supporting information for

Visible-light-mediated C-H amidation of imidazoheterocycles with N-amidopyridiniums

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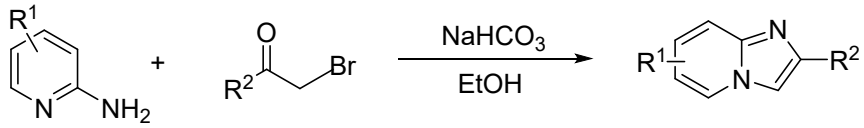
1. General information

Unless otherwise stated, all commercial reagents were used without additional purification. Column chromatography was undertaken on silica gel (200-300 mesh) using a proper eluent system. ^{1}H NMR, ^{19}F NMR, and ^{13}C NMR spectra were recorded on a spectrometer at 400, 376 and 101 MHz, respectively, with deuteraterated chloroform as solvent. The chemical shifts δ are reported in ppm relative to tetramethylsilane (δ = 0 ppm) or residual $CHCl_3$ (δ = 77.00 ppm). The following abbreviations were used to describe peak splitting patterns when appropriate: s (singlet), d (doublet), t (triplet), q (quartet), m (multiplet), dd (doublet of doublet), td (triplet of doublet). Coupling constants *J* are reported in Hertz (Hz). High-resolution mass spectrometry (**HRMS**) was performed on a Q-TOF spectrometer using electrospray ionization (**ESI**). The imidazo[1,2-*a*]pyridines[1-3] and N-amidopyridinium salts[4-6] were prepared according to references.

2. Preparation of Starting Materials

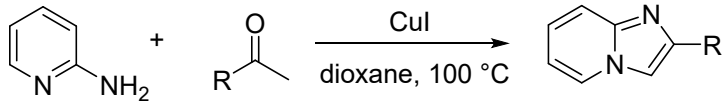
Synthesis of Substrates 1

Procedure A (1a-1o, 1q-1ag, 1ai)：



A round-bottom flask equipped with a magnetic stir bar was charged with 2-aminopyridine (1.3 equiv.), the corresponding α-bromo-ketones (1.0 equiv.), and $NaHCO_3$ (1.5 equiv.). EtOH was then added, and the resulting solution was stirred at room temperature for 6 h. After the completion of the reaction, the resulting mixture was diluted with water and extracted with ethyl acetate (three times). The combined organic layers were dried over anhydrous Na_2SO_4 and concentrated under reduced pressure to give the crude product. The crude product was purified by column chromatography on silica gel with petroleum ether/EtOAc as eluent to afford pure product.

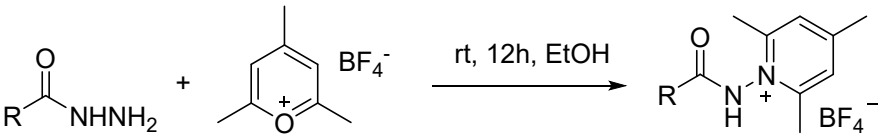
Procedure B (1p, 1ah)：



A round-bottom flask equipped with a magnetic stir bar was charged with 2-aminopyridines (1.2 equiv.), the corresponding α-bromo-ketones (1.0 equiv.), CuI (0.2 equiv.). Dioxane was then added, and the resulting solution was stirred at 100 °C under air for 14 h. After the completion of the reaction, the reaction solvent was concentrated under reduced pressure to give the crude product, which was purified by column chromatography on silica gel with petroleum ether/EtOAc as eluent to afford pure product.

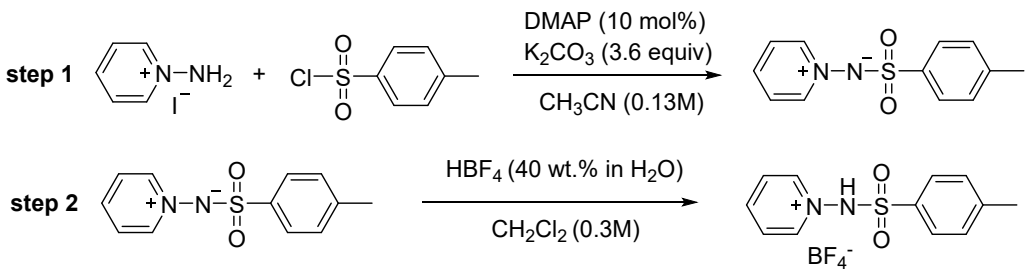
Synthesis of Substrates 2

Procedure A：



To a solution of 2,4,6-Trimethylpyrylium tetrafluor oborate (1.0 equiv.) in ethanol was added hydrazine (1.0 equiv.). The reaction mixture was stirred at room temperature for 12 h. The mixture was cooled to 0 °C and petroleum ether was added. The precipitate was collected, washed with Et_2O and dried to give products **2**.

Procedure B：



Step 1: To a solution of 1-aminopyridinium iodide (1.0 equiv.) and distilled-CH_3CN (0.13 M) were added DMAP (10 mol%), K_2CO_3 (3.6 equiv.) and sulfonyl chloride (1.0 equiv.) at 0 °C (ice water bath) under N_2. Then, the cooling bath was removed and the reaction mixture was stirred at room temperature for 6 h. The suspension was filtered and concentrated in vacuo. The residue was suspended in DCM and filtered to remove inorganic impurities. After the solvent was removed under reduced pressure, The crude product was purified by column chromatography on silica gel with DCM/MeOH as eluent to afford pure product.

Step 2: The obtained ylide was disolved in DCM (0.3 M) and tetrafluoroboric acid solution (40 wt.% in H_2O) (1.3 equiv.) was added to the solution at room temperature. The reaction mixture was stirred for 30 min, then the product was precipitated with Et_2O. The resulting precipitate was filtered off, washed with Et_2O and dried under vacuum.

3. General procedure for N-(2-phenylimidazo[1,2-a]pyridin-3-yl)acetamide

Under Ar atmosphere, a reaction tube (25 mL) equipped with a magnetic stirrer bar was charged with imidazo[1,2-a]pyridine (**1**, 0.2 mmol), N-amidopyridinium salts (**2**, 0.24 mmol), 4CzIPN (0.014 mmol, 7 mol%), Et_3N (0.24 mmol), and DMSO (1.0 mL). The reaction mixture was stirred with a 9 W blue LEDs irradiation at room temperature for 36 h. The resulting mixture was diluted with water (10 mL) and extract with EtOAc (10 mL). The combined organic layer was dried with anhydrous $MgSO_4$. After removal of EtOAc under vacuum, the residue was purified by chromatography on silica gel (eluent: EA/PE) to give the desired product **3**.

4. Radical-trapping experiment

Two equivalents of radical scavenger TEMPO (2,2,6,6-tetramethylpiperidinoxy), DPE (1,1-diphenylethylene) or BHT (butylated hydroxytoluene) was added to the reaction of **1a** with **2a** in the standard conditions. After 36 h, the reaction mixture was cooled to room temperature. The crude reaction mixture was detected by HRMS or GC-MS.

5. Luminescence Quenching Experiments

Emission intensities were recorded using an Edinburgh UK FLS100 photoluminescence spectrometer from 400 nm to 800 nm. After irradiation of 5 × 10-5M of 4CzIPN and different concentration of quencher in solvent (CH_2Cl_2) at 375 nm,

its fluorescence was measured.

As shown in Figures S1-S3, the emission intensity of the excited state of photocatalyst 4CzIPN is decreased in the presence of **2a** or Et_3N. In contrast, when solutions of **1a** have been employed, no fluorescence quenching has been observed. The liner relationship between I_0/I and the different concentration of **1a**, **2a**, Et_3N was shown in Figure S4.

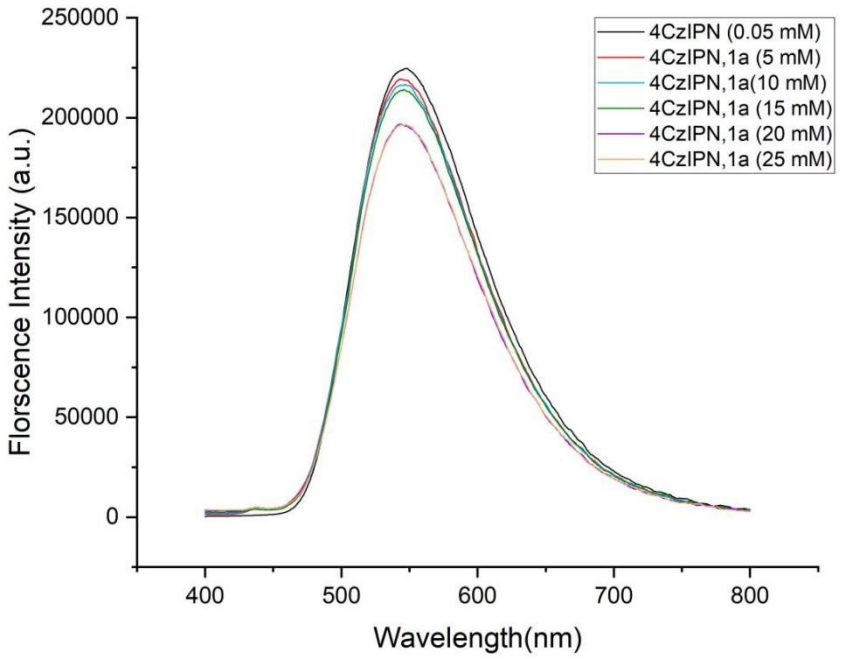


Figure S1. Fluorescence quenching of 4CzIPN with **1a**.

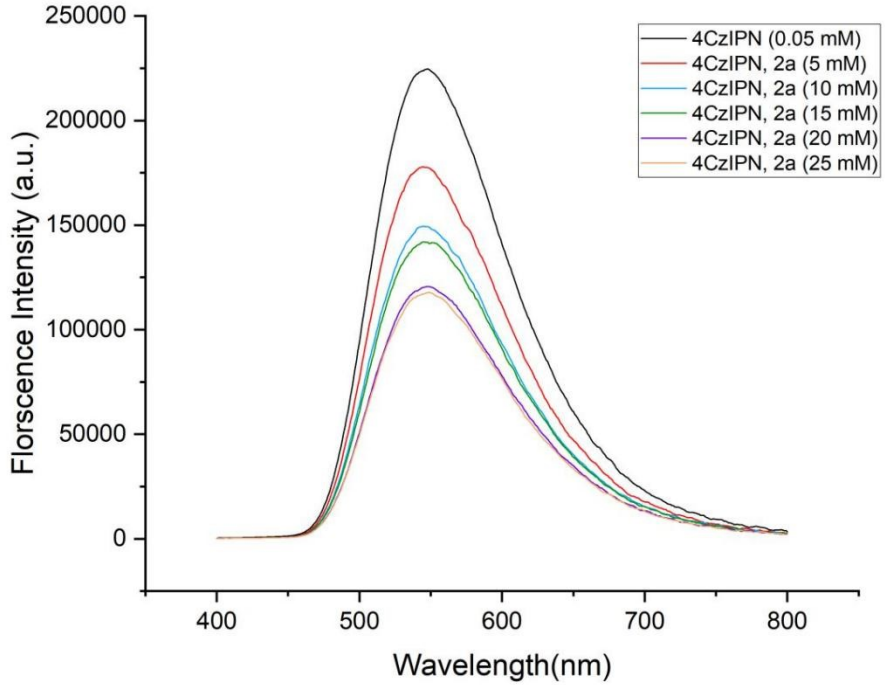


Figure S2. Fluorescence quenching of 4CzIPN with **2a**.

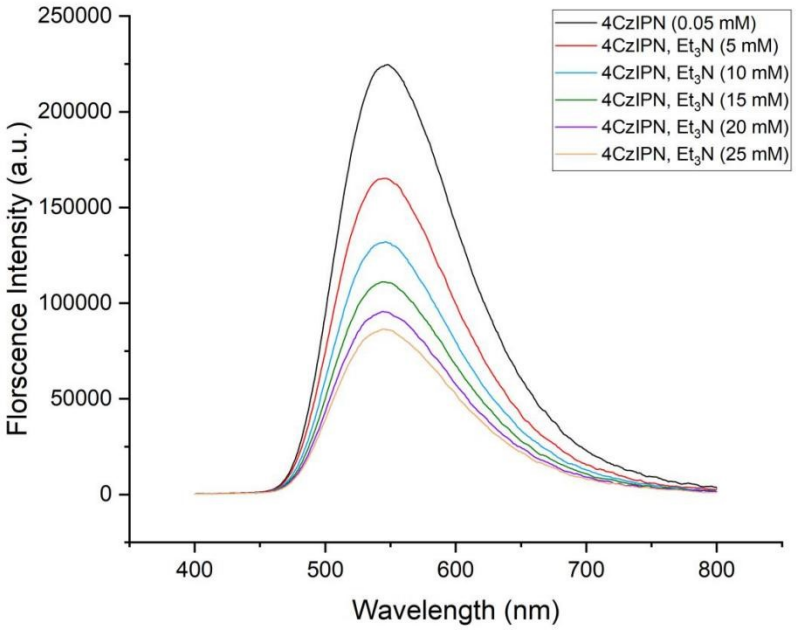


Figure S3. Fluorescence quenching of 4CzIPN with Et_3N.

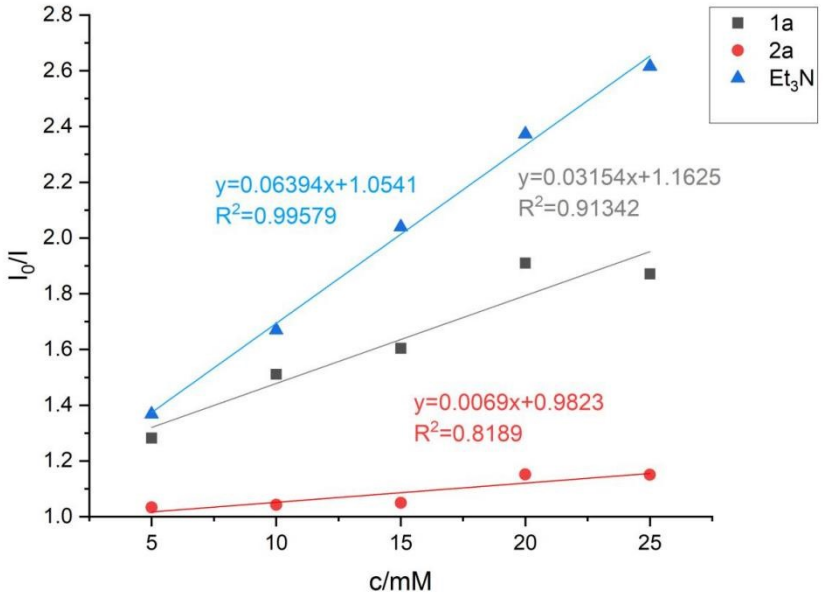
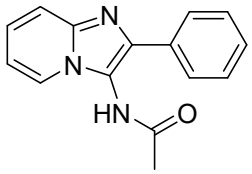
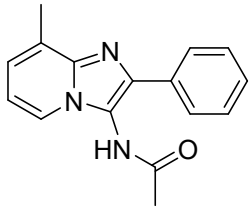


Figure S4. The liner relationship between I_0/I (I_0 and I are the florescence intensities of 4CzIPN before and after adding the **1a**, **2a** and Et_3N with various concentration)

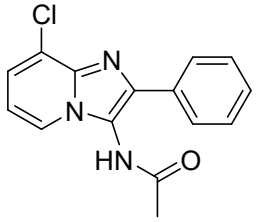
6. Characterization of the products



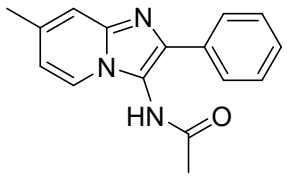
N-(2-phenylimidazo[1,2-a]pyridin-3-yl)acetamide (3a)[7]: 37 mg, 74% yield, white solid; mp 217–219 °C. ^{1}H NMR (400 MHz, DMSO-d_6) δ 10.30 (s, 1H), 8.08 (dt, J = 6.8, 1.2 Hz, 1H), 8.03 – 7.96 (m, 2H), 7.61 (dt, J = 9.0, 1.2 Hz, 1H), 7.47 (t, J = 7.7 Hz, 2H), 7.39 – 7.27 (m, 2H), 6.95 (td, J = 6.8, 1.1 Hz, 1H), 2.24 (s, 3H).^{13}C NMR (101 MHz, DMSO-d_6) δ 170.9, 142.3, 137.7, 134.0, 129.0, 128.1, 127.2, 125.5, 124.3, 117.3, 116.2, 112.5, 23.2. HRMS (ESI-TOF) m/z [M + H]$^+$ calcd for $C_{15}H_{14}N_3O$ 252.1131, found 252.1135.



N-(8-methyl-2-phenylimidazo[1,2-a]pyridin-3-yl)acetamide (3b)[8]: 36 mg, 68% yield, white solid; mp 216−218 °C. ^{1}H NMR (400 MHz, DMSO-d_6) δ 10.17 (s, 1H), 8.02 – 7.97 (m, 2H), 7.93 (d, J = 6.8 Hz, 1H), 7.47 (t, J = 7.7 Hz, 2H), 7.38 – 7.32 (m, 1H), 7.12 (dt, J = 6.8, 1.3 Hz, 1H), 6.86 (t, J = 6.8 Hz, 1H), 2.55 (s, 3H), 2.23 (s, 3H).^{13}C NMR (101 MHz, DMSO-d_6) δ 170.9, 142.6, 137.2, 134.1, 129.0, 128.0, 127.2, 126.8, 124.2, 122.1, 116.5, 112.5, 23.1, 16.6. HRMS (ESI-TOF) m/z [M + H]$^+$ calcd for $C_{16}H_{16}N_3O$ 266.1288, found 266.1293.

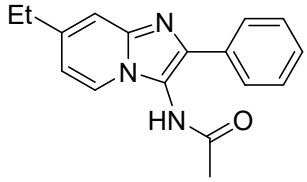


N-(8-chloro-2-phenylimidazo[1,2-a]pyridin-3-yl)acetamide (3c): 35 mg, 61% yield, white solid; mp 248–250 °C. ^{1}H NMR (400 MHz, DMSO-d_6) δ 10.29 (s, 1H), 8.13 (dd, J = 6.8, 1.2 Hz, 1H), 8.02 – 7.95 (m, 2H), 7.55 – 7.44 (m, 3H), 7.42 – 7.33 (m, 1H), 6.97 – 6.91 (m, 1H), 2.23 (d, J = 1.1 Hz, 3H).^{13}C NMR (101 MHz, DMSO-d_6) δ 170.9, 139.3, 138.3, 133.4, 129.1, 128.4, 127.3, 124.7, 123.7, 121.9, 117.8, 112.4, 23.2. HRMS (ESI-TOF) m/z [M + H]$^+$ calcd for $C_{15}H_{13}ClN_3O$ 286.0742, found 286.0744.

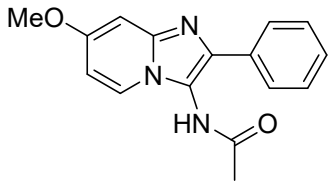


N-(7-methyl-2-phenylimidazo[1,2-a]pyridin-3-yl)acetamide (3d)[8]: white solid; 36 mg, 68% yield, mp 219–221 °C. ^{1}H NMR (400 MHz, DMSO-d_6) δ 10.14 (s, 1H), 7.99

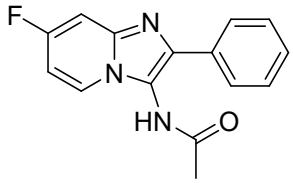
– 7.94 (m, 3H), 7.46 (t, *J* = 7.7 Hz, 2H), 7.39 – 7.30 (m, 2H), 6.79 (dd, *J* = 7.0, 1.6 Hz, 1H), 2.40 – 2.36 (m, 3H), 2.23 (s, 3H).^{13}C NMR (101 MHz, DMSO-d_6) δ 170.9, 142.7, 137.2, 136.1, 134.2, 128.9, 127.9, 127.1, 123.6, 115.7, 115.5, 114.9, 23.1, 21.2. HRMS (ESI-TOF) m/z [M + H]$^+$ calcd for $C_{16}H_{16}N_3O$ 266.1288, found 266.1288.



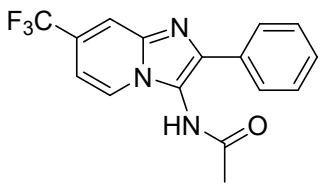
N-(7-ethyl-2-phenylimidazo[1,2-a]pyridin-3-yl)acetamide (3e): 38 mg, 67% yield, Colorless oil; ^{1}H NMR (400 MHz, DMSO-d_6) δ 10.14 (s, 1H), 8.00 – 7.94 (m, 3H), 7.46 (t, *J* = 7.7 Hz, 2H), 7.38 – 7.31 (m, 2H), 6.84 (dd, *J* = 7.1, 1.7 Hz, 1H), 2.68 (q, *J* = 7.5 Hz, 2H), 2.23 (s, 3H), 1.24 (t, *J* = 7.5 Hz, 3H).^{13}C NMR (101 MHz, DMSO-d_6) δ 170.9, 142.8, 142.1, 137.3, 134.2, 128.9, 127.9, 127.0, 123.8, 115.6, 114.2, 113.9, 28.2, 23.1, 15.1. HRMS (ESI-TOF) m/z [M + H]$^+$ calcd for $C_{17}H_{18}N_3O$ 280.1444, found 280.1448.



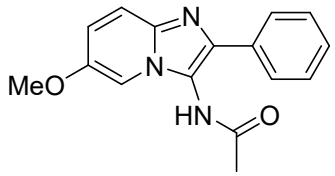
N-(7-methoxy-2-phenylimidazo[1,2-a]pyridin-3-yl)acetamide (3f): 33 mg, 58% yield, Colorless oil; ^{1}H NMR (400 MHz, DMSO-d_6) δ 10.07 (s, 1H), 7.93 (dd, *J* = 7.8, 2.0 Hz, 3H), 7.44 (t, *J* = 7.6 Hz, 2H), 7.35 – 7.26 (m, 1H), 6.98 (d, *J* = 2.4 Hz, 1H), 6.64 (dd, *J* = 7.4, 2.4 Hz, 1H), 3.85 (s, 4H), 2.20 (s, 3H).^{13}C NMR (101 MHz, DMSO-d_6) δ 170.9, 158.2, 143.8, 136.9, 134.2, 128.9, 127.8, 126.9, 124.9, 115.1, 106.9, 95.0, 56.1, 23.1. HRMS (ESI-TOF) m/z [M + H]$^+$ calcd for $C_{16}H_{16}N_3O_2$ 282.1237, found 282.1241.



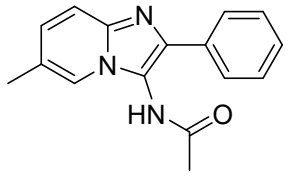
N-(7-fluoro-2-phenylimidazo[1,2-a]pyridin-3-yl)acetamide (3g): 35 mg, 65% yield, white solid; mp 217–219 °C. ^{1}H NMR (400 MHz, DMSO-d_6) δ 10.20 (s, 1H), 8.18 (dd, *J* = 7.5, 5.8 Hz, 1H), 7.98 – 7.93 (m, 2H), 7.51 – 7.45 (m, 3H), 7.38 – 7.33 (m, 1H), 7.02 (td, *J* = 7.6, 2.5 Hz, 1H), 2.23 (s, 3H).^{13}C NMR (101 MHz, DMSO-d_6) δ 171.0, 160.5 (d, *J* = 249.5 Hz), 142.3 (d, *J* = 14.1 Hz), 138.3, 133.7, 129.1, 128.2, 127.1, 126.6 (d, *J* = 11.1 Hz), 116.2, 104.6 (d, *J* = 29.3 Hz), 100.8 (d, *J* = 23.7 Hz), 23.2.^{19}F NMR (376 MHz, DMSO-d_6) δ -113.72. HRMS (ESI-TOF) m/z [M + H]$^+$ calcd for $C_{15}H_{13}FN_3O$ 270.1037, found 270.1037.



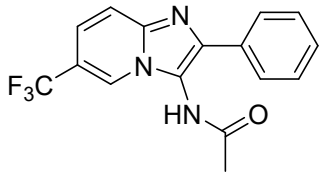
N-(2-phenyl-7-(trifluoromethyl)imidazo[1,2-a]pyridin-3-yl)acetamide (3h): 38 mg, 59% yield, white solid; mp 173–175 °C. ^{1}H NMR (400 MHz, DMSO-d_6) δ 10.39 (s, 1H), 8.34 (d, J = 7.1 Hz, 1H), 8.13 (s, 1H), 8.04 – 7.98 (m, 2H), 7.51 (t, J = 7.6 Hz, 2H), 7.40 (t, J = 7.3 Hz, 1H), 7.22 (dd, J = 7.3, 1.9 Hz, 1H), 2.26 (s, 3H).^{13}C NMR (101 MHz, DMSO-d_6) δ 170.9, 140.3, 139.9, 133.2, 129.2, 128.7, 127.3, 125.9, 125.4 (q, J = 33.3 Hz), 124.1 (q, J = 272.7 Hz), 117.9, 115.5 (q, J = 5.1 Hz), 107.9 (q, J = 4.0 Hz), 23.2.^{19}F NMR (376 MHz, DMSO-d_6) δ -61.78. HRMS (ESI-TOF) m/z [M + H]$^+$ calcd for $C_{16}H_{13}F_3N_3O$ 320.1005, found 320.1005.



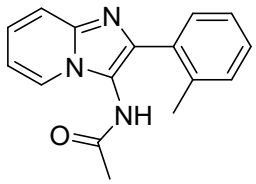
N-(6-methoxy-2-phenylimidazo[1,2-a]pyridin-3-yl)acetamide (3i): 34 mg, 60% yield, colorless oil; ^{1}H NMR (400 MHz, DMSO-d_6) δ 10.09 (s, 1H), 7.95 – 7.92 (m, 2H), 7.58 (d, J = 2.4 Hz, 1H), 7.54 (d, J = 9.7 Hz, 1H), 7.45 (t, J = 7.7 Hz, 2H), 7.35 – 7.30 (m, 1H), 7.11 (dd, J = 9.7, 2.4 Hz, 1H), 3.82 (s, 3H), 2.24 (s, 3H). ^{13}C NMR (101 MHz, DMSO-d_6) δ 170.8, 149.1, 139.5, 137.9, 134.2, 128.9, 127.9, 126.9, 120.2, 117.8, 117.1, 105.9, 56.9, 23.3. HRMS (ESI-TOF) m/z [M + H]$^+$ calcd for $C_{16}H_{16}N_3O_2$ 282.1237, found 282.1237.



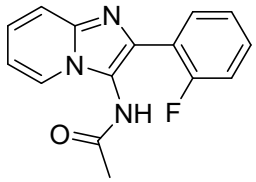
N-(6-methyl-2-phenylimidazo[1,2-a]pyridin-3-yl)acetamide (3j): 36 mg, 67% yield, pale yellow solid; mp 241–243 °C. ^{1}H NMR (400 MHz, DMSO-d_6) δ 10.23 (s, 1H), 8.00 – 7.92 (m, 2H), 7.87 (q, J = 1.4 Hz, 1H), 7.52 – 7.48 (m, 1H), 7.44 (t, J = 7.7 Hz, 2H), 7.35 – 7.29 (m, 1H), 7.15 (dd, J = 9.1, 1.7 Hz, 1H), 2.33 – 2.29 (m, 3H), 2.23 (s, 3H).^{13}C NMR (101 MHz, DMSO-d_6) δ 170.9, 141.4, 137.6, 134.2, 128.9, 128.5, 127.9, 127.0, 121.8, 121.6, 116.8, 115.9, 23.2, 18.1. HRMS (ESI-TOF) m/z [M + H]$^+$ calcd for $C_{16}H_{16}N_3O$ 266.1288, found 266.1287.



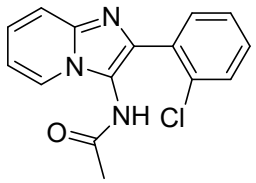
N-(2-phenyl-6-(trifluoromethyl)imidazo[1,2-a]pyridin-3-yl)acetamide (3k): 39 mg, 62% yield, white solid; mp 204–206 °C. ^{1}H NMR (400 MHz, DMSO-d_6) δ 10.30 (s, 1H), 8.66 – 8.63 (m, 1H), 8.03 – 7.98 (m, 2H), 7.82 (d, J = 9.4 Hz, 1H), 7.56 (dd, J = 9.5, 1.9 Hz, 1H), 7.50 (t, J = 7.6 Hz, 2H), 7.42 – 7.36 (m, 1H), 2.26 (s, 3H).^{13}C NMR (101 MHz, DMSO-d_6) δ 171.2, 142.1, 139.4, 133.2, 129.1, 128.7, 127.3, 124.4 (q, J = 272.7 Hz), 124.1 (q, J = 5.6 Hz), 120.9 (d, J = 3.0 Hz), 118.5, 117.9, 115.3 (q, J = 34.3 Hz), 23.7.^{19}F NMR (376 MHz, DMSO-d_6) δ -60.03. HRMS (ESI-TOF) m/z [M + H]$^+$ calcd for $C_{16}H_{13}F_3N_3O$ 320.1005, found 320.1006.



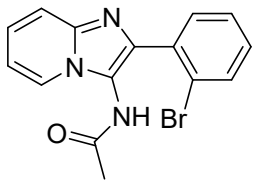
N-(2-(o-tolyl)imidazo[1,2-a]pyridin-3-yl)acetamide (3l): 35 mg, 65% yield, white solid; mp 244–246 °C. ^{1}H NMR (400 MHz, DMSO-d_6) δ 9.97 (s, 1H), 8.05 (dt, J = 6.8, 1.1 Hz, 1H), 7.60 (dt, J = 9.1, 1.1 Hz, 1H), 7.37 (dd, J = 7.1, 1.4 Hz, 1H), 7.34 – 7.21 (m, 4H), 6.96 (td, J = 6.8, 1.2 Hz, 1H), 2.34 (s, 3H), 2.11 (d, J = 0.9 Hz, 3H).^{13}C NMR (101 MHz, DMSO-d_6) δ 170.9, 142.0, 139.5, 137.3, 133.4, 130.9, 130.5, 128.4, 125.9, 125.1, 124.4, 117.3, 117.1, 112.3, 22.9, 20.6. HRMS (ESI-TOF) m/z [M + H]$^+$ calcd for $C_{16}H_{16}N_3O$ 266.1288, found 266.1288.



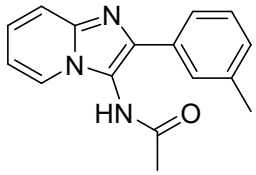
N-(2-(2-fluorophenyl)imidazo[1,2-a]pyridin-3-yl)acetamide (3m): 39 mg, 72% yield, colorless oil; ^{1}H NMR (400 MHz, DMSO-d_6) δ 9.99 (s, 1H), 8.06 (dt, J = 6.9, 1.2 Hz, 1H), 7.78 (td, J = 7.5, 1.7 Hz, 1H), 7.62 (dt, J = 9.1, 1.1 Hz, 1H), 7.47 – 7.40 (m, 1H), 7.35 – 7.27 (m, 3H), 6.97 (td, J = 6.8, 1.2 Hz, 1H), 2.13 (s, 3H).^{13}C NMR (101 MHz, DMSO-d_6) δ 170.6, 159.9 (d, J = 249.1 Hz), 142.5, 133.6 (d, J = 2.3 Hz), 131.7 (d, J = 3.8 Hz), 130.4 (d, J = 8.2 Hz), 125.5, 124.9 (d, J = 3.4 Hz), 124.6, 121.9 (d, J = 14.3 Hz), 117.9, 117.4, 116.5 (d, J = 21.9 Hz), 112.6, 22.9.^{19}F NMR (376 MHz, DMSO-d_6) δ -113.09. HRMS (ESI-TOF) m/z [M + H]$^+$ calcd for $C_{15}H_{13}FN_3O$ 270.1037, found 270.1039.



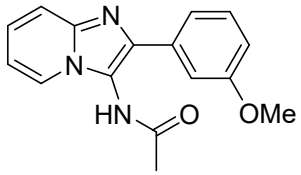
N-(2-(2-chlorophenyl)imidazo[1,2-a]pyridin-3-yl)acetamide (3n): 39 mg, 69% yield, white solid; mp 243–245 °C. ^{1}H NMR (400 MHz, DMSO-d_6) δ 9.99 (s, 1H), 8.06 (dt, J = 6.9, 1.2 Hz, 1H), 7.62 (dt, J = 9.1, 1.1 Hz, 1H), 7.56 (ddd, J = 9.9, 6.0, 3.4 Hz, 2H), 7.43 (ddd, J = 6.0, 3.5, 0.9 Hz, 2H), 7.33 (ddt, J = 8.9, 6.6, 1.1 Hz, 1H), 6.98 (tt, J = 6.8, 1.1 Hz, 1H), 2.10 (d, J = 0.9 Hz, 3H).^{13}C NMR (101 MHz, DMSO-d_6) δ 170.6, 142.1, 136.5, 133.2, 132.9, 132.8, 130.3, 130.1, 127.4, 125.4, 124.6, 117.9, 117.5, 112.5, 23.0. HRMS (ESI-TOF) m/z [M + H]$^+$ calcd for $C_{15}H_{13}ClN_3O$ 286.0742, found 286.0747.



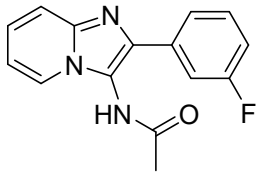
N-(2-(2-bromophenyl)imidazo[1,2-a]pyridin-3-yl)acetamide (3o): 34 mg, 52% yield, white solid; mp 256–258 °C. ^{1}H NMR (400 MHz, DMSO-d_6) δ 9.98 (s, 1H), 8.06 (dt, J = 6.9, 1.2 Hz, 1H), 7.77 – 7.72 (m, 1H), 7.61 (dt, J = 9.1, 1.1 Hz, 1H), 7.49 – 7.45 (m, 2H), 7.38 – 7.29 (m, 2H), 6.98 (tt, J = 6.8, 1.1 Hz, 1H), 2.10 (s, 3H).^{13}C NMR (101 MHz, DMSO-d_6) δ 170.6, 141.9, 138.1, 135.1, 133.8, 132.9, 130.4, 127.9, 125.3, 124.7, 123.1, 117.6, 117.5, 112.5, 23.1. HRMS (ESI-TOF) m/z [M + H]$^+$ calcd for $C_{15}H_{13}BrN_3O$ 330.0237, found 330.0237.



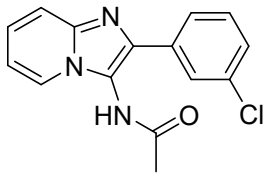
N-(2-(m-tolyl)imidazo[1,2-a]pyridin-3-yl)acetamide (3p): 36 mg, 67% yield, white solid; mp 223–225 °C. ^{1}H NMR (400 MHz, DMSO-d_6) δ 10.17 (s, 1H), 8.08 (dt, J = 6.8, 1.2 Hz, 1H), 7.83 (d, J = 1.9 Hz, 1H), 7.77 (d, J = 7.8 Hz, 1H), 7.60 (dt, J = 9.1, 1.1 Hz, 1H), 7.35 (t, J = 7.7 Hz, 1H), 7.31 (ddd, J = 9.2, 6.7, 1.2 Hz, 1H), 7.19 – 7.14 (m, 1H), 6.94 (td, J = 6.8, 1.1 Hz, 1H), 2.39 (s, 3H), 2.24 (s, 3H).^{13}C NMR (101 MHz, DMSO-d_6) δ 170.9, 142.3, 138.0, 137.7, 133.9, 128.9, 128.7, 127.8, 125.5, 124.3, 124.2, 117.3, 116.1, 112.4, 23.1, 21.7. HRMS (ESI-TOF) m/z [M + H]$^+$ calcd for $C_{16}H_{16}N_3O$ 266.1288, found 266.1293.



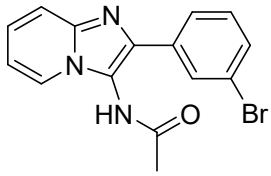
N-(2-(3-methoxyphenyl)imidazo[1,2-a]pyridin-3-yl)acetamide (3q): 35 mg, 62% yield, colorless oil; ^{1}H NMR (400 MHz, DMSO-d_6) δ 10.19 (s, 1H), 8.09 (dt, J = 6.8, 1.2 Hz, 1H), 7.64 – 7.53 (m, 3H), 7.38 (t, J = 7.9 Hz, 1H), 7.31 (ddd, J = 9.1, 6.7, 1.3 Hz, 1H), 6.97 – 6.91 (m, 2H), 3.83 (s, 3H), 2.23 (s, 3H).^{13}C NMR (101 MHz, DMSO-d_6) δ 170.8, 159.8, 142.2, 137.4, 135.3, 130.1, 125.6, 124.3, 119.5, 117.3, 116.2, 113.9, 112.5, 112.2, 55.5, 23.1. HRMS (ESI-TOF) m/z [M + H]$^+$ calcd for $C_{16}H_{16}N_3O_2$ 282.1237, found 282.1237.



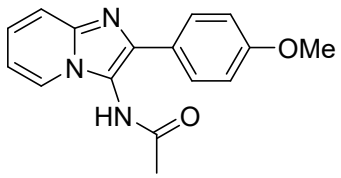
N-(2-(3-fluorophenyl)imidazo[1,2-a]pyridin-3-yl)acetamide (3r): 35 mg, 65% yield, white solid; mp 182–184 °C. ^{1}H NMR (400 MHz, DMSO-d_6) δ 10.37 (s, 1H), 8.10 (dt, J = 6.9, 1.2 Hz, 1H), 7.84 (dt, J = 7.9, 1.2 Hz, 1H), 7.75 (ddd, J = 10.8, 2.7, 1.5 Hz, 1H), 7.61 (dt, J = 9.1, 1.1 Hz, 1H), 7.51 (td, J = 8.0, 6.2 Hz, 1H), 7.33 (ddd, J = 9.1, 6.7, 1.3 Hz, 1H), 7.23 – 7.14 (m, 1H), 6.96 (td, J = 6.8, 1.2 Hz, 1H), 2.25 (s, 3H).^{13}C NMR (101 MHz, DMSO-d_6) δ 170.9, 162.8 (d, J = 242.3 Hz), 142.3, 136.4 (d, J = 8.1 Hz), 136.3 (d, J = 2.0 Hz), 131.1 (d, J = 9.1 Hz), 125.9, 124.4, 123.1 (d, J = 3.0 Hz), 117.4, 116.7, 114.8 (d, J = 21.2 Hz), 113.4 (d, J = 23.2 Hz), 112.7, 23.2.^{19}F NMR (376 MHz, DMSO-d_6) δ -112.94. HRMS (ESI-TOF) m/z [M + H]$^+$ calcd for $C_{15}H_{13}FN_3O$ 270.1037, found 270.1038.



N-(2-(3-chlorophenyl)imidazo[1,2-a]pyridin-3-yl)acetamide (3s): 33 mg, 58% yield, white solid; mp 221–223 °C. ^{1}H NMR (400 MHz, DMSO-d_6) δ 10.38 (s, 1H), 8.14 – 8.07 (m, 1H), 8.00 (t, J = 1.9 Hz, 1H), 7.95 (dd, J = 7.8, 1.4 Hz, 1H), 7.63 – 7.58 (m, 1H), 7.50 (t, J = 7.9 Hz, 1H), 7.41 (ddd, J = 8.0, 2.2, 1.1 Hz, 1H), 7.33 (ddd, J = 9.1, 6.7, 1.3 Hz, 1H), 6.97 (td, J = 6.7, 1.1 Hz, 1H), 2.24 (s, 3H).^{13}C NMR (101 MHz, DMSO-d_6) δ 170.9, 142.4, 136.1, 136.1, 133.8, 131.0, 127.8, 126.6, 125.9, 125.5, 124.5, 117.4, 116.7, 112.78, 23.2. HRMS (ESI-TOF) m/z [M + H]$^+$ calcd for $C_{15}H_{13}ClN_3O$ 286.0742, found 286.0744.

