Supporting Information for

Versatile electrooxidative amino- and oxyselenation of alkenes

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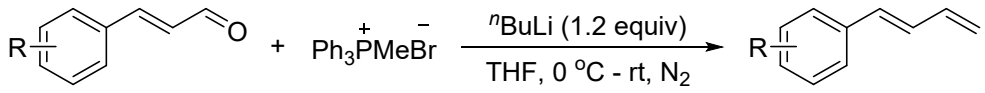
1. General considerations

^{1}H, ^{13}C and ^{19}F NMR spectra were recorded on Varian Inova-400 or 600 MHz spectrometers. ^{1}H and ^{13}C NMR chemical shifts were determined relative to internal standard TMS at δ 0.0 ppm or $CDCl_3$ (δ(^{1}H), 7.26 ppm; δ(^{13}C), 77.16 ppm) or DMSO-D_6 (δ(^{1}H), 2.50 ppm; δ(^{13}C), 39.52 ppm). Chemical shifts (δ) are reported in ppm, and coupling constants (*J*) are reported in Hertz (Hz). The following abbreviations are used to explain the multiplicities: s = singlet, d = doublet, t = triplet, q = quartet, m = multiplet. The HRMS analysis was obtained on a Agilent 6540 UHD Q-TOF mass spectrometer. The melting point was recorded on BÜCHI (M-560) and uncorrected. Analytical thin layer chromatography (TLC) was performed on 0.25 mm silica gel 60 F254 plates and viewed by UV light (254 nm). Column chromatographic purification was performed using 200-300 mesh silica gel. Electrochemical reactions were performed on IKA ElectraSyn 2.0 pro. X-ray single crystal diffraction data were collected on a Bruker D8 VENTURE. H_2 detection experiment was conducted on a ES20B-H_2 gas detector (Shenzhen Eyesky Technology Co., Ltd). Cyclic voltammetry (CV) was carried out on a CHI660E electrochemical workstation (CH Instruments, Ins).

All the chemical reagents were purchased from commercial sources and used as received unless otherwise indicated. Aryl 1,3-butadienes[1] and diselenides[2] were prepared by the reported procedures.

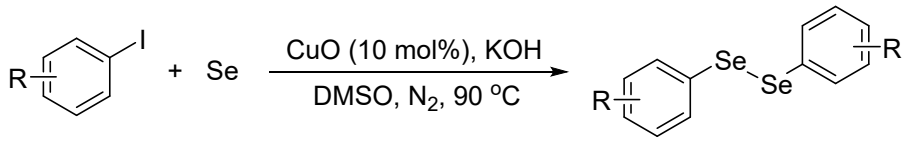
2. Experimental procedures

2.1 General procedure for the synthesis of aryl 1,3-butadienes[1]



Under nitrogen atmosphere, methyltriphenylphosphonium bromide (3.0 mmol) in THF (20 mL) was added ^{n}BuLi (1.2 mL, 2.5 M in THF, 3.0 mmol) slowly at 0 °C in a flame-dried round-bottom flask. After stirring for 20 min, the cinnamaldehyde (2.5 mmol) was added. The reaction mixture was then warmed to room temperature and stirred for another 5-10 hours. After the starting material was consumed completely which was detected by TLC, the reaction mixture was quenched with sat. NH_4Cl aq. (15 mL) and extracted with ethyl acetate (20 mL × 3). The combined organic layers were dried over Na_2SO_4, concentrated in vacuo and purified by flash chromatography on silica gel with petroleum ether (60-90 °C) to afford the desired 1,3-butadiene products.

2.2 General procedure for the synthesis of diselenides[2]

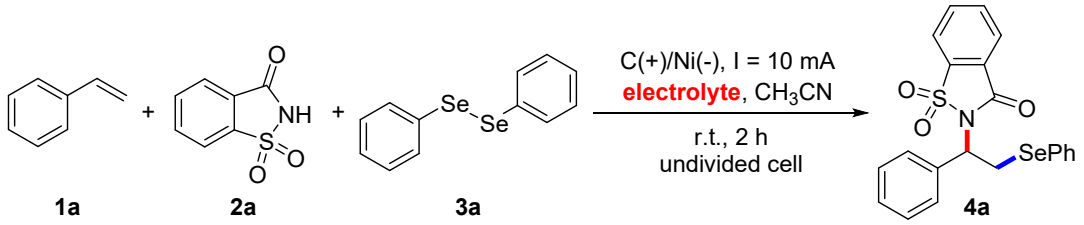


Under nitrogen atmosphere, to a stirred solution of Se (6.0 mmol) powder and aryl iodides (3.0 mmol) in dry DMSO (6.0 mL) was added CuO nanoparticles (10 mol%) followed by KOH (2.0 equiv) at 90 °C. The progress of the reaction was monitored by TLC. After the reaction was complete, the reaction mixture was allowed to cool, which was subjected to column chromatographic separation to give pure diselenides.

2.3 Optimization of reaction conditions

2.3.1 Optimization of aminoselenation of styrene

Table S1 Screening of electrolytes[a]

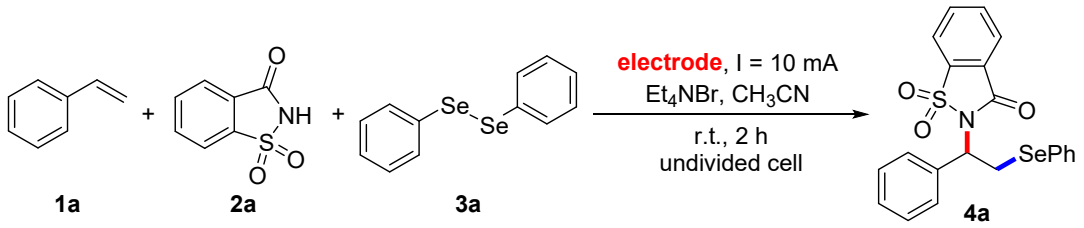


1a 2a 3a 4a

Entry	Electrolyte	Yield (%)[b]
1	$^{n}Bu_4NBr$	83
2	Me_4NCl	66
3	Me_4NBr	92
4	**Et_4NBr**	**92**
5	Me_4NBF_4	24
6	$^{n}Pr_4NBr$	86
7	$^{n}Bu_4NI$	n.r.
8	$^{n}Bu_4NClO_4$	trace
9	$^{n}Bu_4NHSO_4$	trace
10	$^{n}Bu_4NBF_4$	trace
11	$^{n}Bu_4NPF_6$	trace

[a] Reaction conditions: **1a** (0.3 mmol), **2a** (0.2 mmol), **3a** (0.15 mmol), electrolyte (0.2 mmol), CH_3CN (4.0 mL), C anode (immersed surface area 8 × 5 mm^2), Ni cathode (immersed surface area 8 × 5 mm^2), 10 mA, 2 h, r.t., undivided cell. [b] Isolated yields. n.r. = no reaction.

Table S2 Screening of electrodes[a]

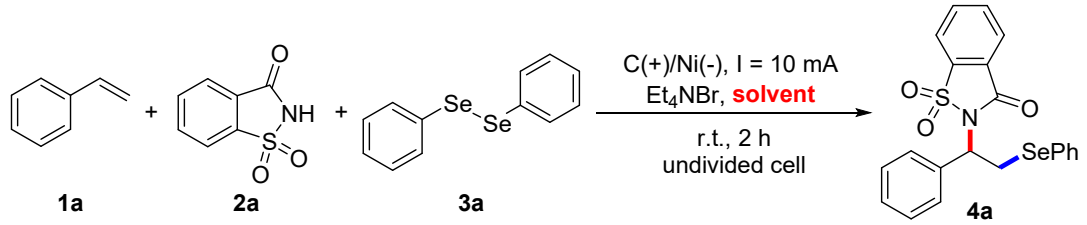


1a 2a 3a 4a

Entry	Electrode	Yield (%)[b]
1	**C-Ni**	**92**
2	C-C	86
3	C-Cu	84
4	C-Zn	62

[a] Reaction conditions: **1a** (0.3 mmol), **2a** (0.2 mmol), **3a** (0.15 mmol), Et_4NBr (0.2 mmol), CH_3CN (4.0 mL), anode (immersed surface area 8 × 5 mm^2), cathode (immersed surface area 8 × 5 mm^2), 10 mA, 2 h, r.t., undivided cell. [b] Isolated yields.

Table S3 Screening of solvents[a]

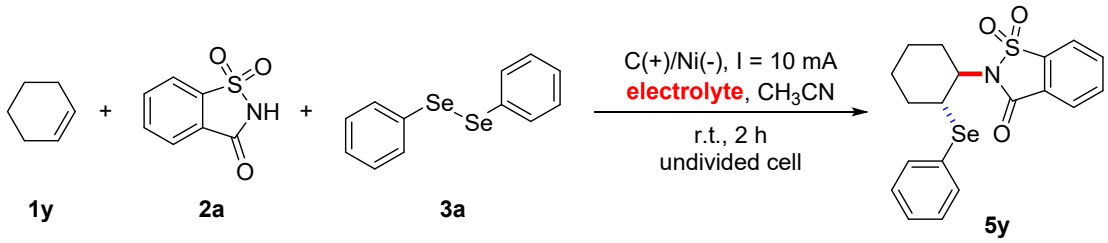


Entry	Solvent	Yield (%)[b]
1	CH_3CN	92
2	MeOH	n.r.
3	DMF	46
4	DMSO	n.r.
5	DMA	trace

[a] Reaction conditions: **1a** (0.3 mmol), **2a** (0.2 mmol), **3a** (0.15 mmol), Et_4NBr (0.2 mmol), solvent (4.0 mL), C anode (immersed surface area 8 × 5 mm^2), Ni cathode (immersed surface area 8 × 5 mm^2), 10 mA, 2 h, r.t., undivided cell. [b] Isolated yields. DMF = *N*,*N*-dimethylformamide. DMSO = dimethyl sulfoxide. DMA = *N*, *N*-dimethylacetamide.

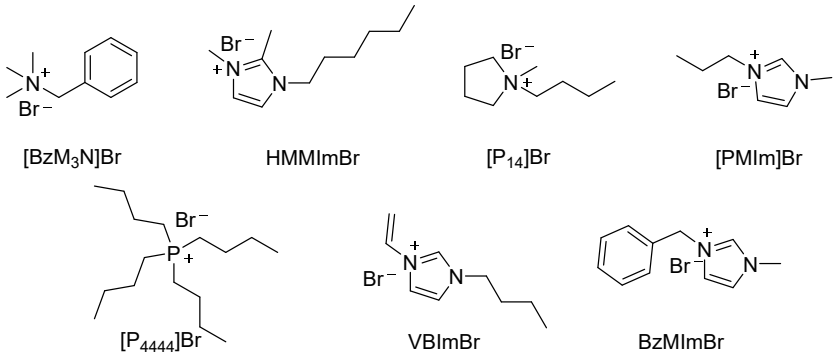
2.3.2 Optimization of aminoselenation of cyclohexene

Table S4 Screening of electrolytes[a]



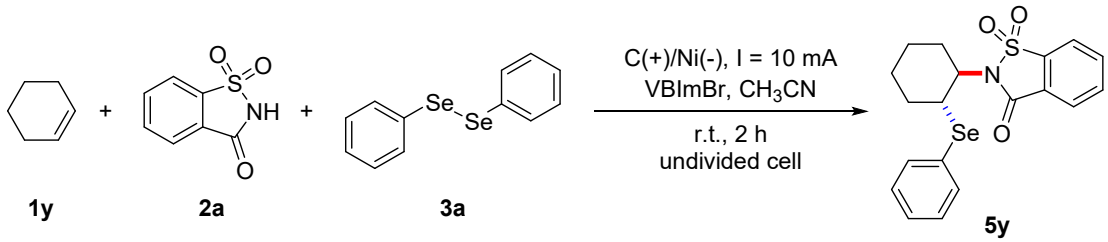
Entry	Electrolyte	Yield (%)[b]
1	Et_4NBr	66
2	Bu_4NBr	68
3	Cetyltrimethylammonium bromide	59
4	Bu_4NPF_6	44
5	Bu_4NI	n.r.
6	$TEABF_4$	35
7	KBr	54
8	Bu_4NCl	23
9	NaBr	53
10	$TBAClO_4$	28
11	Bu_4NOAc	45
12	Bu_4NBr_3	43
13	$[BzM_3N]Br$	trace
14	HMMImBr	71

15	$[P_{14}]Br$	68
16	[PMIm]Br	77
17	$[P_{4444}]Br$	59
18	**VBImBr**	**78**
19	BzMImBr	63



[a] Reaction conditions: **1y** (0.3 mmol), **2a** (0.2 mmol), **3a** (0.15 mmol), electrolyte (0.2 mmol), CH_3CN (4 mL), C anode (immersed surface area 8 × 5 mm^2), Ni cathode (immersed surface area 8 × 5 mm^2), 10 mA, 2 h, r.t., undivided cell. [b] Isolated yields. $[BzM_3N]Br$ = benzyltrimethylammonium bromide. HMMImBr = 1-hexyl-2,3-dimethylimidazolium bromide. $[P_{14}]Br$ = 1-butyl-1-methylpyrrolidinium bromide. [PMIm]Br = 1-methyl-3-propylimidazolium bromide. $[P_{4444}]Br$ = tetrabutylphosphonium bromide. VBImBr = 1-butyl-3-vinylimidazolium bromide. BzMImBr = 1-benzyl-3-methylIimidazolium bromide.

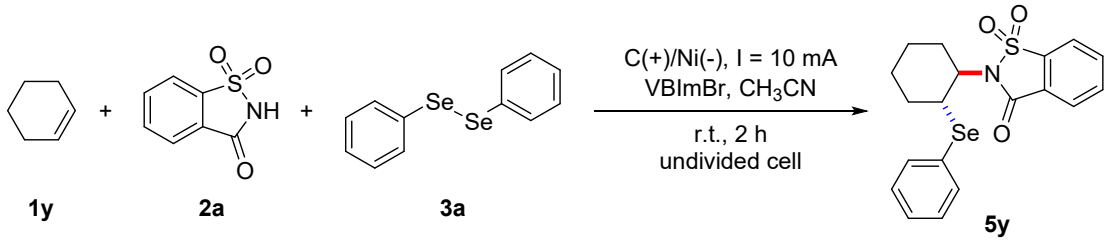
Table S5 Screening of quantity of 1y[a]



Entry	1y (mmol)	Yield (%)[b]
1	**0.3**	**78**
2	0.2	71
3	0.4	53

[a] Reaction conditions: **1y** (x mmol), **2a** (0.2 mmol), **3a** (0.15 mmol), VBImBr (0.2 mmol), CH_3CN (4 mL), C anode (immersed surface area 8 × 5 mm^2), Ni cathode (immersed surface area 8 × 5 mm^2), 10 mA, 2 h, r.t., undivided cell. [b] Isolated yields.

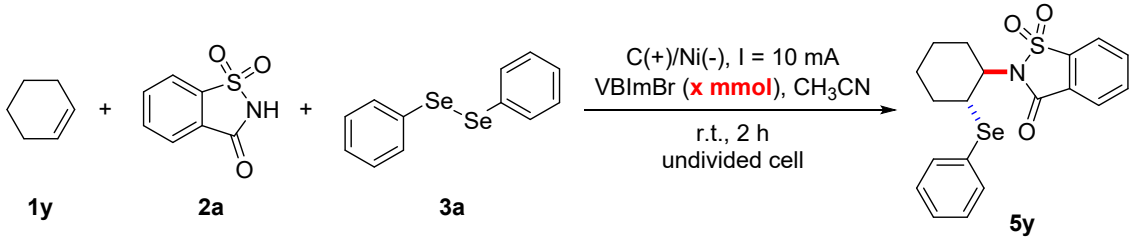
Table S6 Screening of quantity of 3a[a]



Entry	3a (mmol)	Yield (%)[b]
1	**0.15**	**78**
2	0.1	49
3	0.2	70

[a] Reaction conditions: **1y** (0.3 mmol), **2a** (0.2 mmol), **3a** (x mmol), VBImBr (0.2 mmol), CH_3CN (4 mL), C anode (immersed surface area 8 × 5 mm^2), Ni cathode (immersed surface area 8 × 5 mm^2), 10 mA, 2 h, r.t., undivided cell. [b] Isolated yields.

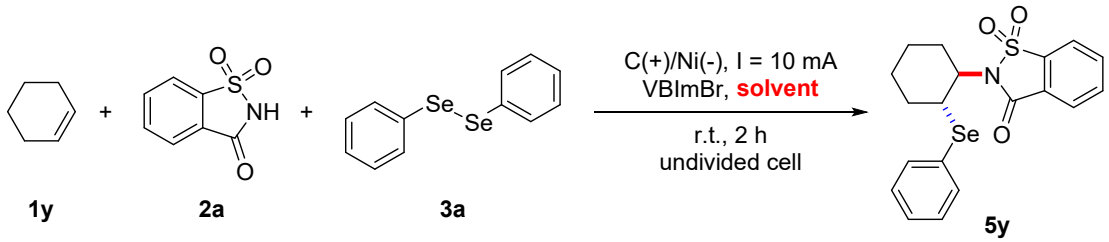
Table S7 Screening of quantity of electrolyte[a]



Entry	VBImBr (mmol)	Yield (%)[b]
1	**0.2**	**78**
2	0.1	66
3	0.3	53

[a] Reaction conditions: **1y** (0.3 mmol), **2a** (0.2 mmol), **3a** (0.15 mmol), VBImBr (x mmol), CH_3CN (4 mL), C anode (immersed surface area 8 × 5 mm^2), Ni cathode (immersed surface area 8 × 5 mm^2), 10 mA, 2 h, r.t., undivided cell. [b] Isolated yields.

Table S8 Screening of solvents[a]

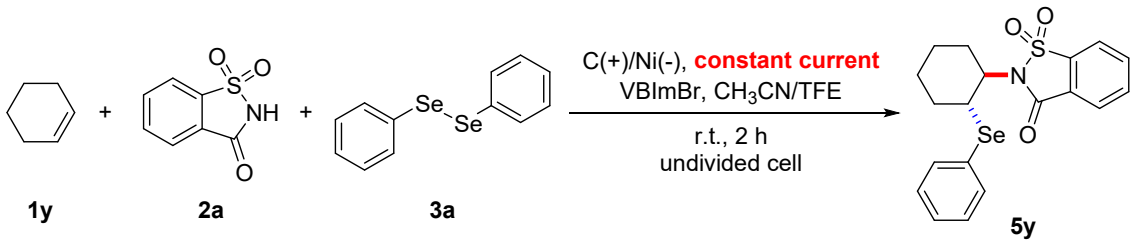


Entry	Solvent	Yield (%)[b]
1	CH_3CN	78
2	H_2O	n.r.
3	CH_3CH_2OH	61
4	CH_3OH	trace
5	Isopropyl alcohol	78
6	$CH_3CH_3CH_3CH_2OH$	trace
7	$HOCH_2CH_2OH$	n.r.
8	DMSO	27
9	NMP	n.r.
10	DMF	trace

11	HFIP	87
12	TFE	49
13	CH_3CN/CH_2Cl_2 (3:1)	69
14	CH_3CN/HFIP (3:1)	92
15	CH_3CN/CH_3CH_2OH (1:3)	59
16	CH_3CH_2OH/HFIP (3:1)	Trace
17	CH_3CN/TFE(3:1)	94
18	**CH_3CN/TFE (1:3)**	**95**
19	CH_3CN/TFE (0.5:3.5)	76
20	CH_3CN/TFE (0.2:3.8)	66

[a] Reaction conditions: **1y** (0.3 mmol), **2a** (0.2 mmol), **3a** (0.15 mmol), VBImBr (0.2 mmol), solvent (4 mL), C anode (immersed surface area 8 × 5 mm^2), Ni cathode (immersed surface area 8 × 5 mm^2), 10 mA, 2 h, r.t., undivided cell. [b] Isolated yields. NMP = 1-methyl-2-pyrrolidinone. HFIP = 1,1,1,3,3,3-Hexafluoro-2-propanol. TFE = 2,2,2-trifluoroethanol.

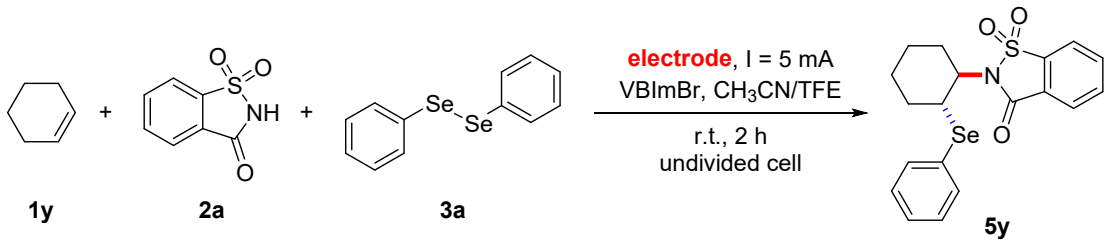
Table S9 Screening of constant current[a]



Entry	Constant current (mA)	Yield (%)[b]
1	10	95
2	without current	n.r.
3	**5**	**97**
4	3	80
5	8	92
6	15	64

[a] Reaction conditions: **1y** (0.3 mmol), **2a** (0.2 mmol), **3a** (0.15 mmol), VBImBr (0.2 mmol), CH_3CN/TFE (4 mL, v:v = 1:3), C anode (immersed surface area 8 × 5 mm^2), Ni cathode (immersed surface area 8 × 5 mm^2), x mA, 2 h, r.t., undivided cell. [b] Isolated yields.

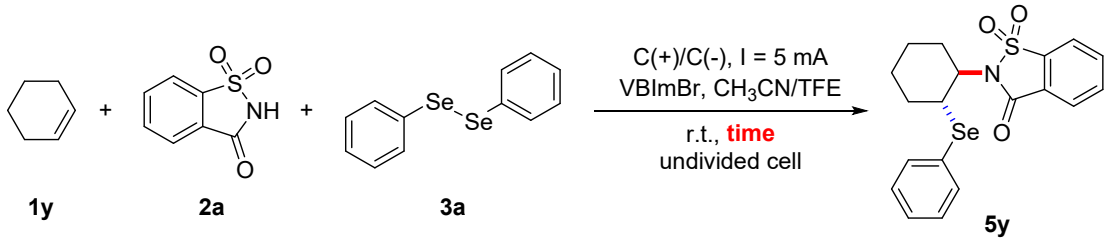
Table S10 Screening of electrodes[a]



Entry	Electrode	Yield (%)[b]
1	C-Ni	97
2	C-Cu	91
3	C-Fe	96
4	C-Zn	85
5	**C-C**	**99**

[a] Reaction conditions: **1y** (0.3 mmol), **2a** (0.2 mmol), **3a** (0.15 mmol), VBImBr (0.2 mmol), CH_3CN/TFE (4 mL, v:v = 1:3), anode (immersed surface area 8 × 5 mm^2), cathode (immersed surface area 8 × 5 mm^2), 5 mA, 2 h, r.t., undivided cell. [b] Isolated yields.

Table S11 Screening of reaction time[a]

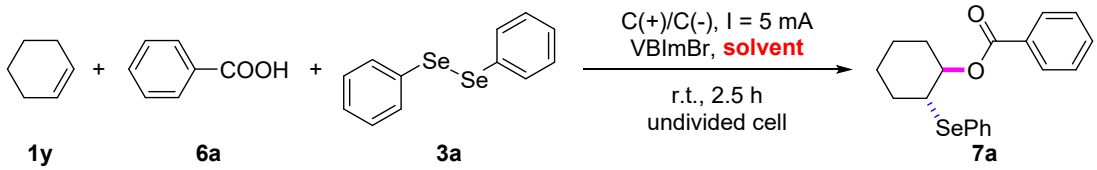


Entry	Time (h)	Yield (%)[b]
1	**2**	**99**
2	1.5	95
3	2.5	98
4	3	92

[a] Reaction conditions: **1y** (0.3 mmol), **2a** (0.2 mmol), **3a** (0.15 mmol), VBImBr (0.2 mmol), CH_3CN/TFE (4 mL, v:v =1:3), C anode (immersed surface area 8 × 5 mm^2), C cathode (immersed surface area 8 × 5 mm^2), 5 mA, x h, r.t., undivided cell. [b] Isolated yields.

2.3.3 Optimization of oxyselenation of cyclohexene

Table S12 Screening of solvents[a]

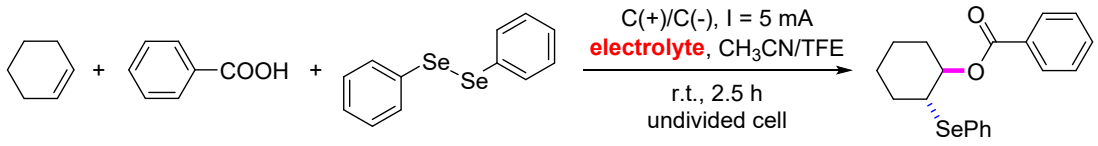


Entry	Solvent	Yield (%)[b]
1	CH_3CN	21
2	DMF	trace
3	DMA	n.r.
4	DMSO	n.d.
5	DCM	23
6	DCE	trace
7	CH_3CN/TFE(3:1)	53

8	CH_3CN/TFE(3.5:0.5)	57
9	**CH_3CN/TFE(2:2)**	**90**
10	CH_3CN/TFE(1:3)	73

[a] Reaction conditions: **1y** (0.2 mmol), **6a** (0.4 mmol), **3a** (0.15 mmol), VBImBr (0.2 mmol), solvent (4 mL), C anode (immersed surface area 8 × 5 mm^2), C cathode (immersed surface area 8 × 5 mm^2), 5 mA, 2.5 h, r.t., undivided cell. [b] Isolated yields. DCM = dichloromethane. DCE = dichloroethane.

Table S13 Screening of electrolytes[a]

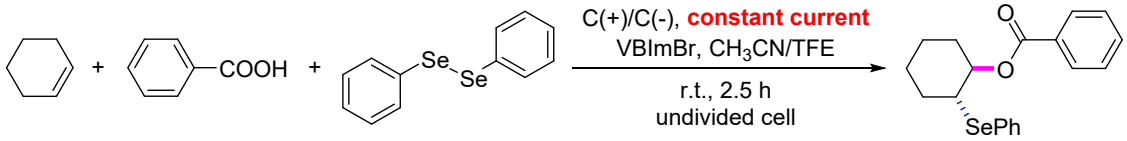


1y **6a** **3a** **7a**

Entry	Electrolyte	Yield (%)[b]
1	**VBImBr**	**90**
2	NaBr	86
3	Et_4NBr	75
4	DMMI	trace
5	Et_4NBF_4	trace

[a] Reaction conditions: **1y** (0.2 mmol), **6a** (0.4 mmol), **3a** (0.15 mmol), electrolyte (0.2 mmol), CH_3CN/TFE (4 mL, v:v =2:2), C anode (immersed surface area 8 × 5 mm^2), C cathode (immersed surface area 8 × 5 mm^2), 5 mA, 2.5 h, r.t., undivided cell. [b] Isolated yields.

Table S14 Screening of constant current[a]

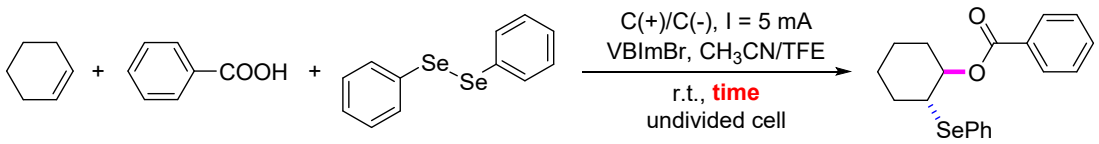


1y **6a** **3a** **7a**

Entry	Constant current (mA)	Yield (%)[b]
1	**5**	**90**
2	without current	n.r.
3	3	82
4	7	88

[a] Reaction conditions: **1y** (0.2 mmol), **6a** (0.4 mmol), **3a** (0.15 mmol), VBImBr (0.2 mmol), CH_3CN/TFE (4 mL, v:v =2:2), C anode (immersed surface area 8 × 5 mm^2), C cathode (immersed surface area 8 × 5 mm^2), x mA, 2.5 h, r.t., undivided cell. [b] Isolated yields.

Table S15 Screening of reaction time[a]



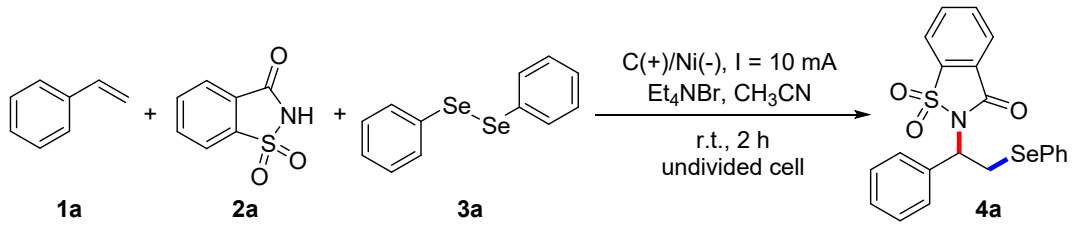
1y 6a 3a 7a

Entry	Time (h)	Yield (%)[b]
1	2.5	90
2	2	75
3	1.5	79

[a] Reaction conditions: **1y** (0.2 mmol), **6a** (0.4 mmol), **3a** (0.15 mmol), VBImBr (0.2 mmol), CH_3CN/TFE (4 mL, v:v = 2:2), C anode (immersed surface area 8 × 5 mm^2), C cathode (immersed surface area 8 × 5 mm^2), 5 mA, x h, r.t., undivided cell. [b] Isolated yields.

2.4 General procedure for amino- and oxyselenation of alkenes

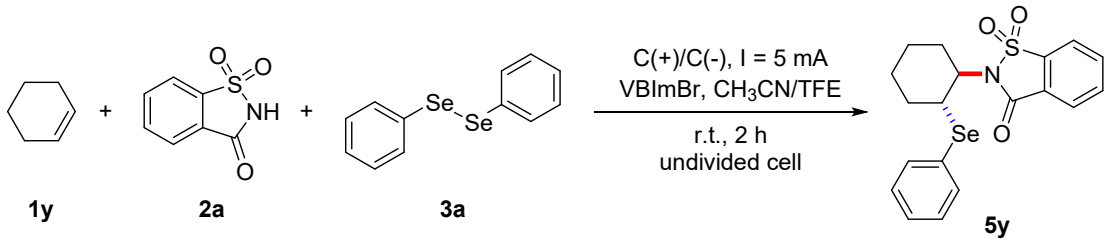
2.4.1 General procedure for aminoselenation of activated alkenes (taking 4a as an example)



1a 2a 3a 4a

Under air, a mixture of styrene **1a** (35 μL, 0.3 mmol), saccharin **2a** (37.0 mg, 0.2 mmol), diphenyl diselenide **3a** (46.8 mg, 0.15 mmol), Et_4NBr (42.0 mg, 0.2 mmol) and CH_3CN (4.0 mL) were added in an oven dried undivided bottle (10 mL). The bottle was equipped with graphite rod as the anode and nickel plate as the cathode. The resulting mixture was stirred and electrolyzed at a constant current mode with a constant current 10 mA at ambient temperature for 2 h. When the reaction was finished, the resulting mixture and all the volatiles were evaporated under reduced pressure. The resultant residue was purified by silica gel column chromatography (eluent: petroleum ether (60-90 °C)/EtOAc = 6:1, v/v) to afford the desired product **4a** as a white solid (81.5 mg, 92% yield).

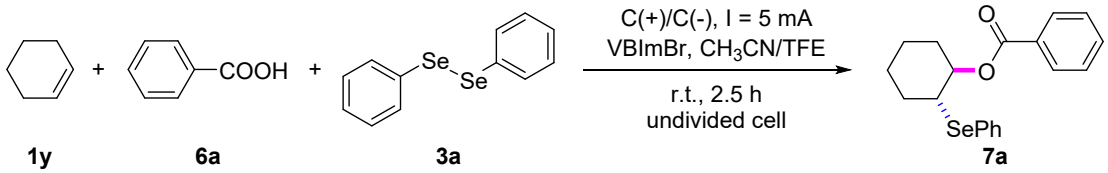
2.4.2 General procedure for aminoselenation of unactivated alkenes (taking 5y as an example)



1y **2a** **3a** **5y**

Under air, a mixture of cyclohexene **1y** (30 μL, 0.3 mmol), saccharin **2a** (37.0 mg, 0.2 mmol), diphenyl diselenide **3a** (46.8 mg, 0.15 mmol), VBImBr (46.2 mg, 0.2 mmol) and CH_3CN/TFE (4 mL, v:v = 1:3) were added in an oven dried undivided bottle (10 mL). The bottle was equipped with graphite rod as the anode and the cathode. The resulting mixture was stirred and electrolyzed at a constant current mode with a constant current 5 mA at ambient temperature for 2 h. When the reaction was finished, the resulting mixture and all the volatiles were evaporated under reduced pressure. The resultant residue was purified by silica gel column chromatography (eluent: petroleum ether (60-90 °C)/EtOAc = 10:1, v/v) to afford the desired product **5y** as a yellow oil (83.8 mg, 99% yield).

2.4.3 General procedure for oxyselenation of unactivated alkenes (taking 7a as an example)



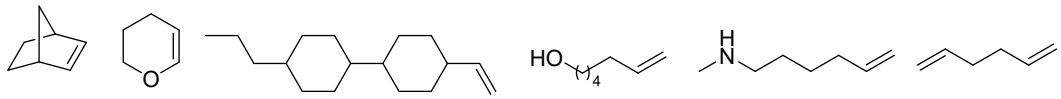
1y **6a** **3a** **7a**

Under air, a mixture of cyclohexene **1y** (20 μL, 0.2 mmol), benzoic acid **6a** (48.9 mg, 0.4 mmol), diphenyl diselenide **3a** (46.8 mg, 0.15 mmol), VBImBr (46.2 mg, 0.2 mmol) and CH_3CN/TFE (4 mL, v:v = 2:2) were added in an oven dried undivided bottle (10 mL). The bottle was equipped with graphite rod as the anode and the cathode. The resulting mixture was stirred and electrolyzed at a constant current mode with a constant current 5 mA at ambient temperature for 2.5 h. When the reaction was finished, the resulting mixture and all the volatiles were evaporated under reduced pressure. The resultant residue was purified by silica gel column chromatography (eluent: petroleum ether (60-90 °C)/EtOAc = 50:1, v/v) to afford the desired product **7a** as a yellow oil (64.7 mg, 90% yield).

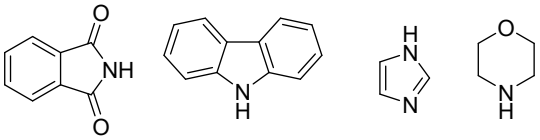
2.5 Unreacted substrates

2.5.1 Unreacted substrates for aminoselenation

Unreacted olefins:

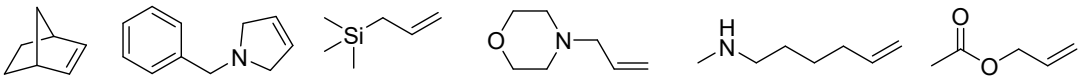


Unreacted nucleophilic reagents:

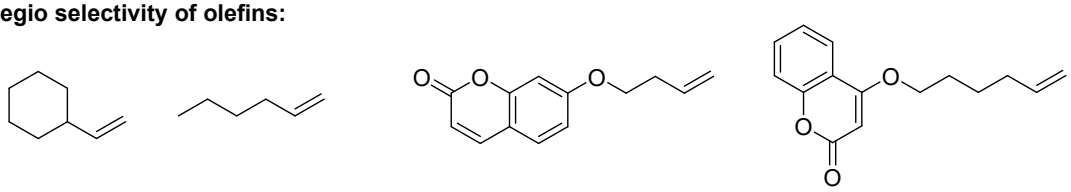


2.5.2 Unreacted substrates for oxyselenation

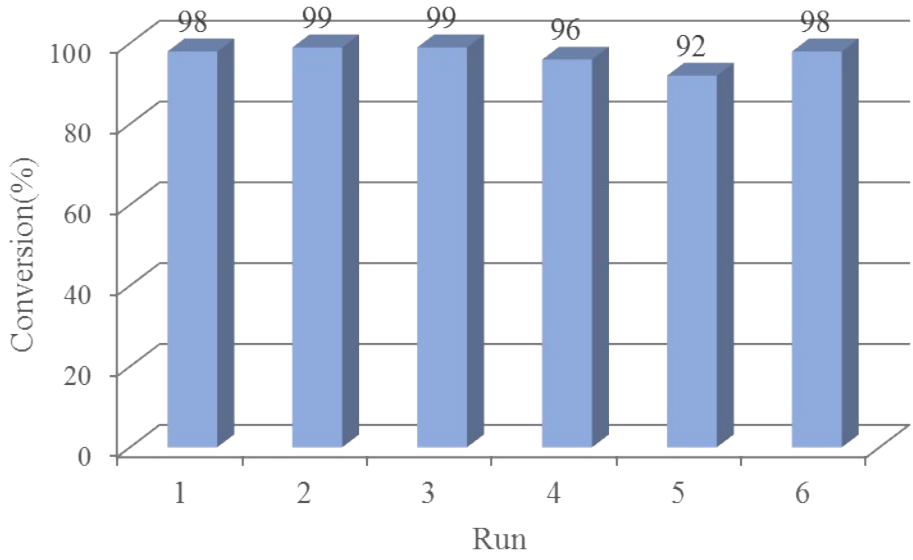
Unreacted olefins:



Regio selectivity of olefins:



2.6 Recycling experiment of VBImBr

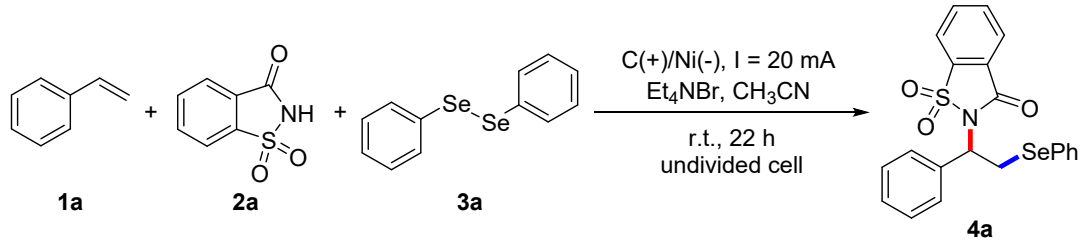


It is significant to note that the ionic liquid VBImBr could be easily recycled.

After the reaction was complete, water and ethyl acetate were added, and then the VBImBr was separated in the water layer and reused after drying in vacuo. The VBImBr was utilized repeatedly six times without any loss of activity.

2.7 Gram-scale synthesis

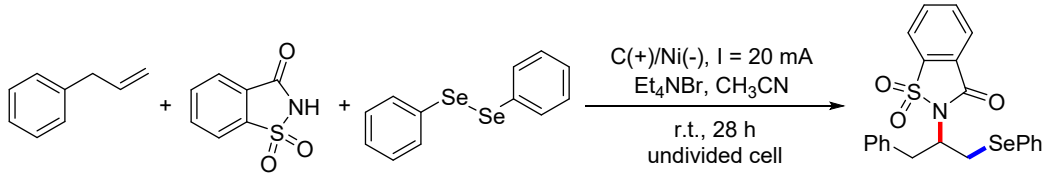
2.7.1 Gram-scale synthesis of 4a at 3 mmol scale



1a **2a** **3a** **4a**
(1.25 g, 94%)

[a] Reaction conditions: **1a** (4.5 mmol), **2a** (3 mmol), **3a** (2.25 mmol), Et_4NBr (3 mmol), CH_3CN (20 mL), C anode (27 mm × 15 mm × 1 mm), Ni cathode (27 mm × 15 mm × 1 mm), 20 mA, 22 h, r.t., undivided cell.

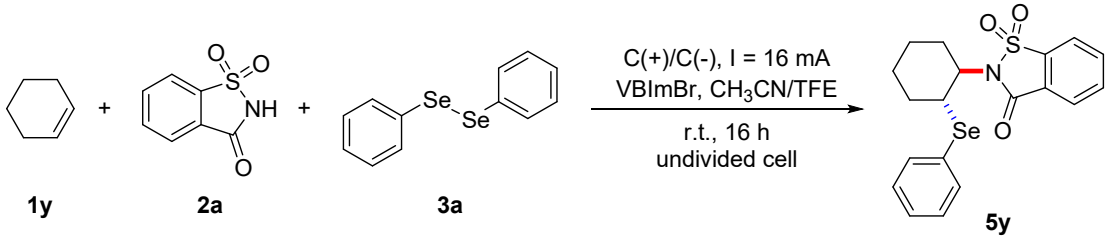
2.7.2 Gram-scale synthesis of 5a at 3 mmol scale



1a **2a** **3a** **5a**
(0.86 g, 63%)

[a] Reaction conditions: **allylbenzene** (4.5 mmol), **2a** (3 mmol), **3a** (2.25 mmol), Et_4NBr (3 mmol), CH_3CN (20 mL), C anode (27 mm × 15 mm × 1 mm), Ni cathode (27 mm × 15 mm × 1 mm), 20 mA, 28 h, r.t., undivided cell.

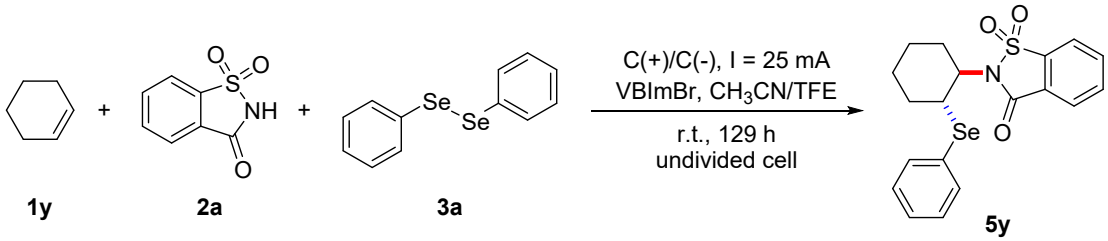
2.7.3 Gram-scale synthesis of 5y at 4 mmol scale



1y **2a** **3a** **5y**
(1.64 g, 98%)

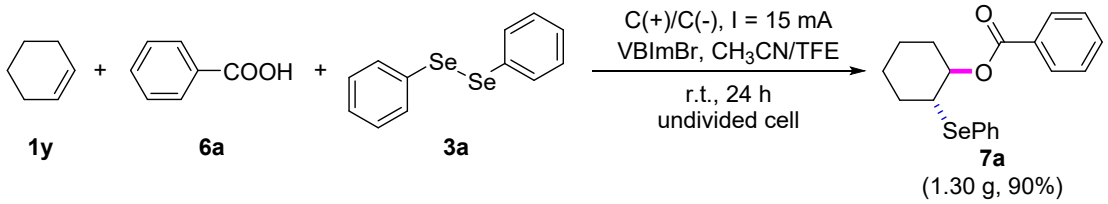
[a] Reaction conditions: **1y** (6 mmol), **2a** (4 mmol), **3a** (3 mmol), VBImBr (4 mmol), CH_3CN/TFE (40 mL, v:v = 1:3), C anode (25 mm × 15 mm × 1 mm), C cathode (25 mm × 15 mm × 1 mm), 16 mA, 16 h, r.t., undivided cell.

2.7.4 Gram-scale synthesis of 5y at 30 mmol scale



[a] Reaction conditions: **1y** (135 mmol), **2a** (30 mmol), **3a** (15 mmol), VBImBr (30 mmol), CH_3CN/TFE (260 mL, v:v = 7:6), C anode (45 mm × 25 mm × 1 mm), C cathode (45 mm × 25 mm × 1 mm), 25 mA, 129 h, r.t., undivided cell.

2.7.5 Gram-scale synthesis of 7a at 4 mmol scale

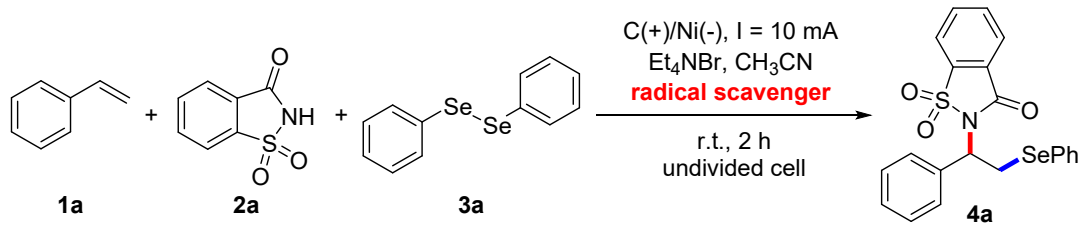


[a] Reaction conditions: **1y** (4 mmol), **6a** (8 mmol), **3a** (3 mmol), VBImBr (4 mmol), CH_3CN/TFE (40 mL, v:v =1:1), C anode (25 mm × 15 mm × 1 mm), C cathode (25 mm × 15 mm × 1 mm), 15 mA, 24 h, r.t., undivided cell.

3. Mechanistic studies

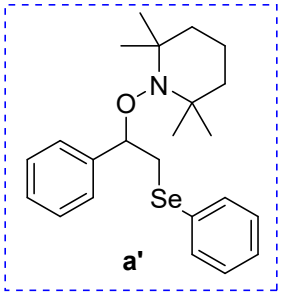
3.1 Radical trapping experiments

3.1.1 Table S16 of radical trapping experiments of aminoselenation of styrene[a]

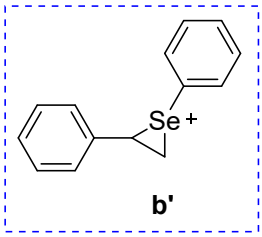


Entry	Radical scavenger (mmol)	Yield of 4a (%)[b]
1	none	92
2	BHT (0.4)	98
3	activated carbon (0.8)	92
4	TEMPO (0.4)	79

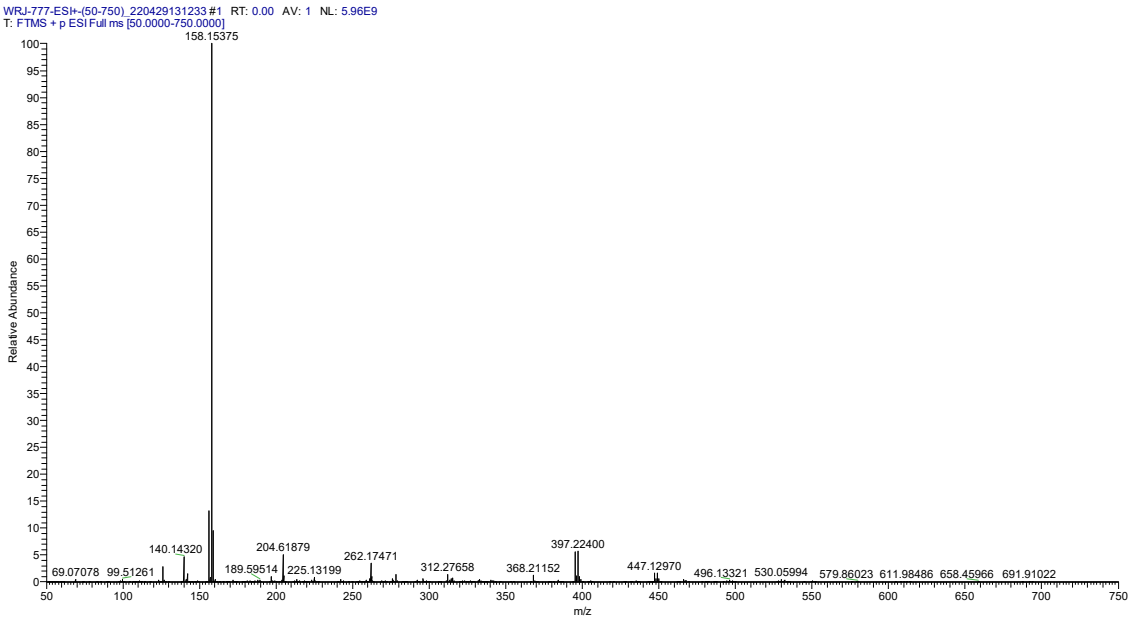
[a] Reaction conditions: **1a** (0.3 mmol), **2a** (0.2 mmol), **3a** (0.15 mmol), Et_4NBr (0.2 mmol), radical scavenger, CH_3CN (4.0 mL), C anode (immersed surface area 8 × 5 mm^2), Ni cathode (immersed surface area 8 × 5 mm^2), 10 mA, 2 h, r.t., undivided cell. [b] Isolated yields.

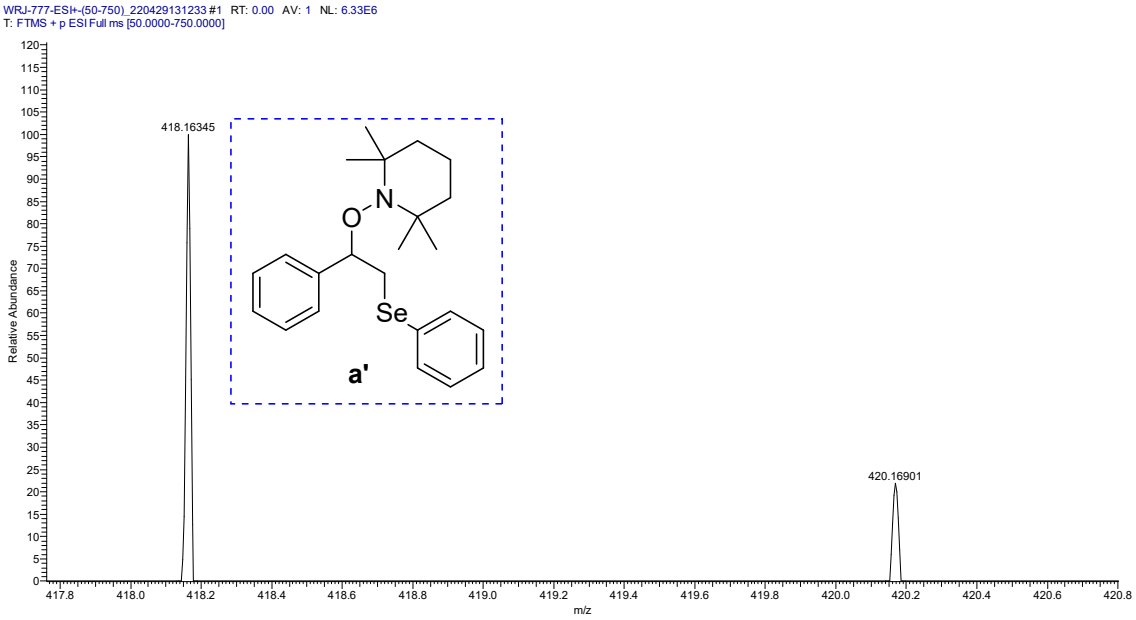


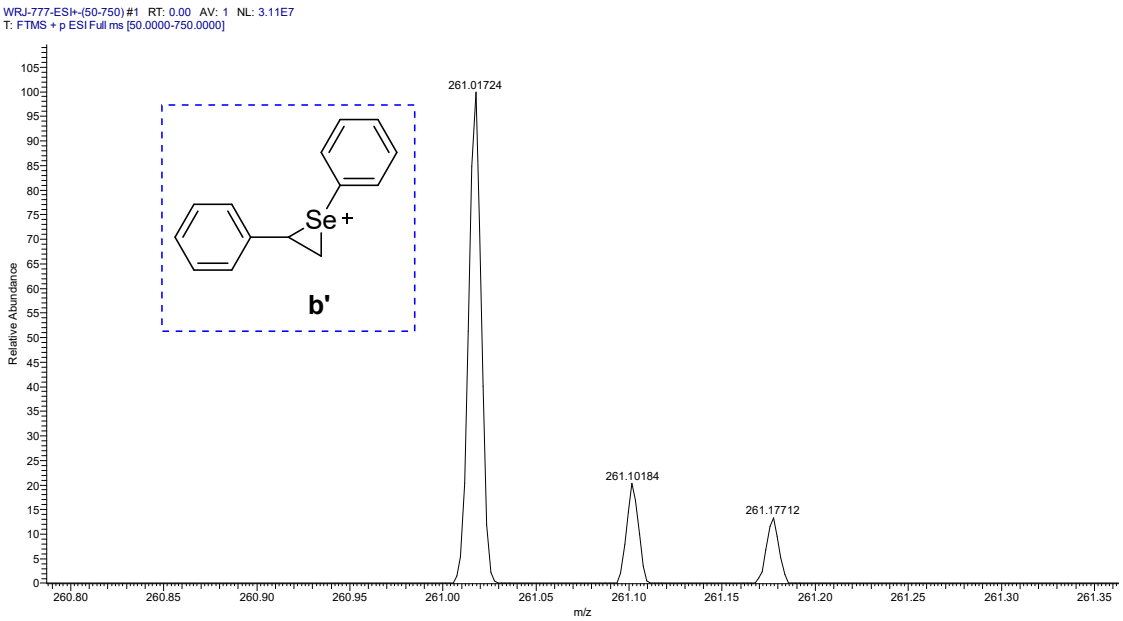
Detected by HRMS of **a'** calcd for $C_{23}H_{32}NOSe^+$ $[M+H]^+$: 418.1644; Found: 418.1635.



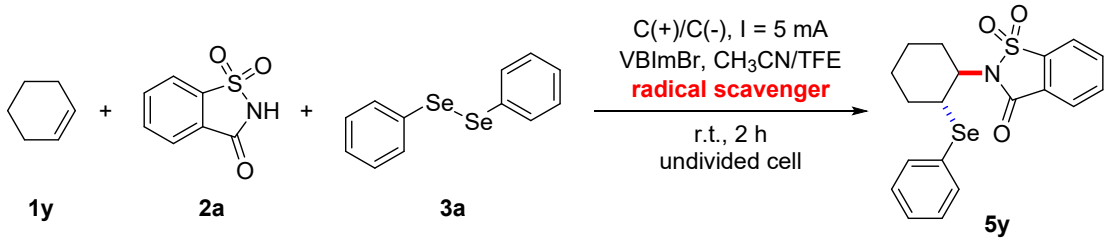
Detected by HRMS of **b'** calcd for $C_{14}H_{13}Se^+$ $[M]^+$: 261.0177; Found: 261.0172.





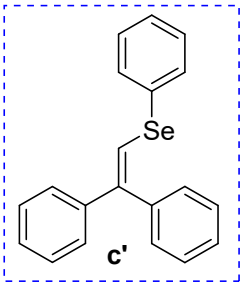


3.1.2 Table S17 of radical trapping experiments of aminoselenation of cyclohexene[a]

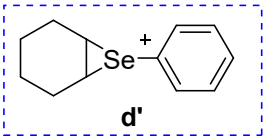


Entry	Radical scavenger (mmol)	Yield of 5y (%)[b]
1	none	99
2	BHT (0.4)	91
3	activated carbon (0.8)	83
5	1,1-diphenythylene (0.4)	87
7	TEMPO (0.4)	20
8	TEMPO (0.8)	trace

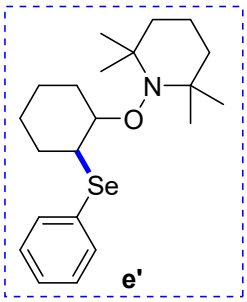
[a] Reaction conditions: **1y** (0.3 mmol), **2a** (0.2 mmol), **3a** (0.15 mmol), VBImBr (0.2 mmol), radical scavenger, CH_3CN/TFE (4 mL, v:v = 1:3), C anode (immersed surface area 8 × 5 mm^2), C cathode (immersed surface area 8 × 5 mm^2), 5 mA, 2 h, r.t., undivided cell. [b] Isolated yields.



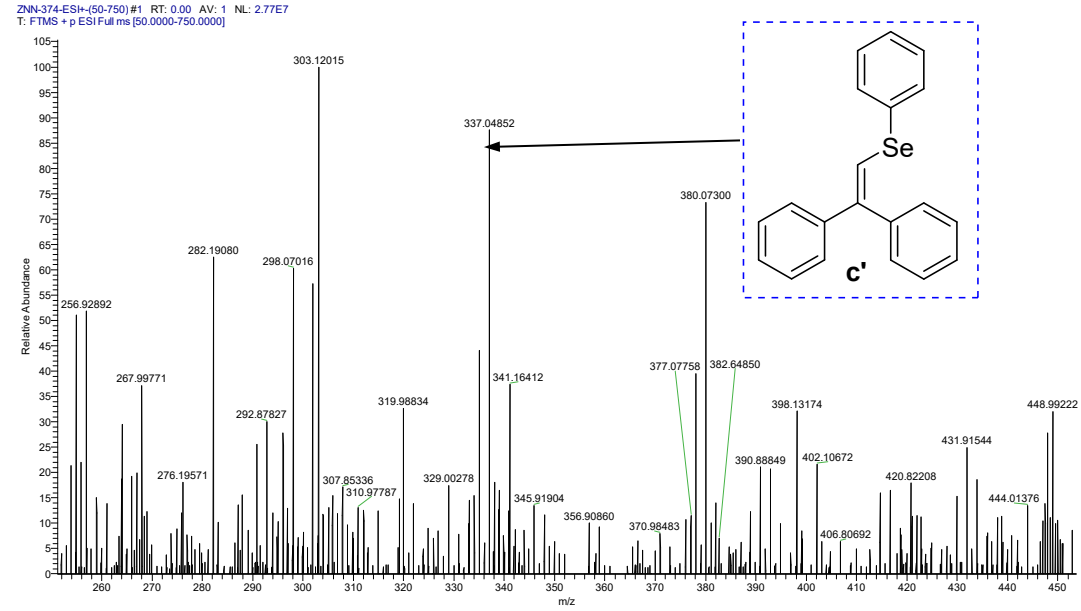
Detected by HRMS of **c'** calcd for $C_{20}H_{17}Se$ $[M+H]^+$: 337.0490; Found: 337.0485.

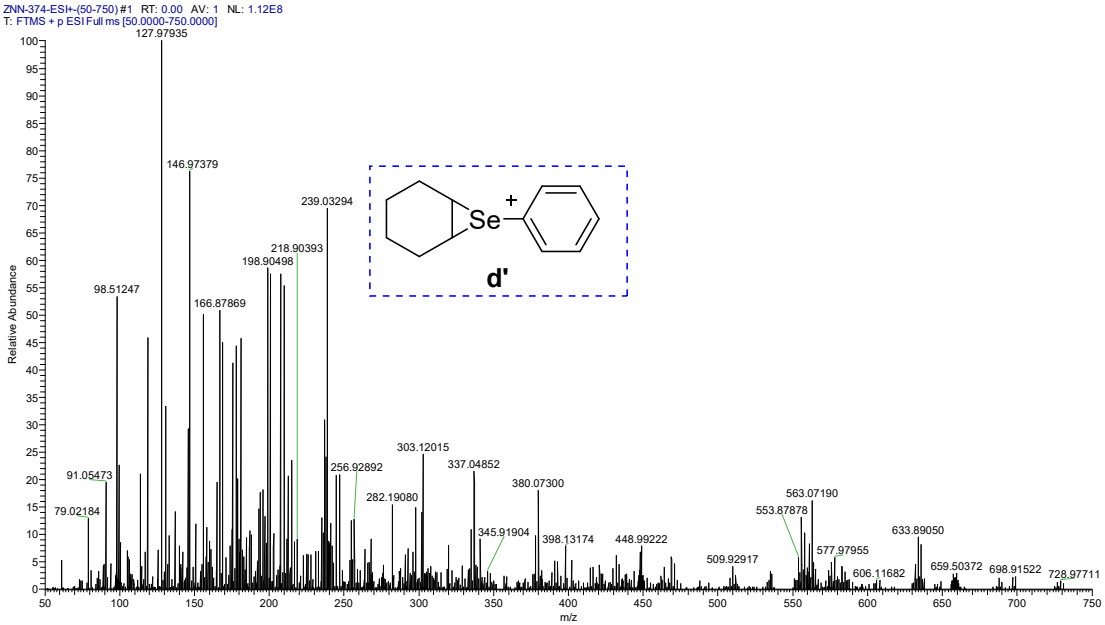


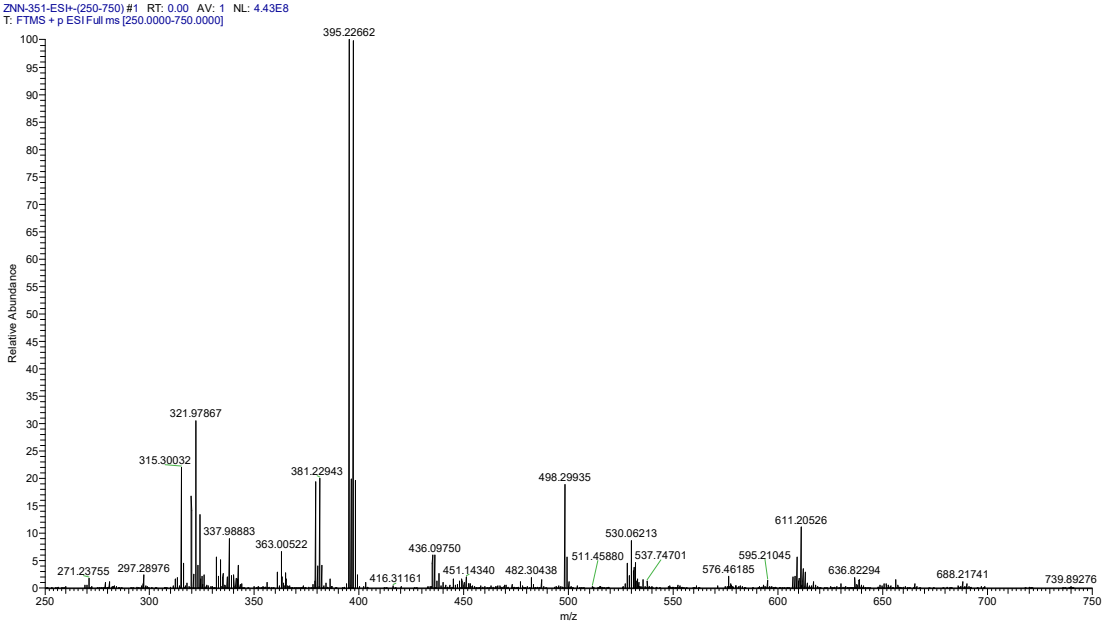
Detected by HRMS of **d'** calcd for $C_{12}H_{15}Se^+$ $[M]^+$: 239.0334; Found: 239.0329.

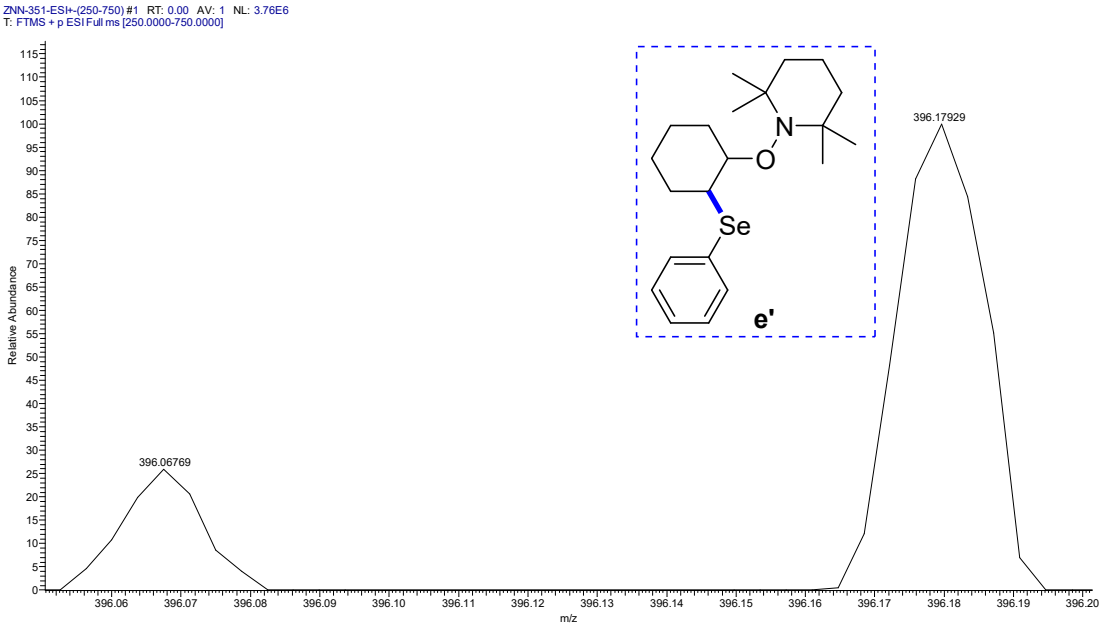


Detected by HRMS of **e'** calcd for $C_{21}H_{33}NOSe$ $[M+H]^+$: 396.1800; Found: 396.1793.

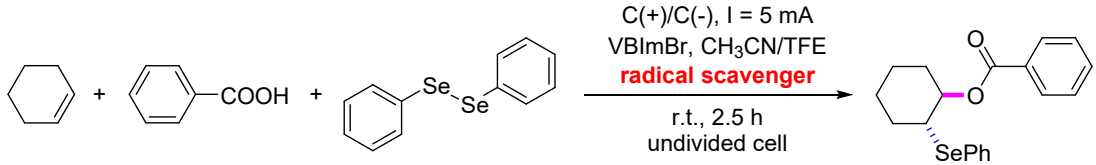








3.1.3 Table S18 of radical trapping experiments of oxyselenation of cyclohexene[a]



1y **6a** **3a** **7a**

Entry	Radical scavenger (mmol)	Yield of 7a (%)[b]
1	none	90
2	BHT (0.4)	92
3	activated carbon (0.8)	75
4	1,1-diphenythylene (0.4)	84
5	TEMPO (0.4)	trace

[a] Reaction conditions: **1y** (0.2 mmol), **6a** (0.4 mmol), **7a** (0.15 mmol), VBImBr (0.2 mmol), radical scavenger, CH_3CN/TFE (4 mL, v:v = 2:2), C anode (immersed surface area 8 × 5 mm^2), C cathode (immersed surface area 8 × 5 mm^2), 5 mA, 2.5 h, r.t., undivided cell. [b] Isolated yields.

3.2 Cyclic voltammetry experiments

3.2.1 Cyclic voltammetry experiments for aminoselenation of styrene

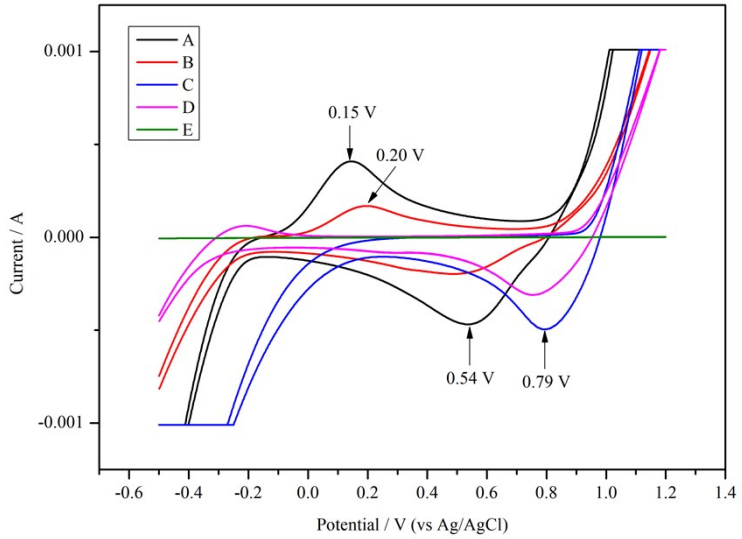


Figure S1 Cyclic voltammograms using Pt disk as work electrode, a glassy carbon disk and Ag/AgCl as counter and reference electrode, respectively, at 100 mV/s scan rate: **A: 3a** (0.15 mmol), Et_4NBr (0.2 mmol), CH_3CN (4.0 mL); **B: 1a** (0.3 mmol), **3a** (0.15 mmol), Et_4NBr (0.2 mmol), CH_3CN (4.0 mL); **C: 2a** (0.2 mmol), Et_4NBr (0.2 mmol), CH_3CN (4.0 mL); **D:** Et_4NBr (0.2 mmol), CH_3CN (4.0 mL). **E:** CH_3CN (4.0 mL).

3.2.2 Cyclic voltammetry experiments for aminoselenation of cyclohexene

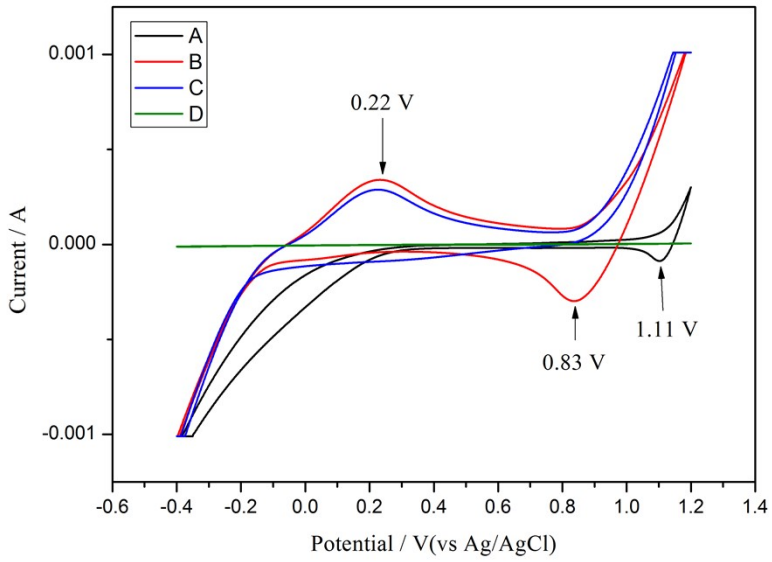


Figure S2 Cyclic voltammograms using Pt disk as work electrode, a glassy carbon disk and Ag/AgCl as counter and reference electrode, respectively, at 100 mV/s scan rate: **A**: **2a** (0.2 mmol), VBImBr (0.2 mmol), CH_3CN/TFE (4 mL, v:v = 1:3). **B**: **3a** (0.15 mmol), VBImBr (0.2 mmol), CH_3CN/TFE (4 mL, v:v = 1:3). **C**: **1y** (0.3 mmol), **3a** (0.15 mmol), VBImBr (0.2 mmol), CH_3CN/TFE (4 mL, v:v = 1:3). **D**: CH_3CN/TFE (4 mL, v:v = 1:3).

3.2.3 Cyclic voltammetry experiments for oxyselenation of cyclohexene

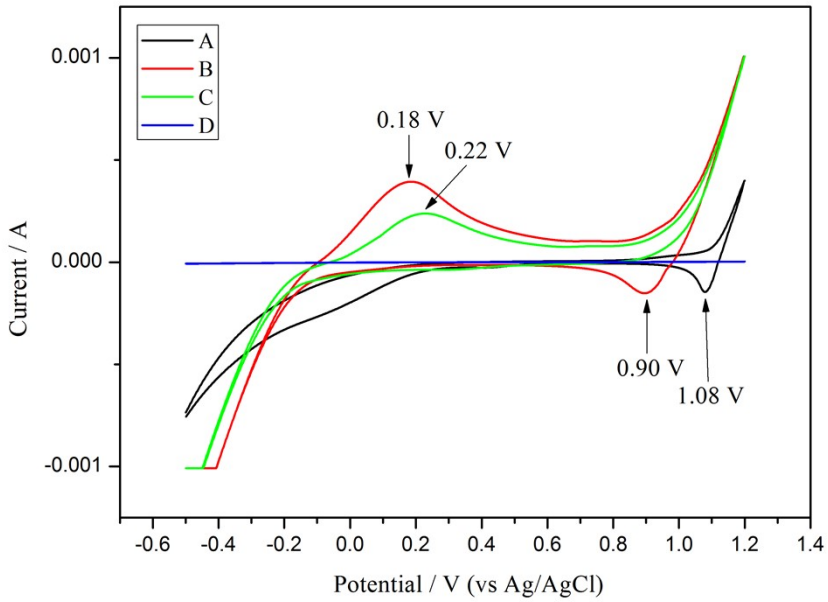
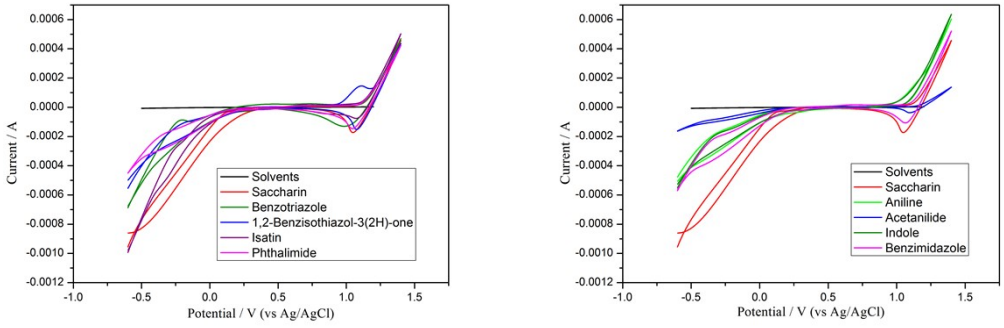


Figure S3 Cyclic voltammograms using Pt disk as work electrode, a glassy carbon disk and Ag/AgCl as counter and reference electrode, respectively, at 100 mV/s scan rate: **A**: **6a** (0.4 mmol), VBImBr (0.2 mmol), CH_3CN/TFE (4 mL, v:v = 2:2). **B**: **3a** (0.15 mmol), VBImBr (0.2 mmol), CH_3CN/TFE (4 mL, v:v = 2:2). **C**: **1y** (0.2 mmol), **3a** (0.15 mmol), VBImBr (0.2 mmol), CH_3CN/TFE (4 mL, v:v = 2:2). **D**: CH_3CN/TFE (4 mL, v:v = 2:2).

3.2.4 Cyclic voltammetrys for various *N*-centered nucleophiles



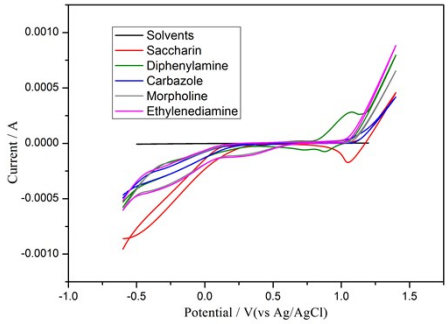


Figure S4 Cyclic voltammograms using Pt disk as work electrode, a glassy carbon disk and Ag/AgCl as counter and reference electrode, respectively, at 100 mV/s scan rate.

3.3 H_2 detection experiments

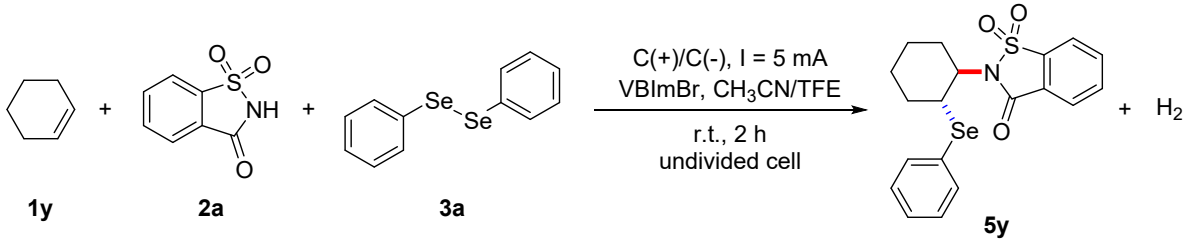


Figure S5 H_2 detection experiment by a H_2 detector at different reaction time

In order to demonstrate the release of H_2 during electrochemical aminoselenation of cyclohexene, the model reaction of cyclohexene (**1y**), saccharin (**2a**) and diphenyl diselenide (**3a**) was monitored by a H_2 detector under standard conditions. Just as shown in Figure S5, as the reaction proceeded, the H_2 was observed clearly and the concentration increased gradually.

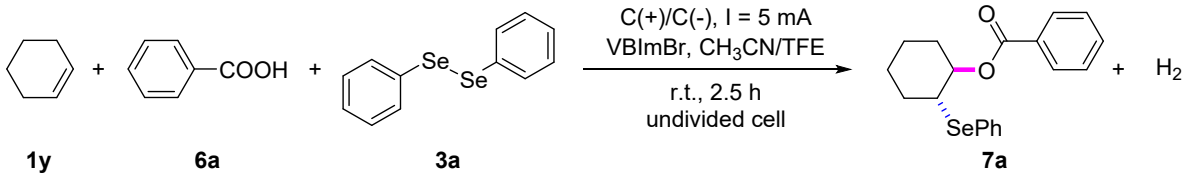
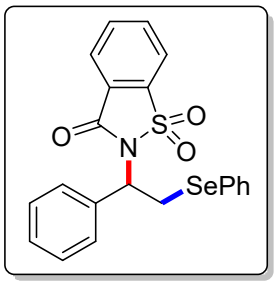


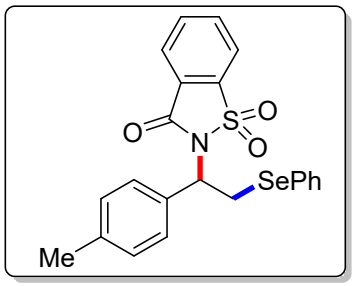
Figure S6 H_2 detection experiment by a H_2 detector at different reaction time

In order to demonstrate the release of H_2 during electrochemical oxyselenation of cyclohexene, the model reaction of cyclohexene (**1y**), benzoic acid (**6a**) and diphenyl diselenide (**3a**) was monitored by a H_2 detector under standard conditions. Just as shown in Figure S6, as the reaction proceeded, the H_2 was observed clearly and the concentration increased gradually.

4. Analytical data

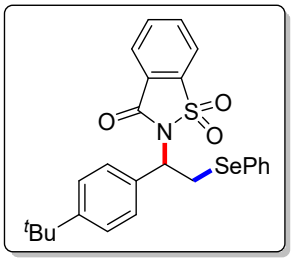


2-(1-phenyl-2-(phenylselanyl)ethyl)benzo[*d*]isothiazol-3(2*H*)-one 1,1-dioxide (4a): Known compound[3]. (Eluent: petroleum ether (60-90 °C)/EtOAc = 6:1, v/v). 81.8 mg, 92% yield. White solid. m.p.: 95.8-97.3 °C. **^{1}H NMR** ($CDCl_3$, 400 MHz) δ 7.98 (d, *J* = 7.3 Hz, 1H), 7.88-7.76 (m, 3H), 7.60-7.56 (m, 4H), 7.38-7.33 (m, 3H), 7.27-7.26 (m, 3H), 5.42 (t, *J* = 8.1 Hz, 1H), 4.11 (dd, *J* = 12.9, 8.4 Hz, 1H), 3.84 (dd, *J* = 12.9, 7.7 Hz, 1H); **^{13}C NMR** ($CDCl_3$, 100 MHz) δ 158.8, 137.4, 136.7, 134.8, 134.4, 133.8, 129.3, 129.1, 128.9, 128.7, 128.6, 127.7, 127.2, 125.2, 120.8, 57.9, 29.1.

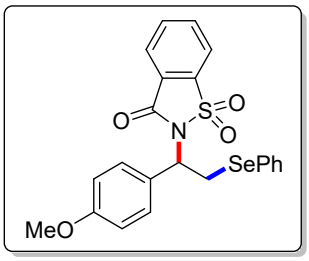


2-(2-(phenylselanyl)-1-(*p*-tolyl)ethyl)benzo[*d*]isothiazol-3(2*H*)-one 1,1-dioxide (4b): Known compound[3]. (Eluent: petroleum ether (60-90 °C)/EtOAc = 6:1,

v/v). 73.5 mg, 76% yield. Colorless oil. **^{1}H NMR** ($CDCl_3$, 400 MHz) δ 7.97-7.95 (m, 1H), 7.85-7.74 (m, 3H), 7.57-7.55 (m, 2H), 7.47 (d, *J* = 8.1 Hz, 2H), 7.26-7.24 (m, 3H), 7.16 (d, *J* = 8.1 Hz, 2H), 5.38 (t, *J* = 8.1 Hz, 1H), 4.06 (dd, *J* = 12.8, 8.3 Hz, 1H), 3.83 (dd, *J* = 12.8, 7.9 Hz, 1H), 2.33 (s, 3H); **^{13}C NMR** ($CDCl_3$, 100 MHz) δ 158.8, 138.8, 137.5, 134.8, 134.3, 133.8, 133.6, 129.4, 129.3, 129.2, 128.6, 127.7, 127.2, 125.2, 120.8, 57.6, 29.1, 21.3.

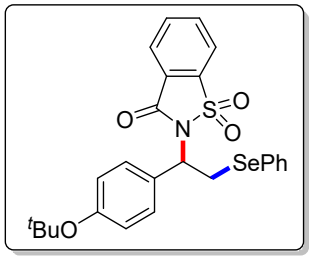


2-(1-(4-(*tert*-butyl)phenyl)-2-(phenylselanyl)ethyl)benzo[*d*]isothiazol-3(2*H*)-one 1,1-dioxide (4c): Known compound[3]. (Eluent: petroleum ether (60-90 °C)/EtOAc = 6:1, v/v). 88 mg, 88% yield. Colorless oil. **^{1}H NMR** ($CDCl_3$, 400 MHz) δ 7.97-7.94 (m, 1H), 7.86-7.72 (m, 3H), 7.59-7.56 (m, 2H), 7.54-7.52 (m, 2H), 7.41-7.36 (m, 2H), 7.27-7.24 (m, 3H), 5.41 (t, *J* = 7.5 Hz, 1H), 4.14 (dd, *J* = 13.0, 8.8 Hz, 1H), 3.83 (dd, *J* = 12.9, 7.4 Hz, 1H), 1.31 (s, 9H); **^{13}C NMR** ($CDCl_3$, 100 MHz) δ 158.8, 151.7, 137.4, 134.8, 134.3, 133.9, 133.8, 129.2, 129.2, 128.3, 127.7, 127.3, 125.6, 125.2, 120.9, 57.8, 34.7, 31.4, 29.3.

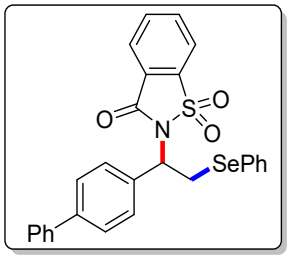


2-(1-(4-methoxyphenyl)-2-(phenylselanyl)ethyl)benzo[*d*]isothiazol-3(2*H*)-one 1,1-dioxide (4d): Known compound[3]. (Eluent: petroleum ether (60-90 °C)/EtOAc = 6:1, v/v). 62.1 mg, 66% yield. Colorless oil. **^{1}H NMR** ($CDCl_3$, 400 MHz) δ 7.95 (d, *J* = 7.5 Hz, 1H), 7.84-7.73 (m, 3H), 7.56-7.49 (m, 4H), 7.25-7.23 (m, 3H), 6.86 (d, *J* = 8.7 Hz, 2H), 5.36 (t, *J* = 8.1 Hz, 1H), 4.03 (dd, *J* = 12.8, 8.1 Hz, 1H), 3.82 (dd, *J* = 12.8, 8.1 Hz, 1H), 3.78 (s, 3H); **^{13}C NMR** ($CDCl_3$, 100 MHz) δ 159.9, 158.8, 137.5,

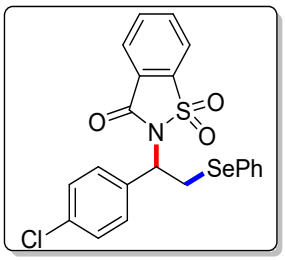
134.8, 134.4, 133.8, 130.1, 129.3, 129.2, 128.6, 127.7, 127.3, 125.2, 120.8, 114.0, 57.5, 55.4, 29.3.



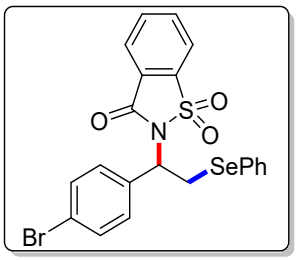
2-(1-(4-(*tert*-butoxy)phenyl)-2-(phenylselanyl)ethyl)benzo[*d*]isothiazol-3(2*H*)-one 1,1-dioxide (4e): New compound. (Eluent: petroleum ether (60-90 °C)/EtOAc = 6:1, v/v). 85.3 mg, 83% yield. White solid. m.p.: 136.6-138.6 °C. **^{1}H NMR** ($CDCl_3$, 400 MHz) δ 7.98-7.96 (m, 1H), 7.87-7.76 (m, 3H), 7.56-7.54 (m, 2H), 7.46-7.46 (m, 2H), 7.26-7.23 (m, 3H), 6.95-6.92 (m, 2H), 5.36 (t, *J* = 8.0 Hz, 1H), 4.08 (dd, *J* = 12.8, 8.7 Hz, 1H), 3.77 (dd, *J* = 12.8, 7.5 Hz, 1H), 1.33 (s, 9H); **^{13}C NMR** ($CDCl_3$, 100 MHz) δ 158.8, 156.0, 137.5, 134.8, 134.4, 133.9, 131.3, 129.4, 129.3, 129.2, 127.7, 127.3, 125.3, 123.8, 120.9, 78.8, 57.6, 29.4, 29.0. **HRMS** (ESI-Orbitrap) m/z calcd for $C_{25}H_{25}NO_4SSeNa$ $[M+Na]^+$: 538.0562; found: 538.0562.



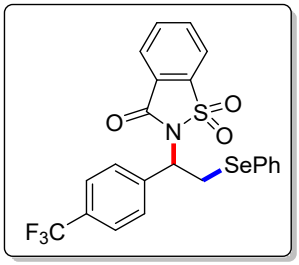
2-(1-([1,1'-biphenyl]-4-yl)-2-(phenylselanyl)ethyl)benzo[*d*]isothiazol-3(2*H*)-one 1,1-dioxide (4f): Known compound[3]. (Eluent: petroleum ether (60-90 °C)/EtOAc = 6:1, v/v). 96.1 mg, 93% yield. White solid. m.p.: 126.2-128.1 °C. **^{1}H NMR** ($CDCl_3$, 400 MHz) δ 7.99-7.97 (m, 1H), 7.88-7.75 (m, 3H), 7.67-7.65 (m, 2H), 7.60-7.57 (m, 6H), 7.45-7.41 (m, 2H), 7.37-7.33 (m, 1H), 7.27-7.26 (m, 3H), 5.45 (t, *J* = 8.1 Hz, 1H), 4.13 (dd, *J* = 12.9, 8.3 Hz, 1H), 3.89 (dd, *J* = 12.9, 7.9 Hz, 1H); **^{13}C NMR** ($CDCl_3$, 100 MHz) δ 158.9, 141.7, 140.6, 137.5, 135.7, 134.9, 134.4, 133.9, 129.3, 129.1, 129.1, 128.9, 127.8, 127.6, 127.4, 127.2, 125.3, 120.9, 57.7, 29.1.



2-(1-(4-chlorophenyl)-2-(phenylselanyl)ethyl)benzo[*d*]isothiazol-3(2*H*)-one 1,1-dioxide (4g): Known compound[3]. (Eluent: petroleum ether (60-90 °C)/EtOAc = 6:1, v/v). 82.7 mg, 87% yield. Colorless oil. **^{1}H NMR** ($CDCl_3$, 400 MHz) δ 7.97-7.95 (m, 1H), 7.87-7.75 (m, 3H), 7.55-7.49 (m, 4H), 7.32-7.24 (m, 5H), 5.35 (t, *J* = 8.1 Hz, 1H), 4.03 (dd, *J* = 12.9, 7.9 Hz, 1H), 3.81 (dd, *J* = 12.9, 8.2 Hz, 1H); **^{13}C NMR** ($CDCl_3$, 100 MHz) δ 158.8, 137.4, 135.1, 135.0, 134.8, 134.5, 133.9, 130.2, 129.4, 128.8, 128.8, 127.9, 127.1, 125.3, 120.9, 57.2, 28.8.

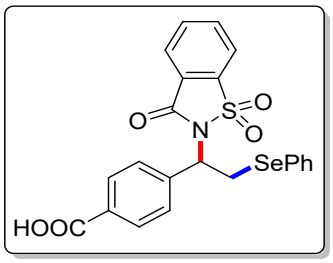


2-(1-(4-bromophenyl)-2-(phenylselanyl)ethyl)benzo[*d*]isothiazol-3(2*H*)-one 1,1-dioxide (4h): Known compound[3]. (Eluent: petroleum ether (60-90 °C)/EtOAc = 6:1, v/v). 84.5 mg, 81% yield. White solid. m.p.: 99.3-105.5 °C. **^{1}H NMR** ($CDCl_3$, 400 MHz) δ 7.98-7.96 (m, 1H), 7.87-7.76 (m, 3H), 7.57-7.54 (m, 2H), 7.35-7.24 (m, 6H), 7.03-6.98 (m, 1H), 5.35 (t, *J* = 8.1 Hz, 1H), 4.05 (dd, *J* = 13.0, 8.2 Hz, 1H), 3.79 (dd, *J* = 13.0, 7.9 Hz, 1H); **^{13}C NMR** ($CDCl_3$, 100 MHz) δ 158.7, 137.3, 135.6, 134.9, 134.4, 133.9, 131.8, 130.5, 129.3, 128.7, 127.8, 127.0, 125.3, 123.0, 120.9, 57.2, 28.7.

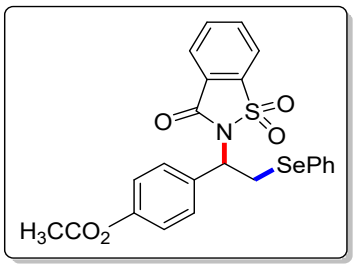


2-(2-(phenylselanyl)-1-(4-(trifluoromethyl)phenyl)ethyl)benzo[*d*]isothiazol-3(2*H*)-one 1,1-dioxide (4i): Known compound[3]. (Eluent: petroleum ether (60-90

°C)/EtOAc = 6:1, v/v). 54.2 mg, 53% yield. Colorless oil. **^{1}H NMR** ($CDCl_3$, 400 MHz) δ 7.98 (d, *J* = 7.4 Hz, 1H), 7.89-7.77 (m, 3H), 7.68 (d, *J* = 8.2 Hz, 2H), 7.58 (d, *J* = 8.4 Hz, 2H), 7.54-7.51 (m, 2H), 7.29-7.22 (m, 3H), 5.40 (t, *J* = 8.1 Hz, 1H), 4.05 (dd, *J* = 13.0, 7.8 Hz, 1H), 3.84 (dd, *J* = 13.0, 8.3 Hz, 1H); **^{13}C NMR** ($CDCl_3$, 100 MHz) δ 158.8, 140.6, 137.4, 135.1, 134.5, 134.0, 130.9 (q, J_{CF} = 32.4 Hz), 129.4, 129.2, 128.6, 128.0, 127.0, 125.6 (q, J_{CF} = 3.7 Hz), 125.4, 124.0 (q, J_{CF} = 270.7 Hz), 121.0, 57.4, 28.6; **^{19}F NMR** ($CDCl_3$, 376 MHz) δ -62.7.

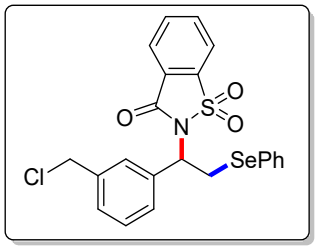


4-(1-(1,1-dioxido-3-oxobenzo[*d*]isothiazol-2(3*H*)-yl)-2-(phenylselanyl)ethyl)benzoic acid (4j): Known compound[3]. (Eluent: dichloromethane/methyl alcohol = 20:1, v/v). 59.4 mg, 61% yield. White solid. m.p.: 200.3-201.0 °C. **^{1}H NMR** (DMSO-d_6, 400 MHz) δ 13.00 (s, 1H), 8.27 (d, *J* = 7.6 Hz, 1H), 8.07-7.92 (m, 5H), 7.66 (d, *J* = 8.4 Hz, 2H), 7.52-7.49 (m, 2H), 7.26-7.24 (m, 3H), 5.46 (t, *J* = 8.0 Hz, 1H), 4.06 (dd, *J* = 12.8, 9.0 Hz, 1H), 3.92 (dd, *J* = 12.8, 7.2 Hz, 1H); **^{13}C NMR** (DMSO-d_6, 100 MHz) δ 167.0, 158.5, 141.7, 136.4, 136.1, 135.4, 132.3, 130.8, 129.5, 129.3, 128.9, 128.3, 127.2, 125.9, 125.3, 121.5, 56.0, 27.9.

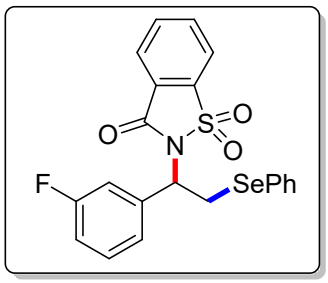


4-(1-(1,1-dioxido-3-oxobenzo[*d*]isothiazol-2(3*H*)-yl)-2-(phenylselanyl)ethyl)phenyl acetate (4k): Known compound[3]. (Eluent: petroleum ether (60-90 °C)/EtOAc = 4:1, v/v). 81.9 mg, 82% yield. Colorless oil. **^{1}H NMR** ($CDCl_3$, 400 MHz) δ 7.95-7.93 (m, 1H), 7.85-7.73 (m, 3H), 7.61-7.54 (m, 4H), 7.27-7.23 (m, 3H), 7.09-7.05 (m, 2H), 5.36 (t, *J* = 8.0 Hz, 1H), 4.10 (dd, *J* = 13.0, 8.6 Hz,

1H), 3.78 (dd, J = 13.0, 7.6 Hz, 1H), 2.27 (s, 3H); **^{13}C NMR** ($CDCl_3$, 100 MHz) δ 169.3, 158.8, 150.9, 137.4, 134.9, 134.4, 134.4, 134.0, 130.0, 129.3, 128.9, 127.8, 127.2, 125.3, 121.8, 120.9, 57.4, 29.1, 21.3.

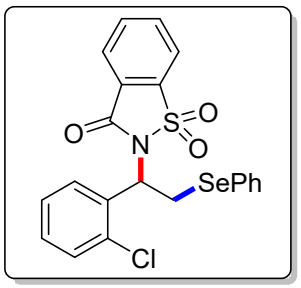


2-(1-(3-(chloromethyl)phenyl)-2-(phenylselanyl)ethyl)benzo[*d*]isothiazol-3(2*H*)-one 1,1-dioxide (4l): New compound. (Eluent: petroleum ether (60-90 °C)/EtOAc = 6:1, v/v). 74.1 mg, 75% yield. Colorless oil. **^{1}H NMR** ($CDCl_3$, 400 MHz) δ 7.97-7.95 (m, 1H), 7.87-7.75 (m, 3H), 7.57-7.53 (m, 4H), 7.37-7.35 (m, 2H), 7.27-7.24 (m, 3H), 5.38 (t, J = 8.1 Hz, 1H), 4.56 (s, 2H), 4.06 (dd, J = 12.9, 8.24 Hz, 1H), 3.81 (dd, J = 12.9, 7.9 Hz, 1H); **^{13}C NMR** ($CDCl_3$, 100 MHz) δ 158.8, 138.0, 137.4, 136.9, 134.9, 134.4, 133.9, 129.4, 129.3, 129.2, 129.1, 128.9, 128.9, 127.8, 127.1, 125.3, 120.9, 57.5, 45.8, 29.0; **HRMS** (ESI-Orbitrap) m/z calcd for $C_{22}H_{18}ClNO_3SSeNa$ $[M+Na]^+$: 513.9753; found: 513.9750.

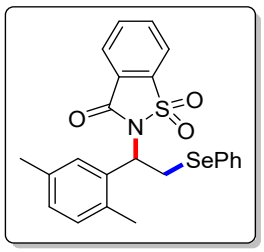


2-(1-(3-fluorophenyl)-2-(phenylselanyl)ethyl)benzo[*d*]isothiazol-3(2*H*)-one 1,1-dioxide (4m): New compound. (Eluent: petroleum ether (60-90 °C)/EtOAc = 6:1, v/v). 70.6 mg, 77% yield. White solid. m.p.: 112-113 °C. **^{1}H NMR** ($CDCl_3$, 400 MHz) δ 7.97-7.95 (m, 1H), 7.87-7.75 (m, 3H), 7.55-7.52 (m, 2H), 7.45 (s, 4H), 7.26-7.22 (m, 2H), 5.33 (t, J = 8.1 Hz, 1H), 4.02 (dd, J = 12.9, 7.9 Hz, 1H), 3.81 (dd, J = 12.9, 8.3 Hz, 1H); **^{13}C NMR** ($CDCl_3$, 100 MHz) δ 164.0, 160.2 (d, J_{CF} = 271.0 Hz), 139.2 (d, J_{CF} = 7.2 Hz), 137.4, 135.0, 134.5, 134.0, 130.2 (d, J_{CF} = 8.1 Hz), 129.4, 128.8, 127.9, 127.1, 125.4, 124.4 (d, J_{CF} = 2.9 Hz), 120.9, 116.0 (d, J_{CF} = 8.0 Hz), 115.8 (d, J_{CF} =

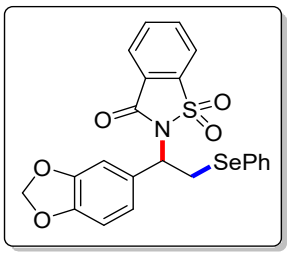
9.0 Hz), 57.3, 28.9; **^{19}F NMR** ($CDCl_3$, 376 MHz) δ -112.0; **HRMS** (ESI-Orbitrap) m/z calcd for $C_{21}H_{17}FNO_3SSe$ $[M+H]^+$: 462.0073; found: 462.0077.



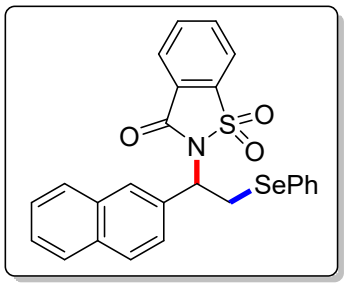
2-(1-(2-chlorophenyl)-2-(phenylselanyl)ethyl)benzo[*d*]isothiazol-3(2*H*)-one 1,1-dioxide (4n): Known compound[3]. (Eluent: petroleum ether (60-90 °C)/EtOAc = 6:1, v/v). 70.3 mg, 74% yield. White solid. m.p.: 167.6-170.5 °C. **^{1}H NMR** ($CDCl_3$, 400 MHz) δ 8.06-8.03 (m, 1H), 7.83-7.75 (m, 4H), 7.62-7.60 (m, 2H), 7.40-7.38 (m, 1H), 7.32-7.25 (m, 5H), 6.01 (t, *J* = 8.1 Hz, 1H), 4.01 (dd, *J* = 13.0, 8.4 Hz, 1H), 3.75 (dd, *J* = 13.0, 7.8 Hz, 1H); **^{13}C NMR** ($CDCl_3$, 100 MHz) δ 159.1, 137.7, 135.0, 134.4, 134.4, 134.2, 133.9, 130.2, 130.0, 129.4, 129.3, 128.9, 127.9, 127.3, 127.0, 125.4, 120.8, 54.2, 29.2.



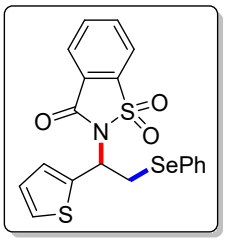
2-(1-(2,5-dimethylphenyl)-2-(phenylselanyl)ethyl)benzo[*d*]isothiazol-3(2*H*)-one 1,1-dioxide (4o): New compound. (Eluent: petroleum ether (60-90 °C)/EtOAc = 6:1, v/v). 61.4 mg, 65 % yield. Colorless oil. **^{1}H NMR** ($CDCl_3$, 400 MHz) δ 8.05-8.02 (m, 1H), 7.83-7.77 (m, 3H), 7.57-7.55 (m, 2H), 7.52 (s, 1H), 7.27-7.23 (m, 3H), 7.04 (s, 2H), 5.71 (t, *J* = 8.0 Hz, 1H), 4.04 (dd, *J* = 12.9, 8.2 Hz, 1H), 3.72 (dd, *J* = 12.9, 7.8 Hz, 1H), 2.31 (s, 3H), 2.22 (s, 3H); **^{13}C NMR** ($CDCl_3$, 100 MHz) δ 159.2, 137.8, 135.9, 134.9, 134.3, 134.2, 134.0, 133.9, 130.7, 129.7, 129.4, 129.2, 128.6, 127.8, 127.1, 125.4, 120.7, 54.3, 30.1, 21.4, 19.0. **HRMS** (ESI-Orbitrap) m/z calcd for $C_{23}H_{21}NO_3SSeNa$ $[M+Na]^+$: 494.0300; found: 494.0303.



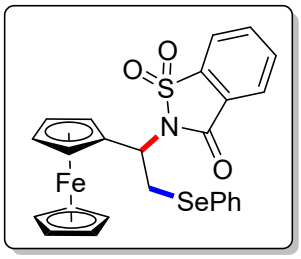
2-(1-(benzo[*d*][1,3]dioxol-5-yl)-2-(phenylselanyl)ethyl)benzo[*d*]isothiazol-3(2*H*)-one 1,1-dioxide (4p): New compound. (Eluent: petroleum ether (60-90 °C)/EtOAc = 6:1, v/v). 81.7 mg, 84% yield. White solid. m.p. 127.4-128.6 °C: **^{1}H NMR** ($CDCl_3$, 400 MHz) δ 7.98-7.96 (m, 1H), 7.87-7.76 (m, 3H), 7.56-7.53 (m, 2H), 7.27-7.24 (m, 3H), 7.09 (d, *J* = 1.8 Hz, 1H), 7.03 (dd, *J* = 8.1, 1.8 Hz, 1H), 6.76 (d, *J* = 8.1 Hz, 1H), 5.94-5.93 (m, 2H), 5.31 (t, *J* = 8.1 Hz, 1H), 3.99 (dd, *J* = 12.8, 8.0 Hz, 1H), 3.79 (dd, *J* = 12.9, 8.2 Hz, 1H); **^{13}C NMR** ($CDCl_3$, 100 MHz) δ 158.8, 148.0, 147.9, 137.4, 134.9, 134.4, 133.8, 130.4, 129.3, 129.0, 127.8, 127.2, 125.3, 122.7, 120.9, 109.1, 108.2, 101.4, 57.9, 29.3; **HRMS** (ESI-Orbitrap) m/z calcd for $C_{22}H_{17}NO_5SSeNa$ $[M+Na]^+$: 509.9885; found: 509.9887.



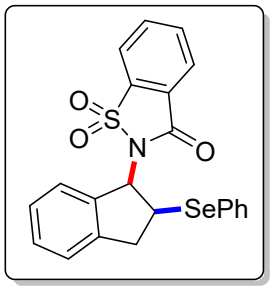
2-(1-(naphthalen-2-yl)-2-(phenylselanyl)ethyl)benzo[*d*]isothiazol-3(2*H*)-one 1,1-dioxide (4q): Known compound[3]. (Eluent: petroleum ether (60-90 °C)/EtOAc = 6:1, v/v). 92.2 mg, 94% yield. Colorless oil. **^{1}H NMR** ($CDCl_3$, 400 MHz) δ 8.03 (d, 1H), 7.97-7.94 (m, 1H), 7.85-7.69 (m, 7H), 7.59-7.57 (m, 2H), 7.49-7.47 (m, 2H), 7.26-7.24 (m, 3H), 5.59 (t, *J* = 8.1 Hz, 1H), 4.19 (dd, *J* = 12.9, 8.2 Hz, 1H), 3.97 (dd, *J* = 12.9, 8.0 Hz, 1H); **^{13}C NMR** ($CDCl_3$, 100 MHz) δ 158.9, 137.4, 134.8, 134.4, 134.1, 133.9, 133.4, 133.1, 129.3, 129.1, 128.5, 128.4, 128.2, 127.8, 127.7, 127.2, 126.7, 126.4, 126.1, 125.3, 120.9, 58.0, 29.1.



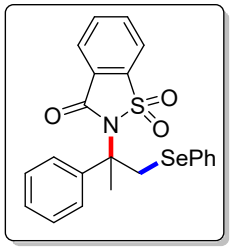
2-(2-(phenylselanyl)-1-(thiophen-2-yl)ethyl)benzo[*d*]isothiazol-3(2*H*)-one 1,1-dioxide (4r): Known compound[3]. (Eluent: petroleum ether (60-90 °C)/EtOAc = 6:1, v/v). 75.2 mg, 84% yield. White solid. m.p.: 89.2-90.4 °C. **^{1}H NMR** ($CDCl_3$, 400 MHz) δ 7.99-7.97 (m, 1H), 7.88-7.77 (m, 3H), 7.59-7.56 (m, 2H), 7.28 (dd, *J* = 5.1, 1.2 Hz, 1H), 7.27-7.23 (m, 4H), 6.97 (dd, *J* = 5.1, 3.6 Hz, 1H), 5.62 (t, *J* = 7.9 Hz, 1H), 4.07 (dd, *J* = 13.0, 8.6 Hz, 1H), 3.81 (dd, *J* = 13.0, 7.4 Hz, 1H); **^{13}C NMR** ($CDCl_3$, 100 MHz) δ 158.6, 139.3, 137.5, 134.9, 134.4, 134.0, 129.3, 128.9, 128.2, 127.9, 127.1, 126.8, 126.5, 125.3, 120.9, 52.8, 30.5.



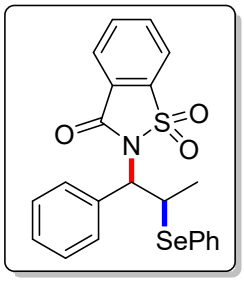
2-(1-ferrocenyl-2-(phenylselanyl)ethyl)benzo[*d*]isothiazol-3(2*H*)-one 1,1-dioxide (4s): New compound. (Eluent: petroleum ether (60-90 °C)/EtOAc = 6:1, v/v). 50.7 mg, 45% yield. Yellow solid. m.p.:152.0-152.2 °C. **^{1}H NMR** ($CDCl_3$, 400 MHz) δ 7.95-7.93 (s, 1H), 7.85-7.74 (m, 5H), 7.31-7.29 (m, 3H), 5.34 (dd, *J* = 11.9, 8.8 Hz, 1H), 4.4 (d, *J* = 1.0 Hz, 1H), 4.4 (d, *J* = 1.1 Hz, 1H), 4.19-4.13 (m, 3H), 4.0 (s, 5H), 3.8 (dd, *J* = 13.3, 10.1 Hz, 1H); **^{13}C NMR** ($CDCl_3$, 100 MHz) δ 158.7, 137.7, 135.2, 134.7, 134.2, 129.4, 129.3, 128.2, 127.3, 125.2, 120.8, 84.8, 69.1, 69.0, 68.7, 68.2, 67.7, 54.6, 29.8. **HRMS** (ESI-Orbitrap) m/z calcd for $C_{25}H_{22}FeNO_3SSe$ $[M+H]^+$: 551.9830; found: 551.9810.



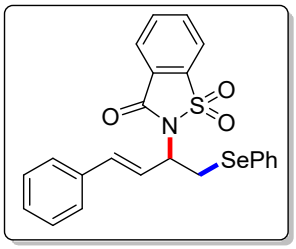
2-(2-(phenylselanyl)-2,3-dihydro-1*H*-inden-1-yl)benzo[*d*]isothiazol-3(2*H*)-one 1,1-dioxide (4t): Known compound[3]. (Eluent: petroleum ether (60-90 °C)/EtOAc = 4:1, v/v). 71.1 mg, 78% yield. White solid. m.p.: 133.9-134.7 °C. **^{1}H NMR** ($CDCl_3$, 400 MHz) δ 7.98-7.96 (m, 1H), 7.90-7.77 (m, 3H), 7.71-7.68 (m, 2H), 7.33-7.18 (m, 7H), 5.75 (d, *J* = 7.0 Hz, 1H), 4.67 (q, *J* = 8.0 Hz, 1H), 3.71 (dd, *J* = 16.3, 8.0 Hz, 1H), 3.10 (dd, *J* = 16.4, 7.3 Hz, 1H); **^{13}C NMR** ($CDCl_3$, 100 MHz) δ 158.6, 142.1, 137.7, 137.2, 136.1, 134.9, 134.4, 129.2, 129.1, 128.4, 127.3, 127.2, 125.3, 124.7, 124.6, 121.0, 63.6, 42.5, 38.9.



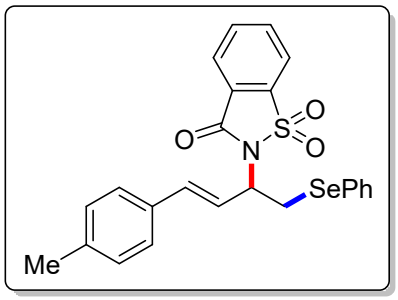
2-(2-phenyl-1-(phenylselanyl)propan-2-yl)benzo[*d*]isothiazol-3(2*H*)-one 1,1-dioxide (4u): Known compound[3]. (Eluent: petroleum ether (60-90 °C)/EtOAc = 6:1, v/v). 63.7 mg, 70% yield. Colorless oil. **^{1}H NMR** ($CDCl_3$, 400 MHz) δ 7.89-7.87 (m, 3H), 7.83-7.79 (m, 1H), 7.70-7.69 (m, 2H), 7.54-7.52 (m, 2H), 7.50-7.47 (m, 2H), 7.35-7.24 (m, 3H), 7.11-7.05 (m, 3H), 4.55 (d, *J* = 12.1 Hz, 1H), 3.89 (d, *J* = 12.1 Hz, 1H), 2.23 (s, 3H); **^{13}C NMR** ($CDCl_3$, 100 MHz) δ 158.9, 143.8, 137.9, 134.8, 134.0, 134.0, 129.6, 128.8, 128.6, 127.6, 127.4, 126.4, 125.5, 125.0, 120.3, 68.0, 37.6, 25.7.



2-(1-phenyl-2-(phenylselanyl)propyl)benzo[*d*]isothiazol-3(2*H*)-one 1,1-dioxide (4v): Known compound[3]. (Eluent: petroleum ether (60-90 °C)/EtOAc = 6:1, v/v). 83.5 mg, 87% yield. White solid. m.p. 143.8-144.5 °C. **^{1}H NMR** ($CDCl_3$, 400 MHz) δ 7.98-7.96 (m, 1H), 7.84-7.74 (m, 3H), 7.65-7.62 (m, 2H), 7.43-7.41 (m, 2H), 7.34-7.28 (m, 4H), 7.26-7.21 (m, 2H), 5.05 (d, *J* = 11.7 Hz, 1H), 4.69-4.61 (m, 1H), 1.56 (d, *J* = 6.8 Hz, 3H); **^{13}C NMR** ($CDCl_3$, 100 MHz) δ 158.7, 137.2, 136.5, 136.5, 136.5, 134.8, 134.4, 129.7, 129.0, 128.9, 128.4, 127.5, 127.1, 125.2, 120.9, 63.4, 37.7, 20.7.

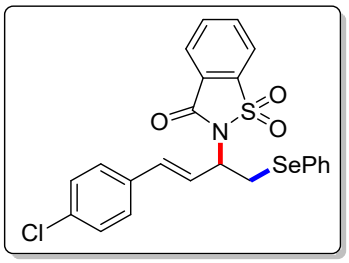


(*E*)-2-(4-phenyl-1-(phenylselanyl)but-3-en-2-yl)benzo[*d*]isothiazol-3(2*H*)-one 1,1-dioxide (4w): New compound. (Eluent: petroleum ether (60-90 °C)/EtOAc = 8:1, v/v). 78.7 mg, 84% yield, Colorless oil. **^{1}H NMR** ($CDCl_3$, 400 MHz) δ 8.01-7.99 (m, 1H), 7.87-7.79 (m, 3H), 7.61-7.57 (m, 2H), 7.38-7.36 (m, 2H), 7.33-7.23 (m, 6H), 6.72 (d, *J* = 15.8 Hz, 1H), 6.57 (dd, *J* = 15.7, 8.4 Hz, 1H), 5.03 (q, *J* = 8.2 Hz, 1H), 3.75 (dd, *J* = 12.8, 7.4 Hz, 1H), 3.58 (dd, *J* = 12.8, 8.4 Hz, 1H); **^{13}C NMR** ($CDCl_3$, 100 MHz) δ 158.6, 137.7, 135.8, 135.5, 134.9, 134.4, 133.7, 129.3, 129.0, 128.6, 128.4, 127.6, 127.3, 127.0, 125.3, 124.1, 120.9, 56.9, 29.9. **HRMS** (ESI-Orbitrap) m/z calcd for $C_{23}H_{19}NO_3SSeNa$ $[M+Na]^+$: 492.0143; found: 492.0143.

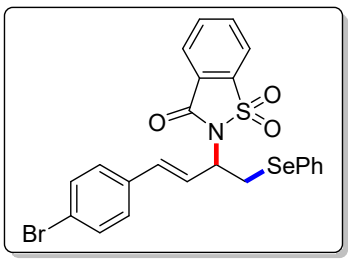


(*E*)-2-(1-(phenylselanyl)-4-(*p*-tolyl)but-3-en-2-yl)benzo[*d*]isothiazol-3(2*H*)-one 1,1-dioxide (4x): New compound. (Eluent: petroleum ether (60-90 °C)/EtOAc = 8:1, v/v). 76.7 mg, 79% yield. Colorless oil. **^{1}H NMR** ($CDCl_3$, 400 MHz) δ 8.02-7.99

(m, 1H), 7.89-7.79 (m, 3H), 7.60-7.58 (m, 2H), 7.28-7.26 (m, 5H), 7.11 (d, *J* = 8.0 Hz, 2H), 6.68 (d, *J* = 15.8 Hz, 1H), 6.51 (dd, *J* = 15.8, 8.5 Hz, 1H), 5.02 (q, *J* = 8.2 Hz, 1H), 3.75 (dd, *J* = 12.8, 7.5 Hz, 1H), 3.57 (dd, *J* = 12.7, 8.2 Hz, 1H), 2.33 (s, 3H); **^{13}C NMR** ($CDCl_3$, 100 MHz) δ 158.6, 138.3, 137.7, 135.4, 134.8, 134.3, 133.6, 133.0, 129.3, 129.3, 129.1, 127.6, 127.3, 126.9, 125.2, 123.0, 120.8, 57.0, 30.0, 21.3; **HRMS** (ESI-Orbitrap) m/z calcd for $C_{24}H_{22}NO_3SSe$ $[M+H]^+$: 484.0480; found: 484.0480.

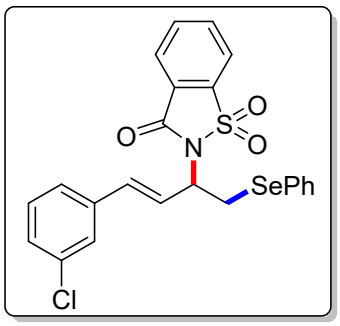


(*E*)-2-(4-(4-chlorophenyl)-1-(phenylselanyl)but-3-en-2-yl)benzo[d]isothiazol-3(2H)-one 1,1-dioxide (4y): New compound. (Eluent: petroleum ether (60-90 °C)/EtOAc = 8:1, v/v). 91.1 mg, 91% yield. Colorless oil. **^{1}H NMR** ($CDCl_3$, 400 MHz) δ 8.01-7.99 (m, 1H), 7.89-7.78 (m, 3H), 7.58-7.56 (m, 2H), 7.26-7.25 (m, 7H), 8.65 (d, *J* = 15.8 Hz, 1H), 6.51 (dd, *J* = 15.8, 8.3 Hz, 1H), 5.00 (q, *J* = 7.6 Hz, 1H), 3.71 (dd, *J* = 12.8, 7.2 Hz, 1H), 3.57 (dd, *J* = 12.8, 8.5 Hz, 1H); **^{13}C NMR** ($CDCl_3$, 100 MHz) δ 158.6, 137.7, 134.9, 134.4, 134.3, 134.2, 134.1, 133.7, 129.3, 128.9, 128.8, 128.2, 127.7, 127.2, 125.3, 124.8, 120.9, 56.7, 29.7; **HRMS** (ESI-Orbitrap) m/z calcd for $C_{23}H_{19}ClNO_3SSe$ $[M+H]^+$: 503.9934; found: 503.9935.

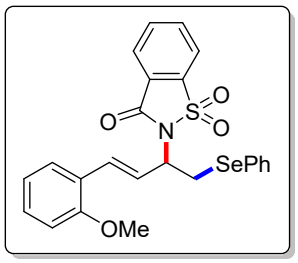


(*E*)-2-(4-(4-bromophenyl)-1-(phenylselanyl)but-3-en-2-yl)benzo[*d*]isothiazol-3(2*H*)-one 1,1-dioxide (4z): New compound. (Eluent: petroleum ether (60-90 °C)/EtOAc = 8:1, v/v). 100.9 mg, 92% yield. Colorless oil. **^{1}H NMR** ($CDCl_3$, 400 MHz) δ 8.02-8.00 (m, 1H), 7.90-7.79 (m, 3H), 7.58-7.56 (m, 2H), 7.42-7.40 (m, 2H), 7.27-7.25 (m, 3H), 7.21-7.19 (m, 2H), 6.63 (d, *J* = 15.8 Hz, 1H), 6.53 (dd, *J* = 15.8,

8.2 Hz, 1H), 4.99 (q, *J* = 8.2 Hz, 1H), 3.71 (dd, *J* = 12.8, 7.2 Hz, 1H), 3.57 (dd, *J* = 12.8, 8.5 Hz, 1H); **^{13}C NMR** ($CDCl_3$, 100 MHz) δ 158.6, 137.6, 134.9, 134.7, 134.4, 134.2, 133.6, 131.7, 129.3, 128.9, 128.5, 127.7, 127.2, 125.3, 124.9, 122.3, 120.9, 56.7, 29.7; **HRMS** (ESI-Orbitrap) m/z calcd for $C_{23}H_{18}BrNO_3SSeNa$ $[M+Na]^+$: 569.9248; found: 569.9251.

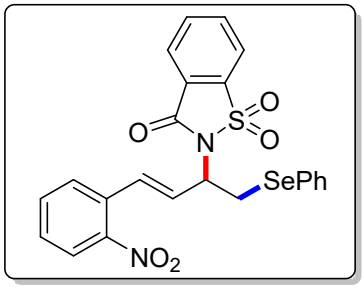


(*E*)-2-(4-(3-chlorophenyl)-1-(phenylselanyl)but-3-en-2-yl)benzo[*d*]isothiazol-3(2*H*)-one 1,1-dioxide (4a′): New compound. (Eluent: petroleum ether (60-90 °C)/EtOAc = 8:1, v/v). 97.0 mg, 96% yield. white solid. m.p.: 150.9-153.5 °C. **^{1}H NMR** ($CDCl_3$, 400 MHz) δ 8.00-7.98 (m, 1H), 7.88-7.77 (m, 3H), 7.57-7.55 (m, 2H), 7.30 (s, 1H), 7.26-7.24 (m, 3H), 7.20-7.19 (m, 3H), 6.62 (d, *J* = 15.8 Hz, 1H), 6.52 (dd, *J* = 15.8, 8.1 Hz, 1H), 4.98 (q, *J* = 7.5 Hz, 1H), 3.70 (dd, *J* = 12.8, 7.1 Hz, 1H), 3.56 (dd, *J* = 12.8, 8.6 Hz, 1H); **^{13}C NMR** ($CDCl_3$, 100 MHz) δ 158.6, 137.7, 134.9, 134.6, 134.5, 134.1, 133.7, 129.9, 129.4, 128.9, 128.3, 127.7, 127.2, 126.8, 125.7, 125.3, 125.3, 120.9, 56.6, 29.6; **HRMS** (ESI-Orbitrap) m/z calcd for $C_{23}H_{19}ClNO_3SSe$ $[M+H]^+$: 503.9934; found: 503.9935.

