Supplementary Information

Enantioselective Alkyl C-H Sulfimidation Enabled by Copper Catalysis

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GENERAL METHODS AND MATERIALS

NMR spectra were recorded on Bruker-400 MHz and 500 MHz spectrometer. Chemical shifts (δ) are given in ppm relative to TMS. The residual solvent signals were used as references and the chemical shifts converted to the TMS scale ($CDCl_3$). Multiplicities were given as: s (singlet); d (doublet); t (triplet); q (quartet); dd (doublet of doublets); dt (doublet of triplets); m (multiplets), etc. Coupling constants are reported as *J* values in Hz.

Electron Paramagnetic Resonance (EPR) Spectra was recorded on JEOL JES-FA200 ESR operating in the X-band mode at 2 mW microwave power at 25 °C.

High resolution mass spectral analysis (HRMS) was recorded on a Waters Acquity UPLC-Xevo G2 QTof (ESI+).

Enantiomeric excesses were performed on a Waters Alliance e2695 separations module and 2998 PDA detector with Daicel CHIRALPAK® or Daicel CHIRALCEL® columns (4.6 × 250 mm, particle size 5 μm). UV detection monitored at 200-400 nm.

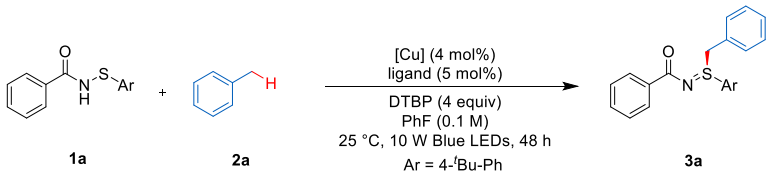
Optical rotations were measured on a Perkin Elmer Model 343 Polarimeter and an Anton Paar MCP 5300.

Materials: Sulfenamides **1** were prepared according to the procedures reported in the literature[1-7]. Toluene (SCR, not stabilized) was distilled with Na under positive pressure of N_2. Acetone (SCR) was distilled with $KMnO_4$ under positive pressure of N_2. CH_3CN, 1,4-dioxane, DCM, EtOAc and THF (J&K, ACS grade) were packed with molecular sieves. Fluorobenzene (ACS grade) was purchased from commercial suppliers (Energy, J&K). All toluene derivatives and copper salts were purchased from commercial suppliers (Adamas-beta, Energy, Bidepharm, Aldrich, Acros, TCI, J&K) and used as received. “Brine” refers to a saturated aqueous solution of sodium chloride. DTBP was purchased from TCI. The reaction mixture is irradiated in a photoreactor (Commercial supplier: Bibby Scientific Ltd., website: http://www.rogertech.cn/cpzszong.asp). Light was emitted by OHSP-350UV-455 nm lamps, 0.5 cm away. To maintain the temperature, reactor has cooling system itself.

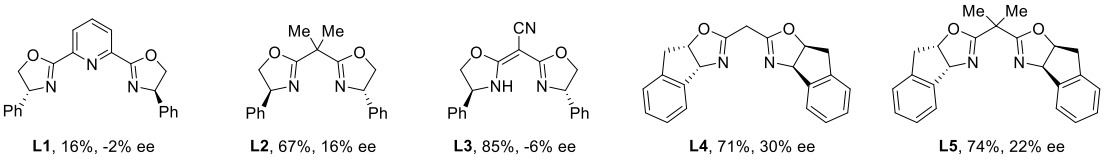
Figure S1. The picture of photoreactor.

OPTIMIZATION OF THE REACTION CONDITIONS

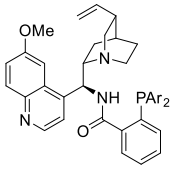
Table S1. Evaluation of the chiral ligand.



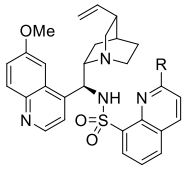
1a **2a** **3a**



L1, 16%, -2% ee **L2**, 67%, 16% ee **L3**, 85%, -6% ee **L4**, 71%, 30% ee **L5**, 74%, 22% ee



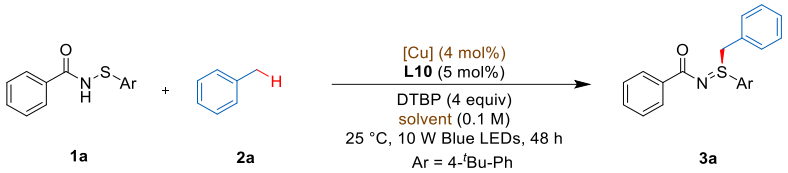
L6, Ar= Ph 36%, 8% ee
L7, Ar= 1-Naphthyl 45%, 3% ee
L8, Ar= 3,5-$(Ph)_2C_6H_3$ 71%, 7% ee
L9, Ar= 2,4,6-$(Me)_3C_6H_2$ 7%, 4% ee



L10, R= H 77%, 95% ee
L11, R= Me 55%, 87% ee
L11, R= ^{i}Pr 52%, 87% ee

Reaction conditions: **1a** (0.1 mmol, 1.0 equiv), toluene **2a** (60 equiv), $Cu(CH_3CN)_4PF_6$ (4 mol%), ligand (5 mol%), DTBP (4.0 equiv), fluorobenzene (0.1 M), 10 W Blue LED (λ_{max} =455 nm), 25 °C, 48 h. The yield was determined *via* ^{1}H NMR analysis using 1,3,5-triacetylbenzene as an internal standard, and the ee value was determined by HPLC using a chiral stationary phase.

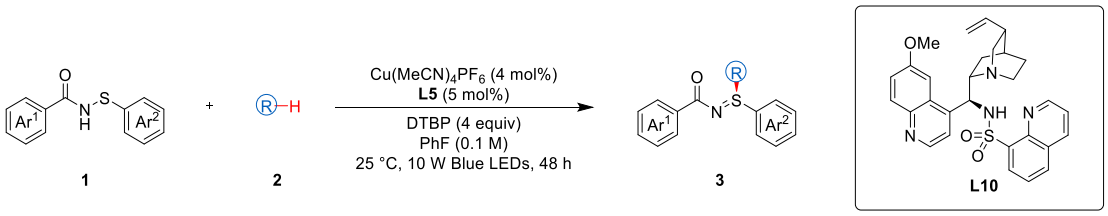
Table S2. Evaluation of the Cu-salts and solvents.



entry	Cu-salt	solvent	yield of 3a (%)	ee of 3a (%)
1	$Cu(MeCN)_4PF_6$	MeCN	76	91
2	$Cu(MeCN)_4PF_6$	DCM	37	92
3	$Cu(MeCN)_4PF_6$	EtOAc	42	87
4	$Cu(MeCN)_4PF_6$	Acetone	56	92
5	$Cu(MeCN)_4PF_6$	PhF	77	96
6	$Cu(MeCN)_4PF_6$	PhCl	28	97
7	CuCl	PhF	67	93
8	CuBr	PhF	33	93
9	CuI	PhF	38	94

Reaction conditions: **1a** (0.1 mmol, 1.0 equiv), toluene **2a** (600 μL, 60 equiv), [Cu] (4 mol%), **L10** (5 mol%), DTBP (4.0 equiv), solvent (0.1 M), 10 W Blue LED (λ_{max} =455 nm), 25 °C, 48 h. The yield was determined via ^{1}H NMR analysis using 1,3,5-triacetylbenzene as an internal standard, and the ee value was determined by HPLC using a chiral stationary phase.

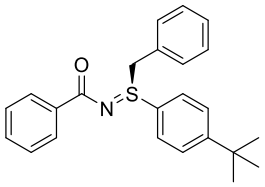
GENERAL PROCEDURE FOR ENANTIOSELECTIVE ALKYL C-H SULFIMIDATION



To a flame-dried and N_2-purged Schlenk tube (10 mL) were added $Cu(CH_3CN)_4PF_6$ (1.5 mg, 0.004 mmol, 4 mol%), **L10** (2.6 mg, 0.005 mmol, 5 mol%), sulfenamides **1** (0.1 mmol, 1.0 equiv) and a stirring bar. The Schlenk tube was then evacuated and filled with N_2. This cycle was repeated three times and followed by the addition of fluorobenzene (1.0 mL), hydrocarbons **2** (6 mmol, 60.0 equiv) and DTBP (58.5 mg, 74 μL, 0.4 mmol, 4.0 equiv) sequentially. The Schlenk tube was positioned in the photoreactor under 10 W 455 nm LEDs. After being stirred at 25 °C for 48 h, the reaction mixture was then filtered through short silica column and concentrated under reduced pressure. The residue was purified through column chromatography on silica gel (petroleum ether/ethyl acetate) to afford the corresponding products **3**.

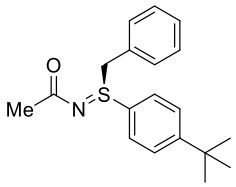
ANALYTICAL DATA FOR THE PRODUCTS 3

(*S*)-*N*-(benzyl(4-(*tert*-butyl)phenyl)-λ^4-sulfaneylidene)benzamide (3a)



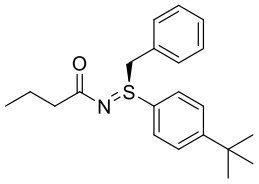
Yield: 83%. $[\alpha]_D^{20}$ = +62.8 (c 0.21, CH_2Cl_2). Enantiomeric ratio: 97.5:2.5, determined by HPLC (CHIRALCEL OD-H, *n*-hexane/isopropanol = 70/30, flow rate 1.0 mL/min, T = 30°C, 270 nm): t_R= 5.4 min (minor), t_R= 6.8 min (major). **^{1}H NMR** (500 MHz, Chloroform-*d*) δ 8.24 – 8.18 (m, 2H), 7.49 (d, *J* = 8.2 Hz, 2H), 7.48 – 7.36 (m, 5H), 7.29 (t, *J* = 7.4 Hz, 1H), 7.21 (t, *J* = 7.5 Hz, 2H), 6.98 (d, *J* = 7.5 Hz, 2H), 4.63 (d, *J* = 12.4 Hz, 1H), 4.23 (d, *J* = 12.3 Hz, 1H), 1.31 (s, 9H). **^{13}C NMR** (126 MHz, $CDCl_3$) δ 176.7, 156.2, 136.7, 130.8, 130.7, 128.9, 128.8, 128.8, 128.7, 128.5, 127.9, 127.8, 126.5, 56.0, 35.1, 31.2. **HRMS** (ESI-TOF) m/z: $[M+H]^+$ calculated for $C_{24}H_{25}NOS$: 376.1730, found 376.1730. The absolute configurations were assigned by the X-ray analysis.

(*S*)-*N*-(benzyl(4-(*tert*-butyl)phenyl)-λ^4-sulfaneylidene)acetamide (3b)



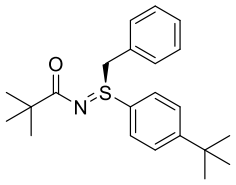
Yield: 96%. $[\alpha]_D^{20}$ = +69.0 (c 0.75, CH_2Cl_2). Enantiomeric ratio: 96.5:3.5, determined by HPLC (CHIRALPAK AD-H, *n*-hexane/isopropanol = 70/30, flow rate 1.0 mL/min, T = 30°C, 270 nm): t_R= 4.5 min (minor), t_R= 5.6 min (major). **^{1}H NMR** (500 MHz, Chloroform-*d*) δ 7.44 – 7.38 (m, 4H), 7.30 – 7.26 (m, 1H), 7.24 – 7.19 (m, 2H), 6.96 – 6.93 (m, 2H), 4.54 (d, *J* = 12.4 Hz, 1H), 4.10 (d, *J* = 12.3 Hz, 1H), 2.14 (s, 3H), 1.30 (s, 9H). **^{13}C NMR** (126 MHz, $CDCl_3$) δ 182.2, 156.2, 130.6, 128.8, 128.7, 128.5, 127.9, 126.5, 55.7, 35.1, 31.1, 24.6. **HRMS** (ESI-TOF) m/z: $[M+H]^+$ calculated for $C_{19}H_{23}NOS$: 314.1573, found 314.1581. The absolute configuration was tentatively assigned by analogy.

(*S*)-*N*-(benzyl(4-(*tert*-butyl)phenyl)-λ^4-sulfaneylidene)butyramide (3c)



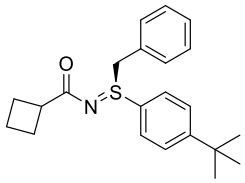
Yield: 70%. $[\alpha]_D^{20}$ = +56.8 (c 0.60, CH_2Cl_2). Enantiomeric ratio: 95:5, determined by HPLC (CHIRALCEL OD-H, hexane/isopropanol = 80/20, flow rate 1.0 mL/min, T = 30°C, 270 nm): t_R= 4.7 min (minor), t_R= 5.1 min (major). **^{1}H NMR** (500 MHz, Chloroform-*d*) δ 7.45 – 7.38 (m, 4H), 7.32 – 7.25 (m, 1H), 7.23 – 7.20 (m, 2H), 6.97 – 6.92 (m, 2H), 4.55 (d, *J* = 12.4 Hz, 1H), 4.10 (d, *J* = 12.4 Hz, 1H), 2.45 – 2.33 (m, 2H), 1.72 (h, *J* = 7.4 Hz, 2H), 1.31 (s, 9H), 0.97 (t, *J* = 7.4 Hz, 3H). **^{13}C NMR** (126 MHz, $CDCl_3$) δ 184.8, 156.1, 130.6, 129.0, 128.8, 128.8, 128.5, 127.9, 126.5, 55.7, 39.9, 35.1, 31.1, 20.2, 14.1. **HRMS** (ESI-TOF) m/z: $[M+H]^+$ calculated for $C_{21}H_{27}NOS$: 342.1886, found 342.1896. The absolute configuration was tentatively assigned by analogy.

(*S*)-*N*-(benzyl(4-(*tert*-butyl)phenyl)-λ^4-sulfaneylidene)pivalamide (3d)



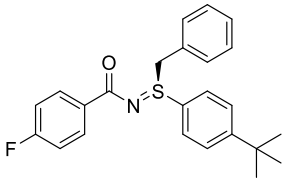
Yield: 85%. $[\alpha]_D^{20}$ = +55.7 (c 0.76, CH_2Cl_2). Enantiomeric ratio: 97:3, determined by HPLC (CHIRALCEL OD-H, hexane/isopropanol = 80/20, flow rate 1.0 mL/min, T = 30°C, 270 nm): t_R= 4.0 min (minor), t_R= 4.6 min (major). **^{1}H NMR** (400 MHz, Chloroform-*d*) δ 7.43 – 7.34 (m, 4H), 7.30 – 7.24 (m, 1H), 7.19 (dd, *J* = 8.2, 6.7 Hz, 2H), 6.93 – 6.88 (m, 2H), 4.41 (d, *J* = 12.3 Hz, 1H), 4.14 (d, *J* = 12.3 Hz, 1H), 1.31 (s, 9H), 1.25 (s, 9H). **^{13}C NMR** (101 MHz, $CDCl_3$) δ 190.3, 155.8, 130.9, 129.3, 128.8, 128.6, 128.2, 127.7, 126.3, 55.5, 40.1, 35.0, 31.2, 28.7. **HRMS** (ESI-TOF) m/z: $[M+H]^+$ calculated for $C_{22}H_{29}NOS$: 356.2043, found 342.2053. The absolute configuration was tentatively assigned by analogy.

(*S*)-*N*-(benzyl(4-(*tert*-butyl)phenyl-λ^4-sulfaneylidene)cyclobutanecarboxamide (3e)



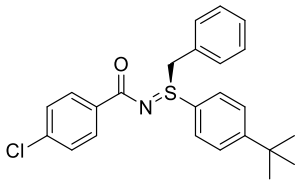
Yield: 79%. $[\alpha]_D^{20}$ = +60.6 (c 0.70, CH_2Cl_2). Enantiomeric ratio: 94:6, determined by HPLC (CHIRALCEL OD-H, hexane/isopropanol = 90/10, flow rate 1.0 mL/min, T = 30°C, 270 nm): t_R=7.7 min (minor), t_R= 9.1 min (major). **^{1}H NMR** (400 MHz, Chloroform-*d*) δ 7.43 – 7.37 (m, 4H), 7.31 – 7.24 (m, 1H), 7.23 – 7.17 (m, 2H), 6.95 – 6.90 (m, 2H), 4.53 (d, *J* = 12.3 Hz, 1H), 4.11 (d, *J* = 12.3 Hz, 1H), 3.29 (pd, *J* = 8.5, 1.1 Hz, 1H), 2.40 – 2.26 (m, 2H), 2.24 – 2.11 (m, 2H), 1.99 – 1.79 (m, 2H), 1.29 (s, 9H). **^{13}C NMR** (101 MHz, $CDCl_3$) δ 186.4, 156.1, 130.7, 129.0, 128.8, 128.7, 128.4, 127.9, 126.4, 55.6, 41.4, 35.1, 31.1, 26.4, 26.4, 18.4. **HRMS** (ESI-TOF) m/z: $[M+H]^+$ calculated for $C_{22}H_{27}NOS$: 354.1886, found 354.1902. The absolute configuration was tentatively assigned by analogy.

(*S*)-*N*-(benzyl(4-(*tert*-butyl)phenyl)-λ^4-sulfaneylidene)-4-fluorobenzamide (3f)



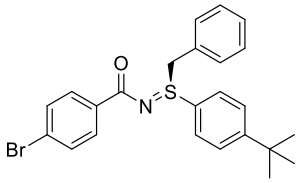
Yield: 44%. $[\alpha]_D^{20}$ = +49.2 (c 0.43, CH_2Cl_2). Enantiomeric ratio: 96.5:3.5, determined by HPLC (CHIRALCEL OD-H, hexane/isopropanol = 70/30, flow rate 1.0 mL/min, T = 30°C, 270 nm): t_R=4.8 min (minor), t_R= 6.0 min (major). **^{1}H NMR** (500 MHz, Chloroform-*d*) δ 8.23 – 8.16 (m, 2H), 7.51 – 7.41 (m, 4H), 7.33 – 7.26 (m, 1H), 7.25 – 7.18 (m, 2H), 7.10 – 7.01 (m, 2H), 7.01 – 6.95 (m, 2H), 4.62 (d, *J* = 12.4 Hz, 1H), 4.22 (d, *J* = 12.4 Hz, 1H), 1.32 (s, 9H). **^{13}C NMR** (126 MHz, Chloroform-*d*) δ 175.6, 164.6 (d, *J* = 249.6 Hz), 156.3, 132.9 (d, *J* = 2.8 Hz), 131.0 (d, *J* = 8.5 Hz), 130.8, 128.9, 128.7 (d, *J* = 24.0 Hz), 128.5, 127.9, 126.5, 114.6 (d, *J* = 21.2 Hz), 56.1, 35.1, 31.1. **^{19}F NMR** (471 MHz, $CDCl_3$) δ -110.35.; **HRMS** (ESI-TOF) m/z: $[M+H]^+$ calculated for $C_{22}H_{24}FNOS$: 394.1635, found 394.1644. The absolute configuration was tentatively assigned by analogy.

(*S*)-*N*-(benzyl(4-(*tert*-butyl)phenyl)-λ^4-sulfaneylidene)-4-chlorobenzamide (3g)



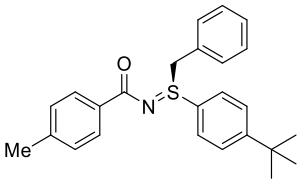
Yield: 56%. $[\alpha]_D^{20}$ = +73.5 (c 0.58, CH_2Cl_2). Enantiomeric ratio: 96.5:3.5, determined by HPLC (CHIRALPAK IC, hexane/isopropanol = 70/30, flow rate 1.0 mL/min, T = 30°C, 270 nm): t_R= 11.5 min (minor), t_R= 15.1 min (major). **^{1}H NMR** (500 MHz, Chloroform-*d*) δ 8.23 – 8.16 (m, 2H), 7.51 – 7.41 (m, 4H), 7.33 – 7.26 (m, 1H), 7.25 – 7.18 (m, 2H), 7.10 – 7.01 (m, 2H), 7.01 – 6.95 (m, 2H), 4.62 (d, *J* = 12.4 Hz, 1H), 4.22 (d, *J* = 12.4 Hz, 1H), 1.32 (s, 9H). **^{13}C NMR** (126 MHz, $CDCl_3$) δ 175.6, 156.3, 136.8, 135.2, 130.8, 130.2, 128.9, 128.6, 128.5, 128.0, 127.9, 126.5, 56.1, 35.1, 31.1.; **HRMS** (ESI-TOF) m/z: $[M+H]^+$ calculated for $C_{24}H_{24}ClNOS$: 410.1340, found 410.1346. The absolute configuration was tentatively assigned by analogy.

(*S*)-*N*-(benzyl(4-(*tert*-butyl)phenyl)-λ^4-sulfaneylidene)-4-bromobenzamide (3h)



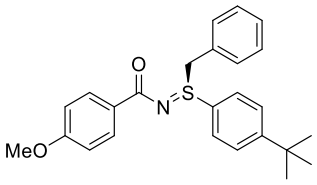
Yield: 71%. $[\alpha]_D^{20}$ = +68.5 (c 0.81, CH_2Cl_2). Enantiomeric ratio: 98:2, determined by HPLC (CHIRALCEL OD-H, hexane/isopropanol = 90/10, flow rate 1.0 mL/min, T = 30°C, 270 nm): t_R=16.1 min (major), t_R= 18.9 min (minor). **^{1}H NMR** (400 MHz, Chloroform-*d*) δ 8.08 – 8.04 (m, 2H), 7.55 – 7.48 (m, 2H), 7.51 – 7.40 (m, 4H), 7.34 – 7.25 (m, 1H), 7.23 – 7.19 (m, 2H), 6.97 – 6.95 (m, 2H), 4.61 (d, *J* = 12.3 Hz, 1H), 4.23 (d, *J* = 12.4 Hz, 1H), 1.32 (s, 9H). **^{13}C NMR** (101 MHz, $CDCl_3$) δ 175.6, 156.3, 135.7, 131.0, 130.8, 130.5, 128.9, 128.6, 128.5, 127.9, 126.5, 125.4, 56.0, 35.1, 31.1.; **HRMS** (ESI-TOF) m/z: $[M+H]^+$ calculated for $C_{24}H_{24}BrNOS$: 454.0835, found 454.0844. The absolute configuration was tentatively assigned by analogy.

(*S*)-*N*-(benzyl(4-(*tert*-butyl)phenyl)-λ^4-sulfaneylidene)-4-methylbenzamide (3i)



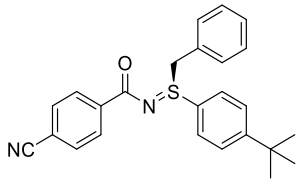
Yield: 62%. $[\alpha]_D^{20}$ = +72.6 (c 0.61, CH_2Cl_2). Enantiomeric ratio: 98:2, determined by HPLC (CHIRALCEL OD-H, hexane/isopropanol = 95/5, flow rate 1.0 mL/min, T = 30°C, 270 nm): t_R= 32.5 min (major), t_R= 37.6 min (minor). **^{1}H NMR** (400 MHz, Chloroform-*d*) δ 8.11 – 8.07 (m, 2H), 7.53 – 7.45 (m, 2H), 7.47 – 7.39 (m, 2H), 7.33 – 7.24 (m, 1H), 7.26 – 7.16 (m, 4H), 7.02 – 6.94 (m, 2H), 4.63 (d, *J* = 12.3 Hz, 1H), 4.22 (d, *J* = 12.3 Hz, 1H), 2.39 (s, 3H), 1.31 (s, 9H). **^{13}C NMR** (101 MHz, $CDCl_3$) δ 176.7, 156.1, 140.9, 134.0, 130.8, 129.0, 128.8, 128.8, 128.5, 128.5, 127.9, 126.4, 56.0, 35.1, 31.1, 21.6.; **HRMS** (ESI-TOF) m/z: $[M+H]^+$ calculated for $C_{25}H_{27}NOS$: 390.1886, found 390.1899. The absolute configuration was tentatively assigned by analogy.

(*S*)-*N*-(benzyl(4-(*tert*-butyl)phenyl)-λ^4-sulfaneylidene)-4-methoxybenzamide (3j)



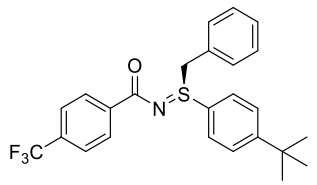
Yield: 74%. $[\alpha]_D^{20}$ = +65.7 (c 0.75, CH_2Cl_2). Enantiomeric ratio: 97.5:2.5, determined by HPLC (CHIRALPAK AS-H, hexane/isopropanol = 70/30, flow rate 1.0 mL/min, T = 30°C, 270 nm): t_R= 5.4 min (minor), t_R= 8.5 min (major). **^{1}H NMR** (400 MHz, Chloroform-*d*) δ 8.20 – 8.12 (m, 2H), 7.48 (d, *J* = 8.3 Hz, 2H), 7.43 (d, *J* = 8.7 Hz, 2H), 7.32 – 7.26 (m, 1H), 7.21 (t, *J* = 7.4 Hz, 2H), 6.98 (d, *J* = 7.4 Hz, 2H), 6.90 (d, *J* = 8.6 Hz, 2H), 4.63 (d, *J* = 12.3 Hz, 1H), 4.20 (d, *J* = 12.3 Hz, 1H), 3.85 (s, 3H), 1.31 (s, 9H). **^{13}C NMR** (101 MHz, $CDCl_3$) δ 176.4, 161.7, 156.1, 130.8, 130.5, 129.5, 129.1, 128.8, 128.8, 128.5, 127.8, 126.4, 113.0, 56.1, 55.3, 35.1, 31.1.; **HRMS** (ESI-TOF) m/z: $[M+H]^+$ calculated for $C_{25}H_{27}NO_2S$: 406.1835, found 406.1845. The absolute configuration was tentatively assigned by analogy.

(*S*)-*N*-(benzyl(4-(*tert*-butyl)phenyl)-λ^4-sulfaneylidene)-4-methoxybenzamide (3k)



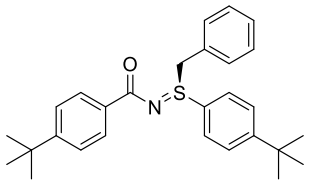
Yield: 63%. $[\alpha]_D^{20}$ = +67.9 (c 0.63, CH_2Cl_2). Enantiomeric ratio: 95.5:4.5, determined by HPLC (CHIRALCEL OD-H, hexane/isopropanol = 80/20, flow rate 1.0 mL/min, T = 30°C, 270 nm): t_R= 8.5 min (minor), t_R= 13.2 min (major). **^{1}H NMR** (400 MHz, Chloroform-*d*) δ 8.30 – 8.24 (m, 2H), 7.72 – 7.64 (m, 2H), 7.52 – 7.43 (m, 4H), 7.34 – 7.28 (m, 1H), 7.25 – 7.19 (m, 2H), 7.01 – 6.95 (m, 2H), 4.63 (d, *J* = 12.3 Hz, 1H), 4.26 (d, *J* = 12.3 Hz, 1H), 1.32 (s, 9H). **^{13}C NMR** (101 MHz, $CDCl_3$) δ 174.5, 156.6, 140.8, 131.8, 130.8, 129.3, 129.1, 128.6, 128.2, 128.2, 127.9, 126.6, 118.9, 113.9, 56.0, 35.2, 31.1.; **HRMS** (ESI-TOF) m/z: $[M+H]^+$ calculated for $C_{25}H_{24}N_2OS$: 401.1682, found 401.1691. The absolute configuration was tentatively assigned by analogy.

(*S*)-*N*-(benzyl(4-(*tert*-butyl)phenyl)-λ^4-sulfaneylidene)-4-(trifluoromethyl)benzamide (3l)



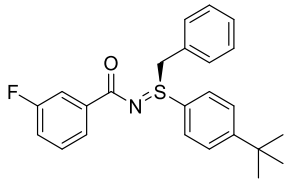
Yield: 63%. $[\alpha]_D^{20}$ = +59.6 (c 0.70, CH_2Cl_2). Enantiomeric ratio: 97:3, determined by HPLC (CHIRALCEL OD-H, hexane/isopropanol = 80/20, flow rate 1.0 mL/min, T = 30°C, 270 nm): t_R= 5.5 min (minor), t_R= 7.0 min (major). **^{1}H NMR** (400 MHz, Chloroform-*d*) δ 8.32 – 8.26 (m, 2H), 7.66 – 7.64 (m, 2H), 7.52 – 7.43 (m, 4H), 7.34 – 7.28 (m, 1H), 7.24 – 7.20 (m, 2H), 7.00 – 6.95 (m, 2H), 4.63 (d, *J* = 12.3 Hz, 1H), 4.26 (d, *J* = 12.4 Hz, 1H), 1.32 (s, 9H). **^{13}C NMR** (101 MHz, $CDCl_3$) δ 175.3, 156.6, 140.1, 132.8, 132.5, 132.1, 131.8, 130.9, 129.1, 129.1, 128.6, 128.5, 128.5, 128.0, 126.7, 125.7, 125.0, 124.9, 124.9, 124.8, 123.0, 56.1, 35.2, 31.2. **^{19}F NMR** (376 MHz, $CDCl_3$) δ -62.58.; **HRMS** (ESI-TOF) m/z: $[M+H]^+$ calculated for $C_{25}H_{24}F_3NOS$: 444.1603, found 444.1609. The absolute configuration was tentatively assigned by analogy.

(*S*)-*N*-(benzyl(4-(*tert*-butyl)phenyl)-λ^4-sulfaneylidene)-4-(*tert*-butyl)benzamide (3m)



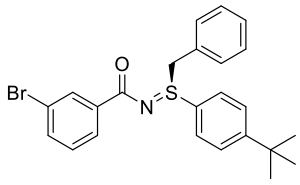
Yield: 83%. $[\alpha]_D^{20}$ = +55.3 (c 0.90, CH_2Cl_2). Enantiomeric ratio: 96:4 determined by HPLC (CHIRALCEL OD-H, hexane/isopropanol = 80/20, flow rate 1.0 mL/min, T = 30°C, 270 nm): t_R= 6.1 min (minor), t_R= 7.3 min (major). **^{1}H NMR** (400 MHz, Chloroform-*d*) δ 8.17 – 8.09 (m, 2H), 7.51 – 7.46 (m, 2H), 7.42 (dq, *J* = 8.8, 2.1 Hz, 4H), 7.31 – 7.26 (m, 1H), 7.26 – 7.17 (m, 2H), 7.03 – 6.95 (m, 2H), 4.63 (d, *J* = 12.3 Hz, 1H), 4.20 (d, *J* = 12.4 Hz, 1H), 1.34 (s, 9H), 1.31 (s, 9H). **^{13}C NMR** (101 MHz, $CDCl_3$) δ 176.7, 156.1, 153.9, 134.0, 130.8, 129.2, 128.8, 128.8, 128.5, 128.5, 127.8, 126.4, 124.8, 56.0, 35.1, 34.9, 31.3, 31.1.; **HRMS** (ESI-TOF) m/z: $[M+H]^+$ calculated for $C_{28}H_{33}NOS$: 432.2356, found 432.2370. The absolute configuration was tentatively assigned by analogy.

(*S*)-*N*-(benzyl(4-(*tert*-butyl)phenyl)-λ^4-sulfaneylidene)-3-fluorobenzamide (3n)



Yield: 87%. $[\alpha]_D^{20}$ = +56.6 (c 0.86, CH_2Cl_2). Enantiomeric ratio: 97.5:2.5 determined by HPLC (CHIRALCEL OD-H, hexane/isopropanol = 80/20, flow rate 1.0 mL/min, T = 30°C, 270 nm): t_R= 5.7 min (minor), t_R= 7.1 min (major). **^{1}H NMR** (400 MHz, Chloroform-*d*) δ 7.97 (dt, *J* = 7.7, 1.3 Hz, 1H), 7.88 (ddd, *J* = 10.0, 2.7, 1.4 Hz, 1H), 7.53 – 7.41 (m, 4H), 7.35 (td, *J* = 8.0, 5.7 Hz, 1H), 7.34 – 7.25 (m, 1H), 7.27 – 7.17 (m, 2H), 7.13 (tdd, *J* = 8.4, 2.7, 1.0 Hz, 1H), 7.02 – 6.94 (m, 2H), 4.62 (d, *J* = 12.4 Hz, 1H), 4.23 (d, *J* = 12.4 Hz, 1H), 1.32 (s, 9H). **^{13}C NMR** (101 MHz, Chloroform-*d*) δ 175.3 (d, *J* = 2.3 Hz), 162.5 (d, *J* = 245.0 Hz), 156.4, 139.2 (d, *J* = 6.8 Hz), 130.8, 129.3 (d, *J* = 7.8 Hz), 128.9, 128.6, 128.5, 128.5, 127.9, 126.5, 124.4 (d, *J* = 2.8 Hz), 117.5 (d, *J* = 21.5 Hz), 115.6 (d, *J* = 22.1 Hz), 56.0, 35.1, 31.1. **^{19}F NMR** (376 MHz, $CDCl_3$) δ -113.98.; **HRMS** (ESI-TOF) m/z: $[M+H]^+$ calculated for $C_{24}H_{24}FNOS$: 394.1635, found 394.1640. The absolute configuration was tentatively assigned by analogy.

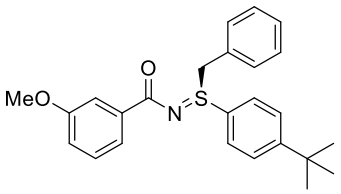
(*S*)-*N*-(benzyl(4-(*tert*-butyl)phenyl)-λ^4-sulfaneylidene)-3-bromobenzamide (3o)



Yield: 63%. $[\alpha]_D^{20}$ = +55.9 (c 0.72, CH_2Cl_2). Enantiomeric ratio: 96:4 determined by HPLC (CHIRALCEL OD-H, hexane/isopropanol = 80/20, flow rate 1.0 mL/min, T = 30°C, 270 nm): t_R= 6.2 min (minor), t_R= 7.9 min (major). **^{1}H NMR** (400 MHz, Chloroform-*d*) δ 8.34 (t, *J* = 1.8 Hz, 1H), 8.10 (dt, *J* = 7.8, 1.3 Hz, 1H), 7.56 (ddd, *J* = 7.9, 2.1, 1.1 Hz, 1H), 7.52 – 7.41 (m, 4H), 7.35 – 7.17 (m, 4H), 7.02 – 6.94 (m, 2H), 4.62 (d, *J* = 12.4 Hz, 1H), 4.23 (d, *J* = 12.4 Hz, 1H), 1.32 (s, 9H). **^{13}C NMR** (101 MHz, $CDCl_3$) δ 175.0, 156.4, 138.8, 133.6, 131.9, 130.8, 129.4, 128.9, 128.5, 128.5, 127.9, 127.3, 126.6,

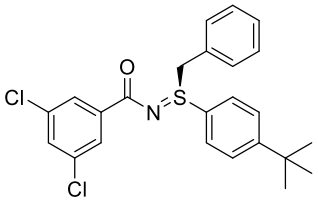
122.0, 56.1, 35.1, 31.1.; **HRMS** (ESI-TOF) m/z: $[M+H]^+$ calculated for $C_{24}H_{24}BrNOS$: 454.0835, found 454.0852. The absolute configuration was tentatively assigned by analogy.

(*S*)-*N*-(benzyl(4-(*tert*-butyl)phenyl)-λ⁴-sulfaneylidene)-3-methoxybenzamide (3p)



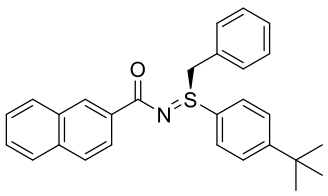
Yield: 36%. $[\alpha]_D^{20}$ = +43.9 (c 0.38, CH_2Cl_2). Enantiomeric ratio: 92.5:7.5 determined by HPLC (CHIRALPAK AS-H, hexane/isopropanol = 80/20, flow rate 1.0 mL/min, T = 30°C, 270 nm): t_R= 6.5 min (minor), t_R= 11.2 min (major). **^{1}H NMR** (500 MHz, Chloroform-*d*) δ 7.81 (dt, *J* = 7.6, 1.2 Hz, 1H), 7.74 (dd, *J* = 2.7, 1.4 Hz, 1H), 7.52 – 7.41 (m, 4H), 7.32 – 7.27 (m, 2H), 7.25 – 7.17 (m, 2H), 7.04 – 6.96 (m, 3H), 4.64 (d, *J* = 12.4 Hz, 1H), 4.22 (d, *J* = 12.4 Hz, 1H), 3.86 (s, 3H), 1.32 (s, 9H). **^{13}C NMR** (126 MHz, $CDCl_3$) δ 176.5, 159.3, 156.2, 138.2, 130.8, 128.9, 128.8, 128.8, 128.7, 128.5, 127.9, 126.5, 121.3, 117.3, 113.1, 56.0, 55.4, 35.1, 31.1.; **HRMS** (ESI-TOF) m/z: $[M+H]^+$ calculated for $C_{25}H_{27}NO_2S$: 406.1835, found 406.1852. The absolute configuration was tentatively assigned by analogy.

(*S*)-*N*-(benzyl(4-(*tert*-butyl)phenyl)-λ⁴-sulfaneylidene)-3,5-dichlorobenzamide (3q)



Yield: 40%. $[\alpha]_D^{20}$ = +33.7 (c 0.45, CH_2Cl_2). Enantiomeric ratio: 98:2 determined by HPLC (CHIRALCEL OD-H, hexane/isopropanol = 80/20, flow rate 1.0 mL/min, T = 30°C, 270 nm): t_R= 5.1 min (minor), t_R= 5.9 min (major). **^{1}H NMR** (400 MHz, Chloroform-*d*) δ 8.05 (d, *J* = 2.0 Hz, 2H), 7.49 – 7.45 (m, 4H), 7.42 (t, *J* = 2.0 Hz, 1H), 7.34 – 7.28 (m, 1H), 7.27 – 7.18 (m, 2H), 6.97 (dt, *J* = 7.0, 1.3 Hz, 2H), 4.61 (d, *J* = 12.4 Hz, 1H), 4.24 (d, *J* = 12.3 Hz, 1H), 1.32 (s, 9H). **^{13}C NMR** (101 MHz, $CDCl_3$) δ 173.7, 156.6, 139.7, 134.5, 130.8, 130.4, 129.0, 128.6, 128.2, 128.2, 127.9, 127.3, 126.6, 56.1, 35.2, 31.1.; **HRMS** (ESI-TOF) m/z: $[M+H]^+$ calculated for $C_{24}H_{23}ClNOS$: 444.0950, found 444.0962. The absolute configuration was tentatively assigned by analogy.

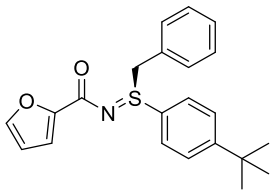
(*S*)-*N*-(benzyl(4-(*tert*-butyl)phenyl)-λ⁴-sulfaneylidene)-2-naphthamide (3r)



Yield: 63%. $[\alpha]_D^{20}$ = +57.8 (c 0.67, CH_2Cl_2). Enantiomeric ratio: 93:7 determined by HPLC (CHIRALCEL OD-H, hexane/isopropanol = 70/30, flow rate 1.0 mL/min, T = 30°C, 270 nm): t_R= 10.0 min (major), t_R= 13.8 min (minor). **^{1}H NMR** (400 MHz, Chloroform-*d*) δ 8.76 – 8.69 (m, 1H), 8.29 (dd, *J* = 8.5, 1.7 Hz, 1H), 8.01 – 7.92 (m, 1H), 7.91 – 7.82 (m, 2H), 7.58 – 7.42 (m, 6H), 7.34 – 7.25 (m, 1H), 7.25 – 7.20 (m, 2H), 7.05 – 6.97 (m, 2H), 4.70 (d, *J* = 12.3 Hz, 1H), 4.29 (d, *J* = 12.3 Hz, 1H), 1.33 (s, 9H). **^{13}C NMR** (101 MHz, $CDCl_3$) δ 176.7, 156.2, 134.7, 134.1, 132.9, 130.8, 129.2, 129.0, 128.9,

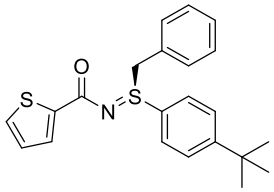
128.7, 128.5, 128.0, 127.6, 127.3, 126.9, 126.5, 125.9, 56.1, 35.1, 31.2.; **HRMS** (ESI-TOF) m/z: $[M+H]^+$ calculated for $C_{28}H_{27}NOS$: 426.1886, found 426.1902. The absolute configuration was tentatively assigned by analogy.

(*S*)-*N*-(benzyl(4-(*tert*-butyl)phenyl)-λ⁴-sulfaneylidene)furan-2-carboxamide (3s)



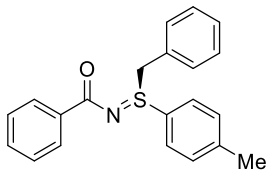
Yield: 56%. $[\alpha]_D^{20}$ = +64.2 (c 0.51, CH_2Cl_2). Enantiomeric ratio: 98.5:1.5 determined by HPLC (CHIRALCEL OD-H, hexane/isopropanol = 80/20, flow rate 1.0 mL/min, T = 30°C, 270 nm): t_R= 9.7 min (minor), t_R= 13.5 min (major). **^{1}H NMR** (400 MHz, Chloroform-*d*) δ 7.51 – 7.46 (m, 3H), 7.47 – 7.38 (m, 2H), 7.34 – 7.25 (m, 1H), 7.27 – 7.18 (m, 2H), 7.07 (d, *J* = 3.3 Hz, 1H), 7.03 – 6.95 (m, 2H), 6.45 (dd, *J* = 3.5, 1.8 Hz, 1H), 4.72 (d, *J* = 12.3 Hz, 1H), 4.22 (d, *J* = 12.3 Hz, 1H), 1.30 (s, 9H). **^{13}C NMR** (101 MHz, $CDCl_3$) δ 168.7, 156.4, 151.1, 144.0, 130.7, 129.0, 128.7, 128.6, 128.6, 127.9, 126.6, 113.8, 111.3, 56.3, 35.1, 31.1.; **HRMS** (ESI-TOF) m/z: $[M+H]^+$ calculated for $C_{22}H_{23}NO_2S$: 366.1522, found 366.1537. The absolute configuration was tentatively assigned by analogy.

(*S*)-*N*-(benzyl(*p*-tolyl)-λ⁴-sulfaneylidene)thiophene-2-carboxamide (3t)



Yield: 80%. $[\alpha]_D^{20}$ = +43.5 (c 0.77, CH_2Cl_2). Enantiomeric ratio: 97:3 determined by HPLC (CHIRALCEL OD-H, hexane/isopropanol = 80/20, flow rate 1.0 mL/min, T = 30°C, 270 nm): t_R= 8.2 min (minor), t_R= 12.7 min (major). **^{1}H NMR** (500 MHz, Chloroform-*d*) δ 7.73 (dd, *J* = 3.6, 1.3 Hz, 1H), 7.50 – 7.46 (m, 2H), 7.45 – 7.41 (m, 2H), 7.37 (dd, *J* = 5.0, 1.2 Hz, 1H), 7.31 – 7.27 (m, 1H), 7.25 – 7.18 (m, 2H), 7.04 (dd, *J* = 5.0, 3.6 Hz, 1H), 7.01 – 6.98 (m, 2H), 4.62 (d, *J* = 12.3 Hz, 1H), 4.20 (d, *J* = 12.3 Hz, 1H), 1.31 (s, 9H). **^{13}C NMR** (126 MHz, $CDCl_3$) δ 171.9, 156.3, 141.9, 130.8, 129.8, 129.3, 128.9, 128.8, 128.6, 128.5, 127.8, 127.2, 126.5, 56.4, 35.1, 31.1.; **HRMS** (ESI-TOF) m/z: $[M+H]^+$ calculated for $C_{22}H_{23}NOS_2$: 382.1294, found 382.1308. The absolute configuration was tentatively assigned by analogy.

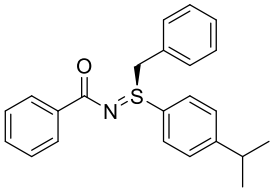
(*S*)-*N*-(benzyl(*p*-tolyl)-λ⁴-sulfaneylidene)benzamide (3u)



Yield: 58%. $[\alpha]_D^{20}$ = +87.7 (c 0.49, CH_2Cl_2). Enantiomeric ratio: 92:8 determined by HPLC (CHIRALCEL OD-H, hexane/isopropanol = 80/20, flow rate 1.0 mL/min, T = 30°C, 270 nm): t_R= 7.6 min (minor), t_R= 9.0 min (major). **^{1}H NMR** (400 MHz, Chloroform-*d*) δ 8.20 (dt, *J* = 7.0, 1.5 Hz, 2H), 7.48 – 7.36 (m, 5H), 7.32 – 7.27 (m, 1H), 7.22 (dt, *J* = 7.0, 3.3 Hz, 4H), 6.98 (dt, *J* = 7.0, 1.3 Hz, 2H), 4.64 (d, *J* = 12.3 Hz, 1H), 4.23 (d, *J* = 12.4 Hz,1H), 2.39 (s, 9H). **^{13}C NMR** (101 MHz, $CDCl_3$) δ 176.6, 143.1, 136.7, 130.8, 130.7, 130.1, 128.8, 128.7, 128.6, 128.5, 128.1, 127.8, 56.0, 21.6.; **HRMS** (ESI-TOF)

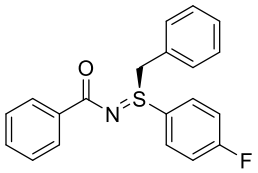
m/z: $[M+H]^+$ calculated for $C_{21}H_{19}NOS$: 334.1260, found 334.1273. The absolute configuration was tentatively assigned by analogy.

(*S*)-*N*-(benzyl(4-isopropylphenyl)-λ^4-sulfaneylidene)benzamide (3v)



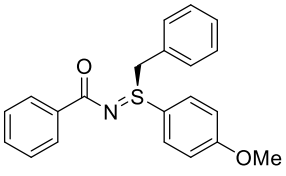
Yield: 91%. $[\alpha]_D^{20}$ = +57.2 (c 0.83, CH_2Cl_2). Enantiomeric ratio: 96.5:3.5 determined by HPLC (CHIRALCEL OD-H, hexane/isopropanol = 80/20, flow rate 1.0 mL/min, T = 30°C, 270 nm): t_R= 6.8 min (minor), t_R= 8.7 min (major). **^{1}H NMR** (500 MHz, Chloroform-*d*) δ 8.19 (d, *J* = 7.5 Hz, 2H), 7.48 (d, *J* = 8.0 Hz, 2H), 7.44 (d, *J* = 7.2 Hz, 1H), 7.39 (t, *J* = 7.5 Hz, 2H), 7.30 – 7.23 (m, 3H), 7.21 (t, *J* = 7.5 Hz, 2H), 6.97 (d, *J* = 7.5 Hz, 2H), 4.63 (d, *J* = 12.4 Hz, 1H), 4.22 (d, *J* = 12.4 Hz, 1H), 2.93 (hept, *J* = 7.0 Hz, 1H), 1.24 (d, *J* = 7.0 Hz, 6H). **^{13}C NMR** (126 MHz, $CDCl_3$) δ 176.7, 153.9, 136.7, 130.8, 130.7, 129.2, 128.8, 128.7, 128.7, 128.5, 128.2, 127.8, 127.6, 56.1, 34.2, 23.8, 23.8.; **HRMS** (ESI-TOF) m/z: $[M+H]^+$ calculated for $C_{23}H_{23}NOS$: 362.1573, found 362.1583. The absolute configuration was tentatively assigned by analogy.

(*S*)-*N*-(benzyl(4-fluorophenyl)-λ^4-sulfaneylidene)benzamide (3w)



Yield: 89%. $[\alpha]_D^{20}$ = +106.2 (c 0.75, CH_2Cl_2). Enantiomeric ratio: 95:5 determined by HPLC (CHIRALCEL OD-H, hexane/isopropanol = 80/20, flow rate 1.0 mL/min, T = 30°C, 270 nm): t_R= 9.0 min (minor), t_R= 12.4 min (major). **^{1}H NMR** (500 MHz, Chloroform-*d*) δ 8.22 – 8.16 (m, 2H), 7.57 – 7.52 (m, 2H), 7.48 – 7.44 (m, 1H), 7.44 – 7.37 (m, 2H), 7.35 – 7.27 (m, 1H), 7.28 – 7.20 (m, 2H), 7.16 – 7.08 (m, 2H), 6.98 – 6.94 (m, 2H), 4.64 (d, *J* = 12.4 Hz, 1H), 4.24 (d, *J* = 12.4 Hz, 1H). **^{13}C NMR** (126 MHz, Chloroform-*d*) δ 176.7, 165.0 (d, *J* = 253.8 Hz), 136.4, 130.9, 130.8, 130.5 (d, *J* = 9.1 Hz), 129.1, 128.7 (d, *J* = 9.2 Hz), 128.2, 127.9, 127.6, 127.6, 116.8 (d, *J* = 22.2 Hz), 56.1. **^{19}F NMR** (471 MHz, $CDCl_3$) δ -105.85.; **HRMS** (ESI-TOF) m/z: $[M+H]^+$ calculated for $C_{20}H_{16}FNOS$: 338.1009, found 338.1021. The absolute configuration was tentatively assigned by analogy.

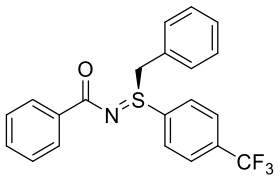
(*S*)-*N*-(benzyl(4-methoxyphenyl)-λ^4-sulfaneylidene)benzamide (3x)



Yield: 92%. $[\alpha]_D^{20}$ = +104.1 (c 0.81, CH_2Cl_2). Enantiomeric ratio: 97:3 determined by HPLC (CHIRALCEL OD-H, hexane/isopropanol = 80/20, flow rate 1.0 mL/min, T = 30°C, 270 nm): t_R= 10.8 min (minor), t_R= 13.0 min (major). **^{1}H NMR** (500 MHz, Chloroform-*d*) δ 8.19 (d, *J* = 6.9 Hz, 2H), 7.49 (d, *J* = 8.6 Hz, 2H), 7.44 (d, *J* = 7.0 Hz, 1H), 7.39 (t, *J* = 7.4 Hz, 2H), 7.29 (t, *J* = 7.4 Hz, 1H), 7.23 (t, *J* = 7.5 Hz, 2H), 6.97 (d, *J* = 7.5 Hz, 2H), 6.92 (d, *J* = 8.6 Hz, 2H), 4.65 (d, *J* = 12.4 Hz, 1H), 4.20 (d, *J* = 12.4 Hz, 1H), 3.83 (s, 3H). **^{13}C NMR** (126 MHz, $CDCl_3$) δ 176.5, 162.9, 136.8, 130.9, 130.7, 130.1, 128.8,

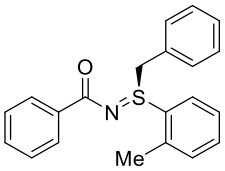
128.7, 128.6, 128.5, 127.8, 122.6, 114.9, 56.1, 55.6.; **HRMS** (ESI-TOF) m/z: $[M+H]^+$ calculated for $C_{21}H_{19}NO_2S$: 350.1209, found 350.1214. The absolute configuration was tentatively assigned by analogy.

(*S*)-*N*-(benzyl(4-(trifluoromethyl)phenyl)-λ⁴-sulfaneylidene)benzamide (3y)



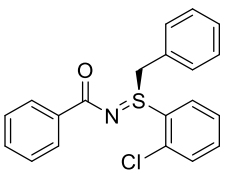
Yield: 79%. $[\alpha]_D^{20}$ = +54.6 (c 0.75, CH_2Cl_2). Enantiomeric ratio: 93.5:6.5 determined by HPLC (CHIRALCEL OD-H, hexane/isopropanol = 80/20, flow rate 1.0 mL/min, T = 30°C, 270 nm): t_R= 8.8 min (minor), t_R= 15.0 min (major). **^{1}H NMR** (500 MHz, Chloroform-*d*) δ 8.23 – 8.15 (m, 2H), 7.71 – 7.61 (m, 4H), 7.50 – 7.46 (m, 1H), 7.45 – 7.38 (m, 2H), 7.37 – 7.29 (m, 1H), 7.29 – 7.22 (m, 2H), 7.01 – 6.95 (m, 2H), 4.65 (d, *J* = 12.5 Hz, 1H), 4.31 (d, *J* = 12.5 Hz, 1H). **^{13}C NMR** (126 MHz, Chloroform-*d*) δ 177.1, 136.6 (d, *J* = 98.7 Hz), 134.2 (d, *J* = 33.1 Hz), 131.2, 130.9, 129.4, 128.9, 128.9, 128.5, 128.1, 128.0, 126.4 (q, *J* = 3.8 Hz), 123.4 (d, *J* = 272.7 Hz), 56.0. **^{19}F NMR** (471 MHz, $CDCl_3$) δ -63.03.; **HRMS** (ESI-TOF) m/z: $[M+H]^+$ calculated for $C_{21}H_{16}F_3NOS$: 388.0977, found 388.0993. The absolute configuration was tentatively assigned by analogy.

(*S*)-*N*-(benzyl(*o*-tolyl)-λ⁴-sulfaneylidene)benzamide (3aa)



Yield: 90%. $[\alpha]_D^{20}$ = +46.3 (c 0.75, CH_2Cl_2). Enantiomeric ratio: 96.5:3.5 determined by HPLC (CHIRALPAK IC, hexane/isopropanol = 70/30, flow rate 1.0 mL/min, T = 30°C, 270 nm): t_R= 16.3 min (minor), t_R= 18.8 min (major). **^{1}H NMR** (500 MHz, Chloroform-*d*) δ 8.22 – 8.17 (m, 2H), 7.95 (dd, *J* = 7.8, 1.6 Hz, 1H), 7.49 – 7.41 (m, 1H), 7.43 – 7.32 (m, 4H), 7.33 – 7.26 (m, 1H), 7.21 (t, *J* = 7.6 Hz, 2H), 7.14 (d, *J* = 7.4 Hz, 1H), 6.99 – 6.93 (m, 2H), 4.69 (d, *J* = 12.2 Hz, 1H), 4.20 (d, *J* = 12.2 Hz, 1H), 2.11 (s, 3H). **^{13}C NMR** (126 MHz, $CDCl_3$) δ 176.7, 139.4, 136.8, 132.1, 131.8, 130.9, 130.8, 130.7, 129.1, 128.8, 128.7, 128.6, 127.9, 127.7, 127.6, 55.3, 19.0.; **HRMS** (ESI-TOF) m/z: $[M+H]^+$ calculated for $C_{21}H_{19}NOS$: 334.1260, found 334.1269. The absolute configuration was tentatively assigned by analogy.

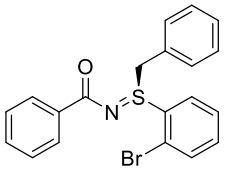
(*S*)-*N*-(benzyl(2-chlorophenyl)-λ⁴-sulfaneylidene)benzamide (3ab)



Yield: 85%. $[\alpha]_D^{20}$ = -21.3 (c 0.75, CH_2Cl_2). Enantiomeric ratio: 90.5:9.5 determined by HPLC (CHIRALCEL OD-H, hexane/isopropanol = 80/20, flow rate 1.0 mL/min, T = 30°C, 270 nm): t_R= 7.7 min (minor), t_R= 8.4 min (major). **^{1}H NMR** (400 MHz, Chloroform-*d*) δ 8.25 – 8.16 (m, 2H), 7.60 (dd, *J* = 7.9, 1.6 Hz, 1H), 7.53 – 7.35 (m, 5H), 7.33 – 7.24 (m, 2H), 7.19 (t, *J* = 7.6 Hz, 2H), 7.00 (dt, *J* = 7.0, 1.4 Hz, 2H), 4.65 (d, *J* = 12.8 Hz, 1H), 4.43 (d, *J* = 12.8 Hz, 1H). **^{13}C NMR** (101

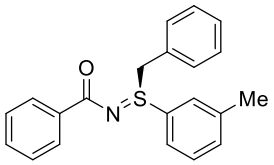
MHz, $CDCl_3$) δ 176.8, 136.6, 133.4, 133.0, 131.1, 131.0, 130.9, 130.1, 129.8, 129.1, 128.9, 128.3, 128.3, 128.0, 52.5.; **HRMS** (ESI-TOF) m/z: $[M+H]^+$ calculated for $C_{20}H_{16}ClNOS$: 354.0714, found 354.0724. The absolute configuration was tentatively assigned by analogy.

(*S*)-*N*-(benzyl(2-bromophenyl)-λ⁴-sulfaneylidene)benzamide (3ac)



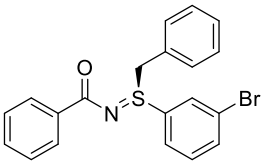
Yield: 86%. $[\alpha]_D^{20}$ = -24.2 (c 1.26, CH_2Cl_2). Enantiomeric ratio: 87.5:12.5 determined by HPLC (CHIRALCEL OD-H, hexane/isopropanol = 80/20, flow rate 1.0 mL/min, T = 30°C, 270 nm): t_R= 8.0 min (minor), t_R= 8.9 min (major). **^{1}H NMR** (500 MHz, Chloroform-*d*) δ 8.23 – 8.15 (m, 2H), 7.65 (dd, *J* = 7.7, 1.5 Hz, 1H), 7.55 (dd, *J* = 7.7, 2.0 Hz, 1H), 7.51 – 7.43 (m, 1H), 7.44 – 7.37 (m, 2H), 7.40 – 7.33 (m, 1H), 7.33 (td, *J* = 7.5, 1.4 Hz, 1H), 7.32 – 7.24 (m, 1H), 7.23 – 7.16 (m, 2H), 7.04 – 7.00 (m, 2H), 4.64 (d, *J* = 12.8 Hz, 1H), 4.44 (d, *J* = 12.8 Hz, 1H). **^{13}C NMR** (126 MHz, $CDCl_3$) δ 176.7, 136.6, 133.3, 133.2, 132.8, 131.2, 131.0, 130.1, 129.1, 128.9, 128.5, 128.3, 128.0, 122.6, 52.5.; **HRMS** (ESI-TOF) m/z: $[M+Na]^+$ calculated for $C_{20}H_{16}BrNOS$: 420.0028, found 420.0044. The absolute configuration was tentatively assigned by analogy.

(*S*)-*N*-(benzyl(*m*-tolyl)-λ⁴-sulfaneylidene)benzamide (3ad)



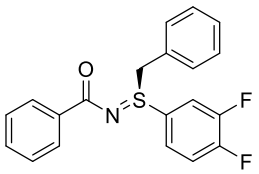
Yield: 60%. $[\alpha]_D^{20}$ = +65.8 (c 0.50, CH_2Cl_2). Enantiomeric ratio: 98:2 determined by HPLC (CHIRALCEL OD-H, hexane/isopropanol = 80/20, flow rate 1.0 mL/min, T = 30°C, 270 nm): t_R= 7.0 min (minor), t_R= 9.2 min (major). **^{1}H NMR** (500 MHz, Chloroform-*d*) δ 8.23 – 8.16 (m, 2H), 7.49 – 7.42 (m, 1H), 7.44 – 7.37 (m, 2H), 7.38 – 7.32 (m, 1H), 7.34 – 7.26 (m, 4H), 7.25 – 7.21 (m, 2H), 7.00 – 6.94 (m, 2H), 4.63 (d, *J* = 12.3 Hz, 1H), 4.24 (d, *J* = 12.3 Hz, 1H), 2.33 (s, 3H). **^{13}C NMR** (126 MHz, $CDCl_3$) δ 176.9, 136.8, 133.2, 132.1, 131.0, 130.9, 129.3, 129.0, 128.8, 128.7, 128.6, 128.4, 127.9, 125.3, 56.1, 21.5.; **HRMS** (ESI-TOF) m/z: $[M+H]^+$ calculated for $C_{21}H_{19}NOS$: 334.1260 found 334.1270. The absolute configuration was tentatively assigned by analogy.

(*S*)-*N*-(benzyl(3-bromophenyl)-λ⁴-sulfaneylidene)benzamide (3ae)



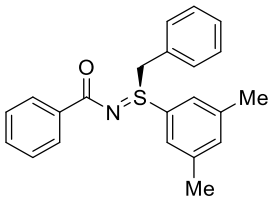
Yield: 68%. $[\alpha]_D^{20}$ = +36.9 (c 0.68, CH_2Cl_2). Enantiomeric ratio: 91.5:8.5 determined by HPLC (CHIRALCEL OD-H, hexane/isopropanol = 80/20, flow rate 1.0 mL/min, T = 30°C, 270 nm): t_R= 8.6 min (minor), t_R= 12.7 min (major). **^{1}H NMR** (400 MHz, Chloroform-*d*) δ 8.19 – 8.12 (m, 2H), 7.66 – 7.56 (m, 2H), 7.48 – 7.39 (m, 1H), 7.38 (t, *J* = 7.2 Hz, 3H), 7.30 (t, *J* = 7.4 Hz, 1H), 7.23 (t, *J* = 6.2 Hz, 3H), 6.95 (d, *J* = 7.3 Hz, 2H), 4.59 (d, *J* = 12.5 Hz, 1H), 4.23 (d, *J* = 12.4 Hz, 1H). **^{13}C NMR** (101 MHz, $CDCl_3$) δ 177.0, 136.4, 135.5, 134.6, 131.1, 130.9, 130.7, 130.7, 129.3, 128.9, 128.8, 128.1, 128.0, 126.7, 123.5, 56.2.; **HRMS** (ESI-TOF) m/z: $[M+H]^+$ calculated for $C_{20}H_{16}BrNOS$: 398.0209 found 398.0211. The absolute configuration was tentatively assigned by analogy.

(*S*)-*N*-(benzyl(3,4-difluorophenyl)-λ^4-sulfaneylidene)benzamide (3af)



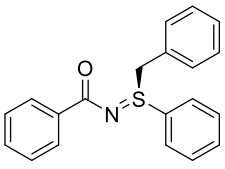
Yield: 86%. $[\alpha]_D^{20}$ = +87.6 (c 0.71, CH_2Cl_2). Enantiomeric ratio: 93.5:6.5 determined by HPLC (CHIRALCEL OD-H, hexane/isopropanol = 80/20, flow rate 1.0 mL/min, T = 30°C, 270 nm): t_R= 9.1 min (minor), t_R= 15.3 min (major). **^{1}H NMR** (500 MHz, Chloroform-*d*) δ 8.21 – 8.11 (m, 2H), 7.51 – 7.42 (m, 2H), 7.44 – 7.37 (m, 2H), 7.36 – 7.29 (m, 1H), 7.30 – 7.23 (m, 2H), 7.25 – 7.15 (m, 2H), 7.02 – 6.93 (m, 2H), 4.62 (d, *J* = 12.5 Hz, 1H), 4.25 (d, *J* = 12.5 Hz, 1H). **^{13}C NMR** (126 MHz, Chloroform-*d*) δ 176.9, 154.0 (d, *J* = 12.8 Hz), 151.9 (d, *J* = 12.8 Hz), 149.9 (d, *J* = 13.3 Hz), 136.2, 131.2, 130.9, 129.4, 128.9, 128.9, 128.1, 127.9, 125.1 (dd, *J* = 7.3, 3.7 Hz), 118.4 (d, *J* = 18.4 Hz), 117.6 (d, *J* = 19.8 Hz), 56.3. **^{19}F NMR** (471 MHz, $CDCl_3$) δ -129.86, -129.90, -132.83, -132.87.; **HRMS** (ESI-TOF) m/z: $[M+H]^+$ calculated for $C_{20}H_{15}F_2NOS$: 356.0915 found 356.0922. The absolute configuration was tentatively assigned by analogy.

(*S*)-*N*-(benzyl(3,5-dimethylphenyl)-λ^4-sulfaneylidene)benzamide (3ag)



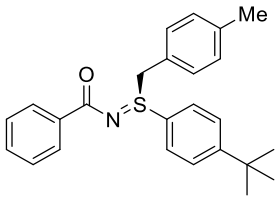
Yield: 89%. $[\alpha]_D^{20}$ = +50.2 (c 0.78, CH_2Cl_2). Enantiomeric ratio: 97:3 determined by HPLC (CHIRALCEL OD-H, hexane/isopropanol = 80/20, flow rate 1.0 mL/min, T = 30°C, 270 nm): t_R= 6.3 min (minor), t_R= 9.2 min (major). **^{1}H NMR** (400 MHz, Chloroform-*d*) δ 8.20 (dt, *J* = 7.0, 1.6 Hz, 2H), 7.50 – 7.36 (m, 3H), 7.35 – 7.26 (m, 1H), 7.28 – 7.20 (m, 2H), 7.12 (s, 3H), 7.04 – 6.95 (m, 2H), 4.61 (d, *J* = 12.3 Hz, 1H), 4.21 (d, *J* = 12.3 Hz, 1H), 2.29 (s, 6H). **^{13}C NMR** (101 MHz, $CDCl_3$) δ 176.9, 139.5, 136.9, 134.2, 132.0, 131.0, 130.8, 129.0, 128.9, 128.5, 127.9, 125.6, 56.1, 21.3.; **HRMS** (ESI-TOF) m/z: $[M+H]^+$ calculated for $C_{22}H_{21}NOS$: 348.1417 found 348.1432. The absolute configuration was tentatively assigned by analogy.

(*S*)-*N*-(benzyl(phenyl)-λ^4-sulfaneylidene)benzamide (3ah)



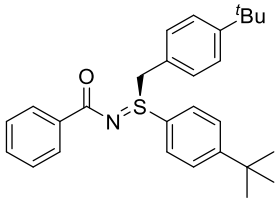
Yield: 96%. $[\alpha]_D^{20}$ = +90.3 (c 0.78, CH_2Cl_2). Enantiomeric ratio: 97:3 determined by HPLC (CHIRALCEL OD-H, hexane/isopropanol = 70/30, flow rate 1.0 mL/min, T = 30°C, 270 nm): t_R= 6.4 min (minor), t_R= 7.2 min (major). **^{1}H NMR** (400 MHz, Chloroform-*d*) δ 8.25 – 8.17 (m, 2H), 7.58 – 7.49 (m, 3H), 7.51 – 7.36 (m, 5H), 7.34 – 7.24 (m, 1H), 7.26 – 7.17 (m, 2H), 6.99 – 6.90 (m, 2H), 4.64 (d, *J* = 12.4 Hz, 1H), 4.26 (d, *J* = 12.4 Hz, 1H). **^{13}C NMR** (101 MHz, $CDCl_3$) δ 176.8, 136.7, 132.4, 132.3, 130.9, 130.9, 129.5, 129.0, 128.8, 128.6, 128.4, 128.2, 127.9, 56.1.; **HRMS** (ESI-TOF) m/z: $[M+H]^+$ calculated for $C_{20}H_{17}NOS$: 320.1104 found 320.1114. The absolute configuration was tentatively assigned by analogy.

(*S*)-*N*-((4-(*tert*-butyl)phenyl)(4-methylbenzyl)-λ^4-sulfaneylidene)benzamide (3ai)



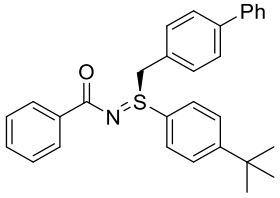
Yield: 60%. $[\alpha]_D^{20}$ = +54.2 (c 0.59, CH_2Cl_2). Enantiomeric ratio: 97.5:2.5 determined by HPLC (CHIRALCEL OD-H, hexane/isopropanol = 80/20, flow rate 1.0 mL/min, T = 30°C, 270 nm): t_R= 6.0 min (minor), t_R= 8.1 min (major). **^{1}H NMR** (500 MHz, Chloroform-*d*) δ 8.22 – 8.17 (m, 2H), 7.54 – 7.48 (m, 2H), 7.48 – 7.40 (m, 3H), 7.39 (t, *J* = 7.1 Hz, 2H), 7.02 (d, *J* = 7.7 Hz, 2H), 6.88 (d, *J* = 7.8 Hz, 2H), 4.61 (d, *J* = 12.4 Hz, 1H), 4.19 (d, *J* = 12.4 Hz, 1H), 2.31 (s, 3H), 1.32 (s, 9H). **^{13}C NMR** (126 MHz, $CDCl_3$) δ 176.7, 156.2, 138.9, 136.9, 130.8, 130.7, 129.3, 129.3, 128.8, 128.0, 127.9, 126.5, 125.7, 56.0, 35.2, 31.3, 21.4.; **HRMS** (ESI-TOF) m/z: $[M+H]^+$ calculated for $C_{25}H_{27}NOS$: 390.1886 found 390.1893. The absolute configuration was tentatively assigned by analogy.

(*S*)-*N*-((4-(*tert*-butyl)benzyl)(4-(*tert*-butyl)phenyl)-λ^4-sulfaneylidene)benzamide (3aj)



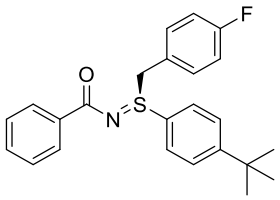
Yield: 71%. $[\alpha]_D^{20}$ = +48.0 (c 0.77, CH_2Cl_2). Enantiomeric ratio: 96.5:3.5 determined by HPLC (CHIRALCEL OD-H, hexane/isopropanol = 80/20, flow rate 1.0 mL/min, T = 30°C, 270 nm): t_R= 5.5 min (minor), t_R= 7.1 min (major). **^{1}H NMR** (400 MHz, Chloroform-*d*) δ 8.27 – 8.18 (m, 2H), 7.52 – 7.47 (m, 2H), 7.46 – 7.36 (m, 5H), 7.22 (dd, *J* = 8.2, 1.6 Hz, 2H), 6.99 – 6.91 (m, 2H), 4.66 (d, *J* = 12.2 Hz, 1H), 4.16 (d, *J* = 12.3 Hz, 1H), 1.32 (s, 9H), 1.28 (s, 9H). **^{13}C NMR** (101 MHz, $CDCl_3$) δ 176.7, 156.1, 152.1, 136.9, 130.8, 130.5, 129.3, 128.8, 127.9, 126.5, 125.9, 125.5, 56.0, 35.2, 34.7, 31.4, 31.2.; **HRMS** (ESI-TOF) m/z: $[M+H]^+$ calculated for $C_{28}H_{33}NOS$: 432.2356 found 432.2365. The absolute configuration was tentatively assigned by analogy.

(*S*)-*N*-(([1,1'-biphenyl]-4-ylmethyl)(4-(*tert*-butyl)phenyl)-λ^4-sulfaneylidene)benzamide (3ak)



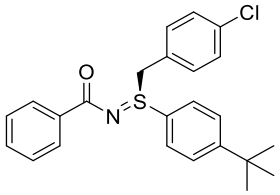
Yield: 79%. $[\alpha]_D^{20}$ = +82.0 (c 0.94, CH_2Cl_2). Enantiomeric ratio: 96:4 determined by HPLC (CHIRALCEL OD-H, hexane/isopropanol = 80/20, flow rate 1.0 mL/min, T = 30°C, 270 nm): t_R= 8.6 min (minor), t_R= 12.4 min (major). **^{1}H NMR** (400 MHz, Chloroform-*d*) δ 8.26 – 8.19 (m, 2H), 7.60 – 7.52 (m, 4H), 7.49 – 7.33 (m, 10H), 7.06 (d, *J* = 8.1 Hz, 2H), 4.67 (d, *J* = 12.3 Hz, 1H), 4.30 (d, *J* = 12.3 Hz, 1H), 1.33 (s, 9H). **^{13}C NMR** (101 MHz, $CDCl_3$) δ 176.8, 156.3, 141.7, 140.3, 136.8, 131.4, 130.8, 129.0, 129.0, 128.8, 128.1, 127.9, 127.8, 127.7, 127.2, 127.1, 126.6, 55.9, 35.2, 31.3.; **HRMS** (ESI-TOF) m/z: $[M+H]^+$ calculated for $C_{30}H_{29}NOS$: 452.2043 found 452.2053. The absolute configuration was tentatively assigned by analogy.

(*S*)-*N*-((4-(*tert*-butyl)phenyl)(4-fluorobenzyl)-λ^4-sulfaneylidene)benzamide (3al)



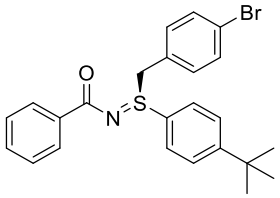
Yield: 79%. $[\alpha]_D^{20}$ = +72.2 (c 0.70, CH_2Cl_2). Enantiomeric ratio: 97:3 determined by HPLC (CHIRALCEL OD-H, hexane/isopropanol = 80/20, flow rate 1.0 mL/min, T = 30°C, 270 nm): t_R= 7.1 min (minor), t_R= 10.8 min (major). **^{1}H NMR** (400 MHz, Chloroform-*d*) δ 8.23 – 8.15 (m, 2H), 7.53 – 7.43 (m, 4H), 7.47 – 7.41 (m, 1H), 7.44 – 7.35 (m, 2H), 6.97 – 6.85 (m, 4H), 4.52 (d, *J* = 12.5 Hz, 1H), 4.29 (d, *J* = 12.6 Hz, 1H), 1.32 (s, 9H). **^{13}C NMR** (101 MHz, Chloroform-*d*) δ 176.8, 163.1 (d, *J* = 248.7 Hz), 156.4, 136.7, 132.7 (d, *J* = 8.6 Hz), 130.9, 128.8, 128.6, 128.0, 127.9, 126.6, 124.5 (d, *J* = 3.5 Hz), 115.6 (d, *J* = 21.5 Hz), 55.1, 35.2, 31.2. **^{19}F NMR** (376 MHz, $CDCl_3$) δ -112.15.; **HRMS** (ESI-TOF) m/z: $[M+H]^+$ calculated for $C_{24}H_{24}FNOS$: 394.1635 found 394.1647. The absolute configuration was tentatively assigned by analogy.

(*S*)-*N*-((4-(*tert*-butyl)phenyl)(4-chlorobenzyl)-λ^4-sulfaneylidene)benzamide (3am)



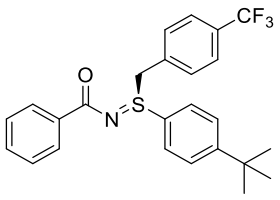
Yield: 39%. $[\alpha]_D^{20}$ = +68.8 (c 0.40, CH_2Cl_2). Enantiomeric ratio: 99:1 determined by HPLC (CHIRALCEL OD-H, hexane/isopropanol = 80/20, flow rate 1.0 mL/min, T = 30°C, 270 nm): t_R= 7.3 min (minor), t_R= 11.4 min (major). **^{1}H NMR** (400 MHz, Chloroform-*d*) δ 8.22 – 8.14 (m, 2H), 7.55 – 7.41 (m, 5H), 7.44 – 7.35 (m, 2H), 7.22 – 7.15 (m, 2H), 6.92 – 6.85 (m, 2H), 4.50 (d, *J* = 12.5 Hz, 1H), 4.29 (d, *J* = 12.5 Hz, 1H), 1.33 (s, 9H). **^{13}C NMR** (101 MHz, $CDCl_3$) δ 176.8, 156.5, 136.6, 135.1, 132.2, 130.9, 128.8, 128.7, 128.6, 128.0, 128.0, 127.1, 126.7, 55.1, 35.2, 31.2.; **HRMS** (ESI-TOF) m/z: $[M+H]^+$ calculated for $C_{24}H_{24}ClNOS$: 410.1340 found 410.1355. The absolute configuration was tentatively assigned by analogy.

(*S*)-*N*-((4-bromobenzyl)(4-(*tert*-butyl)phenyl)-λ^4-sulfaneylidene)benzamide (3an)



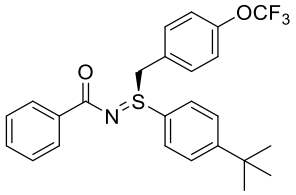
Yield: 89%. $[\alpha]_D^{20}$ = +64.2 (c 1.01, CH_2Cl_2). Enantiomeric ratio: 97.5:2.5 determined by HPLC (CHIRALCEL OD-H, hexane/isopropanol = 80/20, flow rate 1.0 mL/min, T = 30°C, 270 nm): t_R= 7.4 min (minor), t_R= 11.2 min (major). **^{1}H NMR** (400 MHz, Chloroform-*d*) δ 8.23 – 8.13 (m, 2H), 7.55 – 7.41 (m, 5H), 7.44 – 7.35 (m, 2H), 7.34 (d, *J* = 8.4 Hz, 2H), 6.82 (d, *J* = 8.4 Hz, 2H), 4.48 (d, *J* = 12.5 Hz, 1H), 4.28 (d, *J* = 12.5 Hz, 1H), 1.33 (s, 9H). **^{13}C NMR** (101 MHz, $CDCl_3$) δ 176.8, 156.5, 136.6, 132.5, 131.7, 130.9, 128.8, 128.5, 128.0, 128.0, 127.7, 126.7, 123.4, 55.2, 35.3, 31.2.; **HRMS** (ESI-TOF) m/z: $[M+H]^+$ calculated for $C_{24}H_{24}BrNOS$: 454.0835 found 454.0847. The absolute configuration was tentatively assigned by analogy.

(*S*)-*N*-((4-(*tert*-butyl)phenyl)(4-(trifluoromethyl)benzyl)-λ^4-sulfaneylidene)benzamide (3ao)



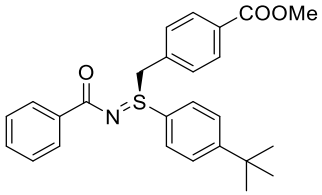
Yield: 91%. $[\alpha]_D^{20}$ = +53.3 (c 1.01, CH_2Cl_2). Enantiomeric ratio: 94.5:5.5 determined by HPLC (CHIRALCEL OD-H, hexane/isopropanol = 80/20, flow rate 1.0 mL/min, T = 30°C, 270 nm): t_R= 6.8 min (minor), t_R= 10.8 min (major). **^{1}H NMR** (400 MHz, Chloroform-*d*) δ 8.23 – 8.14 (m, 2H), 7.54 – 7.43 (m, 7H), 7.45 – 7.36 (m, 2H), 7.08 (d, *J* = 7.9 Hz, 2H), 4.56 (d, *J* = 12.4 Hz, 1H), 4.39 (d, *J* = 12.5 Hz, 1H), 1.32 (s, 9H). **^{13}C NMR** (101 MHz, Chloroform-*d*) δ 176.9, 156.7, 136.5, 132.8, 131.3, 131.0, 131.0 (q, *J* = 32.6 Hz), 128.8, 128.4, 128.0, 127.9, 126.8, 125.4 (q, *J* = 3.9 Hz), 55.1, 35.2, 31.2. **^{19}F NMR** (376 MHz, $CDCl_3$) δ -62.70.; **HRMS** (ESI-TOF) m/z: $[M+H]^+$ calculated for $C_{25}H_{24}F_3NOS$: 444.1603 found 444.1619. The absolute configuration was tentatively assigned by analogy.

(*S*)-*N*-((4-(*tert*-butyl)phenyl)(4-(trifluoromethoxy)benzyl)-λ^4-sulfaneylidene)benzamide (3ap)



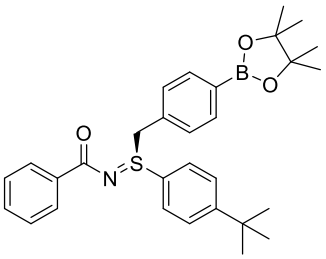
Yield: 31%. $[\alpha]_D^{20}$ = +32.2 (c 0.36, CH_2Cl_2). Enantiomeric ratio: 95:5 determined by HPLC (CHIRALCEL OD-H, hexane/isopropanol = 80/20, flow rate 1.0 mL/min, T = 30°C, 270 nm): t_R= 6.2 min (minor), t_R= 9.2 min (major). **^{1}H NMR** (400 MHz, Chloroform-*d*) δ 8.21 – 8.16 (m, 2H), 7.52 – 7.41 (m, 5H), 7.40 (dd, *J* = 8.2, 6.7 Hz, 2H), 7.05 (d, *J* = 8.3 Hz, 2H), 6.98 (d, *J* = 8.4 Hz, 2H), 4.53 (d, *J* = 12.5 Hz, 1H), 4.33 (d, *J* = 12.5 Hz, 1H), 1.32 (s, 9H). **^{13}C NMR** (101 MHz, Chloroform-*d*) δ 176.8, 156.5, 149.7, 136.6, 132.4, 130.9, 128.8, 128.0, 127.9 (d, *J* = 96.3 Hz), 127.9, 126.7, 120.8, 120.4 (q, *J* = 193.1 Hz), 54.9, 35.2, 31.2. **^{19}F NMR** (376 MHz, $CDCl_3$) δ -57.86.; **HRMS** (ESI-TOF) m/z: $[M+H]^+$ calculated for $C_{25}H_{24}F_3NO_2S$: 460.1553 found 460.1568. The absolute configuration was tentatively assigned by analogy.

methyl (*S*)-4-((*N*-benzoyl-λ^4-(4-(*tert*-butyl)phenyl)sulfinimidoyl)methyl)benzoate (3aq)



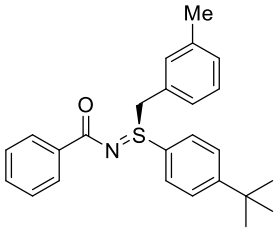
Yield: 70%. $[\alpha]_D^{20}$ = +76.3 (c 0.76, CH_2Cl_2). Enantiomeric ratio: 96:4 determined by HPLC (CHIRALCEL OD-H, hexane/isopropanol = 80/20, flow rate 1.0 mL/min, T = 30°C, 270 nm): t_R= 9.8 min (minor), t_R= 13.4 min (major). **^{1}H NMR** (400 MHz, Chloroform-*d*) δ 8.20 – 8.14 (m, 2H), 7.90 – 7.85 (m, 2H), 7.53 – 7.40 (m, 5H), 7.43 – 7.34 (m, 2H), 7.03 (d, *J* = 8.3 Hz, 2H), 4.58 (d, *J* = 12.3 Hz, 1H), 4.36 (d, *J* = 12.3 Hz, 1H), 3.90 (s, 3H), 1.31 (s, 9H). **^{13}C NMR** (101 MHz, $CDCl_3$) δ 176.9, 166.6, 156.6, 136.6, 133.7, 131.0, 130.9, 130.5, 129.6, 128.8, 128.4, 127.9, 126.7, 55.4, 52.4, 35.2, 31.2.; **HRMS** (ESI-TOF) m/z: $[M+H]^+$ calculated for $C_{26}H_{27}NO_3S$: 434.1784 found 434.1797. The absolute configuration was tentatively assigned by analogy.

(*S*)-*N*-((4-(*tert*-butyl)phenyl)(4-(4,4,5,5-tetramethyl-1,3,2-dioxaborolan-2-yl)benzyl)-λ^4-sulfaneylidene)benzamide (3ar)



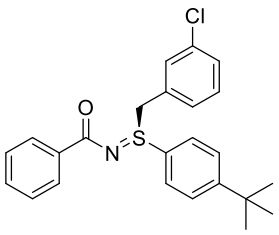
Yield: 89%. $[\alpha]_D^{20}$ = +55.2 (c 1.12, CH_2Cl_2). Enantiomeric ratio: 97:3 determined by HPLC (CHIRALCEL OD-H, hexane/isopropanol = 80/20, flow rate 1.0 mL/min, T = 30°C, 270 nm): t_R= 5.8 min (minor), t_R= 7.6 min (major). **^{1}H NMR** (400 MHz, Chloroform-*d*) δ 8.19 (dt, *J* = 6.9, 1.5 Hz, 2H), 7.69 – 7.62 (m, 2H), 7.55 – 7.47 (m, 2H), 7.49 – 7.40 (m, 3H), 7.43 – 7.34 (m, 2H), 7.01 (d, *J* = 7.9 Hz, 2H), 4.65 (d, *J* = 12.3 Hz, 1H), 4.24 (d, *J* = 12.3 Hz, 1H), 1.34 (s, 12H), 1.32 (s, 9H). **^{13}C NMR** (101 MHz, $CDCl_3$) δ 176.8, 156.3, 136.8, 134.9, 131.7, 130.8, 130.2, 128.9, 128.8, 128.0, 127.9, 126.6, 84.1, 75.1, 56.2, 35.2, 31.2, 25.0, 25.0.; **HRMS** (ESI-TOF) m/z: $[M+H]^+$ calculated for $C_{30}H_{36}BNO_3S$: 502.2582 found 502.2592. The absolute configuration was tentatively assigned by analogy.

(*S*)-*N*-((4-(*tert*-butyl)phenyl)(3-methylbenzyl)-λ^4-sulfaneylidene)benzamide (3as)



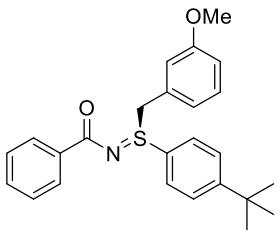
Yield: 73%. $[\alpha]_D^{20}$ = +63.3 (c 0.71, CH_2Cl_2). Enantiomeric ratio: 97.5:2.5 determined by HPLC (CHIRALCEL OD-H, hexane/isopropanol = 80/20, flow rate 1.0 mL/min, T = 30°C, 270 nm): t_R= 6.4 min (minor), t_R= 8.3 min (major). **^{1}H NMR** (400 MHz, Chloroform-*d*) δ 8.23 – 8.17 (m, 2H), 7.52 – 7.40 (m, 5H), 7.44 – 7.35 (m, 2H), 7.16 – 7.06 (m, 2H), 6.81 (dt, *J* = 6.7, 2.0 Hz, 1H), 6.69 (d, *J* = 2.0 Hz, 1H), 4.62 (d, *J* = 12.2 Hz, 1H), 4.17 (d, *J* = 12.2 Hz, 1H), 2.19 (s, 3H), 1.32 (s, 9H). **^{13}C NMR** (101 MHz, $CDCl_3$) δ 176.8, 156.2, 138.2, 136.9, 131.8, 130.8, 129.6, 129.0, 128.8, 128.5, 128.4, 128.1, 127.9, 127.9, 126.5, 56.3, 35.2, 31.2, 21.2.; **HRMS** (ESI-TOF) m/z: $[M+H]^+$ calculated for $C_{25}H_{27}NOS$: 390.1886 found 390.1889. The absolute configuration was tentatively assigned by analogy.

(*S*)-*N*-((4-(*tert*-butyl)phenyl)(3-chlorobenzyl)-λ^4-sulfaneylidene)benzamide (3at)



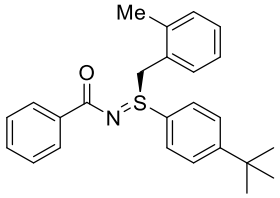
Yield: 91%. $[\alpha]_D^{20}$ = +90.5 (c 0.93, CH_2Cl_2). Enantiomeric ratio: 97.5:2.5 determined by HPLC (CHIRALCEL OD-H, hexane/isopropanol = 80/20, flow rate 1.0 mL/min, T = 30°C, 270 nm): t_R= 8.1 min (minor), t_R= 12.0 min (major). **^{1}H NMR** (400 MHz, Chloroform-*d*) δ 8.22 – 8.17 (m, 2H), 7.51 – 7.45 (m, 4H), 7.49 – 7.41 (m, 1H), 7.44 – 7.35 (m, 2H), 7.26 (ddd, *J* = 8.3, 2.1, 1.0 Hz, 1H), 7.17 (t, *J* = 7.8 Hz, 1H), 6.95 (dt, *J* = 7.6, 1.4 Hz, 1H), 6.72 (t, *J* = 1.9 Hz, 1H), 4.50 (d, *J* = 12.4 Hz, 1H), 4.25 (d, *J* = 12.3 Hz, 1H), 1.33 (s, 9H). **^{13}C NMR** (101 MHz, $CDCl_3$) δ 176.8, 156.6, 136.6, 134.2, 131.0, 130.9, 130.5, 129.7, 129.1, 129.0, 128.8, 128.3, 128.0, 127.9, 126.7, 55.3, 35.3, 31.2.; **HRMS** (ESI-TOF) m/z: $[M+H]^+$ calculated for $C_{24}H_{24}ClNOS$: 410.1340 found 410.1356. The absolute configuration was tentatively assigned by analogy.

(*S*)-*N*-((4-(*tert*-butyl)phenyl)(3-methoxybenzyl)-λ^4-sulfaneylidene)benzamide (3au)



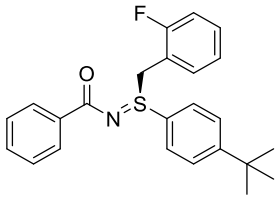
Yield: 60%. $[\alpha]_D^{20}$ = +64.4 (c 0.61, CH_2Cl_2). Enantiomeric ratio: 95:5 determined by HPLC (CHIRALCEL OD-H, hexane/isopropanol = 80/20, flow rate 1.0 mL/min, T = 30°C, 270 nm): t_R= 7.4 min (minor), t_R= 9.5 min (major). **^{1}H NMR** (500 MHz, Chloroform-*d*) δ 8.26 – 8.15 (m, 2H), 7.55 – 7.48 (m, 2H), 7.48 – 7.41 (m, 3H), 7.43 – 7.35 (m, 1H), 7.12 (dd, *J* = 8.4, 7.5 Hz, 1H), 6.83 (ddd, *J* = 8.4, 2.6, 1.0 Hz, 1H), 6.57 (dt, *J* = 7.6, 1.2 Hz, 1H), 6.46 (dd, *J* = 2.6, 1.6 Hz, 1H), 4.62 (d, *J* = 12.3 Hz, 1H), 4.21 (d, *J* = 12.3 Hz, 1H), 3.61 (s, 3H), 1.32 (s, 9H). **^{13}C NMR** (126 MHz, $CDCl_3$) δ 176.8, 159.6, 156.3, 136.8, 130.8, 130.0, 129.6, 129.0, 128.8, 128.1, 127.9, 126.6, 123.2, 115.5, 115.5, 56.2, 55.2, 35.2, 31.2.; **HRMS** (ESI-TOF) m/z: $[M+H]^+$ calculated for $C_{25}H_{27}NO_2S$: 406.1835 found 406.1844. The absolute configuration was tentatively assigned by analogy.

(*S*)-*N*-((4-(*tert*-butyl)phenyl)(2-methylbenzyl)-λ^4-sulfaneylidene)benzamide (3av)



Yield: 72%. $[\alpha]_D^{20}$ = +76.2 (c 0.70, CH_2Cl_2). Enantiomeric ratio: 97:3 determined by HPLC (CHIRALCEL OD-H, hexane/isopropanol = 80/20, flow rate 1.0 mL/min, T = 30°C, 270 nm): t_R= 5.7 min (minor), t_R= 7.4 min (major). **^{1}H NMR** (500 MHz, Chloroform-*d*) δ 8.25 – 8.19 (m, 2H), 7.52 – 7.46 (m, 2H), 7.48 – 7.36 (m, 5H), 7.20 (td, *J* = 7.4, 1.3 Hz, 1H), 7.15 (d, *J* = 7.4 Hz, 1H), 6.99 (td, *J* = 7.5, 1.5 Hz, 1H), 6.75 (dd, *J* = 7.7, 1.3 Hz, 1H), 4.93 (d, *J* = 12.3 Hz, 1H), 4.02 (d, *J* = 12.2 Hz, 1H), 2.30 (s, 3H), 1.31 (s, 9H). **^{13}C NMR** (126 MHz, $CDCl_3$) δ 176.9, 156.4, 138.4, 136.8, 132.0, 130.8, 130.7, 129.2, 129.0, 128.8, 128.0, 127.9, 127.5, 126.5, 126.1, 54.7, 35.2, 31.2, 19.4.; **HRMS** (ESI-TOF) m/z: $[M+H]^+$ calculated for $C_{25}H_{27}NOS$: 390.1886 found 390.1897. The absolute configuration was tentatively assigned by analogy.

