Supporting Information

Visible-Light-Enabled Reduction of Arylsulfonyl and Benzoyl Azides to Access Primary Arylsulfonamides and Benzoyl Amides

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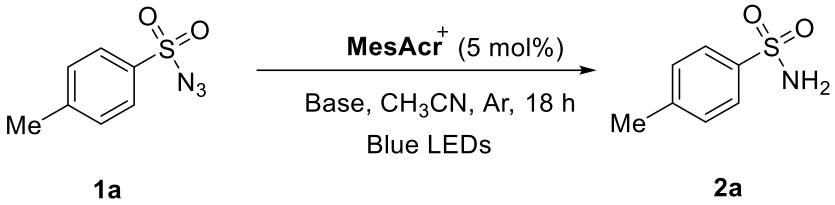
1. General Information

Nuclear magnetic resonance spectra were recorded on Bruker 600 MHz instruments internally referenced to TMS (0.0 ppm) or residue of $CDCl_3$ (7.26 ppm for ^1H, and 77.00 ppm for ^{13}C) or DMSO-d_6 (2.50 ppm for ^1H, and 39.60 ppm for ^{13}C) signal. The following abbreviations were used to explain multiplicities: s = singlet, d = doublet, t = triplet, q = quartet, m = multiplet, br = broad. High-resolution mass spectra (HRMS) were conducted at Micromass Q-Tof instrument (ESI). All reagents were purchased at the highest commercial quality and used without further purification unless otherwise stated. All reactions were performed under an inert atmosphere of dry argon in dried glassware, unless otherwise stated. Solvents were distilled using standard techniques. Acetonitrile and dichloromethane were distilled over calcium hydride under an atmosphere of argon. Room temperature reactions were performed between 25-28 °C. The reactions that require heating were put in an oil bath with a temperature monitor. Kessil lamp (440 nm) was used as the light source. The sulfonyl and acyl azides were synthesized according to the literature.[1]

2. Experimental Section

2.1. Optimization Studies

Table S1. Screening of Bases [a,b]



Entries	Base	Temp.	Time	Yield (%)[b]
1	Me_3N	r.t	18 h	50%
2	Et_3N	r.t	18 h	29%
3	Bn_3N	r.t	18 h	94%
4	DABCO	r.t	18 h	14%
5	DMAP	r.t	18 h	10%
6	DBU	r.t	18 h	5%

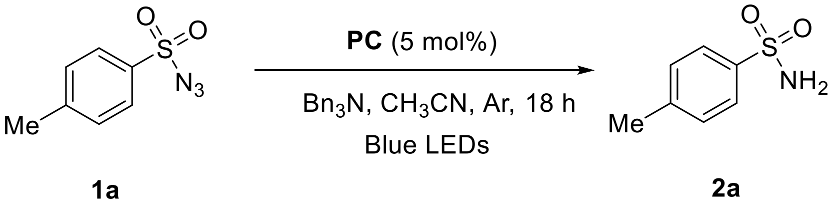
[a] Reaction conditions: **1a** (0.2 mmol), Base (1.5 equiv.), 9-Mesityl-10-methylacridinium perchlorate (**MesAcr**$^+$) (5 mol%) in CH_3CN (2.0 mL) at room temperature under Ar and Blue LEDs irradiation for 18 h. [b] The yield was determined by ^1H NMR analysis of crude product using 1,3,5-trimethoxybenzene as an internal standard.

Table S2. Screening of Solvents [a,b]

Entries	Solvent	Temp.	Time	Yield (%)[b]
1	DCM	r.t	18 h	70%
2	Dioxane	r.t	18 h	87%
3	DMF	r.t	18 h	22%
4	CH_3CN	r.t	18 h	94%
5	DMSO	r.t	18 h	59%
6	THF	r.t	18 h	77%
7	toluene	r.t	18 h	43%

[a] Reaction conditions: **1a** (0.2 mmol), Bn_3N (1.5 equiv.), 9-Mesityl-10-methylacridinium perchlorate (**MesAcr+**) (5 mol%) in solvent (2.0 mL) at room temperature under Ar and Blue LEDs irradiation for 18 h. [b] The yield was determined by ^1H NMR analysis of crude product using 1,3,5-trimethoxybenzene as an internal standard.

Table S3. Screening of Catalysts [a,b]



Entries	PC	Temp.	Time	Yield (%)[b]
1	MesAcr$^+$	r.t	18 h	94%
2	PTH	r.t	18 h	29%
3	*fac*-Ir(ppy)$_3$	r.t	18 h	77%
4	4CzIPN	r.t	18 h	46%
5	Ru(bpy)$_3$Cl$_2$	r.t	18 h	61%

6	$Ir[dF(CF_3)ppy_2(dtbbpy)]PF_6$	r.t	18 h	65%

[a] Reaction conditions: **1a** (0.2 mmol), Bn_3N (1.5 equiv.), catalyst (5 mol%) in CH_3CN (2.0 mL) at room temperature under Ar and Blue LEDs irradiation for 18 h. [b] The yield was determined by ^1H NMR analysis of crude product using 1,3,5-trimethoxybenzene as an internal standard.

2.2. General Procedure for the Reduction of Arylsulfonyl and Benzoyl azides

9-mesityl-10-methylacridinium perchlorate (4.1 mg, 0.0100 mmol, 5 mol%), arylsulfonyl azide or benzoyl azide (0.200 mmol, 1.0 equiv.) and Bn_3N (0.300 mmol, 1.5 equiv.) were added in a Schlenk tube, and the mixture was degassed under vacuum and purged with argon for three times at room temperature. CH_3CN (2.0 mL) were added and the mixture was stirred for 18 h irradiated by the LEDs at room temperature. After the reaction is complete, the reaction mixture was filtered through a pad of Celite. The filtrate was concentrated in vacuo to afford crude products, which were purified by flash column chromatography on silica gel to give the pure products.

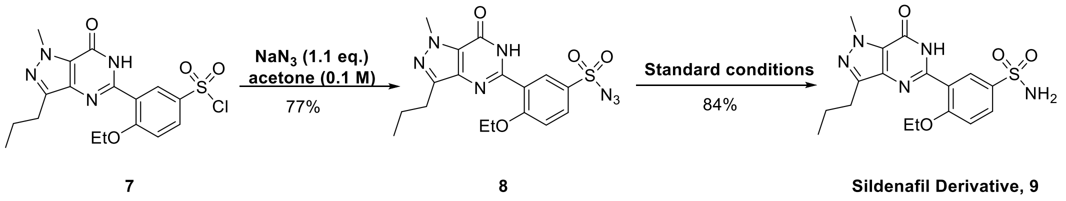
2.3. Gram-Scale Synthesis for Product 2a

1a, 5 mmol
0.985 g

2a, 78%Yield
0.67 g

9-mesityl-10-methylacridinium perchlorate (102.5 mg, 0.250 mmol, 5 mol%), 4-methylbenzenesulfonyl azide **1a** (985 mg, 5.0 mmol, 1.0 equiv.) and Bn_3N (7.5 mmol, 1.5 equiv.) were added to a 100 mL round bottom flask, and the mixture was degassed under vacuum and purged with argon for three times at room temperature. CH_3CN (50.0 mL) were added and the mixture was stirred for 18 h irradiated by the LEDs at room temperature. After the reaction is complete, the reaction mixture was filtered through a pad of Celite. The filtrate was concentrated in vacuo to afford crude products, which were purified by flash column chromatography on silica gel to give the pure product **2a** (670 mg, 78%).

2.4. Synthesis for Bioactive Molecule

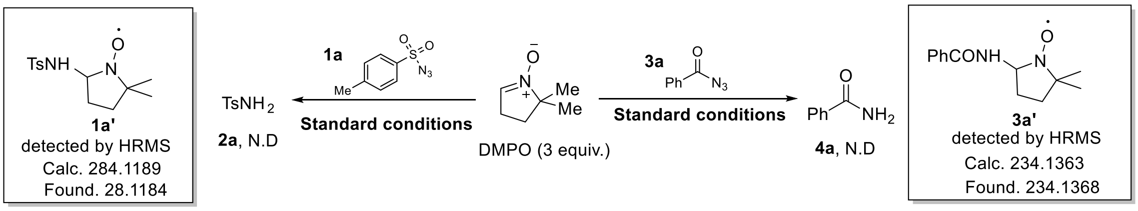


7 8 Sildenafil Derivative, 9

The reaction of 4-ethoxy-3-(1-methyl-7-oxo-3-propyl-6,7-dihydro-1H-pyrazolo[4,3-d]pyrimidin-5-yl)benzenesulfonyl azide **8** (83.4 mg, 0.200 mmol, 1.0 equiv.) which is afforded by reacting 4-ethoxy-3-(1-methyl-7-oxo-3-propyl-6,7-dihydro-1H-pyrazolo[4,3-d]pyrimidin-5-yl)benzenesulfonyl chloride **7** with NaN_3 in acetone solution, Bn_3N (86.1 mg, 0.300 mmol, 1.5 equiv.) and 9-mesityl-10-methylacridinium perchlorate (4.1 mg, 0.010 mmol, 5 mol%) in CH_3CN (2.0 mL) delivered **9** (65.7 mg, 84%) as a white solid after purification via silica gel column chromatography with 20% ethyl acetate/hexanes (Rf = 0.4, 20% ethyl acetate/hexanes). **^{1}H NMR** (600 MHz, DMSO-d_6) δ 12.19 (s, 1H), 8.01 (d, J = 2.4 Hz, 1H), 7.90 (dd, J = 2.4, 9.0 Hz, 1H), 7.36 (s, 2H), 7.31 (d, J = 9.0 Hz, 1H), 4.21-4.15 (m, 5H), 2.78 (t, J = 7.8 Hz, 2H), 1.78-1.70 (m, 2H), 1.34 (t, J = 7.2Hz, 3H), 0.94 (t, J = 7.2 Hz, 3H); **^{13}C NMR** (150 MHz, DMSO-d_6) δ 158.8, 153.8, 148.6, 150.0, 137.9, 136.0, 129.6, 128.3, 124.4, 123.0, 112.9, 64.8, 37.9, 27.2, 21.8, 14.4, 13.9; **HRMS (ESI)** Calcd for $C_{17}H_{21}N_5O_4S$ $[M+H]^+$ 392.1387, found 392.1386.

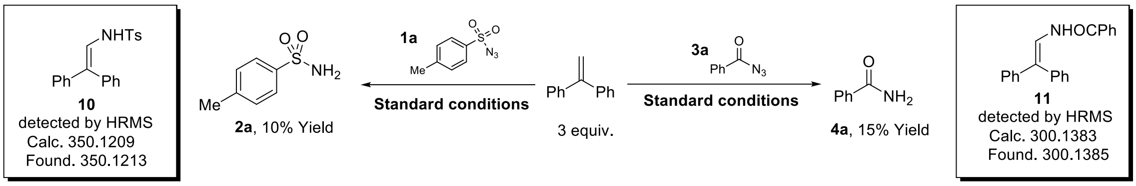
2.5. Mechanism Experiments

2.5.1 Radical- trapping with DMPO



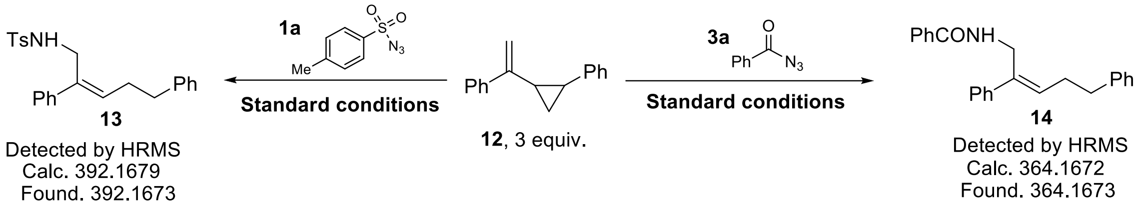
9-mesityl-10-methylacridinium perchlorate (4.1 mg, 0.0100 mmol, 5 mol%), 4-methylbenzenesulfonyl azide **1a** or **3a** (0.200 mmol, 1.0 equiv.), Bn_3N (0.300 mmol, 1.5 equiv.) and 5,5-dimethyl-1-pyrroline *N*-oxide (DMPO) (3.0 equiv.) were added to a Schlenk tube, and the mixture was degassed under vacuum and purged with argon for three times at room temperature. CH_3CN (2.0 mL) were added and the mixture was stirred for 12 h irradiated by the LEDs at room temperature. After the reaction is complete, the reaction mixture was filtered through a pad of Celite. The diluted filtrate was analyzed by HRMS, and products **2a** and **4a** were not detected, but possible radical intermediates **1a′** and **3a′** were detected.

2.5.2 Radical trapping with 1,1-diphenylethene



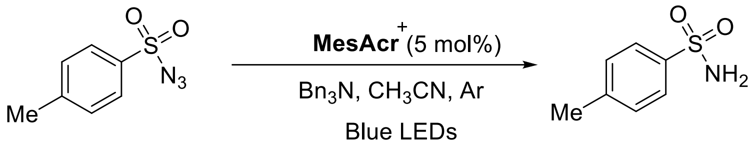
9-mesityl-10-methylacridinium perchlorate (4.1 mg, 0.0100 mmol, 5 mol%), 4-methylbenzenesulfonyl azide **1a** or **3a** (0.200 mmol, 1.0 equiv.), Bn_3N (0.300 mmol, 1.5 equiv.) and 1,1-diphenylethene (3.0 equiv.) were added to a Schlenk tube, and the mixture was degassed under vacuum and purged with argon for three times at room temperature. CH_3CN (2.0 mL) were added and the mixture was stirred for 12 h irradiated by the LEDs at room temperature. After the reaction is complete, the reaction mixture was filtered through a pad of Celite. The diluted filtrate was analyzed by HRMS, and products **2a** and **4a** were detected, meanwhile, radical intermediates **10** and **11** also were detected.

2.5.3 Radical clock experiments



9-mesityl-10-methylacridinium perchlorate (4.1 mg, 0.0100 mmol, 5 mol%), 4-methylbenzenesulfonyl azide **1a** or **3a** (0.200 mmol, 1.0 equiv.), Bn_3N (0.300 mmol, 1.5 equiv.) and **12** (3.0 equiv.) were added to a Schlenk tube, and the mixture was degassed under vacuum and purged with argon for three times at room temperature. CH_3CN (2.0 mL) were added and the mixture was stirred for 12 h irradiated by the LEDs at room temperature. After the reaction is complete, the reaction mixture was filtered through a pad of Celite. The diluted filtrate was analyzed by HRMS, and the ring-opened products **13** and **14** were detected.

2.5.4 Quantum yield measurement



1a **2a**, 17% yield

9-mesityl-10-methylacridinium perchlorate (4.1 mg, 0.0100 mmol, 5 mol%), arylsulfonyl azide **1a** (0.200 mmol, 1.0 equiv.) and Bn_3N (0.300 mmol, 1.5 equiv.) were added in a Schlenk tube, and the mixture was degassed under vacuum and purged with argon for three times at room temperature. CH_3CN (2.0 mL) were added and the mixture was irradiated (λ = 440 nm, with intensity of 7.65 mW/cm^2) by the LEDs for 7200s at room temperature. After irradiated, the yield of product **2a** was determined by ^{1}HNMR based on 1,3,5-trimethoxybenzene standard. The quantum yield Φ was determined as follows.

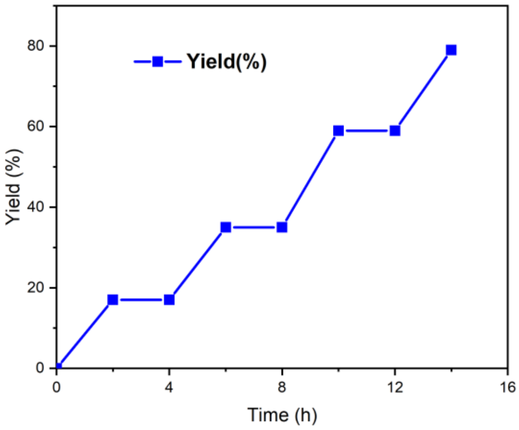
$$\phi = \frac{\mathbf{n_{2a}N_A / t}}{\boldsymbol{f}\mathbf{P\lambda / hc}}$$

Notes: n_{2a}: the mole number(3.4×10^{-5} mol) of the product **2a**; t: reaction time (7200 s); N_A: 6.02×10^{23}/mol; f: $1\text{-}10^{-A}$ (440 nm, A =0.31); P: P = E*S (E = 7.65 mW/cm^2, S: the area that irradiated S = 3.10 cm^2); λ: wavelength (4.4×10^{-7} m); h: planck constant (6.626×10^{-34} J*s); c: speed of light (3×10^8 m/s).

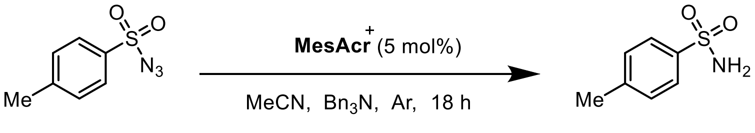
Φ = 0.11

2.5.5 Light on-off experiment

Light on-off experiments were carried out by following the procedure below. 4-methylbenzenesulfonyl azide **1a** (39.4 mg, 0.200 mmol, 1.0 equiv.), Bn_3N (86.1 mg, 0.300 mmol, 1.5 equiv.) and 9-mesityl-10-methylacridinium perchlorate (4.1 mg, 0.010 mmol, 5 mol%) in CH_3CN (2.0 mL) were added in a Schlenk tube, and the mixture was degassed under vacuum and purged with argon for three times at room temperature. CH_3CN (2.0 mL) were added. The tube was stirred at room temperature alternating intervals of irradiation by blue LEDs and two-hour dark, during a total of 14 hours. The GC-MS yield of the product was monitored with dodecane as internal standard after each interval.

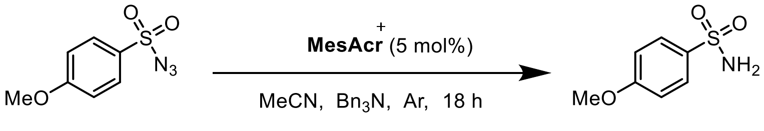


2.6. Characterization of Products



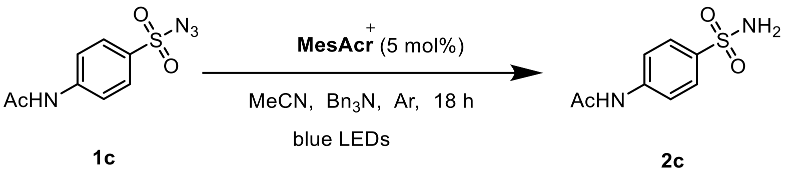
1a **2a**

Compound **2a**[2] was synthesized according to the General Procedure. The reaction of 4-methylbenzenesulfonyl azide **1a** (39.4 mg, 0.200 mmol, 1.0 equiv.), Bn_3N (86.1 mg, 0.300 mmol, 1.5 equiv.) and 9-mesityl-10-methylacridinium perchlorate (4.1 mg, 0.010 mmol, 5 mol%) in CH_3CN (2.0 mL) delivered **2a** (30.8 mg, 90%) as a white solid after purification via silica gel column chromatography (Rf = 0.5, ethyl acetate/ petroleum ether =2:1). **^{1}H NMR** (600 MHz, $CDCl_3$) δ 7.81 (d, *J* = 7.8 Hz, 2H), 7.31 (d, *J* = 7.8 Hz, 2H), 4.94 (s, 2H), 2.43 (s, 3H); **^{13}C NMR** (150 MHz, $CDCl_3$) δ 143.6, 139.0, 129.7, 126.4, 21.5.

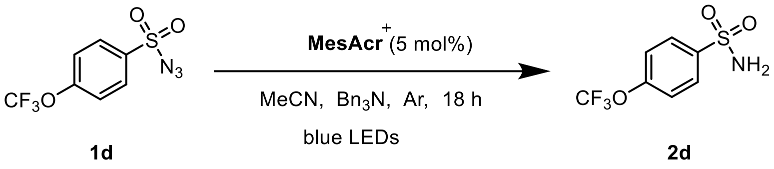


1b **2b**

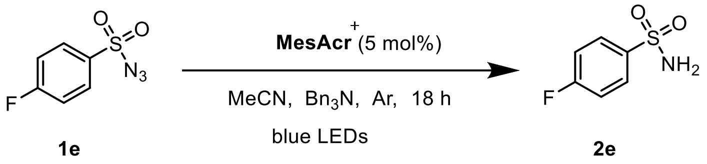
Compound **2b**[2] was synthesized according to the General Procedure. The reaction of 4-methoxybenzenesulfonyl azide **1b** (42.6 mg, 0.200 mmol, 1.0 equiv.), Bn_3N (86.1 mg，0.300 mmol, 1.5 equiv.) and 9-mesityl-10-methylacridinium perchlorate (4.1 mg, 0.010 mmol, 5 mol%) in CH_3CN (2.0 mL) delivered **2b** (34.0 mg, 91%) as a white solid after purification via silica gel column chromatography (Rf = 0.5, ethyl acetate/ petroleum ether =2:1). **^{1}H NMR** (600 MHz, $CDCl_3$) δ 7.86 (d, *J* = 9.0 Hz, 2H), 6.98 (d, *J* = 8.4 Hz, 2H), 4.84 (s, 2H), 3.87 (s, 3H); **^{13}C NMR** (150 MHz, $CDCl_3$) δ 163.0, 133.6, 128.6, 114.2, 55.6.



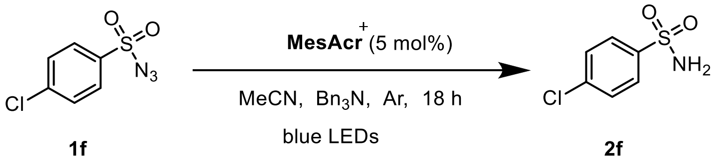
Compound **2c**[5] was synthesized according to the General Procedure. The reaction of 4-acetamidobenzenesulfonyl azide **1c** (48.0 mg, 0.200 mmol, 1.0 equiv.), Bn_3N (86.1 mg, 0.300 mmol, 1.5 equiv.) and 9-mesityl-10-methylacridinium perchlorate (4.1 mg, 0.010 mmol, 5 mol%) in CH_3CN (2.0 mL) delivered **2c** (35.9 mg, 84%) as a white solid after purification via silica gel column chromatography (Rf = 0.3, ethyl acetate/ petroleum ether =1:1). **^{1}H NMR** (600 MHz, DMSO-d_6) δ 10.26 (s, 1H), 7.81-7.68 (m, 4H), 7.22 (s, 2H), 2.08 (s, 3H); **^{13}C NMR** (150 MHz, DMSO-d_6) δ 169.0, 142.3, 138.2, 126.8, 118.5, 24.2.



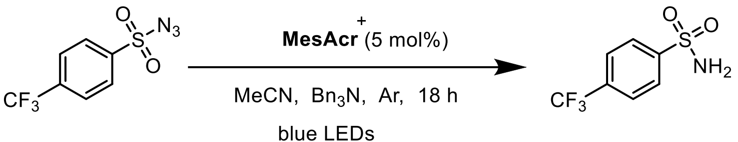
Compound **2d** was synthesized according to the General Procedure. The reaction of 4-(trifluoromethoxy)benzenesulfonyl azide **1d** (53.4 mg, 0.200 mmol, 1.0 equiv.), Bn_3N (86.1 mg, 0.300 mmol, 1.5 equiv.) and 9-mesityl-10-methylacridinium perchlorate (4.1 mg, 0.010 mmol, 5 mol%) in CH_3CN (2.0 mL) delivered **2d** (41.0 mg, 85%) as a white solid after purification via silica gel column chromatography (Rf = 0.48, ethyl acetate/ petroleum ether =2:1). **^{1}H NMR** (600 MHz, DMSO-d_6) δ 7.95 (d, J = 7.8 Hz, 2H), 7.58 (d, J = 8.4 Hz, 2H), 7.50 (s, 2H); **^{13}C NMR** (150 MHz, DMSO-d_6) δ 150.4, 143.2, 128.3, 121.5, 120.0 (q, J = 256.5 Hz); **^{19}F NMR** (565 MHz, DMSO-d_6) δ -56.8; **HRMS (ESI)** Calcd for $C_7H_6F_3NO_3S$ $[M+H]^+$ 242.0093, found 242.0095.



Compound **2e**[2] was synthesized according to the General Procedure. The reaction of 4-fluorobenzenesulfonyl azide **1e** (40.2 mg, 0.200 mmol, 1.0 equiv.), Bn_3N (86.1 mg, 0.300 mmol, 1.5 equiv.) and 9-mesityl-10-methylacridinium perchlorate (4.1 mg, 0.010 mmol, 5 mol%) in CH_3CN (2.0 mL) delivered **2e** (29.8 mg, 85%) as a white solid after purification via silica gel column chromatography (Rf = 0.5, ethyl acetate/ petroleum ether =2:1). **^{1}H NMR** (600 MHz, DMSO-d_6) δ 7.92-7.87 (m, 2H), 7.44-7.38 (m, 4H); **^{13}C NMR** (150 MHz, DMSO-d_6) δ 164.6, 163.0, 140.7 (d, J = 3.0 Hz), 128.6 (d, J = 9.0 Hz), 116.1 (d, J = 21.0 Hz); **^{19}F NMR** (565 MHz, DMSO-d6) δ -108.1.

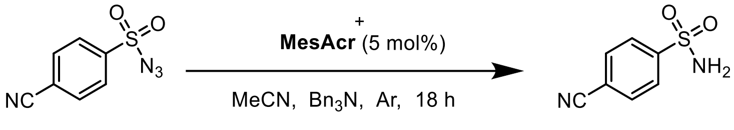


Compound **2f**[3] was synthesized according to the General Procedure. The reaction of 4-chlorobenzenesulfonyl azide **1f** (43.3 mg, 0.200 mmol, 1.0 equiv.), Bn_3N (86.1 mg, 0.300 mmol, 1.5 equiv.) and 9-mesityl-10-methylacridinium perchlorate (4.1 mg, 0.010 mmol, 5 mol%) in CH_3CN (2.0 mL) delivered **2f** (33.2 mg, 87%) as a white solid after purification via silica gel column chromatography (Rf = 0.5, ethyl acetate/ petroleum ether =2:1). **^{1}H NMR** (600 MHz, DMSO-d$_6$) δ 7.85-7.82 (m, 2H), 7.68-7.64 (m, 2H), 7.47 (s, 2H); **^{13}C NMR** (150 MHz, DMSO-d$_6$) δ 143.1, 136.7, 129.2, 127.7.



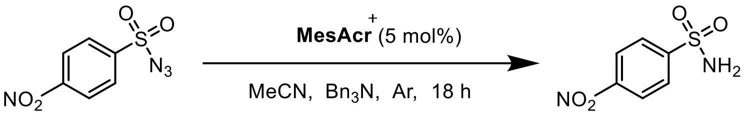
1g **2g**

Compound **2g**[2] was synthesized according to the General Procedure. The reaction of 4-(trifluoromethyl)benzenesulfonyl azide **1g** (50.2 mg, 0.200 mmol, 1.0 equiv.), Bn$_3$N (86.1 mg, 0.300 mmol, 1.5 equiv.) and 9-mesityl-10-methylacridinium perchlorate (4.1 mg, 0.010 mmol, 5 mol%) in CH3CN (2.0 mL) delivered **2g** (34.2 mg, 76%) as a white solid after purification via silica gel column chromatography (Rf = 0.4, ethyl acetate/ petroleum ether =2:1). **^{1}H NMR** (600 MHz, DMSO-d$_6$) δ 8.04 (d, *J* = 7.8 Hz, 2H), 7.97 (d, *J* = 7.8 Hz, 2H), 7.62 (s, 2H); **^{13}C NMR** (150 MHz, DMSO-d$_6$) δ 147.9, 131.8 (q, *J* = 33.0 Hz), 126.7, 126.4 (q, *J* = 3.0 Hz), 124.6, 122.8, 121.0; **^{19}F NMR** (565 MHz, DMSO-d$_6$) δ -61.6.



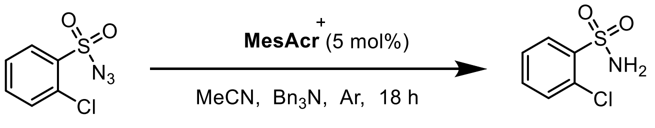
1h **2h**

Compound **2h**[4] was synthesized according to the General Procedure. The reaction of 4-cyanobenzenesulfonyl azide **1h** (41.6 mg, 0.200 mmol, 1.0 equiv.), Bn$_3$N (86.1 mg, 0.300 mmol, 1.5 equiv.) and 9-mesityl-10-methylacridinium perchlorate (4.1 mg, 0.010 mmol, 5 mol%) in CH$_3$CN (2.0 mL) delivered **2h** (29.0 mg, 85%) as a white solid after purification via silica gel column chromatography (Rf = 0.51, ethyl acetate/ petroleum ether =2:1). **^{1}H NMR** (600 MHz, DMSO-d$_6$) δ 8.07 (d, *J* = 8.4 Hz, 2H), 7.98 (d, *J* = 8.4 Hz, 2H), 7.65 (s, 2H); **^{13}C NMR** (150 MHz, DMSO-d$_6$) δ 148.1, 133.4, 126.5, 118.0, 114.4.



1i **2i**

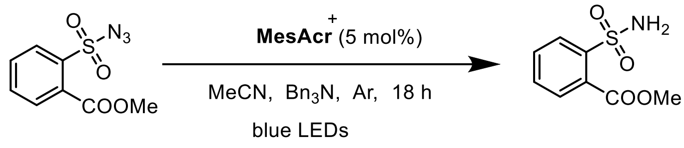
Compound **2i**[2] was synthesized according to the General Procedure. The reaction of 4-nitrobenzenesulfonyl azide **1i** (45.6 mg, 0.200 mmol, 1.0 equiv.), Bn$_3$N (86.1 mg, 0.300 mmol, 1.5 equiv.) and 9-mesityl-10-methylacridinium perchlorate (4.1 mg, 0.010 mmol, 5 mol%) in CH$_3$CN (2.0 mL) delivered **2i** (34.3 mg, 85%) as a white solid after purification via silica gel column chromatography (Rf = 0.6, ethyl acetate/ petroleum ether =1:1). **^{1}H NMR** (600 MHz, DMSO-d$_6$) δ 8.42 (d, *J* = 8.4 Hz, 2H), 8.07 (d, *J* = 9.0 Hz, 2H), 7.73 (s, 2H); **^{13}C NMR** (150 MHz, DMSO-d$_6$) δ 149.5, 149.3, 127.3, 124.5.



1j **2j**

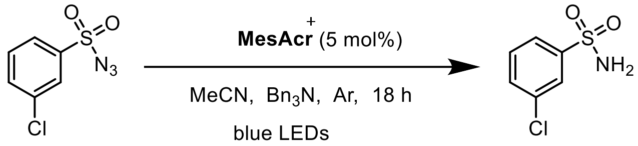
Compound **2j**[6] was synthesized according to the General Procedure. The reaction of 2-chlorobenzenesulfonyl azide **1j** (43.3 mg, 0.200 mmol, 1.0 equiv.), Bn$_3$N (86.1 mg, 0.300 mmol, 1.5 equiv.) and 9-mesityl-10-methylacridinium perchlorate (4.1 mg, 0.010 mmol, 5 mol%) in CH$_3$CN (2.0 mL) delivered **2j** (32.4 mg, 85%) as a white solid after purification via silica gel column chromatography (Rf =

0.4, ethyl acetate/ petroleum ether =2:1). ^{1}**H NMR** (600 MHz, DMSO-d$_6$) δ 7.98 (dd, *J* = 1.2, 7.8 Hz, 1H), 7.64 (dd, *J* = 1.2, 7.8 Hz, 1H), 7.62-7.58 (m, 3H), 7.52 (td, *J* = 1.2, 7.8 Hz, 1H); ^{13}**C NMR** (150 MHz, DMSO-d$_6$) δ 141.1, 133.5, 131.6, 130.4, 129.1, 127.5.



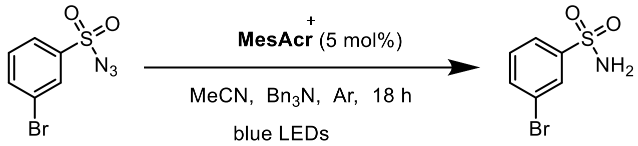
1k **2k**

Compound **2k**[6] was synthesized according to the General Procedure. The reaction of methyl 2-(azidosulfonyl)benzoate **1k** (48.2 mg, 0.200 mmol, 1.0 equiv.), Bn$_3$N (86.1 mg, 0.300 mmol, 1.5 equiv.) and 9-mesityl-10-methylacridinium perchlorate (4.1 mg, 0.010 mmol, 5 mol%) in CH$_3$CN (2.0 mL) delivered **2k** (37.4 mg, 87%) as a white solid after purification via silica gel column chromatography (Rf = 0.65, ethyl acetate/ petroleum ether =1:1). ^{1}**H NMR** (600 MHz, CDCl$_3$) δ 8.17-8.11 (m, 1H), 7.92-7.81 (m, 1H), 7.70-7.58 (m, 2H), 5.76 (s, 2H), 3.99 (s, 3H); ^{13}**C NMR** (150 MHz, CDCl$_3$) δ 168.0, 141.5, 132.4, 132.0, 130.7, 129.9, 128.4, 53.4.



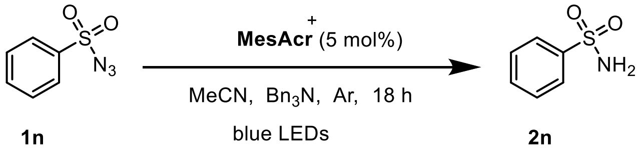
1l **2l**

Compound **2l**[3] was synthesized according to the General Procedure. The reaction of 3-chlorobenzenesulfonyl azide **1l** (43.3 mg, 0.200 mmol, 1.0 equiv.), Bn$_3$N (86.1 mg, 0.300 mmol, 1.5 equiv.) and 9-mesityl-10-methylacridinium perchlorate (4.1 mg, 0.010 mmol, 5 mol%) in CH$_3$CN (2.0 mL) delivered **2l** (31.7 mg, 83%) as a white solid after purification via silica gel column chromatography (Rf = 0.4, ethyl acetate/ petroleum ether =2:1). ^{1}**H NMR** (600 MHz, DMSO-d$_6$) δ 7.85 (t, *J* = 1.8 Hz, 1H), 7.80-7.77 (m, 1H), 7.71-7.66 (m, 1H), 7.62 (t, *J* = 7.8 Hz, 1H), 7.52 (s, 2H); ^{13}**C NMR** (150 MHz, DMSO-d$_6$) δ 146.0, 133.6, 131.9, 131.2, 125.5, 124.4.