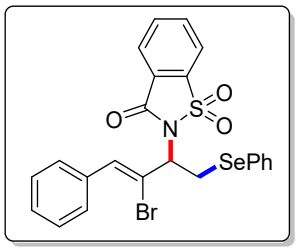


(*E*)-2-(4-(2-methoxyphenyl)-1-(phenylselanyl)but-3-en-2-yl)benzo[*d*]isothiazol-3(2*H*)-one 1,1-dioxide (4b′): New compound. (Eluent: petroleum ether (60-90 °C)/EtOAc = 8:1, v/v). 86.6 mg, 87% yield. white solid. m.p.: 130.8-131.6 °C. **^{1}H NMR** ($CDCl_3$, 400 MHz) δ 8.01-7.99 (m, 1H), 7.88-7.77 (m, 3H), 7.60-7.57 (m, 2H), 7.39 (dd, *J* = 7.7, 1.7 Hz, 1H), 7.26-7.20 (m, 4H), 7.04 (d, *J* = 16.0 Hz, 1H), 6.90-6.83 (m, 2H), 6.59 (dd, *J* = 15.9, 8.6 Hz, 1H), 5.05 (q, *J* = 7.9 Hz, 1H),

3.82 (s, 3H), 3.75 (dd, *J* = 12.8, 7.8 Hz, 1H), 3.55 (dd, *J* = 12.8, 8.0 Hz, 1H); **^{13}C NMR** ($CDCl_3$, 100 MHz) δ 158.6, 157.1, 137.8, 134.8, 134.3, 133.7, 130.4, 129.5, 129.3, 129.2, 127.6, 127.5, 127.3, 125.2, 124.8, 124.4, 120.8, 120.7, 111.0, 57.5, 55.6, 30.2; **HRMS** (ESI-Orbitrap) m/z calcd for $C_{24}H_{21}NO_4SSeNa$ $[M+Na]^+$: 522.0249; found: 522.0248.

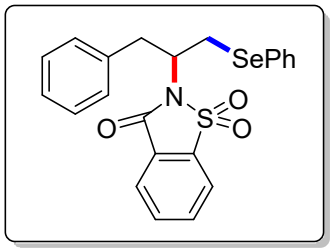


(*E*)-2-(4-(2-nitrophenyl)-1-(phenylselanyl)but-3-en-2-yl)benzo[*d*]isothiazol-3(2*H*)-one 1,1-dioxide (4c′): New compound. (Eluent: petroleum ether (60-90 °C)/EtOAc = 6:1, v/v). 66.6 mg, 65% yield. Yellow oil. **^{1}H NMR** ($CDCl_3$, 400 MHz) δ 7.94-7.92 (m, 1H), 7.89-7.86 (m, 1H), 7.81-7.71 (m, 3H), 7.53-7.49 (m, 2H), 7.48-7.41 (m, 2H), 7.34-7.30 (m, 1H), 7.20-7.12 (m, 4H), 6.42 (dd, *J* = 15.6, 8.2 Hz, 1H), 4.98 (q, *J* = 8.2 Hz, 1H), 3.62 (dd, *J* = 12.8, 7.4 Hz, 1H), 3.51 (dd, *J* = 12.8, 8.7 Hz, 1H); **^{13}C NMR** ($CDCl_3$, 100 MHz) δ 158.6, 147.7, 137.7, 135.0, 134.5, 133.8, 133.4, 132.0, 131.1, 129.4, 129.3, 128.9, 128.6, 127.8, 127.2, 125.4, 124.7, 120.9, 56.1, 29.4; **HRMS** (ESI-Orbitrap) m/z calcd for $C_{23}H_{18}N_2O_5SSeNa$ $[M+Na]^+$: 536.9994; found: 537.0002.

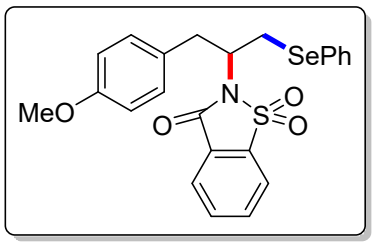


(*Z*)-2-(3-bromo-4-phenyl-1-(phenylselanyl)but-3-en-2-yl)benzo[*d*]isothiazol-3(2*H*)-one 1,1-dioxide (4d′): New compound. (Eluent: petroleum ether (60-90 °C)/EtOAc = 8:1, v/v). 66.2 mg, 60% yield. White solid. m.p.:153.4-154.6 °C. **^{1}H NMR** ($CDCl_3$, 400 MHz) δ 8.07-8.05 (m, 1H), 7.90-7.80 (m, 3H), 7.64-7.62 (m, 2H), 7.59-7.57 (m, 2H), 7.38-7.28 (m, 6H), 7.25-7.24 (m, 1H), 5.34 (t, *J* = 7.7 Hz, 1H),

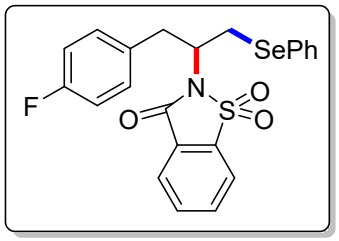
3.93 (dd, J = 13.0, 8.6 Hz, 1H), 3.78 (dd, J = 13.0, 7.2 Hz, 1H); **^{13}C NMR** ($CDCl_3$, 100 MHz) δ 158.9, 137.7, 135.1, 134.9, 134.5, 134.3, 133.0, 129.4, 129.3, 128.8, 128.7, 128.3, 128.1, 126.8, 125.6, 121.0, 120.8, 62.2, 28.9; **HRMS** (ESI-Orbitrap) m/z calcd for $C_{23}H_{18}BrNO_3SSeNa$ $[M+Na]^+$: 569.9248; found: 569.9251.



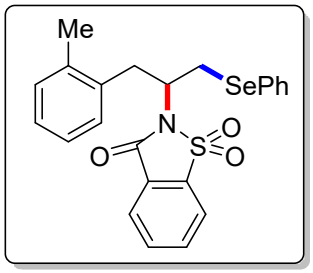
2-(1-phenyl-3-(phenylselanyl)propan-2-yl)benzo[*d*]isothiazol-3(2*H*)-one 1,1-dioxide (5a): New compound. (Eluent: petroleum ether (60-90 °C)/EtOAc = 6:1, v/v). 71.8 mg, 79% yield. Colorless oil. **^{1}H NMR** ($CDCl_3$, 400 MHz) δ 8.05-8.03 (m, 1H), 7.92-7.80 (m, 3H), 7.56-7.53 (m, 2H), 7.31-7.20 (m, 8H), 4.10-3.98 (m, 3H), 3.19 (dd, J = 14.8, 5.2 Hz, 1H), 2.89 (dd, J = 14.7, 8.8 Hz, 1H); **^{13}C NMR** ($CDCl_3$, 100 MHz) δ 159.3, 138.6, 137.6, 135.1, 135.0, 134.5, 129.3, 129.2, 128.5, 128.1, 127.7, 127.2, 126.8, 125.4, 121.1, 44.3, 43.2, 38.9; **HRMS** (ESI-Orbitrap) m/z calcd for $C_{22}H_{19}NO_3SSeNa$ $[M+Na]^+$: 480.0143; found: 480.0146.



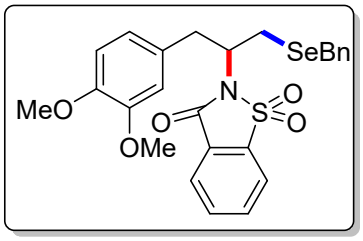
2-(1-(4-methoxyphenyl)-3-(phenylselanyl)propan-2-yl)benzo[*d*]isothiazol-3(2*H*)-one 1,1-dioxide (5b): New compound. (Eluent: petroleum ether (60-90 °C) / EtOAc = 6:1, v/v). 66.5 mg, 68% yield. Colorless oil. **^{1}H NMR** ($CDCl_3$, 400 MHz) δ 8.04-8.02 (m, 1H), 7.92-7.79 (m, 3H), 7.56-7.54 (m, 2H), 7.27-7.25 (m, 3H), 7.17-7.15 (m, 2H), 6.84-6.81 (m, 2H), 4.11-3.95 (m, 3H), 3.78 (s, 3H), 3.12 (dd, J = 14.7, 5.2 Hz, 1H), 2.84 (dd, J = 14.6, 8.4 Hz, 1H); **^{13}C NMR** ($CDCl_3$, 100 MHz) δ 159.2, 158.4, 137.6, 135.0, 134.5, 130.5, 130.2, 129.2, 128.1, 128.0, 127.8, 127.2, 125.4, 121.0, 113.9, 55.3, 44.2, 43.5, 38.0; **HRMS** (ESI) m/z Calcd for $C_{23}H_{22}NO_4SSe$ $[M+H]^+$: 488.0429; Found: 488.0417.



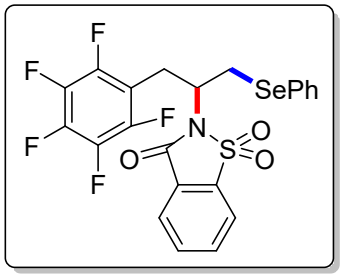
2-(1-(4-fluorophenyl)-3-(phenylselanyl)propan-2-yl)benzo[*d*]isothiazol-3(2*H*)-one 1,1-dioxide (5c): New compound. (Eluent: petroleum ether (60-90 °C)/EtOAc = 6:1, v/v). 53.7 mg, 56% yield. Colorless oil. **^{1}H NMR** ($CDCl_3$, 400 MHz) δ 8.05-8.03 (m, 1H), 7.93-7.81 (m, 3H), 7.54-7.51 (m, 2H), 7.29-7.24 (m, 3H), 7.21-7.17 (m, 2H), 7.00-6.93 (m, 2H), 4.12-4.02(m, 2H), 3.98-3.91 (m, 1H), 3.16 (dd, *J* = 14.7, 5.2 Hz, 1H), 2.84 (dd, *J* = 14.7, 9.2 Hz, 1H); **^{13}C NMR** ($CDCl_3$, 100 MHz) δ 161.8 (d, *J* = 243.0 Hz), 159.3, 137.6, 135.1, 134.6, 134.2 (d, *J* = 3.4 Hz), 130.7 (d, *J* = 7.9 Hz), 129.3, 128.2, 127.4 (d, *J* = 38.7 Hz), 125.5, 121.1, 115.4, 115.2, 44.3, 43.4, 38.0; **^{19}F NMR** ($CDCl_3$, 376 MHz) δ -116.3; **HRMS** (ESI) m/z Calcd for $C_{22}H_{18}FNO_3SSeNa$ $[M+Na]^+$: 498.0049; Found: 498.0050.



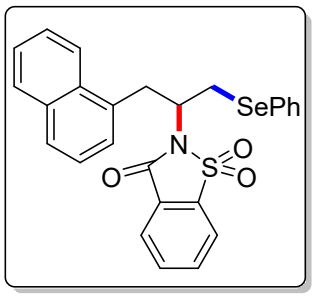
2-(1-(phenylselanyl)-3-(*o*-tolyl)propan-2-yl)benzo[*d*]isothiazol-3(2*H*)-one 1,1-dioxide (5d): New compound. (Eluent: petroleum ether (60-90 °C)/EtOAc = 6:1, v/v). 50.9 mg, 54% yield. Colorless oil. **^{1}H NMR** ($CDCl_3$, 400 MHz) δ 8.06-8.04 (m, 1H), 7.92-7.80 (m, 3H), 7.55-7.52 (m, 2H), 7.27-7.21 (m, 4H), 7.15-7.12 (m, 3H), 4.11-4.01 (m, 3H), 3.18 (dd, *J* = 14.8, 5.0 Hz, 1H), 2.97-2.91 (m, 1H), 2.24 (s, 3H); **^{13}C NMR** ($CDCl_3$, 100 MHz) δ 159.3, 137.6, 136.8, 136.4, 135.0, 134.5, 133.0, 130.6, 129.8, 129.2, 128.0, 127.9, 127.2, 126.9, 126.0, 125.4, 121.1, 44.5, 42.4, 36.7, 19.6; **HRMS** (ESI-Orbitrap) m/z calcd for $C_{23}H_{21}NO_3SSeNa$ $[M+Na]^+$: 494.0300; found: 494.0298.



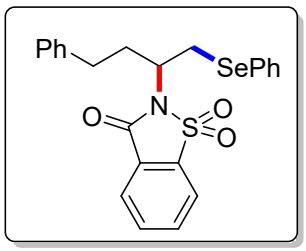
2-(1-(benzylselanyl)-3-(3,4-dimethoxyphenyl)propan-2-yl)benzo[*d*]isothiazol-3(2*H*)-one 1,1-dioxide (5e): New compound. (Eluent: petroleum ether (60-90 °C)/EtOAc = 8:1, v/v). 64.4 mg, 61% yield. Colorless oil. **^{1}H NMR** ($CDCl_3$, 400 MHz) δ 8.07-8.05 (m, 1H), 7.94-7.81 (m, 3H), 7.26-7.19 (m, 5H), 6.75-6.71 (m, 3H), 4.12-3.97 (m, 2H), 3.83 (s, 6H), 3.78-3.76 (m, 2H), 3.52 (m, 1H), 3.06 (dd, *J* = 14.3, 5.1 Hz, 1H), 2.79 (dd, *J* = 14.2, 8.7 Hz, 1H); **^{13}C NMR** ($CDCl_3$, 100 MHz) δ 159.3, 148.8, 147.7, 138.8, 137.7, 135.0, 134.5, 131.1, 129.1, 128.6, 127.3, 126.9, 125.5, 121.4, 121.0, 112.4, 111.0, 55.9, 55.9, 44.1, 40.3, 38.9, 27.7; **HRMS** (ESI-Orbitrap) m/z calcd for $C_{25}H_{25}NO_5SSeNa$ $[M+Na]^+$: 554.0511; found: 554.0502.



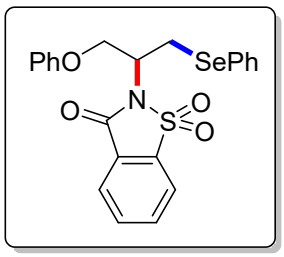
2-(1-(perfluorophenyl)-3-(phenylselanyl)propan-2-yl)benzo[*d*]isothiazol-3(2*H*)-one 1,1-dioxide (5f): New compound. (Eluent: petroleum ether (60-90 °C)/EtOAc = 6:1, v/v). 48.2 mg, 44% yield. Colorless oil. **^{1}H NMR** ($CDCl_3$, 400 MHz) δ 8.08-8.06 (m, 1H), 7.95-7.83 (m, 3H), 7.52-7.49 (m, 2H), 7.28-7.24 (m, 3H), 4.17 (dd, *J* = 18.8, 10.2 Hz, 1H), 4.03-4.94 (m, 2H), 3.30-3.27 (m, 1H), 3.05 (dd, *J* = 14.4, 9.3 Hz, 1H); **^{13}C NMR** ($CDCl_3$, 100 MHz) δ 159.3, 146.3, 144.3, 137.6, 136.5, 135.2, 134.7, 134.5, 129.6, 129.4, 128.3, 127.3, 127.1, 125.6, 121.3, 44.2, 41.0, 26.9; **^{19}F NMR** ($CDCl_3$, 376 MHz) δ -64.3, -78.5, -84.7; **HRMS** (ESI) m/z Calcd for $C_{22}H_{14}F_5NO_3SSeNa$ $[M+Na]^+$: 569.9672; Found: 569.9673.



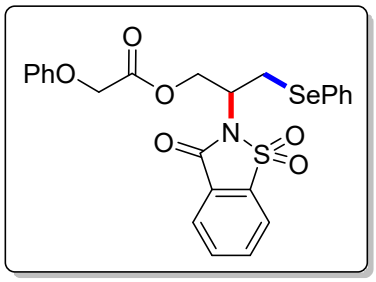
2-(1-(naphthalen-1-yl)-3-(phenylselanyl)propan-2-yl)benzo[*d*]isothiazol-3(2*H*)-one 1,1-dioxide (5g): New compound. (Eluent: petroleum ether (60-90 °C)/EtOAc = 4:1, v/v). 52.4 mg, 48% yield. Colorless oil. **^{1}H NMR** ($CDCl_3$, 400 MHz) δ 8.10-8.07 (m, 1H), 7.96-7.93 (m, 1H), 7.90-7.82 (m, 4H), 7.77 (d, *J* = 8.2 Hz, 1H), 7.55-7.41 (m, 6H), 7.30-7.22 (m, 3H), 4.34-4.26 (m, 1H), 4.17-4.15 (m, 2H), 3.70 (dd, *J* = 14.8, 6.0 Hz, 1H), 3.40 (dd, *J* = 14.8, 9.2 Hz, 1H); **^{13}C NMR** ($CDCl_3$, 100 MHz) δ 159.4, 137.6, 135.1, 135.0, 134.6, 134.5, 134.0, 131.9, 129.2, 129.0, 128.0, 127.8, 127.8, 127.5, 127.2, 126.2, 125.7, 125.5, 125.4, 123.5, 121.1, 44.5, 42.5, 36.7; **HRMS** (ESI) m/z Calcd for $C_{26}H_{21}NO_3SSeNa$ $[M+Na]^+$: 530.0300; Found: 530.0300.



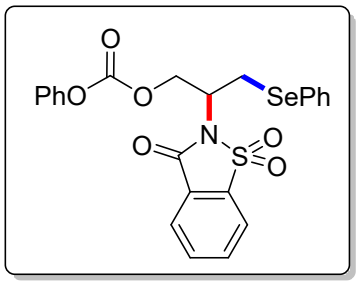
2-(4-phenyl-1-(phenylselanyl)butan-2-yl)benzo[*d*]isothiazol-3(2*H*)-one 1,1-dioxide (5h): New compound. (Eluent: petroleum ether (60-90 °C)/EtOAc = 8:1, v/v). 45.5 mg, 48% yield. Colorless oil. **^{1}H NMR** ($CDCl_3$, 400 MHz) δ 8.04-8.02 (m, 1H), 7.91-7.80 (m, 3H), 7.67-7.64 (m, 2H), 7.33-7.30 (m, 3H), 7.26-7.22 (m, 2H), 7.18-7.14 (m, 3H), 4.11-4.00 (m, 2H), 3.76-3.69 (m, 1H), 3.10-3.03 (m, 1H), 2.79-2.71 (m, 1H), 2.18-2.09 (m, 1H), 1.92-1.83 (m, 1H); **^{13}C NMR** ($CDCl_3$, 100 MHz) δ 159.2, 141.3, 137.6, 135.1, 135.0, 134.5, 129.4, 128.6, 128.5, 128.2, 127.5, 127.2, 126.1, 125.4, 121.1, 44.4, 41.9, 33.8, 33.7; **HRMS** (ESI) m/z Calcd for $C_{23}H_{21}NO_3SSeNa$ $[M+Na]^+$: 494.0300; Found: 494.0303.



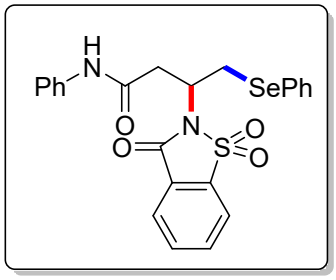
2-(1-phenoxy-3-(phenylselanyl)propan-2-yl)benzo[*d*]isothiazol-3(2*H*)-one 1,1-dioxide (5i): New compound. (Eluent: petroleum ether (60-90 °C)/EtOAc = 6:1, v/v). 55.7 mg, 59% yield. Colorless oil. **^{1}H NMR** ($CDCl_3$, 400 MHz) δ 8.05-8.03 (m, 1H), 7.92-7.80 (m, 3H), 7.70-7.68 (m, 2H), 7.33-7.24 (m, 5H), 6.95 (t, *J* = 7.4 Hz, 1H), 6.87-6.85 (m, 2H), 4.40-4.24 (m, 3H), 4.16 (dd, *J* = 14.8, 6.7 Hz, 1H), 4.11-4.04 (m, 1H); **^{13}C NMR** ($CDCl_3$, 100 MHz) δ 159.3, 158.4, 137.6, 135.0, 134.9, 134.5, 129.5, 129.4, 128.3, 127.5, 127.2, 125.4, 121.3, 121.1, 114.8, 68.7, 41.3, 40.9; **HRMS** (ESI) m/z Calcd for $C_{22}H_{19}NO_4SSeNa$ $[M+Na]^+$: 496.0092; Found: 496.0091.



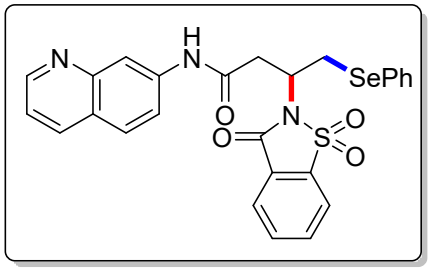
2-(1,1-dioxido-3-oxobenzo[*d*]isothiazol-2(3*H*)-yl)-3-(phenylselanyl)propyl 2-phenoxyacetate (5j): New compound. (Eluent: petroleum ether (60-90 °C)/EtOAc = 4:1, v/v). 48.9 mg, 46% yield. Colorless oil. **^{1}H NMR** ($CDCl_3$, 400 MHz) δ 8.01-8.00 (m, 1H), 7.89-7.76 (m, 3H), 7.63-7.61 (m, 2H), 7.31-7.23 (m, 5H), 6.96 (t, *J* = 7.4 Hz, 1H), 6.89-6.87 (m, 2H), 4.63-4.52 (m, 3H), 4.39 (dd, *J* = 11.8, 5.8 Hz, 1H), 4.13-4.00 (m, 2H), 3.92-3.85 (m, 1H); **^{13}C NMR** ($CDCl_3$, 100 MHz) δ 168.7, 159.2, 157.8, 137.5, 135.1, 134.6, 129.7, 129.6, 128.6, 127.1, 126.8, 125.5, 121.8, 121.2, 114.8, 65.5, 65.0, 40.8, 39.5; **HRMS** (ESI) m/z Calcd for $C_{24}H_{21}NO_6SSeNa$ $[M+Na]^+$: 554.0147; Found: 554.0146.



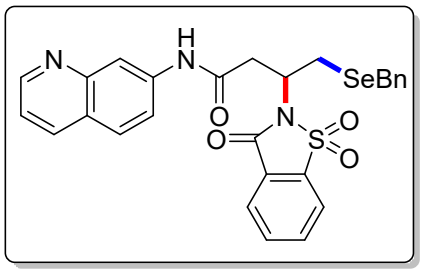
2-(1,1-dioxido-3-oxobenzo[*d*]isothiazol-2(3*H*)-yl)-3-(phenylselanyl)propyl phenyl carbonate (5k): New compound. (Eluent: petroleum ether (60-90 °C)/EtOAc = 6:1, v/v). 35.8 mg, 35% yield. purple oil. **^{1}H NMR** ($CDCl_3$, 400 MHz) δ 8.07-8.05 (m, 1H), 7.94-7.80 (m, 3H), 7.70-7.67 (m, 2H), 7.39-7.30 (m, 5H), 7.25-7.21 (m, 1H), 7.18-7.15 (m, 2H), 4.61 (dd, *J* = 11.6, 4.4 Hz, 1H), 4.46 (dd, *J* = 11.6, 6.5 Hz, 1H), 4.21 (dd, *J* = 15.0, 9.4 Hz, 1H), 4.61 (dd, *J* = 14.9, 6.3 Hz, 1H), 4.03-4.36 (m, 1H); **^{13}C NMR** ($CDCl_3$, 100 MHz) δ 159.3, 153.4, 151.2, 137.6, 135.2, 135.2, 135.1, 134.6, 129.6, 129.6, 128.7, 127.2, 126.7, 126.2, 125.5, 121.2, 68.8, 40.9, 39.4; **HRMS** (ESI) m/z Calcd for $C_{23}H_{19}NO_6SSeNa$ $[M+Na]^+$: 539.9991; Found: 539.9990.



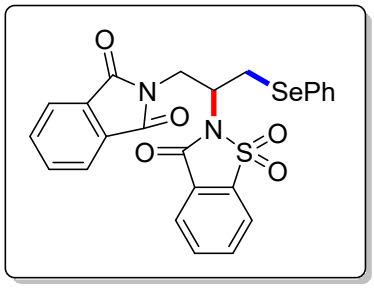
3-(1,1-dioxido-3-oxobenzo[*d*]isothiazol-2(3*H*)-yl)-*N*-phenyl-4-(phenylselanyl)butanamide (5l): New compound. (Eluent: petroleum ether (60-90 °C)/EtOAc = 3:1, v/v). 52.7 mg, 53% yield. Colorless oil. **^{1}H NMR** ($CDCl_3$, 400 MHz) δ 8.01-7.99 (m, 1H), 7.88-7.67 (m, 6H), 7.48 (d, *J* = 8.0 Hz, 2H), 7.32-7.25 (m, 5H), 7.06 (t, *J* = 7.3 Hz, 1H), 4.10 (s, 3H), 2.93-2.89 (m, 1H), 2.73 (dd, *J* = 15.1, 5.6 Hz, 1H); **^{13}C NMR** ($CDCl_3$, 100 MHz) δ 168.0, 159.6, 137.8, 137.4, 135.2, 135.0, 134.7, 129.5, 129.0, 128.4, 127.8, 127.0, 125.5, 124.4, 121.2, 119.1, 43.9, 40.5, 36.8; **HRMS** (ESI) m/z Calcd for $C_{23}H_{20}N_2O_4SSeNa$ $[M+Na]^+$: 523.0201; Found: 523.0203.



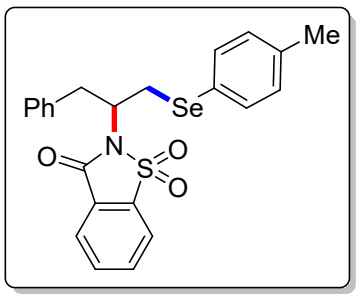
3-(1,1-dioxido-3-oxobenzo[*d*]isothiazol-2(3*H*)-yl)-4-(phenylselanyl)-*N*-(quinolin-8-yl)butanamide (5m): New compound. (Eluent: petroleum ether (60-90 °C)/EtOAc = 4:1, v/v). 79.4 mg, 72% yield. White solid. m.p.: 145.5-148.6 °C. **^{1}H NMR** ($CDCl_3$, 400 MHz) δ 9.85 (s, 1H), 8.80 (dd, *J* = 4.2, 1.7 Hz, 1H), 8.75 (dd, *J* = 5.6, 3.4 Hz, 1H), 8.15 (dd, *J* = 8.3, 1.7 Hz, 1H), 8.01-7.99 (m, 1H), 7.88-7.72 (m, 5H), 7.50-7.43 (m, 3H), 7.32-7.29 (m, 3H), 4.26-4.15 (m, 3H), 3.16 (dd, *J* = 15.9, 4.6 Hz, 1H), 2.91 (dd, *J* = 16.0, 7.7 Hz, 1H); **^{13}C NMR** ($CDCl_3$, 100 MHz) δ 168.5, 159.4, 148.2, 138.4, 137.6, 136.5, 135.5, 135.0, 134.5, 134.3, 129.5, 128.4, 128.0, 127.5, 127.4, 127.2, 125.4, 121.7, 121.1, 116.9, 44.1, 41.0, 37.0; **HRMS** (ESI) m/z Calcd for $C_{26}H_{22}N_3O_4SSe$ $[M+H]^+$: 552.0491; Found: 552.0490.



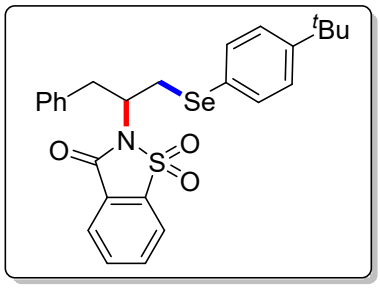
4-(benzylselanyl)-3-(1,1-dioxido-3-oxobenzo[*d*]isothiazol-2(3*H*)-yl)-*N*-(quinolin-8-yl)butanamide (5n): New compound. (Eluent: petroleum ether (60-90 °C)/EtOAc = 8:1, v/v). 48.8 mg, 43% yield. Colorless oil. **^{1}H NMR** ($CDCl_3$, 400 MHz) δ 9.79 (s, 1H), 8.77-8.74 (m, 2H), 8.13-8.11 (m, 1H), 8.00-7.99 (m, 1H), 7.86-7.77 (m, 3H), 7.47-7.36 (m, 5H), 7.25 (m, 2H), 7.17-7.16 (m, 1H), 4.18-4.02 (m, 4H), 3.86-3.85 (m, 1H), 3.12-3.08 (m, 1H), 2.92-2.87 (m, 1H); **^{13}C NMR** ($CDCl_3$, 100 MHz) δ 168.6, 159.3, 148.2, 139.0, 138.4, 137.6, 136.4, 134.9, 134.4, 134.4, 129.1, 128.7, 128.0, 127.4, 127.2, 127.0, 125.4, 121.7, 121.6, 121.1, 116.7, 44.0, 41.8, 34.5, 28.9; **HRMS** (ESI-Orbitrap) m/z calcd for $C_{27}H_{24}N_3O_4SSe$ $[M+H]^+$: 566.0647; found: 566.0639.



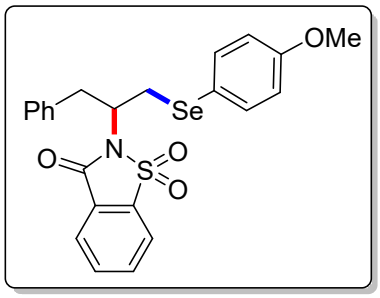
2-(2-(1,1-dioxido-3-oxobenzo[*d*]isothiazol-2(3*H*)-yl)-3-(phenylselanyl)propyl)isoindoline-1,3-dione (5o): New compound. (Eluent: petroleum ether (60-90 °C)/EtOAc = 2:1, v/v). 59.2 mg, 56% yield. White solid. m.p. 153.4-158.4 °C. **^{1}H NMR** ($CDCl_3$, 400 MHz) δ 8.08-8.05 (m, 1H), 7.93-7.83 (m, 3H), 7.82-7.77 (m, 2H), 7.74-7.69 (m, 2H), 7.63-7.60 (m, 2H), 7.24-7.19 (m, 3H), 4.25-4.94 (m, 5H); **^{13}C NMR** ($CDCl_3$, 100 MHz) δ 168.2, 159.3, 137.6, 135.1, 134.9, 134.6, 134.1, 131.9, 129.4, 128.2, 127.2, 126.8, 125.5, 123.5, 121.2, 42.2, 40.9, 40.4; **HRMS** (ESI) m/z Calcd for $C_{24}H_{18}N_2O_5SSeNa$ $[M+Na]^+$: 548.9994; Found: 548.9996.



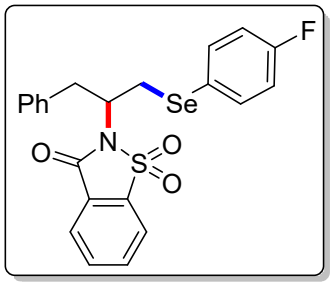
2-(1-phenyl-3-(*p*-tolylselanyl)propan-2-yl)benzo[*d*]isothiazol-3(2*H*)-one 1,1-dioxide (5p): New compound. (Eluent: petroleum ether (60-90 °C)/EtOAc = 8:1, v/v). 53.6 mg, 57% yield. Colorless oil. **^{1}H NMR** ($CDCl_3$, 400 MHz) δ 8.05-8.03 (m, 1H), 7.92-7.80 (m, 3H), 7.45-7.43 (m, 2H), 7.31-7.20 (m, 5H), 7.09-7.07 (m, 2H), 4.06-4.04 (m, 2H), 3.99-3.92 (m, 1H), 3.15 (dd, *J* = 14.6, 5.4 Hz, 1H), 2.87 (dd, *J* = 14.6, 8.9 Hz, 1H), 3.32 (s, 3H); **^{13}C NMR** ($CDCl_3$, 100 MHz) δ 159.3, 138.7, 138.3, 137.7, 135.6, 135.0, 134.5, 130.1, 129.2, 128.5, 127.3, 126.8, 125.4, 123.7, 121.1, 44.4, 43.0, 38.9, 21.3; **HRMS** (ESI-Orbitrap) m/z calcd for $C_{23}H_{21}NO_3SSeNa$ $[M+Na]^+$: 494.0300; found: 492.0304.



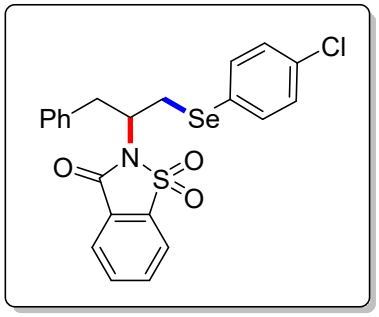
4-(1-((4-(*tert*-butyl)phenyl)selanyl)-3-phenylpropan-2-yl)benzo[*d*]isothiazol-3(2*H*)-one 1,1-dioxide (5q): New compound. (Eluent: petroleum ether (60-90 °C)/EtOAc = 8:1, v/v). 77 mg, 75% yield. Colorless oil. **^{1}H NMR** ($CDCl_3$, 400 MHz) δ 8.05-8.03 (m, 1H), 7.92-7.80 (m, 3H), 7.49-7.45 (m, 2H), 7.31-7.19 (m, 7H), 4.09-4.07 (m, 2H), 4.03-3.95 (m, 1H), 3.17 (dd, *J* = 14.7, 5.4 Hz, 1H), 2.90 (dd, *J* = 14.7, 8.9 Hz, 1H), 1.30 (s, 9H); **^{13}C NMR** ($CDCl_3$, 100 MHz) δ 159.3, 151.3, 138.7, 137.6, 135.0, 135.0, 134.5, 129.2, 128.5, 127.3, 126.7, 126.4, 125.4, 124.0, 121.1, 44.5, 42.8, 39.0, 34.7, 31.4; **HRMS** (ESI-Orbitrap) m/z calcd for $C_{26}H_{27}NO_3SSeNa$ $[M+Na]^+$: 536.0769; found: 536.0765.



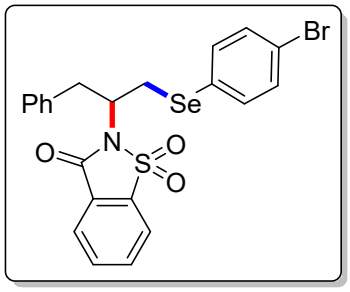
2-(1-((4-methoxyphenyl)selanyl)-3-phenylpropan-2-yl)benzo[*d*]isothiazol-3(2*H*)-one 1,1-dioxide (5r): New compound. (Eluent: petroleum ether (60-90 °C)/EtOAc = 8:1, v/v). 55.6 mg, 57% yield. Colorless oil. **^{1}H NMR** ($CDCl_3$, 400 MHz) δ 8.05-8.02 (m, 1H), 7.92-7.80 (m, 3H), 7.50-7.47 (m, 2H), 7.31-7.20 (m, 5H), 6.83-6.79 (m, 2H), 4.08-4.98 (m, 2H), 3.92-3.84 (m, 1H), 3.79 (s, 3H), 3.11 (dd, *J* = 14.6, 5.6 Hz, 1H), 2.86 (dd, *J* = 14.6, 9.0 Hz, 1H); **^{13}C NMR** ($CDCl_3$, 100 MHz) δ 160.1, 159.3, 138.8, 137.9, 137.6, 135.0, 134.5, 129.2, 128.5, 127.3, 126.7, 125.4, 121.1, 117.2, 114.9, 55.4, 44.4, 43.2, 38.9; **HRMS** (ESI-Orbitrap) m/z calcd for $C_{23}H_{21}NO_4SSeNa$ $[M+Na]^+$: 510.0249; found: 510.0248.



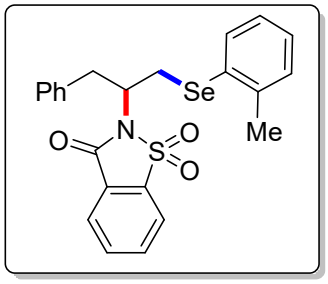
2-(1-((4-fluorophenyl)selanyl)-3-phenylpropan-2-yl)benzo[*d*]isothiazol-3(2*H*)-one 1,1-dioxide (5s): New compound. (Eluent: petroleum ether (60-90 °C)/EtOAc = 8:1, v/v). 38 mg, 35% yield. Colorless oil. **^{1}H NMR** ($CDCl_3$, 400 MHz) δ 8.05-8.03 (m, 1H), 7.93-7.81 (m, 3H), 7.51-7.48 (m, 2H), 7.31-7.21 (m, 5H), 6.96-6.92 (m, 2H), 4.05-4.03 (m, 2H), 3.97-3.89 (m, 1H), 3.15 (dd, J = 14.7, 5.5 Hz, 1H), 2.88 (dd, J = 14.6, 9.0 Hz, 1H); **^{13}C NMR** ($CDCl_3$, 100 MHz) δ 163.0 (d, J_{CF} = 246.6 Hz), 159.3, 138.5, 137.7 (d, J_{CF} = 8.0 Hz), 137.6, 134.8 (d, J_{CF} = 48.8 Hz), 129.2, 128.6, 127.2, 126.9, 125.5, 122.2, 121.1, 116.6, 116.3, 44.3, 43.9, 39.1; **^{19}F NMR** (376 MHz, $CDCl_3$) δ -113.2; **HRMS** (ESI-Orbitrap) m/z calcd for $C_{22}H_{18}FNO_3SSeNa$ $[M+Na]^+$: 498.0049; found: 498.0050.



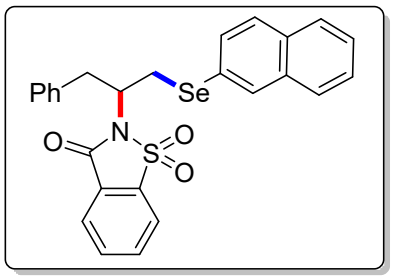
2-(1-((4-chlorophenyl)selanyl)-3-phenylpropan-2-yl)benzo[*d*]isothiazol-3(2*H*)-one 1,1-dioxide (5t): New compound. (Eluent: petroleum ether (60-90 °C)/EtOAc = 8:1, v/v). 49.2 mg, 50% yield. Colorless oil. **^{1}H NMR** ($CDCl_3$, 400 MHz) δ 8.05-8.03 (m, 1H), 7.93-7.81 (m, 3H), 7.45-7.41 (m, 2H), 7.31-7.18 (m, 7H), 4.10-4.95 (m, 3H), 3.18 (dd, J = 14.7, 5.3 Hz, 1H), 2.88 (dd, J = 14.8, 8.5 Hz, 1H); **^{13}C NMR** ($CDCl_3$, 100 MHz) δ 159.3, 138.3, 137.6, 136.4, 135.1, 134.6, 134.4, 129.4, 129.2, 128.6, 127.2, 126.9, 126.0, 125.5, 121.1, 44.3, 43.8, 39.1; **HRMS** (ESI-Orbitrap) m/z calcd for $C_{22}H_{18}ClNO_3SSeNa$ $[M+Na]^+$: 513.9753; found: 513.9746.



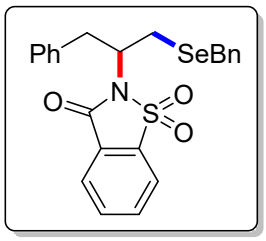
2-(1-((4-bromophenyl)selanyl)-3-phenylpropan-2-yl)benzo[*d*]isothiazol-3(2*H*)-one 1,1-dioxide (5u): New compound. (Eluent: petroleum ether (60-90 °C)/EtOAc = 8:1, v/v). 51 mg, 51% yield. Colorless oil. **^{1}H NMR** ($CDCl_3$, 400 MHz) δ 8.04 (d, *J* = 7.0 Hz, 1H), 7.93-7.82 (m, 3H), 7.38-7.27 (m, 6H), 7.24-7.21 (m, 3H), 4.07-3.96 (m, 3H), 3.18 (dd, *J* = 14.7, 5.1 Hz, 1H), 2.88 (dd, *J* = 14.9, 8.9 Hz, 1H); **^{13}C NMR** ($CDCl_3$, 100 MHz) δ 159.3, 138.3, 137.6, 136.6, 135.1, 134.6, 132.3, 129.2, 128.6, 127.2, 126.9, 126.8, 125.5, 122.5, 121.1, 44.3, 43.8, 39.1; **HRMS** (ESI-Orbitrap) m/z calcd for $C_{22}H_{19}BrNO_3SSe$ $[M+H]^+$: 535.9429; found: 535.9418.



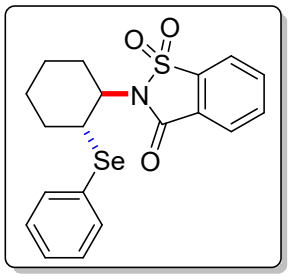
2-(1-phenyl-3-(*o*-tolylselanyl)propan-2-yl)benzo[*d*]isothiazol-3(2*H*)-one 1,1-dioxide (5v): New compound. (Eluent: petroleum ether (60-90 °C)/EtOAc = 8:1, v/v). 47 mg, 50% yield. Colorless oil. **^{1}H NMR** ($CDCl_3$, 400 MHz) δ 8.05-8.03 (m, 1H), 7.92-7.80 (m, 3H), 7.56 (d, *J* = 7.4 Hz, 1H), 7.30-7.14 (m, 7H), 7.11-7.07 (m, 1H), 4.16-4.97 (m, 3H), 3.27 (dd, *J* = 14.5, 4.6 Hz, 1H), 2.88 (dd, *J* = 14.6, 8.8 Hz, 1H), 2.36 (s, 3H); **^{13}C NMR** ($CDCl_3$, 100 MHz) δ 159.3, 141.0, 138.6, 137.7, 135.0, 134.5, 134.5, 130.3, 129.5, 129.2, 128.5, 128.0, 127.3, 126.8, 126.7, 125.5, 121.1, 44.4, 42.5, 38.9, 22.8. **HRMS** (ESI-Orbitrap) m/z calcd for $C_{23}H_{21}NO_3SSeNa$ $[M+Na]^+$: 494.0300; found: 492.0311.



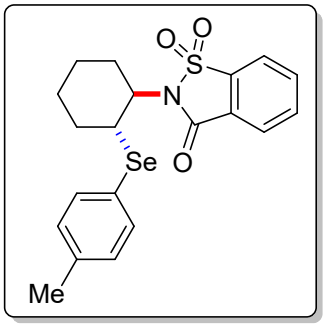
2-(1-(naphthalen-2-ylselanyl)-3-phenylpropan-2-yl)benzo[*d*]isothiazol-3(2*H*)-one 1,1-dioxide (5w): New compound. (Eluent: petroleum ether (60-90 °C)/EtOAc = 8:1, v/v). 40.0 mg, 39% yield. Colorless oil. **^{1}H NMR** ($CDCl_3$, 400 MHz) δ 8.02 (s, 1H), 7.98 (d, *J* = 7.3 Hz, 1H), 7.89 (d, *J* = 7.4 Hz, 1H), 7.84-7.74 (m, 4H), 7.71 (d, *J* = 8.6 Hz, 1H), 7.57 (dd, *J* = 8.5, 1.7 Hz, 1H), 7.49-7.44 (m, 2H), 7.32-7.21 (m, 5H), 4.18-4.11 (m, 3H), 3.23 (dd, *J* = 14.1, 4.6 Hz, 1H), 3.96 (dd, *J* = 14.4, 8.1 Hz, 1H); **^{13}C NMR** ($CDCl_3$, 100 MHz) δ 159.3, 138.5, 137.6, 135.0, 134.5, 134.0, 133.9, 132.6, 131.7, 129.4, 129.2, 128.8, 128.6, 127.8, 127.6, 127.2, 126.9, 126.5, 126.4, 125.4, 121.0, 44.5, 43.1, 39.0; HRMS (ESI) m/z Calcd for $C_{26}H_{21}NO_3SSeNa$ $[M+Na]^+$: 530.0300; Found: 530.0306.



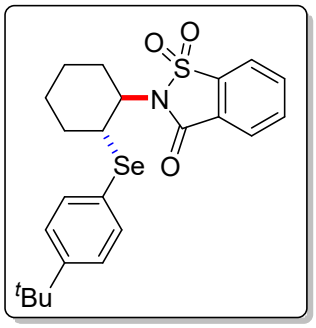
2-(1-(benzylselanyl)-3-phenylpropan-2-yl)benzo[*d*]isothiazol-3(2*H*)-one 1,1-dioxide (5x): New compound. (Eluent: petroleum ether (60-90 °C)/EtOAc = 8:1, v/v). 63.3 mg, 67% yield. Colorless oil. **^{1}H NMR** ($CDCl_3$, 400 MHz) δ 8.06-8.04 (m, 1H), 7.93-7.80 (m, 3H), 7.24-7.14 (m, 10H), 4.09-3.98 (m, 2H), 3.71 (s, 2H), 3.54-3.52 (m, 1H), 3.12-3.14 (m, 1H), 2.83-2.77 (m, 1H); **^{13}C NMR** ($CDCl_3$, 100 MHz) δ 159.2, 138.7, 137.7, 135.0, 134.5, 129.3, 129.1, 128.6, 128.4, 127.3, 126.9, 126.6, 125.5, 121.1, 44.3, 40.5, 39.5, 27.8; **HRMS** (ESI-Orbitrap) m/z calcd for $C_{23}H_{22}NO_3SSe$ $[M+H]^+$: 472.0480; found: 472.0474.



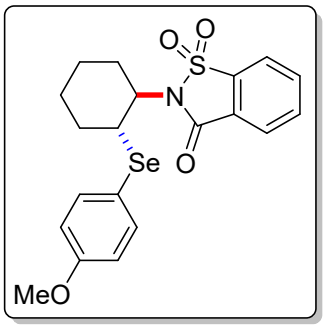
2-(2-(phenylselanyl)cyclohexyl)benzo[*d*]isothiazol-3(2*H*)-one 1,1-dioxide (**5y**): Known compound[4]. (Eluent: petroleum ether (60-90 °C)/EtOAc = 10:1, v/v). 83.8 mg, 99% yield. Yellow oil. **^{1}H NMR** ($CDCl_3$, 400 MHz) δ 7.96-7.95 (m, 1H), 7.88-7.76 (m, 3H), 7.58-7.56 (m, 2H), 7.19-7.13 (m, 3H), 4.11 (s, 2H), 2.30-2.16 (m, 3H), 1.90-1.87 (m, 1H), 1.71-1.66 (m, 1H), 1.52-1.32 (m, 3H); **^{13}C NMR** ($CDCl_3$, 100 MHz) δ 158.9, 137.3, 136.1, 134.7, 134.2, 128.8, 127.9, 127.7, 127.3, 125.3, 120.7, 58.7, 34.9, 31.9, 29.7, 25.8.



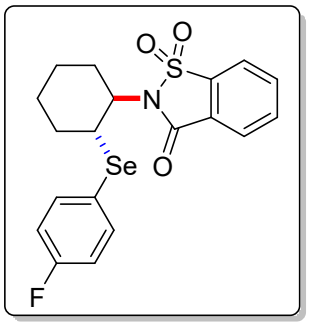
2-(2-(*p*-tolylselanyl)cyclohexyl)benzo[*d*]isothiazol-3(2*H*)-one 1,1-dioxide (5z): New compound. (Eluent: petroleum ether (60-90 °C)/EtOAc = 10:1, v/v). 46.6 mg, 54% yield. Yellow oil. **^{1}H NMR** ($CDCl_3$, 400 MHz) δ 7.96-7.94 (m, 1H), 7.88-7.76 (m, 3H), 7.47-7.44 (m, 2H), 6.95 (d, *J* = 7.8 Hz, 2H), 4.06 (s, 2H), 2.25 (s, 6H), 1.88-1.86 (m, 1H), 1.71-1.68 (m, 1H), 1.46-1.33 (m, 3H); **^{13}C NMR** ($CDCl_3$, 100 MHz) δ 158.9, 137.9, 137.4, 136.4, 134.6, 134.1, 129.6, 127.4, 125.2, 123.9, 120.7, 58.9, 34.8, 31.9, 26.7, 25.8, 21.2; **HRMS** (ESI-Orbitrap) m/z calcd for $C_{20}H_{21}NO_3SSeNa$ $[M+Na]^+$:458.0300; found: 458.0297.



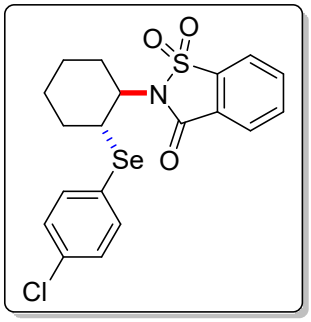
2-(2-((4-(*tert*-butyl)phenyl)selanyl)cyclohexyl)benzo[*d*]isothiazol-3(2*H*)-one 1,1-dioxide (5a′): New compound. (Eluent: petroleum ether (60-90 °C)/EtOAc = 15:1, v/v). 87.9 mg, 92% yield. Yellow oil. **^{1}H NMR** ($CDCl_3$, 400 MHz) δ 7.96-7.95 (m, 1H), 7.89-7.76 (m, 3H), 7.50-7.48 (m, 2H), 7.19-7.16 (m, 2H), 4.07 (s, 2H), 2.29-2.15 (m, 3H), 1.89-1.87 (m, 1H), 1.72-1.70 (m, 1H), 1.49-1.33 (m, 3H), 1.26 (s, 9H); **^{13}C NMR** ($CDCl_3$, 100 MHz) δ 158.9, 151.0, 137.4, 135.9, 134.6, 134.2, 127.4, 125.9, 125.2, 124.1, 120.8, 58.9, 35.0, 34.6, 31.9, 31.4, 26.7, 25.8; **HRMS** (ESI-Orbitrap) m/z calcd for $C_{23}H_{27}NO_3SSeNa$ $[M+Na]^+$:500.0769; found: 500.0764.



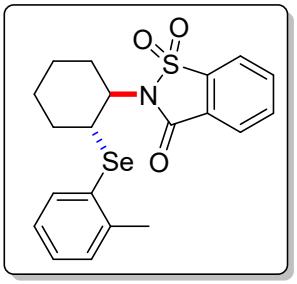
2-(2-((4-methoxyphenyl)selanyl)cyclohexyl)benzo[*d*]isothiazol-3(2*H*)-one 1,1-dioxide (5b′): New compound. (Eluent: petroleum ether (60-90 °C)/EtOAc = 8:1, v/v). 57.4 mg, 64% yield. Yellow oil. **^{1}H NMR** ($CDCl_3$, 400 MHz) δ 7.97-7.95 (m, 1H), 7.89-7.76 (m, 3H), 7.52-7.48 (m, 2H), 6.69 (d, *J* = 8.0 Hz, 2H), 4.14-3.99 (m, 2H), 3.73 (s, 3H), 2.24-2.14 (m, 3H), 1.86-1.85 (m, 1H), 1.70-1.65 (m, 1H), 1.41-1.31 (m, 3H); **^{13}C NMR** ($CDCl_3$, 100 MHz) δ 159.8, 158.9, 138.3, 137.4, 134.6, 134.2, 127.4, 125.2, 120.7, 117.6, 114.4, 58.9, 55.2, 43.8, 34.6, 31.9, 26.6, 25.8; **HRMS** (ESI-Orbitrap) m/z calcd for $C_{20}H_{21}NO_4SSeNa$ $[M+Na]^+$:474.0249; found: 474.0252.



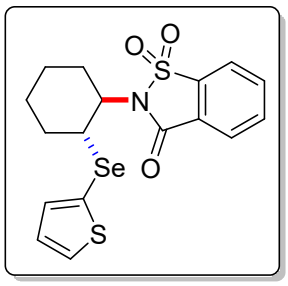
2-(2-((4-fluorophenyl)selanyl)cyclohexyl)benzo[*d*]isothiazol-3(2*H*)-one 1,1-dioxide (5c′): New compound. (Eluent: petroleum ether (60-90 °C)/EtOAc = 10:1, v/v). 50.0 mg, 61% yield. Yellow oil. **^{1}H NMR** ($CDCl_3$, 400 MHz) δ 7.97-7.95 (m, 1H), 7.89-7.78 (m, 3H), 7.56-7.53 (m, 2H), 6.82 (t, J = 8.4 Hz, 2H), 4.05 (s, 2H), 2.25-2.14 (m, 3H), 1.89-1.87 (m, 1H), 1.73-1.70 (m, 1H), 1.47-1.33 (m, 3H); **^{13}C NMR** ($CDCl_3$, 100 MHz) δ 162.9 (d, J_{CF} = 264 Hz), 158.9, 138.4 (d, J_{CF} = 8 Hz), 137.4, 134.7, 134.3, 127.3, 125.2, 122.2, 120.8, 115.9 (d, J_{CF} = 21 Hz), 58.9, 34.7, 31.9, 26.7, 25.8; **^{19}F NMR** ($CDCl_3$, 376 MHz) δ -36.1; **HRMS** (ESI-Orbitrap) m/z calcd for $C_{19}H_{18}NO_3FSSeNa$ $[M+Na]^+$:462.0049; found: 462.0066.



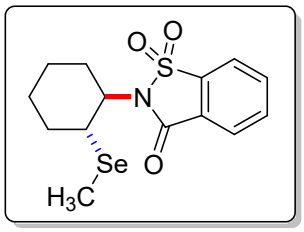
2-(2-((4-chlorophenyl)selanyl)cyclohexyl)benzo[d]isothiazol-3(2*H*)-one 1,1-dioxide (5d′): New compound. (Eluent: petroleum ether (60-90 °C)/EtOAc = 15:1, v/v). 47.8 mg, 53% yield. Yellow oil. **^{1}H NMR** ($CDCl_3$, 400 MHz) δ 7.93-7.91 (m, 1H), 7.88-7.77 (m, 3H), 7.49-7.47 (m, 2H), 7.05 (d, J = 8.0 Hz, 2H), 4.11 (s, 2H), 2.27-2.14 (m, 3H), 1.90-1.88 (m, 1H), 1.74-1.72 (m, 1H), 1.48-1.35 (m, 3H); **^{13}C NMR** ($CDCl_3$, 100 MHz) δ 158.9, 137.5, 137.3, 134.7, 134.3, 134.2, 128.9, 127.2, 126.0, 125.2, 120.8, 59.0, 34.7, 31.9, 26.7, 25.7; **HRMS** (ESI-Orbitrap) m/z calcd for $C_{19}H_{19}ClNO_3SSeNa$ $[M+H]^+$:455.9895; found: 455.9903.



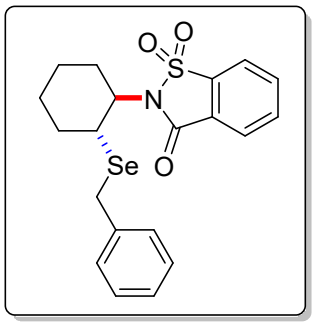
2-(2-(*o*-tolylselanyl)cyclohexyl)benzo[*d*]isothiazol-3(2*H*)-one 1,1-dioxide (5e′): New compound. (Eluent: petroleum ether (60-90 °C)/EtOAc = 10:1, v/v). 53.2 mg, 61% yield. Yellow oil. **^{1}H NMR** ($CDCl_3$, 400 MHz) δ 7.96-7.94 (m, 1H), 7.89-7.76 (m, 3H), 7.56 (dd, *J* = 7.7, 6.6 Hz, 1H), 7.14-7.05 (m, 2H), 6.91 (t, *J* = 7.3 Hz, 1H), 4.18 (s, 2H), 2.40 (s, 3H), 2.29-2.16 (m, 3H), 1.93-1.88 (m, 1H), 1.73-1.69 (m, 1H), 1.62-1.52 (m, 1H), 1.45-1.25 (m, 2H); **^{13}C NMR** ($CDCl_3$, 100 MHz) δ 158.9, 141.9, 137.4, 136.0, 134.7, 134.2, 129.9, 129.3, 128.0, 127.3, 126.2, 125.2, 120.8, 58.6, 34.9, 31.9, 26.7, 25.9, 23.2; **HRMS** (ESI-Orbitrap) m/z calcd for $C_{20}H_{21}NO_3SSeNa$ $[M+Na]^+$:458.0300; found: 458.0307.



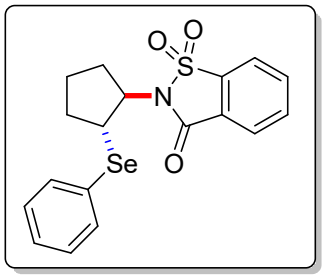
2-(2-(thiophen-2-ylselanyl)cyclohexyl)benzo[*d*]isothiazol-3(2*H*)-one 1,1-dioxide (5f′): New compound. (Eluent: petroleum ether (60-90 °C)/EtOAc = 15:1, v/v). 44.6 mg, 52% yield. Yellow oil. **^{1}H NMR** ($CDCl_3$, 400 MHz) δ 8.06-8.04 (m, 1H), 7.92-7.81 (m, 3H), 7.37 (d, *J* = 5.2 Hz, 1H), 7.27-7.26 (m, 1H), 6.95-6.93 (m, 1H), 4.16 (s, 1H), 3.91 (s, 1H), 2.28-2.16 (m, 3H), 1.87-1.84 (m, 1H), 1.72-1.60 (m, 1H), 1.40-1.25 (m, 3H); **^{13}C NMR** ($CDCl_3$, 100 MHz) δ 158.9, 138.1, 137.5, 134.8, 134.4, 131.9, 128.2, 127.4, 125.4, 120.8, 120.6, 58.3, 34.5, 31.9, 26.6, 25.7; **HRMS** (ESI-Orbitrap) m/z calcd for $C_{17}H_{17}NO_3S_2SeNa$ $[M+Na]^+$:449.9707; found: 449.9708.



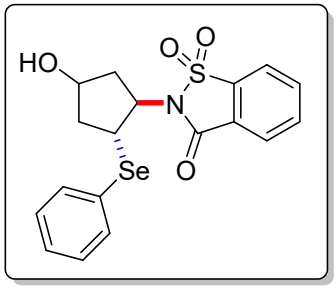
2-(2-(methylselanyl)cyclohexyl)benzo[*d*]isothiazol-3(2*H*)-one 1,1-dioxide (5g′): New compound. (Eluent: petroleum ether (60-90 °C)/EtOAc = 10:1, v/v). 69.8 mg, 97% yield. White solid. m.p.: 112.5-113.8 °C. **^{1}H NMR** ($CDCl_3$, 400 MHz) δ 8.05-8.03 (m, 1H), 7.89-7.78 (m, 3H), 4.08 (s, 1H), 3.66 (s, 1H), 2.36-2.21 (m, 3H), 1.92 (s, 4H), 1.79-1.78 (m, 1H), 1.69-1.59 (m, 1H), 1.48-1.40 (m, 2H); **^{13}C NMR** ($CDCl_3$, 100 MHz) δ 158.9, 137.5, 134.7, 134.2, 127.3, 125.3, 120.8, 57.7, 39.9, 34.7, 31.7, 26.7, 26.0, 1.57; **HRMS** (ESI-Orbitrap) m/z calcd for $C_{14}H_{17}NO_3SSeNa$ $[M+Na]^+$:381.9987; found: 381.9986.



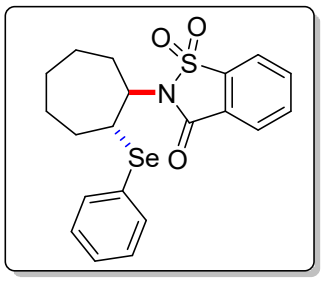
2-(2-(benzylselanyl)cyclohexyl)benzo[*d*]isothiazol-3(2*H*)-one 1,1-dioxide (5h′): New compound. (Eluent: petroleum ether (60-90 °C)/EtOAc = 10:1, v/v). 81.8 mg, 94% yield. Yellow oil. **^{1}H NMR** ($CDCl_3$, 400 MHz) δ 8.05-8.03 (m, 1H), 7.89-7.78 (m, 3H), 7.28-7.15 (m, 5H), 4.14 (s, 1H), 3.89-3.77 (m, 2H), 3.73 (s, 1H), 2.27-2.22 (m, 3H), 1.93-1.90 (m, 1H), 1.75-1.62 (m, 2H), 1.43-1.34 (m, 2H); **^{13}C NMR** ($CDCl_3$, 100 MHz) δ 158.9, 138.8, 137.4, 134.7, 134.3, 129.1, 128.4, 127.3, 126.7, 125.2, 120.8, 58.0, 35.8, 31.8, 26.8, 26.1, 25.9; **HRMS** (ESI-Orbitrap) m/z calcd for $C_{20}H_{21}NO_3SSeNa$ $[M+Na]^+$:458.0300; found: 458.0306.



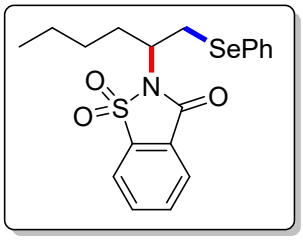
2-(2-(phenylselanyl)cyclopentyl)benzo[*d*]isothiazol-3(2*H*)-one 1,1-dioxide (5i′): Known compound[4]. (Eluent: petroleum ether (60-90 °C)/EtOAc = 10:1, v/v). 81.0 mg, 99% yield. Yellow oil. **^{1}H NMR** ($CDCl_3$, 400 MHz) δ 7.97-7.95 (m, 1H), 7.86-7.78 (m, 3H), 7.62-7.59 (m, 2H), 7.18-7.16 (m, 3H), 4.53-4.46 (m, 1H), 4.34-4.27 (m, 1H), 2.34-2.27 (m, 2H), 2.16-2.12 (m, 1H), 1.93-1.90 (m, 1H), 1.77-1.69 (m, 2H); **^{13}C NMR** ($CDCl_3$, 100 MHz) δ 158.8, 137.5, 135.8, 134.7, 134.2, 128.9, 127.9, 127.6, 127.2, 125.1, 120.7, 60.0, 42.0, 32.3, 28.8, 22.7.



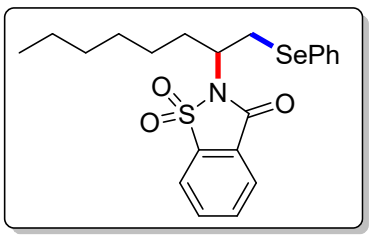
2-(4-hydroxy-2-(phenylselanyl)cyclopentyl)benzo[*d*]isothiazol-3(2*H*)-one 1,1-dioxide (5j′): New compound. (Eluent: petroleum ether (60-90 °C)/EtOAc = 3:1, v/v). d.r. = 8:1, 60.8 mg, 72% yield. White solid. m.p.: 108.6-109.9 °C. **^{1}H NMR** ($CDCl_3$, 400 MHz) δ 7.97-7.95 (m, 1H), 7.87-7.77 (m, 3H), 7.62-7.60 (m, 2H), 7.24-7.17 (m, 3H), 4.81 (dd, *J* = 18.1, 9.2 Hz, 1H), 4.53-4.48 (m, 1H), 4.27 (dd, *J* = 17.8, 8.8 Hz, 1H), 2.76-2.69 (m, 1H), 2.60-2.53 (m, 1H), 2.15-2.09 (m, 1H), 1.85 (s, 1H), 1.82-1.75 (m, 1H); **^{13}C NMR** ($CDCl_3$, 100 MHz) δ 159.5, 158.9, 137.5, 137.2, 136.7, 136.0, 135.1, 134.8, 134.6, 134.4, 129.1, 129.1, 128.5, 128.2, 127.4, 127.2, 126.3, 125.3, 125.2, 121.1, 120.8, 71.1, 70.4, 58.0, 57.1, 42.9, 42.1, 40.0, 39.9, 39.7, 38.8; **HRMS** (ESI-Orbitrap) m/z calcd for $C_{18}H_{17}NO_4SSeNa$ $[M+Na]^+$: 445.9936; found:445.9929.



2-(2-(phenylselanyl)cycloheptyl)benzo[*d*]isothiazol-3(2*H*)-one 1,1-dioxide (**5k′**): New compound. (Eluent: petroleum ether (60-90 °C)/EtOAc = 10:1, v/v). 77.0 mg, 89% yield. Yellow oil. **^{1}H NMR** ($CDCl_3$, 400 MHz) δ 8.00-7.98 (m, 1H), δ 7.89-7.76 (m, 3H), δ 7.57-7.55 (m, 2H), δ 7.20-7.17 (m, 3H), δ 4.40-4.29 (m, 2H), δ 2.41-2.33 (m, 1H), δ 2.24-2.18 (m, 1H), δ 2.14-2.07 (m, 1H), δ 1.94-1.89 (m, 1H), δ 1.84-1.68 (m, 2H), δ 1.65-1.53 (m, 4H); **^{13}C NMR** ($CDCl_3$, 100 MHz) δ 158.8, 137.4, 135.4, 134.7, 134.2, 128.9, 127.7, 127.3, 125.2, 120.7, 61.2, 46.8, 33.1, 32.9, 27.6, 25.5, 25.4; **HRMS** (ESI-Orbitrap) m/z calcd for $C_{20}H_{22}NO_3SSe$ $[M+H]^+$:436.0480; found:436.0466.

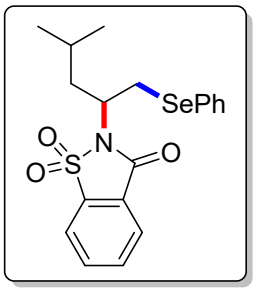


2-(1-(phenylselanyl)heptan-2-yl)benzo[*d*]isothiazol-3(2*H*)-one 1,1-dioxide (**5l′**): Known compound[4]. (Eluent: petroleum ether (60-90 °C)/EtOAc = 10:1, v/v). 57.6 mg, 68% yield. Yellow oil. **^{1}H NMR** ($CDCl_3$, 400 MHz) δ 8.04-8.02 (m, 1H), 7.91-7.80 (m, 3H), 7.65-7.63 (m, 2H), 7.30-7.27 (m, 3H), 4.05-3.95 (m, 2H), 3.75-3.67 (m, 1H), 1.84-1.76 (m, 1H), 1.71-1.52 (m, 2H), 1.49-1.24 (m, 3H), 0.88 (t, *J* = 7.3 Hz, 3H); **^{13}C NMR** ($CDCl_3$, 100 MHz) δ 159.3, 137.7, 135.0, 134.5, 129.3, 128.0, 127.8, 127.3, 125.4, 121.1, 44.6, 42.4, 31.8, 29.7, 22.5, 14.1.

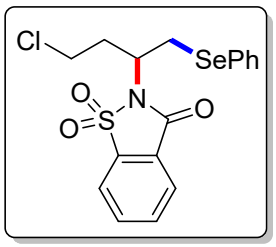


2-(1-(phenylselanyl)nonan-2-yl)benzo[*d*]isothiazol-3(2*H*)-one 1,1-dioxide

(5m′): New compound. (Eluent: petroleum ether (60-90 °C)/EtOAc = 10:1, v/v). 64.9 mg, 72% yield. Yellow oil. **^{1}H NMR** ($CDCl_3$, 400 MHz) δ 8.05-8.02 (m, 1H), 7.91-7.80 (m, 3H), 7.65-7.63 (m, 2H), 7.30-7.28 (m, 3H), 4.05-3.95 (m, 2H), 3.75-3.68 (m, 1H), 1.81-1.75 (m, 1H), 1.70-1.40 (m, 3H), 1.33-1.23 (m, 6H), 0.87-0.84 (m, 3H); **^{13}C NMR** ($CDCl_3$, 100 MHz) δ 159.3, 137.7, 135.0, 135.0, 134.5, 129.3, 128.0, 127.9, 127.3, 125.4, 121.1, 44.6, 42.5, 32.2, 31.8, 29.1, 27.6, 22.7, 14.2; **HRMS** (ESI-Orbitrap) m/z calcd for $C_{21}H_{25}NO_3SSeNa$ $[M+Na]^+$: 474.0613; found:474.0613.

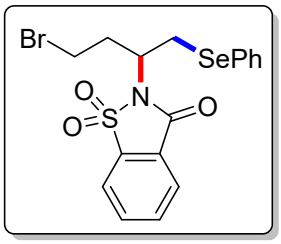


2-(4-methyl-1-(phenylselanyl)pentan-2-yl)benzo[*d*]isothiazol-3(2*H*)-one 1,1-dioxide (5n′): New compound. (Eluent: petroleum ether (60-90 °C)/EtOAc = 10:1, v/v). 53.3 mg, 63% yield. Yellow oil. **^{1}H NMR** ($CDCl_3$, 400 MHz) δ 8.04-8.02 (m, 1H), 7.91-7.80 (m, 3H), 7.66-7.63 (m, 2H), 7.31-7.28 (m, 3H), 4.06-3.92 (m, 2H), 3.78-3.70 (m, 1H), 2.05-1.96 (m, 1H), 1.59-1.46 (m, 2H), 0.90 (dd, *J* = 15.3, 6.7 Hz, 6H); **^{13}C NMR** ($CDCl_3$, 100 MHz) δ 159.2, 137.6, 135.2, 134.9, 134.5, 129.3, 128.1, 127.5, 127.3, 125.4, 121.0, 45.1, 41.2, 40.4, 26.3, 23.4, 21.3; **HRMS** (ESI-Orbitrap) m/z calcd for $C_{19}H_{21}NO_3SSeNa$ $[M+Na]^+$: 446.0300; found: 446.0299.

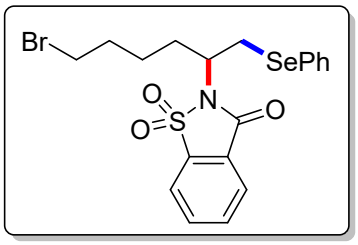


2-(4-chloro-1-(phenylselanyl)butan-2-yl)benzo[*d*]isothiazol-3(2*H*)-one 1,1-dioxide (5o′): New compound. (Eluent: petroleum ether (60-90 °C)/EtOAc = 10:1, v/v). 73.6 mg, 86% yield. Yellow oil. **^{1}H NMR** ($CDCl_3$, 400 MHz) δ 8.05-8.03 (m, 1H), 7.92-7.81 (m, 3H), 7.66-7.64 (m, 2H), 7.33-7.29 (m, 3H), 4.12 (dd, *J* = 14.6, 5.6 Hz, 1H), 3.95 (dd, *J* = 14.6, 9.9 Hz, 1H), 3.87-3.78 (m, 3H), 2.29-2.20 (m, 1H), 1.99-

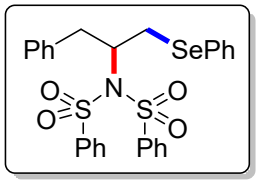
1.90 (m, 1H); **^{13}C NMR** ($CDCl_3$, 100 MHz) δ 159.3, 137.6, 135.5, 135.1, 134.6, 129.5, 128.6, 127.2, 126.7, 125.5, 121.2, 44.4, 42.8, 39.5, 34.9; HRMS (ESI-Orbitrap) m/z calcd for $C_{17}H_{16}ClNO_3SSeK$ $[M+K]^+$: 467.9336; found: 467.9332.



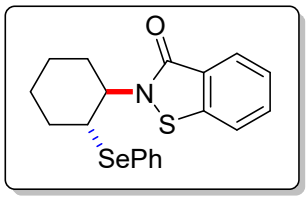
2-(4-bromo-1-(phenylselanyl)butan-2-yl)benzo[*d*]isothiazol-3(2*H*)-one 1,1-dioxide (5p′): New compound. (Eluent: petroleum ether (60-90 °C)/EtOAc = 10:1, v/v). 81.1 mg, 86% yield. Yellow oil. **^{1}H NMR** ($CDCl_3$, 400 MHz) δ 8.05-8.03 (m, 1H), 7.92-7.80 (m, 3H), 7.67-7.65 (m, 2H), 7.34-7.31 (m, 3H), 4.11 (dd, *J* = 14.6, 5.6 Hz, 1H), 3.95 (dd, *J* = 14.6, 9.9 Hz, 1H), 3.86-3.78 (m, 1H), 3.70-3.60 (m, 2H), 2.35-2.26 (m, 1H), 2.07-1.98 (m, 1H); **^{13}C NMR** ($CDCl_3$, 100 MHz) δ 159.3, 137.5, 135.5, 135.1, 134.6, 129.5, 128.5, 127.1, 126.5, 125.5, 121.2, 44.3, 40.7, 34.9, 31.1; HRMS (ESI-Orbitrap) m/z calcd for $C_{17}H_{16}BrNO_3SSeNa$ $[M+Na]^+$: 495.9092; found: 495.9089.



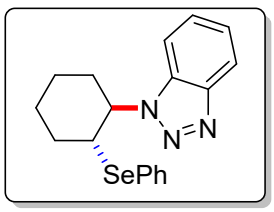
2-(6-bromo-1-(phenylselanyl)hexan-2-yl)benzo[*d*]isothiazol-3(2*H*)-one 1,1-dioxide (5q′): New compound. (Eluent: petroleum ether (60-90 °C)/EtOAc = 10:1, v/v). 80.5 mg, 80% yield. Yellow oil. **^{1}H NMR** ($CDCl_3$, 400 MHz) δ 8.05-8.03 (m, 1H), 7.92-7.80 (m, 3H), 7.66-7.63 (m, 2H), 7.32-7.30 (m, 3H), 4.07-3.94 (m, 2H), 3.71-3.65 (m, 1H), 3.40-3.35 (m, 2H), 1.87-1.79 (m, 4H), 1.63-1.55 (m, 2H); **^{13}C NMR** ($CDCl_3$, 100 MHz) δ 159.3, 137.6, 135.1, 135.0, 134.5, 129.4, 128.2, 127.4, 127.2, 125.4, 121.1, 44.5, 42.0, 33.5, 32.4, 31.1, 26.2; HRMS (ESI-Orbitrap) m/z calcd for $C_{19}H_{21}BrNO_3SSe$ $[M+H]^+$: 501.9585; found: 501.9590.



***N*-(1-phenyl-3-(phenylselanyl)propan-2-yl)-*N*-(phenylsulfonyl)benzenesulfonamide (5r′)**: New compound. (Eluent: petroleum ether (60-90 °C)/EtOAc = 6:1, v/v). 45.1 mg, 39% yield. Colorless oil. **^{1}H NMR** ($CDCl_3$, 400 MHz) δ 7.87-7.85 (m, 4H), 7.65-7.61 (m, 2H), 7.50-7.46 (m, 6H), 7.35-7.22 (m, 6H), 7.03-7.00 (m, 2H), 7.07-7.96 (m, 2H), 3.83-3.76 (m, 1H), 3.13 (dd, *J* = 14.7, 5.0 Hz, 1H), 2.68 (dd, *J* = 14.8, 10.5 Hz, 1H); **^{13}C NMR** ($CDCl_3$, 100 MHz) δ 139.3, 139.1, 135.2, 134.1, 129.3, 129.2, 129.1, 128.6, 128.5, 128.1, 126.7, 53.6, 45.0, 38.5; **HRMS** (ESI) m/z Calcd for $C_{27}H_{25}NO_4S_2SeNa$ $[M+Na]^+$: 594.0282; Found: 594.0274.

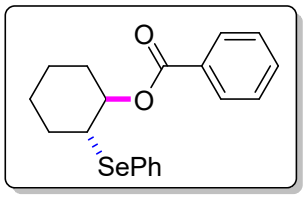


2-(2-(phenylselanyl)cyclohexyl)benzo[*d*]isothiazol-3(2*H*)-one (5s′): New compound. (Eluent: petroleum ether (60-90 C)/EtOAc = 10:1, v/v). 22.3 mg, 29% yield. Yellow oil. **^{1}H NMR** ($CDCl_3$, 400 MHz) δ 8.05 (d, *J* = 7.8 Hz, 1H), 7.59-7.49 (m, 4H), 7.40-7.37 (m, 1H), 7.21-7.13 (m, 3H), 4.67 (s, 1H), 3.33 (s, 1H), 2.27-2.24 (m, 1H), 2.12-2.09 (m, 1H), 1.86-1.82 (m, 1H), 1.78-1.71 (m, 2H), 1.60-1.48 (m, 1H), 1.45-1.25 (m, 2H); **^{13}C NMR** ($CDCl_3$, 100 MHz) δ 165.3, 140.2, 136.3, 131.7, 128.8, 128.0, 127.2, 126.9, 125.4, 125.2, 120.5, 57.2, 47.7, 34.6, 34.1, 26.8, 25.4; **HRMS** (ESI-Orbitrap) m/z calcd for $C_{19}H_{19}NOSSeNa$ $[M+Na]^+$:412.0245; found: 412.0240.

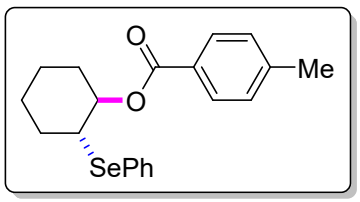


1-(2-(phenylselanyl)cyclohexyl)-*1H*-benzo[*d*][1,2,3]triazole (5t′): Known compound[5]. (Eluent: petroleum ether (60-90 C)/EtOAc = 10:1, v/v). 18.9 mg, 27%

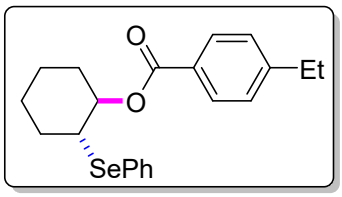
yield. White solid. m.p.: 106.3-107.9 °C. **^{1}H NMR** ($CDCl_3$, 400 MHz) δ 7.98-7.95 (m, 1H), 7.52-7.50 (m, 1H), 7.47-7.43 (m, 1H), 7.34-7.30 (m, 1H), 7.16-7.08 (m, 3H), 7.04-7.01 (m, 2H), 4.65 (td, *J* = 11.5, 4.4 Hz, 1H), 3.93 (ddd, *J* = 13.1, 10.3, 4.1 Hz, 1H), 2.47-2.44 (m, 1H), 2.34-2.24 (m, 1H), 2.18-2.15 (m, 1H), 1.99-1.98 (m, 1H), 1.88-1.86 (m, 1H), 1.76-1.65 (m, 1H), 1.59-1.46 (m, 1H); **^{13}C NMR** ($CDCl_3$, 100 MHz) δ 145.9, 135.3, 133.0, 128.7, 127.9, 127.0, 123.7, 120.1, 109.8, 63.8, 47.3, 34.5, 34.1, 26.8, 25.4.



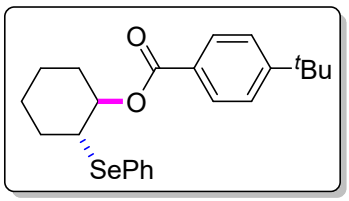
2-(phenylselanyl)cyclohexyl benzoate (7a): Known compound[6]. (Eluent: petroleum ether (60-90 °C)/EtOAc = 50:1, v/v). 64.7 mg, 90 % yield. Yellow oil. **^{1}H NMR** ($CDCl_3$, 400 MHz) δ 7.98-7.95 (m, 2H), 7.58-7.52 (m, 3H), 7.43-7.38 (m, 2H), 7.28-7.20 (m, 3H), 5.09 (td, *J* = 9.0, 4.0 Hz, 1H), 3.40 (ddd, *J* = 11.1, 8.2, 4.2 Hz, 1H), 2.27-2.21 (m, 2H), 1.81-1.67 (m, 2H), 1.64-1.35 (m, 4H); **^{13}C NMR** ($CDCl_3$, 100 MHz) δ 166.0, 135.4, 133.0, 130.7, 129.9, 129.1, 128.7, 128.5, 127.8, 76.1, 46.4, 32.4, 31.7, 25.9, 23.7.



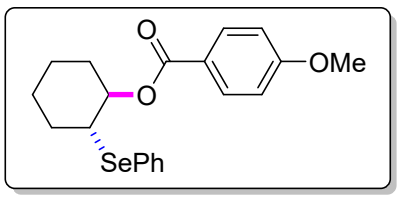
2-(phenylselanyl)cyclohexyl 4-methylbenzoate (7b): New compound. (Eluent: petroleum ether (60-90 °C)/EtOAc = 50:1, v/v). 70.4 mg, 94 % yield. Orange-red oil liquid . **^{1}H NMR** ($CDCl_3$, 400 MHz) δ 7.87 (d, *J* = 8.2 Hz, 2H), 7.59-7.57 (m, 2H), 7.26-7.20 (m, 5H), 5.07 (td, *J* = 8.9, 3.9 Hz, 1H), 3.40 (td, *J* = 10.1, 4.2 Hz, 1H), 2.41 (s, 3H), 2.25-2.22 (m, 2H), 1.79-1.69 (m, 2H), 1.66-1.34 (m, 4H); **^{13}C NMR** ($CDCl_3$, 100 MHz) δ 165.9, 143.5, 135.3, 129.8, 129.0, 129.0, 128.6, 127.9, 127.7, 75.6, 46.3, 32.3, 31.5, 25.7, 23.6, 21.7; **HRMS** (ESI-Orbitrap) m/z calcd for $C_{20}H_{22}O_2SeNa$ $[M+Na]^+$: 397.0683; Found: 397.0686.



2-(phenylselanyl)cyclohexyl 4-ethylbenzoate (7c): New compound. (Eluent: petroleum ether (60-90 °C)/EtOAc = 50:1, v/v). 70.8 mg, 92 % yield. Orange-red oil liquid. **^{1}H NMR** ($CDCl_3$, 400 MHz) δ 7.91-7.88 (m, 2H), 7.60-7.56 (m 2H), 7.26-7.21 (m, 5H), 5.08 (td, *J* = 8.9, 3.9 Hz, 1H), 3.40 (ddd, *J* = 11.2, 8.1, 4.2 Hz, 1H), 5.41 (q, *J* = 7.6 Hz, 2H), 2.26-2.21 (m, 2H), 1.80-1.66 (m, 2H), 1.64-1.35 (m, 4H), 1.26 (t, *J* = 7.6 Hz, 3H); **^{13}C NMR** ($CDCl_3$, 100 MHz) δ 165.9, 149.7, 135.3, 129.9, 129.0, 128.6, 128.1, 127.9, 127.7, 75.6, 46.3, 32.3, 31.5, 29.1, 25.7, 23.6, 15.4; **HRMS** (ESI-Orbitrap) m/z calcd for $C_{21}H_{24}O_2SeNa$ $[M+Na]^+$: 411.0839; Found: 411.0844.

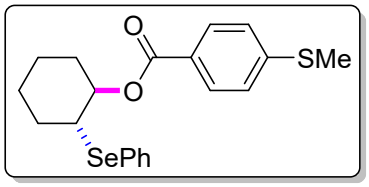


2-(phenylselanyl)cyclohexyl 4-(tert-butyl)benzoate (7d): New compound. (Eluent: petroleum ether (60-90 °C)/EtOAc = 50:1, v/v). 75.8 mg, 91 % yield. Orange-red oil liquid. **^{1}H NMR** ($CDCl_3$, 400 MHz) δ 7.94-7.91 (m, 2H), 7.59-7.57 (m, 2H), 7.45-7.42 (m, 2H), 7.27-7.21 (m, 3H), 5.08 (td, *J* = 8.9, 4.0 Hz, 1H), 3.40 (ddd, *J* = 11.2, 8.1, 4.1 Hz, 1H), 2.26-2.21 (m, 2H), 1.79-1.68 (m, 2H), 1.63-1.40 (m, 4H), 1.35 (s, 9H); **^{13}C NMR** ($CDCl_3$, 100 MHz) δ 165.9, 156.5, 135.4, 129.7, 129.0, 128.5, 127.8, 127.7, 125.3, 75.5, 46.3, 35.1, 32.3, 31.5, 31.2, 25.7, 23.6; **HRMS** (ESI-Orbitrap) m/z calcd for $C_{23}H_{28}O_2SeNa$ $[M+Na]^+$: 439.1152; Found: 439.1149.

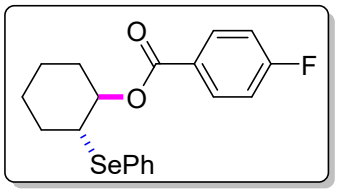


2-(phenylselanyl)cyclohexyl 4-methoxybenzoate (7e): New compound. (Eluent: petroleum ether (60-90 °C)/EtOAc = 30:1, v/v). 67.7 mg, 87 % yield. Orange-red oil liquid. **^{1}H NMR** ($CDCl_3$, 400 MHz) δ 7.93-7.90 (m, 2H), 7.59-7.56 (m, 2H), 7.26-7.20 (m, 3H), 6.90-6.86 (m, 2H), 5.05 (td, *J* = 8.9, 4.0 Hz, 1H), 3.85 (s, 3H), 3.39

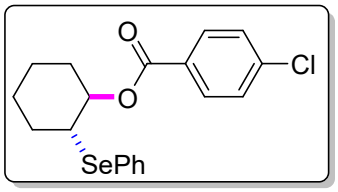
(ddd, J = 11.2, 8.2, 4.2 Hz, 1H), 2.24-2.20 (m, 2H), 1.78-1.68 (m, 2H), 1.65-1.34 (m, 4H); **^{13}C NMR** ($CDCl_3$, 100 MHz) δ 165.5, 163.3, 135.3, 131.8, 129.0, 128.6, 127.6, 123.0, 113.6, 75.6, 55.5, 46.4, 32.3, 31.6, 25.7, 23.6; **HRMS** (ESI-Orbitrap) m/z calcd for $C_{20}H_{22}O_3SeNa$ $[M+Na]^+$: 413.0632; Found: 413.0635.



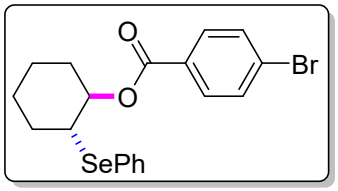
2-(phenylselanyl)cyclohexyl 4-(methylthio)benzoate (7f): New compound. (Eluent: petroleum ether (60-90 °C)/EtOAc = 50:1, v/v). 66.0 mg, 81 % yield. Orange-red oil liquid. **^{1}H NMR** ($CDCl_3$, 400 MHz) δ 7.86-7.83 (m, 2H), 7.57-7.55 (m, 2H), 7.26-7.20 (m, 5H), 5.06 (td, J = 9.0, 3.9 Hz, 1H), 3.38 (ddd, J = 11.2, 8.3, 4.1 Hz, 1H), 2.51 (s, 3H), 2.25-2.20 (m, 2H), 1.78-1.68 (m, 2H), 1.65-1.35 (m, 4H); **^{13}C NMR** ($CDCl_3$, 100 MHz) δ 165.6, 145.3, 135.3, 130.1, 129.0, 128.6, 127.7, 126.7, 124.9, 75.8, 46.3, 32.3, 31.6, 25.7, 23.4, 15.0; **HRMS** (ESI-Orbitrap) m/z calcd for $C_{20}H_{22}O_2SSeNa$ $[M+Na]^+$: 429.0403; Found: 429.0399.



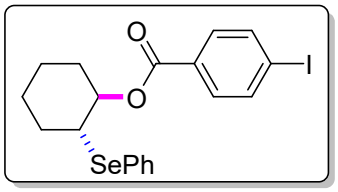
2-(phenylselanyl)cyclohexyl 4-fluorobenzoate (7g): New compound. (Eluent: petroleum ether (60-90 °C)/EtOAc = 50:1, v/v). 73.0 mg, 97 % yield. Orange-red oil liquid. **^{1}H NMR** ($CDCl_3$, 400 MHz) δ 7.96-7.91 (m, 2H), 7.56-7.54 (m, 2H), 7.27-7.19 (m, 3H), 7.08-7.03 (m, 2H), 5.07 (td, J = 9.1, 4.0 Hz, 1H), 3.38 (ddd, J = 11.5, 8.4, 4.1 Hz, 1H), 2.26-2.20 (m, 2H), 1.80-1.69 (m, 2H), 1.66-1.33 (m, 4H); **^{13}C NMR** ($CDCl_3$, 100 MHz) δ 165.8 (d, J_{CF} = 252 Hz), 164.9, 135.2, 132.3 (d, J_{CF} = 10 Hz), 129.0, 128.6, 127.7, 126.8 (d, J_{CF} = 3 Hz), 115.4 (d, J_{CF} = 22 Hz), 76.4, 46.3, 32.4, 31.7, 25.8, 23.7; **^{19}F NMR** ($CDCl_3$, 376 MHz) δ -31.6; **HRMS** (ESI-Orbitrap) m/z calcd for $C_{19}H_{19}FO_2SeNa$ $[M+Na]^+$: 401.0432; Found: 401.0430.



2-(phenylselanyl)cyclohexyl 4-chlorobenzoate (7h): New compound. (Eluent: petroleum ether (60-90 °C)/EtOAc = 50:1, v/v). 66.4 mg, 84 % yield. Orange-red oil liquid. **^{1}H NMR** ($CDCl_3$, 400 MHz) δ 7.87-7.83 (m, 2H), 7.57-7.54 (m, 2H), 7.26-7.20 (m, 5H), 7.38-7.34 (m, 2H), 7.28-7.20 (m, 3H), 5.07 (td, *J* = 9.1, 3.9 Hz, 1H), 3.38 (ddd, *J* = 11.3, 8.6, 4.1 Hz, 1H), 2.27-2.20 (m, 2H), 1.80-1.69 (m, 2H), 1.65-1.34 (m, 4H); **^{13}C NMR** ($CDCl_3$, 100 MHz) δ 165.0, 139.3, 135.2, 131.2, 129.1, 129.0, 128.7, 128.6, 127.7, 76.6, 46.3, 32.4, 31.8, 25.9, 23.7; **HRMS** (ESI-Orbitrap) m/z calcd for $C_{19}H_{19}ClO_2SeNa$ $[M+Na]^+$: 417.0136; Found: 417.0140.

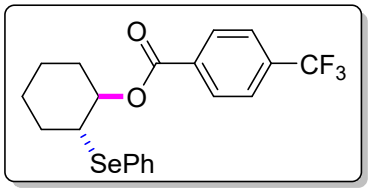


2-(phenylselanyl)cyclohexyl 4-bromobenzoate (7i): New compound. (Eluent: petroleum ether (60-90 °C)/EtOAc = 50:1, v/v). 69.4 mg, 79 % yield. Orange-red oil liquid. **^{1}H NMR** ($CDCl_3$, 400 MHz) δ 7.79-7.76 (m, 2H), 7.55-7.51 (m, 4H), 7.26-7.19 (m, 3H), 5.06 (td, *J* = 9.1, 4.0 Hz, 1H), 3.37 (ddd, *J* = 11.4, 8.6, 4.1 Hz, 1H), 2.26-2.19 (m, 2H), 1.79-1.69 (m, 2H), 1.94-1.33 (m, 4H); **^{13}C NMR** ($CDCl_3$, 100 MHz) δ 165.1, 135.2, 131.6, 131.3, 129.5, 125.1, 128.6, 128.0, 127.7, 76.6, 46.2, 32.4, 31.7, 25.8, 23.7; **HRMS** (ESI-Orbitrap) m/z calcd for $C_{19}H_{19}BrNaO_2SeNa$ $[M+Na]^+$: 460.9631; Found: 460.9638.

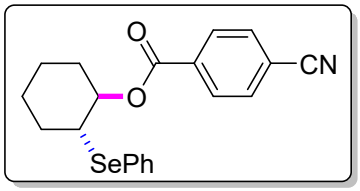


2-(phenylselanyl)cyclohexyl 4-iodobenzoate (7j): New compound. (Eluent: petroleum ether (60-90 °C)/EtOAc = 50:1, v/v). 68.8 mg, 71 % yield. Orange-red oil liquid. **^{1}H NMR** ($CDCl_3$, 400 MHz) δ 7.76-7.73 (m, 2H), 7.64-7.60 (m, 2H), 7.55-7.53 (m, 2H), 7.28-7.19 (m, 3H), 5.06 (td, *J* = 9.2, 4.0 Hz, 1H), 3.37 (ddd, *J* = 11.3,

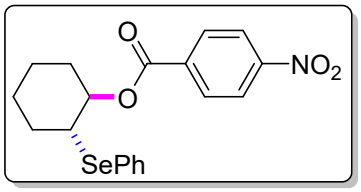
8.6, 4.1 Hz, 1H), 2.26-2.19 (m, 2H), 1.79-1.69 (m, 2H), 1.64-1.33 (m, 4H); **^{13}C NMR** ($CDCl_3$, 100 MHz) δ 165.4, 137.7, 135.2, 131.2, 130.0, 129.1, 128.5, 127.7, 100.7, 76.5, 46.2, 32.4, 31.7, 25.8, 23.7; **HRMS** (ESI-Orbitrap) m/z calcd for $C_{19}H_{19}IO_2SeNa$ $[M+Na]^+$: 508.9493; Found: 508.9495.



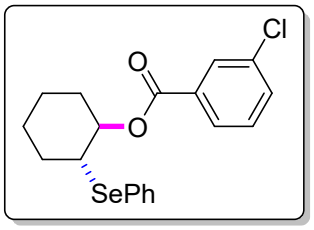
2-(phenylselanyl)cyclohexyl 4-(trifluoromethyl)benzoate (7k): New compound. (Eluent: petroleum ether (60-90 °C)/EtOAc = 50:1, v/v). 61.3 mg, 72% yield. Yellow oil. **^{1}H NMR** ($CDCl_3$, 400 MHz) δ 8.03-8.01 (m, 2H), 7.66-7.64 (m, 2H), 7.55-7.53 (m, 2H), 7.24-7.18 (m, 3H), 5.10 (td, *J* = 9.3, 4.0 Hz, 1H), 3.40 (ddd, *J* = 11.4, 8.8, 4.1 Hz, 1H), 2.28-2.21 (m, 2H), 1.81-1.71 (m, 2H), 1.65-1.35 (m, 4H); **^{13}C NMR** ($CDCl_3$, 100 MHz) δ 164.7, 135.2, 134.9, 134.3 (q, J_{CF} = 32 Hz), 133.8, 130.2, 129.1, 128.5, 127.8, 125.3 (q, J_{CF} = 3 Hz), 123.8 (q, J_{CF} = 271 Hz), 77.0, 46.2, 32.4, 31.8, 25.9, 23.7; **^{19}F NMR** ($CDCl_3$, 376 MHz) δ -63.1; **HRMS** (ESI-Orbitrap) m/z calcd for $C_{20}H_{19}F_3O_2SeNa$ $[M+Na]^+$: 451.0400; Found: 451.0397.



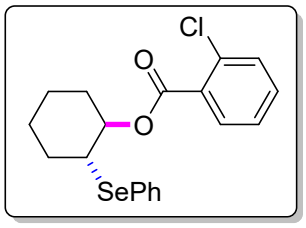
2-(phenylselanyl)cyclohexyl 4-cyanobenzoate (7l): New compound. (Eluent: petroleum ether (60-90 °C)/EtOAc = 30:1, v/v). 66.9 mg, 85% yield. White solid. m.p.: 54.9-55.7 °C. **^{1}H NMR** ($CDCl_3$, 400 MHz) δ 7.98-7.95 (m, 2H), 7.68-7.65 (m, 2H), 7.53-7.51 (m, 2H), 7.26-7.17 (m, 3H), 5.09 (td, *J* = 9.4, 4.0 Hz, 1H), 3.38 (ddd, *J* = 1.5, 8.9, 4.1 Hz, 1H), 2.27-2.19 (m, 2H), 1.81-1.70 (m, 2H), 1.63-1.36 (m, 4H); **^{13}C NMR** ($CDCl_3$, 100 MHz) δ 164.2, 135.1, 134.3, 132.1, 130.2, 129.1, 128.5, 127.7, 118.2, 116.2, 77.5, 46.1, 32.3, 31.9, 25.9, 23.7; **HRMS** (ESI-Orbitrap) m/z calcd for $C_{20}H_{19}NO_2SeNa$ $[M+Na]^+$: 408.0479; Found: 408.0480.



2-(phenylselanyl)cyclohexyl 4-nitrobenzoate (7m): New compound. (Eluent: petroleum ether (60-90 °C)/EtOAc = 30:1, v/v). 57.6 mg, 72 % yield. White solid. m.p.: 71.6-72.3 °C. **^{1}H NMR** ($CDCl_3$, 400 MHz) δ 8.22-8.20 (m, 2H), 8.04-8.02 (m, 2H), 7.54-7.51 (m, 2H), 7.24-7.18 (m, 3H), 5.10 (td, *J* = 9.3, 4.1 Hz, 1H), 3.39 (ddd, *J* = 11.5, 8.9, 4.1 Hz, 1H), 2.29-2.21 (m, 2H), 1.82-1.72 (m, 2H), 1.65-1.37 (m, 4H); **^{13}C NMR** ($CDCl_3$, 100 MHz) δ 164.0, 150.5, 135.9, 135.1, 130.8, 129.1, 128.5, 127.8, 123.4, 77.7, 46.1, 32.4, 31.9, 25.9, 23.8; **HRMS** (ESI-Orbitrap) m/z calcd for $C_{19}H_{19}NO_4SeNa$ $[M+Na]^+$: 428.0377; Found: 428.0380.

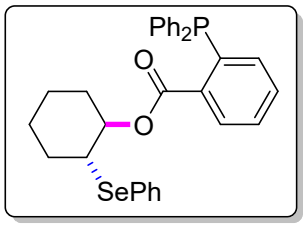


2-(phenylselanyl)cyclohexyl 3-chlorobenzoate (7n): New compound. (Eluent: petroleum ether (60-90 °C)/EtOAc = 50:1, v/v). 64.5 mg, 82 % yield. Orange-red oil liquid. **^{1}H NMR** ($CDCl_3$, 400 MHz) δ 7.87-7.81 (m, 2H), 7.57-7.53 (m, 2H), 7.51-7.48 (m, 1H), 7.33 (t, *J* =15.8 Hz, 1H), 7.26-7.18 (m, 3H), 5.09 (td, *J* = 9.2, 4.0 Hz, 1H), 3.38 (ddd, *J* = 11.3, 8.7, 4.1 Hz, 1H), 2.29-2.18 (m, 2H), 1.81-1.70 (m, 2H), 1.65-1.33 (m, 4H); **^{13}C NMR** ($CDCl_3$, 100 MHz) δ 164.1, 135.2, 134.4, 132.9, 132.3, 129.8, 129.6, 129.0, 128.5, 127.9, 127.8, 76.8, 46.2, 32.4, 31.8, 25.9, 23.7; **HRMS** (ESI-Orbitrap) m/z calcd for $C_{19}H_{19}ClO_2SeNa$ $[M+Na]^+$: 417.0136; Found: 417.0140.

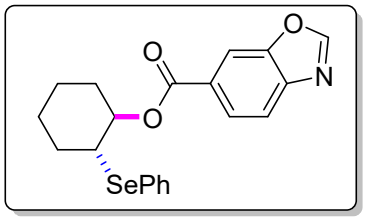


2-(phenylselanyl)cyclohexyl 2-chlorobenzoate (7o): New compound. (Eluent: petroleum ether (60-90 °C)/EtOAc = 50:1, v/v). 74.0 mg, 94 % yield. Orange-red oil

liquid. **^{1}H NMR** ($CDCl_3$, 400 MHz) δ 7.77 (dd, *J* = 7.7, 1.6 Hz, 1H), 7.61-7.57 (m, 2H), 7.45-7.37 (m, 2H), 7.29-7.21 (m, 4H), 5.11 (td, *J* = 9.1, 4.1 Hz, 1H), 3.37 (ddd, *J* = 11.1, 8.2, 4.1 Hz, 1H), 2.29-2.19 (m, 2H), 1.81-1.65 (m, 2H), 1.63-1.32 (m, 4H); **^{13}C NMR** ($CDCl_3$, 100 MHz) δ 164.9, 135.4, 133.7, 132.4, 131.5, 131.0, 130.6, 129.0, 128.2, 127.8, 126.6, 76.4, 45.9, 32.3, 31.4, 25.6, 23.5; **HRMS** (ESI-Orbitrap) m/z calcd for $C_{19}H_{19}ClO_2SeNa$ $[M+Na]^+$: 417.0136; Found: 417.0140.

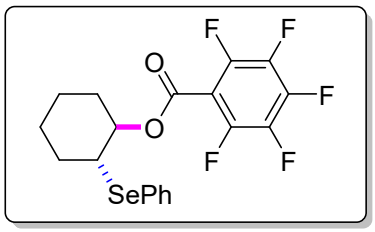


2-(phenylselanyl)cyclohexyl 2-(diphenylphosphaneyl)benzoate (7p): New compound. (Eluent: petroleum ether (60-90 °C)/EtOAc = 2:1, v/v). 81.9 mg, 75% yield. Colourless oil. **^{1}H NMR** ($CDCl_3$, 600 MHz) δ 7.96-7.95 (m, 1H), 7.72-7.63 (m, 5H), 7.61-7.43 (m, 10H), 7.28-7.21 (m, 4H), 4.76-4.73 (m, 1H), 2.98-2.94 (m, 1H), 2.04 (d, *J* = 13.9 Hz, 1H), 1.90-1.89 (m, 1H), 1.58 (s, 2H), 1.40-1.38 (m, 1H), 1.26-1.21 (m, 3H); **^{13}C NMR** ($CDCl_3$, 150 MHz) δ 165.9 (d, *J* = 2.5 Hz), 136.1 (d, *J* = 5.0 Hz), 135.5, 135.0 (d, *J* = 7.5 Hz), 133.6 (dd, *J* = 90.0, 33.8 Hz), 132.8, 132.2 (d, *J* = 8.8 Hz), 131.9 (d, *J* = 8.8 Hz), 131.5 (dd, *J* = 12.5, 1.3 Hz), 131.0 (d, *J* = 8.8 Hz), 130.8 (d, *J* = 7.5 Hz), 128.9, 128.3 (d, *J* = 11.3 Hz), 128.0, 127.7; **^{31}P NMR** ($CDCl_3$, 240 MHz) δ 34.1; **HRMS** (ESI-Orbitrap) m/z calcd for $C_{31}H_{30}PO_2Se$ $[M+H]^+$: 545.1149; Found: 545.1152.

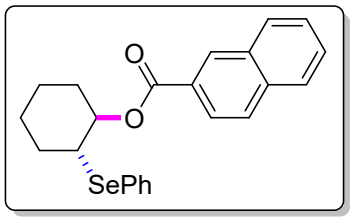


2-(phenylselanyl)cyclohexyl benzo[d]oxazole-6-carboxylate (7q): New compound. (Eluent: petroleum ether (60-90 °C)/EtOAc = 10:1, v/v). 53.6 mg, 67% yield. Orange-red oil liquid. **^{1}H NMR** ($CDCl_3$, 400 MHz) δ 8.21 (s, 1H), 8.12 (dd, *J* = 1.4, 0.5 Hz, 1H), 8.0 (dd, *J* = 8.4, 1.5 Hz, 1H), 7.78 (d, *J* = 8.4 Hz, 1H), 7.56-7.53 (m, 3H), 7.22-7.17 (m, 3H), 5.11 (td, *J* = 9.2, 4.0 Hz, 1H), 3.41 (ddd, *J* = 11.3, 8.7, 4.1 Hz,

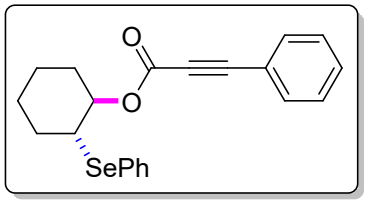
1H), 2.27-2.23 (m, 2H), 1.80-1.70 (m, 2H), 1.66-1.37 (m, 4H); **^{13}C NMR** ($CDCl_3$, 100 MHz) δ 165.2, 154.9, 149.7, 143.8, 135.2, 129.0, 128.5, 128.3, 127.7, 126.5, 120.2, 112.9, 76.8, 46.3, 32.4, 31.8, 25.8, 23.7; **HRMS** (ESI-Orbitrap) m/z calcd for $C_{20}H_{19}NO_3SeNa$ $[M+Na]^+$: 424.0428; Found: 424.0430.



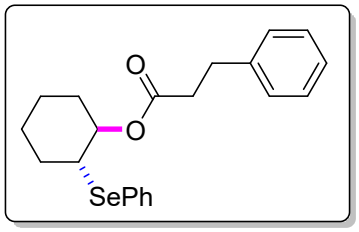
2-(phenylselanyl)cyclohexyl 2,3,4,5,6-pentafluorobenzoate (7r): New compound. (Eluent: petroleum ether (60-90 °C)/EtOAc = 50:1, v/v). 48.0 mg, 53 % yield. Orange-red oil liquid. **^{1}H NMR** ($CDCl_3$, 400 MHz) δ 7.57-7.55 (m, 2H), 7.24-7.21 (m, 3H), 5.15 (td, *J* = 8.9, 4.0 Hz, 1H), 3.33 (ddd, *J* = 10.9,7.9, 4.2 Hz, 1H), 2.24-2.19 (m, 2H), 1.79-1.67 (m, 2H), 1.65-1.53 (m, 2H), 1.47-1.36 (m, 2H); **^{13}C NMR** ($CDCl_3$, 100 MHz) δ 158.3, 135.2, 131.6, 129.3, 129.0, 128.2, 127.8, 108.5, 78.3, 45.1, 31.7, 31.1, 25.4, 23.3; **^{19}F NMR** ($CDCl_3$, 376 MHz) δ -138.0, 149.1, 160.7; **HRMS** (ESI-Orbitrap) m/z calcd for $C_{19}H_{15}F_5O_2SeNa$ $[M+Na]^+$: 473.0055; Found: 473.0058.



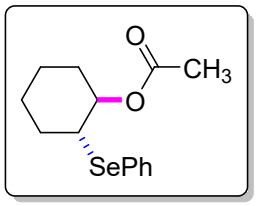
2-(phenylselanyl)cyclohexyl 2-naphthoate (7s): New compound. (Eluent: petroleum ether (60-90 °C)/EtOAc = 50:1, v/v). 65.9 mg, 80% yield. Orange-red oil liquid. **^{1}H NMR** ($CDCl_3$, 400 MHz) δ 8.50 (s, 1H), 8.02 (dd, *J* = 8.6, 1.7 Hz, 1H), 7.93-7.85 (m, 3H), 7.62-7.52 (m, 4H), 7.24-7.19 (m, 3H), 5.18 (td, *J* = 9.1, 4.0 Hz, 1H), 3.47 (ddd, *J* = 11.3, 8.4, 4.2 Hz, 1H), 2.33-2.27 (m, 2H), 1.83-1.70 (m, 2H), 1.68-1.37 (m, 4H); **^{13}C NMR** ($CDCl_3$, 100 MHz) δ 166.0, 135.6, 135.3, 132.5, 131.2, 129.5, 129.0, 128.7, 128.2, 128.1, 127.8, 127.7, 126.6, 125.5, 76.2, 46.4, 32.4, 31.7, 25.8, 23.7; **HRMS** (ESI-Orbitrap) m/z calcd for $C_{23}H_{22}O_2SeNa$ $[M+Na]^+$:433.0683; Found: 433.0679.



2-(phenylselanyl)cyclohexyl 3-phenylpropiolate (7t): New compound. (Eluent: petroleum ether (60-90 °C)/EtOAc = 50:1, v/v). 54.3 mg, 71% yield. Orange-red oil liquid. **^{1}H NMR** ($CDCl_3$, 400 MHz) δ 7.66-7.62 (m, 2H), 7.60-7.57 (m, 2H), 7.47-7.43 (m, 1H), 7.40-7.35 (m, 2H), 7.29-7.26 (m, 3H), 5.01 (td, *J* = 9.0, 4.2 Hz, 1H), 3.27 (ddd, *J* = 11.3, 8.5, 4.2 Hz, 1H), 2.25-2.13 (m, 2H), 1.78-1.64 (m, 2H), 1.59-1.26 (m, 4H); **^{13}C NMR** ($CDCl_3$, 100 MHz) δ 153.4, 135.6, 133.0, 130.6, 129.0, 128.6, 128.2, 127.9, 119.7, 86.4, 80.9, 77.2, 45.7, 32.3, 31.4, 25.6, 23.5; **HRMS** (ESI-Orbitrap) m/z calcd for $C_{21}H_{20}O_2SeNa$ $[M+Na]^+$: 407.0532; Found: 407.0526.

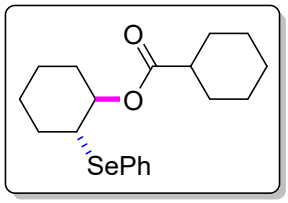


2-(phenylselanyl)cyclohexyl 3-phenylpropanoate (7u): New compound. (Eluent: petroleum ether (60-90 °C)/EtOAc = 50:1, v/v). 64.1 mg, 83 % yield. Orange-red oil liquid. **^{1}H NMR** ($CDCl_3$, 400 MHz) δ 7.60-7.55 (m, 2H), 7.32-7.26 (m, 5H), 7.22-7.18 (m, 3H), 4.88 (td, *J* = 4.2, 9.2 Hz, 1H), 3.21 (ddd, *J* = 11.4, 8.7, 4.1 Hz, 1H), 2.95 (t, *J* = 7.7 Hz, 2H), 2.57-2.53 (m, 2H), 2.18-2.03 (m, 2H), 1.72-1.64 (m, 2H), 1.56-1.26 (m, 4H); **^{13}C NMR** ($CDCl_3$, 100 MHz) δ 172.2, 140.7, 135.1, 129.0, 128.7, 128.5, 128.4, 127.6, 126.3, 75.4, 46.1, 36.0, 32.3, 31.8, 31.0, 25.8, 23.7; **HRMS** (ESI-Orbitrap) m/z calcd for $C_{21}H_{24}O_2SeNa$ $[M+Na]^+$: 411.0839; Found: 411.0844.

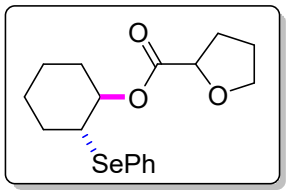


2-(phenylselanyl)cyclohexyl acetate (7v): Known compound[7]. (Eluent:

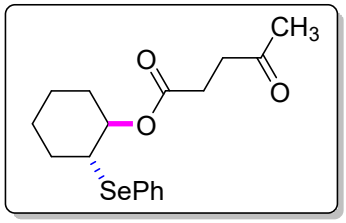
petroleum ether (60-90 °C)/EtOAc = 50:1, v/v). 54.4 mg, 92 % yield. Yellow oil. **^{1}H NMR** ($CDCl_3$, 400 MHz) δ 7.59-7.56 (m, 2H), 7.29-7.25 (m, 3H), 4.84 (td, *J* = 9.3, 4.2 Hz, 1H), 3.21 (ddd, *J* = 11.5, 8.9, 4.1 Hz, 1H), 2.17-2.05 (m, 2H), 1.95 (s, 3H), 1.74-1.62 (m, 2H), 1.55-1.24 (m, 4H); **^{13}C NMR** ($CDCl_3$, 100 MHz) δ 170.5, 135.2, 129.0, 128.7, 127.7, 75.6, 46.2, 32.4, 31.9, 26.0, 23.7, 21.3.



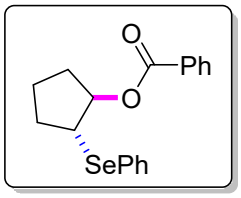
2-(phenylselanyl)cyclohexyl cyclohexanecarboxylate (7w): New compound. (Eluent: petroleum ether (60-90 °C)/EtOAc = 70:1, v/v). 54.4 mg, 74 % yield. Orange-red oil liquid. **^{1}H NMR** ($CDCl_3$, 400 MHz) δ 7.59-7.55 (m, 2H), 7.28-7.25 (m, 3H), 4.82 (td, *J* = 9.0, 4.1 Hz, 1H), 3.21 (ddd, *J* = 11.4, 8.5, 4.1 Hz, 1H), 2.24-2.16 (m, 1H), 2.14-2.04 (m, 2H), 1.94-1.84 (m, 2H), 1.76-1.62 (m, 5H), 1.55-1.22 (m, 5H); **^{13}C NMR** ($CDCl_3$, 100 MHz) δ 175.3, 135.2, 129.0, 128.7, 128.5, 128.4, 127.6, 74.5, 46.0, 43.4, 32.3, 31.7, 29.1, 25.9, 25.8, 25.6 (d, *J* = 1 Hz), 23.6; **HRMS** (ESI-Orbitrap) m/z calcd for $C_{19}H_{26}O_2SeNa$ $[M+Na]^+$: 389.0996; Found: 389.0996.



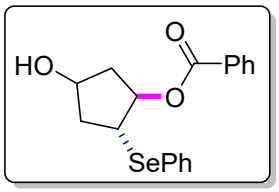
2-(phenylselanyl)cyclohexyl tetrahydrofuran-2-carboxylate (7x): New compound. (Eluent: petroleum ether (60-90 °C)/EtOAc = 10:1, v/v). 58.5 mg, 83% yield. Orange-red oil liquid. **^{1}H NMR** ($CDCl_3$, 400 MHz) δ 7.57-7.55 (m, 2H), 7.29-7.24 (m, 3H), 4.89-4.82 (m, 1H), 4.44-4.33 (m, 1H), 4.08-3.99 (m, 1H), 3.93-3.88 (m, 1H), 3.24-3.13 (m, 1H), 2.25-1.83 (m, 6H), 1.72-1.61 (m, 2H), 1.50-1.25 (m, 4H); **^{13}C NMR** ($CDCl_3$, 100 MHz) δ 172.8, 172.6, 135.4, 129.0, 128.1, 127.9, 127.8, 127.8, 76.8, 75.5, 75.1, 69.4, 46.1, 45.8, 32.7, 32.4, 31.8, 31.6, 25.9, 25.8, 25.2, 30.0, 23.7, 23.6; **HRMS** (ESI-Orbitrap) m/z calcd for $C_{17}H_{22}O_3SeNa$ $[M+Na]^+$: 377.0632; Found: 377.0627.



2-(phenylselanyl)cyclohexyl 4-oxopentanoate (7y): New compound. (Eluent: petroleum ether (60-90 °C)/EtOAc = 10:1, v/v). 55.5 mg, 79 % yield. Colorless oil liquid. **^{1}H NMR** ($CDCl_3$, 400 MHz) δ 7.57-7.54 (m, 2H), 7.27-7.24 (m, 3H), 4.82 (td, *J* = 9.2, 4.2 Hz, 1H), 3.20 (ddd, *J* = 11.4, 8.8, 4.1 Hz, 1H), 2.78-2.61 (m, 2H), 2.55-2.38 (m, 2H), 2.16 (s, 3H), 2.14-2.03 (m, 2H), 1.72-1.62 (m, 2H), 1.53-1.25 (m, 4H); **^{13}C NMR** ($CDCl_3$, 100 MHz) δ 206.7, 172.0, 135.1, 129.0, 128.7, 127.6, 75.7, 46.4, 38.1, 32.3, 31.7, 30.0, 28.3, 25.8, 23.6; **HRMS** (ESI-Orbitrap) m/z calcd for $C_{17}H_{22}O_3SeNa$ $[M+Na]^+$: 377.0632; Found: 377.0638.

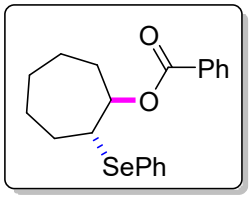


2-(phenylselanyl)cyclopentyl benzoate (7z): Known compound[6]. (Eluent: petroleum ether (60-90 °C)/EtOAc = 50:1, v/v). 44.4 mg, 64% yield. Orange-red oil liquid. **^{1}H NMR** ($CDCl_3$, 400 MHz) δ 7.97-7.94 (m, 2H), 7.63-7.59 (m, 2H), 7.57-7.52 (m, 1H), 7.44-7.39 (m, 2H), 7.27-7.24 (m, 3H), 5.42-5.39 (m, 1H), 3.82-3.78 (m, 1H), 2.38-2.27 (m, 2H), 1.91-1.76 (m, 4H); **^{13}C NMR** ($CDCl_3$, 100 MHz) δ 165.9, 134.3, 133.0, 130.5, 129.7, 129.3, 129.2, 128.4, 127.7, 82.2, 46.2, 31.4, 31.1, 22.8.

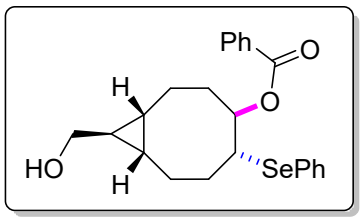


4-hydroxy-2-(phenylselanyl)cyclopentyl benzoate (7a′): New compound. (Eluent: petroleum ether (60-90 °C)/EtOAc = 2:1, v/v). d.r. = 8:1, 69.5 mg, 96% yield. Orange-red oil liquid. **^{1}H NMR** ($CDCl_3$, 400 MHz) δ 7.93-7.90 (m, 2H), 7.63-7.60 (m, 2H), 7.56-7.52 (m, 1H), 7.42-7.38 (m, 2H), 7.26-7.23 (m, 3H), 5.53 (dt, *J* = 6.7, 4.0 Hz, 1H), 4.57-4.51 (m, 1H), 3.76-3.71 (m, 1H), 2.72-2.60 (m, 1H), 2.40-2.33 (m, 1H),

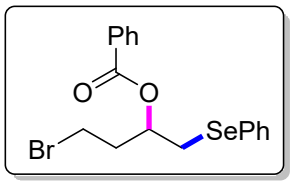
2.21-2.13 (m, 2H), 1.89-1.83 (m, 1H); **^{13}C NMR** ($CDCl_3$, 100 MHz) δ 81.2, 81.0, 134.9, 134.6, 133.1, 130.1, 130.0, 129.7, 129.7, 129.3, 129.2, 129.1, 128.4, 127.9, 81.2, 80.9, 71.6, 71.6, 43.8, 43.7, 41.6, 41.3, 40.9; **HRMS** (ESI-Orbitrap) m/z calcd for $C_{18}H_{19}O_3Se$ $[M+H]^+$: 361.0502; Found: 361.0507.



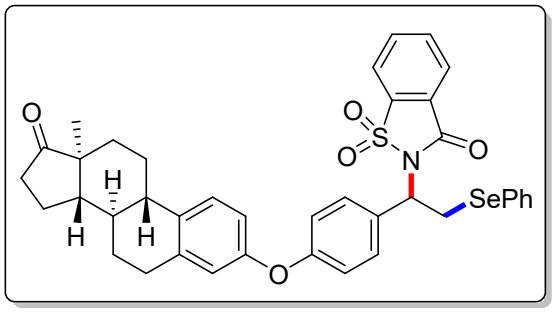
2-(phenylselanyl)cycloheptyl benzoate (7b′): Known compound[6]. (Eluent: petroleum ether (60-90 °C)/EtOAc = 50:1, v/v). 63.4 mg, 85% yield. Orange-red oil liquid. **^{1}H NMR** ($CDCl_3$, 400 MHz) δ 8.01-7.98 (m, 2H), 7.61-7.52 (m, 3H), 7.44-7.40 (m, 2H), 7.25-7.21 (m, 3H), 5.37 (ddd, *J* = 8.3, 5.5, 3.6 Hz, 1H), 3.64 (ddd, *J* = 9.1, 6.7, 3.4 Hz, 1H), 2.27-2.20 (m, 1H), 2.06-1.92 (m, 2H), 1.87-1.51 (m, 7H); **^{13}C NMR** ($CDCl_3$, 100 MHz) δ 165.7, 135.0, 132.9, 130.7, 129.7, 129.3, 129.1, 128.4, 127.7, 78.6, 48.8, 32.0, 31.7, 28.3, 26.6, 22.3.



(1*R*,8*S*,9*S*)-9-(hydroxymethyl)-5-(phenylselanyl)bicyclo[6.1.0]nonan-4-yl benzoate (7c′): New compound. (Eluent: petroleum ether (60-90 °C)/EtOAc = 1:1, v/v). d.r. = 8:1, 85 mg, 99% yield. Colourless oil. **^{1}H NMR** ($CDCl_3$, 400 MHz) δ 8.06-8.01 (m, 2H), 7.55-7.50 (m, 3H), 7.42 (q, *J* = 7.1 Hz, 2H), 7.27-7.25 (m, 3H), 5.21 (dt, *J* = 8.3, 3.0 Hz, 1H), 4.16-4.11 (m, 1H), 3.54-3.45 (m, 1H), 2.23-1.85 (m, 6H), 1.53 (s, 1H), 1.35-1.21 (m, 2H), 0.85-0.79 (m, 1H), 0.68-0.54 (m, 1H); **^{13}C NMR** ($CDCl_3$, 150 MHz) δ 165.9, 165.8, 134.2, 134.0, 133.1, 133.1, 130.8, 130.5, 130.3, 130.2, 129.9, 129.9, 129.7, 129.2, 128.5, 128.4, 127.4, 127.4, 76.3, 76.2, 66.6, 48.4, 47.4, 36.3, 35.3, 33.9, 33.8, 29.7, 29.4, 27.5, 26.8, 26.7, 25.2, 24.6, 22.6, 21.0, 20.7, 20.3; **HRMS** (ESI-Orbitrap) m/z calcd for $C_{23}H_{26}O_3SeNa$ $[M+Na]^+$: 453.0939; Found: 453.0938.

