Supporting Information

Visible-light-induced intermolecular aminoselenation of alkenes

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Content

1. General information

Solvents and reagents

Reagents were used as received without further purification unless otherwise indicated. Solvents were dried and distilled prior to use. Petroleum ether used had a boiling point range of 60−90°C. Diselenides were prepared from the corresponding iodides with elemental selenium according to Braga's report.[1]

Chromatography

Chromatographic purification of products was performed as flash column chromatography on silica gel (200−300 meshes). Thin-layer chromatography (TLC) was carried out on silica plates (TLC Silica GF_{254}). Visualization of the compounds was accomplished by projecting UV-light onto the developed plates.

NMR spectra

NMR spectra were recorded on a Bruker Avance- III HD (^{1}H NMR: 400 MHz, ^{13}C NMR: 100 MHz) spectrometer. Chemical shifts are referenced to residual solvent signals ($CDCl_3$: 7.26 ppm and 77.16 ppm for ^{1}H NMR and ^{13}C NMR respectively) and reported in parts per million (ppm) relative to tetramethylsilane (TMS). Spin−spin coupling constants (*J*) were given in Hz. Multiplicities of NMR signals are abbreviated as follows: br = broad, s = singlet, d = doublet, t = triplet, q = quartet, m = multiplet.

Mass spectra

High resolution mass spectrometry (HRMS) analyses were carried out on a Thermo Fisher Q Exactive Mass Spectrometer.

Melting points

Melting points were determined on glass slides using a WRX-4 digital display microscopic melting point apparatus and were presented uncorrected.

X-ray diffraction experiment

The crystals of **4w**, **4y** and **6d** were obtained by slowly evaporating a mixture of ethyl acetate and *n*-hexane solution at an ambient temperature. The data were collected at 100 K on a Rigaku Oxford Diffraction Supernova Dual Source, Cu at Zero, equipped with an AtlasS2 CCD using Cu K_α radiation. Crystallographic data for the structure reported in this paper have been deposited at the Cambridge Crystallographic Data Center and allocated with the deposition numbers: CCDC 2102240, 2102238 and 2102239 for compounds **4w**, **4y** and **6d**, respectively.

2. Light sources, glassware and setup for irradiations

Light sources

All photoreactions were performed using a 24 W energy-saving household CFL bulb (cool daylight, 6500 K) by Opple. Please refer to the website (https://detail.tmall.com/item.htm?id=36296589905&spm=a1z09.2.0.0.289f2e8dLvLPlS&_u=nkj7u3r52c7) for more detail. The emission spectra of lamp used in Table 1 were recorded and are

presented in Figure S1.

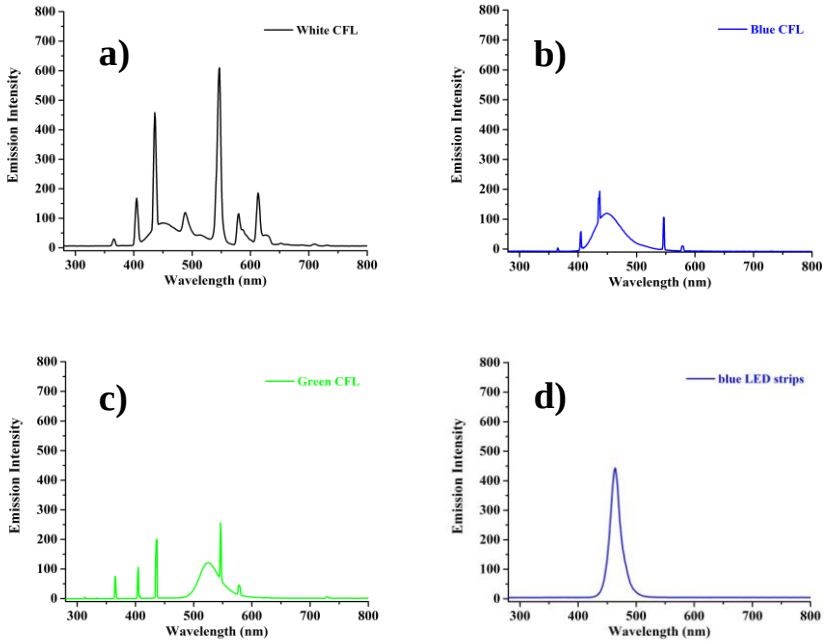


Figure S1 Emission spectrum of the lamp used. a) Emission spectra of CFL lamp used; b) Emission spectra of blue lamp used; c) Emission spectra of green lamp used. d) Emission spectra of LED strip used

Glassware

All reactions were performed in 25 mL vials made of Synthware. For detailed technical information, the reader is directed to the homepage of Synthware: http://www.xinweier.com/.

Setup for irradiations

All photoreactions were performed with the 24W energy-saving CFL-bulb introduced above. The reaction vessel was placed approximately 1 cm from the light source. A typical reaction setup is shown in Figure S2.

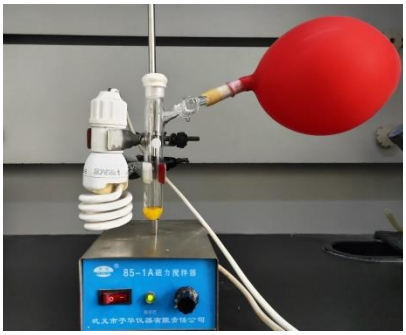


Figure S2 Setup for irradiations with a 24 W CFL

Irradiations with sunlight were performed by placing the reaction vessel outside (September, 2020, Nantong, China, 32 °00'95"N) from morning to evening. The samples were kept in a fridge at –18 ℃ overnight. This procedure was repeated until full consumption of the starting substrate was achieved as judged by TLC. A typical reaction setup is shown in Figure S3.

Figure S3 Setup for irradiations with sunlight

3. Mechanistic studies

1) UV-Vis Experiments

UV-visible absorption spectra were collected on a UV1800PC (Jinghua, China). The samples were prepared 1.80×10^{-4} mol/L in CH_3CN. The spectra obtained were listed as follow (Figure S4). Figure S4a reveals that absorption maxima of diphenyl diselenide (**2a)** are located around 330 nm, with corresponding absorption band extending to visible light region, while styrene (**1a)** and saccharin (**3a**) has no absorb to UV-visible light. Figure S4b-e show that 1:1 molar ratio double-component samples and the combination of all reaction components do not lead to the appearance of new absorption maxima. These results ruled out the formation of possible photoactive intermediates/EDA complexes.

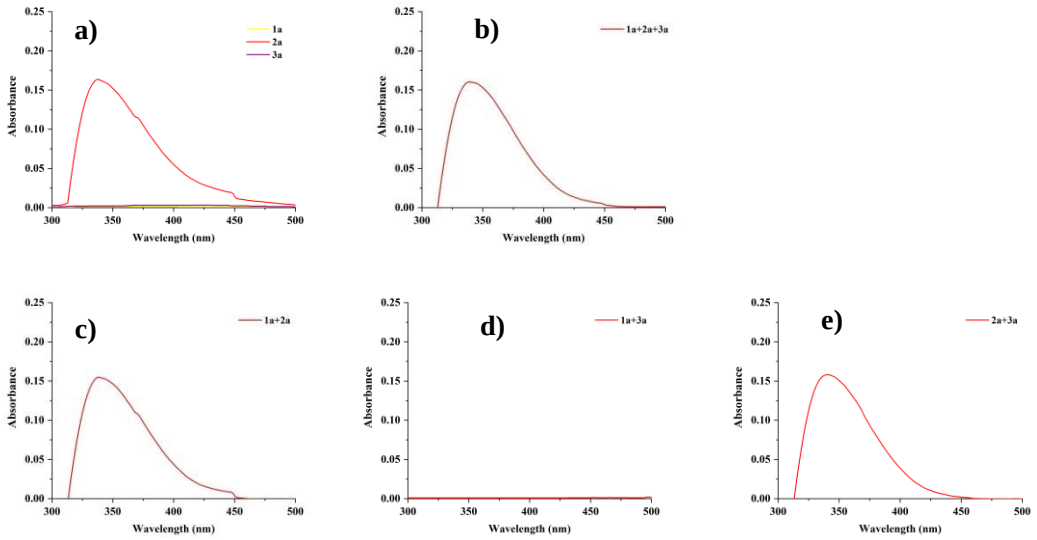
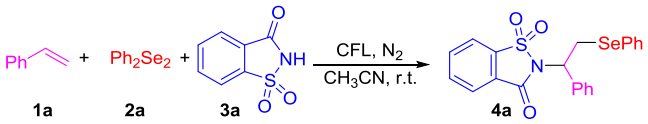


Figure S4 UV/vis spectra of all reaction components and a combination thereof

2) Light-dark cycle experiments.

The reaction was performed under nitrogen atmosphere using styrene (0.20 mmol), Ph_2Se_2 (0.20 mmol), saccharin (0.20 mmol) and 2.0 mL CH_3CN. The reaction was alternatingly irradiated with a 24 W compact fluorescent lamp and kept in the dark for 1 hour intervals. Aliquots were taken at the start and after each interval, the solvent was removed with a rotary evaporator and diluted with $CDCl_3$ and subjected to ^1H NMR measurements. The reaction yield was determined by ^1H NMR

spectroscopy using 1,3,5-trimethoxybenzene as internal standard. The changes in yield observed during the dark phases fall within the margin of error and are thus negligible (Figure S5).



Conditions	Time (h)	NMR Yield of **4a**
Light	5	33
Dark	6	34
Light	11	60
Dark	12	58
Light	17	73
Dark	18	73
Light	23	86

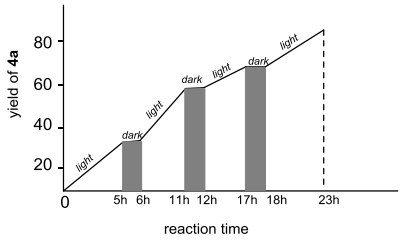
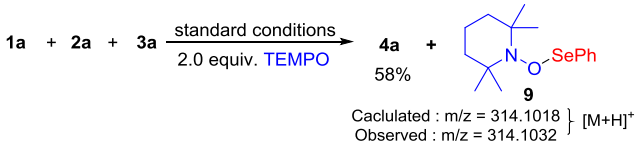


Figure S5 Light-dark cycle experiments

3) Trapping experiments

To explore the reaction mechanism, a radical trapping experiment was conducted in this case. We conducted the aforementioned reaction with styrene **1a** (0.20 mmol), Ph_2Se_2 **2a** (0.20 mmol), saccharin **3a** (0.20 mmol) and 2 equivalent amount of TEMPO under the standard reaction conditions. The desired product **3a** was obtained in 58% yield. Very importantly, a trace amount of TEMPO adducts **9** was detected from reaction mixture by ESI-MS. The detection of HRMS for **9** $C_{15}H_{23}NOSe$ $(M+H)^+$: calculated 314.1018, found 314.1032 suggests the formation of phenylseleno radical in the transformation. The HRMS spectrum of **9** was pasted here for information (Figure S6).



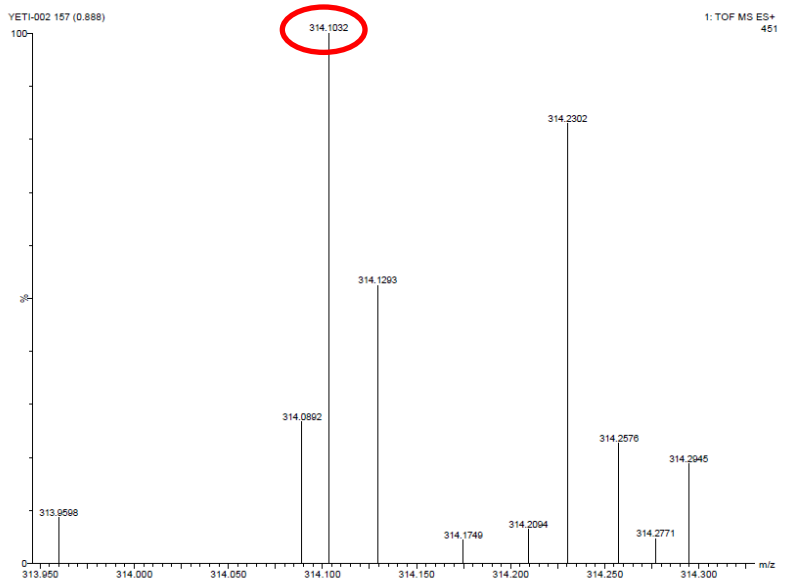
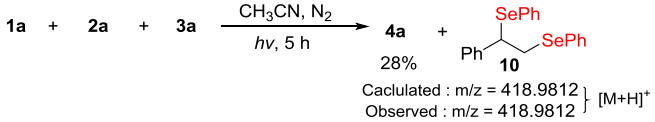


Figure S6 HRMS spectra of **9**

4) HRMS experiments

A solution of styrene **1a** (0.20 mmol), Ph_2Se_2 **2a** (0.20 mmol), saccharin **3a** (0.20 mmol) and 2 mL of CH_3CN was placed in flame-dried Schlenk flask. The resulting mixture was irradiated with 24W CFL for 5 h. The reaction mixture was diluted with EtOAc and the crude material was examined by ESI-MS. The detection of HRMS for $C_{20}H_{18}Se_2$ $(M+H)^+$: caclulated 418.9812, found 418.9812 suggests the formation of compound **10** as the key intermediate in this transformation (Figure S7).



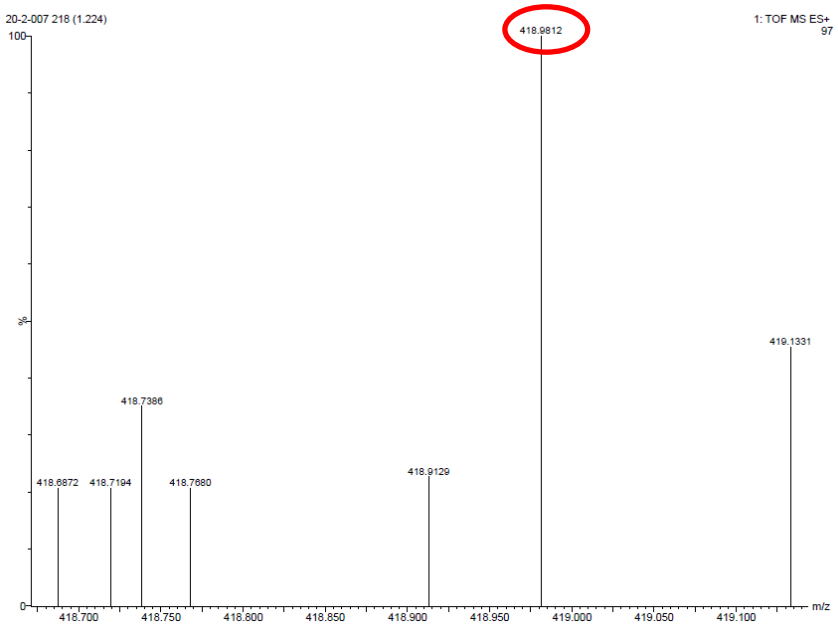
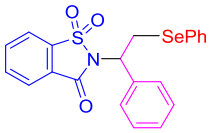


Figure S7 HRMS spectra of **10**

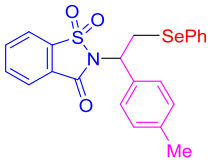
4. General procedure for the aminoselenation

Saccharin (0.20 mmol, 1 equiv.) and diselenide (0.20 mmol, 1 equiv.) were added to a flame-dried Schlenk flask containing a stirring bar and purged by evacuating the flask and backfilling with argon three times. Then, alkene (0.20 mmol, 1.00 equiv.) and 2 mL of degassed CH_3CN were added by syringe. The reaction mixture was irradiated with a 24W household compact fluorescent lamp from a distance of 1 cm for 20 h. After completion of the reaction, the solvent was removed with a rotary evaporator. The pure product was obtained by flash chromatography on silica gel using petroleum ether and ethyl acetate as the eluent.

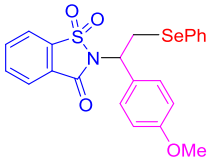
5. Characterization data



2-(1-Phenyl-2-(phenylselanyl)ethyl)benzo[*d*]isothiazol-3(2*H*)-one 1,1-dioxide (**4a**). Compound **4a** was prepared according to the general procedure and isolated as a yellow solid (73 mg, 83% yield) after flash chromatography (petroleum ether/ethyl acetate = 10/1); mp = 85-87 ℃. ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.87 (d, *J* = 7.0 Hz, 1H), 7.76 – 7.65 (m, 3H), 7.50 – 7.45 (m, 4H), 7.29 – 7.22 (m, 3H), 7.17 – 7.14 (m, 3H), 5.30 (t, *J* = 8.1 Hz, 1H), 4.00 (dd, *J* = 12.9, 8.1 Hz, 1H), 3.73 (dd, *J* = 12.9, 8.1 Hz, 1H). ^{13}C NMR (100 MHz, $CDCl_3$): δ 157.7, 136.3, 135.6, 133.7, 133.2, 132.7, 128.1, 128.0, 127.7, 127.55, 127.52, 126.6, 126.0, 124.1, 119.7, 56.8, 28.0. The data are in accordance with the literature.[2]

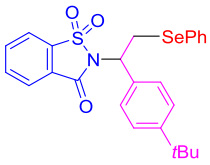


2-(2-(Phenylselanyl)-1-(*p*-tolyl)ethyl)benzo[*d*]isothiazol-3(2*H*)-one 1,1-dioxide (**4b**). Compound **4b** was prepared according to the general procedure and isolated as a yellow solid (78 mg, 85% yield) after flash chromatography (petroleum ether/ethyl acetate = 10/1); mp = 84-85 ℃. ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.87 (d, *J* = 7.1 Hz, 1H), 7.79 – 7.62 (m, 3H), 7.48 – 7.46 (m, 2H), 7.38 (d, *J* = 8.1 Hz, 2H), 7.17 – 7.15 (m, 3H), 7.07 (d, *J* = 8.0 Hz, 2H), 5.29 (t, *J* = 8.1 Hz, 1H), 3.97 (dd, *J* = 12.8, 8.1 Hz, 1H), 3.74 (dd, *J* = 12.8, 8.1 Hz, 1H), 2.24 (s, 3H). ^{13}C NMR (100 MHz, $CDCl_3$): δ 157.7, 137.6, 136.4, 133.6, 133.2, 132.6, 132.5, 128.2, 128.1, 128.0, 127.5, 126.5, 126.1, 124.1, 119.7, 56.5, 28.0, 20.2. The data are in accordance with the literature.[2]

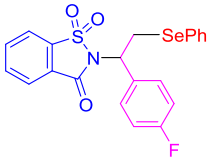


2-(1-(4-Methoxyphenyl)-2-(phenylselanyl)ethyl)benzo[*d*]isothiazol-3(2*H*)-one 1,1-dioxide 1,1-dioxide (**4c**). Compound **4c** was prepared according to the general procedure and isolated as a white solid (77 mg, 82% yield) after flash chromatography (petroleum ether/ethyl acetate = 7/1); mp = 92-93 ℃. ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.8 (d, *J* = 6.8 Hz, 1H), 7.77 – 7.64 (m, 3H), 7.49

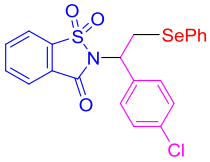
– 7.39 (m, 4H), 7.18 – 7.14 (m, 3H), 6.78 (d, *J* = 8.8 Hz, 2H), 5.28 (t, *J* = 8.1 Hz, 1H), 3.95 (dd, *J* = 12.8, 8.1 Hz, 1H), 3.74 (dd, *J* = 12.8, 8.1 Hz, 1H), 3.69 (s, 3H). ^{13}C NMR (100 MHz, $CDCl_3$): δ 158.7, 157.6, 136.4, 133.7, 133.2, 132.6, 129.0, 128.1, 128.0, 127.5, 126.5, 126.1, 124.1, 119.7, 112.8, 56.3, 54.2, 28.1. The data are in accordance with the literature.[2]



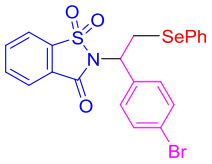
2-(1-(4-(*tert*-Butyl)phenyl)-2-(phenylselanyl)ethyl)benzo[d]isothiazol-3(2H)-one 1,1-dioxide (**4d**). Compound **4d** was prepared according to the general procedure and isolated as a white solid (87 mg, 87% yield) after flash chromatography (petroleum ether/ethyl acetate = 12/1); mp = 58-60 ℃. ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.88 (d, *J* = 7.1 Hz, 1H), 7.79 – 7.65 (m, 3H), 7.48 – 7.46 (m, 2H), 7.41 (d, *J* = 8.4 Hz, 2H), 7.27 (d, *J* = 8.4 Hz, 2H), 7.18 – 7.15 (m, 3H), 5.29 (t, *J* = 8.0 Hz, 1H), 4.03 (dd, *J* = 12.9, 8.0 Hz, 1H), 3.71 (dd, *J* = 12.9, 8.0 Hz, 1H), 1.21 (s, 9H). ^{13}C NMR (100 MHz, $CDCl_3$): δ 157.7, 150.6, 136.3, 133.6, 133.2, 132.75, 132.67, 128.1, 127.2, 126.5, 126.2, 124.5, 124.1, 119.7, 56.6, 33.6, 30.2, 28.1. The data are in accordance with the literature.[2]



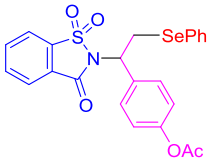
2-(1-(4-Fluorophenyl)-2-(phenylselanyl)ethyl)benzo[*d*]isothiazol-3(2*H*)-one 1,1-dioxide (**4e**). Compound **4e** was prepared according to the general procedure and isolated as a yellow solid (72 mg, 78% yield) after flash chromatography (petroleum ether/ethyl acetate = 7/1); mp = 86-88 ℃. ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.88 (d, *J* = 7.1 Hz, 1H), 7.80 – 7.63 (m, 3H), 7.54 – 7.39 (m, 4H), 7.17 – 7.15 (m, 3H), 6.95 – 6.91 (m, 2H), 5.27 (t, *J* = 8.1 Hz, 1H), 3.94 (dd, *J* = 12.9, 8.1 Hz, 1H), 3.72 (dd, *J* = 12.9, 8.1 Hz, 1H). ^{13}C NMR (100 MHz, $CDCl_3$): δ 161.7 (d, $J_{C\text{-}F}$ = 248.1 Hz), 157.6, 136.3, 133.8, 133.3, 132.7, 131.4(d, $J_{C\text{-}F}$ = 3.3 Hz), 129.6 (d, $J_{C\text{-}F}$ = 8.3 Hz), 128.2, 127.7, 126.7, 126.0, 124.1, 119.8, 114.4 (d, $J_{C\text{-}F}$ = 21.6 Hz), 56.1, 27.9. ^{19}F NMR (376 MHz, $CDCl_3$): δ -112.6. The data are in accordance with the literature.[2]



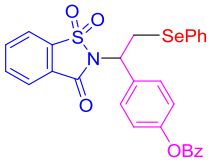
2-(1-(4-Chlorophenyl)-2-(phenylselanyl)ethyl)benzo[*d*]isothiazol-3(2*H*)-one 1,1-dioxide (**4f**). Compound **4f** was prepared according to the general procedure and isolated as a yellow solid (72 mg, 75% yield) after flash chromatography (petroleum ether/ethyl acetate = 10/1); mp = 93-95 ℃. ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.89 (d, *J* = 7.3 Hz, 1H), 7.81 – 7.64 (m, 3H), 7.50 – 7.36 (m, 4H), 7.22 (d, *J* = 8.5 Hz, 2H), 7.18 (d, *J* = 6.6 Hz, 3H), 5.24 (dd, *J* = 14.6, 6.5 Hz, 1H), 3.93 (dd, *J* = 12.9, 8.1 Hz, 1H), 3.72 (dd, *J* = 12.9, 8.1 Hz, 1H). ^{13}C NMR (100 MHz, $CDCl_3$): δ 157.7, 136.3, 134.0, 133.8, 133.7, 133.3, 132.8, 129.1, 128.2, 127.71, 127.66, 126.7, 126.0, 124.2, 119.8, 56.1, 27.7. The data are in accordance with the literature.[2]



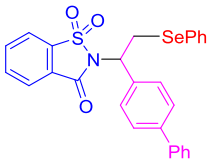
2-(1-(4-Bromophenyl)-2-(phenylselanyl)ethyl)benzo[*d*]isothiazol-3(2*H*)-one 1,1-dioxide (**4g**). Compound **4g** was prepared according to the general procedure and isolated as a yellow solid (81 mg, 78% yield) after flash chromatography (petroleum ether/ethyl acetate = 11/1); mp = 93-95 ℃. ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.87 (d, *J* = 7.1 Hz, 1H), 7.77 – 7.66 (m, 3H), 7.44 (d, *J* = 7.2 Hz, 2H), 7.39 – 7.32 (m, 4H), 7.18 – 7.12 (m, 3H), 5.22 (t, *J* = 8.1 Hz, 1H), 3.92 (dd, *J* = 12.9, 8.1 Hz, 1H), 3.71 (dd, *J* = 12.9, 8.1 Hz, 1H). ^{13}C NMR (100 MHz, $CDCl_3$): δ 157.6, 136.2, 134.5, 133.8, 133.3, 132.8, 130.6, 129.4, 128.2, 127.6, 126.7, 125.9, 124.2, 121.9, 119.8, 56.1, 27.6. The data are in accordance with the literature.[2]



4-(1-(1,1-Dioxido-3-oxobenzo[*d*]isothiazol-2(3*H*)-yl)-2-(phenylselanyl)ethyl)phenyl acetate (**4h**). Compound **4h** was prepared according to the general procedure and isolated as a yellow solid (83 mg, 83% yield) after flash chromatography (petroleum ether/ethyl acetate = 4/1); mp = 42-44 ℃. ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.86 (d, *J* = 7.1 Hz, 1H), 7.79 – 7.62 (m, 3H), 7.57 – 7.40 (m, 4H), 7.20 – 7.10 (m, 3H), 6.98 (d, *J* = 8.6 Hz, 2H), 5.26 (t, *J* = 8.0 Hz, 1H), 4.01 (dd, *J* = 12.9, 8.1 Hz, 1H), 3.68 (dd, *J* = 12.9, 8.1 Hz, 1H), 2.19 (s, 3H). ^{13}C NMR (100 MHz, $CDCl_3$): δ 168.2, 157.7, 149.7, 136.2, 133.8, 133.3, 132.8, 128.8, 128.2, 127.8, 126.7, 126.0, 124.1, 120.6, 119.8, 56.2, 27.9, 20.1. HRMS (ESI): m/z $[M+Na]^+$ Calcd for $C_{23}H_{19}NNaO_5SSe$ 524.0041; Found 524.0029.

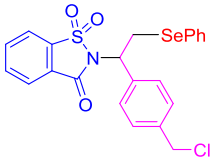


4-(1-(1,1-Dioxido-3-oxobenzo[*d*]isothiazol-2(3*H*)-yl)-2-(phenylselanyl)ethyl)phenyl benzoate (**4i**). Compound **4i** was prepared according to the general procedure and isolated as a yellow solid (100 mg, 89% yield) after flash chromatography (petroleum ether/ethyl acetate = 5/1); mp = 60-62 ℃. ^{1}H NMR (400 MHz, $CDCl_3$): δ 8.12 – 8.08 (m, 2H), 7.90 (d, *J* = 7.0 Hz, 1H), 7.82 – 7.67 (m, 3H), 7.58 – 7.53 (m, 3H), 7.50 – 7.47 (m, 2H), 7.42 (t, *J* = 7.7 Hz, 2H), 7.19 – 7.16 (m, 3H), 7.13 (d, *J* = 8.6 Hz, 2H), 5.31 (t, *J* = 8.1 Hz, 1H), 4.03 (dd, *J* = 13.0, 8.0 Hz, 1H), 3.73 (dd, *J* = 13.0, 8.0 Hz, 1H). ^{13}C NMR (100 MHz, $CDCl_3$): δ 163.9, 157.7, 150.0, 136.3, 133.8, 133.3, 133.2, 132.8, 132.7, 129.2, 128.9, 128.4, 128.2, 127.8, 127.6, 126.7, 126.1, 124.2, 120.8, 119.8, 56.3, 28.0. HRMS (ESI): m/z $[M+H]^+$ Calcd for $C_{28}H_{22}NO_5SSe$ 564.0378; Found 564.0375.

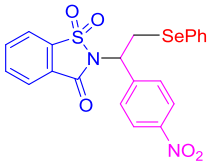


2-(1-([1,1'-Biphenyl]-4-yl)-2-(phenylselanyl)ethyl)benzo[*d*]isothiazol-3(2*H*)-one 1,1-dioxide (**4j**). Compound **4j** was prepared according to the general procedure and isolated as a yellow solid

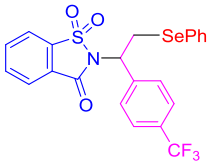
(93 mg, 90% yield) after flash chromatography (petroleum ether/ethyl acetate = 7/1); mp = 48-50 ℃. ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.85 (d, *J* = 7.1 Hz, 1H), 7.74 (d, *J* = 7.1 Hz, 1H), 7.70 – 7.60 (m, 2H), 7.54 (d, *J* = 8.3 Hz, 2H), 7.49 – 7.43 (m, 6H), 7.31 (t, *J* = 7.5 Hz, 2H), 7.22 (t, *J* = 7.3 Hz, 1H), 7.16 – 7.11 (m, 3H), 5.33 (t, *J* = 8.1 Hz, 1H), 4.01 (dd, *J* = 12.9, 8.1 Hz, 1H), 3.77 (dd, *J* = 12.9, 8.1 Hz, 1H). ^{13}C NMR (100 MHz, $CDCl_3$): δ 157.7, 140.5, 139.4, 136.3, 134.6, 133.7, 133.2, 132.7, 128.1, 127.98, 127.92, 127.7, 126.6, 126.4, 126.2, 126.05, 126.02, 124.1, 119.7, 56.5, 28.0. HRMS (ESI): m/z $[M+Na]^+$ Calcd for $C_{27}H_{21}NNaO_3SSe$ 542.0300; Found 542.0294.



2-(1-(4-(Chloromethyl)phenyl)-2-(phenylselanyl)ethyl)benzo[*d*]isothiazol-3(2*H*)-one 1,1-dioxide (**4k**). Compound **4k** was prepared according to the general procedure and isolated as an oil (72 mg, 73% yield) after flash chromatography (petroleum ether/ethyl acetate = 6/1). ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.87 (d, *J* = 7.1 Hz, 1H), 7.79 – 7.65 (m, 3H), 7.49 – 7.44 (m, 4H), 7.27 (d, *J* = 8.2 Hz, 2H), 7.17 – 7.15 (m, 3H), 5.29 (t, *J* = 8.1 Hz, 1H), 4.46 (s, 2H), 3.97 (dd, *J* = 12.9, 8.1 Hz, 1H), 3.72 (dd, *J* = 12.9, 8.1 Hz, 1H). ^{13}C NMR (100 MHz, $CDCl_3$): δ 157.7, 136.9, 136.3, 135.8, 133.8, 133.3, 132.8, 128.2, 128.0, 127.8, 127.7, 126.7, 126.0, 124.1, 119.8, 56.4, 44.6, 27.8. HRMS (ESI): m/z $[M+Na]^+$ Calcd for $C_{22}H_{18}ClNNaO_3SSe$ 513.9753; Found 513.9745.

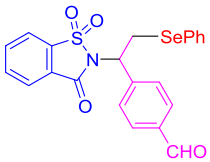


2-(1-(4-Nitrophenyl)-2-(phenylselanyl)ethyl)benzo[*d*]isothiazol-3(2*H*)-one 1,1-dioxide (**4l**). Compound **4l** was prepared according to the general procedure and isolated as an oil (71 mg, 73% yield) after flash chromatography (petroleum ether/ethyl acetate = 5/1). ^{1}H NMR (400 MHz, $CDCl_3$): δ 8.09 (d, *J* = 8.8 Hz, 2H), 7.90 (d, *J* = 7.0 Hz, 1H), 7.84 – 7.70 (m, 3H), 7.64 (d, *J* = 8.8 Hz, 2H), 7.48 – 7.37 (m, 2H), 7.32 – 7.09 (m, 3H), 5.32 (t, *J* = 8.1 Hz, 1H), 3.94 (dd, *J* = 13.0, 7.5 Hz, 1H), 3.76 (dd, *J* = 13.0, 8.6 Hz, 1H). ^{13}C NMR (100 MHz, $CDCl_3$): δ 157.6, 146.8, 142.5, 136.1, 134.0, 133.5, 132.9, 128.7, 128.3, 127.2, 127.0, 125.7, 124.3, 122.7, 119.9, 55.8, 27.2. HRMS (ESI): m/z $[M+Na]^+$ Calcd for $C_{21}H_{16}N_2NaO_5SSe$ 510.9837; Found 510.9846.

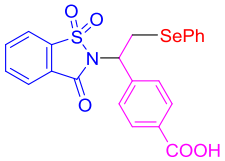


2-(2-(Phenylselanyl)-1-(4-(trifluoromethyl)phenyl)ethyl)benzo[*d*]isothiazol-3(2*H*)-one 1,1-dioxide (**4m**). Compound **4m** was prepared according to the general procedure and isolated as an oil (93 mg, 91% yield) after flash chromatography (petroleum ether/ethyl acetate = 10/1). ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.90 – 7.81 (m, 1H), 7.80 – 7.62 (m, 3H), 7.58 (d, *J* = 8.2 Hz, 2H), 7.47 (d, *J* = 8.2 Hz, 2H), 7.44 – 7.34 (m, 2H), 7.23 – 7.06 (m, 3H), 5.29 (t, *J* = 8.1 Hz, 1H), 3.94 (dd, *J* = 13.0, 7.9 Hz, 1H), 3.73 (dd, *J* = 13.0, 8.2 Hz, 1H). ^{13}C NMR (100 MHz, $CDCl_3$): δ 157.6, 139.5, 136.1, 133.9, 133.3, 132.8, 129.6 (q, J_{C-F} = 32.5 Hz), 128.2, 128.0, 127.5, 126.8, 125.8, 124.4 (q, J_{C-F} = 3.8 Hz), 124.2, 120.1 (q, J_{C-F} = 271.0 Hz), 119.8, 56.23, 27.45. ^{19}F NMR (376

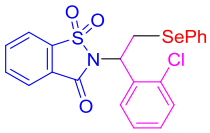
MHz, $CDCl_3$): δ -62.6. HRMS (ESI): m/z $[M+H]^+$ Calcd for $C_{22}H_{17}F_3NO_3SSe$ 512.0041; Found 512.0066.



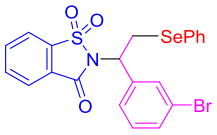
4-(1-(1,1-Dioxido-3-oxobenzo[*d*]isothiazol-2(3*H*)-yl)-2-(phenylselanyl)ethyl)benzaldehyde (**4n**). Compound **4n** was prepared according to the general procedure and isolated as an oil (67 mg, 71% yield) after flash chromatography (petroleum ether/ethyl acetate = 8/1). ^{1}H NMR (400 MHz, $CDCl_3$): δ 9.89 (s, 1H), 7.88 (d, *J* = 8.0 Hz, 1H), 7.80 – 7.68 (m, 5H), 7.63 (d, *J* = 8.2 Hz, 2H), 7.51 – 7.38 (m, 2H), 7.27 – 7.11 (m, 3H), 5.32 (t, *J* = 8.1 Hz, 1H), 3.97 (dd, *J* = 13.0, 7.9 Hz, 1H), 3.74 (dd, *J* = 13.0, 8.2 Hz, 1H). ^{13}C NMR (100 MHz, $CDCl_3$): δ 191.7, 158.7, 143.1, 137.2, 136.3, 135.0, 134.5, 133.9, 129.9, 129.34, 129.30, 128.5, 127.9, 126.9, 125.3, 120.9, 57.3, 28.5. HRMS (ESI): m/z $[M+Na]^+$ Calcd for $C_{22}H_{17}NNaO_4SSe$ 493.9936; Found 493.9950.



4-(1-(1,1-Dioxido-3-oxobenzo[*d*]isothiazol-2(3*H*)-yl)-2-(phenylselanyl)ethyl)benzoic acid (**4o**). Compound **4o** was prepared according to the general procedure and isolated as an oil (67 mg, 69% yield) after flash chromatography (petroleum ether/ethyl acetate = 2/1). ^{1}H NMR (400 MHz, DMSO-d_6) δ 13.11 (brs, 1H), 8.29 (d, *J* = 7.7 Hz, 1H), 8.16 – 7.91 (m, 5H), 7.67 (d, *J* = 8.2 Hz, 2H), 7.52 – 7.48 (m, 2H), 7.43 – 7.20 (m, 3H), 5.46 (d, *J* = 8.9 Hz, 1H), 4.07 (dd, *J* = 12.9, 9.0 Hz, 1H), 3.92 (dd, *J* = 12.9, 7.1 Hz, 1H). ^{13}C NMR (100 MHz, DMSO-d_6): δ 167.3, 158.9, 142.1, 136.8, 136.5, 135.8, 132.8, 131.2, 129.9, 129.7, 129.3, 128.7, 127.7, 126.3, 125.7, 121.9, 56.4, 28.3. HRMS (ESI): m/z $[M+Na]^+$ Calcd for $C_{22}H_{17}NNaO_5SSe$ 509.9885; Found 509.9893.

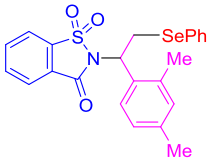


2-(1-(2-Chlorophenyl)-2-(phenylselanyl)ethyl)benzo[*d*]isothiazol-3(2*H*)-one 1,1-dioxide (**4p**). Compound **4p** was prepared according to the general procedure and isolated as an oil (78 mg, 82% yield) after flash chromatography (petroleum ether/ethyl acetate = 8/1). ^{1}H NMR (400 MHz, $CDCl_3$): δ 8.10 – 7.91 (m, 1H), 7.81 – 7.72 (m, 3H), 7.70 – 7.63 (m, 1H), 7.60 – 7.43 (m, 2H), 7.37 – 7.25 (m, 1H), 7.26 – 7.03 (m, 5H), 5.91 (t, *J* = 8.0 Hz, 1H), 3.91 (dd, *J* = 13.0, 8.4 Hz, 1H), 3.66 (dd, *J* = 13.0, 7.7 Hz, 1H). ^{13}C NMR (100 MHz, $CDCl_3$): δ 157.9, 136.5, 133.8, 133.3, 133.2, 133.0, 132.7, 129.0, 128.8, 128.2, 128.1, 127.7, 126.7, 126.1, 125.8, 124.3, 119.6, 53.0, 28.0. The data are in accordance with the literature.[2]

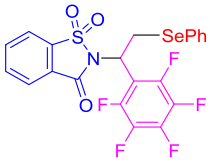


2-(1-(3-Bromophenyl)-2-(phenylselanyl)ethyl)benzo[*d*]isothiazol-3(2*H*)-one 1,1-dioxide (**4q**). Compound **4q** was prepared according to the general procedure and isolated as a white solid (79

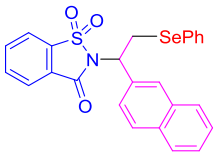
mg, 76% yield) after flash chromatography (petroleum ether/ethyl acetate = 10/1); mp = 128-130 ℃. ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.89 (d, *J* = 7.1 Hz, 1H), 7.79 – 7.68 (m, 3H), 7.63 – 7.62 (m, 1H), 7.47 – 7.45 (m, 2H), 7.41 (d, *J* = 7.8 Hz, 1H), 7.37 – 7.33 (m, 1H), 7.18 – 7.16 (m, 3H) 7.12 (t, *J* = 7.9 Hz, 1H), 5.22 (t, *J* = 8.1 Hz, 1H), 3.95 (dd, *J* = 13.0, 8.1 Hz, 1H), 3.68 (dd, *J* = 13.0, 8.1 Hz, 1H). ^{13}C NMR (100 MHz, $CDCl_3$): δ 157.6, 137.9, 136.2, 133.8, 133.3, 132.9, 130.9, 130.6, 129.0, 128.2, 127.6, 126.8, 126.2, 125.9, 124.2, 121.6, 119.8, 56.2, 27.7. HRMS (ESI): m/z $[M+Na]^+$ Calcd for $C_{21}H_{16}BrNNaO_3SSe$ 543.9092; Found 543.9083.



2-(1-(2,4-Dimethylphenyl)-2-(phenylselanyl)ethyl)benzo[*d*]isothiazol-3(2*H*)-one 1,1-dioxide (**4r**). Compound **4r** was prepared according to the general procedure and isolated as an oil (76 mg, 81% yield) after flash chromatography (petroleum ether/ethyl acetate = 20/1). ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.98 – 7.83 (m, 1H), 7.73 – 7.64 (m, 3H), 7.54 (d, *J* = 8.0 Hz, 1H), 7.51 – 7.43 (m, 2H), 7.22 – 7.09 (m, 3H), 6.97 (dd, *J* = 8.1, 1.8 Hz, 1H), 6.89 (d, *J* = 1.8 Hz, 1H), 5.64 (t, *J* = 8.0 Hz, 1H), 3.91 (dd, *J* = 12.8, 7.8 Hz, 1H), 3.68 (dd, *J* = 12.8, 8.1 Hz, 1H), 2.21 (s, 3H), 2.14 (s, 3H). ^{13}C NMR (100 MHz, $CDCl_3$): δ 159.1, 138.7, 137.8, 137.0, 134.8, 134.2, 133.7, 131.6, 131.0, 129.3, 129.2, 127.9, 127.6, 127.1, 126.9, 125.2, 120.6, 53.9, 29.9, 21.2, 19.3. HRMS (ESI): m/z $[M+Na]^+$ Calcd for $C_{23}H_{21}NNaO_3SSe$ 494.0300; Found 494.0310.

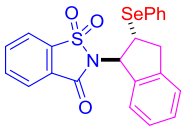


2-(1-(Perfluorophenyl)-2-(phenylselanyl)ethyl)benzo[*d*]isothiazol-3(2*H*)-one 1,1-dioxide (**4s**). Compound **4s** was prepared according to the general procedure and isolated as an oil (66 mg, 62% yield) after flash chromatography (petroleum ether/ethyl acetate = 12/1). ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.98 (d, *J* = 7.2 Hz, 1H), 7.84 – 7.69 (m, 3H), 7.46 (d, *J* = 7.5 Hz, 2H), 7.26 – 7.17 (m, 3H), 5.79 (dd, *J* = 9.9, 7.0 Hz, 1H), 3.86 (dd, *J* = 12.9, 7.8 Hz, 1H), 3.83 (dd, *J* = 12.9, 8.1 Hz, 1H). ^{13}C NMR (100 MHz, $CDCl_3$): δ 156.9, 146.2 (m), 143.7 (m), 141.9 (m), 136.4, 134.1, 133.5, 133.0, 128.3, 127.2, 126.4, 125.4, 124.5, 119.7, 108.6 (m), 46.8, 26.6. ^{19}F NMR (376 MHz, $CDCl_3$): δ -137.7, -152.2, -161.4. HRMS (ESI): m/z $[M+Na]^+$ Calcd for $C_{21}H_{12}F_5NNaO_3SSe$ 555.9515; Found 555.9529.

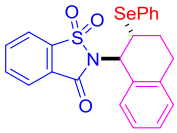


2-(1-(Naphthalen-2-yl)-2-(phenylselanyl)ethyl)benzo[*d*]isothiazol-3(2*H*)-one 1,1-dioxide (**4t**). Compound **4t** was prepared according to the general procedure and isolated as a yellow solid (82 mg, 83% yield) after flash chromatography (petroleum ether/ethyl acetate = 9/1); mp = 91-93 ℃. ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.92 (s, 1H), 7.86 (d, *J* = 7.2 Hz, 1H), 7.76 – 7.58 (m, 7H), 7.47 (d, *J* = 7.1 Hz, 2H), 7.38 – 7.35 (m, 2H), 7.17 – 7.15 (m, 3H), 5.48 (t, *J* = 8.1 Hz, 1H), 4.07 (dd, *J* = 12.9, 8.1 Hz, 1H), 3.85 (dd, *J* = 12.9, 8.1 Hz, 1H). ^{13}C NMR (100 MHz, $CDCl_3$): δ 157.7, 136.3, 133.7, 133.2, 132.9, 132.7, 132.2, 131.9, 128.1, 128.0, 127.3, 127.2, 127.0, 126.6, 126.5, 126.0,

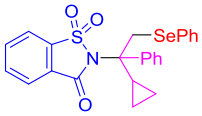
125.5, 125.3, 124.9, 124.1, 119.7, 56.9, 28.0. HRMS (ESI): m/z $[M+Na]^+$ Calcd for $C_{25}H_{19}NNaO_3SSe$ 516.0143; Found 516.0147.



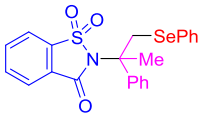
***anti*-2-(2-(Phenylselanyl)-2,3-dihydro-1H-inden-1-yl)benzo[*d*]isothiazol-3(2*H*)-one 1,1-dioxide** (**4u**). Compound **4u** was prepared according to the general procedure and isolated as a yellow solid (65 mg, 72% yield) after flash chromatography (petroleum ether/ethyl acetate = 10/1); mp = 119-121 ℃. ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.90 (d, *J* = 7.4 Hz, 1H), 7.84 – 7.70 (m, 3H), 7.62 – 7.59 (m, 2H), 7.24 – 7.14 (m, 6H), 7.13 – 7.09 (m, 1H), 5.65 (d, *J* = 7.0 Hz, 1H), 4.57 (dd, *J* = 15.1, 7.3 Hz, 1H), 3.62 (dd, *J* = 16.4, 8.1 Hz, 1H), 3.01 (dd, *J* = 16.4, 8.1 Hz, 1H). ^{13}C NMR (100 MHz, $CDCl_3$): δ 157.5, 141.0, 136.6, 136.0, 135.0, 133.8, 133.2, 128.1, 128.0, 127.2, 126.20, 126.17, 126.1, 124.2, 123.6, 123.4, 119.8, 62.5, 41.4, 37.8. HRMS (ESI): m/z $[M+Na]^+$ Calcd for $C_{22}H_{17}NNaO_3SSe$ 477.9987; Found 477.9987.



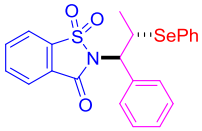
***anti*-2-(2-(Phenylselanyl)-1,2,3,4-tetrahydronaphthalen-1-yl)benzo[*d*]isothiazol-3(2*H*)-one 1,1-dioxide** (**4v**). Compound **4v** was prepared according to the general procedure and isolated as a yellow solid (69 mg, 74% yield) after flash chromatography (petroleum ether/ethyl acetate = 10/1); mp = 169-171 ℃. ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.91 (d, *J* = 7.1 Hz, 1H), 7.85 – 7.70 (m, 3H), 7.60 – 7.57 (m, 2H), 7.24 (d, *J* = 8.0 Hz, 1H), 7.19 – 7.16 (m, 3H), 7.11 (d, *J* = 7.2 Hz, 1H), 7.07 – 7.02 (m, 2H), 5.48 (d, *J* = 9.4 Hz, 1H), 4.32 – 4.26 (m, 1H), 3.06 – 2.92 (m, 1H), 2.82 (dt, *J* = 16.9, 4.6 Hz, 1H), 2.48 – 2.41 (m, 1H), 1.95 – 1.85 (m, 1H). ^{13}C NMR (100 MHz, $CDCl_3$): δ 157.8, 136.6, 136.2, 135.0, 133.8, 133.2, 130.9, 127.93, 127.90, 127.1, 126.9, 126.1, 125.9, 125.4, 124.3, 119.8, 56.6, 40.7, 29.4, 28.5. HRMS (ESI): m/z $[M+Na]^+$ Calcd for $C_{23}H_{19}NNaO_3SSe$ 492.0143; Found 492.0144.



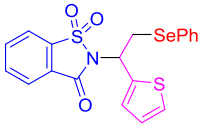
2-(1-Cyclopropyl-1-phenyl-2-(phenylselanyl)ethyl)benzo[*d*]isothiazol-3(2*H*)-one 1,1-dioxide (**4w**). Compound **4w** was prepared according to the general procedure and isolated as a yellow solid (64 mg, 66% yield) after flash chromatography (petroleum ether/ethyl acetate = 10/1). mp = 191-192 ℃. ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.81 (d, *J* = 7.7 Hz, 1H), 7.74 (td, *J* = 7.5, 1.2 Hz, 1H), 7.59 (td, *J* = 7.5, 1.1 Hz, 1H), 7.56 – 7.50 (m, 1H), 7.48 – 7.41 (m, 2H), 7.39 – 7.27 (m, 2H), 7.28 – 7.11 (m, 3H), 7.01 – 6.86 (m, 3H), 4.60 (d, *J* = 12.0 Hz, 1H), 3.87 (d, *J* = 12.0 Hz, 1H), 2.48 – 2.40 (m, 1H), 0.86 – 0.74 (m, 1H), 0.47 – 0.36 (m, 1H), 0.36 – 0.25 (m, 1H), -0.13 – -0.18 (m, 1H). ^{13}C NMR (100 MHz, $CDCl_3$): δ 157.6, 136.8, 136.7, 133.1, 132.7, 132.1, 127.8, 127.1, 126.5, 126.2, 125.9, 125.8, 124.5, 123.4, 118.7, 71.2, 36.7, 14.3, 4.6. HRMS (ESI): m/z $[M+Na]^+$ Calcd for $C_{24}H_{21}NNaO_3SSe$ 506.0300; Found 506.0323.