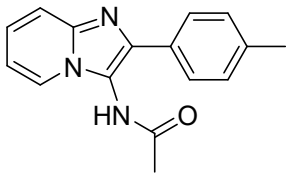


N-(2-(3-bromophenyl)imidazo[1,2-a]pyridin-3-yl)acetamide (3t): 38 mg, 57% yield, white solid; mp 245–247 °C. ^{1}H NMR (400 MHz, DMSO-d_6) δ 10.23 (s, 1H), 8.15 (t, J = 1.8 Hz, 1H), 8.11 (dt, J = 6.9, 1.2 Hz, 1H), 7.97 (dt, J = 7.8, 1.3 Hz, 1H), 7.62 (dd, J = 9.1, 1.1 Hz, 1H), 7.55 (dt, J = 8.3, 1.3 Hz, 1H), 7.44 (t, J = 7.9 Hz, 1H), 7.34 (ddd, J = 9.0, 6.7, 1.3 Hz, 1H), 6.97 (td, J = 6.8, 1.2 Hz, 1H), 2.24 (s, 3H). ^{13}C NMR (101 MHz, DMSO-d_6) δ 170.9, 142.4, 136.3, 135.9, 131.3, 130.7, 129.5, 126.0, 125.9, 124.5, 122.5, 117.4, 116.7, 112.8, 23.2. HRMS (ESI-TOF) m/z [M + H]$^+$ calcd for $C_{15}H_{13}BrN_3O$ 330.0237, found 330.0239.

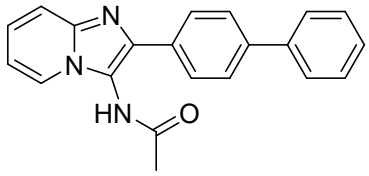


N-(2-(4-methoxyphenyl)imidazo[1,2-a]pyridin-3-yl)acetamide (3u): 30 mg, 53% yield, white solid; mp 261–263 °C. ^{1}H NMR (400 MHz, DMSO-d_6) δ 10.12 (s, 1H), 8.05 (dt, J = 6.8, 1.2 Hz, 1H), 7.93 – 7.88 (m, 2H), 7.57 (dt, J = 9.1, 1.1 Hz, 1H), 7.29 (ddt, J = 9.1, 6.8, 1.2 Hz, 1H), 7.07 – 7.01 (m, 2H), 6.93 (tt, J = 6.8, 1.1 Hz, 1H), 3.81

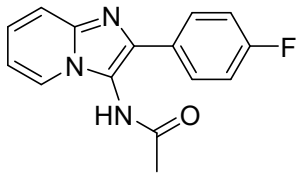
(d, J = 0.8 Hz, 3H), 2.22 (s, 3H).^{13}C NMR (101 MHz, DMSO-d_6) δ 170.9, 159.4, 142.2, 137.8, 128.4, 126.5, 125.3, 124.1, 117.1, 115.2, 114.5, 112.3, 55.6, 23.1. HRMS (ESI-TOF) m/z [M + H]$^+$ calcd for $C_{16}H_{16}N_3O_2$ 282.1237, found 282.1241.



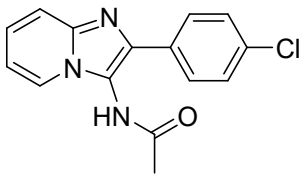
N-(2-(p-tolyl)imidazo[1,2-a]pyridin-3-yl)acetamide (3v): 29 mg, 55% yield, colorless oil; ^{1}H NMR (400 MHz, DMSO-d_6) δ 10.12 (s, 1H), 8.09 – 8.03 (m, 1H), 7.86 (d, J = 8.0 Hz, 2H), 7.62 – 7.55 (m, 1H), 7.28 (dd, J = 8.6, 4.7 Hz, 3H), 6.93 (t, J = 6.8 Hz, 1H), 2.35 (s, 3H), 2.22 (s, 3H). ^{13}C NMR (101 MHz, DMSO-d_6) δ 170.8, 142.3, 137.8, 137.4, 131.2, 129.6, 127.1, 125.4, 124.2, 117.2, 115.7, 112.4, 23.1, 21.3. HRMS (ESI-TOF) m/z [M + H]$^+$ calcd for $C_{16}H_{16}N_3O$ 266.1288, found 266.1288.



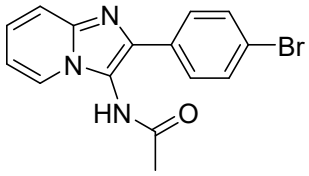
N-(2-([1,1'-biphenyl]-4-yl)imidazo[1,2-a]pyridin-3-yl)acetamide (3w): 34 mg, 52% yield, white solid; mp 273–275 °C. ^{1}H NMR (400 MHz, DMSO-d_6) δ 10.16 (s, 1H), 8.02 (dd, J = 7.0, 4.0 Hz, 3H), 7.71 (d, J = 8.2 Hz, 2H), 7.68 – 7.63 (m, 2H), 7.54 (dt, J = 9.0, 1.1 Hz, 1H), 7.44 – 7.37 (m, 2H), 7.32 – 7.27 (m, 1H), 7.24 (ddd, J = 9.2, 6.7, 1.3 Hz, 1H), 6.88 (td, J = 6.8, 1.2 Hz, 1H), 2.18 (d, J = 1.1 Hz, 3H).^{13}C NMR (101 MHz, DMSO-d_6) δ 170.9, 142.4, 140.2, 139.7, 137.3, 133.1, 129.5, 128.0, 127.6, 127.2, 127.0, 125.6, 124.3, 117.3, 116.3, 112.5, 23.2. HRMS (ESI-TOF) m/z [M + H]$^+$ calcd for $C_{21}H_{18}N_3O$ 328.1444, found 328.1444.



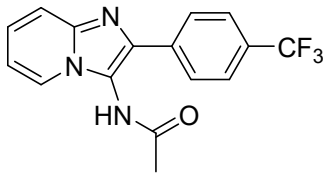
N-(2-(4-fluorophenyl)imidazo[1,2-a]pyridin-3-yl)acetamide (3x): 34 mg, 62% yield, white solid; mp 228–230 °C. ^{1}H NMR (400 MHz, DMSO-d_6) δ 10.30 (s, 1H), 8.08 (dt, J = 6.8, 1.2 Hz, 1H), 8.05 – 7.99 (m, 2H), 7.60 (dt, J = 9.1, 1.1 Hz, 1H), 7.38 – 7.25 (m, 3H), 6.95 (td, J = 6.8, 1.1 Hz, 1H), 2.24 (s, 3H).^{13}C NMR (101 MHz, DMSO-d_6) δ 170.9, 162.2 (d, J = 245.4 Hz), 142.3, 136.9, 130.5 (d, J = 2.9 Hz), 129.1 (d, J = 8.1 Hz), 125.6, 124.3, 117.3, 115.9, 115.9 (d, J = 21.2 Hz), 112.5, 23.2.^{19}F NMR (376 MHz, DMSO-d_6) δ -114.26. HRMS (ESI-TOF) m/z [M + H]$^+$ calcd for $C_{15}H_{13}FN_3O$ 270.1037, found 270.1039.



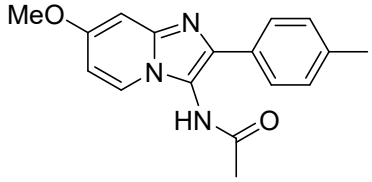
N-(2-(4-chlorophenyl)imidazo[1,2-a]pyridin-3-yl)acetamide (3y): 29 mg, 51% yield, white solid; mp 252–254 °C. ^{1}H NMR (400 MHz, DMSO-d_6) δ 10.34 (s, 1H), 8.09 (dt, J = 6.9, 1.3 Hz, 1H), 8.03 – 7.95 (m, 2H), 7.59 (dd, J = 9.1, 1.2 Hz, 1H), 7.55 – 7.49 (m, 2H), 7.32 (ddd, J = 9.1, 6.7, 1.3 Hz, 1H), 6.96 (td, J = 6.8, 1.1 Hz, 1H), 2.23 (s, 3H).^{13}C NMR (101 MHz, DMSO-d_6) δ 170.9, 142.4, 136.5, 132.9, 132.7, 129.1, 128.8, 125.8, 124.4, 117.3, 116.4, 112.6, 23.2. HRMS (ESI-TOF) m/z [M + H]$^+$ calcd for $C_{15}H_{13}ClN_3O$ 286.0742, found 286.0744.



N-(2-(4-bromophenyl)imidazo[1,2-a]pyridin-3-yl)acetamide (3z): 32 mg, 48% yield, white solid; mp 252–254 °C. ^{1}H NMR (400 MHz, DMSO-d_6) δ 10.16 (s, 1H), 8.09 (dt, J = 6.9, 1.2 Hz, 1H), 7.97 – 7.88 (m, 2H), 7.69 – 7.63 (m, 2H), 7.60 (dt, J = 9.1, 1.1 Hz, 1H), 7.32 (ddd, J = 9.1, 6.7, 1.3 Hz, 1H), 6.96 (td, J = 6.8, 1.1 Hz, 1H), 2.23 (s, 3H).^{13}C NMR (101 MHz, DMSO-d_6) δ 170.8, 142.4, 136.5, 133.3, 132.0, 129.1, 125.8, 124.4, 121.3, 117.4, 116.4, 112.7, 23.2. HRMS (ESI-TOF) m/z [M + H]$^+$ calcd for $C_{15}H_{13}BrN_3O$ 330.0237, found 330.0237.

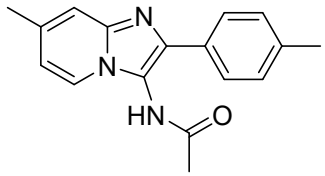


N-(2-(4-(trifluoromethyl)phenyl)imidazo[1,2-a]pyridin-3-yl)acetamide (3aa): 35 mg, 55% yield, white solid; mp 212−214 °C. ^{1}H NMR (400 MHz, DMSO-d_6) δ 10.27 (s, 1H), 8.19 (d, J = 8.2 Hz, 2H), 8.15 – 8.11 (m, 1H), 7.83 (d, J = 8.2 Hz, 2H), 7.64 (d, J = 9.1 Hz, 1H), 7.35 (ddd, J = 8.8, 6.8, 1.3 Hz, 1H), 6.99 (td, J = 6.8, 1.1 Hz, 1H), 2.25 (s, 3H).^{13}C NMR (101 MHz, DMSO-d_6) δ 170.9, 142.5, 138.0, 136.0, 128.2 (q, J = 32.3 Hz), 127.6, 126.1, 125.9 (q, J = 4.0 Hz), 124.8 (q, J = 272.7 Hz), 124.5, 117.5, 117.3, 112.9, 23.2.^{19}F NMR (376 MHz, DMSO-d_6) δ -60.96. HRMS (ESI-TOF) m/z [M + H]$^+$ calcd for $C_{16}H_{13}F_3N_3O$ 320.1005, found 320.1006.

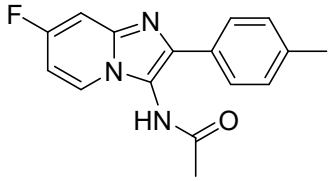


N-(7-methoxy-2-(p-tolyl)imidazo[1,2-a]pyridin-3-yl)acetamide (3ab): 32 mg, 54% yield, white solid; mp 255–257 °C. ^{1}H NMR (400 MHz, DMSO-d_6) δ 9.94 (s, 1H), 7.83

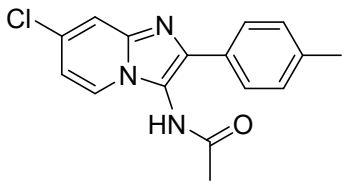
(d, *J* = 7.5 Hz, 1H), 7.76 – 7.71 (m, 2H), 7.17 (d, *J* = 8.0 Hz, 2H), 6.88 (d, *J* = 2.4 Hz, 1H), 6.55 (dd, *J* = 7.4, 2.4 Hz, 1H), 3.77 (s, 3H), 2.25 (s, 3H), 2.11 (s, 3H).^{13}C NMR (101 MHz, DMSO-d_6) δ 170.9, 158.1, 143.6, 137.1, 137.0, 131.4, 129.5, 126.8, 124.9, 114.7, 106.8, 94.9, 56.1, 23.1, 21.3. HRMS (ESI-TOF) m/z [M + H]$^+$ calcd for $C_{17}H_{18}N_3O_2$ 296.1394, found 296.1394.



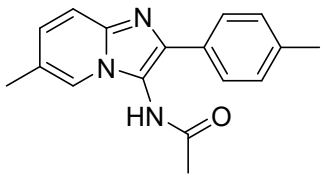
N-(7-methyl-2-(p-tolyl)imidazo[1,2-a]pyridin-3-yl)acetamide (3ac): 39 mg, 69% yield, Colorless oil; ^{1}H NMR (400 MHz, DMSO-d_6) δ 10.09 (s, 1H), 7.94 (d, *J* = 6.9 Hz, 1H), 7.84 (d, *J* = 8.1 Hz, 2H), 7.35 (d, *J* = 1.8 Hz, 1H), 7.26 (d, *J* = 8.0 Hz, 2H), 6.78 (dd, *J* = 7.0, 1.6 Hz, 1H), 2.38 (s, 3H), 2.34 (s, 3H), 2.21 (s, 3H).^{13}C NMR (101 MHz, DMSO-d_6) δ 170.9, 142.6, 137.4, 137.2, 135.9, 131.3, 129.5, 127.0, 123.5, 115.4, 115.3, 114.8, 23.1, 21.3, 21.2. HRMS (ESI-TOF) m/z [M + H]$^+$ calcd for $C_{17}H_{18}N_3O$ 280.1444, found 280.1445.



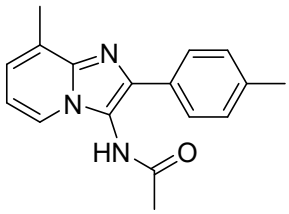
N-(7-fluoro-2-(p-tolyl)imidazo[1,2-a]pyridin-3-yl)acetamide (3ad): 37 mg, 66% yield, white solid; mp 228–230 °C. ^{1}H NMR (400 MHz, DMSO-d_6) δ 10.16 (s, 1H), 8.16 (dd, *J* = 7.4, 5.9 Hz, 1H), 7.87 – 7.82 (m, 2H), 7.46 (dd, *J* = 10.1, 2.6 Hz, 1H), 7.27 (d, *J* = 7.9 Hz, 2H), 7.00 (tdd, *J* = 7.6, 2.6, 1.0 Hz, 1H), 2.34 (s, 3H), 2.22 (d, *J* = 1.1 Hz, 3H).^{13}C NMR (101 MHz, DMSO-d_6) δ 170.9, 160.4 (d, *J* = 248.3 Hz), 142.2 (d, *J* = 14.2 Hz), 138.4, 137.6, 130.9, 129.6, 127.0, 126.4 (d, *J* = 11.1 Hz), 115.8, 104.4 (d, *J* = 29.4 Hz), 100.8 (d, *J* = 23.6 Hz), 23.1, 21.3.^{19}F NMR (376 MHz, DMSO-d_6) δ -113.98. HRMS (ESI-TOF) m/z [M + H]$^+$ calcd for $C_{16}H_{15}FN_3O$ 284.1194, found 284.1194.



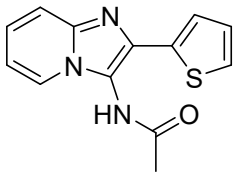
N-(7-chloro-2-(p-tolyl)imidazo[1,2-a]pyridin-3-yl)acetamide (3ae): 37 mg, 62% yield, white solid; mp 206–208 °C. ^{1}H NMR (400 MHz, DMSO-d_6) δ 10.20 (s, 1H), 8.14 – 8.10 (m, 1H), 7.85 (d, *J* = 8.0 Hz, 2H), 7.76 (d, *J* = 2.0 Hz, 1H), 7.28 (d, *J* = 8.0 Hz, 2H), 7.01 (dd, *J* = 7.2, 2.1 Hz, 1H), 2.34 (s, 3H), 2.21 (s, 3H).^{13}C NMR (101 MHz, DMSO-d_6) δ 170.9, 141.9, 138.6, 137.8, 130.7, 130.6, 129.6, 127.1, 125.4, 116.3, 115.9, 113.5, 23.1, 21.3. HRMS (ESI-TOF) m/z [M + H]$^+$ calcd for $C_{16}H_{15}ClN_3O$ 300.0898, found 300.0902.



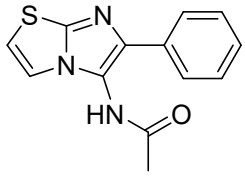
N-(6-methyl-2-(p-tolyl)imidazo[1,2-a]pyridin-3-yl)acetamide (3af): 30 mg, 54% yield, pale yellow solid; mp 208–210 °C. ^{1}H NMR (400 MHz, DMSO-d_6) δ 10.08 (s, 1H), 7.91 – 7.79 (m, 3H), 7.49 (d, J = 9.1 Hz, 1H), 7.26 (d, J = 8.0 Hz, 2H), 7.16 (dd, J = 9.1, 1.7 Hz, 1H), 2.33 (d, J = 11.5 Hz, 7H), 2.23 (s, 3H).^{13}C NMR (101 MHz, DMSO-d_6) δ 170.8, 141.3, 137.7, 137.3, 131.3, 129.6, 128.4, 126.9, 121.7, 121.5, 116.6, 115.4, 23.2, 21.3, 18.1. HRMS (ESI-TOF) m/z [M + H]$^+$ calcd for $C_{17}H_{18}N_3O$ 280.1444, found 280.1446.



N-(8-methyl-2-(p-tolyl)imidazo[1,2-a]pyridin-3-yl)acetamide (3ag)[9]: 34 mg, 61% yield, white solid; mp 221–223 °C. ^{1}H NMR (400 MHz, DMSO-d_6) δ 10.22 (s, 1H), 7.88 (dd, J = 8.0, 6.3 Hz, 3H), 7.26 (d, J = 7.9 Hz, 2H), 7.09 (dt, J = 6.7, 1.2 Hz, 1H), 6.83 (t, J = 6.8 Hz, 1H), 2.53 (s, 3H), 2.34 (s, 3H), 2.21 (s, 3H).^{13}C NMR (101 MHz, DMSO-d_6) δ 170.8, 142.5, 137.4, 137.2, 131.4, 129.5, 127.1, 126.6, 123.8, 121.9, 116.1, 112.3, 23.1, 21.3, 16.6. HRMS (ESI-TOF) m/z [M + H]$^+$ calcd for $C_{17}H_{18}N_3O$ 280.1444, found 280.1448.

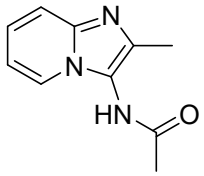


N-(2-(thiophen-2-yl)imidazo[1,2-a]pyridin-3-yl)acetamide (3ah): 32 mg, 61% yield, white solid; mp 221–223 °C. ^{1}H NMR (400 MHz, DMSO-d_6) δ 10.14 (s, 1H), 8.08 (dt, J = 6.8, 1.1 Hz, 1H), 7.59 – 7.55 (m, 2H), 7.53 (dd, J = 3.6, 1.0 Hz, 1H), 7.31 (ddd, J = 9.3, 6.7, 1.2 Hz, 1H), 7.18 – 7.15 (m, 1H), 6.95 (td, J = 6.8, 1.1 Hz, 1H), 2.25 (s, 3H).^{13}C NMR (101 MHz, DMSO-d_6) δ 170.8, 142.3, 136.8, 133.9, 128.3, 126.4, 125.7, 124.8, 124.2, 117.0, 114.9, 112.7, 23.1. HRMS (ESI-TOF) m/z [M + H]$^+$ calcd for $C_{13}H_{12}N_3OS$ 258.0696, found 258.0700.

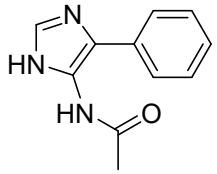


N-(6-phenylimidazo[2,1-b]thiazol-5-yl)acetamide (3ai): Colorless oil; 32 mg, 62% yield, ^{1}H NMR (400 MHz, DMSO-d_6) δ 10.13 (s, 1H), 7.84 (dd, J = 8.2, 1.4 Hz, 2H),

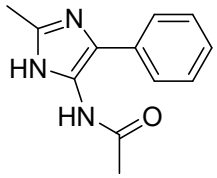
7.64 (d, J = 4.5 Hz, 1H), 7.42 (t, J = 7.7 Hz, 2H), 7.28 (t, J = 7.6 Hz, 1H), 7.25 (d, J = 4.5 Hz, 1H), 2.16 (s, 3H).^{13}C NMR (101 MHz, DMSO-d_6) δ 170.7, 146.2, 138.1, 134.2, 128.9, 127.4, 126.3, 119.2, 117.9, 113.4, 23.0. HRMS (ESI-TOF) m/z [M + H]$^+$ calcd for $C_{13}H_{12}N_3OS$ 258.0696, found 258.0699.



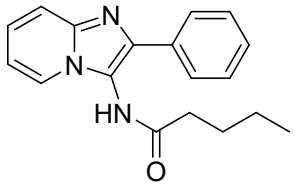
N-(2-methylimidazo[1,2-a]pyridin-3-yl)acetamide (3aj): 16 mg, 43% yield, colorless oil; ^{1}H NMR (400 MHz, DMSO-d_6) δ 9.80 (s, 1H), 7.94 (dt, J = 6.8, 1.2 Hz, 1H), 7.44 (dt, J = 9.1, 1.2 Hz, 1H), 7.20 (ddd, J = 9.1, 6.7, 1.3 Hz, 1H), 6.87 (td, J = 6.8, 1.2 Hz, 1H), 2.22 (s, 3H), 2.14 (s, 3H).^{13}C NMR (101 MHz, DMSO-d_6) δ 170.3, 141.7, 136.6, 124.1, 123.8, 116.6, 116.5, 111.7, 22.9, 13.1. HRMS (ESI-TOF) m/z [M + H]$^+$ calcd for $C_{10}H_{12}N_3O$ 190.0975, found 190.0972.



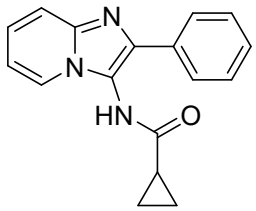
N-(4-phenyl-1H-imidazol-5-yl)acetamide (3ak): 8 mg, 20% yield, colorless oil; ^{1}H NMR (400 MHz, DMSO-d_6) δ 12.43 (s, 1H), 9.56 (s, 1H), 7.59 (s, 3H), 7.38 (t, J = 7.8 Hz, 2H), 7.23 (q, J = 9.4, 7.4 Hz, 1H), 2.01 (s, 3H).^{13}C NMR (101 MHz, DMSO-d_6) δ 170.1, 133.5, 129.2, 128.9, 126.9, 126.8, 125.8, 125.7, 23.2. HRMS (ESI-TOF) m/z [M + H]$^+$ calcd for $C_{11}H_{12}N_3O$ 202.0975, found 202.0978.



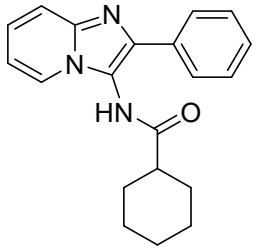
N-(2-methyl-4-phenyl-1H-imidazol-5-yl)acetamide (3al): 8 mg, 19% yield, Colorless oil; ^{1}H NMR (400 MHz, DMSO-d_6) δ 9.53 (s, 1H), 7.64 (d, J = 7.6 Hz, 1H), 7.56 (d, J = 7.7 Hz, 2H), 7.36 (t, J = 7.8 Hz, 2H), 7.22 – 7.15 (m, 1H), 2.27 (s, 3H), 2.01 (s, 3H). ^{13}C NMR (101 MHz, DMSO-d_6) δ 170.1, 141.9, 129.1, 128.9, 126.8, 126.3, 125.3, 125.2, 23.2, 14.3. HRMS (ESI-TOF) m/z [M + H]$^+$ calcd for $C_{12}H_{14}N_3O$ 216.1131, found 216.1130.



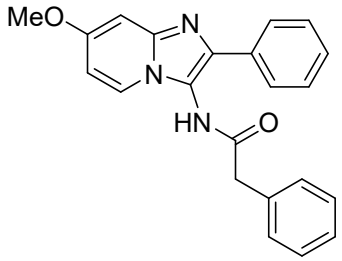
N-(2-phenylimidazo[1,2-a]pyridin-3-yl)pentanamide (3am): 43 mg, 73% yield, white solid; mp 148–150 °C. ^{1}H NMR (400 MHz, DMSO-d_6) δ 10.11 (s, 1H), 8.01 – 7.94 (m, 3H), 7.60 (dt, J = 9.0, 1.2 Hz, 1H), 7.48 – 7.41 (m, 2H), 7.37 – 7.27 (m, 2H), 6.95 (td, J = 6.7, 1.2 Hz, 1H), 2.52 (t, J = 7.5 Hz, 2H), 1.68 (m, J = 7.4 Hz, 2H), 1.47 – 1.34 (m, 2H), 0.95 (t, J = 7.4 Hz, 3H).^{13}C NMR (101 MHz, DMSO-d_6) δ 173.7, 142.3, 137.7, 134.0, 128.9, 128.1, 127.1, 125.5, 124.1, 117.3, 116.1, 112.5, 35.3, 27.5, 22.3, 14.2. HRMS (ESI-TOF) m/z [M + H]$^+$ calcd for $C_{18}H_{20}N_3O$ 294.1601, found 294.1600.



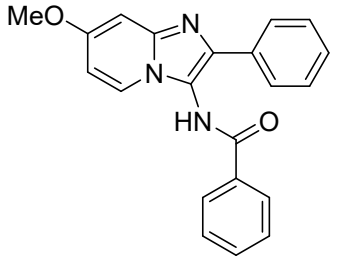
N-(2-phenylimidazo[1,2-a]pyridin-3-yl)cyclopropanecarboxamide (3an)[9]: 38 mg, 68% yield, white solid; mp 217–219 °C. ^{1}H NMR (400 MHz, DMSO-d_6) δ 10.46 (s, 1H), 8.04 – 7.98 (m, 2H), 7.95 (dd, J = 6.9, 1.3 Hz, 1H), 7.66 – 7.61 (m, 1H), 7.51 (t, J = 7.7 Hz, 2H), 7.41 – 7.31 (m, 2H), 6.98 (td, J = 6.8, 1.2 Hz, 1H), 2.04 (tt, J = 7.4, 4.9 Hz, 1H), 0.97 – 0.89 (m, 4H).^{13}C NMR (101 MHz, DMSO-d_6) δ 174.2, 142.3, 137.6, 134.1, 129.0, 128.1, 127.1, 125.5, 124.0, 117.4, 116.0, 112.6, 14.2, 7.9. HRMS (ESI-TOF) m/z [M + H]$^+$ calcd for $C_{17}H_{16}N_3O$ 278.1288, found 278.1291.



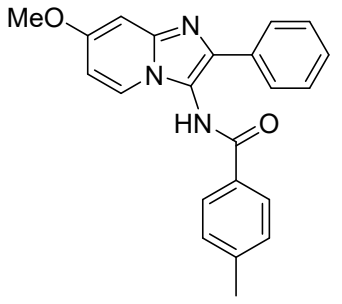
N-(2-phenylimidazo[1,2-a]pyridin-3-yl)cyclohexanecarboxamide(3ao)[7]: 29 mg, 46% yield, white solid; mp 202–204 °C. ^{1}H NMR (400 MHz, DMSO-d_6) δ 10.02 (s, 1H), 7.98 – 7.88 (m, 3H), 7.60 (dd, J = 9.1, 1.1 Hz, 1H), 7.45 (t, J = 7.6 Hz, 2H), 7.37 – 7.26 (m, 2H), 6.95 (t, J = 6.8 Hz, 1H), 2.56 (tt, J = 11.6, 3.6 Hz, 1H), 2.07 – 1.97 (m, 2H), 1.80 (dt, J = 12.6, 3.3 Hz, 2H), 1.72 – 1.65 (m, 2H), 1.49 (qd, J = 12.3, 3.2 Hz, 2H), 1.40 – 1.29 (m, 2H).^{13}C NMR (101 MHz, DMSO-d_6) δ 176.5, 142.4, 137.8, 134.0, 128.9, 128.1, 127.1, 125.4, 123.8, 117.3, 116.0, 112.6, 44.1, 29.4, 25.8, 25.6. HRMS (ESI-TOF) m/z [M + H]$^+$ calcd for $C_{20}H_{22}N_3O$ 320.1757, found 320.1755.



N-(7-methoxy-2-phenylimidazo[1,2-a]pyridin-3-yl)-2-phenylacetamide (3ap): 40 mg, 57% yield, colorless oil; ^{1}H NMR (400 MHz, DMSO-d_6) δ 10.23 (s, 1H), 7.85 (d, J = 7.5 Hz, 1H), 7.82 – 7.72 (m, 2H), 7.46 – 7.37 (m, 4H), 7.34 – 7.25 (m, 4H), 6.98 (d, J = 2.4 Hz, 1H), 6.65 (dd, J = 7.5, 2.4 Hz, 1H), 3.85 (s, 3H), 3.81 (s, 2H). ^{13}C NMR (101 MHz, DMSO-d_6) δ 171.6, 158.1, 143.7, 136.8, 135.8, 134.0, 129.7, 128.9, 128.7, 127.7, 127.2, 126.7, 124.6, 114.8, 107.1, 95.0, 56.1, 42.9. HRMS (ESI-TOF) m/z [M + H]$^+$ calcd for $C_{22}H_{20}N_3O_2$ 358.1550, found 358.1551.

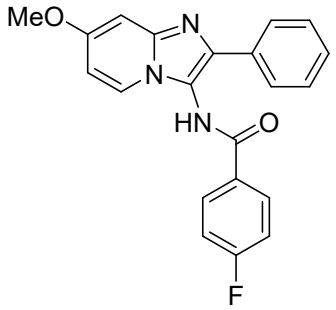


N-(7-methoxy-2-phenylimidazo[1,2-a]pyridin-3-yl)benzamide (3aq): 42 mg, 62% yield, Colorless oil; ^{1}H NMR (400 MHz, DMSO-d_6) δ 10.61 (s, 1H), 8.15 – 8.09 (m, 2H), 8.00 – 7.93 (m, 3H), 7.71 – 7.64 (m, 1H), 7.60 (dd, J = 8.2, 6.6 Hz, 2H), 7.42 (t, J = 7.7 Hz, 2H), 7.33 – 7.25 (m, 1H), 7.04 (d, J = 2.4 Hz, 1H), 6.65 (dd, J = 7.5, 2.5 Hz, 1H), 3.87 (s, 3H). ^{13}C NMR (101 MHz, DMSO-d_6) δ 167.2, 158.2, 144.0, 137.5, 134.3, 133.5, 132.8, 129.1, 128.9, 128.4, 127.8, 126.8, 124.9, 114.8, 107.2, 95.1, 56.1. HRMS (ESI-TOF) m/z [M + H]$^+$ calcd for $C_{21}H_{18}N_3O_2$ 344.1394, found 344.1393.

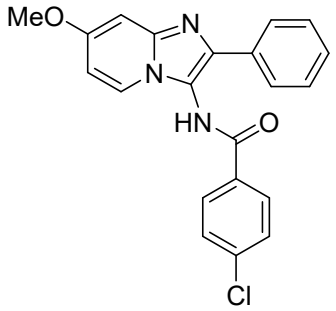


N-(7-methoxy-2-phenylimidazo[1,2-a]pyridin-3-yl)-4-methylbenzamide (3ar): 44 mg, 62% yield, colorless oil; ^{1}H NMR (400 MHz, DMSO-d_6) δ 10.52 (s, 1H), 8.05 – 7.98 (m, 2H), 7.98 – 7.90 (m, 3H), 7.41 (t, J = 7.7 Hz, 4H), 7.33 – 7.25 (m, 1H), 7.03 (d, J = 2.5 Hz, 1H), 6.65 (dd, J = 7.4, 2.5 Hz, 1H), 3.87 (s, 3H), 2.42 (s, 3H). ^{13}C NMR (101 MHz, DMSO-d_6) δ 167.1, 158.2, 143.9, 142.9, 137.4, 134.3, 130.6, 129.6, 128.9,

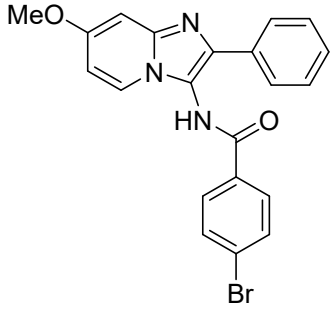
128.4, 127.8, 126.8, 124.8, 115.0, 107.1, 95.1, 56.1, 21.5. HRMS (ESI-TOF) m/z [M + H]$^+$ calcd for $C_{22}H_{20}N_3O_2$ 358.1550, found 358.1552.



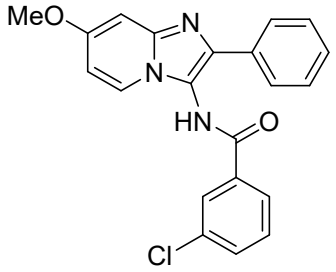
4-fluoro-N-(7-methoxy-2-phenylimidazo[1,2-a]pyridin-3-yl)benzamide (3as): 39 mg, 54% yield, colorless oil; ^{1}H NMR (400 MHz, DMSO-d_6) δ 10.63 (s, 1H), 8.23 – 8.15 (m, 2H), 8.01 – 7.93 (m, 3H), 7.49 – 7.38 (m, 4H), 7.34 – 7.25 (m, 1H), 7.04 (d, J = 2.5 Hz, 1H), 6.65 (dd, J = 7.4, 2.5 Hz, 1H), 3.87 (s, 3H). ^{13}C NMR (101 MHz, DMSO-d_6) δ 166.2, 166.2, 163.7, 158.2, 144.0, 137.5, 134.2, 131.2 (d, J = 9.2 Hz), 130.0 (d, J = 2.9 Hz), 128.9, 127.8, 126.8, 124.9, 116.2, 116.0, 114.7, 107.1, 95.1, 56.1. ^{19}F NMR (376 MHz, DMSO-d_6) δ -107.61. HRMS (ESI-TOF) m/z [M + H]$^+$ calcd for $C_{21}H_{17}FN_3O_2$ 362.1299, found 366.1298.



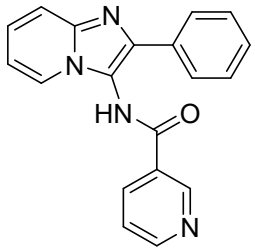
4-chloro-N-(7-methoxy-2-phenylimidazo[1,2-a]pyridin-3-yl)benzamide (3at): 38 mg, 51% yield, colorless oil; ^{1}H NMR (400 MHz, DMSO-d_6) δ 10.69 (s, 1H), 8.16 – 8.10 (m, 2H), 8.00 (d, J = 7.5 Hz, 1H), 7.97 – 7.86 (m, 2H), 7.72 – 7.65 (m, 2H), 7.42 (t, J = 7.7 Hz, 2H), 7.34 – 7.26 (m, 1H), 7.03 (d, J = 2.5 Hz, 1H), 6.65 (dd, J = 7.5, 2.4 Hz, 1H), 3.87 (s, 3H). ^{13}C NMR (101 MHz, DMSO-d_6) δ 166.3, 158.2, 144.0, 137.7, 137.5, 134.2, 132.2, 130.4, 129.2, 128.9, 127.9, 126.8, 125.0, 114.6, 107.2, 95.1, 56.1. HRMS (ESI-TOF) m/z [M + H]$^+$ calcd for $C_{21}H_{17}ClN_3O_2$ 378.1004, found 378.1005.



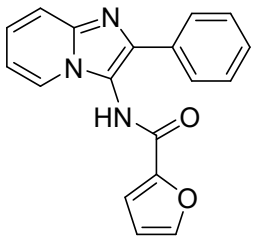
4-bromo-N-(7-methoxy-2-phenylimidazo[1,2-a]pyridin-3-yl)benzamide (3au): 40 mg, 48% yield, colorless oil; ^{1}H NMR (400 MHz, DMSO-d_6) δ 10.69 (s, 1H), 8.07 – 8.03 (m, 2H), 8.00 (d, J = 7.5 Hz, 1H), 7.97 – 7.91 (m, 2H), 7.86 – 7.79 (m, 2H), 7.42 (dd, J = 8.4, 7.0 Hz, 2H), 7.34 – 7.25 (m, 1H), 7.03 (d, J = 2.5 Hz, 1H), 6.65 (dd, J = 7.5, 2.5 Hz, 1H), 3.87 (s, 3H). ^{13}C NMR (101 MHz, DMSO-d_6) δ 166.4, 158.2, 144.0, 137.5, 134.2, 132.6, 132.1, 130.5, 128.9, 127.9, 126.8, 126.7, 125.0, 114.6, 107.2, 95.1, 56.1. HRMS (ESI-TOF) m/z [M + H]$^+$ calcd for $C_{21}H_{17}BrN_3O_2$ 422.0499, found 422.0499.



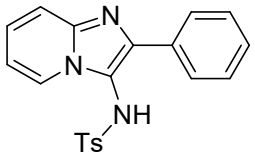
3-chloro-N-(7-methoxy-2-phenylimidazo[1,2-a]pyridin-3-yl)benzamide (3av): 33 mg, 43% yield, colorless oil; ^{1}H NMR (400 MHz, DMSO-d_6) δ 10.73 (s, 1H), 8.16 (t, J = 1.9 Hz, 1H), 8.09 – 8.01 (m, 2H), 7.98 – 7.91 (m, 2H), 7.75 (ddd, J = 8.1, 2.3, 1.1 Hz, 1H), 7.64 (t, J = 7.9 Hz, 1H), 7.43 (dd, J = 8.4, 7.0 Hz, 2H), 7.34 – 7.26 (m, 1H), 7.04 (d, J = 2.4 Hz, 1H), 6.65 (dd, J = 7.5, 2.5 Hz, 1H), 3.88 (s, 3H). ^{13}C NMR (101 MHz, DMSO-d_6) δ 165.9, 158.3, 144.0, 137.5, 135.5, 134.2, 133.9, 132.5, 131.1, 129.0, 128.3, 127.9, 127.2, 126.8, 125.1, 114.4, 107.1, 95.1, 56.1. HRMS (ESI-TOF) m/z [M + H]$^+$ calcd for $C_{21}H_{17}ClN_3O_2$ 378.1004, found 378.1002.



N-(2-phenylimidazo[1,2-a]pyridin-3-yl)nicotinamide (3aw): 40 mg, 63% yield, colorless oil; ^{1}H NMR (400 MHz, DMSO-d_6) δ 10.94 (s, 1H), 9.31 (d, J = 2.3 Hz, 1H), 8.86 (dd, J = 4.9, 1.7 Hz, 1H), 8.47 (dt, J = 8.1, 2.1 Hz, 1H), 8.26 (dd, J = 6.7, 1.2 Hz, 1H), 8.02 (dd, J = 8.0, 1.5 Hz, 2H), 7.71 – 7.62 (m, 2H), 7.47 (t, J = 7.6 Hz, 2H), 7.40 – 7.30 (m, 2H), 6.98 (td, J = 6.7, 1.0 Hz, 1H).^{13}C NMR (101 MHz, DMSO-d_6) δ 165.9, 153.3, 149.5, 142.7, 138.4, 136.3, 133.9, 129.3, 129.1, 128.3, 127.2, 125.8, 124.5, 124.2, 117.4, 115.4, 112.8. HRMS (ESI-TOF) m/z [M + H]$^+$ calcd for $C_{19}H_{15}N_4O$ 315.1240, found 315.1241.

