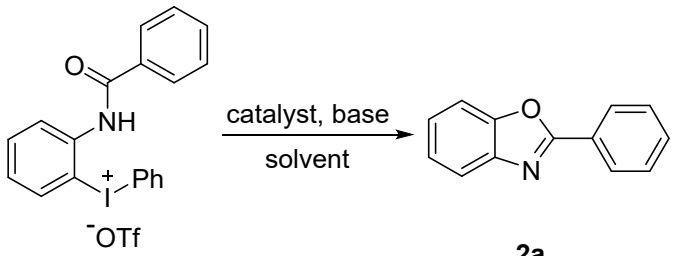
The general information for the synthetic experiments: Synthesis details for key compounds are described here. All solvents were commercially available and were used without a further purification unless stated. The chemicals used were either purchased from commercial sources or prepared according to literature procedures. The ^{1}H and ^{13}C nuclear magnetic resonance (NMR) spectra were recorded on a Bruker Avance spectrometer 400 at 400 MHz and 100 MHz respectively. Chemical shifts are given in ppm (δ) referenced to *CDCl₃* with 7.26 for ^{1}H and 77.10 for ^{13}C, and to *d_6-DMSO* with 2.50 for ^{1}H and 39.5 for ^{13}C. In the case of multiplet, the signals are reported as intervals. Signals are abbreviated as follows: s, singlet; d, doublet; t, triplet; q, quartet; m, multiplet. Coupling constants are expressed in hertz. High-resolution mass spectra (HRMS) were recorded on Thermo Fisher spectrometer, Orbitrap QExactive GC/MS (EI mode) and Orbitrap QExactive LC/MS(ESI mode) or BRUKER VPEXII spectrometer (ESI mode).The progress of the reactions was monitored by thin-layer chromatography on a glass plate coated with silica gel with fluorescent indicator (GF254). Column chromatography was performed on silica gel (200-300 mesh).

Table S1. Optimization of the reaction conditions[a]



1a **2a**

Entry	Catalyst	Base	Solvent	Temp. (°C)	Yiled[b] (%)
1	$Ni(acac)_2$	Na_2CO_3	DMF	40	44
2	$Ni(COD)_2$	Na_2CO_3	DMF	40	28
3	$NiCl_2$	Na_2CO_3	DMF	40	42
4	$NiBr_2$	Na_2CO_3	DMF	40	60
5	NiI_2	Na_2CO_3	DMF	40	56
6	$Ni(OAc)_2$	Na_2CO_3	DMF	40	0
7	$Ni(BF_4)_2$-$6H_2O$	Na_2CO_3	DMF	40	50
8	$Ni(OTf)_2$	Na_2CO_3	DMF	40	64
9	CuI	Na_2CO_3	DMF	40	23
10	----	Na_2CO_3	DMF	40	Trace
11	$Ni(OTf)_2$	Na_2CO_3	MeCN	40	32
12	$Ni(OTf)_2$	Na_2CO_3	DCE	40	21
13	$Ni(OTf)_2$	Na_2CO_3	EtOAc	40	18
14	$Ni(OTf)_2$	Na_2CO_3	EtOH	40	23
15	$Ni(OTf)_2$	Na_2CO_3	dioxane	40	28
16	$Ni(OTf)_2$	Na_2CO_3	THF	40	36
17	$Ni(OTf)_2$	Na_2CO_3	HFIP	40	63
18	$Ni(OTf)_2$	Na_2CO_3	DMSO	40	75
19	$Ni(OTf)_2$	Na_2CO_3	DMSO	60	91
20	$Ni(OTf)_2$	Na_2CO_3	DMSO	80	99 (98[c])

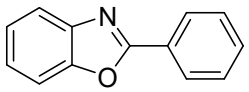
21	$Ni(OTf)_2$	NaOAc	DMSO	80	0
22	$Ni(OTf)_2$	$NaHCO_3$	DMSO	80	83
23	$Ni(OTf)_2$	NaOH	DMSO	80	72
24	$Ni(OTf)_2$	K_3PO_4	DMSO	80	87
25	$Ni(OTf)_2$	Et_3N	DMSO	80	52
26	$Ni(OTf)_2$	*t*BuOK	DMSO	80	28

[a]Reaction conditions: diphenyliodonium **1a** (0.1 mmol), nickel catalysts (0.05 equiv.), base (1.5 equiv.), solvent (0.5 mL), 6 h, argon. [b]NMR yield. [c]Isolated yield. DCE: 1,2-dichloroethane; HFIP: hexafluoroisopropanol.

General procedure for nickel catalyzed synthesis benzoxazole derivatives 2 and 4:

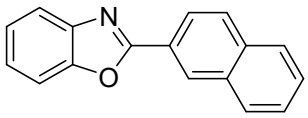
To iodonium **1** (55 mg, 0.1 mmol) in a flask was added Na_2CO_3 (16 mg, 1.5 equiv.), $Ni(OTf)_2$ (1.8 mg, 5 mol%), DMSO (1.0 mL). The reaction flask was evacuated and backfilled with argon three times, the reaction mixture was stirred at 80 °C heated by an oil bath for 6h. The reaction was monitored by TLC. After the reaction was finished, the residue was dissolved in EtOAc, washed with H_2O and brine, and dried over anhydrous Na_2SO_4, then evaporated under vacuum. The residue was purified by column chromatography on silica gel (PE/EA = 1/50- 1/10) to provide **2** or **4**.

Characterization data of products



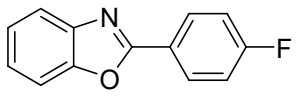
2a

2-Phenylbenzo[d]oxazole (2a): The product was isolated as a white solid (19 mg, 98%). mp 98 – 100 °C； ^{1}H NMR (400 MHz, $CDCl_3$) δ 8.32 – 8.22 (m, 2H), 7.79 (dd, *J* = 5.8, 3.3 Hz, 1H), 7.59 (dd, *J* = 6.0, 3.2 Hz, 1H), 7.56 – 7.50 (m, 3H), 7.39 – 7.32 (m, 2H) ppm. ^{13}C NMR (100 MHz, $CDCl_3$) δ 163.2, 150.9, 142.2, 131.7, 129.1, 127.8, 127.3, 125.3, 124.7, 120.2, 110.8 ppm. HRMS (ESI, *m/z*) calcd for $C_{13}H_{10}NO$ $[M+H]^+$: 196.07569, found: 196.07568.



2b

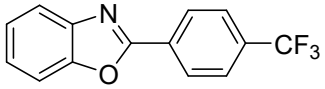
2-(Naphthalen-2-yl)benzo[d]oxazole (2b): The product was isolated as a white solid (22 mg, 90%). mp 107-109 °C ^{1}H NMR (400 MHz, $CDCl_3$) δ 8.79 (s, 1H), 8.33 (dd, *J* = 8.6, 1.5 Hz, 1H), 7.99 (dd, *J* = 8.6, 5.3 Hz, 2H), 7.93 – 7.87 (m, 1H), 7.82 (dd, *J* = 5.8, 3.2 Hz, 1H), 7.63 (dd, *J* = 5.9, 3.2 Hz, 1H), 7.58 (ddt, *J* = 10.8, 7.0, 3.5 Hz, 2H), 7.43 – 7.32 (m, 2H) ppm. ^{13}C NMR (100 MHz, $CDCl_3$) δ 163.4, 151.0, 142.3, 134.9, 133.1, 129.1, 129.0, 128.4, 128.1, 128.0, 127.1, 125.4, 124.8, 124.5, 124.1, 120.2, 110.8 ppm. HRMS (ESI, *m/z*) calcd for $C_{17}H_{12}NO$ $[M+H]^+$: 246.09134, found: 246.09113.



2c

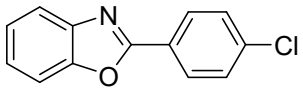
2-(4-Fluorophenyl)benzo[d]oxazole (2c): The product was isolated as a white solid (20 mg, 92%). mp

95-97 °C; ^{1}H NMR (400 MHz, $CDCl_3$) δ 8.31 – 8.22 (m, 2H), 7.80 – 7.73 (m, 1H), 7.57 (dt, *J* = 9.6, 3.6 Hz, 1H), 7.40 – 7.32 (m, 2H), 7.26 – 7.17 (m, 2H) ppm. ^{13}C NMR (100 MHz, $CDCl_3$) δ 165.0 (d, $J_{C\text{-}F}$ = 250.0 Hz), 162.3, 150.9, 142.2, 130.0 (d, $J_{C\text{-}F}$ = 9.0 Hz), 125.3, 124.8, 123.6 (d, $J_{C\text{-}F}$ = 3.0 Hz), 120.1, 116.3 (d, $J_{C\text{-}F}$ = 23.0 Hz), 110.7 ppm. HRMS (ESI, *m/z*) calcd for $C_{13}H_9NOF$ $[M+H]^+$: 214.06627, found: 214.06618.



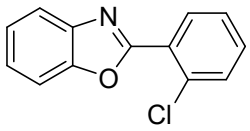
2d

2-(4-(Trifluoromethyl)phenyl)benzo[d]oxazole (2d): The product was isolated as a white solid (24 mg, 91%). mp 141-142 °C; ^{1}H NMR (400 MHz, $CDCl_3$) δ 8.38 (d, *J* = 8.2 Hz, 2H), 7.83 – 7.75 (m, 3H), 7.64 – 7.59 (m, 1H), 7.44 – 7.36 (m, 2H) ppm. ^{13}C NMR (100 MHz, $CDCl_3$) δ 161.6, 151.0, 142.0, 133.1 (q, $J_{C\text{-}F}$ = 27.0 Hz), 130.6, 128.0, 126.1 (q, $J_{C\text{-}F}$ = 3.0 Hz), 126.0, 125.1, 122.8, 120.6, 111.0 ppm. HRMS (ESI, *m/z*) calcd for $C_{14}H_9NOF_3$ $[M+H]^+$: 264.06290, found: 264.06308.



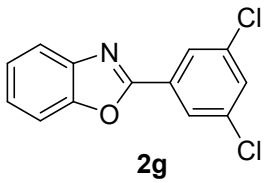
2e

2-(4-Chlorophenyl)benzo[d]oxazole (2e): The product was isolated as a white solid (22 mg, 95%). mp 146-147 °C; ^{1}H NMR (500 MHz, $CDCl_3$) δ 8.20 (d, *J* = 8.5 Hz, 2H), 7.78 (dd, *J* = 6.1, 2.9 Hz, 1H), 7.58 (dd, *J* = 6.3, 2.8 Hz, 1H), 7.51 (d, *J* = 8.5 Hz, 2H), 7.42 – 7.34 (m, 2H) ppm. ^{13}C NMR (100 MHz, $CDCl_3$) δ 162.2, 150.8, 142.1, 137.9, 129.4, 129.0, 125.8, 125.5, 124.9, 120.2, 110.8 ppm. HRMS (ESI, *m/z*) calcd for $C_{13}H_9NOCl$ $[M+H]^+$: 230.03672, found: 230.03658.



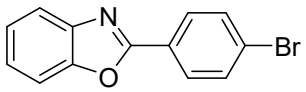
2f

2-(2-Chlorophenyl)benzo[d]oxazole (2f): The product was isolated as a white solid (21 mg, 91%). mp 74 °C; ^{1}H NMR (500 MHz, $CDCl_3$) δ 8.16 (d, *J* = 7.5 Hz, 1H), 7.91 – 7.81 (m, 1H), 7.63 (dd, *J* = 5.8, 2.5 Hz, 1H), 7.57 (d, *J* = 7.8 Hz, 1H), 7.50 – 7.35 (m, 4H) ppm. ^{13}C NMR (100 MHz, $CDCl_3$) δ 161.1, 150.7, 141.8, 133.6, 132.0, 131.9, 131.5, 127.1, 126.4, 125.7, 124.8, 120.6, 110.9 ppm. HRMS (ESI, *m/z*) calcd for $C_{13}H_9NOCl$ $[M+H]^+$: 230.03672, found: 230.03650.



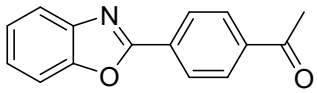
2g

2-(3, 5-Dichlorophenyl)benzo[d]oxazole (2g): The product was isolated as a white solid (24 mg, 92%). mp 134-136 °C; ^{1}H NMR (500 MHz, $CDCl_3$) δ 8.14 (s, 2H), 7.79 (d, *J* = 7.5 Hz, 1H), 7.59 (d, *J* = 7.5 Hz, 1H), 7.51 (s, 1H), 7.46 – 7.35 (m, 2H) ppm. ^{13}C NMR (100 MHz, $CDCl_3$) δ 160.5, 150.9, 141.8, 135.9, 131.3, 130.0, 126.1, 125.9, 125.2, 120.6, 110.9 ppm. HRMS (ESI, *m/z*) calcd for $C_{13}H_8NOCl_2$ $[M+H]^+$: 263.99775, found:263.99750.



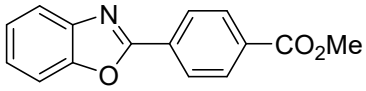
2h

2-(4-Bromophenyl)benzo[d]oxazole (2h): The product was isolated as a white solid (26 mg, 95%). mp 147-149 °C; ^{1}H NMR (500 MHz, $CDCl_3$) δ 8.13 (d, *J* = 8.6 Hz, 2H), 7.78 (dd, *J* = 6.2, 2.9 Hz, 1H), 7.67 (d, *J* = 8.5 Hz, 2H), 7.58 (dd, *J* = 6.1, 3.0 Hz, 1H), 7.40 – 7.34 (m, 2H) ppm. ^{13}C NMR (100 MHz, $CDCl_3$) δ 162.2, 150.9, 142.1, 132.3, 129.1, 126.4, 126.2, 125.5, 124.9, 120.2, 110.8 ppm. HRMS (ESI, *m/z*) calcd for $C_{13}H_9NOBr$ $[M+H]^+$: 273.98620, found:273.98584.



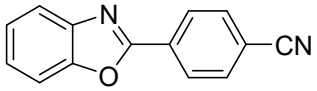
2i

1-(4-(Benzo[d]oxazol-2-yl)phenyl)ethan-1-one (2i): The product was isolated as a white solid (21 mg, 88%). mp 170-173 °C; ^{1}H NMR (400 MHz, $CDCl_3$) δ 8.35 (d, *J* = 8.3 Hz, 2H), 8.09 (d, *J* = 8.4 Hz, 2H), 7.86 – 7.76 (m, 1H), 7.65 – 7.57 (m, 1H), 7.39 (p, *J* = 6.9 Hz, 2H), 2.66 (s, 3H) ppm. ^{13}C NMR (100 MHz, $CDCl_3$) δ 197.5, 162.0, 151.0, 142.1, 139.1, 131.2, 129.0, 127.9, 125.9, 125.0, 120.5, 110.9, 26.9 ppm. HRMS (ESI, *m/z*) calcd for $C_{15}H_{12}NO_2$ $[M+H]^+$: 238.08626, found: 238.08611.



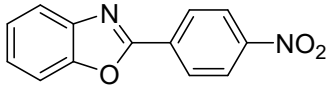
2j

Methyl 4-(benzo[d]oxazol-2-yl)benzoate (2j): The product was isolated as a white solid (21 mg, 84%). mp 195-197 °C; ^{1}H NMR (500 MHz, $CDCl_3$) δ 8.34 (d, *J* = 8.5 Hz, 2H), 8.20 (d, *J* = 8.5 Hz, 2H), 7.85 – 7.76 (m, 1H), 7.66 – 7.57 (m, 1H), 7.46 – 7.34 (m, 2H), 3.97 (s, 3H) ppm. ^{13}C NMR (100 MHz, $CDCl_3$) δ 166.4, 162.0, 151.0, 142.1, 132.6, 131.1, 130.2, 127.6, 125.8, 125.0, 120.5, 110.9, 52.5 ppm. HRMS (ESI, *m/z*) calcd for $C_{15}H_{12}NO_3$ $[M+H]^+$: 254.08117, found: 254.08089.



2k

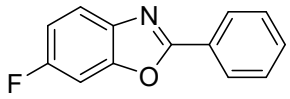
4-(Benzo[d]oxazol-2-yl)benzonitrile (2k): The product was isolated as a white solid (19 mg, 87%). mp 199-201 °C; ^{1}H NMR (400 MHz, $CDCl_3$) δ 8.41 – 8.30 (m, 2H), 7.86 – 7.75 (m, 3H), 7.65 – 7.58 (m, 1H), 7.46 – 7.35 (m, 2H) ppm. ^{13}C NMR (100 MHz, $CDCl_3$) δ 161.0, 151.0, 142.0, 132.8, 131.2, 128.1, 126.3, 125.3, 120.7, 118.3, 114.9, 111.0 ppm. HRMS (ESI, *m/z*) calcd for $C_{14}H_9N_2O$ $[M+H]^+$: 221.07094, found: 221.07092.



2l

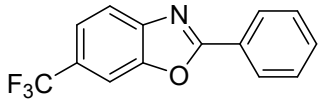
2-**(4-Nitrophenyl)benzo[d]oxazole (2l)**: The product was isolated as a white solid (19 mg, 79%). mp 180-182 °C; ^{1}H NMR (400 MHz, $CDCl_3$) δ 8.49 – 8.33 (m, 4H), 7.87 – 7.81 (m, 1H), 7.67 – 7.61 (m, 1H), 7.48 – 7.40 (m, 2H) ppm. ^{13}C NMR (100 MHz, $CDCl_3$) δ 160.8, 151.2, 149.6, 142.0, 132.9, 128.6, 126.5, 125.4, 124.4, 120.8, 111.1 ppm. HRMS (ESI, *m/z*) calcd for $C_{13}H_9N_2O_3$ $[M+H]^+$: 241.06077,

found: 241.06044.



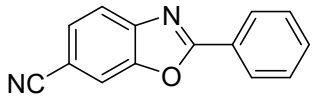
2m

6-Fluoro-2-phenylbenzo[d]oxazole (2m): The product was isolated as a white solid (18 mg, 83%). mp 95-97 °C; ^{1}H NMR (400 MHz, $CDCl_3$) δ 8.28 – 8.17 (m, 2H), 7.70 (dd, *J* = 8.7, 4.9 Hz, 1H), 7.59 – 7.48 (m, 3H), 7.31 (dd, *J* = 8.0, 2.4 Hz, 1H), 7.15 – 7.07 (m, 1H) ppm. ^{13}C NMR (100 MHz, $CDCl_3$) δ 160.8 (d, $J_{C\text{-}F}$ = 243.0 Hz), 159.6, 138.5, 131.8, 129.1, 127.6, 127.0, 120.4 (d, $J_{C\text{-}F}$ = 10.0 Hz), 112.7 (d, $J_{C\text{-}F}$ = 25.0 Hz), 99.0, 98.7 ppm. HRMS (ESI, *m/z*) calcd for $C_{13}H_9NOF$ $[M+H]^+$: 214.06627, found: 214.06615.



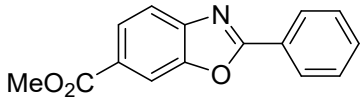
2n

2-Phenyl-6-(trifluoromethyl)benzo[d]oxazole (2n): The product was isolated as a white solid (19 mg, 73%). mp 80-82 °C; ^{1}H NMR (400 MHz, $CDCl_3$) δ 8.30 – 8.24 (m, 2H), 7.86 (d, *J* = 9.0 Hz, 2H), 7.64 (d, *J* = 8.3 Hz, 1H), 7.62 – 7.51 (m, 3H) ppm. ^{13}C NMR (100 MHz, $CDCl_3$) δ 165.5, 155.1, 150.3, 145.0, 132.4, 129.2, 128.1, 126.6, 124.3 (q, $J_{C\text{-}F}$ = 271.0 Hz), 122.4 (q, $J_{C\text{-}F}$ = 4.0 Hz), 120.5, 108.5 ppm. HRMS (ESI, *m/z*) calcd for $C_{14}H_9NOF_3$ $[M+H]^+$: 264.06308, found: 264.06281.



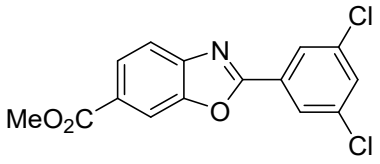
2o

2-Phenylbenzo[d]oxazole-6-carbonitrile (2o): The product was isolated as a white solid (17 mg, 76%). mp 182-185 °C; ^{1}H NMR (400 MHz, $CDCl_3$) δ 8.27 (d, *J* = 7.6 Hz, 2H), 7.89 (s, 1H), 7.83 (d, *J* = 8.2 Hz, 1H), 7.65 (d, *J* = 8.2 Hz, 1H), 7.61 (t, *J* = 7.2 Hz, 1H), 7.56 (t, *J* = 7.5 Hz, 2H) ppm. ^{13}C NMR (100 MHz, $CDCl_3$) δ 166.2, 150.1, 146.1, 132.8, 129.3, 129.0, 128.3, 126.1, 121.1, 118.9, 115.0, 108.2 ppm. HRMS (ESI, *m/z*) calcd for $C_{14}H_9N_2O$ $[M+H]^+$: 221.07094, found: 221.07085.



2p

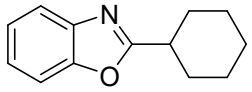
Methyl 2-phenylbenzo[d]oxazole-6-carboxylate (2p): The product was isolated as a white solid (20 mg,78 %). mp 132-135 °C; ^{1}H NMR (400 MHz, $CDCl_3$) δ 8.28 (dd, *J* = 8.0, 1.6 Hz, 3H), 8.09 (dd, *J* = 8.4, 1.5 Hz, 1H), 7.79 (d, *J* = 8.4 Hz, 1H), 7.60 – 7.50 (m, 3H), 3.97 (s, 3H) ppm. ^{13}C NMR (100 MHz, $CDCl_3$) δ 166.8, 165.7, 150.6, 146.2, 132.4, 129.2, 128.1, 127.2, 126.7, 126.6, 119.7, 112.4, 52.5 ppm. HRMS (ESI, *m/z*) calcd for $C_{15}H_{12}NO_3$ $[M+H]^+$: 254.08117, found: 254.08086.



2q

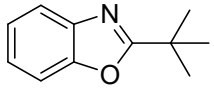
Methyl 2-(3,5-dichlorophenyl)benzo[d]oxazole-6-carboxylate (2q): The product was isolated as a white solid (26 mg, 81%). mp 175-177 °C ^{1}H NMR (400 MHz, $CDCl_3$) δ 8.28 (d, *J* = 1.0 Hz, 1H), 8.15

(d, *J* = 1.9 Hz, 2H), 8.12 (dd, *J* = 8.4, 1.5 Hz, 1H), 7.82 – 7.78 (m, 1H), 7.54 (t, *J* = 1.9 Hz, 1H), 3.98 (s, 3H) ppm. ^{13}C NMR (100 MHz, $CDCl_3$) δ 166.5, 162.9, 150.5, 145.6, 136.0, 132.0, 129.4, 128.0, 126.8, 126.2, 120.1, 112.6, 52.6 ppm. HRMS (ESI, *m/z*) calcd for $C_{15}H_{10}Cl_2NO_3$ $[M+H]^+$: 322.00323, found: 322.00281.



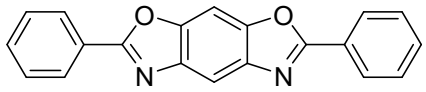
2r

2-Cyclohexylbenzo[d]oxazole (2r): The product was isolated as a white solid (19 mg, 94%). mp 156-158 °C; ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.72 – 7.65 (m, 1H), 7.47 (dt, *J* = 7.6, 3.4 Hz, 1H), 7.31 – 7.27 (m, 2H), 2.96 (tt, *J* = 11.4, 3.6 Hz, 1H), 2.22 – 2.14 (m, 2H), 1.93 – 1.82 (m, 2H), 1.71 (ddd, *J* = 24.4, 12.2, 3.4 Hz, 3H), 1.50 – 1.29 (m, 3H) ppm. ^{13}C NMR (100 MHz, $CDCl_3$) δ 170.6, 150.7, 141.3, 124.5, 124.1, 119.7, 110.4, 38.0, 30.6, 25.9, 25.8 ppm. HRMS (ESI, *m/z*) calcd for $C_{13}H_{16}NO$ $[M+H]^+$: 202.12264, found:202.12244.



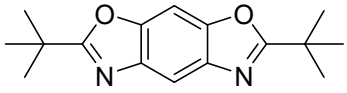
2s

2-(tert-Butyl)benzo[d]oxazole (2s): The product was isolated as a white solid (17 mg, 95%). mp 220-223 °C; ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.70 (dd, *J* = 5.9, 3.2 Hz, 1H), 7.49 (dd, *J* = 5.9, 3.2 Hz, 1H), 7.30 (dd, *J* = 6.0, 3.2 Hz, 2H), 1.50 (s, 9H) ppm. ^{13}C NMR (100 MHz, $CDCl_3$) δ 150.9, 141.3, 124.6, 124.1, 119.8, 110.4, 34.3, 28.6 ppm. HRMS (ESI, *m/z*) calcd for $C_{11}H_{13}NO$ $[M+H]^+$: 176.1070, found: 176.1069.



4a

2,6-Diphenylbenzo[1,2-d:5,4-d']bis(oxazole) (4a): The product was isolated as a white solid (23 mg, 73%). mp 180 °C; ^{1}H NMR (400 MHz, $CDCl_3$) δ 8.28 (s, 4H), 8.12 (s, 1H), 7.80 (s, 1H), 7.56 (s, 6H) ppm. ^{13}C NMR (100 MHz, $CDCl_3$) δ 164.0, 140.0, 131.8, 129.2, 127.8, 127.1, 110.0, 93.5 ppm. HRMS (ESI, *m/z*) calcd for $C_{20}H_{13}N_2O_2$ $[M+H]^+$: 313.09715, found: 313.09692.



4b

2,6-di-tert-Butylbenzo[1,2-d:5,4-d']bis(oxazole) (4b): The product was isolated as a white solid (18 mg, 66%). mp 132-133 °C; ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.96 (s, 1H), 7.58 (s, 1H), 1.51 (s, 18H) ppm. ^{13}C NMR (100 MHz, $CDCl_3$) δ 174.2, 148.5, 138.6, 109.5, 92.9, 34.5, 28.6 ppm. HRMS (ESI, *m/z*) calcd for $C_{16}H_{21}N_2O_2$ $[M+H]^+$: 273.15975, found:273.15930.

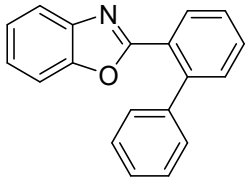
1 mmol scale reaction

To iodonium **1d** (617.3 mg, 1 mmol) in a flask was added Na_2CO_3 (158.98 mg, 1.5 equiv.), $Ni(OTf)_2$ (17.84 mg, 5 mol%), DMSO (5 mL). The reaction flask was evacuated and backfilled with argon three times, the reaction mixture was stirred at 80 °C heated by an oil bath for 6h. The reaction was monitored

by TLC. After the reaction was finished, the residue was dissolved in EtOAc, washed with H_2O and brine, dried over anhydrous Na_2SO_4, and then evaporated under vacuum. The residue was purified by column chromatography on silica gel to provide **2d** in 65% yield (170.45 mg).

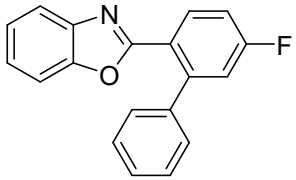
General procedure for nickel/Palladium catalyzed synthesis benzoxazole derivatives 6:

To iodonium **1** (55 mg, 0.1 mmol) in a flask was added Na_2CO_3 (16 mg, 1.5 equiv.), $Ni(OTf)_2$ (1.8 mg, 5 mol%), DMSO (1.0 mL). The reaction flask was evacuated and backfilled with argon three times, the reaction mixture was stirred at 80 °C heated by an oil bath for 6h. The reaction was monitored by TLC. After the reaction was finished, to the reaction mixture was added $PdCl_2$ (5 mol%), AgOAc (2.0 equiv.), K_3PO_4 (2.0 equiv.), TFA (1.0 mL), the reaction mixture was stirred at 80 °C heated by an oil bath for 24h. The reaction was monitored by TLC. After the reaction was finished, the residue was dissolved in EtOAc, washed with H_2O and brine, and dried over anhydrous Na_2SO_4, then evaporated under vacuum. The residue was purified by column chromatography on silica gel (PE/EA = 1/50-1/10) to provide **6**.



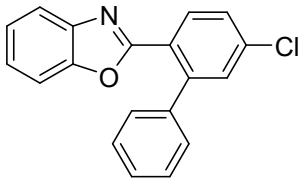
6a

2-([1,1'-Diphenyl]-2-yl)benzo[d]oxazole (6a): The product was isolated as a white solid (21 mg, 77%). mp 87 °C; ^{1}H NMR (400 MHz, $CDCl_3$) δ 8.15 – 8.09 (m, 1H), 7.72 (dd, J = 7.5, 1.1 Hz, 1H), 7.59 (td, J = 7.5, 1.4 Hz, 1H), 7.51 (ddd, J = 8.3, 5.5, 1.4 Hz, 2H), 7.35 – 7.25 (m, 8H) ppm. ^{13}C NMR (100 MHz, $CDCl_3$) δ 164.0, 150.8, 142.6, 141.8, 141.1, 131.3, 131.1, 128.9, 128.2, 127.7, 127.4, 126.4, 125.0, 124.4, 120.2, 110.6 ppm. HRMS (ESI, *m/z*) calcd for $C_{19}H_{14}NO$ $[M+H]^+$: 272.10699, found: 272.10657.



6b

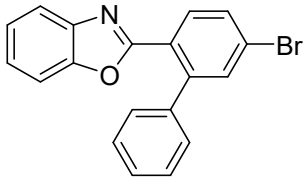
2-(5-Fluoro-[1,1'-biphenyl]-2-yl)benzo[d]oxazole (6b): The product was isolated as a white solid (19 mg, 64%). mp 82-85 °C; ^{1}H NMR (400 MHz, $CDCl_3$) δ 8.16 – 8.08 (m, 1H), 7.71 (d, J = 7.6 Hz, 1H), 7.38 – 7.25 (m, 8H), 7.24 – 7.17 (m, 2H) ppm. ^{13}C NMR (100 MHz, $CDCl_3$) δ 164.1 (d, $J_{C\text{-}F}$ = 251.0 Hz), 162.8, 150.8, 145.1, 141.7, 140.0, 133.4 (d, $J_{C\text{-}F}$ = 9.0 Hz), 128.7, 128.4, 127.9, 125.1, 124.5, 122.7 (d, $J_{C\text{-}F}$ = 3.0 Hz), 120.2, 118.3, 115.0 (d, $J_{C\text{-}F}$ = 21.0 Hz), 110.6 ppm. HRMS (ESI, *m/z*) calcd for $C_{19}H_{13}NOF$ $[M+H]^+$: 290.09757, found: 290.09720.



6c

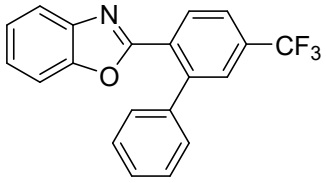
2-(5-Chloro-[1,1'-biphenyl]-2-yl)benzo[d]oxazole (6c): The product was isolated as a white solid (22 mg, 71%). mp 79-82 °C; ^{1}H NMR (400 MHz, $CDCl_3$) δ 8.12 – 8.06 (m, 1H), 7.71 (dd, J = 7.4, 1.3

Hz, 1H), 7.53 – 7.46 (m, 2H), 7.39 – 7.24 (m, 8H) ppm. ^{13}C NMR (100 MHz, $CDCl_3$) δ 163.0, 150.8, 144.1, 141.6, 139.8, 137.2, 132.4, 131.4, 128.8, 128.4, 127.9, 127.9, 125.3, 124.8, 124.6, 120.2, 110.7 ppm. HRMS (ESI, *m/z*) calcd for $C_{19}H_{13}NOCl$ $[M+H]^+$: 306.06802, found: 306.06775.



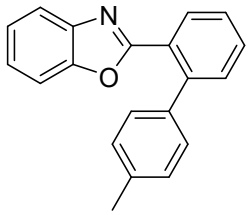
6d

2-(5-Bromo-[1,1'-biphenyl]-2-yl)benzo[d]oxazole (6d): The product was isolated as a white solid (20 mg, 57%). mp 104-107 °C;^{1}H NMR (400 MHz, $CDCl_3$) δ 8.01 (dd, *J* = 7.5, 1.4 Hz, 1H), 7.74 – 7.69 (m, 1H), 7.65 (dd, *J* = 7.7, 1.7 Hz, 2H), 7.38 – 7.24 (m, 8H) ppm. ^{13}C NMR (100 MHz, $CDCl_3$) δ 163.0, 150.8, 144.3, 141.7, 139.8, 134.3, 132.4, 130.8, 128.8, 128.4, 127.9, 125.6, 125.3, 124.6, 120.3, 120.3, 110.7 ppm. HRMS (ESI, *m/z*) calcd for $C_{19}H_{13}NOBr$ $[M+H]^+$: 350.01750, found: 350.01721.



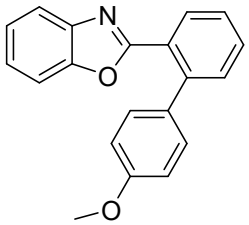
6e

2-(5-(Trifluoromethyl)-[1,1'-biphenyl]-2-yl)benzo[d]oxazole (6e):The product was isolated as a white solid (18 mg, 55%). mp 85-87 °C; ^{1}H NMR (400 MHz, $CDCl_3$) δ 8.27 (d, *J* = 7.9 Hz, 1H), 7.75 (t, *J* = 9.3 Hz, 3H), 7.42 – 7.27 (m, 8H) ppm. ^{13}C NMR (100 MHz, $CDCl_3$) δ 162.5, 150.9, 143.3, 141.6, 139.8, 132.8 (q, $J_{C\text{-}F}$ = 33.0 Hz), 131.6, 129.6, 128.8, 128.5, 128.2 (q, $J_{C\text{-}F}$ = 3.0 Hz), 128.1, 125.6, 124.8, 124.4 (q, $J_{C\text{-}F}$ = 3.0 Hz), 124.4, 120.5, 110.8 ppm. HRMS (ESI, *m/z*) calcd for $C_{20}H_{13}NOF_3$ $[M+H]^+$: 340.09438, found: 340.09399.



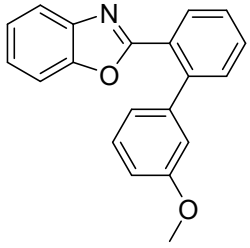
6f

2-(4'-Methyl-[1,1'-biphenyl]-2-yl)benzo[d]oxazole (6f): The product was isolated as a white solid (19 mg, 68%). mp 96-97 °C; ^{1}H NMR (400 MHz, $CDCl_3$) δ 8.08 – 8.00 (m, 1H), 7.73 – 7.65 (m, 1H), 7.56 – 7.49 (m, 1H), 7.44 (ddd, *J* = 5.1, 3.8, 1.9 Hz, 2H), 7.30 – 7.19 (m, 3H), 7.14 (d, *J* = 8.1 Hz, 2H), 7.08 (d, *J* = 8.0 Hz, 2H), 2.32 (s, 3H) ppm. ^{13}C NMR (100 MHz, $CDCl_3$) δ 164.2, 150.8, 142.6, 141.7, 138.0, 137.1, 131.3, 131.2, 131.2, 129.0, 128.8, 127.4, 126.3, 125.0, 124.4, 120.2, 110.7, 21.3 ppm. HRMS (ESI, *m/z*) calcd for $C_{20}H_{16}NO$ $[M+H]^+$: 286.12264, found: 286.12225.



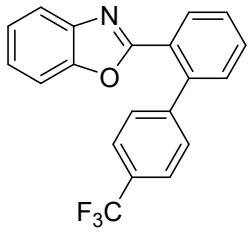
6g

2-(4'-Methoxy-[1,1'-biphenyl]-2-yl)benzo[d]oxazole (6g): The product was isolated as a white solid (22 mg, 73%). mp 102-105 °C; ^{1}H NMR (400 MHz, $CDCl_3$) δ 8.07 (d, *J* = 7.5 Hz, 1H), 7.73 (d, *J* = 7.3 Hz, 1H), 7.56 (t, *J* = 7.4 Hz, 1H), 7.46 (dd, *J* = 13.0, 6.1 Hz, 2H), 7.29 (ddd, *J* = 15.5, 8.0, 3.4 Hz, 3H), 7.21 (d, *J* = 8.6 Hz, 2H), 6.86 (d, *J* = 8.6 Hz, 2H), 3.81 (s, 3H) ppm. ^{13}C NMR (100 MHz, $CDCl_3$) δ 164.2, 159.1, 150.9, 142.2, 141.8, 133.4, 131.2, 131.2, 131.1, 130.1, 127.3, 126.4, 125.0, 124.4, 120.2, 113.8, 110.7, 55.4 ppm. HRMS (ESI, *m/z*) calcd for $C_{20}H_{16}NO_2$ $[M+H]^+$: 302.11756, found: 302.11716.



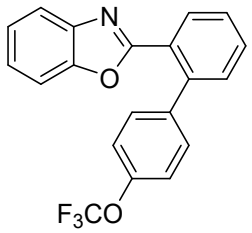
6h

2-(3'-Methoxy-[1,1'-biphenyl]-2-yl)benzo[d]oxazole (6h): The product was isolated as a white solid (20 mg, 68%). mp 84-86 °C; ^{1}H NMR (400 MHz, $CDCl_3$) δ 8.08 (dd, *J* = 5.4, 3.0 Hz, 1H), 7.79 – 7.71 (m, 1H), 7.64 – 7.57 (m, 1H), 7.52 (ddd, *J* = 4.6, 3.8, 2.2 Hz, 2H), 7.37 – 7.27 (m, 3H), 7.25 – 7.19 (m, 1H), 6.91 – 6.80 (m, 3H), 3.68 (s, 3H) ppm. ^{13}C NMR (100 MHz, $CDCl_3$) δ 164.0, 159.5, 150.9, 142.4, 141.8, 131.1, 129.2, 127.7, 126.4, 125.1, 124.4, 121.5, 120.2, 114.2, 113.4, 110.7, 55.3 pmm. HRMS (ESI, *m/z*) calcd for $C_{20}H_{16}NO_2$ $[M+H]^+$: 302.11756, found: 302.11713.



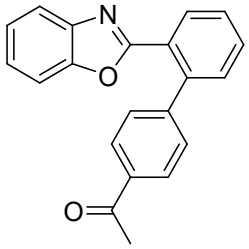
6i

2-(4'-(Trifluoromethyl)-[1,1'-biphenyl]-2-yl)benzo[d]oxazole (6i): The product was isolated as a white solid (16 mg, 46%). mp 83 °C; ^{1}H NMR (400 MHz, $CDCl_3$) δ 8.22 – 8.14 (m, 1H), 7.71 (d, *J* = 6.9 Hz, 1H), 7.65 – 7.55 (m, 4H), 7.50 – 7.44 (m, 1H), 7.42 (d, *J* = 8.0 Hz, 2H), 7.36 – 7.27 (m, 3H) ppm. ^{13}C NMR (100 MHz, $CDCl_3$) δ 163.2, 150.8, 144.9, 141.7, 141.1, 131.3, 131.2, 131.1, 129.4, 128.4, 126.8 (q, $J_{C\text{-}F}$ = 269.0 Hz), 126.3, 125.4, 125.2 (q, $J_{C\text{-}F}$ = 3.0 Hz), 124.7, 123.1, 110.7 ppm. HRMS (ESI, *m/z*) calcd for $C_{20}H_{13}NOF_3$ $[M+H]^+$: 340.09438, found: 340.09406.



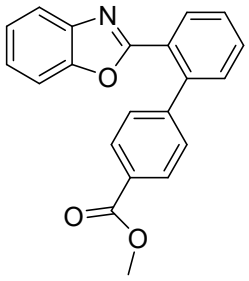
6j

2-(4'-(Trifluoromethoxy)-[1,1'-biphenyl]-2-yl)benzo[d]oxazole (6j): The product was isolated as a white solid (18 mg, 51%). mp 57-60 °C; ^{1}H NMR (400 MHz, $CDCl_3$) δ 8.22 – 8.13 (m, 1H), 7.71 (d, *J* = 7.0 Hz, 1H), 7.60 (dt, *J* = 7.5, 3.8 Hz, 1H), 7.57 – 7.51 (m, 1H), 7.50 – 7.44 (m, 1H), 7.35 – 7.26 (m, 5H), 7.19 (d, *J* = 8.2 Hz, 2H) ppm. ^{13}C NMR (100 MHz, $CDCl_3$) δ 163.4, 150.8, 148.7, 141.7, 141.1, 140.0, 131.2, 131.2, 131.1, 130.4, 128.2, 126.4, 125.3, 124.6, 120.7, 120.3, 110.6 ppm. HRMS (ESI, *m/z*) calcd for $C_{20}H_{13}NO_2F_3$ $[M+H]^+$: 356.08929, found: 356.08875.



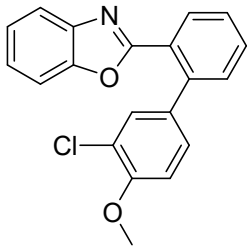
6k

1-(2'-(Benzo[d]oxazol-2-yl)-[1,1'-biphenyl]-4-yl)ethan-1-one (6k): The product was isolated as a white solid (17 mg, 54%). mp 149 °C; ^{1}H NMR (400 MHz, $CDCl_3$) δ 8.15 (d, *J* = 7.4 Hz, 1H), 7.93 (d, *J* = 8.2 Hz, 2H), 7.70 (d, *J* = 7.2 Hz, 1H), 7.64 – 7.58 (m, 1H), 7.56 (t, *J* = 7.0 Hz, 1H), 7.48 (d, *J* = 8.3 Hz, 1H), 7.40 (t, *J* = 6.7 Hz, 2H), 7.34 – 7.25 (m, 3H), 2.62 (s, 3H) ppm. ^{13}C NMR (100 MHz, $CDCl_3$) δ 198.0, 163.3, 150.8, 146.1, 141.7, 141.3, 136.0, 131.2, 131.2, 131.1, 129.3, 128.4, 126.3, 125.3, 124.6, 120.3, 110.7, 26.8 ppm. HRMS (ESI, *m/z*) calcd for $C_{21}H_{16}NO_2$ $[M+H]^+$: 314.11756, found: 314.11697.



6l

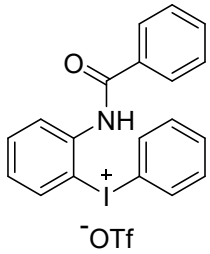
Methyl 2'-(benzo[d]oxazol-2-yl)-[1,1'-biphenyl]-4-carboxylate (6l): The product was isolated as a white solid (17 mg, 51%). mp 165-167 °C; ^{1}H NMR (400 MHz, $CDCl_3$) δ 8.16 (d, *J* = 7.5 Hz, 1H), 8.01 (d, *J* = 8.2 Hz, 2H), 7.70 (d, *J* = 7.4 Hz, 1H), 7.63 – 7.59 (m, 1H), 7.56 (dd, *J* = 10.7, 4.3 Hz, 1H), 7.48 (d, *J* = 7.5 Hz, 1H), 7.37 (d, *J* = 8.2 Hz, 2H), 7.34 – 7.24 (m, 3H), 3.93 (s, 3H) ppm. ^{13}C NMR (100 MHz, $CDCl_3$) δ 167.2, 163.4, 150.8, 145.9, 141.7, 141.4, 131.2, 131.2, 129.6, 129.1, 128.3, 126.3, 125.2, 124.6, 120.3, 110.7, 52.3 ppm. HRMS (ESI, *m/z*) calcd for $C_{21}H_{16}NO_3$ $[M+H]^+$: 330.11247, found: 330.11182.



6t

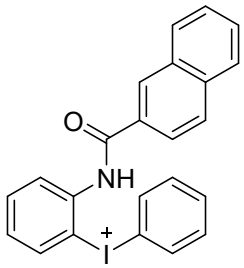
2-(3'-chloro-4'-methoxy-[1,1'-biphenyl]-2-yl)benzo[d]oxazole(6t): The product was isolated as a white solid (18 mg, 53%); mp 89-91 °C; ^{1}H NMR (400 MHz, $CDCl_3$) δ 8.11 (dd, *J* = 7.7, 1.3 Hz, 1H), 7.76 – 7.69 (m, 1H), 7.60 – 7.54 (m, 1H), 7.53 – 7.47 (m, 1H), 7.45 (dd, *J* = 7.6, 1.1 Hz, 1H), 7.41 (d, *J* = 2.2 Hz, 1H), 7.37 – 7.27 (m, 3H), 7.08 (dd, *J* = 8.5, 2.2 Hz, 1H), 6.85 (d, *J* = 8.5 Hz, 1H), 3.91 (s, 3H) ppm. ^{13}C NMR (101 MHz, $CDCl_3$) δ 163.7, 154.5, 150.8, 141.8, 140.8, 134.4, 131.3, 131.2, 130.7, 128.5, 127.8, 126.3, 125.2, 124.5, 122.2, 120.3, 111.7, 110.7, 56.3 ppm. HRMS (ESI, *m/z*) calcd for $C_{20}H_{15}NO_2Cl$ $[M+H]^+$: 336.07858, found: 336.07797.

Synthesis of diaryidoniums was done according to reported work.[1]



1a

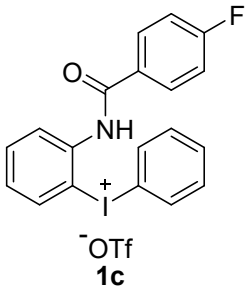
(2-benzamidophenyl)(phenyl)iodonium trifluoromethanesulfonate (1a):
^{1}H NMR (400 MHz, DMSO) δ 11.12 (s, 1H), 8.22 (dd, *J* = 8.3, 1.0 Hz, 2H), 8.12 – 8.03 (m, 3H), 7.71 (qd, *J* = 7.3, 1.3 Hz, 3H), 7.67 – 7.59 (m, 3H), 7.58 – 7.53 (m, 2H), 7.40 – 7.34 (m, 1H) ppm. ^{13}C NMR (100 MHz, DMSO) δ 167.6, 138.4, 135.7, 133.0, 132.9, 132.8, 132.4, 131.8, 129.3, 128.8, 128.1, 127.8, 116.9, 114.3 ppm. HRMS (ESI, *m/z*) calcd for $C_{19}H_{15}NOI$ $[M\text{-}OTf]^+$: 400.01928, found: 400.01892.



1b

(2-(2-naphthamido)phenyl)(phenyl)iodonium trifluoromethanesulfonate (1b)
^{1}H NMR (500 MHz, DMSO) δ 11.31 (s, 1H), 8.72 (s, 1H), 8.24 (d, *J* = 7.9 Hz, 2H), 8.16 (t, *J* = 6.6 Hz, 2H), 8.10 (dd, *J* = 13.8, 6.9 Hz, 3H), 7.76 – 7.67 (m, 4H), 7.65 (d, *J* = 7.2 Hz, 1H), 7.57 (t, *J* = 7.8 Hz, 2H), 7.38 (dd, *J* = 13.5, 6.2 Hz, 1H) ppm. ^{13}C NMR (100 MHz, DMSO) δ 167.6, 138.4, 135.7, 134.8, 133.0, 132.4, 132.0, 131.8, 130.0, 129.2, 129.2, 129.1, 128.6, 128.5, 127.9, 127.8, 127.3, 124.2, 122.0,

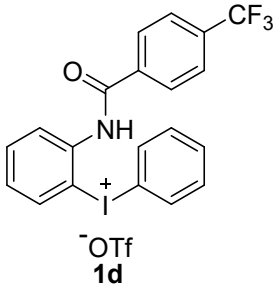
116.9, 114.2 ppm. HRMS (ESI, *m/z*) calcd for $C_{23}H_{17}NOI$ [M-OTf]$^+$: 450.03493, found: 450.03452.