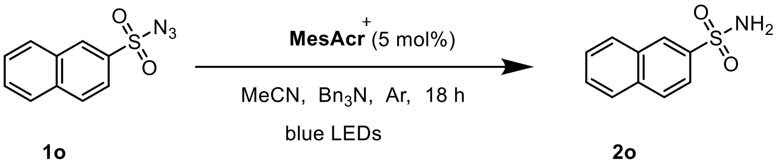
1m **2m**

Compound **2m**[6] was synthesized according to the General Procedure. The reaction of 3-bromobenzenesulfonyl azide **1m** (52.2 mg, 0.200 mmol, 1.0 equiv.), Bn$_3$N (86.1 mg, 0.300 mmol, 1.5 equiv.) and 9-mesityl-10-methylacridinium perchlorate (4.1 mg, 0.010 mmol, 5 mol%) in CH$_3$CN (2.0 mL) delivered **2m** (35.2 mg, 75%) as a white solid after purification via silica gel column chromatography (Rf = 0.58, ethyl acetate/ petroleum ether =2:1). ^{1}**H NMR** (600 MHz, DMSO-d$_6$) δ 7.98 (t, *J* = 1.8 Hz, 1H), 7.85-7.80 (m, 2H), 7.55 (t, *J* = 7.8 Hz, 1H), 7.51 (s, 2H); ^{13}**C NMR** (150 MHz, DMSO-d$_6$) δ 146.2, 134.7, 131.4, 128.3, 124.7, 121.9.

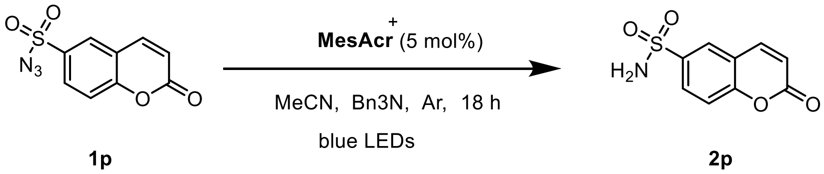


1n **2n**

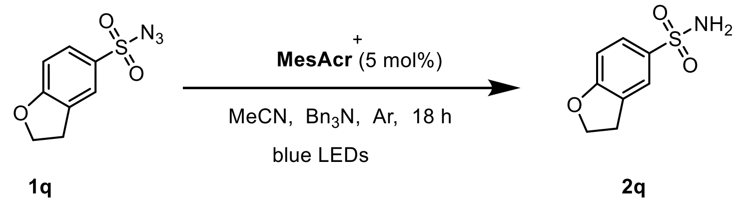
Compound **2n**[2] was synthesized according to the General Procedure. The reaction of benzenesulfonyl azide **1n** (36.6 mg, 0.200 mmol, 1.0 equiv.), Bn_3N (86.1 mg, 0.300 mmol, 1.5 equiv.) and 9-mesityl-10-methylacridinium perchlorate (4.1 mg, 0.010 mmol, 5 mol%) in CH_3CN (2.0 mL) delivered **2n** (27.6 mg, 88%) as a white solid after purification via silica gel column chromatography (Rf = 0.5, ethyl acetate/ petroleum ether =2:1). **^{1}H NMR** (600 MHz, $CDCl_3$) δ 7.94 (d, *J* = 7.2 Hz, 2H), 7.60 (t, *J* = 7.8 Hz, 1H), 7.53 (t, *J* = 7.8 Hz, 2H), 4.85 (s, 2H); **^{13}C NMR** (150 MHz, $CDCl_3$) δ 141.9, 132.8, 129.2, 126.4.



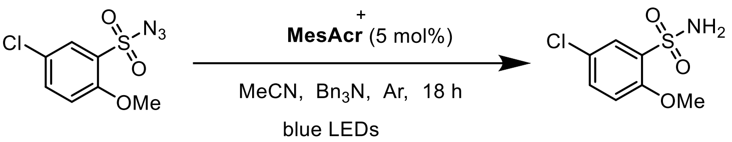
Compound **2o**[2] was synthesized according to the General Procedure. The reaction of naphthalene-2-sulfonyl azide **1o** (46.6 mg, 0.200 mmol, 1.0 equiv.), Bn_3N (86.1 mg, 0.300 mmol, 1.5 equiv.) and 9-mesityl-10-methylacridinium perchlorate (4.1 mg, 0.010 mmol, 5 mol%) in CH_3CN (2.0 mL) delivered **2o** (31.9 mg, 77%) as a white solid after purification via silica gel column chromatography (Rf = 0.48, ethyl acetate/ petroleum ether =2:1). **^{1}H NMR** (600 MHz, DMSO-d_6) δ 8.43 (d, *J* = 1.2 Hz, 1H), 8.16-8.10 (m, 2H), 8.03 (d, *J* = 7.8 Hz, 1H), 7.89 (dd, *J* = 2.4, 9.0 Hz, 1H), 7.72-7.63 (m, 2H), 7.45 (s, 2H); **^{13}C NMR** (150 MHz, DMSO-d_6) δ 141.3, 134.0, 131.8, 129.1, 128.5, 127.9, 127.6, 125.8, 122.2.



Compound **2p** was synthesized according to the General Procedure. The reaction of 2-oxo-*2H*-chromene-6-sulfonyl azide **1p** (50.2 mg, 0.200 mmol, 1.0 equiv.), Bn_3N (86.1 mg, 0.300 mmol, 1.5 equiv.) and 9-mesityl-10-methylacridinium perchlorate (4.1 mg, 0.010 mmol, 5 mol%) in CH_3CN (2.0 mL) delivered **2p** (39.1 mg, 87%) as a white solid after purification via silica gel column chromatography (Rf = 0.66, ethyl acetate/ petroleum ether =1:1). **^{1}H NMR** (600 MHz, DMSO-d_6) δ 8.23-8.20 (m, 2H), 8.01 (dd, *J* = 2.4, 8.4 Hz, 1H), 7.59 (d, *J* = 8.4 Hz, 1H), 7.49 (s, 2H), 6.62 (d, *J* = 9.6 Hz, 1H); **^{13}C NMR** (150 MHz, DMSO-d_6) δ 159.4, 155.3, 143.8, 140.3, 129.1, 126.3, 118.7, 117.7, 117.4; **HRMS (ESI)** Calcd for $C_9H_7NO_4S$ $[M+H]^+$ 226.0169, found 226.0170.

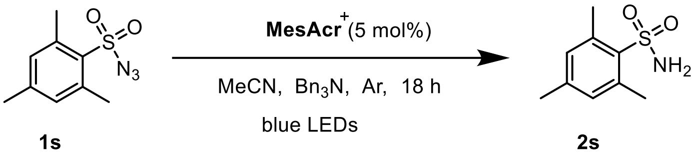


Compound **2q** was synthesized according to the General Procedure. The reaction of 2,3-dihydrobenzofuran-5-sulfonyl azide **1q** (45.0 mg, 0.200 mmol, 1.0 equiv.), Bn_3N (86.1 mg, 0.300 mmol, 1.5 equiv.) and 9-mesityl-10-methylacridinium perchlorate (4.1 mg, 0.010 mmol, 5 mol%) in CH_3CN (2.0 mL) delivered **2q** (33.8 mg, 85%) as a white solid after purification via silica gel column chromatography (Rf = 0.58, ethyl acetate/ petroleum ether =2:1). **^{1}H NMR** (600 MHz, DMSO-d_6) δ 7.67 (s, 1H), 7.58 (d, *J* = 8.4 Hz, 1H), 7.14 (s, 2H), 6.89 (d, *J* = 8.4 Hz, 1H), 4.62 (t, *J* = 9.0 Hz, 2H), 3.24 (t, *J* = 8.4 Hz, 2H); **^{13}C NMR** (150 MHz, DMSO-d_6) δ 162.4, 136.3, 128.4, 126.8, 123.1, 108.8, 72.1, 28.6; **HRMS (ESI)** Calcd for $C_8H_9NO_3S$ $[M+H]^+$ 200.0376, found 200.0376.



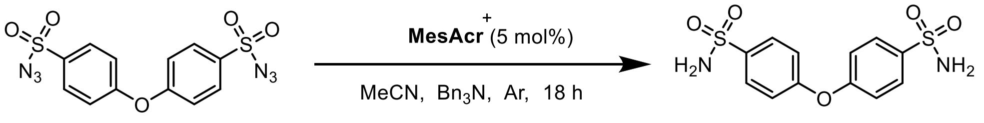
1r **2r**

Compound **2r** was synthesized according to the General Procedure. The reaction of 5-chloro-2-methoxybenzenesulfonyl azide **1r** (49.4 mg, 0.200 mmol, 1.0 equiv.), Bn_3N (86.1 mg, 0.300 mmol, 1.5 equiv.) and 9-mesityl-10-methylacridinium perchlorate (4.1 mg, 0.010 mmol, 5 mol%) in CH_3CN (2.0 mL) delivered **2r** (38.0 mg, 86%) as a white solid after purification via silica gel column chromatography (Rf = 0.45, ethyl acetate/ petroleum ether =2:1). **^{1}H NMR** (600 MHz, $CDCl_3$) δ 7.89 (d, *J* = 2.4 Hz, 1H), 7.50 (dd, *J* = 3.0, 9.0 Hz, 1H), 7.00 (d, *J* = 9.0 Hz, 1H), 5.08 (s, 2H), 4.01 (s, 3H); **^{13}C NMR** (150 MHz, $CDCl_3$) δ 154.5, 134.0, 131.2, 128.3, 126.0, 113.6, 56.8; **HRMS (ESI)** Calcd for $C_7H_8ClNO_3S$ $[M+H]^+$ 221.9986, found 221.9985.



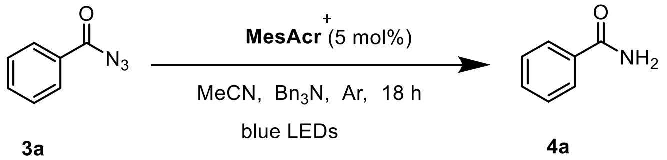
1s **2s**

Compound **2s**[4] was synthesized according to the General Procedure. The reaction of 2,4,6-trimethylbenzenesulfonyl azide **1s** (45.0 mg, 0.200 mmol, 1.0 equiv.), Bn_3N (86.1 mg, 0.300 mmol, 1.5 equiv.) and 9-mesityl-10-methylacridinium perchlorate (4.1 mg, 0.010 mmol, 5 mol%) in CH_3CN (2.0 mL) delivered **2s** (25.1 mg, 63%) as a white solid after purification via silica gel column chromatography (Rf = 0.5, ethyl acetate/ petroleum ether =2:1). **^{1}H NMR** (600 MHz, DMSO-d_6) δ 7.18 (s, 2H), 6.99 (s, 2H), 2.55 (s, 6 H), 2.24 (s, 3H); **^{13}C NMR** (150 MHz, DMSO-d_6) δ 140.6, 138.3, 137.2, 131.4, 22.7, 20.4.



1t **2t**

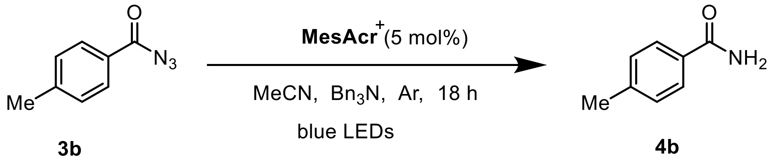
Compound **2t** was synthesized according to the General Procedure. The reaction of 4,4'-oxydibenzenesulfonyl azide **1t** (76.0 mg, 0.200 mmol, 1.0 equiv.), Bn_3N (86.1 mg, 0.300 mmol, 1.5 equiv.) and 9-mesityl-10-methylacridinium perchlorate (4.1 mg, 0.010 mmol, 5 mol%) in CH_3CN (2.0 mL) delivered **2t** (56.4 mg, 86%) as a white solid after purification via silica gel column chromatography (Rf = 0.6, ethyl acetate/ petroleum ether =1:1). **^{1}H NMR** (600 MHz, DMSO-d_6) δ 7.87 (d, *J* = 7.8 Hz, 4H), 7.37 (s, 4H), 7.24 (d, *J* = 8.4 Hz, 4H); **^{13}C NMR** (150 MHz, DMSO-d_6) δ 158.4, 139.8, 128.4, 119.1; **HRMS (ESI)** Calcd for $C_{12}H_{12}N_2O_5S_2$ $[M+H]^+$ 329.0260, found 329.0258.



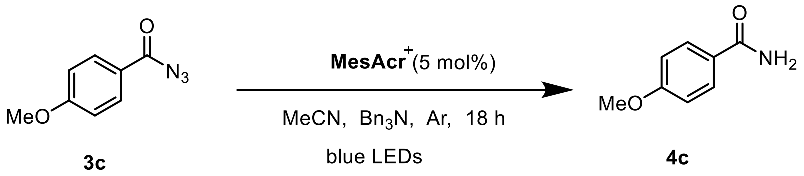
3a **4a**

Compound **4a**[7] was synthesized according to the General Procedure. The reaction of benzoyl azide **3a** (29.4 mg, 0.200 mmol, 1.0 equiv.), Bn_3N (86.1 mg, 0.300 mmol, 1.5 equiv.) and 9-mesityl-10-methylacridinium perchlorate (4.1 mg, 0.010 mmol, 5 mol%) in CH_3CN (2.0 mL) delivered **4a** (20.8 mg, 86%) as a white solid after purification via silica gel column chromatography (Rf = 0.5, ethyl acetate/

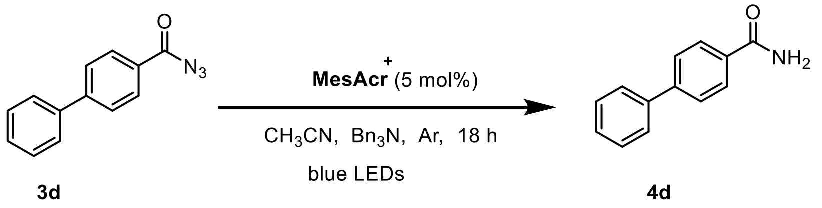
petroleum ether =2:1). ^{1}**H NMR** (600 MHz, $CDCl_3$) δ 7.82 (d, *J* = 7.8 Hz, 2H), 7.52 (t, *J* = 7.8 Hz, 1H), 7.44 (t, *J* = 7.8 Hz, 2H), 6.27 (s, 2H); ^{13}**C NMR** (150 MHz, $CDCl_3$) δ 169.5, 133.4, 132.0, 128.6, 127.3.



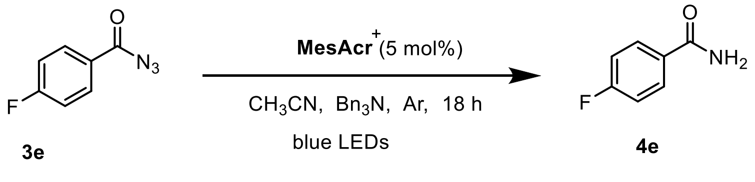
Compound **4b**[7] was synthesized according to the General Procedure. The reaction of 4-methylbenzoyl azide **3b** (32.2 mg, 0.200 mmol, 1.0 equiv.), Bn_3N (86.1 mg, 0.300 mmol, 1.5 equiv.) and 9-mesityl-10-methylacridinium perchlorate (4.1 mg, 0.010 mmol, 5 mol%) in CH_3CN (2.0 mL) delivered **4b** (24.0 mg, 89%) as a white solid after purification via silica gel column chromatography (Rf = 0.5, ethyl acetate/ petroleum ether =2:1). ^{1}**H NMR** (600 MHz, $CDCl_3$) δ 7.71 (d, *J* = 8.4 Hz, 2H), 7.24 (d, *J* = 7.8 Hz, 2H), 6.21-5.81 (br, 2H), 2.40 (s, 3H); ^{13}**C NMR** (150 MHz, $CDCl_3$) δ 169.4, 142.5, 130.5, 129.2, 127.4, 21.5.



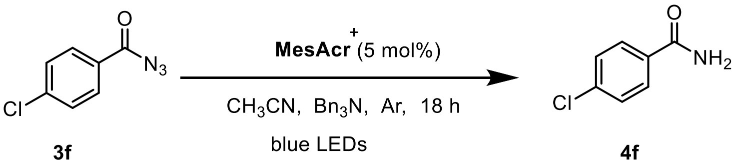
Compound **4c**[7] was synthesized according to the General Procedure. The reaction of 4-methoxybenzoyl azide **3c** (35.4 mg, 0.200 mmol, 1.0 equiv.), Bn_3N (86.1 mg, 0.300 mmol, 1.5 equiv.) and 9-mesityl-10-methylacridinium perchlorate (4.1 mg, 0.010 mmol, 5 mol%) in CH_3CN (2.0 mL) delivered **4c** (26.9 mg, 89%) as a white solid after purification via silica gel column chromatography (Rf = 0.5, ethyl acetate/ petroleum ether =2:1). ^{1}**H NMR** (600 MHz, $CDCl_3$) δ 7.78 (d, *J* = 9.0 Hz, 2H), 6.94 (d, *J* = 8.4 Hz, 2H), 6.23-5.51 (br, 2H), 3.86 (s, 3H); ^{13}**C NMR** (150 MHz, $CDCl_3$) δ 162.6, 129.3, 125.6, 113.8, 55.4.



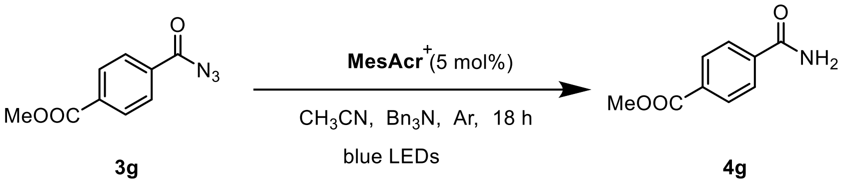
Compound **4d** was synthesized according to the General Procedure. The reaction of methyl [1,1'-biphenyl]-4-carbonyl azide **3d** (44.6 mg, 0.200 mmol, 1.0 equiv.), Bn_3N (86.1 mg, 0.300 mmol, 1.5 equiv.) and 9-mesityl-10-methylacridinium perchlorate (4.1 mg, 0.010 mmol, 5 mol%) in CH_3CN (2.0 mL) delivered **4d** (34.7 mg, 88%) as a white solid after purification via silica gel column chromatography (Rf = 0.5, ethyl acetate/ petroleum ether =2:1). ^{1}**H NMR** (600 MHz, DMSO-d_6) δ 8.02 (s, 1H), 7.97 (d, *J* = 7.2 Hz, 2H), 7.79-7.69 (m, 4H), 7.49 (t, *J* = 6.6 Hz, 2H), 7.43-7.35 (m, 2H); ^{13}**C NMR** (150 MHz, DMSO-d_6) δ 167.6, 142.8, 139.3, 133.2, 129.1, 128.2, 128.1, 127.0, 126.5; **HRMS (ESI)** Calcd for $C_{13}H_{11}NO$ $[M+H]^+$ 198.0913, found 198.0915.



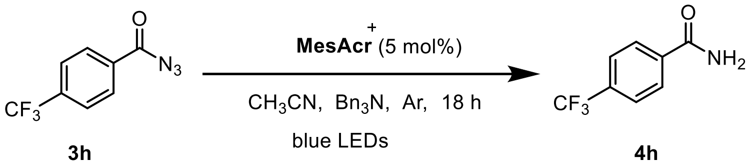
Compound **4e**[8] was synthesized according to the General Procedure. The reaction of 4-fluorobenzoyl azide **3e** (33.0 mg, 0.200 mmol, 1.0 equiv.), Bn_3N (86.1 mg, 0.300 mmol, 1.5 equiv.) and 9-mesityl-10-methylacridinium perchlorate (4.1 mg, 0.010 mmol, 5 mol%) in CH_3CN (2.0 mL) delivered **4e** (22.0 mg, 79%) as a white solid after purification via silica gel column chromatography (Rf = 0.46, ethyl acetate/ petroleum ether =2:1)). **^{1}H NMR** (600 MHz, $CDCl_3$) δ 7.83 (s, 2H), 7.13 (s, 2H), 6.19-5.66 (br, 2H); **^{13}C NMR** (150 MHz, $CDCl_3$) δ 168.2, 165.9, 164.2, 129.8 (d, *J* = 9.0 Hz), 129.5 (d, *J* = 3.0 Hz), 115.7 (d, *J* = 22.5 Hz); **^{19}F NMR** (565 MHz, $CDCl_3$) δ -107.3.



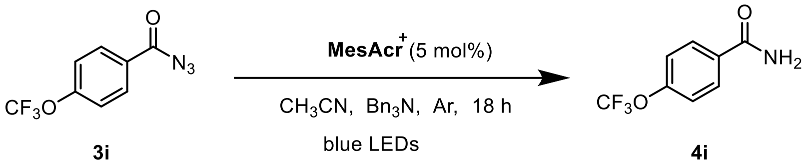
Compound **4f**[7] was synthesized according to the General Procedure. The reaction of 4-chlorobenzoyl azide **3f** (36.2 mg, 0.200 mmol, 1.0 equiv.), Bn_3N (86.1 mg, 0.300 mmol, 1.5 equiv.) and 9-mesityl-10-methylacridinium perchlorate (4.1 mg, 0.010 mmol, 5 mol%) in CH_3CN (2.0 mL) delivered **4f** (26.7 mg, 86%) as a white solid after purification via silica gel column chromatography (Rf = 0.46, ethyl acetate/ petroleum ether =2:1). **^{1}H NMR** (600 MHz, DMSO-d_6) δ 8.04 (s, 1H), 7.89 (d, *J* = 8.4 Hz, 2H), 7.52 (d, *J* = 8.4 Hz, 2H), 7.46 (s, 1H); **^{13}C NMR** (150 MHz, DMSO-d_6) δ 166.9, 136.2, 133.1, 129.5, 128.4.



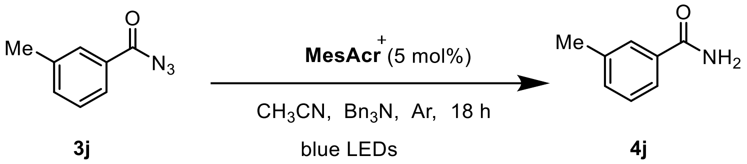
Compound **4g** was synthesized according to the General Procedure. The reaction of methyl 4-(azidocarbonyl)benzoate **3g** (41.0 mg, 0.200 mmol, 1.0 equiv.), Bn_3N (86.1 mg, 0.300 mmol, 1.5 equiv.) and 9-mesityl-10-methylacridinium perchlorate (4.1 mg, 0.010 mmol, 5 mol%) in CH_3CN (2.0 mL) delivered **4g** (30.4 mg, 85%) as a white solid after purification via silica gel column chromatography (Rf = 0.5, ethyl acetate/ petroleum ether =1:1). **^{1}H NMR** (600 MHz, DMSO-d_6) δ 8.15 (s, 1H), 8.05-7.95 (m, 4H), 7.57 (s, 1H), 3.87 (s, 3H); **^{13}C NMR** (150 MHz, DMSO-d_6) δ 167.1, 165.8, 138.5, 131.9, 129.1, 127.9, 52.4; **HRMS (ESI)** Calcd for $C_9H_9NO_3$ $[M+H]^+$ 180.0655, found 234.0538.



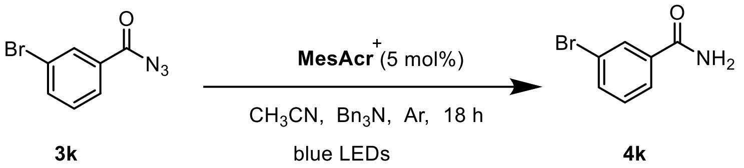
Compound **4h**[8] was synthesized according to the General Procedure. The reaction of 4-(trifluoromethyl)benzoyl azide **3h** (43.0 mg, 0.200 mmol, 1.0 equiv.), Bn_3N (86.1 mg, 0.300 mmol, 1.5 equiv.) and 9-mesityl-10-methylacridinium perchlorate (4.1 mg, 0.010 mmol, 5 mol%) in CH_3CN (2.0 mL) delivered **4h** (30.2 mg, 80%) as a white solid after purification via silica gel column chromatography (Rf = 0.45, ethyl acetate/ petroleum ether =2:1). **^{1}H NMR** (600 MHz, DMSO-d_6) δ 8.19 (s, 1H), 8.06 (d, *J* = 7.8 Hz, 2H), 7.83 (d, *J* = 7.8 Hz, 2H), 7.62 (s, 1H); **^{13}C NMR** (150 MHz, DMSO-d_6) δ 166.8, 138.2, 131.3 (q, *J* = 31.5 Hz), 128.4, 124.1 (q, *J* = 271.5 Hz), 125.3 (q, *J* = 3.0 Hz); **^{19}F NMR** (565 MHz, DMSO-d_6) δ -61.4.



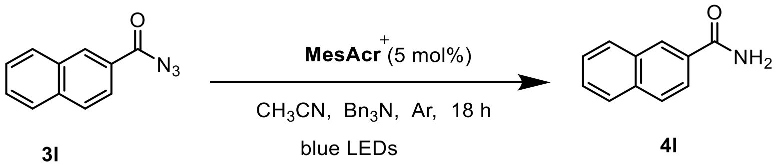
Compound **4i** was synthesized according to the General Procedure. The reaction of methyl 4-(trifluoromethoxy)benzoyl azide **3i** (46.2 mg, 0.200 mmol, 1.0 equiv.), Bn_3N (86.1 mg, 0.300 mmol, 1.5 equiv.) and 9-mesityl-10-methylacridinium perchlorate (4.1 mg, 0.010 mmol, 5 mol%) in CH_3CN (2.0 mL) delivered **4i** (33.6 mg, 82%) as a white solid after purification via silica gel column chromatography (Rf = 0.5, ethyl acetate/ petroleum ether =2:1). **^{1}H NMR** (600 MHz, DMSO-d$_6$) δ 8.07 (s, 1H), 7.99 (d, *J* = 8.4 Hz, 2H), 7.49 (s, 1H), 7.44 (d, *J* = 8.4 Hz, 2H); **^{13}C NMR** (150 MHz, DMSO-d$_6$) δ 166.7, 150.4, 133.5, 129.9, 120.9, 120.6, 119.2; **^{19}F NMR** (565 MHz, $CDCl_3$) δ -56.7; **HRMS (ESI)** Calcd for $C_8H_6F_3NO_2$ $[M+H]^+$ 206.0423, found 206.0428.



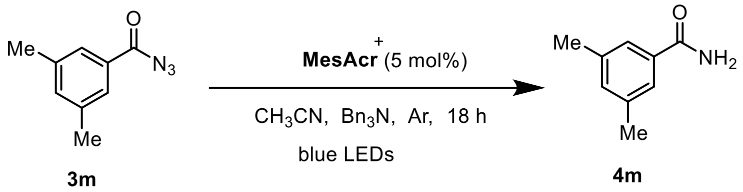
Compound **4j** was synthesized according to the General Procedure. The reaction of 3-methylbenzoyl azide **3j** (32.2 mg, 0.200 mmol, 1.0 equiv.), Bn_3N (86.1 mg, 0.300 mmol, 1.5 equiv.) and 9-mesityl-10-methylacridinium perchlorate (4.1 mg, 0.010 mmol, 5 mol%) in CH_3CN (2.0 mL) delivered **4j** (23.2 mg, 86%) as a white solid after purification via silica gel column chromatography (Rf = 0.5, ethyl acetate/ petroleum ether =2:1). **^{1}H NMR** (600 MHz, $CDCl_3$) δ 7.64 (s, 1H), 7.58 (d, *J* = 6.6 Hz, 1H), 7.34-7.28 (m, 2H), 6.47-6.23 (br, 2H), 2.38 (s, 3H); **^{13}C NMR** (150 MHz, $CDCl_3$) δ 170.0, 138.4, 133.3, 132.6, 128.4, 128.0, 124.3, 21.2; **HRMS (ESI)** Calcd for C_8H_9NO $[M+H]^+$ 136.0757, found 136.0757.



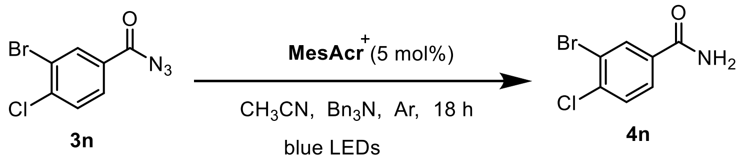
Compound **4k** was synthesized according to the General Procedure. The reaction of 3-bromobenzoyl azide **3k** (45.0 mg, 0.200 mmol, 1.0 equiv.), Bn_3N (86.1 mg, 0.300 mmol, 1.5 equiv.) and 9-mesityl-10-methylacridinium perchlorate (4.1 mg, 0.010 mmol, 5 mol%) in CH_3CN (2.0 mL) delivered **4k** (33.8 mg, 85%) as a white solid after purification via silica gel column chromatography (Rf = 0.42, ethyl acetate/ petroleum ether =2:1). **^{1}H NMR** (600 MHz, DMSO-d$_6$) δ 8.09 (s, 1H), 8.05 (t, *J* = 1.8 Hz, 1H), 7.90-7.86 (m, 1H), 7.75-7.69 (m, 1H), 7.43 (s, 1H), 7.42 (t, *J* = 7.8 Hz, 1H); **^{13}C NMR** (150 MHz, DMSO-d$_6$) δ 166.4, 136.6, 134.1, 130.6, 130.3, 126.6, 121.7; **HRMS (ESI)** Calcd for $C_7H_6BrNO[M+H]^+$ 199.9706, found 199.9708.



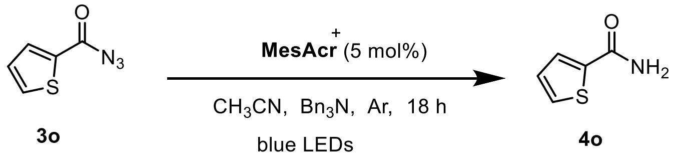
Compound **4l**[7] was synthesized according to the General Procedure. The reaction of methyl 2-naphthoyl azide **3l** (39.4 mg, 0.200 mmol, 1.0 equiv.), Bn$_3$N (86.1 mg, 0.300 mol, 1.5 equiv.) and 9-mesityl-10-methylacridinium perchlorate (4.1 mg, 0.010 mmol, 5 mmol%) in CH$_3$CN (2.0 mL) delivered **4l** (27.7 mg, 81%) as a white solid after purification via silica gel column chromatography (Rf = 0.5, ethyl acetate/ petroleum ether =2:1). **^{1}H NMR** (600 MHz, DMSO-d$_6$) δ 8.49 (s, 1H), 8.14 (s, 1H), 8.02-7.95 (m, 4H), 7.63-7.56 (m, 2H), 7.47 (s, 1H); **^{13}C NMR** (150 MHz, DMSO-d$_6$) δ 168.0, 134.2, 132.2, 131.7, 128.9, 127.9, 127.8, 127.7, 127.6, 126.7, 124.5; **HRMS (ESI)** Calcd for C$_{11}$H$_9$NO [M+H]$^+$ 172.0757, found 172.0755.



Compound **4m** was synthesized according to the General Procedure. The reaction of 3,5-dimethylbenzoyl azide **3m** (35.0 mg, 0.200 mmol, 1.0 equiv.), Bn$_3$N (86.1 mg, 0.300 mmol, 1.5 equiv.) and 9-mesityl-10-methylacridinium perchlorate (4.1 mg, 0.010 mmol, 5 mol%) in CH$_3$CN (2.0 mL) delivered **4m** (23.6 mg, 86%) as a white solid after purification via silica gel column chromatography (Rf = 0.5, ethyl acetate/ petroleum ether =2:1). **^{1}H NMR** (600 MHz, CDCl$_3$) δ 7.42 (s, 2H), 7.15 (s, 1H), 6.26-5.96 (br, 2H), 2.35 (s, 6H); **^{13}C NMR** (150 MHz, CDCl$_3$) δ 170.0, 138.3, 133.6, 133.3, 125.1, 21.2; **HRMS (ESI)** Calcd for C$_9$H$_{11}$NO [M+H]$^+$ 150.0913, found 150.0910.



Compound **4n** was synthesized according to the General Procedure. The reaction of 3-bromo-4-chlorobenzoyl azide **3n** (51.8 mg, 0.200 mmol, 1.0 equiv.), Bn$_3$N (86.1 mg, 0.300 mmol, 1.5 equiv.) and 9-mesityl-10-methylacridinium perchlorate (4.1 mg, 0.010 mmol, 5 mol%) in CH$_3$CN (2.0 mL) delivered **4n** (39.1 mg, 84%) as a white solid after purification via silica gel column chromatography (Rf = 0.45, ethyl acetate/ petroleum ether =2:1). **^{1}H NMR** (600 MHz, DMSO-d$_6$) δ 8.23 (d, *J* = 1.8 Hz, 1H), 8.14 (s, 1H), 7.88 (dd, *J* = 1.8, 8.4 Hz, 1H), 7.71 (d, *J* = 8.4 Hz, 1H), 7.59 (s, 1H); **^{13}C NMR** (150 MHz, DMSO-d$_6$) δ 165.6, 136.2, 134.7, 132.8, 130.6, 128.4, 121.6; **HRMS (ESI)** Calcd for C$_7$H$_5$BrClNO [M+H]$^+$ 233.9316, found 233.9317.



Compound **4o**[7] was synthesized according to the General Procedure. The reaction of thiophene-2-carbonyl azidez **3o** (30.6 mg, 0.200 mmol, 1.0 equiv.), Bn$_3$N (86.1 mg, 0.300 mmol, 1.5 equiv.) and 9-mesityl-10-methylacridinium perchlorate (4.1 mg, 0.010 mmol, 5 mol%) in CH$_3$CN (2.0 mL) delivered **4o** (20.8 mg, 82%) as a white solid after purification via silica gel column chromatography (Rf = 0.48, ethyl acetate/ petroleum ether =2:1). **^{1}H NMR** (600 MHz, DMSO-d$_6$) δ 7.95 (s, 1H), 7.76-7.70 (m, 2H), 7.37 (s, 1H), 7.12 (t, *J* = 4.2 Hz, 1H); **^{13}C NMR** (150 MHz, DMSO-d$_6$) δ 163.0, 140.4, 131.1, 128.8, 128.0.

