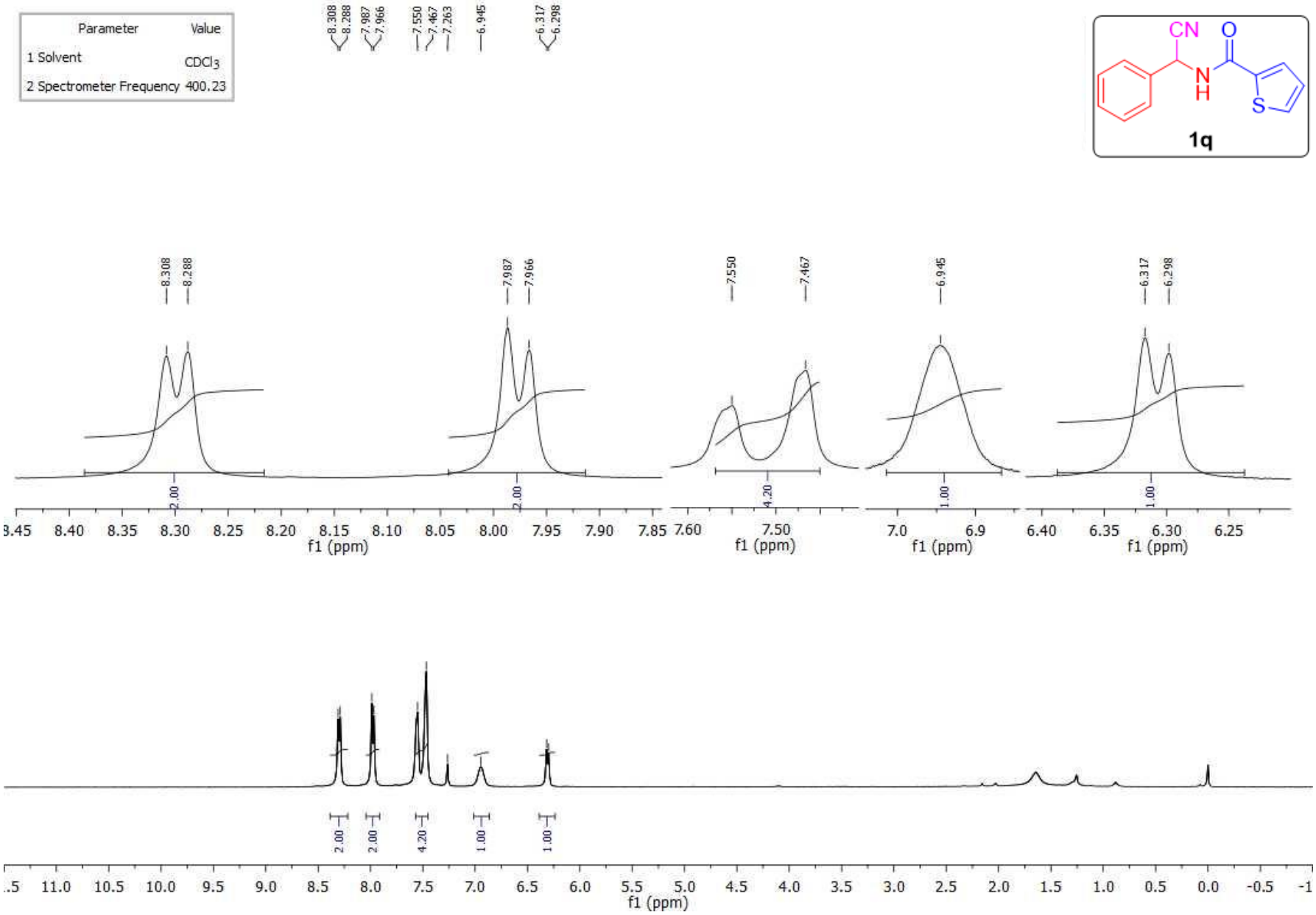


Fig. S54. [1]H NMR spectra of *N*-(cyano(phenyl)methyl)thiophene-2-carboxamide **(1q).**

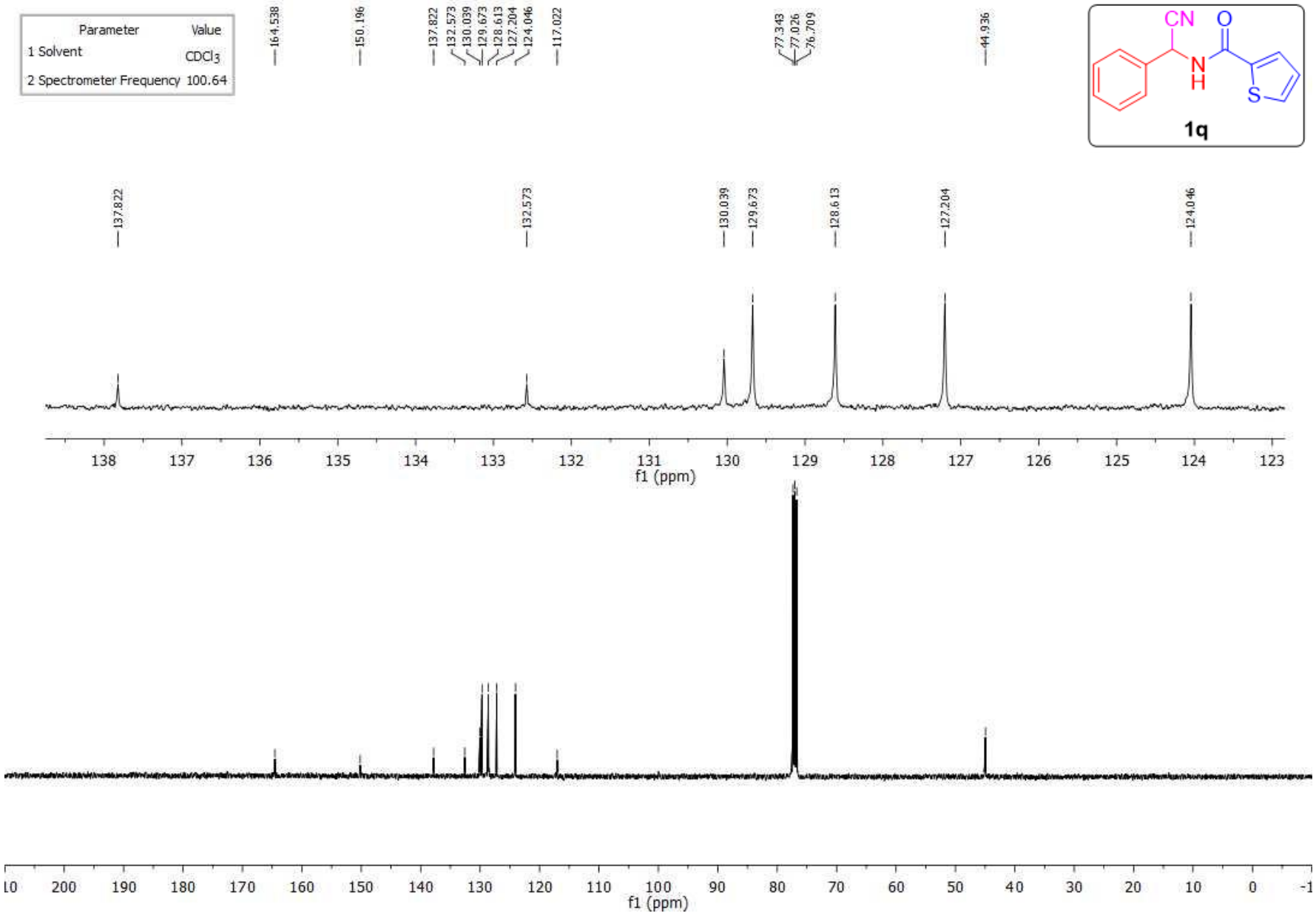


Fig. S55. ^{13}C NMR spectra of *N*-(cyano(phenyl)methyl)thiophene-2-carboxamide **(1q).**

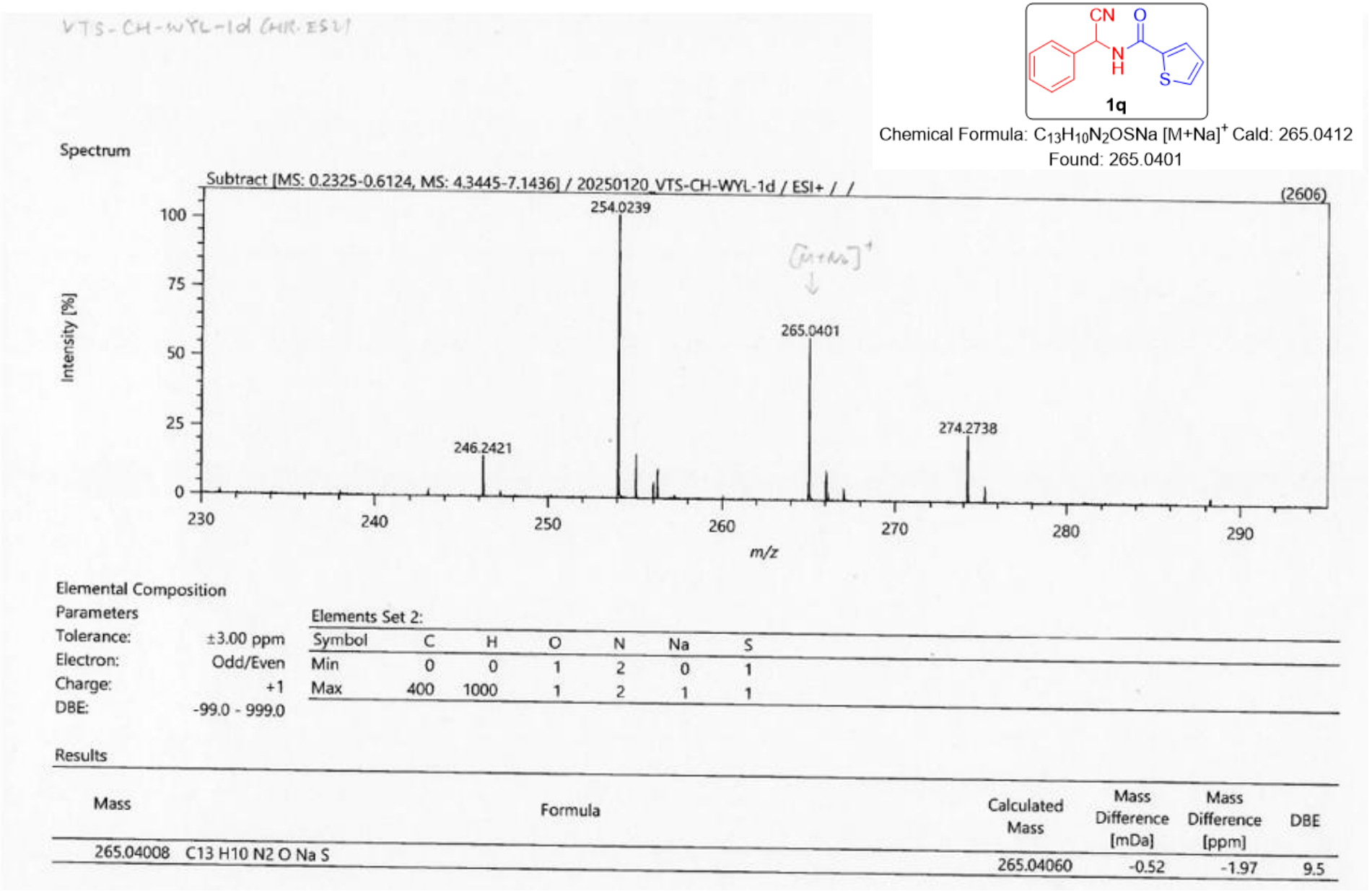


Fig. S56. HRMS data of *N*-(cyano(phenyl)methyl)thiophene-2-carboxamide **(1q).**

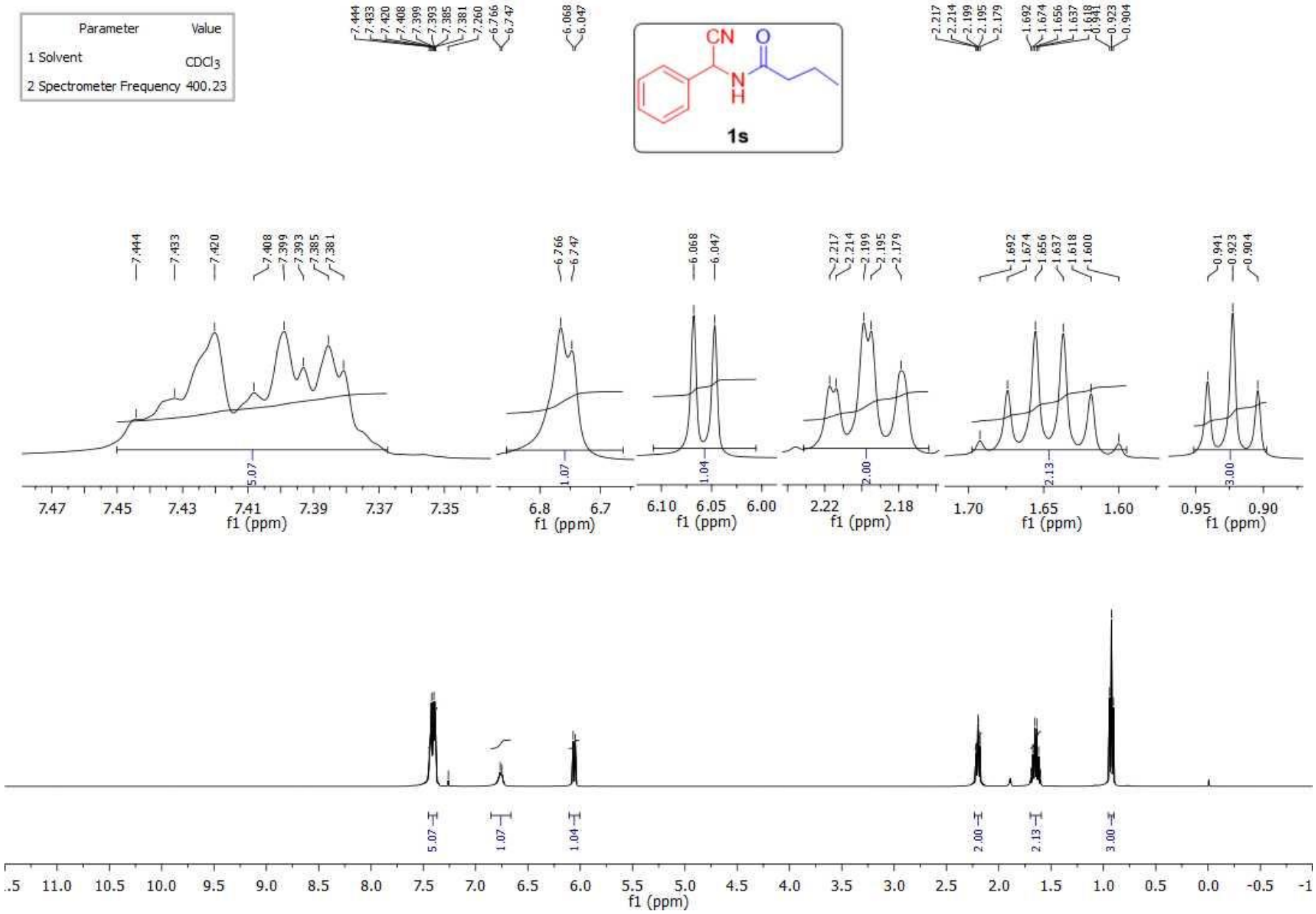


Fig. S57. [1]H NMR spectra of *N*-(cyano(phenyl)methyl)butyramide **(1s).**

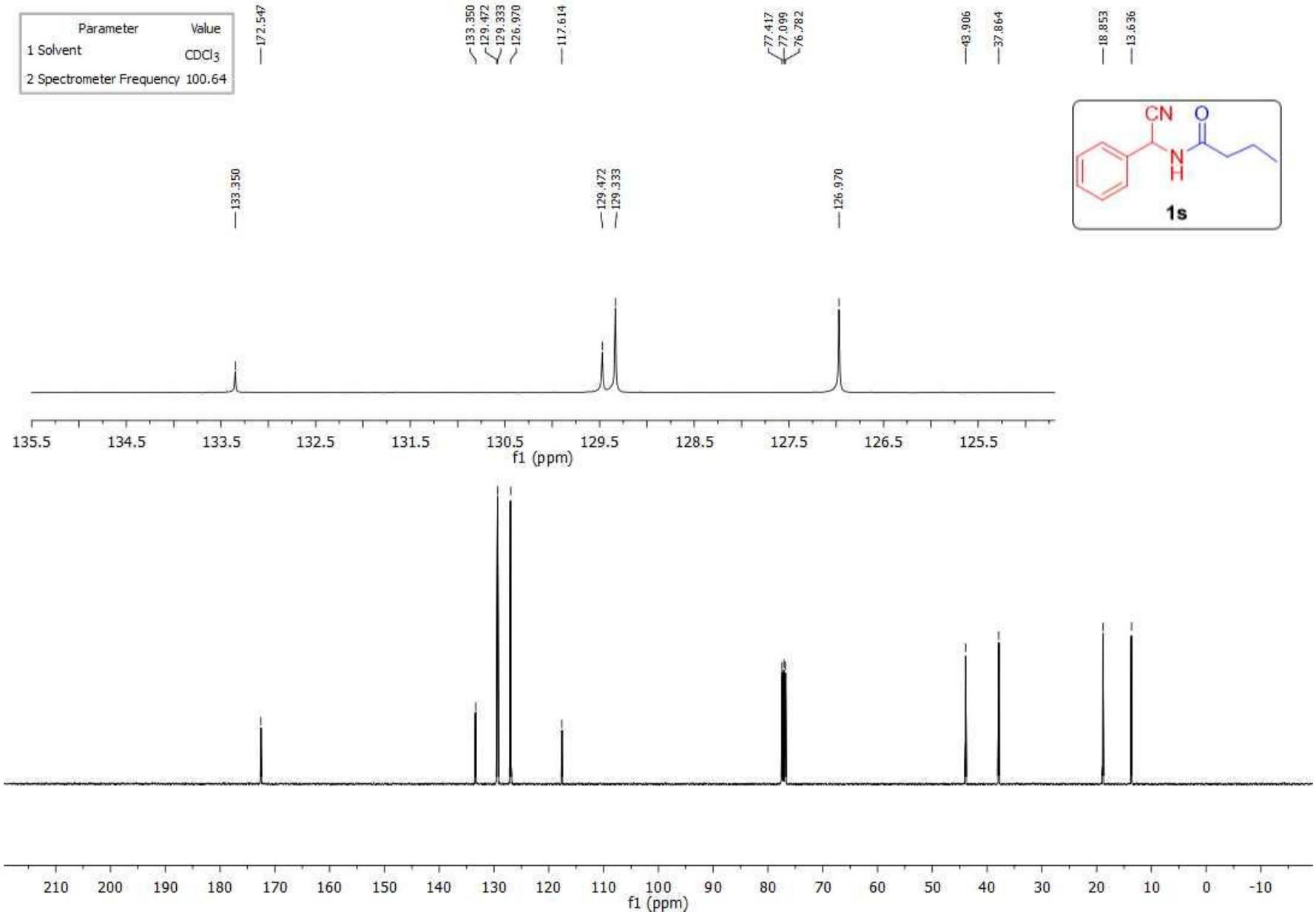


Fig. S58. ^{13}C NMR spectra of *N*-(cyano(phenyl)methyl)butyramide **(1s).**

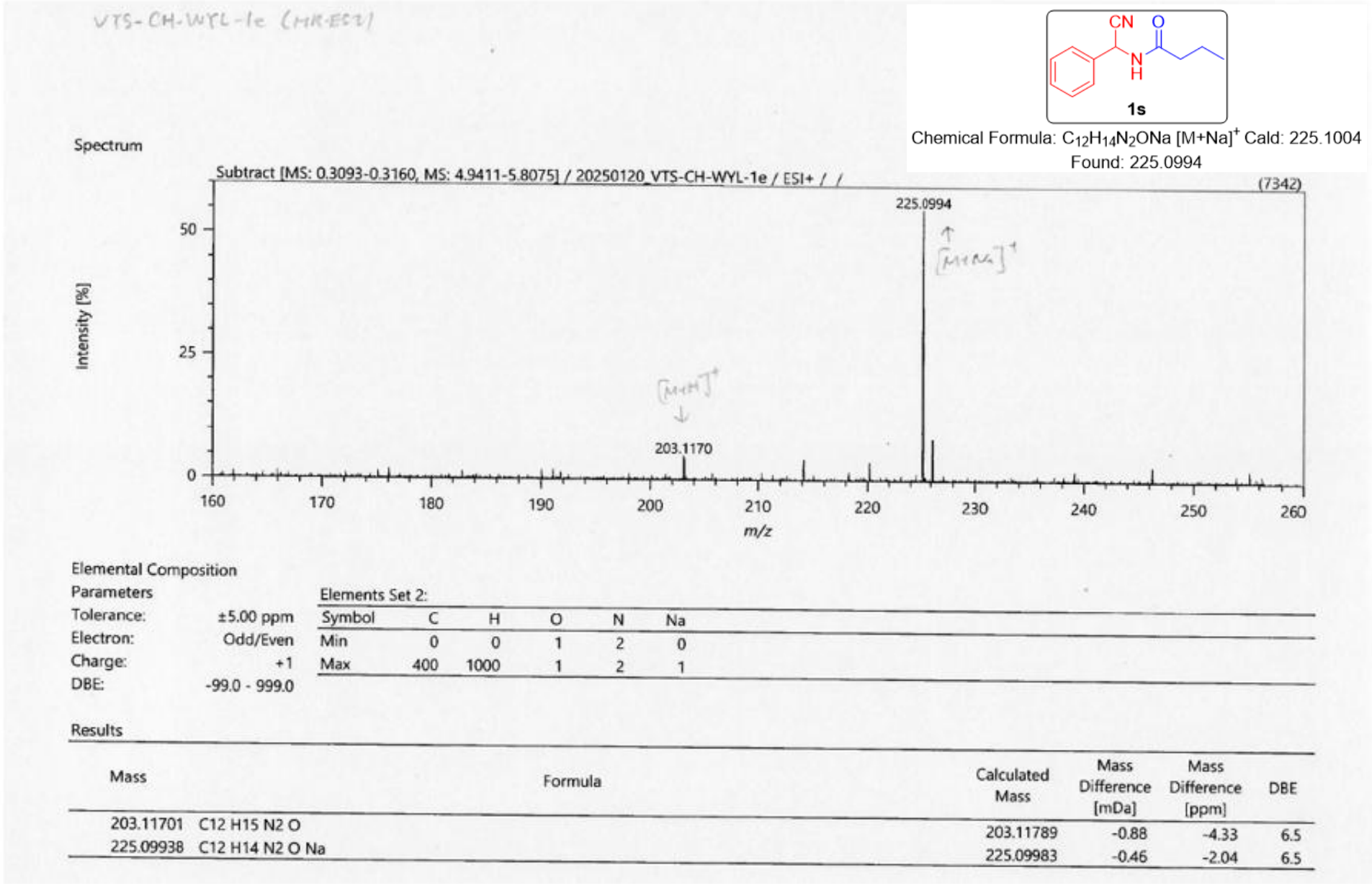


Fig. S59. HRMS data of *N*-(cyano(phenyl)methyl)butyramide **(1s).**

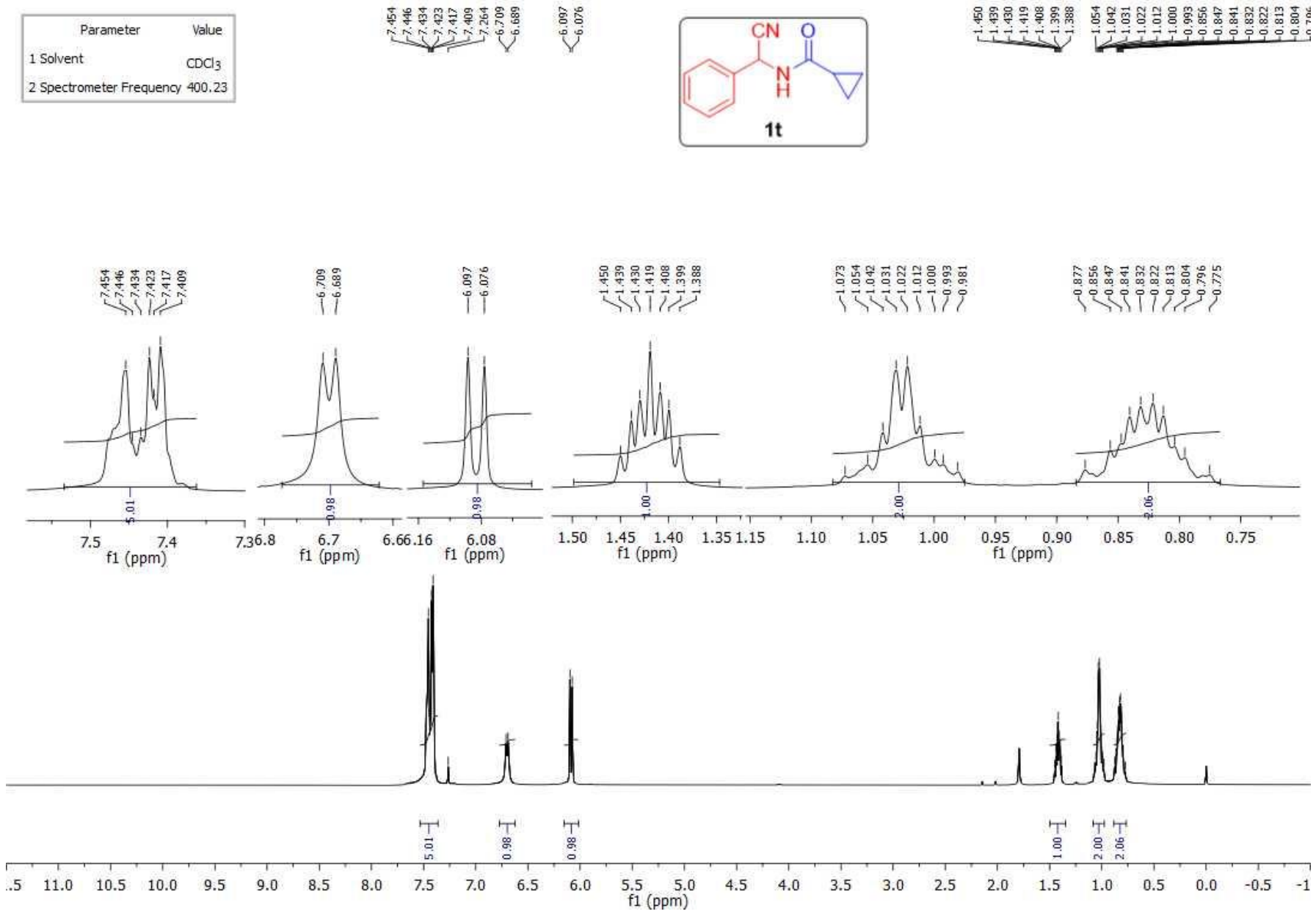


Fig. S60. ^{1}H NMR spectra of *N*-(cyano(phenyl)methyl)cyclopropanecarboxamide **(1t).**

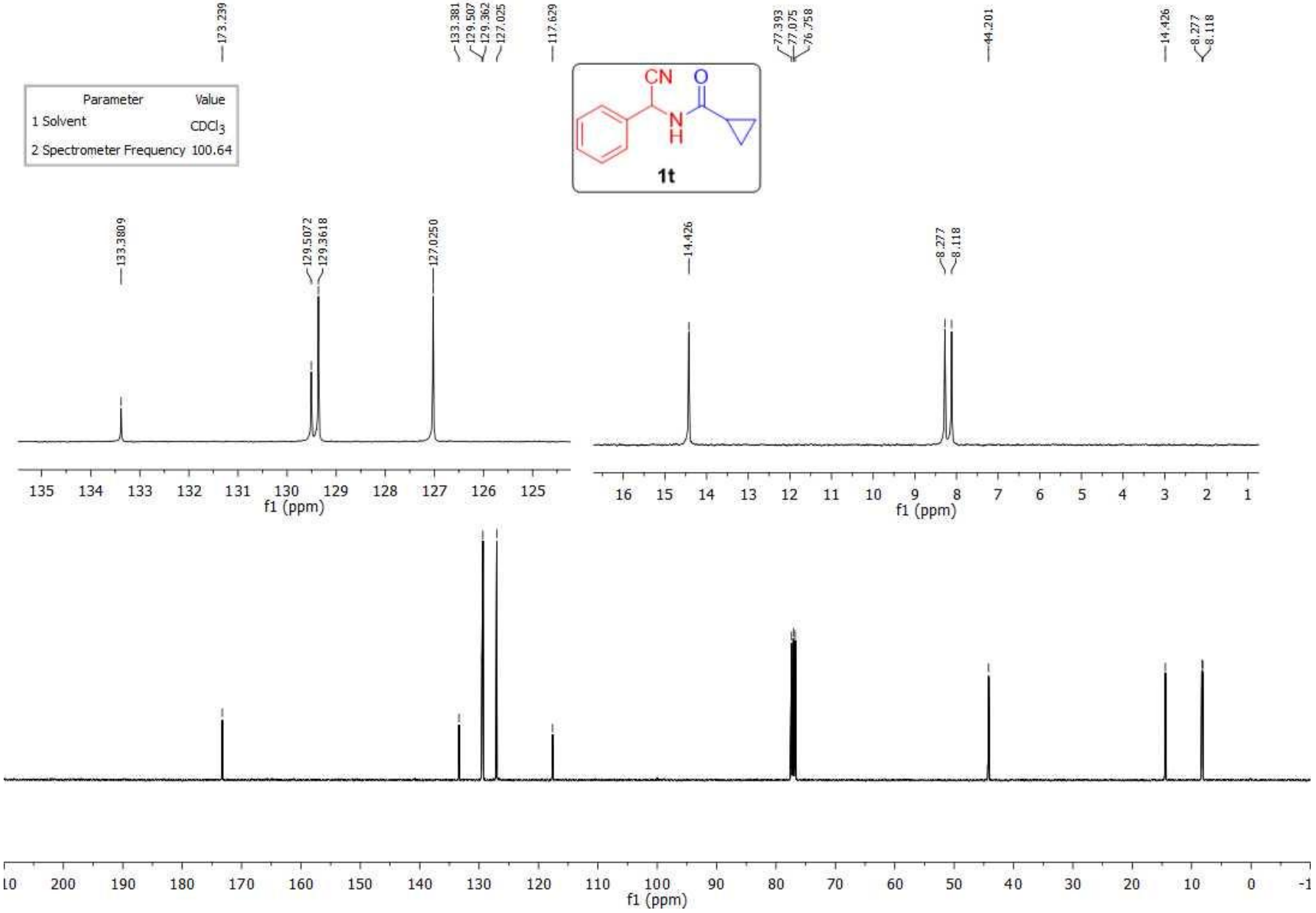


Fig. S61. ^{13}C NMR spectra of *N*-(cyano(phenyl)methyl)cyclopropanecarboxamide **(1t).**

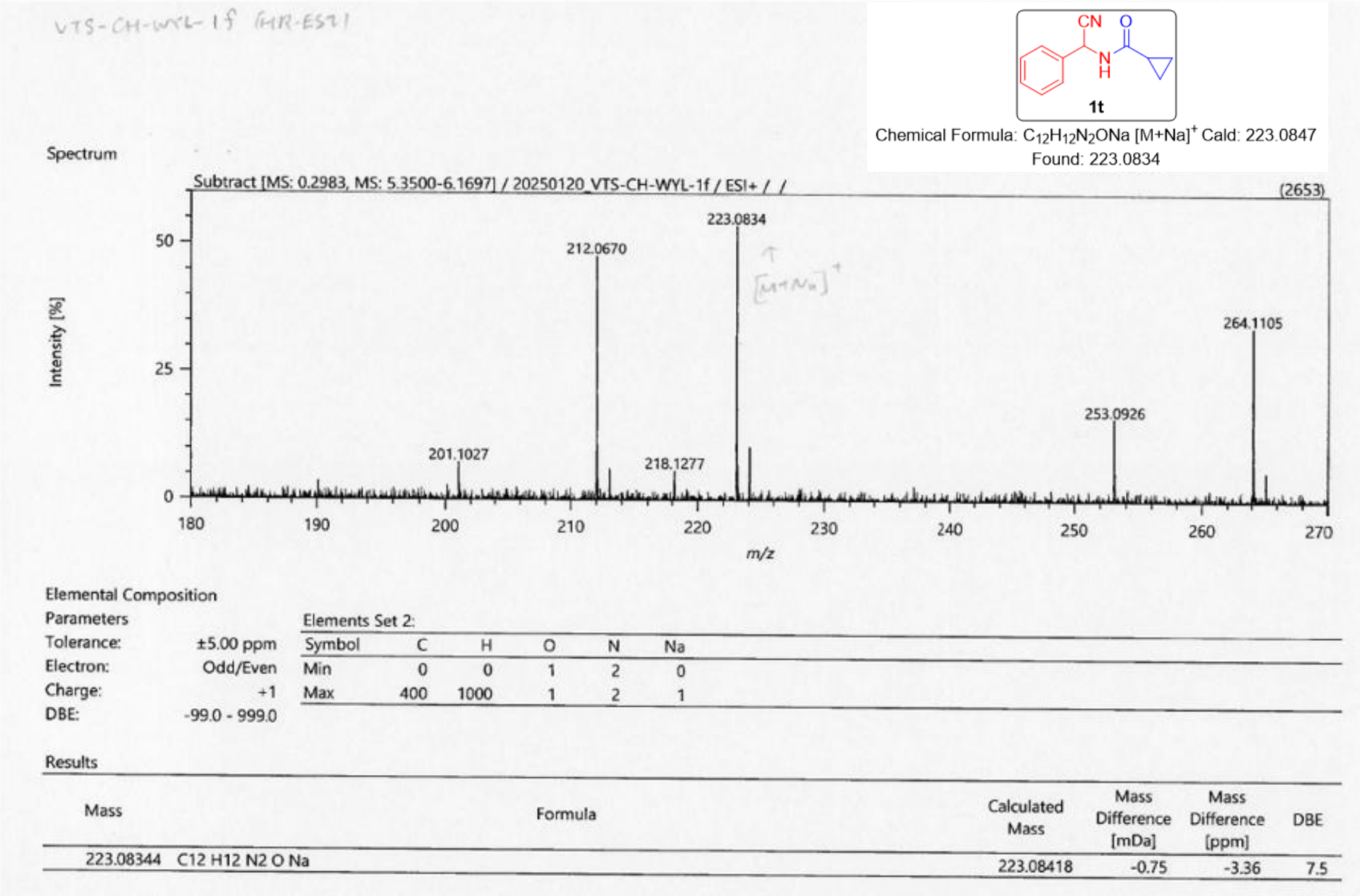


Fig. S62. HRMS data of *N*-(cyano(phenyl)methyl)cyclopropanecarboxamide **(1t).**

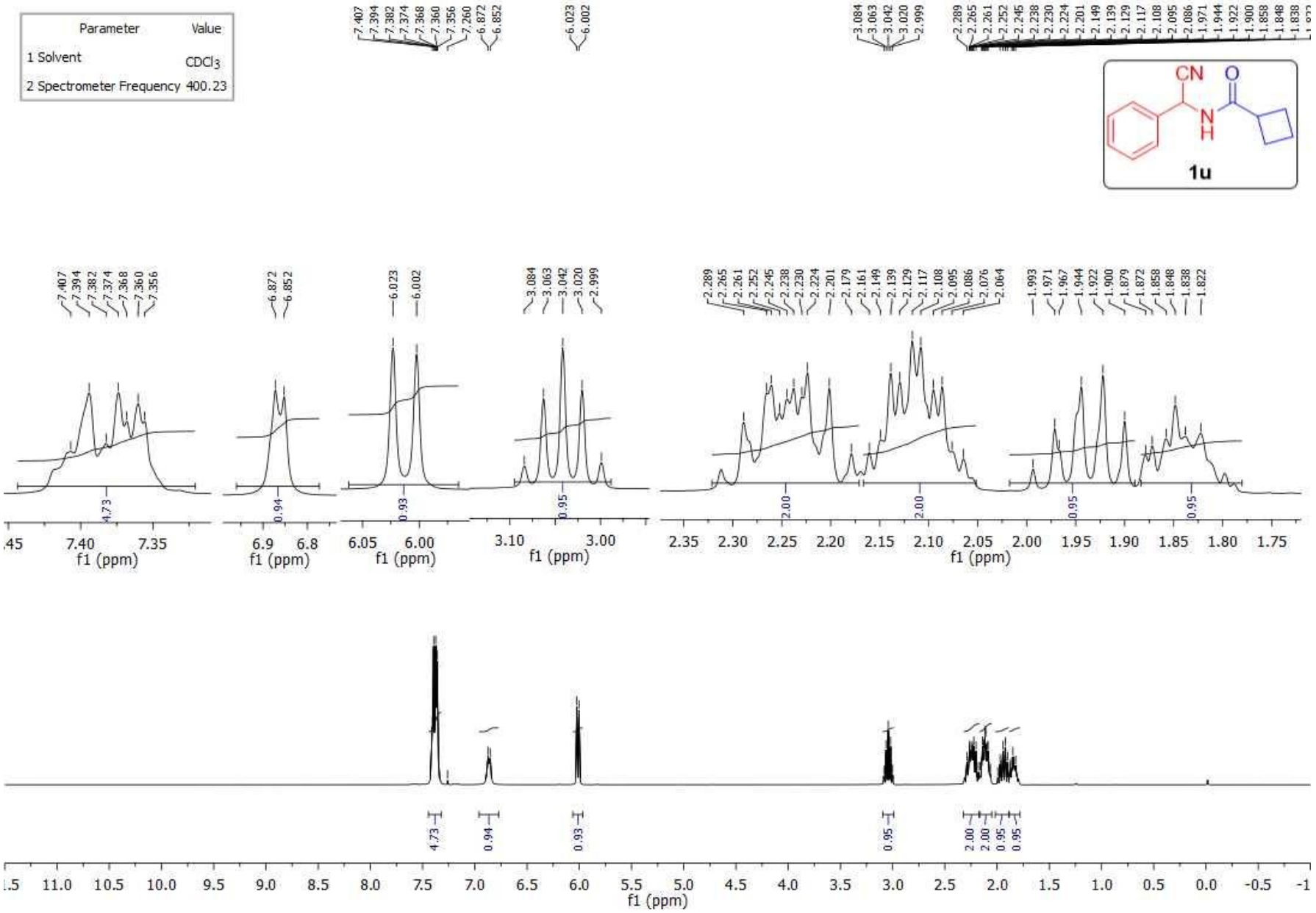


Fig. S63. [1]H NMR spectra of *N*-(cyano(phenyl)methyl)cyclobutanecarboxamide **(1u).**

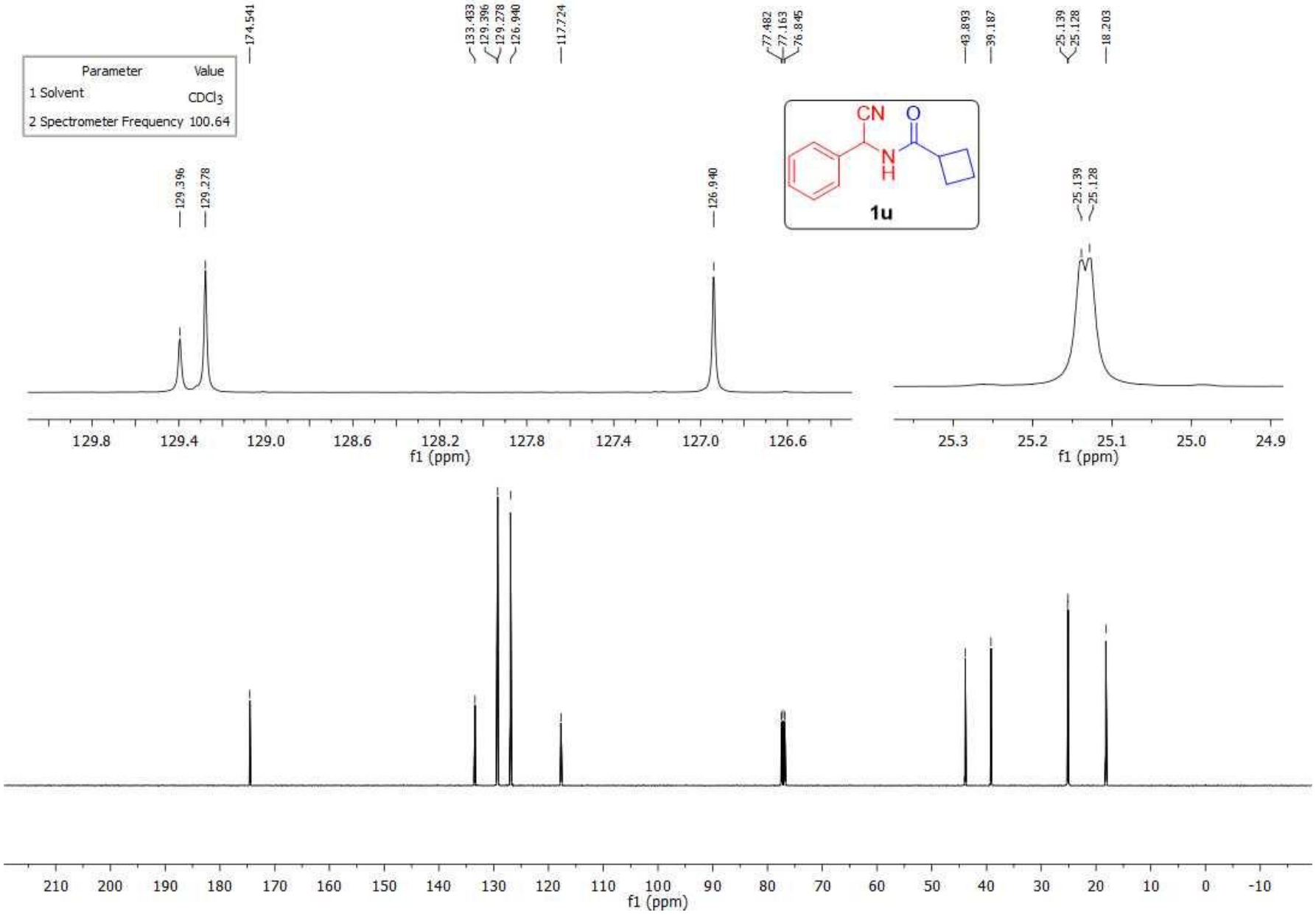


Fig. S64. ^{13}C NMR spectra of *N*-(cyano(phenyl)methyl)cyclobutanecarboxamide **(1u).**