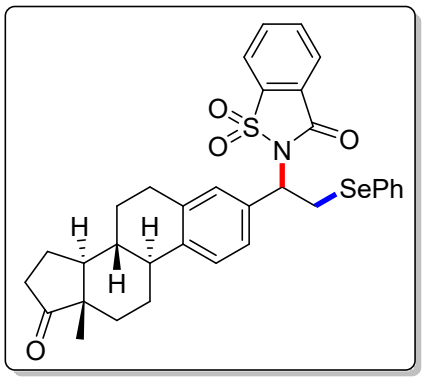


4-bromo-1-(phenylselanyl)butan-2-yl benzoate (7d′): New compound. (Eluent: petroleum ether (60-90 °C)/EtOAc = 50:1, v/v). 61.2 mg, 74% yield. Colorless oil liquid. **^{1}H NMR** ($CDCl_3$, 400 MHz) δ 8.01-7.98 (m, 2H), 7.66-7.62 (m, 2H), 7.59-7.55 (m, 1H), 7.46-7.42 (m, 2H), 7.36-7.28 (m, 3H), 4.61 (dd, *J* = 11.5, 5.2 Hz, 1H), 4.43 (dd, *J* = 11.4, 7.8 Hz, 1H), 3.76-3.62 (m, 3H), 2.41-2.33 (m, 1H), 2.19-2.10 (m, 1H); **^{13}C NMR** ($CDCl_3$, 100 MHz) δ 166.2, 135.6, 133.3, 129.9, 129.8, 129.4, 128.5, 128.4, 127.2, 67.5, 41.8, 35.0, 31.6; **HRMS** (ESI-Orbitrap) m/z calcd for $C_{17}H_{17}BrO_2SeNa$ $[M+Na]^+$: 434.9475; Found: 434.9479.

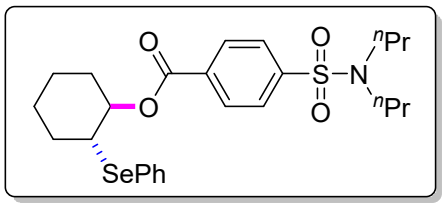


2-(1-(4-(((8*R*,9*S*,13*S*,14*S*)-13-methyl-17-oxo-7,8,9,11,12,13,14,15,16,17-decahydro-6*H*-cyclopenta[*a*]phenanthren-3-yl)oxy)phenyl)-2-(phenylselanyl)ethyl)benzo[*d*]isothiazol-3(2*H*)-one 1,1-dioxide (8a): New compound. (Eluent: petroleum ether (60-90 °C)/EtOAc = 8:1, v/v). 53 mg, 75% yield. white solid. m.p.:162.7-166.0 °C. **^{1}H NMR** ($CDCl_3$, 400 MHz) δ 7.98-7.96 (m, 1H), 7.88-7.77 (m, 3H), 7.56-7.54 (m, 2H), 7.53-7.50 (m, 2H), 7.25-7.22 (m, 4H), 6.95-6.92 (m, 2H), 6.81-6.75 (m, 2H), 5.36 (t, *J* = 8.0 Hz, 1H), 5.30 (s, 1H), 4.05 (dd, *J* = 12.9, 8.3 Hz, 1H), 3.80 (dd, *J* = 12.8, 7.9 Hz, 1H), 2.89-2.85 (m, 2H), 2.54-2.48 (m, 1H), 2.41-2.38 (m, 1H), 2.31-2.25 (m, 1H), 2.19-1.95 (m, 4H), 1.63-1.51 (m, 5H), 0.92 (s, 3H); **^{13}C NMR** ($CDCl_3$, 100 MHz) δ 158.8, 158.1, 154.4, 138.5, 137.5, 135.4, 134.9, 134.4, 133.9, 130.9, 130.2, 129.3, 129.1, 127.8, 127.3, 126.8, 125.3, 120.9, 119.7, 118.1, 117.0, 57.5, 50.5, 48.1, 44.2, 38.3, 36.0, 31.7, 29.6, 29.3, 26.5, 26.0, 21.7, 14.0; **HRMS** (ESI-Orbitrap) m/z calcd for $C_{39}H_{38}NO_5SSe$ $[M+H]^+$: 712.1630;

found: 712.1630.

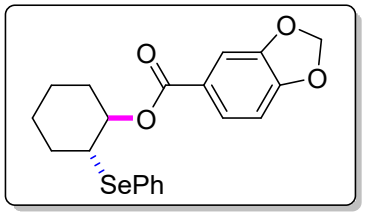


2-(1-((8*R*,9*S*,13*S*,14*S*)-13-methyl-17-oxo-7,8,9,11,12,13,14,15,16,17-decahydro-6*H*-cyclopenta[*a*]phenanthren-3-yl)-2-(phenylselanyl)ethyl)benzo[*d*]isothiazol-3(2*H*)-one 1,1-dioxide (8b): Known compound[3]. (Eluent: petroleum ether (60-90 °C)/EtOAc = 5:1, v/v). 112.6 mg, 91% yield. colorless oil. **^{1}H NMR** ($CDCl_3$, 400 MHz) δ 7.98-7.96 (m, 1H), 7.87-7.75 (m, 3H), 7.56-7.53 (m, 2H), 7.37-7.34 (m, 1H), 7.27-7.22 (m, 5H), 5.35 (td, *J* = 8.0, 2.6 Hz, 1H), 4.15-4.04 (m, 1H), 3.83-3.77 (m, 1H), 2.89-2.86 (m, 2H), 2.49 (dd, *J* = 19.3, 9.0 Hz, 1H), 2.42-2.37 (m, 1H), 2.29-2.24 (m, 1H), 2.18-1.94 (m, 4H), 1.65-1.57 (m, 2H), 1.54-1.42 (m, 4H), 0.89 (s, 3H); **^{13}C NMR** ($CDCl_3$, 100 MHz) δ 158.8, 158.8, 140.4, 137.4, 136.8, 134.8, 134.3, 133.8, 133.8, 129.2, 127.6, 127.3, 126.0, 125.9, 125.6, 125.6, 125.2, 120.8, 57.7, 50.6, 48.0, 44.4, 38.0, 35.9, 31.6, 29.5, 29.2, 26.5, 25.6, 21.7, 13.9.

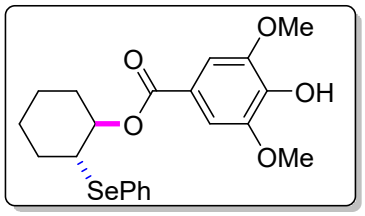


2-(phenylselanyl)cyclohexyl 4-(*N*,*N*-dipropylsulfamoyl)benzoate (8c): New compound. (Eluent: petroleum ether (60-90 °C)/EtOAc = 6:1, v/v). 89.4 mg, 86% yield. Colourless oil. **^{1}H NMR** ($CDCl_3$, 600 MHz) δ 8.02 (d, *J* = 7.9 Hz, 2H), 7.83 (d, *J* = 7.9 Hz, 2H), 7.55 (d, *J* = 7.1 Hz, 2H), 7.28-7.21 (m, 3H), 5.11 (t, *J* = 9.1 Hz, 1H), 3.43-3.39 (m, 1H), 3.11 (t, *J* = 7.2 Hz, 4H), 2.26 (t, *J* = 7.2 Hz, 4H), 1.82-1.73 (m, 2H), 1.66-1.53 (m, 6H), 1.49-1.38 (m, 2H), 0.90 (t, *J* = 7.3 Hz, 6H); **^{13}C NMR**

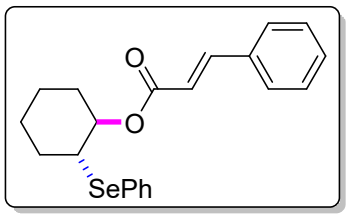
($CDCl_3$, 100 MHz) δ 164.5, 144.1, 135.2, 133.9, 130.4, 129.1, 128.6, 127.8, 127.0, 50.1, 46.2, 32.4, 31.8, 25.9, 23.8, 22.1, 11.3; **HRMS** (ESI-Orbitrap) m/z calcd for $C_{25}H_{34}NO_4SSe$ $[M+H]^+$: 524.1368; Found: 524.1368.



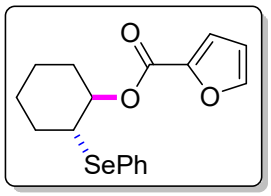
2-(phenylselanyl)cyclohexyl benzo[d][1,3]dioxole-5-carboxylate (8d): New compound. (Eluent: petroleum ether (60-90 °C)/EtOAc = 50:1, v/v). 57.6 mg, 71% yield. Orange-red oil liquid. **^{1}H NMR** ($CDCl_3$, 400 MHz) δ 7.58-7.54 (m, 3H), 7.37 (d, *J* = 1.7 Hz, 1H), 7.26-7.20 (m, 3H), 6.80 (d, *J* = 8.2 Hz, 1H), 6.03-6.02 (m, 2H), 5.05 (td, *J* = 9.0, 3.9 Hz, 1H), 3.37 (ddd, *J* = 11.1, 8.3, 4.1 Hz, 1H), 2.25-2.18 (m, 2H), 1.79-1.68 (m, 2H), 1.64-1.36 (m, 4H); **^{13}C NMR** ($CDCl_3$, 100 MHz) δ 165.2, 151.6, 147.7, 135.3, 129.0, 128.6, 127.7, 125.5, 124.6, 109.7, 108.0, 101.8, 75.9, 46.3, 32.3, 31.6, 25.8, 23.6; **HRMS** (ESI-Orbitrap) m/z calcd for $C_{20}H_{20}O_4SeNa$ $[M+Na]^+$:427.0425; Found: 427.0425.



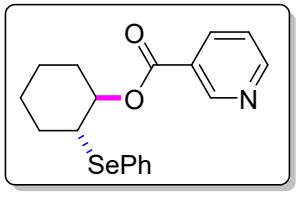
2-(phenylselanyl)cyclohexyl 4-hydroxy-3,5-dimethoxybenzoate (8e): New compound. (Eluent: petroleum ether (60-90 °C)/EtOAc = 2:1, v/v). 48.4 mg, 56% yield. Orange-red oil liquid. **^{1}H NMR** ($CDCl_3$, 400 MHz) δ 7.56-7.54 (m, 2H), 7.27 (s, 2H), 7.24-7.18 (m, 3H), 5.93 (s, 1H), 5.05 (td, *J* = 9.2, 4.0 Hz, 1H), 3.91 (s, 6H), 3.36 (ddd, *J* = 12.0, 8.6, 4.2 Hz, 1H), 2.26-2.19 (m, 2H), 1.78-1.69 (m, 2H), 1.65-1.33 (m, 4H); **^{13}C NMR** ($CDCl_3$, 100 MHz) δ 165.7, 146.6, 139.3, 135.4, 129.0, 128.6, 127.7, 121.5, 106.9, 75.9, 55.5, 46.7, 32.7, 31.8, 25.9, 23.8; **HRMS** (ESI-Orbitrap) m/z calcd for $C_{21}H_{24}O_5SeNa$ $[M+Na]^+$:459.0687; Found: 459.0683.



2-(phenylselanyl)cyclohexyl cinnamate (8f): New compound. (Eluent: petroleum ether (60-90 °C)/EtOAc = 50:1, v/v). 67.2 mg, 87% yield. Orange-red oil liquid. **^{1}H NMR** ($CDCl_3$, 400 MHz) δ 7.63-7.58 (m, 3H), 7.50-7.47 (m, 2H), 7.40-7.36 (m, 3H), 7.27-7.24 (m, 3H), 6.29 (d, *J* = 16.0 Hz, 1H), 4.98 (td, *J* = 9.1, 4.0 Hz, 1H), 3.32 (ddd, *J* = 11.4, 8.7, 4.1 Hz, 1H), 2.24-2.15 (m, 2H), 1.77-1.67 (m, 2H), 1.61-1.34 (m, 4H); **^{13}C NMR** ($CDCl_3$, 100 MHz) δ 166.3, 144.8, 135.3, 134.6, 130.3, 129.0, 128.9, 128.8, 128.2, 127.6, 118.4, 75.8, 46.4, 32.4, 31.9, 25.9, 23.7; **HRMS** (ESI-Orbitrap) m/z calcd for $C_{21}H_{22}O_2SeNa$ $[M+Na]^+$:409.0683; Found: 409.0686.

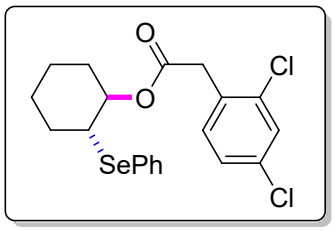


2-(phenylselanyl)cyclohexyl furan-2-carboxylate (8g): New compound. (Eluent: petroleum ether (60-90 °C)/EtOAc = 50:1, v/v). 53.9 mg, 77% yield. Orange-red oil liquid. **^{1}H NMR** ($CDCl_3$, 400 MHz) δ 7.59-7.54 (m, 3H), 7.27-7.20 (m, 3H), 7.03 (dd, *J* = 3.5, 0.8 Hz, 1H), 5.06 (td, *J* = 9.3, 4.1 Hz, 1H), 3.33 (ddd, *J* = 11.3, 8.5, 4.1 Hz, 1H), 2.24-2.15 (m, 2H), 1.78-1.66 (m, 2H), 1.60-1.49 (m, 2H), 1.45-1.32 (m, 2H); **^{13}C NMR** ($CDCl_3$, 100 MHz) δ 158.1, 146.3, 144.9, 135.3, 129.0, 128.4, 127.7, 118.0, 111.8, 76.1, 46.1, 32.4, 31.7, 25.8, 23.6; **HRMS** (ESI-Orbitrap) m/z calcd for $C_{17}H_{18}O_3Na$ $[M+Na]^+$: 373.0319; Found: 373.0316.

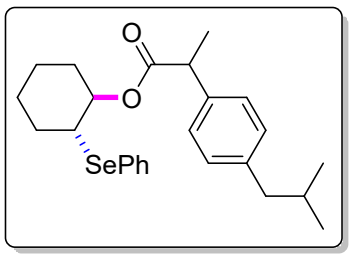


2-(phenylselanyl)cyclohexyl nicotinate (8h): New compound. (Eluent: petroleum ether (60-90 °C)/EtOAc = 8:1, v/v). 27.9 mg, 39% yield. Colorless oil liquid. **^{1}H NMR** ($CDCl_3$, 400 MHz) δ 9.08 (d, *J* = 1.5 Hz, 1H), 8.74 (dd, *J* = 4.8, 1.7

Hz, 1H), 8.14 (dt, *J* = 8.0, 1.9 Hz, 1H), 7.54-7.52 (m, 2H), 7.34-7.31 (m, 1H), 7.24-7.17 (m, 3H), 5.12 (td, *J* = 9.2, 4.1 Hz, 1H), 3.38 (ddd, *J* = 11.4, 8.7, 4.2 Hz, 1H), 2.27-2.18 (m, 2H), 1.82-1.70 (m, 2H), 1.64-1.33 (m, 4H); **^{13}C NMR** ($CDCl_3$, 100 MHz) δ 164.5, 153.3, 151.0, 137.2, 135.2, 129.1, 128.5, 127.8, 126.4, 123.3, 76.9, 46.2, 32.3, 31.8, 25.8, 23.7; **HRMS** (ESI-Orbitrap) m/z calcd for $C_{18}H_{19}NO_2SeNa$ $[M+Na]^+$: 384.0479; Found: 384.0471.

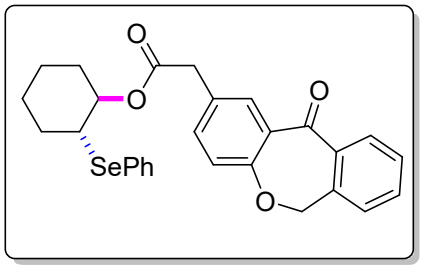


2-(phenylselanyl)cyclohexyl 2-(2,4-dichlorophenyl)acetate (8i): New compound. (Eluent: petroleum ether (60-90 °C)/EtOAc = 50:1, v/v). 75.2 mg, 85% yield. Colourless oil. **^{1}H NMR** ($CDCl_3$, 600 MHz) δ 7.54-7.54 (m, 2H), 7.38 (m, 1H), 7.26 (m, 3H), 7.19 (m, 2H), 4.89-4.86 (m, 1H), 3.63 (s, 2H), 3.19-3.16 (m, 1H), 2.12-2.06 (m, 2H), 1.68-1.61 (m, 2H), 1.51-1.27 (m, 4H); **^{13}C NMR** ($CDCl_3$, 150 MHz) δ 169.4, 135.4, 135.1, 133.8, 132.4, 131.3, 129.3, 129.0, 128.6, 127.7, 127.2, 76.1, 45.9, 38.8, 32.3, 31.5, 25.7, 23.5; **HRMS** (ESI-Orbitrap) m/z calcd for $C_{20}H_{20}Cl_2O_2SeNa$ $[M+Na]^+$:464.9898 ; Found:464.9890.

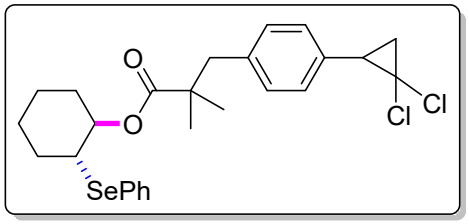


2-(phenylselanyl)cyclohexyl 2-(4-isobutylphenyl)propanoate (8j): New compound. (Eluent: petroleum ether (60-90 °C)/EtOAc = 50:1, v/v). d.r. = 1:1. 66.4 mg, 75% yield. Colourless oil. **^{1}H NMR** ($CDCl_3$, 400 MHz) δ 7.60-7.59 (m, 1H), 7.49 (d, *J* = 7.1 Hz, 1H), 7.31-7.25 (m, 4H), 7.20 (d, *J* = 7.6 Hz, 1H), 7.12-7.10 (m, 1H), 4.87-4.83 (m, 1H), 3.73-3.54 (m, 1H), 3.25-3.20 (m, 1H), 2.48-2.46 (m, 2H), 2.14-2.09 (m, 1H), 2.00-1.96 (m, 1H), 1.89-1.83 (m, 1H), 1.66-1.61 (m, 2H), 1.5-1.50 (m, 4H), 1.47-1.30 (m, 3H), 0.92-0.89 (m, 6H); **^{13}C NMR** ($CDCl_3$, 150 MHz) δ 174.0,

173.9, 140.5, 140.4, 138.1, 137.8, 135.2, 135.1, 129.3, 129.3, 19.0, 128.9, 128.9, 128.5, 127.6, 127.6, 127.5, 127.3, 75.4, 74.7, 46.0, 45.6, 45.6, 45.2, 45.1, 32.2, 31.9, 31.1, 30.9, 30.3, 25.7, 25.3, 23.4, 23.2, 22.5, 18.6, 18.4; **HRMS** (ESI-Orbitrap) m/z calcd for $C_{25}H_{32}O_2SeNa$ $[M+Na]^+$: 465.1468; Found: 465.1468.



2-(phenylselanyl)cyclohexyl 2-(11-oxo-6,11-dihydrodibenzo[*b*,*e*]oxepin-2-yl)acetate (8k): New compound. (Eluent: petroleum ether (60-90 °C)/EtOAc = 50:1, v/v). 76.2 mg, 75% yield. Yellow oil. **^{1}H NMR** ($CDCl_3$, 400 MHz) δ 8.10 (d, *J* = 2.2 Hz, 1H), 7.88 (d, *J* = 7.6 Hz, 1H), 7.55-7.52 (m, 3H), 7.47-7.40 (m, 2H), 7.34 (d, *J* = 7.4 Hz, 1H), 7.27-7.25 (m, 3H), 7.00 (d, *J* = 8.5 Hz, 1H), 5.15 (s, 2H), 4.87 (td, *J* = 9.1, 4.0, Hz, 1H), 3.51 (s, 1H), 3.22 (dt, *J* = 10.1, 4.1 Hz, 1H), 2.15-2.04 (m, 2H), 1.68-1.61 (m, 2H), 1.54-1.26 (m, 4H); **^{13}C NMR** ($CDCl_3$, 150 MHz) δ 190.9, 170.7, 160.5, 140.6, 136.6, 135.6, 132.8, 132.6, 129.5, 129.3, 129.0, 128.7, 128.0, 127.9, 127.7, 125.1, 121.0, 76.0, 73.7, 46.0, 40.4, 32.3, 31.7, 25.8, 23.6; **HRMS** (ESI-Orbitrap) m/z calcd for $C_{28}H_{26}O_4SeNa$ $[M+Na]^+$: 529.0889; Found: 529.0886.



2-(phenylselanyl)cyclohexyl 3-(4-(2,2-dichlorocyclopropyl)phenyl)-2,2-dimethylpropanoate (8l): New compound. (Eluent: petroleum ether (60-90 °C)/EtOAc = 70:1, v/v). d.r. = 1:1, 78.3 mg, 75% yield. Yellow oil. **^{1}H NMR** ($CDCl_3$, 400 MHz) δ 7.56-7.54 (m, 2H), 7.29-7.24 (m, 3H), 7.09-7.07 (m, 2H), 6.89-6.85 (m, 2H), 4.93-4.86 (m, 1H), 3.15 (td, *J* = 10.0, 4.0 Hz, 1H), 2.81 (dd, *J* = 10.6, 8.5 Hz, 1H), 2.07-1.98 (m, 2H), 1.93-1.89 (m, 1H), 1.77-1.72 (m, 1H), 1.64 (s, 6H), 1.61-1.57 (m, 1H), 1.50-1.42 (m, 1H), 1.33-1.23 (m, 3H); **^{13}C NMR** ($CDCl_3$, 150 MHz) δ 173.4

(d, J = 2.5 Hz), 155.2 (d, J = 2.5 Hz), 135.4, 129.7 (d, J = 5.0 Hz), 129.1, 128.0 (d, J = 2.5 Hz), 128.0, 127.9, 118.5 (d, J = 3.8 Hz), 79.3, 75.6, 61.0 (d, J = 3.8 Hz), 45.7, 34.9 (d, J = 3.8 Hz), 32.5, 31.2, 26.4 (d, J = 8.8 Hz), 25.9, 25.6, 25.0 (d, J = 7.5 Hz), 23.5; **HRMS** (ESI-Orbitrap) m/z calcd for $C_{26}H_{30}Cl_2O_2Se$ $[M+Na]^+$: 547.0686; Found: 547.0681.

5. References

[1] Zhang, W.-S.; Ji, D.-W.; Li, Y.; Zhang, X.-X.; Zhao, C.-Y.; Hu, Y.-C.; Chen, Q.-A. *ACS Catal*., **2022**, *12*, 2158-2165.

[2] Singh, D.; Deobald, A. M.; Camargo, L. R. S.; Tabarelli, G.; Rodrigues, O. E. D.; Braga, A. L. *Org Lett*., **2010**, *12*, 3288-3291.

[3] Liu, G.-Q.; Zhou, C.-F.; Zhang, Y.-Q.; Yi, W.; Wang, P.-F.; Liu, J.; Ling, Y. *Green Chem*., **2021**, *23*, 9968-9973.

[4] Sun, K.; Wang, X.; Lv, Y.; Li, G.; Jiao, H.; Dai, C.; Li, Y.; Zhang, C.; Liu, L. *Chem. Commun.*, **2016**, *52*, 8471-8474.

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[6] Guan, H.; Wang, H.; Huang, D.; Shi, Y. *Tetrahedron*, **2012**, *68*, 2728-2735.

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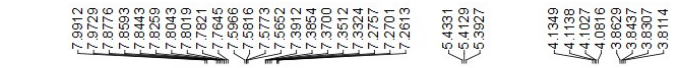
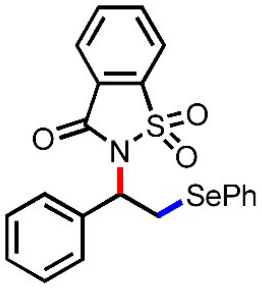
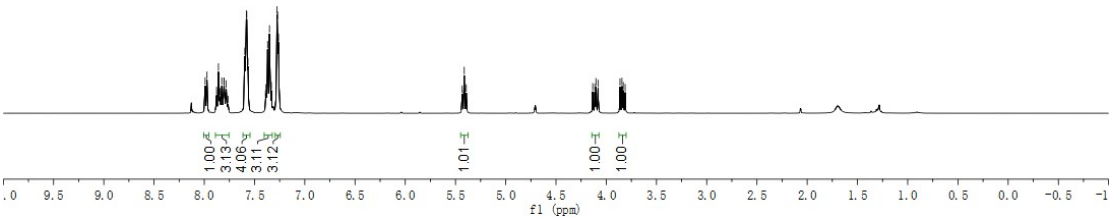
6. Copies of NMR spectra

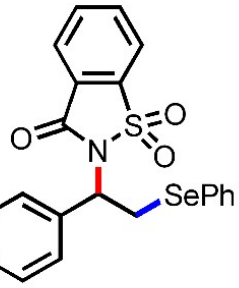
^{1}H NMR of product 4a in $CDCl_3$ (400 MHz)

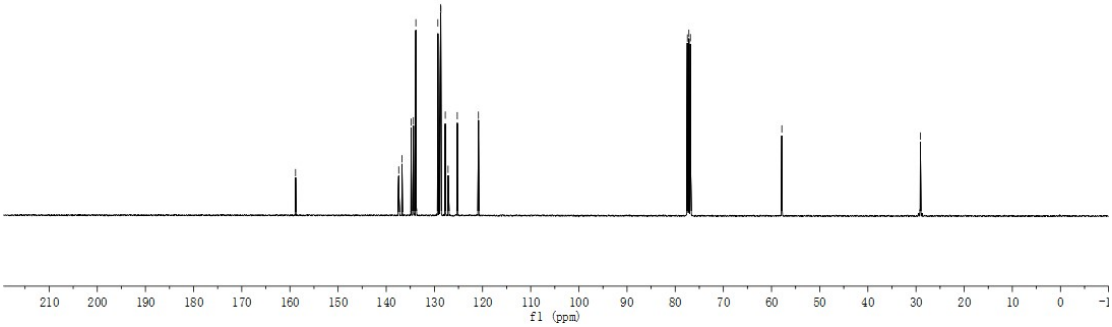




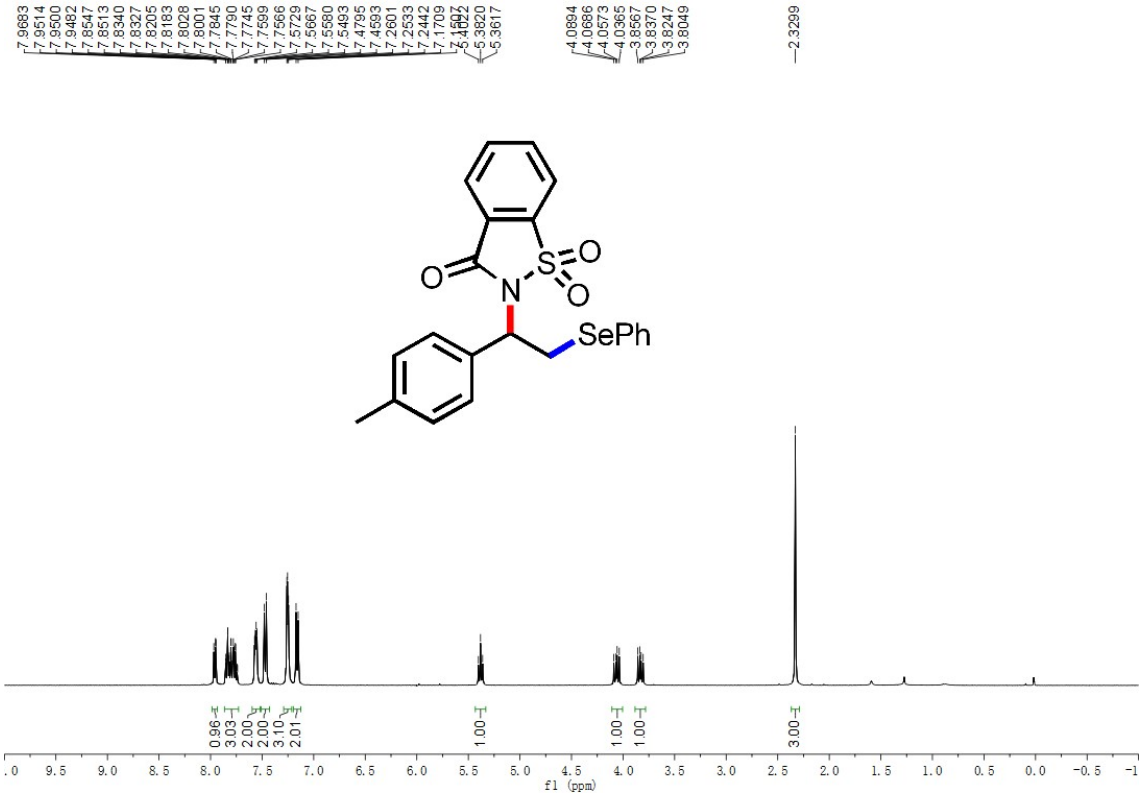


^{13}C NMR of product 4a in $CDCl_3$ (100 MHz)

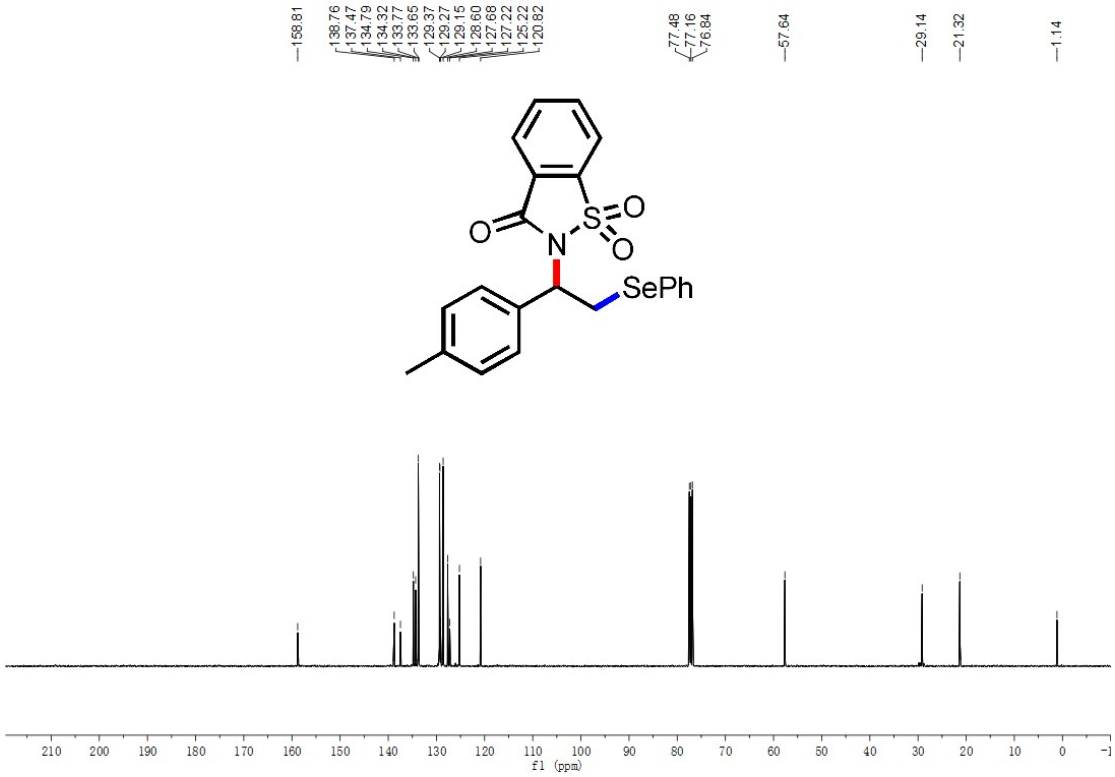




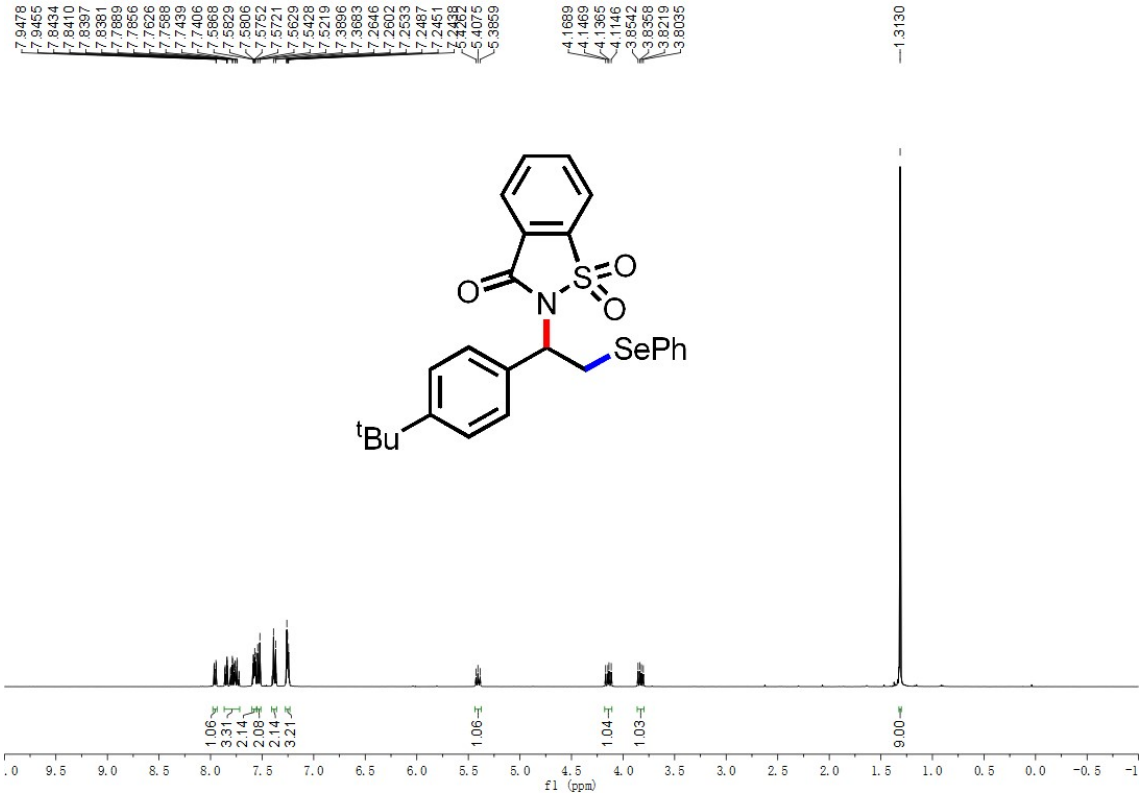
^{1}H NMR of product 4b in $CDCl_3$ (400 MHz)



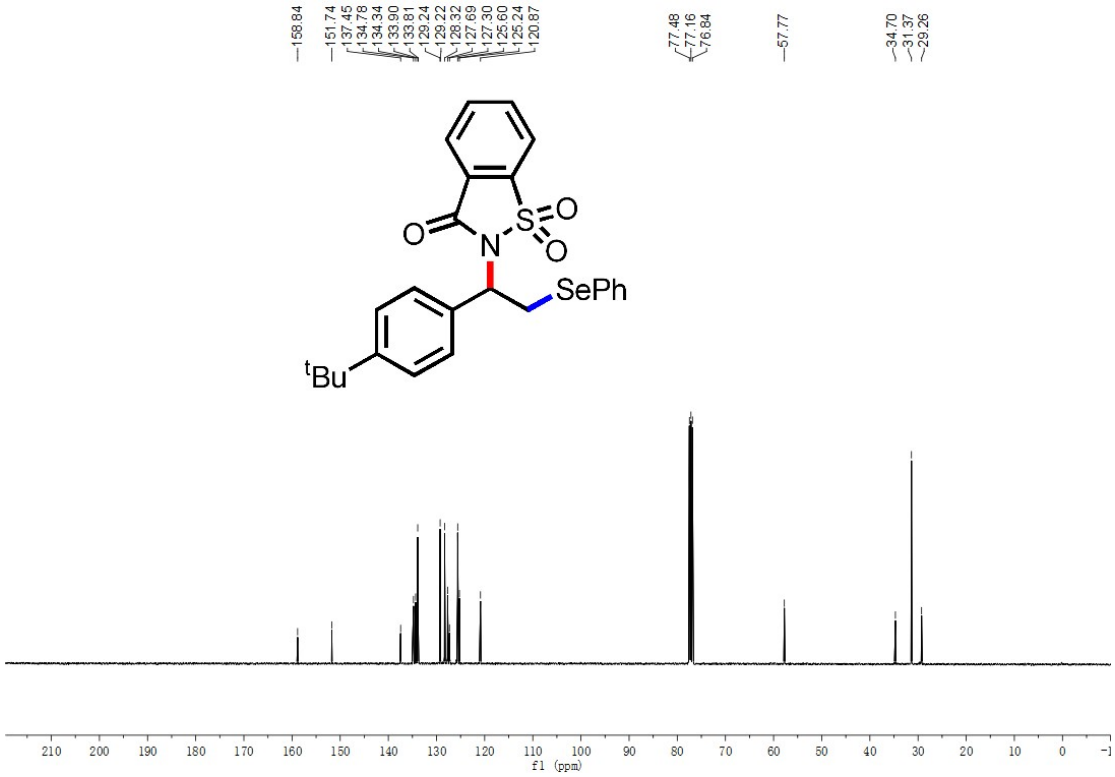
^{13}C NMR of product 4b in $CDCl_3$ (100 MHz)



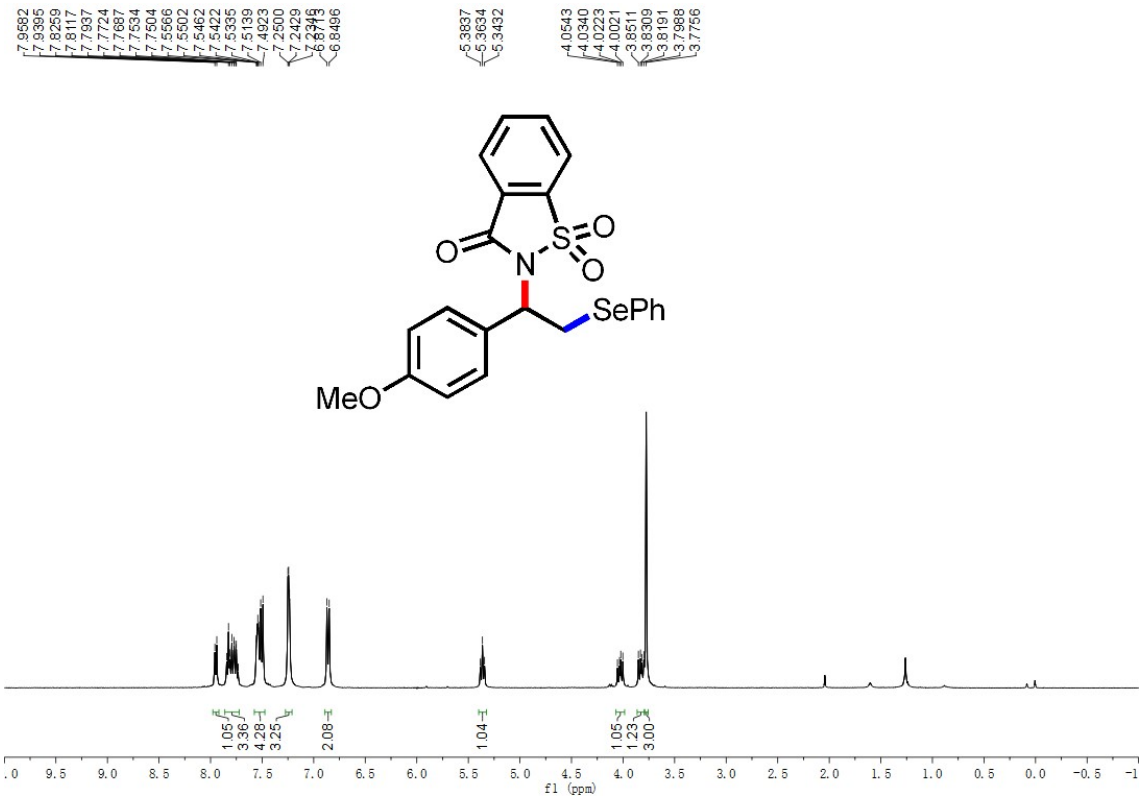
^{1}H NMR of product 4c in $CDCl_3$ (400 MHz)



^{13}C NMR of product 4c in $CDCl_3$ (100 MHz)



^{1}H NMR of product 4d in $CDCl_3$ (400 MHz)



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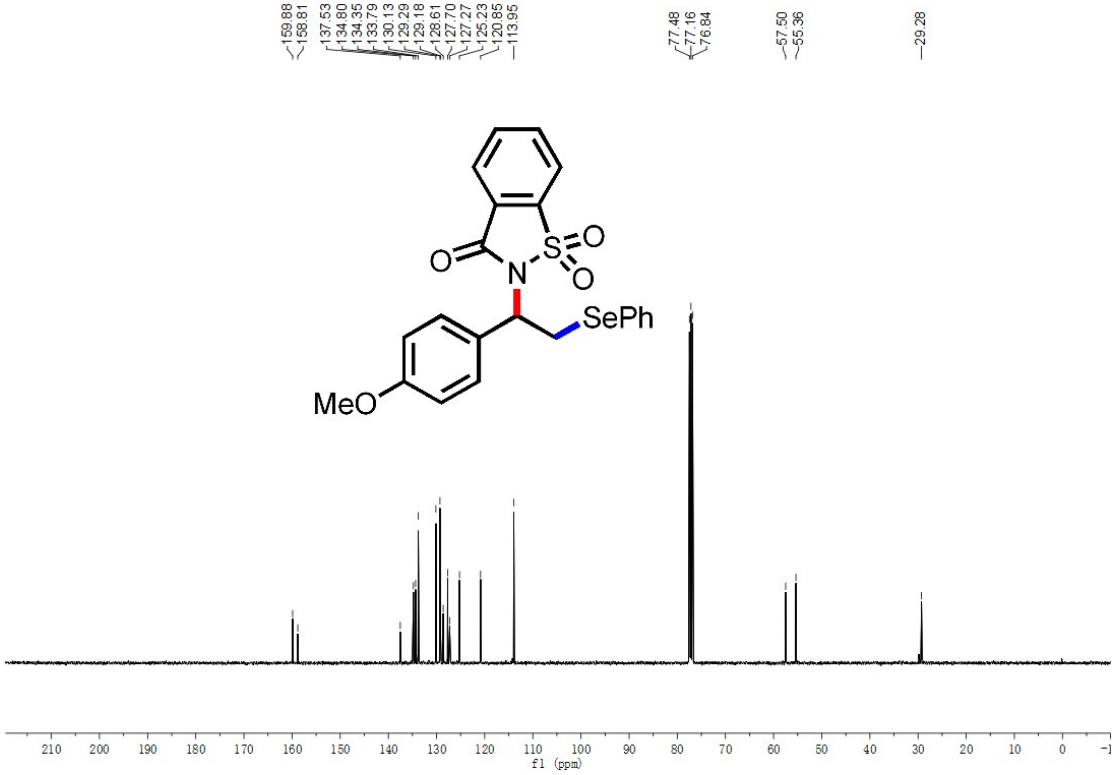
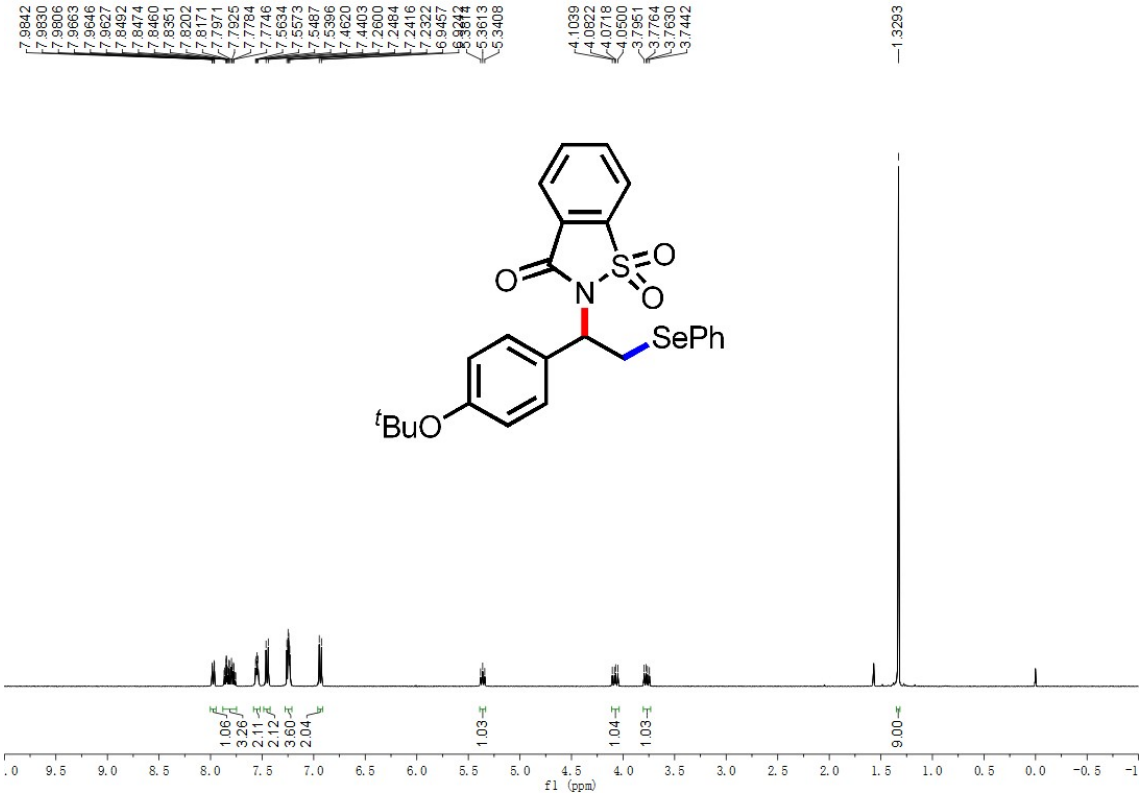
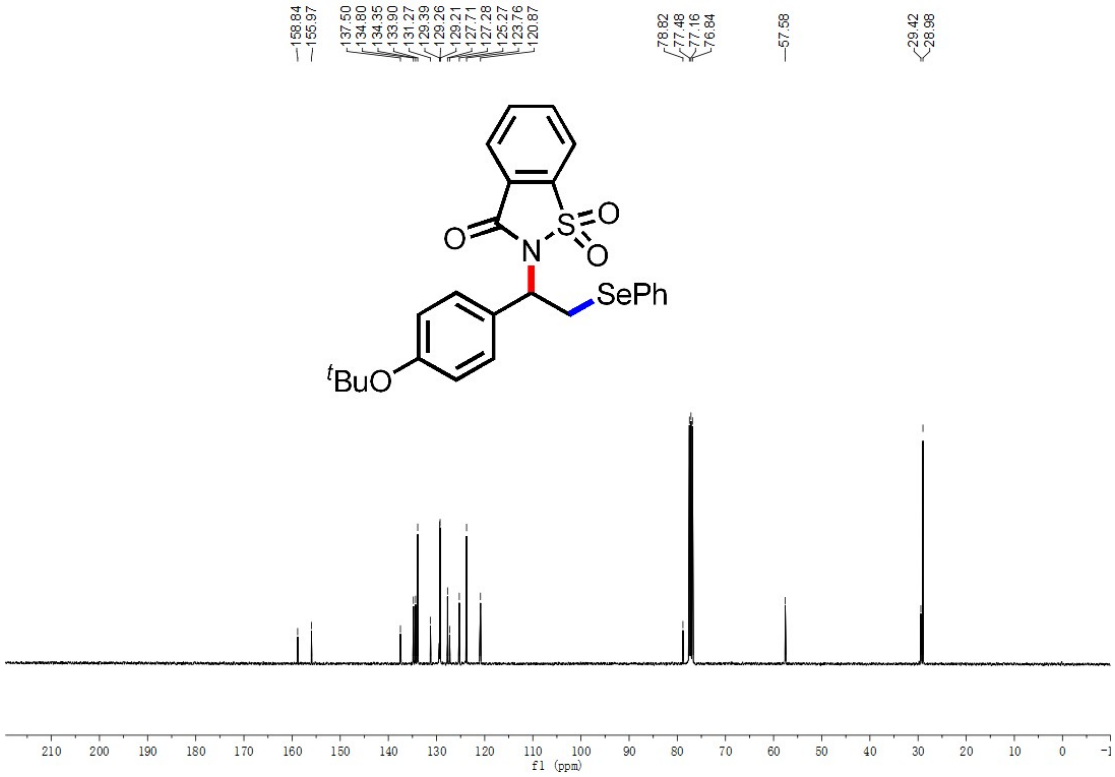


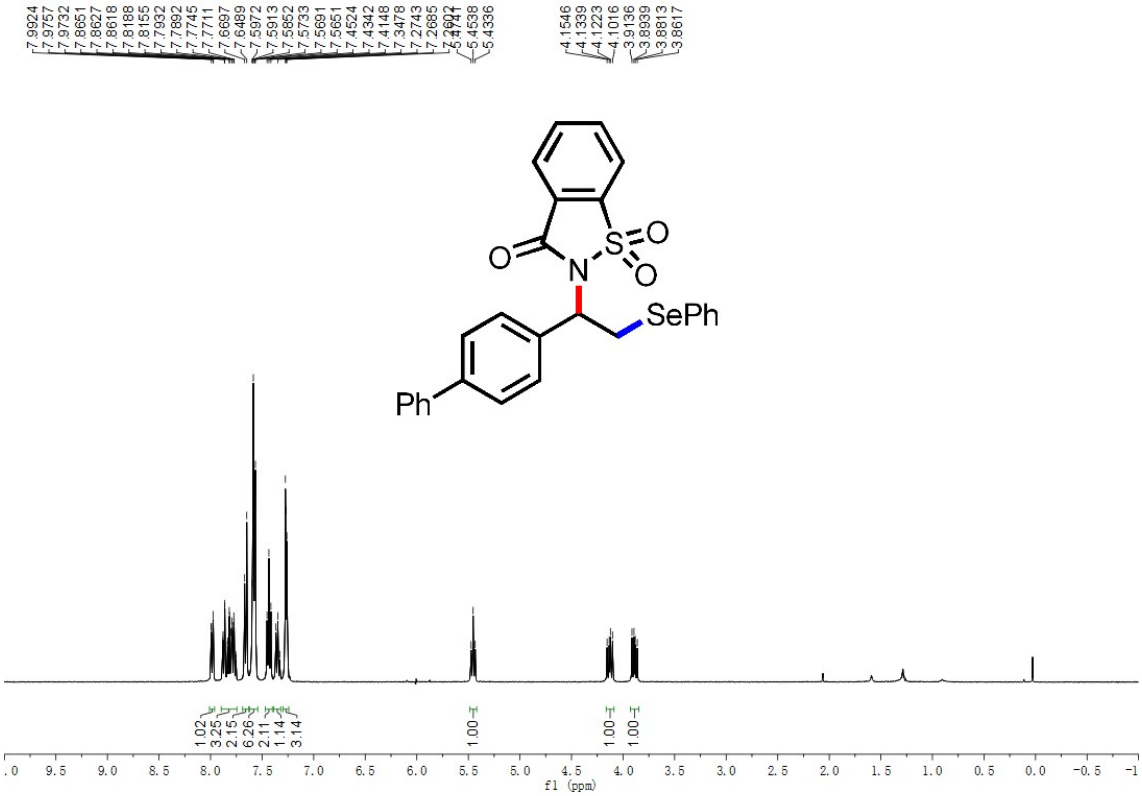
^{1}H NMR of product 4e in $CDCl_3$ (400 MHz)



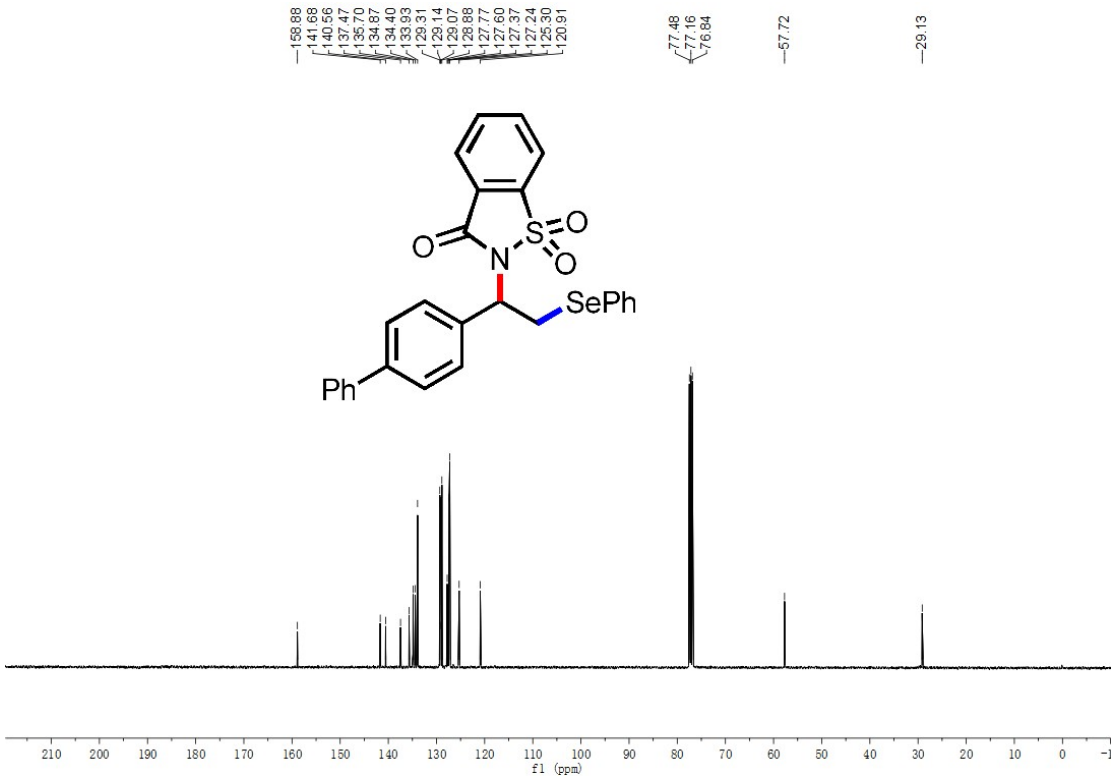
^{13}C NMR of product 4e in $CDCl_3$ (100 MHz)



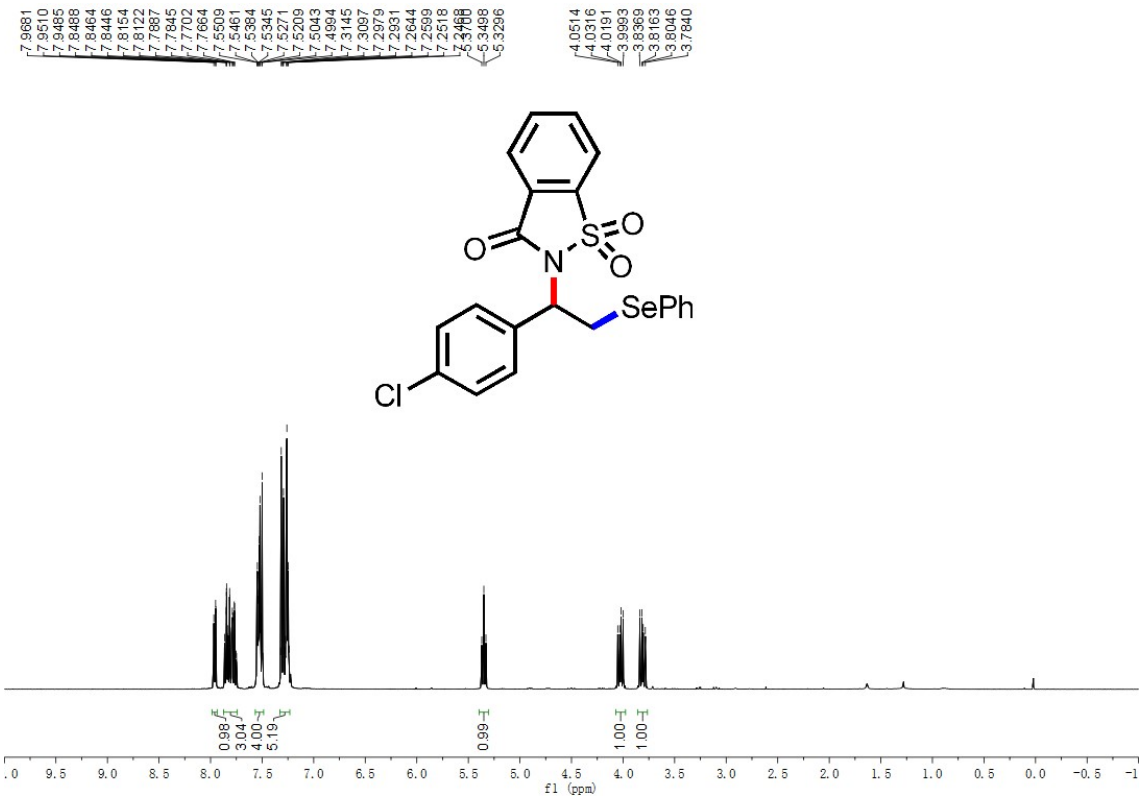
^{1}H NMR of product 4f in $CDCl_3$ (400 MHz)



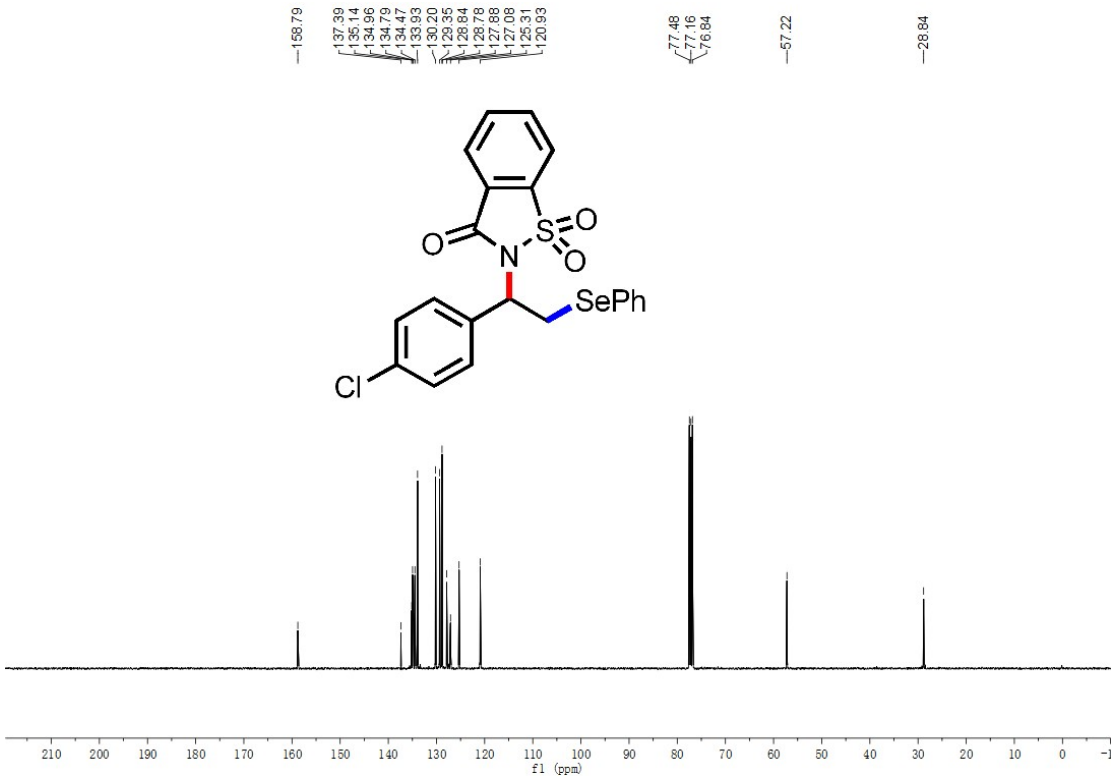
^{13}C NMR of product 4f in $CDCl_3$ (100 MHz)



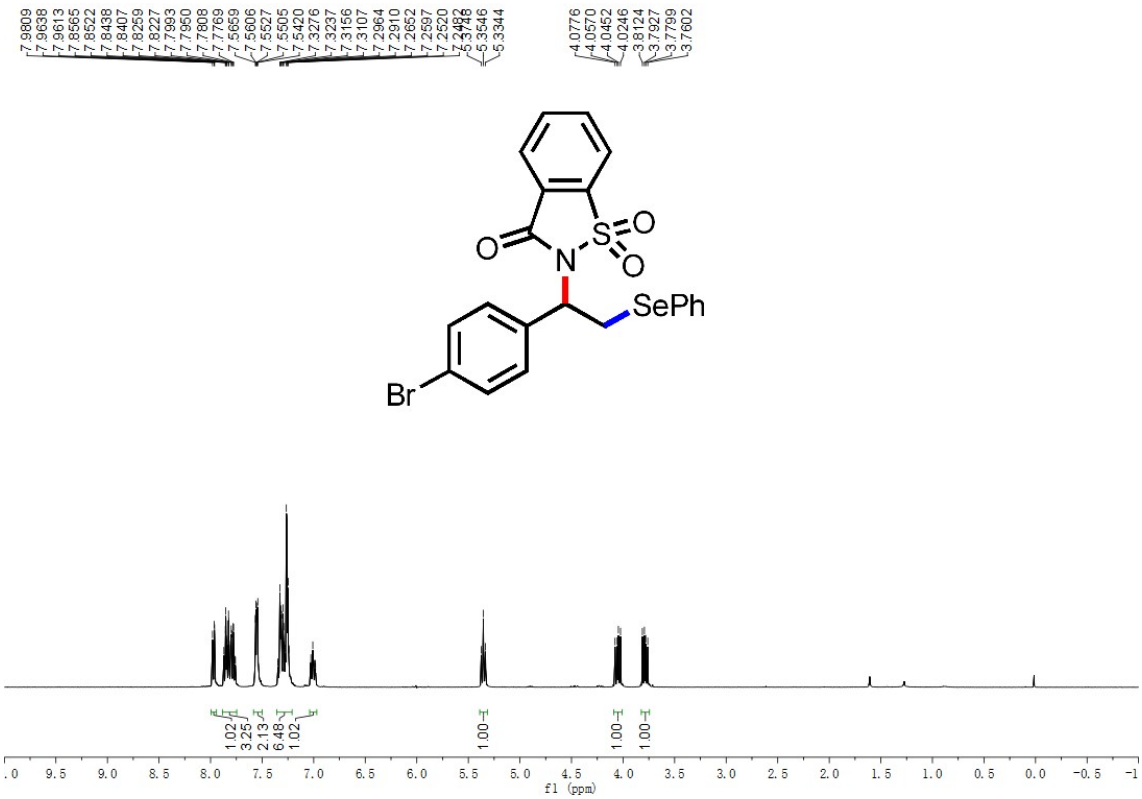
^{1}H NMR of product 4g in $CDCl_3$ (400 MHz)



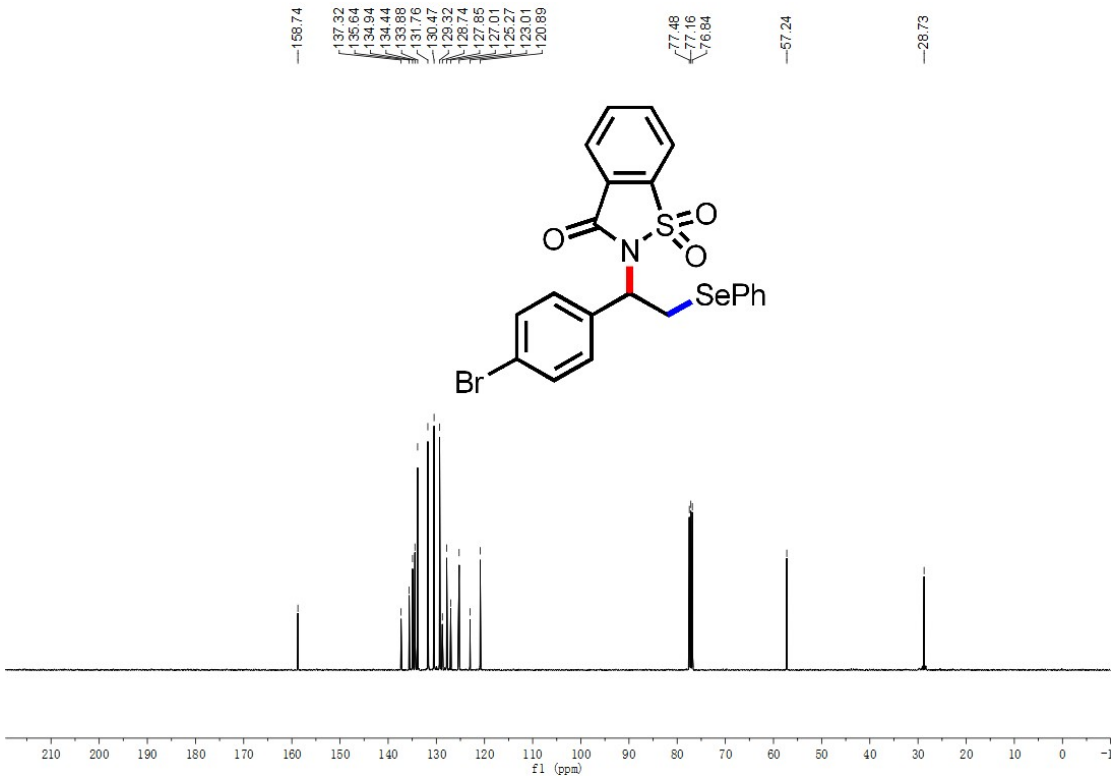
^{13}C NMR of product 4g in $CDCl_3$ (100 MHz)



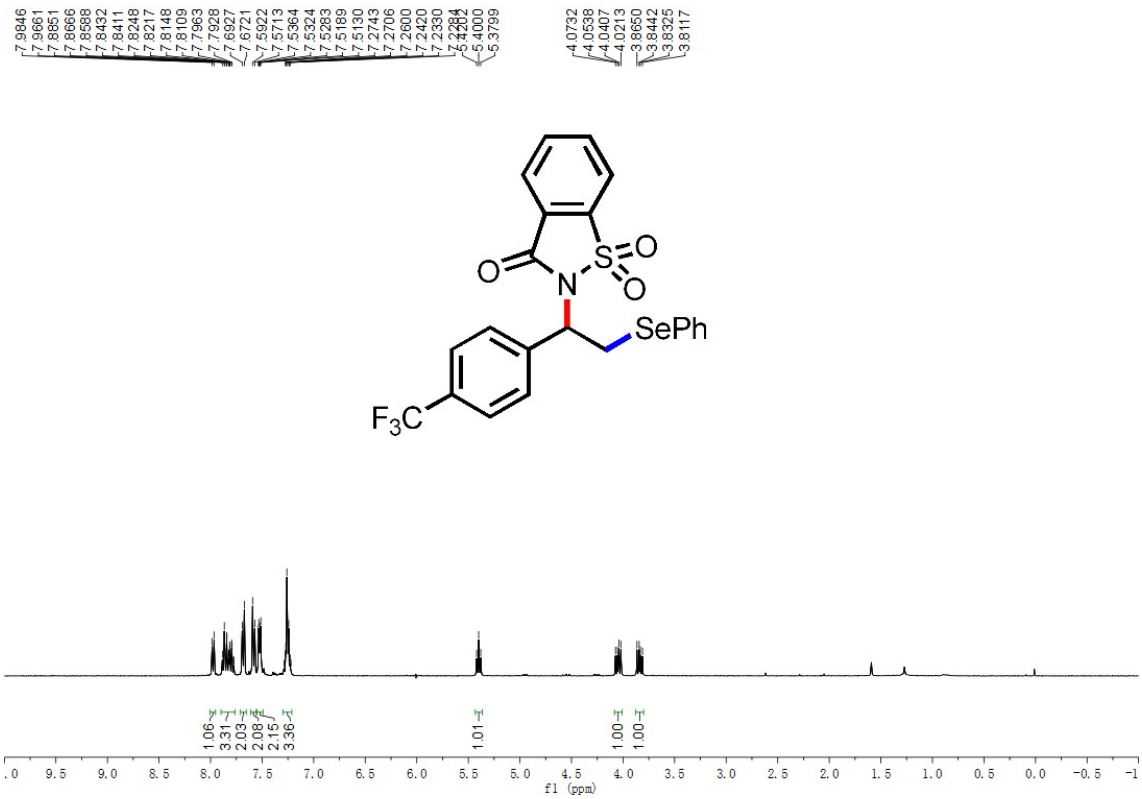
^{1}H NMR of product 4h in $CDCl_3$ (400 MHz)



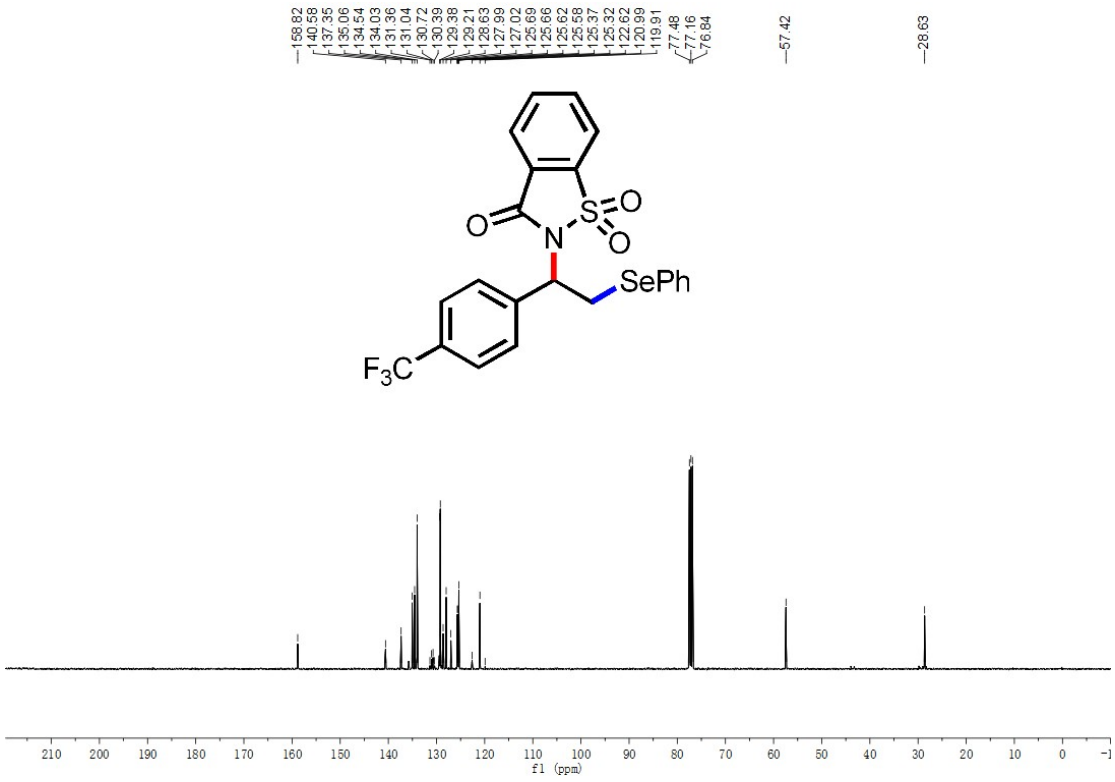
^{13}C NMR of product 4h in $CDCl_3$ (100 MHz)



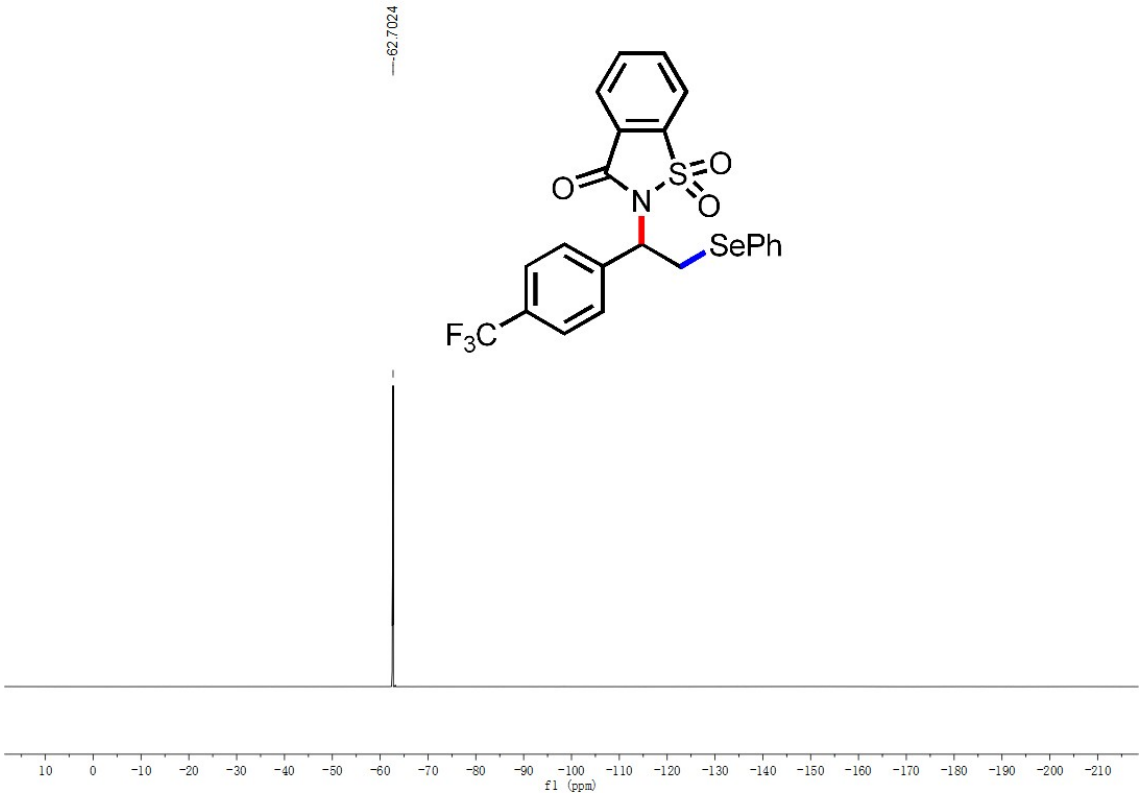
^{1}H NMR of product 4i in $CDCl_3$ (400 MHz)



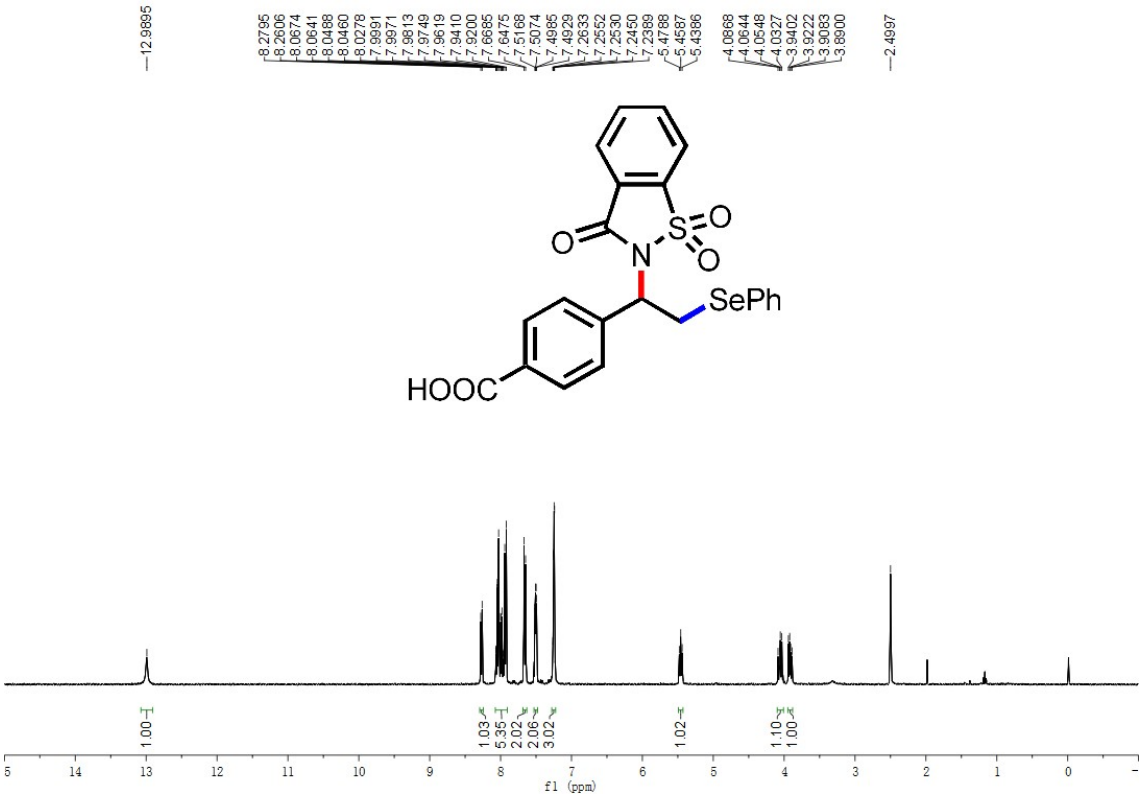
^{13}C NMR of product 4i in $CDCl_3$ (100 MHz)



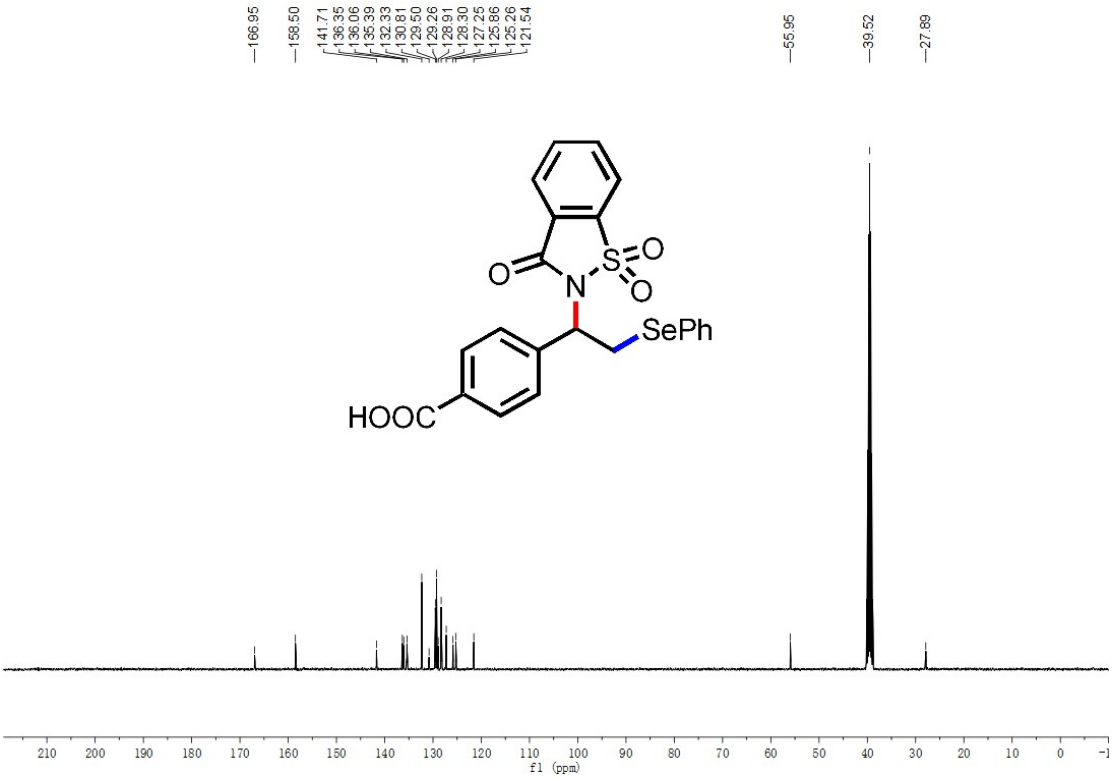
^{19}F NMR of product 4i in $CDCl_3$ (376 MHz)



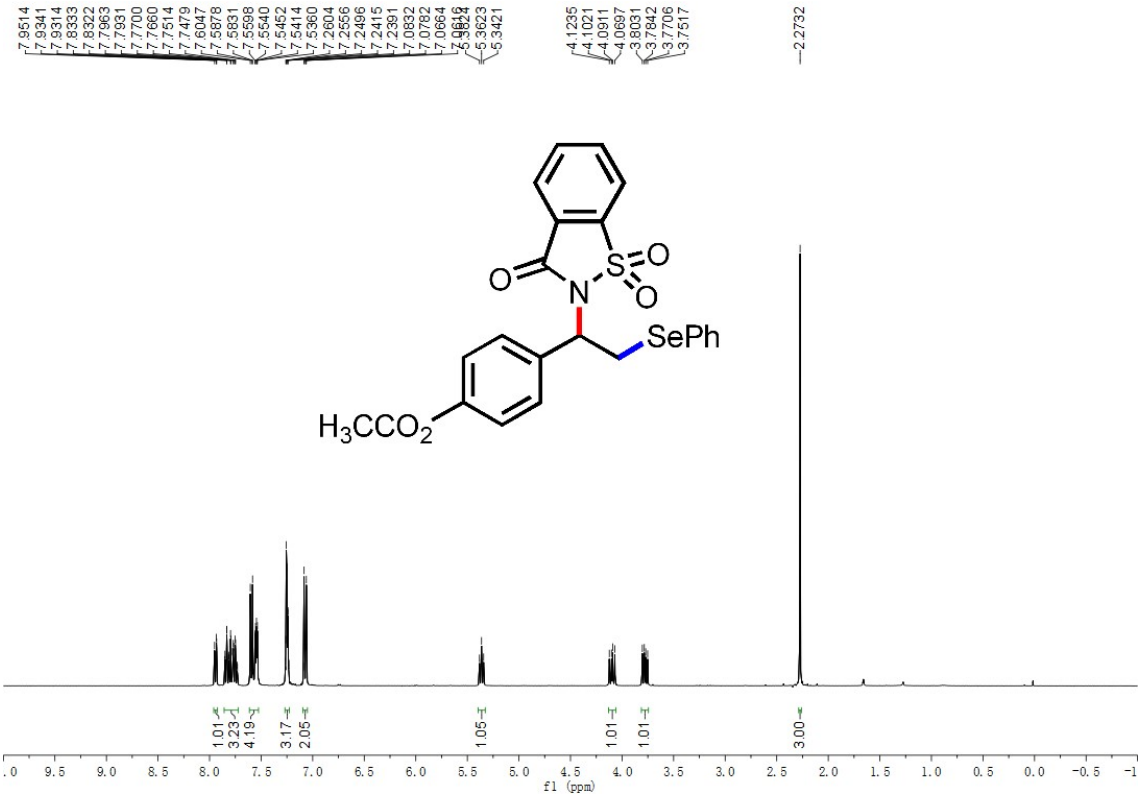
^{1}H NMR of product 4j in $CDCl_3$ (400 MHz)



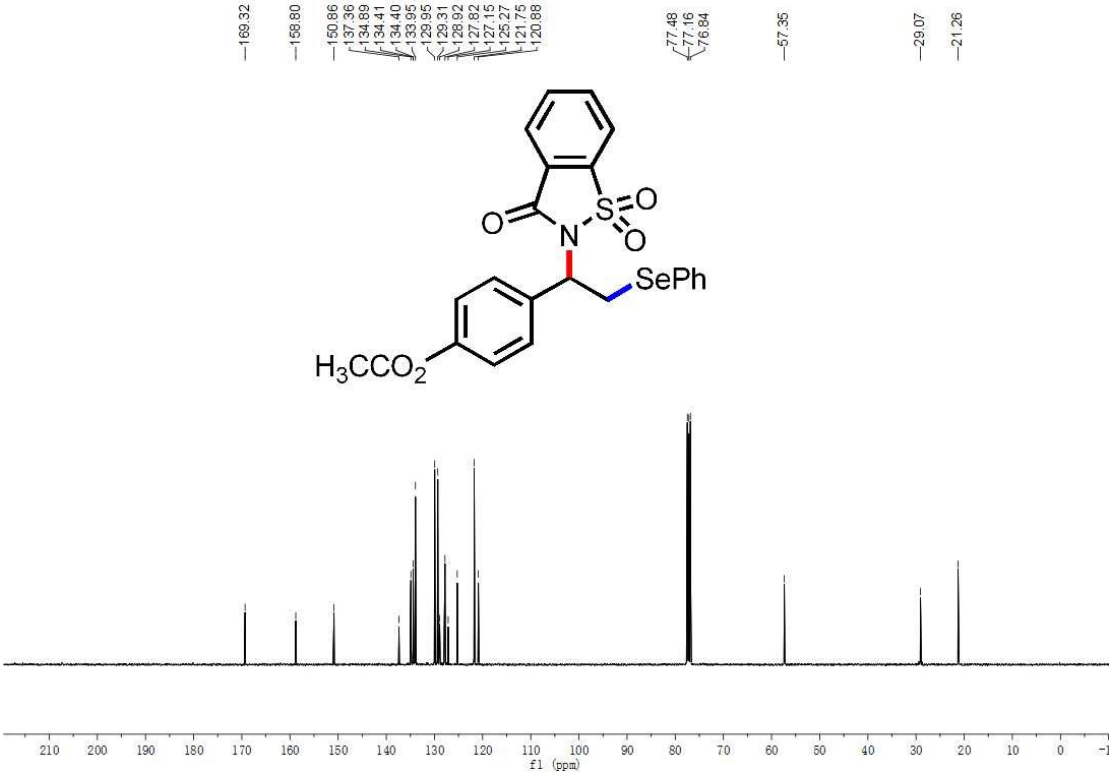
^{13}C NMR of product 4j in $CDCl_3$ (100 MHz)



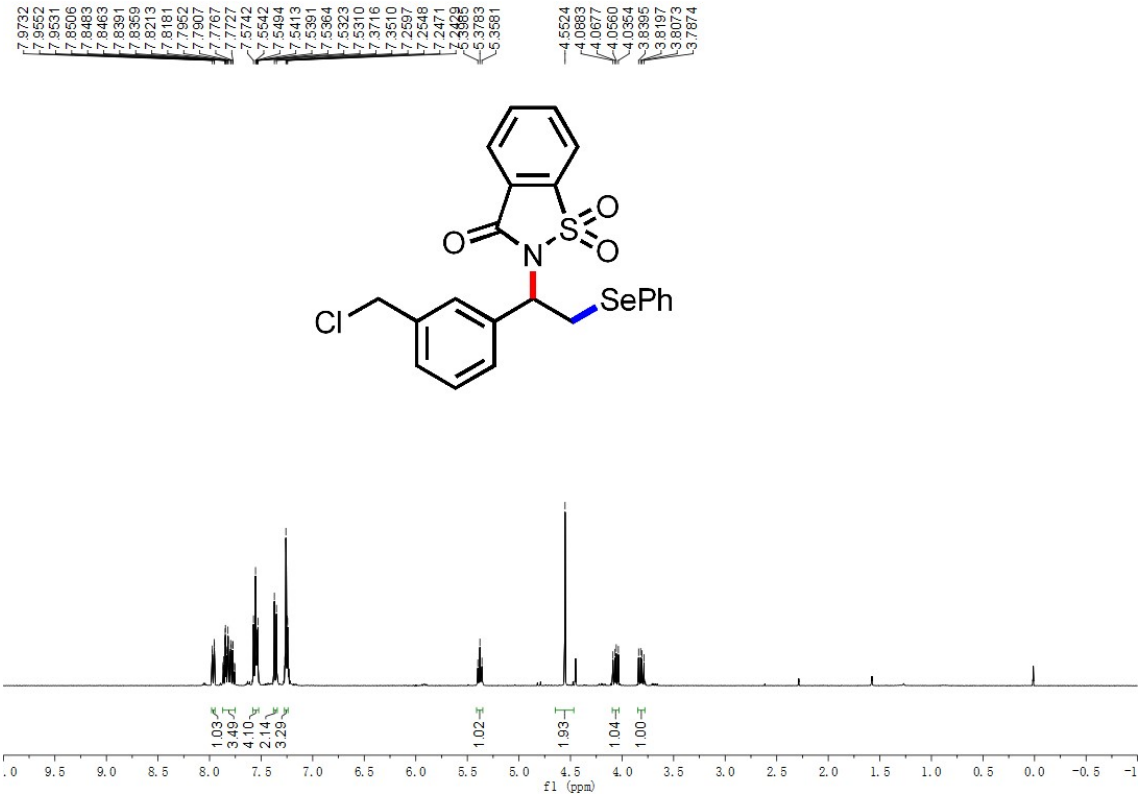
^{1}H NMR of product 4k in $CDCl_3$ (400 MHz)



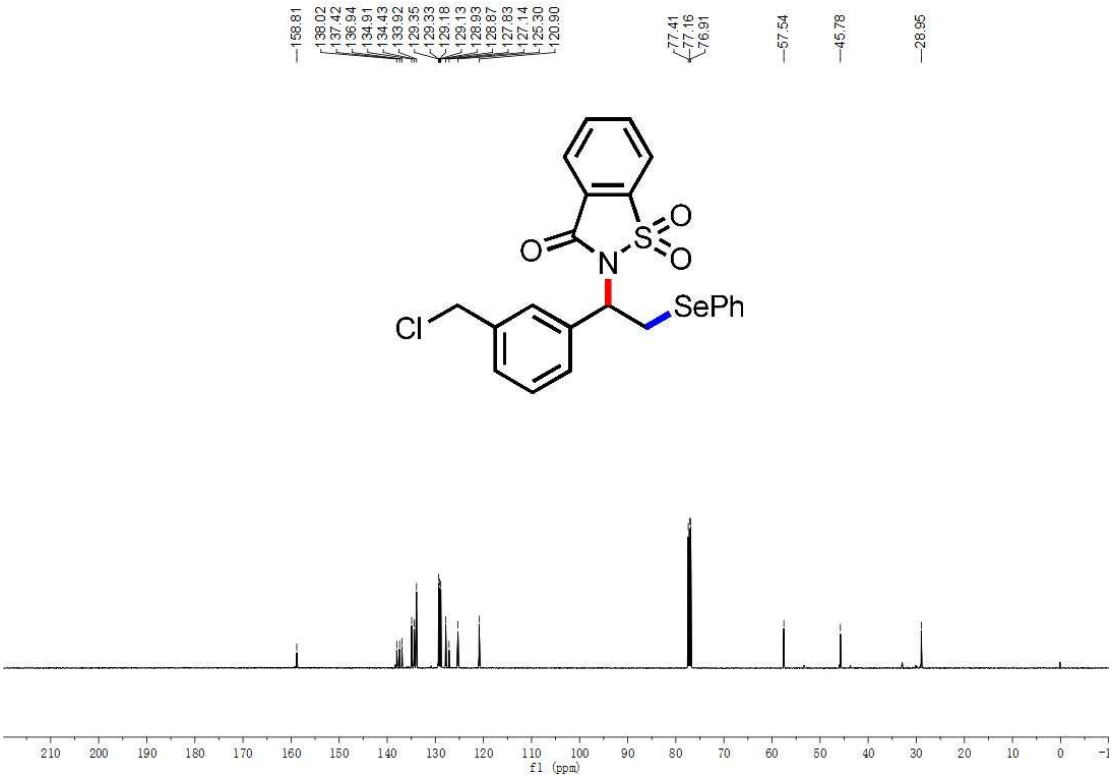
^{13}C NMR of product 4k in $CDCl_3$ (100 MHz)



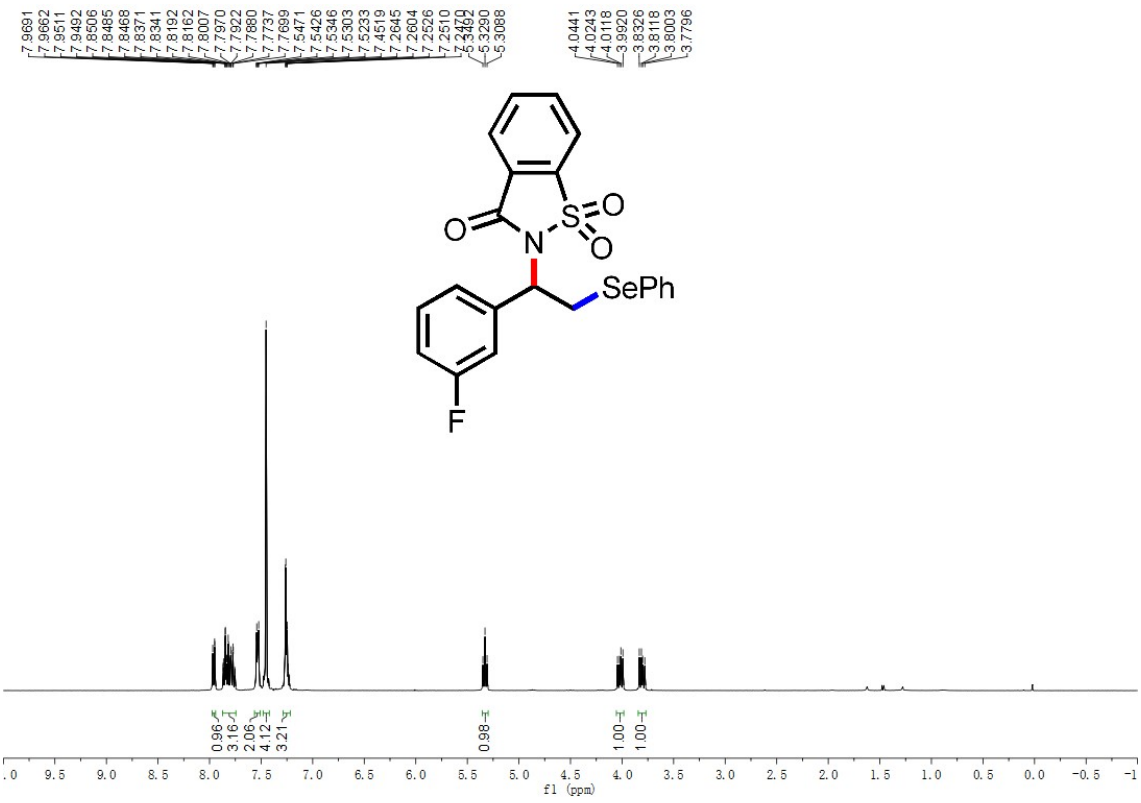
^{1}H NMR of product 4l in $CDCl_3$ (400 MHz)



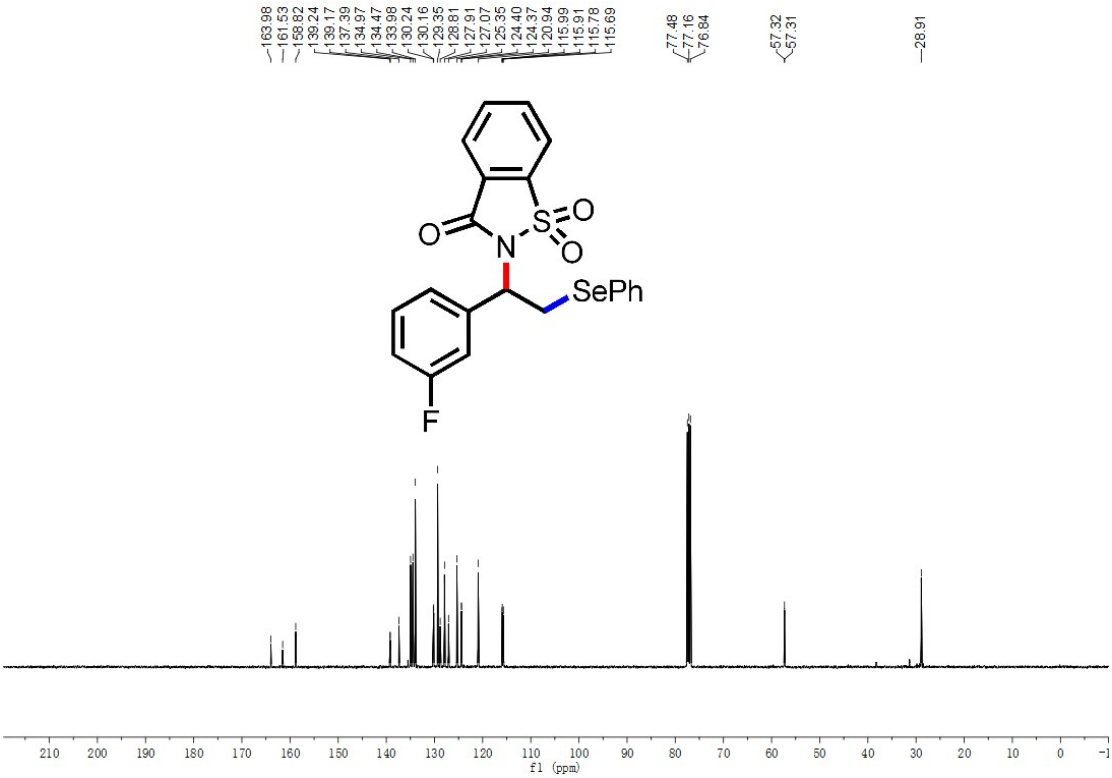
^{13}C NMR of product 4l in $CDCl_3$ (100 MHz)



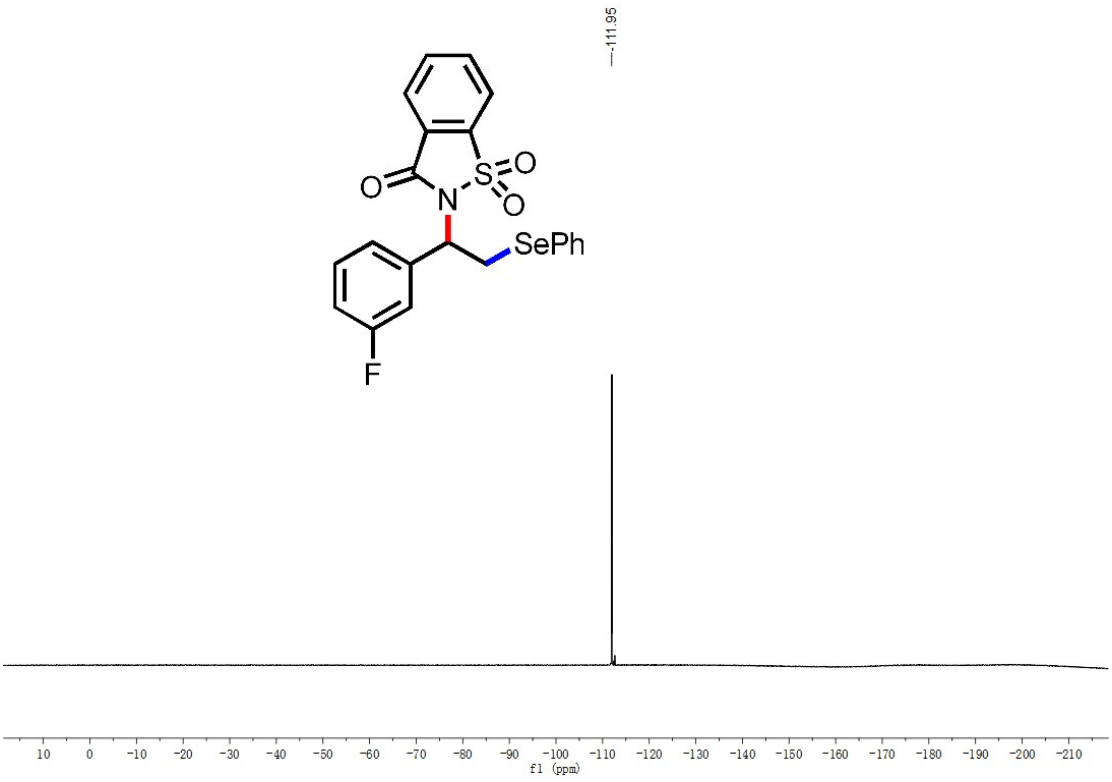
^{1}H NMR of product 4m in $CDCl_3$ (400 MHz)



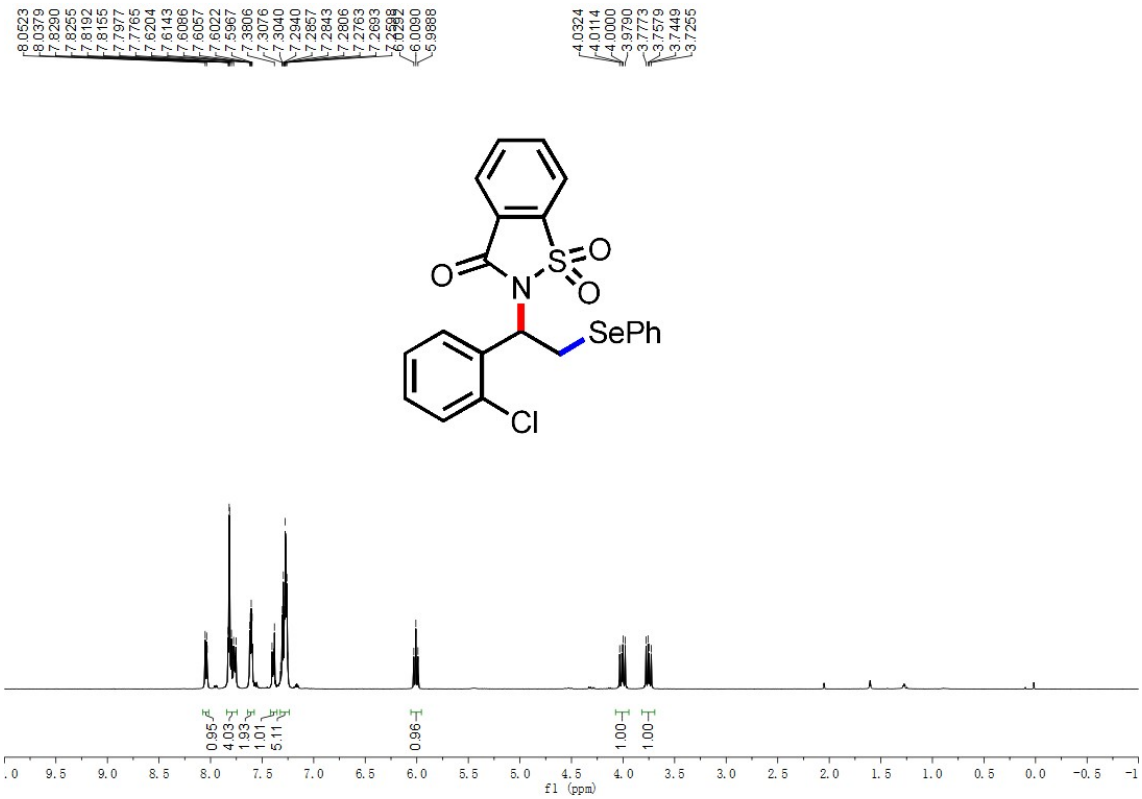
^{13}C NMR of product 4m in $CDCl_3$ (100 MHz)



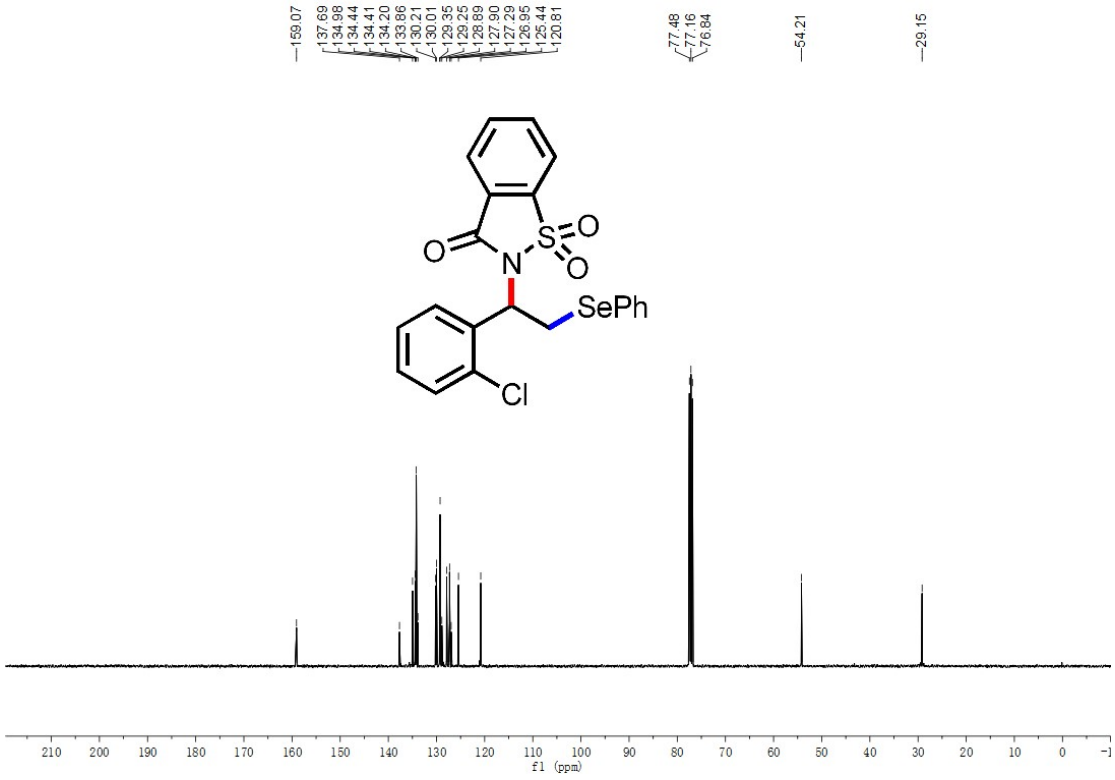
^{19}F NMR of product 4m in $CDCl_3$ (376 MHz)



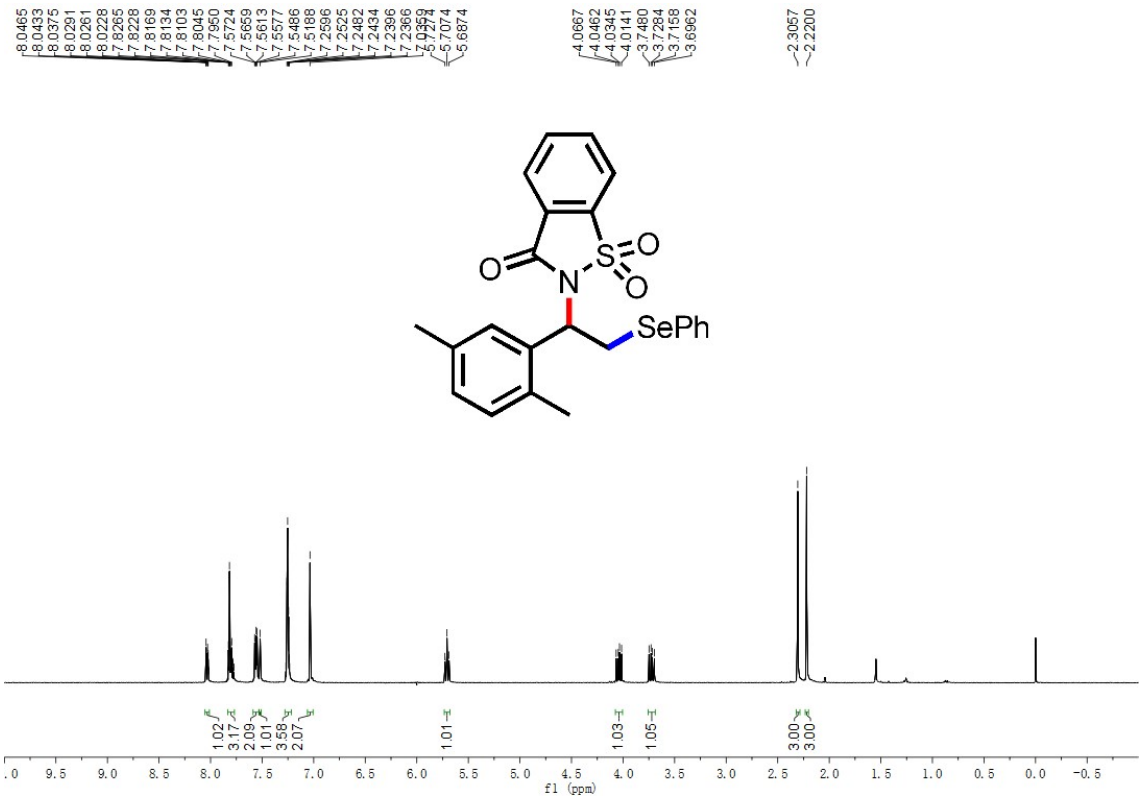
^{1}H NMR of product 4n in $CDCl_3$ (400 MHz)



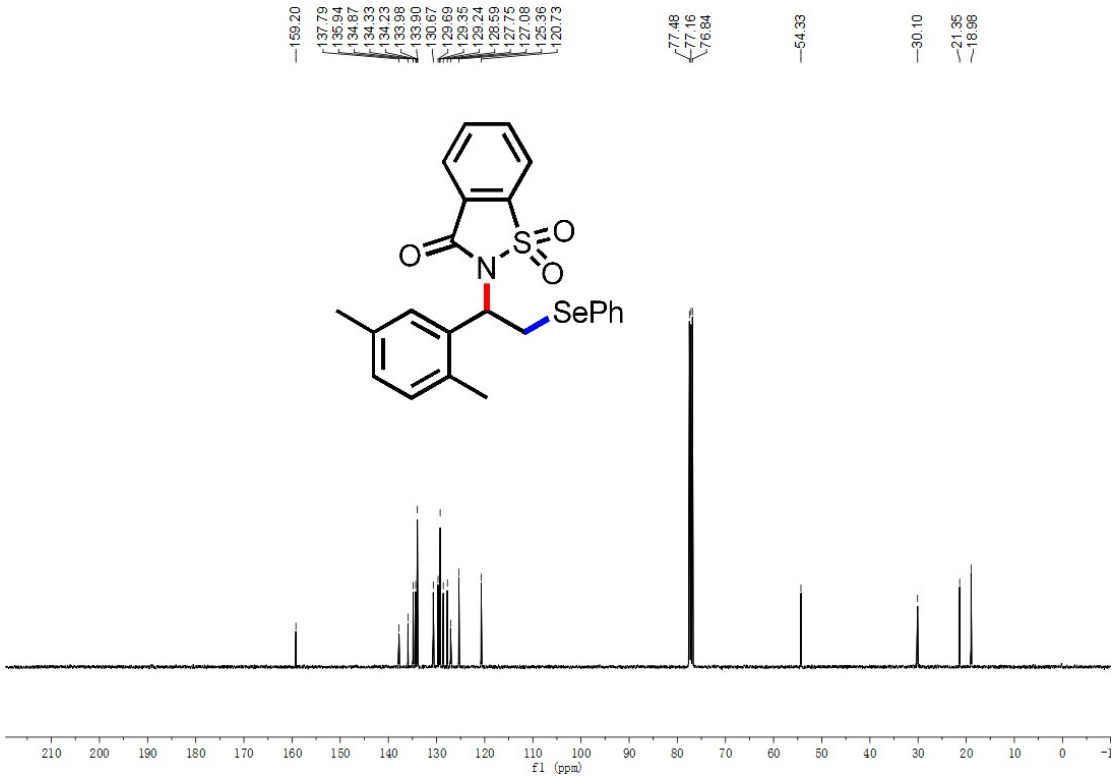
^{13}C NMR of product 4n in $CDCl_3$ (100 MHz)



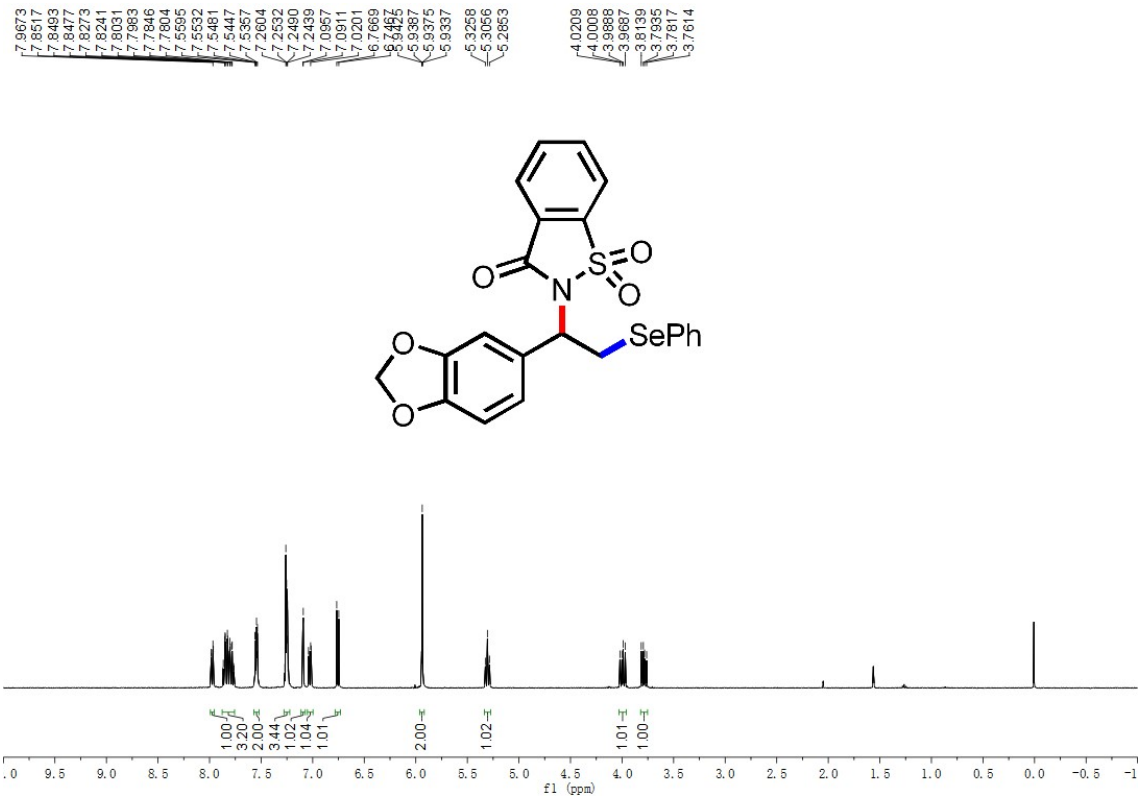
^{1}H NMR of product 4o in $CDCl_3$ (400 MHz)



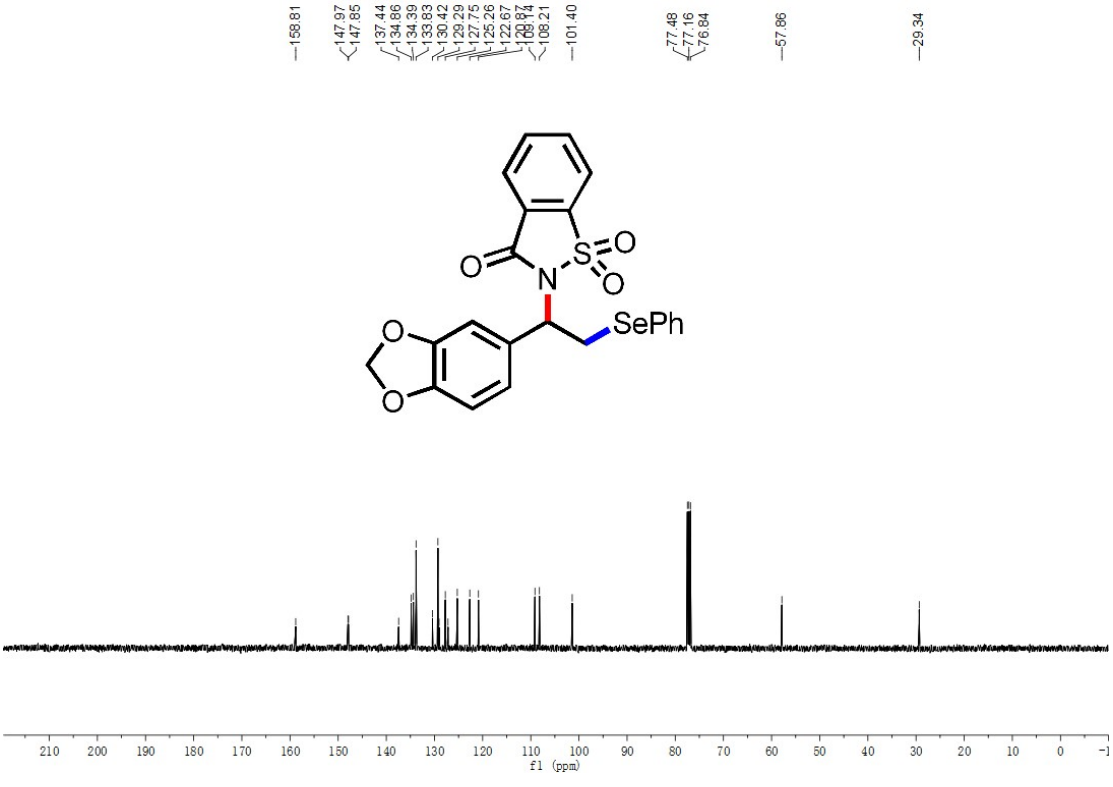
^{13}C NMR of product 4o in $CDCl_3$ (100 MHz)



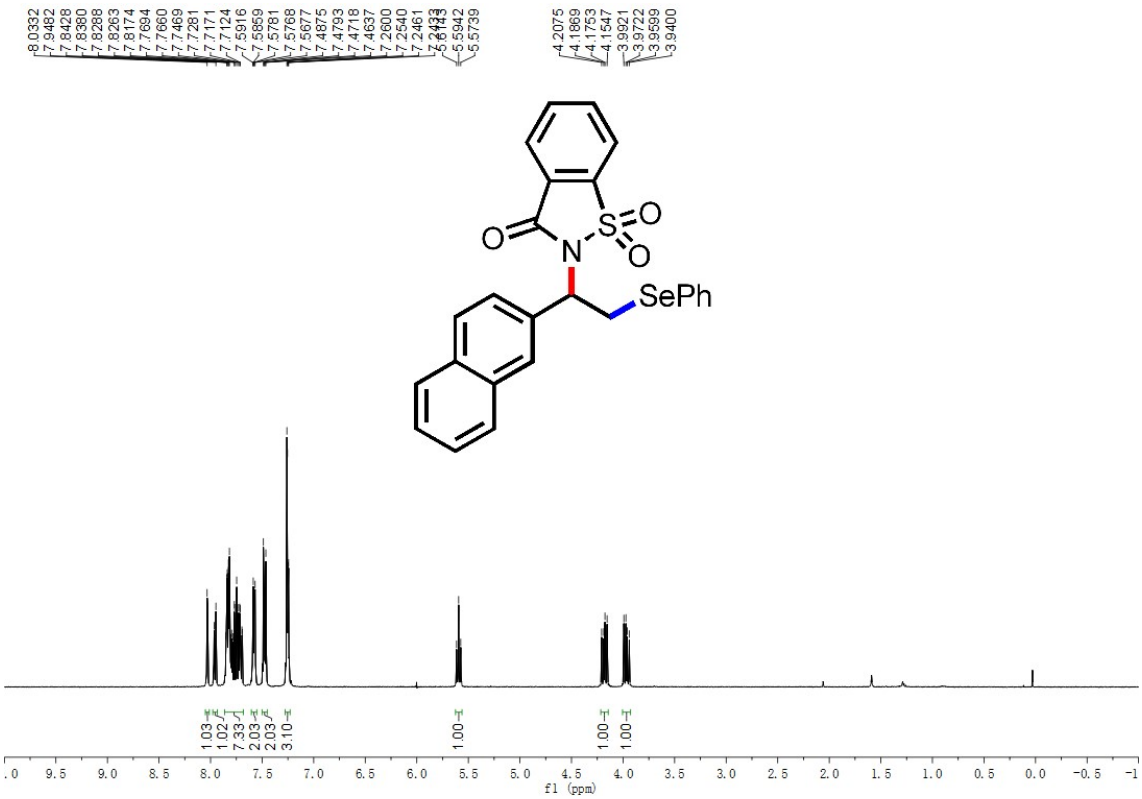
^{1}H NMR of product 4p in $CDCl_3$ (400 MHz)