2.7. References

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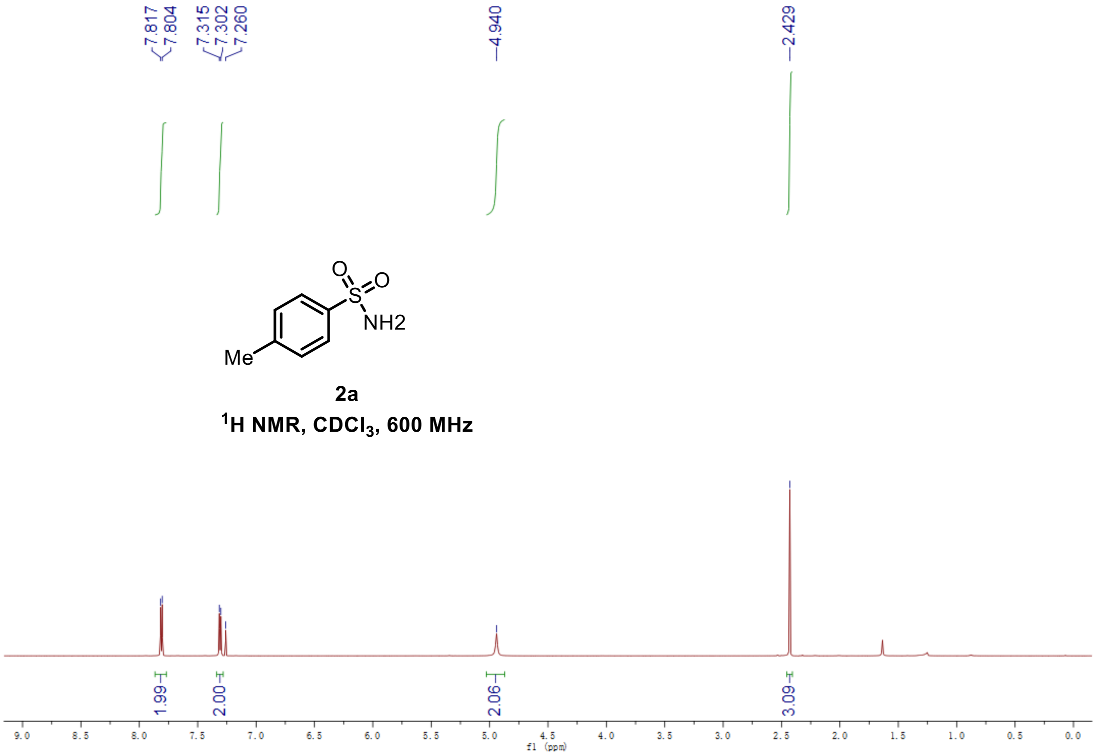
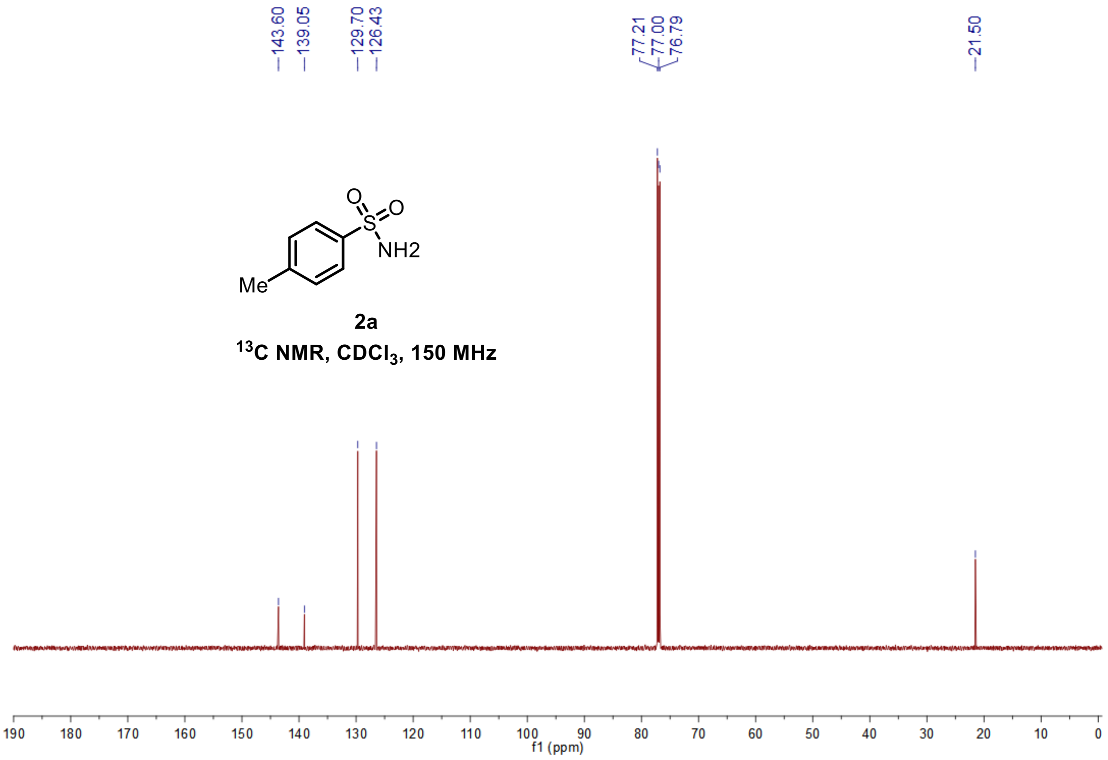
. NMR Spectra for Compounds



2a

^{1}H NMR, CDCl$_3$, 600 MHz



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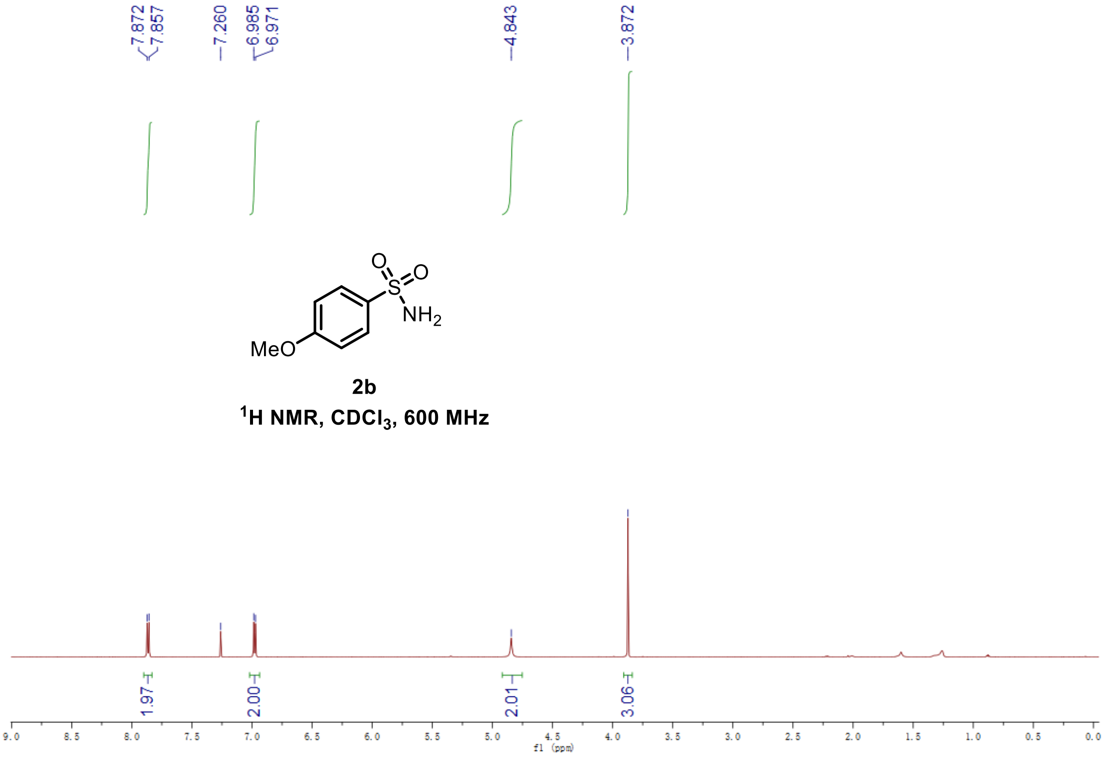

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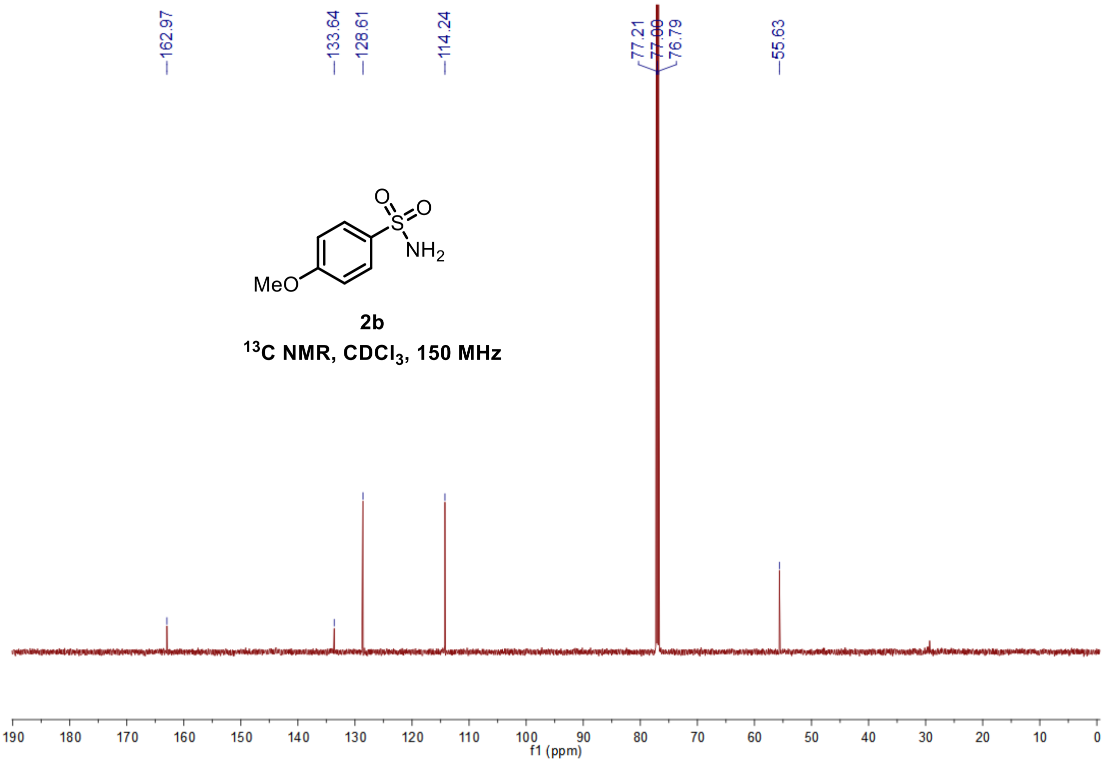

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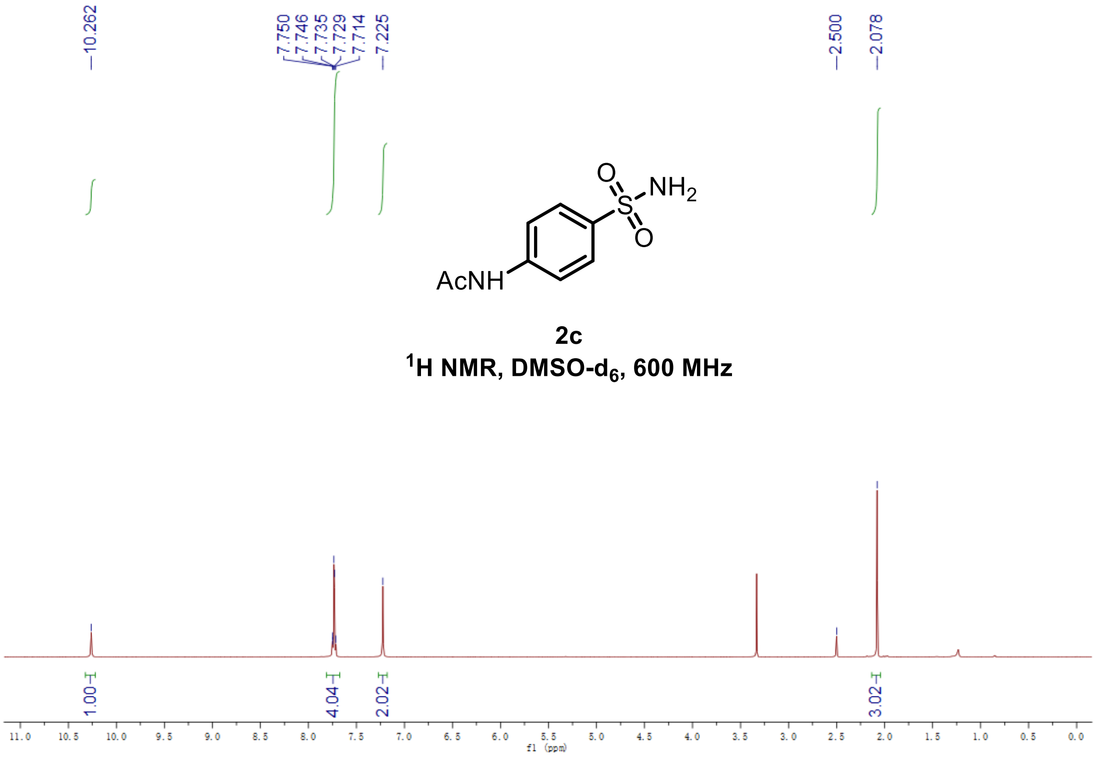

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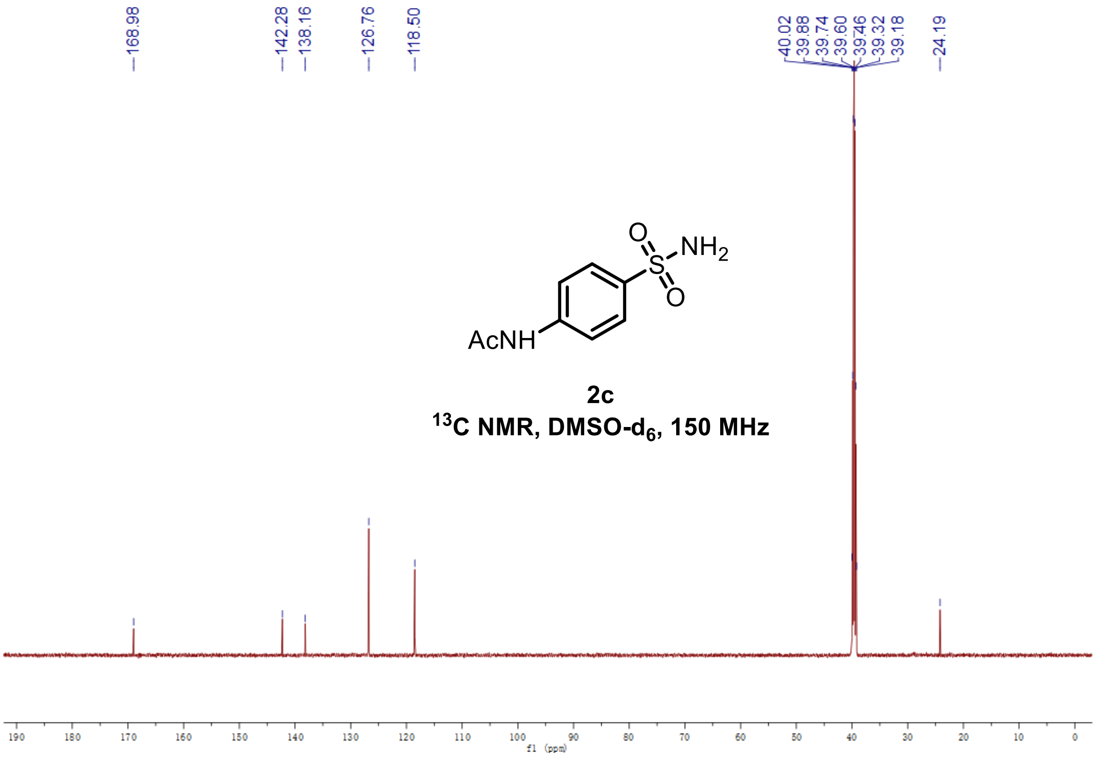
^1H **NMR, DMSO-**d_6**, 600 MHz**



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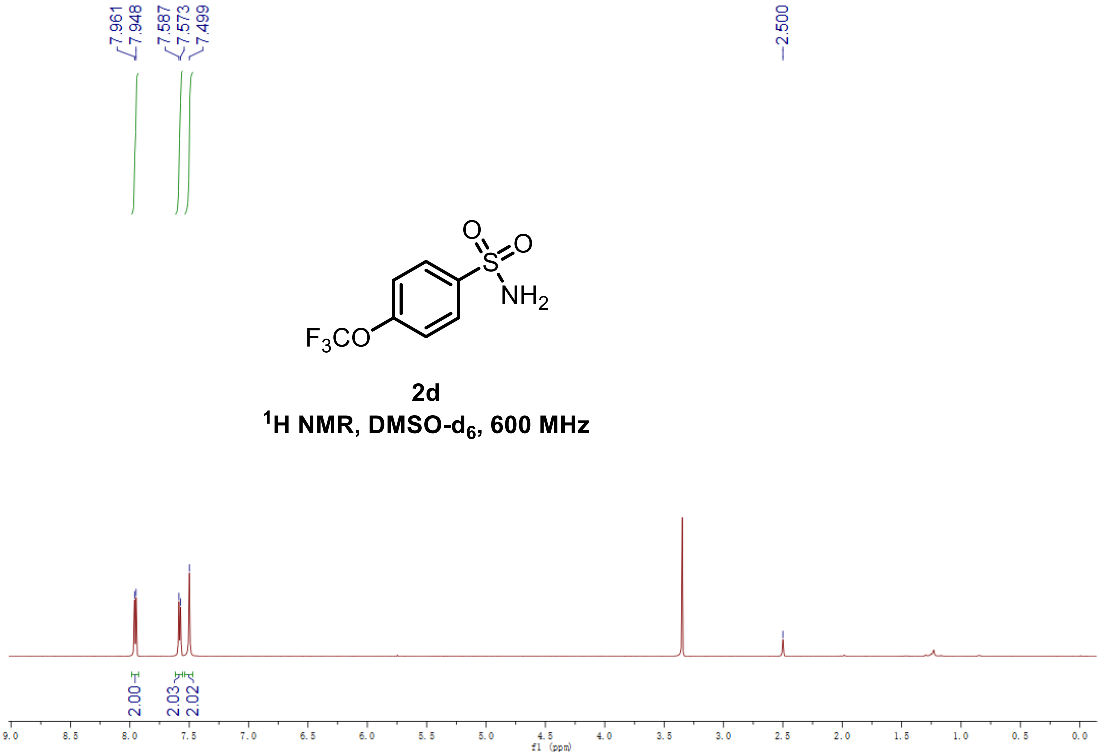

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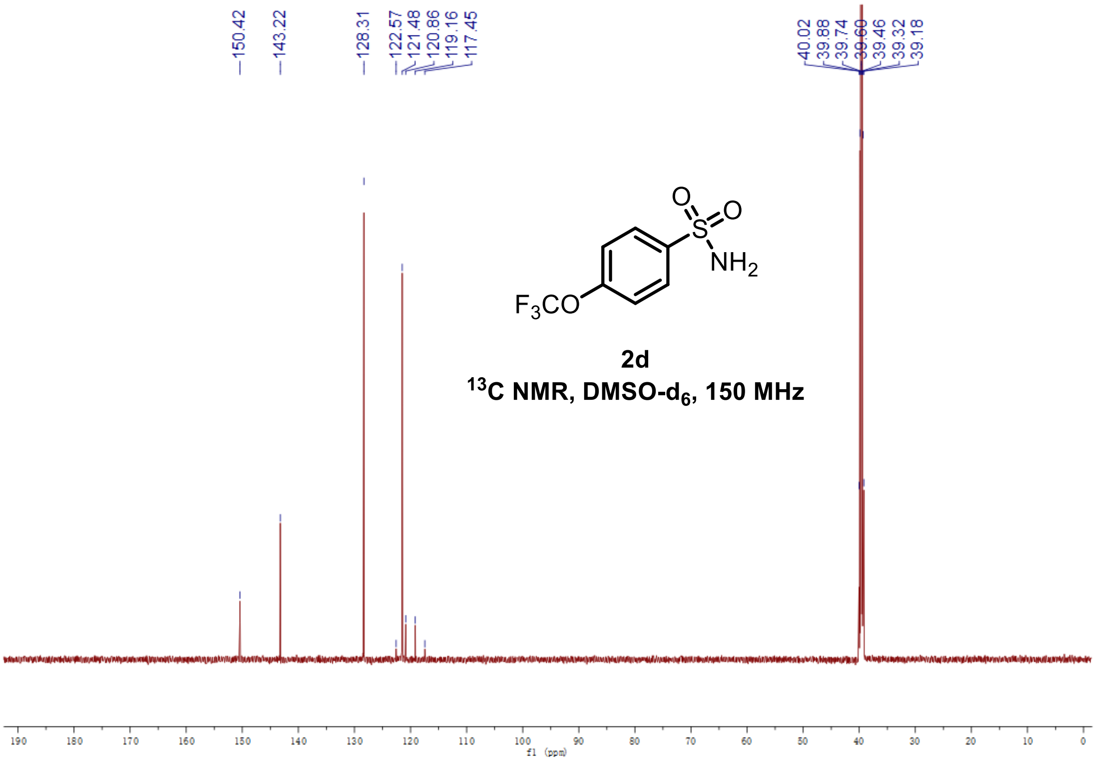

2d
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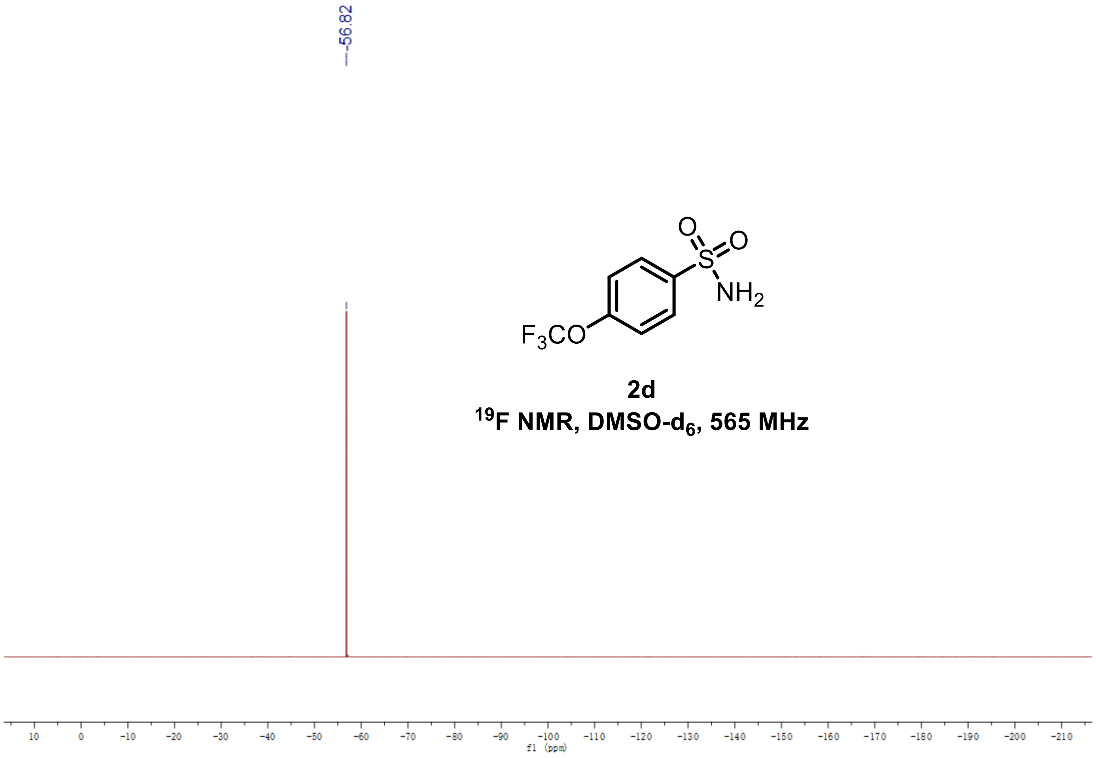

2d

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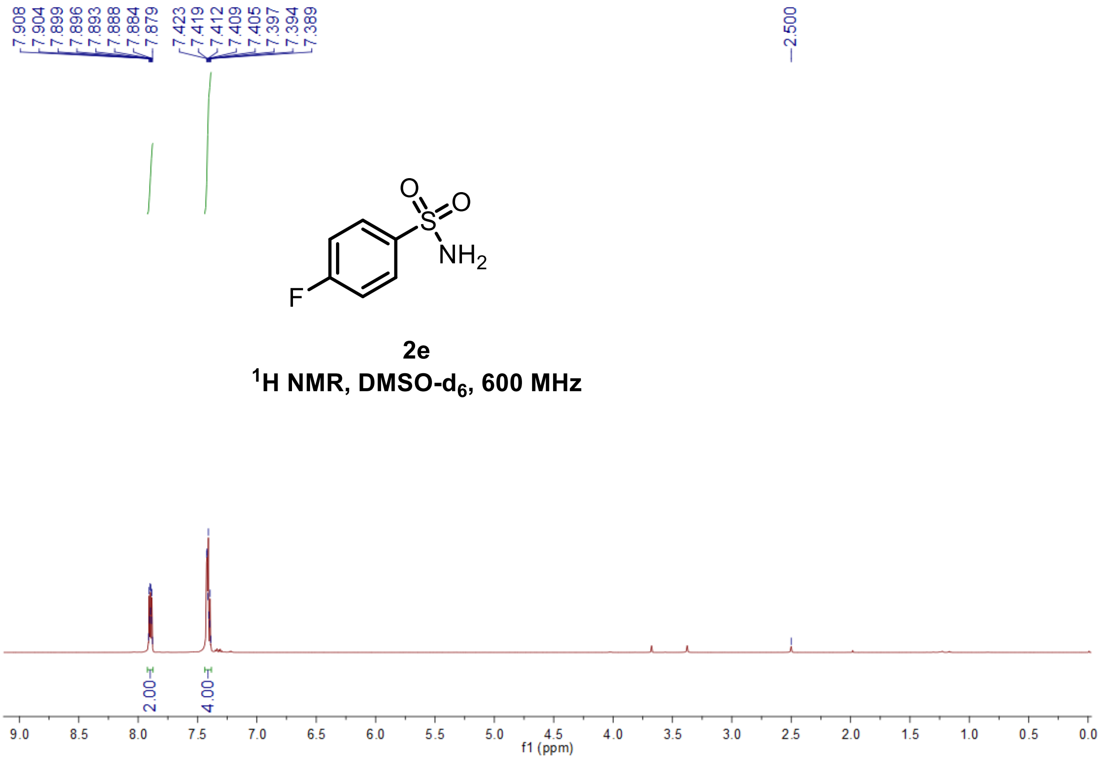

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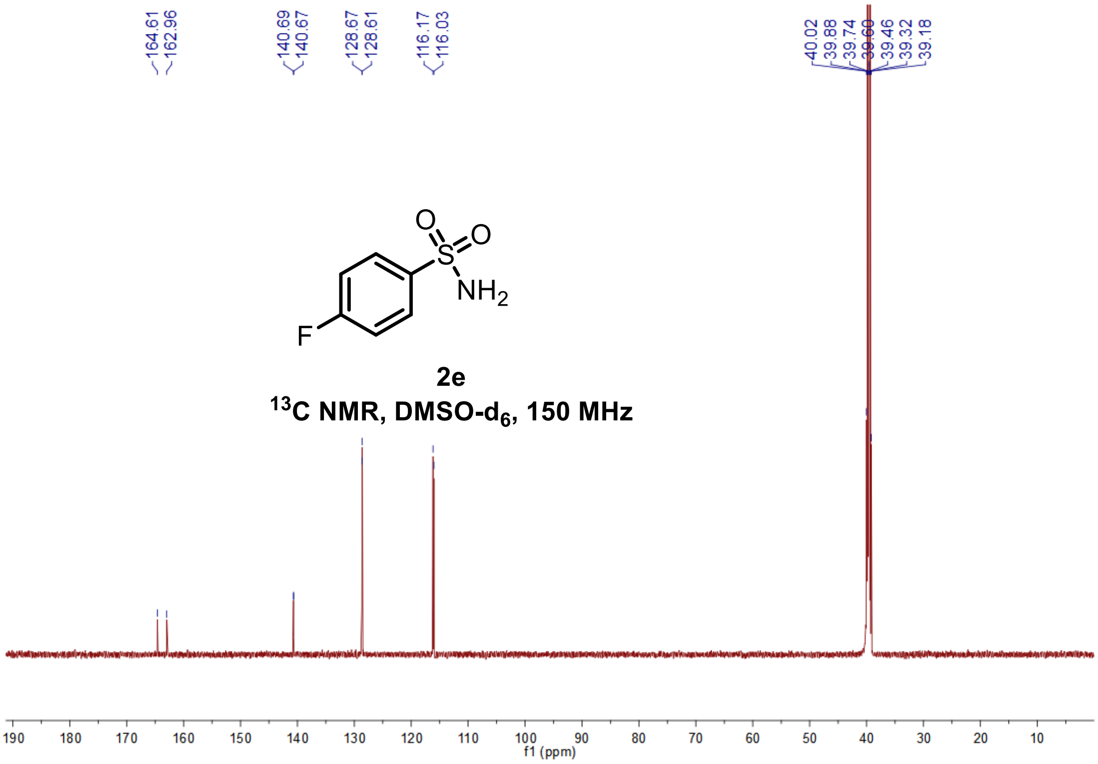

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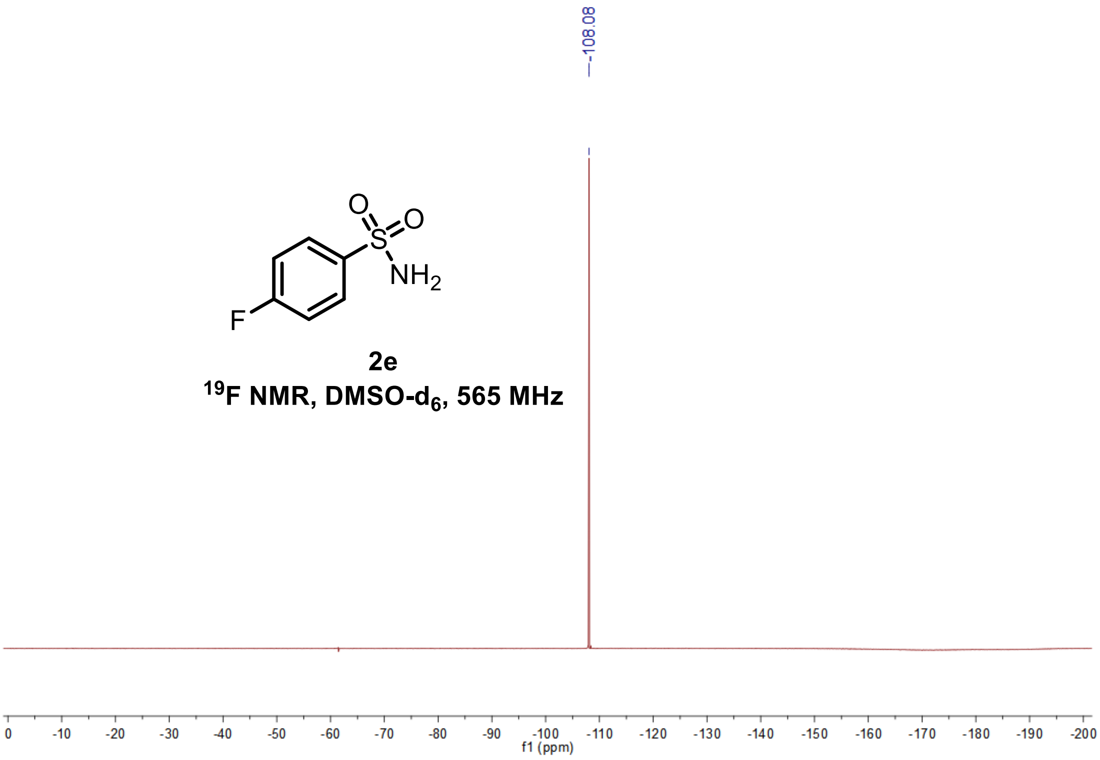
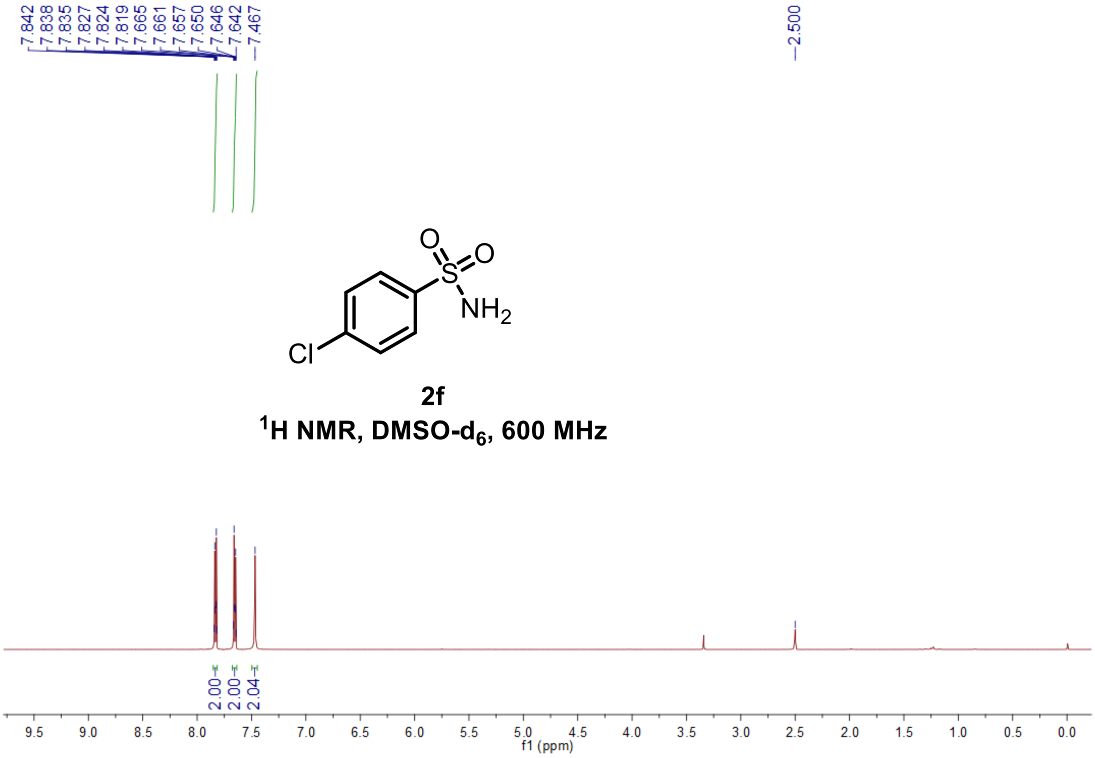