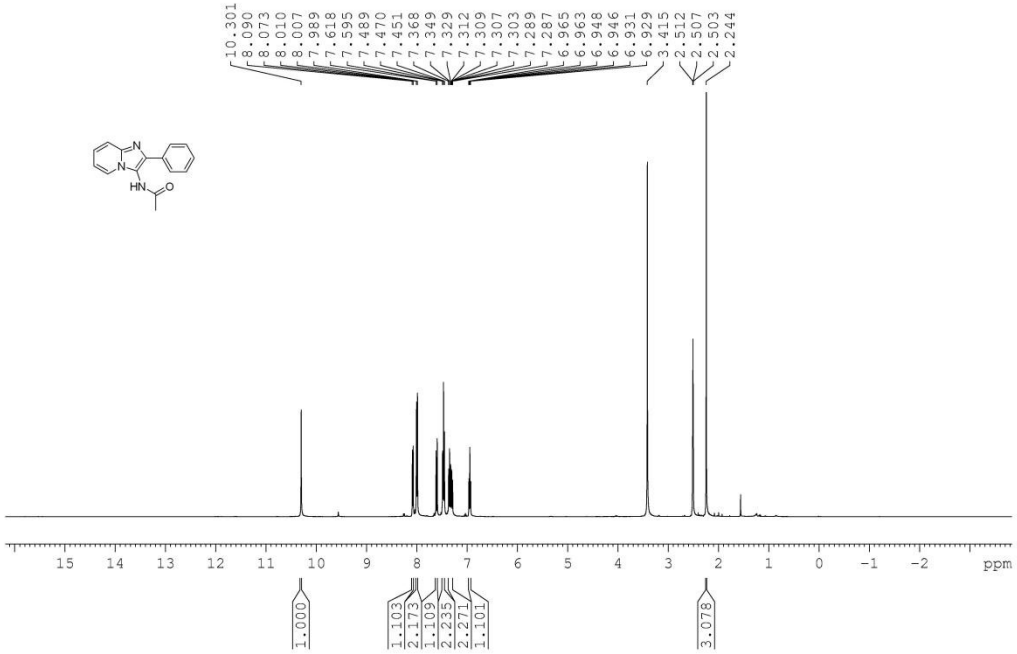


N-(2-phenylimidazo[1,2-a]pyridin-3-yl)furan-2-carboxamide (3ax)[8]: 25 mg, 41% yield, colorless oil; ^{1}H NMR (400 MHz, DMSO-d_6) δ 10.64 (s, 1H), 8.11 (dd, J = 6.8, 1.2 Hz, 1H), 8.04 (d, J = 1.7 Hz, 1H), 8.01 – 7.94 (m, 2H), 7.64 (dt, J = 9.1, 1.2 Hz, 1H), 7.49 – 7.40 (m, 3H), 7.38 – 7.29 (m, 2H), 6.95 (td, J = 6.8, 1.2 Hz, 1H), 6.78 (dd, J = 3.5, 1.8 Hz, 1H). ^{13}C NMR (101 MHz, DMSO-d_6) δ 158.2, 147.2, 146.9, 142.6, 138.5, 133.9, 129.1, 128.2, 127.1, 125.8, 124.3, 117.4, 116.4, 115.0, 112.8, 112.8. HRMS (ESI-TOF) m/z [M + H]$^+$ calcd for $C_{18}H_{14}N_3O_2$ 304.1081, found 304.1083.

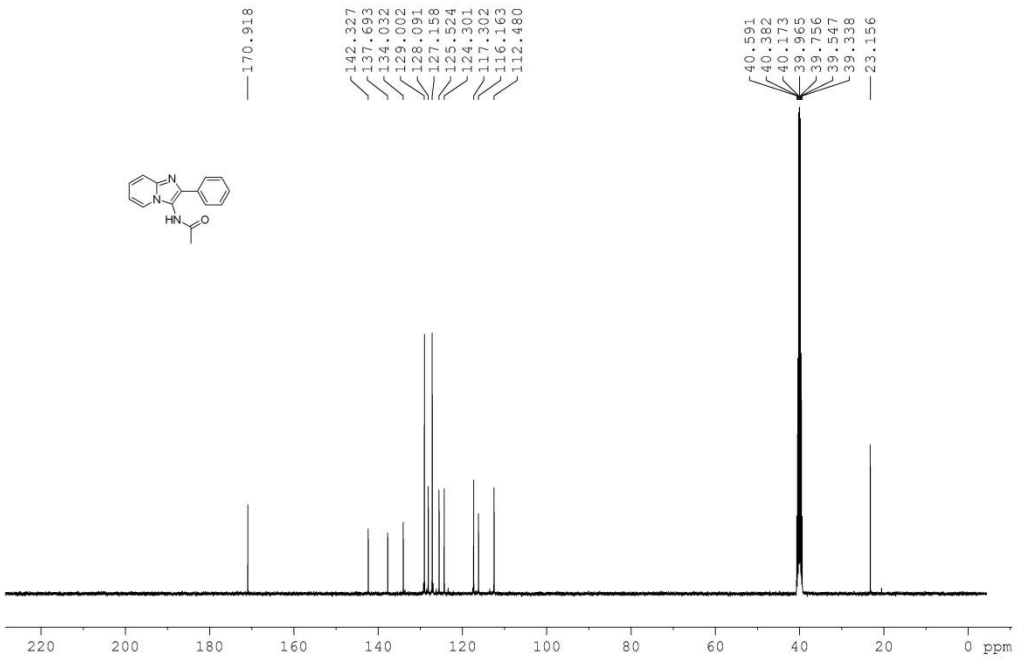


4-methyl-N-(2-phenylimidazo[1,2-a]pyridin-3-yl)benzenesulfonamide (3ay)[10]: 37 mg, 52% yield, yellow solid; mp 115–117 °C. ^{1}H NMR (400 MHz, DMSO-d_6) δ 10.64 – 10.47 (m, 1H), 8.19 (dd, J = 6.9, 1.2 Hz, 1H), 7.67 – 7.61 (m, 2H), 7.58 (d, J = 9.1 Hz, 1H), 7.37 – 7.33 (m, 3H), 7.19 – 7.11 (m, 3H), 7.03 (d, J = 8.0 Hz, 2H), 7.00 – 6.93 (m, 1H), 2.22 (s, 3H). ^{13}C NMR (101 MHz, DMSO-d_6) δ 143.8, 142.8, 140.4, 137.2, 133.0, 129.8, 128.2, 127.6, 127.3, 126.9, 126.4, 124.2, 117.3, 113.7, 112.8, 21.3. HRMS (ESI-TOF) m/z [M + H]$^+$ calcd for $C_{20}H_{18}N_3O_2S$ 364.1114, found 364.1116.

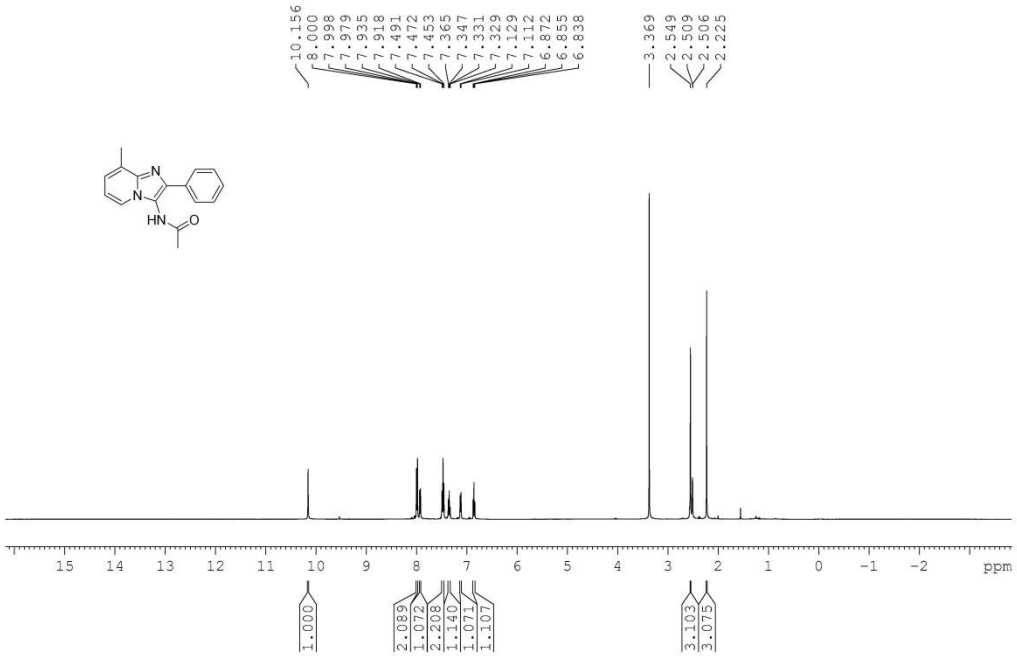
7. Copies of ^{1}H, ^{13}C and ^{19}F NMR spectra