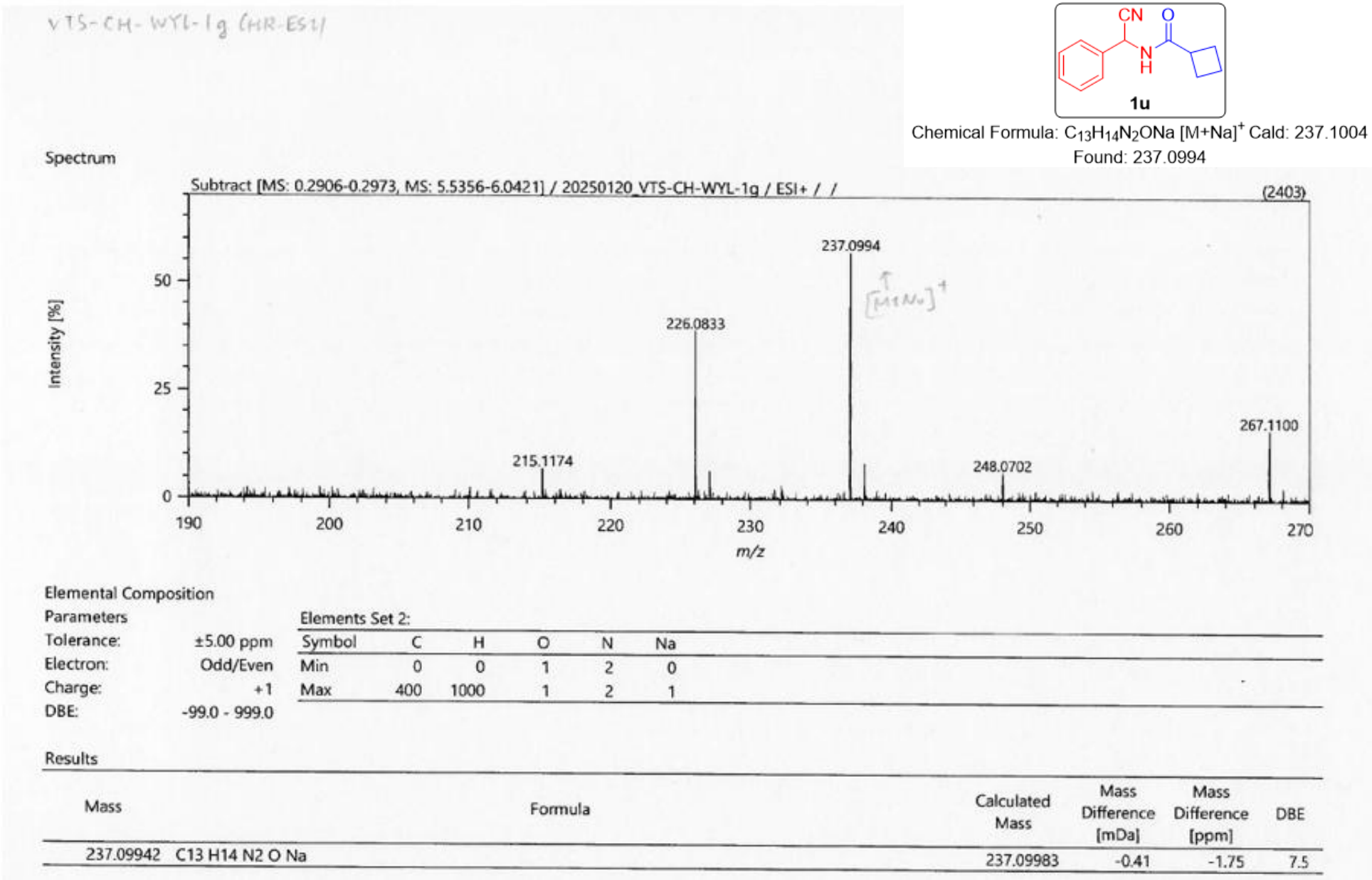


Fig. S65. HRMS data of *N*-(cyano(phenyl)methyl)cyclobutanecarboxamide **(1u).**

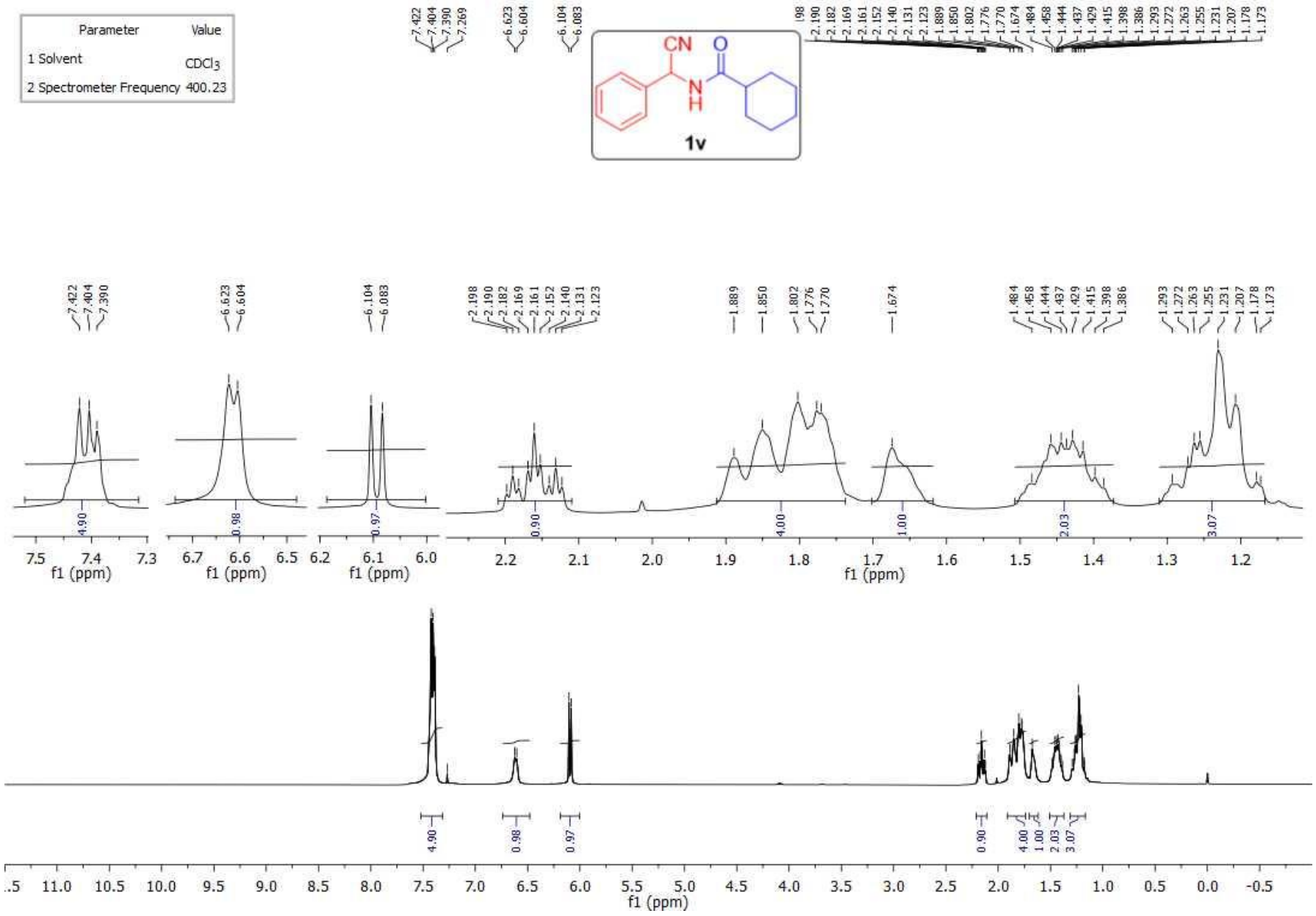


Fig. S66. [1]H NMR spectra of *N*-(cyano(phenyl)methyl)cyclohexanecarboxamide **(1v).**

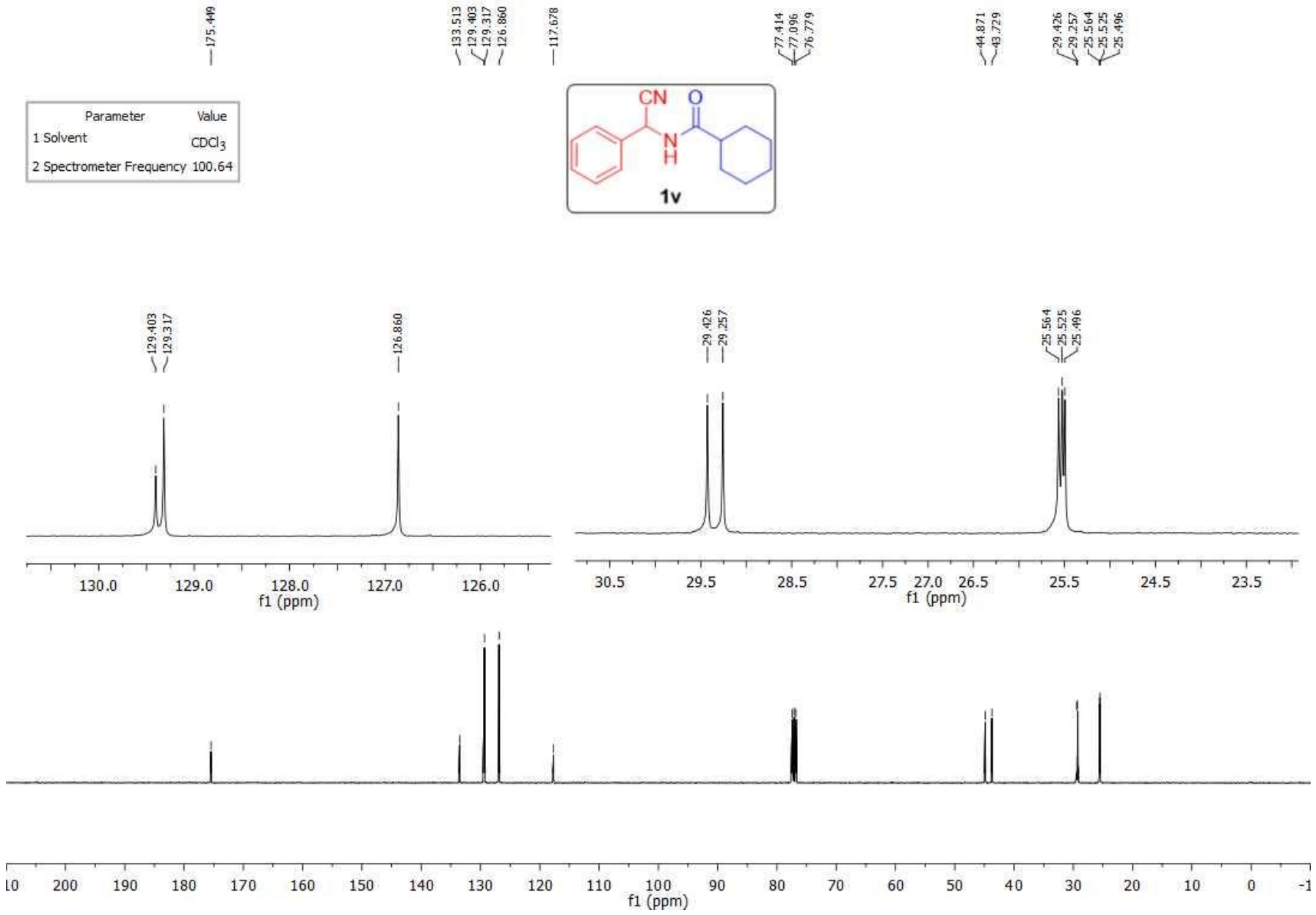


Fig. S67. ^{13}C NMR spectra of *N*-(cyano(phenyl)methyl)cyclohexanecarboxamide **(1v).**

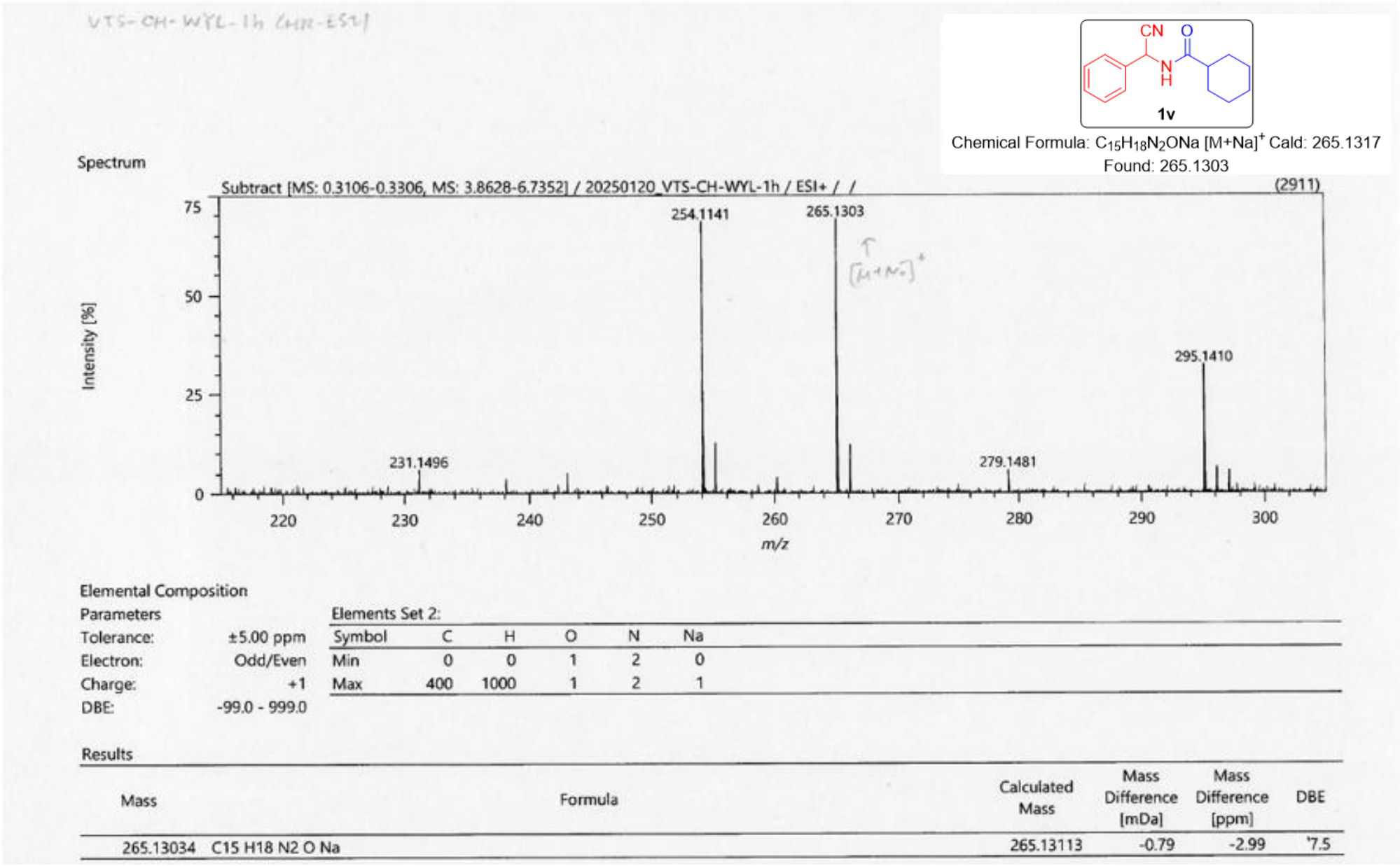


Fig. S68. HRMS data of *N*-(cyano(phenyl)methyl)cyclohexanecarboxamide **(1v).**

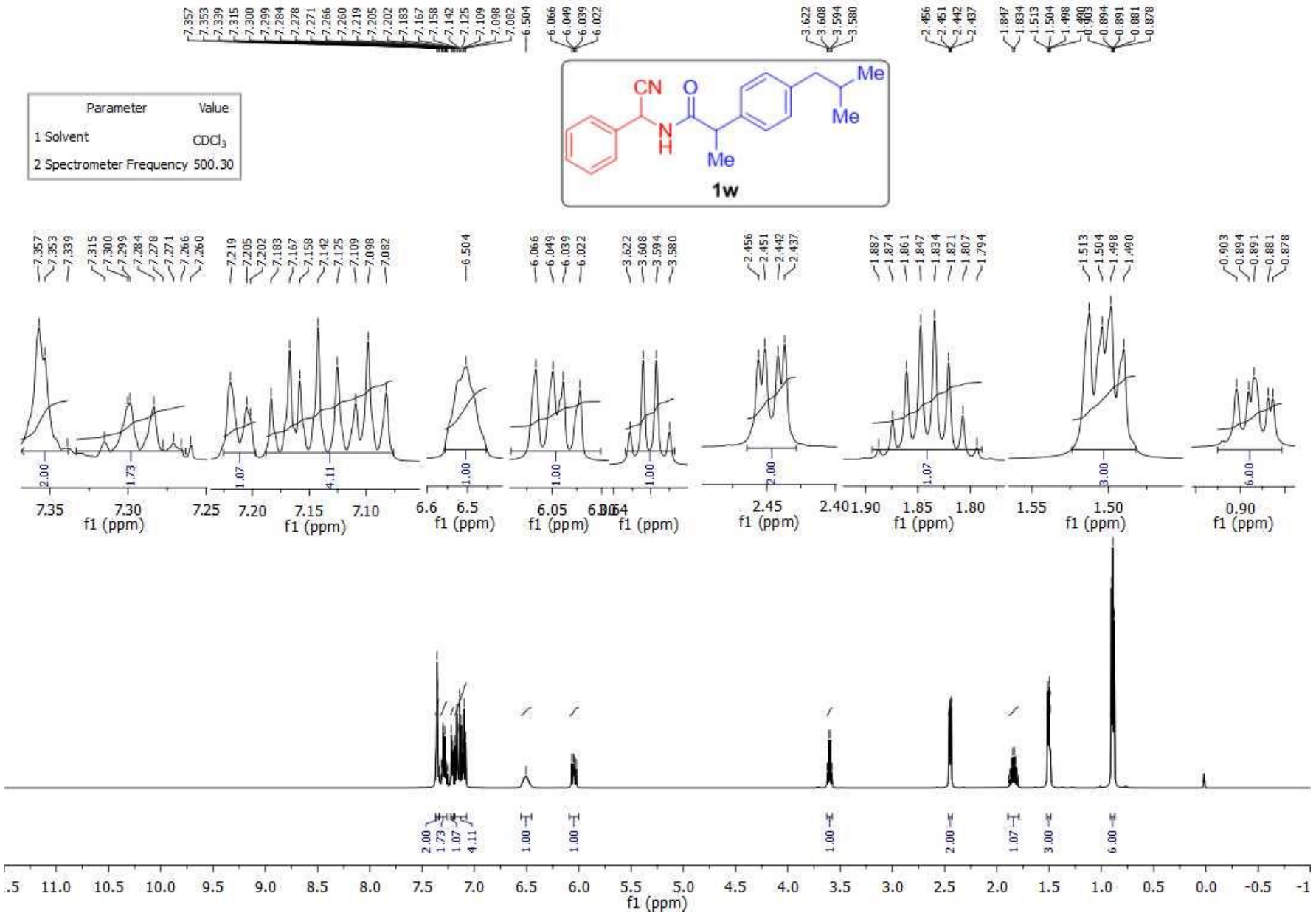


Fig. S69. [1]H NMR spectra of *N*-(cyano(phenyl)methyl)-2-(4-isobutylphenyl)propenamide **(1w).**

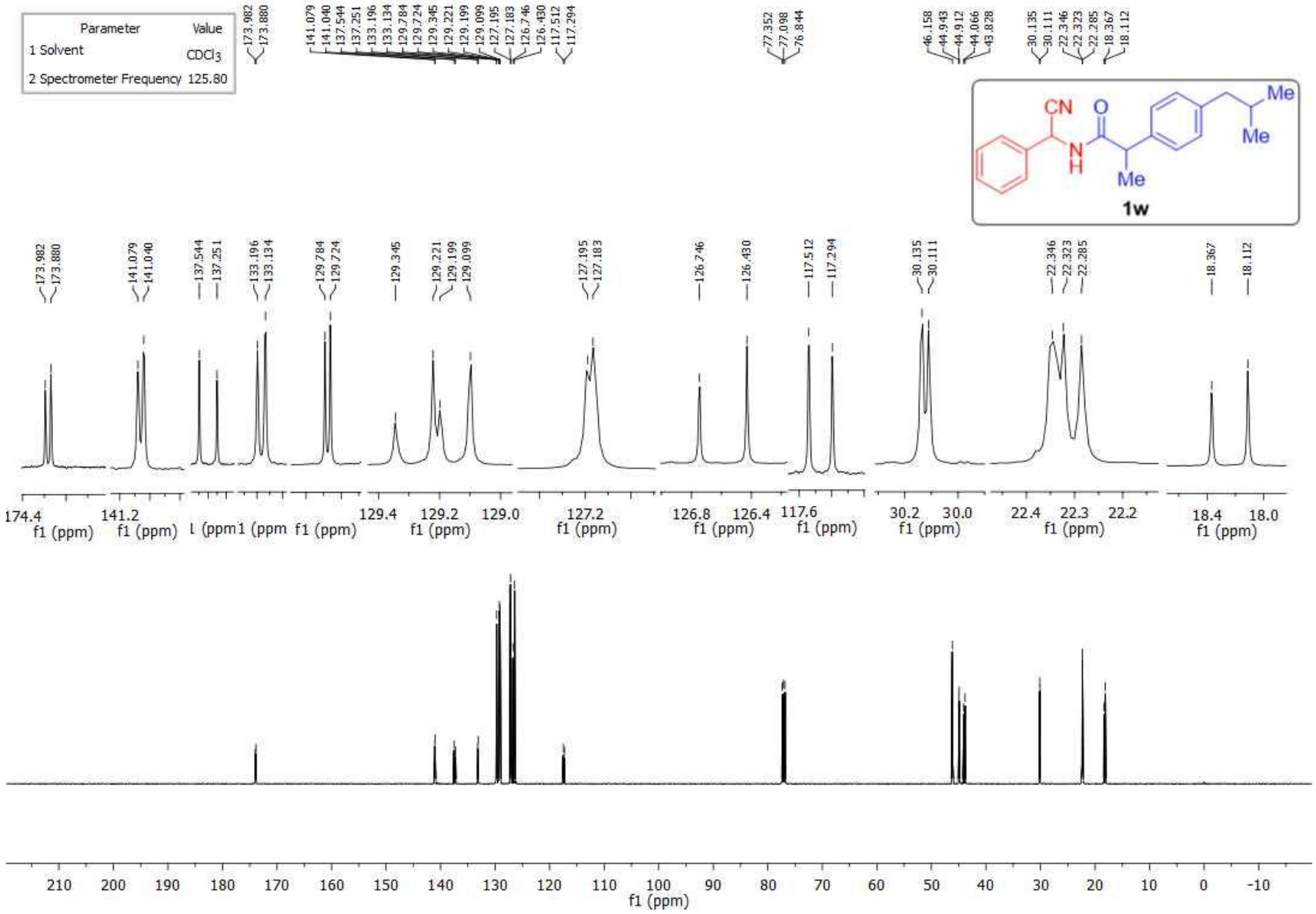


Fig. S70. ^{13}C NMR spectra of *N*-(cyano(phenyl)methyl)-2-(4-isobutylphenyl)propenamide **(1w).**

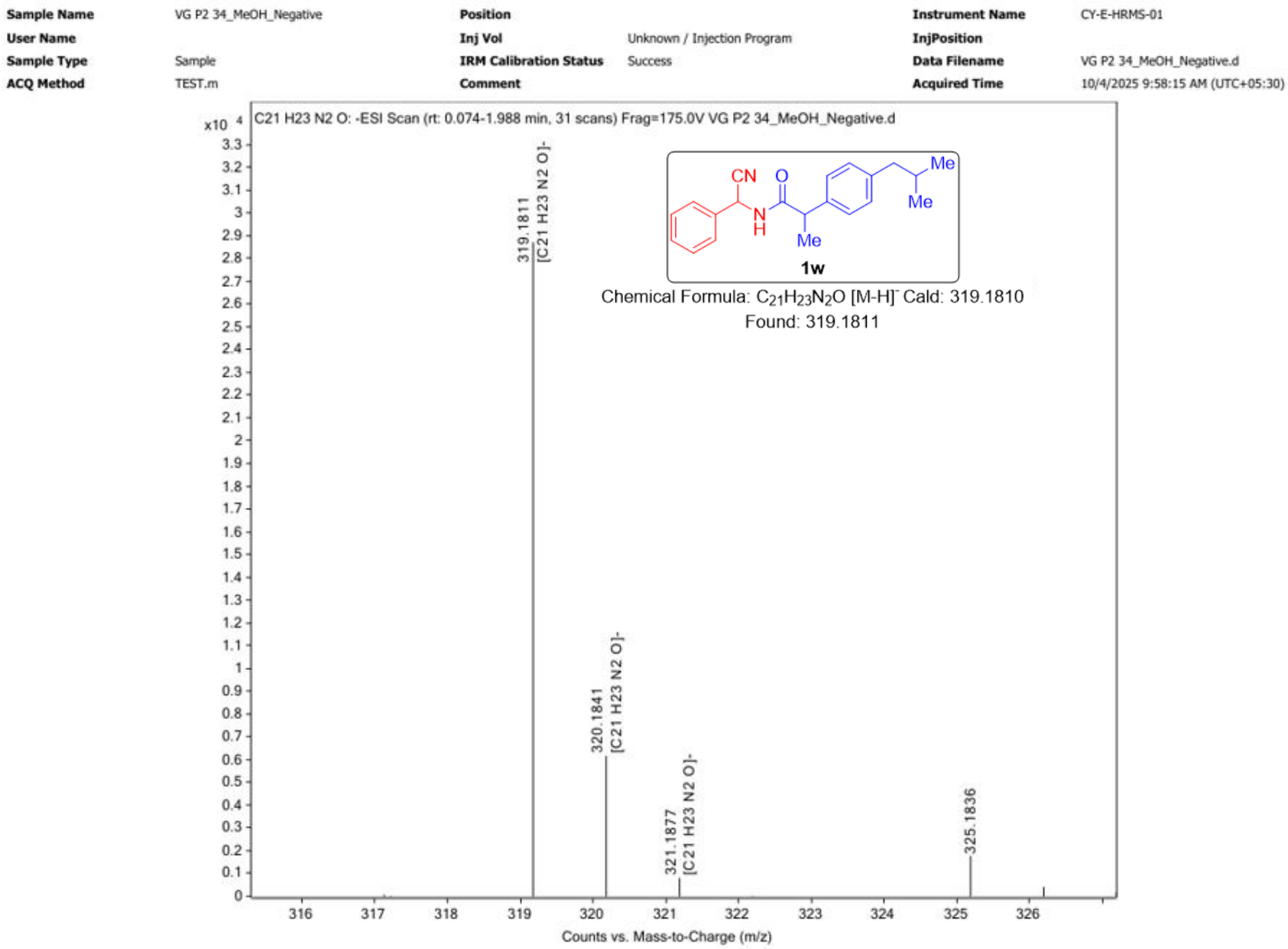


Fig. S71. HRMS data of *N*-(cyano(phenyl)methyl)-2-(4-isobutylphenyl)propenamide **(1w).**