1c

(2-(4-fluorobenzamido)phenyl)(phenyl)iodonium trifluoromethanesulfonate (1c)

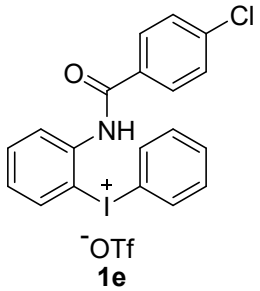
^{1}H NMR (400 MHz, DMSO) δ 11.11 (s, 1H), 8.20 (d, *J* = 7.6 Hz, 2H), 8.14 (dd, *J* = 8.8, 5.5 Hz, 2H), 8.09 (d, *J* = 8.1 Hz, 1H), 7.70 (td, *J* = 7.1, 3.5 Hz, 2H), 7.62 – 7.52 (m, 3H), 7.48 (t, *J* = 8.8 Hz, 2H), 7.41 – 7.33 (m, 1H) ppm. ^{13}C NMR (100 MHz, DMSO) δ 166.6, 166.5 (d, $J_{C\text{-}F}$ = 250.0 Hz), 138.4, 135.9, 135.8, 133.2, 132.6, 132.0, 131.1 (d, $J_{C\text{-}F}$ = 10.0 Hz), 129.5, 128.0, 122.4, 119.2, 116.9, 116.0 (d, $J_{C\text{-}F}$ = 22.0 Hz),114.5 ppm. HRMS (ESI, *m/z*) calcd for $C_{19}H_{14}NOFI$ [M-OTf]$^+$: 418.00986, found: 418.00955.



1d

phenyl(2-(4-(trifluoromethyl)benzamido)phenyl)iodonium trifluoromethanesulfonate (1d)

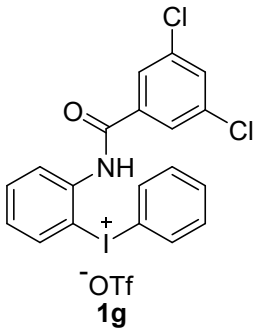
^{1}H NMR (400 MHz, DMSO) δ 11.21 (s, 1H), 8.27 – 8.15 (m, 5H), 8.03 (d, *J* = 8.3 Hz, 2H), 7.75 – 7.67 (m, 2H), 7.62 (dd, *J* = 7.9, 1.3 Hz, 1H), 7.55 (t, *J* = 7.8 Hz, 2H), 7.44 – 7.38 (m, 1H) ppm. ^{13}C NMR (100 MHz, DMSO) δ 166.1, 138.2, 136.9, 136.2, 135.6, 133.1, 132.4, 132.3, 132.1, 131.8, 129.6, 129.0, 128.3, 125.8 (q, $J_{C\text{-}F}$ = 3.0 Hz), 123.9 (q, $J_{C\text{-}F}$ = 3.0 Hz), 116.7, 114.8 ppm. HRMS (ESI, *m/z*) calcd for $C_{20}H_{14}F_3NOI$ [M-OTf]$^+$: 468.00667, found: 468.00644.



1e

(2-(4-chlorobenzamido)phenyl)(phenyl)iodonium trifluoromethanesulfonate (1e)

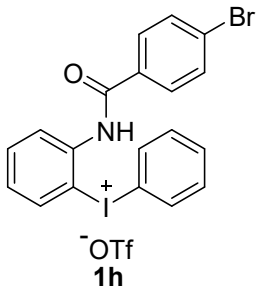
^{1}H NMR (400 MHz, DMSO) δ 11.12 (s, 1H), 8.20 (d, *J* = 7.7 Hz, 2H), 8.12 (d, *J* = 8.2 Hz, 1H), 8.08 (d, *J* = 8.5 Hz, 2H), 7.71 (dd, *J* = 15.3, 8.0 Hz, 4H), 7.60 (dd, *J* = 7.9, 1.1 Hz, 1H), 7.55 (t, *J* = 7.8 Hz, 2H), 7.41 – 7.35 (m, 1H) ppm. ^{13}C NMR (100 MHz, DMSO) δ 166.4, 138.3, 137.7, 136.0, 135.7, 133.1, 132.4, 131.8, 131.6, 130.1, 129.4, 128.9, 128.0, 116.8, 114.6 ppm. HRMS (ESI, *m/z*) calcd for $C_{19}H_{14}NOI$ [M-OTf]$^+$: 400.01928, found: 400.01892. HRMS (ESI, *m/z*) calcd for $C_{19}H_{14}NOClI$ [M-OTf]$^+$: 433.98031, found: 433.97998.



1g

(2-(3,5-dichlorobenzamido)phenyl)(phenyl)iodonium trifluoromethanesulfonate (1g)

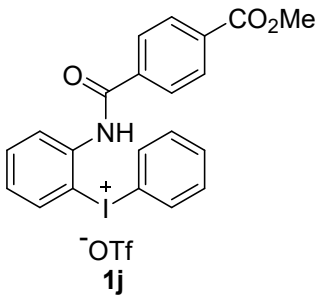
^{1}H NMR (400 MHz, DMSO) δ 11.16 (s, 1H), 8.23 – 8.14 (m, 3H), 8.06 – 7.94 (m, 3H), 7.75 – 7.66 (m, 2H), 7.61 – 7.57 (m, 1H), 7.54 (t, *J* = 7.8 Hz, 2H), 7.44 – 7.38 (m, 1H) ppm. ^{13}C NMR (100 MHz, DMSO) δ 164.7, 138.0, 136.5, 136.4, 135.6, 134.7, 133.3, 132.4, 132.0, 131.9, 129.8, 128.4, 127.0, 116.8, 114.8 ppm. HRMS (ESI, *m/z*) calcd for $C_{19}H_{13}NOCl_2I$ [M-OTf]$^{+}$: 467.94134, found: 467.94128.



1h

(2-(4-bromobenzamido)phenyl)(phenyl)iodonium trifluoromethanesulfonate (1h)

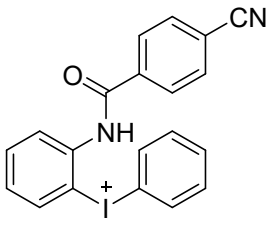
^{1}H NMR (400 MHz, DMSO) δ 11.12 (s, 1H), 8.20 (d, *J* = 7.8 Hz, 2H), 8.12 (d, *J* = 8.1 Hz, 1H), 8.00 (d, *J* = 8.5 Hz, 2H), 7.87 (d, *J* = 8.5 Hz, 2H), 7.70 (t, *J* = 7.5 Hz, 2H), 7.62 – 7.58 (m, 1H), 7.54 (t, *J* = 7.8 Hz, 2H), 7.42 – 7.34 (m, 1H) ppm. ^{13}C NMR (100 MHz, DMSO) δ 166.6, 138.3, 136.0, 135.7, 133.1, 132.4, 132.0, 131.9, 131.9, 130.2, 129.4, 128.0, 126.7, 116.8, 114.6 ppm. HRMS (ESI, *m/z*) calcd for $C_{19}H_{14}NOBrI$ [M-OTf]$^{+}$: 477.92980, found: 477.92963.



1j

(2-(4-(methoxycarbonyl)benzamido)phenyl)(phenyl)iodonium trifluoromethanesulfonate (1j)

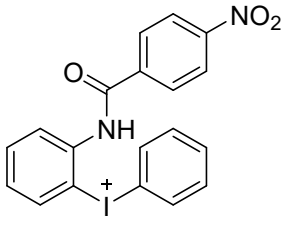
^{1}H NMR (400 MHz, DMSO) δ 11.23 (s, 1H), 8.24 – 8.11 (m, 7H), 7.71 (ddd, *J* = 12.1, 5.0, 2.4 Hz, 2H), 7.61 (dd, *J* = 8.0, 1.4 Hz, 1H), 7.54 (dd, *J* = 10.8, 4.8 Hz, 2H), 7.43 – 7.37 (m, 1H), 3.93 (s, 3H) ppm. ^{13}C NMR (100 MHz, DMSO) δ 166.5, 165.7, 138.2, 137.0, 136.1, 135.6, 133.1, 133.0, 132.4, 131.8, 129.5, 128.5, 128.2, 116.8, 114.7, 52.6 ppm. HRMS (ESI, *m/z*) calcd for $C_{21}H_{17}NO_3I$ [M-OTf]$^{+}$: 458.02476, found: 458.02426.



1k

(2-(4-cyanobenzamido)phenyl)(phenyl)iodonium trifluoromethanesulfonate (1k)

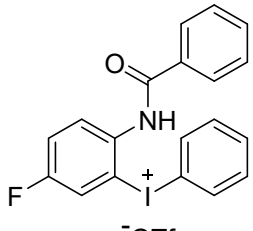
^{1}H NMR (400 MHz, DMSO) δ 11.22 (s, 1H), 8.15 (dd, *J* = 19.8, 8.4 Hz, 7H), 7.71 (dd, *J* = 16.5, 8.3 Hz, 2H), 7.61 (d, *J* = 6.9 Hz, 1H), 7.57 – 7.51 (m, 2H), 7.41 (dd, *J* = 11.2, 4.3 Hz, 1H) ppm. ^{13}C NMR (100 MHz, DMSO) δ166.2, 138.2, 137.2, 136.5, 135.7, 133.4, 133.0, 132.6, 132.0, 130.9, 129.9, 129.1, 128.5, 128.2, 118.4, 116.9, 115.0 ppm. HRMS (ESI, *m/z*) calcd for $C_{20}H_{14}N_2OI$ $[M\text{-}OTf]^+$: 425.01453, found: 425.01389.



1l

(2-(4-nitrobenzamido)phenyl)(phenyl)iodonium trifluoromethanesulfonate (1l)

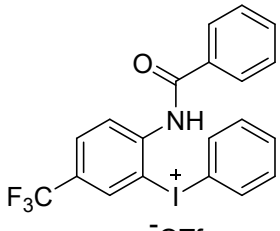
^{1}H NMR (400 MHz, DMSO) δ 11.27 (s, 1H), 8.48 (d, *J* = 8.8 Hz, 2H), 8.26 (d, *J* = 8.8 Hz, 2H), 8.22 – 8.14 (m, 3H), 7.76 – 7.66 (m, 2H), 7.63 (dd, *J* = 7.9, 1.3 Hz, 1H), 7.54 (t, *J* = 7.8 Hz, 2H), 7.45 – 7.38 (m, 1H) ppm. ^{13}C NMR (100 MHz, DMSO) δ 165.6, 149.8, 138.7, 138.1, 136.4, 135.5, 133.2, 132.3, 131.8, 129.7, 129.6, 128.4, 123.9, 116.7, 115.0 ppm. HRMS (ESI, *m/z*) calcd for $C_{19}H_{14}N_2O_3I$ $[M\text{-}OTf]^+$: 445.00436, found: 445.00409.



1m

(2-benzamido-5-fluorophenyl)(phenyl)iodonium trifluoromethanesulfonate (1m)

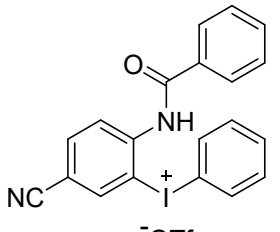
^{1}H NMR (400 MHz, DMSO) δ 11.01 (s, 1H), 8.23 (dd, *J* = 8.3, 1.0 Hz, 2H), 8.12 (dd, *J* = 7.7, 2.6 Hz, 1H), 8.08 – 8.03 (m, 2H), 7.72 (ddd, *J* = 5.6, 4.9, 2.6 Hz, 2H), 7.65 (dt, *J* = 8.2, 6.3 Hz, 4H), 7.60 – 7.54 (m, 2H) ppm. ^{13}C NMR (100 MHz, DMSO) δ 167.4, 159.8 (d, $J_{C\text{-}F}$ = 248.0 Hz), 135.6, 135.3, 132.8, 132.5, 131.9, 129.4 (d, $J_{C\text{-}F}$ = 8.0 Hz), 128.8, 128.1, 122.8, 122.5, 120.2 (d, $J_{C\text{-}F}$ = 22.0 Hz), 117.1, 114.9, 114.9 ppm. HRMS (ESI, *m/z*) calcd for $C_{19}H_{14}NOFI$ $[M\text{-}OTf]^+$: 418.00986, found: 418.00937.



1n

(2-benzamido-5-(trifluoromethyl)phenyl)(phenyl)iodonium trifluoromethanesulfonate (1n)

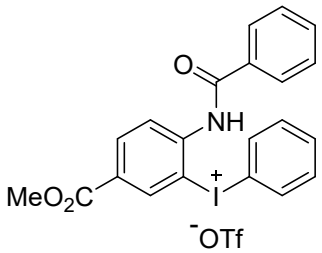
^{1}H NMR (400 MHz, DMSO) δ 11.30 (s, 1H), 8.51 (s, 1H), 8.25 (d, *J* = 8.0 Hz, 2H), 8.08 (t, *J* = 9.1 Hz, 3H), 7.81 (d, *J* = 8.4 Hz, 1H), 7.73 (q, *J* = 7.4 Hz, 2H), 7.65 (t, *J* = 7.6 Hz, 2H), 7.57 (t, *J* = 7.8 Hz, 2H) ppm. ^{13}C NMR (100 MHz, DMSO) δ 167.5, 142.4, 135.7, 133.1, 132.6, 132.5, 131.9, 129.9 (q, $J_{C\text{-}F}$ = 3.0 Hz), 128.9, 128.5, 128.2, 128.1, 122.9 (q, $J_{C\text{-}F}$ = 272.0 Hz), 117.4, 114.1 ppm. HRMS (ESI, *m/z*) calcd for $C_{20}H_{14}NOF_3I$ [M-OTf]$^{+}$: 468.00667, found: 468.00632.



1o

(2-benzamido-5-cyanophenyl)(phenyl)iodonium trifluoromethanesulfonate (1o)

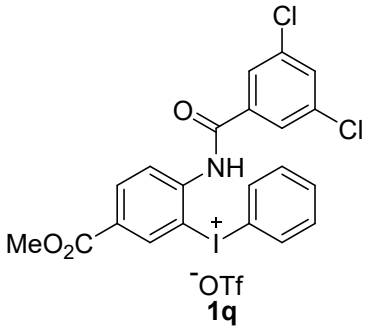
^{1}H NMR (400 MHz, DMSO) δ 11.31 (s, 1H), 8.68 (d, *J* = 1.7 Hz, 1H), 8.25 (d, *J* = 7.5 Hz, 2H), 8.17 (dd, *J* = 8.4, 1.8 Hz, 1H), 8.09 – 8.02 (m, 2H), 7.78 (d, *J* = 8.4 Hz, 1H), 7.76 – 7.70 (m, 2H), 7.65 (t, *J* = 7.5 Hz, 2H), 7.58 (t, *J* = 7.8 Hz, 2H) ppm. ^{13}C NMR (100 MHz, DMSO) δ 167.4, 142.9, 140.0, 136.6, 135.7, 133.2, 132.7, 132.5, 132.0, 128.9, 128.3, 127.9, 117.4, 116.9, 113.7, 110.7 ppm. HRMS (ESI, *m/z*) calcd for $C_{20}H_{14}N_2OI$ [M-OTf]$^{+}$: 425.01453, found: 425.01404.



1p

(2-benzamido-5-(methoxycarbonyl)phenyl)(phenyl)iodonium trifluoromethanesulfonate (1p)

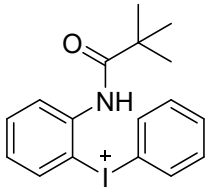
^{1}H NMR (400 MHz, DMSO) δ 11.30 (s, 1H), 8.60 (d, *J* = 1.8 Hz, 1H), 8.25 (d, *J* = 7.4 Hz, 2H), 8.21 (dd, *J* = 8.4, 1.8 Hz, 1H), 8.10 – 8.04 (m, 2H), 7.73 (dd, *J* = 13.1, 7.8 Hz, 3H), 7.65 (t, *J* = 7.5 Hz, 2H), 7.56 (t, *J* = 7.8 Hz, 2H), 3.85 (s, 3H) ppm. ^{13}C NMR (100 MHz, DMSO) δ 167.6, 164.1, 142.6, 136.7, 135.7, 133.2, 133.1, 132.6, 132.5, 131.9, 129.3, 128.9, 128.2, 127.4, 117.2, 113.5, 52.8 ppm. HRMS (ESI, *m/z*) calcd for $C_{21}H_{17}NO_3I$ [M-OTf]$^{+}$: 458.02476, found: 458.02411.



1q

(2-(3,5-dichlorobenzamido)-5-(methoxycarbonyl)phenyl)(phenyl)iodonium trifluoromethanesulfonate (1q)

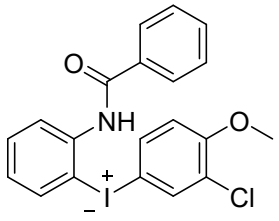
^{1}H NMR (400 MHz, DMSO) δ 10.43 (s, 1H), 8.42 (d, *J* = 1.9 Hz, 1H), 8.01 (dd, *J* = 6.7, 1.9 Hz, 3H), 7.93 (t, *J* = 1.9 Hz, 1H), 7.63 (d, *J* = 8.3 Hz, 1H), 3.87 (s, 3H) ppm. ^{13}C NMR (100 MHz, DMSO) δ 164.6, 162.7, 143.7, 139.6, 137.1, 134.5, 131.5, 129.6, 129.1, 128.0, 126.6, 97.8, 52.5 ppm. HRMS (ESI, *m/z*) calcd for $C_{21}H_{15}NO_3Cl_2I$ [M-OTf]$^{+}$: 525.94682, found: 525.94659.



1s

phenyl(2-pivalamidophenyl)iodonium trifluoromethanesulfonate (1s)

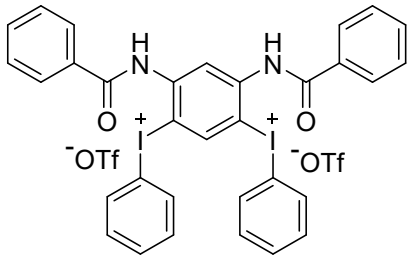
^{1}H NMR (400 MHz, DMSO) δ 10.17 (s, 1H), 8.18 (d, *J* = 7.7 Hz, 2H), 8.00 (d, *J* = 8.1 Hz, 1H), 7.71 (t, *J* = 7.4 Hz, 1H), 7.64 (t, *J* = 7.6 Hz, 1H), 7.56 (t, *J* = 7.8 Hz, 2H), 7.49 – 7.44 (m, 1H), 7.34 – 7.27 (m, 1H), 1.32 (s, 9H) ppm. ^{13}C NMR (100 MHz, DMSO) δ 179.4, 138.5, 135.7, 135.4, 133.0, 132.5, 131.9, 129.1, 127.6, 116.7, 114.7, 27.0 ppm. HRMS (ESI, *m/z*) calcd for $C_{17}H_{19}NOI$ [M-OTf]$^{+}$: 380.05058, found: 380.05011.



1t

(2-benzamidophenyl)(3-chloro-4-methoxyphenyl)iodonium trifluoromethanesulfonate (1t)

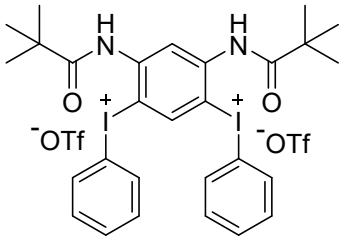
^{1}H NMR (400 MHz, DMSO) δ 11.13 (s, 1H), 8.39 (d, *J* = 2.2 Hz, 1H), 8.19 (dd, *J* = 8.9, 2.1 Hz, 1H), 8.07 (t, *J* = 7.6 Hz, 3H), 7.75 – 7.58 (m, 5H), 7.38 (t, *J* = 7.6 Hz, 1H), 7.31 (d, *J* = 9.0 Hz, 1H), 3.93 (s, 3H) ppm. ^{13}C NMR (101 MHz, DMSO) δ 167.6, 157.8, 138.1, 136.7, 136.6, 135.5, 132.9, 132.7, 129.3, 128.8, 128.1, 127.7, 123.2, 115.6, 114.9, 105.4, 56.8. HRMS (ESI, *m/z*) calcd for $C_{20}H_{16}NO_2ClI$ [M-OTf]$^{+}$: 463.99088, found: 463.99030.



3a

(4,6-bis(benzamido)-1,3-phenylene)bis(phenyliodonium) trifluoromethanesulfonate (3a)

^{1}H NMR (400 MHz, DMSO) δ 11.21 (s, 2H), 8.97 (s, 1H), 8.11 (d, *J* = 7.5 Hz, 4H), 8.06 – 8.00 (m, 4H), 7.89 (s, 1H), 7.72 (q, *J* = 7.3 Hz, 4H), 7.64 (t, *J* = 7.5 Hz, 4H), 7.52 (t, *J* = 7.8 Hz, 4H) ppm. ^{13}C NMR (100 MHz, DMSO) δ 167.3, 143.4, 142.6, 135.4, 133.1, 132.7, 132.0, 128.9, 128.2, 125.4, 122.0, 119.4, 117.3, 112.1 ppm. HRMS (ESI, *m/z*) calcd for $C_{32}H_{23}N_2O_2I_2$ $[M\text{-}2OTf\text{-}H]^+$: 720.98434, found: 720.98279; HRMS (ESI, *m/z*) calcd for $C_{33}H_{24}N_2O_5F_3SI_2$ $[M\text{-}OTf]^+$: 870.94419, found: 870.94250.



3b

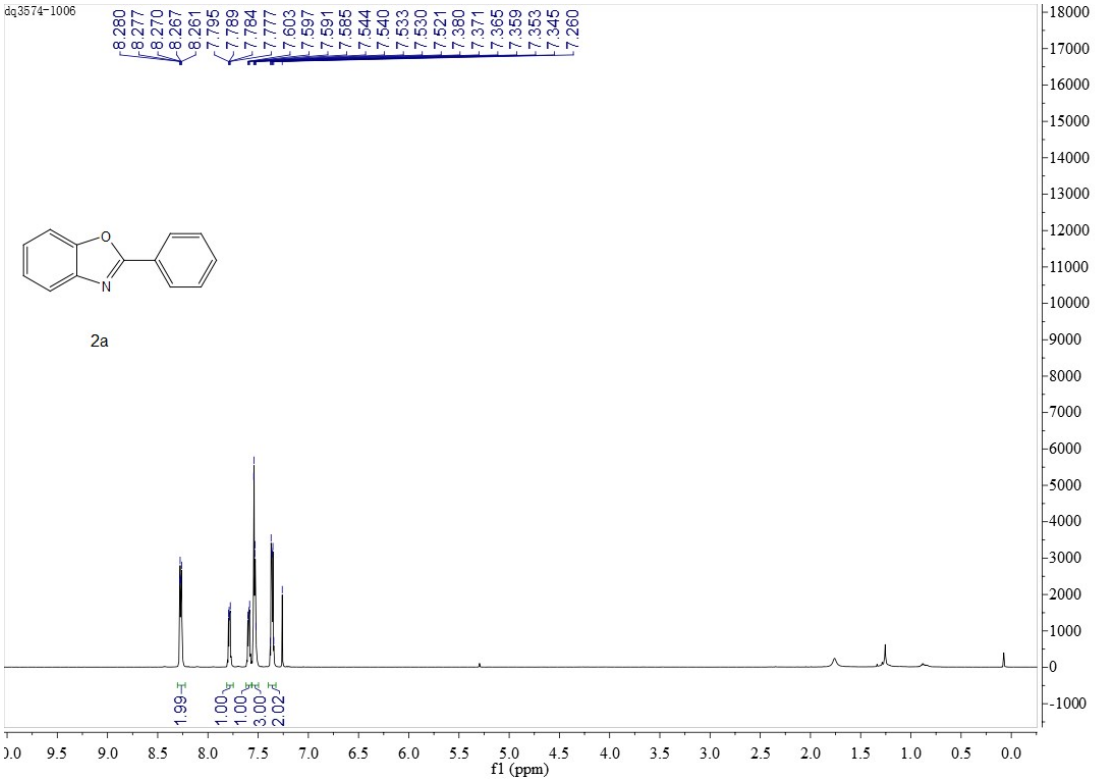
(4,6-dipivalamido-1,3-phenylene)bis(phenyliodonium) trifluoromethanesulfonate (3b)

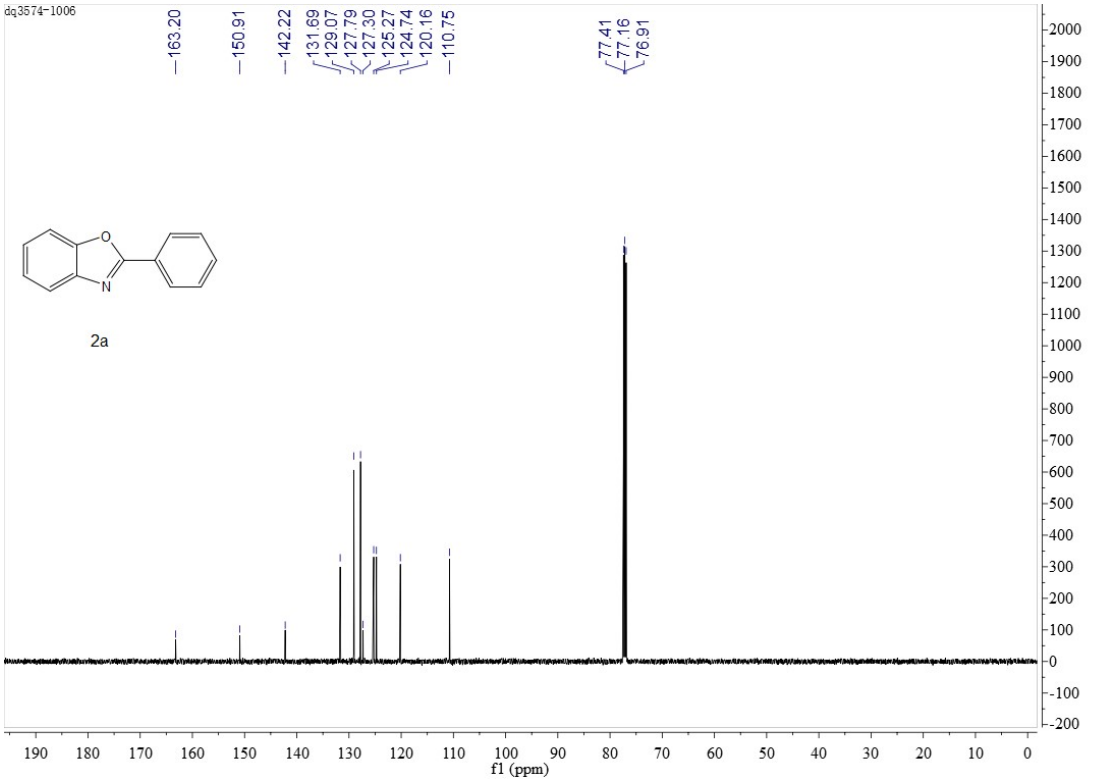
^{1}H NMR (400 MHz, DMSO) δ 10.16 (d, *J* = 23.8 Hz, 2H), 8.83 (s, 1H), 8.04 (d, *J* = 7.9 Hz, 4H), 7.70 (t, *J* = 7.3 Hz, 2H), 7.57 (s, 1H), 7.50 (t, *J* = 7.5 Hz, 4H), 1.30 (s, 18H) ppm. ^{13}C NMR (100 MHz, DMSO) δ 179.1, 143.1, 135.7, 133.0, 132.4, 125.7, 117.6, 112.9, 100.0, 39.7, 27.3 ppm. HRMS (ESI, *m/z*) calcd for $C_{28}H_{31}N_2O_2I_2$ $[M\text{-}2OTf\text{-}H]^+$: 681.04694, found: 681.04633; HRMS (ESI, *m/z*) calcd for $C_{29}H_{32}N_2O_5F_3SI_2$ $[M\text{-}OTf]^+$: 831.00679, found: 831.00586.

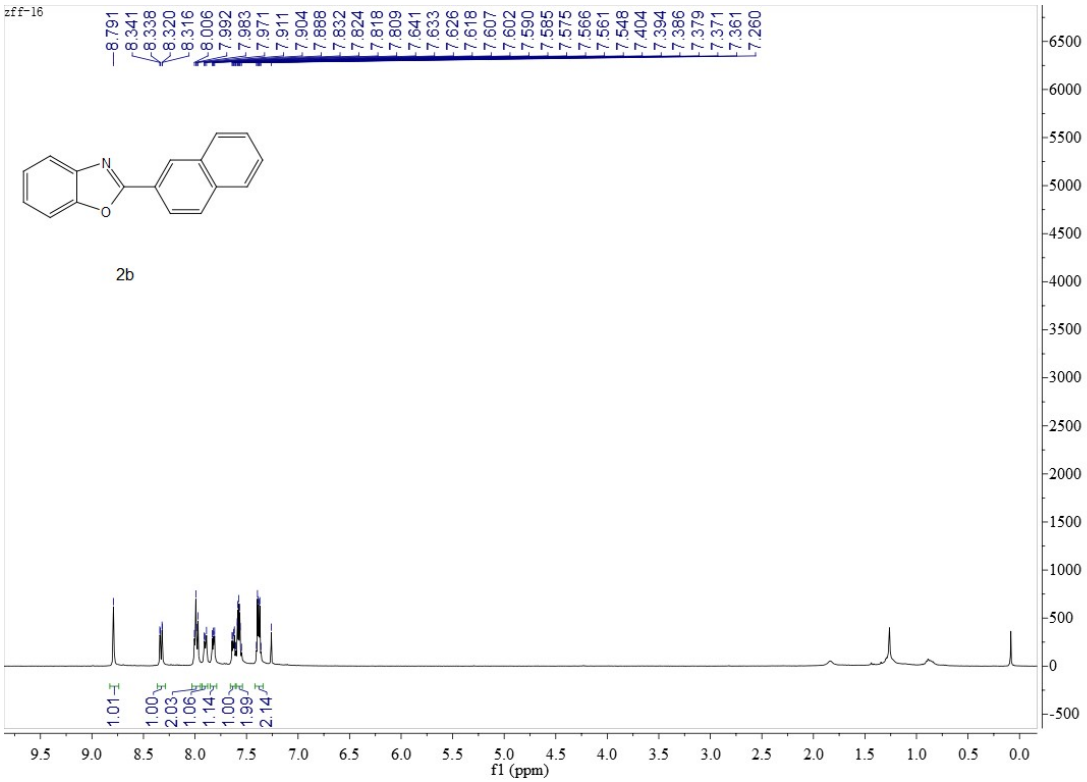
Reference

[1] a) C. Dey, E. Lindstedt, B. Olofsson, *Org. Lett*. **2015**, *17*, 4554-4557; b) M. Bielawski, B. Olofsson, *Chem. Commun*., **2007**, 2521-2523; c) M. Reitti, P. Villo, B. Olofsson, *Angew.Chem. Int. Ed*. **2016**, *55*, 8928-8932; *Angew. Chem*. **2016**, *128*, 9074-9078.