2e

^{19}F NMR, DMSO-d_6, 565 MHz



2f

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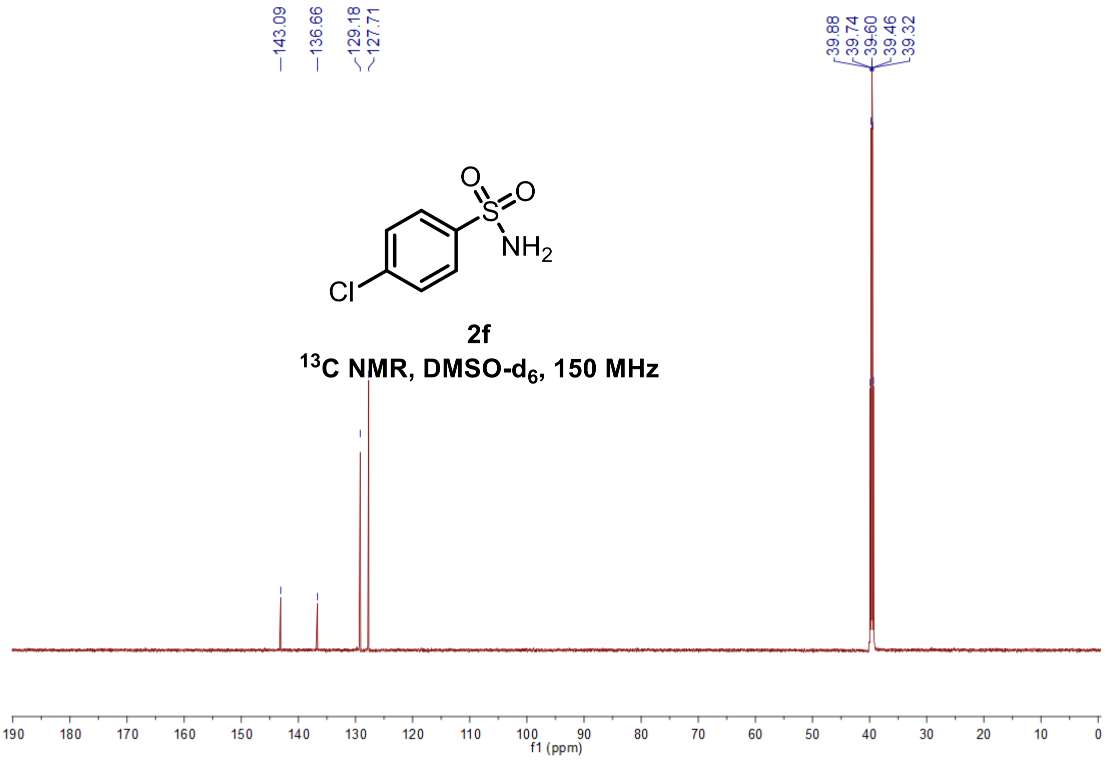

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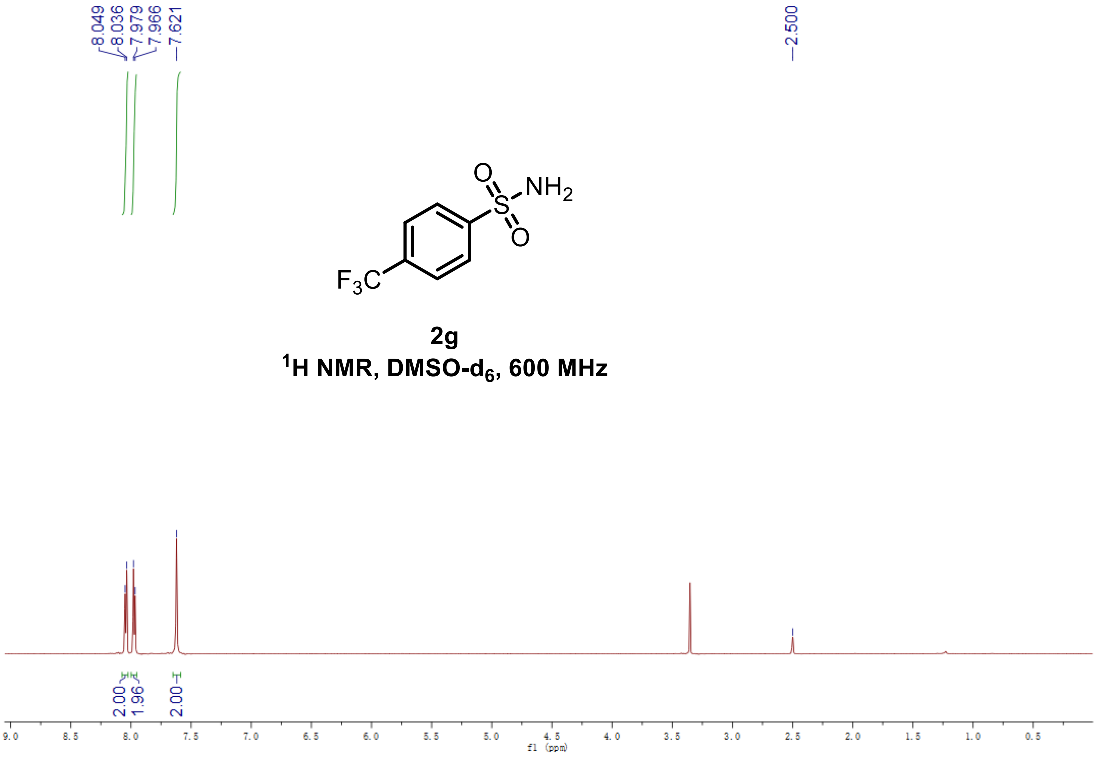

2g
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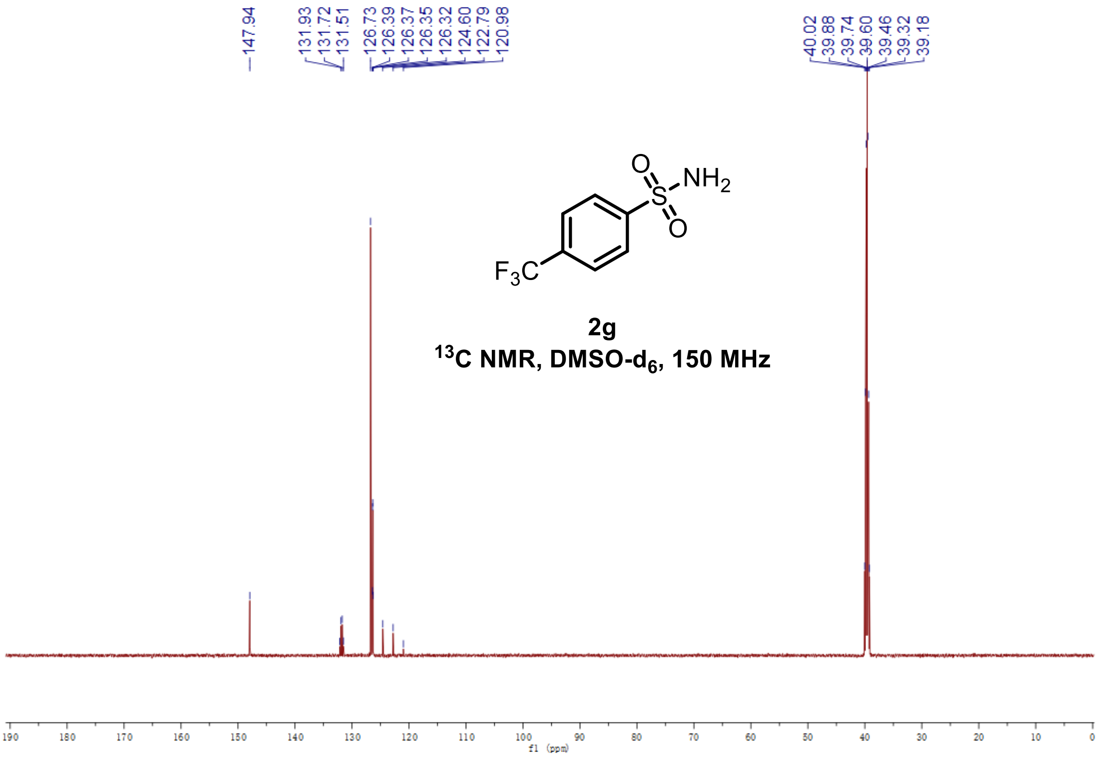

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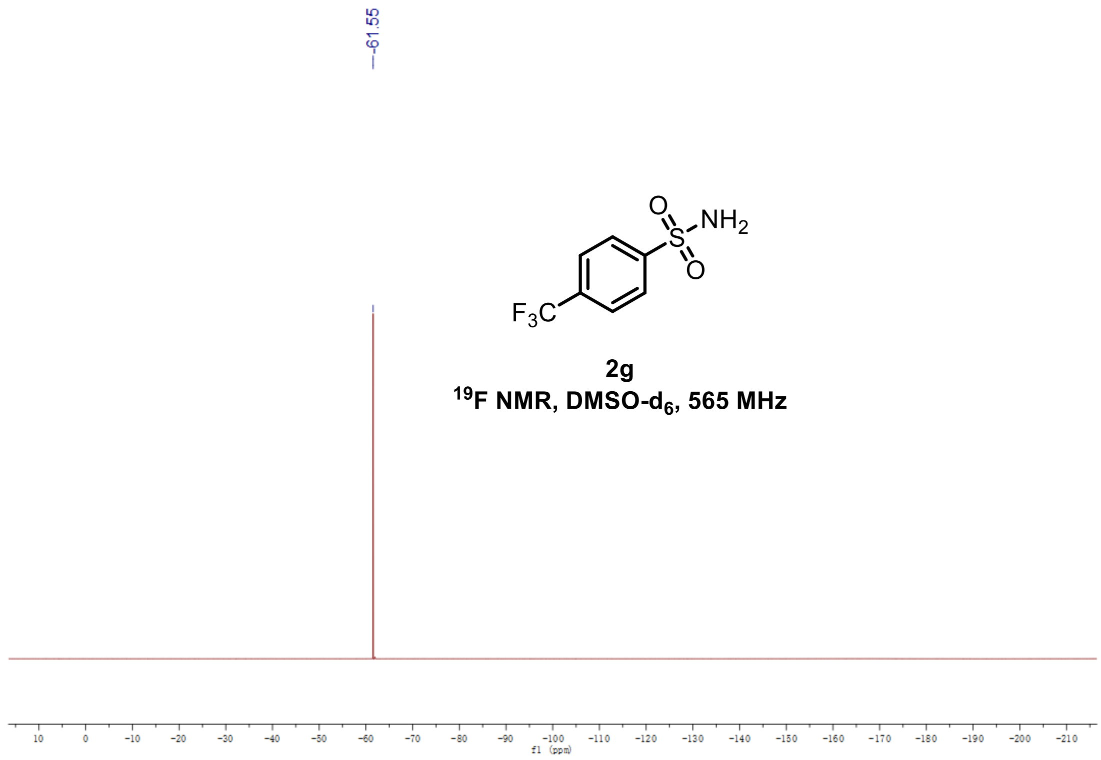

2g

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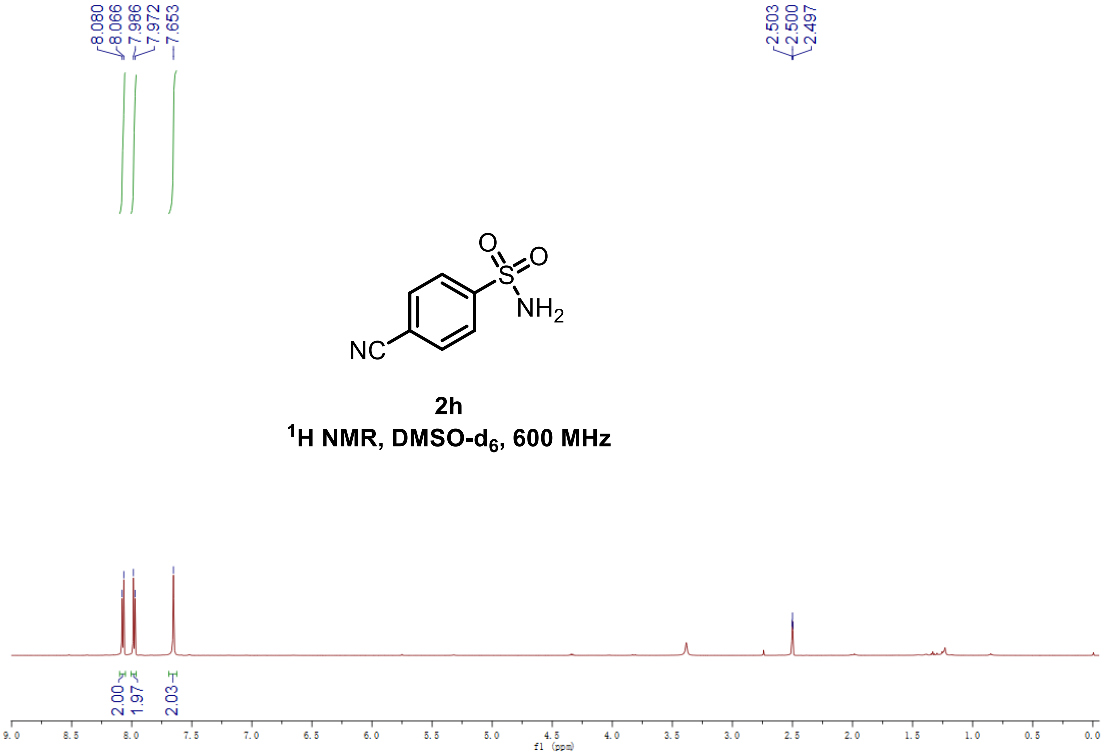

2h

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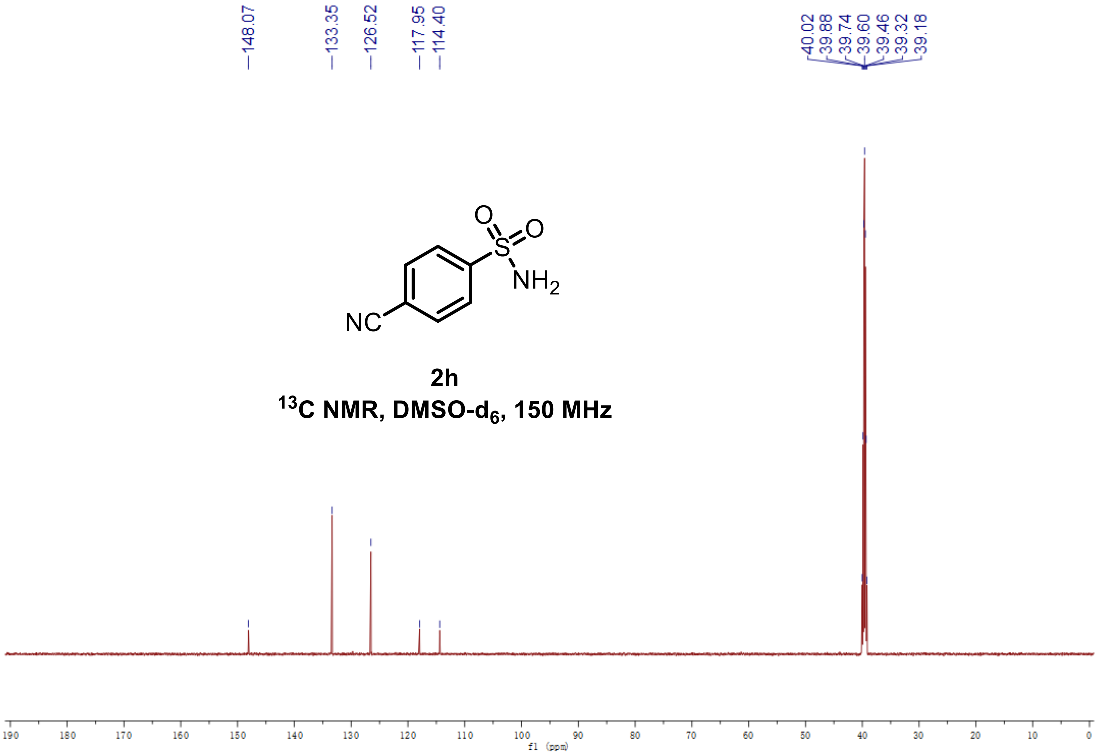

2h

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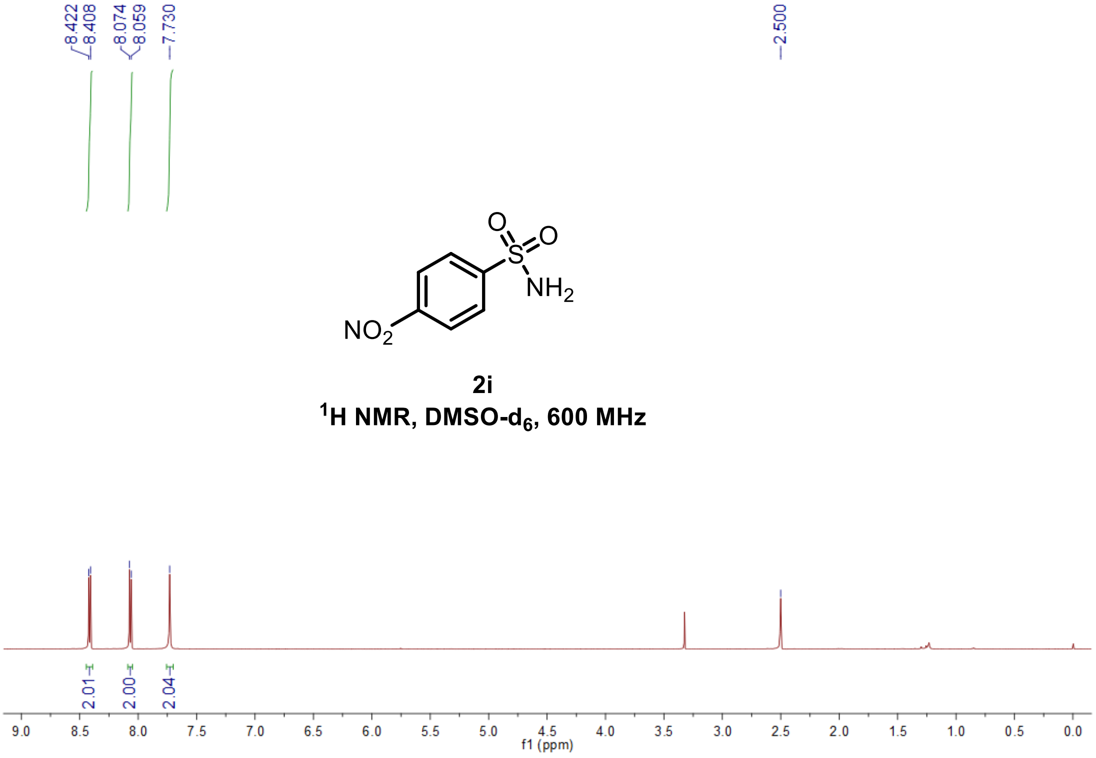

2i

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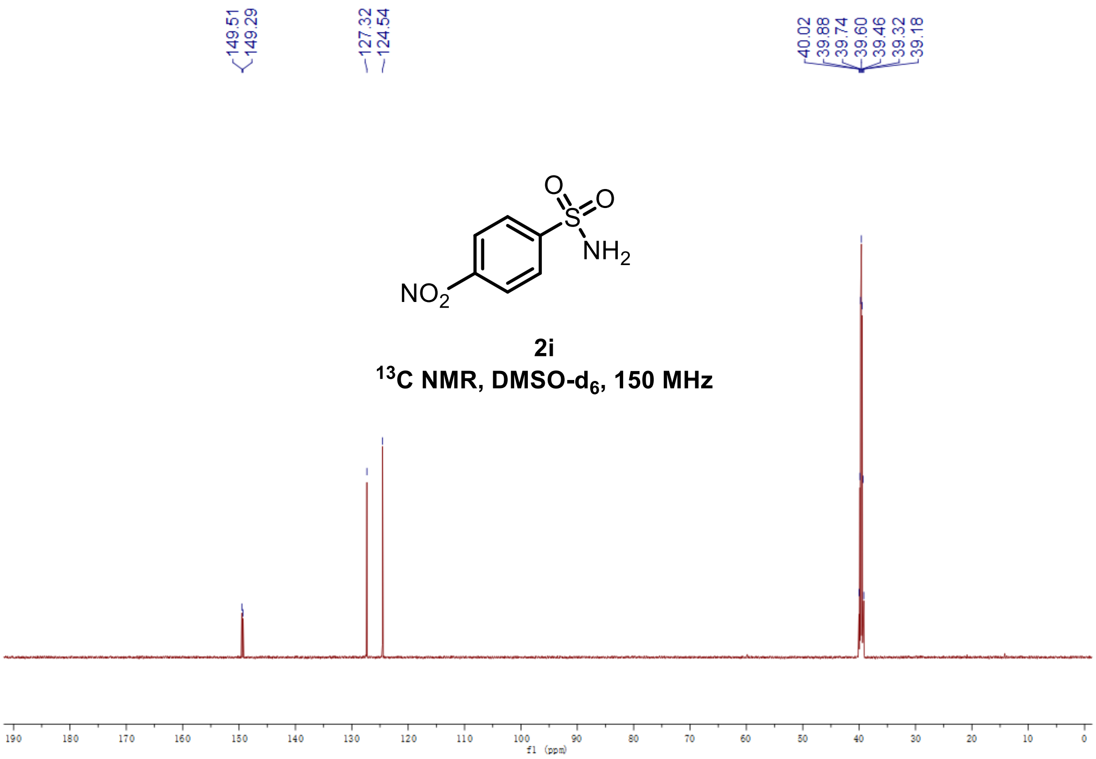

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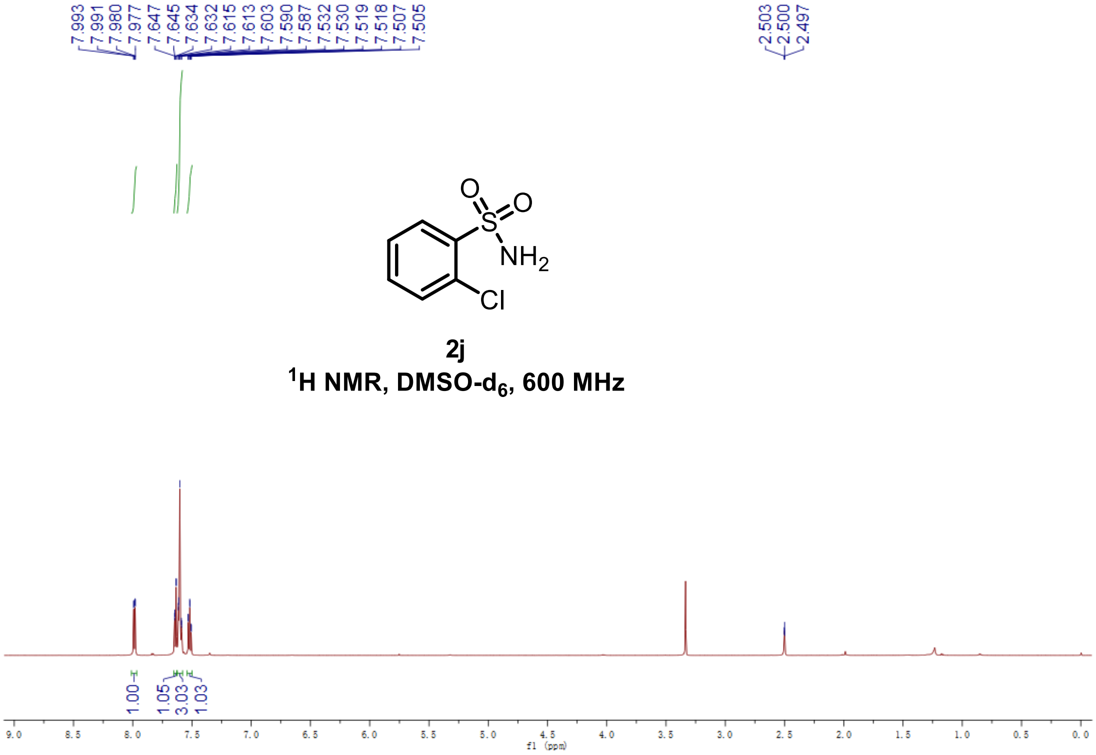

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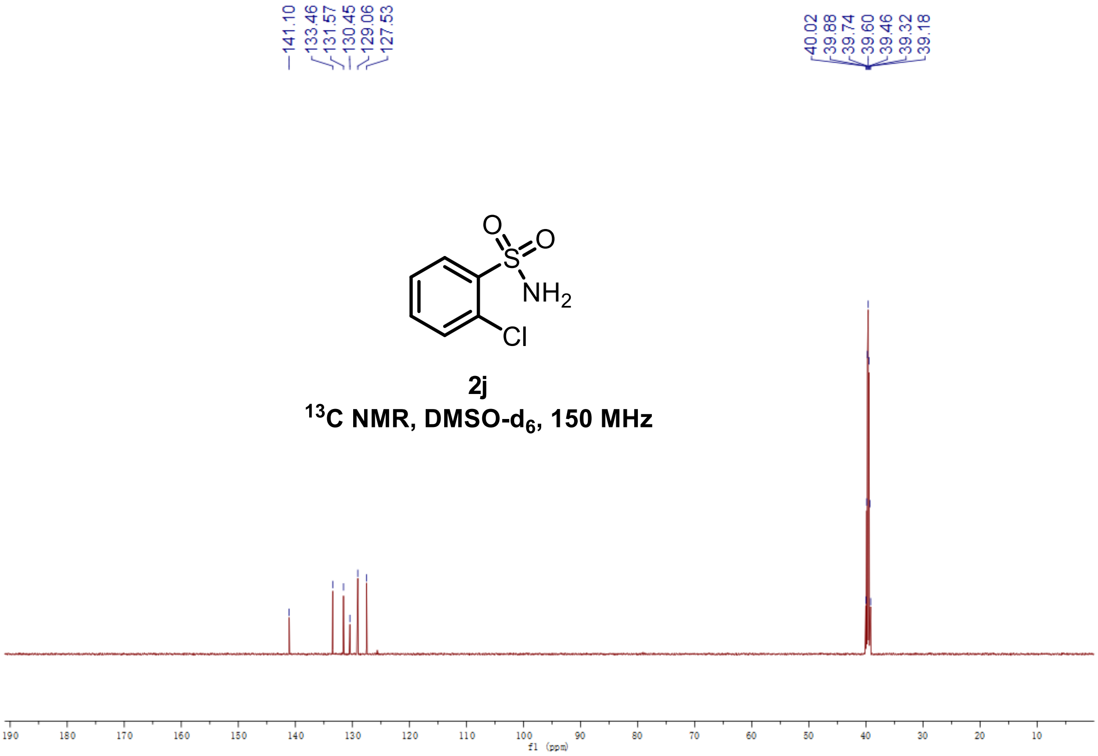

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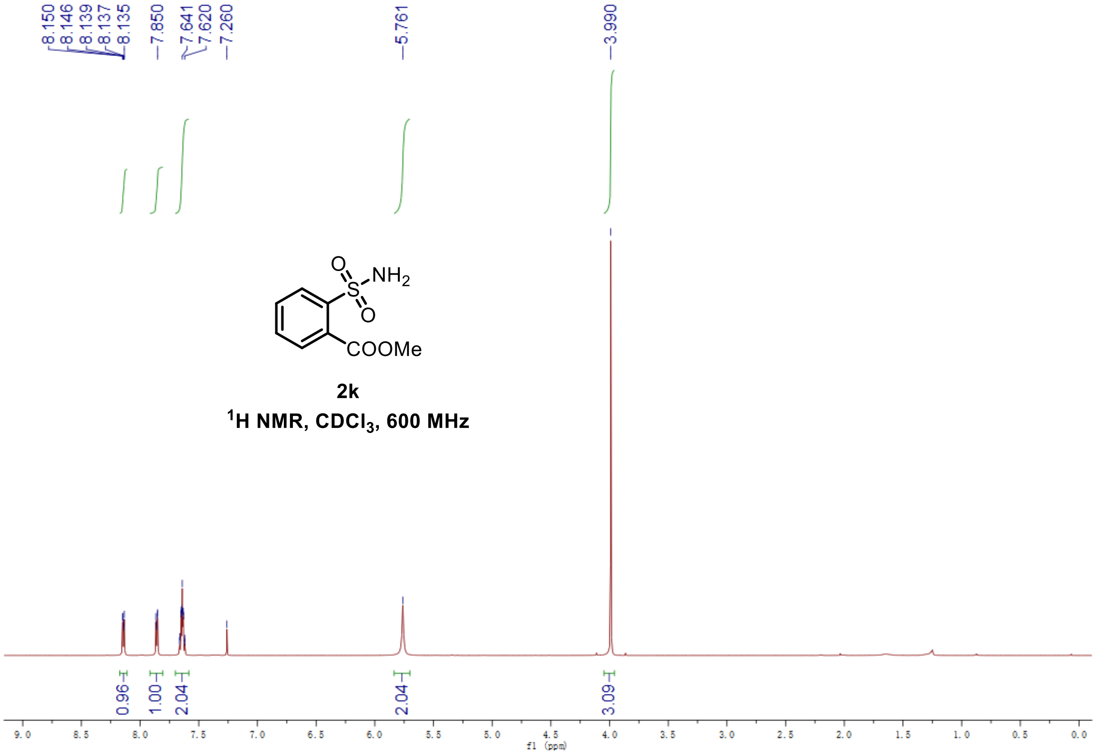

2k

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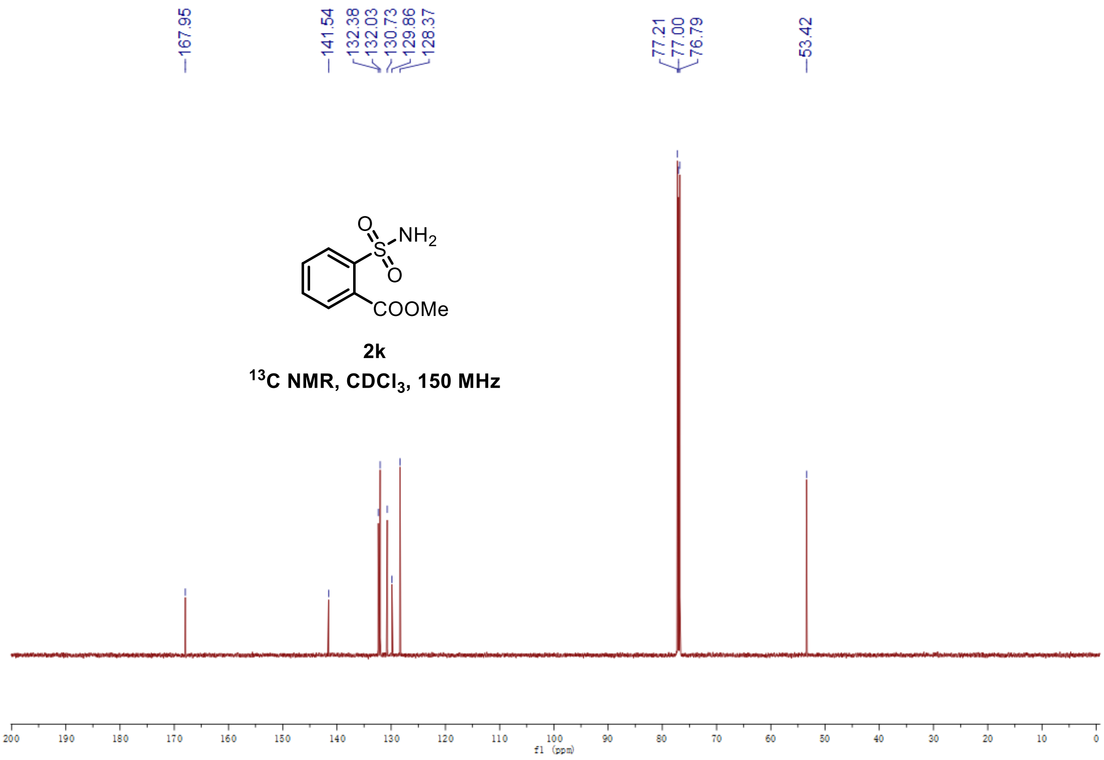

2k

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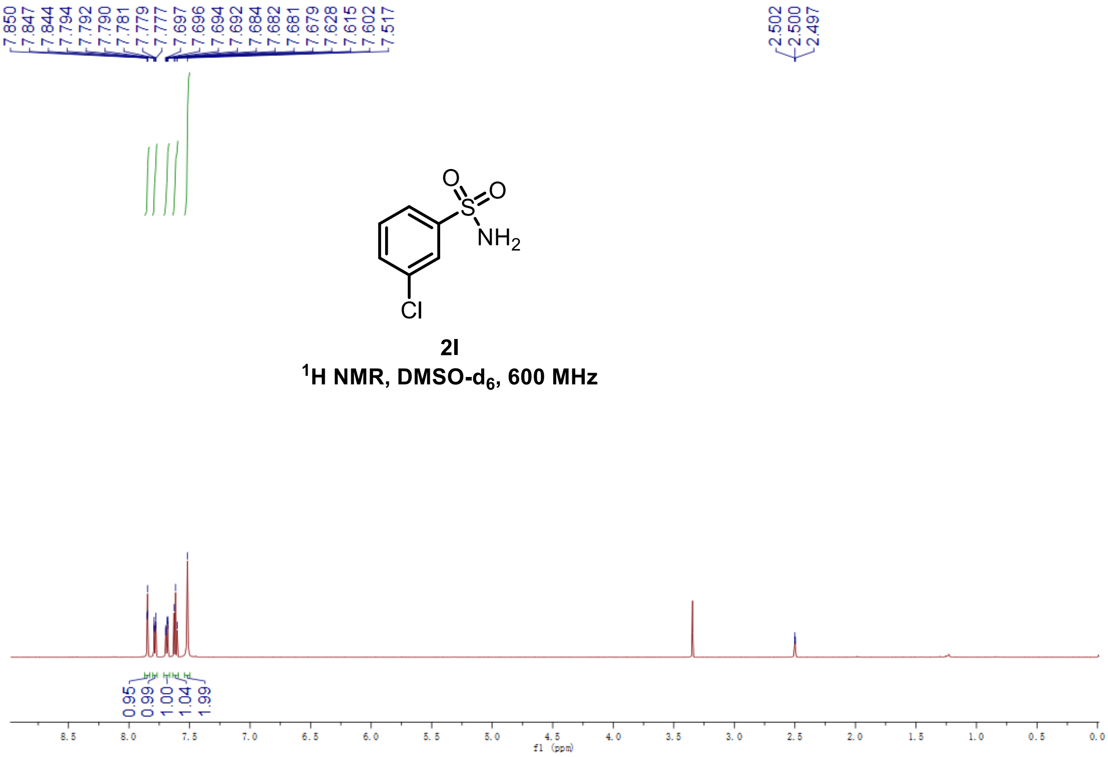