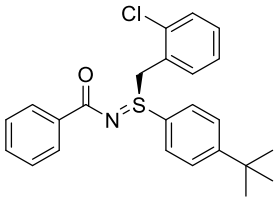
(*S*)-*N*-((4-(*tert*-butyl)phenyl)(2-fluorobenzyl)-λ^4-sulfaneylidene)benzamide (3aw)



Yield: 37%. $[\alpha]_D^{20}$ = +29.3 (c 0.37, CH_2Cl_2). Enantiomeric ratio: 95.5:4.5 determined by HPLC (CHIRALCEL OD-H, hexane/isopropanol = 80/20, flow rate 1.0 mL/min, T = 30°C, 270 nm): t_R= 6.3 min (minor), t_R= 8.2 min (major). **^{1}H NMR** (400 MHz, Chloroform-*d*) δ 8.22 – 8.17 (m, 2H), 7.57 – 7.49 (m, 2H), 7.50 – 7.35 (m, 5H), 7.34 – 7.25 (m, 1H), 7.14 (td, *J* = 7.4, 1.7 Hz, 1H), 7.04 (t, *J* = 7.5 Hz, 1H), 6.93 (t, *J* = 9.0 Hz, 1H), 4.63 (d, *J* = 12.6 Hz, 1H), 4.35 (d, *J* = 12.6 Hz, 1H), 1.31 (s, 9H). **^{13}C NMR** (101 MHz, Chloroform-*d*) δ 176.9, 161.5 (d, *J* = 250.1 Hz), 156.4, 136.7, 133.0 (d, *J* = 3.0 Hz), 131.0 (d, *J* = 8.1 Hz), 130.9, 129.1, 128.9, 127.9, 127.7, 126.6, 124.2 (d, *J* = 3.7 Hz), 116.7 (d, *J* = 14.9 Hz), 115.5 (d, *J* = 21.8 Hz),

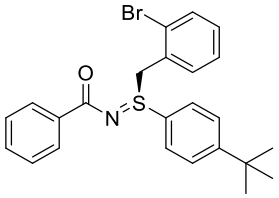
49.0, 35.2, 31.2. **^{19}F NMR** (376 MHz, $CDCl_3$) δ -116.02.; **HRMS** (ESI-TOF) m/z: $[M+H]^+$ calculated for $C_{24}H_{24}FNOS$: 394.1635 found 394.1649. The absolute configuration was tentatively assigned by analogy.

(*S*)-*N*-((4-(*tert*-butyl)phenyl)(2-chlorobenzyl)-λ^4-sulfaneylidene)benzamide (3ax)



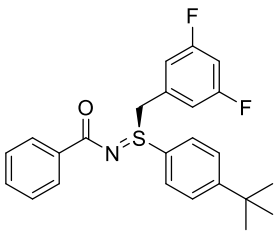
Yield: 48%. $[\alpha]_D^{20}$ = +81.0 (c 0.49, CH_2Cl_2). Enantiomeric ratio: 93:7 determined by HPLC (CHIRALCEL OD-H, hexane/isopropanol = 80/20, flow rate 1.0 mL/min, T = 30°C, 270 nm): t_R= 6.6 min (minor), t_R= 8.2 min (major). **^{1}H NMR** (400 MHz, Chloroform-*d*) δ 8.24 – 8.17 (m, 2H), 7.59 – 7.50 (m, 2H), 7.49 – 7.35 (m, 5H), 7.37 – 7.30 (m, 1H), 7.30 – 7.21 (m, 1H), 7.18 – 7.08 (m, 2H), 4.82 (d, *J* = 12.3 Hz, 1H), 4.35 (d, *J* = 12.3 Hz, 1H), 1.31 (s, 9H). **^{13}C NMR** (101 MHz, $CDCl_3$) δ 176.9, 156.4, 136.7, 135.5, 133.3, 130.8, 130.5, 129.7, 129.5, 128.9, 127.9, 127.6, 126.9, 126.7, 53.6, 35.2, 31.2.; **HRMS** (ESI-TOF) m/z: $[M+H]^+$ calculated for $C_{24}H_{24}ClNOS$: 410.1340 found 410.1349. The absolute configuration was tentatively assigned by analogy.

(*S*)-*N*-((2-bromobenzyl)(4-(*tert*-butyl)phenyl)-λ^4-sulfaneylidene)benzamide (3ay)



Yield: 71%. $[\alpha]_D^{20}$ = -18.2 (c 0.18, CH_2Cl_2). Enantiomeric ratio: 91:9 determined by HPLC (CHIRALCEL OD-H, hexane/isopropanol = 80/20, flow rate 1.0 mL/min, T = 30°C, 270 nm): t_R= 6.6 min (minor), t_R= 8.0 min (major). **^{1}H NMR** (400 MHz, Chloroform-*d*) δ 8.30 – 8.13 (m, 2H), 7.58 – 7.49 (m, 3H), 7.48 – 7.42 (m, 3H), 7.42 – 7.36 (m, 2H), 7.21 – 7.10 (m, 3H), 4.84 (d, *J* = 12.3 Hz, 1H), 4.35 (d, *J* = 12.4 Hz, 1H), 1.31 (s, 9H). **^{13}C NMR** (101 MHz, $CDCl_3$) δ 176.9, 156.4, 136.7, 133.4, 133.1, 130.8, 130.6, 129.5, 129.4, 128.9, 127.9, 127.6, 127.5, 126.7, 125.9, 56.2, 35.2, 31.2.; **HRMS** (ESI-TOF) m/z: $[M+H]^+$ calculated for $C_{24}H_{24}ClNOS$: 410.1340 found 410.1349. The absolute configuration was tentatively assigned by analogy.

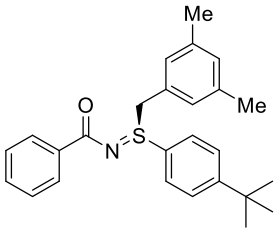
(*S*)-*N*-((4-(*tert*-butyl)phenyl)(3,5-difluorobenzyl)-λ^4-sulfaneylidene)benzamide (3az)



Yield: 68%. $[\alpha]_D^{20}$ = +75.5 (c 0.70, CH_2Cl_2). Enantiomeric ratio: 97.5:2.5 determined by HPLC (CHIRALPAK IC, hexane/isopropanol = 70/30, flow rate 1.0 mL/min, T = 30°C, 270 nm): t_R= 20.0 min (minor), t_R= 21.6 min (major. **^{1}H NMR** (400 MHz, Chloroform-*d*) δ 8.21 – 8.15 (m, 2H), 7.57 – 7.44 (m, 4H), 7.48 – 7.41 (m, 1H), 7.45 – 7.35 (m, 2H), 6.74 (tt, *J* = 8.8, 2.3 Hz, 1H), 6.48 (dt, *J* = 6.4, 2.1 Hz, 2H), 4.50 (d, *J* = 12.5 Hz, 1H), 4.24 (d, *J* = 12.4 Hz, 1H), 1.32 (s, 9H). **^{13}C NMR** (101 MHz, Chloroform-*d*) δ 176.9, 162.7 (dd, *J* = 250.1, 12.5 Hz), 156.8, 136.4, 132.3 (t, *J* = 9.9 Hz), 131.0, 128.8, 128.3,

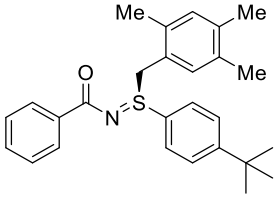
128.0, 127.8, 126.8, 113.8 (dd, J = 25.7, 7.0 Hz), 104.4 (t, J = 25.0 Hz), 55.0, 35.2, 31.2. **^{19}F NMR** (376 MHz, $CDCl_3$) δ -109.20.; **HRMS** (ESI-TOF) m/z: $[M+H]^+$ calculated for $C_{24}H_{23}F_2NOS$: 412.1541 found 412.1556. The absolute configuration was tentatively assigned by analogy.

(*S*)-*N*-((4-(*tert*-butyl)phenyl)(3,5-dimethylbenzyl)-λ^4-sulfaneylidene)benzamide (3ba)



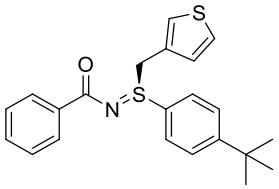
Yield: 81%. $[\alpha]_D^{20}$ = +71.5 (c 0.82, CH_2Cl_2). Enantiomeric ratio: 97:3 determined by HPLC (CHIRALCEL OD-H, hexane/isopropanol = 80/20, flow rate 1.0 mL/min, T = 30°C, 270 nm): t_R= 5.8 min (minor), t_R= 7.6 min (major). **^{1}H NMR** (400 MHz, Chloroform-*d*) δ 8.22 – 8.17 (m, 2H), 7.52 – 7.40 (m, 5H), 7.44 – 7.34 (m, 2H), 6.91 (s, 1H), 6.52 (d, J = 1.5 Hz, 2H), 4.59 (d, J = 12.1 Hz, 1H), 4.10 (d, J = 12.2 Hz, 1H), 2.16 (s, 6H), 1.32 (s, 9H). **^{13}C NMR** (101 MHz, $CDCl_3$) δ 176.8, 156.2, 138.1, 136.9, 130.7, 130.4, 129.1, 128.8, 128.3, 128.2, 127.9, 126.3, 56.4, 35.2, 31.2, 21.1.; **HRMS** (ESI-TOF) m/z: $[M+H]^+$ calculated for $C_{26}H_{29}NOS$: 404.2043 found 404.2048. The absolute configuration was tentatively assigned by analogy.

(*S*)-*N*-((4-(*tert*-butyl)phenyl)(2,4,5-trimethylbenzyl)-λ^4-sulfaneylidene)benzamide (3bb)



Yield: 95%. $[\alpha]_D^{20}$ = -46.2 (c 0.99, CH_2Cl_2). Enantiomeric ratio: 5:95 determined by HPLC (CHIRALCEL OD-H, hexane/isopropanol = 80/20, flow rate 1.0 mL/min, T = 30°C, 270 nm): t_R= 5.9 min (major), t_R= 7.4 min (minor). **^{1}H NMR** (400 MHz, Chloroform-*d*) δ 8.26 – 8.20 (m, 2H), 7.53 – 7.46 (m, 2H), 7.47 – 7.35 (m, 5H), 6.92 (s, 1H), 6.38 (s, 1H), 4.88 (d, J = 12.2 Hz, 1H), 3.93 (d, J = 12.2 Hz, 1H), 2.21 (s, 3H), 2.19 (s, 3H), 2.01 (s, 3H), 1.32 (s, 9H). **^{13}C NMR** (101 MHz, $CDCl_3$) δ 176.9, 156.3, 137.6, 136.9, 135.5, 134.1, 133.3, 131.9, 130.8, 129.3, 128.8, 128.2, 127.9, 126.4, 124.4, 54.6, 35.2, 31.3, 19.5, 19.0, 18.7.; **HRMS** (ESI-TOF) m/z: $[M+H]^+$ calculated for $C_{27}H_{31}NOS$: 418.2199 found 418.2205. The absolute configuration was tentatively assigned by analogy.

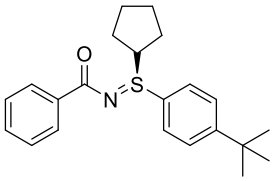
(*S*)-*N*-((4-(*tert*-butyl)phenyl)(thiophen-3-ylmethyl)-λ^4-sulfaneylidene)benzamide (3bc)



Yield: 53%. $[\alpha]_D^{20}$ = +48.8 (c 0.51, CH_2Cl_2). Enantiomeric ratio: 90.5:9.5 determined by HPLC (CHIRALCEL OD-H, hexane/isopropanol = 80/20, flow rate 1.0 mL/min, T = 30°C, 270 nm): t_R= 8.0 min (minor), t_R= 9.6 min (major). **^{1}H NMR** (400 MHz, Chloroform-*d*) δ 8.24 – 8.16 (m, 2H), 7.56 – 7.49 (m, 2H), 7.50 – 7.41 (m, 3H), 7.44 – 7.35 (m, 2H), 7.21 (dd, J = 4.9, 3.0 Hz, 1H), 6.92 (dd, J = 3.0, 1.2 Hz, 1H), 6.78 (dd, J = 5.0, 1.3 Hz, 1H), 4.62 (d, J = 12.8 Hz, 1H), 4.35 (d, J = 12.8 Hz, 1H), 1.32 (s, 9H). **^{13}C NMR** (101 MHz, $CDCl_3$) δ 176.8, 156.3, 136.8, 130.9, 129.2, 129.1, 128.8, 128.7, 127.9, 127.9,

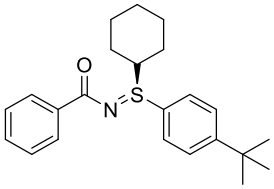
127.1, 126.6, 126.1, 50.5, 35.2, 31.3.; **HRMS** (ESI-TOF) m/z: $[M+H]^+$ calculated for $C_{22}H_{23}NOS_2$: 382.1294 found 382.1299. The absolute configuration was tentatively assigned by analogy.

(*S*)-*N*-((4-(*tert*-butyl)phenyl)(cyclopentyl)-λ⁴-sulfaneylidene)benzamide (3bd)



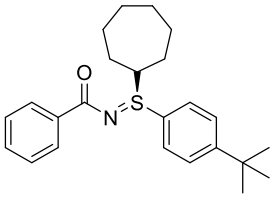
Yield: 74%. $[\alpha]_D^{20}$ = -111.6 (c 0.90, CH_2Cl_2). Enantiomeric ratio: 98:2 determined by HPLC (CHIRALCEL OD-H, hexane/isopropanol = 80/20, flow rate 1.0 mL/min, T = 30°C, 270 nm): t_R= 6.0 min (major), t_R= 7.2 min (minor). **^{1}H NMR** (400 MHz, Chloroform-*d*) δ 8.21 – 8.15 (m, 2H), 7.76 – 7.67 (m, 2H), 7.54 – 7.46 (m, 2H), 7.47 – 7.31 (m, 3H), 3.65 (td, *J* = 7.8, 6.2 Hz, 1H), 2.28 – 2.14 (m, 1H), 2.10 – 1.96 (m, 1H), 1.87 – 1.72 (m, 4H), 1.74 – 1.58 (m, 2H), 1.31 (s, 9H). **^{13}C NMR** (101 MHz, $CDCl_3$) δ 177.0, 155.7, 137.2, 131.5, 130.6, 128.9, 127.8, 127.5, 126.8, 59.9, 35.2, 31.3, 28.5, 28.5, 25.6, 25.4.; **HRMS** (ESI-TOF) m/z: $[M+H]^+$ calculated for $C_{22}H_{27}NOS$: 354.1886 found 354.1898. The absolute configuration was tentatively assigned by analogy.

(*S*)-*N*-((4-(*tert*-butyl)phenyl)(cyclohexyl)-λ⁴-sulfaneylidene)benzamide (3be)



Yield: 76%. $[\alpha]_D^{20}$ = -120.5 (c 0.70, CH_2Cl_2). Enantiomeric ratio: 98:2 determined by HPLC (CHIRALCEL OD-H, hexane/isopropanol = 80/20, flow rate 1.0 mL/min, T = 30°C, 270 nm): t_R= 5.9 min (major), t_R= 10.3 min (minor). **^{1}H NMR** (400 MHz, Chloroform-*d*) δ 8.23 – 8.17 (m, 2H), 7.72 – 7.66 (m, 2H), 7.55 – 7.49 (m, 2H), 7.45 – 7.34 (m, 3H), 3.22 (tt, *J* = 11.2, 3.5 Hz, 1H), 2.25 – 2.13 (m, 1H), 1.85 (td, *J* = 15.7, 14.9, 6.3 Hz, 3H), 1.70 – 1.62 (m, 1H), 1.55 (qd, *J* = 11.9, 3.7 Hz, 1H), 1.40 – 1.33 (m, 1H), 1.33 (s, 9H), 1.33 – 1.18 (m, 3H). **^{13}C NMR** (101 MHz, $CDCl_3$) δ 176.8, 155.8, 137.3, 130.6, 129.0, 128.9, 128.1, 127.8, 126.7, 58.7, 35.2, 31.3, 27.3, 26.8, 25.6, 25.5.; **HRMS** (ESI-TOF) m/z: $[M+H]^+$ calculated for $C_{23}H_{29}NOS$: 368.2043 found 368.2051. The absolute configuration was tentatively assigned by analogy.

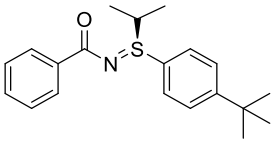
(*S*)-*N*-((4-(*tert*-butyl)phenyl)(cycloheptyl)-λ⁴-sulfaneylidene)benzamide (3bf)



Yield: 72%. $[\alpha]_D^{20}$ = -64.9 (c 0.52, CH_2Cl_2). Enantiomeric ratio: 98:2 determined by HPLC (CHIRALCEL OD-H, hexane/isopropanol = 80/20, flow rate 1.0 mL/min, T = 30°C, 270 nm): t_R= 5.9 min (major), t_R= 10.1 min (minor). **^{1}H NMR** (500 MHz, Chloroform-*d*) δ 8.23 – 8.17 (m, 2H), 7.75 – 7.68 (m, 2H), 7.54 – 7.48 (m, 2H), 7.46 – 7.39 (m, 1H), 7.40 – 7.34 (m, 2H), 3.41 (tt, *J* = 9.4, 4.2 Hz, 1H), 2.26 – 2.16 (m, 1H), 2.08 – 1.98 (m, 1H), 1.83 – 1.67 (m, 3H), 1.61 – 1.40 (m, 7H), 1.33 (s, 9H). **^{13}C NMR** (126 MHz, $CDCl_3$) δ 176.6, 155.8, 137.3, 130.6, 129.1, 128.9, 128.4, 127.8, 126.7, 59.9, 35.2, 31.3,

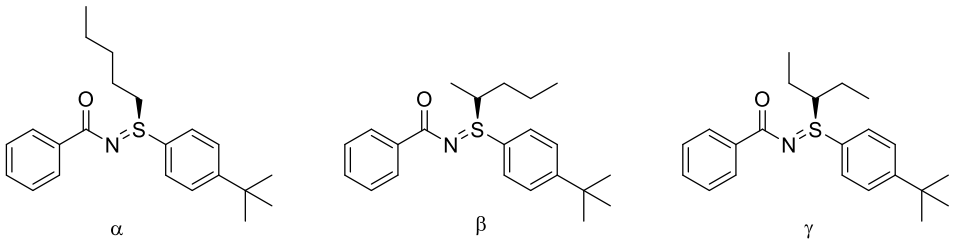
28.9, 28.2, 28.2, 28.1, 26.0, 25.9.; **HRMS** (ESI-TOF) m/z: $[M+H]^+$ calculated for $C_{24}H_{31}NOS$: 382.2199 found 382.2204. The absolute configuration was tentatively assigned by analogy.

(*S*)-*N*-((4-(*tert*-butyl)phenyl)(isopropyl)-λ⁴-sulfaneylidene)benzamide (3bg)



Yield: 32%. $[\alpha]_D^{20}$ = -77.2 (c 0.17, CH_2Cl_2). Enantiomeric ratio: 97:3 determined by HPLC (CHIRALCEL OD-H, hexane/isopropanol = 80/20, flow rate 1.0 mL/min, T = 30°C, 270 nm): t_R= 6.1 min (major), t_R= 7.0 min (minor). **^{1}H NMR** (400 MHz, Chloroform-*d*) δ 8.24 – 8.17 (m, 2H), 7.71 – 7.66 (m, 2H), 7.55 – 7.48 (m, 2H), 7.46 – 7.33 (m, 3H), 3.48 (hept, *J* = 6.9 Hz, 2H), 1.38 (d, *J* = 6.8 Hz, 3H), 1.32 (s, 9H), 1.25 (d, *J* = 6.7 Hz, 3H). **^{13}C NMR** (101 MHz, $CDCl_3$) δ 176.7, 155.9, 137.2, 130.7, 128.9, 128.5, 128.1, 127.9, 126.7, 50.6, 35.2, 31.3, 17.1, 16.5.; **HRMS** (ESI-TOF) m/z: $[M+H]^+$ calculated for $C_{20}H_{25}NOS$: 328.1730 found 328.1731. The absolute configuration was tentatively assigned by analogy.

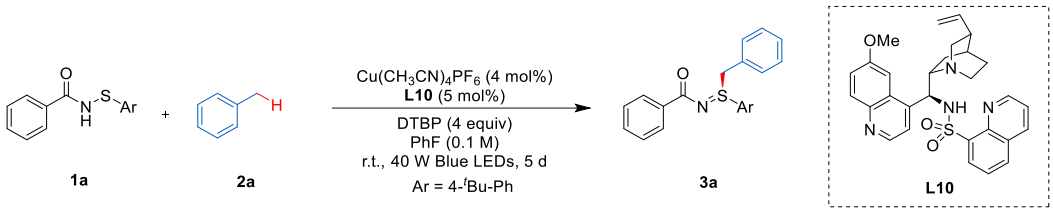
(*S*)-*N*-((4-(*tert*-butyl)phenyl)(pentan-1 or 2 or 3-yl)-λ⁴-sulfaneylidene)benzamide (3bh)



Yield: 90%.**^{1}H NMR** (400 MHz, Chloroform-*d*) δ 8.26 – 8.17 (m, 2H), 7.76 – 7.60 (m, 2H), 7.56 – 7.48 (m, 2H), 7.48 – 7.32 (m, 3H), 3.49 (h, *J* = 6.7 Hz, 0.36H/1H, β), 3.25 (t, *J* = 6.9 Hz, 0.26H/2H, α), 3.12 (p, *J* = 6.6 Hz, 0.23H/1H, γ), 2.00 – 1.35 (m, 5H), 1.35 – 1.29 (m, 9H), 1.21 – 0.83 (m, 6H). **^{13}C NMR** (101 MHz, $CDCl_3$) δ 176.7, 176.5, 176.4, 155.8, 155.6, 155.5, 137.2, 137.2, 130.5, 130.5, 129.0, 129.0, 128.9, 128.8, 128.8, 128.5, 128.0, 127.8, 127.7, 127.6, 127.1, 126.9, 126.6, 126.6, 126.5, 126.2, 63.5, 55.5, 54.5, 35.1, 33.2, 32.7, 31.2, 20.6, 20.4, 19.9, 19.9, 13.9, 13.8, 13.6, 13.2, 11.0, 10.9.; **HRMS** (ESI-TOF) m/z: $[M+H]^+$ calculated for $C_{22}H_{29}NOS$: 356.2043 found 356.2049. The absolute configuration was tentatively assigned by analogy.

SCALE-UP REACTION AND DERIVATIZATION OF THE ALKYL C-H SULFIMIDATION PRODUCT

1. Scale-up reaction



A 100 mL flame-dried and N_2-purged Schlenk tube charged with *N*-((4-(*tert*-butyl)phenyl)thio)benzamide **1a** (2.0 mmol, 1.0 equiv.), $Cu(CH_3CN)_4PF_6$ (30.0 mg, 0.08 mmol, 4 mol%), **L10** (52.0 mg, 0.1 mmol, 5 mol%) and a stirring bar was evacuated and filled with nitrogen (three cycles) before adding benzene **2a** (120 mmol, 60.0 equiv.), DTBP (1.5 mL, 8.0 mmol, 4.0 equiv.) and fluorobenzene (20.0 mL). The flask was positioned under 40 W 455 nm LEDs. After being stirred at room temperature for 5 days, the reaction mixture was then filtered through silica short column and concentrated under reduced pressure. The residue was purified through column chromatography on silica gel (petroleum ether/ethyl acetate) to afford the corresponding products **3a** (0.42g, 56%, 93% ee).

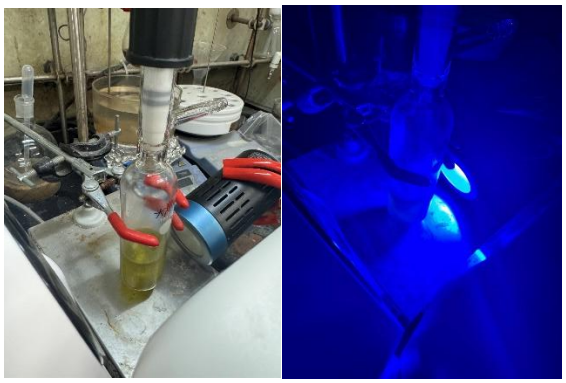


Figure S2. The photoreactor for scale-up reaction.

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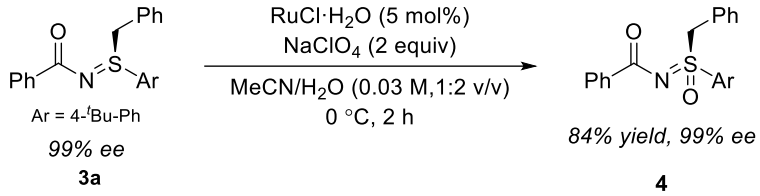
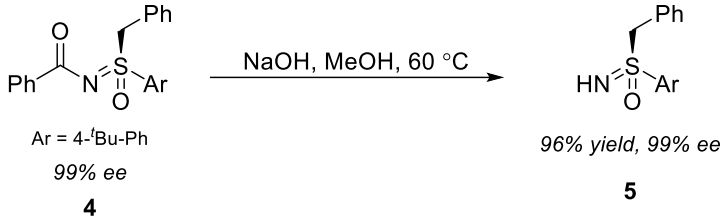
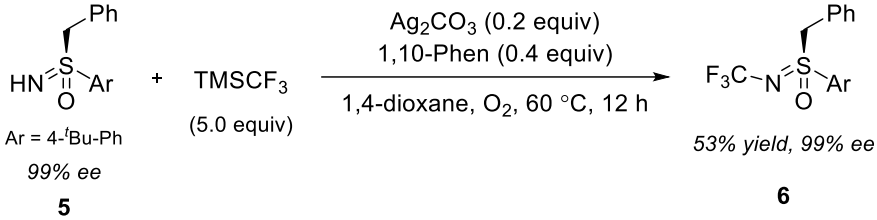
2. Versatile transformations of 3a



Prepared according to the modified literature procedure[8]. To a solution of (*S*)-*N*-(benzyl(4-(*tert*-butyl)phenyl)-λ^4-sulfaneylidene)benzamide (**3a**) (75 mg, 0.2 mmol, 1.0 equiv) in MeCN (2 mL) was added a pre-dissolved solution of $NaIO_4$ (86.4 mg, 0.4 mmol, 2.0 equiv) in H_2O (4 mL).This solution was cooled to 0 °C, and then $RuCl_3$ hydrate (2.3 mg, 0.01 mmol, 0.05 equiv) was added. After being stirred at 0 °C for 2 hours, the reaction mixture was extracted with CH_2Cl_2 (3×10 mL). Then the combined organic layers were washed with brine, dried over anhydrous Na_2SO_4, and concentrated under reduced pressure. The residue was purified through column chromatography on silica gel (hexanes/ethyl acetate= 5:1) to afford *N*-(argio(benzyl)(oxo)- λ^6-sulfaneylidene)benzamide **4** as the colorless solid (84% yield, 99% ee). $[\alpha]_D^{20}$ = 61.8 (c = 0.25 CH_2Cl_2). **^{1}H NMR** (500 MHz, Chloroform-*d*) δ 8.22 – 8.16 (m, 2H), 7.65 – 7.58 (m, 2H), 7.51 (tt, *J* = 6.9, 1.4 Hz, 1H), 7.49 – 7.43 (m, 2H), 7.42 (t, *J* = 7.6 Hz, 2H), 7.29 (tt, *J* = 6.9, 1.3 Hz, 1H), 7.19 (t, *J* = 7.6 Hz, 2H), 7.04 – 6.98 (m, 2H), 4.91 (d, *J* = 13.6 Hz, 1H), 4.86 (d, *J* = 13.6 Hz, 1H), 1.32 (s, 9H). **^{13}C NMR** (126 MHz, $CDCl_3$) δ 174.6, 157.9, 136.0, 132.4, 132.1, 131.3, 129.5, 129.1, 128.5, 128.4, 128.1, 127.6, 126.2, 62.3, 35.3, 31.1. The ee was determined by **HPLC** analysis (CHIRALCEL OD-H, hexane/isopropanol = 80/20, flow rate 1.0 mL/min, T = 30°C, 270 nm): t_R= 8.1 min (minor), t_R= 15.3 min (major). **HRMS** (ESI): m/z calculated for $C_{24}H_{25}NO_2SNa^+$ [M+Na$^+$]: 414.1498, found: 414.1497.

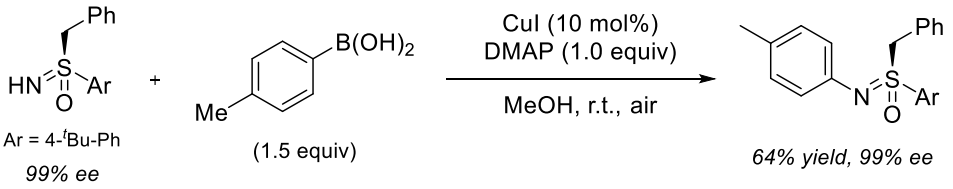


Prepared according to the modified literature procedure[9]. To a solution of sulfoximine **4** (39.1 mg, 0.1 mmol, 1.0 equiv) in MeOH (1.5 mL) was added aqueous NaOH (2M, 0.75 mL). The mixture was stirred at 60℃ in an oil bath for 16 hours. After cooling to room temperature, the mixture was extracted with CH_2Cl_2 (5 mL × 3). The combined organic layers were washed with brine, dried over anhydrous Na_2SO_4 and concentrated under reduced pressure. The obtained residue was purified directly by flash column chromatography on silica gel (hexanes/ethyl acetate= 2:1) to give the corresponding product **5** as the colorless solid (96% yield, >99% ee). $[\alpha]_D^{20}$ = 53.1 (c = 0.1 CH_2Cl_2). **^{1}H NMR** (400 MHz, Chloroform-*d*) δ 7.65 – 7.60 (m, 2H), 7.43 – 7.35 (m, 2H), 7.30 – 7.21 (m, 1H), 7.25 – 7.16 (m, 2H), 7.11 – 7.03 (m, 2H), 4.31 (d, *J* = 13.2 Hz, 1H), 4.21 (d, *J* = 13.2 Hz, 1H), 2.72 (s, 1H), 1.27 (s, 9H). **^{13}C NMR** (101 MHz, $CDCl_3$) δ 157.1, 137.6, 131.2, 128.8, 128.8, 128.8, 128.5, 125.9, 64.8, 35.2, 31.2. The ee was determined by **HPLC** analysis (CHIRALCEL OD-H, hexane/isopropanol = 90/10, flow rate 1.0 mL/min, T = 30°C, 270 nm): t_R= 15.4 min (major), t_R= 17.1 min (minor). **HRMS** (ESI): m/z calculated for $C_{17}H_{21}NOSNa^+$ [M+Na$^+$]: 310.1236, found: 310.1252.

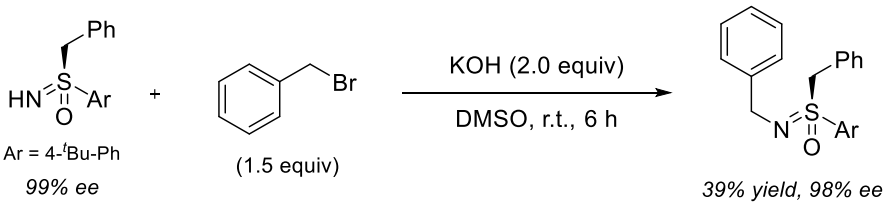


Prepared according to the modified literature procedure[9]. Under dioxygen, a 10 mL flame-dried Schlenk tube equipped with a stirring bar was charged with the compound **5** (28.7 mg, 0.1 mmol, 1.0 equiv), $TMSCF_3$ (71.1 mg, 74 μL, 5.0 equiv), Ag_2CO_3 (5.4 mg, 0.2 equiv), 1,10-phen (7.2 mg, 0.4 equiv) and 1,4-dioxane (0.8 mL). The reaction mixture was stirred at 60 °C for 12 h in an oil bath. After completion of the reaction (as monitored by TLC), the solvent was concentrated in vacuum. Purification by flash column chromatography (hexanes/ethyl acetate= 5:1) afforded the product **6** as the colorless solid (53%

yield, 99% ee). **[α]$_D^{20}$** = 38.4 (c = 0.18, CH_2Cl_2). **^{1}H NMR** (400 MHz, Chloroform-*d*) δ 7.58 – 7.52 (m, 2H), 7.50 – 7.41 (m, 2H), 7.37 – 7.28 (m, 1H), 7.28 – 7.17 (m, 2H), 7.03 – 6.96 (m, 2H), 4.53 (d, *J* = 13.8 Hz, 1H), 4.43 (d, *J* = 13.8 Hz, 1H), 1.33 (s, 9H). **^{13}C NMR** (101 MHz, Chloroform-*d*) δ 158.4, 132.8, 131.4, 129.4, 128.9, 128.6, 126.8, 126.2, 122.4 (d, *J* = 255.8 Hz), 64.6, 35.4, 31.1. ^{19}F NMR (376 MHz, CDCl3) δ -40.72. The ee was determined by **HPLC** analysis (CHIRALCEL OJ-H, hexane/isopropanol = 90/10, flow rate 1.0 mL/min, T = 30°C, 270 nm): t_R= 10.1 min (minor), t_R= 11.7 min (major). **HRMS** (ESI): m/z calculated for $C_{18}H_{20}F_3NOSNa^+$ [M+Na$^+$]: 378.1110, found: 378.1107.



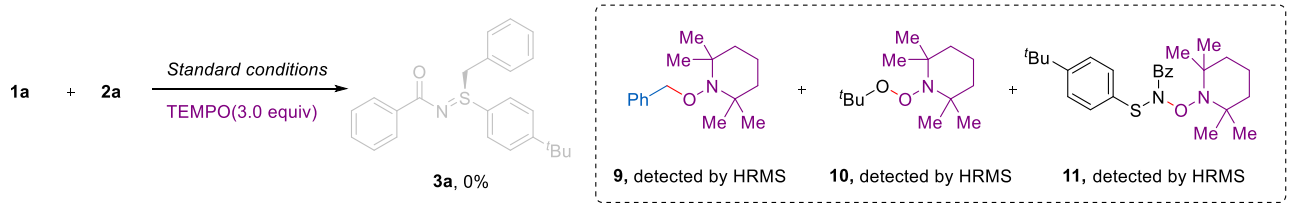
Prepared according to the modified literature procedure[9]. A mixture of the compound **5** (28.7 mg, 0.1 mmol, 1.0 equiv), CuI (2.0 mg, 0.01 mol, 10 mol%), and 4-DMAP (13.0 mg, 0.1 mmol, 1 equiv) was stirred in MeOH (0.8 mL) under open air at room temperature for 5 min. The *p*-tolylboronic acid (20.0 mg, 0.15 mmol, 1.5 equiv) was added to the reaction mixture and allowed being stirred at room temperature. The progress of reaction was monitored by TLC. After completion, the mixture was extracted with CH_2Cl_2 (5 mL × 3). The combined organic layers were washed with brine, dried over anhydrous Na_2SO_4 and concentrated under reduced pressure. Purification by flash column chromatography (hexanes/ethyl acetate= 5:1) afforded the product **7** as the colorless solid (64% yield, 99% ee). **[α]$_D^{20}$** = -34.5 (c = 0.11, CH_2Cl_2). **^{1}H NMR** (400 MHz, Chloroform-d) δ 7.57 – 7.49 (m, 2H), 7.41 – 7.33 (m, 2H), 7.31 – 7.24 (m, 1H), 7.20 (td, J = 7.0, 1.6 Hz, 2H), 7.07 – 6.92 (m, 6H), 4.51 (d, J = 14.1 Hz, 1H), 4.49 (d, J = 13.9 Hz, 1H), 2.23 (s, 3H), 1.29 (s, 9H). **^{13}C NMR** (101 MHz, CDCl3) δ 157.1, 142.7, 133.8, 131.4, 130.8, 130.1, 129.7, 128.7, 128.3, 126.1, 123.4, 115.2, 63.5, 35.2, 31.2, 20.8. The ee was determined by **HPLC** analysis (CHIRALCEL OD-H, hexane/isopropanol = 80/20, flow rate 1.0 mL/min, T = 30°C, 270 nm): t_R= 6.8 min (minor), t_R= 7.9 min (major). **HRMS** (ESI): m/z calculated for $C_{24}H_{28}NOS^+$ [M+H$^+$]: 378.1886, found:378.1886.



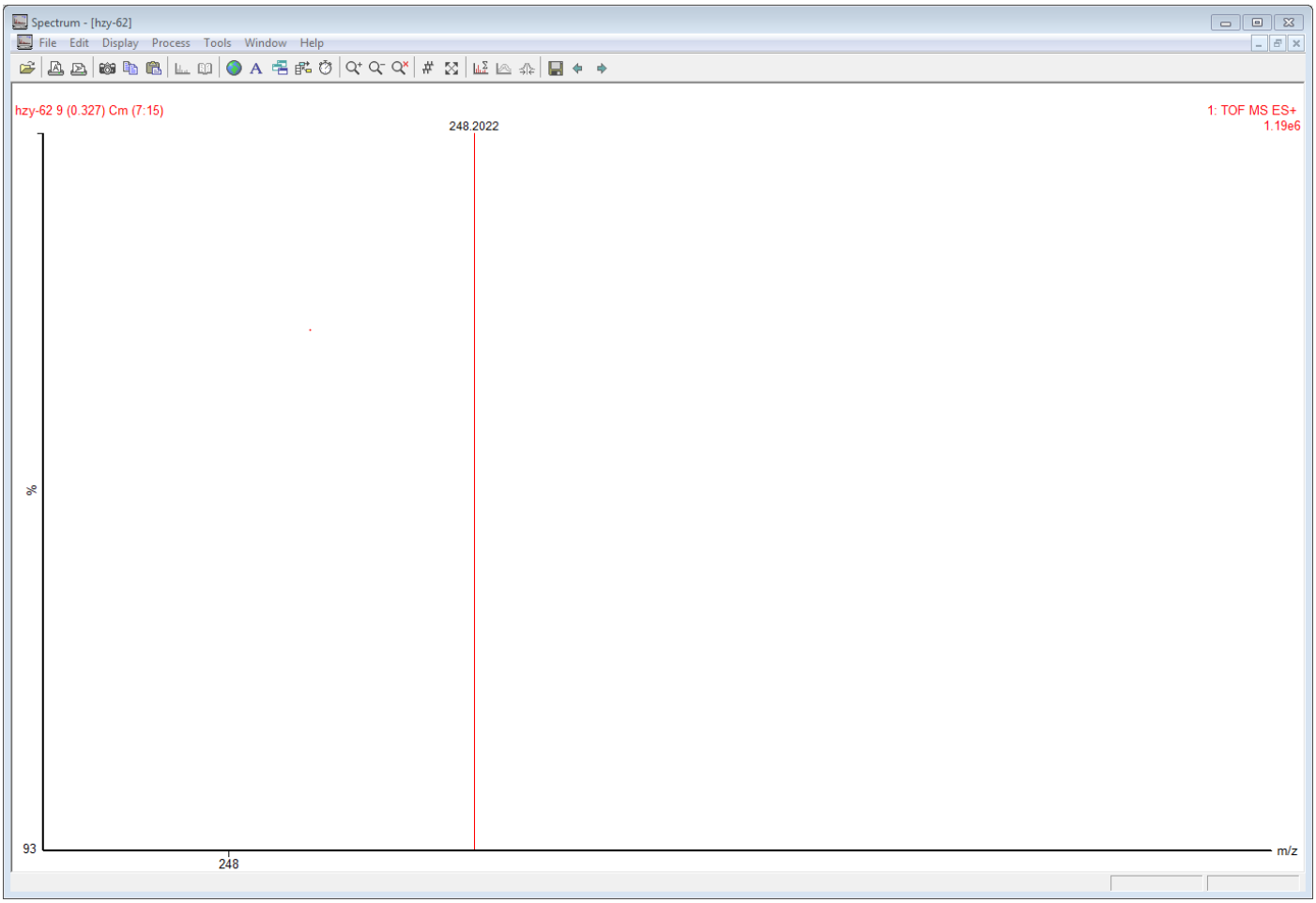
Prepared according to the modified literature procedure[9]. Compound **5** (28.7 mg, 0.1 mmol, 1.0 eq) and potassium hydroxide (12.0 mg, 0.2 mmol, 2 eq) were added to an argon-flushed 10 mL flame-dried Schlenk tube. The mixture was dissolved in DMSO (0.8 mL) and stirred for 5 min. Then, the alkyl bromide (26.0 mg, 0.15 mmol, 1.5 eq) was added, and the reaction mixture was stirred for 6 h at room temperature. Then water (5 mL) was added and the mixture was extracted with DCM (3× 5 mL). The combined organic layers were washed with brine, dried over anhydrous Na_2SO_4 and concentrated under reduced pressure. Purification by flash column chromatography (hexanes/ethyl acetate= 5:1) afforded the product **8** as the colorless solid (39% yield, 98% ee). **[α]$_D^{20}$** = -14.1 (c = 0.05, CH_2Cl_2). **^{1}H NMR** (400 MHz, Chloroform-d) δ 7.53 – 7.47 (m, 2H), 7.45 – 7.35 (m, 4H), 7.34 – 7.24 (m, 3H), 7.26 – 7.17 (m, 3H), 7.09 – 7.01 (m, 2H), 4.43 (s, 2H), 4.30 (d, J = 14.6 Hz, 1H), 4.10 (d, J = 14.6 Hz, 1H), 1.33 (s, 9H). **^{13}C NMR** (101 MHz, CDCl3) δ 156.9, 141.8, 133.9, 131.4, 129.7, 128.9, 128.6, 128.3, 128.3, 127.6, 126.5, 126.1, 63.5, 47.5, 35.3, 31.3. The ee was determined by **HPLC** analysis (CHIRALCEL OD-H, hexane/isopropanol = 80/20, flow rate 1.0 mL/min, T = 30°C, 270 nm): t_R= 6.3 min (major), t_R= 8.1 min (minor). **HRMS** (ESI): m/z calculated for $C_{24}H_{28}NOS^+$ [M+H$^+$]: 378.1886, found:378.1887.

MECHANISTIC INVESTIGATIONS

1. Reaction in the presence of TEMPO:



To a flame-dried and N_2-purged Schlenk tube (10 mL) were added $Cu(CH_3CN)_4PF_6$ (1.5 mg, 0.004 mmol, 4 mol%), **L10** (2.6 mg, 0.005 mmol, 5 mol%), sulfenamide **1a** (0.1 mmol, 1.0 equiv), TEMPO (46.9 mg, 0.3 mmol, 3.0 equiv) and a stirring bar. The Schlenk tube was then evacuated and filled with N_2. This cycle was repeated three times and followed by the addition of PhF (1.0 mL), toluene **2a** (60.0 equiv) and DTBP (58.5 mg, 74 μL, 0.4 mmol, 4.0 equiv) sequentially. The Schlenk tube was positioned in the photoreactor under 10 W 455 nm LEDs. After being stirred at 25 °C for 48 h. The trapping product **9** was detected by HRMS and the desired product **3a** was not detected. **HRMS** (ESI) m/z ($M+H^+$) calculated for $C_{16}H_{26}NO^+$:248.2009, found: 248.2022. The trapping product **10** was detected by HRMS. **HRMS** (ESI) m/z ($M+H^+$) calculated for $C_{13}H_{28}NO_2^+$:230.2115 found: 230.2118. The trapping product **11** was detected by HRMS. **HRMS** (ESI) m/z ($M+H^+$) calculated for $C_{26}H_{37}N_2O_2S^+$:441.2570 found: 441.2586.



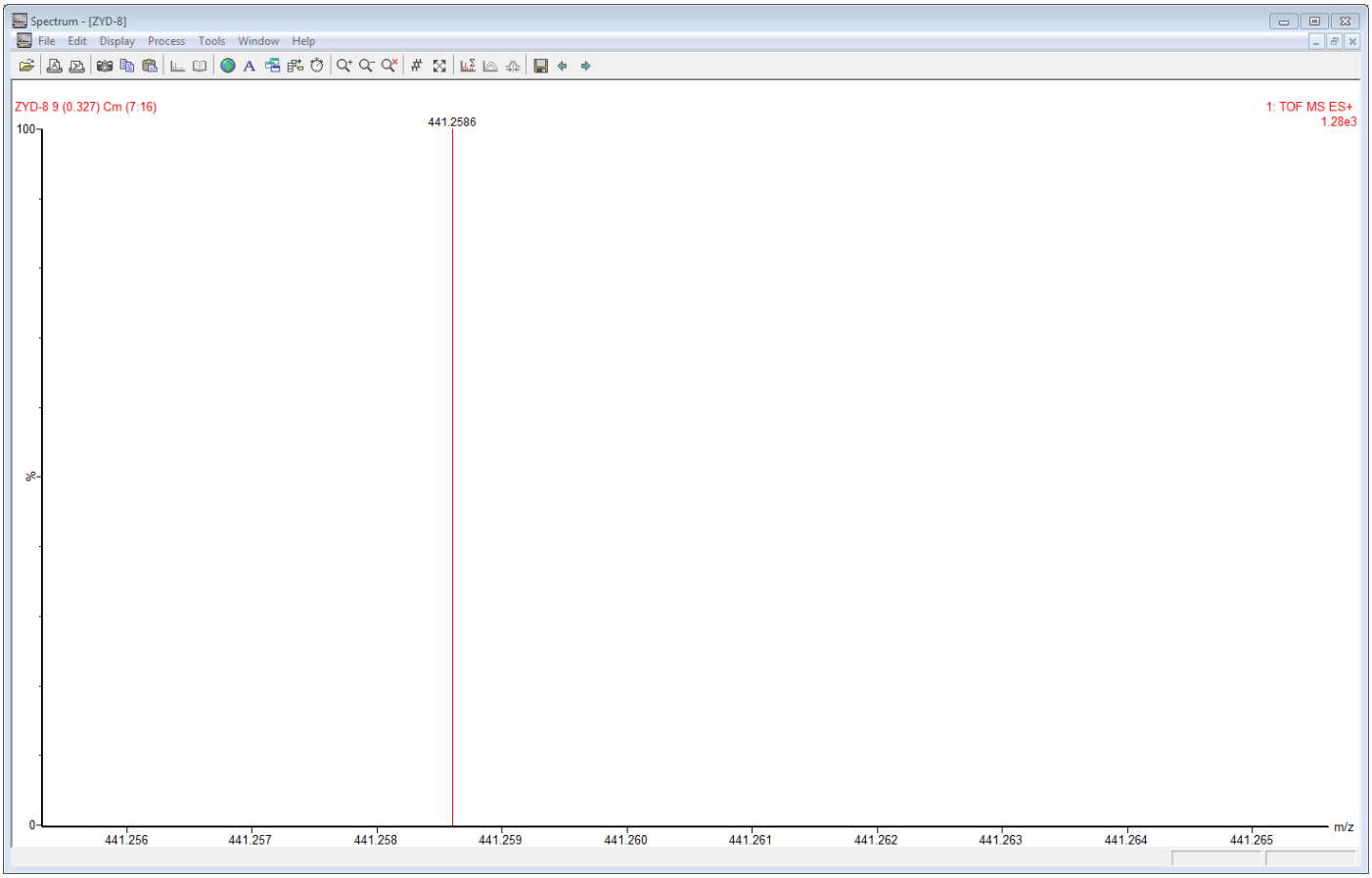
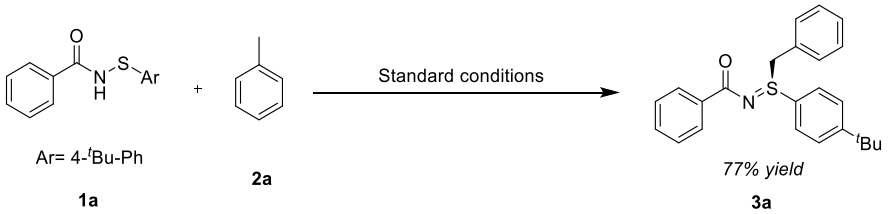
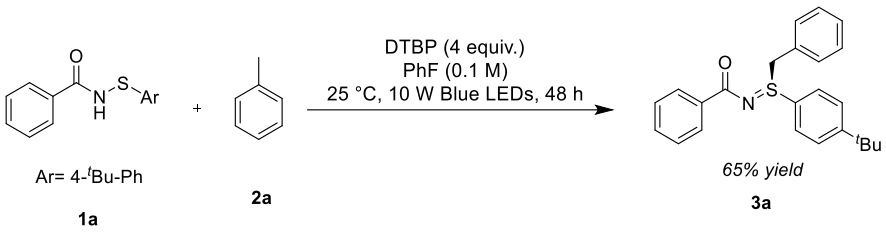


Figure S3. HRMS spectrum of **9** and **11**

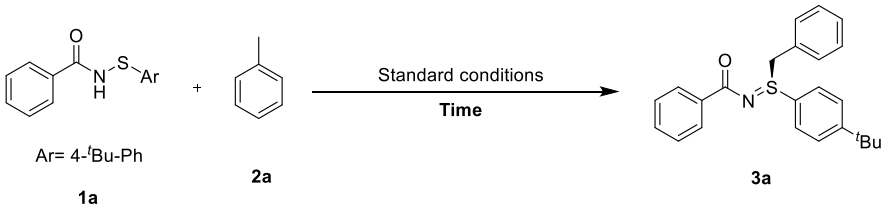
2. Control experiments and time-course experiments:



To a flame-dried and N_2-purged Schlenk tube (10 mL) were added $Cu(CH_3CN)_4PF_6$ (1.5 mg, 0.004 mmol, 4 mol%), **L10** (2.6 mg, 0.005 mmol, 5 mol%), sulfenamide **1a** (0.1 mmol, 1.0 equiv) and a stirring bar. The Schlenk tube was then evacuated and filled with N_2. This cycle was repeated three times and followed by the addition of fluorobenzene (1.0 mL), toluene **2a** (60.0 equiv) and DTBP (58.5 mg, 74 μL, 0.4 mmol, 4.0 equiv) sequentially. The Schlenk tube was positioned in the photoreactor under 10 W 455 nm LEDs. After being stirred at 25 °C for 48 h, each reaction was quenched with ethyl acetate and filtered through short silica column. The mixture was concentrated under reduced pressure and 1,3,5-triacetylbenzene was added as the internal standard. The yield of **3a** was determined by ^{1}H-NMR analysis.



To a flame-dried and N_2-purged Schlenk tube (10 mL) were added sulfenamide **1a** (0.1 mmol, 1.0 equiv) and a stirring bar. The Schlenk tube was then evacuated and filled with N_2. This cycle was repeated three times and followed by the addition of fluorobenzene (1.0 mL), toluene **2a** (60.0 equiv) and DTBP (58.5 mg, 74 μL, 0.4 mmol, 4.0 equiv) sequentially. The Schlenk tube was positioned in the photoreactor under 10 W 455 nm LEDs. After being stirred at 25 °C for 48 h, each reaction was quenched with ethyl acetate and filtered through short silica column. The mixture was concentrated under reduced pressure and 1,3,5-triacetylbenzene was added as the internal standard. The yield of **3a** was determined by ^{1}H-NMR analysis.



To a flame-dried and N_2-purged Schlenk tube (10 mL) were added $Cu(CH_3CN)_4PF_6$ (1.5 mg, 0.004 mmol, 4 mol%), **L10** (2.6 mg, 0.005 mmol, 5 mol%), sulfenamide **1a** (0.1 mmol, 1.0 equiv) and a stirring bar. The Schlenk tube was then evacuated and filled with N_2. This cycle was repeated three times and followed by the addition of fluorobenzene (1.0 mL), toluene **2a** (60.0 equiv) and DTBP (58.5 mg, 74 μL, 0.4 mmol, 4.0 equiv) sequentially. After being stirred at 25°C under 10 W 455 nm LEDs for **t** hours (**t** = 3, 6, 9, 12, 24, 36, 48, 60, 72) respectively, each reaction was quenched with ethyl acetate and filtered through short silica column. The mixture was concentrated under reduced pressure and 1,3,5-triacetylbenzene was added as the internal standard. The yield of **3a** was determined by ^{1}H-NMR analysis.

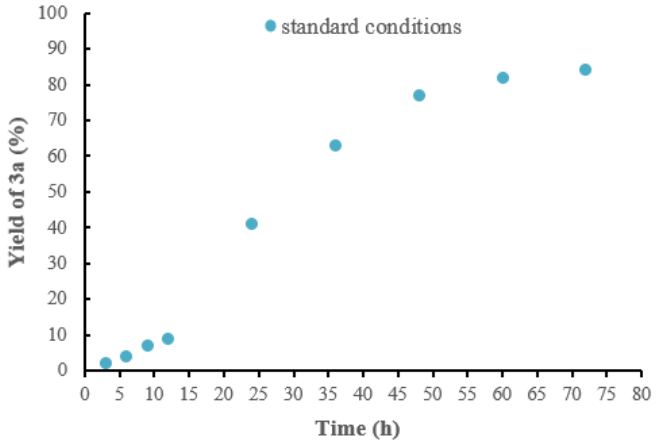
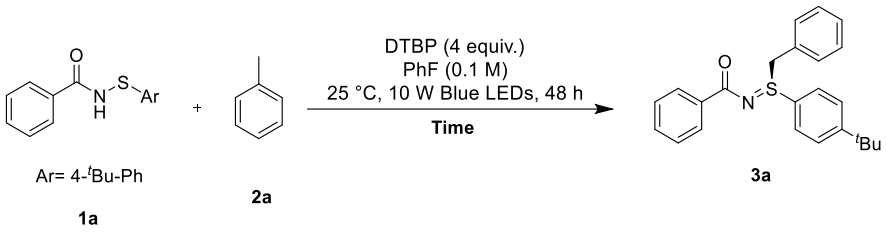


Figure S4. Time-course experiment of standard conditions (no premixing)



To a flame-dried and N_2-purged Schlenk tube (10 mL) were added sulfenamide **1a** (0.1 mmol, 1.0 equiv) and a stirring bar. The Schlenk tube was then evacuated and filled with N_2. This cycle was repeated three times and followed by the addition of fluorobenzene (1.0 mL), toluene **2a** (60.0 equiv) and DTBP (58.5 mg, 74 μL, 0.4 mmol, 4.0 equiv) sequentially. After being stirred at 25°C under 10 W 455 nm LEDs for **t** hours (**t** = 3, 6, 9, 12, 24, 36, 48, 60) respectively, each reaction was quenched with ethyl acetate and filtered through short silica column. The mixture was concentrated under reduced pressure and 1,3,5-triacetylbenzene was added as the internal standard. The yield of **3a** was determined by ^{1}H-NMR analysis.

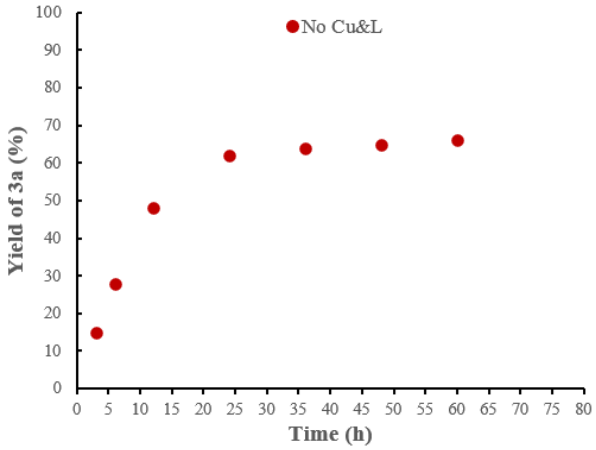
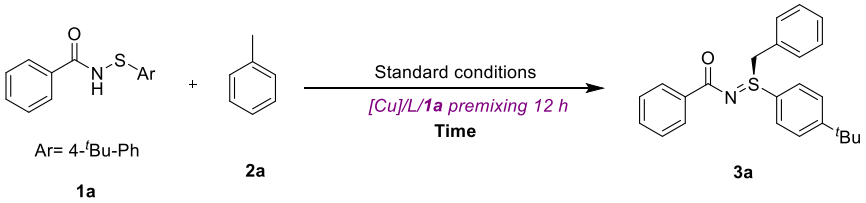


Figure S5. Time-course experiment of No Cu&**L10**



To a flame-dried and N_2-purged Schlenk tube (10 mL) were added **L10** (2.6 mg, 0.005 mmol, 5 mol%), $Cu(CH_3CN)_4PF_6$ (1.5 mg, 0.004 mmol, 4 mol%), sulfenamide **1a** (0.1 mmol, 1.0 equiv), fluorobenzene (1.0 mL) and a stirring bar. The mixture was stirred at room temperature under 10 W 455 nm LEDs for 12 h. Then to the mixture were added toluene **2a** (60.0 equiv) and DTBP (58.5 mg, 74 μL, 0.4 mmol, 4.0 equiv) sequentially. After being stirred at 25℃ under 10 W 455 nm LEDs for **t** hours (**t** = 3, 6, 9, 12, 24, 36, 48, 60, 72) respectively, each reaction was quenched with ethyl acetate and filtered through short silica column. The mixture was concentrated under reduced pressure and 1,3,5-triacetylbenzene was added as the internal standard. The yield of **3a** was determined by ^{1}H-NMR analysis.

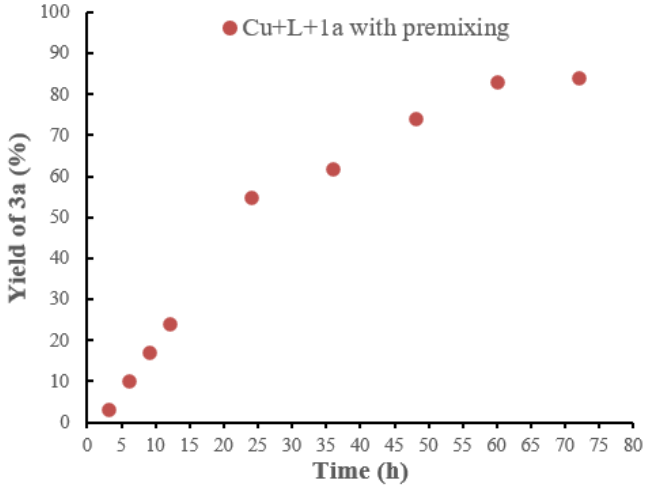
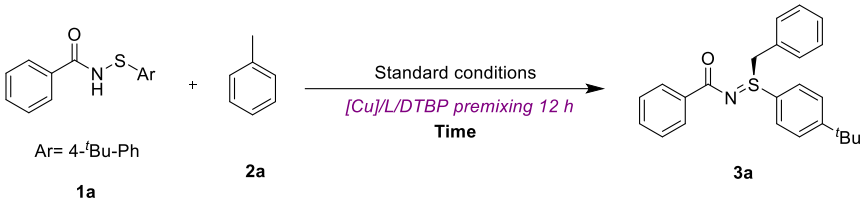


Figure S6 Time-course experiment of Cu/**L10**/**1a** premixing 12 h



To a flame-dried and N_2-purged Schlenk tube (10 mL) were added **L10** (2.6 mg, 0.005 mmol, 5 mol%), $Cu(CH_3CN)_4PF_6$ (1.5 mg, 0.004 mmol, 4 mol%), DTBP (58.5 mg, 74 μL, 0.4 mmol, 4.0 equiv), fluorobenzene (1.0 mL) and a stirring bar. The mixture was stirred at room temperature under 10 W 455 nm LEDs for 12 h. Then to the mixture were added toluene **2a** (60.0 equiv) and sulfenamide **1a** (0.1 mmol, 1.0 equiv) sequentially. After being stirred at 25℃ under 10 W 455 nm LEDs for **t** hours (**t** = 3, 6, 9, 12, 24, 36, 48, 60, 72) respectively, each reaction was quenched with ethyl acetate and filtered through short silica column. The mixture was concentrated under reduced pressure and 1,3,5-triacetylbenzene was added as the internal standard. The yield of **3a** was determined by ^{1}H-NMR analysis.

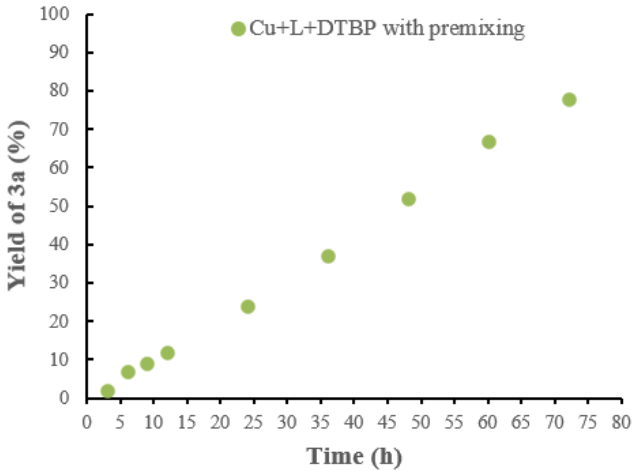
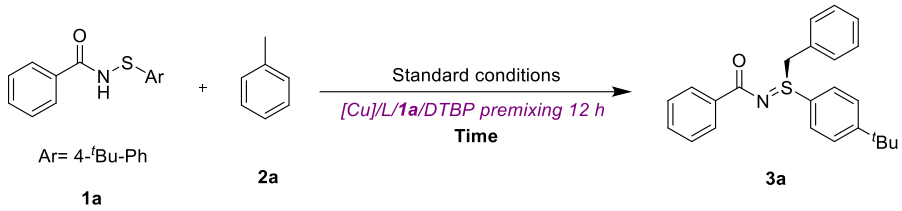


Figure S7 Time-course experiment of Cu/**L10**/DTBP premixing 12 h



To a flame-dried and N_2-purged Schlenk tube (10 mL) were added **L10** (2.6 mg, 0.005 mmol, 5 mol%), $Cu(CH_3CN)_4PF_6$ (1.5 mg, 0.004 mmol, 4 mol%), sulfenamide **1a** (0.1 mmol, 1.0 equiv), DTBP (58.5 mg, 74 μL, 0.4 mmol, 4.0 equiv), fluorobenzene (1.0 mL) and a stirring bar. The mixture was stirred at room temperature under 10 W 455 nm LEDs for 12 h. Then to the mixture were added toluene **2a** (60.0 equiv). After being stirred at 25°C under 10 W 455 nm LEDs for **t** hours (**t** = 3, 6, 9, 12, 24, 36, 48, 60, 72) respectively, each reaction was quenched with ethyl acetate and filtered through short silica column. The mixture was concentrated under reduced pressure and 1,3,5-triacetylbenzene was added as the internal standard. The yield of **3a** was determined by ^{1}H-NMR analysis.

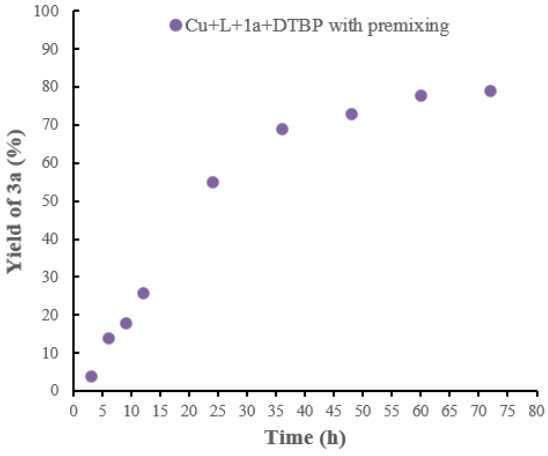


Figure S8 Time-course experiment of Cu/**L10**/**1a**/DTBP premixing 12 h

3. EPR experiments:

Room-temperature EPR spectra of solution sample were obtained using a JEOL JES-FA200 ESR spectrometer (298 K, 9.9099763 GHz, X-band). Microwave power employed was 2 mW; sweep width ranged from 320.5 mT to 328.5 mT. Modulation frequency and modulation width were 100 kHz and 0.12 mT, respectively.

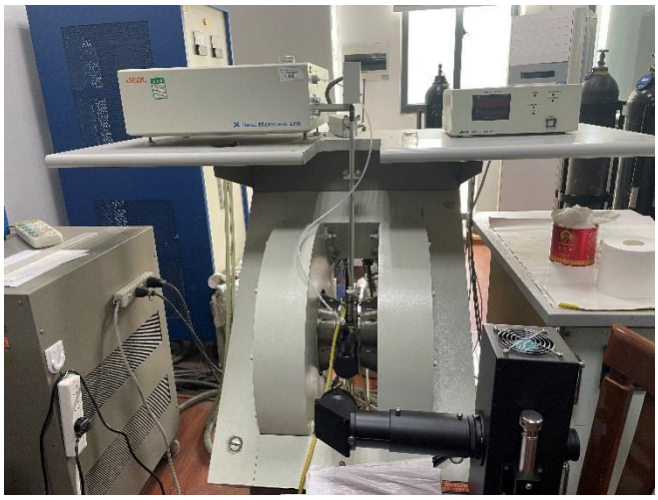
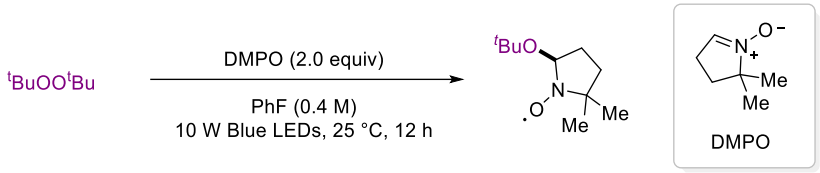


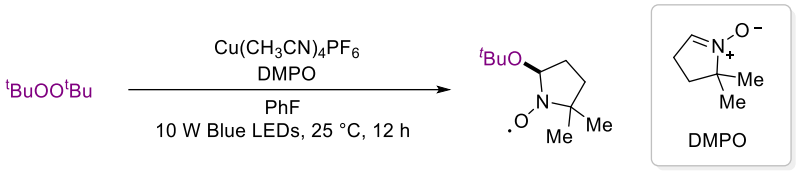
Figure S9. Set-up for electron paramagnetic resonance (EPR) studies.

3.1 EPR spectra of DTBP with irradiation



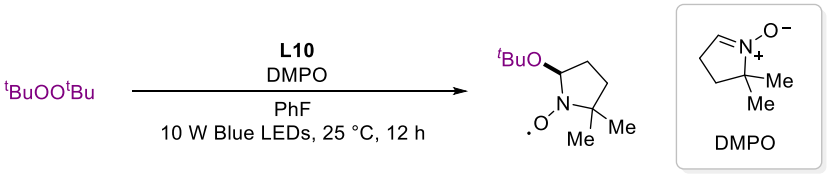
A dried 10 mL Schlenk tube charged with a stirring bar was evacuated and filled with nitrogen (three cycles) before adding DTBP (74 μL, 0.4 mmol, 1.0 equiv), DMPO (92 μL, 0.8 mmol, 2.0 equiv) and PhF (1.0 mL). After being stirred at 25 ℃ under 10 W 455 nm LEDs for 12 hours, the solution (0.5 mL) was transferred into an EPR tube. Then the EPR measurement was carried out at 25 ℃. The captured signals of *tert*-butyl radicals were consistent with those reported in the literature[10-12].

3.2 EPR spectra of DTBP + $Cu(CH_3CN)_4PF_6$ with irradiation



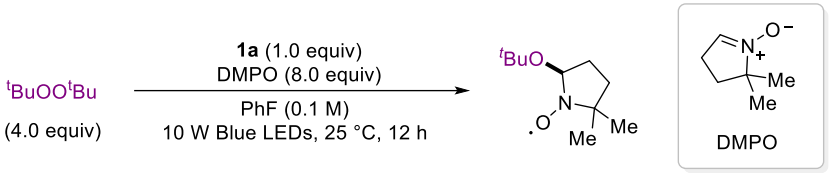
A dried 10 mL Schlenk tube charged with $Cu(CH_3CN)_4PF_6$ (1.5 mg, 0.004 mmol, 4 mol%) and a stirring bar was evacuated and filled with nitrogen (three cycles) before adding DTBP (74 μL, 0.4 mmol, 4 equiv) and DMPO (92 μL, 0.8 mmol, 8 equiv) and PhF (1.0 mL). After being stirred at 25 ℃ under 10 W 455 nm LEDs for 12 hours, the solution (0.5 mL) was transferred into an EPR tube. Then the EPR measurement was carried out at 25 ℃.

3.3 EPR spectra of DTBP + L10 with irradiation



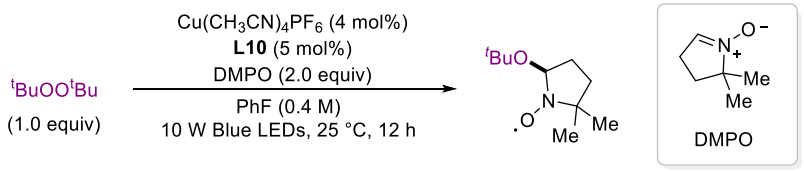
A dried 10 mL Schlenk tube charged with **L10** (2.6 mg, 0.004 mmol, 4 mol%) and a stirring bar was evacuated and filled with nitrogen (three cycles) before adding DTBP (74 μL, 0.4 mmol, 4 equiv), DMPO (92 μL, 0.8 mmol, 8 equiv) and PhF (1.0 mL). After being stirred at 25 ℃ under 10 W 455 nm LEDs for 12 hours, the solution (0.5 mL) was transferred into an EPR tube. Then the EPR measurement was carried out at 25 ℃.

3.4 EPR spectra of DTBP + 1a with irradiation



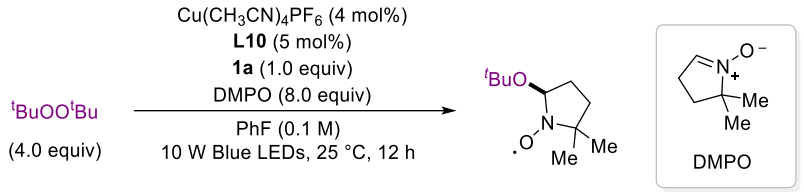
A dried 10 mL Schlenk tube charged with **1a** (0.1 mmol, 1.0 equiv) and a stirring bar was evacuated and filled with nitrogen (three cycles) before adding DTBP (74 μL, 0.4 mmol, 4.0 equiv), DMPO (92 μL, 0.8 mmol, 8.0 equiv) and PhF (1.0 mL). After being stirred at 25 ℃ under 10 W 455 nm LEDs for 12 hours, the solution (0.5 mL) was transferred into an EPR tube. Then the EPR measurement was carried out at 25 ℃.

3.5 EPR spectra of DTBP + $Cu(CH_3CN)_4PF_6$ + L10 with irradiation



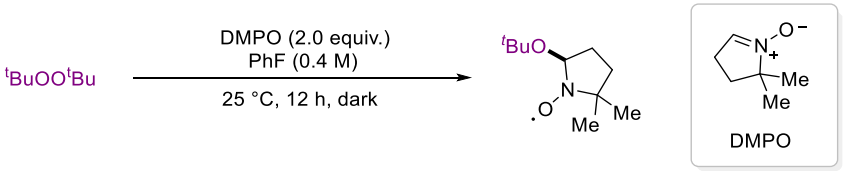
A dried 10 mL Schlenk tube charged with **L10** (10.4 mg, 0.02 mmol, 5 mol%), $Cu(CH_3CN)_4PF_6$ (6.0 mg, 0.016 mmol, 4 mol%) and a stirring bar was evacuated and filled with nitrogen (three cycles) before adding DTBP (74 μL, 0.4 mmol, 1.0 equiv), DMPO (92 μL, 0.8 mmol, 2.0 equiv) and PhF (1.0 mL). After being stirred at 25 ℃ under 10 W 455 nm LEDs for 12 hours, the solution (0.5 mL) was transferred into an EPR tube. Then the EPR measurement was carried out at 25 ℃.

3.6 EPR spectra of DTBP + $Cu(CH_3CN)_4PF_6$ + L10 + 1a with irradiation



A dried 10 mL Schlenk tube charged with **1a** (0.1 mmol, 1.0 equiv), **L10** (2.6 mg, 0.005 mmol, 5 mol%), $Cu(CH_3CN)_4PF_6$ (1.5 mg, 0.004 mmol, 4 mol%) and a stirring bar was evacuated and filled with nitrogen (three cycles) before adding DTBP (74 μL, 0.4 mmol, 4.0 equiv), DMPO (92 μL, 0.8 mmol, 8.0 equiv) and PhF (1.0 mL). After being stirred at 25 ℃ under 10 W 455 nm LEDs for 12 hours, the solution (0.5 mL) was transferred into an EPR tube. Then the EPR measurement was carried out at 25 ℃.

3.7 EPR spectra of DTBP without irradiation



A dried 10 mL Schlenk tube charged with a stirring bar was evacuated and filled with nitrogen (three cycles) before adding DTBP (74 μL, 0.4 mmol, 1.0 equiv), DMPO (92 μL, 0.8 mmol, 2.0 equiv) and PhF (1.0 mL). After being stirred at 25 ℃ in dark for 12 hours, the solution (0.5 mL) was transferred into an EPR tube. Then the EPR measurement was carried out at 25 ℃.

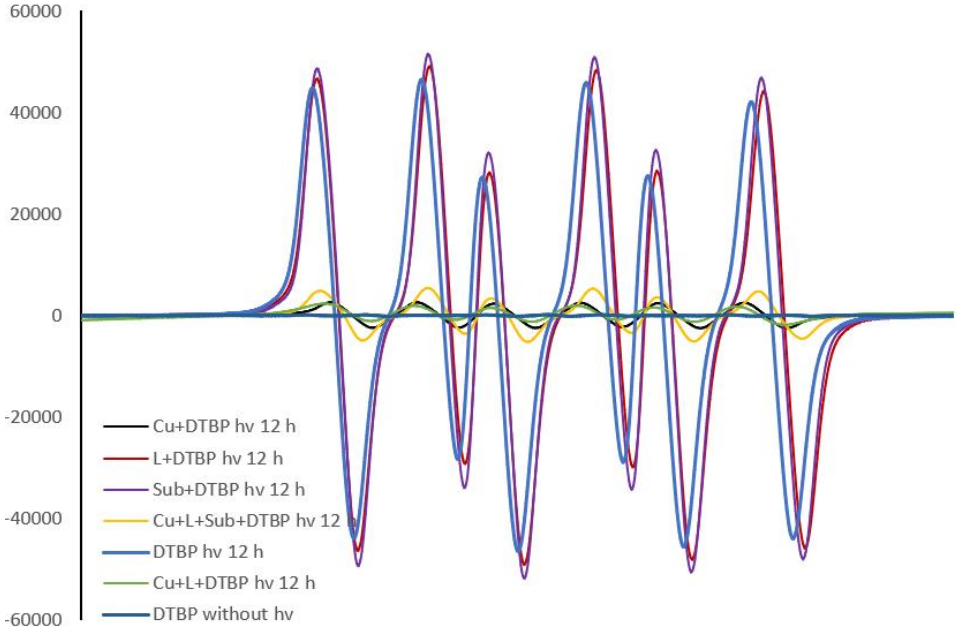


Figure S10. EPR spectra

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4. UV-Vis spectra:

A dried 4 mL quartz tube was charged with **L10** (5.0×10^{-5} M), **1a** (1.0×10^{-3} M), DTBP (4.0×10^{-3} M), $Cu(CH_3CN)_4PF_6$ (4.0×10^{-5} M). Note: PhF as the solvent. The solution was subjected to UV-Vis analysis.

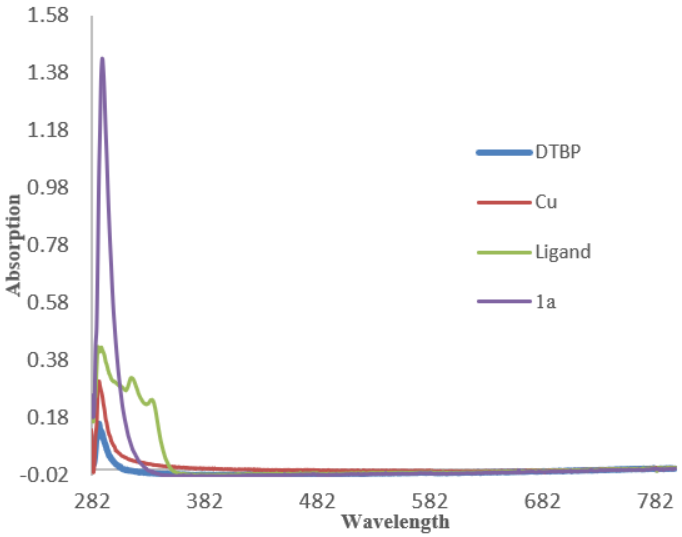


Figure S11. UV-Vis spectra of **L10**, **1a**, $Cu(CH_3CN)_4PF_6$ and DTBP.

A dried 4 mL quartz tube was charged with $Cu(CH_3CN)_4PF_6$ (4.0×10^{-3} M)+**L10** (5.0×10^{-3} M), $Cu(CH_3CN)_4PF_6$ (4.0×10^{-3} M)+**1a** (0.1 M), **L10** (5.0×10^{-3} M)+**1a** (0.1 M), $Cu(CH_3CN)_4PF_6$ (4.0×10^{-3} M)+**L10** (5.0×10^{-3} M)+**1a** (0.1 M), DTBP (0.4 M), reaction system (0.1M for **1a**). Note: PhF as the solvent. The solution was subjected to UV-Vis analysis.

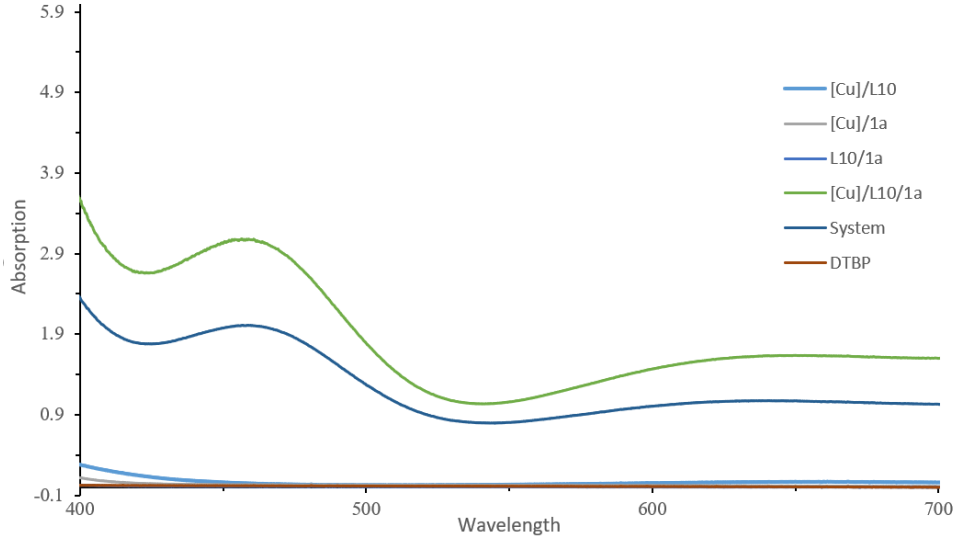
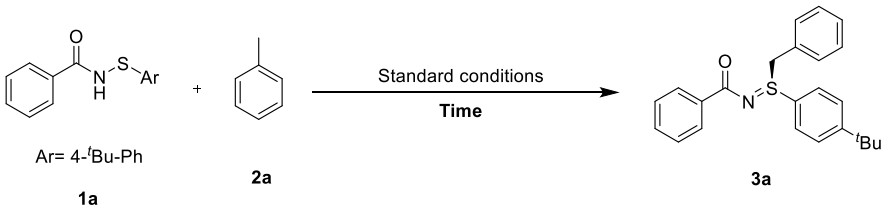


Figure S12. UV-Vis spectra of $Cu(CH_3CN)_4PF_6$ +**L10**, $Cu(CH_3CN)_4PF_6$ +**1a**, **L10** +**1a**, $Cu(CH_3CN)_4PF_6$ +**L10** (5.0×10-3 M) +**1a**, DTBP, reaction system.



To a flame-dried and N_2-purged Schlenk tube (10 mL) were added $Cu(CH_3CN)_4PF_6$ (1.5 mg, 0.004 mmol, 4 mol%), **L10** (2.6 mg, 0.005 mmol, 5 mol%), sulfenamide **1a** (0.1 mmol, 1.0 equiv) and a stirring bar. The Schlenk tube was then evacuated and filled with N_2. This cycle was repeated three times and followed by the addition of fluorobenzene (1.0 mL), toluene **2a** (60.0 equiv) and DTBP (58.5 mg, 74 μL, 0.4 mmol, 4.0 equiv) sequentially. After being stirred at 25℃ under 10 W 455 nm LEDs for **t** hours (**t** =0, 12, 24, 36, 48, 72) respectively. These solutions were subjected to UV/Vis analysis.

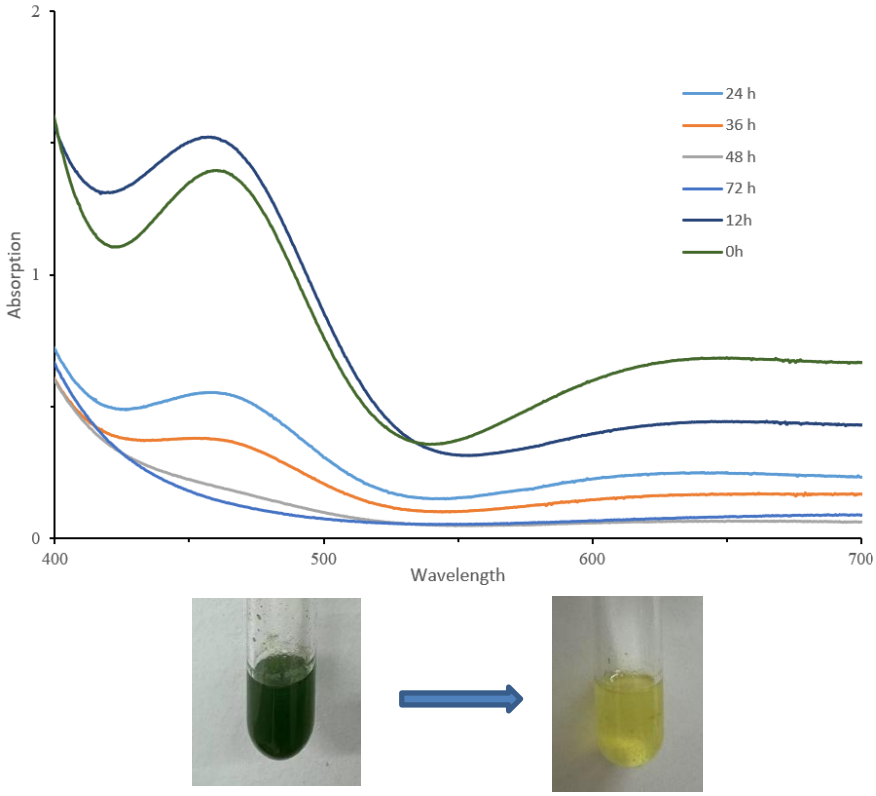


Figure S13. UV-Vis spectra of reaction system for t hours (t =0, 12, 24, 36, 48, 72).

5. Stern-Volmer experiment:

Stern-Volmer luminescence quenching experiments were run with freshly prepared solutions of $Cu(CH_3CN)_4PF_6$ (4.0×10^{-5} M) + **L10** (5.0×10^{-5} M)+ **1a** (0.1 M) premixing in PhF at room temperature. The excitation and emission spectra of the copper complexes were measured at 312 nm and 413 nm. The data summarized in the tables is the intensity measure three times for each sample. The data illustrated in the average of three experiments.

	Vial	Average	I_0/I	DTBP [M]
Luminescence quenching data for $Cu(CH_3CN)_4PF_6$ / **L10/1a** and DTBP.	0	4015	1	0.00
	1	3995	1.01	0.01
	2	3957	1.02	0.02
	3	3929	1.02	0.03
	4	3911	1.03	0.04
	Vial	**Average**	**I_0/I**	**toluene [M]**
Luminescence quenching data for $Cu(CH_3CN)_4PF_6$ / **L10/1a** and toluene	0	2751	1	0.00
	1	2747	1	0.01
	2	2752	1	0.02
	3	2749	1	0.03
	4	2722	1.01	0.04

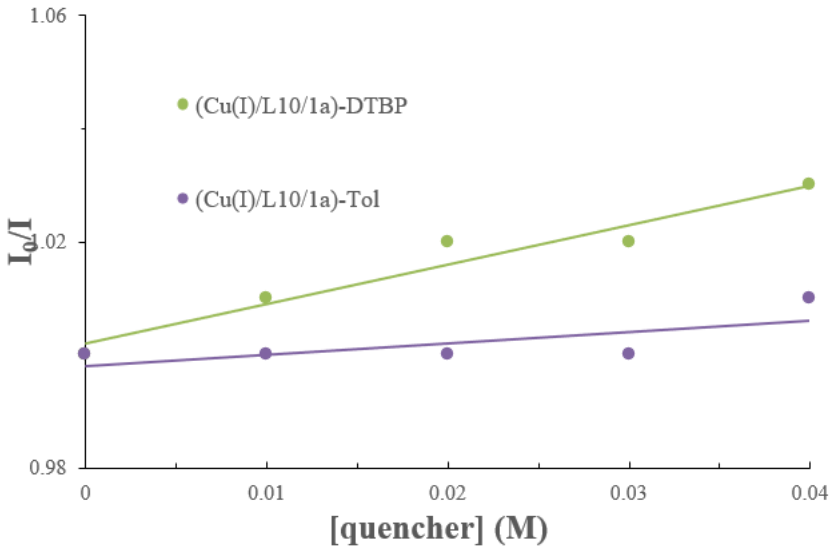


Figure S14. Luminescence quenching of $Cu(CH_3CN)_4PF_6$/**L10/ 1a** with varying concentrations

CRYSTAL DATA

The compound **3a** was crystallized from DCM/*n*-hexane (1:3) at 25 °C and its stereochemistry was assigned by single crystal X-ray analysis. The absolute configurations of other sulfilimines were assigned by analogy. The X-ray data have been deposited at the Cambridge Crystallographic Data Centre (**3a**: CCDC: 2444210).

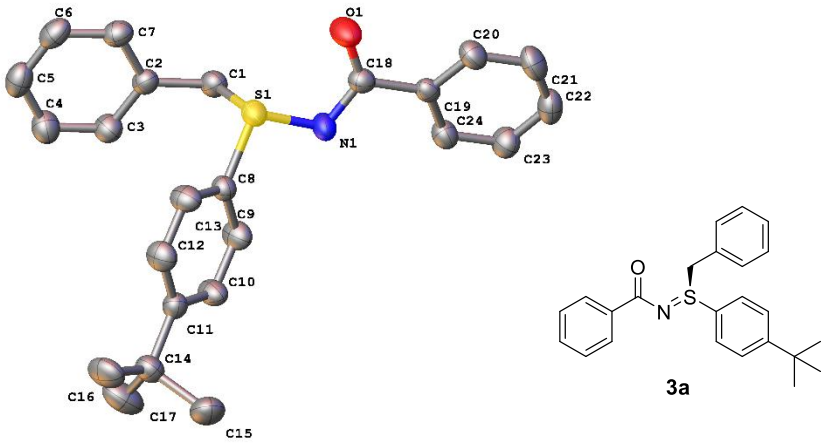


Figure S15. X-ray single crystal of compound **3a.**

Table S3. Crystal data and structure refinement for 241112zyd_3_muban.

Identification code	241112zyd_3_muban
Empirical formula	C24 H25 N O S
Formula weight	375.51
Temperature	296 K
Wavelength	0.71073 Å
Crystal system	Orthorhombic
Space group	$P2_12_12_1$
Unit cell dimensions	a = 6.1503(2) Å
	b = 16.9911(7) Å
	c = 20.2854(8) Å
Volume	2119.83(14) $Å^3$
Z	4
Density (calculated)	1.177 Mg/m^3
Absorption coefficient	0.165 mm^{-1}
F(000)	800
Crystal size	0.17 x 0.17 x 0.05 mm^3
Theta range for data collection	2.599 to 27.477°.
Index ranges	-7<=h<=7, -22<=k<=22, -25<=l<=26
Reflections collected	19473
Independent reflections	4822 [R(int) = 0.0596]
Completeness to theta = 25.242°	99.6 %
Absorption correction	Semi-empirical from equivalents
Max. and min. transmission	0.7456 and 0.6824
Refinement method	Full-matrix least-squares on F^2
Data / restraints / parameters	4822 / 75 / 278
Goodness-of-fit on F^2	1.034
Final R indices [I>2sigma(I)]	R1 = 0.0604, wR2 = 0.1172
R indices (all data)	R1 = 0.1138, wR2 = 0.1409
Absolute structure parameter	0.04(5)
Extinction coefficient	n/a
Largest diff. peak and hole	0.264 and -0.186 $e.Å^{-3}$

The compound **5** was crystallized from DCM/*n*-hexane (1:3) at 25 °C and its stereochemistry was assigned by single crystal X-ray analysis. The absolute configurations of other sulfilimines were assigned by analogy. The X-ray data have been deposited at the Cambridge Crystallographic Data Centre (**5**: CCDC: 2444213).

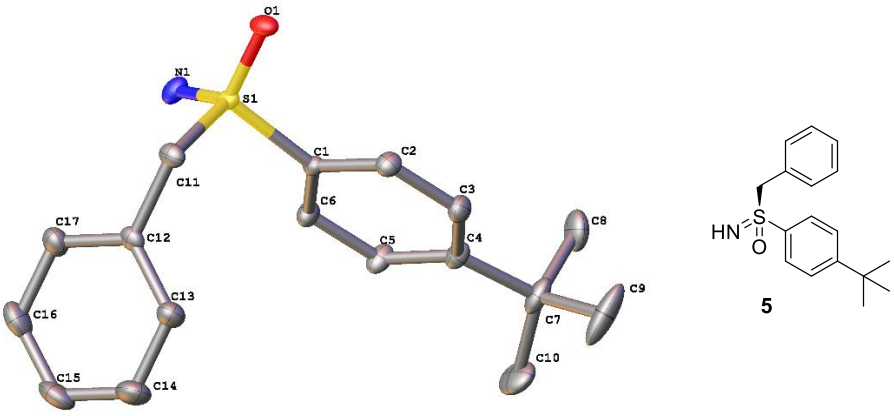


Figure S16. X-ray single crystal of compound **5.**

Table S4. Crystal data and structure refinement for 250319zyd.

Identification code	250319zyd
Empirical formula	C17 H21 N O S
Formula weight	287.41
Temperature	170.00 K
Wavelength	1.34139 Å
Crystal system	Orthorhombic
Space group	$P2_12_12_1$
Unit cell dimensions	a = 5.92330(10) Å
	b = 12.0750(2) Å
	c = 21.9490(4) Å
Volume	1569.88(5) $Å^3$
Z	4
Density (calculated)	1.216 Mg/m^3
Absorption coefficient	1.194 mm^{-1}
F(000)	616
Crystal size	0.17 x 0.17 x 0.05 mm^3
Theta range for data collection	3.635 to 54.860°.
Index ranges	-4<=h<=7, -14<=k<=12, -26<=l<=26
Reflections collected	13738
Independent reflections	2981 [R(int) = 0.0468]
Completeness to theta = 53.594°	99.8 %
Absorption correction	Semi-empirical from equivalents
Max. and min. transmission	0.7508 and 0.6146
Refinement method	Full-matrix least-squares on F^2
Data / restraints / parameters	2981 / 0 / 188
Goodness-of-fit on F^2	1.048
Final R indices [I>2sigma(I)]	R1 = 0.0302, wR2 = 0.0812
R indices (all data)	R1 = 0.0317, wR2 = 0.0825
Absolute structure parameter	0.036(8)
Extinction coefficient	n/a
Largest diff. peak and hole	0.320 and -0.276 $e.Å^{-3}$

DFT CALCULATIONS

Computational Details:

DFT calculations were performed using Gaussian 16 (Rev. C.01).[13] Geometry optimization calculations were performed with the M06 functional,[14-15] combined with Grimme's D3 dispersion correction.[16-18] For geometry optimization, the Alderich's double-zeta def2-SVP[7] basis set was employed for all atoms. Vibrational analysis was conducted at the same level to optimization, to obtain the frequencies were examined to confirm the stationary points as minima (no imaginary frequencies) or transition states (only one imaginary frequency). The solvent effect of fluorobenzene was considered in single-point energy calculations with a triple-zeta basis set (def2-TZVP)[19] and the SMD[20] implicit solvent model(fluorobenzene as solvent). Gibbs-free energy corrections at 298.15 K were appended to the energies, obtained from the vibrational analysis output. 3D structures were generated with CYLview20 program.[21]

Species	E_{el}[1]	E_{el}[2]	G_{coor}	**TS Freq**
·Bn	-270.494321	-270.796542	0.084088	/
·O^{t}Bu	-232.660160	-232.933465	0.090865	/
^{t}BuOH	-233.335801	-233.608709	0.105546	/
1a	-1186.138149	-1187.154330	0.269845	/
3a	-1456.049130	-1457.371720	0.369123	/
int 1	-4789.463081	-4792.620267	0.767851	/
(*S*)-**int 2**	-4788.850591	-4792.008896	0.760983	/
int 3	-5059.394308	-5062.846266	0.868776	/
int 4	-5059.352477	-5062.806340	0.872597	/
(*R*)-**int 2**	-4788.847795	-4792.006992	0.761673	/
(*S*)-**ts 2**	-5059.359845	-5062.812876	0.865642	-225.14
(*R*)-**ts 2**	-5059.358532	-5062.813434	0.869894	-251.43

Table S5. Absolute energies table for transition state structures (all energy dates are given in Hartree)

E_{el}[1]**:** absolute electronic energies from def2-SVP base set gas phase single-point calculation;

E_{el}[2]: absolute electronic energies from high-level def2-TZVP base set solvent phase single-point calculation;

G_{coor}: quasi-harmonic Gibbs energy correction;

TS Freq: imaginary frequencies for transition states, unit: cm^{-1}).