^{1}H and ^{13}C NMR spectra of all products



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7.904
7.888
7.832
7.824
7.818
7.809
7.641
7.633
7.626
7.618
7.607
7.602
7.590
7.585
7.575
7.566
7.561
7.548
7.404
7.394
7.386
7.379
7.371
7.361
7.260
N
O
2b
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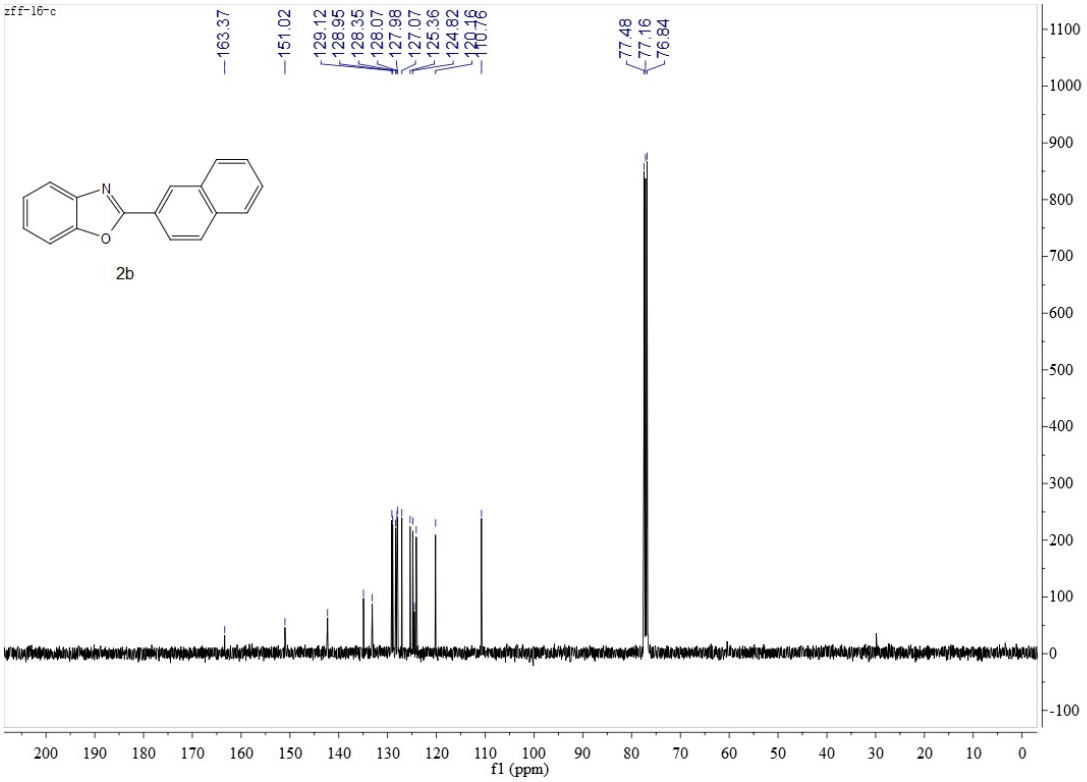
1.00
2.03
1.06
1.14
1.00
1.99
2.14
f1 (ppm)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76.84
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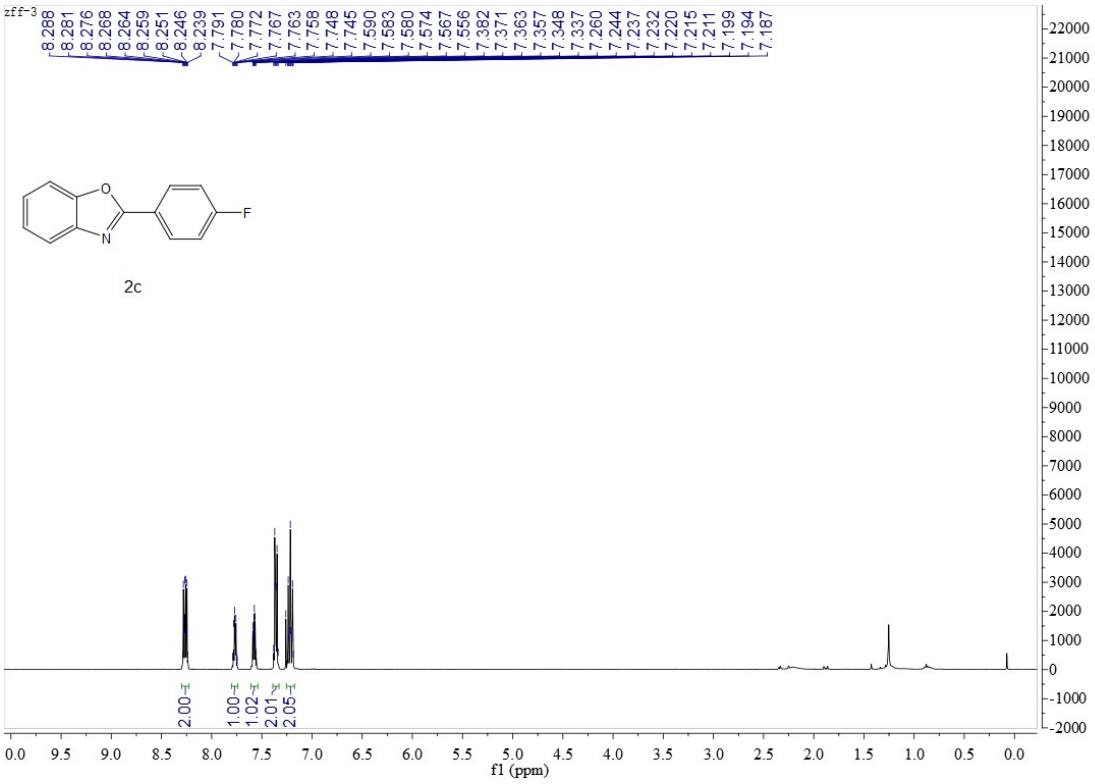
O
2b
f1 (ppm)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7.772
7.767
7.763
7.758
7.748
7.745
7.590
7.583
7.580
7.574
7.567
7.556
7.382
7.371
7.363
7.357
7.348
7.337
7.260
7.244
7.237
7.232
7.220
7.215
7.211
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O
N
F
2c
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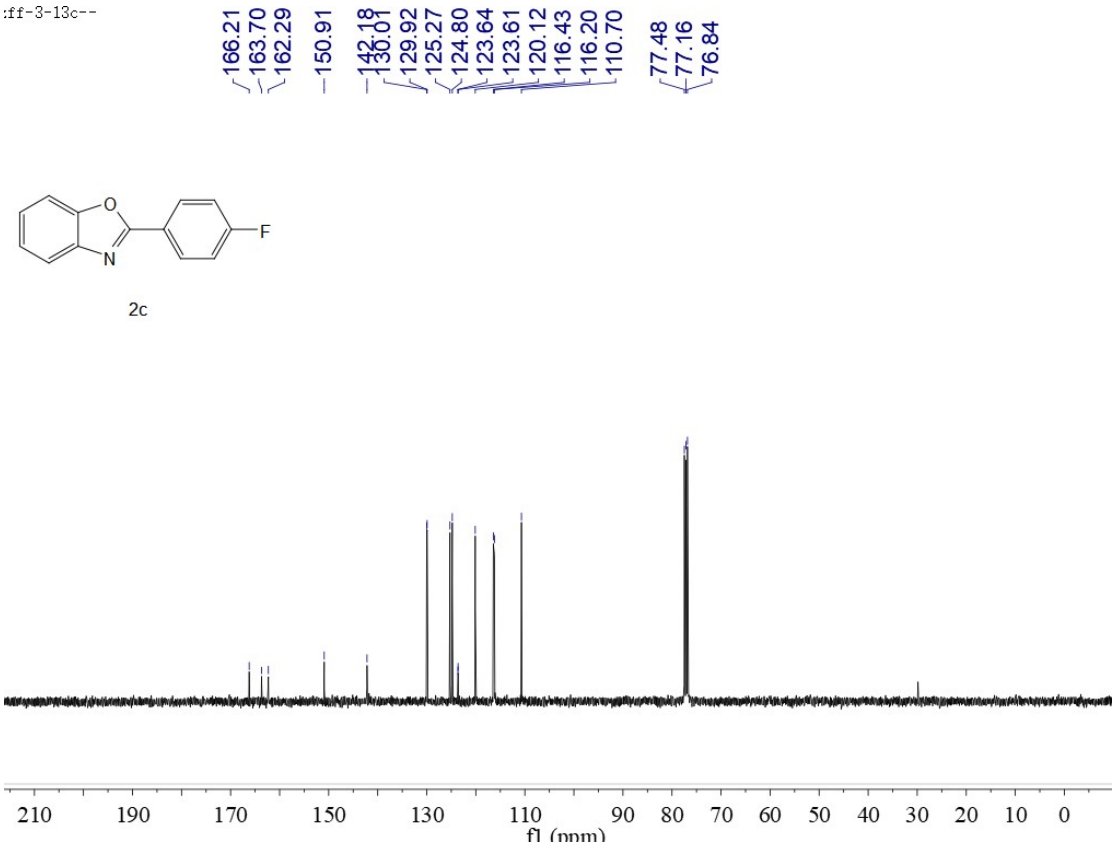
2.05
f1 (ppm)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123.64
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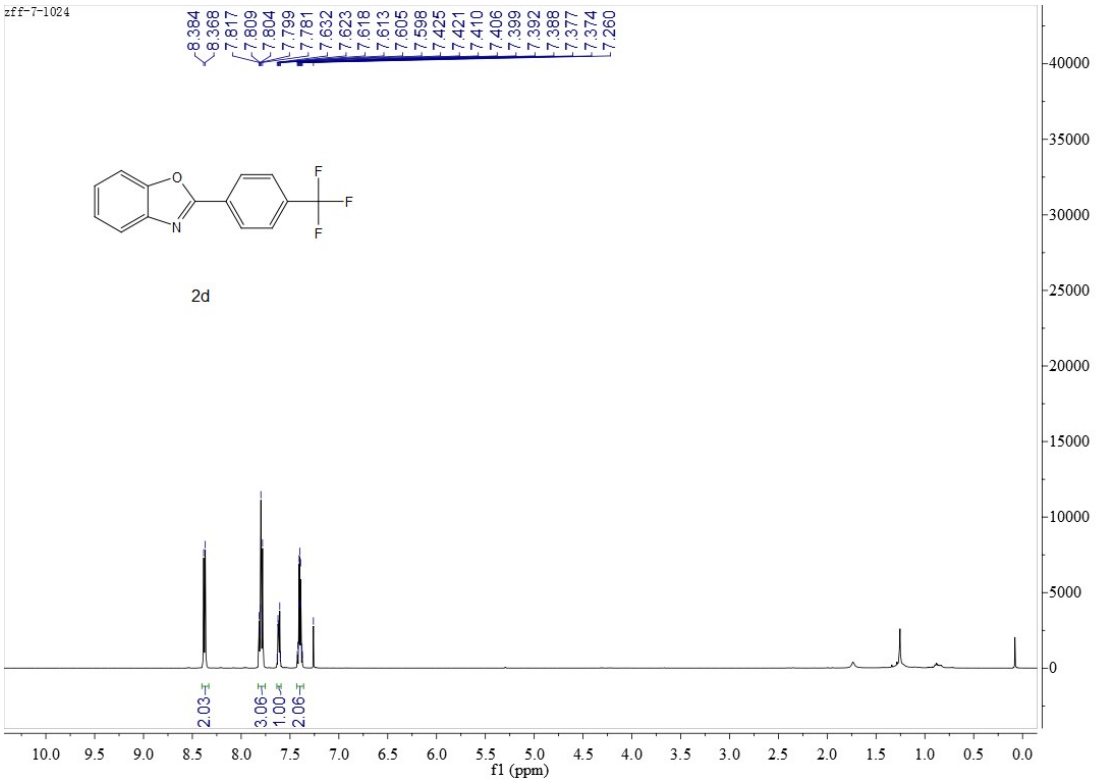
77.16
76.84
O
N
F
2c
f1 (ppm)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7.809
7.804
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7.632
7.623
7.618
7.613
7.605
7.598
7.425
7.421
7.410
7.406
7.399
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7.388
7.377
7.374
7.260
2d
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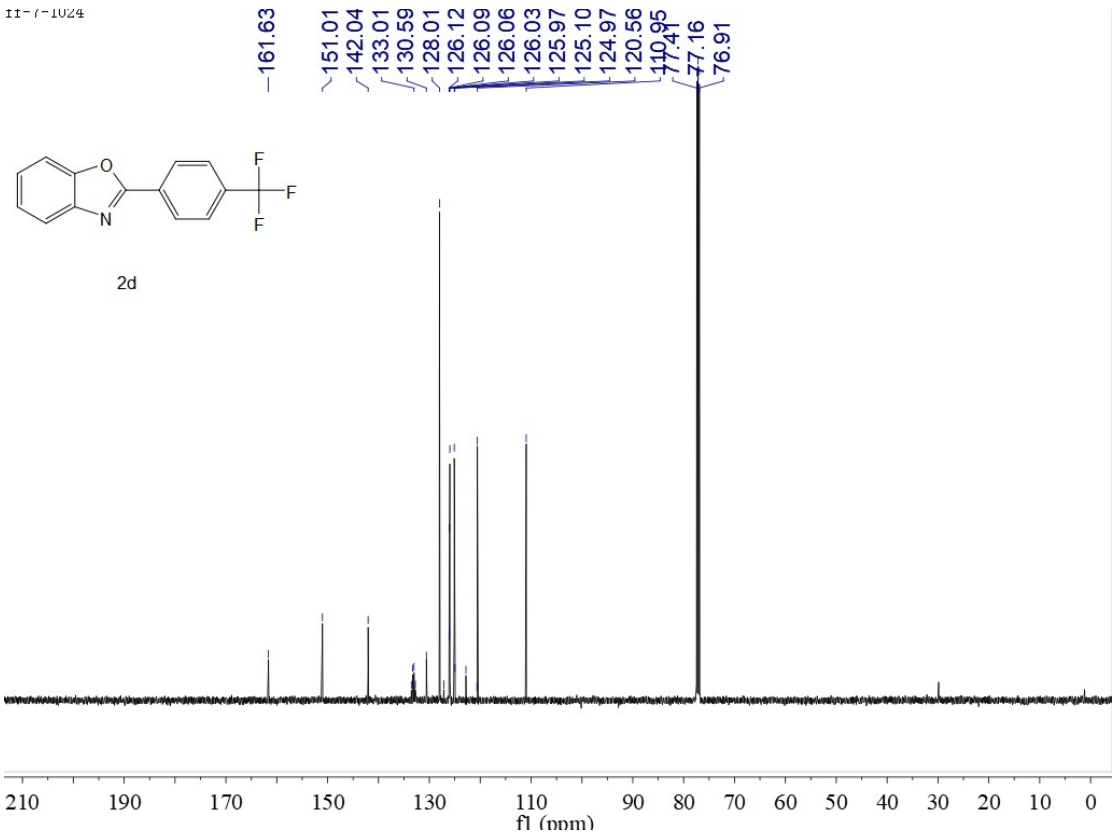
3.06
1.00
2.06
f1 (ppm)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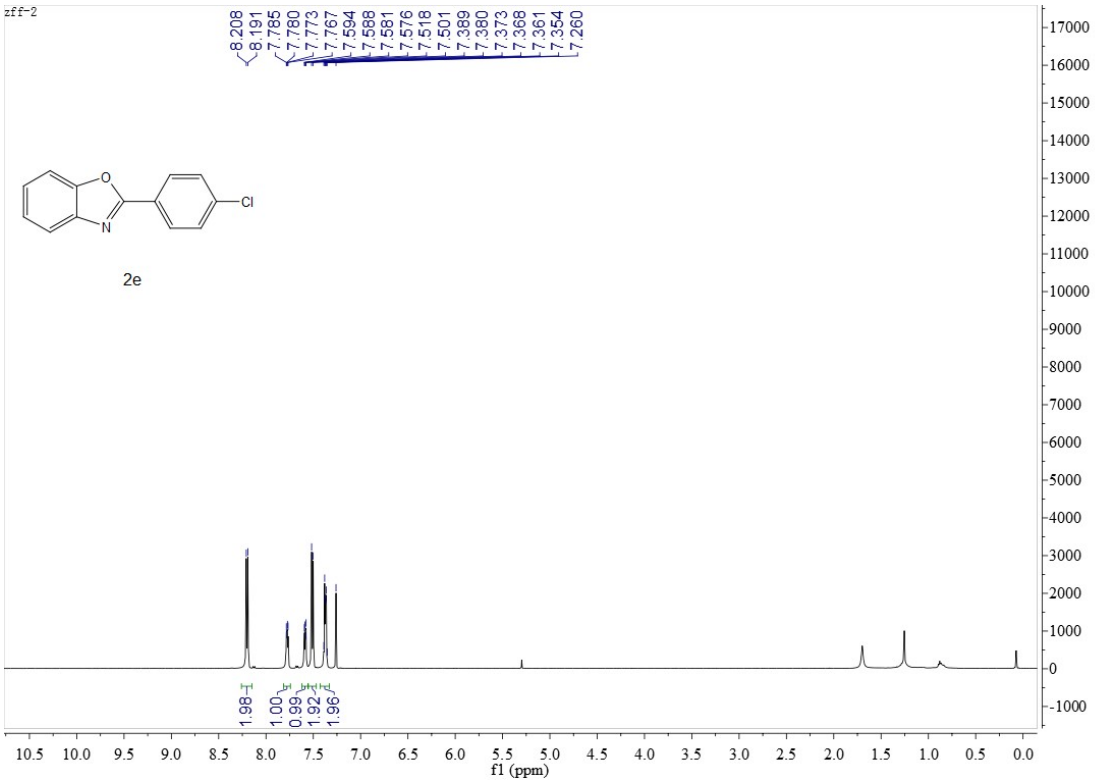
77.41
77.16
76.91
2d
f1 (ppm)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7.389
7.380
7.373
7.368
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O
N
Cl
2e
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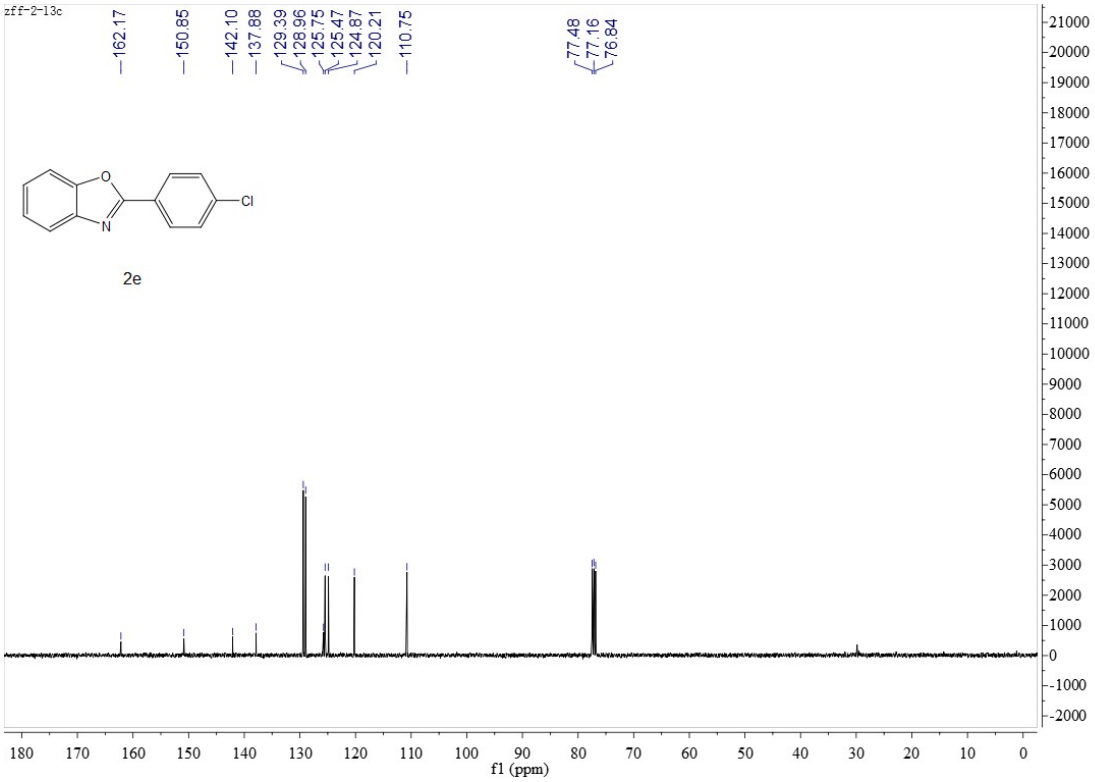
1.92
1.96
f1 (ppm)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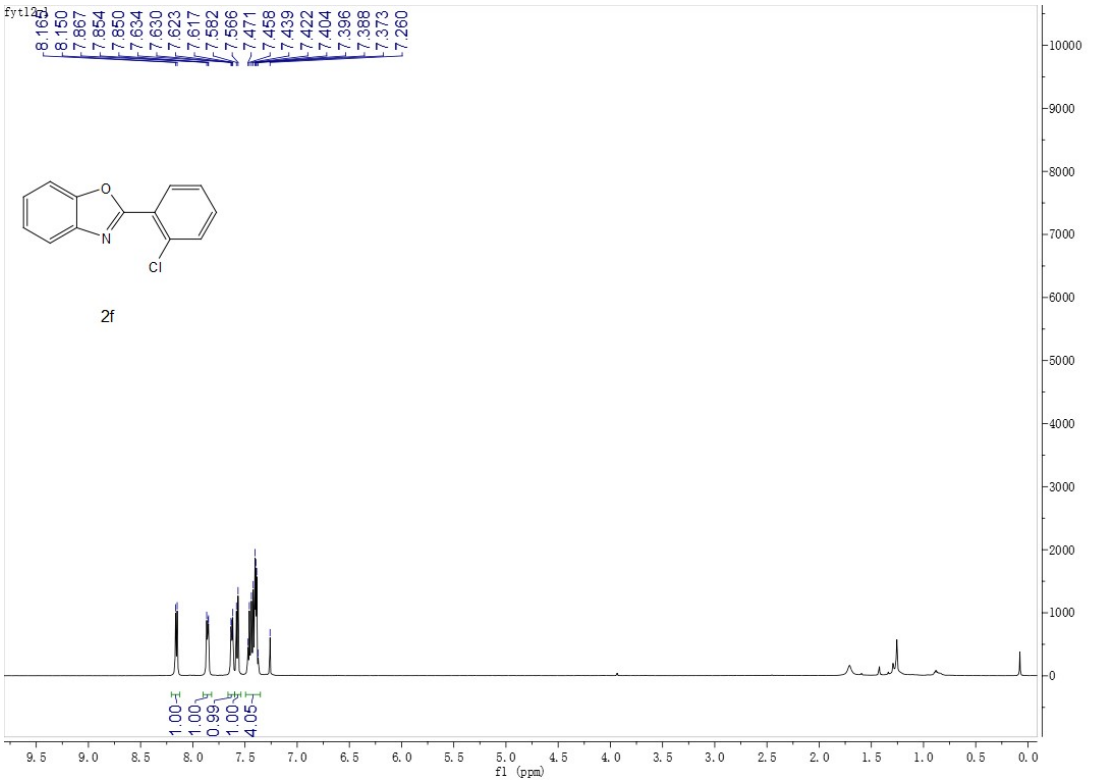
77.16
76.84
O
N
Cl
2e
f1 (ppm)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7.854
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7.623
7.617
7.582
7.566
7.471
7.458
7.439
7.422
7.404
7.396
7.388
7.373
7.260
O
N
Cl
2f
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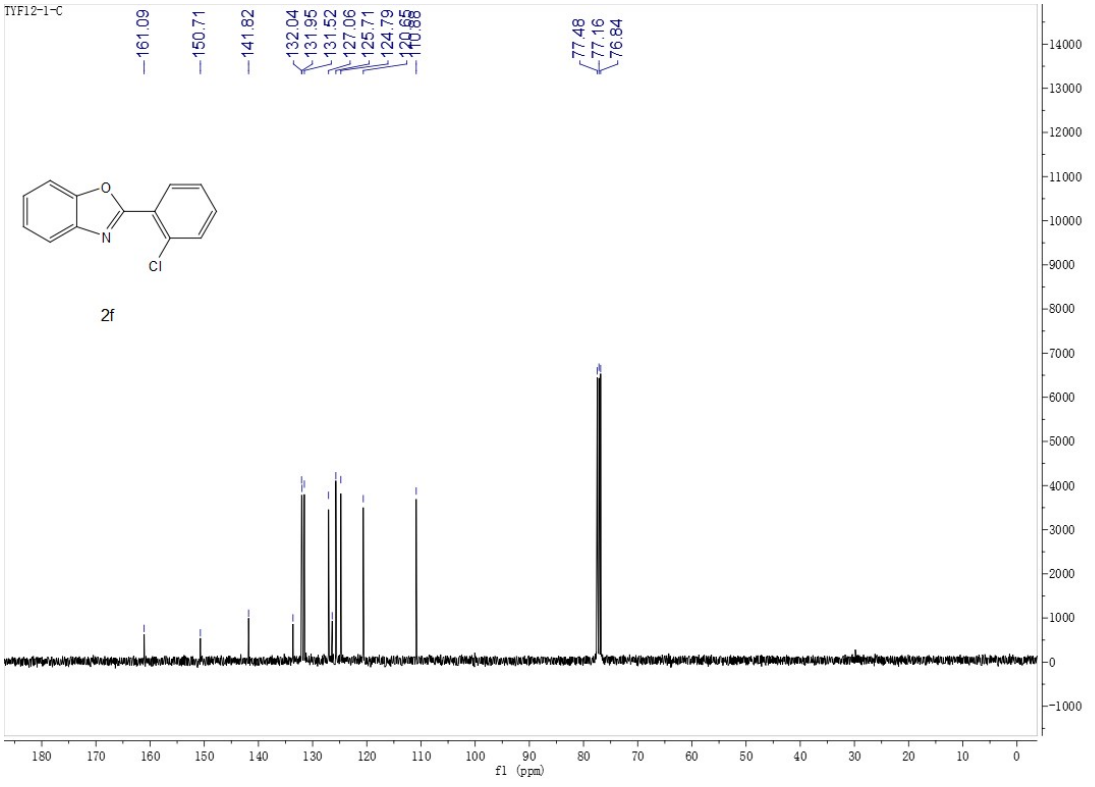
1.00
4.05
f1 (ppm)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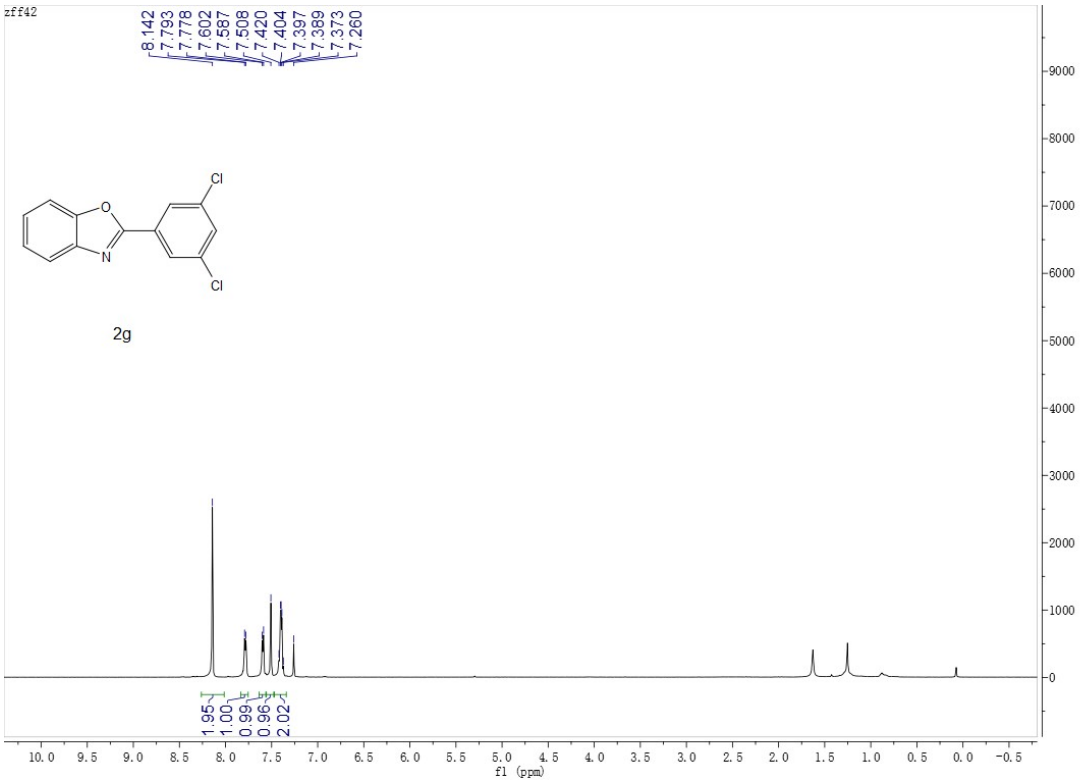
77.16
76.84
O
N
Cl
2f
f1 (ppm)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Cl
O
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Cl
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0.99
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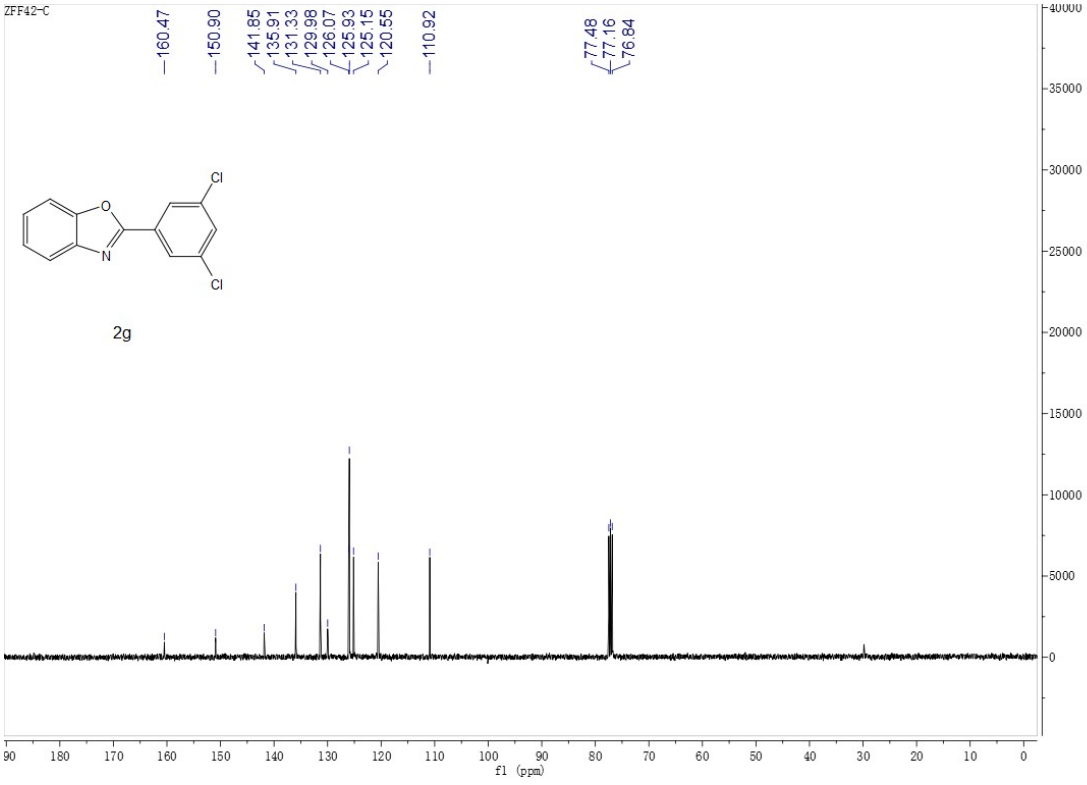
2.02
f1 (ppm)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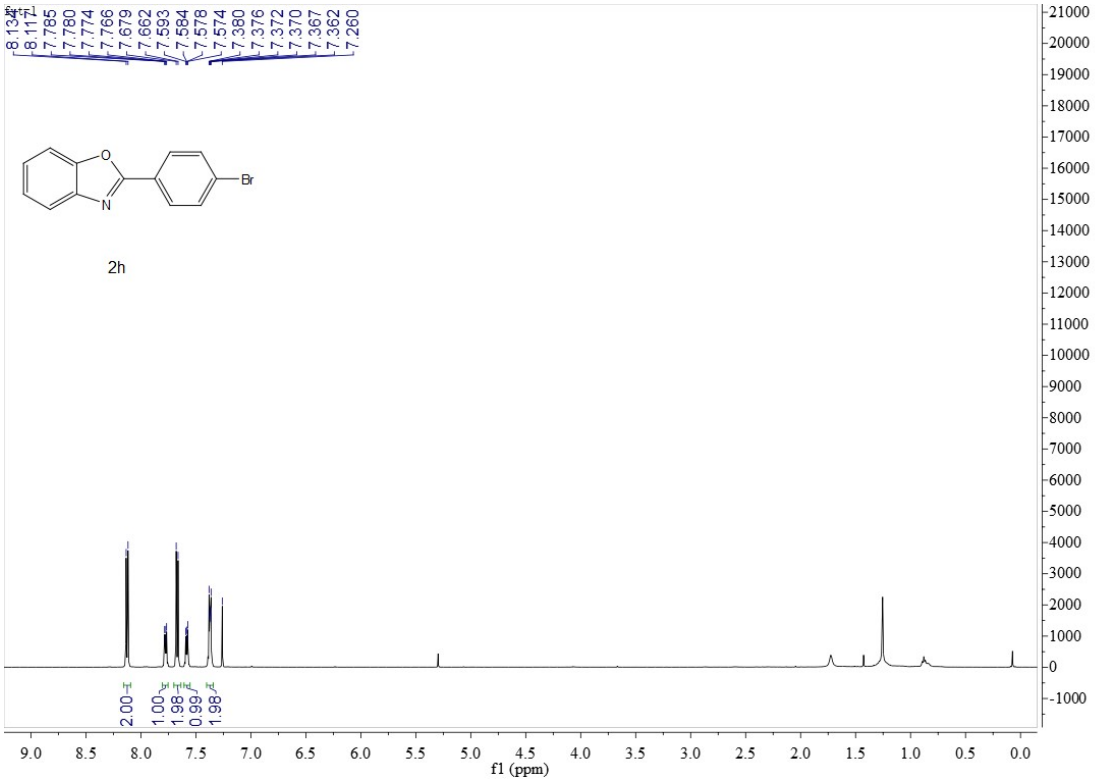
77.16
76.84
Cl
O
N
Cl
2g
f1 (ppm)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7.593
7.584
7.578
7.574
7.380
7.376
7.372
7.370
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O
N
Br
2h
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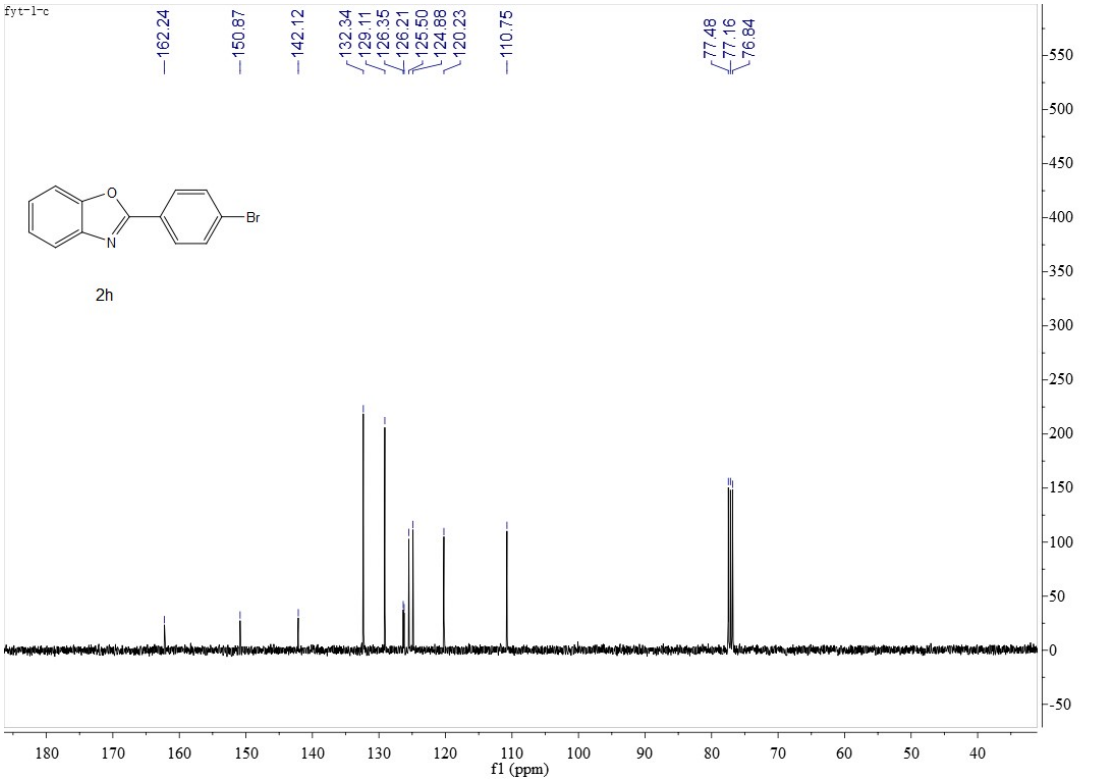
1.98
f1 (ppm)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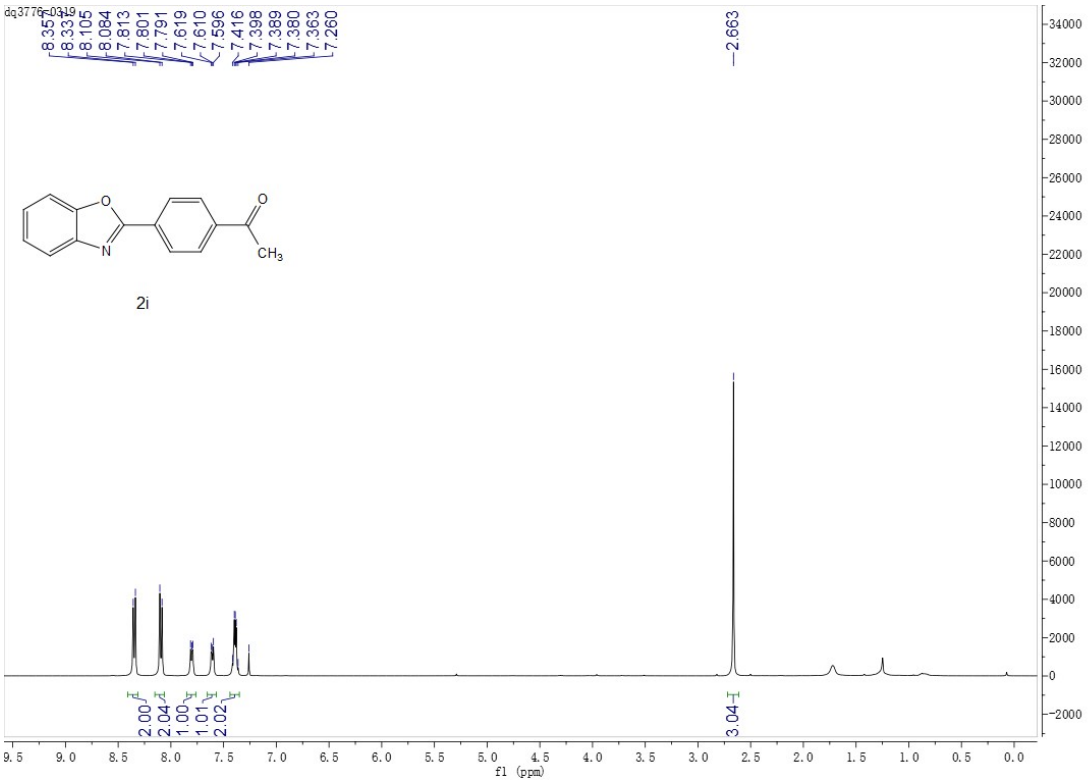
76.84
O
N
Br
2h
f1 (ppm)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7.398
7.389
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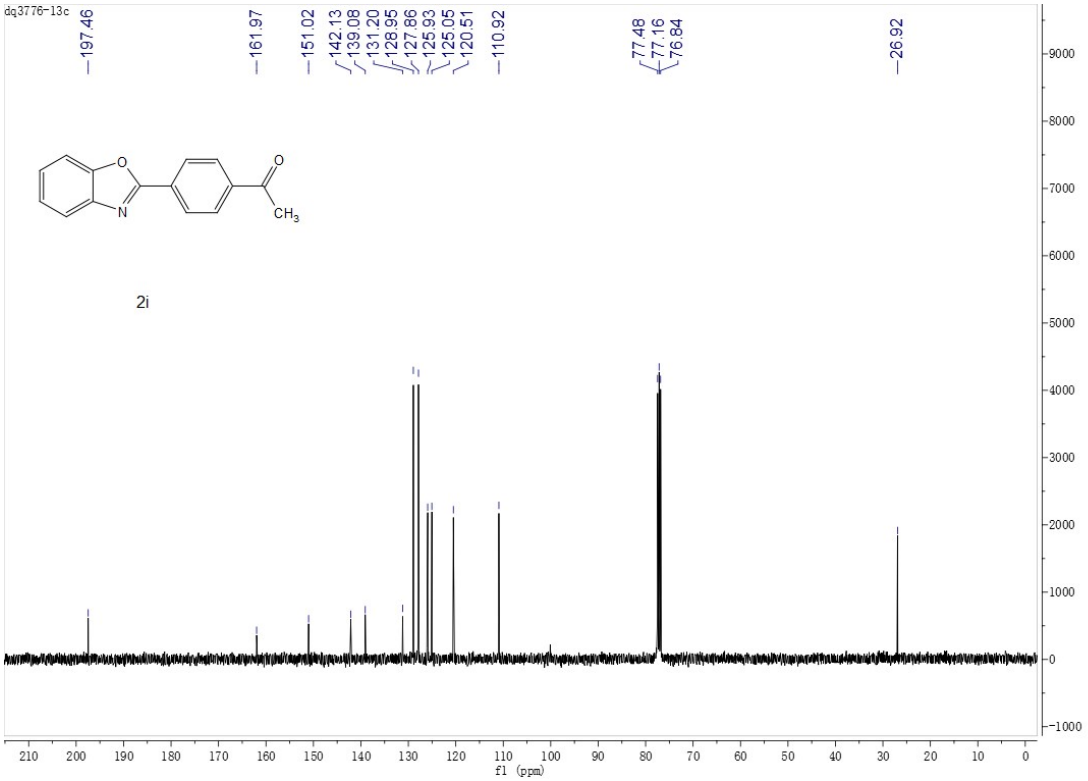
f1 (ppm)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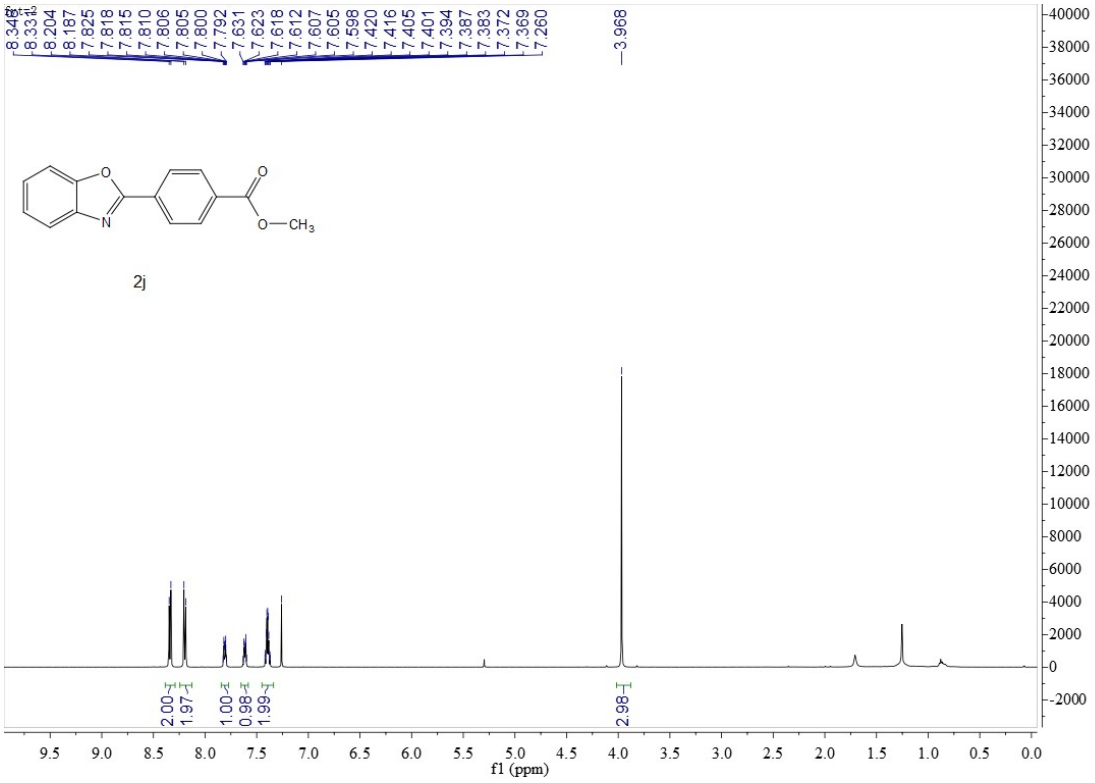
2i
f1 (ppm)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7.631
7.623
7.618
7.612
7.607
7.605
7.598
7.420
7.416
7.405
7.401
7.394
7.387
7.383
7.372
7.369
7.260
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O
O—CH3
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0.98
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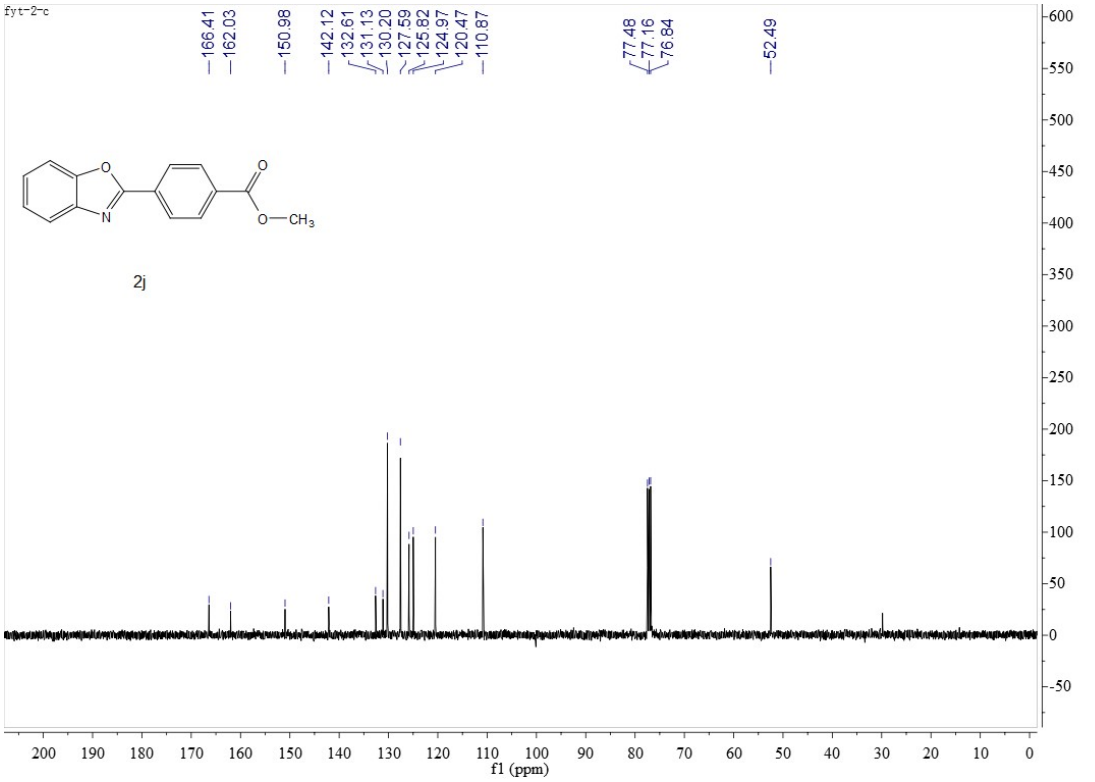
2.98
f1 (ppm)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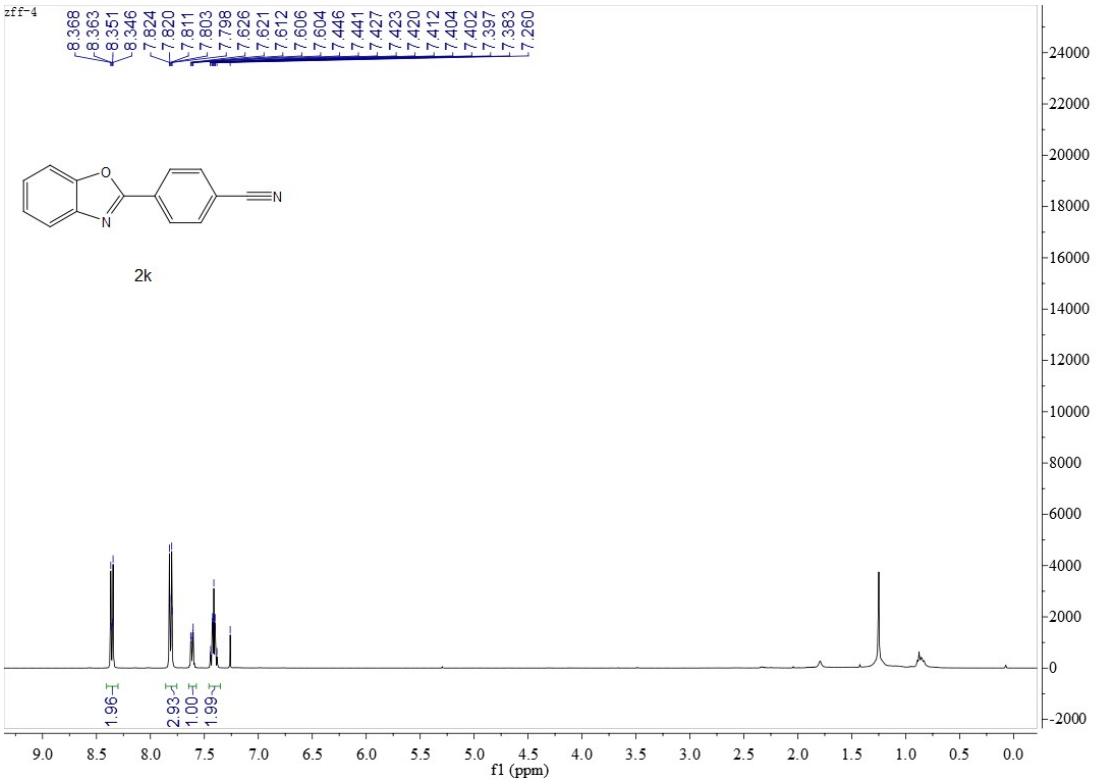
O
N
O
O—CH3
2j
f1 (ppm)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7.606
7.604
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7.427
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7.420
7.412
7.404
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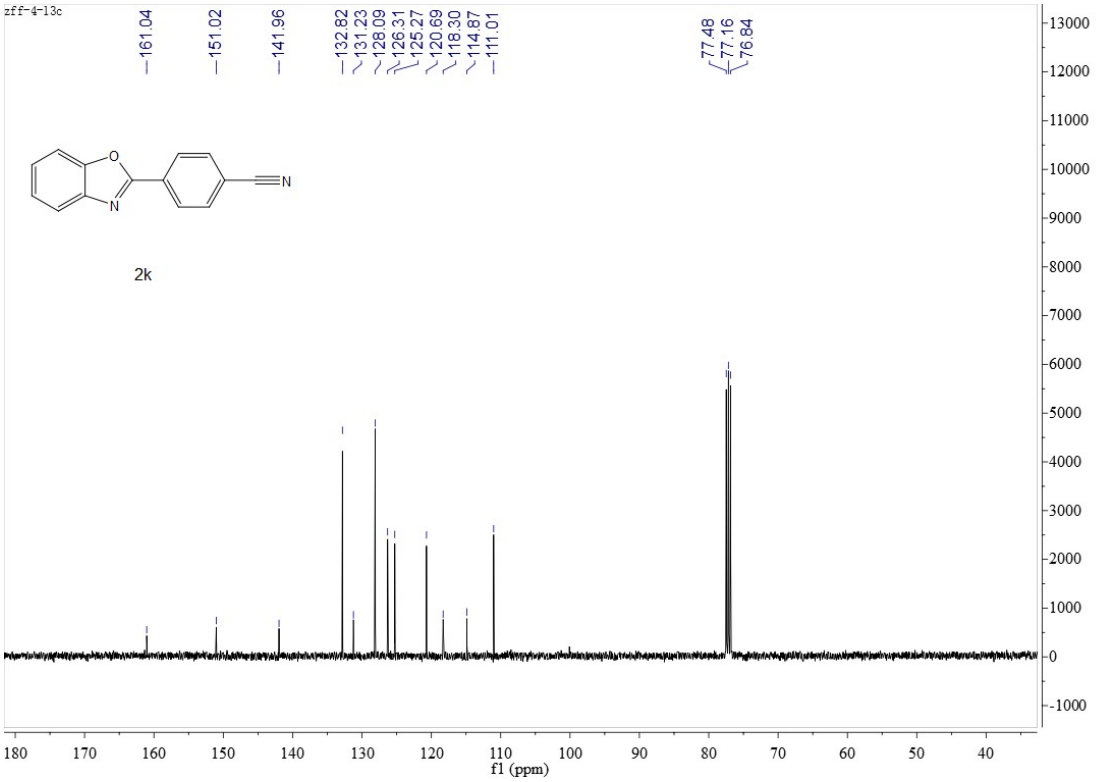
f1 (ppm)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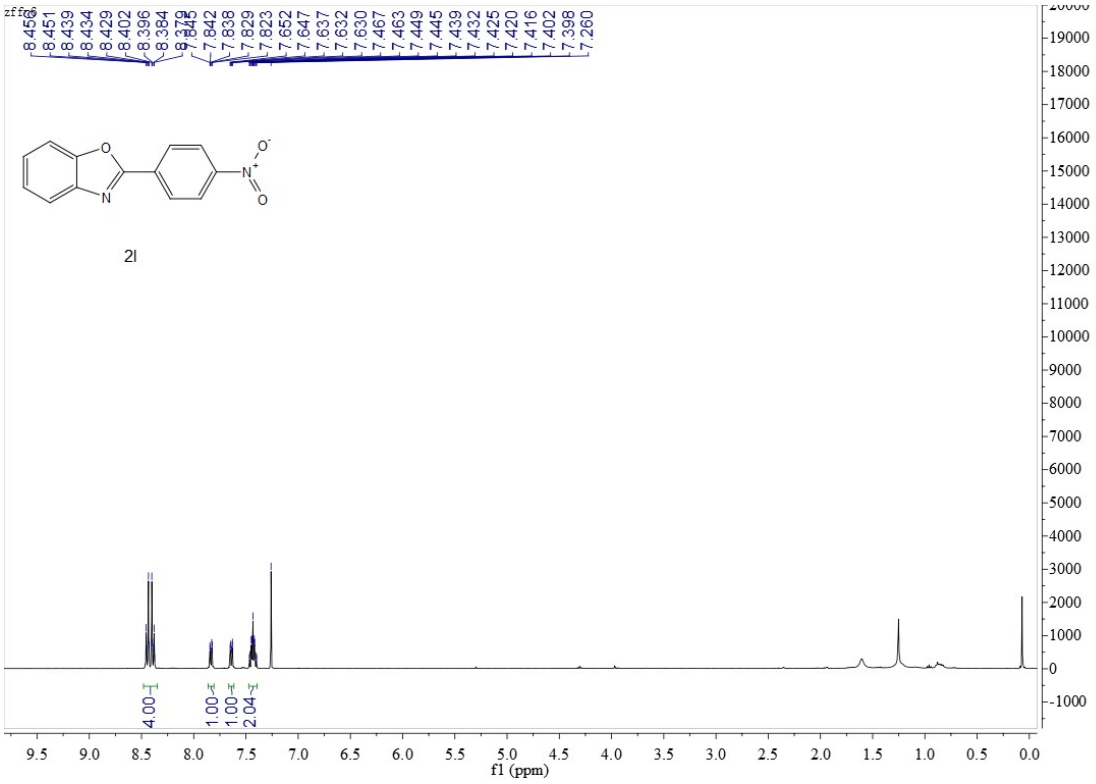
76.84
O
N
N
2k
f1 (ppm)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7.647
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7.632
7.630
7.467
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7.445
7.439
7.432
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7.260
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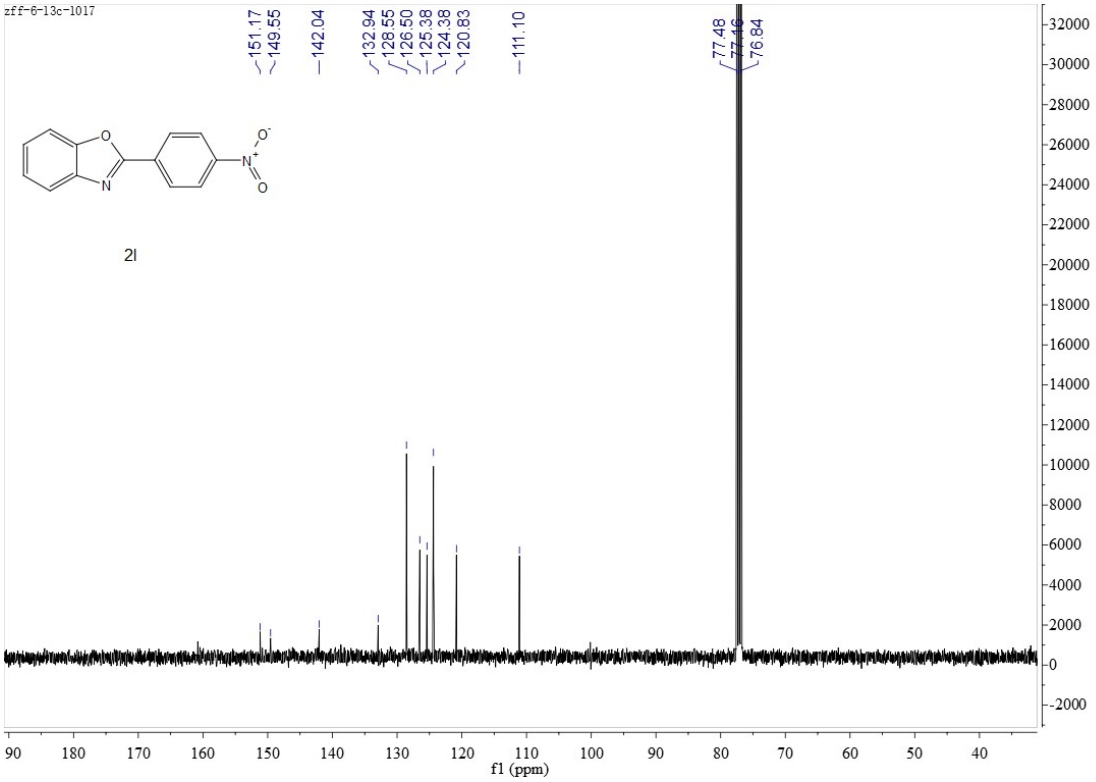
1.00
2.04
f1 (ppm)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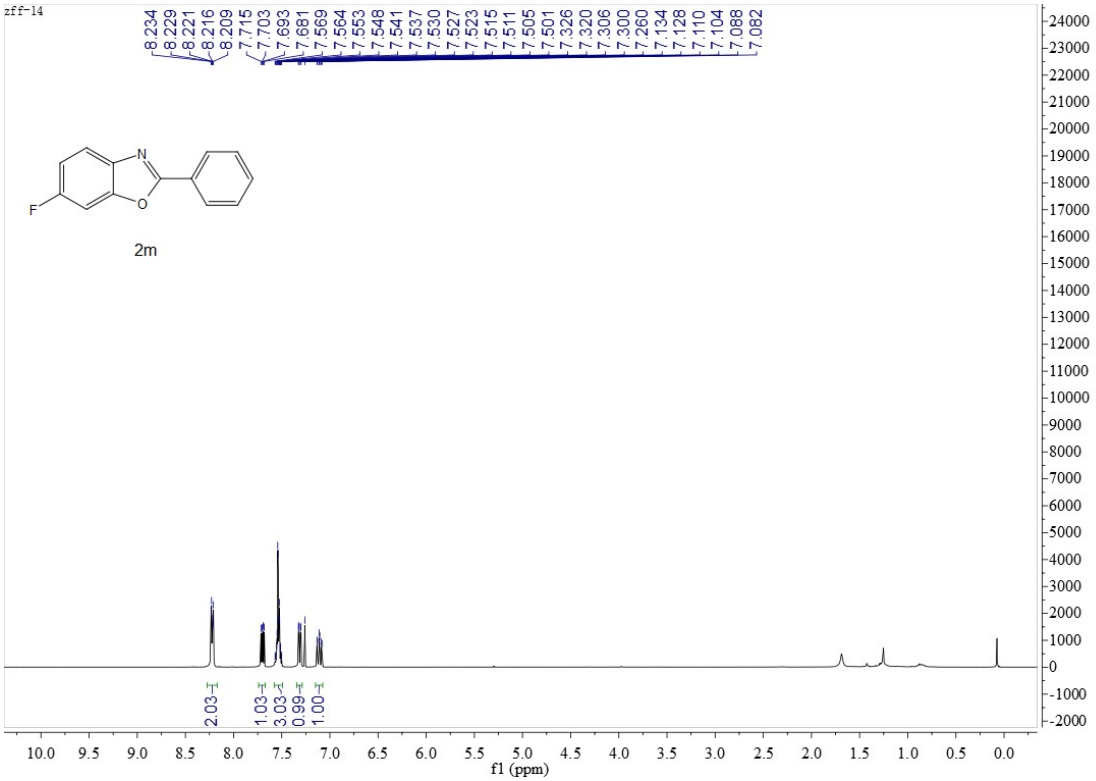
2l
f1 (ppm)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7.548
7.541
7.537
7.530
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7.523
7.515
7.511
7.505
7.501
7.326
7.320
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7.128
7.110
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N
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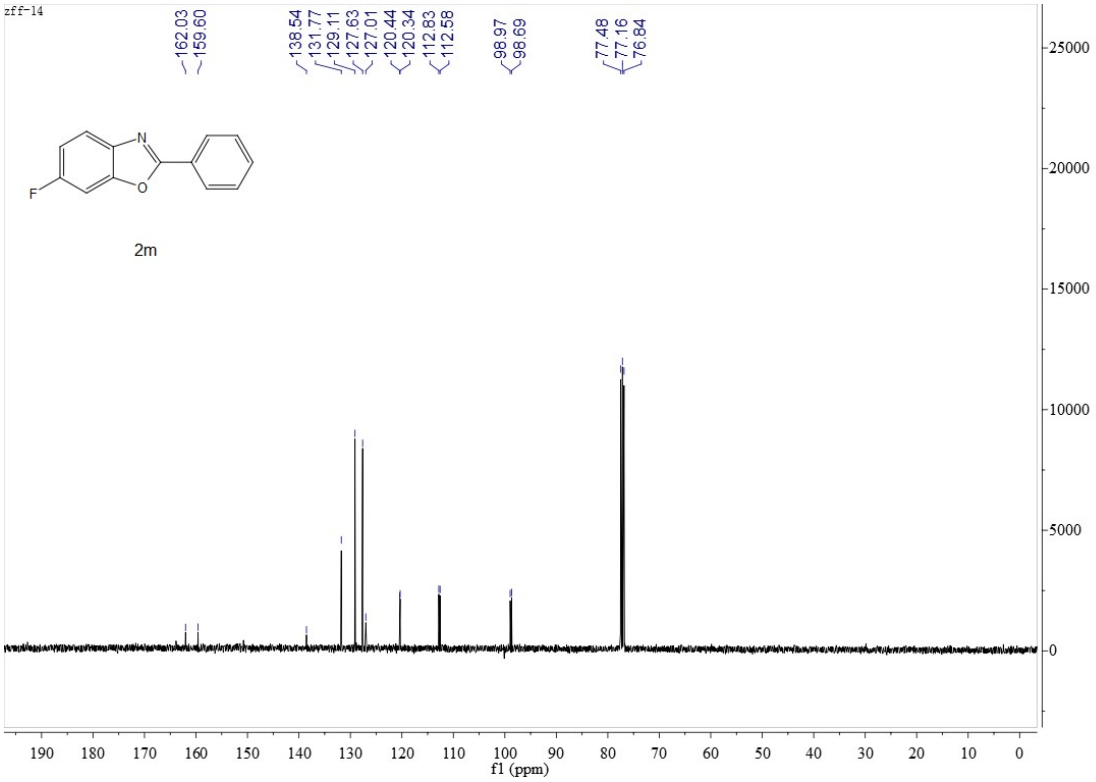
f1 (ppm)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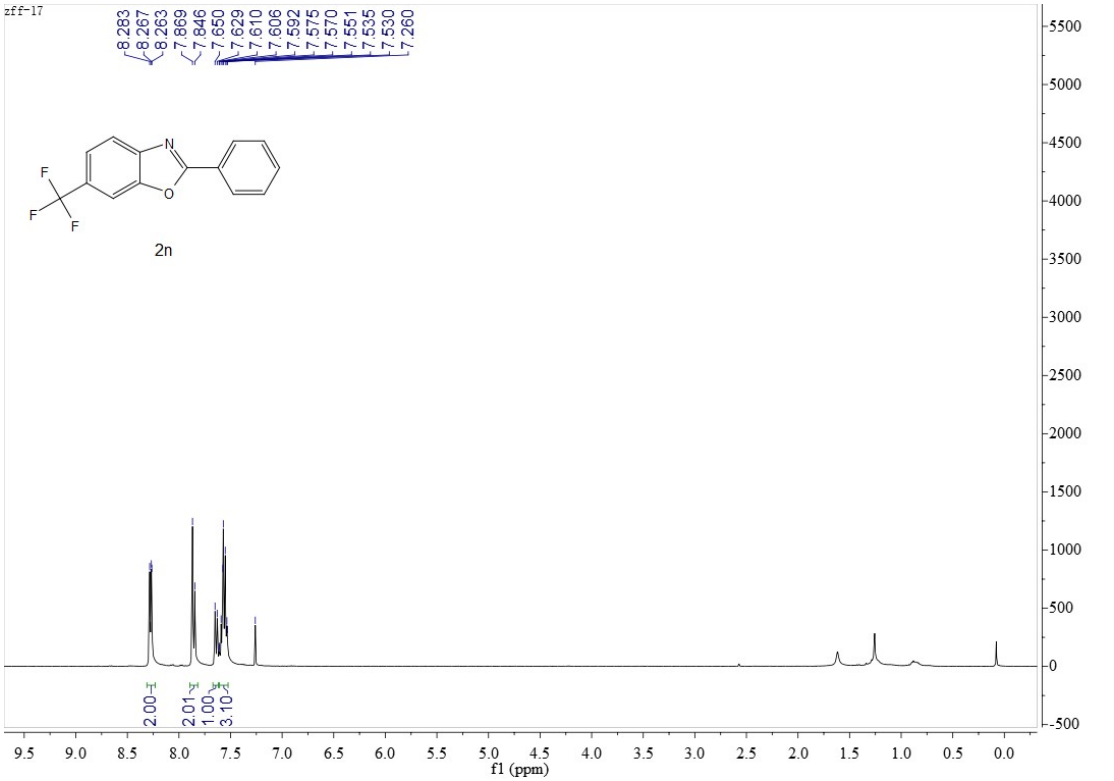
76.84
N
O
F
2m
f1 (ppm)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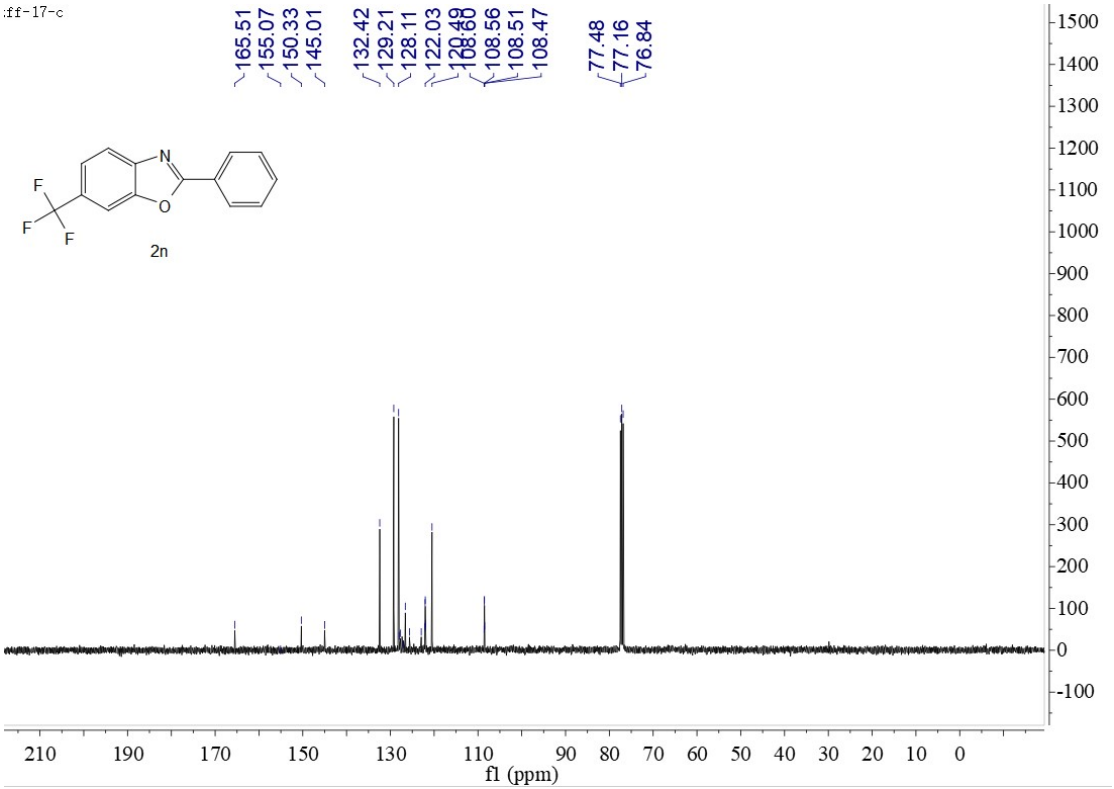
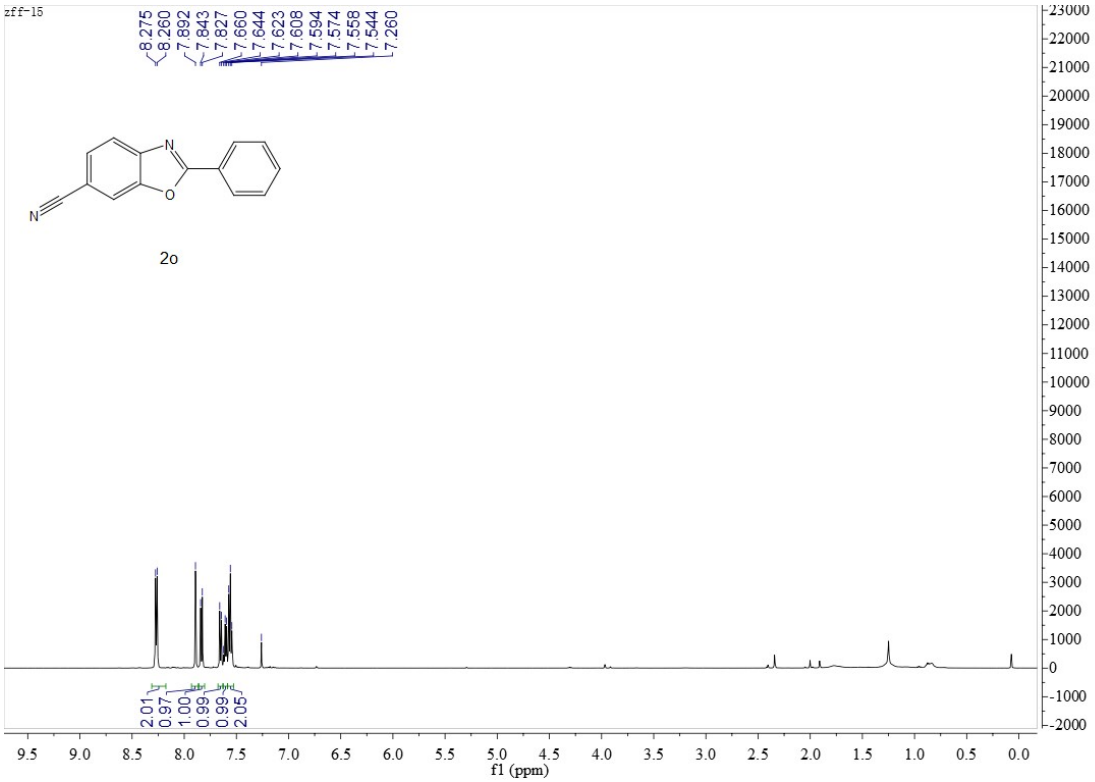
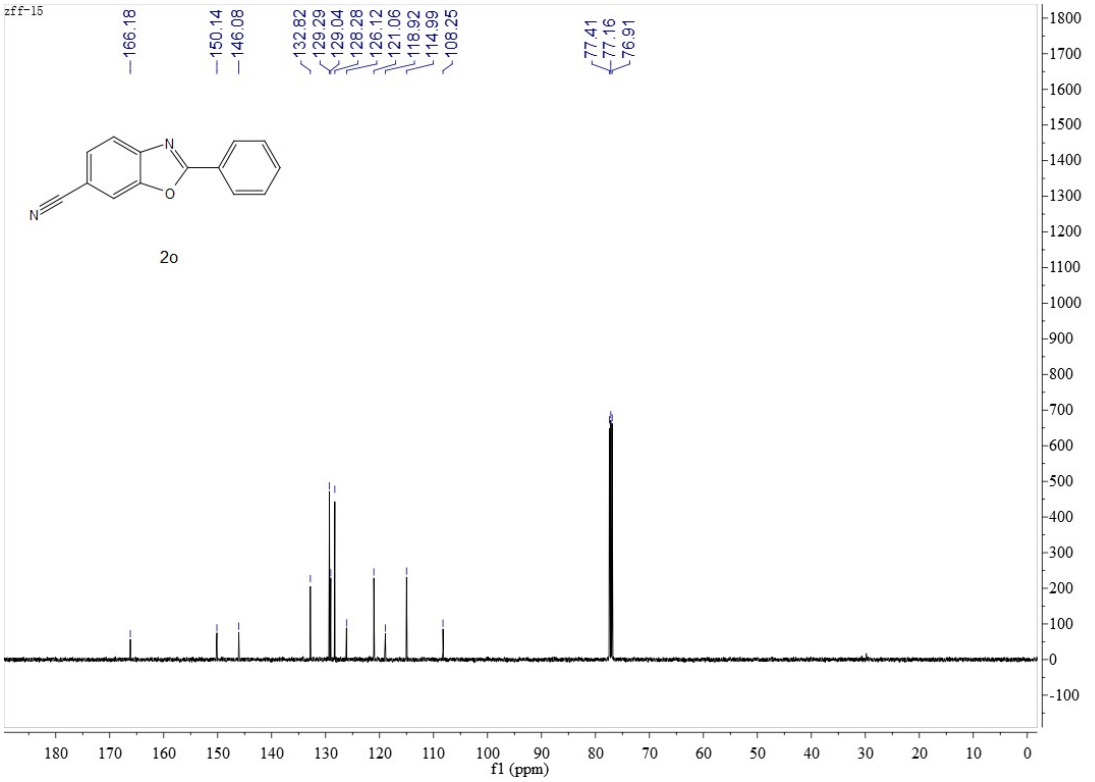
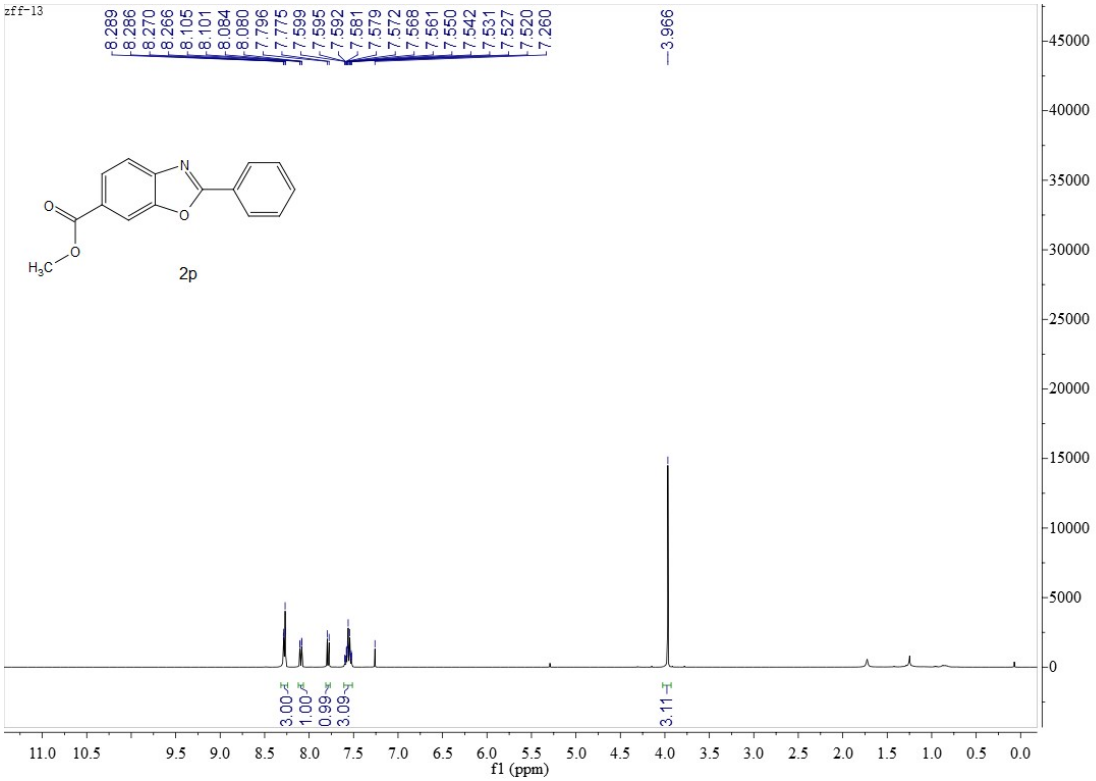
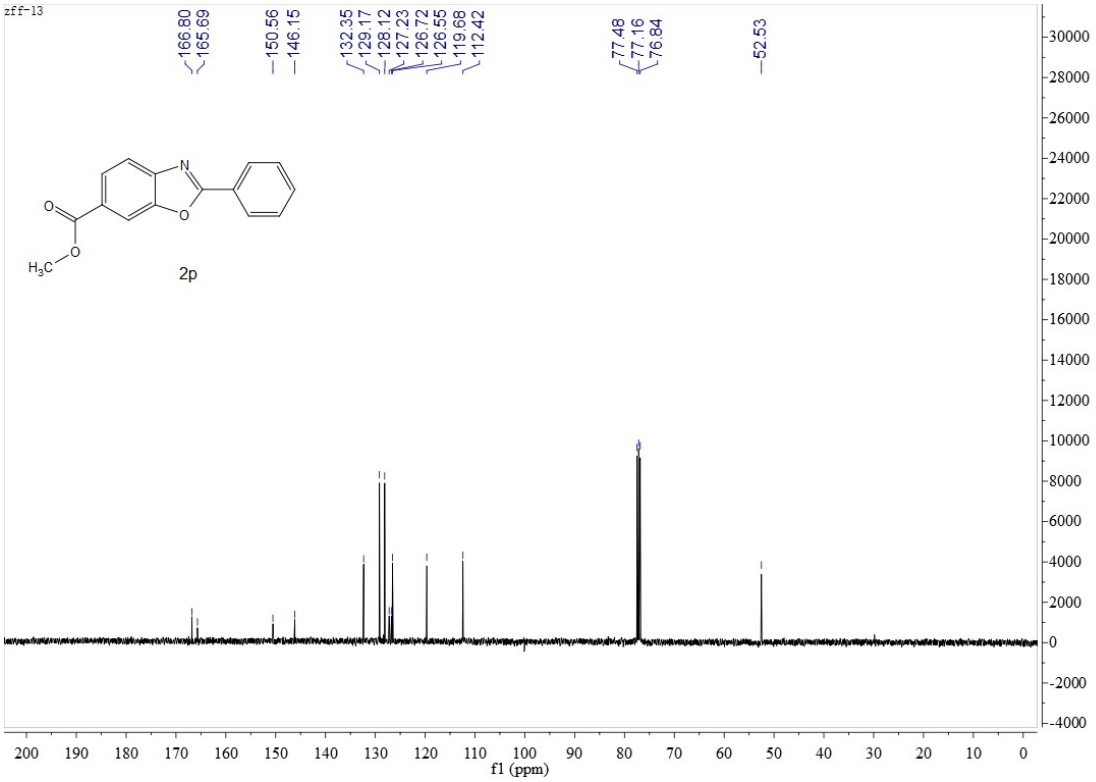
7.535
7.530
7.260
F
F
F
N
O
2n
2.00
2.01
1.00
3.10
f1 (ppm)