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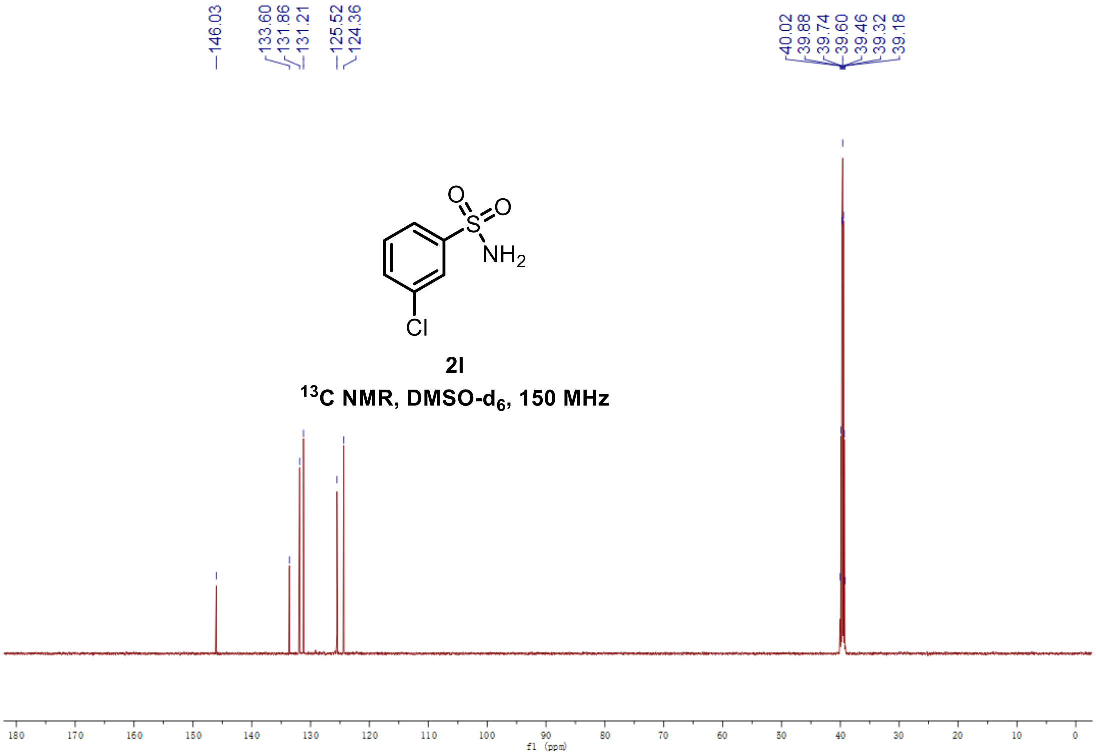

2l

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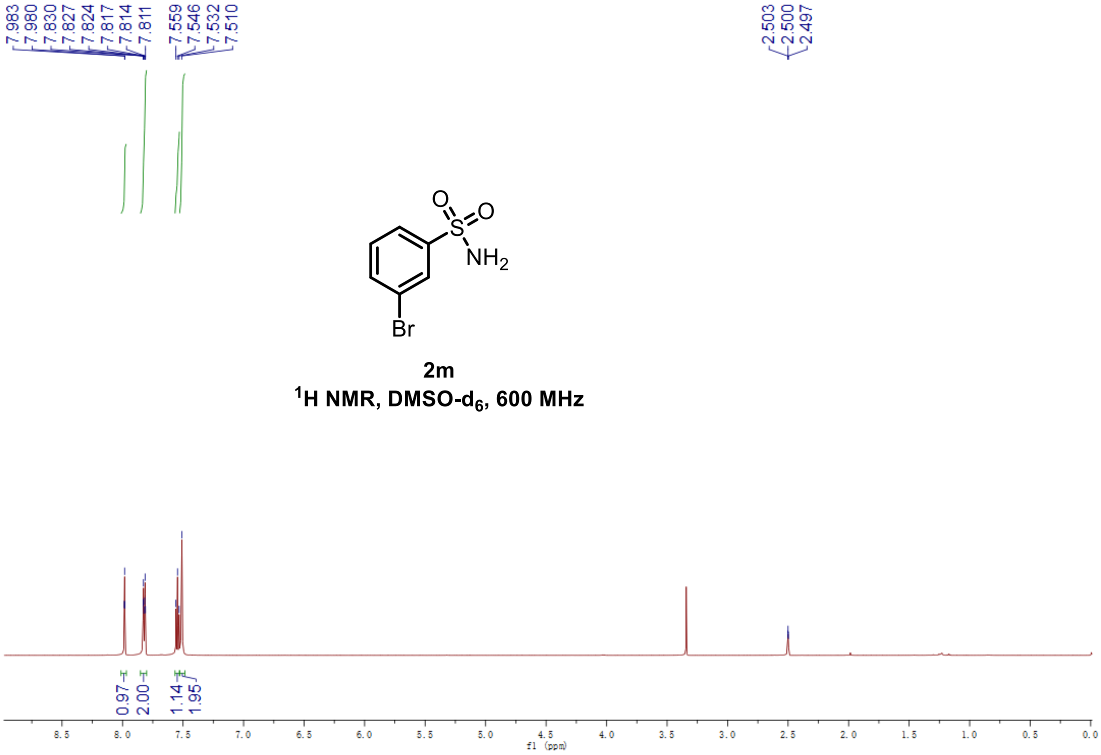

2m

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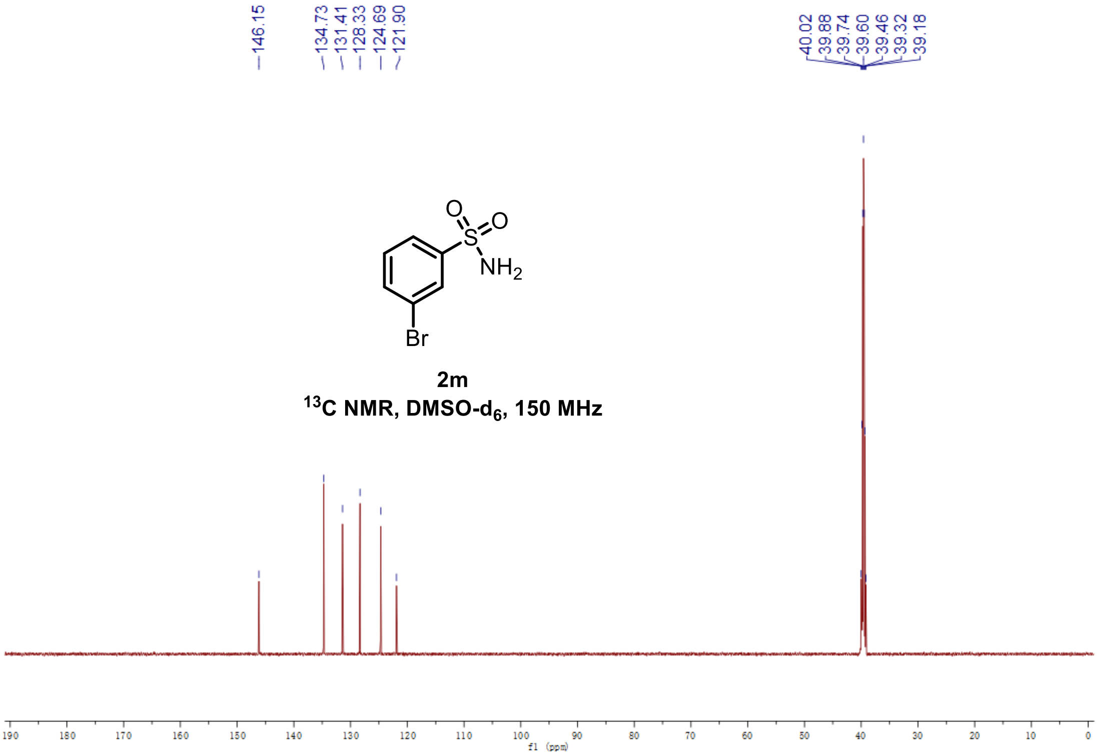

2m

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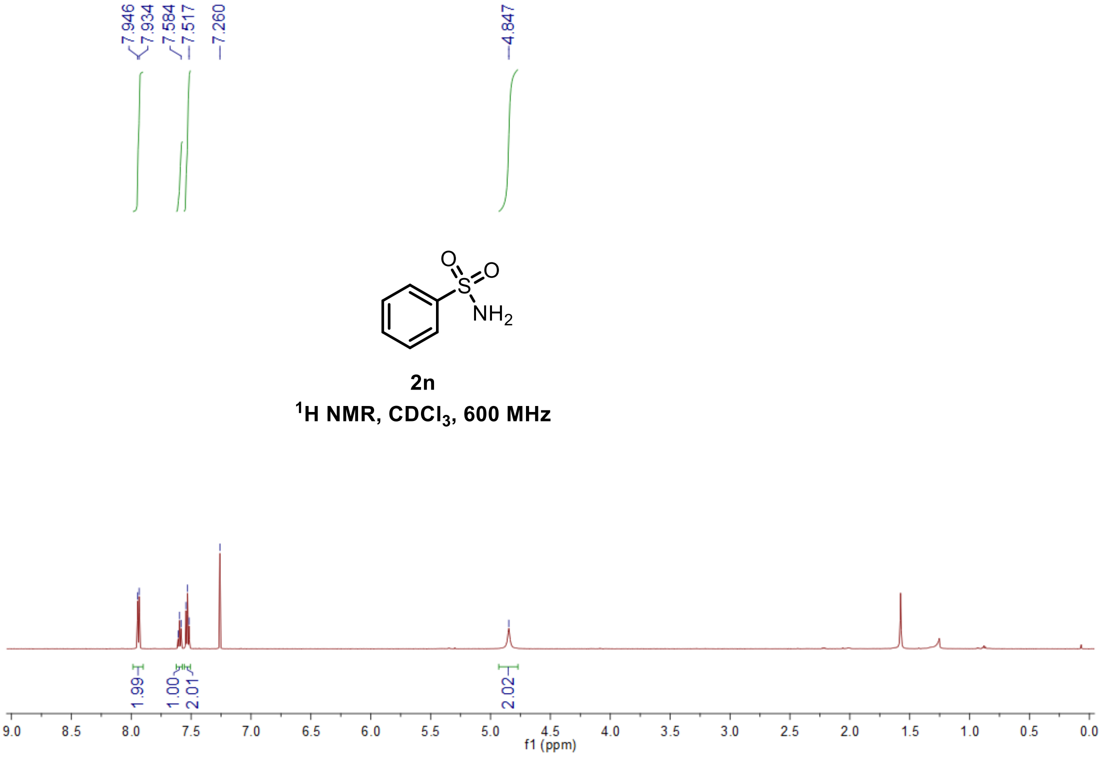

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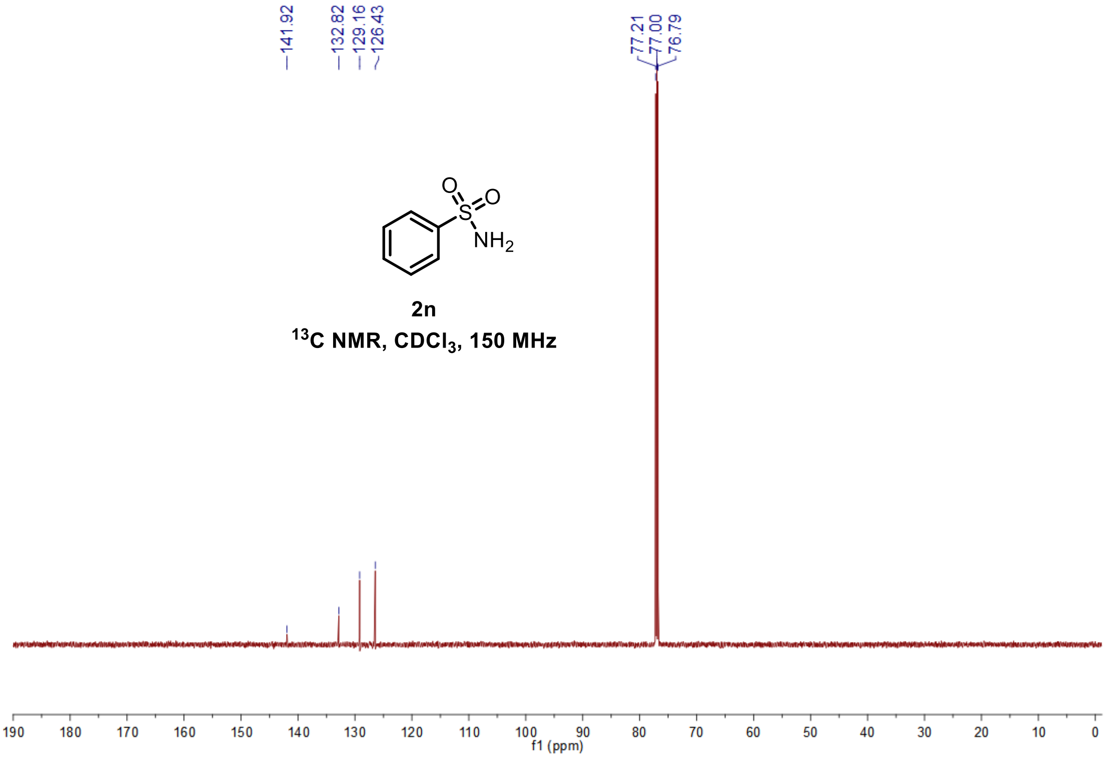

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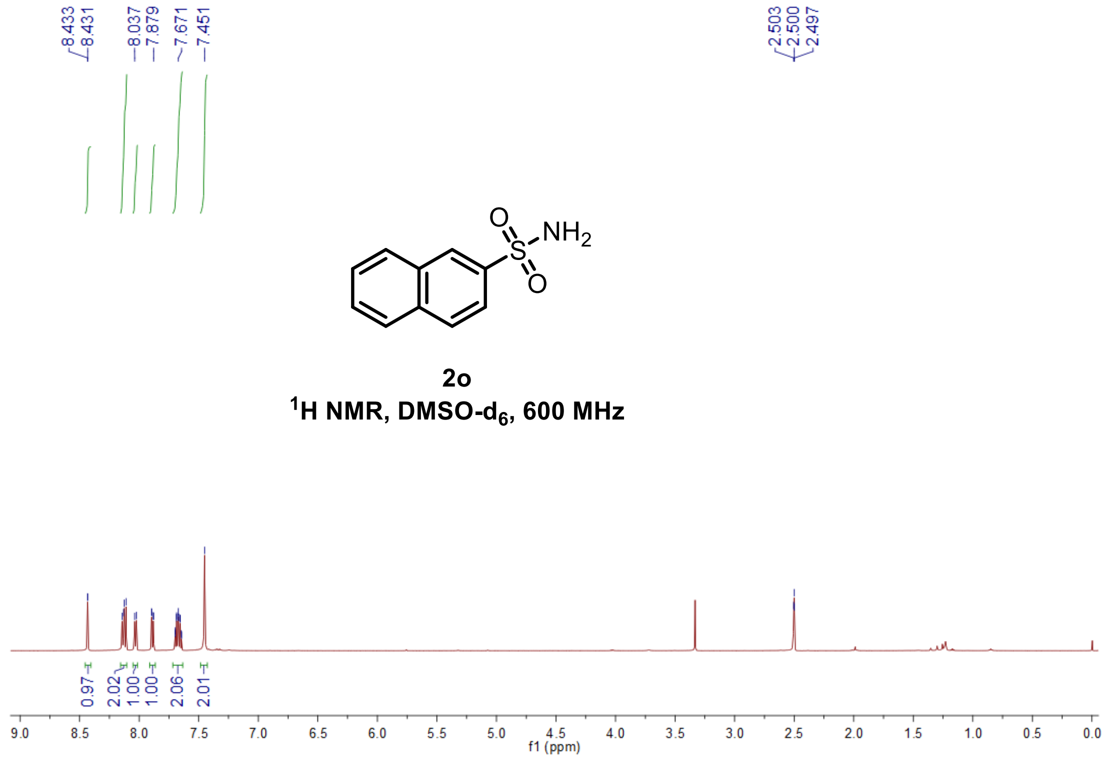

2o

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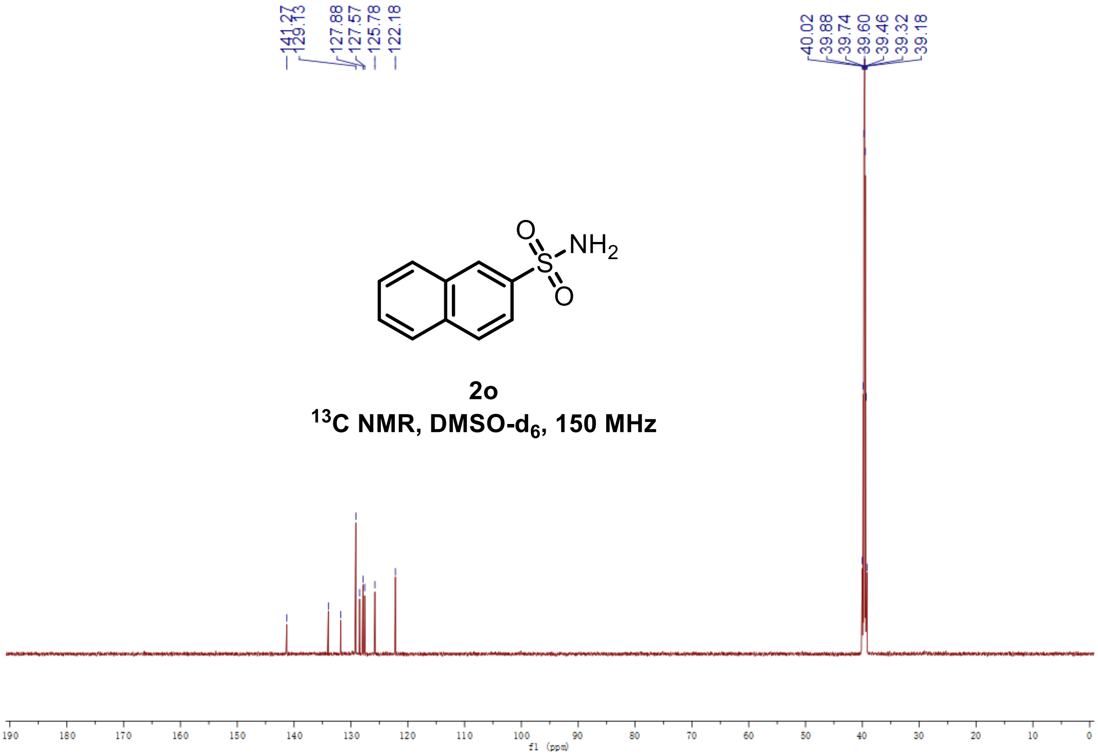

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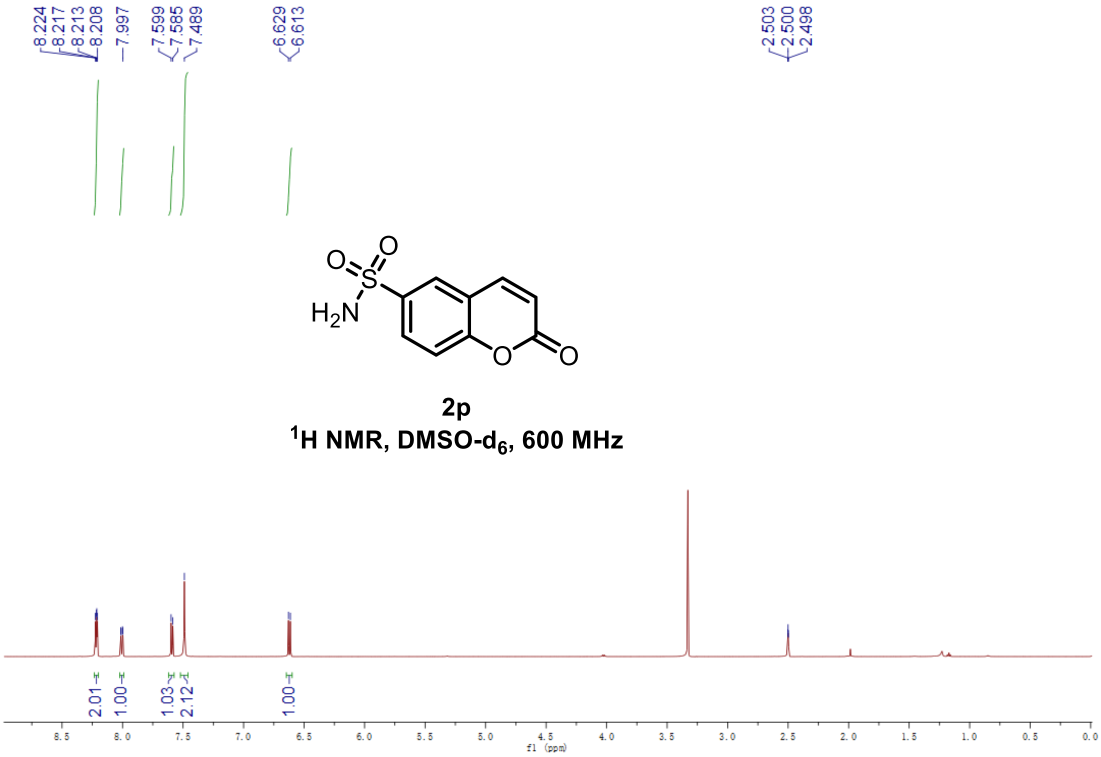
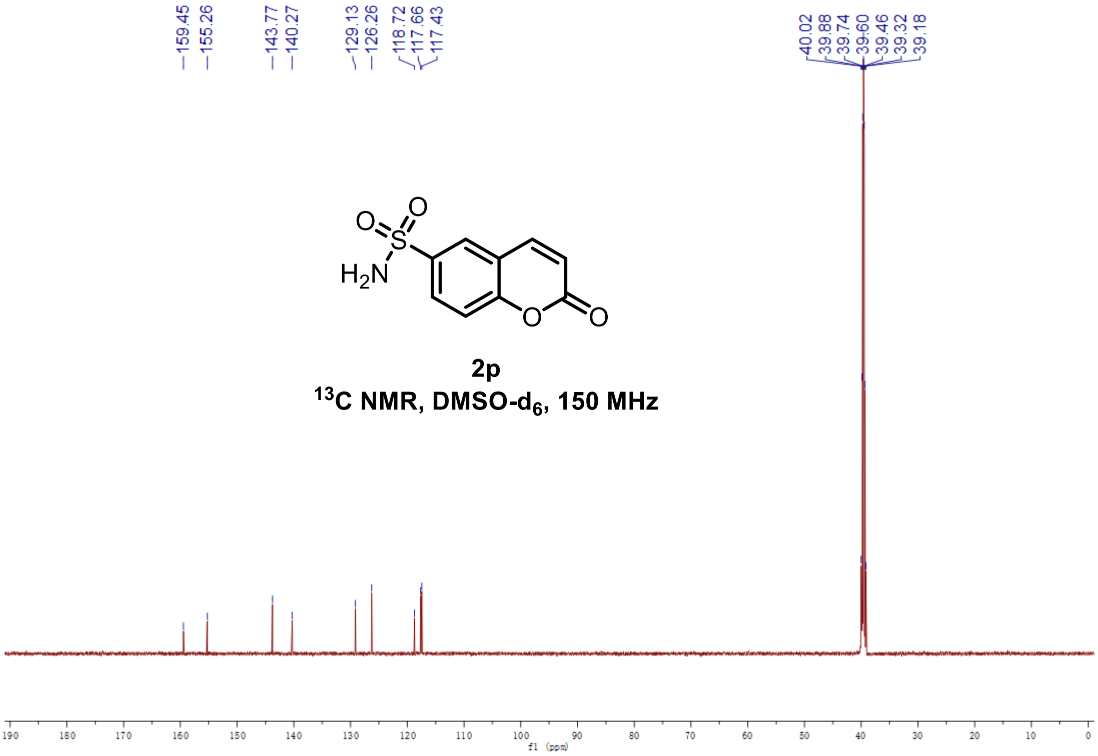