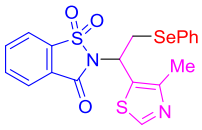
2-(2-Phenyl-1-(phenylselanyl)propan-2-yl)benzo[*d*]isothiazol-3(2*H*)-one 1,1-dioxide (**4x**). Compound **4x** was prepared according to the general procedure and isolated as an oil (78 mg, 86% yield) after flash chromatography (petroleum ether/ethyl acetate = 10/1). ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.84 (d, *J* = 7.7 Hz, 1H), 7.78 – 7.74 (m, 1H), 7.69 – 7.60 (m, 2H), 7.51 (d, *J* = 7.6 Hz, 2H), 7.46 (d, *J* = 7.6 Hz, 2H), 7.31 (d, *J* = 8.5 Hz, 2H), 7.26 – 7.17 (m, 1H), 7.16 – 6.93 (m, 3H), 4.54 (d, *J* = 12.1 Hz, 1H), 3.87 (d, *J* = 12.1 Hz, 1H), 2.21 (s, 3H). ^{13}C NMR (100 MHz, $CDCl_3$): δ 158.8, 143.8, 137.8, 134.7, 134.0, 133.9, 129.5, 128.8, 128.6, 127.6, 127.3, 126.3, 125.5, 124.9, 120.3, 67.9, 37.6, 25.7. HRMS (ESI): m/z $[M+Na]^+$ Calcd for $C_{22}H_{19}NNaO_3SSe$ 480.0143; Found 480.0149.



***anti*-2-(1-Phenyl-2-(phenylselanyl)propyl)benzo[*d*]isothiazol-3(2*H*)-one 1,1-dioxide** (**4y**). Compound **4y** was prepared according to the general procedure and isolated as a yellow solid (67 mg, 74% yield) after flash chromatography (petroleum ether/ethyl acetate = 10/1); mp = 87-88 ℃. ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.89 – 7.85 (m, 1H), 7.76 – 7.63 (m, 3H), 7.57 – 7.55 (m, 2H), 7.35 – 7.32 (m, 2H), 7.23– 7.20 (m, 4H), 7.17 – 7.13 (m, 2H), 4.96 (d, *J* = 11.7 Hz, 1H), 4.57 (dq, *J* = 13.7, 6.8 Hz, 1H), 1.47 (d, *J* = 6.8 Hz, 3H). ^{13}C NMR (100 MHz, $CDCl_3$): δ 157.5, 136.1, 135.4, 135.3, 133.7, 133.2, 128.6, 127.9, 127.7, 127.27, 127.25, 126.4, 126.0, 124.1, 119.8, 62.3, 36.6, 19.5. HRMS (ESI): m/z $[M+Na]^+$ Calcd for $C_{22}H_{19}NNaO_3SSe$ 480.0143; Found 480.0138.

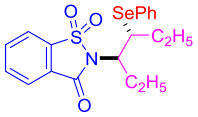


2-(2-(Phenylselanyl)-1-(thiophen-2-yl)ethyl)benzo[*d*]isothiazol-3(2*H*)-one 1,1-dioxide (**4z**). Compound **4z** was prepared according to the general procedure and isolated as a white solid (75 mg, 84% yield) after flash chromatography (petroleum ether/ethyl acetate = 12/1); mp = 85-87 ℃. ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.87 (d, *J* = 7.2 Hz, 1H), 7.78 – 7.63 (m, 3H), 7.48 (d, *J* =7.5 Hz, 2H), 7.21 – 7.13 (m, 5H), 6.88 – 6.86 (m, 1H), 5.53 (t, *J* = 8.0 Hz, 1H), 3.99 (dd, *J* = 13.0, 8.0 Hz, 1H), 3.72 (dd, *J* = 13.0, 8.0 Hz, 1H). ^{13}C NMR (100 MHz, $CDCl_3$): δ 157.4, 138.1, 136.4, 133.8, 133.2, 132.8, 128.2, 127.7, 127.0, 126.7, 125.9, 125.6, 125.3, 124.2, 119.8, 51.7, 29.4. HRMS (ESI): m/z $[M+Na]^+$ Calcd for $C_{19}H_{15}NNaO_3S_2Se$ 471.9551; Found 471.9544.

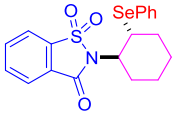


2-(1-(4-Methylthiazol-5-yl)-2-(phenylselanyl)ethyl)benzo[*d*]isothiazol-3(2*H*)-one 1,1-dioxide (**4aa**). Compound **4aa** was prepared according to the general procedure and isolated as a yellow solid (74 mg, 80% yield) after flash chromatography (petroleum ether/ethyl acetate = 1/1); mp =

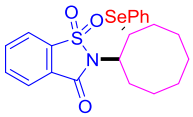
109-111 ℃. ^{1}H NMR (400 MHz, $CDCl_3$): δ 8.60 (s, 1H), 7.90 (d, *J* = 6.9 Hz, 1H), 7.79 – 7.68 (m, 3H), 7.45– 7.43 (m, 2H), 7.18– 7.15 (m, 3H), 5.54 (t, *J* = 7.9 Hz, 1H), 3.86 (dd, *J* = 13.0, 7.9 Hz, 1H), 3.62 (dd, *J* = 13.0, 7.9 Hz, 1H), 2.34 (s, 3H). ^{13}C NMR (100 MHz, $CDCl_3$): δ 157.5, 151.8, 151.5, 136.2, 134.0, 133.4, 132.9, 128.3, 127.1, 126.9, 126.4, 125.8, 124.2, 119.9, 49.2, 30.5, 14.4. HRMS (ESI): m/z $[M+H]^+$ Calcd for $C_{19}H_{17}N_2O_3S_2Se$ 464.9840; Found 464.9829.



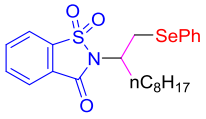
2-(4-(Phenylselanyl)hexan-3-yl)benzo[*d*]isothiazol-3(2*H*)-one 1,1-dioxide (**4ab**). Compound **4ab** was prepared according to the general procedure and isolated as an oil (51 mg, 61% yield) after flash chromatography (petroleum ether/ethyl acetate = 5/1). ^{1}H NMR (400 MHz, $CDCl_3$): δ 8.04 – 7.97 (m, 1H), 7.95 – 7.76 (m, 3H), 7.64 – 7.53 (m, 2H), 7.33 – 7.18 (m, 3H), 4.45 – 4.08 (m, 1H), 3.90 (td, *J* = 8.5, 3.4 Hz, 1H), 2.37 – 2.25 (m, 1H), 2.08 – 1.92 (m, 2H), 1.76 – 1.58 (m, 1H), 1.10 (t, *J* = 7.3 Hz, 3H), 1.01 (t, *J* = 7.3 Hz, 3H). ^{13}C NMR (100 MHz, $CDCl_3$): δ 159.5, 137.3, 134.9, 134.7, 134.2, 129.4, 129.0, 127.6, 127.0, 125.2, 120.7, 60.6, 51.3, 25.0, 22.4, 11.6, 11.6. HRMS (ESI): m/z $[M+Na]^+$ Calcd for $C_{19}H_{21}NNaO_3SSe$ 446.0300; Found 446.0303.



***anti*-2-(2-(Phenylselanyl)cyclohexyl)benzo[*d*]isothiazol-3(2*H*)-one 1,1-dioxide** (**4ac**). Compound **4ac** was prepared according to the general procedure and isolated as an oil (45 mg, 53% yield) after flash chromatography (petroleum ether/ethyl acetate = 12/1). ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.89 (d, *J* = 7.5 Hz, 1H), 7.84 – 7.67 (m, 3H), 7.55 – 7.37 (m, 2H), 7.20 – 7.02 (m, 3H), 4.53 – 3.85 (m, 2H), 2.35 – 2.04 (m, 3H), 1.83 – 1.78 (m, 1H), 1.68 – 1.61 (m, 1H), 1.48 – 1.22 (m, 3H). ^{13}C NMR (100 MHz, $CDCl_3$): δ 157.8, 136.2, 135.0, 133.5, 133.1, 127.6, 126.7, 126.6, 126.2, 124.1, 119.6, 57.6, 33.8, 30.8, 25.5, 24.7. The data are in accordance with the literature.[2]

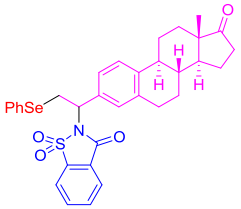


***anti*-2-(2-(Phenylselanyl)cyclooctyl)benzo[*d*]isothiazol-3(2*H*)-one 1,1-dioxide** (**4ad**). Compound **4ad** was prepared according to the general procedure and isolated as an oil (51 mg, 57% yield) after flash chromatography (petroleum ether/ethyl acetate = 15/1); ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.93 – 7.87 (m, 2H), 7.84 – 7.75 (m, 2H), 7.51 (d, *J* = 7.1 Hz, 2H), 7.12 – 7.10 (m, 3H), 4.60 – 4.50 (m, 1H), 4.45 (d, *J* = 8.1 Hz, 1H), 2.45 – 2.39 (m, 1H), 2.34 – 2.22 (m, 1H), 2.20 – 2.08 (m, 1H), 1.98 – 1.61 (m, 7H), 1.54 (d, *J* = 11.4 Hz, 2H). ^{13}C NMR (100 MHz, $CDCl_3$): δ 157.9, 136.2, 134.0, 133.5, 133.0, 128.3, 127.7, 126.4, 124.0, 119.7, 58.2, 45.6, 32.0, 28.5, 26.4, 24.9, 24.3, 24.2. The data are in accordance with the literature.[2]

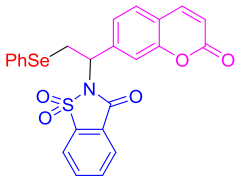


2-(1-(Phenylselanyl)decan-2-yl)benzo[d]isothiazol-3(2H)-one 1,1-dioxide (**4ae**). Compound **4ae** was prepared according to the general procedure and isolated as an oil (39 mg, 41% yield) after flash chromatography (petroleum ether/ethyl acetate = 10/1); ^{1}H NMR (400 MHz, $CDCl_3$): δ 8.04 (d, *J* = 7.1 Hz, 1H), 7.96 – 7.71 (m, 3H), 7.70 – 7.61 (m, 2H), 7.40 – 7.17 (m, 3H), 4.12 –

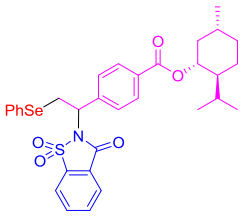
3.89 (m, 2H), 3.81 – 3.64 (m, 1H), 1.87 – 1.72 (m, 1H), 1.70 – 1.64 (m, 1H), 1.59 – 1.40 (m, 2H), 1.35 – 1.21 (m, 10H), 0.86 (t, *J* = 6.8 Hz, 3H). ^{13}C NMR (100 MHz, $CDCl_3$): δ 159.2, 137.6, 134.9, 134.8, 134.3, 129.2, 127.8, 127.7, 127.2, 125.3, 121.0, 44.5, 42.3, 32.1, 31.8, 29.4, 29.3, 29.2, 27.5, 22.6, 14.1. HRMS (ESI): m/z $[M+Na]^+$ Calcd for $C_{23}H_{29}NNaO_3SSe$ 502.0926; Found 502.0943.



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 (**4af**). Compound **4af** was prepared according to the general procedure and isolated as an oil (100 mg, 81% yield) after flash chromatography (petroleum ether/ethyl acetate = 2/1). $[\alpha]_{25}^{D}$ =26.1, c=0.37 g/100 mL, $CHCl_3$. ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.90 (d, *J* = 7.1 Hz, 1H), 7.80 – 7.69 (m, 3H), 7.50 – 7.45 (m, 2H), 7.28 (d, *J* = 8.4 Hz, 1H), 7.19 – 7.16 (m, 5H), 5.27 (td, *J* = 8.1, 2.6 Hz, 1H), 4.02–3.99 (m, 1H), 3.75– 3.69 (m, 1H), 2.86 – 2.76 (m, 2H), 2.42 (dd, *J* = 18.8, 8.6 Hz, 1H), 2.32 (d, *J* = 12.6 Hz, 1H), 2.19 (dd, *J* = 13.6, 7.1 Hz, 1H), 2.05 (dd, *J* = 18.7, 8.9 Hz, 1H), 1.95 – 1.82 (m, 2H), 1.61 – 1.30 (m, 7H), 0.81 (s, 3H). ^{13}C NMR (100 MHz, $CDCl_3$): δ 220.1, 157.7, 139.3, 136.4, 135.7, 133.7, 133.2, 132.70, 132.69, 128.1, 126.5, 126.2, 124.85, 124.82, 124.52, 124.47, 124.1, 119.7, 56.6, 49.5, 46.9, 43.3, 36.9, 34.8, 30.5, 28.4, 28.1, 25.4, 24.5, 20.6, 12.8. HRMS (ESI): m/z $[M+Na]^+$ Calcd for $C_{33}H_{33}NNaO_4SSe$ 642.1188; Found 642.1178.

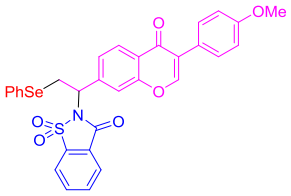


2-(1-(2-Oxo-2*H*-chromen-7-yl)-2-(phenylselanyl)ethyl)benzo[*d*]isothiazol-3(2*H*)-one 1,1-dioxide (**4ag**). Compound **4ag** was prepared according to the general procedure and isolated as an oil (79 mg, 78% yield) after flash chromatography (petroleum ether/ethyl acetate = 3/1). ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.90 (d, *J* = 7.1 Hz, 1H), 7.83 – 7.70 (m, 3H), 7.58 (d, *J* = 9.5 Hz, 1H), 7.46 – 7.44 (m, 2H), 7.38 – 7.35 (m, 2H), 7.20 – 7.15 (m, 3H), 6.33 (d, *J* = 9.5 Hz, 1H), 5.32 (t, *J* = 8.0 Hz, 1H), 3.94 (dd, *J* = 13.0, 8.1 Hz, 1H), 3.76 (dd, *J* = 13.0, 8.1 Hz, 1H). ^{13}C NMR (100 MHz, $CDCl_3$): δ 159.4, 157.7, 152.8, 141.8, 139.9, 136.2, 134.0, 133.5, 132.9, 128.3, 127.4, 126.93, 126.86, 125.8, 124.3, 123.7, 119.9, 117.9, 116.18, 116.09, 56.2, 27.5. HRMS (ESI): m/z $[M+H]^+$ Calcd for $C_{24}H_{18}NO_5SSe$ 512.0065; Found 512.0076.

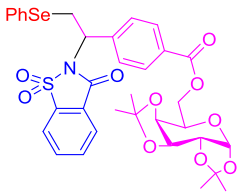


(1*R*,2*S*,5*R*)-2-Isopropyl-5-methylcyclohexyl 4-(1-(1,1-dioxido-3-oxobenzo[*d*]isothiazol-2(3*H*)-yl)-2-(phenylselanyl)ethyl)benzoate (**4ah**).

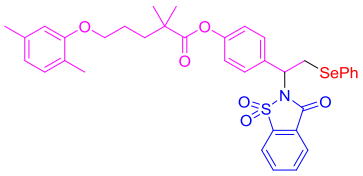
Compound **4ah** was prepared according to the general procedure and isolated as an oil (88 mg, 70% yield) after flash chromatography (petroleum ether/ethyl acetate = 8/1). $[\alpha]_{25}^{D}$ =–13.2, c=0.25 g/100 mL, $CHCl_3$. ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.91 (dd, *J* = 15.4, 7.6 Hz, 3H), 7.81 – 7.69 (m, 3H), 7.55 (d, *J* = 7.4 Hz, 2H), 7.47 – 7.45 (m, 2H), 7.18– 7.16 (m, 2H), 5.32 (td, *J* = 8.0, 3.4 Hz, 1H), 4.83 (td, *J* = 10.9, 4.3 Hz, 1H), 4.02 – 3.92 (m, 1H), 3.75 (ddd, *J* = 12.6, 8.2, 4.1 Hz, 1H), 2.01 (d, *J* = 11.9 Hz, 1H), 1.89 – 1.82 (m, 1H), 1.64 (d, *J* = 11.5 Hz, 2H), 1.54– 1.42 (m, 3H), 1.10 – 0.96 (m, 2H), 0.83 (t, *J* = 7.1 Hz, 6H), 0.69 (d, *J* = 7.1 Hz, 3H). ^{13}C NMR (100 MHz, $CDCl_3$): δ 164.5, 157.7, 140.2, 140.1, 136.3, 133.8, 133.3, 132.8, 130.1, 128.8, 128.2, 127.6, 126.8, 126.0, 124.2, 119.8, 73.9, 56.3, 46.2, 39.9, 33.3, 30.4, 25.4, 22.5, 21.0, 19.8, 15.4. HRMS (ESI): m/z $[M+Na]^+$ Calcd for $C_{32}H_{35}NNaO_5SSe$ 648.1293; Found 648.1274.



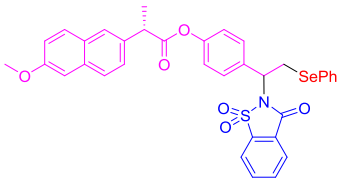
2-(1-(3-(4-Methoxyphenyl)-4-oxo-4*H*-chromen-7-yl)-2-(phenylselanyl)ethyl)benzo[*d*]isothiazol-3(2*H*)-one 1,1-dioxide (**4ai**). Compound **4ai** was prepared according to the general procedure and isolated as an oil (99 mg, 80% yield) after flash chromatography (petroleum ether/ethyl acetate = 3/1). ^{1}H NMR (400 MHz, $CDCl_3$): δ 8.18 (d, *J* = 8.3 Hz, 1H), 7.97 – 7.88 (m, 2H), 7.84 – 7.68 (m, 4H), 7.62 – 7.60 (m, 1H), 7.49 – 7.39 (m, 5H), 7.27 – 7.14 (m, 2H), 6.89 (d, *J* = 8.7 Hz, 2H), 5.37 (t, *J* = 8.0 Hz, 1H), 3.98 (dd, *J* = 13.1, 7.8 Hz, 1H), 3.83 – 3.73 (m, 4H). ^{13}C NMR (100 MHz, $CDCl_3$): δ 175.0, 158.6, 157.7, 154.9, 151.6, 141.6, 136.2, 134.0, 133.4, 132.9, 129.0, 128.3, 127.4, 126.9, 125.8, 125.8, 124.4, 124.3, 124.1, 123.4, 122.8, 119.9, 117.2, 113.0, 56.1, 54.3, 27.4. HRMS (ESI): m/z $[M+H]^+$ Calcd for $C_{31}H_{24}NO_6SSe$ 618.0484; Found 618.0494.



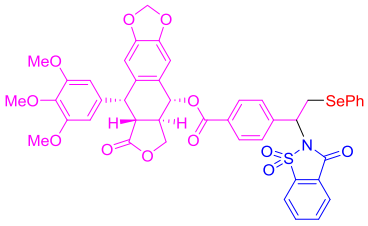
((3*aR*,5*R*,5*aS*,8*aS*,8*bR*)-2,2,7,7-Tetramethyltetrahydro-5*H*-bis([1,3]dioxolo)[4,5-b:4',5'-d]pyran-5-yl)methyl 4-(1-(1,1-dioxido-3-oxobenzo[*d*]isothiazol-2(3*H*)-yl)-2-(phenylselanyl)ethyl)benzoate (**4aj**). Compound **4aj** was prepared according to the general procedure and isolated as an oil (95 mg, 65% yield) after flash chromatography (petroleum ether/ethyl acetate = 5/1). $[\alpha]_{25}^{D}$ =–11.8, c=0.14 g/100 mL, $CHCl_3$. ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.94 (d, *J* = 8.3 Hz, 2H), 7.89 (d, *J* = 7.0 Hz, 1H), 7.81 – 7.68 (m, 3H), 7.54 (d, *J* = 8.3 Hz, 2H), 7.44 – 7.47 (m, 2H), 7.20 – 7.14 (m, 3H), 5.47 (d, *J* = 5.0 Hz, 1H), 5.31 (t, *J* = 8.1 Hz, 1H), 4.57 (dd, *J* = 7.9, 2.5 Hz, 1H), 4.42 (ddd, *J* = 11.4, 5.1, 1.0 Hz, 1H), 4.34 (ddd, *J* = 11.5, 7.4, 2.2 Hz, 1H), 4.25 (ddd, *J* = 9.7, 6.4, 2.2 Hz, 2H), 4.09 (dd, *J* = 9.2, 3.7 Hz, 1H), 3.97 (dd, *J* = 13.0, 8.1 Hz, 1H), 3.73 (dd, *J* = 13.0, 8.1 Hz, 1H), 1.43 (s, 3H), 1.39 (s, 3H), 1.27 (s, 3H), 1.25 (s, 3H). ^{13}C NMR (100 MHz, $CDCl_3$): δ 164.8, 157.7, 140.5, 136.3, 133.9, 133.3, 132.8, 129.0, 128.2, 127.6, 126.8, 125.9, 124.2, 119.8, 108.7, 107.8, 95.3, 70.1, 69.7, 69.5, 65.0, 62.9, 59.4, 56.3, 27.6, 25.0, 24.9, 24.0, 23.5. HRMS (ESI): m/z $[M+H]^+$ Calcd for $C_{34}H_{36}NO_{10}SSe$ 730.1220; Found 730.1212.



4-(1-(1,1-Dioxido-3-oxobenzo[*d*]isothiazol-2(3*H*)-yl)-2-(phenylselanyl)ethyl)phenyl 5-(2,5-dimethylphenoxy)-2,2-dimethylpentanoate (**4ak**). Compound **4ak** was prepared according to the general procedure and isolated as a white solid (115 mg, 83% yield) after flash chromatography (petroleum ether/ethyl acetate = 3/1); mp = 110-112 ℃. ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.88 (d, *J* = 6.9 Hz, 1H), 7.80 – 7.65 (m, 3H), 7.52 – 7.44 (m, 4H), 7.19 – 7.14 (m, 3H), 6.97 – 6.88 (m, 3H), 6.60 – 6.51 (m, 2H), 5.27 (t, *J* = 8.0 Hz, 1H), 3.99 (dd, *J* = 12.9, 8.1 Hz, 1H), 3.88 (s, 2H), 3.70 (dd, *J* = 12.9, 8.1 Hz, 1H), 2.22 (s, 3H), 2.09 (s, 3H), 1.77 (s, 2H), 1.27 (s, 6H), 1.17 (s, 2H). ^{13}C NMR (100 MHz, $CDCl_3$): δ 175.0, 157.6, 155.8, 150.1, 136.3, 135.4, 133.7, 133.2, 133.0, 132.8, 129.3, 128.8, 128.2, 127.8, 126.7, 126.0, 124.1, 122.6, 120.5, 119.7, 110.9, 66.7, 56.2, 41.4, 36.1, 27.9, 24.2, 24.1, 24.0, 14.8. HRMS (ESI): m/z $[M+Na]^+$ Calcd for $C_{36}H_{37}NNaO_6SSe$ 714.1399; Found 714.1389.

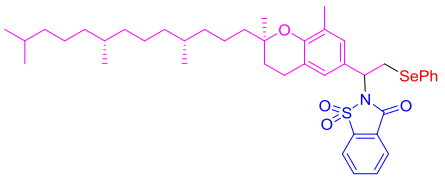


4-(1-(1,1-Dioxido-3-oxobenzo[*d*]isothiazol-2(3*H*)-yl)-2-(phenylselanyl)ethyl)phenyl (2*S*)-2-(6-methoxynaphthalen-2-yl)propanoate (**4al**). Compound **4al** was prepared according to the general procedure and isolated as an oil (97 mg, 72% yield) after flash chromatography (petroleum ether/ethyl acetate = 5/1). $[\alpha]_{25}^{D}$ =16.2, c=0.07 g/100 mL, $CHCl_3$. ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.94 (d, *J* = 7.1 Hz, 1H), 7.86 – 7.70 (m, 6H), 7.56 – 7.45 (m, 5H), 7.25 – 7.21 (m, 3H), 7.17 – 7.13 (m, 2H), 6.97 (d, *J* = 8.6 Hz, 2H), 5.32 (t, *J* = 8.0 Hz, 1H), 4.11 (dd, *J* = 14.2, 7.1 Hz, 1H), 4.04 (dd, *J* = 10.7, 7.3 Hz, 1H), 3.92 (s, 3H), 3.75 (dd, *J* = 13.0, 7.7 Hz, 1H), 1.67 (d, *J* = 7.1 Hz, 3H). ^{13}C NMR (100 MHz, $CDCl_3$): δ 171.8, 157.6, 156.7, 150.0, 136.3, 134.0, 133.7, 133.2, 133.1, 133.0, 132.8, 128.8, 128.3, 128.2, 127.9, 127.8, 126.7, 126.3, 126.0, 125.1, 125.0, 124.1, 120.4, 119.7, 118.1, 104.6, 56.2, 54.3, 44.5, 27.9, 17.4. HRMS (ESI): m/z $[M+Na]^+$ Calcd for $C_{35}H_{29}NNaO_6SSe$ 694.0773; Found 694.0777.

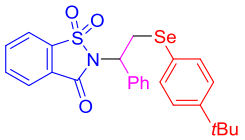


(5*R*,5*aR*,8*aR*,9*R*)-8-Oxo-9-(3,4,5-trimethoxyphenyl)-5,5a,6,8,8a,9-hexahydrofuro[3',4':6,7]naphtho[2,3-*d*][1,3]dioxol-5-yl 4-(1-(1,1-dioxido-3-oxobenzo[*d*]isothiazol-2(3*H*)-yl)-2-(phenylselanyl)ethyl)benzoate (**4am**). Compound **4am** was prepared according to the general procedure and isolated as a yellow solid (101 mg, 57% yield) after flash chromatography (petroleum ether/ethyl acetate =3/1); mp = 84-86 ℃. $[\alpha]_{25}^{D}$ = – 30.9, c=0.069 g/100 mL, $CHCl_3$. ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.95 (d, *J* =

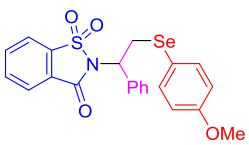
8.4 Hz, 2H), 7.91 (d, *J* = 7.3 Hz, 1H), 7.84 – 7.70 (m, 4H), 7.60 (d, *J* = 8.3 Hz, 2H), 7.49 – 7.44 (m, 2H), 7.20 – 7.18 (m, 3H), 6.76 – 6.75 (m, 1H), 6.50 (s, 1H), 6.35 (s, 2H), 6.03 (d, *J* = 8.7 Hz, 1H), 5.91 (d, *J* = 6.9 Hz, 2H), 5.33 (td, *J* = 8.1, 3.0 Hz, 1H), 4.57 (d, *J* = 4.0 Hz, 1H), 4.34 (dd, *J* = 9.2, 6.6 Hz, 1H), 4.23 (t, *J* = 9.7 Hz, 1H), 4.05 (q, *J* = 7.1 Hz, 1H), 4.00 – 3.91 (m, 1H), 3.82 – 3.75 (m, 1H), 3.73 (d, *J* = 1.2 Hz, 3H), 3.70 (d, *J* = 1.5 Hz, 6H). ^{13}C NMR (100 MHz, $CDCl_3$): δ 172.7, 165.2, 157.7, 151.6, 147.2, 146.7, 141.4, 141.3, 136.3, 136.1, 134.0, 133.8, 133.4, 132.8, 131.4, 128.95, 128.93, 128.3, 128.0, 127.9, 127.2, 126.9, 125.8, 124.3, 119.9, 108.8, 107.0, 106.0, 100.6, 73.3, 70.5, 59.7, 55.1, 44.6, 42.7, 37.8, 27.3. HRMS (ESI): m/z $[M+Na]^+$ Calcd for $C_{44}H_{37}NNaO_{12}SSe$ 906.1094; Found 906.1091.



2-(1-((*R*)-2,8-Dimethyl-2-((4*R*,8*R*)-4,8,12-trimethyltridecyl)chroman-6-yl)-2-(phenylselanyl)ethyl)benzo[*d*]isothiazol-3(2*H*)-one 1,1-dioxide (**4an**). Compound **4an** was prepared according to the general procedure and isolated as an oil (95 mg, 63% yield) after flash chromatography (petroleum ether/ethyl acetate = 3/1). $[\alpha]_{25}^{D}$ = 16.8, c=0.027 g/100 mL, $CHCl_3$. ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.97 (d, *J* = 6.7 Hz, 1H), 7.88 – 7.74 (m, 3H), 7.55 (d, *J* = 6.4 Hz, 2H), 7.25 – 7.21 (m, 3H), 7.14 (s, 1H), 7.08 – 7.09 (m, 1H), 5.29 (dd, *J* = 10.5, 5.7 Hz, 1H), 4.06 (dd, *J* = 12.9, 8.8 Hz, 1H), 3.76 (dd, *J* = 12.9, 7.4 Hz, 1H), 2.75 – 2.63 (m, 2H), 1.82 – 1.67 (m, 2H), 1.60 – 1.02 (m, 27H), 0.90 – 0.80 (m, 12H). ^{13}C NMR (100 MHz, $CDCl_3$): δ 157.7, 151.5, 136.4, 133.5, 133.1, 132.7, 128.4, 128.0, 127.5, 126.4, 126.3, 126.2, 125.7, 125.2, 124.1, 119.7, 119.2, 75.3, 56.9, 39.4, 38.3, 36.41, 36.40, 36.3, 31.76, 31.69, 29.9, 28.6, 27.0, 23.8, 23.4, 23.3, 21.7, 21.6, 21.3, 20.0, 18.7, 18.6. HRMS (ESI): m/z $[M+Na]^+$ Calcd for $C_{42}H_{57}NNaO_4SSe$ 774.3066; Found 774.3051.

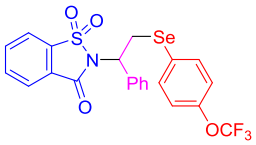


2-(2-((4-(*tert*-Butyl)phenyl)selanyl)-1-phenylethyl)benzo[*d*]isothiazol-3(2*H*)-one 1,1-dioxide (**5a**). Compound **5a** was prepared according to the general procedure and isolated as a yellow solid (73 mg, 73% yield) after flash chromatography (petroleum ether/ethyl acetate = 8/1); mp = 42-44 ℃. ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.90 (d, *J* = 7.0 Hz, 1H), 7.82 – 7.67 (m, 3H), 7.49 (d, *J* = 7.8 Hz, 2H), 7.42 (d, *J* = 8.4 Hz, 2H), 7.30 – 7.22 (m, 3H), 7.19 (d, *J* = 7.4 Hz, 2H), 5.34 (t, *J* = 8.1 Hz, 1H), 3.99 (dd, *J* = 12.9, 8.1 Hz, 1H), 3.71 (dd, *J* = 12.9, 8.1 Hz, 1H), 1.22 (s, 9H). ^{13}C NMR (100 MHz, $CDCl_3$): δ 157.7, 149.8, 136.4, 135.7, 133.7, 133.2, 132.8, 127.7, 127.6, 127.5, 126.1, 125.2, 124.5, 124.1, 119.7, 57.1, 33.5, 30.2, 28.7, 28.1. HRMS (ESI): m/z $[M+Na]^+$ Calcd for $C_{25}H_{25}NNaO_3SSe$ 522.0613; Found 522.0610.

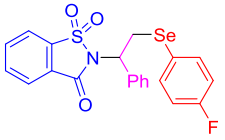


2-(2-((4-Methoxyphenyl)selanyl)-1-phenylethyl)benzo[*d*]isothiazol-3(2*H*)-one 1,1-dioxide (**5b**).

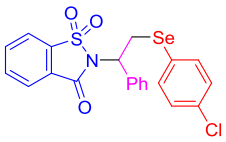
Compound **5b** was prepared according to the general procedure and isolated as a white solid (57 mg, 60% yield) after flash chromatography (petroleum ether/ethyl acetate = 5/1); mp = 198-199 ℃. ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.97 (d, *J* = 7.0 Hz, 1H), 7.88 – 7.73 (m, 3H), 7.53 (dd, *J* = 13.1, 7.6 Hz, 4H), 7.37 – 7.29 (m, 3H), 6.78 (d, *J* = 8.8 Hz, 2H), 5.40 – 5.30 (m, 1H), 4.03 (dd, *J* = 12.9, 8.1 Hz, 1H), 3.79 (s, 3H), 3.67 (dd, *J* = 12.9, 8.1 Hz, 1H). ^{13}C NMR (100 MHz, $CDCl_3$): δ 158.7, 157.7, 136.4, 135.8, 135.5, 133.6, 133.2, 127.7, 127.6, 127.5, 126.1, 124.1, 119.7, 117.8, 113.8, 56.9, 54.2, 28.7. HRMS (ESI): m/z $[M+Na]^+$ Calcd for $C_{22}H_{19}NNaO_4SSe$ 496.0092; Found 496.0089.



2-(1-Phenyl-2-((4-(trifluoromethoxy)phenyl)selanyl)ethyl)benzo[*d*]isothiazol-3(2*H*)-one 1,1-dioxide (**5c**). Compound **5c** was prepared according to the general procedure and isolated as an oil (82 mg, 78% yield) after flash chromatography (petroleum ether/ethyl acetate = 6/1). ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.96 (d, *J* = 7.0 Hz, 1H), 7.90 – 7.74 (m, 3H), 7.59 – 7.52 (m, 4H), 7.38 – 7.29 (m, 3H), 7.06 (d, *J* = 8.0 Hz, 2H), 5.38 (t, *J* = 8.1 Hz, 1H), 4.11 (dd, *J* = 13.0, 8.1 Hz, 1H), 3.79 (dd, *J* = 13.0, 8.1 Hz, 1H). ^{13}C NMR (100 MHz, $CDCl_3$): δ 157.7, 147.9, 136.3, 135.4, 134.5, 133.8, 133.3, 127.9, 127.6, 127.5, 126.1, 126.0, 124.1, 120.6 (q, J_{C-F}=256.0 Hz), 120.5, 119.8, 57.0, 28.4. ^{19}F NMR (376 MHz, $CDCl_3$): δ -57.8. HRMS (ESI): m/z $[M+Na]^+$ Calcd for $C_{22}H_{16}F_3NNaO_4SSe$ 549.9810; Found 549.9815.

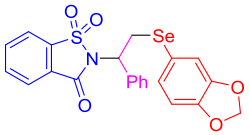


2-(2-((4-Fluorophenyl)selanyl)-1-phenylethyl)benzo[*d*]isothiazol-3(2*H*)-one 1,1-dioxide (**5d**). Compound **5d** was prepared according to the general procedure and isolated as an oil (75 mg, 81% yield) after flash chromatography (petroleum ether/ethyl acetate = 5/1). ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.88 (d, *J* = 6.9 Hz, 1H), 7.84 – 7.64 (m, 3H), 7.62 – 7.40 (m, 4H), 7.31 – 7.16 (m, 3H), 6.98 – 6.74 (m, 2H), 5.27 (t, *J* = 7.4 Hz, 1H), 3.99 (dd, *J* = 13.0, 8.7 Hz, 1H), 3.65 (dd, *J* = 13.0, 7.3 Hz, 1H). ^{13}C NMR (100 MHz, $CDCl_3$): δ 162.7 (d, J_{C-F} = 247.9 Hz), 158.8, 137.3, 136.64, 136.60 (d, J_{C-F} = 8.0 Hz), 134.8, 134.3, 128.8, 128.6 (d, J_{C-F} = 10.7 Hz), 127.1, 125.2, 123.3 (d, J_{C-F} = 3.5 Hz), 120.8, 116.4, 116.2, 57.9, 29.7. ^{19}F NMR (376 MHz, $CDCl_3$): δ 113.6. HRMS (ESI): m/z $[M+Na]^+$ Calcd for $C_{21}H_{16}FNNaO_3SSe$ 483.9892; Found 483.9880.

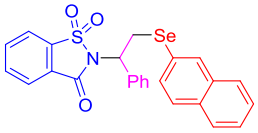


2-(2-((4-Chlorophenyl)selanyl)-1-phenylethyl)benzo[*d*]isothiazol-3(2*H*)-one 1,1-dioxide (**5e**). Compound **5e** was prepared according to the general procedure and isolated as a white solid (77 mg, 81% yield) after flash chromatography (petroleum ether/ethyl acetate = 8/1); mp = 107-109 ℃. ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.95 (d, *J* = 7.0 Hz, 1H), 7.89 – 7.75 (m, 3H), 7.56 (d, *J* = 7.7 Hz, 2H), 7.47 (d, *J* = 8.5 Hz, 2H), 7.39 – 7.29 (m, 3H), 7.18 (d, *J* = 8.5 Hz, 2H), 5.40 –

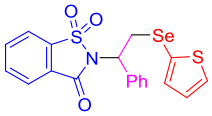
5.33 (m, 1H), 4.12 (dd, *J* = 13.0, 8.1 Hz, 1H), 3.75 (dd, *J* = 13.0, 8.1 Hz, 1H). ^{13}C NMR (100 MHz, $CDCl_3$): δ 158.8, 137.3, 136.6, 135.3, 134.8, 134.3, 134.0, 129.3, 128.9, 128.7, 128.5, 127.05, 127.01, 125.2, 120.8, 57.9, 29.3. HRMS (ESI): m/z $[M+Na]^+$ Calcd for $C_{21}H_{16}ClNNaO_3SSe$ 499.9597; Found 499.9590.



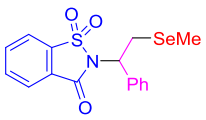
2-(2-(Benzo[*d*][1,3]dioxol-5-ylselanyl)-1-phenylethyl)benzo[*d*]isothiazol-3(2*H*)-one 1,1-dioxide (**5f**). Compound **5f** was prepared according to the general procedure and isolated as an oil (81 mg, 83% yield) after flash chromatography (petroleum ether/ethyl acetate = 8/1). ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.98 (d, *J* = 7.8 Hz, 1H), 7.93 – 7.77 (m, 3H), 7.55 (d, *J* = 7.8 Hz, 2H), 7.46 – 7.20 (m, 3H), 7.16 – 6.94 (m, 2H), 6.70 (d, *J* = 7.9 Hz, 1H), 6.09 – 5.86 (m, 2H), 5.36 (t, *J* = 8.0 Hz, 1H), 4.03 (dd, *J* = 13.0, 8.7 Hz, 1H), 3.69 (dd, *J* = 13.0, 7.3 Hz, 1H). ^{13}C NMR (100 MHz, $CDCl_3$): δ 158.8, 147.94, 147.91, 137.4, 136.8, 134.7, 134.2, 129.0, 128.7, 128.6, 128.5, 127.1, 125.1, 120.8, 119.9, 115.2, 109.1, 101.3, 57.9, 30.1. HRMS (ESI): m/z $[M+Na]^+$ Calcd for $C_{22}H_{17}NNaO_5SSe$ 509.9885; Found 509.9890.



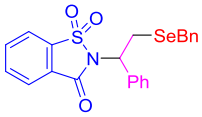
2-(2-(Naphthalen-2-ylselanyl)-1-phenylethyl)benzo[*d*]isothiazol-3(2*H*)-one 1,1-dioxide (**5g**). Compound **5g** was prepared according to the general procedure and isolated as a yellow solid (76 mg, 77% yield) after flash chromatography (petroleum ether/ethyl acetate = 7/1). mp = 110-112 ℃. ^{1}H NMR (400 MHz, $CDCl_3$): δ 8.37 (d, *J* = 7.8 Hz, 1H), 8.07 – 7.68 (m, 7H), 7.64 – 7.46 (m, 4H), 7.45 – 7.24 (m, 4H), 5.42 (t, *J* = 8.1 Hz, 1H), 4.08 (dd, *J* = 12.7, 8.3 Hz, 1H), 3.83 (dd, *J* = 12.7, 7.8 Hz, 1H). ^{13}C NMR (100 MHz, $CDCl_3$): δ 158.7, 137.4, 136.6, 134.7, 134.4, 134.2, 134.1, 134.1, 129.2, 128.7, 128.65, 128.59, 128.5, 128.3, 127.8, 127.1, 126.8, 126.3, 125.8, 125.1, 120.7, 57.9, 29.0. HRMS (ESI): m/z $[M+Na]^+$ Calcd for $C_{25}H_{19}NNaO_3SSe$ 516.0143; Found 516.0157.



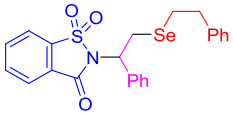
2-(1-Phenyl-2-(thiophen-2-ylselanyl)ethyl)benzo[*d*]isothiazol-3(2*H*)-one 1,1-dioxide (**5h**). Compound **5h** was prepared according to the general procedure and isolated as an oil (67 mg, 75% yield) after flash chromatography (petroleum ether/ethyl acetate = 8/1). ^{1}H NMR (400 MHz, $CDCl_3$): δ 8.01 – 7.97 (m, 1H), 7.88 – 7.76 (m, 3H), 7.54 (d, *J* = 7.8 Hz, 2H), 7.40 – 7.39 (m, 1H), 7.37 – 7.30 (m, 3H), 7.27 (dd, *J* = 3.5, 1.2 Hz, 1H), 6.96 (dd, *J* = 5.3, 3.5 Hz, 1H), 5.41 (dd, *J* = 8.9, 7.3 Hz, 1H), 4.00 (dd, *J* = 13.0, 8.1 Hz, 1H), 3.63 (dd, *J* = 13.0, 8.1 Hz, 1H). ^{13}C NMR (100 MHz, $CDCl_3$): δ 157.8, 136.4, 135.8, 135.7, 133.7, 133.3, 130.6, 127.8, 127.6, 127.5, 127.2, 126.1, 124.2, 121.5, 119.8, 56.6, 31.3. HRMS (ESI): m/z $[M+Na]^+$ Calcd for $C_{19}H_{15}NNaO_3S_2Se$ 471.9551; Found 471.9549.



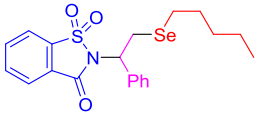
2-(2-(Methylselanyl)-1-phenylethyl)benzo[*d*]isothiazol-3(2*H*)-one 1,1-dioxide (**5i**). Compound **5i** was prepared according to the general procedure and isolated as a yellow solid (62 mg, 81% yield) after flash chromatography (petroleum ether/ethyl acetate = 5/1); mp = 94-96 ℃. ^{1}H NMR (400 MHz, $CDCl_3$): δ 8.01 (d, *J* = 7.0 Hz, 1H), 7.90 – 7.77 (m, 3H), 7.63 (d, *J* = 6.9 Hz, 2H), 7.42 – 7.31 (m, 3H), 5.39 (t, *J* = 8.2 Hz, 1H), 3.68 (dd, *J* = 12.9, 8.2 Hz, 1H), 3.53 (dd, *J* = 12.9, 8.2 Hz, 1H), 2.04 (s, 3H). ^{13}C NMR (100 MHz, $CDCl_3$): δ 157.8, 136.4, 135.8, 133.7, 133.3, 127.8, 127.6, 127.5, 126.1, 124.2, 119.8, 56.5, 25.2, 4.1. HRMS (ESI): m/z $[M+Na]^+$ Calcd for $C_{16}H_{15}NNaO_3SSe$ 403.9830; Found 403.9824.



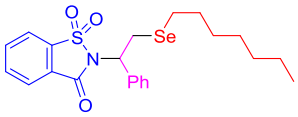
2-(2-(Benzylselanyl)-1-phenylethyl)benzo[*d*]isothiazol-3(2*H*)-one 1,1-dioxide (**5j**). Compound **5j** was prepared according to the general procedure and isolated as a yellow solid (70 mg, 77% yield) after flash chromatography (petroleum ether/ethyl acetate = 8/1); mp = 39-40 ℃. ^{1}H NMR (400 MHz, $CDCl_3$): δ 8.01 (d, *J* = 6.9 Hz, 1H), 7.90 – 7.76 (m, 3H), 7.53 (d, *J* = 8.0 Hz, 2H), 7.39 – 7.27 (m, 8H), 5.25 (t, *J* = 8.2 Hz, 1H), 3.83 (d, *J* = 4.6 Hz, 2H), 3.64 (dd, *J* = 13.1, 8.3 Hz, 1H), 3.41 (dd, *J* = 13.1, 8.3 Hz, 1H). ^{13}C NMR (100 MHz, $CDCl_3$): δ 157.8, 137.6, 136.3, 135.9, 133.7, 133.3, 128.0, 127.7, 127.6, 127.5, 127.4, 126.2, 125.9, 124.2, 119.8, 56.6, 26.7, 23.6. HRMS (ESI): m/z $[M+Na]^+$ Calcd for $C_{22}H_{19}NNaO_3SSe$ 480.0143; Found 480.0140.



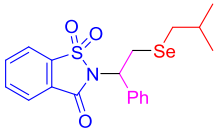
2-(2-(Phenethylselanyl)-1-phenylethyl)benzo[*d*]isothiazol-3(2*H*)-one 1,1-dioxide (**5k**). Compound **5k** was prepared according to the general procedure and isolated as an oil (73 mg, 78% yield) after flash chromatography (petroleum ether/ethyl acetate = 10/1). ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.96 – 7.83 (m, 1H), 7.80 – 7.75 (m, 1H), 7.74 – 7.65 (m, 2H), 7.60 – 7.44 (m, 2H), 7.37 – 7.22 (m, 3H), 7.23 – 7.13 (m, 2H), 7.12 – 7.06 (m, 3H), 5.29 (t, *J* = 8.2 Hz, 1H), 3.59 – 3.43 (m, 2H), 2.87 (dd, *J* = 8.6, 6.0 Hz, 2H), 2.76 (dd, *J* = 8.1, 6.4 Hz, 2H). ^{13}C NMR (100 MHz, $CDCl_3$): δ 158.7, 141.0, 137.4, 136.7, 134.8, 134.3, 128.8, 128.6, 128.5, 128.4, 127.2, 126.4, 125.2, 120.8, 58.0, 37.0, 25.8, 24.7. HRMS (ESI): m/z $[M+Na]^+$ Calcd for $C_{23}H_{21}NNaO_3SSe$ 494.0300; Found 494.0308.



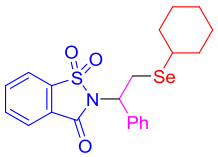
2-(2-(Pentylselanyl)-1-phenylethyl)benzo[*d*]isothiazol-3(2*H*)-one 1,1-dioxide (**5l**). Compound **5l** was prepared according to the general procedure and isolated as an oil (72 mg, 82% yield) after flash chromatography (petroleum ether/ethyl acetate = 15/1). ^{1}H NMR (400 MHz, $CDCl_3$): δ 8.13 – 7.99 (m, 1H), 7.97 – 7.74 (m, 3H), 7.67 – 7.55 (m, 2H), 7.44 – 7.28 (m, 3H), 5.38 (t, *J* = 8.2 Hz, 1H), 3.61 (d, *J* = 8.2 Hz, 2H), 2.59 (t, *J* = 7.5 Hz, 2H), 1.74 – 1.59 (m, 2H), 1.41 – 1.09 (m, 4H), 0.88 (t, *J* = 7.1 Hz, 3H). ^{13}C NMR (100 MHz, $CDCl_3$): δ 158.7, 137.4, 136.7, 134.7, 134.3, 128.76, 128.64, 128.60, 127.2, 125.2, 120.8, 58.1, 32.0, 30.0, 25.0, 24.4, 22.2, 14.0. HRMS (ESI): m/z $[M+Na]^+$ Calcd for $C_{20}H_{23}NNaO_3SSe$ 460.0456; Found 460.0466.



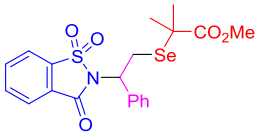
2-(2-(Heptylselanyl)-1-phenylethyl)benzo[*d*]isothiazol-3(2*H*)-one 1,1-dioxide (**5m**). Compound **5m** was prepared according to the general procedure and isolated as an oil (70 mg, 75% yield) after flash chromatography (petroleum ether/ethyl acetate = 10/1). ^{1}H NMR (400 MHz, $CDCl_3$): δ 8.04 – 7.93 (m, 1H), 7.93 – 7.75 (m, 3H), 7.68 – 7.55 (m, 2H), 7.42 – 7.29 (m, 3H), 5.38 (t, *J* = 8.2 Hz, 1H), 3.61 (d, *J* = 8.2 Hz, 2H), 2.59 (t, *J* = 7.5 Hz, 2H), 1.73 – 1.59 (m, 2H), 1.42 – 1.19 (m, 8H), 0.87 (t, *J* = 6.7 Hz, 3H). ^{13}C NMR (100 MHz, $CDCl_3$): δ 158.7, 137.4, 136.7, 134.7, 134.3, 128.8, 128.64, 128.60, 127.2, 125.2, 120.8, 58.1, 31.7, 30.3, 29.8, 28.8, 25.1, 24.4, 22.6, 14.1. HRMS (ESI): m/z $[M+Na]^+$ Calcd for $C_{22}H_{27}NNaO_3SSe$ 488.0769; Found 488.0782.



2-(2-(Isobutylselanyl)-1-phenylethyl)benzo[*d*]isothiazol-3(2*H*)-one 1,1-dioxide (**5n**). Compound **5n** was prepared according to the general procedure and isolated as an oil (65 mg, 77% yield) after flash chromatography (petroleum ether/ethyl acetate = 10/1). ^{1}H NMR (400 MHz, $CDCl_3$): δ 8.01 (d, *J* = 7.6 Hz, 1H), 7.93 – 7.71 (m, 3H), 7.71 – 7.53 (m, 2H), 7.47 – 7.28 (m, 3H), 5.38 (t, *J* = 8.2 Hz, 1H), 3.60 (d, *J* = 8.1 Hz, 2H), 2.52 (dd, *J* = 6.8, 1.8 Hz, 2H), 1.82 (dp, *J* = 13.4, 6.7 Hz, 1H), 0.97 (d, *J* = 6.6 Hz, 6H). ^{13}C NMR (100 MHz, $CDCl_3$): δ 158.7, 137.4, 136.7, 134.7, 134.3, 128.8, 128.64, 128.59, 127.2, 125.2, 120.8, 58.1, 35.1, 29.2, 25.0, 22.63, 22.57. HRMS (ESI): m/z $[M+Na]^+$ Calcd for $C_{19}H_{21}NNaO_3SSe$ 446.0300; Found 446.0323.