Cartesian Coordinates (Å) for the Optimized Structures

^{t}BuO •

C	-0.00000200	-0.02589500	0.08581300

C	-1.26416900	-0.78933100	-0.30357700
H	-2.15896300	-0.21766500	-0.01208400
H	-1.29857300	-0.97794900	-1.38937300
H	-1.29574800	-1.76170100	0.21363900
C	0.00006600	1.36354700	-0.59166700
H	-0.89562100	1.93372000	-0.30378800
H	0.89581100	1.93363200	-0.30378900
H	0.00005800	1.21621600	-1.68403000
C	1.26409000	-0.78945500	-0.30358200
H	2.15894100	-0.21787500	-0.01209500
H	1.29557700	-1.76182600	0.21363700
H	1.29846800	-0.97807800	-1.38937800
O	0.00001800	0.28479100	1.41816700

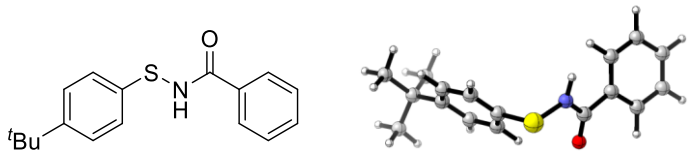
^{t}BuOH

C	-0.00665500	0.00000000	0.01967400
C	0.67418700	-1.25196200	-0.51633700
H	0.19819000	-2.15330000	-0.09795100
H	0.62018200	-1.30592400	-1.61643000
H	1.74219500	-1.26709700	-0.23455400
C	-1.48184500	-0.00000500	-0.33258100
H	-1.97245900	-0.89100600	0.09039800
H	-1.97246600	0.89099100	0.09040000
H	-1.62956600	-0.00000400	-1.42439500
C	0.67417800	1.25196800	-0.51633600
H	0.19817500	2.15330200	-0.09794900
H	1.74218600	1.26711000	-0.23455200
H	0.62017300	1.30593100	-1.61642800
O	0.04074100	-0.00000100	1.43905000
H	0.96827300	0.00000000	1.70254200

Bn·

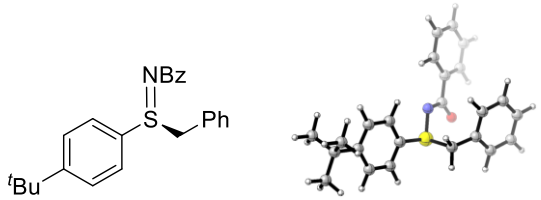
C	1.13148700	-1.21007700	-0.00005600
C	-0.25216400	-1.21620500	-0.00001500
C	-0.99301500	-0.00000100	0.00002800
C	-0.25216500	1.21620500	0.00004100
C	1.13148500	1.21007800	-0.00000600
C	1.83595500	0.00000000	-0.00005400
H	1.67832900	-2.15785800	-0.00008600
H	-0.80067200	-2.16429700	-0.00002500
H	-0.80067500	2.16429600	0.00007500
H	1.67833000	2.15785700	-0.00000800
H	2.92967500	0.00000200	-0.00008500
C	-2.39631400	0.00000000	0.00006000
H	-2.95830400	0.93870400	0.00015300
H	-2.95830500	-0.93870400	-0.00001000

1a



C	-2.22886400	-0.37679000	0.86548500
C	-3.28491000	-0.16486300	-0.03725100
C	-1.97395700	1.63266600	-1.02471700
C	-0.94287000	1.40975700	-0.11500900
C	-1.08122200	0.40251500	0.84805900
H	-2.31099800	-1.16462400	1.62175100
H	-1.86590800	2.41537000	-1.78249600
H	-0.28182500	0.24634400	1.57928800
C	2.43089800	0.68708500	0.57170400
C	3.56561400	-0.17761600	0.11044100
C	3.65422000	-0.72758500	-1.17301600
C	4.56164700	-0.46687600	1.04843000
C	4.73330400	-1.53749100	-1.51750400
H	2.86103900	-0.55827300	-1.90874500
C	5.64495600	-1.26529400	0.70038200
H	4.45950000	-0.04886100	2.05364300
C	5.73351600	-1.80058300	-0.58425700
H	4.78880600	-1.97186100	-2.51965200
H	6.42514200	-1.47717700	1.43699300
H	6.58293100	-2.43339200	-0.85734500
C	-3.13471900	0.86022800	-0.97537500
H	-3.92563600	1.06554000	-1.70077900
C	-4.53290400	-1.04096800	0.04288200
C	-5.56615800	-0.67069500	-1.01660300
H	-6.44734600	-1.32678600	-0.92316700
H	-5.91717500	0.36889400	-0.90504300
H	-5.17115200	-0.79371700	-2.03905800
C	-5.17961400	-0.87335800	1.42165500
H	-6.08695400	-1.49696900	1.49893500
H	-4.50176200	-1.17060300	2.23784000
H	-5.47142600	0.17614800	1.59501700
C	-4.13737800	-2.50624200	-0.16519300
H	-3.66715900	-2.65129200	-1.15246900
H	-3.42552800	-2.85735200	0.59900100
H	-5.02812100	-3.15583200	-0.11304200
S	0.49349400	2.46805600	-0.14053800
O	2.14508400	0.79646300	1.74386300
N	1.75375800	1.34479500	-0.43325300
H	2.08133800	1.25694900	-1.39087800

3a



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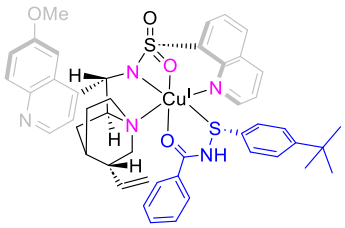

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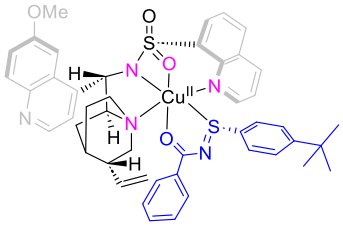

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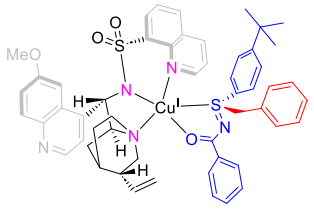
int 3



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H	7.56870500	3.02477300	-0.63183900
H	8.14868400	1.37648000	-1.29095200

C	-1.52399100	-1.82384600	-2.99620100
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H	-1.49991800	-5.64898700	-1.63475700
H	-1.04432900	0.18482300	-2.29065300
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H	-2.68631900	-0.54307400	1.15653100
C	-3.27073100	2.12152500	-0.89677400
S	-1.41402700	2.00194500	1.16503900
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H	-4.55810400	-1.46433100	-0.17628000
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H	-2.89211800	3.13131100	-1.08808900
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H	-4.74233700	2.20546800	-2.44841100
C	0.01032800	3.09195600	-0.58754100
C	-5.48472100	-1.60095400	-2.87856100
C	-6.47369700	0.63303500	-3.29150100
C	-7.11066600	-0.61233400	-1.24465000
C	0.70437700	4.26520100	-1.19139900
O	0.23659400	1.94694600	-1.06611000
H	-4.63902300	-1.40370400	-3.55979000
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H	1.60936400	3.05767400	-2.71854300
C	1.26786500	6.61679300	-1.21426600
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C	2.08514000	6.41290800	-2.32581200
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H	1.16956600	7.61760400	-0.78382200
H	2.62798700	7.25377800	-2.76761700
S	0.11560600	-1.71024200	2.18340700
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H	-2.84682200	3.76415300	1.87424800
C	-3.55169700	1.98081100	2.91532400
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C	-4.86776400	2.14881200	2.46989900
C	-4.23125700	-0.00949300	4.10977800
H	-2.20339600	0.71970800	4.04421400
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H	-5.10910300	2.98605300	1.80521000
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H	-3.97003600	-0.86711700	4.73551800
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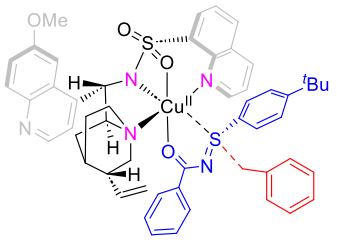
H	-6.31666300	-0.54993900	3.95228300

(*S*)-**ts2**



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C	-1.60529600	1.21443400	-3.05271800
C	-0.45205000	-3.42744500	-0.64382800
O	-0.07726700	-1.70273800	-2.53966600
O	-2.11964400	-3.14627500	-2.68114400
H	-7.55239000	-2.41461400	-1.54898400
C	-5.10286400	-1.43110600	3.46551900

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H	2.17516400	-1.37045200	-2.08645200
C	3.62716200	0.47377300	0.39450600
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S	-1.22284000	-2.34568900	-1.84320900
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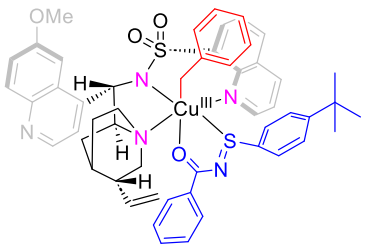
int 4



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C	5.13029700	-1.44750300	-2.28097400
C	4.40716700	-0.30285900	1.77153100
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C	5.69712100	-3.17540100	-0.90239400
H	4.35214400	-3.64035500	0.74505900
C	3.30172400	0.44840200	-3.26275700
H	2.01221100	-0.14502900	-1.64271900
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N	6.01002000	-2.41336600	-1.91883100
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C	2.26328300	1.52777300	2.62566900
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O	1.16118000	-4.12630400	0.11916900
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H	6.40023600	-3.97914100	-0.64131600
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O	2.45044500	1.30307200	-3.87468700
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H	4.77364700	0.87776800	-4.78326500
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H	-7.31451800	-0.36164900	-1.34470300
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C	2.16076800	3.37339800	-1.06407500
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H	1.35067700	6.96385000	0.15928700
H	3.24924200	6.57952600	-1.40224500
S	0.82394800	-2.98383700	-0.74864600
C	-2.85323800	-2.75476600	2.08393200
C	-4.14767200	-2.82704000	2.58395600
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H	-2.54897500	-3.39153100	1.24924200
H	-4.86220400	-3.52442200	2.13626800
H	-5.54944400	-2.07238900	4.04853100
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H	-1.58371400	-0.39085700	4.18864700
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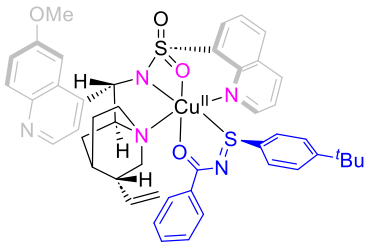
(*R*)-**int 2**



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N	-0.83132000	0.30084700	0.99554500
H	0.88300800	1.41207800	1.32333500
C	3.88468600	-0.30598500	4.71151300
H	1.99268800	-1.35330800	4.47616500
C	4.48073200	1.86921400	0.29639300
H	2.67146400	0.71865800	0.12856100
C	5.63423600	1.79610800	2.41602800
N	4.79755200	0.49126100	4.21787100
C	-1.71881300	1.11026900	3.25787400
H	0.11918100	2.28738100	3.31653300
H	0.24744600	0.69881600	4.06546400
C	-1.63465900	1.52097400	0.81541700
C	-1.69490200	-0.74249700	1.60022900
C	2.56503500	-2.91887600	-0.78298100
O	0.04968500	-3.10489500	-0.16091800
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C	2.53442500	-2.14283600	-1.97762400
C	3.53457900	-3.86827700	-0.57101800
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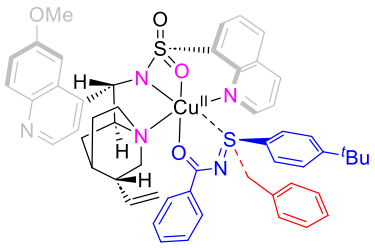
(*R*)-**ts 2**



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N	-0.79104400	0.15983300	0.92777600
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C	4.65010700	1.50667200	0.65120200
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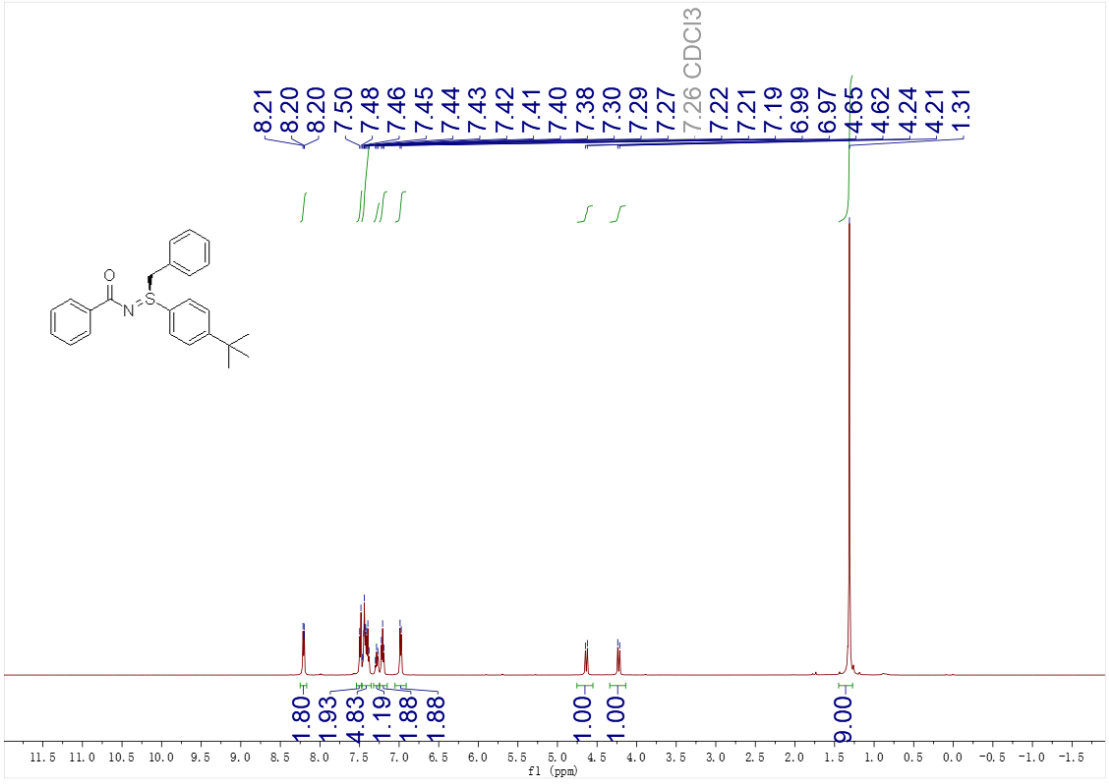
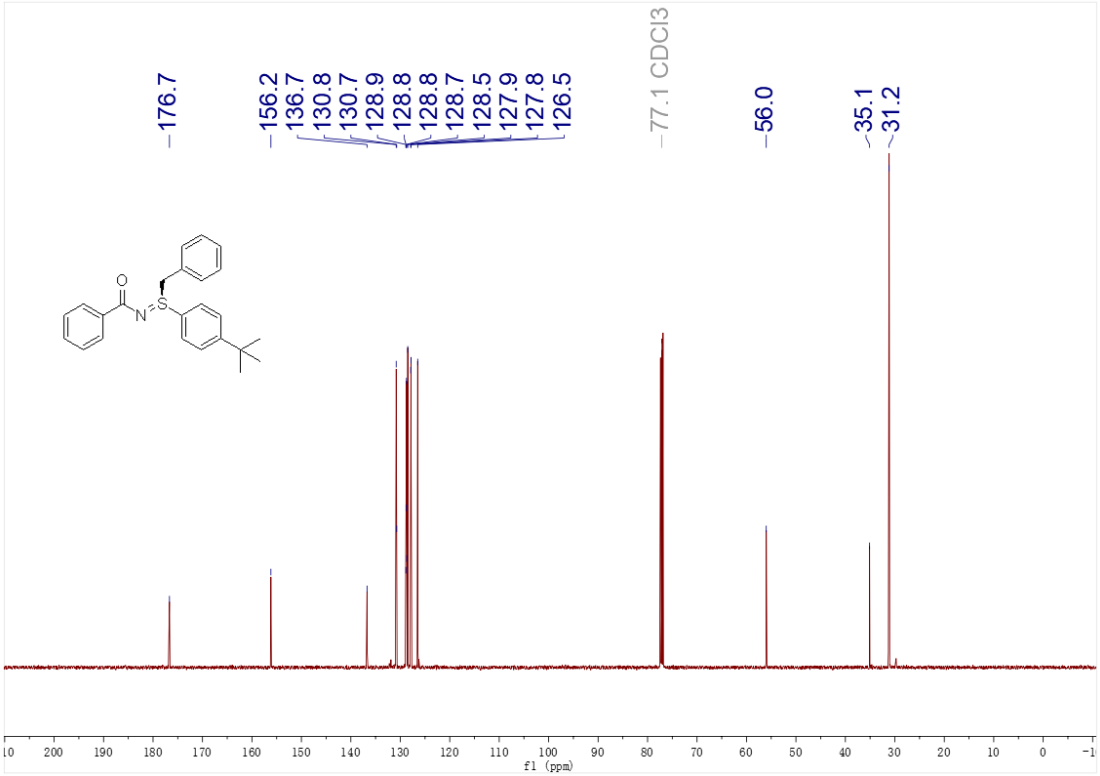
NMR SPECTRA

(*S*)-*N*-(benzyl(4-(*tert*-butyl)phenyl)-λ^4-sulfaneylidene)benzamide (3a)

^{1}H NMR (500 MHz, Chloroform-*d*)



^{13}C NMR (126 MHz, $CDCl_3$)



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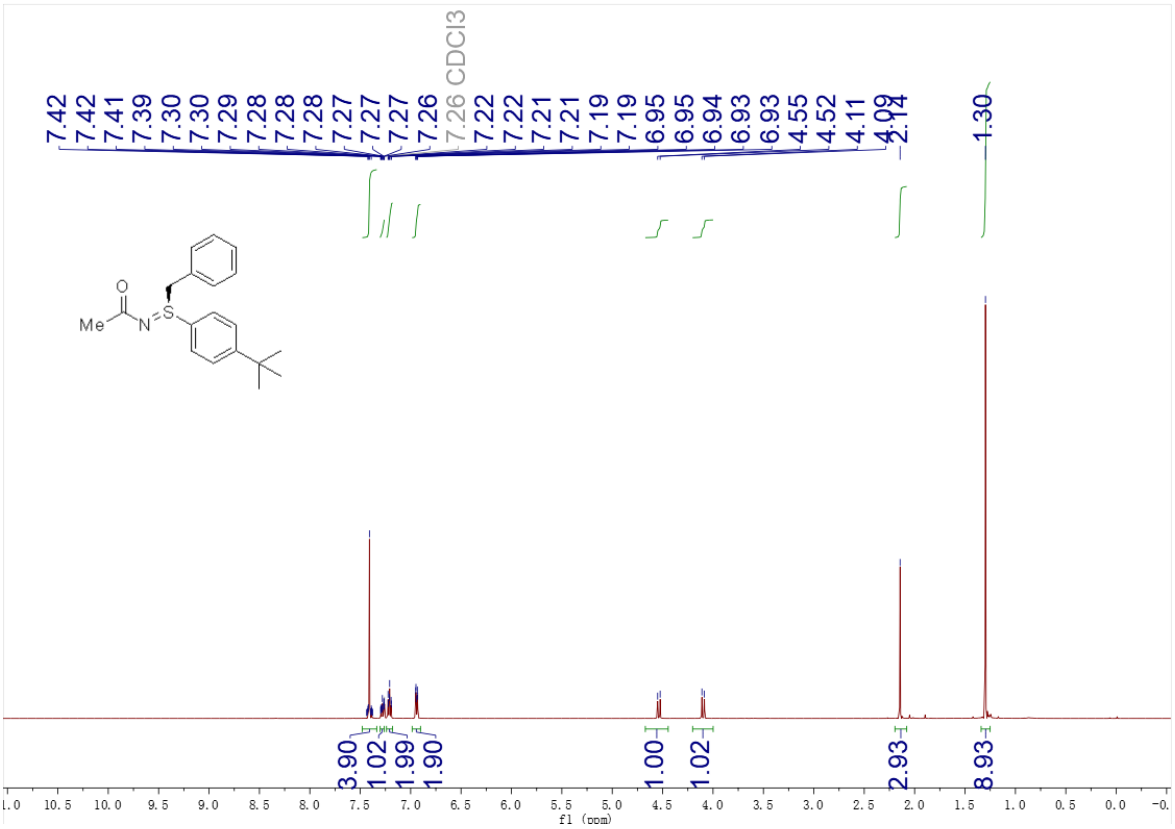
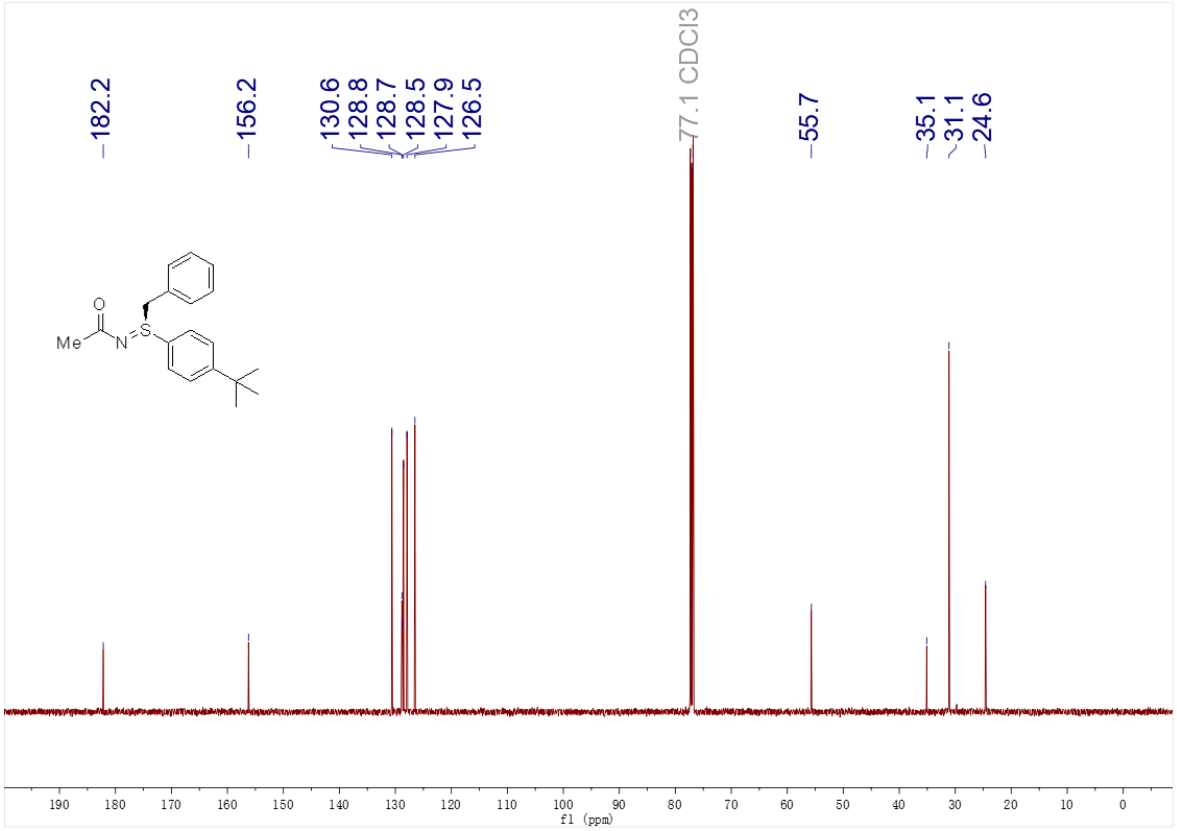
^{1}H NMR (500 MHz, Chloroform-*d*)



^{13}C NMR (126 MHz, $CDCl_3$)



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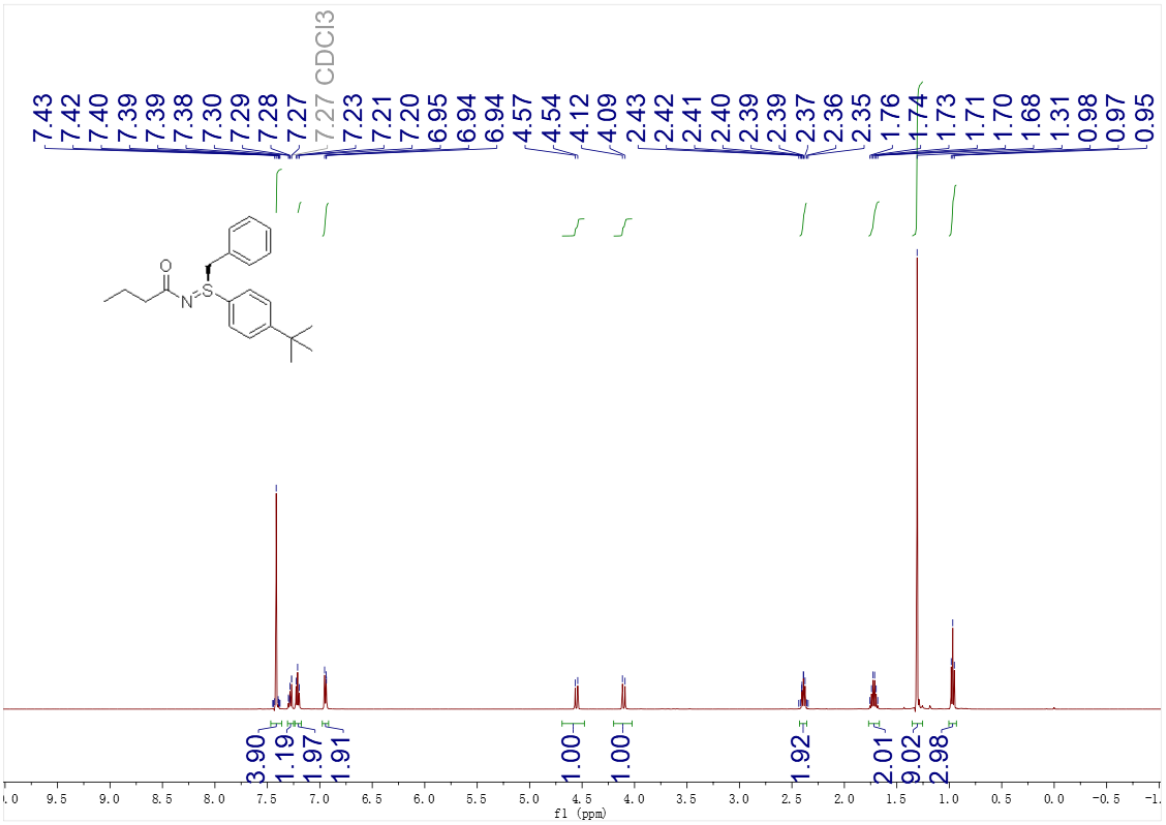
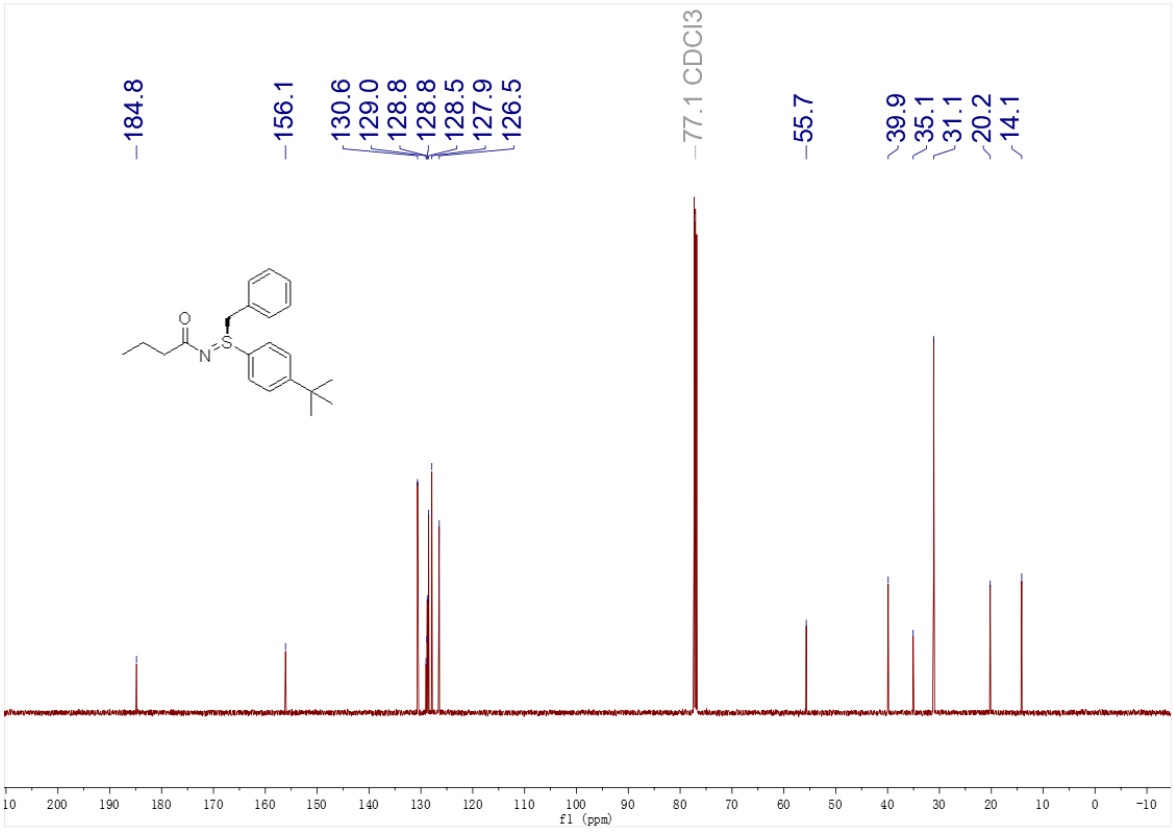
^{1}H NMR (500 MHz, Chloroform-*d*)



^{13}C NMR (126 MHz, $CDCl_3$)



(*S*)-*N*-(benzyl(4-(*tert*-butyl)phenyl)-λ^4-sulfaneylidene)pivalamide (3d)

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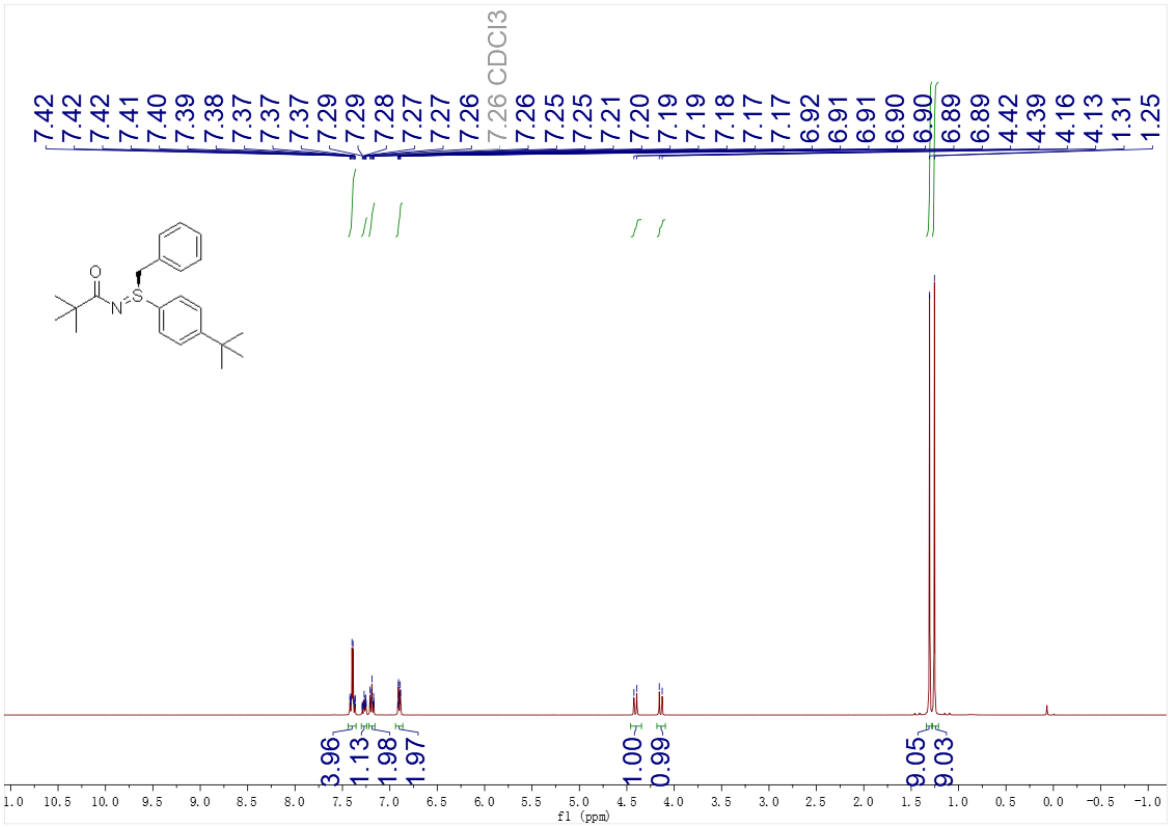
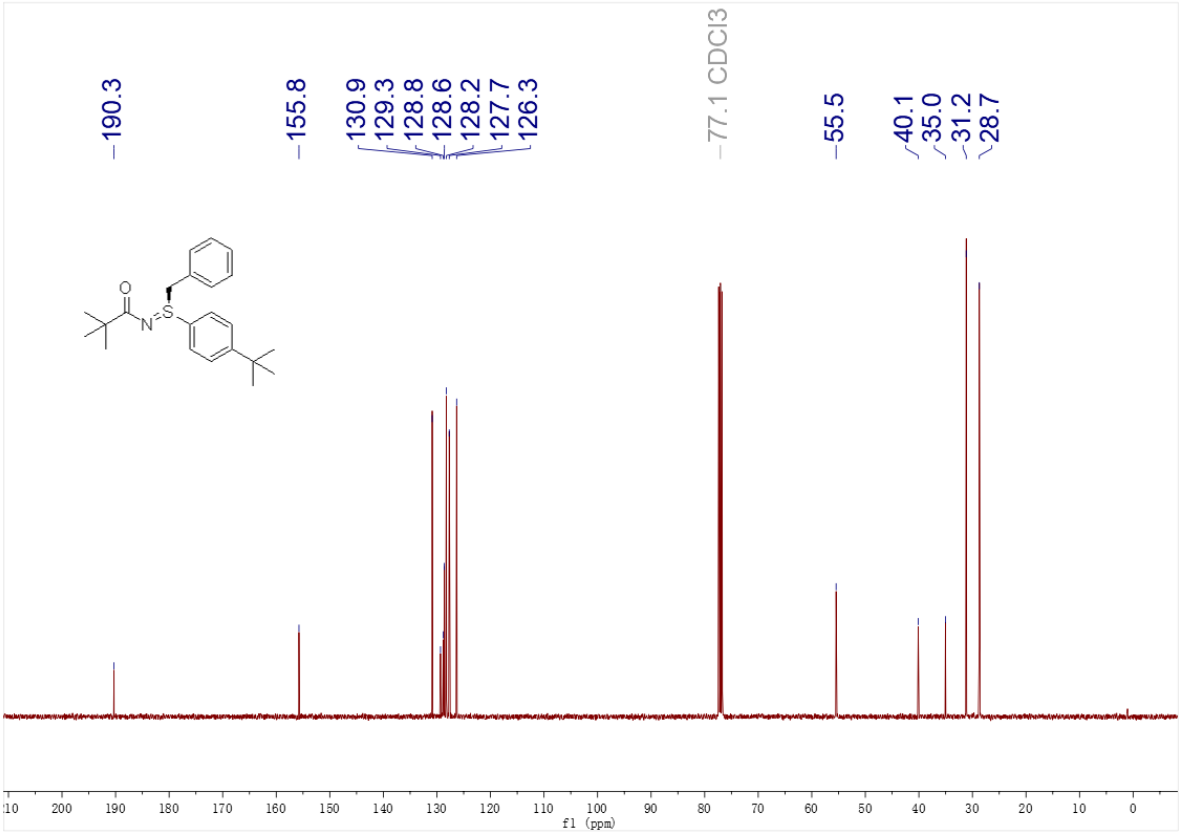
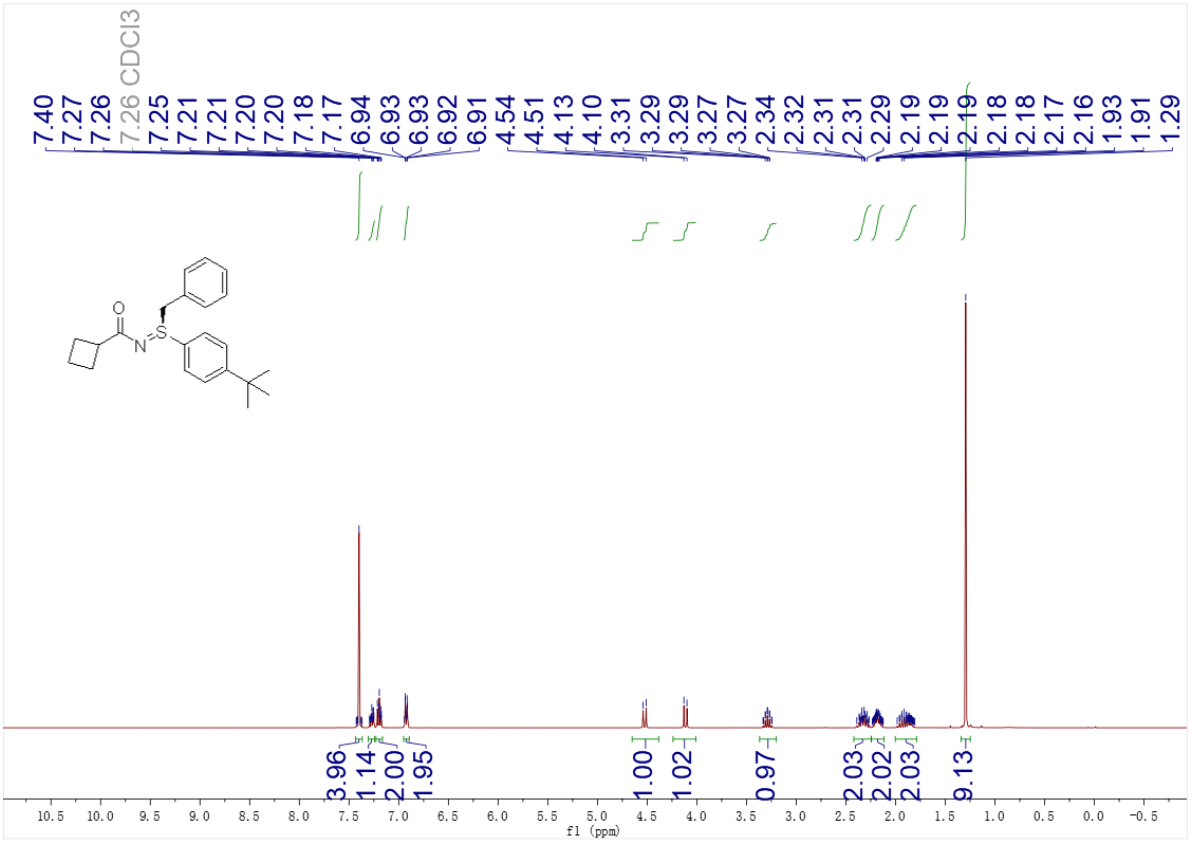


^{13}C NMR (101 MHz, $CDCl_3$)

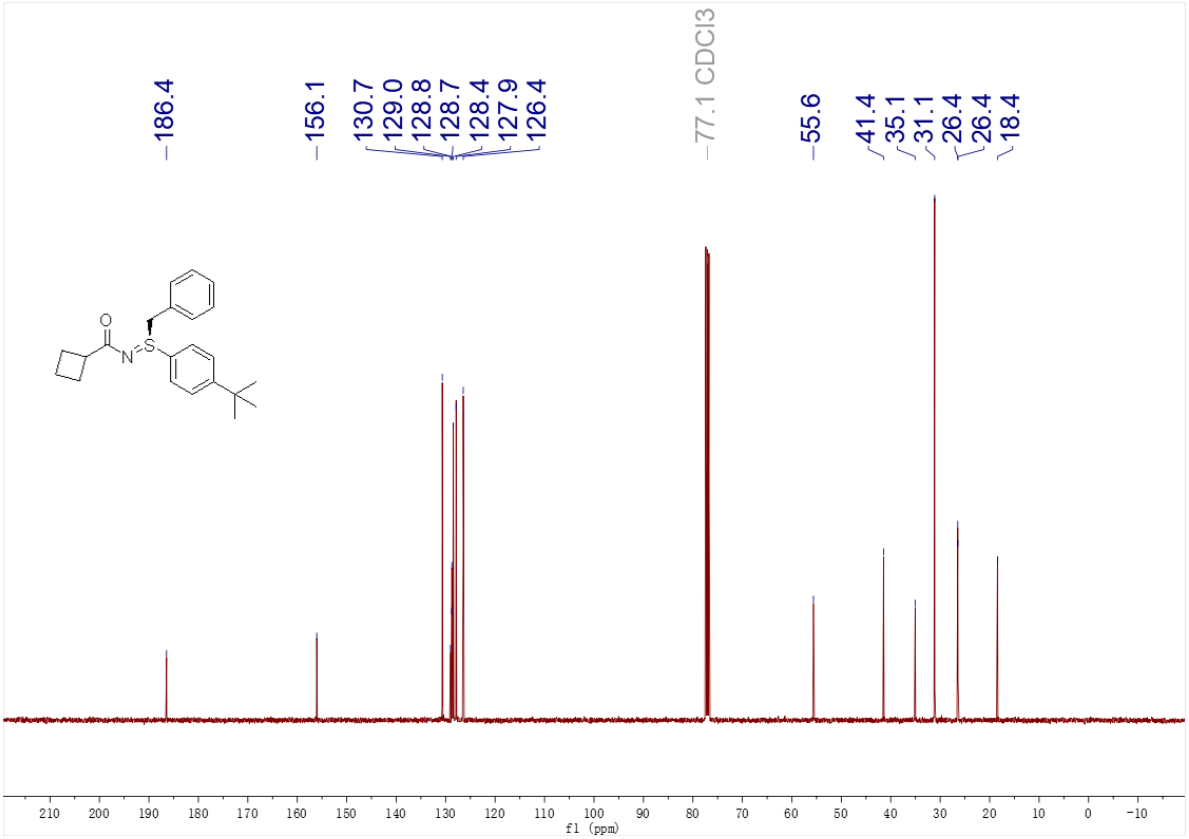


(*S*)-*N*-(benzyl(4-(*tert*-butyl)phenyl-λ^4-sulfaneylidene)cyclobutanecarboxamide (3e)

^{1}H NMR (400 MHz, Chloroform-*d*)

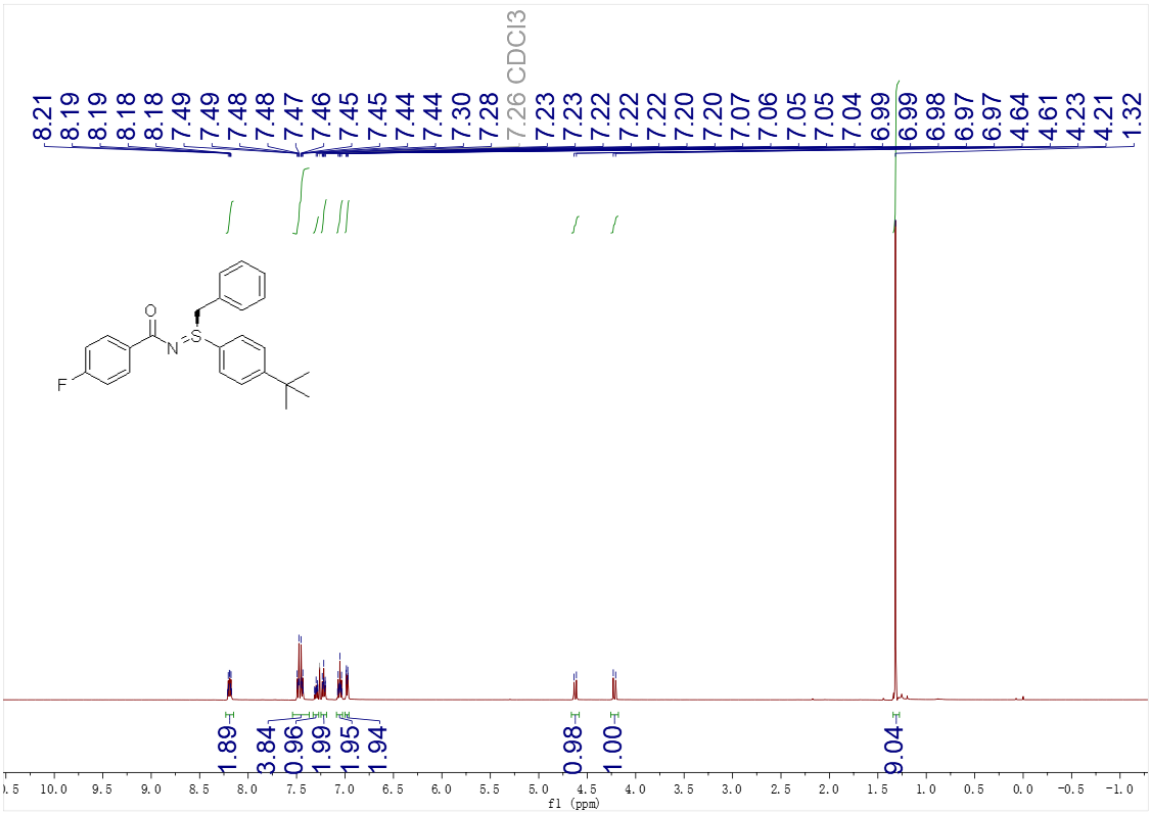


^{13}C NMR (101 MHz, $CDCl_3$)

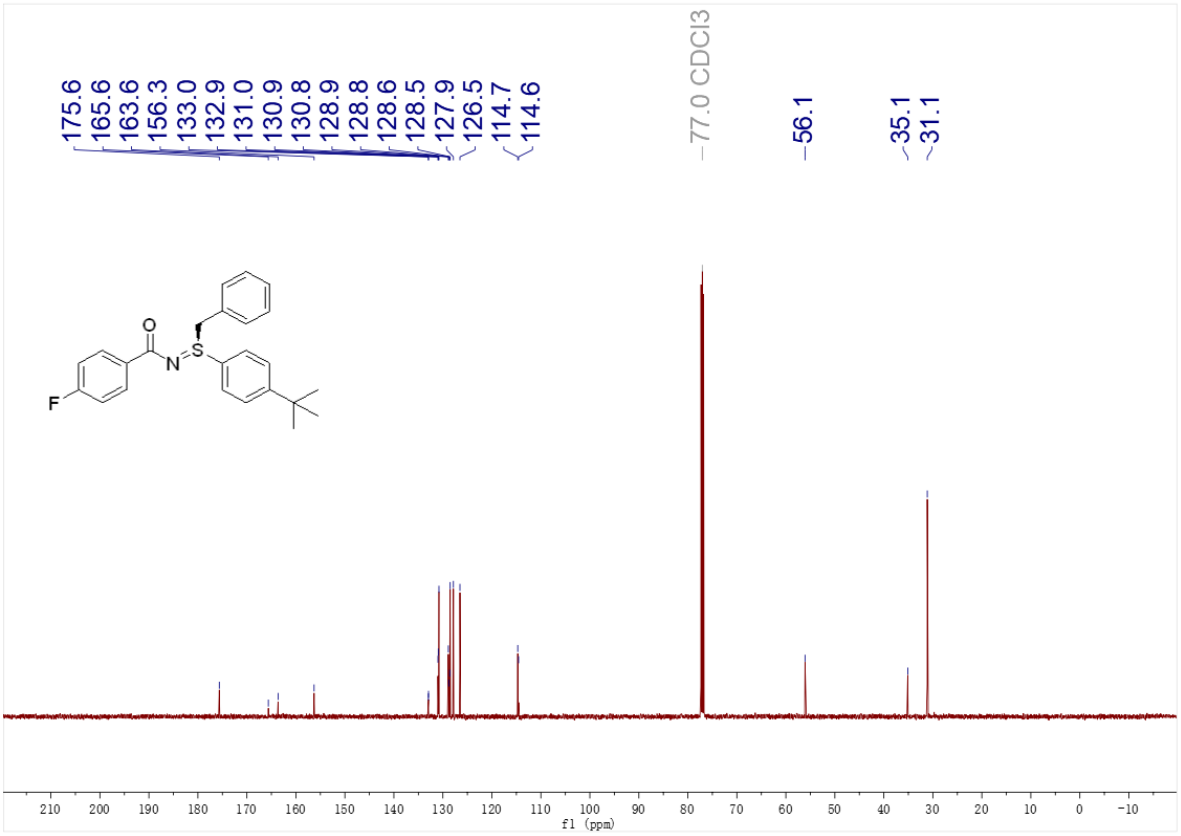


(*S*)-*N*-(benzyl(4-(*tert*-butyl)phenyl)-λ^4-sulfaneylidene)-4-fluorobenzamide (3f)

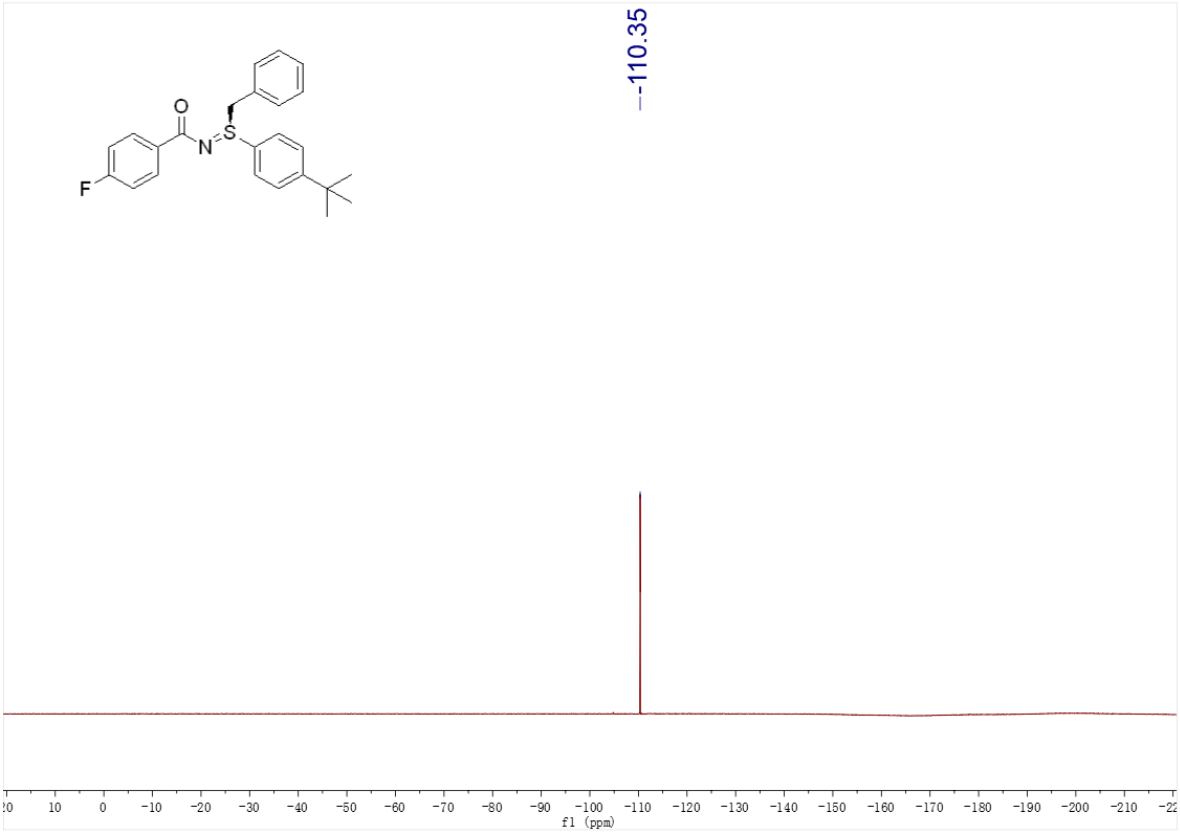
^{1}H NMR (500 MHz, Chloroform-*d*)



^{13}C NMR (126 MHz, Chloroform-*d*)

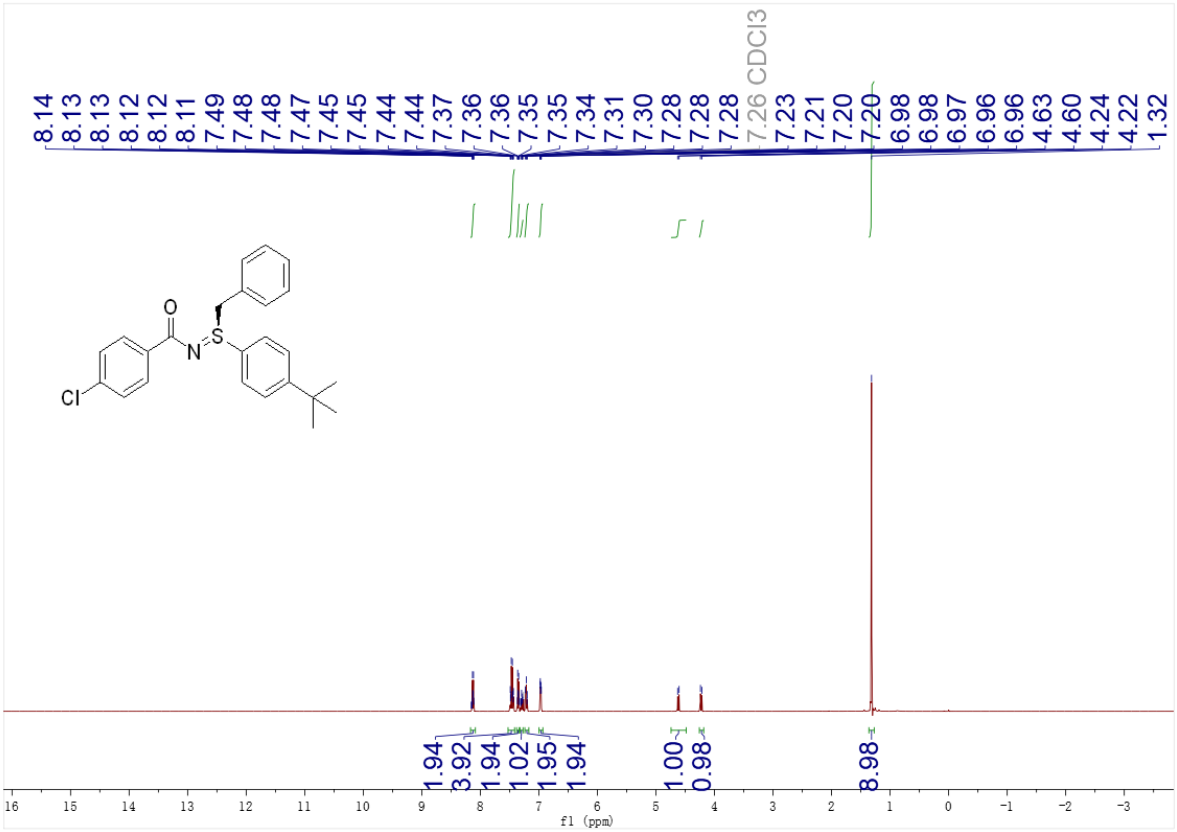


^{19}F NMR (471 MHz, $CDCl_3$)

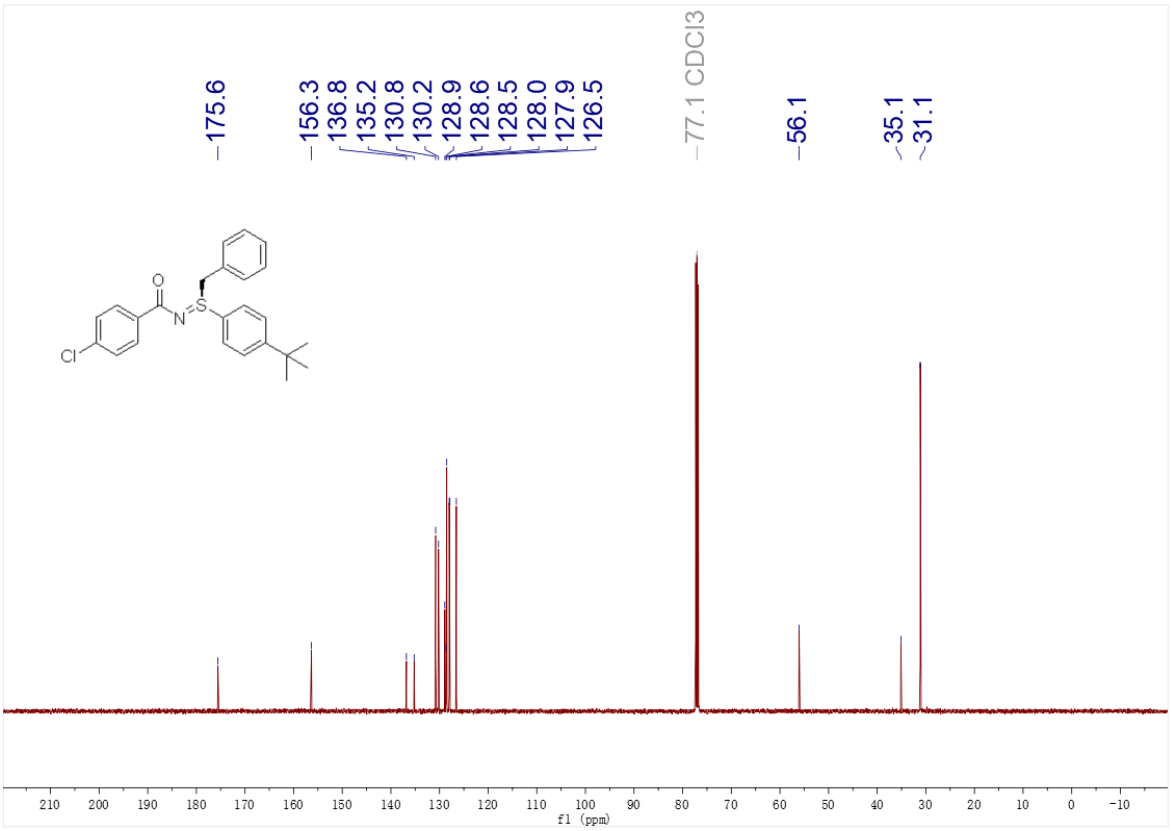


(*S*)-*N*-(benzyl(4-(*tert*-butyl)phenyl)-λ^4-sulfaneylidene)-4-chlorobenzamide (3g)

^{1}H NMR (500 MHz, Chloroform-*d*)

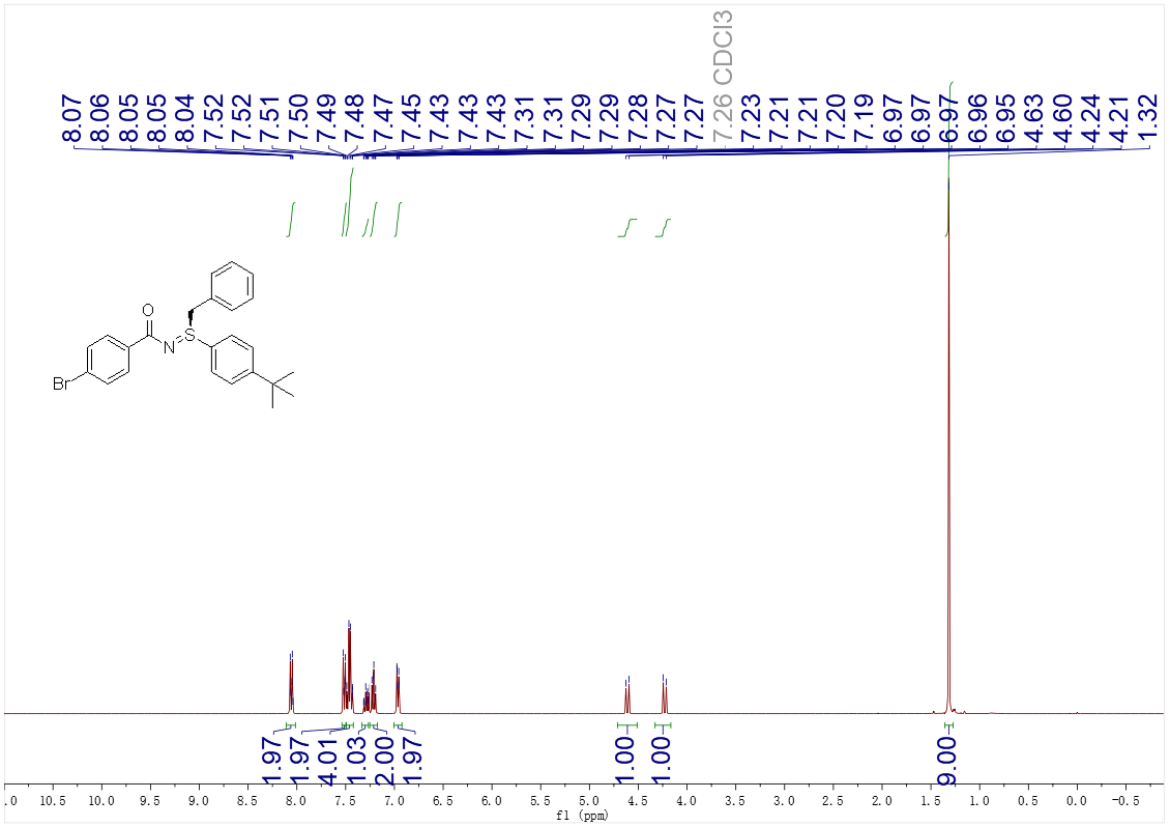


^{13}C NMR (126 MHz, $CDCl_3$)

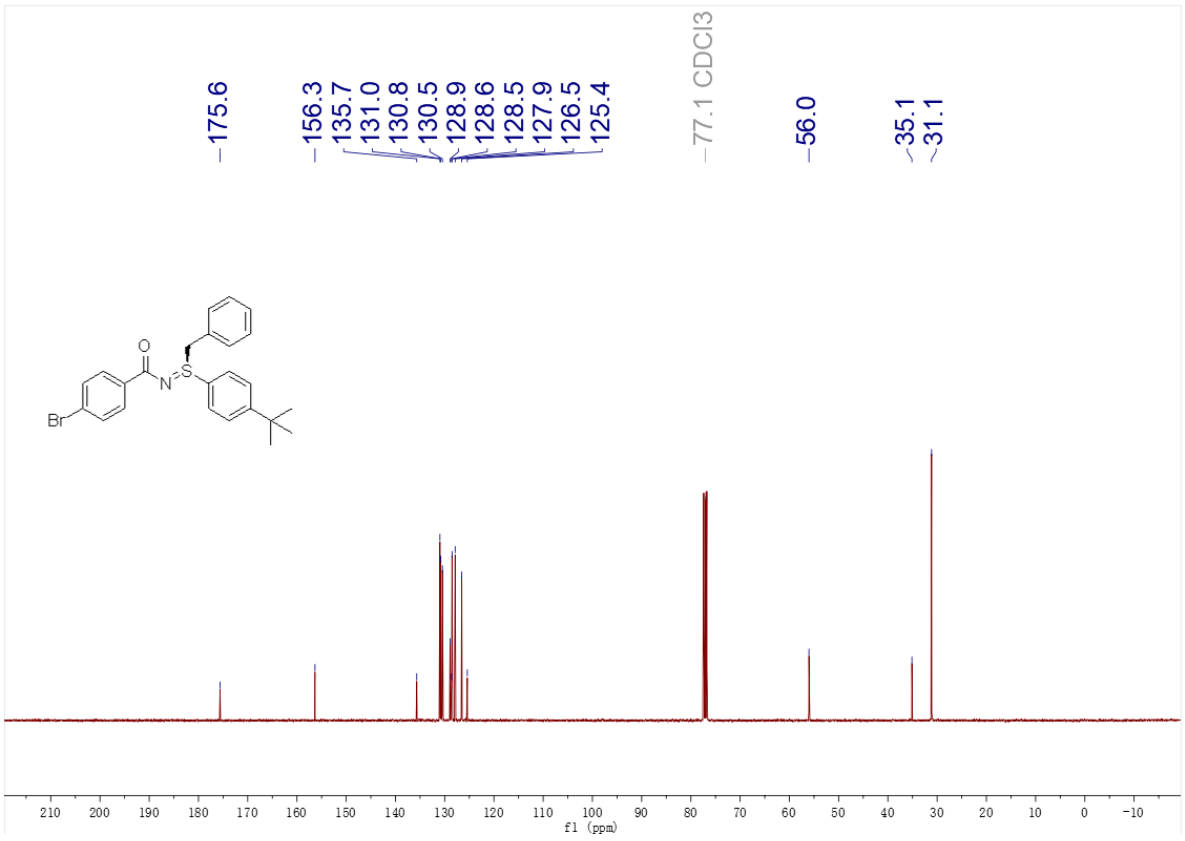


(*S*)-*N*-(benzyl(4-(*tert*-butyl)phenyl)-λ^4-sulfaneylidene)-4-bromobenzamide (3h)

^{1}H NMR (400 MHz, Chloroform-*d*)

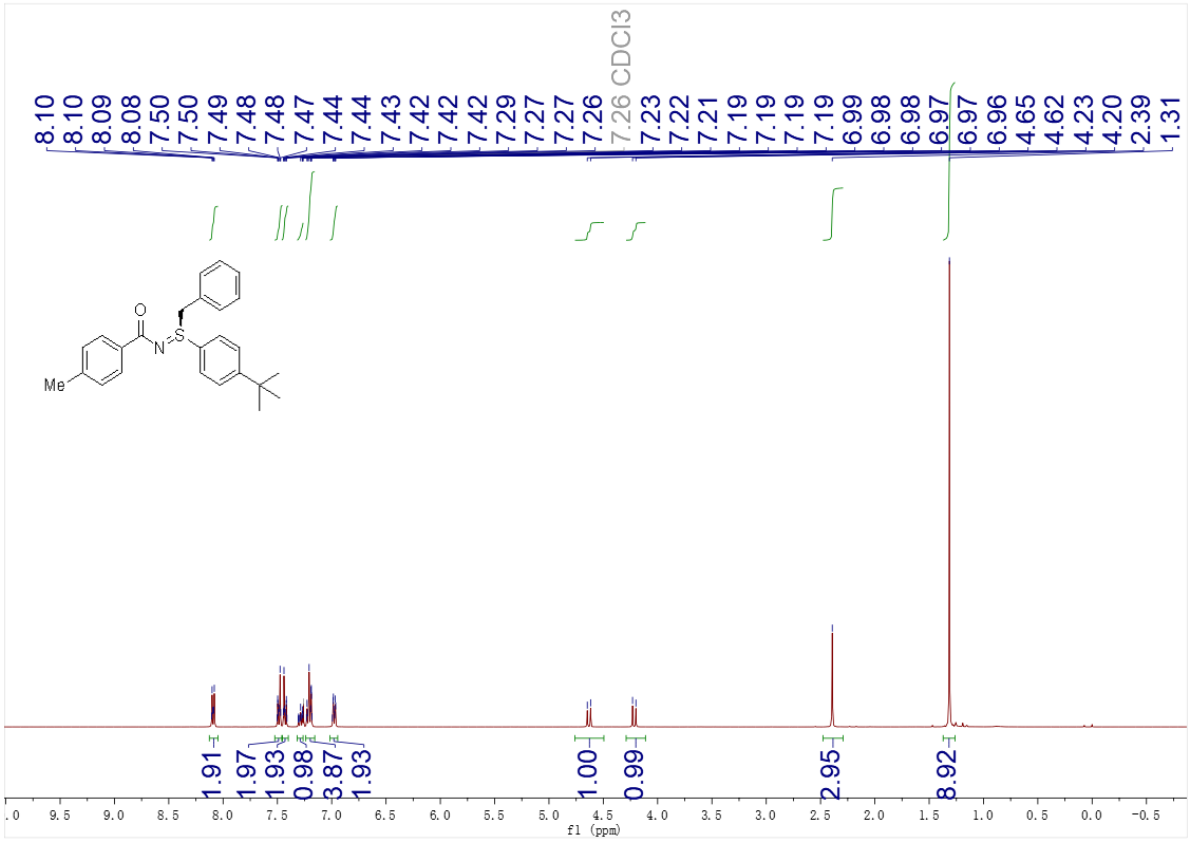


^{13}C NMR (101 MHz, $CDCl_3$)

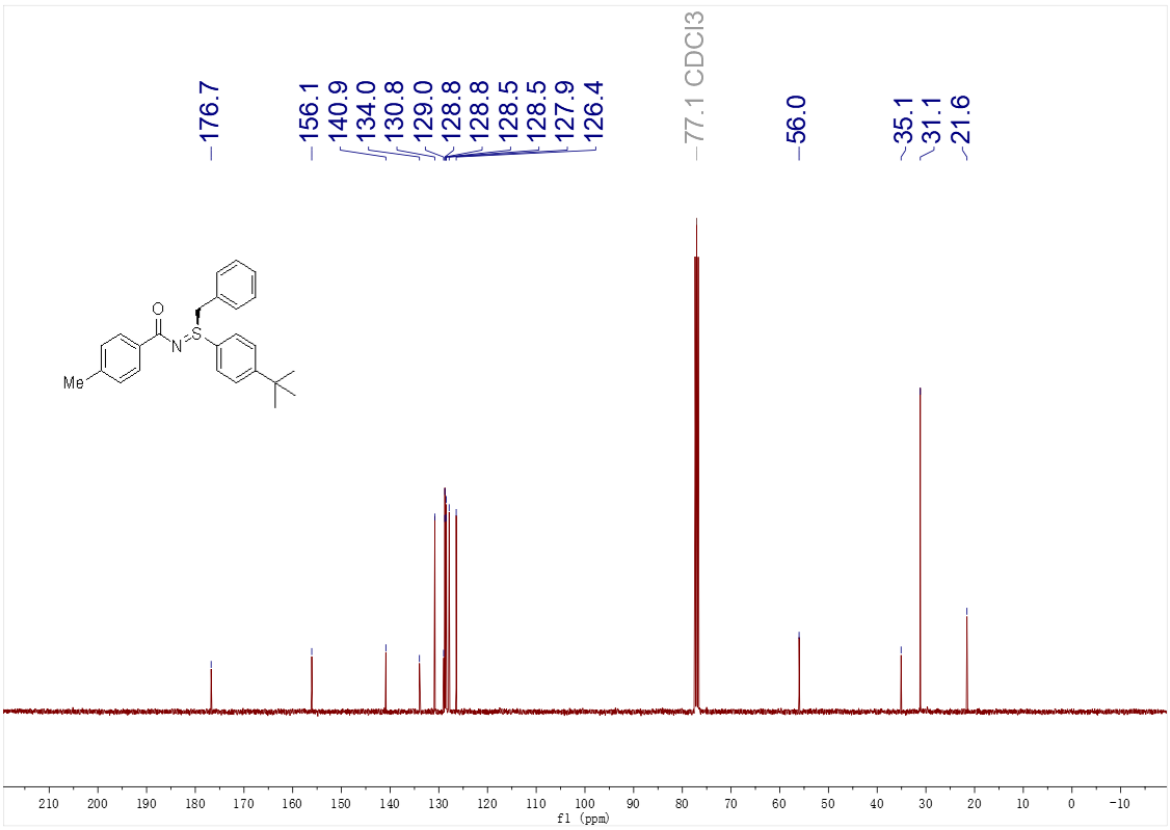


(*S*)-*N*-(benzyl(4-(*tert*-butyl)phenyl)-λ^4-sulfaneylidene)-4-methylbenzamide (3i)

^{1}H NMR (400 MHz, Chloroform-*d*)

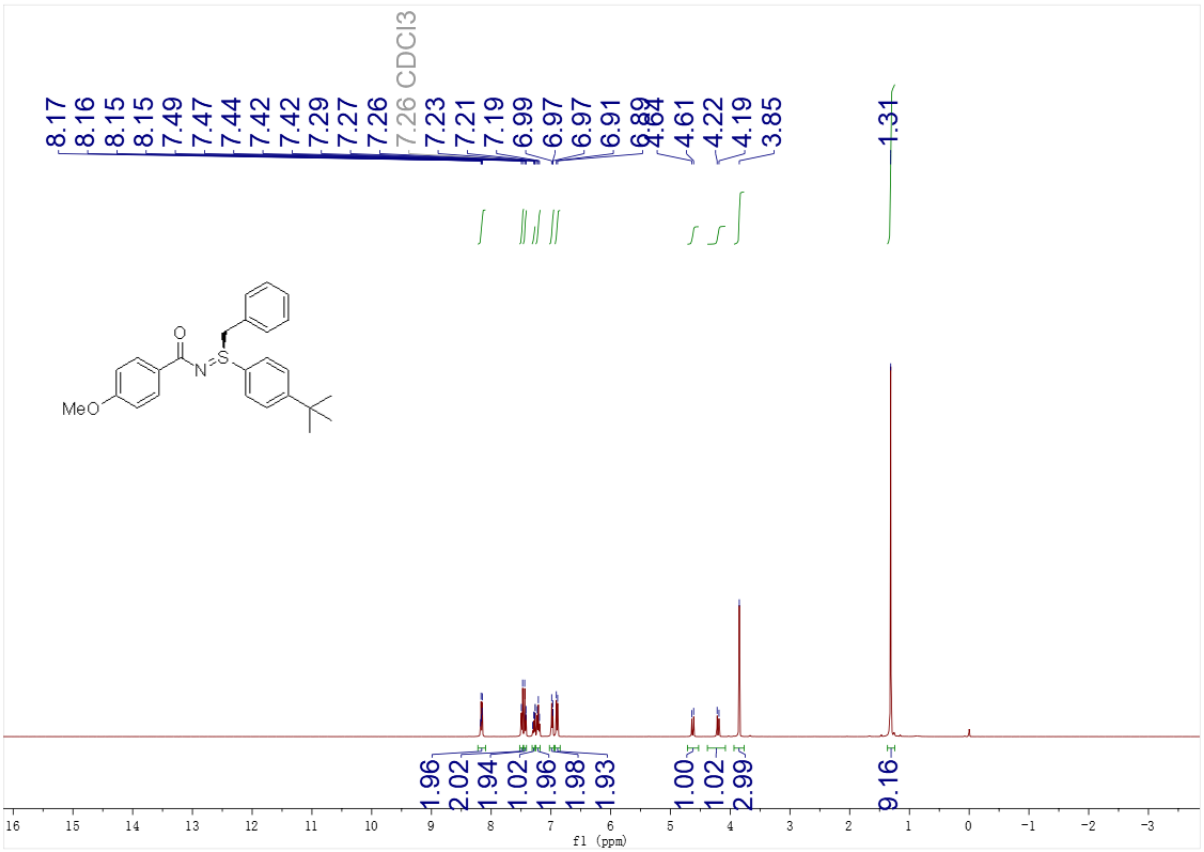


^{13}C NMR (101 MHz, $CDCl_3$)

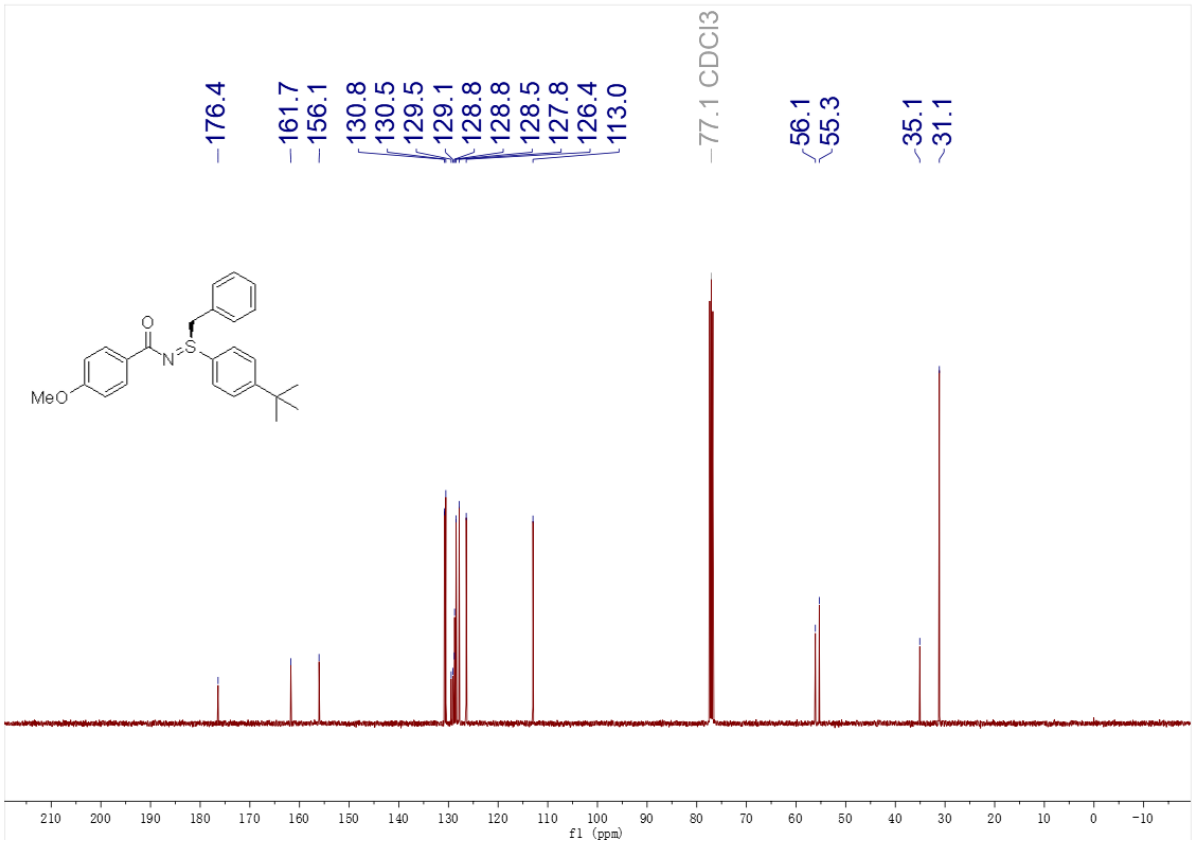


(*S*)-*N*-(benzyl(4-(*tert*-butyl)phenyl)-λ^4-sulfaneylidene)-4-methoxybenzamide (3j)

^{1}H NMR (400 MHz, Chloroform-*d*)

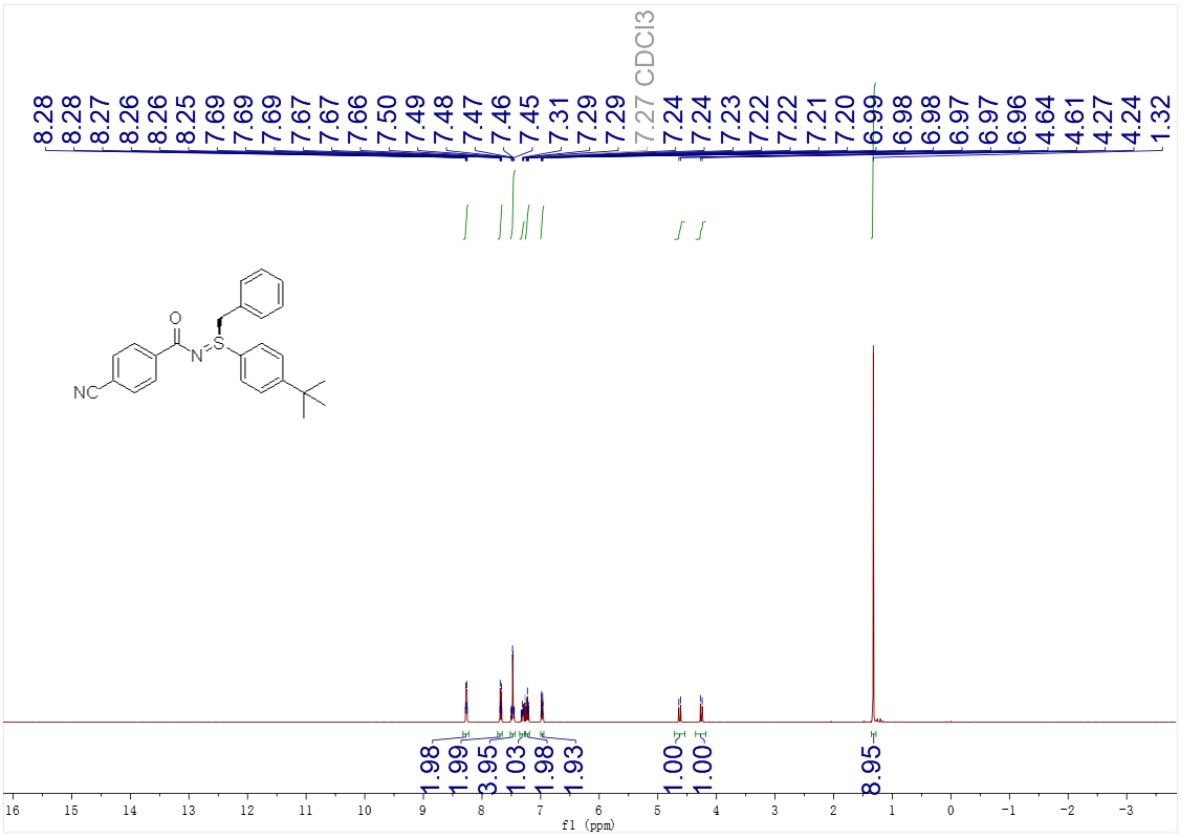


^{13}C NMR (101 MHz, $CDCl_3$)

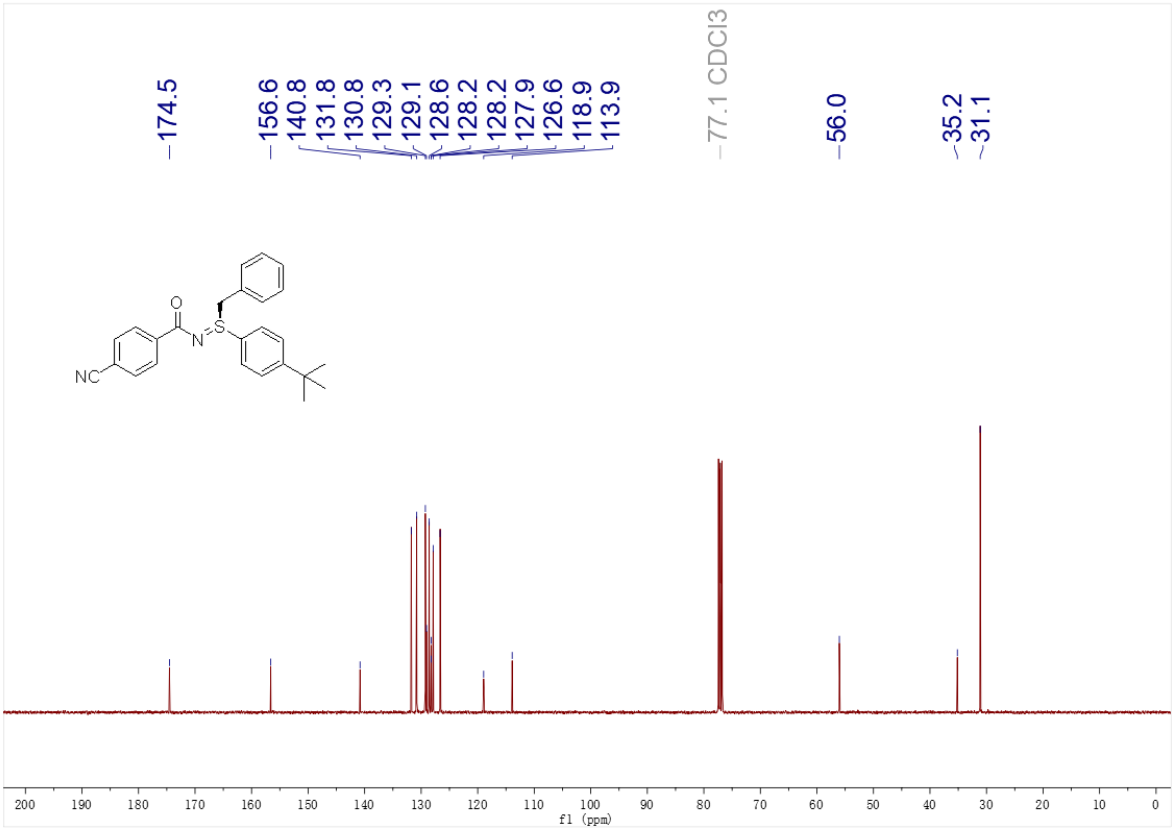


(*S*)-*N*-(benzyl(4-(*tert*-butyl)phenyl)-λ^4-sulfaneylidene)-4-methoxybenzamide (3k)

^{1}H NMR (400 MHz, Chloroform-*d*)

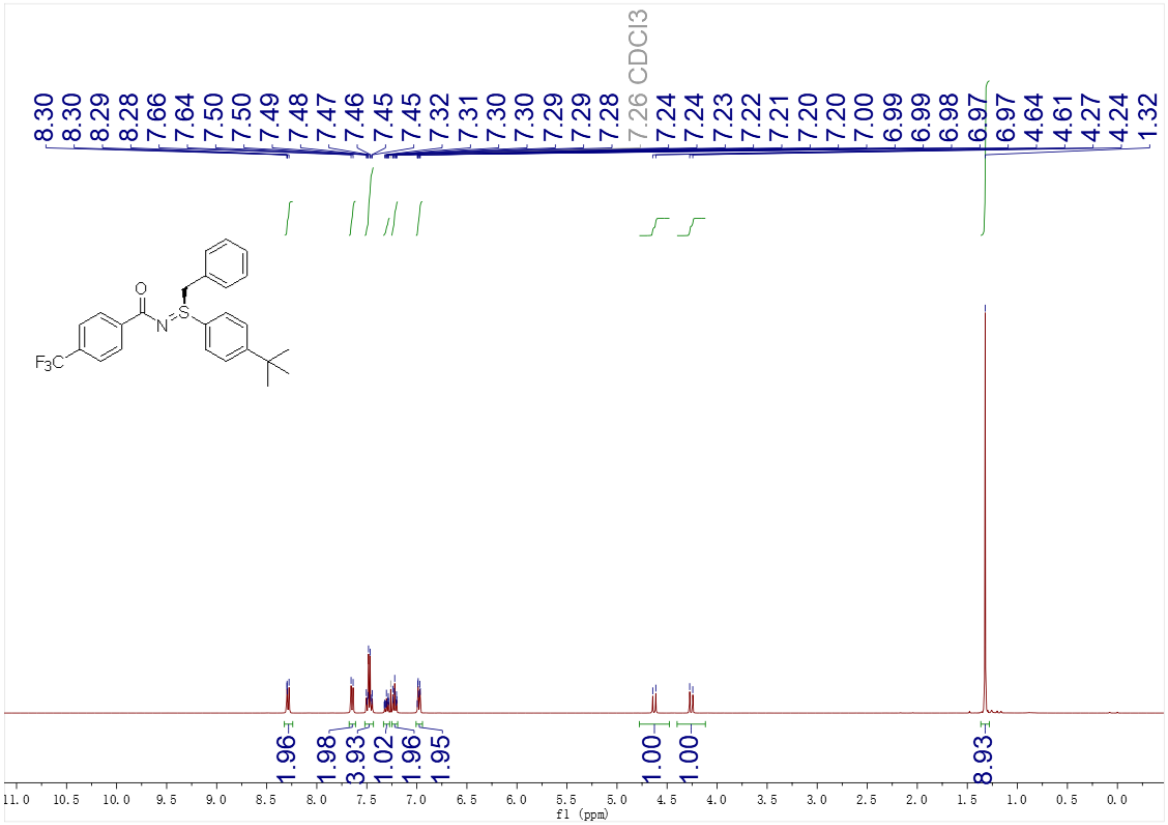


^{13}C NMR (101 MHz, $CDCl_3$)

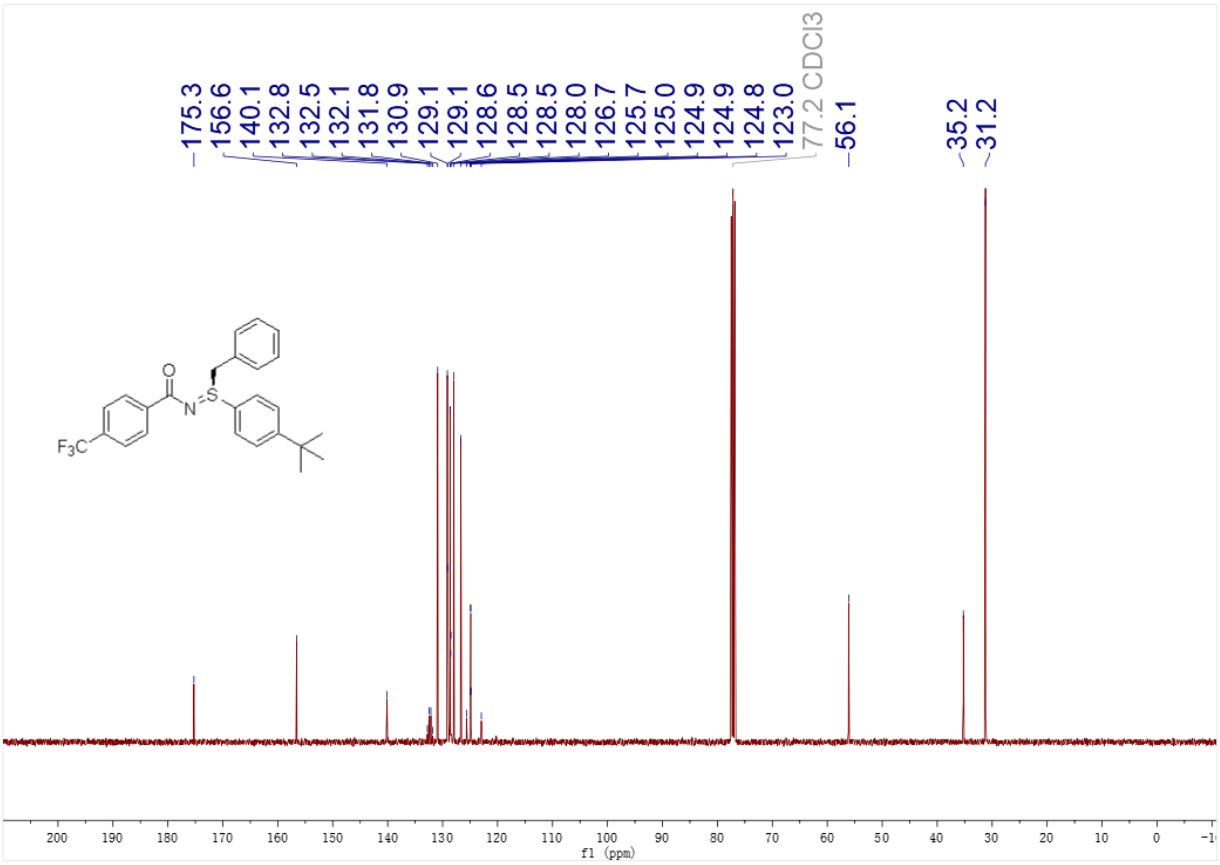


(*S*)-*N*-(benzyl(4-(*tert*-butyl)phenyl)-λ^4-sulfaneylidene)-4-(trifluoromethyl)benzamide (3l)