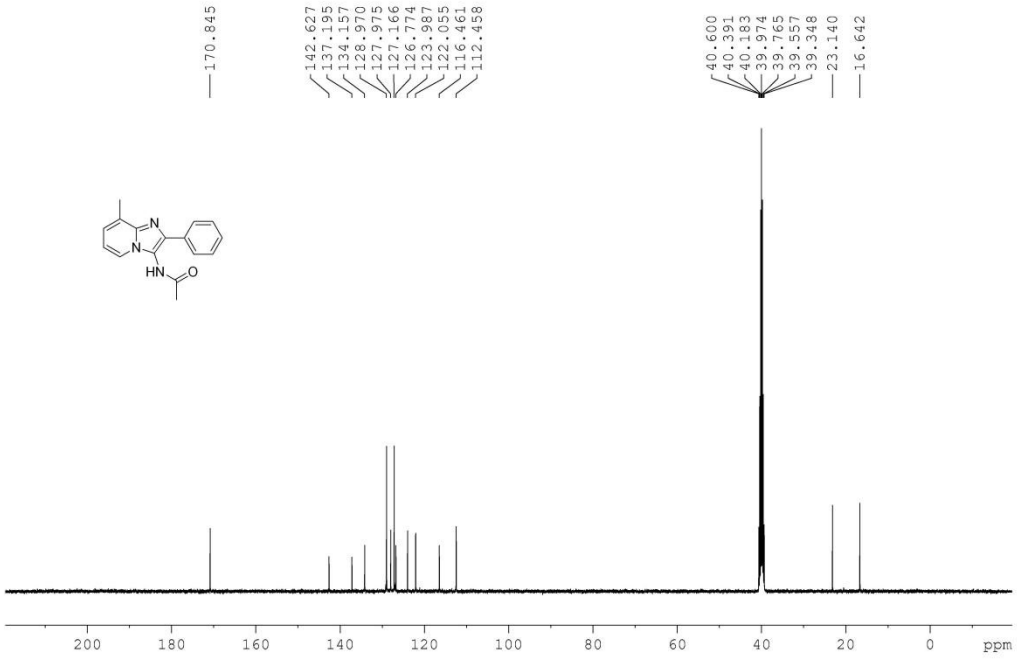
^{1}H NMR spectrum of compound 3a



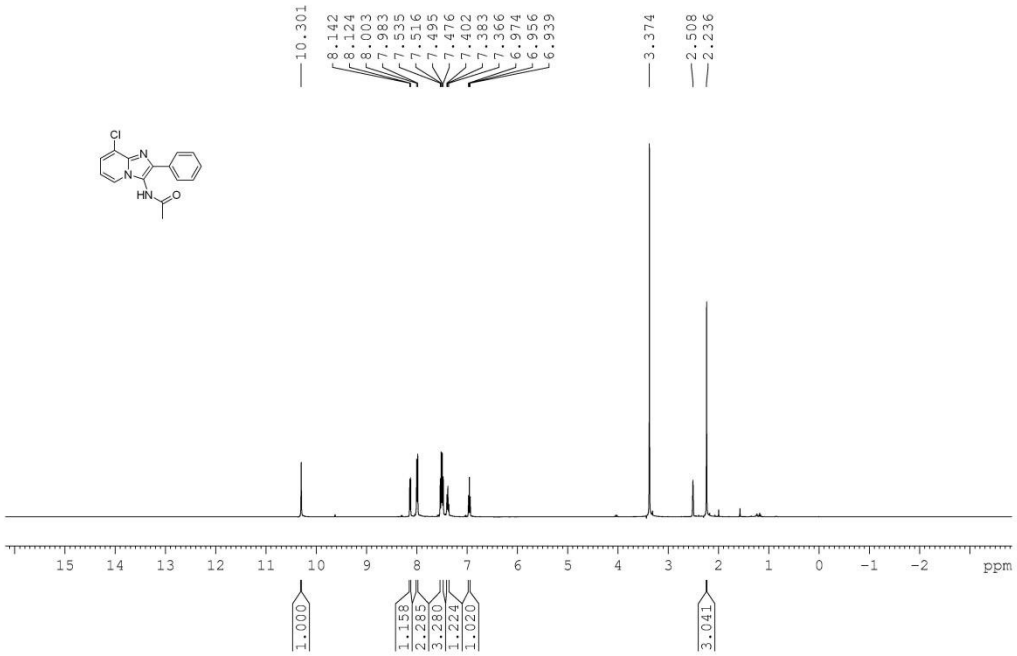
^{13}C NMR spectrum of compound 3a



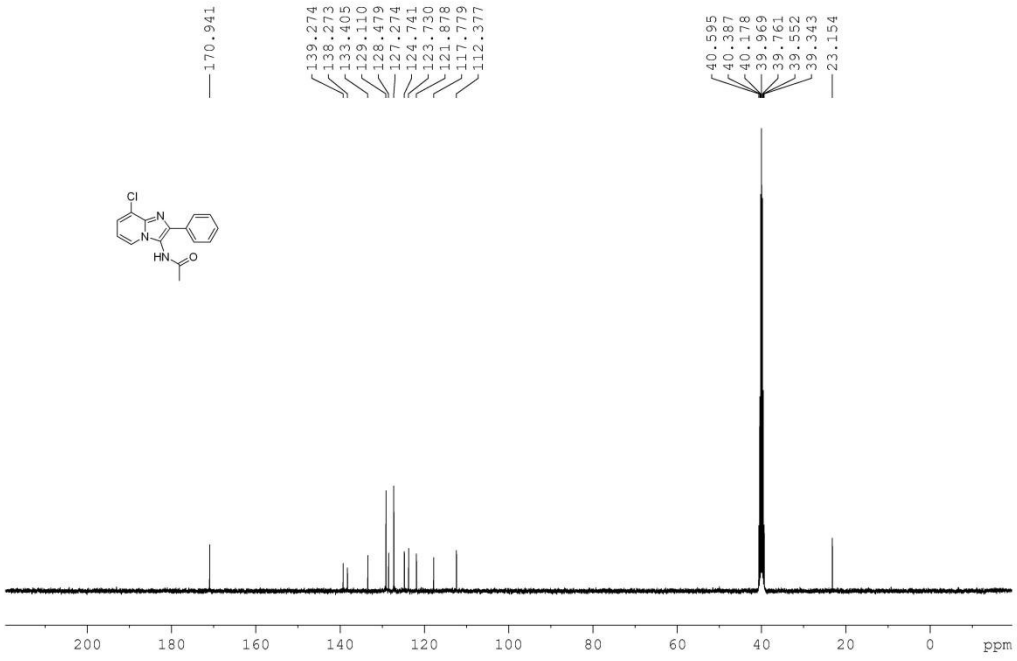
^{1}H NMR spectrum of compound 3b



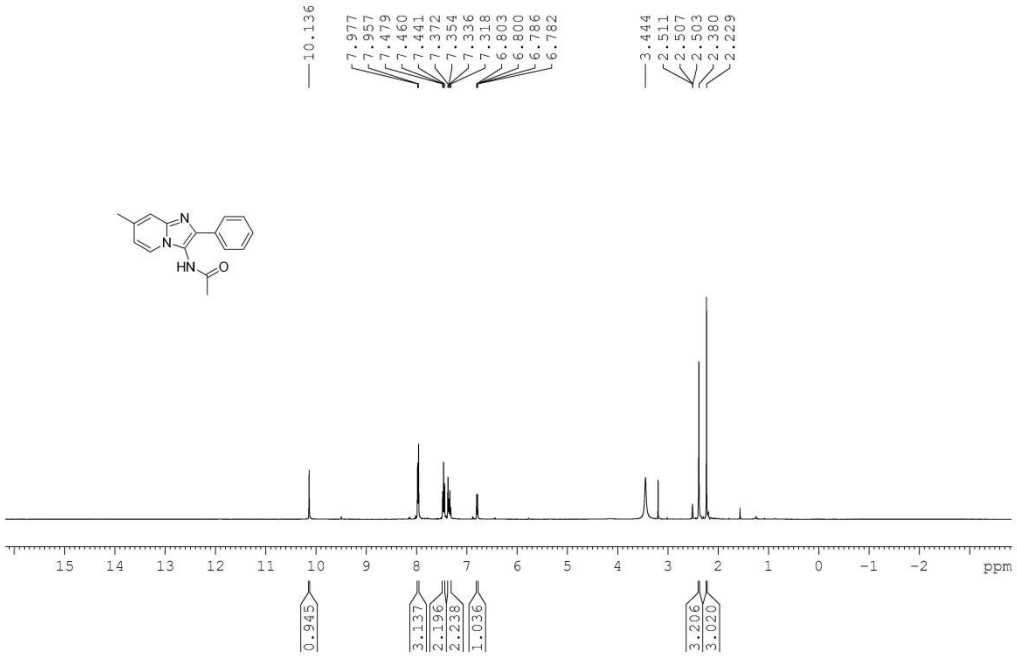
^{13}C NMR spectrum of compound 3b



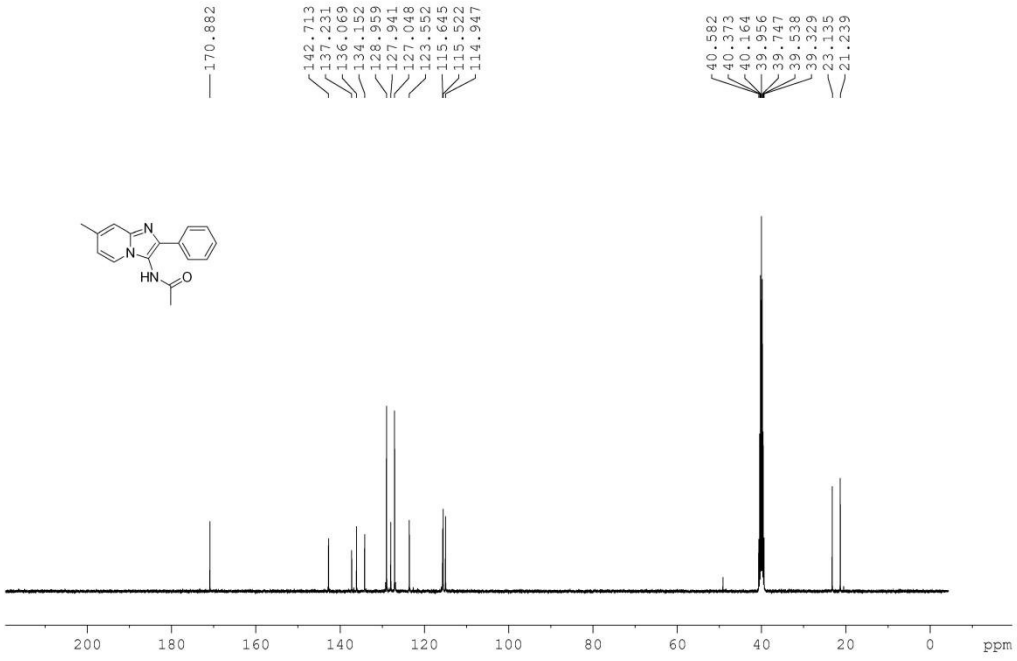
^{1}H NMR spectrum of compound 3c



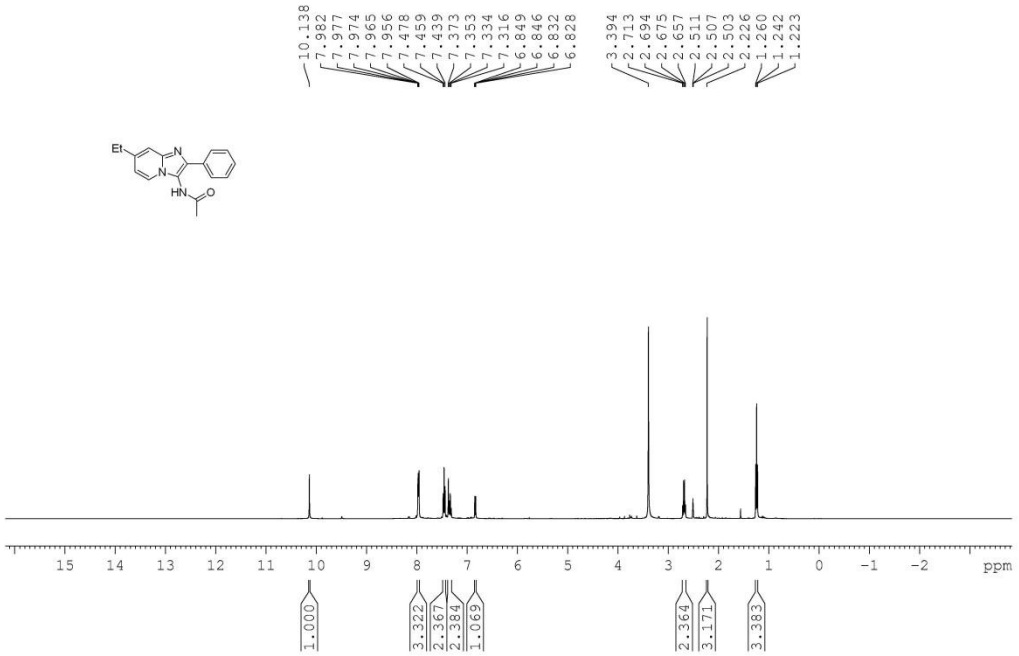
^{13}C NMR spectrum of compound 3c



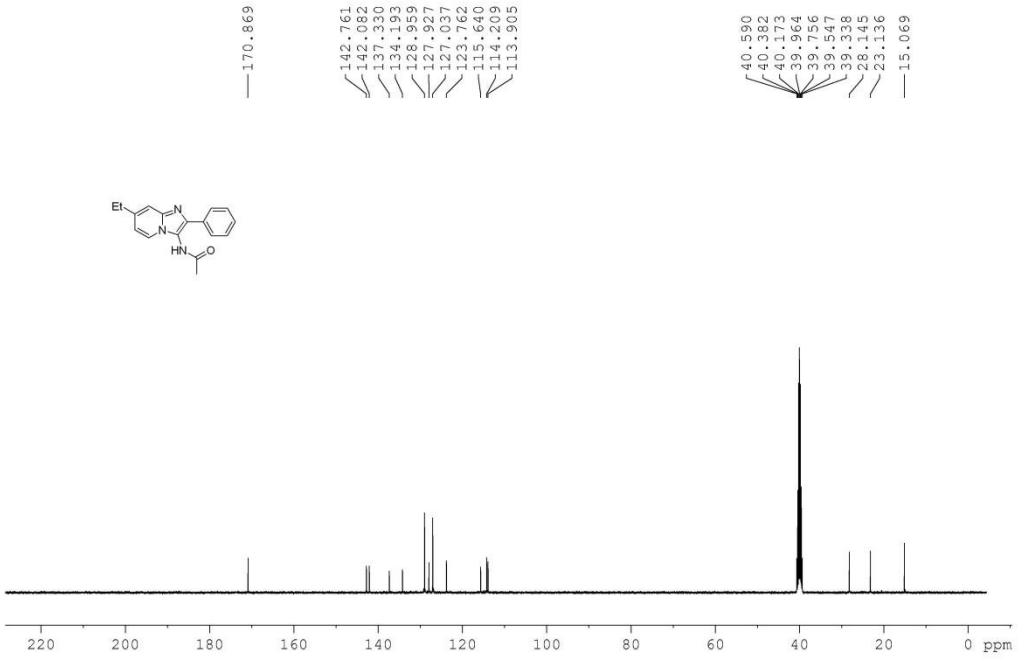
^{1}H NMR spectrum of compound 3d



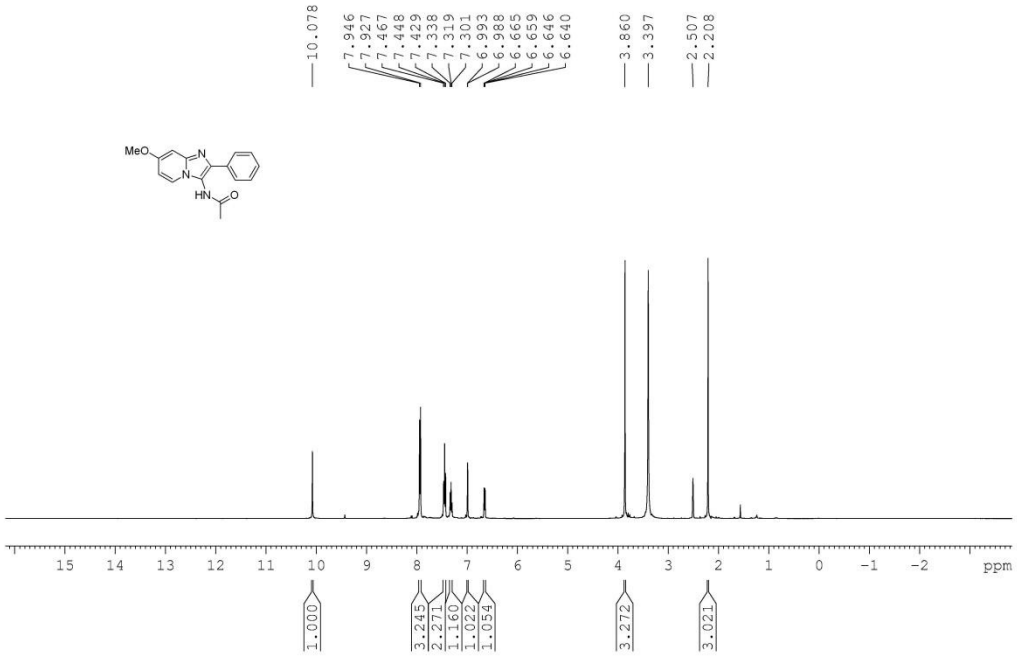
^{13}C NMR spectrum of compound 3d



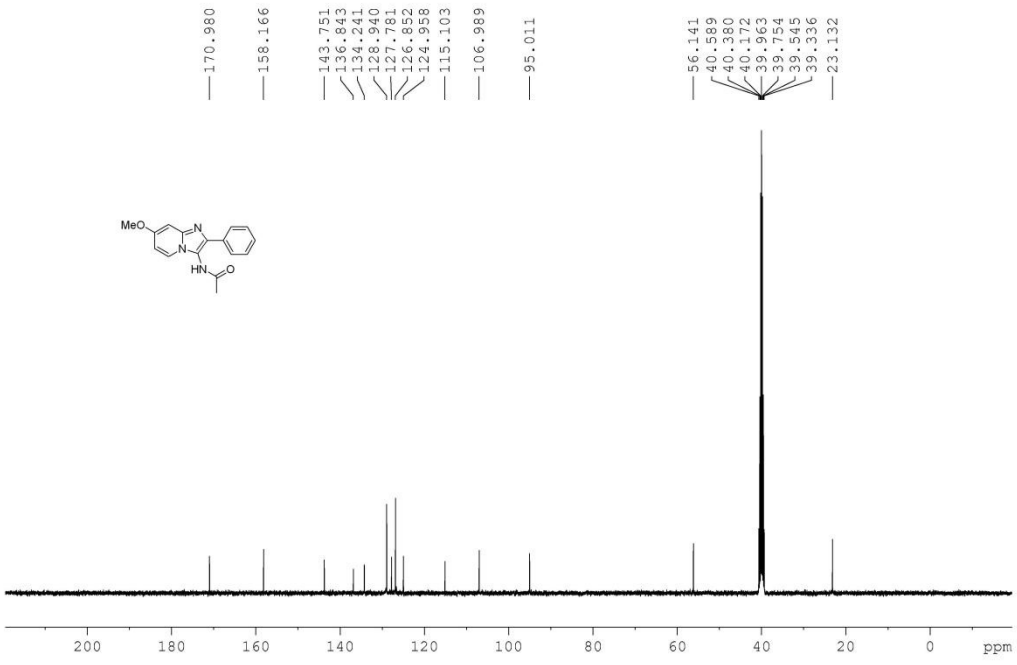
^{1}H NMR spectrum of compound 3e



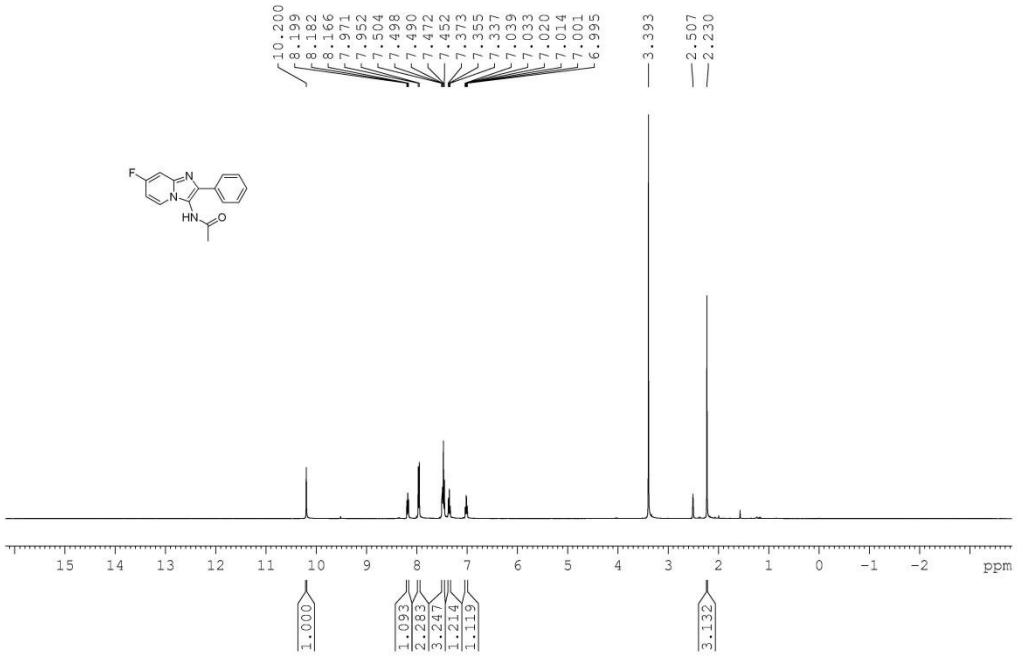
^{13}C NMR spectrum of compound 3e



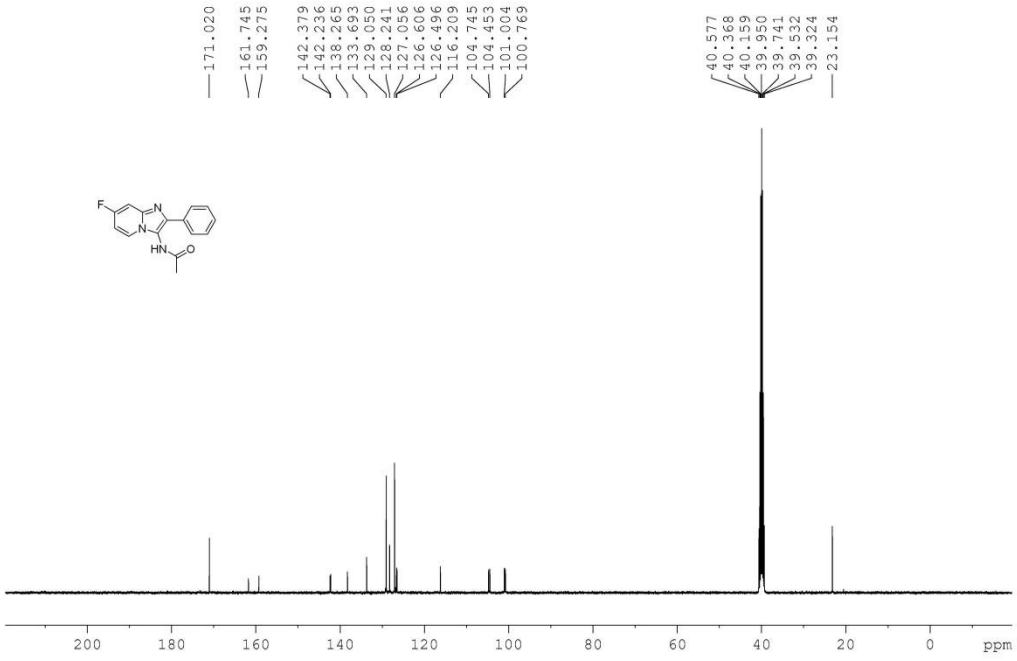
^{1}H NMR spectrum of compound 3f



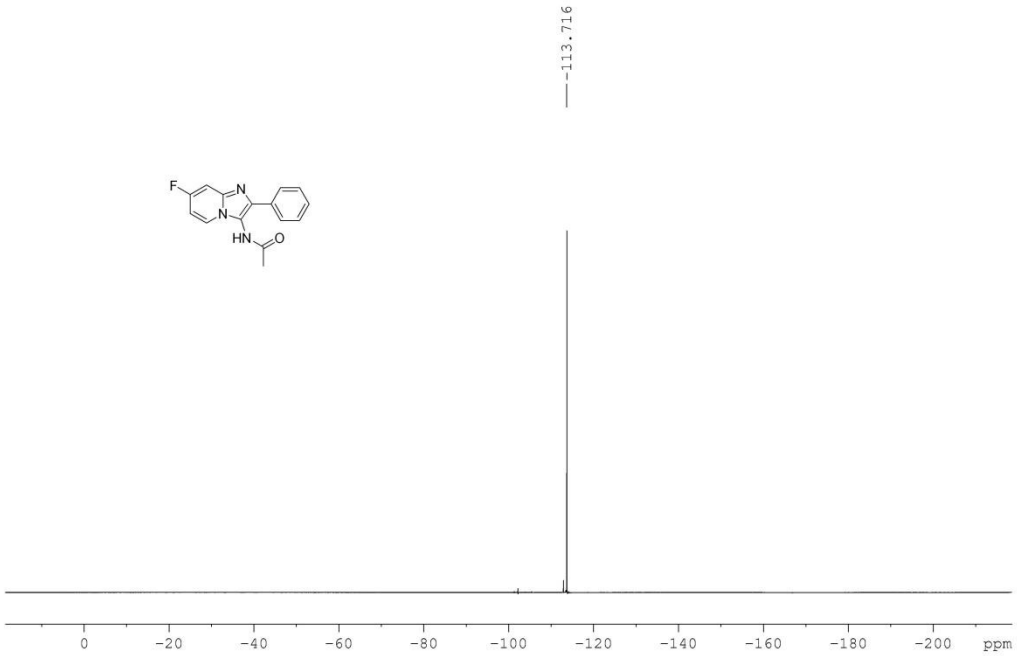
^{13}C NMR spectrum of compound 3f



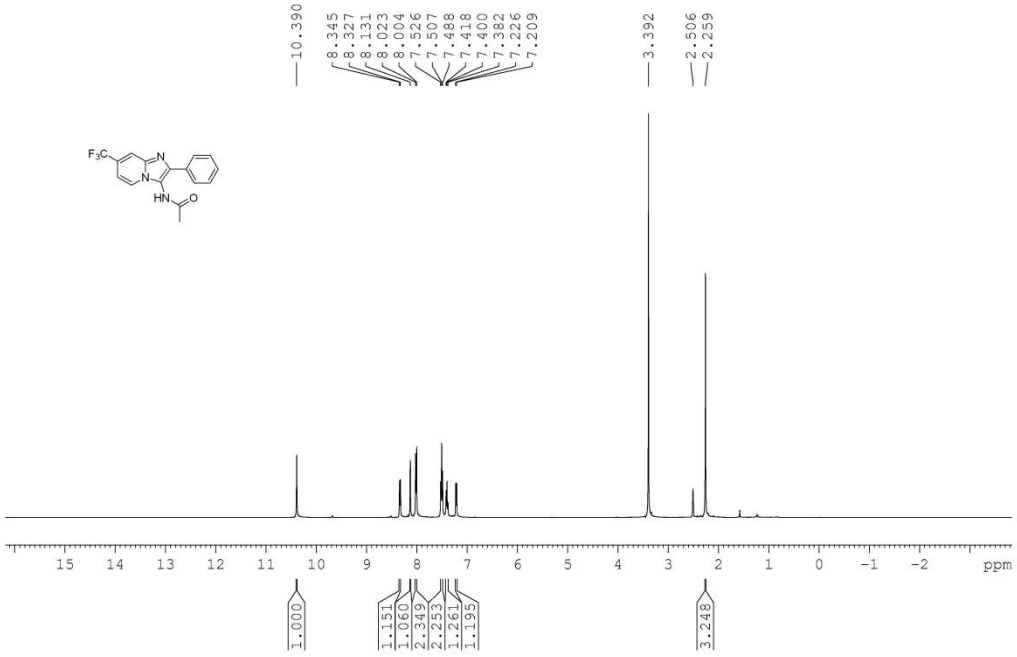
^{1}H NMR spectrum of compound 3g



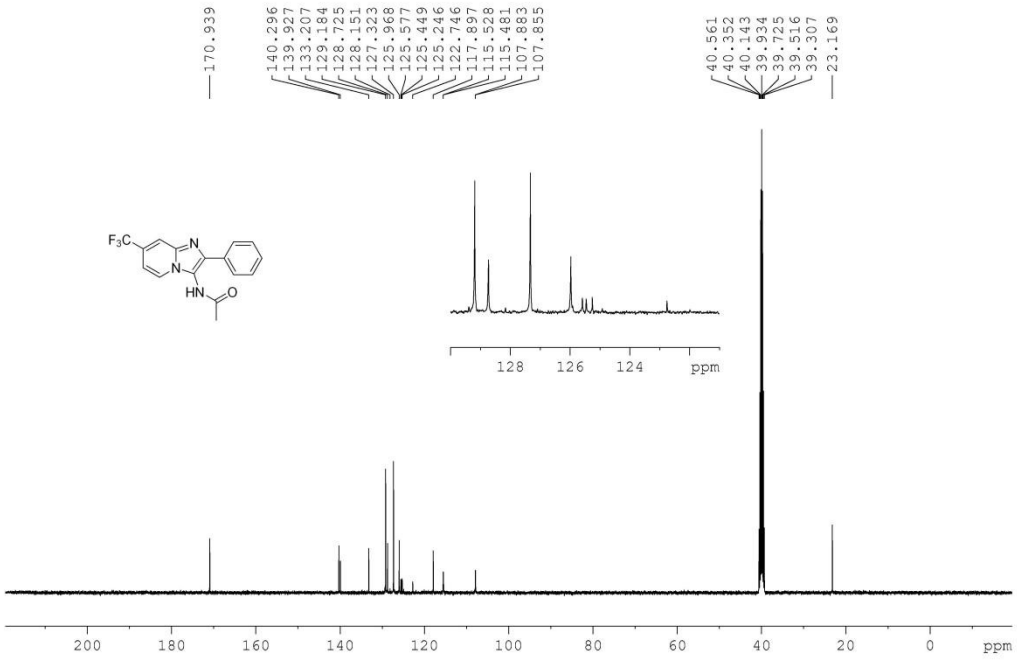
^{13}C NMR spectrum of compound 3g



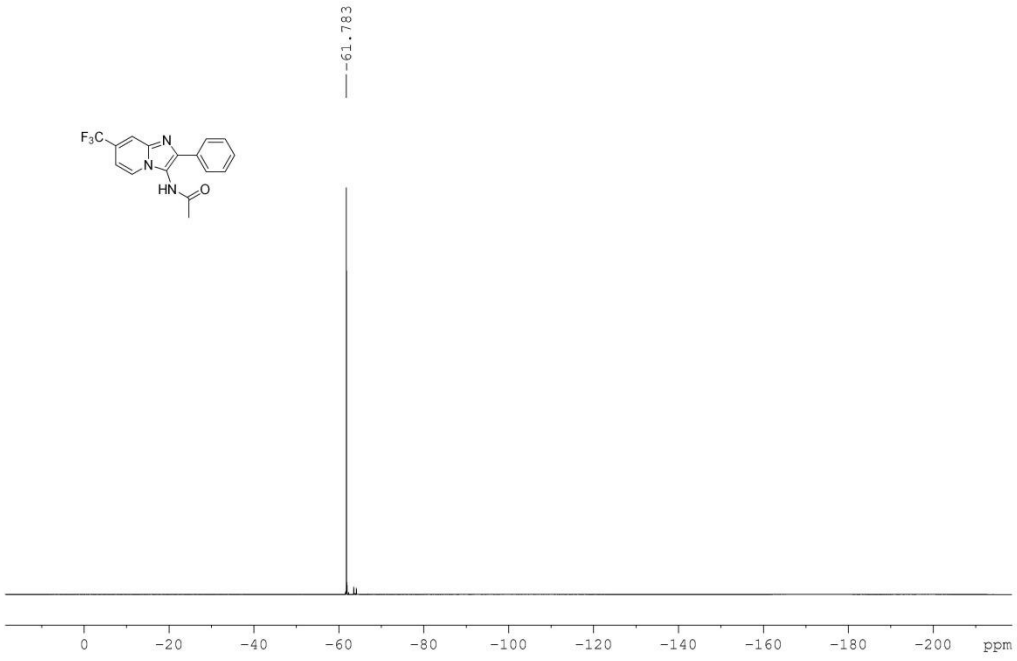
^{19}F NMR spectrum of compound 3g



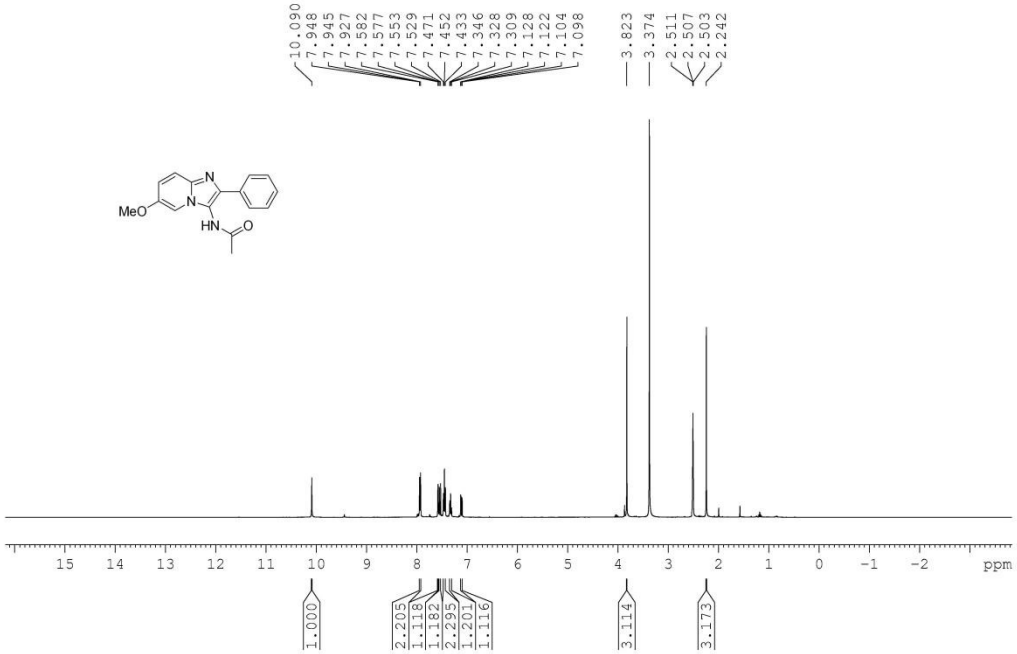
^{1}H NMR spectrum of compound 3h



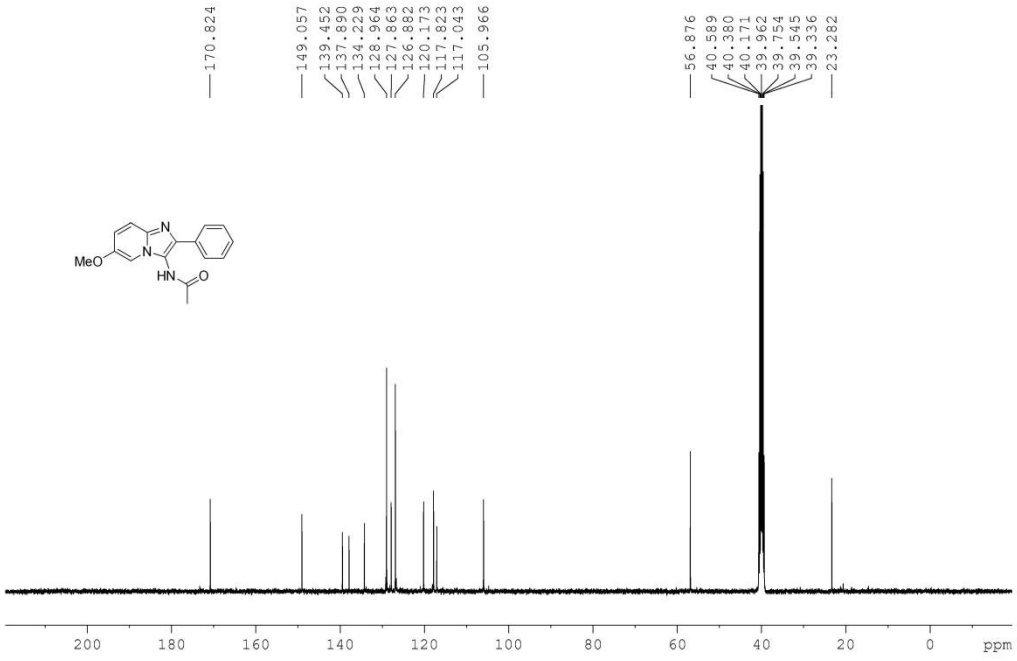
^{13}C NMR spectrum of compound 3h



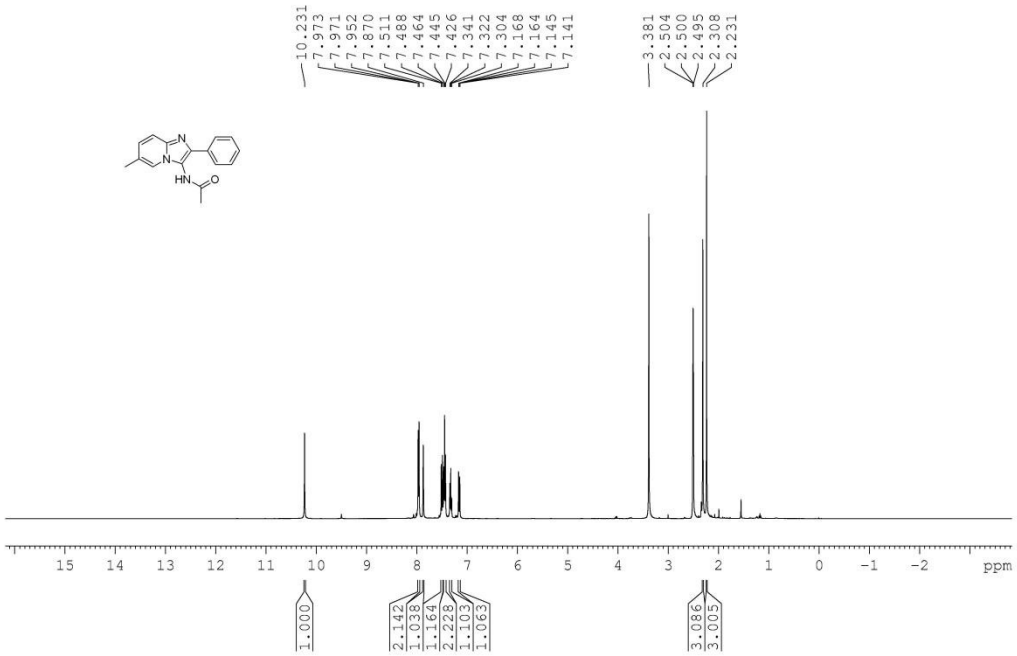
^{19}F NMR spectrum of compound 3h



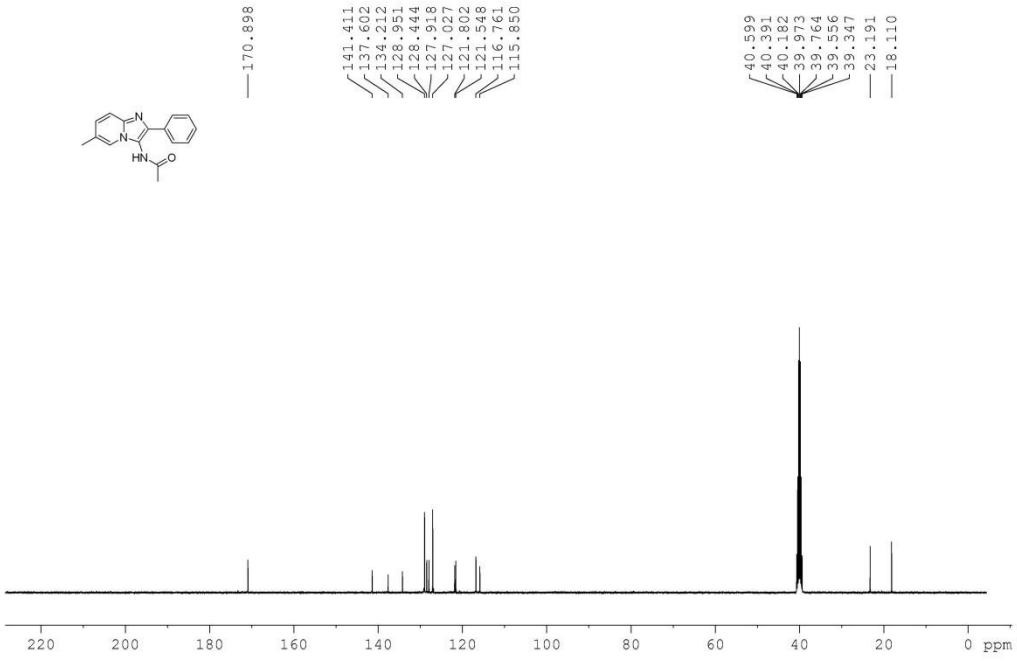
^{1}H NMR spectrum of compound 3i



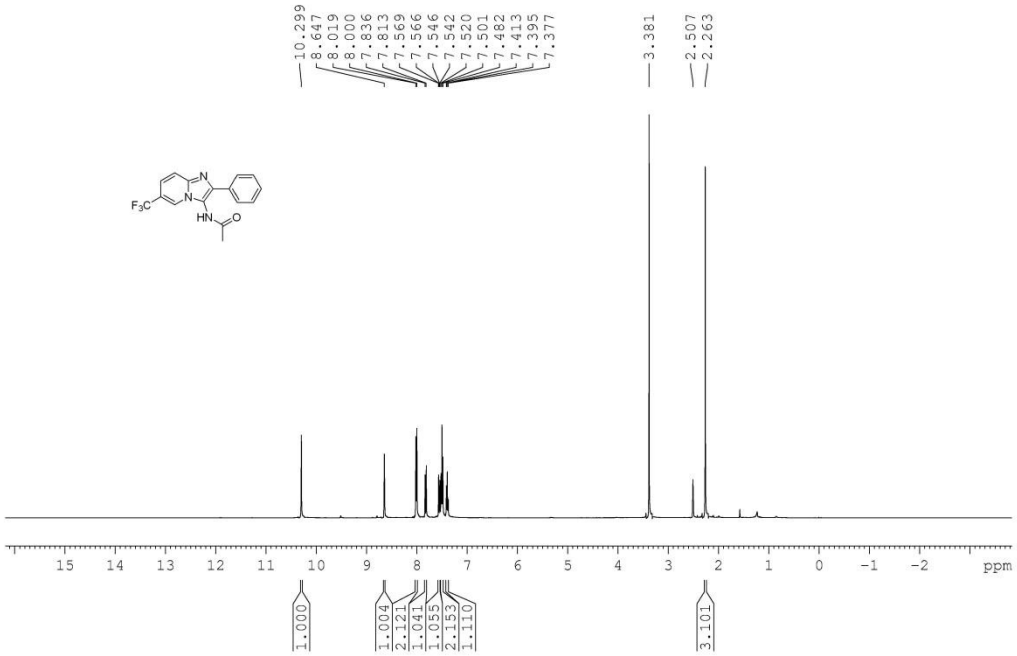
^{13}C NMR spectrum of compound 3i



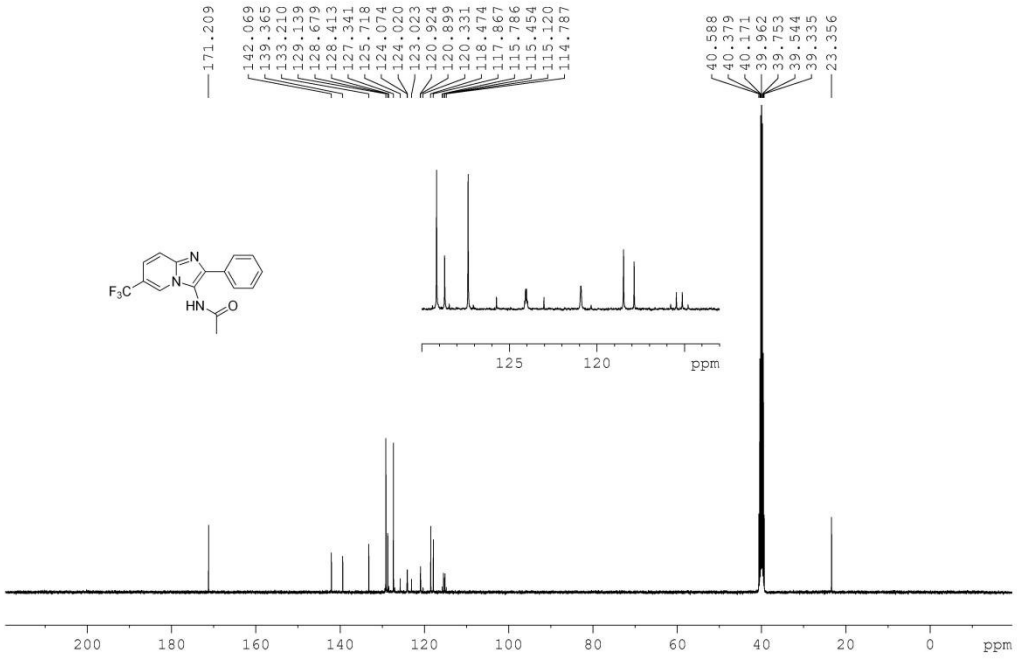
^{1}H NMR spectrum of compound 3j



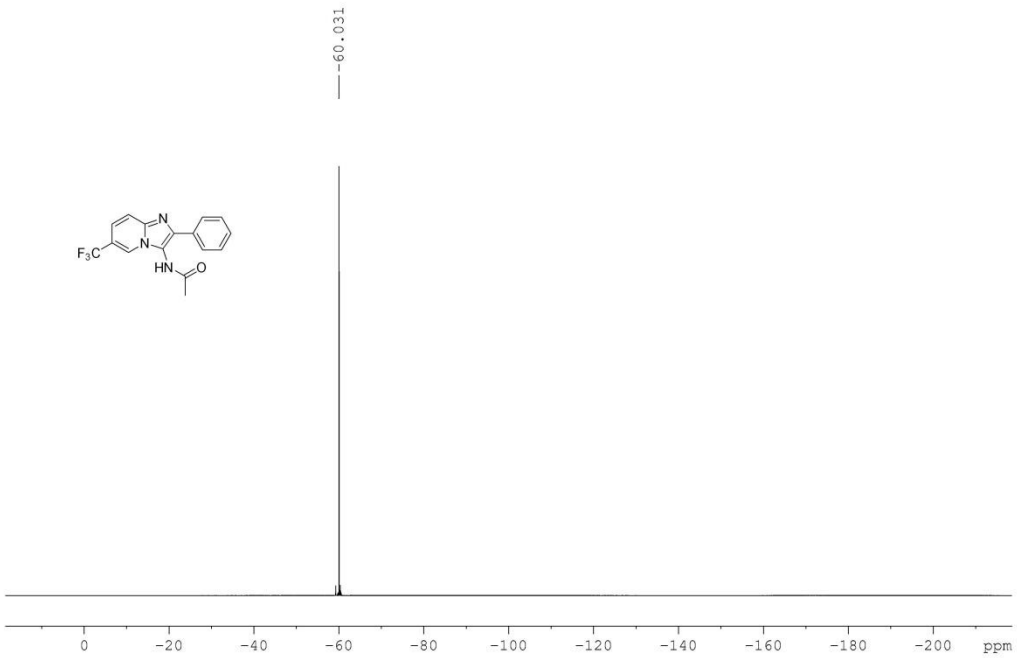
^{13}C NMR spectrum of compound 3j