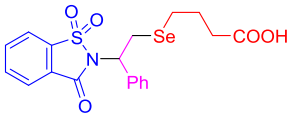


2-(2-(Cyclohexylselanyl)-1-phenylethyl)benzo[*d*]isothiazol-3(2*H*)-one 1,1-dioxide (**5o**). Compound **5o** was prepared according to the general procedure and isolated as an oil (56 mg, 62% yield) after flash chromatography (petroleum ether/ethyl acetate = 15/1). ^{1}H NMR (400 MHz, $CDCl_3$): δ 8.01 (d, *J* = 6.9 Hz, 1H), 7.91 – 7.73 (m, 3H), 7.70 – 7.54 (m, 2H), 7.46 – 7.31 (m, 3H), 5.40 (t, *J* = 8.2 Hz, 1H), 3.66 (dd, *J* = 12.7, 8.8 Hz, 1H), 3.58 (dd, *J* = 12.7, 7.6 Hz, 1H), 2.95 (tt, *J* = 10.9, 3.7 Hz, 1H), 2.08 – 1.99 (m, 2H), 1.75 – 1.69 (m, 2H), 1.57 – 1.43 (m, 2H), 1.38 – 1.19 (m, 4H). ^{13}C NMR (100 MHz, $CDCl_3$): δ 158.7, 137.5, 136.7, 134.7, 134.3, 128.73, 128.57, 128.56, 127.2, 125.2, 120.8, 58.5, 39.8, 34.5, 34.3, 26.81, 26.79, 25.8, 22.9. HRMS (ESI): m/z $[M+Na]^+$ Calcd for $C_{21}H_{23}NNaO_3SSe$ 472.0456; Found 472.0465.

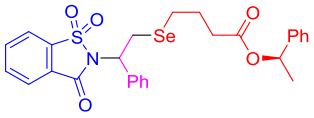


Methyl 2-((2-(1,1-dioxido-3-oxobenzo[*d*]isothiazol-2(3*H*)-yl)-2-phenylethyl)selanyl)-2-methylpropanoate (**5p**). Compound **5p** was prepared according to the general procedure and isolated as an oil (51

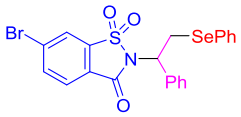
mg, 55% yield) after flash chromatography (petroleum ether/ethyl acetate = 8/1). ^{1}H NMR (400 MHz, $CDCl_3$): δ 8.07 – 7.97 (m, 1H), 7.91 – 7.73 (m, 3H), 7.66 – 7.50 (m, 2H), 7.45 – 7.29 (m, 3H), 5.44 (t, *J* = 8.3 Hz, 1H), 3.85 (dd, *J* = 12.8, 8.4 Hz, 1H), 3.78 (s, 3H), 3.74 (dd, *J* = 12.8, 7.6 Hz, 1H), 1.65 (s, 3H), 1.64 (s, 3H). ^{13}C NMR (100 MHz, $CDCl_3$): δ 175.2, 158.7, 137.4, 136.7, 134.7, 134.3, 128.8, 128.6, 128.5, 127.2, 125.2, 120.8, 57.9, 52.6, 41.4, 26.1, 26.0, 24.7. HRMS (ESI): m/z $[M+Na]^+$ Calcd for $C_{20}H_{21}NNaO_5SSe$ 490.0198; Found 490.0209.



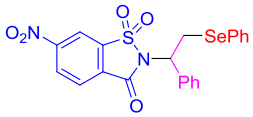
4-((2-(1,1-Dioxido-3-oxobenzo[*d*]isothiazol-2(3*H*)-yl)-2-phenylethyl)selanyl)butanoic acid (**5q**). Compound **5q** was prepared according to the general procedure and isolated as an oil (54 mg, 60% yield) after flash chromatography (petroleum ether/ethyl acetate = 2/1). ^{1}H NMR (400 MHz, CD_3OD): δ 8.18 – 7.83 (m, 4H), 7.71 – 7.49 (m, 2H), 7.44 – 7.22 (m, 3H), 5.37 (t, *J* = 8.2 Hz, 1H), 3.65 (dd, *J* = 12.9, 8.7 Hz, 1H), 3.54 (dd, *J* = 12.9, 7.7 Hz, 1H), 2.78 – 2.54 (m, 2H), 2.42 – 2.32 (m, 2H), 1.97 – 1.85 (m, 2H). ^{13}C NMR (100 MHz, CD_3OD): δ 175.4, 159.0, 137.4, 135.1, 134.5, 128.4, 128.3, 128.2, 128.1, 126.7, 124.7, 120.6, 57.7, 33.2, 25.2, 24.2, 23.0. HRMS (ESI): m/z $[M+Na]^+$ Calcd for $C_{19}H_{19}NNaO_5SSe$ 476.0041; Found 476.0051.



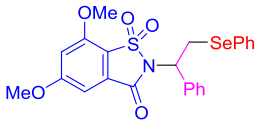
4-((2-(1,1-Dioxido-3-oxobenzo[*d*]isothiazol-2(3*H*)-yl)-2-phenylethyl)selanyl)-N-((*R*)-1-phenylethyl)butanamide (**5r**). Compound **5r** was prepared according to the general procedure and isolated as an oil (57 mg, 51% yield) after flash chromatography (petroleum ether/ethyl acetate = 3/1). $[\alpha]_{25}^{D}$ = 40, c=0.011 g/100 mL, $CHCl_3$.^{1}H NMR (400 MHz, $CDCl_3$): δ 8.01 (d, *J* = 7.5 Hz, 1H), 7.88 – 7.77 (m, 3H), 7.71 – 7.53 (m, 2H), 7.41 – 7.23 (m, 8H), 5.88 (q, *J* = 6.7 Hz, 1H), 5.36 (td, *J* = 8.2, 2.3 Hz, 1H), 3.63 (ddd, *J* = 12.8, 8.1, 1.2 Hz, 1H), 3.56 (dd, *J* = 12.8, 8.2 Hz, 1H), 2.60 (td, *J* = 7.3, 1.9 Hz, 2H), 2.42 (tt, *J* = 7.3, 2.8 Hz, 2H), 2.07 – 1.88 (m, 2H), 1.52 (dd, *J* = 6.6, 1.7 Hz, 3H). ^{13}C NMR (100 MHz, $CDCl_3$): δ 172.1, 158.7, 141.7, 137.4, 136.7, 134.8, 134.3, 128.8, 128.6, 128.6, 128.5, 127.9, 127.2, 126.1, 125.2, 120.8, 72.4, 57.9, 34.3, 25.4, 24.6, 23.9, 22.3. HRMS (ESI): m/z $[M+Na]^+$ Calcd for $C_{27}H_{28}N_2NaO_4SSe$ 579.0827; Found 579.0828.



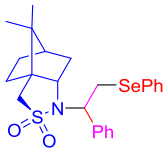
6-Bromo-2-(1-phenyl-2-(phenylselanyl)ethyl)benzo[*d*]isothiazol-3(2*H*)-one 1,1-dioxide (**6a**). Compound **6a** was prepared according to the general procedure and isolated as a white solid (81 mg, 78% yield) after flash chromatography (petroleum ether/ethyl acetate = 15/1). mp = 118-119 ℃. ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.91 (d, *J* = 1.6 Hz, 1H), 7.82 (dd, *J* = 8.2, 1.6 Hz, 1H), 7.74 (d, *J* = 8.2 Hz, 1H), 7.54 – 7.36 (m, 4H), 7.31 – 7.22 (m, 3H), 7.23 – 7.14 (m, 3H), 5.47 – 5.22 (m, 1H), 3.99 (dd, *J* = 12.9, 8.6 Hz, 1H), 3.70 (dd, *J* = 12.9, 7.6 Hz, 1H). ^{13}C NMR (100 MHz, $CDCl_3$): δ 157.0, 137.7, 136.5, 135.3, 132.8, 128.7, 128.1, 127.84, 127.83, 127.6, 127.5, 126.7, 125.4, 124.8, 122.9, 57.1, 27.9. HRMS (ESI): m/z $[M+H]^+$ Calcd for $C_{21}H_{17}BrNO_3SSe$ 521.9272; Found 521.9280.



6-Nitro-2-(1-phenyl-2-(phenylselanyl)ethyl)benzo[*d*]isothiazol-3(2*H*)-one 1,1-dioxide (**6b**). Compound **6b** was prepared according to the general procedure and isolated as a yellow solid (78 mg, 80% yield) after flash chromatography (petroleum ether/ethyl acetate = 15/1). mp = 140-141 ℃. ^{1}H NMR (400 MHz, $CDCl_3$): δ 8.61 (d, *J* = 1.9 Hz, 1H), 8.54 (dd, *J* = 8.4, 1.9 Hz, 1H), 8.08 (d, *J* = 8.4 Hz, 1H), 7.56 – 7.35 (m, 4H), 7.35 – 7.24 (m, 3H), 7.23 – 7.02 (m, 3H), 5.33 (dd, *J* = 8.9, 7.3 Hz, 1H), 4.03 (dd, *J* = 13.0, 8.8 Hz, 1H), 3.69 (dd, *J* = 13.1, 7.3 Hz, 1H). ^{13}C NMR (100 MHz, $CDCl_3$): δ 155.7, 150.4, 137.6, 135.0, 132.9, 130.3, 128.19, 128.17, 128.08, 127.7, 127.6, 127.5, 126.8, 125.7, 115.8, 57.7, 27.7. HRMS (ESI): m/z $[M+Na]^+$ Calcd for $C_{21}H_{16}N_2NaO_5SSe$ 510.9837; Found 510.9837.



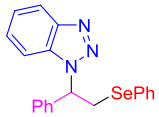
5,7-Dimethoxy-2-(1-phenyl-2-(phenylselanyl)ethyl)benzo[*d*]isothiazol-3(2*H*)-one 1,1-dioxide (**6c**). Compound **6c** was prepared according to the general procedure and isolated as a yellow solid (71 mg, 71% yield) after flash chromatography (petroleum ether/ethyl acetate = 4/1). mp = 88-89 ℃ ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.61 – 7.27 (m, 4H), 7.30 – 7.20 (m, 3H), 7.19 – 7.17 (m, 3H), 6.88 (d, *J* = 2.0 Hz, 1H), 6.59 (d, *J* = 2.0 Hz, 1H), 5.23 (t, *J* = 8.1 Hz, 1H), 3.97 (dd, *J* = 12.8, 8.3 Hz, 1H), 3.87 (s, 3H), 3.79 (s, 3H), 3.74 (dd, *J* = 12.9, 7.9 Hz, 1H). ^{13}C NMR (100 MHz, $CDCl_3$): δ 165.4, 157.6, 154.7, 135.7, 132.6, 129.8, 128.14, 128.10, 127.6, 127.5, 127.4, 126.5, 115.6, 103.3, 98.9, 56.3, 55.6, 55.3, 28.0. HRMS (ESI): m/z $[M+Na]^+$ Calcd for $C_{23}H_{21}NNaO_5SSe$ 526.0198; Found 526.0206.



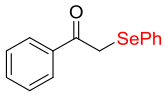
(3a*R*,6*R*)-8,8-dimethyl-1-(1-phenyl-2-(phenylselanyl)ethyl)hexahydro-3*H*-3a,6-methanobenzo[*c*]isothiazole 2,2-dioxide (**6d**). Compound **6d** was prepared according to the general procedure and isolated as a white solid (53 mg, 56% yield) after flash chromatography (petroleum ether/ethyl acetate = 10/1). mp = 128-130 ℃. $[\alpha]_{25}^{D}$ = 30, c=0.017 g/100 mL, $CHCl_3$. ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.54 – 7.47 (m, 2H), 7.43 – 7.35 (m, 2H), 7.36 – 7.29 (m, 3H), 7.28 – 7.18 (m, 3H), 4.75 (dd, *J* = 10.7, 5.2 Hz, 1H), 3.81 (dd, *J* = 12.2, 5.2 Hz, 1H), 3.64 (dd, *J* = 12.2, 10.7 Hz, 1H), 3.23 (dd, *J* = 7.9, 5.0 Hz, 1H), 3.20 – 2.95 (m, 2H), 1.89 – 1.68 (m, 3H), 1.60 – 1.56 (m, 1H), 1.46 – 1.28 (m, 2H), 1.23 – 1.08 (m, 1H), 0.94 (s, 3H), 0.85 (s, 3H). ^{13}C NMR (100 MHz, $CDCl_3$): δ 137.2, 132.7, 130.3, 129.2, 128.9, 128.2, 128.2, 127.2, 63.8, 58.0, 50.1, 49.6, 47.7, 44.7, 35.3, 32.3, 27.7, 26.7, 20.2, 20.1. HRMS (ESI): m/z $[M+Na]^+$ Calcd for $C_{24}H_{29}NNaO_2SSe$ 498.0976; Found 498.0980.

N-(1-Phenyl-2-(phenylselanyl)ethyl)-N-(phenylsulfonyl)benzenesulfonamide (**6e**). Compound **6e** was prepared according to the general procedure and isolated as a yellow solid (68 mg, 61% yield) after flash chromatography (petroleum ether/ethyl acetate = 12/1); mp = 136-138 ℃. ^{1}H

NMR (400 MHz, $CDCl_3$): δ 7.64 (d, *J* = 8.1 Hz, 2H), 7.43 – 7.39 (m, 2H), 7.37 – 7.30 (m, 4H), 7.28 – 7.26 (m, 3H), 7.22 – 7.16 (m, 9H), 4.90 (dd, *J* = 11.5, 3.4 Hz, 1H), 4.80 (dd, *J* = 15.1, 11.5 Hz, 1H), 3.48 (dd, *J* = 15.1, 3.4 Hz, 1H). ^{13}C NMR (100 MHz, $CDCl_3$): δ 137.3, 137.0, 135.0, 132.5, 128.4, 128.2, 128.1, 127.9, 127.6, 127.5, 127.5, 127.0, 51.3, 45.6. The data are in accordance with the literature.[2]



1-(1-Phenyl-2-(phenylselanyl)ethyl)-1*H*-benzo[*d*][1,2,3]triazole (**6f**). Compound **6f** was prepared according to the general procedure and isolated as an oil (38 mg, 50% yield) after flash chromatography (petroleum ether/ethyl acetate = 8/1).^{1}H NMR (400 MHz, $CDCl_3$): δ 7.97 (d, *J* = 8.1 Hz, 1H), 7.35 (d, *J* = 8.0 Hz, 2H), 7.30 – 7.13 (m, 11H), 5.77 (dd, *J* = 9.4, 5.8 Hz, 1H), 4.18 (dd, *J* = 13.1, 7.6 Hz, 1H), 3.75 (dd, *J* = 13.1, 7.6 Hz, 1H). ^{13}C NMR (100 MHz, $CDCl_3$): δ 145.1, 137.3, 132.7, 132.0, 128.2, 128.0, 127.9, 127.7, 126.7, 126.2, 125.8, 122.9, 119.0, 108.5, 62.6, 31.5. The data are in accordance with the literature.[2]



1-Phenyl-2-(phenylselanyl)ethan-1-one (**8**). Oil, petroleum ether/ethyl acetate = 30/1, 14 mg, 25% yield. ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.83 – 7.78 (m, 2H), 7.51 – 7.43 (m, 3H), 7.36 (t, *J* = 7.7 Hz, 2H), 7.23 – 7.16 (m, 3H), 4.10 (s, 2H). ^{13}C NMR (100 MHz, $CDCl_3$): δ 193.9, 134.4, 133.0, 132.2, 128.2, 128.0, 127.7, 127.6, 127.1, 31.7. Spectral data are in good agreement with literature values.[3]

6. ORTEP drawing

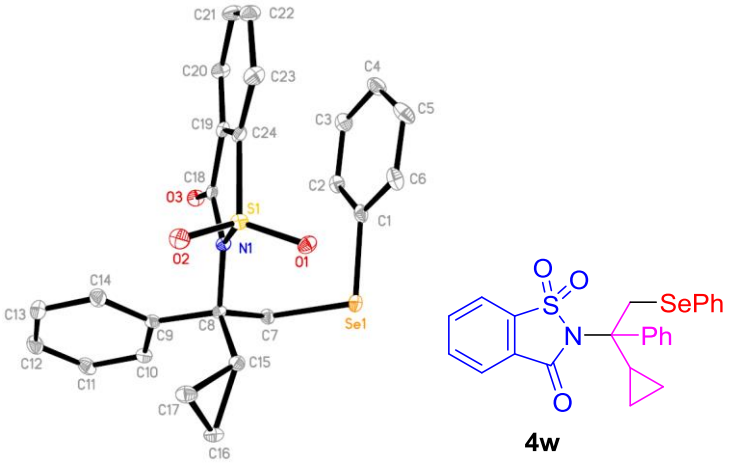


Figure S8 ORTEP drawing of **4w** with the thermal ellipsoids at 30% probability. Hydrogen atoms were omitted for clarity.

Table S1 Crystal data and structure refinement for **4w**.

CCDC	2102240
Empirical formula	$C_{24}H_{21}NO_3SSe$
Formula weight	482.44

Temperature/K	149.99(10)
Crystal system	monoclinic
Space group	$P2_1/c$
a/Å	14.6984(11)
b/Å	11.1240(5)
c/Å	14.3493(11)
α/°	90
β/°	117.396(10)
γ/°	90
Volume/$Å^3$	2083.1(3)
Z	4
$\rho_{calc}g/cm^3$	1.538
μ/mm^{-1}	1.930
F(000)	984.0
Crystal size/mm^3	0.13 × 0.11 × 0.08
Radiation	Mo Kα (λ = 0.71073)
2Θ range for data collection/°	4.812 to 49.996
Index ranges	$-17 \le h \le 17$, $-11 \le k \le 13$, $-17 \le l \le 14$
Reflections collected	8449
Independent reflections	3670 [R_{int} = 0.0292, R_{sigma} = 0.0443]
Data/restraints/parameters	3670/0/271
Goodness-of-fit on F^2	1.035
Final R indexes [I>=2σ (I)]	R_1 = 0.0336, wR_2 = 0.0735
Final R indexes [all data]	R_1 = 0.0429, wR_2 = 0.0773
Largest diff. peak/hole / e $Å^{-3}$	0.43/-0.38

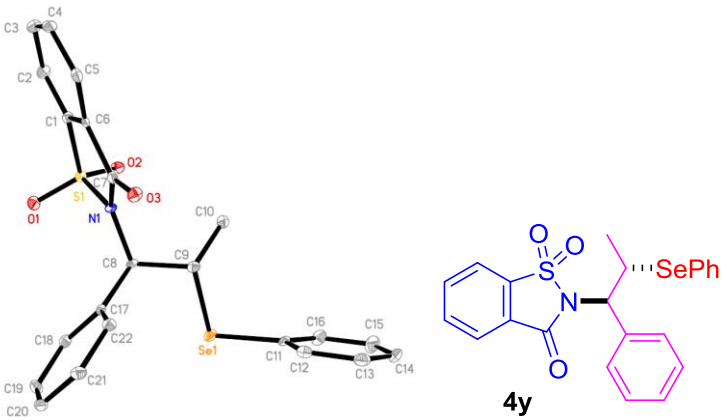


Figure S9 ORTEP drawing of **4y** with the thermal ellipsoids at 30% probability. Hydrogen atoms were omitted for clarity.

Table S2 Crystal data and structure refinement for **4y**.

CCDC	2102238
Empirical formula	$C_{22}H_{19}NO_3SSe$
Formula weight	456.40
Temperature/K	100.01(10)
Crystal system	monoclinic
Space group	$P2_1/n$
a/Å	9.4942(8)
b/Å	18.7603(10)
c/Å	11.8071(8)
α/°	90
β/°	112.137(9)
γ/°	90
Volume/Å^3	1948.0(3)
Z	4
ρ_{calc}g/cm^3	1.556
μ/mm^{-1}	2.058
F(000)	928.0
Crystal size/mm^3	0.14 ×0.13 ×0.12
Radiation	Mo Kα (λ = 0.71073)
2Θ range for data collection/°	4.31 to 50
Index ranges	-11 ≤ h ≤ 10, -16 ≤ k ≤ 22, -11 ≤ l ≤ 14
Reflections collected	8562
Independent reflections	3433 [R_{int} = 0.0451, R_{sigma} = 0.0628]
Data/restraints/parameters	3433/0/254
Goodness-of-fit on F^2	1.052
Final R indexes [I>=2σ (I)]	R_1 = 0.0395, wR_2 = 0.0801
Final R indexes [all data]	R_1 = 0.0540, wR_2 = 0.0874
Largest diff. peak/hole / e Å^{-3}	0.46/-0.41

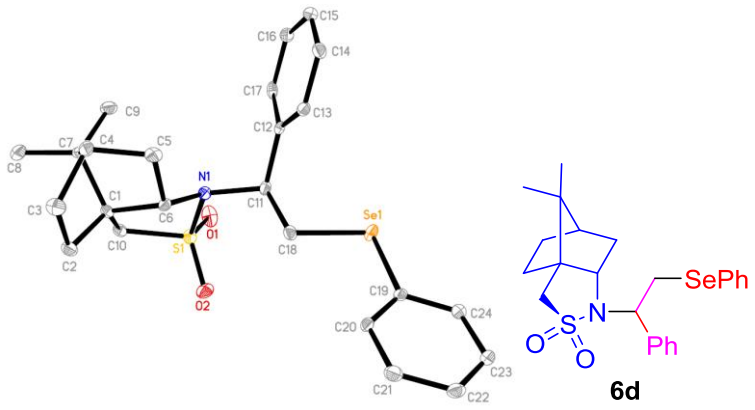


Figure S10 ORTEP drawing of **6d** with the thermal ellipsoids at 30% probability. Hydrogen atoms were omitted for clarity.

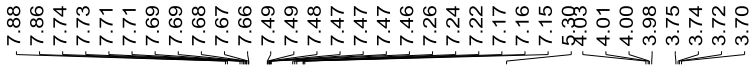
Table S3 Crystal data and structure refinement for **6d**.

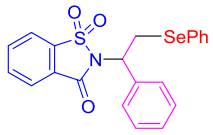
Identification code	2102239
Empirical formula	$C_{24}H_{29}NO_2SSe$
Formula weight	474.50
Temperature/K	150.00(10)
Crystal system	monoclinic
Space group	$P2_1$
a/Å	9.8465(7)
b/Å	23.1935(15)
c/Å	10.1145(8)
α/°	90
β/°	108.968(8)
γ/°	90
Volume/Å^3	2184.5(3)
Z	4
ρ_{calc}g/cm^3	1.443
μ/mm^{-1}	1.835
F(000)	984.0
Crystal size/mm^3	0.12 × 0.1 × 0.08
Radiation	Mo Kα (λ = 0.71073)
2Θ range for data collection/°	4.258 to 59.344
Index ranges	-12 ≤ h ≤ 7, -31 ≤ k ≤ 26, -13 ≤ l ≤ 13
Reflections collected	11701
Independent reflections	7934 [R_{int} = 0.0301, R_{sigma} = 0.0615]
Data/restraints/parameters	7934/1/528
Goodness-of-fit on F^2	1.038
Final R indexes [I>=2σ (I)]	R_1 = 0.0383, wR_2 = 0.0703
Final R indexes [all data]	R_1 = 0.0471, wR_2 = 0.0747
Largest diff. peak/hole / e Å^{-3}	0.52/-0.54
Flack parameter	-0.011(9)

7. References

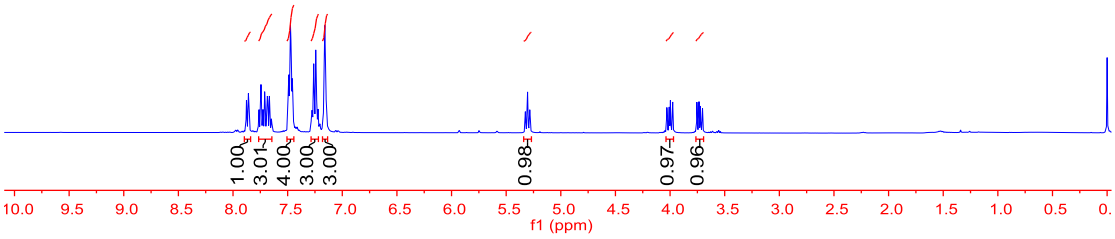
1. D. Singh, A. M. Deobald, L. R. S. Camargo, G. Tabarelli, O. E. D. Rodrigues and A. L. Braga, *Org. Lett.*, **2010**, 12, 3288.
2. K. Sun, X. Wang, Y. Lv, G. Li, H. Jiao, C. Dai, Y. Li, C. Zhang and L. Liu, *Chem. Commun.*, **2016**, 52, 8471.
3. Y. Nishiyama, H. Kawamatsu, S. Funato, K. Tokunaga and N. Sonoda, *J. Org. Chem.*, **2003**, 68, 3599.

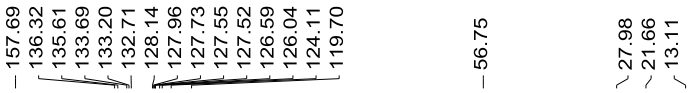
8. Copies of NMR spectra

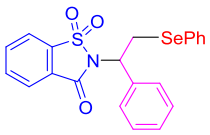




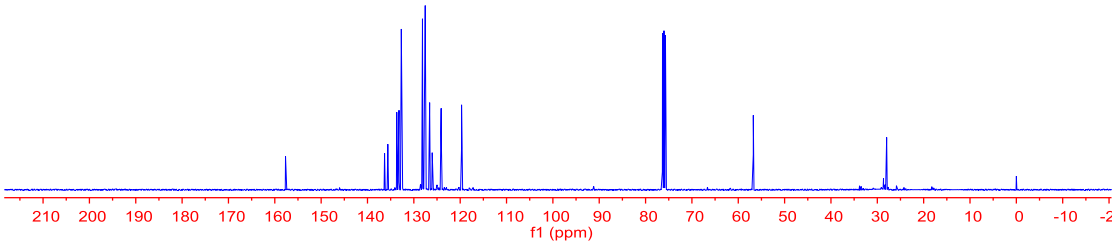
^{1}H NMR (400 MHz, $CDCl_3$) of **4a**

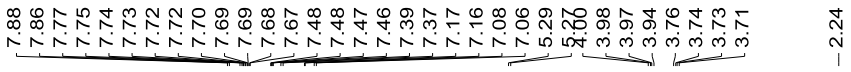


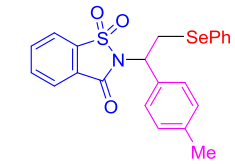




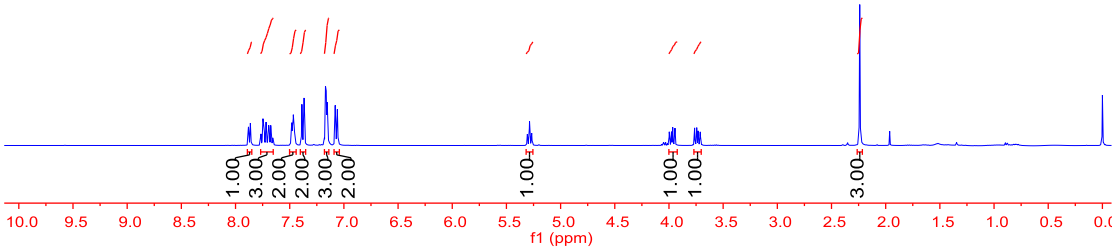
^{13}C NMR (100 MHz, $CDCl_3$) of **4a**

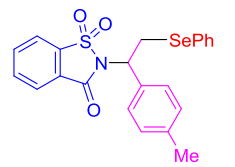




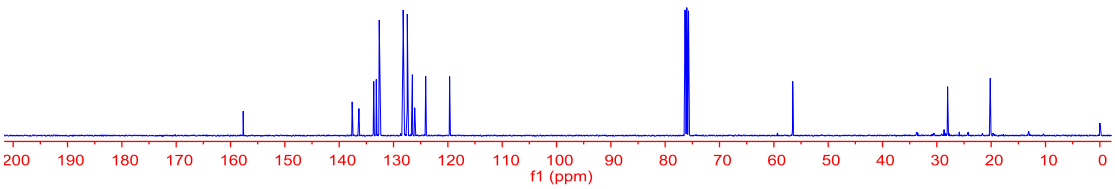


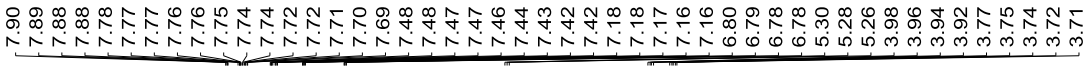
^{1}H NMR (400 MHz, $CDCl_3$) of **4b**

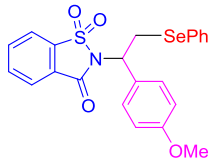




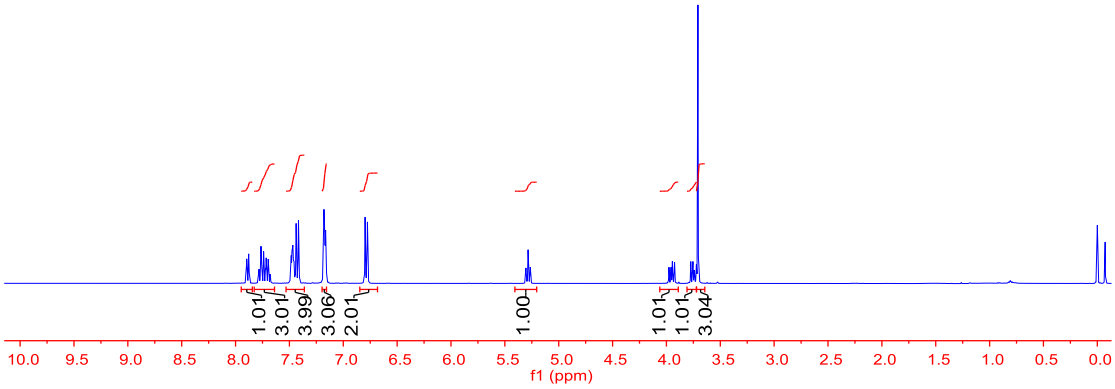
^{13}C NMR (100 MHz, $CDCl_3$) of **4b**

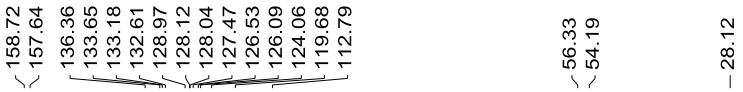


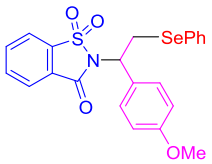




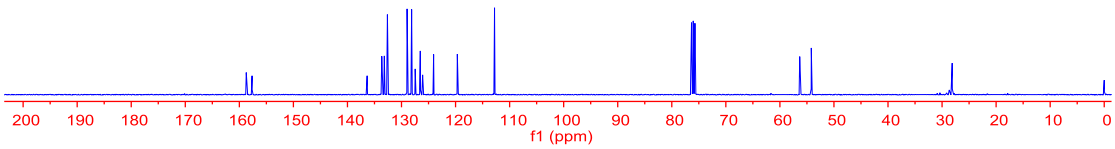
^{1}H NMR (400 MHz, $CDCl_3$) of **4c**

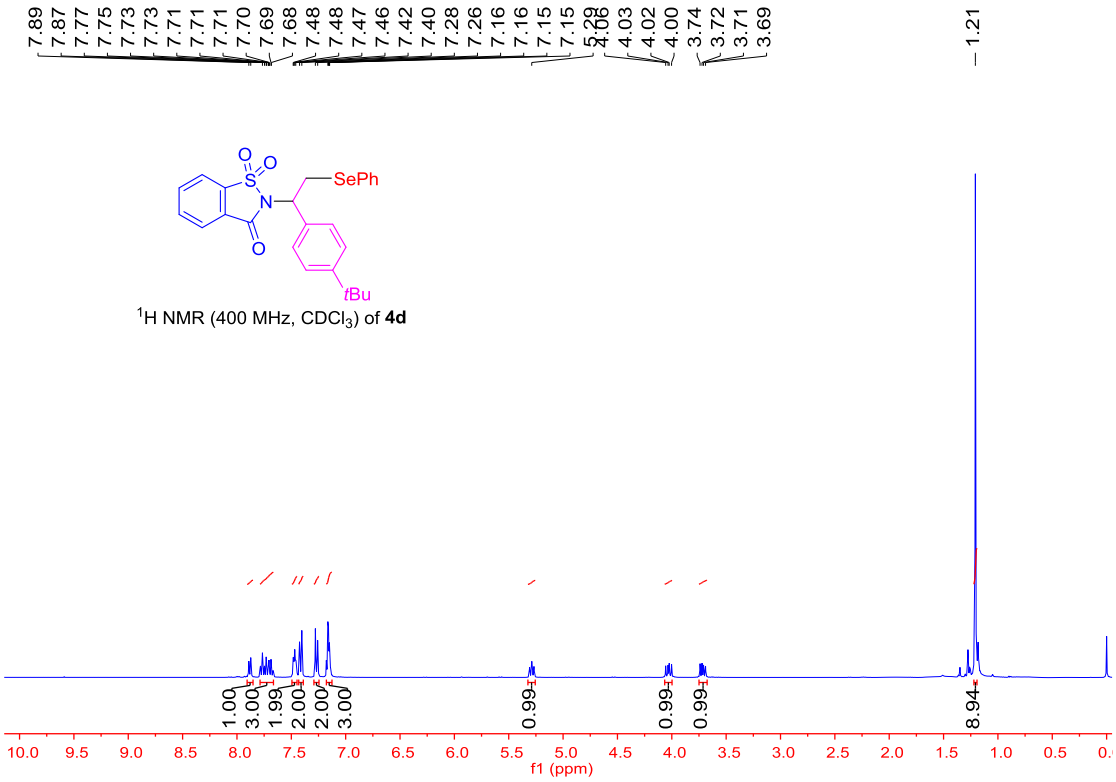




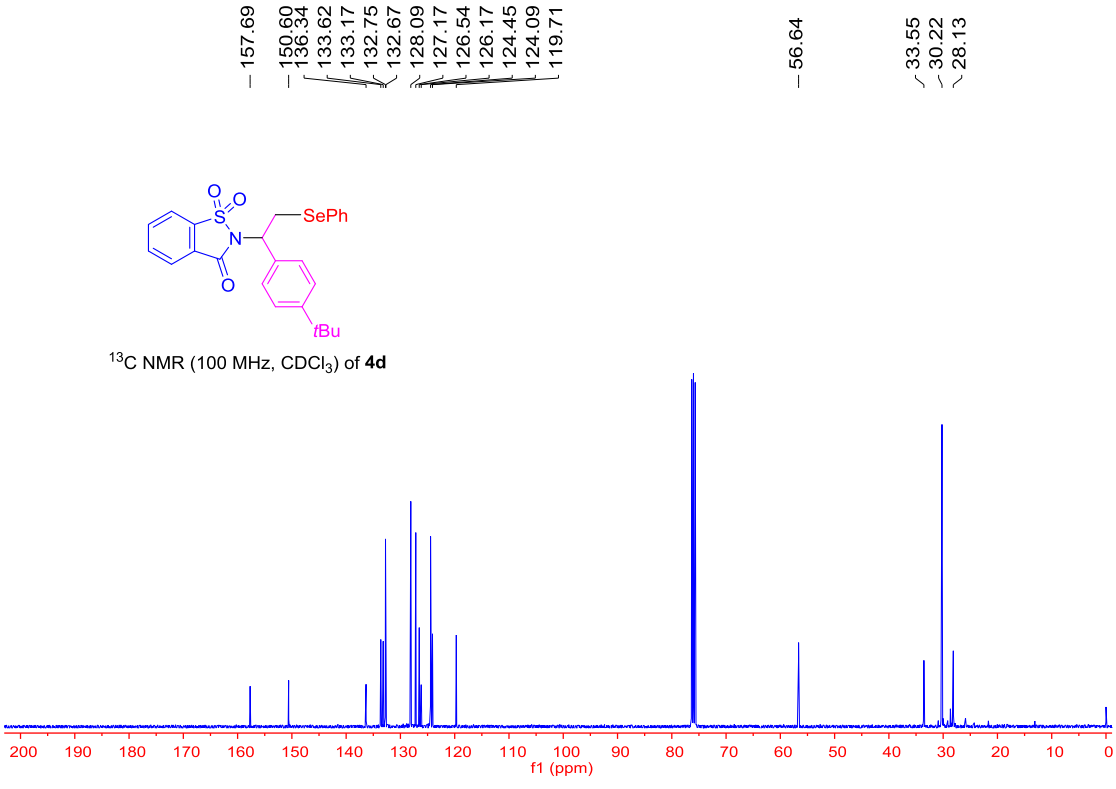


^{13}C NMR (100 MHz, $CDCl_3$) of **4c**

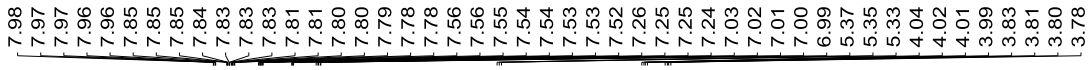


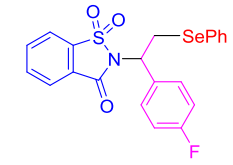


^{1}H NMR (400 MHz, $CDCl_3$) of **4d**

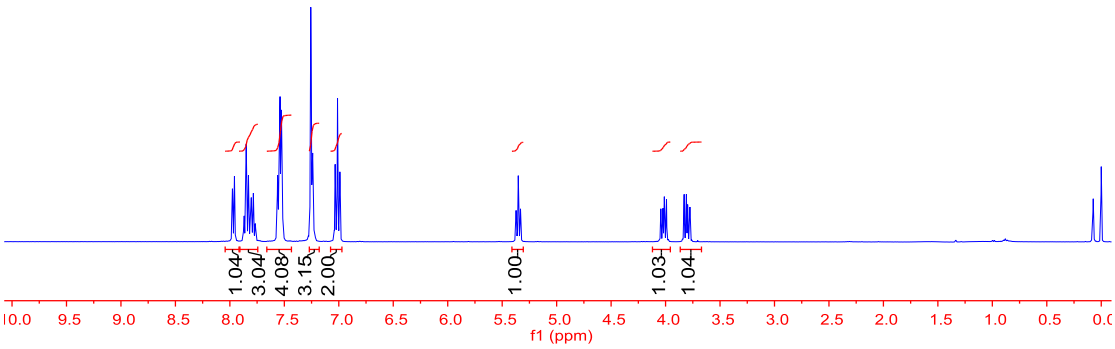


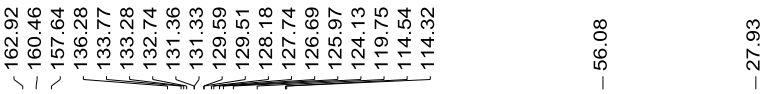
^{13}C NMR (100 MHz, $CDCl_3$) of **4d**

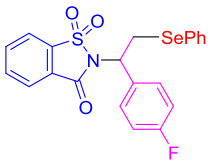




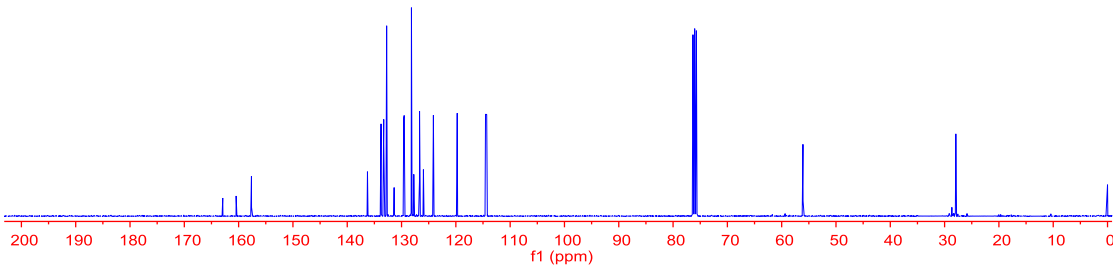
^{1}H NMR (400 MHz, $CDCl_3$) of **4e**

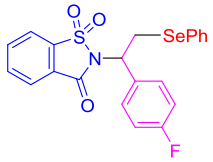




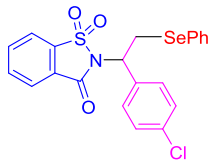


^{13}C NMR (100 MHz, $CDCl_3$) of **4e**

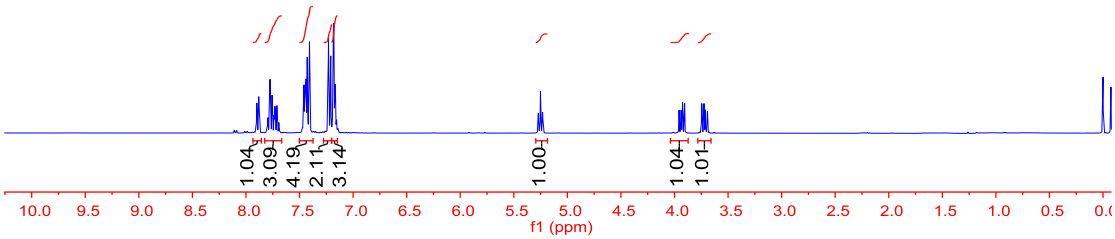


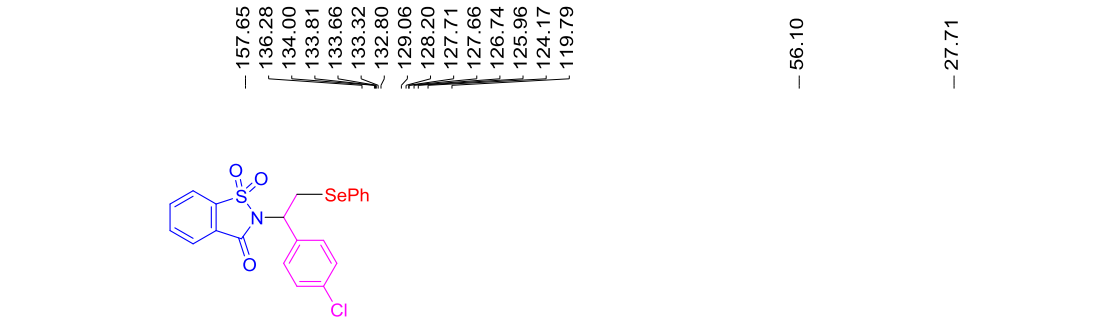


^{19}F NMR (376 MHz, $CDCl_3$) of **4e**

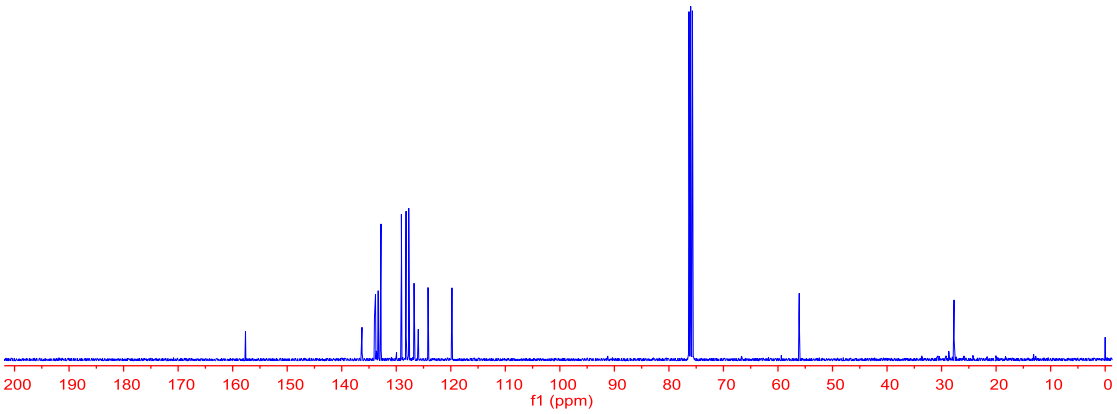


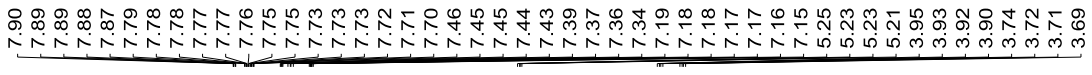
^{1}H NMR (400 MHz, $CDCl_3$) of **4f**

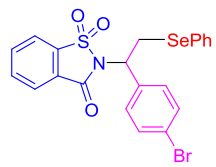




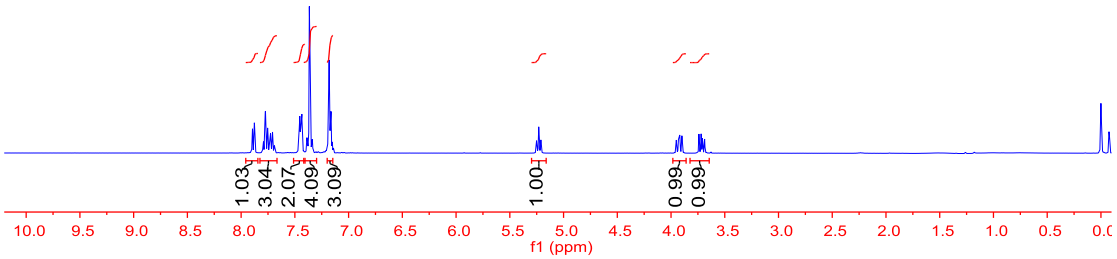
^{13}C NMR (100 MHz, $CDCl_3$) of **4f**

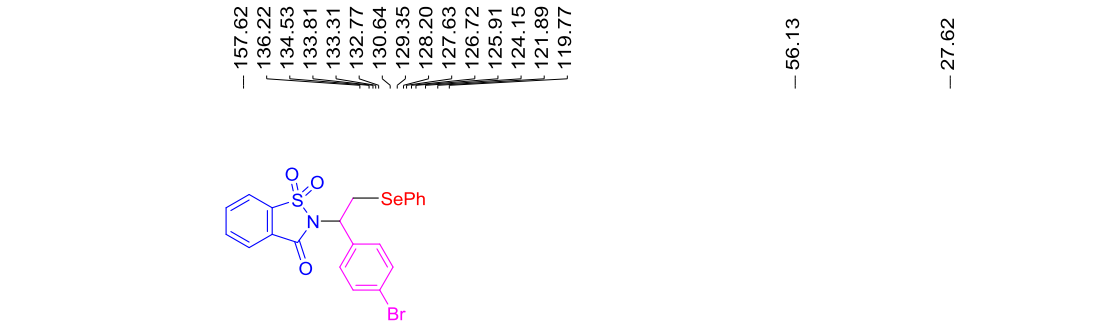




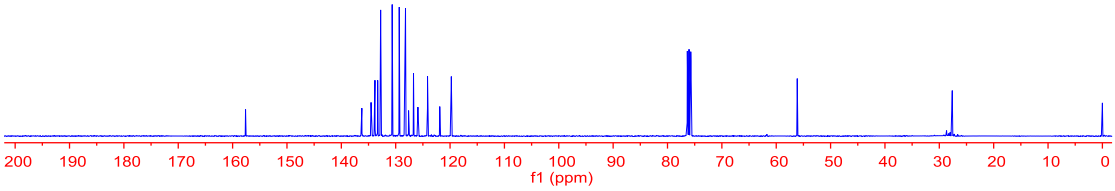


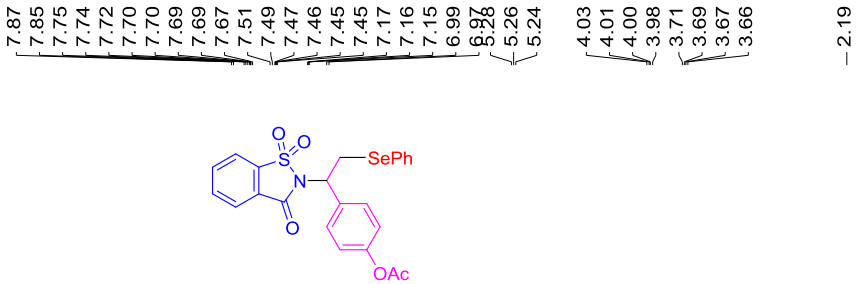
^{1}H NMR (400 MHz, $CDCl_3$) of **4g**



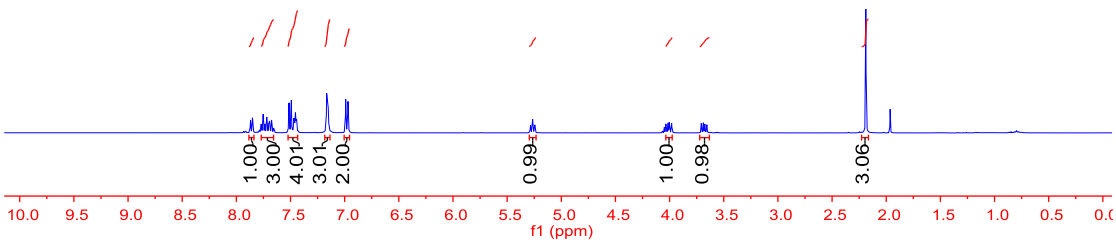


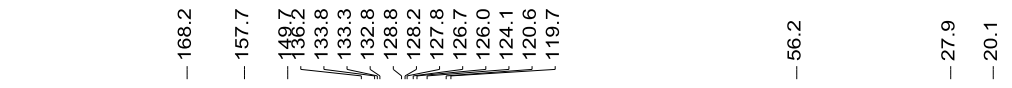
^{13}C NMR (100 MHz, $CDCl_3$) of **4g**