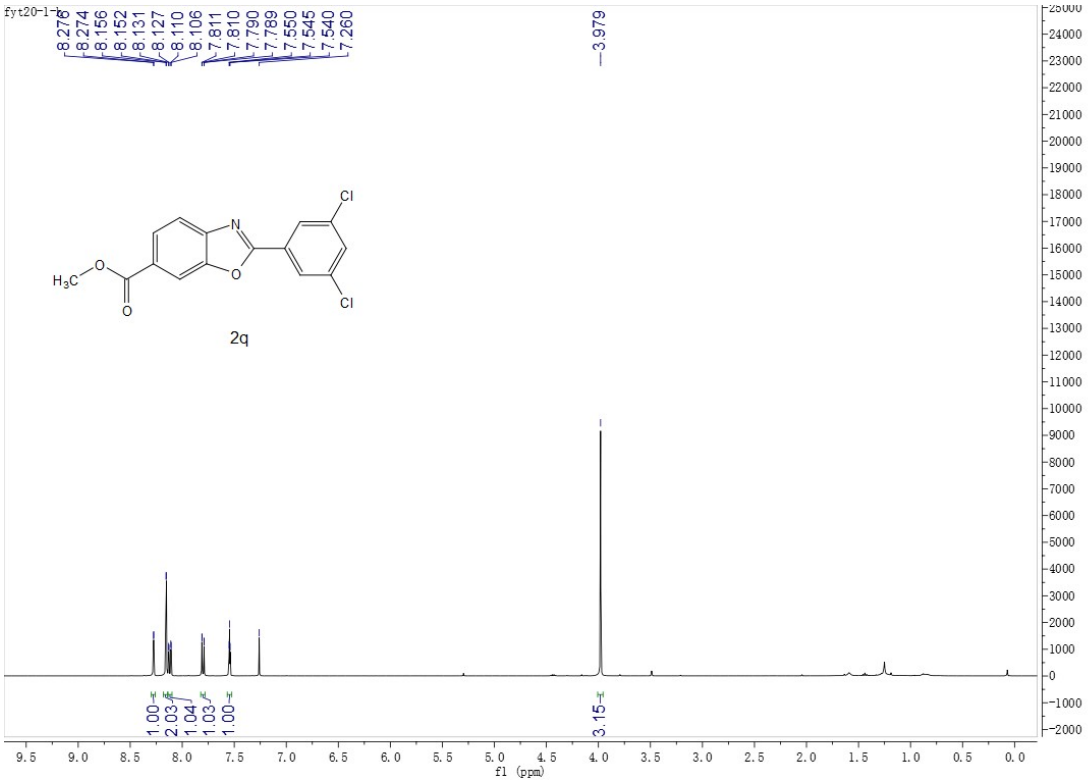

zff-17-c
165.51
155.07
150.33
145.01
132.42
129.21
128.11
122.03
120.49
108.60
108.56
108.51
108.47
77.48
77.16
76.84
F
F
F
N
O
2n
f1 (ppm)

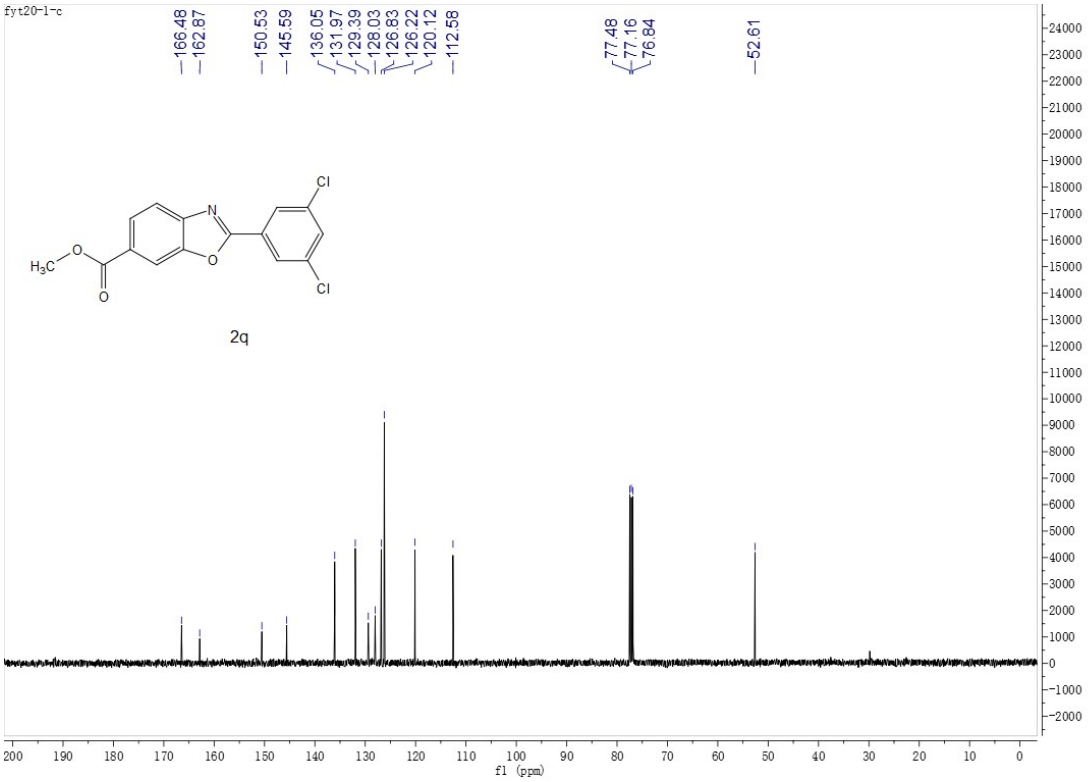

zff-15
8.275
8.260
7.892
7.843
7.827
7.660
7.644
7.623
7.608
7.594
7.574
7.558
7.544
7.260
N
O
N
2o
2.01
0.97
1.00
0.99
0.99
2.05
f1 (ppm)

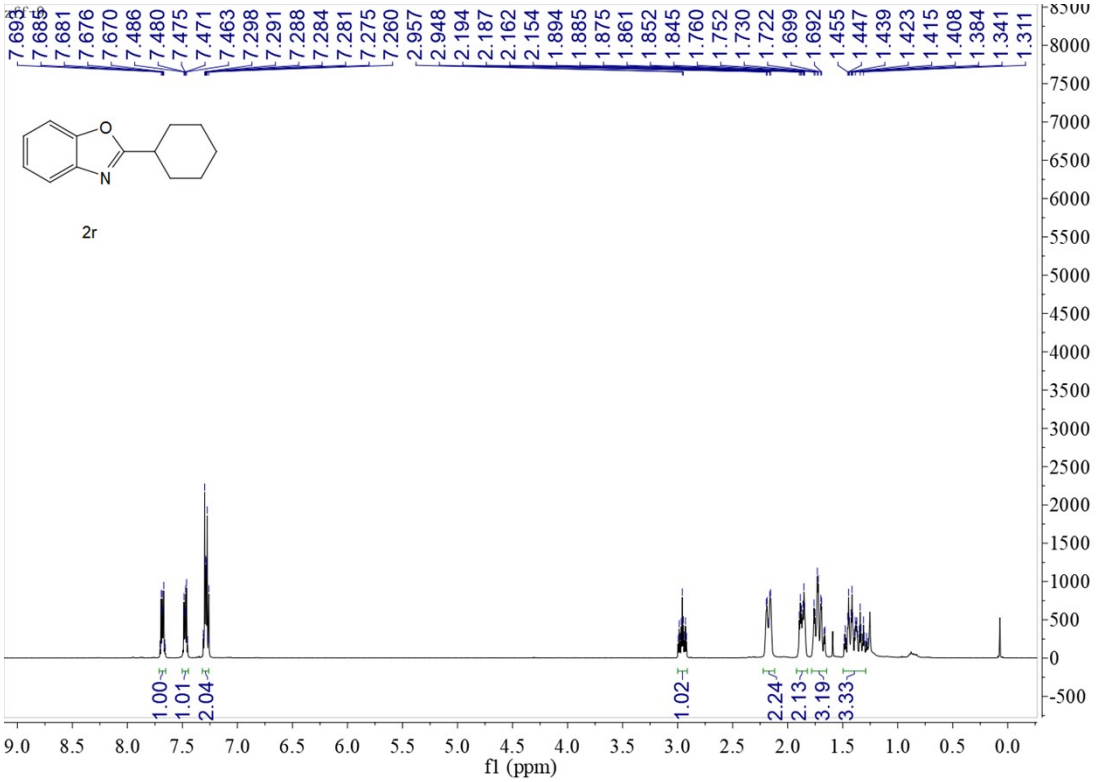

zff-15
166.18
150.14
146.08
132.82
129.29
129.04
128.28
126.12
121.06
118.92
114.99
108.25
77.41
77.16
76.91
N
O
N
2o
f1 (ppm)

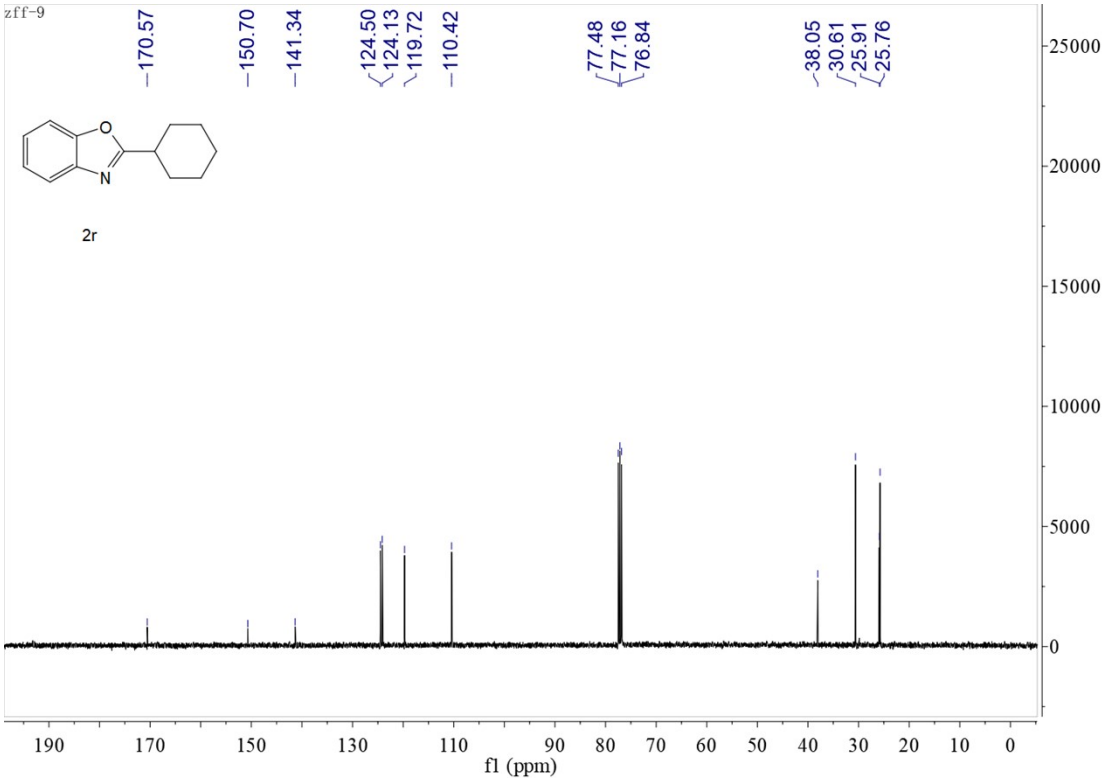

zff-13
8.289
8.286
8.270
8.266
8.105
8.101
8.084
8.080
7.796
7.775
7.599
7.595
7.592
7.581
7.579
7.572
7.568
7.561
7.550
7.542
7.531
7.527
7.520
7.260
3.966
2p
3.00
1.00
0.99
3.09
3.11
f1 (ppm)

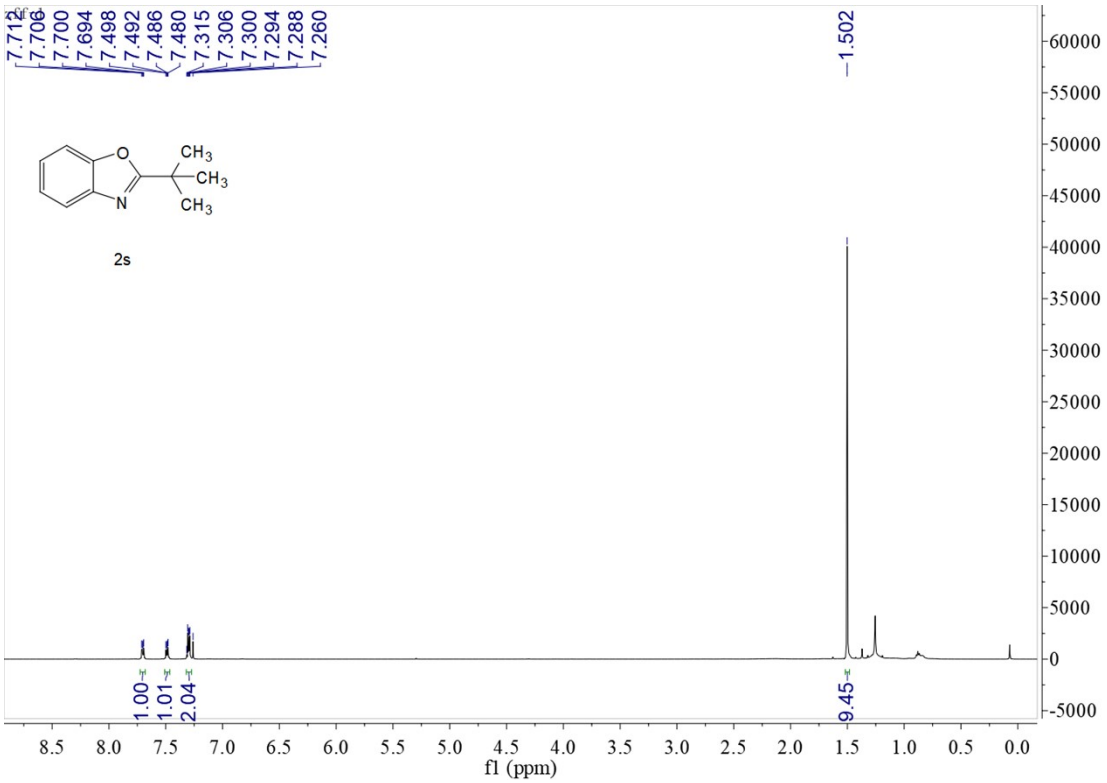

zff-13
166.80
165.69
150.56
146.15
132.35
129.17
128.12
127.23
126.72
126.55
119.68
112.42
77.48
77.16
76.84
52.53
2p
f1 (ppm)

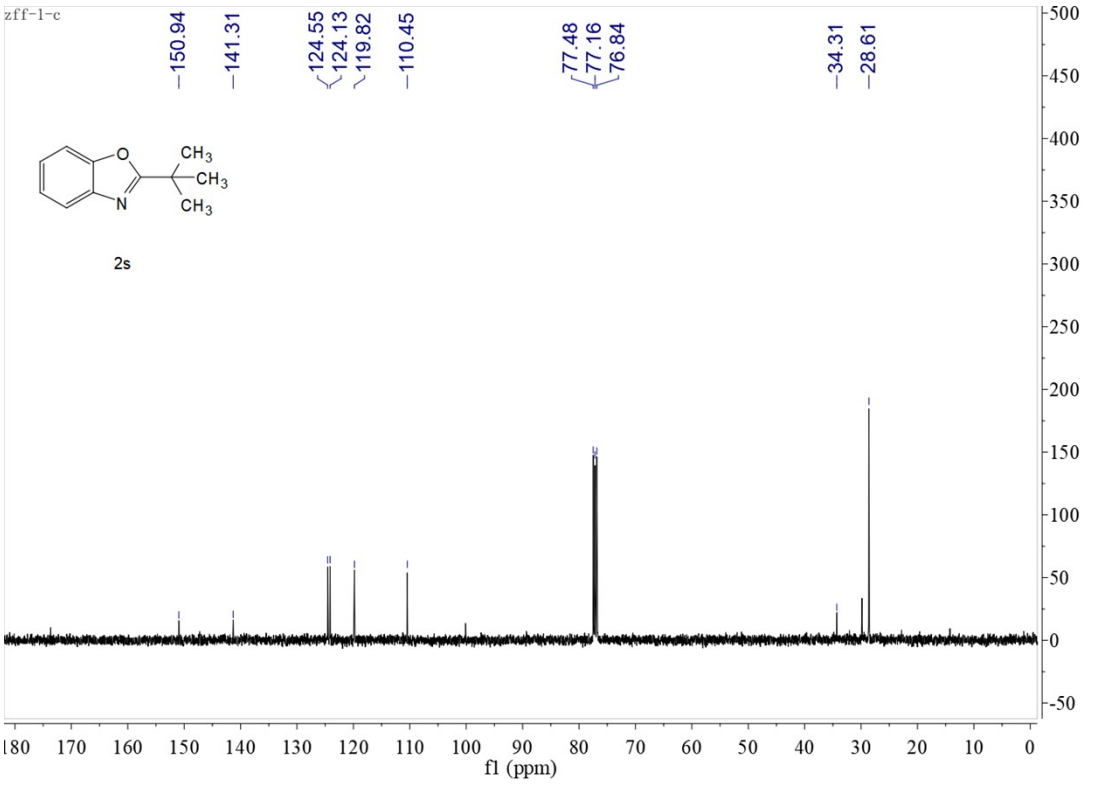

fyt20-1-h
8.278
8.274
8.156
8.152
8.131
8.127
8.110
8.106
7.811
7.810
7.790
7.789
7.550
7.545
7.540
7.260
3.979
Cl
N
O
H3C
O
O
Cl
2q
1.00
2.03
1.04
1.03
1.00
3.15
f1 (ppm)

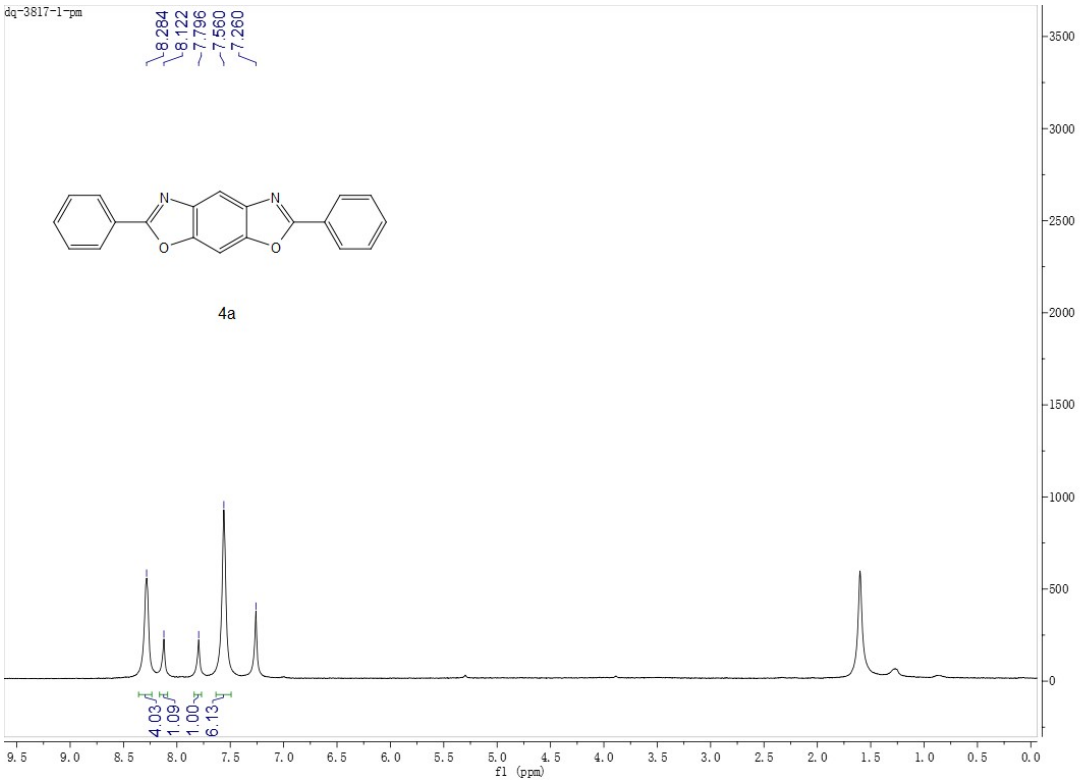

fyt20-1-c
166.48
162.87
150.53
145.59
136.05
131.97
129.39
128.03
126.83
126.22
120.12
112.58
77.48
77.16
76.84
52.61
Cl
N
O
H3C
O
O
Cl
2q
f1 (ppm)

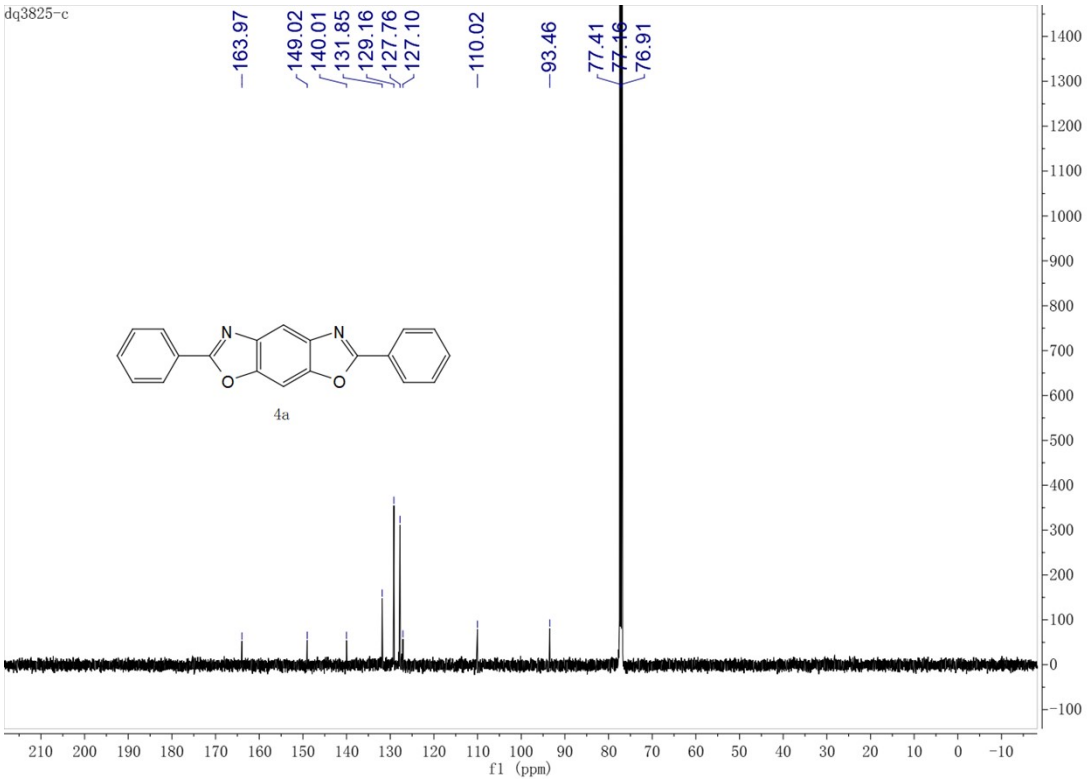

7.692
7.685
7.681
7.676
7.670
7.486
7.480
7.475
7.471
7.463
7.298
7.291
7.288
7.284
7.281
7.275
7.260
2.957
2.948
2.194
2.187
2.162
2.154
1.894
1.885
1.875
1.861
1.852
1.845
1.760
1.752
1.730
1.722
1.699
1.692
1.455
1.447
1.439
1.423
1.415
1.408
1.384
1.341
1.311
2r
1.00
1.01
2.04
1.02
2.24
2.13
3.19
3.33
f1 (ppm)

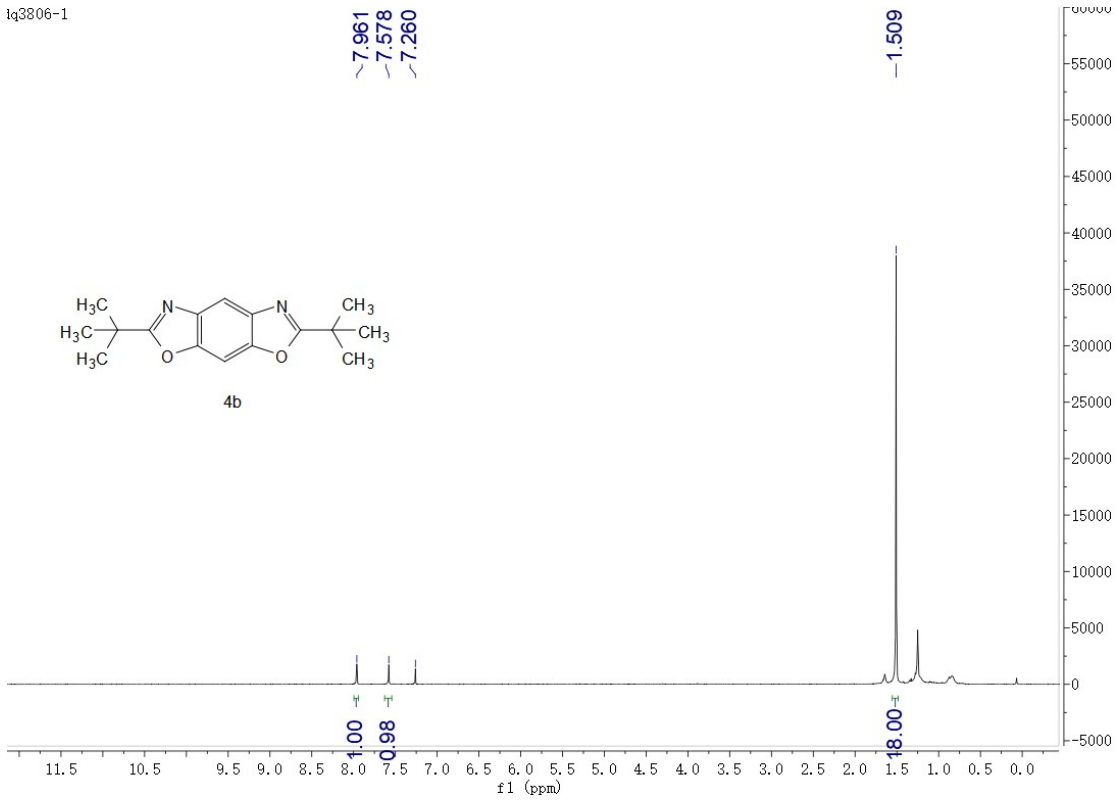

zff-9
170.57
150.70
141.34
124.50
124.13
119.72
110.42
77.48
77.16
76.84
38.05
30.61
25.91
25.76
2r
f1 (ppm)

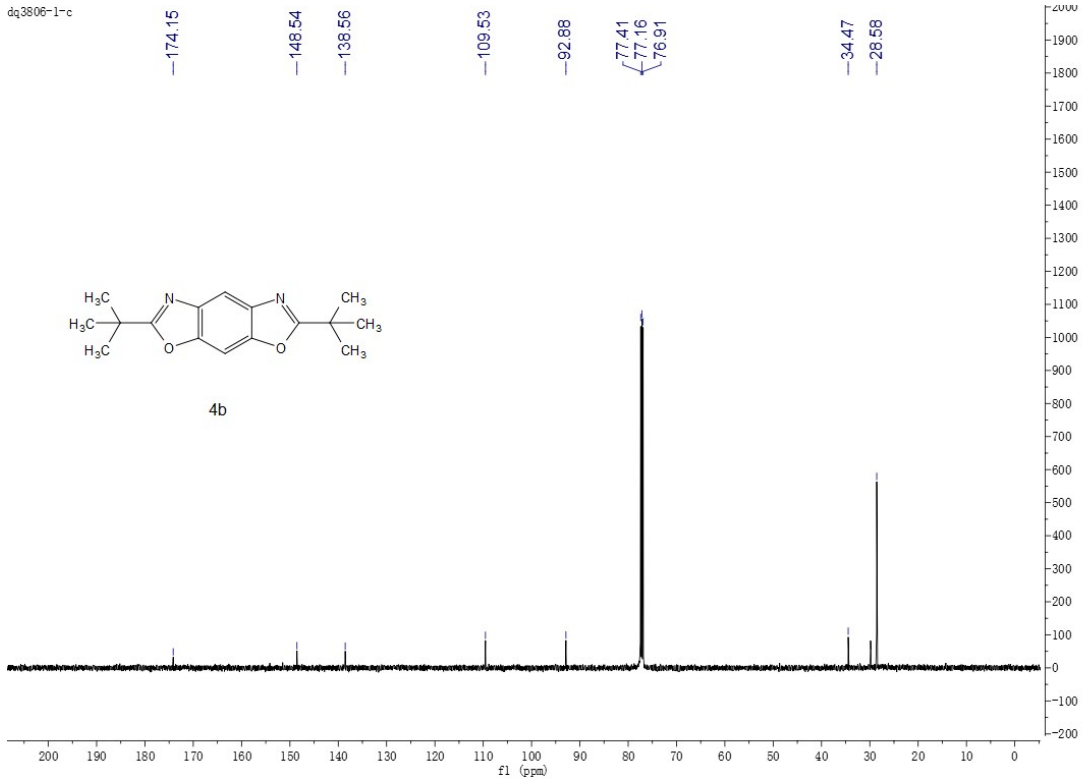

7.712
7.706
7.700
7.694
7.498
7.492
7.486
7.480
7.315
7.306
7.300
7.294
7.288
7.260
1.502
2s
1.00
1.01
2.04
9.45
fl (ppm)

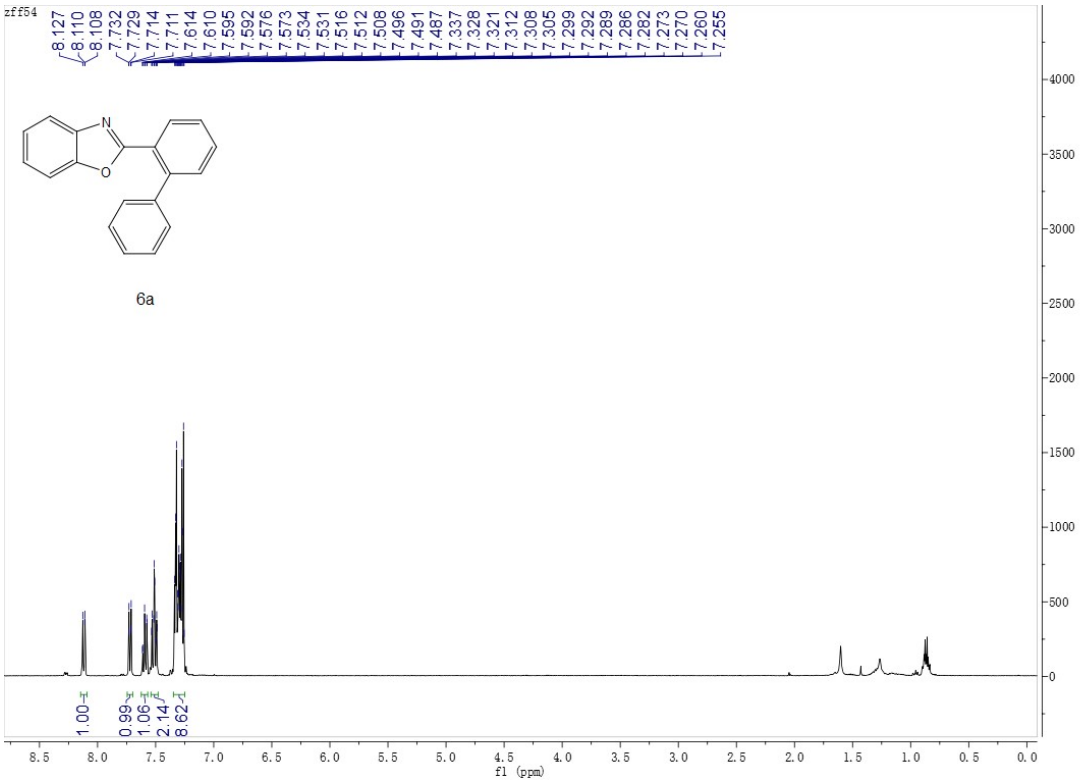

zff-1-c
150.94
141.31
124.55
124.13
119.82
110.45
77.48
77.16
76.84
34.31
28.61
2s
fl (ppm)