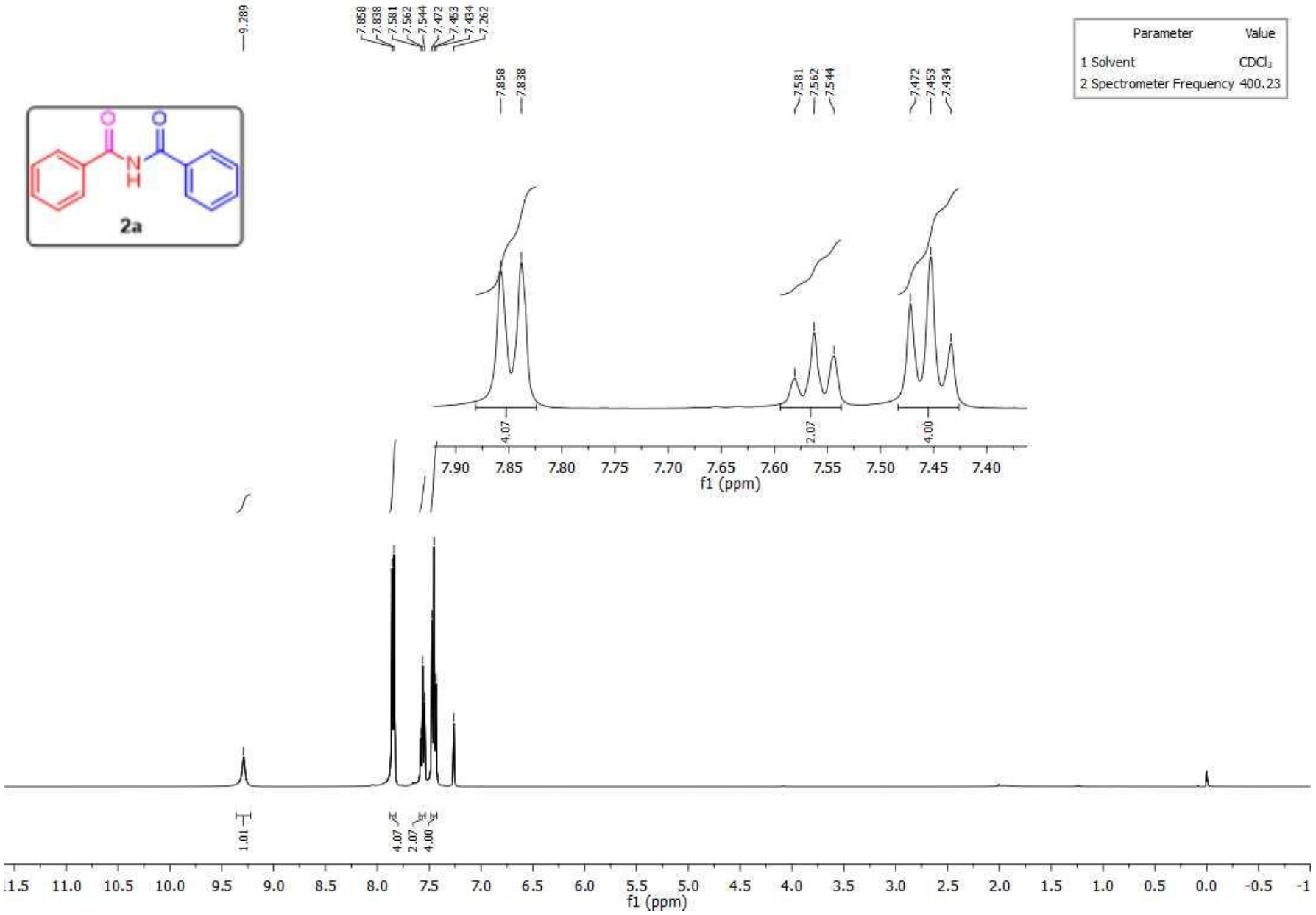


Fig. S72. [1]H NMR spectra of *N*-benzoylbenzamide **(2a).**

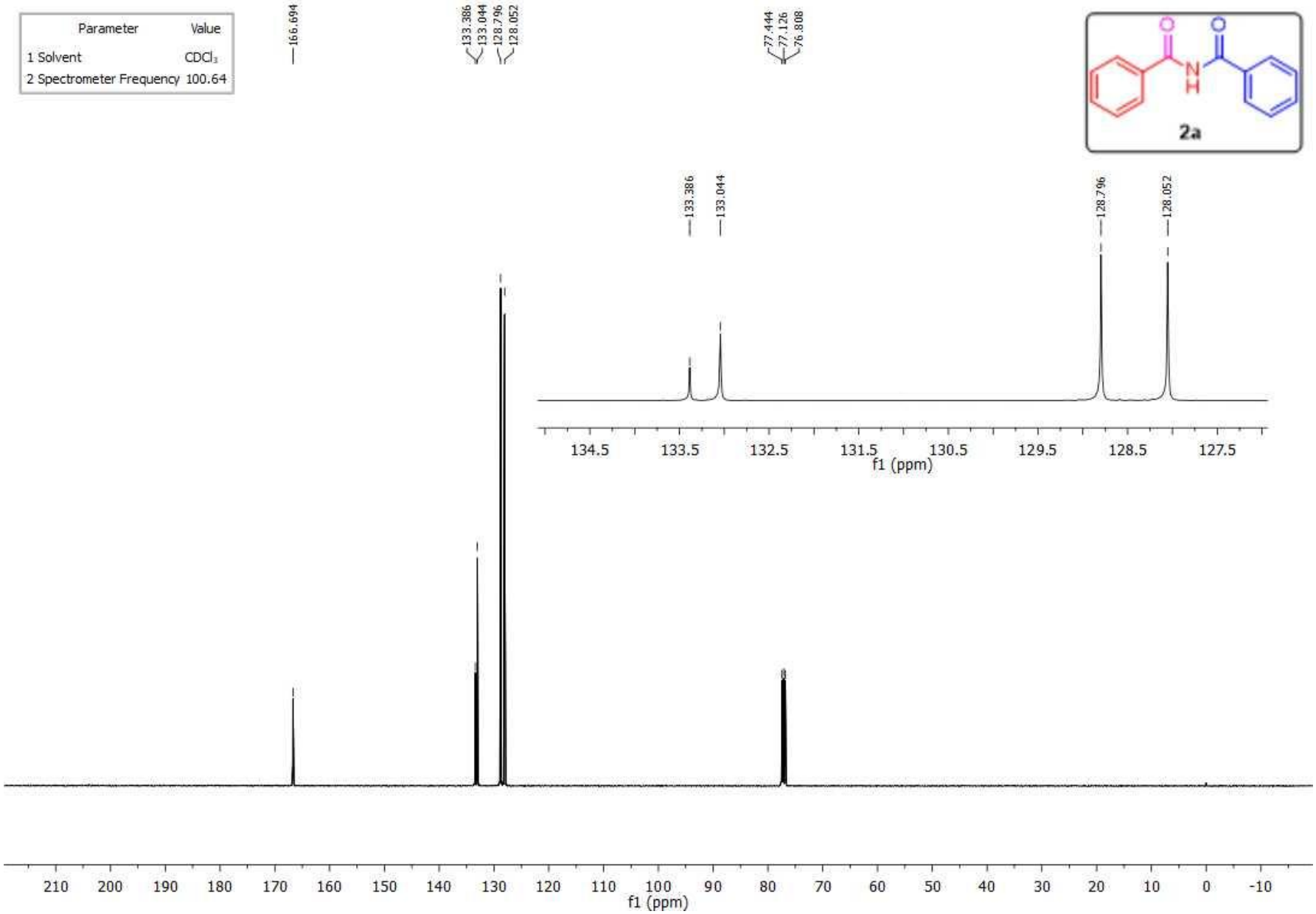


Fig. S73. ^{13}C NMR spectra of *N*-benzoylbenzamide **(2a).**

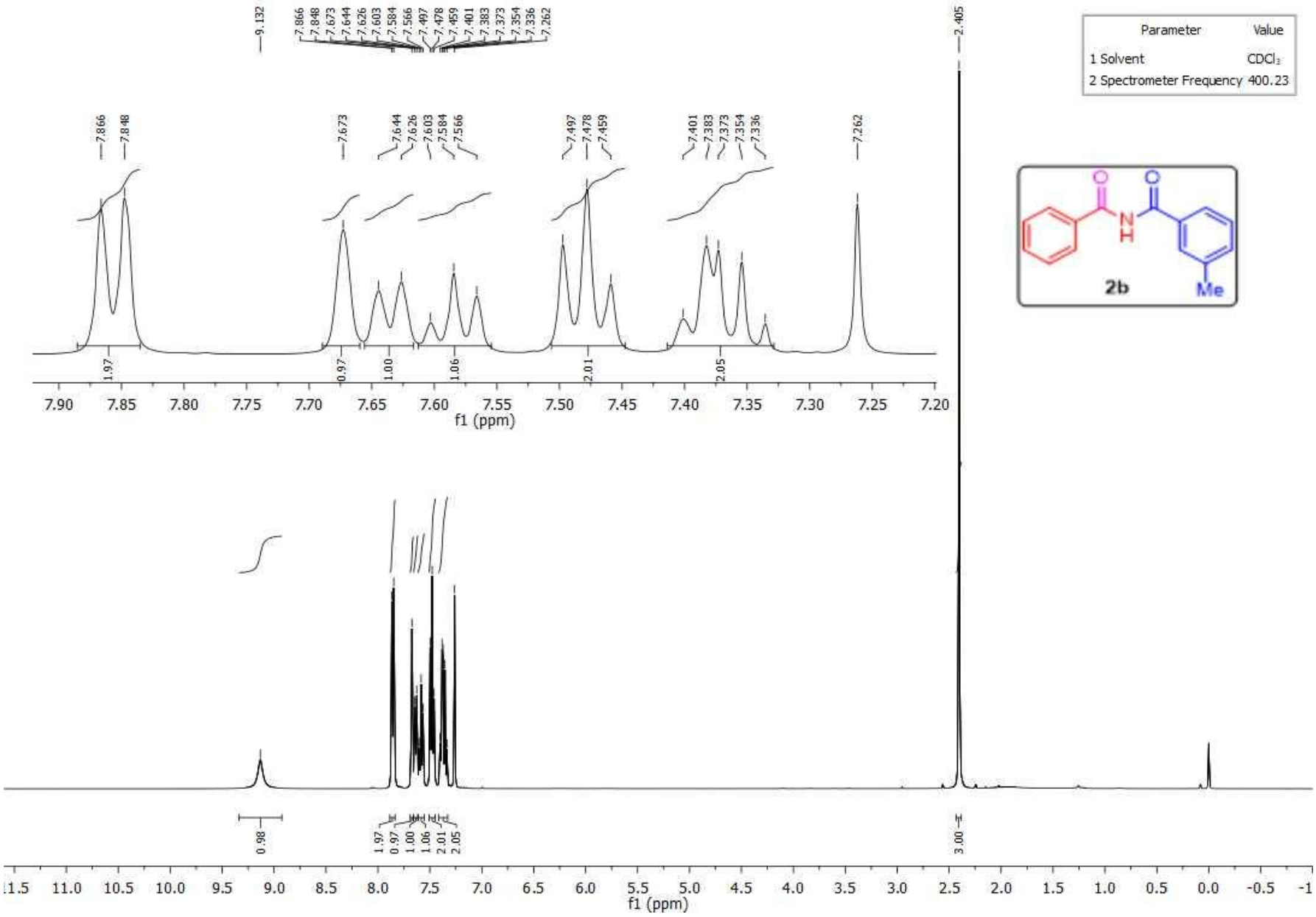


Fig. S74. [1]H NMR spectra of *N*-benzoyl-3-methylbenzamide **(2b).**

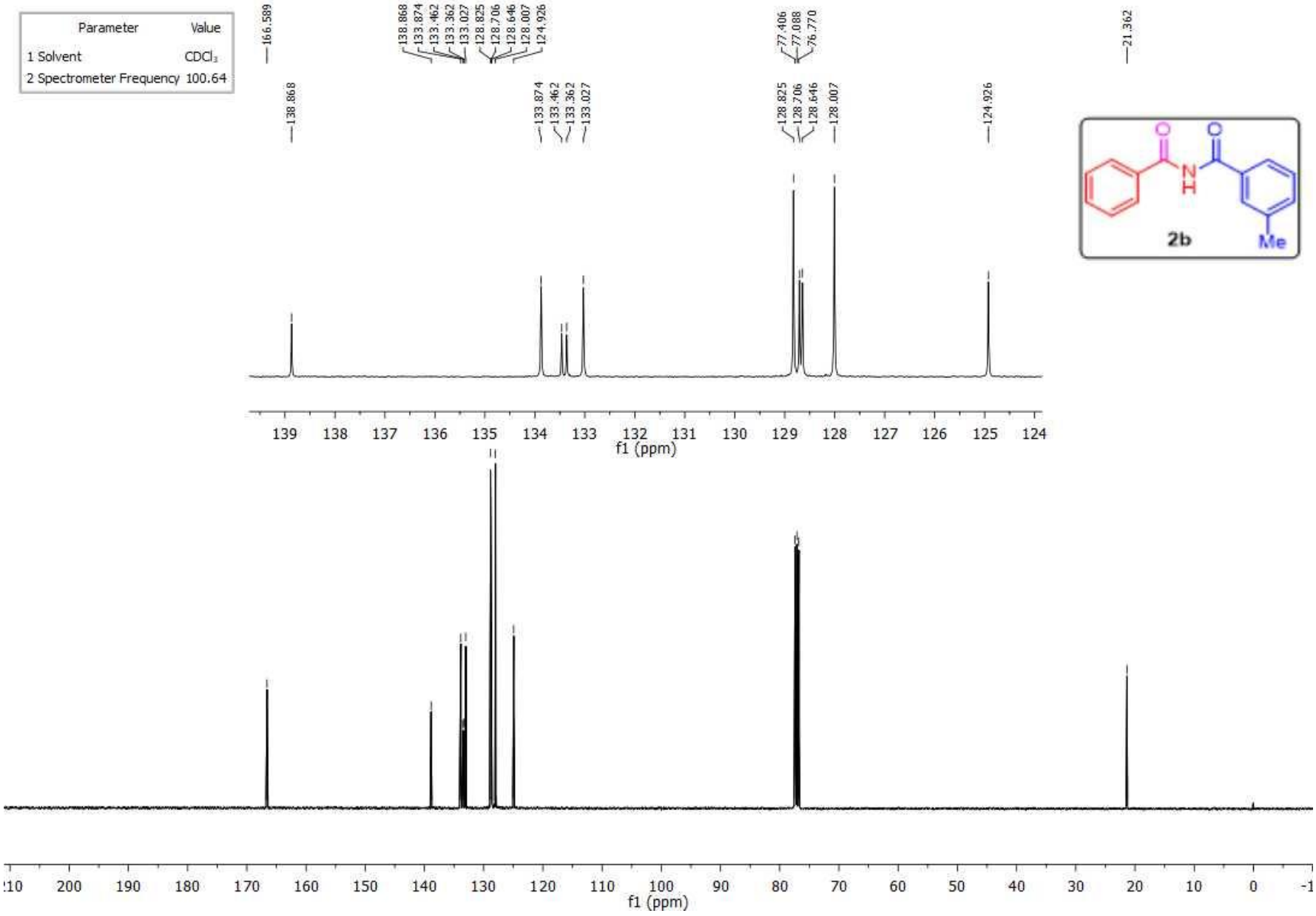


Fig. S75. ^{13}C NMR spectra of *N*-benzoyl-3-methylbenzamide **(2b).**

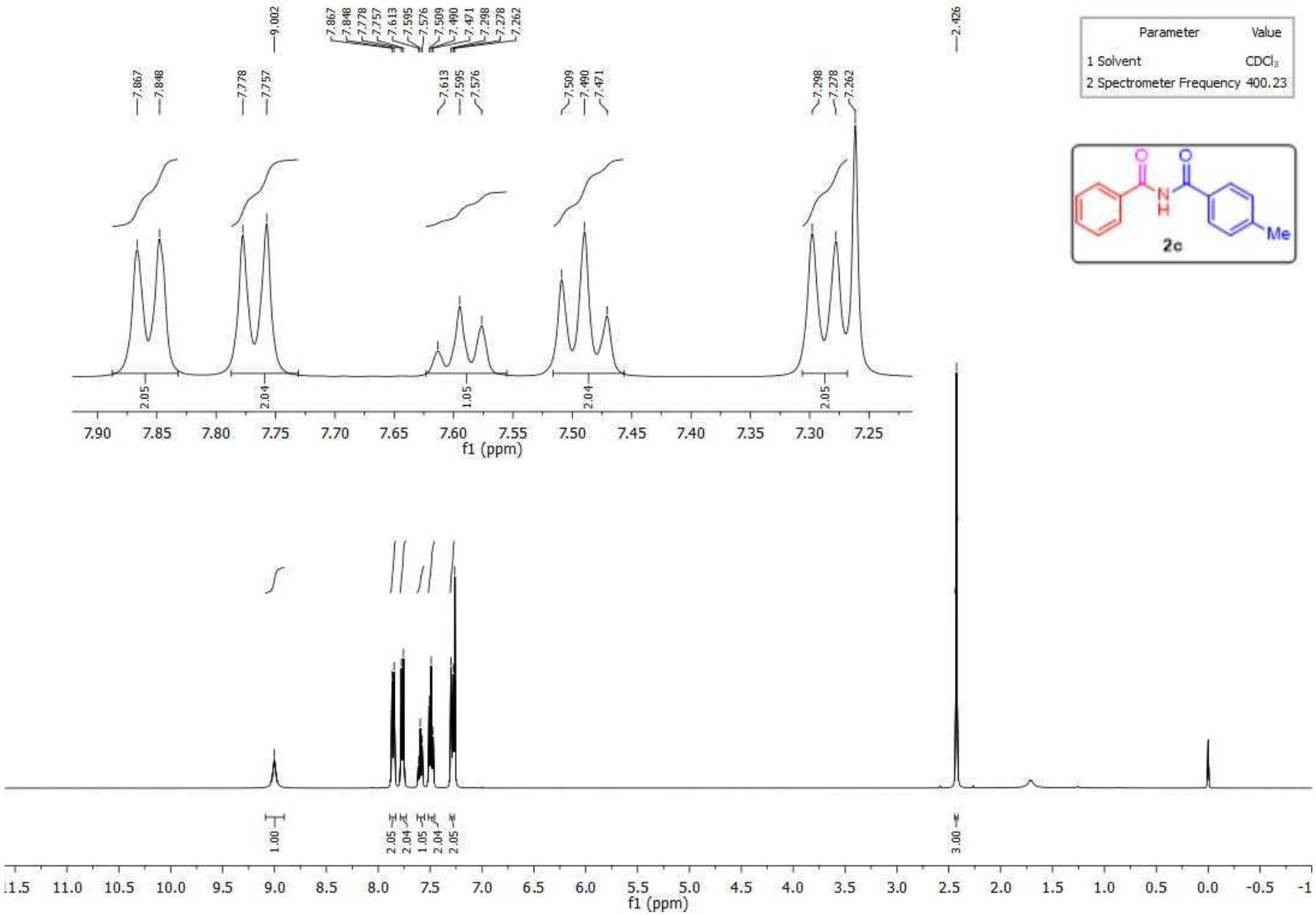


Fig. S76. ^{1}H NMR spectra of *N*-benzoyl-4-methylbenzamide **(2c).**

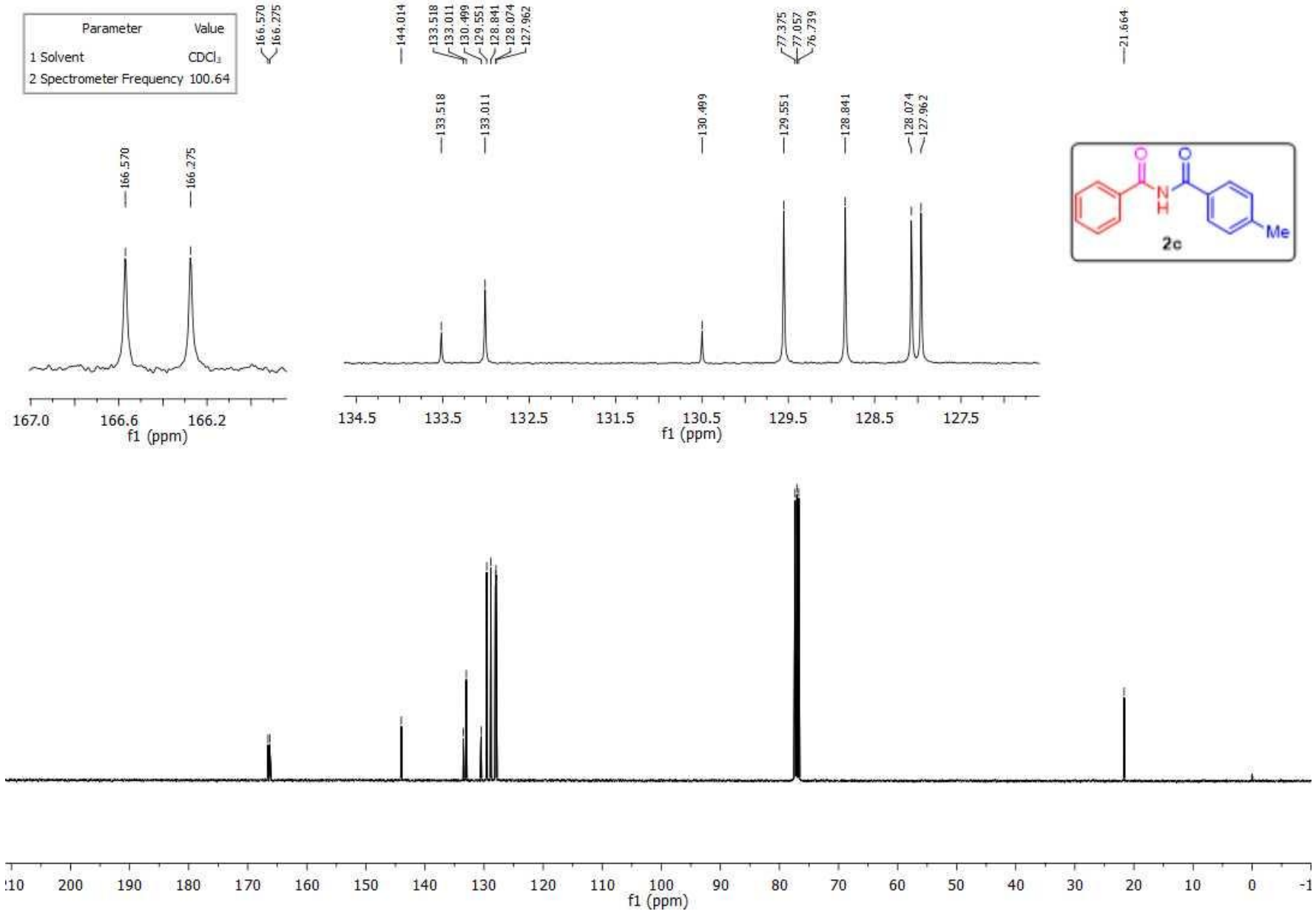


Fig. S77. ^{13}C NMR spectra of *N*-benzoyl-4-methylbenzamide **(2c).**

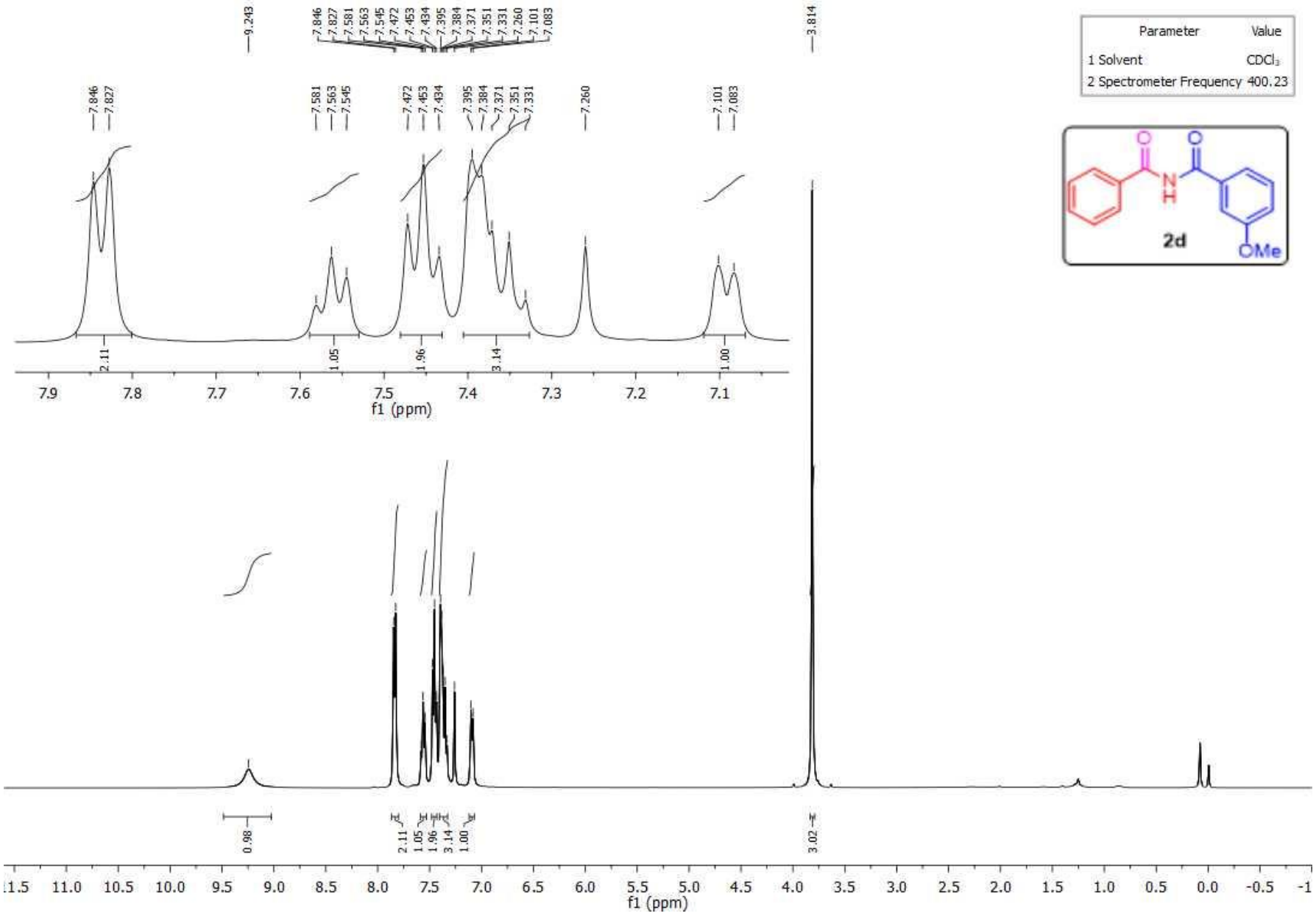


Fig. S78. [1]H NMR spectra of *N*-benzoyl-3-methoxybenzamide **(2d).**

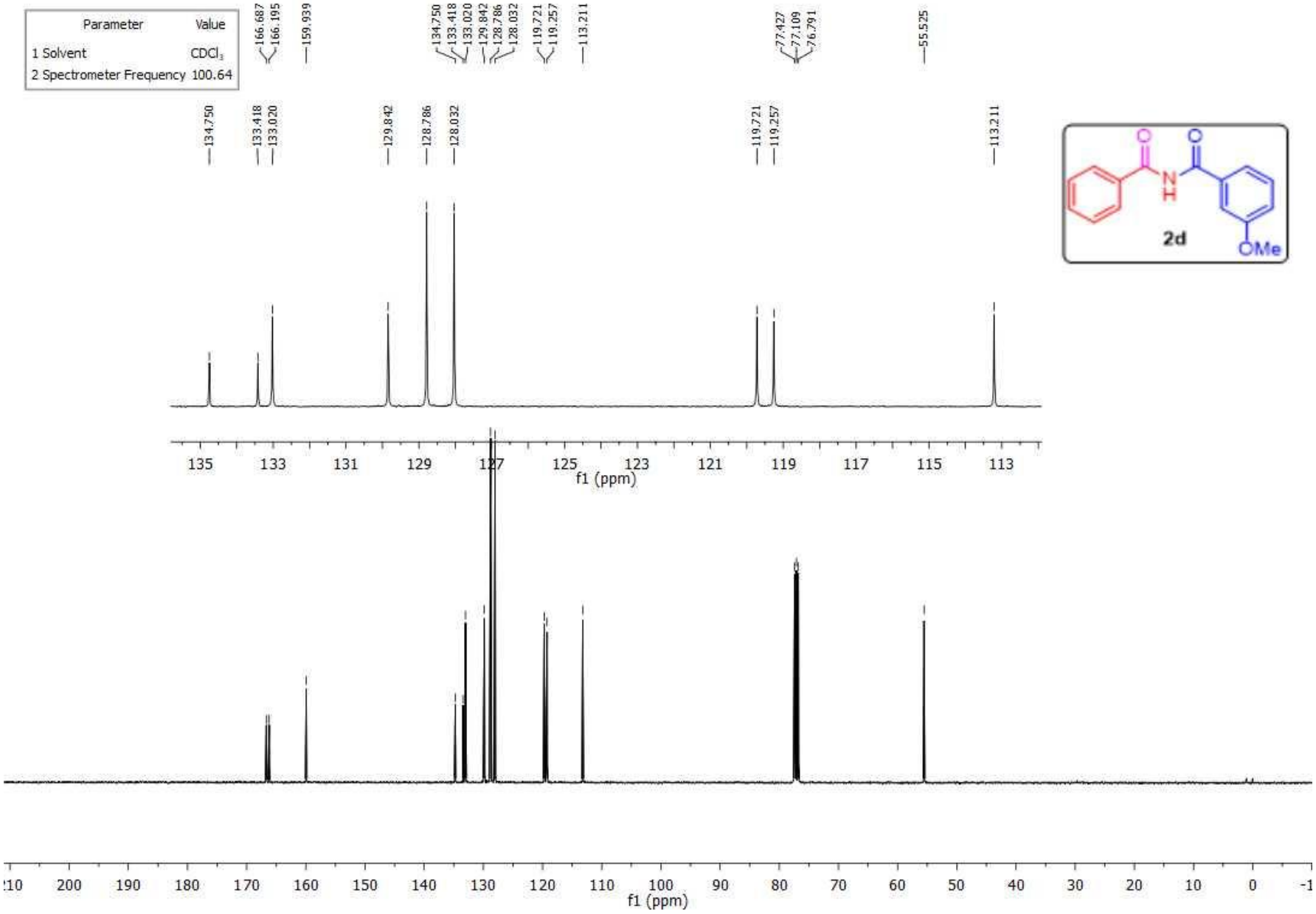


Fig. S79. ^{13}C NMR spectra of *N*-benzoyl-3-methoxybenzamide **(2d).**

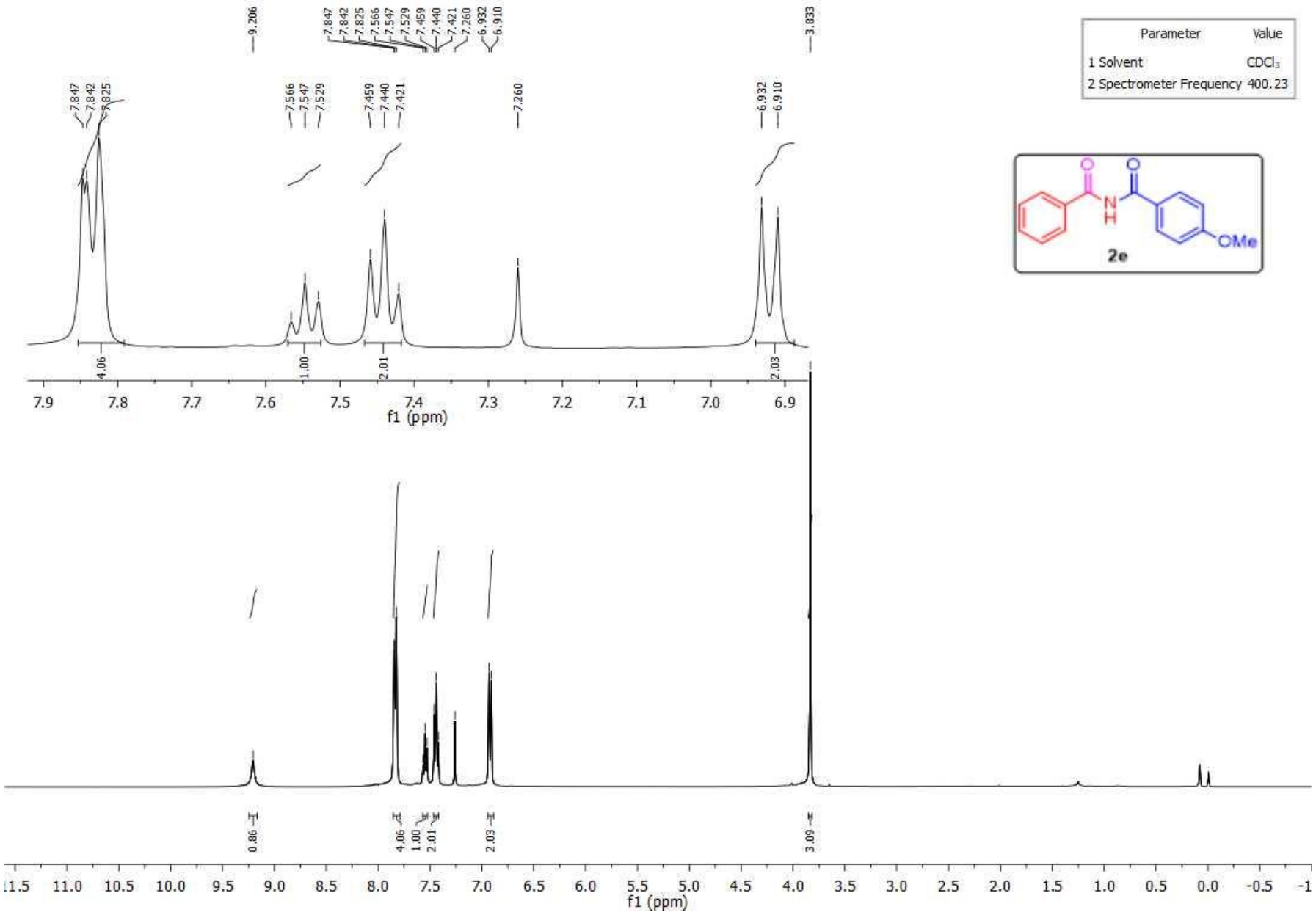


Fig. S80. ^{1}H NMR spectra of *N*-benzoyl-4-methoxybenzamide **(2e).**

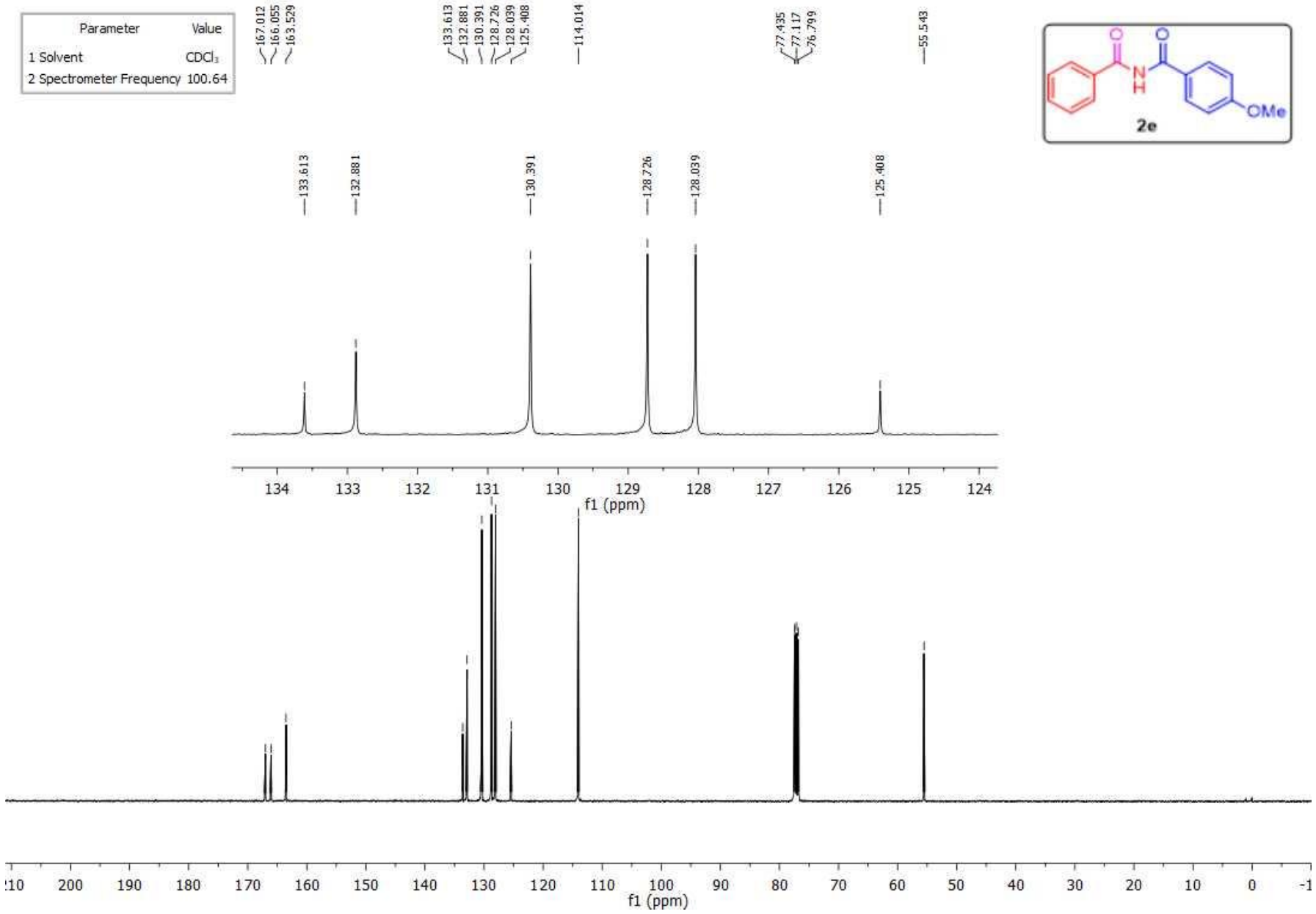


Fig. S81. ^{13}C NMR spectra of *N*-benzoyl-4-methoxybenzamide **(2e).**

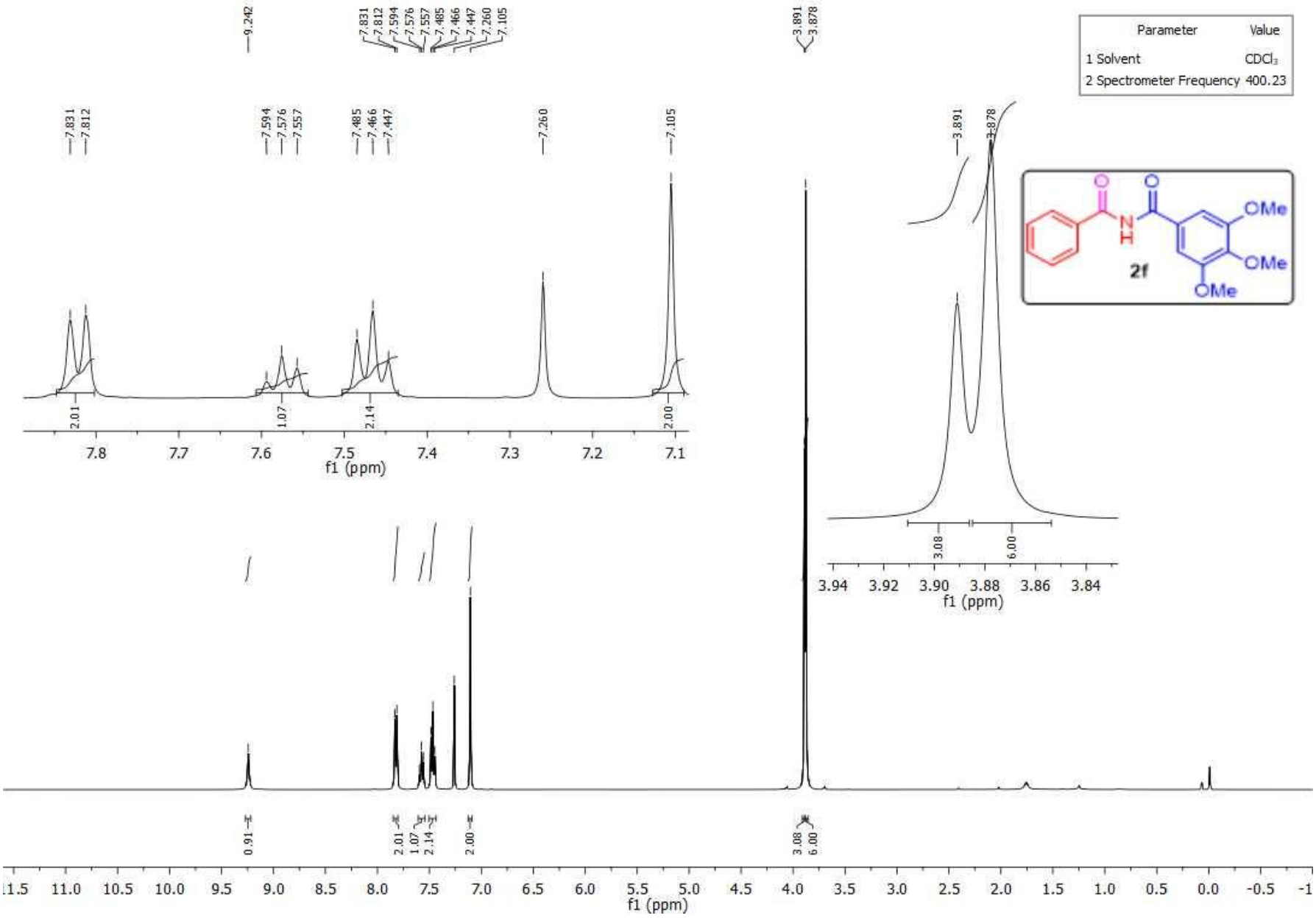


Fig. S82. [1]H NMR spectra of *N*-benzoyl-3,4,5-trimethoxybenzamide **(2f).**

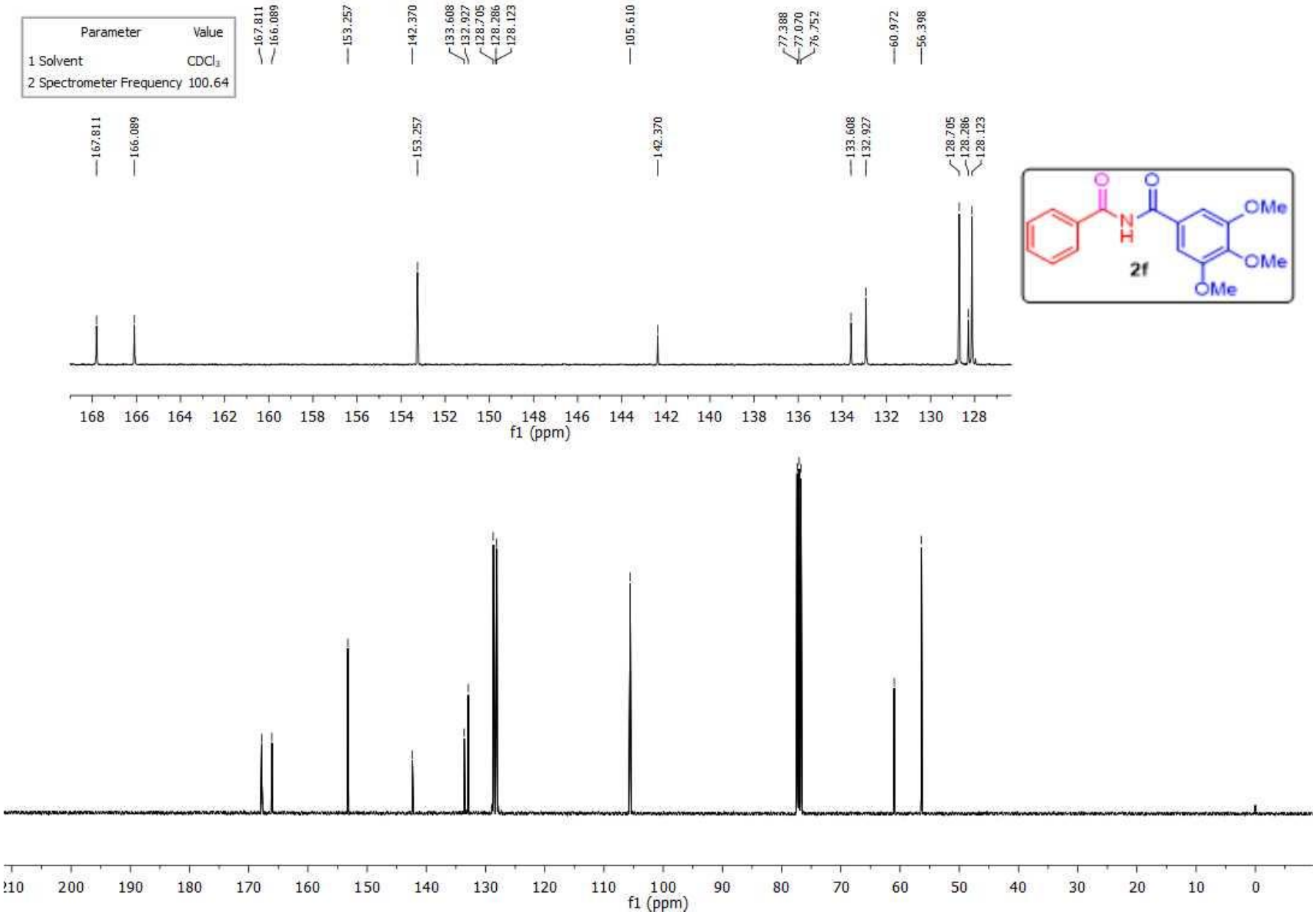


Fig. S83. ^{13}C NMR spectra of *N*-benzoyl-3,4,5-trimethoxybenzamide **(2f).**

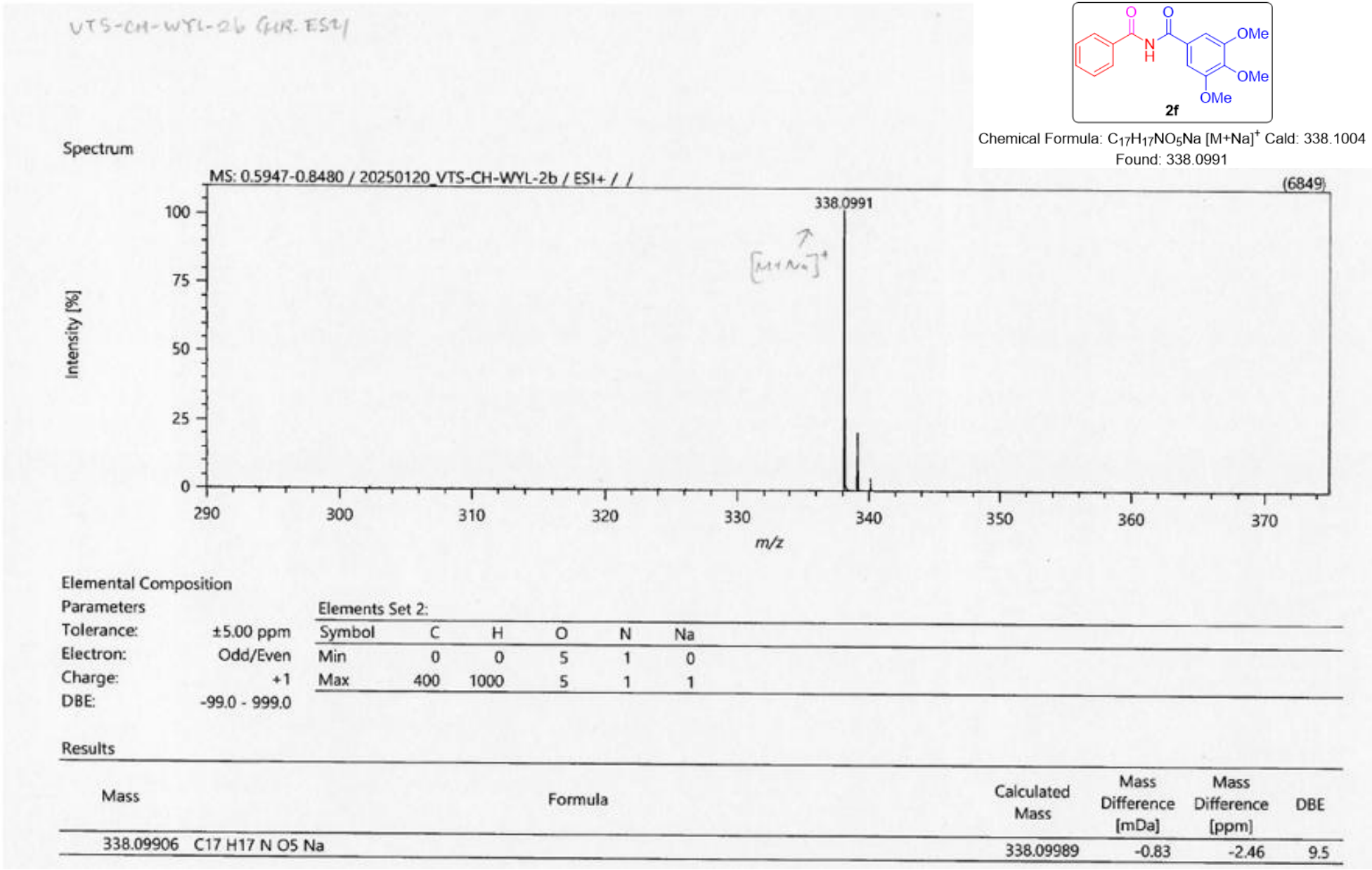


Fig. S84. HRMS data of *N*-benzoyl-3,4,5-trimethoxybenzamide **(2f).**

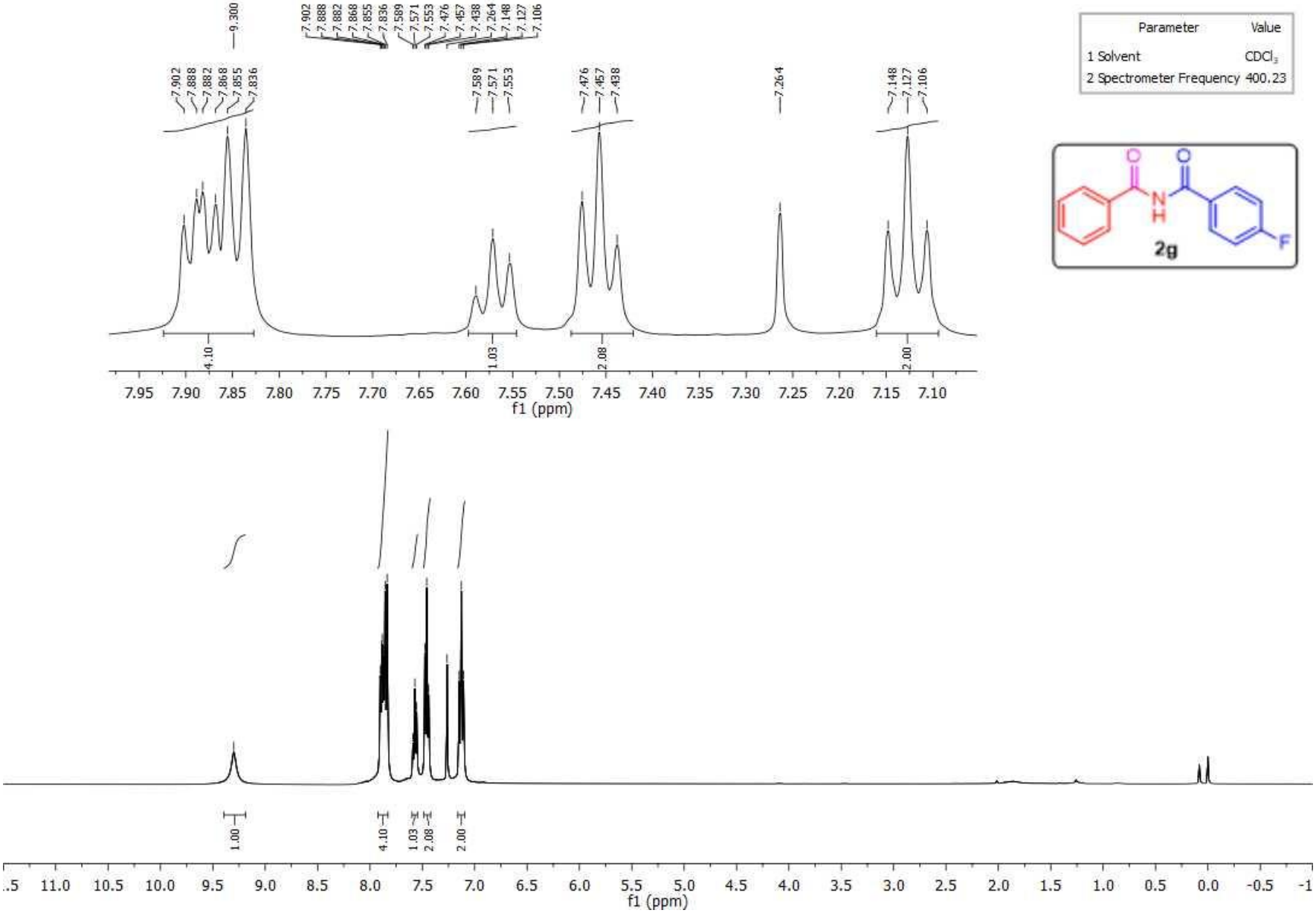


Fig. S85. ^{1}H NMR spectra of *N*-benzoyl-4-fluorobenzamide **(2g).**