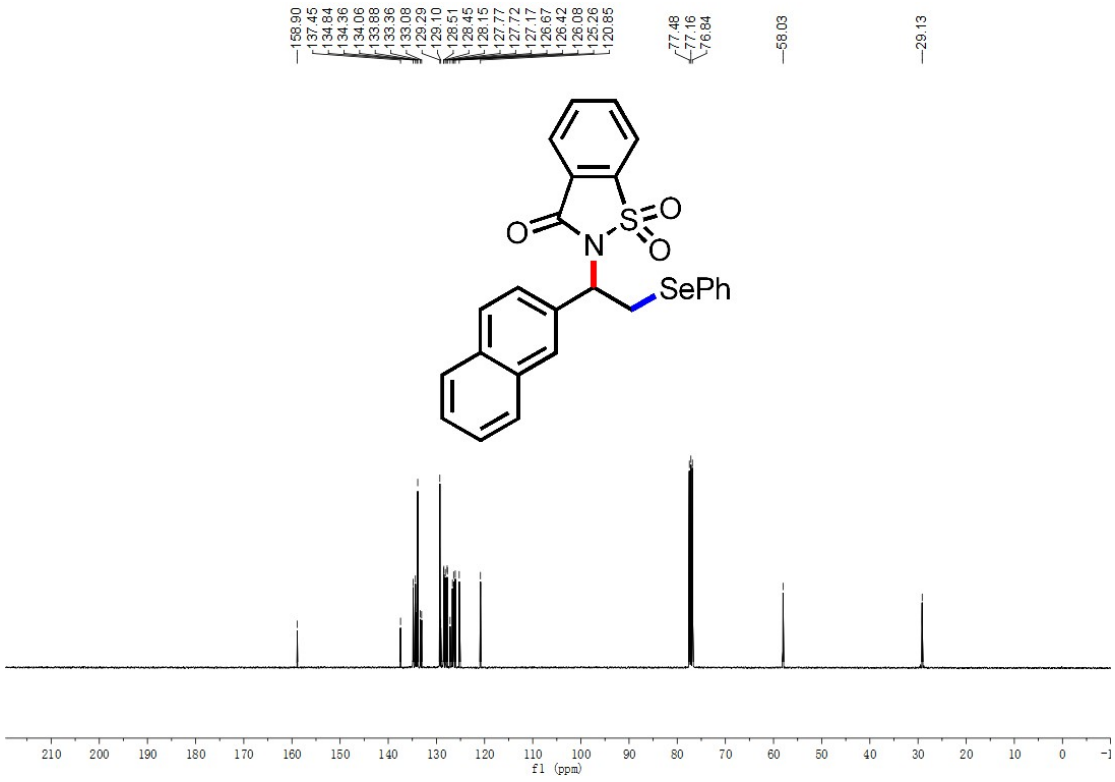
^{13}C NMR of product 4p in $CDCl_3$ (100 MHz)



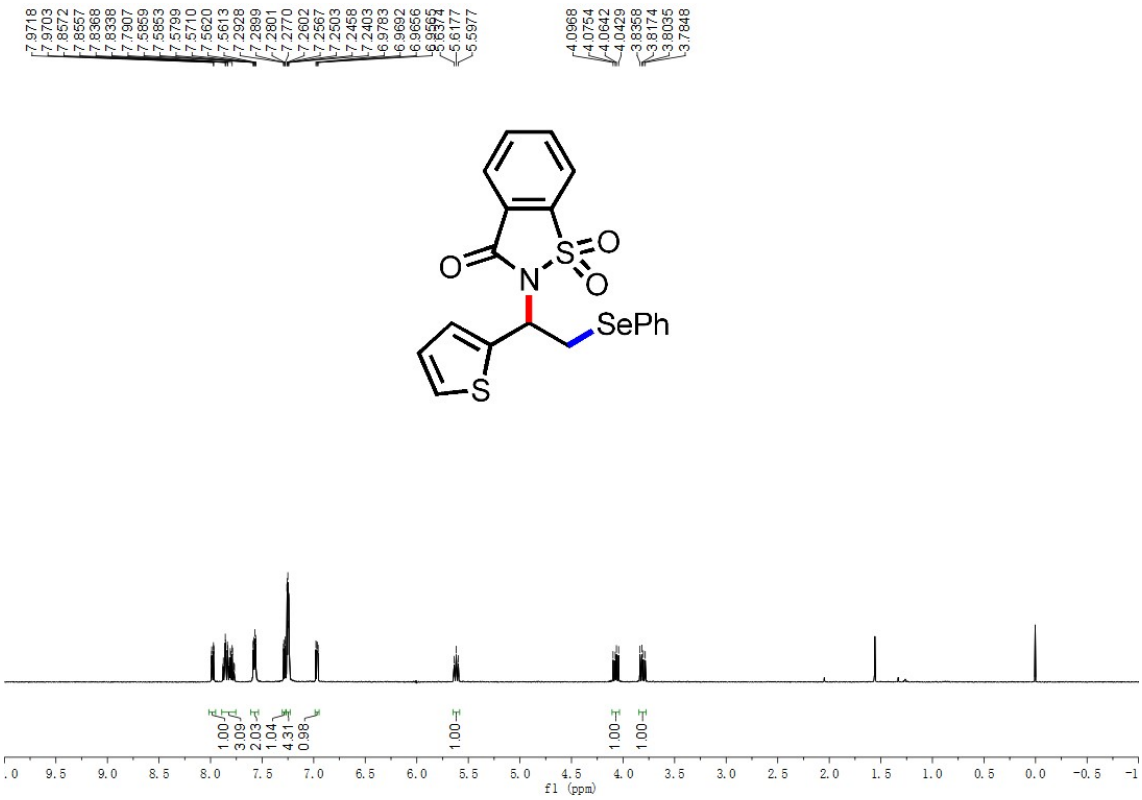
^{1}H NMR of product 4q in $CDCl_3$ (400 MHz)



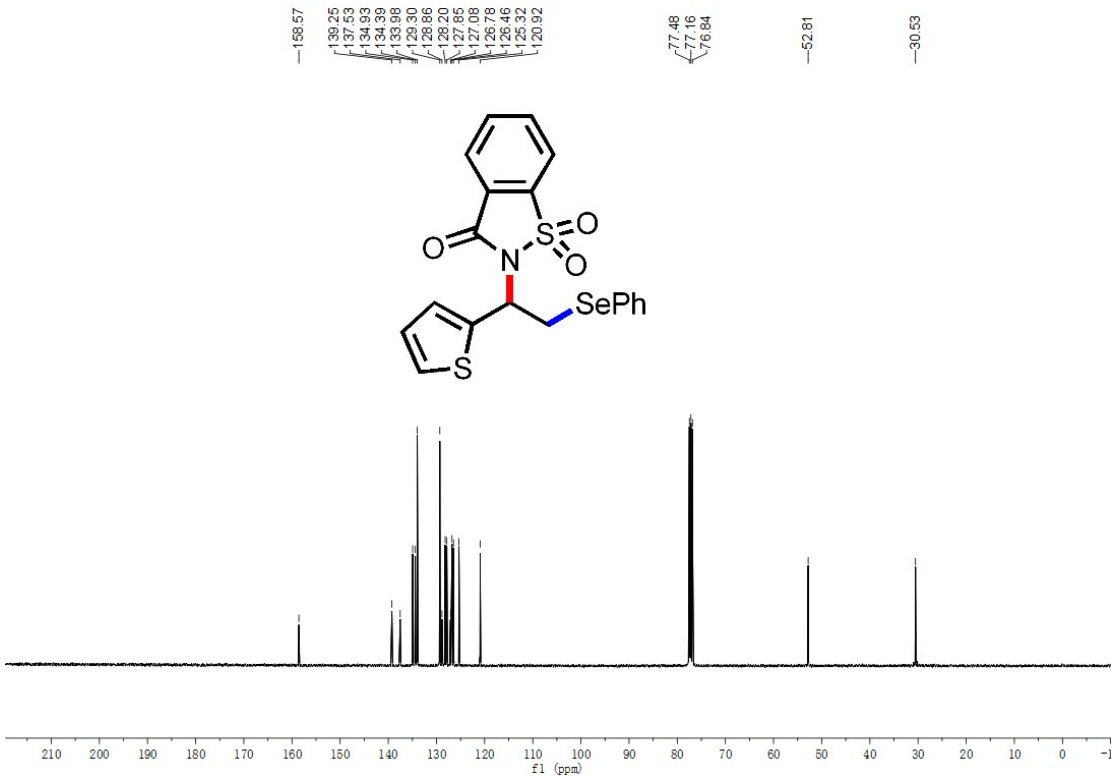
^{13}C NMR of product 4q in $CDCl_3$ (100 MHz)



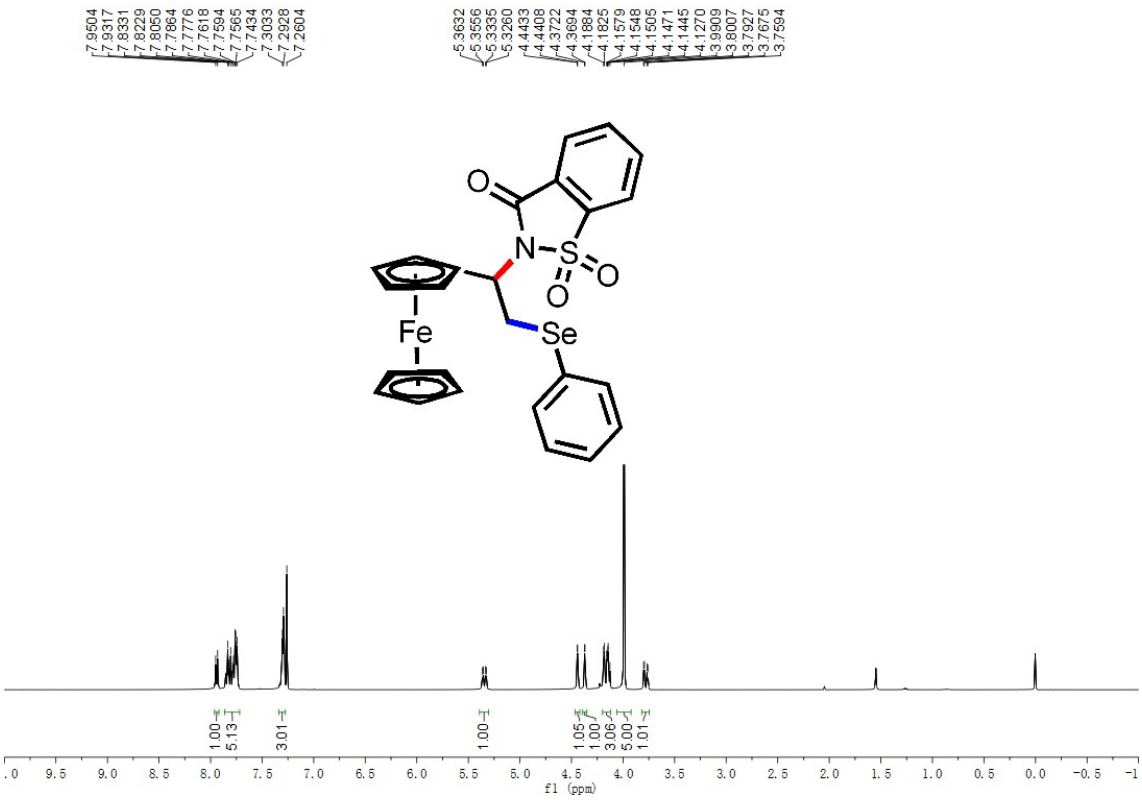
^{1}H NMR of product 4r in $CDCl_3$ (400 MHz)



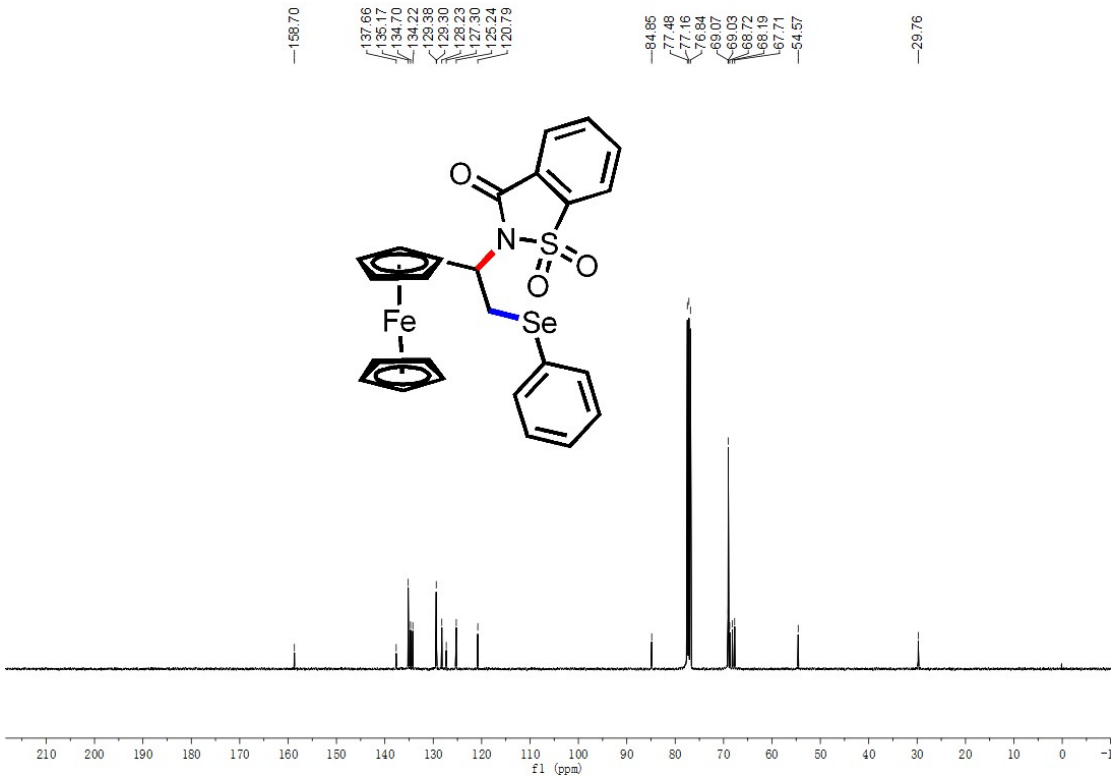
^{13}C NMR of product 4r in $CDCl_3$ (100 MHz)



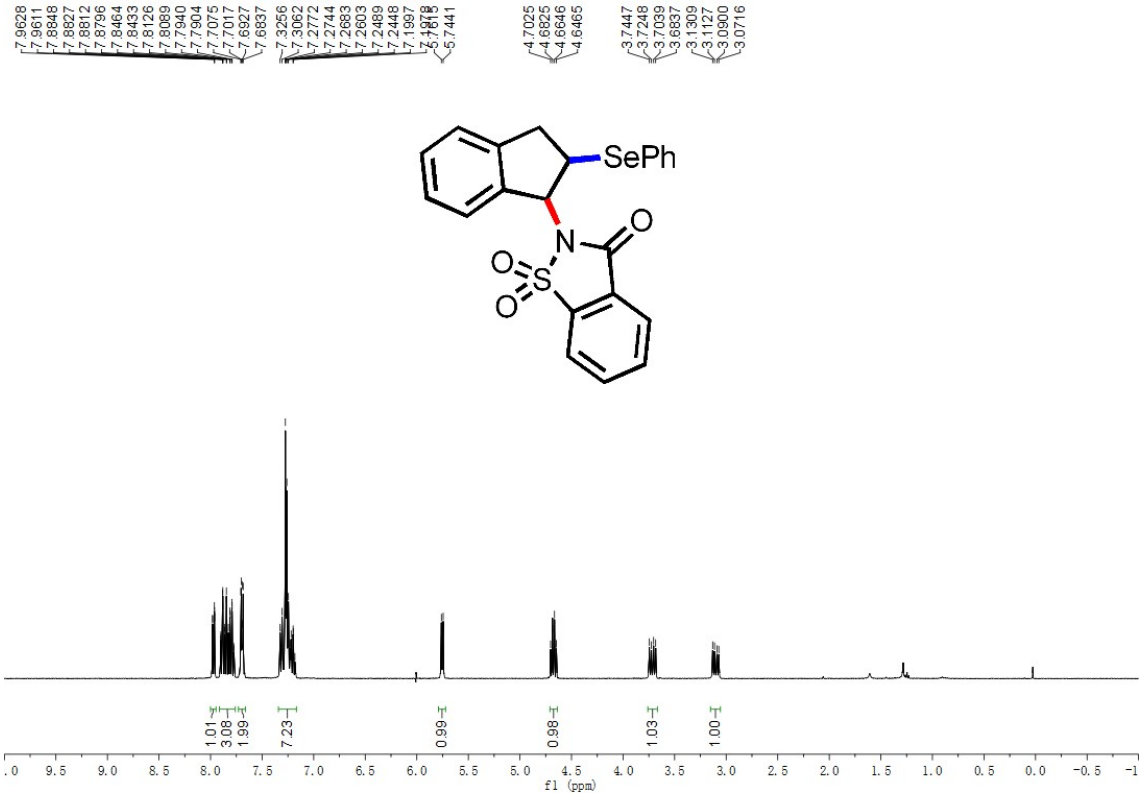
^{1}H NMR of product 4s in $CDCl_3$ (400 MHz)



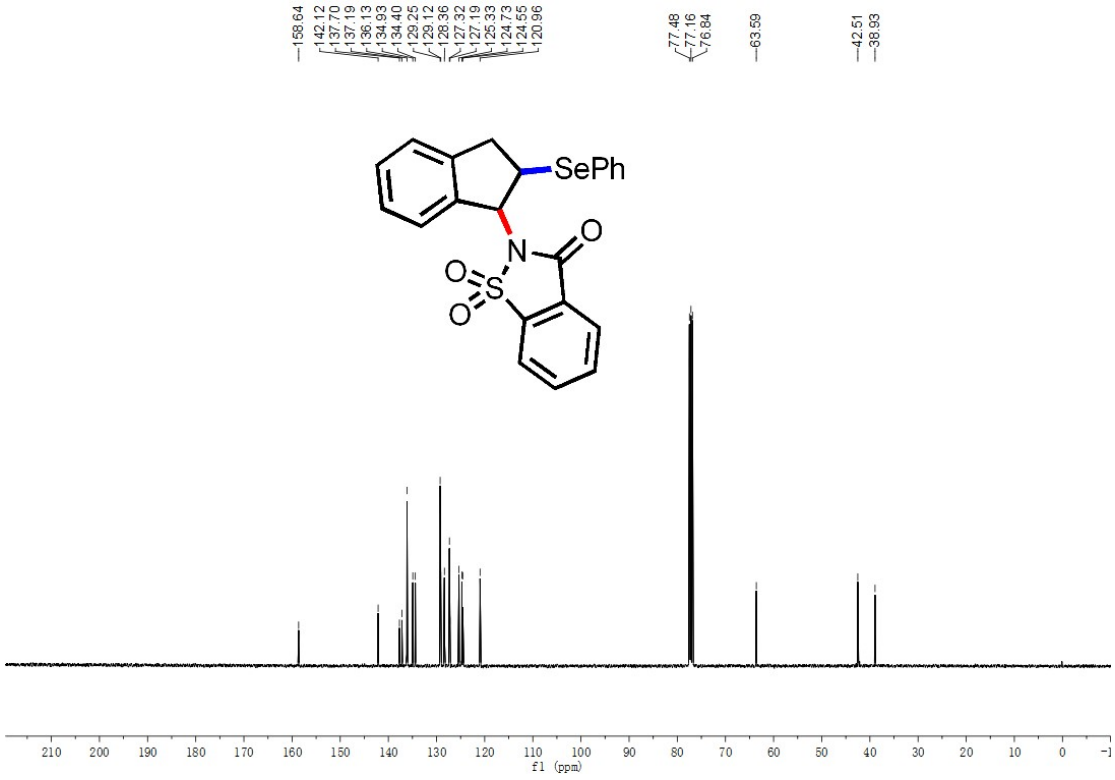
^{13}C NMR of product 4s in $CDCl_3$ (100 MHz)



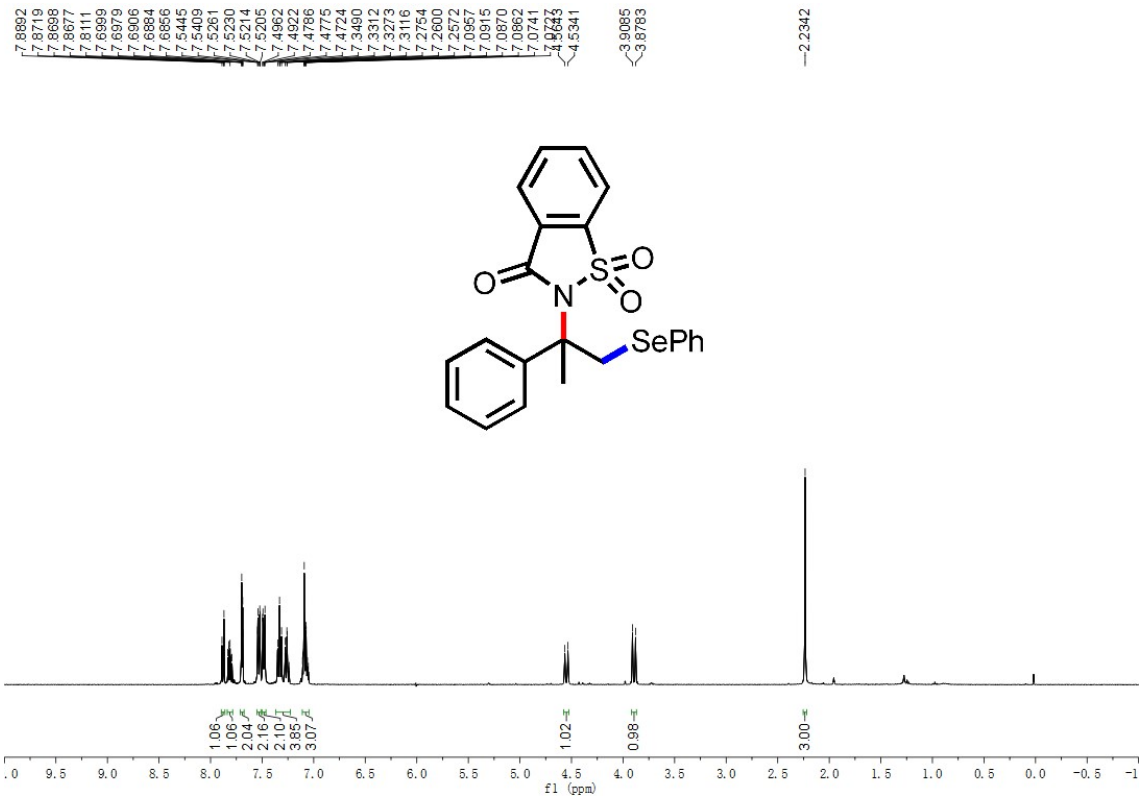
^{1}H NMR of product 4t in $CDCl_3$ (400 MHz)



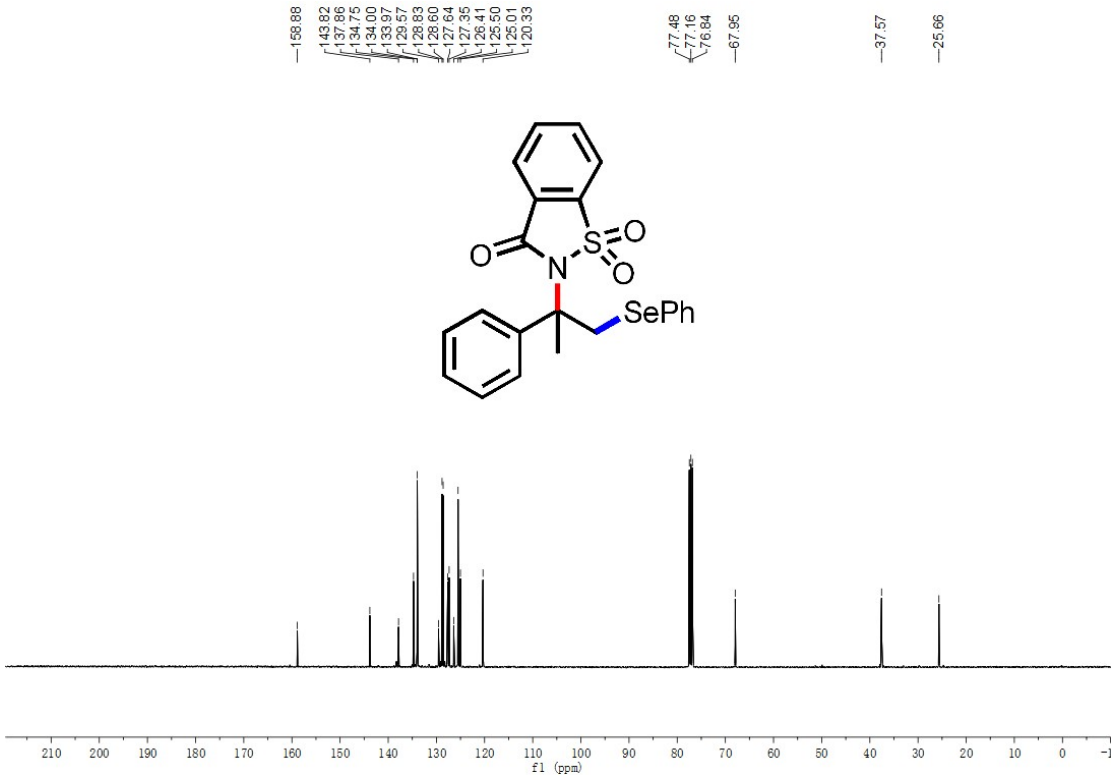
^{13}C NMR of product 4t in $CDCl_3$ (100 MHz)



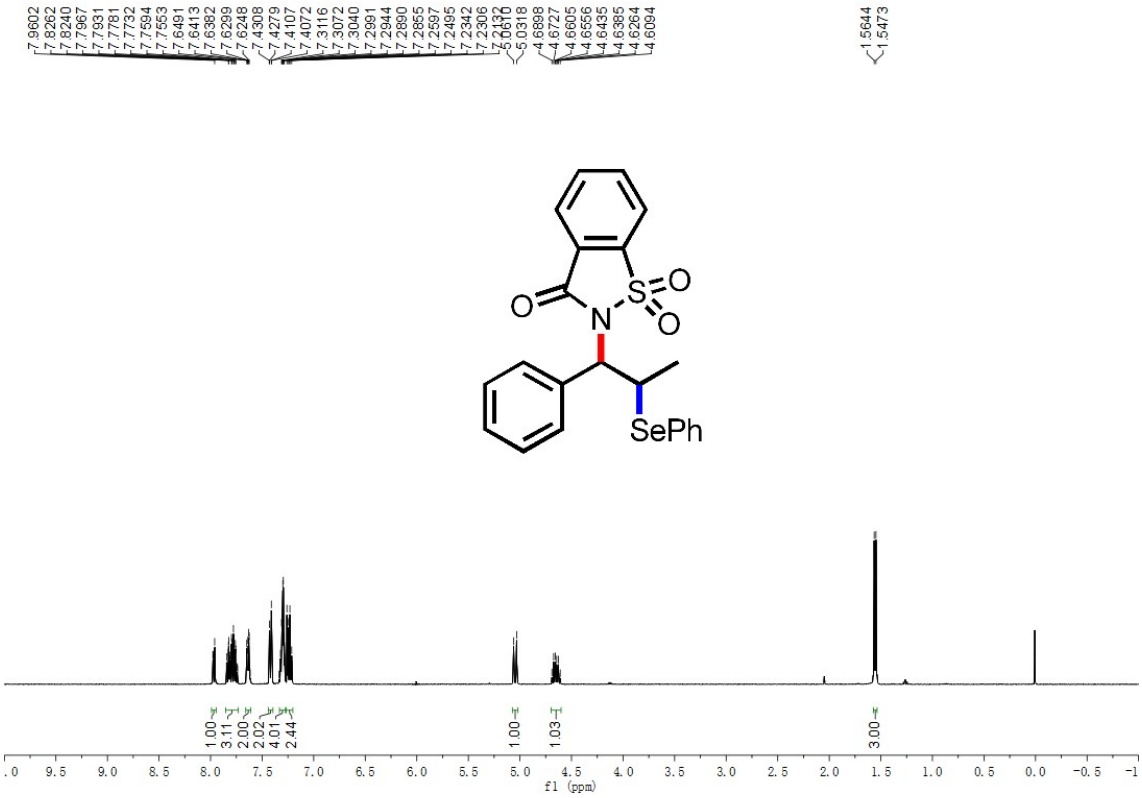
^{1}H NMR of product 4u in $CDCl_3$ (400 MHz)



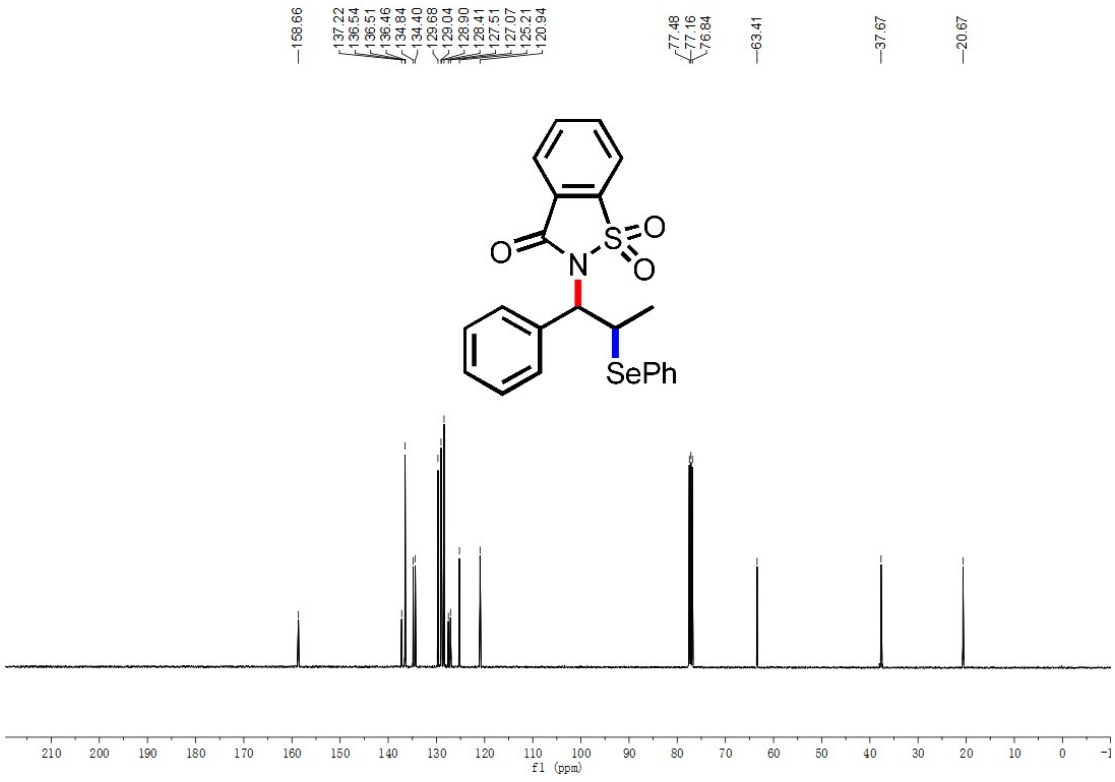
^{13}C NMR of product 4u in $CDCl_3$ (100 MHz)



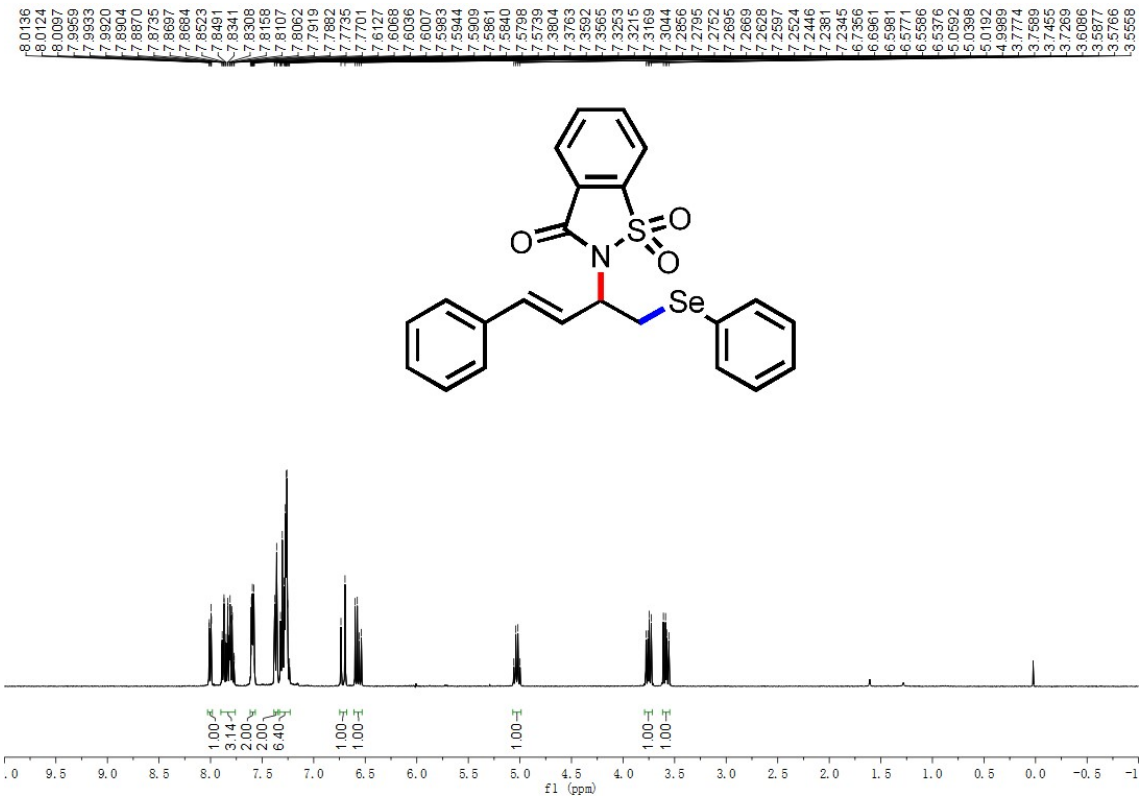
^{1}H NMR of product 4v in $CDCl_3$ (400 MHz)



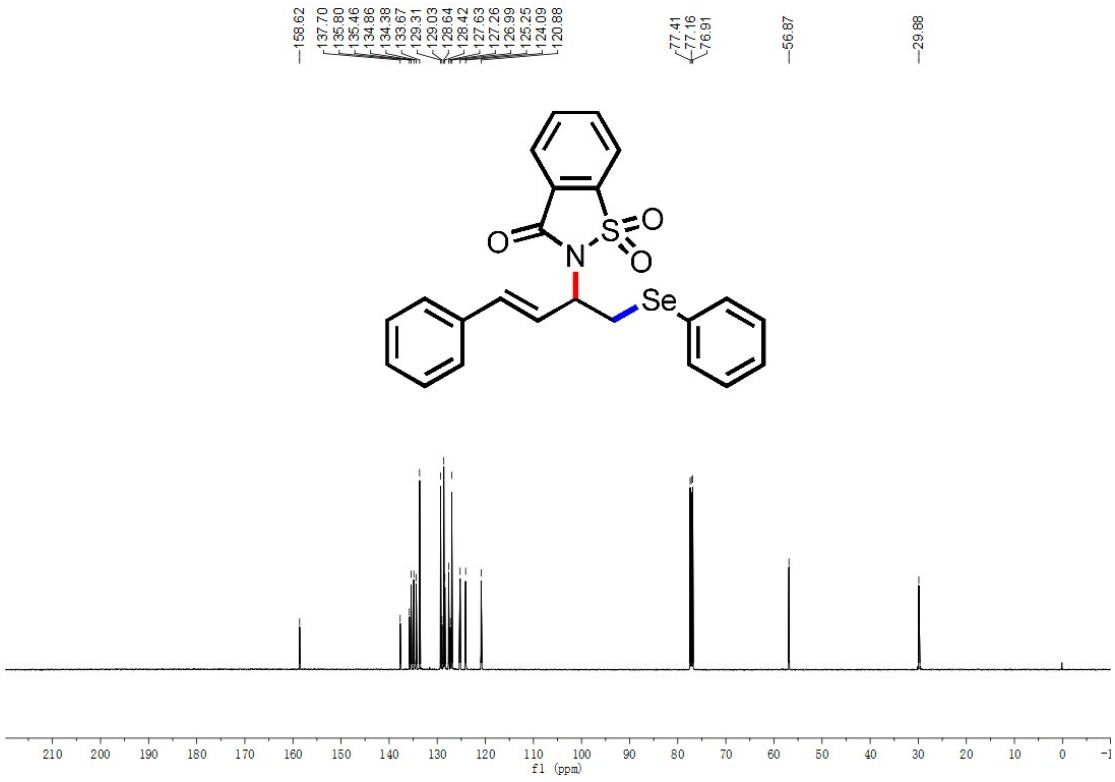
^{13}C NMR of product 4v in $CDCl_3$ (100 MHz)



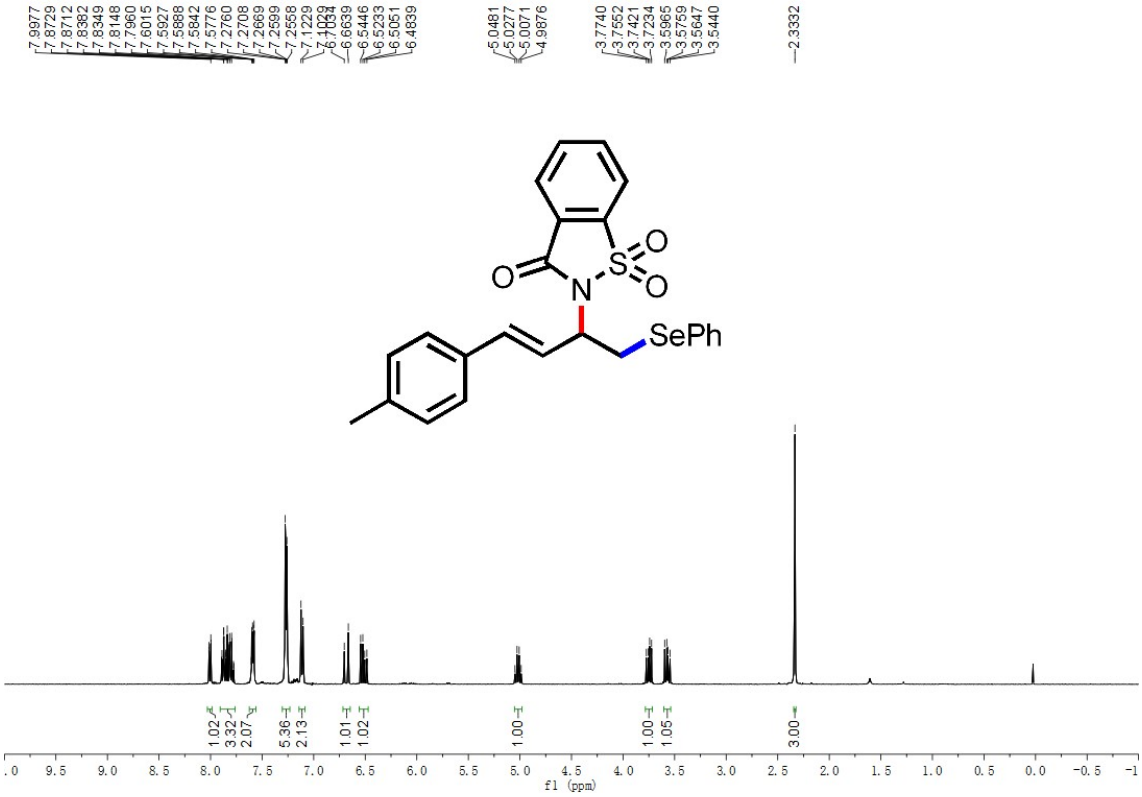
^{1}H NMR of product 4w in $CDCl_3$ (400 MHz)



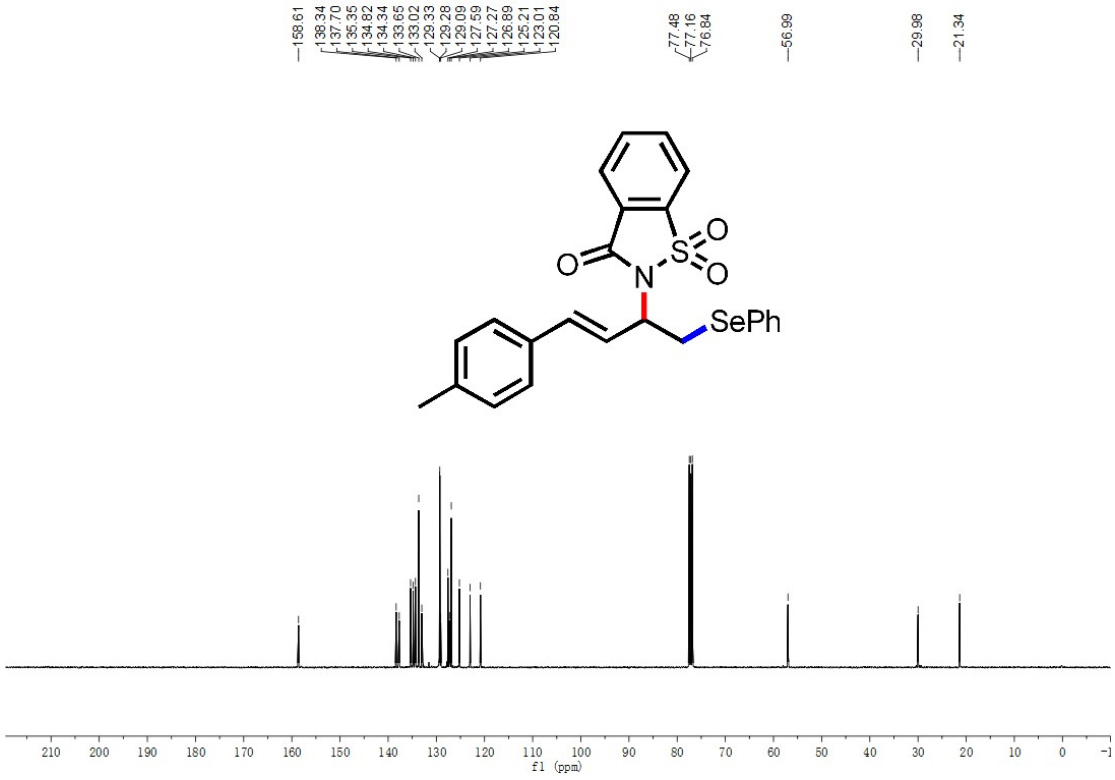
^{13}C NMR of product 4w in $CDCl_3$ (100 MHz)



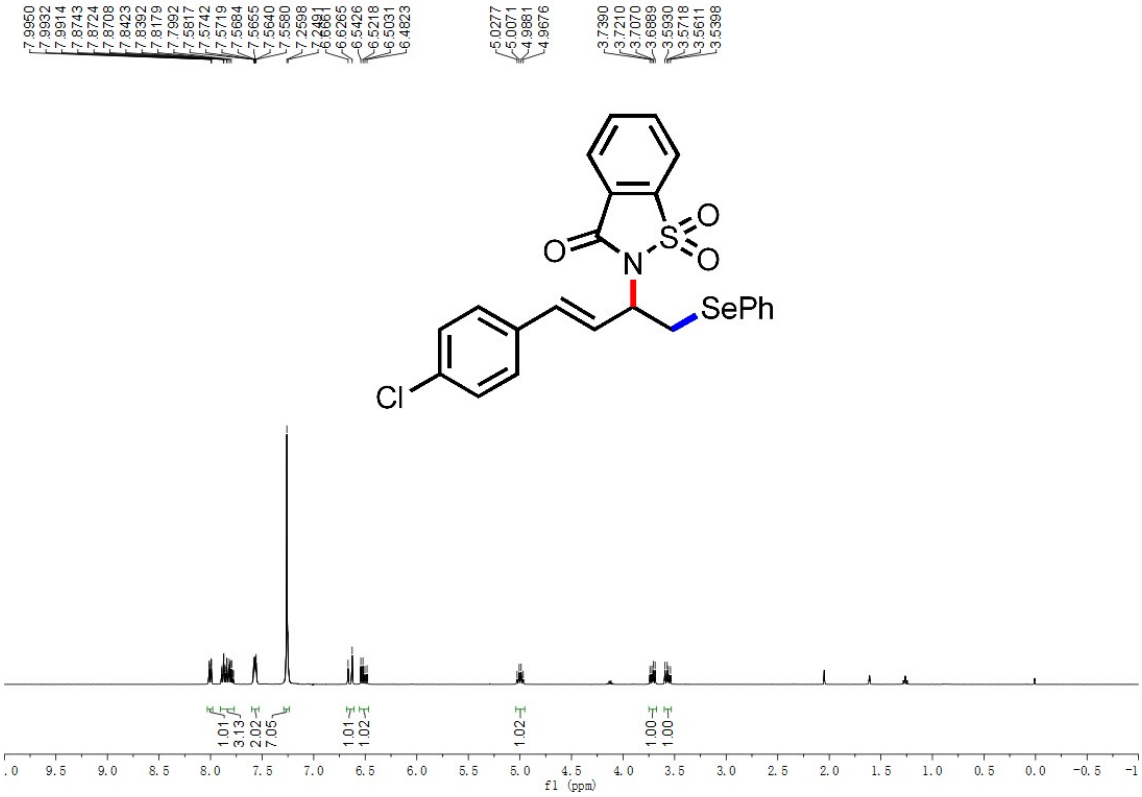
^{1}H NMR of product 4x in $CDCl_3$ (400 MHz)



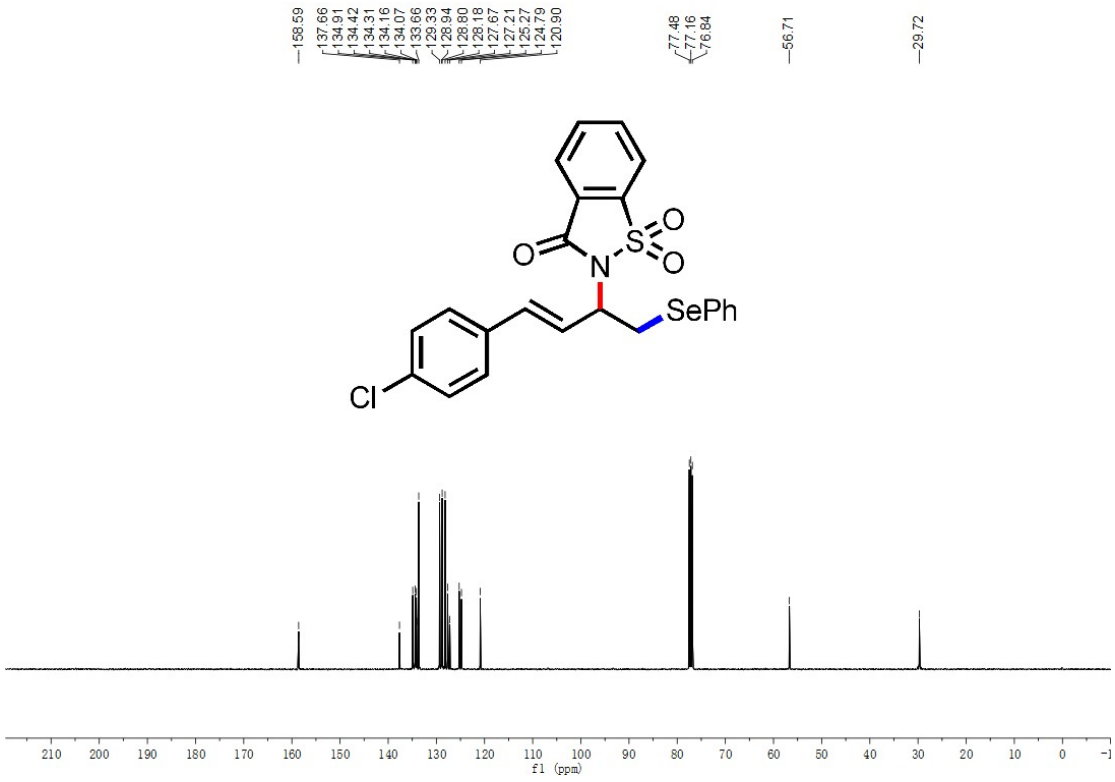
^{13}C NMR of product 4x in $CDCl_3$ (100 MHz)



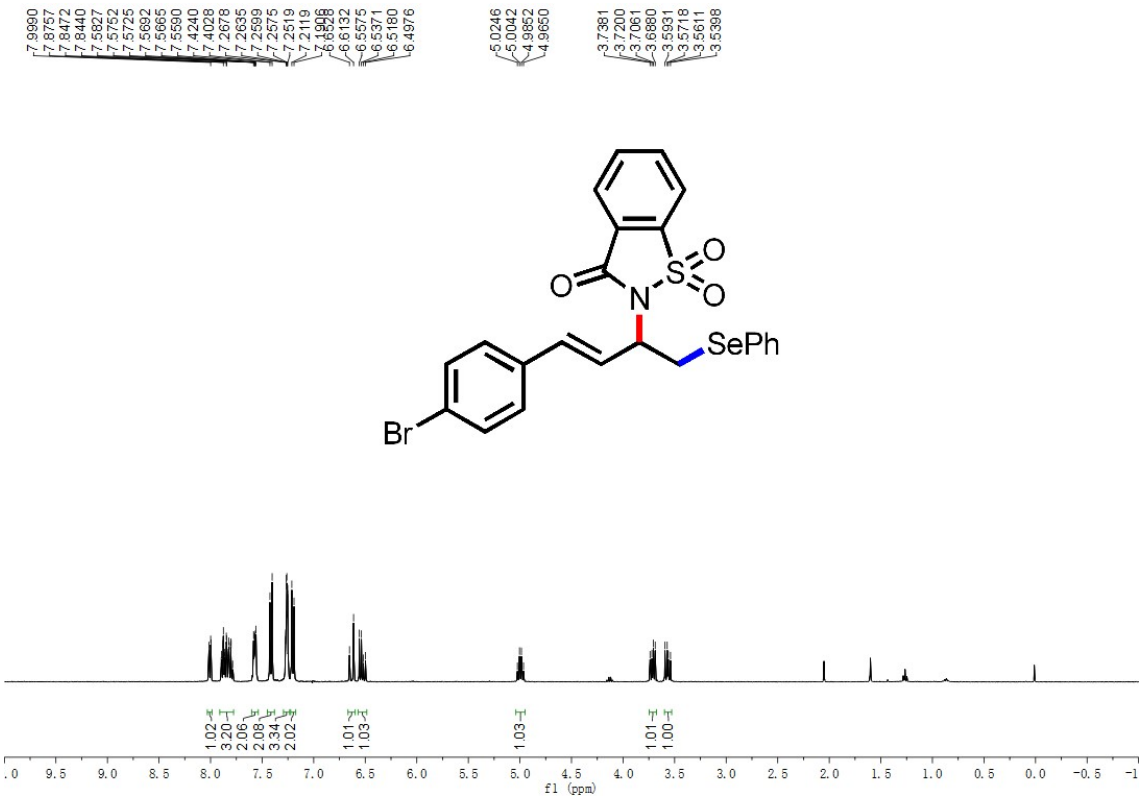
^{1}H NMR of product 4y in $CDCl_3$ (400 MHz)



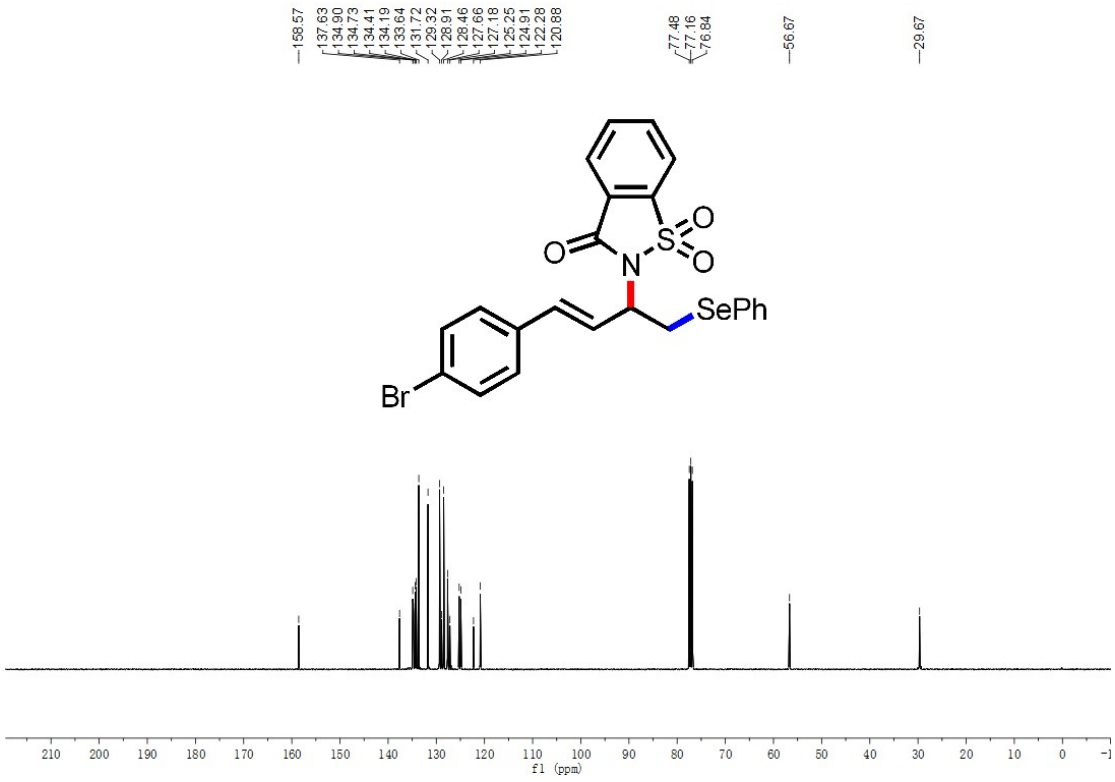
^{13}C NMR of product 4y in $CDCl_3$ (100 MHz)



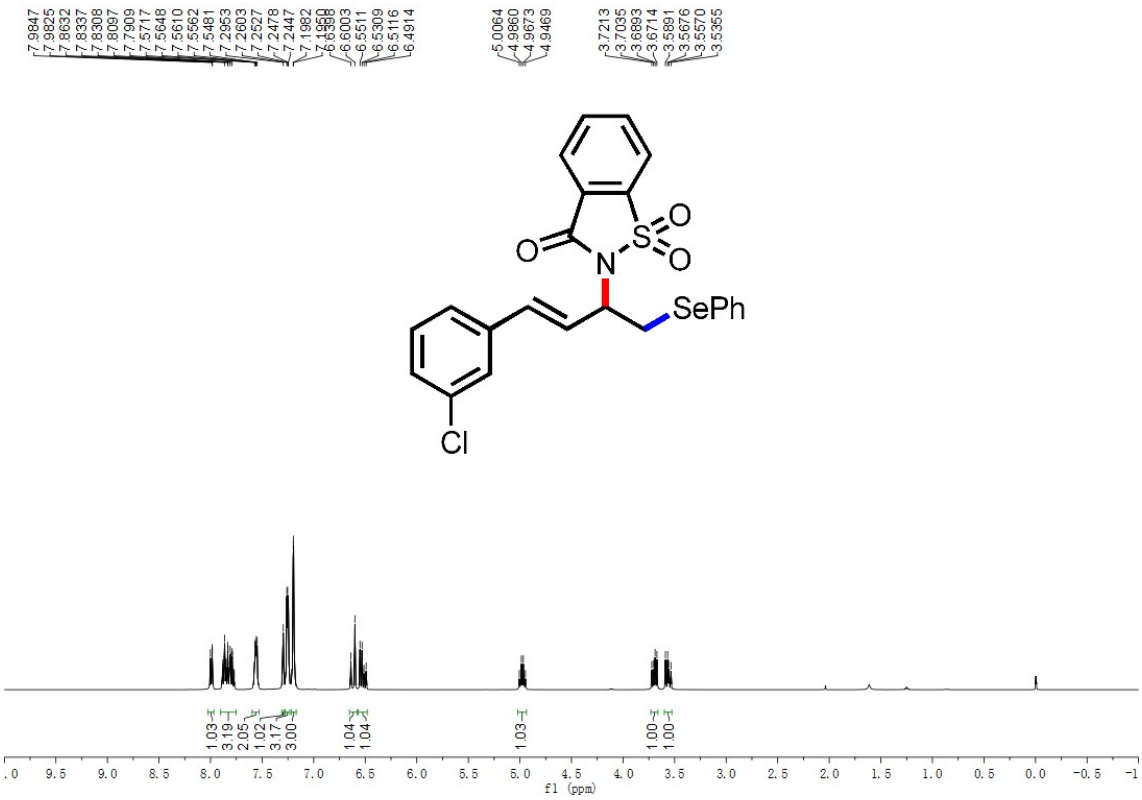
^{1}H NMR of product 4z in $CDCl_3$ (400 MHz)



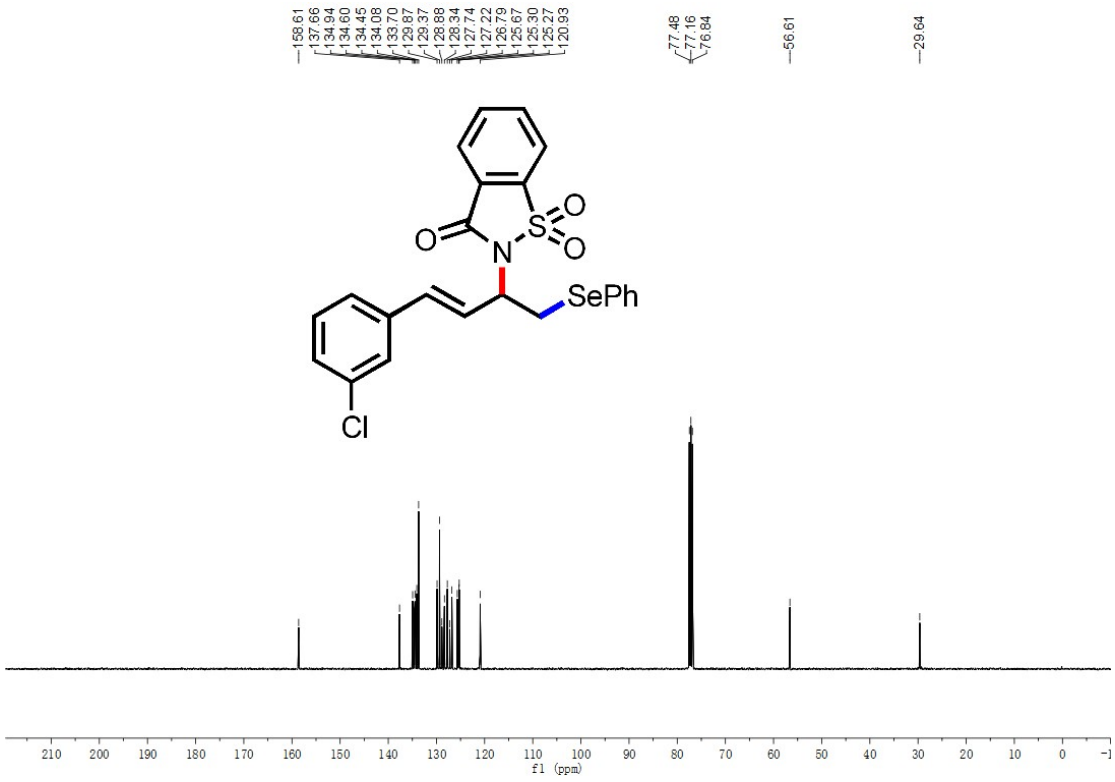
^{13}C NMR of product 4z in $CDCl_3$ (100 MHz)



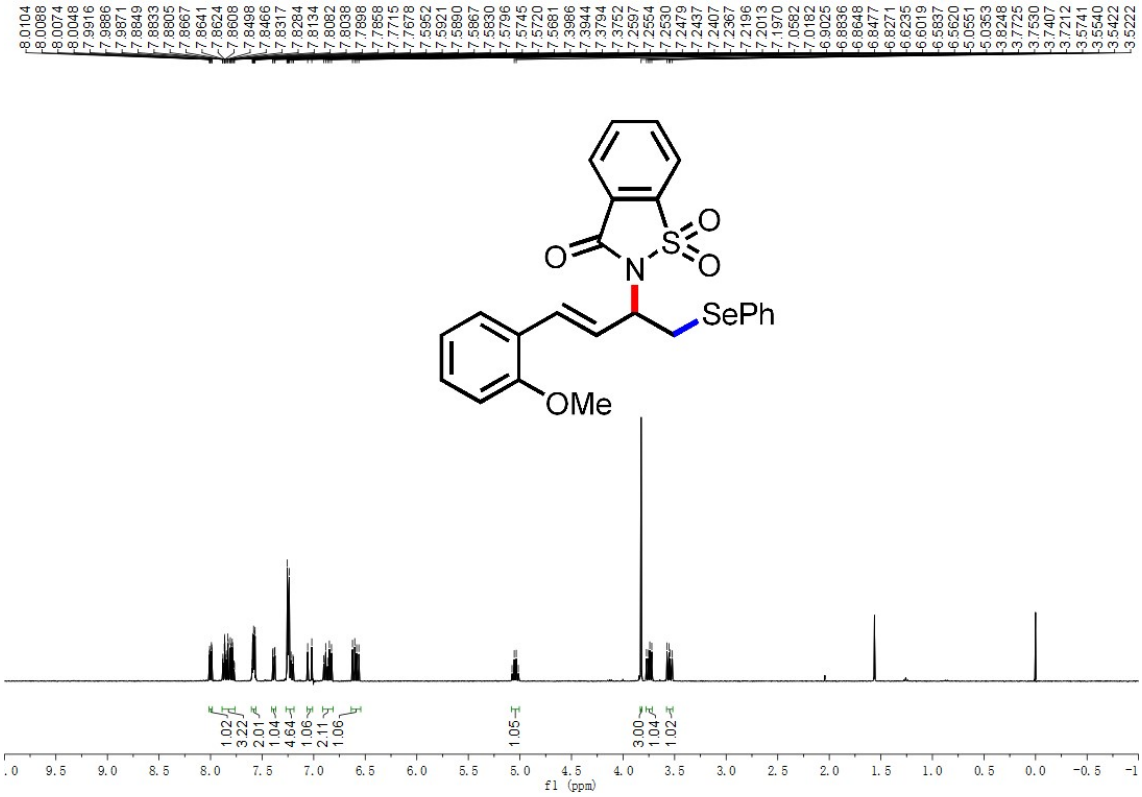
^{1}H NMR of product 4a′ in $CDCl_3$ (400 MHz)



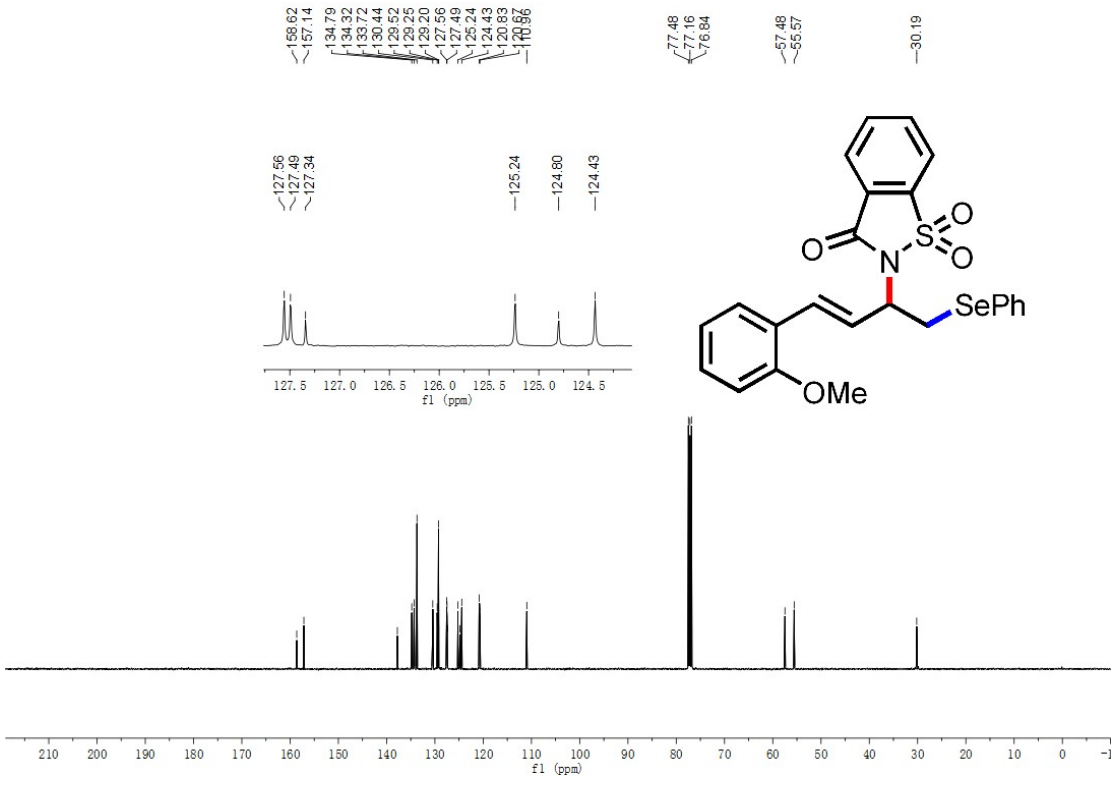
^{13}C NMR of product 4a′ in $CDCl_3$ (100 MHz)



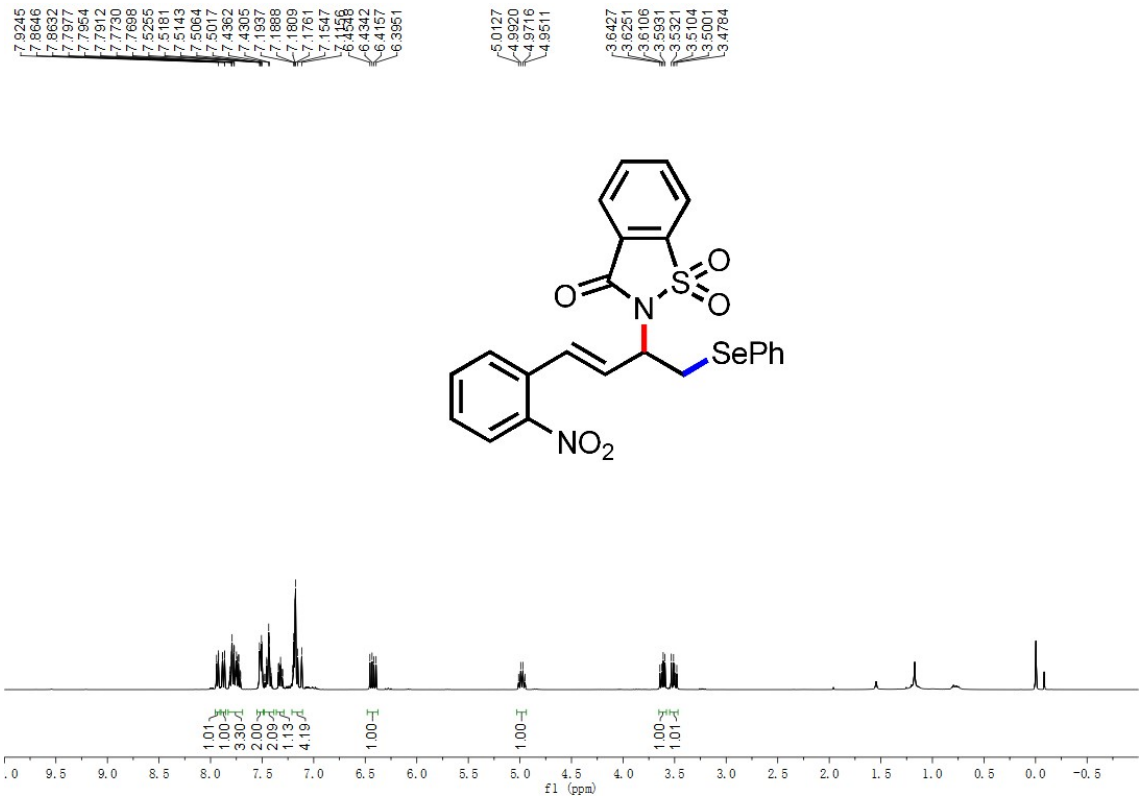
^{1}H NMR of product 4b′ in $CDCl_3$ (400 MHz)



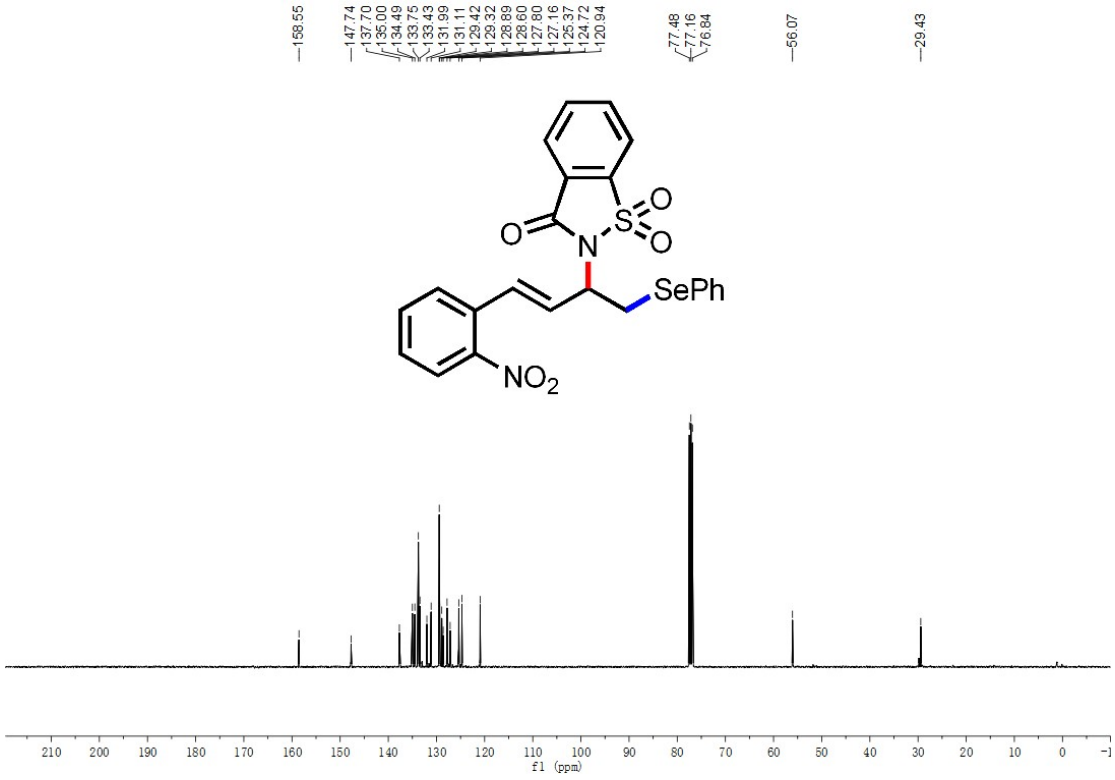
^{13}C NMR of product 4b′ in $CDCl_3$ (100 MHz)



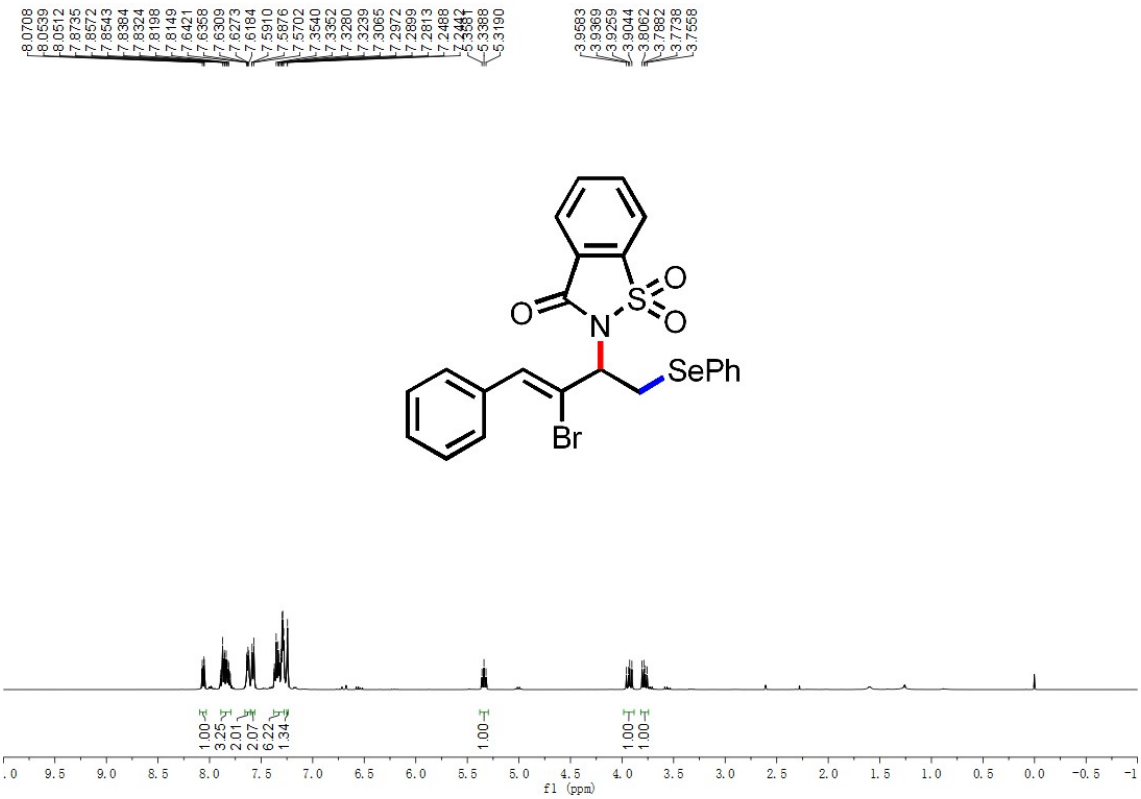
^{1}H NMR of product 4c′ in $CDCl_3$ (400 MHz)



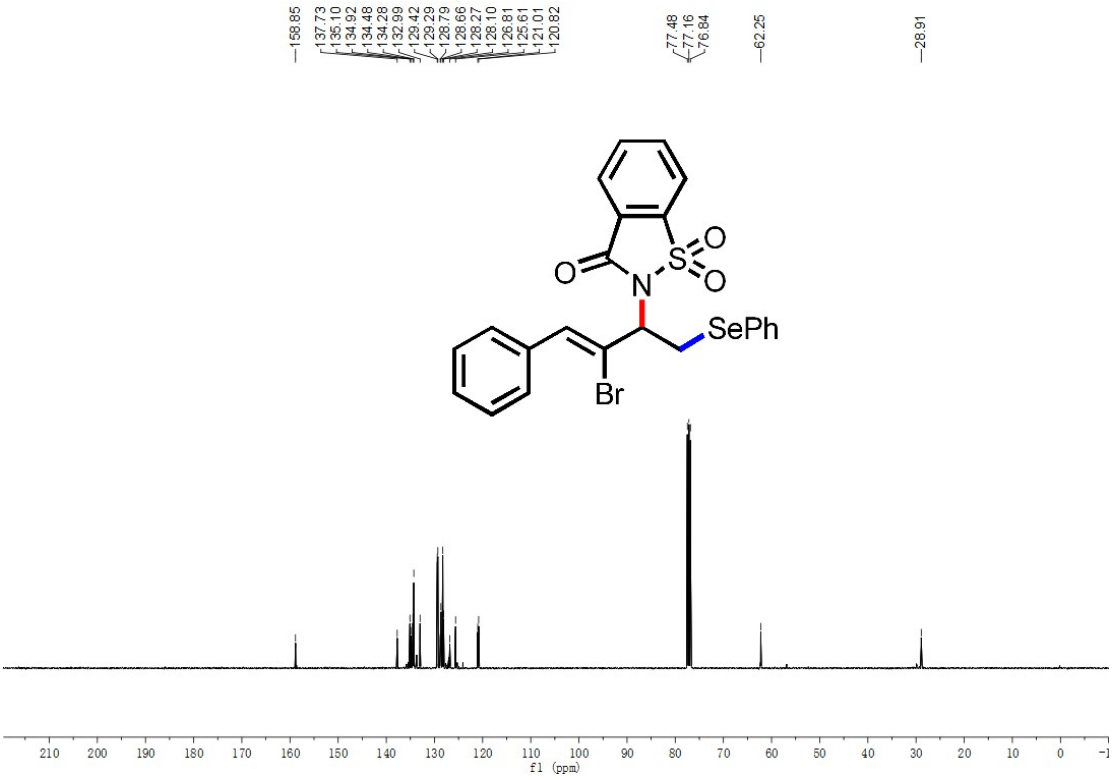
^{13}C NMR of product 4c′ in $CDCl_3$ (100 MHz)



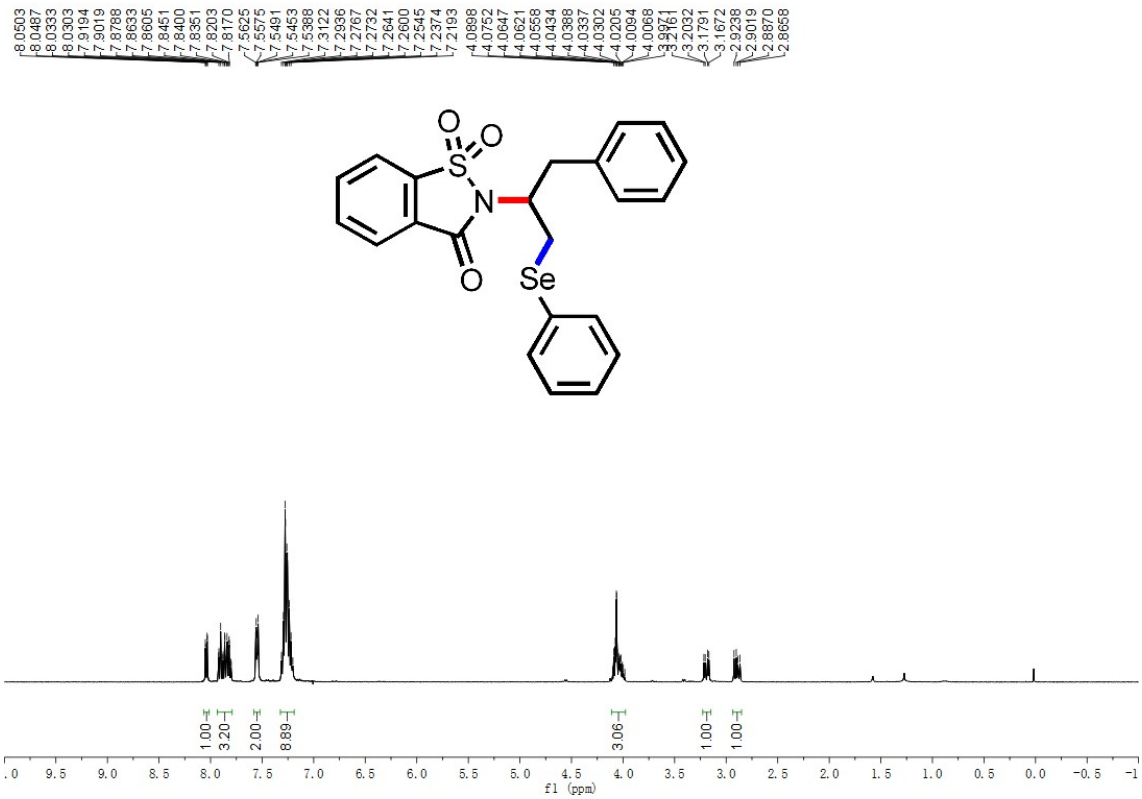
^{1}H NMR of product 4d′ in $CDCl_3$ (400 MHz)



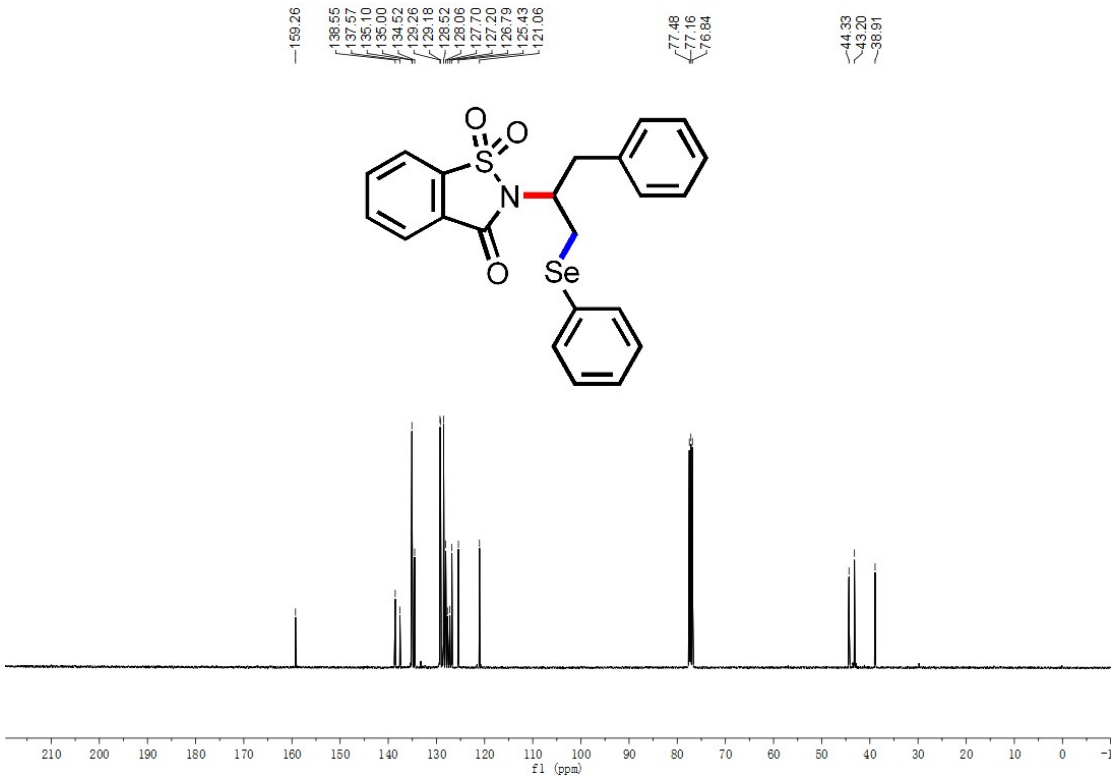
^{13}C NMR of product 4d′ in $CDCl_3$ (100 MHz)



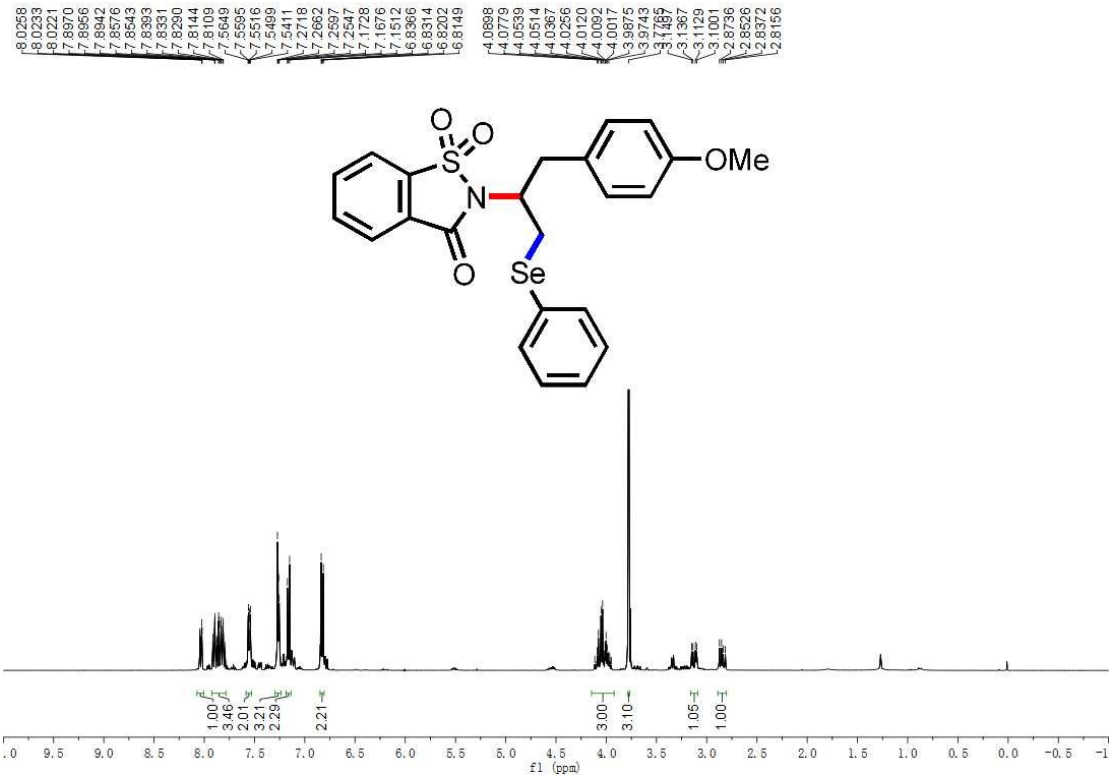
^{1}H NMR of product 5a in $CDCl_3$ (400 MHz)



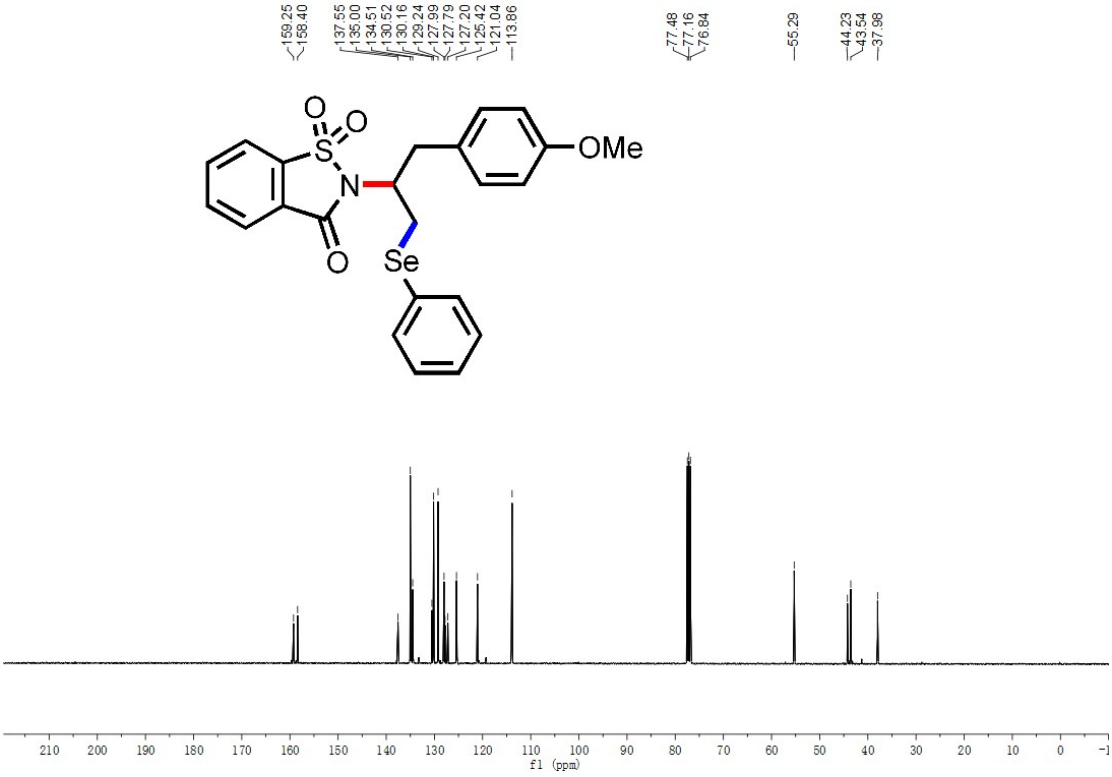
^{13}C NMR of product 5a in $CDCl_3$ (100 MHz)



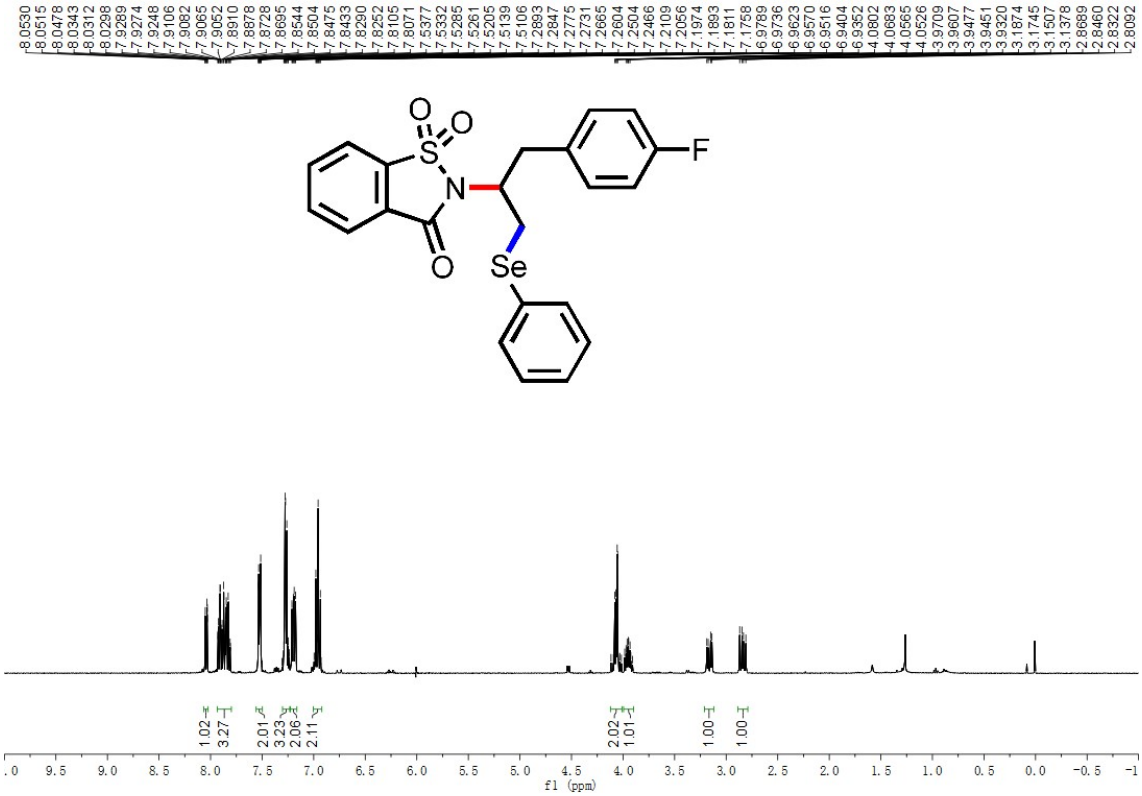
^{1}H NMR of product 5b in $CDCl_3$ (400 MHz)



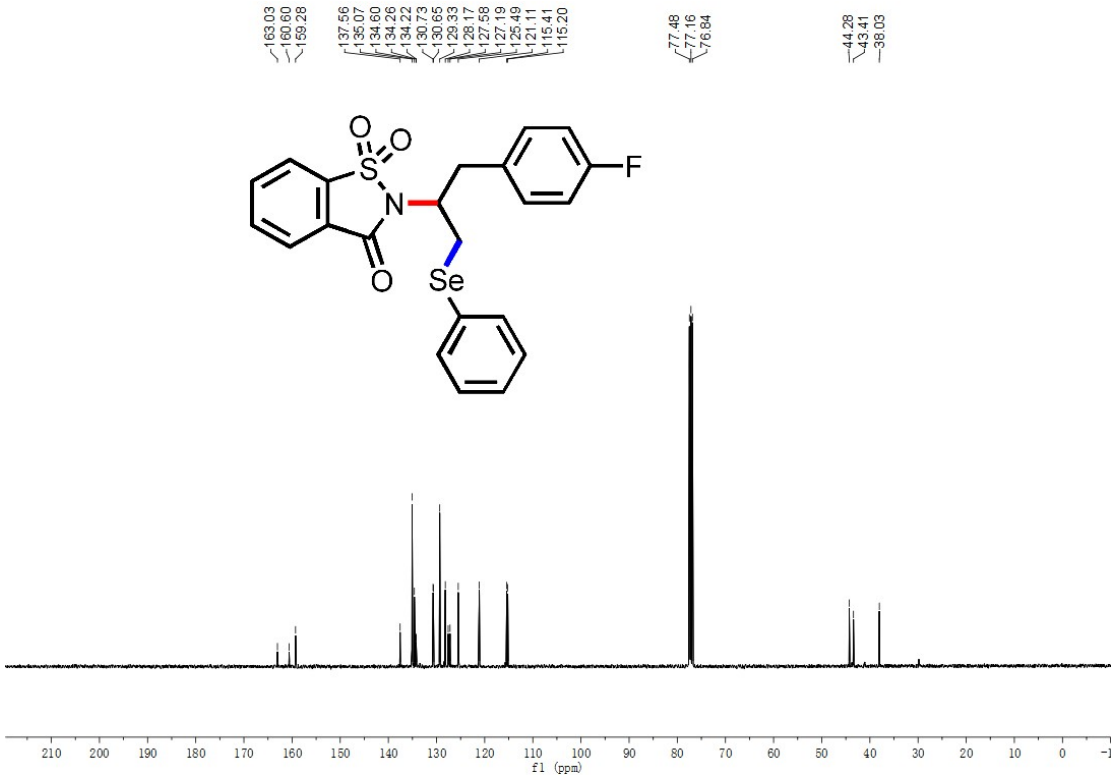
^{13}C NMR of product 5b in $CDCl_3$ (100 MHz)



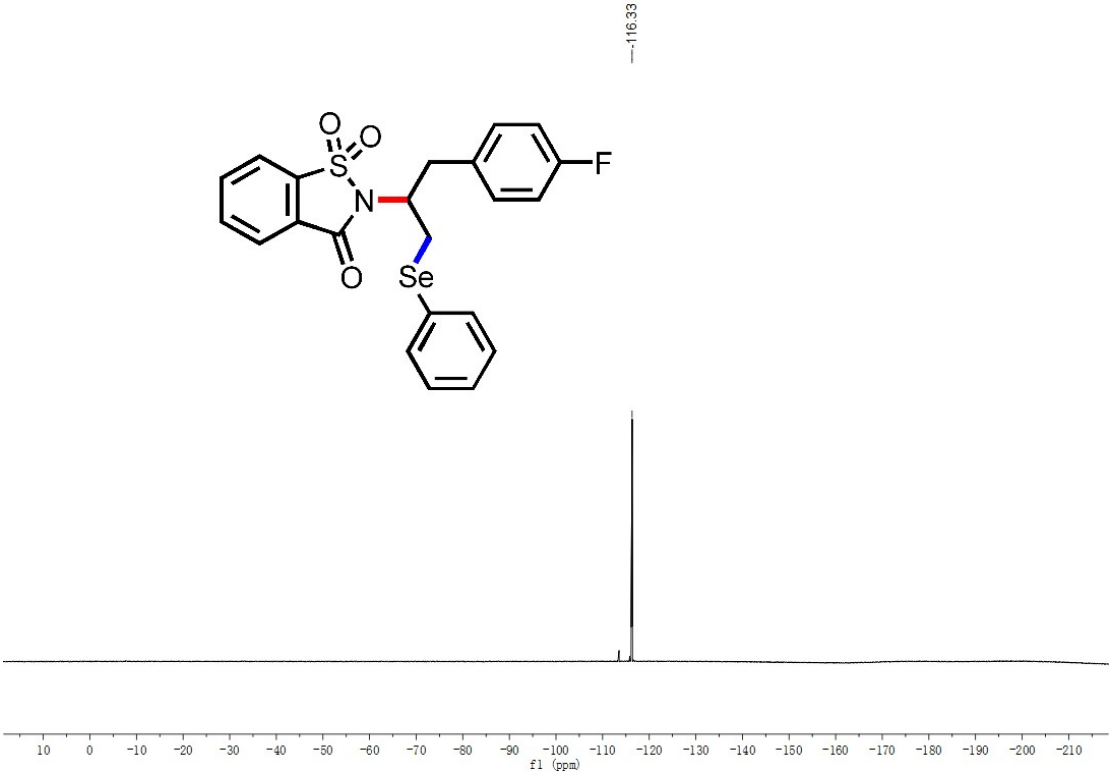
^{1}H NMR of product 5c in $CDCl_3$ (400 MHz)



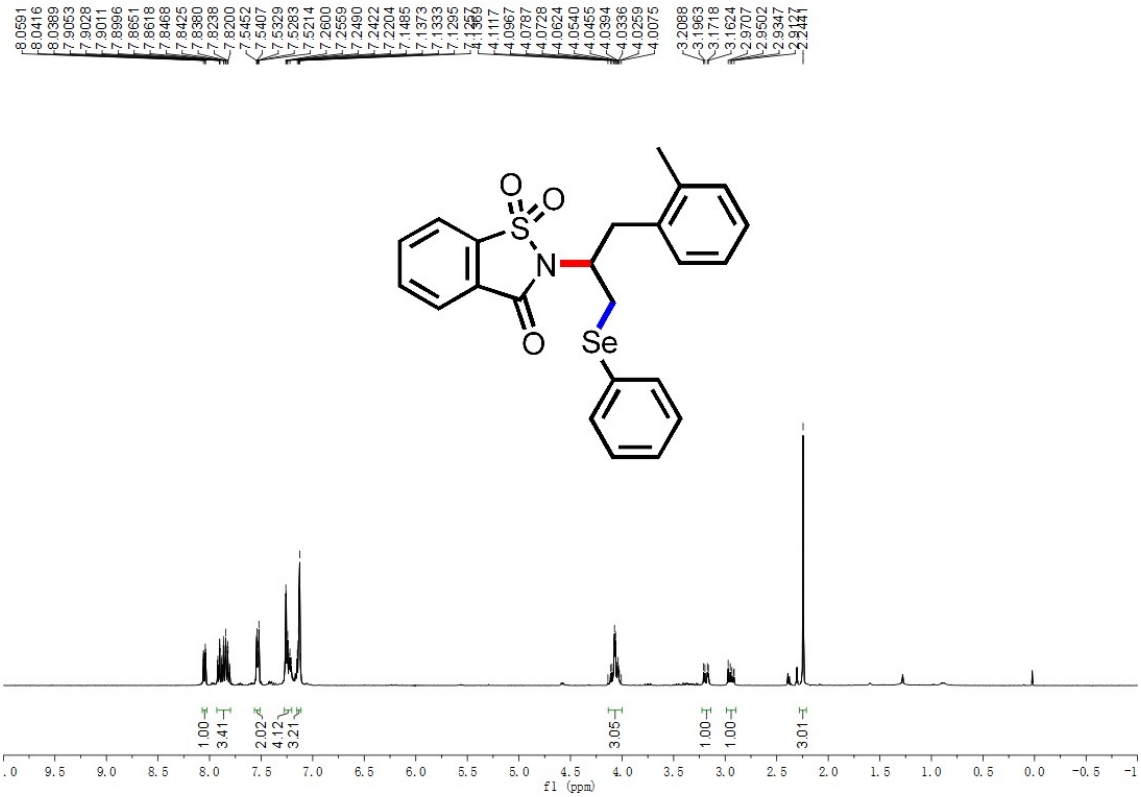
^{13}C NMR of product 5c in $CDCl_3$ (100 MHz)



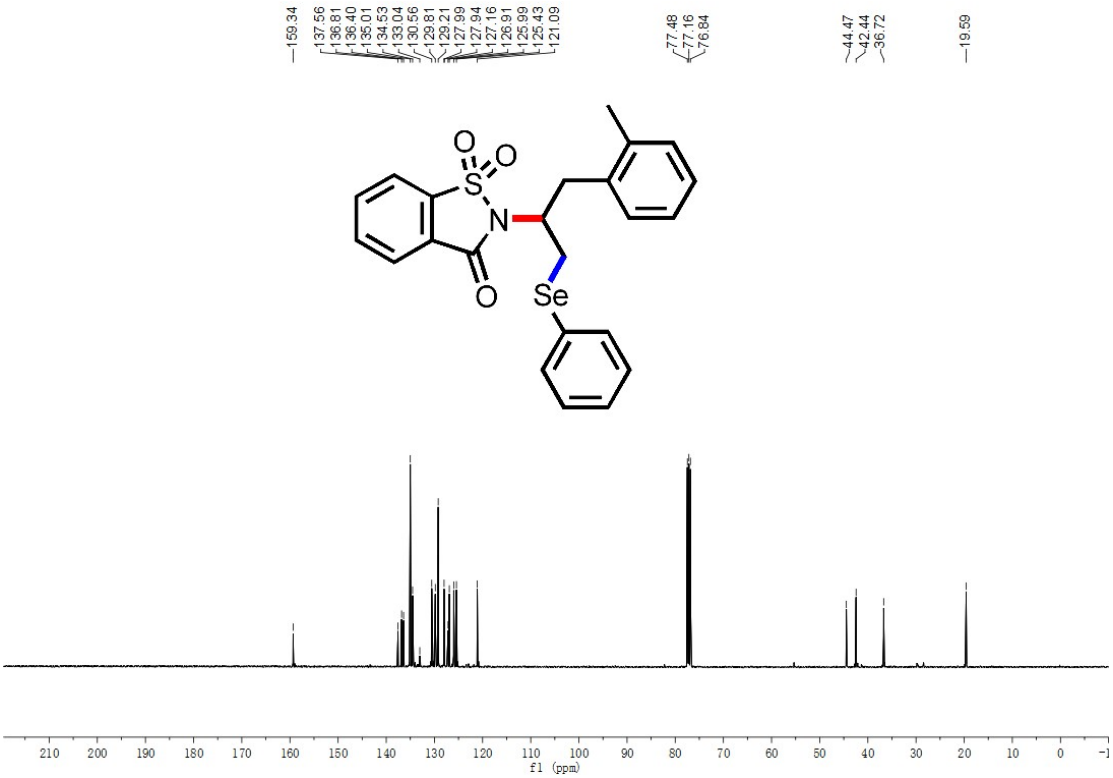
^{19F} NMR of product 5c in $CDCl_3$ (376 MHz)



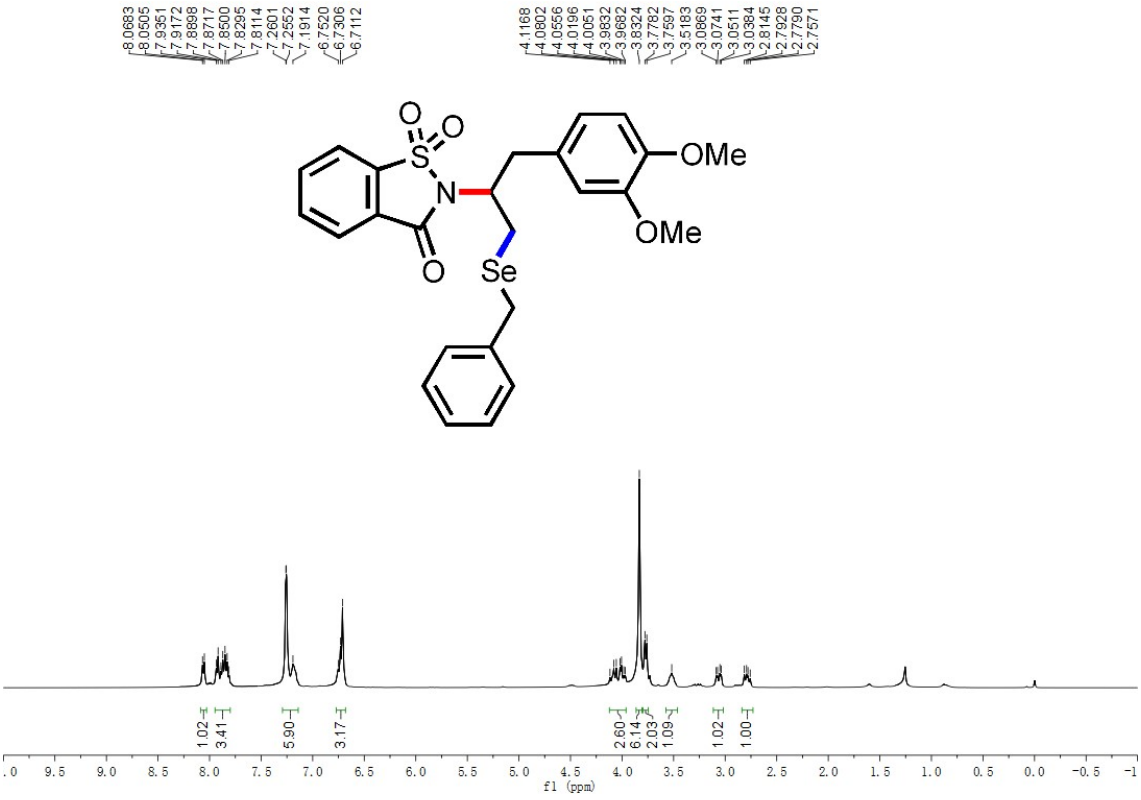
^{1}H NMR of product 5d in $CDCl_3$ (400 MHz)



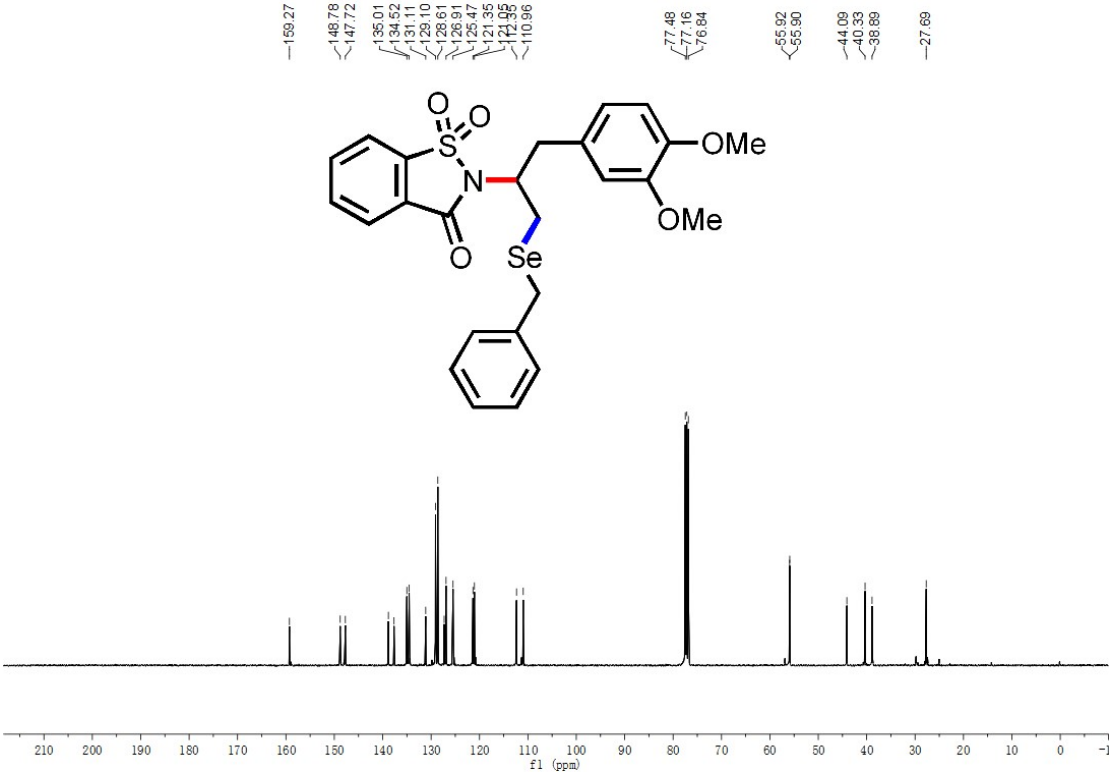
^{13}C NMR of product 5d in $CDCl_3$ (100 MHz)



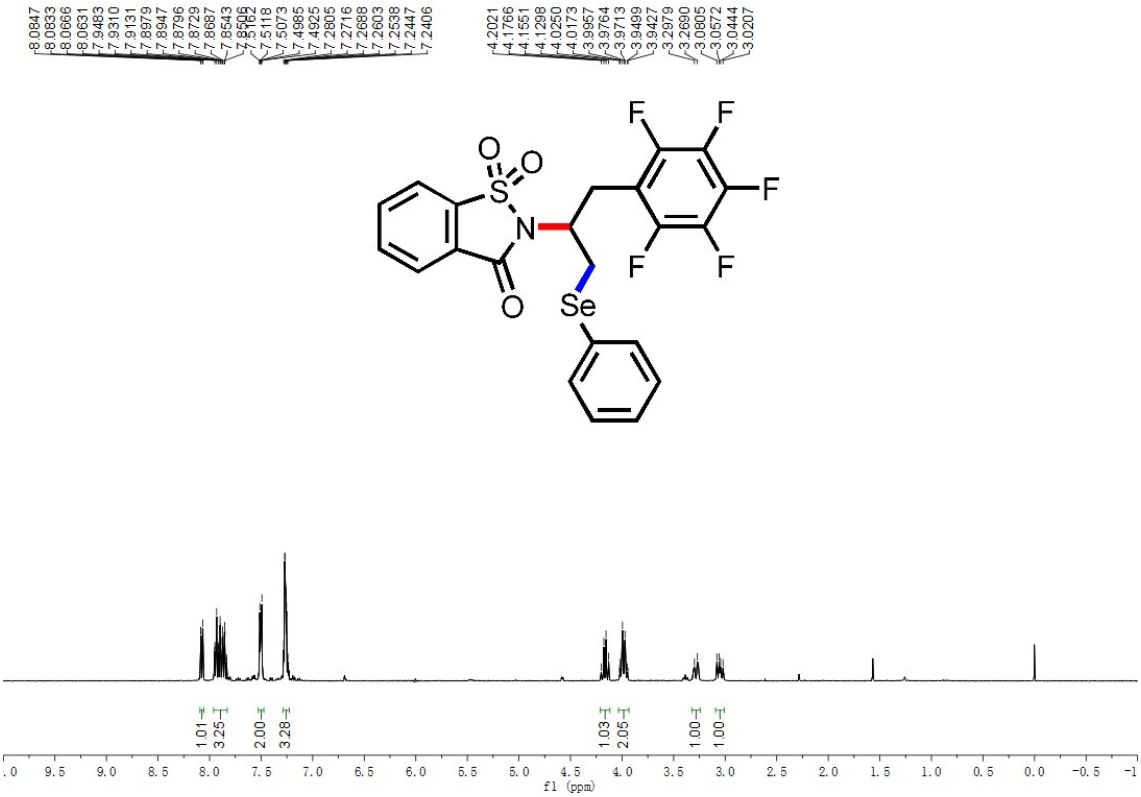
^{1}H NMR of product 5e in $CDCl_3$ (400 MHz)



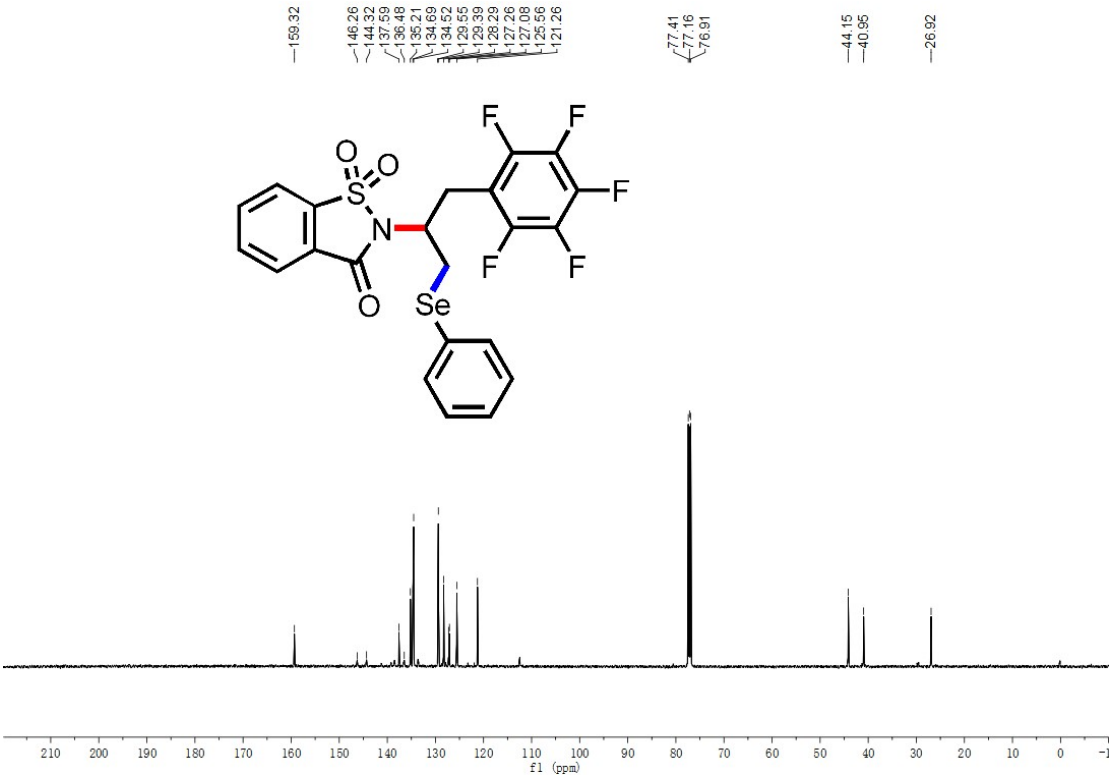
^{13}C NMR of product 5e in $CDCl_3$ (100 MHz)



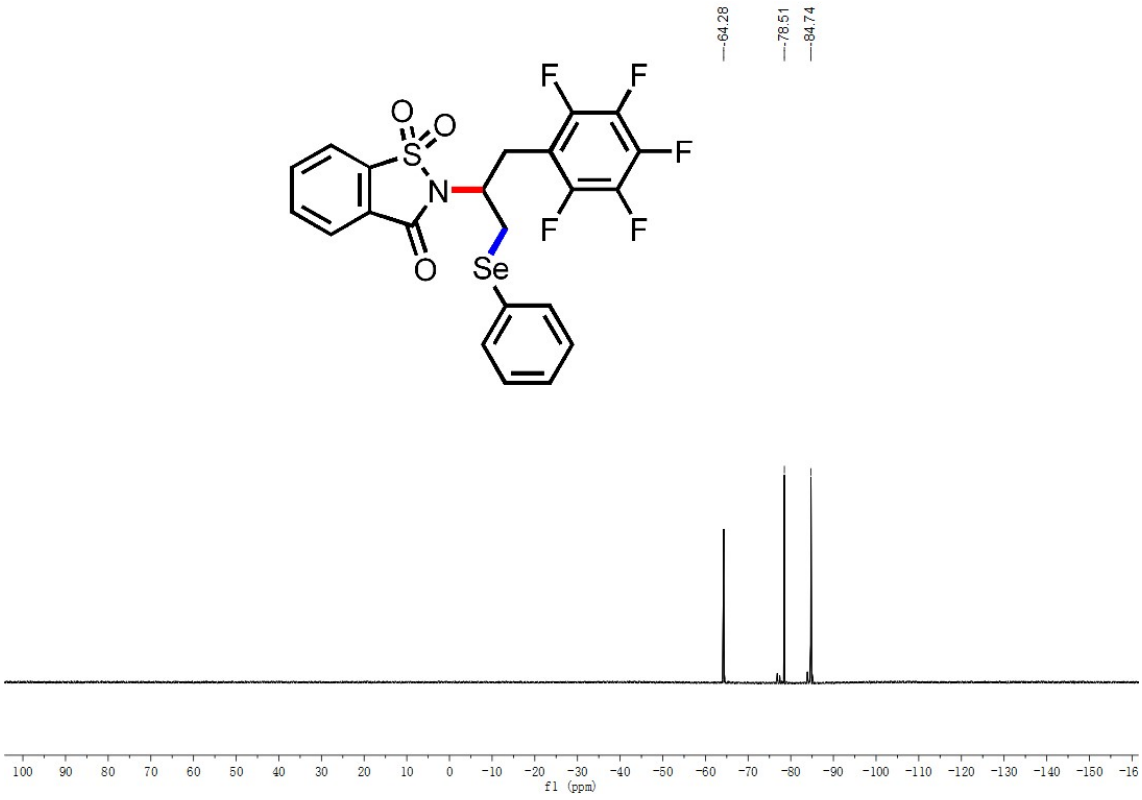
^{1}H NMR of product 5f in $CDCl_3$ (400 MHz)



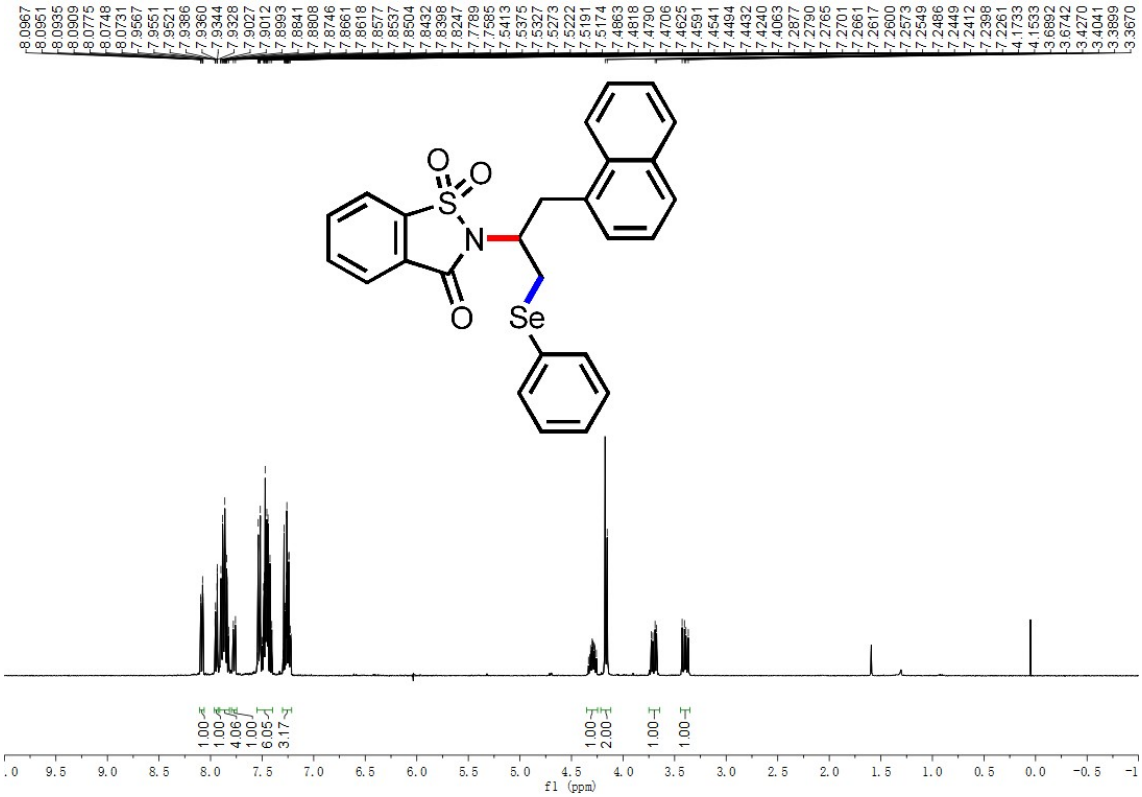
^{13}C NMR of product 5f in $CDCl_3$ (100 MHz)