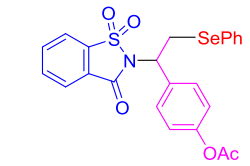




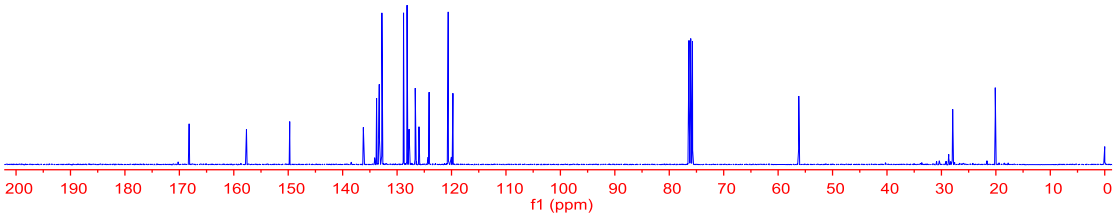
^{1}H NMR (400 MHz, $CDCl_3$) of **4h**

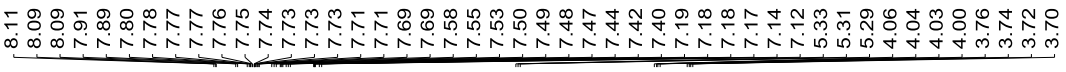


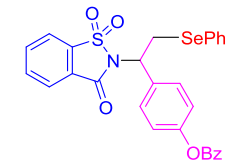




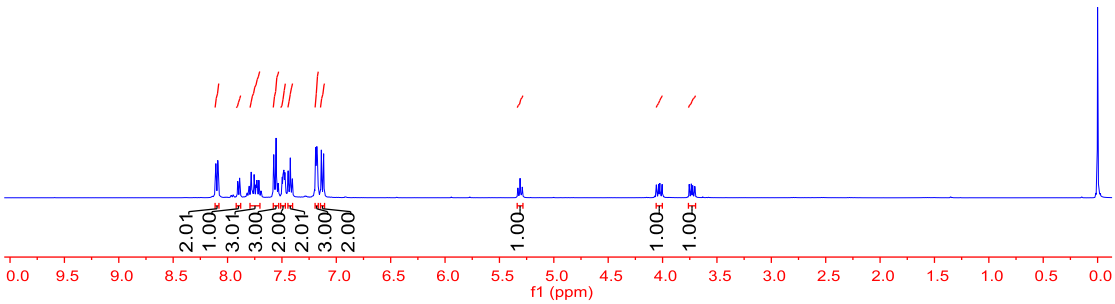
^{13}C NMR (100 MHz, $CDCl_3$) of **4h**

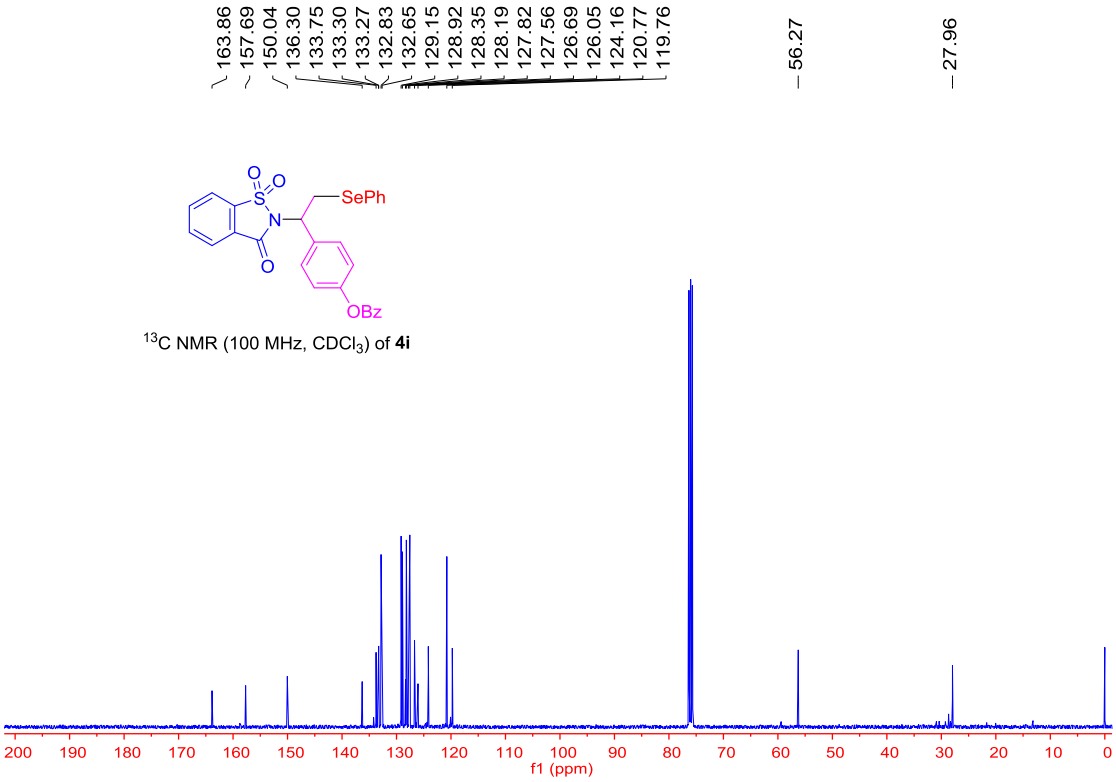




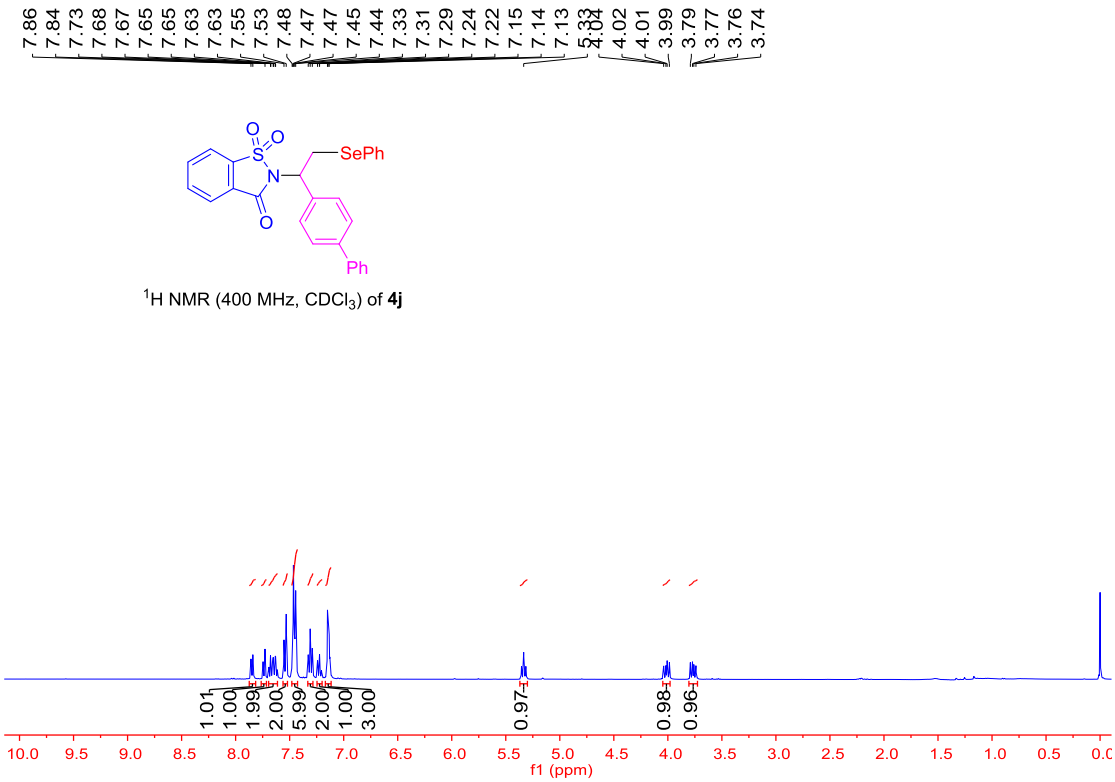


^{1}H NMR (400 MHz, $CDCl_3$) of **4i**

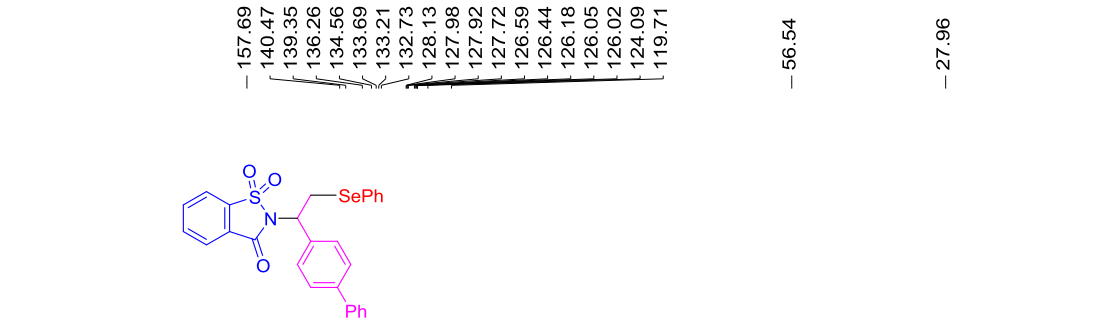




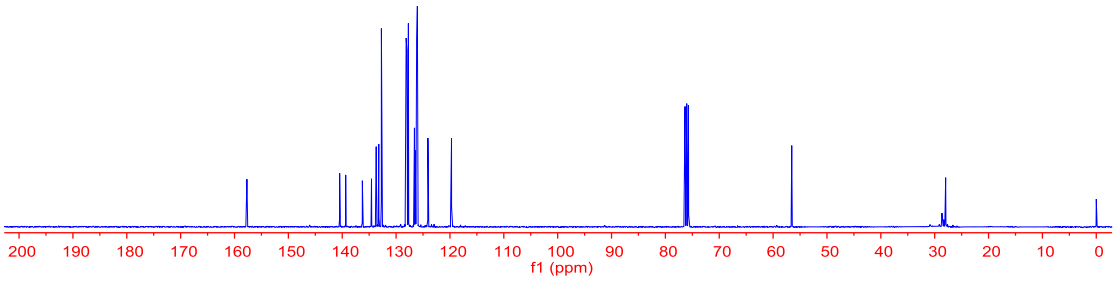
^{13}C NMR (100 MHz, $CDCl_3$) of **4i**

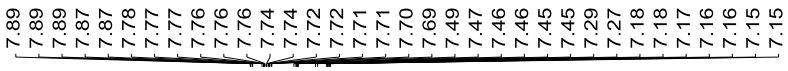


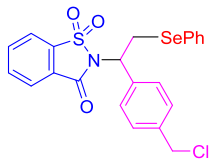
^{1}H NMR (400 MHz, $CDCl_3$) of **4j**



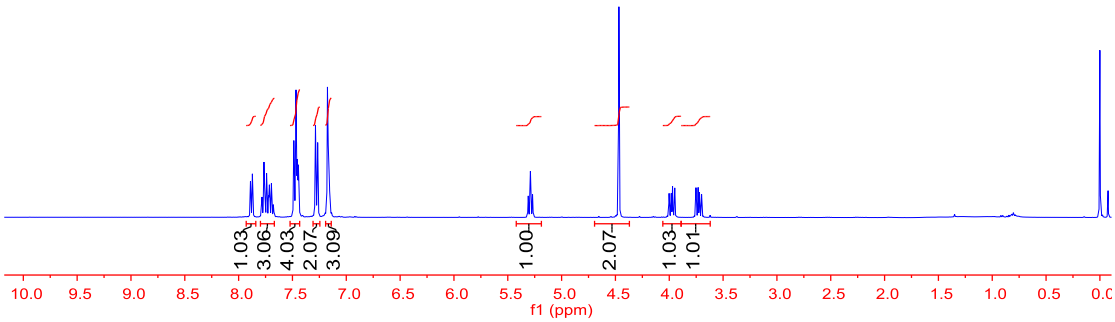
^{13}C NMR (100 MHz, $CDCl_3$) of **4j**

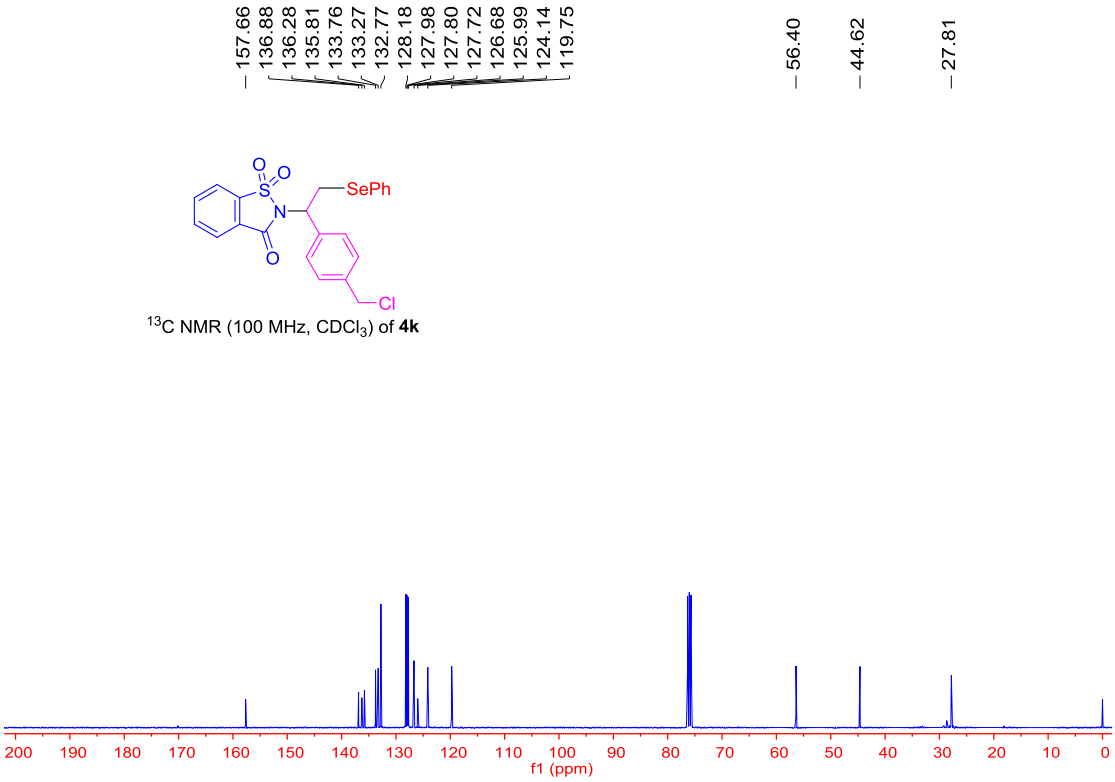




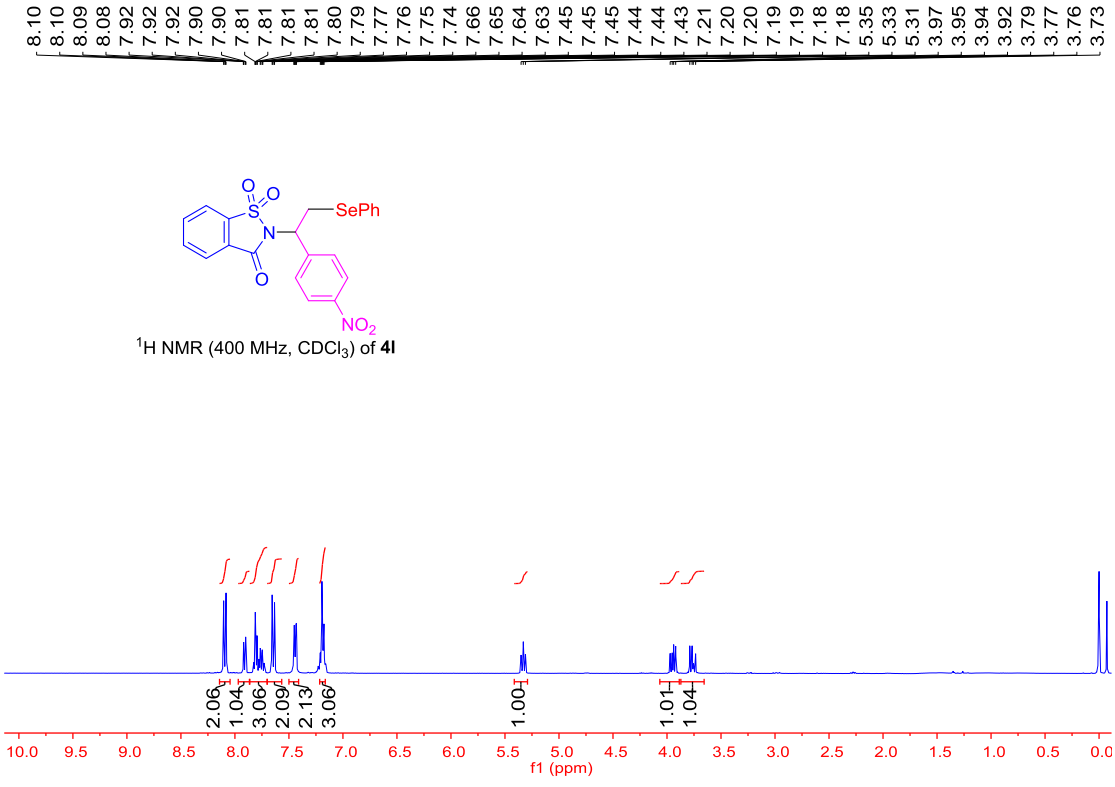


^{1}H NMR (400 MHz, $CDCl_3$) of **4k**

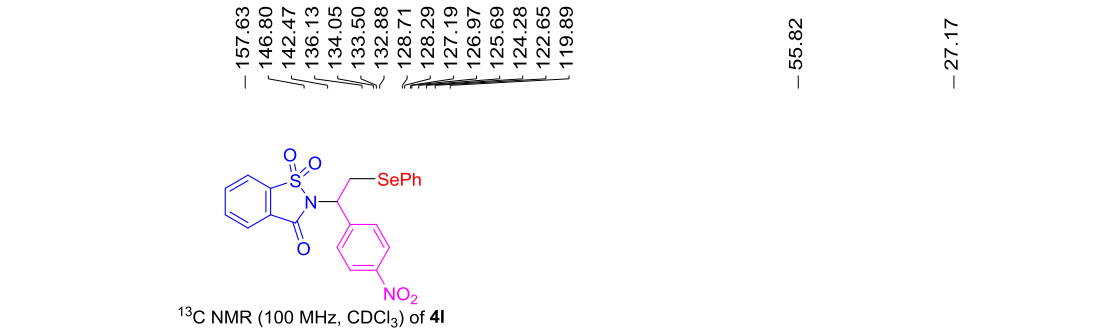




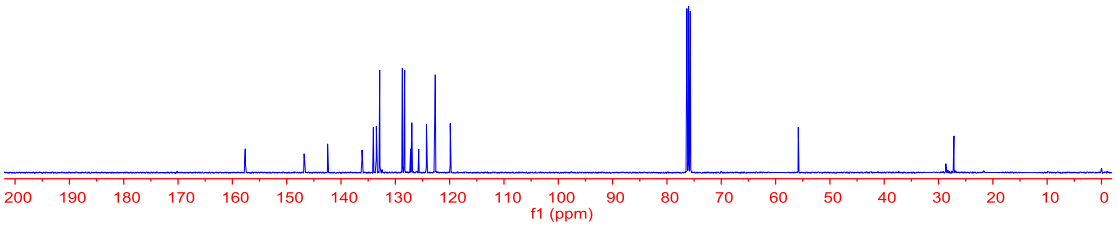
^{13}C NMR (100 MHz, $CDCl_3$) of **4k**

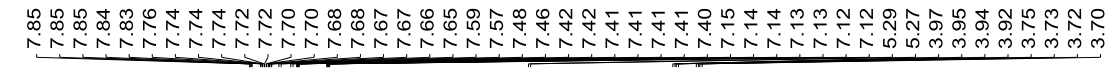


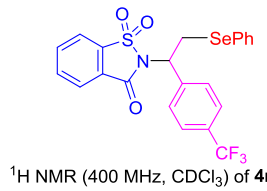
^{1}H NMR (400 MHz, $CDCl_3$) of **4l**



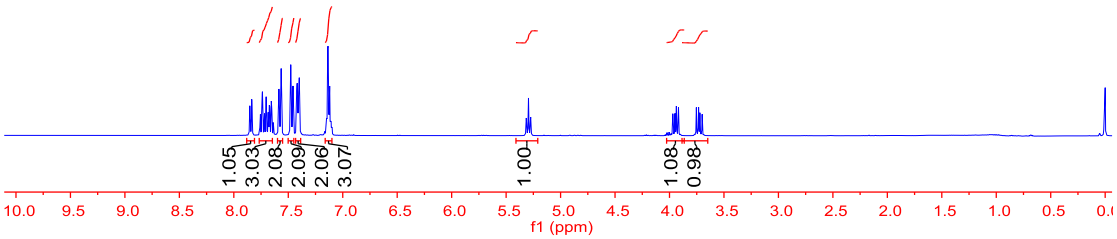
^{13}C NMR (100 MHz, $CDCl_3$) of **4l**

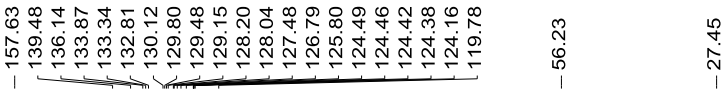


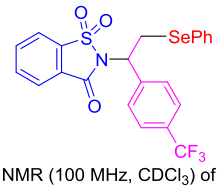




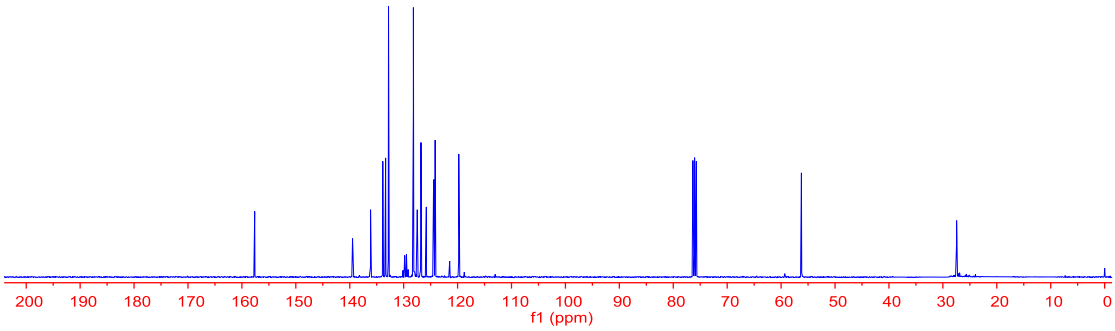
^{1}H NMR (400 MHz, $CDCl_3$) of **4m**

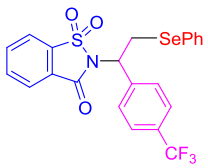




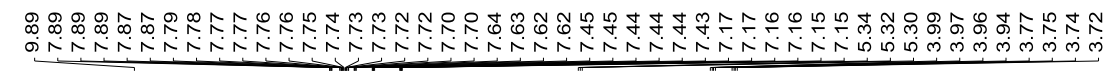


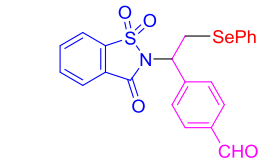
^{13}C NMR (100 MHz, $CDCl_3$) of **4m**



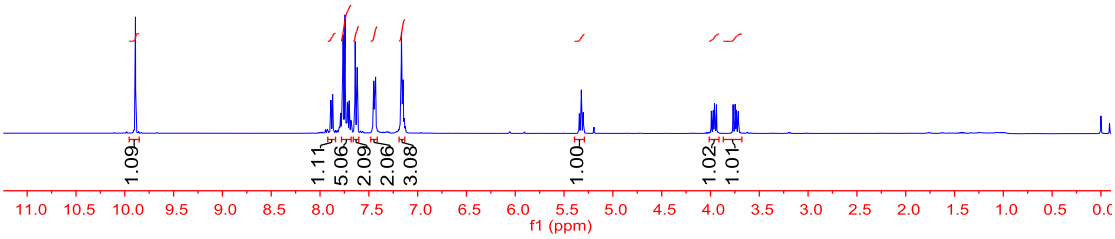


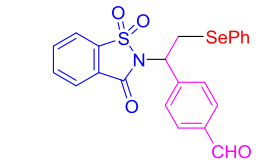
^{19}F NMR (376 MHz, $CDCl_3$) of **4m**



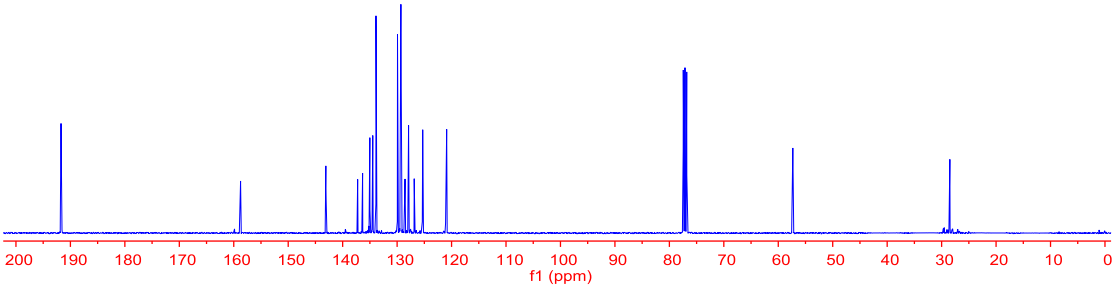


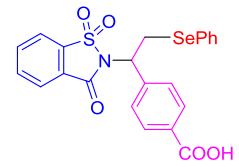
^{1}H NMR (400 MHz, $CDCl_3$) of **4n**



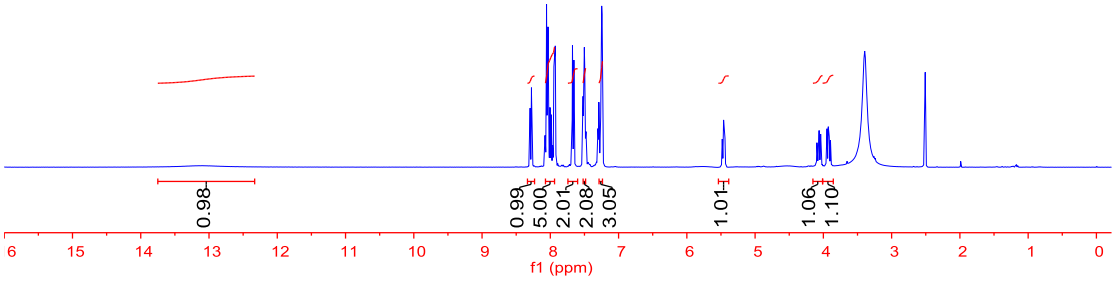


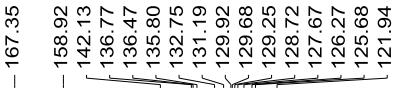
^{13}C NMR (100 MHz, $CDCl_3$) of **4n**

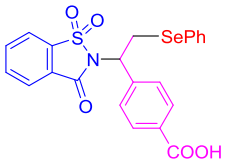




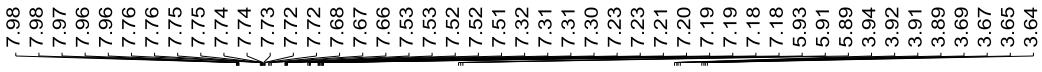
^{1}H NMR (400 MHz, DMSO-d_6) of **4o**

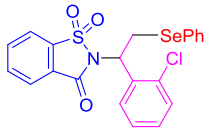




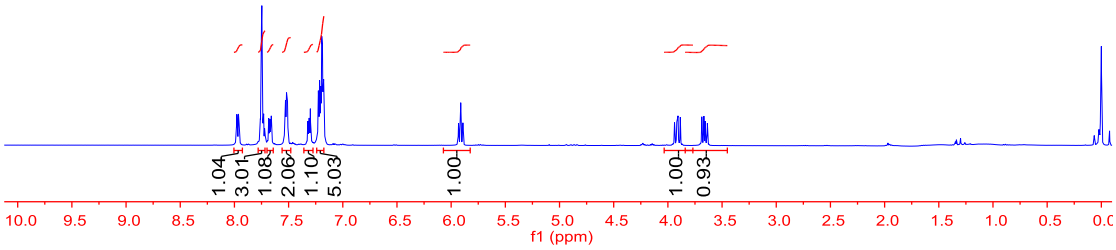


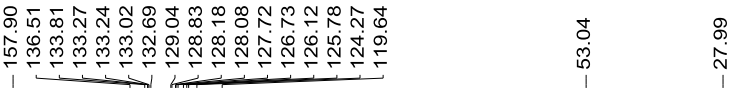
^{13}C NMR (100 MHz, DMSO-d_6) of **4o**

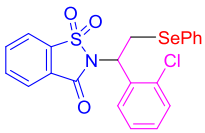




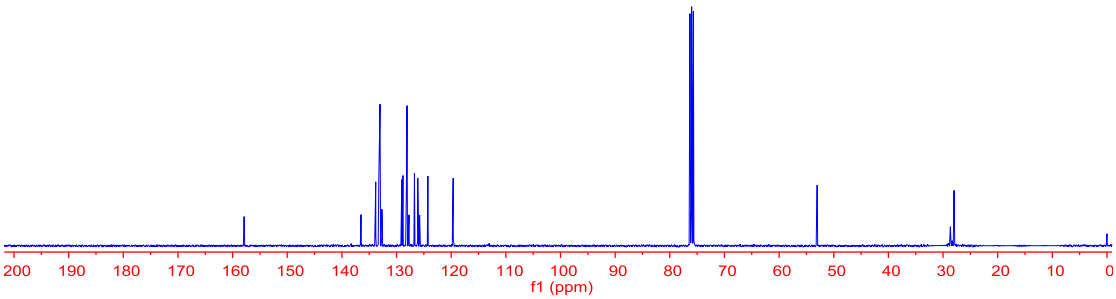
^{1}H NMR (400 MHz, $CDCl_3$) of **4p**

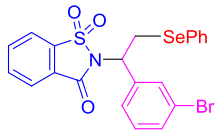




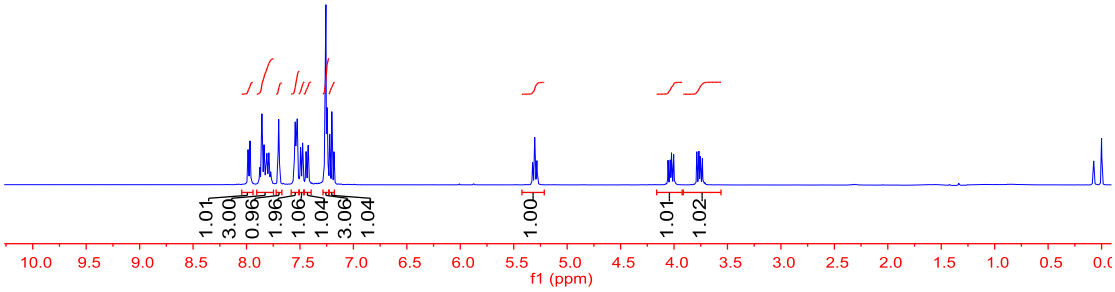


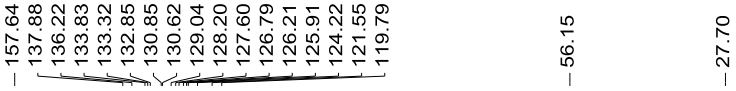
^{13}C NMR (100 MHz, $CDCl_3$) of **4p**

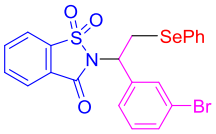




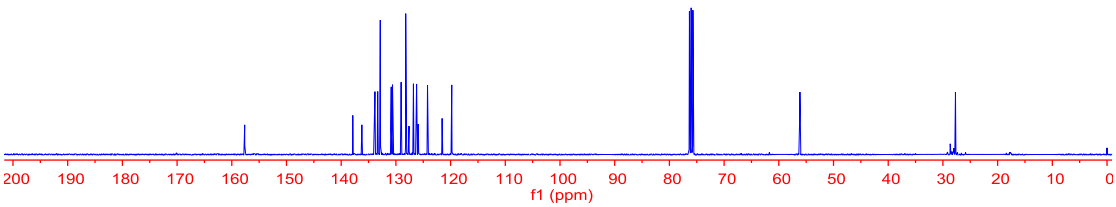
^{1}H NMR (400 MHz, $CDCl_3$) of **4q**

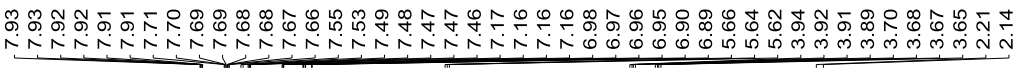


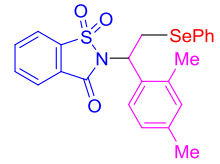




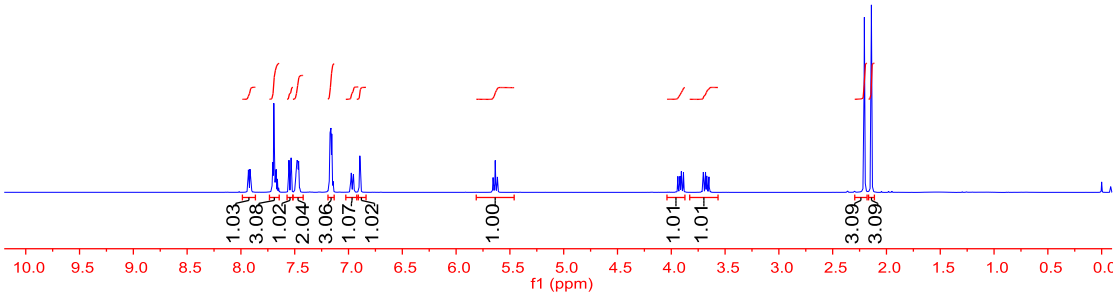
^{13}C NMR (100 MHz, $CDCl_3$) of **4q**

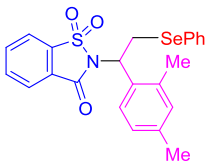




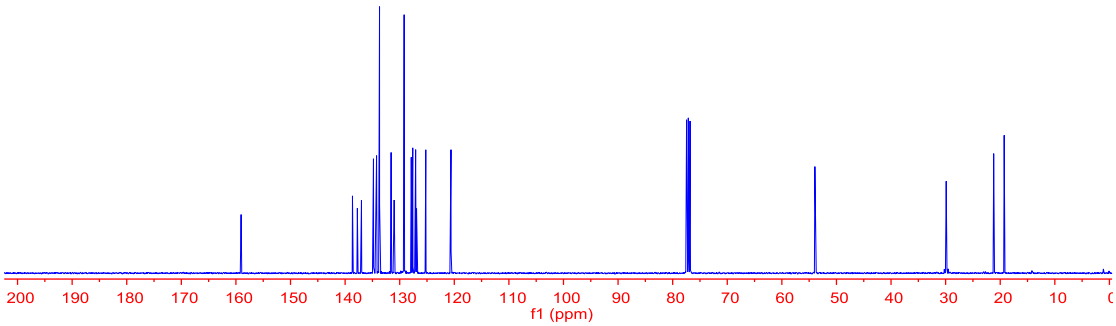


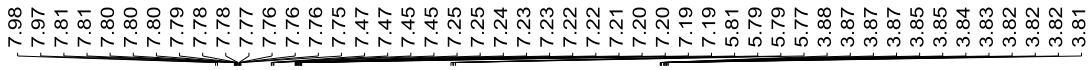
^{1}H NMR (400 MHz, $CDCl_3$) of **4r**

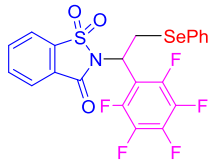




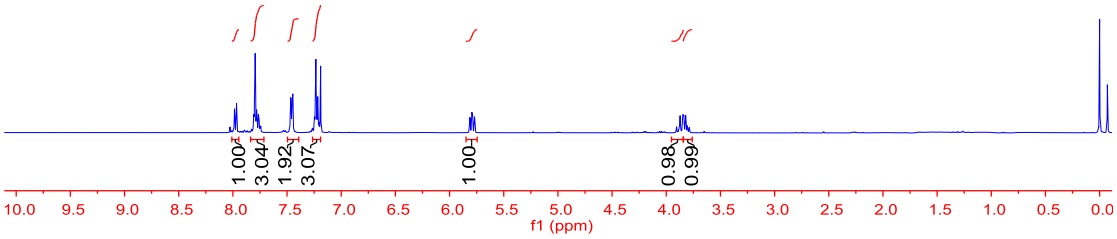
^{13}C NMR (100 MHz, $CDCl_3$) of **4r**

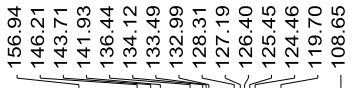


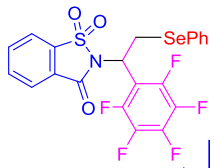




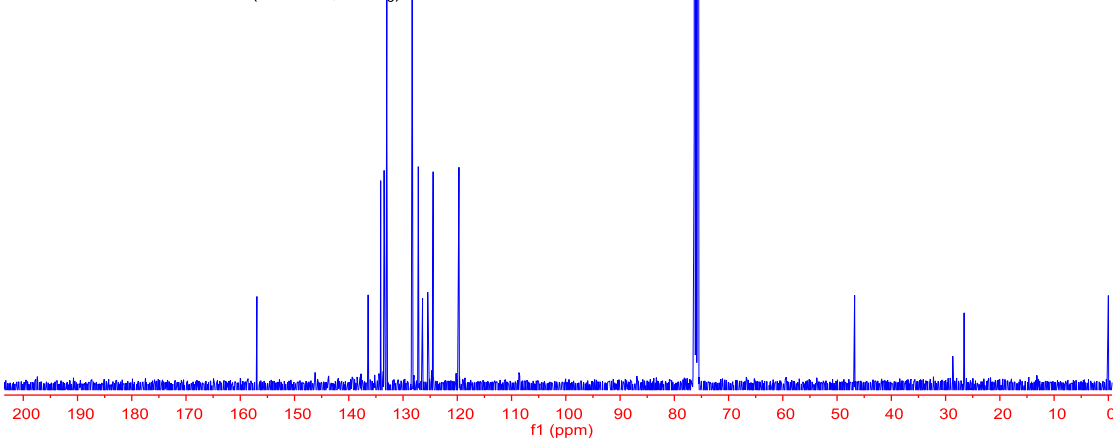
^{1}H NMR (400 MHz, $CDCl_3$) of **4s**

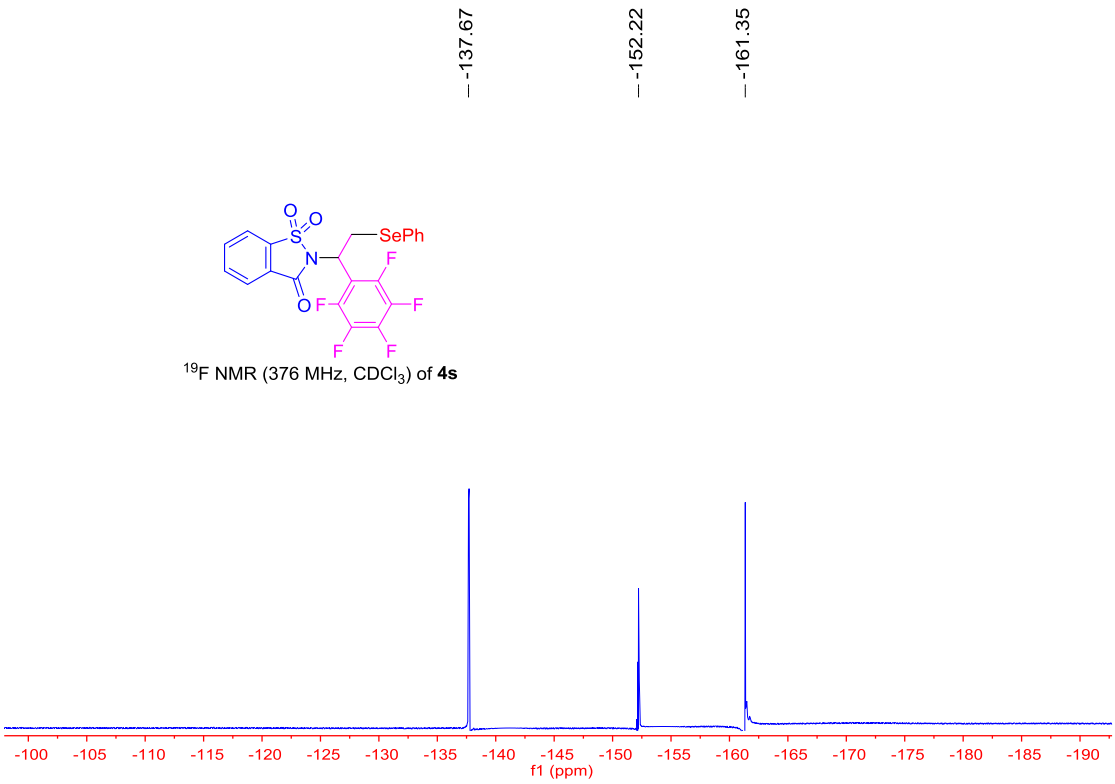




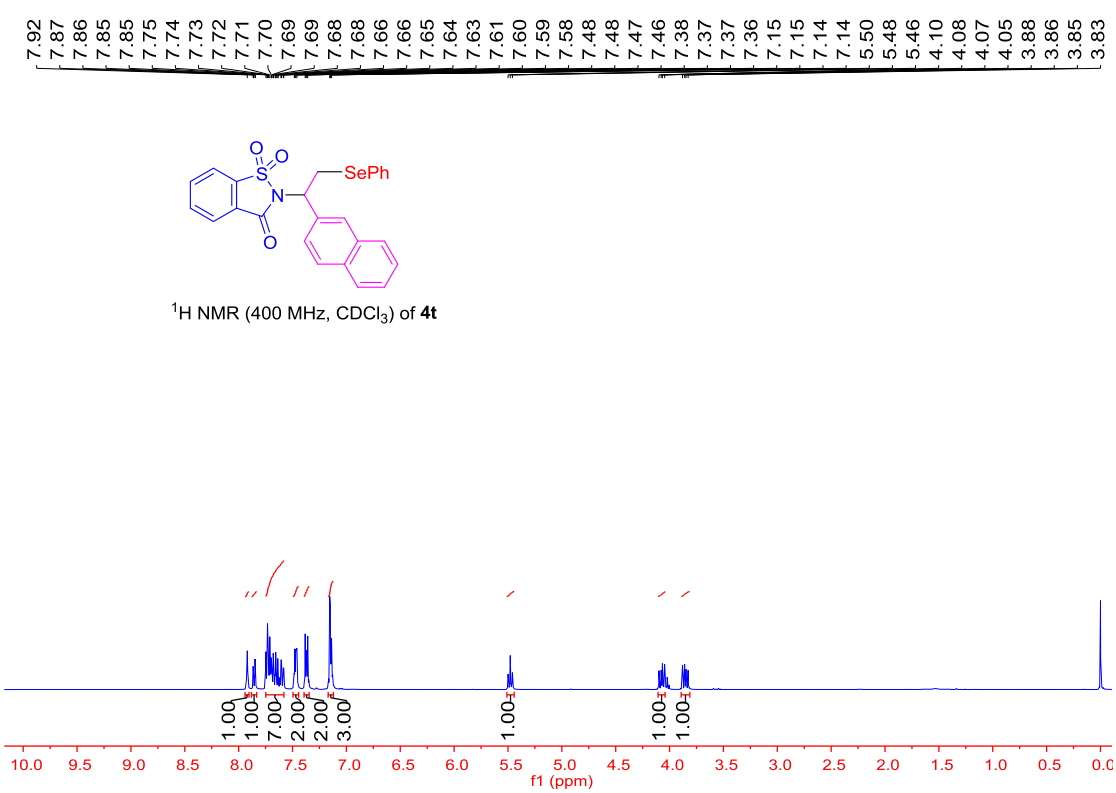


^{13}C NMR (100 MHz, $CDCl_3$) of **4s**

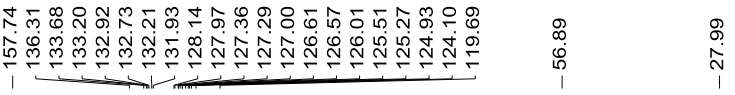


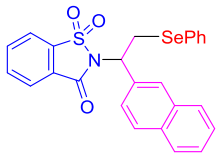


^{19}F NMR (376 MHz, $CDCl_3$) of **4s**

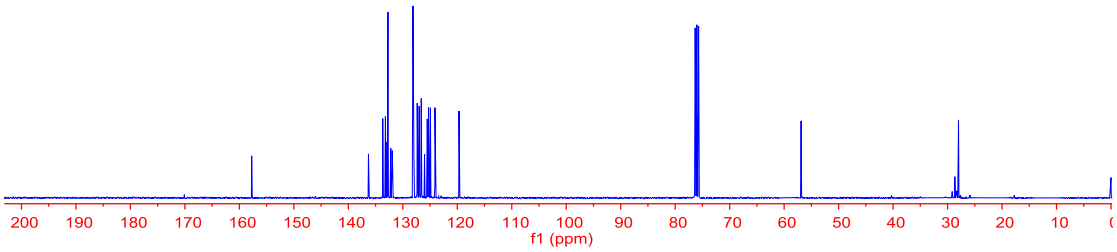


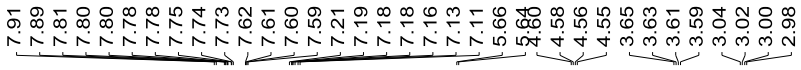
^{1}H NMR (400 MHz, $CDCl_3$) of **4t**

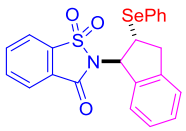




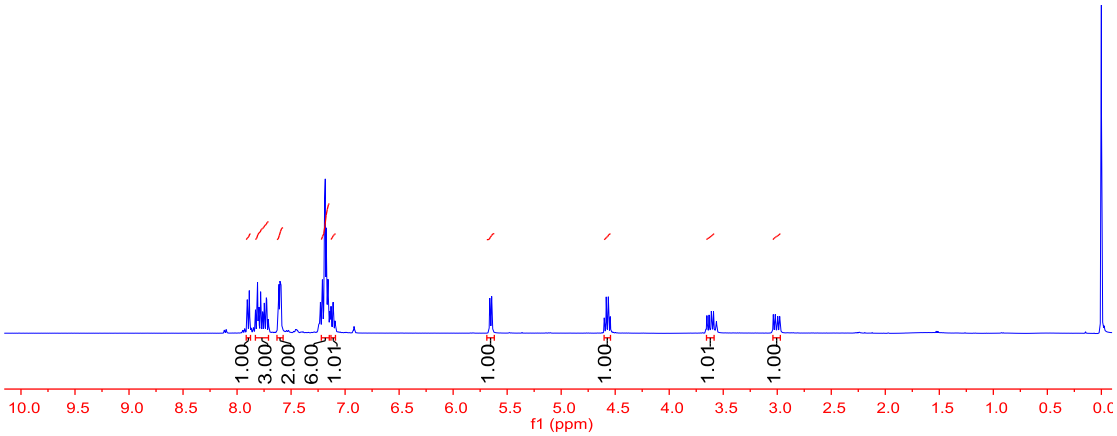
^{13}C NMR (100 MHz, $CDCl_3$) of **4t**