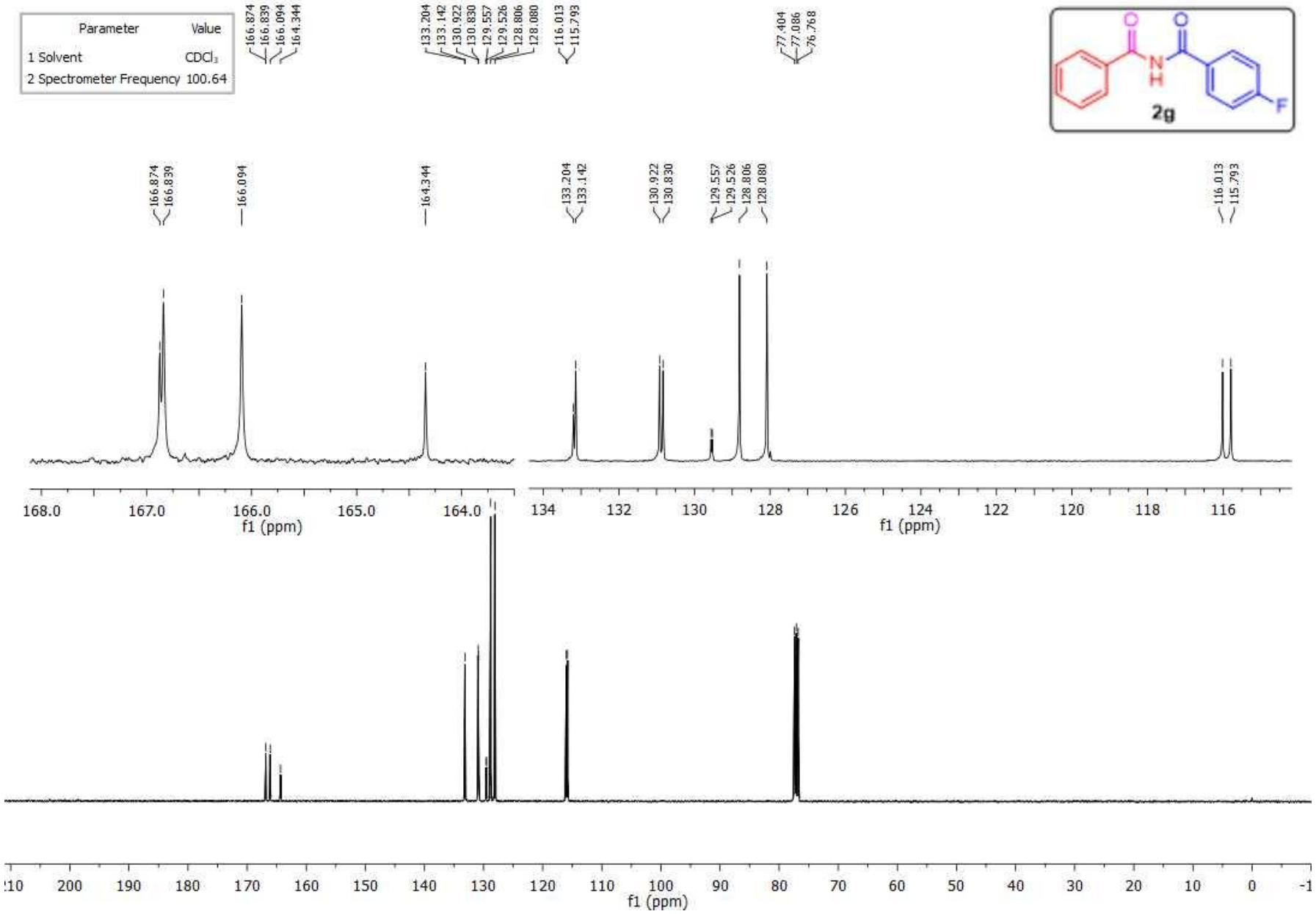


Fig. S86. ^{13}C NMR spectra of *N*-benzoyl-4-fluorobenzamide **(2g).**

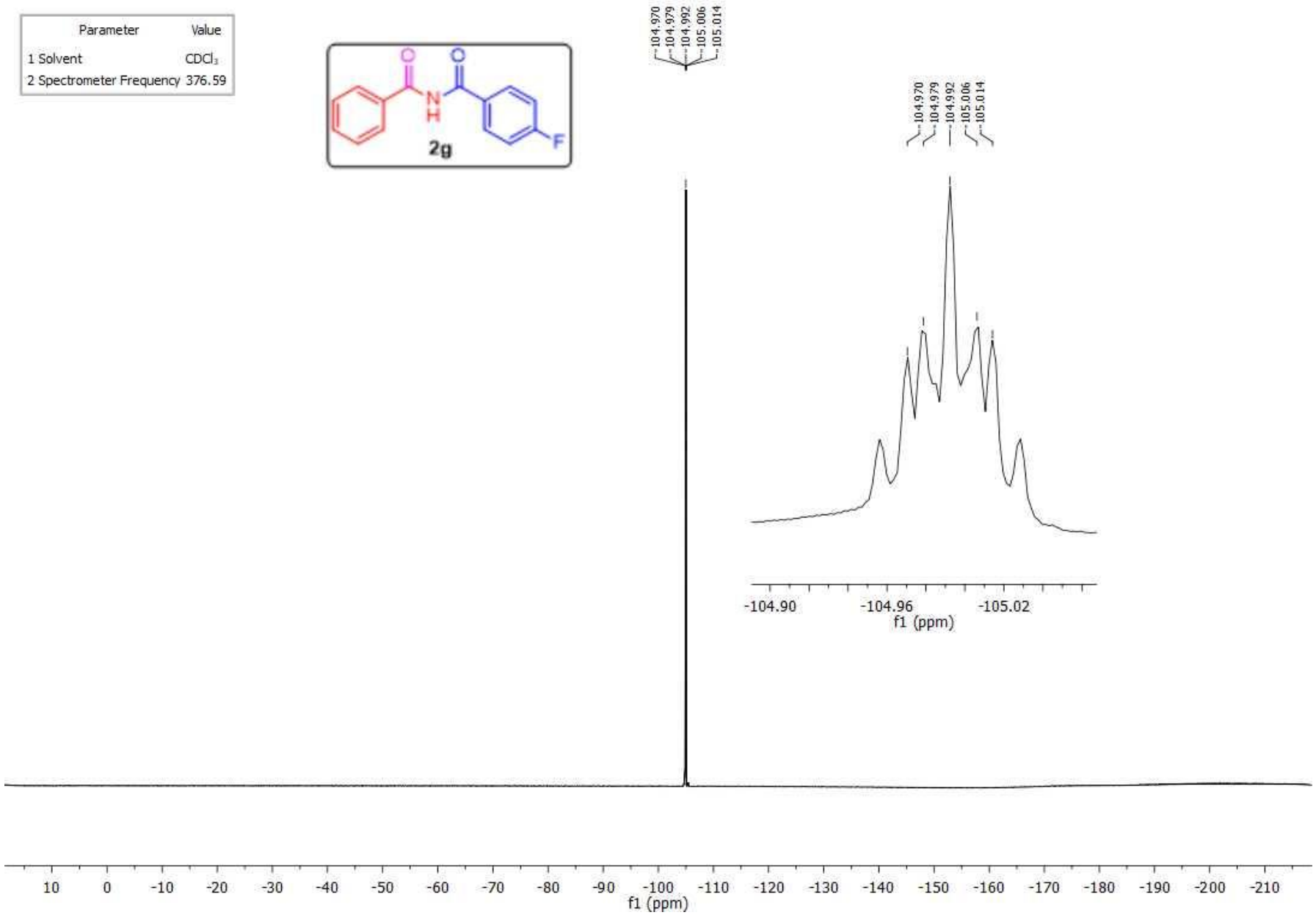


Fig. S87. ^{19}F NMR spectra of *N*-benzoyl-4-fluorobenzamide **(2g).**

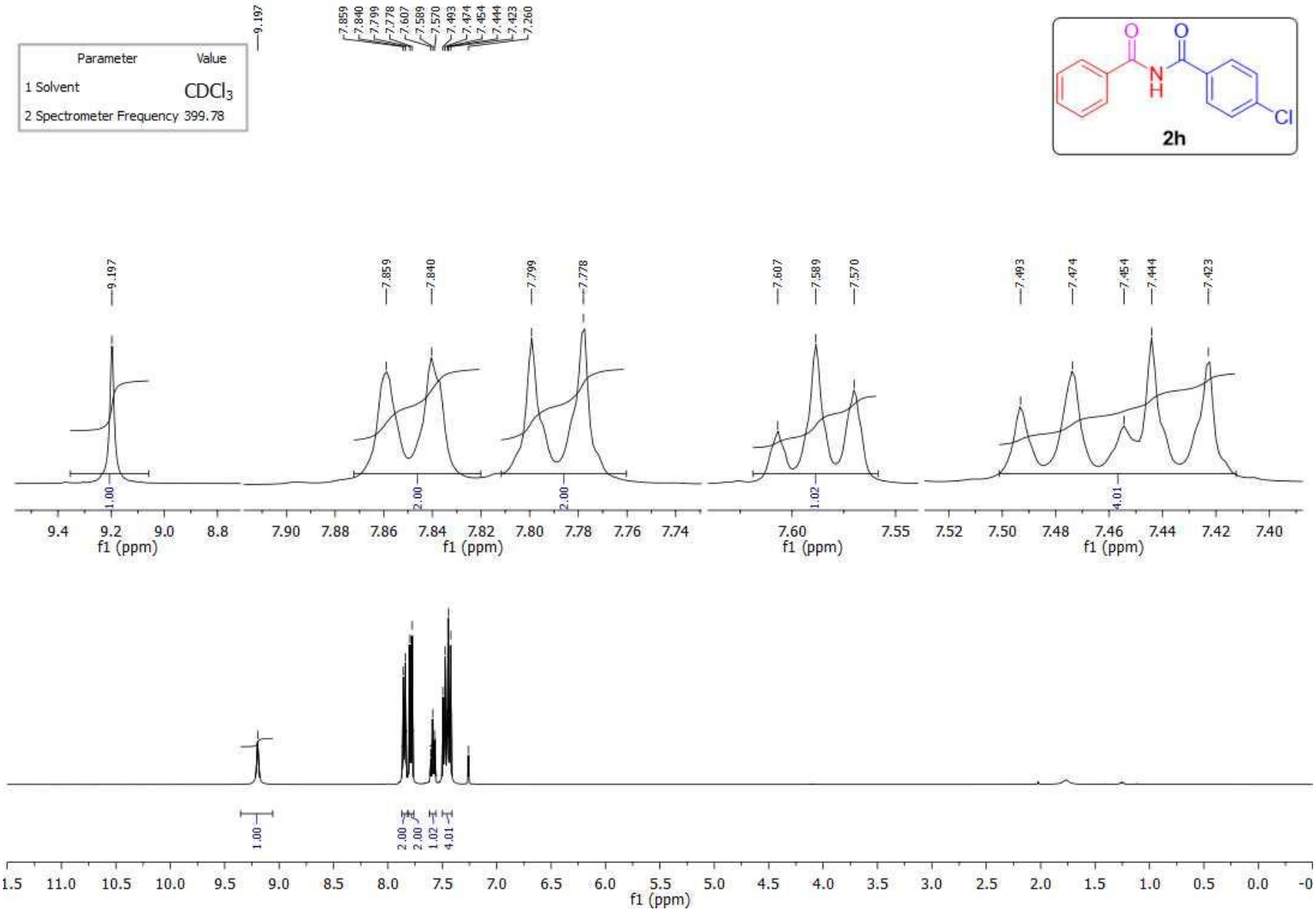


Fig. S88. ^{1}H NMR spectra of *N*-benzoyl-4-chlorobenzamide **(2h).**

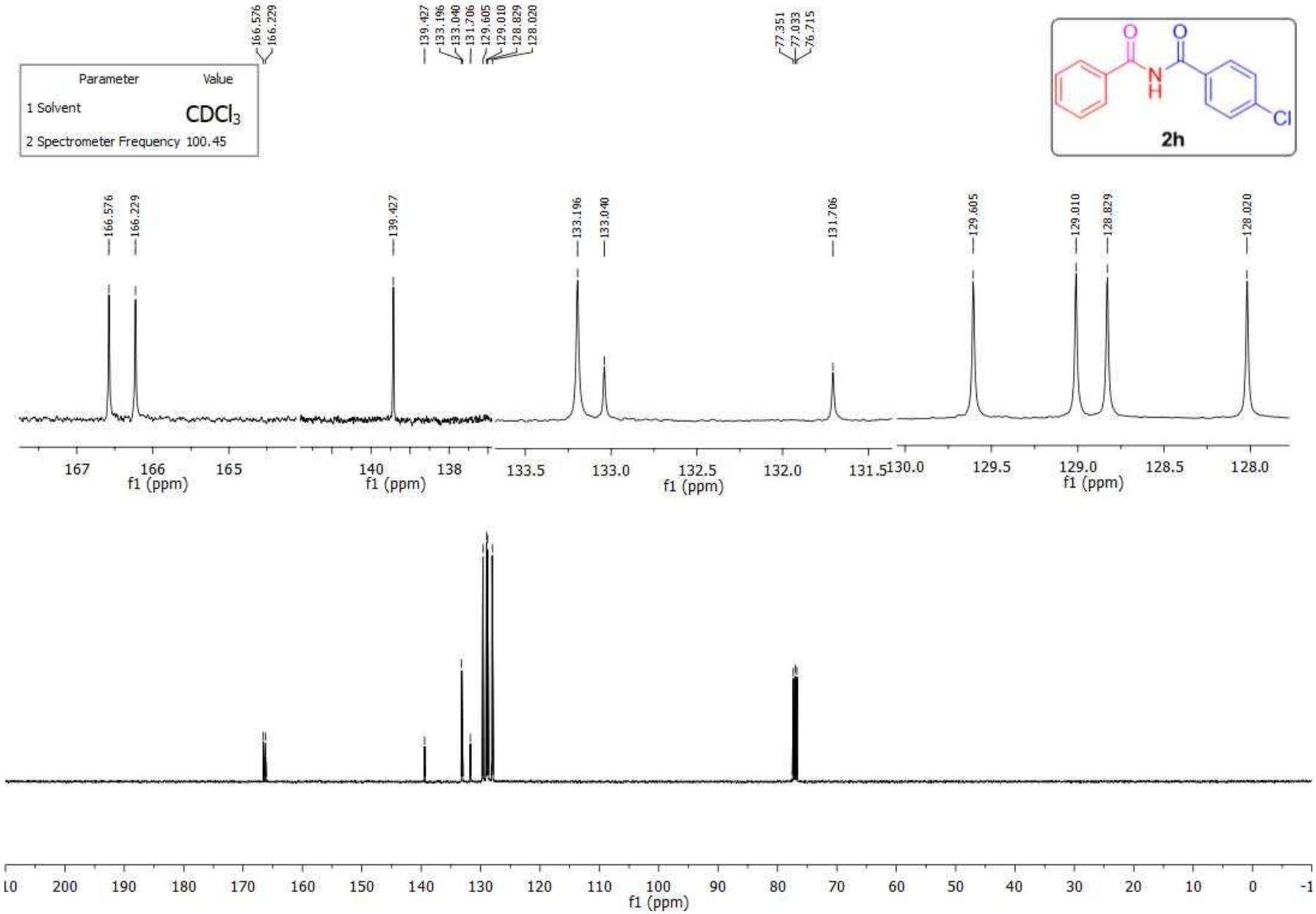


Fig. S89. ^{13}C NMR spectra of *N*-benzoyl-4-chlorobenzamide **(2h).**

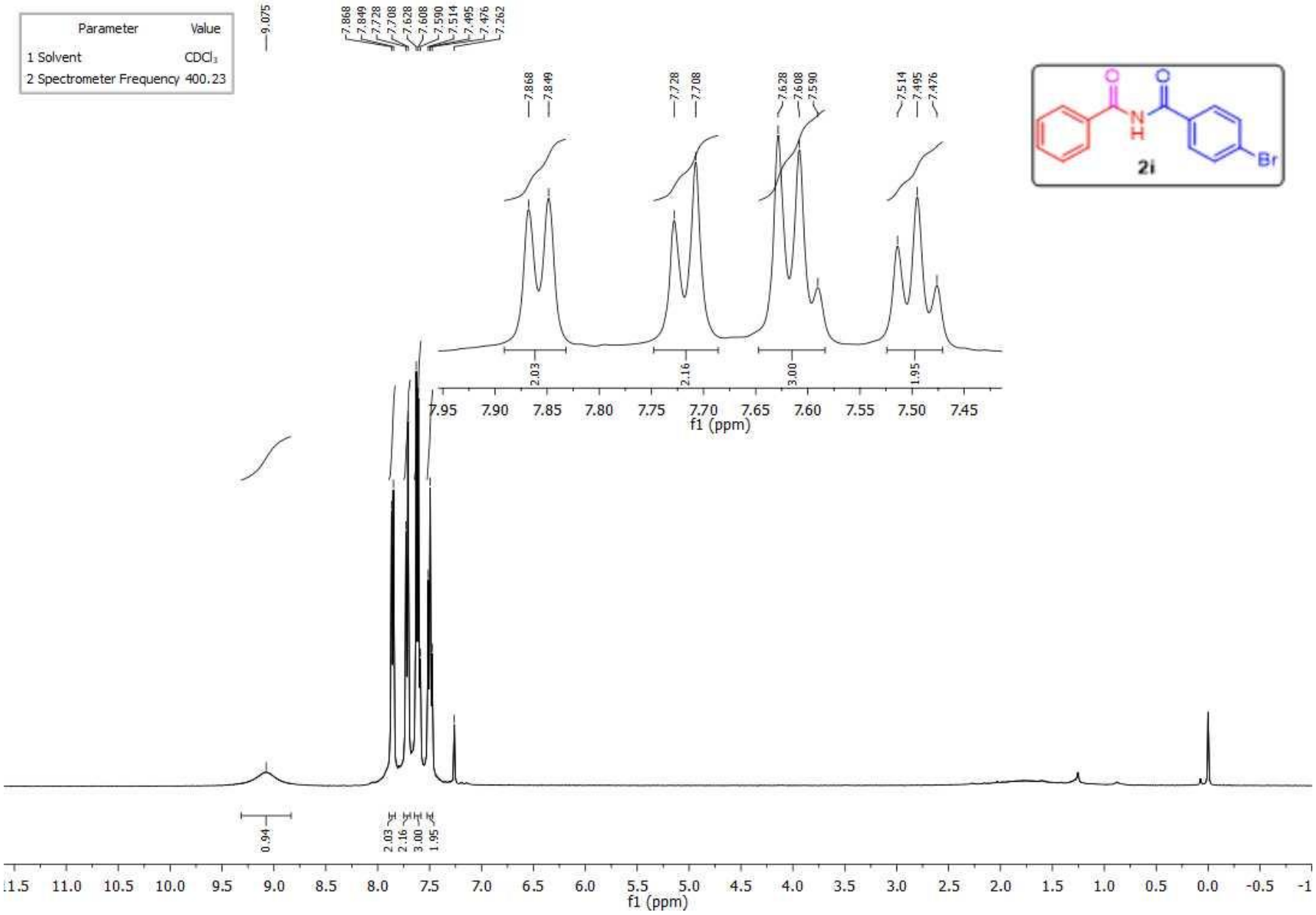


Fig. S90. ^{1}H NMR spectra of *N*-benzoyl-4-bromobenzamide **(2i).**

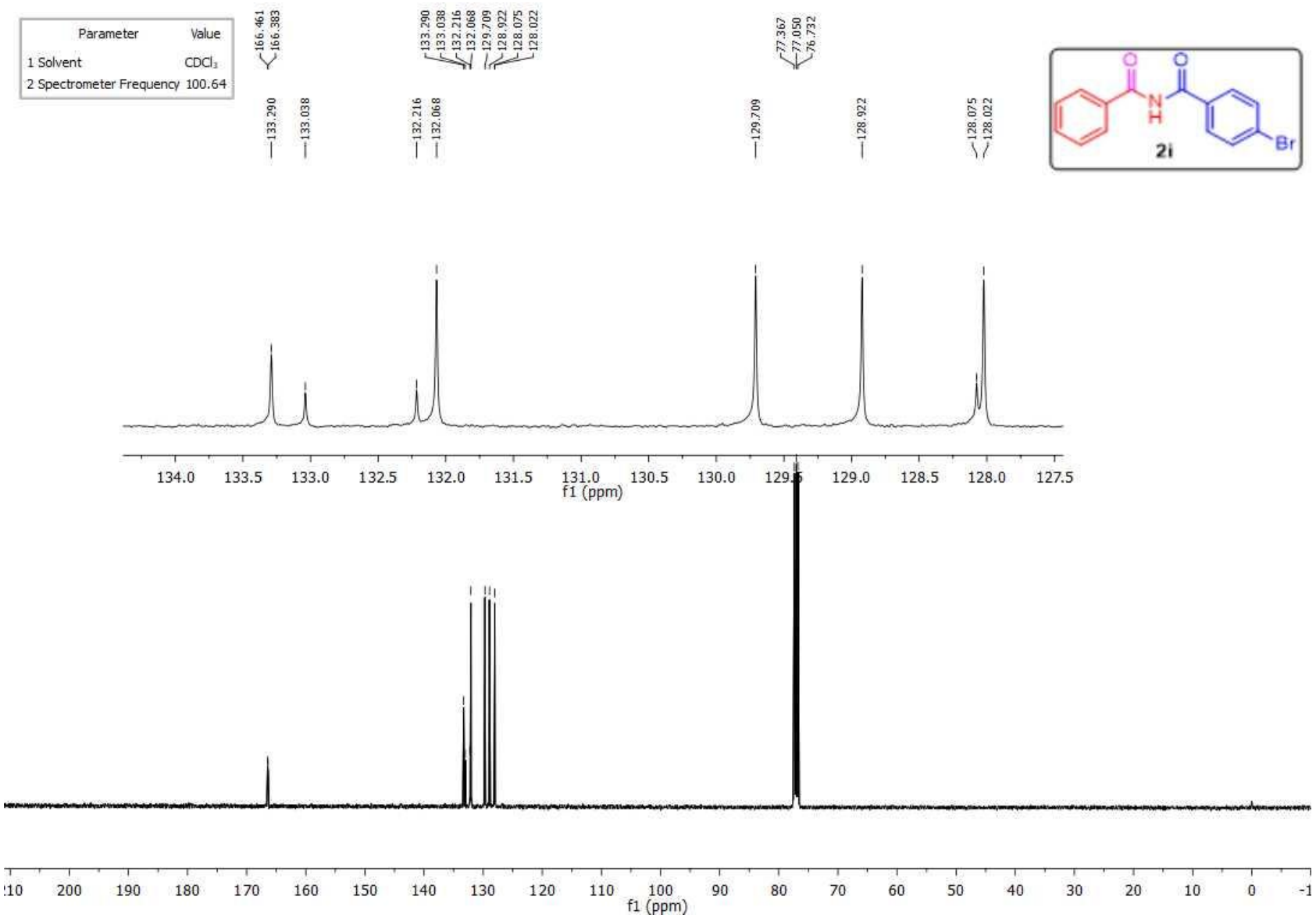


Fig. S91. ^{13}C NMR spectra of *N*-benzoyl-4-bromobenzamide **(2i).**

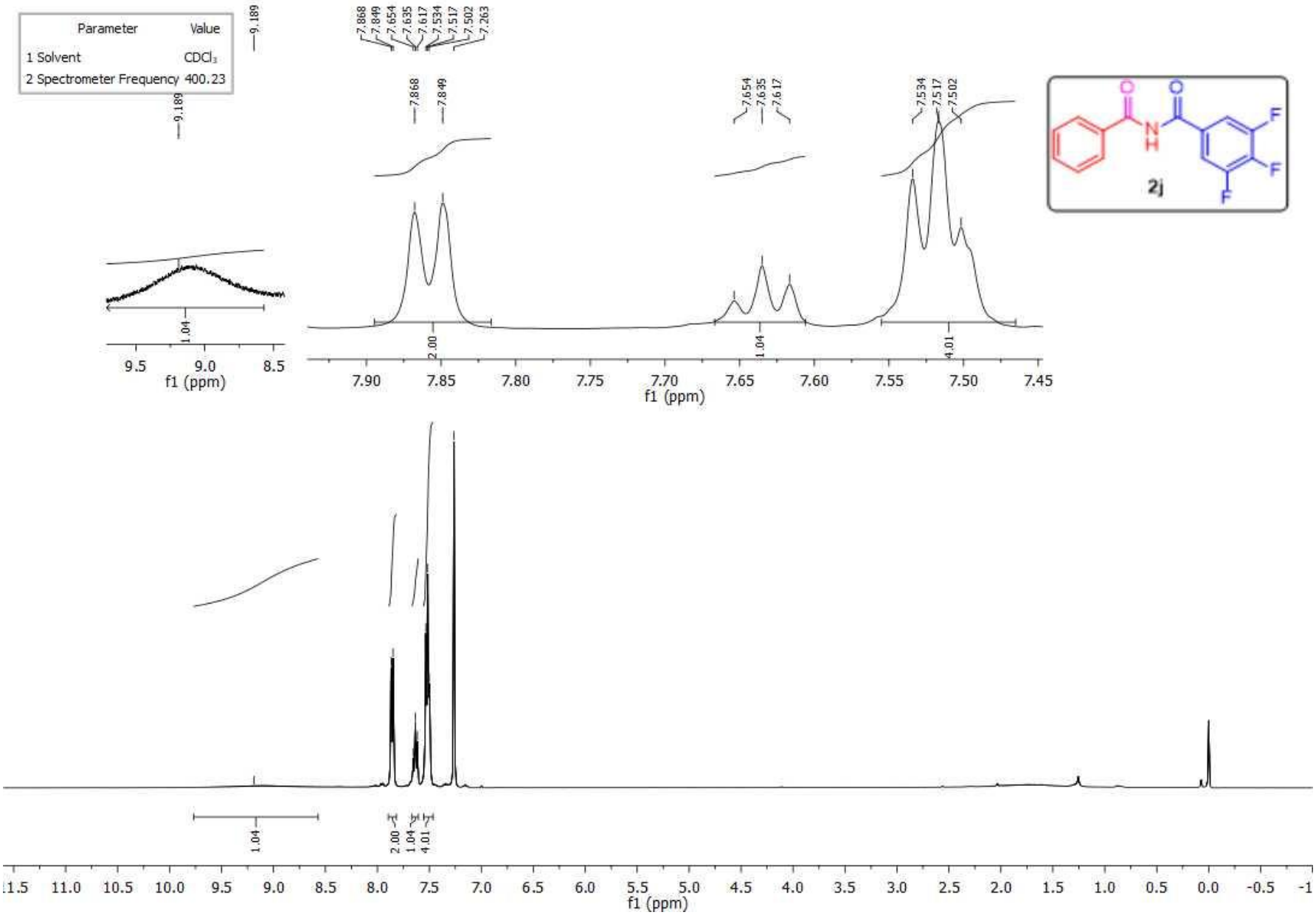


Fig. S92. ^{1}H NMR spectra of *N*-benzoyl-3,4,5-trifluorobenzamide **(2j).**

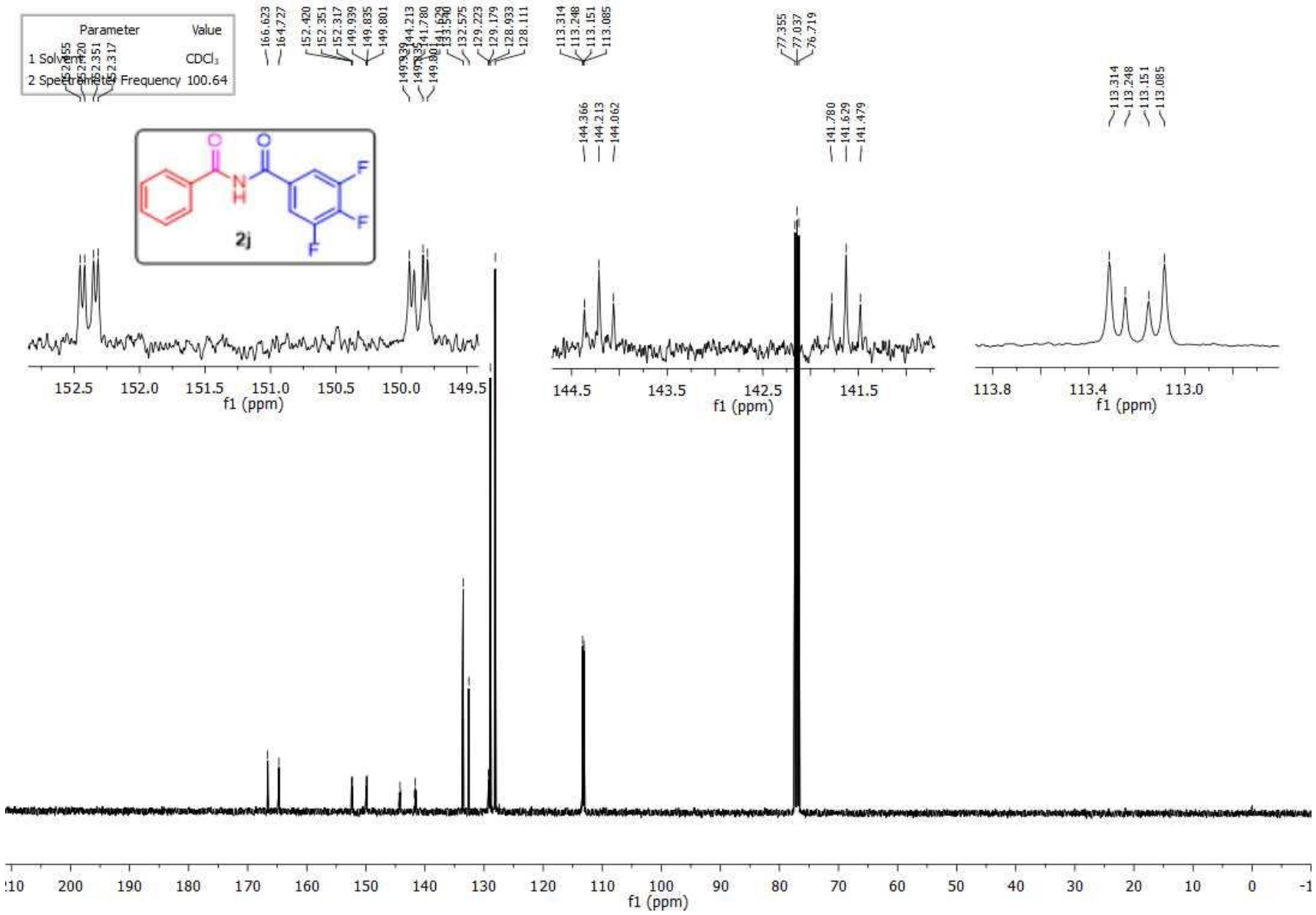


Fig. S93. ^{13}C NMR spectra of *N*-benzoyl-3,4,5-trifluorobenzamide **(2j).**

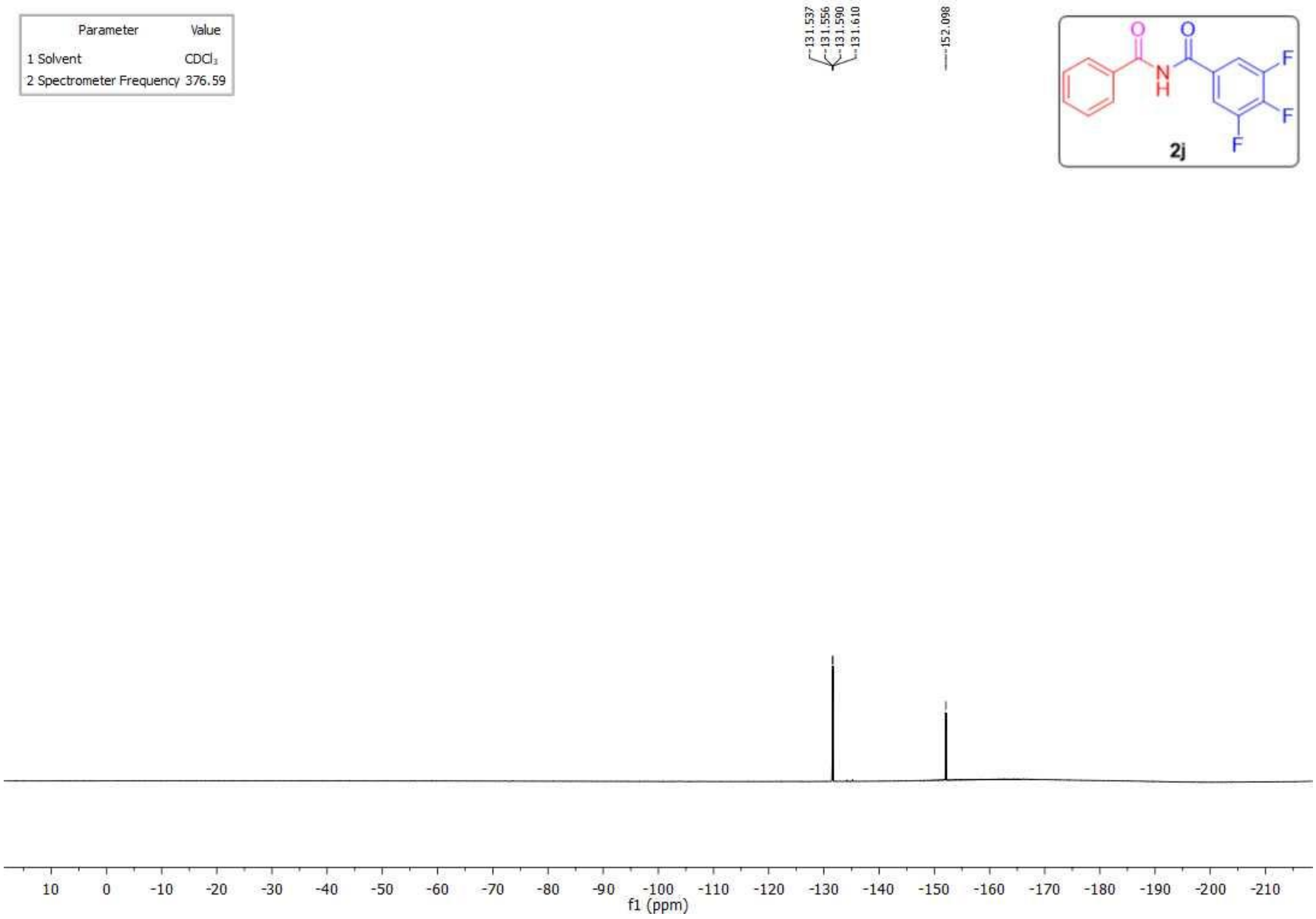


Fig. S94. ^{19}F NMR spectra of *N*-benzoyl-3,4,5-trifluorobenzamide **(2j).**

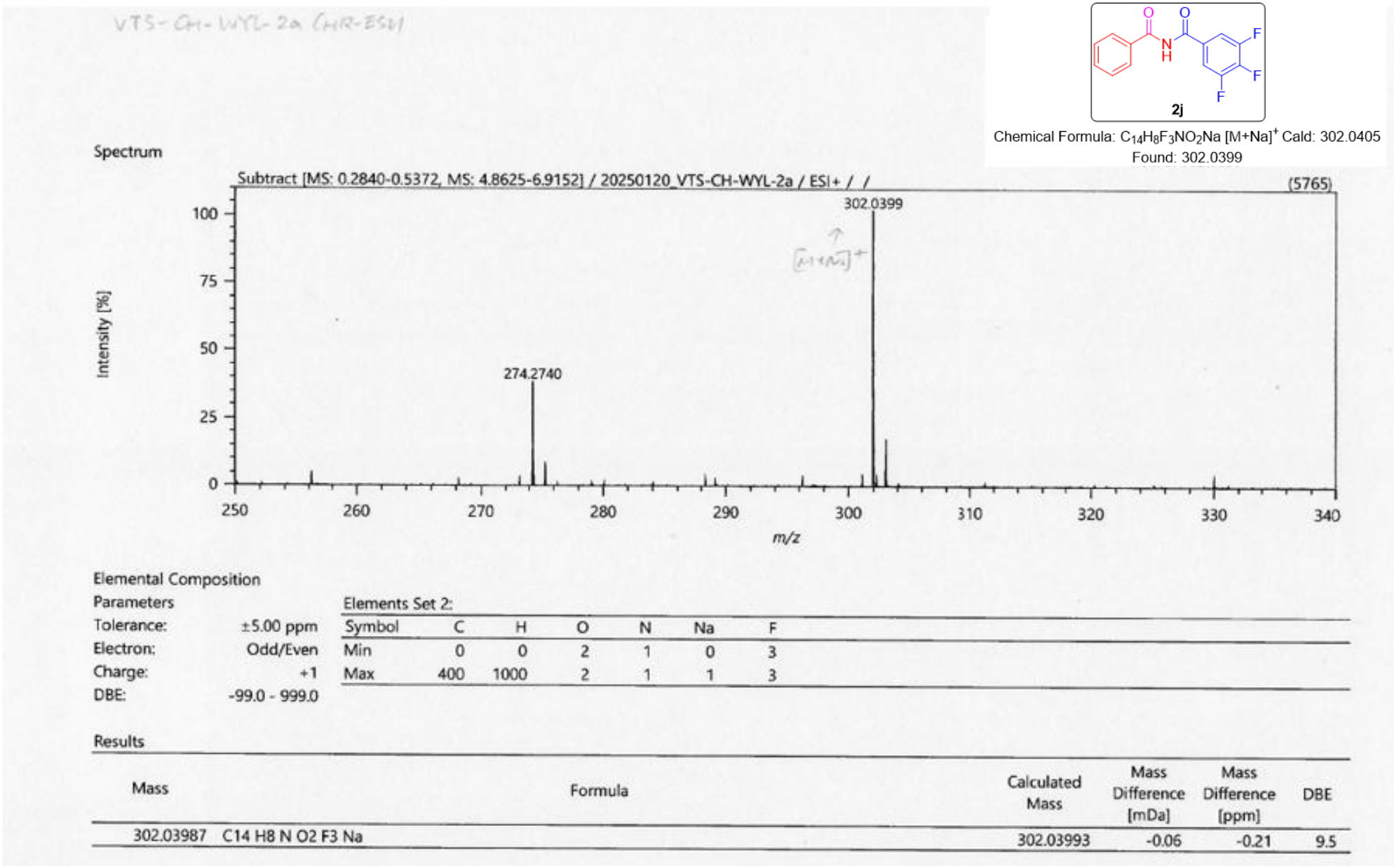


Fig. S95. HRMS data of *N*-benzoyl-3,4,5-trifluorobenzamide **(2j).**

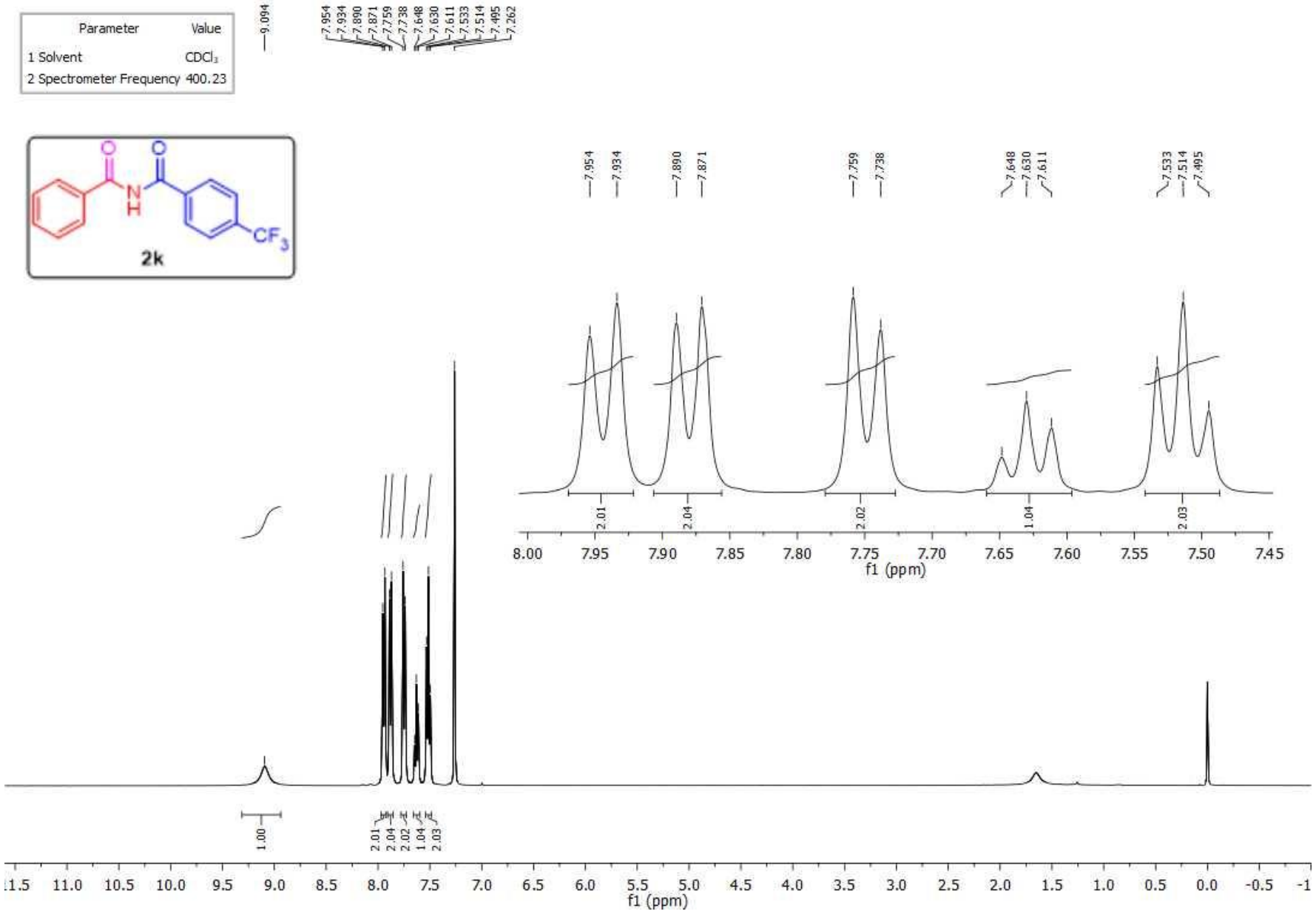


Fig. S96. [1]H NMR spectra of *N*-benzoyl-4-(trifluoromethyl)benzamide **(2k).**

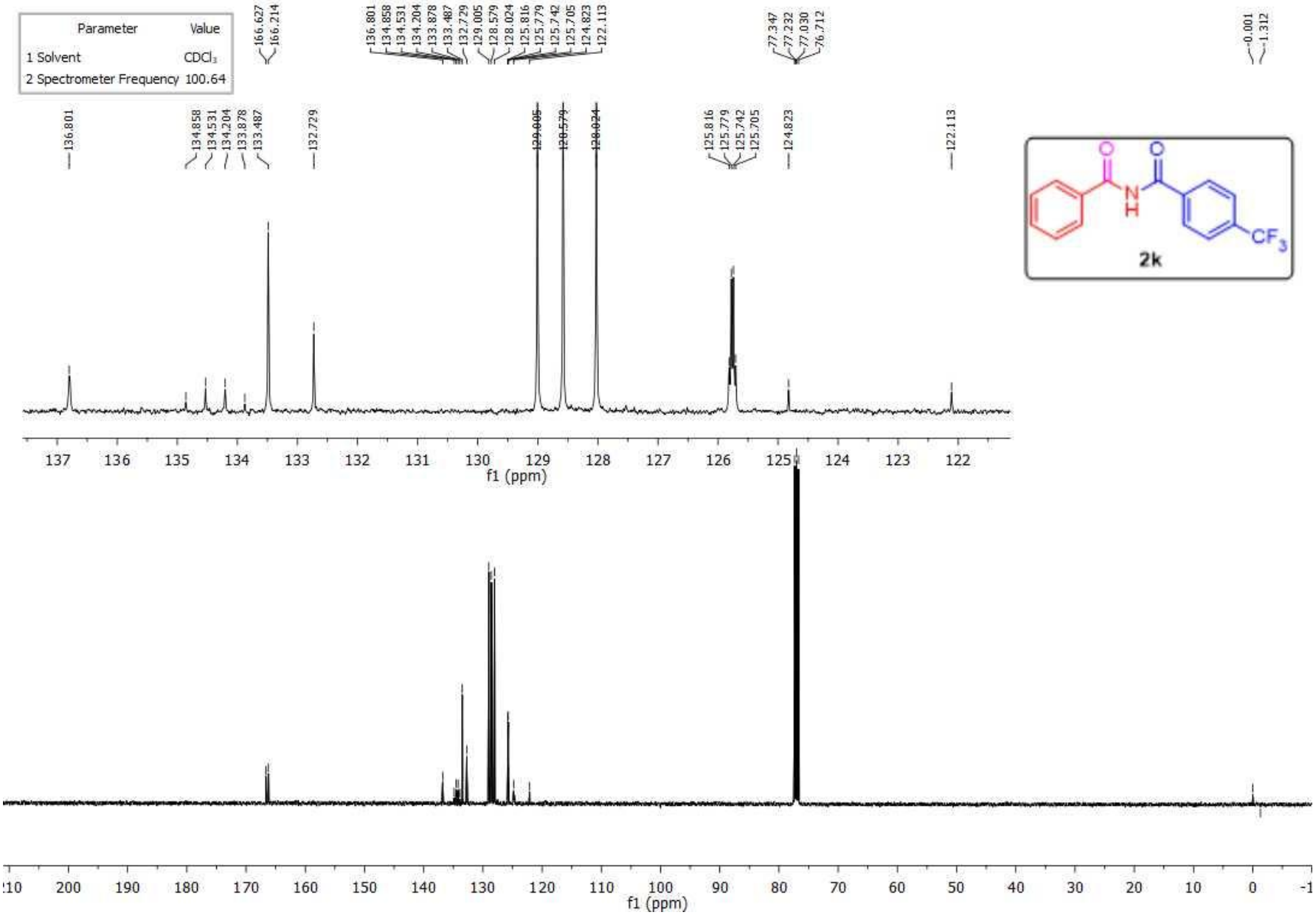


Fig. S97. ^{13}C NMR spectra of *N*-benzoyl-4-(trifluoromethyl)benzamide **(2k).**

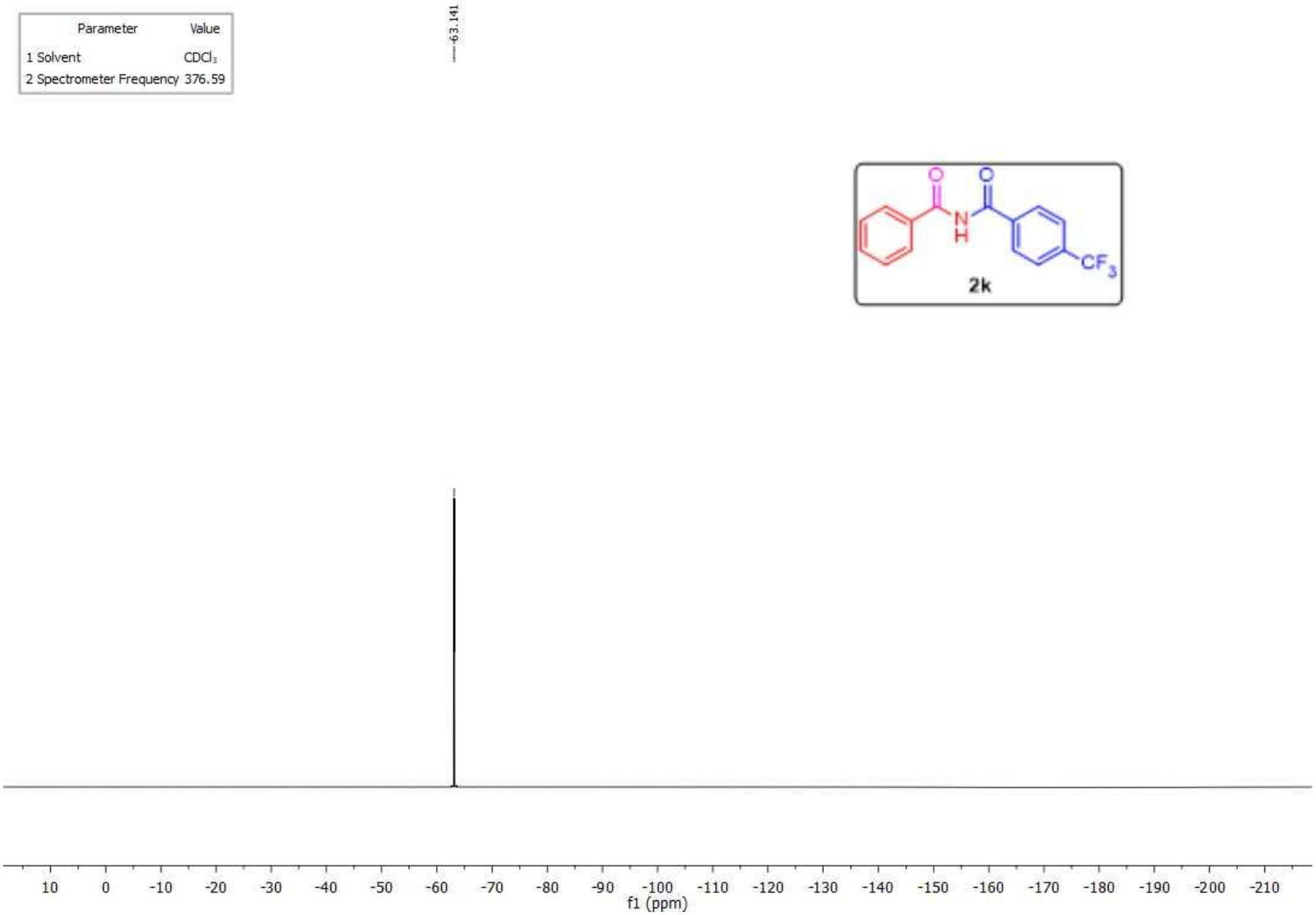


Fig. S98. ^{19}F NMR spectra of *N*-benzoyl-4-(trifluoromethyl)benzamide **(2k).**