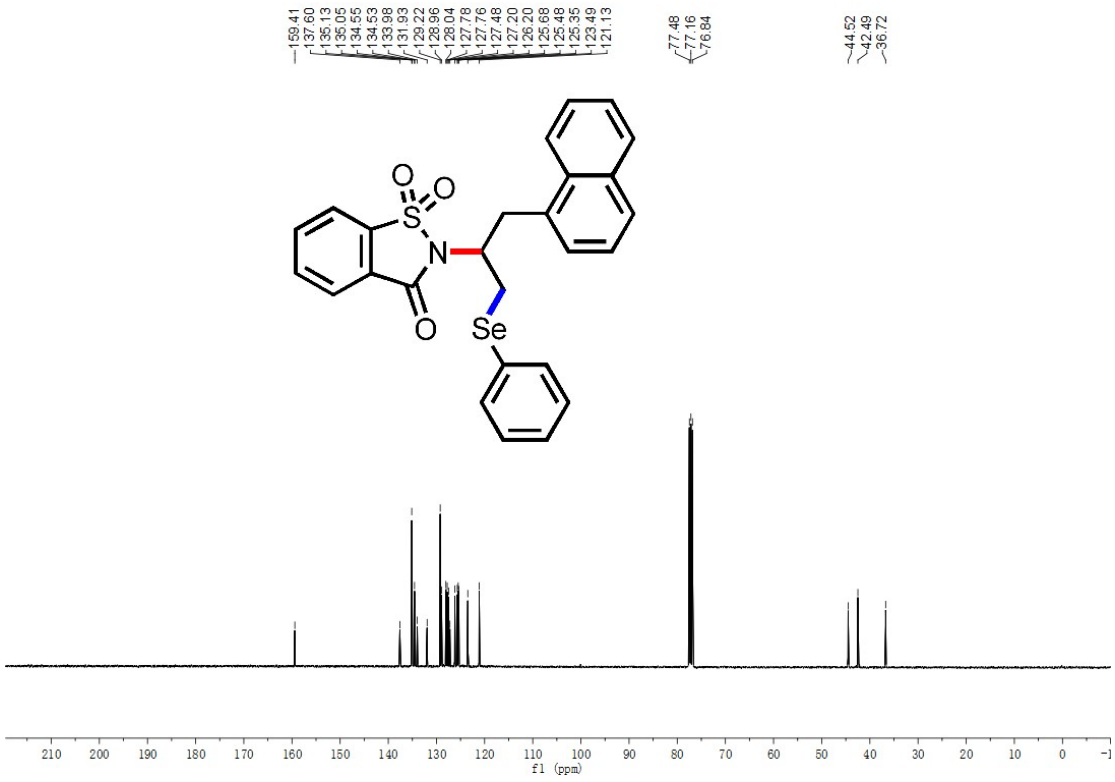
^{19}F NMR of product 5f in $CDCl_3$ (376 MHz)



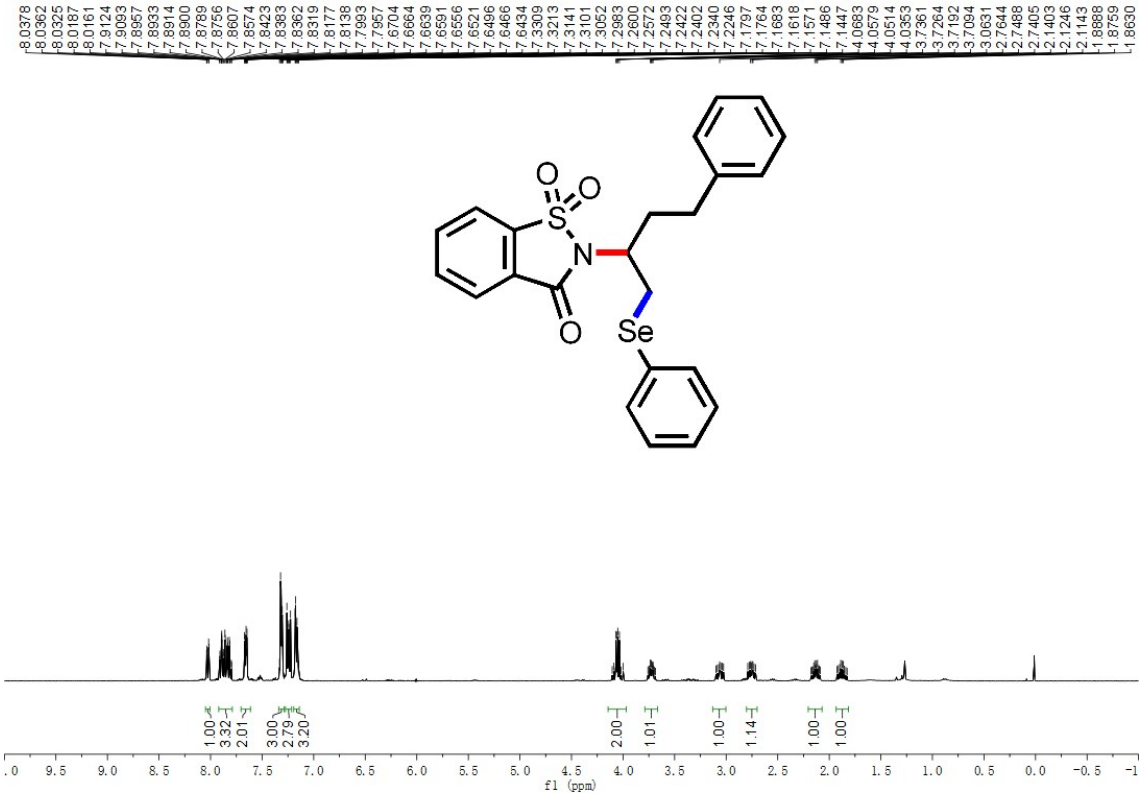
^{1}H NMR of product 5g in $CDCl_3$ (400 MHz)



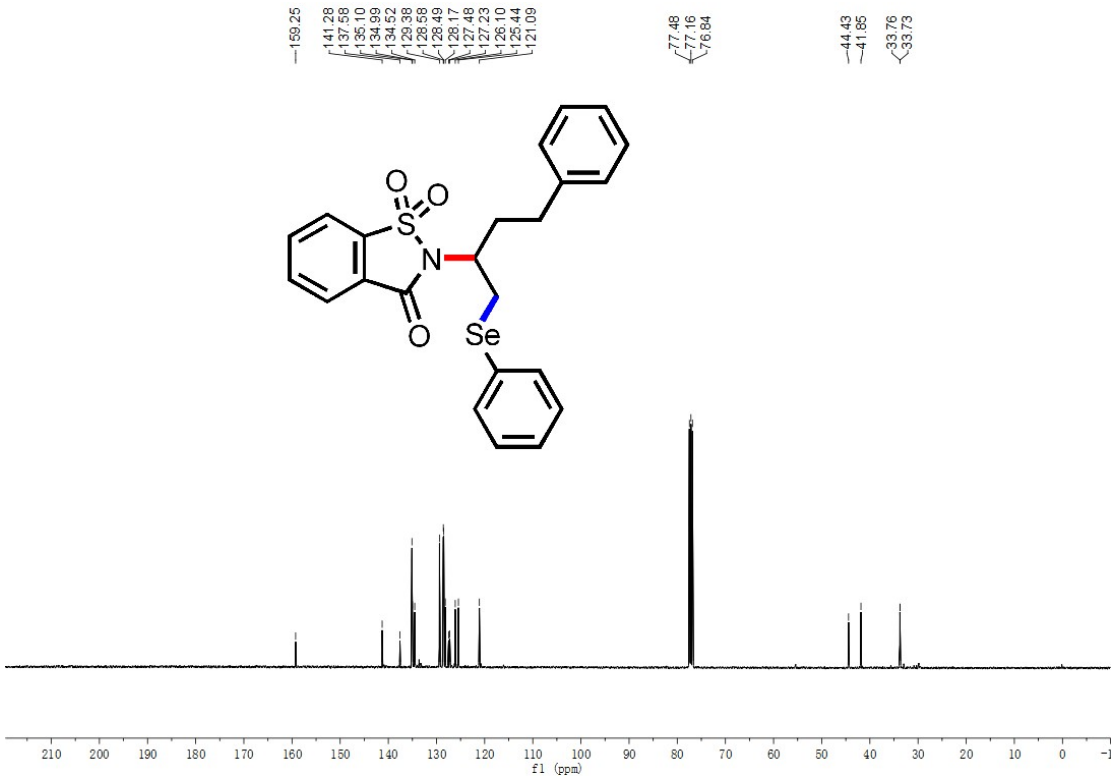
^{13}C NMR of product 5g in $CDCl_3$ (100 MHz)



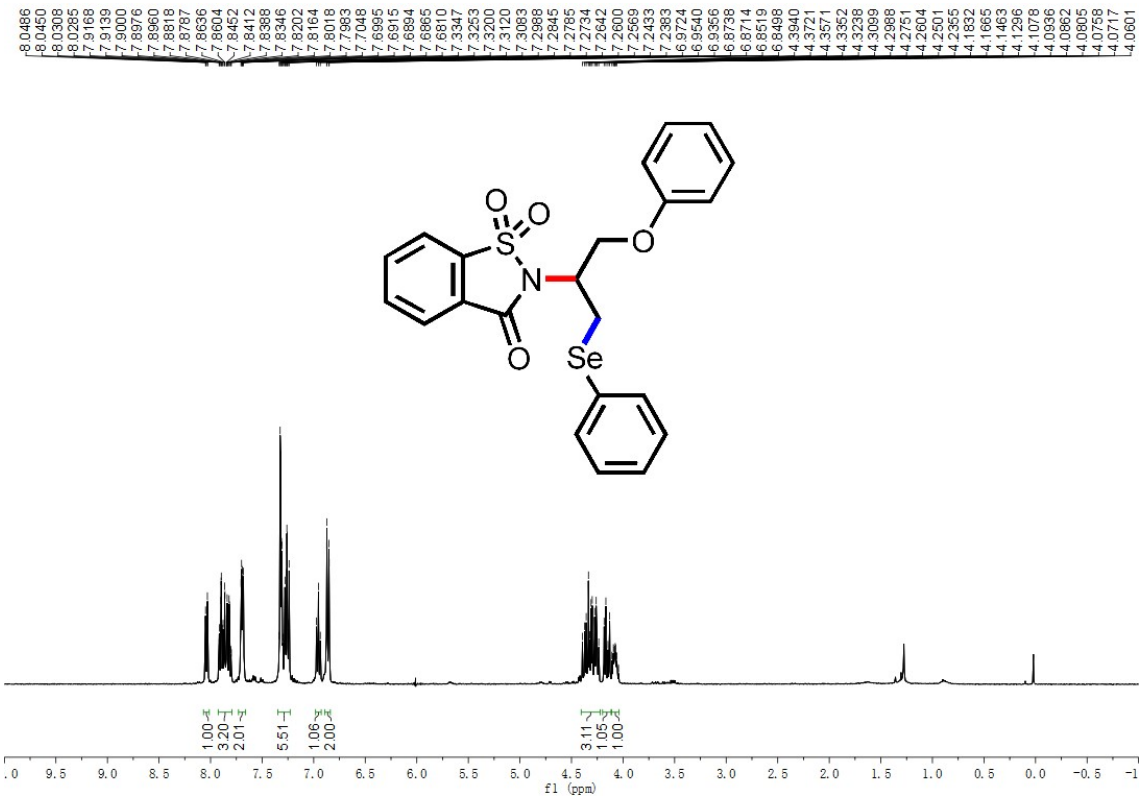
^{1}H NMR of product 5h in $CDCl_3$ (400 MHz)



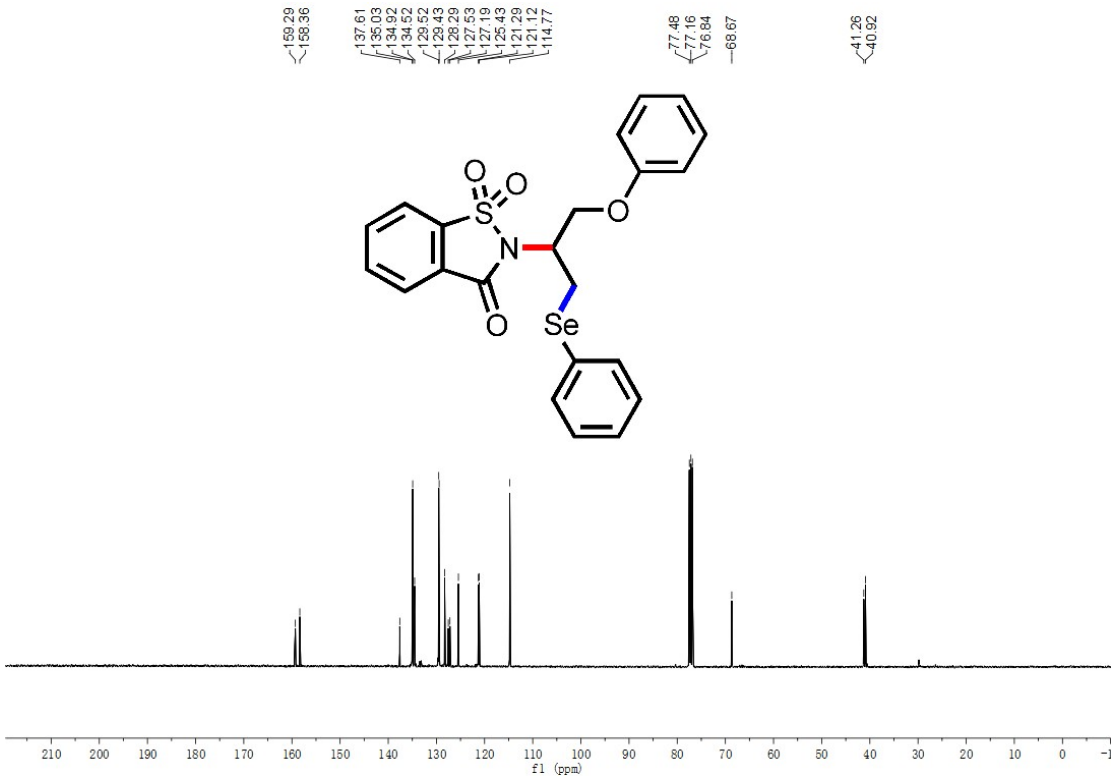
^{13}C NMR of product 5h in $CDCl_3$ (100 MHz)



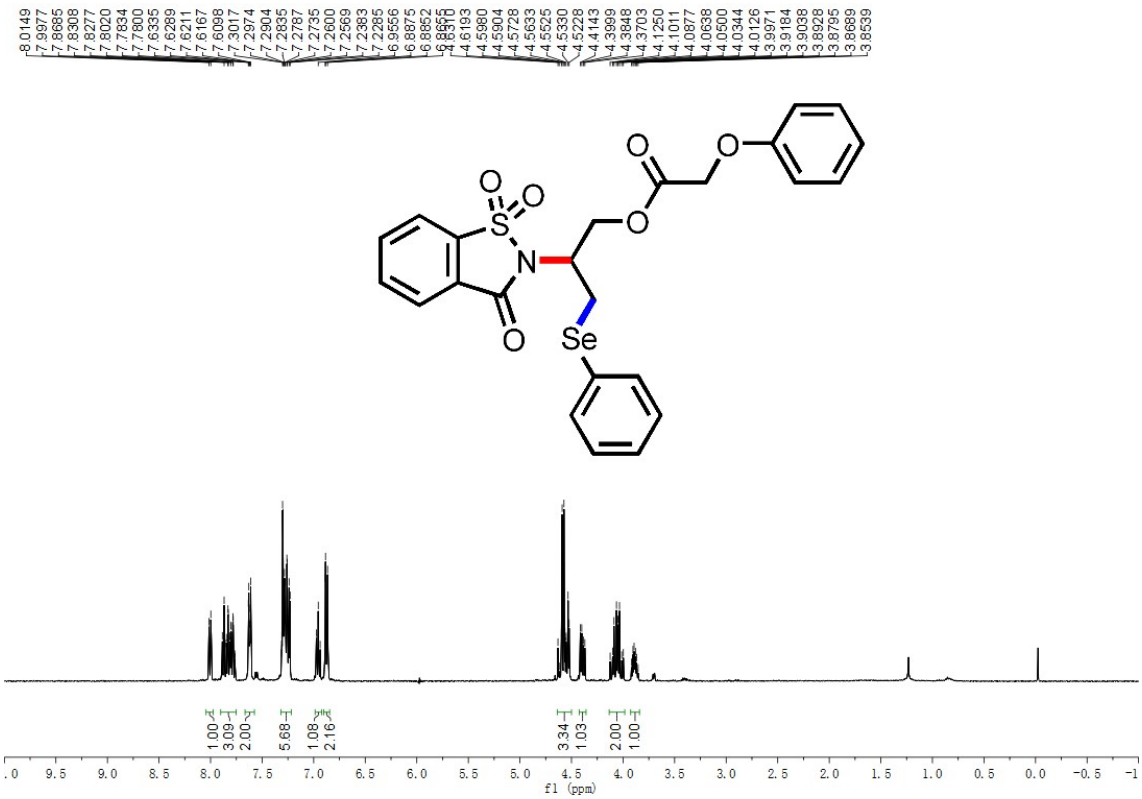
^{1}H NMR of product 5i in $CDCl_3$ (400 MHz)



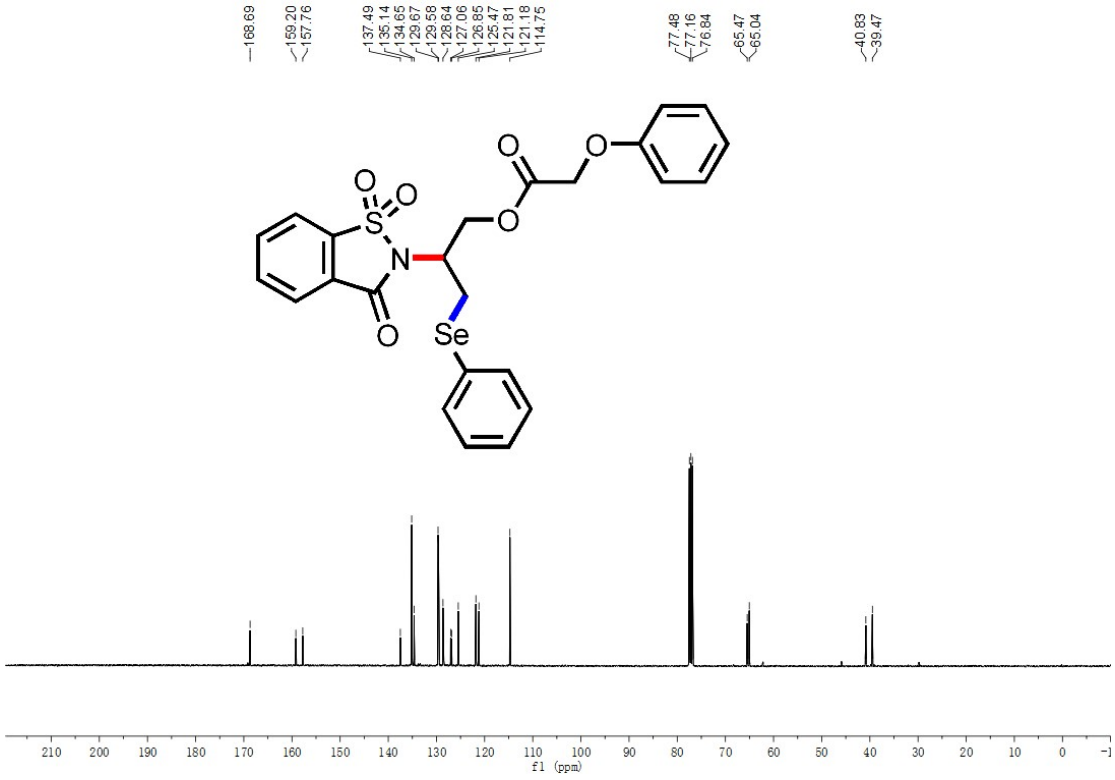
^{13}C NMR of product 5i in $CDCl_3$ (100 MHz)



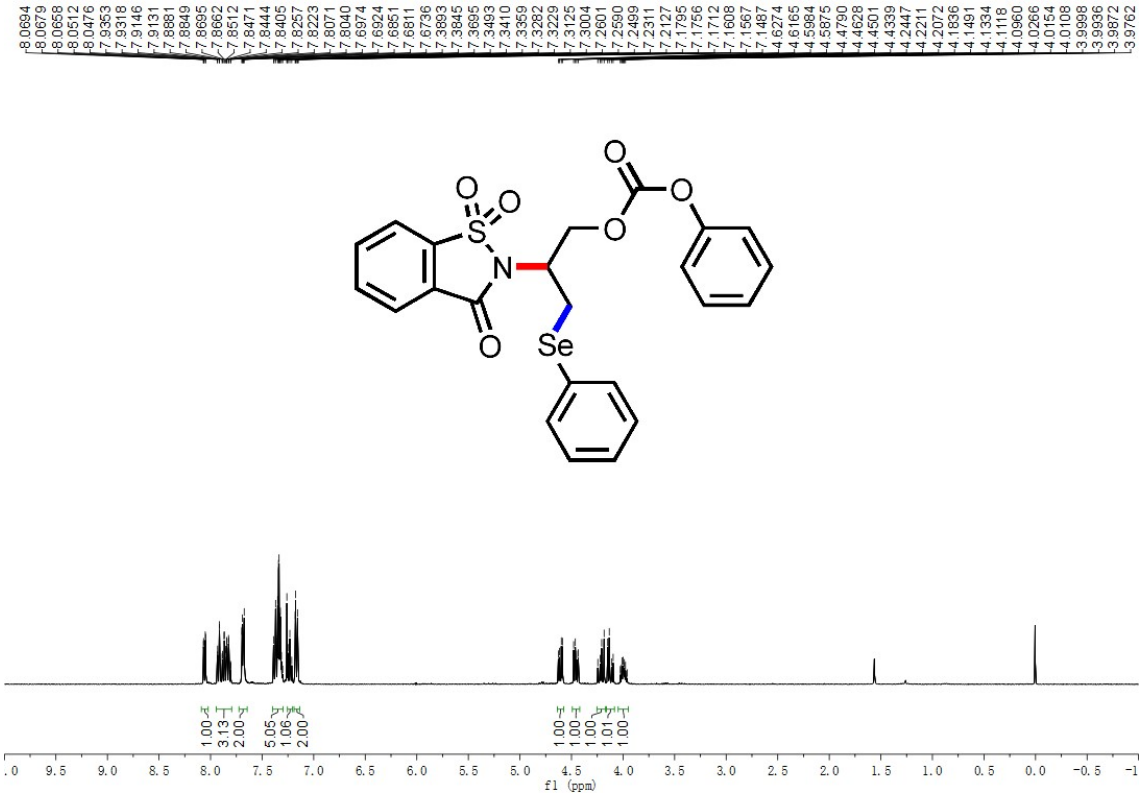
^{1}H NMR of product 5j in $CDCl_3$ (400 MHz)



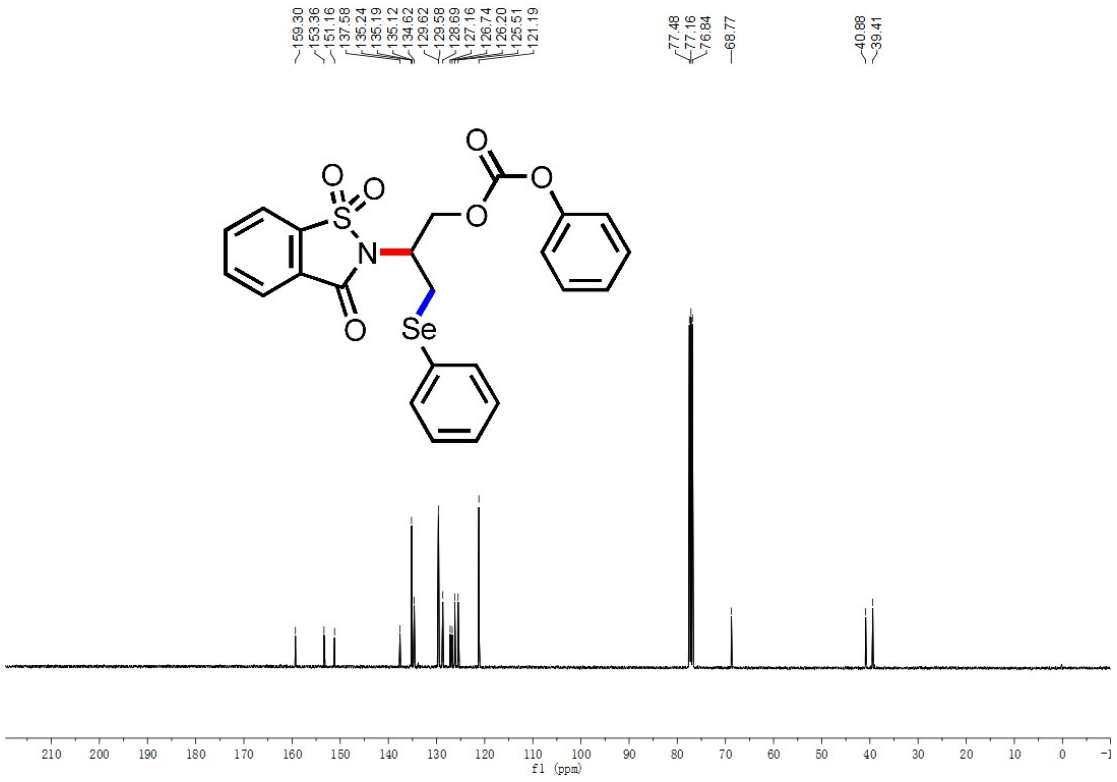
^{13}C NMR of product 5j in $CDCl_3$ (100 MHz)



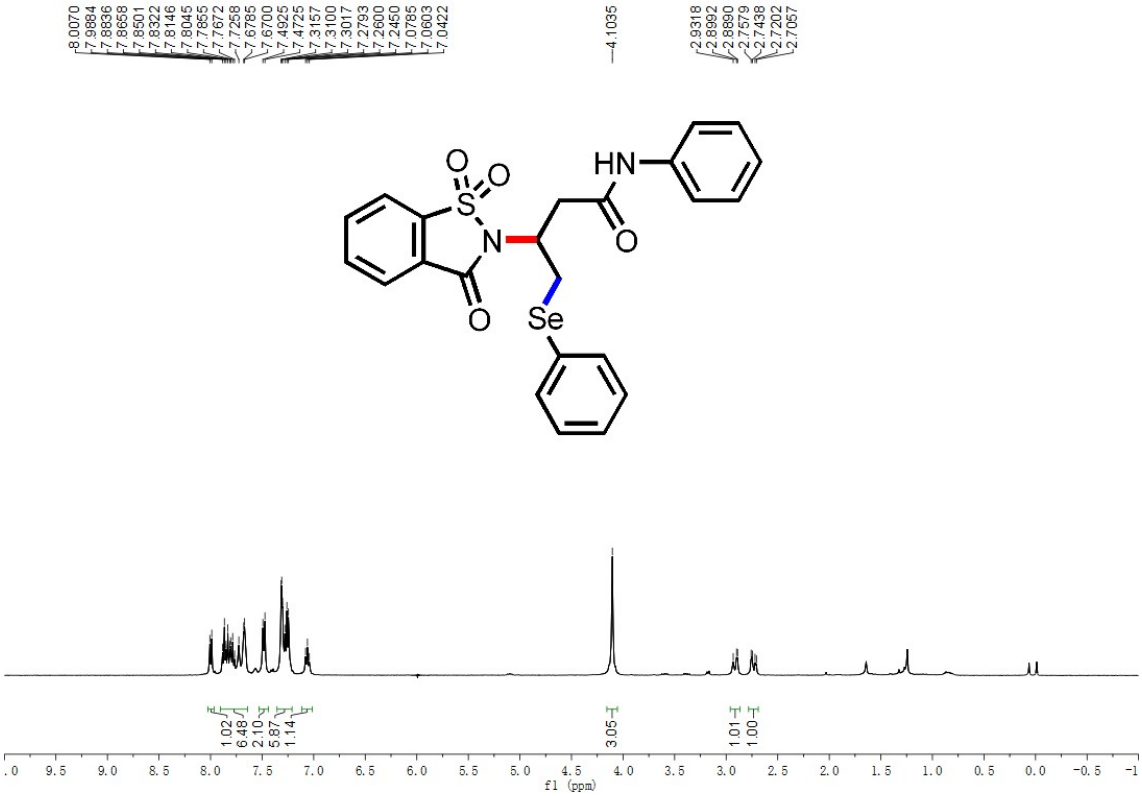
^{1}H NMR of product 5k in $CDCl_3$ (400 MHz)



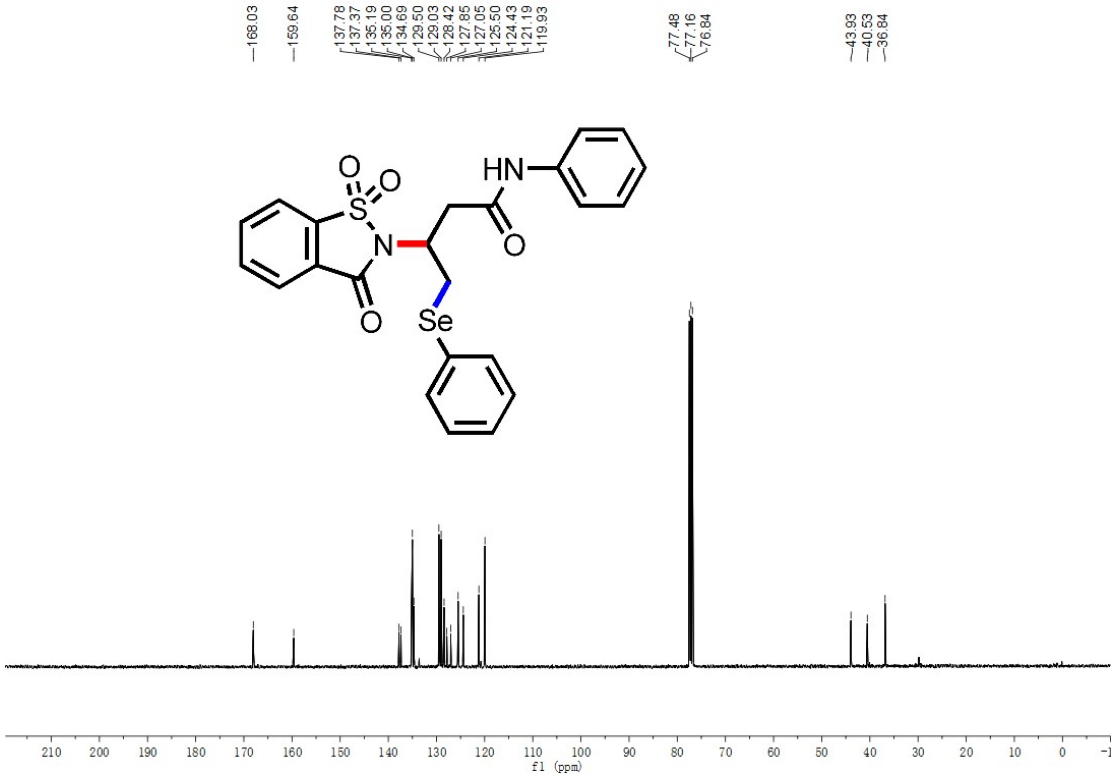
^{13}C NMR of product 5k in $CDCl_3$ (100 MHz)



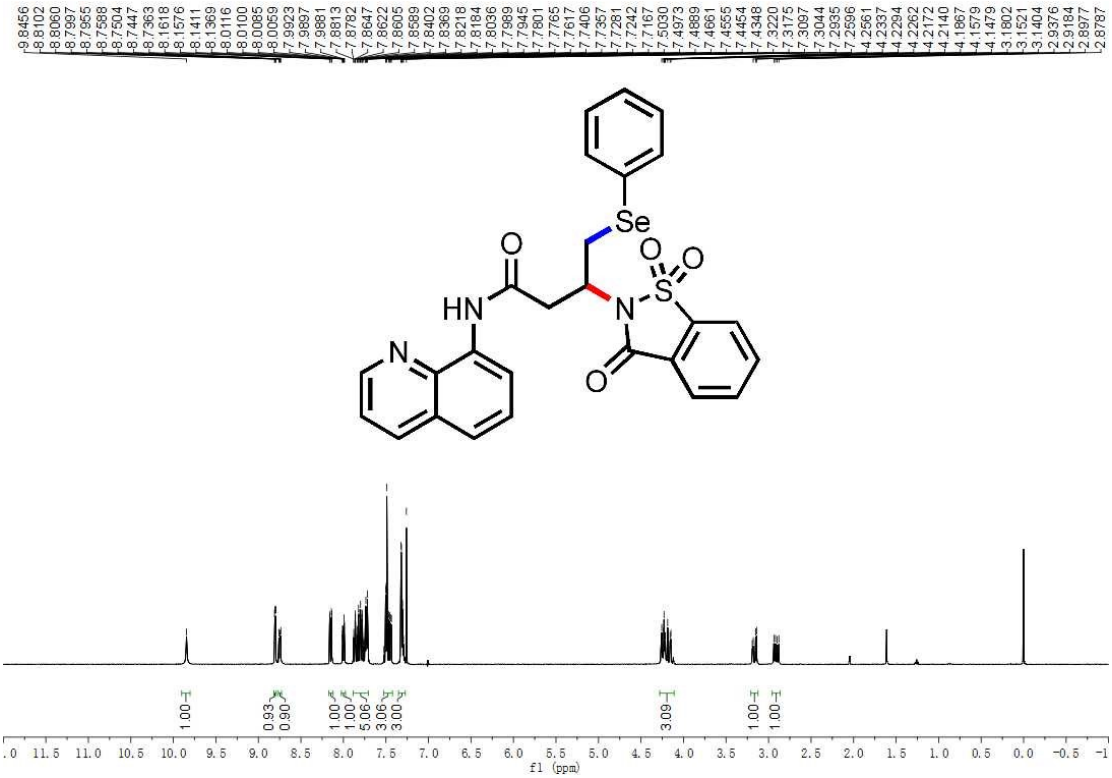
^{1}H NMR of product 5l in $CDCl_3$ (400 MHz)



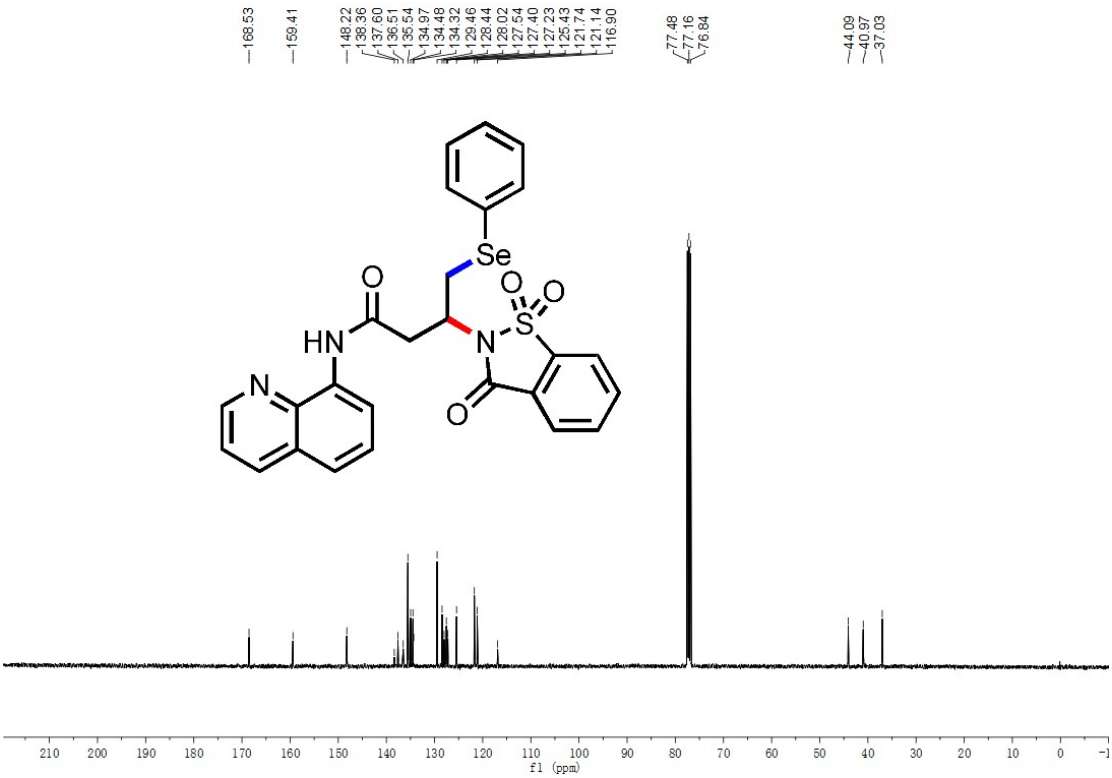
^{13}C NMR of product 5l in $CDCl_3$ (100 MHz)



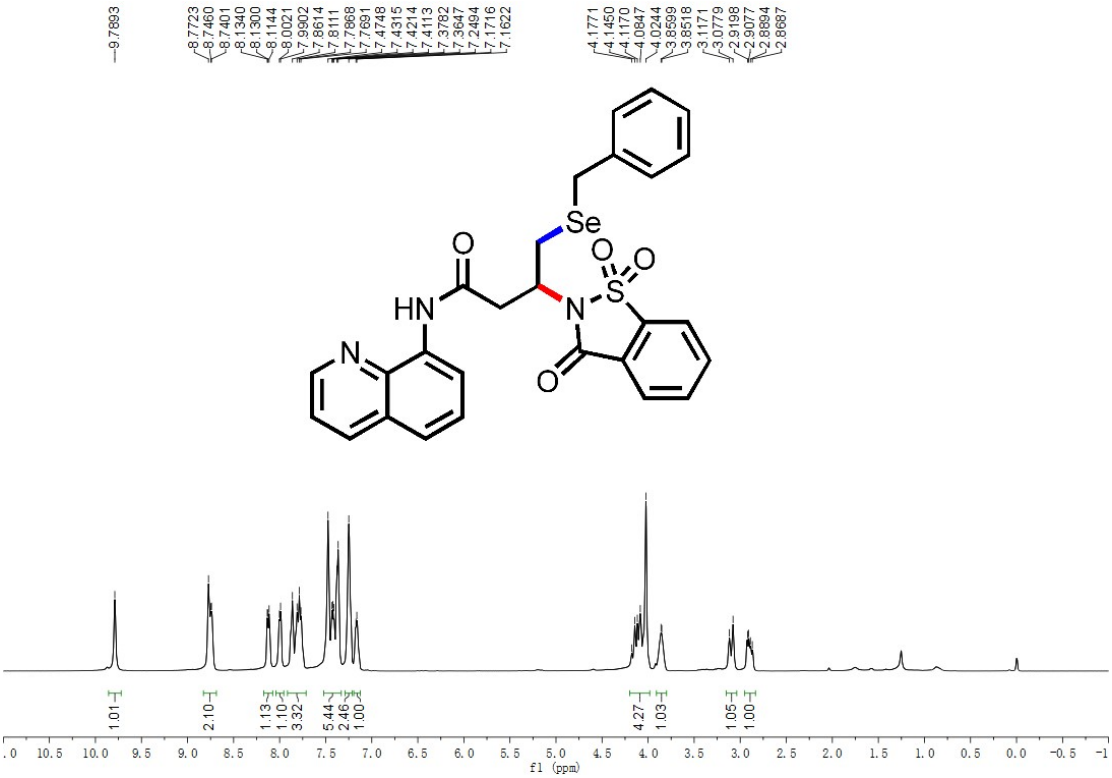
^{1}H NMR of product 5m in $CDCl_3$ (400 MHz)



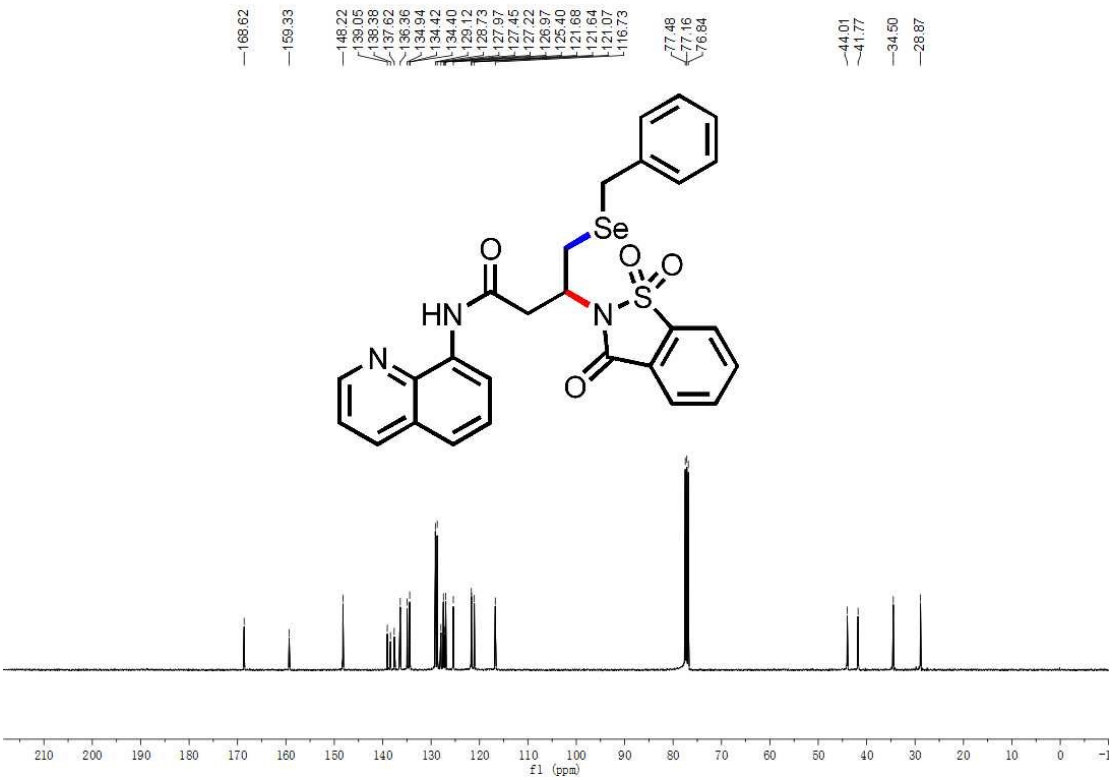
^{13}C NMR of product 5m in $CDCl_3$ (100 MHz)



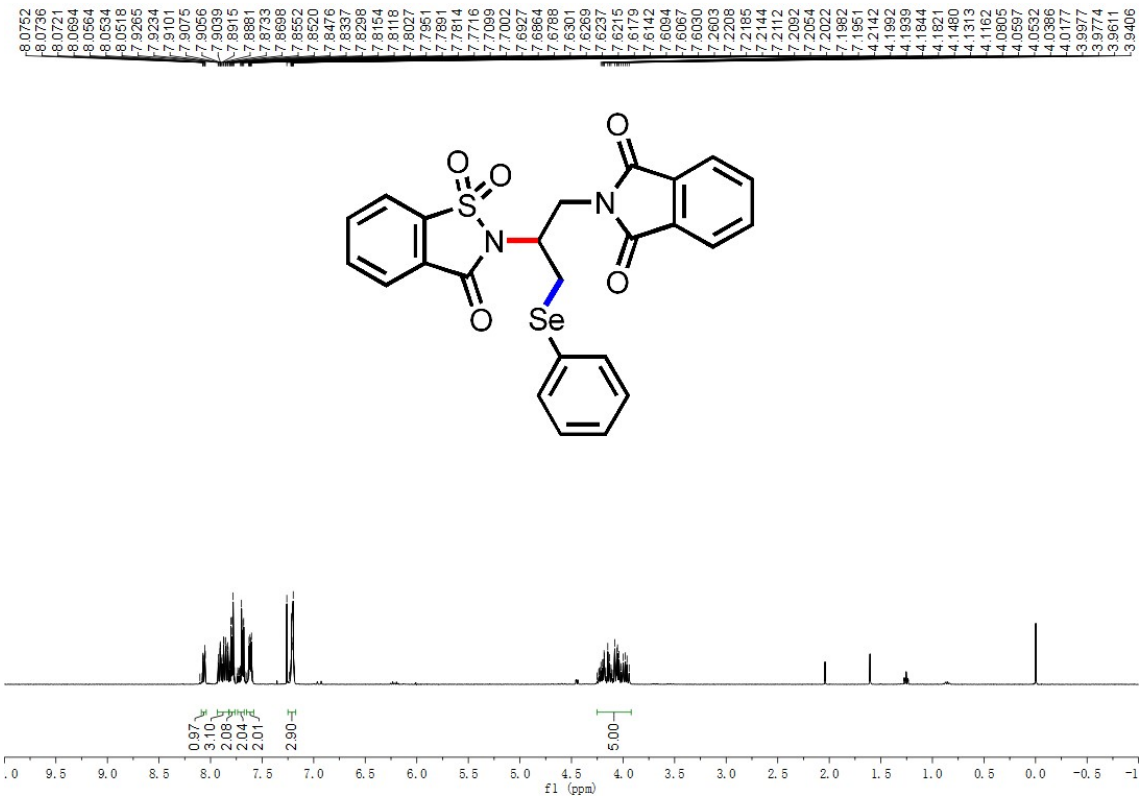
^{1}H NMR of product 5n in $CDCl_3$ (400 MHz)



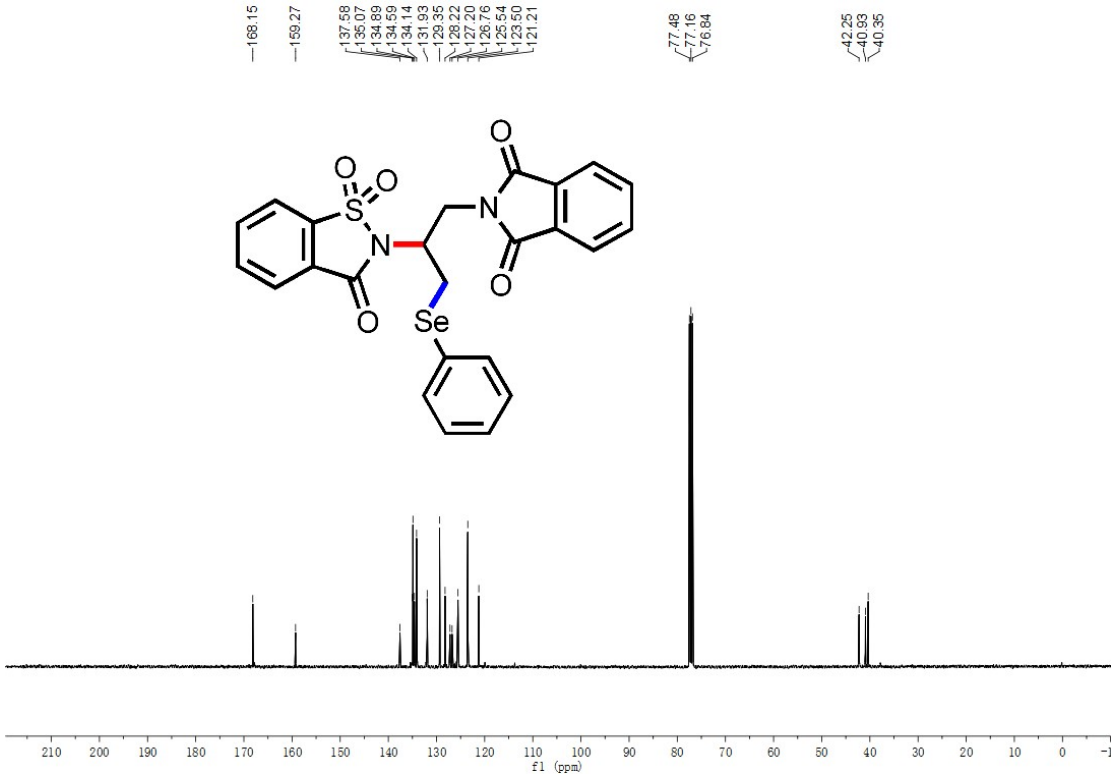
^{13}C NMR of product 5n in $CDCl_3$ (100 MHz)



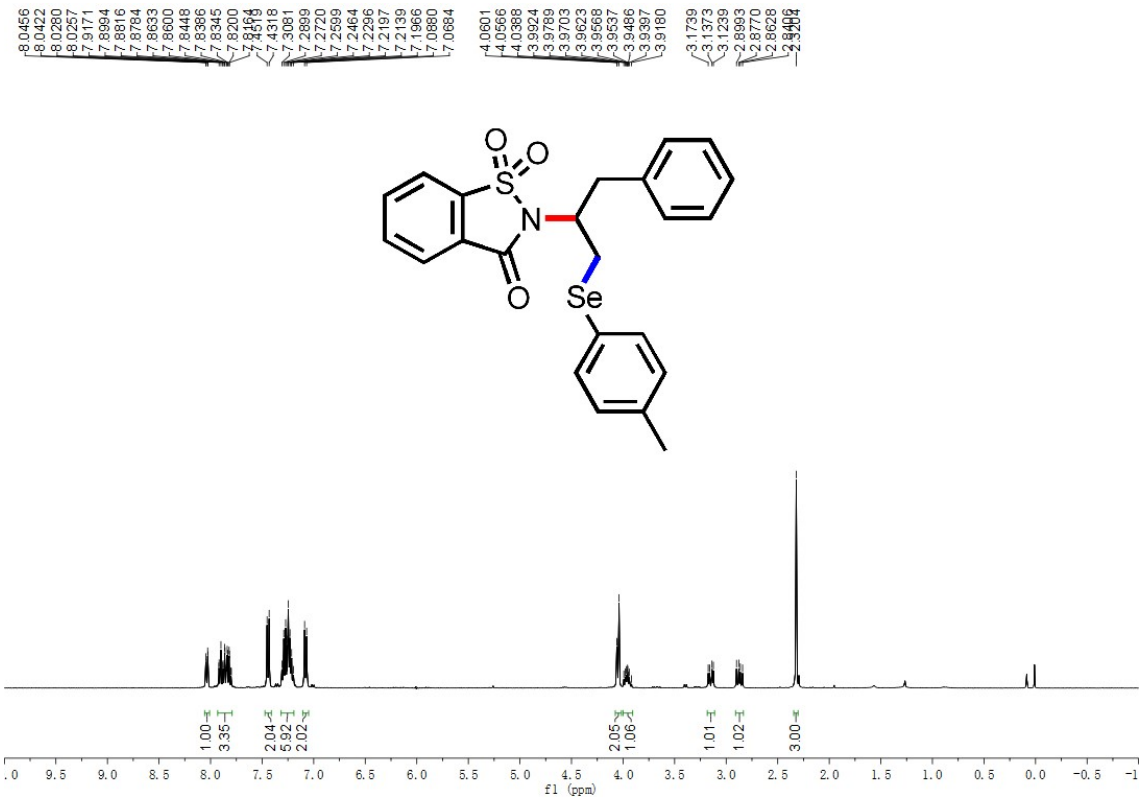
^{1}H NMR of product 5o in $CDCl_3$ (400 MHz)



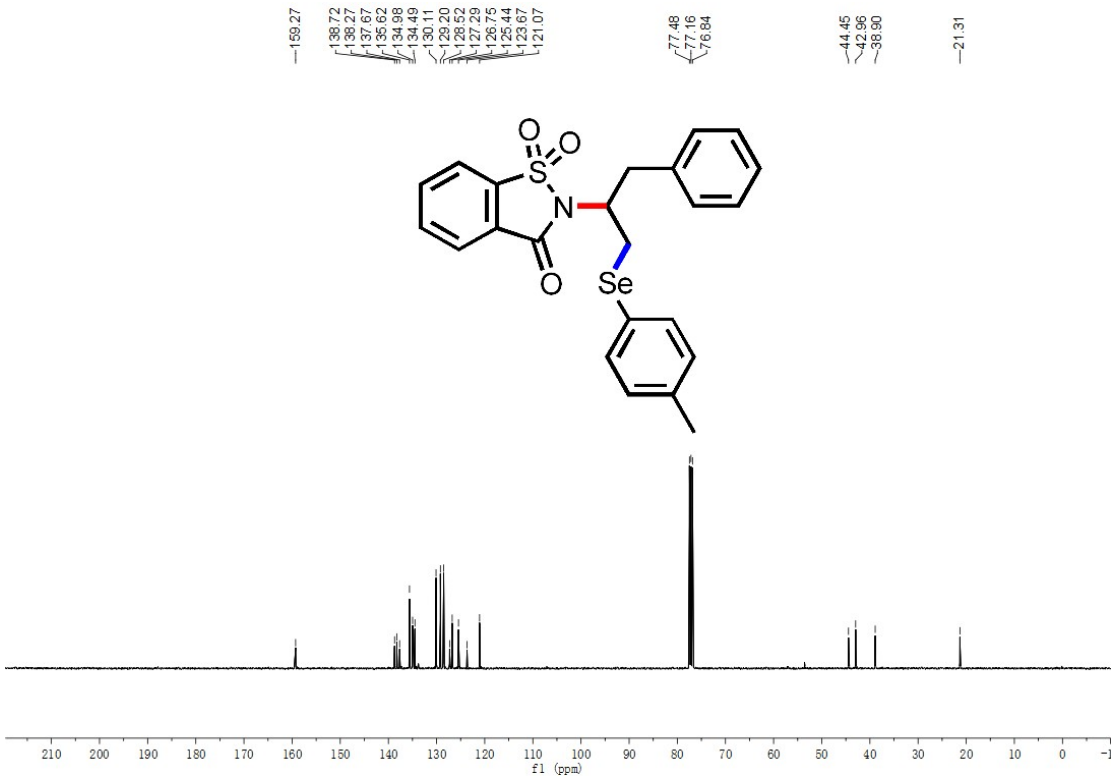
^{13}C NMR of product 5o in $CDCl_3$ (100 MHz)



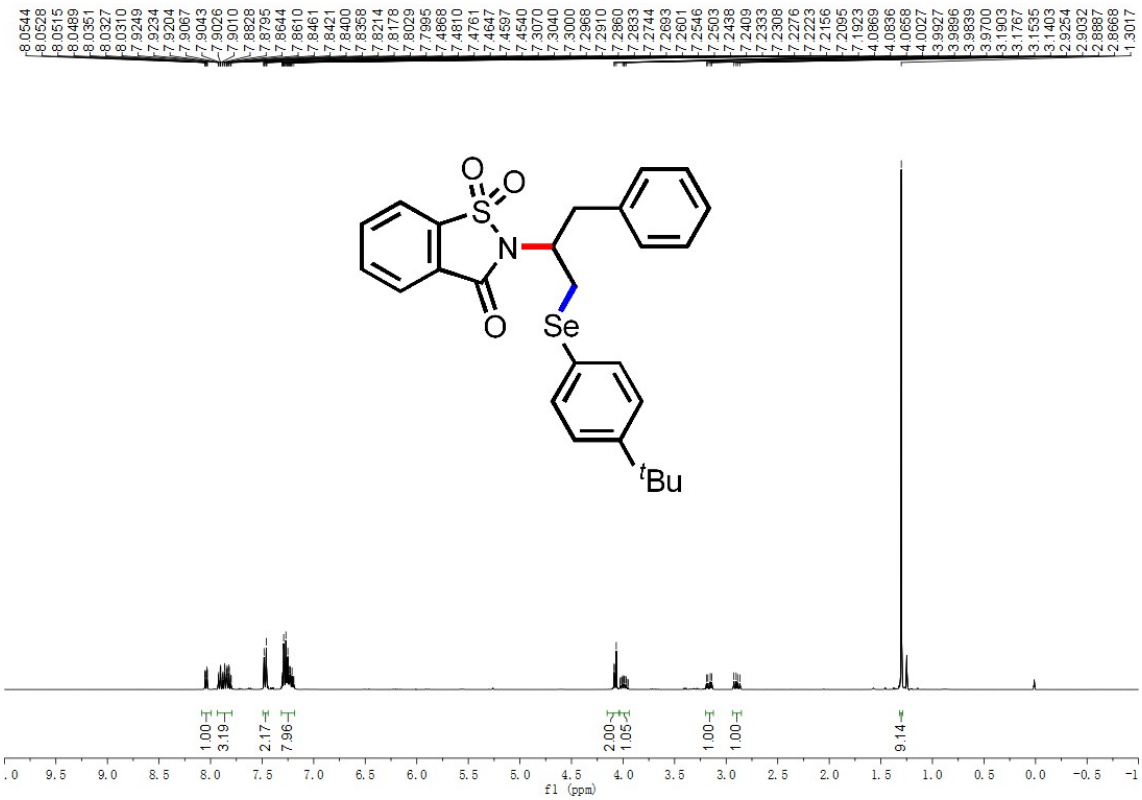
^{1}H NMR of product 5p in $CDCl_3$ (400 MHz)



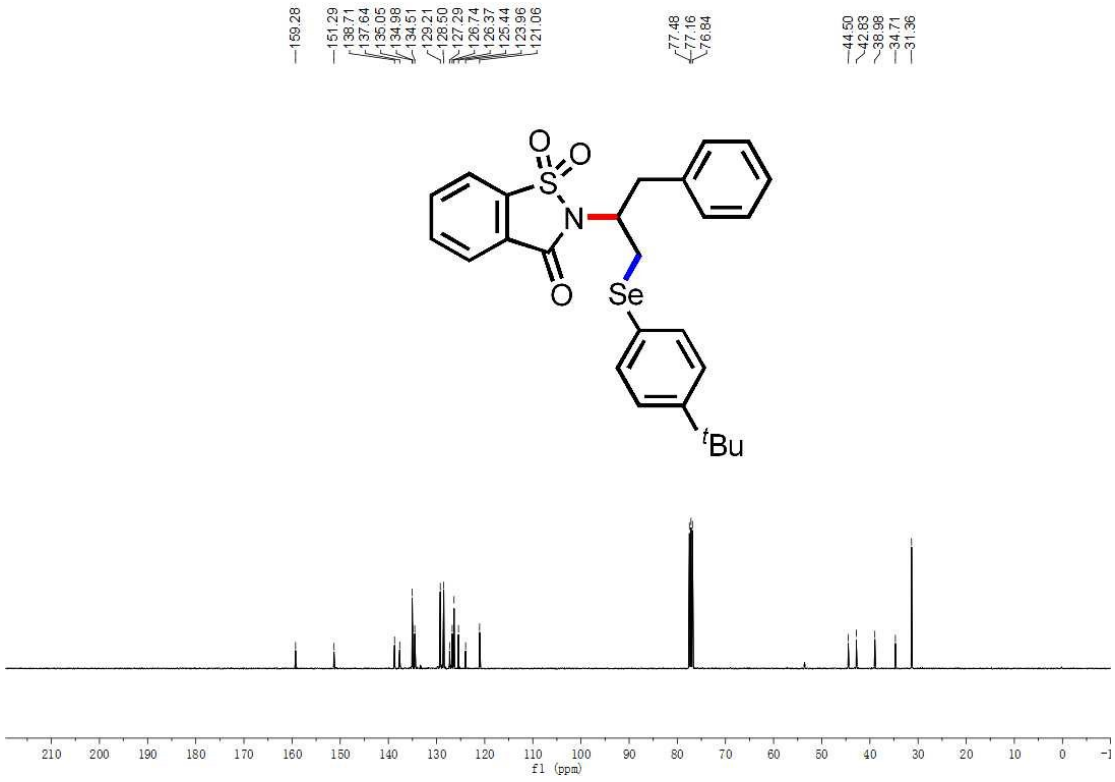
^{13}C NMR of product 5p in $CDCl_3$ (100 MHz)



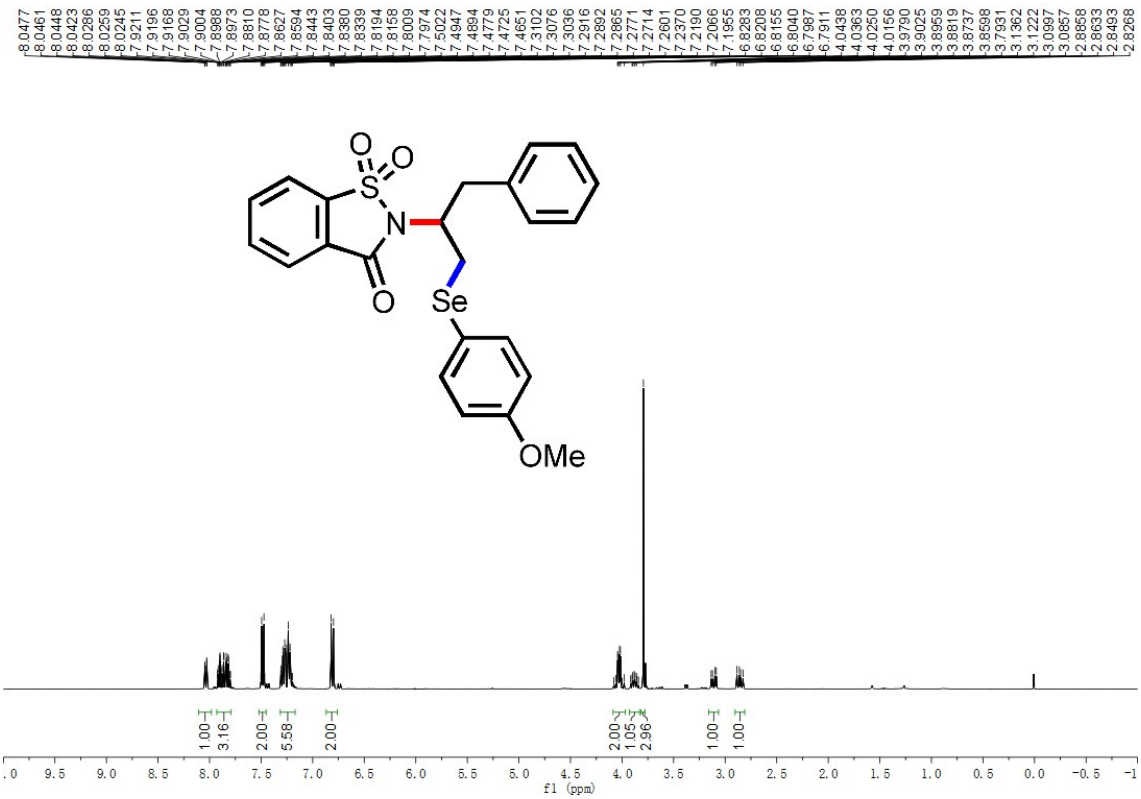
^{1}H NMR of product 5q in $CDCl_3$ (400 MHz)



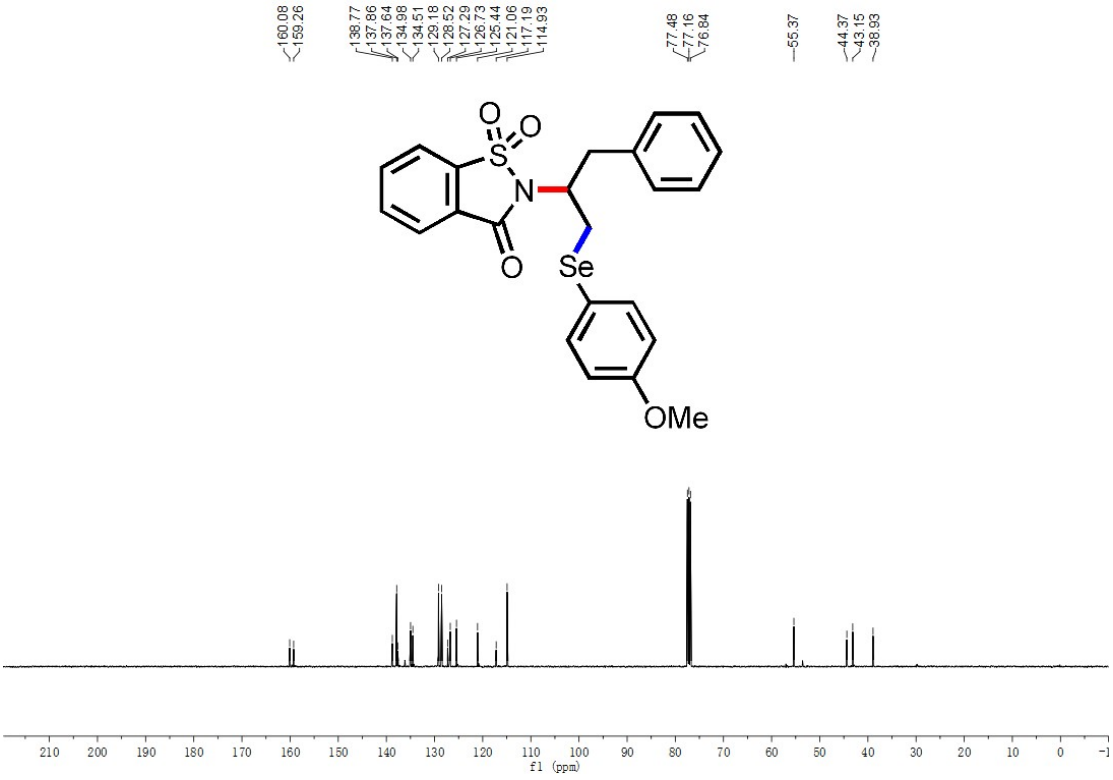
^{13}C NMR of product 5q in $CDCl_3$ (100 MHz)



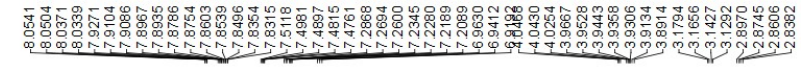
^{1}H NMR of product 5r in $CDCl_3$ (400 MHz)

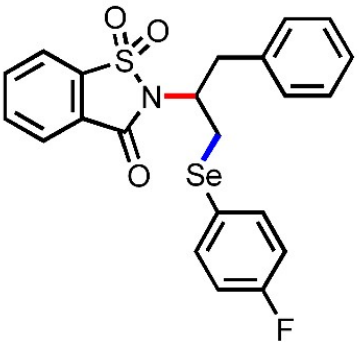


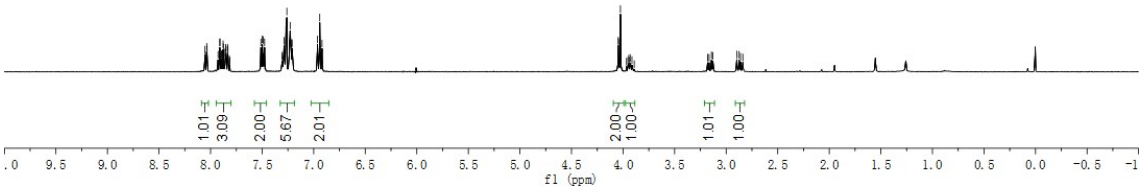
^{13}C NMR of product 5r in $CDCl_3$ (100 MHz)



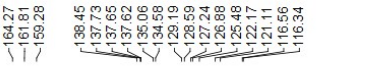
^{1}H NMR of product 5s in $CDCl_3$ (400 MHz)

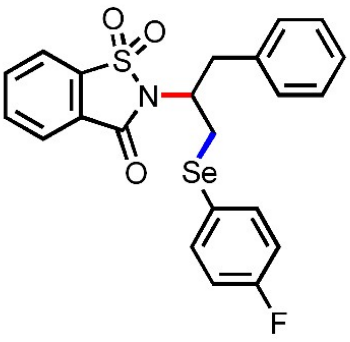


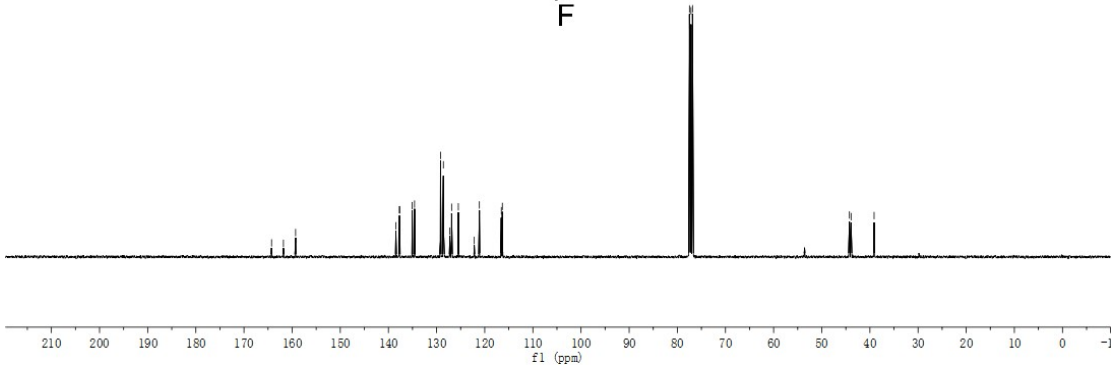




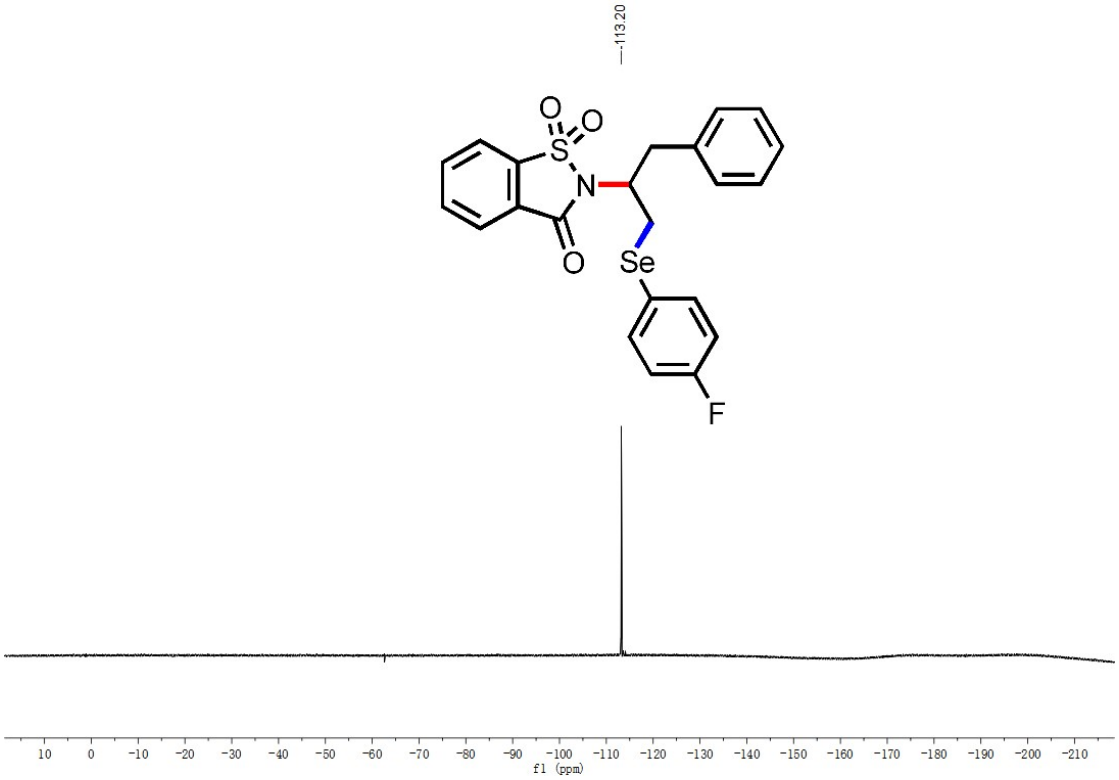
^{13}C NMR of product 5s in $CDCl_3$ (100 MHz)



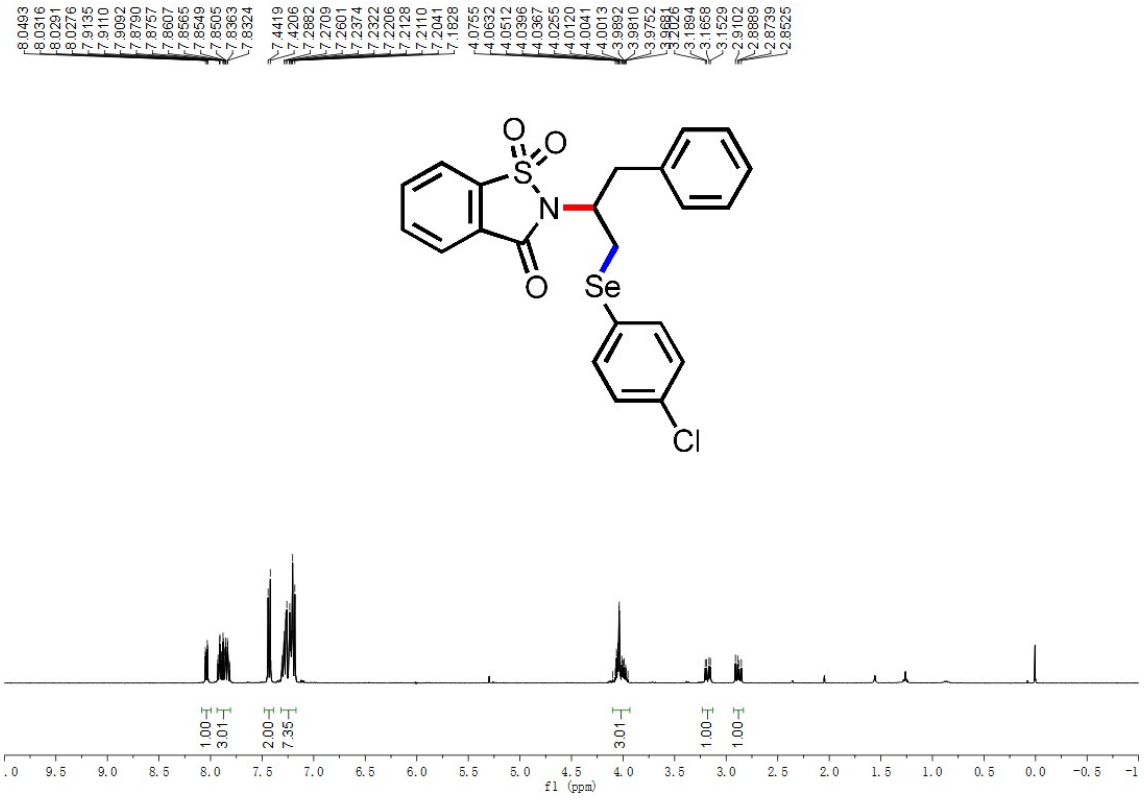




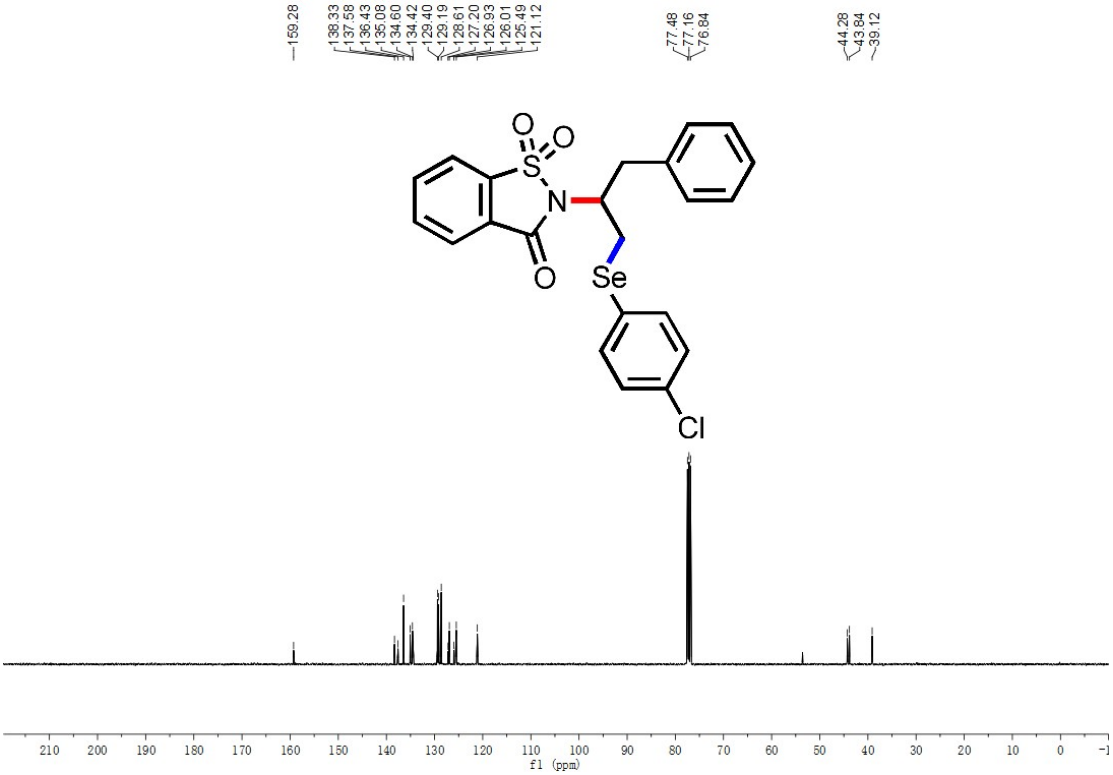
^{19}F NMR of product 5s in $CDCl_3$ (376 MHz)



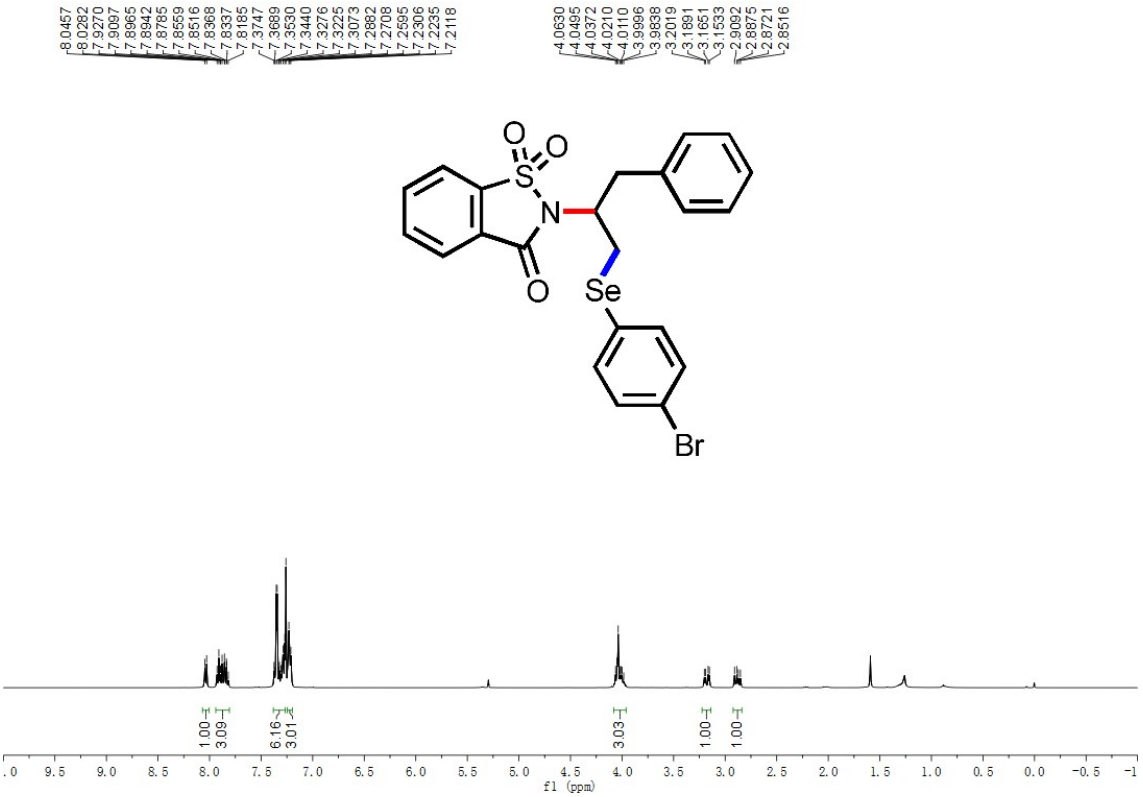
^{1}H NMR of product 5t in $CDCl_3$ (400 MHz)



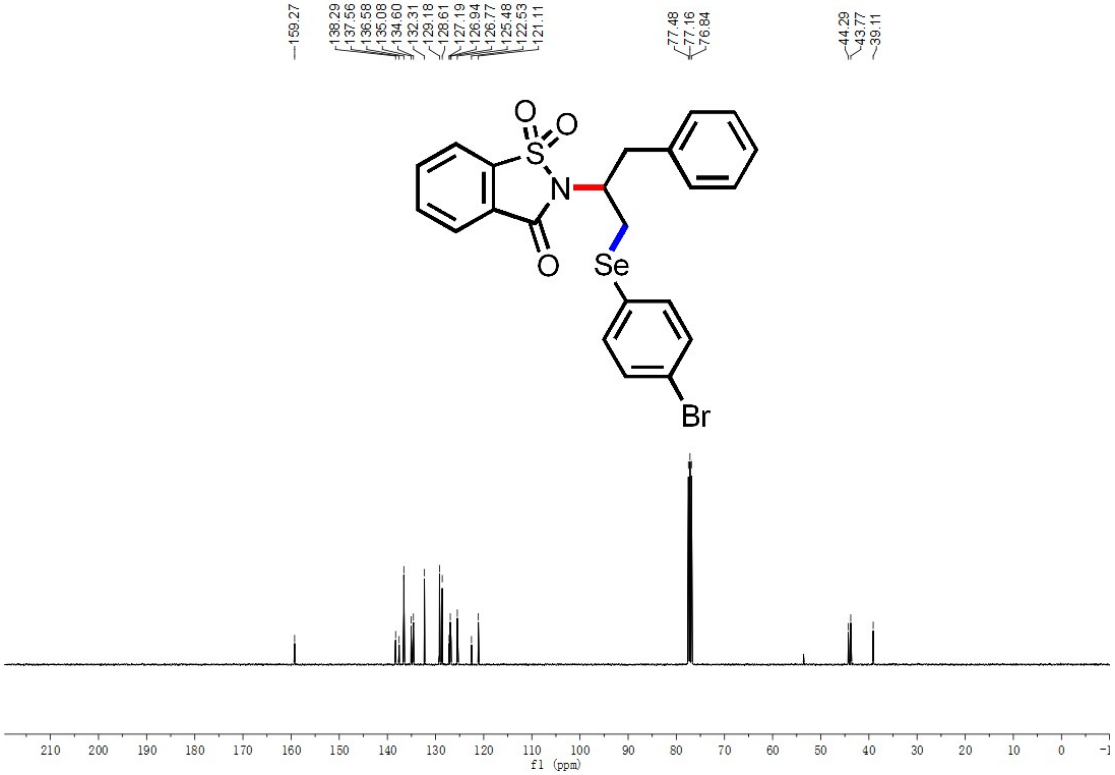
^{13}C NMR of product 5t in $CDCl_3$ (100 MHz)



^{1}H NMR of product 5u in $CDCl_3$ (400 MHz)



^{13}C NMR of product 5u in $CDCl_3$ (100 MHz)



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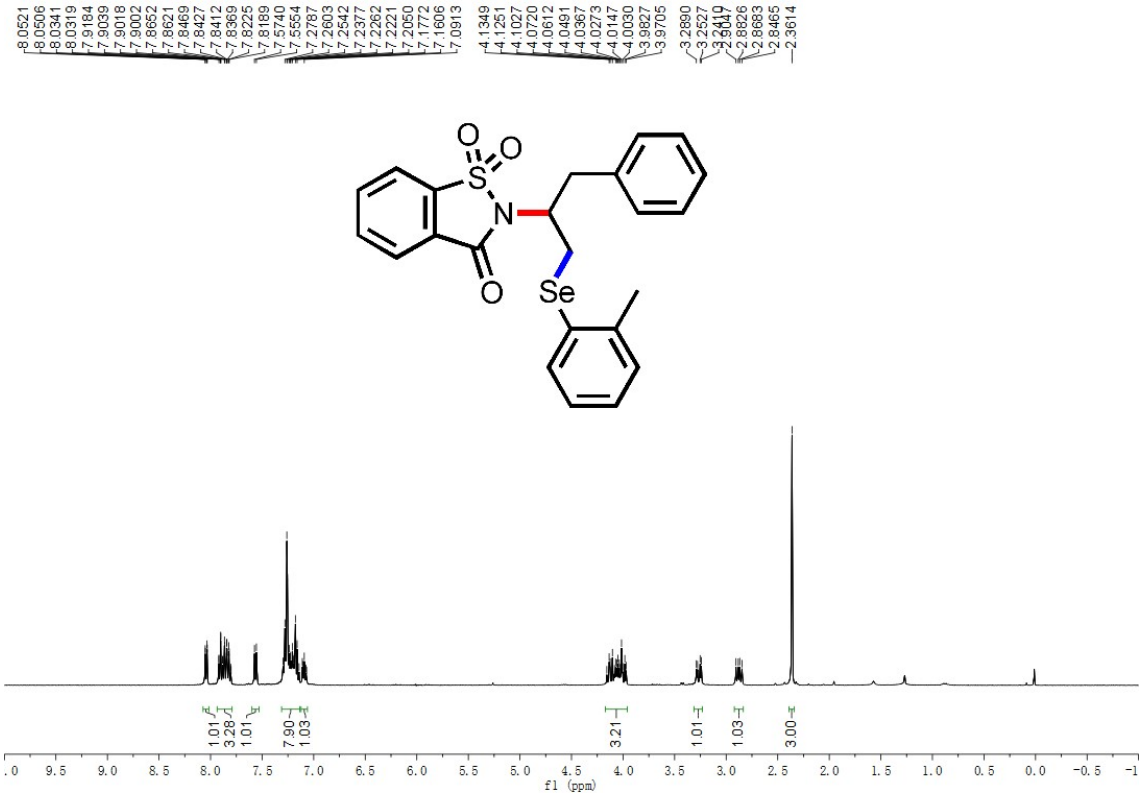
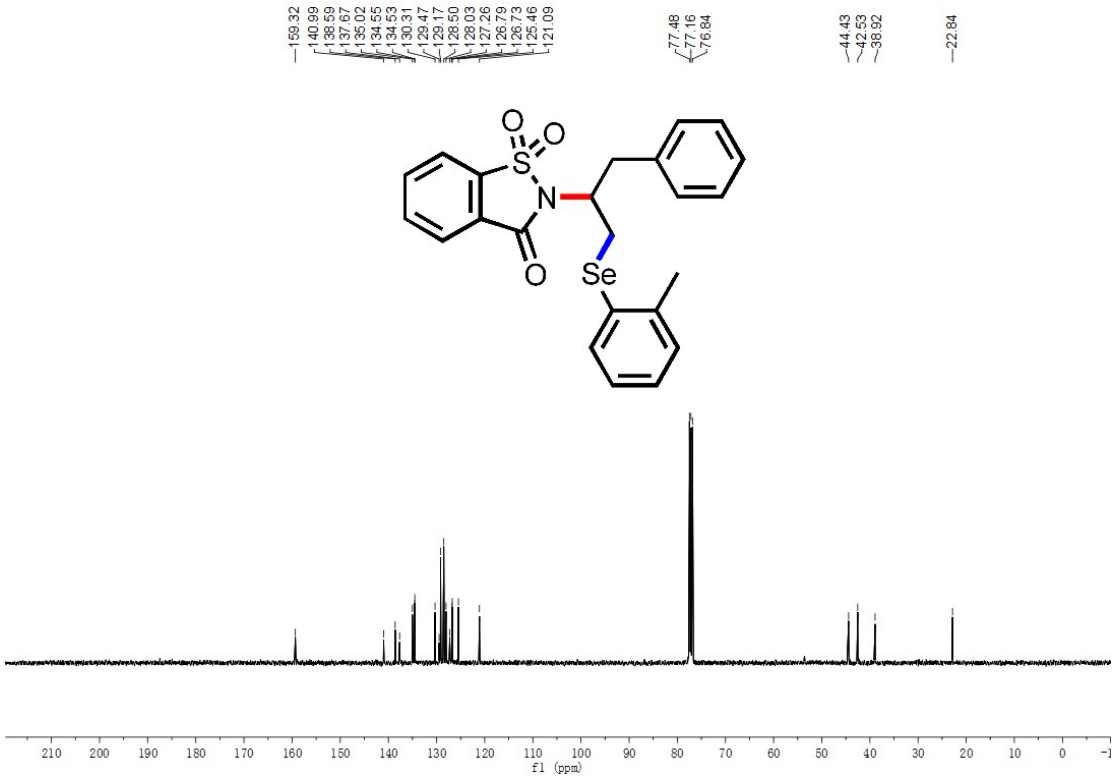
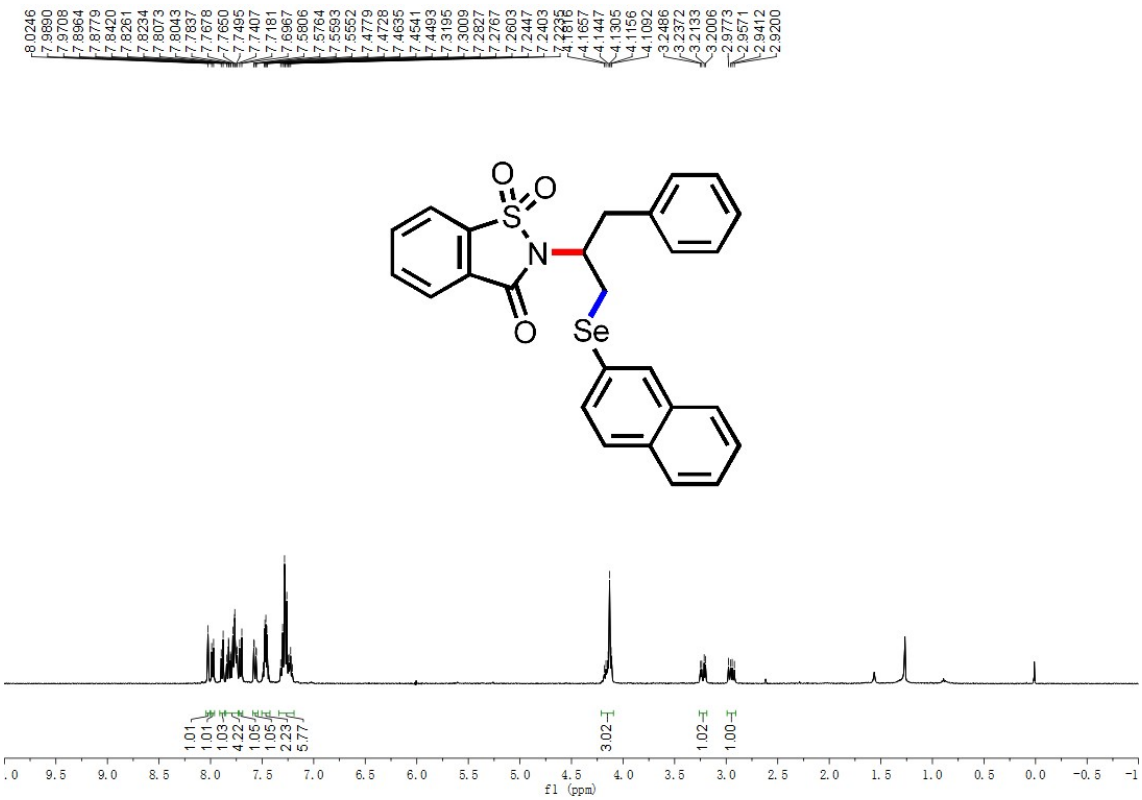
H NMR of product 5v in $CDCl_3$ (400 MHz)



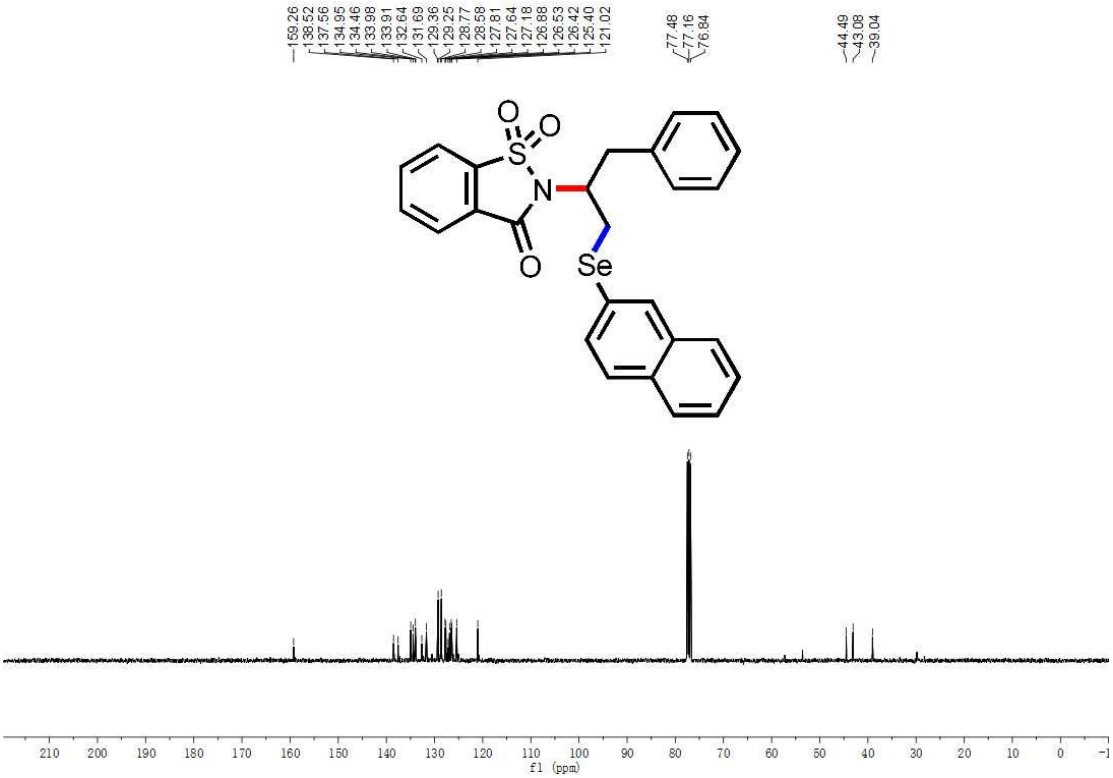
^{13}C NMR of product 5v in $CDCl_3$ (100 MHz)



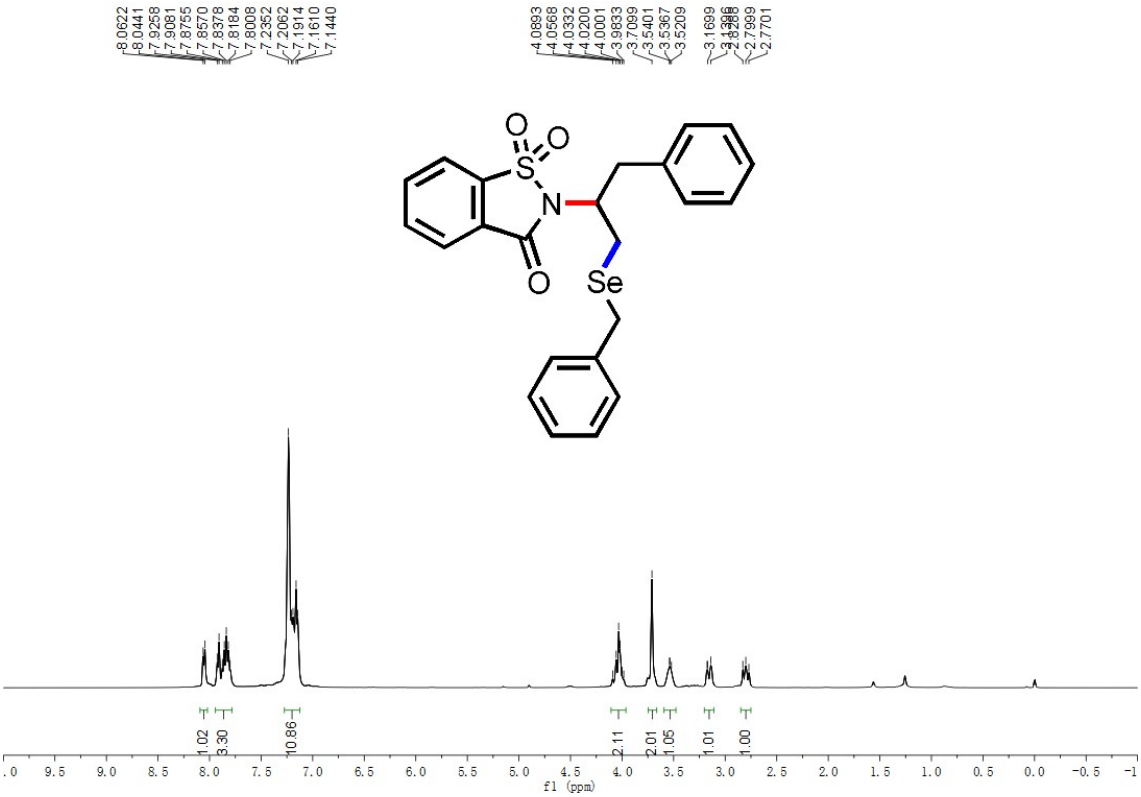
^{1}H NMR of product 5w in $CDCl_3$ (400 MHz)



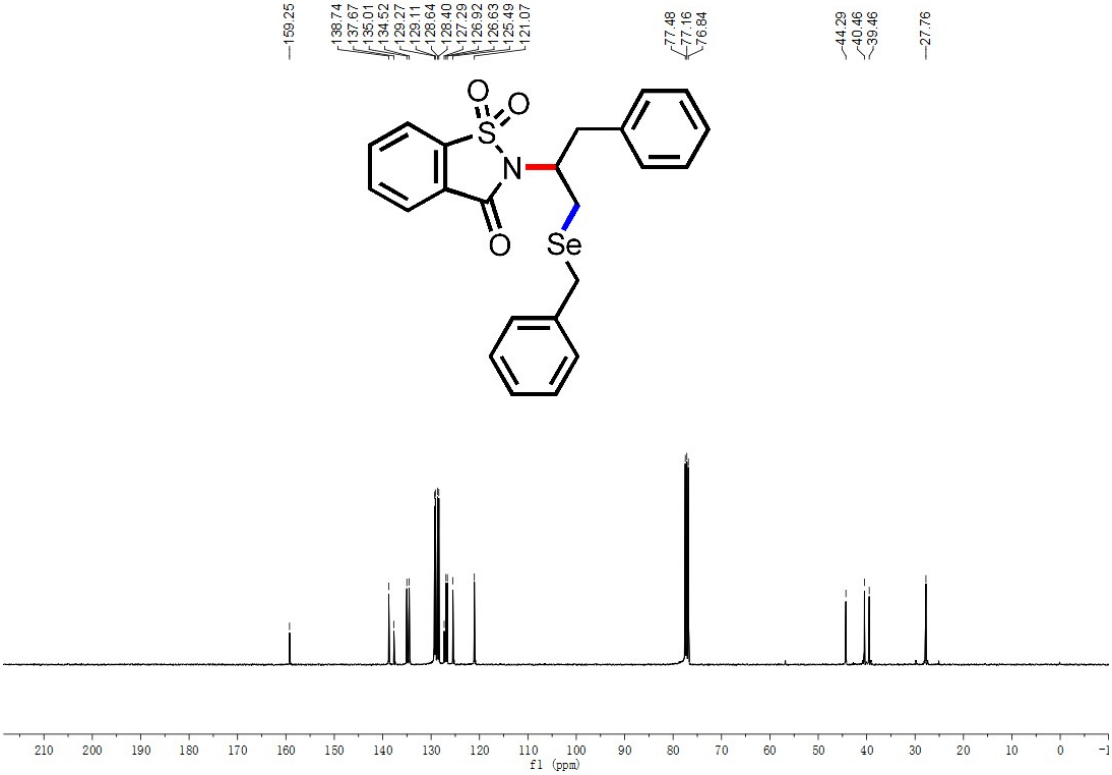
^{13}C NMR of product 5w in $CDCl_3$ (100 MHz)



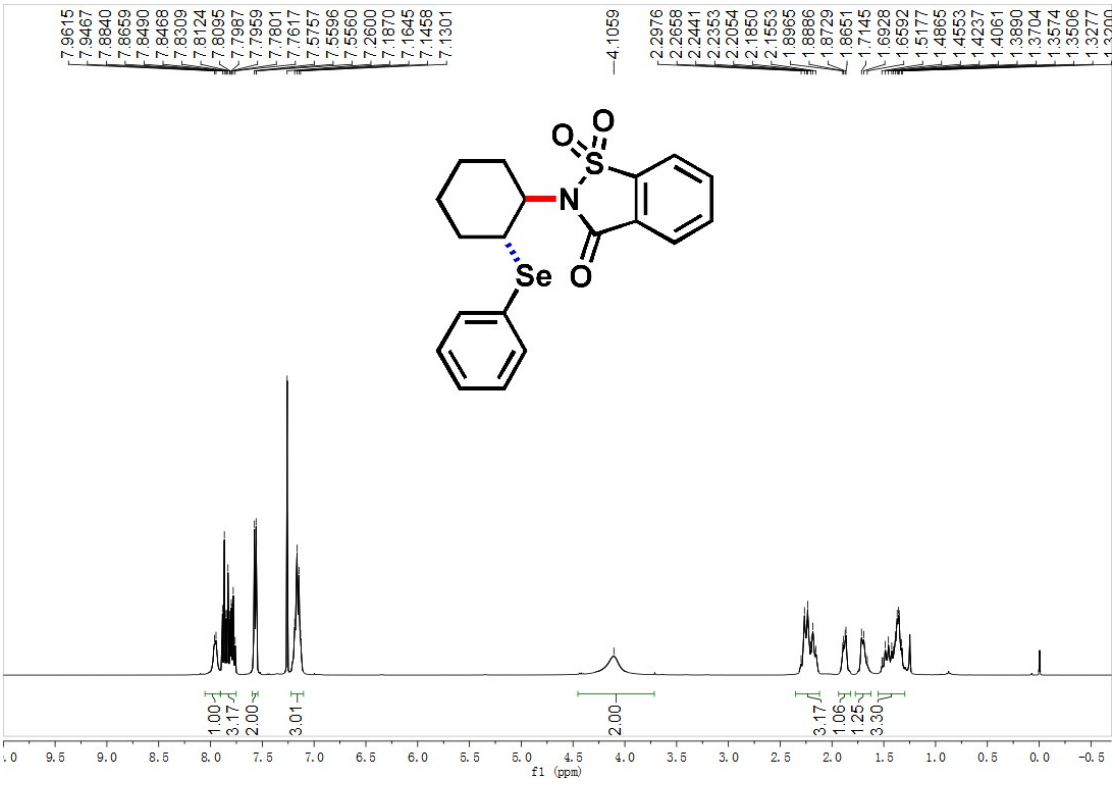
^{1}H NMR of product 5x in $CDCl_3$ (400 MHz)



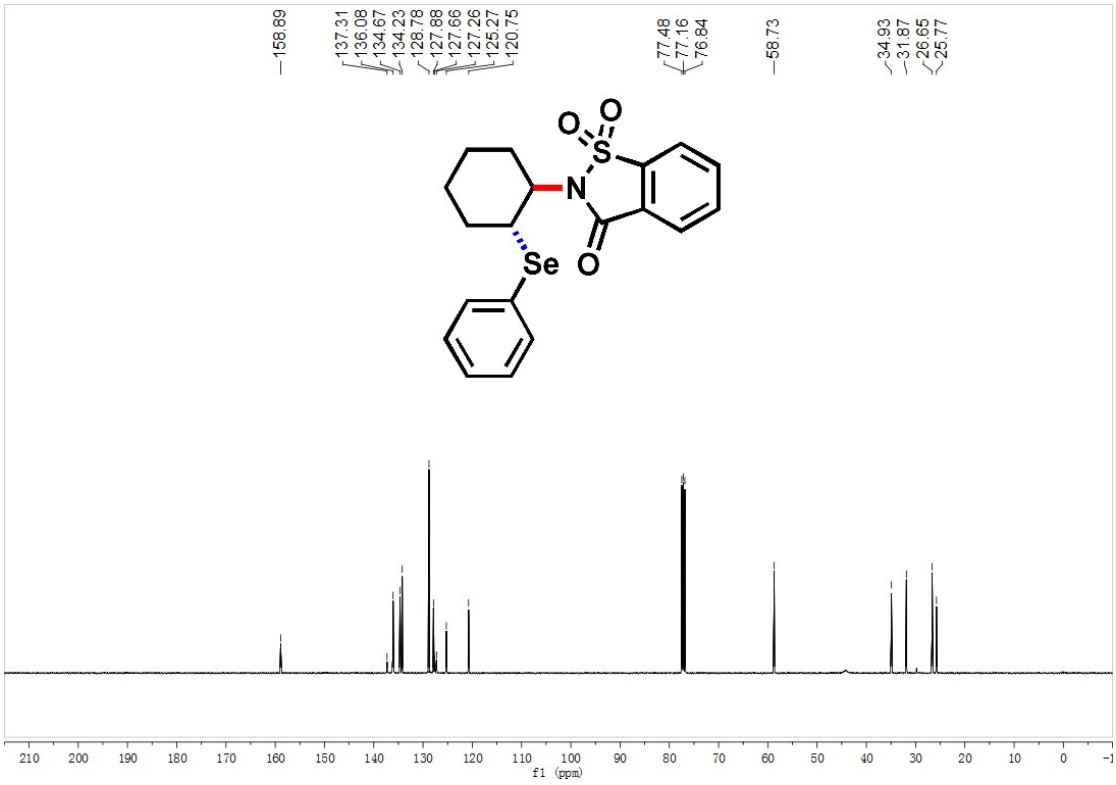
^{13}C NMR of product 5x in $CDCl_3$ (100 MHz)



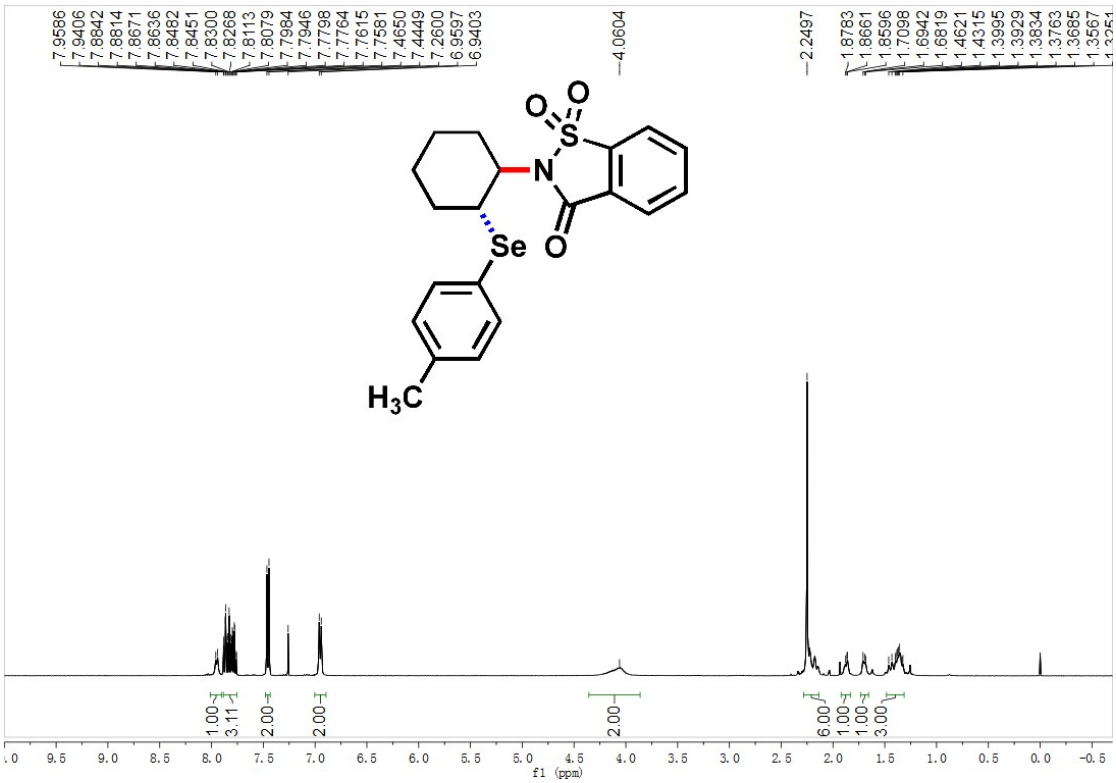
^{1}H NMR of product 5y in $CDCl_3$ (400 MHz)



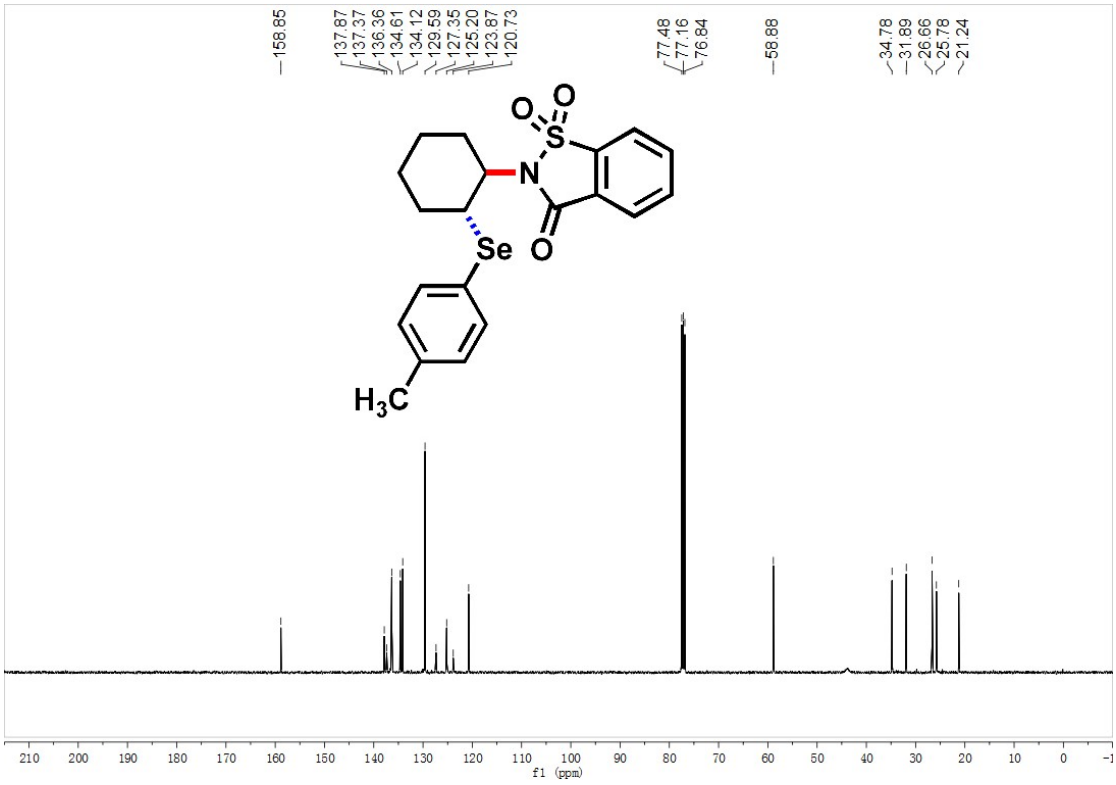
^{13}C NMR of product 5y in $CDCl_3$ (100 MHz)



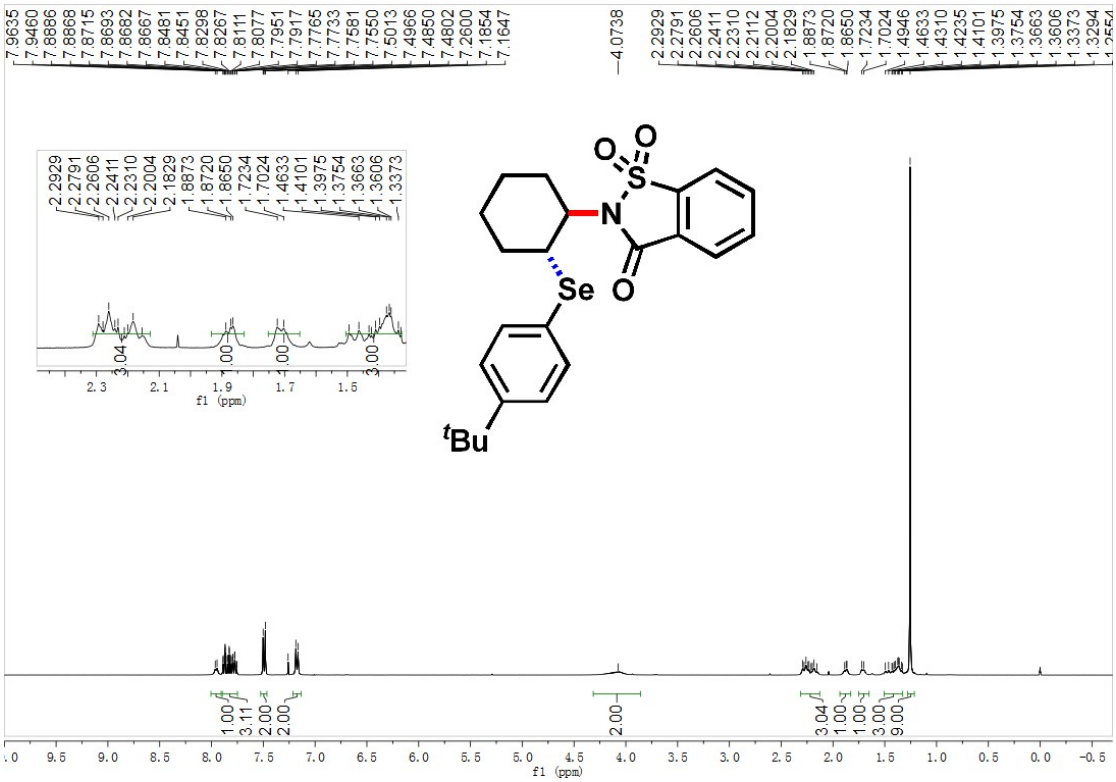
H NMR of product 5z in $CDCl_3$ (400 MHz)



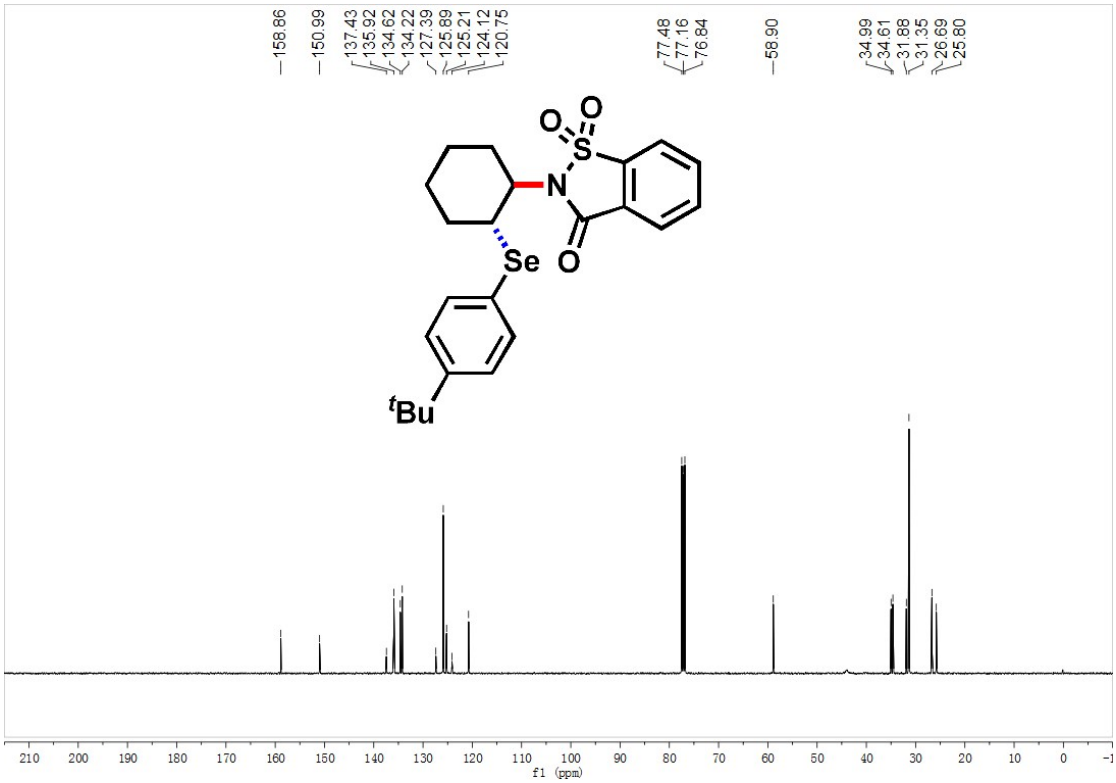
^{13}C NMR of product 5z in $CDCl_3$ (100 MHz)



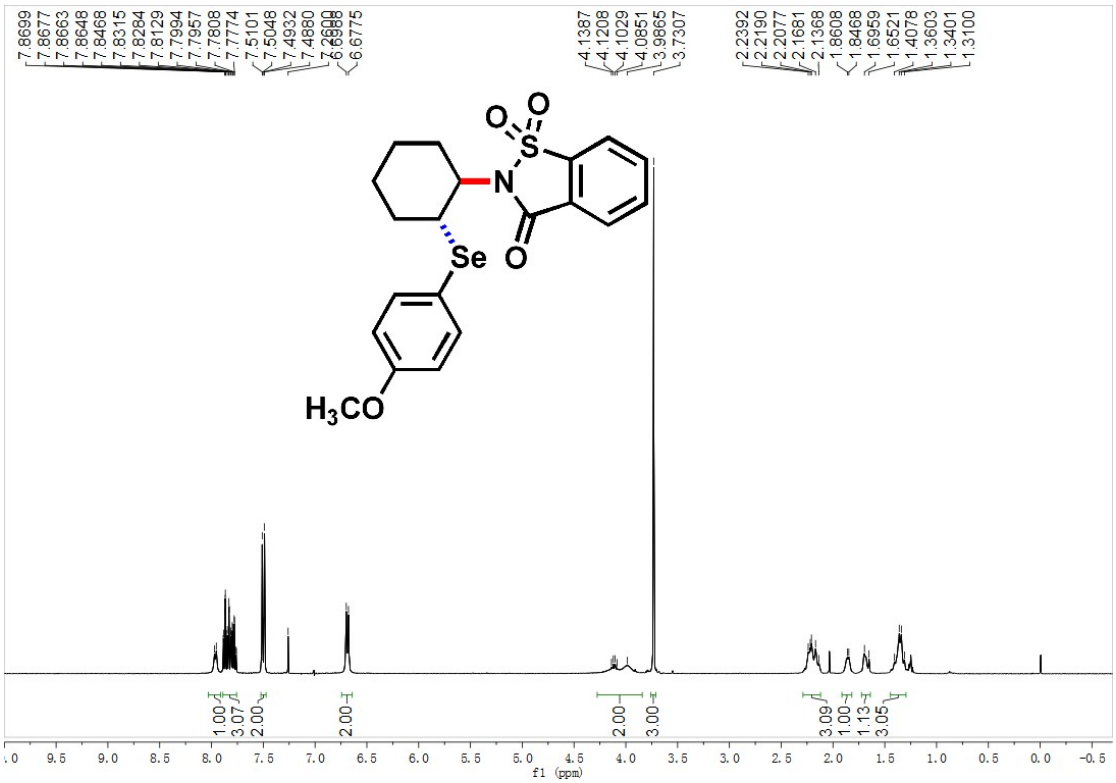
^{1}H NMR of product 5a′ in $CDCl_3$ (400 MHz)