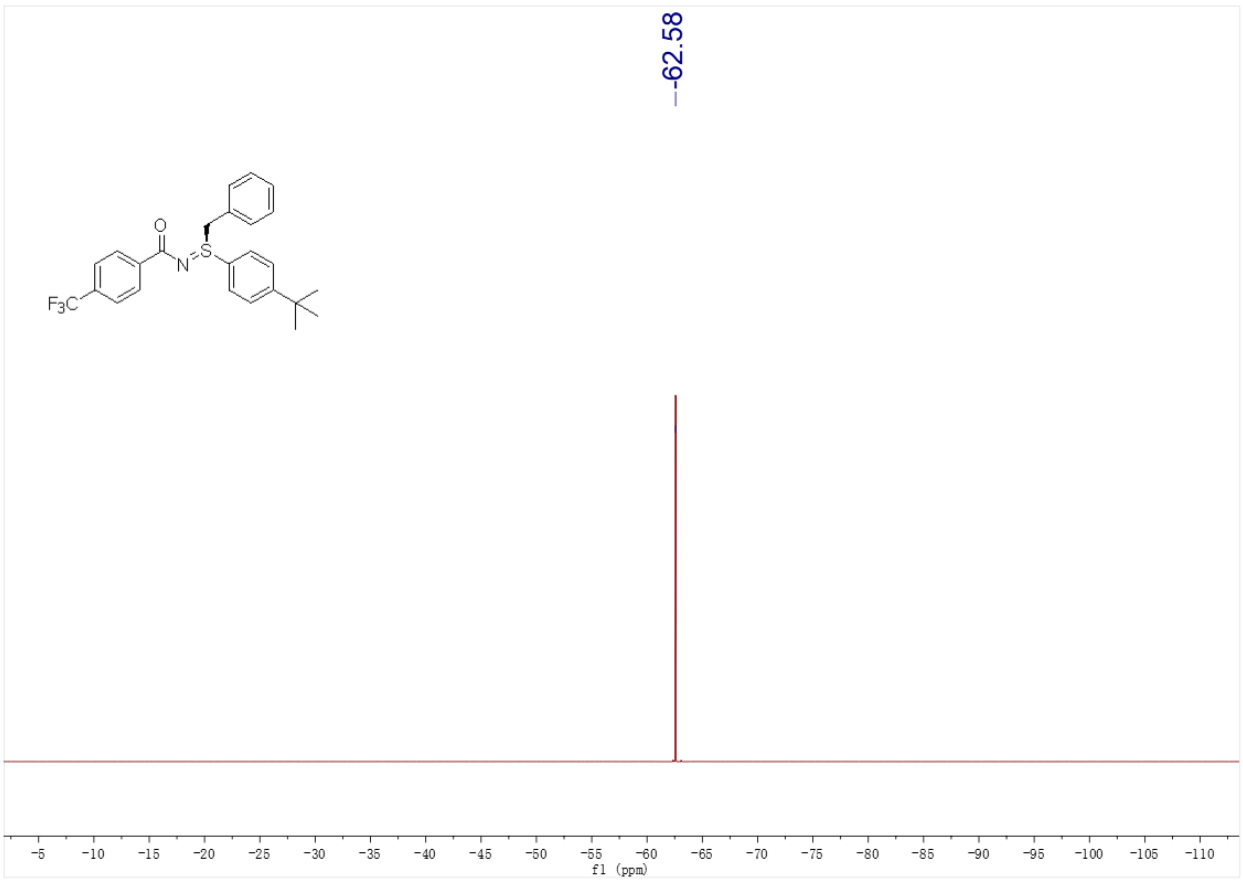
^{1}H NMR (400 MHz, Chloroform-*d*)



^{13}C NMR (101 MHz, Chloroform-*d*)

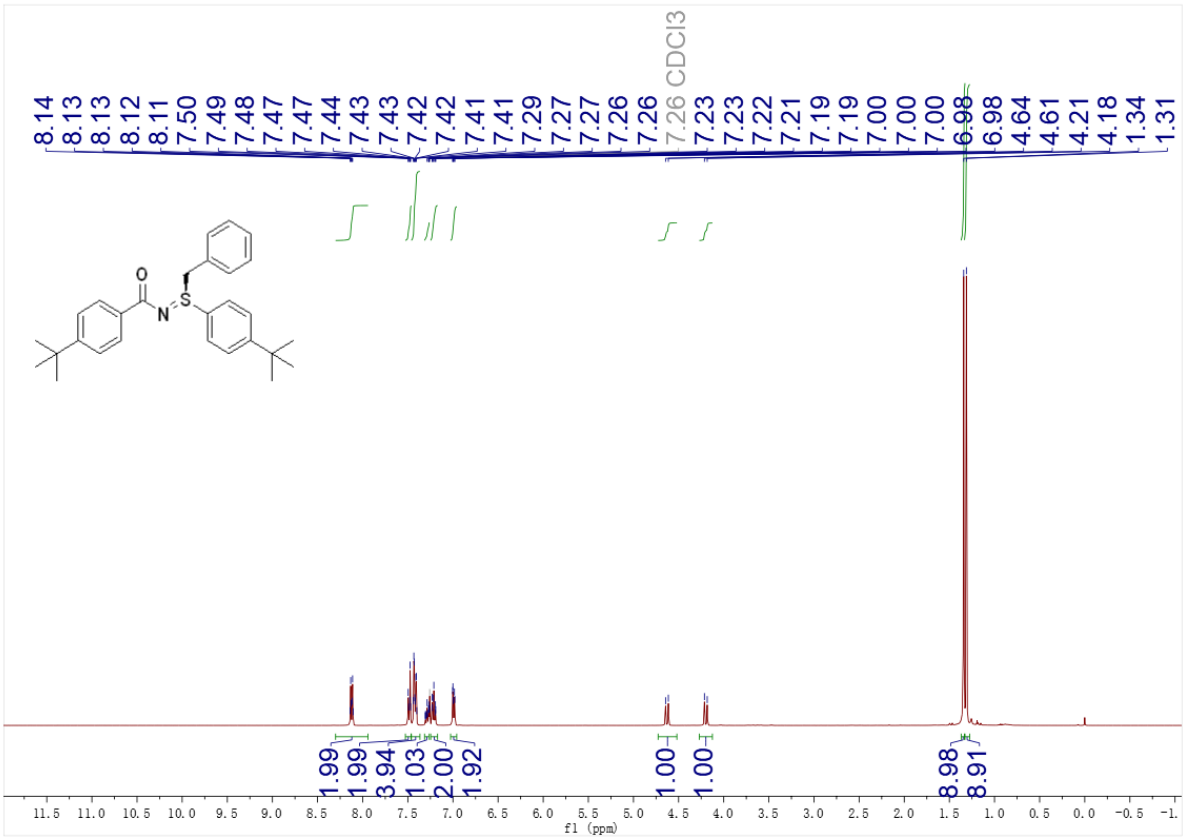


^{19}F NMR (376 MHz, $CDCl_3$)

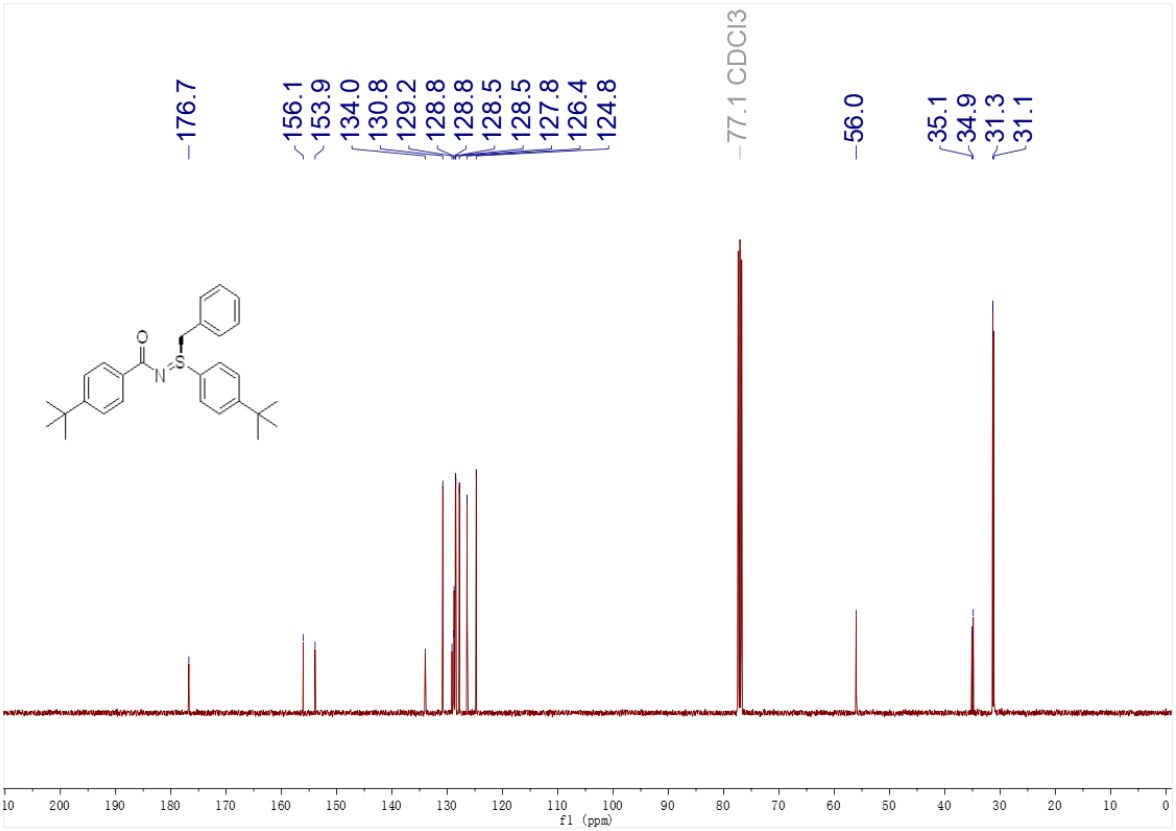


(*S*)-*N*-(benzyl(4-(*tert*-butyl)phenyl)-λ^4-sulfaneylidene)-4-(*tert*-butyl)benzamide (3m)

^{1}H NMR (400 MHz, Chloroform-*d*)

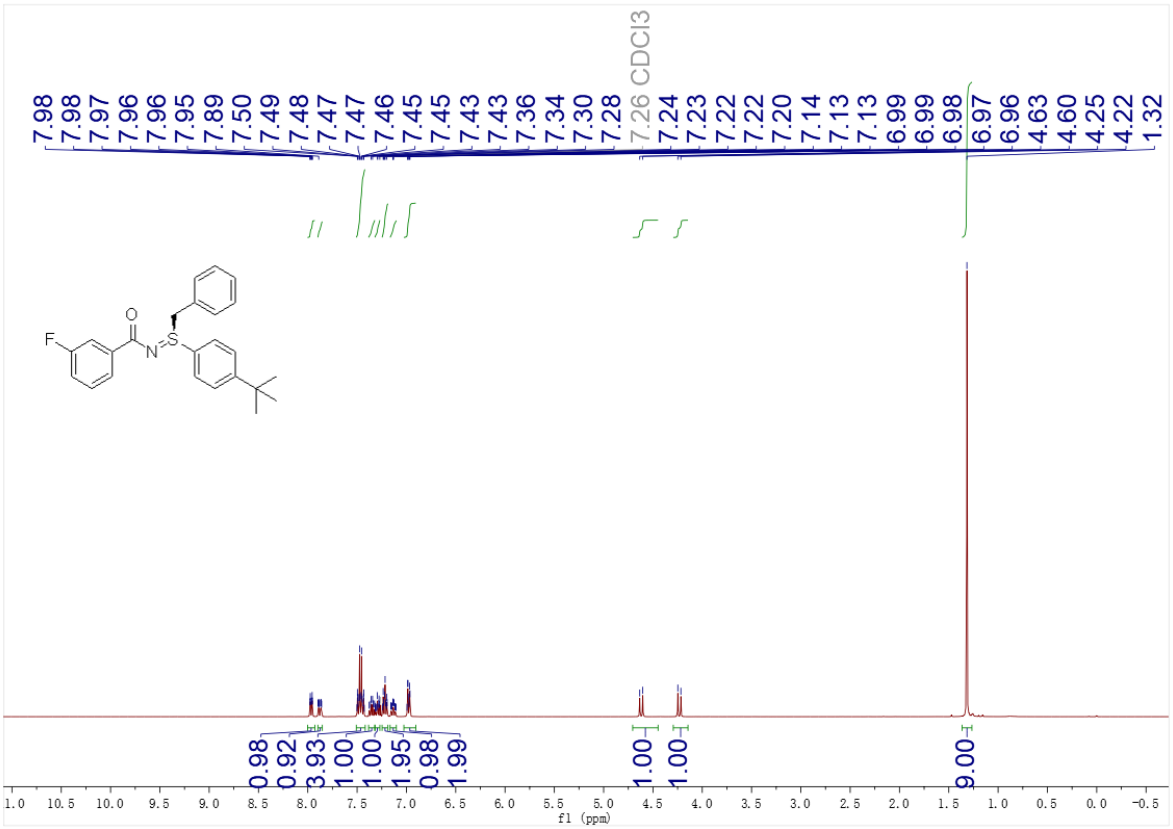


^{13}C NMR (101 MHz, $CDCl_3$)

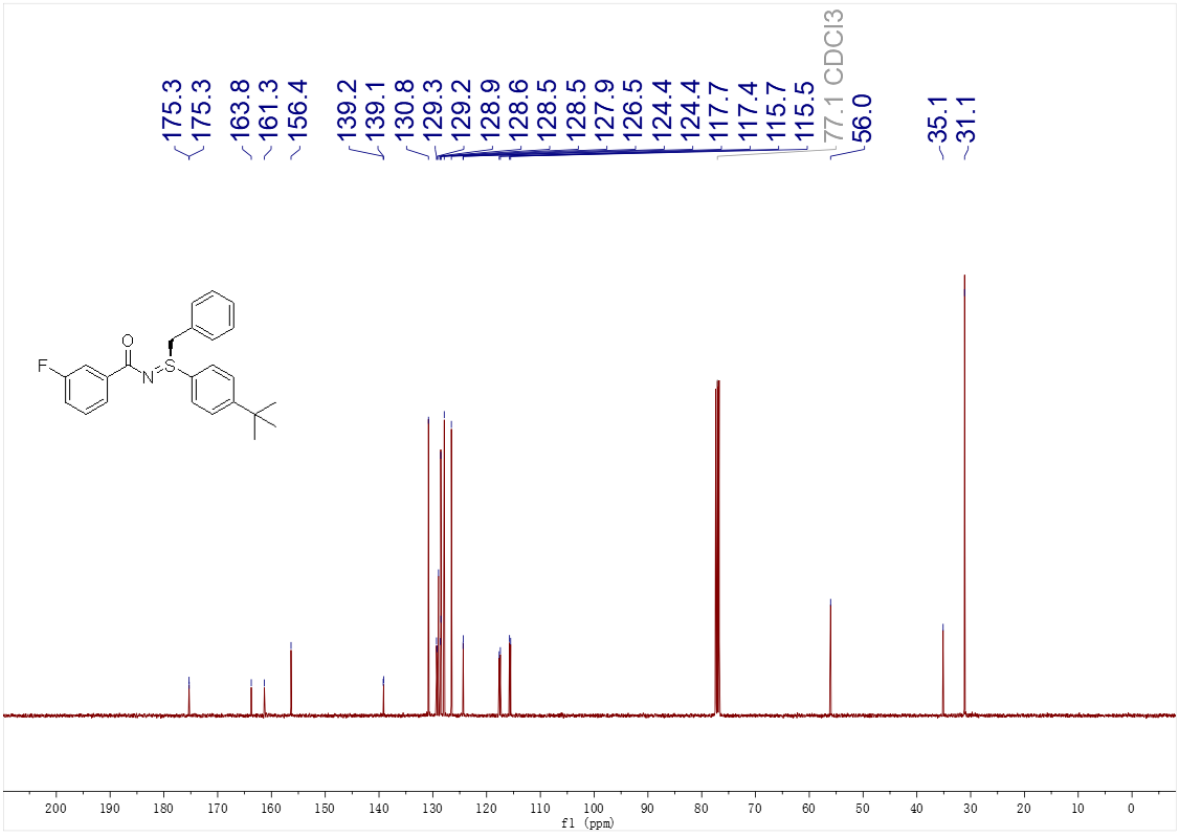


(*S*)-*N*-(benzyl(4-(*tert*-butyl)phenyl)-λ^4-sulfaneylidene)-3-fluorobenzamide (3n)

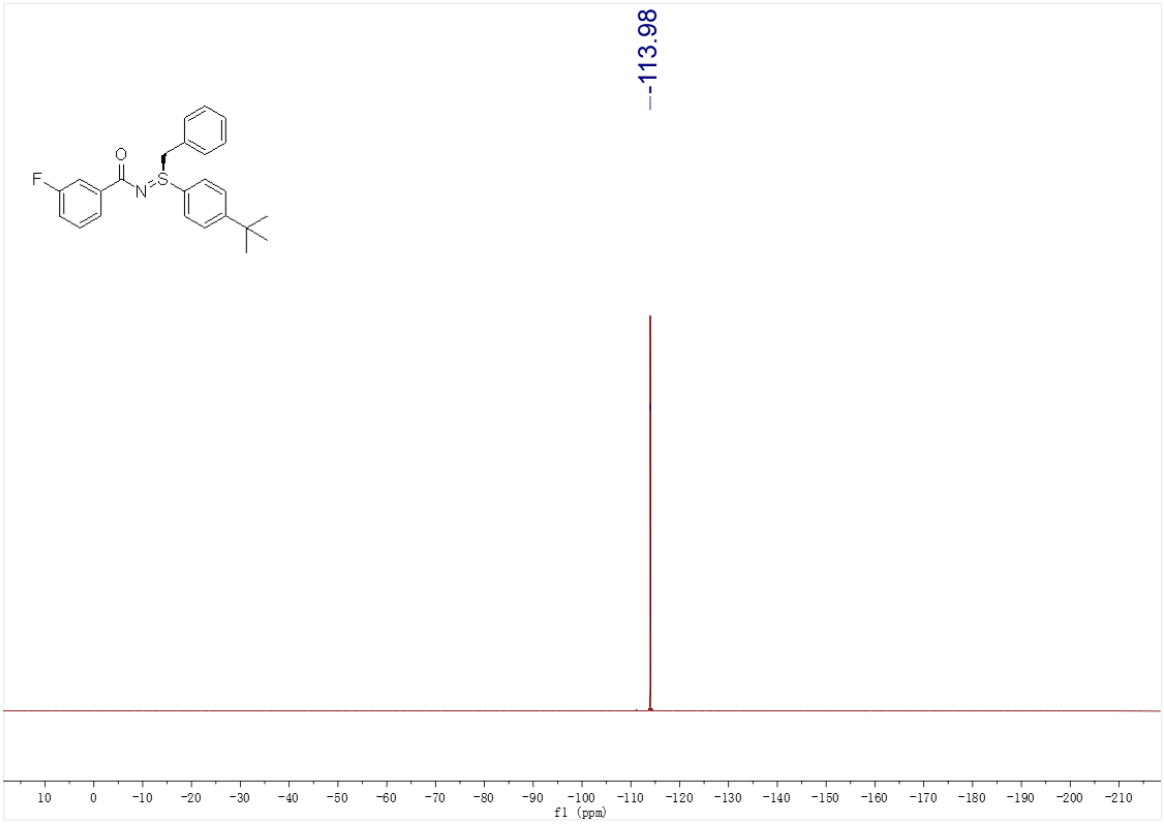
^{1}H NMR (400 MHz, Chloroform-*d*)



^{13}C NMR (101 MHz, Chloroform-*d*)

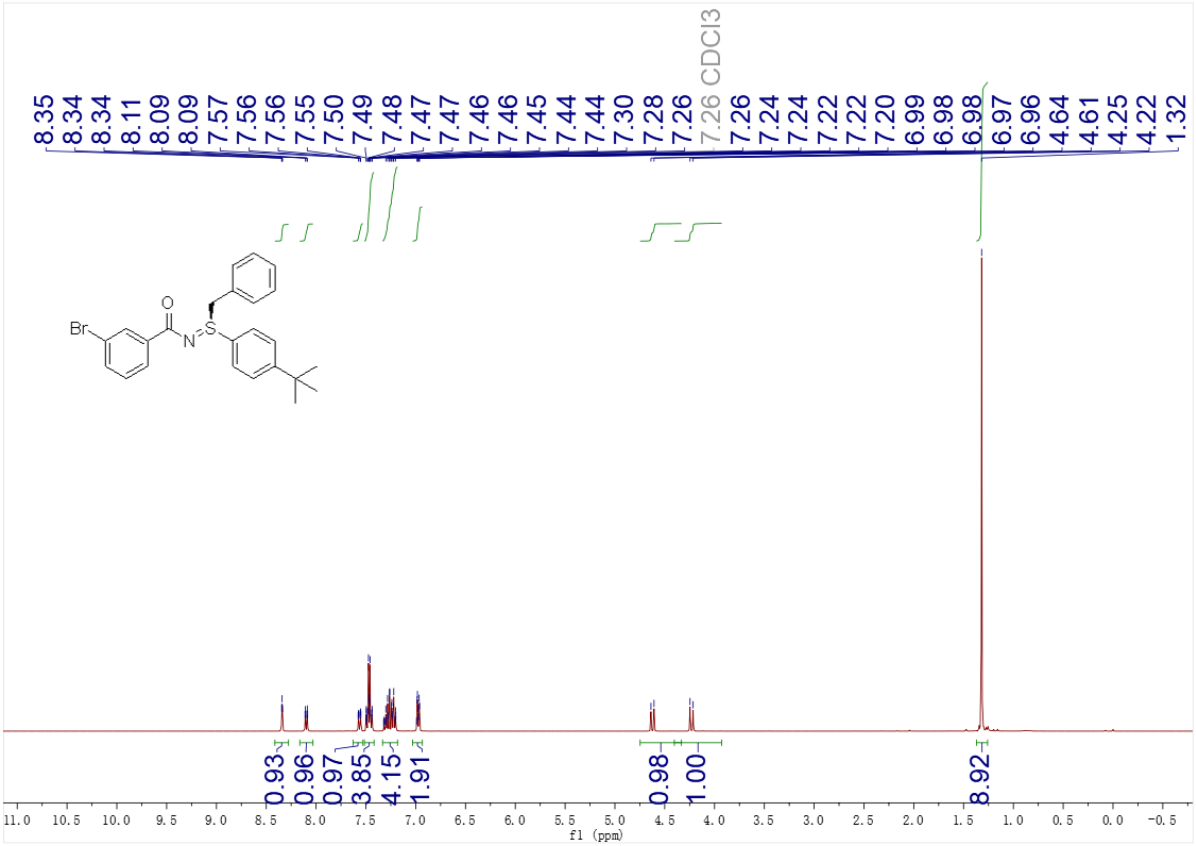


^{19}F NMR (376 MHz, $CDCl_3$)

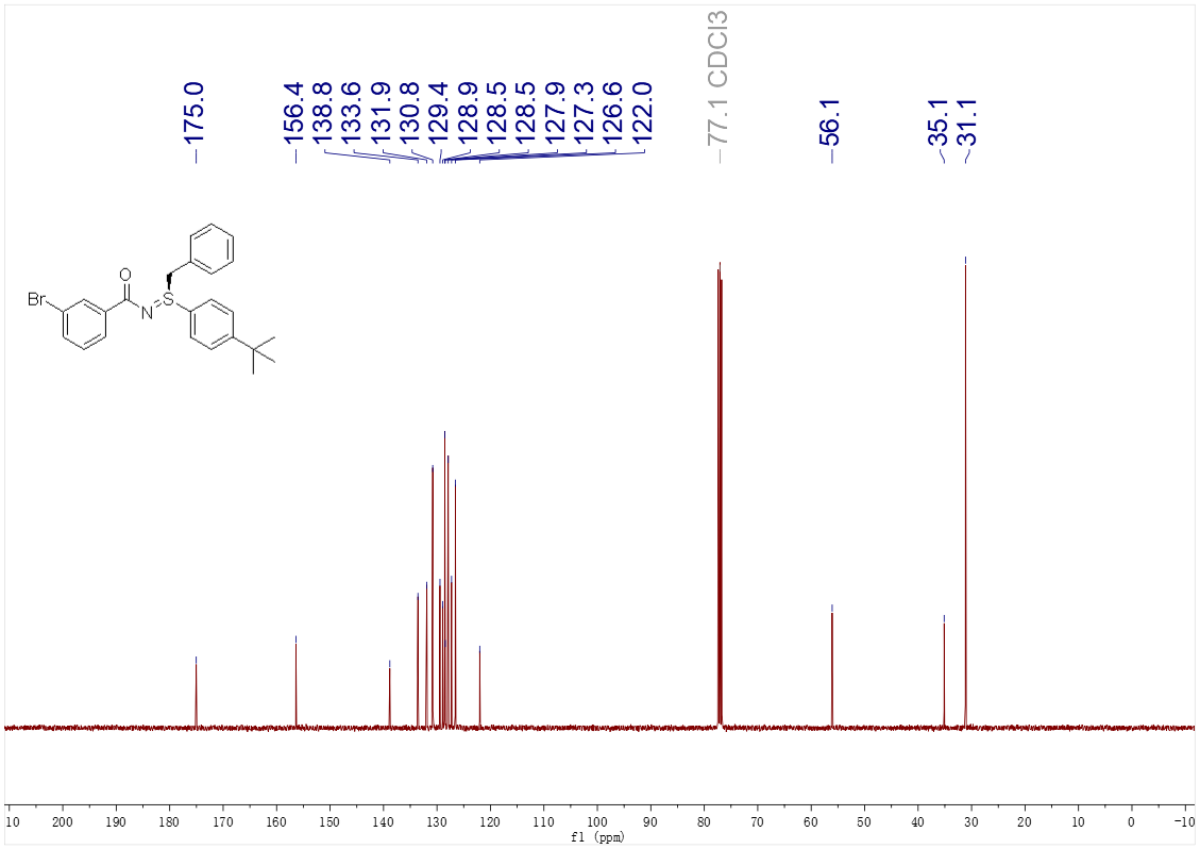


(*S*)-*N*-(benzyl(4-(*tert*-butyl)phenyl)-λ^4-sulfaneylidene)-3-bromobenzamide (3o)

^{1}H NMR (400 MHz, Chloroform-*d*)

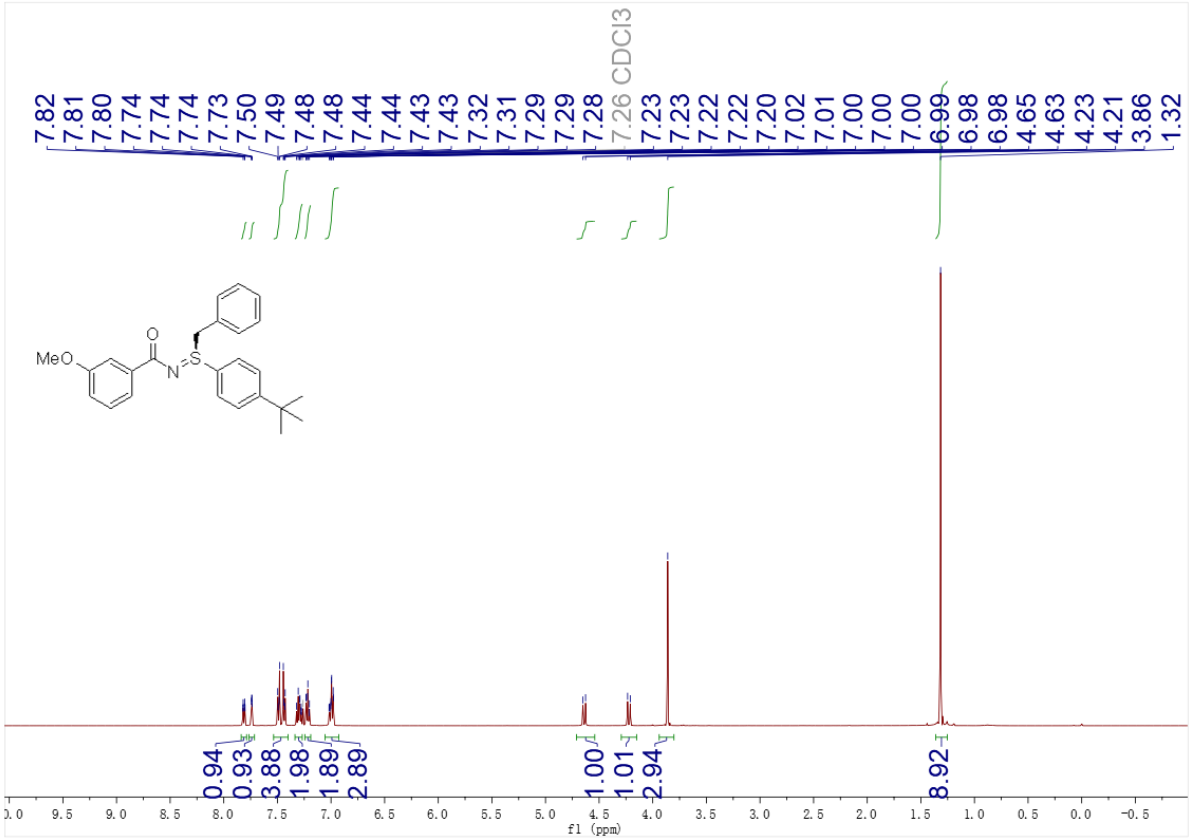


^{13}C NMR (101 MHz, $CDCl_3$)

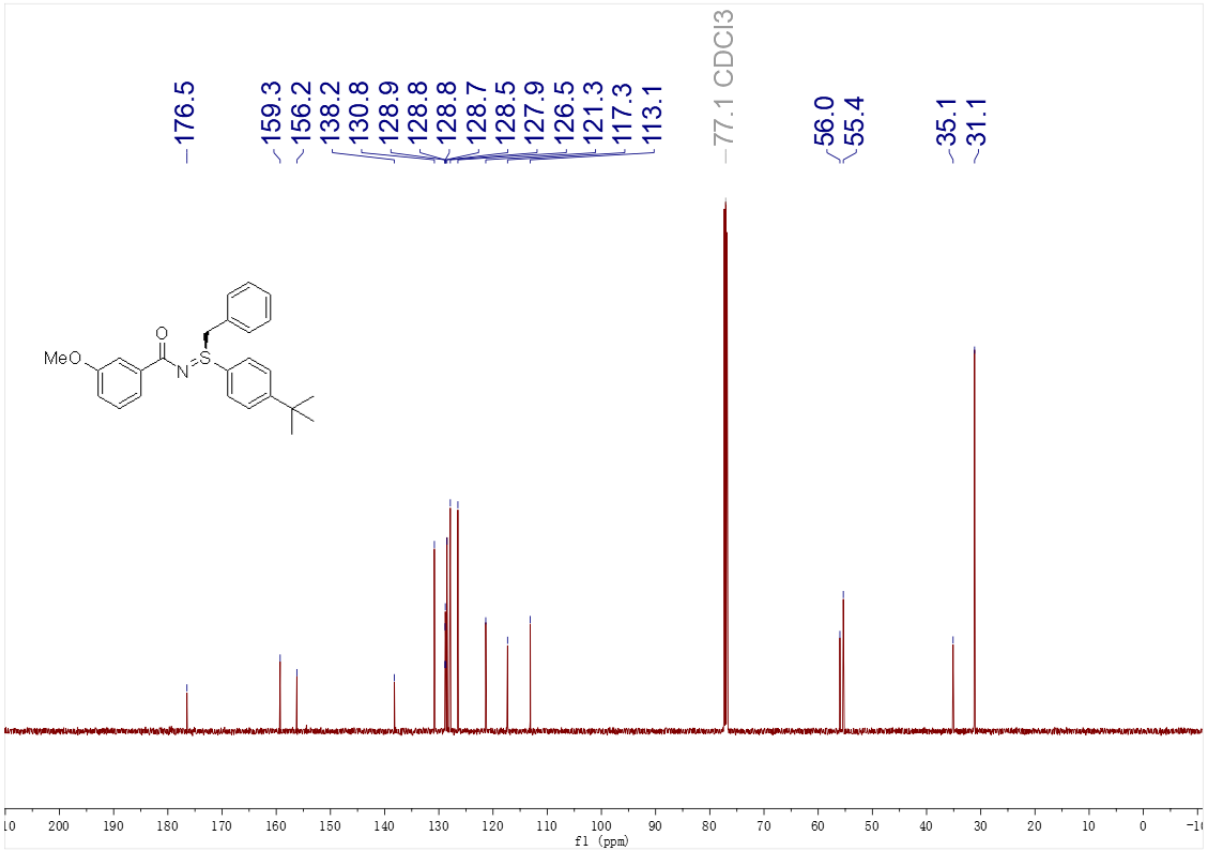


(*S*)-*N*-(benzyl(4-(*tert*-butyl)phenyl)-λ^4-sulfaneylidene)-3-methoxybenzamide (3p)

^{1}H NMR (500 MHz, Chloroform-*d*)

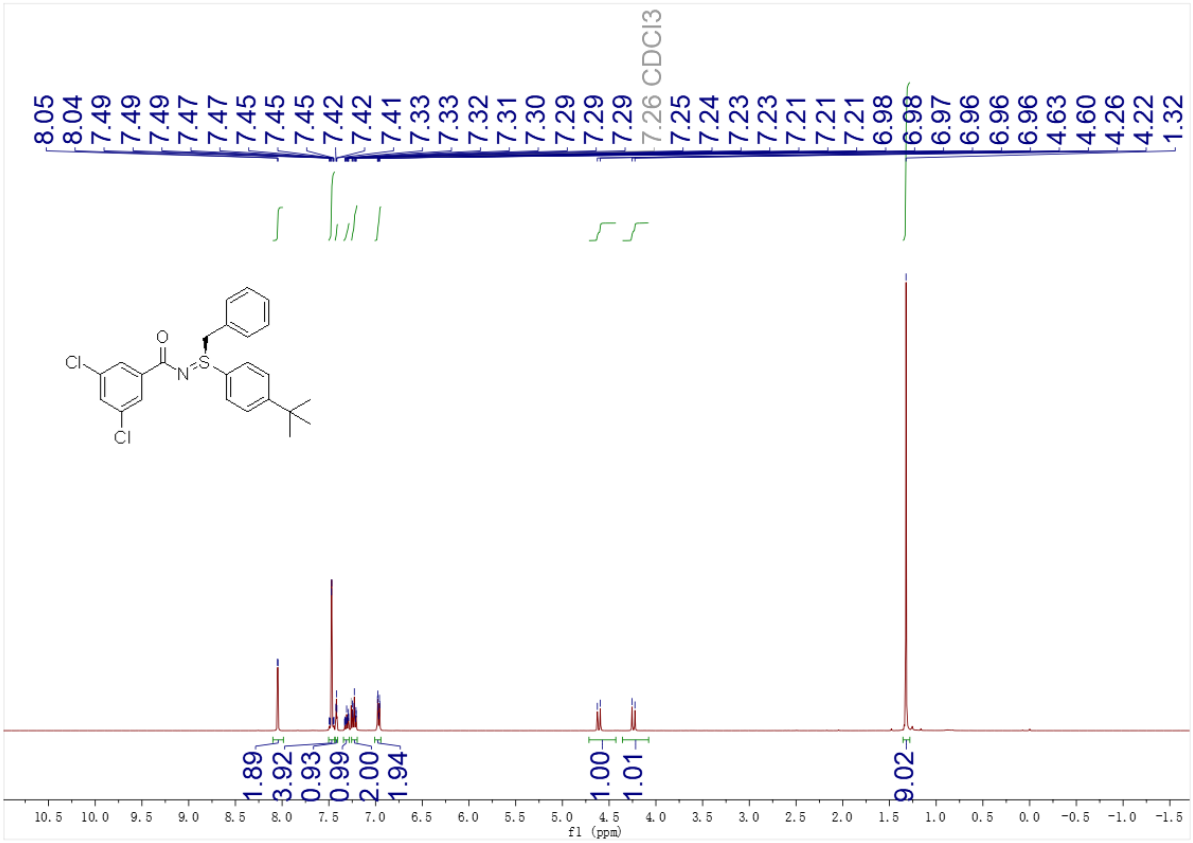


^{13}C NMR (126 MHz, $CDCl_3$)

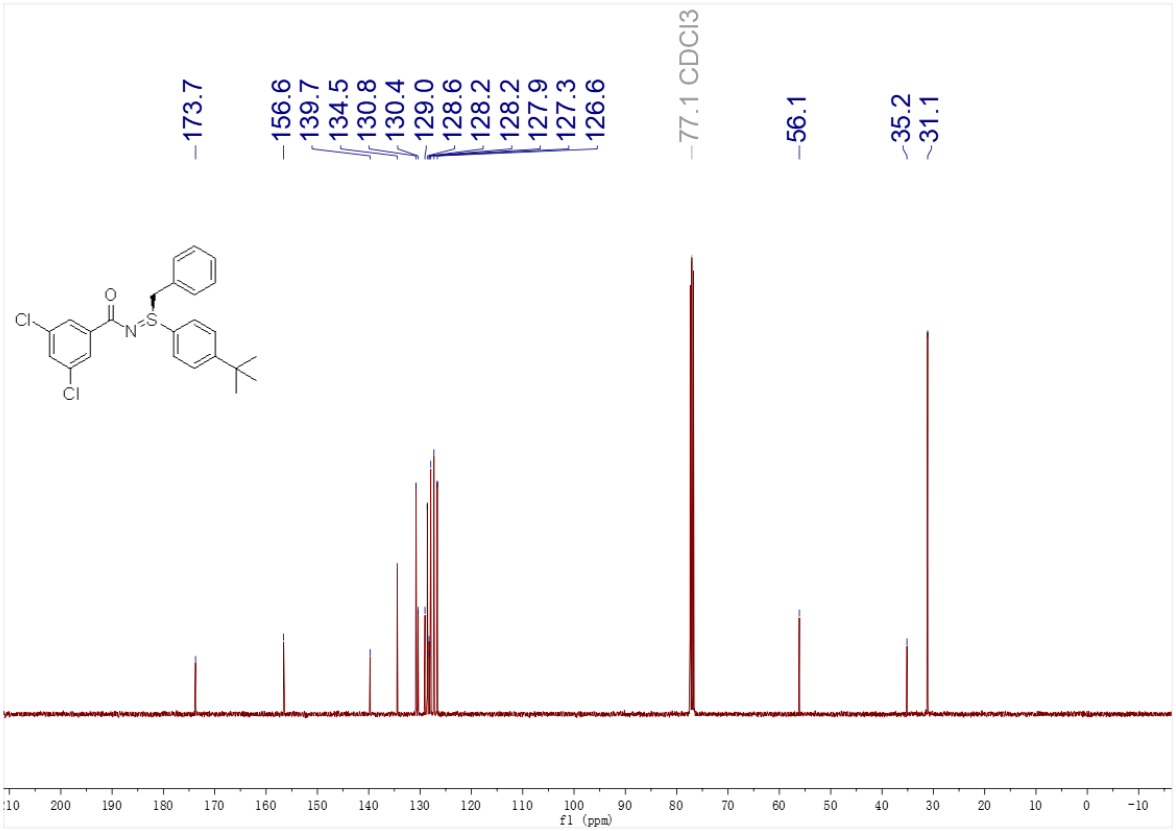


(*S*)-*N*-(benzyl(4-(*tert*-butyl)phenyl)-λ^4-sulfaneylidene)-3,5-dichlorobenzamide (3q)

^{1}H NMR (400 MHz, Chloroform-*d*)

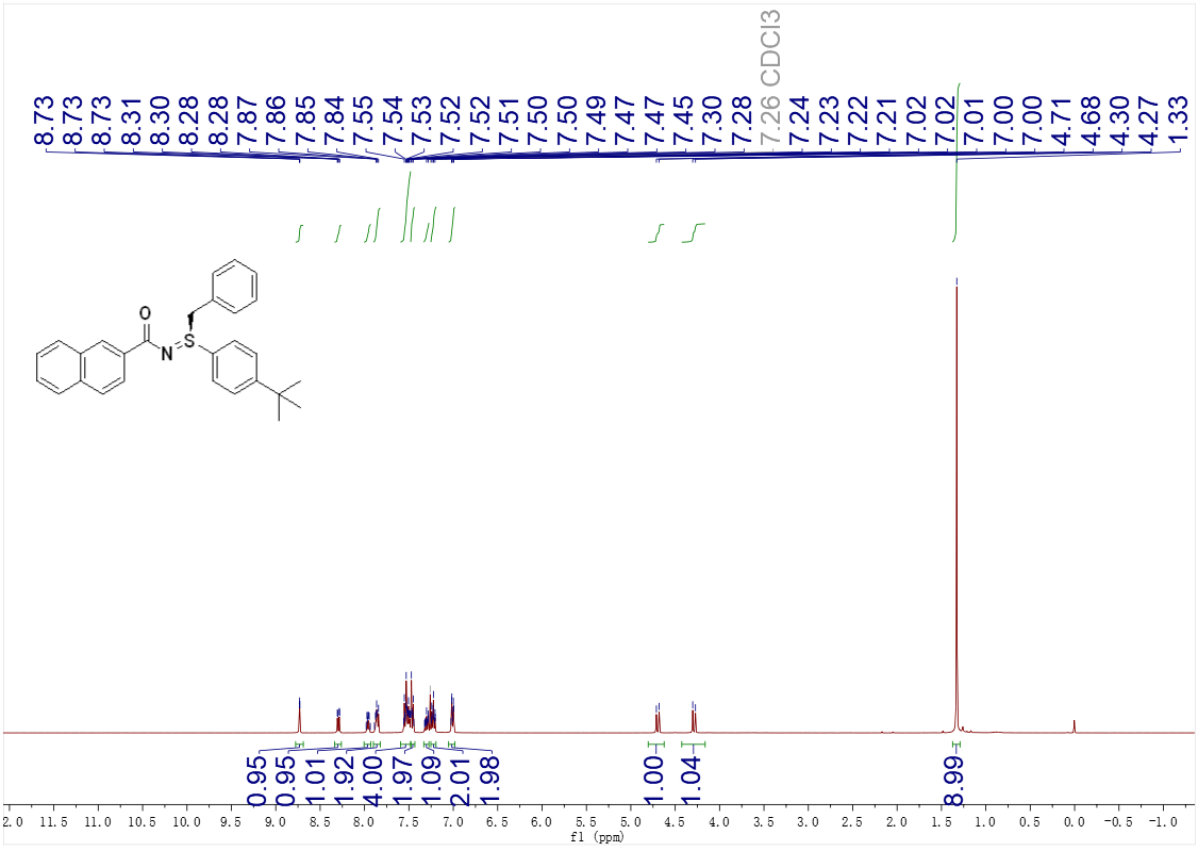


^{13}C NMR (101 MHz, $CDCl_3$)

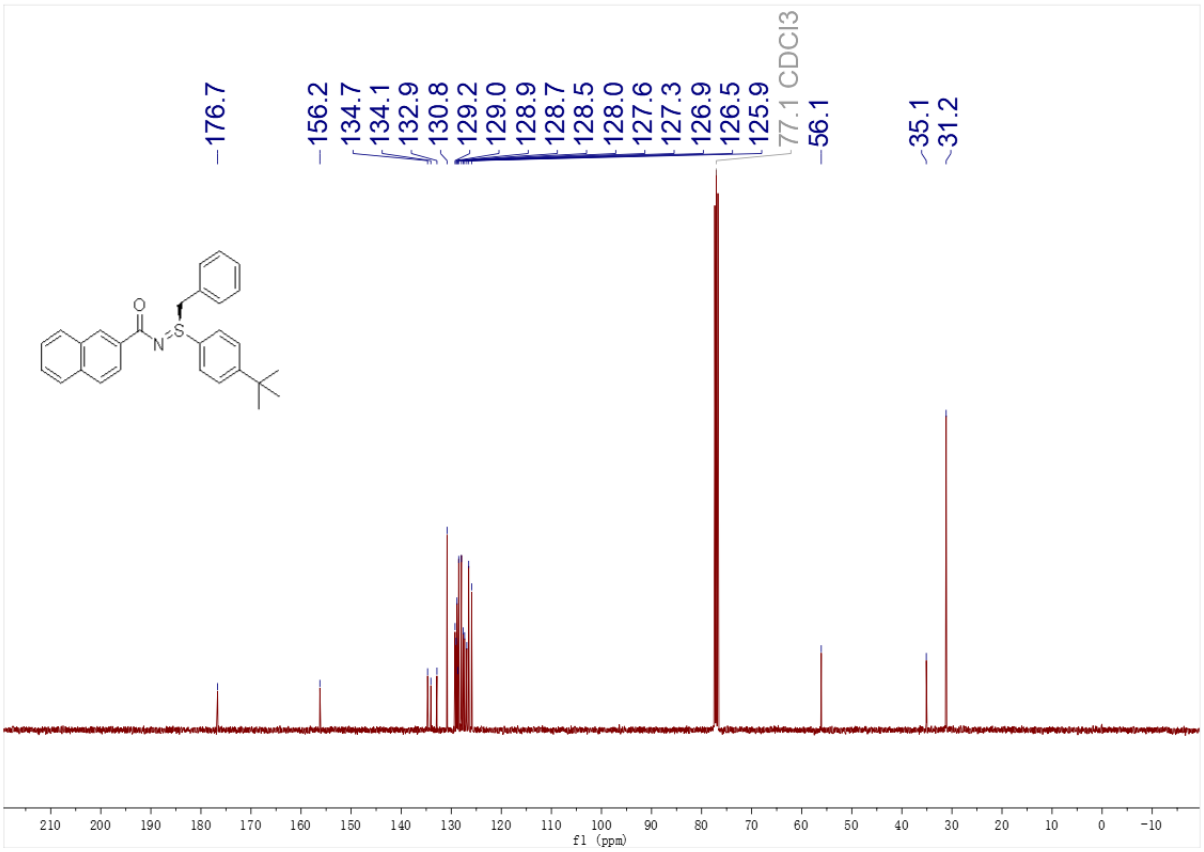


(*S*)-*N*-(benzyl(4-(*tert*-butyl)phenyl)-λ^4-sulfaneylidene)-2-naphthamide (3r)

^{1}H NMR (400 MHz, Chloroform-*d*)

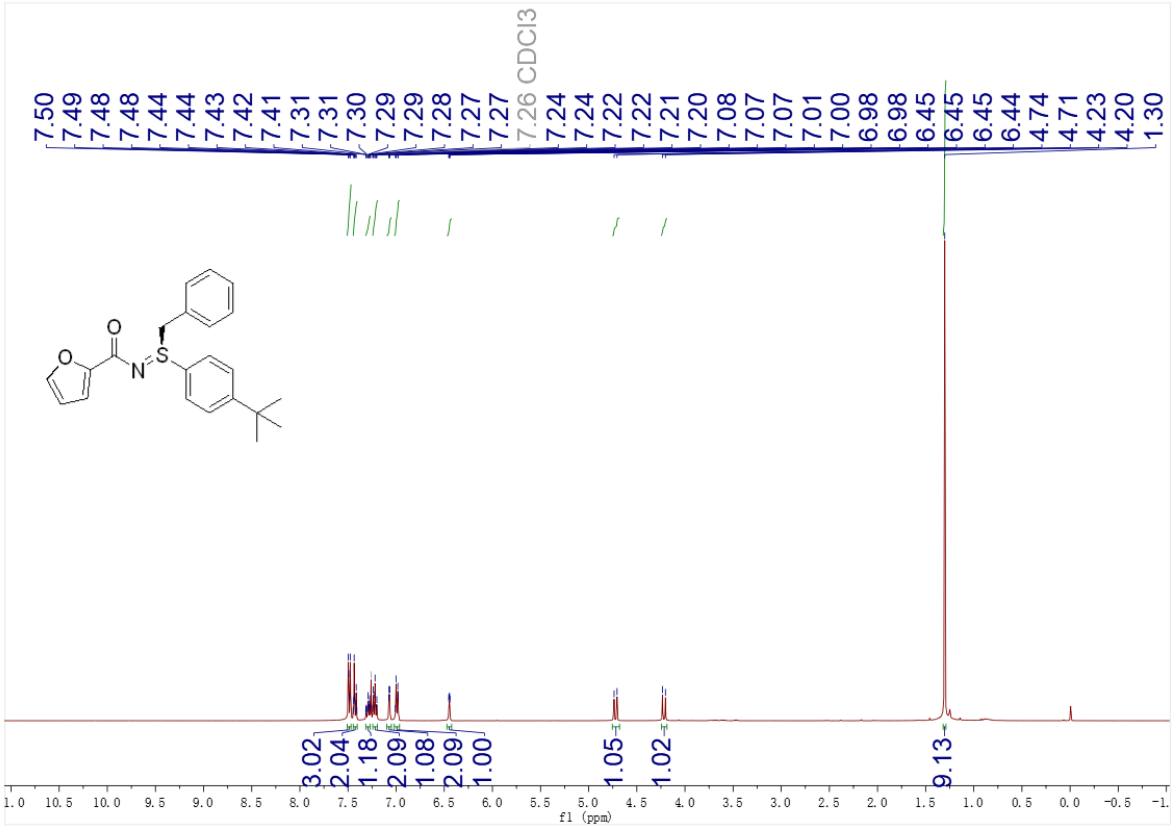


^{13}C NMR (101 MHz, $CDCl_3$)

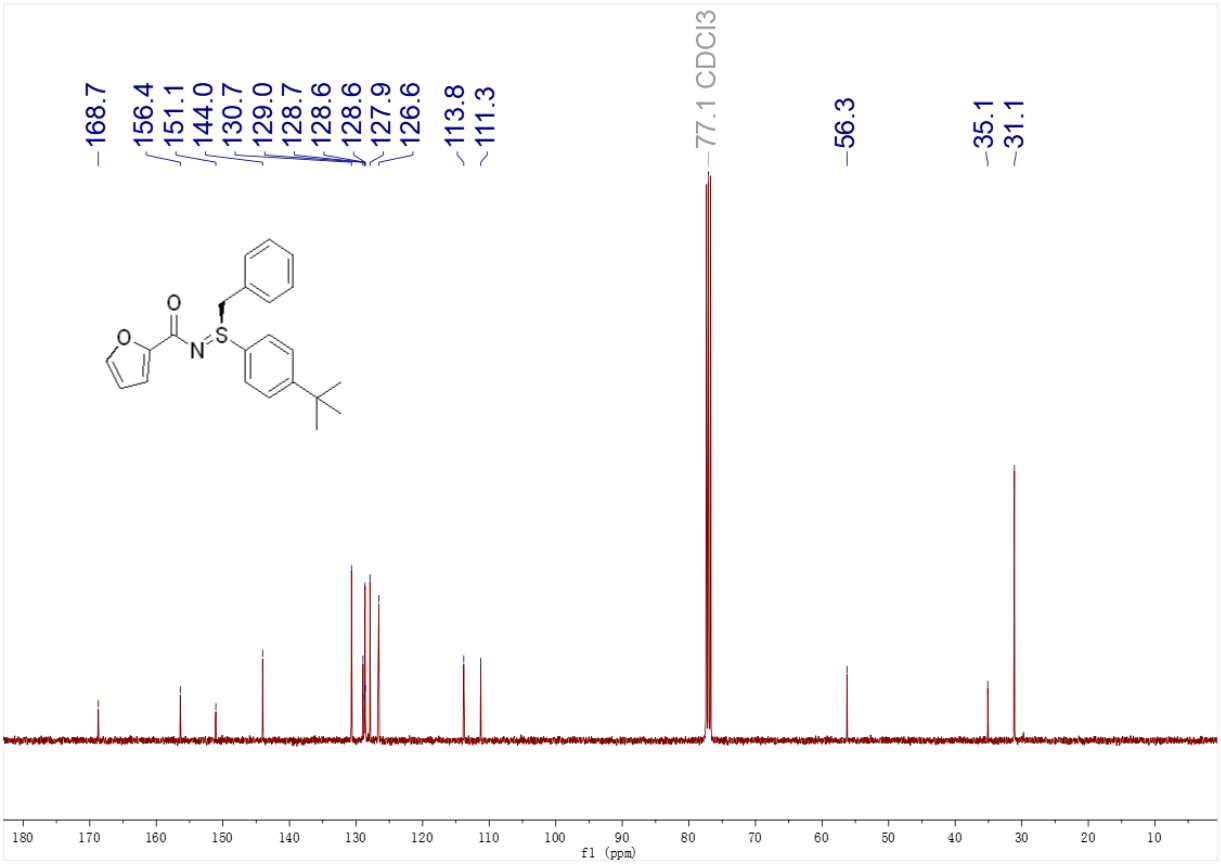


(*S*)-*N*-(benzyl(4-(*tert*-butyl)phenyl)-λ^4-sulfaneylidene)furan-2-carboxamide (3s)

^{1}H NMR (400 MHz, Chloroform-*d*)

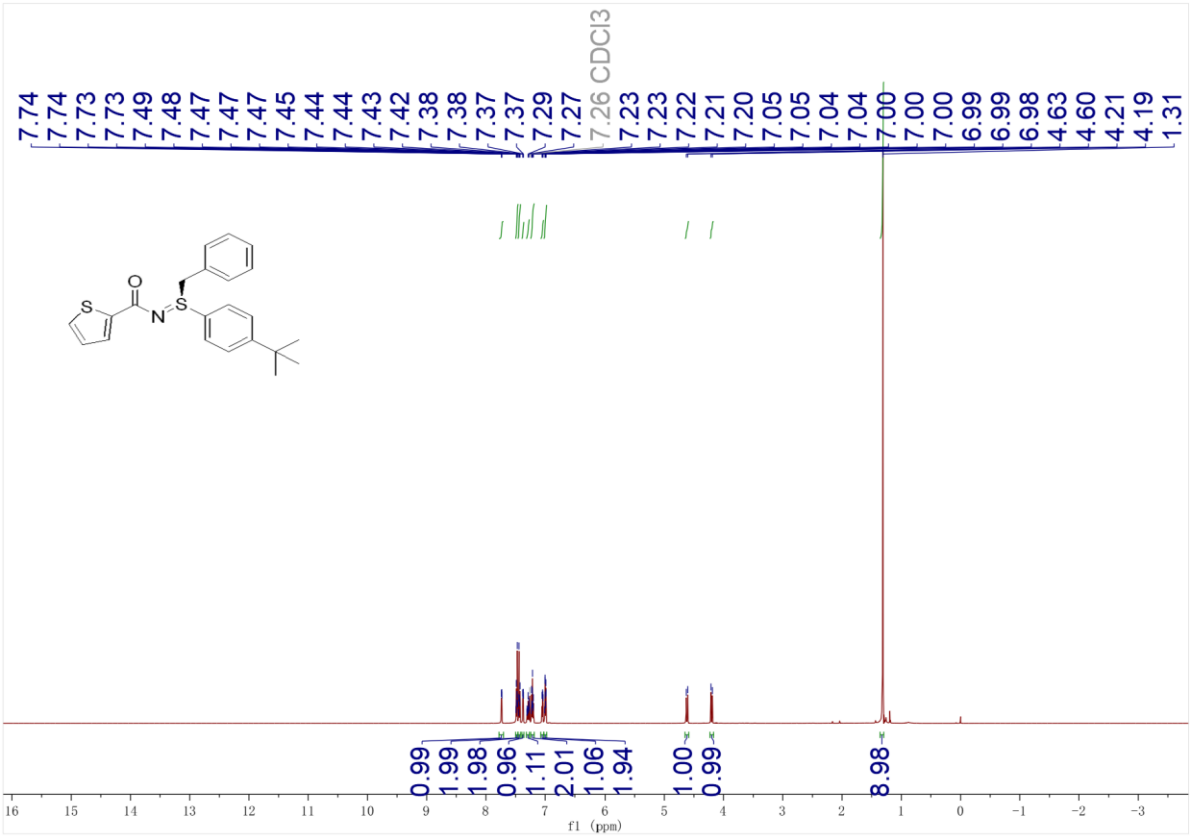


^{13}C NMR (101 MHz, $CDCl_3$)

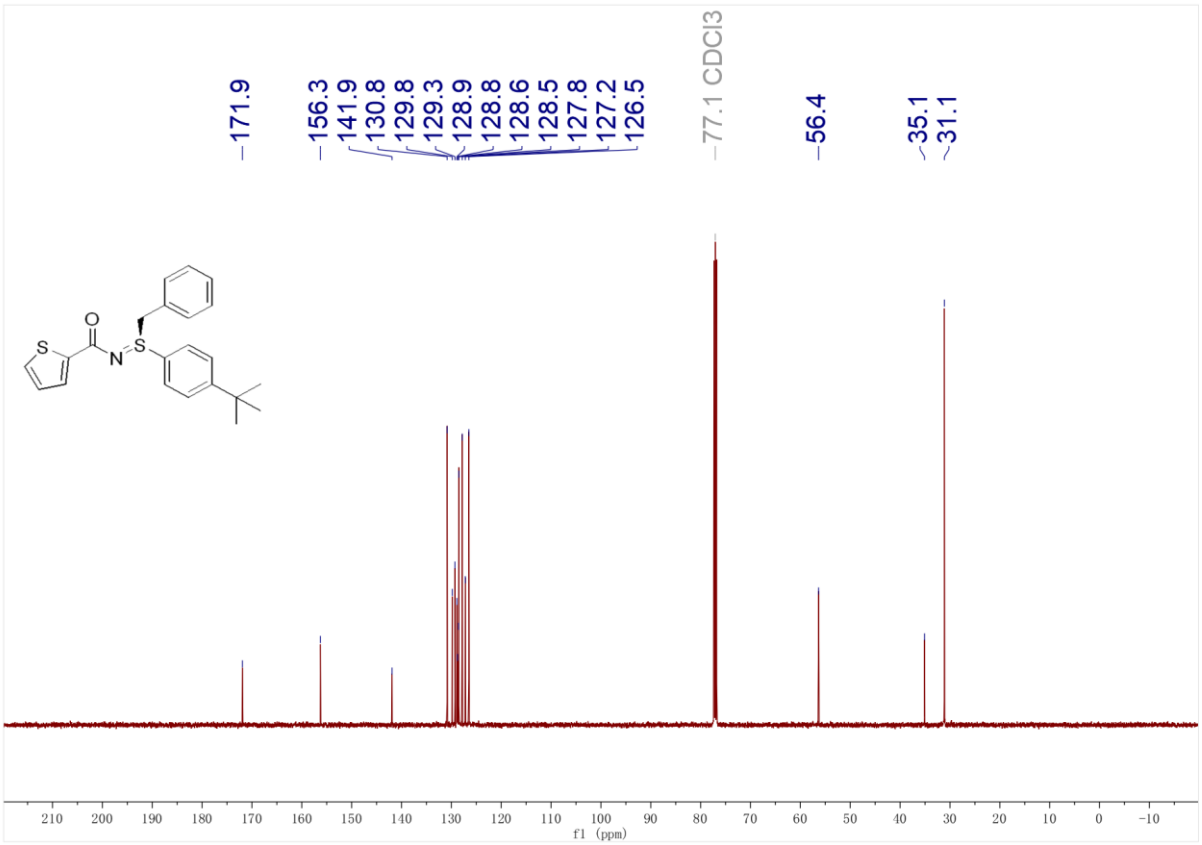


(*S*)-*N*-(benzyl(*p*-tolyl)-λ^4-sulfaneylidene)thiophene-2-carboxamide (3t)

^{1}H NMR (500 MHz, Chloroform-*d*)

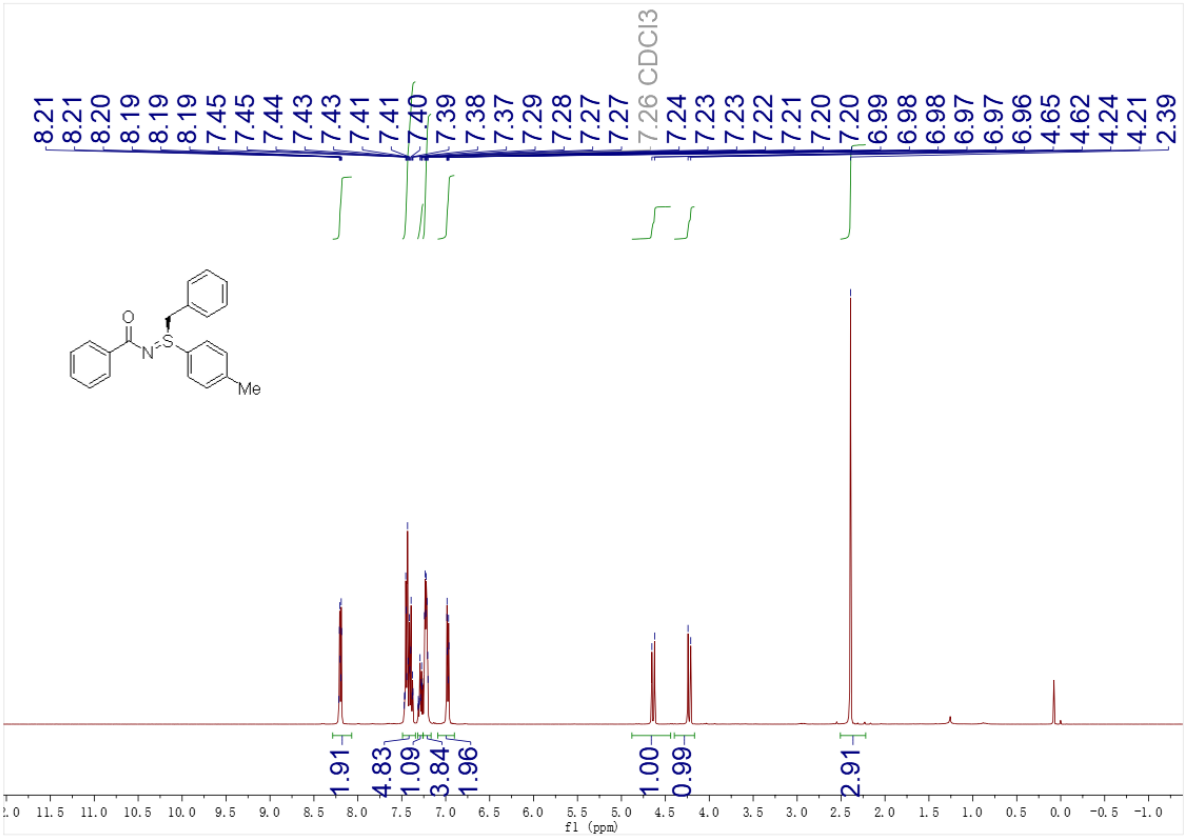


^{13}C NMR (126 MHz, $CDCl_3$)

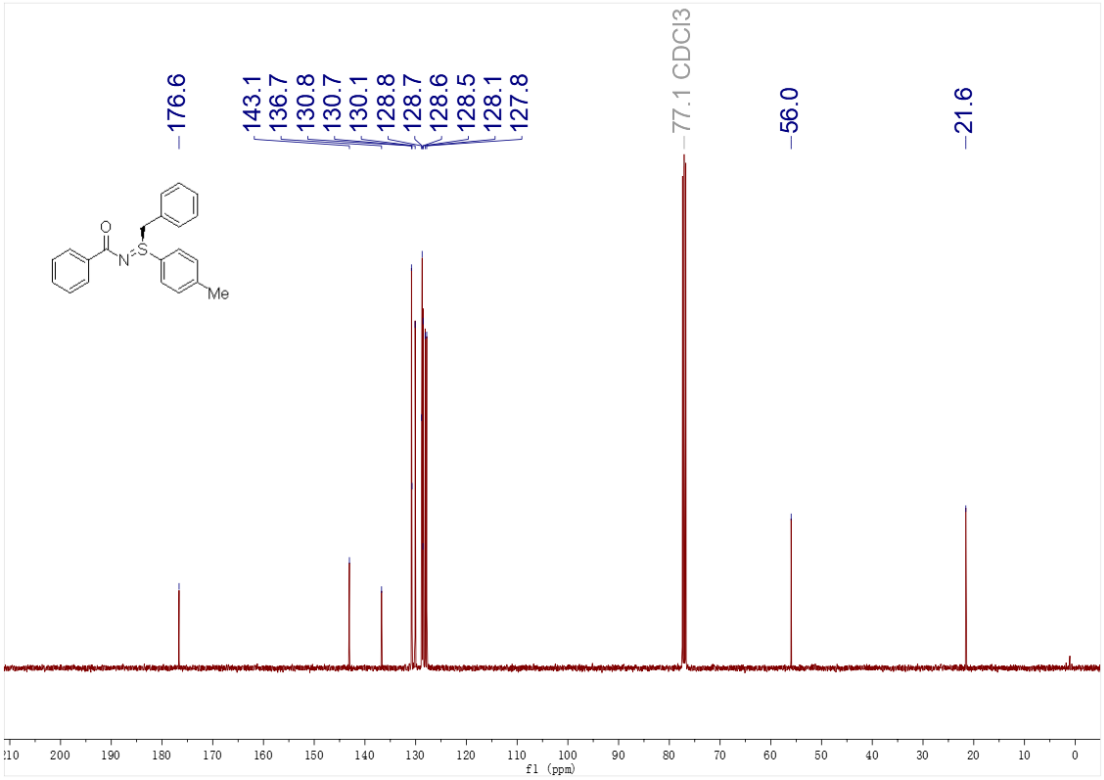


(*S*)-*N*-(benzyl(*p*-tolyl)-λ^4-sulfaneylidene)benzamide (3u)

^{1}H NMR (400 MHz, Chloroform-*d*)

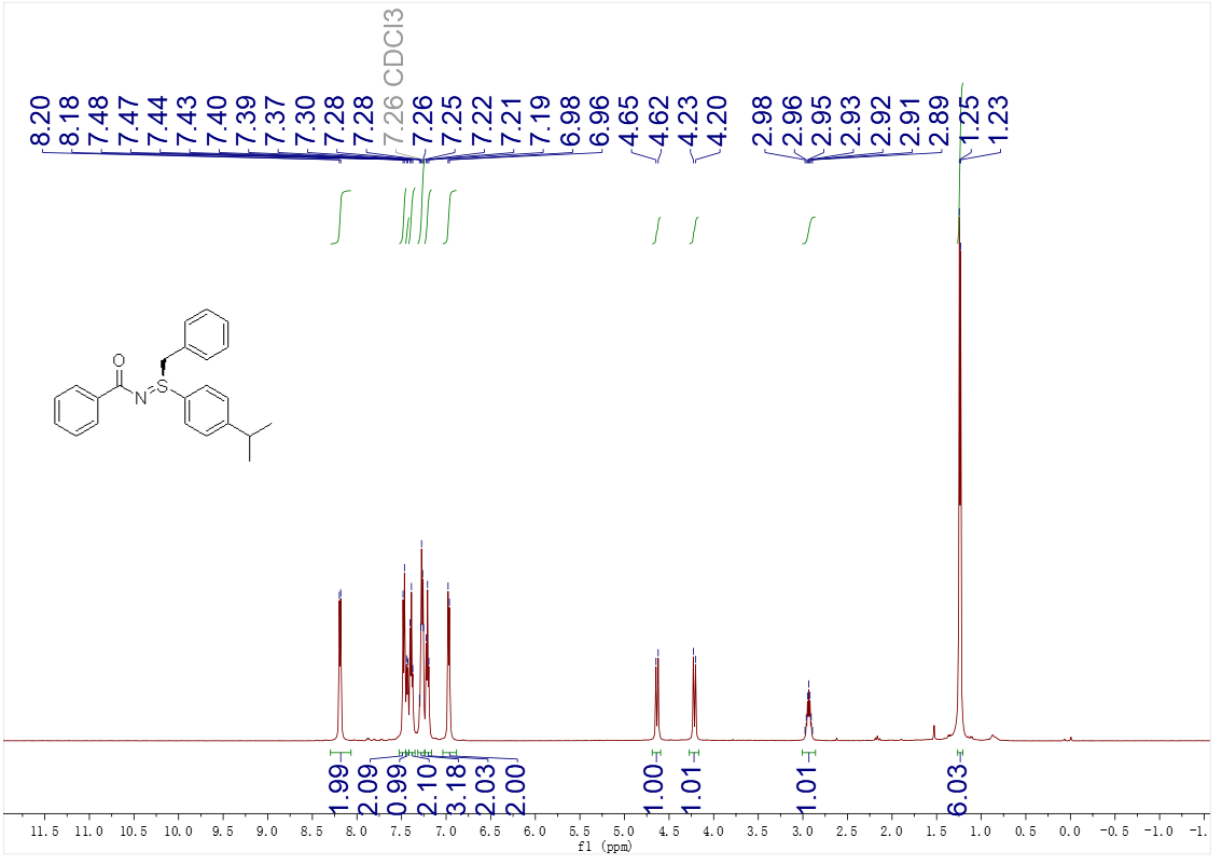


^{13}C NMR (101 MHz, $CDCl_3$)

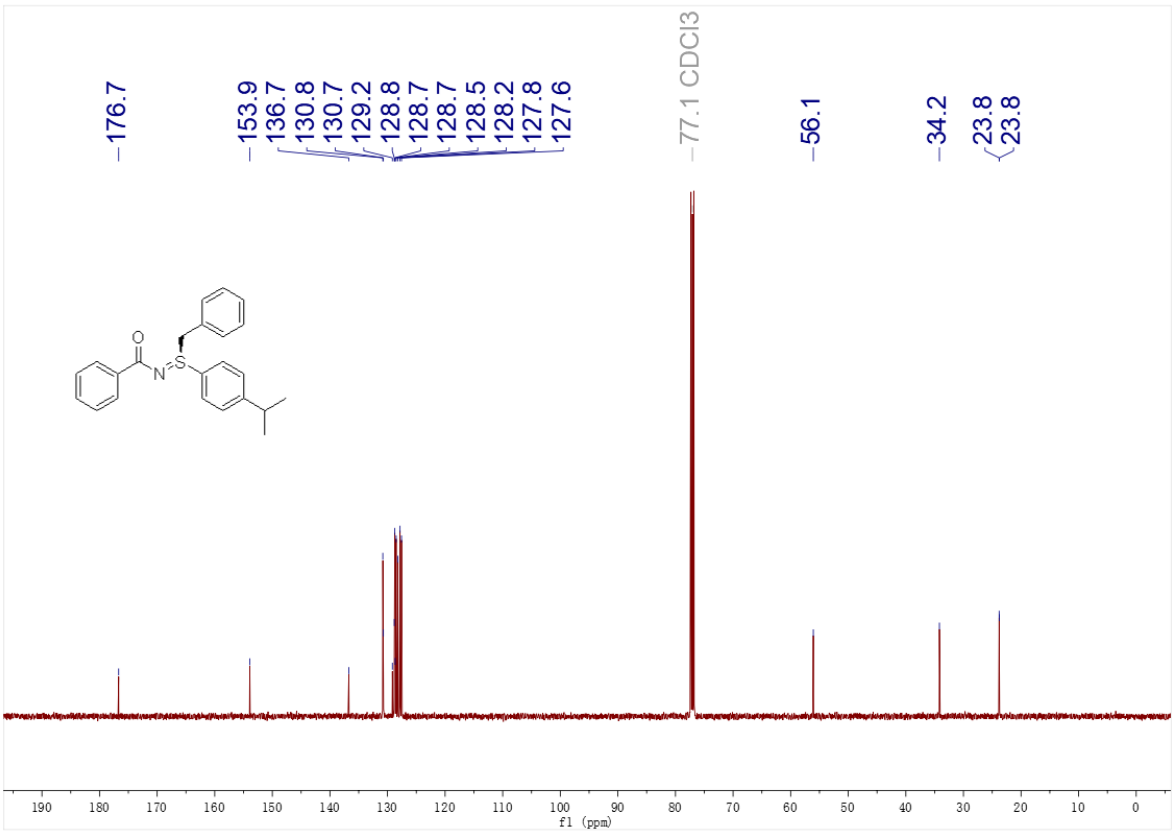


(*S*)-*N*-(benzyl(4-isopropylphenyl)-λ^4-sulfaneylidene)benzamide (3v)

^{1}H NMR (500 MHz, Chloroform-*d*)

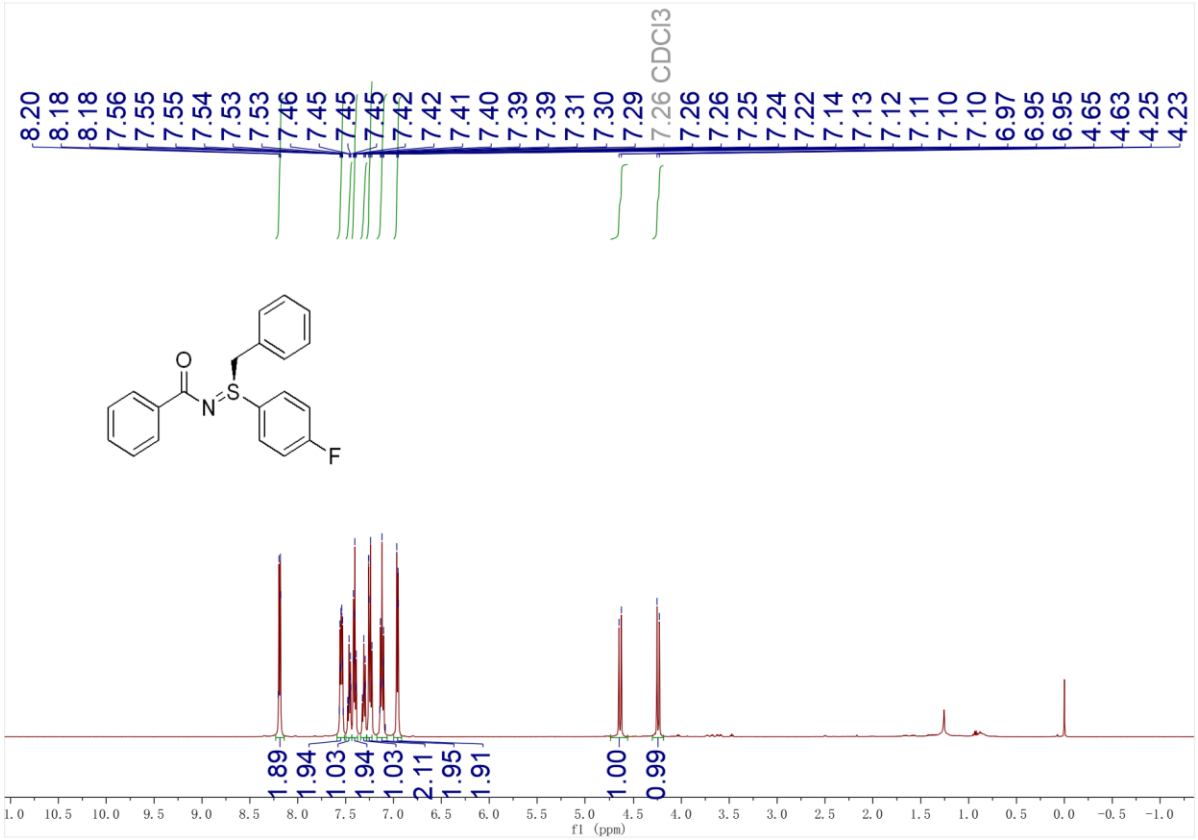


^{13}C NMR (126 MHz, $CDCl_3$)

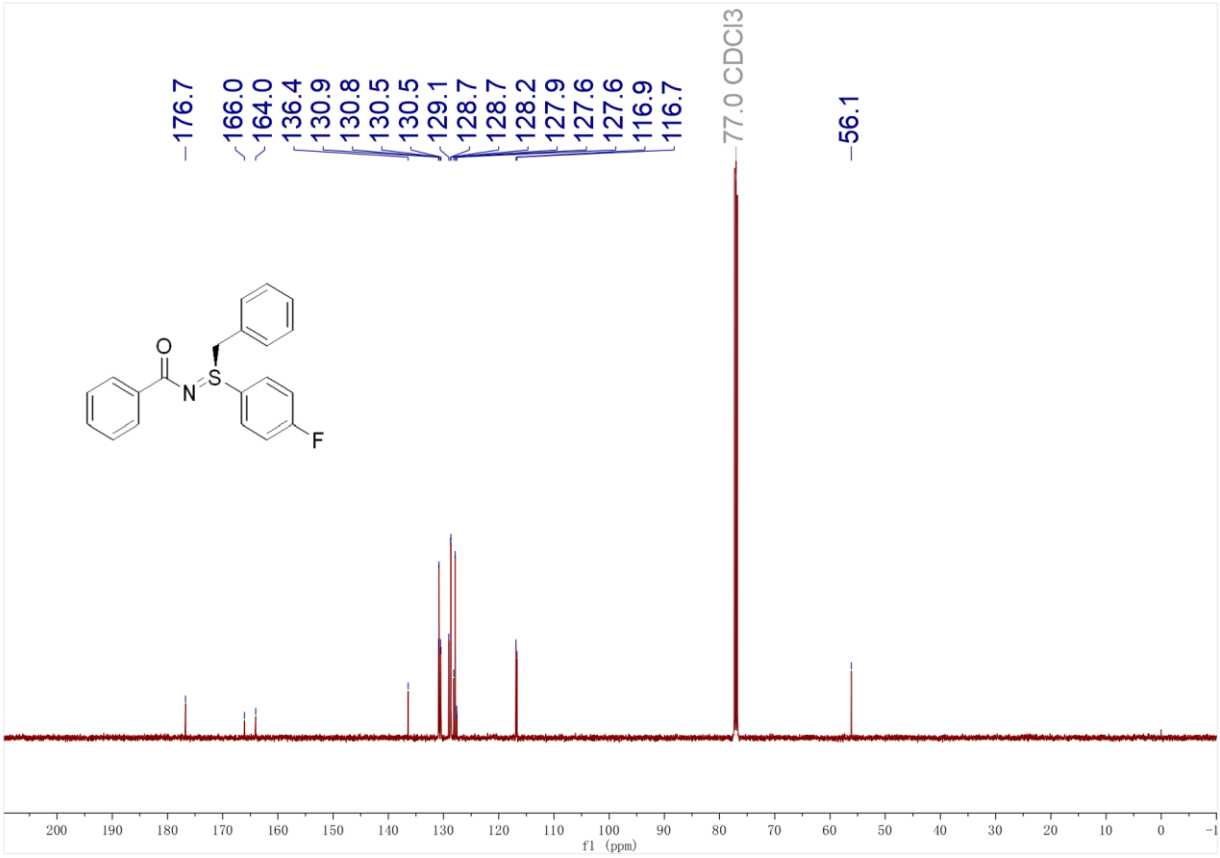


(*S*)-*N*-(benzyl(4-fluorophenyl)-λ^4-sulfaneylidene)benzamide (3w)

^{1}H NMR (500 MHz, Chloroform-*d*)



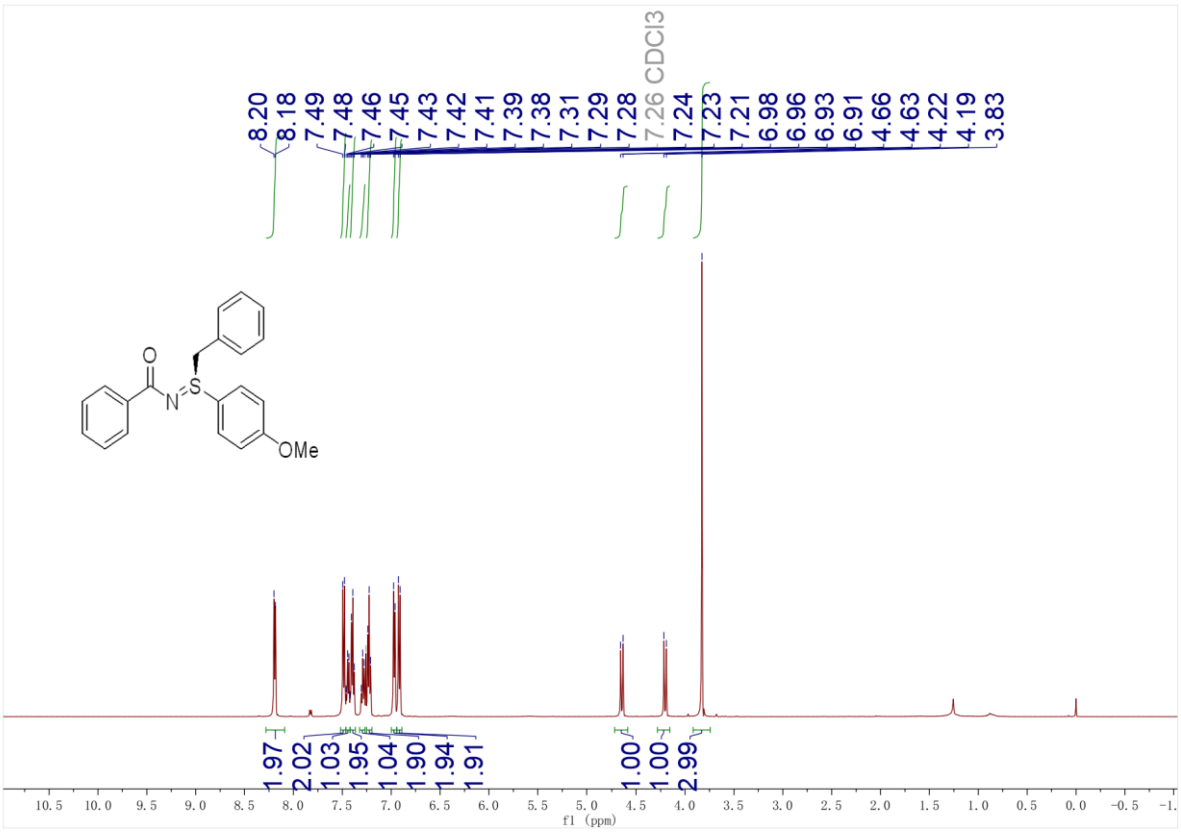
^{13}C NMR (126 MHz, Chloroform-*d*)



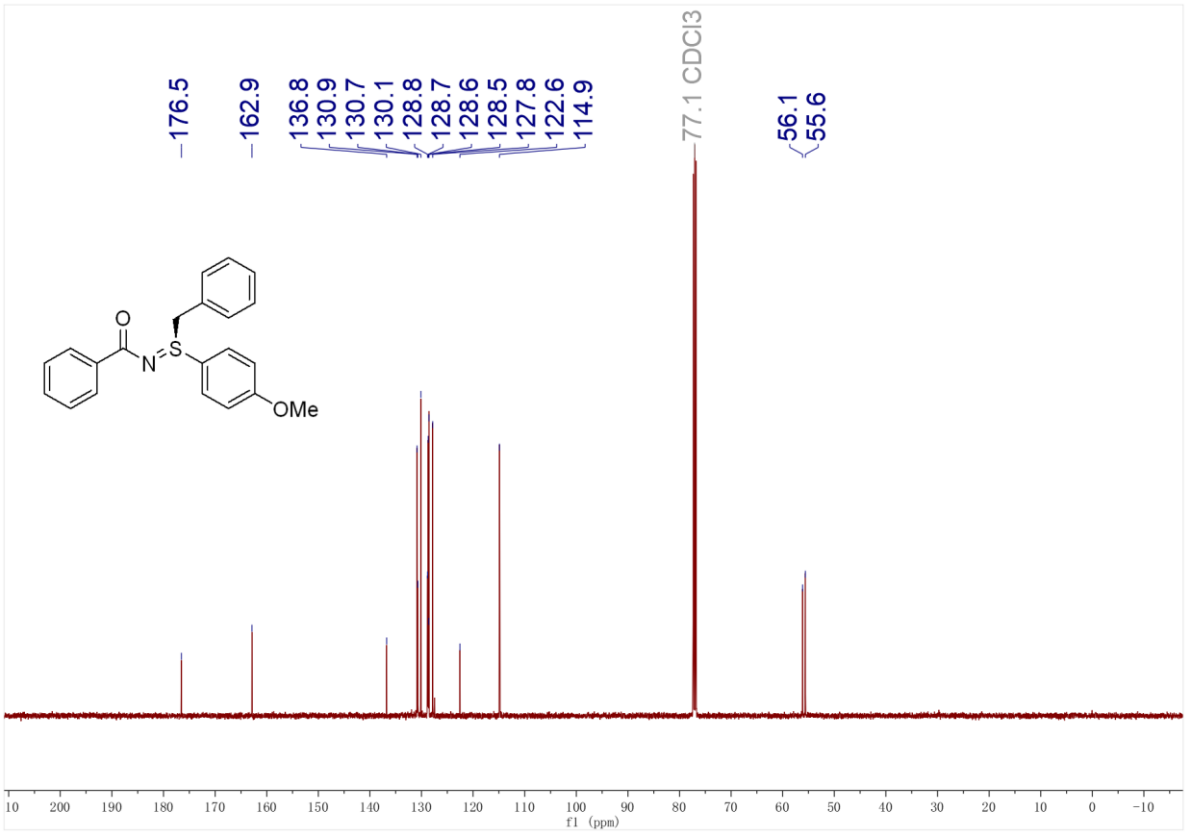
^{19}F NMR (471 MHz, $CDCl_3$)

(*S*)-*N*-(benzyl(4-methoxyphenyl)-λ^4-sulfaneylidene)benzamide (3x)

^{1}H NMR (500 MHz, Chloroform-*d*)

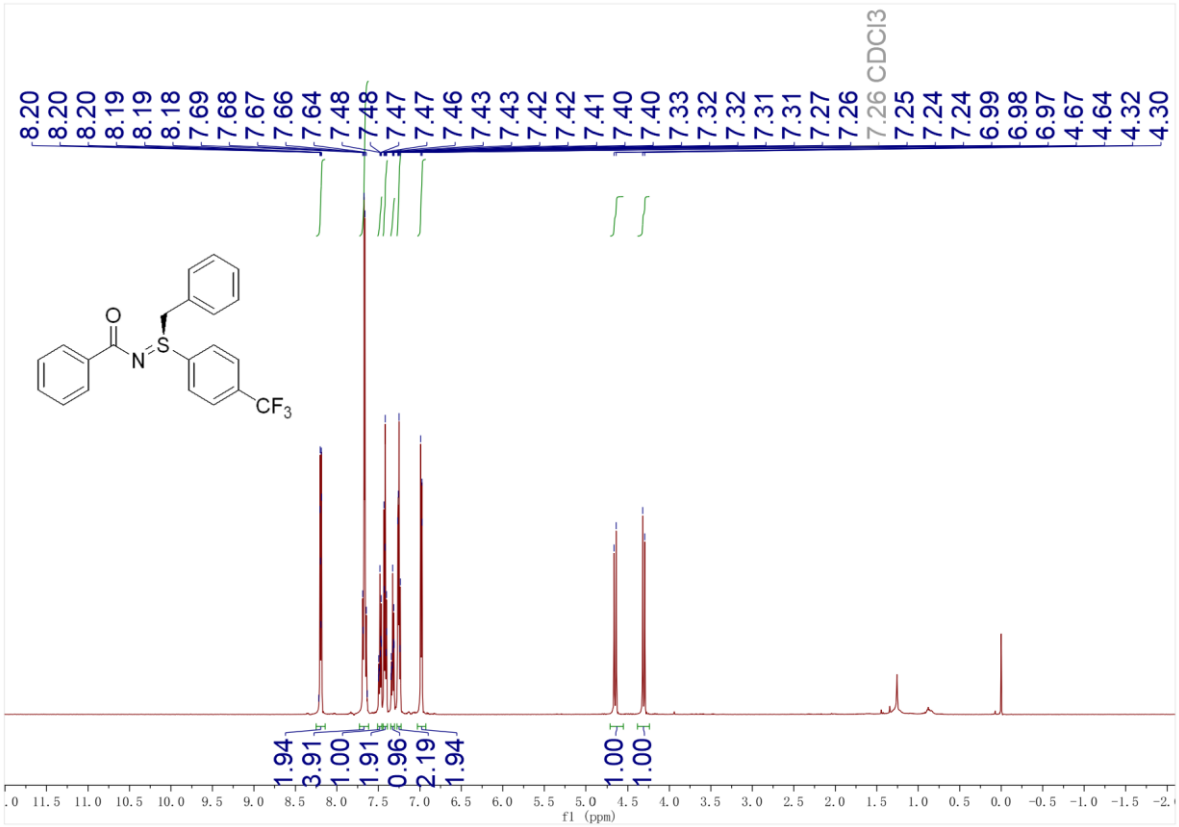


^{13}C NMR (126 MHz, $CDCl_3$)

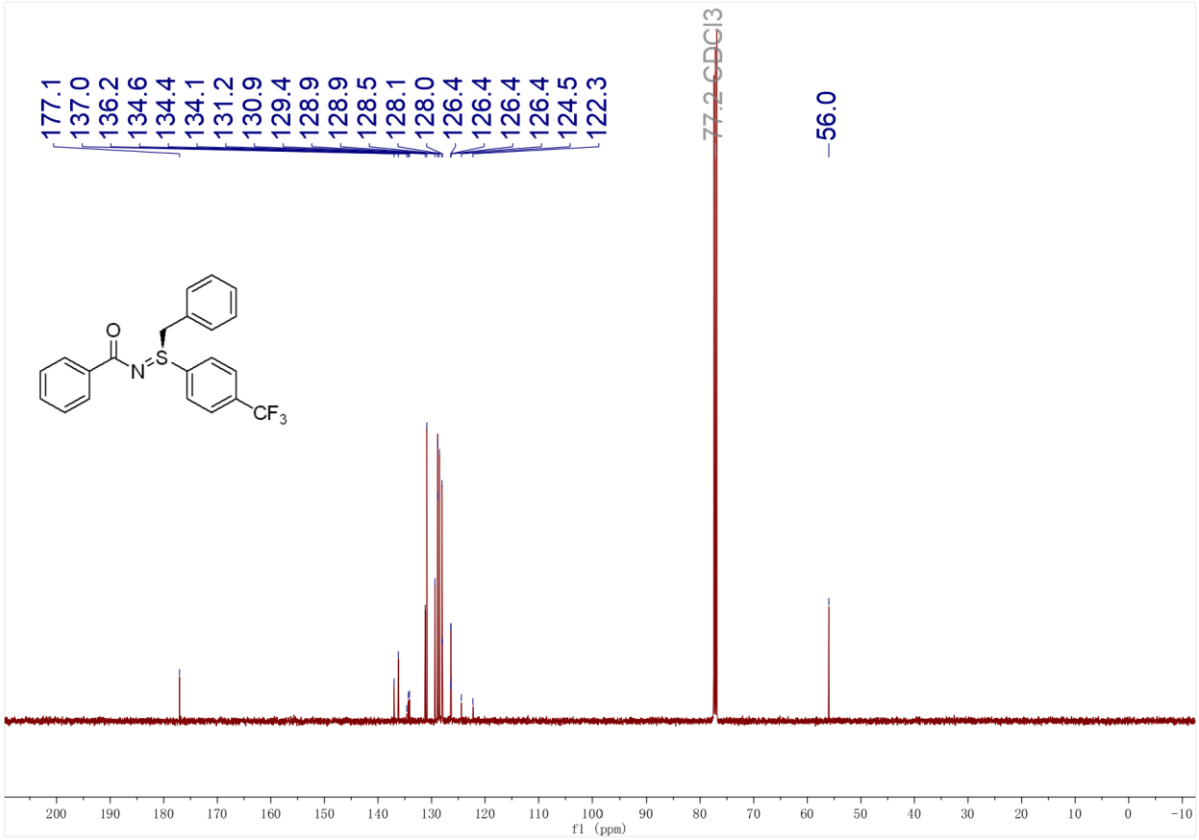


(*S*)-*N*-(benzyl(4-(trifluoromethyl)phenyl)-λ^4-sulfaneylidene)benzamide (3y)