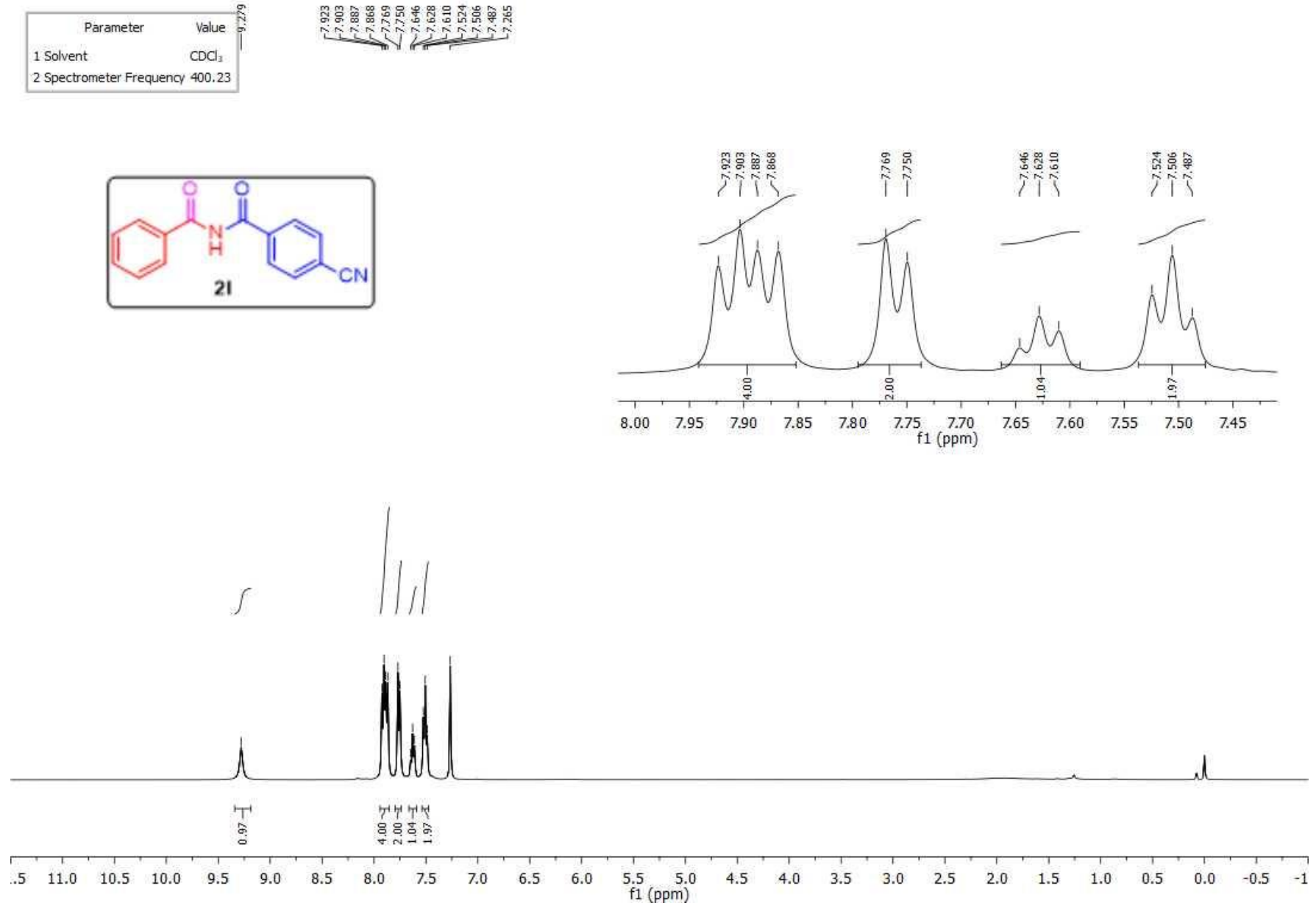


Fig. S99. [1]H NMR spectra of *N*-benzoyl-4-cyanobenzamide **(2l).**

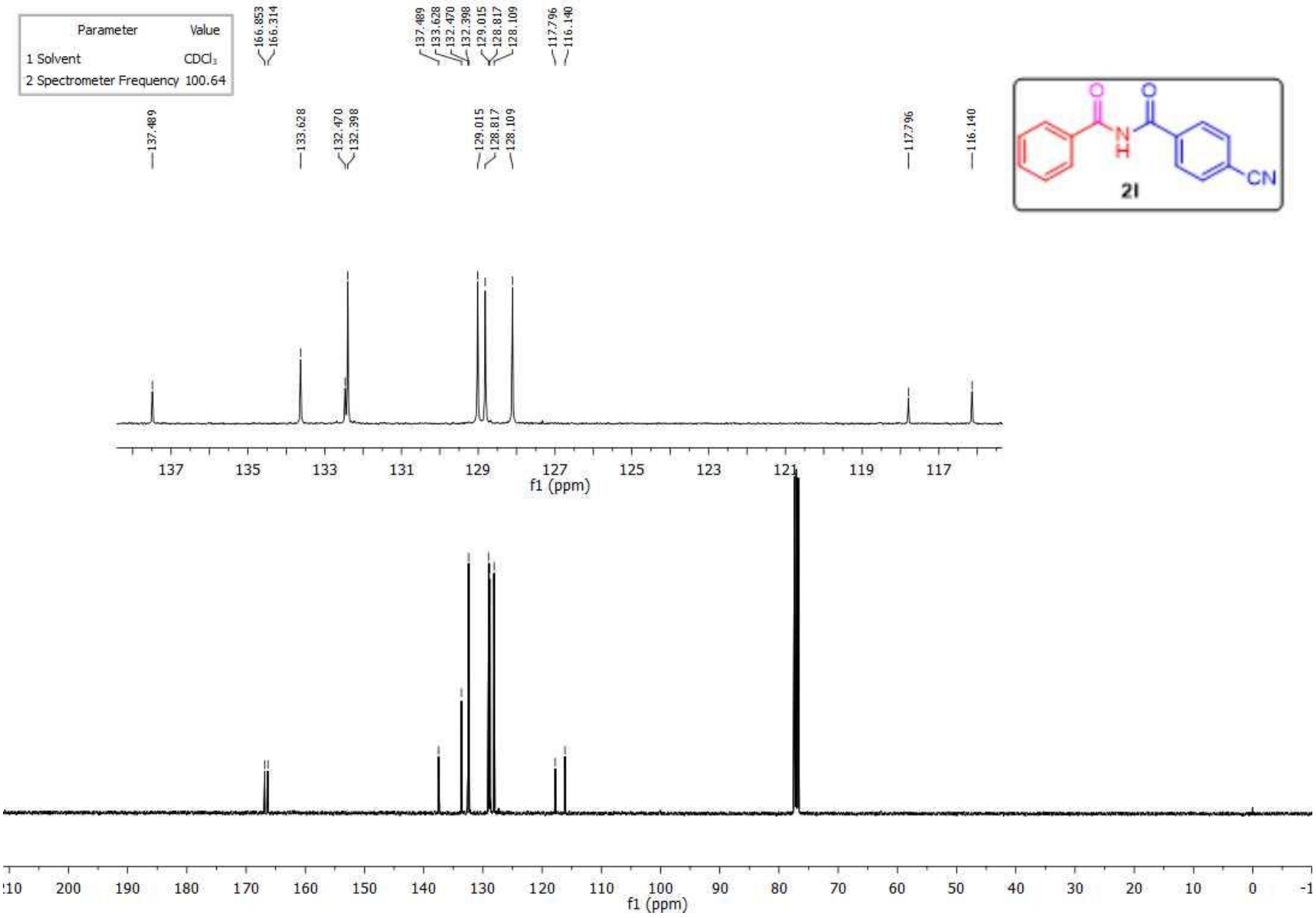


Fig. S100. ^{13}C NMR spectra of *N*-benzoyl-4-cyanobenzamide **(2l).**

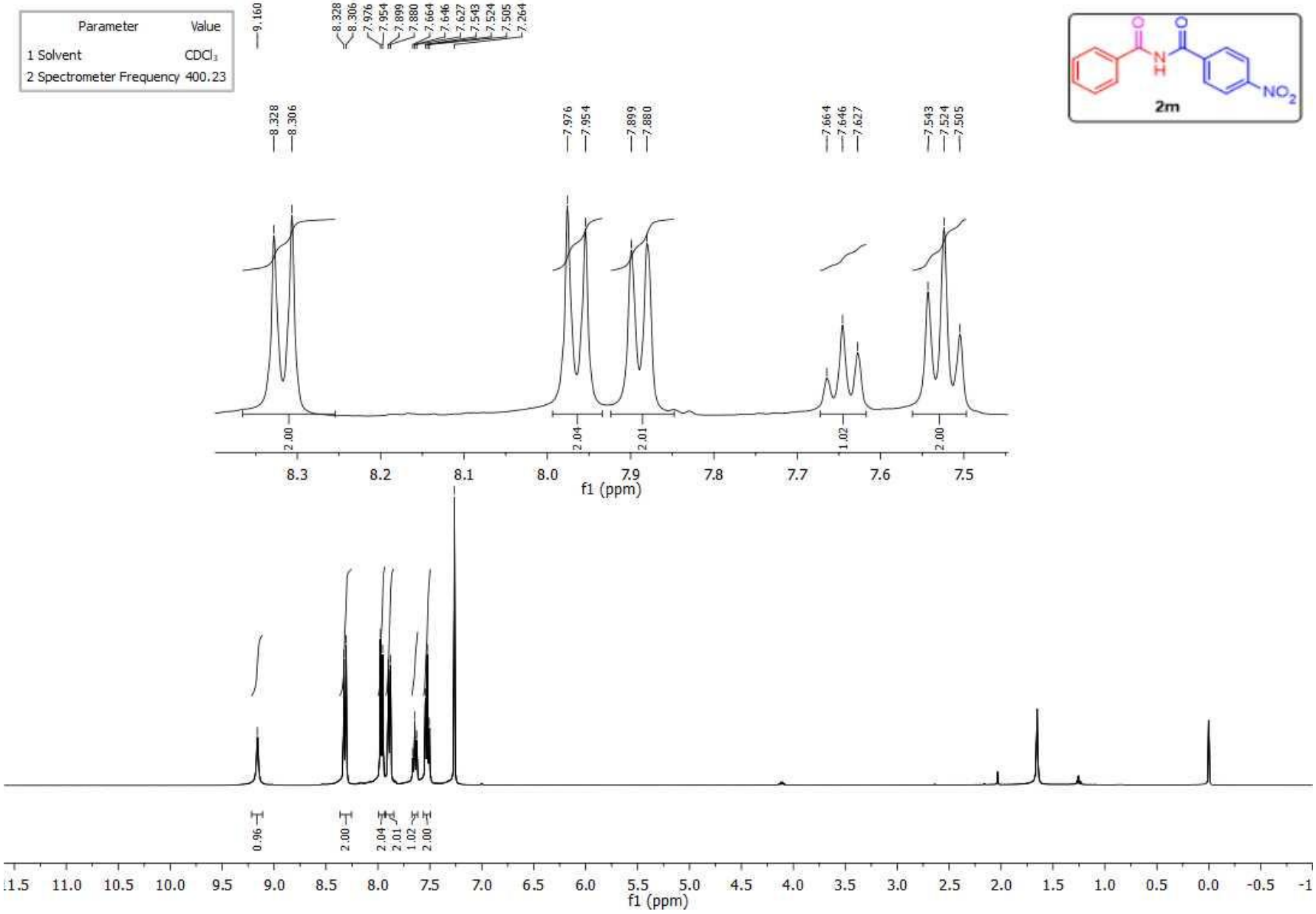


Fig. S101. [1]H NMR spectra of *N*-benzoyl-4-nitrobenzamide **(2m).**

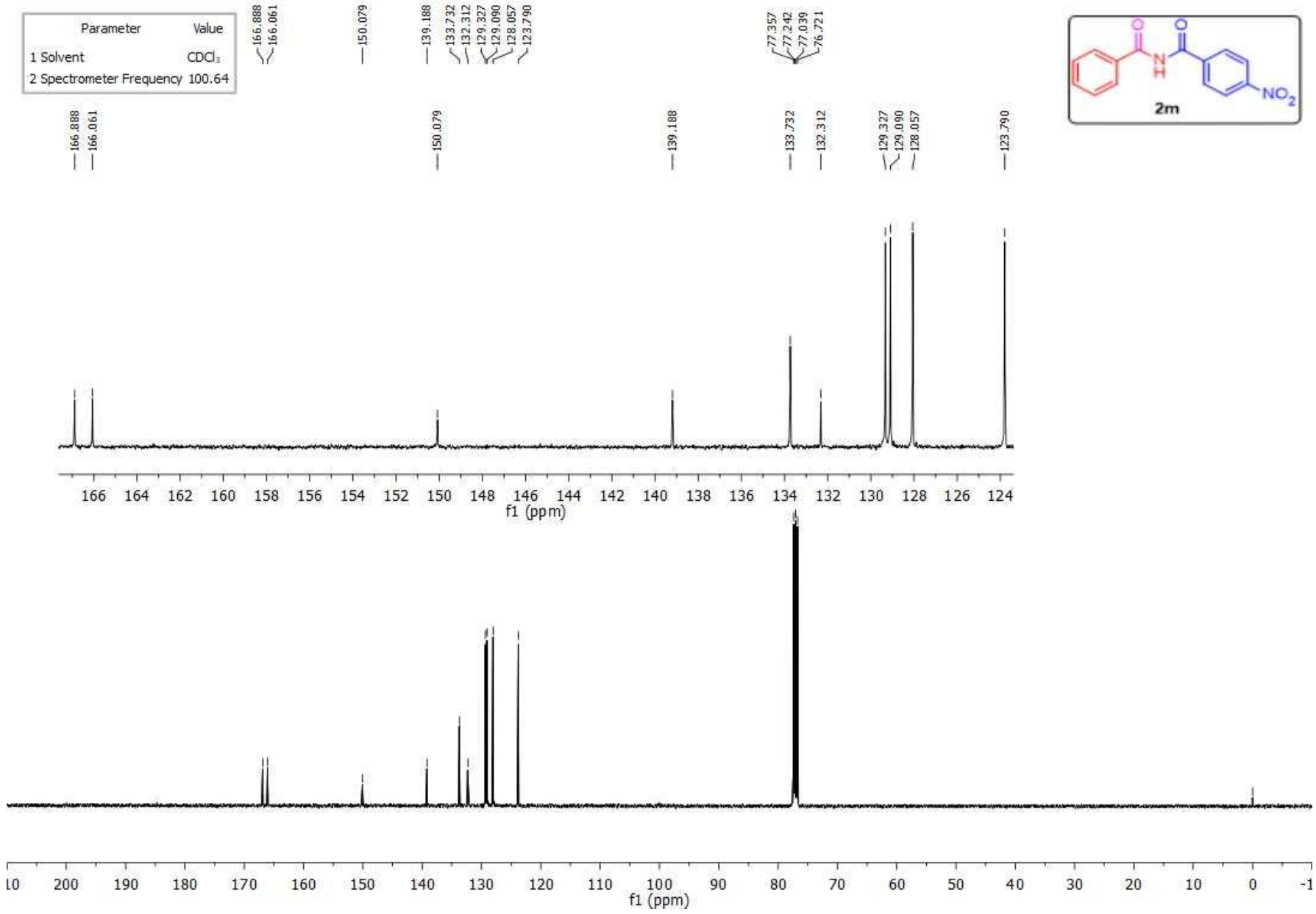


Fig. S102. ^{13}C NMR spectra of *N*-benzoyl-4-nitrobenzamide **(2m).**

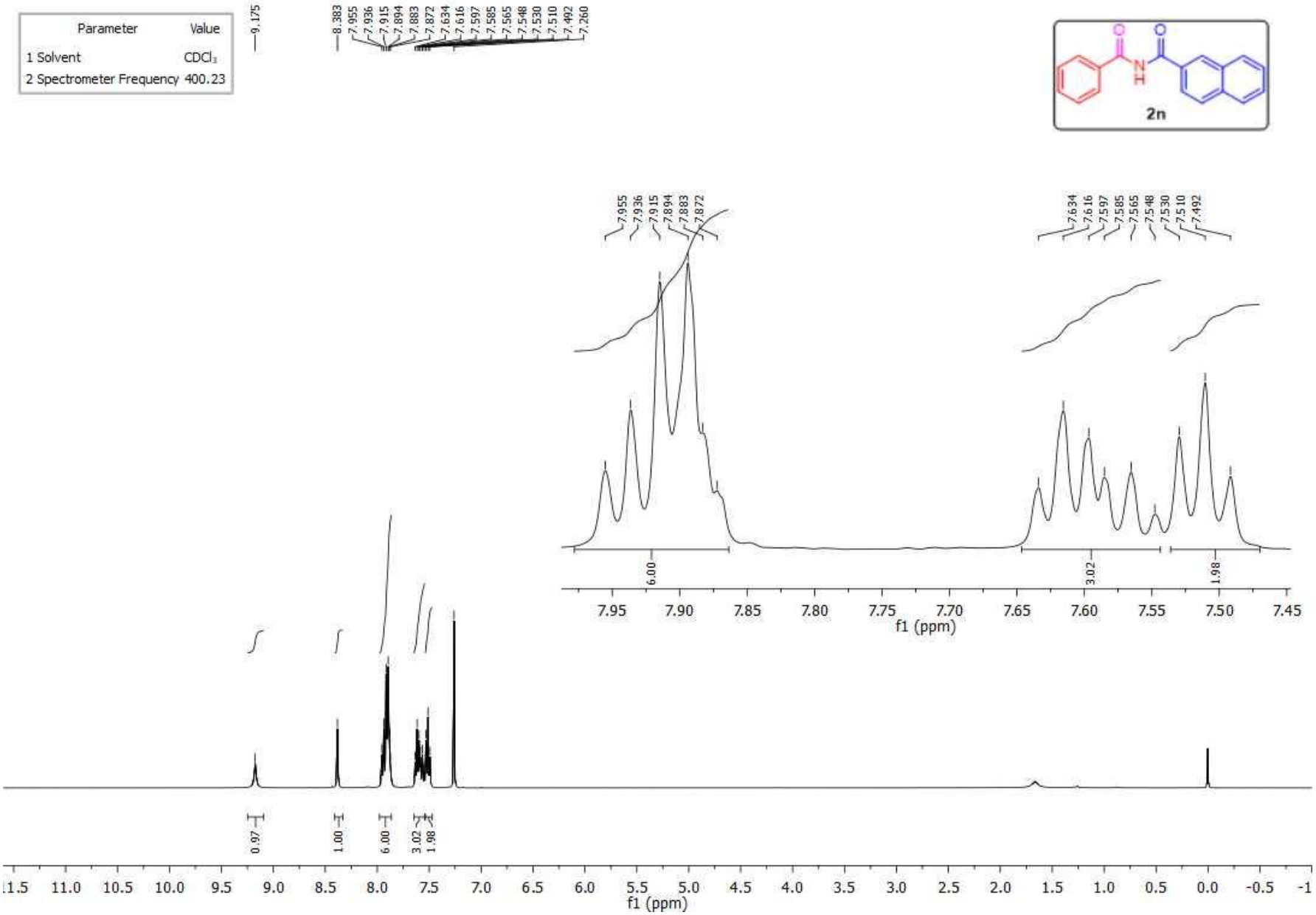


Fig. S103. [1]H NMR spectra of *N*-benzoyl-2-naphthamide **(2n).**

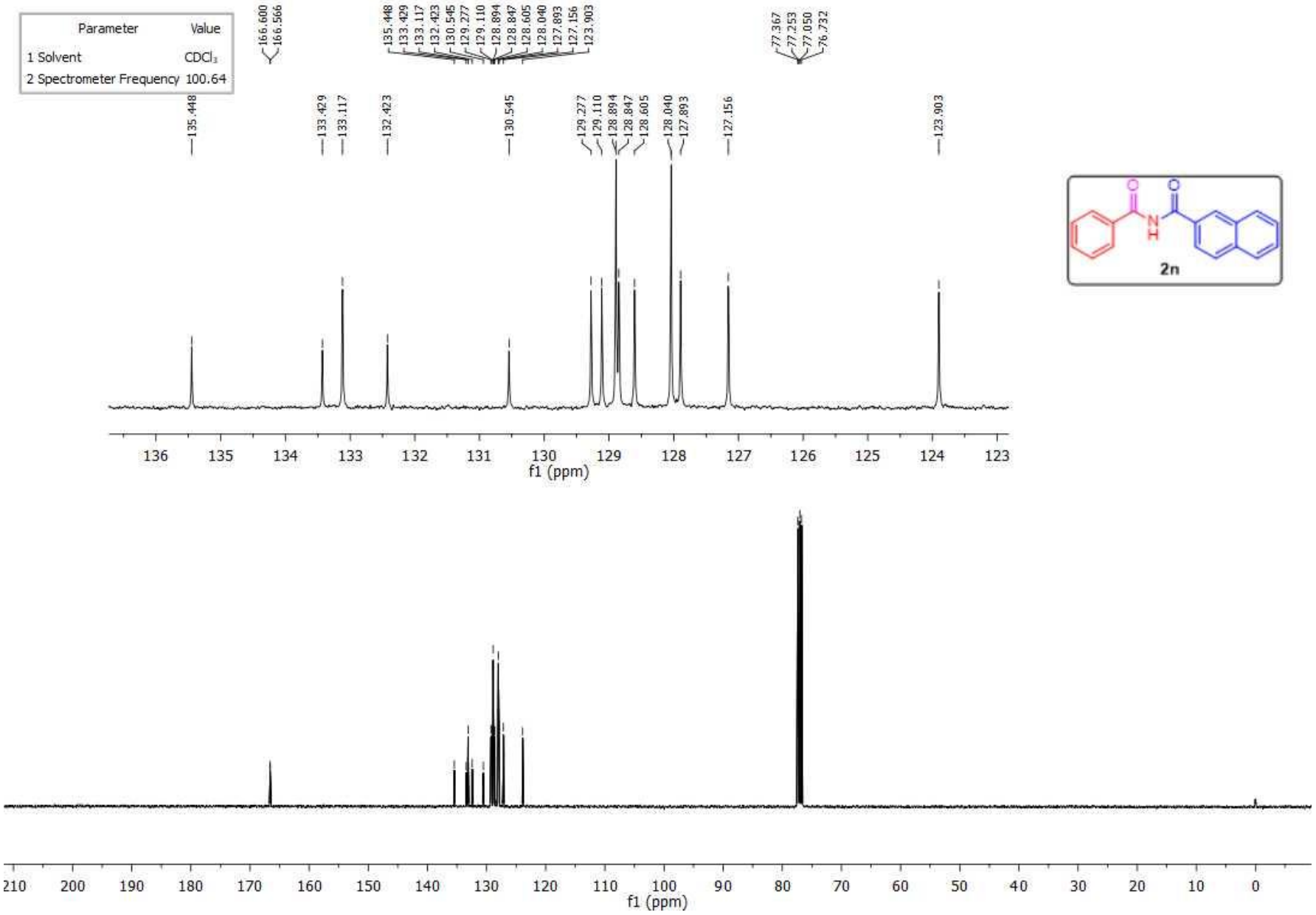


Fig. S104. ^{13}C NMR spectra of *N*-benzoyl-2-naphthamide **(2n).**

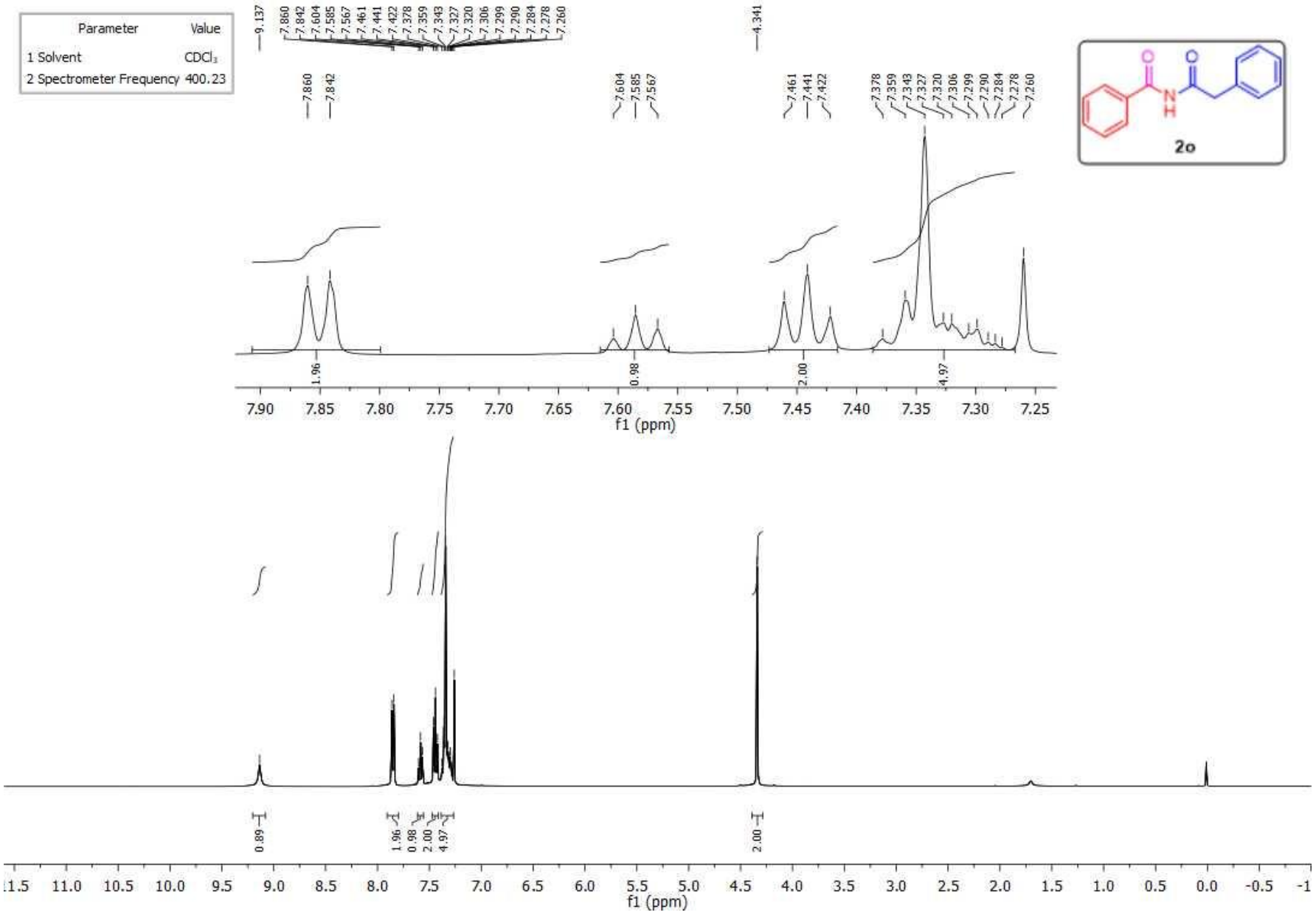


Fig. S105. [1]H NMR spectra of *N*-(2-phenylacetyl)benzamide **(2o).**

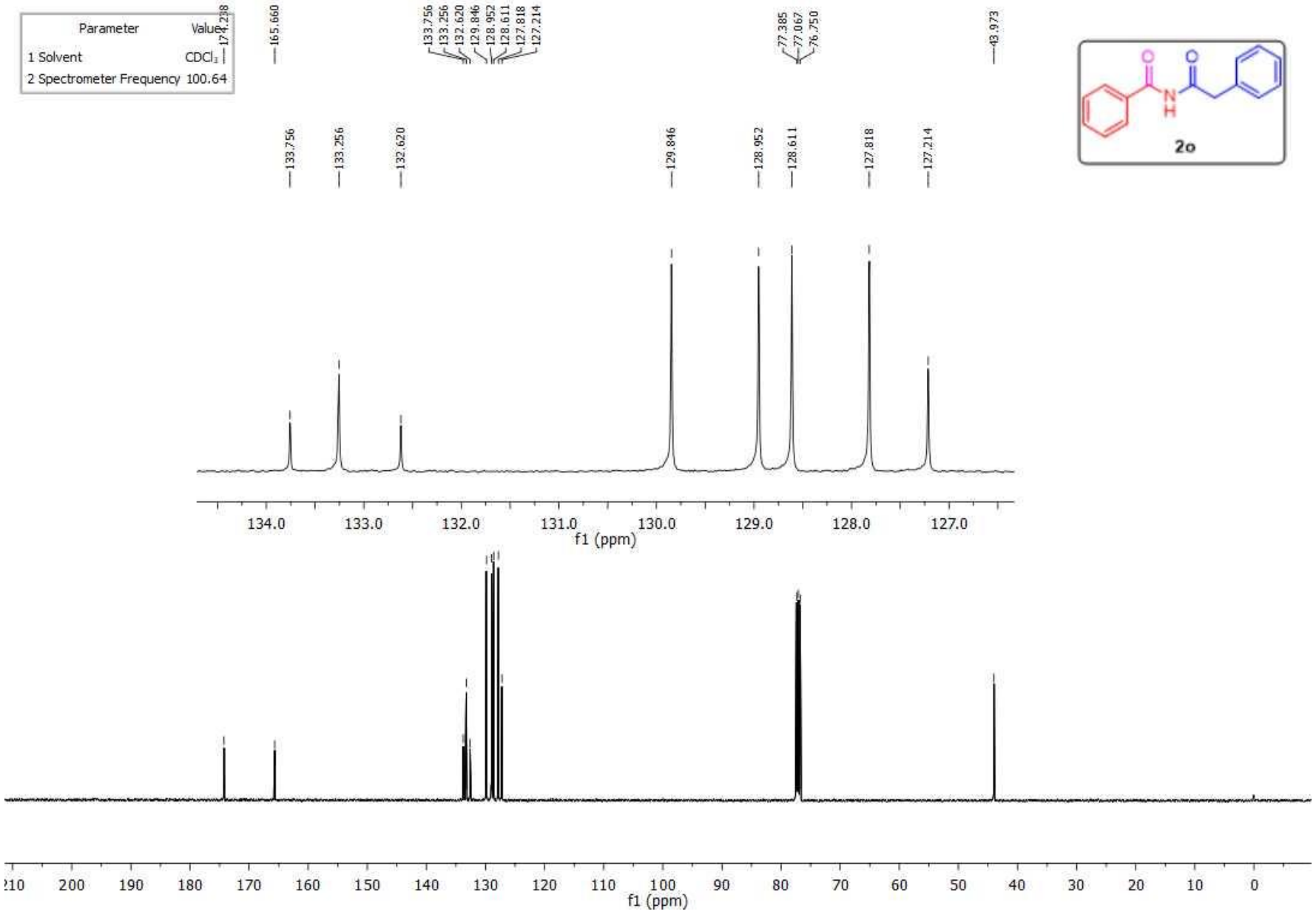


Fig. S106. ^{13}C NMR spectra of *N*-(2-phenylacetyl)benzamide **(2o).**

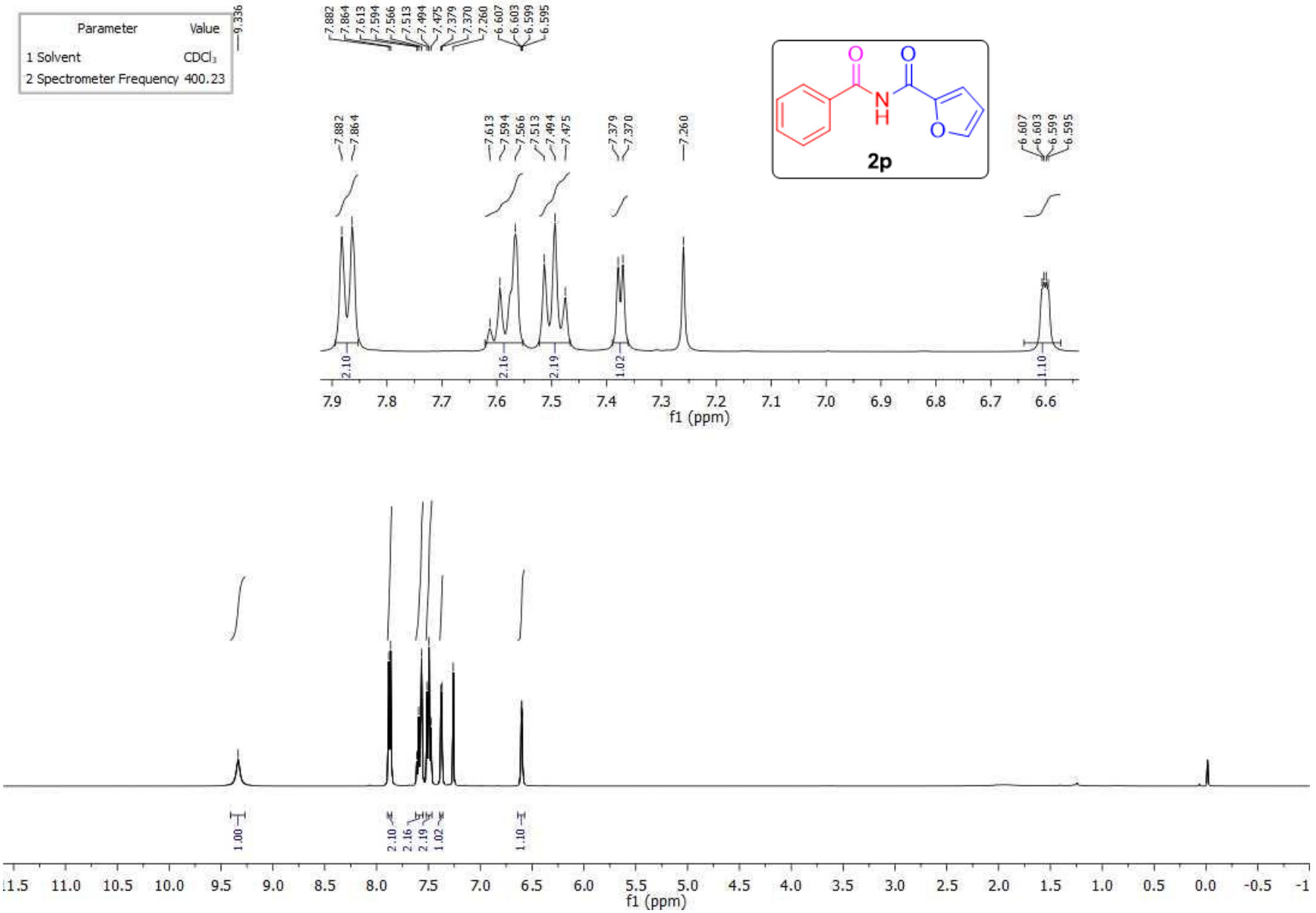


Fig. S107. ^{1}H NMR spectra of *N*-benzoylfuran-2-carboxamide **(2p).**

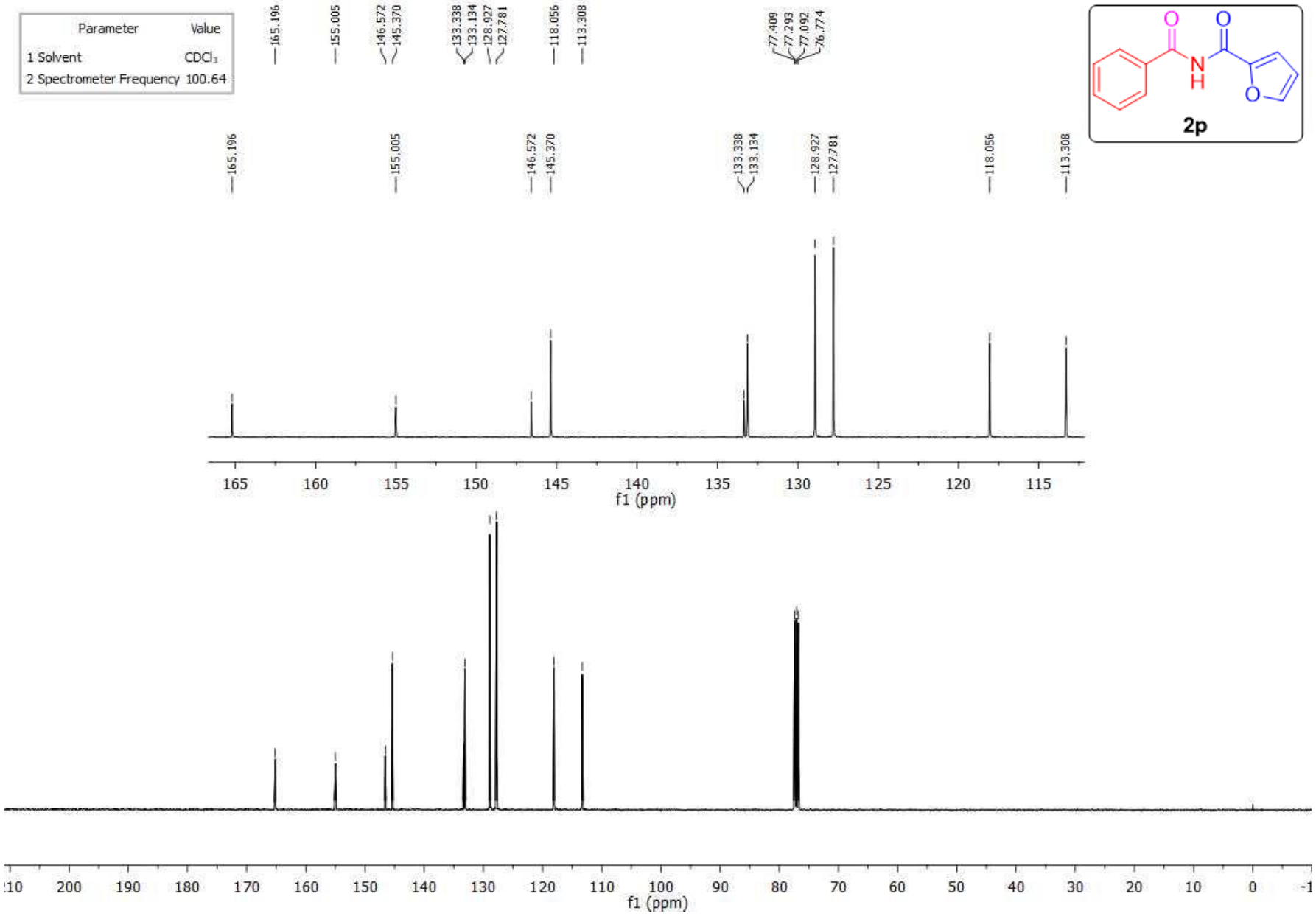


Fig. S108. ^{13}C NMR spectra of *N*-benzoylfuran-2-carboxamide **(2p).**

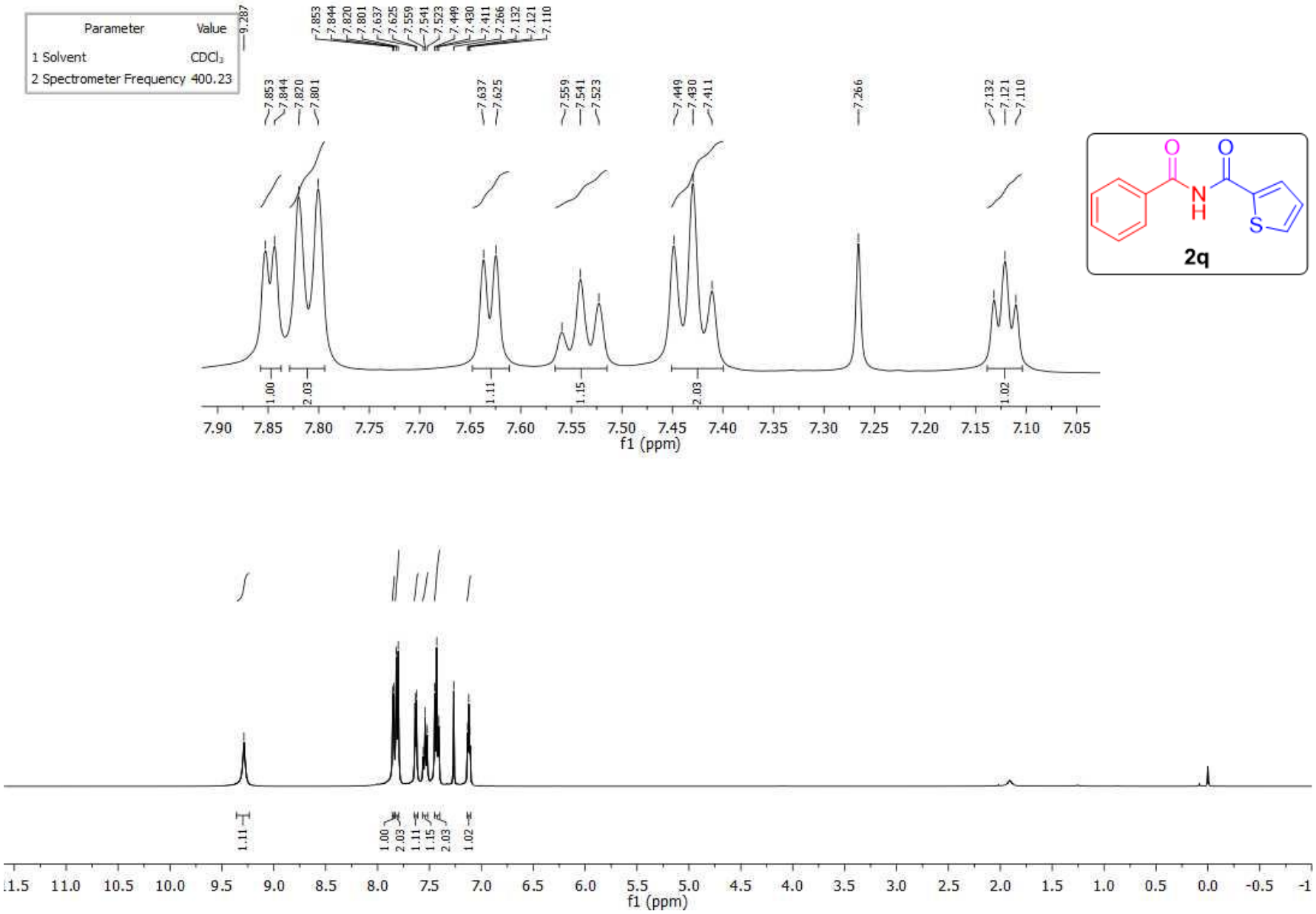


Fig. S109. [1]H NMR spectra of *N*-benzoylthiophene-2-carboxamide **(2q).**

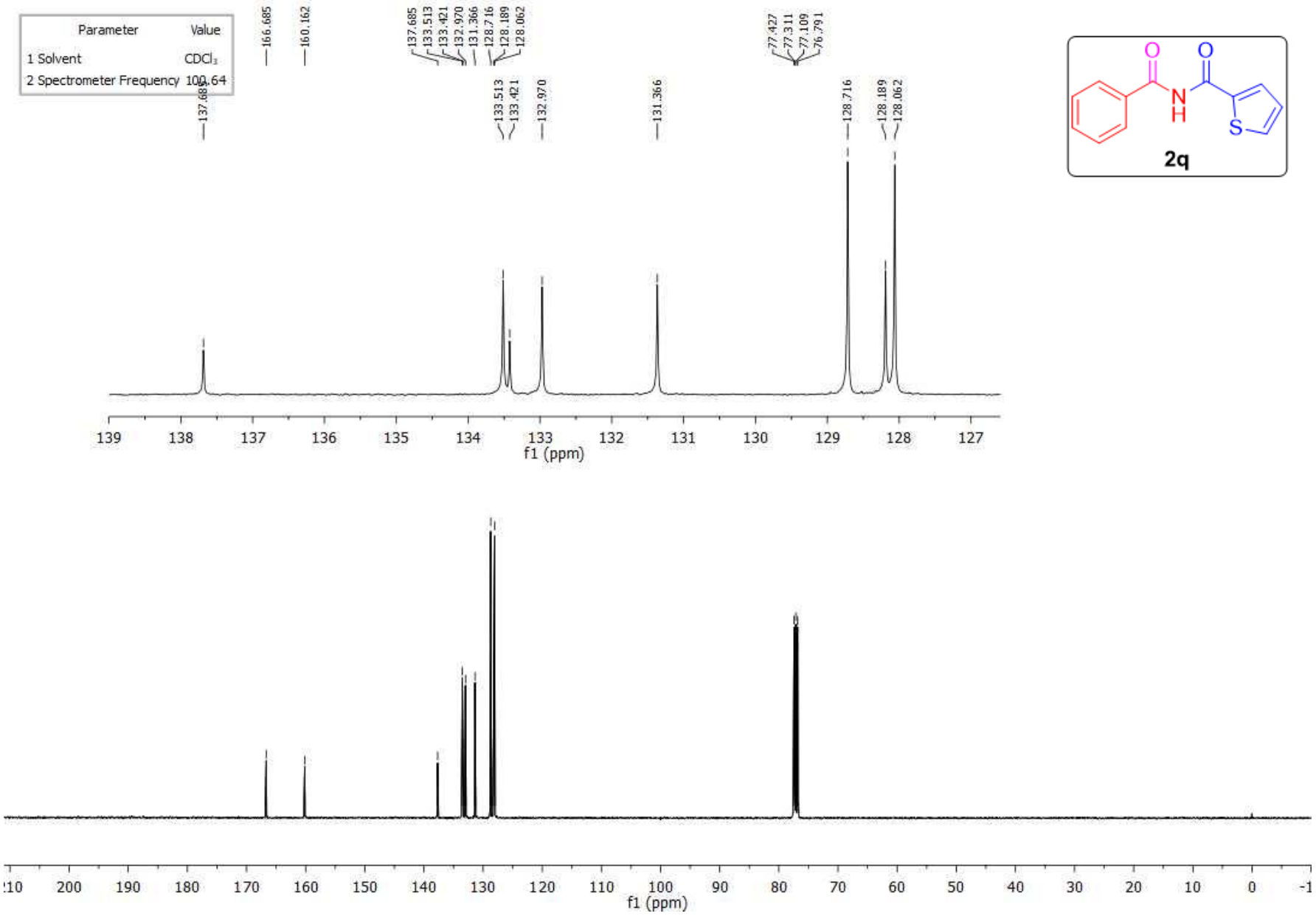


Fig. S110. ^{13}C NMR spectra of N-benzoylthiophene-2-carboxamide **(2q).**