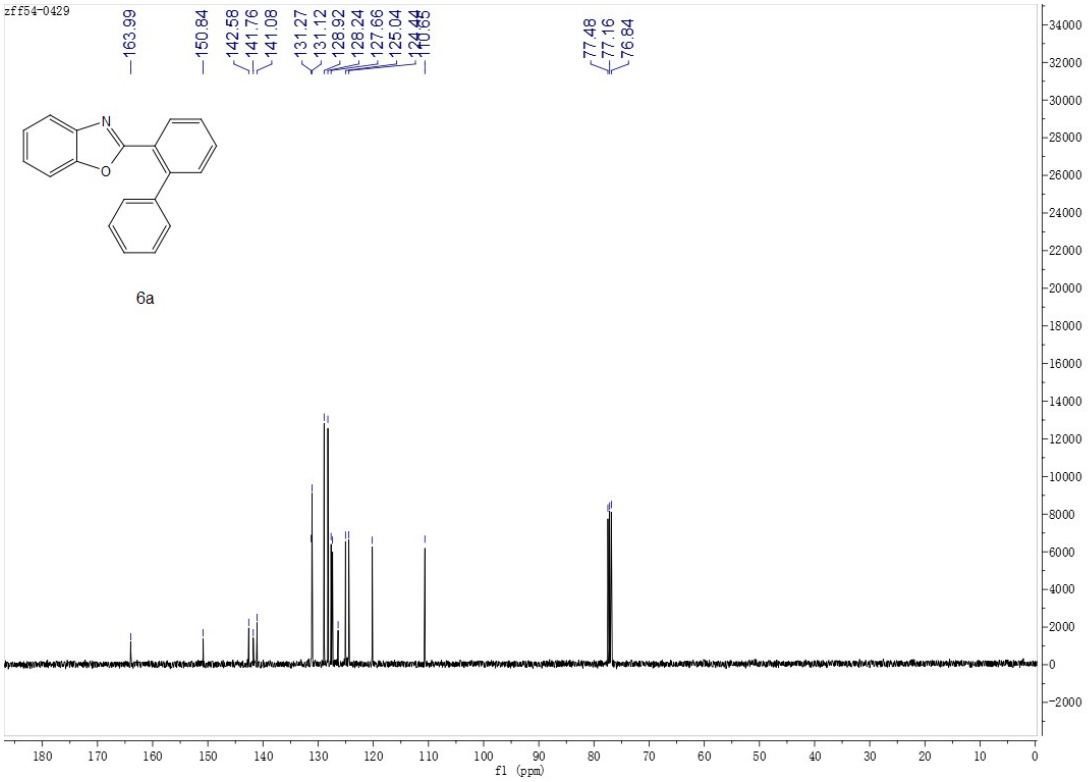

dq-3817-1-pm
8.284
8.122
7.796
7.560
7.260
4a
4.03
1.09
1.00
6.13
f1 (ppm)

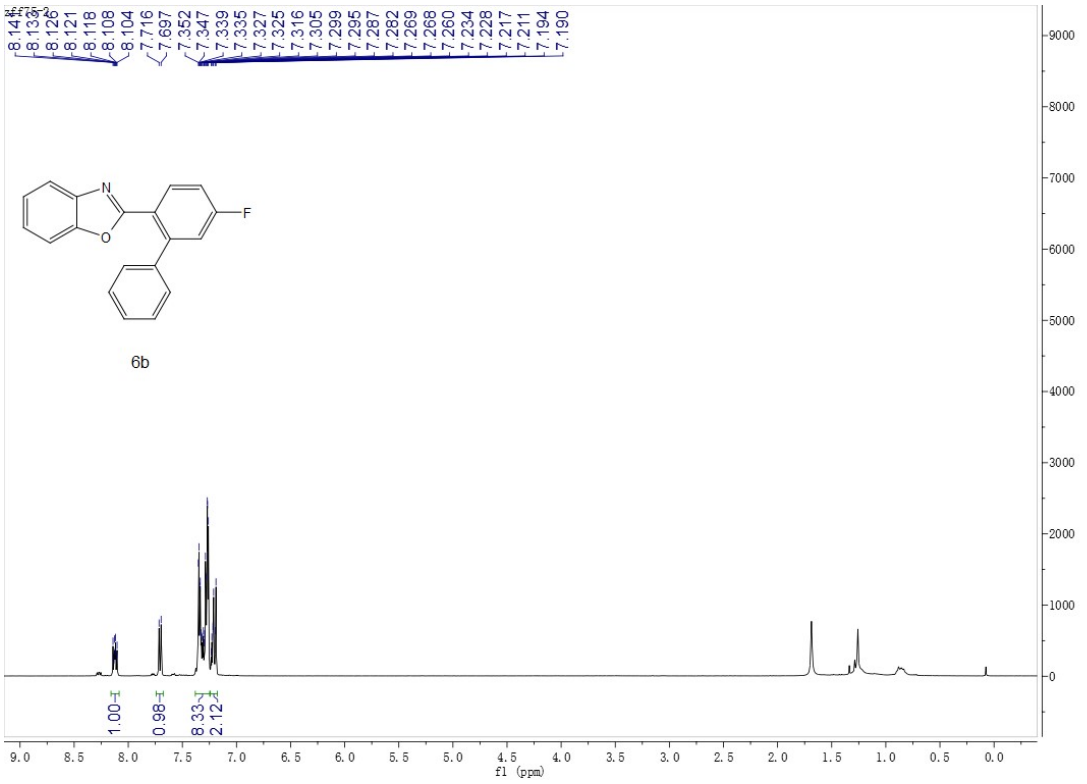

dq3825-c
163.97
149.02
140.01
131.85
129.16
127.76
127.10
110.02
93.46
77.41
77.16
76.91
4a
f1 (ppm)

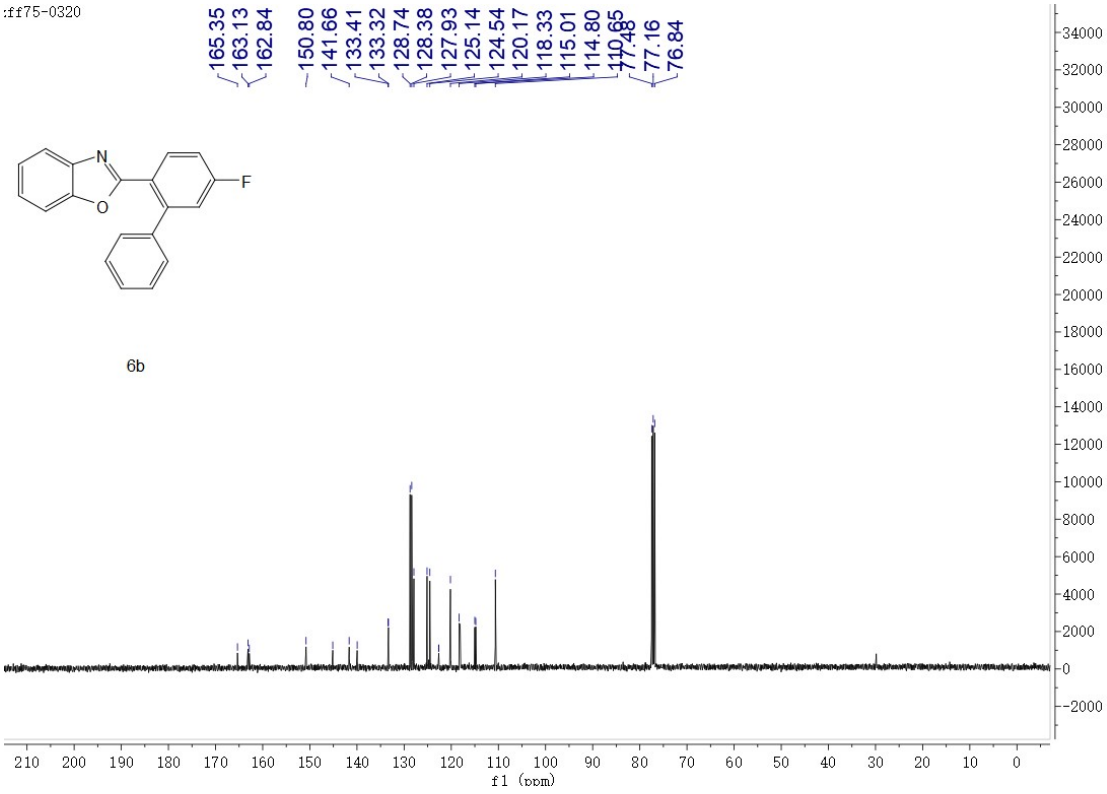

lq3806-1
7.961
7.578
7.260
1.509
4b
1.00
0.98
18.00
f1 (ppm)


dq3806-1-c
174.15
148.54
138.56
109.53
92.88
77.41
77.16
76.91
34.47
28.58
4b
f1 (ppm)


zff54
8.127
8.110
8.108
7.732
7.729
7.714
7.711
7.614
7.610
7.595
7.592
7.576
7.573
7.534
7.531
7.516
7.512
7.508
7.496
7.491
7.487
7.337
7.328
7.321
7.312
7.308
7.305
7.299
7.292
7.289
7.286
7.282
7.273
7.270
7.260
7.255
6a
1.00
0.99
1.06
2.14
8.62
f1 (ppm)


zff54-0429
163.99
150.84
142.58
141.76
141.08
131.27
131.12
128.92
128.24
127.66
125.04
77.48
77.16
76.84
6a
f1 (ppm)


8.145
8.139
8.126
8.121
8.118
8.108
8.104
7.716
7.697
7.352
7.347
7.339
7.335
7.327
7.325
7.316
7.305
7.299
7.295
7.287
7.282
7.269
7.268
7.260
7.234
7.228
7.217
7.211
7.194
7.190
N
O
F
6b
1.00
0.98
8.33
2.12
fl (ppm)


:ff75-0320
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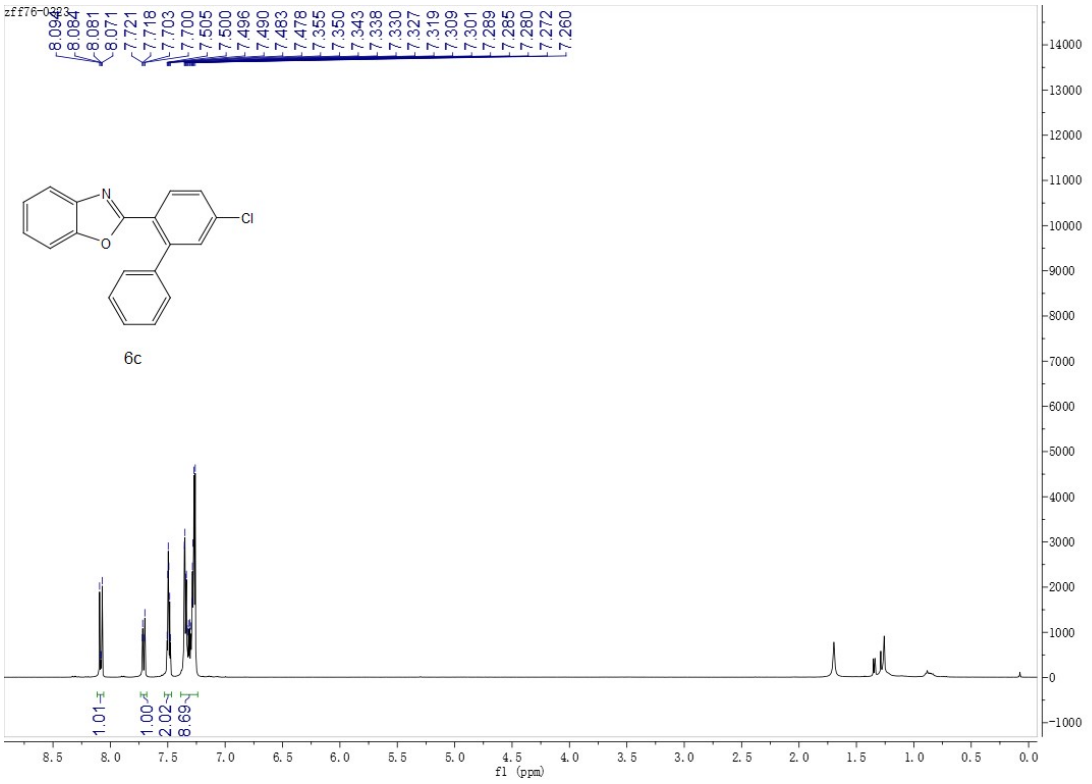
163.13
162.84
150.80
141.66
133.41
133.32
128.74
128.38
127.93
125.14
124.54
120.17
118.33
115.01
114.80
110.65
77.48
77.16
76.84
N
O
F
6b
fl (ppm)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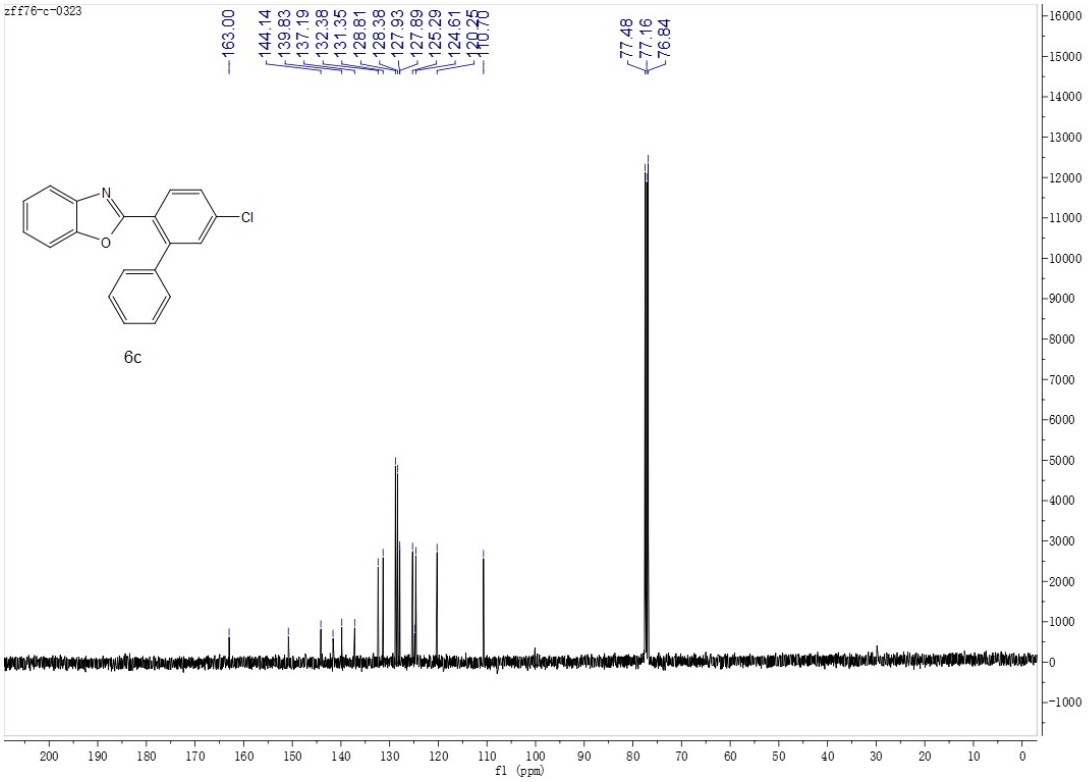
8.084
8.081
8.071
7.721
7.718
7.703
7.700
7.505
7.500
7.496
7.490
7.483
7.478
7.355
7.350
7.343
7.338
7.330
7.327
7.319
7.309
7.301
7.289
7.285
7.280
7.272
7.260
N
O
Cl
1.01
1.00
2.02
8.69
f1 (ppm)

6c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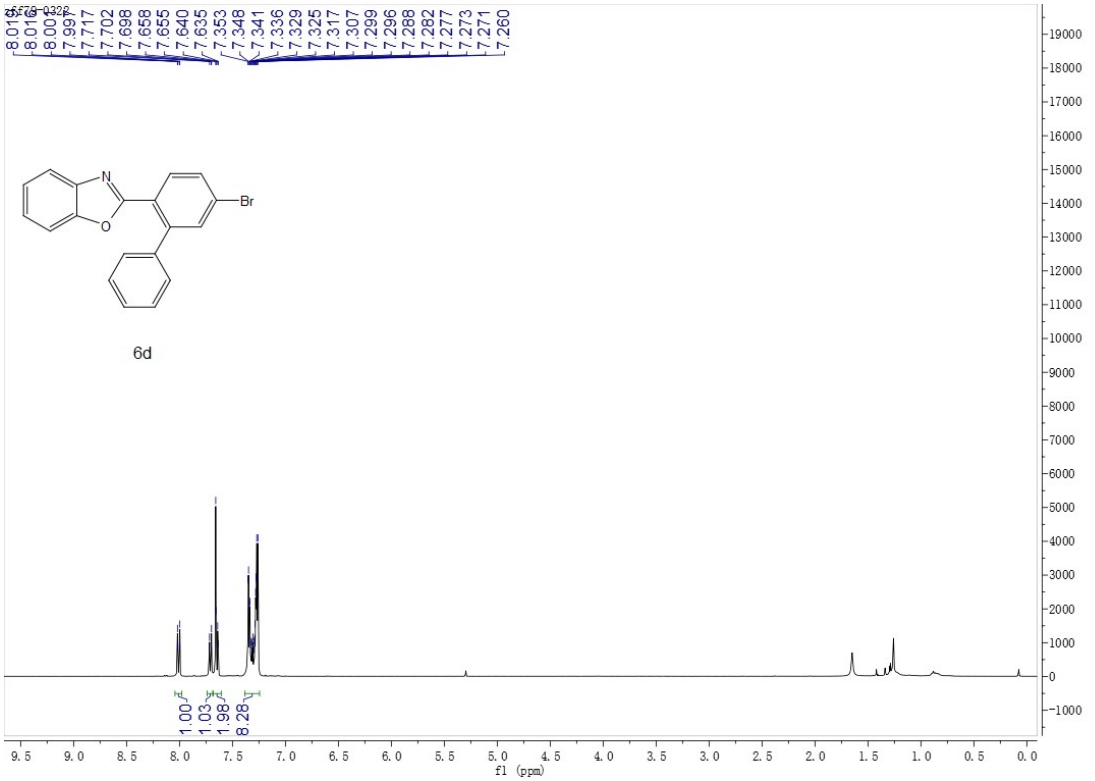
139.83
137.19
132.38
131.35
128.81
128.38
127.93
127.89
125.29
124.61
120.25
110.70
77.48
77.16
76.84
N
O
Cl
f1 (ppm)

6c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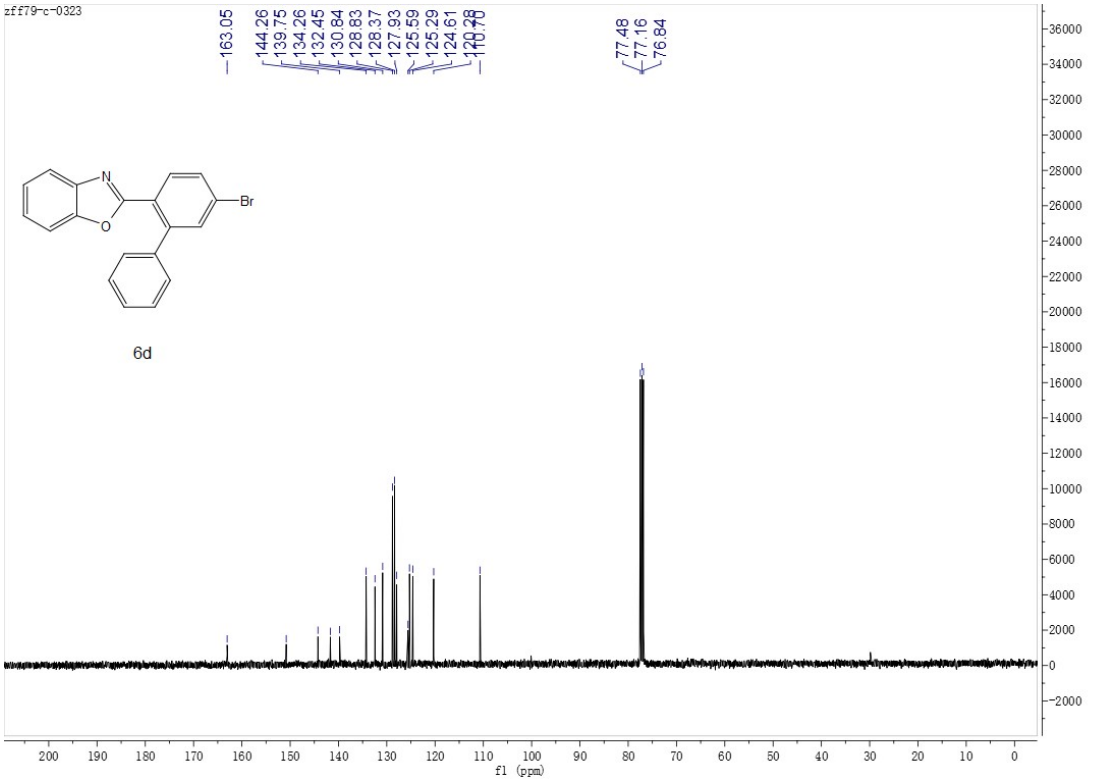
7.702
7.698
7.658
7.655
7.640
7.635
7.353
7.348
7.341
7.336
7.329
7.325
7.317
7.307
7.299
7.296
7.288
7.282
7.277
7.273
7.271
7.260
N
O
Br
6d
1.00
1.03
1.98
8.28
f1 (ppm)


zff79-c-0323
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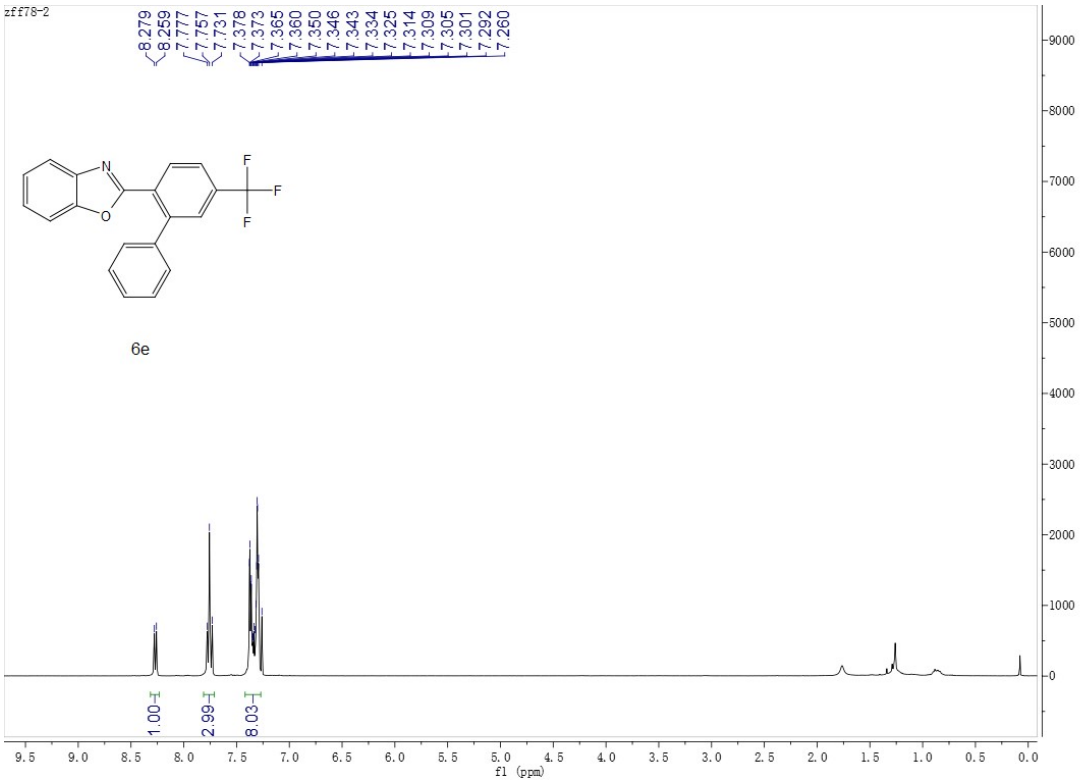
139.75
134.26
132.45
130.84
128.83
128.37
127.93
125.59
125.29
124.61
77.48
77.16
76.84
N
O
Br
6d
f1 (ppm)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7.777
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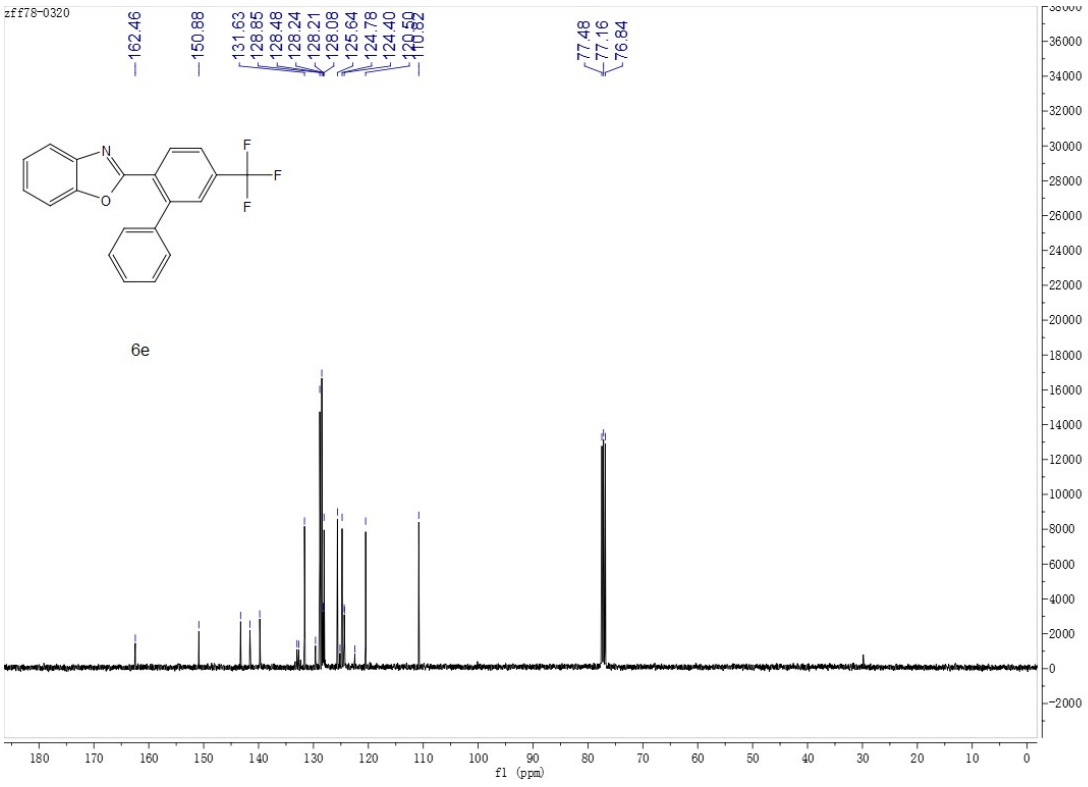
7.731
7.378
7.373
7.365
7.360
7.350
7.346
7.343
7.334
7.325
7.314
7.309
7.305
7.301
7.292
7.260
N
O
F
F
F
6e
1.00
2.99
8.03
f1 (ppm)


zff78-0320
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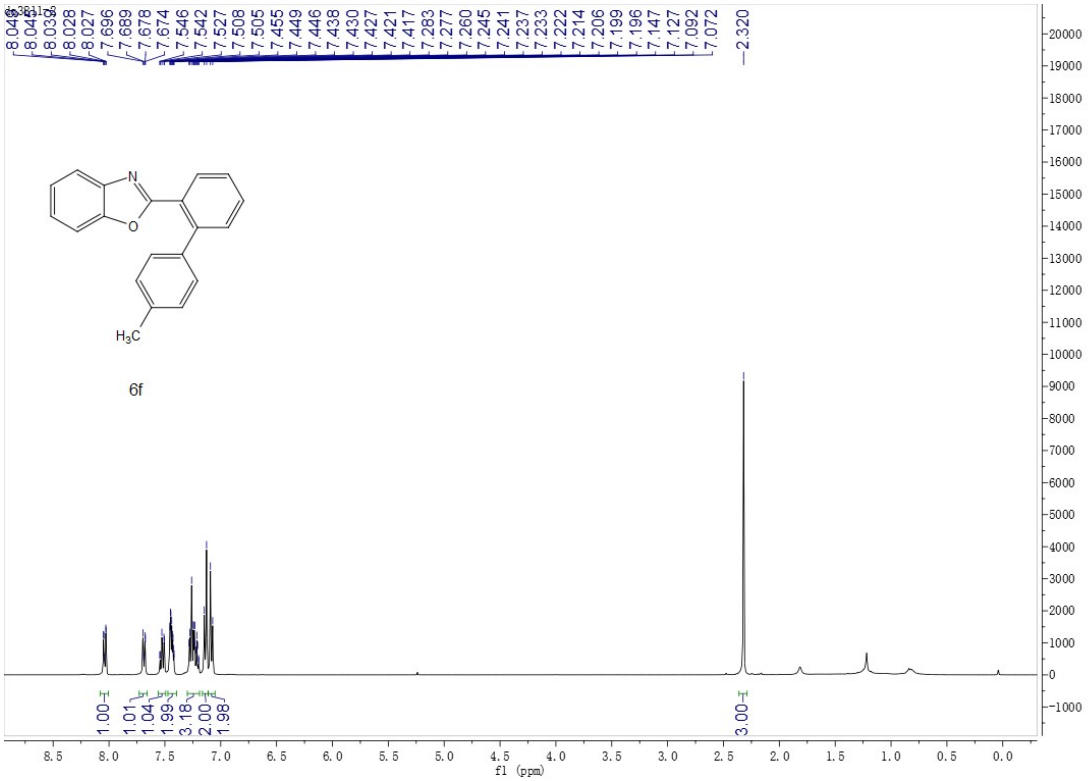
150.88
131.63
128.85
128.48
128.24
128.21
128.08
125.64
124.78
124.40
120.50
110.82
77.48
77.16
76.84
N
O
F
F
F
6e
f1 (ppm)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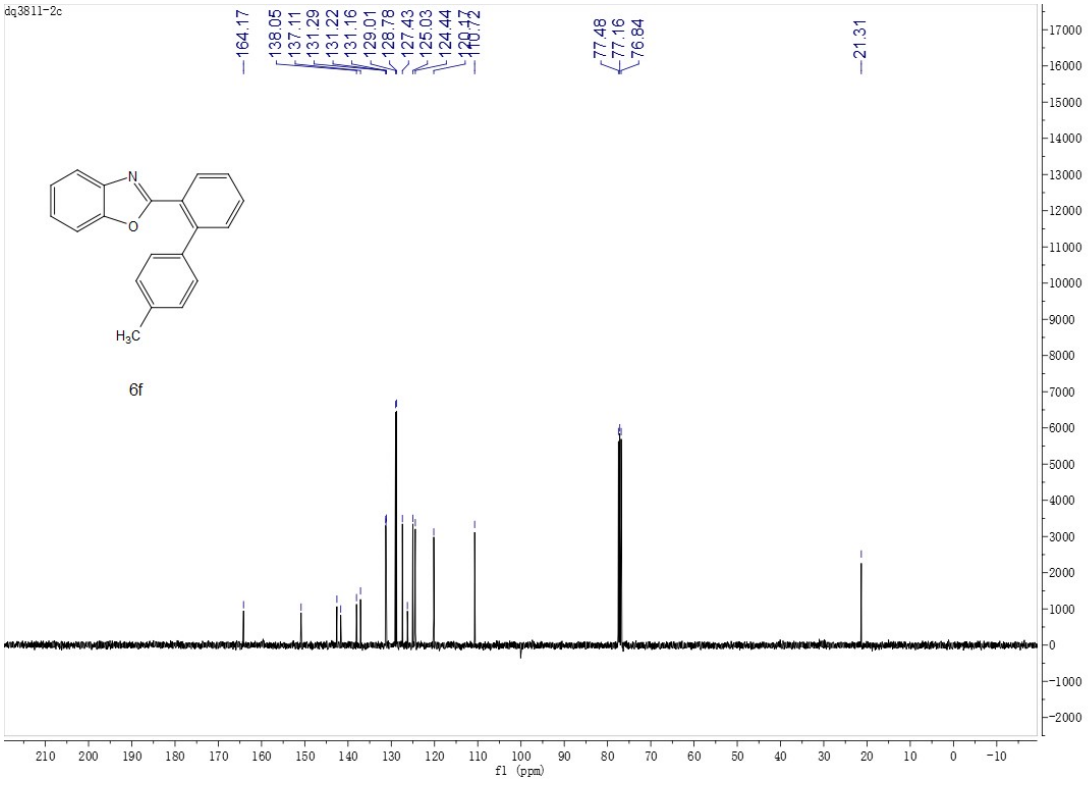
8.041
8.038
8.028
8.027
7.696
7.689
7.678
7.674
7.546
7.542
7.527
7.508
7.505
7.455
7.449
7.446
7.438
7.430
7.427
7.421
7.417
7.283
7.277
7.260
7.245
7.241
7.237
7.233
7.222
7.214
7.206
7.199
7.196
7.147
7.127
7.092
7.072
2.320
N
O
H3C
6f
1.00
1.01
1.04
1.99
3.18
2.00
1.98
3.00
f1 (ppm)


dq3811-2c
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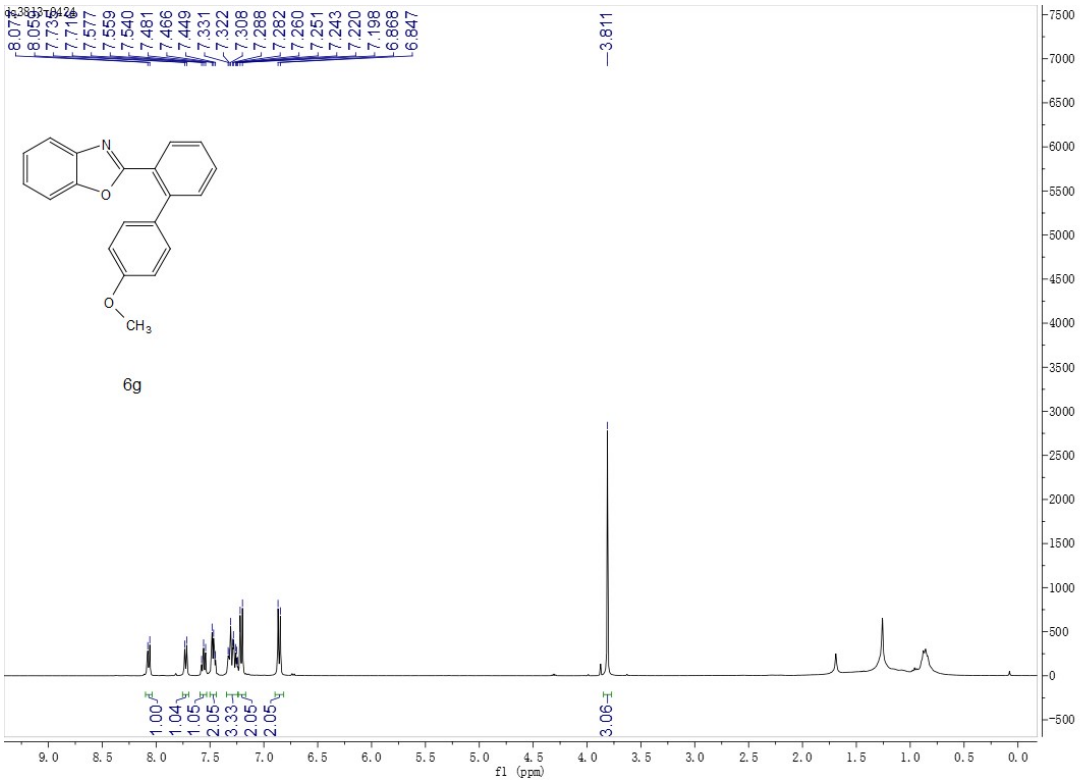
138.05
137.11
131.29
131.22
131.16
129.01
128.78
127.43
125.03
124.44
120.17
110.72
77.48
77.16
76.84
21.31
N
O
H3C
6f
f1 (ppm)


8.076
8.055
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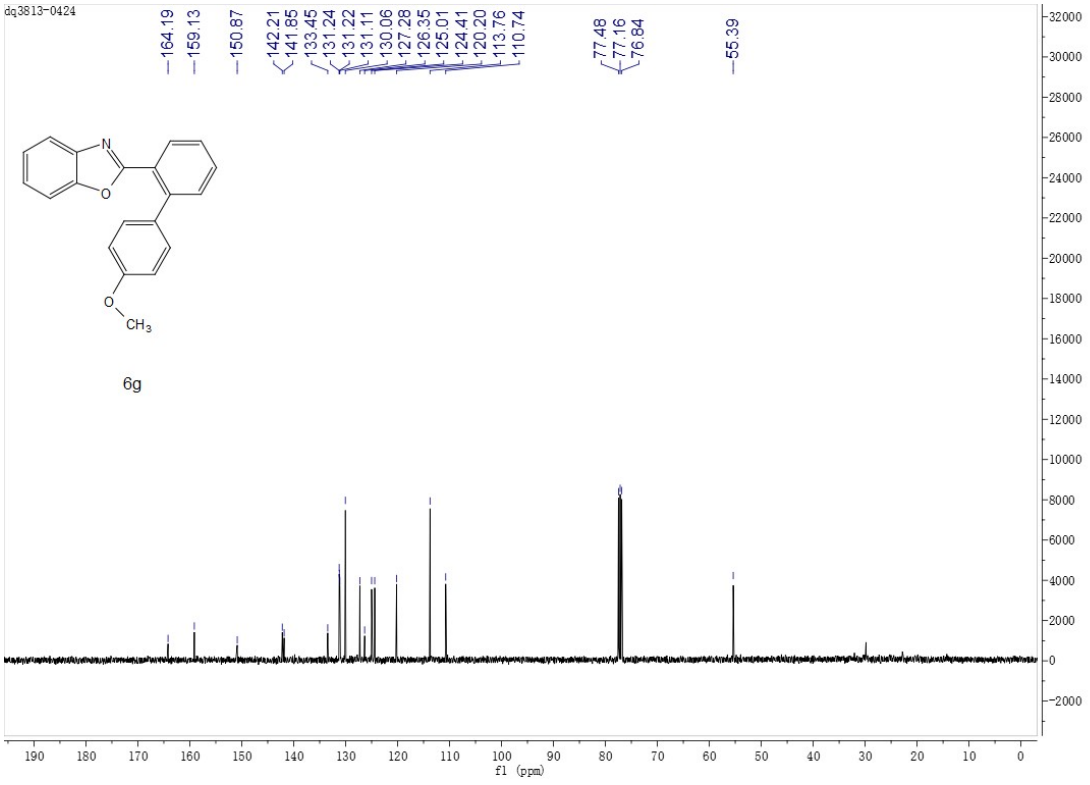
7.716
7.577
7.559
7.540
7.481
7.466
7.449
7.331
7.322
7.308
7.288
7.282
7.260
7.251
7.243
7.220
7.198
6.868
6.847
3.811
1.00
1.04
1.05
2.05
3.33
2.05
2.05
3.06
f1 (ppm)

6g


dq3813-0424
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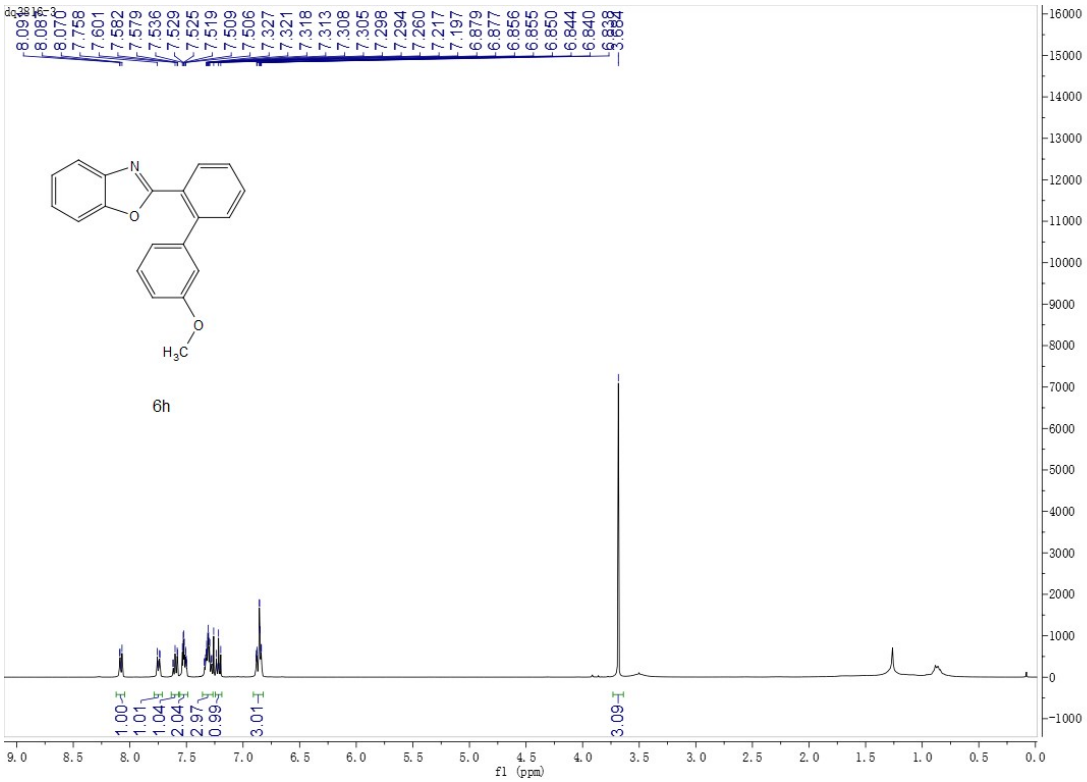
150.87
142.21
141.85
133.45
131.24
131.22
131.11
130.06
127.28
126.35
125.01
124.41
120.20
113.76
110.74
77.48
77.16
76.84
55.39
f1 (ppm)