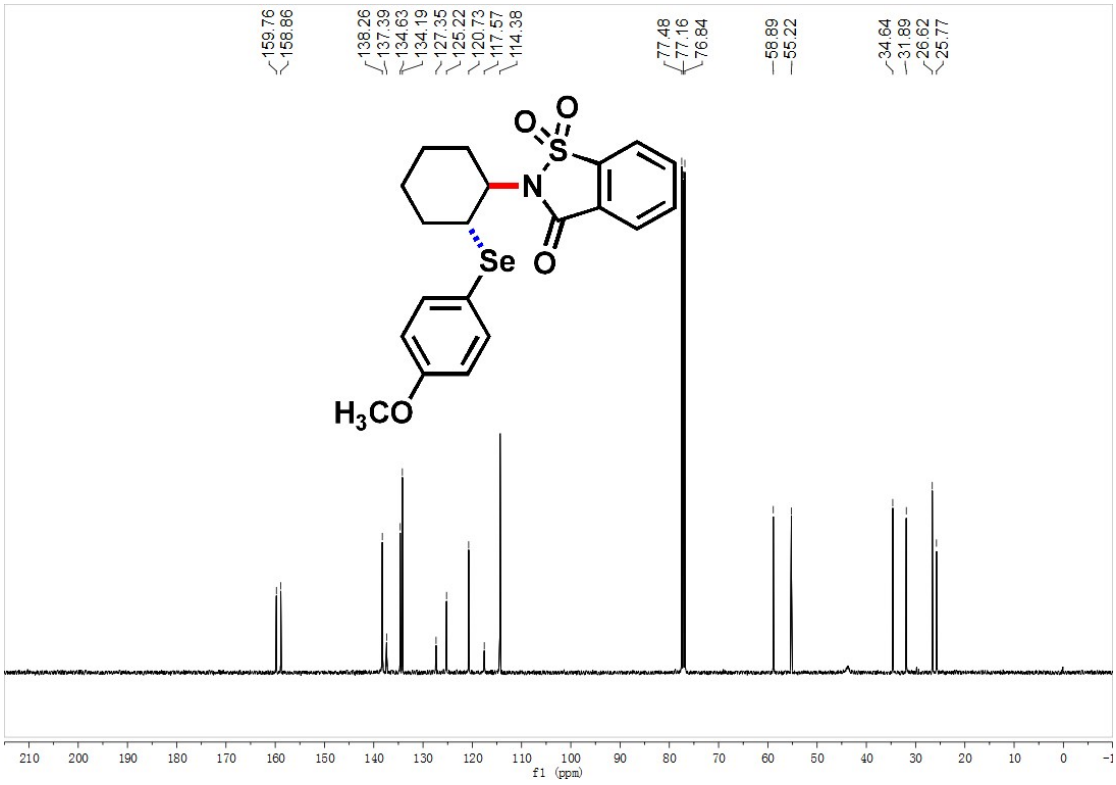
^{13}C NMR of product 5a′ in $CDCl_3$ (100 MHz)



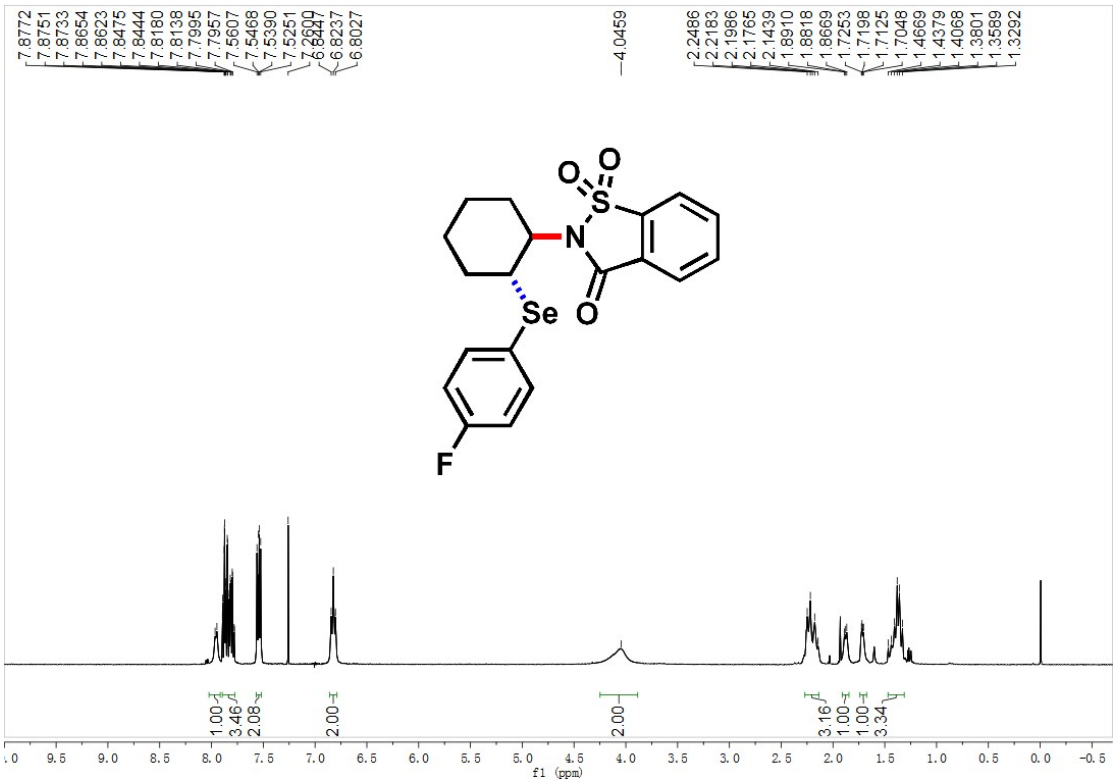
^{1}H NMR of product 5b′ in $CDCl_3$ (400 MHz)



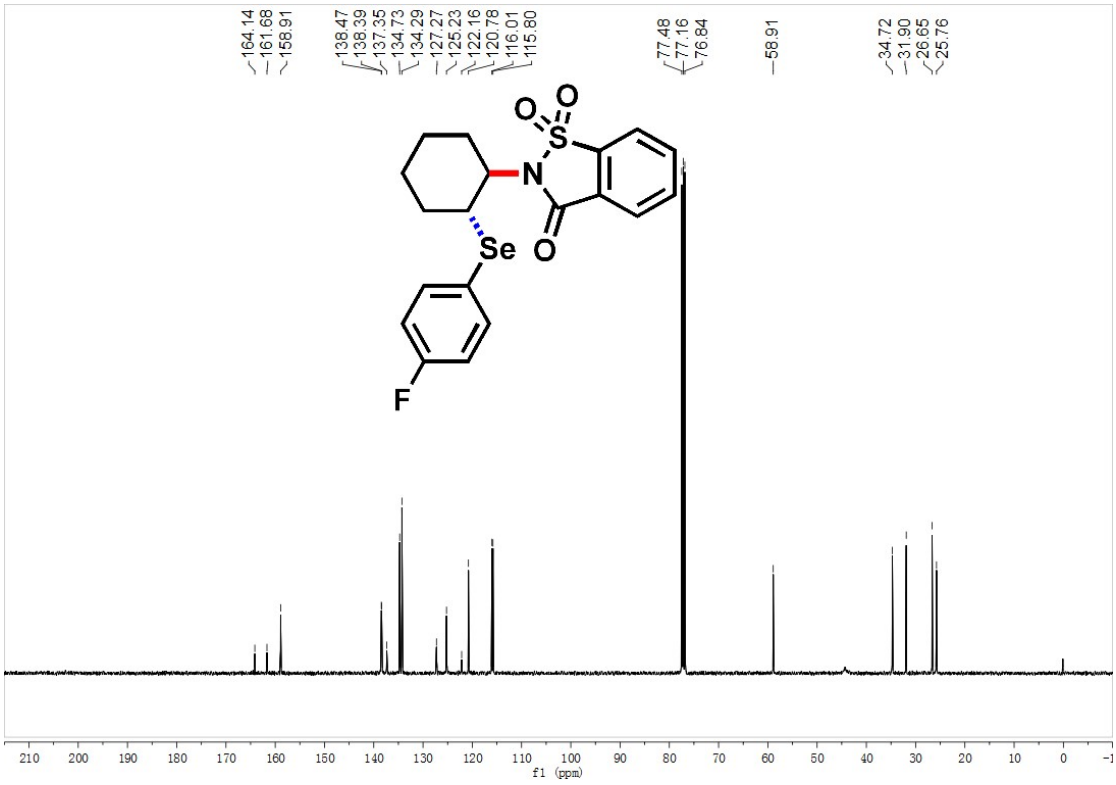
^{13}C NMR of product 5b′ in $CDCl_3$ (100 MHz)



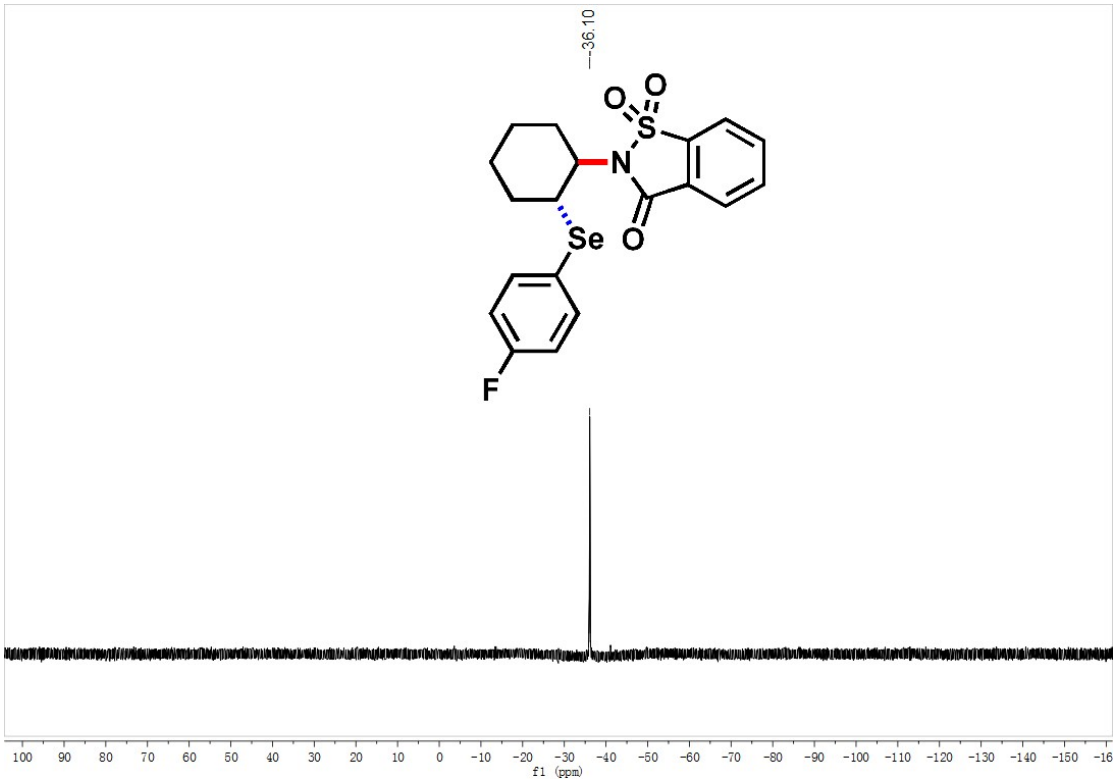
^{1}H NMR of product 5c′ in $CDCl_3$ (400 MHz)



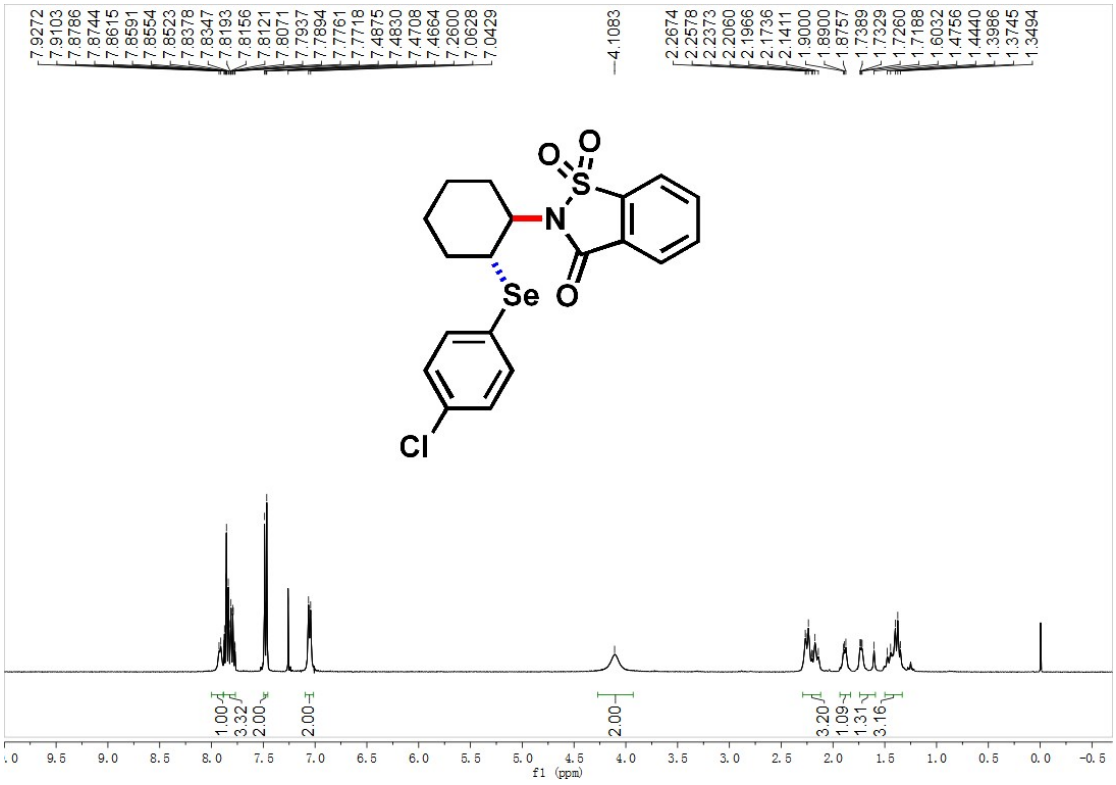
^{13}C NMR of product 5c′ in $CDCl_3$ (100 MHz)



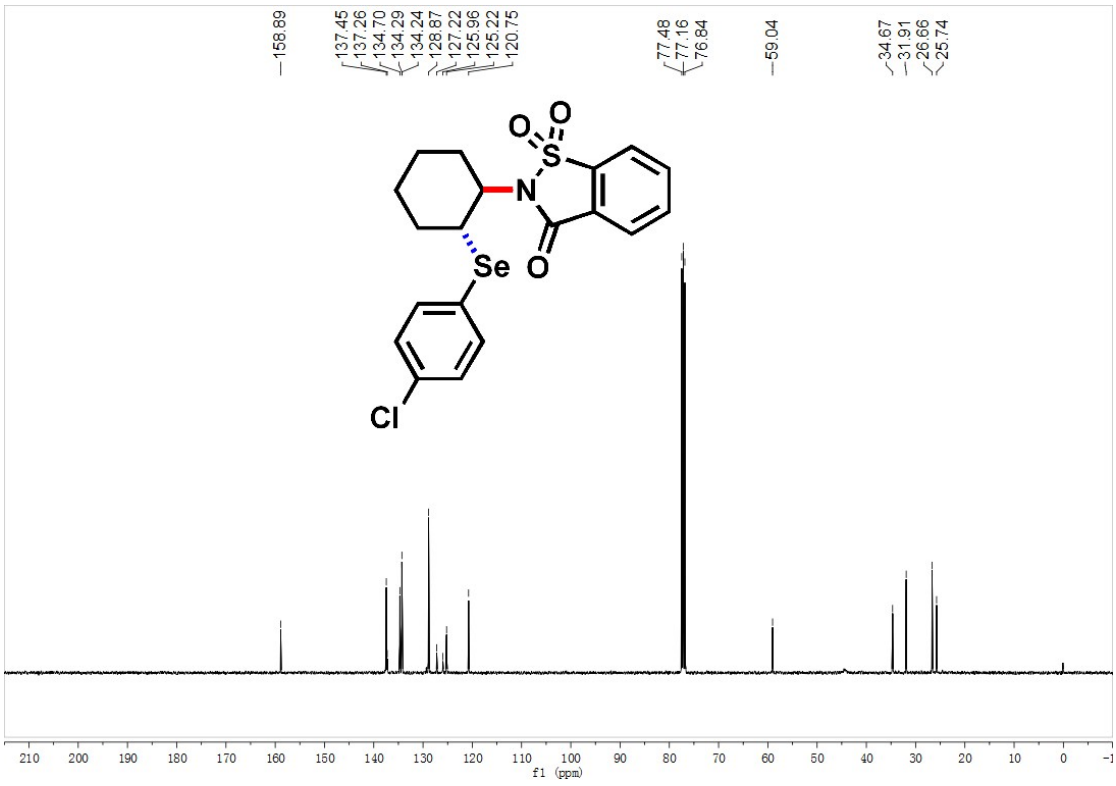
^{19}F NMR of product 5c′ in $CDCl_3$ (376 MHz)



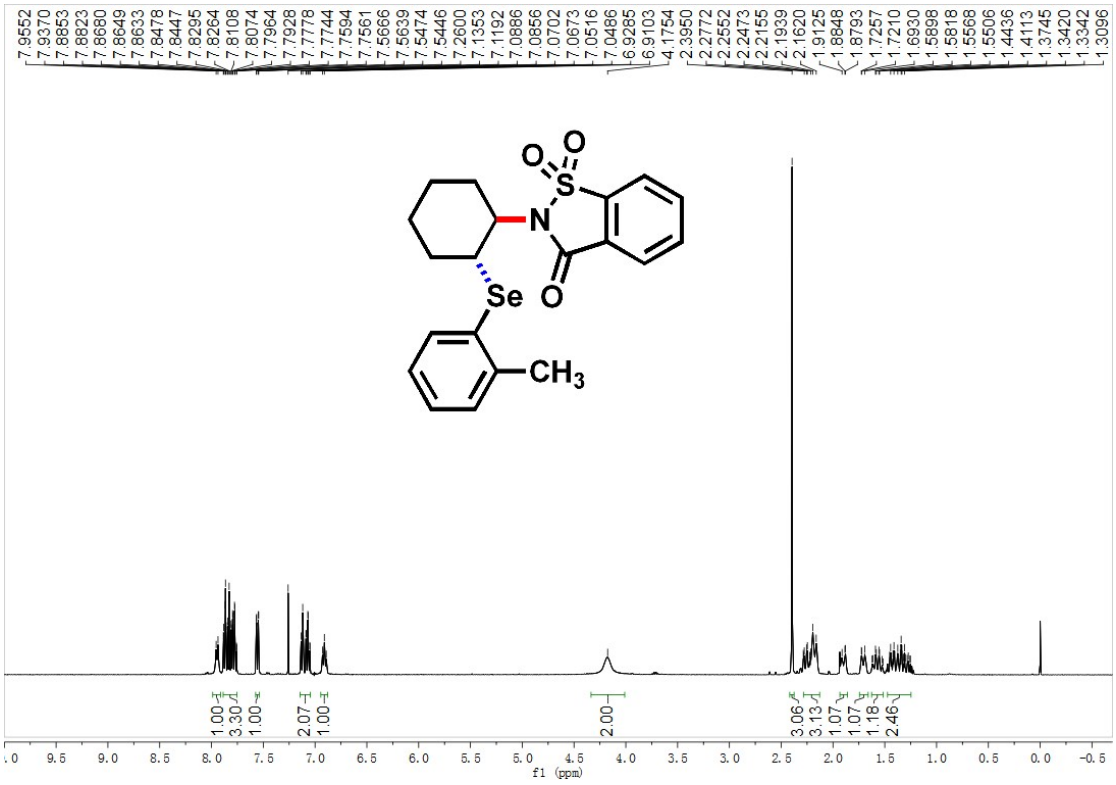
^{1}H NMR of product 5d′ in $CDCl_3$ (400 MHz)



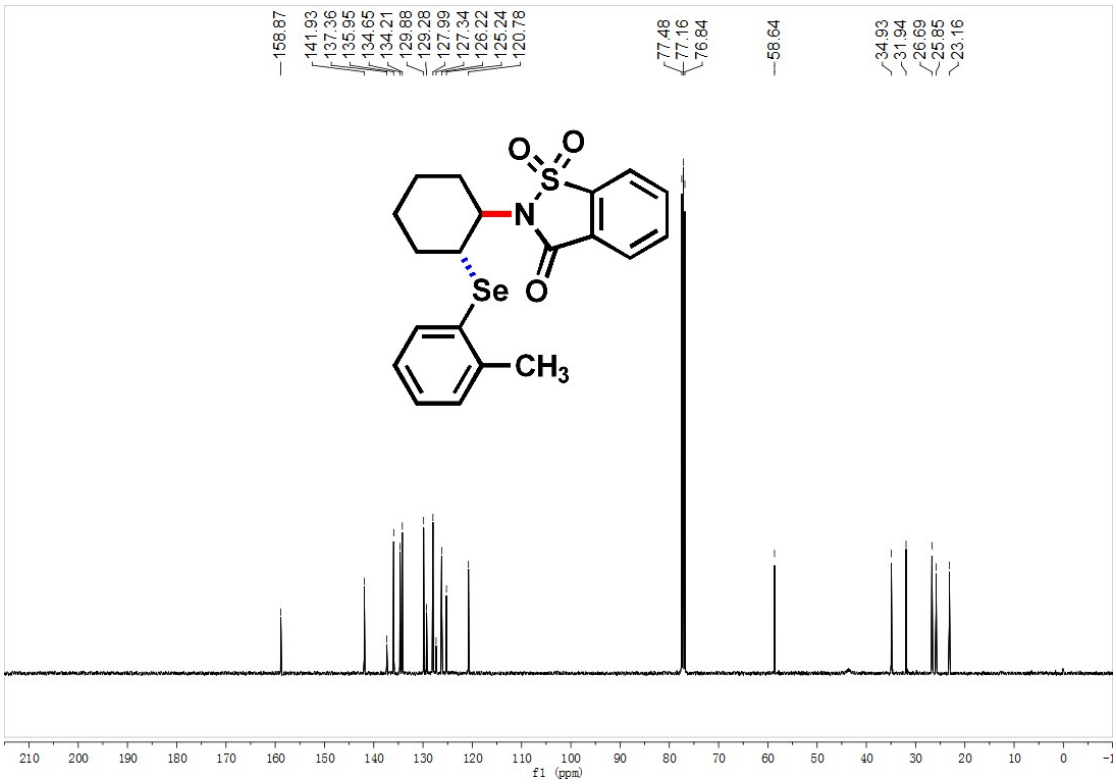
^{13}C NMR of product 5d′ in $CDCl_3$ (100 MHz)



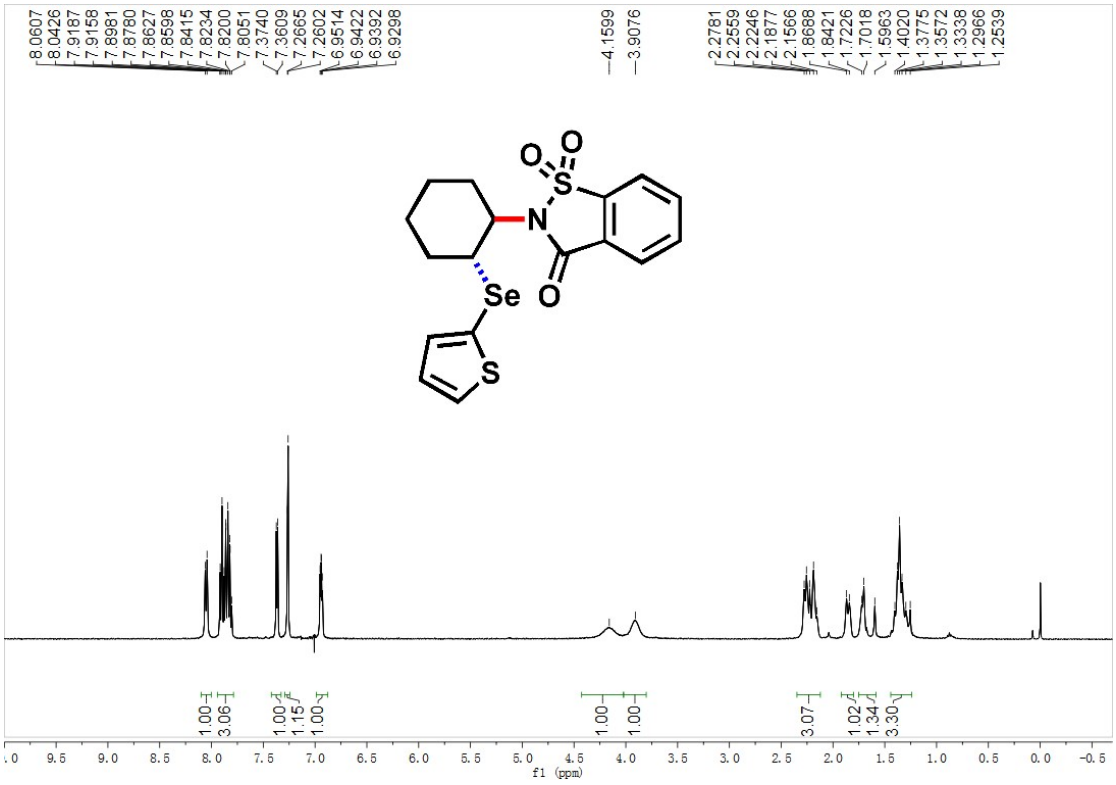
^{1}H NMR of product 5e′ in $CDCl_3$ (400 MHz)



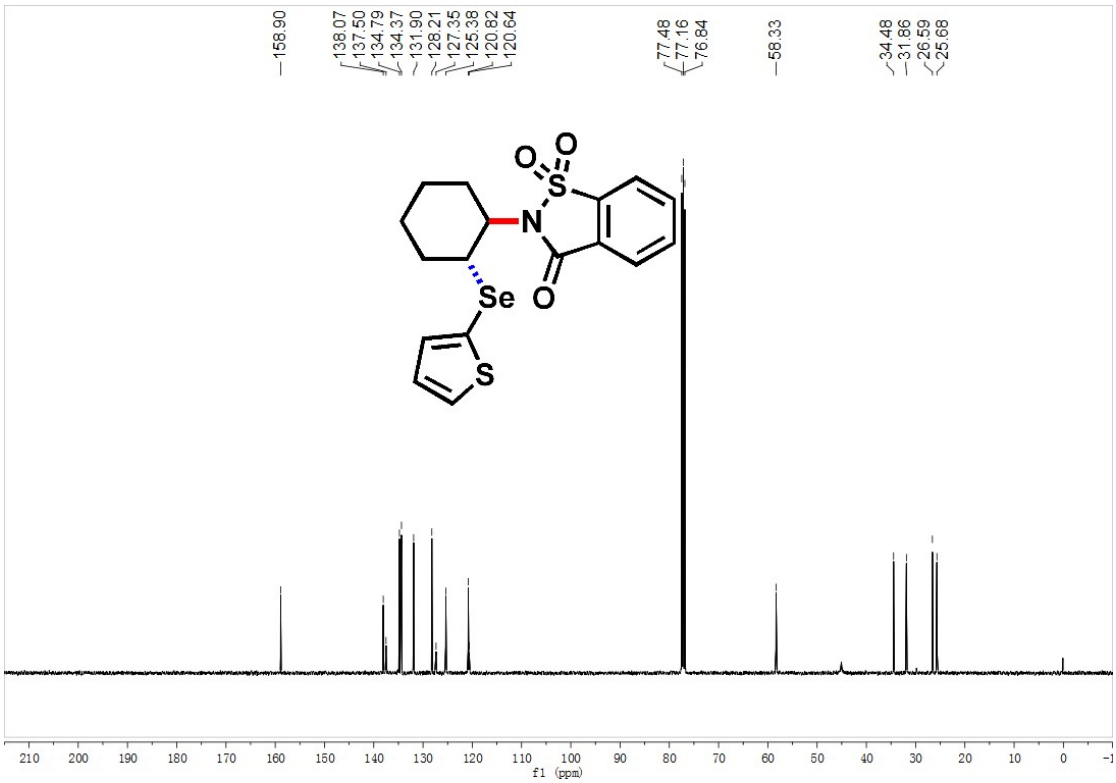
^{13}C NMR of product 5e′ in $CDCl_3$ (100 MHz)



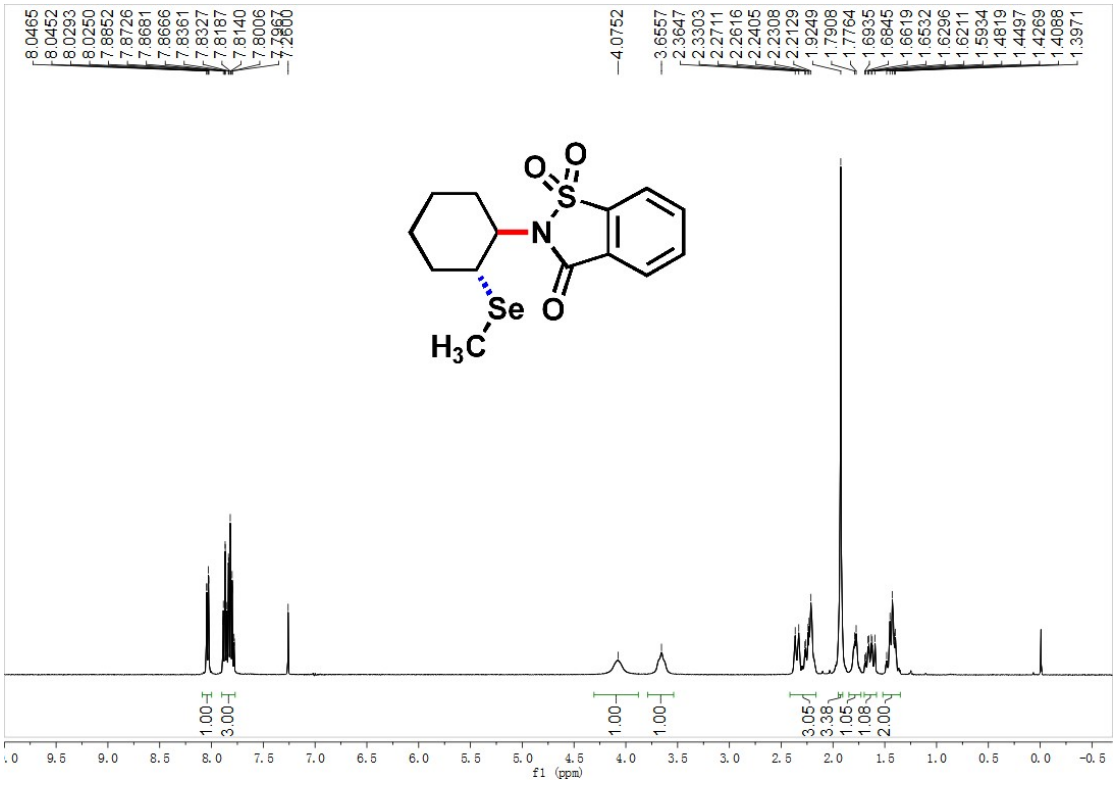
^{1}H NMR of product 5f′ in $CDCl_3$ (400 MHz)



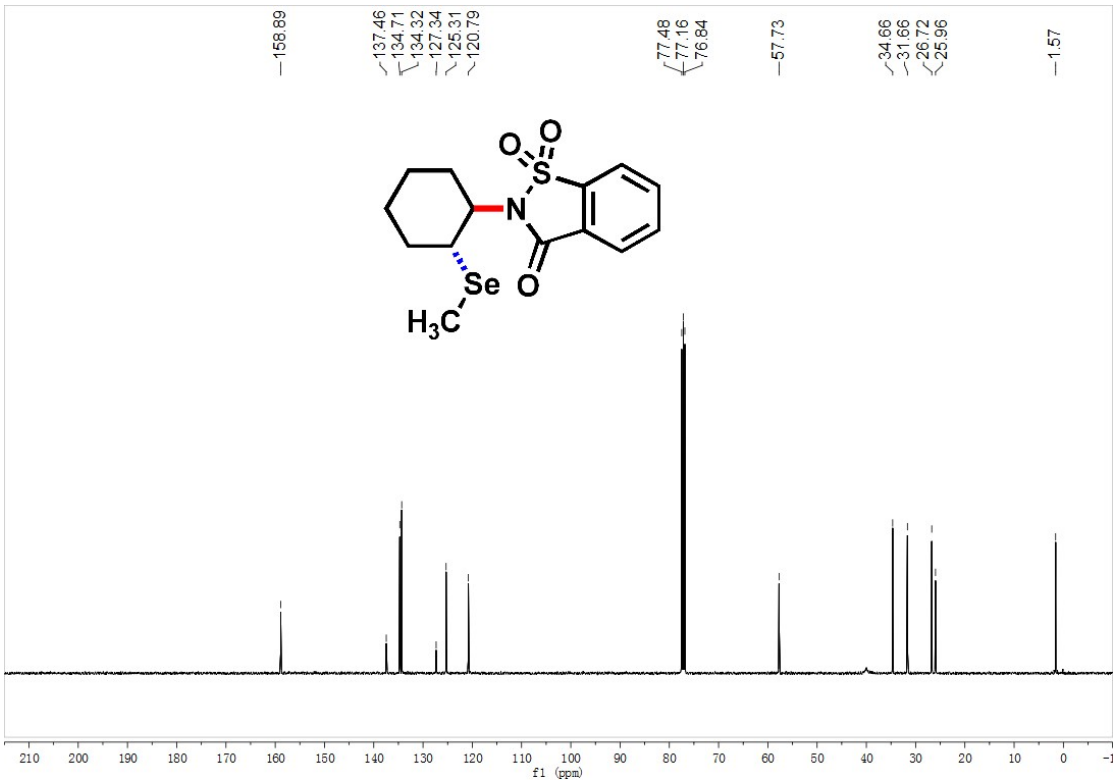
^{13}C NMR of product 5f′ in $CDCl_3$ (100 MHz)



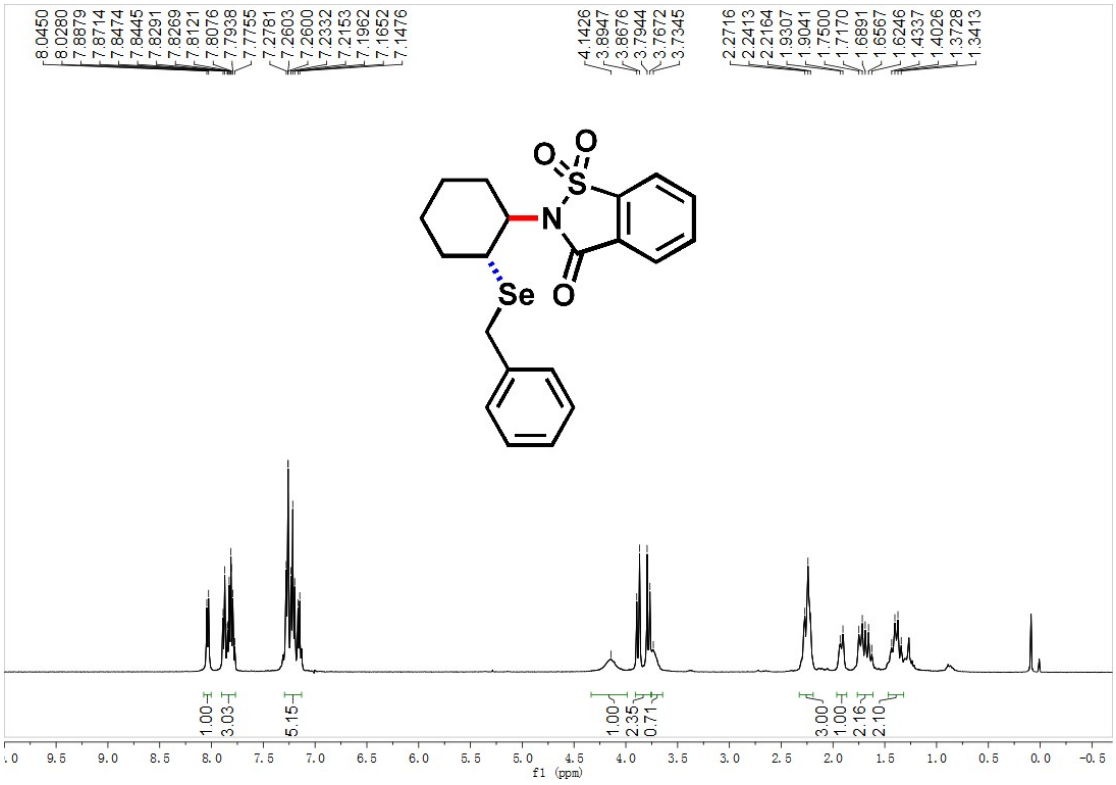
^{1}H NMR of product 5g′ in $CDCl_3$ (400 MHz)



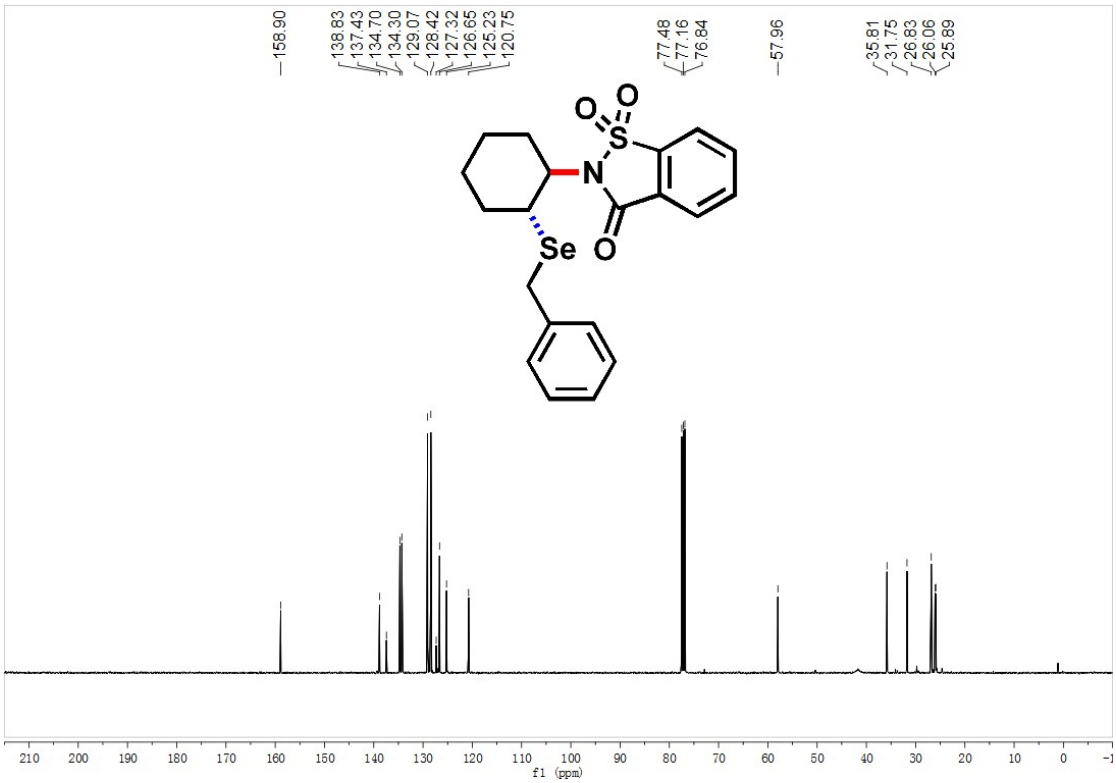
^{13}C NMR of product 5g′ in $CDCl_3$ (100 MHz)



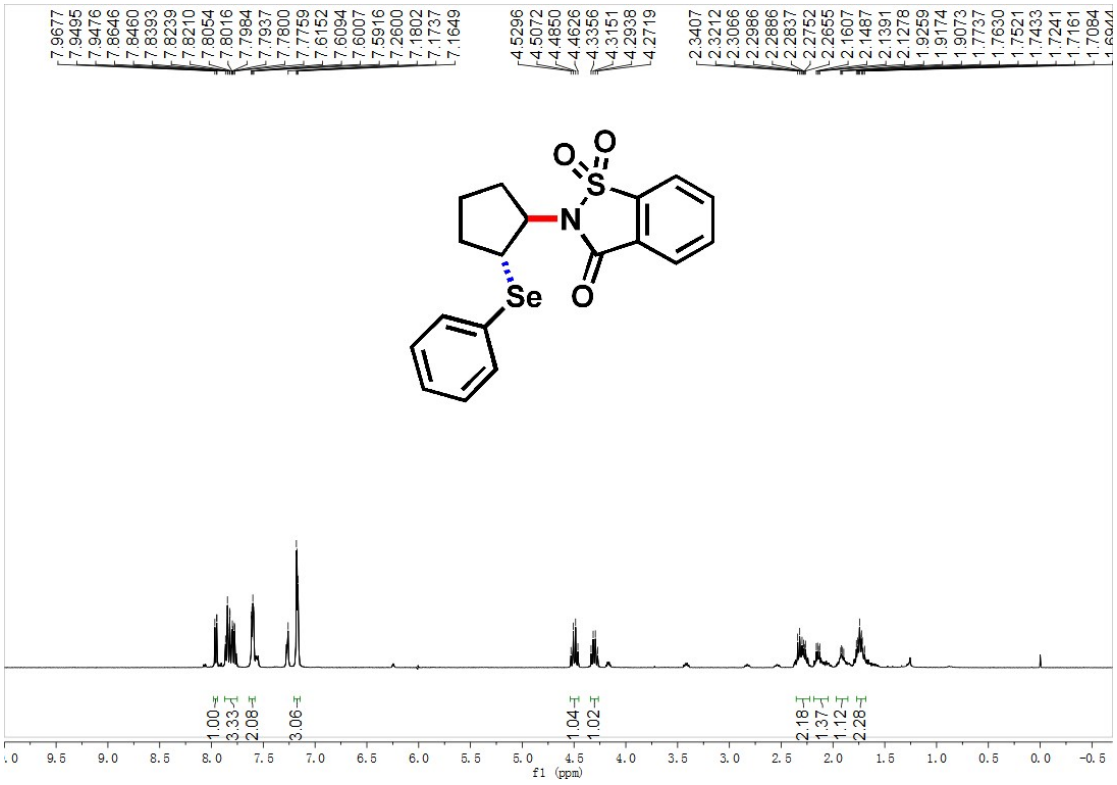
^{1}H NMR of product 5h′ in $CDCl_3$ (400 MHz)



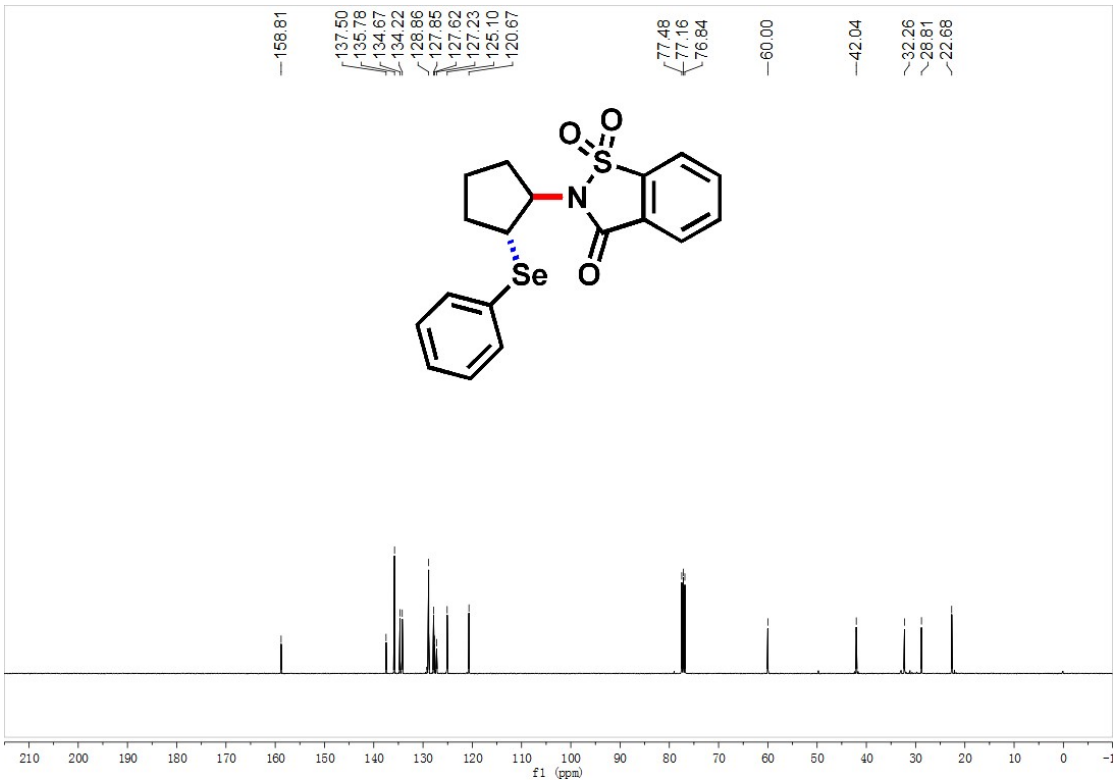
^{13}C NMR of product 5h′ in $CDCl_3$ (100 MHz)



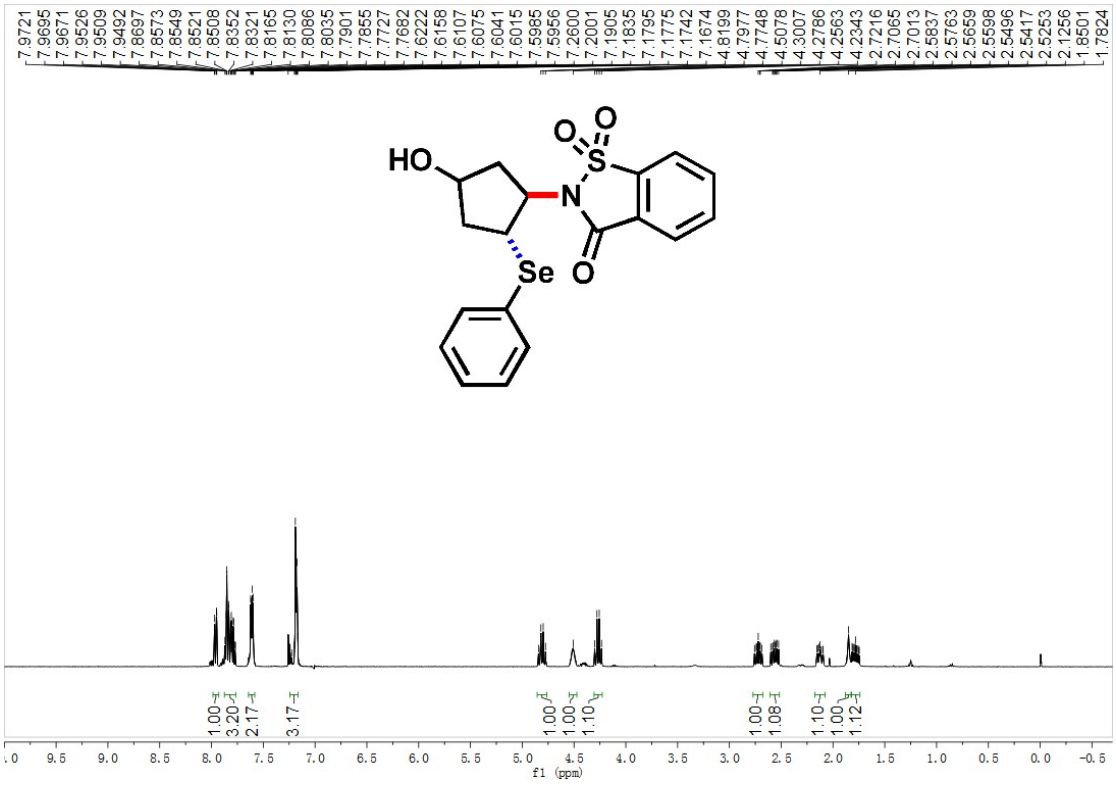
^{1}H NMR of product 5i′ in $CDCl_3$ (400 MHz)



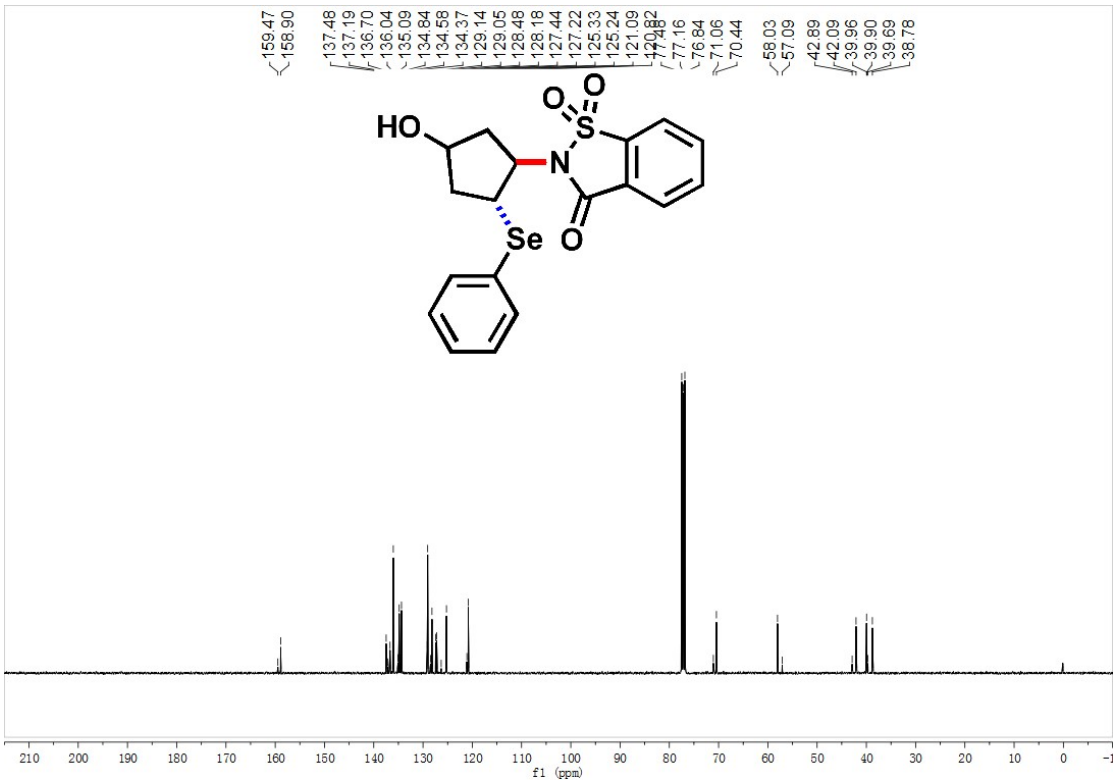
^{13}C NMR of product 5i′ in $CDCl_3$ (100 MHz)



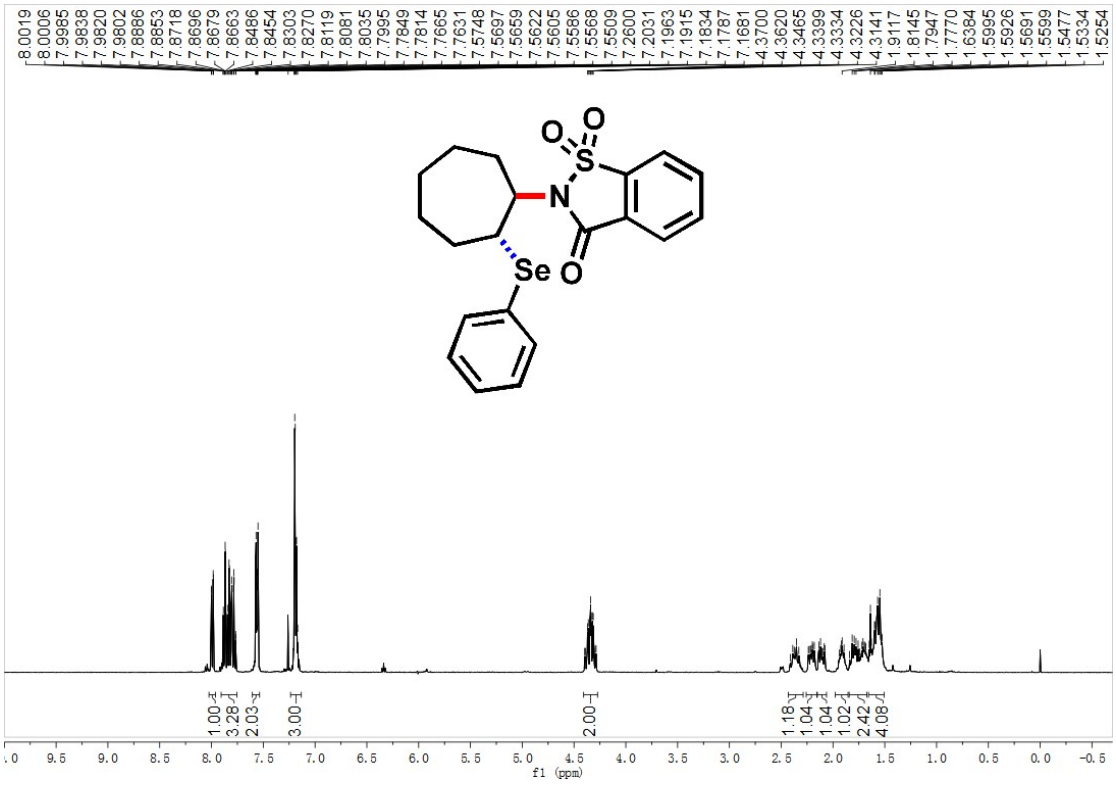
^{1}H NMR of product 5j′ in $CDCl_3$ (400 MHz)



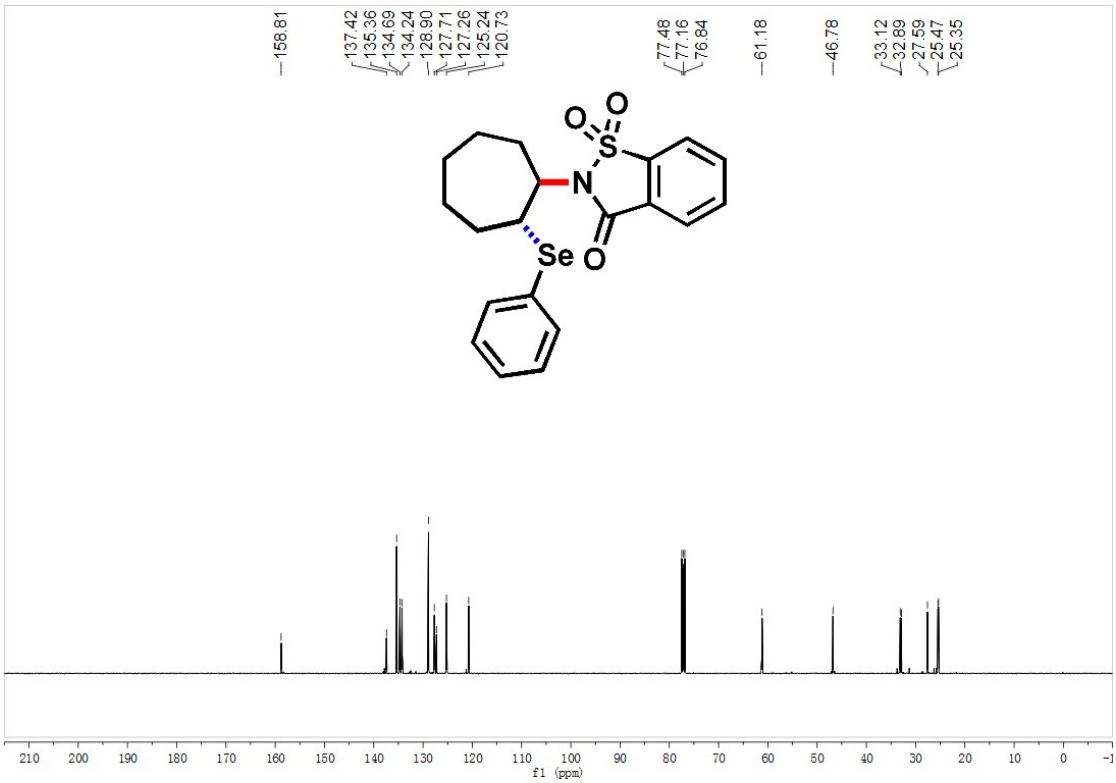
^{13}C NMR of product 5j′ in $CDCl_3$ (100 MHz)



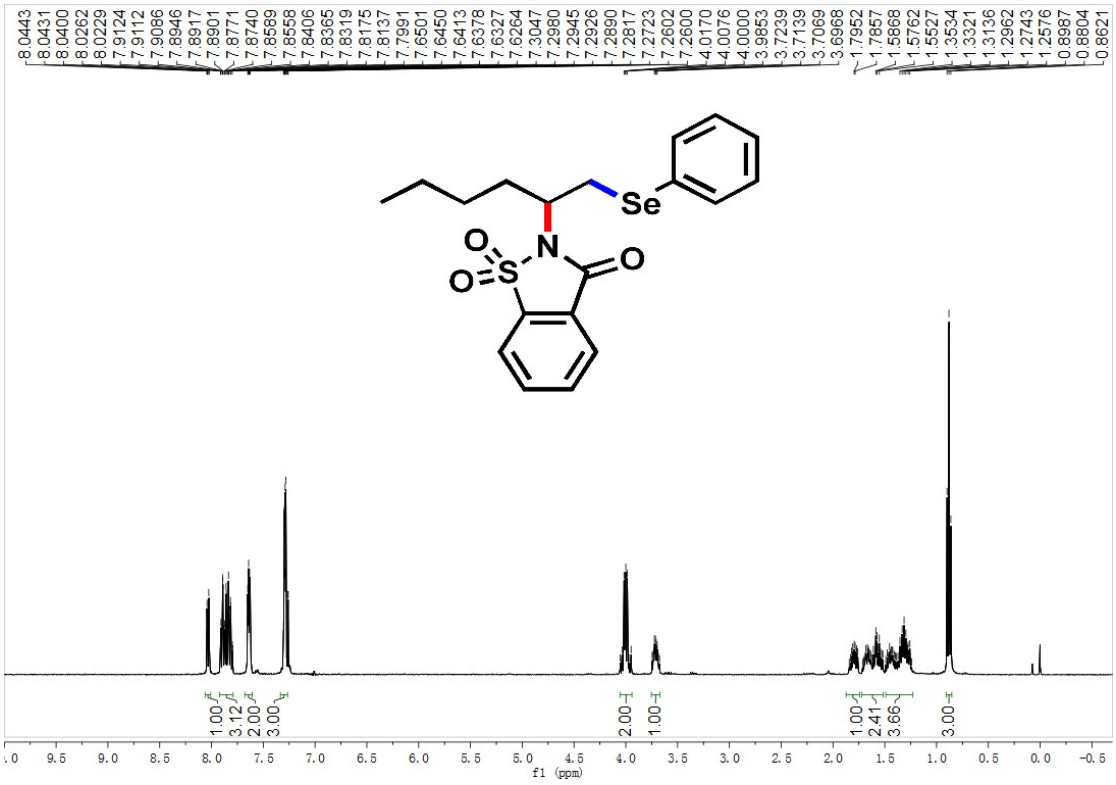
^{1}H NMR of product 5k′ in $CDCl_3$ (400 MHz)



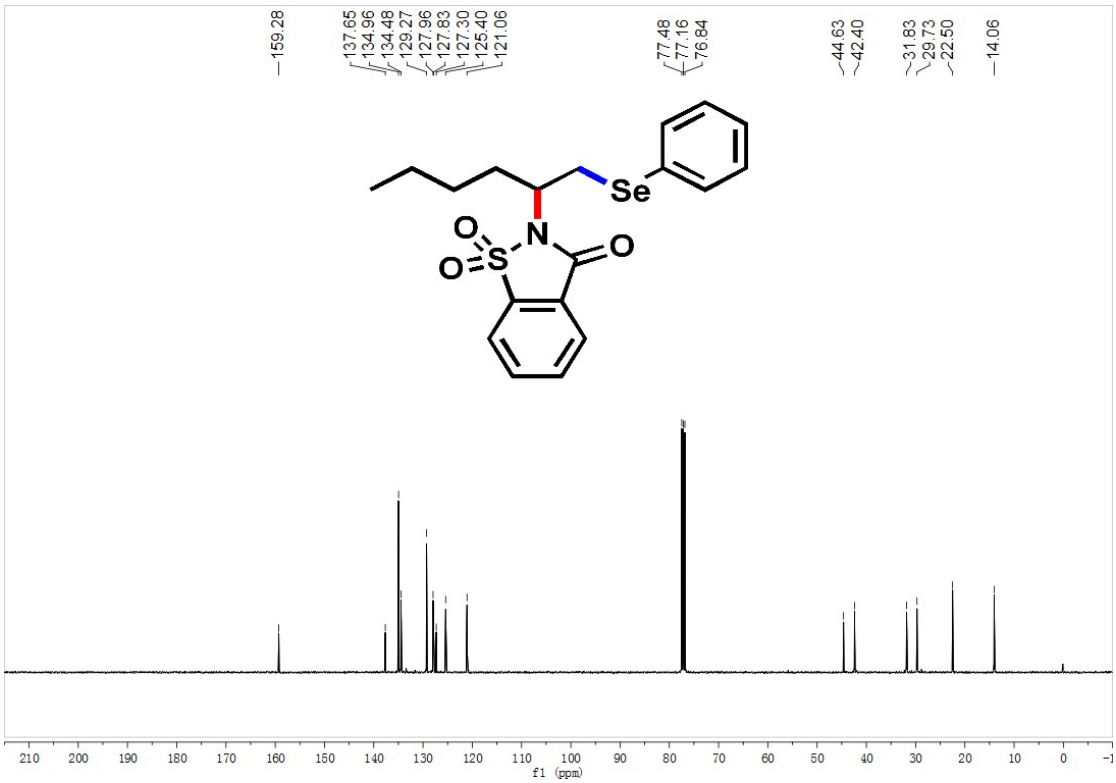
^{13}C NMR of product 5k′ in $CDCl_3$ (100 MHz)



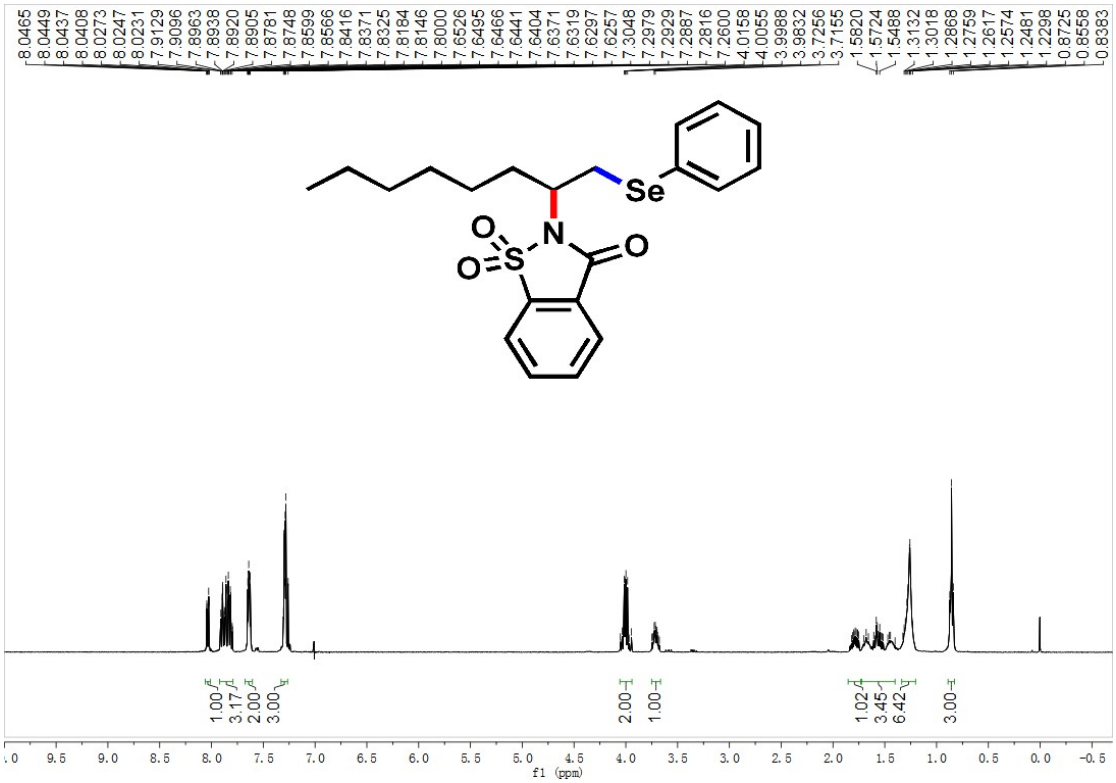
^{1}H NMR of product 5l′ in $CDCl_3$ (400 MHz)



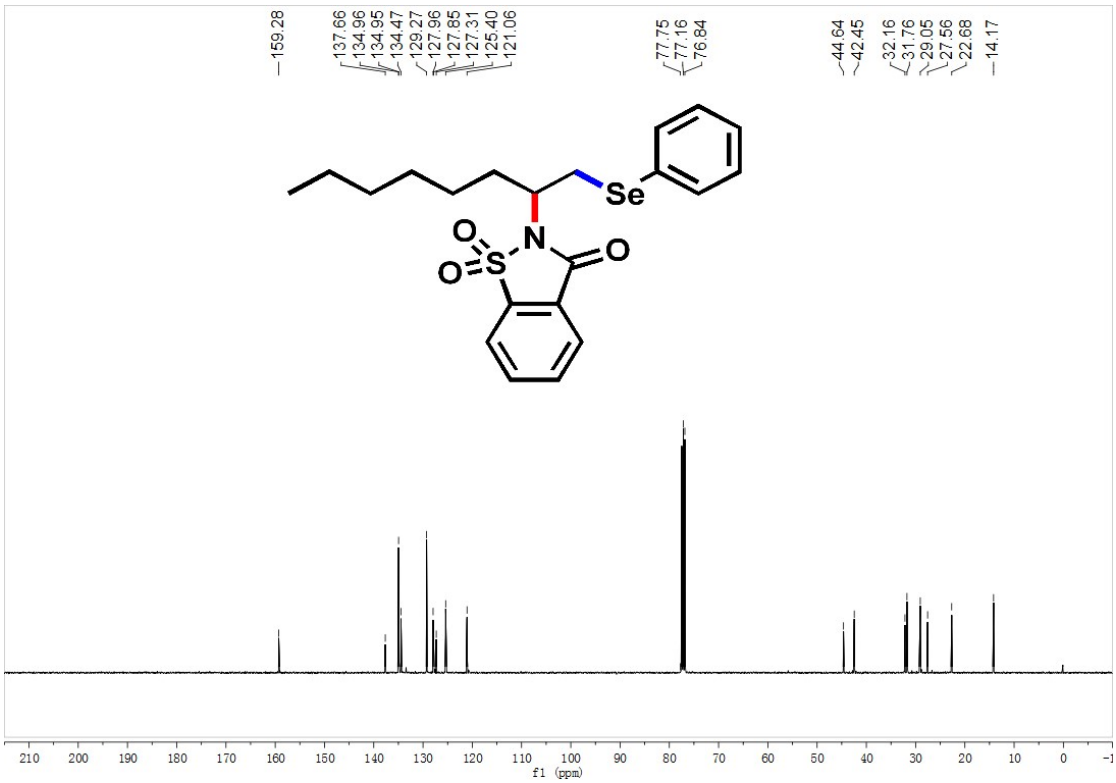
^{13}C NMR of product 5l′ in $CDCl_3$ (100 MHz)



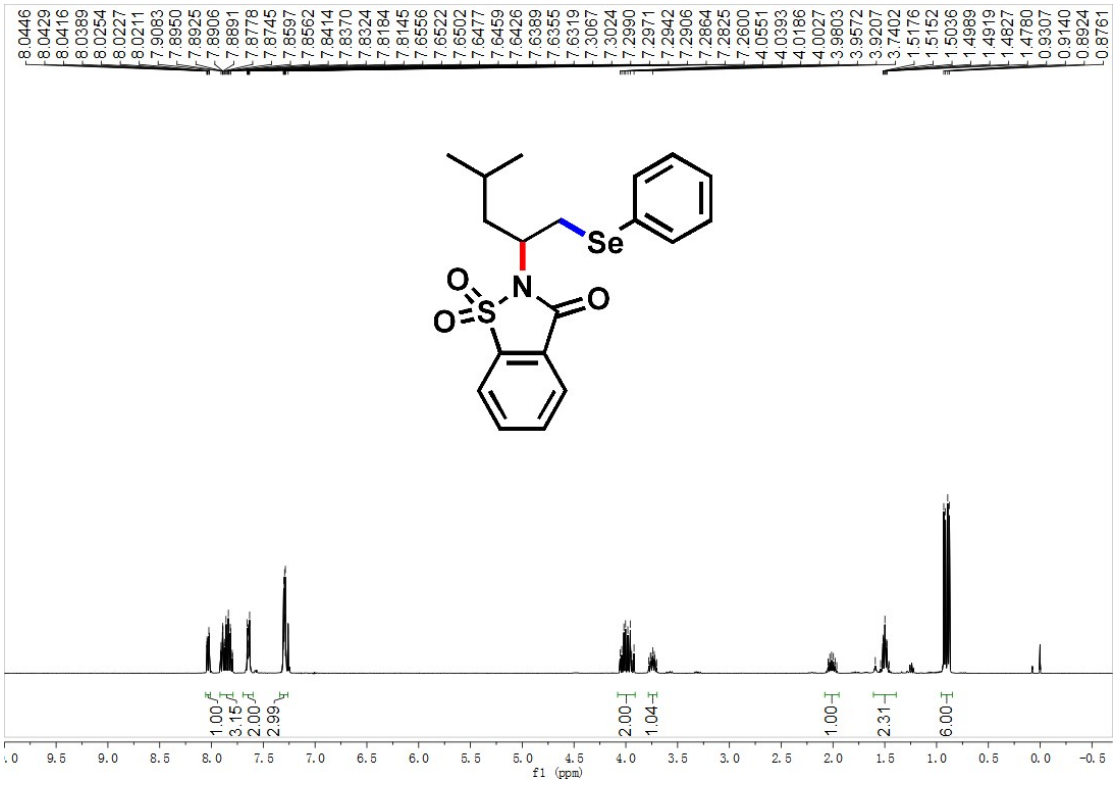
^{1}H NMR of product 5m′ in $CDCl_3$ (400 MHz)



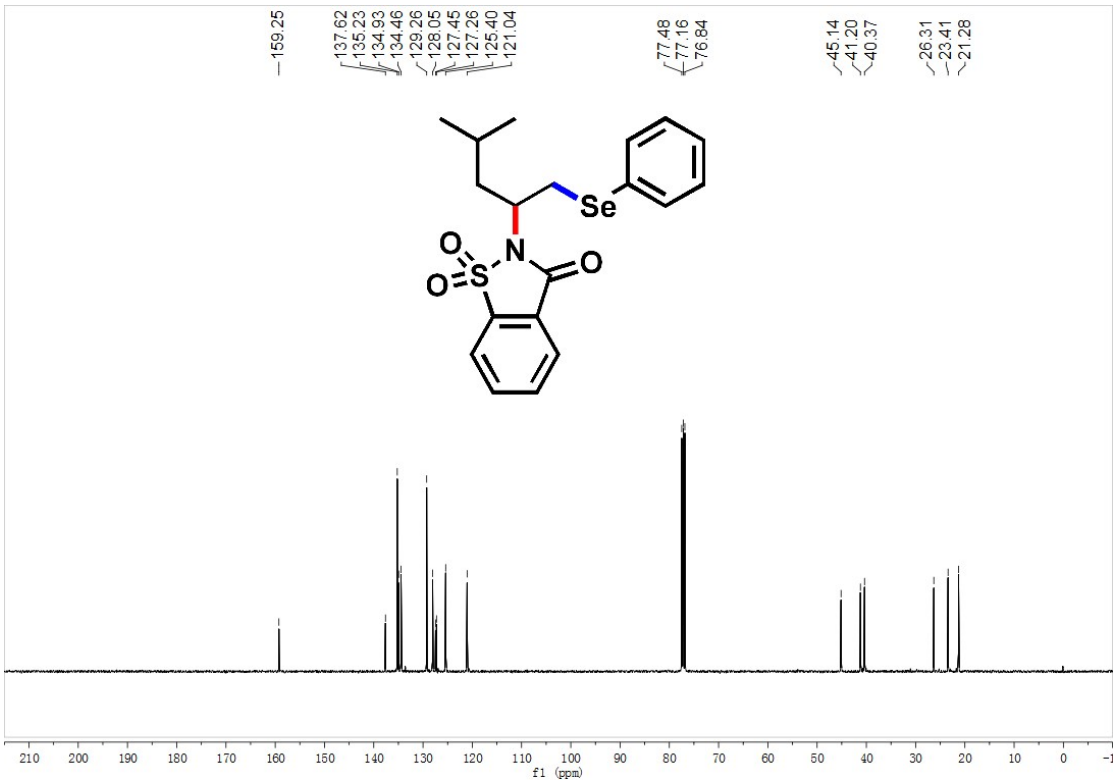
^{13}C NMR of product 5m′ in $CDCl_3$ (100 MHz)



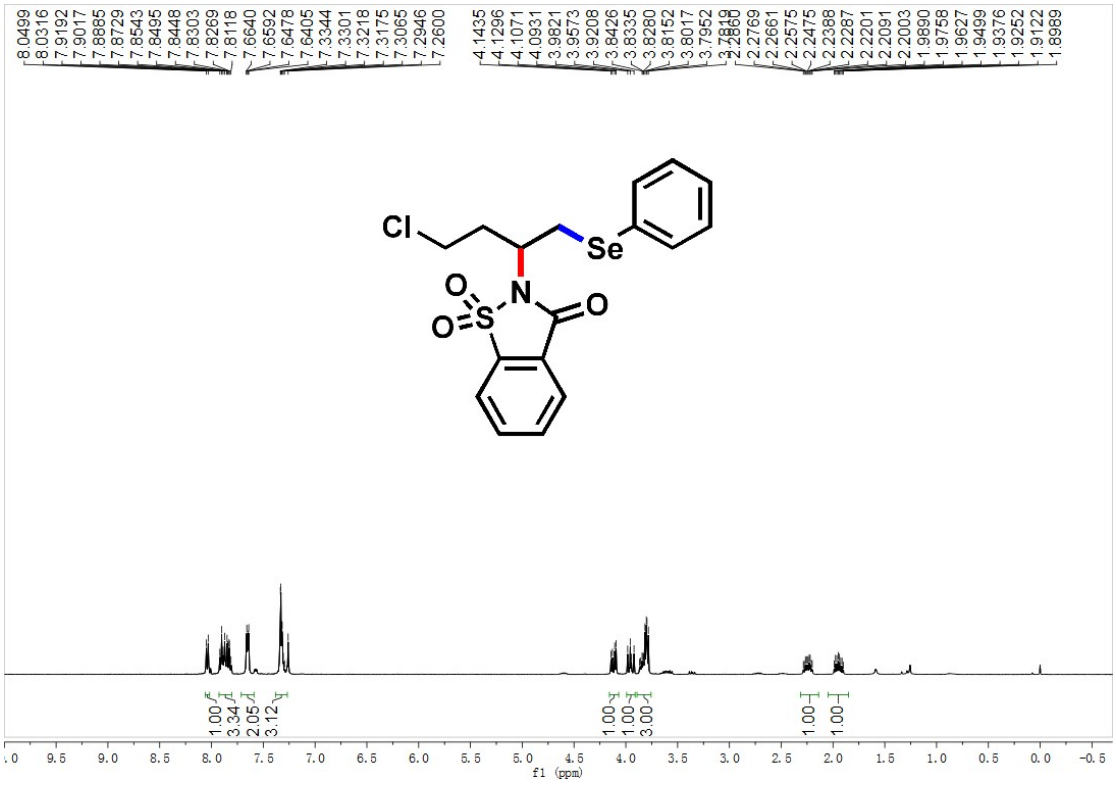
^{1}H NMR of product 5n′ in $CDCl_3$ (400 MHz)



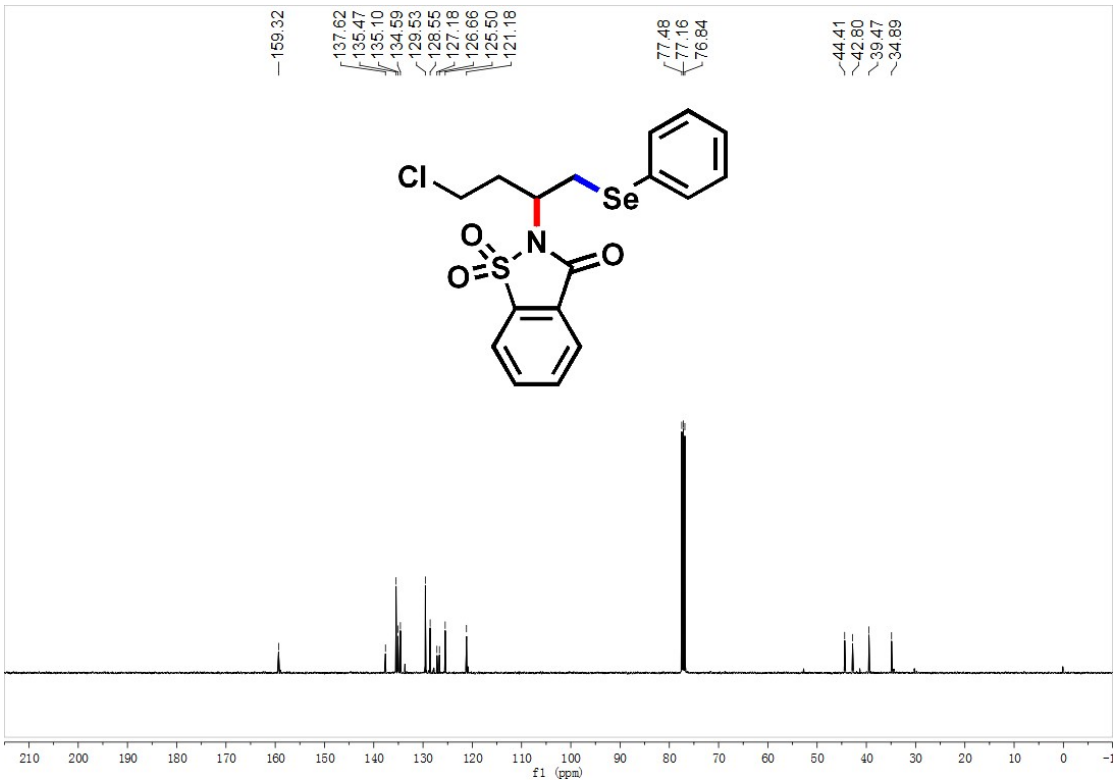
^{13}C NMR of product 5n′ in $CDCl_3$ (100 MHz)



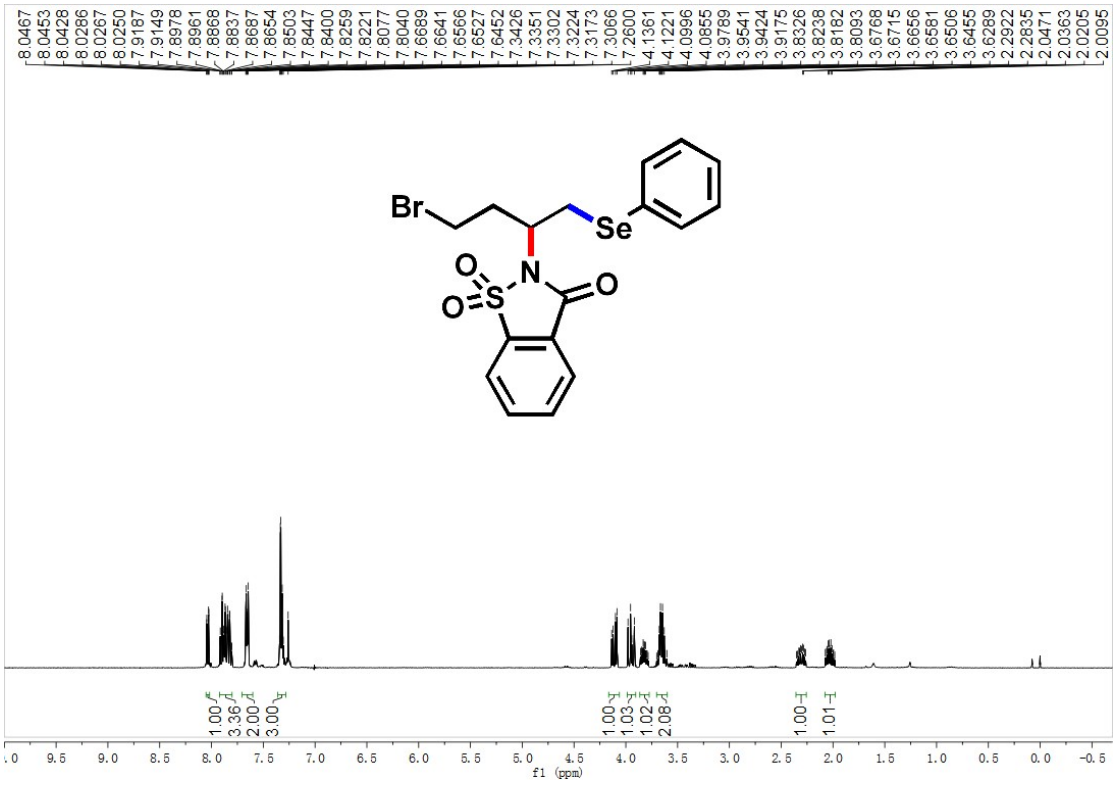
^{1}H NMR of product 5o′ in $CDCl_3$ (400 MHz)



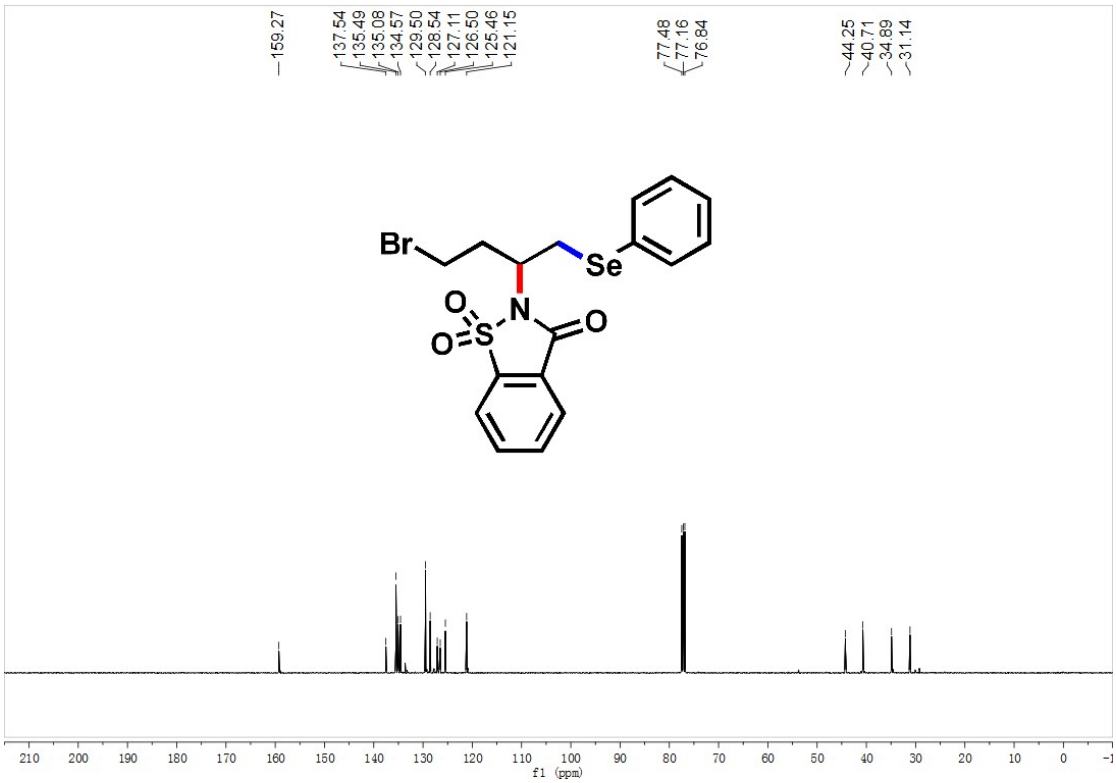
^{13}C NMR of product 5o′ in $CDCl_3$ (100 MHz)



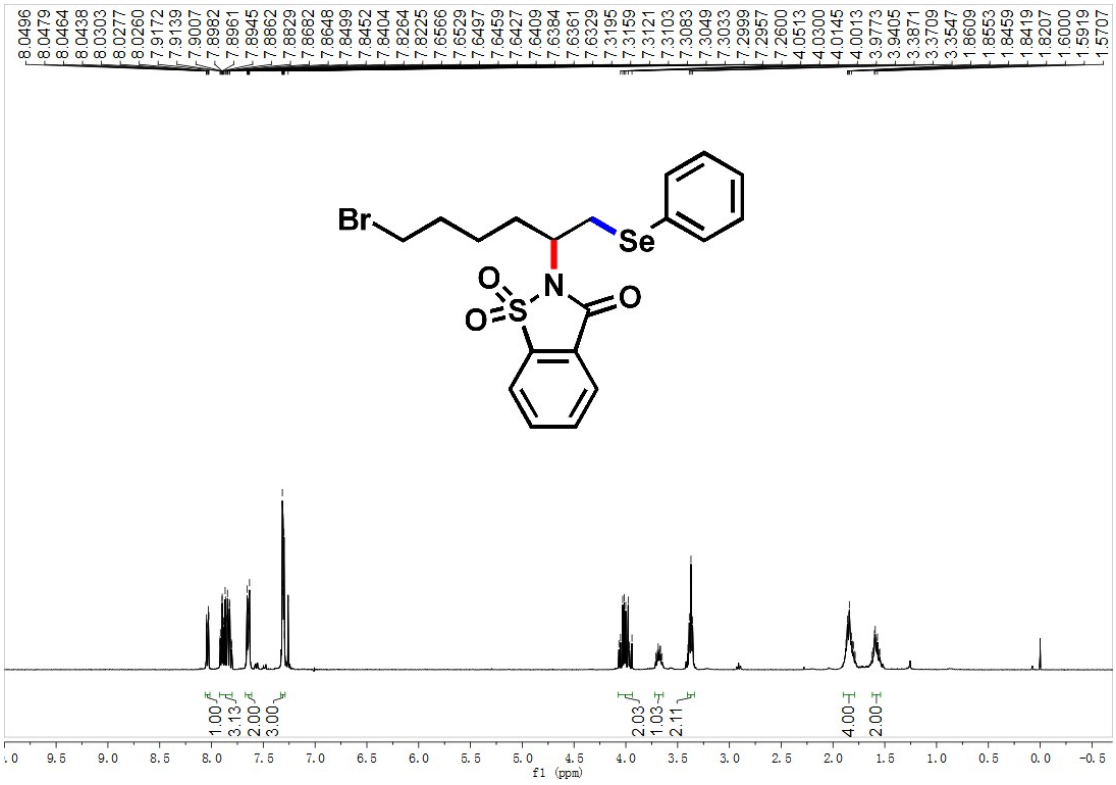
^{1}H NMR of product 5p′ in $CDCl_3$ (400 MHz)



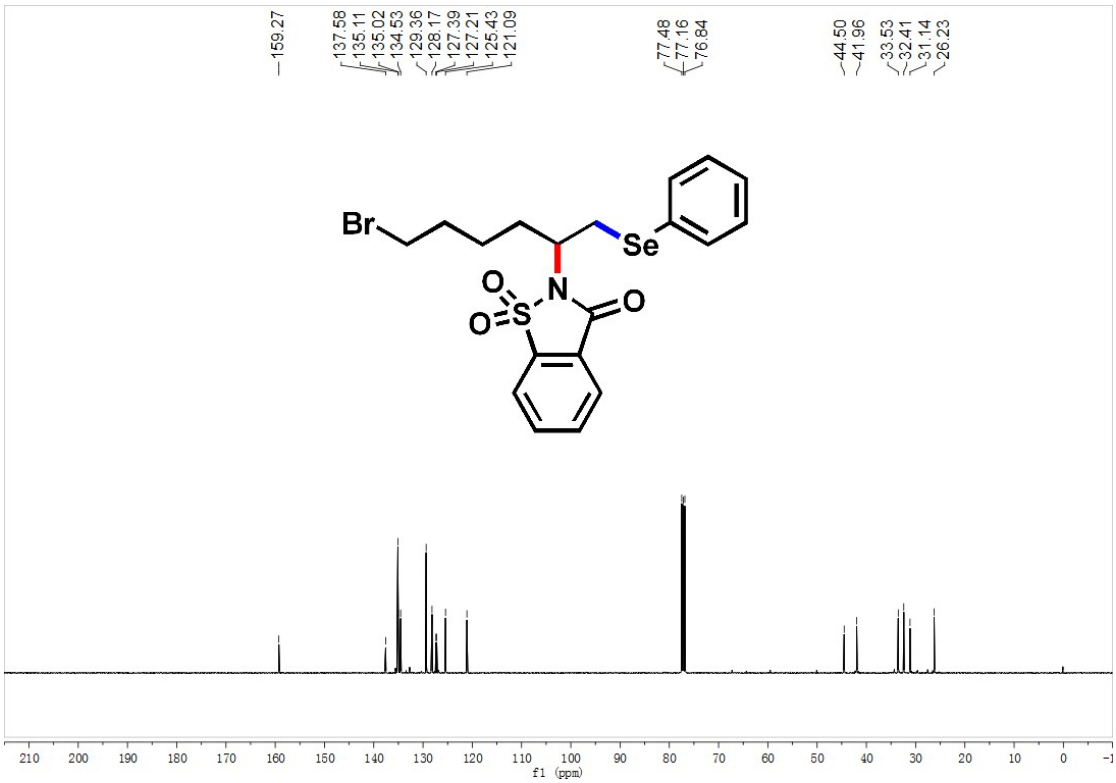
^{13}C NMR of product 5p′ in $CDCl_3$ (100 MHz)



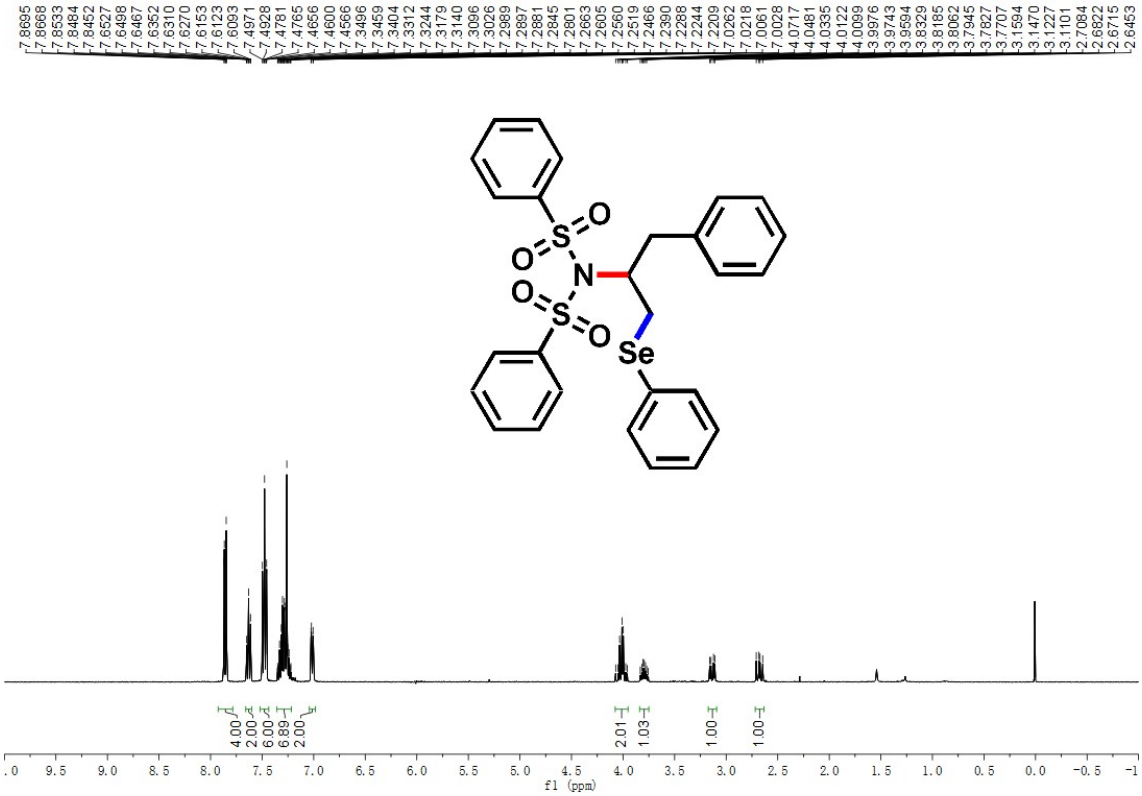
^{1}H NMR of product 5q′ in $CDCl_3$ (400 MHz)



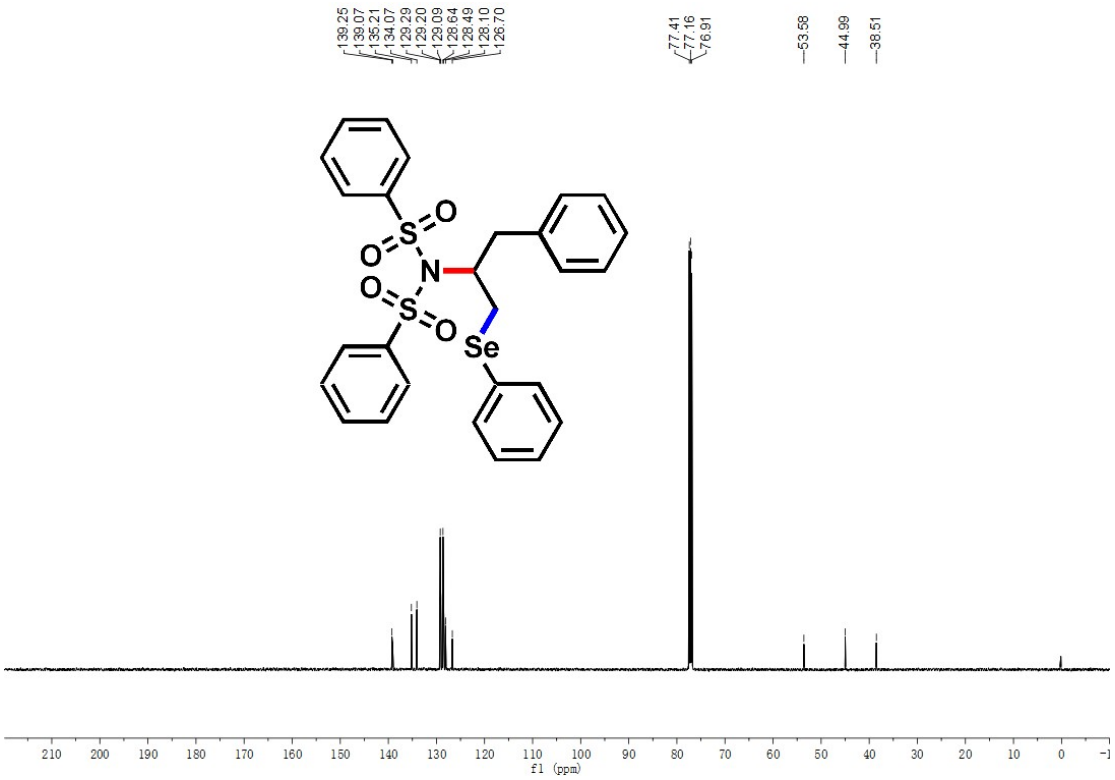
^{13}C NMR of product 5q′ in $CDCl_3$ (100 MHz)



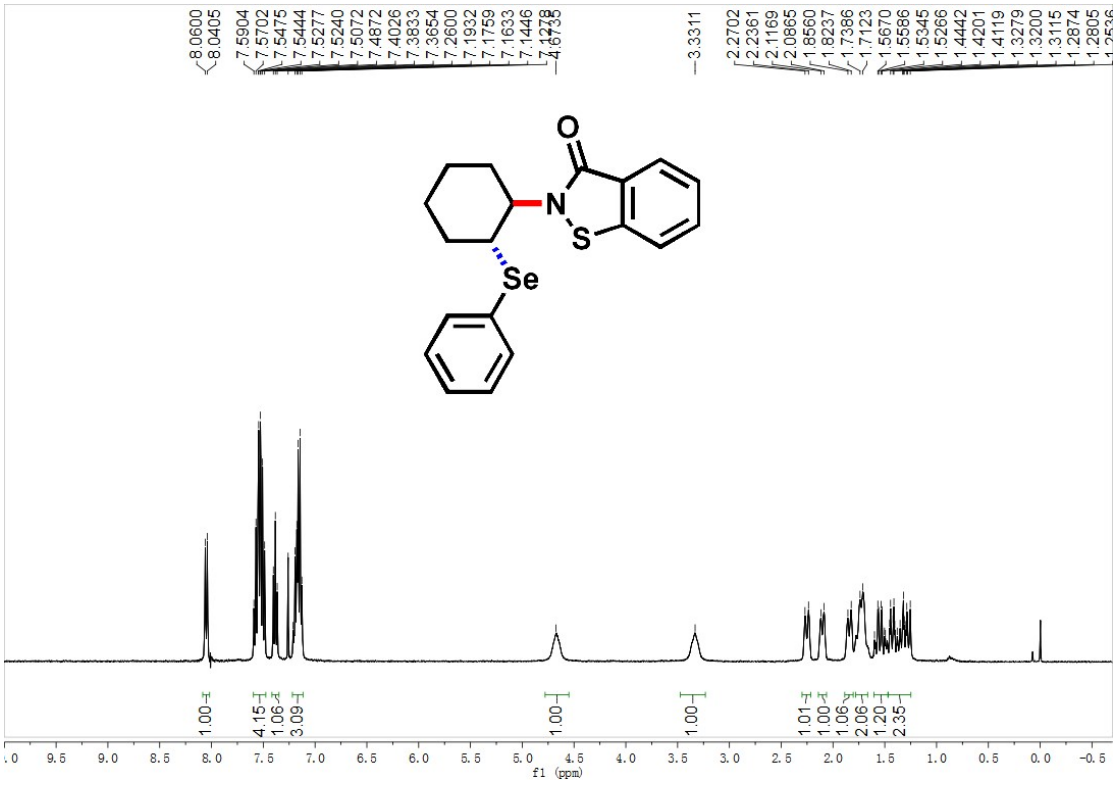
^{1}H NMR of product 5r′ in $CDCl_3$ (400 MHz)



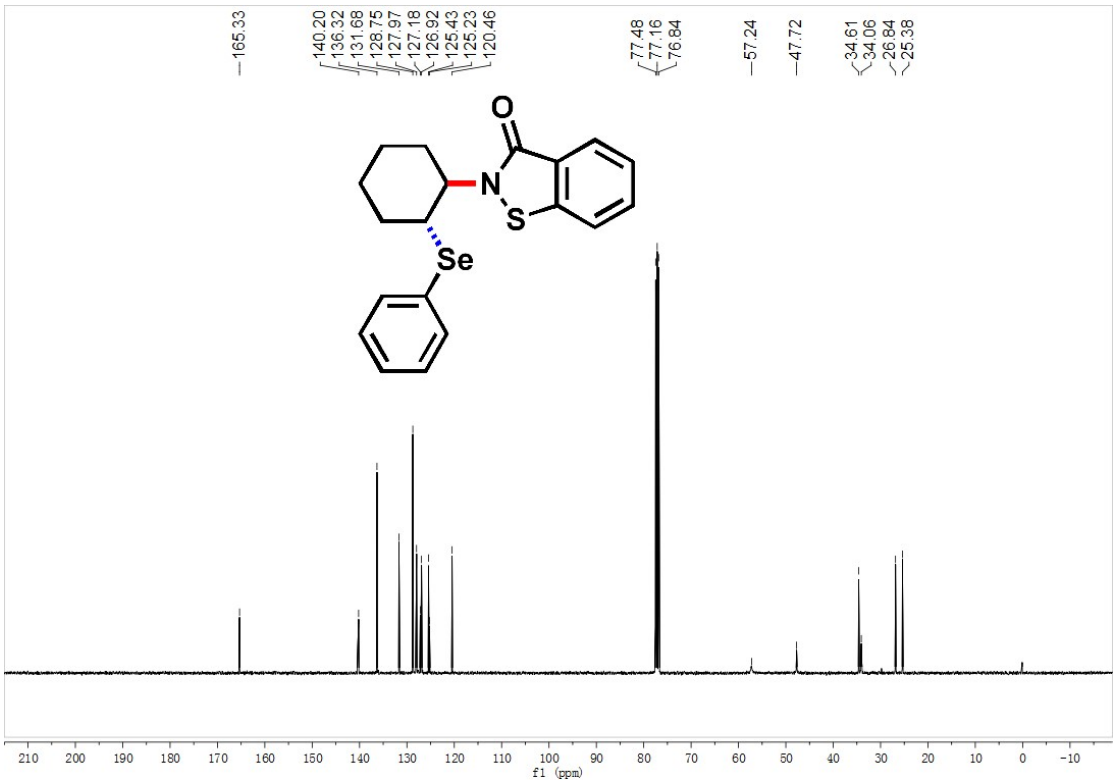
^{13}C NMR of product 5r′ in $CDCl_3$ (100 MHz)



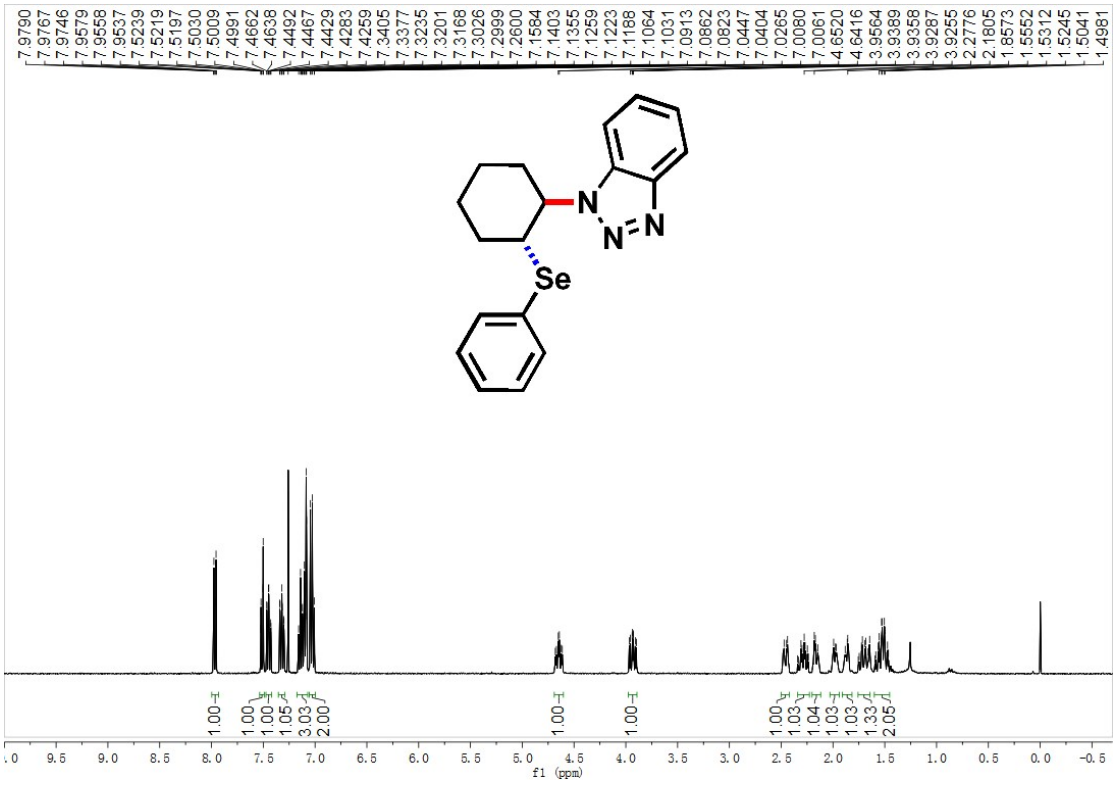
^{1}H NMR of product 5s′ in $CDCl_3$ (400 MHz)



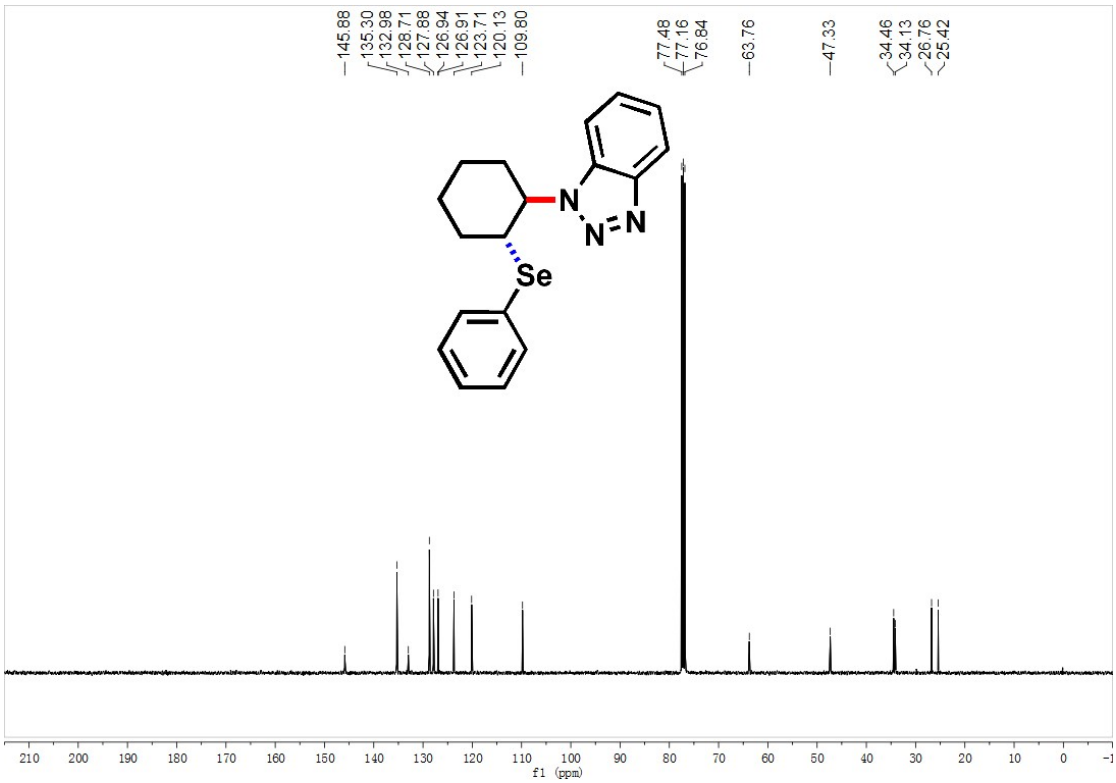
^{13}C NMR of product 5s′ in $CDCl_3$ (100 MHz)



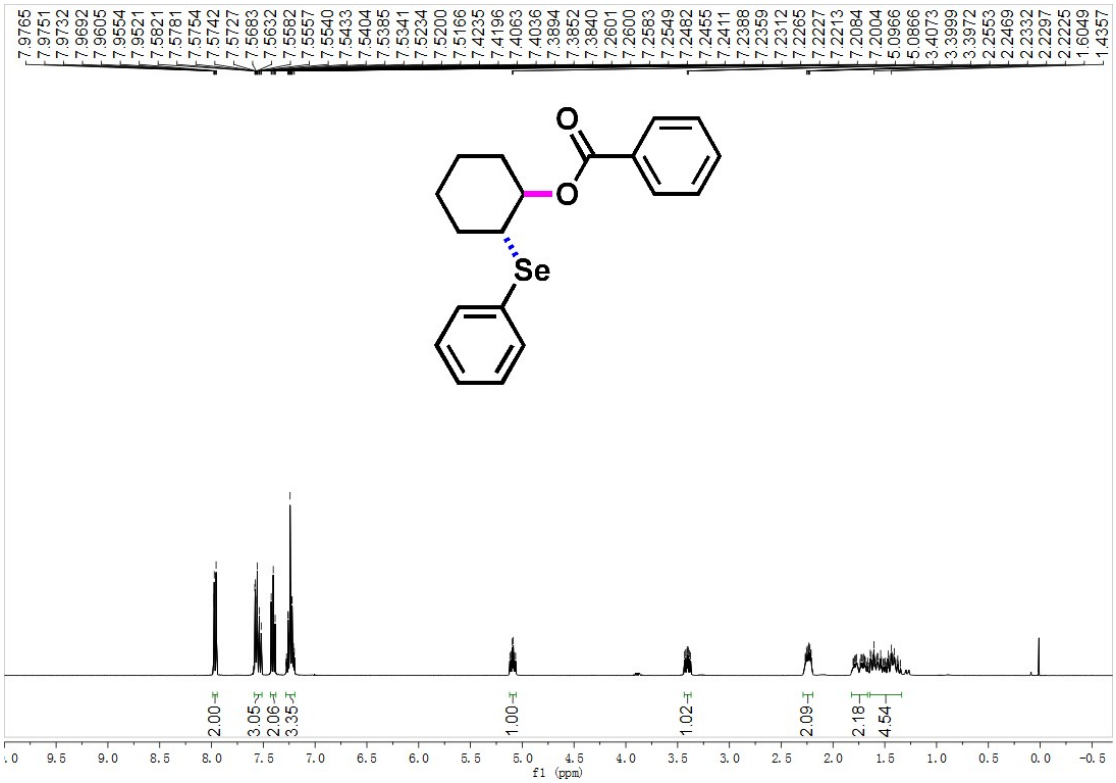
^{1}H NMR of product 5t′ in $CDCl_3$ (400 MHz)



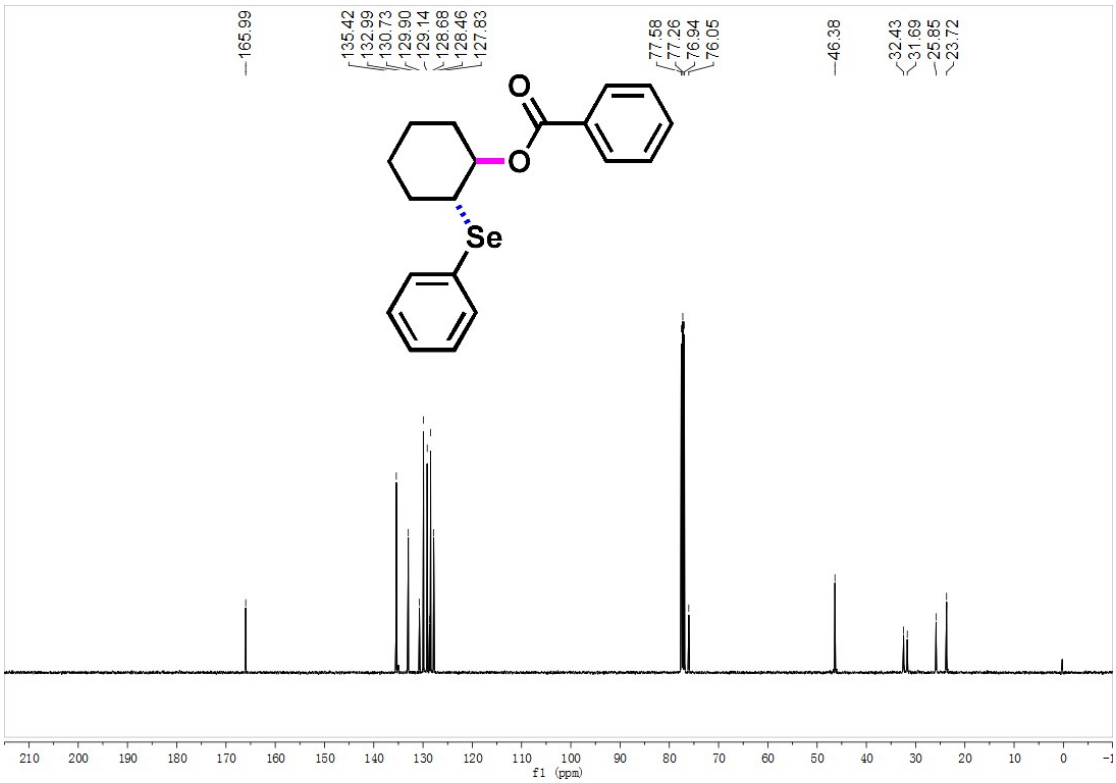
^{13}C NMR of product 5t′ in $CDCl_3$ (100 MHz)



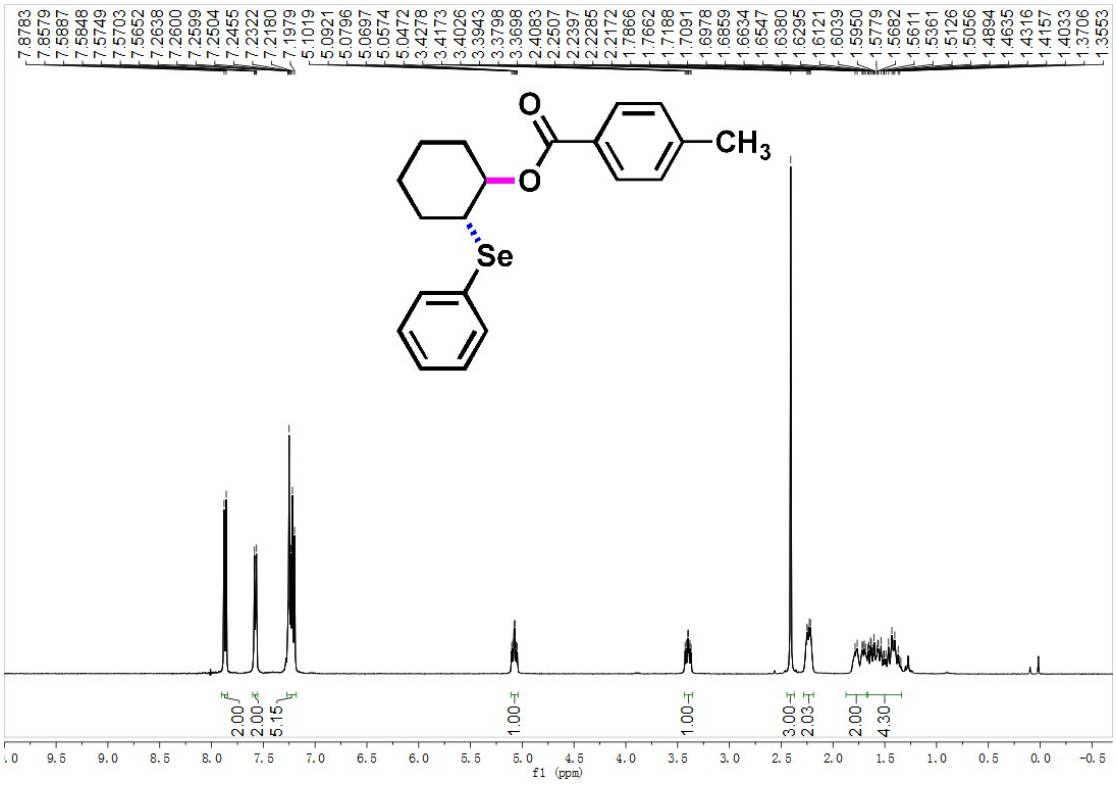
^{1}H NMR of product 7a in $CDCl_3$ (400 MHz)



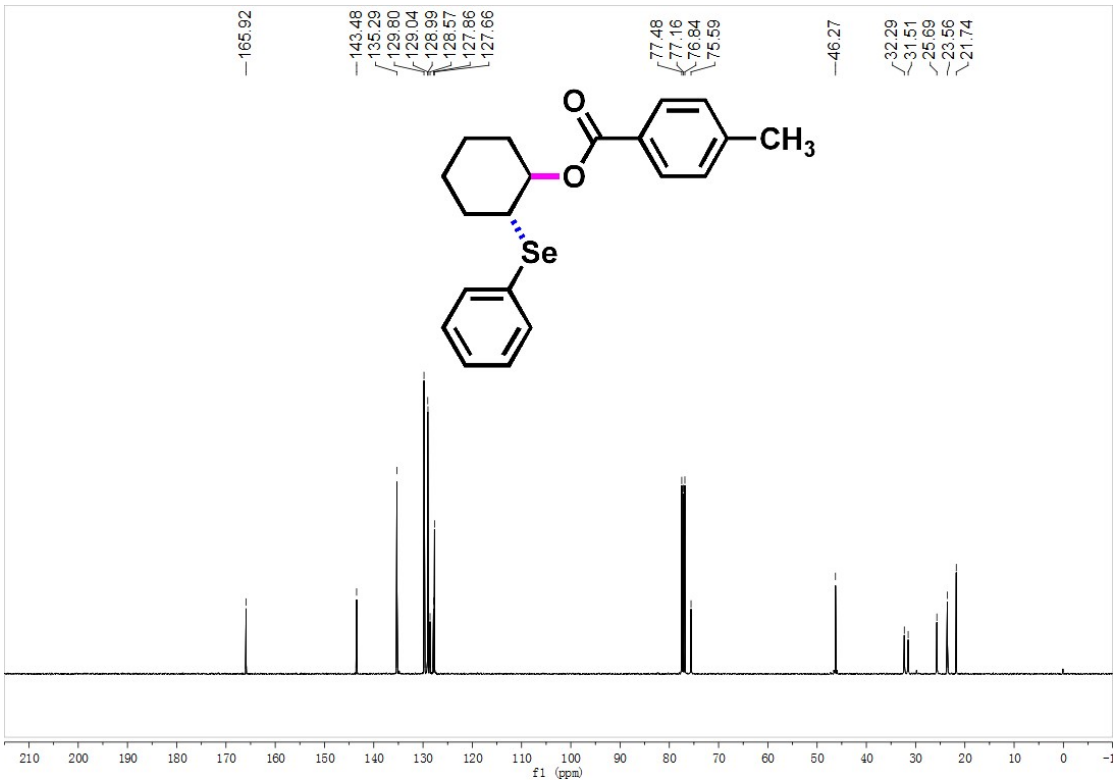
^{13}C NMR of product 7a in $CDCl_3$ (100 MHz)



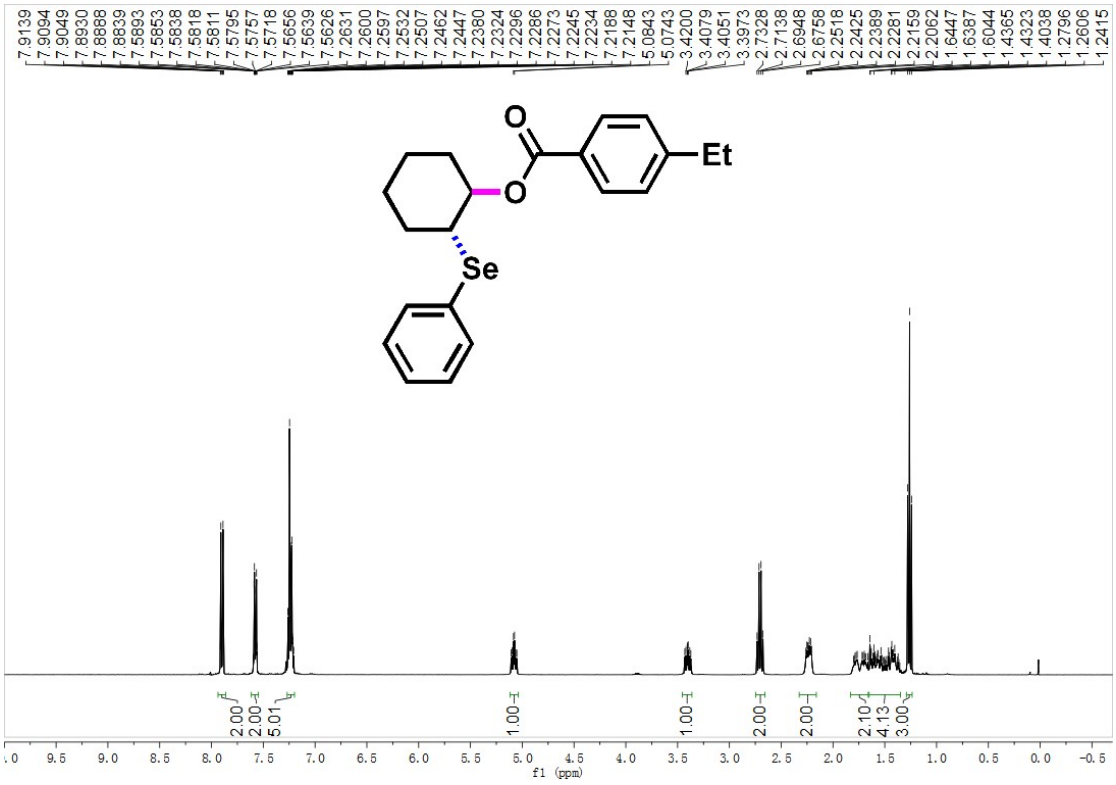
^{1}H NMR of product 7b in $CDCl_3$ (400 MHz)