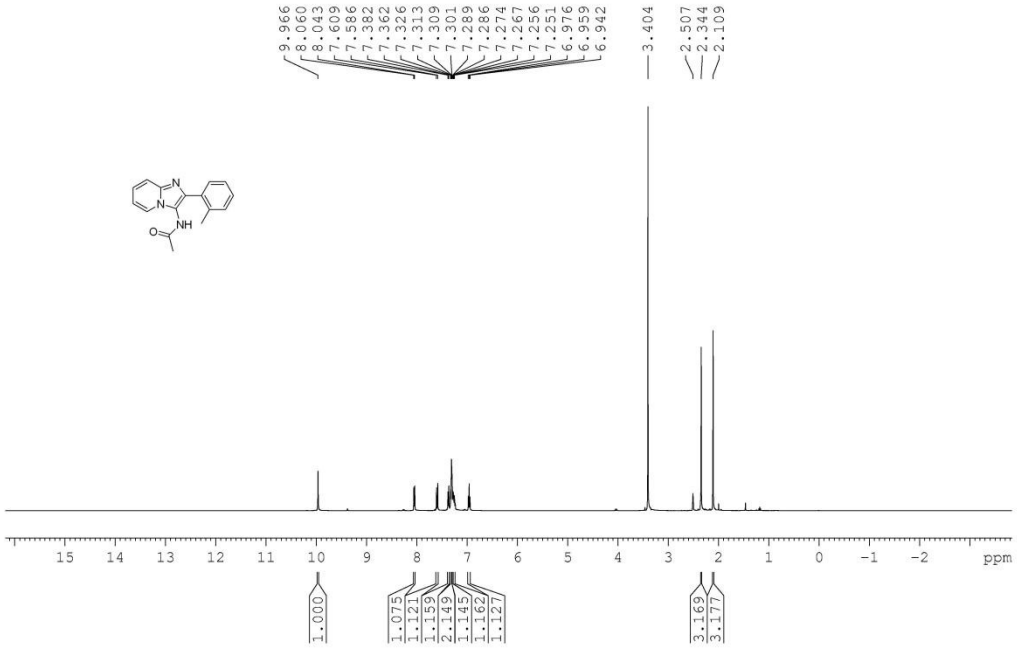
^{1}H NMR spectrum of compound 3k



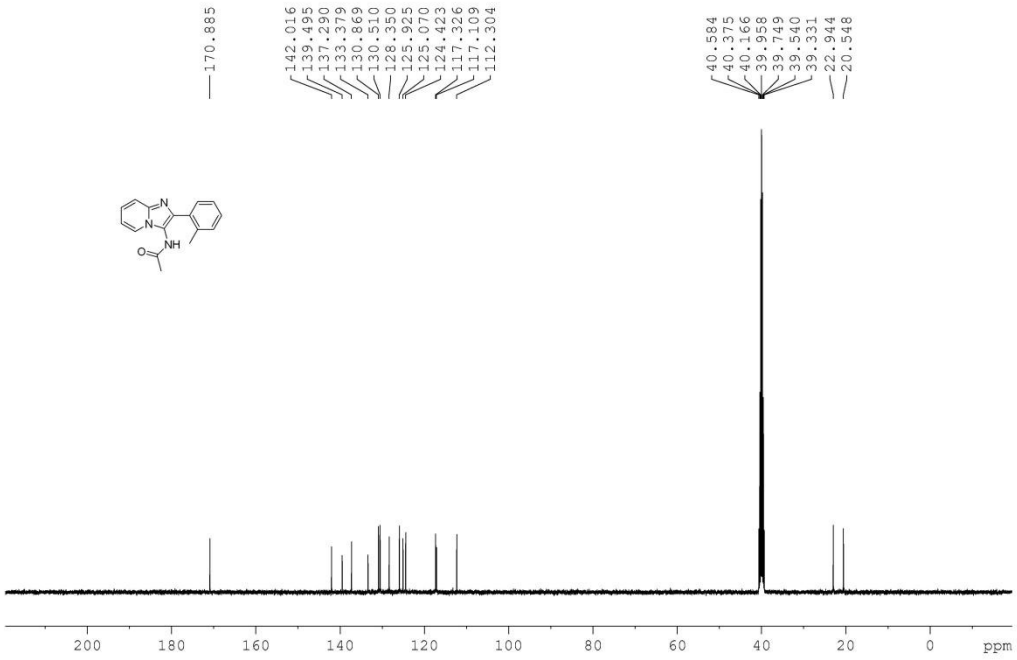
^{13}C NMR spectrum of compound 3k



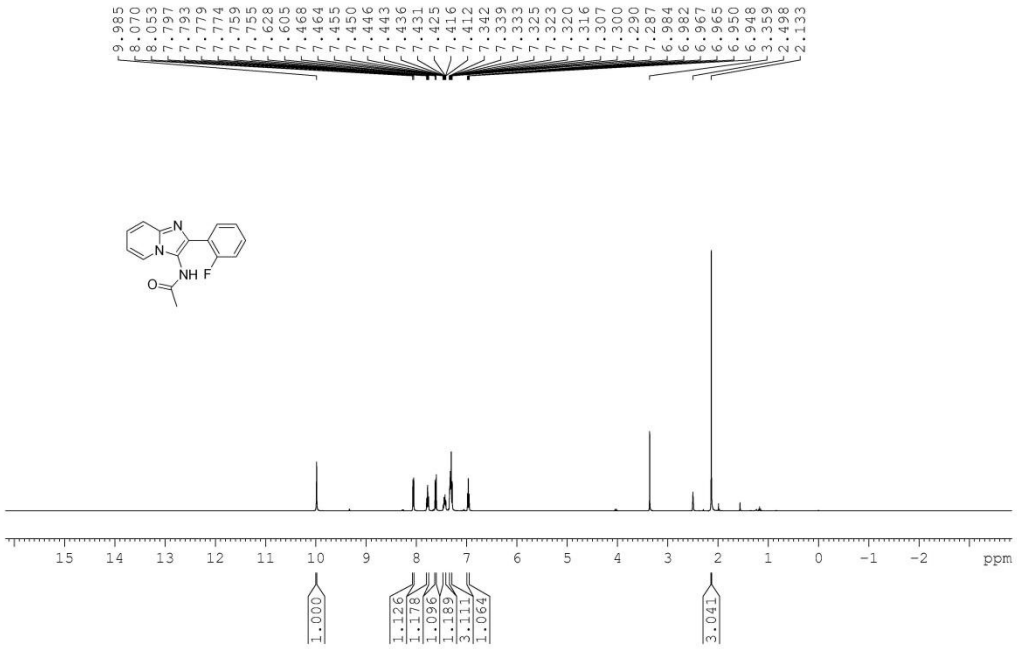
^{19}F NMR spectrum of compound 3k



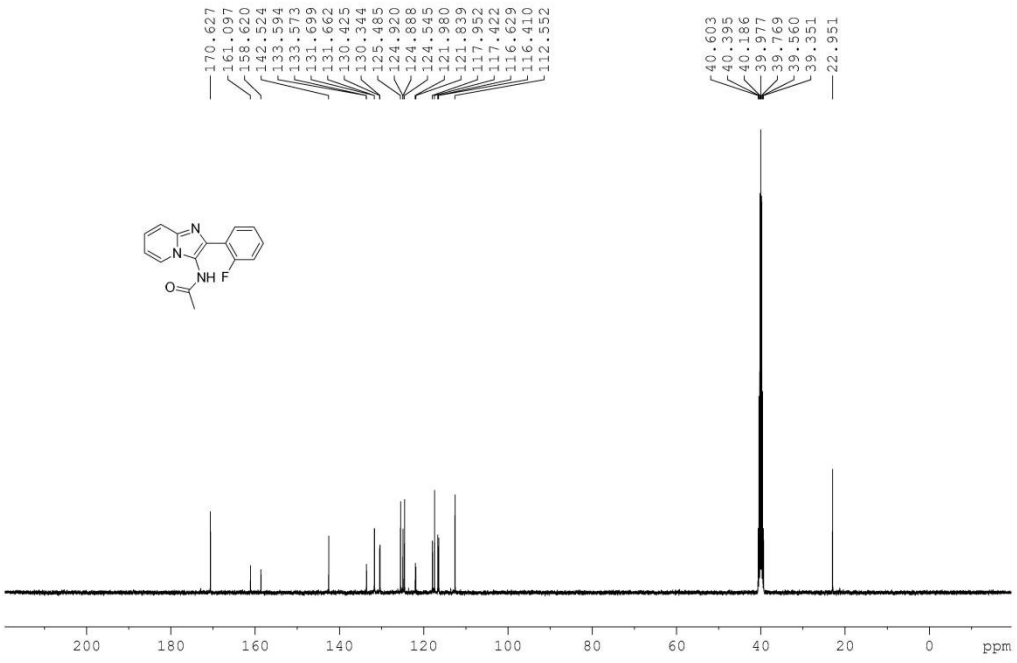
^{1}H NMR spectrum of compound 3l



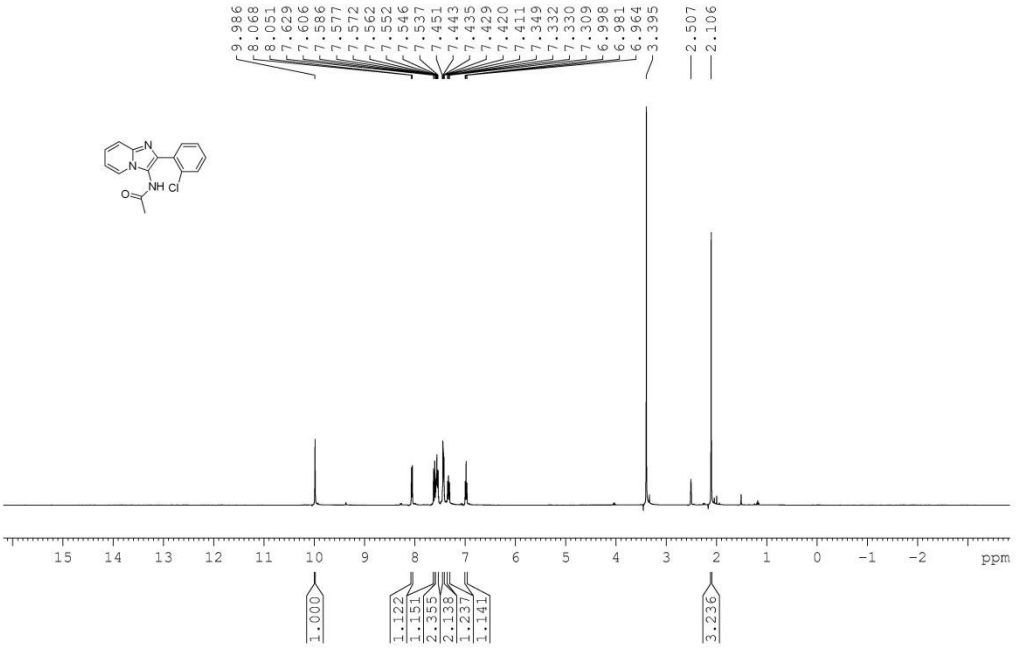
^{13}C NMR spectrum of compound 3l



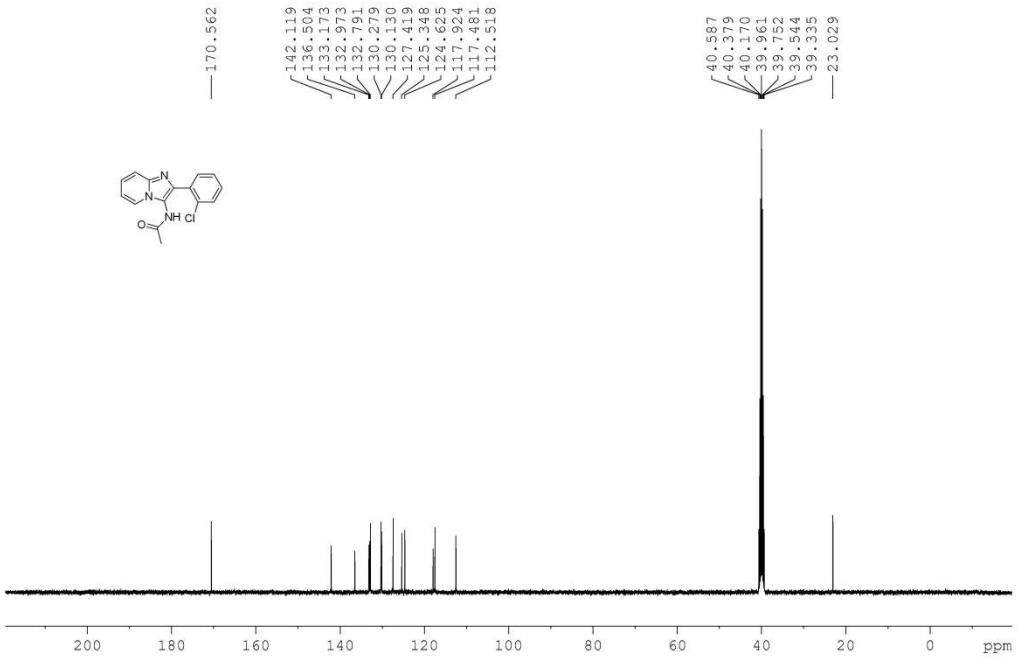
^{1}H NMR spectrum of compound 3m



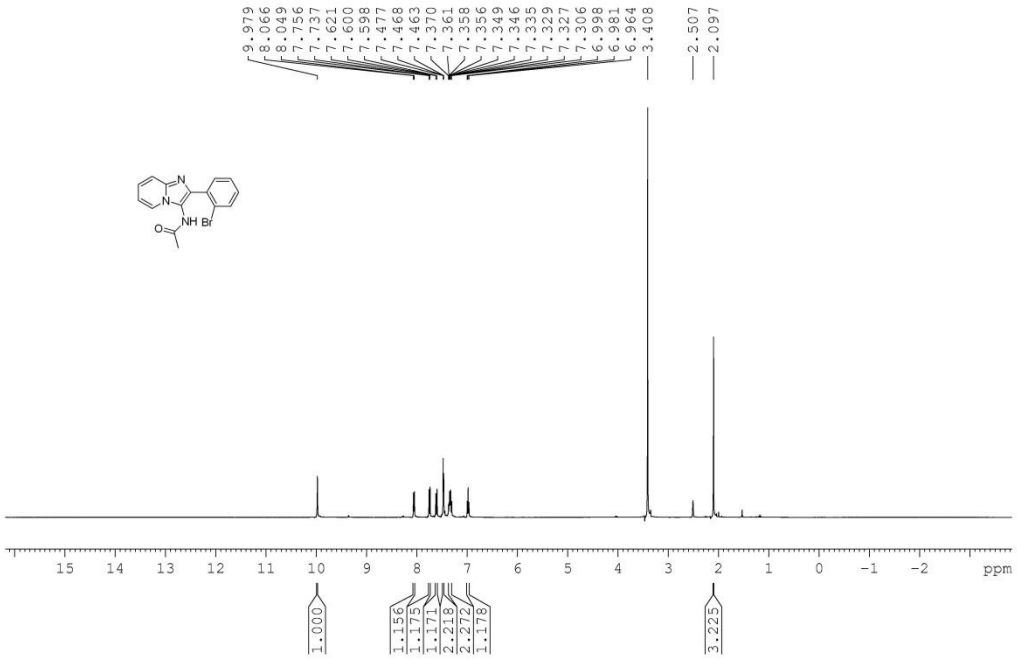
^{13}C NMR spectrum of compound 3m



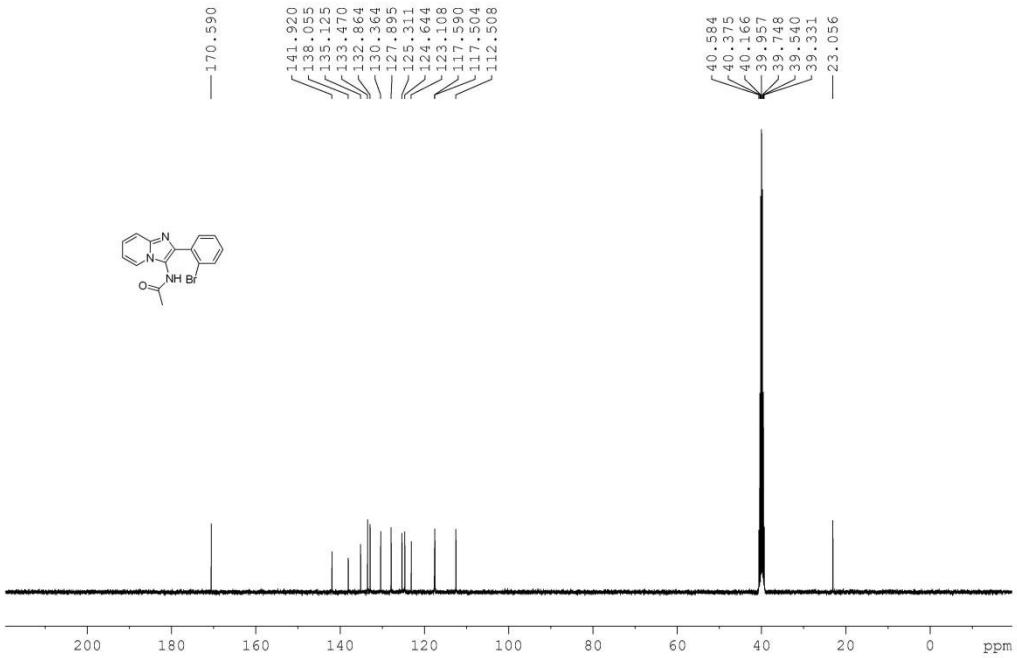
^{1}H NMR spectrum of compound 3n



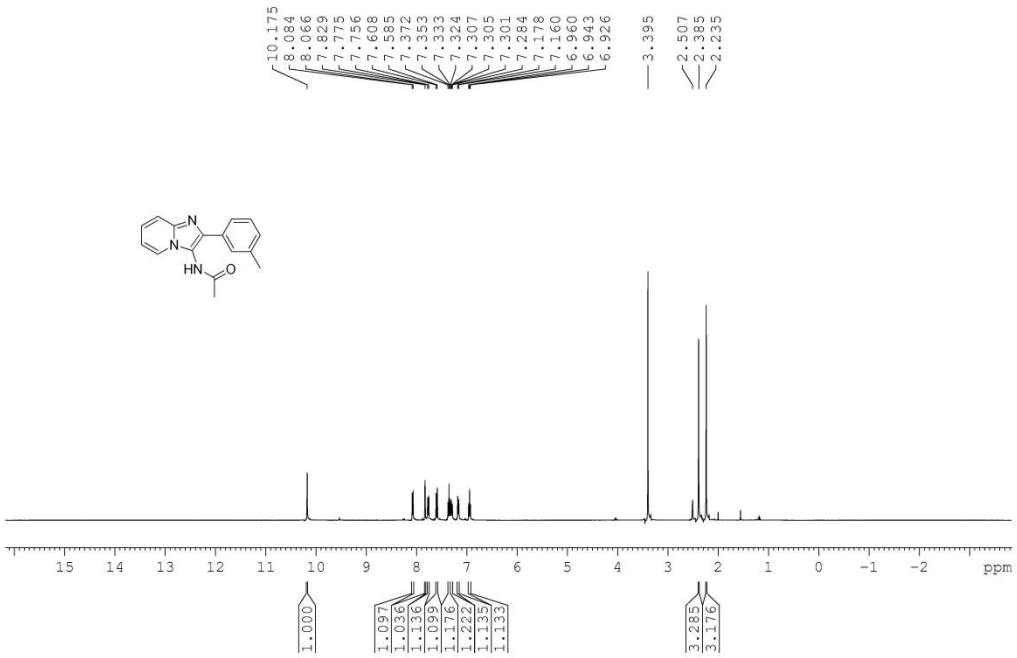
^{13}C NMR spectrum of compound 3n



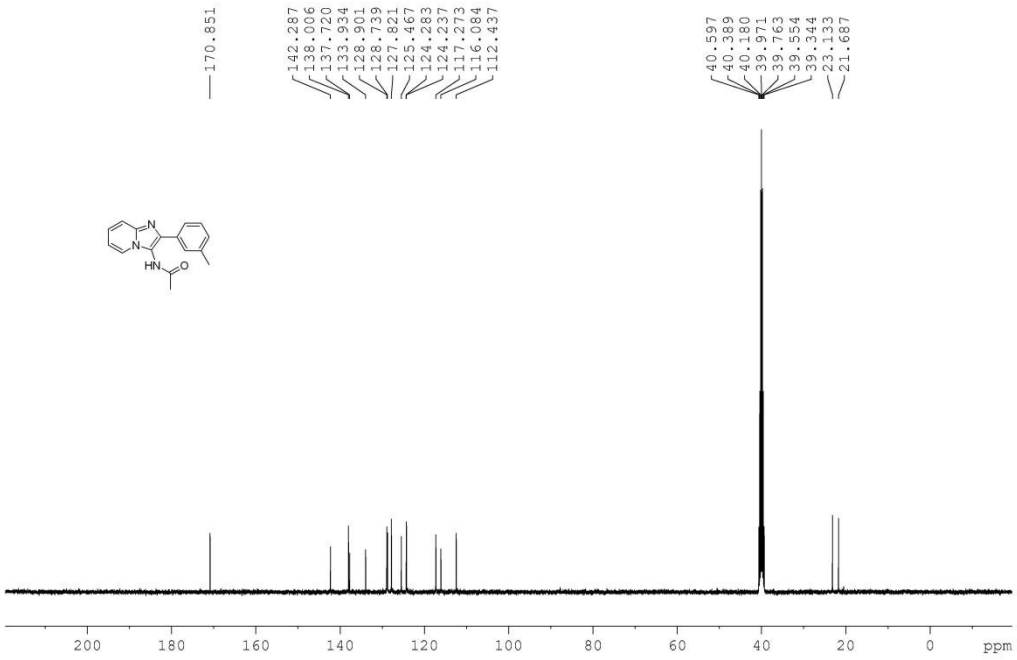
^{1}H NMR spectrum of compound 3o



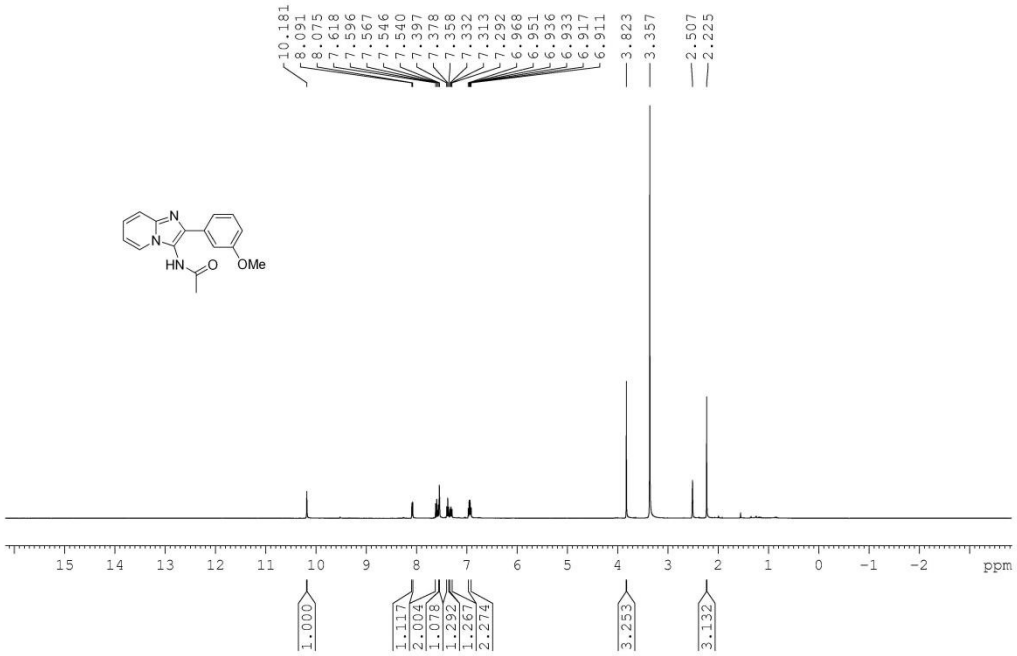
^{13}C NMR spectrum of compound 3o



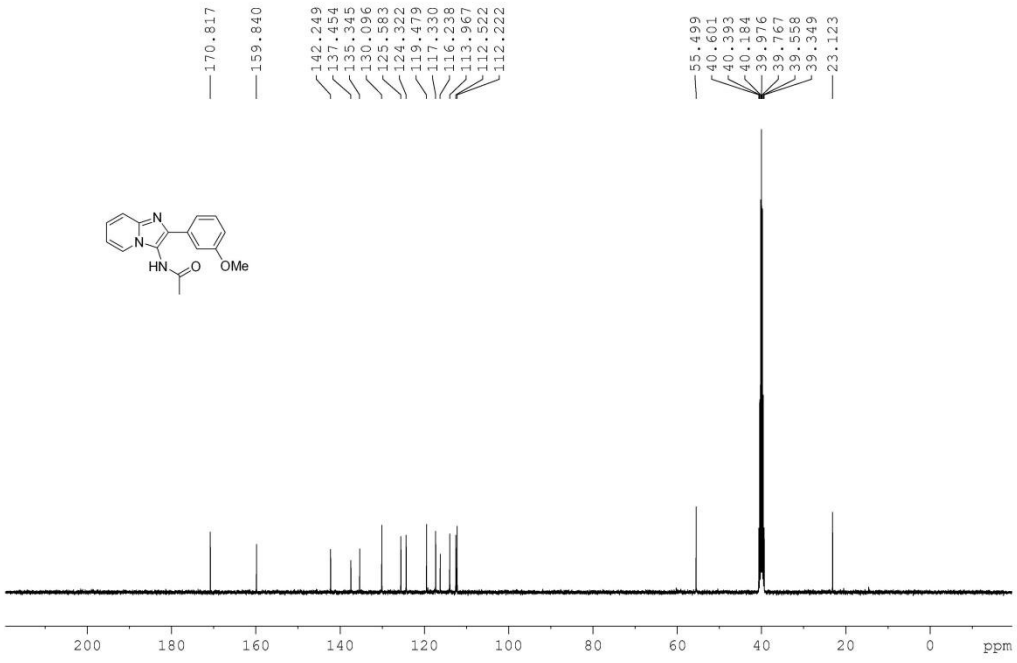
^{1}H NMR spectrum of compound 3p



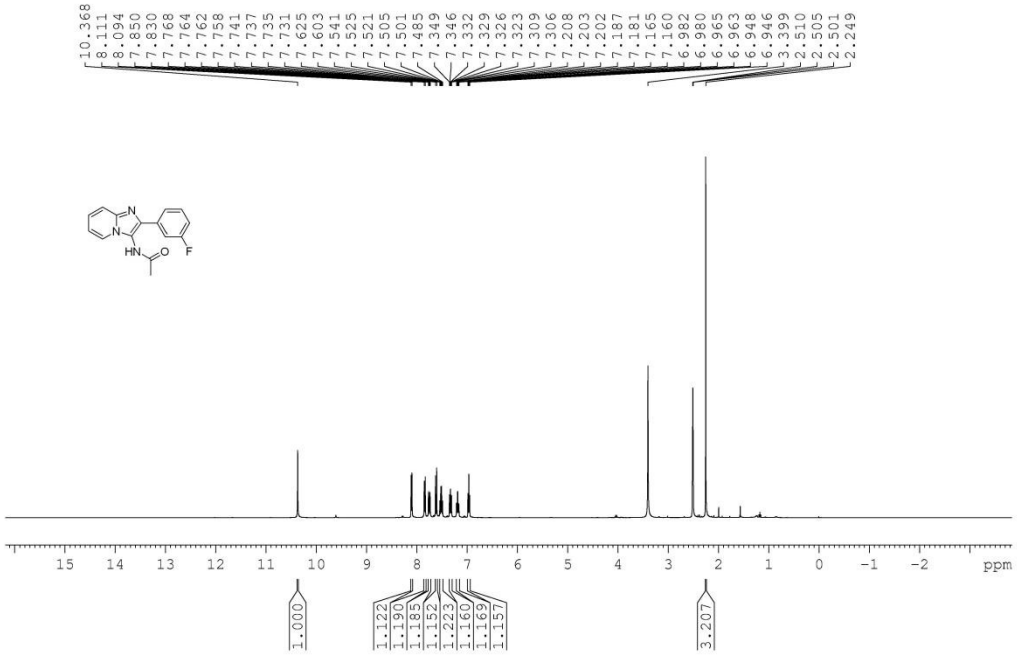
^{13}C NMR spectrum of compound 3p



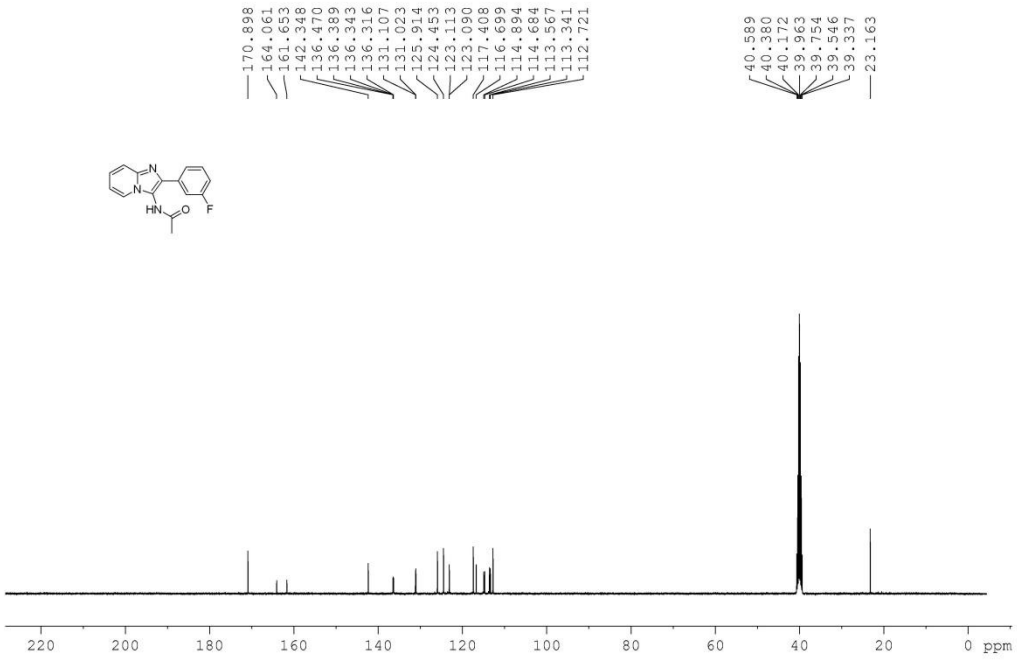
^{1}H NMR spectrum of compound 3q



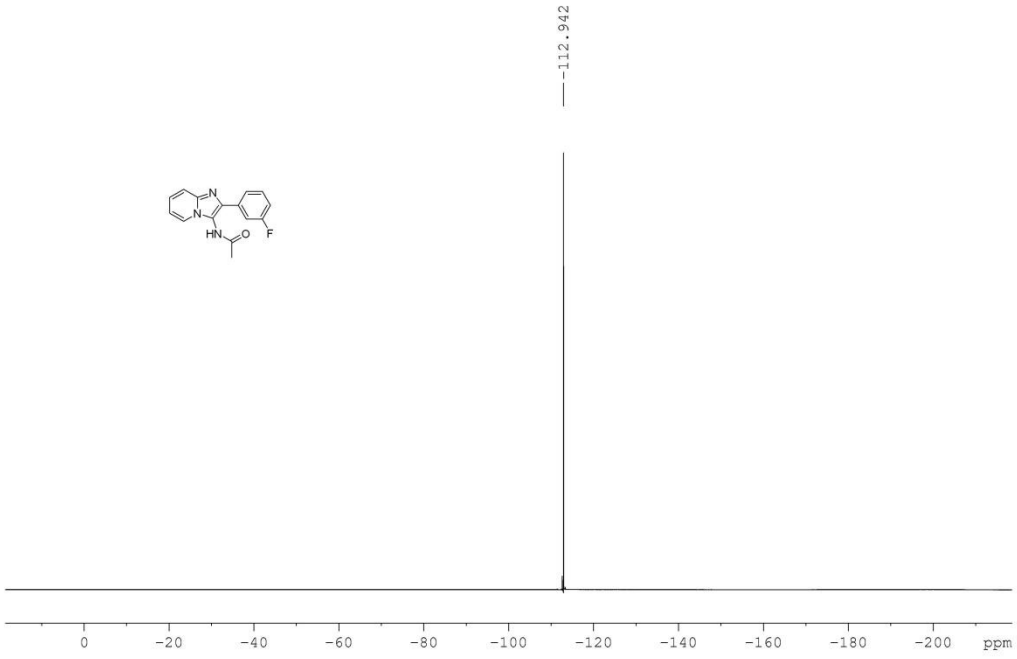
^{13}C NMR spectrum of compound 3q



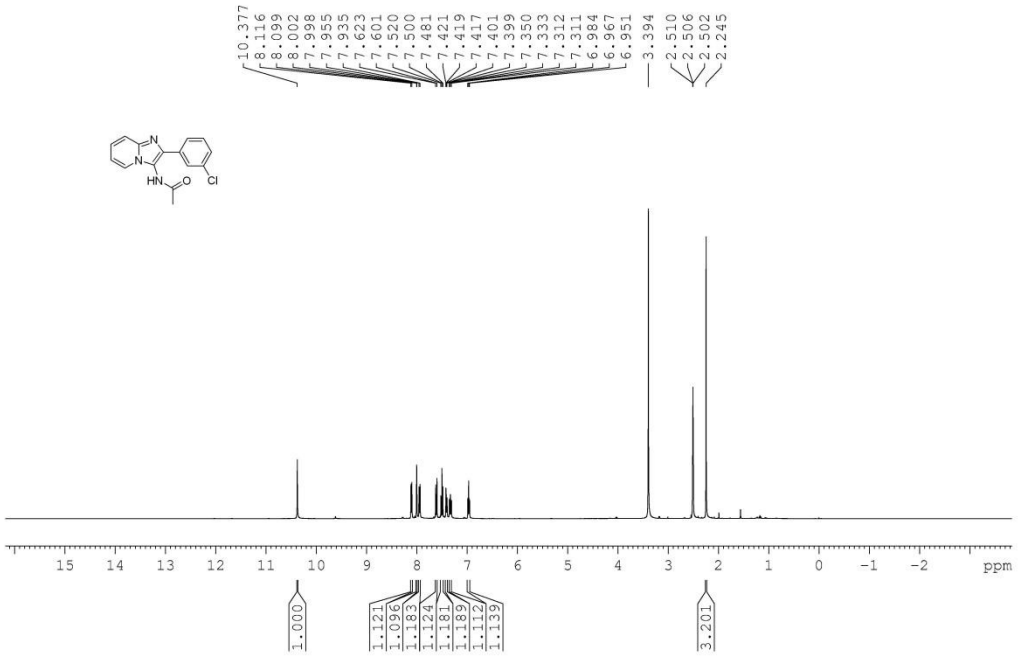
^{1}H NMR spectrum of compound 3r



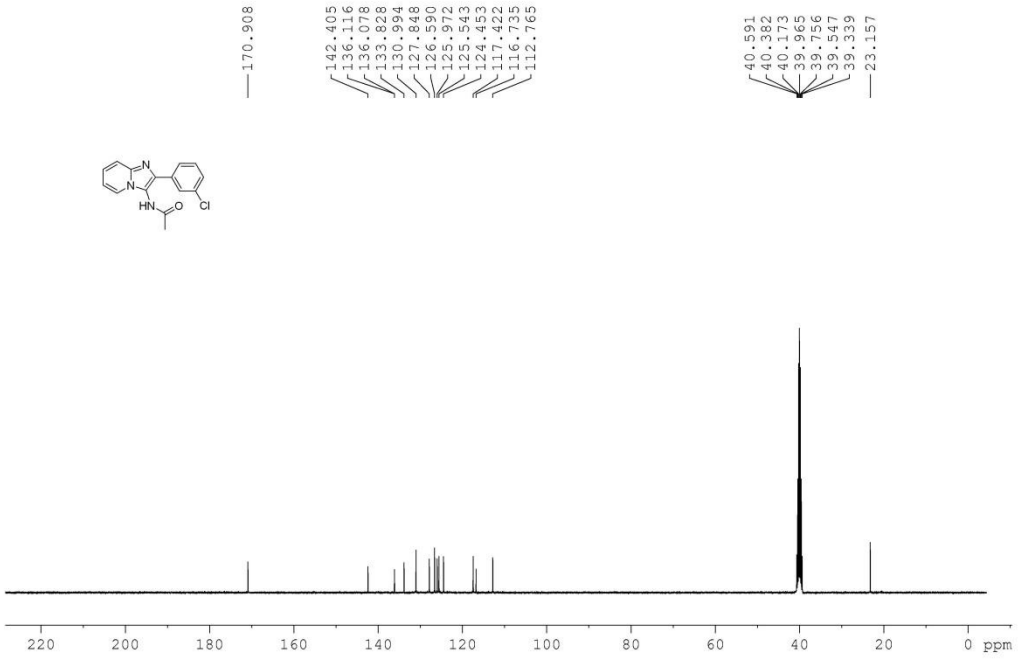
^{13}C NMR spectrum of compound 3r



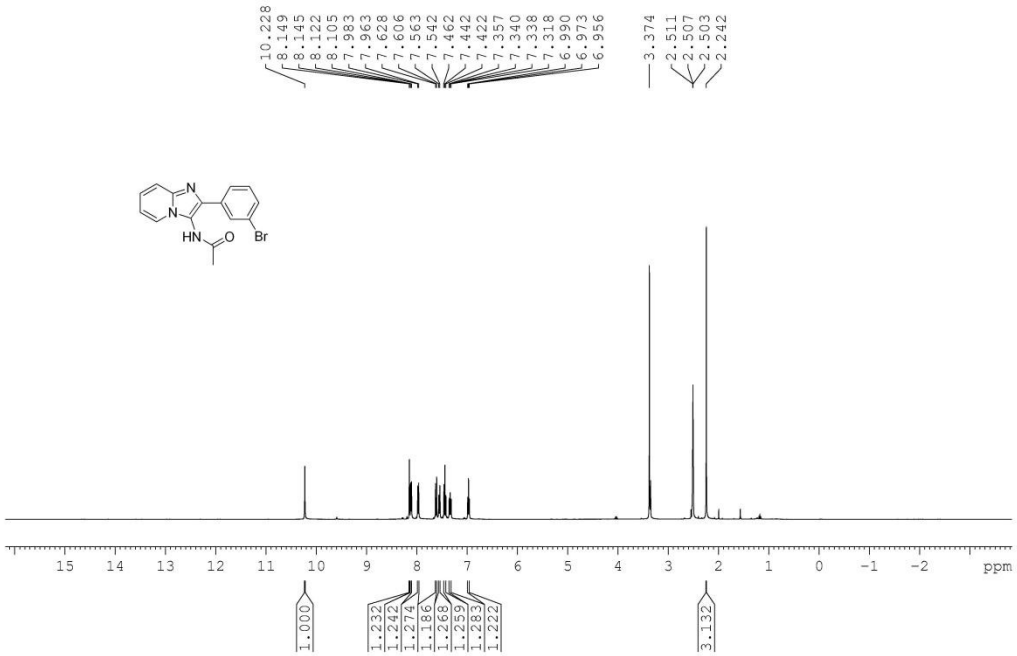
^{19}F NMR spectrum of compound 3r



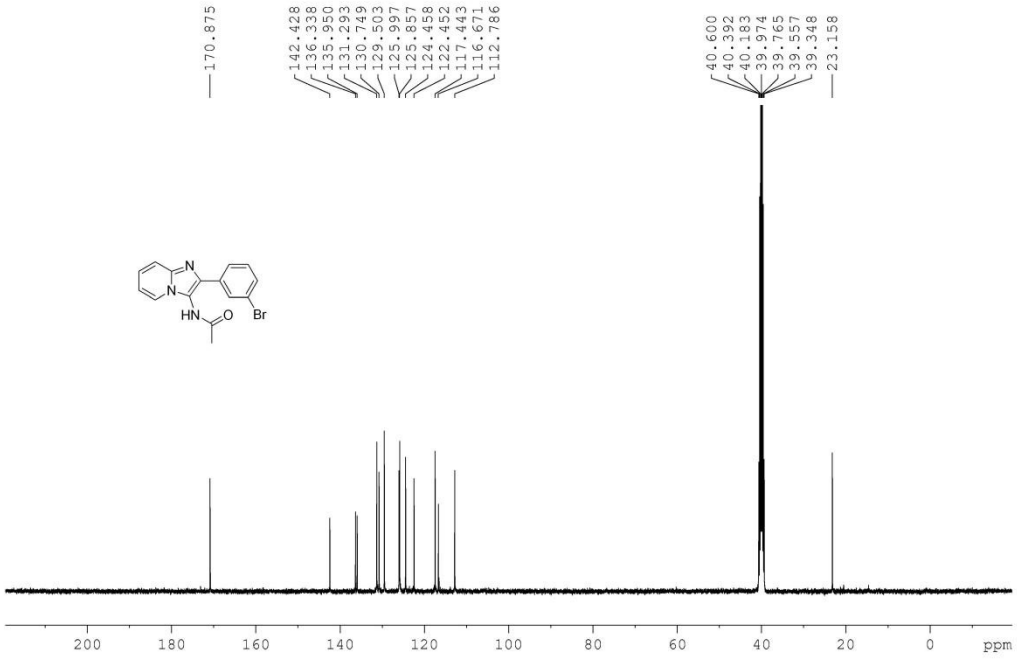
^{1}H NMR spectrum of compound 3s



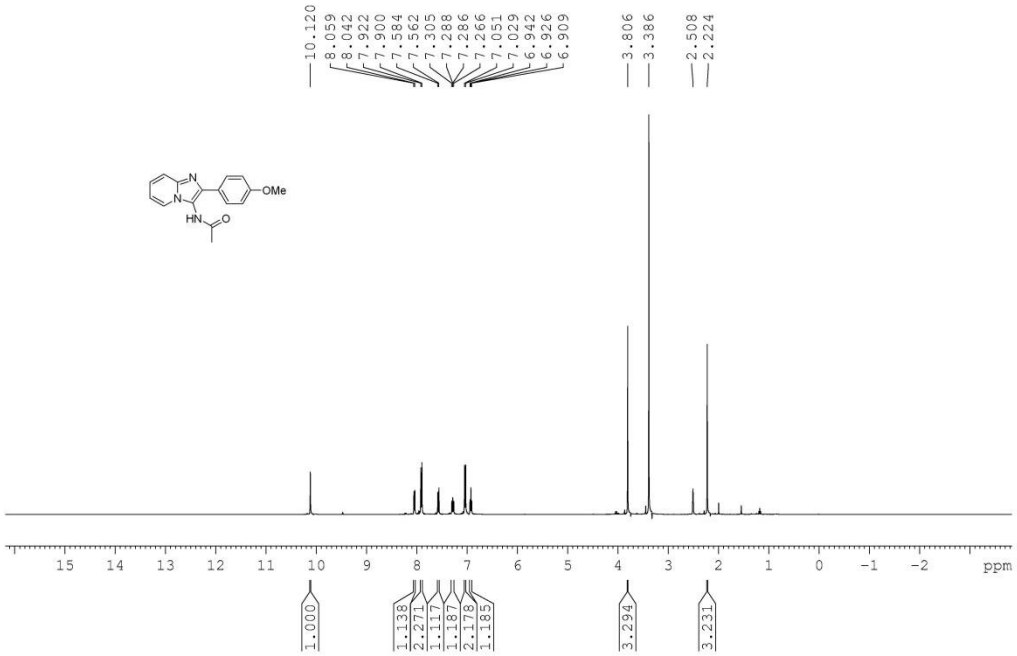
^{13}C NMR spectrum of compound 3s



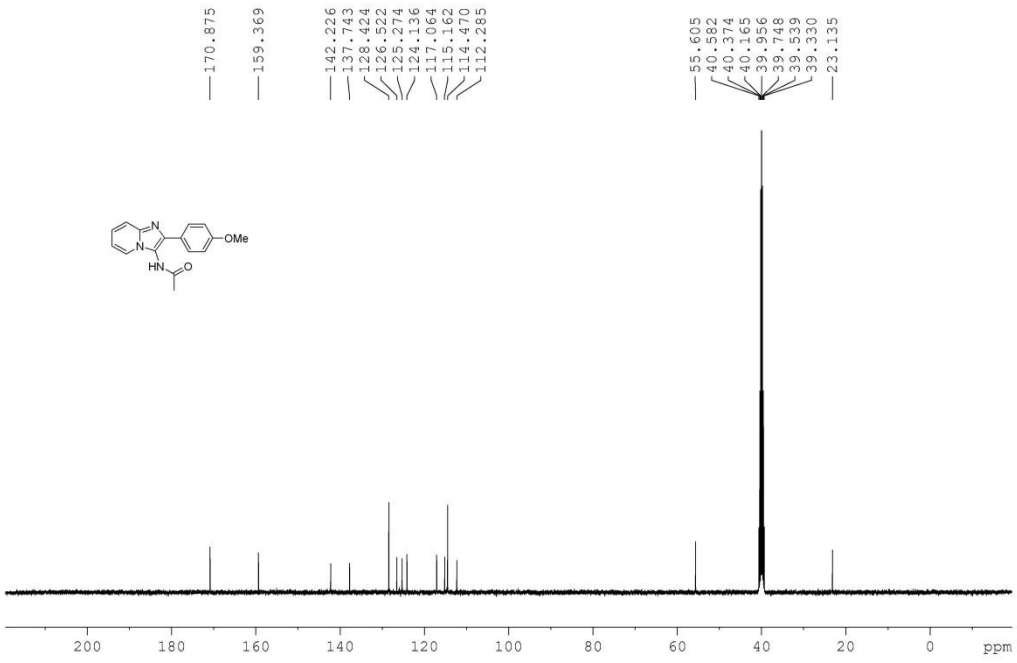
^{1}H NMR spectrum of compound 3t



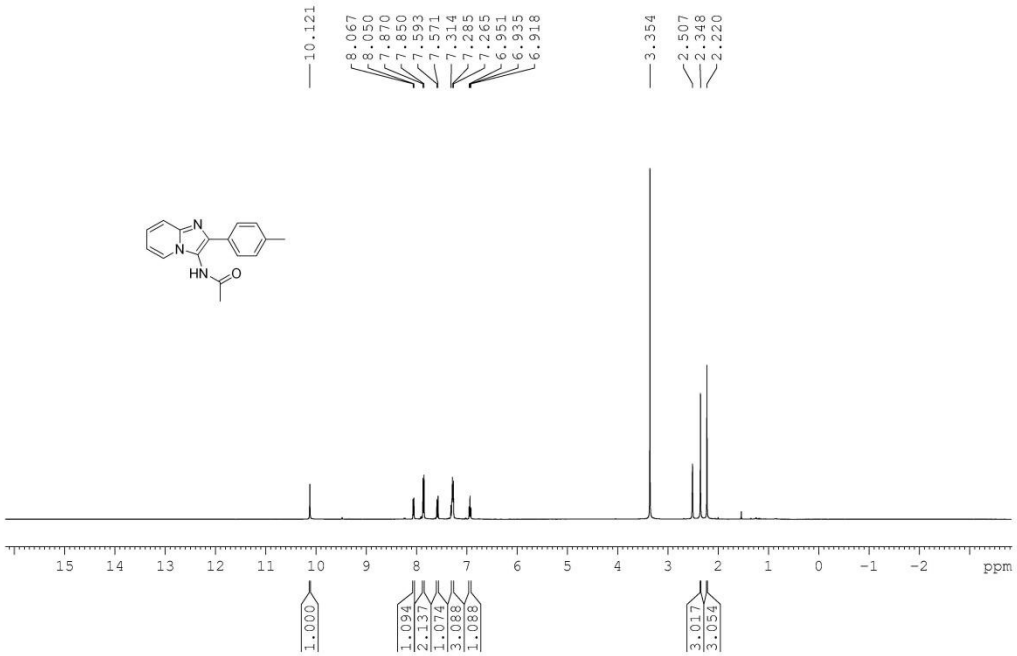
^{13}C NMR spectrum of compound 3t