6g


dq3816-3
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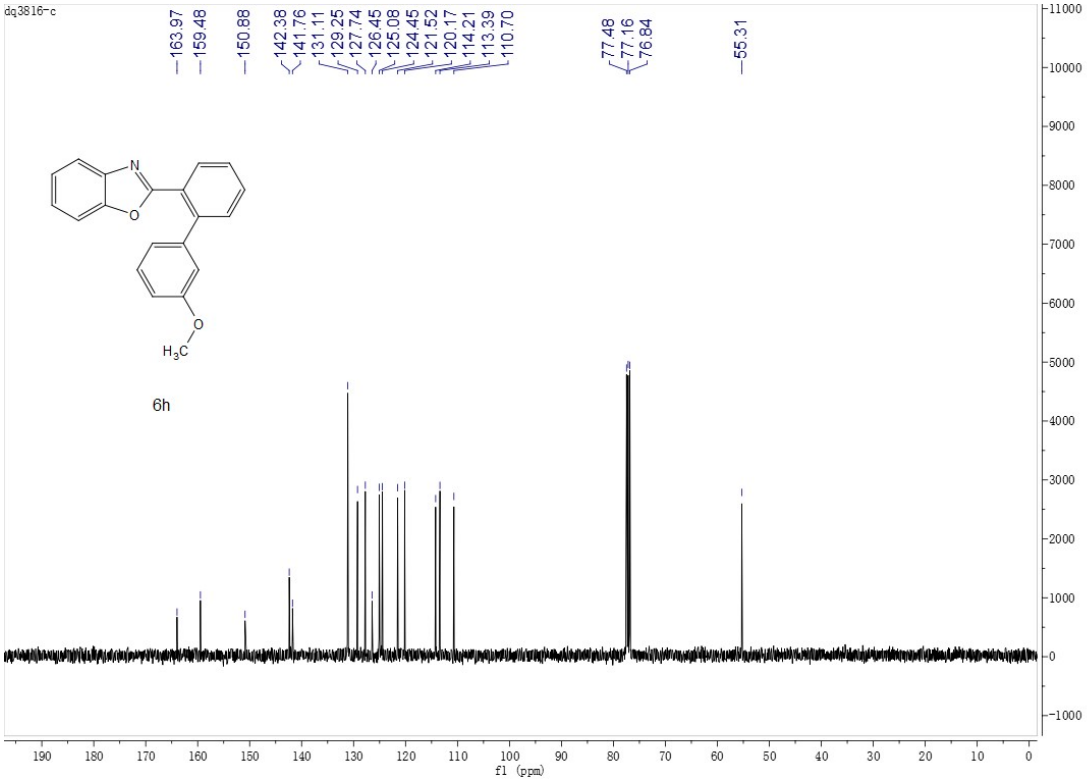
8.087
8.070
7.758
7.601
7.582
7.579
7.536
7.529
7.525
7.519
7.509
7.506
7.327
7.321
7.318
7.313
7.308
7.305
7.298
7.294
7.260
7.217
7.197
6.879
6.877
6.856
6.855
6.850
6.844
6.840
3.884
N
O
O
H3C
6h
1.00
1.01
1.04
2.04
2.97
0.99
3.01
3.09
f1 (ppm)


dq3816-c
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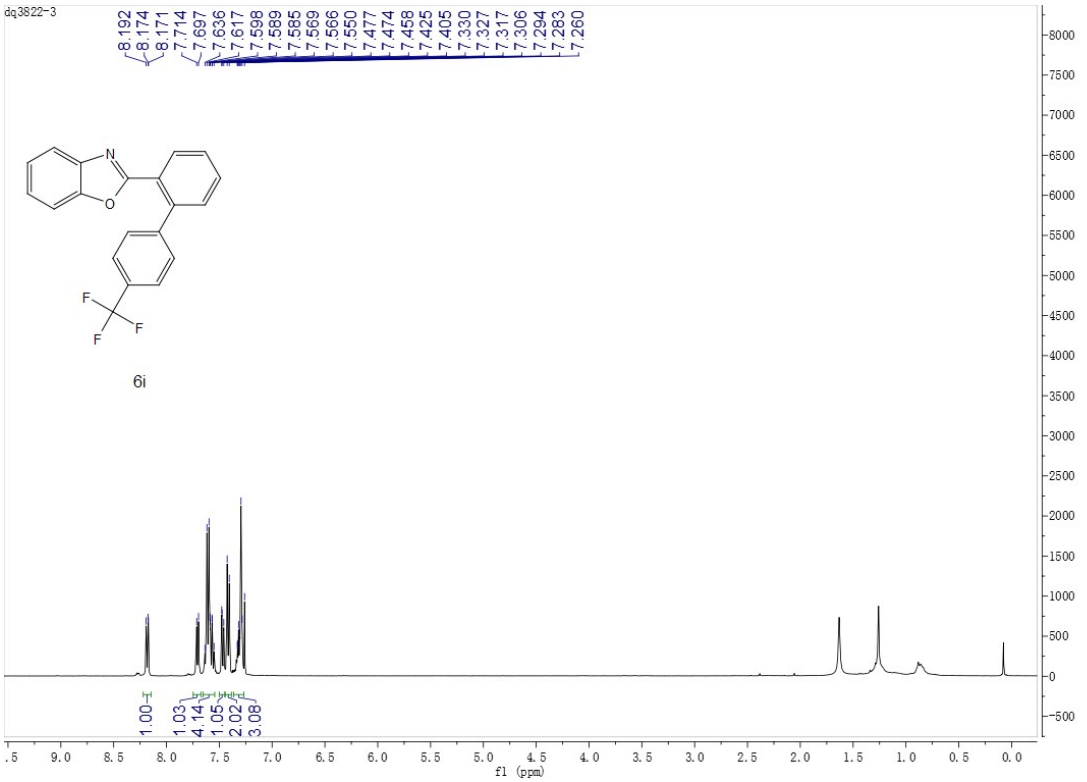
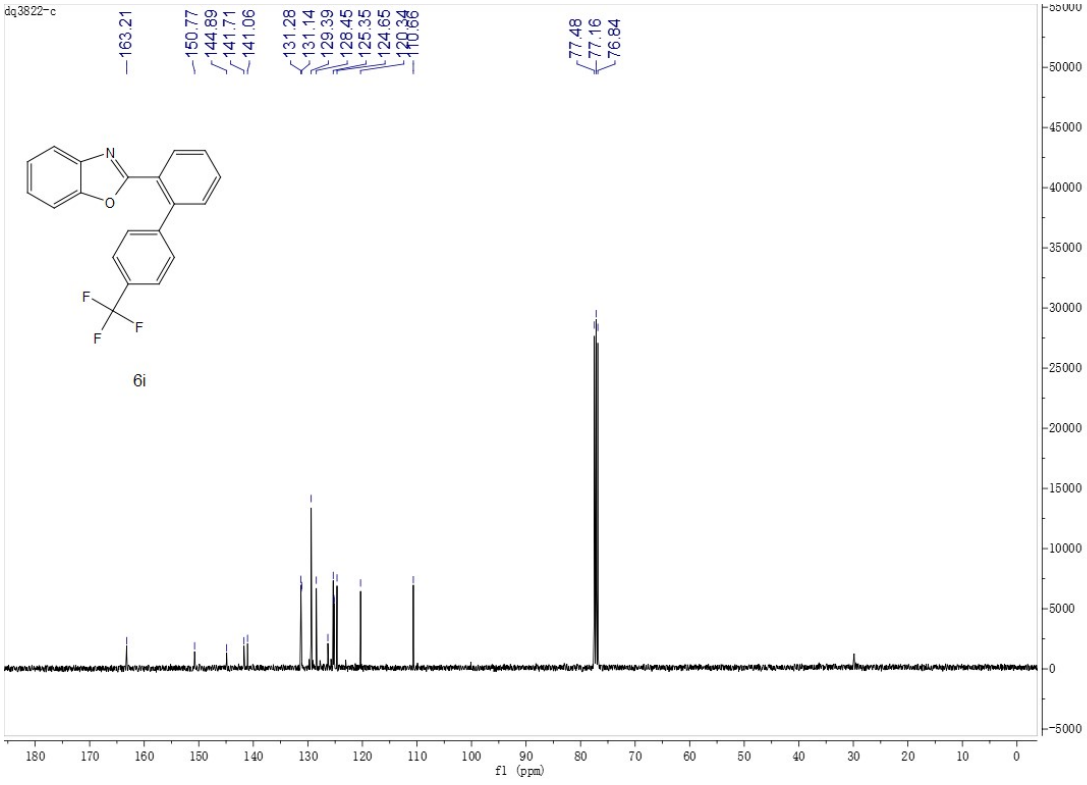
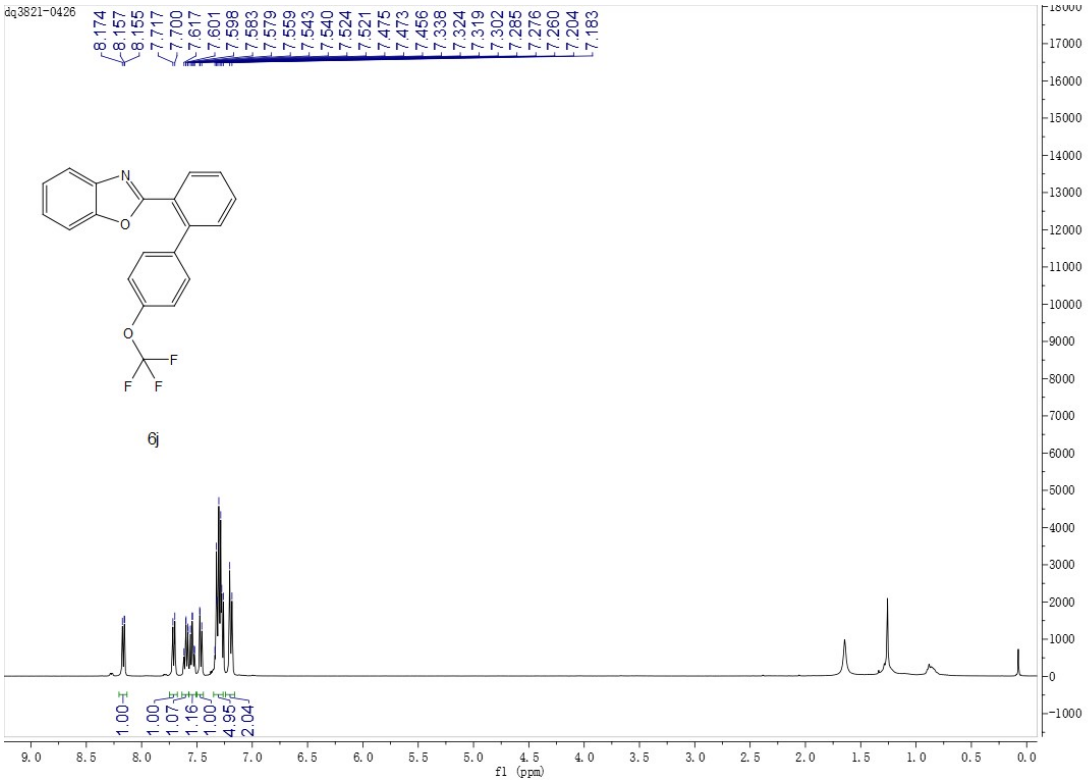
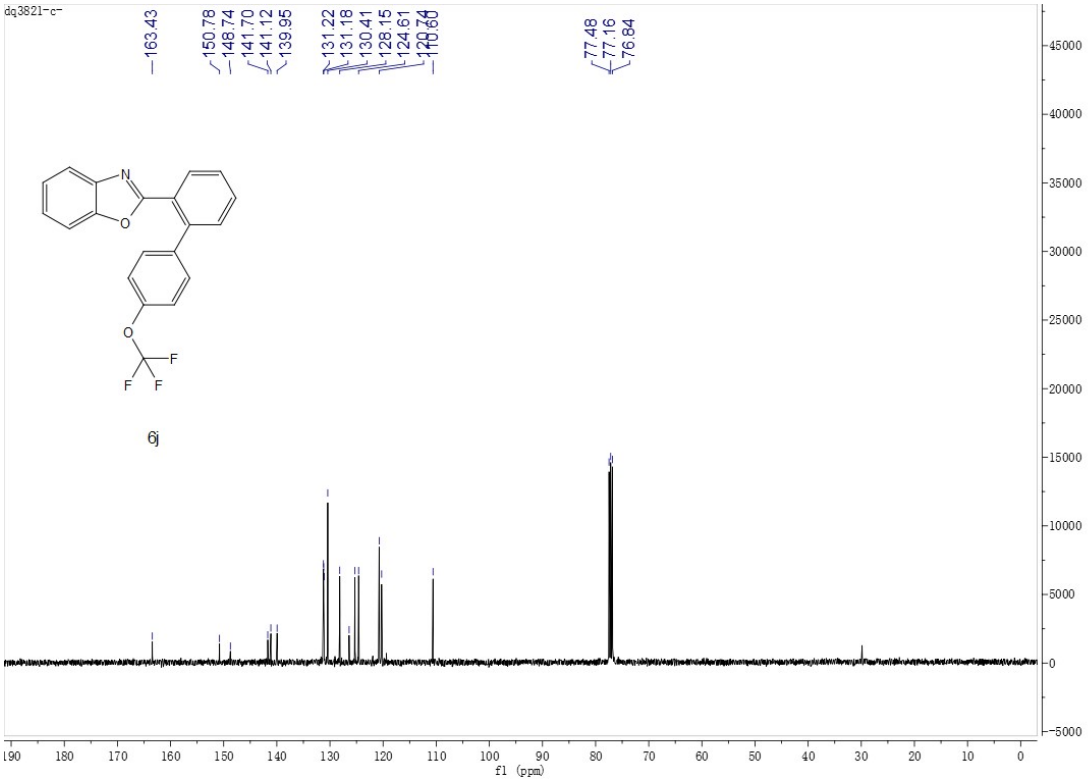
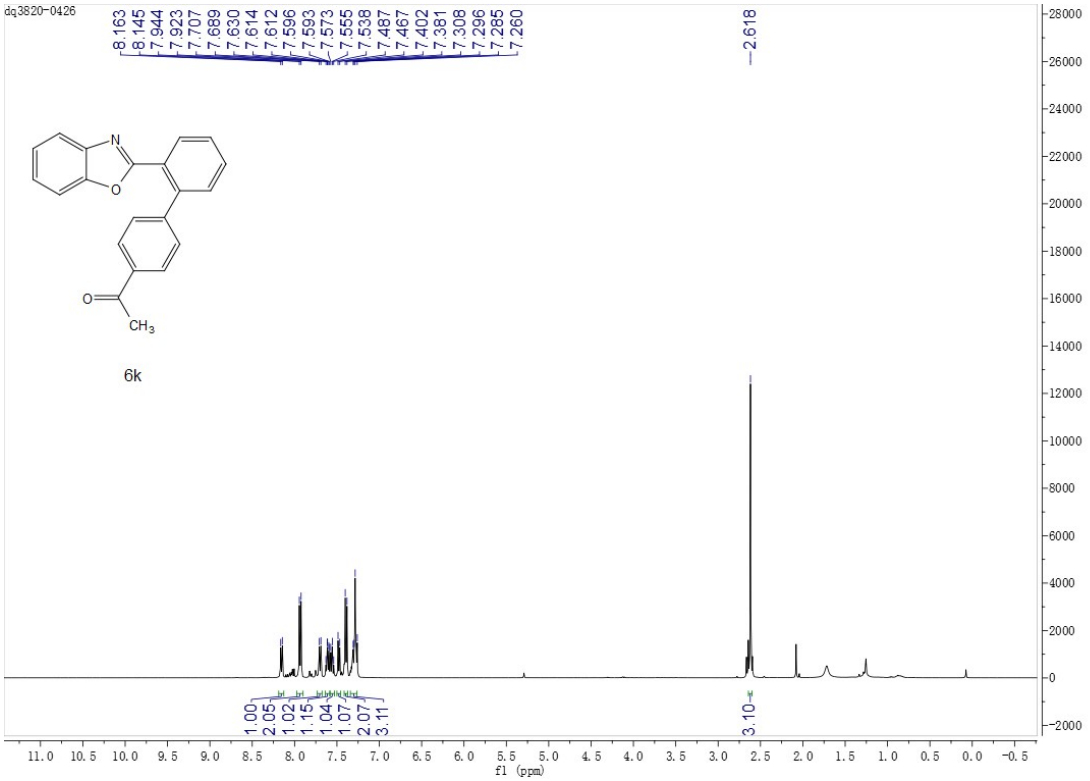
159.48
150.88
142.38
141.76
131.11
129.25
127.74
126.45
125.08
124.45
121.52
120.17
114.21
113.39
110.70
77.48
77.16
76.84
55.31
N
O
O
H3C
6h
f1 (ppm)

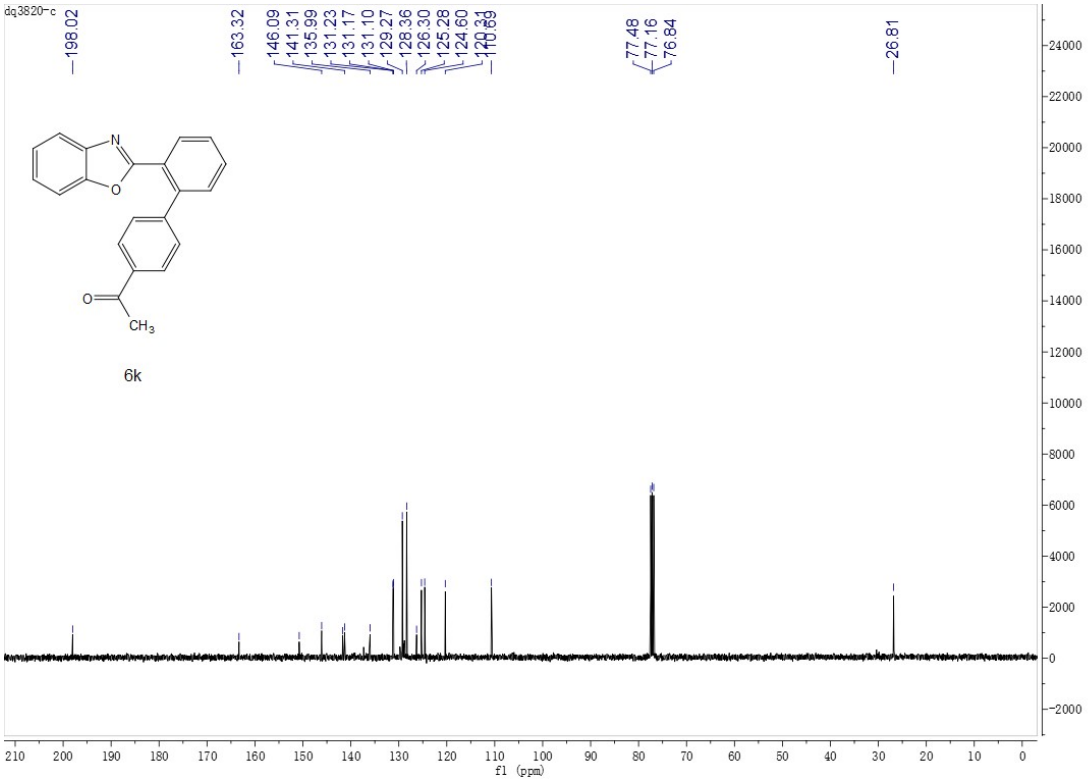

dq3822-3
8.192
8.174
8.171
7.714
7.697
7.636
7.617
7.598
7.589
7.585
7.569
7.566
7.550
7.477
7.474
7.458
7.425
7.405
7.330
7.327
7.317
7.306
7.294
7.283
7.260
6i
1.00
1.03
4.14
1.05
2.02
3.08
f1 (ppm)

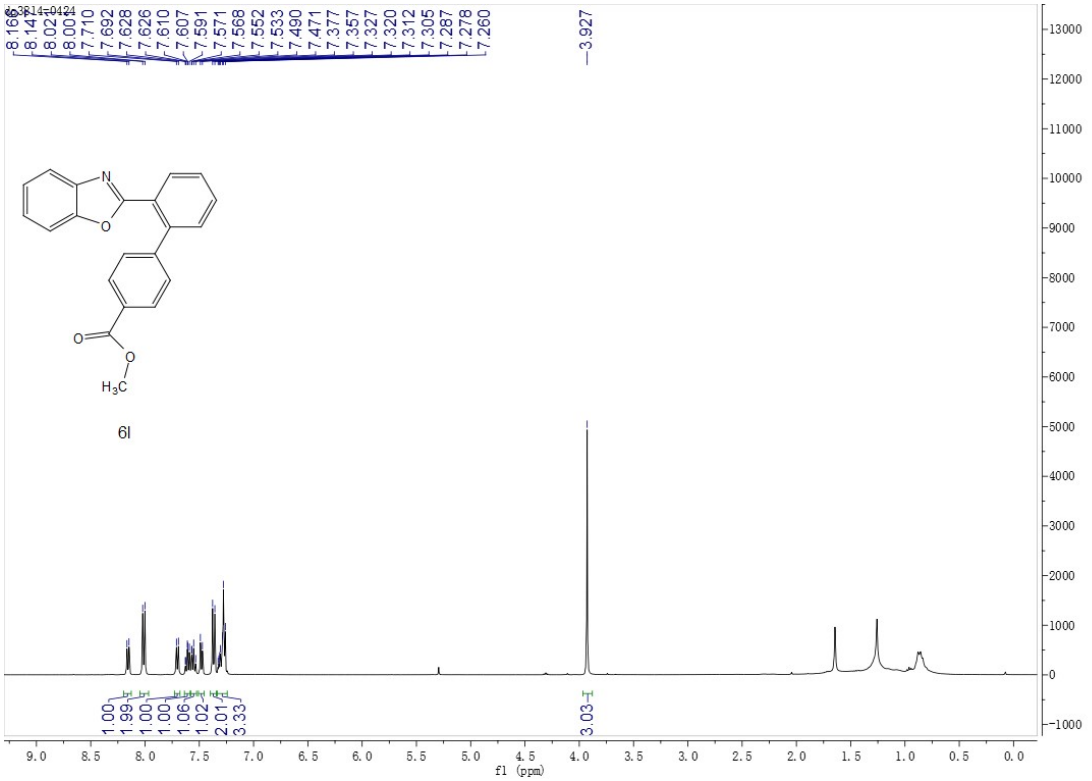

dq3822-c
163.21
150.77
144.89
141.71
141.06
131.28
131.14
129.39
128.45
125.35
124.65
120.34
110.66
77.48
77.16
76.84
6i
f1 (ppm)

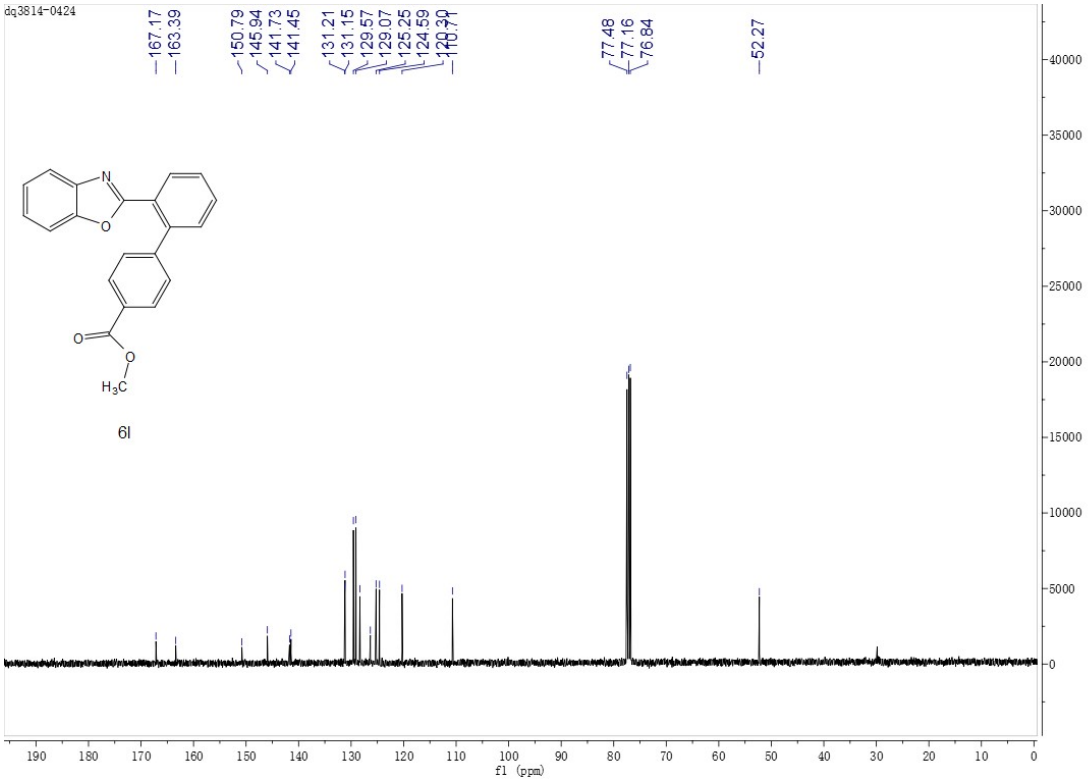

dq3821-0426
8.174
8.157
8.155
7.717
7.700
7.617
7.601
7.598
7.583
7.579
7.559
7.543
7.540
7.524
7.521
7.475
7.473
7.456
7.338
7.324
7.319
7.302
7.285
7.276
7.260
7.204
7.183
6j
1.00
1.00
1.07
1.16
1.00
4.95
2.04
f1 (ppm)

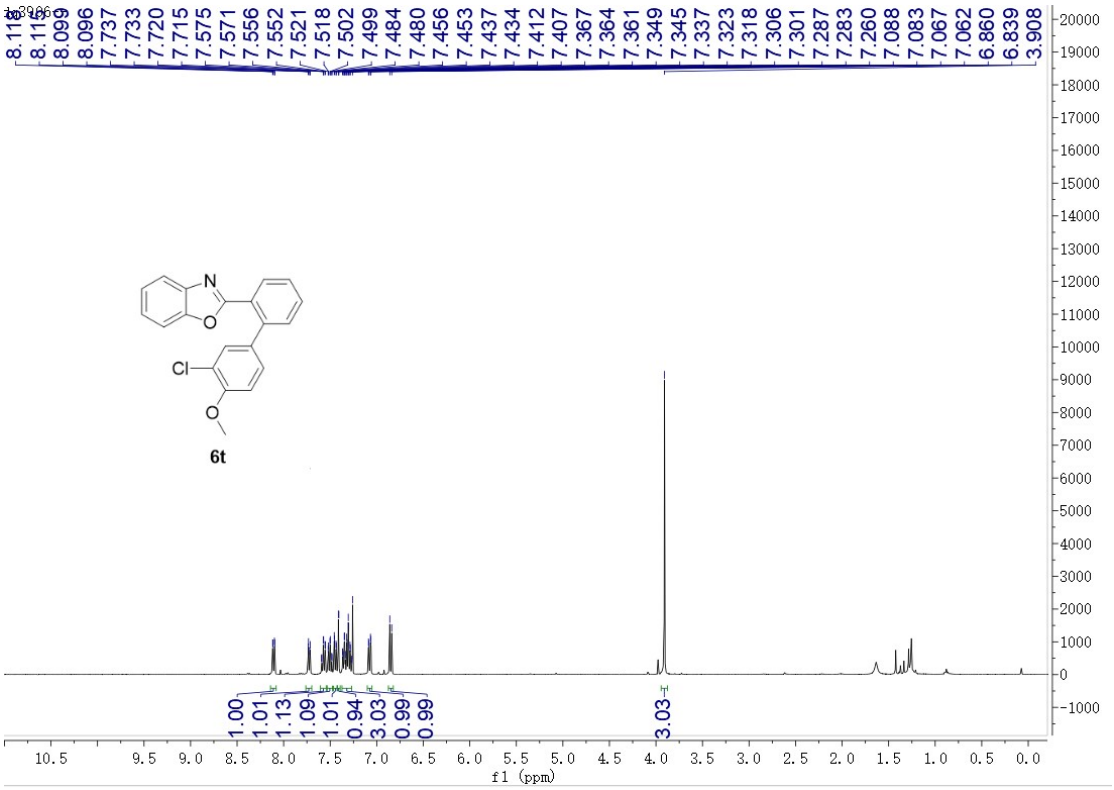

dq3821-c-
163.43
150.78
148.74
141.70
141.12
139.95
131.22
131.18
130.41
128.15
124.61
120.74
110.60
77.48
77.16
76.84
6j
f1 (ppm)

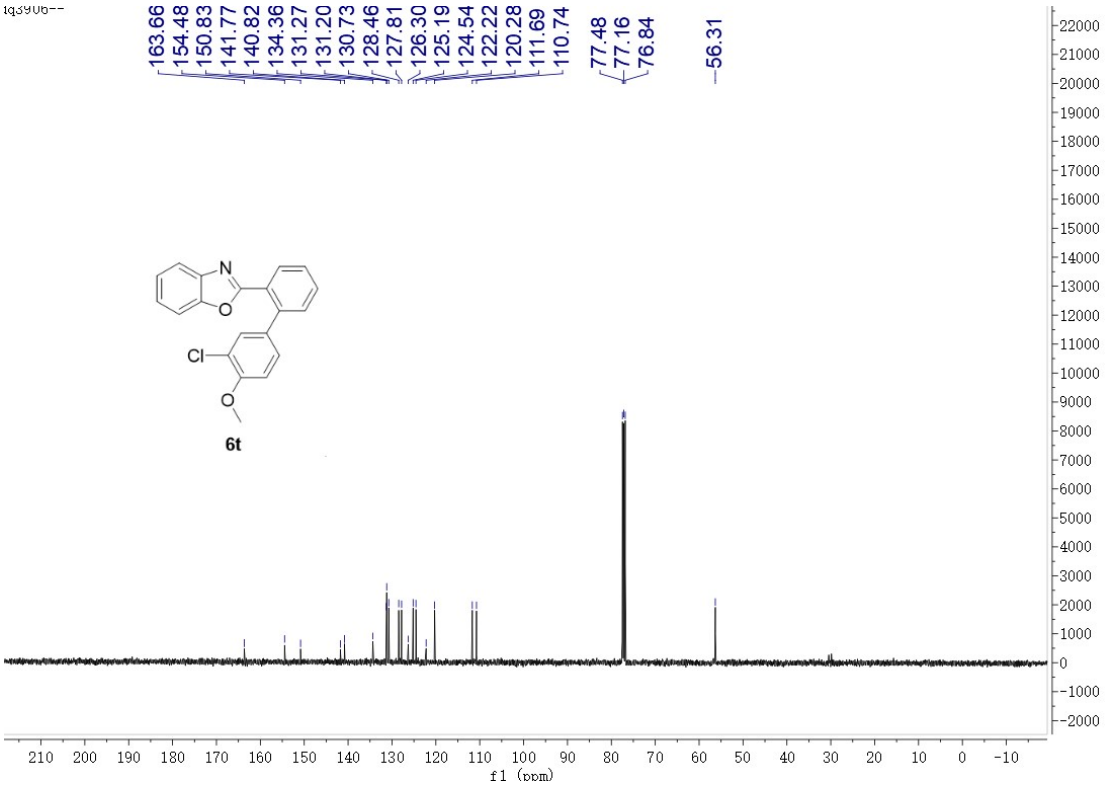

dq3820-0426
8.163
8.145
7.944
7.923
7.707
7.689
7.630
7.614
7.612
7.596
7.593
7.573
7.555
7.538
7.487
7.467
7.402
7.381
7.308
7.296
7.285
7.260
2.618
6k
1.00
2.05
1.02
1.15
1.04
1.07
2.07
3.11
3.10
f1 (ppm)

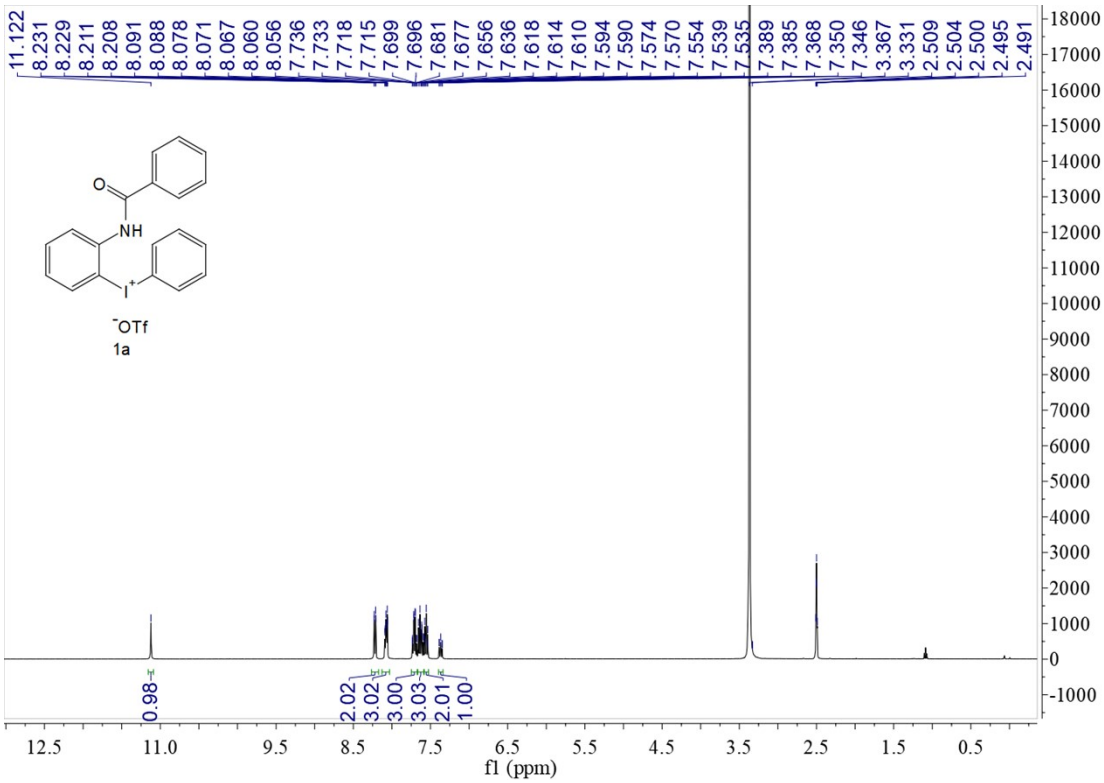

dq3820-c
198.02
163.32
146.09
141.31
135.99
131.23
131.17
131.10
129.27
128.36
126.30
125.28
124.60
77.48
77.16
76.84
26.81
6k
f1 (ppm)

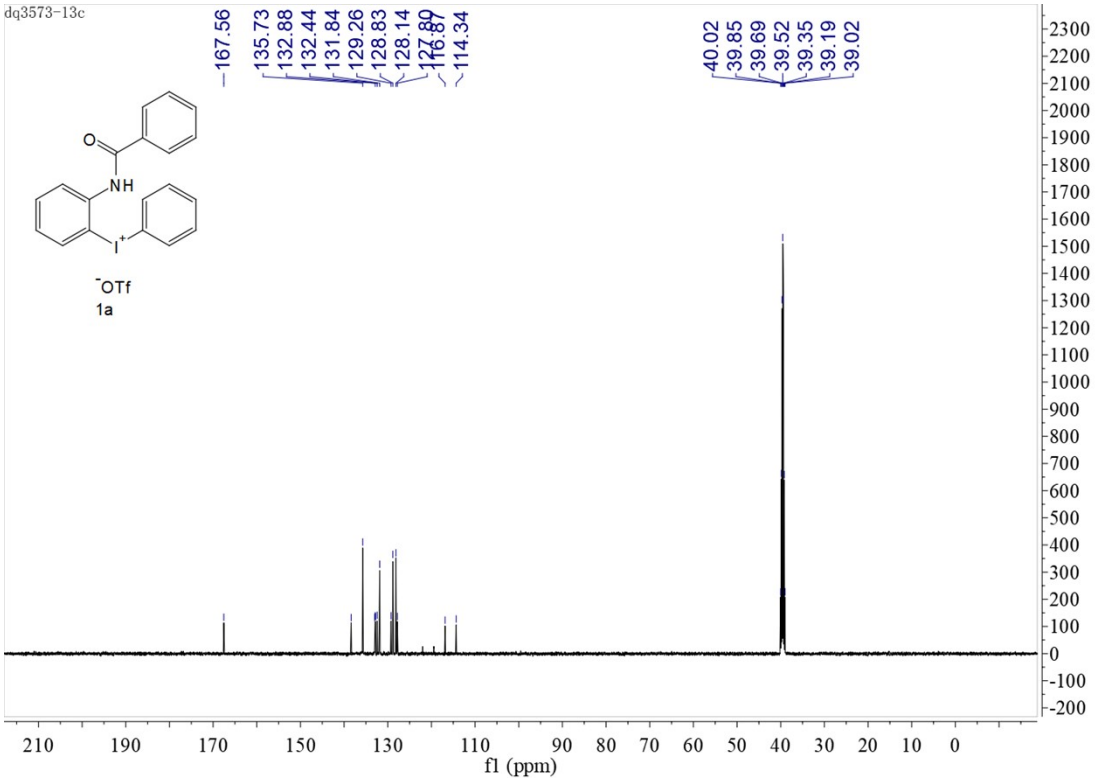

dq3814-0424
8.166
8.147
8.021
8.001
7.710
7.692
7.628
7.626
7.610
7.607
7.591
7.571
7.568
7.552
7.533
7.490
7.471
7.377
7.357
7.327
7.320
7.312
7.305
7.287
7.278
7.260
3.927
6l
1.00
1.99
1.00
1.00
1.06
1.02
2.01
3.33
3.03
f1 (ppm)

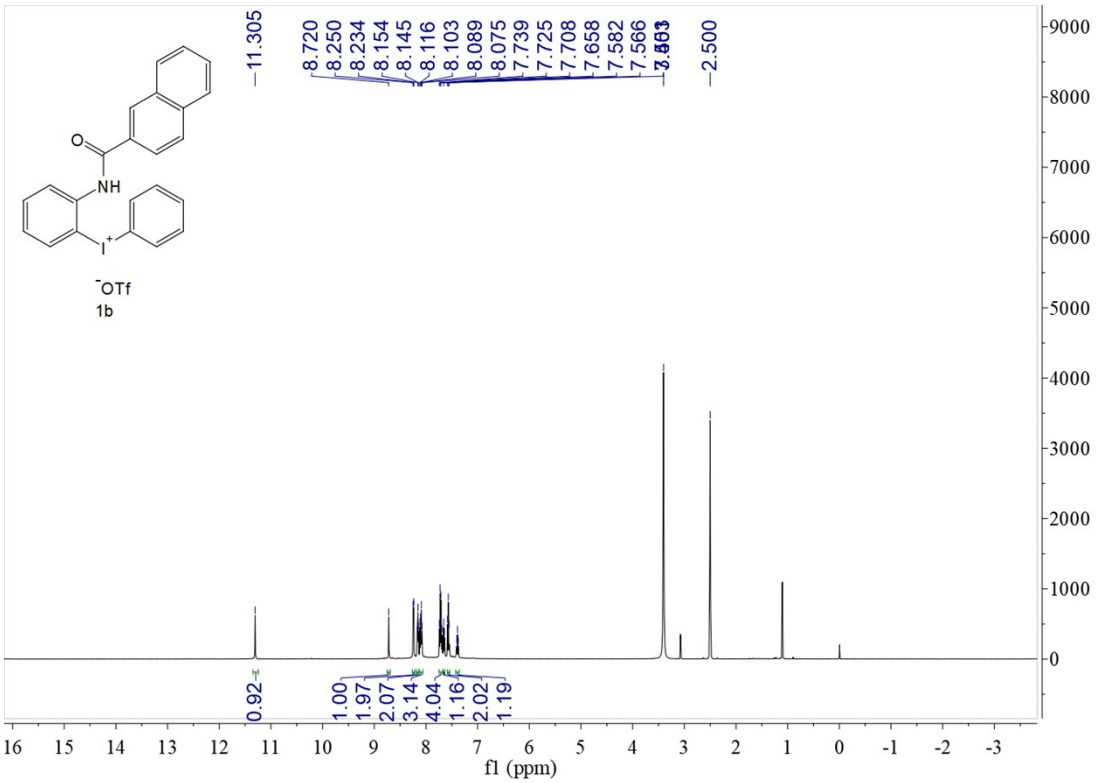

dq3814-0424
167.17
163.39
150.79
145.94
141.73
141.45
131.21
131.15
129.57
129.07
125.25
124.59
120.30
110.71
77.48
77.16
76.84
52.27
6l
f1 (ppm)

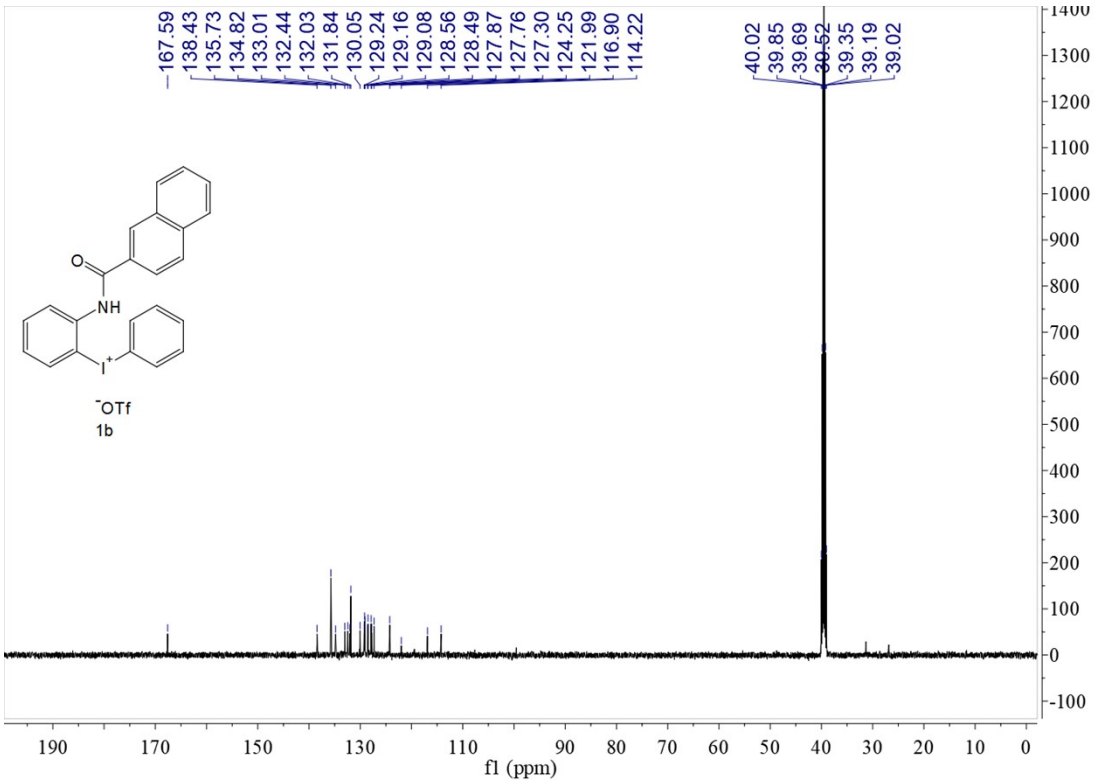

8.115
8.099
8.096
7.737
7.733
7.720
7.715
7.575
7.571
7.556
7.552
7.521
7.518
7.502
7.499
7.484
7.480
7.456
7.453
7.437
7.434
7.412
7.407
7.367
7.364
7.361
7.349
7.345
7.337
7.323
7.318
7.306
7.301
7.287
7.283
7.260
7.088
7.083
7.067
7.062
6.860
6.839
3.908
N
O
Cl
O
6t
1.00
1.01
1.13
1.09
1.01
0.94
3.03
0.99
0.99
3.03
f1 (ppm)

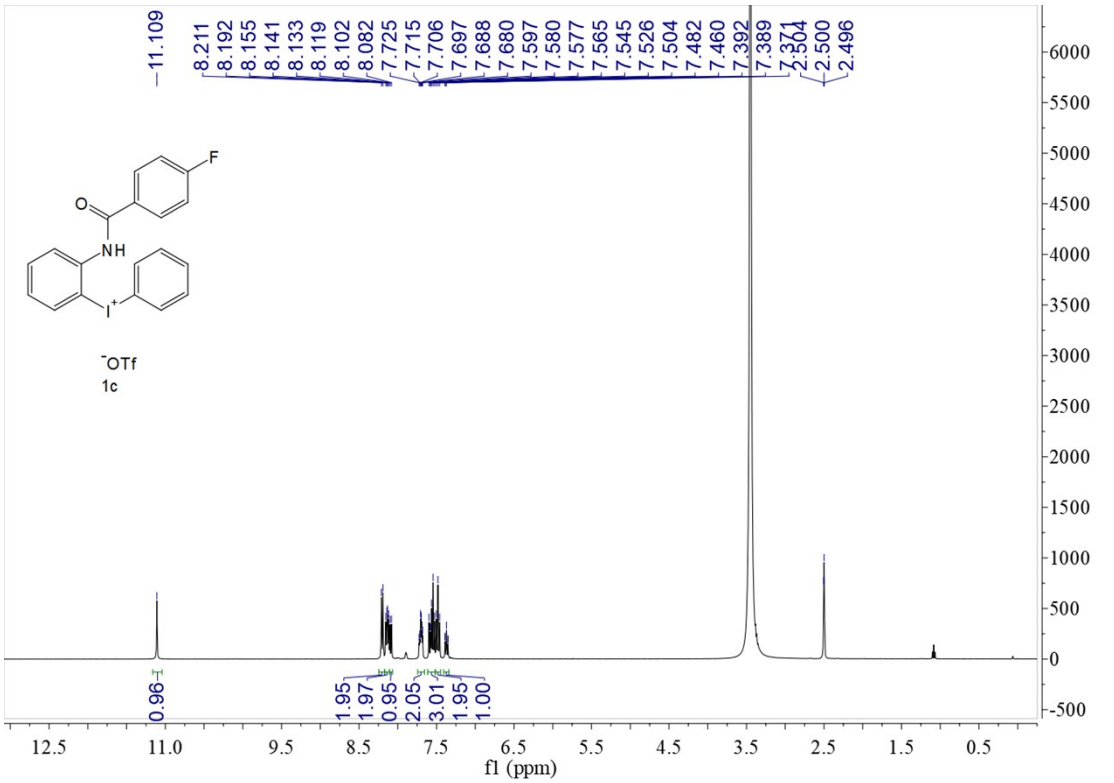

163.66
154.48
150.83
141.77
140.82
134.36
131.27
131.20
130.73
128.46
127.81
126.30
125.19
124.54
122.22
120.28
111.69
110.74
77.48
77.16
76.84
56.31
N
O
Cl
O
6t
f1 (ppm)

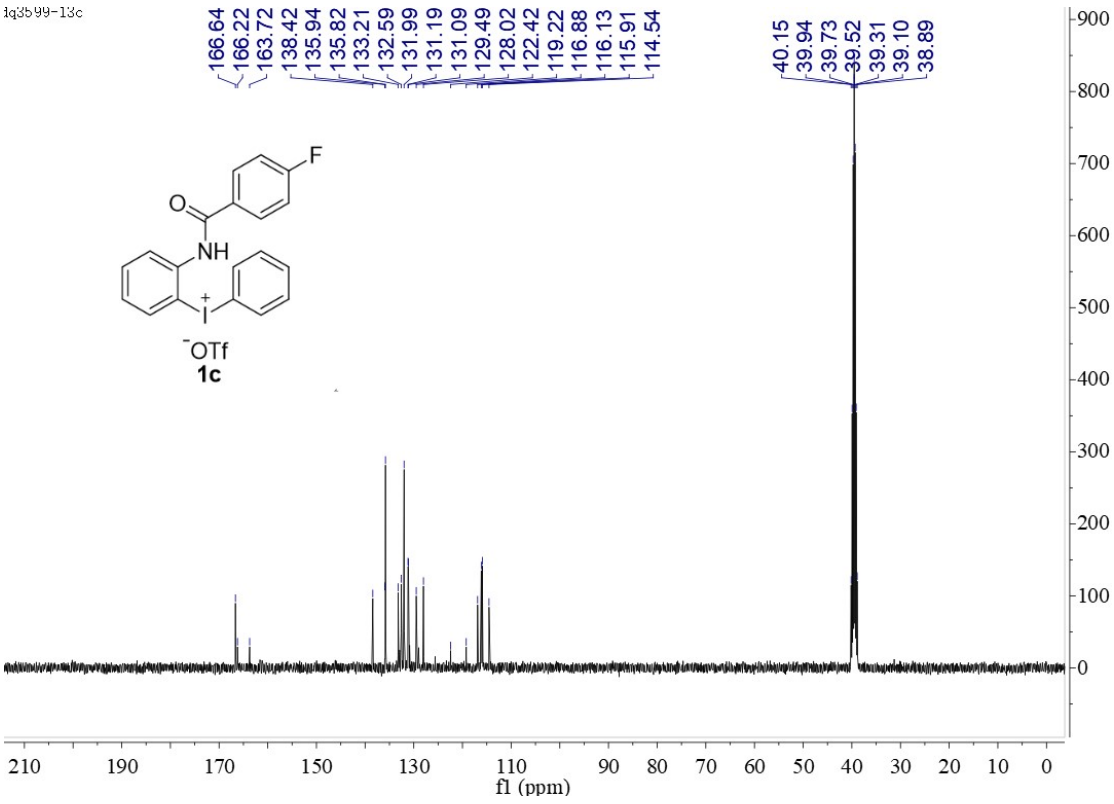

11.122
8.231
8.229
8.211
8.208
8.091
8.088
8.078
8.071
8.067
8.060
8.056
7.736
7.733
7.718
7.715
7.699
7.696
7.681
7.677
7.656
7.636
7.618
7.614
7.610
7.594
7.590
7.574
7.570
7.554
7.539
7.535
7.389
7.385
7.368
7.350
7.346
3.367
3.331
2.509
2.504
2.500
2.495
2.491
O
NH
I+
-OTf
1a
0.98
2.02
3.02
3.00
3.03
2.01
1.00
f1 (ppm)

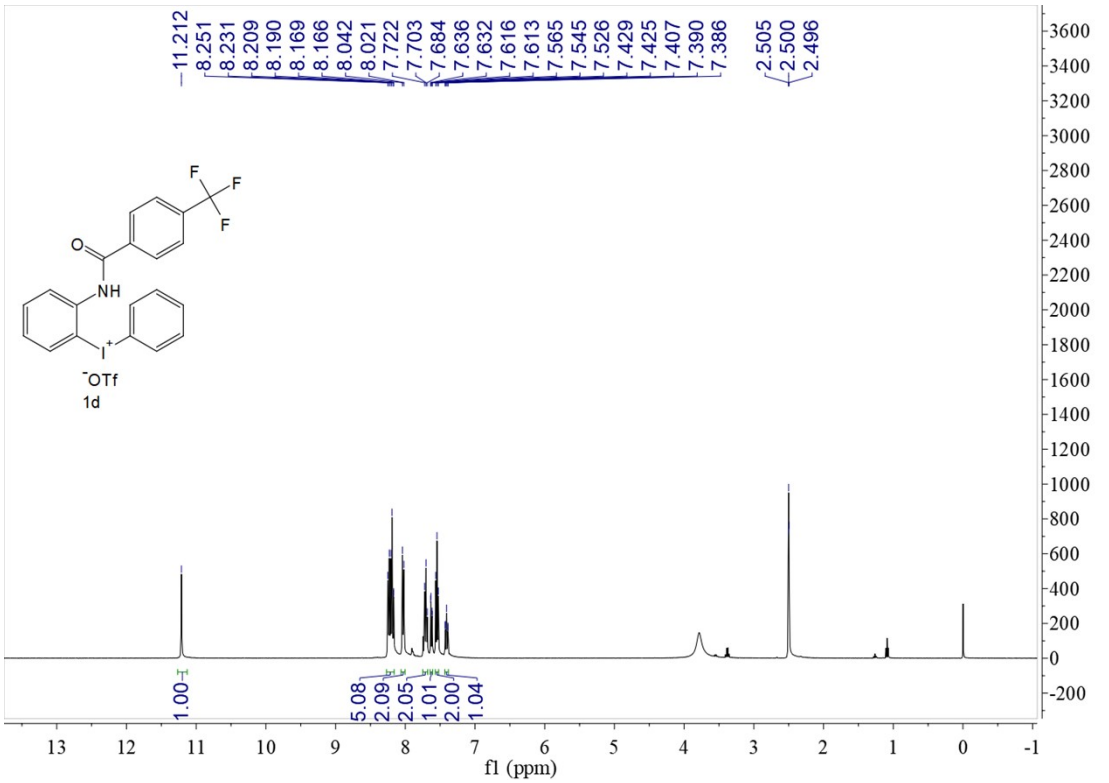

dq3573-13c
167.56
135.73
132.88
132.44
131.84
129.26
128.83
128.14
127.80
116.87
114.34
40.02
39.85
39.69
39.52
39.35
39.19
39.02
O
NH
I+
-OTf
1a
f1 (ppm)