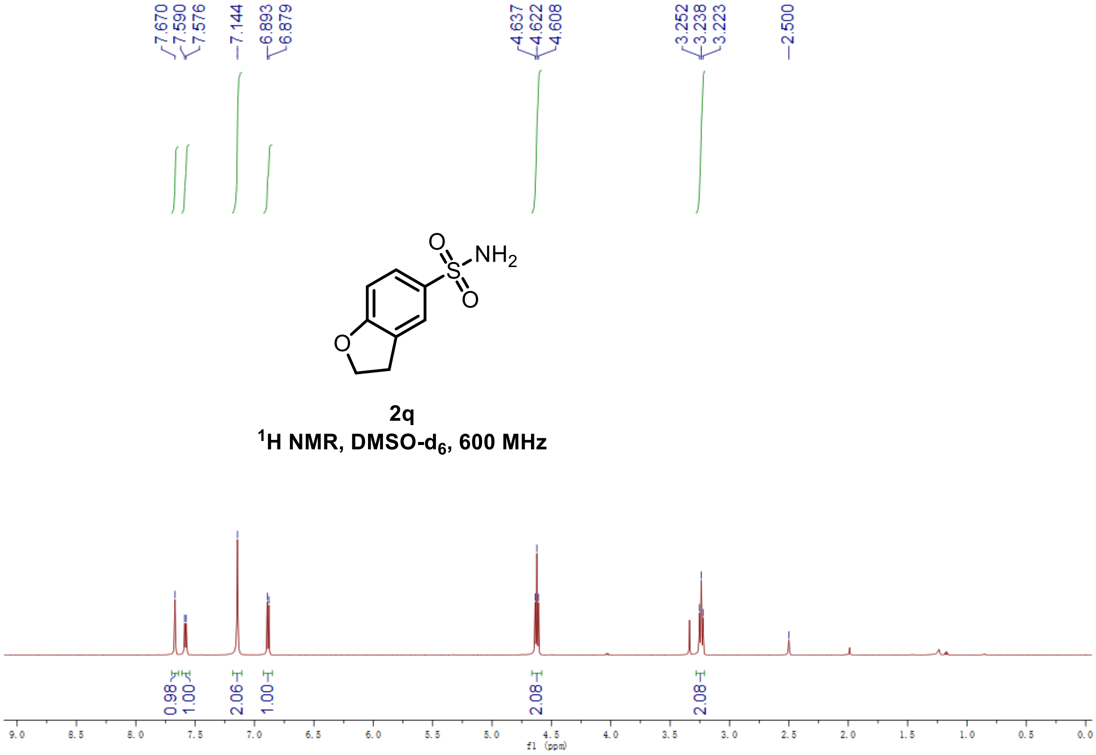
2p

^{1}H NMR, DMSO-d_6, 600 MHz



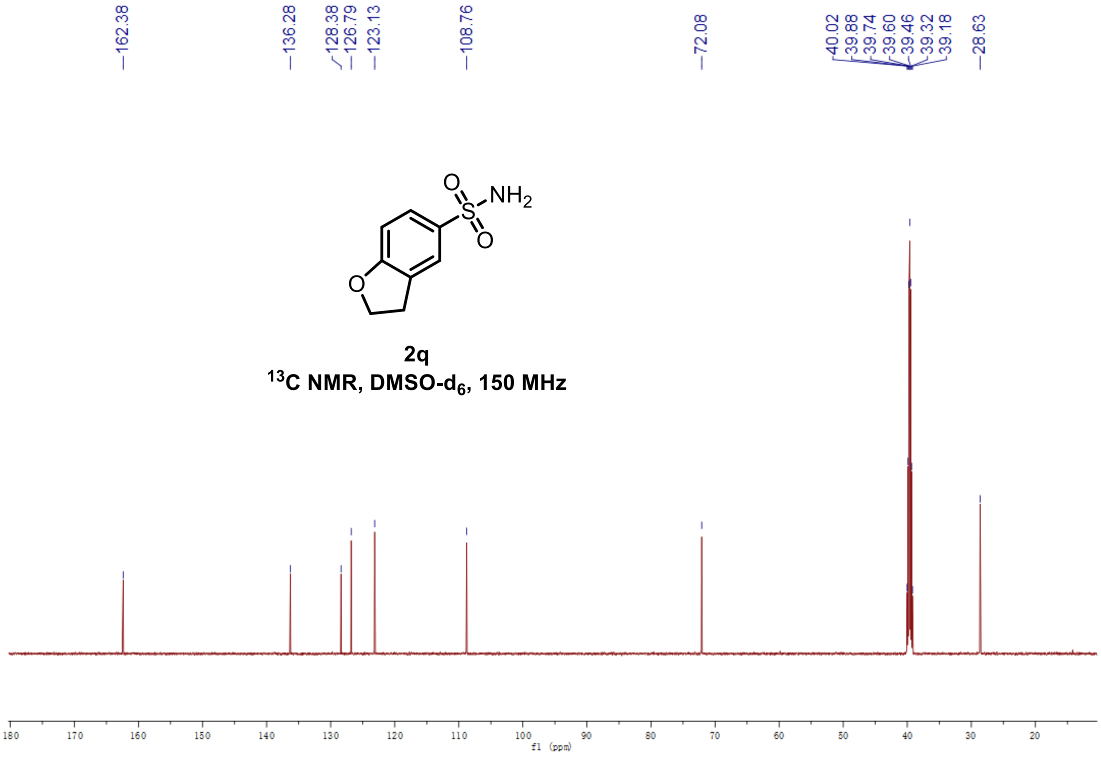
2p

^{13}C NMR, DMSO-d_6, 150 MHz



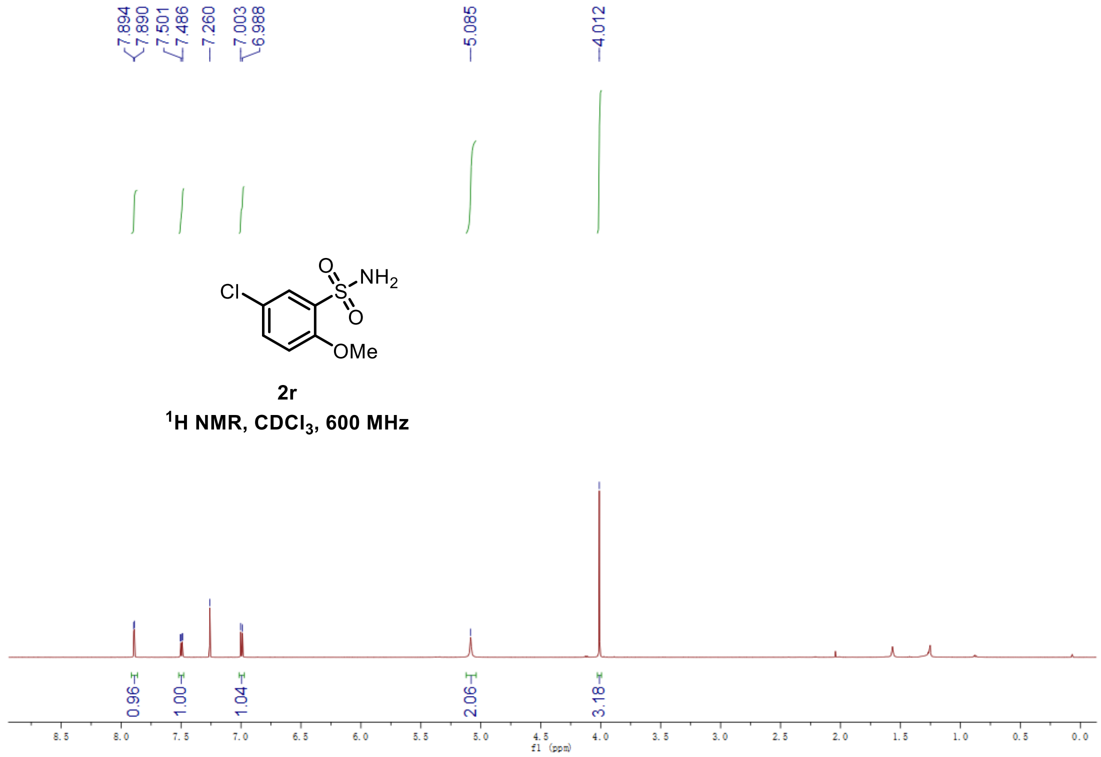
2q

^{1}H NMR, DMSO-d_6, 600 MHz



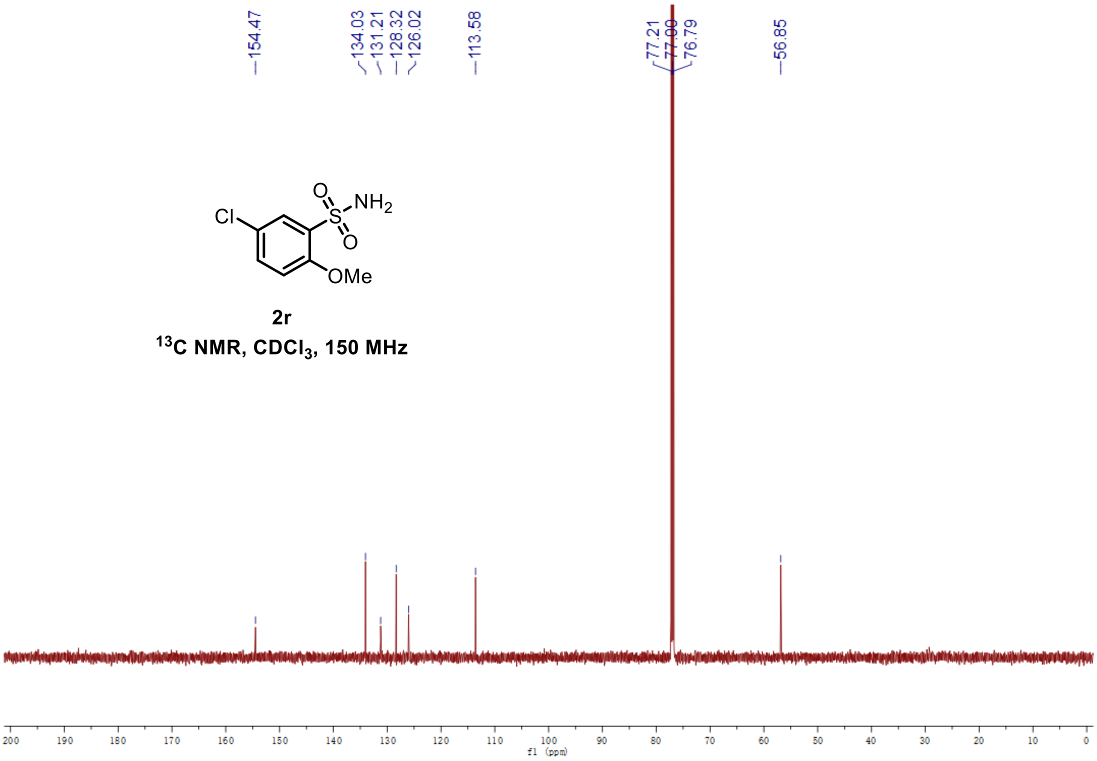
2q

^{13}C NMR, DMSO-d$_6$, 150 MHz



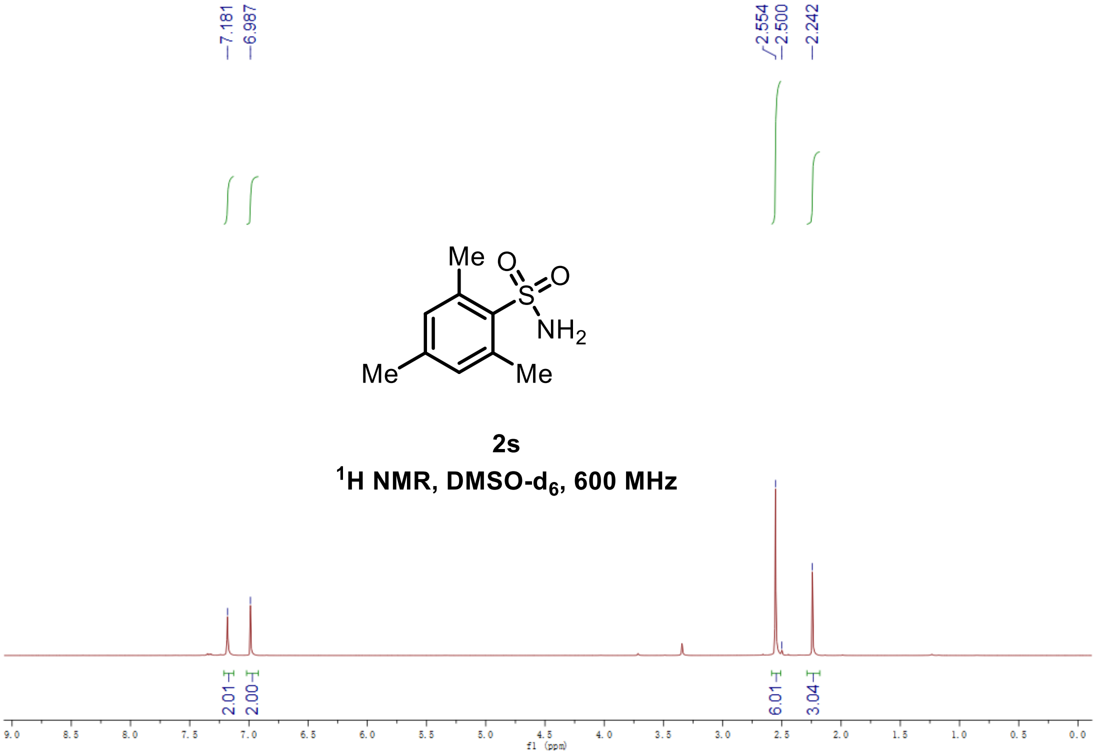
2r

^{1}H NMR, CDCl$_3$, 600 MHz



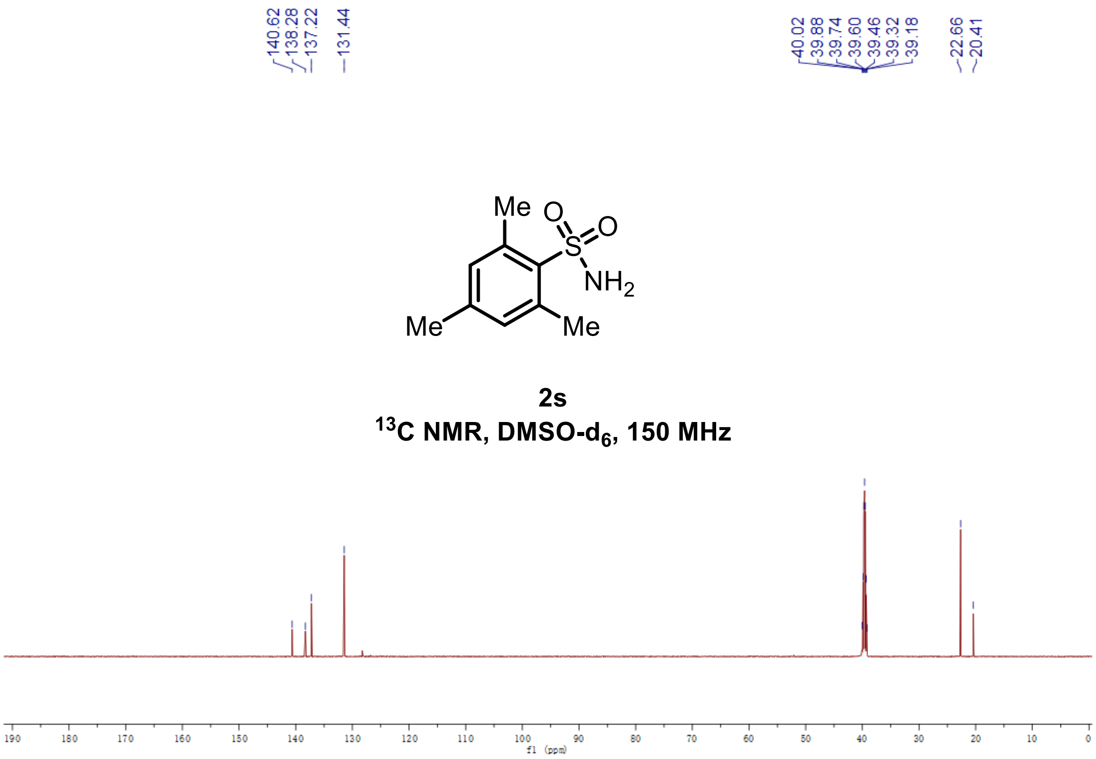
2r

^{13}C NMR, $CDCl_3$, 150 MHz



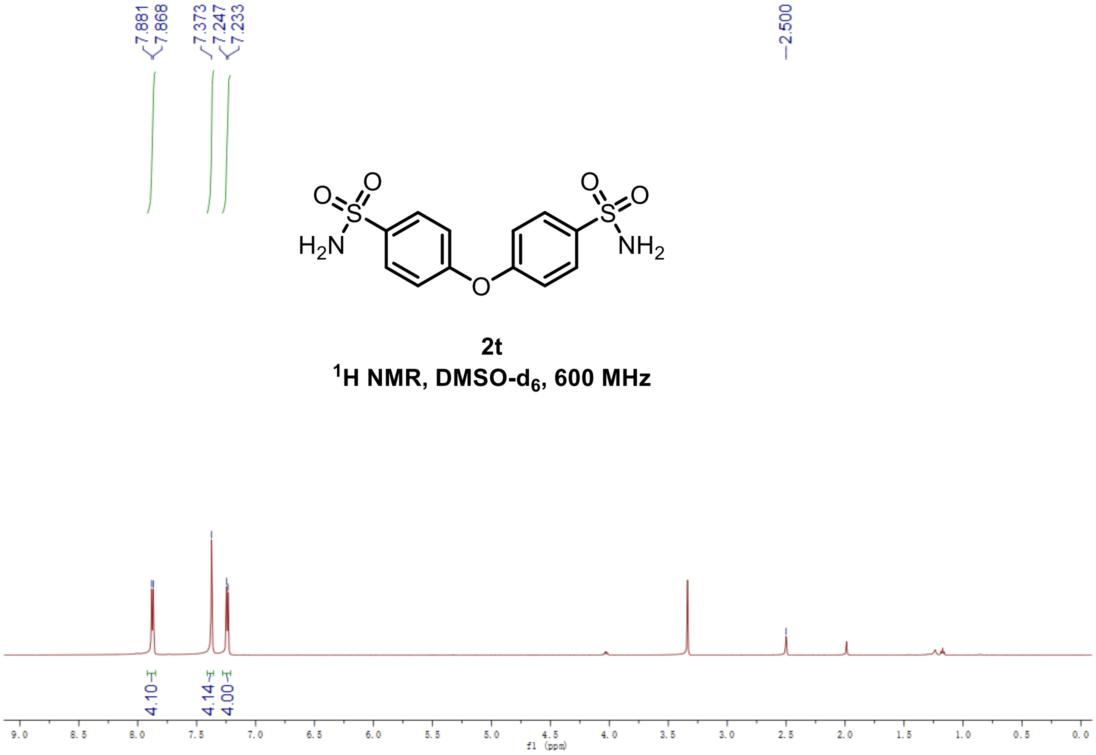
2s

^{1}H NMR, DMSO-d_6, 600 MHz



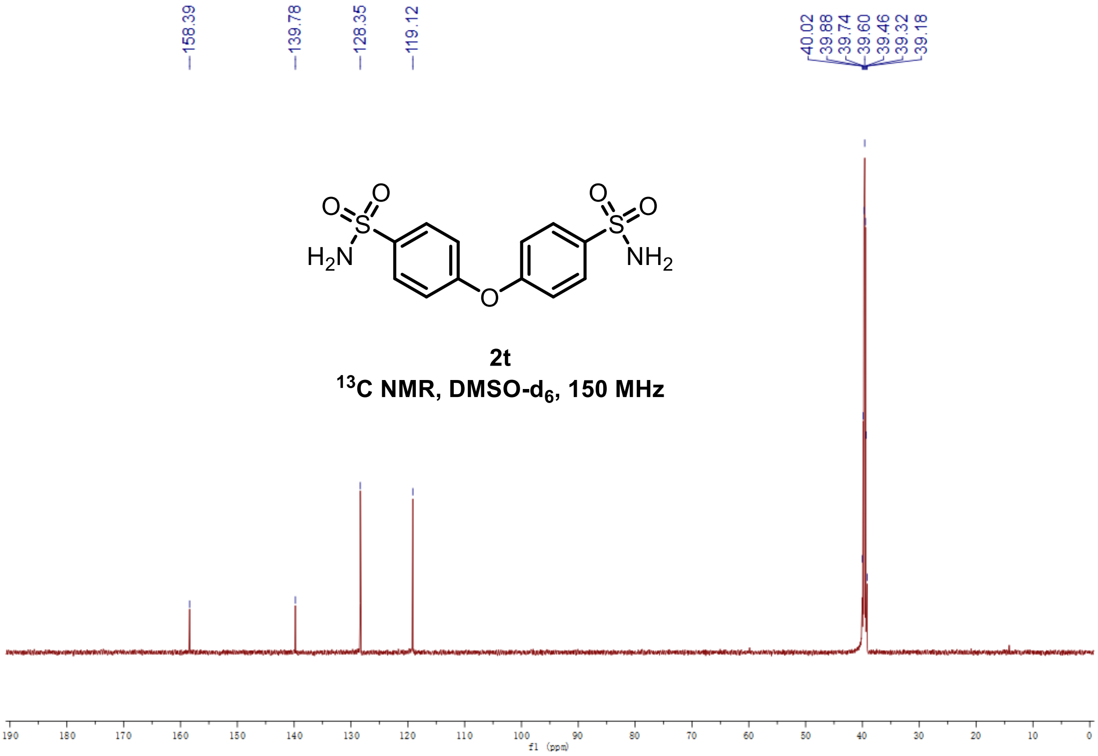
2s

^{13}C NMR, DMSO-d_6, 150 MHz



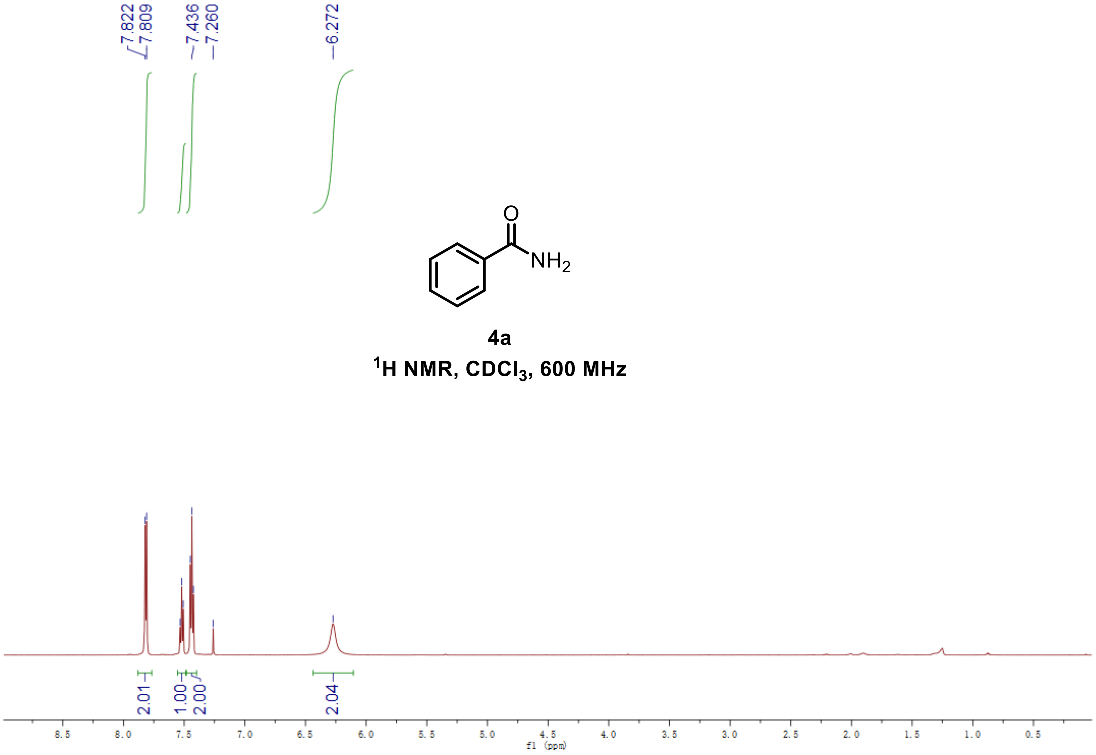
2t

^{1}H NMR, DMSO-d_6, 600 MHz



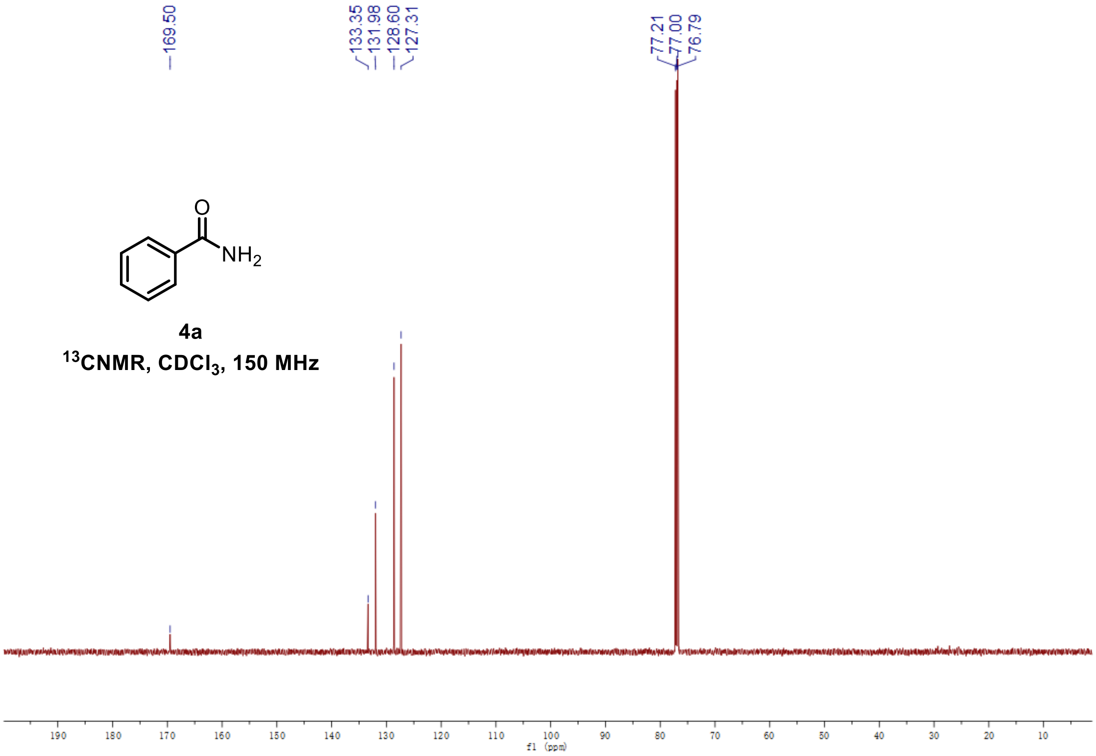
2t

^{13}C NMR, DMSO-d_6, 150 MHz



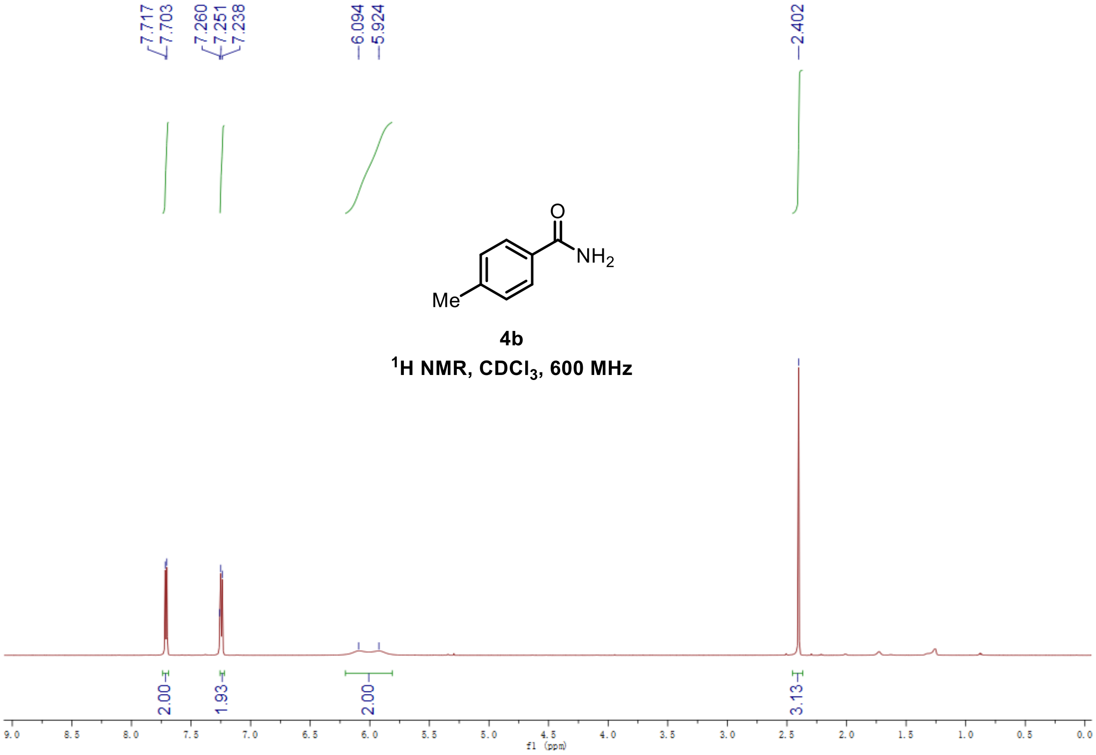
4a

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



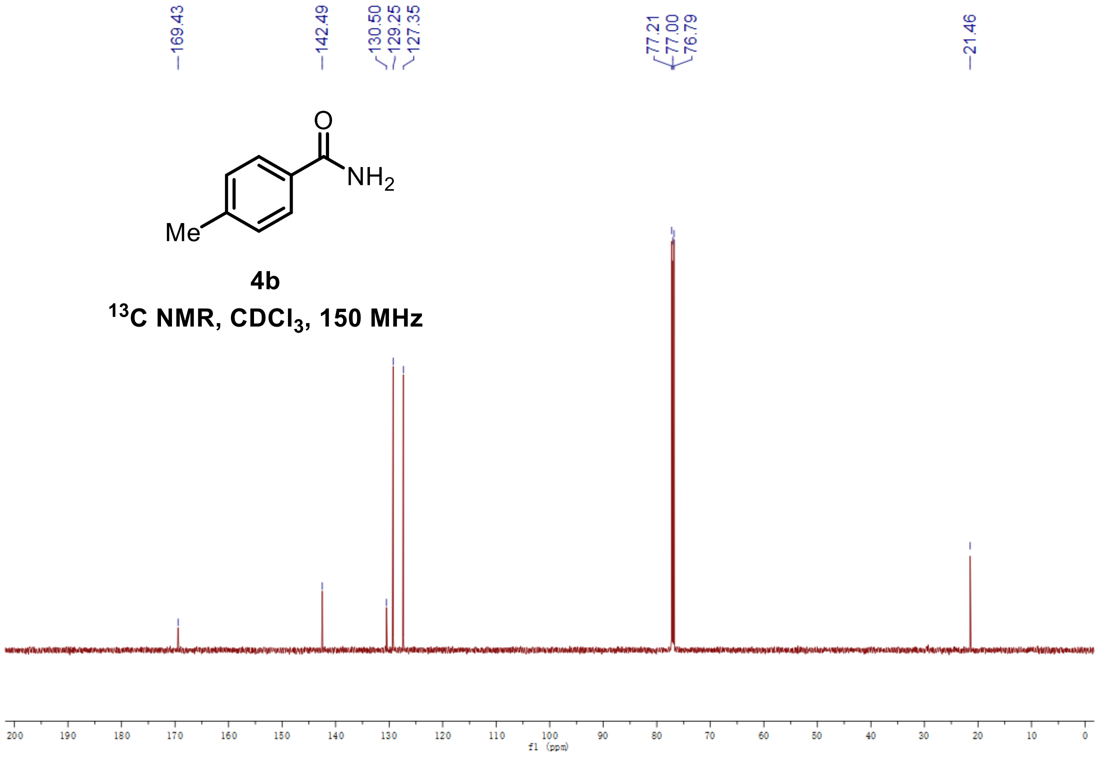
4a

^{13}CNMR, CDCl$_3$, 150 MHz



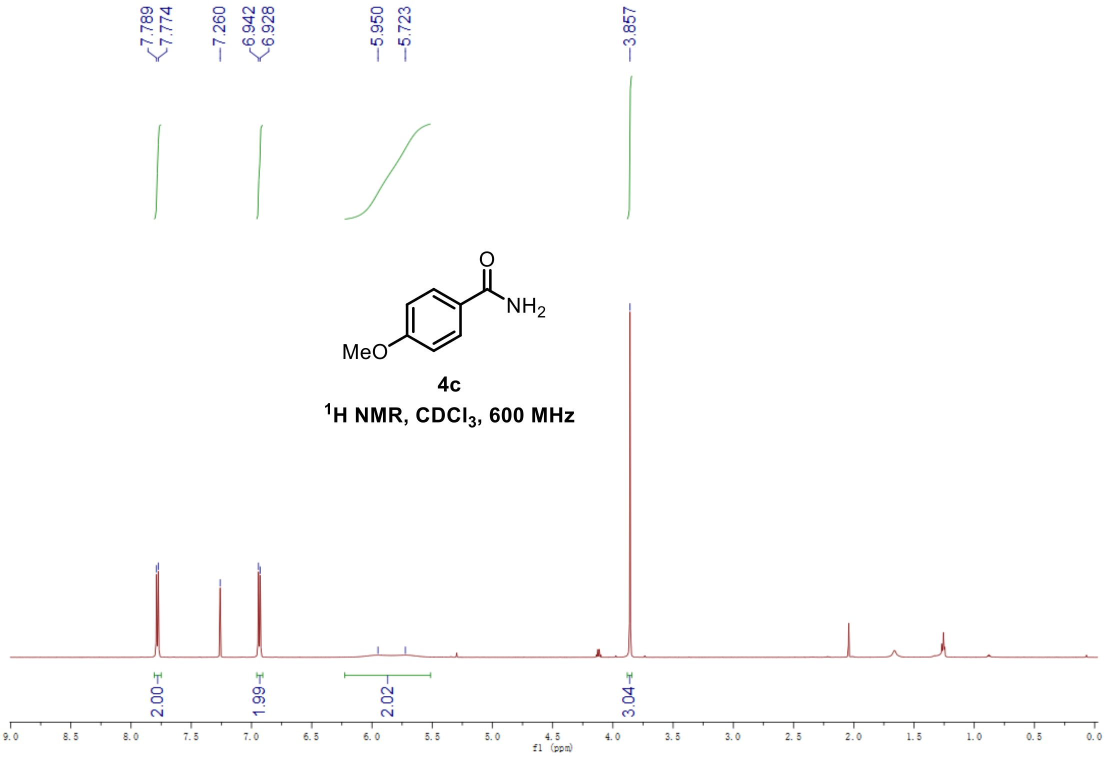
4b

^{1}H NMR, CDCl$_3$, 600 MHz



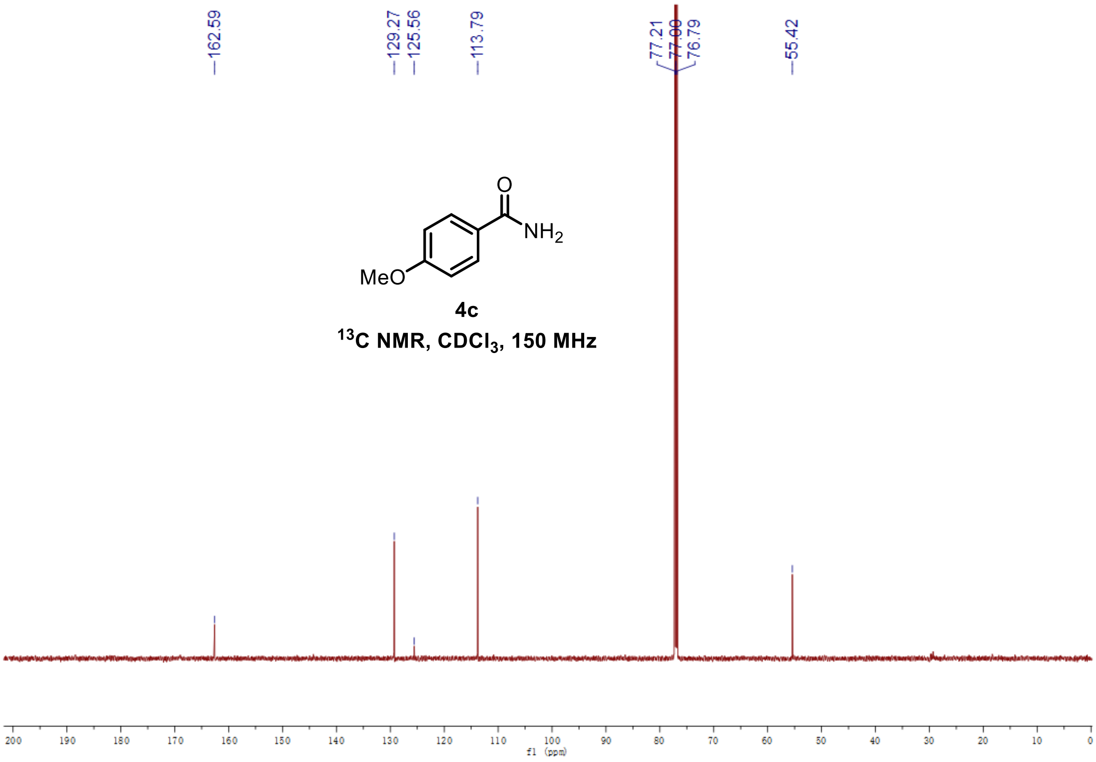
4b

^{13}C NMR, CDCl$_3$, 150 MHz

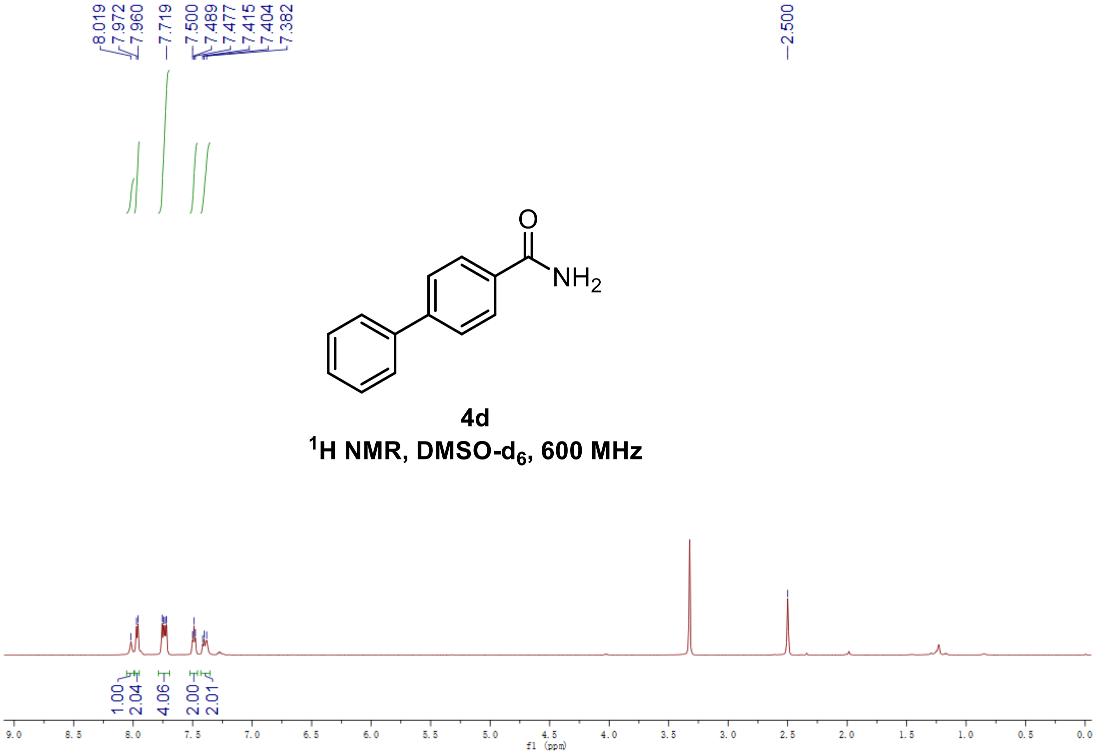


4c

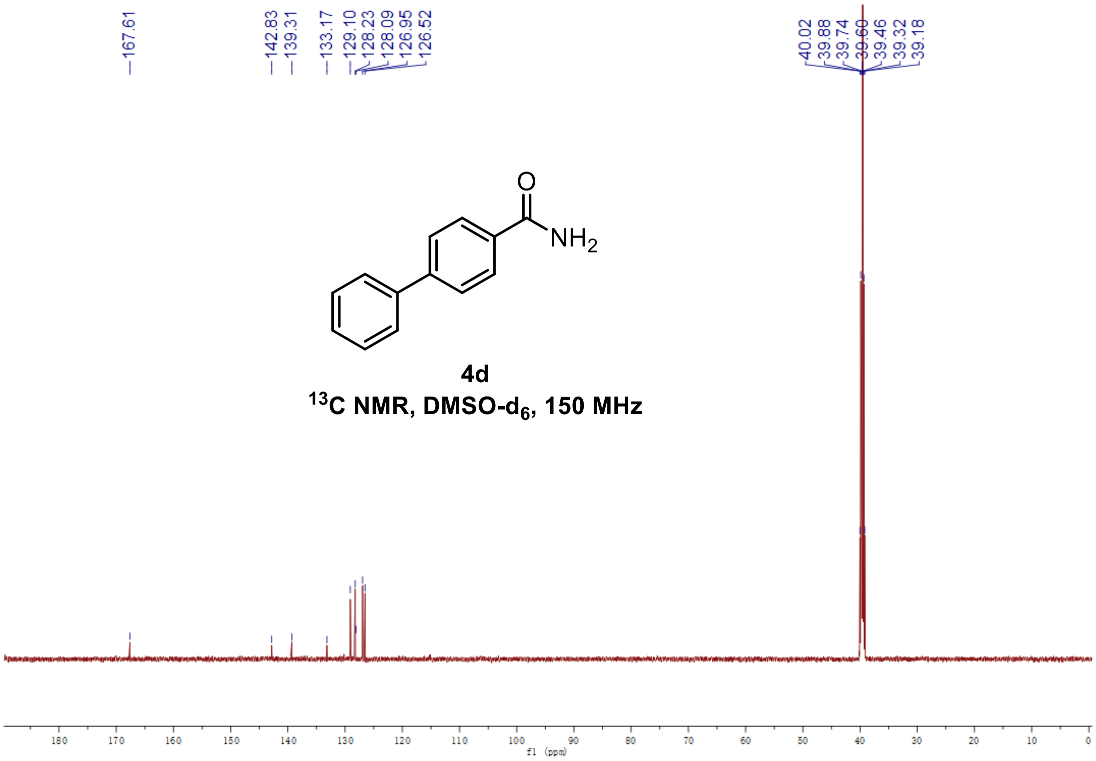