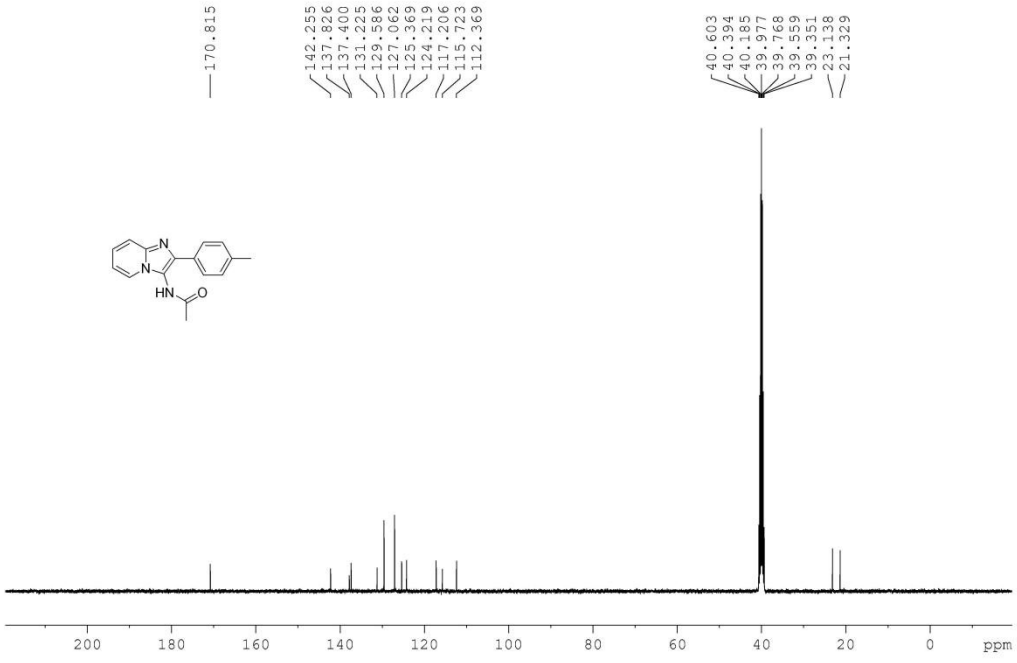
^{1}H NMR spectrum of compound 3u



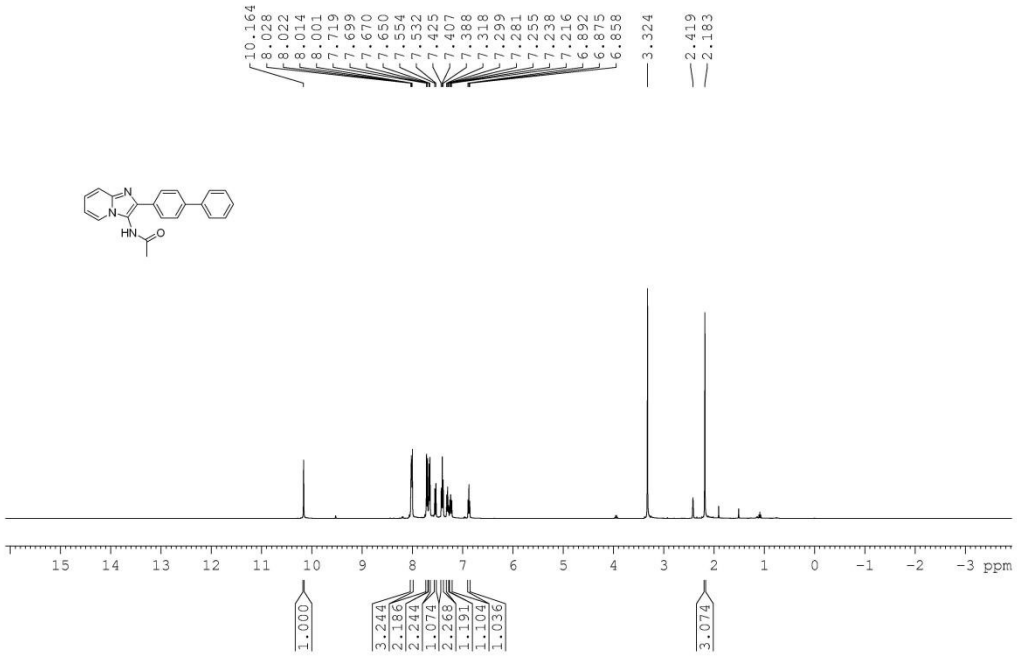
^{13}C NMR spectrum of compound 3u



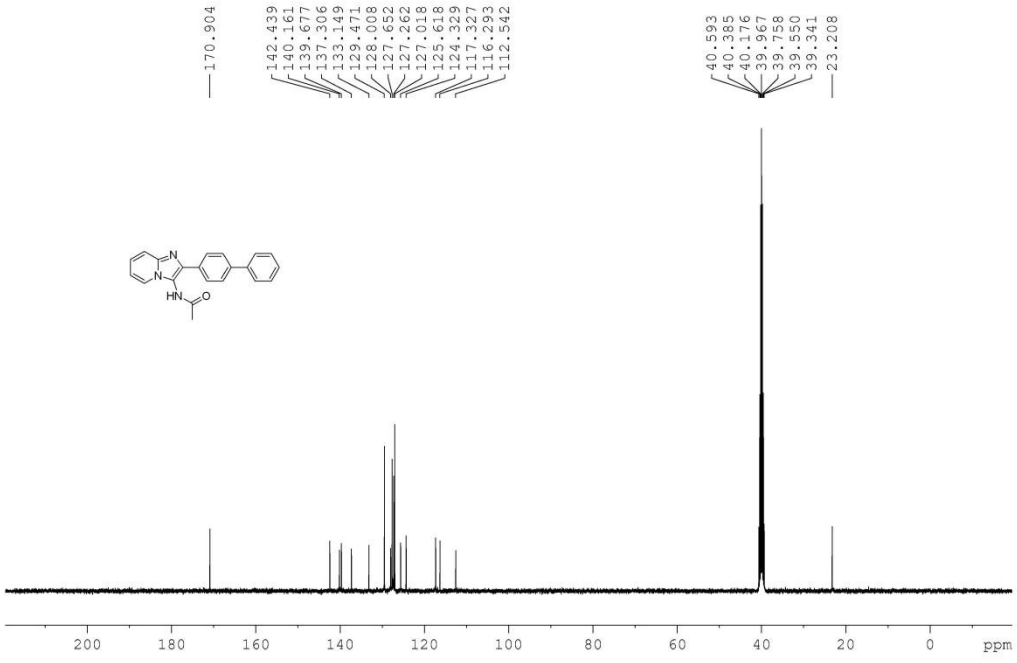
^{1}H NMR spectrum of compound 3v



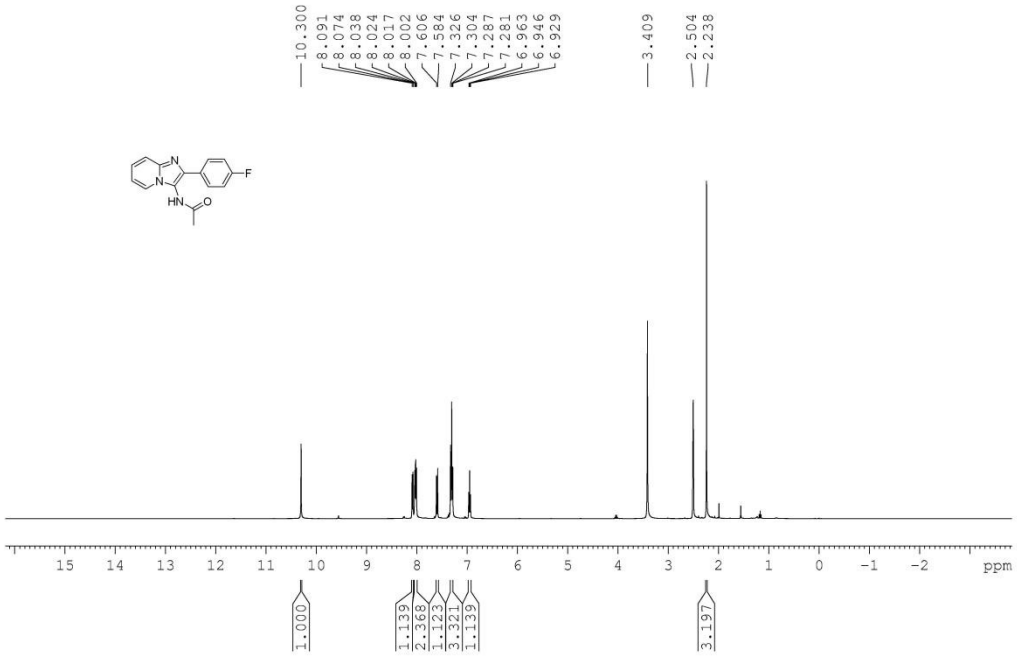
^{13}C NMR spectrum of compound 3v



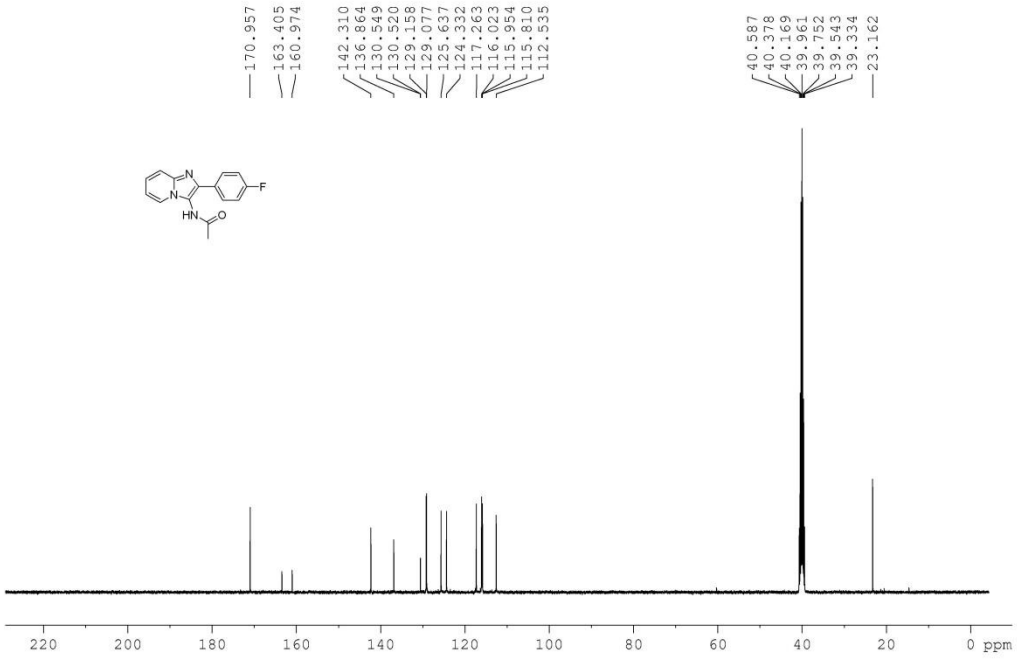
^{1}H NMR spectrum of compound 3w



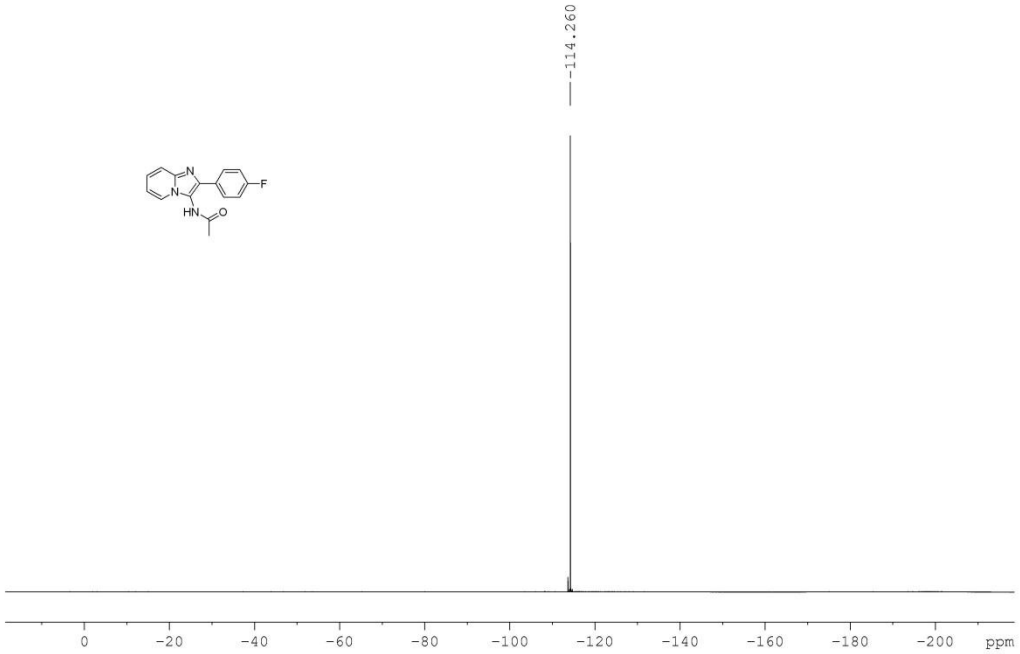
^{13}C NMR spectrum of compound 3w



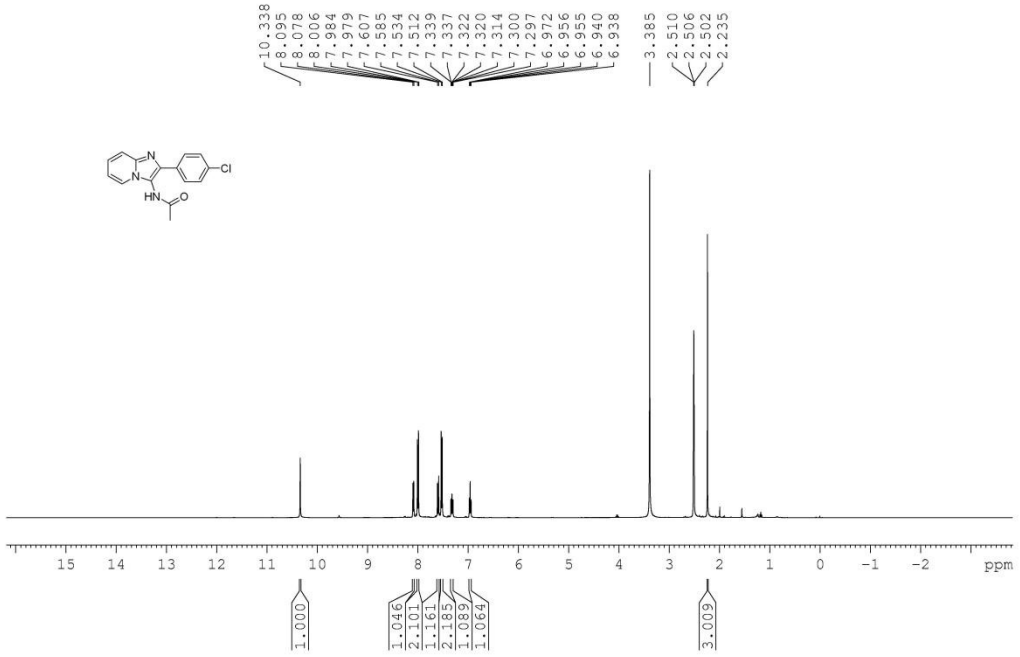
^{1}H NMR spectrum of compound 3x



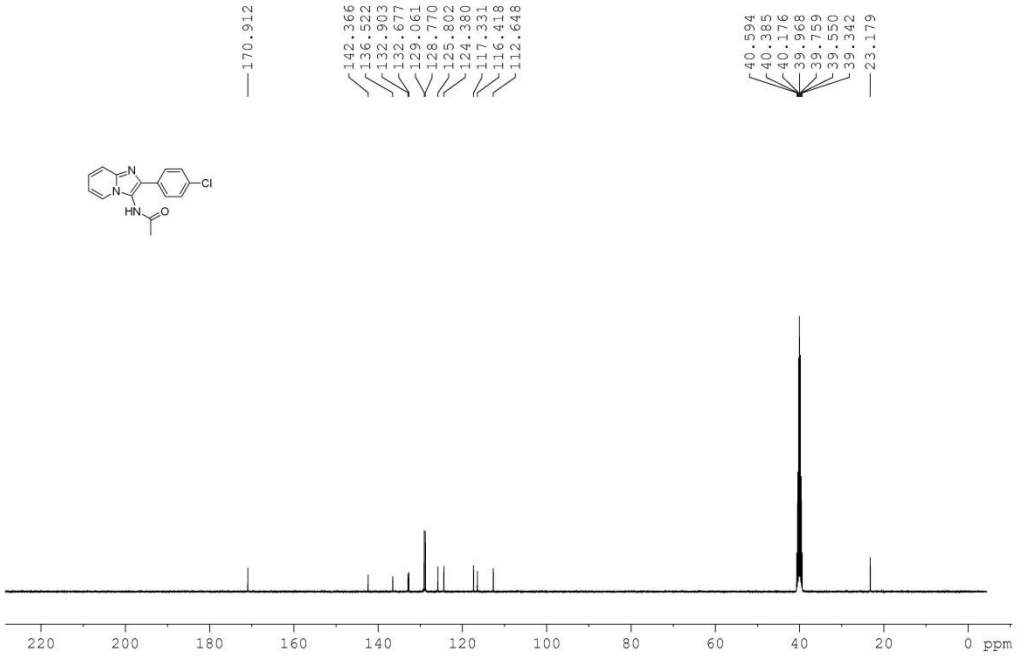
^{13}C NMR spectrum of compound 3x



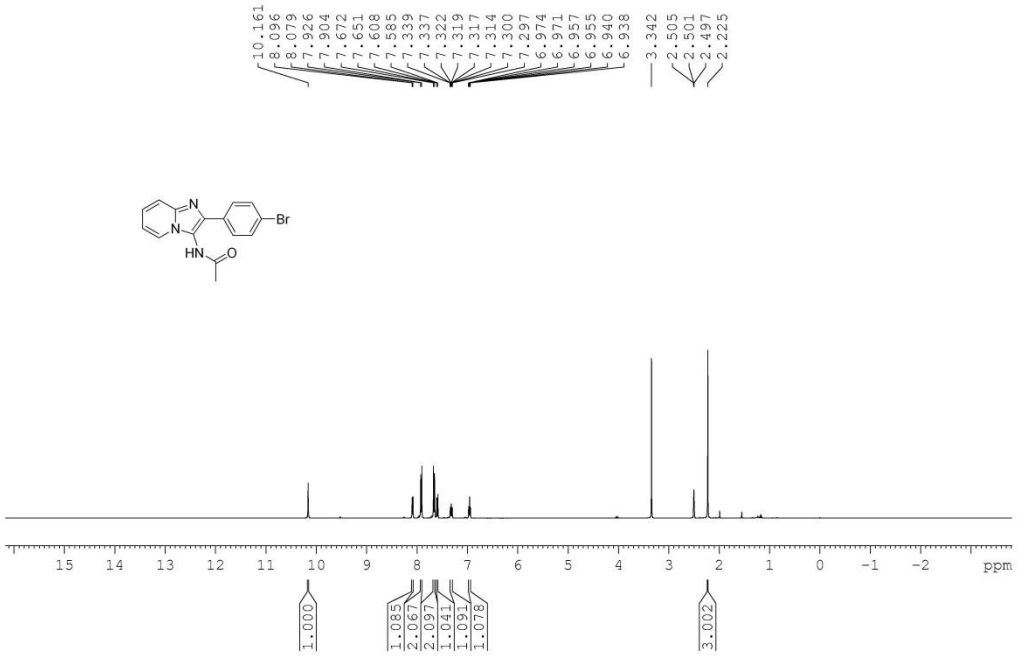
^{19}F NMR spectrum of compound 3x



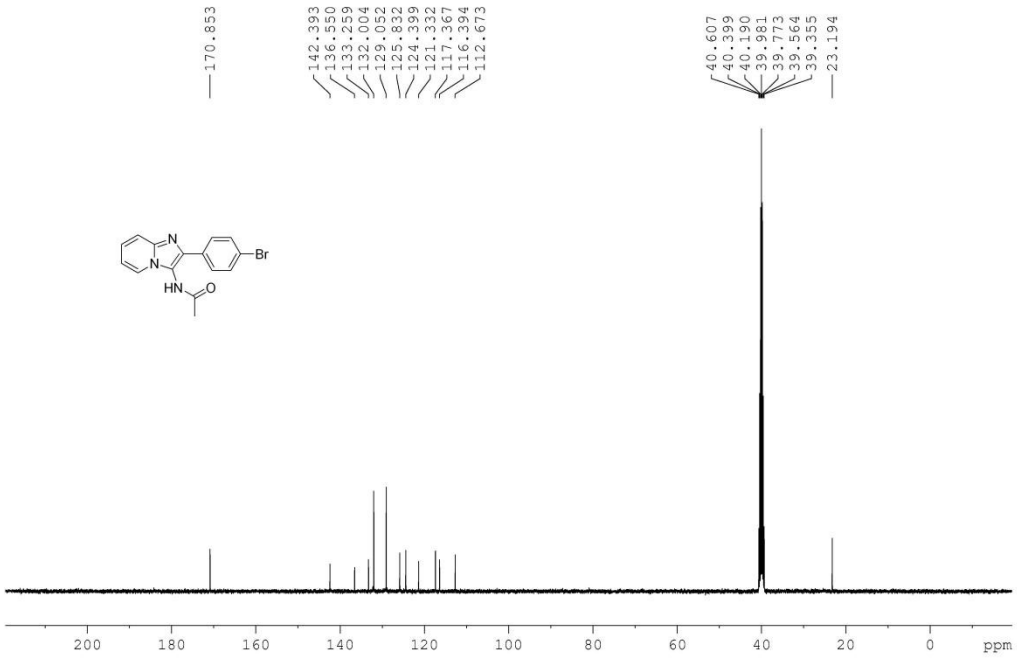
^{1}H NMR spectrum of compound 3y



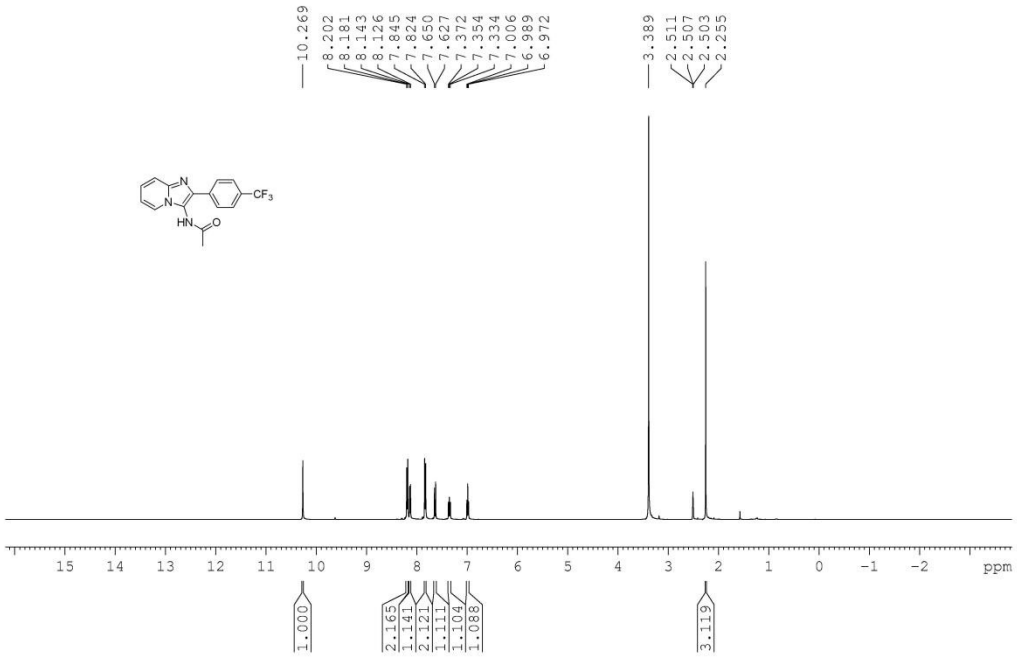
^{13}C NMR spectrum of compound 3y



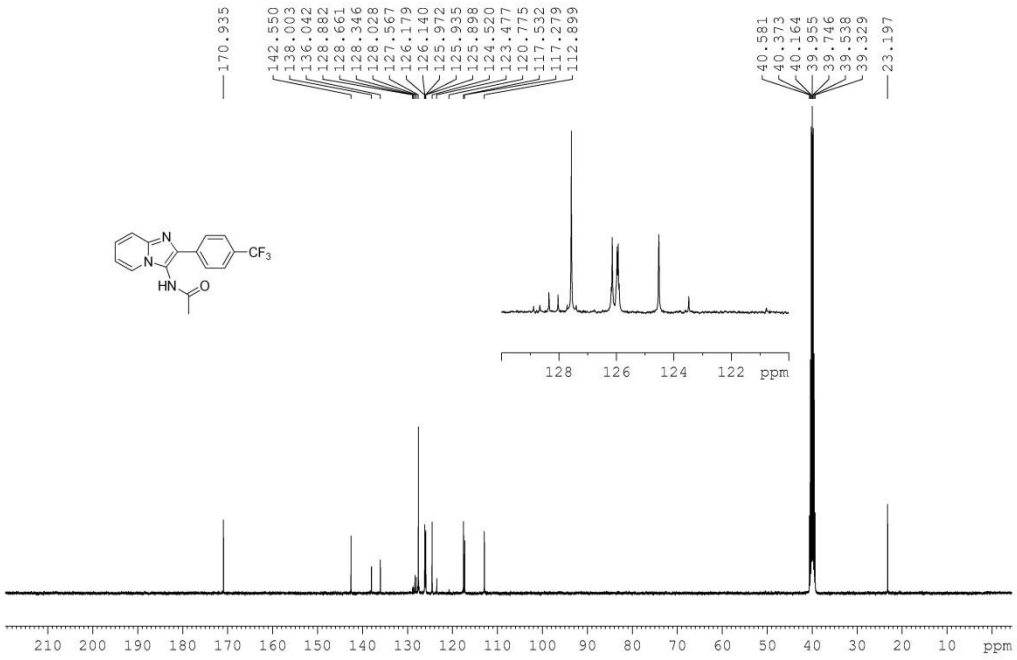
^{1}H NMR spectrum of compound 3z



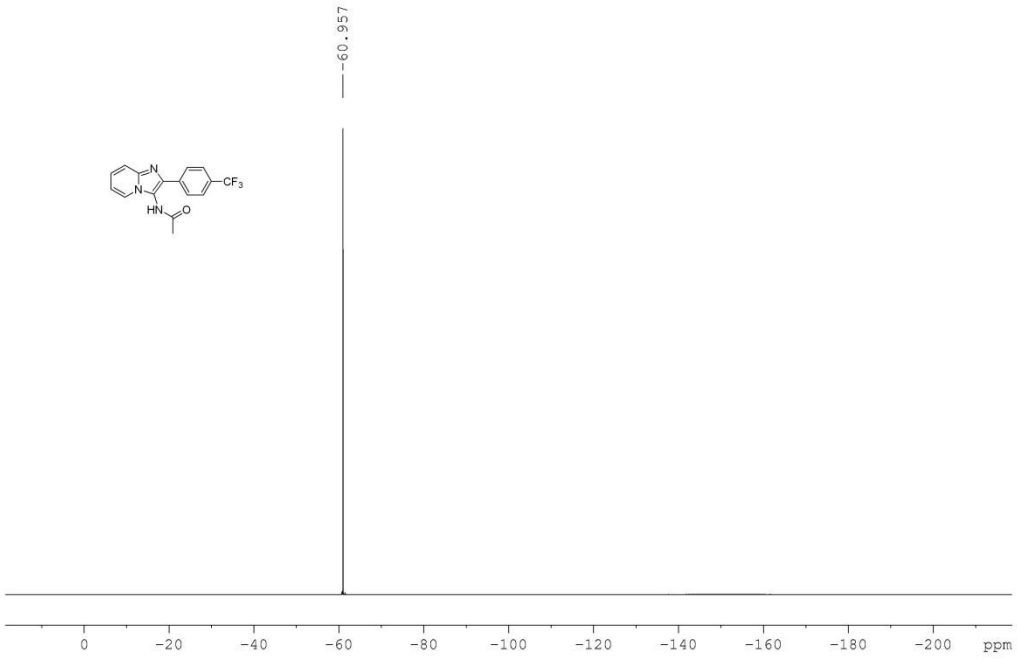
^{13}C NMR spectrum of compound 3z



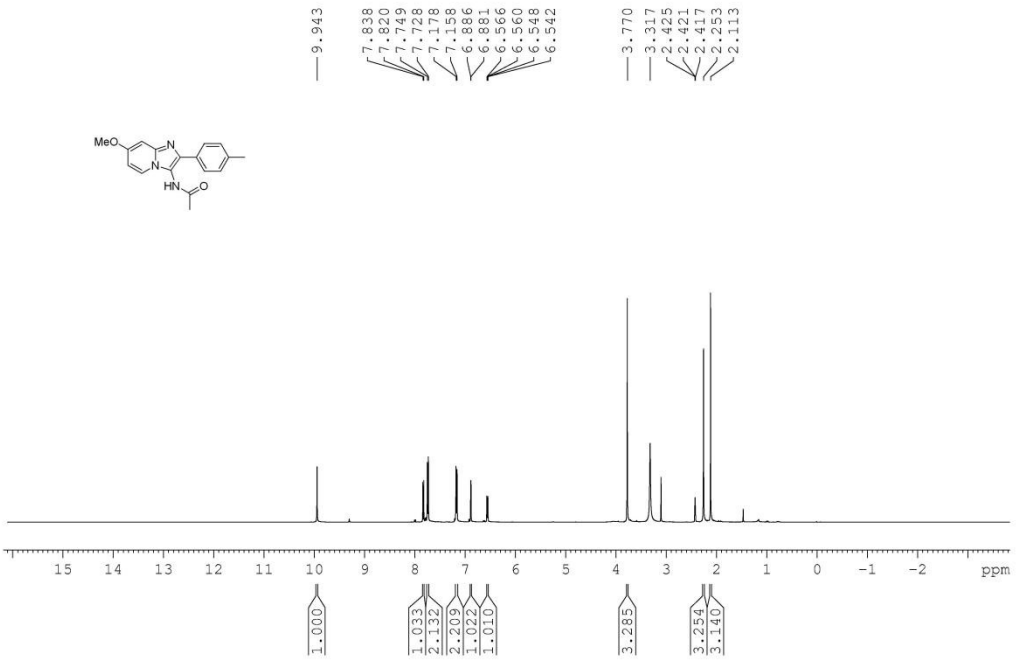
^{1}H NMR spectrum of compound 3aa



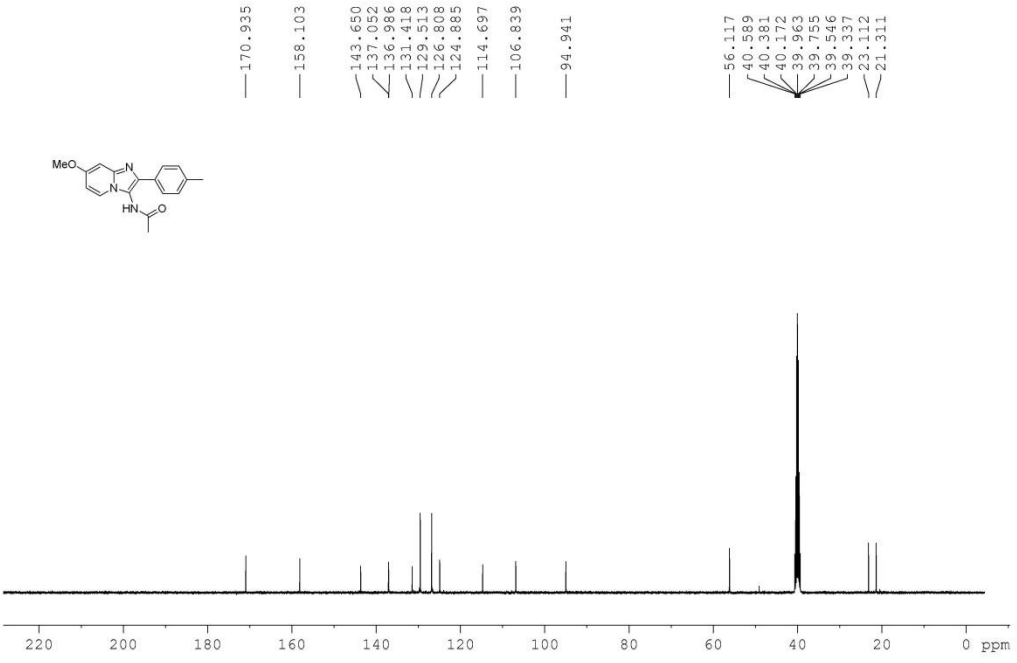
^{13}C NMR spectrum of compound 3aa



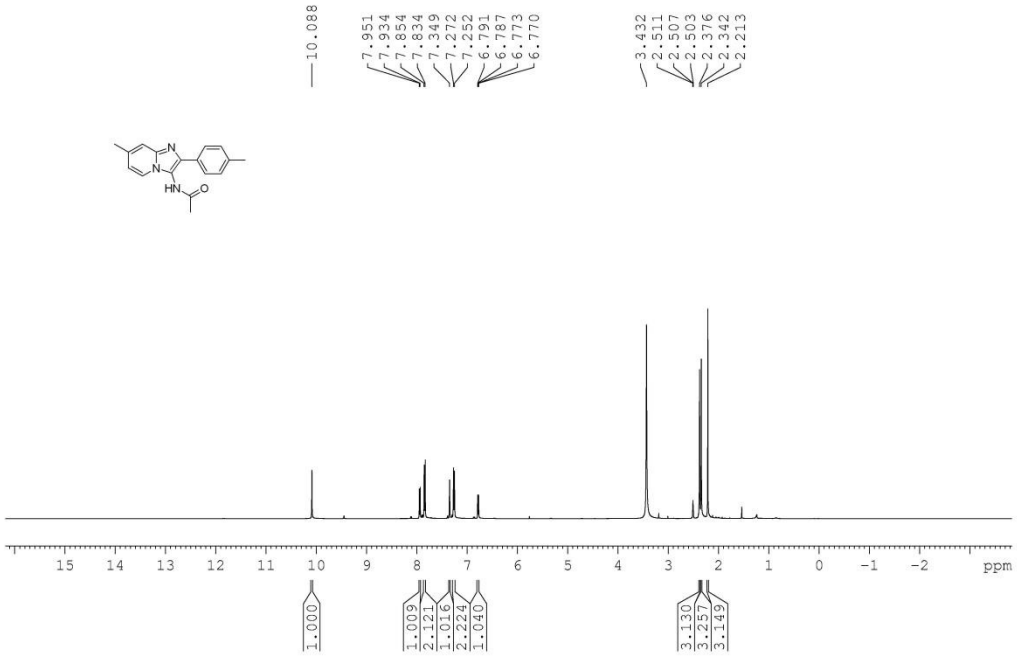
^{19}F NMR spectrum of compound 3aa



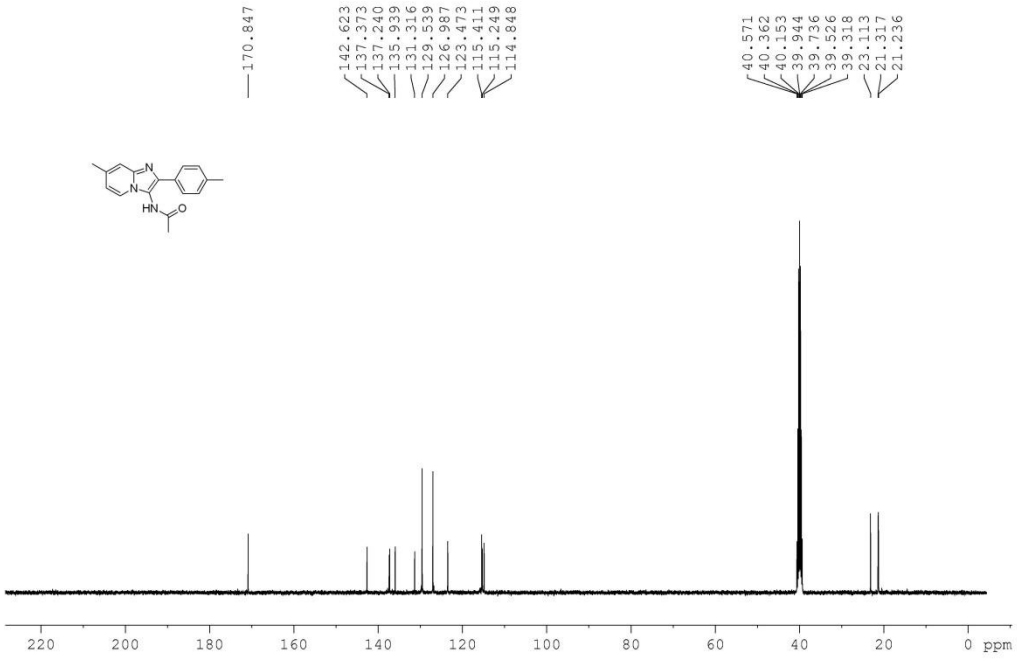
^{1}H NMR spectrum of compound 3ab



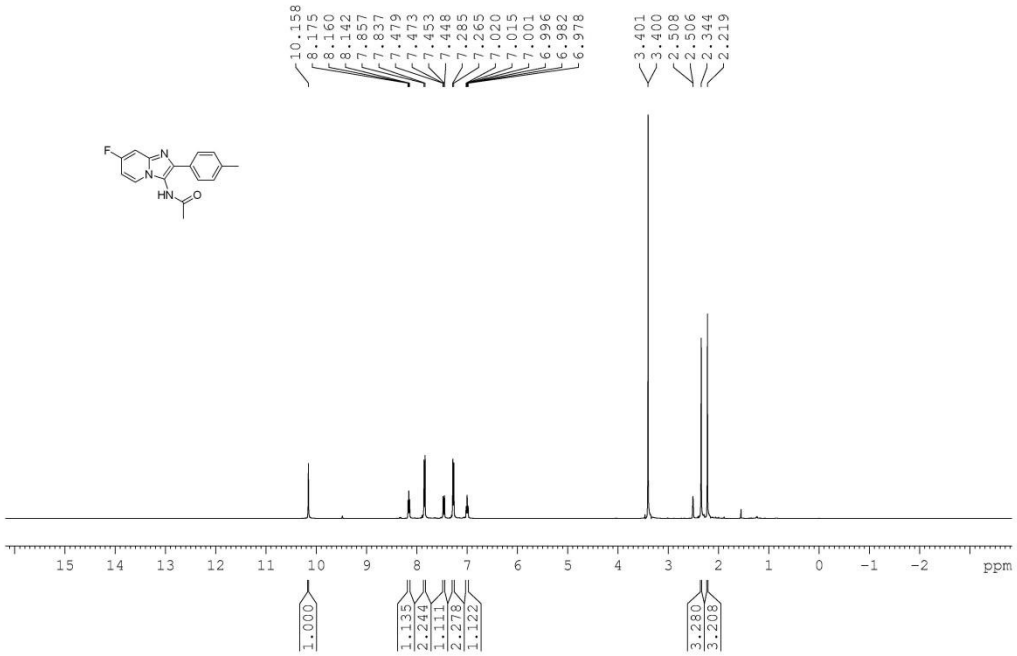
^{13}C NMR spectrum of compound 3ab



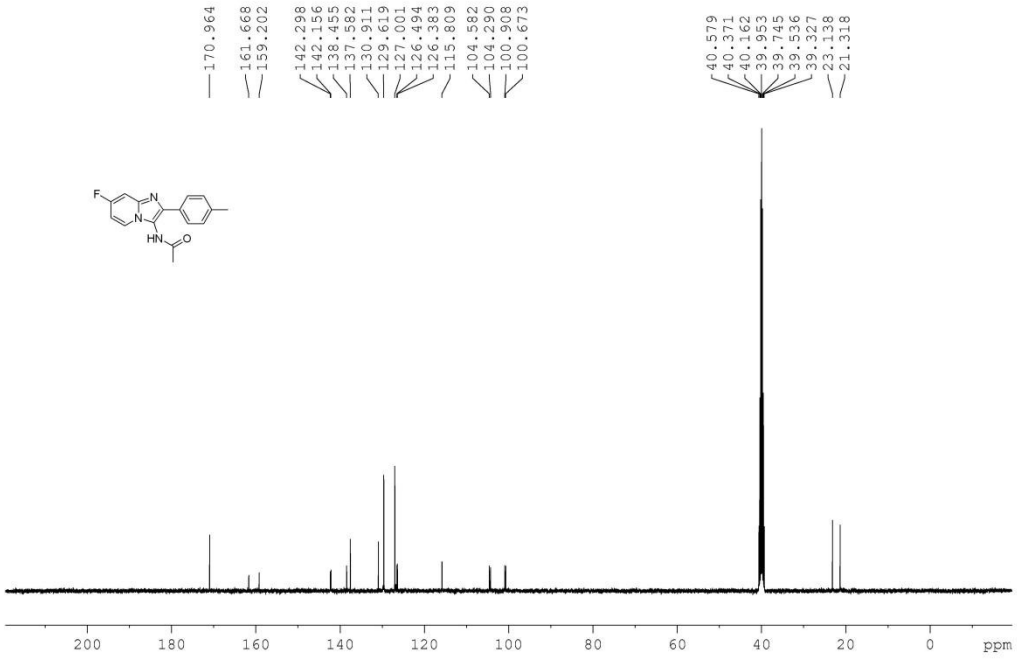
^{1}H NMR spectrum of compound 3ac



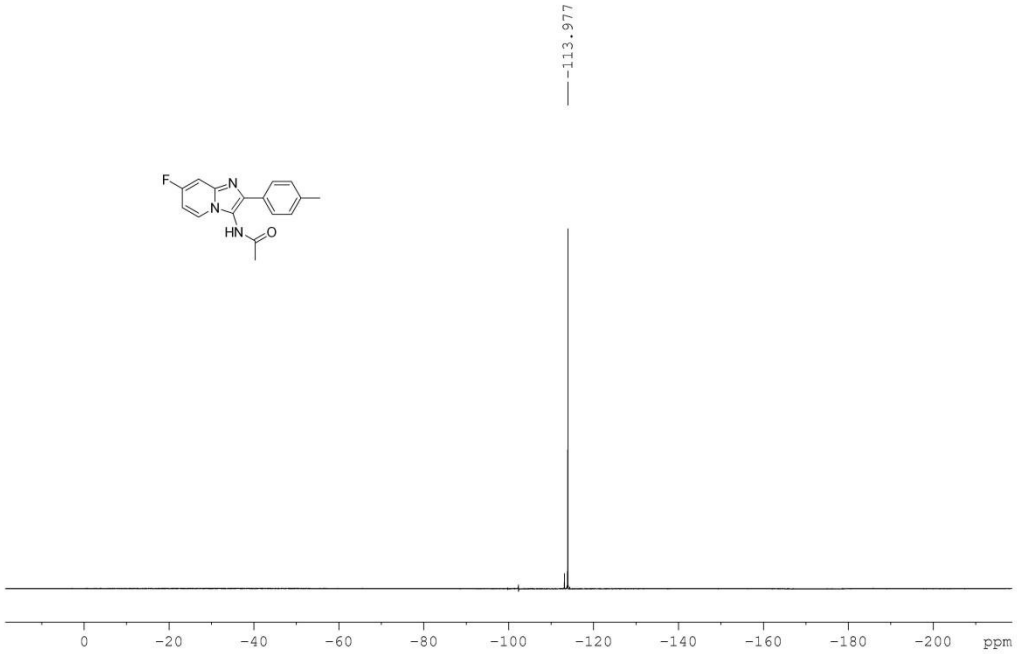
^{13}C NMR spectrum of compound 3ac



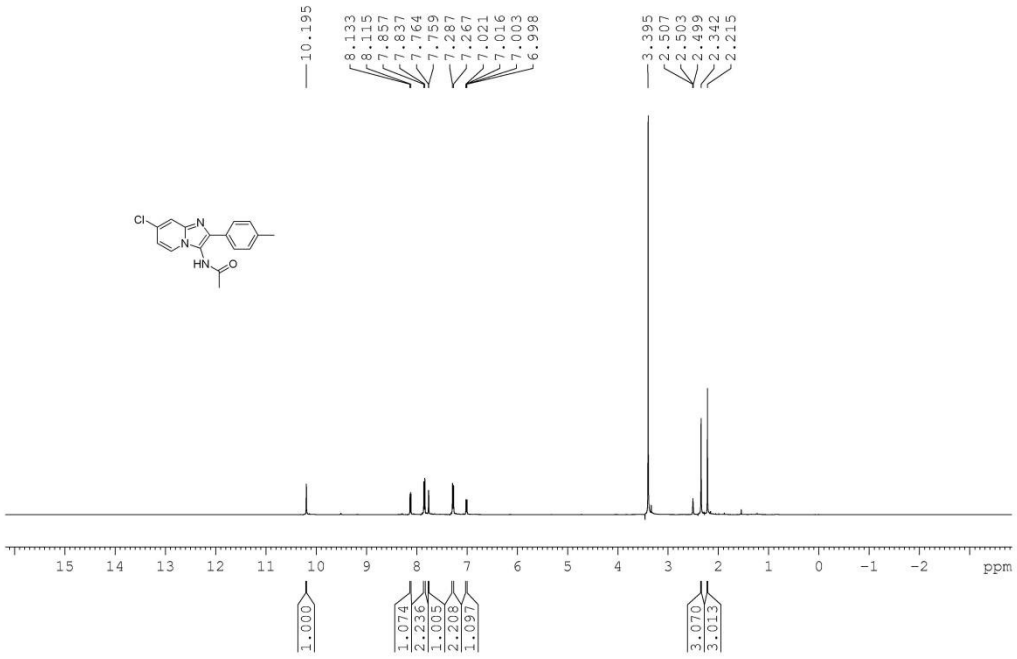
^{1}H NMR spectrum of compound 3ad



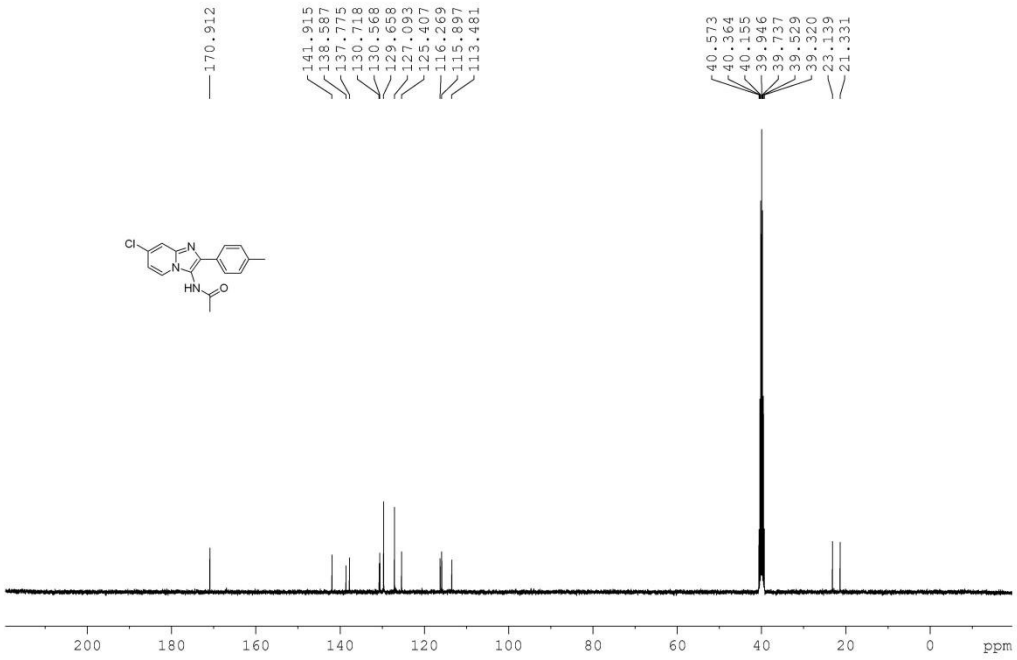