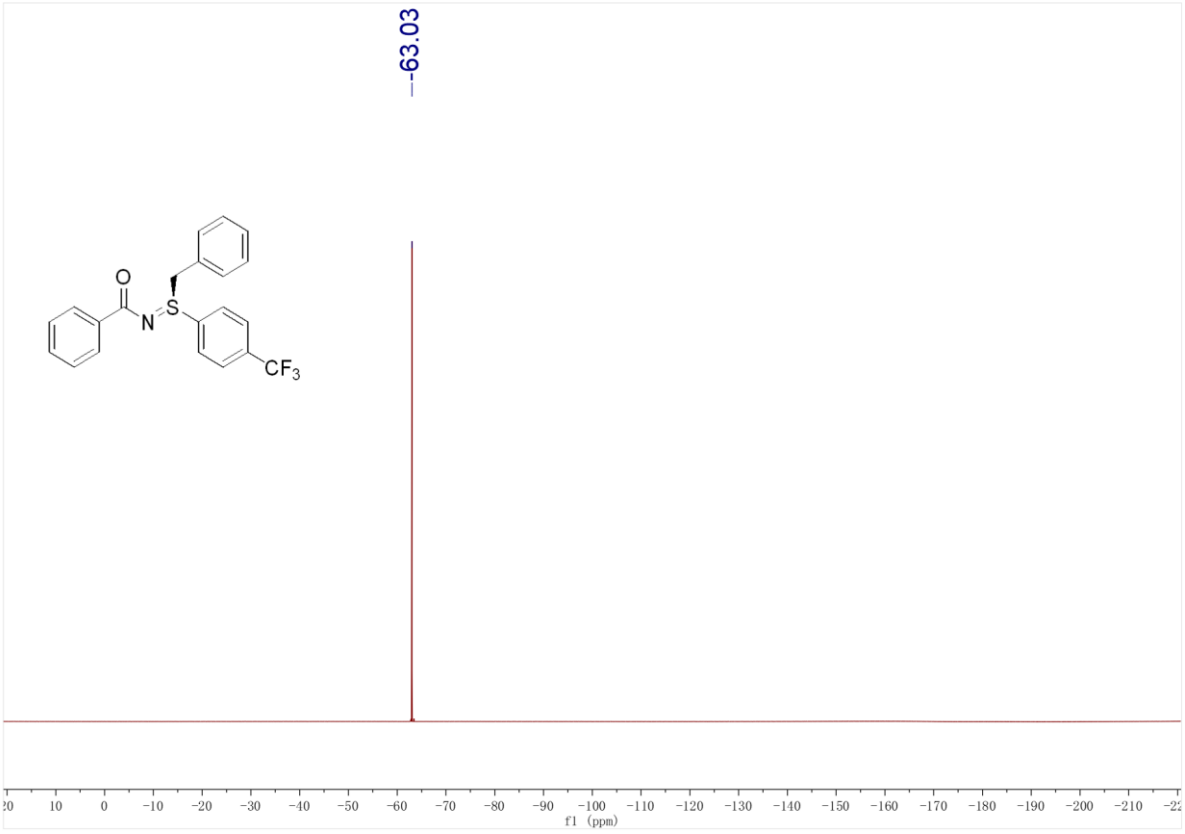
^{1}H NMR (500 MHz, Chloroform-*d*)



^{13}C NMR (126 MHz, Chloroform-*d*)

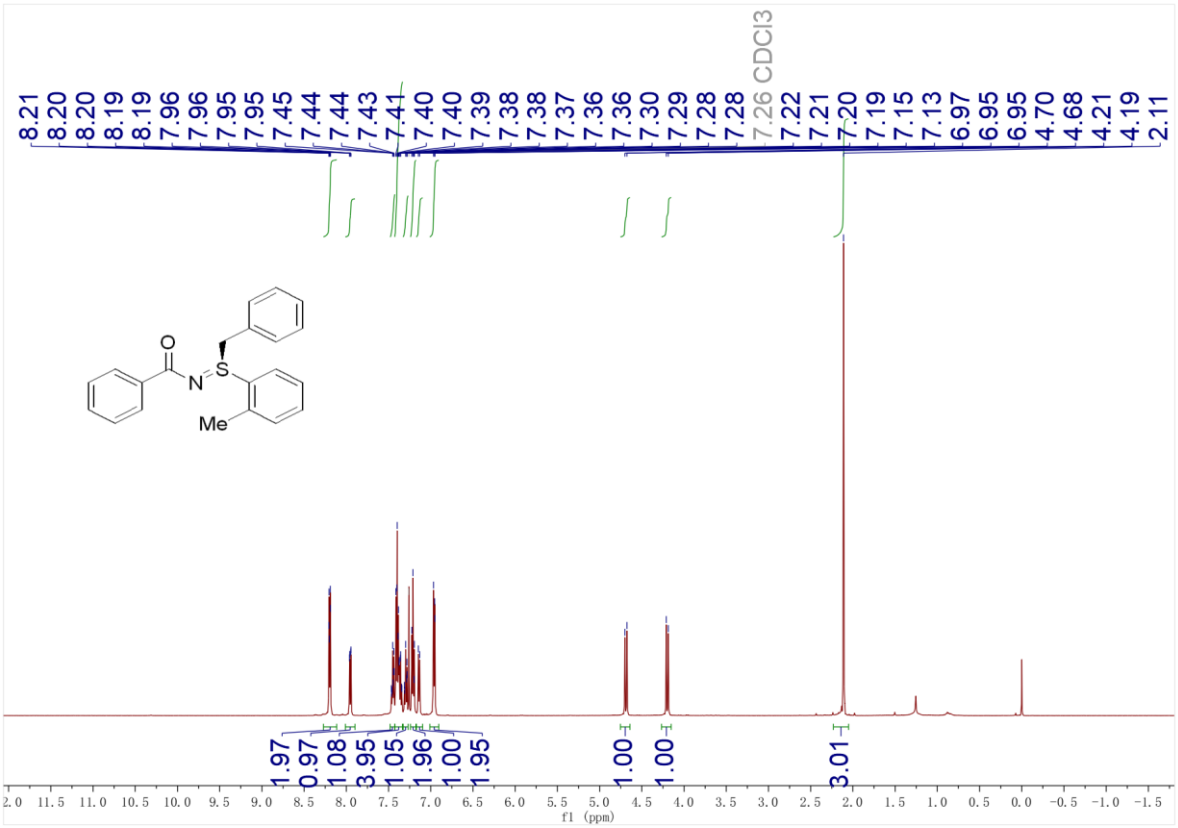


^{19}F NMR (471 MHz, $CDCl_3$)

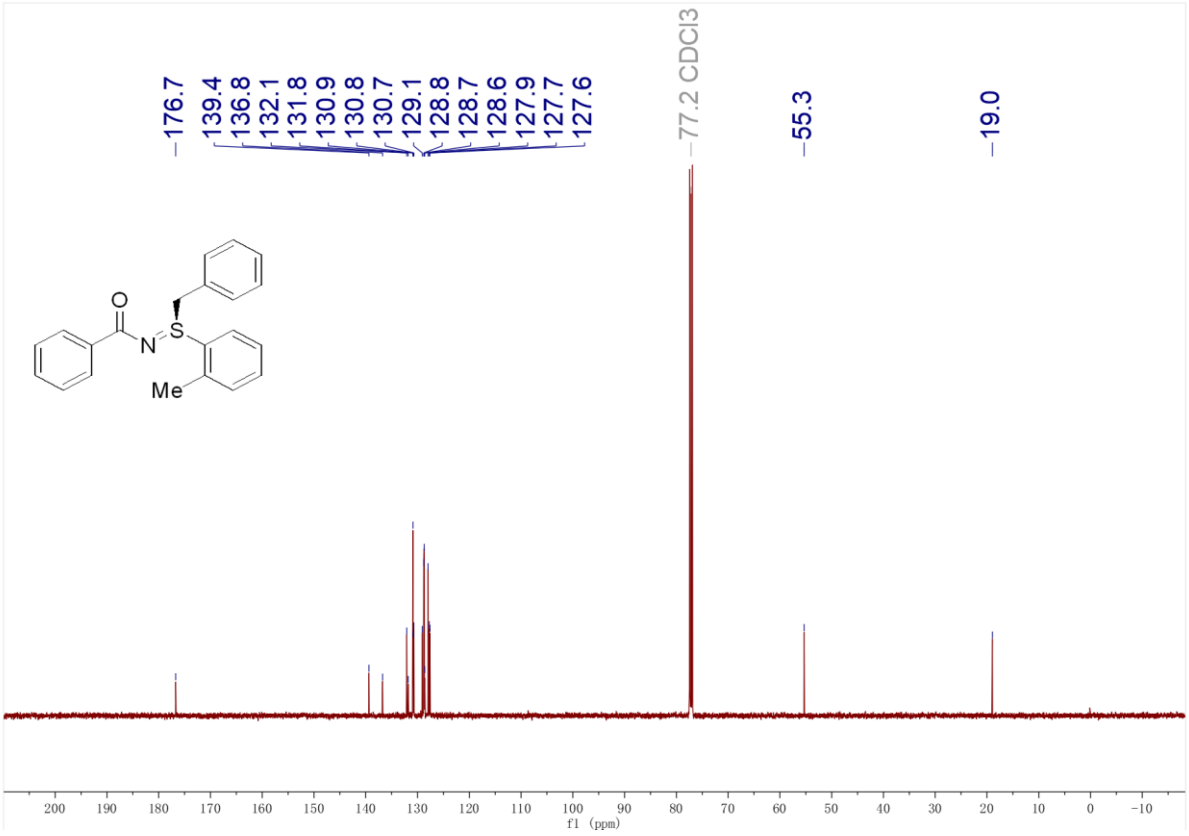


(*S*)-*N*-(benzyl(*o*-tolyl)-λ^4-sulfaneylidene)benzamide (3aa)

^{1}H NMR (500 MHz, Chloroform-*d*)

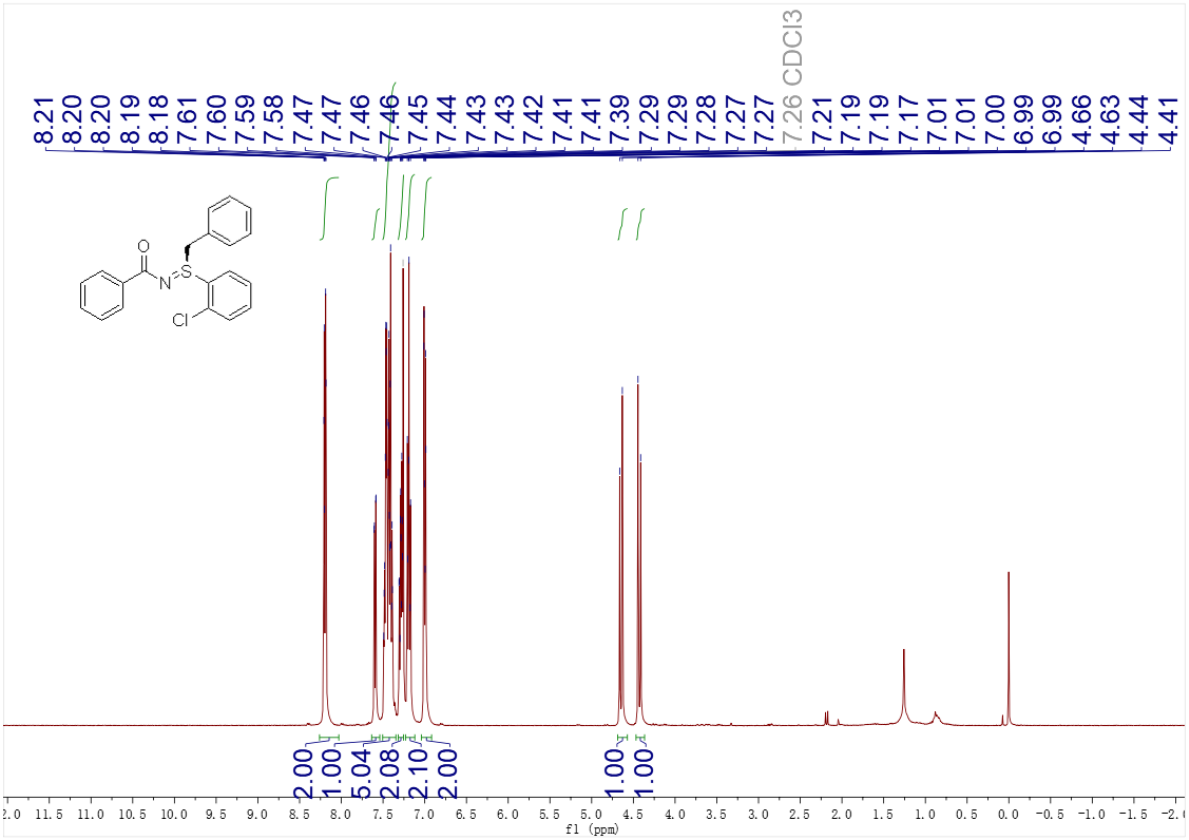


^{13}C NMR (126 MHz, $CDCl_3$)

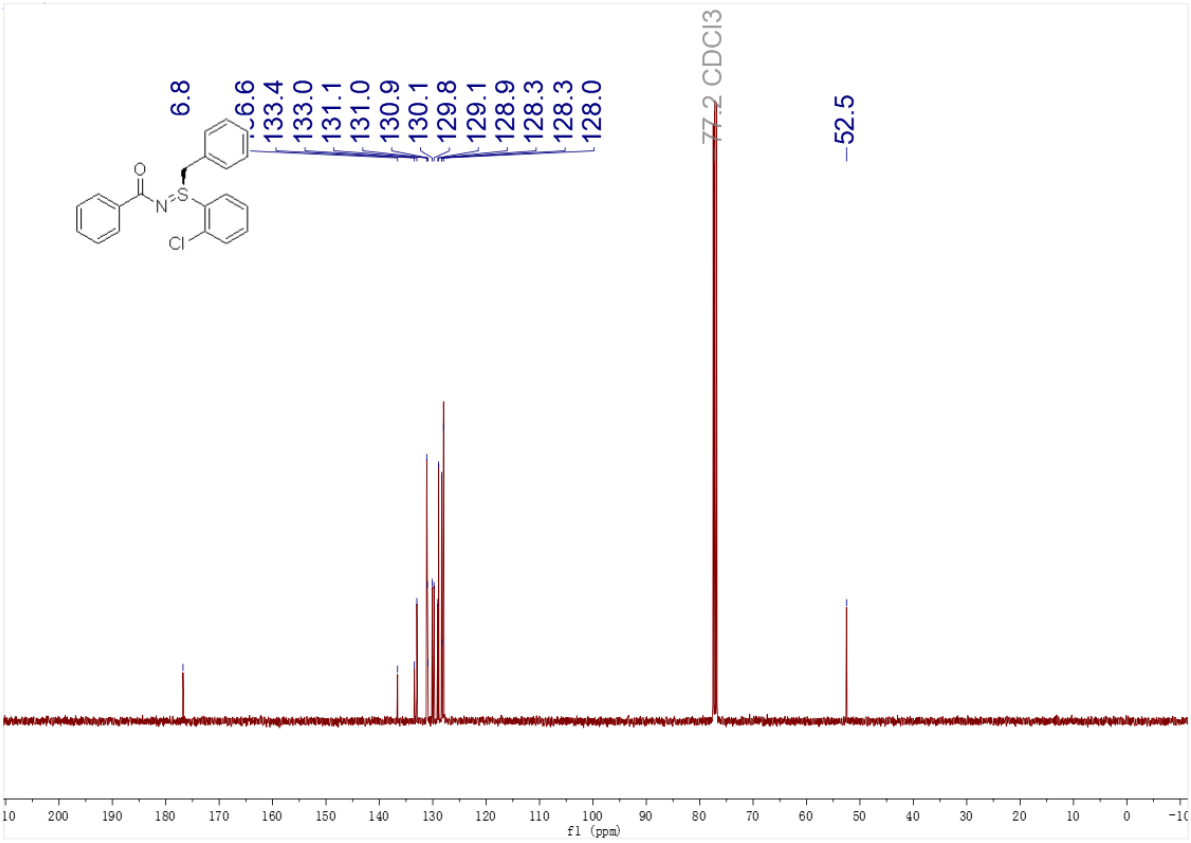


(*S*)-*N*-(benzyl(2-chlorophenyl)-λ^4-sulfaneylidene)benzamide (3ab)

^{1}H NMR (400 MHz, Chloroform-*d*)

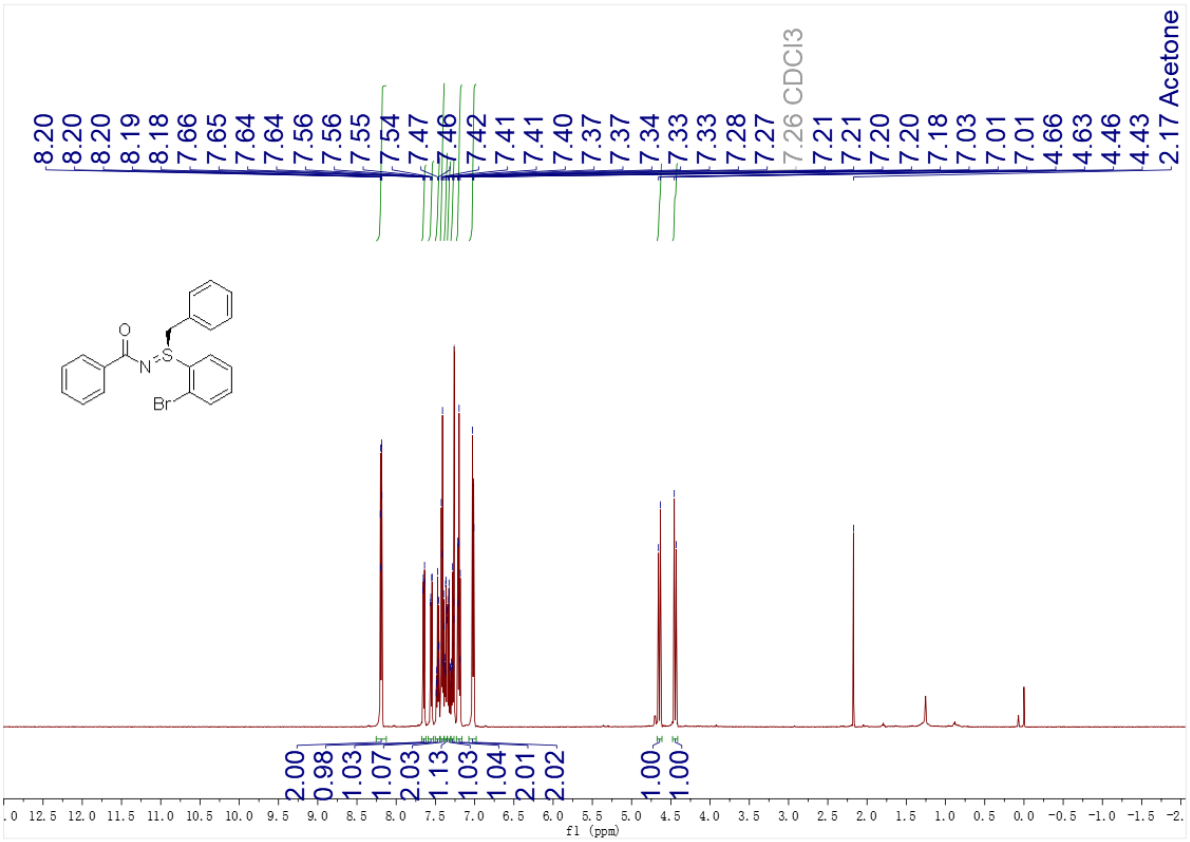


^{13}C NMR (101 MHz, $CDCl_3$)

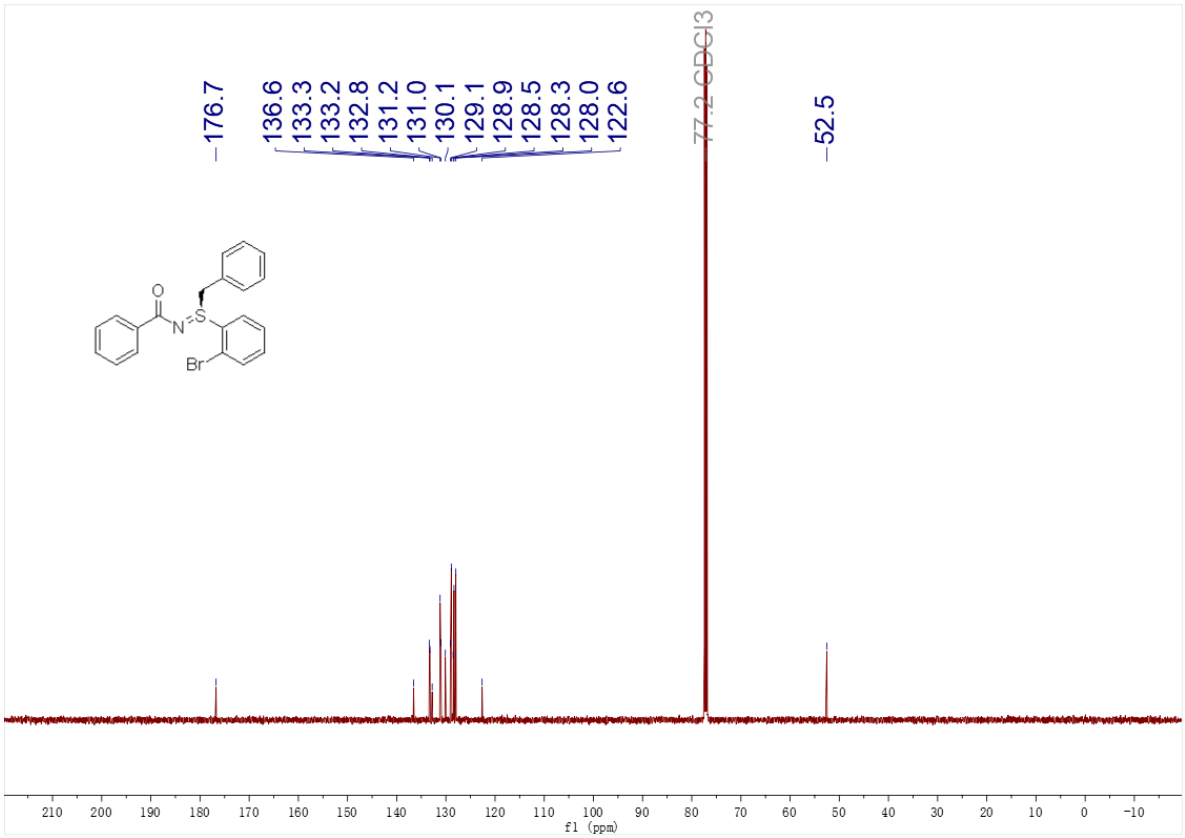


(*S*)-*N*-(benzyl(2-bromophenyl)-λ^4-sulfaneylidene)benzamide (3ac)

^{1}H NMR (500 MHz, Chloroform-*d*)

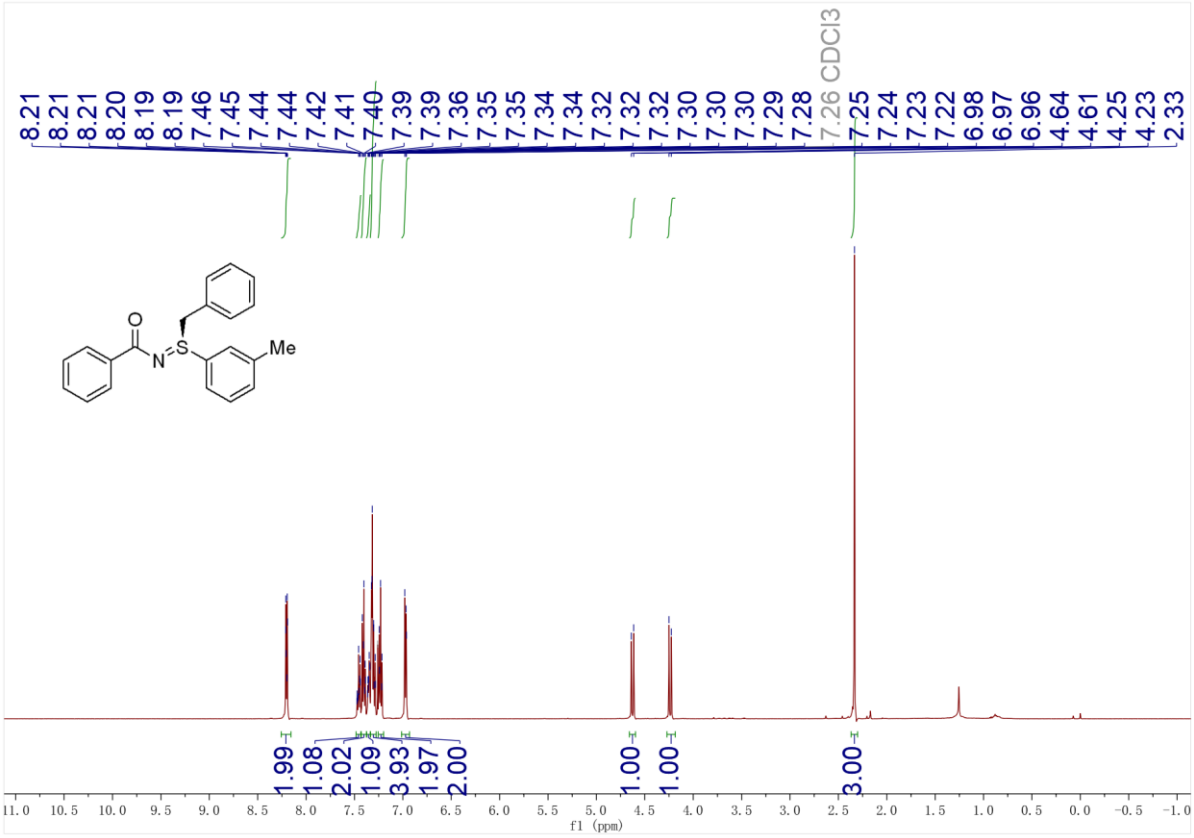


^{13}C NMR (126 MHz, $CDCl_3$)

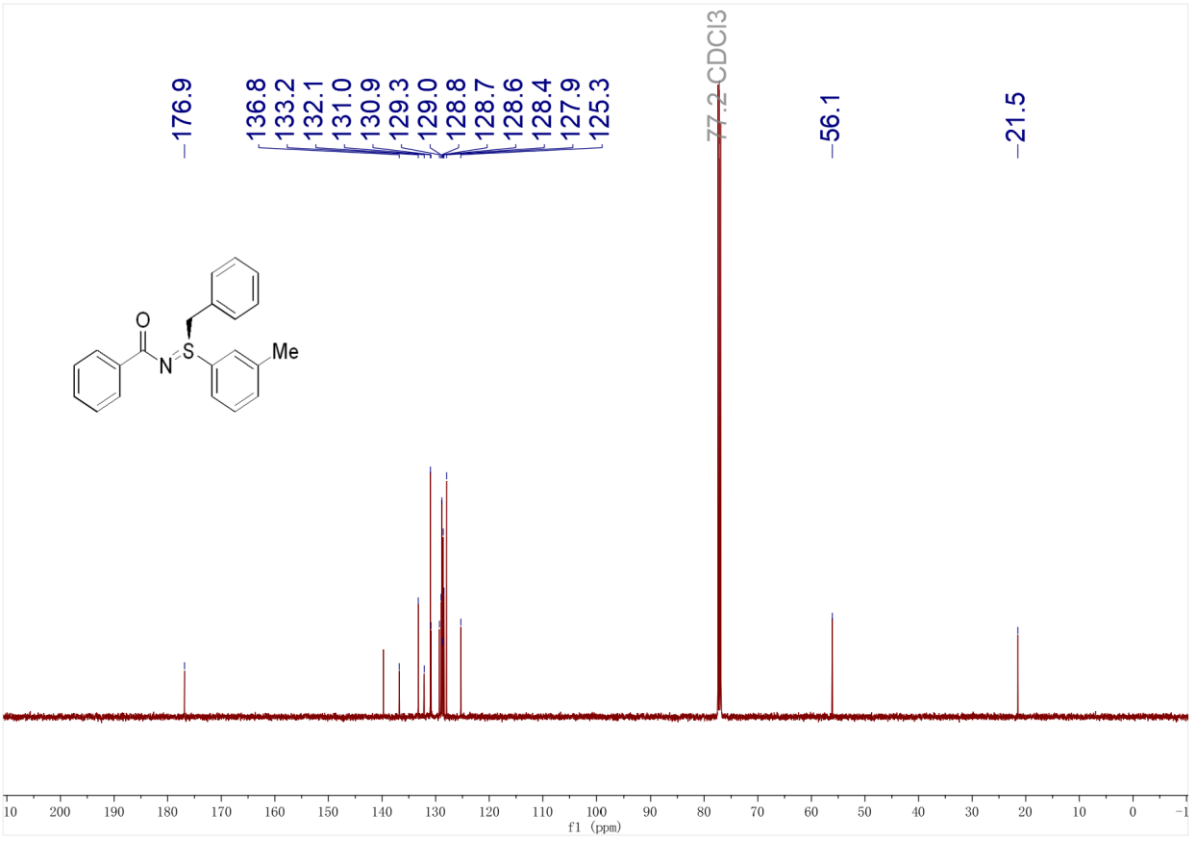


(*S*)-*N*-(benzyl(*m*-tolyl)-λ^4-sulfaneylidene)benzamide (3ad)

^{1}H NMR (500 MHz, Chloroform-*d*)

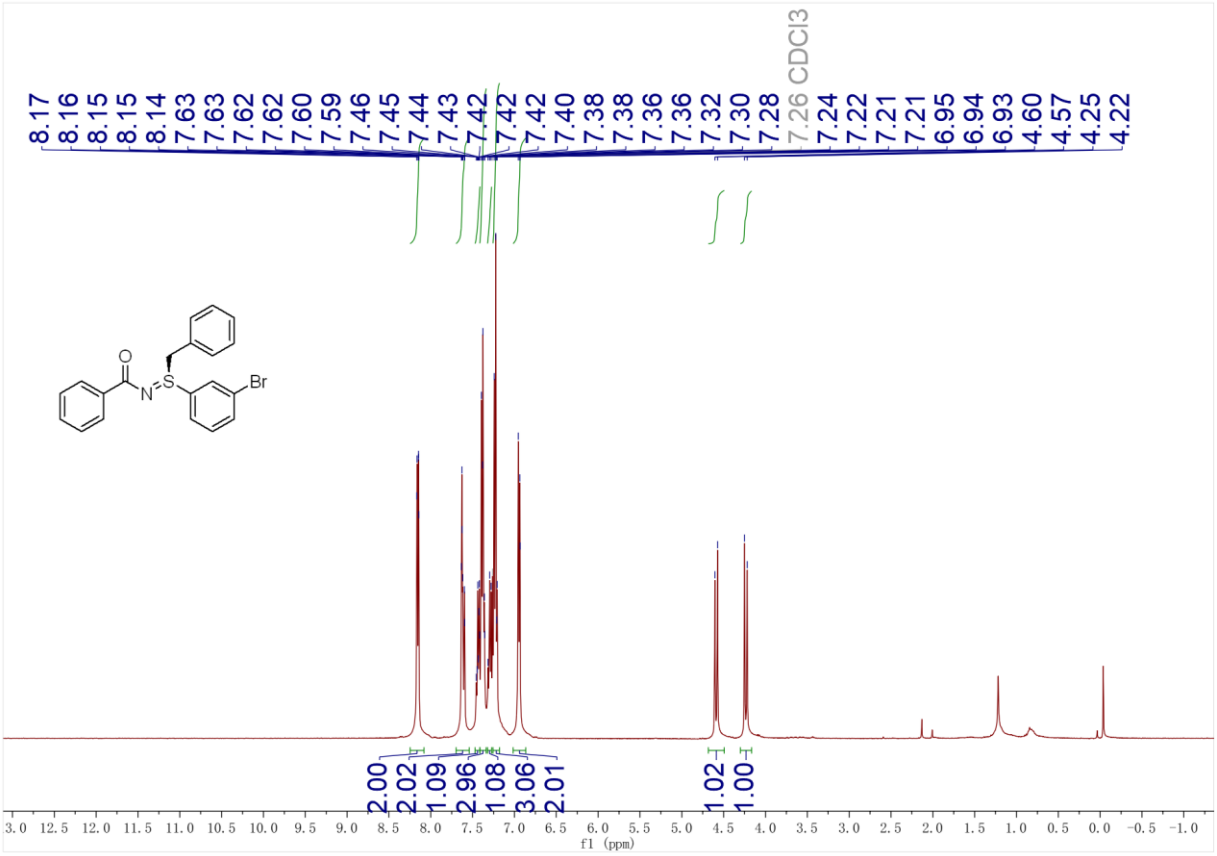


^{13}C NMR (126 MHz, $CDCl_3$)

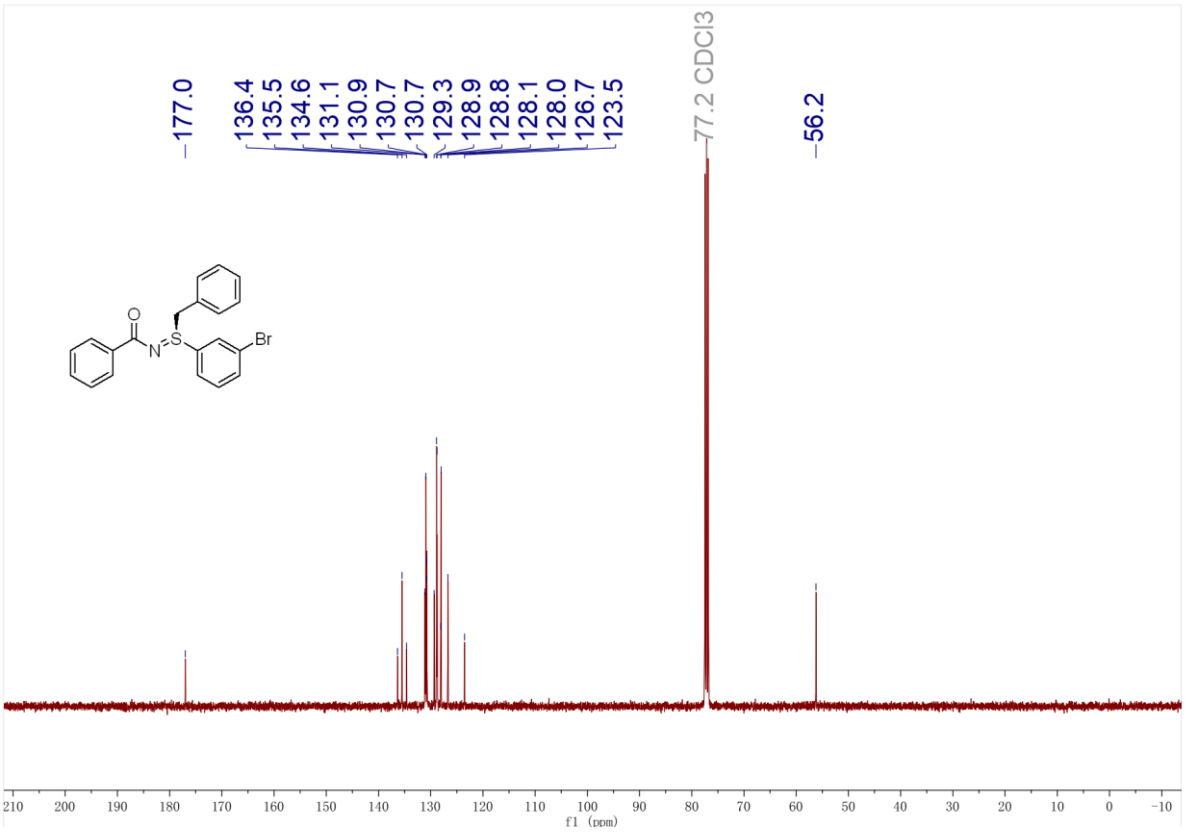


(*S*)-*N*-(benzyl(3-bromophenyl)-λ^4-sulfaneylidene)benzamide (3ae)

^{1}H NMR (400 MHz, Chloroform-*d*)

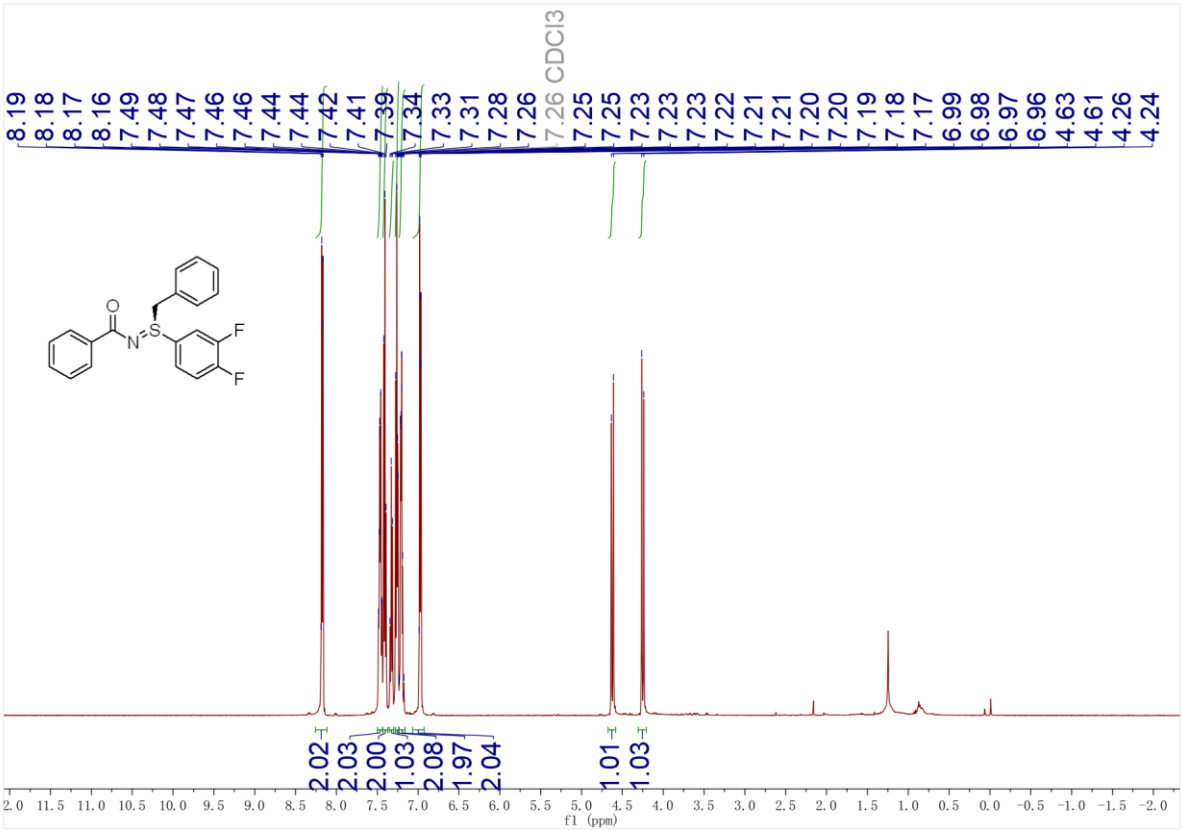


^{13}C NMR (101 MHz, $CDCl_3$)

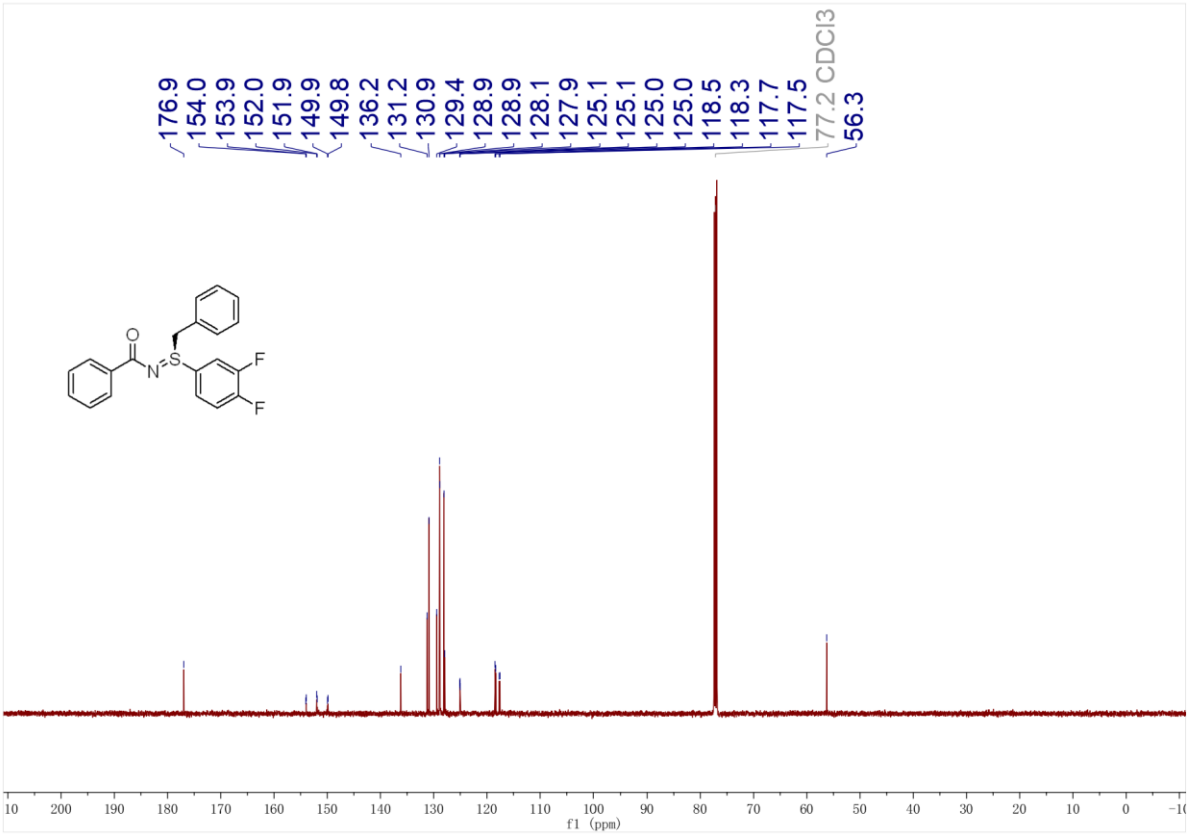


(*S*)-*N*-(benzyl(3,4-difluorophenyl)-λ^4-sulfaneylidene)benzamide (3af)

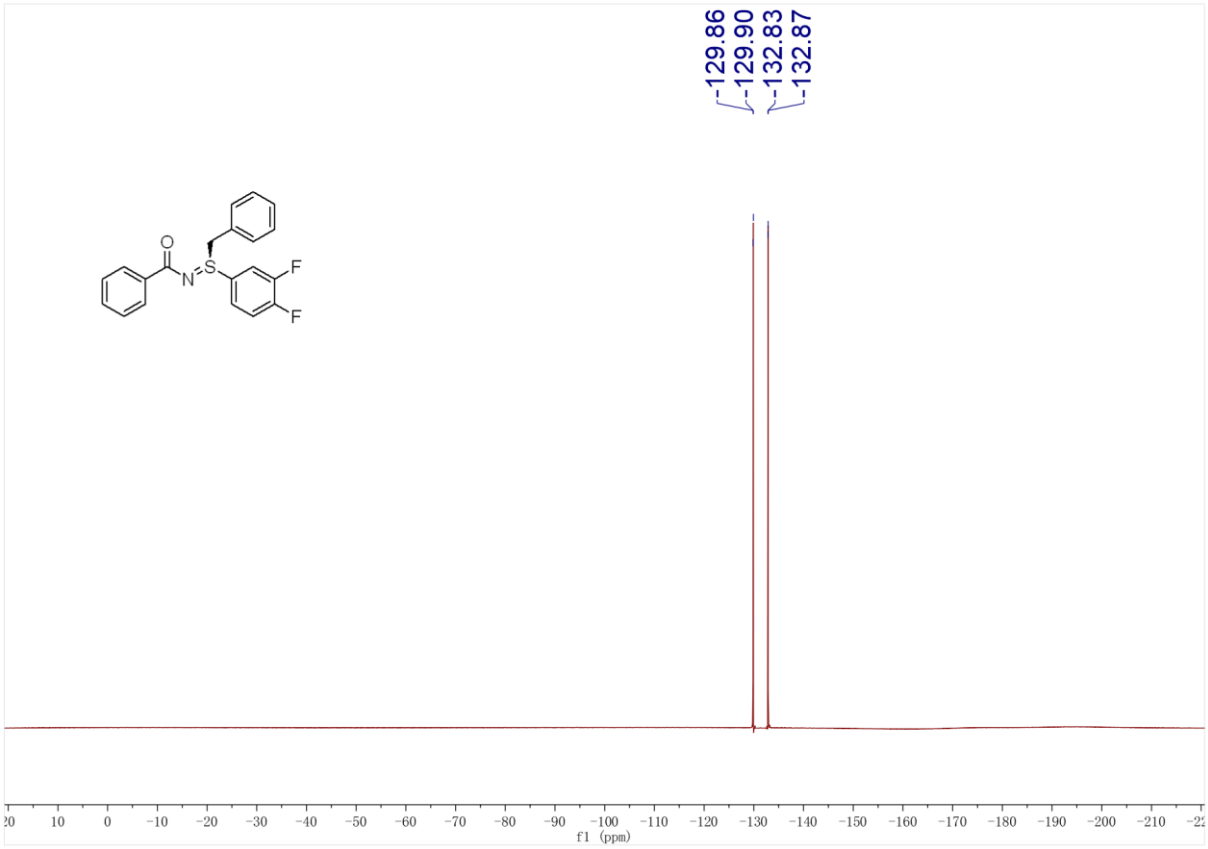
^{1}H NMR (500 MHz, Chloroform-*d*)



^{13}C NMR (126 MHz, Chloroform-*d*)

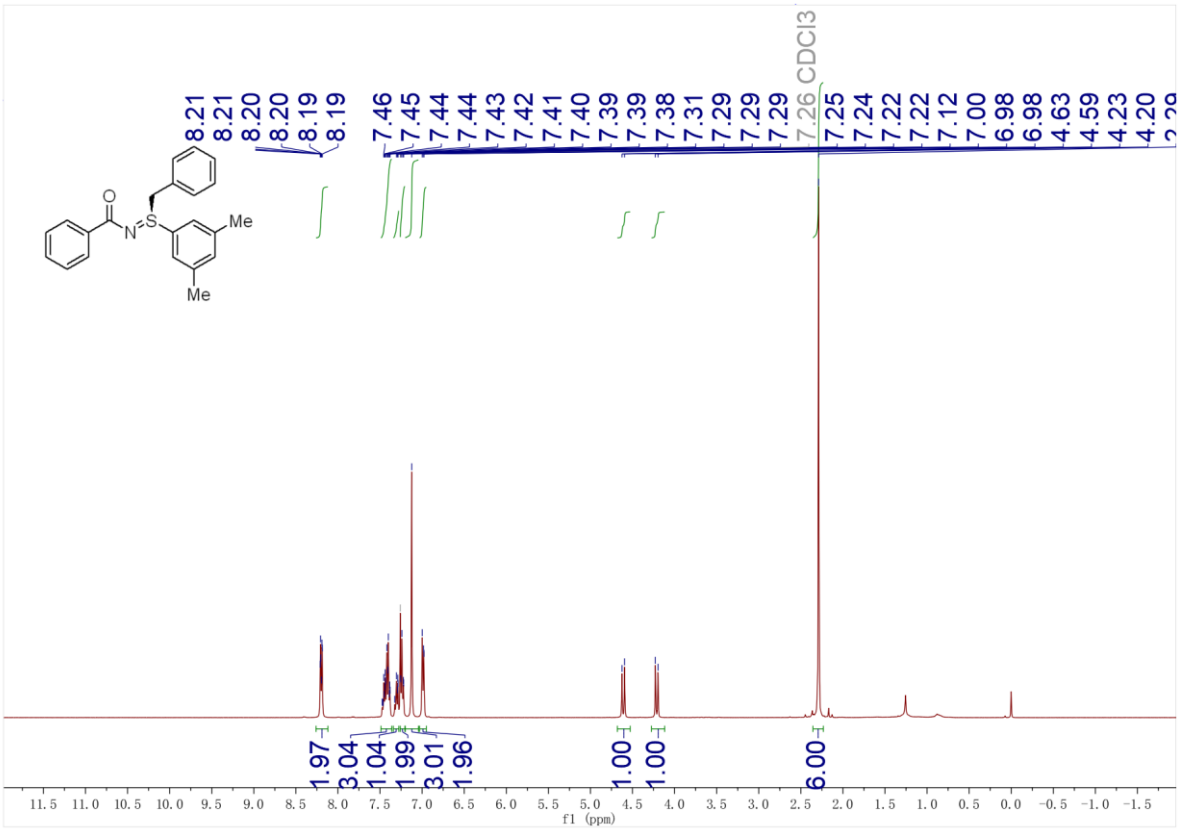


^{19}F NMR (471 MHz, $CDCl_3$)

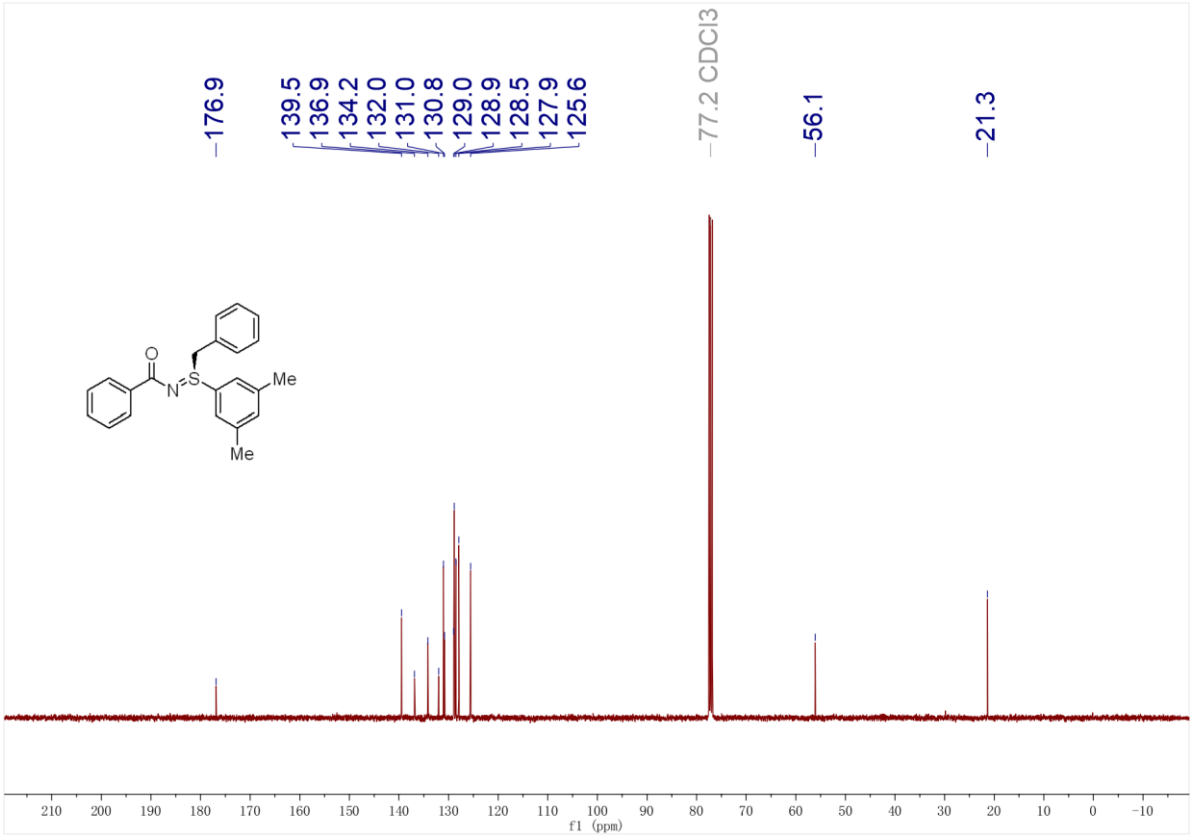


(*S*)-*N*-(benzyl(3,5-dimethylphenyl)-λ^4-sulfaneylidene)benzamide (3ag)

^{1}H NMR (400 MHz, Chloroform-*d*)

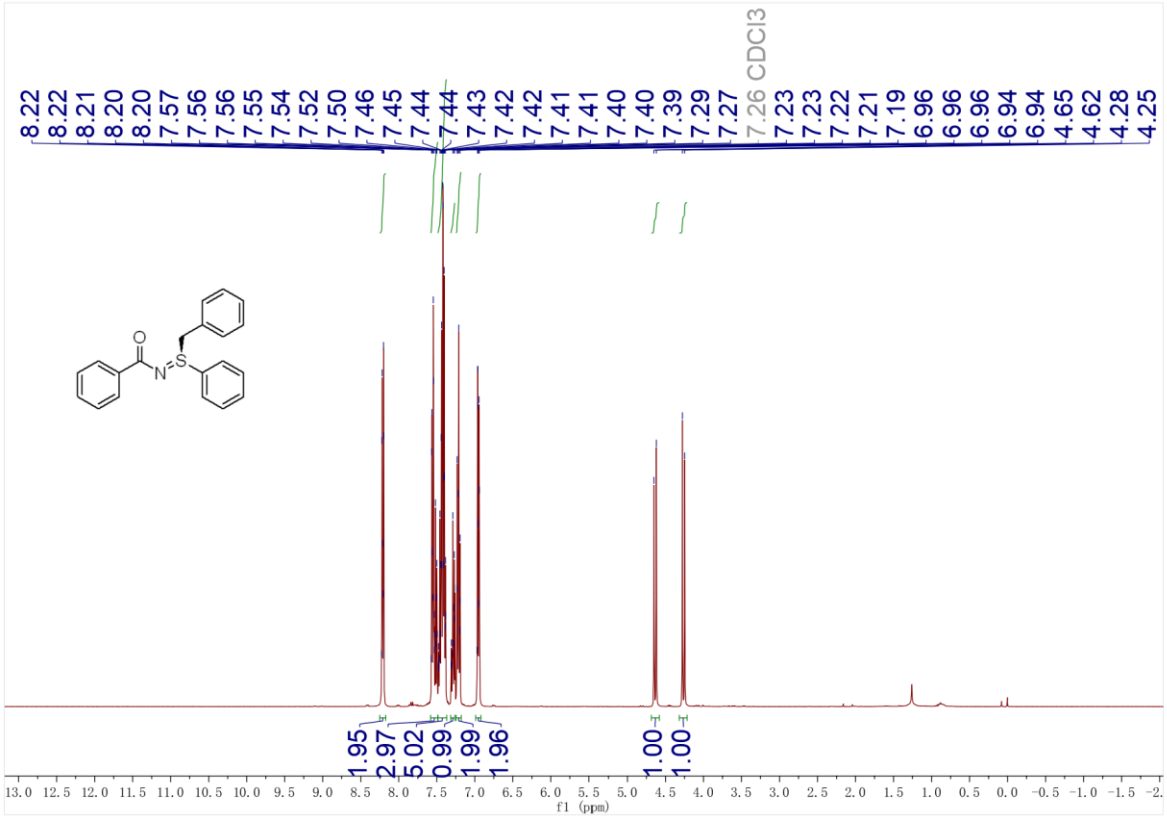


^{13}C NMR (101 MHz, $CDCl_3$)

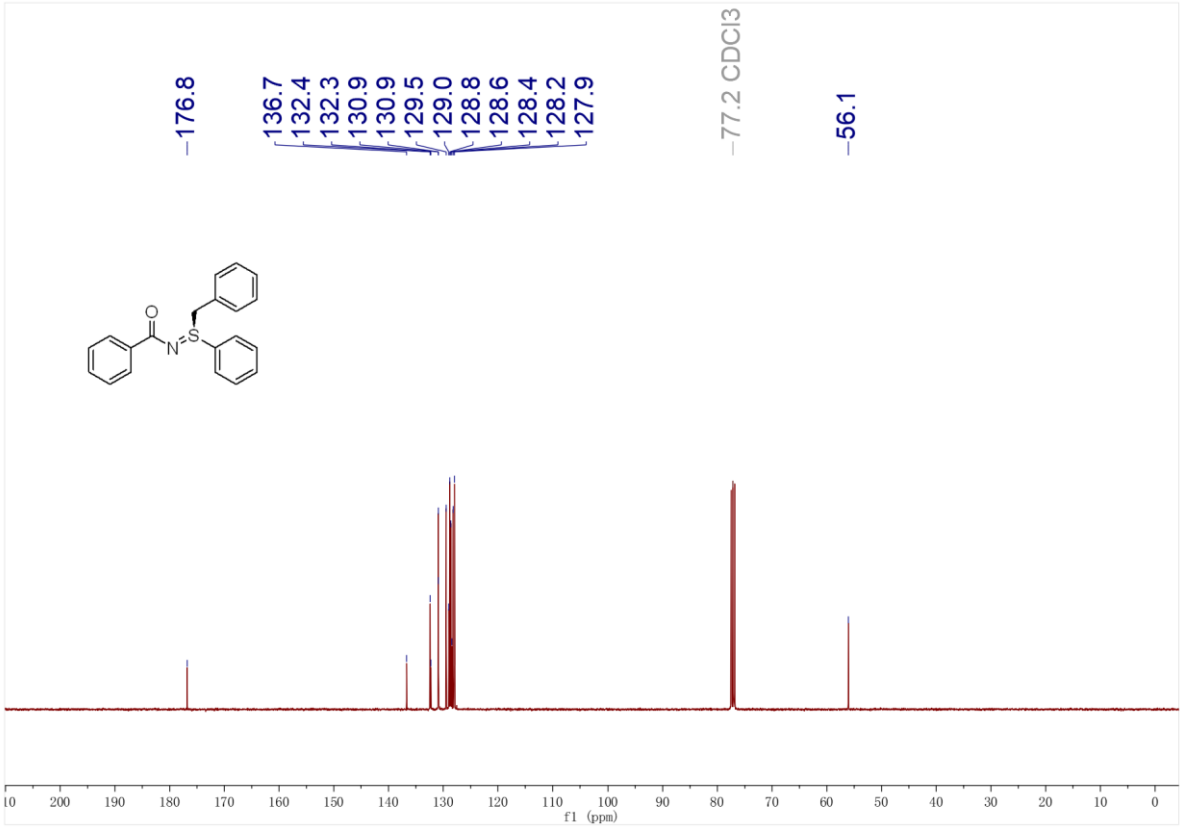


(*S*)-*N*-(benzyl(phenyl)-λ^4-sulfaneylidene)benzamide (3ah)

^{1}H NMR (400 MHz, Chloroform-*d*)

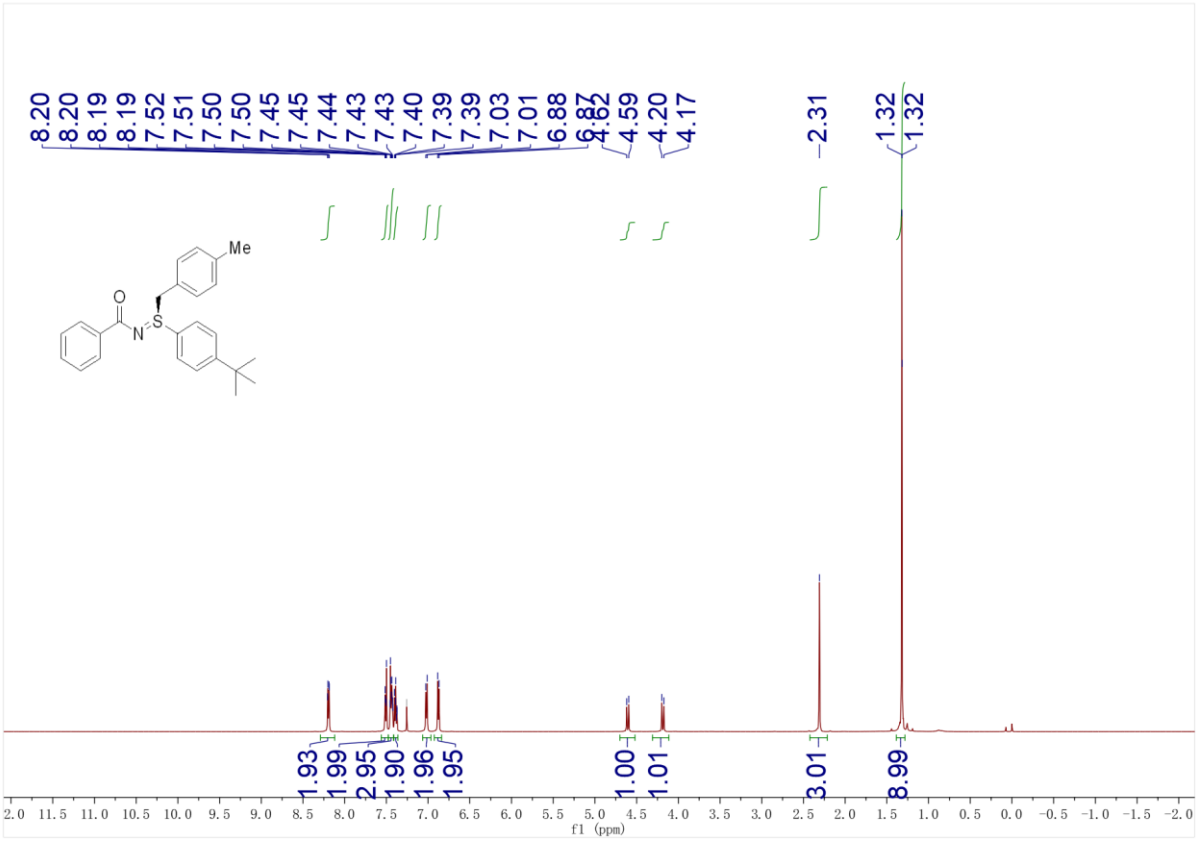


^{13}C NMR (101 MHz, $CDCl_3$)

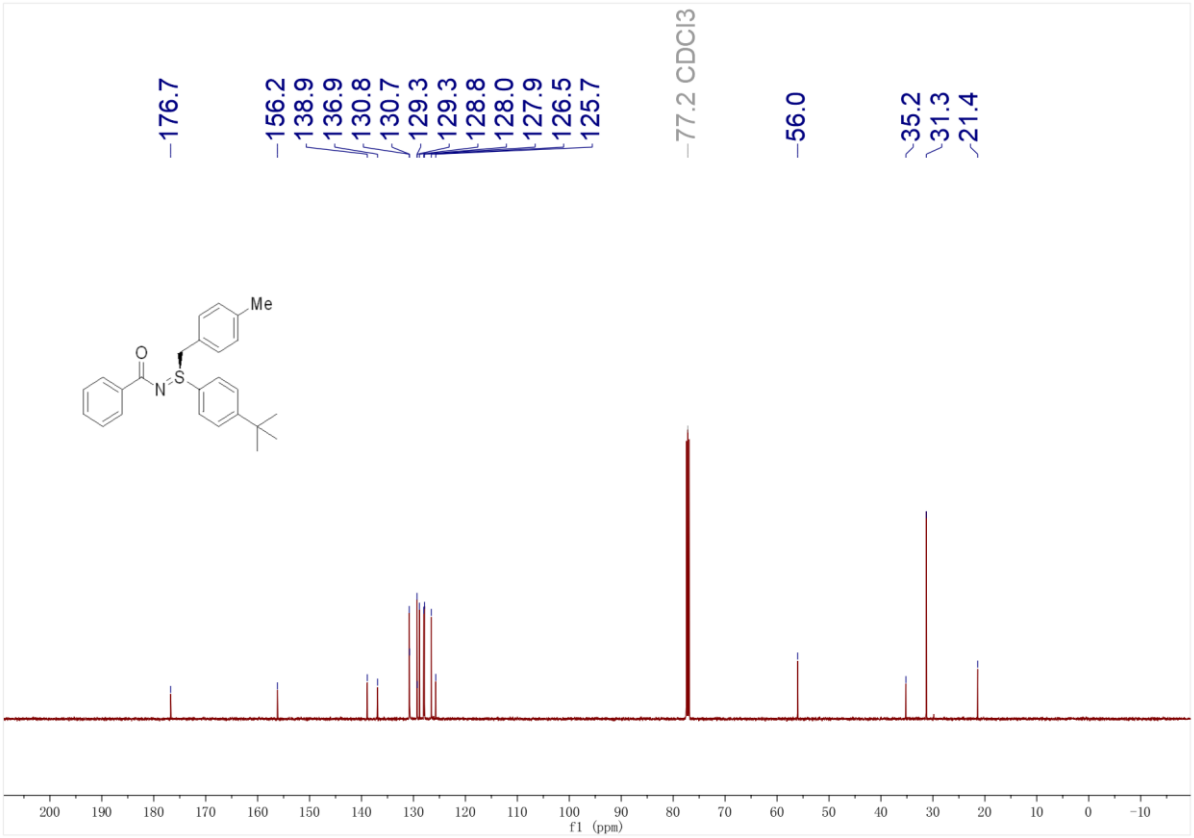


(*S*)-*N*-((4-(*tert*-butyl)phenyl)(4-methylbenzyl)-λ^4-sulfaneylidene)benzamide (3ai)

^{1}H NMR (500 MHz, Chloroform-*d*)

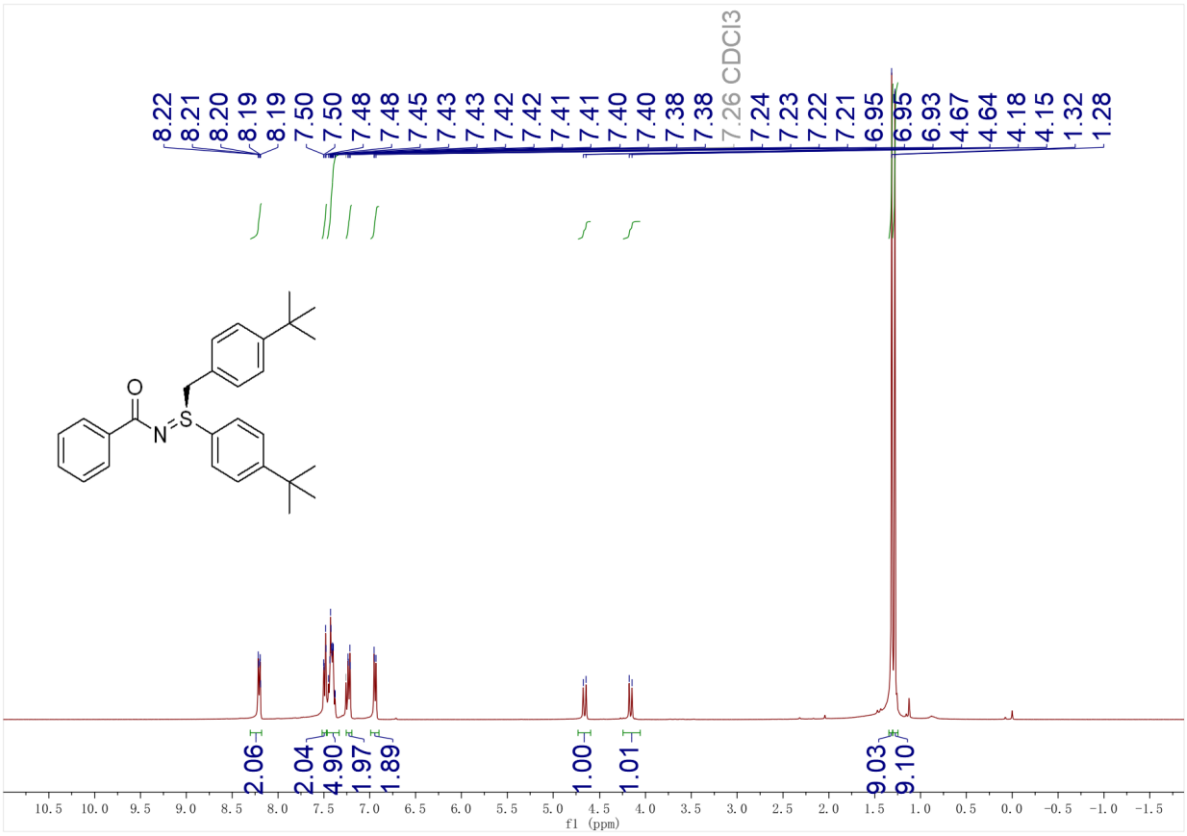


^{13}C NMR (126 MHz, $CDCl_3$)

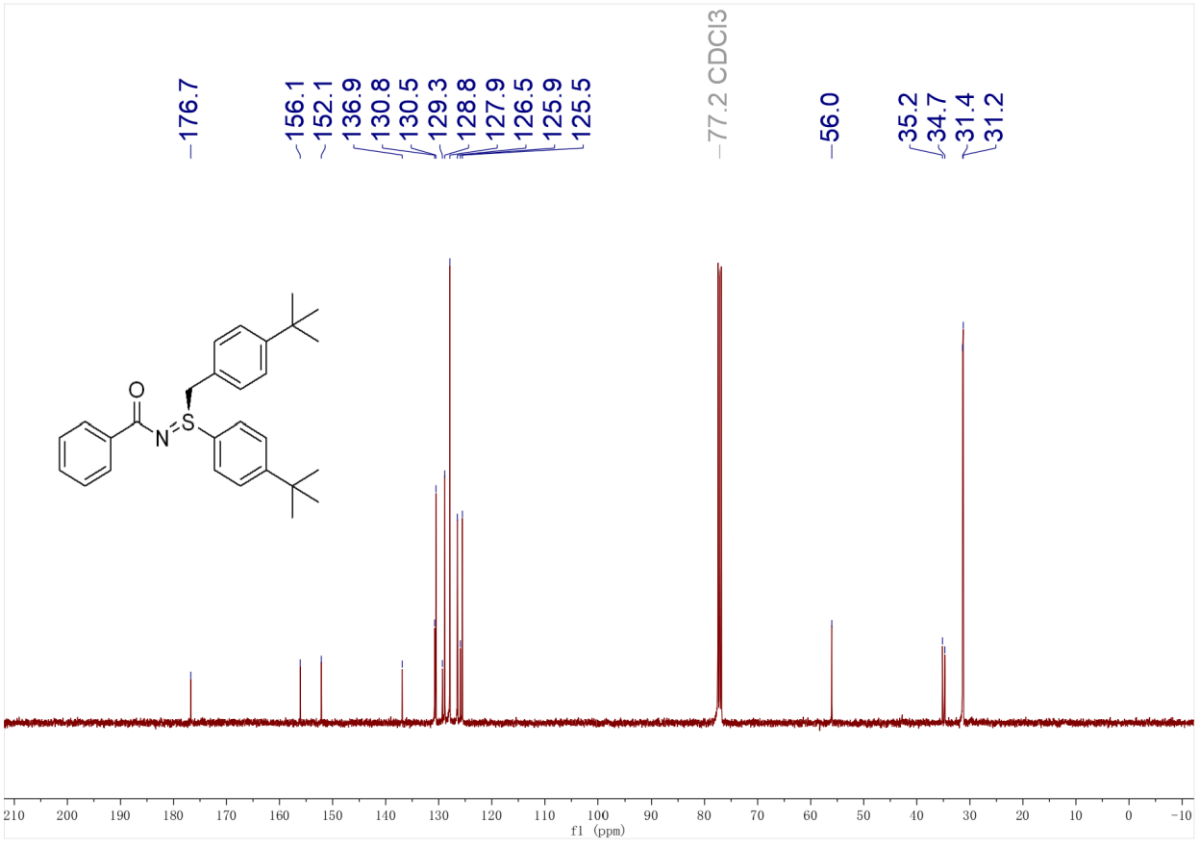


(*S*)-*N*-((4-(*tert*-butyl)benzyl)(4-(*tert*-butyl)phenyl)-λ^4-sulfaneylidene)benzamide (3aj)

^{1}H NMR (400 MHz, Chloroform-*d*)

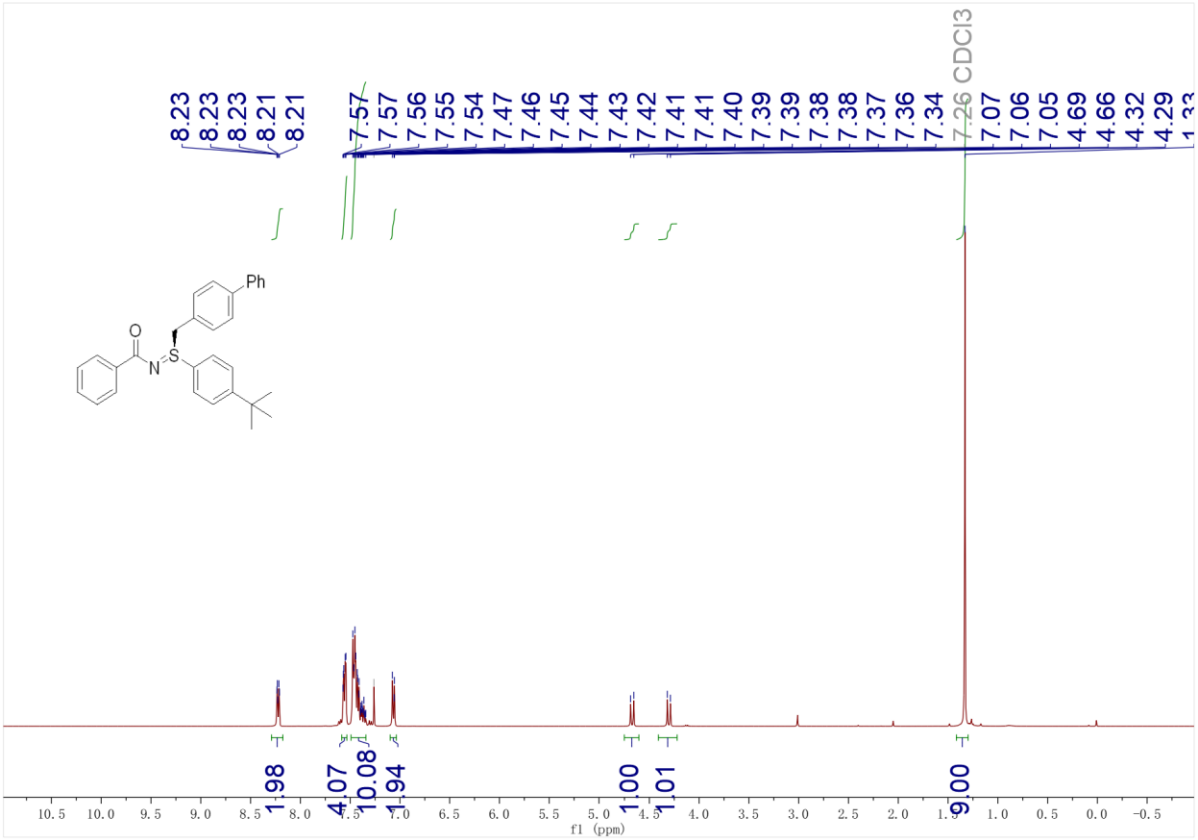


^{13}C NMR (101 MHz, $CDCl_3$)

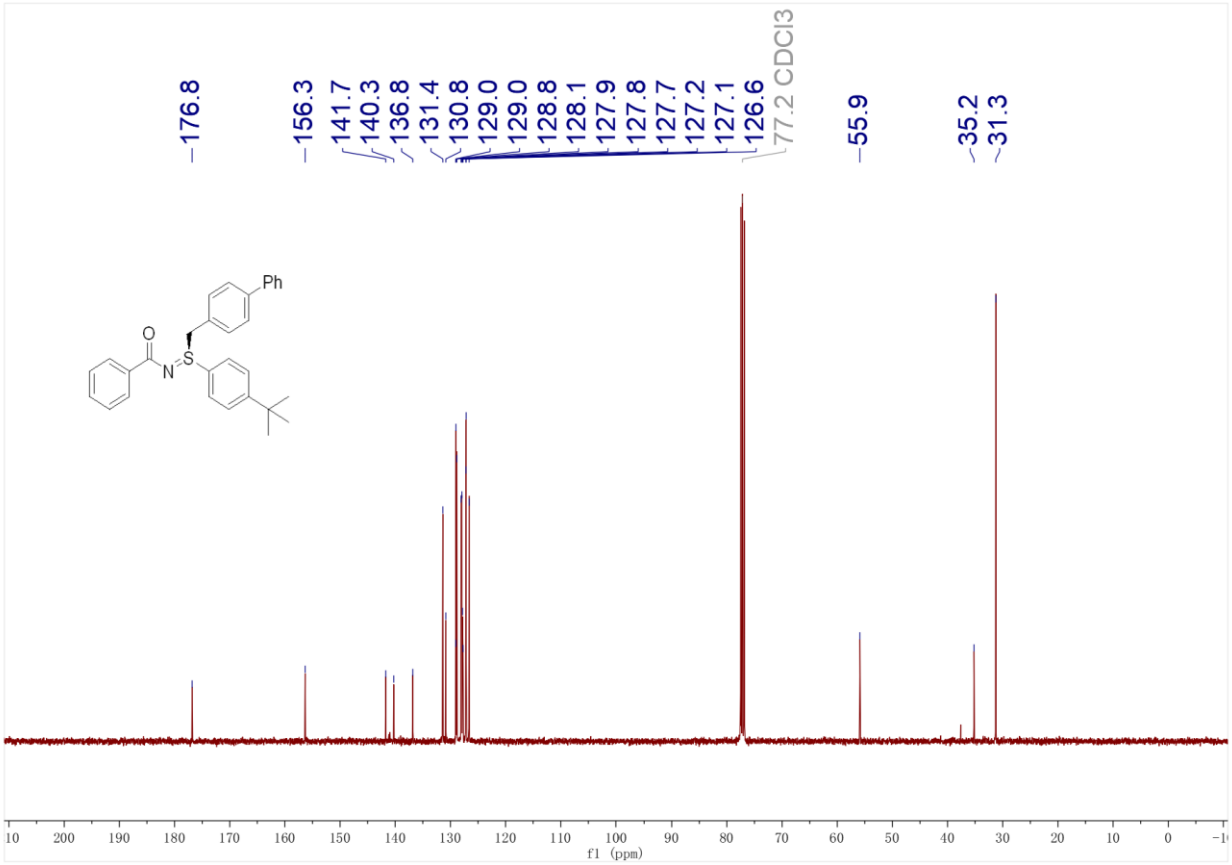


(*S*)-*N*-(([1,1'-biphenyl]-4-ylmethyl)(4-(*tert*-butyl)phenyl)-λ^4-sulfaneylidene)benzamide (3ak)

^{1}H NMR (400 MHz, Chloroform-*d*)

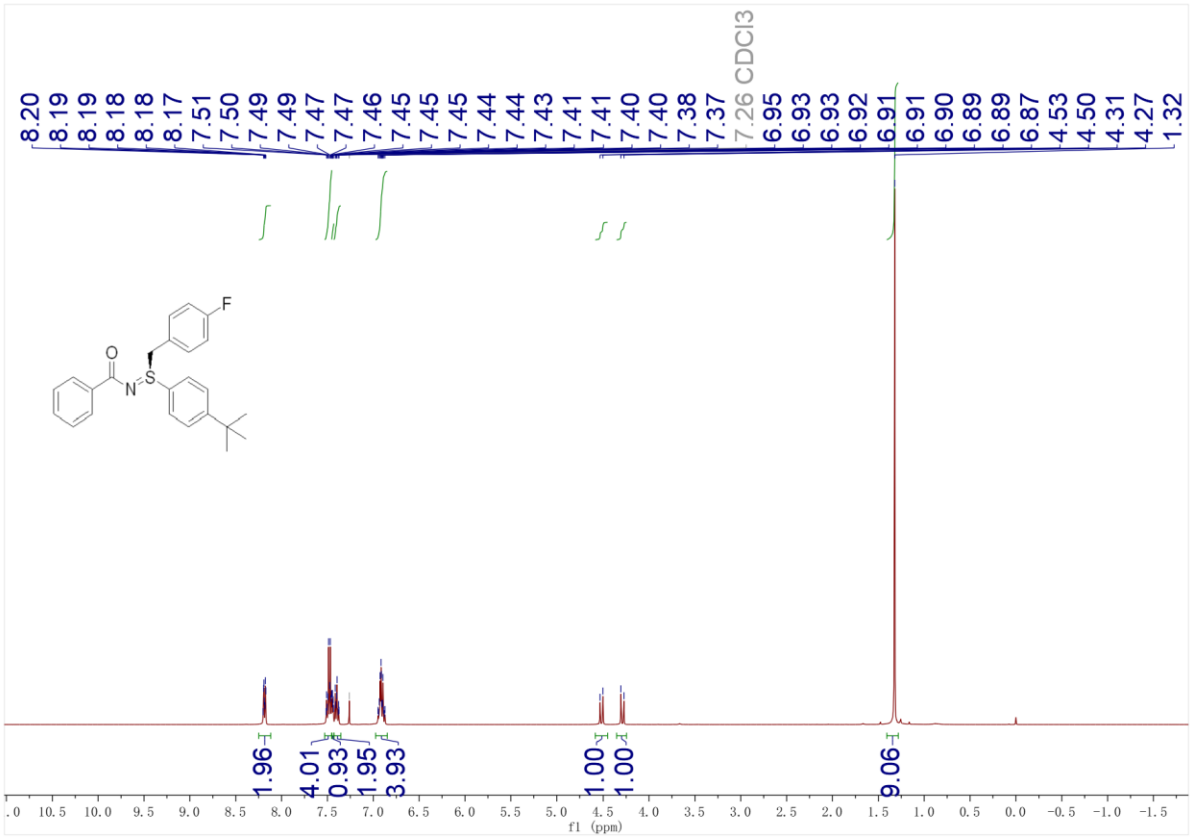


^{13}C NMR (101 MHz, $CDCl_3$)

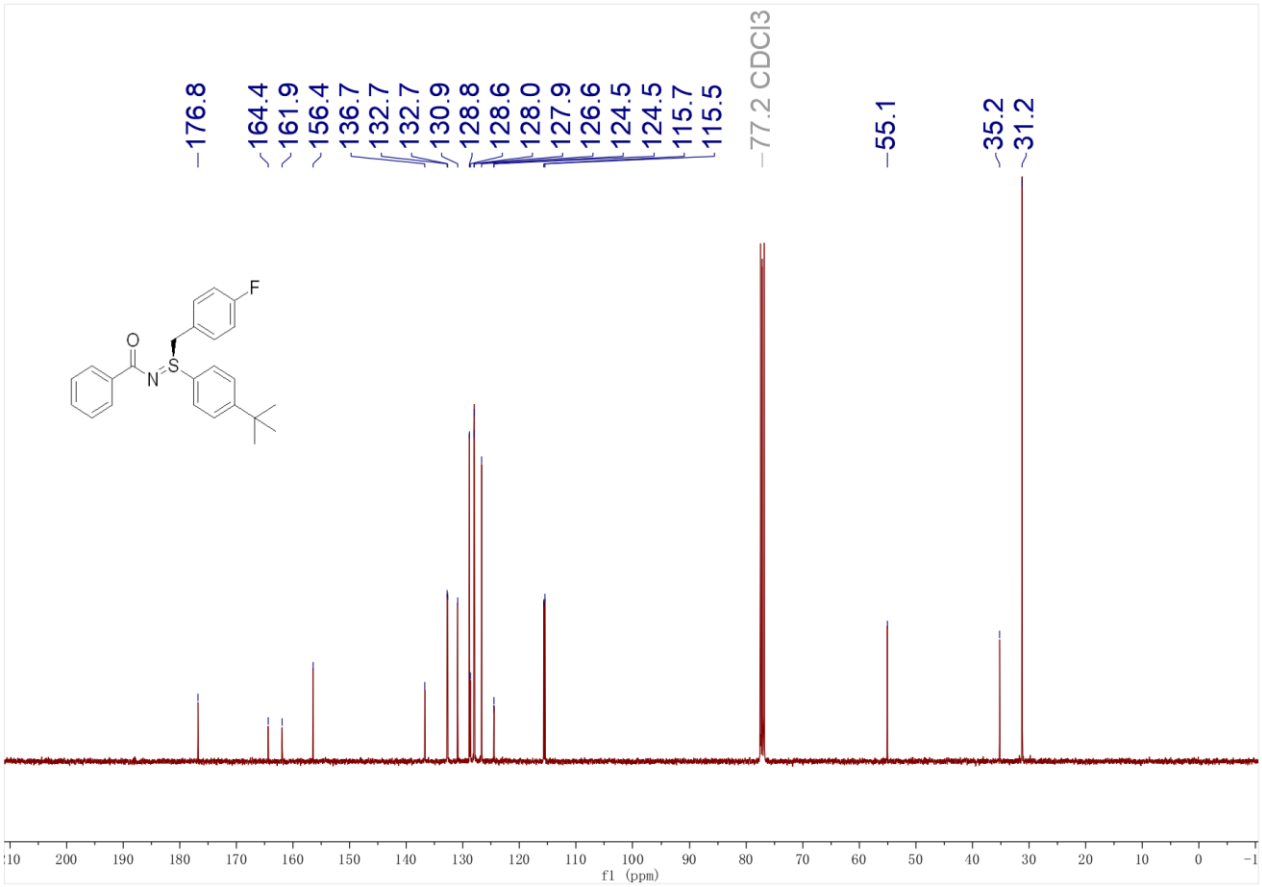


(*S*)-*N*-((4-(*tert*-butyl)phenyl)(4-fluorobenzyl)-λ^4-sulfaneylidene)benzamide (3al)

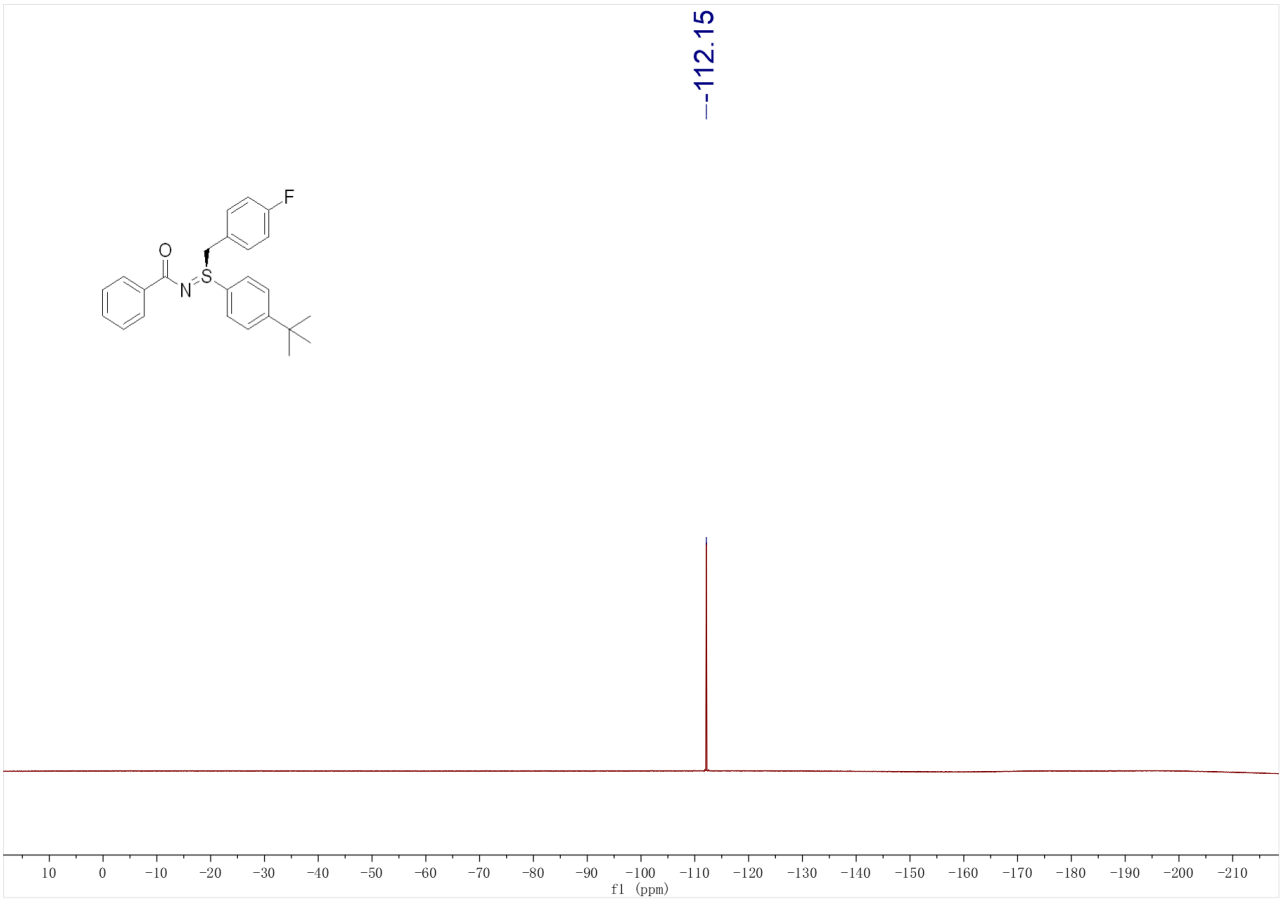
^{1}H NMR (400 MHz, Chloroform-*d*)



^{13}C NMR (101 MHz, Chloroform-*d*)

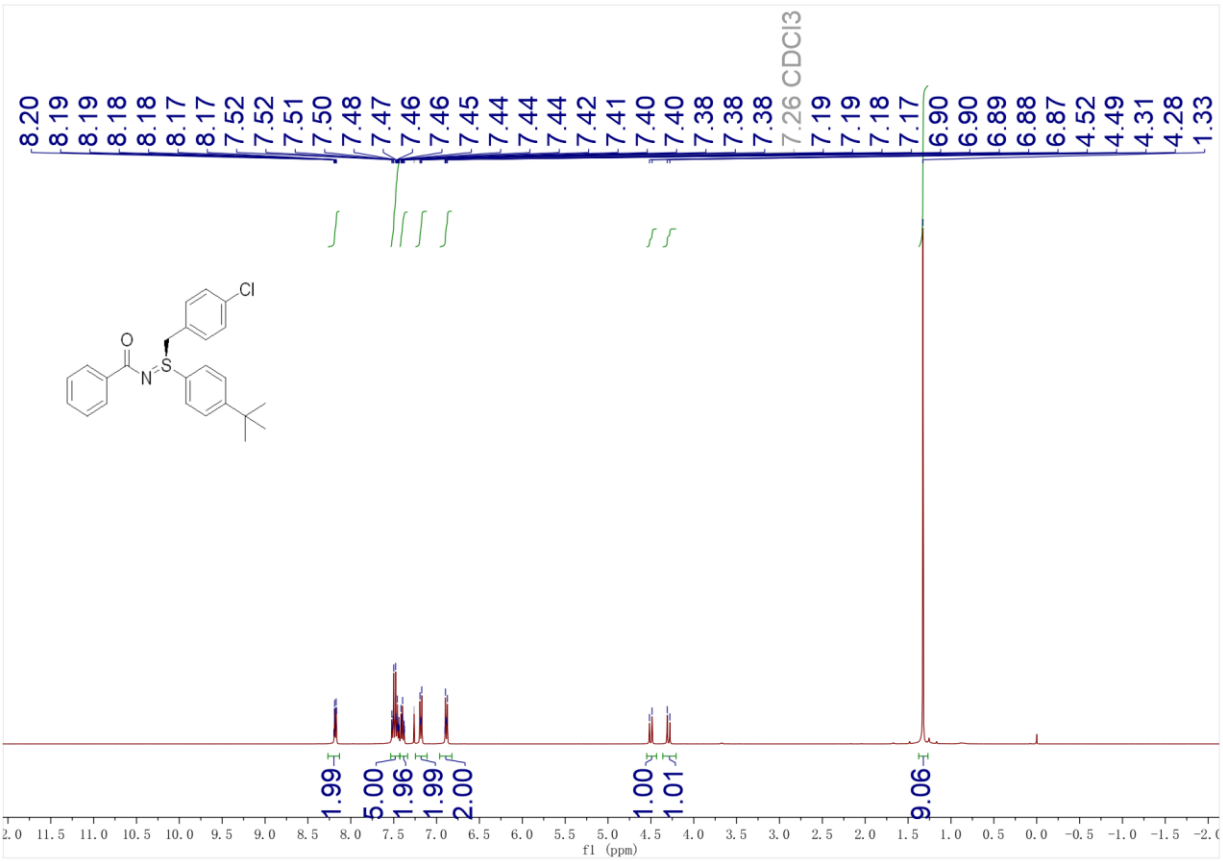


^{19}F NMR (376 MHz, $CDCl_3$)