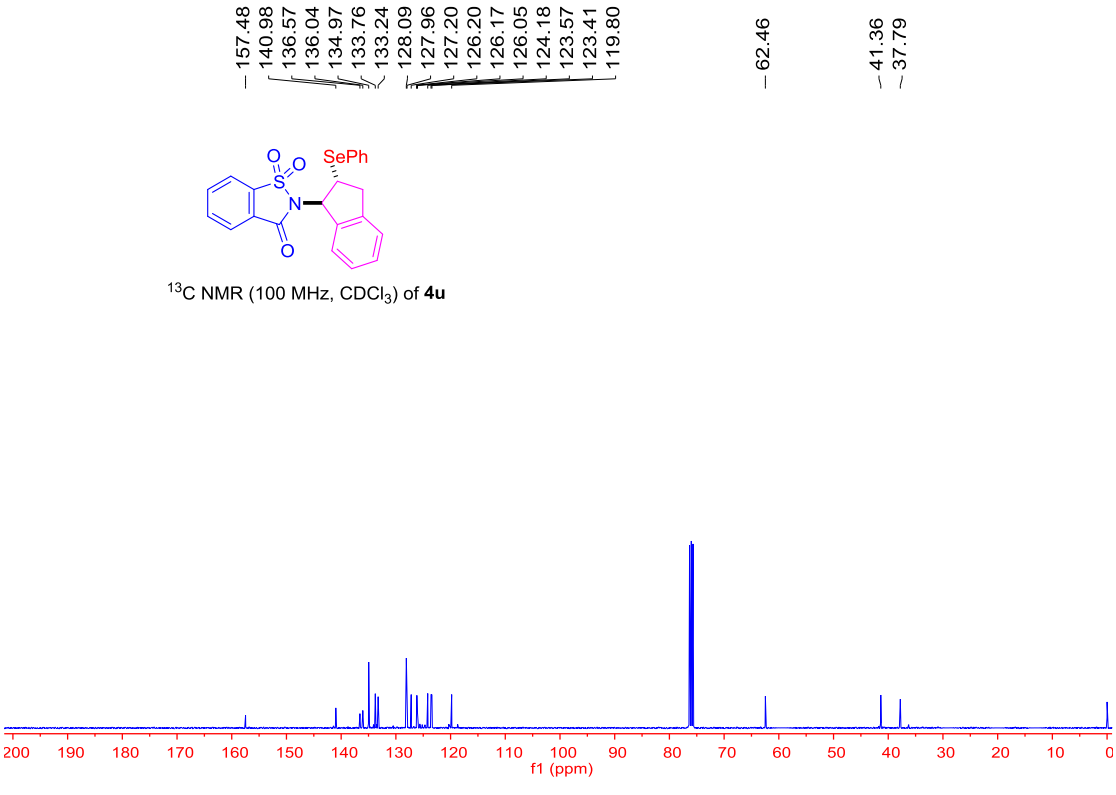




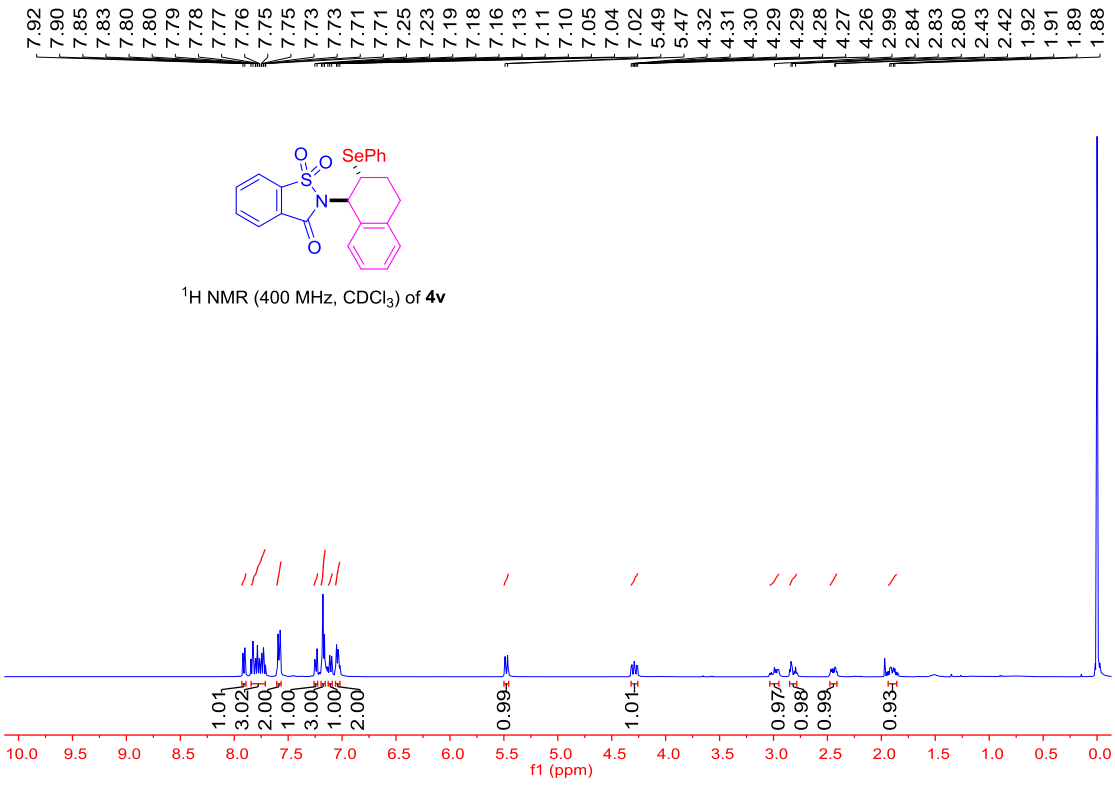


^{1}H NMR (400 MHz, $CDCl_3$) of **4u**

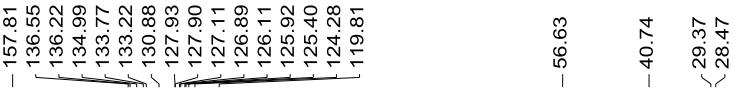


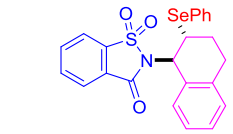


^{13}C NMR (100 MHz, $CDCl_3$) of **4u**

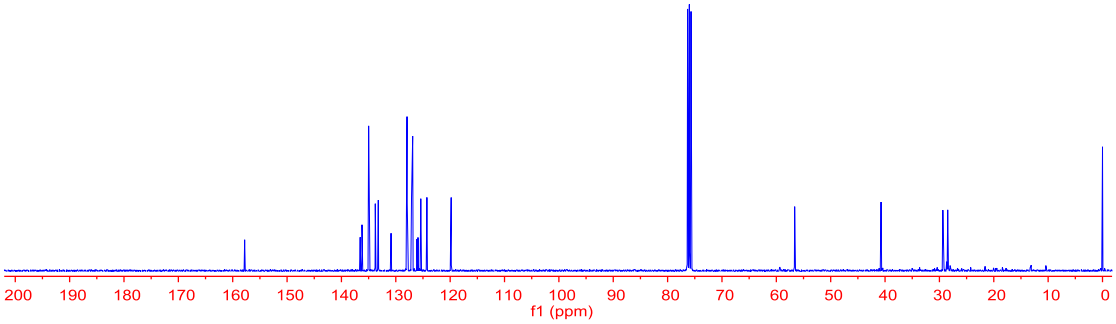


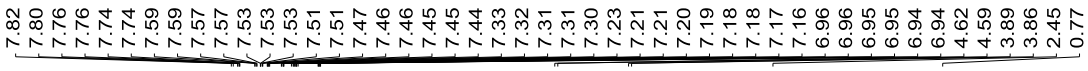
^{1}H NMR (400 MHz, $CDCl_3$) of **4v**

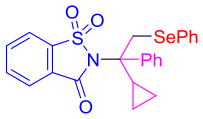




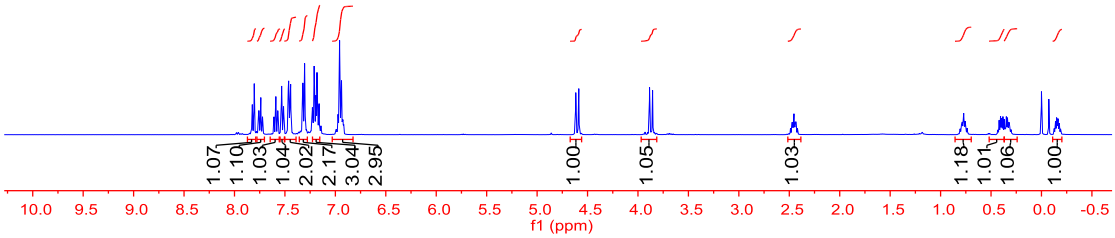
^{13}C NMR (100 MHz, $CDCl_3$) of **4v**

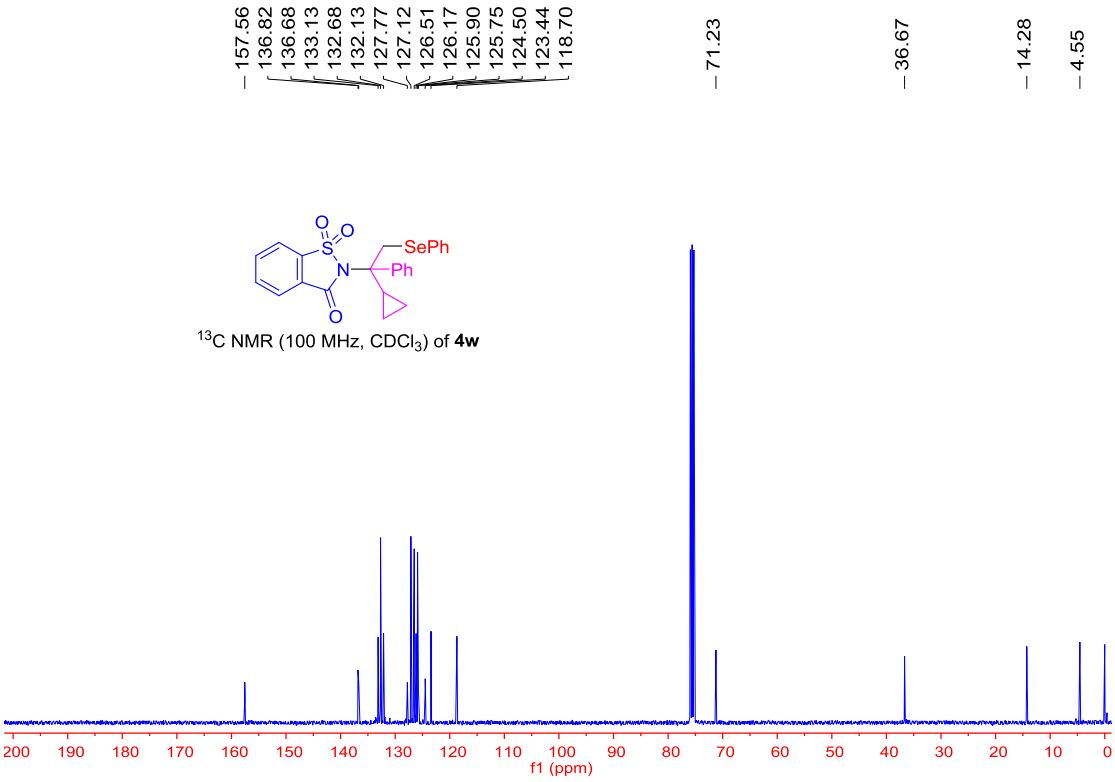




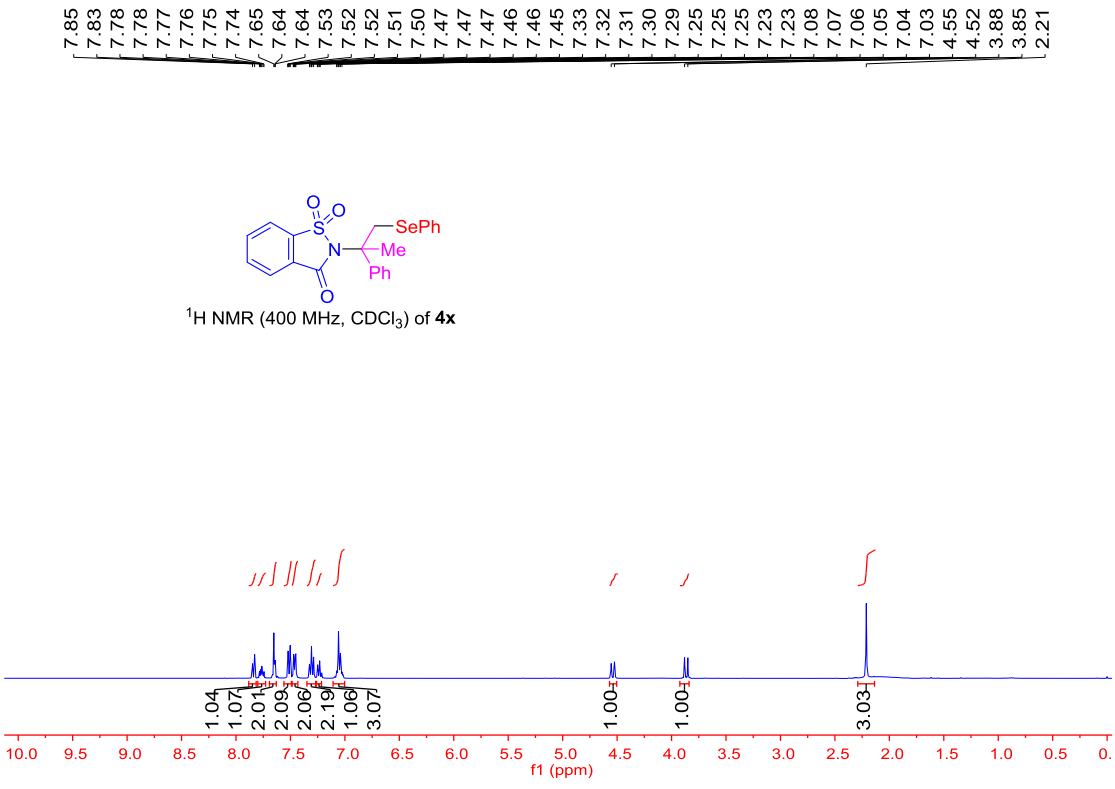


^{1}H NMR (400 MHz, $CDCl_3$) of **4w**

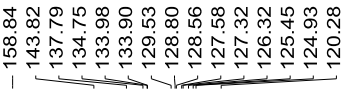


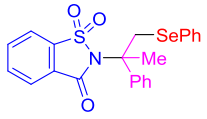


^{13}C NMR (100 MHz, $CDCl_3$) of **4w**

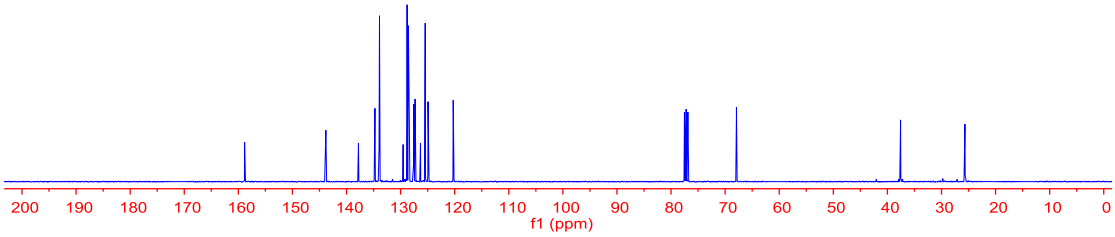


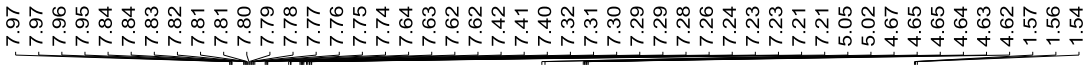
^{1}H NMR (400 MHz, $CDCl_3$) of **4x**

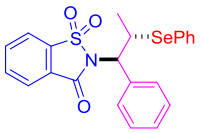




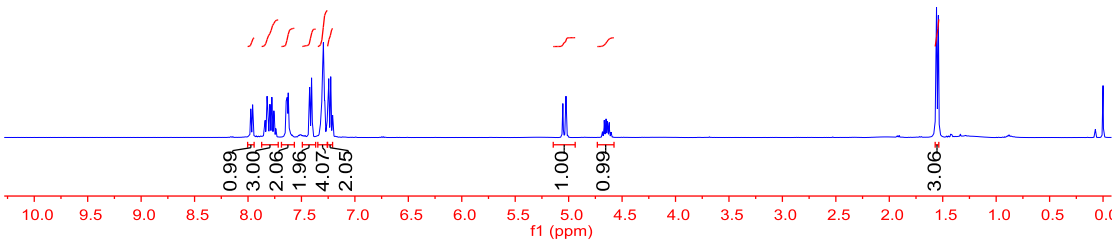
^{13}C NMR (100 MHz, $CDCl_3$) of **4x**

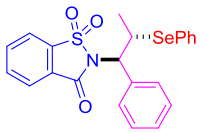




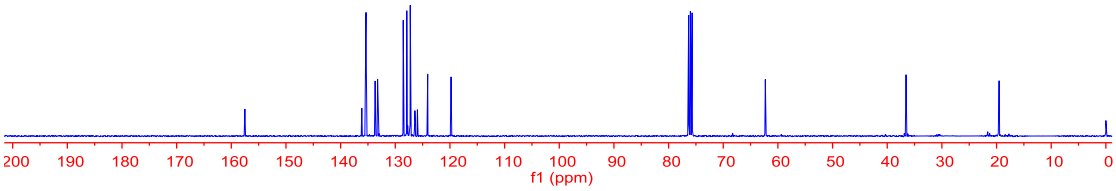


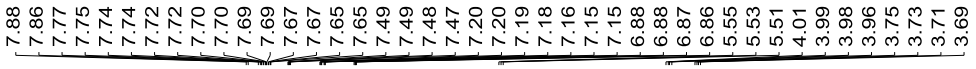
^{1}H NMR (400 MHz, $CDCl_3$) of **4y**

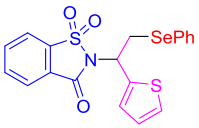




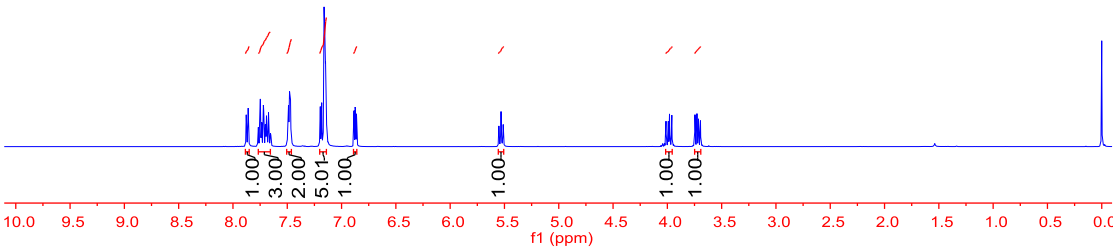
^{13}C NMR (100 MHz, $CDCl_3$) of **4y**

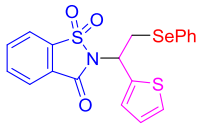




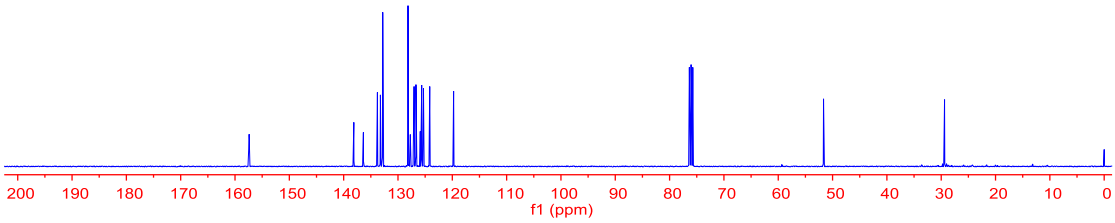


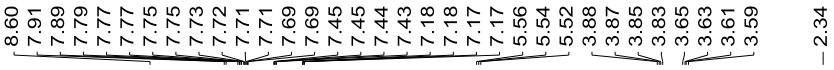
^{1}H NMR (400 MHz, $CDCl_3$) of **4z**

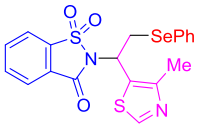




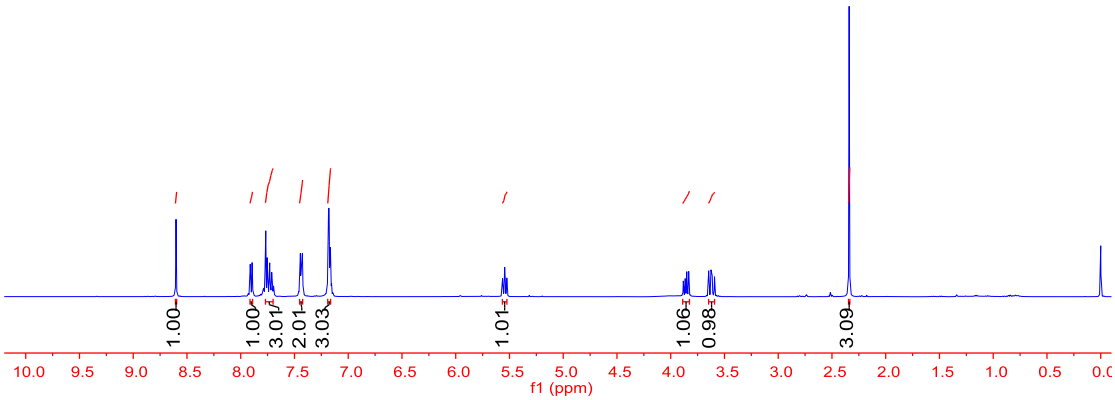
^{13}C NMR (100 MHz, $CDCl_3$) of **4z**

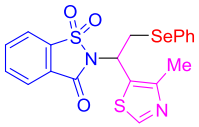




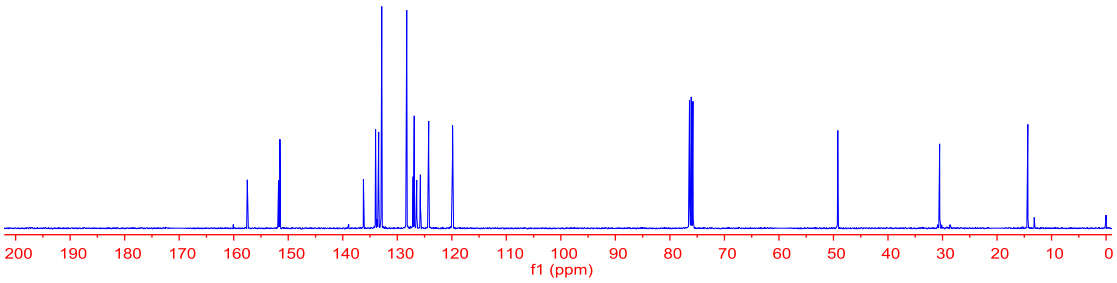


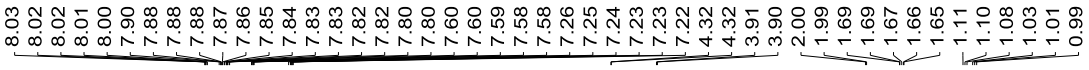
^{1}H NMR (400 MHz, $CDCl_3$) of **4aa**

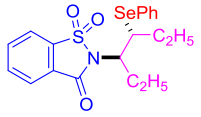




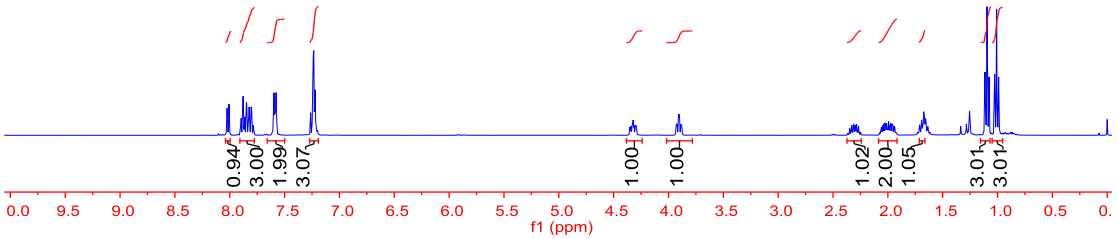
^{13}C NMR (100 MHz, $CDCl_3$) of **4aa**

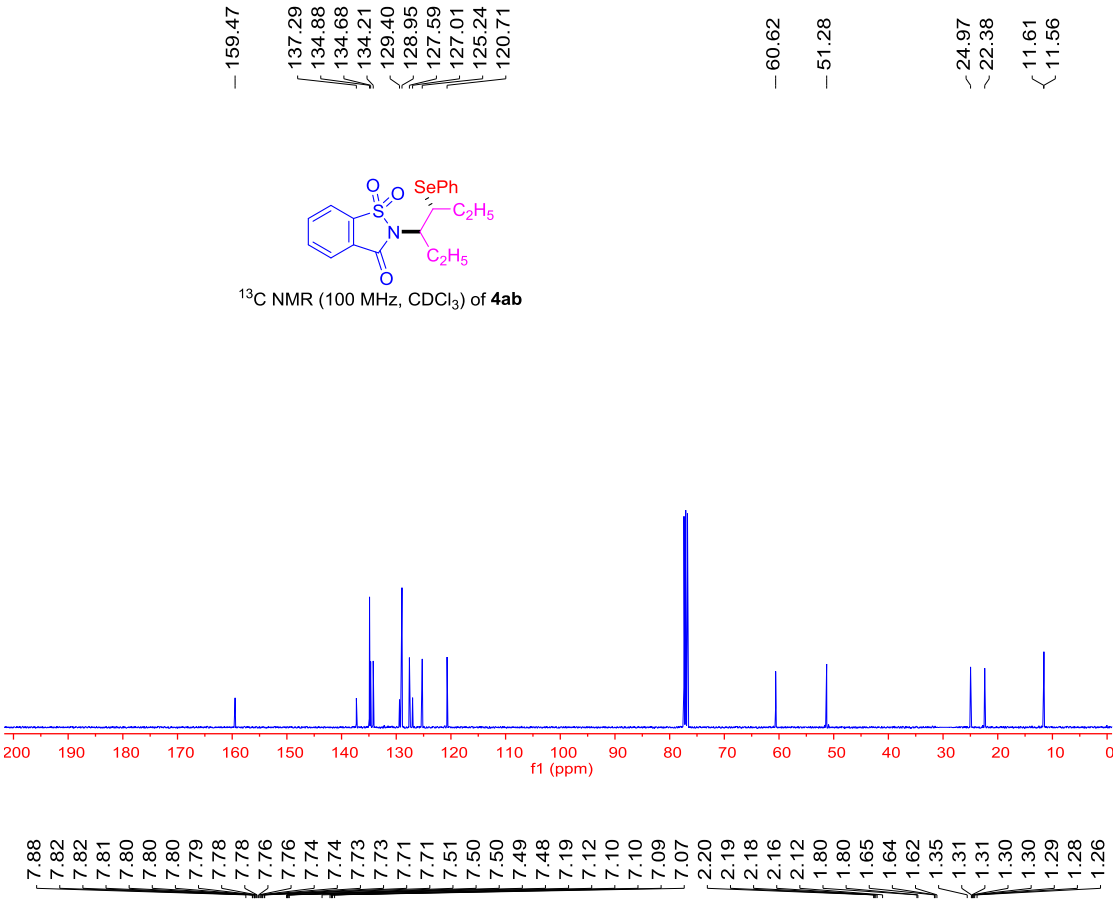




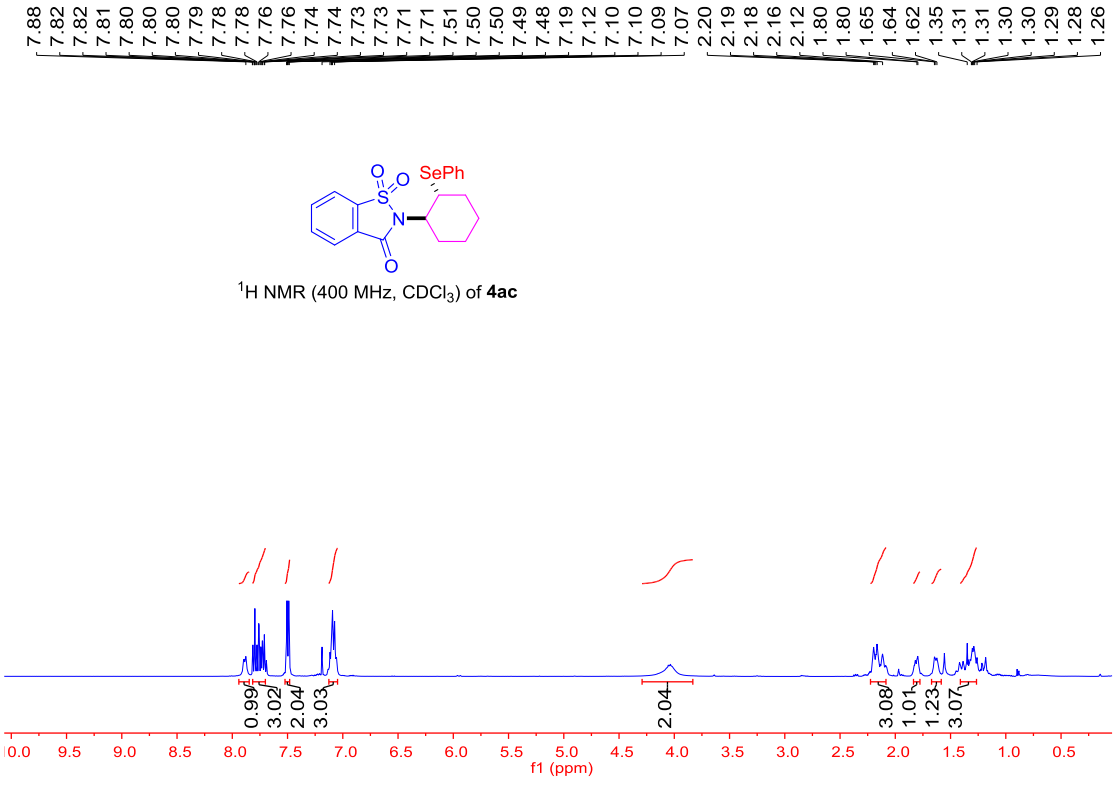


^{1}H NMR (400 MHz, $CDCl_3$) of **4ab**

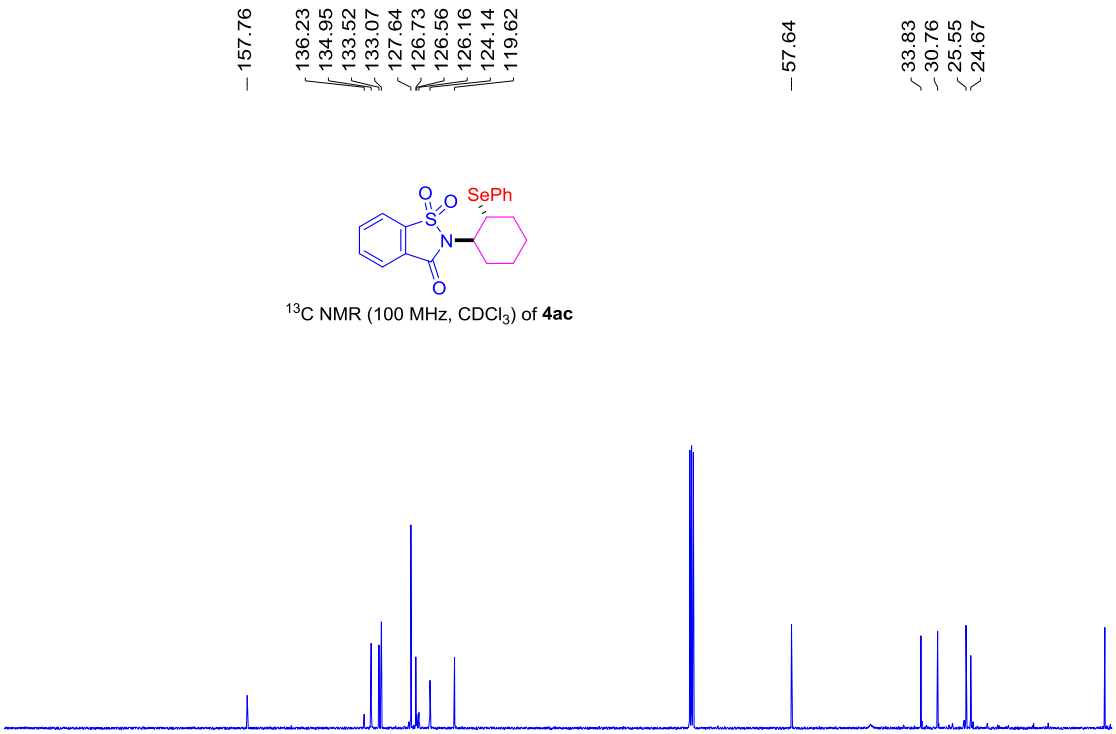




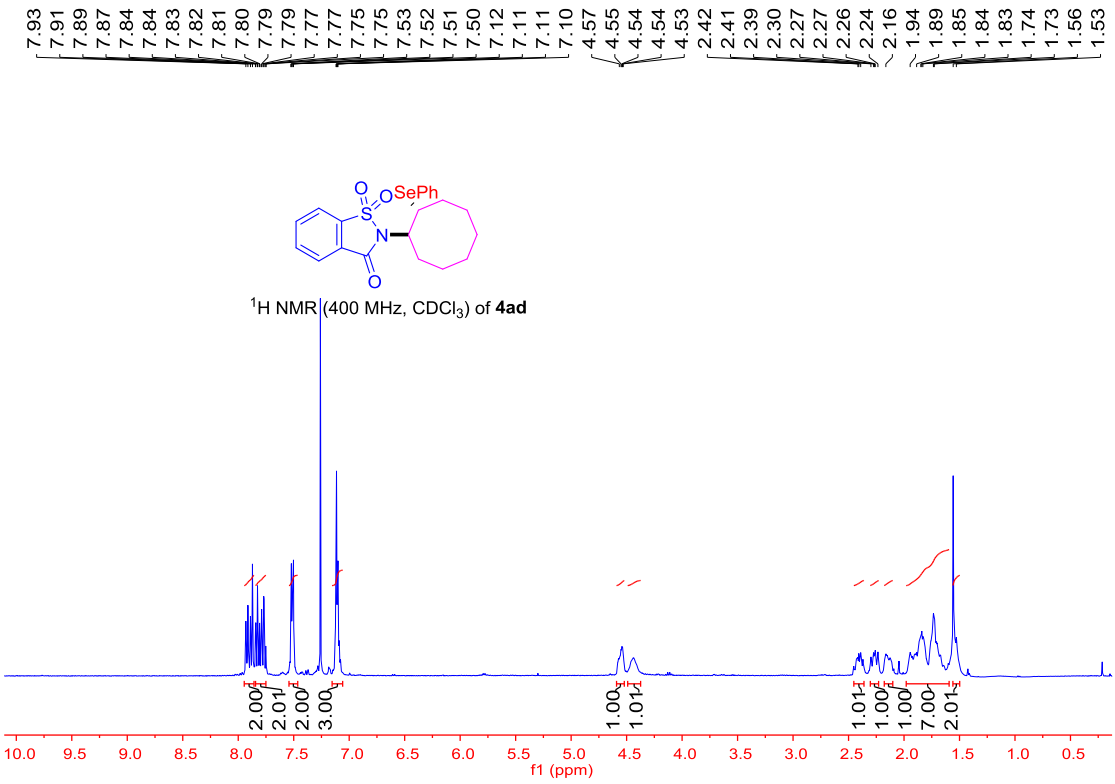
^{13}C NMR (100 MHz, $CDCl_3$) of **4ab**



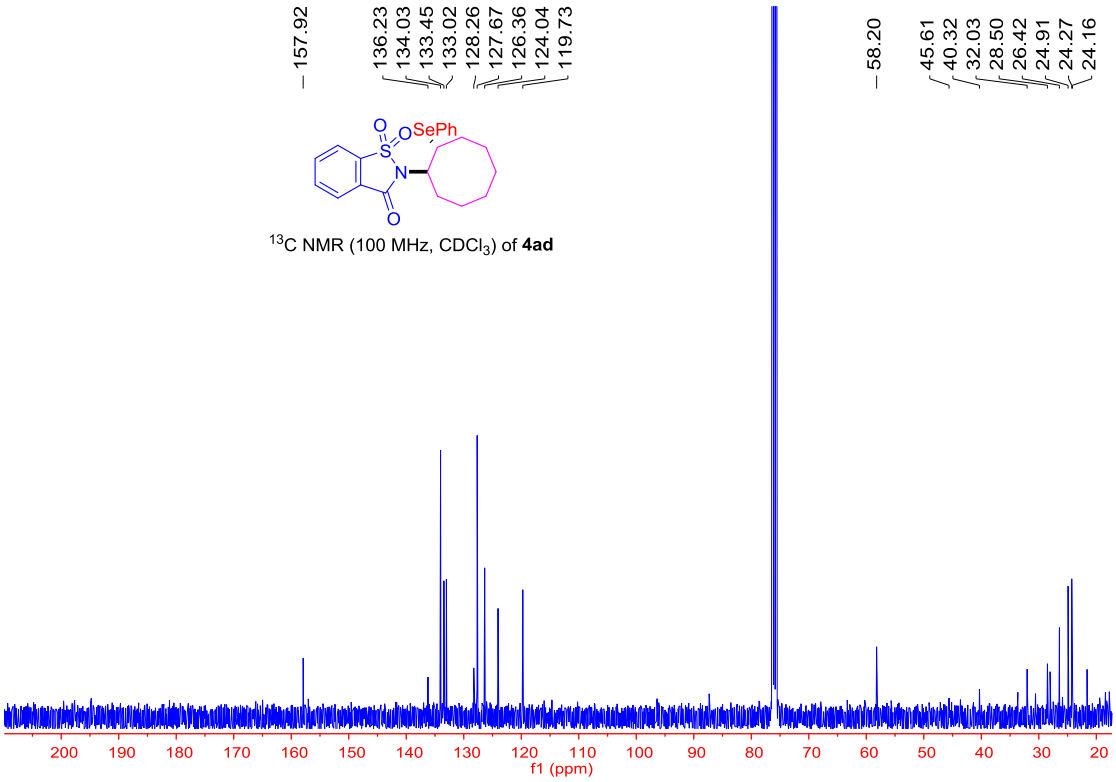
^{1}H NMR (400 MHz, $CDCl_3$) of **4ac**



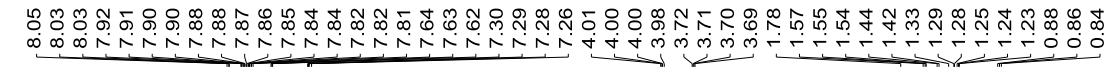
^{13}C NMR (100 MHz, $CDCl_3$) of **4ac**

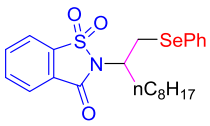


^{1}H NMR (400 MHz, $CDCl_3$) of **4ad**

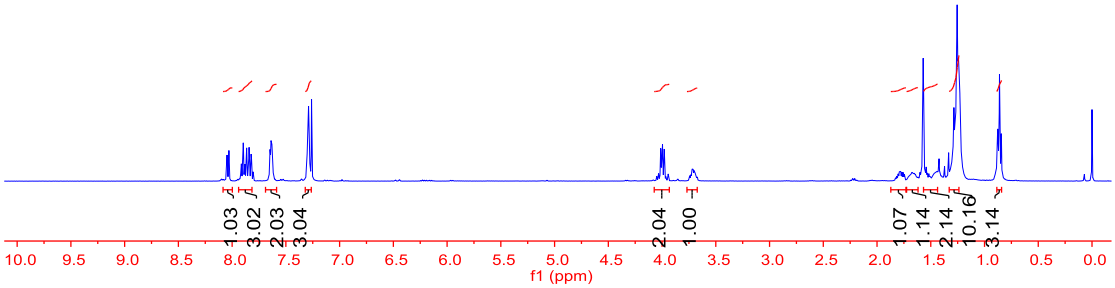


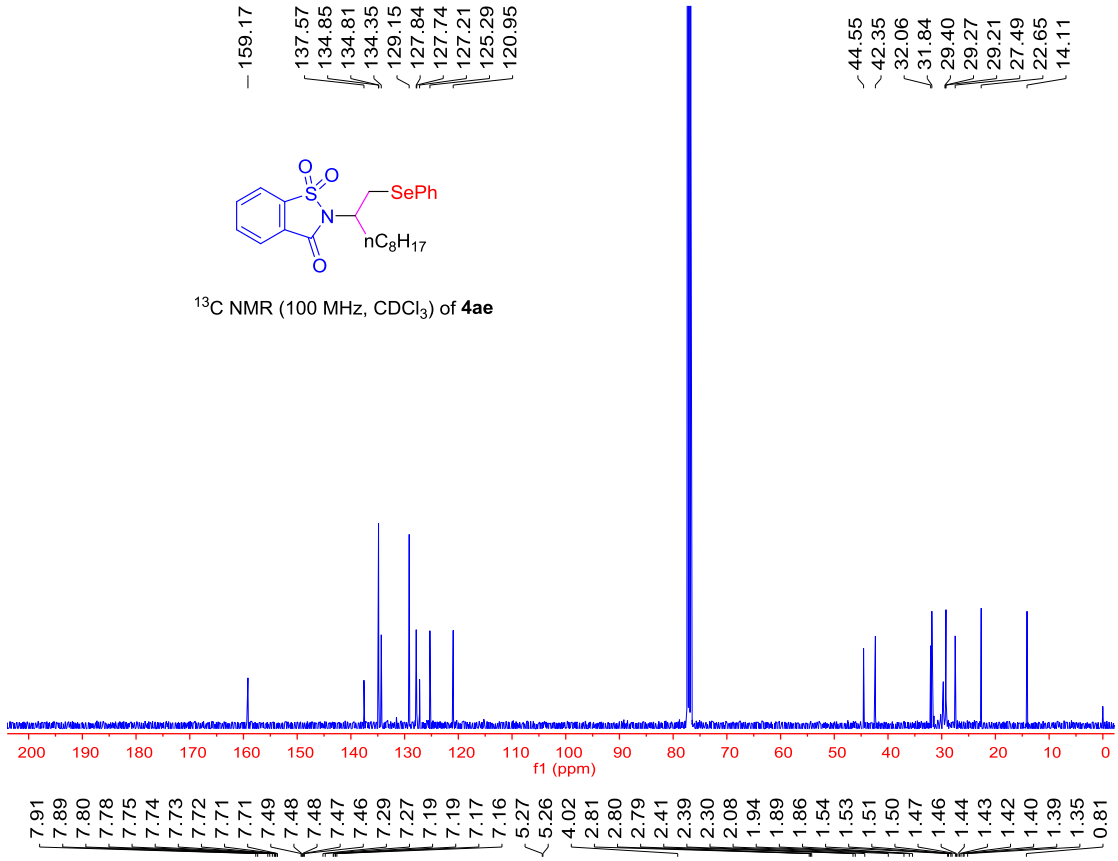
^{13}C NMR (100 MHz, $CDCl_3$) of **4ad**



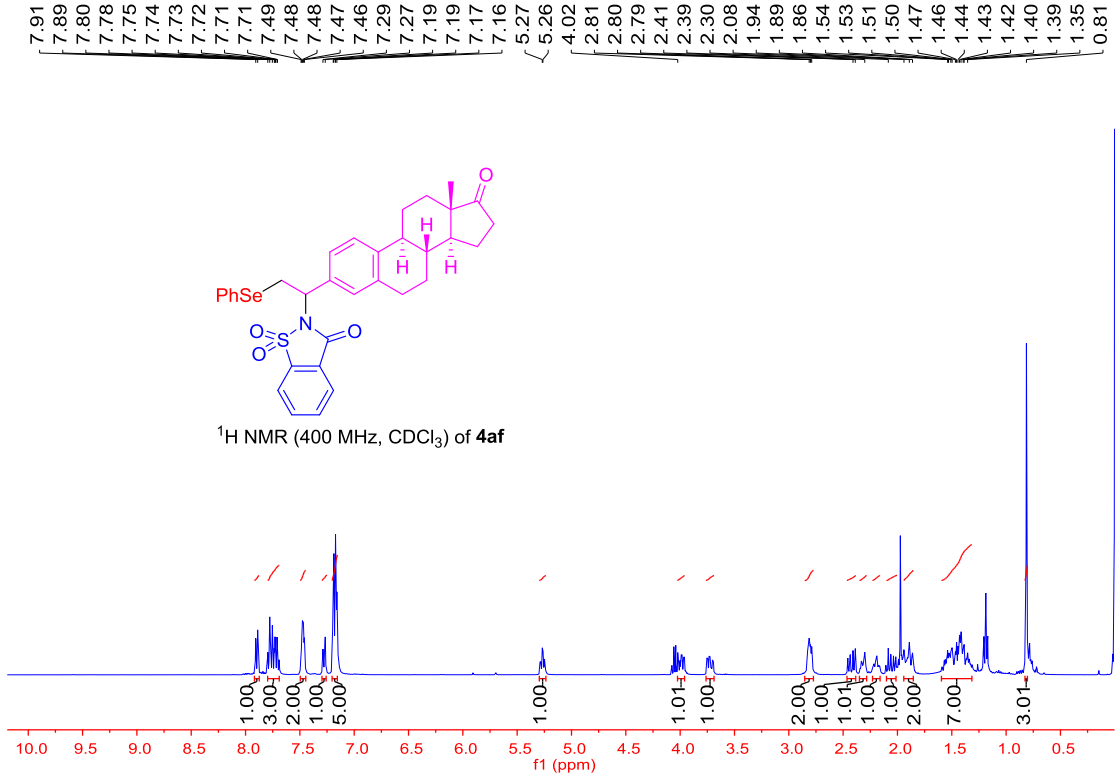


^{1}H NMR (400 MHz, $CDCl_3$) of **4ae**

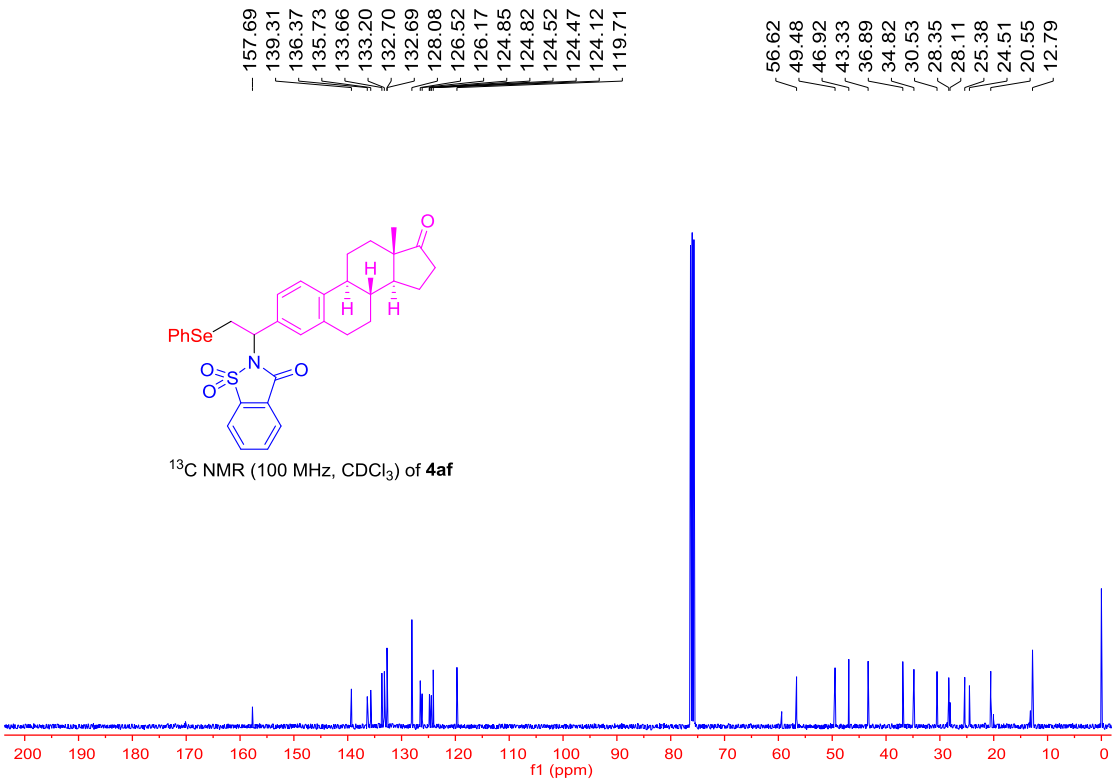




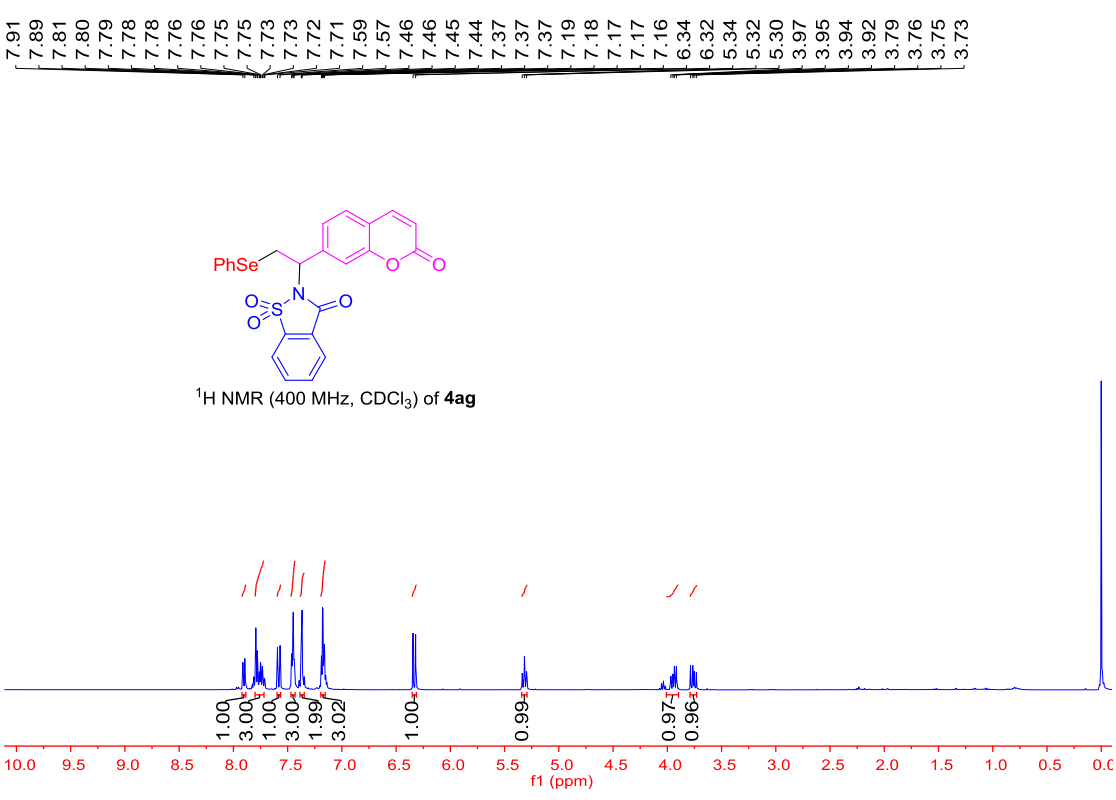
^{13}C NMR (100 MHz, $CDCl_3$) of **4ae**



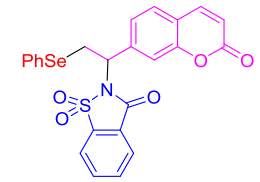
^{1}H NMR (400 MHz, $CDCl_3$) of **4af**



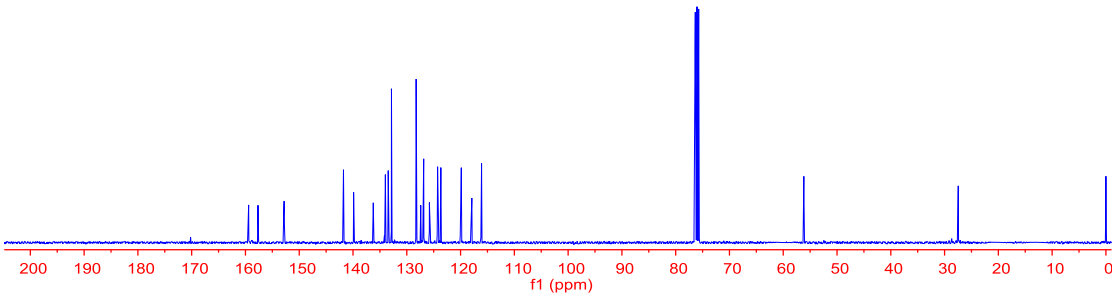
^{13}C NMR (100 MHz, $CDCl_3$) of **4af**