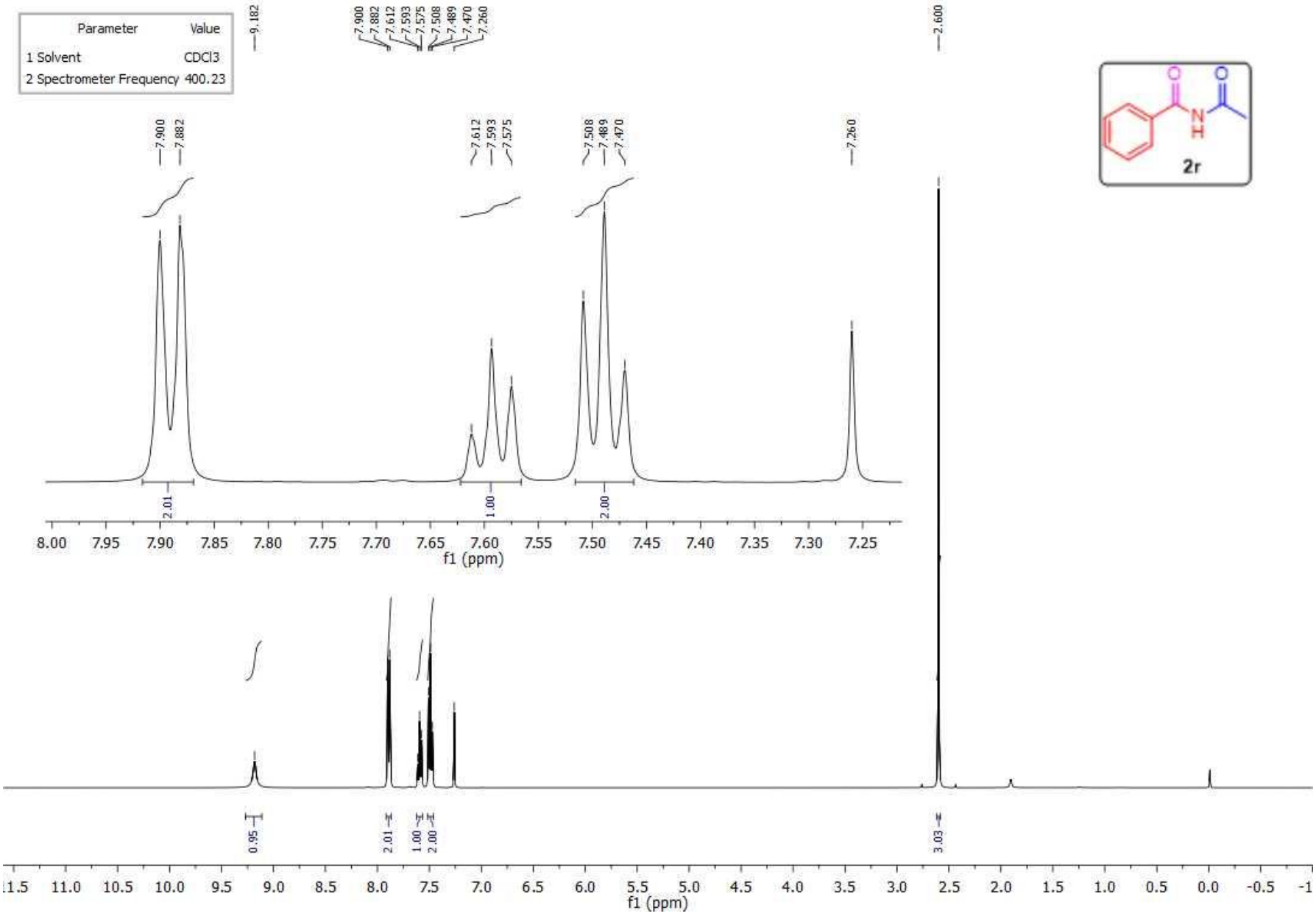


Fig. S111. [1]H NMR spectra of *N*-acetylbenzamide **(2r).**

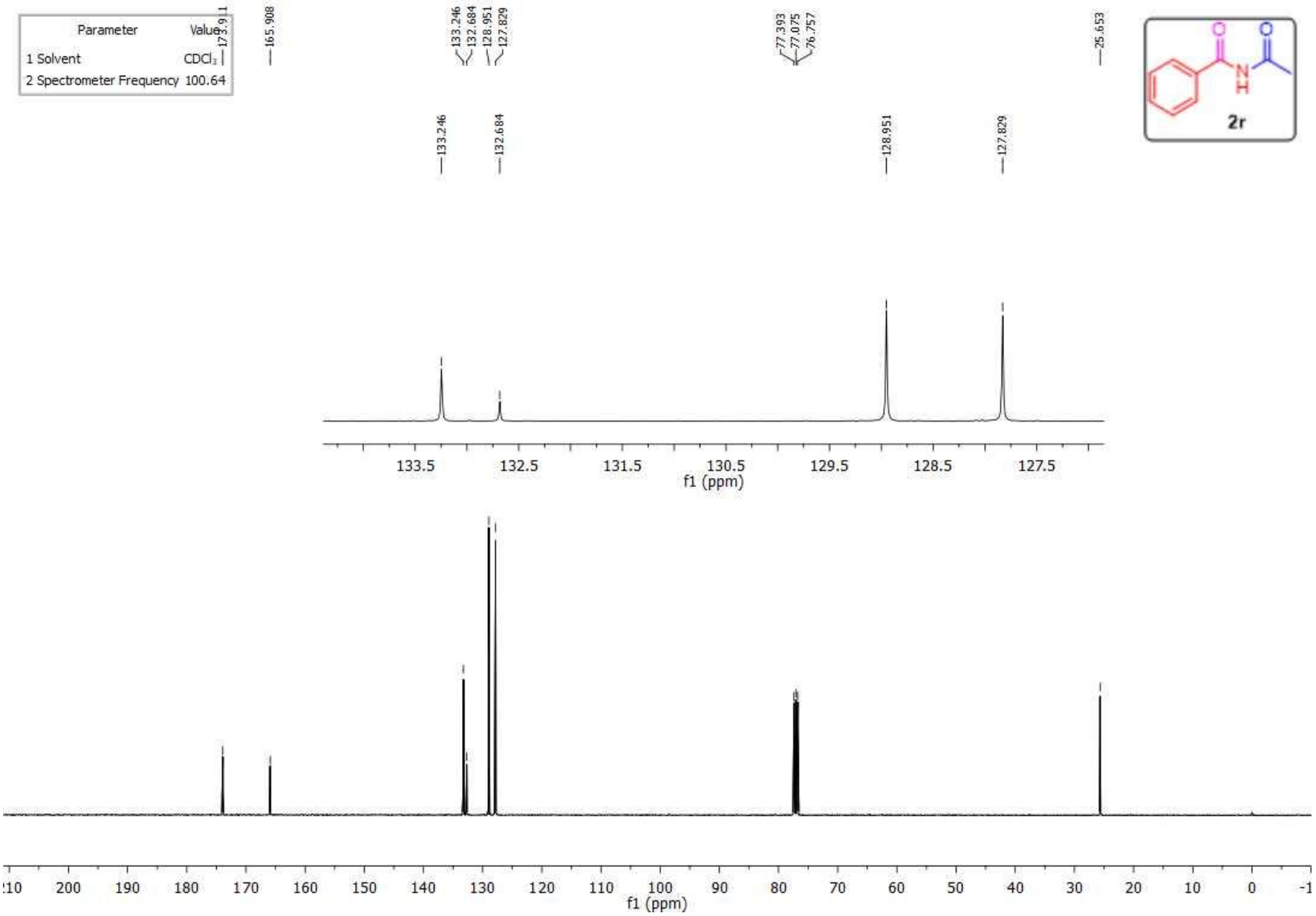


Fig. S112. ^{13}C NMR spectra of *N*-acetylbenzamide **(2r).**

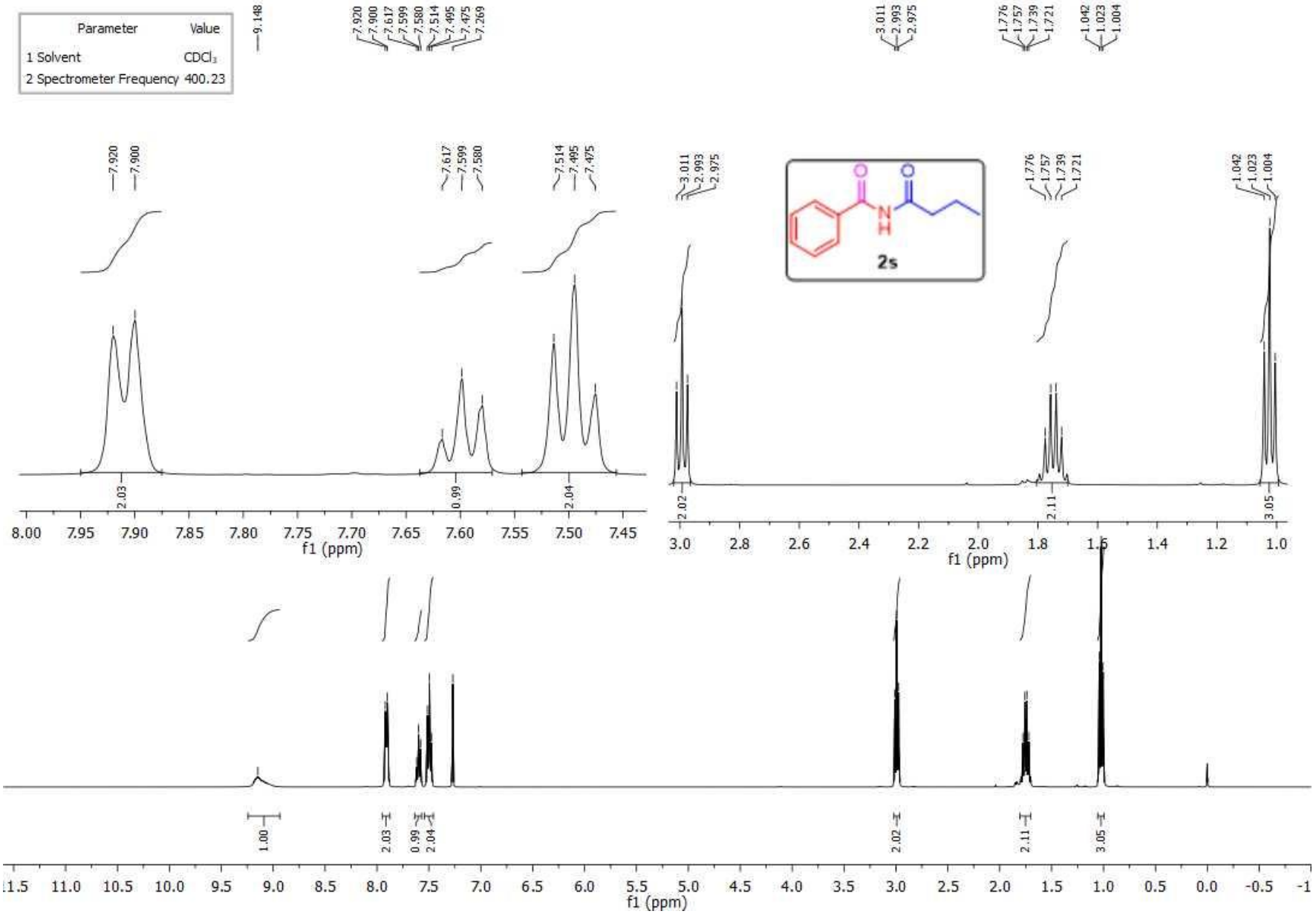


Fig. S113. ^{1}H NMR spectra of *N*-butyrylbenzamide **(2s).**

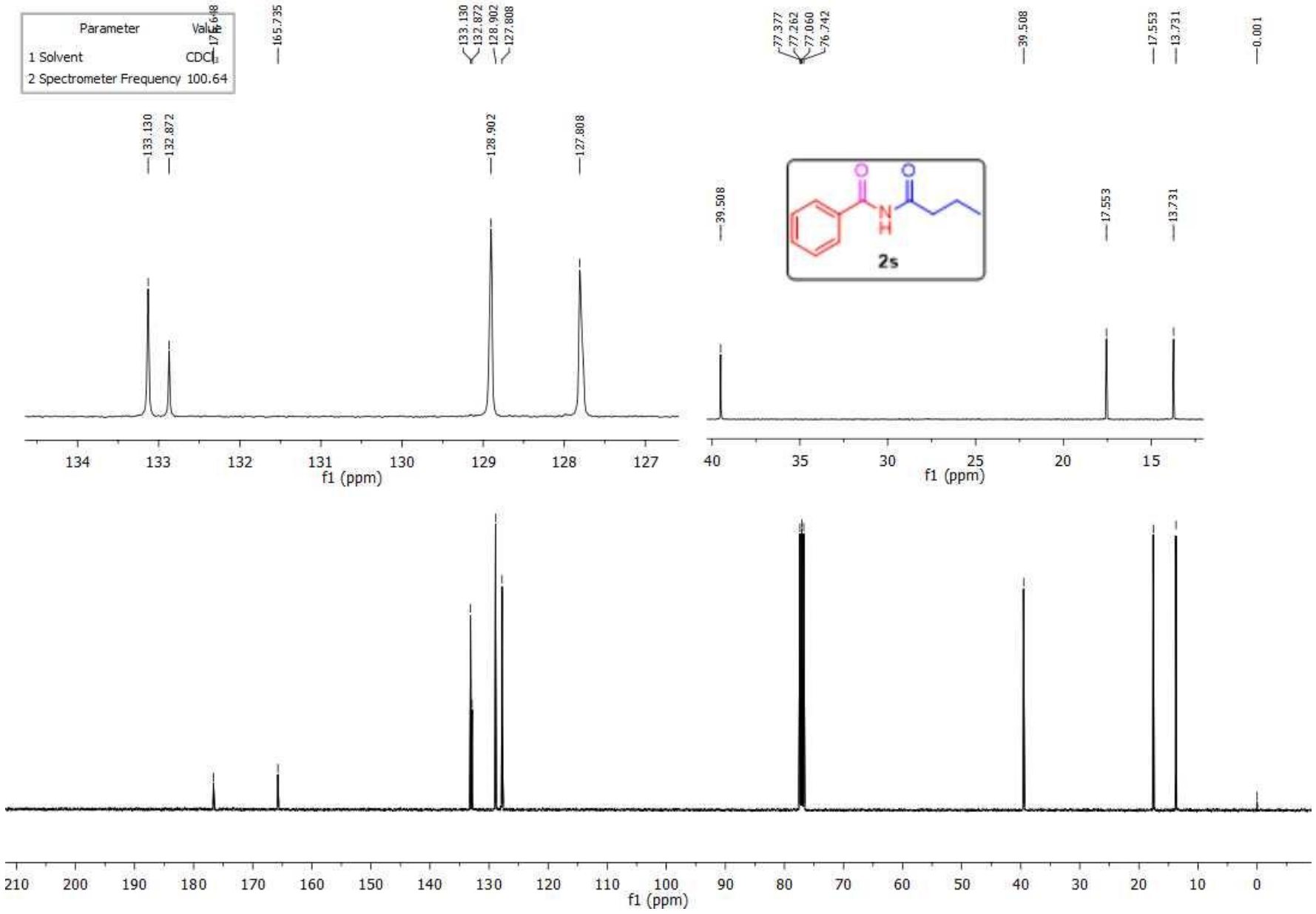


Fig. S114. ^{13}C NMR spectra of *N*-butyrylbenzamide **(2s).**

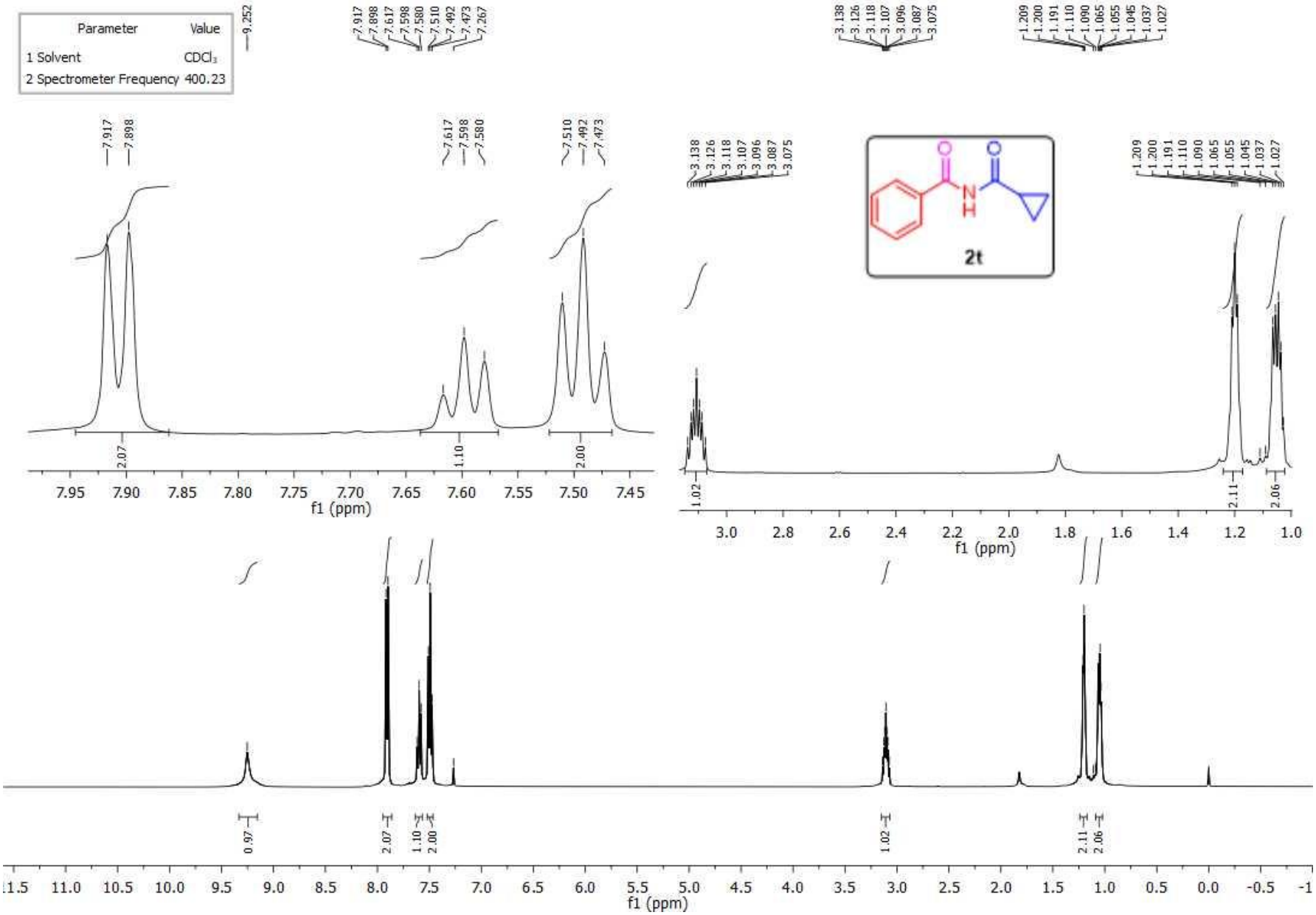


Fig. S115. ^{1}H NMR spectra of ***N*-**(cyclopropanecarbonyl)benzamide **(2t).**

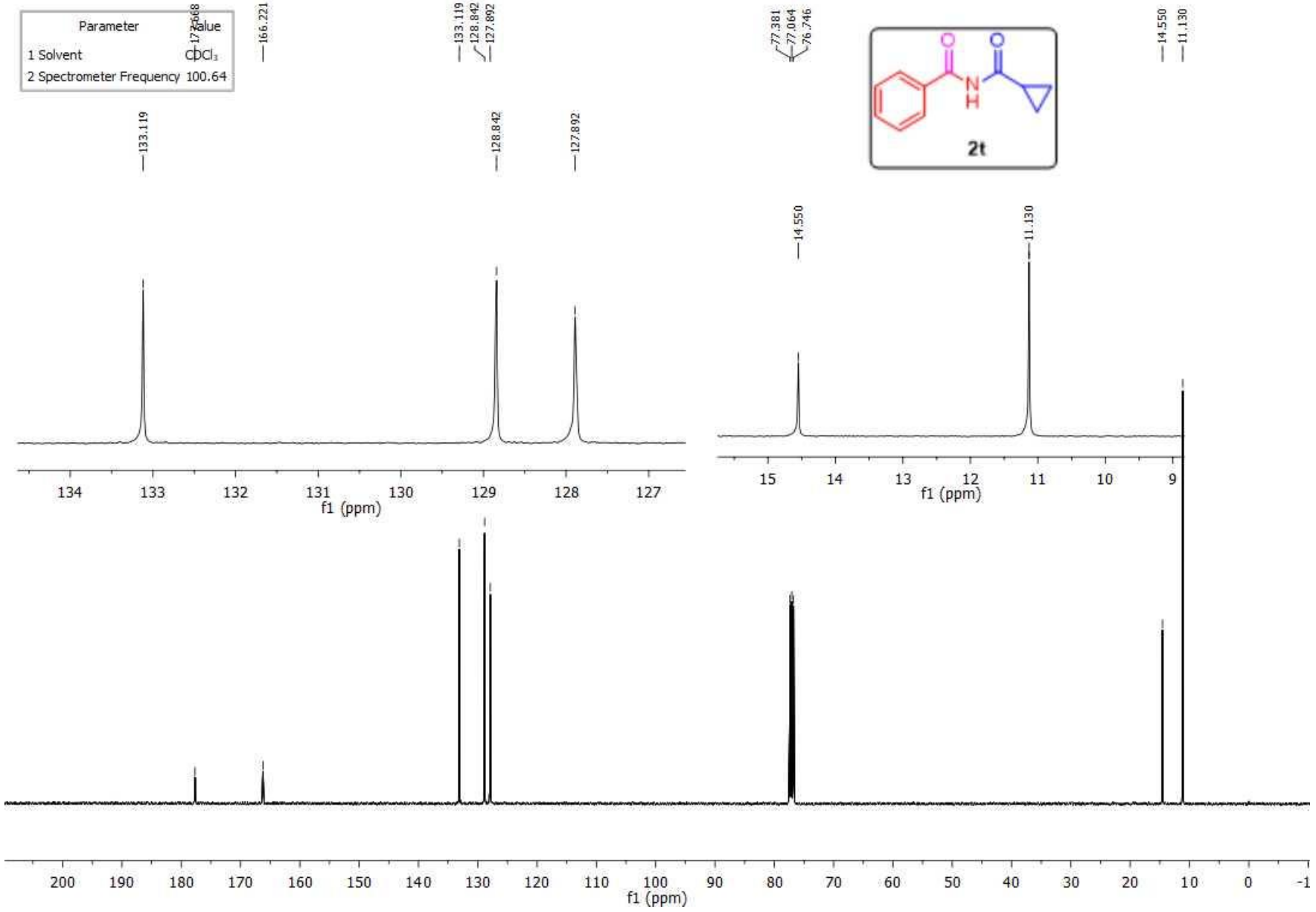


Fig. S116. ^{13}C NMR spectra of *N*-(cyclopropanecarbonyl)benzamide **(2t).**

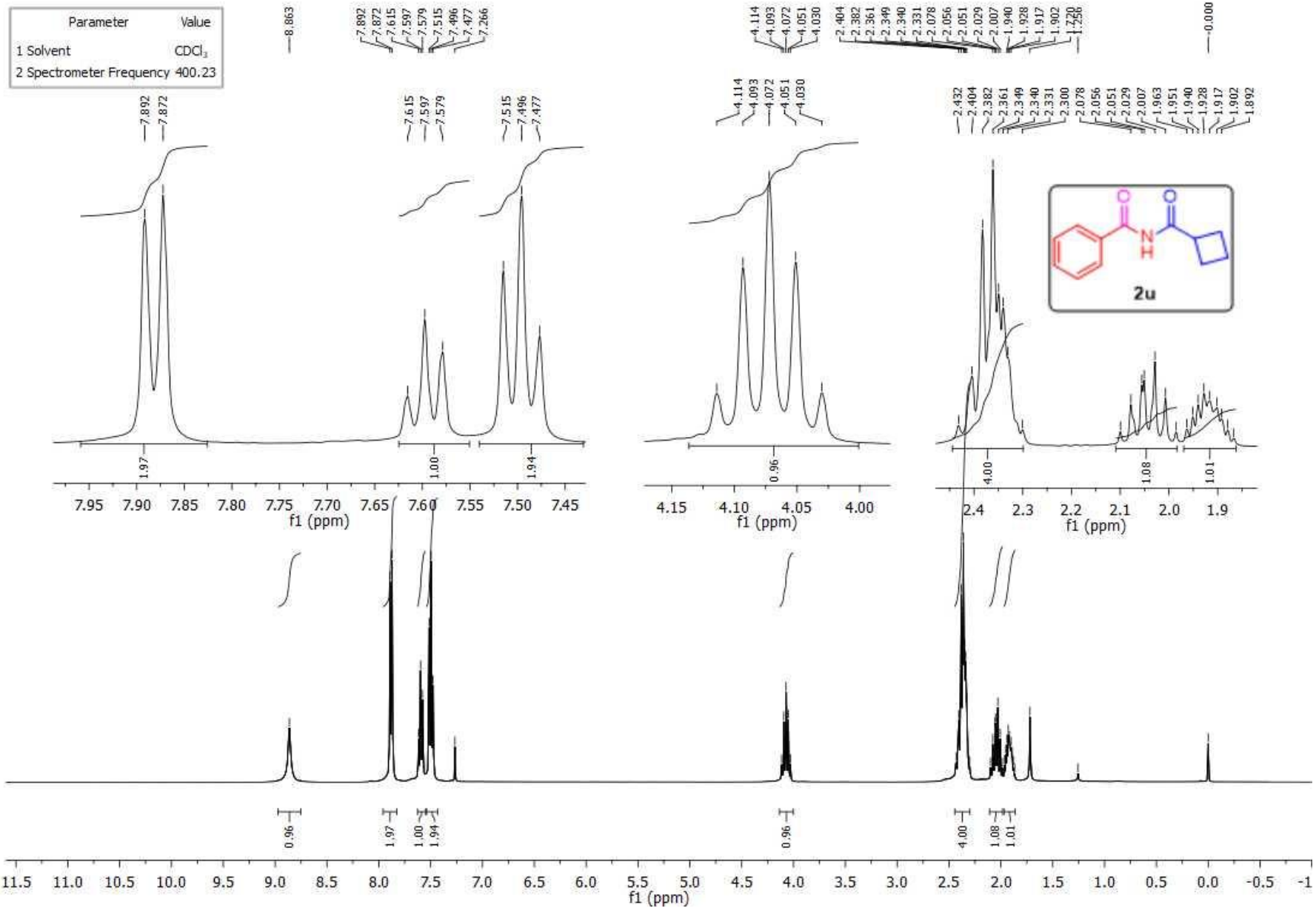


Fig. S117. ^{1}H NMR spectra of *N*-(cyclobutanecarbonyl)benzamide **(2u).**

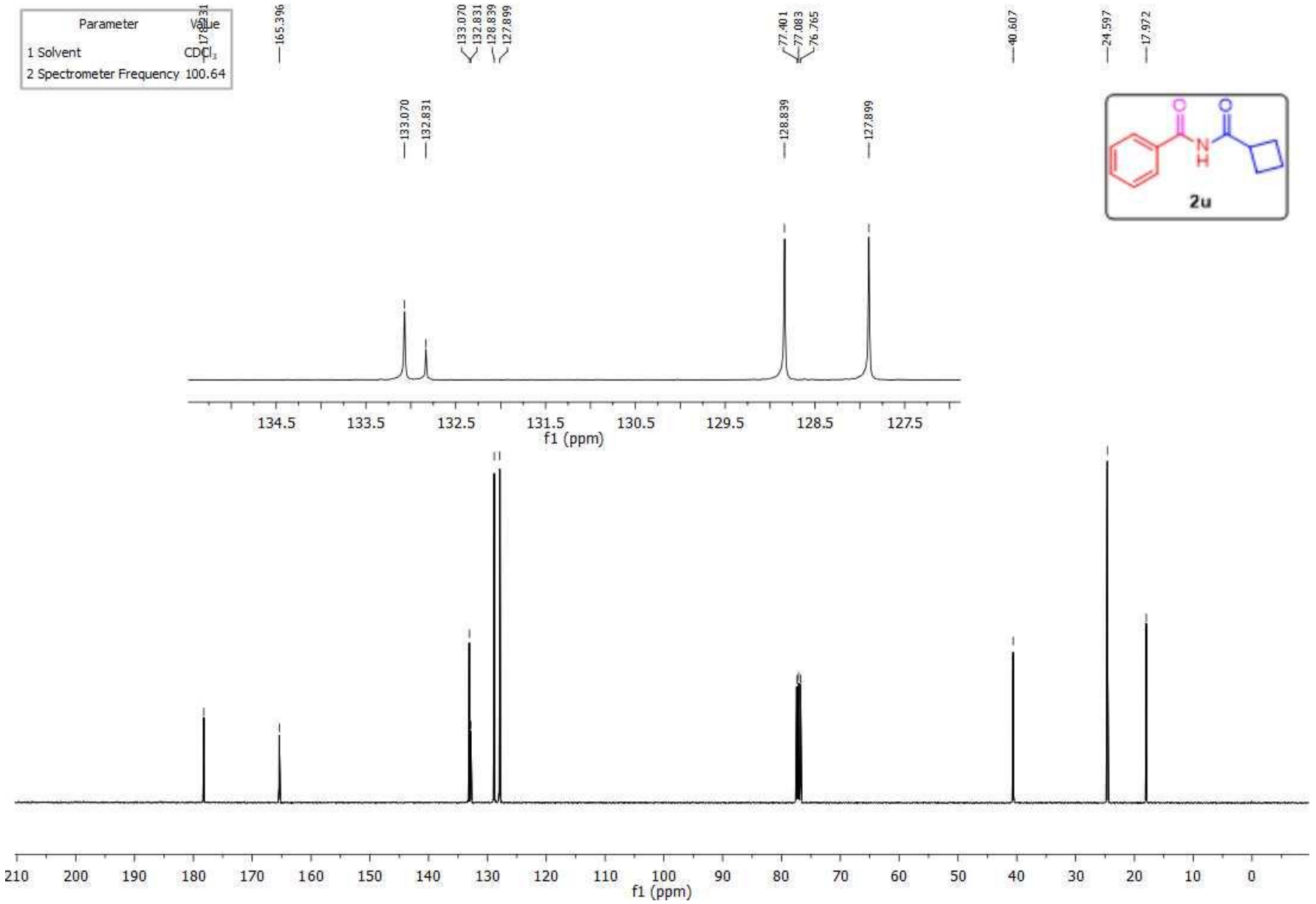


Fig. S118. ^{13}C NMR spectra of *N*-(cyclobutanecarbonyl)benzamide **(2u).**

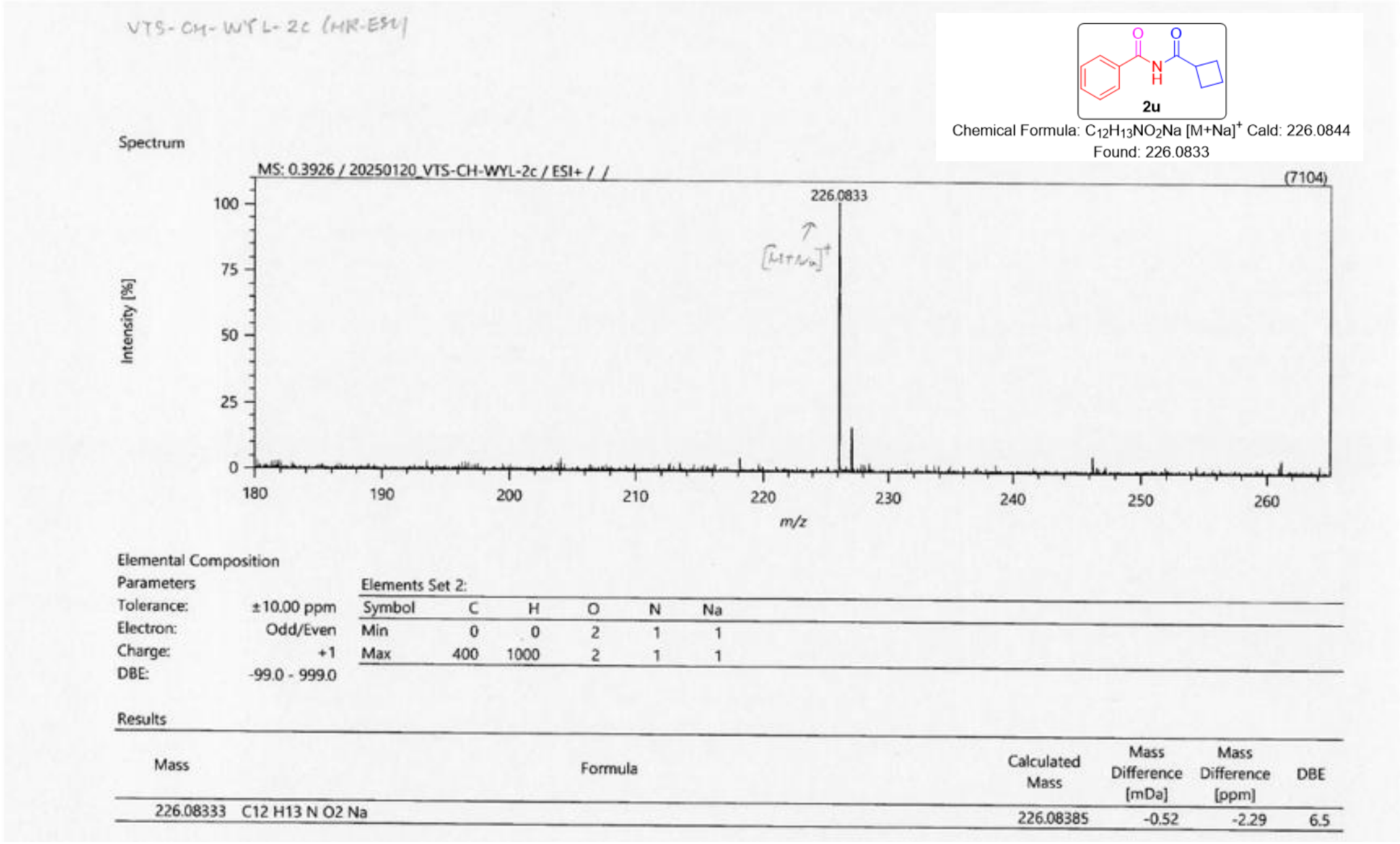


Fig. S119. HRMS data of *N*-(cyclobutanecarbonyl)benzamide (2u).

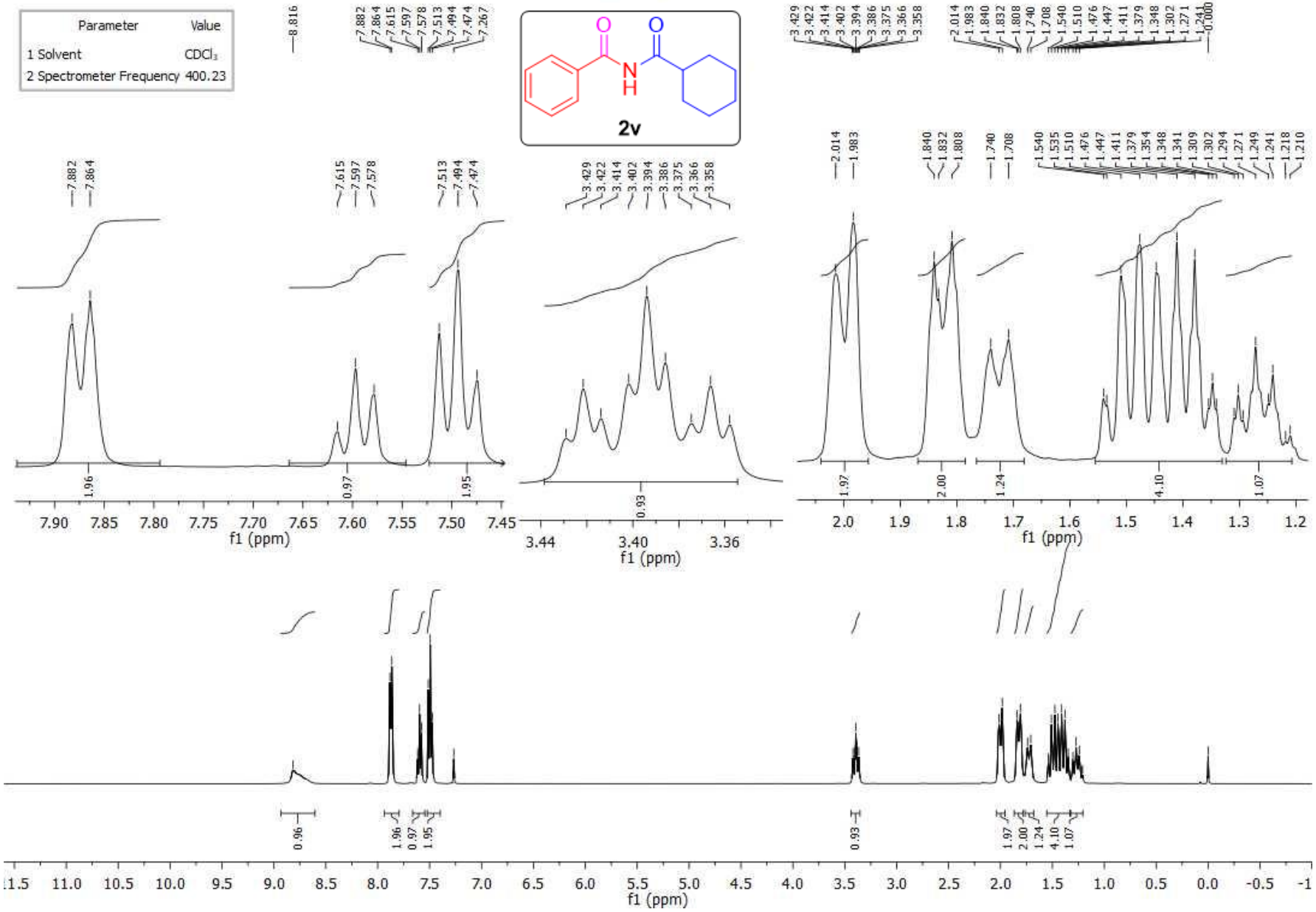


Fig. S120. ^{1}H NMR spectra of *N*-(cyclohexanecarbonyl)benzamide **(2v).**

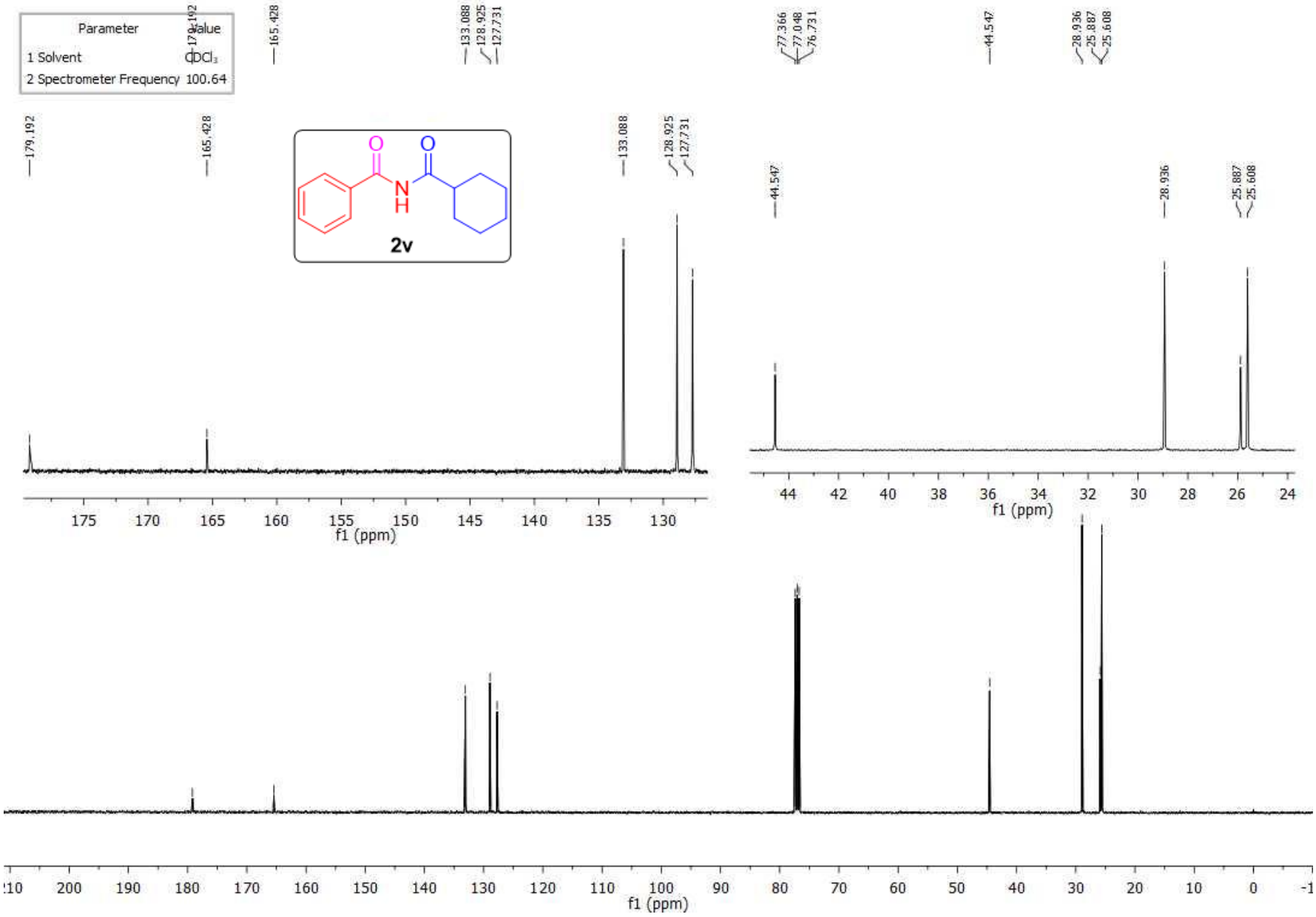


Fig. S121. ^{13}C NMR spectra of *N*-(cyclohexanecarbonyl)benzamide **(2v).**

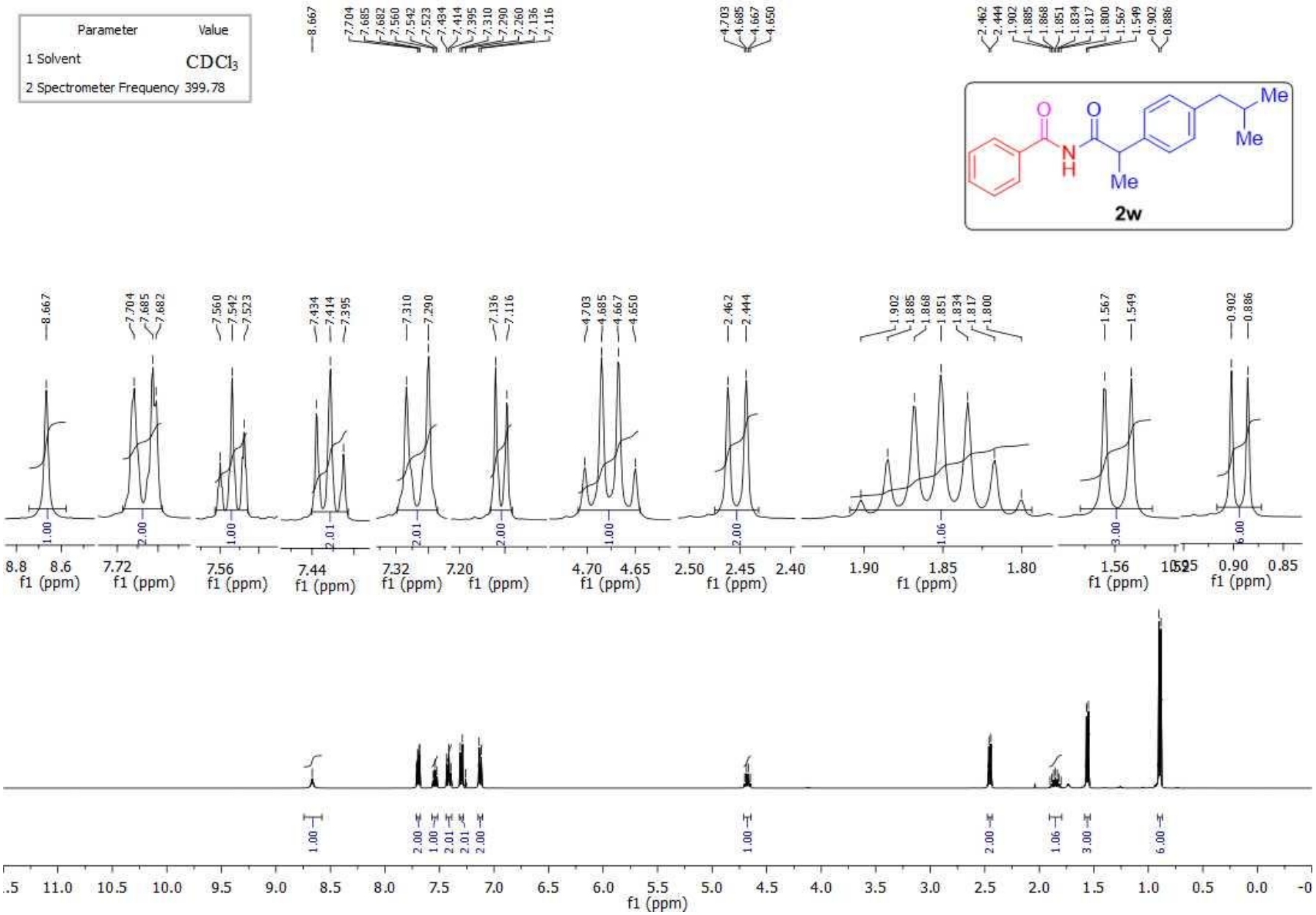


Fig. S122. [1]H NMR spectra of *N*-(2-(4-isobutylphenyl)propanoyl)benzamide **(2w).**