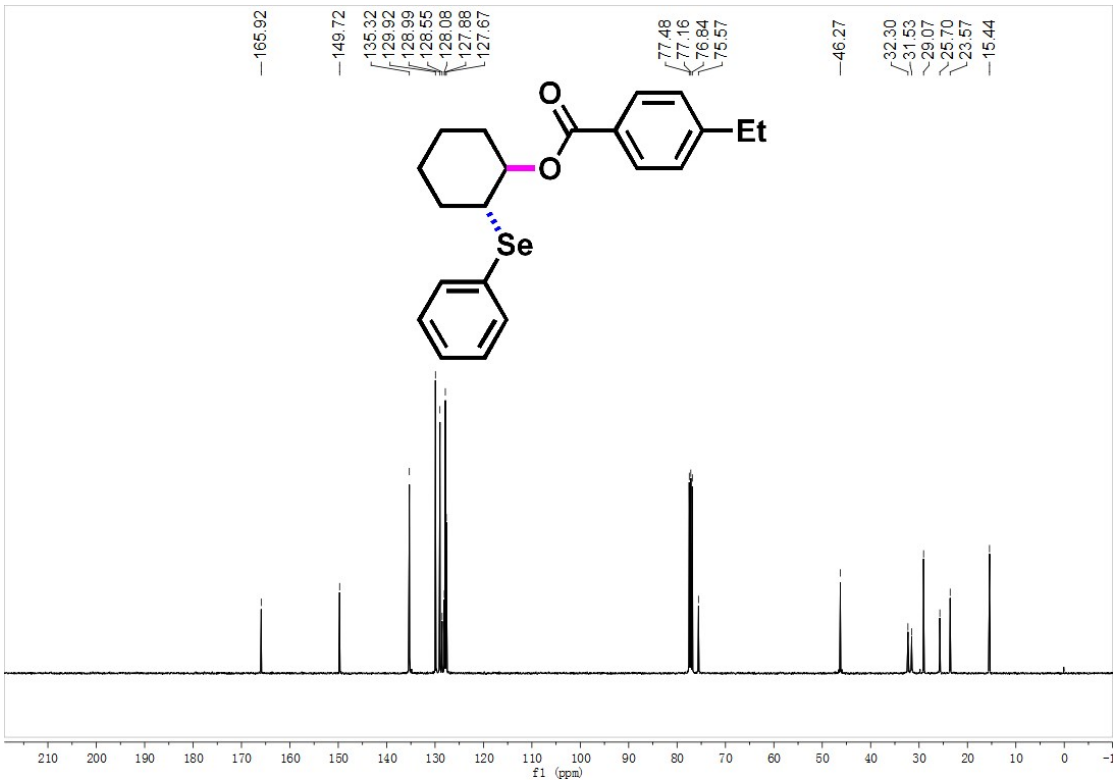
^{13}C NMR of product 7b in $CDCl_3$ (100 MHz)



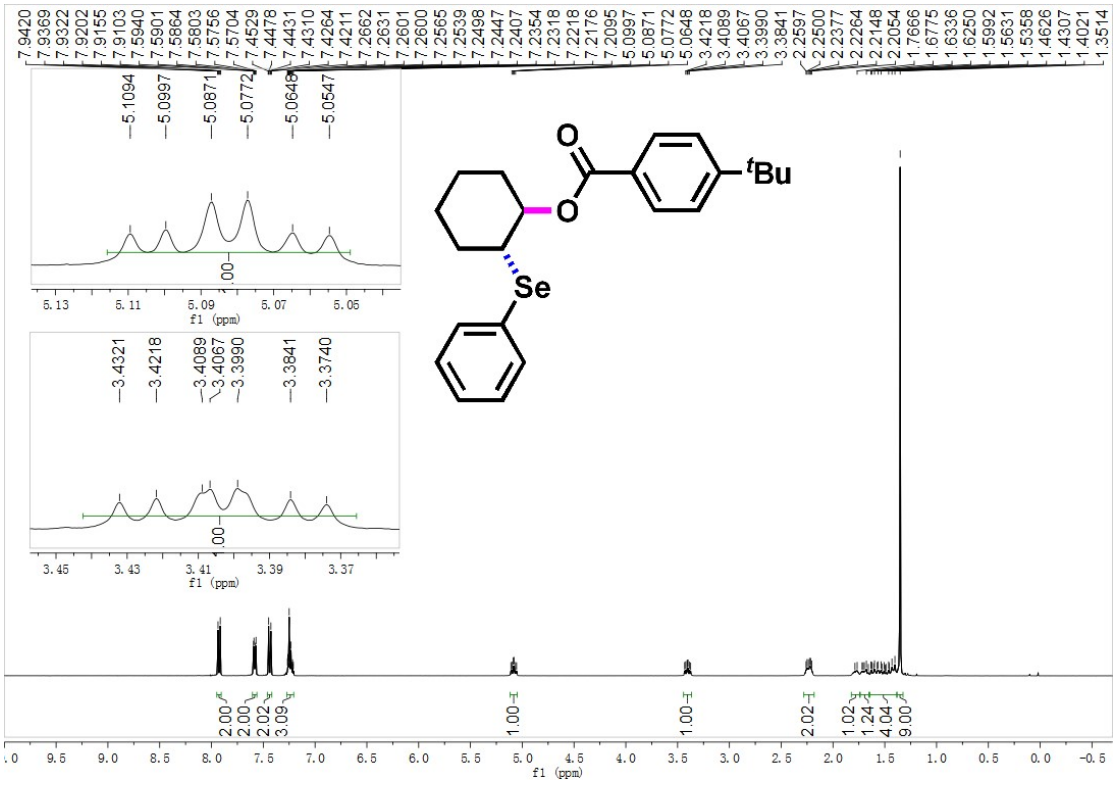
^{1}H NMR of product 7c in $CDCl_3$ (400 MHz)



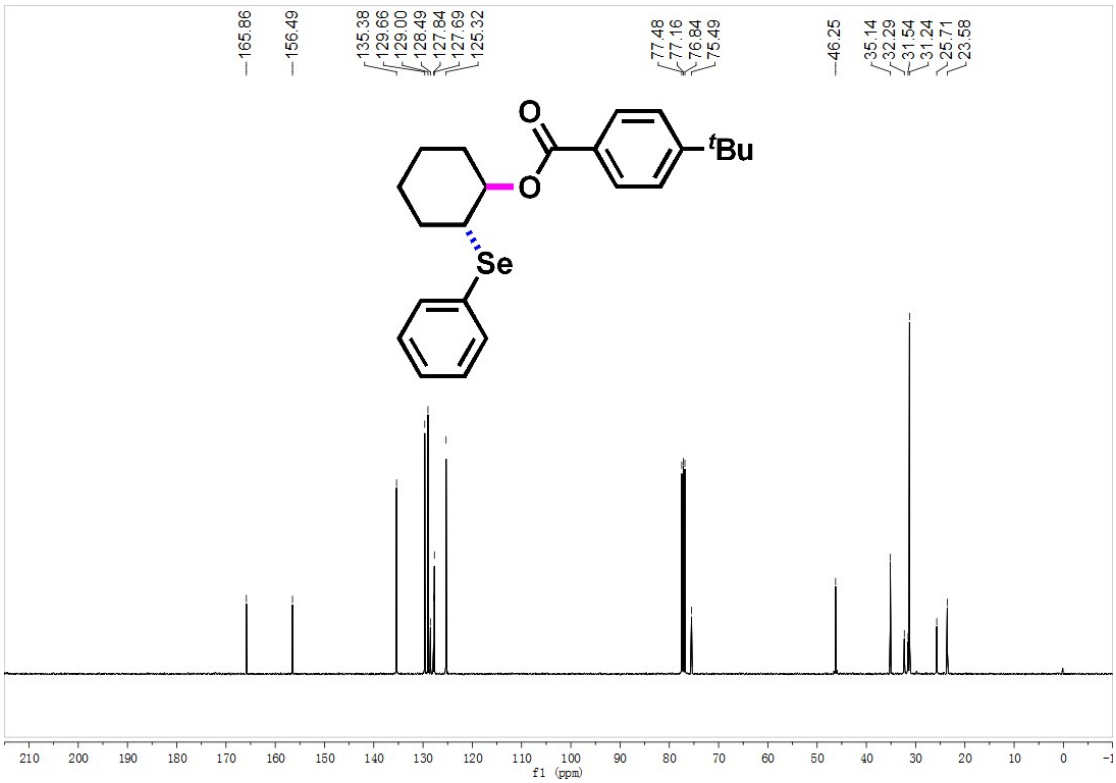
^{13}C NMR of product 7c in $CDCl_3$ (100 MHz)



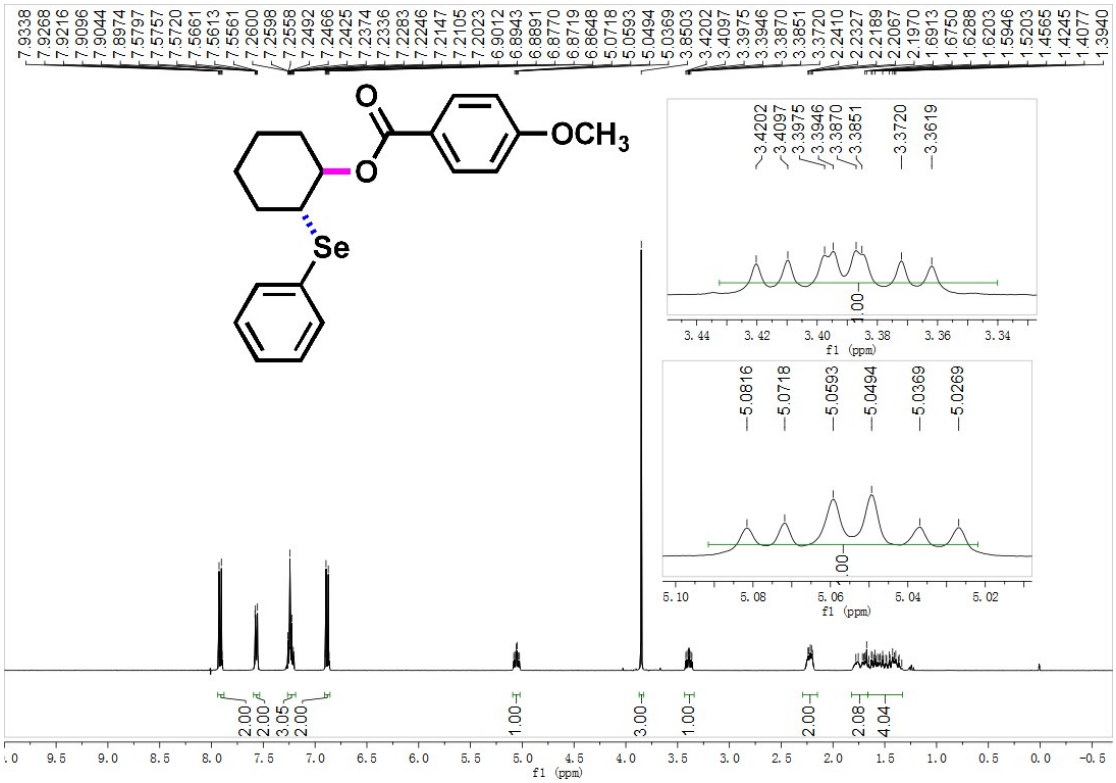
^{1}H NMR of product 7d in $CDCl_3$ (400 MHz)



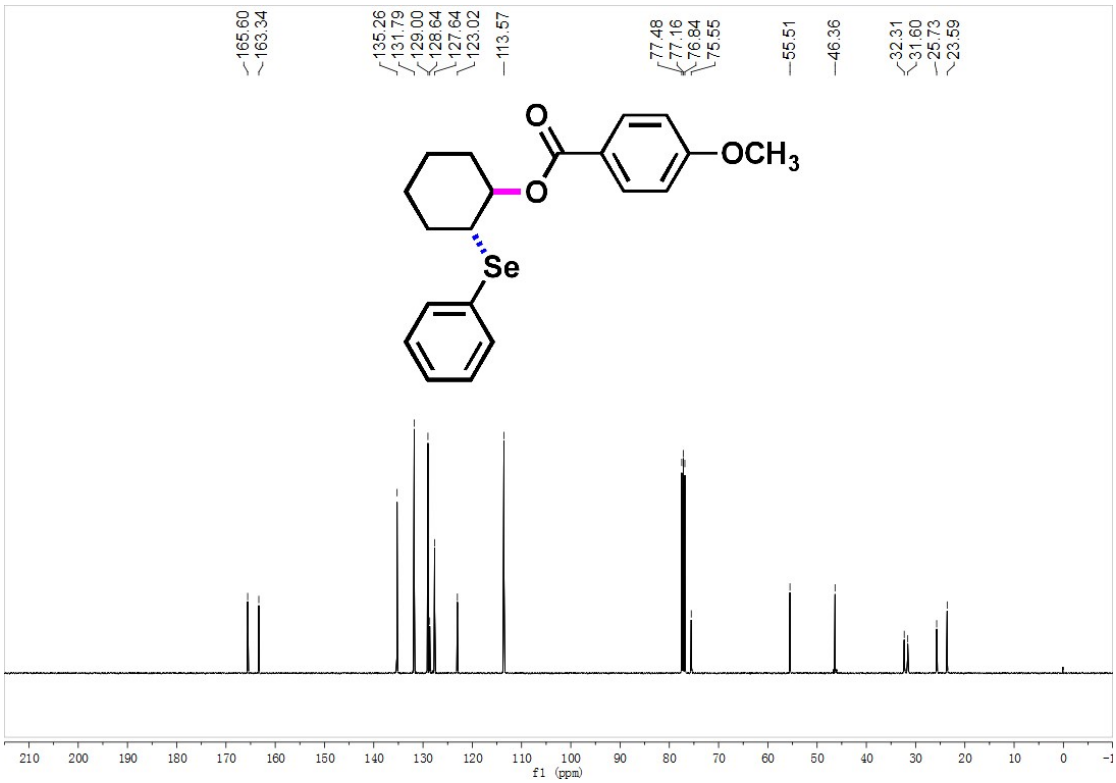
^{13}C NMR of product 7d in $CDCl_3$ (100 MHz)



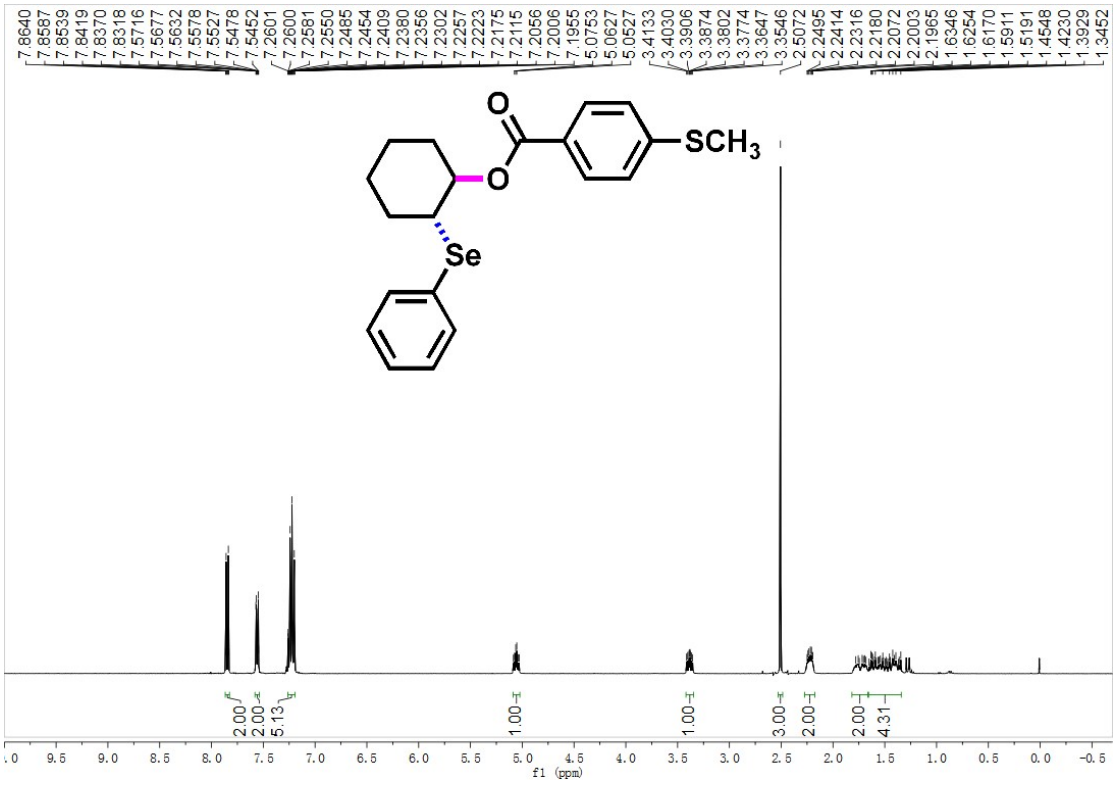
^{1}H NMR of product 7e in $CDCl_3$ (400 MHz)



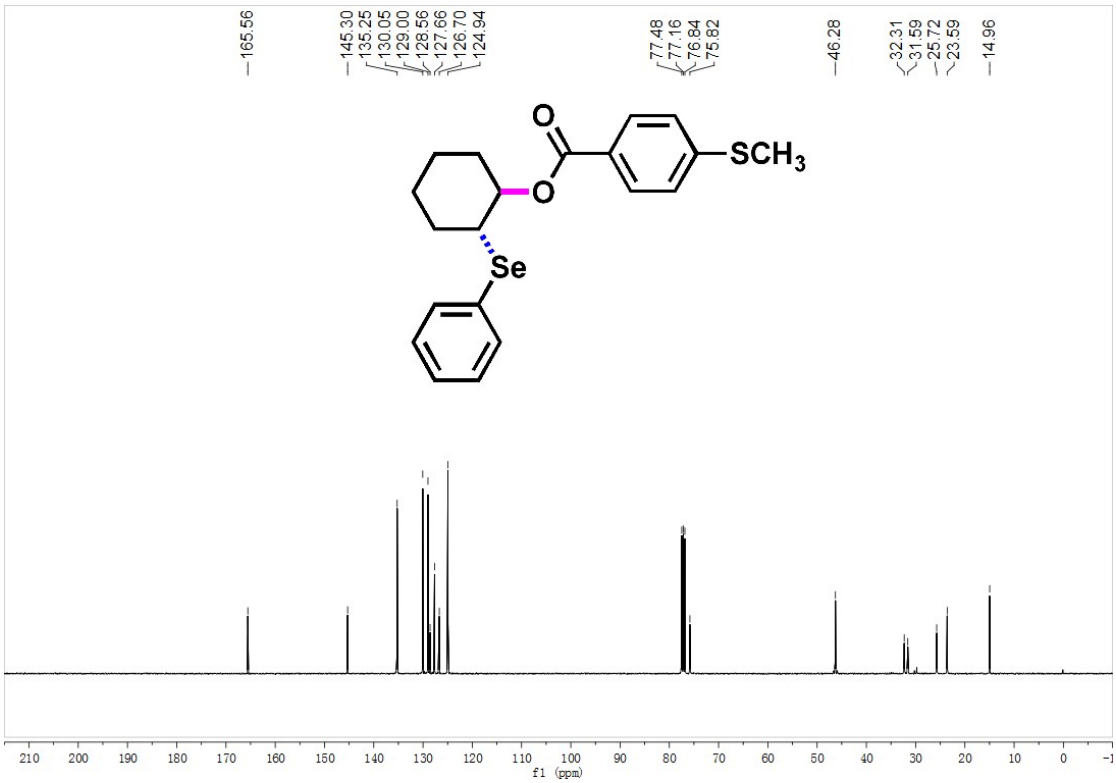
^{13}C NMR of product 7e in $CDCl_3$ (100 MHz)



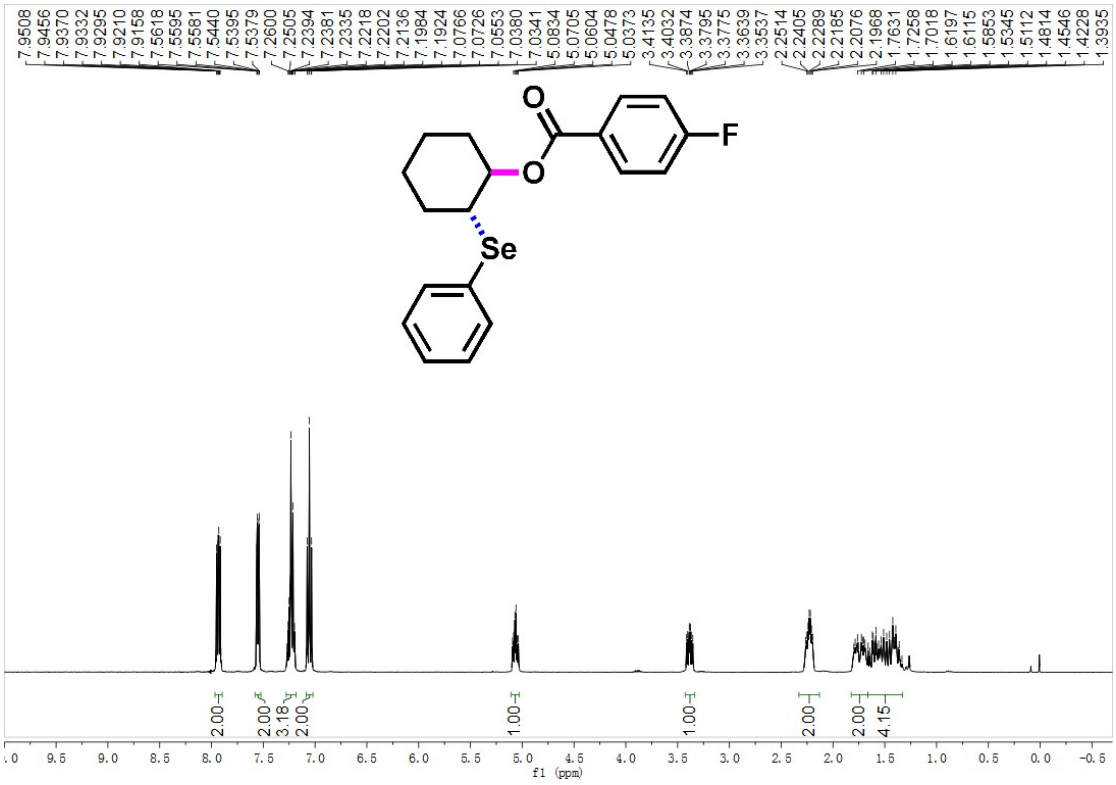
^{1}H NMR of product 7f in $CDCl_3$ (400 MHz)



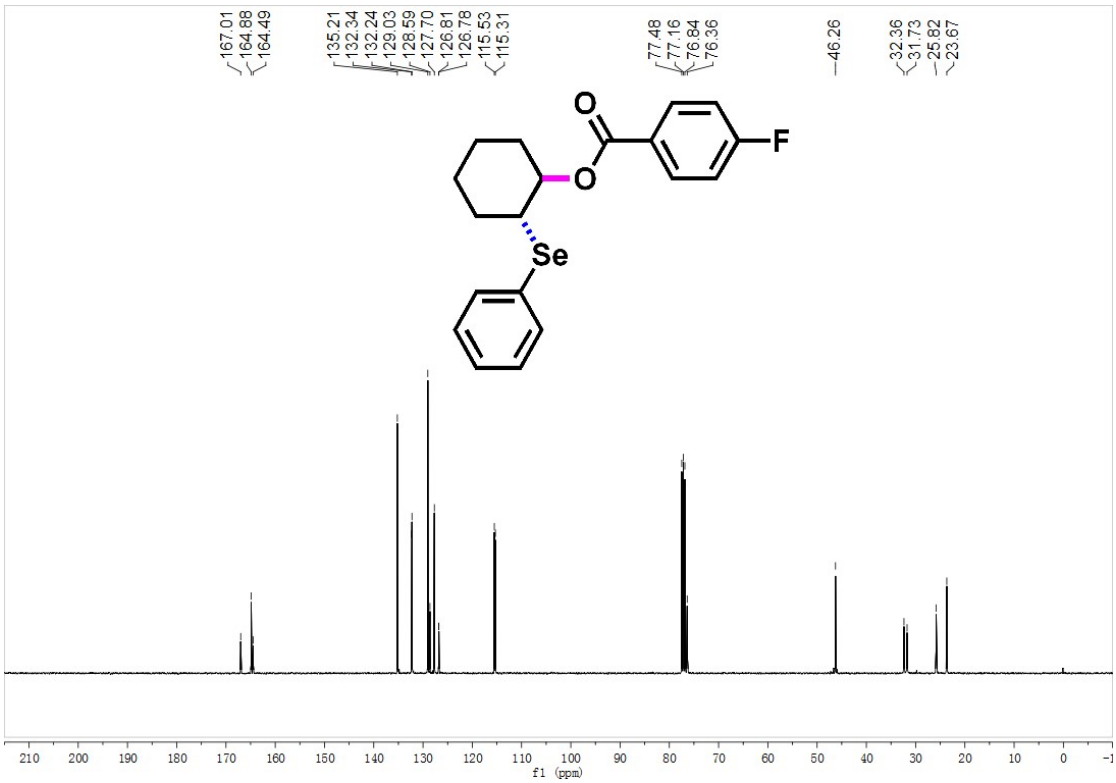
^{13}C NMR of product 7f in $CDCl_3$ (100 MHz)



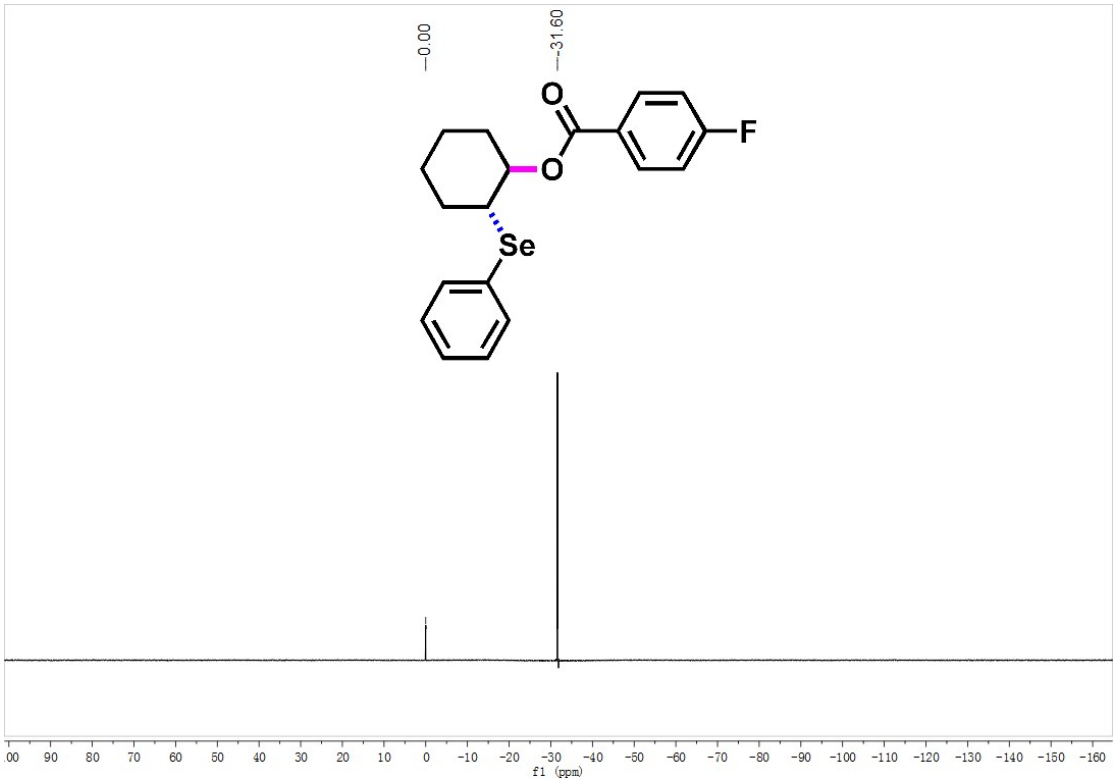
^{1}H NMR of product 7g in $CDCl_3$ (400 MHz)



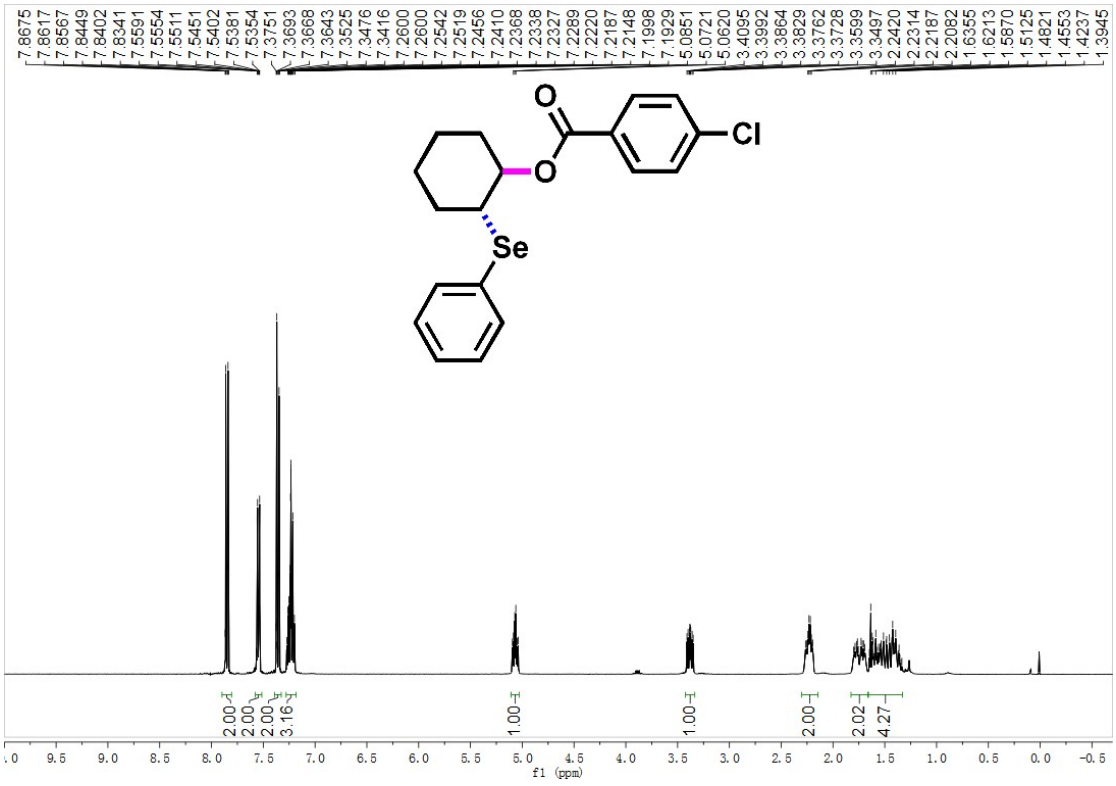
^{13}C NMR of product 7g in $CDCl_3$ (100 MHz)



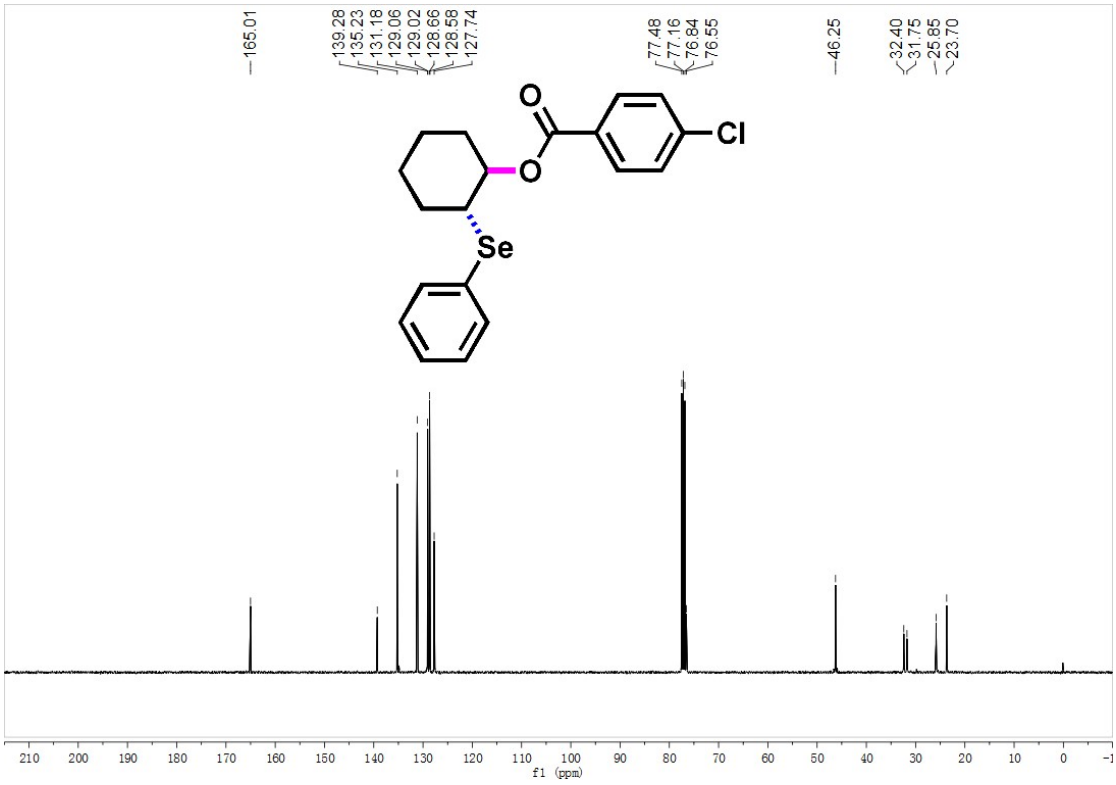
^{19}F NMR of product 7g in $CDCl_3$ (376 MHz)



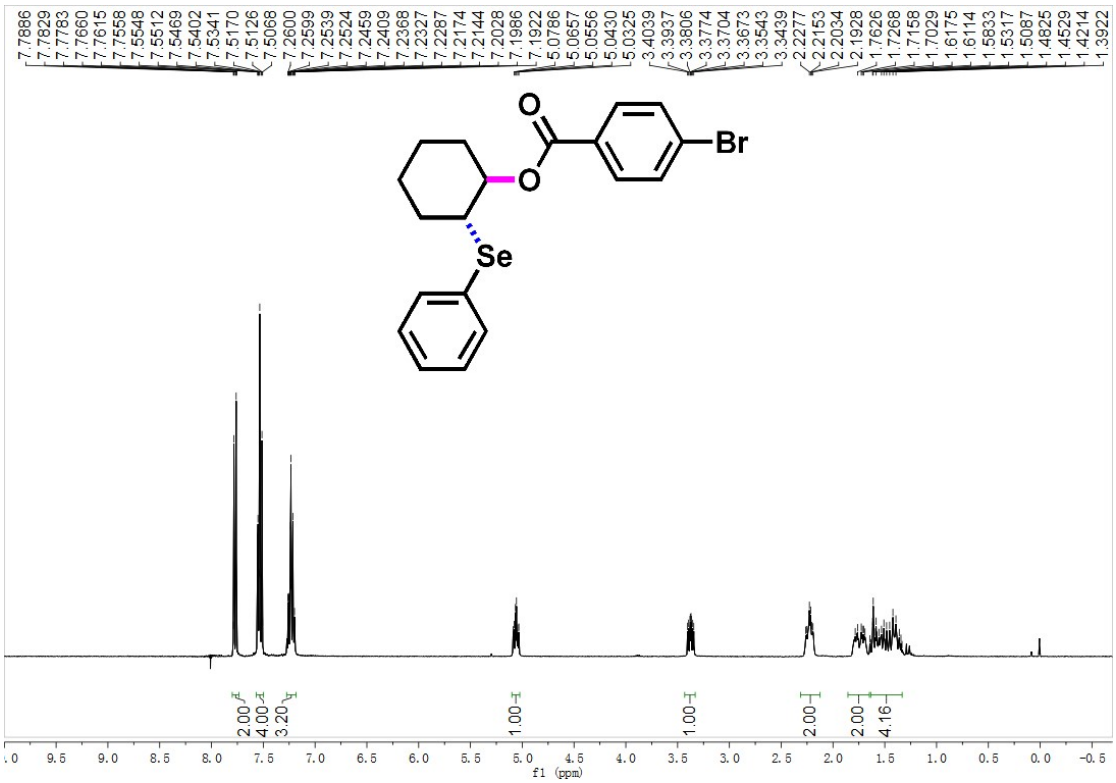
^{1}H NMR of product 7h in $CDCl_3$ (400 MHz)



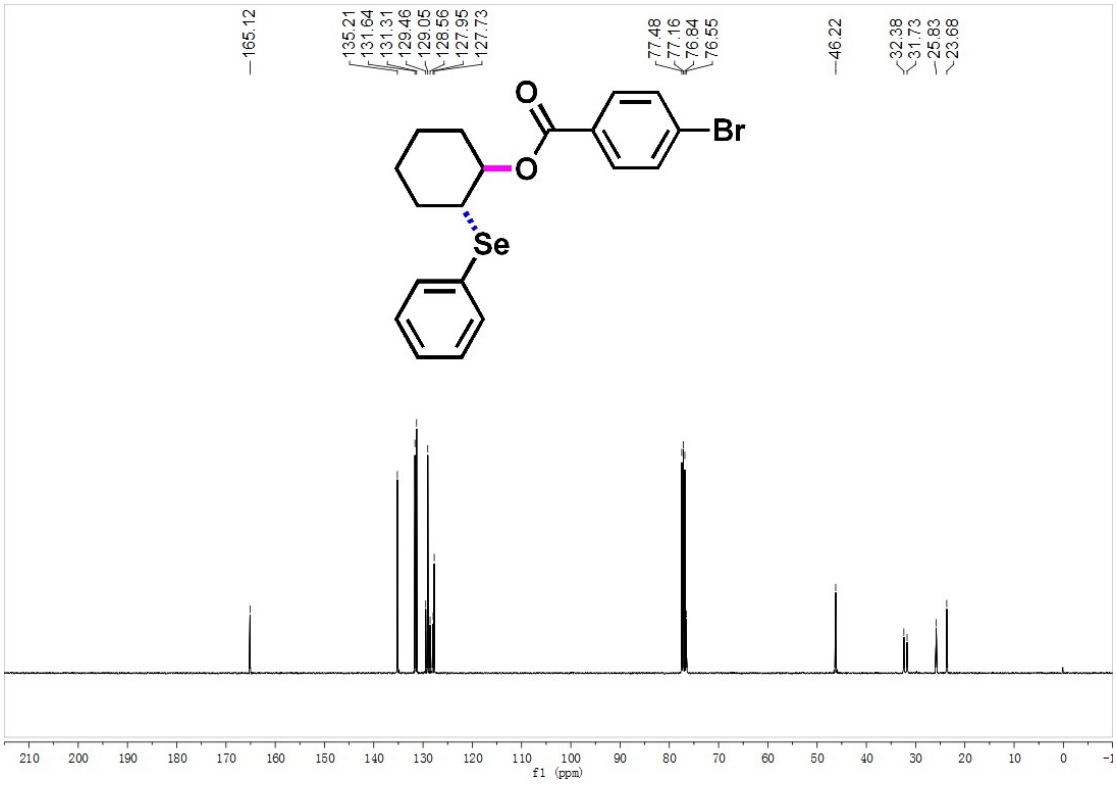
^{13}C NMR of product 7h in $CDCl_3$ (100 MHz)



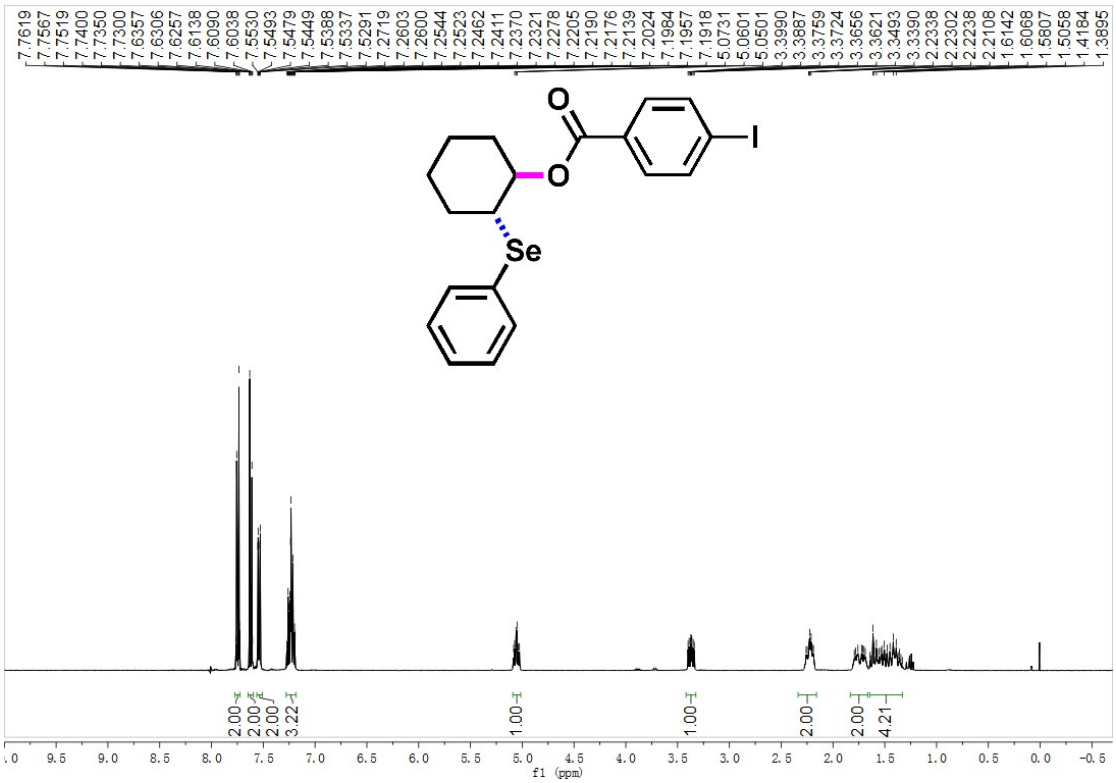
^{1}H NMR of product 7i in $CDCl_3$ (400 MHz)



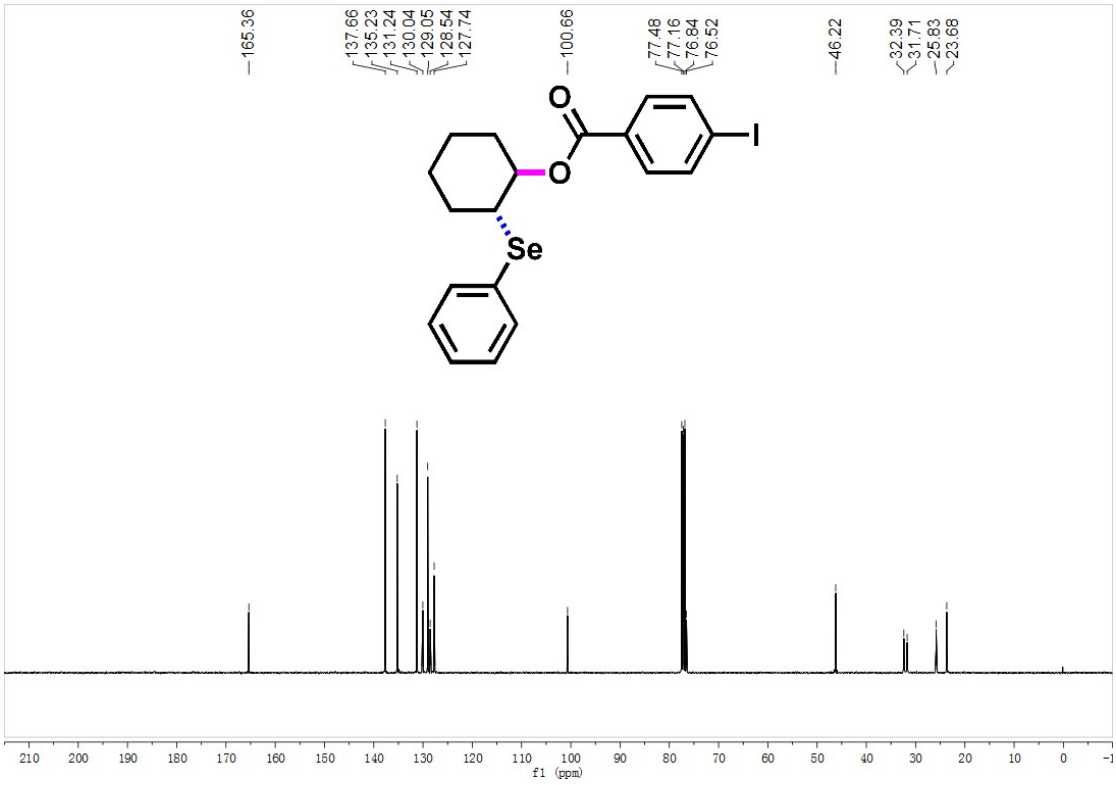
^{13}C NMR of product 7i in $CDCl_3$ (100 MHz)



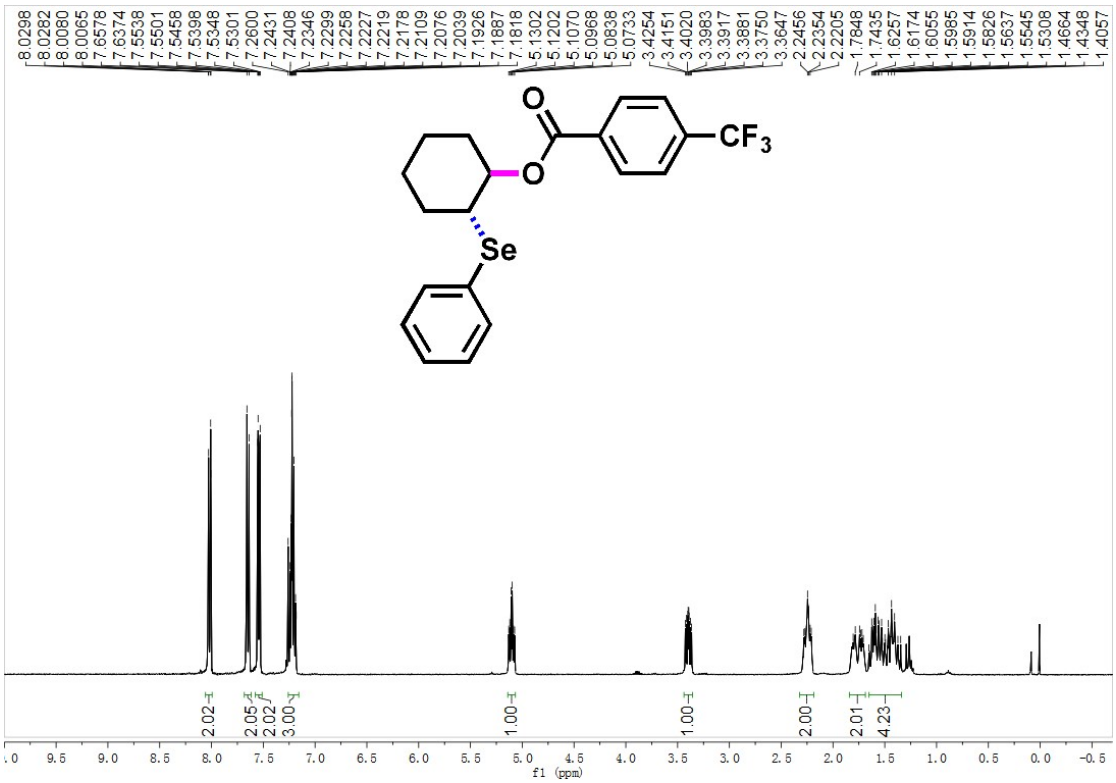
^{1}H NMR of product 7j in $CDCl_3$ (400 MHz)



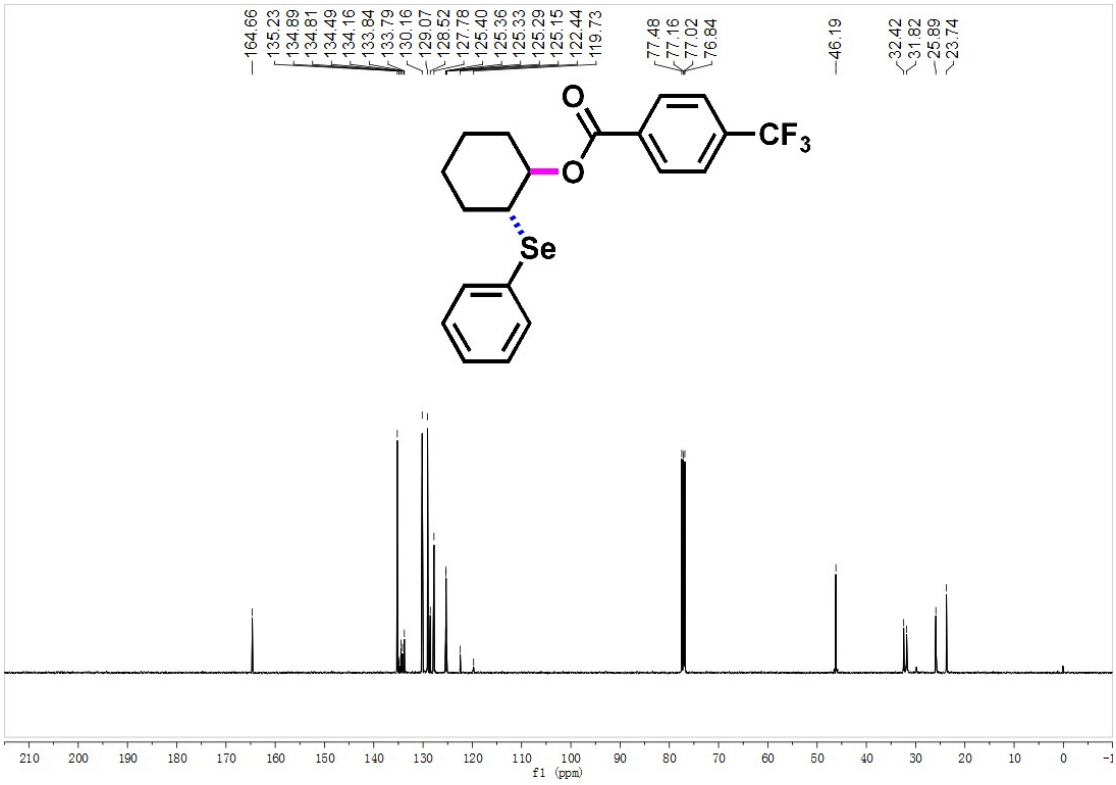
^{13}C NMR of product 7j in $CDCl_3$ (100 MHz)



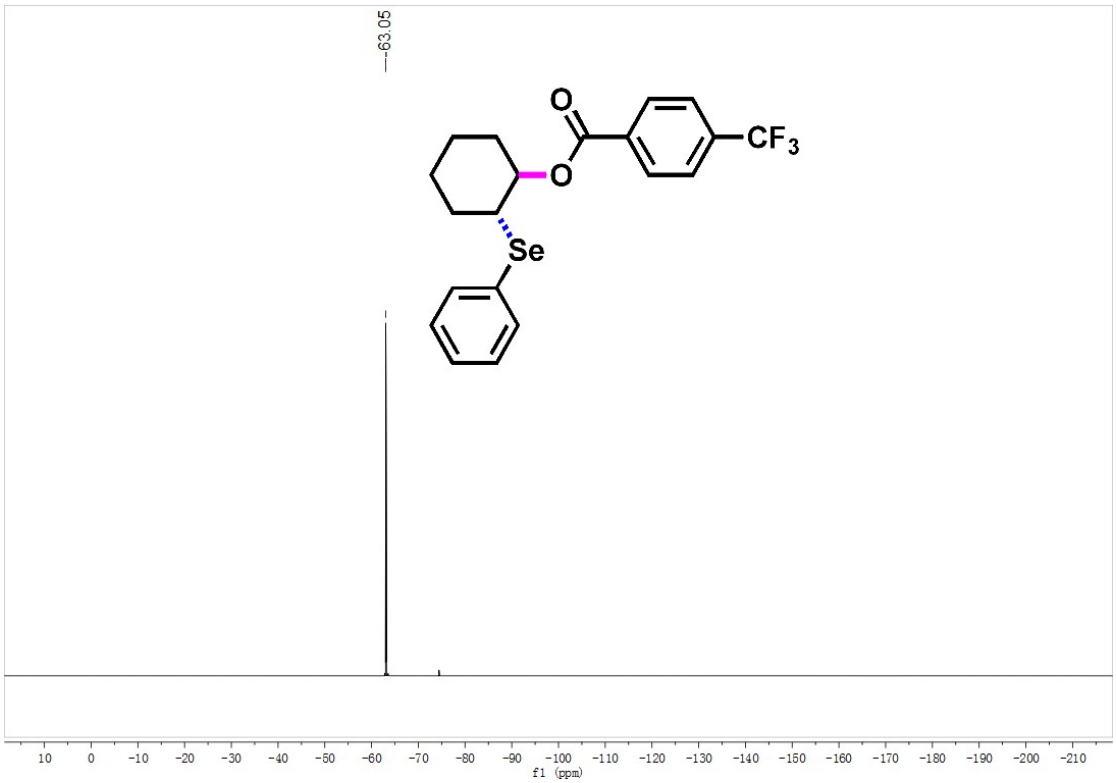
^{1}H NMR of product 7k in $CDCl_3$ (400 MHz)



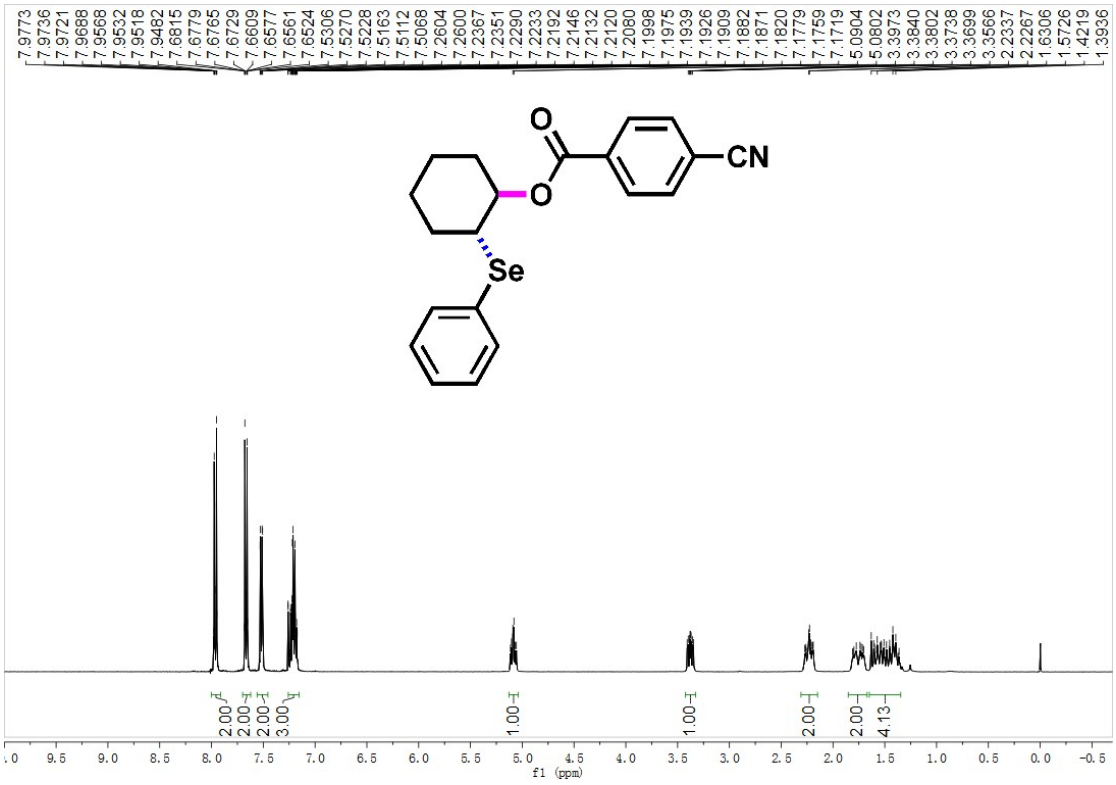
^{13}C NMR of product 7k in $CDCl_3$ (100 MHz)



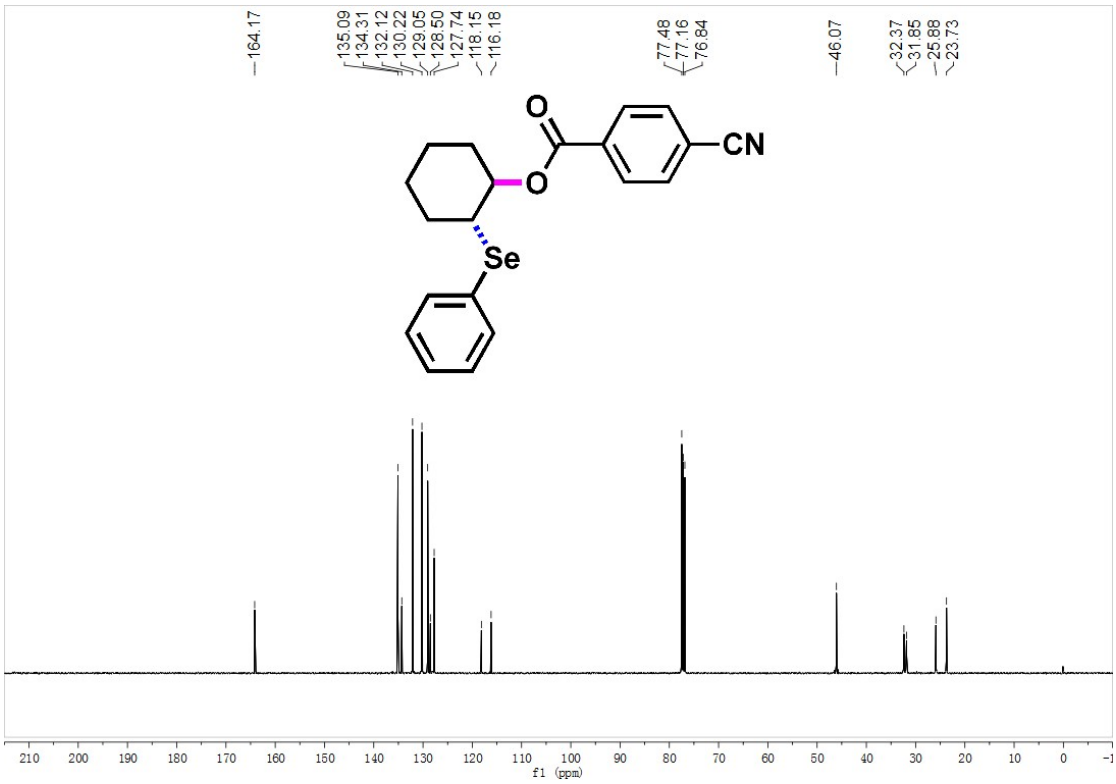
^{19}F NMR of product 7k in $CDCl_3$ (376 MHz)



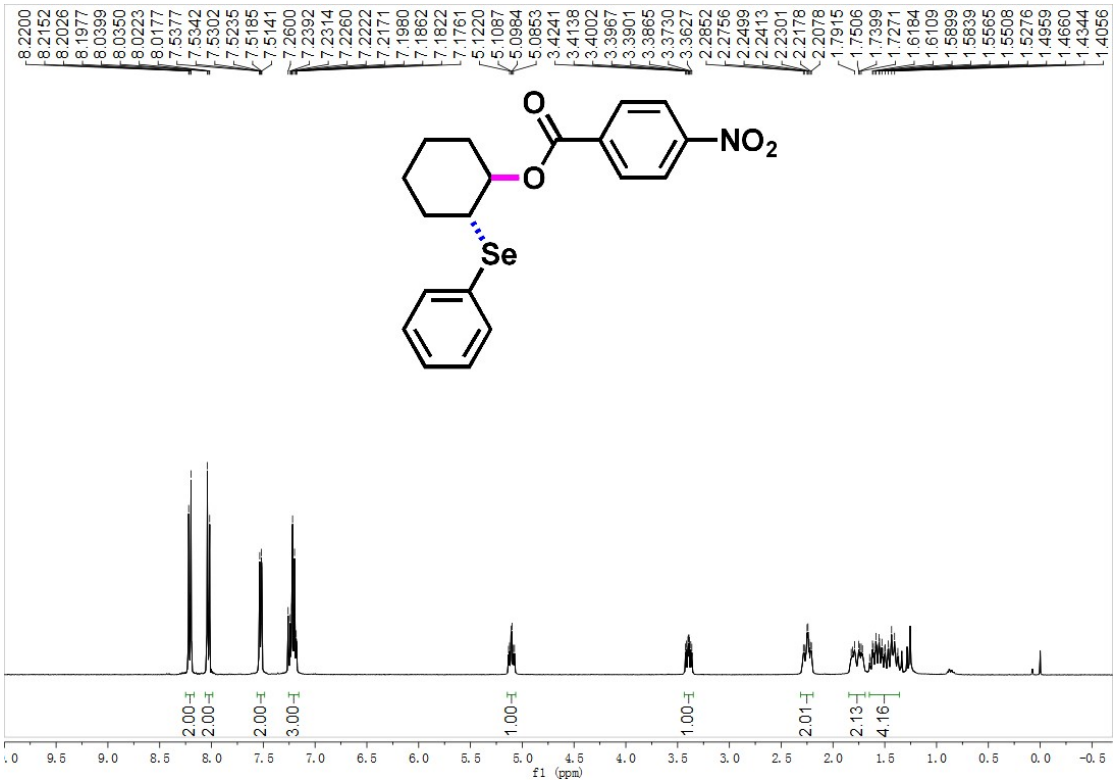
^{1}H NMR of product 7l in $CDCl_3$ (400 MHz)



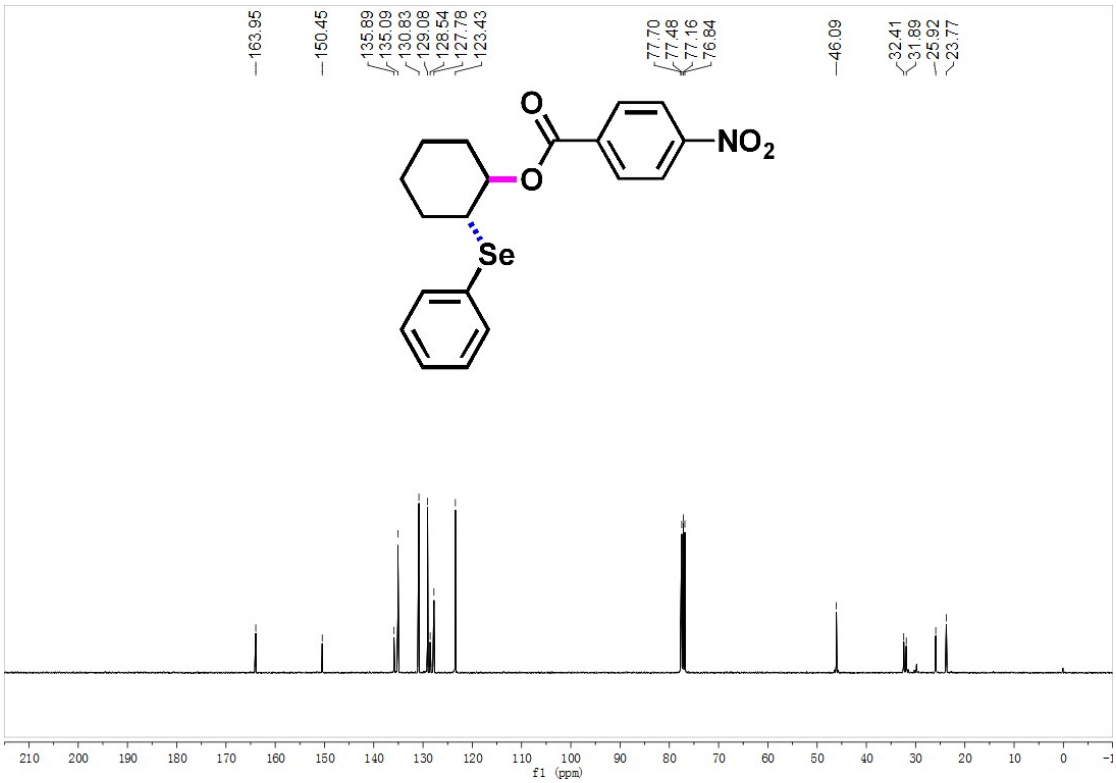
^{13}C NMR of product 7l in $CDCl_3$ (100 MHz)



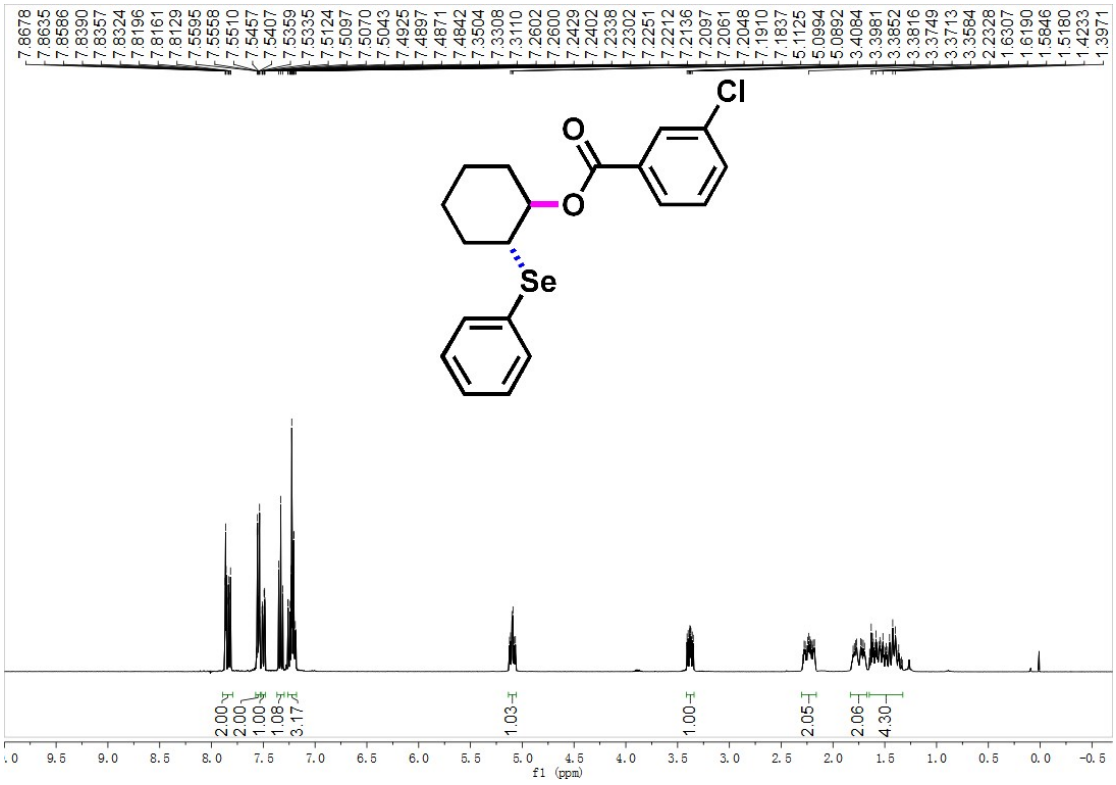
^{1}H NMR of product 7m in $CDCl_3$ (400 MHz)



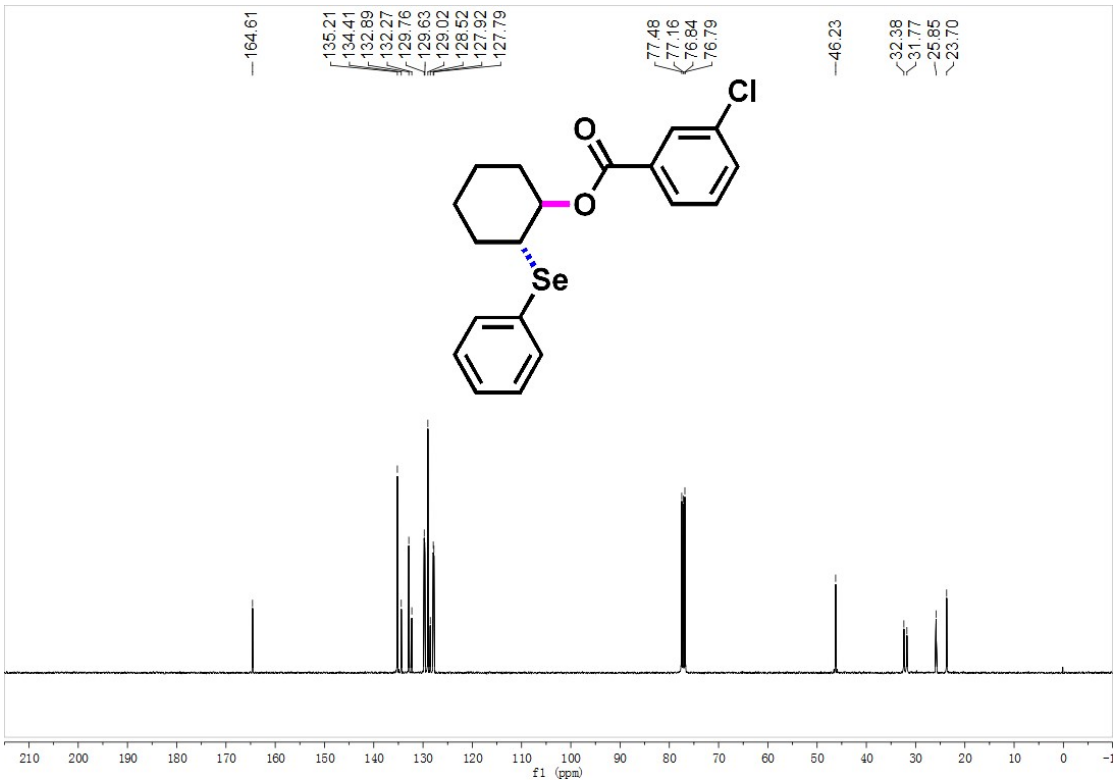
^{13}C NMR of product 7m in $CDCl_3$ (100 MHz)



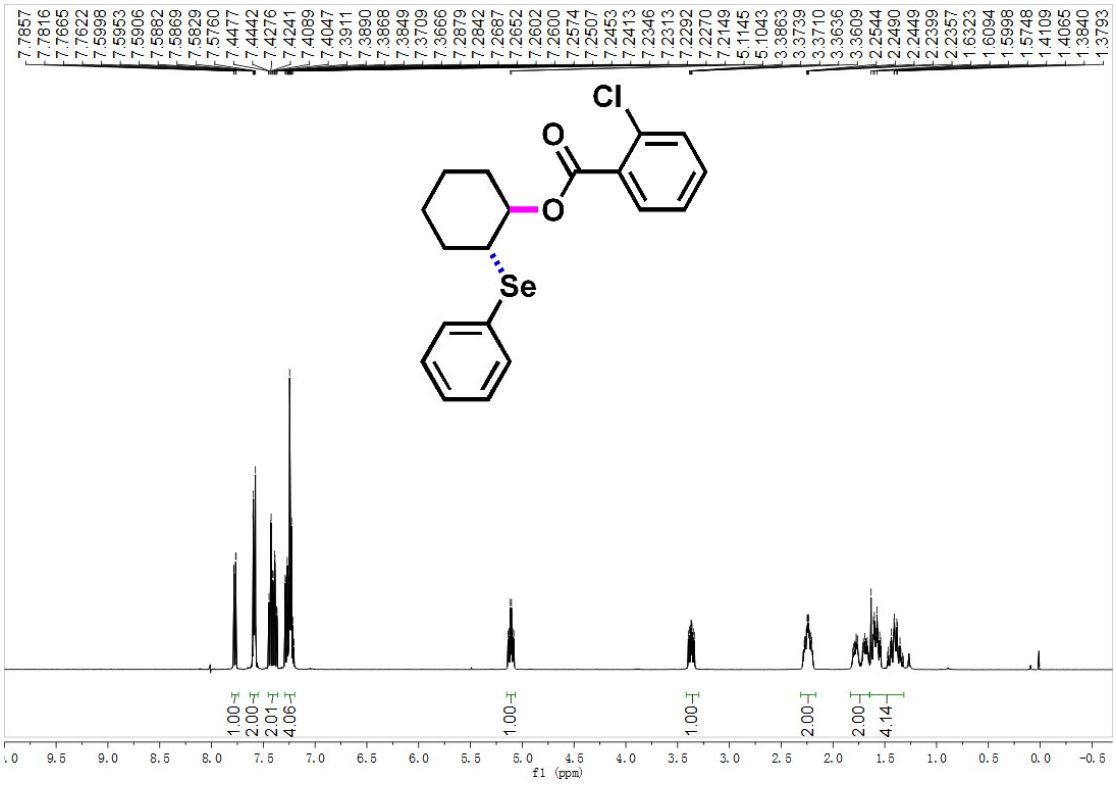
^{1}H NMR of product 7n in $CDCl_3$ (400 MHz)



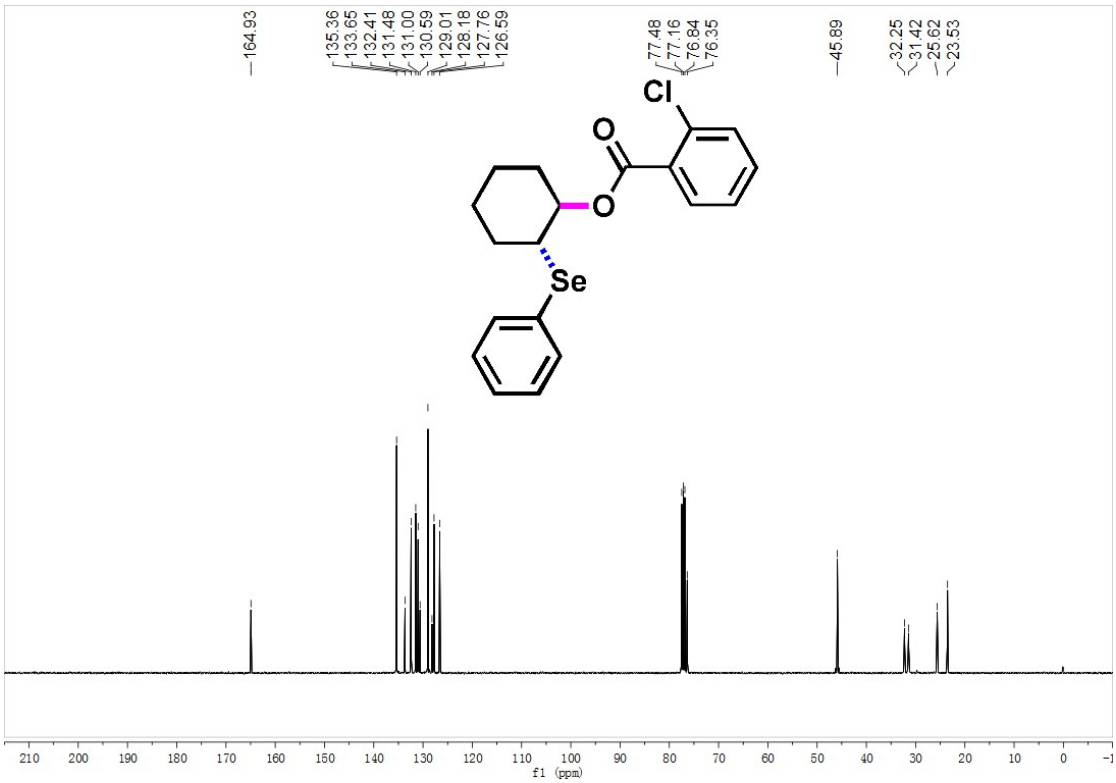
^{13}C NMR of product 7n in $CDCl_3$ 100 MHz)



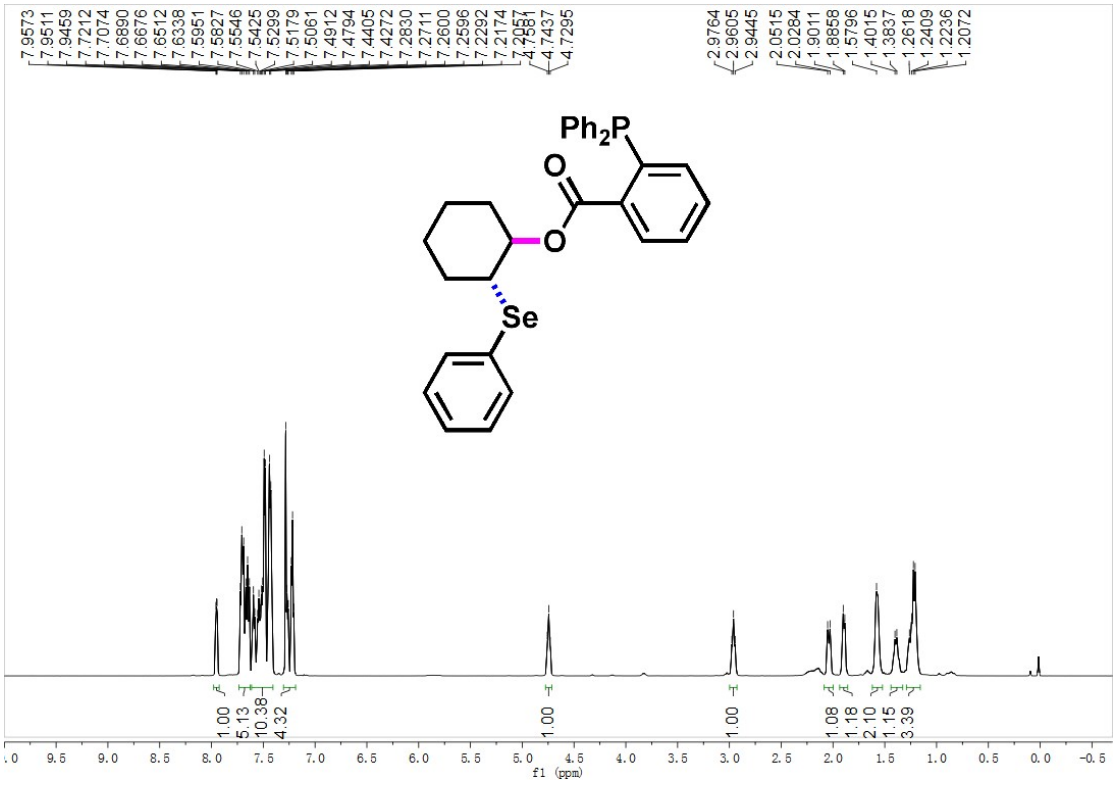
^{1}H NMR of product 7o in $CDCl_3$ (400 MHz)



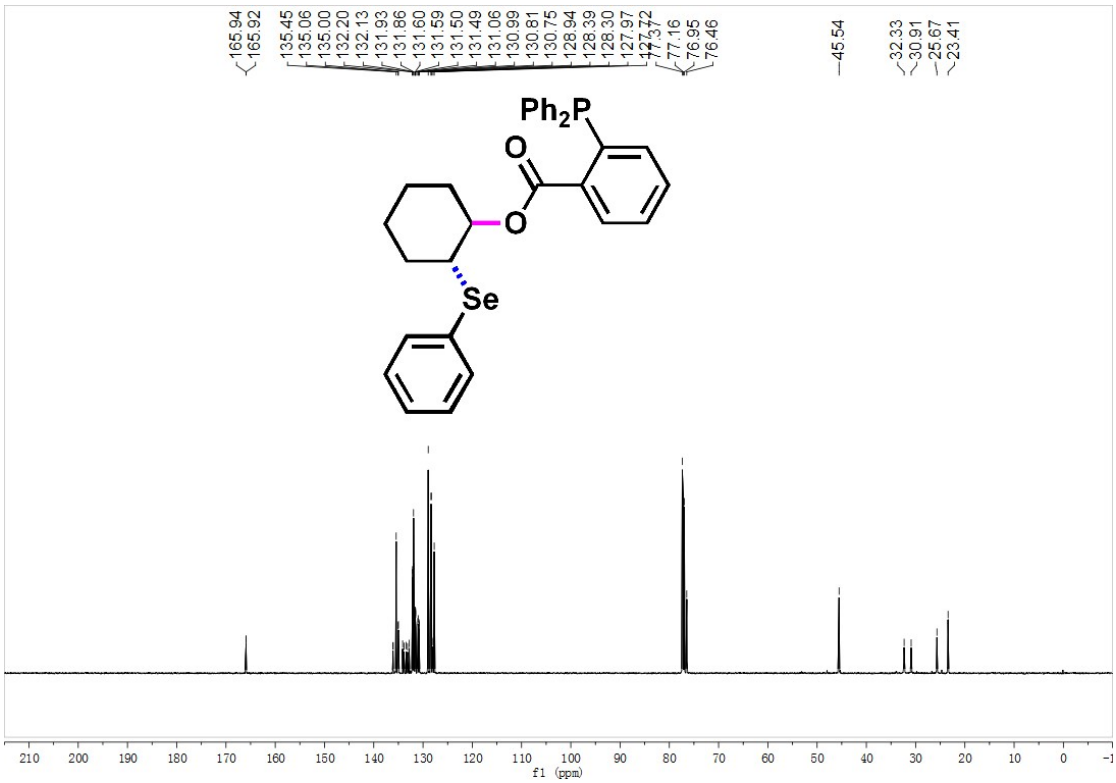
^{13}C NMR of product 7o in $CDCl_3$ (100 MHz)



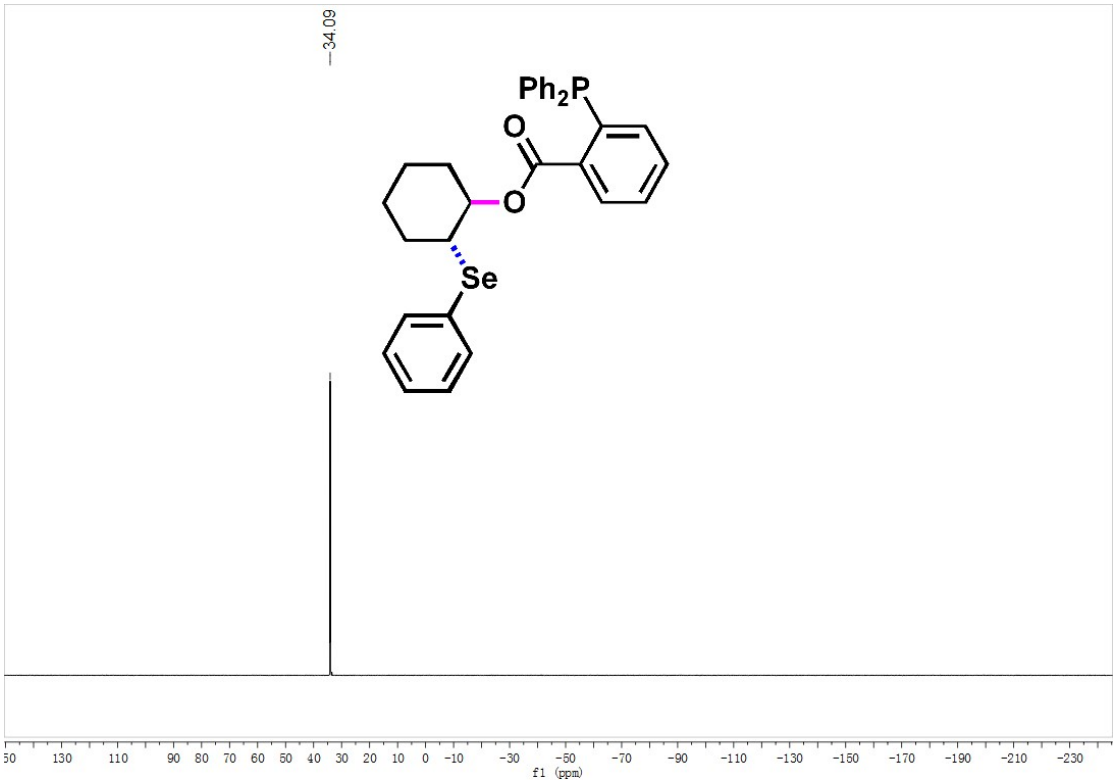
^{1}H NMR of product 7p in $CDCl_3$ (600 MHz)



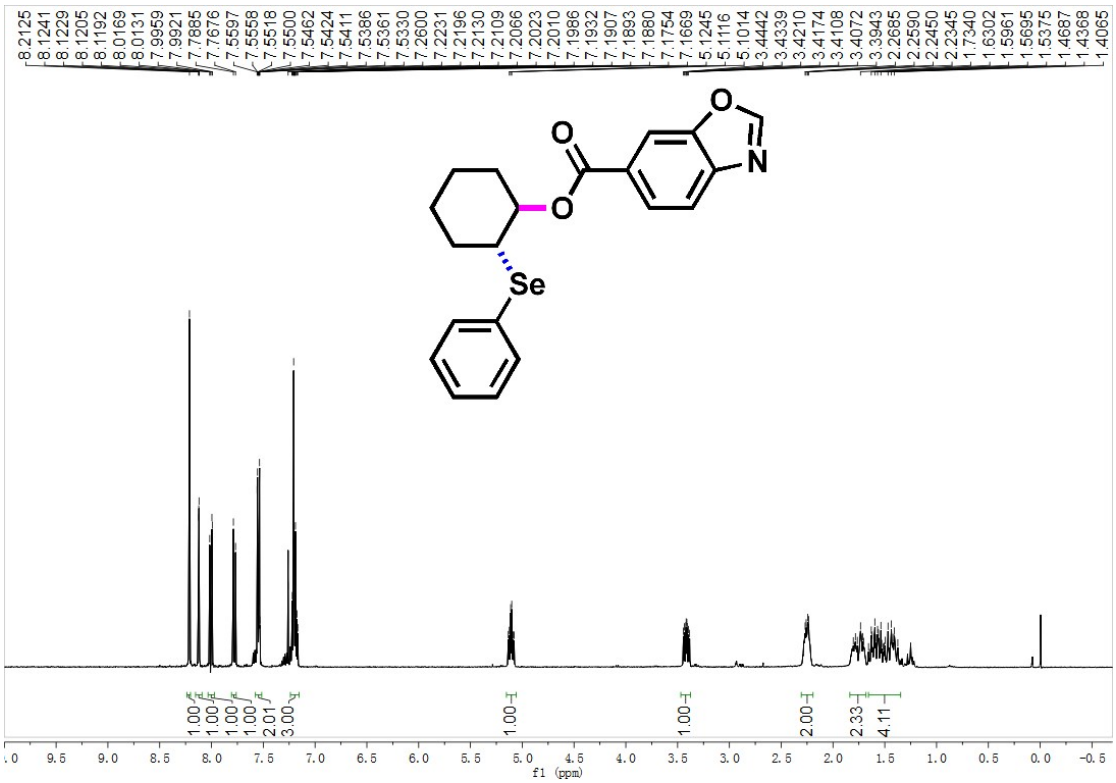
^{13}C NMR of product 7p in $CDCl_3$ (150 MHz)



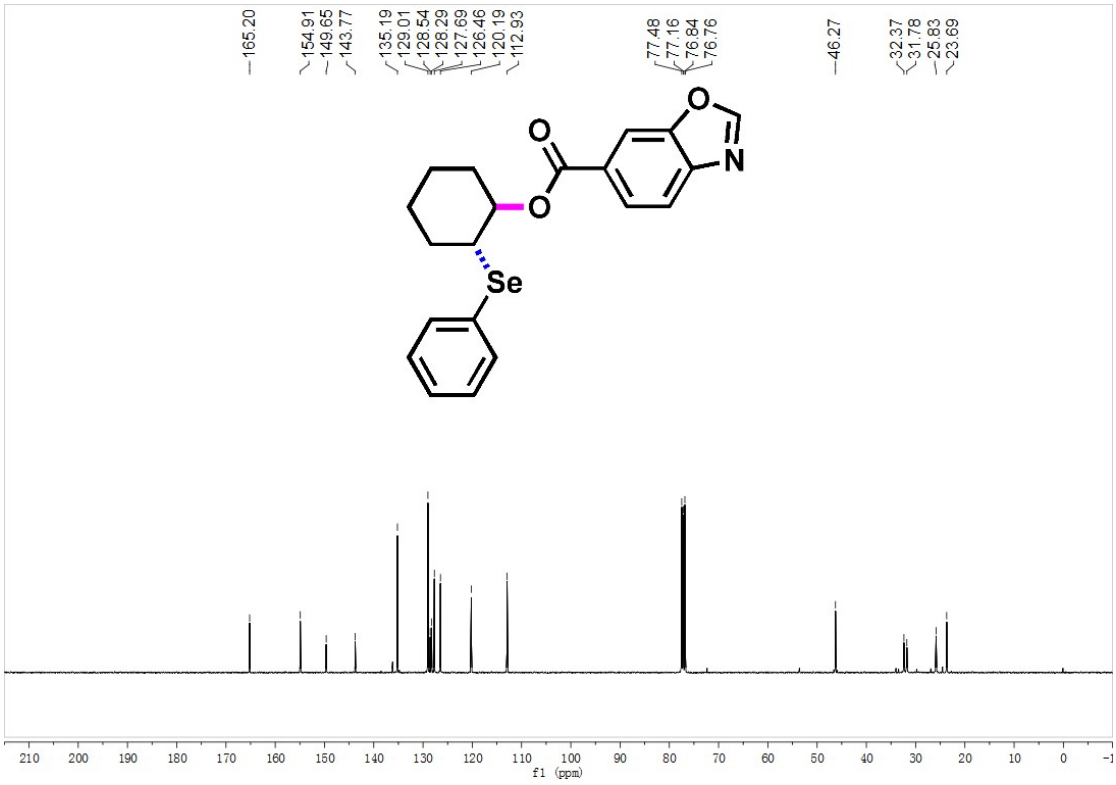
^{31}P NMR of product 7p in $CDCl_3$ (240 MHz)



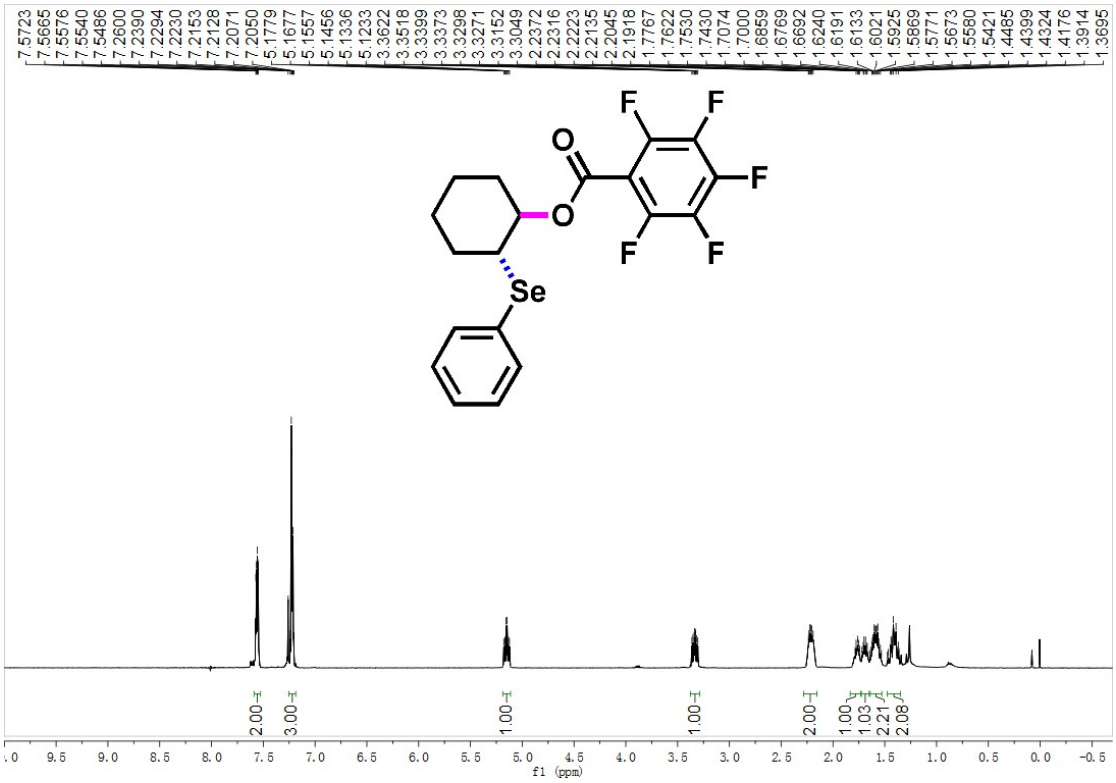
^{1}H NMR of product 7q in $CDCl_3$ (400 MHz)



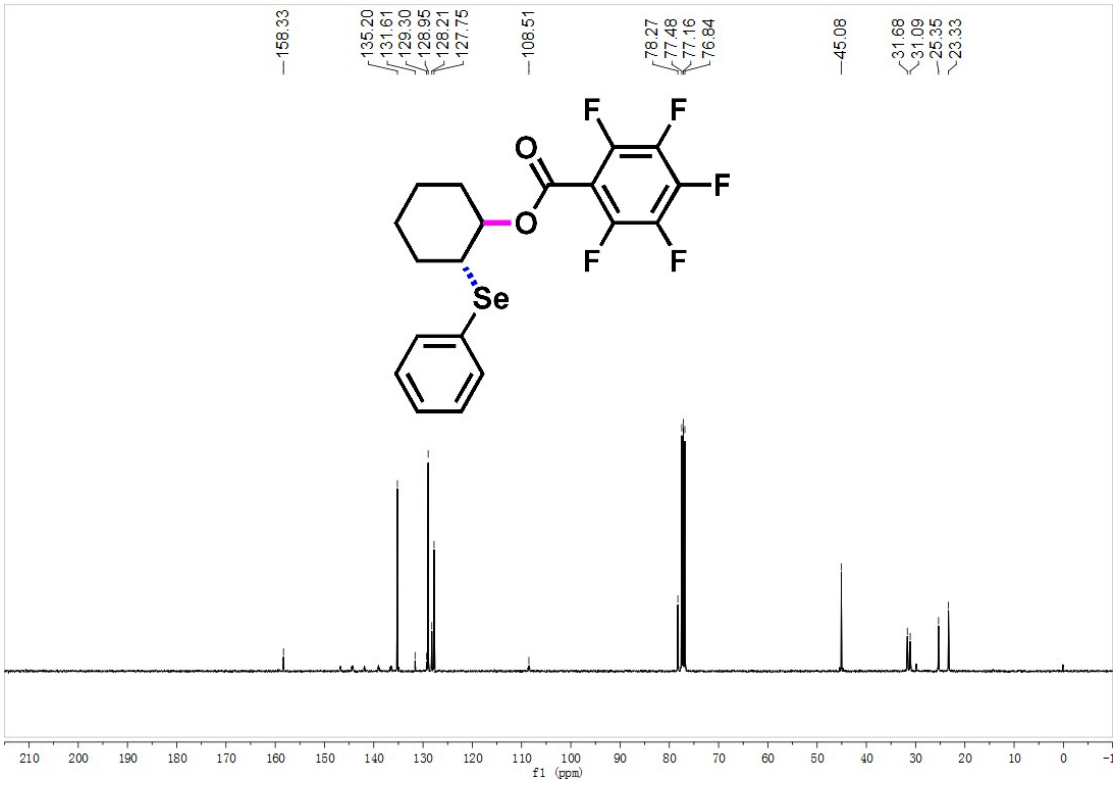
^{13}C NMR of product 7q in $CDCl_3$ (100 MHz)



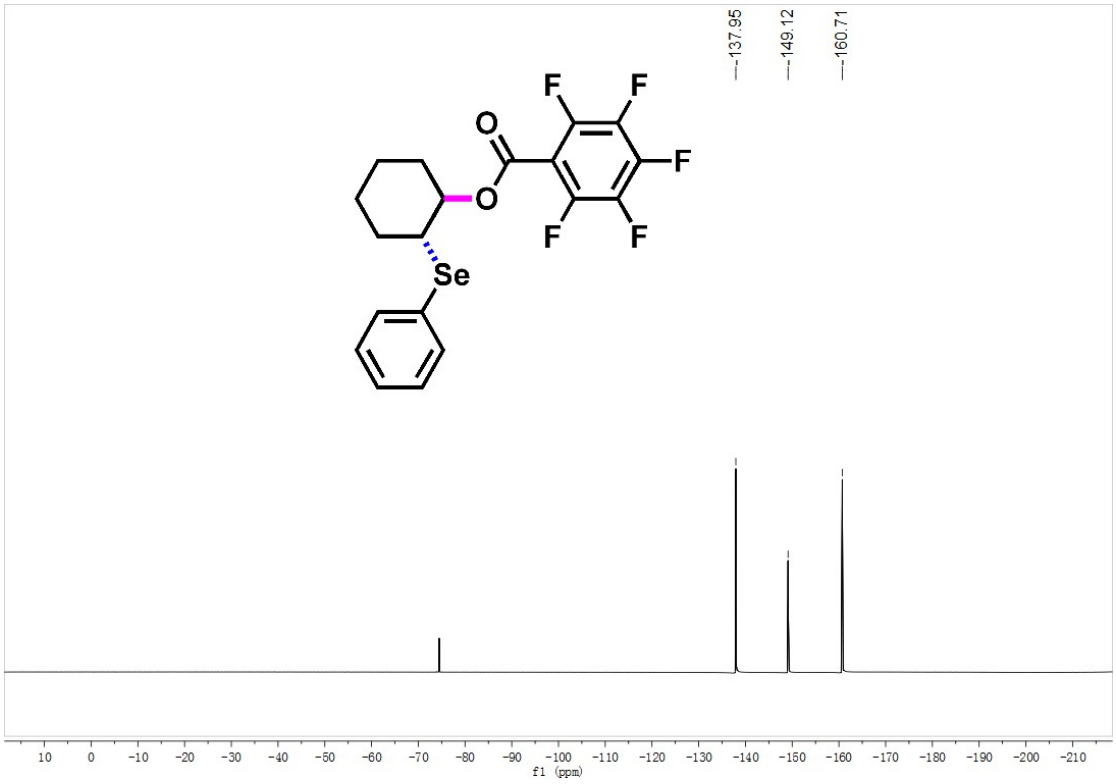
^{1}H NMR of product 7r in $CDCl_3$ (400 MHz)



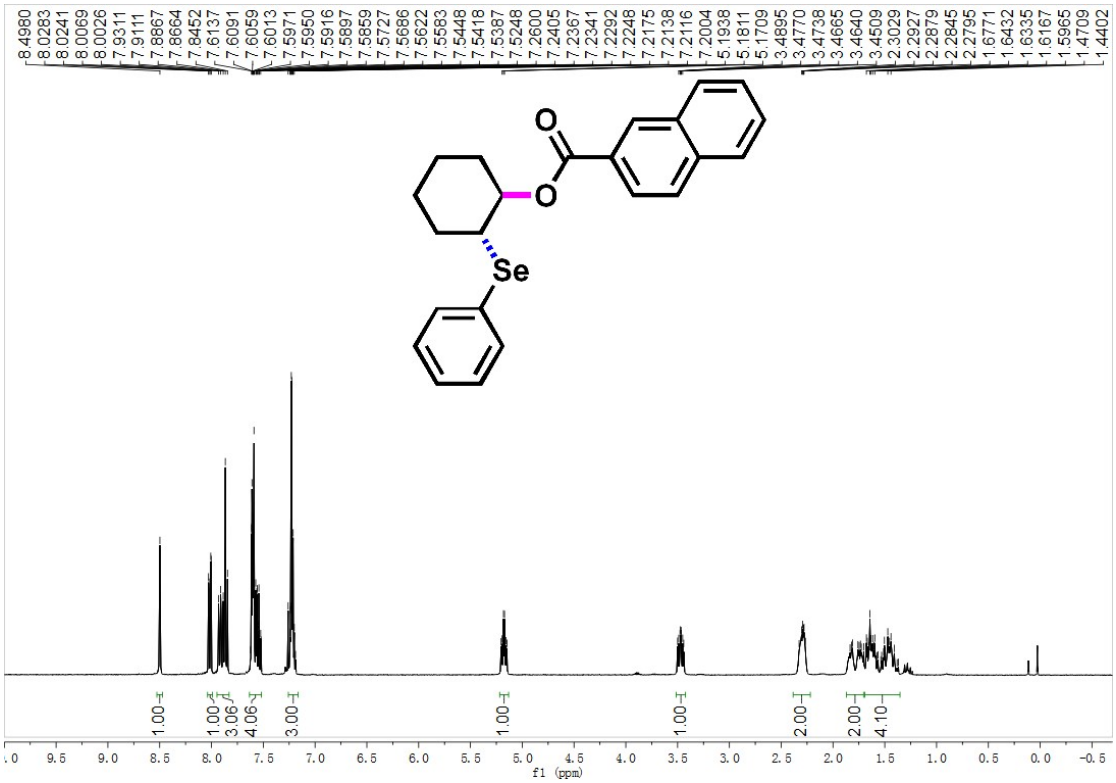
^{13}C NMR of product 7r in $CDCl_3$ (100 MHz)



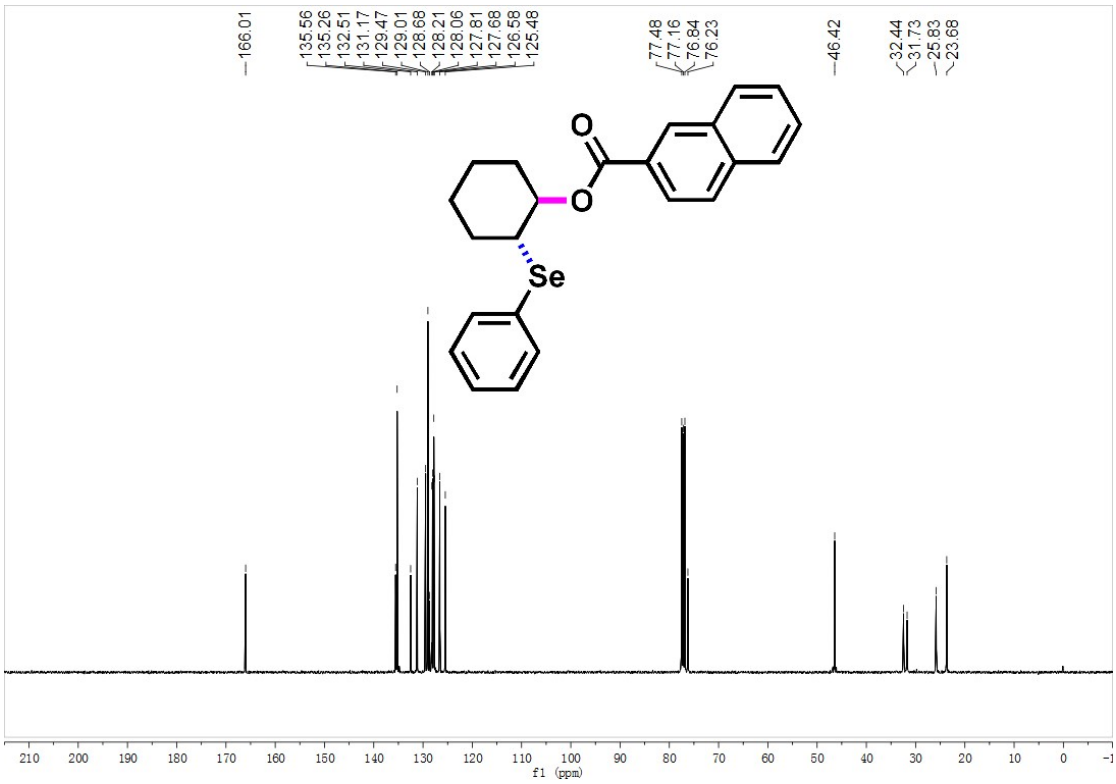
^{19}F NMR of product 7r in $CDCl_3$ (376 MHz)



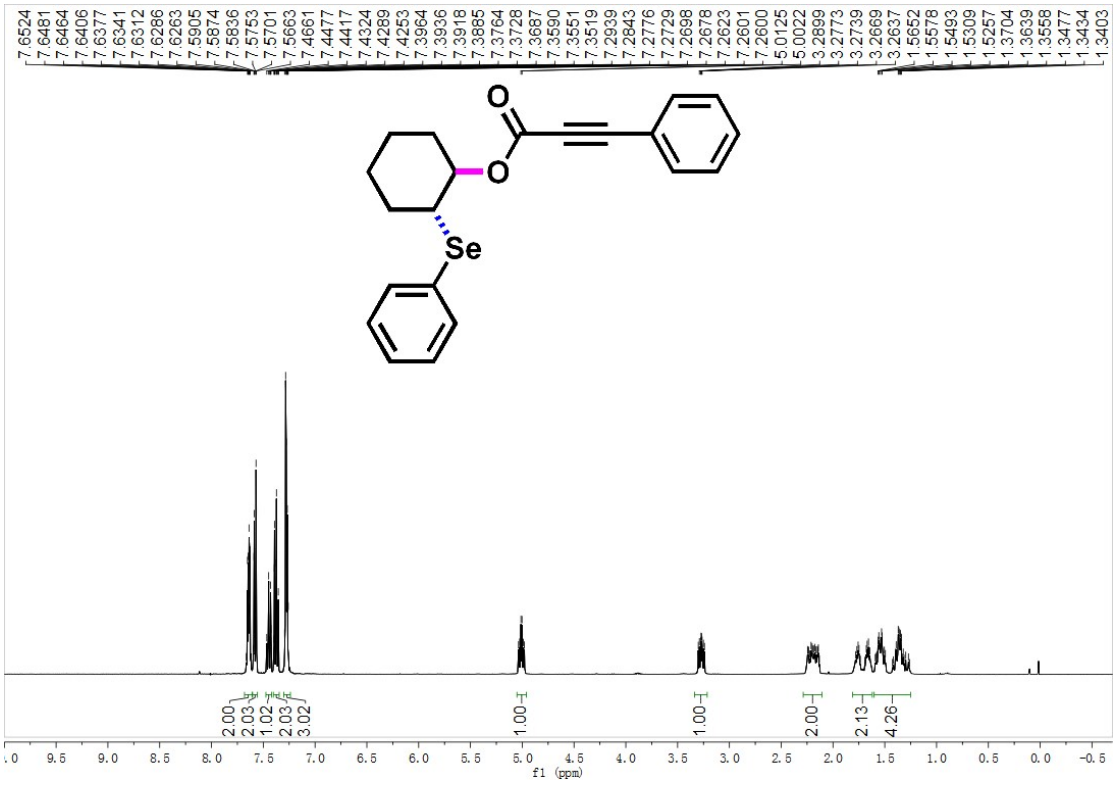
^{1}H NMR of product 7s in $CDCl_3$ (400 MHz)



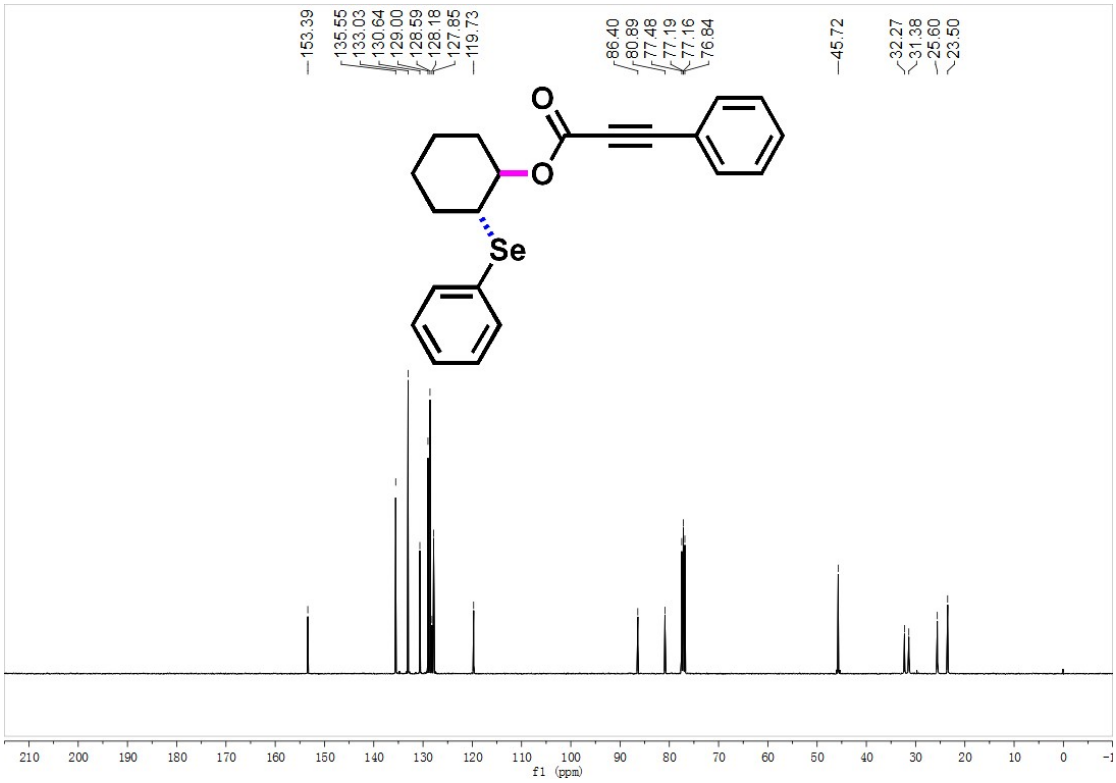
^{13}C NMR of product 7s in $CDCl_3$ (100 MHz)



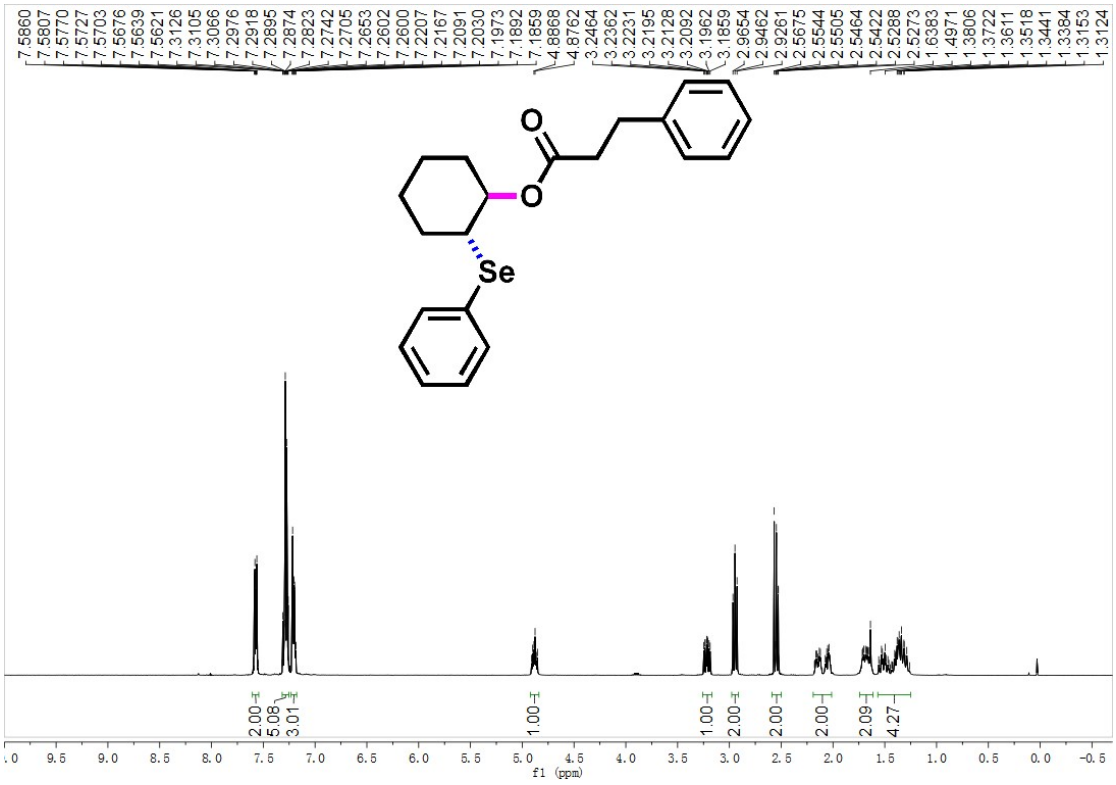
^{1}H NMR of product 7t in $CDCl_3$ (400 MHz)



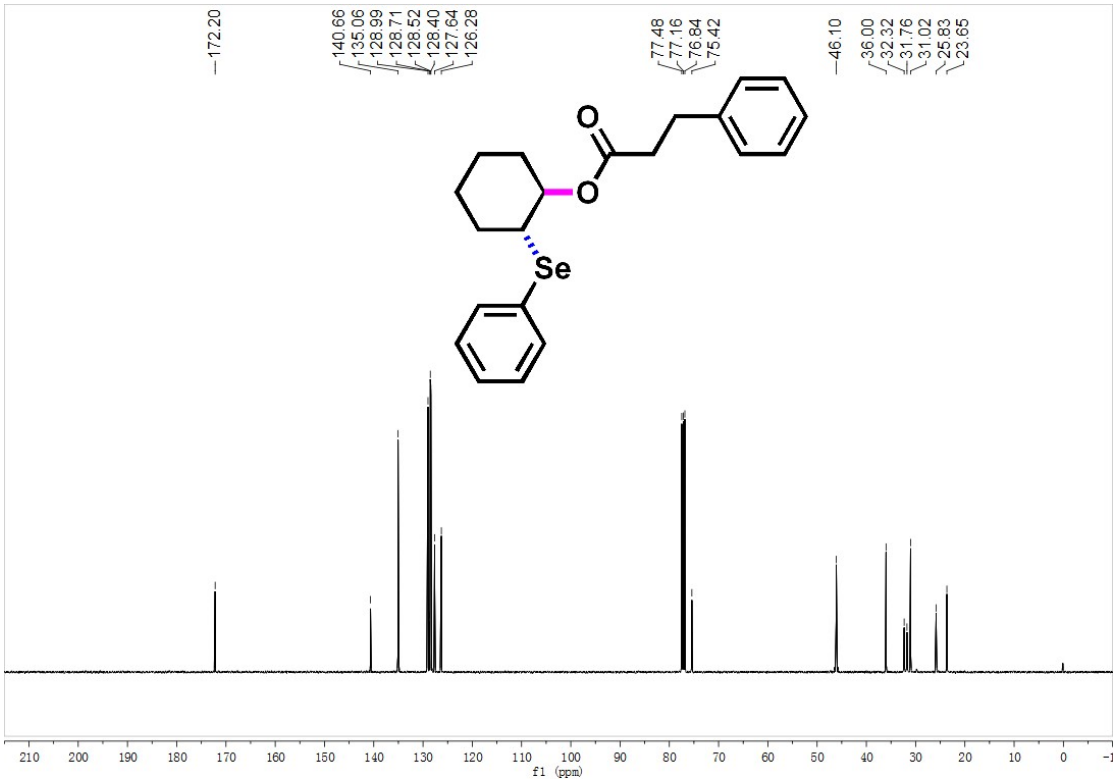
^{13}C NMR of product 7t in $CDCl_3$ (100 MHz)



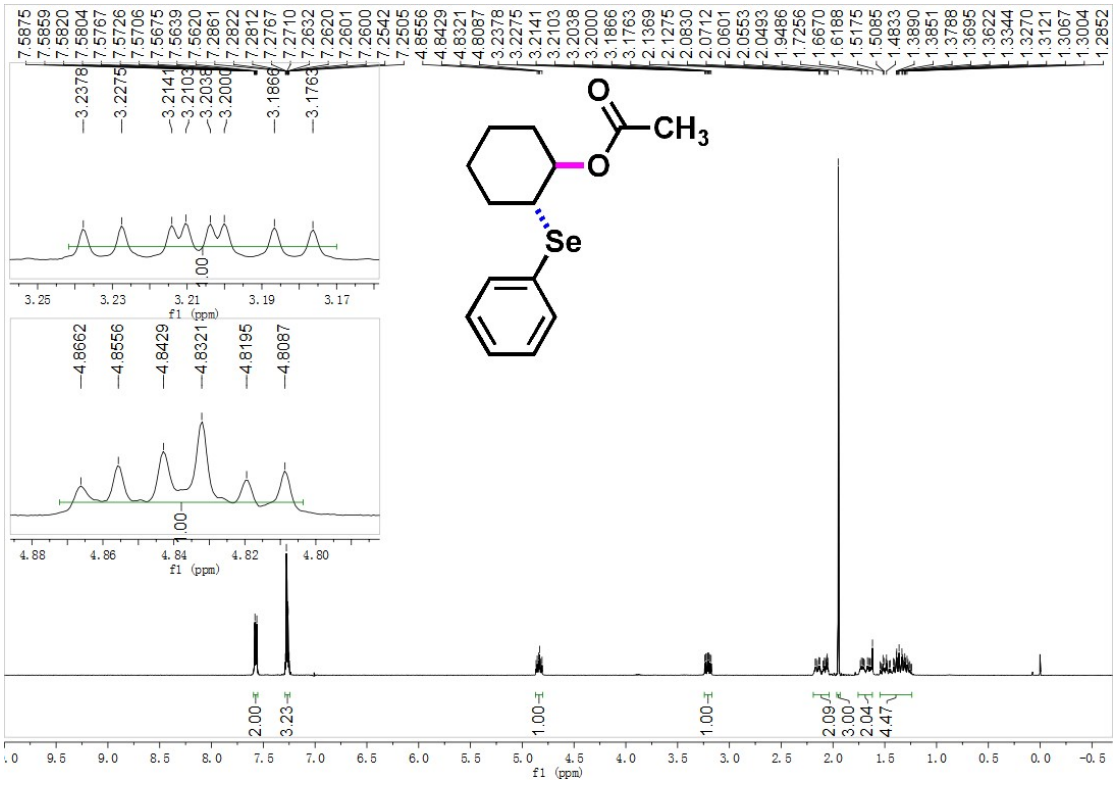
^{1}H NMR of product 7u in $CDCl_3$ (400 MHz)



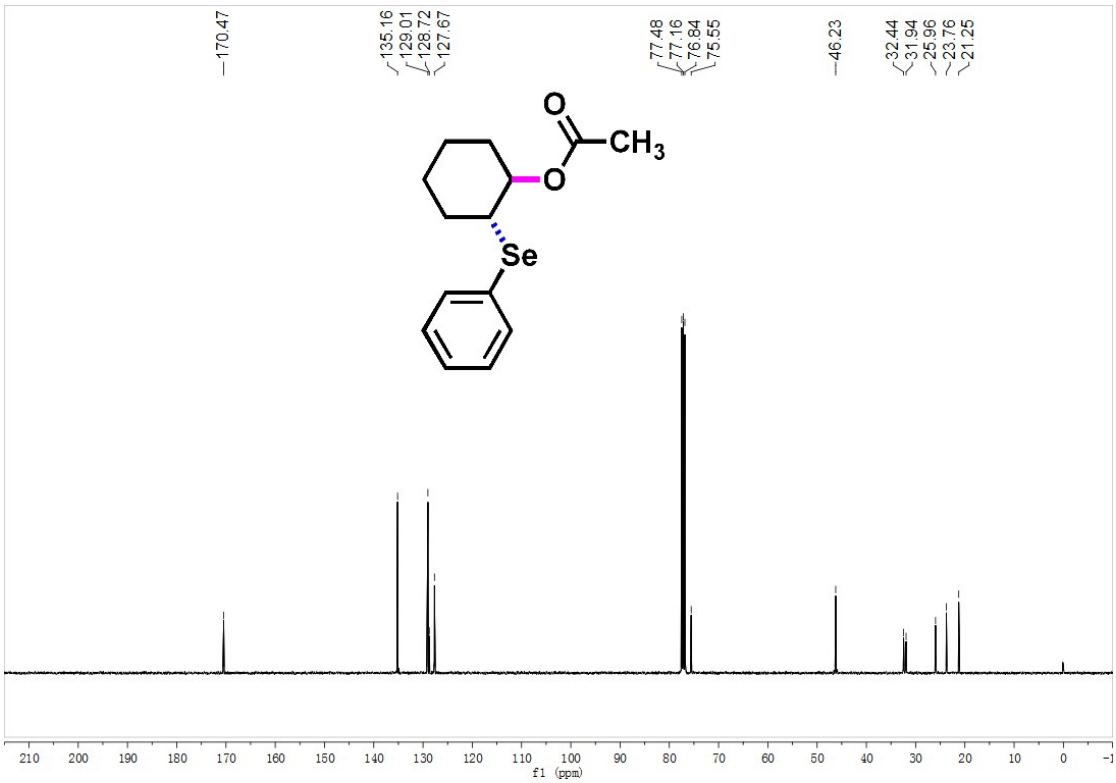
^{13}C NMR of product 7u in $CDCl_3$ (100 MHz)