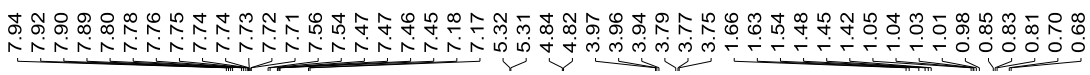


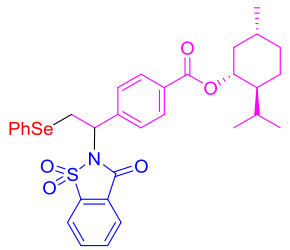
^{1}H NMR (400 MHz, $CDCl_3$) of **4ag**



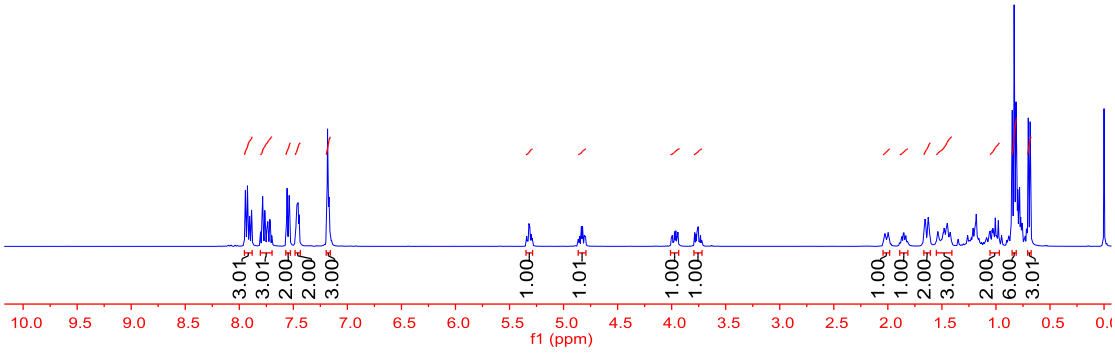
^{13}C NMR (100 MHz, $CDCl_3$) of **4ag**

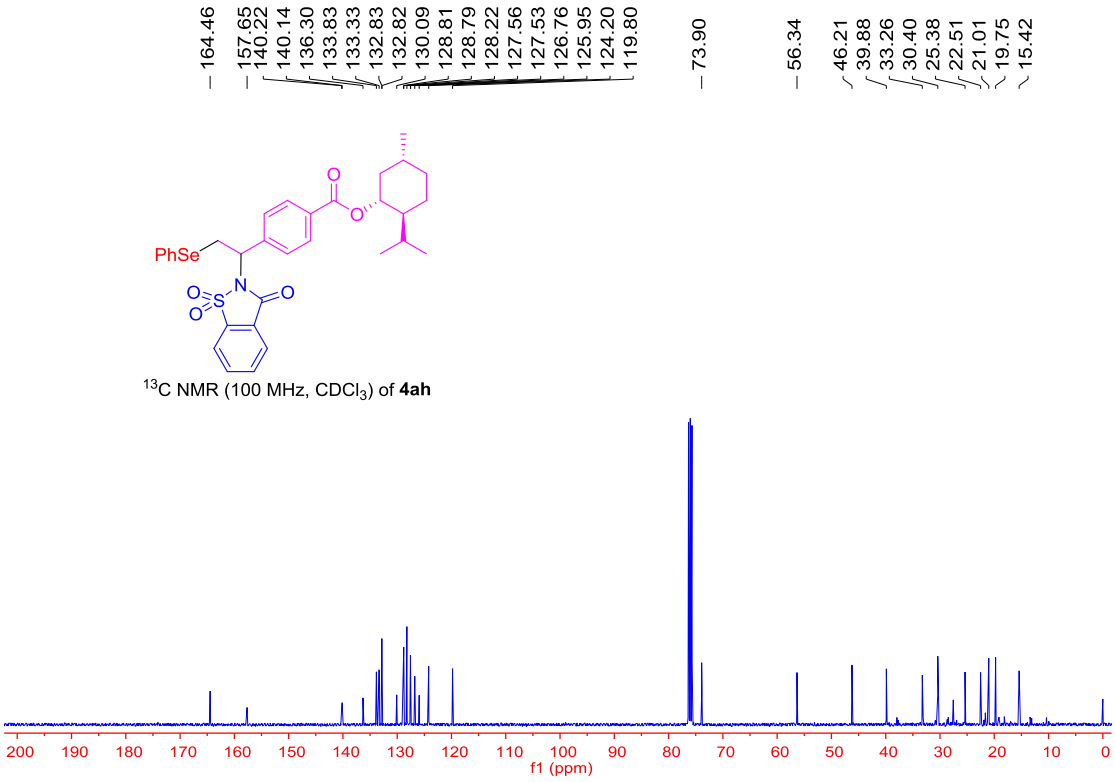




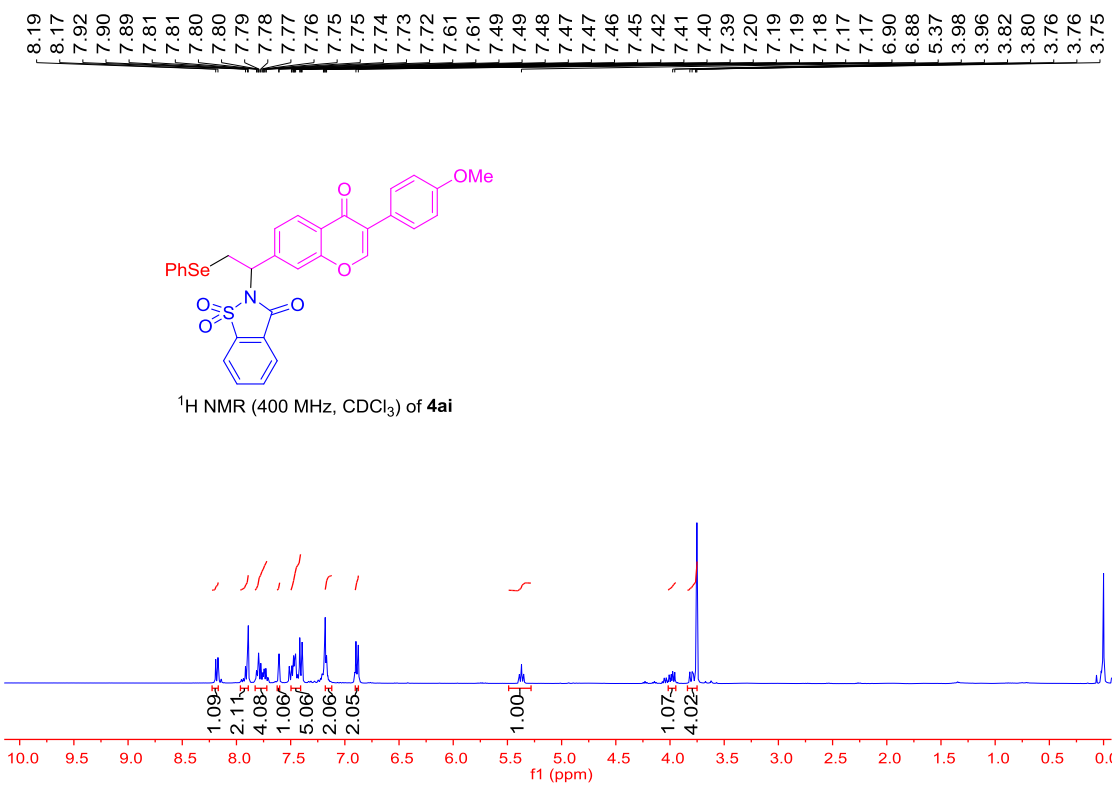


^{1}H NMR (400 MHz, $CDCl_3$) of **4ah**

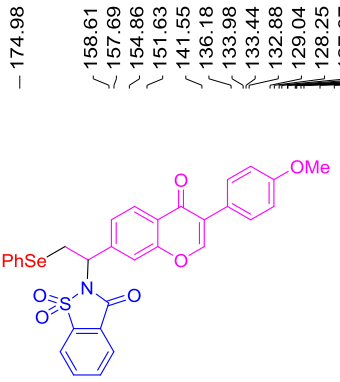




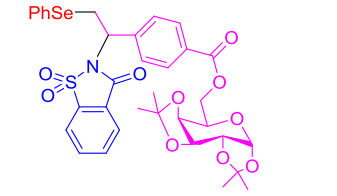
^{13}C NMR (100 MHz, $CDCl_3$) of **4ah**



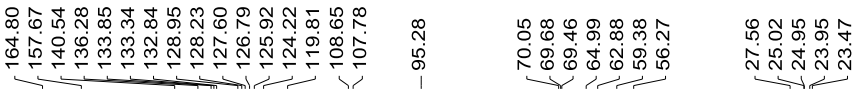
^{1}H NMR (400 MHz, $CDCl_3$) of **4ai**

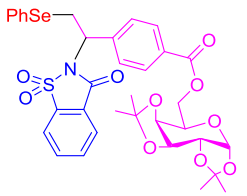


^{13}C NMR (100 MHz, $CDCl_3$) of **4ai**

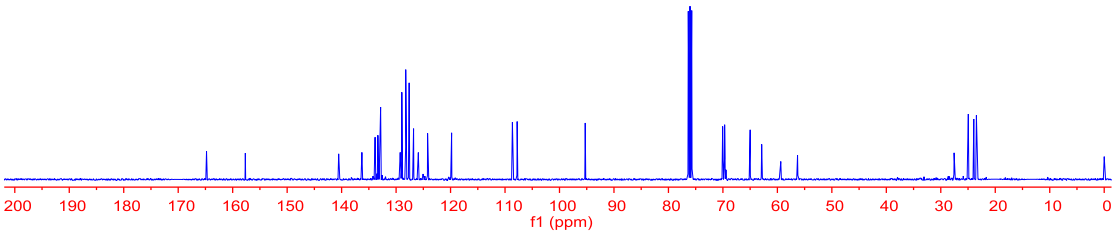


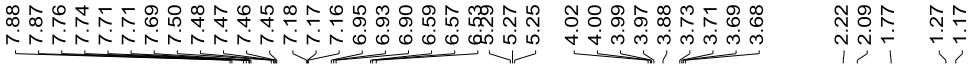
^{1}H NMR (400 MHz, $CDCl_3$) of **4aj**

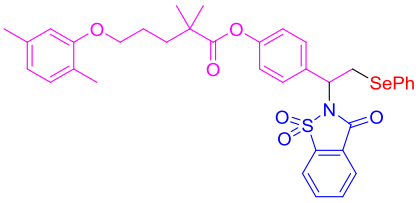




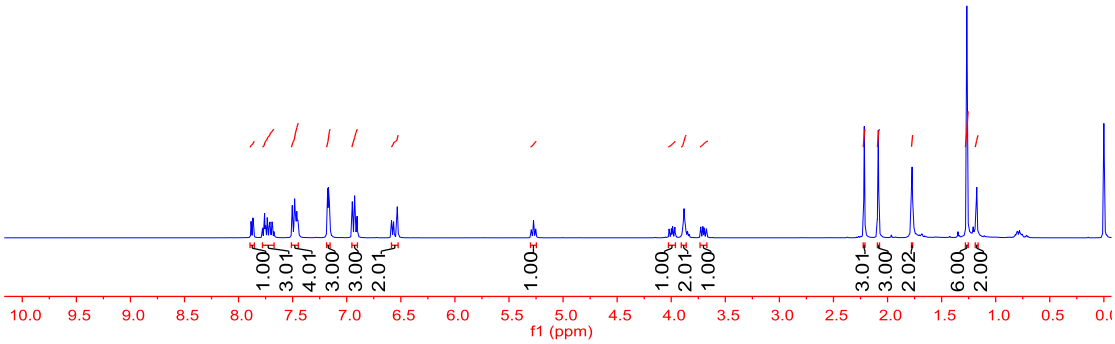
^{13}C NMR (100 MHz, $CDCl_3$) of **4aj**

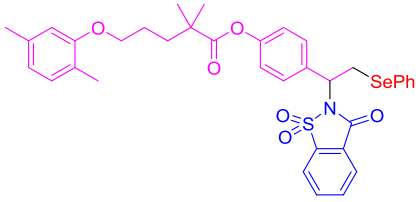




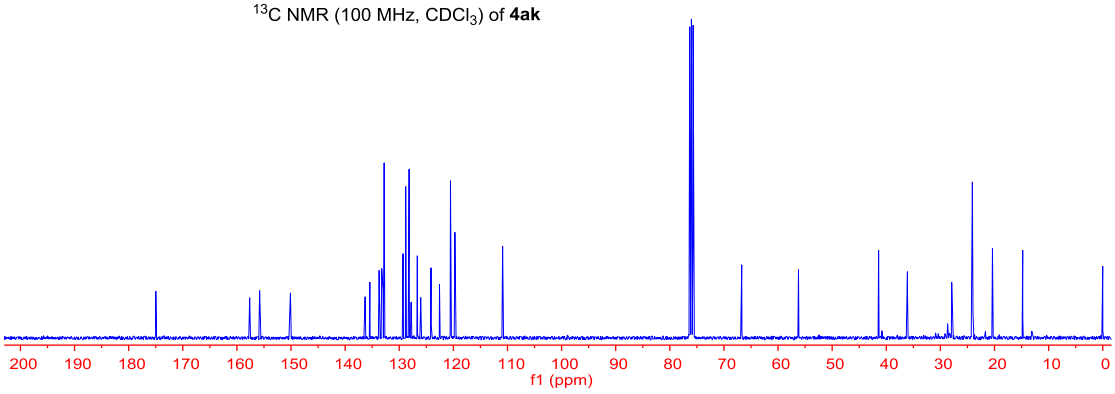


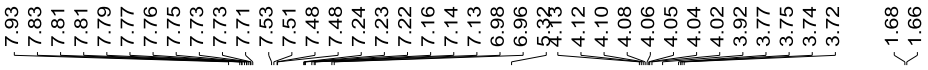
^{1}H NMR (400 MHz, $CDCl_3$) of **4ak**

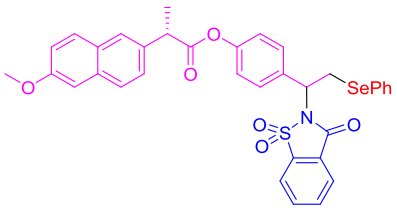




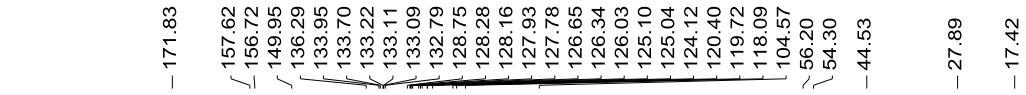
^{13}C NMR (100 MHz, $CDCl_3$) of **4ak**

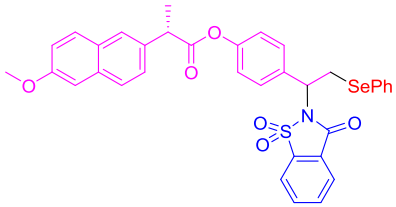




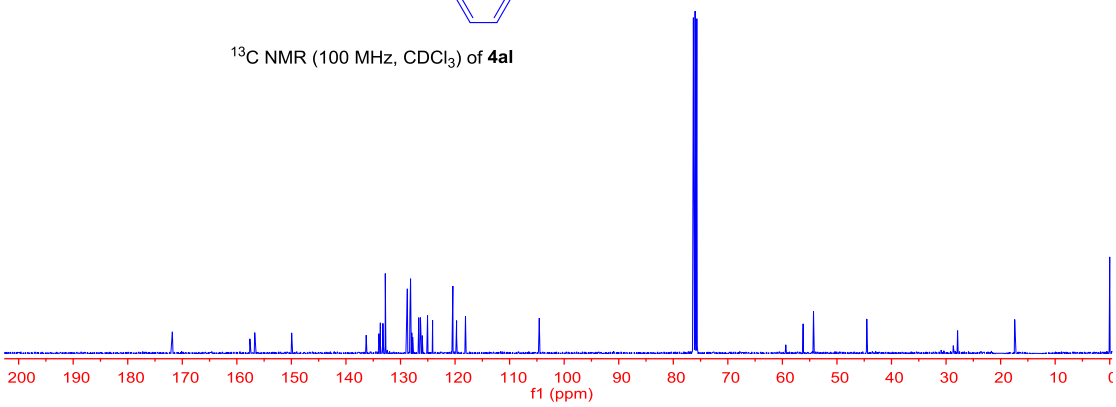


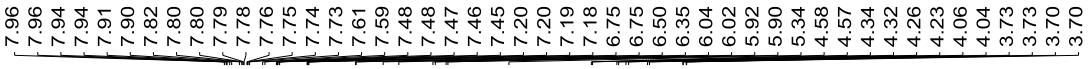
^{1}H NMR (400 MHz, $CDCl_3$) of **4al**

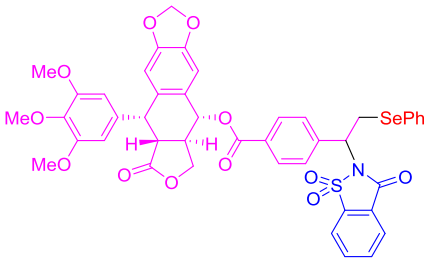




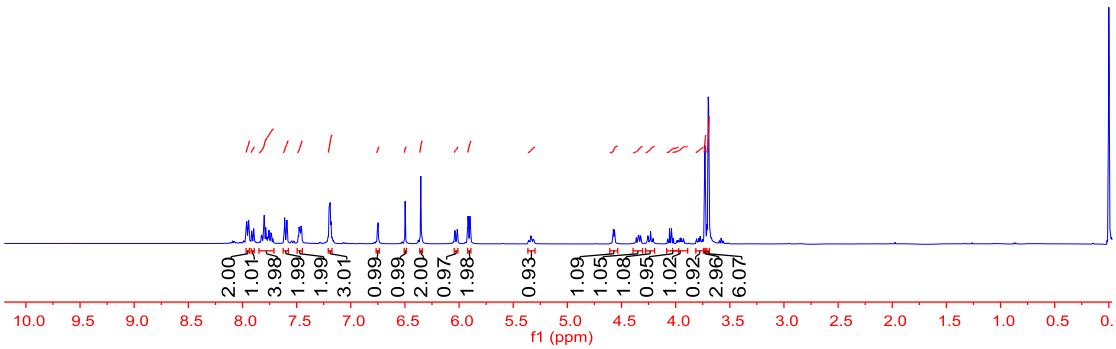
^{13}C NMR (100 MHz, $CDCl_3$) of **4al**

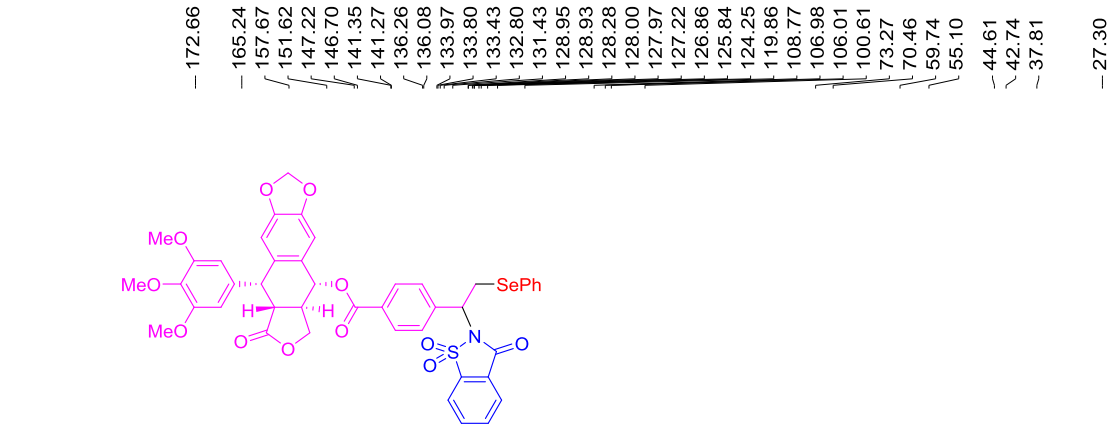




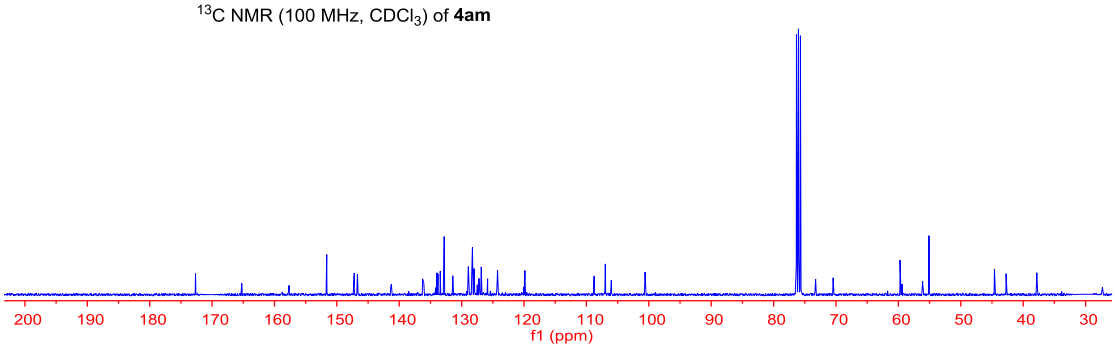


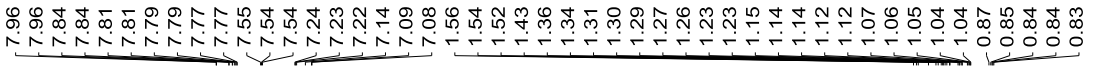
^{1}H NMR (400 MHz, $CDCl_3$) of **4am**

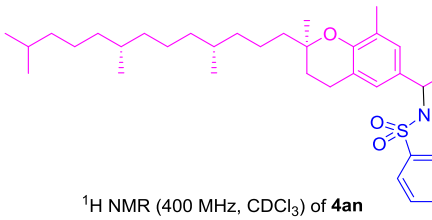




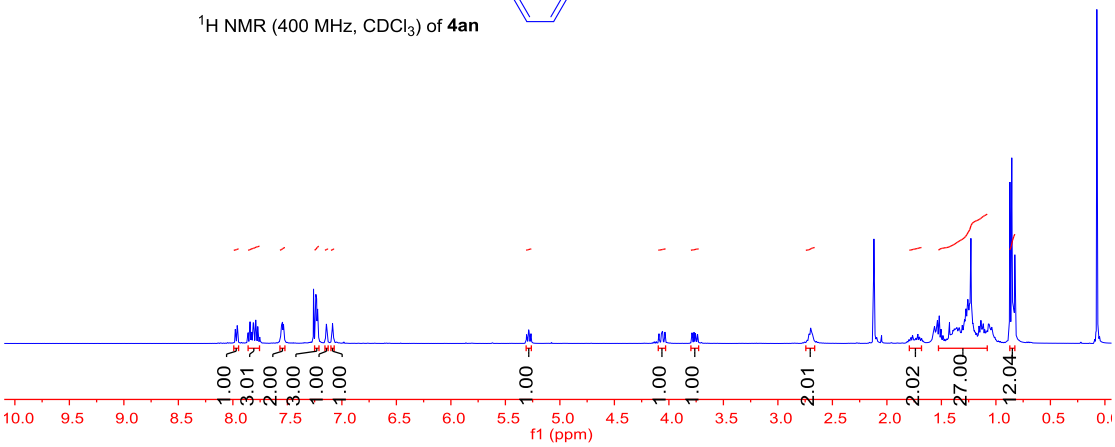
^{13}C NMR (100 MHz, $CDCl_3$) of **4am**

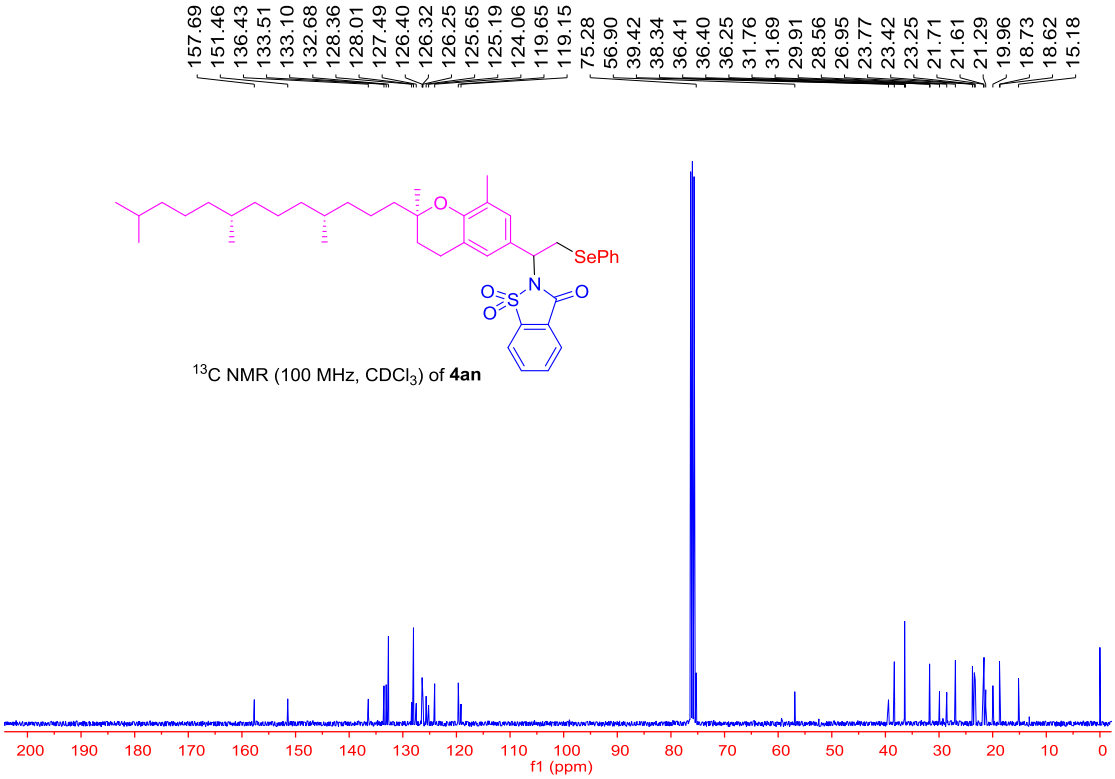




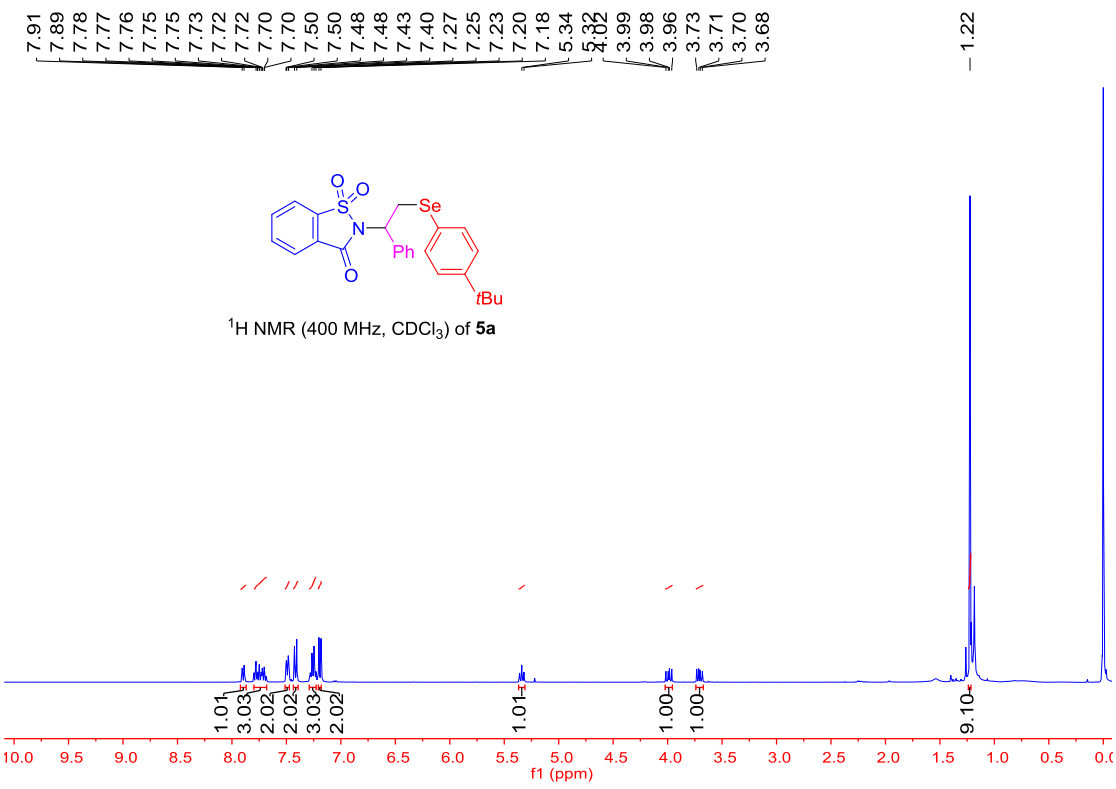


^{1}H NMR (400 MHz, $CDCl_3$) of **4an**

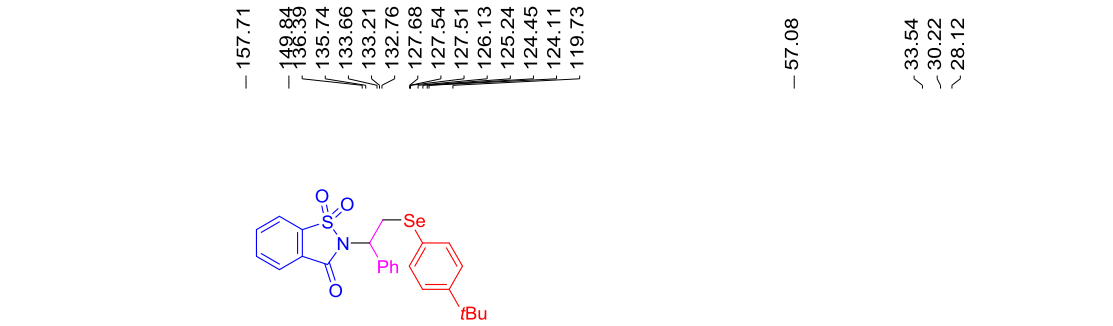




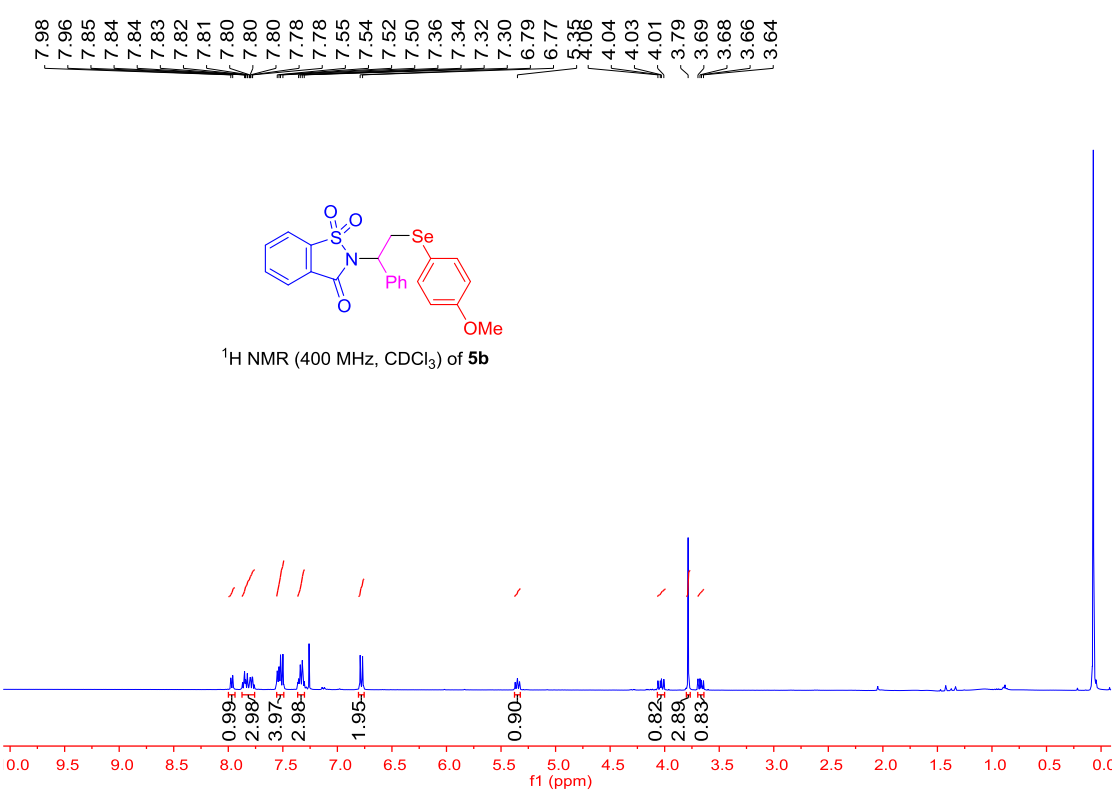
^{13}C NMR (100 MHz, $CDCl_3$) of **4an**



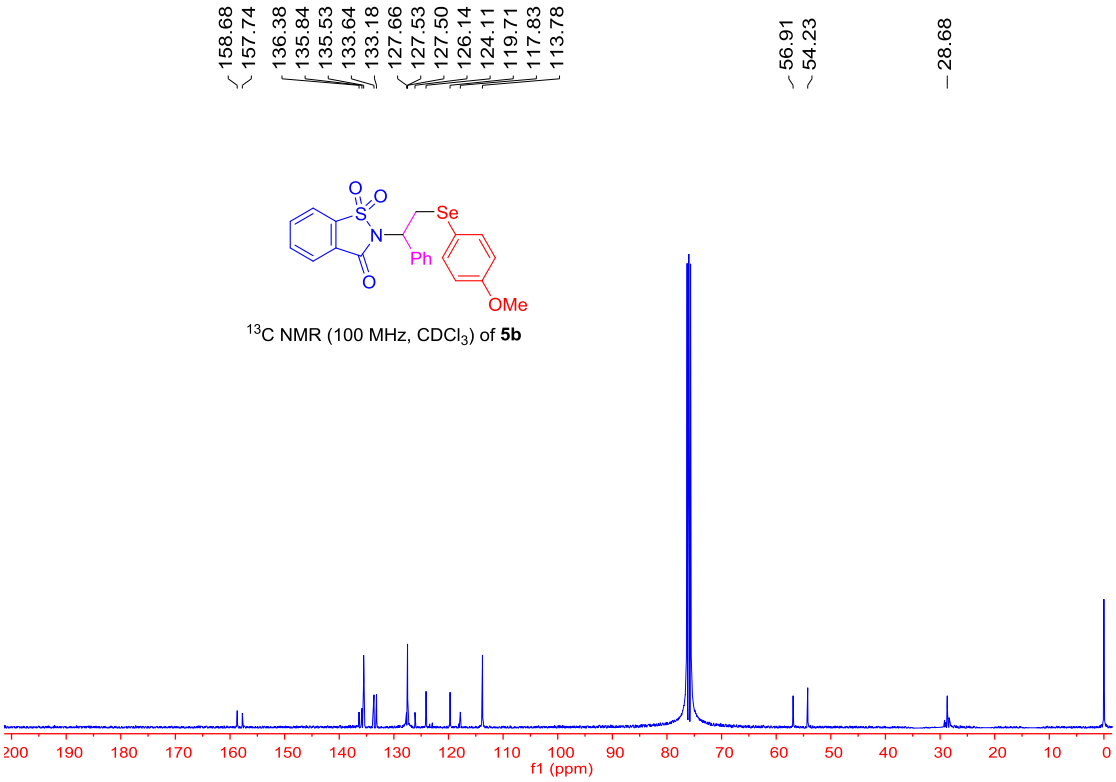
^{1}H NMR (400 MHz, $CDCl_3$) of **5a**



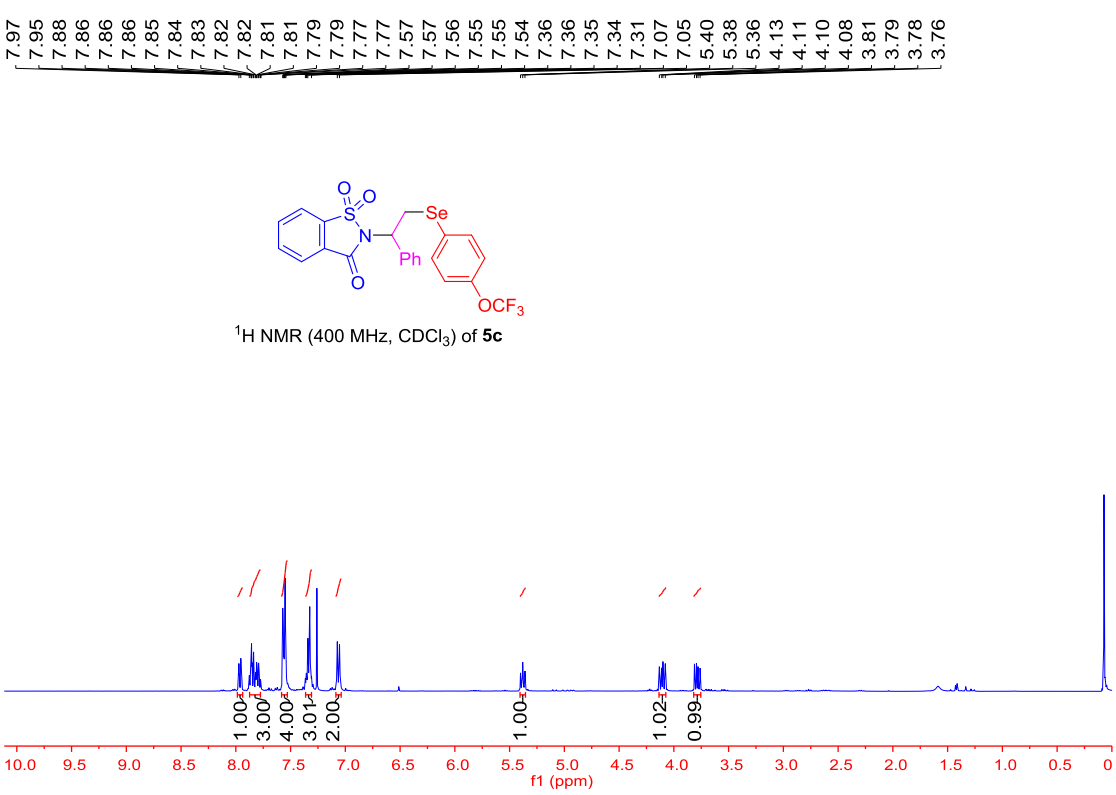
^{13}C NMR (100 MHz, $CDCl_3$) of **5a**



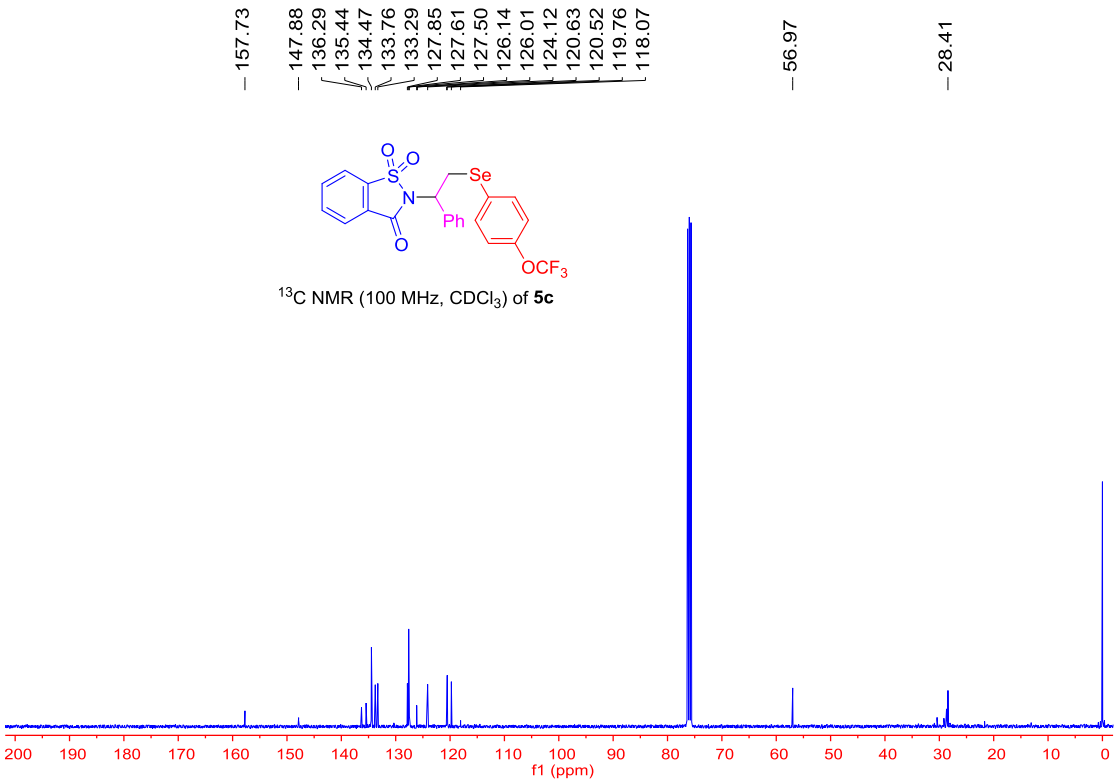
^{1}H NMR (400 MHz, $CDCl_3$) of **5b**



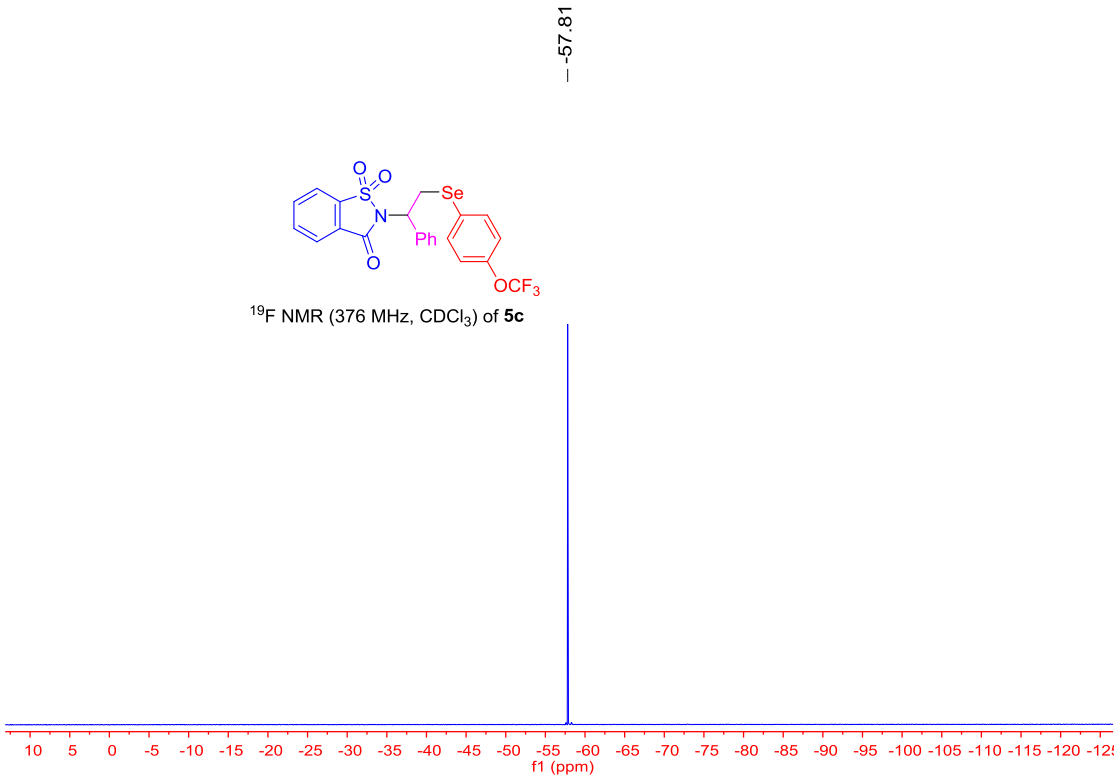
^{13}C NMR (100 MHz, $CDCl_3$) of **5b**



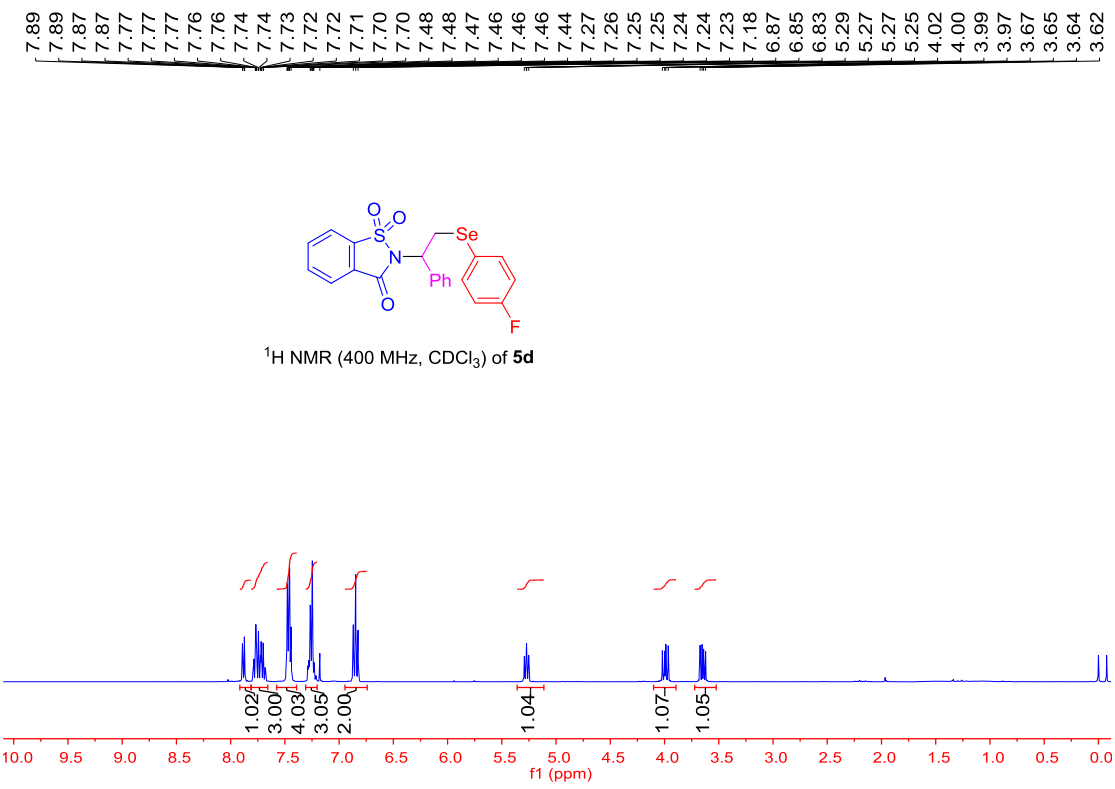
^{1}H NMR (400 MHz, $CDCl_3$) of **5c**



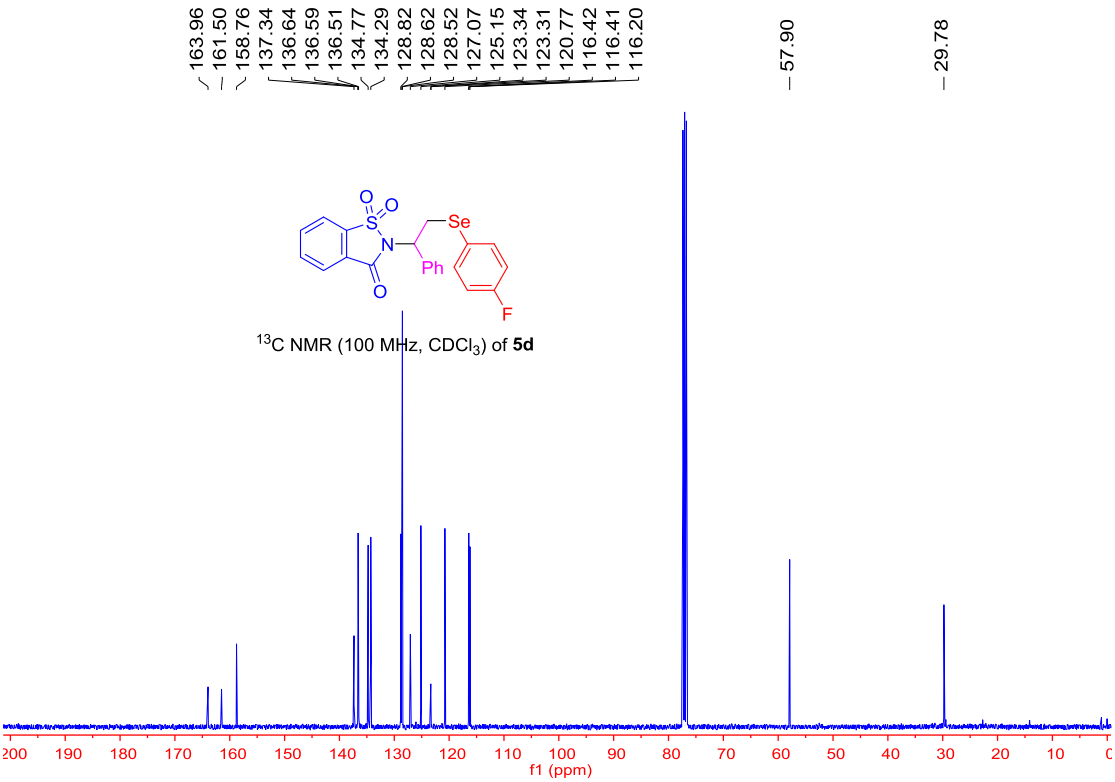
^{13}C NMR (100 MHz, $CDCl_3$) of **5c**