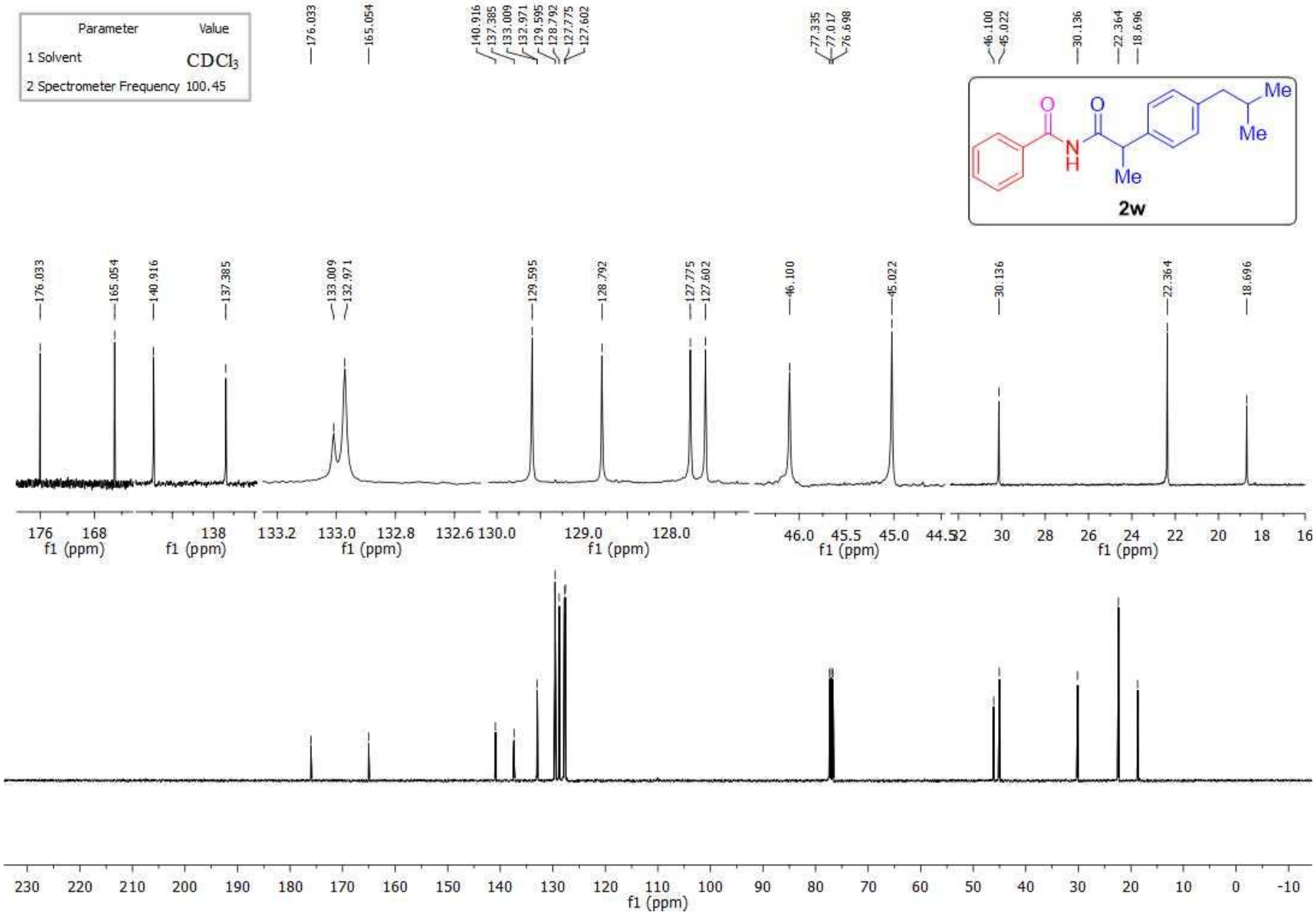


Fig. S123. ^{13}C NMR spectra of *N*-(2-(4-isobutylphenyl)propanoyl)benzamide **(2w).**

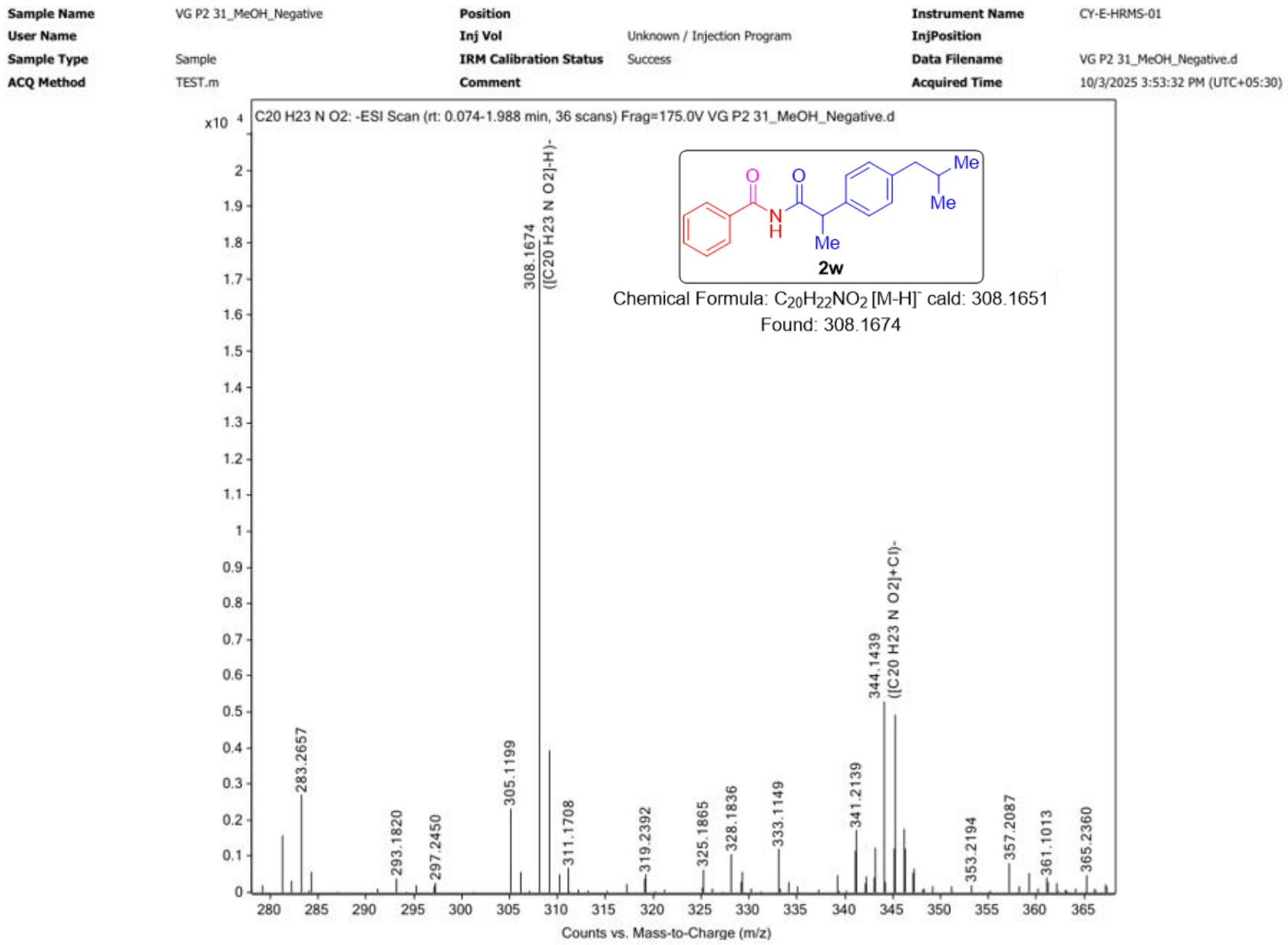


Fig. S124. HRMS data of *N*-(2-(4-isobutylphenyl)propanoyl)benzamide **(2w).**

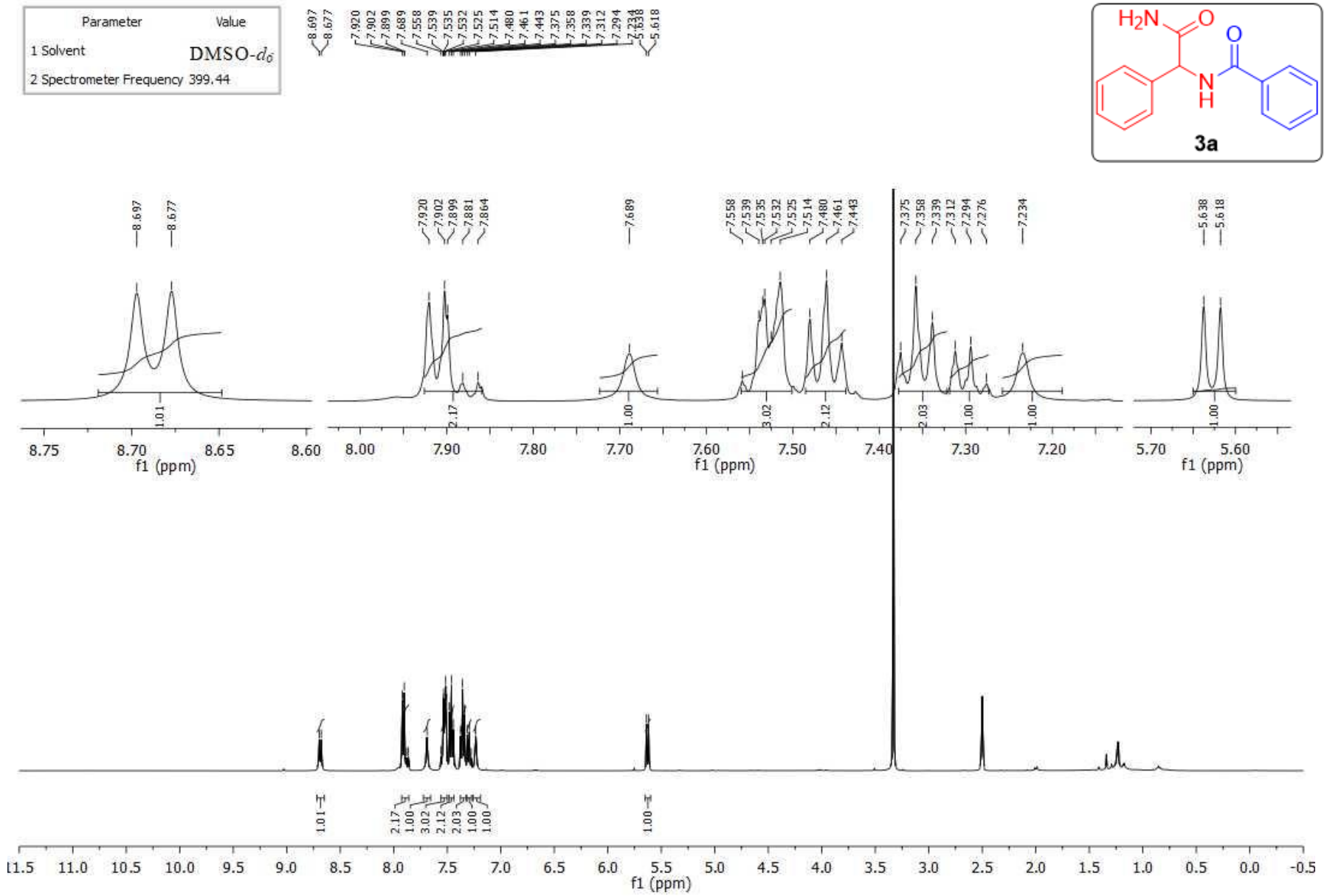


Fig. S125. ^{1}H NMR spectra of *N*-(2-amino-2-oxo-1-phenylethyl)benzamide **(3a).**

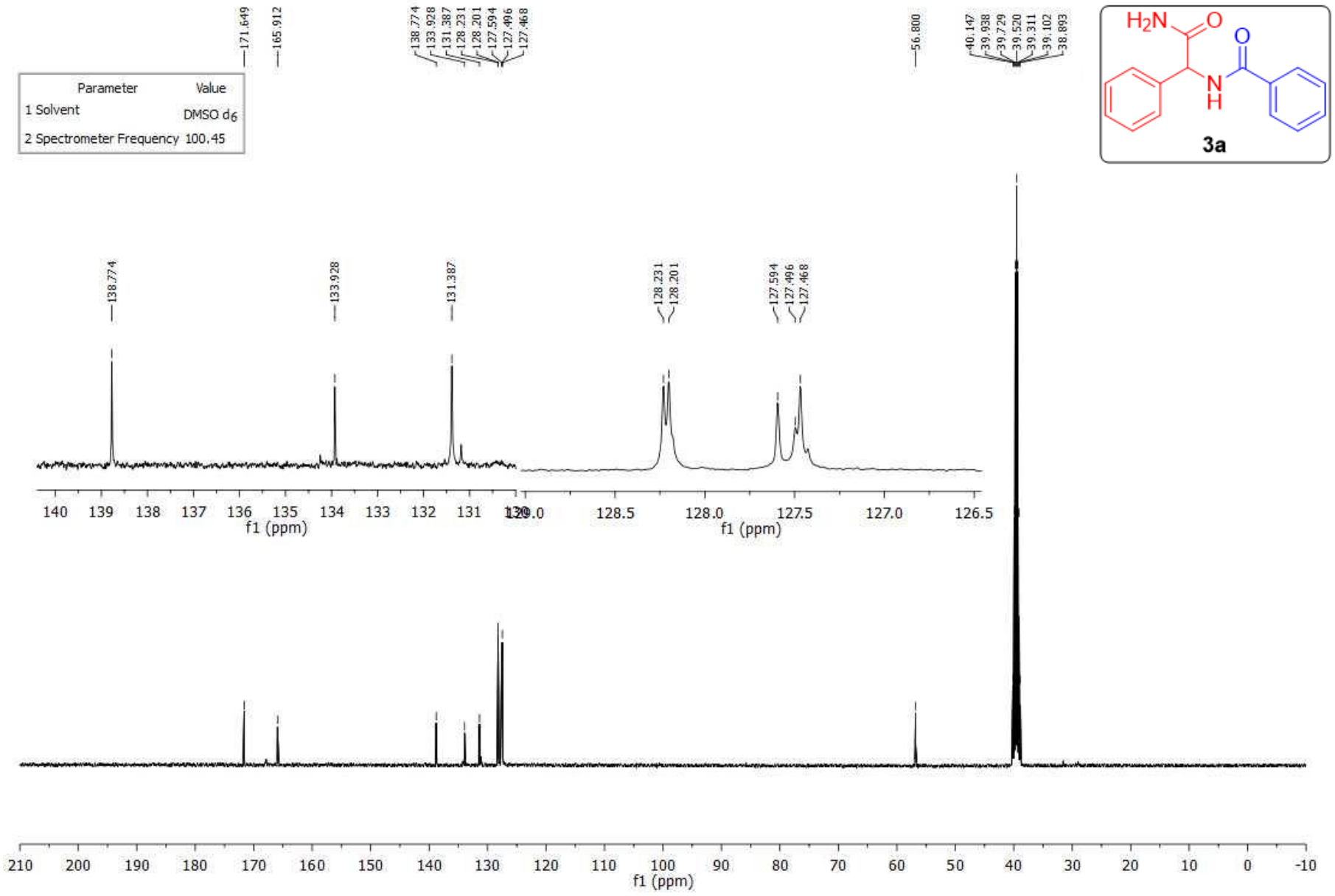


Fig. S126. ^{13}C NMR spectra of *N*-(2-amino-2-oxo-1-phenylethyl)benzamide **(3a).**

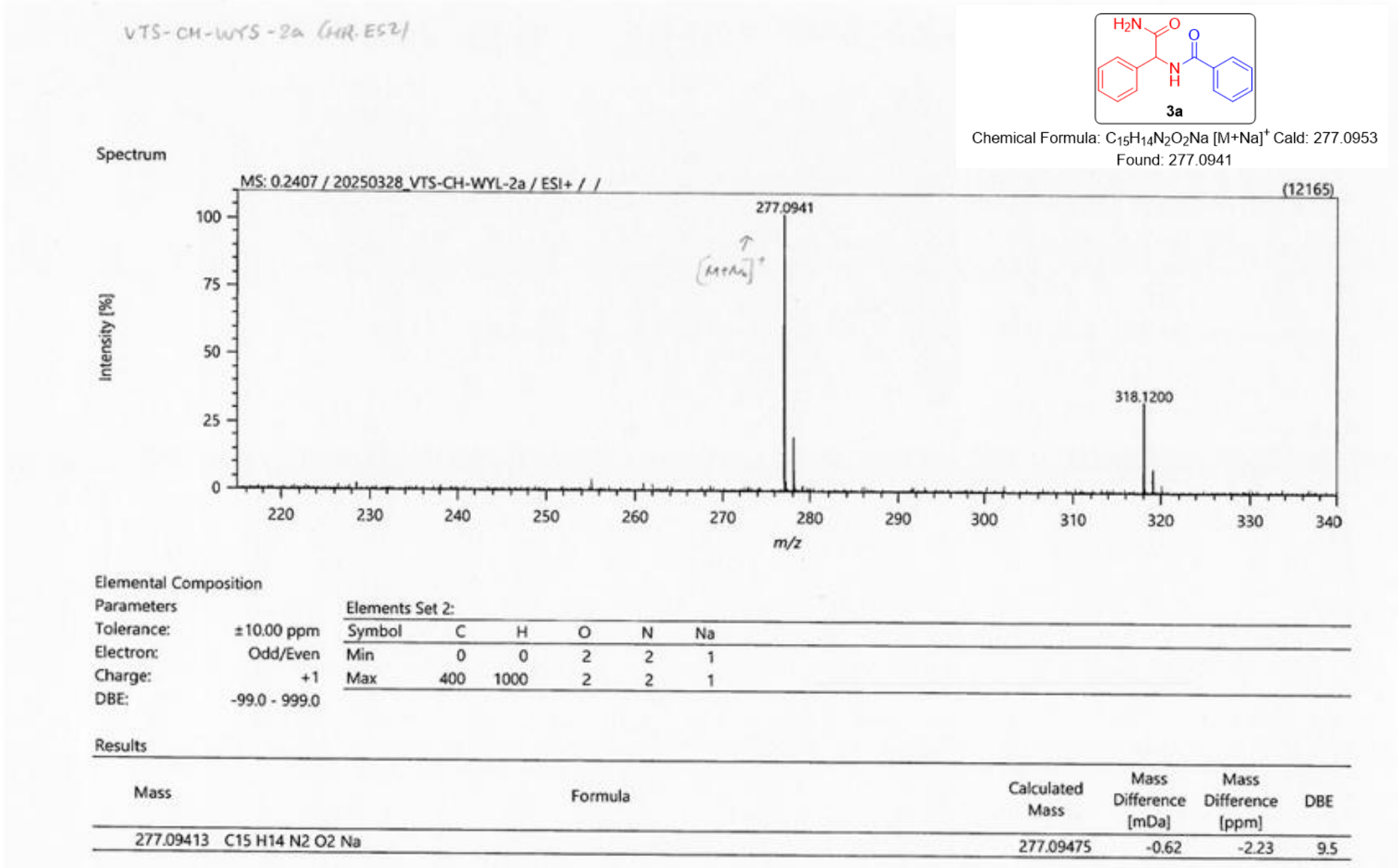


Fig. S127. HRMS data of *N*-(2-amino-2-oxo-1-phenylethyl)benzamide **(3a).**

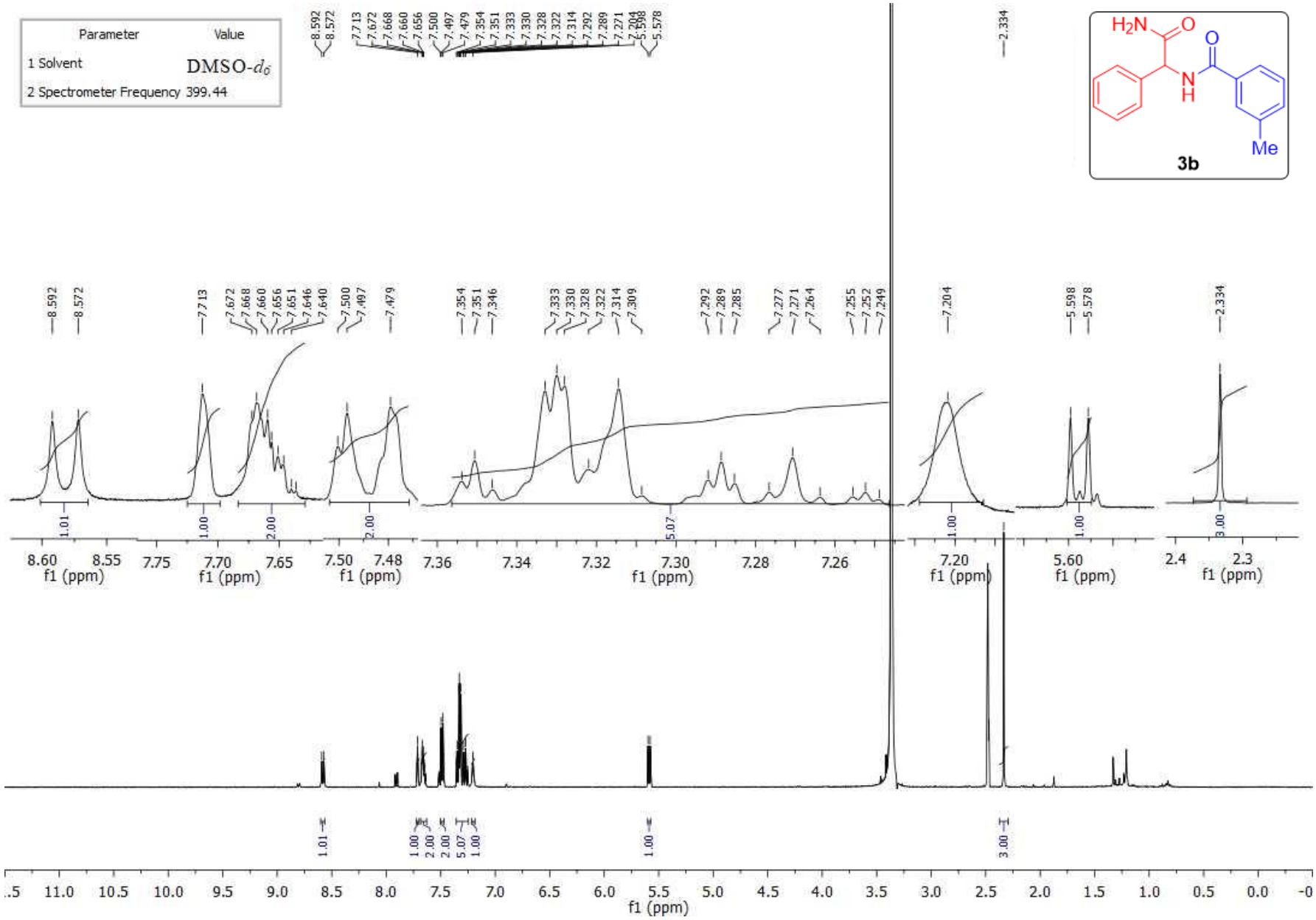


Fig. S128. ^{1}H NMR spectra of *N*-(2-amino-2-oxo-1-phenylethyl)-3-methylbenzamide **(3b).**

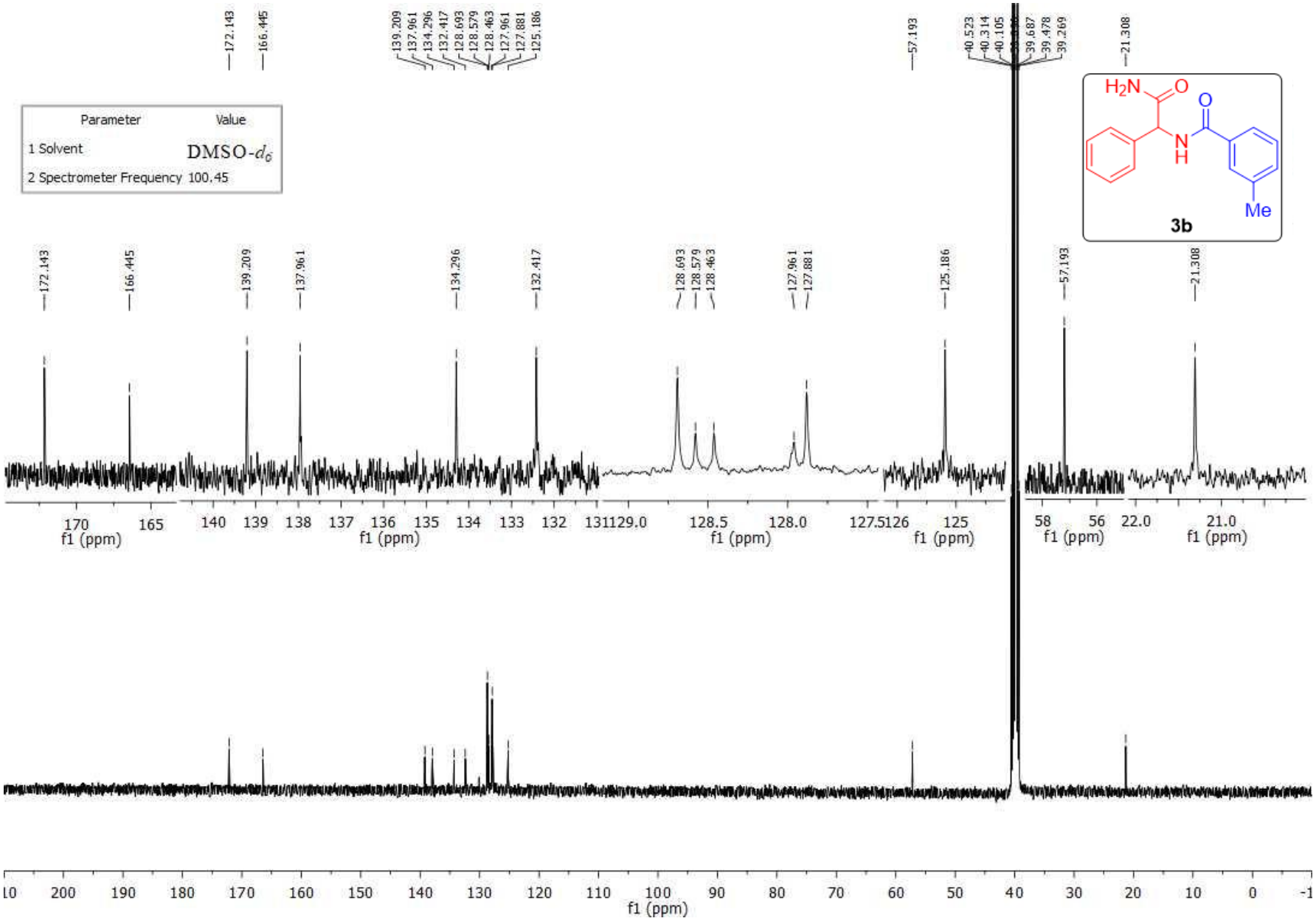
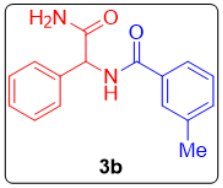
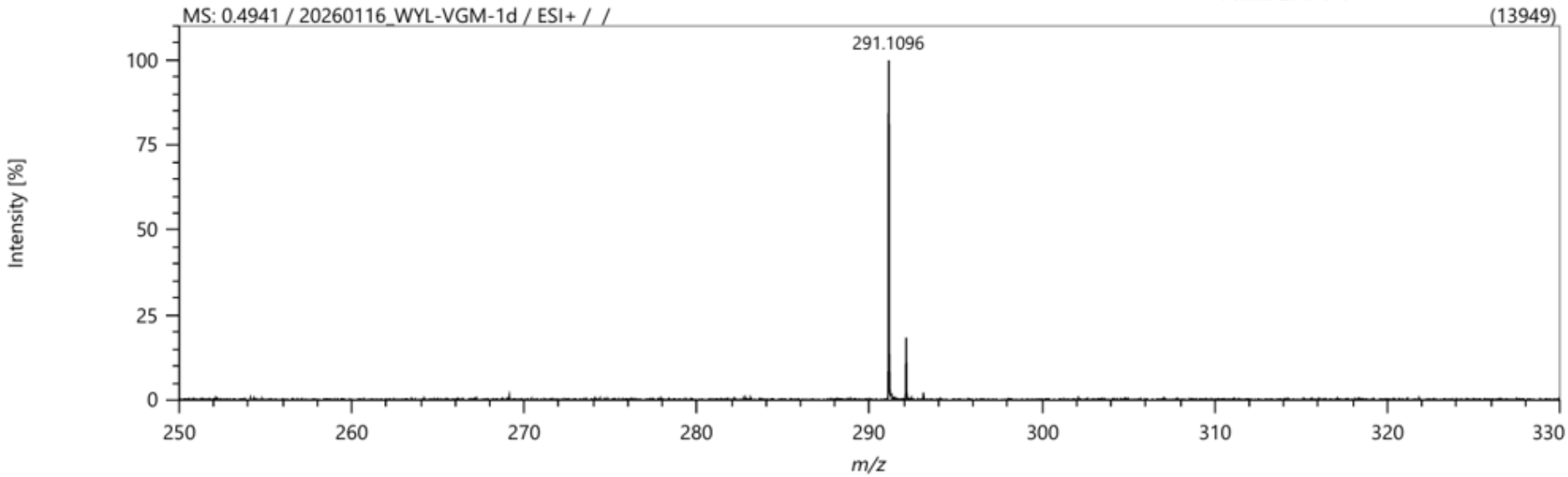


Fig. S129. ^{13}C NMR spectra of *N*-(2-amino-2-oxo-1-phenylethyl)-3-methylbenzamide **(3b).**



Chemical Formula: $C_{16}H_{16}N_2O_2Na$ $[M+Na]^+$ Cald: 291.1109
Found: 291.1096

Spectrum



Elemental Composition

Parameters		Elements Set 2:					
Tolerance:	±10.00 ppm	Symbol	C	H	O	N	Na
Electron:	Odd/Even	Min	1	0	2	2	1
Charge:	+1	Max	400	1000	2	3	1
DBE:	-99.0 - 999.0						

Results

Mass	Formula	Calculated Mass	Mass Difference [mDa]	Mass Difference [ppm]	DBE
291.10957	C16 H16 N2 O2 Na	291.11040	-0.83	-2.83	9.5

Fig. S130. HRMS data of *N*-(2-amino-2-oxo-1-phenylethyl)-3-methylbenzamide **(3b).**

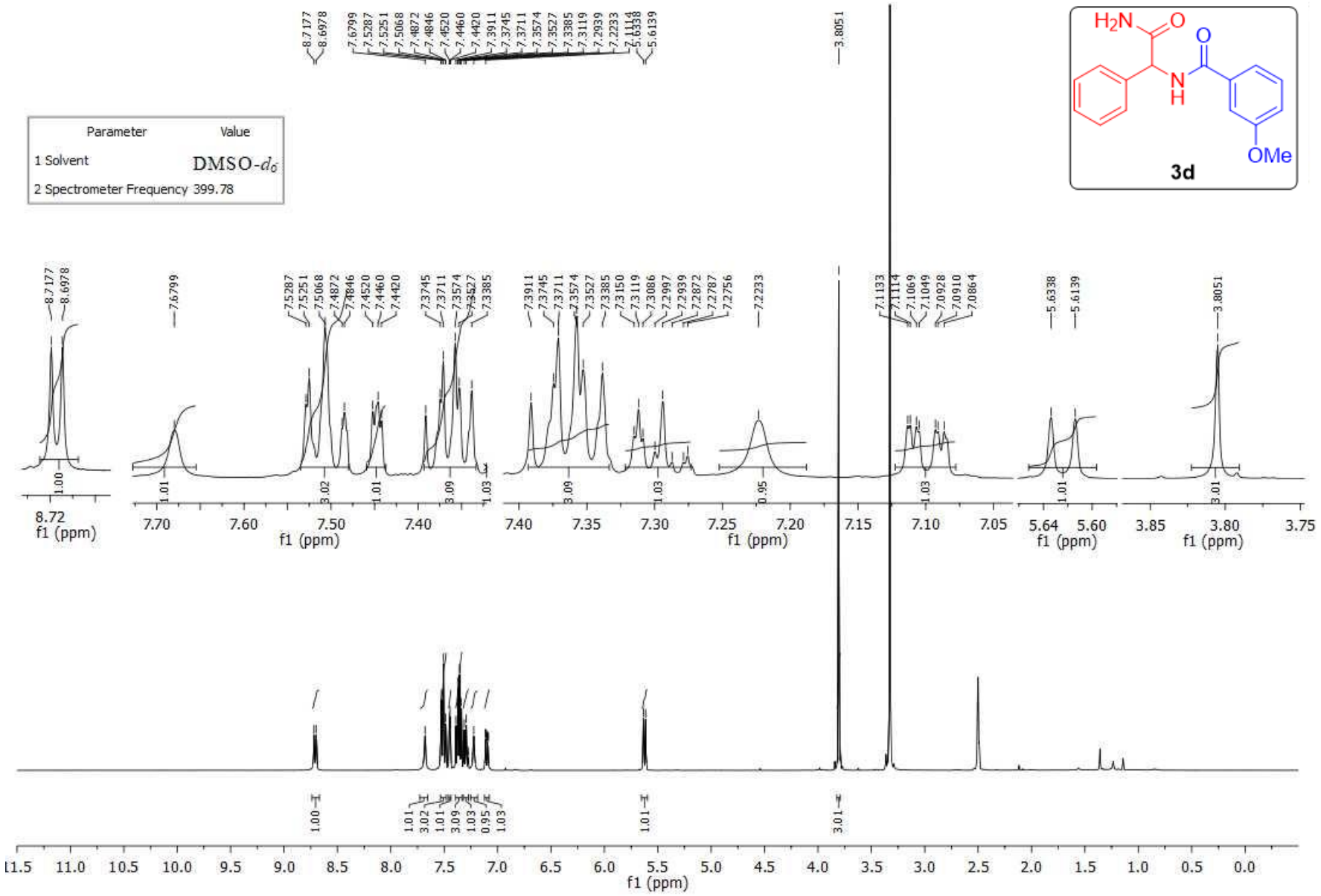


Fig. S131. ^{1}H NMR spectra of *N*-(2-amino-2-oxo-1-phenylethyl)-3-methoxybenzamide **(3d).**

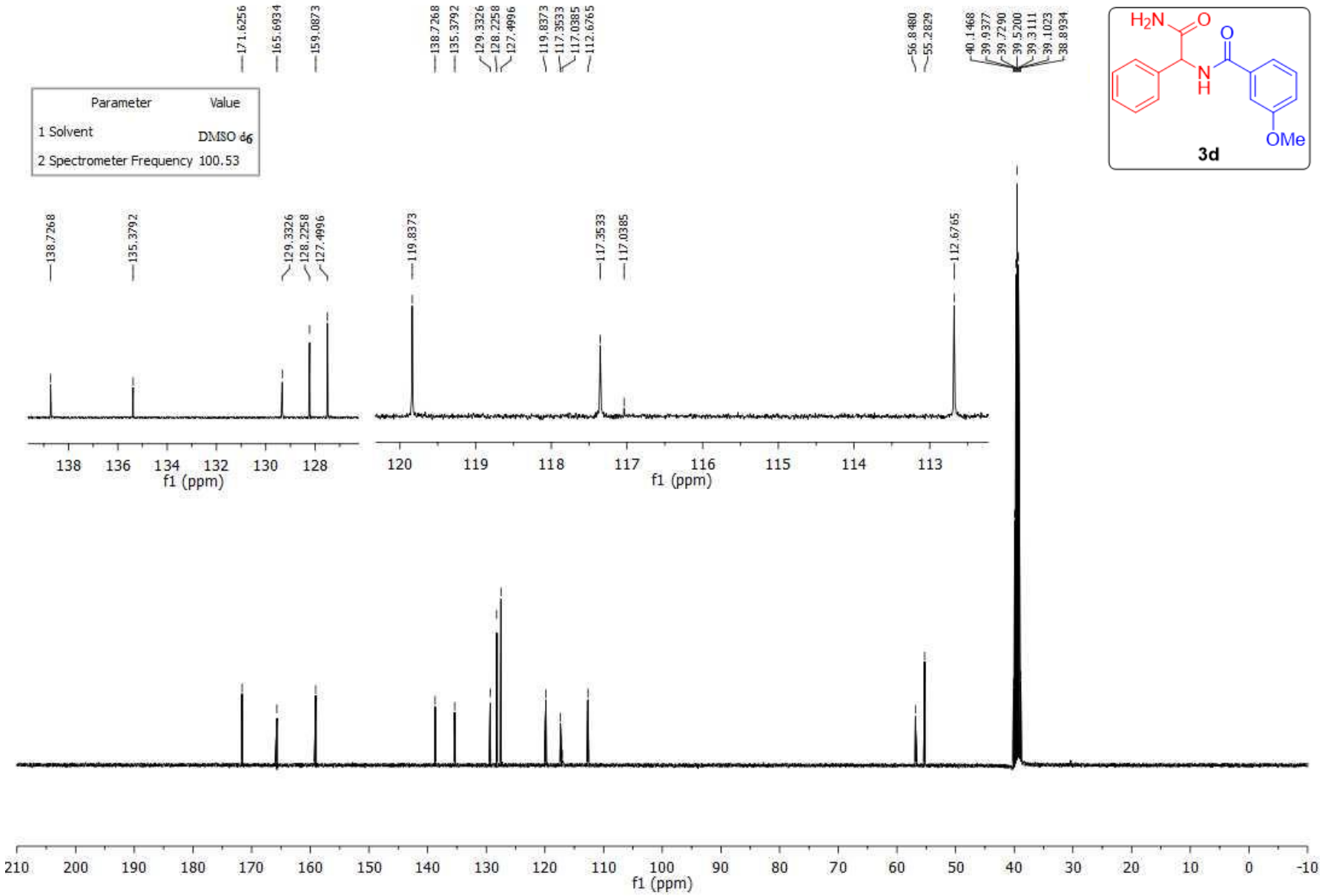


Fig. S132. ^{13}C NMR spectra of *N*-(2-amino-2-oxo-1-phenylethyl)-3-methoxybenzamide **(3d).**

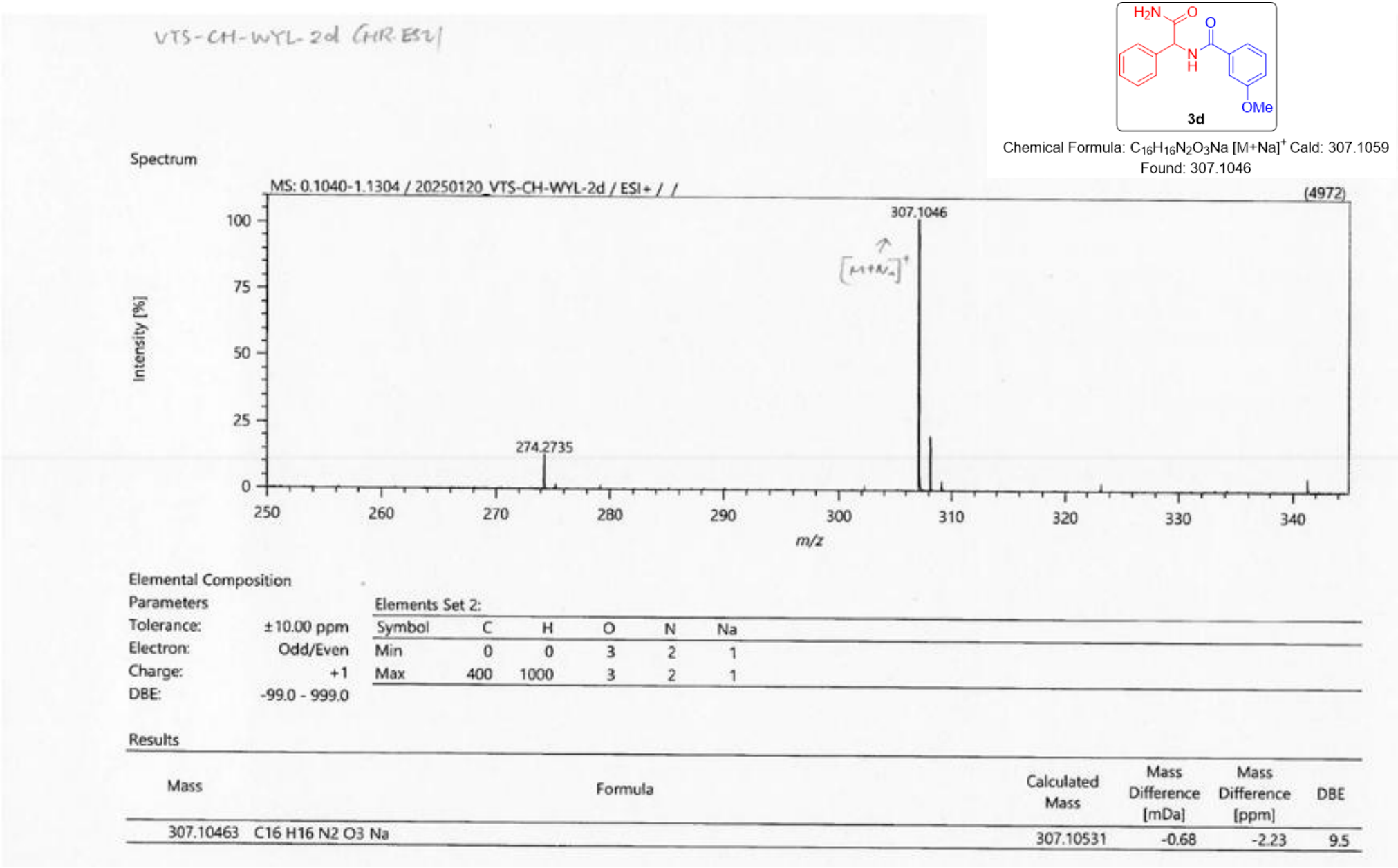


Fig. S133. HRMS data of *N*-(2-amino-2-oxo-1-phenylethyl)-3-methoxybenzamide **(3d).**