^{1}H NMR, CDCl$_3$, 600 MHz


4c

^{13}C NMR, $CDCl_3$, 150 MHz

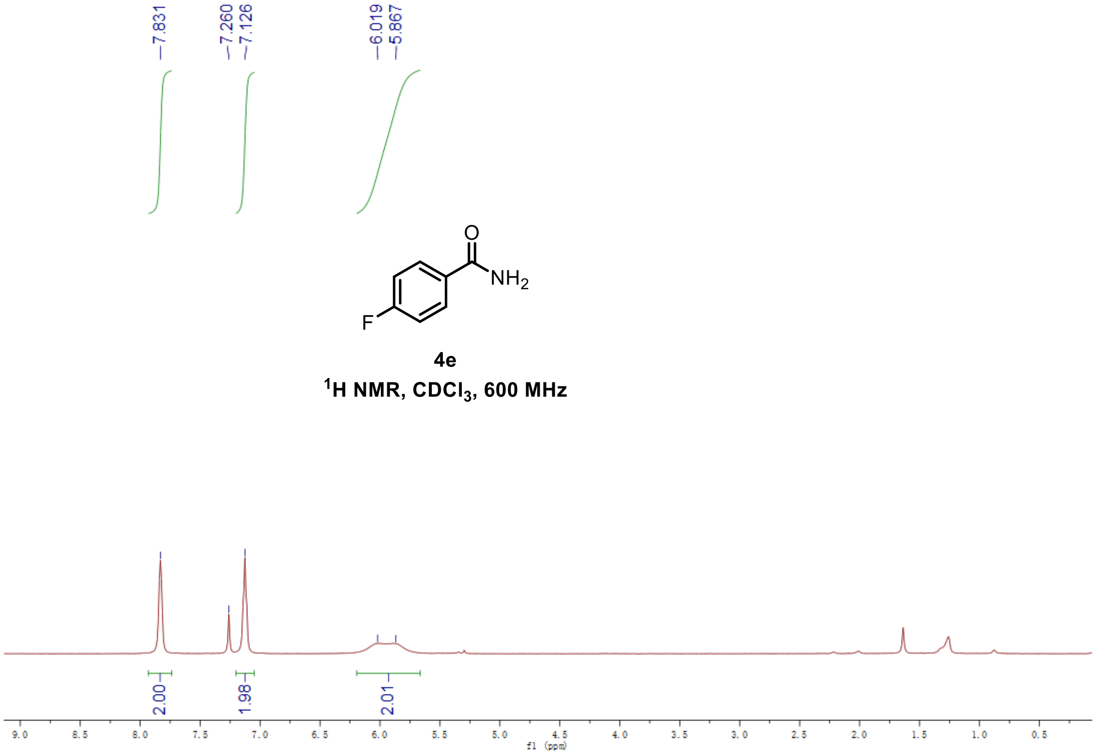

4d

^{1}H NMR, DMSO-d_6, 600 MHz



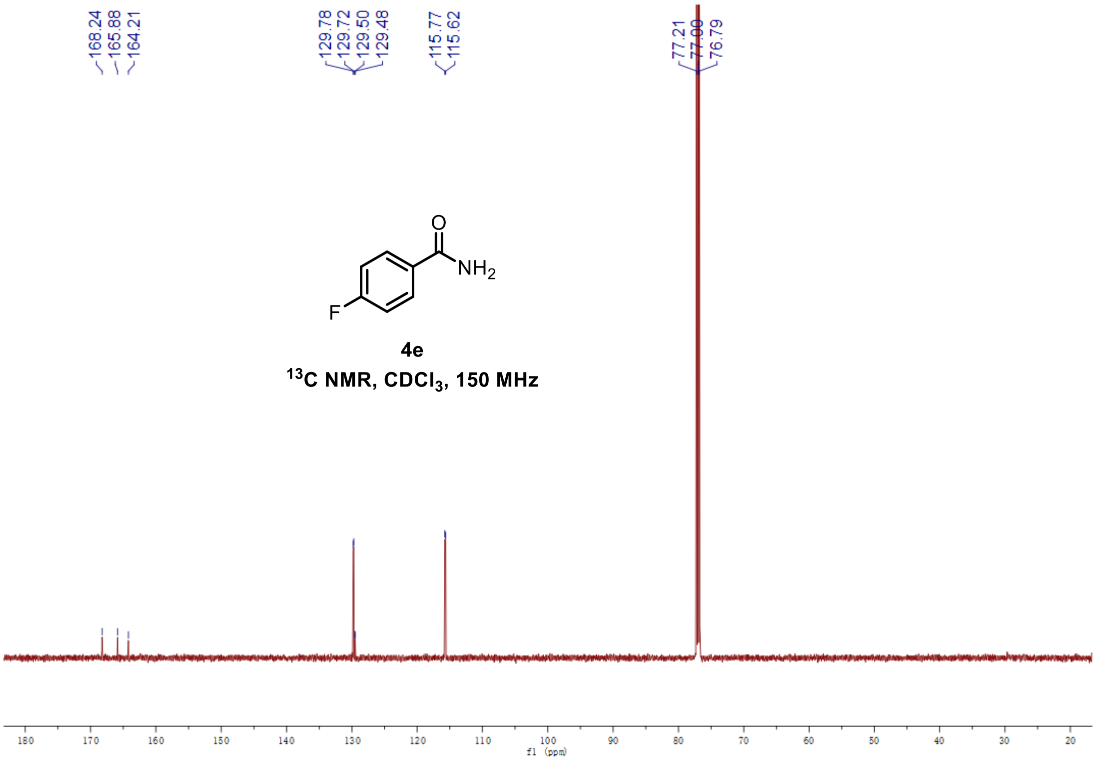
4d

^{13}C NMR, DMSO-d$_6$, 150 MHz

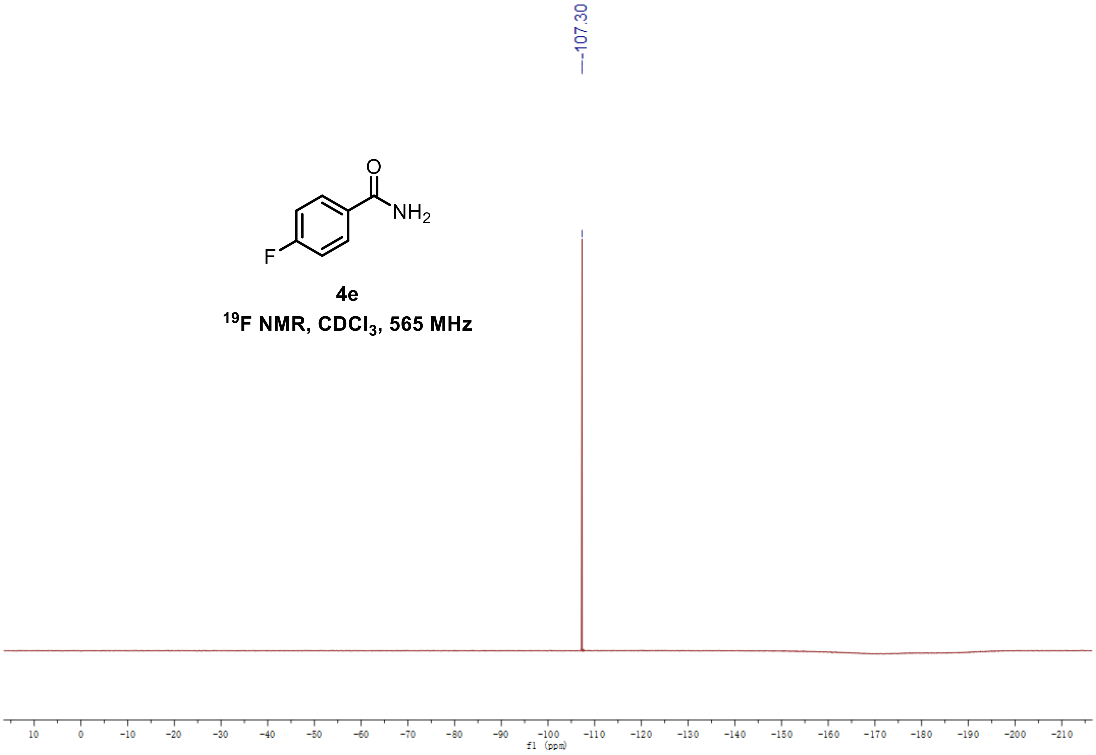


4e

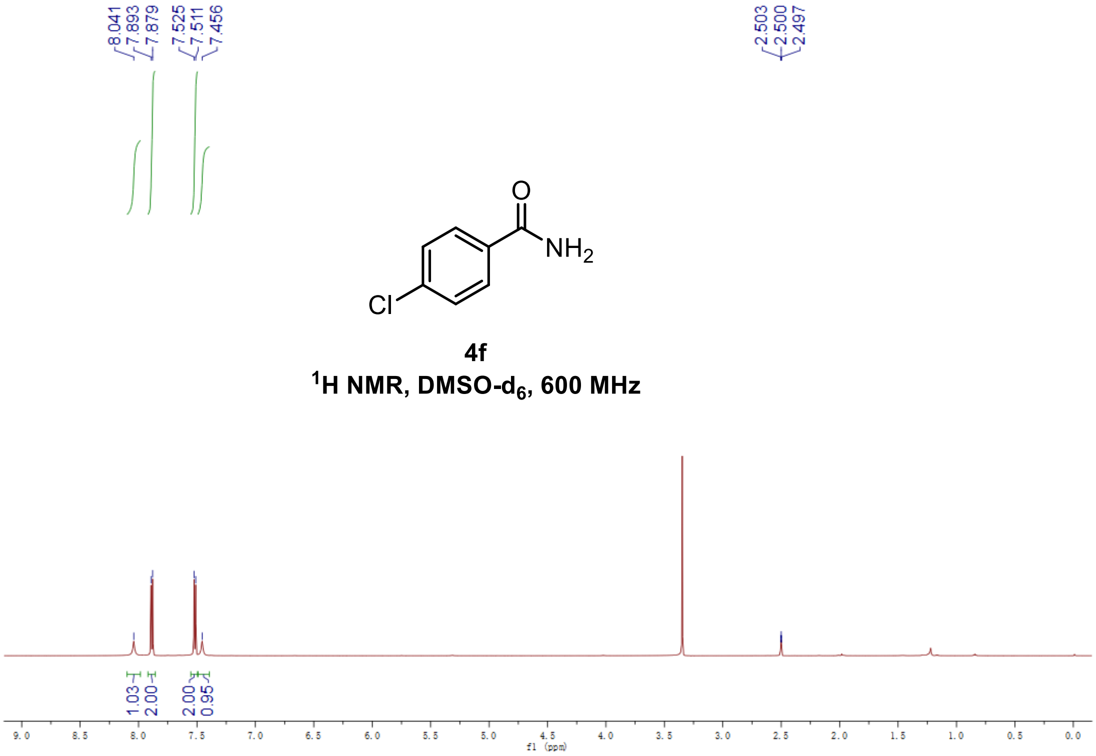
^{1}H NMR, CDCl$_3$, 600 MHz



4e
^{13}C NMR, $CDCl_3$, 150 MHz

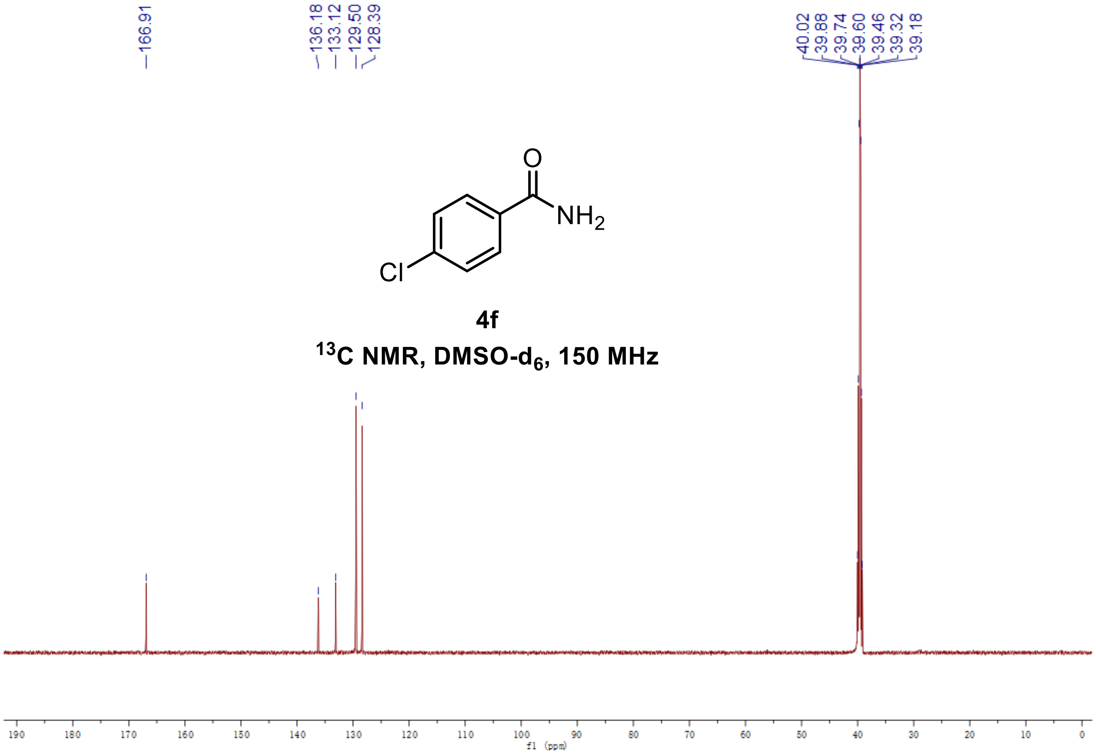


4e
^{19}F NMR, $CDCl_3$, 565 MHz



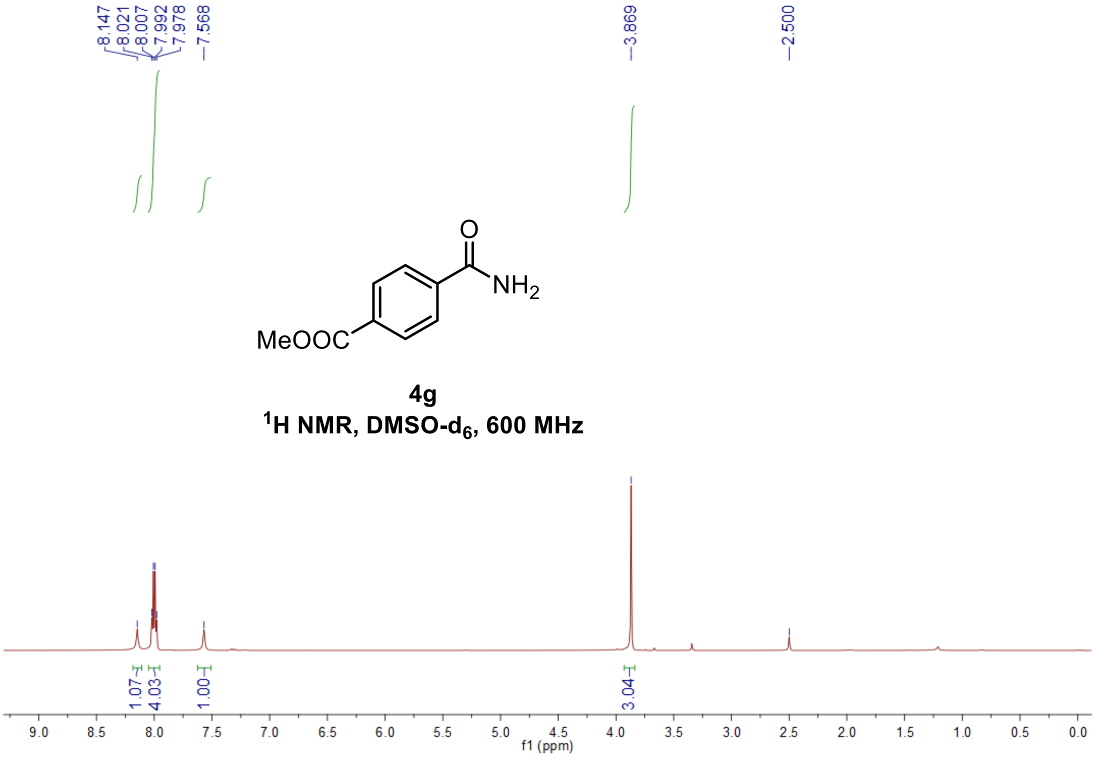
4f

^{1}H NMR, DMSO-d_6, 600 MHz



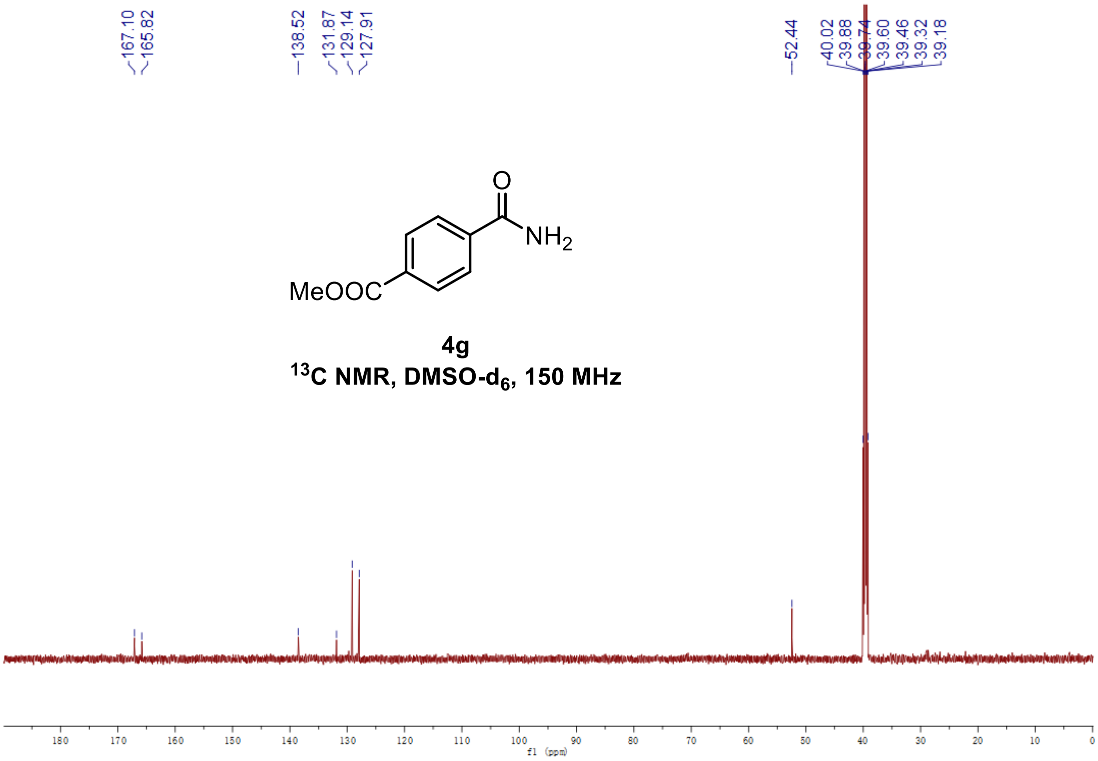
4f

^{13}C NMR, DMSO-d_6, 150 MHz



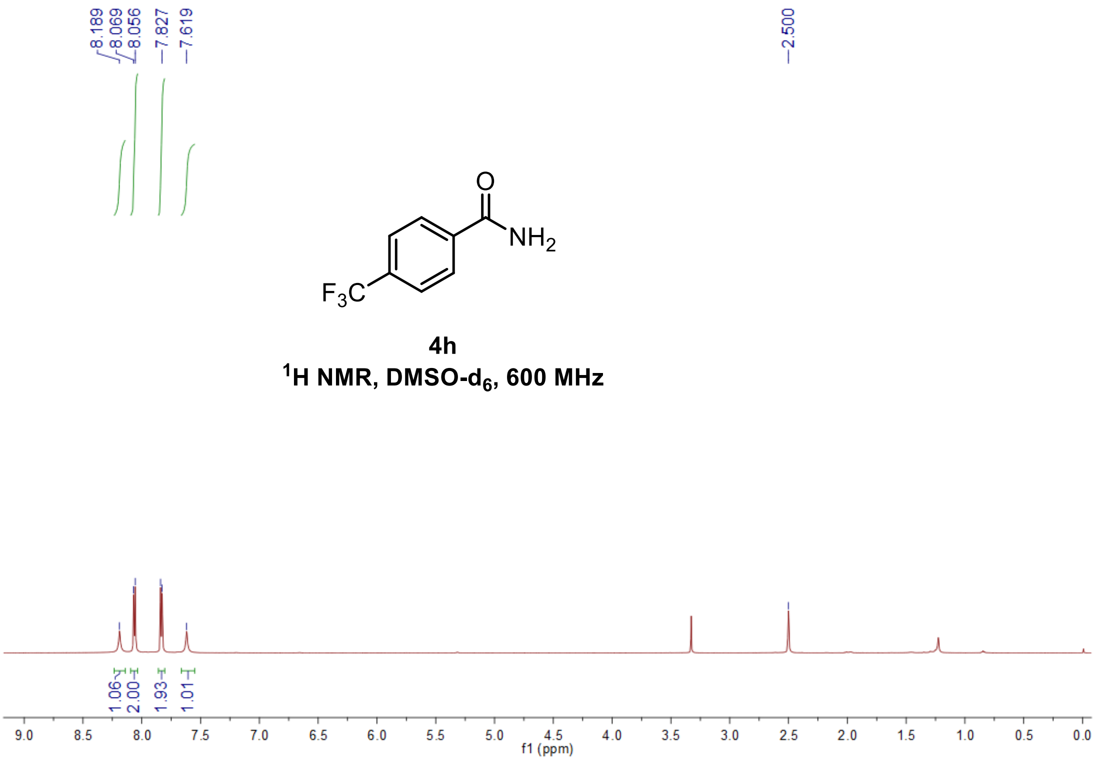
4g

^{1}H NMR, DMSO-d_6, 600 MHz



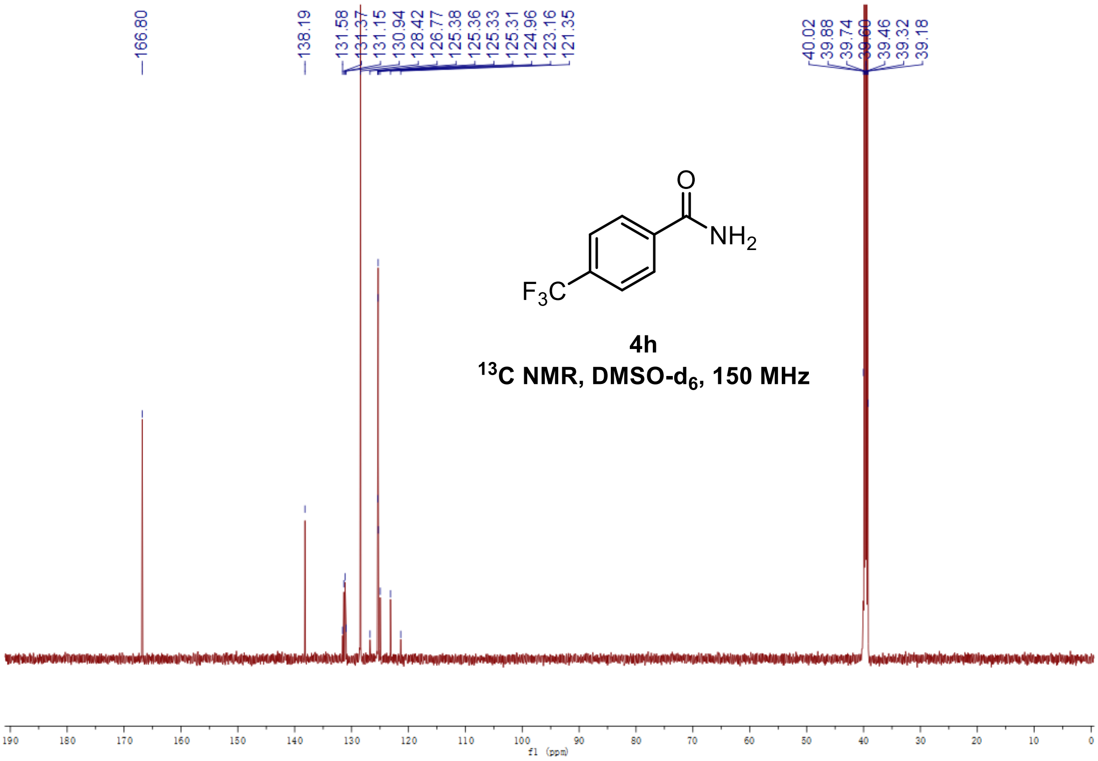
4g

^{13}C NMR, DMSO-d_6, 150 MHz



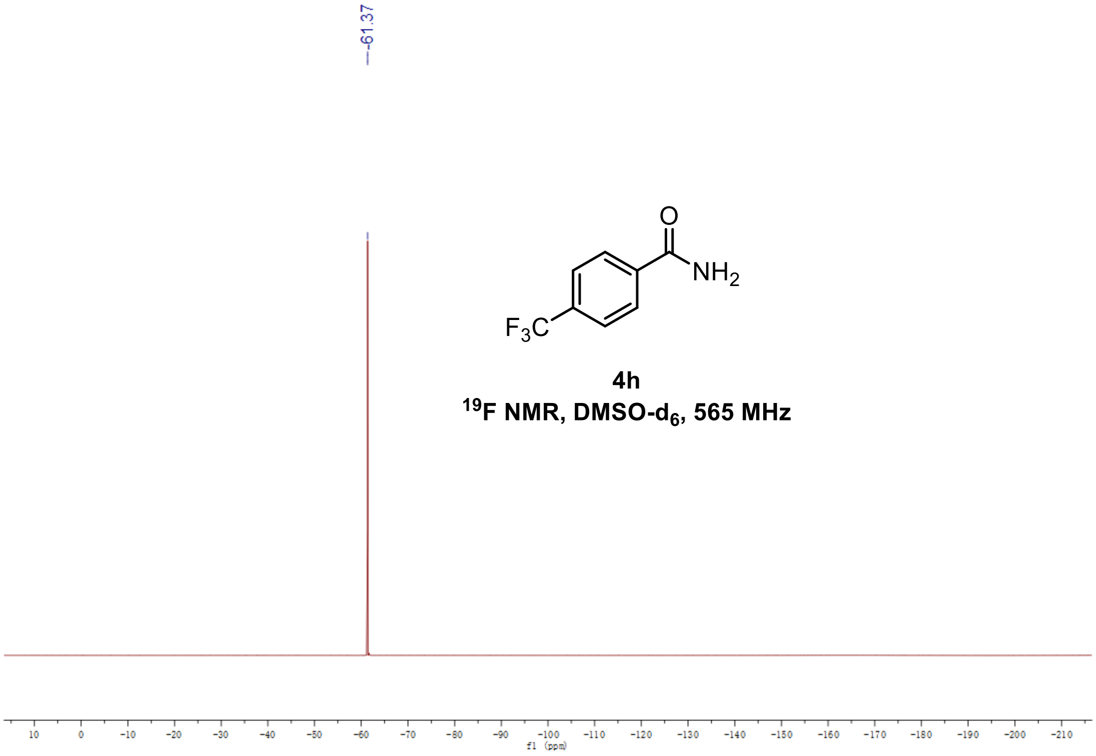
4h

^{1}H NMR, DMSO-d_6, 600 MHz



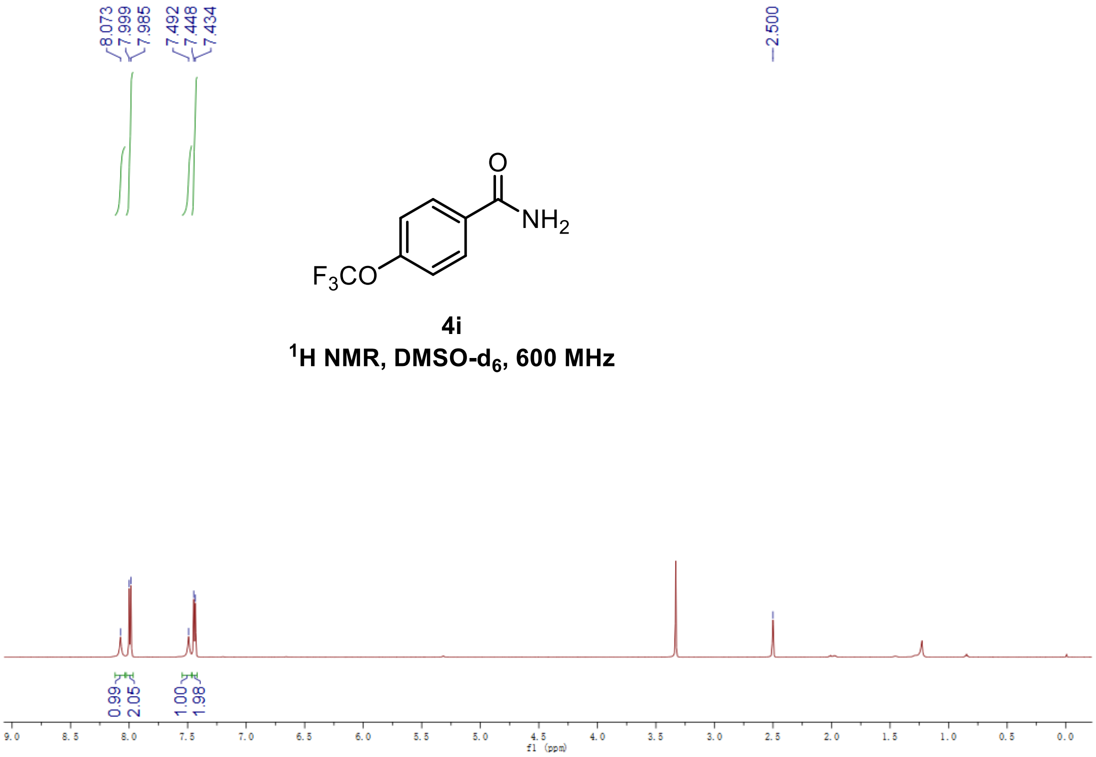
4h

^{13}C NMR, DMSO-d_6, 150 MHz



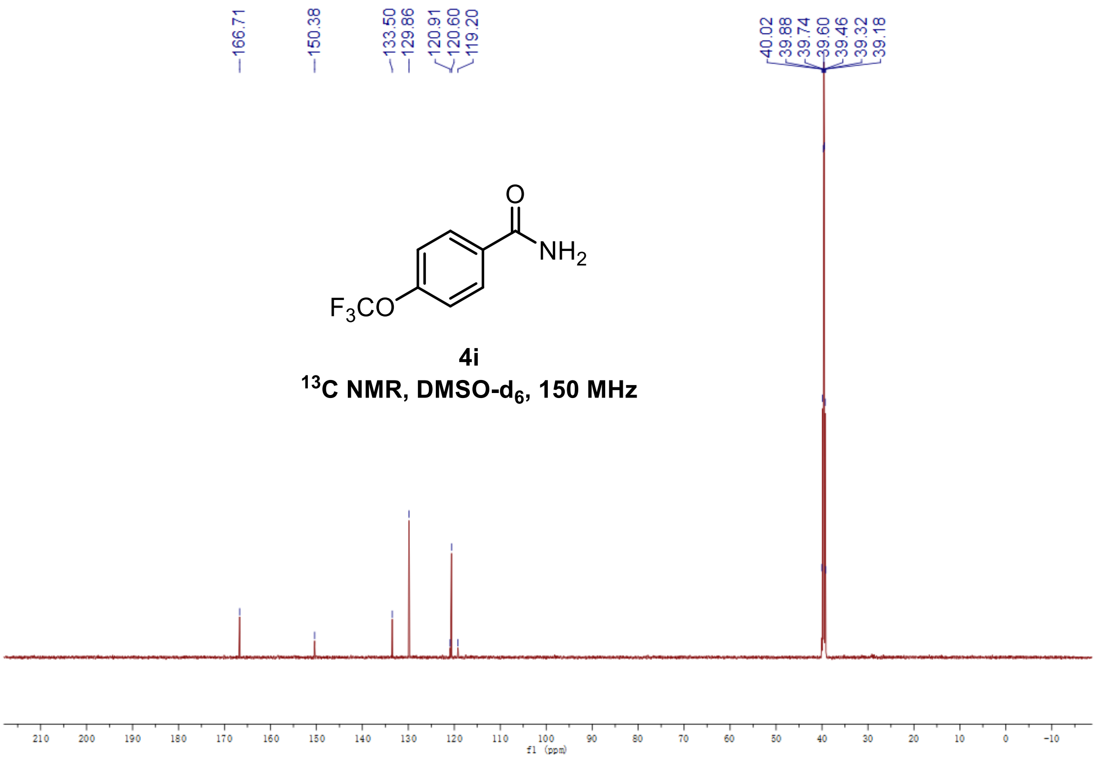
4h

^{19}F NMR, DMSO-d$_6$, 565 MHz



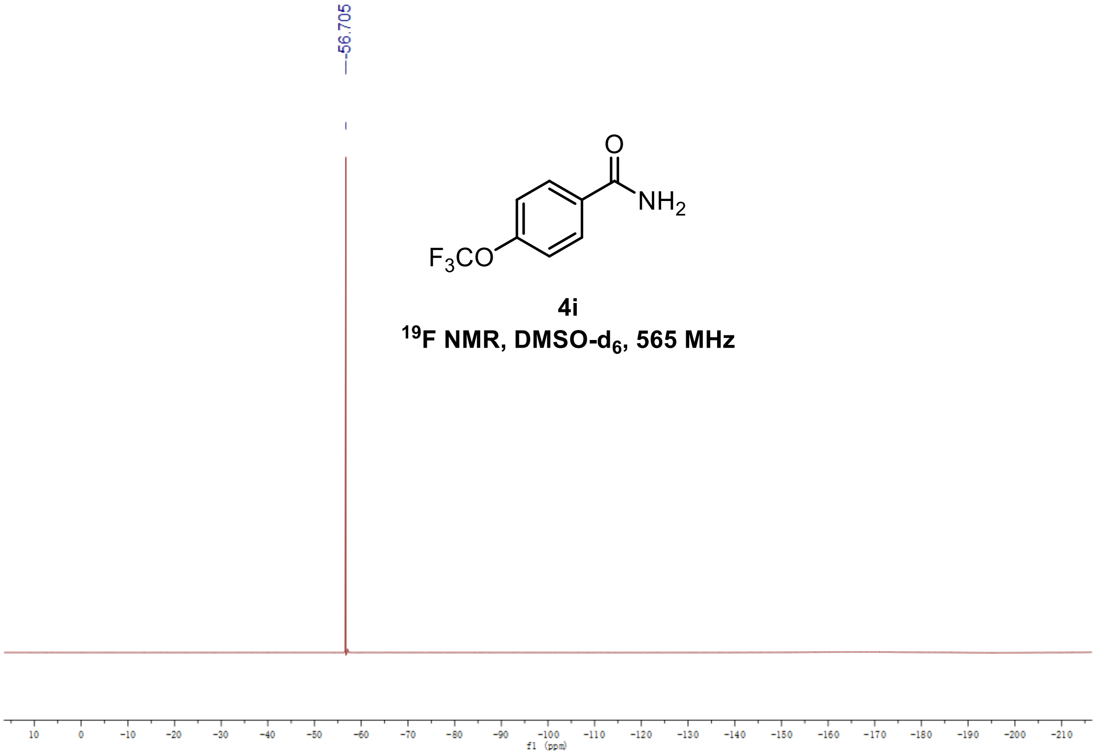
4i

^{1}H NMR, DMSO-d$_6$, 600 MHz



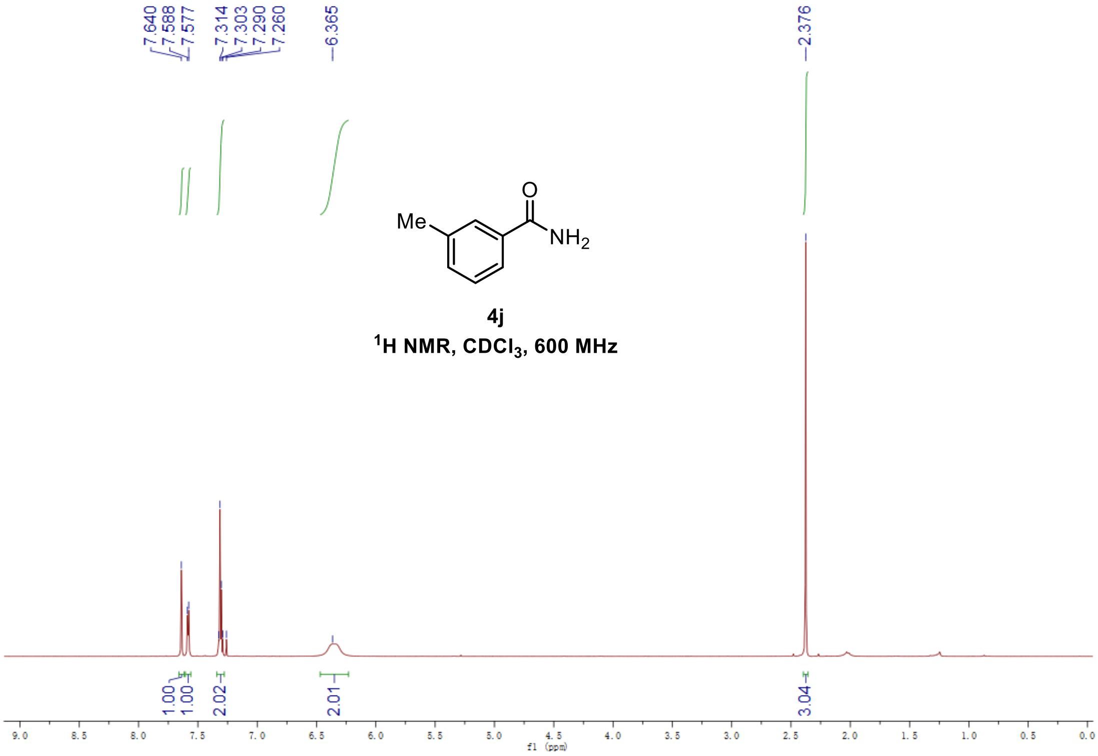
4i

^{13}C NMR, DMSO-d$_6$, 150 MHz

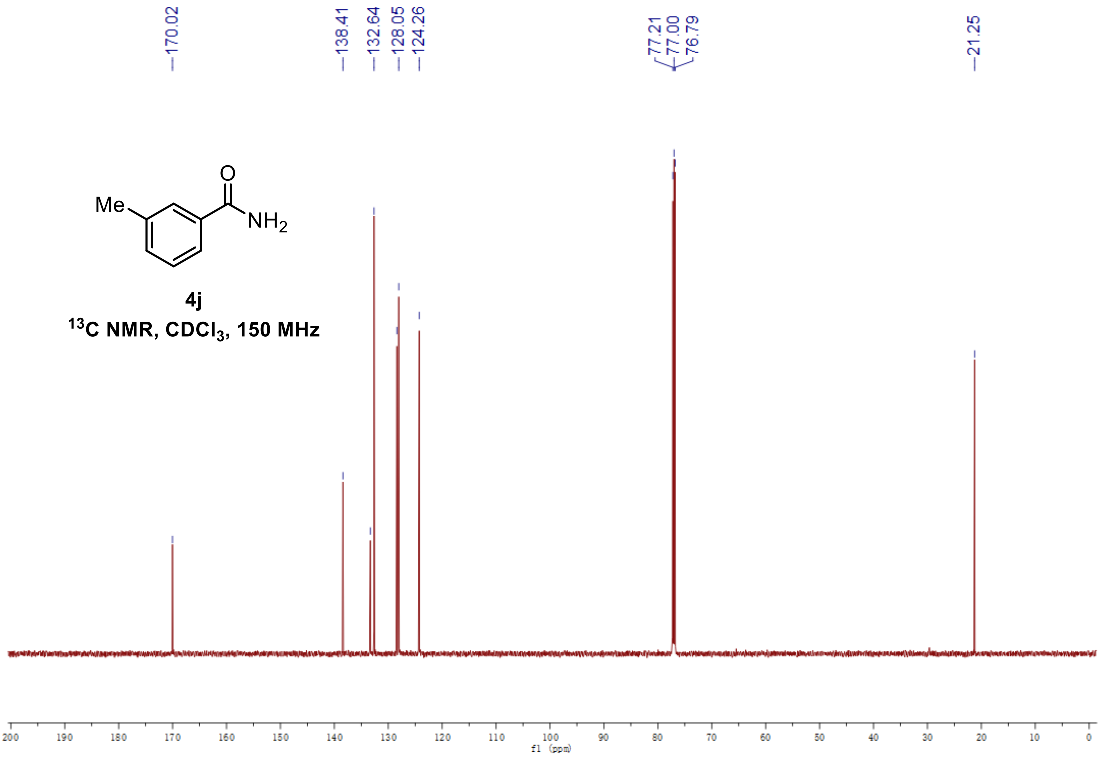


4i