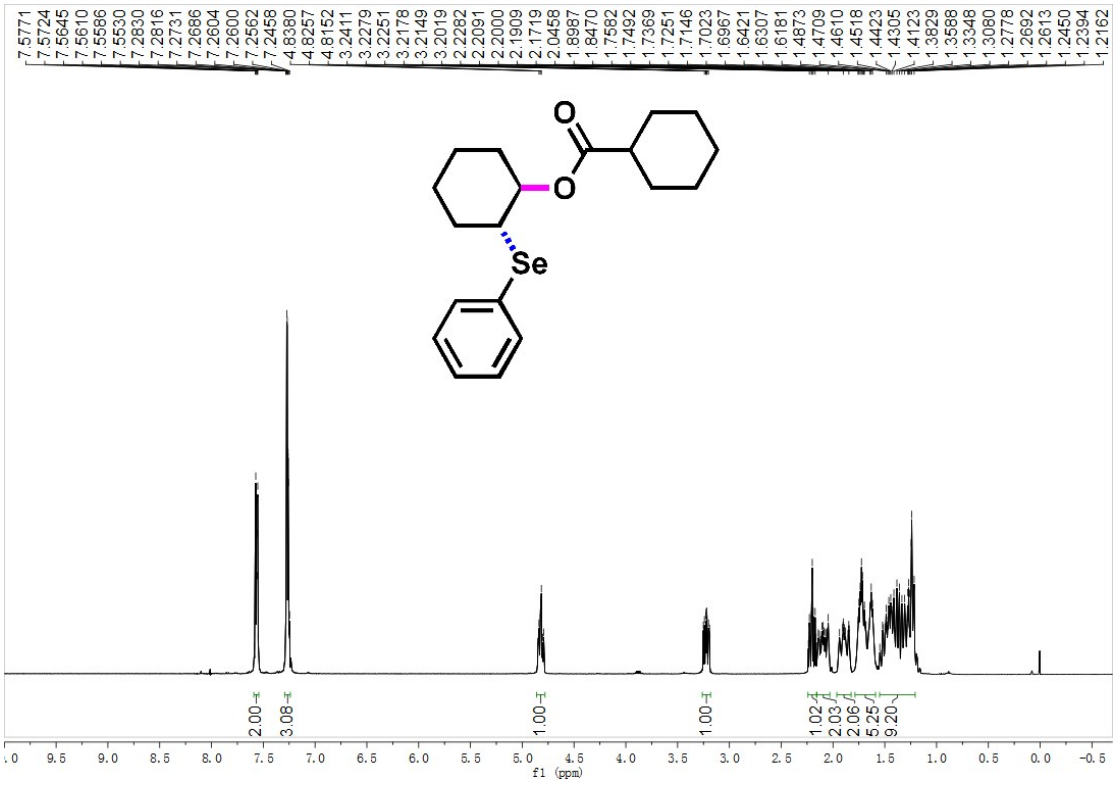
^{1}H NMR of product 7v in $CDCl_3$ (400 MHz)



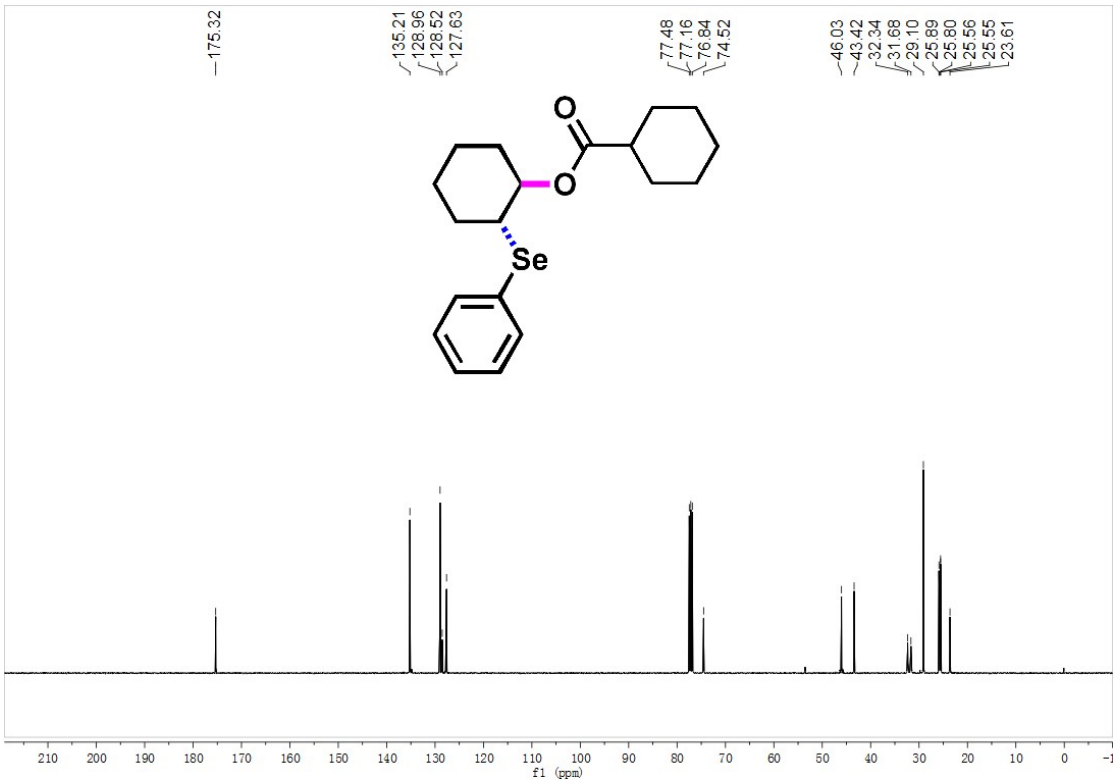
^{13}C NMR of product 7v in $CDCl_3$ (100 MHz)



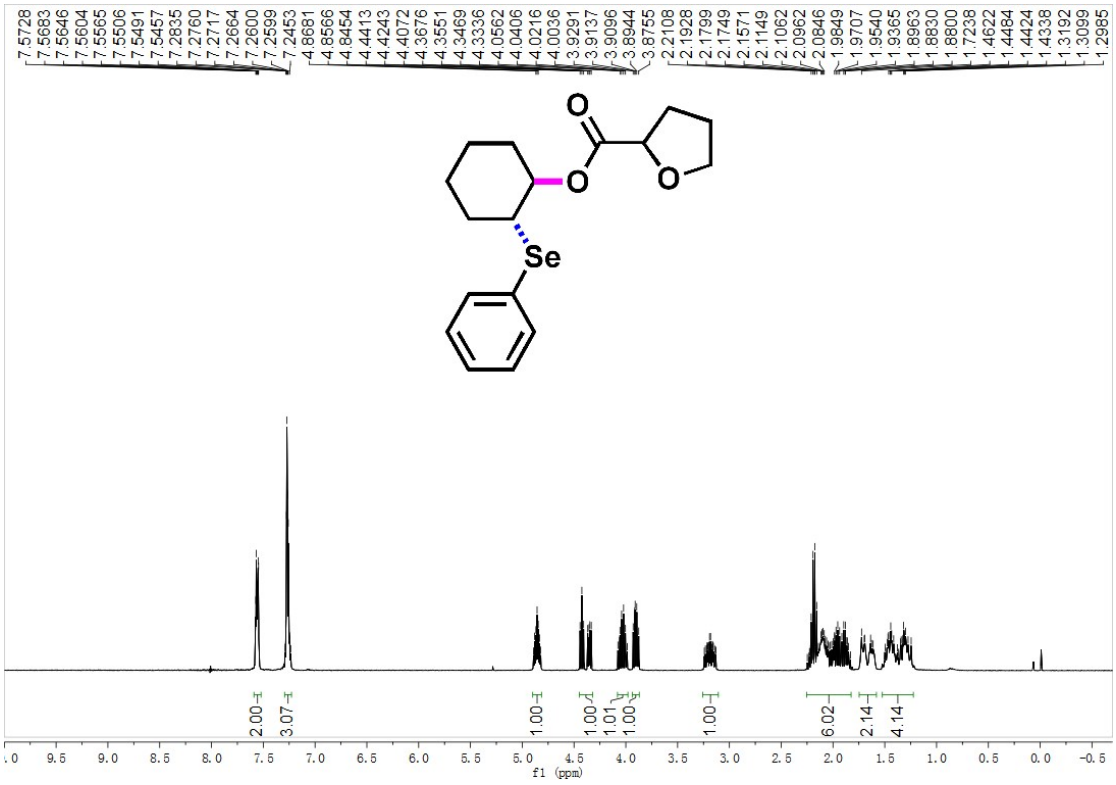
^{1}H NMR of product 7w in $CDCl_3$ (400 MHz)



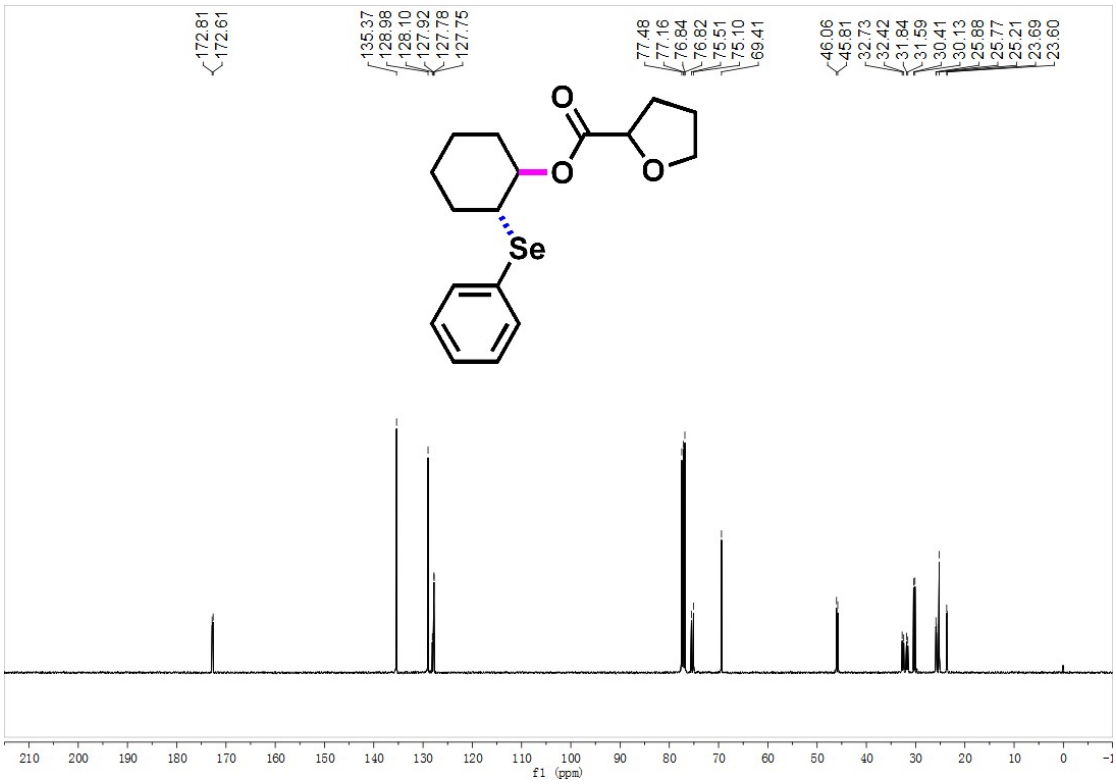
^{13}C NMR of product 7w in $CDCl_3$ (100 MHz)



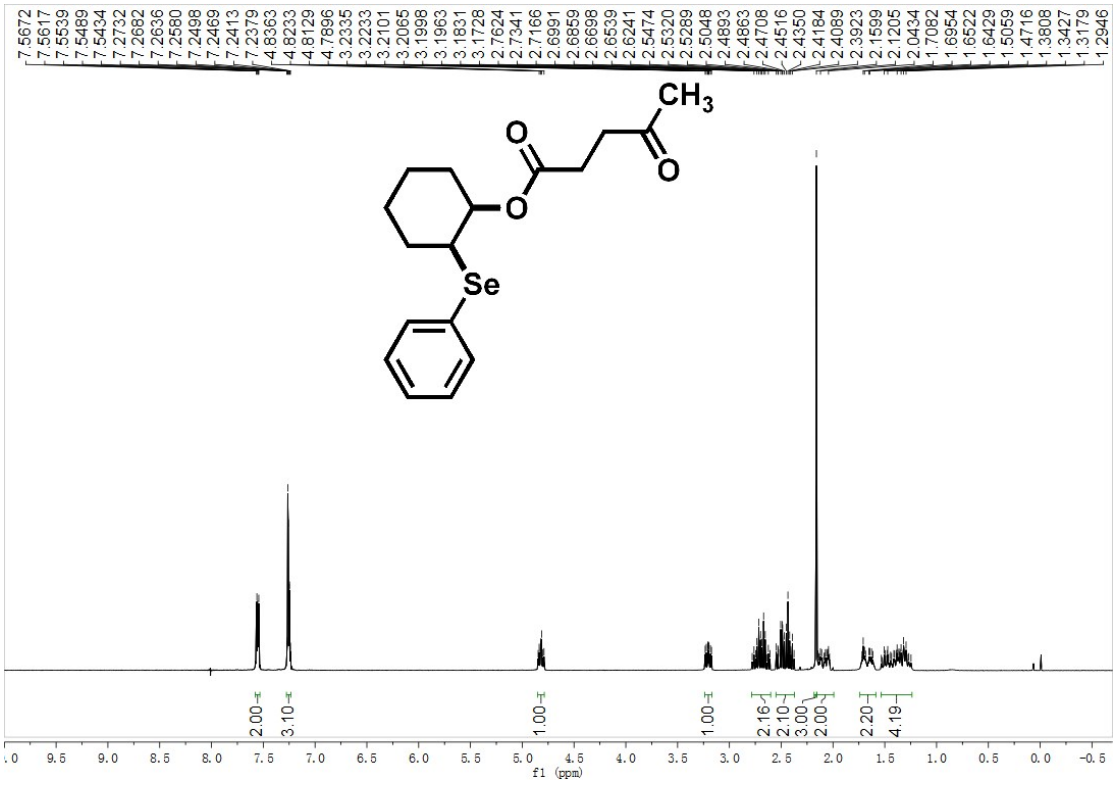
^{1}H NMR of product 7x in $CDCl_3$ (400 MHz)



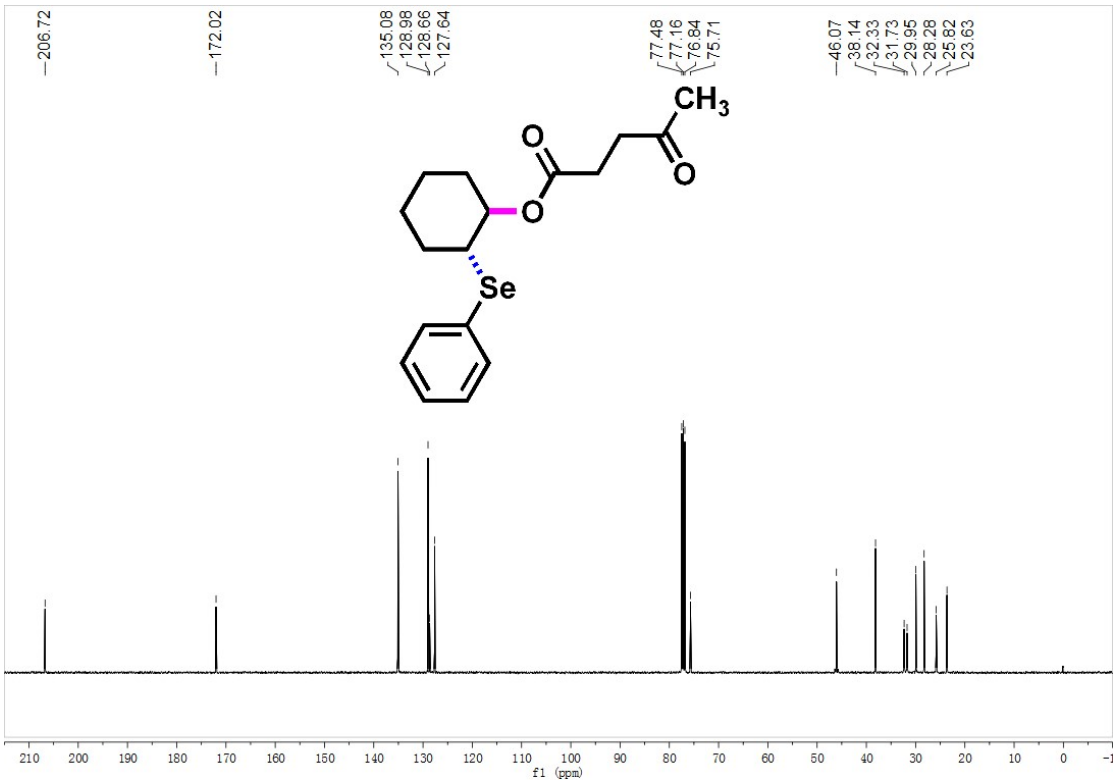
^{13}C NMR of product 7x in $CDCl_3$ (100 MHz)



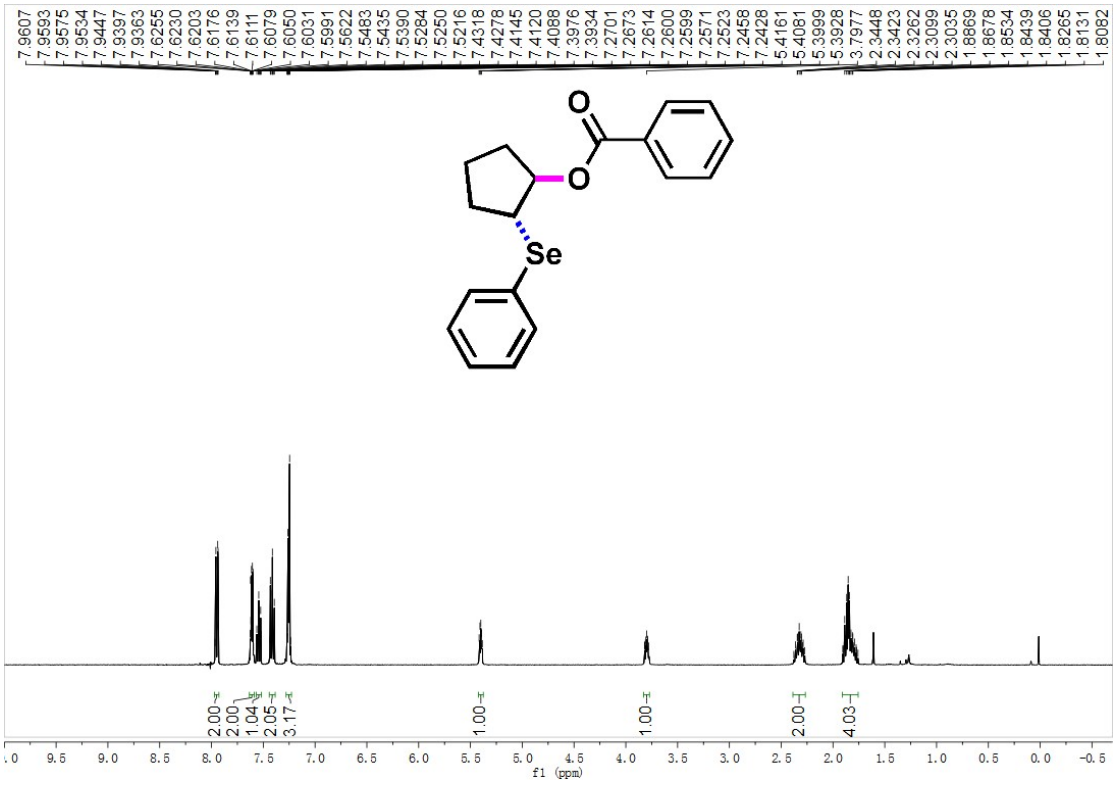
^{1}H NMR of product 7y in $CDCl_3$ (400 MHz)



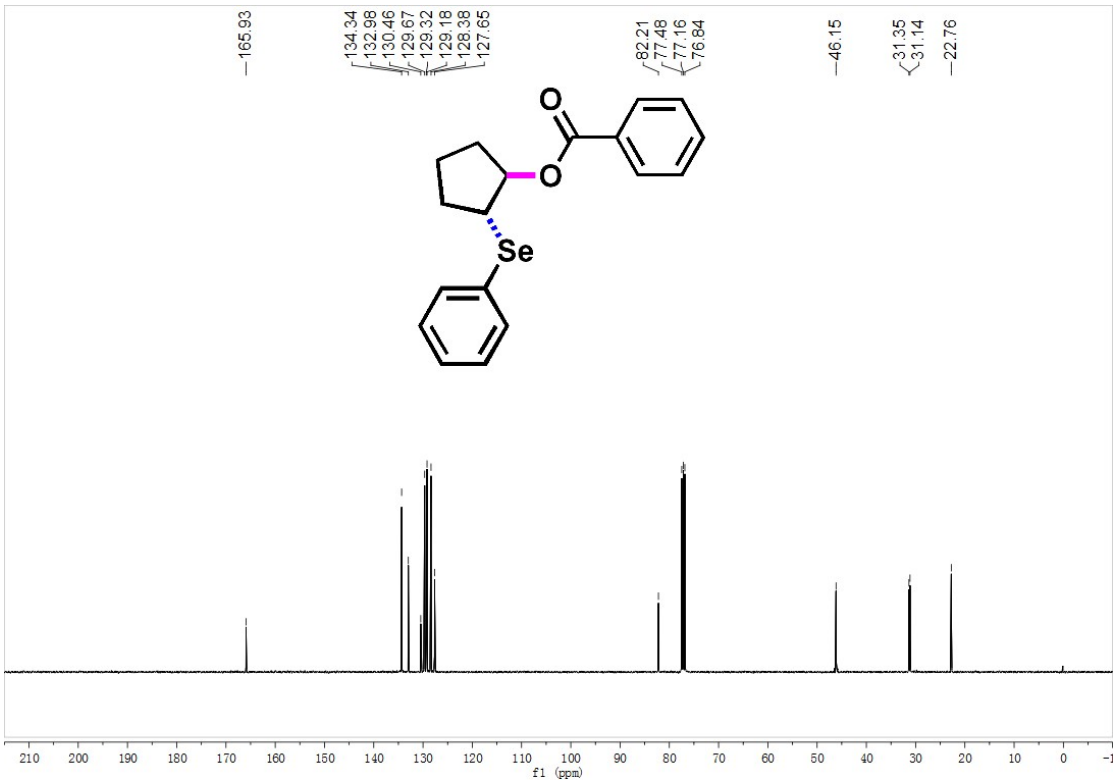
^{13}C NMR of product 7y in $CDCl_3$ (100 MHz)



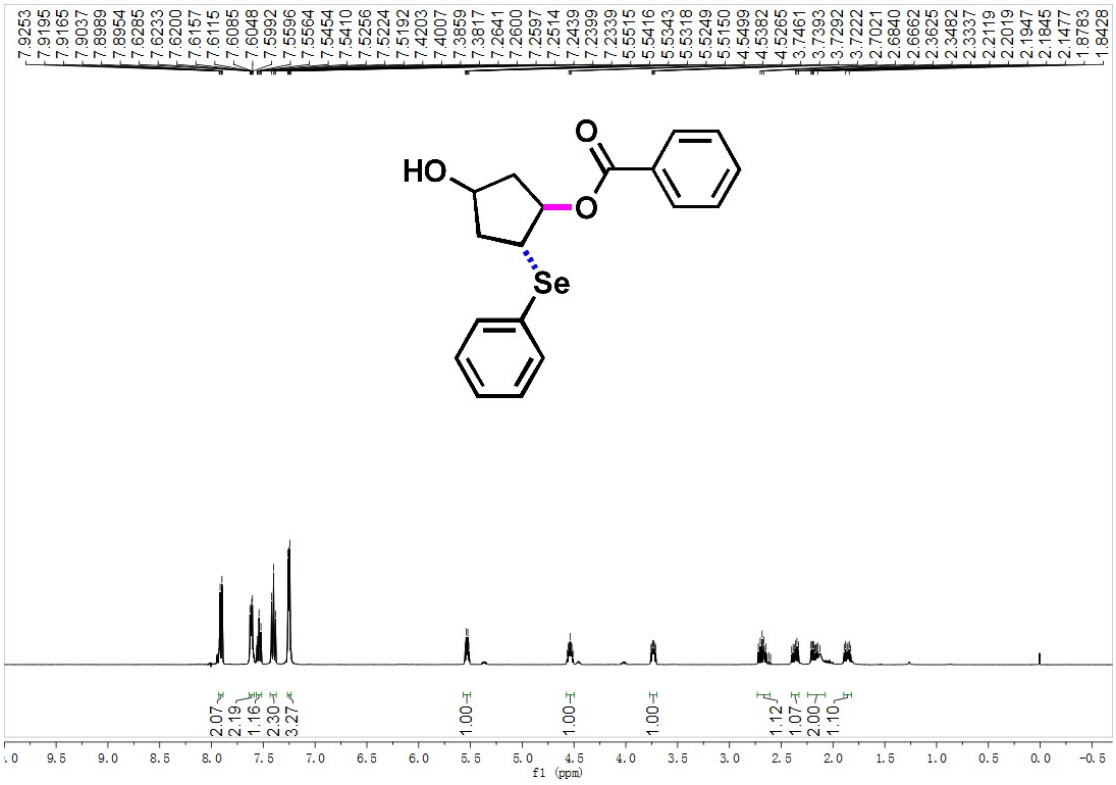
^{1}H NMR of product 7z in $CDCl_3$ (400 MHz)



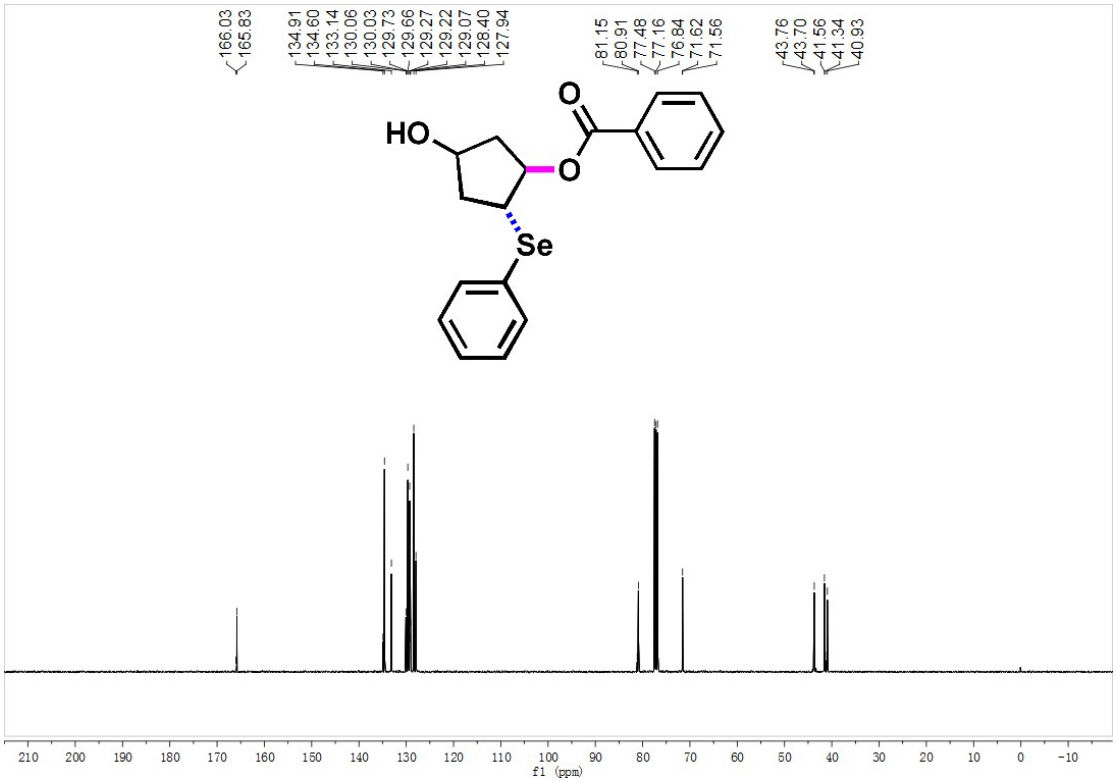
^{13}C NMR of product 7z in $CDCl_3$ (100 MHz)



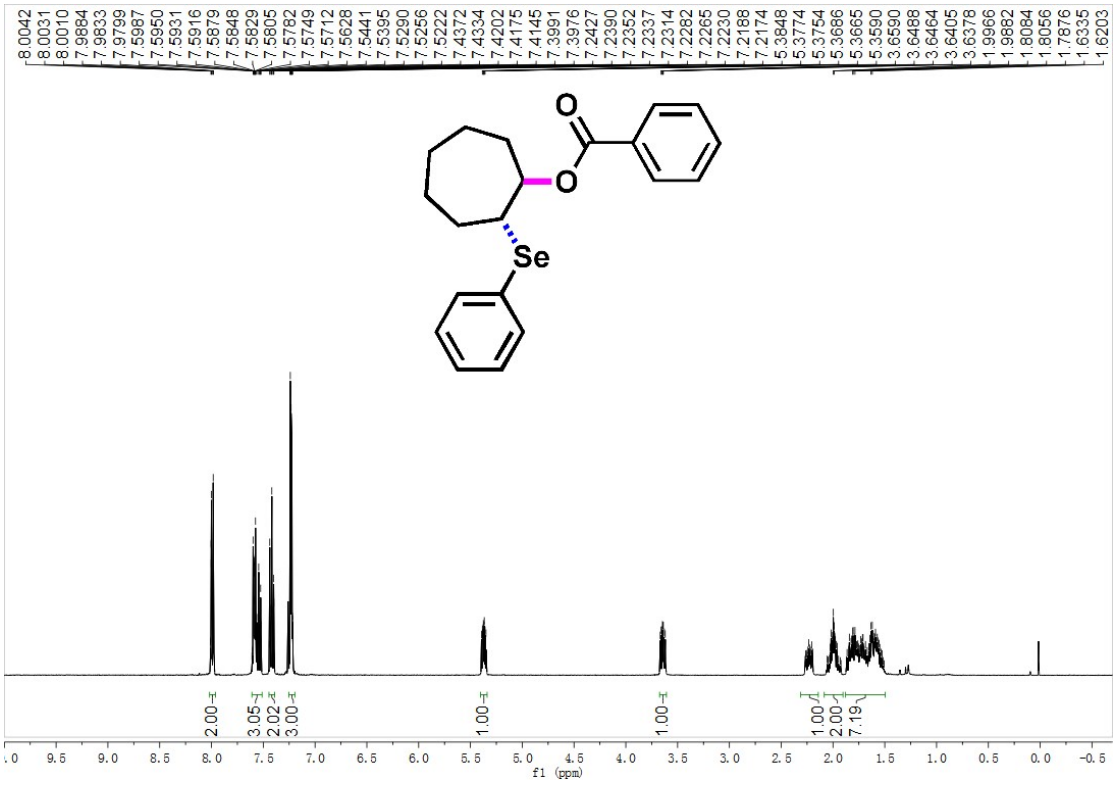
^{1}H NMR of product 7a′ in $CDCl_3$ (400 MHz)



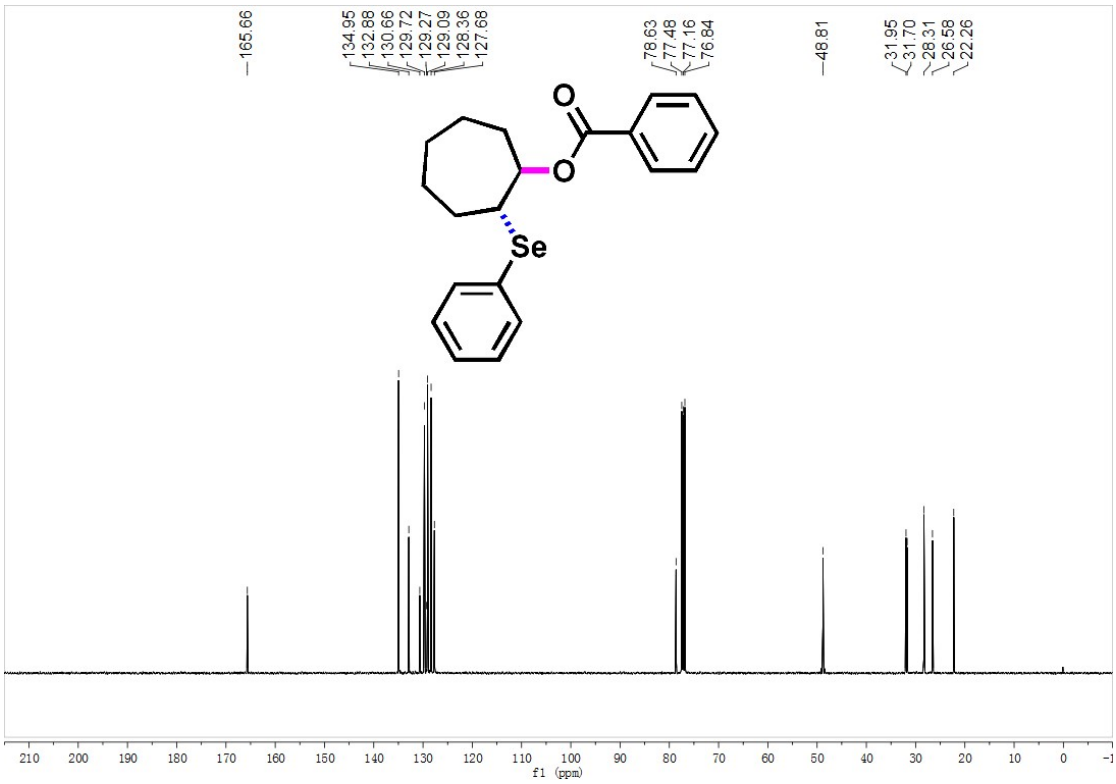
^{13}C NMR of product 7a′ in $CDCl_3$ (100 MHz)



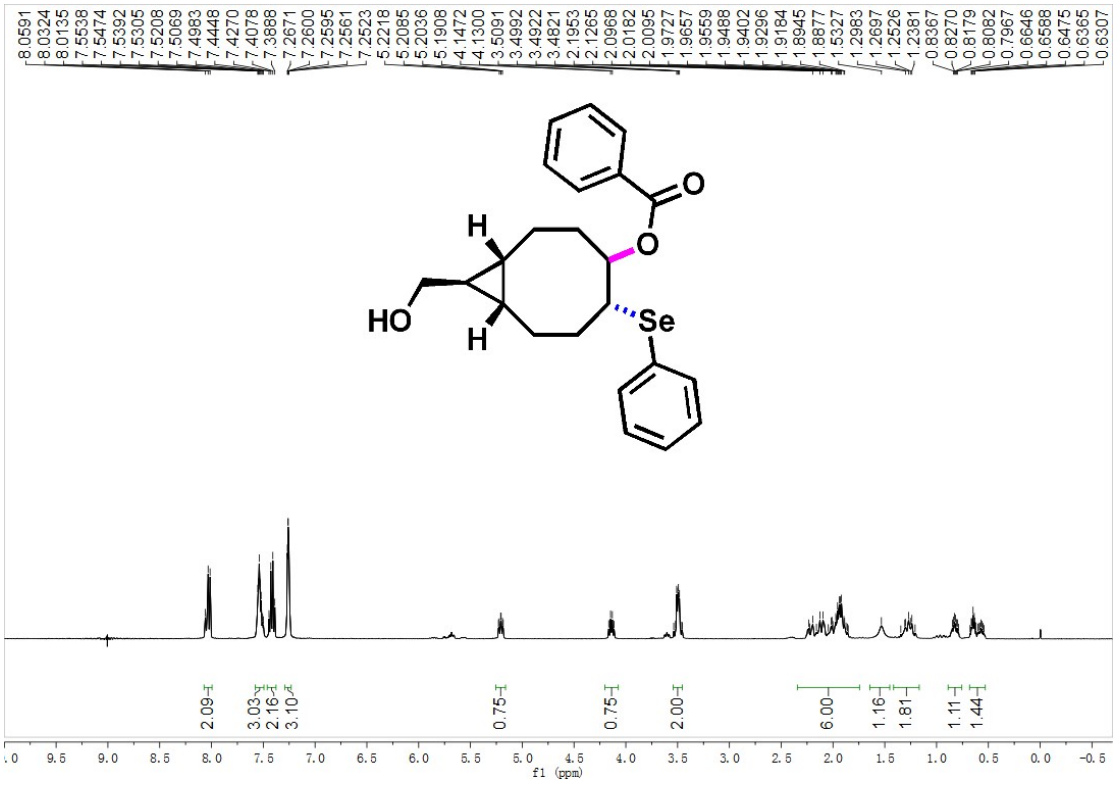
^{1}H NMR of product 7b′ in $CDCl_3$ (400 MHz)



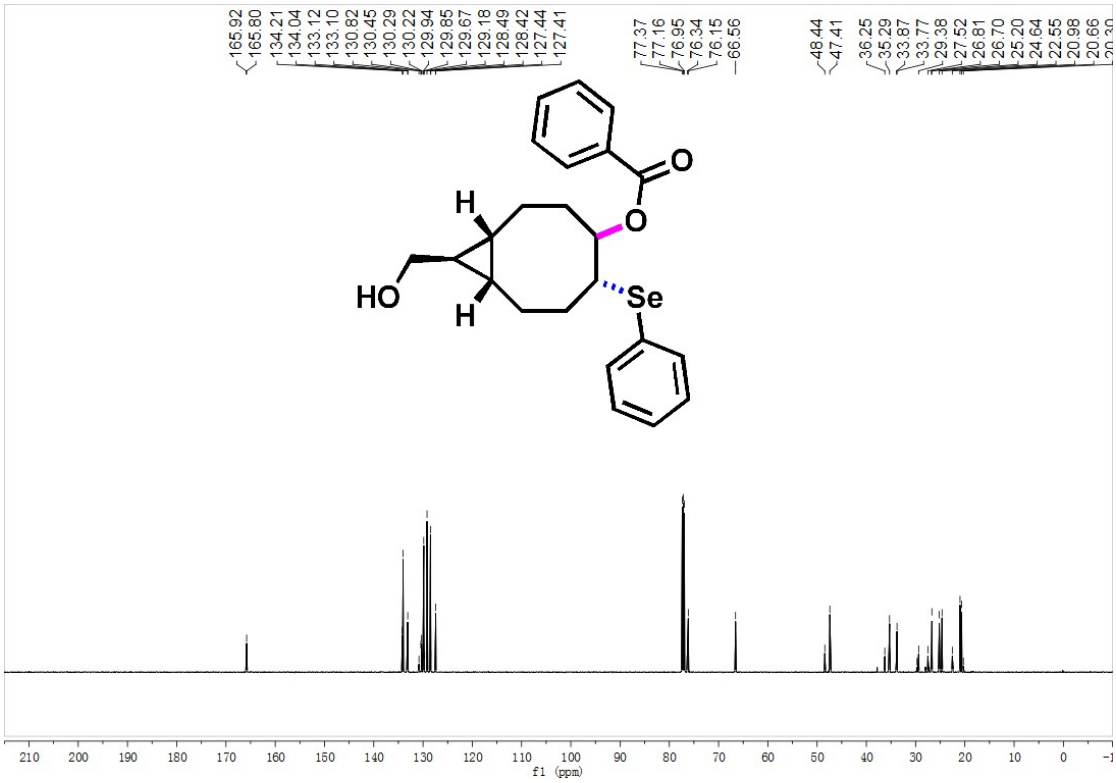
^{13}C NMR of product 7b′ in $CDCl_3$ (100 MHz)



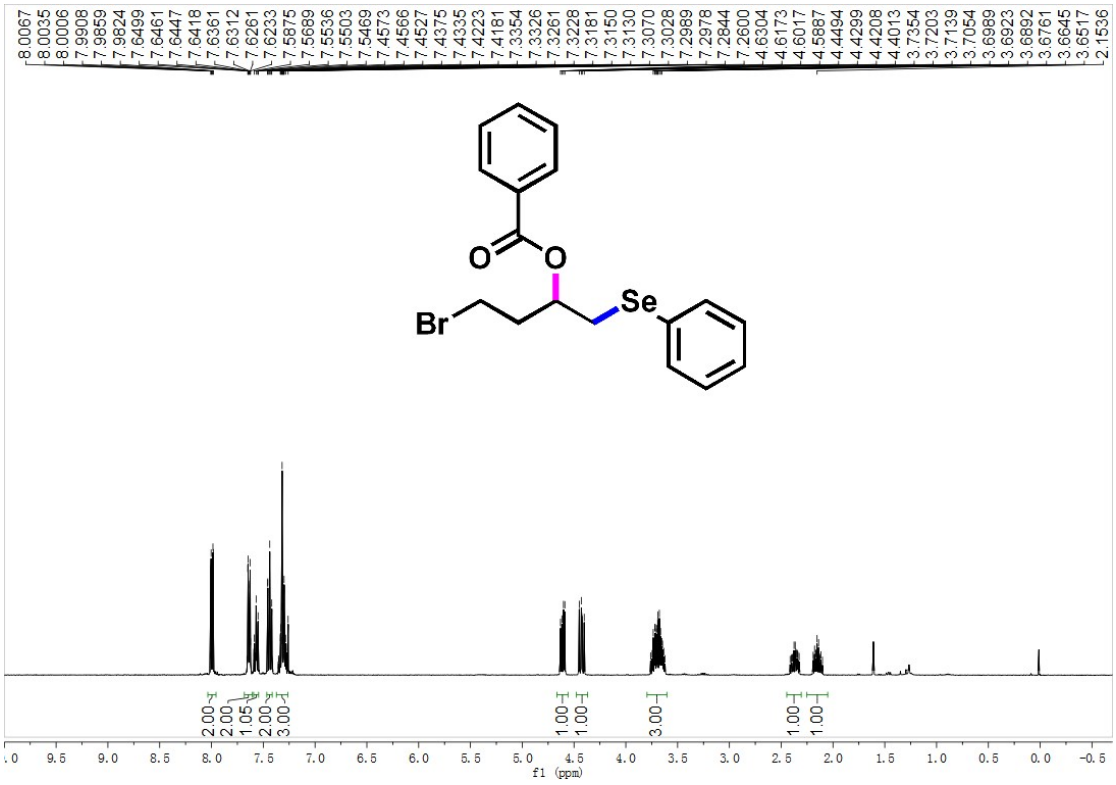
^{1}H NMR of product 7c′ in $CDCl_3$ (400 MHz)



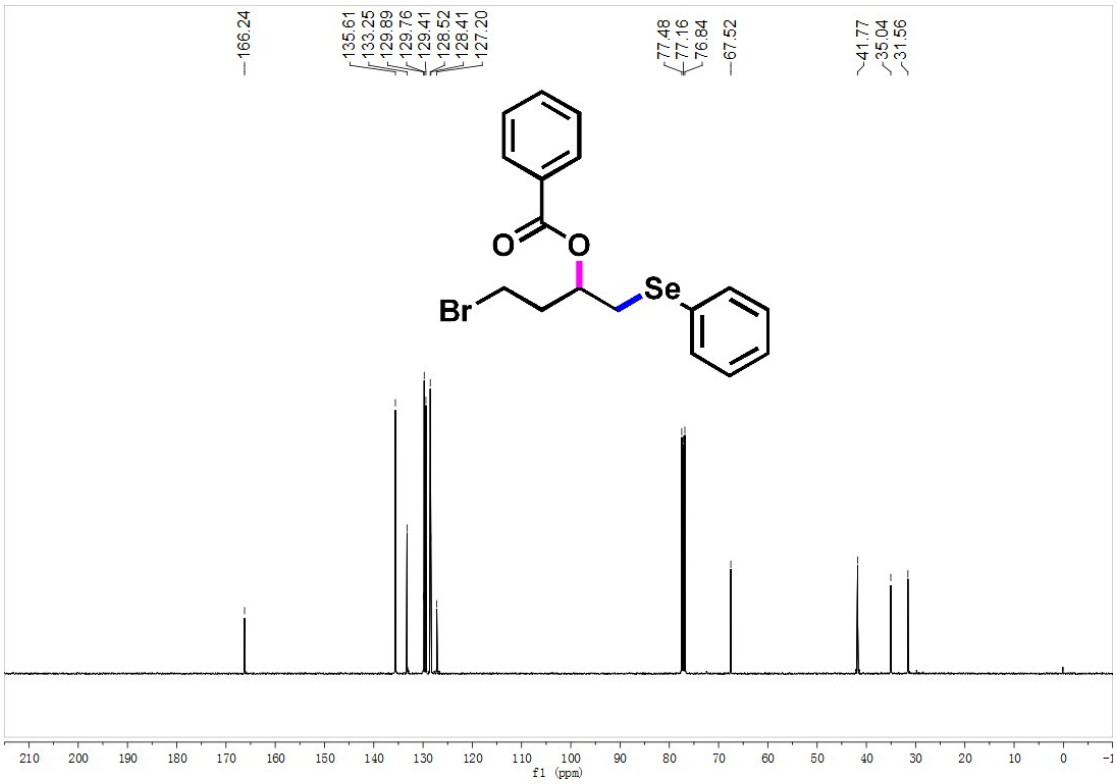
^{13}C NMR of product 7c′ in $CDCl_3$ (150 MHz)



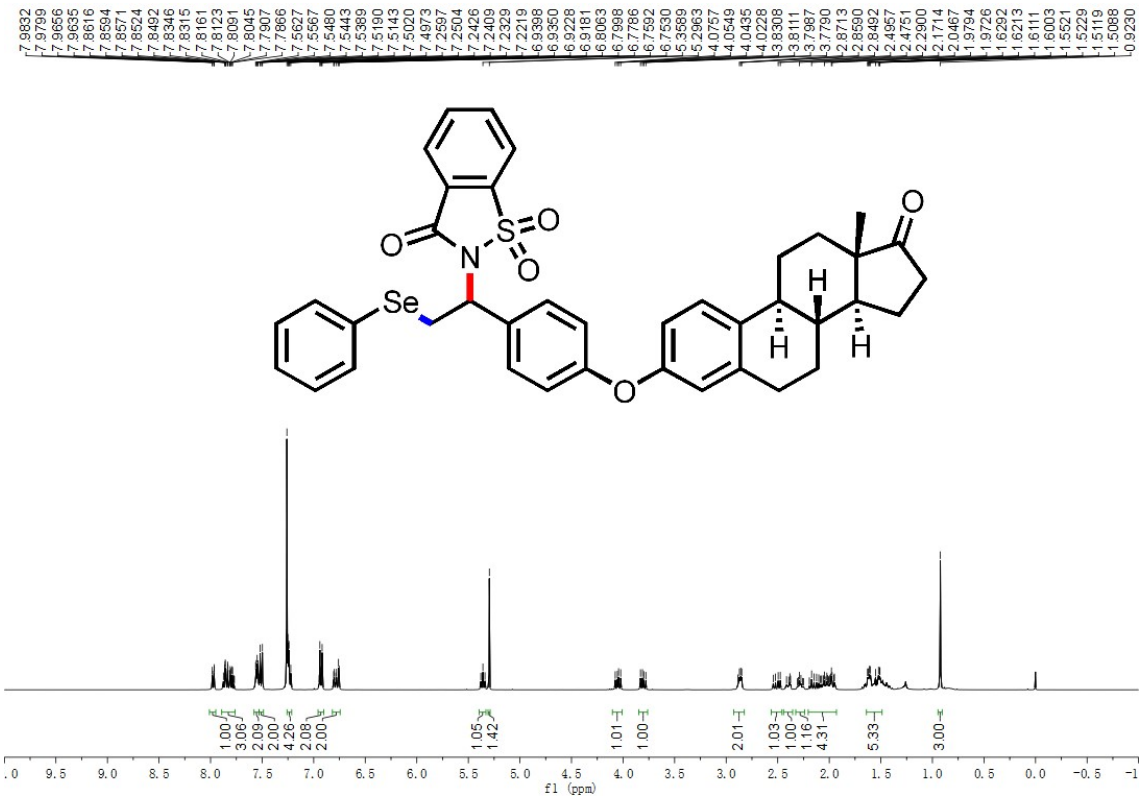
^{1}H NMR of product 7d′ in $CDCl_3$ (400 MHz)



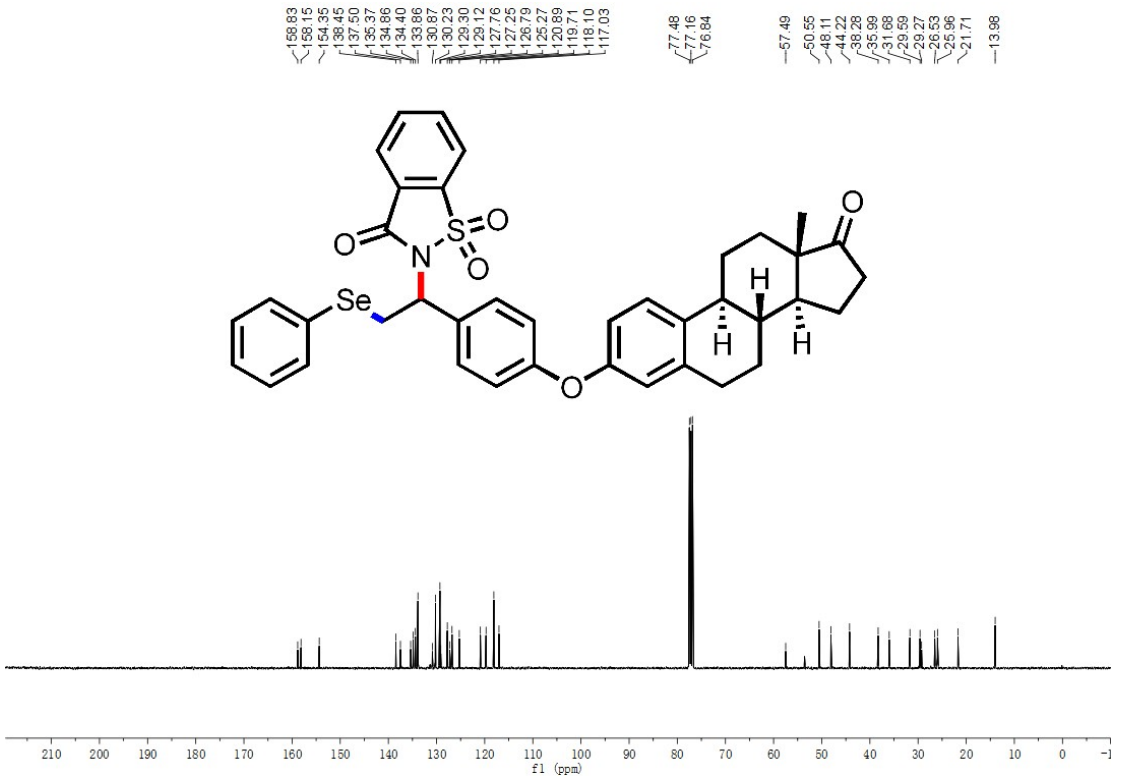
^{13}C NMR of product 7d′ in $CDCl_3$ (100 MHz)



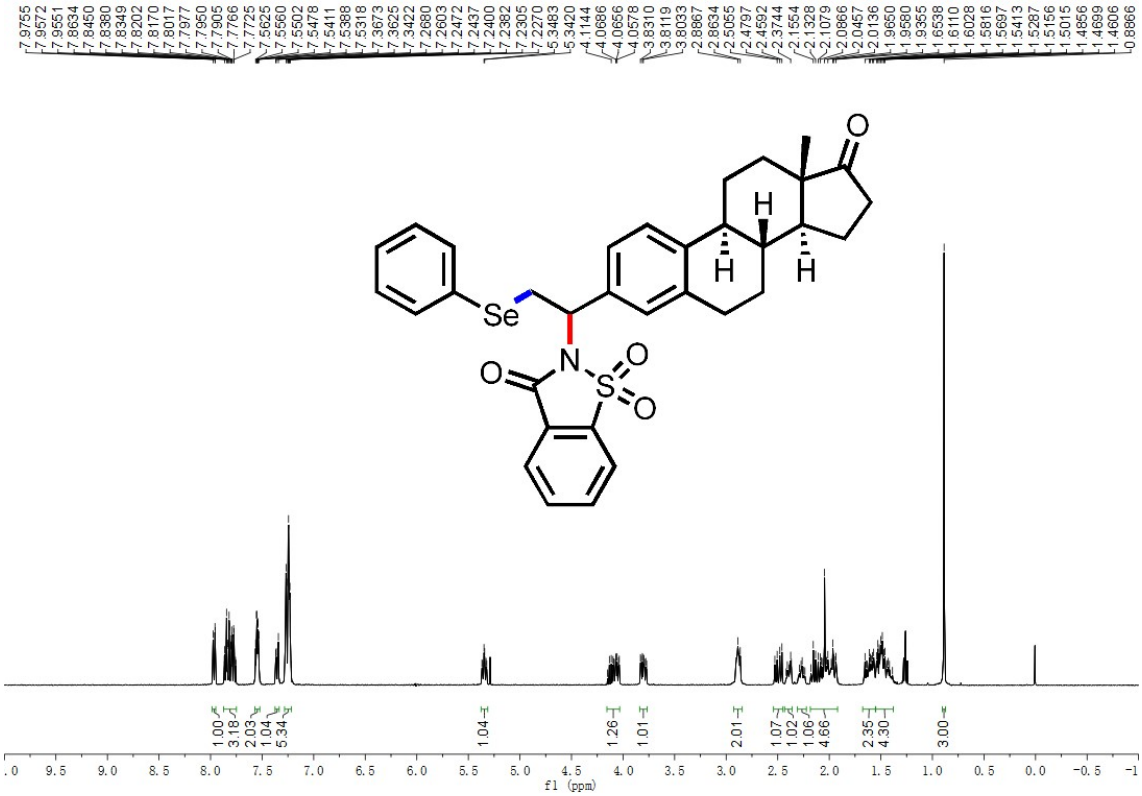
^{1}H NMR of product 8a in $CDCl_3$ (400 MHz)



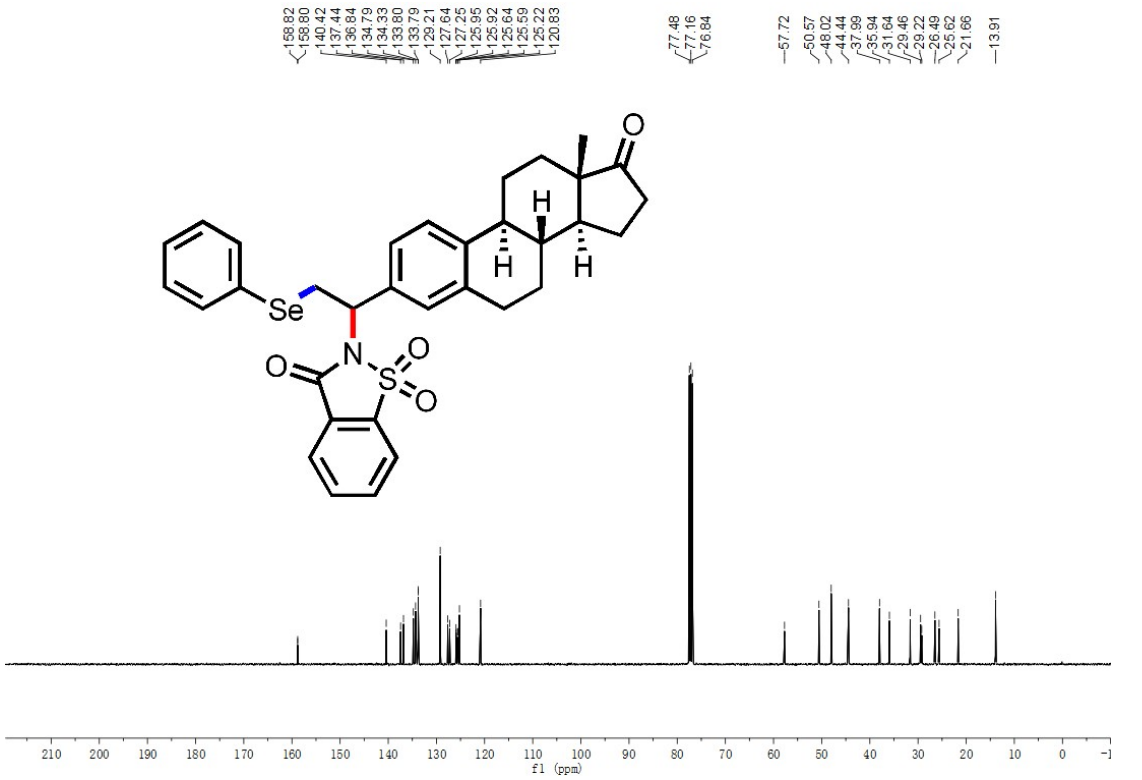
^{13}C NMR of product 8a in $CDCl_3$ (100 MHz)



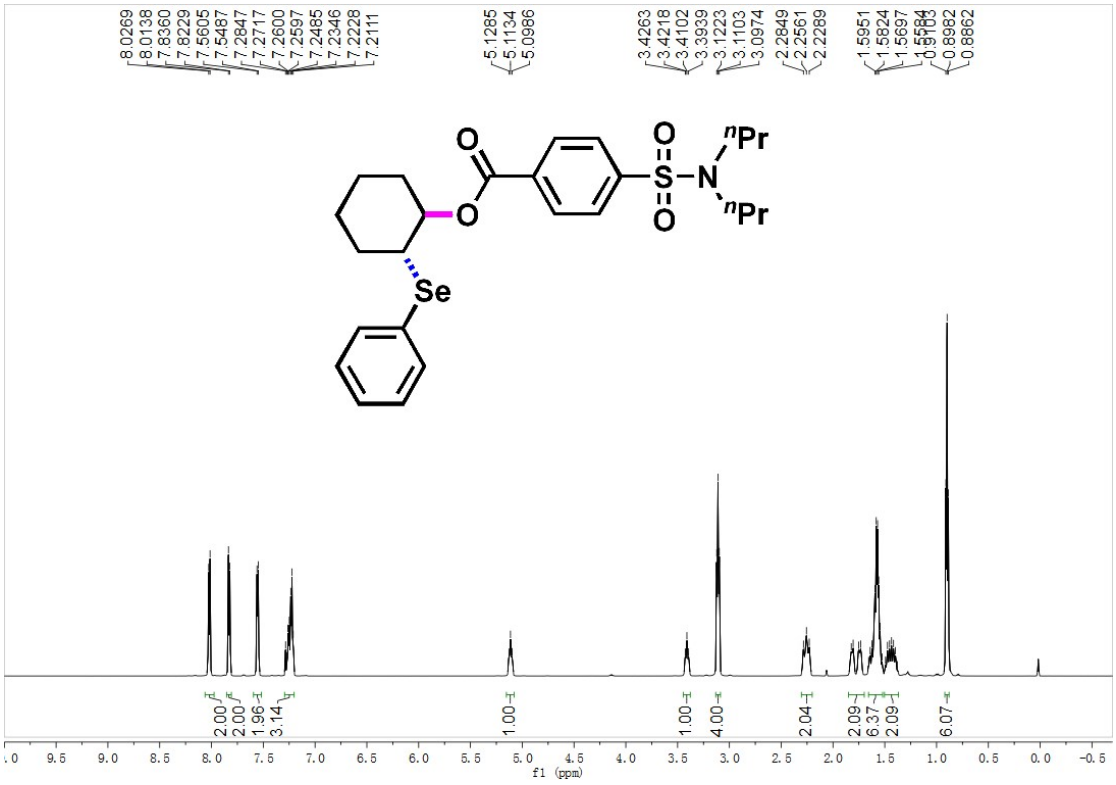
^{1}H NMR of product 8b in $CDCl_3$ (400 MHz)



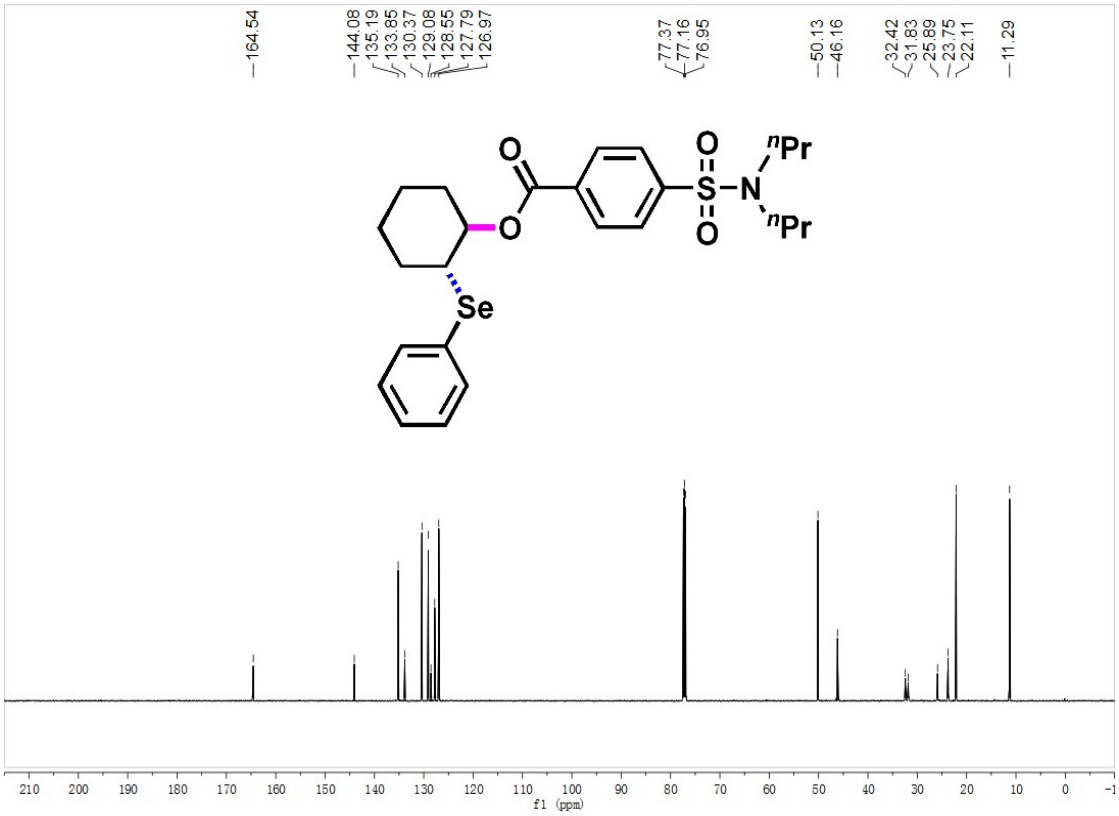
^{13}C NMR of product 8b in $CDCl_3$ (100 MHz)



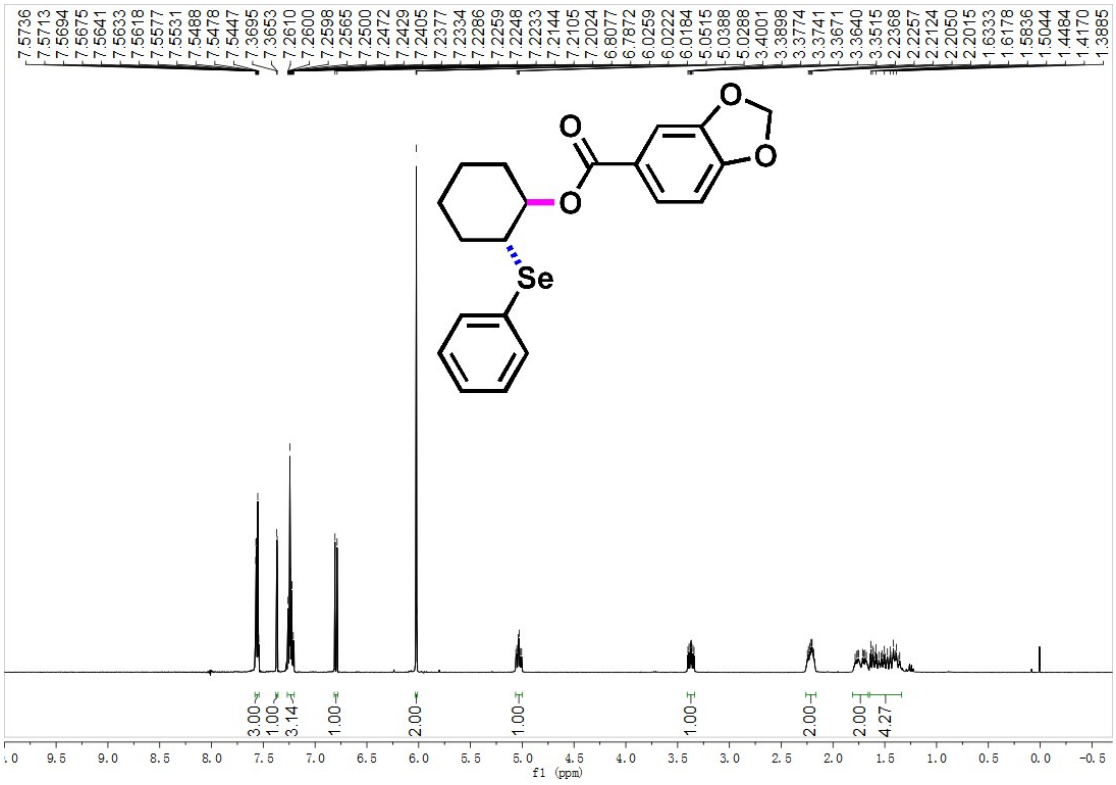
^{1}H NMR of product 8c in CDCl3 (600 MHz)



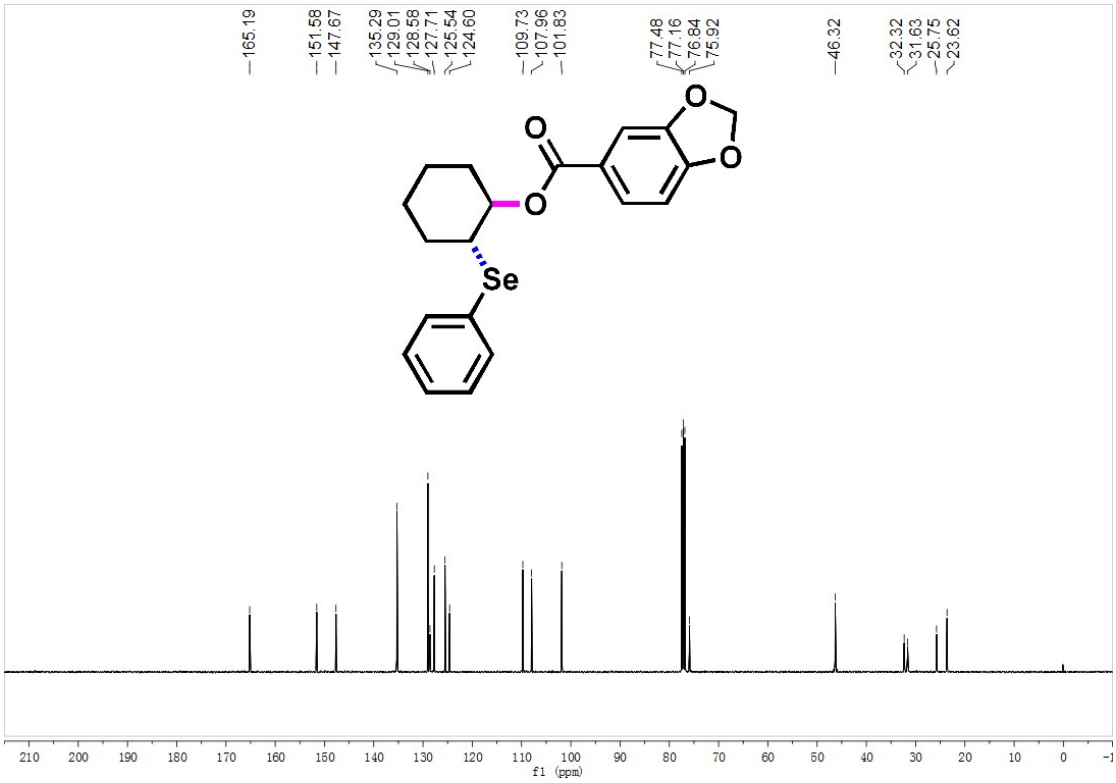
^{13}C NMR of product 8c in $CDCl_3$ (150 MHz)



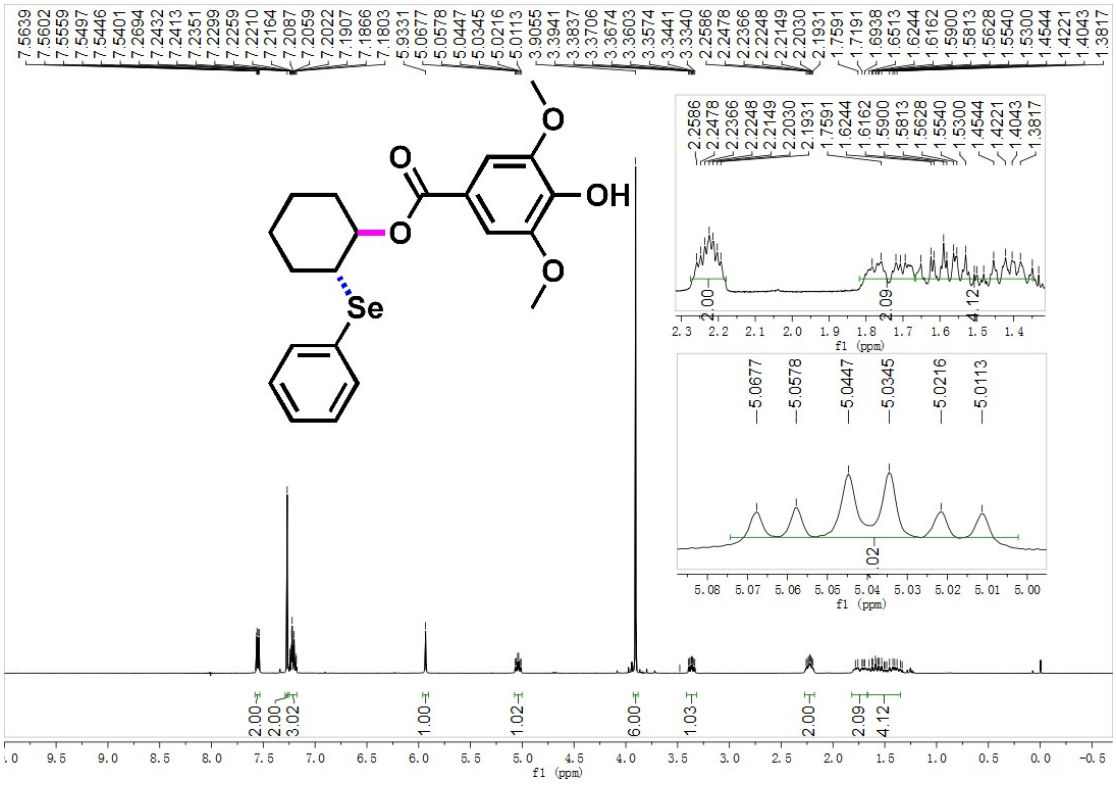
^{1}H NMR of product 8d in $CDCl_3$ (400 MHz)



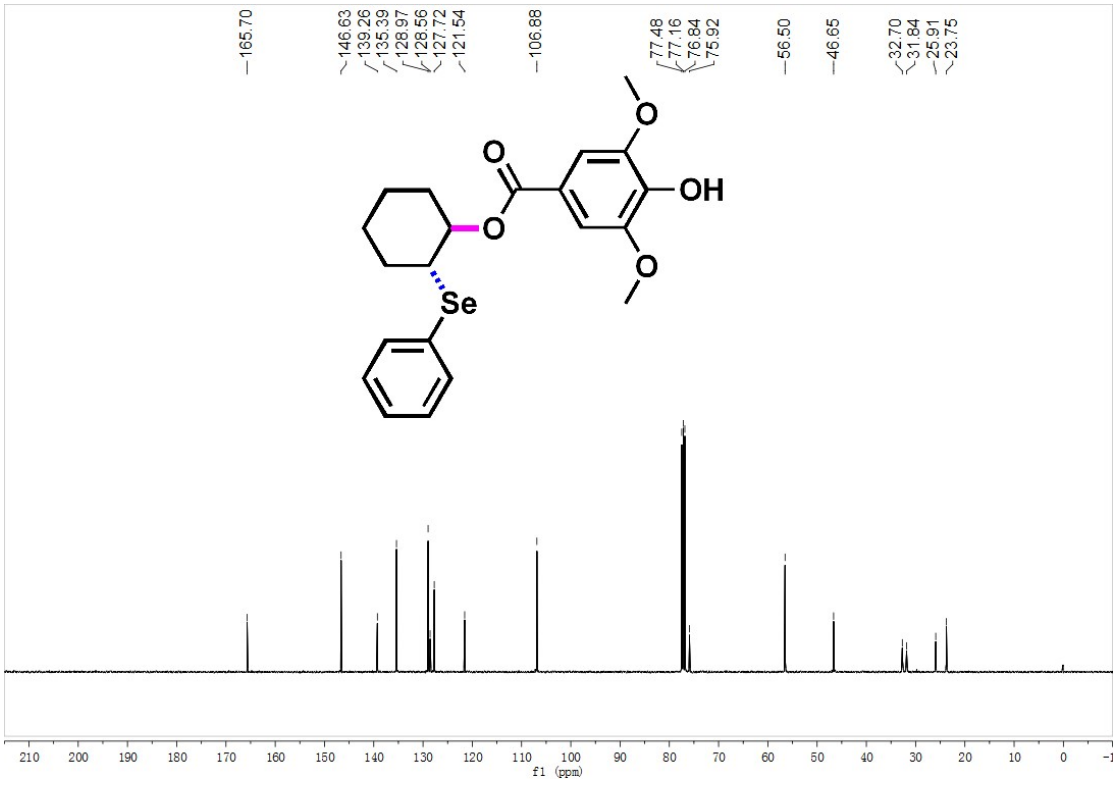
^{13}C NMR of product 8d in $CDCl_3$ (100 MHz)



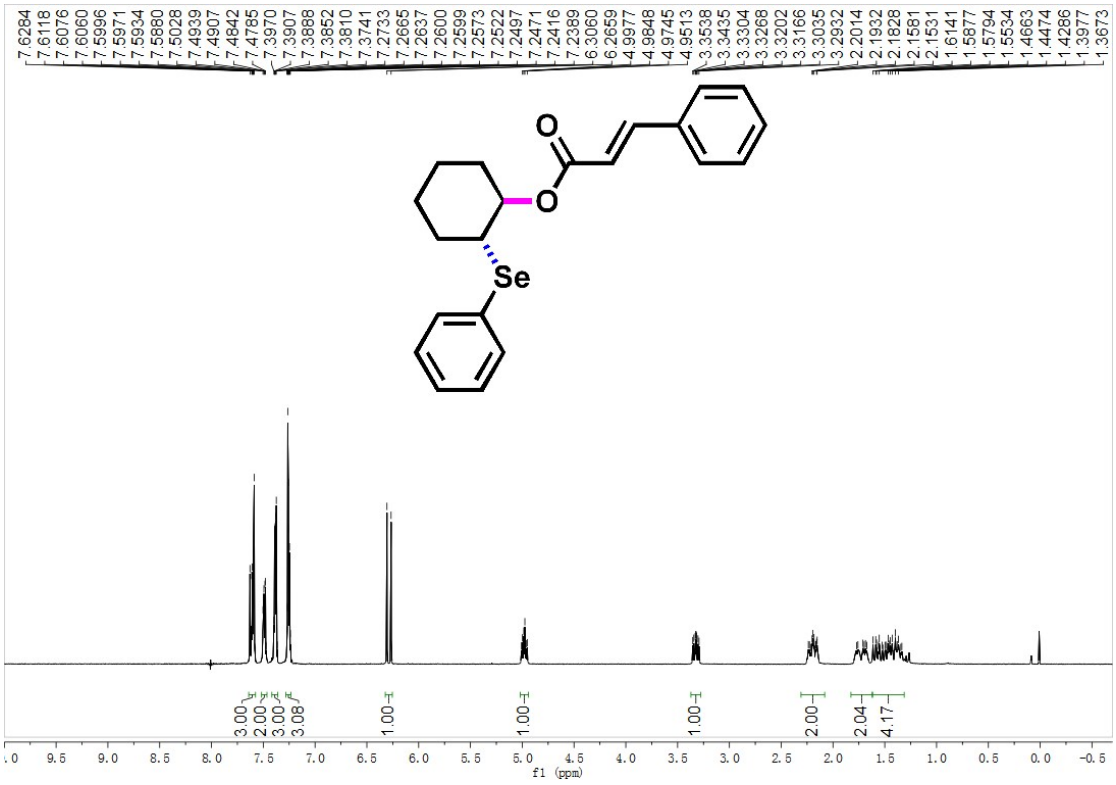
^{1}H NMR of product 8e in $CDCl_3$ (400 MHz)



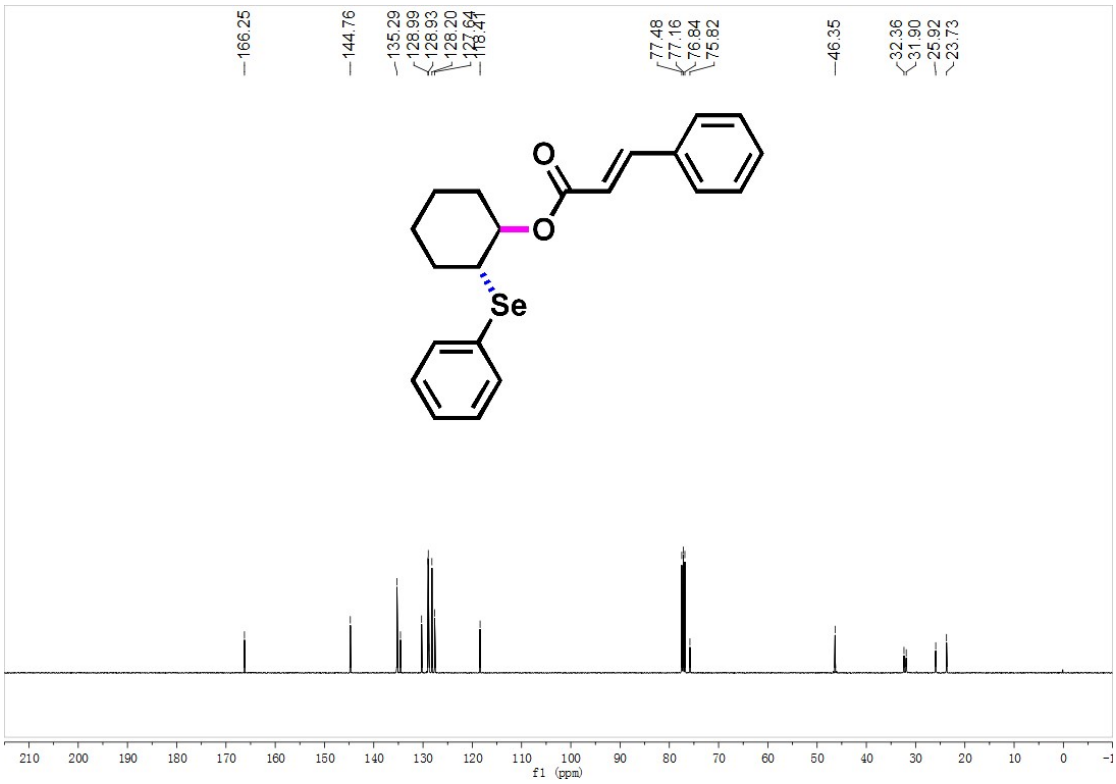
^{13}C NMR of product 8e in $CDCl_3$ (100 MHz)



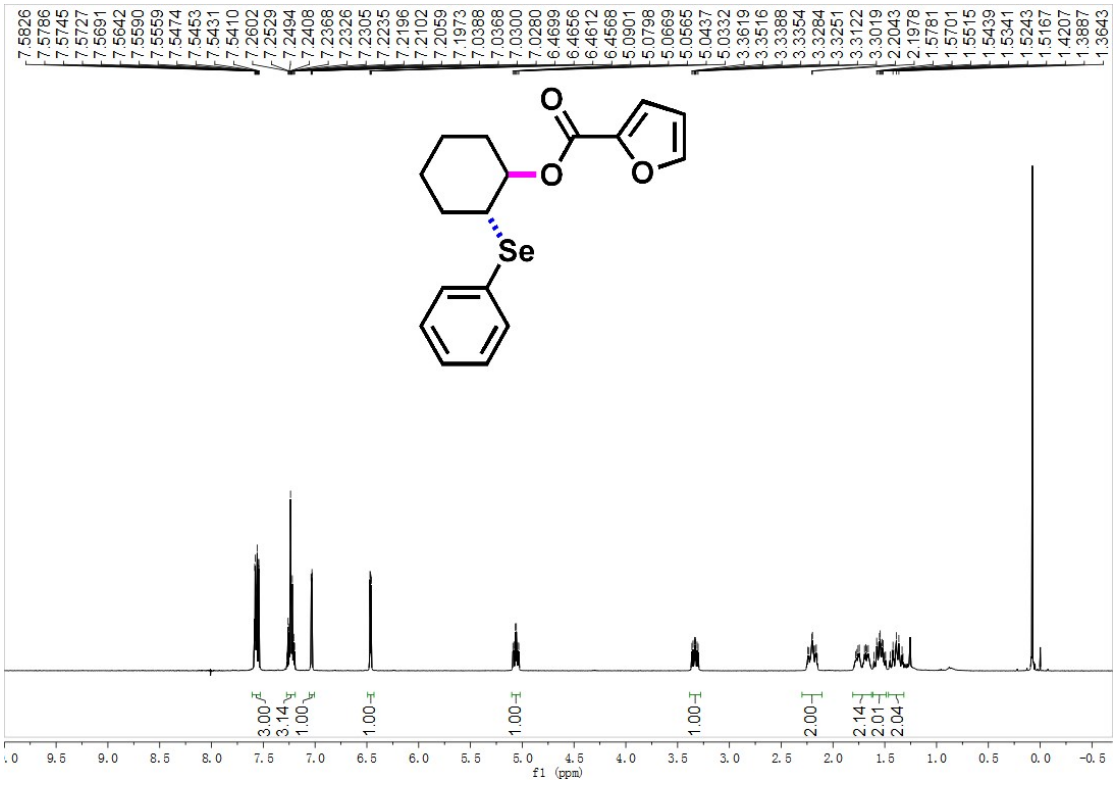
^{1}H NMR of product 8f in $CDCl_3$ (400 MHz)



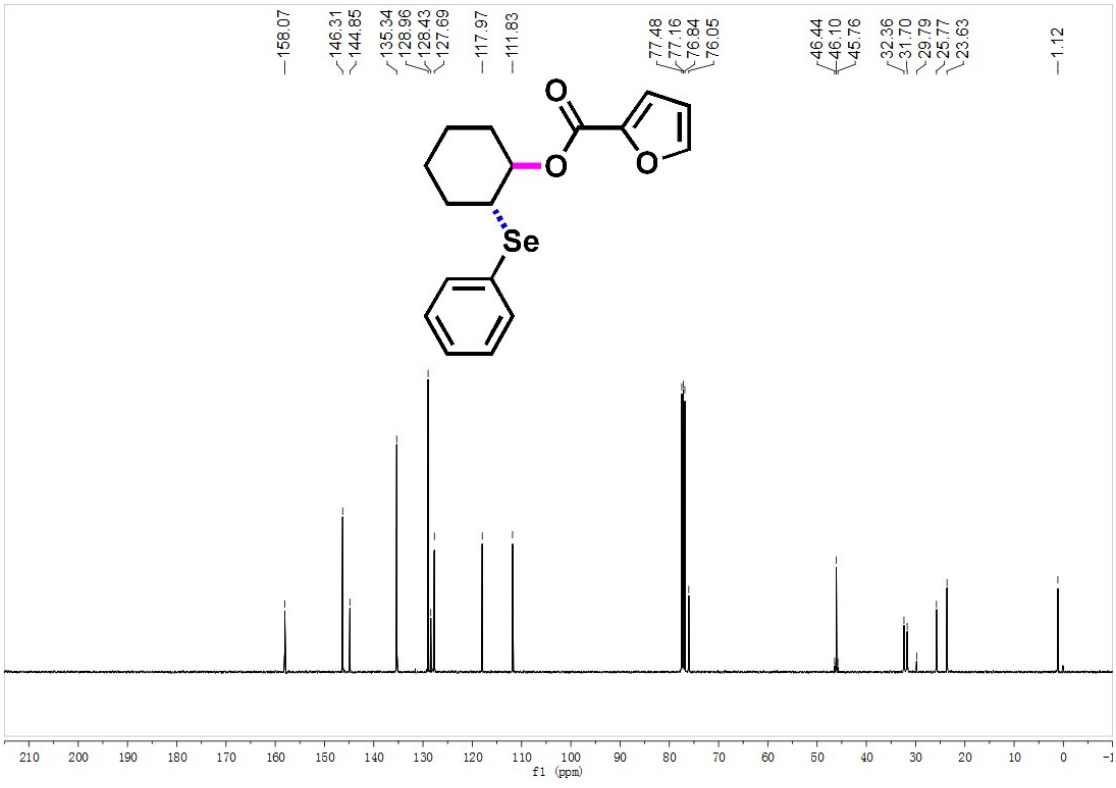
^{13}C NMR of product 8f in $CDCl_3$ (100 MHz)



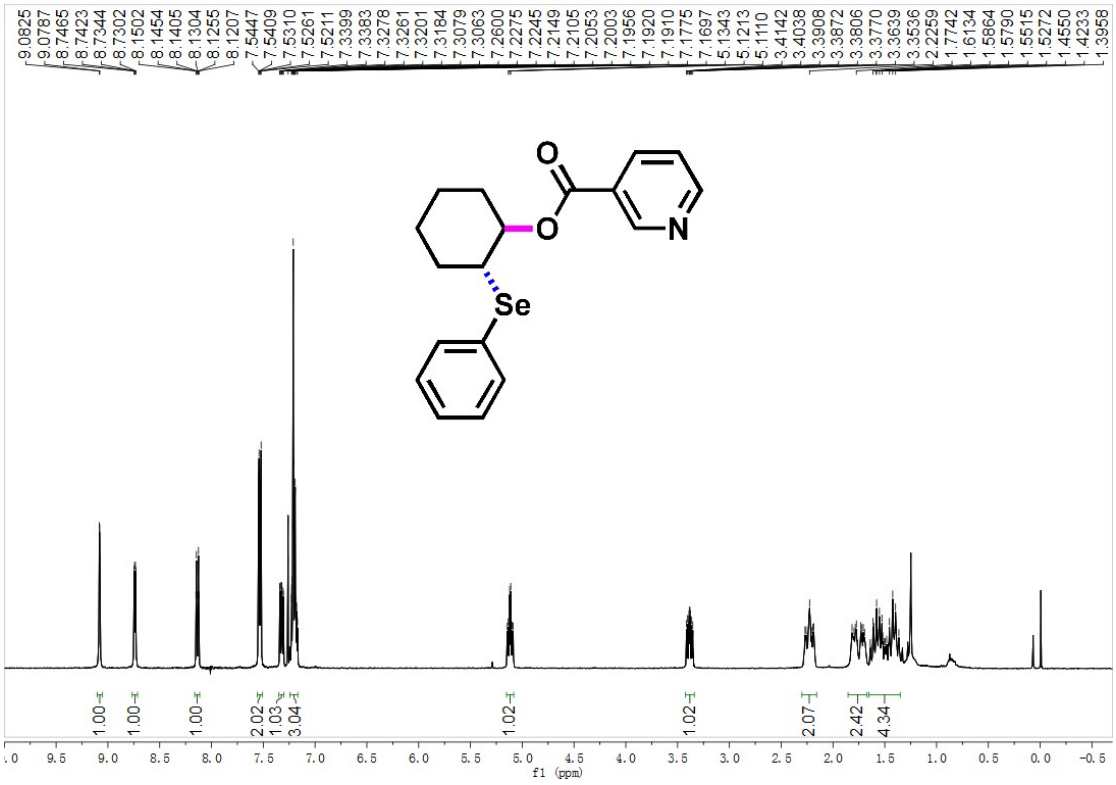
^{1}H NMR of product 8g in $CDCl_3$ (400 MHz)



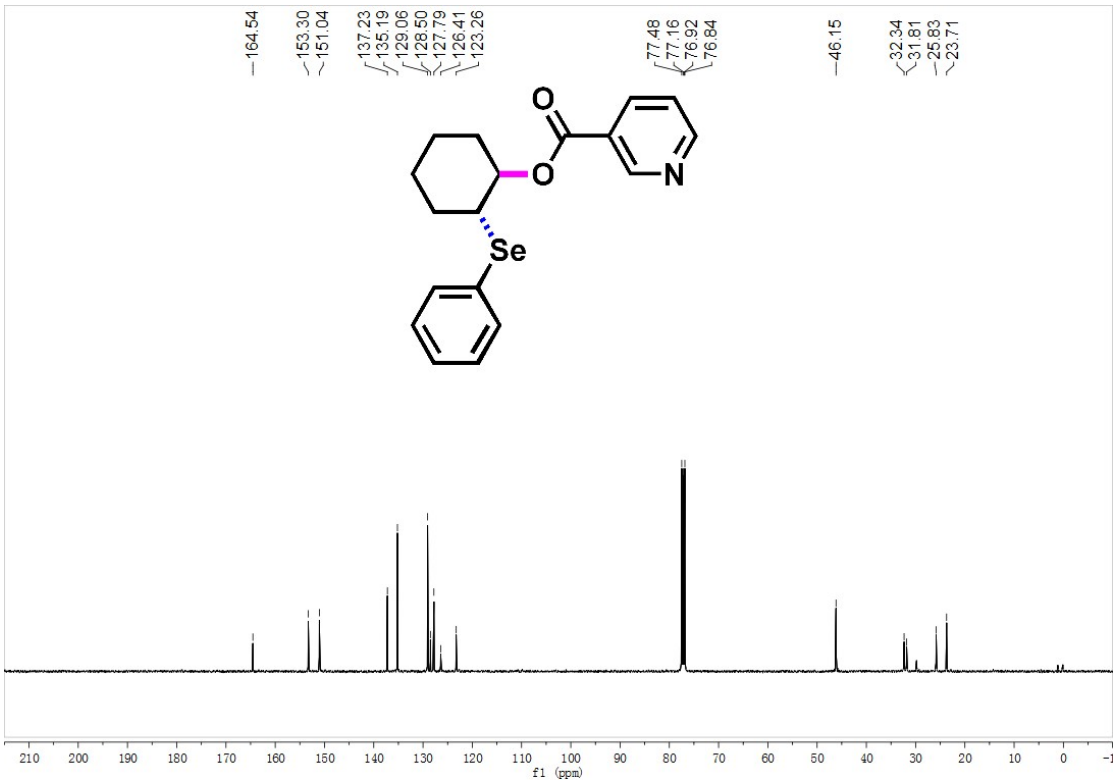
^{13}C NMR of product 8g in $CDCl_3$ (100 MHz)



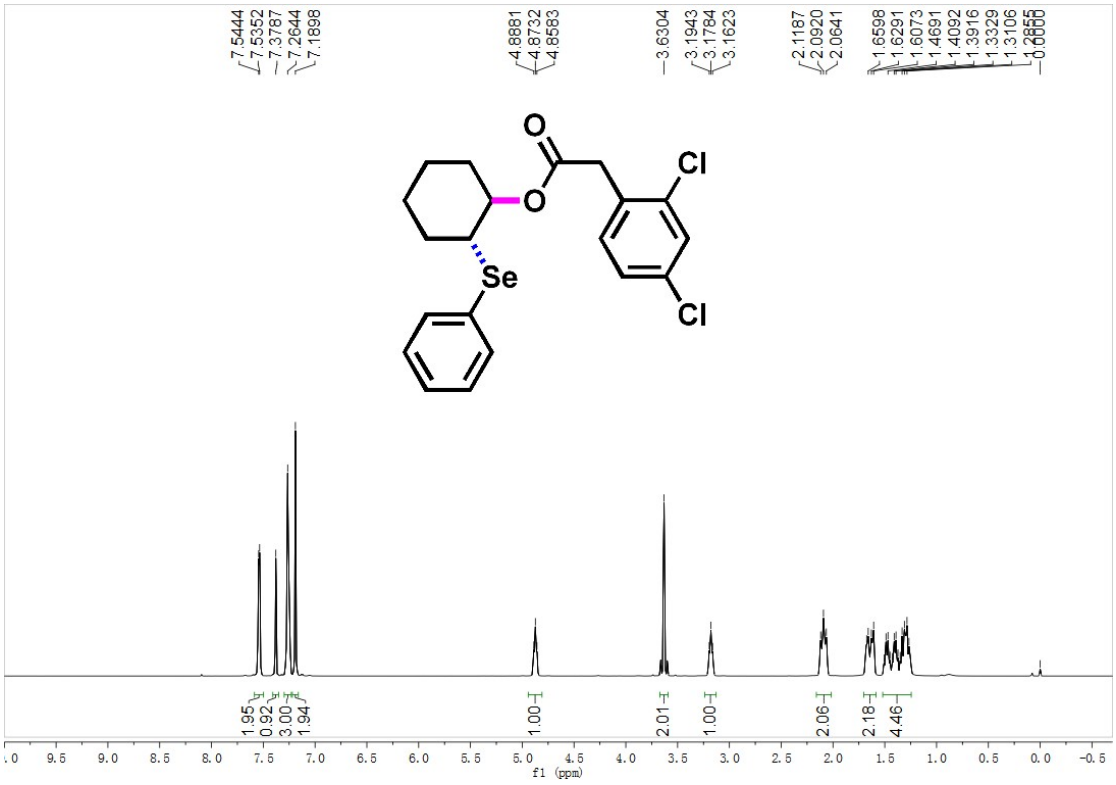
^{1}H NMR of product 8h in $CDCl_3$ (400 MHz)



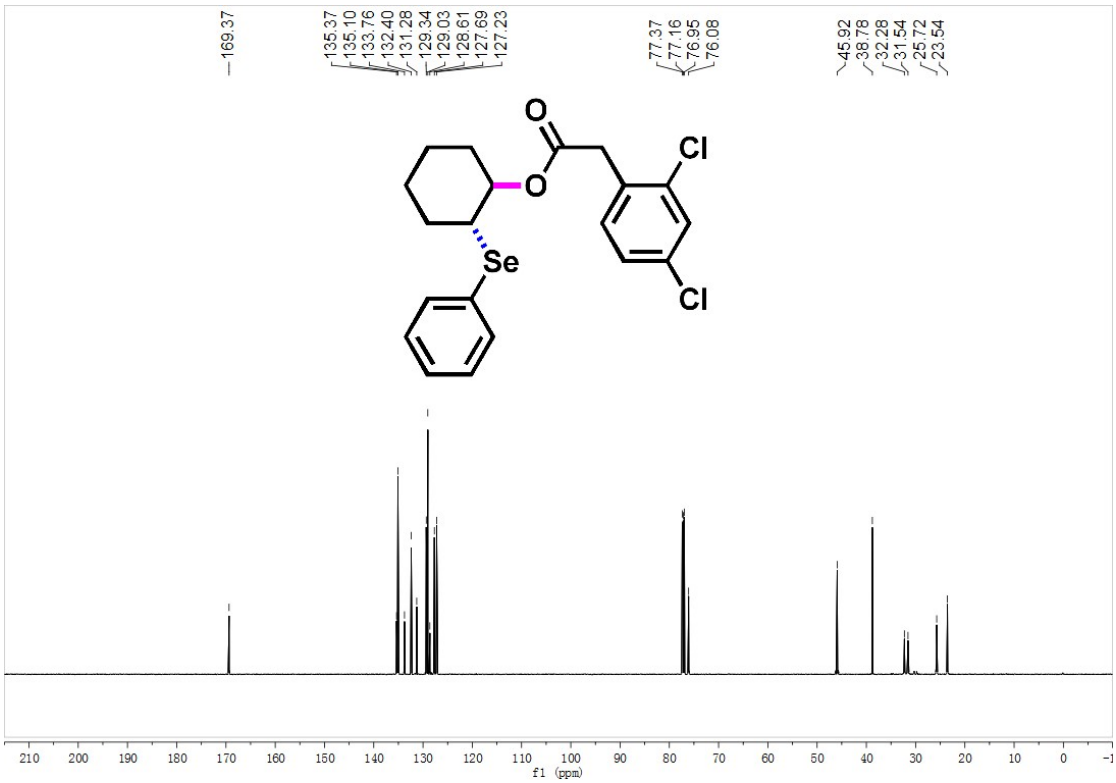
^{13}C NMR of product 8h in $CDCl_3$ (100 MHz)



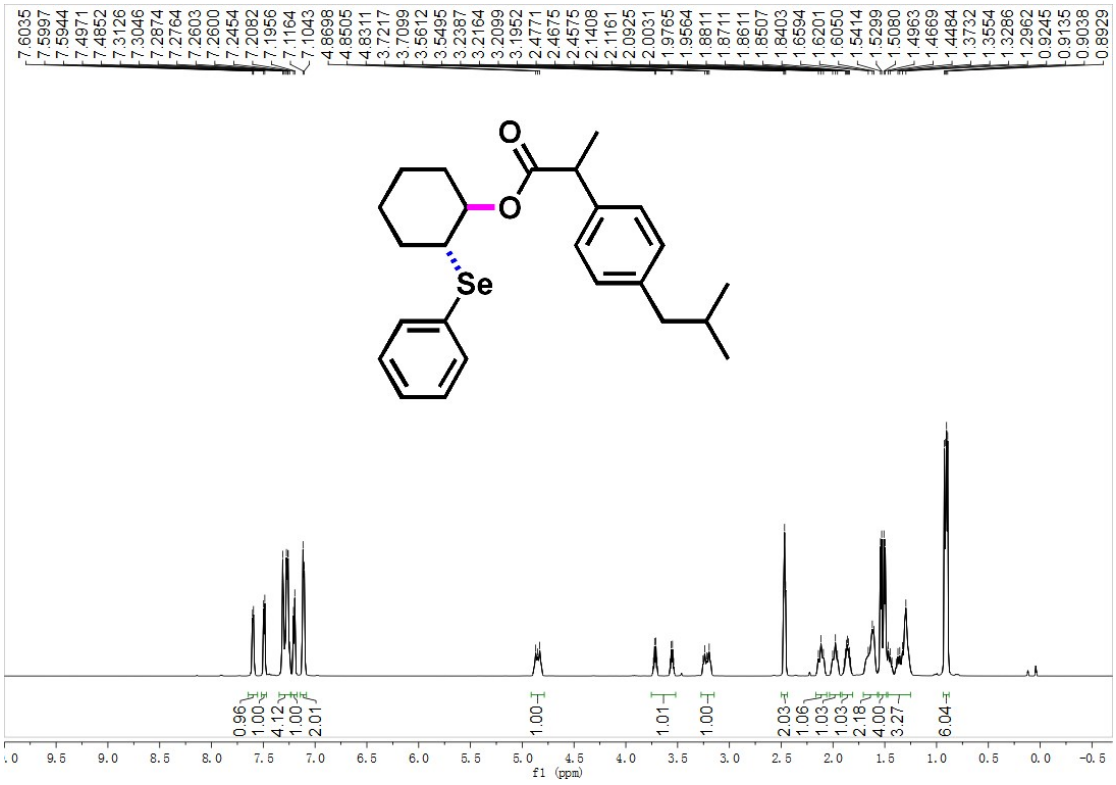
^{1}H NMR of product 8i in $CDCl_3$ (600 MHz)



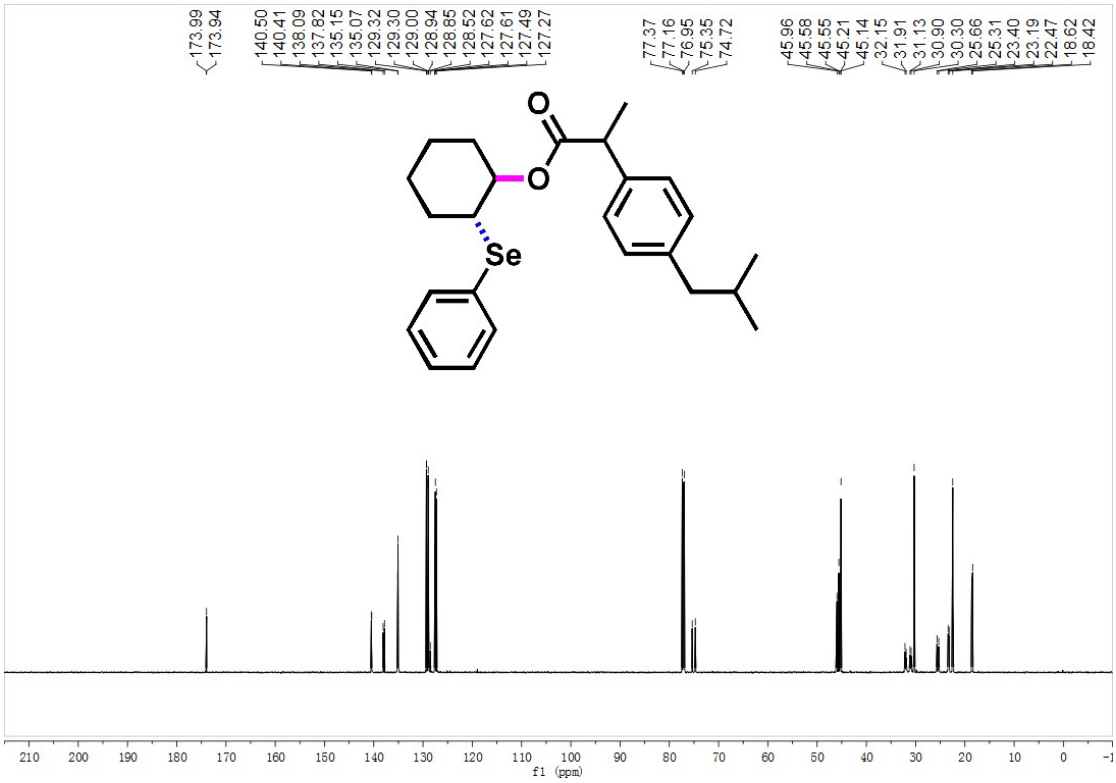
^{13}C NMR of product 8i in $CDCl_3$ (150 MHz)



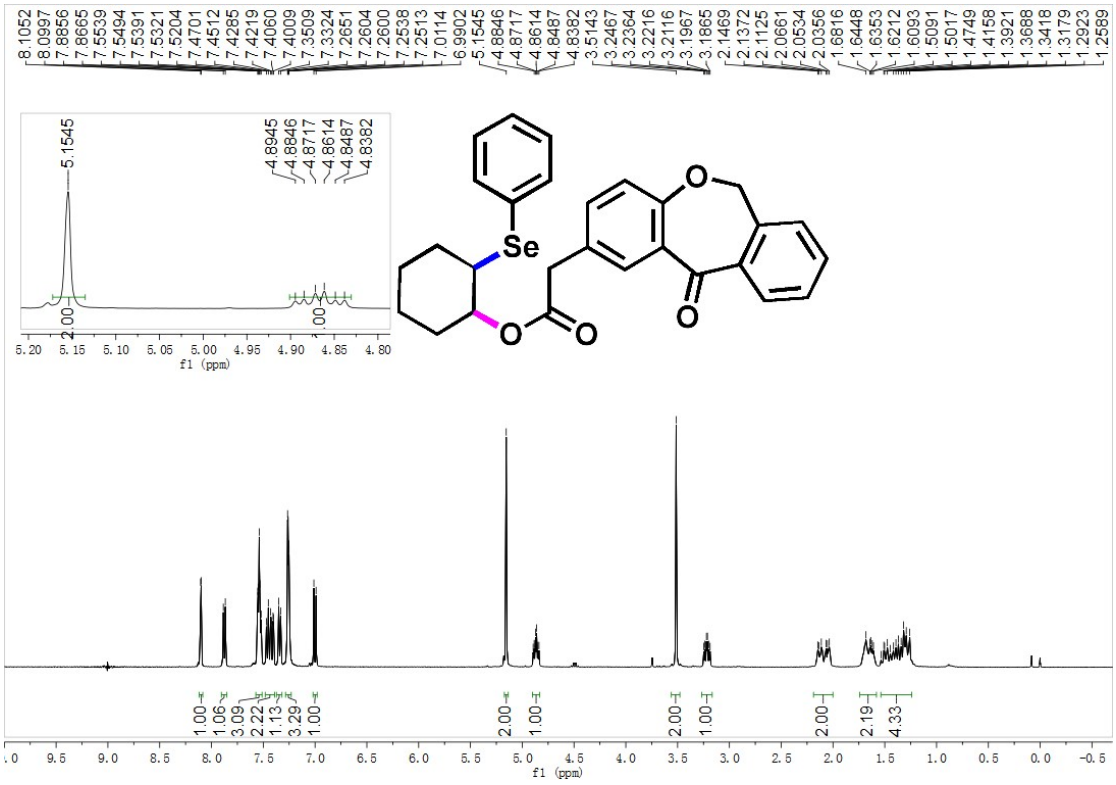
^{1}H NMR of product 8j in $CDCl_3$ (600 MHz)



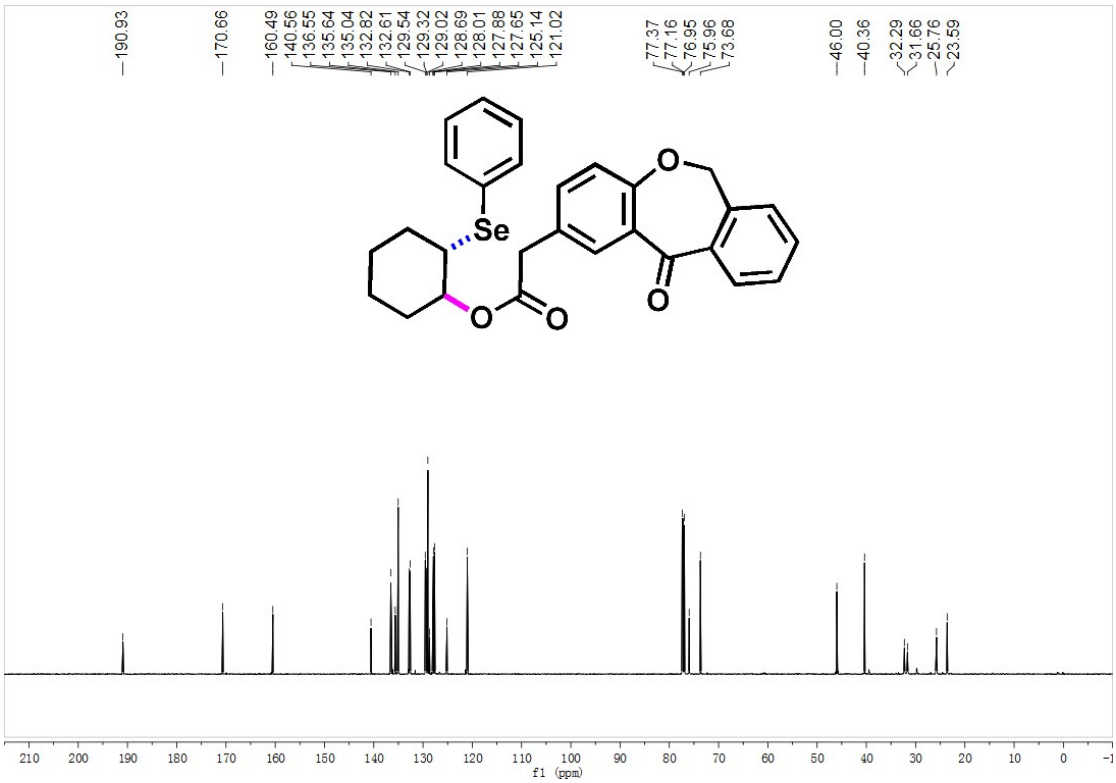
^{13}C NMR of product 8j in $CDCl_3$ (150 MHz)



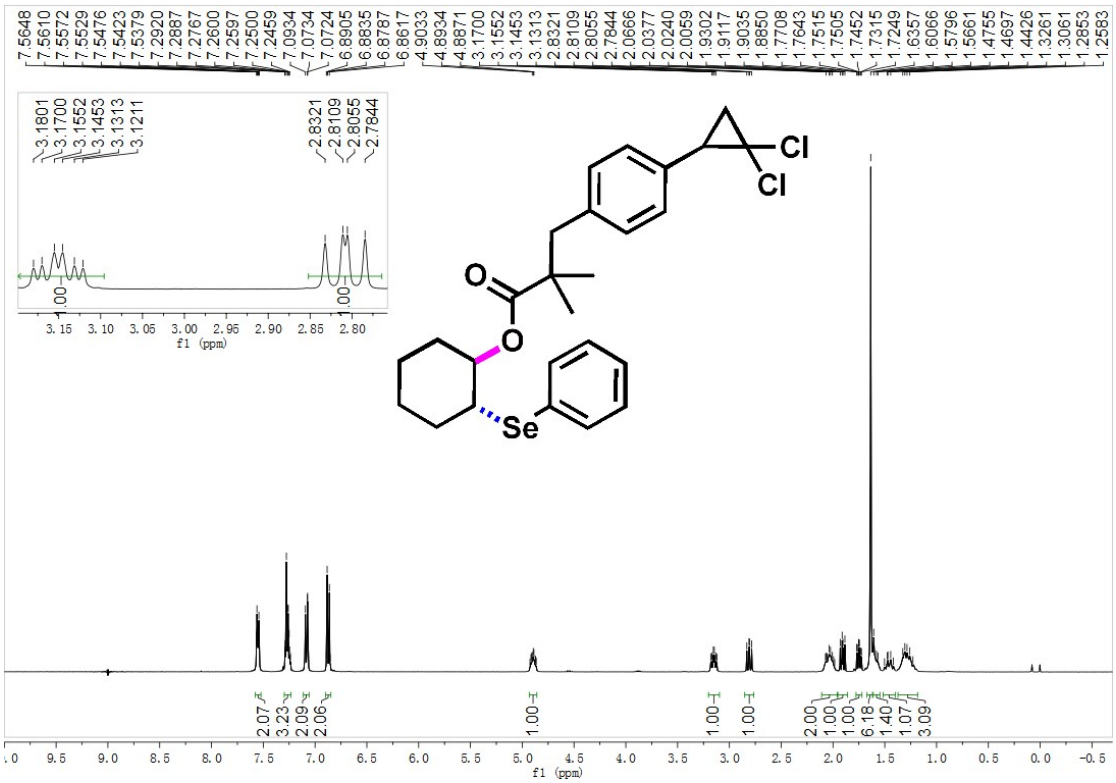
^{1}H NMR of product 8k in $CDCl_3$ (400 MHz)



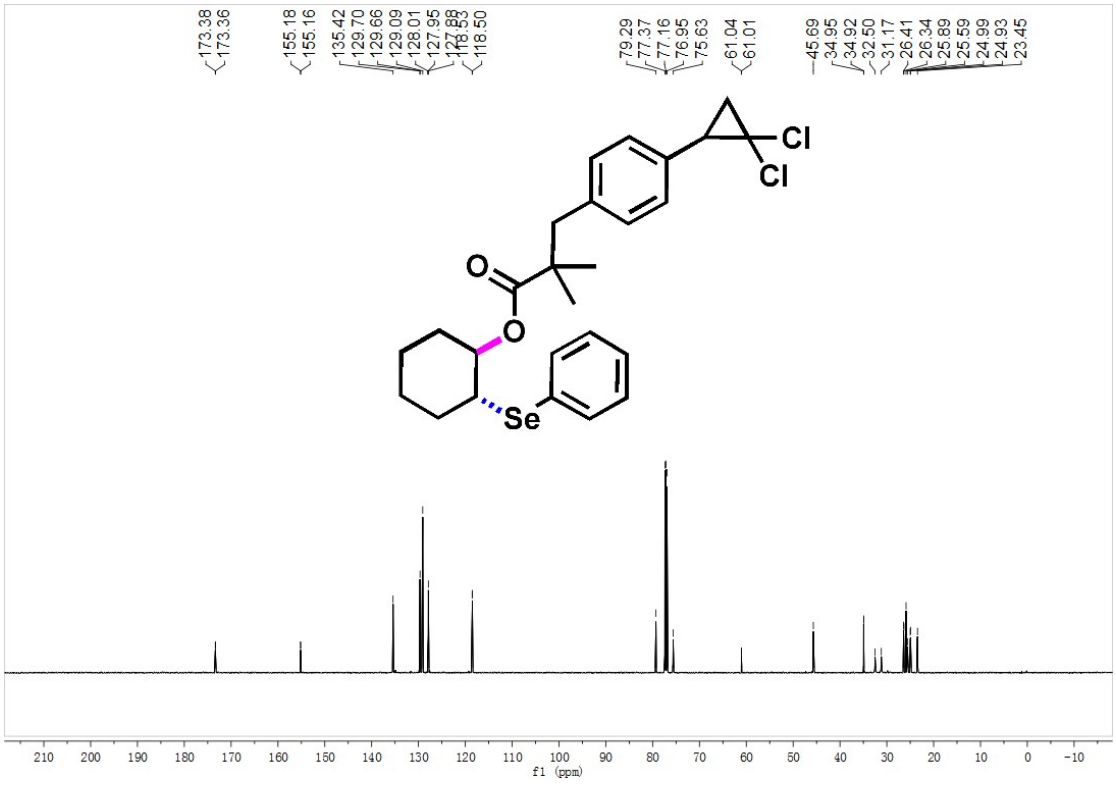
^{13}C NMR of product 8k in $CDCl_3$ (150 MHz)



^{1}H NMR of product 8l in $CDCl_3$ (400 MHz)



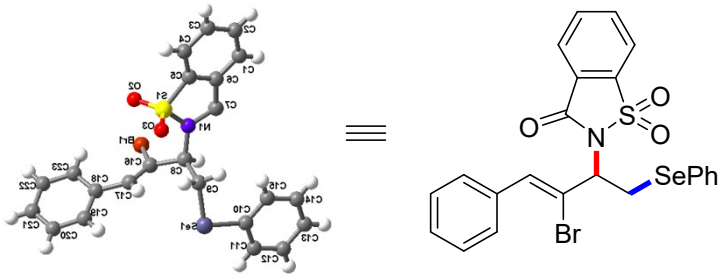
^{13}C NMR of product 8l in $CDCl_3$ (150 MHz)



7. X-Ray crystallographic data

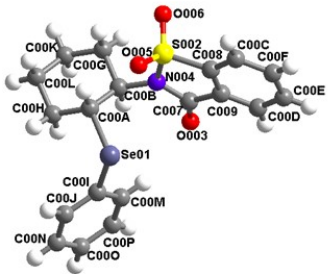
The suitable crystals were selected on a **XtaLAB Synergy**, **Dualflex**, **HyPix** diffractometer. The crystals were kept at 100.03(10) K during data collection. Using Olex2, the structures were solved with the ShelXT structure solution program using Intrinsic Phasing and refined with the ShelXL refinement package using Least Squares minimisation.

7.1 X-Ray crystallographic data for 4d′ (CCDC 2233790)



Identification code	CCDC 2233790
Empirical formula	$C_{23}H_{18}BrNO_3SSe$
Formula weight	547.31
Temperature/K	296.15
Crystal system	orthorhombic
Space group	Pbca
a/Å	9.9532(9)
b/Å	24.647(2)
c/Å	17.5152(15)
α/°	90
β/°	90
γ/°	90
Volume/Å^3	4296.8(7)
Z	8
ρ_{calc}g/cm^3	1.692
μ/mm^{-1}	3.730
F(000)	2176.0
Crystal size/mm^3	0.1 × 0.1 × 0.08
Radiation	MoKα (λ = 0.71073)
2Θ range for data collection/°	5.706 to 49.99
Index ranges	-11 ≤ h ≤ 11, -28 ≤ k ≤ 29, -13 ≤ l ≤ 20
Reflections collected	20591
Independent reflections	3771 [R_{int} = 0.0569, R_{sigma} = 0.0403]
Data/restraints/parameters	3771/0/271
Goodness-of-fit on F^2	1.006
Final R indexes [I>=2σ (I)]	R_1 = 0.0333, wR_2 = 0.0606
Final R indexes [all data]	R_1 = 0.0625, wR_2 = 0.0691
Largest diff. peak/hole / e Å^{-3}	0.43/-0.38

7.2 X-Ray crystallographic data for 5y (CCDC 2191956)



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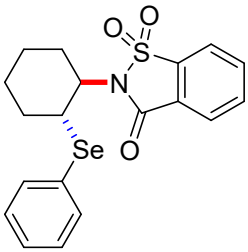
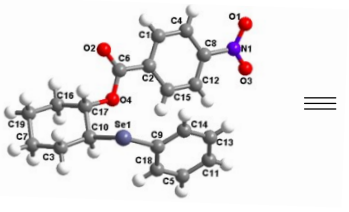


Identification code	CCDC 2191956
Empirical formula	$C_{19}H_{19}NO_3SSe$
Formula weight	420.37
Temperature/K	296.15
Crystal system	monoclinic
Space group	$P2_1/c$
a/Å	14.852(3)
b/Å	8.3709(17)
c/Å	15.745(3)
α/°	90
β/°	111.498(4)
γ/°	90
Volume/Å^3	1821.3(6)
Z	4
ρ_{calc}g/cm^3	1.533
μ/mm^{-1}	2.194
F(000)	856.0
Crystal size/mm^3	0.2 × 0.15 × 0.1
Radiation	MoKα (λ = 0.71073)
2Θ range for data collection/°	5.254 to 55.202
Index ranges	-19 ≤ h ≤ 16, -10 ≤ k ≤ 10, -18 ≤ l ≤ 20
Reflections collected	10639
Independent reflections	4149 [R_{int} = 0.0436, R_{sigma} = 0.0554]
Data/restraints/parameters	4149/0/226
Goodness-of-fit on F^2	1.033
Final R indexes [I>=2σ (I)]	R_1 = 0.0406, wR_2 = 0.0854
Final R indexes [all data]	R_1 = 0.0802, wR_2 = 0.0967
Largest diff. peak/hole / e Å^{-3}	0.34/-0.40

7.3 X-Ray crystallographic data for 7m (CCDC 2227321)



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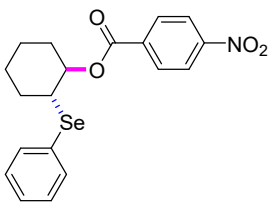

Identification code	CCDC 2227321
Empirical formula	$C_{19}H_{19}NO_4Se$
Formula weight	404.31
Temperature/K	296.15
Crystal system	monoclinic
Space group	$P2_1/n$
a/Å	6.0420(6)

b/Å	7.1534(7)
c/Å	41.598(4)
α/°	90
β/°	91.970(2)
γ/°	90
Volume/Å^3	1796.8(3)
Z	4
ρcalcg/cm^3	1.495
μ/mm^{-1}	2.113
F(000)	824.0
Crystal size/mm^3	? × ? × ?
Radiation	MoKα (λ = 0.71073)
2Θ range for data collection/°	5.778 to 55.252
Index ranges	$-7 \leq h \leq 7$, $-7 \leq k \leq 9$, $-46 \leq l \leq 54$
Reflections collected	10475
Independent reflections	4080 [R_{int} = 0.0368, R_{sigma} = 0.0504]
Data/restraints/parameters	4080/0/226
Goodness-of-fit on F^2	1.036
Final R indexes [I>=2σ (I)]	R_1 = 0.0442, wR_2 = 0.0780
Final R indexes [all data]	R_1 = 0.0790, wR_2 = 0.0873
Largest diff. peak/hole / e Å^{-3}	0.30/-0.45