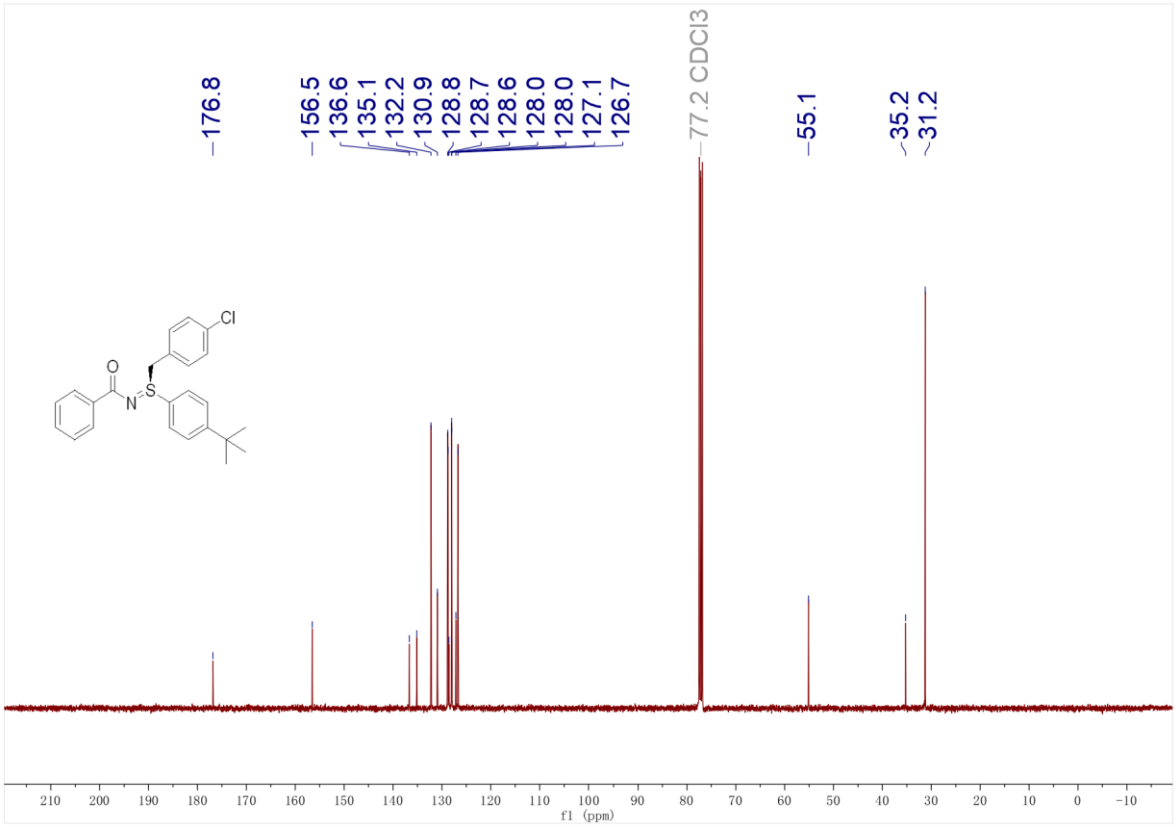


(*S*)-*N*-((4-(*tert*-butyl)phenyl)(4-chlorobenzyl)-λ^4-sulfaneylidene)benzamide (3am)

^{1}H NMR (400 MHz, Chloroform-*d*)

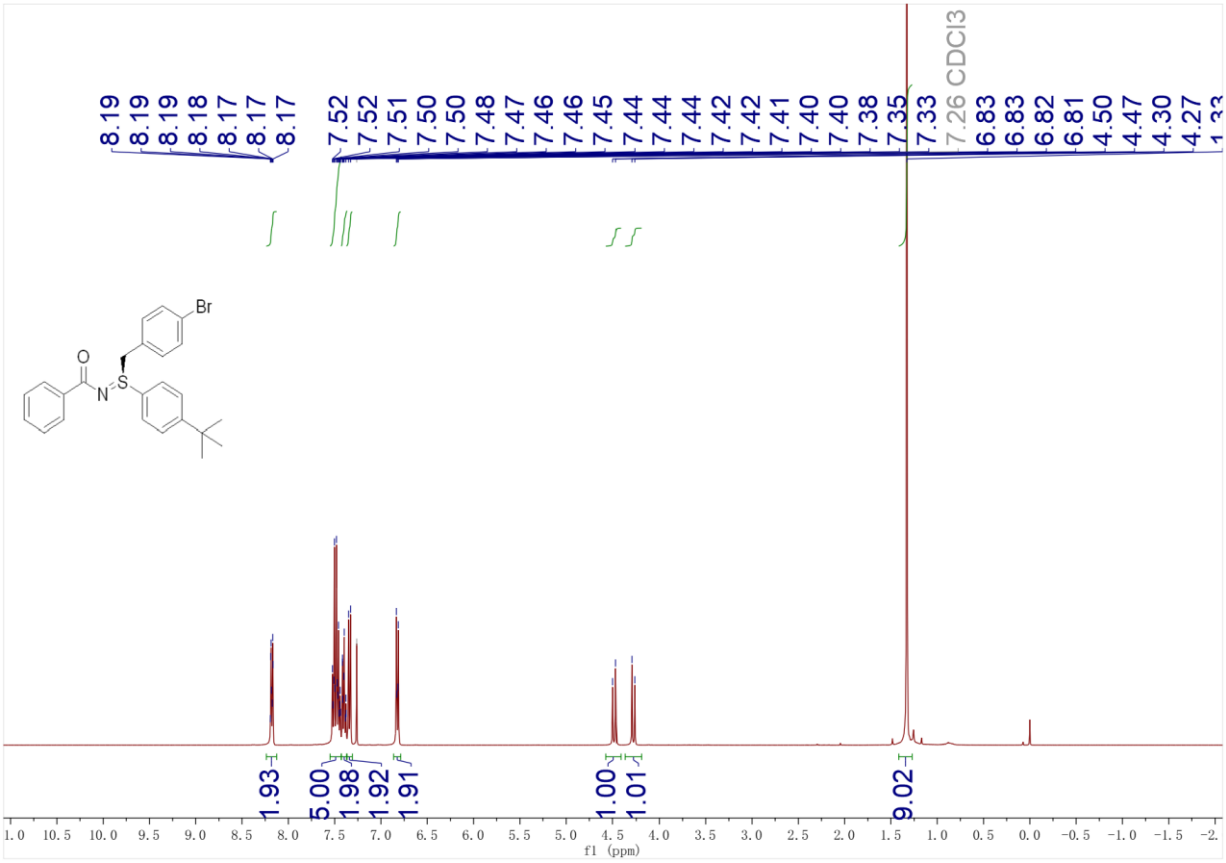


^{13}C NMR (101 MHz, $CDCl_3$)

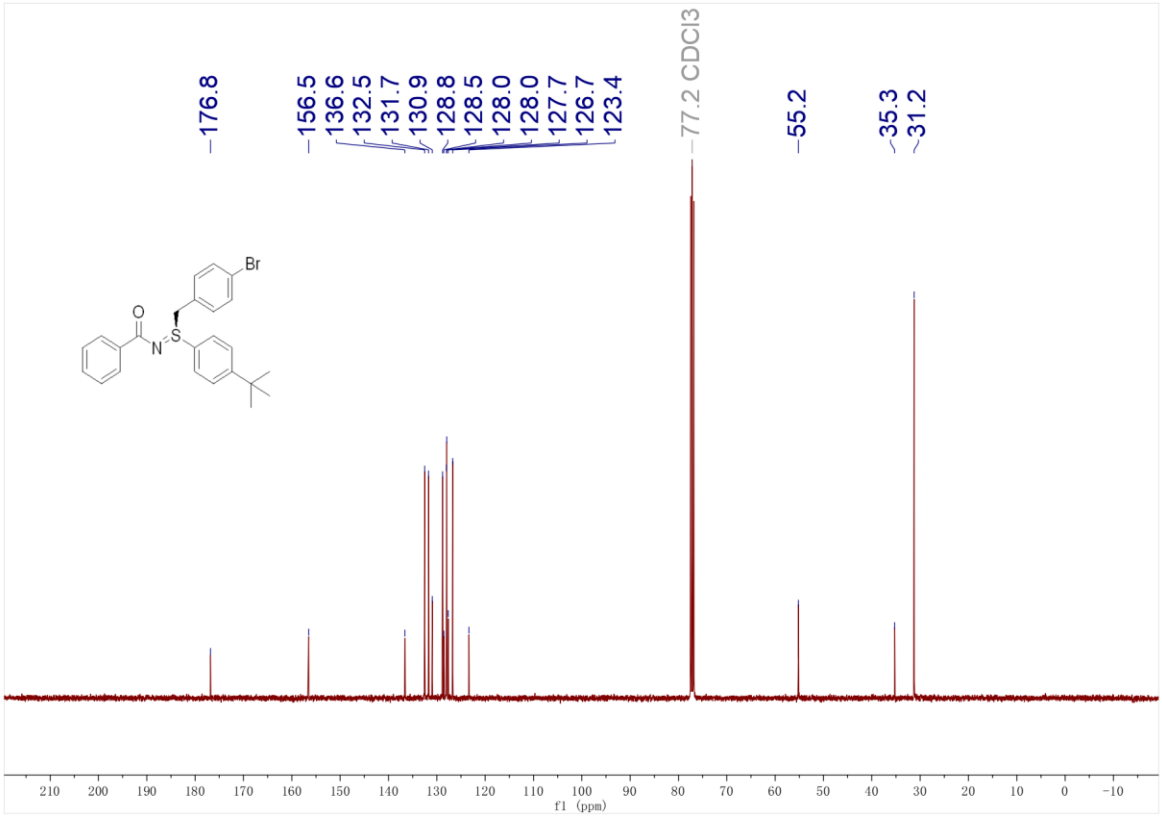


(*S*)-*N*-((4-bromobenzyl)(4-(*tert*-butyl)phenyl)-λ^{4}-sulfaneylidene)benzamide (3an)

^{1}H NMR (400 MHz, Chloroform-*d*)

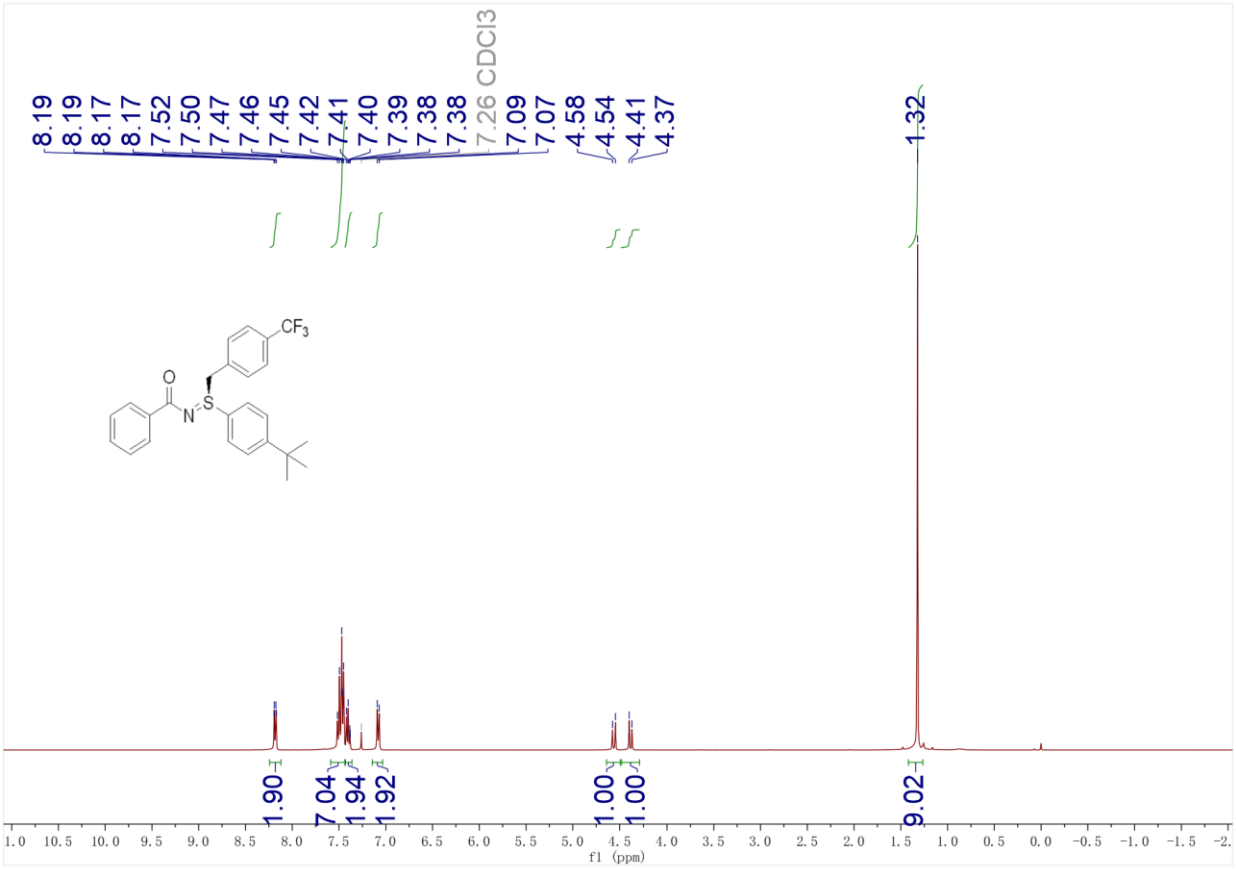


^{13}C NMR (101 MHz, $CDCl_3$)

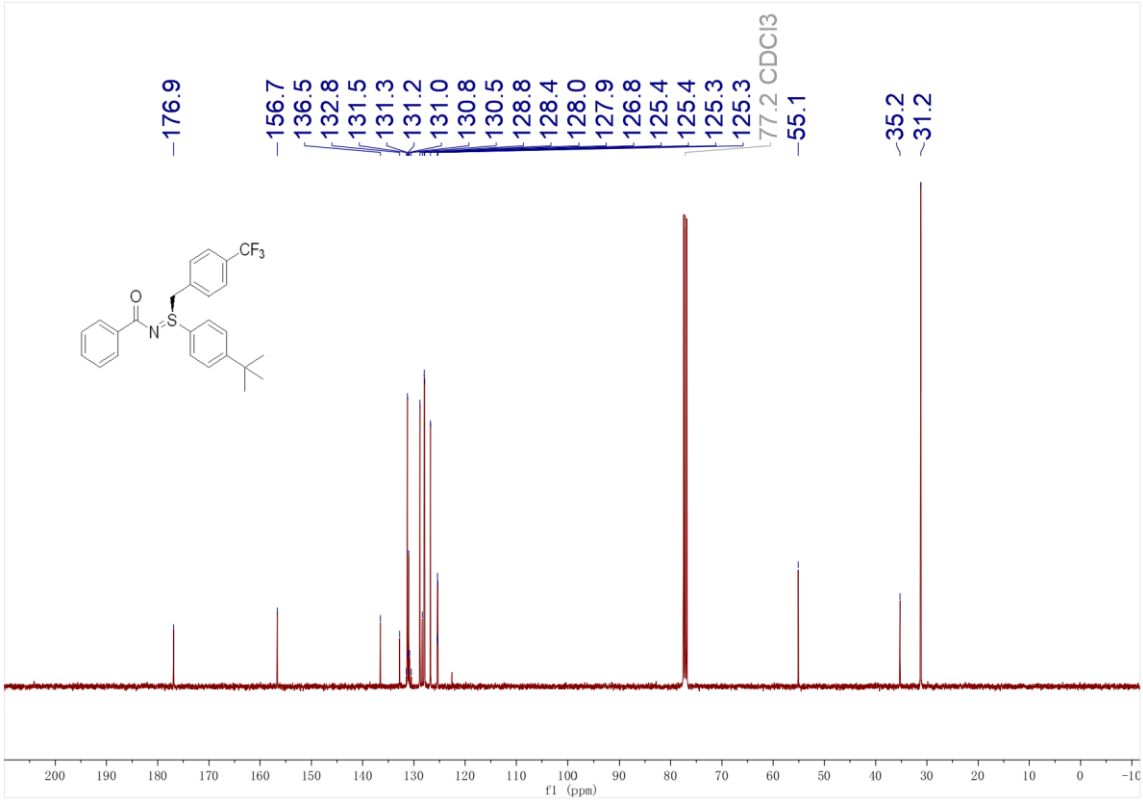


(*S*)-*N*-((4-(*tert*-butyl)phenyl)(4-(trifluoromethyl)benzyl)-λ^{4}-sulfaneylidene)benzamide (3ao)

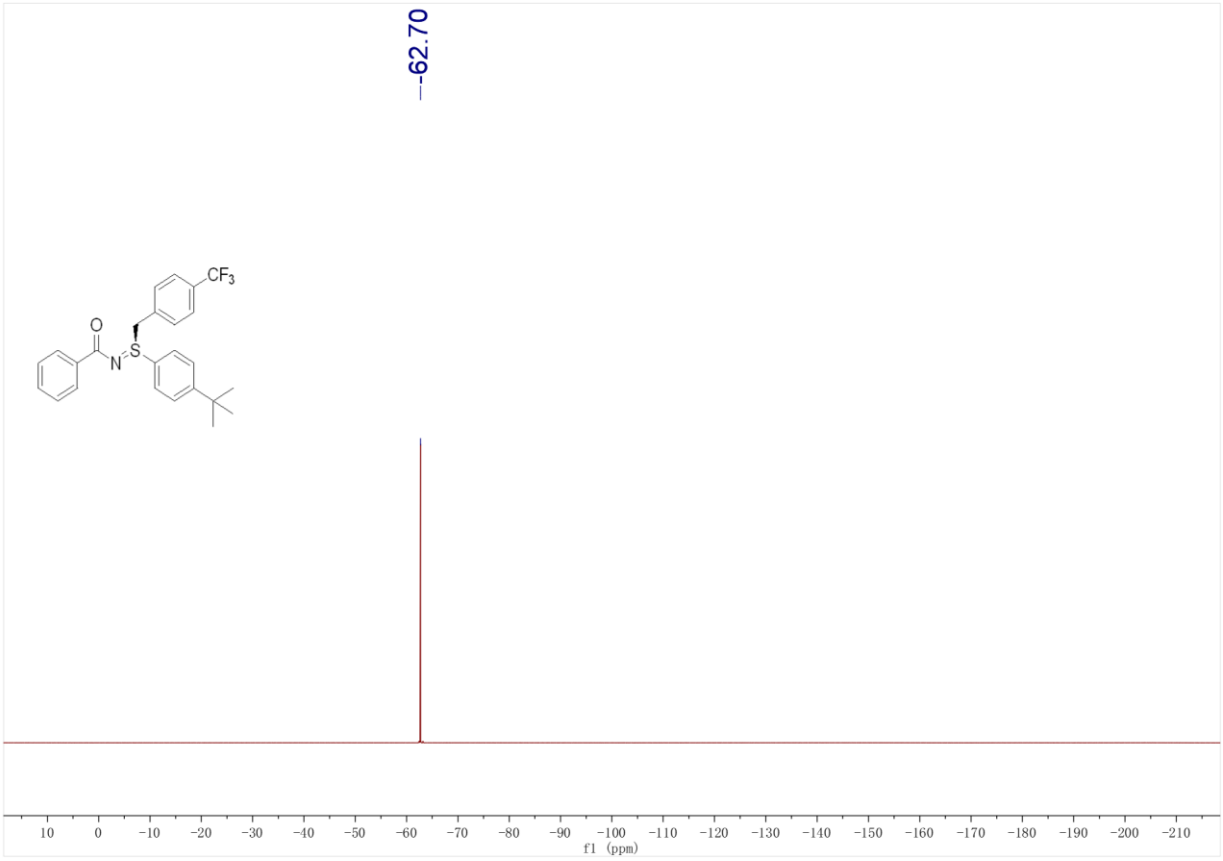
^{1}H NMR (400 MHz, Chloroform-*d*)



^{13}C NMR (101 MHz, Chloroform-*d*)

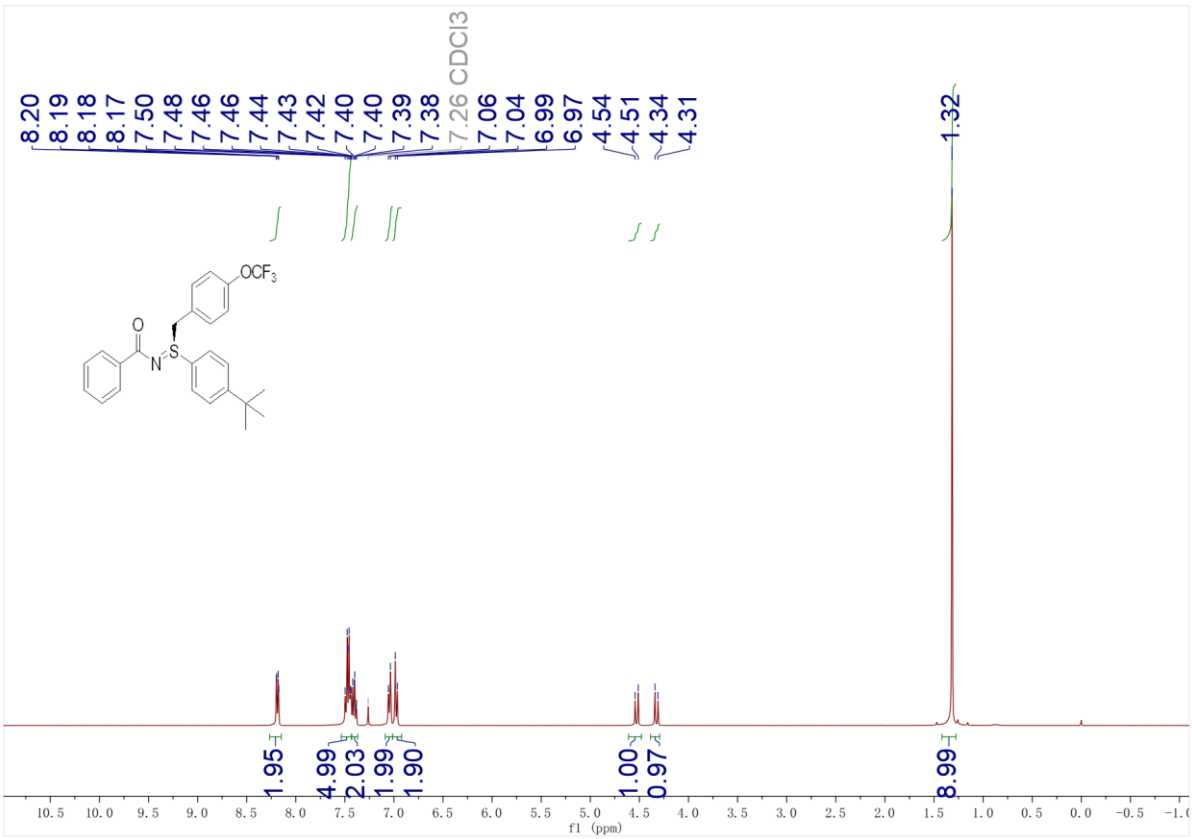


^{19}F NMR (376 MHz, $CDCl_3$)

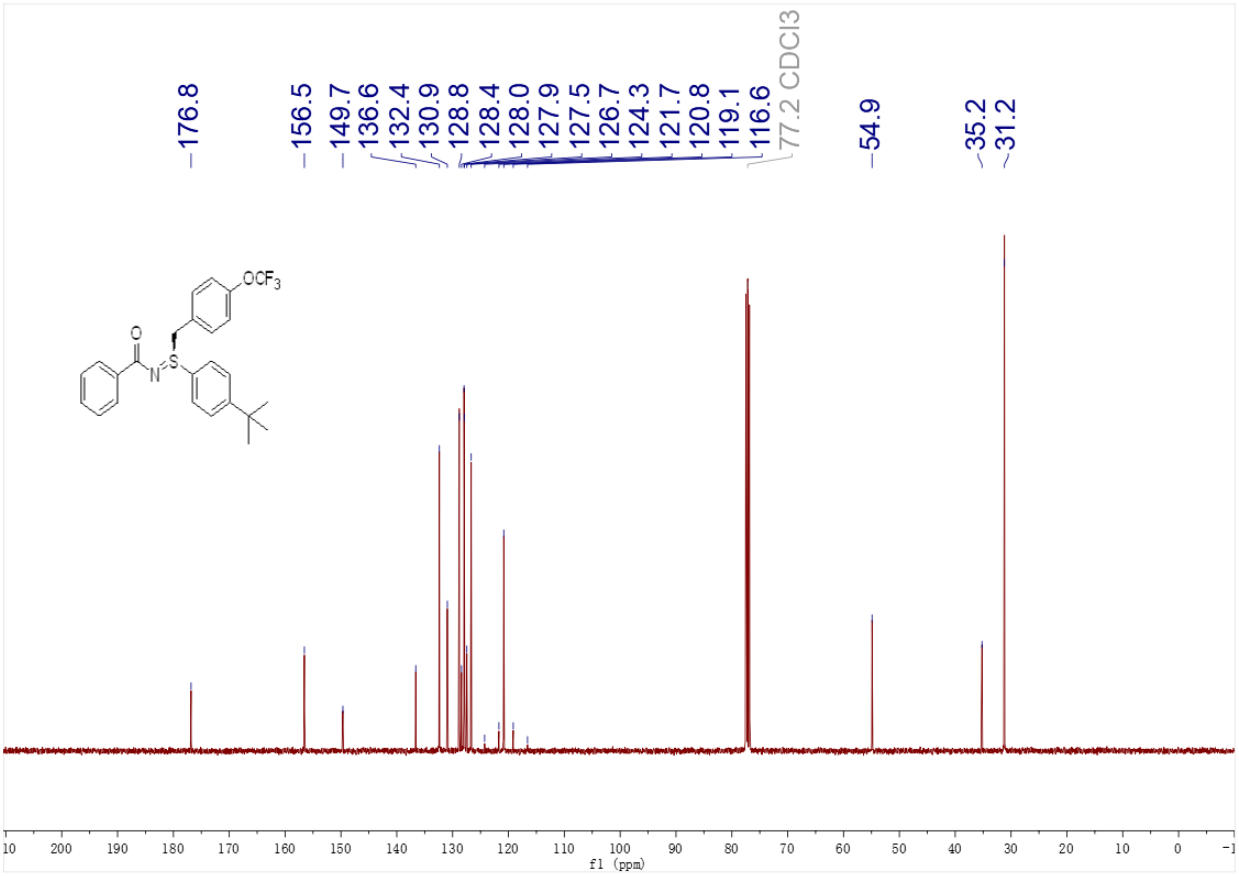


(*S*)-*N*-((4-(*tert*-butyl)phenyl)(4-(trifluoromethoxy)benzyl)-λ^4-sulfaneylidene)benzamide (3ap)

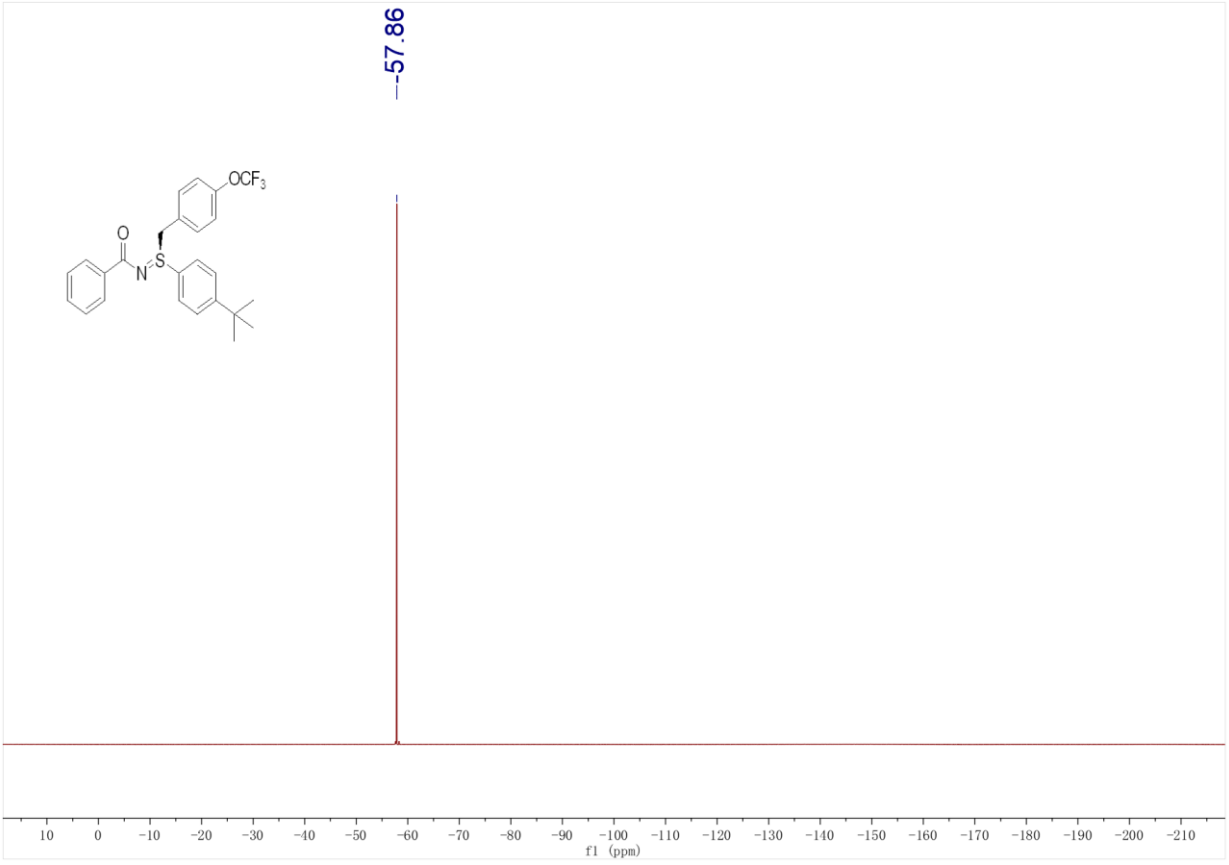
^{1}H NMR (400 MHz, Chloroform-*d*)



^{13}C NMR (101 MHz, Chloroform-*d*)

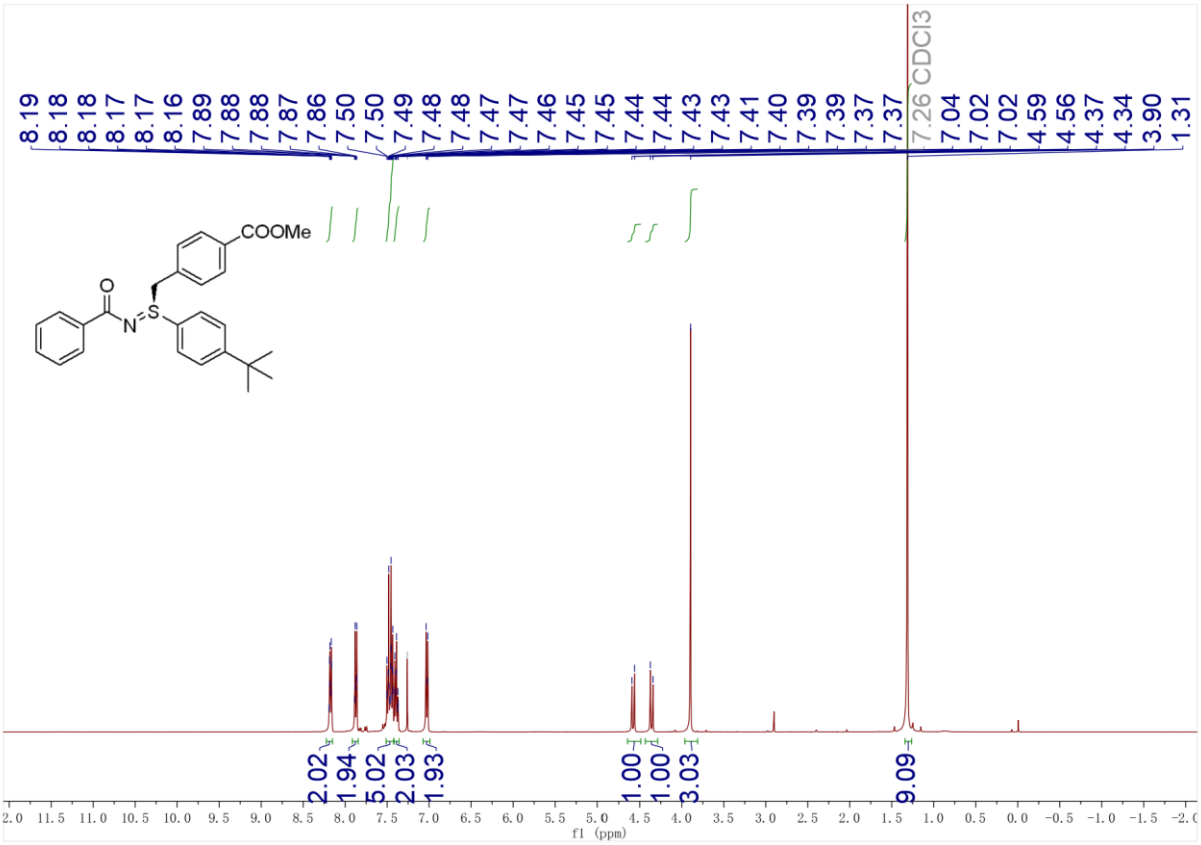


^{19}F NMR (376 MHz, $CDCl_3$)

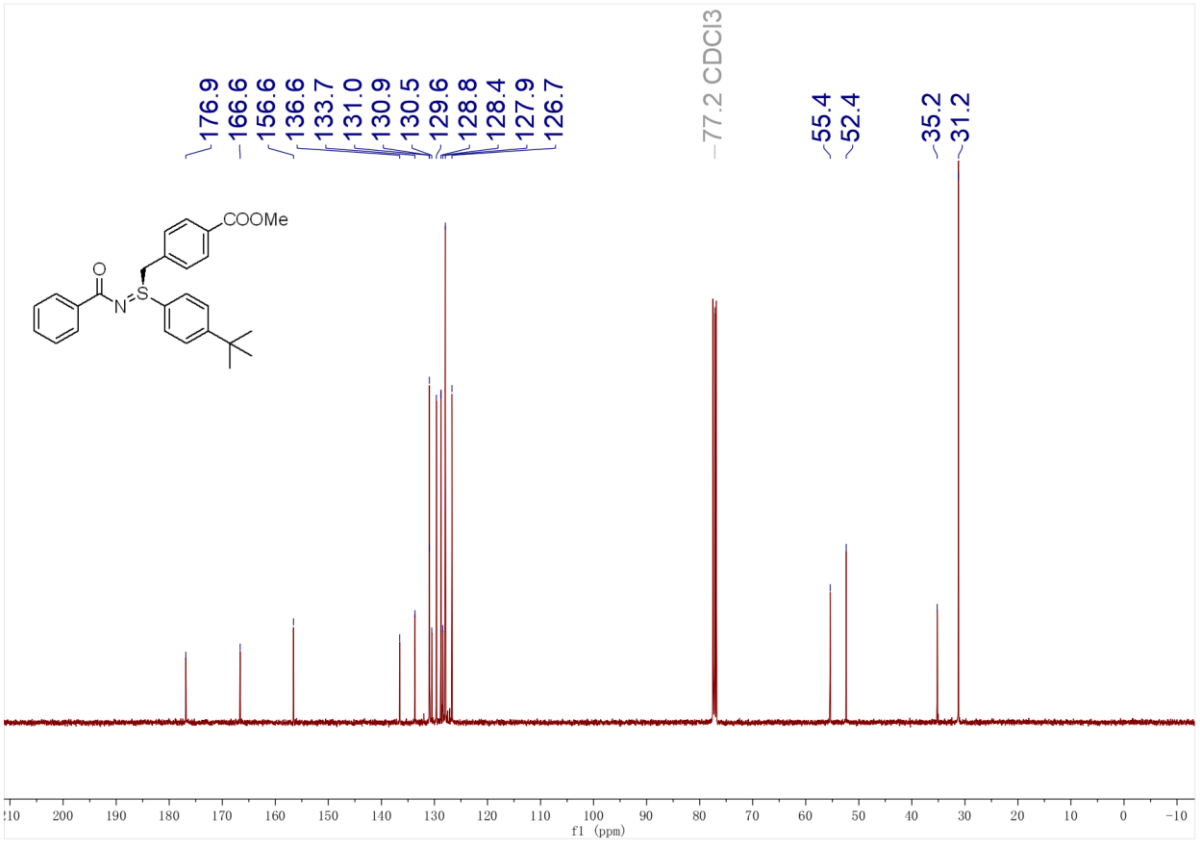


methyl (*S*)-4-((*N*-benzoyl-λ^4-(4-(*tert*-butyl)phenyl)sulfinimidoyl)methyl)benzoate (3aq)

^{1}H NMR (400 MHz, Chloroform-*d*)

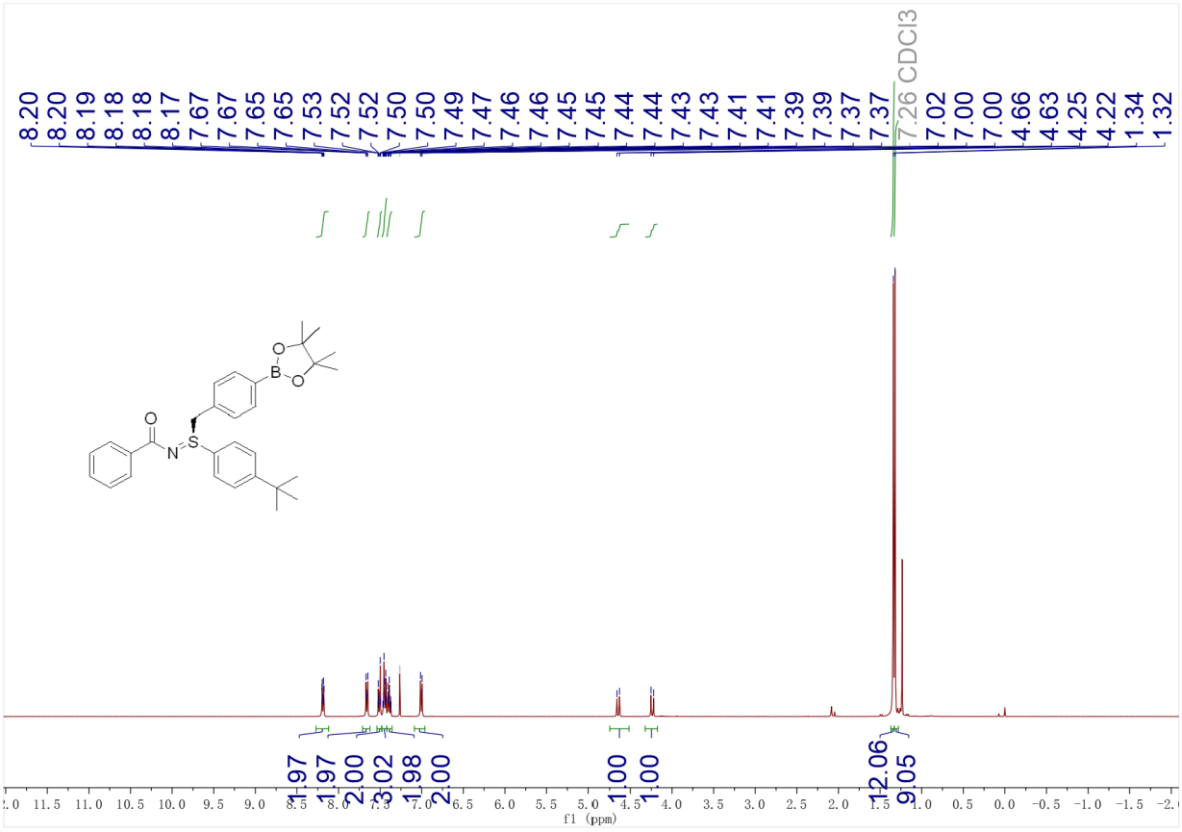


^{13}C NMR (101 MHz, $CDCl_3$)

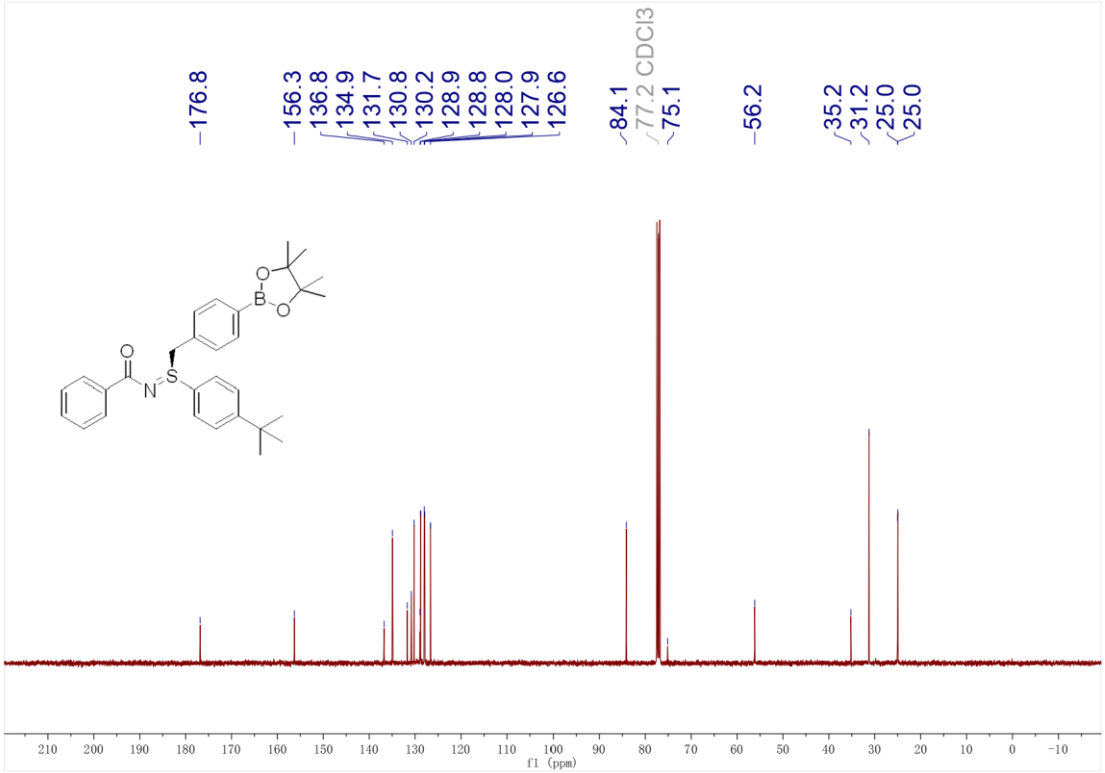


(*S*)-*N*-((4-(*tert*-butyl)phenyl)(4-(4,4,5,5-tetramethyl-1,3,2-dioxaborolan-2-yl)benzyl)-λ^4-sulfaneylidene)benzamide (3ar)

^{1}H NMR (400 MHz, Chloroform-*d*)

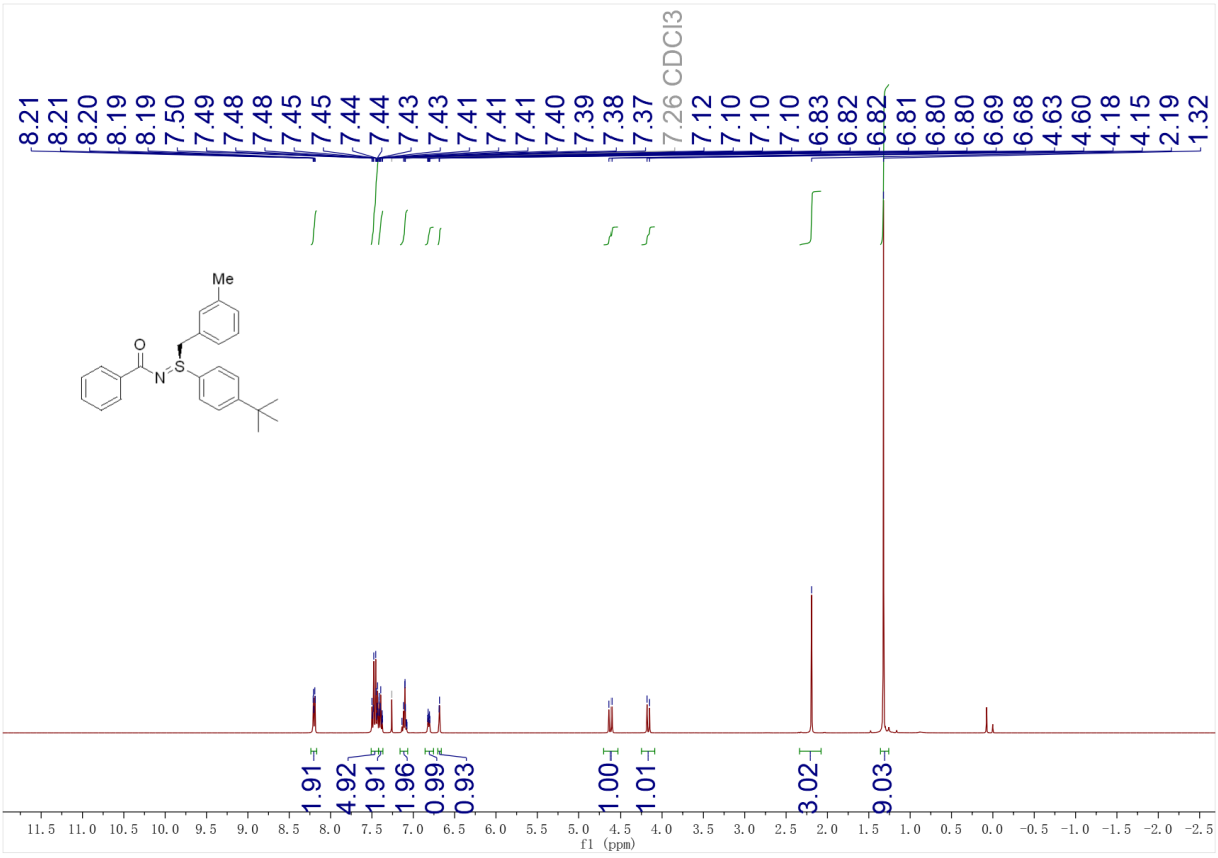


^{13}C NMR (101 MHz, $CDCl_3$)

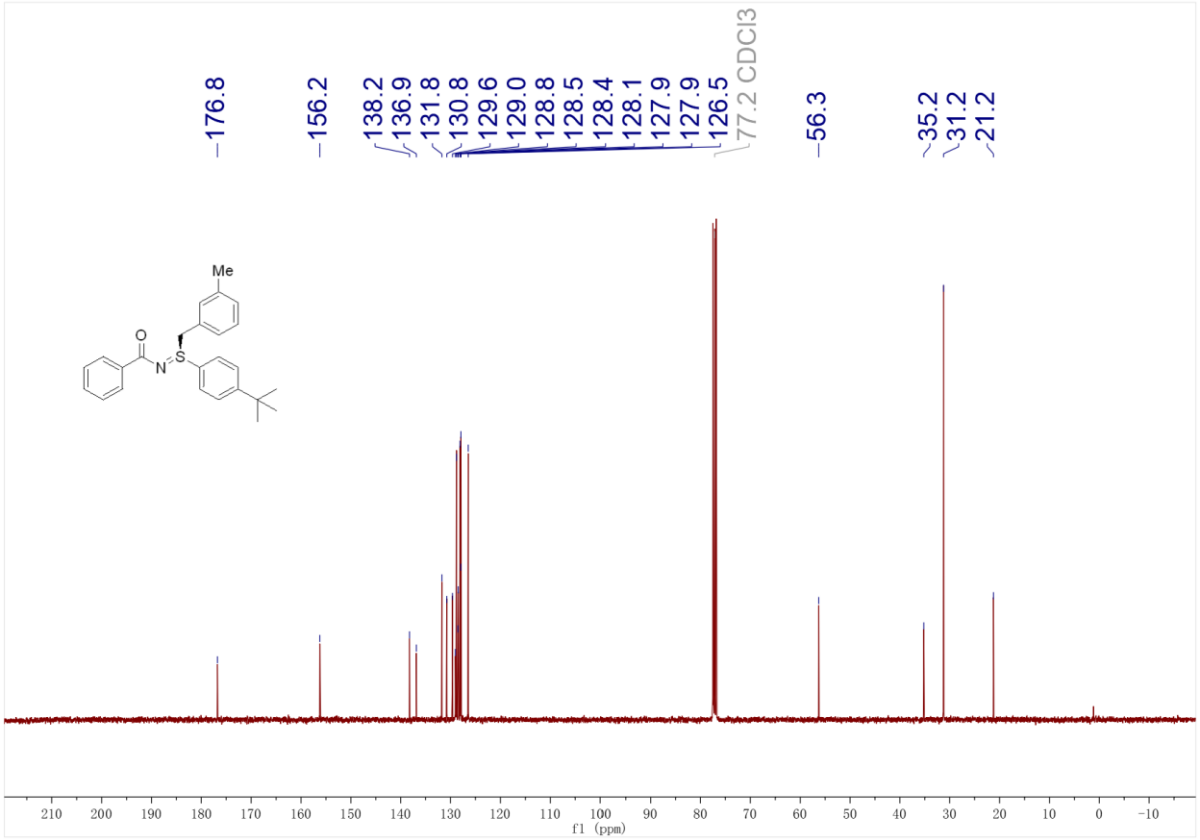


(*S*)-*N*-((4-(*tert*-butyl)phenyl)(3-methylbenzyl)-λ^4-sulfaneylidene)benzamide (3as)

^{1}H NMR (400 MHz, Chloroform-*d*)

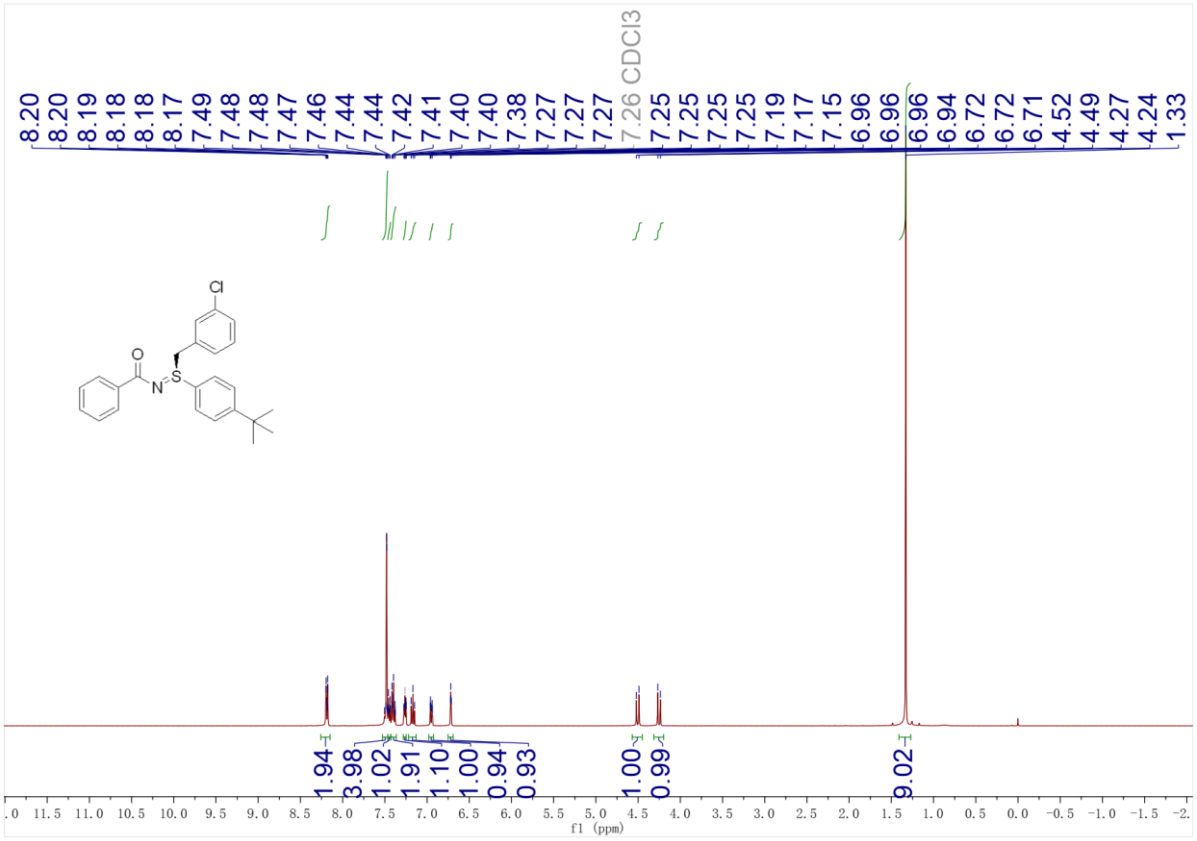


^{13}C NMR (101 MHz, $CDCl_3$)

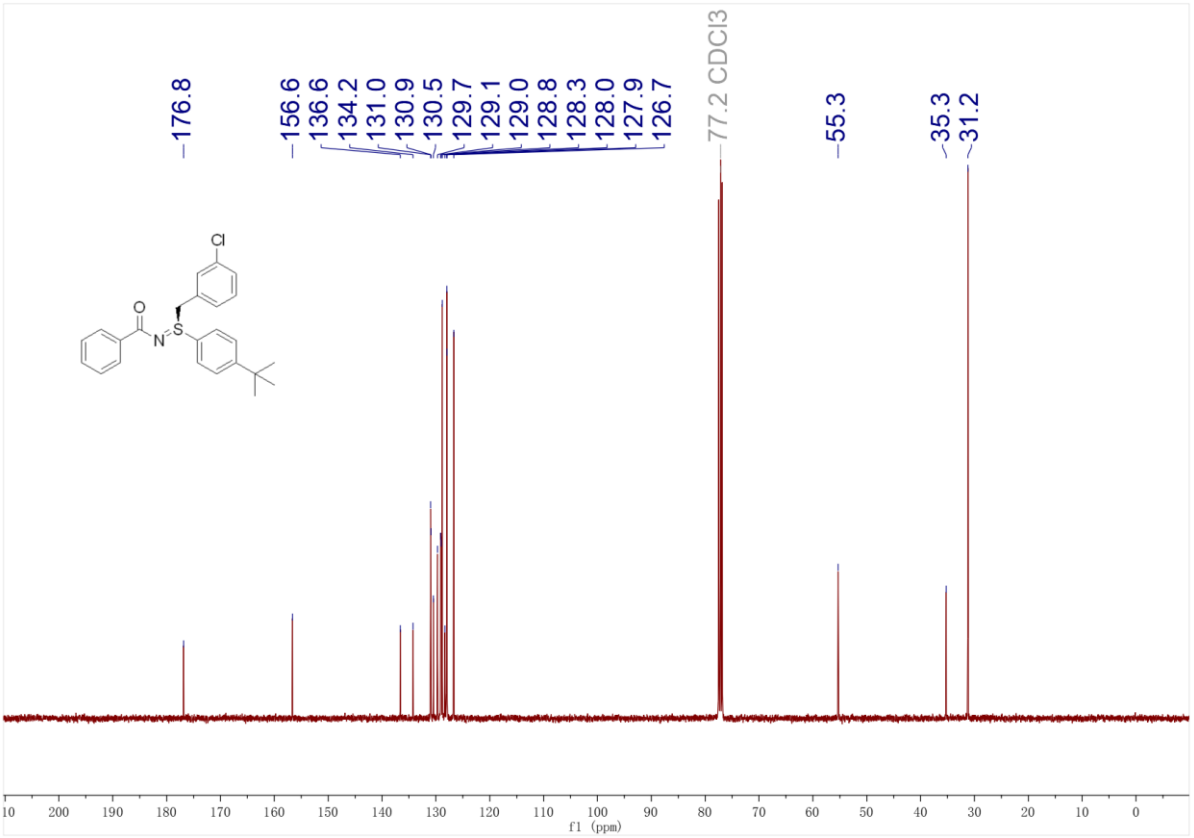


(*S*)-*N*-((4-(*tert*-butyl)phenyl)(3-chlorobenzyl)-λ^4-sulfaneylidene)benzamide (3at)

^{1}H NMR (400 MHz, Chloroform-*d*)

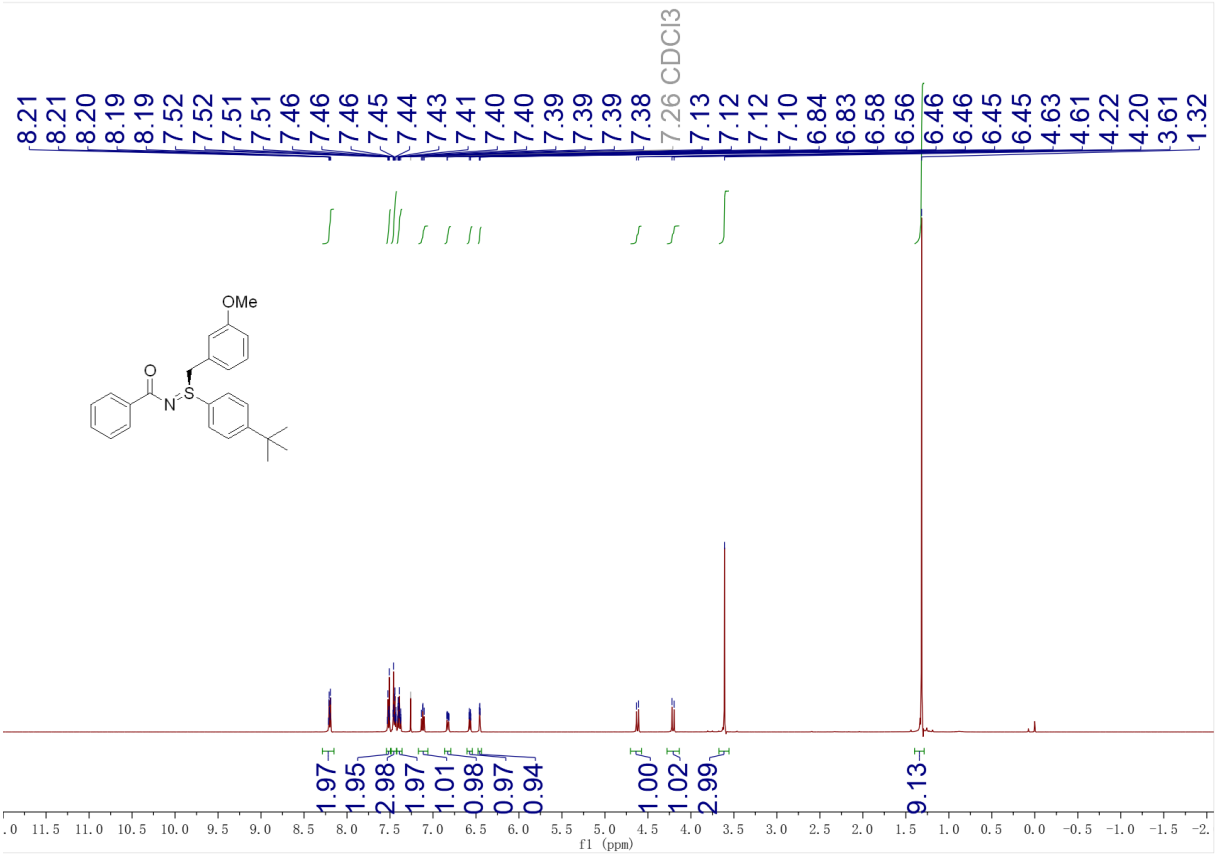


^{13}C NMR (101 MHz, $CDCl_3$)

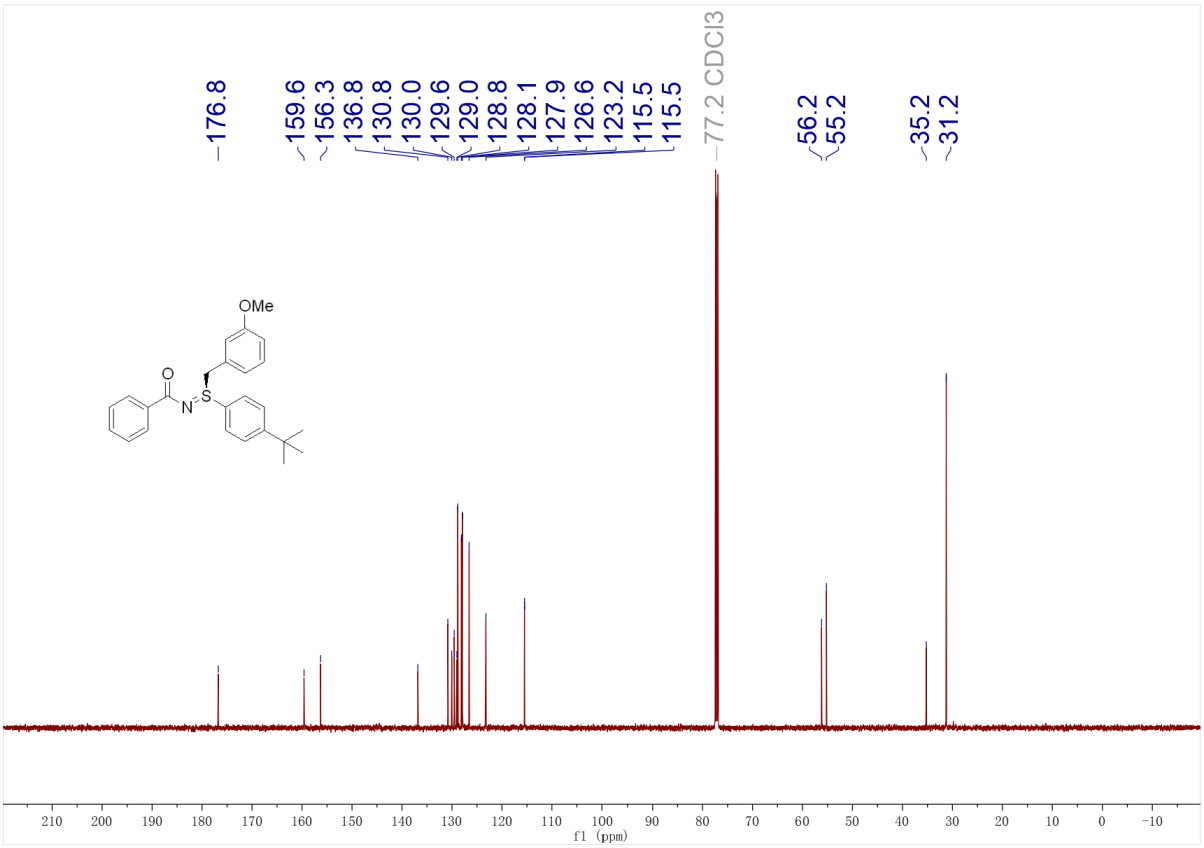


(*S*)-*N*-((4-(*tert*-butyl)phenyl)(3-methoxybenzyl)-λ^4-sulfaneylidene)benzamide (3au)

^{1}H NMR (500 MHz, Chloroform-*d*)

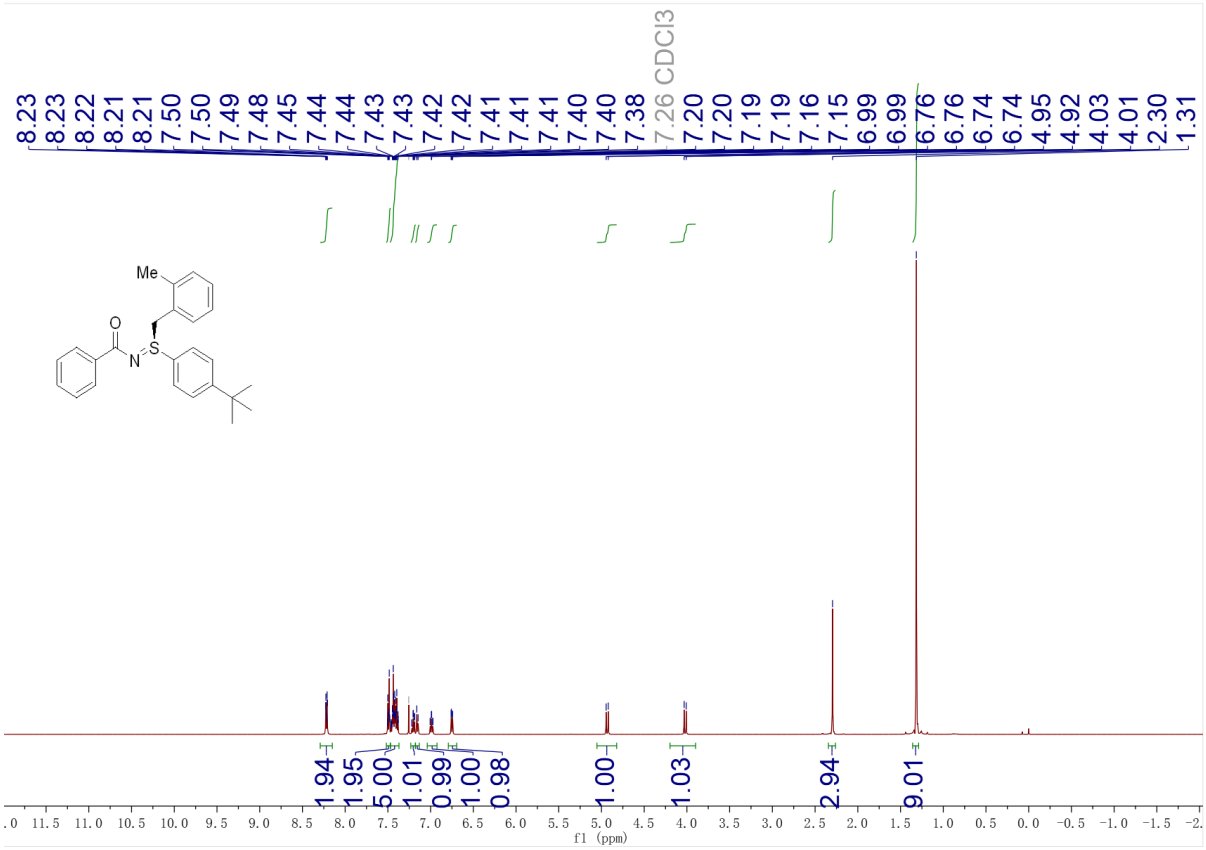


^{13}C NMR (126 MHz, $CDCl_3$)

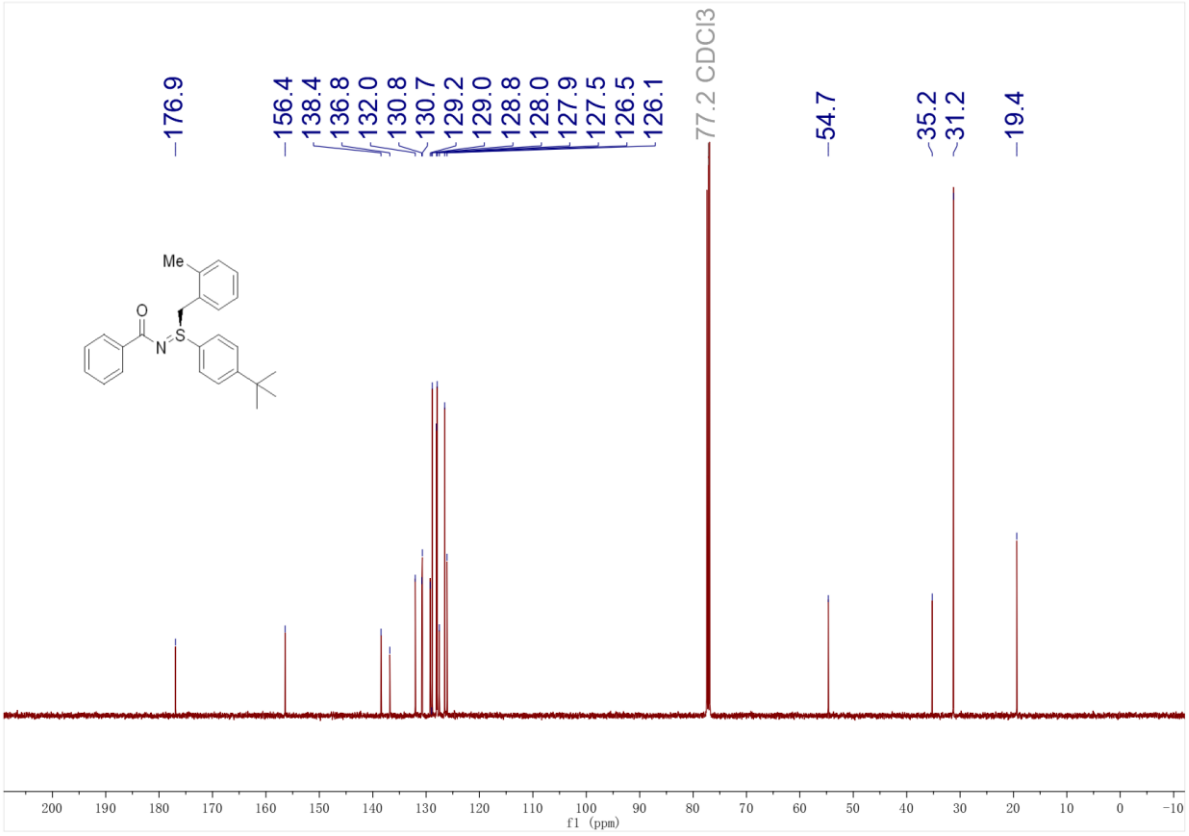


(*S*)-*N*-((4-(*tert*-butyl)phenyl)(2-methylbenzyl)-λ^4-sulfaneylidene)benzamide (3av)

^{1}H NMR (500 MHz, Chloroform-*d*)

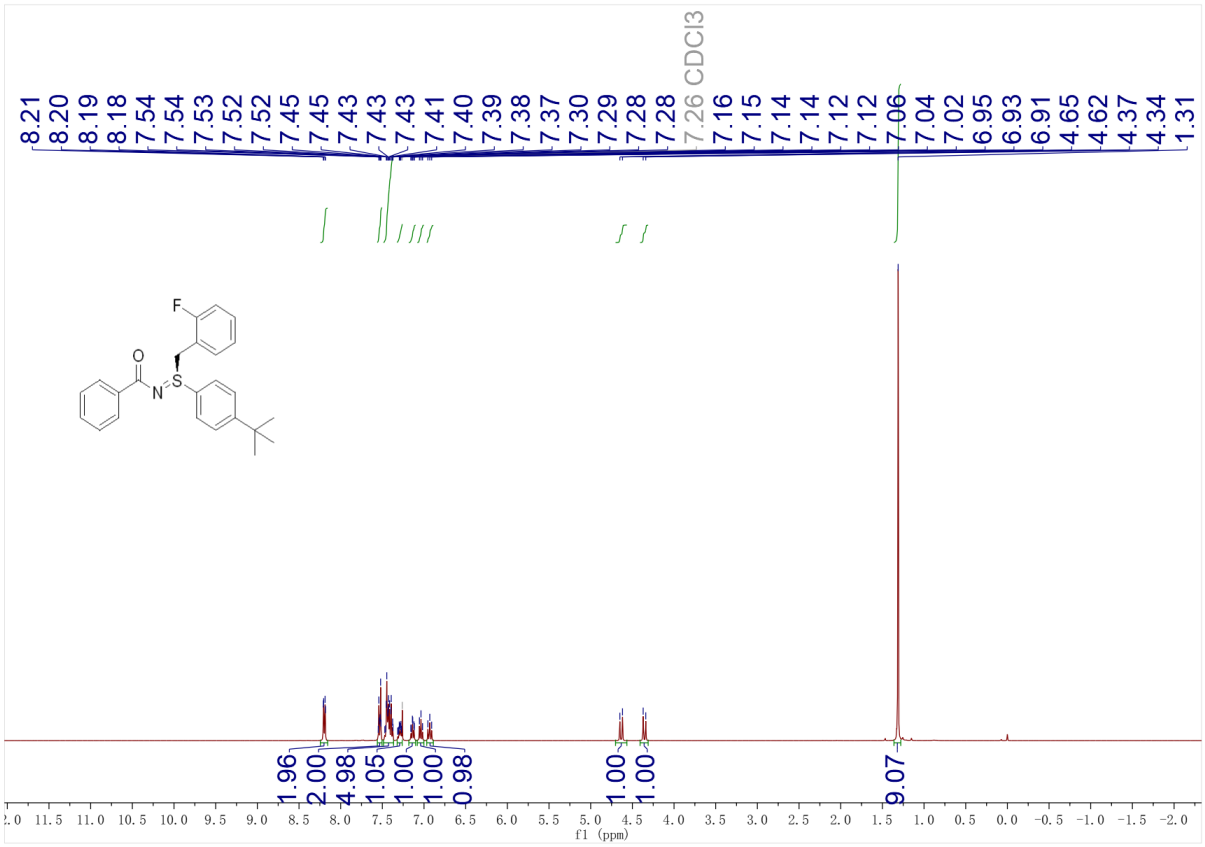


^{13}C NMR (126 MHz, $CDCl_3$)

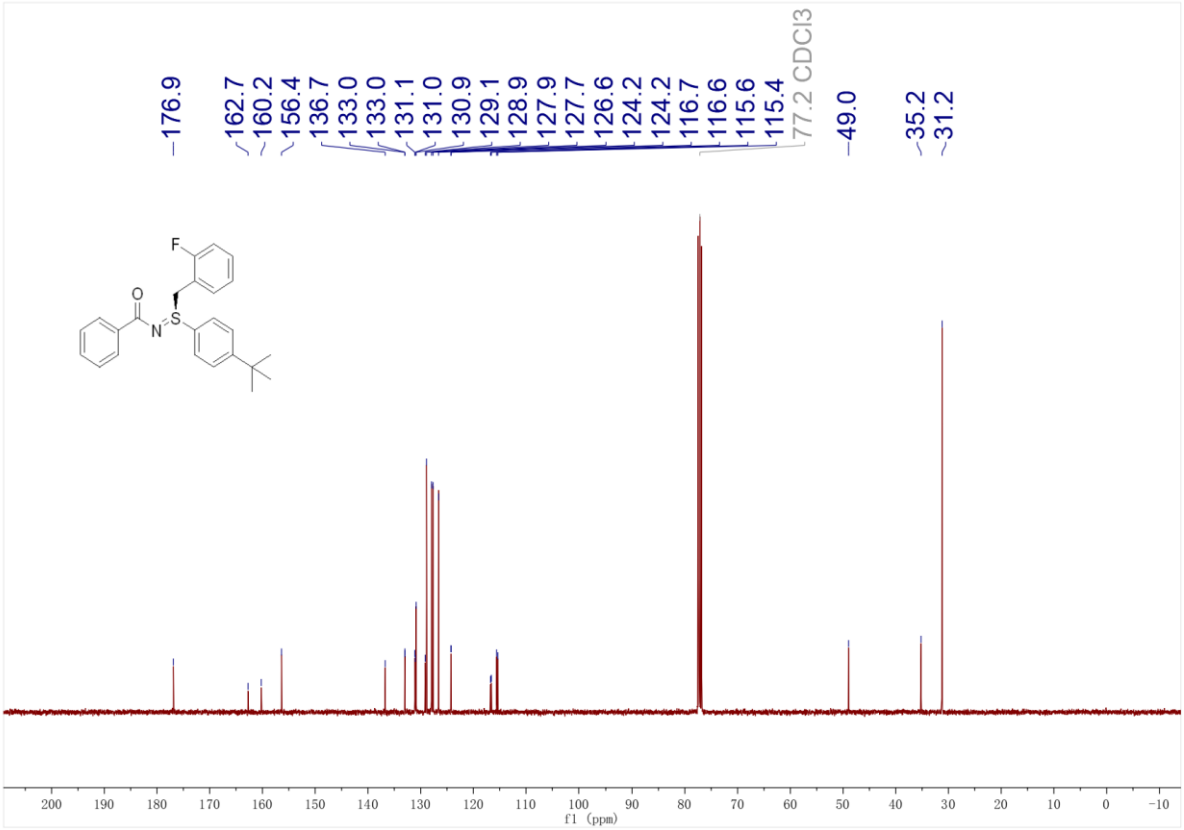


(*S*)-*N*-((4-(*tert*-butyl)phenyl)(2-fluorobenzyl)-λ^4-sulfaneylidene)benzamide (3aw)

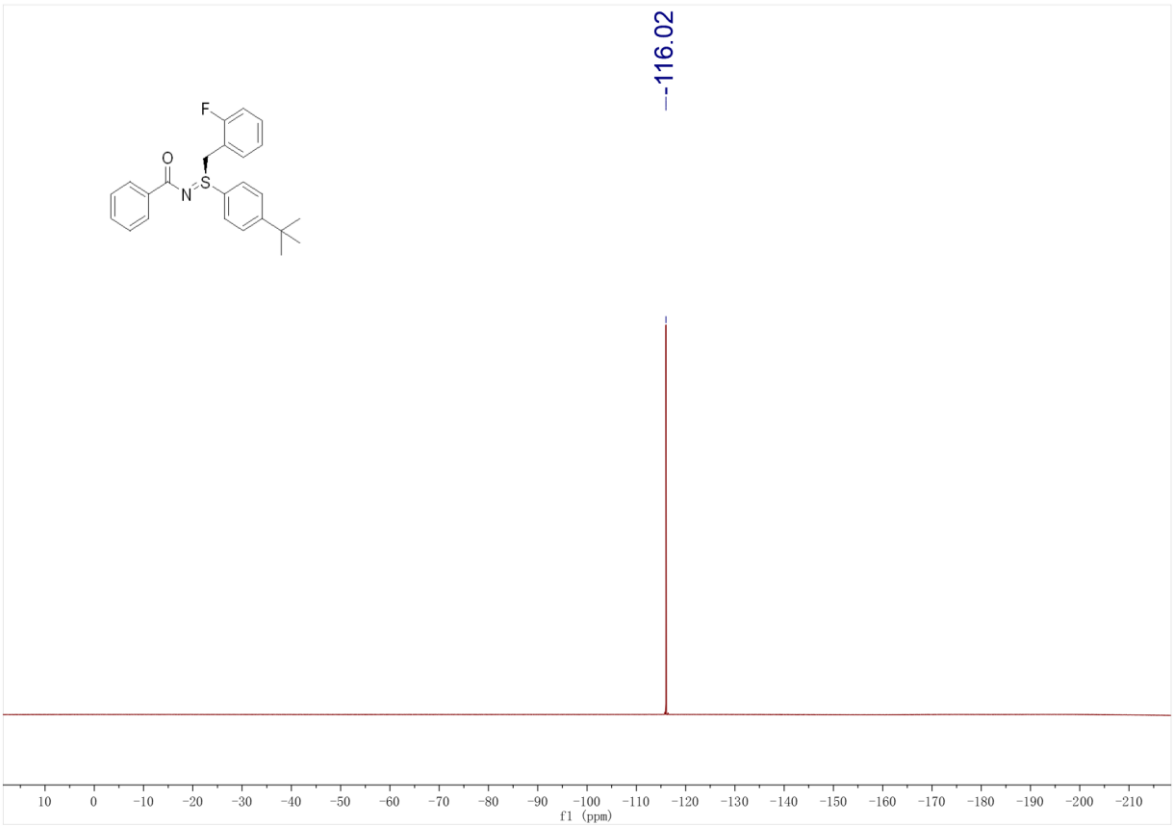
^{1}H NMR (400 MHz, Chloroform-*d*)



^{13}C NMR (101 MHz, Chloroform-*d*)

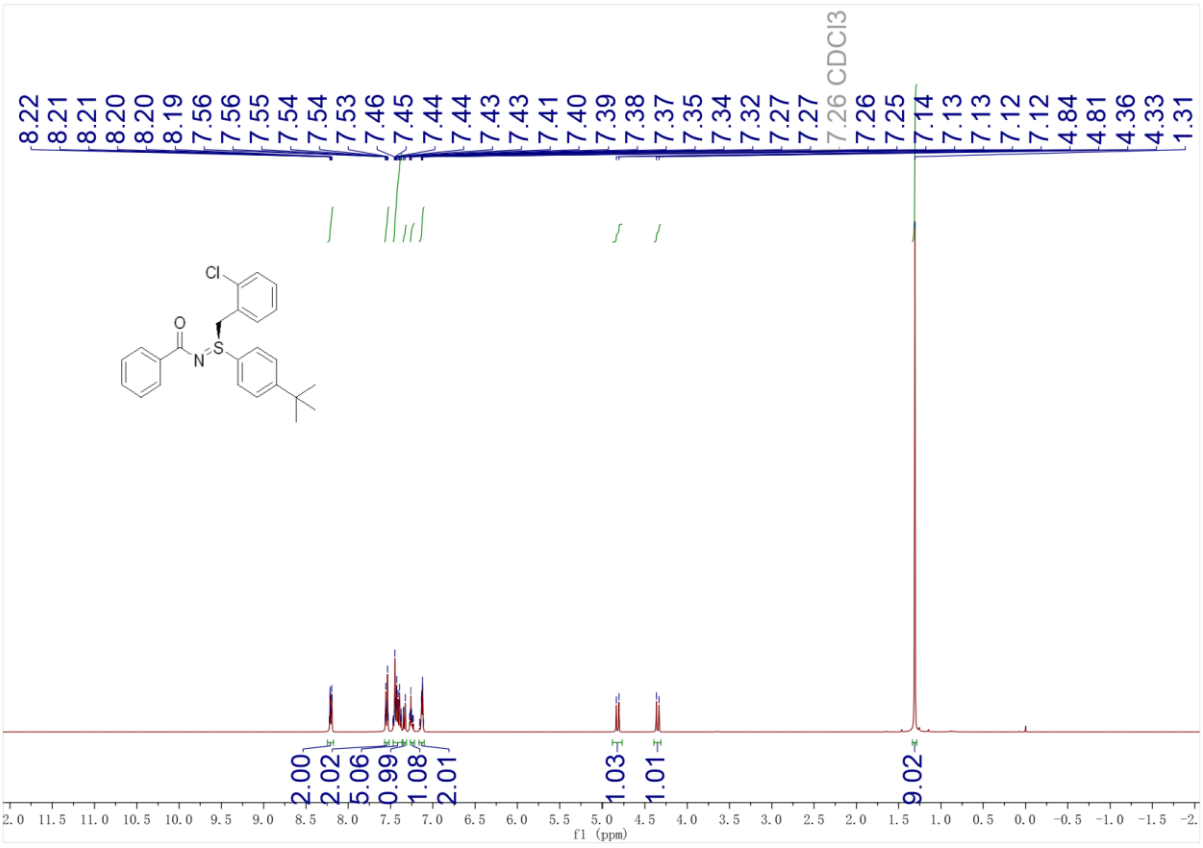


^{19}F NMR (376 MHz, $CDCl_3$)

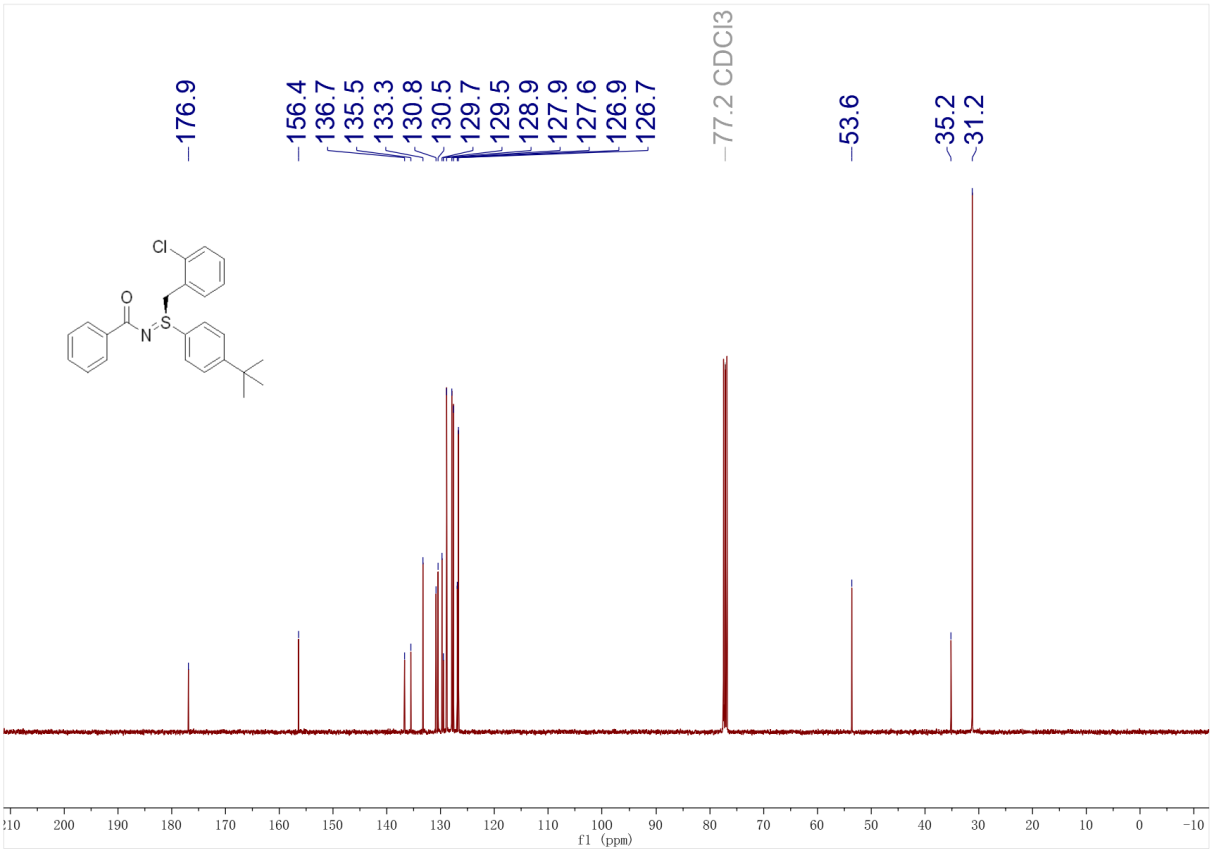


(*S*)-*N*-((4-(*tert*-butyl)phenyl)(2-chlorobenzyl)-λ^4-sulfaneylidene)benzamide (3ax)

^{1}H NMR (400 MHz, Chloroform-*d*)

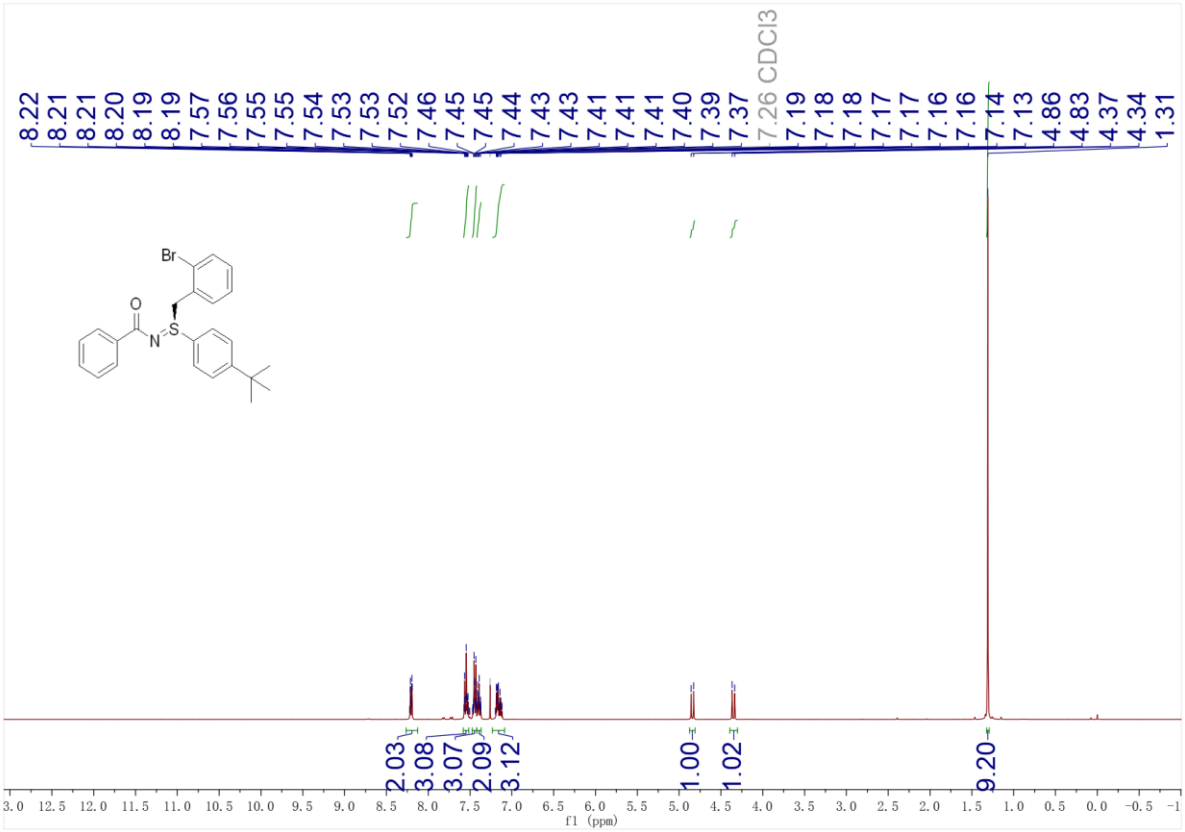


^{13}C NMR (101 MHz, $CDCl_3$)

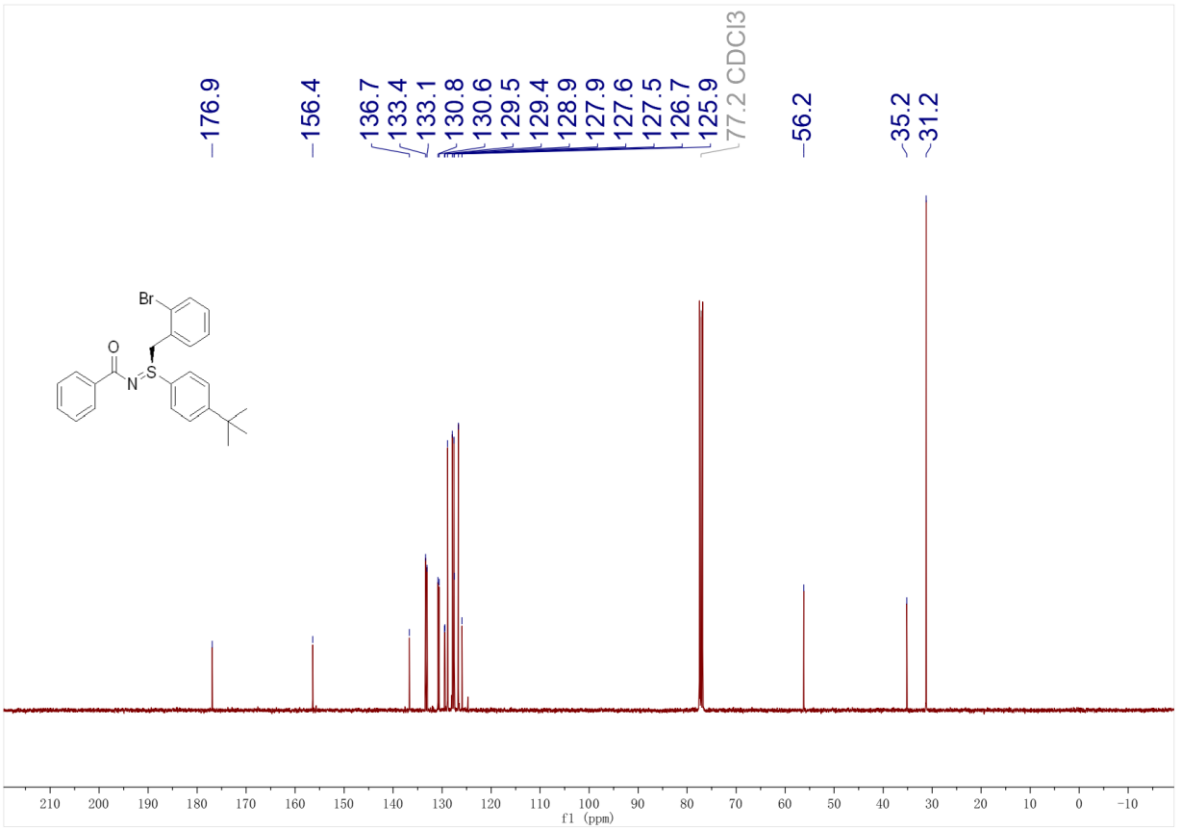


(*S*)-*N*-((2-bromobenzyl)(4-(*tert*-butyl)phenyl)-λ^4-sulfaneylidene)benzamide (3ay)