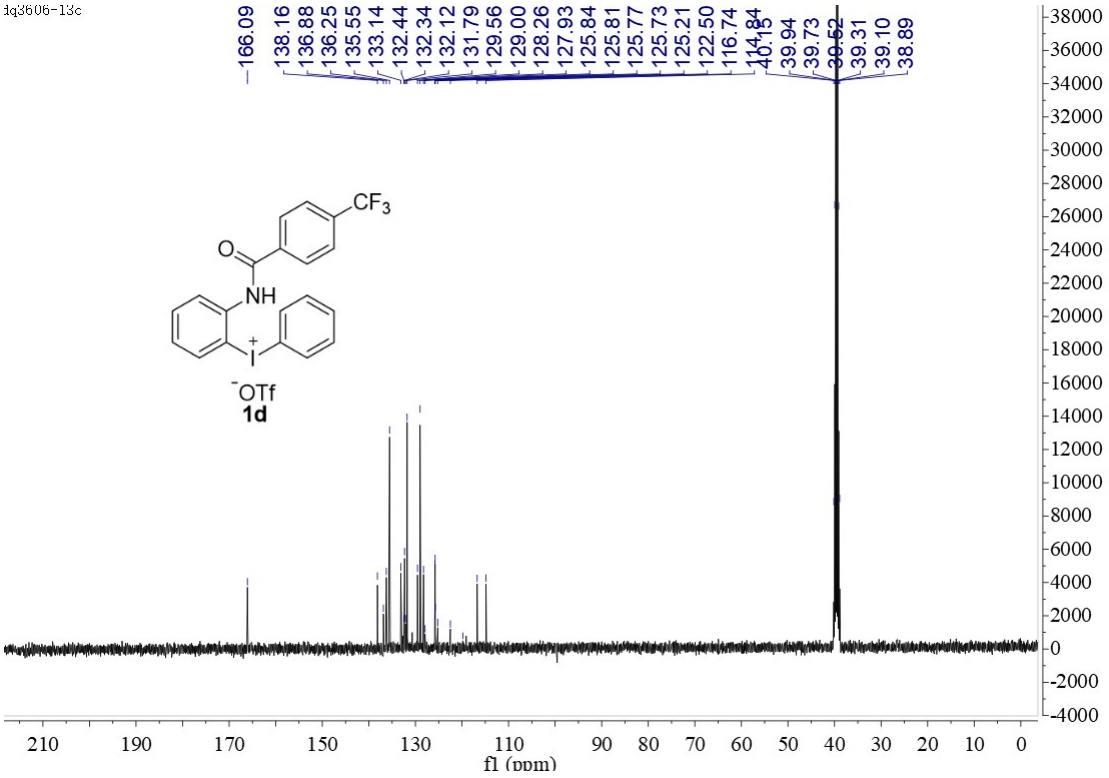

11.305
8.720
8.250
8.234
8.154
8.145
8.116
8.103
8.089
8.075
7.739
7.725
7.708
7.658
7.582
7.566
2.500
O
NH
I+
-OTf
1b
0.92
1.00
1.97
2.07
3.14
4.04
1.16
2.02
1.19
fl (ppm)


167.59
138.43
135.73
134.82
133.01
132.44
132.03
131.84
130.05
129.24
129.16
129.08
128.56
128.49
127.87
127.76
127.30
124.25
121.99
116.90
114.22
40.02
39.85
39.69
39.52
39.35
39.19
39.02
O
NH
I+
-OTf
1b
fl (ppm)


11.109
8.211
8.192
8.155
8.141
8.133
8.119
8.102
8.082
7.725
7.715
7.706
7.697
7.688
7.680
7.597
7.580
7.577
7.565
7.545
7.526
7.504
7.482
7.460
7.392
7.389
7.371
2.504
2.500
2.496
F
O
NH
I+
OTf
1c
0.96
1.95
1.97
0.95
2.05
3.01
1.95
1.00
fl (ppm)


1q3599-13c
166.64
166.22
163.72
138.42
135.94
135.82
133.21
132.59
131.99
131.19
131.09
129.49
128.02
122.42
119.22
116.88
116.13
115.91
114.54
40.15
39.94
39.73
39.52
39.31
39.10
38.89
F
O
NH
I+
OTf
1c
fl (ppm)


11.212
8.251
8.231
8.209
8.190
8.169
8.166
8.042
8.021
7.722
7.703
7.684
7.636
7.632
7.616
7.613
7.565
7.545
7.526
7.429
7.425
7.407
7.390
7.386
2.505
2.500
2.496
F
F
F
O
NH
I+
-OTf
1d
1.00
5.08
2.09
2.05
1.01
2.00
1.04
fl (ppm)


dq3606-13c
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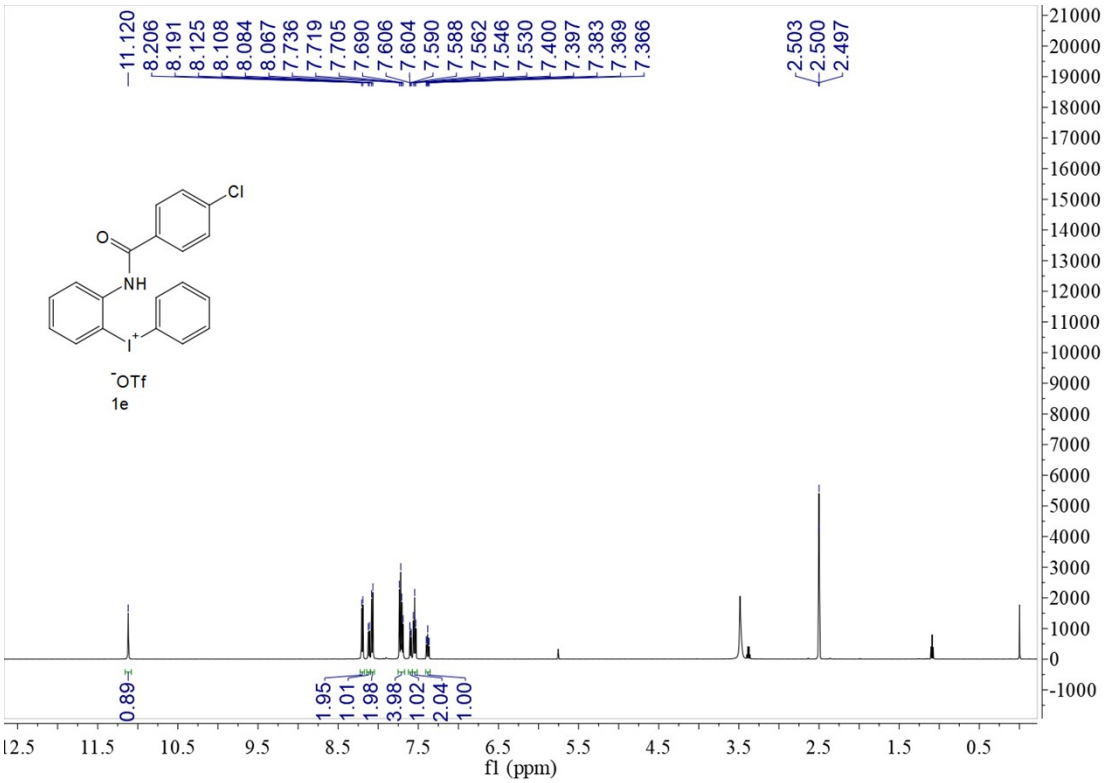
138.16
136.88
136.25
135.55
133.14
132.44
132.34
132.12
131.79
129.56
129.00
128.26
127.93
125.84
125.81
125.77
125.73
125.21
122.50
116.74
114.84
40.15
39.94
39.73
39.52
39.31
39.10
38.89
CF3
O
NH
I+
-OTf
1d
fl (ppm)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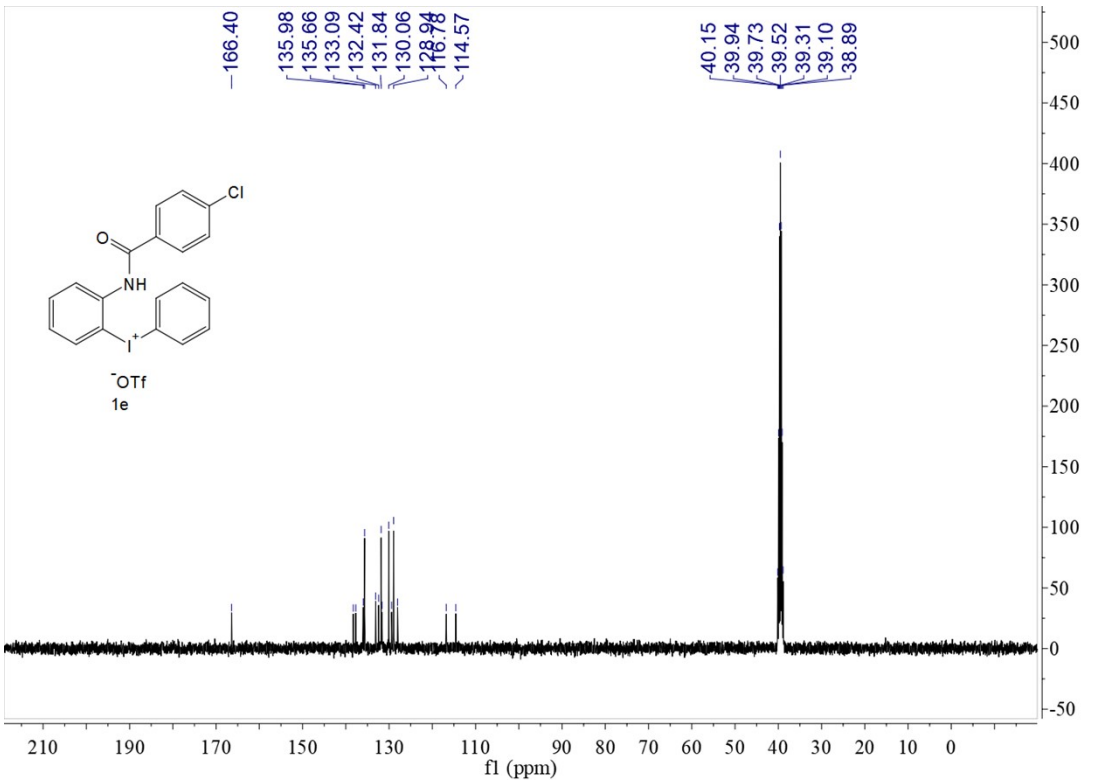
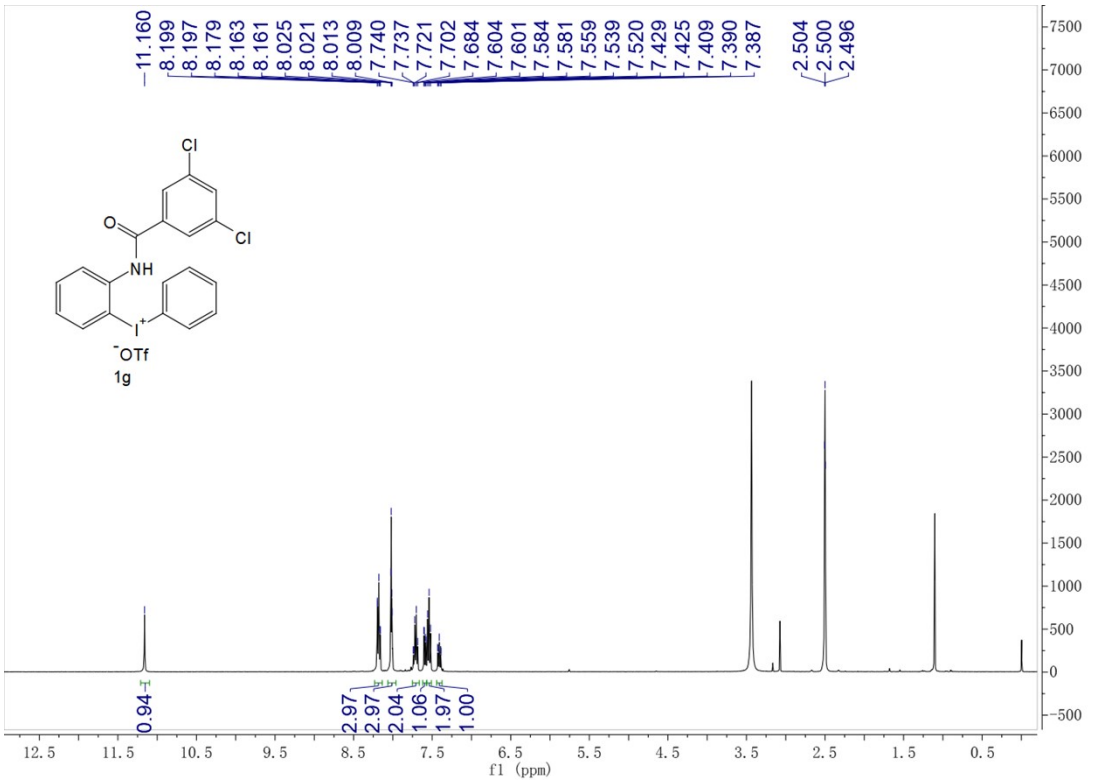
8.084
8.067
7.736
7.719
7.705
7.690
7.606
7.604
7.590
7.588
7.562
7.546
7.530
7.400
7.397
7.383
7.369
7.366
2.503
2.500
2.497
Cl
O
NH
I+
OTf
1e
0.89
1.95
1.01
1.98
3.98
1.02
2.04
1.00
f1 (ppm)


166.40
135.98
135.66
133.09
132.42
131.84
130.06
114.57
40.15
39.94
39.73
39.52
39.31
39.10
38.89
Cl
O
NH
I+
OTf
1e
f1 (ppm)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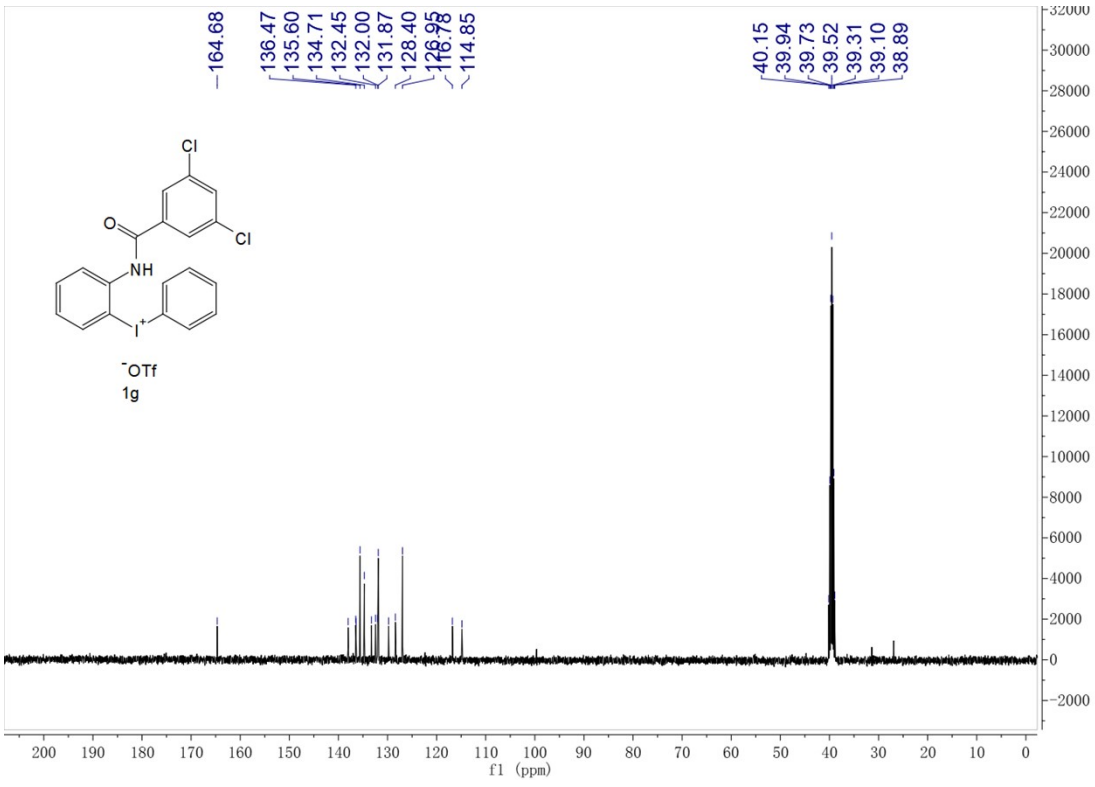
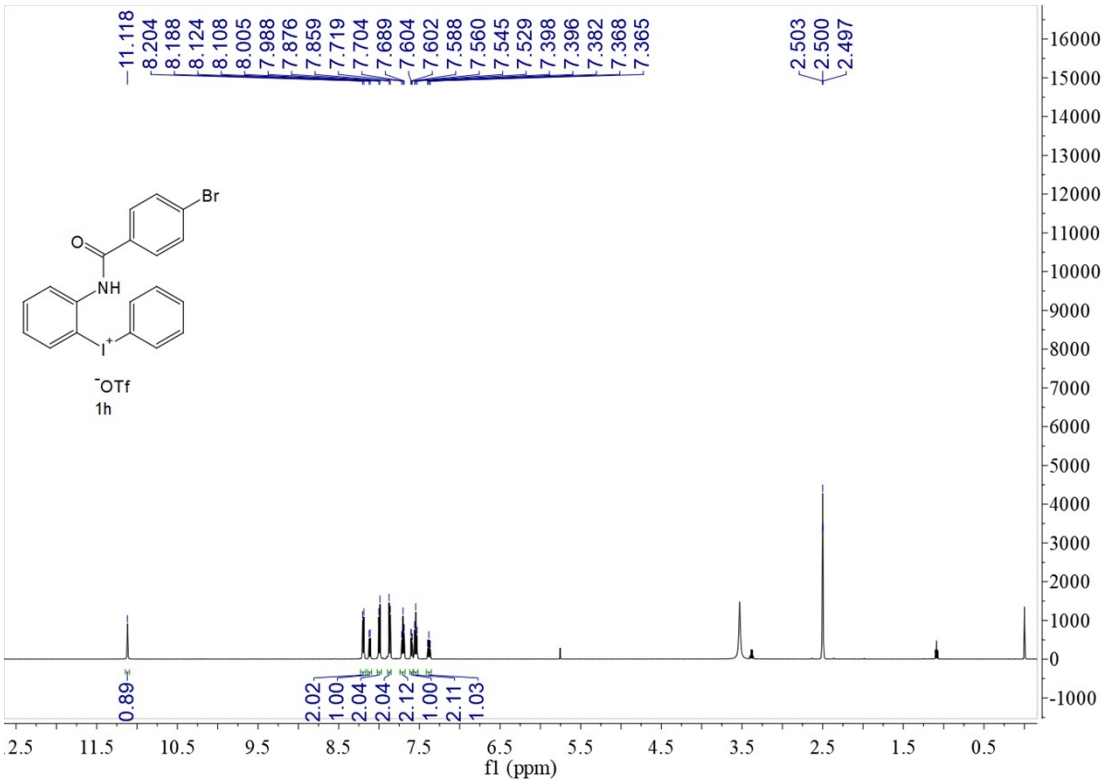
8.199
8.197
8.179
8.163
8.161
8.025
8.021
8.013
8.009
7.740
7.737
7.721
7.702
7.684
7.604
7.601
7.584
7.581
7.559
7.539
7.520
7.429
7.425
7.409
7.390
7.387
2.504
2.500
2.496
Cl
O
NH
Cl
I+
OTf
1g
0.94
2.97
2.97
2.04
1.06
1.97
1.00
f1 (ppm)


164.68
136.47
135.60
134.71
132.45
132.00
131.87
128.40
114.85
40.15
39.94
39.73
39.52
39.31
39.10
38.89
Cl
O
NH
Cl
I+
OTf
1g
f1 (ppm)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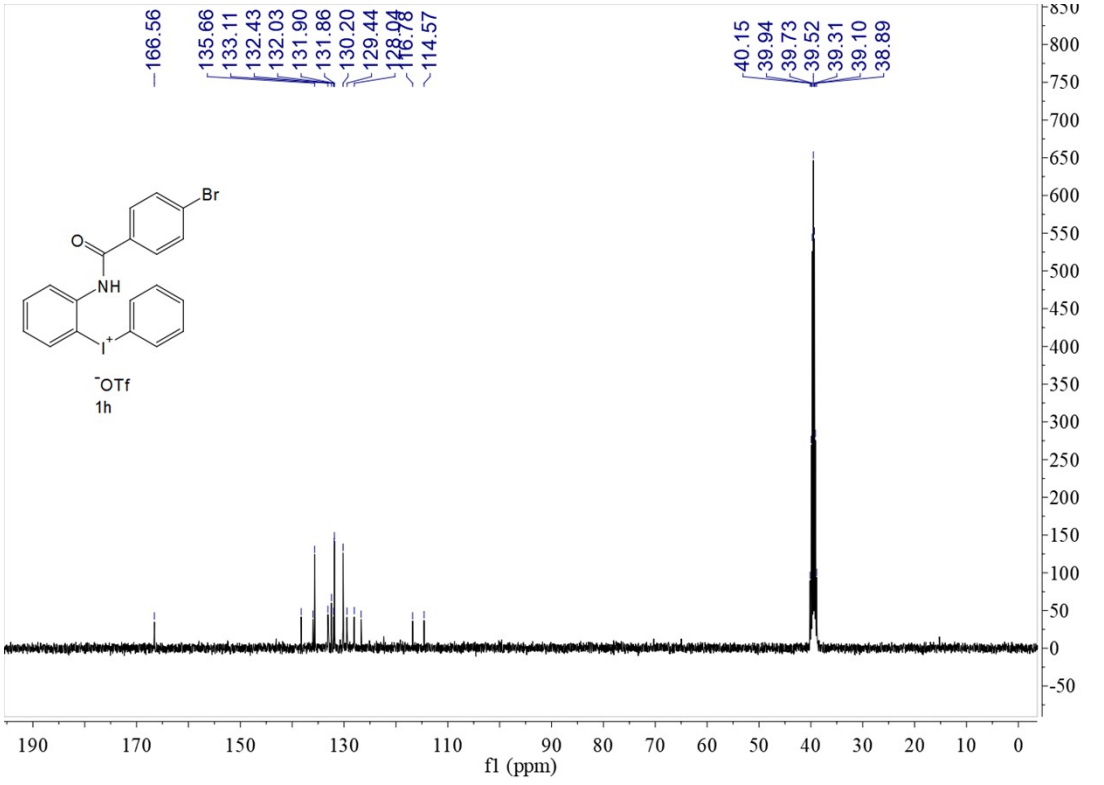
8.124
8.108
8.005
7.988
7.876
7.859
7.719
7.704
7.689
7.604
7.602
7.588
7.560
7.545
7.529
7.398
7.396
7.382
7.368
7.365
2.503
2.500
2.497
Br
O
NH
I+
-OTf
1h
0.89
2.02
1.00
2.04
2.04
2.12
1.00
2.11
1.03
f1 (ppm)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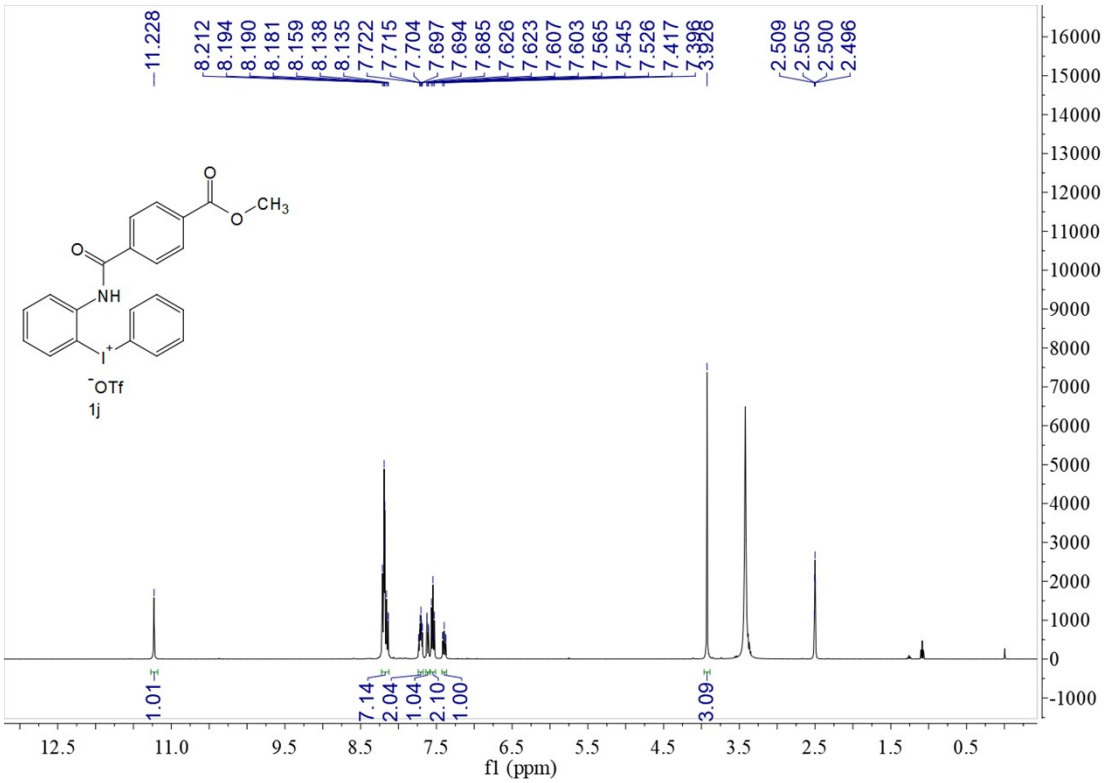
135.66
133.11
132.43
132.03
131.90
131.86
130.20
129.44
128.04
116.78
114.57
40.15
39.94
39.73
39.52
39.31
39.10
38.89
Br
O
NH
I+
-OTf
1h
f1 (ppm)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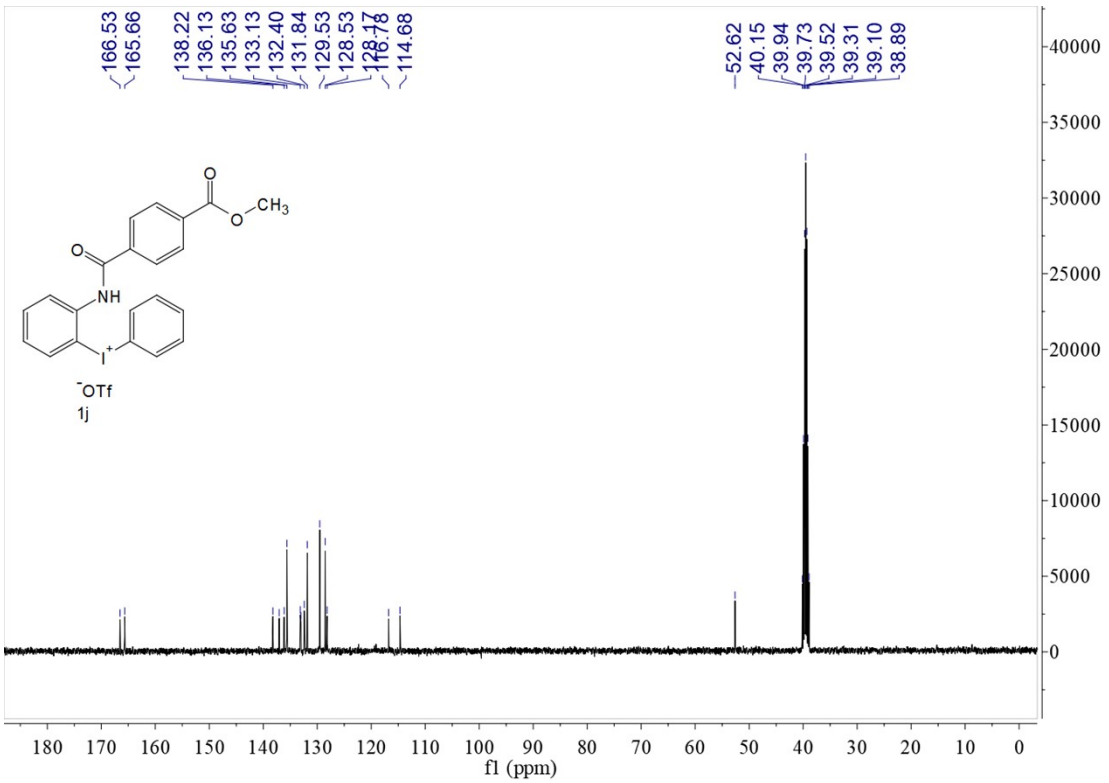
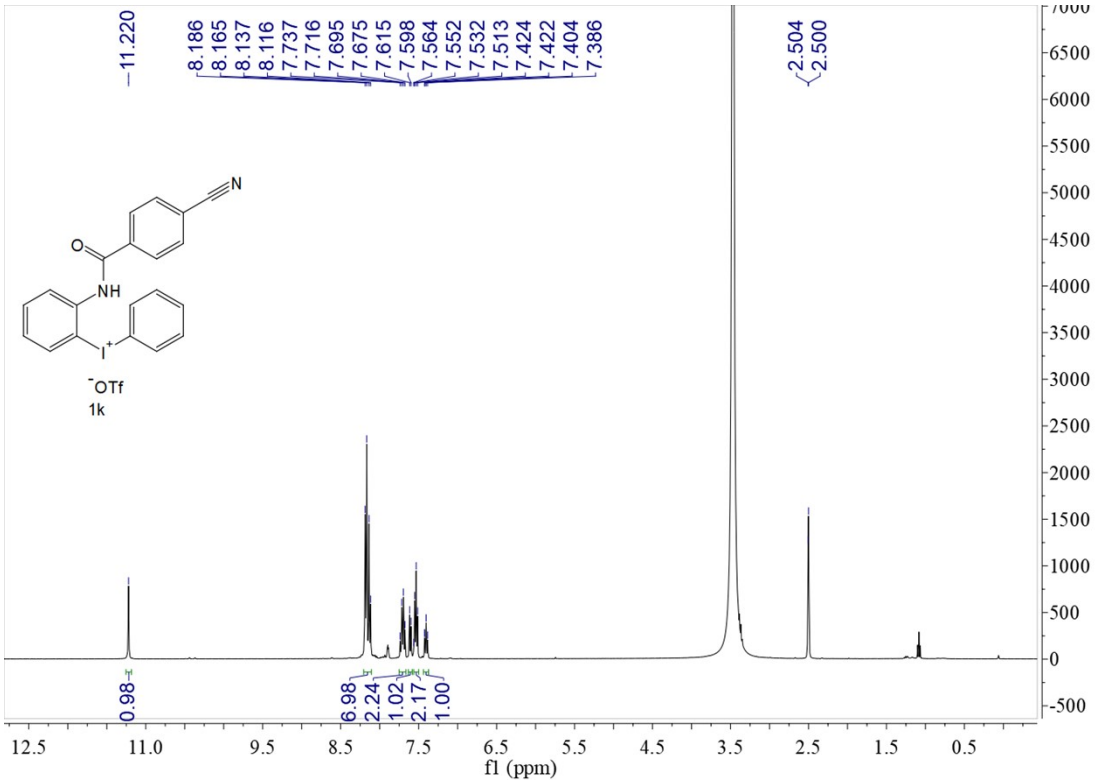
8.212
8.194
8.190
8.181
8.159
8.138
8.135
7.722
7.715
7.704
7.697
7.694
7.685
7.626
7.623
7.607
7.603
7.565
7.545
7.526
7.417
3.928
2.509
2.505
2.500
2.496
1.01
7.14
2.04
1.04
2.10
1.00
3.09
fl (ppm)
OTf
1j


166.53
165.66
138.22
136.13
135.63
133.13
132.40
131.84
129.53
128.53
114.68
52.62
40.15
39.94
39.73
39.52
39.31
39.10
38.89
fl (ppm)
OTf
1j


11.220
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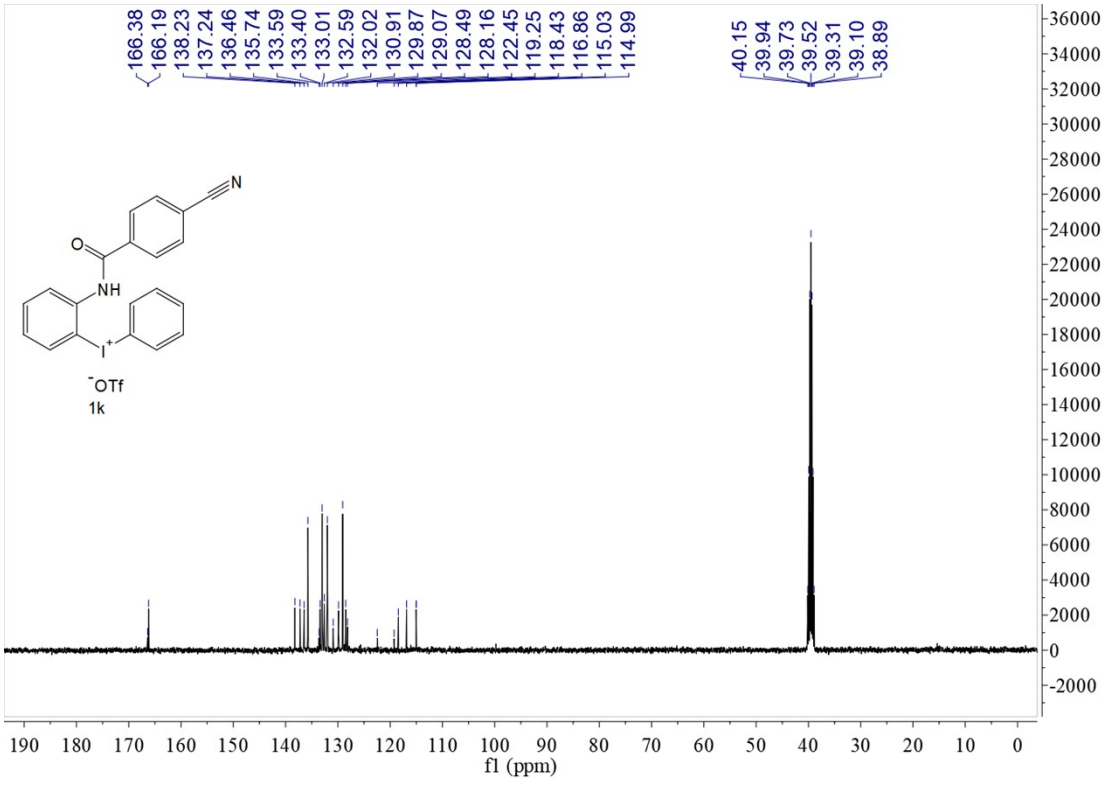
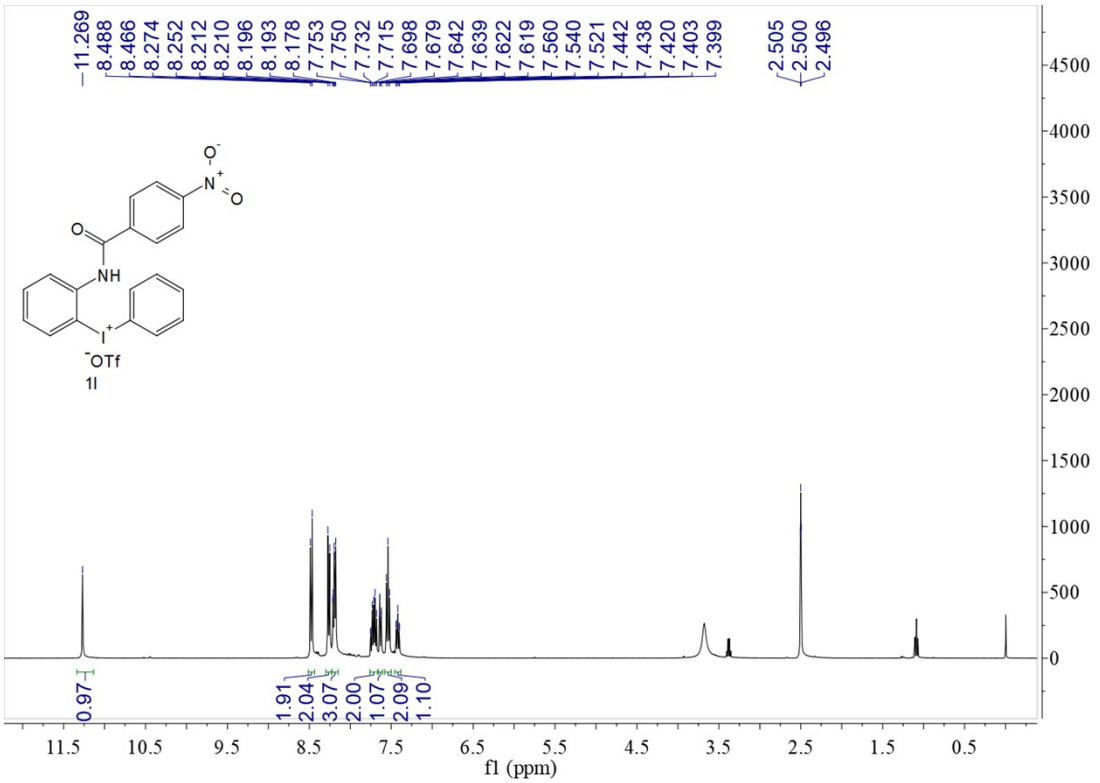
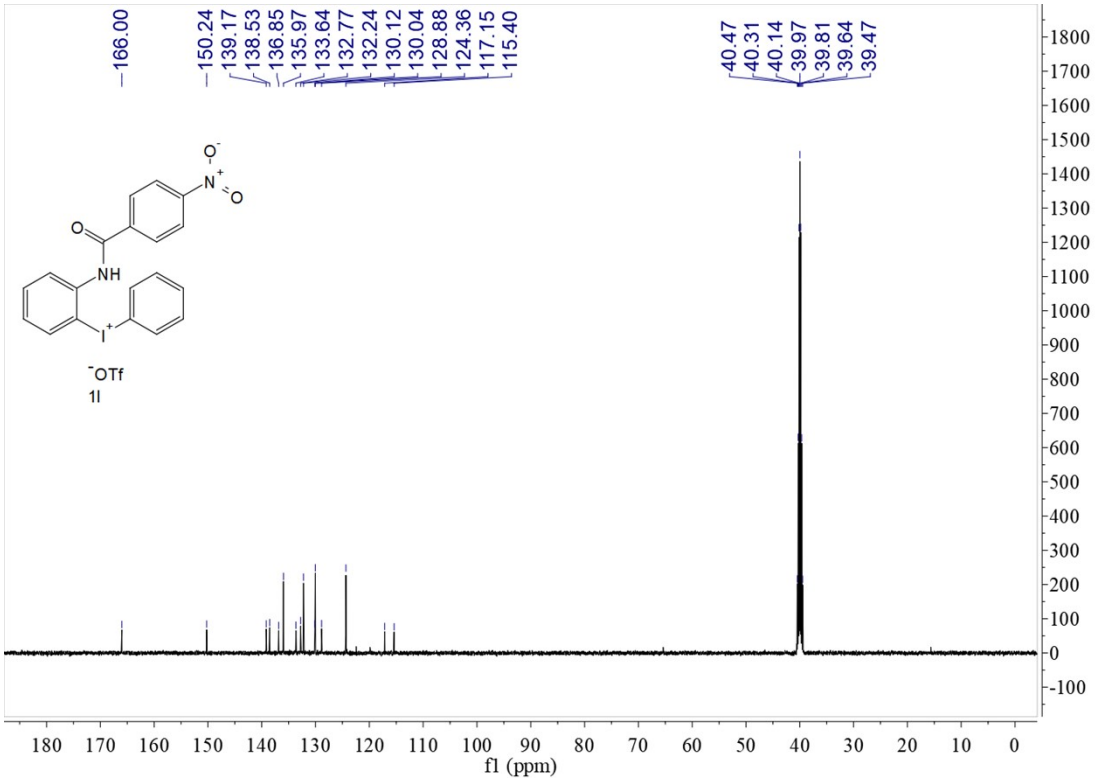
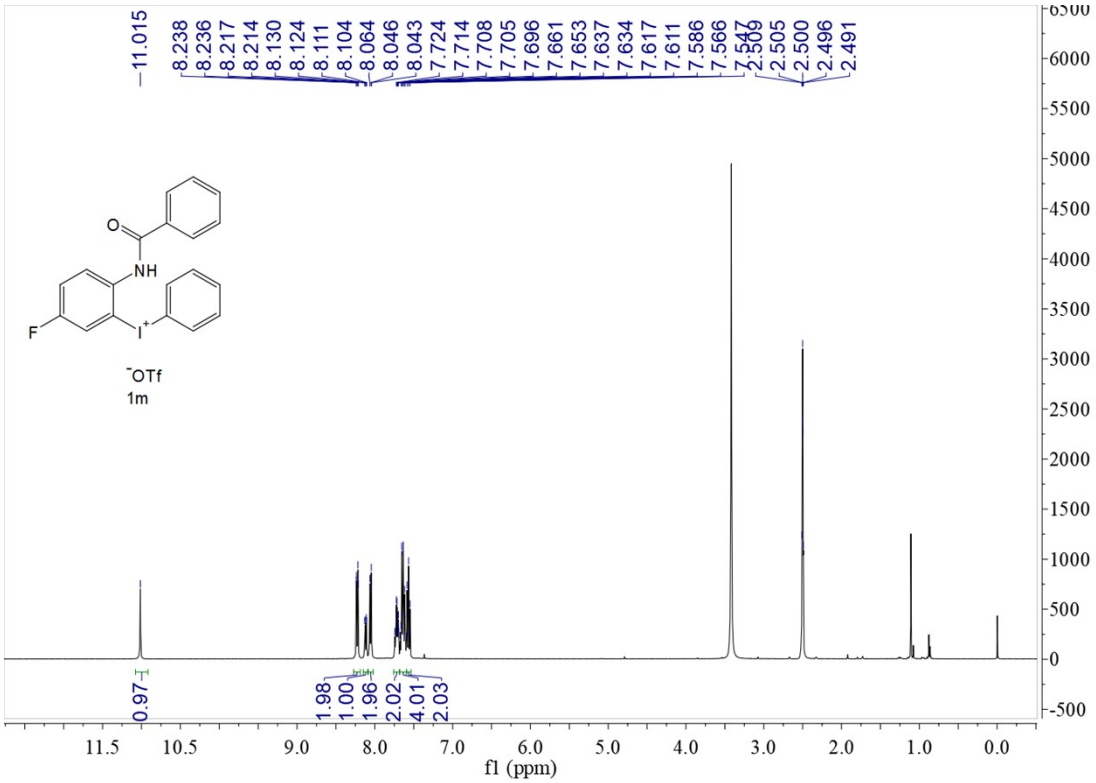
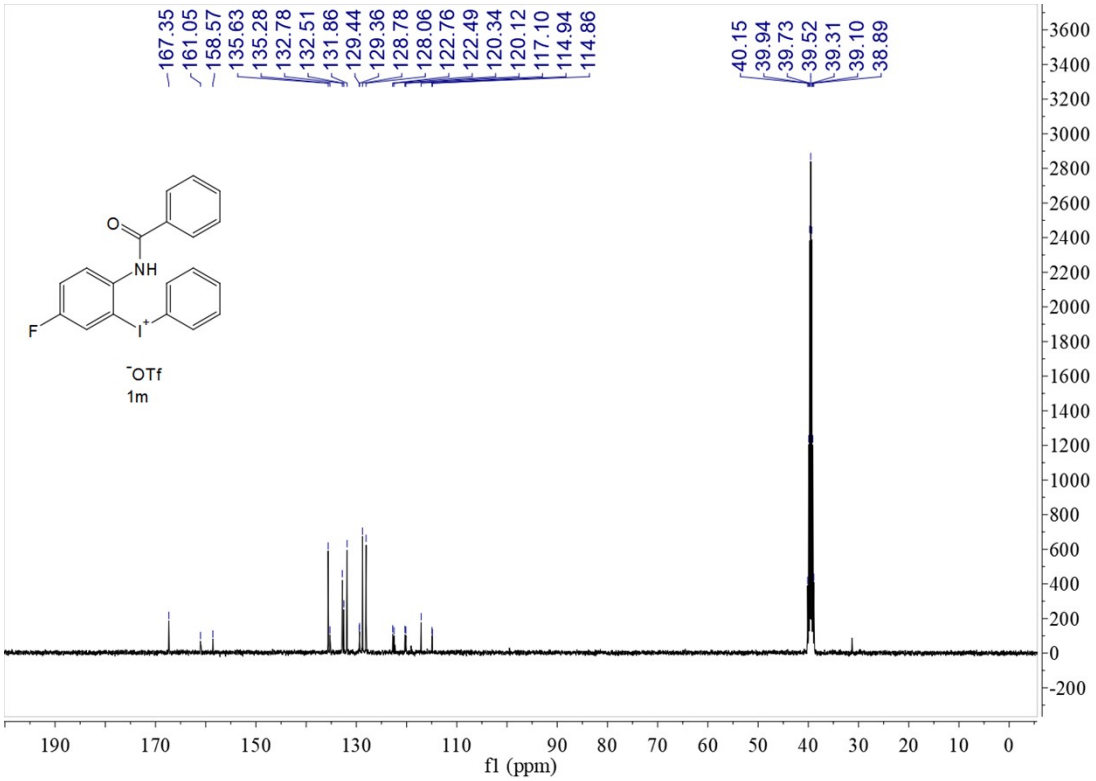
8.165
8.137
8.116
7.737
7.716
7.695
7.675
7.615
7.598
7.564
7.552
7.532
7.513
7.424
7.422
7.404
7.386
2.504
2.500
N
O
NH
I+
-OTf
1k
0.98
6.98
2.24
1.02
2.17
1.00
fl (ppm)

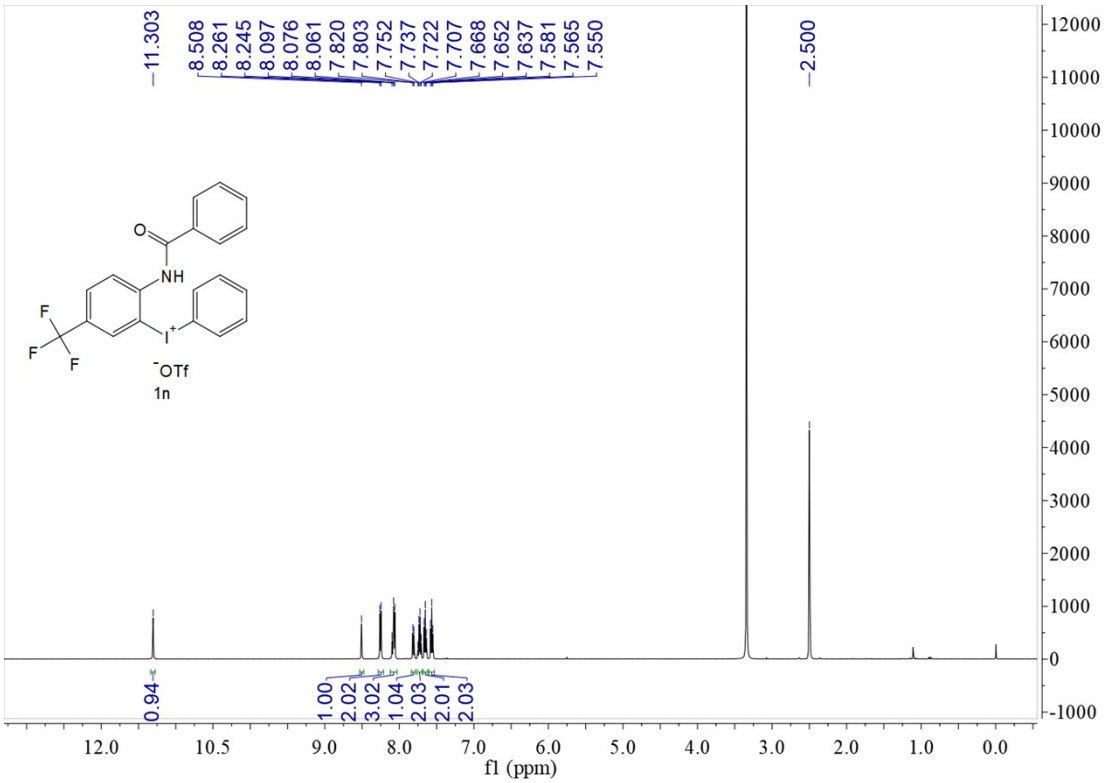

166.38
166.19
138.23
137.24
136.46
135.74
133.59
133.40
133.01
132.59
132.02
130.91
129.87
129.07
128.49
128.16
122.45
119.25
118.43
116.86
115.03
114.99
40.15
39.94
39.73
39.52
39.31
39.10
38.89
N
O
NH
I+
-OTf
1k
fl (ppm)