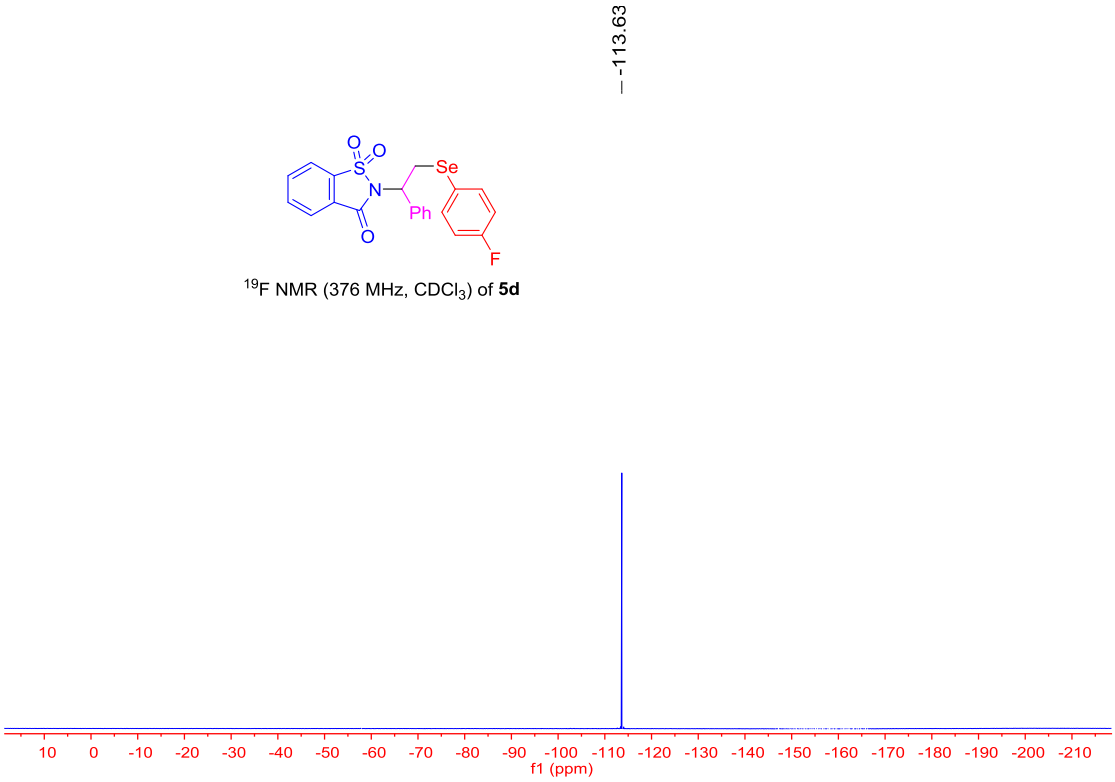
^{19}F NMR (376 MHz, $CDCl_3$) of **5c**



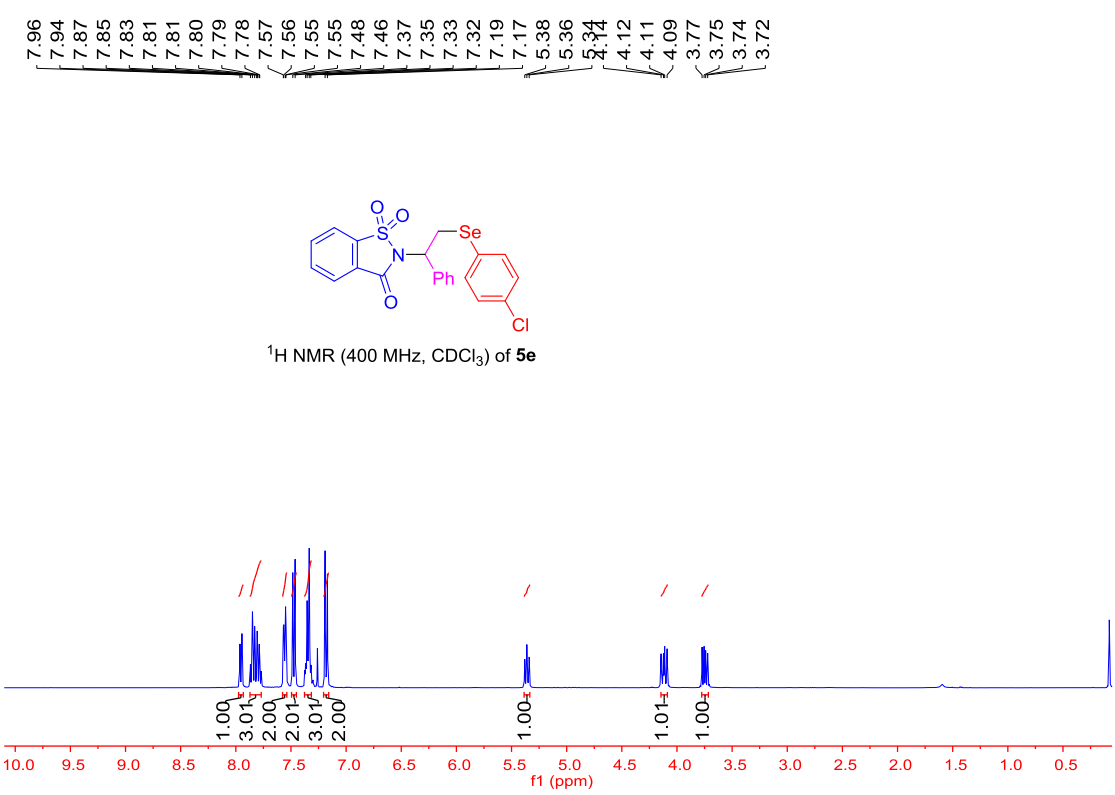
^{1}H NMR (400 MHz, $CDCl_3$) of **5d**



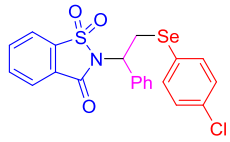
^{13}C NMR (100 MHz, $CDCl_3$) of **5d**



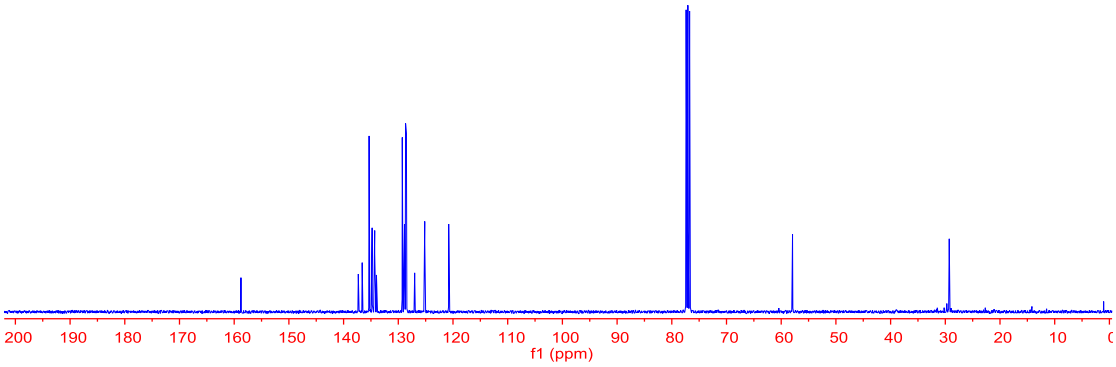
^{19}F NMR (376 MHz, $CDCl_3$) of **5d**

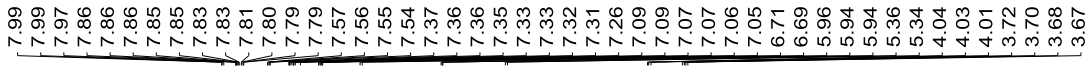


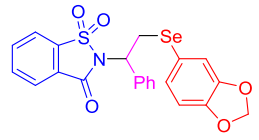
^{1}H NMR (400 MHz, $CDCl_3$) of **5e**



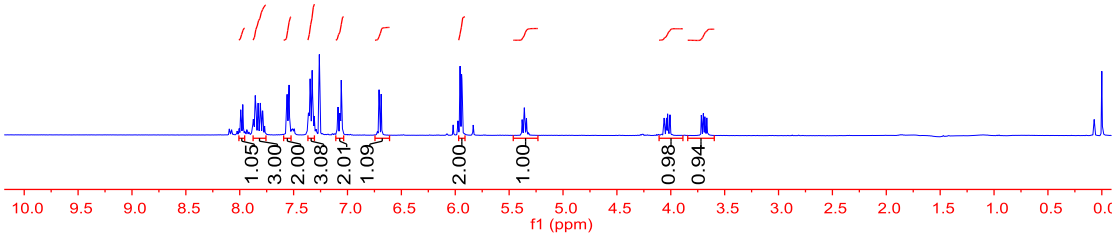
^{13}C NMR (100 MHz, $CDCl_3$) of **5e**

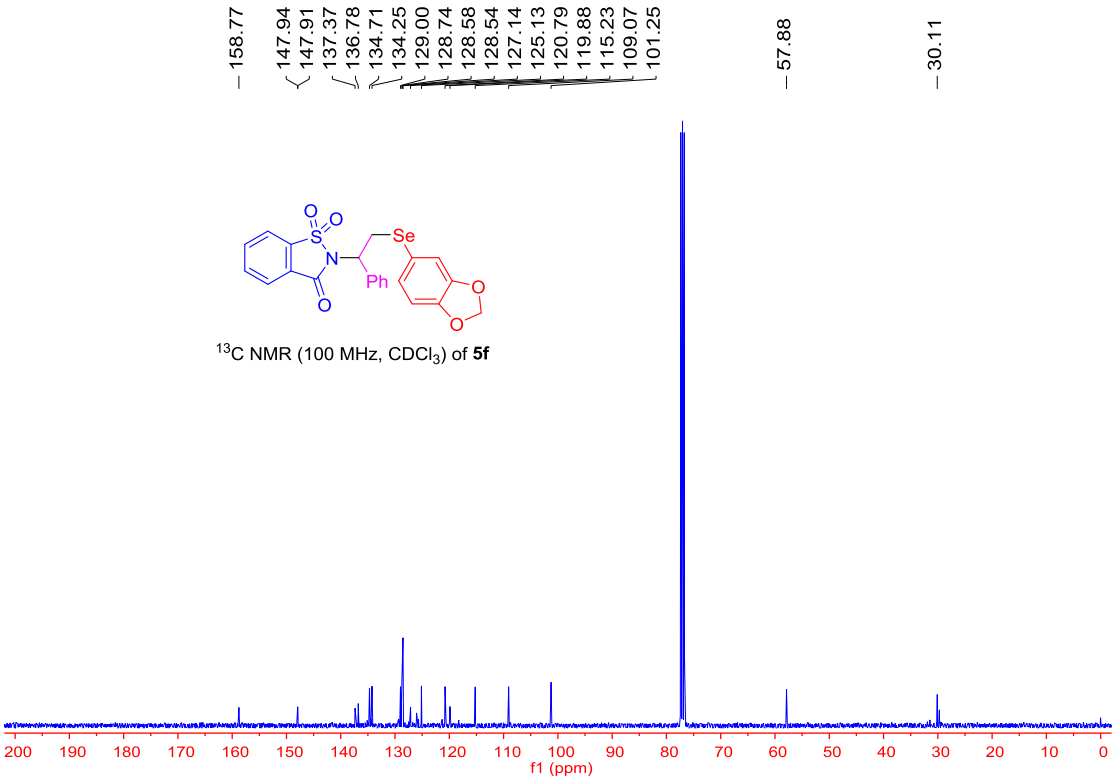




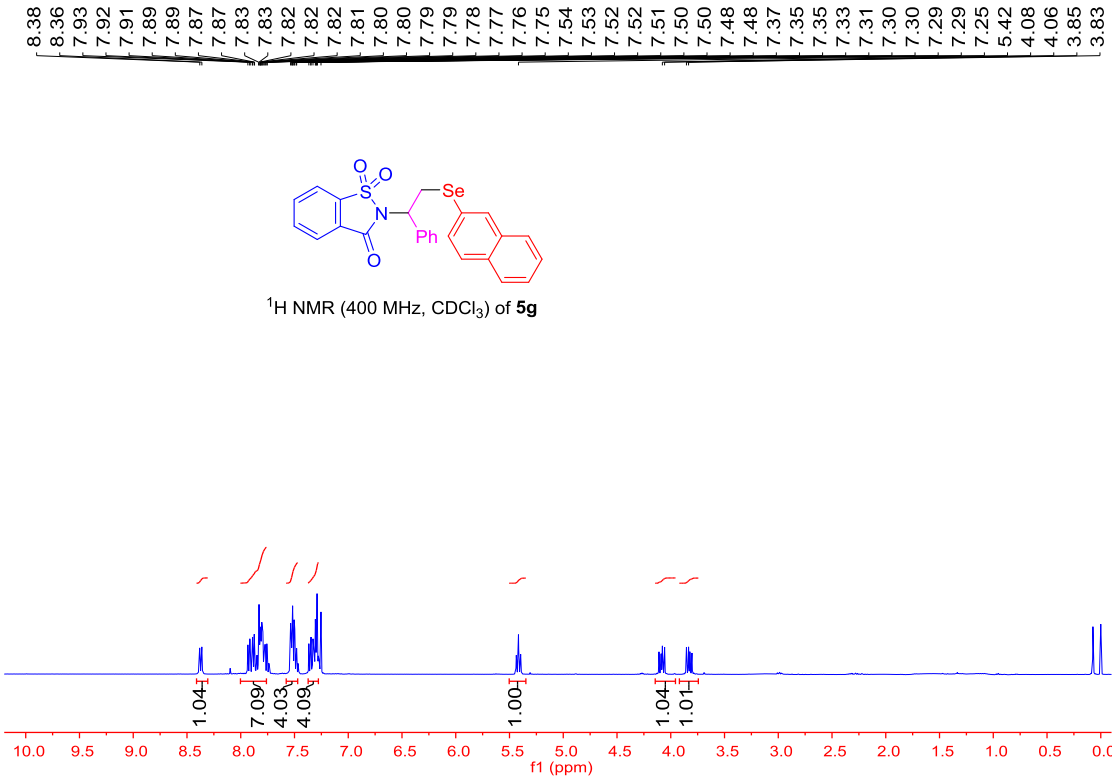


^{1}H NMR (400 MHz, $CDCl_3$) of **5f**

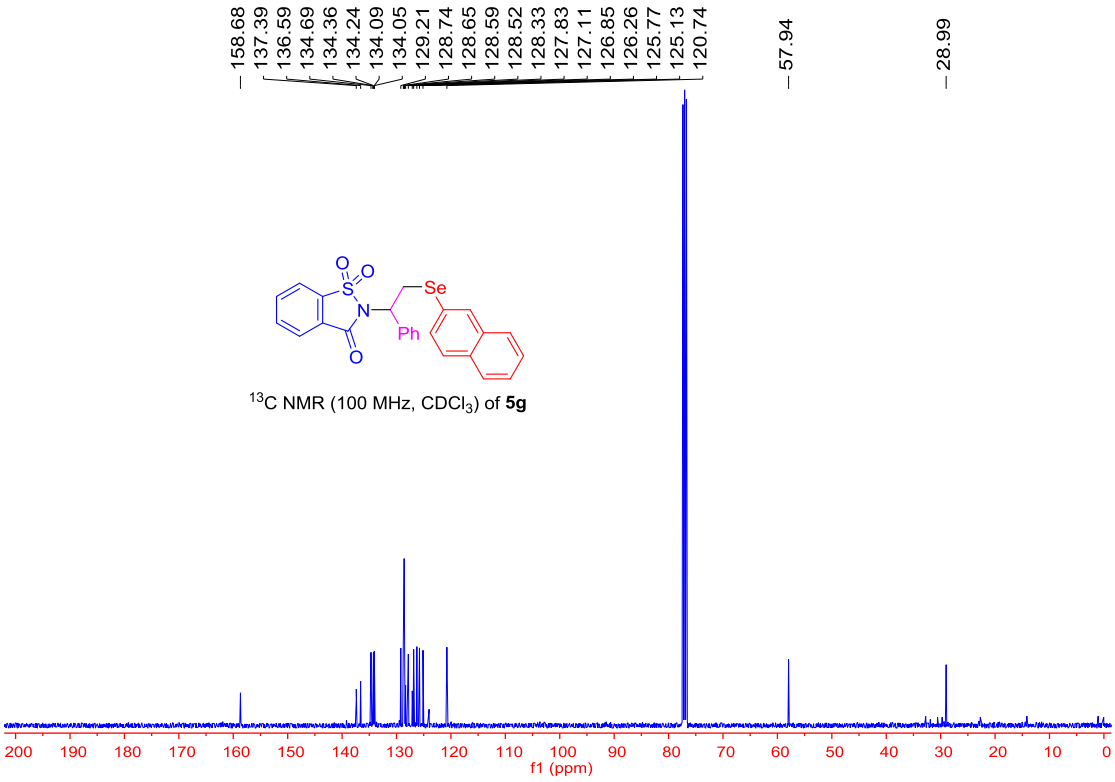




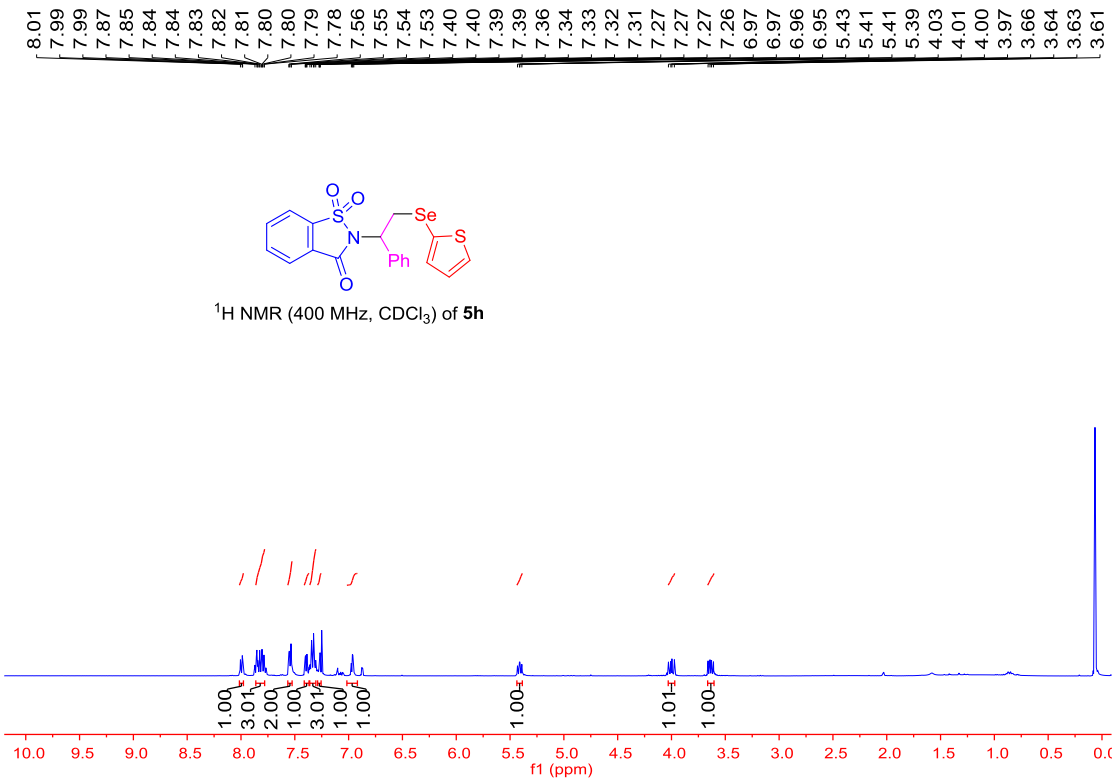
^{13}C NMR (100 MHz, $CDCl_3$) of **5f**



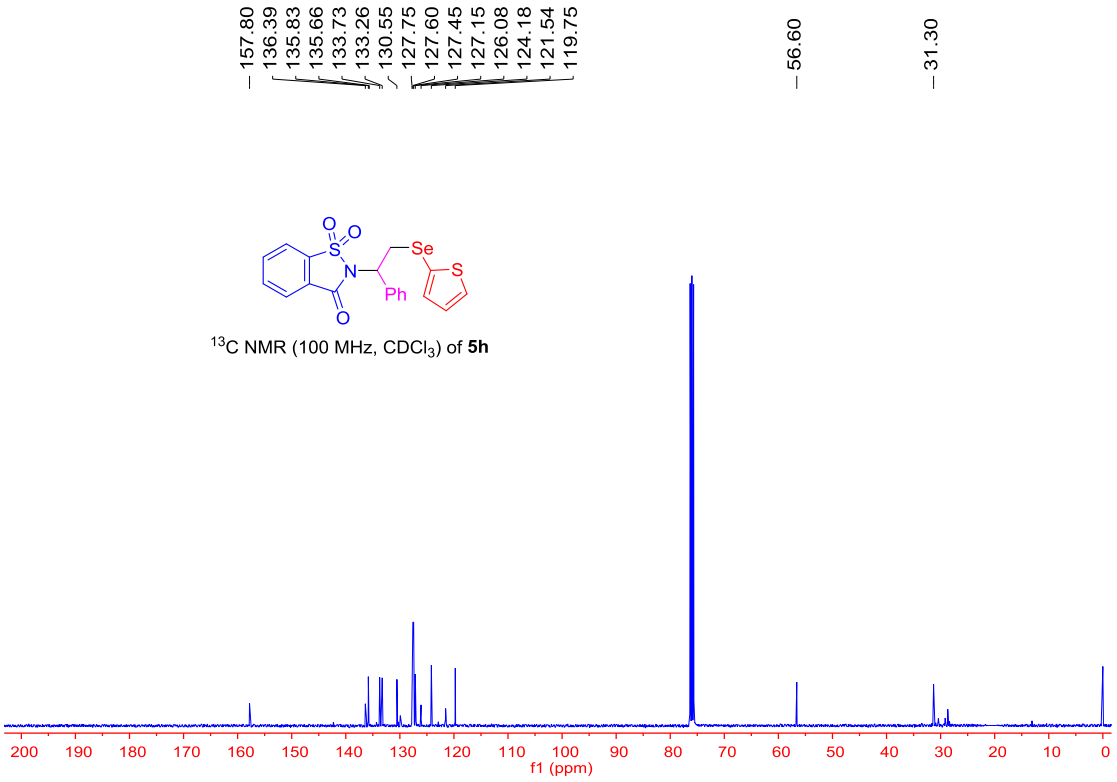
^{1}H NMR (400 MHz, $CDCl_3$) of **5g**



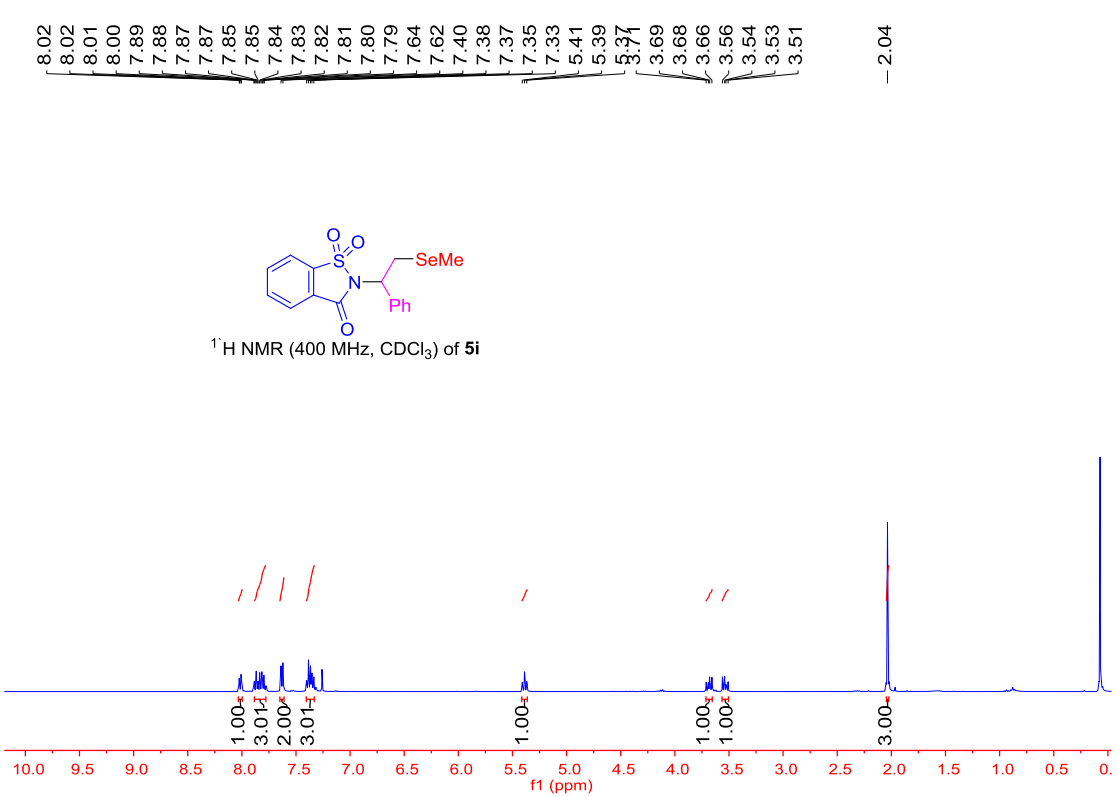
^{13}C NMR (100 MHz, $CDCl_3$) of **5g**



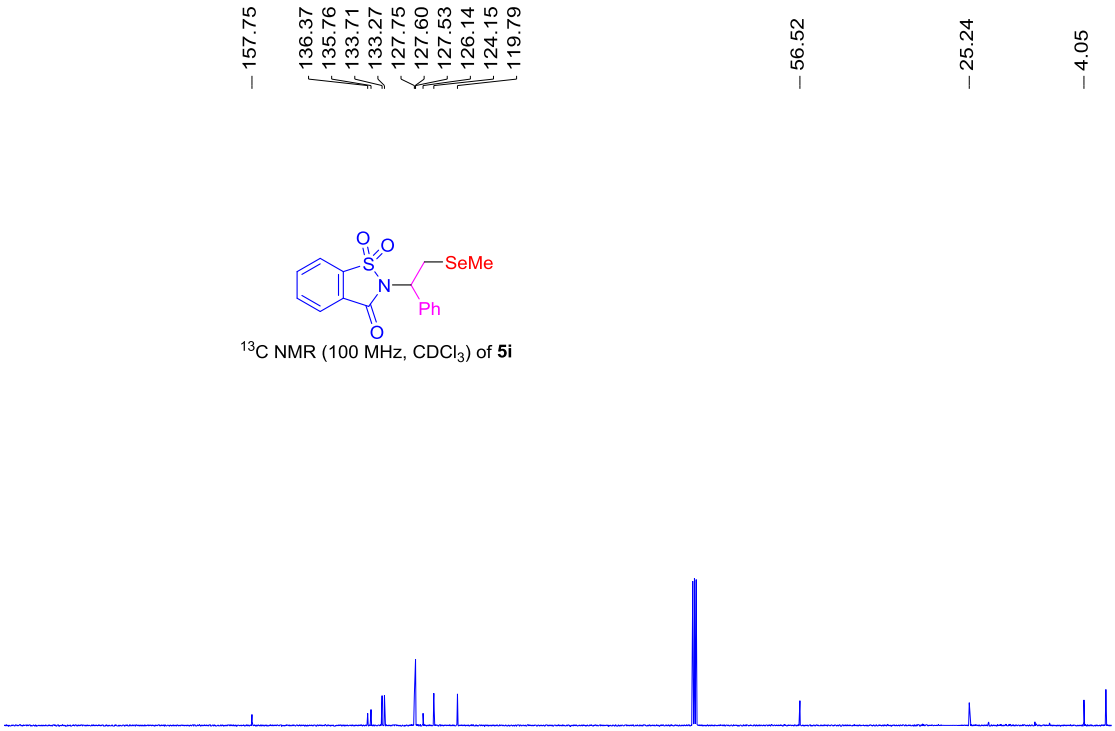
^{1}H NMR (400 MHz, $CDCl_3$) of **5h**



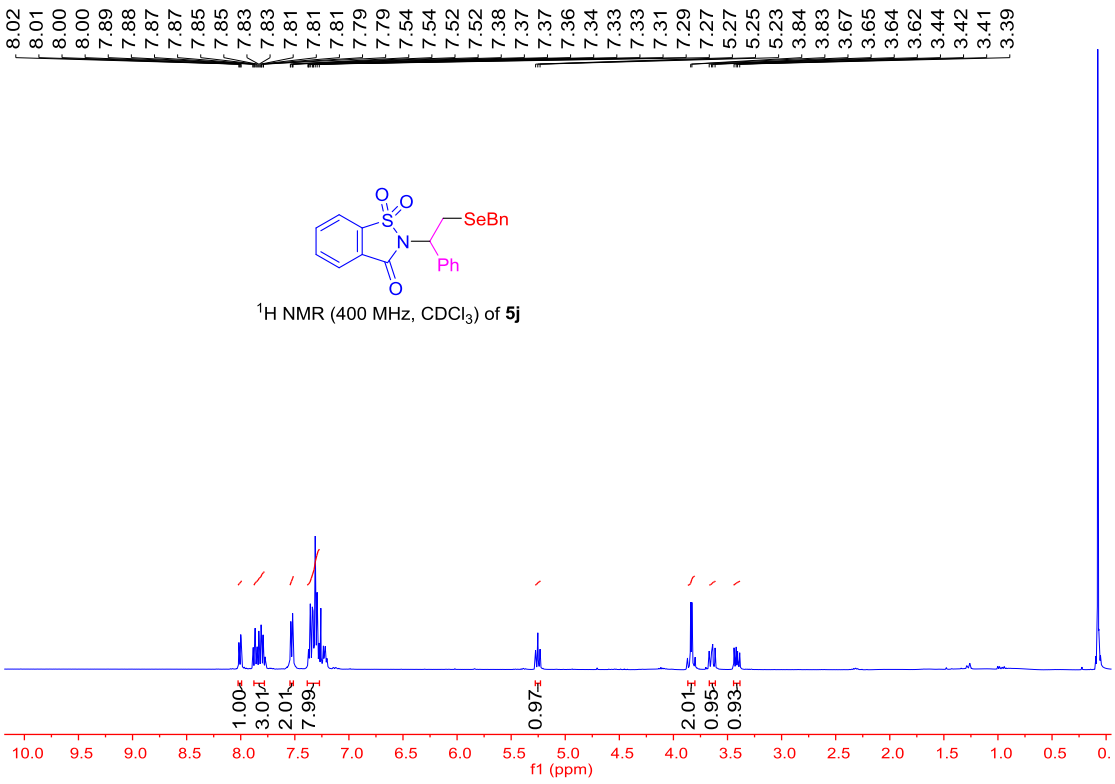
^{13}C NMR (100 MHz, $CDCl_3$) of **5h**



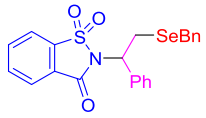
^{1}H NMR (400 MHz, $CDCl_3$) of **5i**



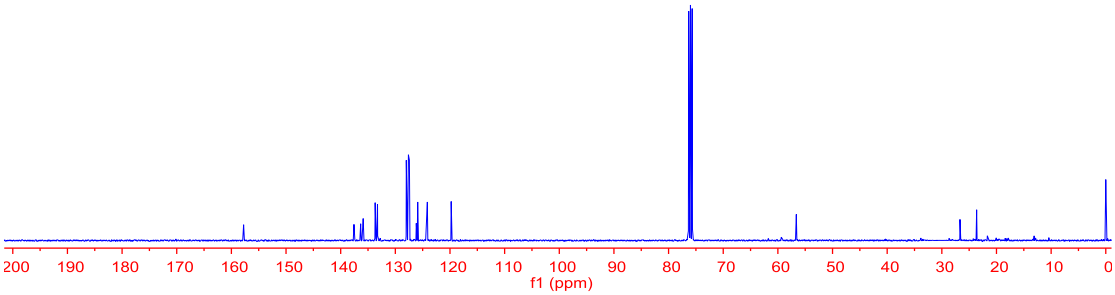
^{13}C NMR (100 MHz, $CDCl_3$) of **5i**

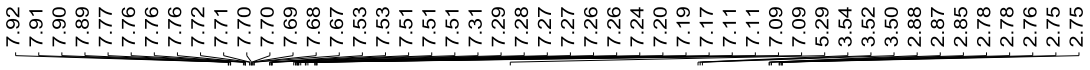


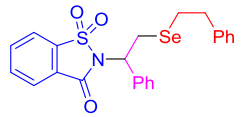
^{1}H NMR (400 MHz, $CDCl_3$) of **5j**



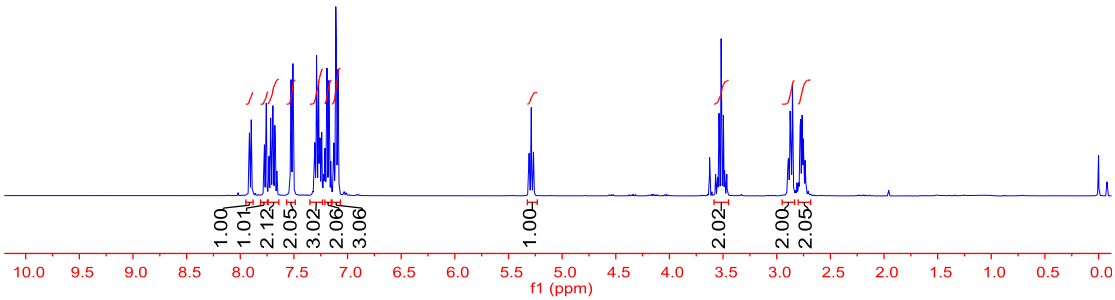
^{13}C NMR (100 MHz, $CDCl_3$) of **5j**

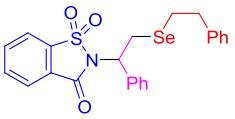




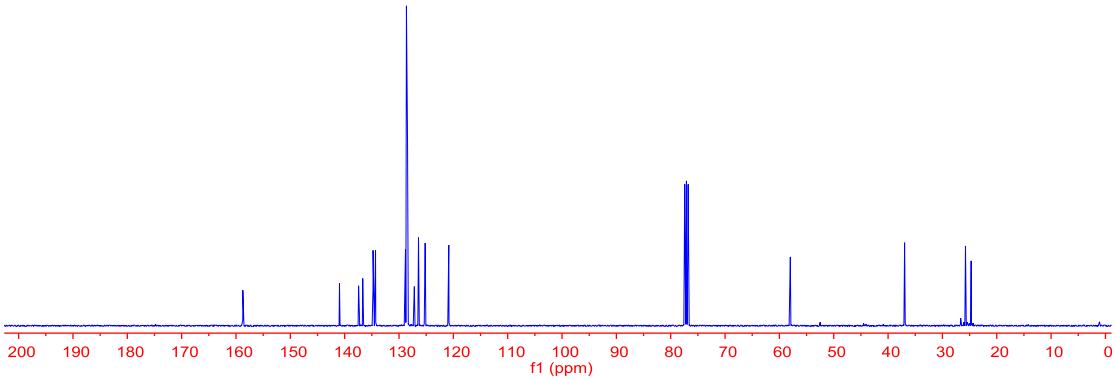


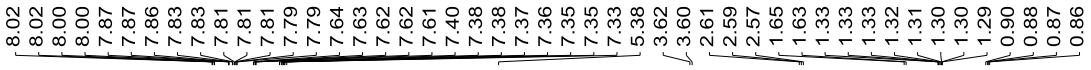
^{1}H NMR (400 MHz, $CDCl_3$) of **5k**

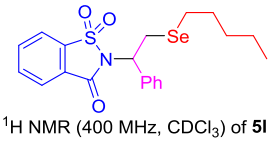




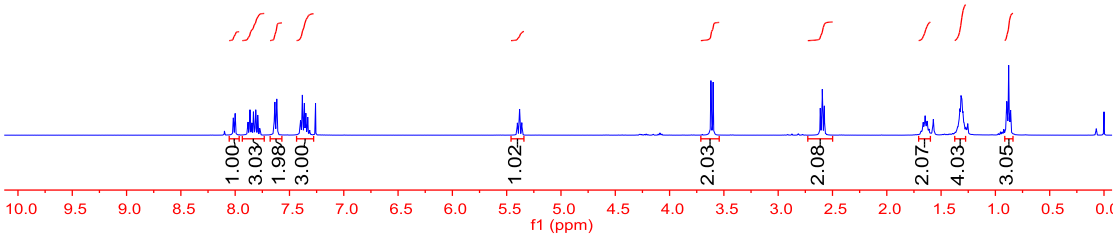
^{13}C NMR (100 MHz, $CDCl_3$) of **5k**

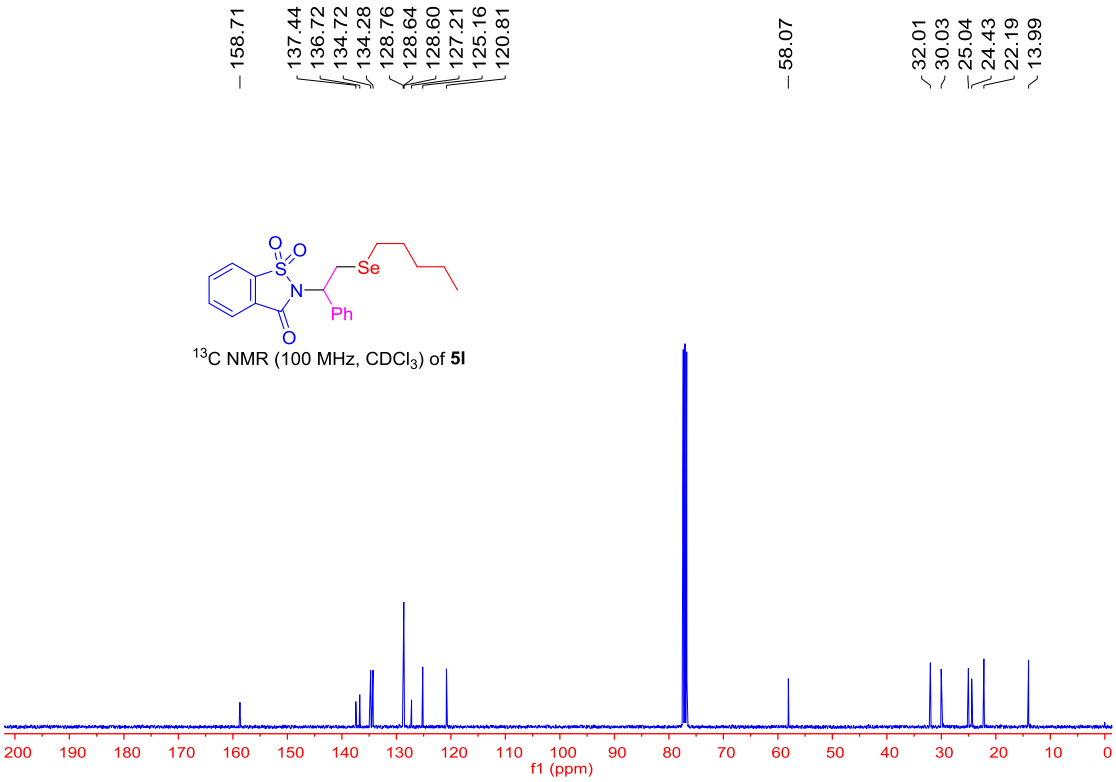




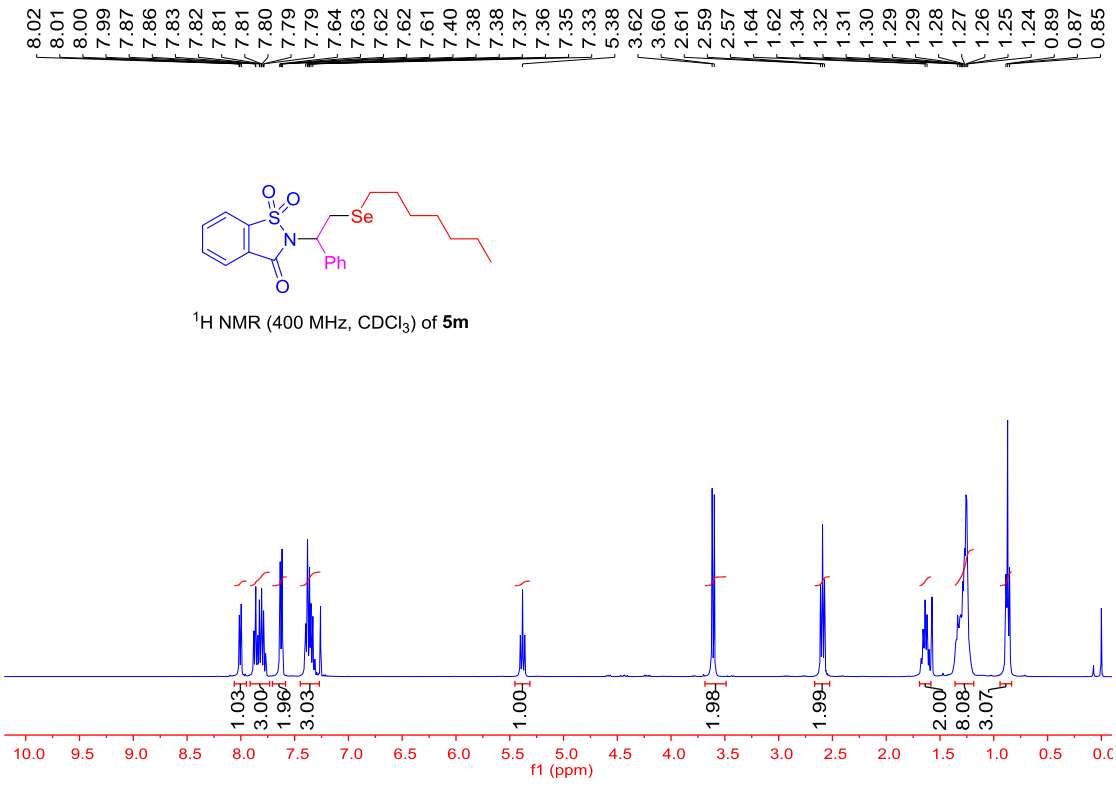


^{1}H NMR (400 MHz, $CDCl_3$) of **5l**

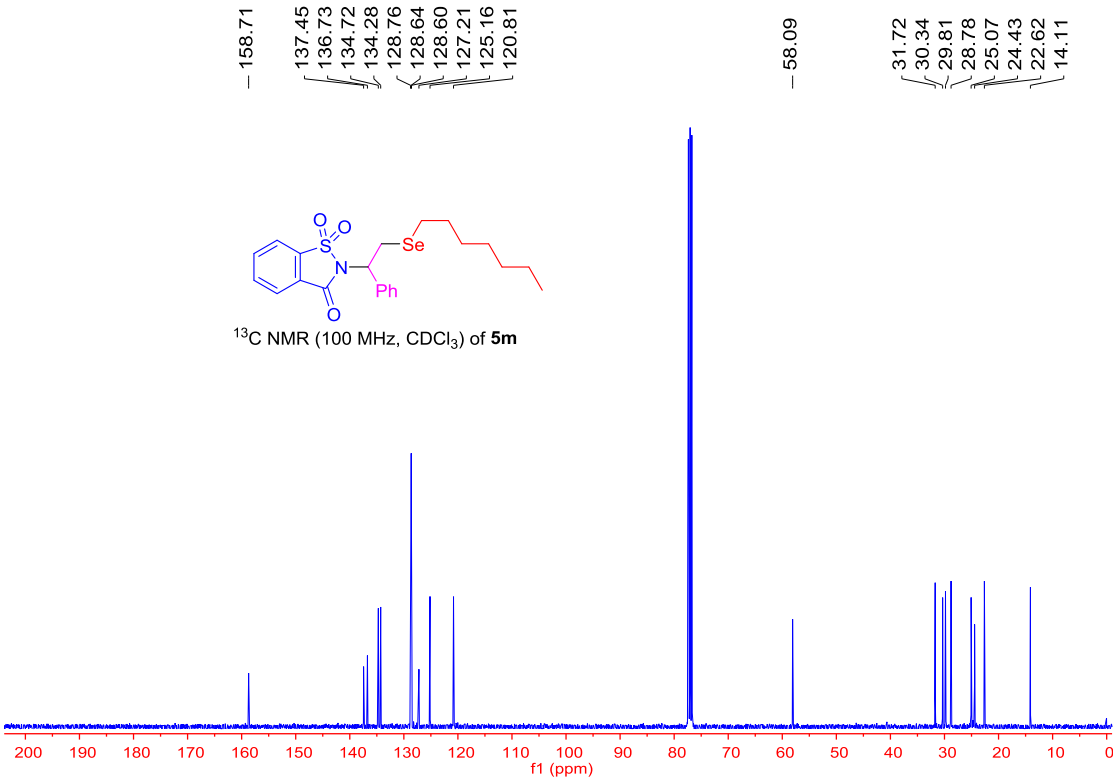




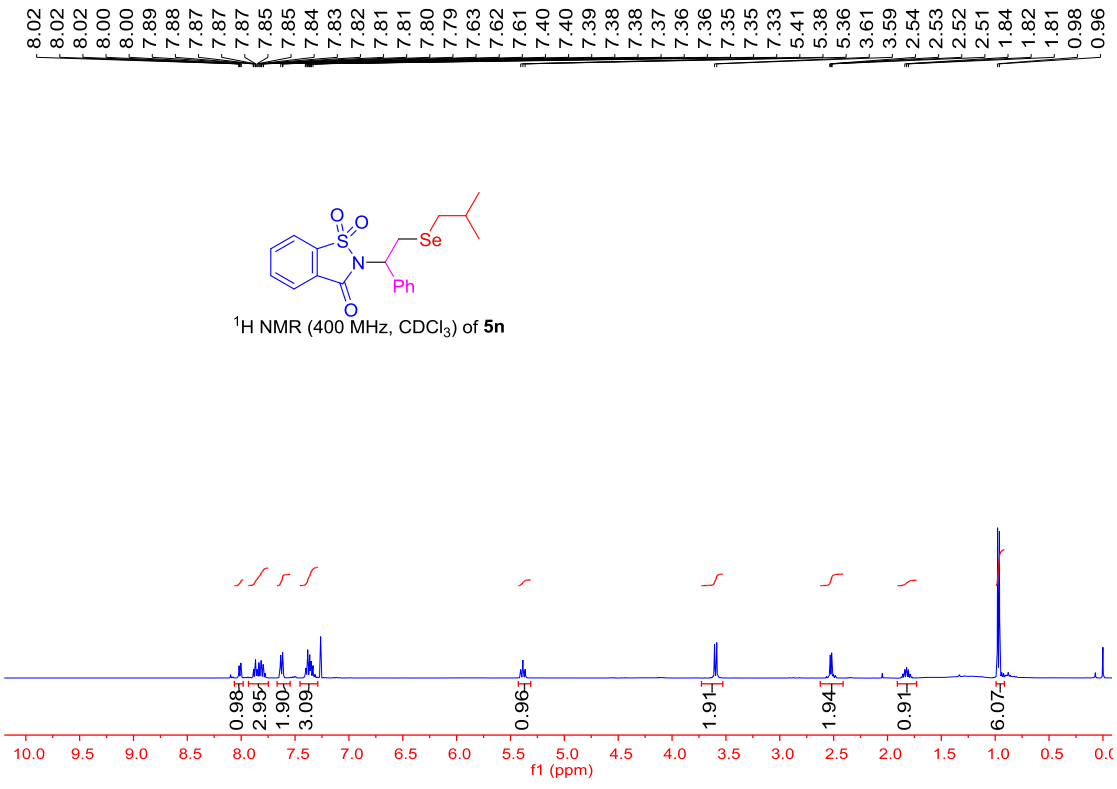
^{13}C NMR (100 MHz, $CDCl_3$) of **5l**