^{1}H NMR (400 MHz, Chloroform-*d*)

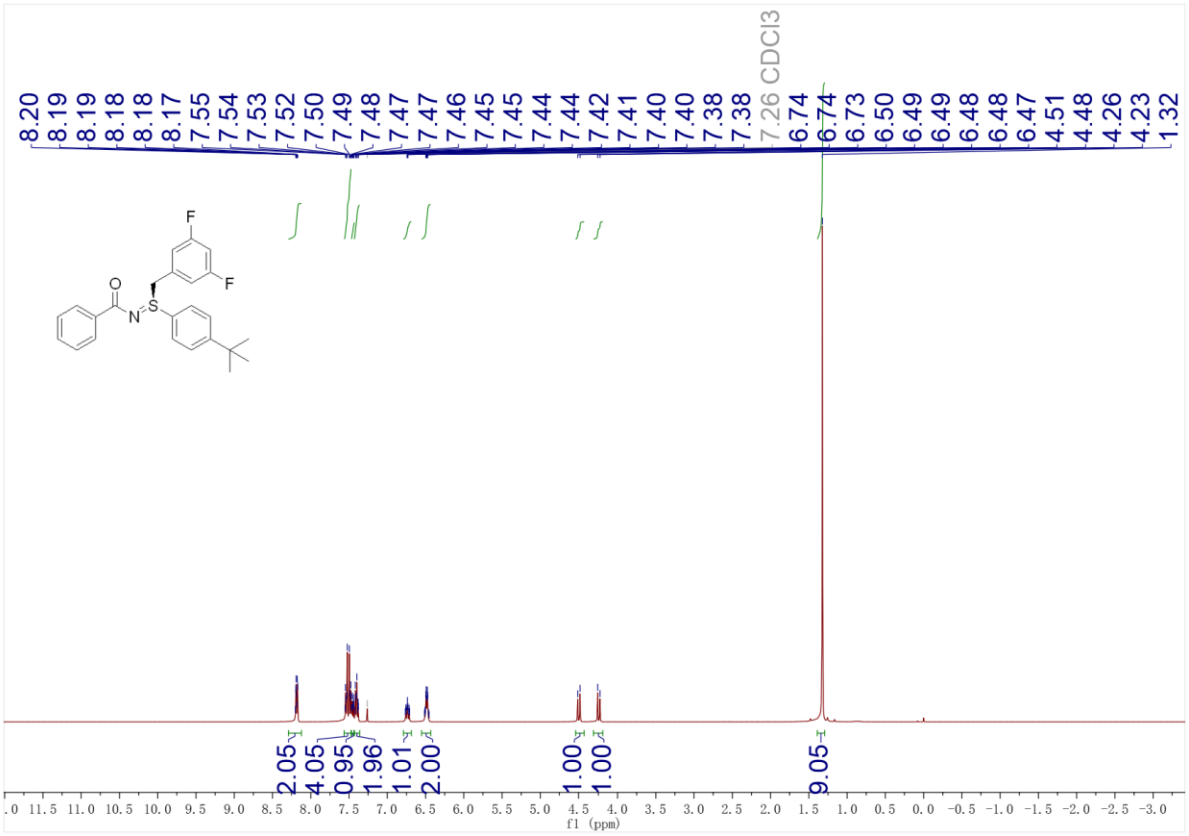


^{13}C NMR (101 MHz, $CDCl_3$)

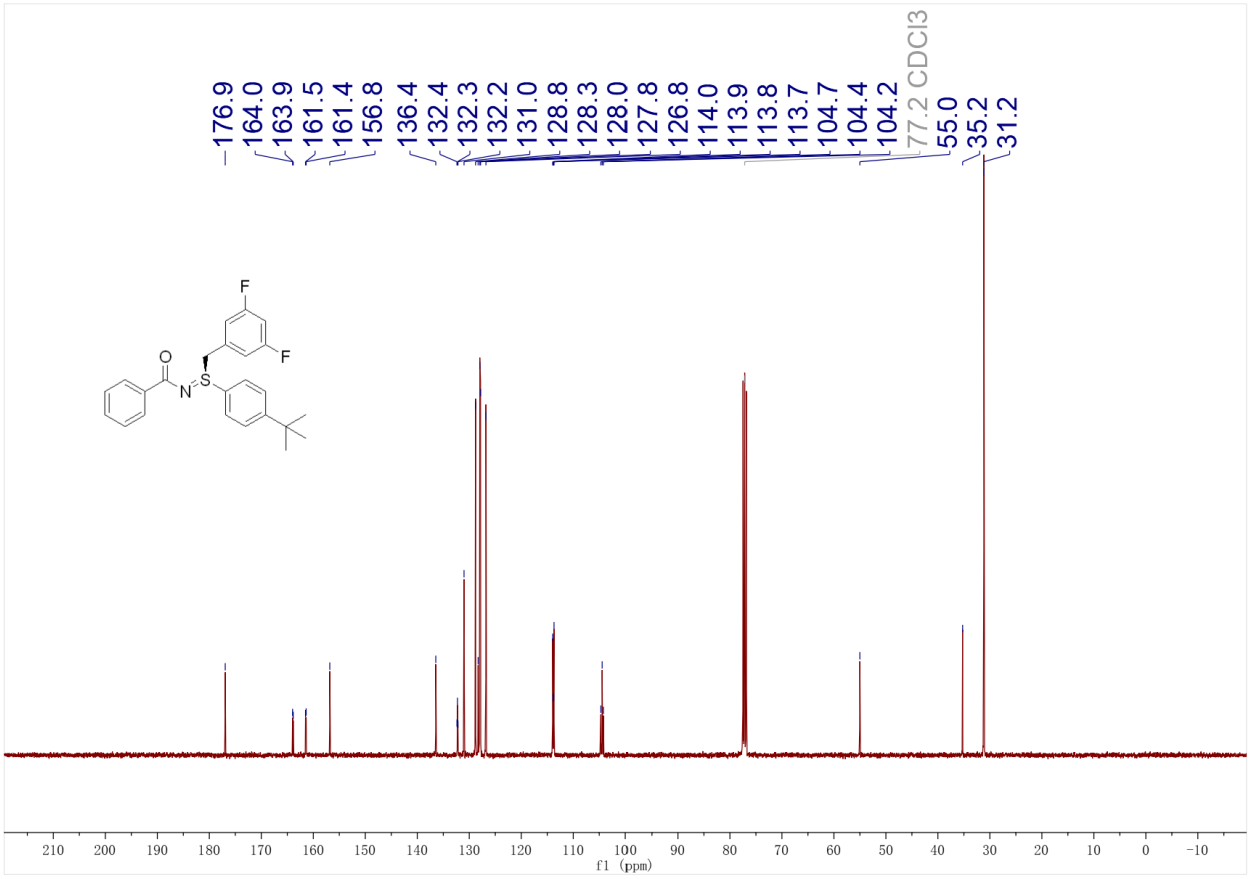


(*S*)-*N*-((4-(*tert*-butyl)phenyl)(3,5-difluorobenzyl)-λ^4-sulfaneylidene)benzamide (3az)

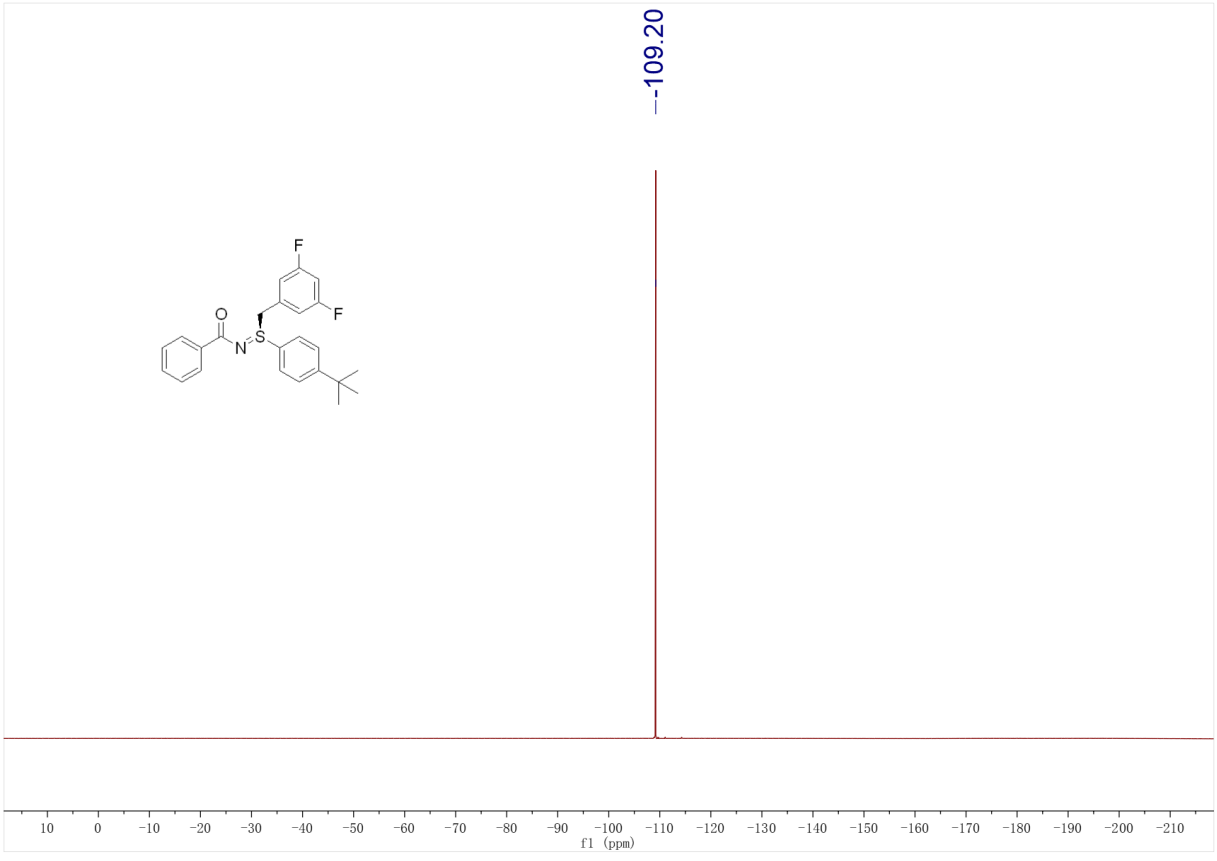
^{1}H NMR (400 MHz, Chloroform-*d*)



^{13}C NMR (101 MHz, Chloroform-*d*)

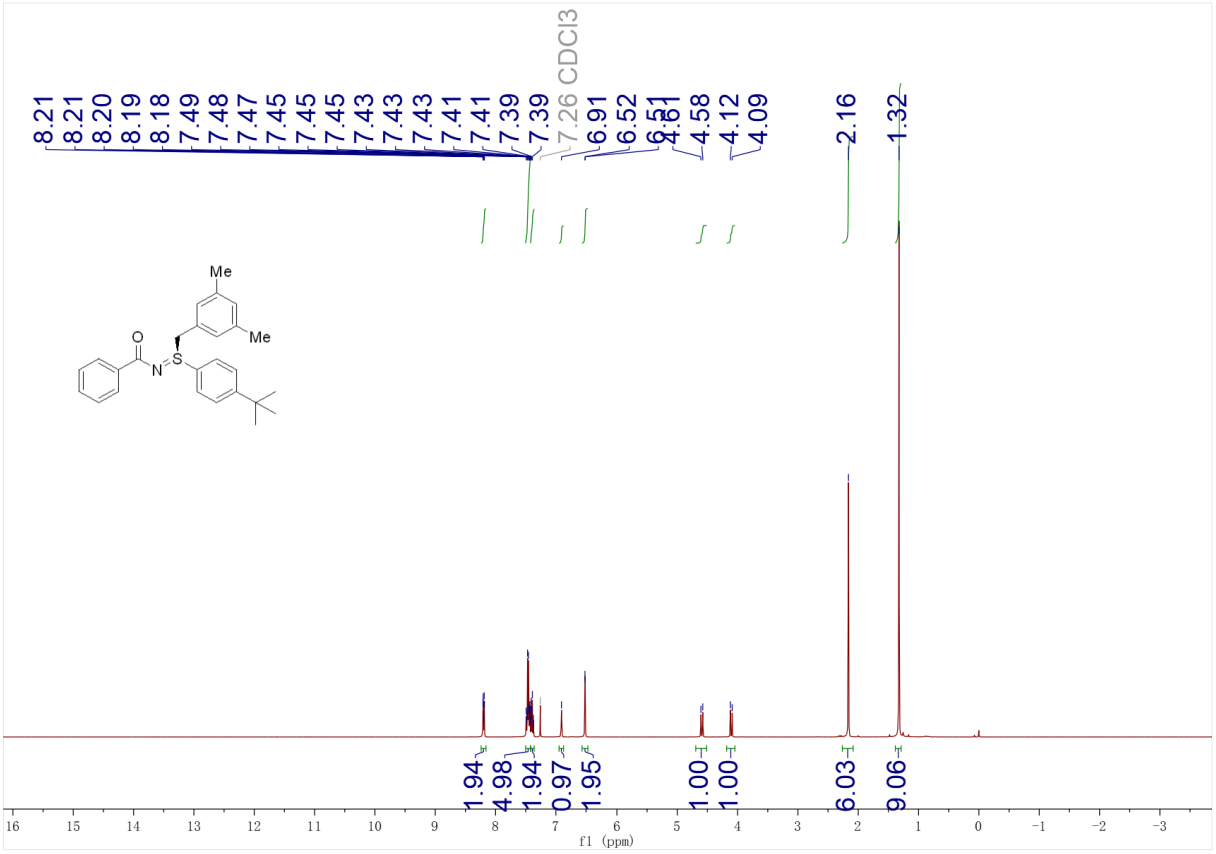


^{19}F NMR (376 MHz, $CDCl_3$)

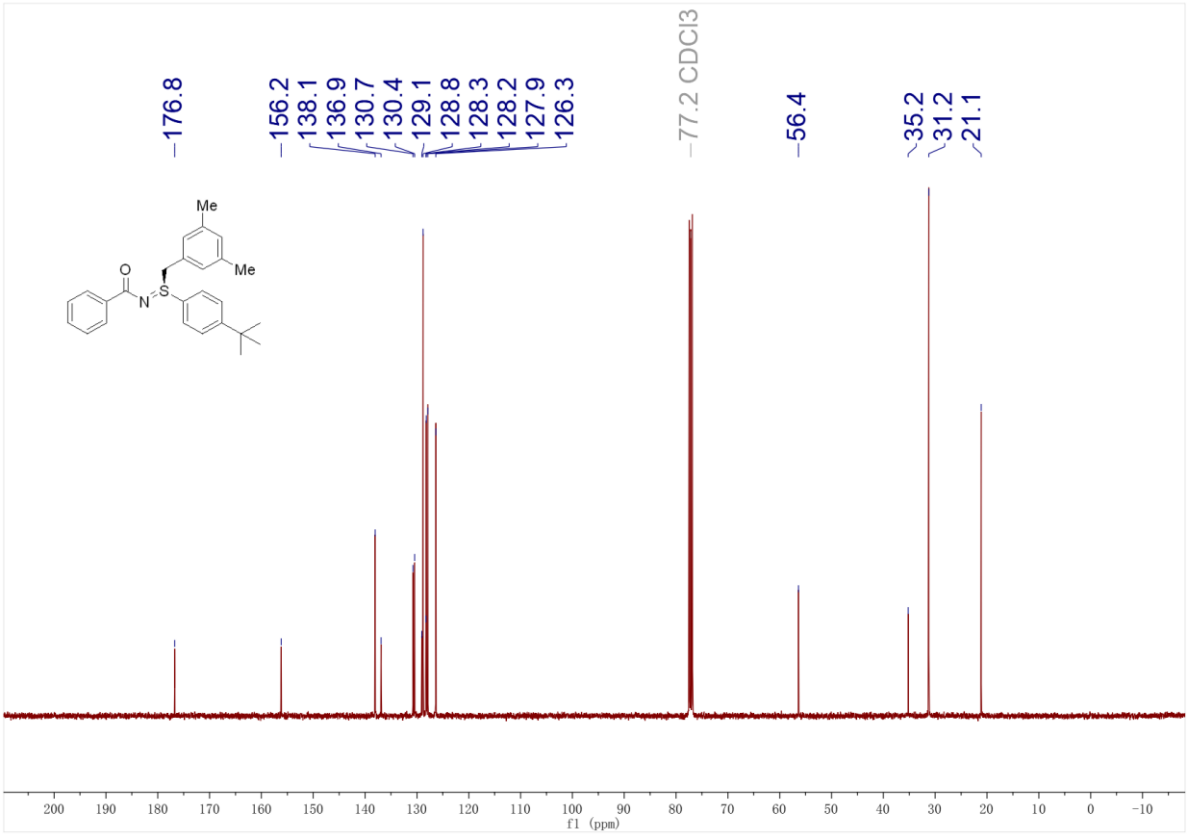


(*S*)-*N*-((4-(*tert*-butyl)phenyl)(3,5-dimethylbenzyl)-λ^4-sulfaneylidene)benzamide (3ba)

^{1}H NMR (400 MHz, Chloroform-*d*)

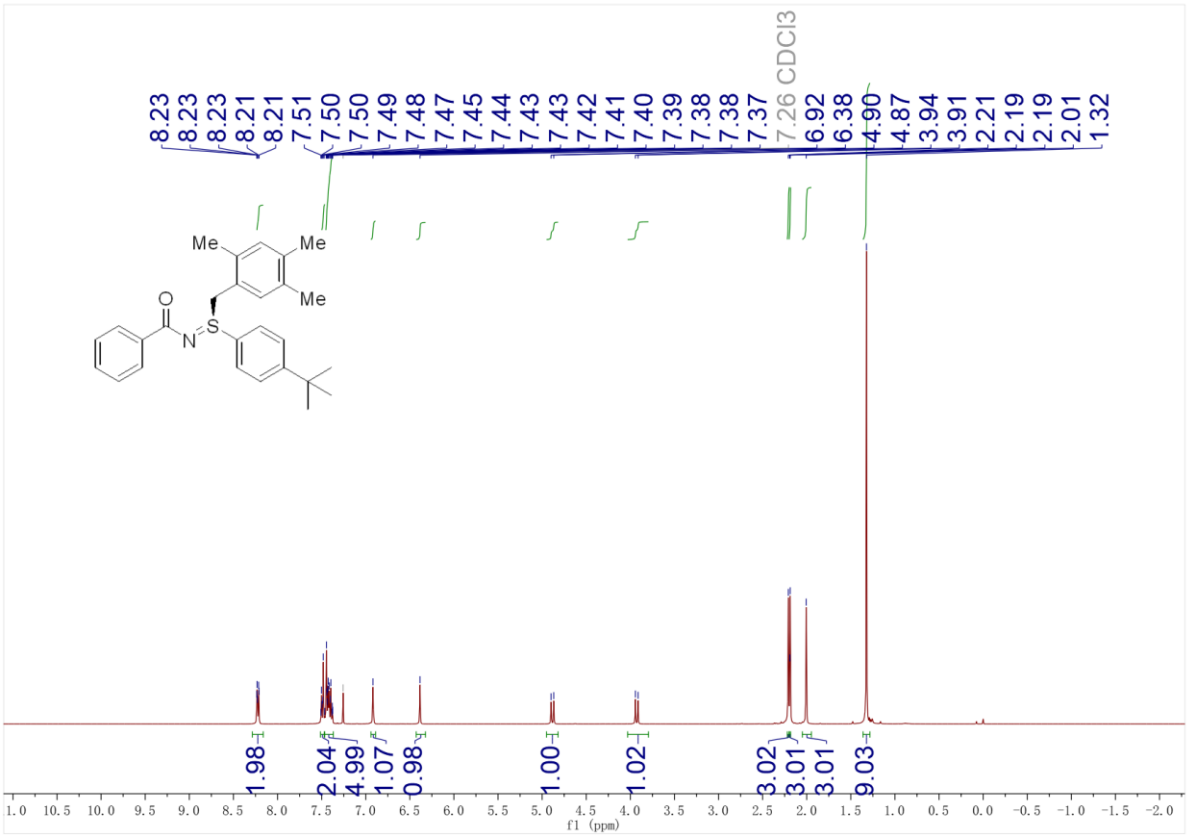


^{13}C NMR (101 MHz, $CDCl_3$)

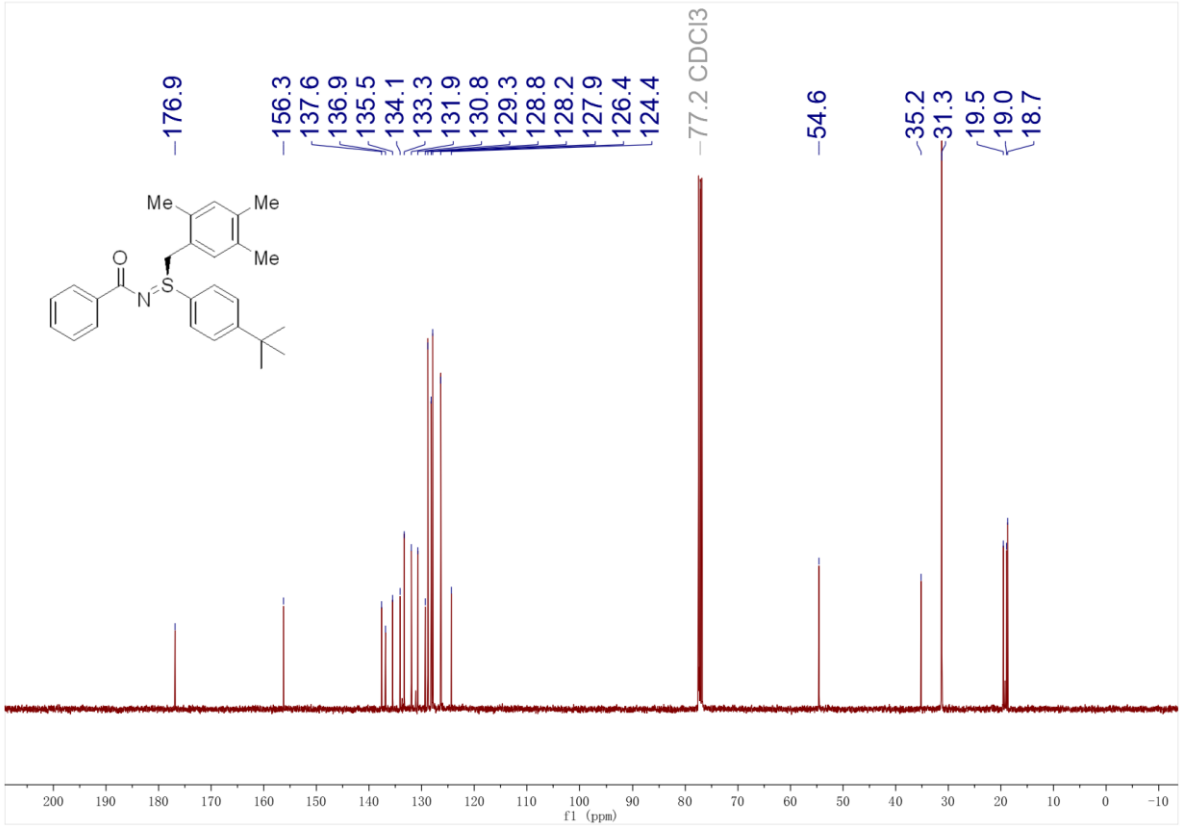


(*S*)-*N*-((4-(*tert*-butyl)phenyl)(2,4,5-trimethylbenzyl)-λ^4-sulfaneylidene)benzamide (3bb)

^{1}H NMR (400 MHz, Chloroform-*d*)

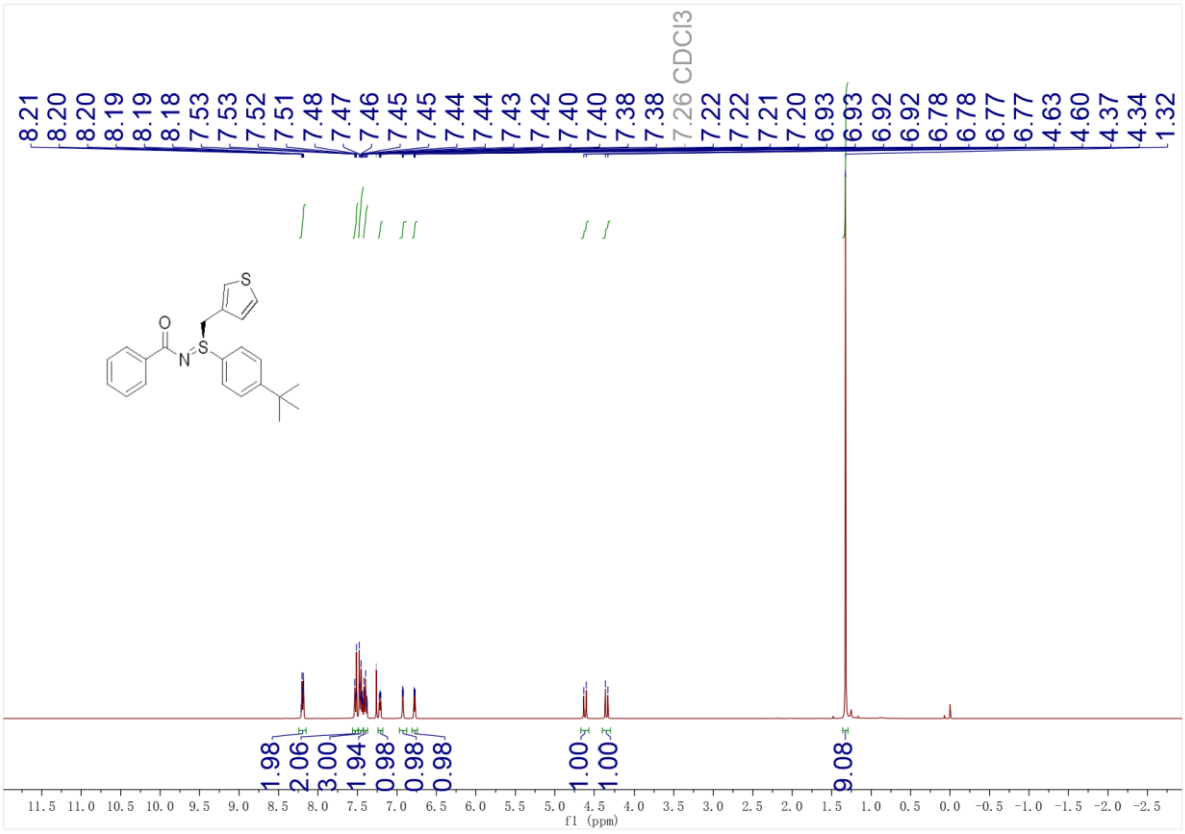


^{13}C NMR (101 MHz, $CDCl_3$)

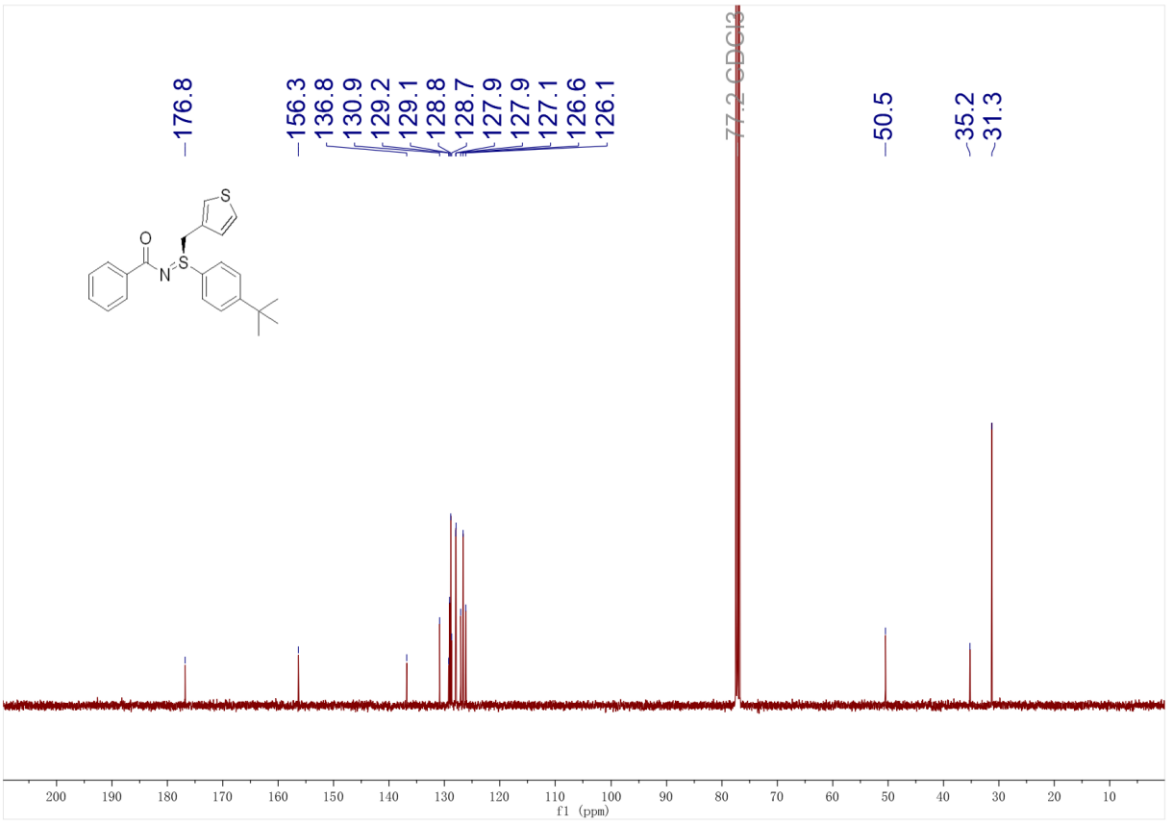


(*S*)-*N*-((4-(*tert*-butyl)phenyl)(thiophen-3-ylmethyl)-λ^4-sulfaneylidene)benzamide (3bc)

^{1}H NMR (400 MHz, Chloroform-*d*)

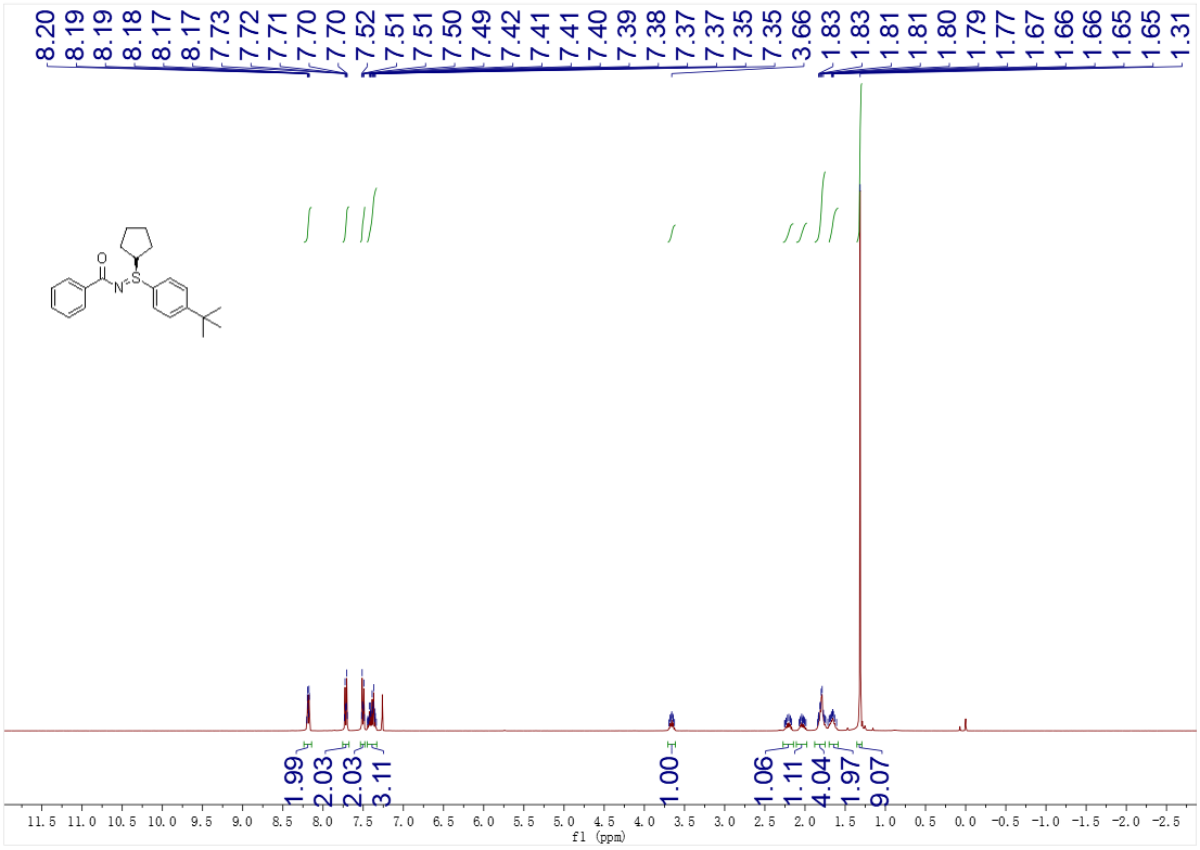


^{13}C NMR (101 MHz, $CDCl_3$)

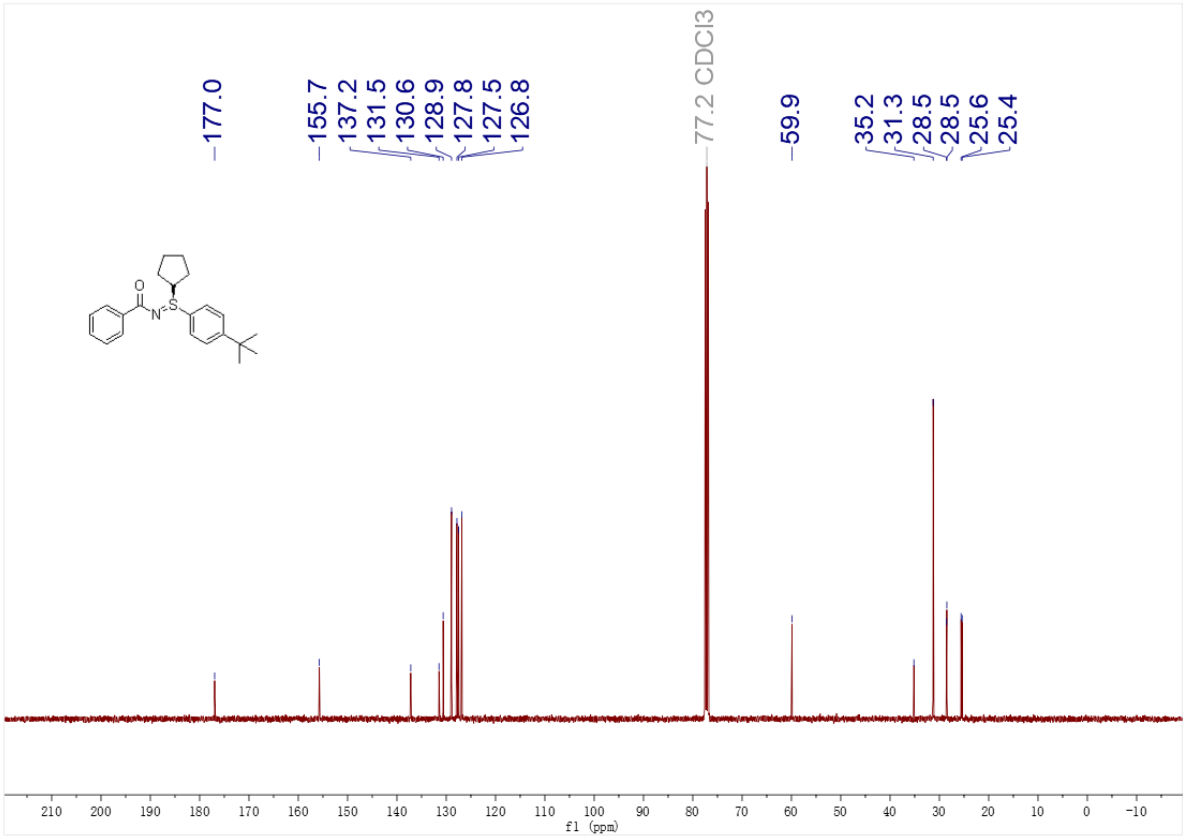


(*S*)-*N*-((4-(*tert*-butyl)phenyl)(cyclopentyl)-λ^4-sulfaneylidene)benzamide (3bd)

^{1}H NMR (400 MHz, Chloroform-*d*)

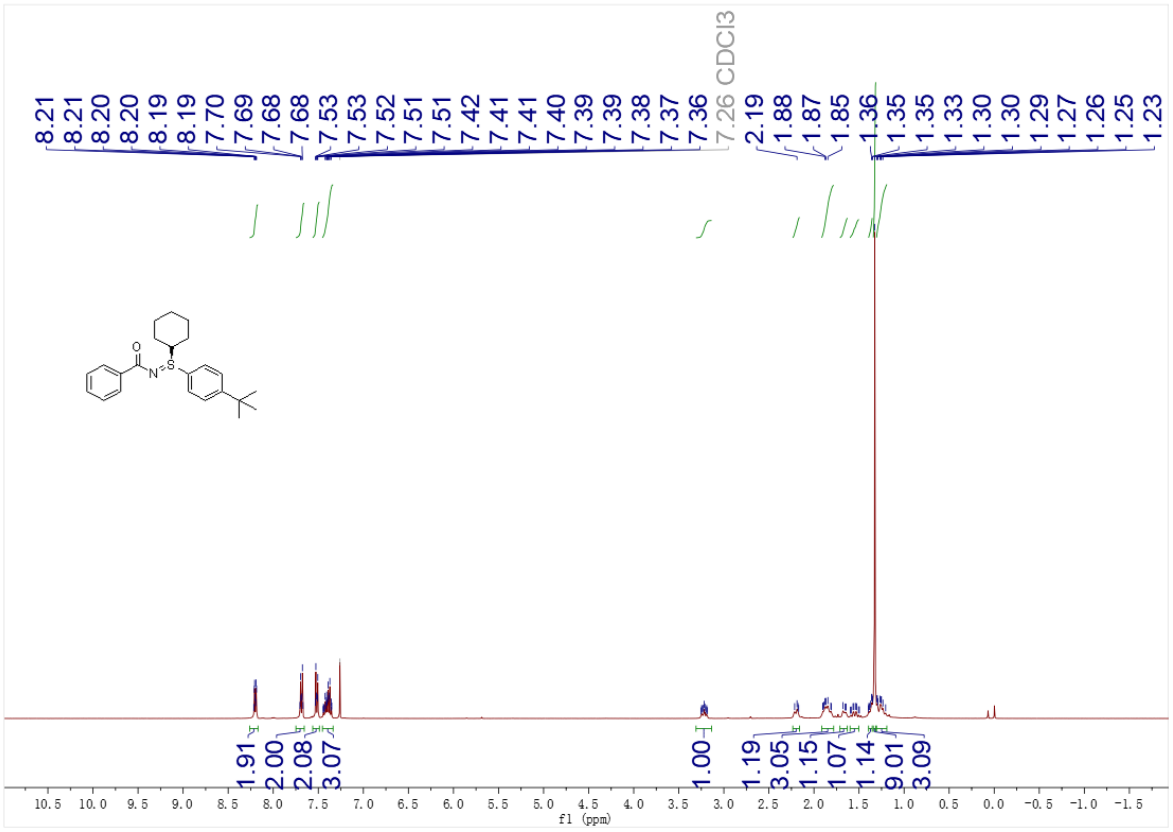


^{13}C NMR (101 MHz, $CDCl_3$)

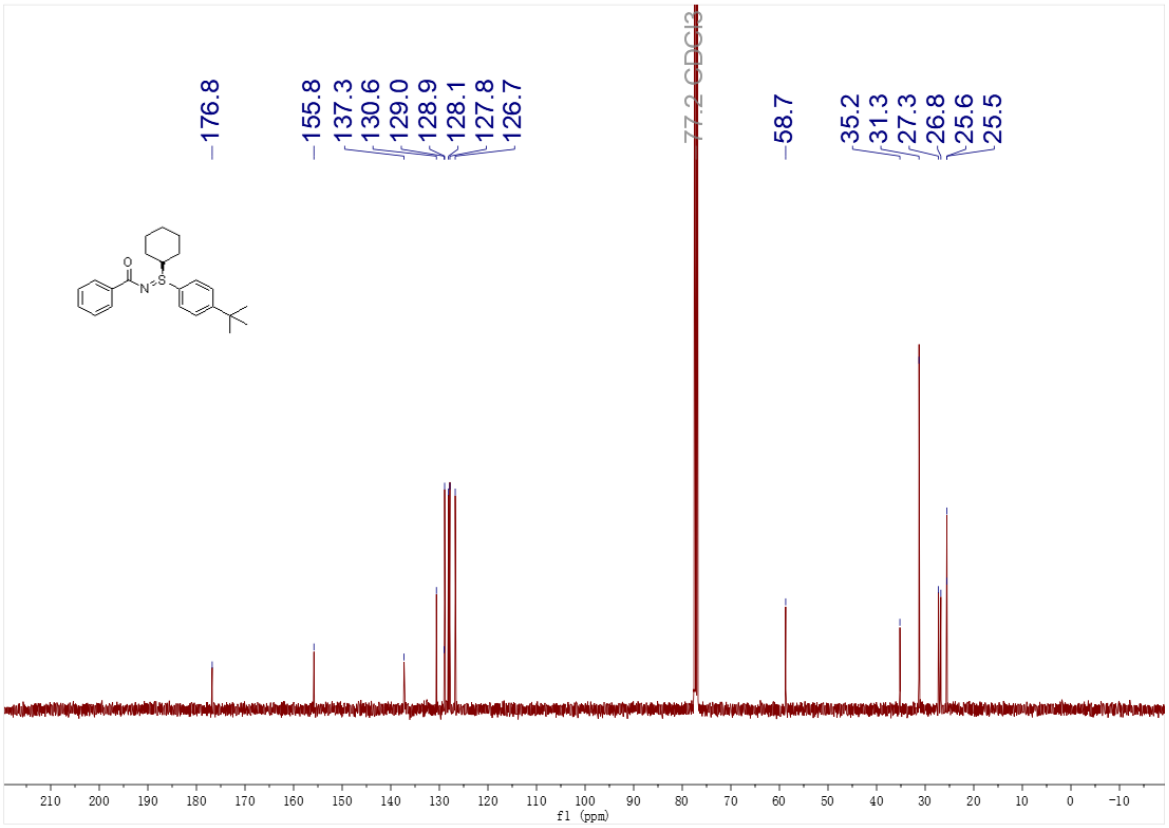


(*S*)-*N*-((4-(*tert*-butyl)phenyl)(cyclohexyl)-λ^4-sulfaneylidene)benzamide (3be)

^{1}H NMR (400 MHz, Chloroform-*d*)

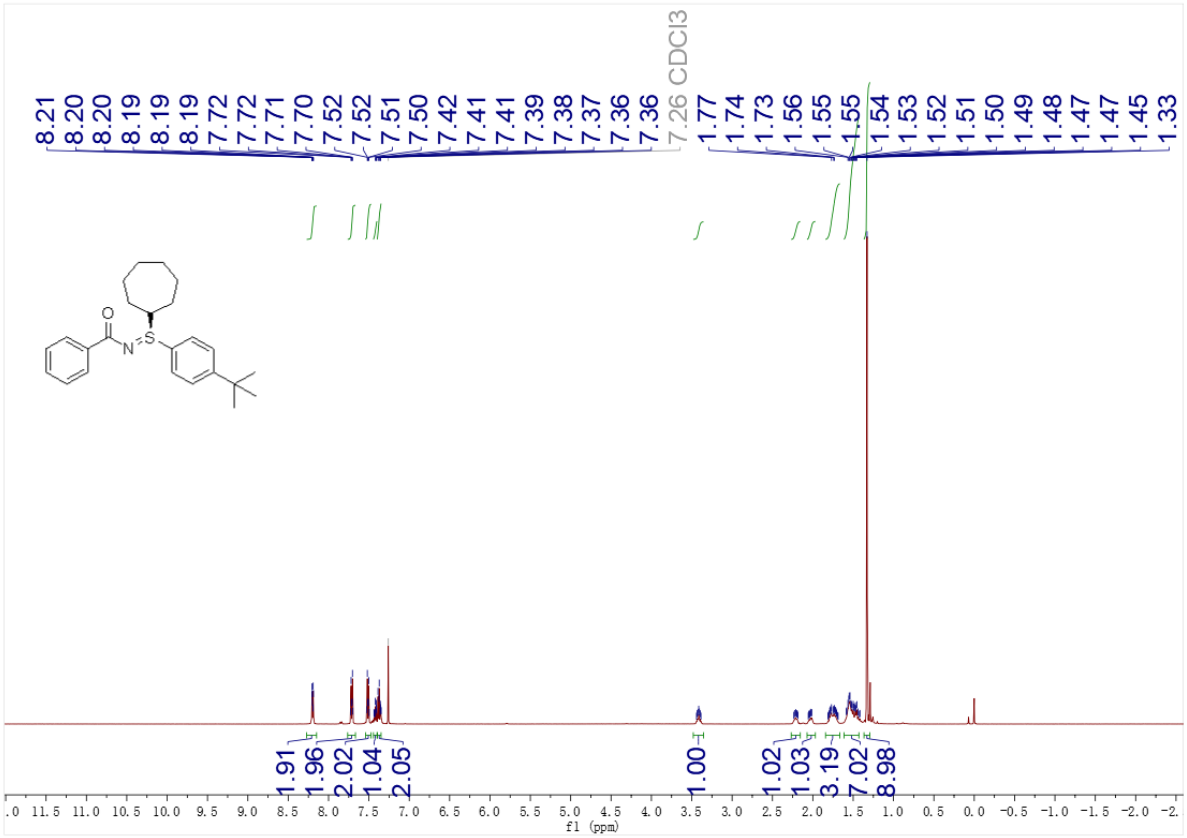


^{13}C NMR (101 MHz, $CDCl_3$)

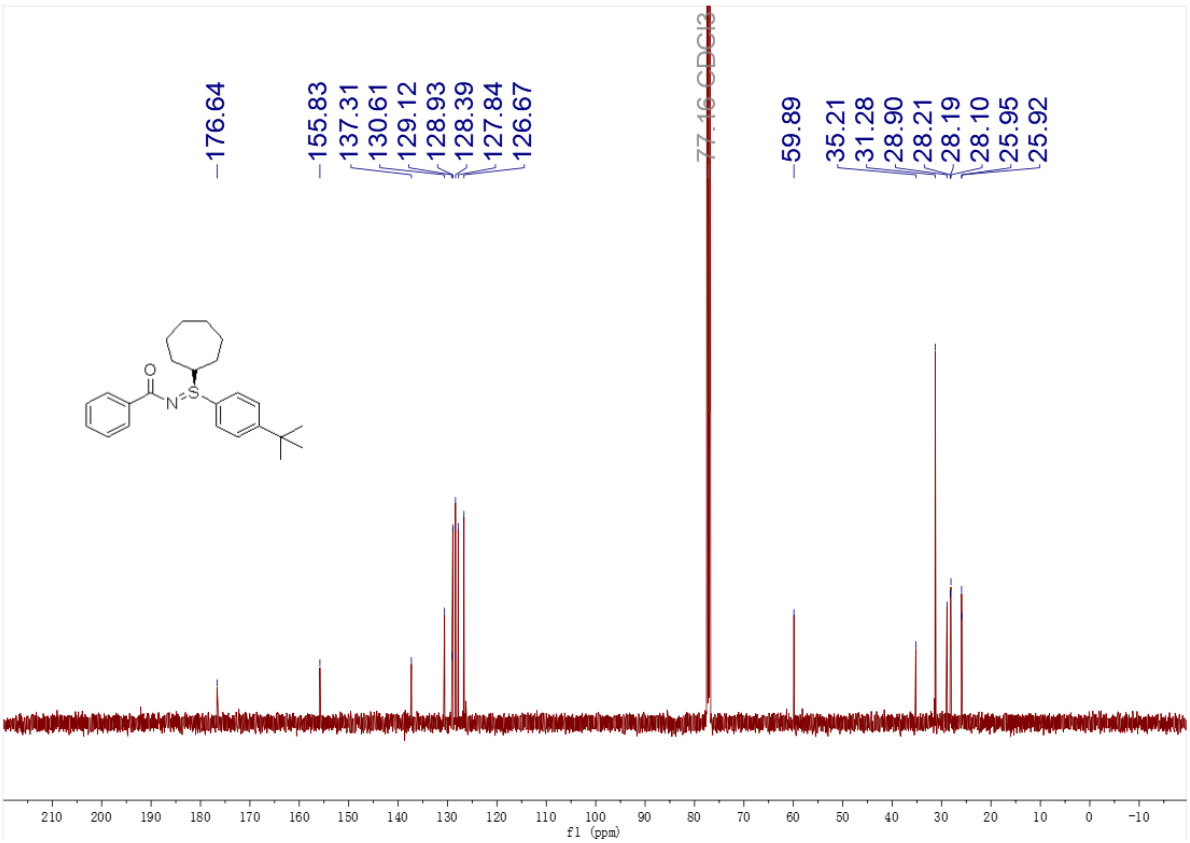


(*S*)-*N*-((4-(*tert*-butyl)phenyl)(cycloheptyl)-λ^4-sulfaneylidene)benzamide (3bf)

^{1}H NMR (500 MHz, Chloroform-*d*)

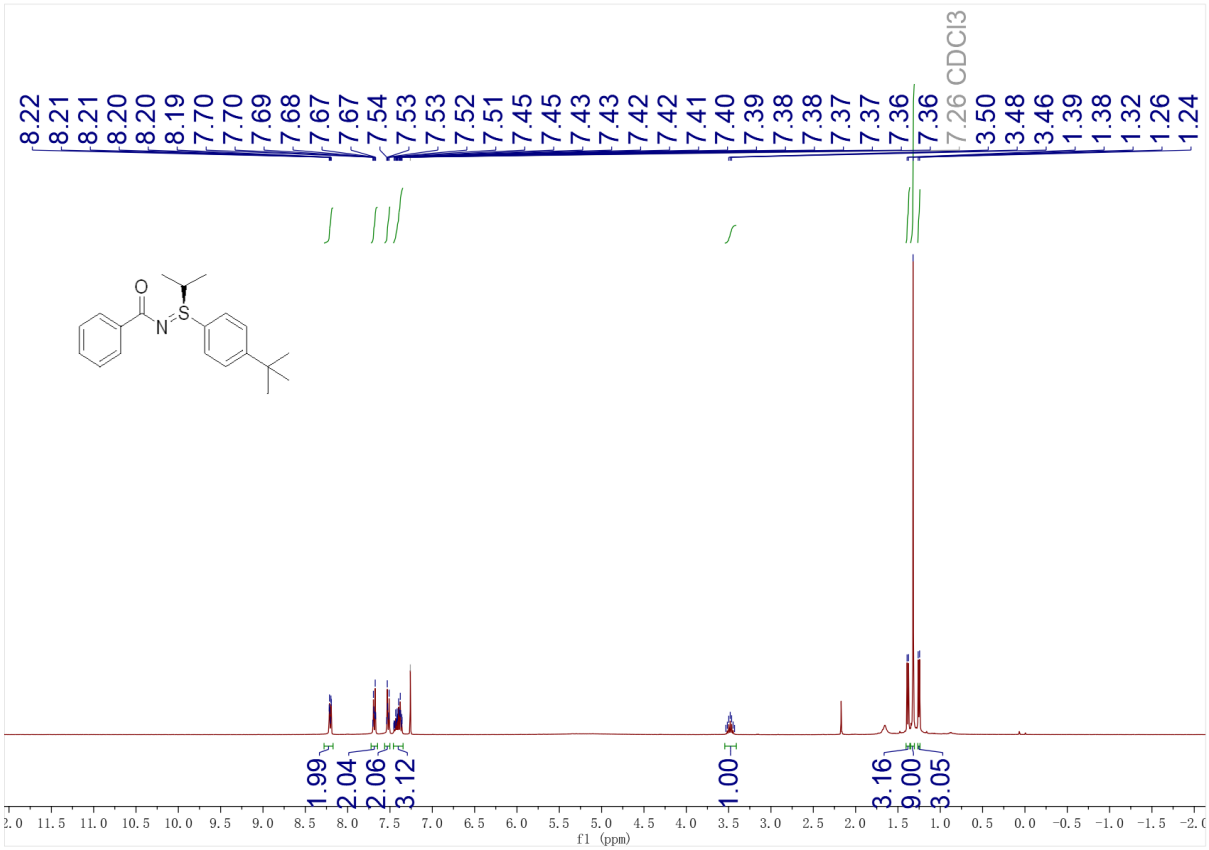


^{13}C NMR (126 MHz, $CDCl_3$)

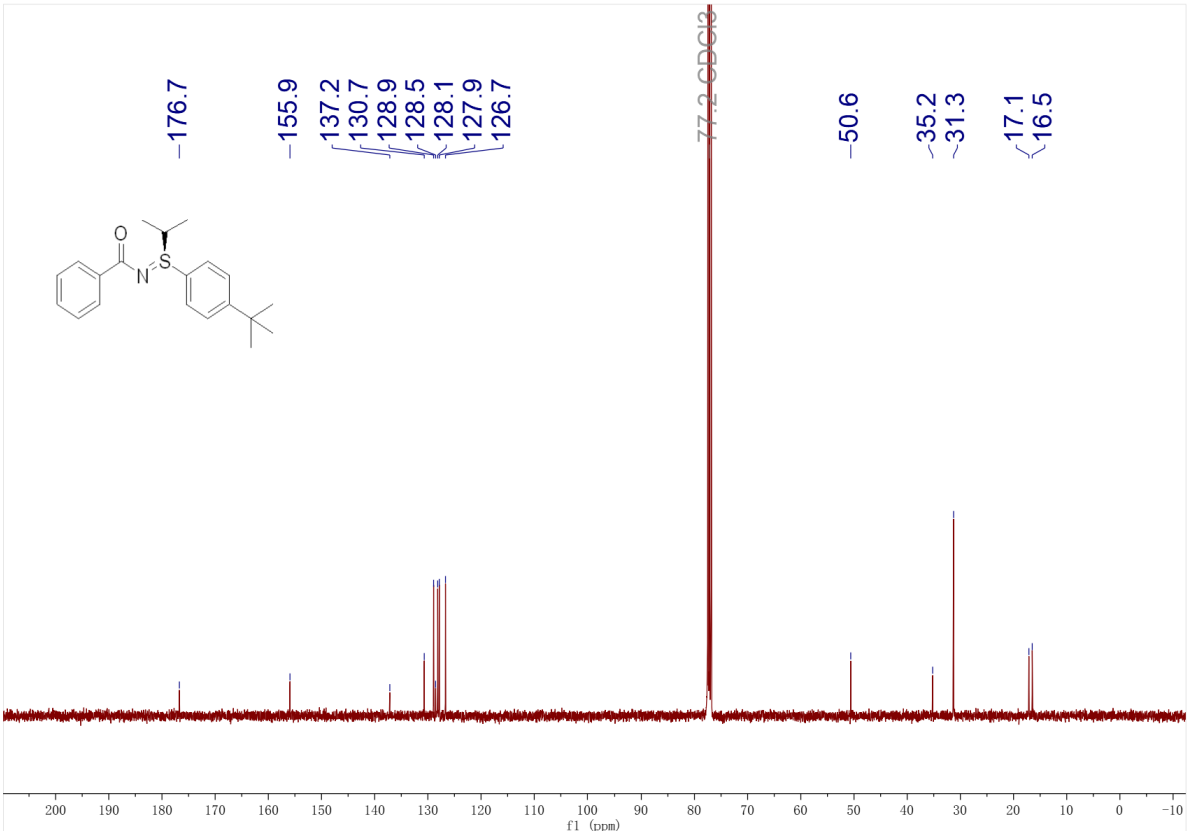


(*S*)-*N*-((4-(*tert*-butyl)phenyl)(isopropyl)-λ^4-sulfaneylidene)benzamide (3bg)

^{1}H NMR (400 MHz, Chloroform-*d*)

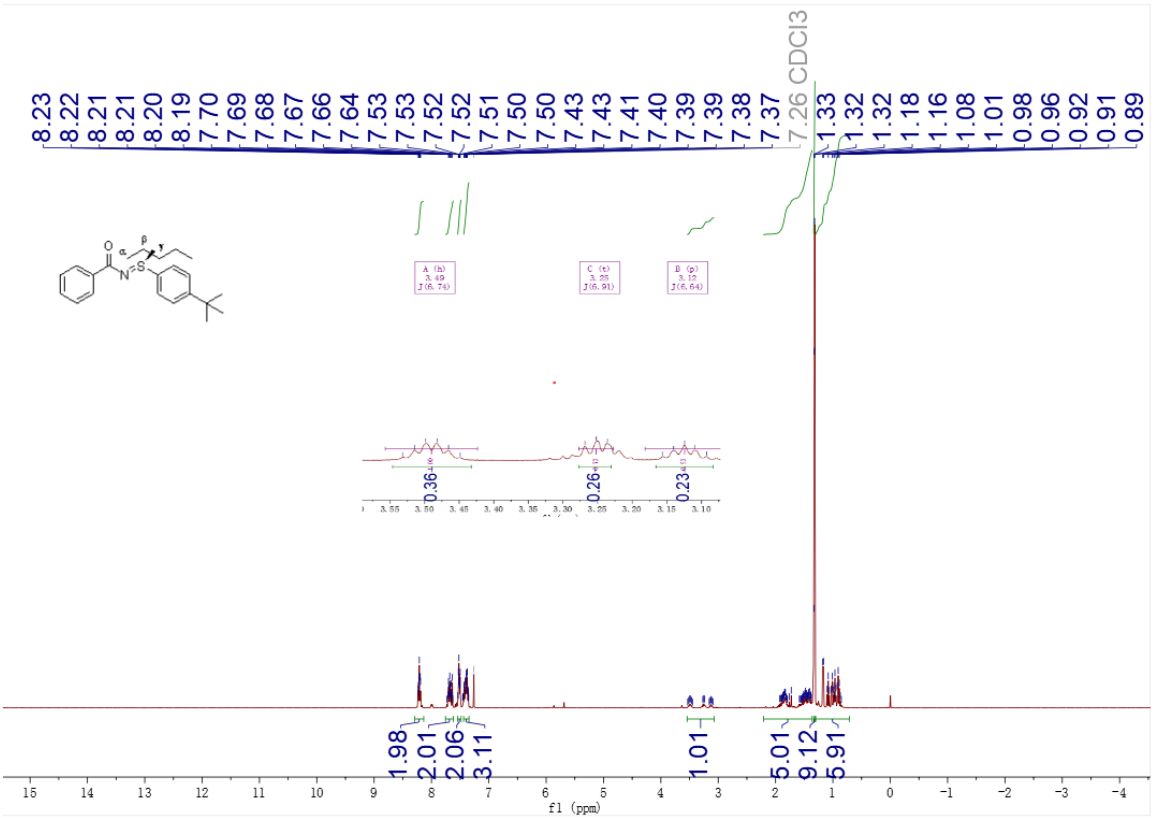


^{13}C NMR (101 MHz, $CDCl_3$)

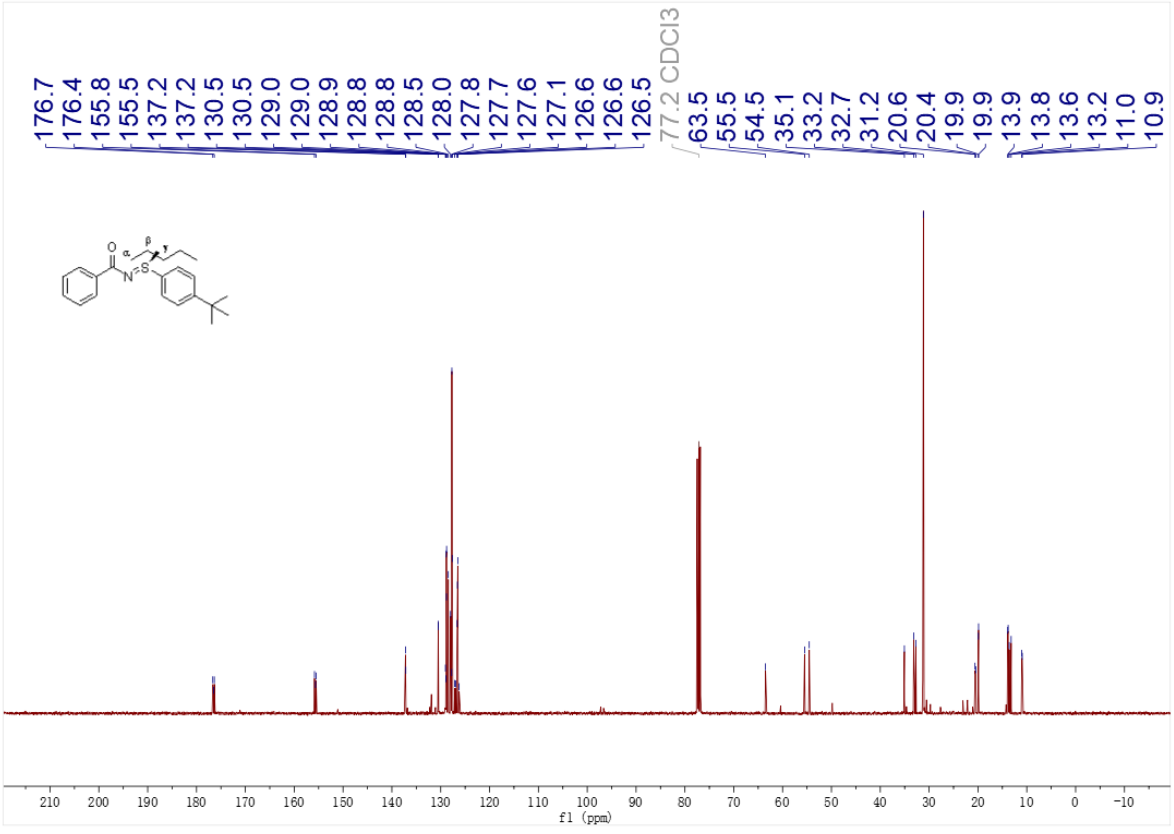


(*S*)-*N*-((4-(*tert*-butyl)phenyl)(pentan-1 or 2 or 3-yl)-λ^4-sulfaneylidene)benzamide (3bh)

^{1}H NMR (400 MHz, Chloroform-*d*)

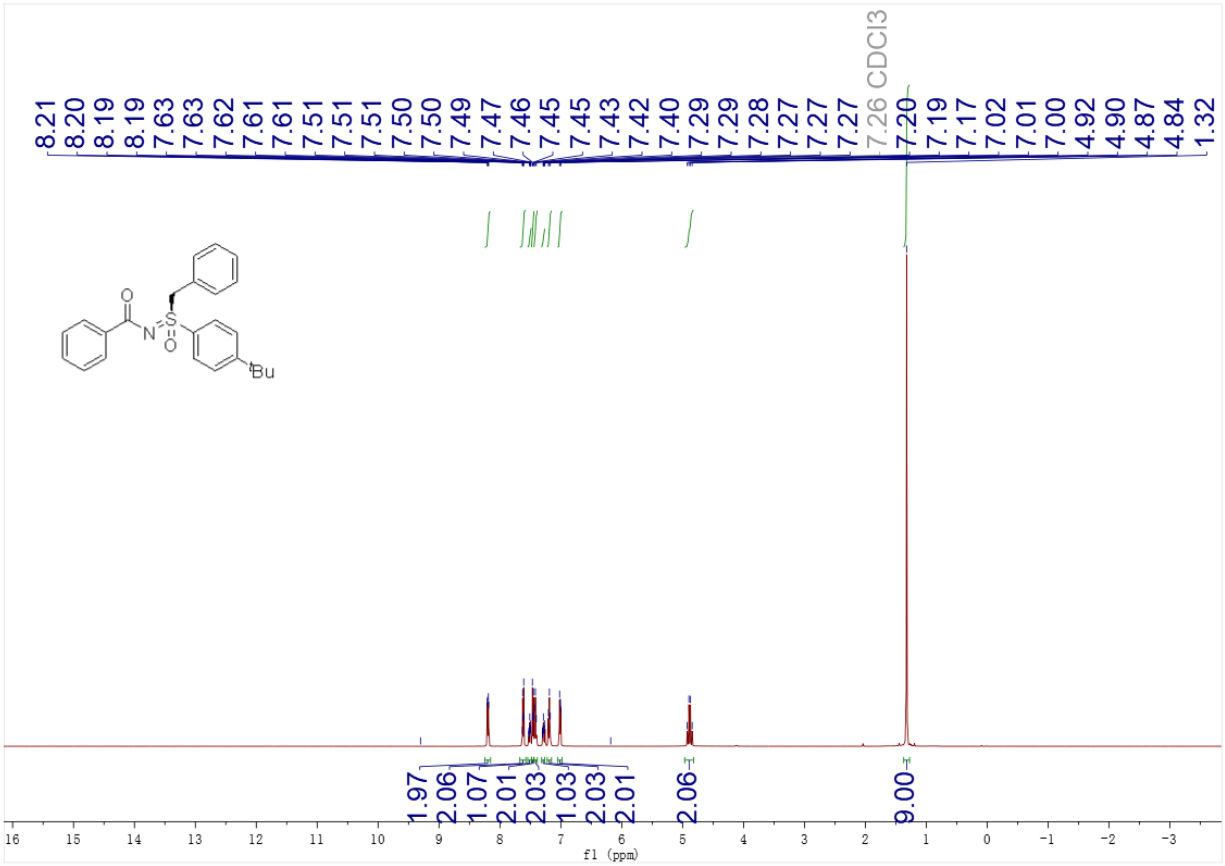


^{13}C NMR (101 MHz, $CDCl_3$)

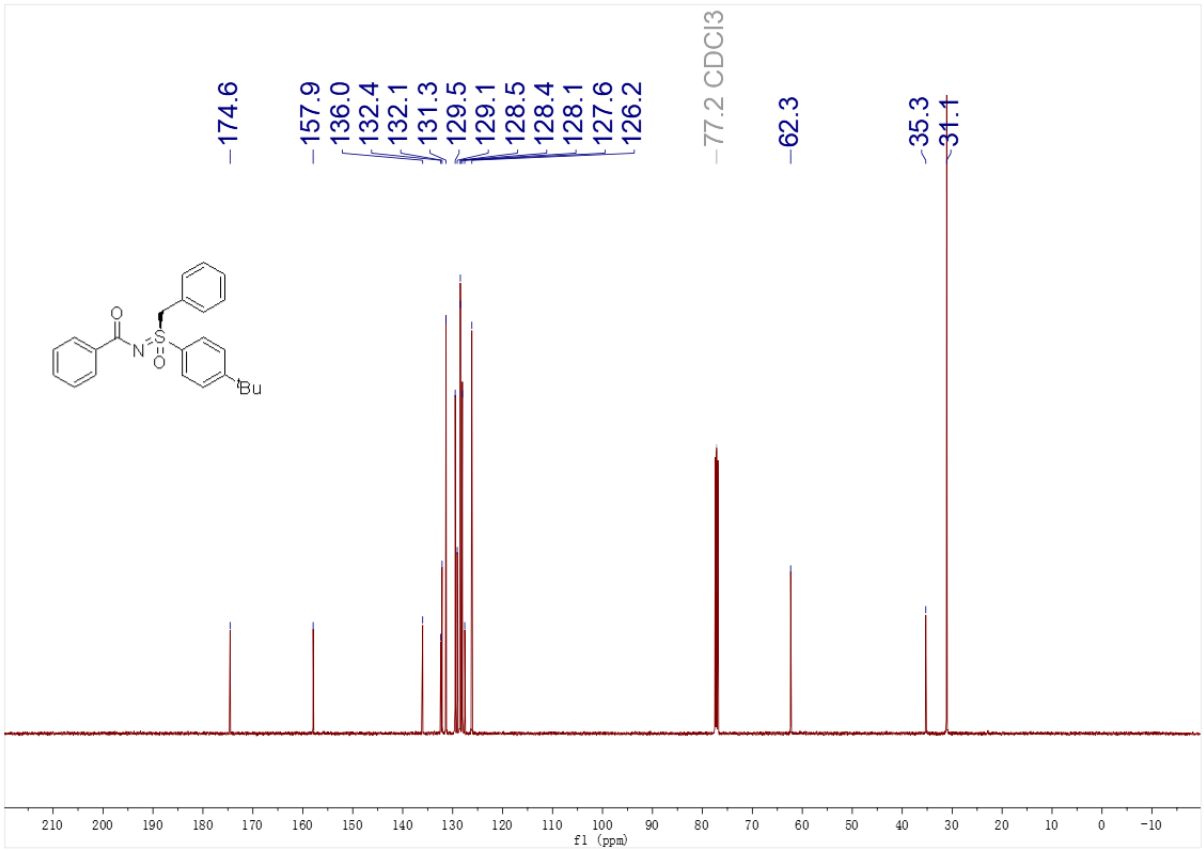


(*R*)-*N*-(benzyl(4-(*tert*-butyl)phenyl)(oxo)-λ^6-sulfaneylidene)benzamide (4)

^{1}H NMR (500 MHz, Chloroform-*d*)

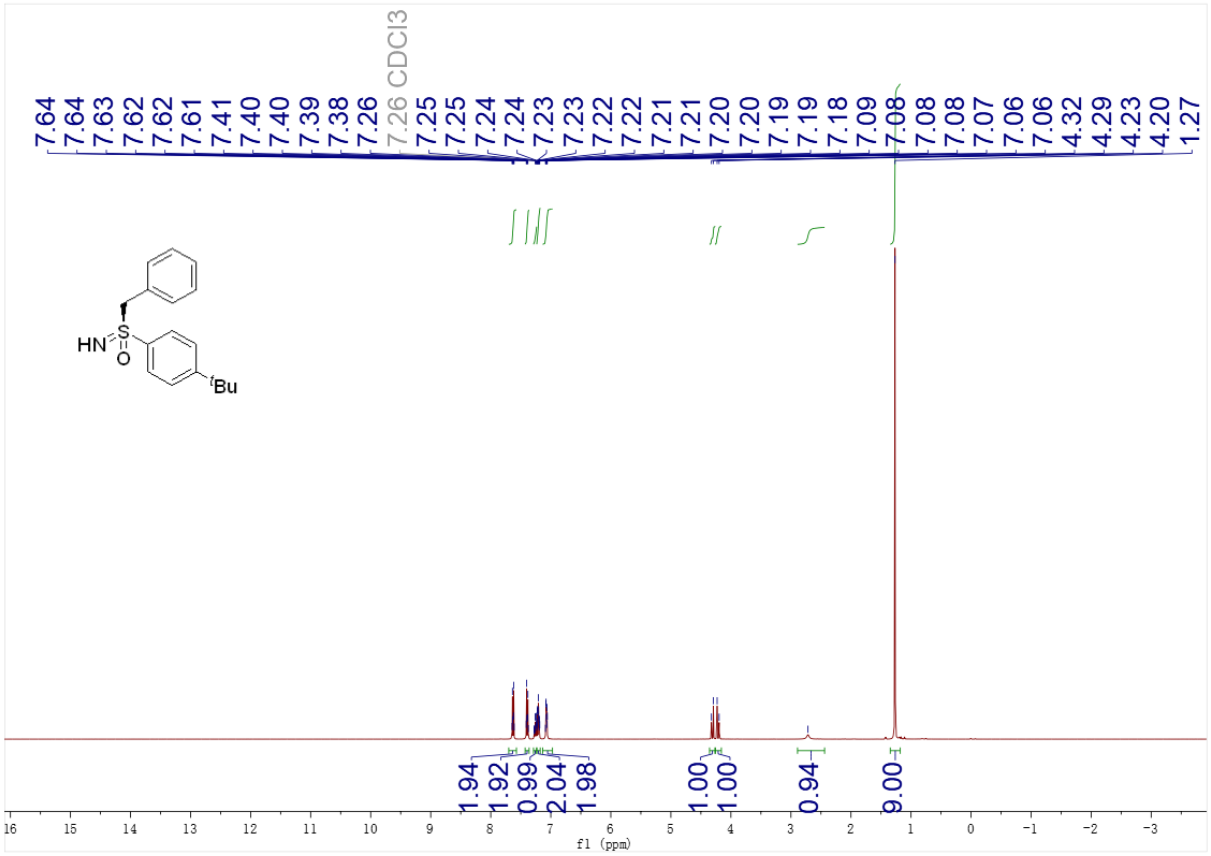


^{13}C NMR (126 MHz, $CDCl_3$)

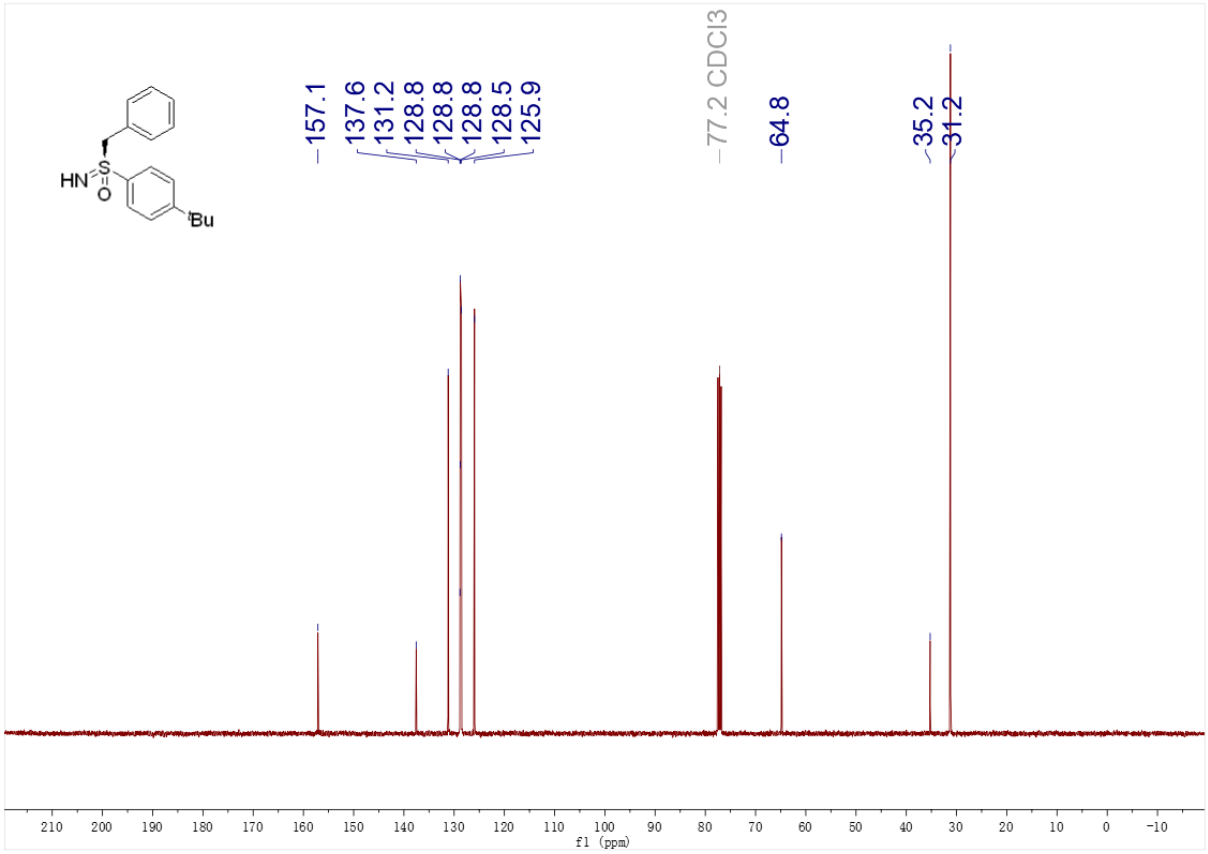


(*R*)-benzyl(4-(*tert*-butyl)phenyl)(imino)-λ^6-sulfanone (5)

^{1}H NMR (400 MHz, Chloroform-*d*)

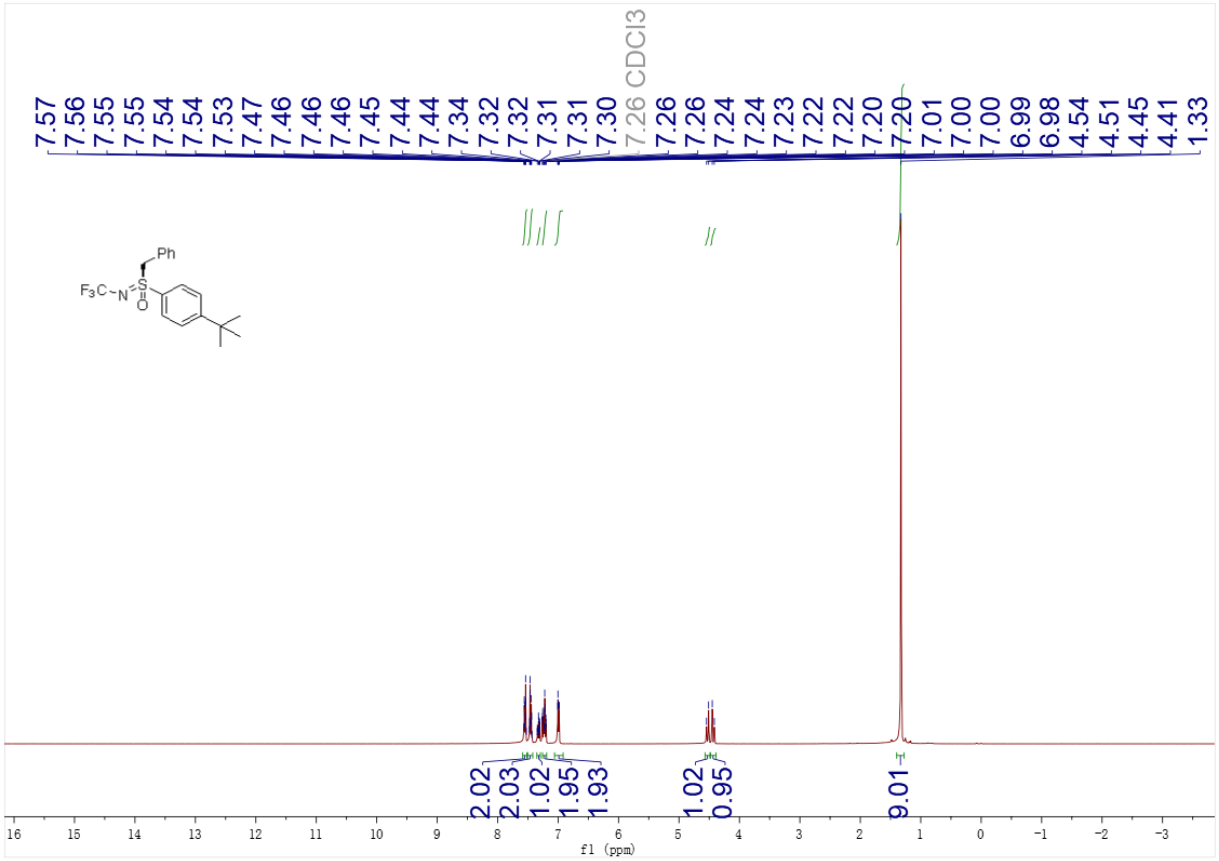


^{13}C NMR (101 MHz, $CDCl_3$)

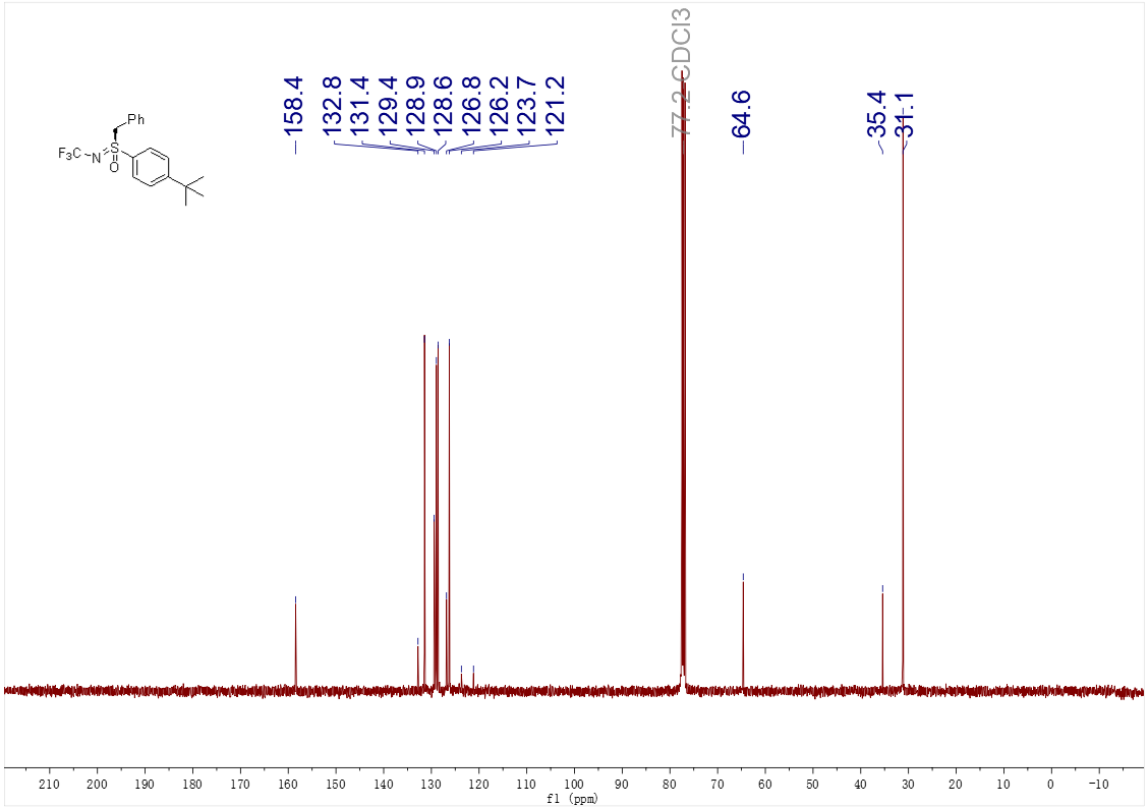


(*R*)-benzyl(4-(*tert*-butyl)phenyl)((trifluoromethyl)imino)-λ^6-sulfanone (6)

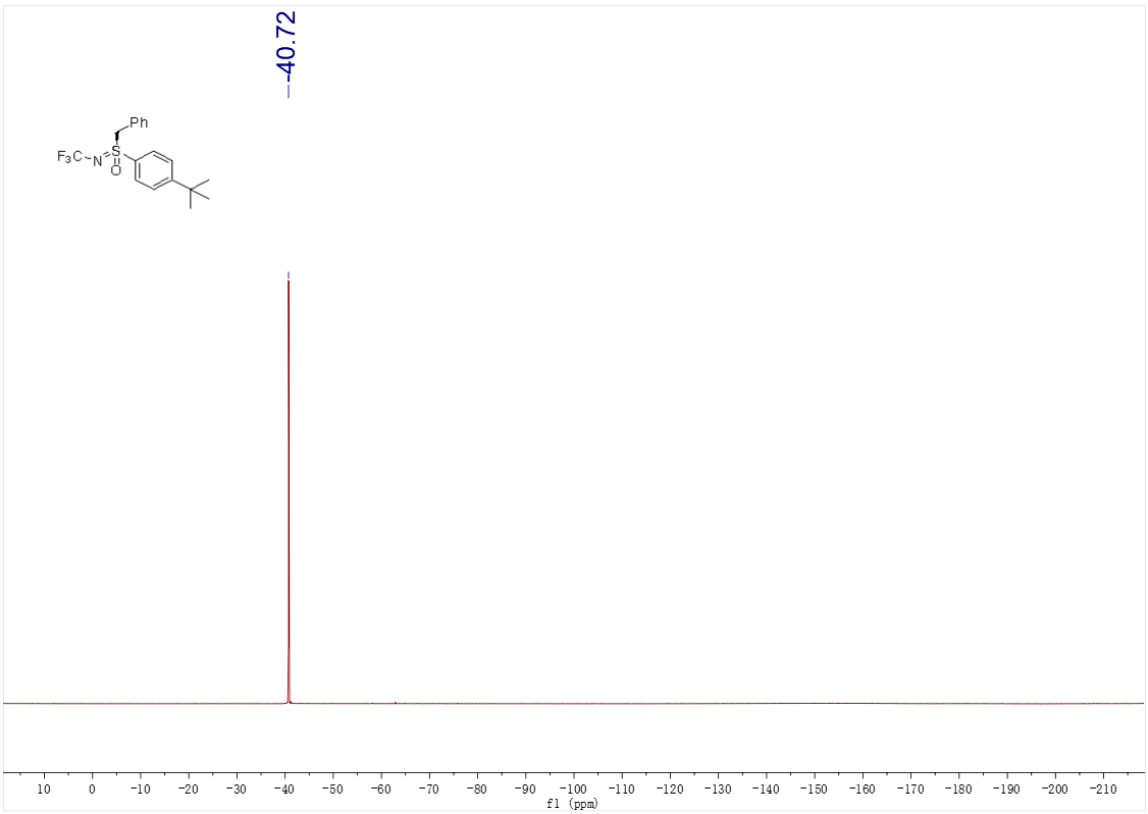
^{1}H NMR (400 MHz, Chloroform-*d*)



^{13}C NMR (101 MHz, $CDCl_3$)

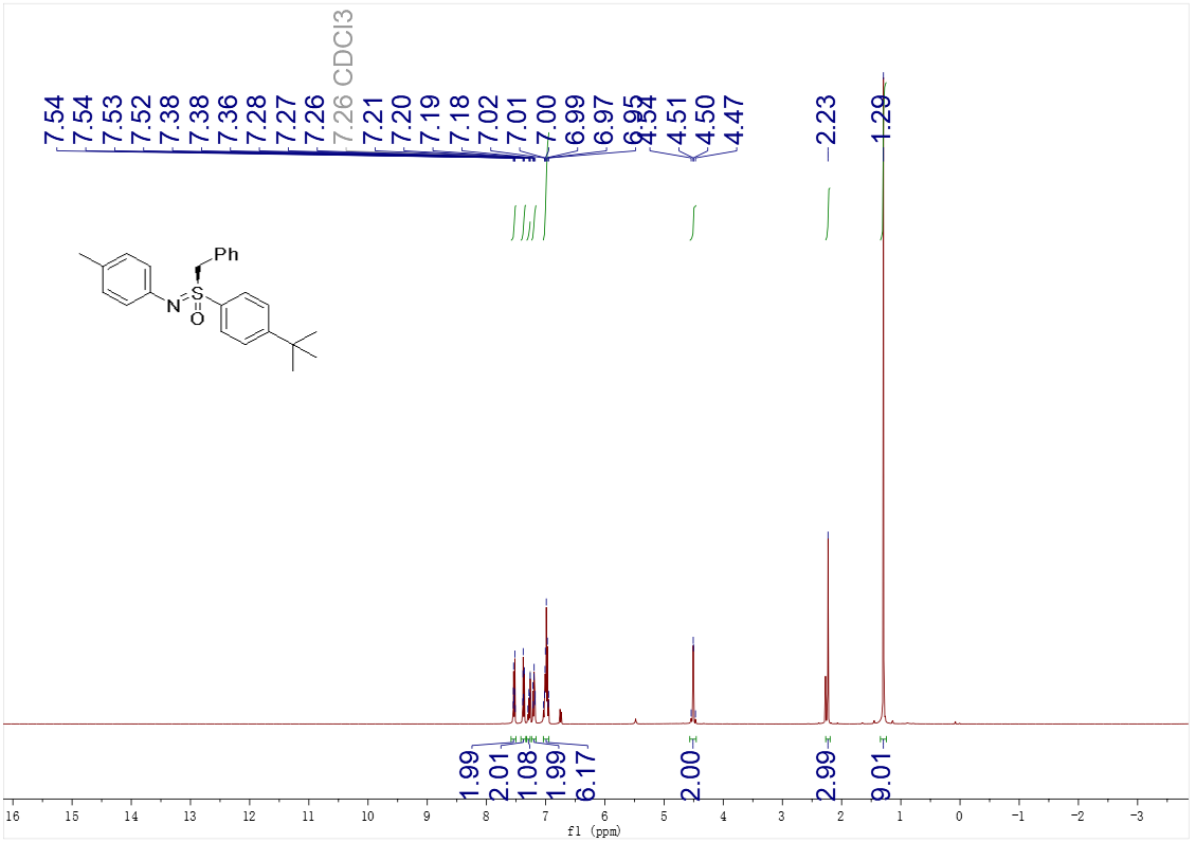


^{19}F NMR (376 MHz, $CDCl_3$)

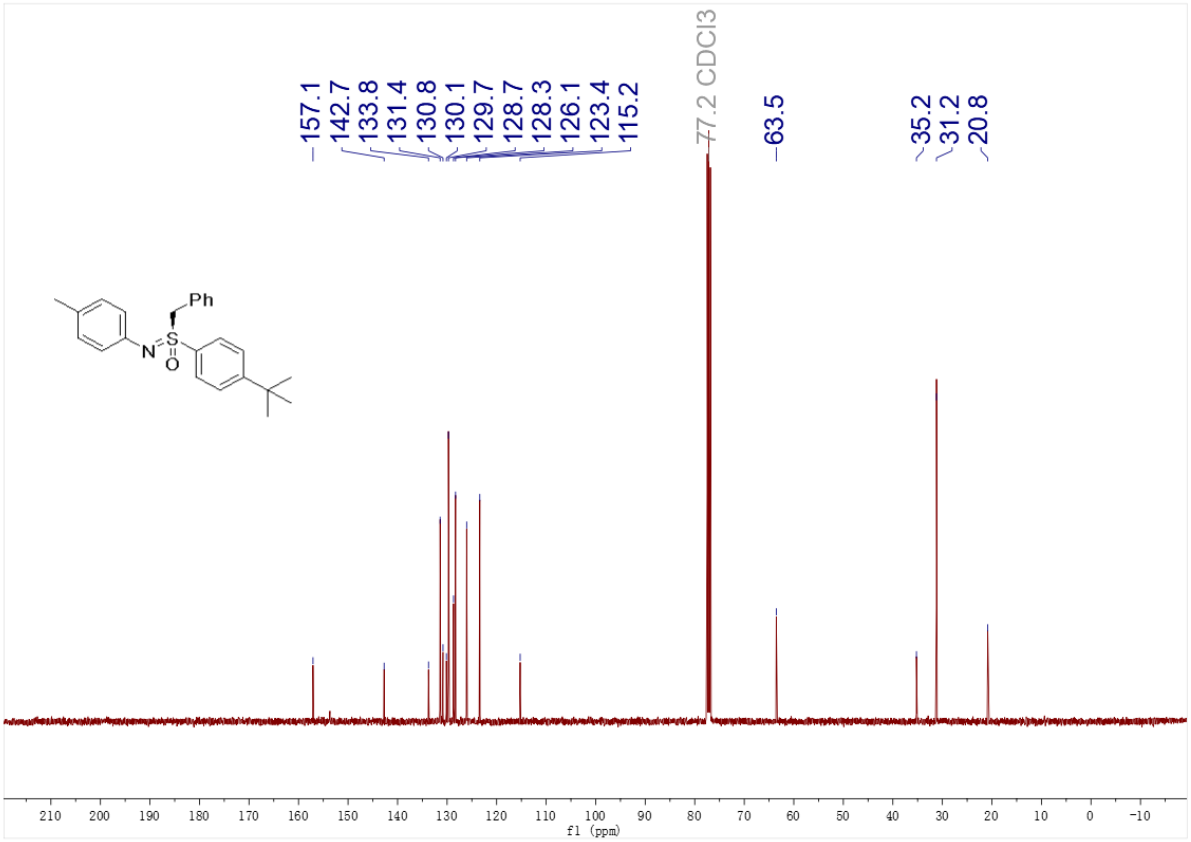


(*R*)-benzyl(4-(*tert*-butyl)phenyl)(*p*-tolylimino)-λ^6-sulfanone (7)