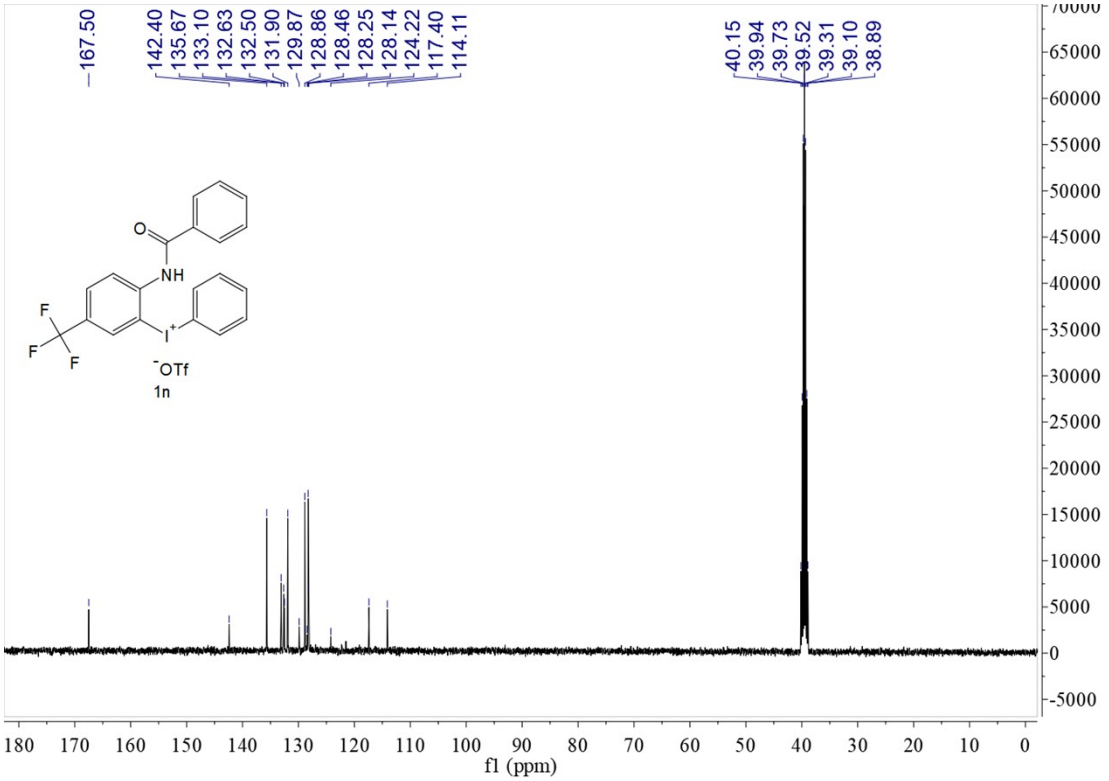

11.269
8.488
8.466
8.274
8.252
8.212
8.210
8.196
8.193
8.178
7.753
7.750
7.732
7.715
7.698
7.679
7.642
7.639
7.622
7.619
7.560
7.540
7.521
7.442
7.438
7.420
7.403
7.399
2.505
2.500
2.496
O
N
O
NH
I
OTf
1l
0.97
1.91
2.04
3.07
2.00
1.07
2.09
1.10
f1 (ppm)

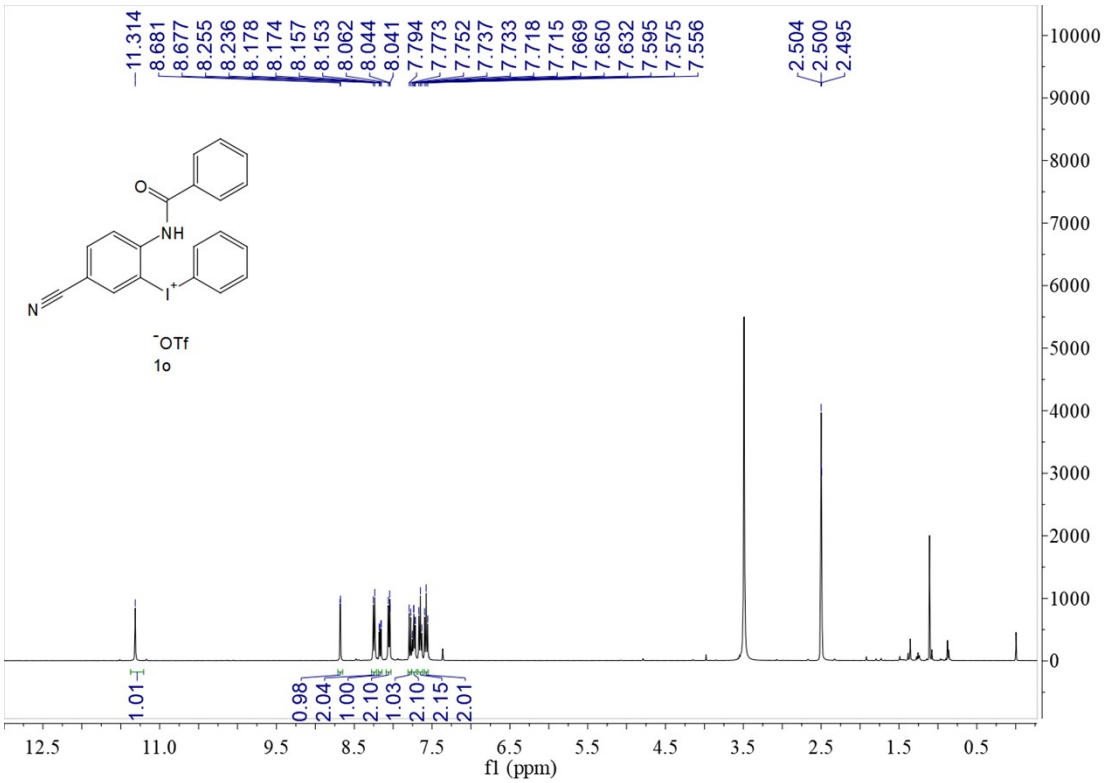

166.00
150.24
139.17
138.53
136.85
135.97
133.64
132.77
132.24
130.12
130.04
128.88
124.36
117.15
115.40
40.47
40.31
40.14
39.97
39.81
39.64
39.47
O
N
O
NH
I
OTf
1l
f1 (ppm)

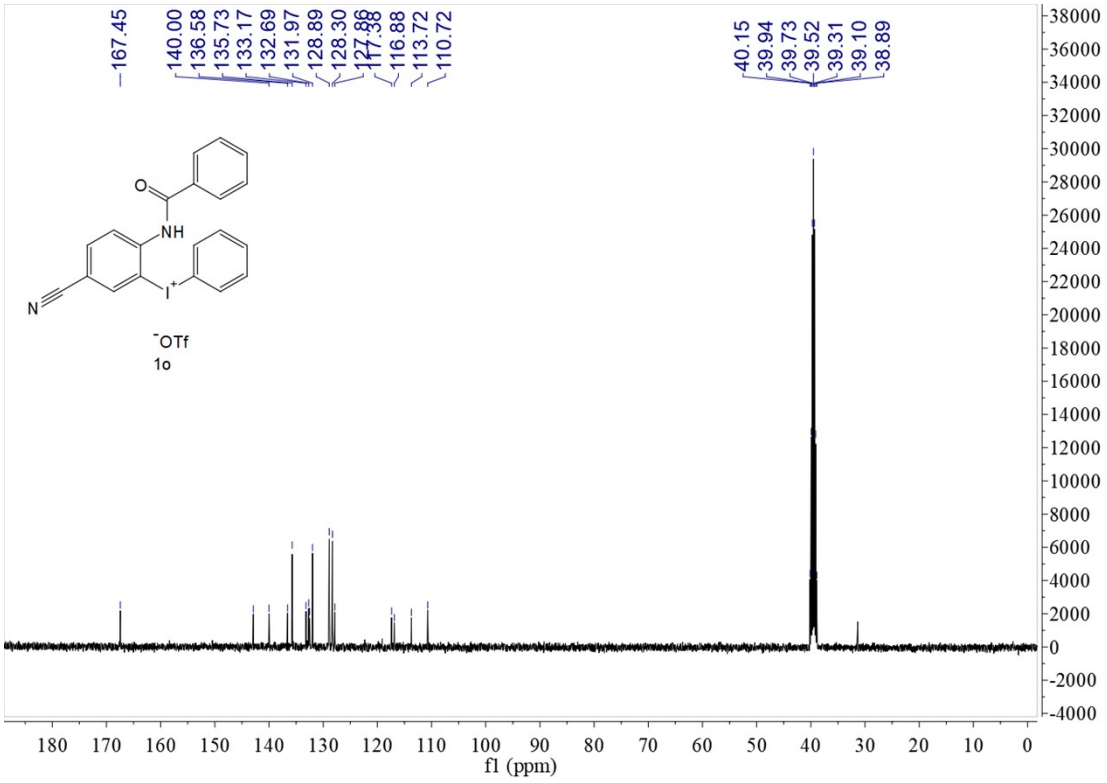

11.015
8.238
8.236
8.217
8.214
8.130
8.124
8.111
8.104
8.064
8.046
8.043
7.724
7.714
7.708
7.705
7.696
7.661
7.653
7.637
7.634
7.617
7.611
7.586
7.566
7.547
2.509
2.505
2.500
2.496
2.491
O
NH
F
I+
OTf
1m
0.97
1.98
1.00
1.96
2.02
4.01
2.03
11.5
10.5
9.0
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
f1 (ppm)

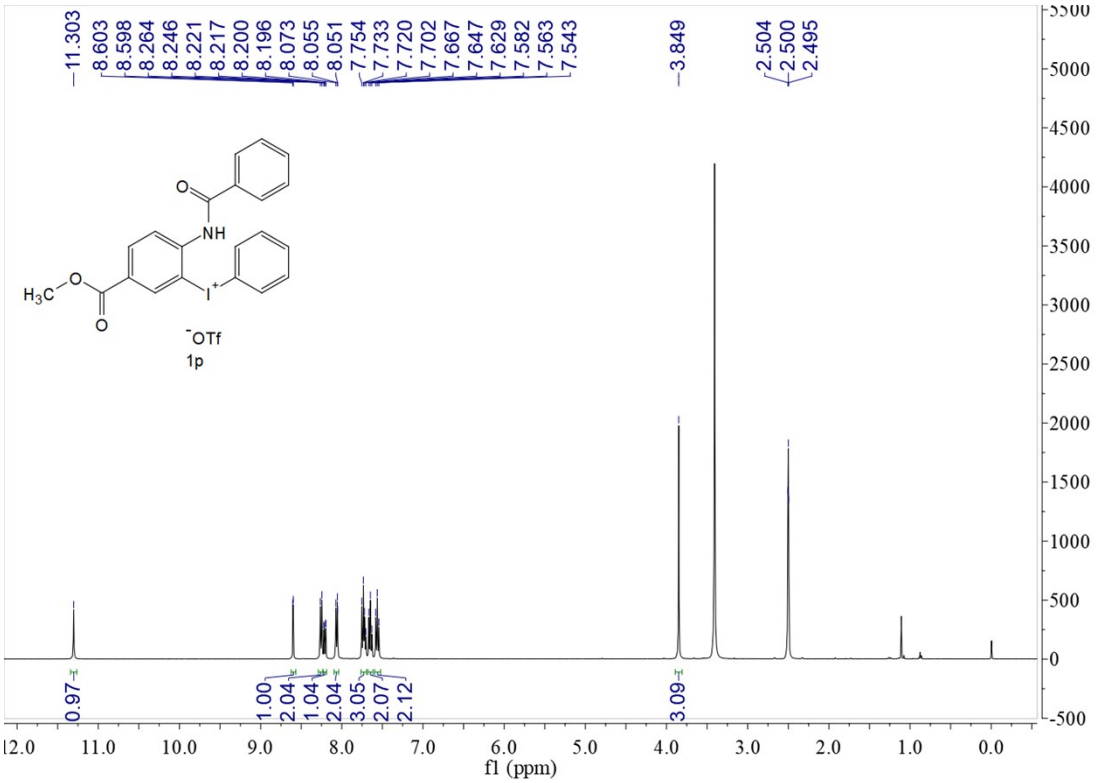

167.35
161.05
158.57
135.63
135.28
132.78
132.51
131.86
129.44
129.36
128.78
128.06
122.76
122.49
120.34
120.12
117.10
114.94
114.86
40.15
39.94
39.73
39.52
39.31
39.10
38.89
O
NH
F
I+
OTf
1m
190
170
150
130
110
90
80
70
60
50
40
30
20
10
0
f1 (ppm)

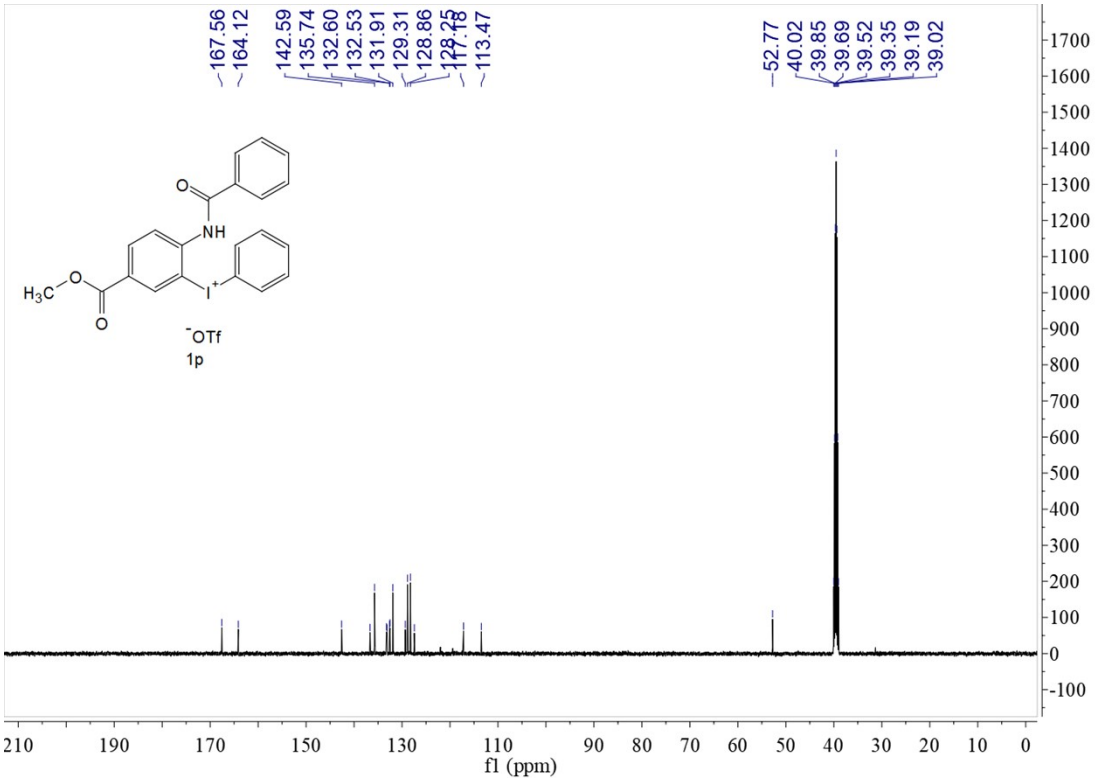

11.303
8.508
8.261
8.245
8.097
8.076
8.061
7.820
7.803
7.752
7.737
7.722
7.707
7.668
7.652
7.637
7.581
7.565
7.550
2.500
0.94
1.00
2.02
3.02
1.04
2.03
2.01
2.03
OTf
1n
fl (ppm)

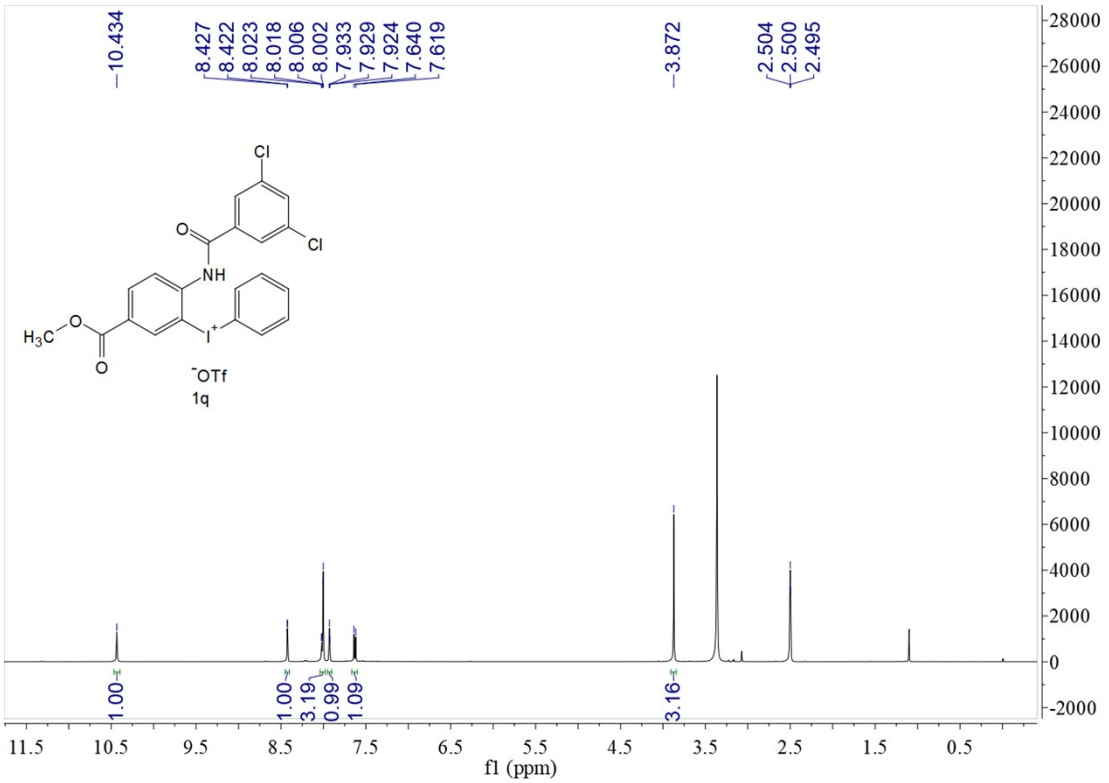

167.50
142.40
135.67
133.10
132.63
132.50
131.90
129.87
128.86
128.46
128.25
128.14
124.22
117.40
114.11
40.15
39.94
39.73
39.52
39.31
39.10
38.89
OTf
1n
fl (ppm)

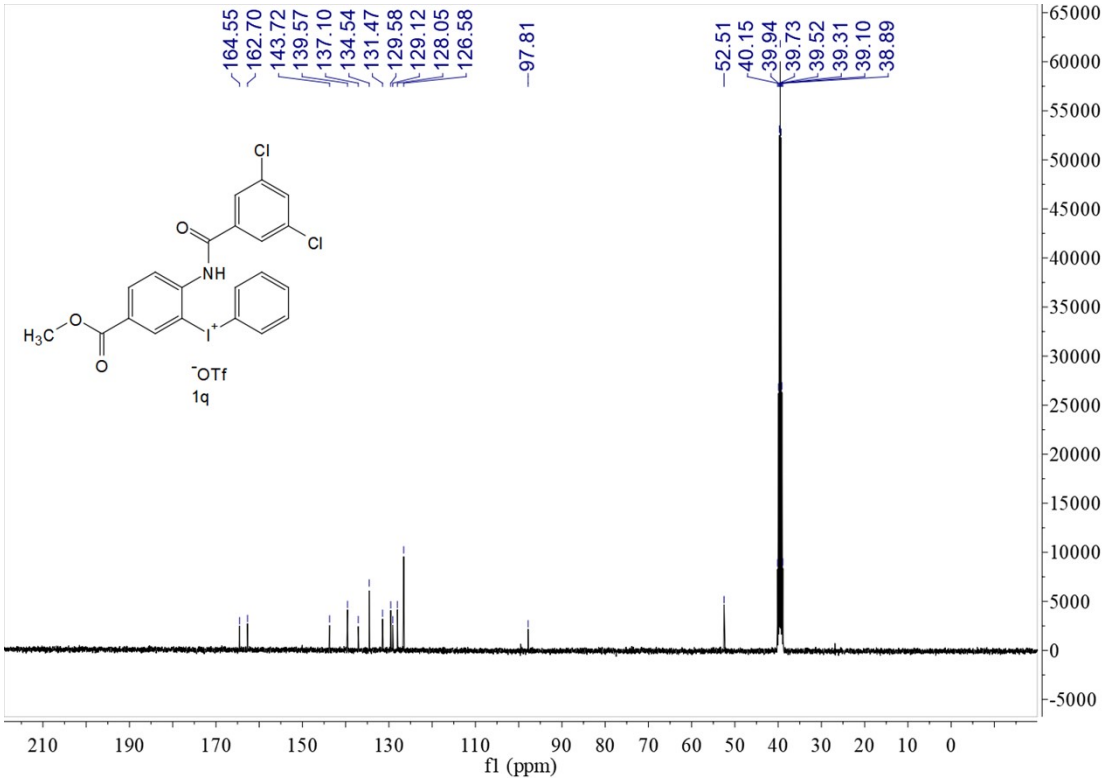

11.314
8.681
8.677
8.255
8.236
8.178
8.174
8.157
8.153
8.062
8.044
8.041
7.794
7.773
7.752
7.737
7.733
7.718
7.715
7.669
7.650
7.632
7.595
7.575
7.556
2.504
2.500
2.495
O
NH
N
I+
OTf
1o
1.01
0.98
2.04
1.00
2.10
1.03
2.10
2.15
2.01
f1 (ppm)

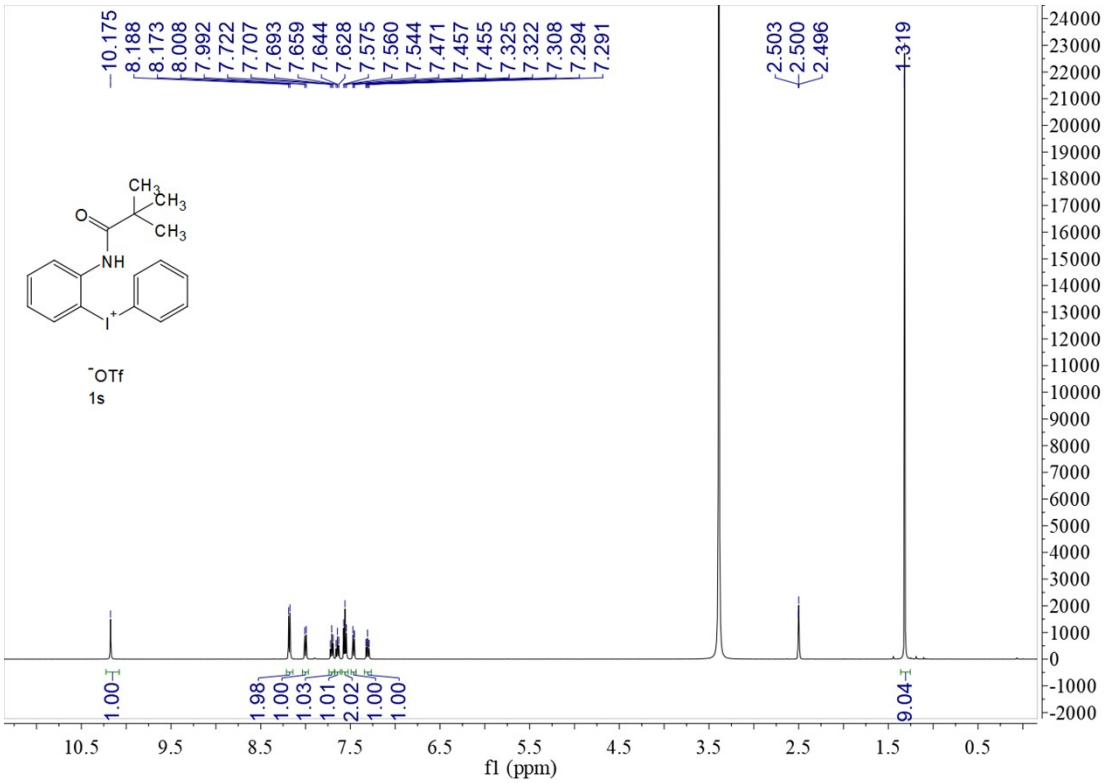

167.45
140.00
136.58
135.73
133.17
132.69
131.97
128.89
128.30
116.88
113.72
110.72
40.15
39.94
39.73
39.52
39.31
39.10
38.89
O
NH
N
I+
OTf
1o
f1 (ppm)

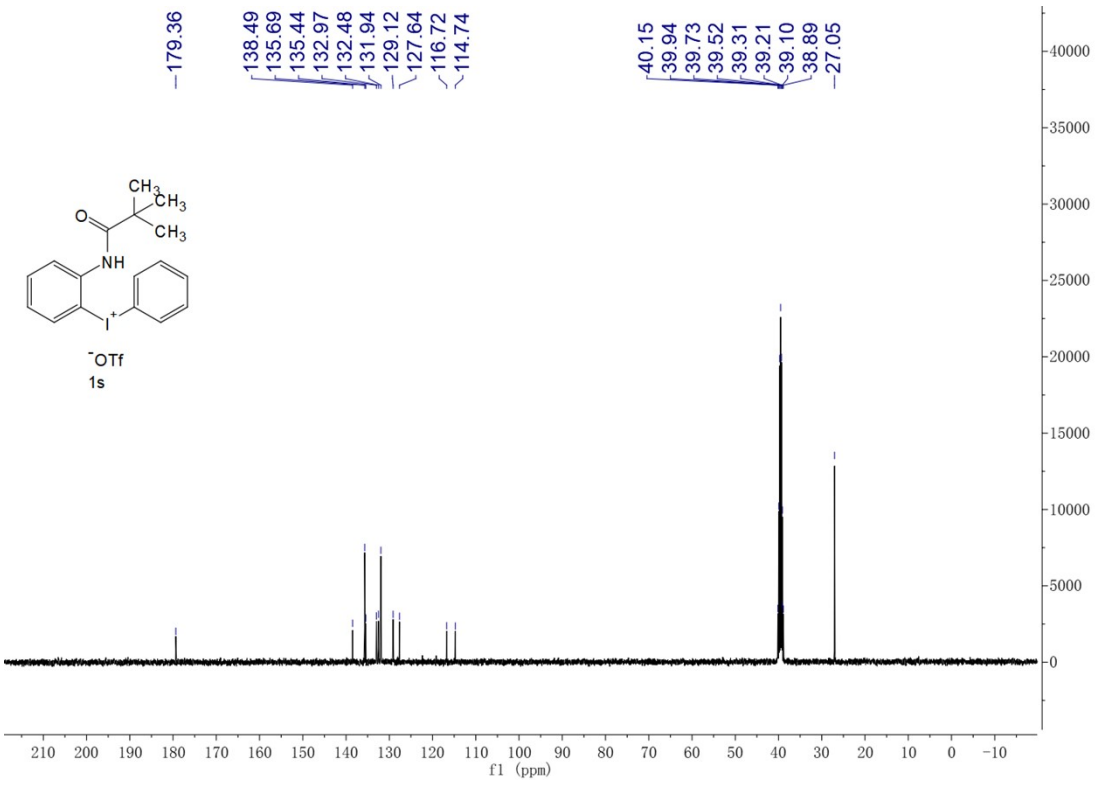

11.303
8.603
8.598
8.264
8.246
8.221
8.217
8.200
8.196
8.073
8.055
8.051
7.754
7.733
7.720
7.702
7.667
7.647
7.629
7.582
7.563
7.543
3.849
2.504
2.500
2.495
O
NH
H3C
O
O
I+
-OTf
1p
0.97
1.00
2.04
1.04
2.04
3.05
2.07
2.12
3.09
f1 (ppm)

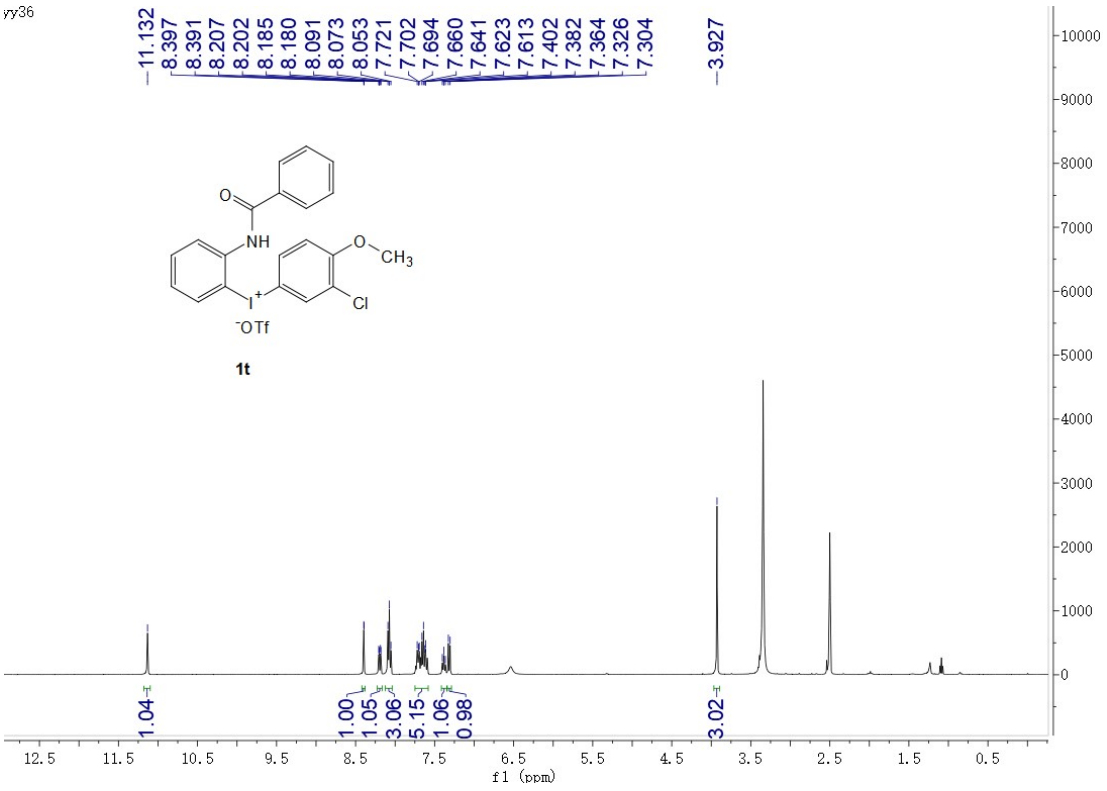

167.56
164.12
142.59
135.74
132.60
132.53
131.91
129.31
128.86
113.47
52.77
40.02
39.85
39.69
39.52
39.35
39.19
39.02
O
NH
H3C
O
O
I+
-OTf
1p
f1 (ppm)

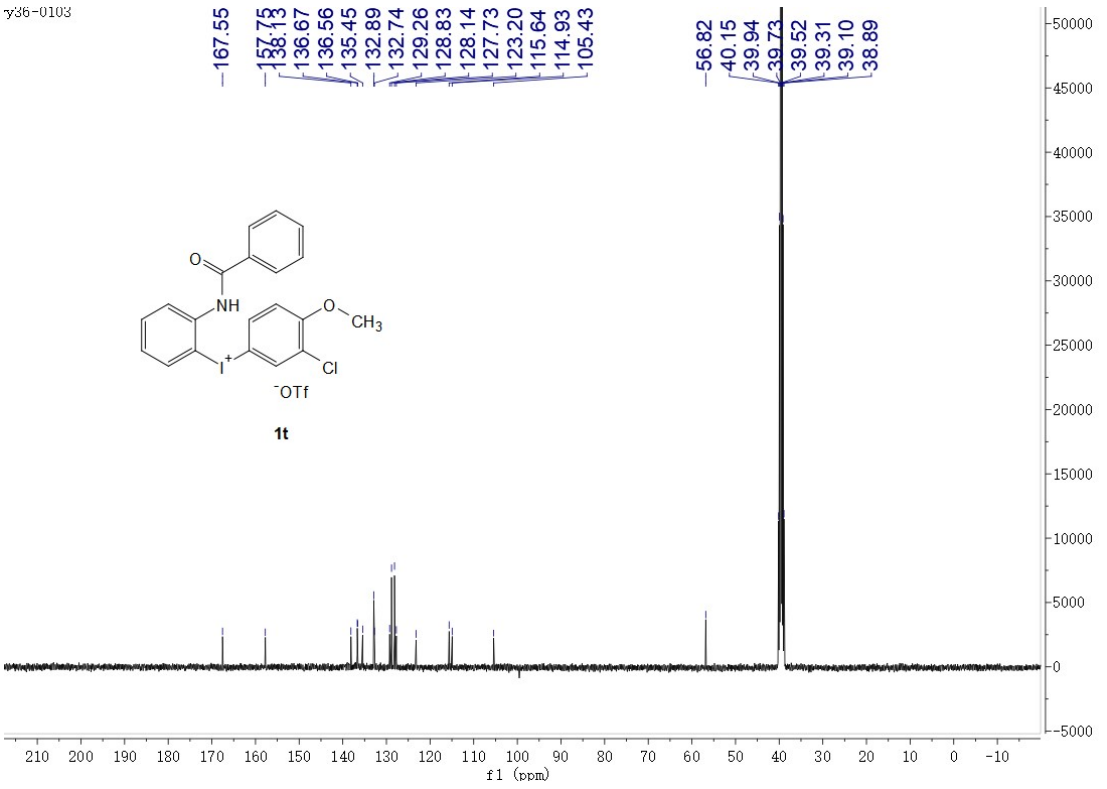

10.434
8.427
8.422
8.023
8.018
8.006
8.002
7.933
7.929
7.924
7.640
7.619
3.872
2.504
2.500
2.495
Cl
O
NH
Cl
H3C
O
O
I+
OTf
1q
1.00
1.00
3.19
0.99
1.09
3.16
f1 (ppm)

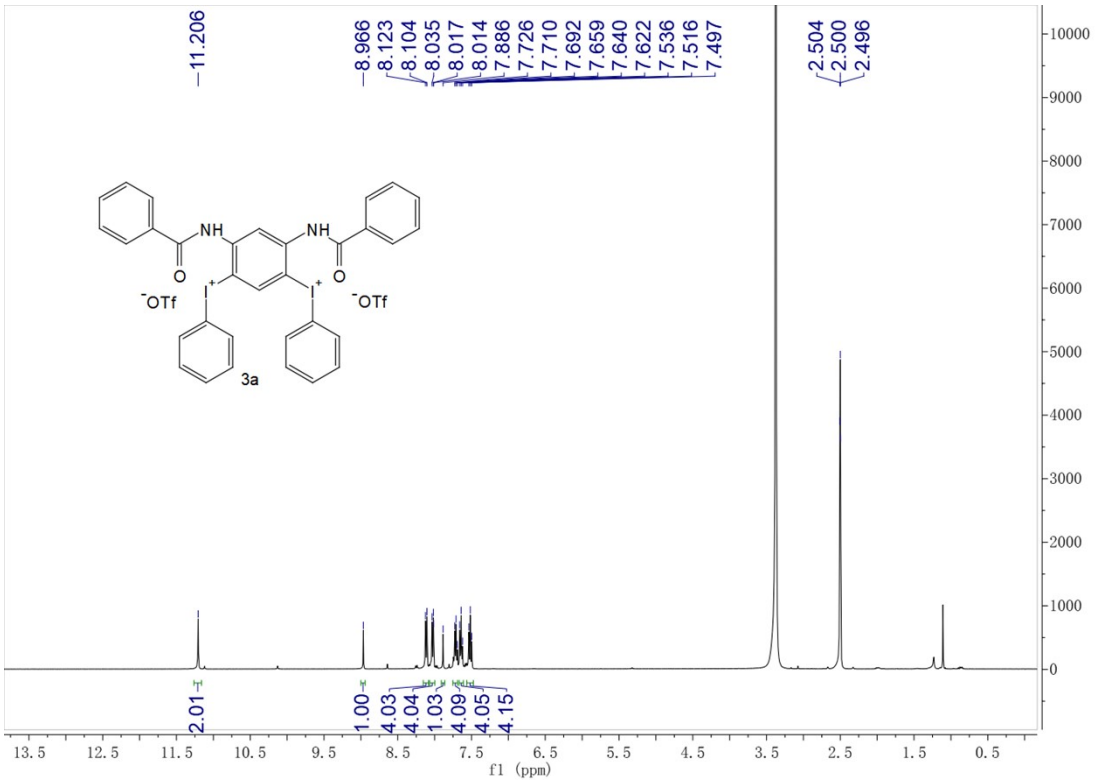

164.55
162.70
143.72
139.57
137.10
134.54
131.47
129.58
129.12
128.05
126.58
97.81
52.51
40.15
39.94
39.73
39.52
39.31
39.10
38.89
Cl
O
NH
Cl
H3C
O
O
I+
OTf
1q
f1 (ppm)

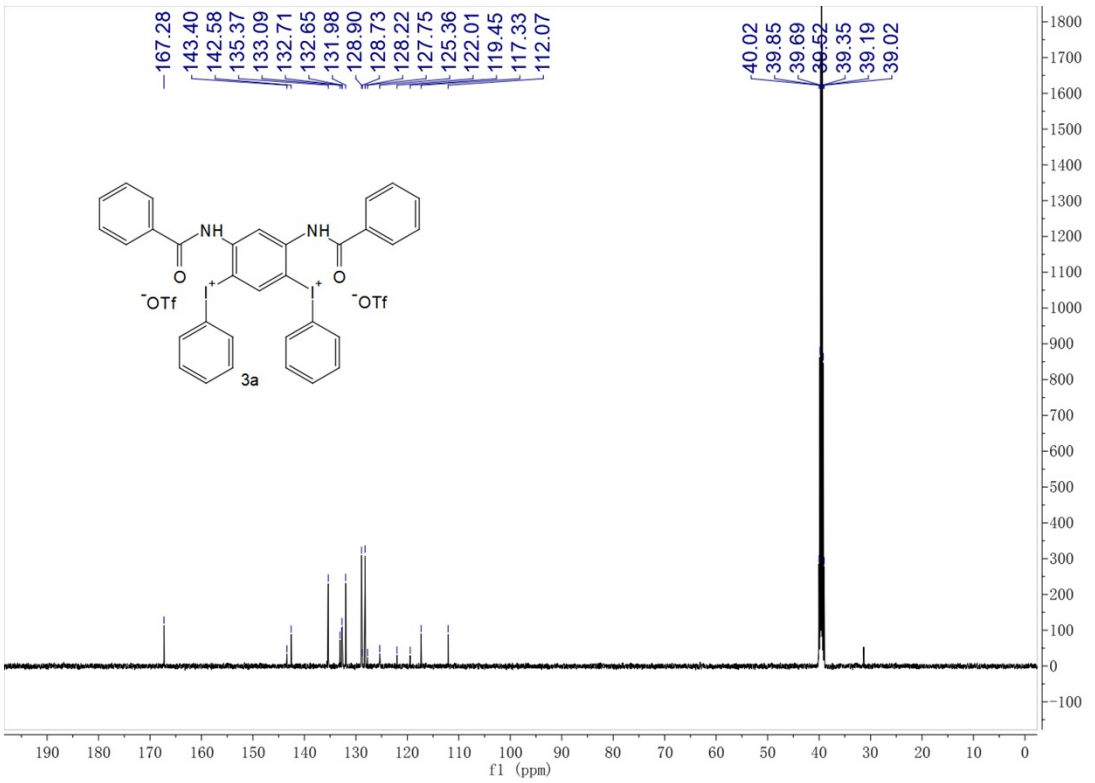

10.175
8.188
8.173
8.008
7.992
7.722
7.707
7.693
7.659
7.644
7.628
7.575
7.560
7.544
7.471
7.457
7.455
7.325
7.322
7.308
7.294
7.291
2.503
2.500
2.496
1.319
1.00
1.98
1.00
1.03
1.01
2.02
1.00
1.00
9.04
fl (ppm)
OTf
1s


179.36
138.49
135.69
135.44
132.97
132.48
131.94
129.12
127.64
116.72
114.74
40.15
39.94
39.73
39.52
39.31
39.21
39.10
38.89
27.05
f1 (ppm)
OTf
1s


yy36
11.132
8.397
8.391
8.207
8.202
8.185
8.180
8.091
8.073
8.053
7.721
7.702
7.694
7.660
7.641
7.623
7.613
7.402
7.382
7.364
7.326
7.304
3.927
O
NH
O
CH3
I+
Cl
-OTf
1t
1.04
1.00
1.05
3.06
5.15
1.06
0.98
3.02
f1 (ppm)


yy36-0103
167.55
157.75
138.13
136.67
136.56
135.45
132.89
132.74
129.26
128.83
128.14
127.73
123.20
115.64
114.93
105.43
56.82
40.15
39.94
39.73
39.52
39.31
39.10
38.89
O
NH
O
CH3
I+
Cl
-OTf
1t
f1 (ppm)


11.206
8.966
8.123
8.104
8.035
8.017
8.014
7.886
7.726
7.710
7.692
7.659
7.640
7.622
7.536
7.516
7.497
2.504
2.500
2.496
NH
NH
O
O
-OTf
-OTf
3a
2.01
1.00
4.03
4.04
1.03
4.09
4.05
4.15
f1 (ppm)


167.28
143.40
142.58
135.37
133.09
132.71
132.65
131.98
128.90
128.73
128.22
127.75
125.36
122.01
119.45
117.33
112.07
40.02
39.85
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39.19
39.02
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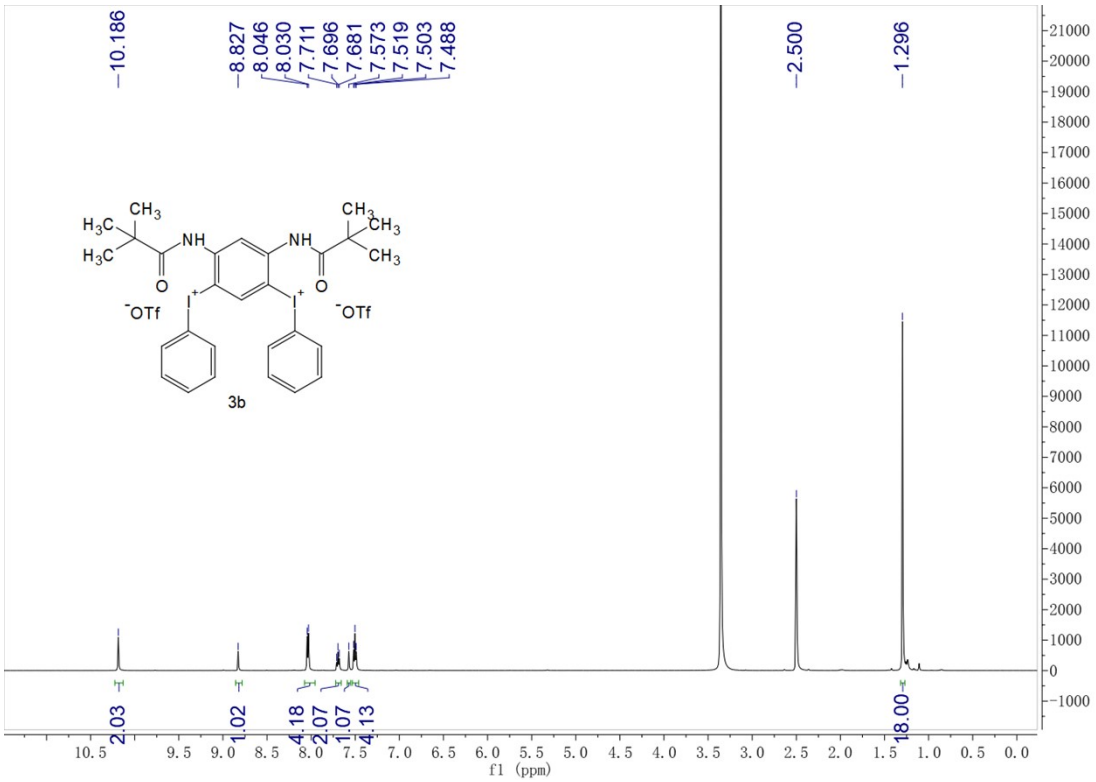
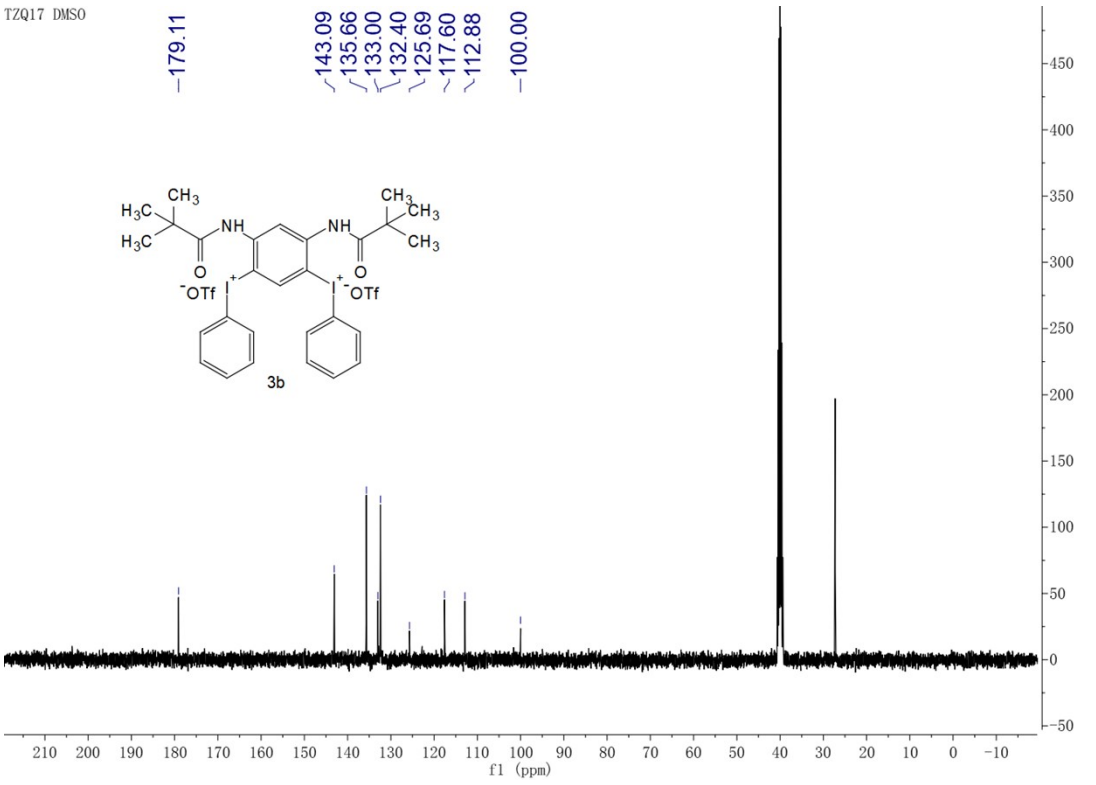
NH
O
O
-OTf
-OTf
3a
f1 (ppm)


10.186
8.827
8.046
8.030
7.711
7.696
7.681
7.573
7.519
7.503
7.488
2.500
1.296
3b
2.03
1.02
4.18
2.07
1.07
4.13
18.00
f1 (ppm)


TZQ17 DMSO
179.11
143.09
135.66
133.00
132.40
125.69
117.60
112.88
100.00
3b
f1 (ppm)