^{13}C NMR spectrum of compound 3ad



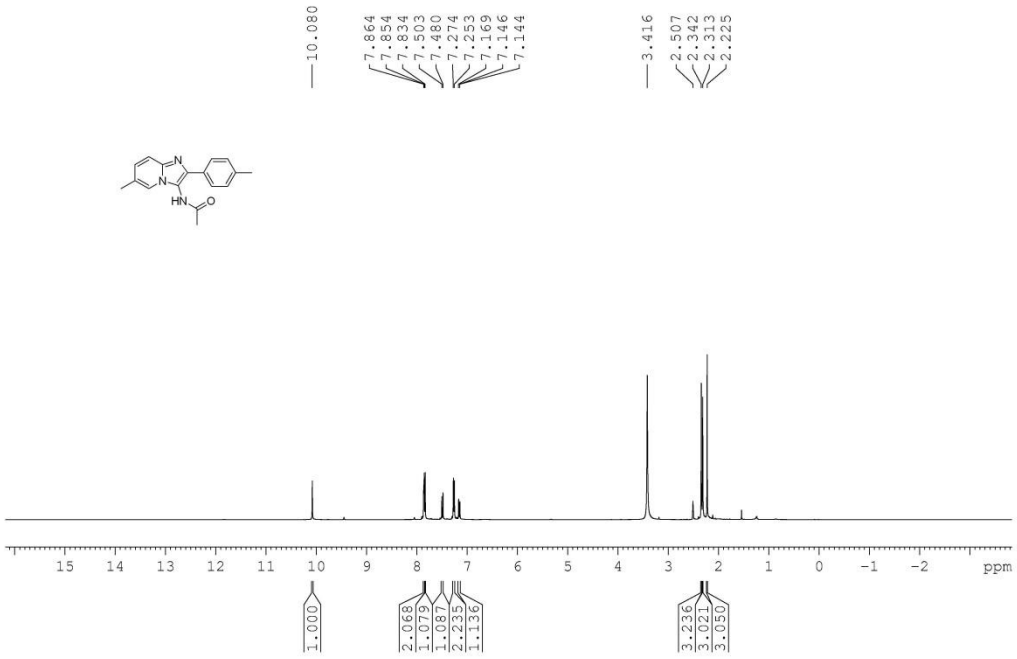
^{19}F NMR spectrum of compound 3ad



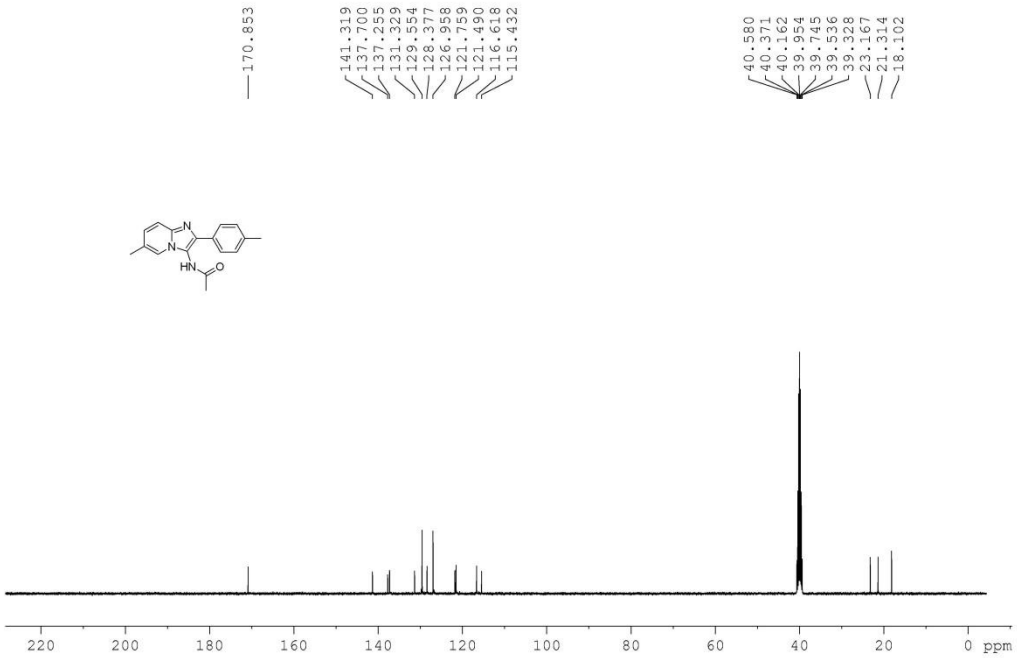
^{1}H NMR spectrum of compound 3ae



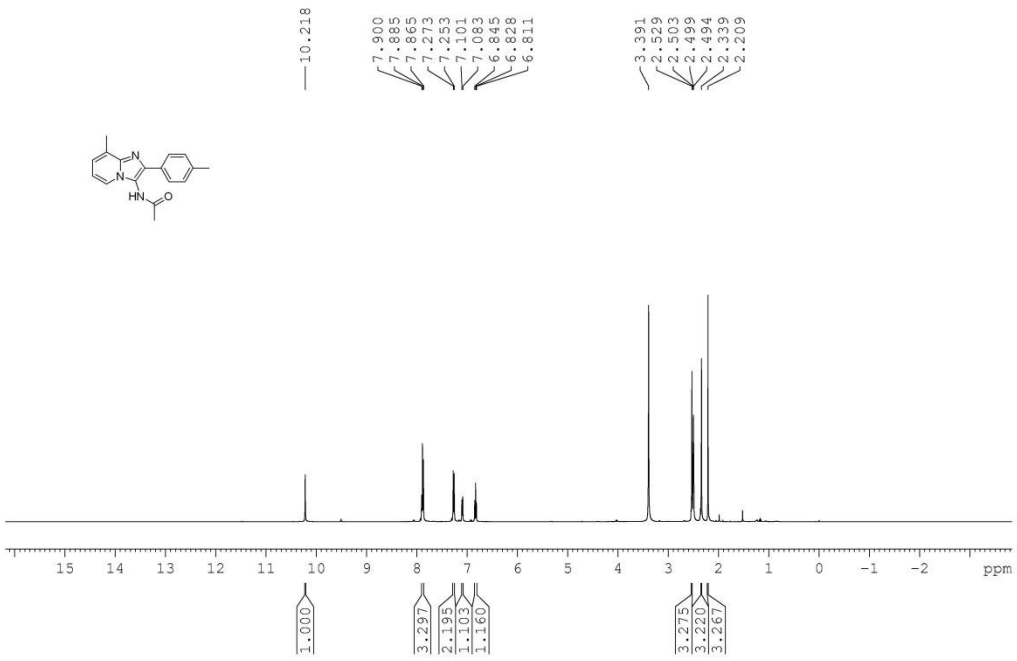
^{13}C NMR spectrum of compound 3ae



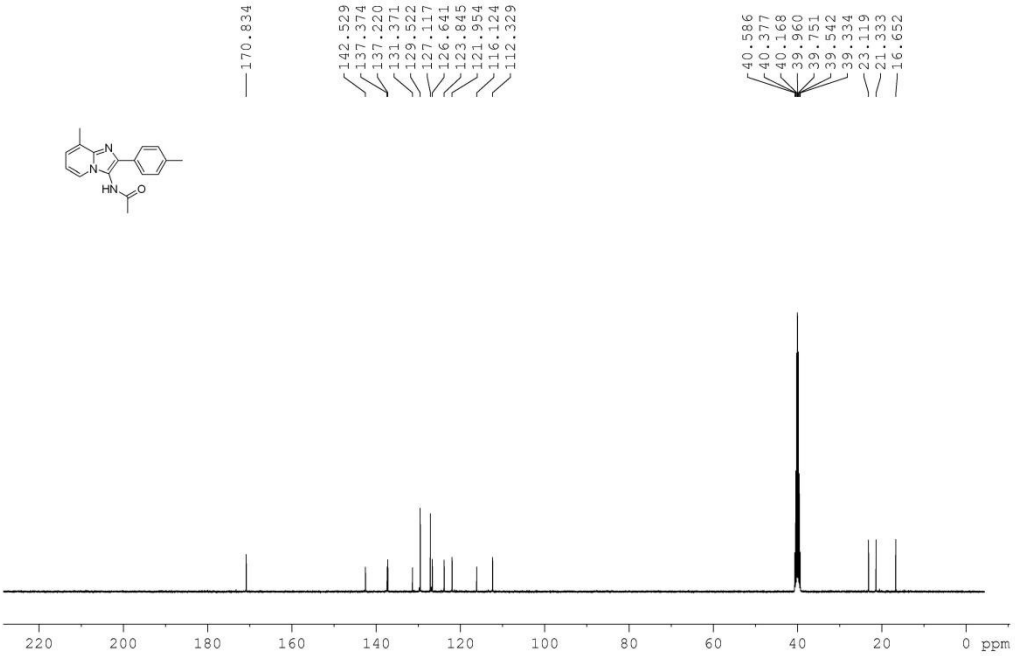
^{1}H NMR spectrum of compound 3af



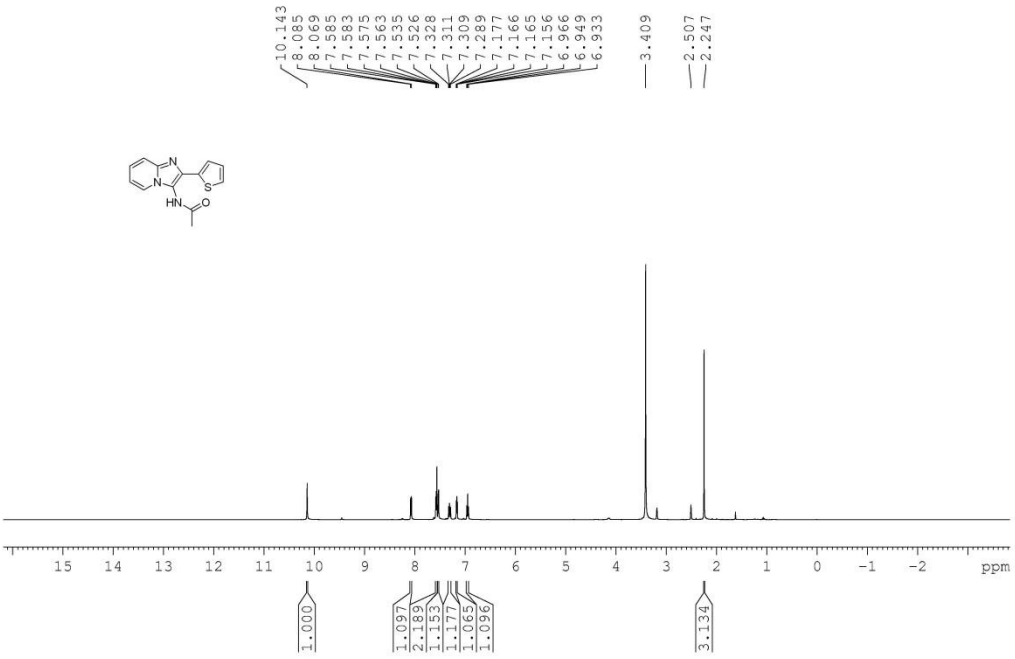
^{13}C NMR spectrum of compound 3af



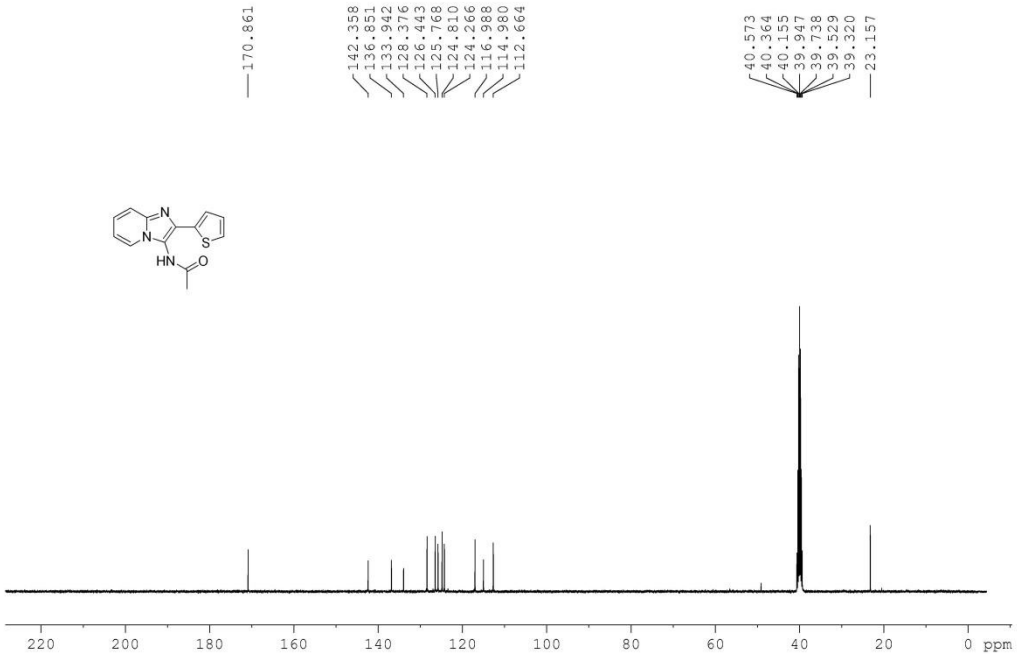
^{1}H NMR spectrum of compound 3ag



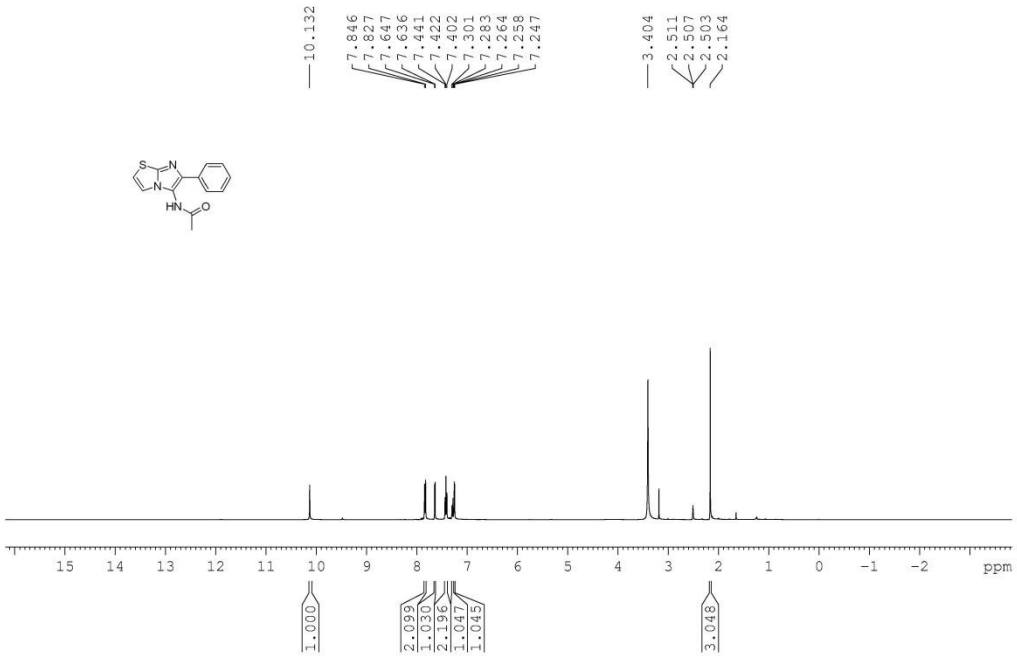
^{13}C NMR spectrum of compound 3ag



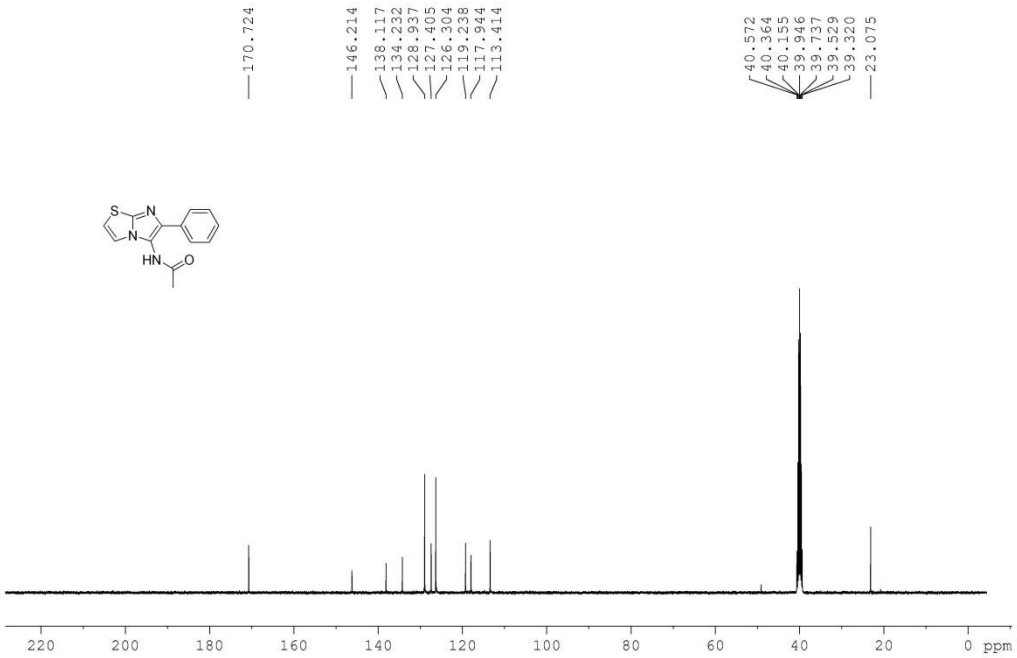
^{1}H NMR spectrum of compound 3ah



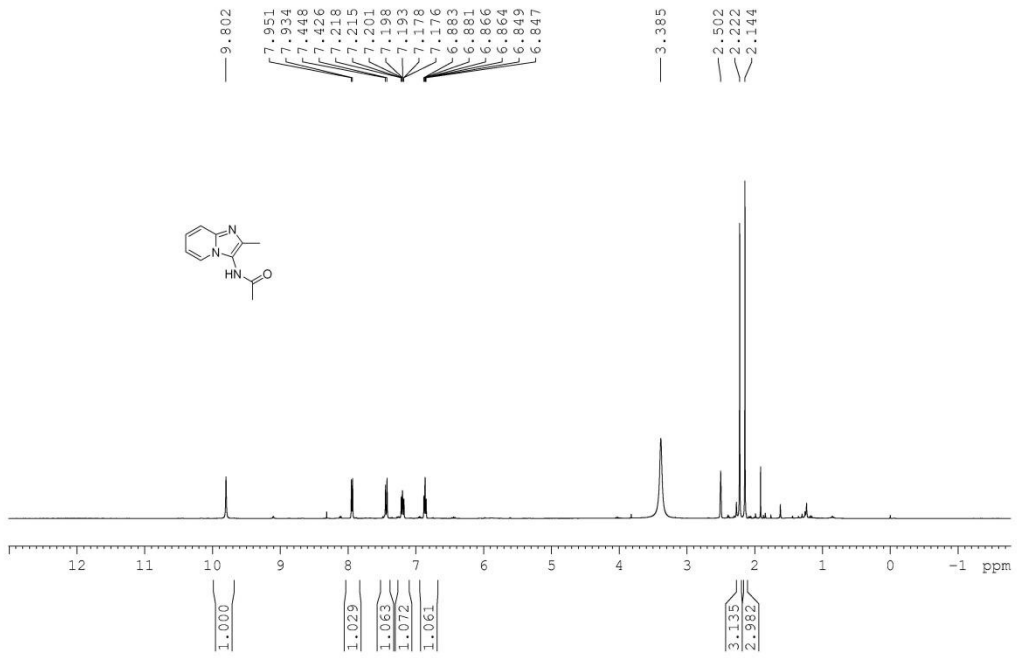
^{13}C NMR spectrum of compound 3ah



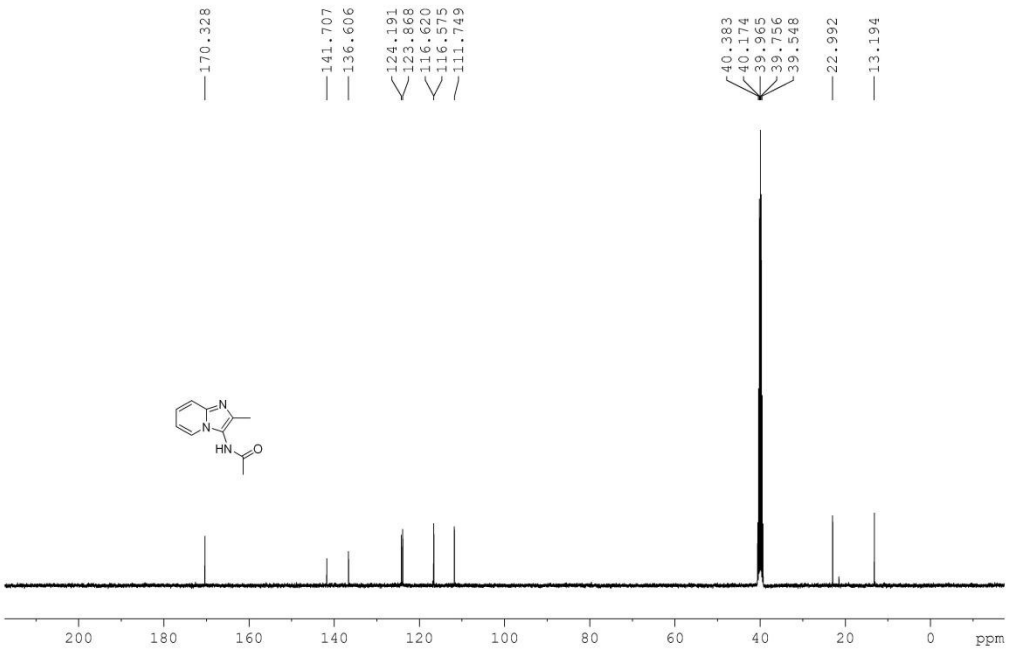
^{1}H NMR spectrum of compound 3ai



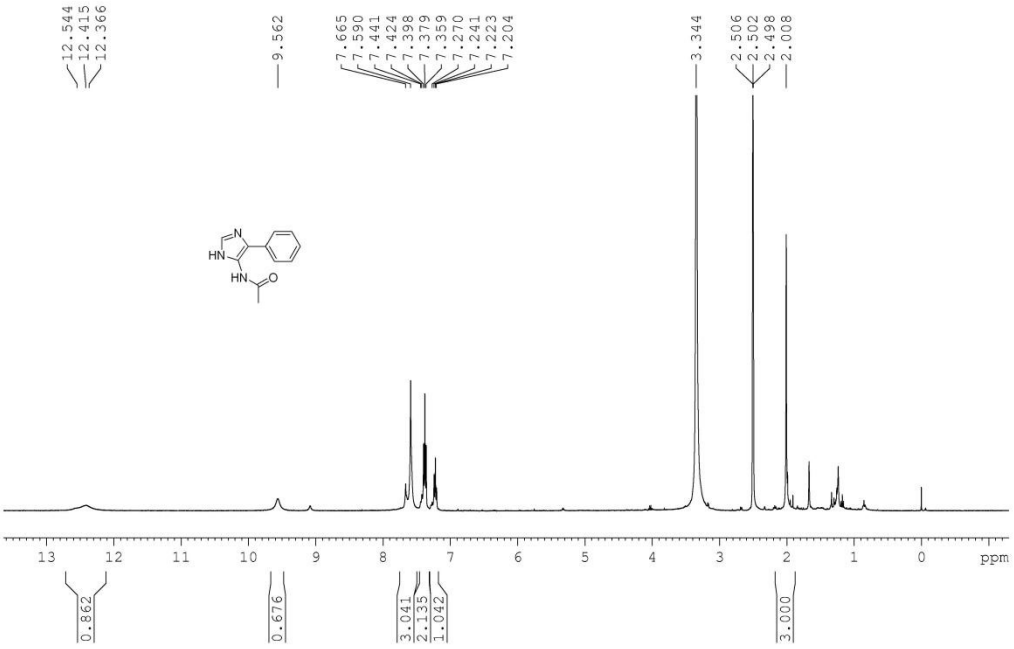
^{13}C NMR spectrum of compound 3ai



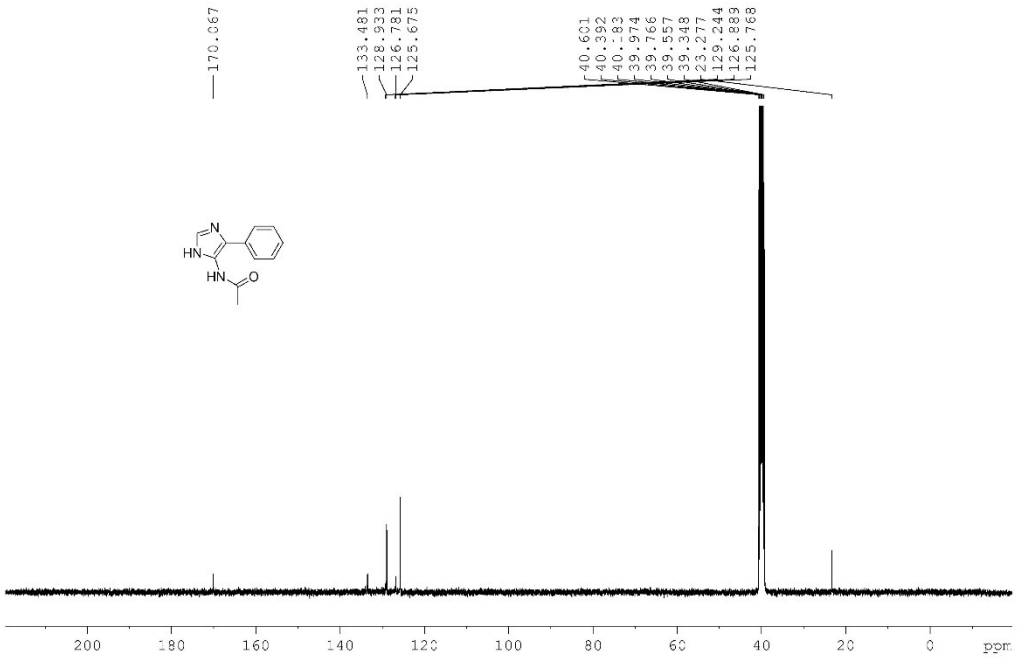
^{1}H NMR spectrum of compound 3aj



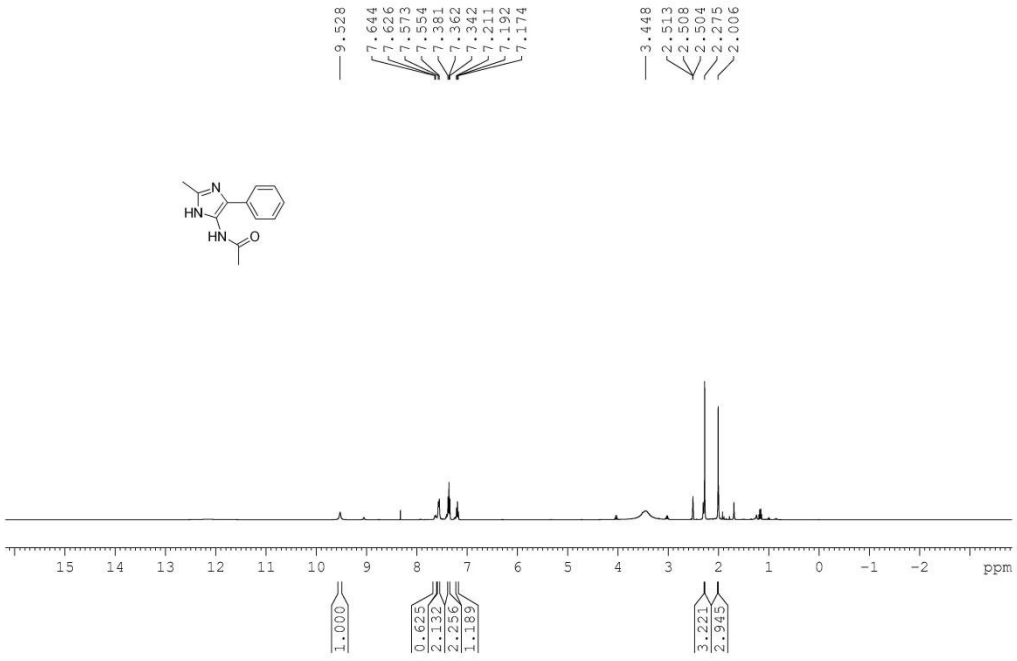
^{13}C NMR spectrum of compound 3aj



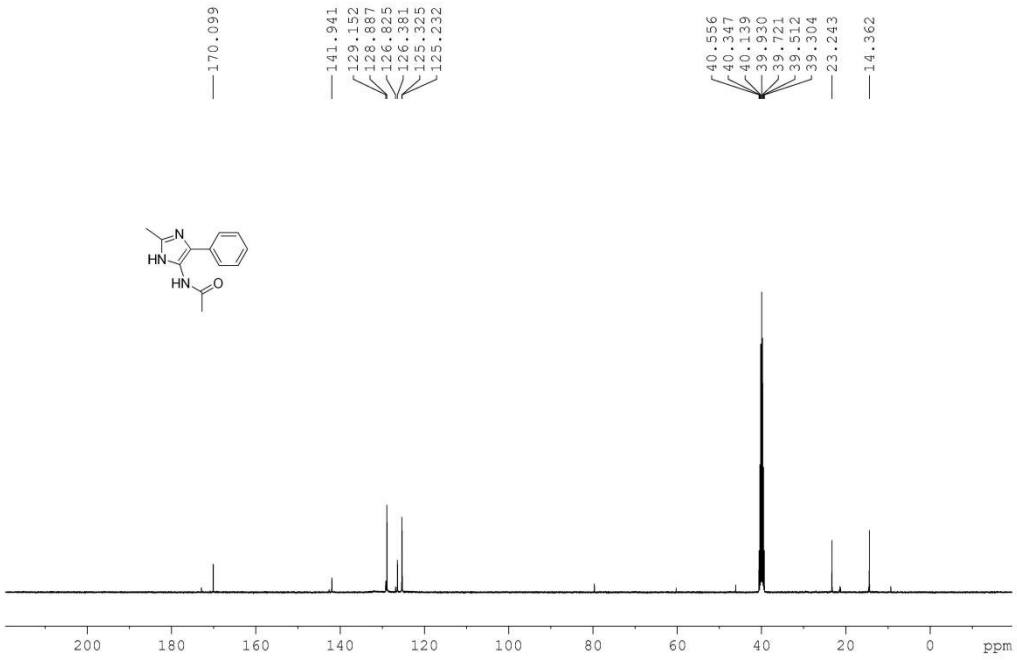
^{1}H NMR spectrum of compound 3ak



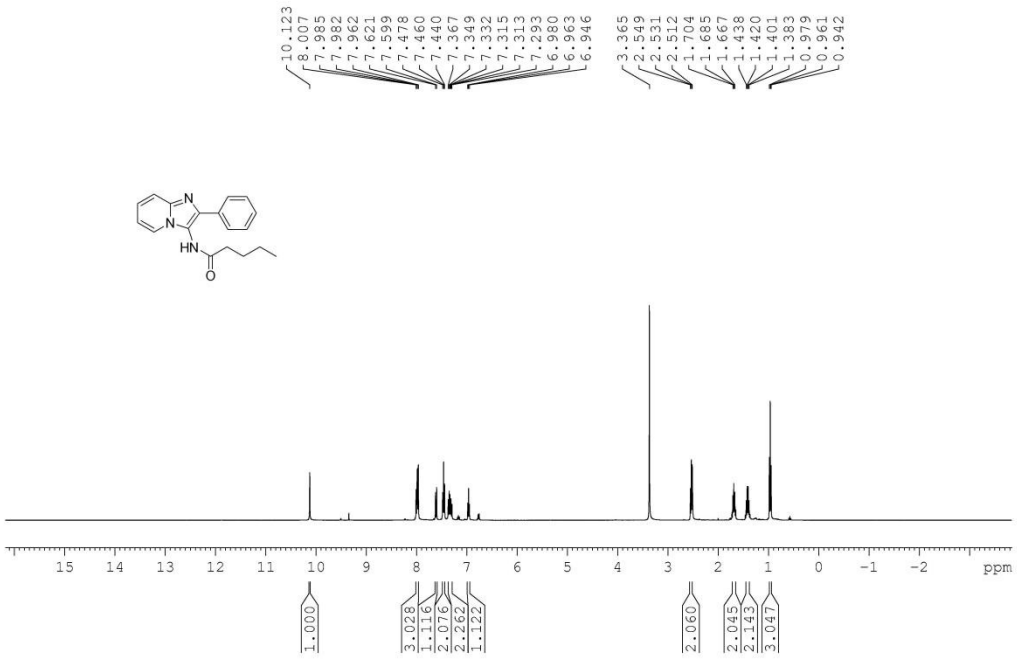
^{13}C NMR spectrum of compound 3ak



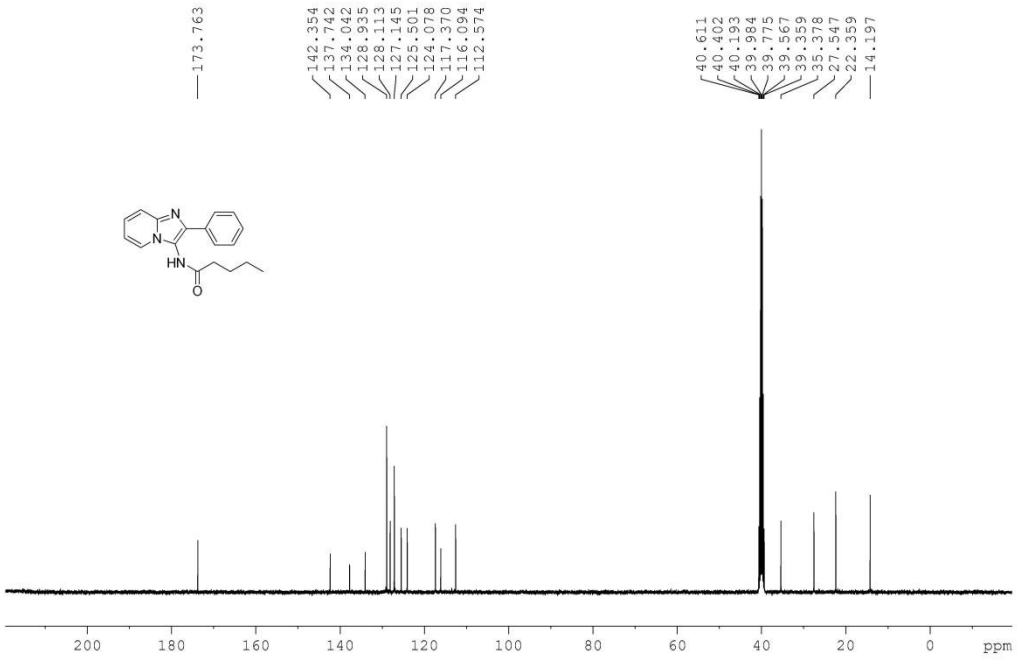
^{1}H NMR spectrum of compound 3al



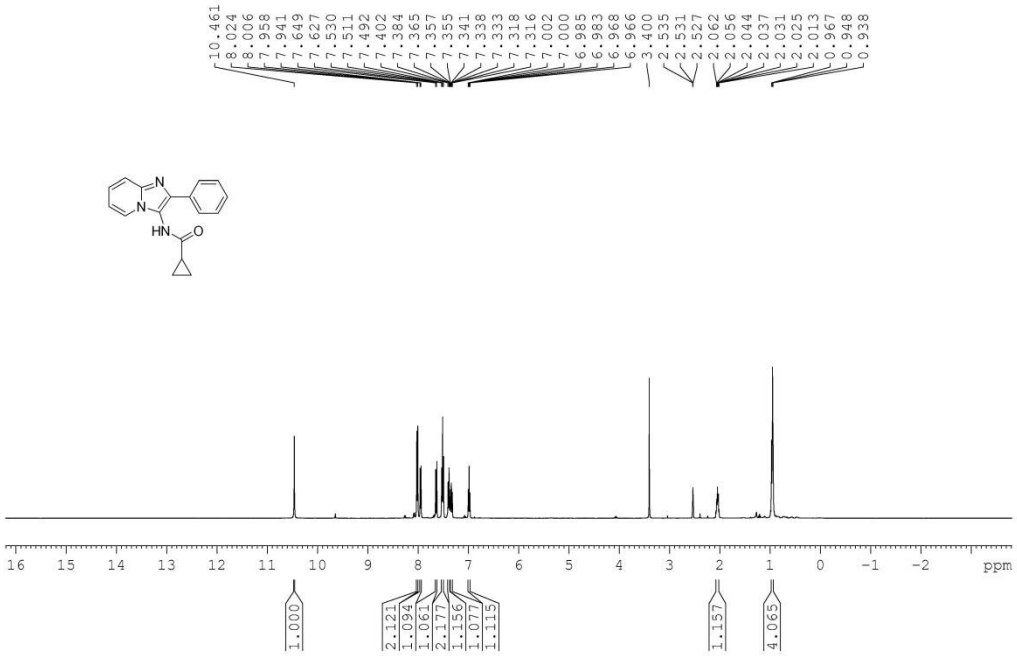
^{13}C NMR spectrum of compound 3al



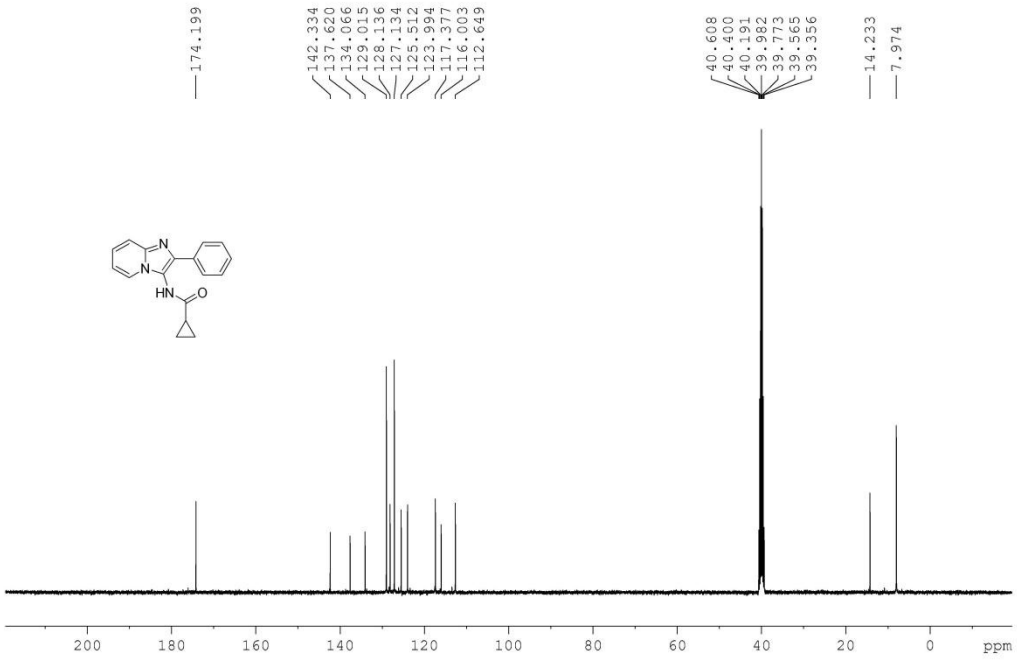
^{1}H NMR spectrum of compound 3am



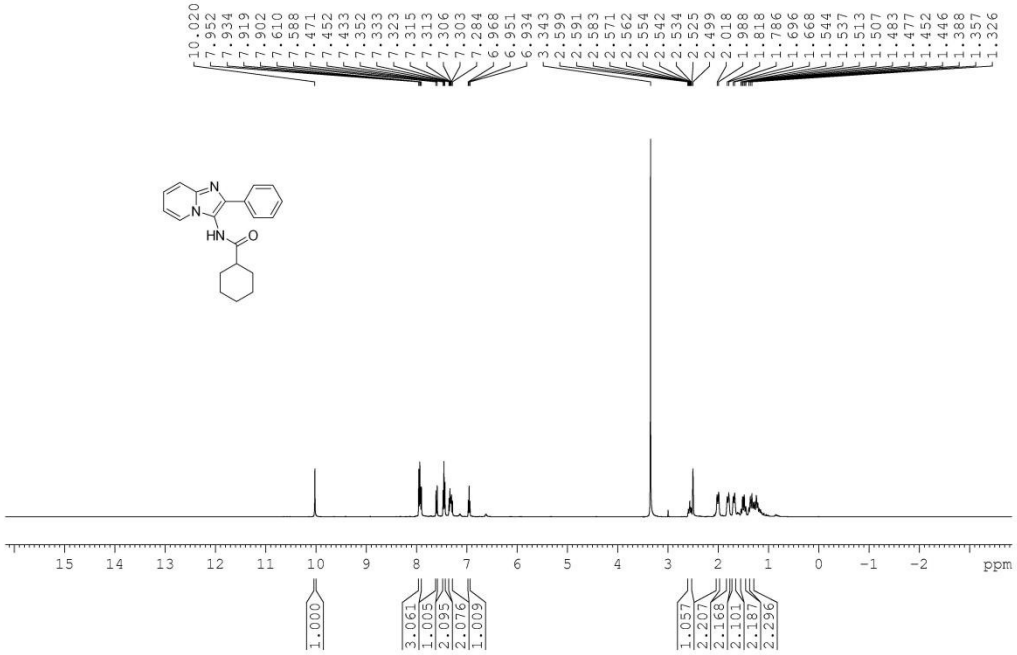
^{13}C NMR spectrum of compound 3am



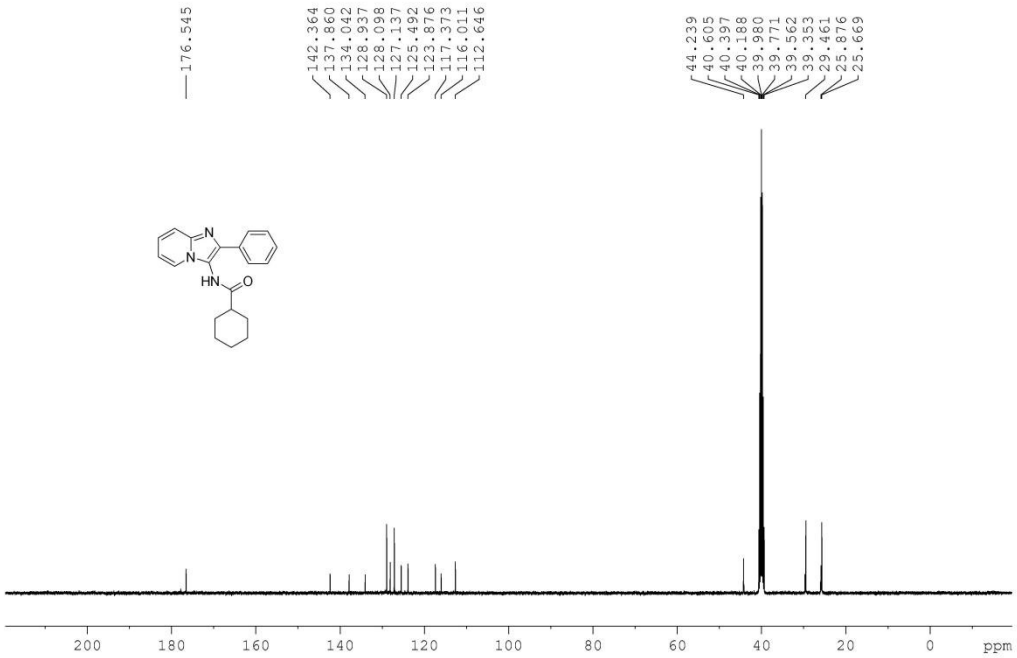
^{1}H NMR spectrum of compound 3an



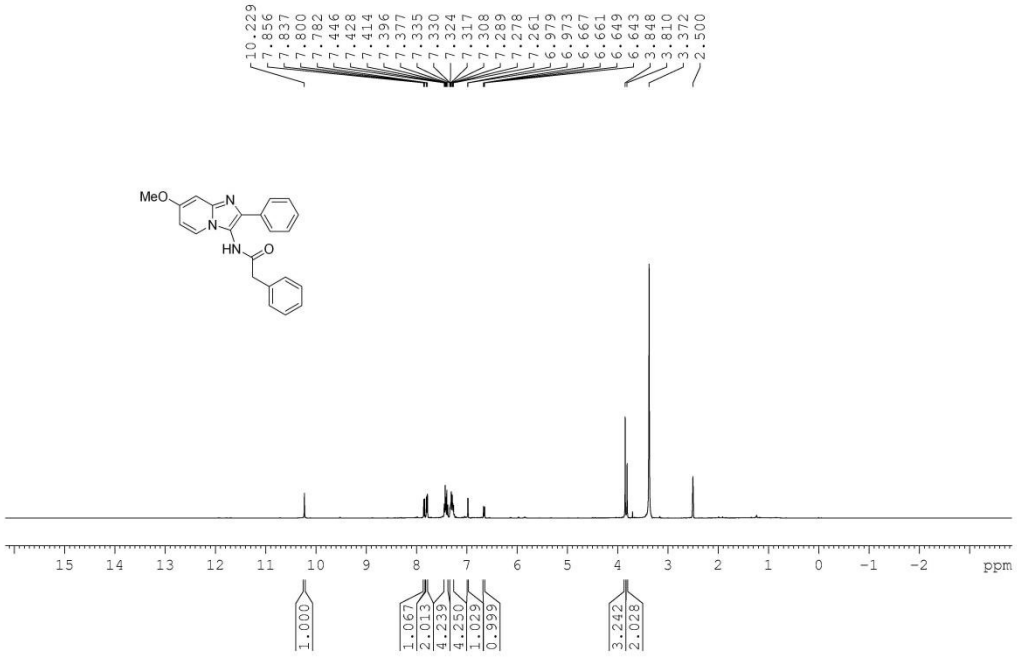
^{13}C NMR spectrum of compound 3an



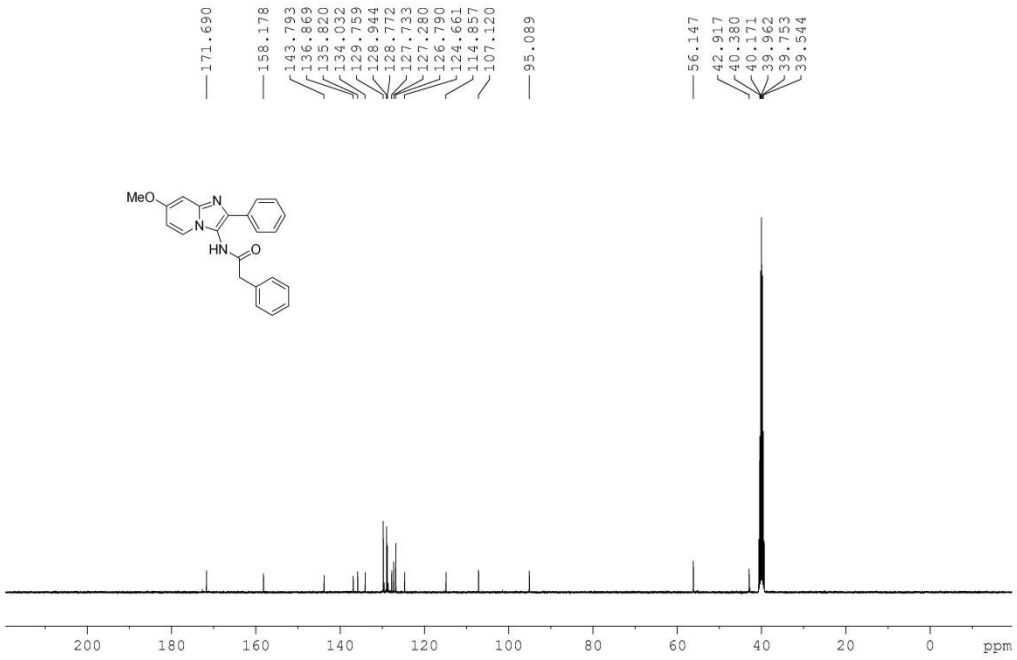