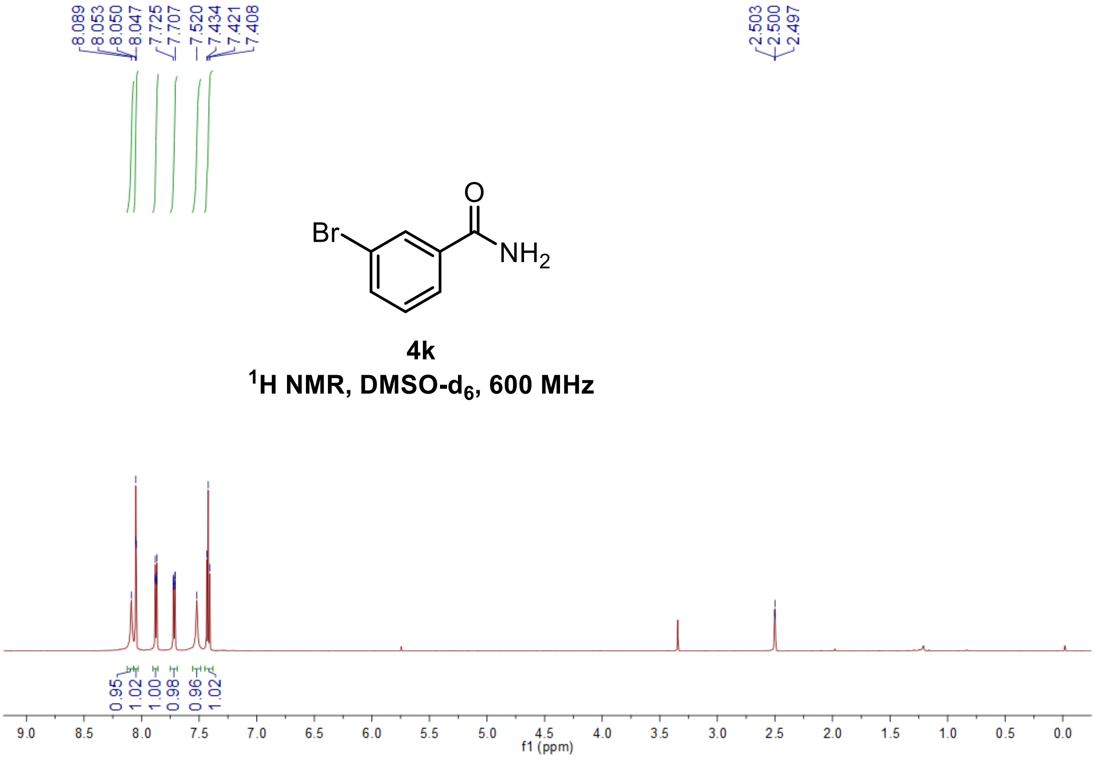
^{19}F NMR, DMSO-d$_6$, 565 MHz


4j

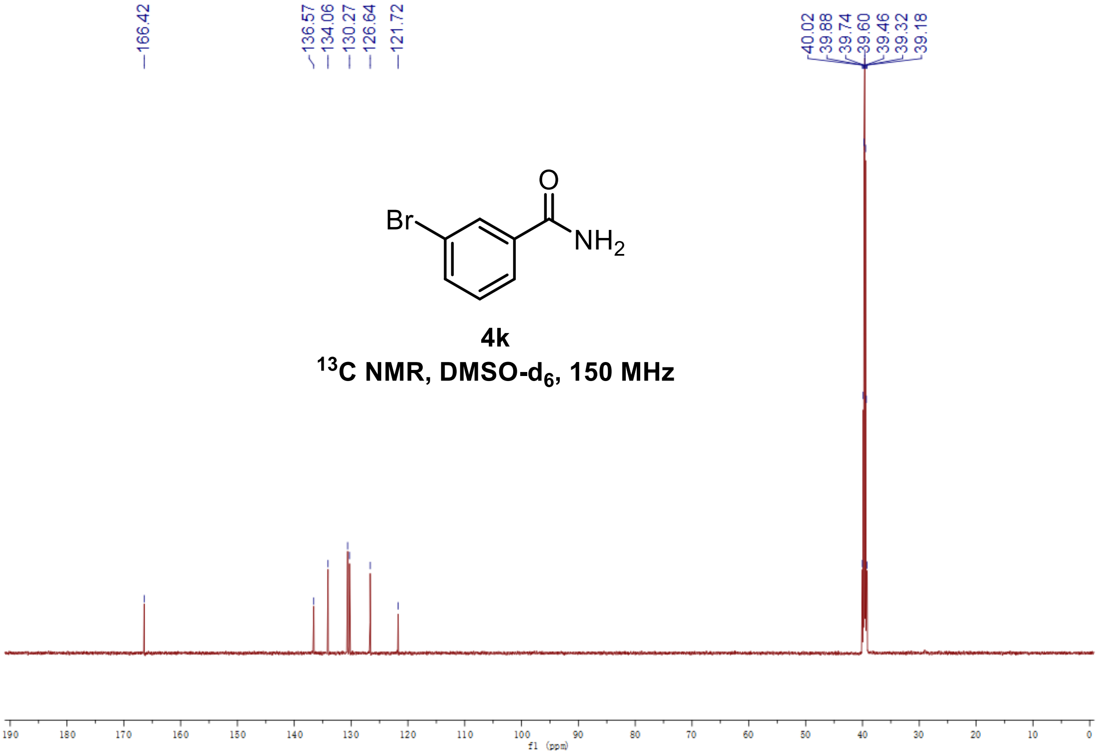
^{1}H NMR, CDCl$_3$, 600 MHz


4j

^{13}C NMR, CDCl$_3$, 150 MHz



4k
^{1}H NMR, DMSO-d$_6$, 600 MHz



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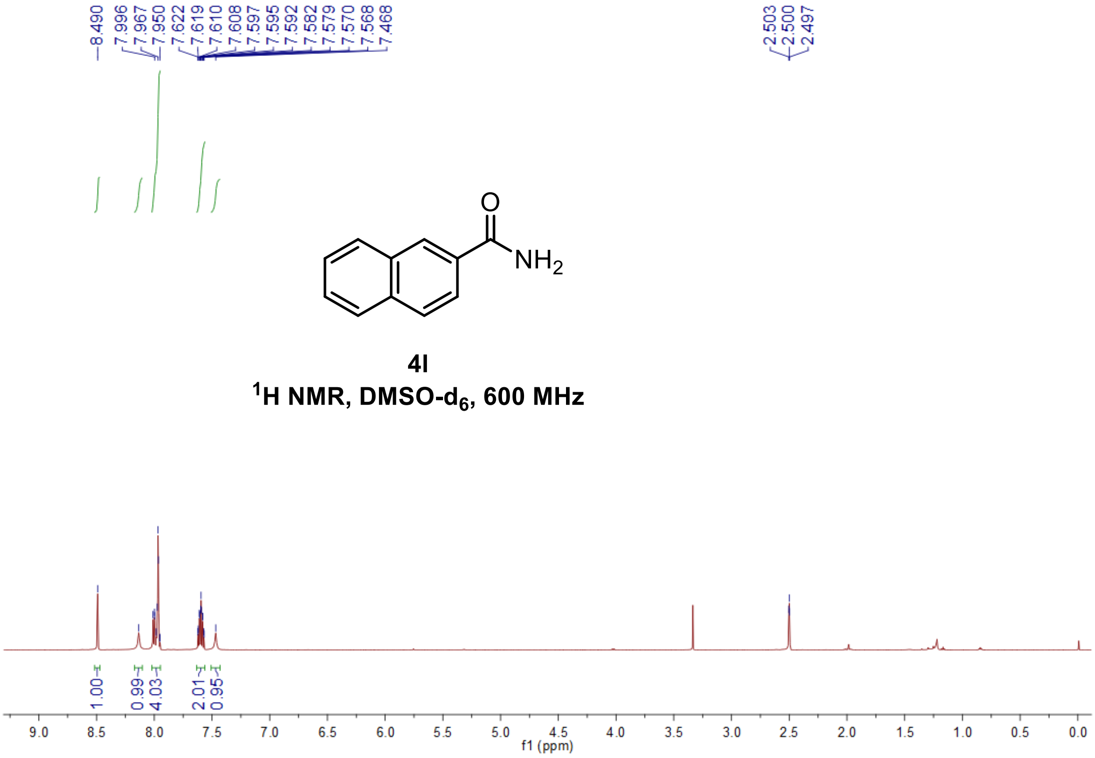

4l

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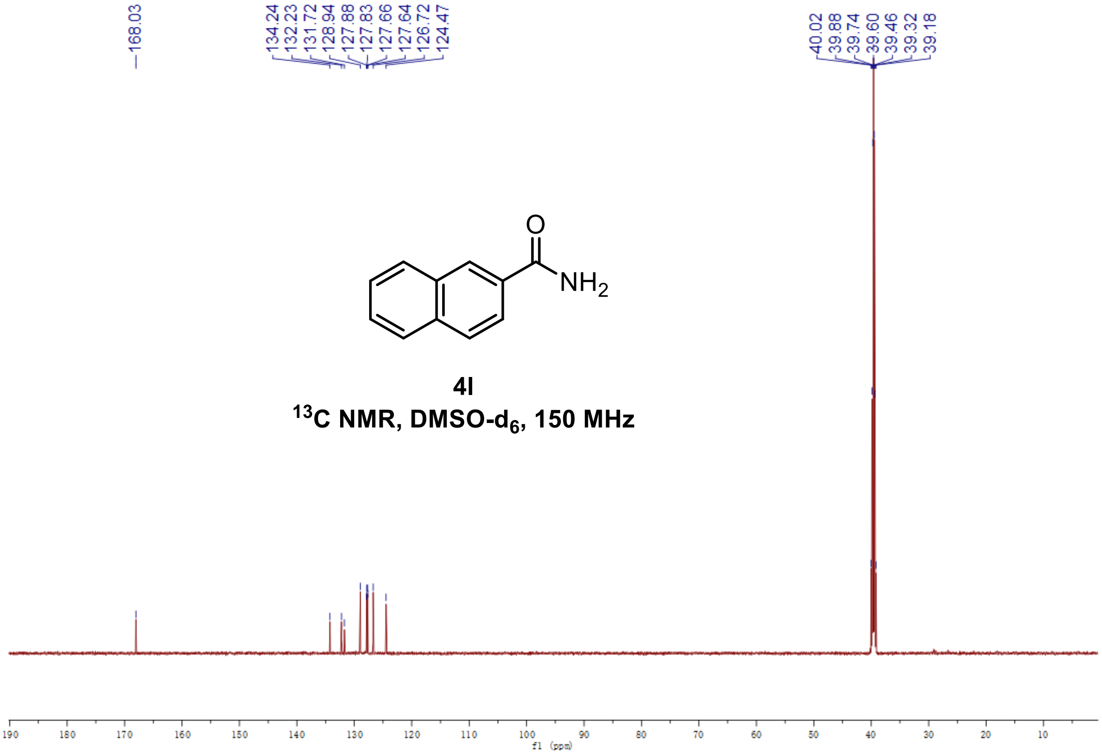

4l

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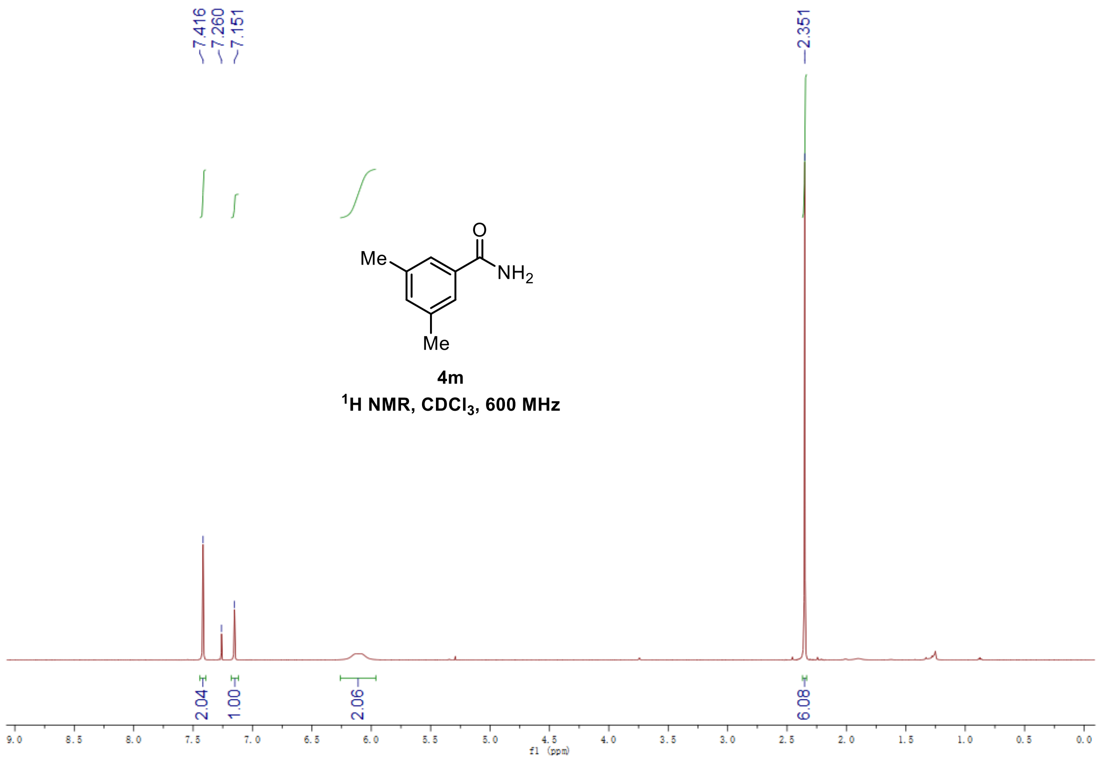

4m

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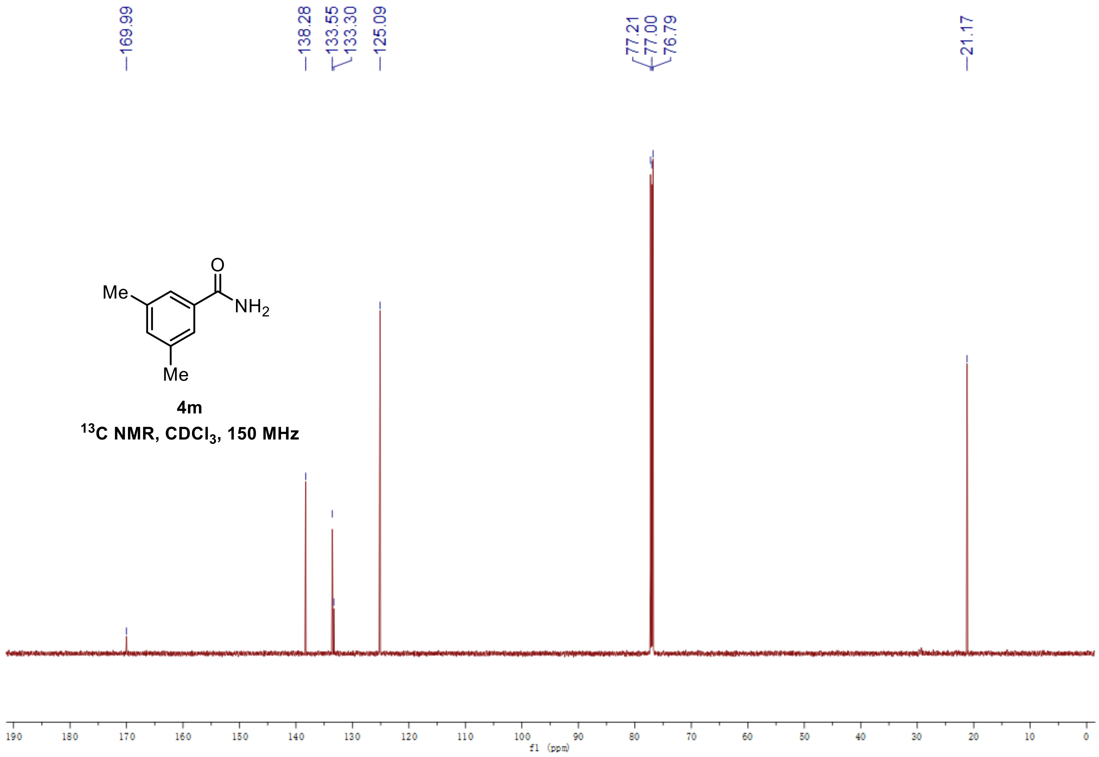
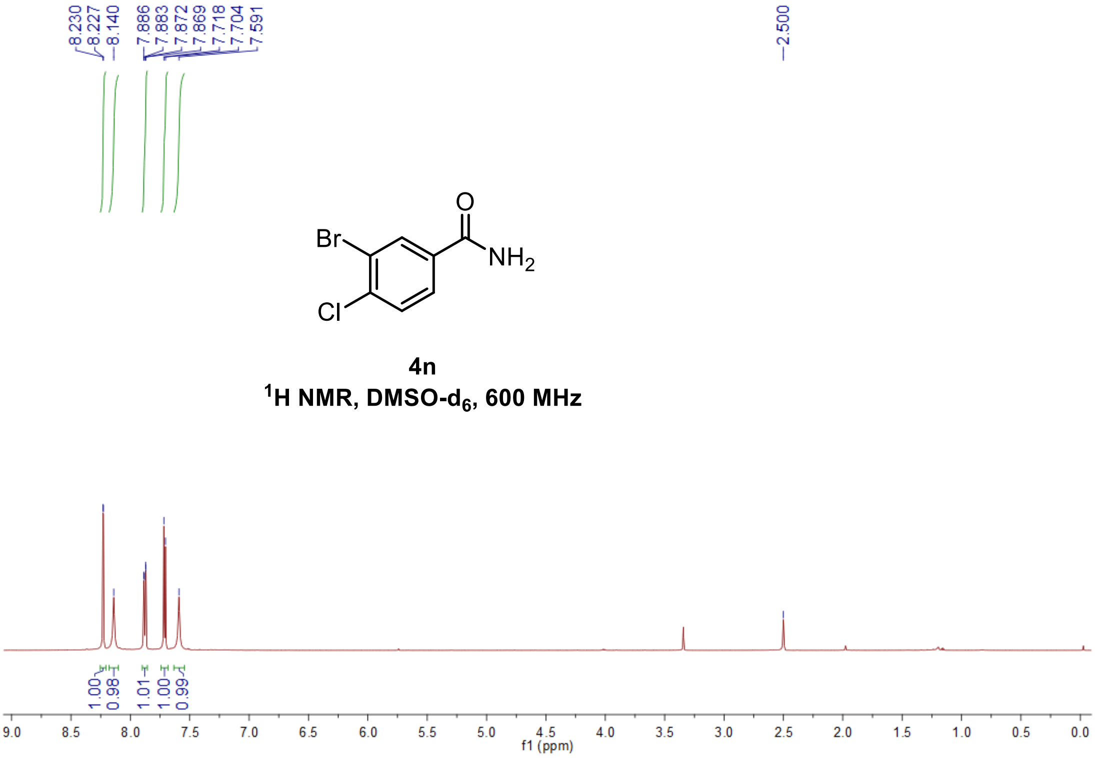


4m

^{13}C NMR, CDCl$_3$, 150 MHz



4n

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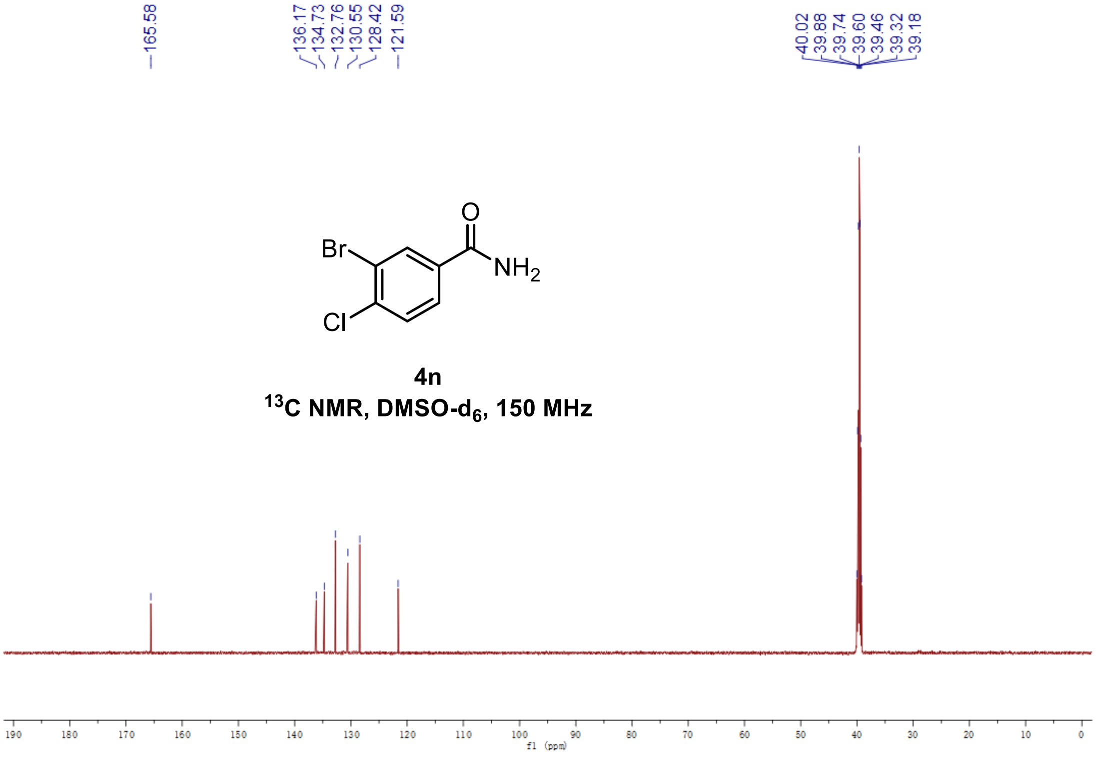

4n

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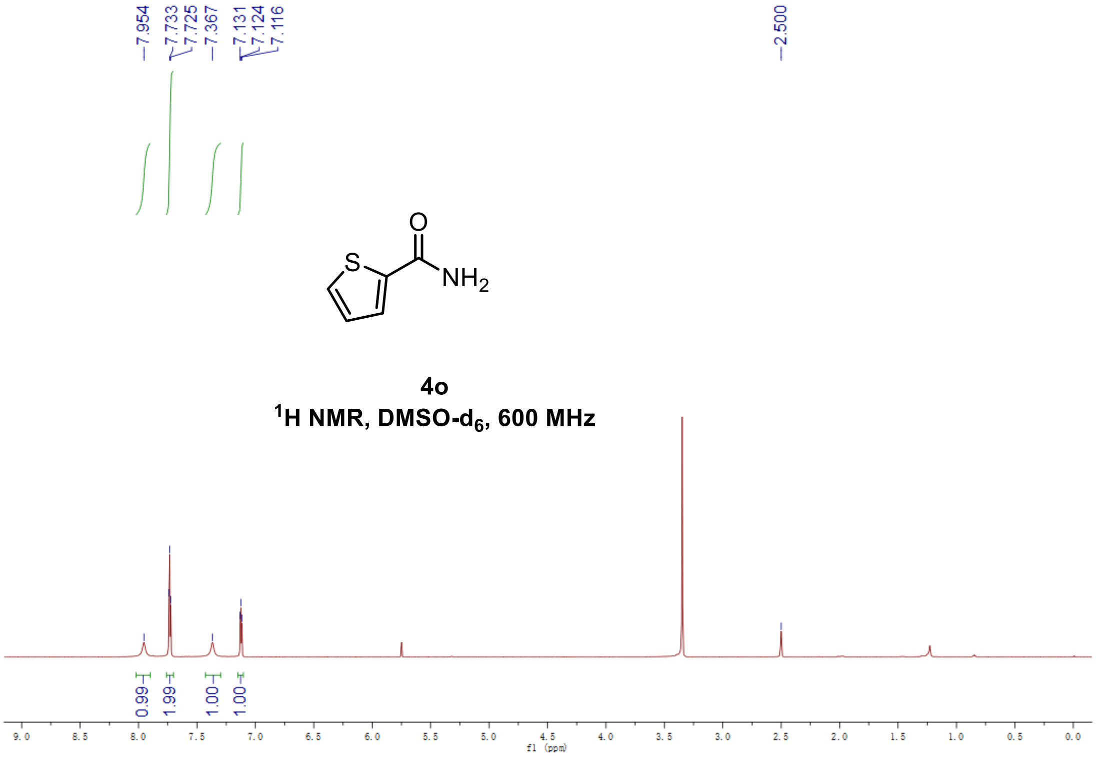

4o

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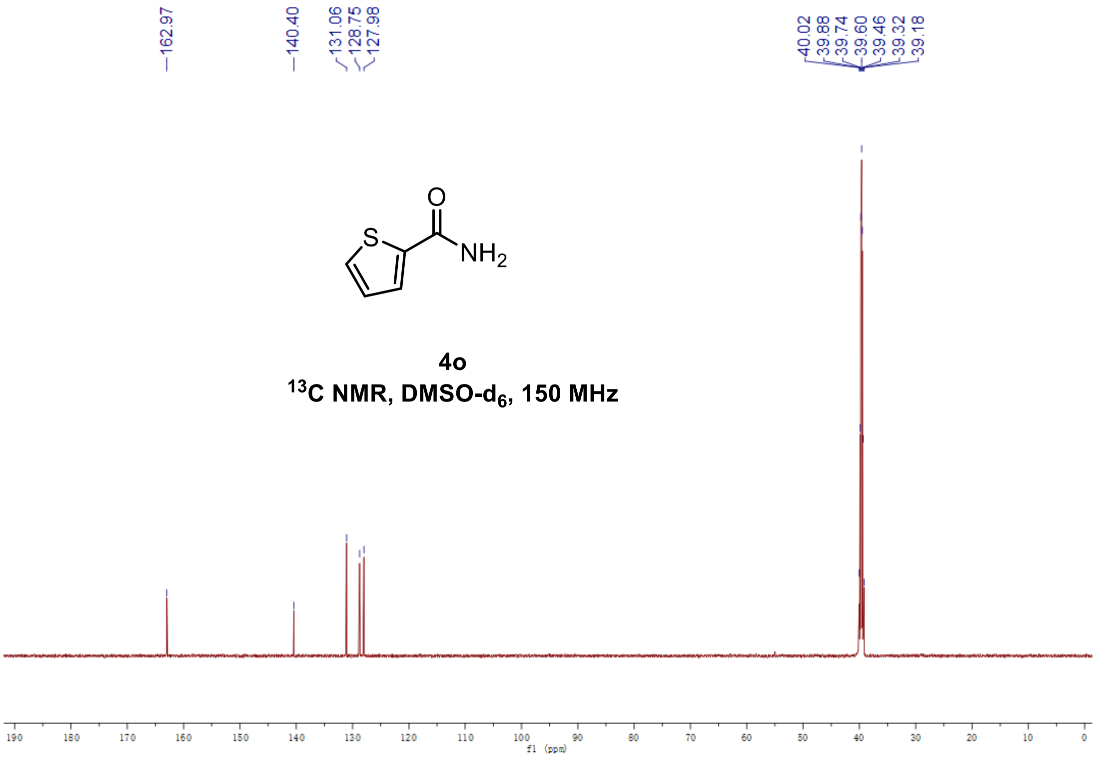

4o

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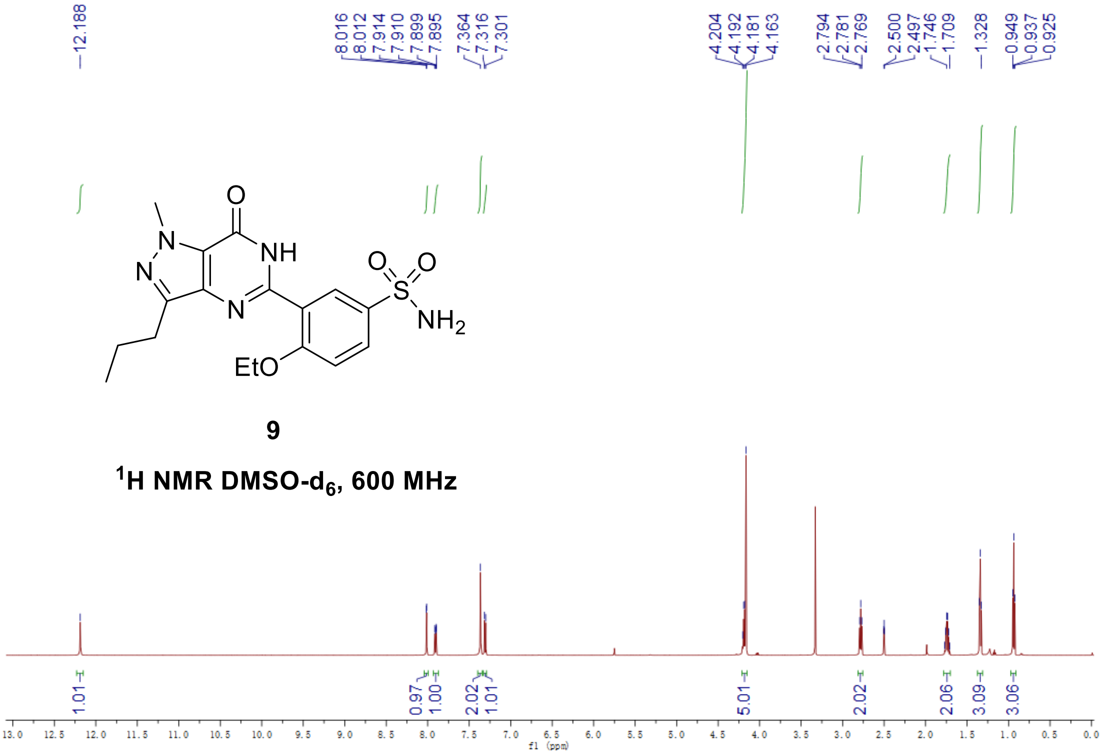
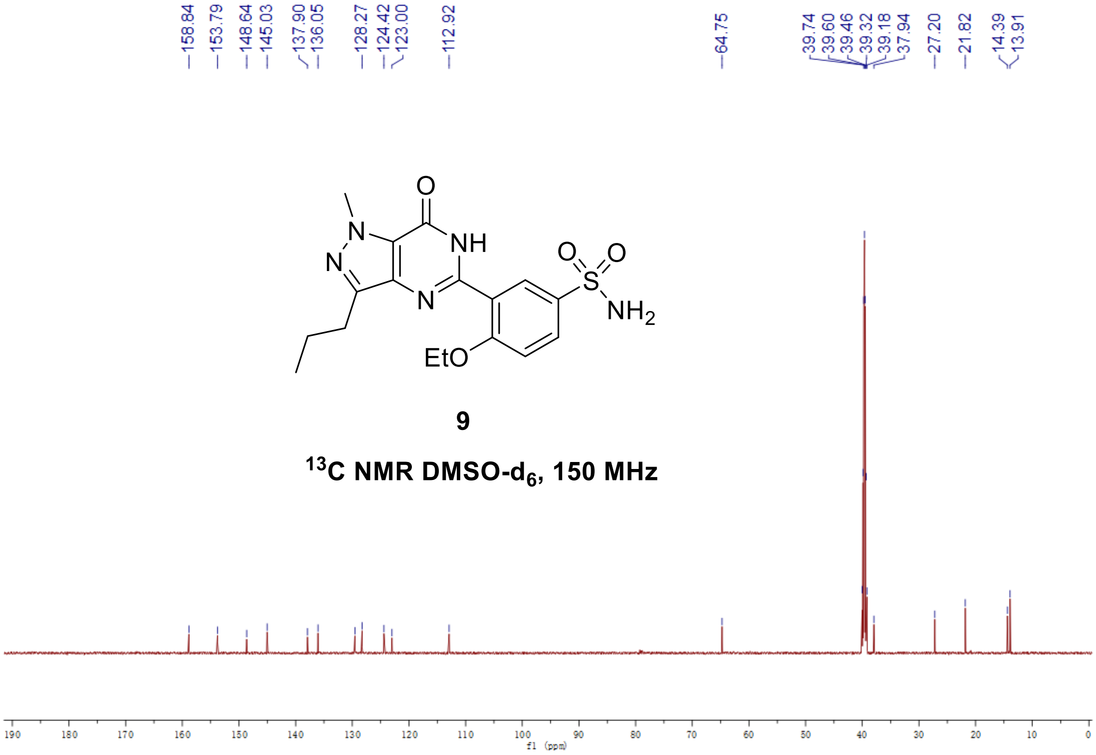


9

^{1}H NMR DMSO-d$_6$, 600 MHz



9

^{13}C NMR DMSO-d$_6$, 150 MHz