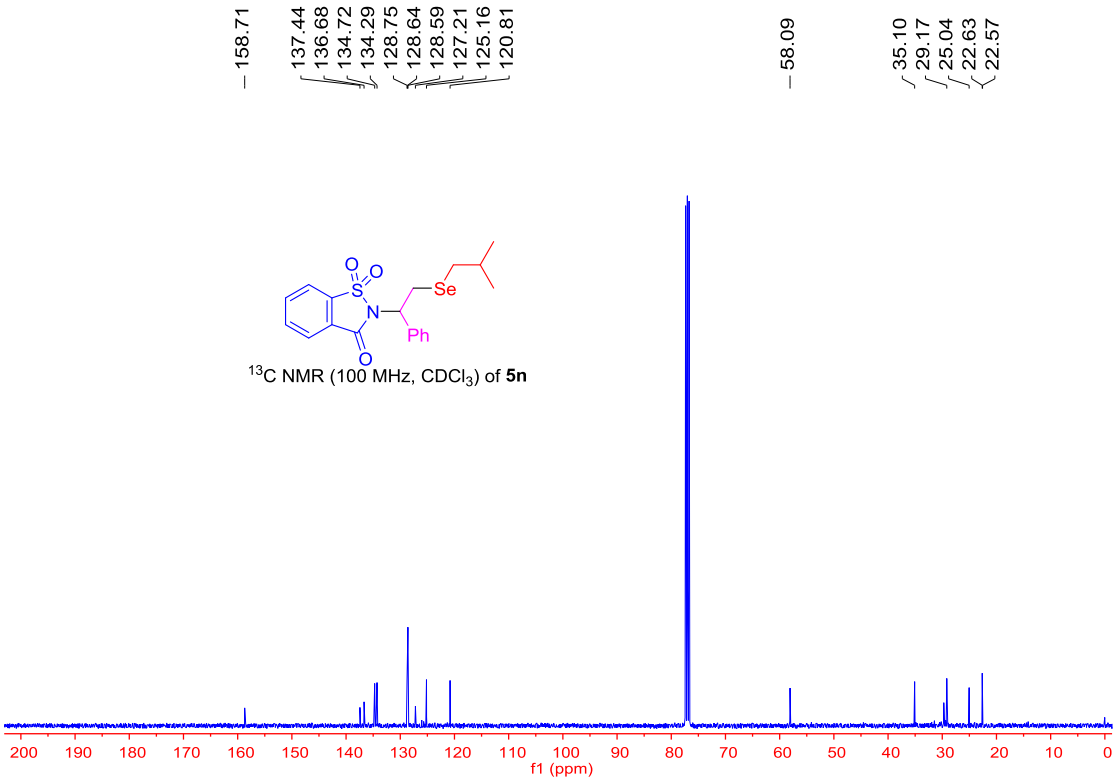
^{1}H NMR (400 MHz, $CDCl_3$) of **5m**



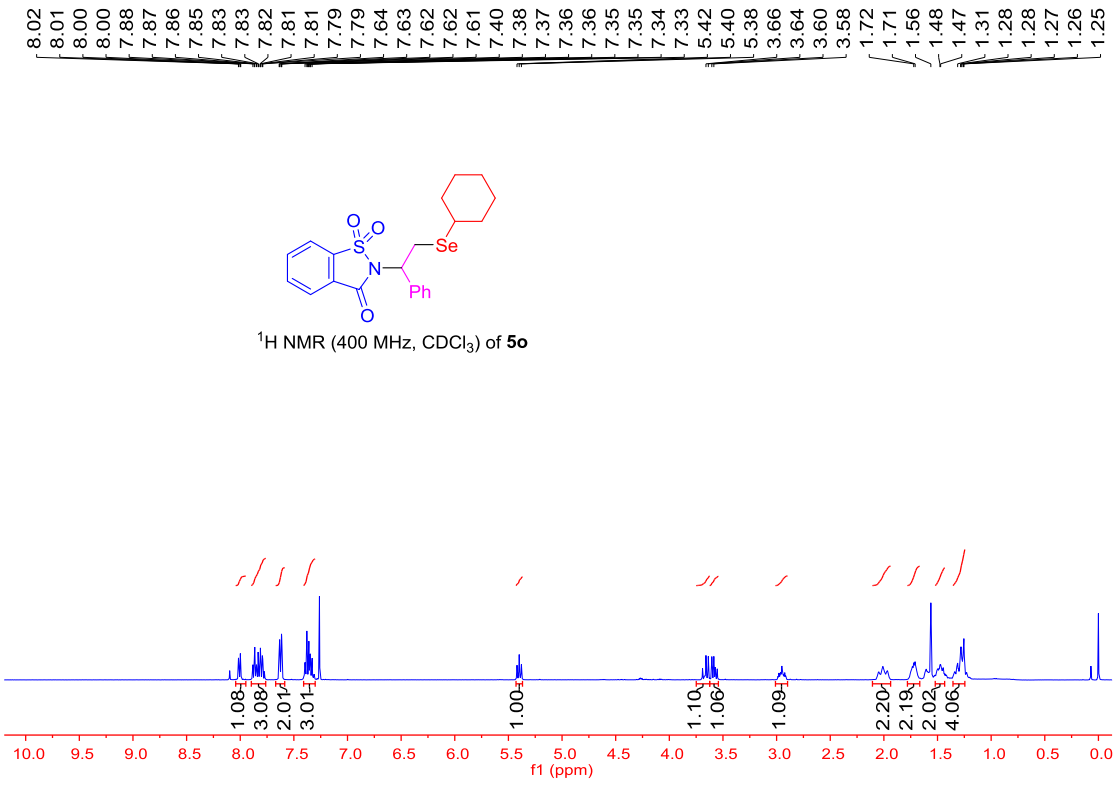
^{13}C NMR (100 MHz, $CDCl_3$) of **5m**



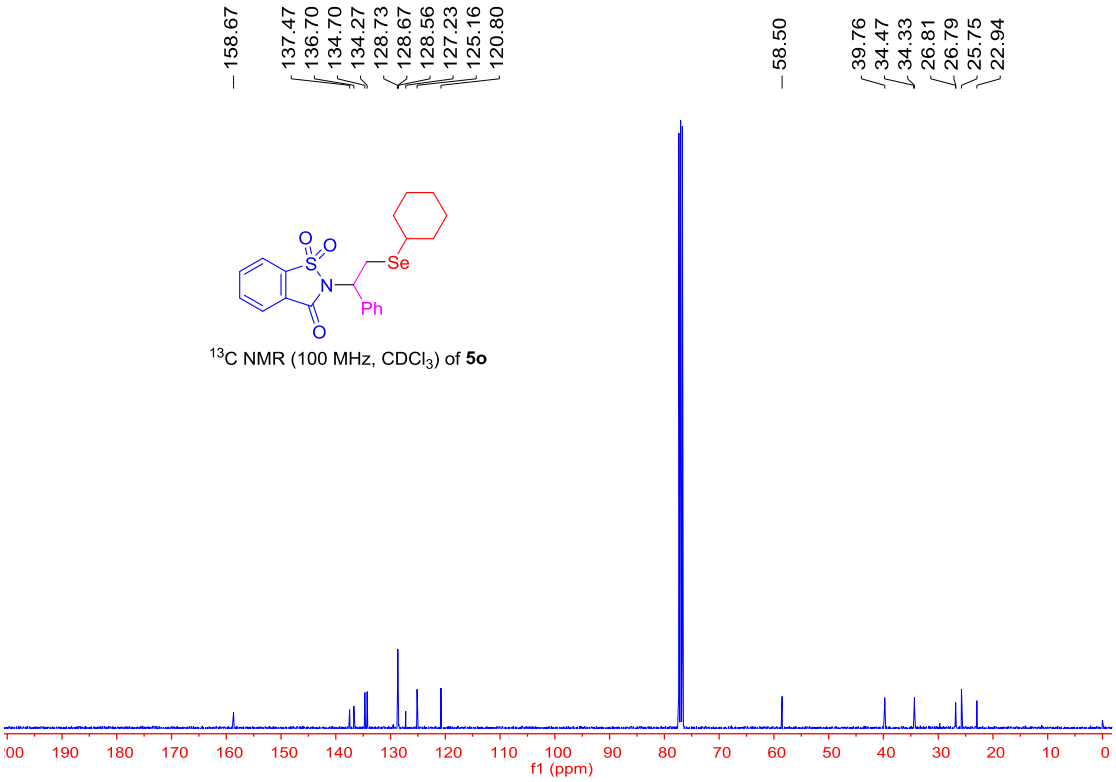
^{1}H NMR (400 MHz, $CDCl_3$) of **5n**



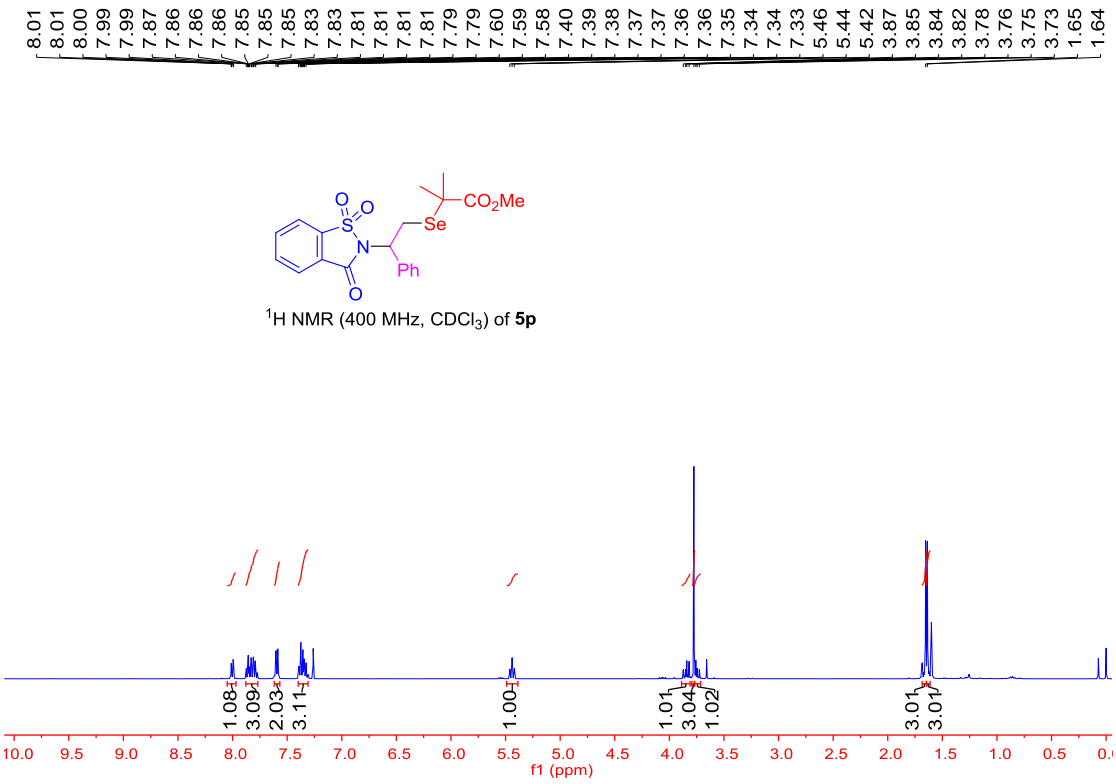
^{13}C NMR (100 MHz, $CDCl_3$) of **5n**



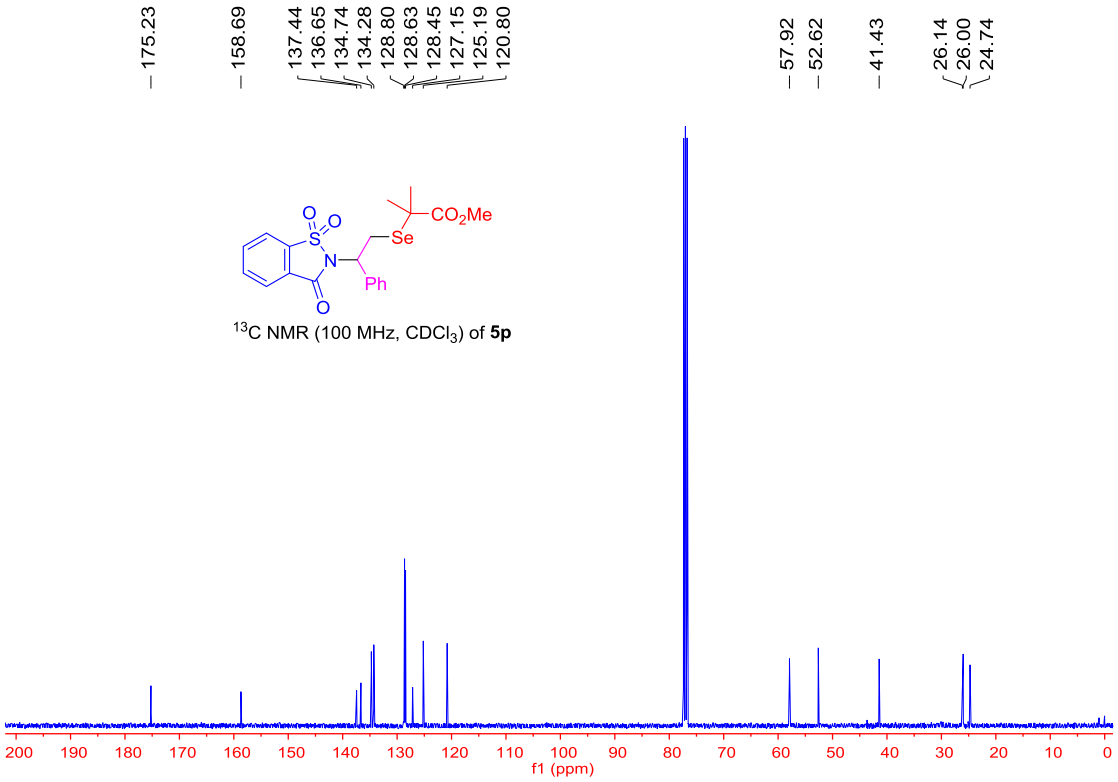
^{1}H NMR (400 MHz, $CDCl_3$) of **5o**



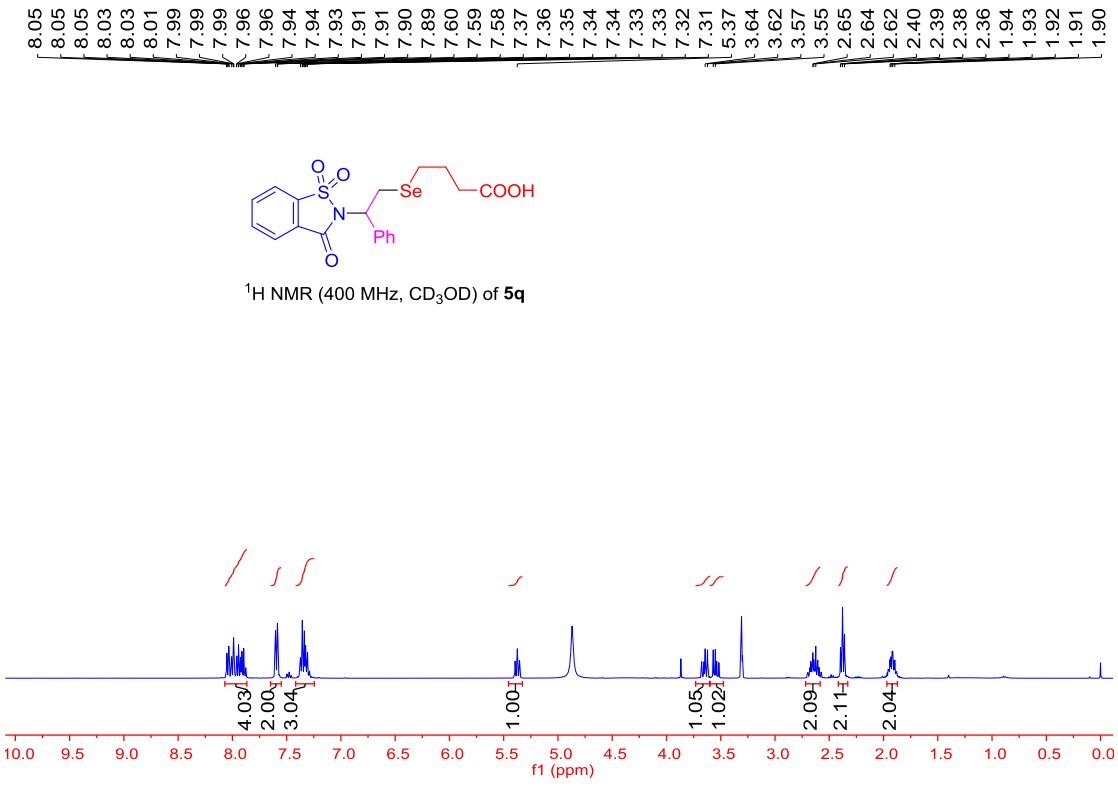
^{13}C NMR (100 MHz, $CDCl_3$) of **5o**



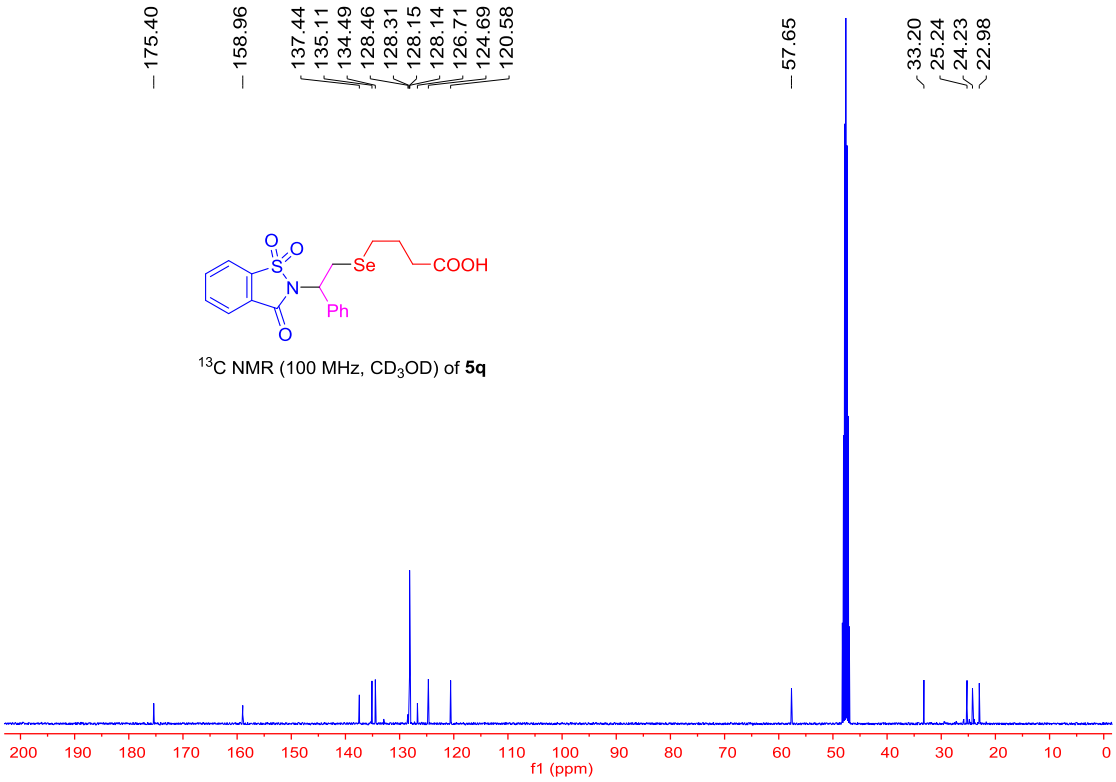
^{1}H NMR (400 MHz, $CDCl_3$) of **5p**



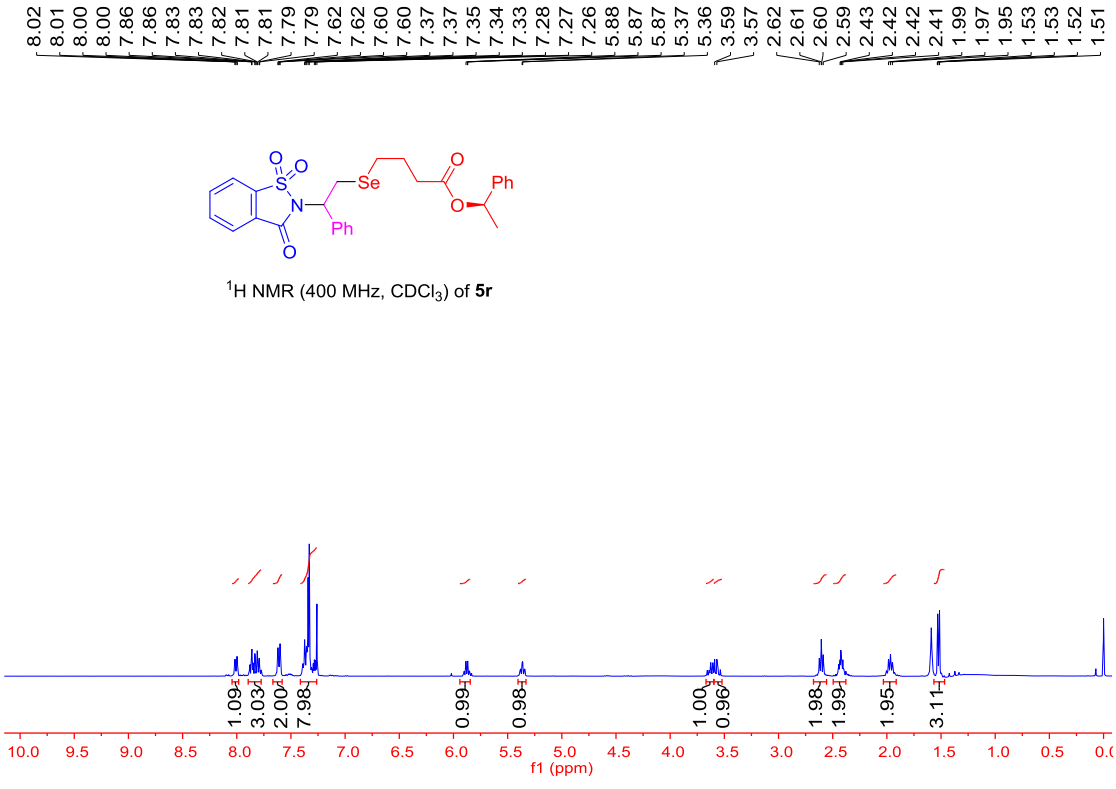
^{13}C NMR (100 MHz, $CDCl_3$) of **5p**



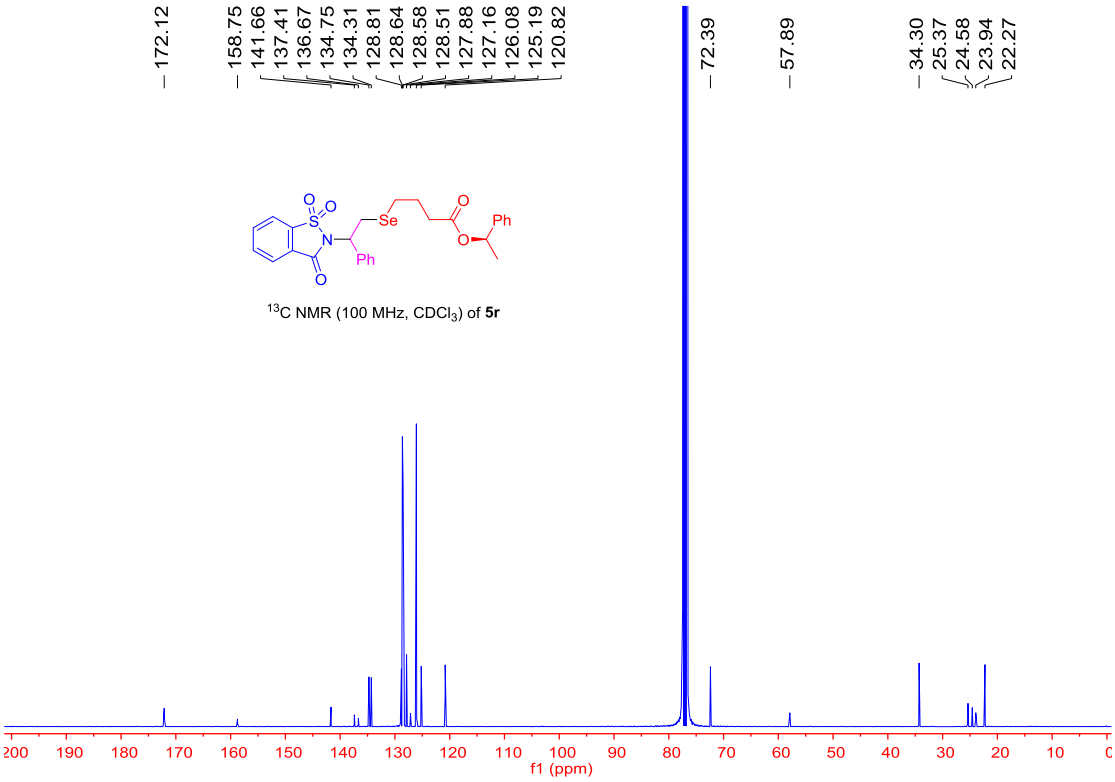
^{1}H NMR (400 MHz, CD_3OD) of **5q**



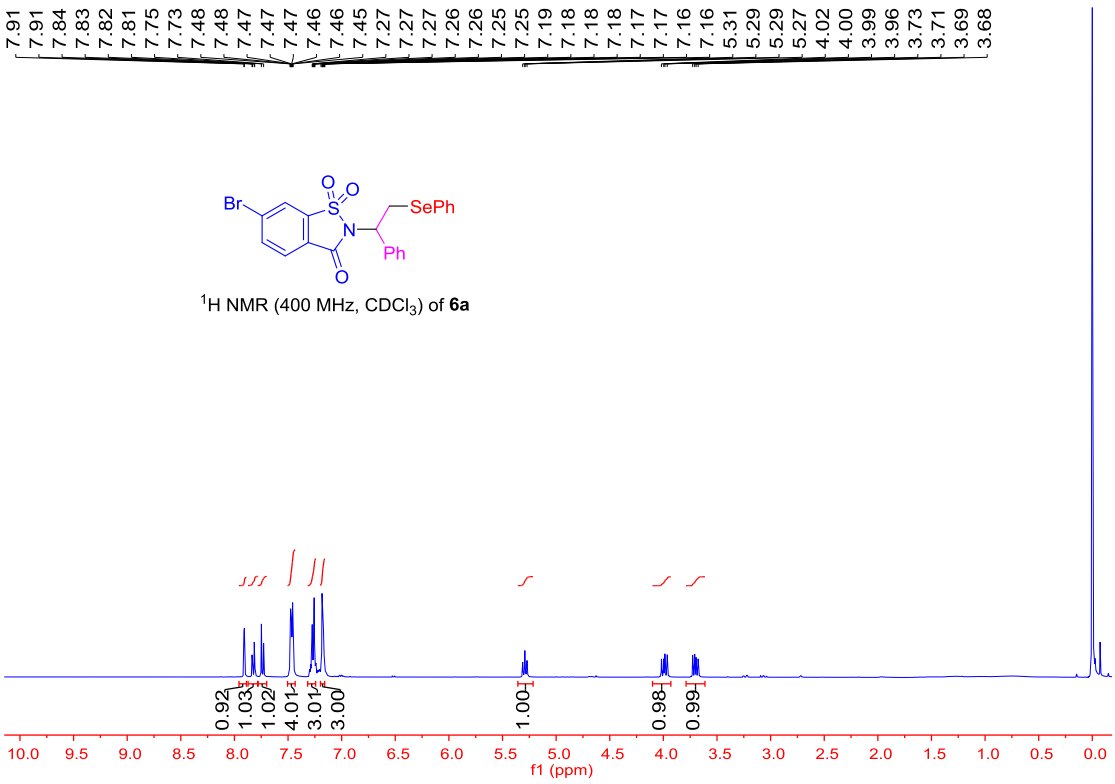
^{13}C NMR (100 MHz, CD_3OD) of **5q**



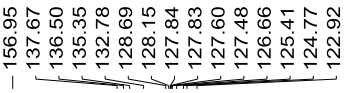
^{1}H NMR (400 MHz, $CDCl_3$) of **5r**

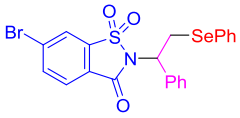


^{13}C NMR (100 MHz, $CDCl_3$) of **5r**

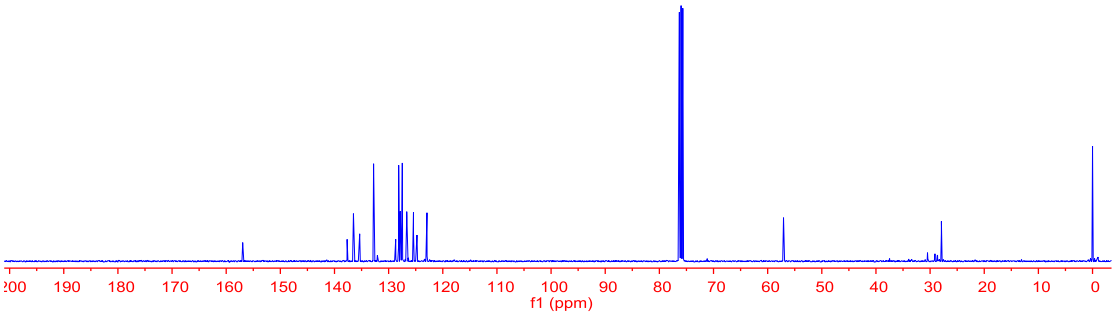


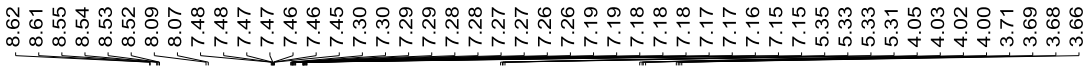
^{1}H NMR (400 MHz, $CDCl_3$) of **6a**

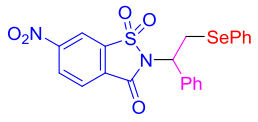




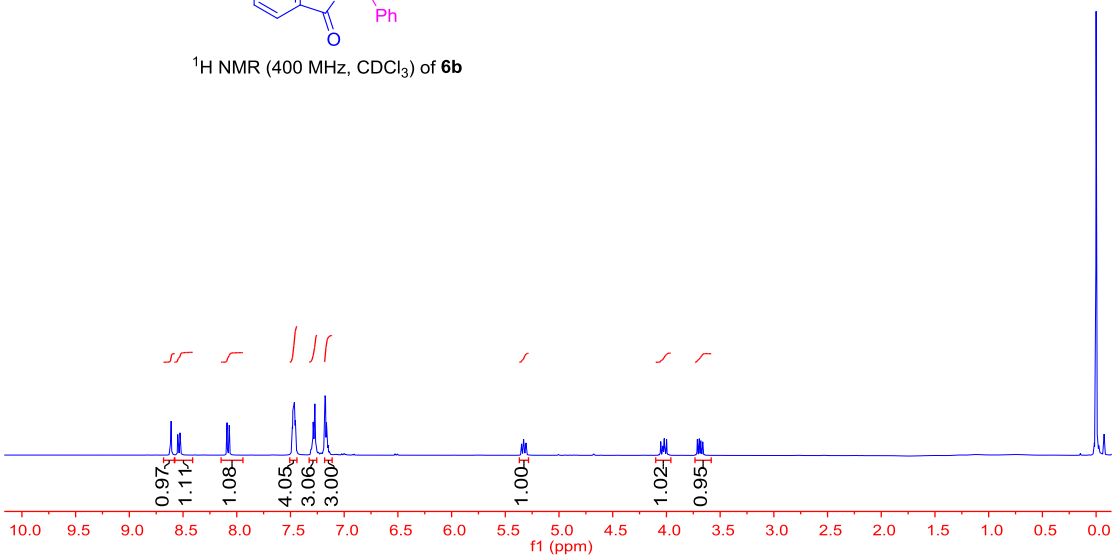
^{13}C NMR (100 MHz, $CDCl_3$) of **6a**

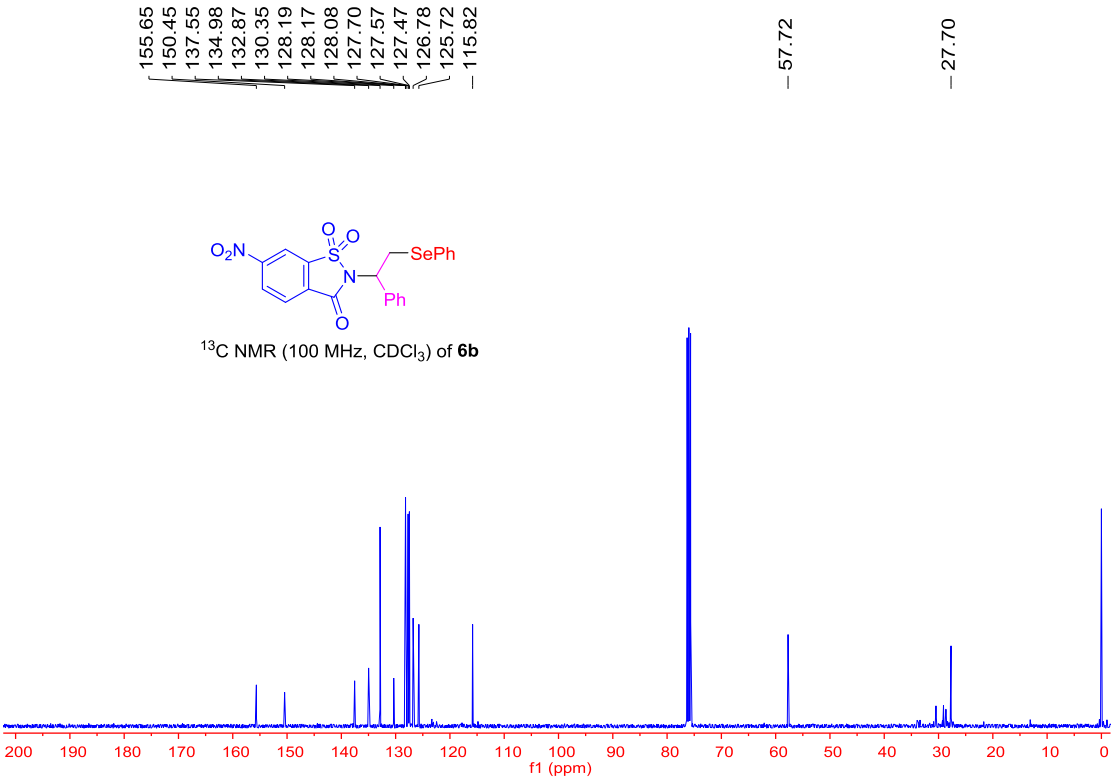




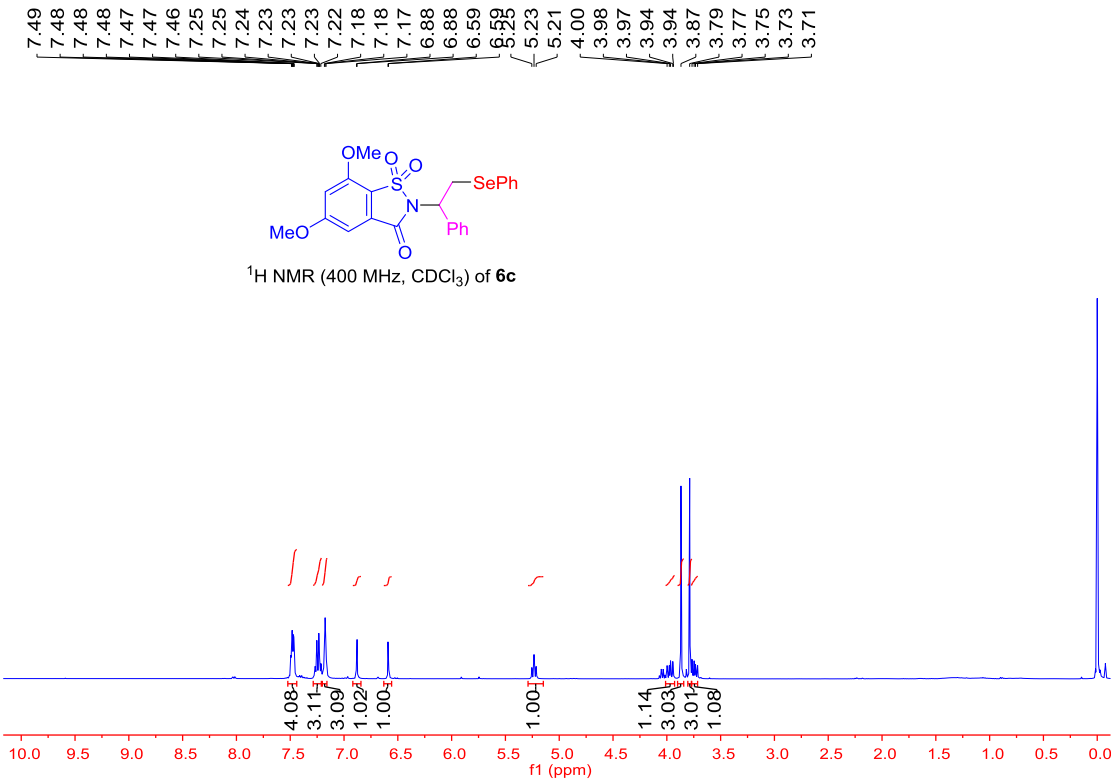


^{1}H NMR (400 MHz, $CDCl_3$) of **6b**

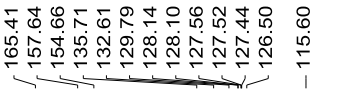


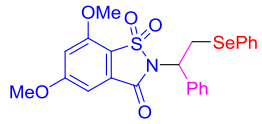


^{13}C NMR (100 MHz, $CDCl_3$) of **6b**

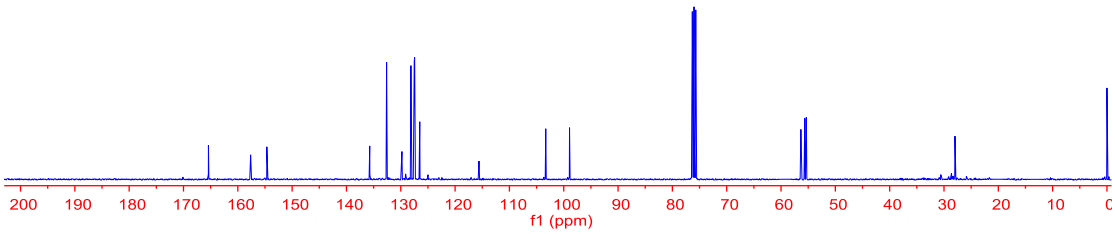


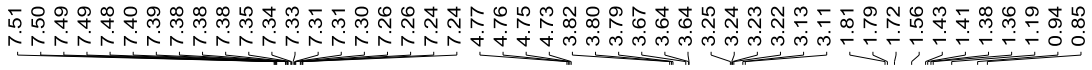
^{1}H NMR (400 MHz, $CDCl_3$) of **6c**

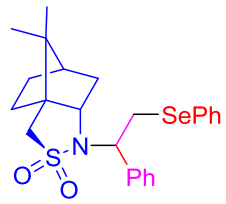




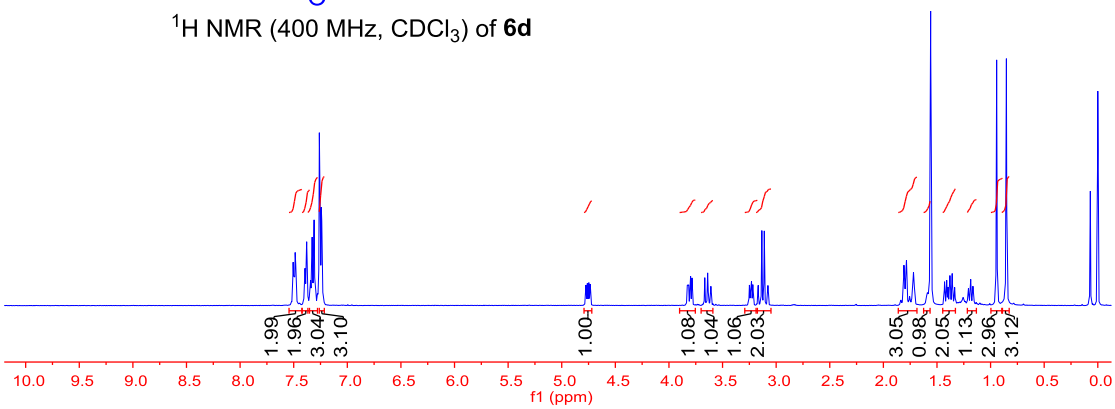
^{13}C NMR (100 MHz, $CDCl_3$) of **6c**

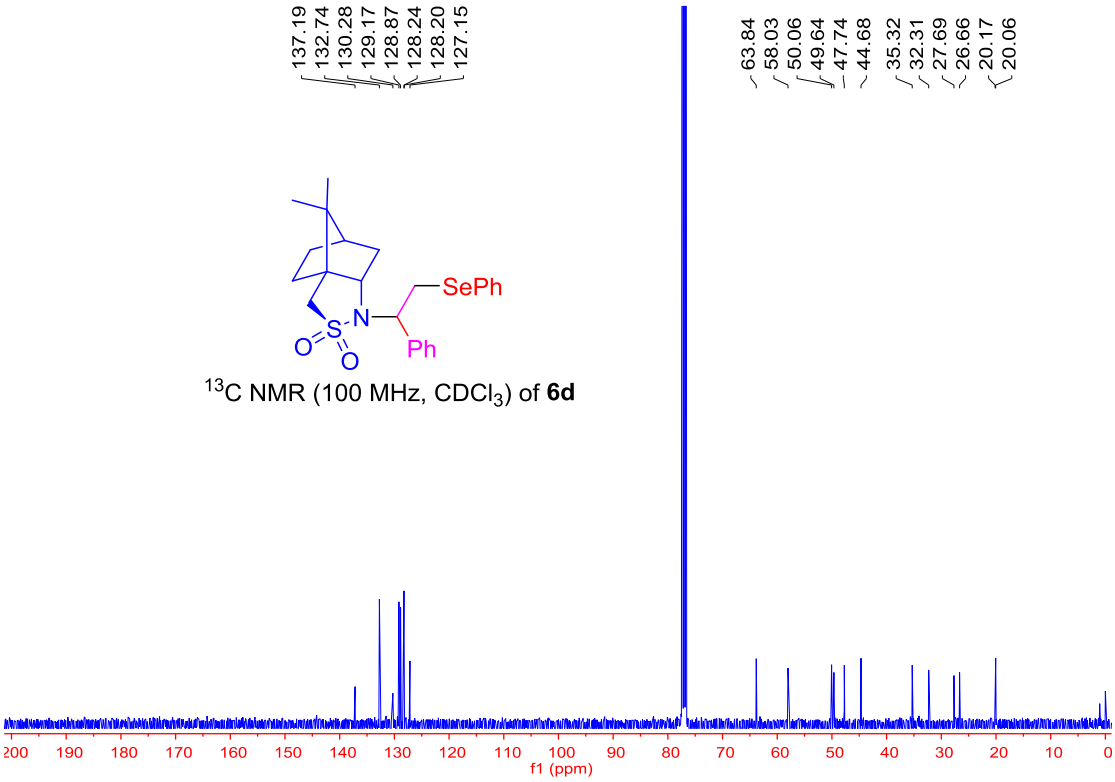




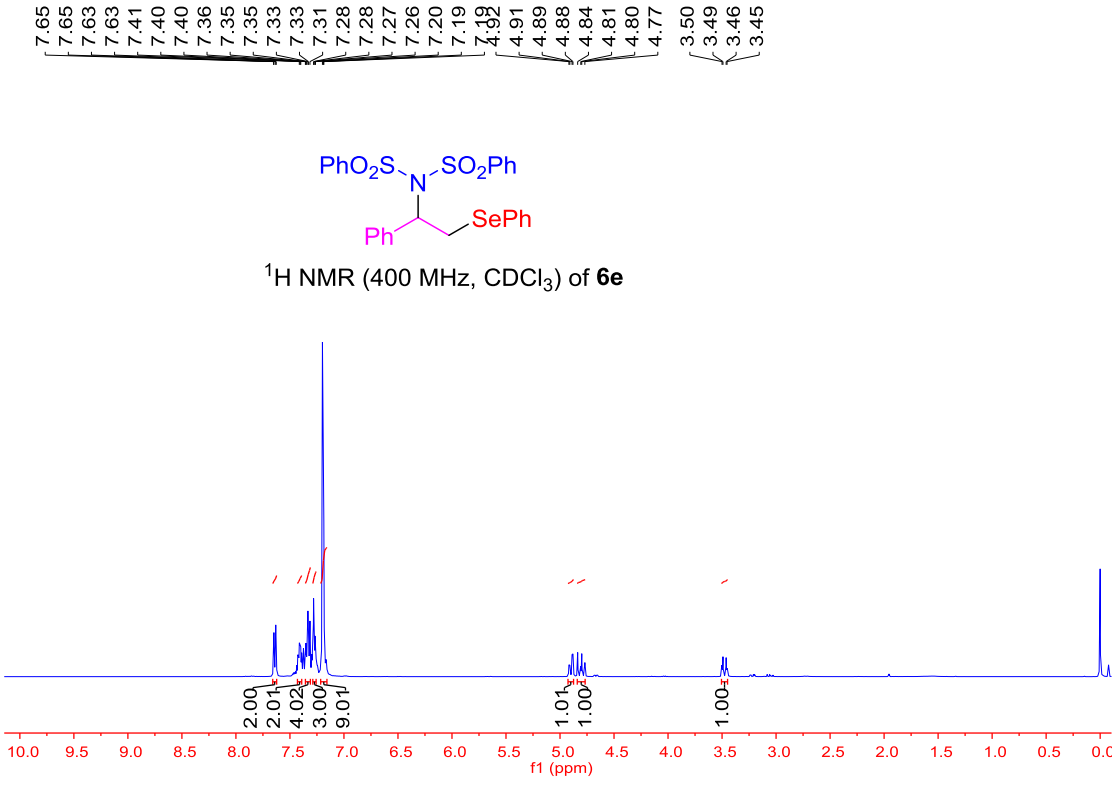


^{1}H NMR (400 MHz, $CDCl_3$) of **6d**

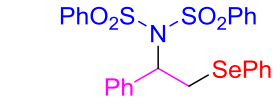




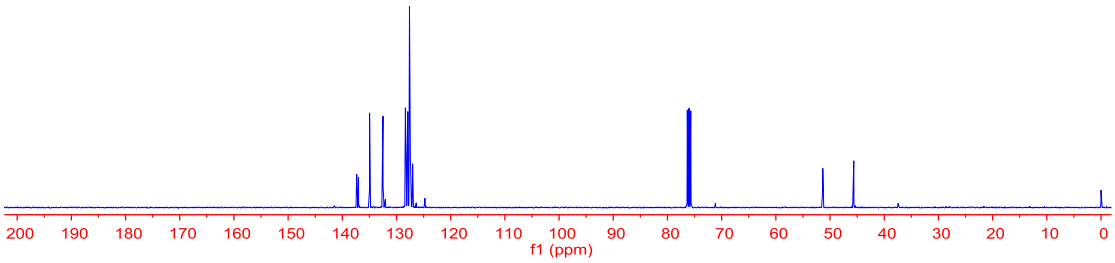
^{13}C NMR (100 MHz, $CDCl_3$) of **6d**

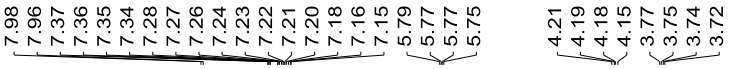


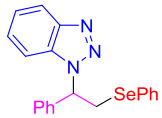
^{1}H NMR (400 MHz, $CDCl_3$) of **6e**



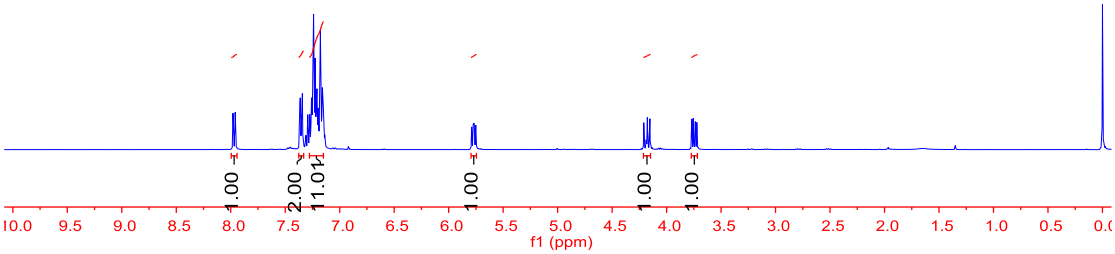
^{13}C NMR (100 MHz, $CDCl_3$) of **6e**

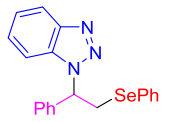




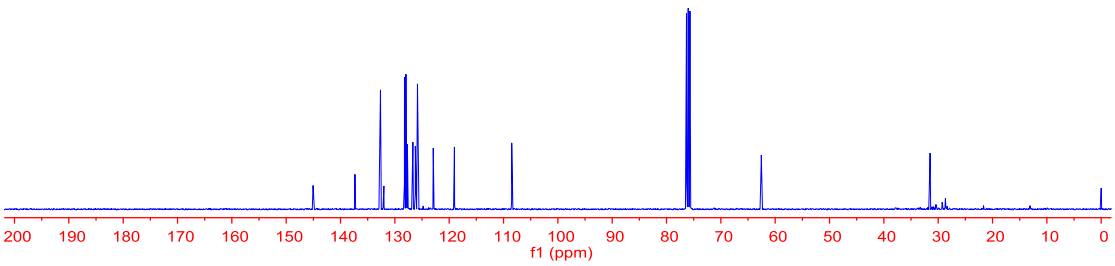


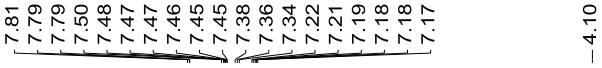
^{1}H NMR (400 MHz, $CDCl_3$) of **6f**

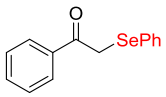




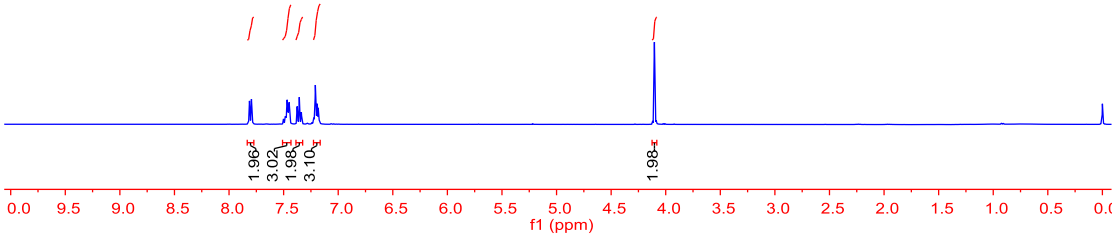
^{13}C NMR (100 MHz, $CDCl_3$) of **6f**



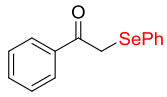




^{1}H NMR (400 MHz, $CDCl_3$) of **8**



193.9
134.4
133.0
132.2
128.2
128.0
127.7
127.6
127.1
31.7



^{13}C NMR (100 MHz, $CDCl_3$) of **8**