^{1}H NMR spectrum of compound 3ao



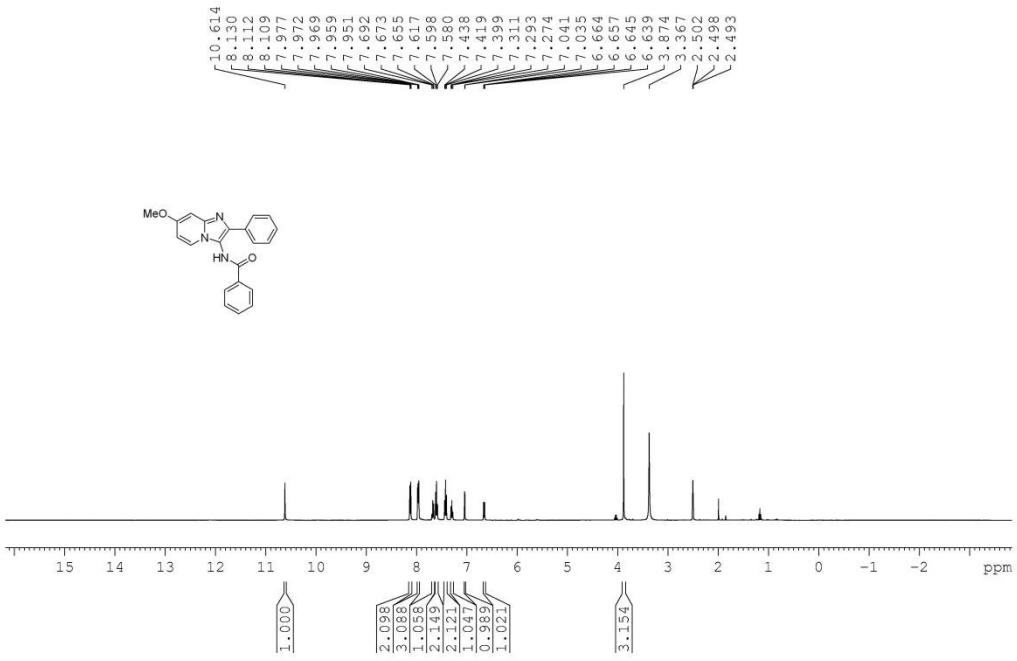
^{13}C NMR spectrum of compound 3ao



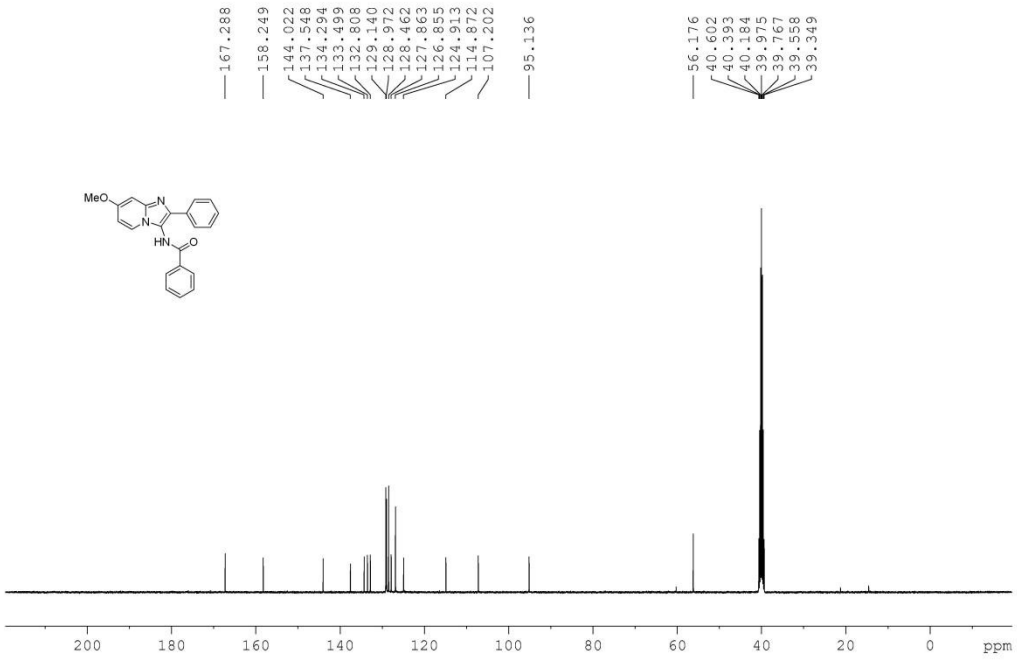
^{1}H NMR spectrum of compound 3ap



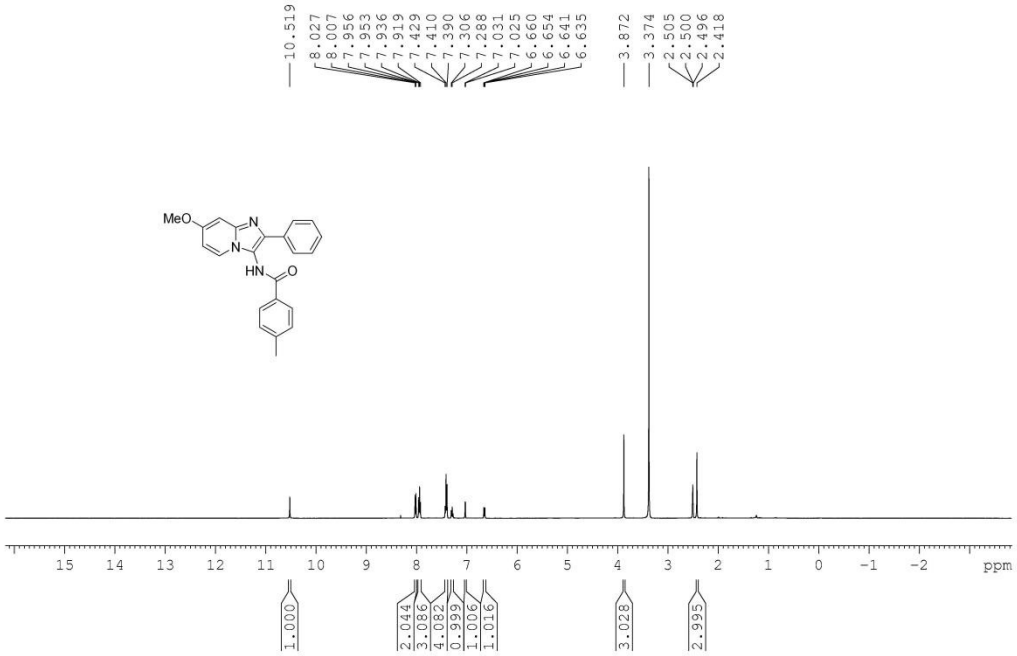
^{13}C NMR spectrum of compound 3ap



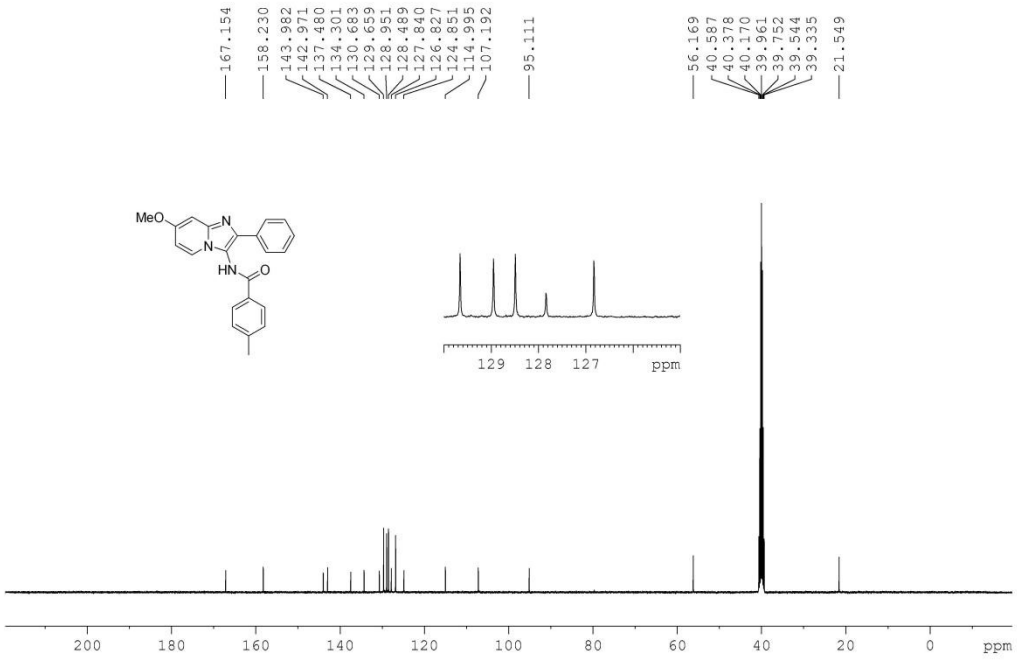
^{1}H NMR spectrum of compound 3aq



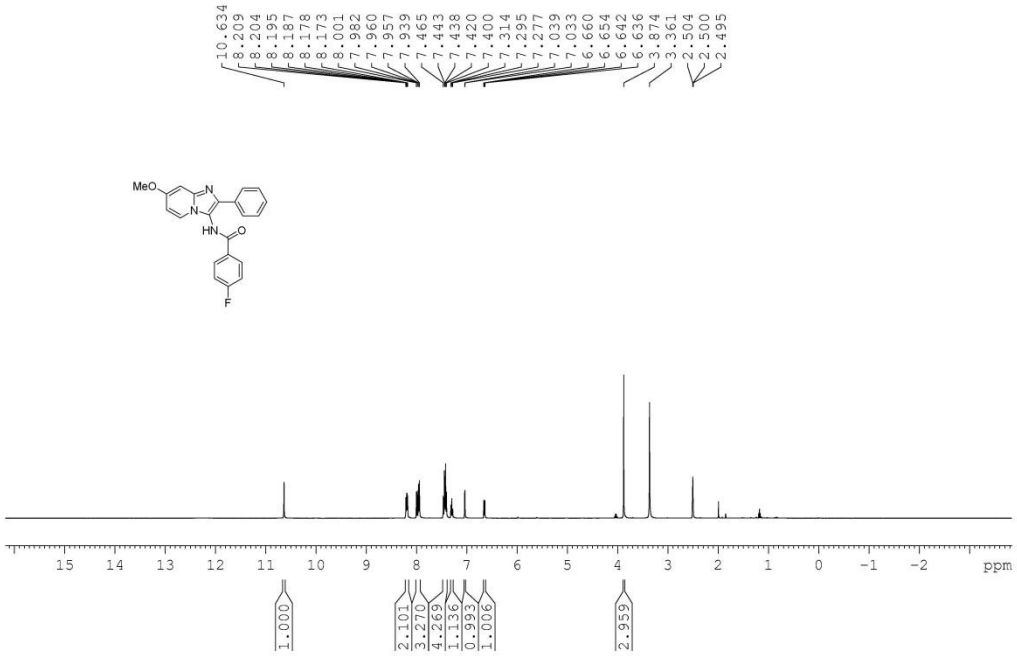
^{13}C NMR spectrum of compound 3aq



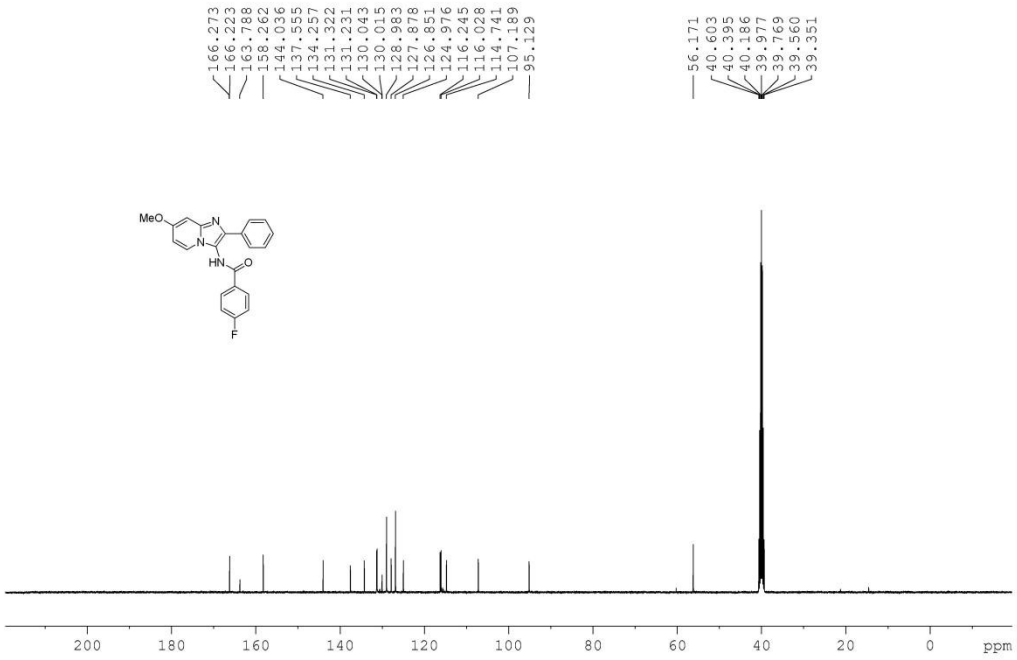
^{1}H NMR spectrum of compound 3ar



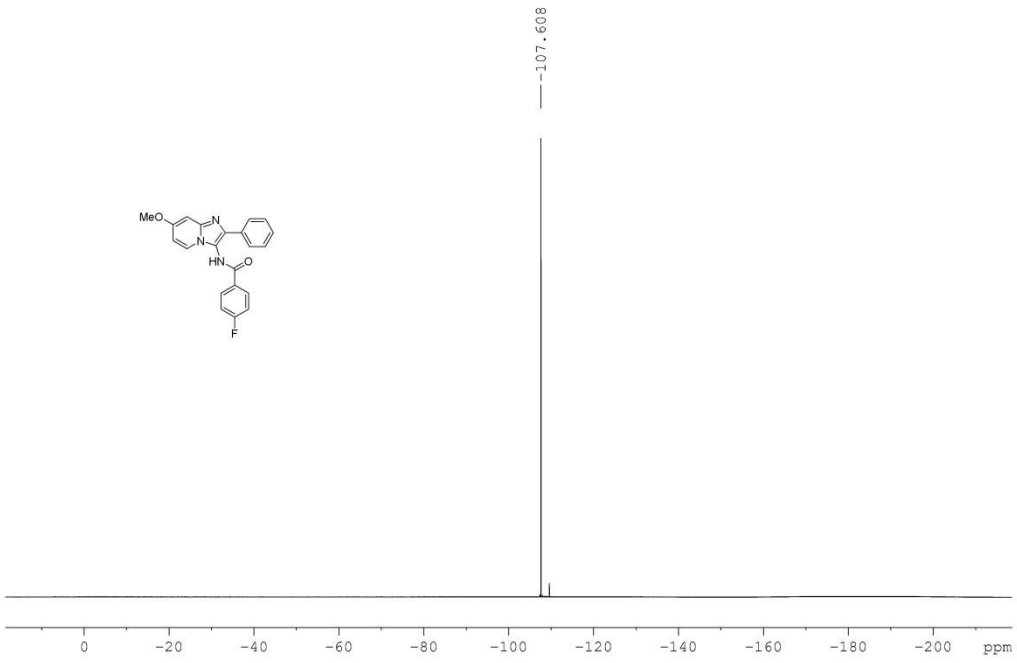
^{13}C NMR spectrum of compound 3ar



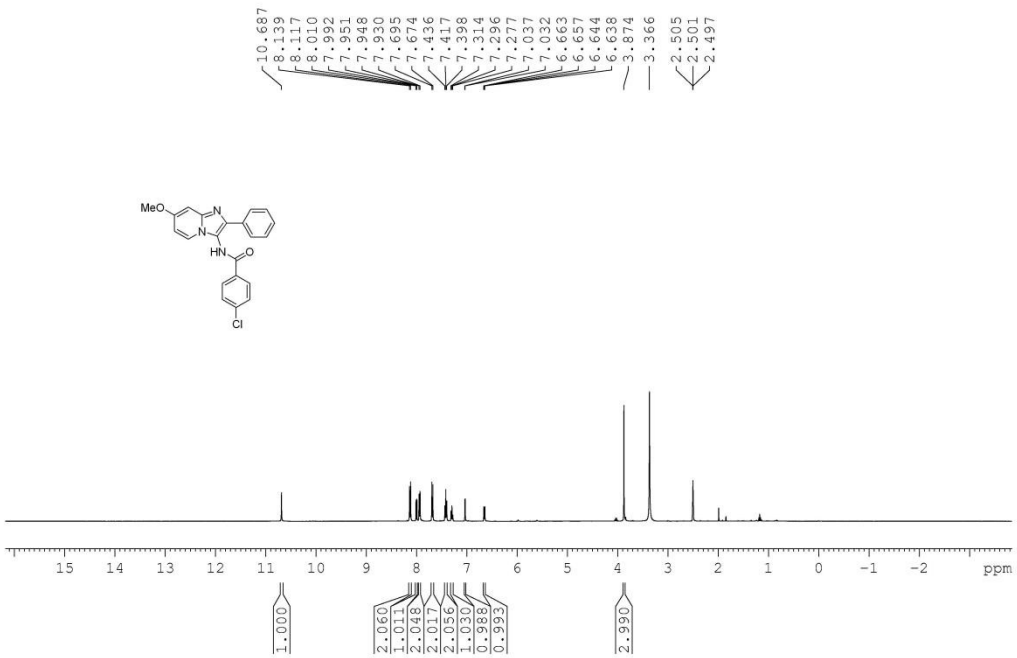
^{1}H NMR spectrum of compound 3as



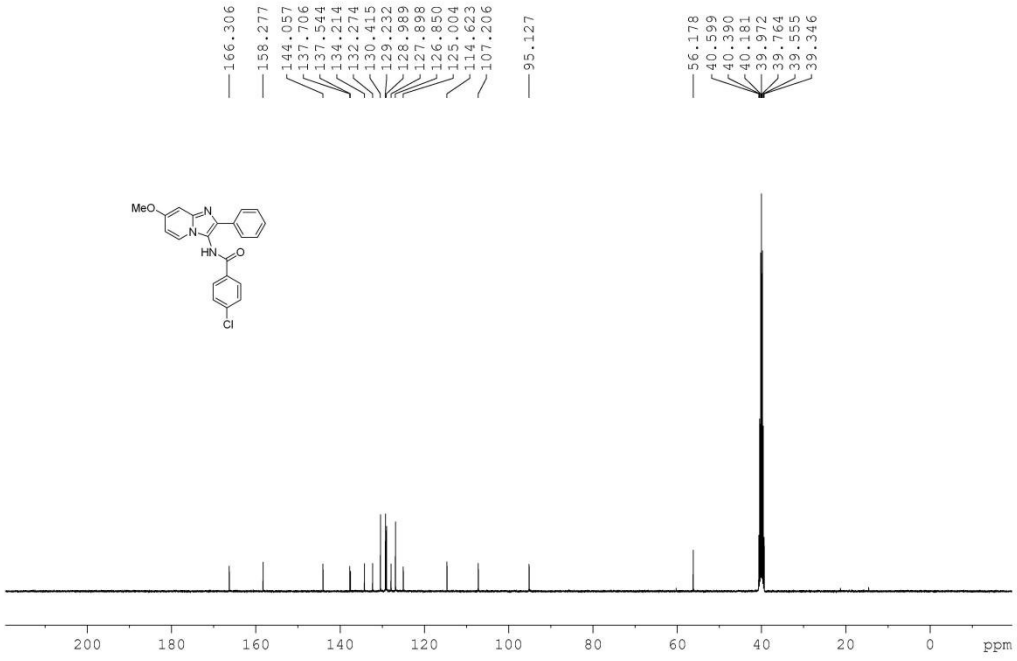
^{13}C NMR spectrum of compound 3as



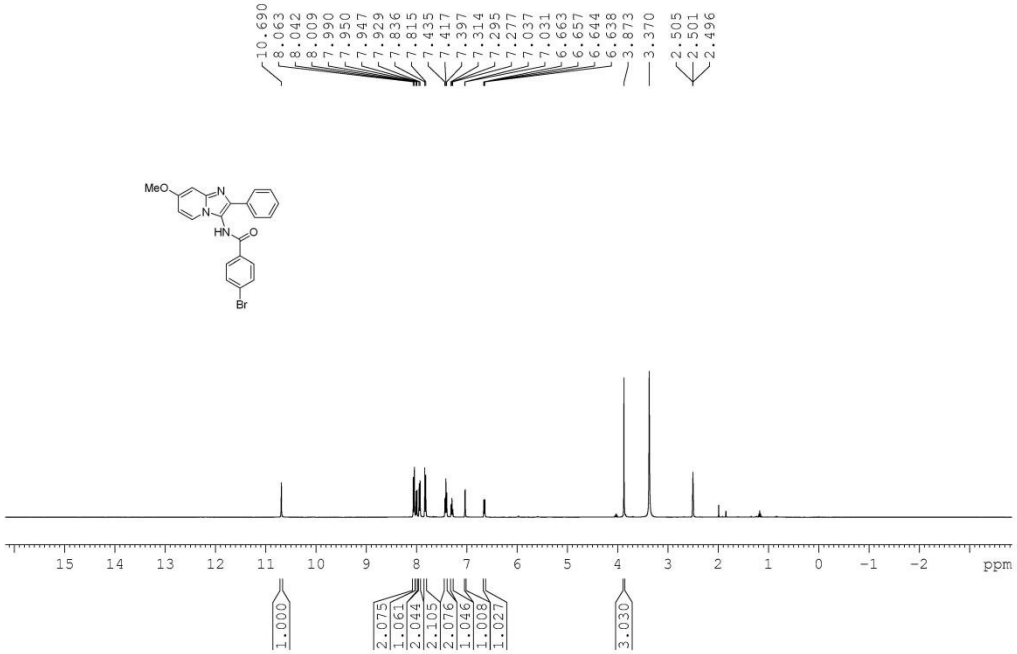
^{19}F NMR spectrum of compound 3as



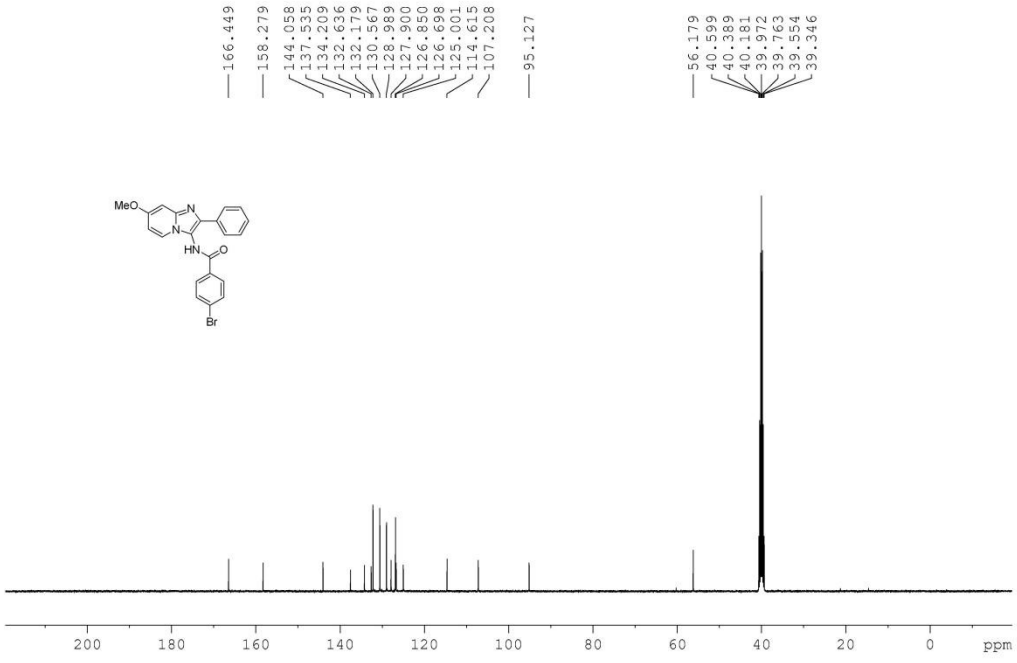
^{1}H NMR spectrum of compound 3at



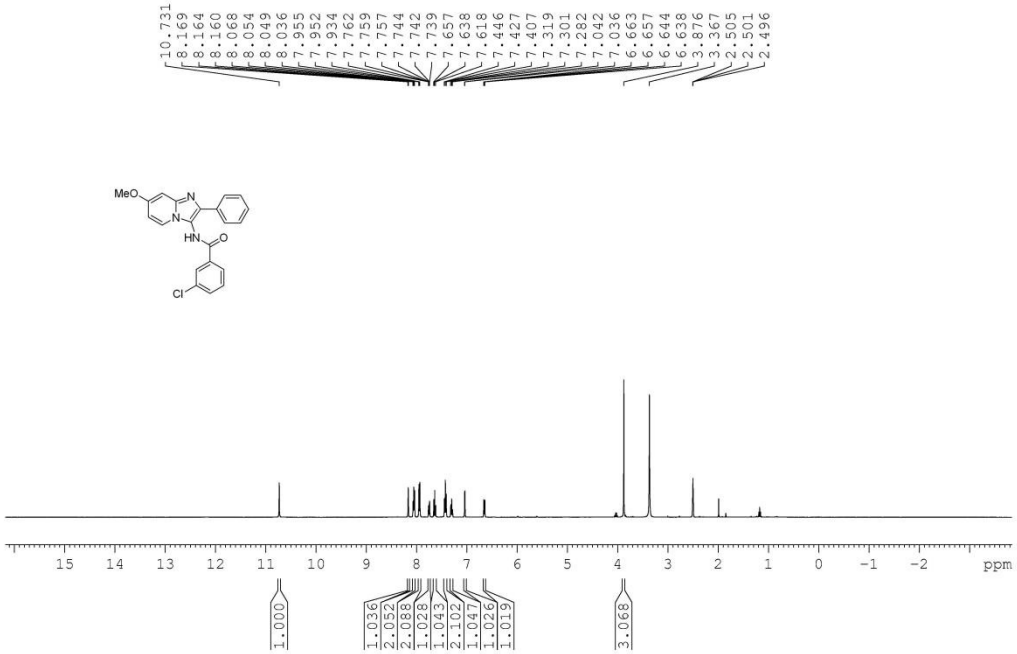
^{13}C NMR spectrum of compound 3at



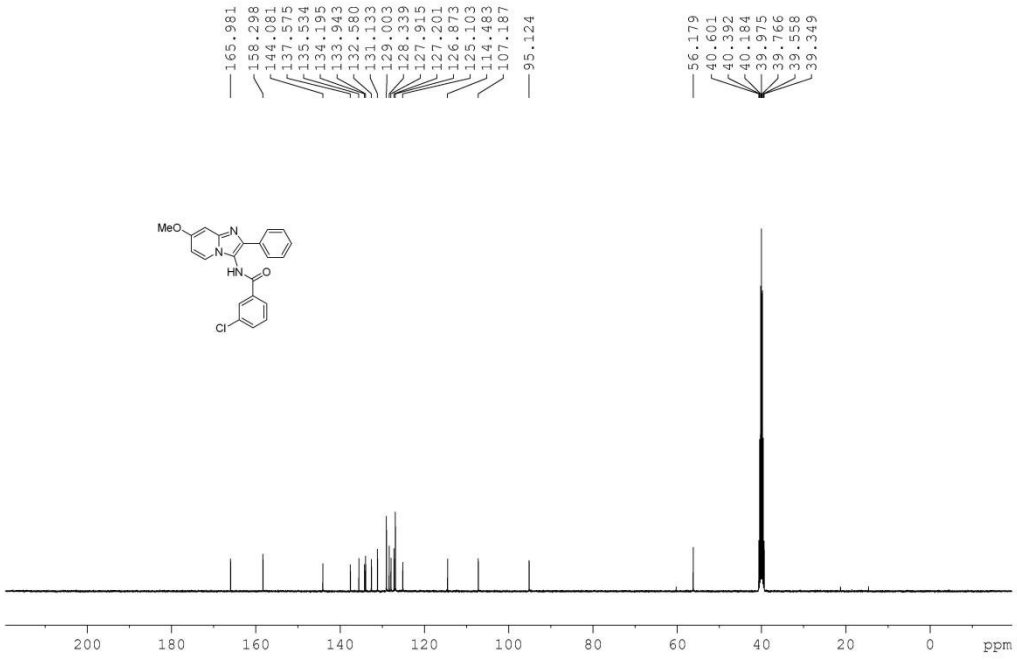
^{1}H NMR spectrum of compound 3au



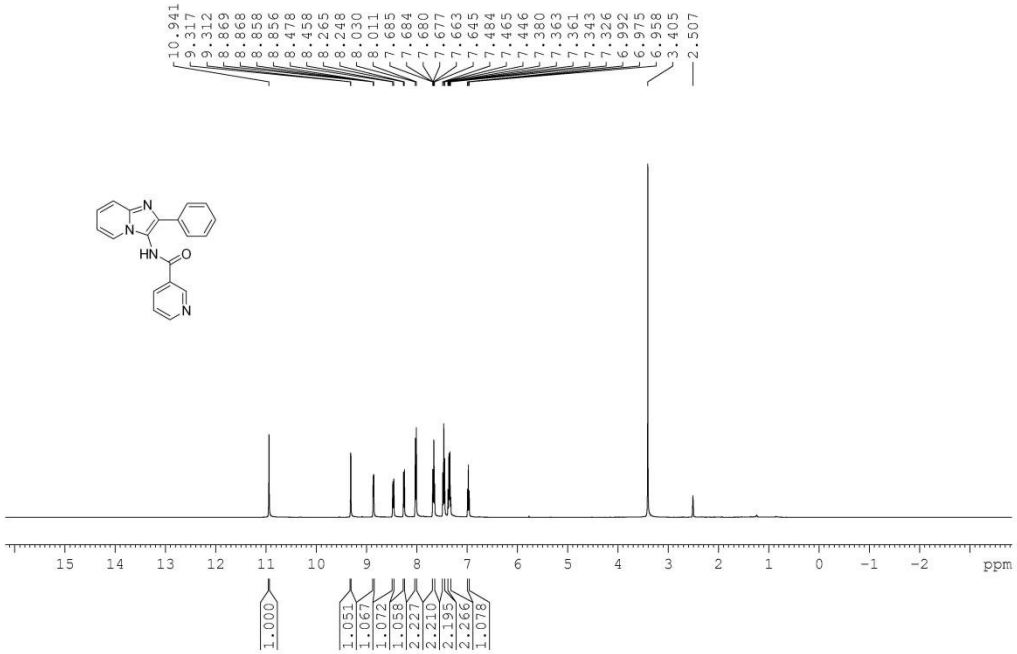
^{13}C NMR spectrum of compound 3au



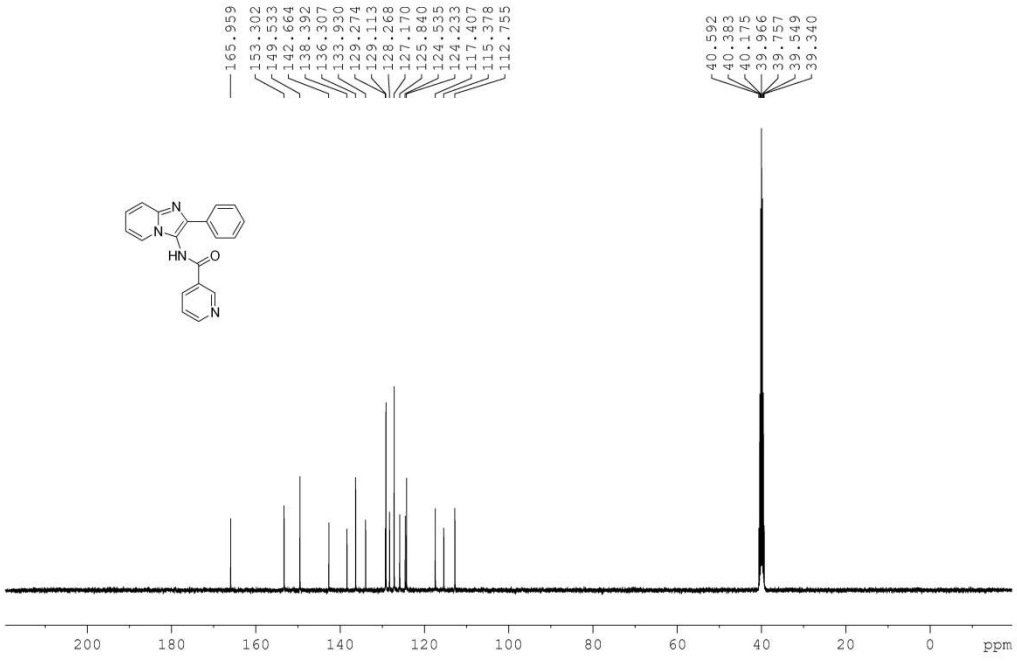
^{1}H NMR spectrum of compound 3av



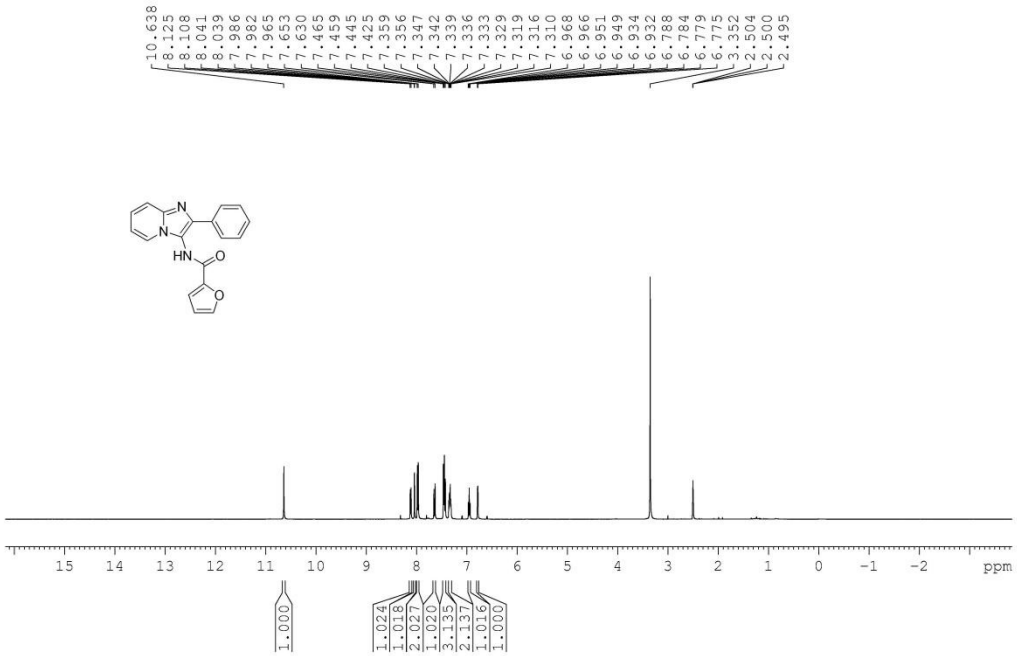
^{13}C NMR spectrum of compound 3av



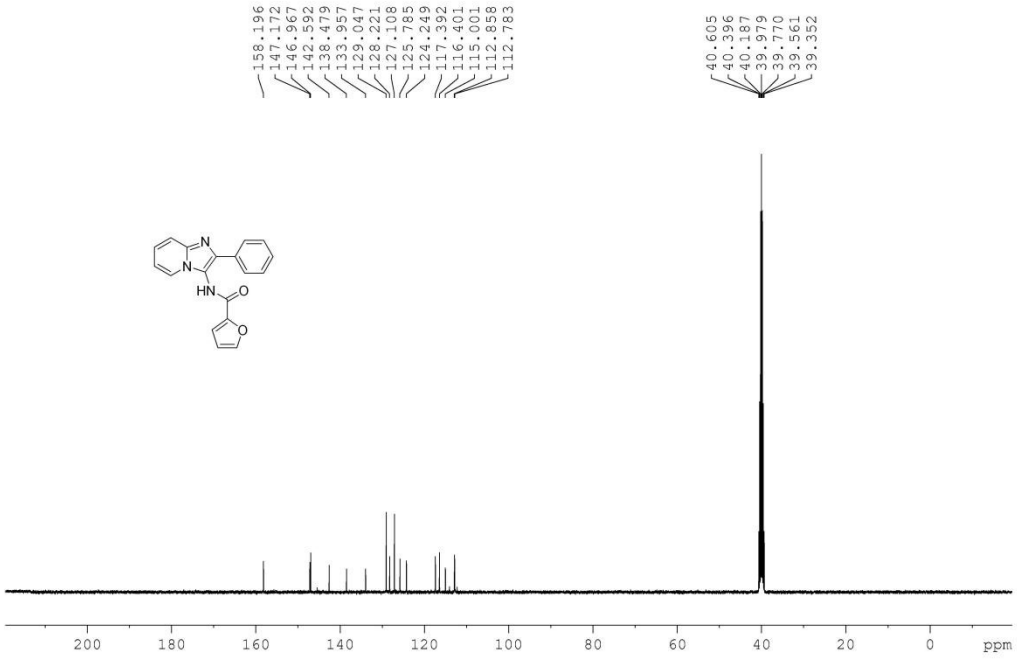
^{1}H NMR spectrum of compound 3aw



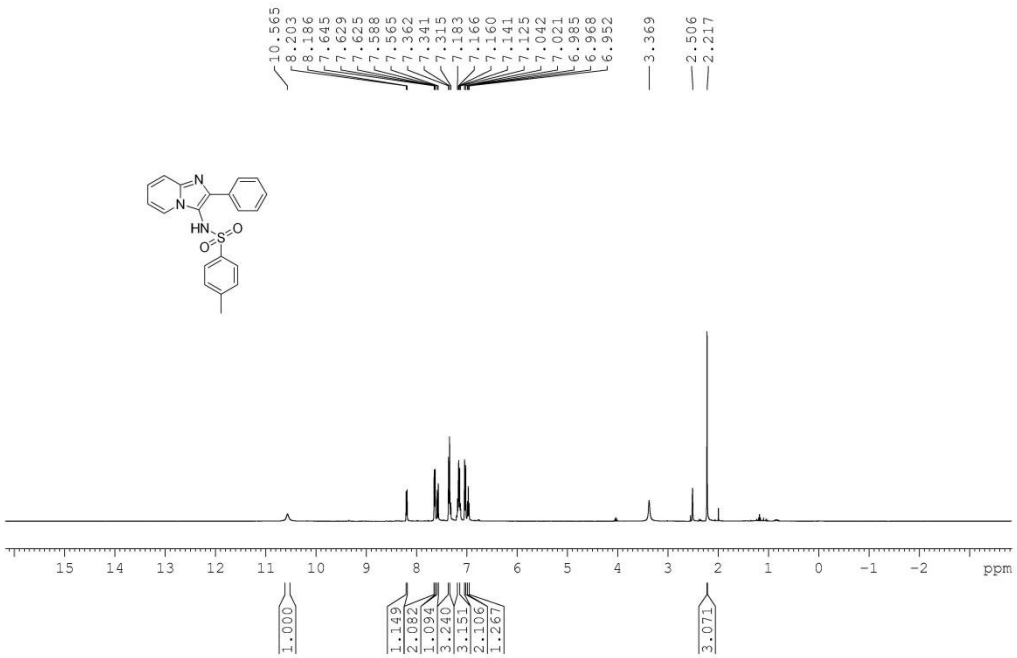
^{13}C NMR spectrum of compound 3aw



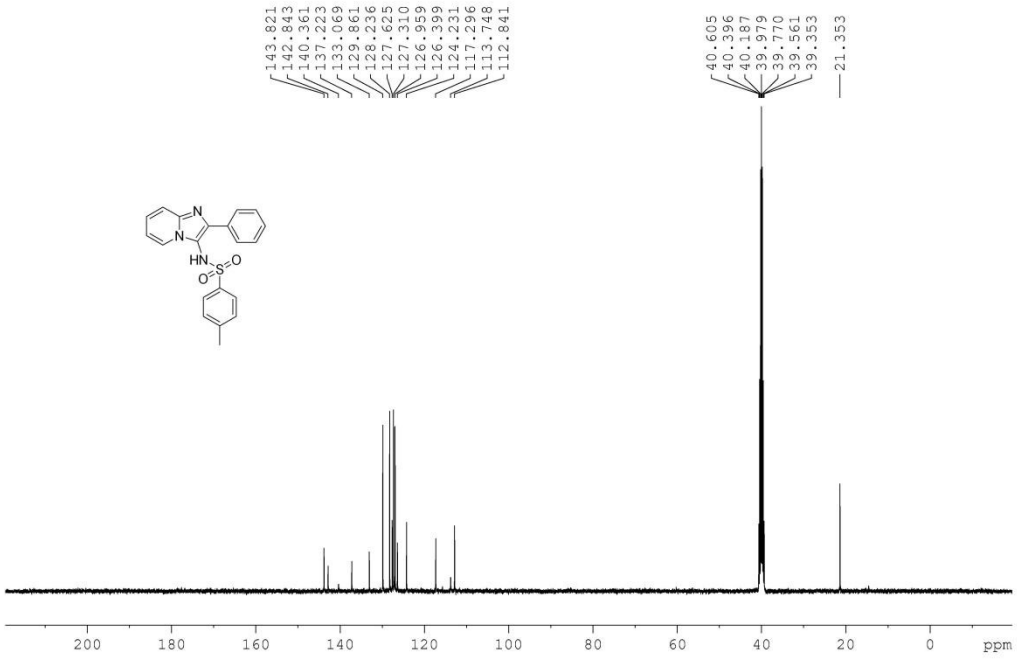
^{1}H NMR spectrum of compound 3ax



^{13}C NMR spectrum of compound 3ax



^{1}H NMR spectrum of compound 3ay



^{13}C NMR spectrum of compound 3ay

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