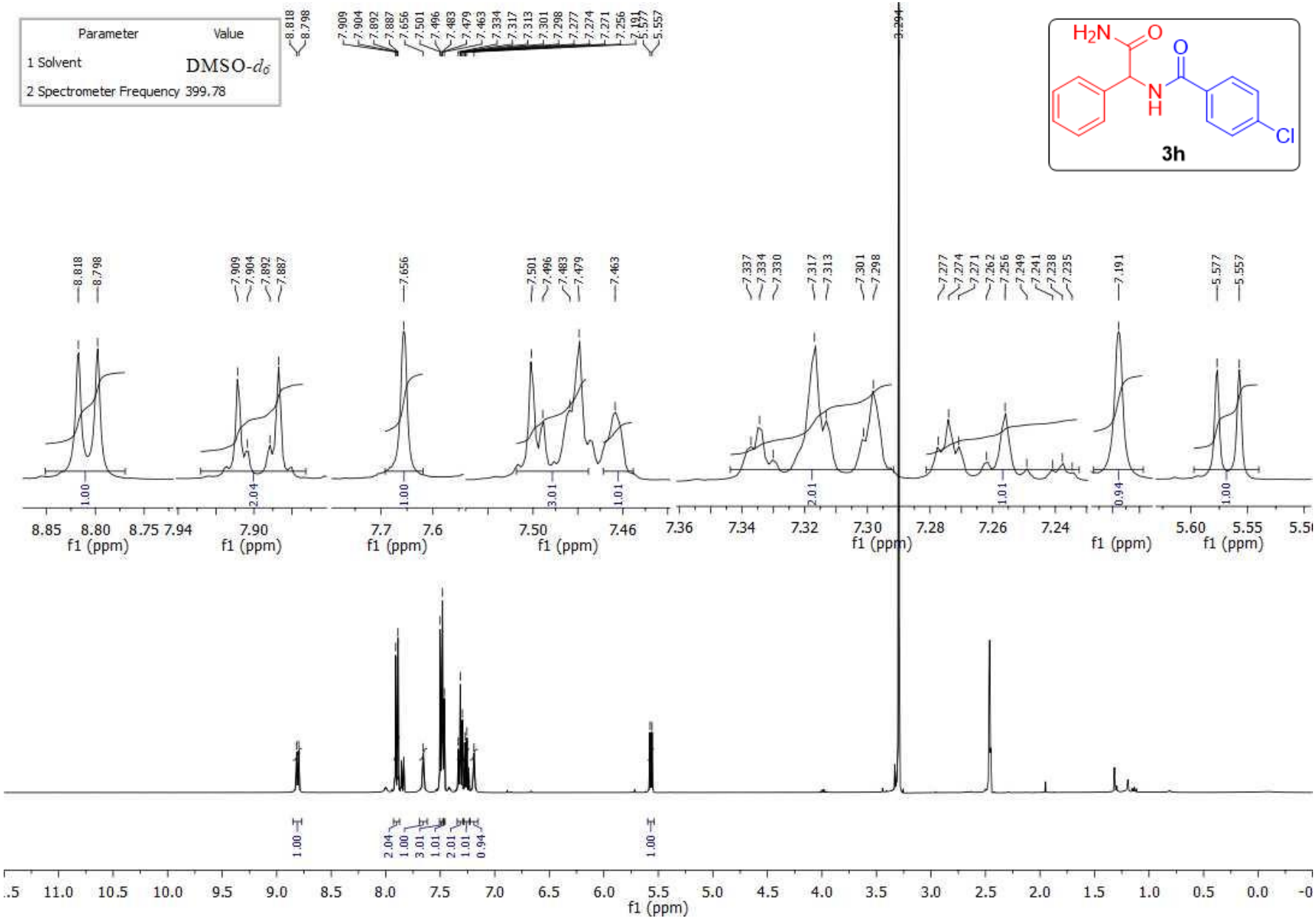


Fig. S134. [1]H NMR spectra of *N*-(2-amino-2-oxo-1-phenylethyl)-4-chlorobenzamide **(3h).**

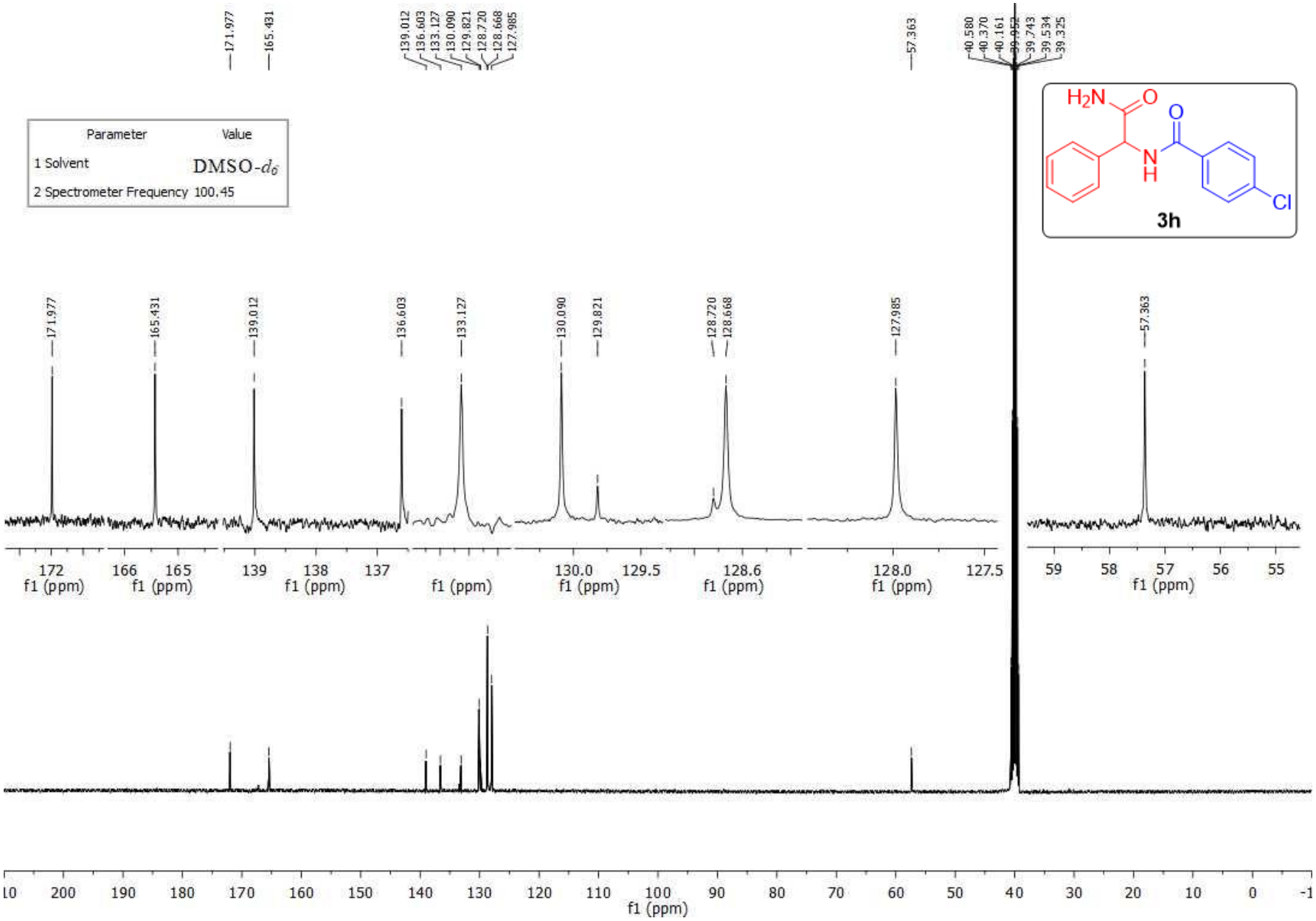
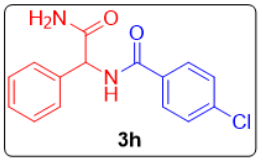
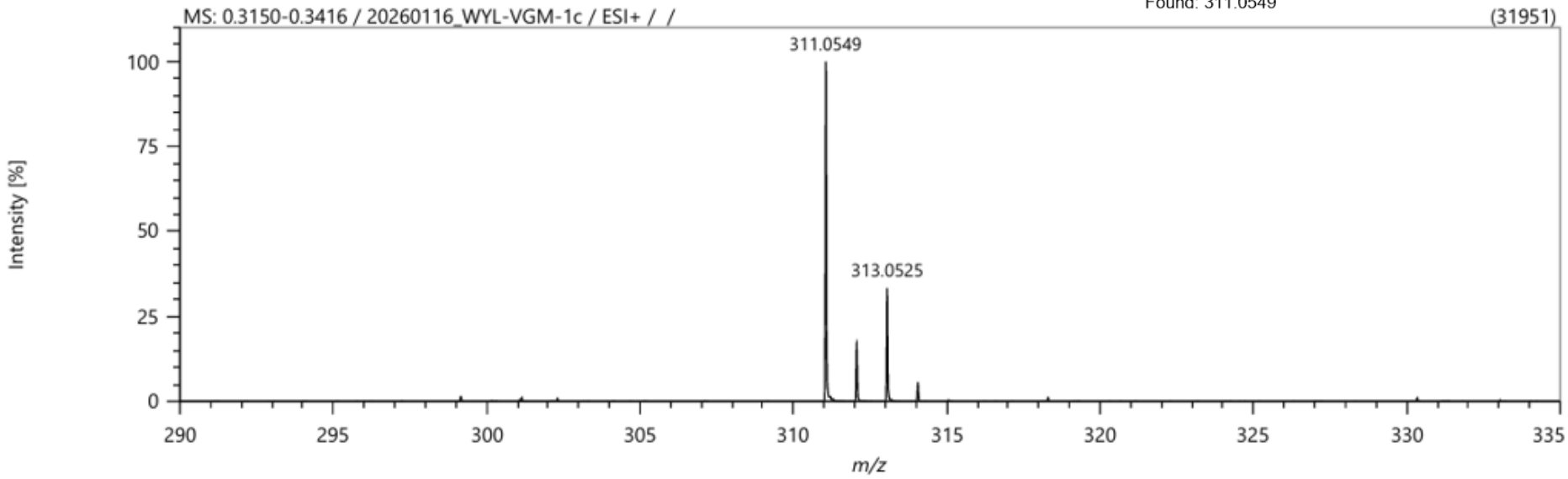


Fig. S135. ^{13}C NMR spectra of *N*-(2-amino-2-oxo-1-phenylethyl)-4-chlorobenzamide **(3h).**



Chemical Formula: $C_{15}H_{13}ClN_2O_2Na$ $[M+Na]^+$ Cald: 311.0563
Found: 311.0549

Spectrum



Elemental Composition

Parameters		Elements Set 2:						
Tolerance:	±10.00 ppm	Symbol	C	H	O	N	Na	Cl
Electron:	Odd/Even	Min	1	0	2	2	1	1
Charge:	+1	Max	400	1000	2	3	1	1
DBE:	-99.0 - 999.0							

Results

Mass	Formula	Calculated Mass	Mass Difference [mDa]	Mass Difference [ppm]	DBE
311.05491	C15 H13 N2 O2 Na Cl	311.05578	-0.86	-2.78	9.5

Fig. S136. HRMS data of ***N*-(2-amino-2-oxo-1-phenylethyl)-4-chlorobenzamide (3h).**

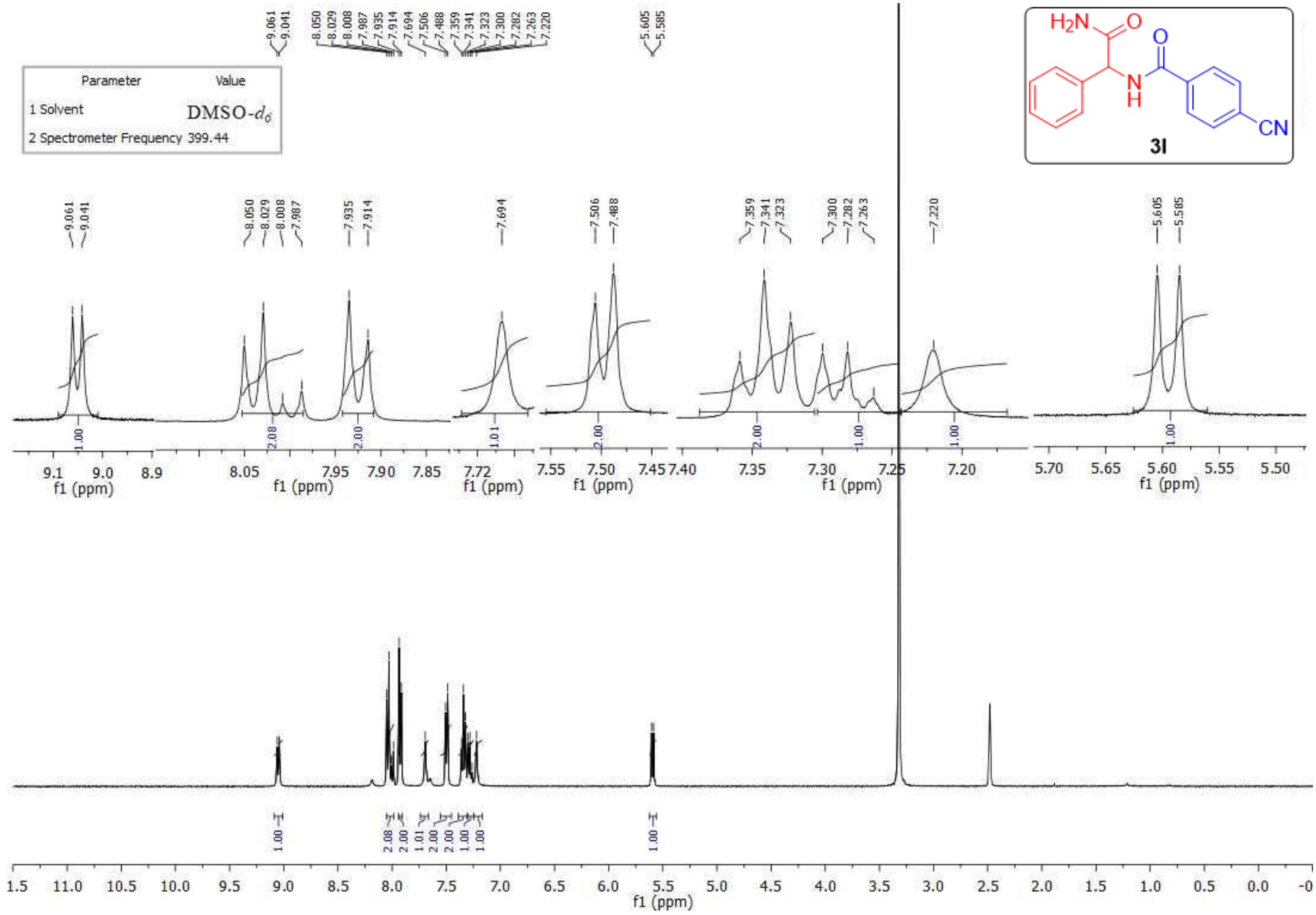


Fig. S137. ^{1}H NMR spectra of *N*-(2-amino-2-oxo-1-phenylethyl)-4-cyanobenzamide **(3l).**

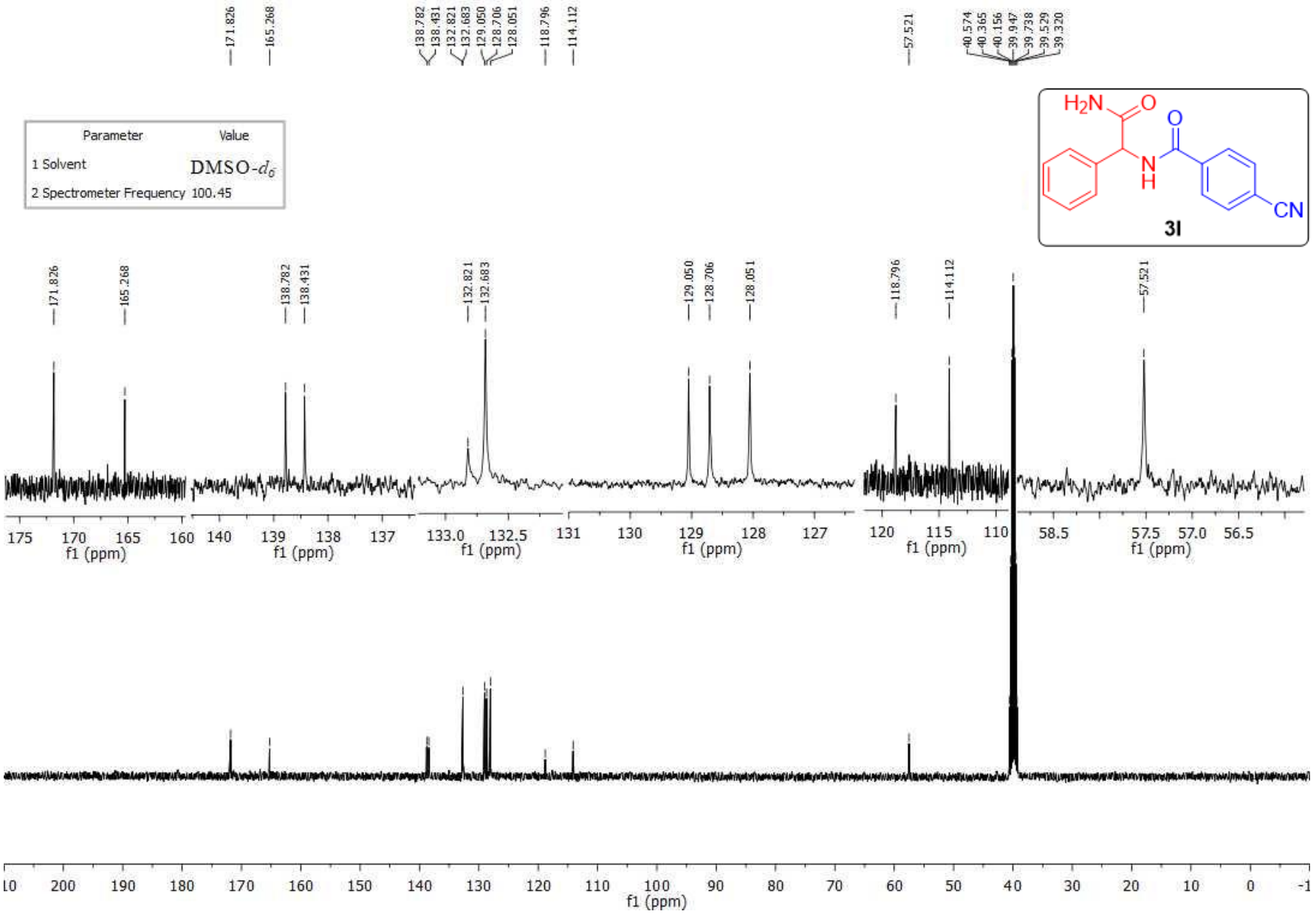
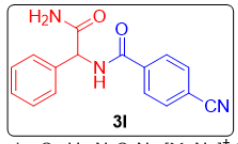
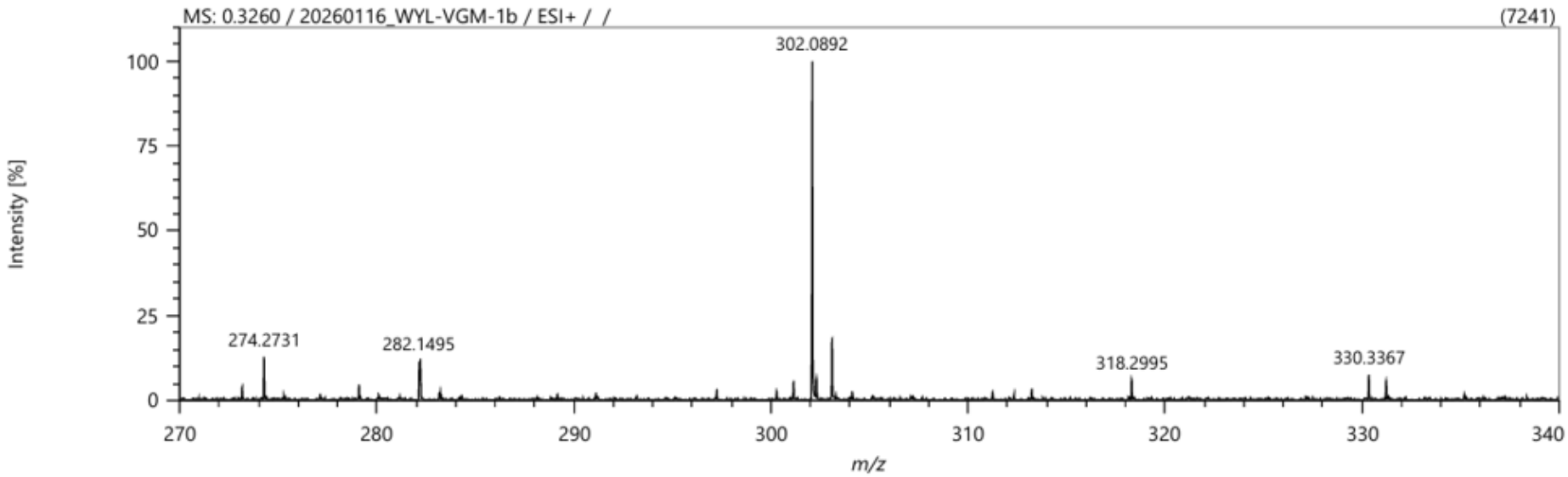


Fig. S138. ^{13}C NMR spectra of *N*-(2-amino-2-oxo-1-phenylethyl)-4-cyanobenzamide **(3l).**



Chemical Formula: $C_{16}H_{13}N_3O_2Na$ $[M+Na]^+$ Cald: 302.0905
Found: 302.0892

Spectrum



Elemental Composition

Parameters		Elements Set 2:					
Tolerance:	±10.00 ppm	Symbol	C	H	O	N	Na
Electron:	Odd/Even	Min	1	0	2	3	1
Charge:	+1	Max	400	1000	2	3	1
DBE:	-99.0 - 999.0						

Results

Mass	Formula	Calculated Mass	Mass Difference [mDa]	Mass Difference [ppm]	DBE
302.08924	C16 H13 N3 O2 Na	302.09000	-0.76	-2.52	11.5

Fig. S139. HRMS data of *N*-(2-amino-2-oxo-1-phenylethyl)-4-cyanobenzamide **(3l).**

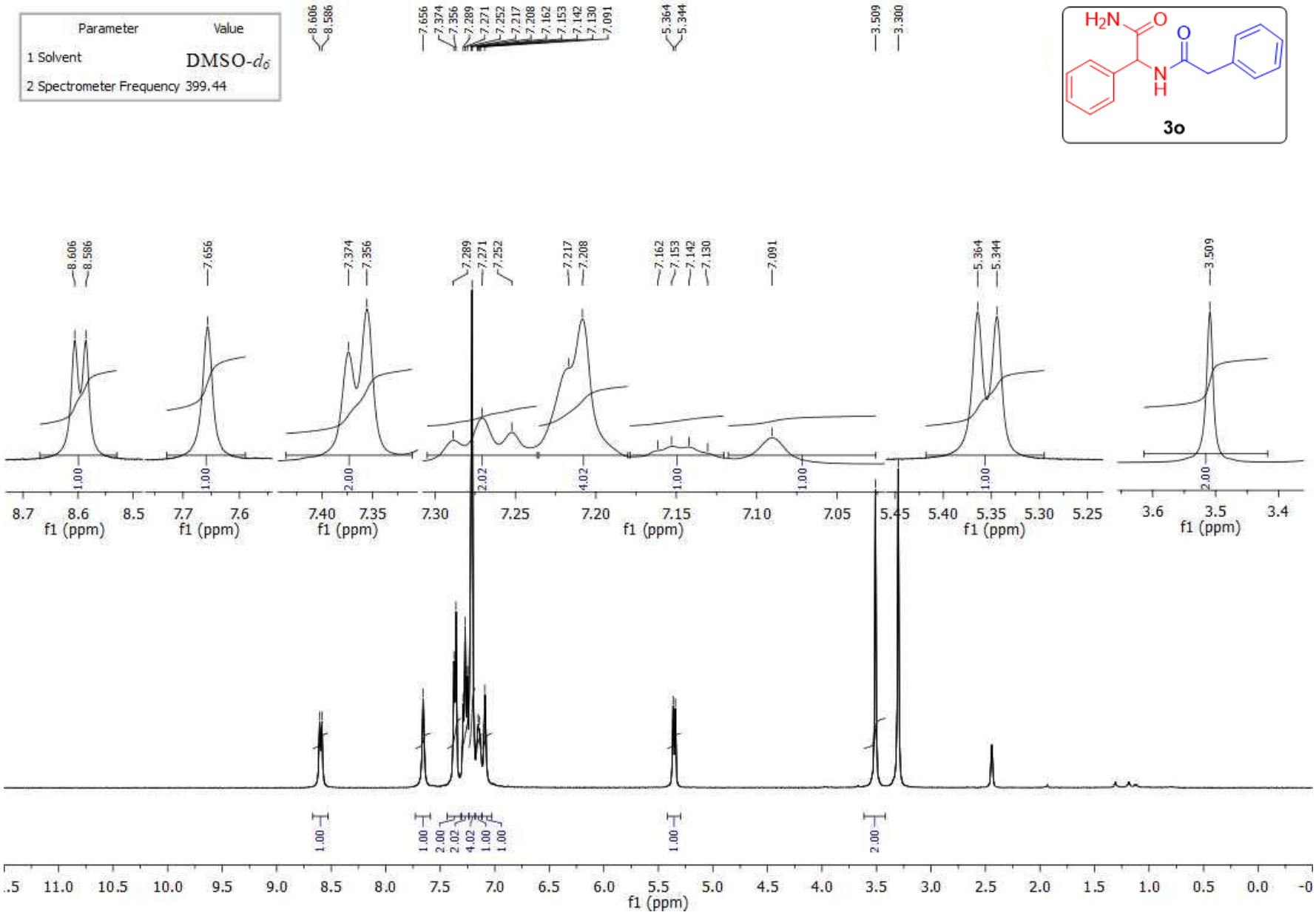


Fig. S140. ^{1}H NMR spectra of *N*-(2-amino-2-oxo-1-phenylethyl)-2-phenylacetamide **(3o).**

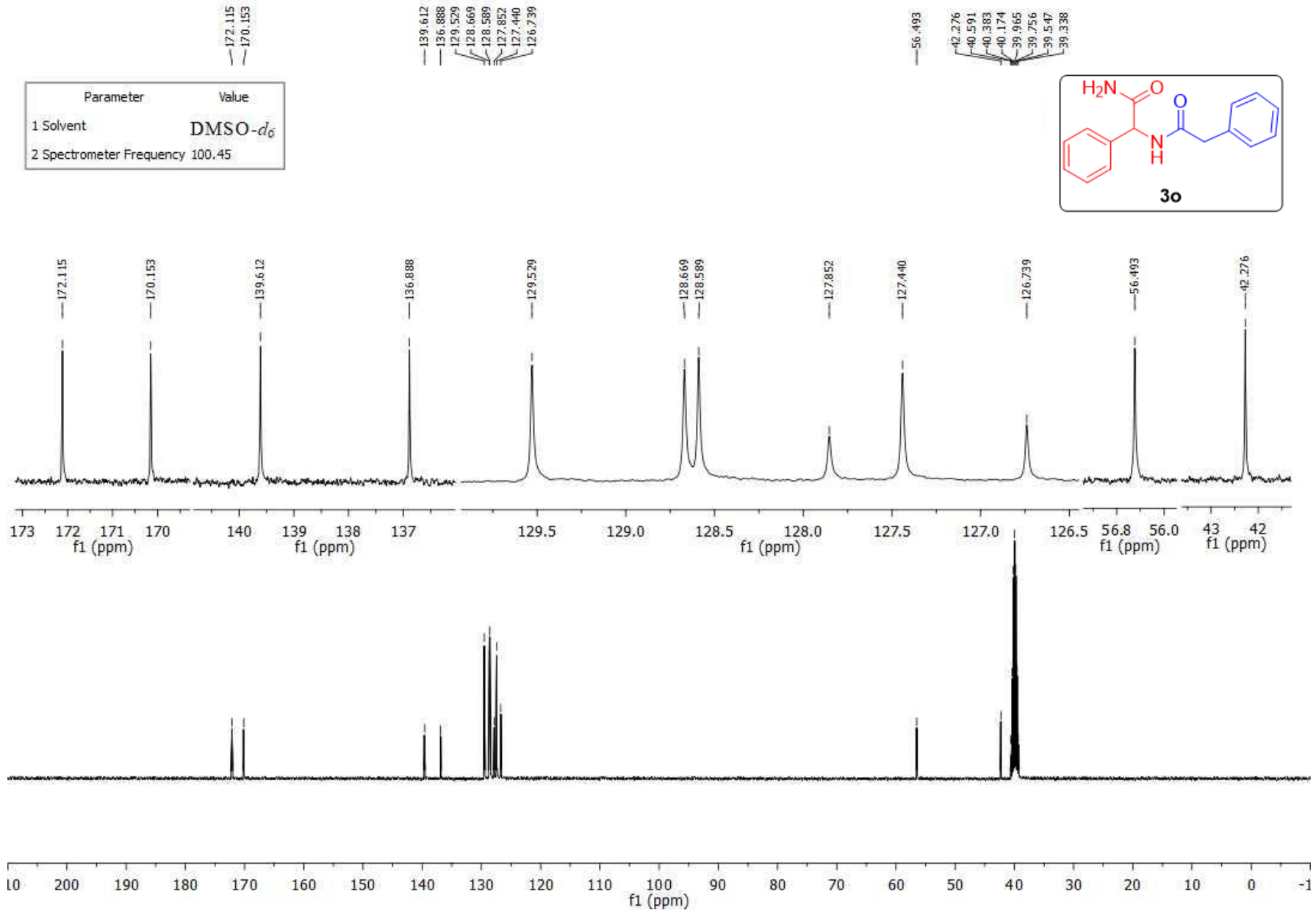
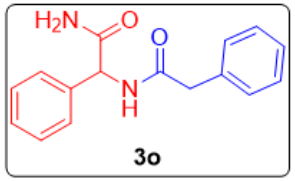
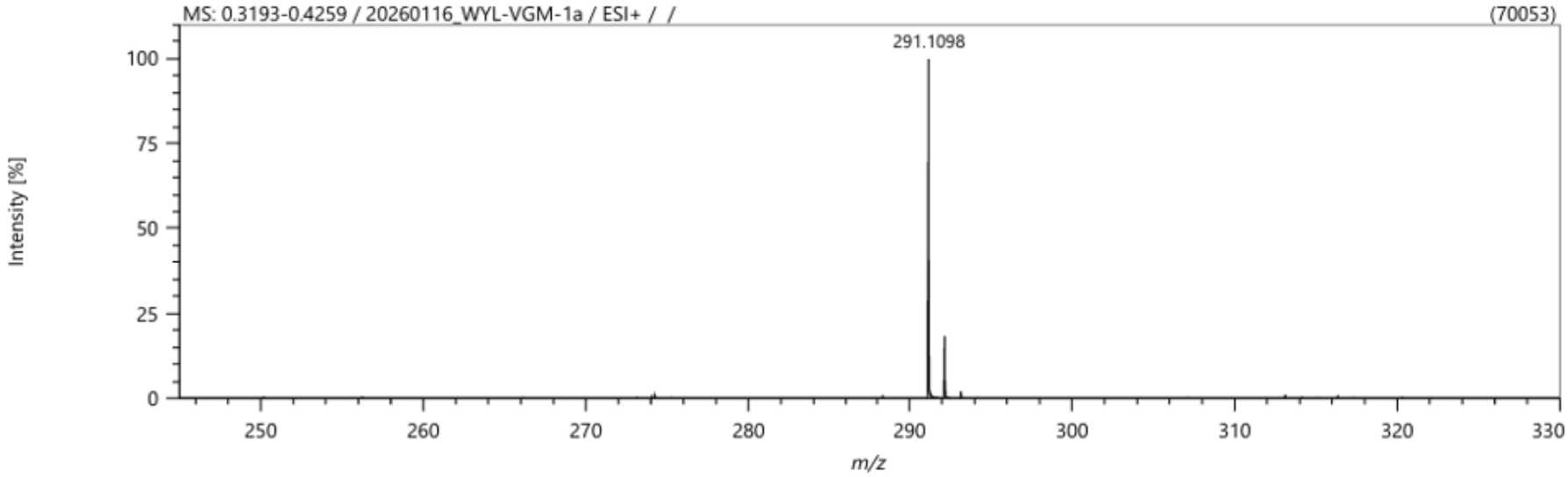


Fig. S141. ^{13}C NMR spectra of *N*-(2-amino-2-oxo-1-phenylethyl)-2-phenylacetamide **(3o).**



Chemical Formula: $C_{16}H_{16}N_2O_2Na$ $[M+Na]^+$ Cald: 291.1109
Found: 291.1098

Spectrum



Elemental Composition

Parameters		Elements Set 2:					
Tolerance:	±10.00 ppm	Symbol	C	H	O	N	Na
Electron:	Odd/Even	Min	1	0	2	2	1
Charge:	+1	Max	400	1000	2	2	1
DBE:	-99.0 - 999.0						

Results

Mass	Formula	Calculated Mass	Mass Difference [mDa]	Mass Difference [ppm]	DBE
291.10978	C16 H16 N2 O2 Na	291.11040	-0.62	-2.12	9.5

Fig. S142. HRMS data of *N*-(2-amino-2-oxo-1-phenylethyl)-2-phenylacetamide **(3o).**

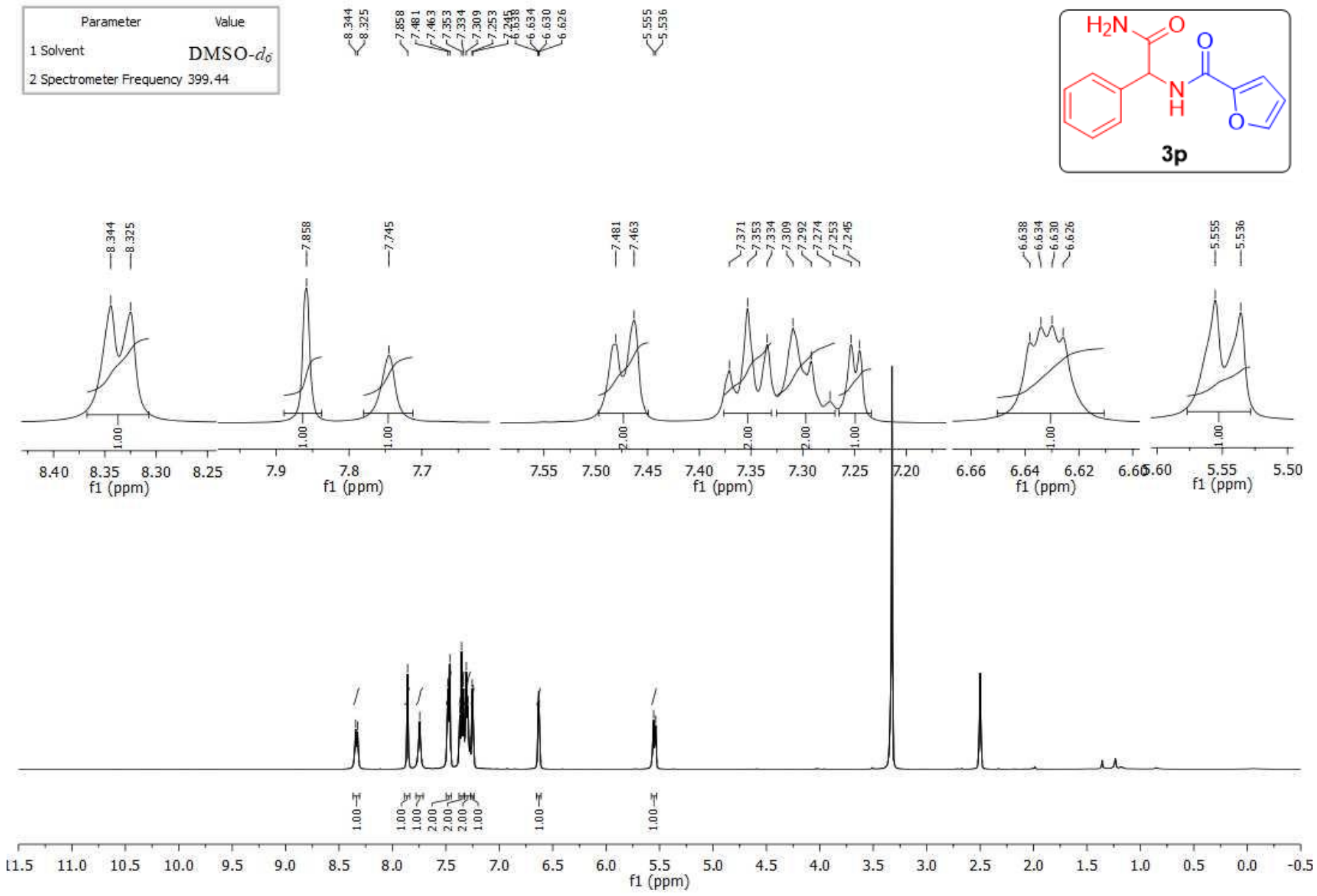


Fig. S143. ^{1}H NMR spectra of ***N*-(2-**amino-2-oxo-1-phenylethyl)furan-2-carboxamide **(3p).**

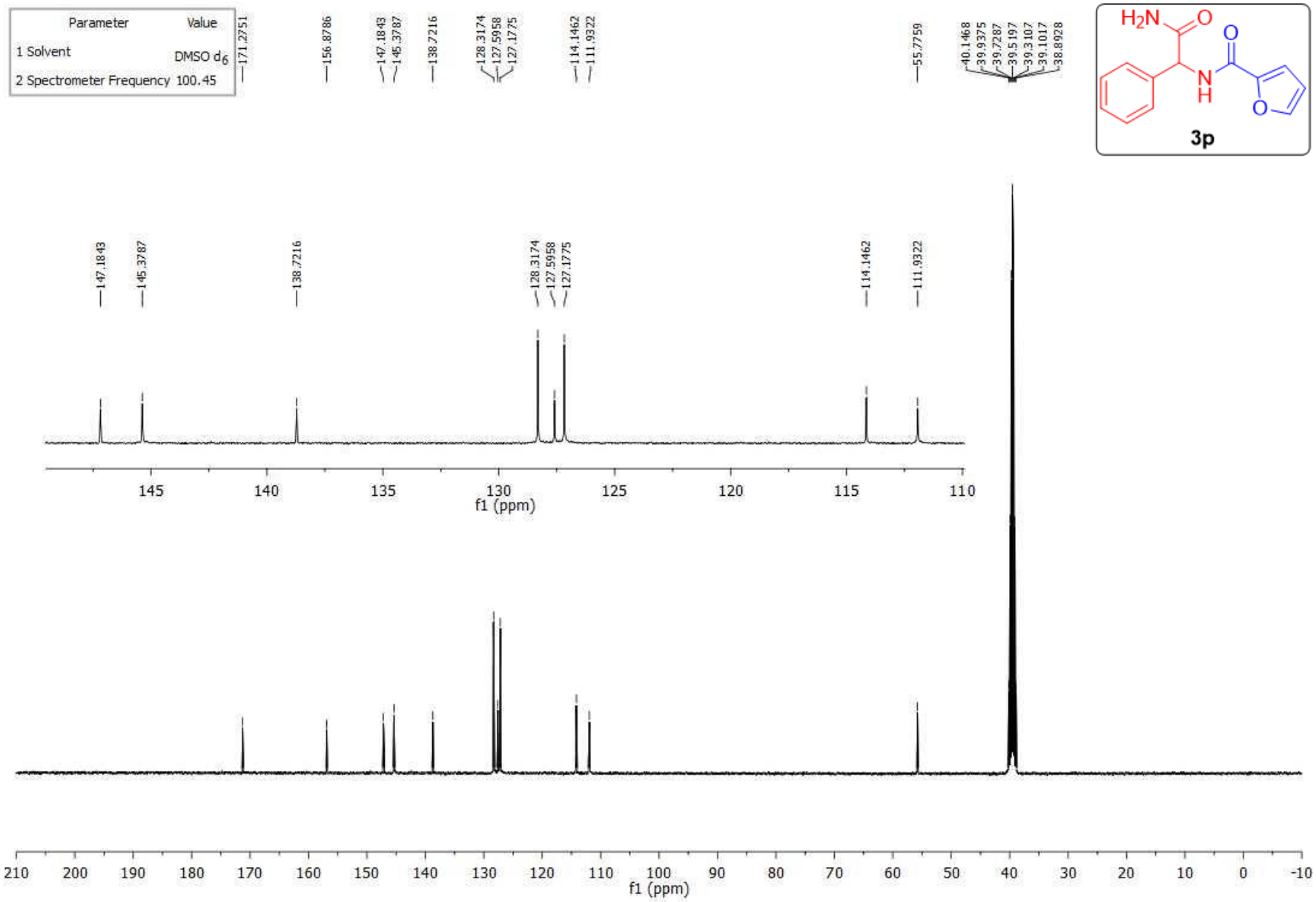


Fig. S144. ^{13}C NMR spectra of *N*-(2-amino-2-oxo-1-phenylethyl)furan-2-carboxamide **(3p).**

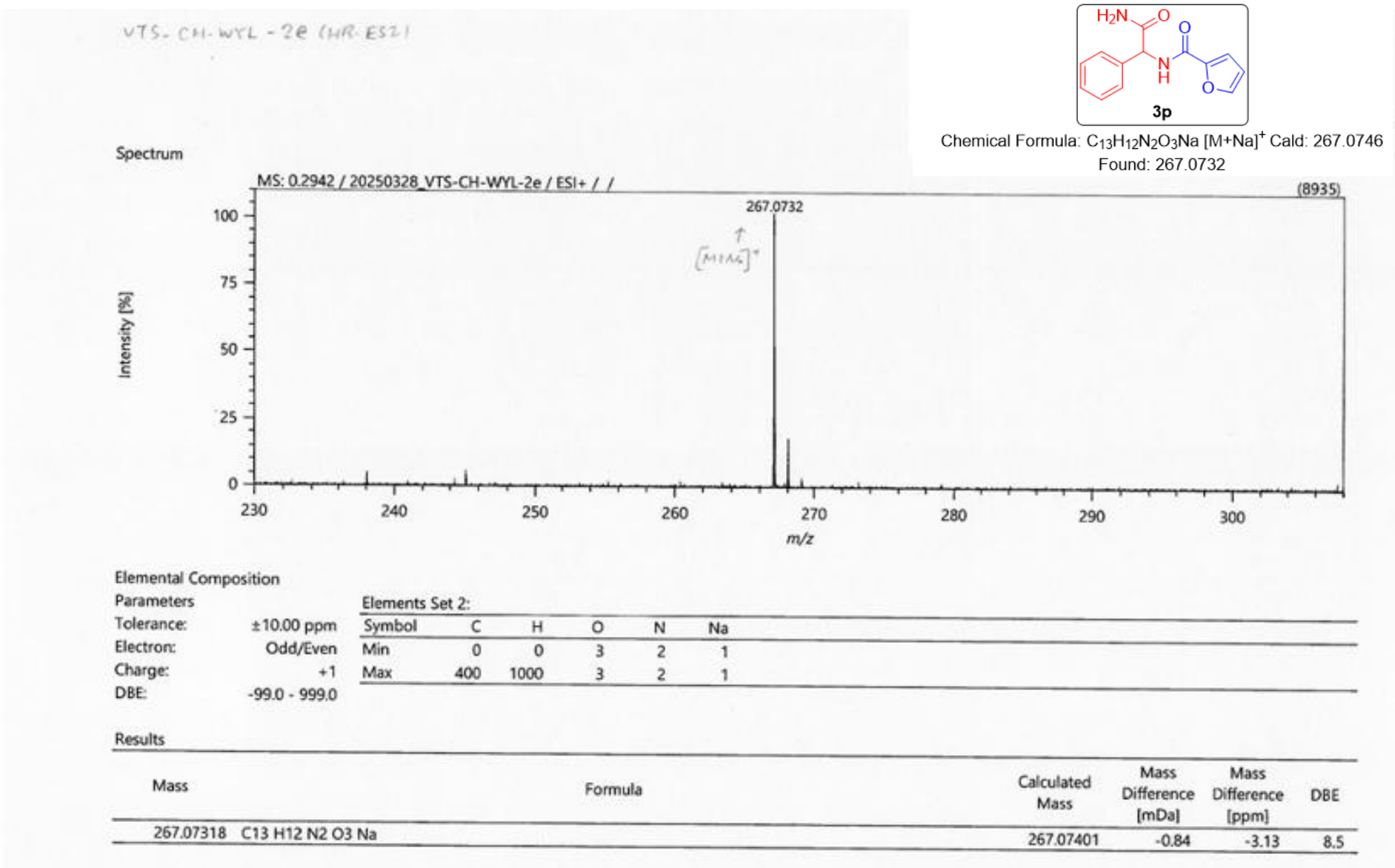


Fig. S145. HRMS data of *N*-(2-amino-2-oxo-1-phenylethyl)furan-2-carboxamide **(3p).**