^{1}H NMR (400 MHz, Chloroform-*d*)

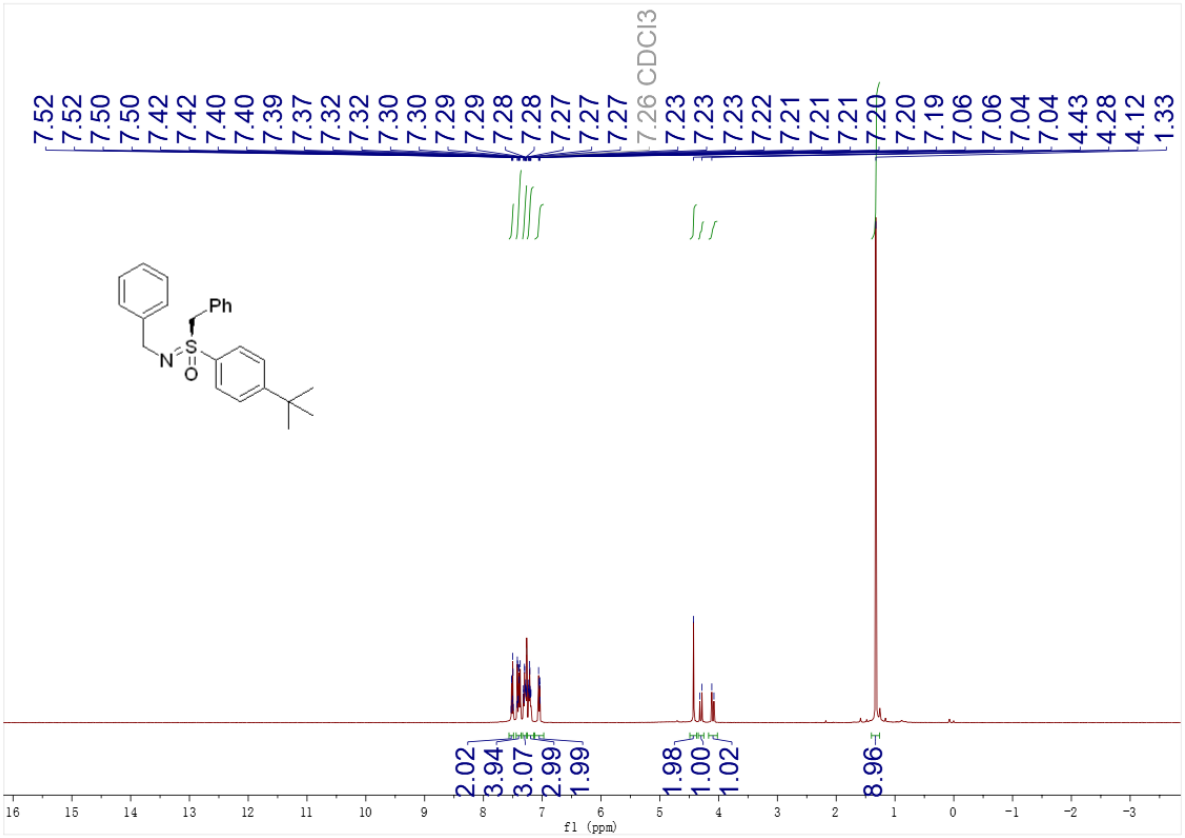


^{13}C NMR (101 MHz, $CDCl_3$)

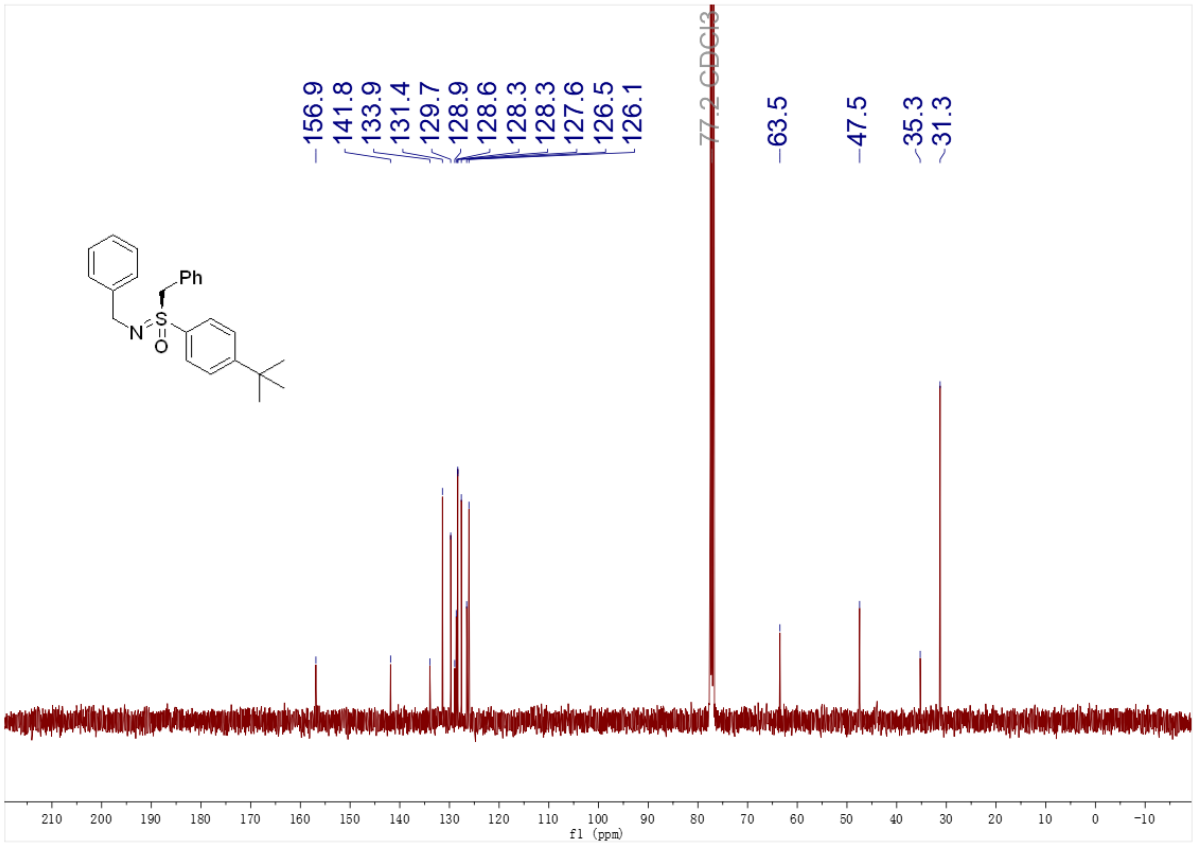


(*R*)-benzyl(benzylimino)(4-(*tert*-butyl)phenyl)-λ^6-sulfanone (8)

^{1}H NMR (400 MHz, Chloroform-*d*)

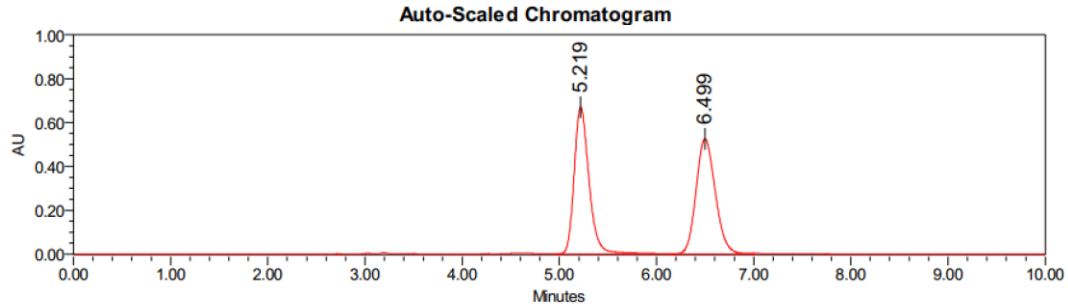


^{13}C NMR (101 MHz, $CDCl_3$)



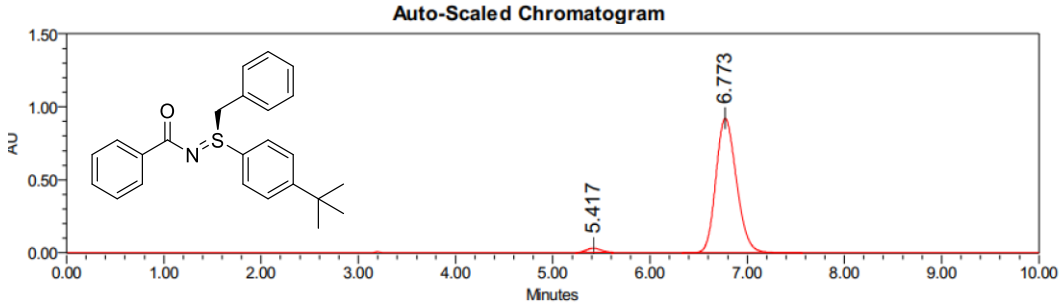
HPLC DATA AND CHROMATOGRAMS

(*S*)-*N*-(benzyl(4-(*tert*-butyl)phenyl)-λ^4-sulfaneylidene)benzamide (3a)



Peak Results

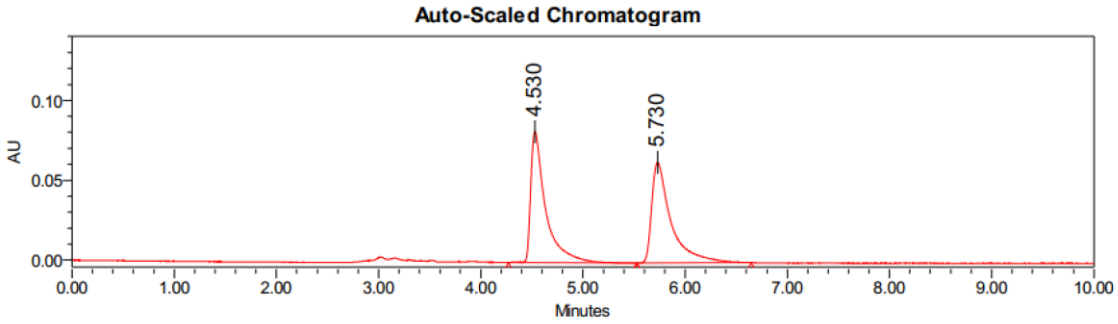
	Channel Description	RT	Height (μV)	Area (μV*sec)	% Area
1	2998 (210-400)nm	5.219	670235	7142891	49.74
2	2998 (210-400)nm	6.499	525299	7218678	50.26



Peak Results

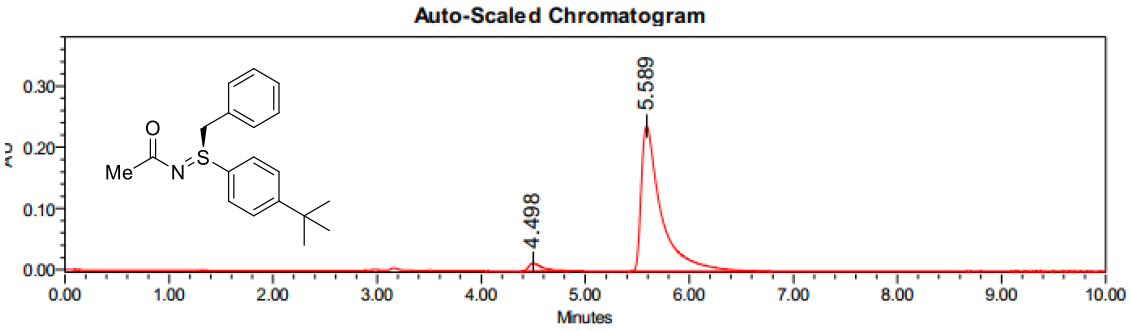
	Channel Description	RT	Height (μV)	Area (μV*sec)	% Area
1	2998 (210-400)nm	5.417	29313	299263	2.17
2	2998 (210-400)nm	6.773	920809	13498127	97.83

(*S*)-*N*-(benzyl(4-(*tert*-butyl)phenyl)-λ^4-sulfaneylidene)acetamide (3b)



Peak Results

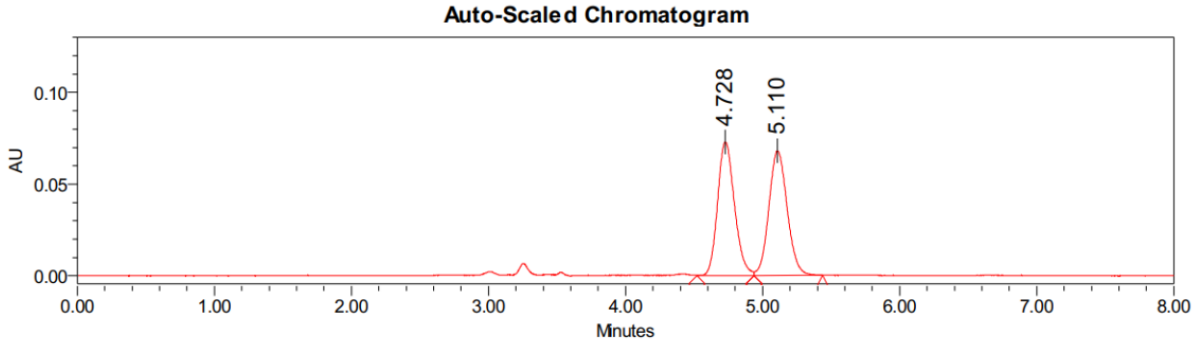
	Channel Description	RT	Height (μV)	Area (μV*sec)	% Area
1	2998 (210-400)nm	4.530	82049	836901	50.24
2	2998 (210-400)nm	5.730	63030	828820	49.76



Peak Results

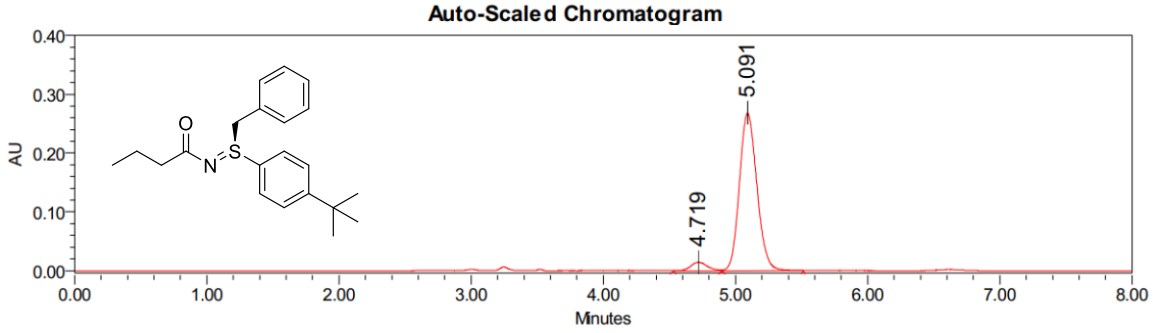
	Channel Description	RT	Height (μV)	Area (μV*sec)	% Area
1	2998 (210-400)nm	4.498	12550	110099	3.38
2	2998 (210-400)nm	5.589	236861	3151510	96.62

(*S*)-*N*-(benzyl(4-(*tert*-butyl)phenyl)-λ^4-sulfaneylidene)butyramide (3c)



Peak Results

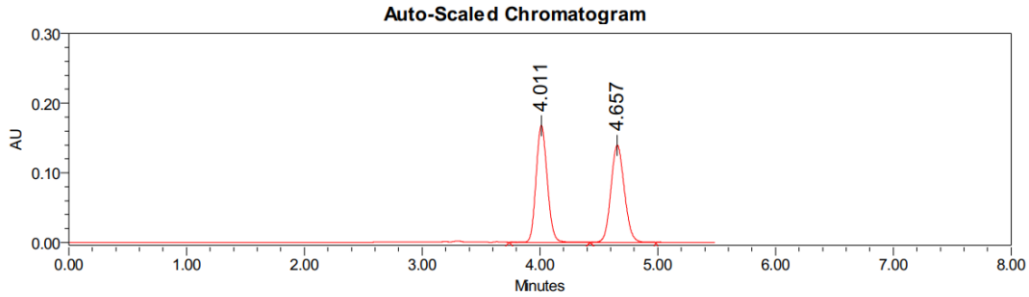
	Channel Description	RT	Height (μV)	Area (μV*sec)	% Area
1	2998 (210-400)nm	4.728	72848	623689	49.61
2	2998 (210-400)nm	5.110	68000	633378	50.39



Peak Results

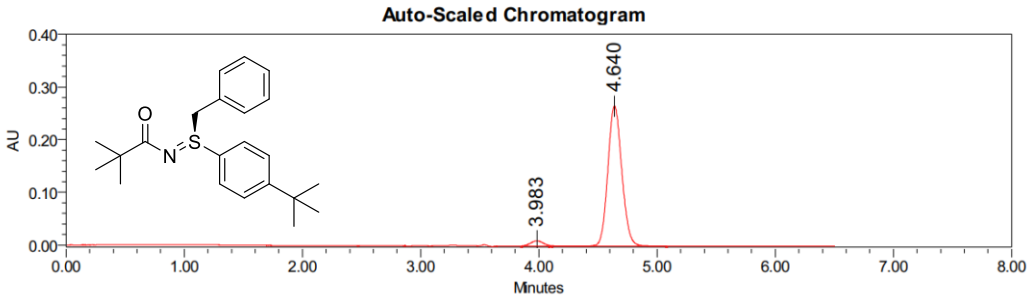
	Channel Description	RT	Height (μV)	Area (μV*sec)	% Area
1	2998 (210-400)nm	4.719	14368	125414	4.84
2	2998 (210-400)nm	5.091	268211	2468084	95.16

(*S*)-*N*-(benzyl(4-(*tert*-butyl)phenyl)-λ^4-sulfaneylidene)pivalamide (3d)



Peak Results

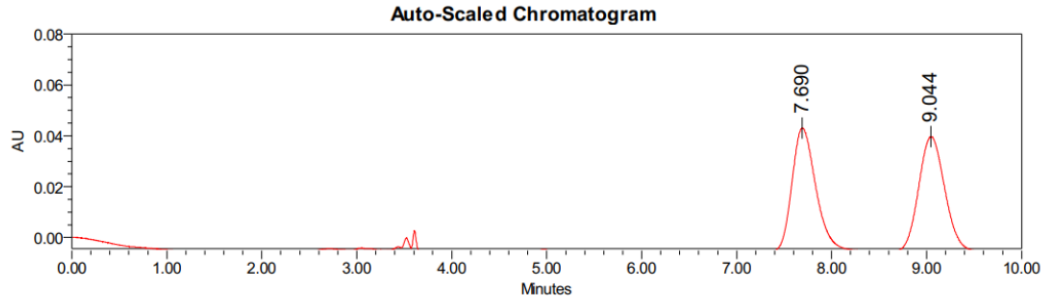
	Channel Description	RT	Height (μV)	Area (μV*sec)	% Area
1	2998 (210-400)nm	4.011	168067	1115463	50.17
2	2998 (210-400)nm	4.657	139439	1107838	49.83



Peak Results

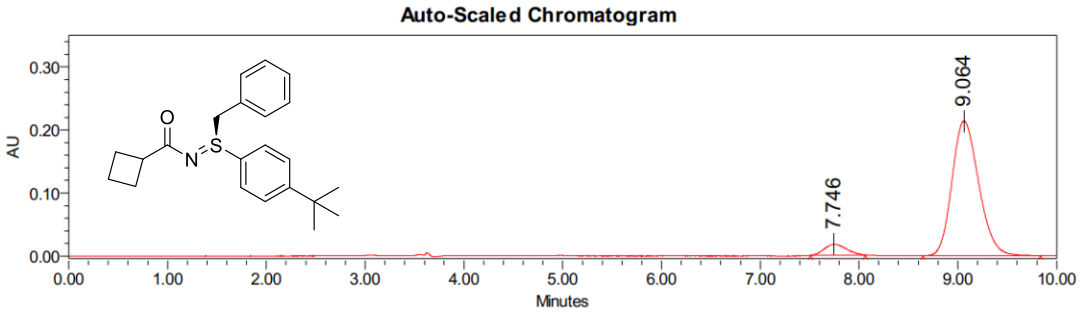
	Channel Description	RT	Height (μV)	Area (μV*sec)	% Area
1	2998 (210-400)nm	3.983	9848	72026	3.20
2	2998 (210-400)nm	4.640	265884	2182021	96.80

(*S*)-*N*-(benzyl(4-(*tert*-butyl)phenyl-λ^4-sulfaneylidene)cyclobutanecarboxamide (3e)



Peak Results

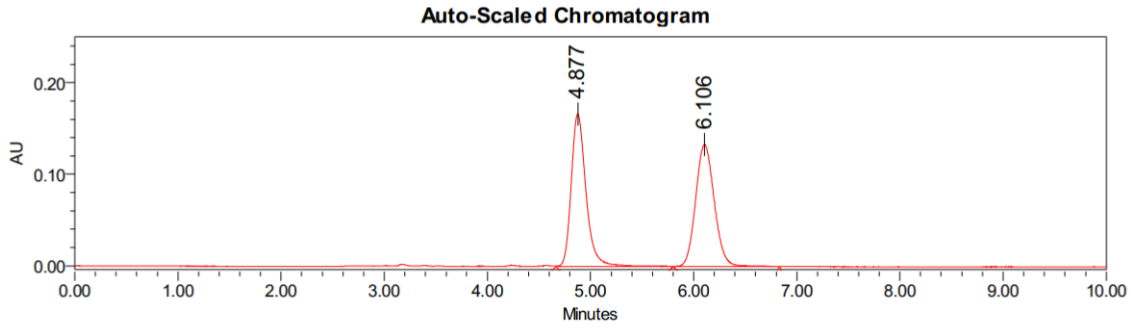
	Channel Description	RT	Height (μV)	Area (μV*sec)	% Area
1	2998 (210-400)nm	7.690	48780	862571	49.86
2	2998 (210-400)nm	9.044	45360	867566	50.14



Peak Results

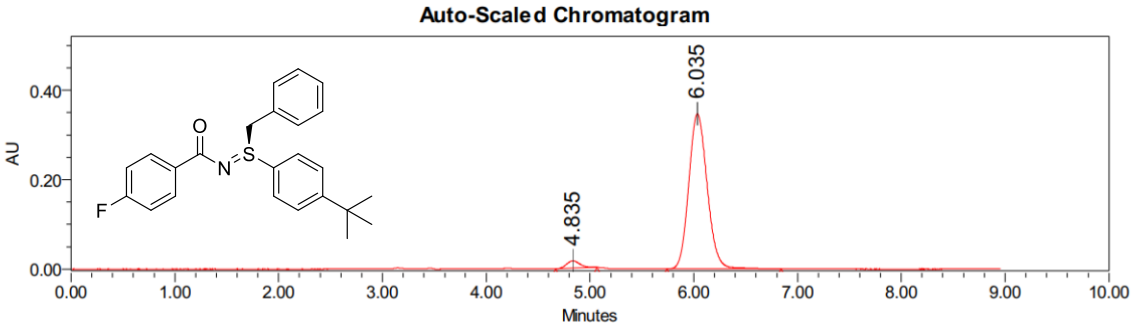
	Channel Description	RT	Height (μV)	Area (μV*sec)	% Area
1	2998 (210-400)nm	7.746	17246	267707	6.24
2	2998 (210-400)nm	9.064	213829	4020606	93.76

(*S*)-*N*-(benzyl(4-(*tert*-butyl)phenyl)-λ^4-sulfaneylidene)-4-fluorobenzamide (3f)



Peak Results

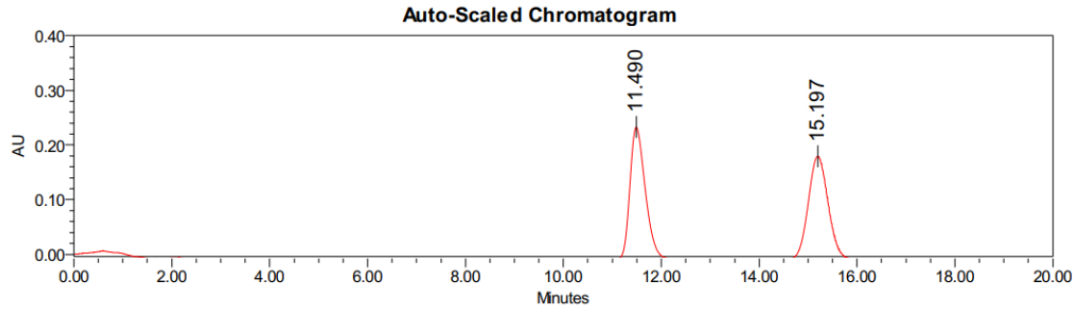
	Channel Description	RT	Height (μV)	Area (μV*sec)	% Area
1	2998 (210-400)nm	4.877	166879	1670566	49.91
2	2998 (210-400)nm	6.106	133438	1676667	50.09



Peak Results

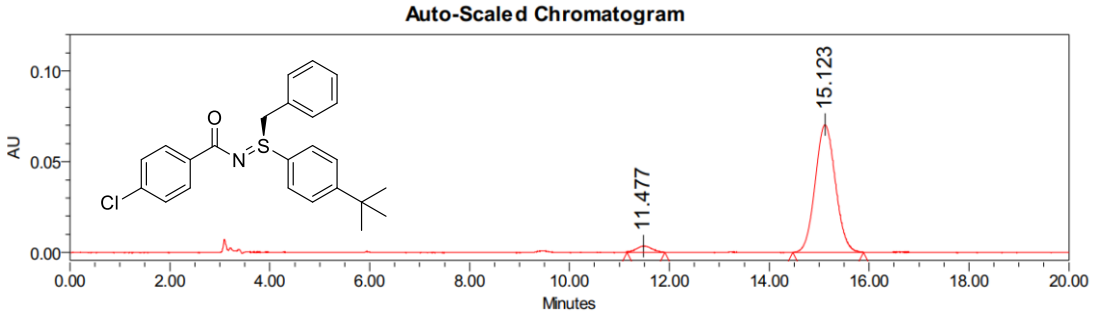
	Channel Description	RT	Height (μV)	Area (μV*sec)	% Area
1	2998 (210-400)nm	4.835	16473	147494	3.33
2	2998 (210-400)nm	6.035	346825	4275411	96.67

(*S*)-*N*-(benzyl(4-(*tert*-butyl)phenyl)-λ^4-sulfaneylidene)-4-chlorobenzamide (3g)



Peak Results

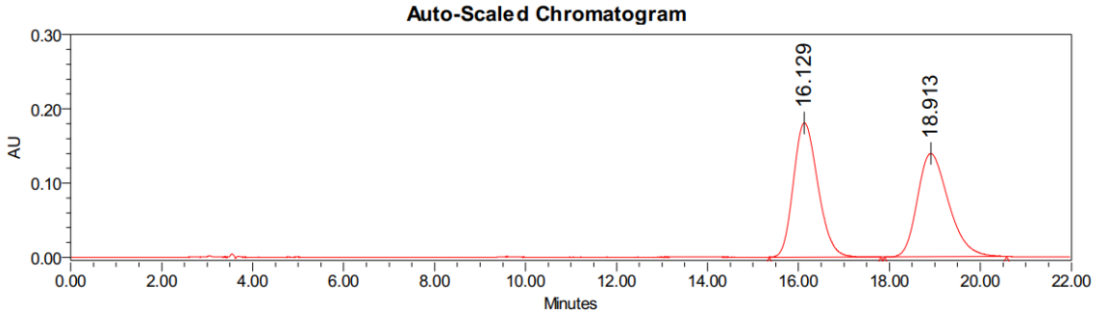
	Channel Description	RT	Height (μV)	Area (μV*sec)	% Area
1	2998 (210-400)nm	11.490	242516	5316275	50.03
2	2998 (210-400)nm	15.197	188932	5310916	49.97



Peak Results

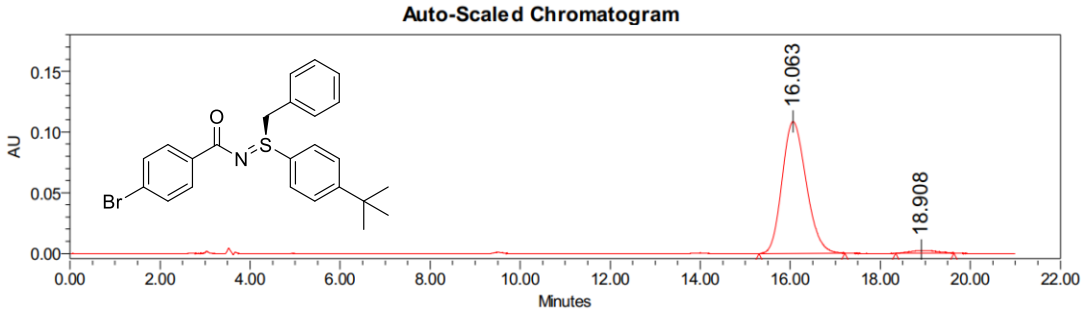
	Channel Description	RT	Height (μV)	Area (μV*sec)	% Area
1	2998 (210-400)nm	11.477	3416	71226	3.49
2	2998 (210-400)nm	15.123	70274	1970211	96.51

(*S*)-*N*-(benzyl(4-(*tert*-butyl)phenyl)-λ^4-sulfaneylidene)-4-bromobenzamide (3h)



Peak Results

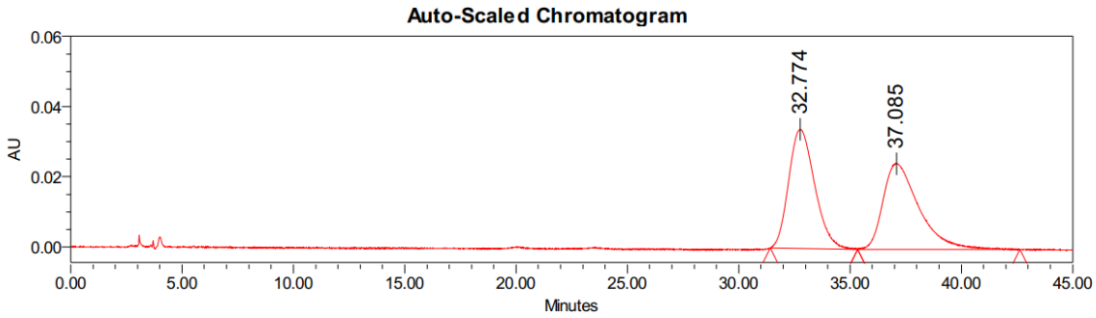
	Channel Description	RT	Height (μV)	Area (μV*sec)	% Area
1	2998 (210-400)nm	16.129	181172	6805391	50.50
2	2998 (210-400)nm	18.913	139390	6670226	49.50



Peak Results

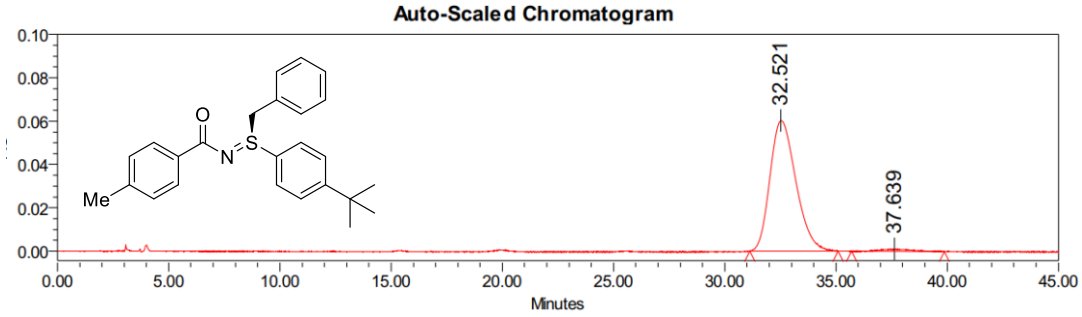
	Channel Description	RT	Height (μV)	Area (μV*sec)	% Area
1	2998 (210-400)nm	16.063	108580	4037075	97.82
2	2998 (210-400)nm	18.908	2237	89964	2.18

(*S*)-*N*-(benzyl(4-(*tert*-butyl)phenyl)-λ^4-sulfaneylidene)-4-methylbenzamide (3i)



Peak Results

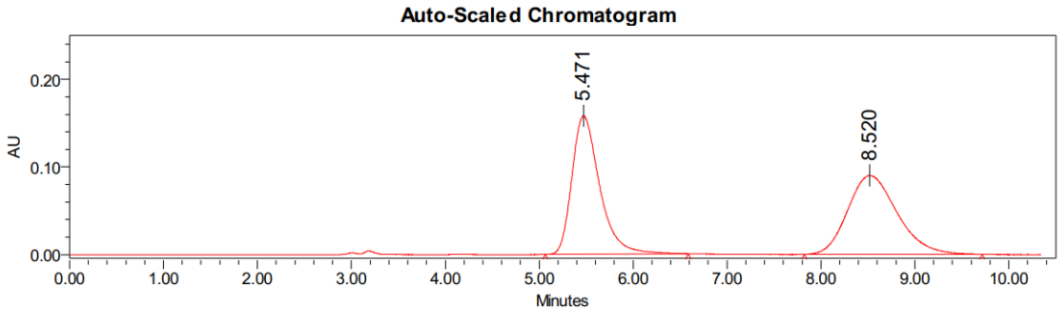
	Channel Description	RT	Height (μV)	Area (μV*sec)	% Area
1	2998 (210-400)nm	32.774	34016	2765791	50.25
2	2998 (210-400)nm	37.085	24432	2738320	49.75



Peak Results

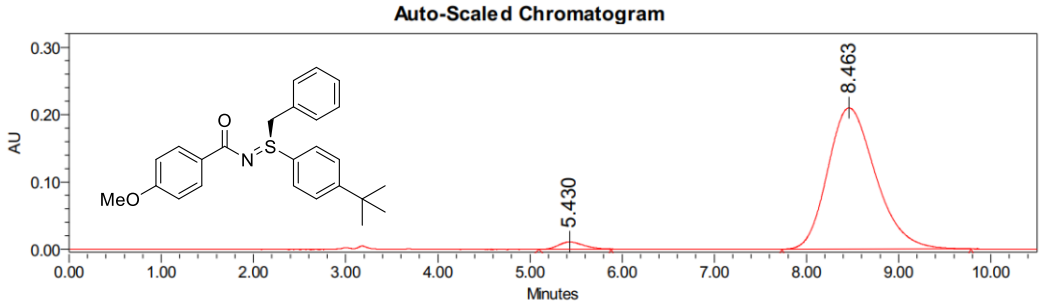
	Channel Description	RT	Height (μV)	Area (μV*sec)	% Area
1	2998 (210-400)nm	32.521	60235	4894196	97.90
2	2998 (210-400)nm	37.639	1046	104997	2.10

(*S*)-*N*-(benzyl(4-(*tert*-butyl)phenyl)-λ^4-sulfaneylidene)-4-methoxybenzamide (3j)



Peak Results

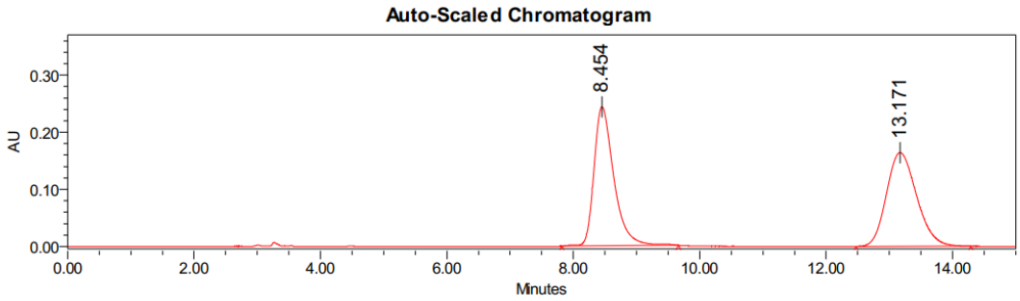
	Channel Description	RT	Height (μV)	Area (μV*sec)	% Area
1	2998 (210-400)nm	5.471	158168	3244748	49.63
2	2998 (210-400)nm	8.520	90068	3292562	50.37



Peak Results

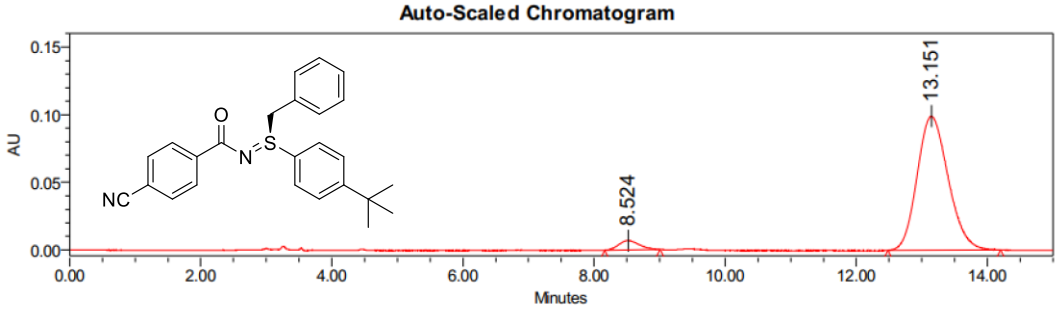
	Channel Description	RT	Height (μV)	Area (μV*sec)	% Area
1	2998 (210-400)nm	5.430	10874	204736	2.63
2	2998 (210-400)nm	8.463	209843	7574316	97.37

(*S*)-*N*-(benzyl(4-(*tert*-butyl)phenyl)-λ^4-sulfaneylidene)-4-methoxybenzamide (3k)



Peak Results

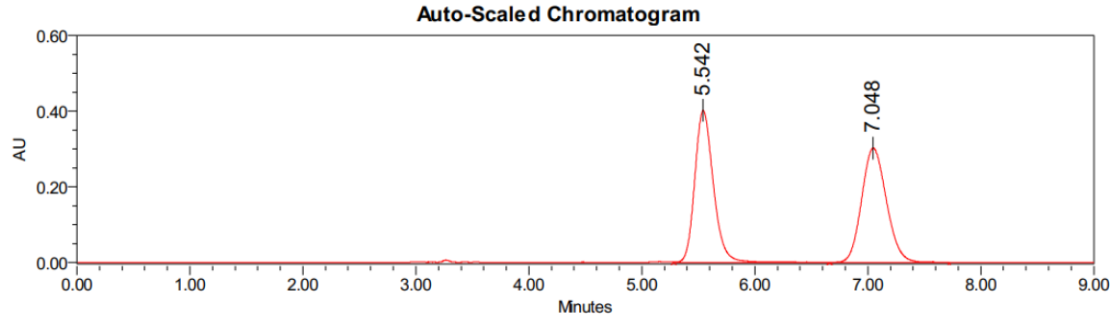
	Channel Description	RT	Height (μV)	Area (μV*sec)	% Area
1	2998 (210-400)nm	8.454	243429	5317843	49.44
2	2998 (210-400)nm	13.171	164234	5438529	50.56



Peak Results

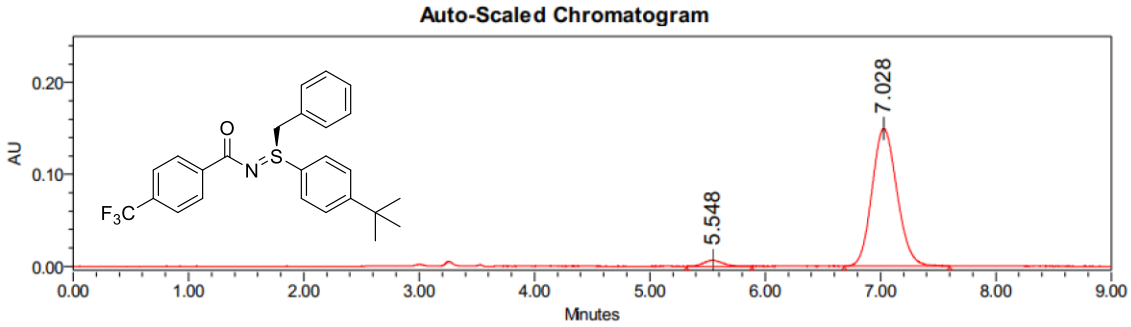
	Channel Description	RT	Height (μV)	Area (μV*sec)	% Area
1	2998 (210-400)nm	8.524	6888	150219	4.40
2	2998 (210-400)nm	13.151	99043	3264028	95.60

(*S*)-*N*-(benzyl(4-(*tert*-butyl)phenyl)-λ^4-sulfaneylidene)-4-(trifluoromethyl)benzamide (3l)



Peak Results

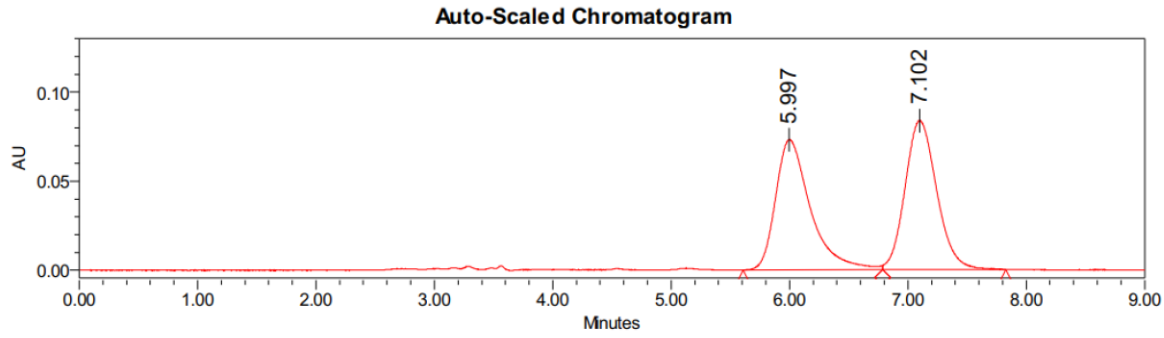
	Channel Description	RT	Height (μV)	Area (μV*sec)	% Area
1	2998 (210-400)nm	5.542	401746	4601607	50.08
2	2998 (210-400)nm	7.048	302540	4586493	49.92



Peak Results

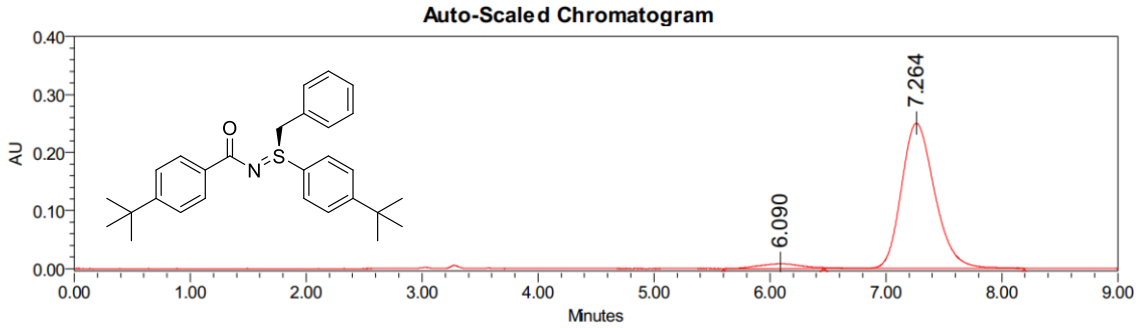
	Channel Description	RT	Height (μV)	Area (μV*sec)	% Area
1	2998 (210-400)nm	5.548	6320	72657	3.14
2	2998 (210-400)nm	7.028	149771	2242009	96.86

(*S*)-*N*-(benzyl(4-(*tert*-butyl)phenyl)-λ^4-sulfaneylidene)-4-(tert-butyl)benzamide (3m)



Peak Results

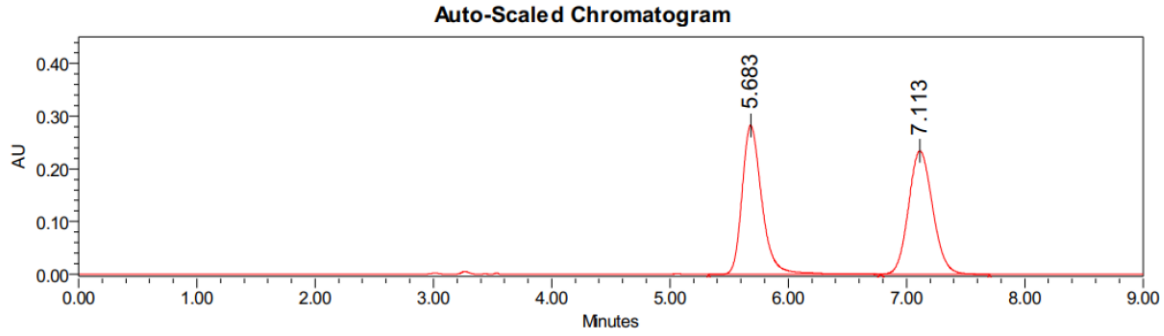
	Channel Description	RT	Height (μV)	Area (μV*sec)	% Area
1	2998 (210-400)nm	5.997	73137	1500867	49.08
2	2998 (210-400)nm	7.102	83722	1556882	50.92



Peak Results

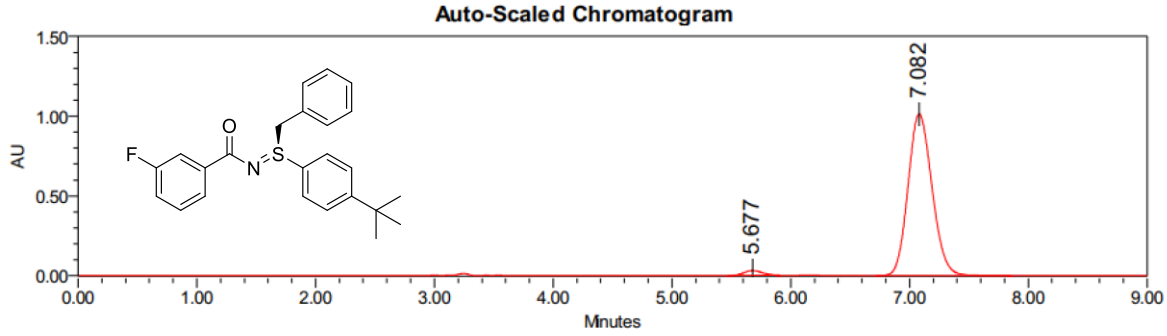
	Channel Description	RT	Height (μV)	Area (μV*sec)	% Area
1	2998 (210-400)nm	6.090	8254	210124	4.04
2	2998 (210-400)nm	7.264	250219	4990328	95.96

(*S*)-*N*-(benzyl(4-(*tert*-butyl)phenyl)-λ^4-sulfaneylidene)-3-fluorobenzamide (3n)



Peak Results

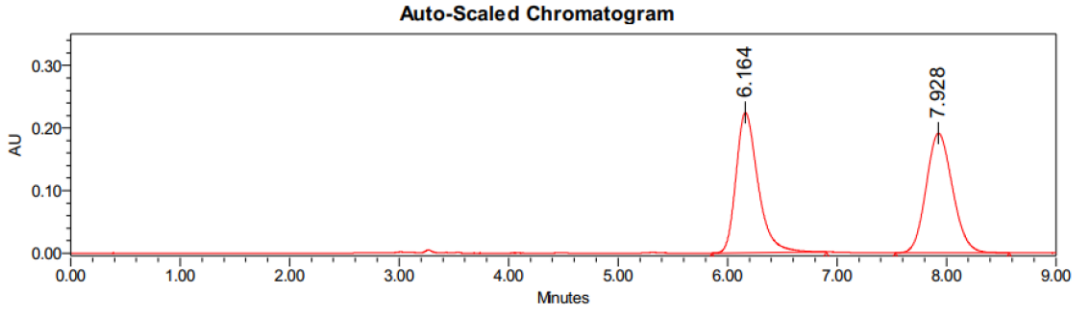
	Channel Description	RT	Height (μV)	Area (μV*sec)	% Area
1	2998 (210-400)nm	5.683	282801	3306206	49.96
2	2998 (210-400)nm	7.113	234087	3310944	50.04



Peak Results

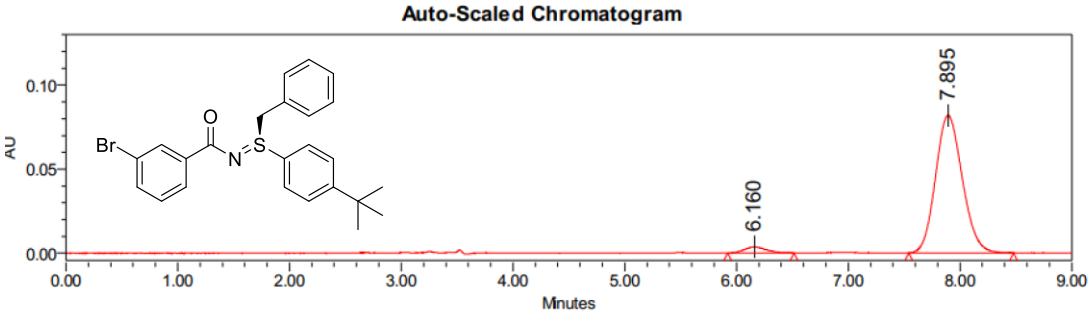
	Channel Description	RT	Height (μV)	Area (μV*sec)	% Area
1	2998 (210-400)nm	5.677	30956	333294	2.29
2	2998 (210-400)nm	7.082	1012581	14226773	97.71

(*S*)-*N*-(benzyl(4-(*tert*-butyl)phenyl)-λ^4-sulfaneylidene)-3-bromobenzamide (3o)



Peak Results

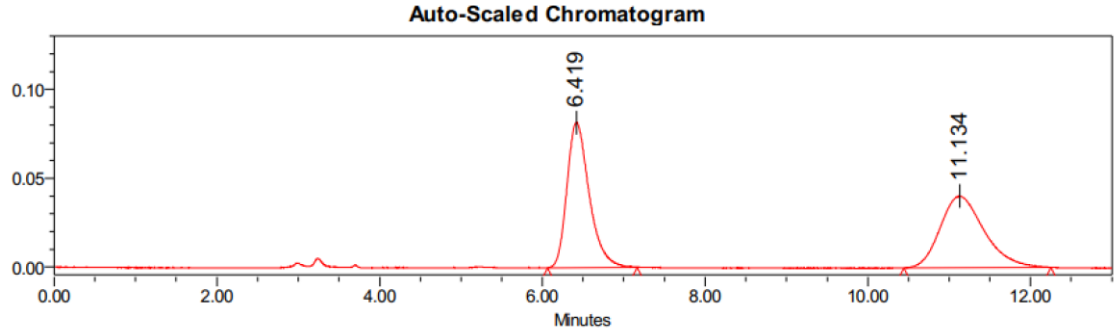
	Channel Description	RT	Height (μV)	Area (μV*sec)	% Area
1	2998 (210-400)nm	6.164	224010	3129758	49.42
2	2998 (210-400)nm	7.928	191070	3203548	50.58



Peak Results

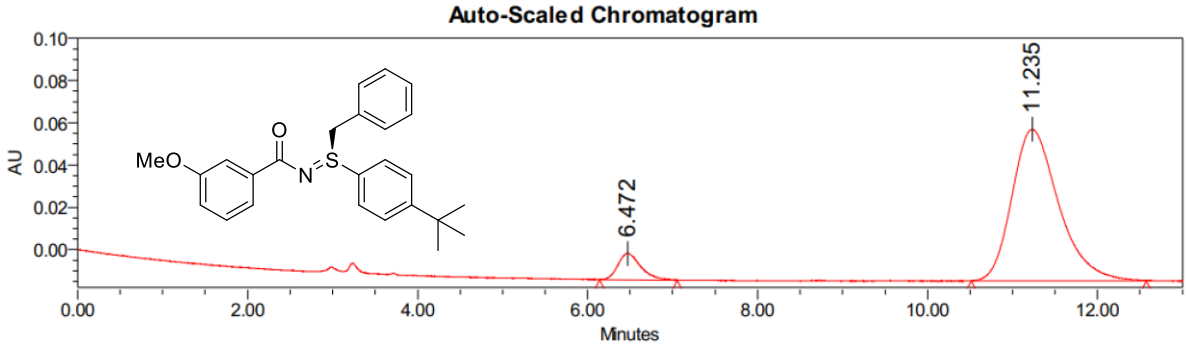
	Channel Description	RT	Height (μV)	Area (μV*sec)	% Area
1	2998 (210-400)nm	6.160	3711	53508	3.77
2	2998 (210-400)nm	7.895	81833	1364369	96.23

(*S*)-*N*-(benzyl(4-(*tert*-butyl)phenyl)-λ^4-sulfaneylidene)-3-methoxybenzamide (3p)



Peak Results

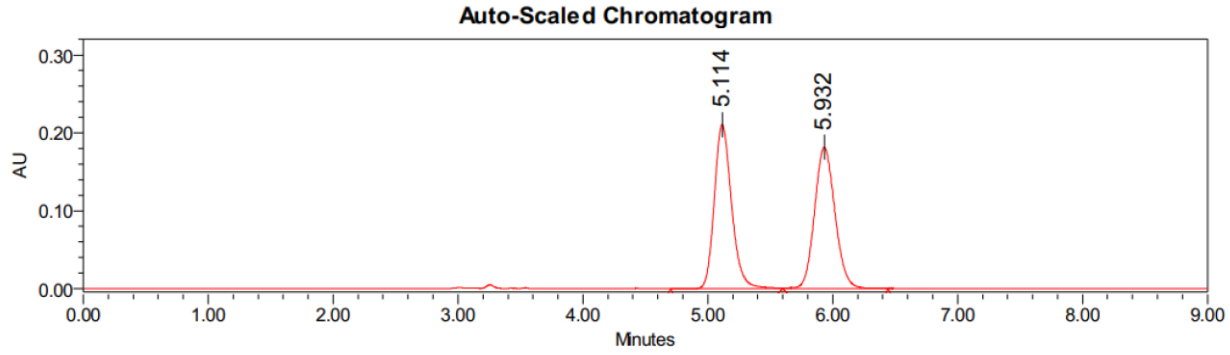
	Channel Description	RT	Height (μV)	Area (μV*sec)	% Area
1	2998 (210-400)nm	6.419	81769	1552441	50.60
2	2998 (210-400)nm	11.134	40358	1515394	49.40



Peak Results

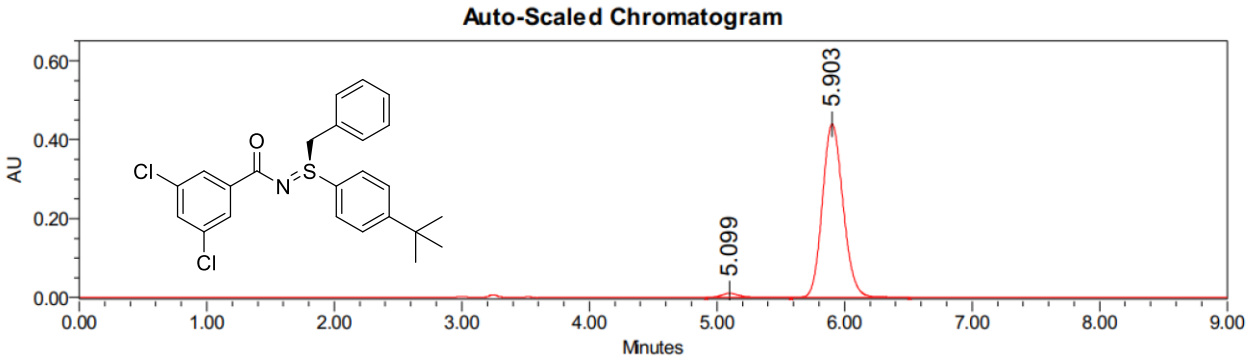
	Channel Description	RT	Height (μV)	Area (μV*sec)	% Area
1	2998 (210-400)nm	6.472	12441	229958	7.75
2	2998 (210-400)nm	11.235	71704	2737513	92.25

(*S*)-*N*-(benzyl(4-(*tert*-butyl)phenyl)-λ^4-sulfaneylidene)-3,5-dichlorobenzamide (3q)



Peak Results

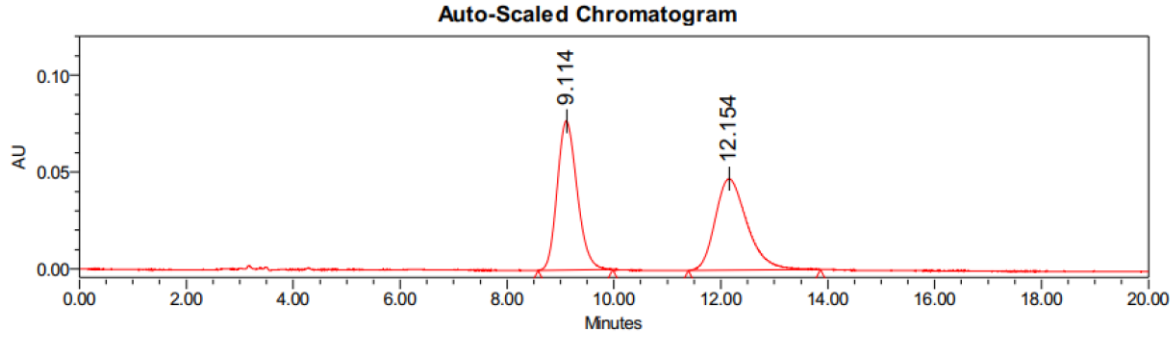
	Channel Description	RT	Height (μV)	Area (μV*sec)	% Area
1	2998 (210-400)nm	5.114	210621	2040428	49.83
2	2998 (210-400)nm	5.932	181190	2054497	50.17



Peak Results

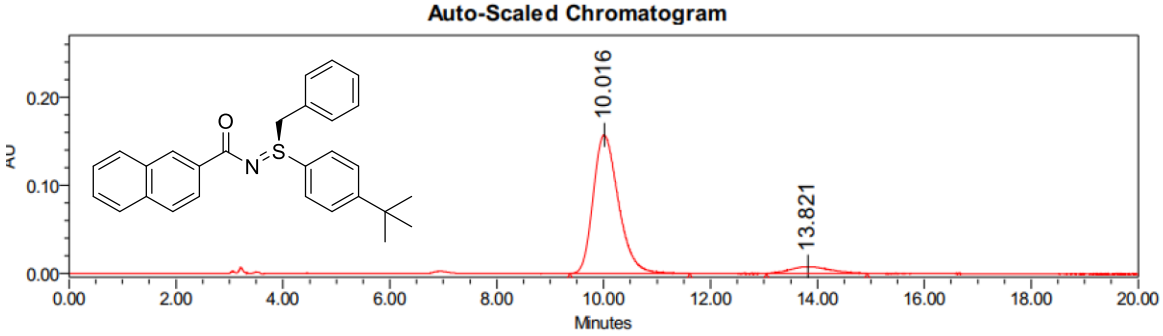
	Channel Description	RT	Height (μV)	Area (μV*sec)	% Area
1	2998 (210-400)nm	5.099	10553	103541	2.06
2	2998 (210-400)nm	5.903	439330	4931237	97.94

(*S*)-*N*-(benzyl(4-(*tert*-butyl)phenyl)-λ^4-sulfaneylidene)-2-naphthamide (3r)



Peak Results

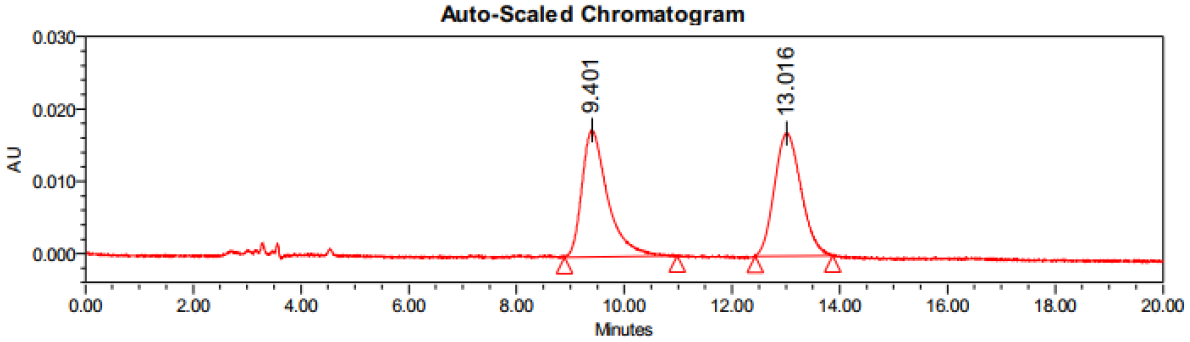
	Channel Description	RT	Height (μV)	Area (μV*sec)	% Area
1	2998 (210-400)nm	9.114	76864	2000331	50.65
2	2998 (210-400)nm	12.154	47174	1948912	49.35



Peak Results

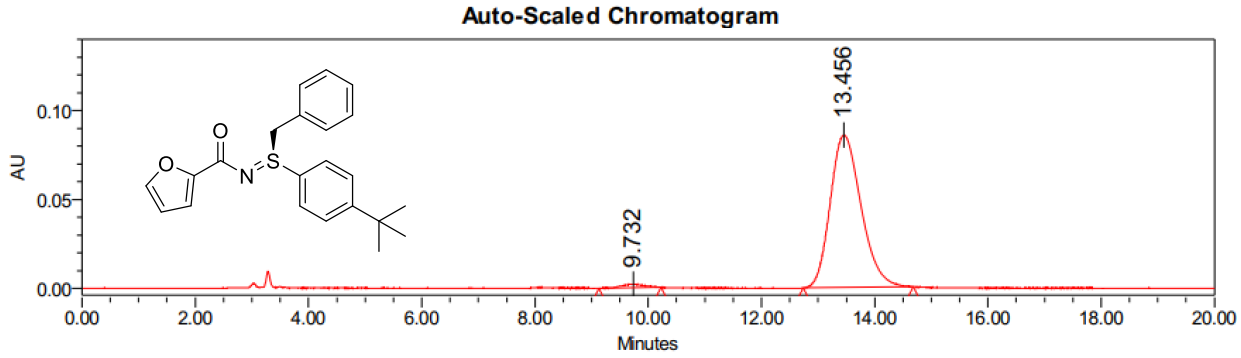
	Channel Description	RT	Height (μV)	Area (μV*sec)	% Area
1	2998 (210-400)nm	10.016	157148	5134453	93.00
2	2998 (210-400)nm	13.821	7533	386272	7.00

(*S*)-*N*-(benzyl(4-(*tert*-butyl)phenyl)-λ^4-sulfaneylidene)furan-2-carboxamide (3s)



Peak Results

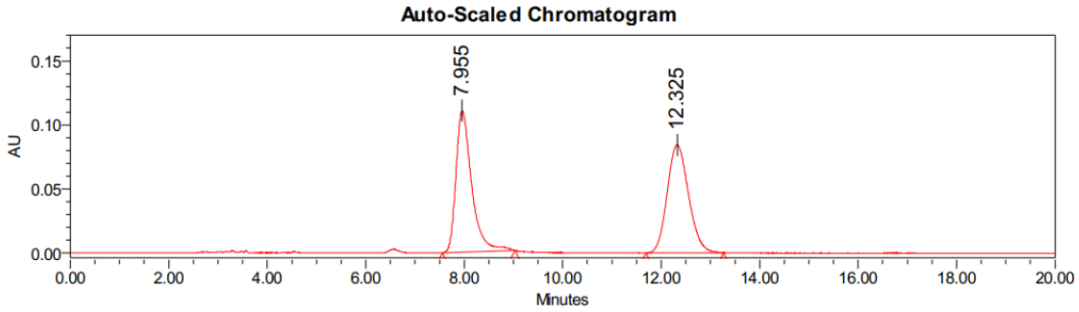
	Channel Description	RT	Height (μV)	Area (μV*sec)	% Area
1	2998 (210-400)nm	9.401	17524	585344	49.95
2	2998 (210-400)nm	13.016	16968	586420	50.05



Peak Results

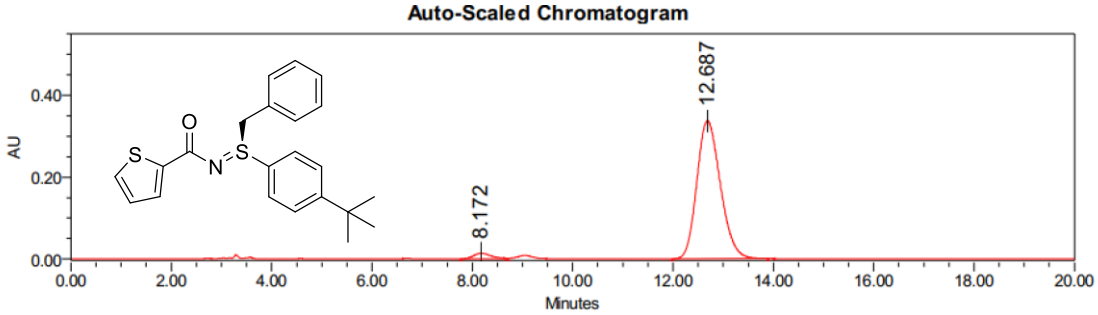
	Channel Description	RT	Height (μV)	Area (μV*sec)	% Area
1	2998 (210-400)nm	9.732	1946	56878	1.72
2	2998 (210-400)nm	13.456	85856	3253817	98.28

(*S*)-*N*-(benzyl(*p*-tolyl)-λ^4-sulfaneylidene)thiophene-2-carboxamide (3t)



Peak Results

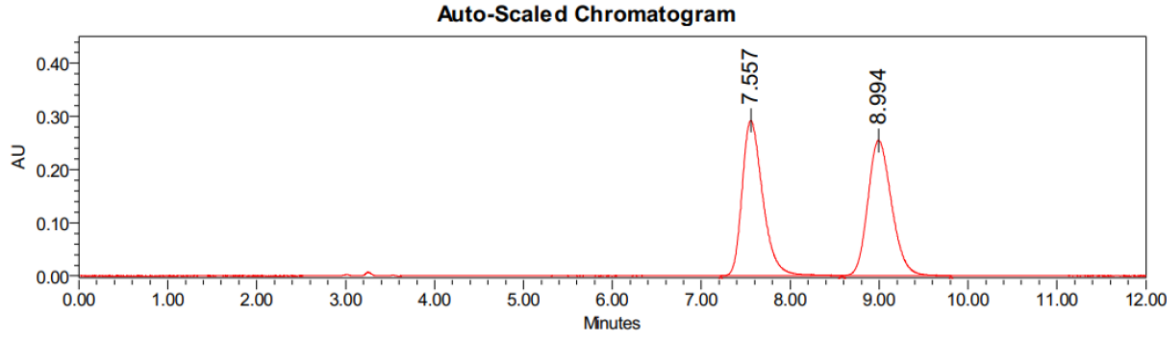
	Channel Description	RT	Height (μV)	Area (μV*sec)	% Area
1	2998 (210-400)nm	7.955	110538	2448227	49.08
2	2998 (210-400)nm	12.325	84422	2540182	50.92



Peak Results

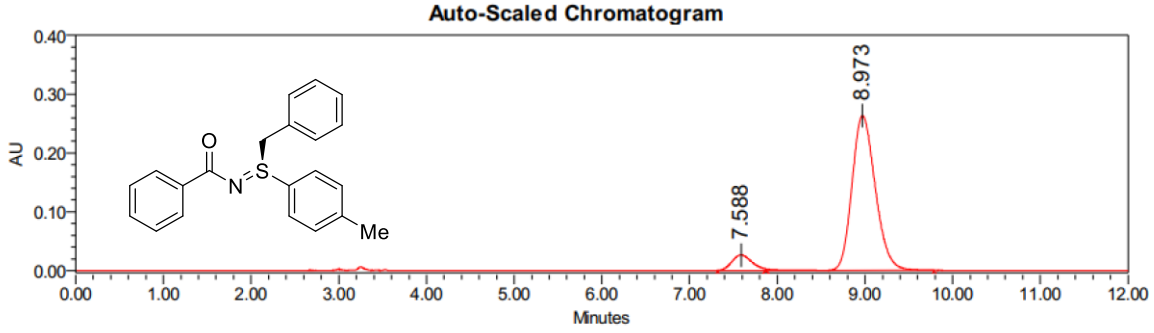
	Channel Description	RT	Height (μV)	Area (μV*sec)	% Area
1	2998 (210-400)nm	8.172	13974	348905	3.09
2	2998 (210-400)nm	12.687	337338	10947154	96.91

(*S*)-*N*-(benzyl(*p*-tolyl)-λ^4-sulfaneylidene)benzamide (3u)



Peak Results

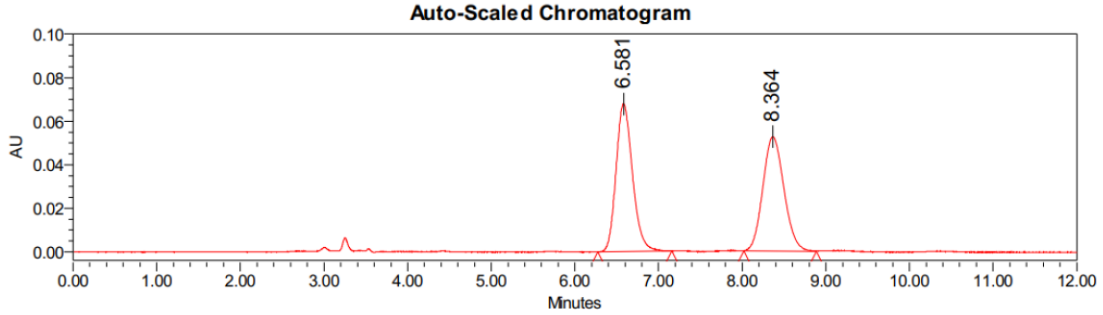
	Channel Description	RT	Height (μV)	Area (μV*sec)	% Area
1	2998 (210-400)nm	7.557	292200	4715131	50.00
2	2998 (210-400)nm	8.994	254412	4715795	50.00



Peak Results

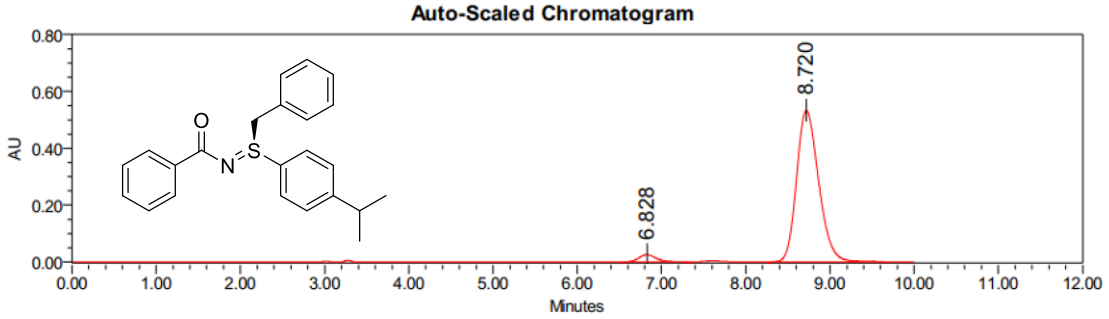
	Channel Description	RT	Height (μV)	Area (μV*sec)	% Area
1	2998 (210-400)nm	7.588	26218	411147	7.79
2	2998 (210-400)nm	8.973	262967	4863853	92.21

(*S*)-*N*-(benzyl(4-isopropylphenyl)-λ^4-sulfaneylidene)benzamide (3v)



Peak Results

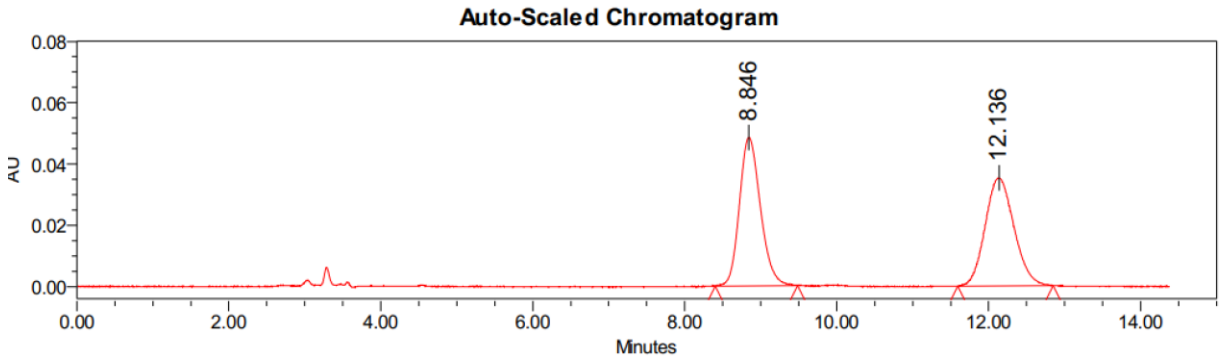
	Channel Description	RT	Height (μV)	Area (μV*sec)	% Area
1	2998 (210-400)nm	6.581	67884	929435	50.28
2	2998 (210-400)nm	8.364	52446	919259	49.72



Peak Results

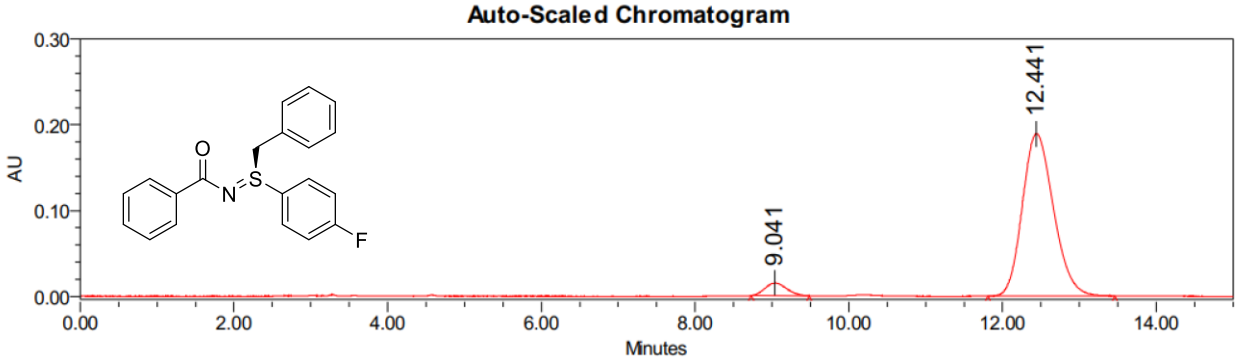
	Channel Description	RT	Height (μV)	Area (μV*sec)	% Area
1	2998 (210-400)nm	6.828	25598	369377	3.67
2	2998 (210-400)nm	8.720	532746	9704892	96.33

(*S*)-*N*-(benzyl(4-fluorophenyl)-λ^4-sulfaneylidene)benzamide (3w)



Peak Results

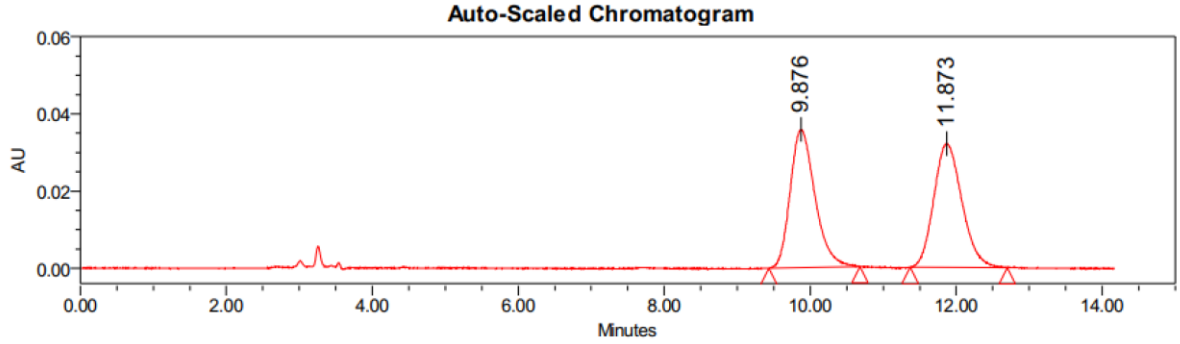
	Channel Description	RT	Height (μV)	Area (μV*sec)	% Area
1	2998 (210-400)nm	8.846	48356	930591	50.04
2	2998 (210-400)nm	12.136	35227	929258	49.96



Peak Results

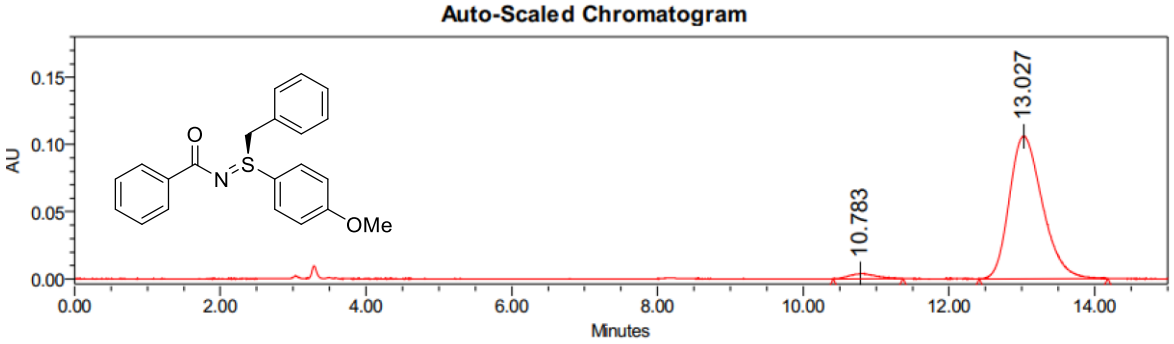
	Channel Description	RT	Height (μV)	Area (μV*sec)	% Area
1	2998 (210-400)nm	9.041	14839	292699	5.18
2	2998 (210-400)nm	12.441	189372	5354935	94.82

(*S*)-*N*-(benzyl(4-methoxyphenyl)-λ^4-sulfaneylidene)benzamide (3x)



Peak Results

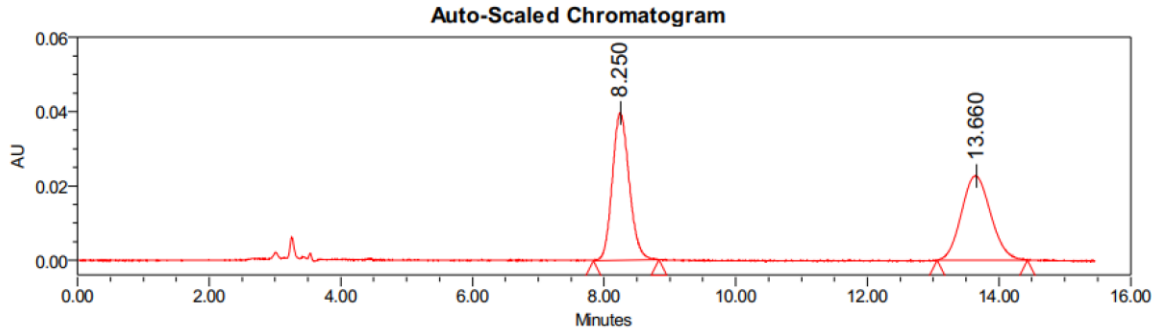
	Channel Description	RT	Height (μV)	Area (μV*sec)	% Area
1	2998 (210-400)nm	9.876	35831	843531	49.62
2	2998 (210-400)nm	11.873	32036	856544	50.38



Peak Results

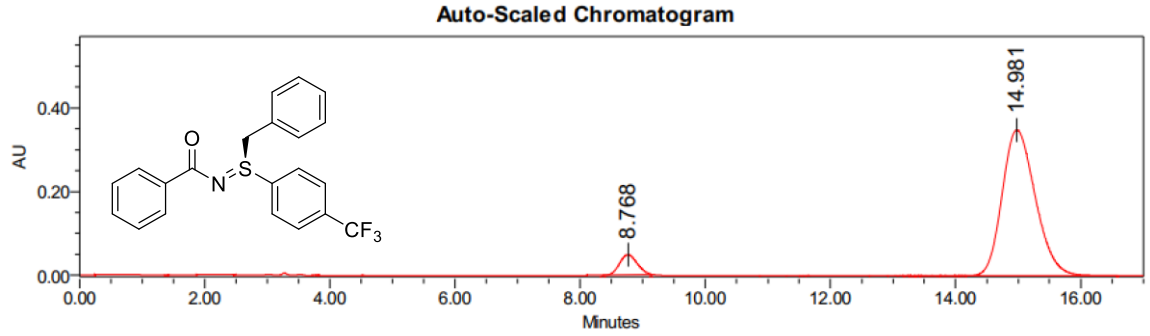
	Channel Description	RT	Height (μV)	Area (μV*sec)	% Area
1	2998 (210-400)nm	10.783	3701	97146	2.82
2	2998 (210-400)nm	13.027	106132	3353353	97.18

(*S*)-*N*-(benzyl(4-(trifluoromethyl)phenyl)-λ^4-sulfaneylidene)benzamide (3y)



Peak Results

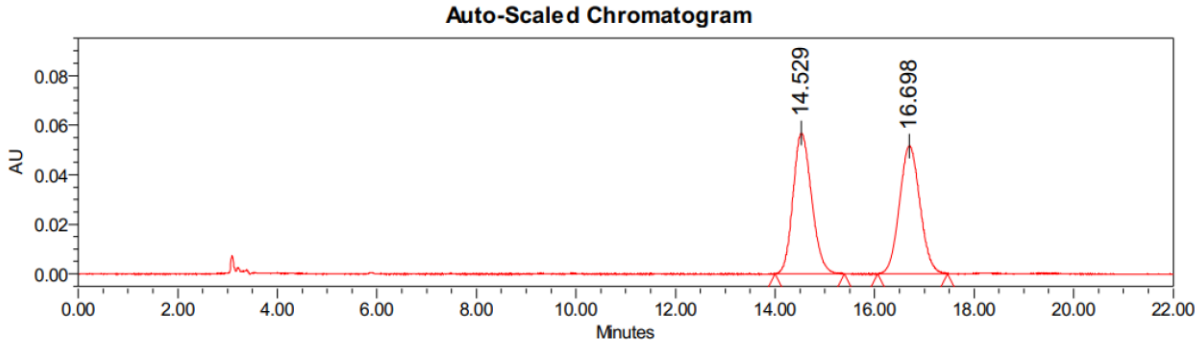
	Channel Description	RT	Height (μV)	Area (μV*sec)	% Area
1	2998 (210-400)nm	8.250	39635	704597	50.04
2	2998 (210-400)nm	13.660	22712	703494	49.96



Peak Results

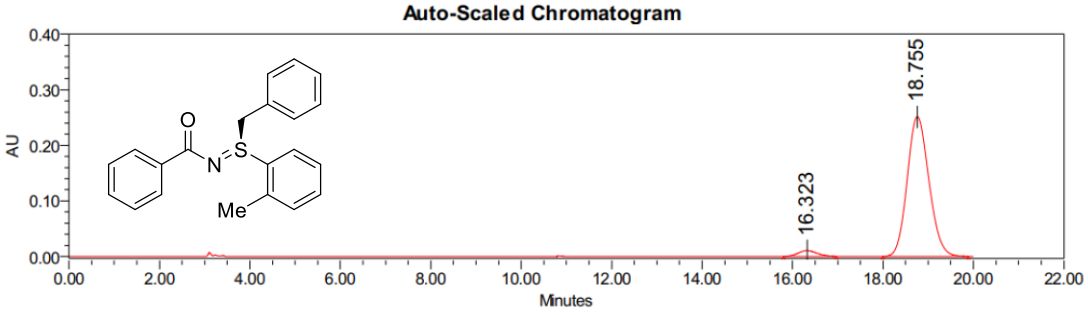
	Channel Description	RT	Height (μV)	Area (μV*sec)	% Area
1	2998 (210-400)nm	8.768	47799	921729	6.69
2	2998 (210-400)nm	14.981	348575	12855131	93.31

(*S*)-*N*-(benzyl(*o*-tolyl)-λ^4-sulfaneylidene)benzamide (3aa)



Peak Results

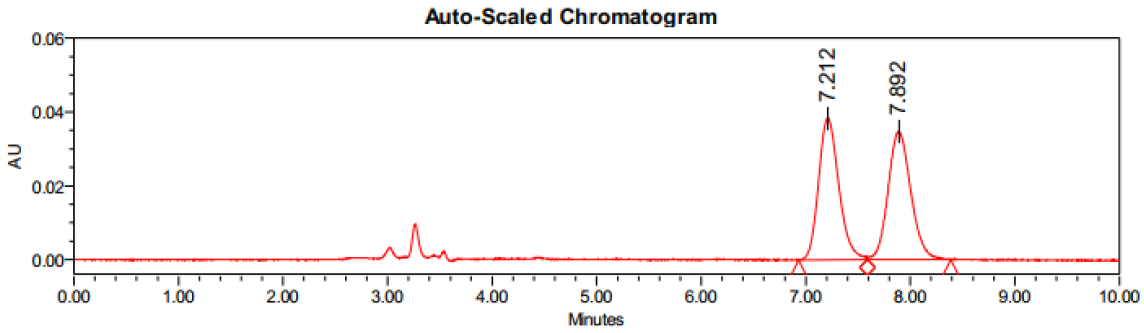
	Channel Description	RT	Height (μV)	Area (μV*sec)	% Area
1	2998 (210-400)nm	14.529	56729	1472587	50.01
2	2998 (210-400)nm	16.698	51567	1472031	49.99



Peak Results

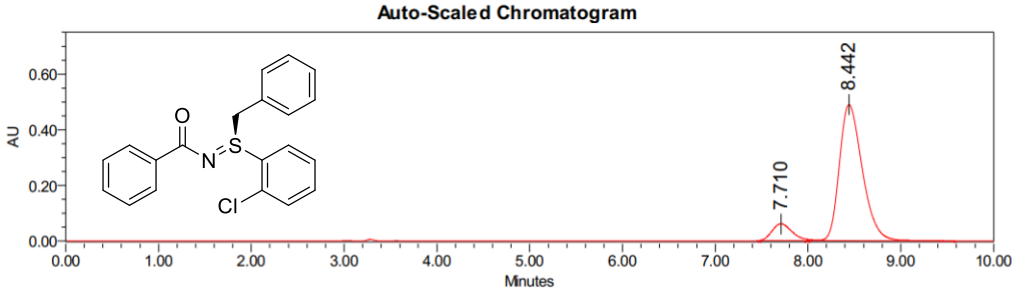
	Channel Description	RT	Height (μV)	Area (μV*sec)	% Area
1	2998 (210-400)nm	16.323	10210	303016	3.48
2	2998 (210-400)nm	18.755	251320	8411376	96.52

(*S*)-*N*-(benzyl(2-chlorophenyl)-λ^4-sulfaneylidene)benzamide (3ab)



Peak Results

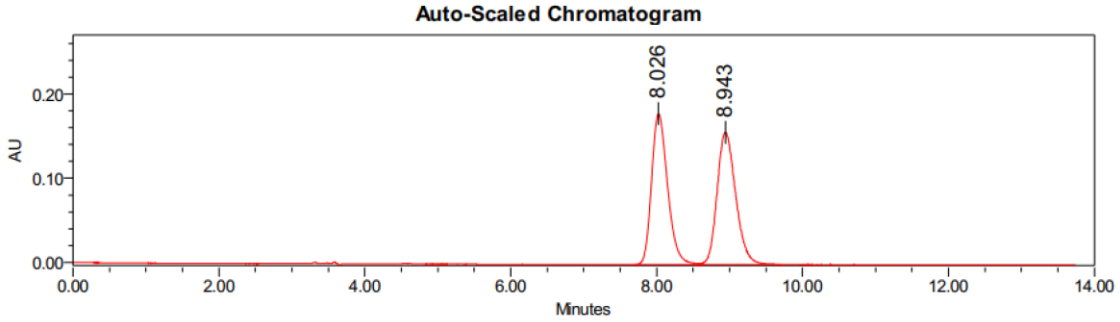
	Channel Description	RT	Height (μV)	Area (μV*sec)	% Area
1	2998 (210-400)nm	7.212	38356	518833	49.88
2	2998 (210-400)nm	7.892	34671	521327	50.12



Peak Results

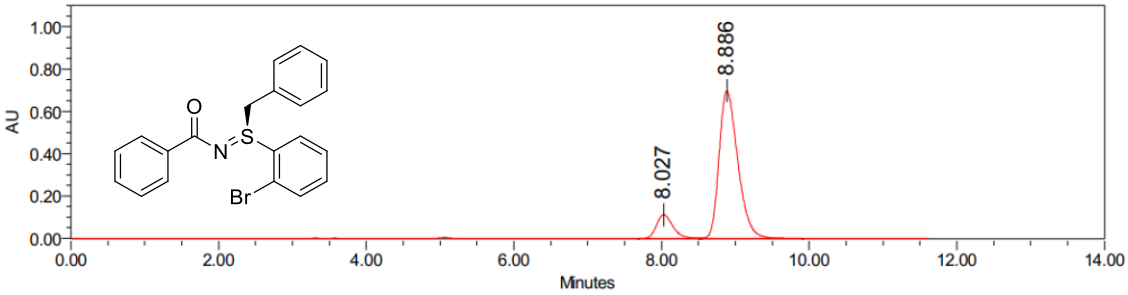
	Channel Description	RT	Height (μV)	Area (μV*sec)	% Area
1	2998 (210-400)nm	7.710	60070	883664	9.49
2	2998 (210-400)nm	8.442	489295	8430793	90.51

(*S*)-*N*-(benzyl(2-bromophenyl)-λ^4-sulfaneylidene)benzamide (3ac)



Peak Results

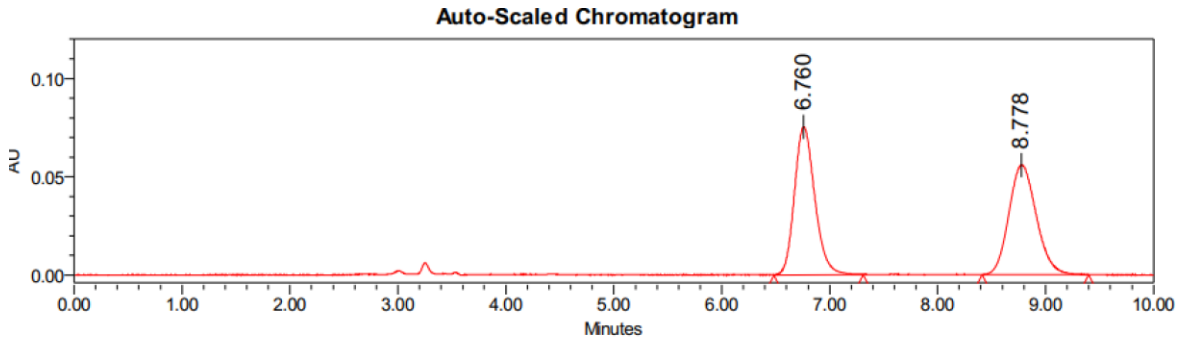
	Channel Description	RT	Height (μV)	Area (μV*sec)	% Area
1	2998 (210-400)nm	8.026	179431	2747331	49.92
2	2998 (210-400)nm	8.943	156819	2756457	50.08



Peak Results

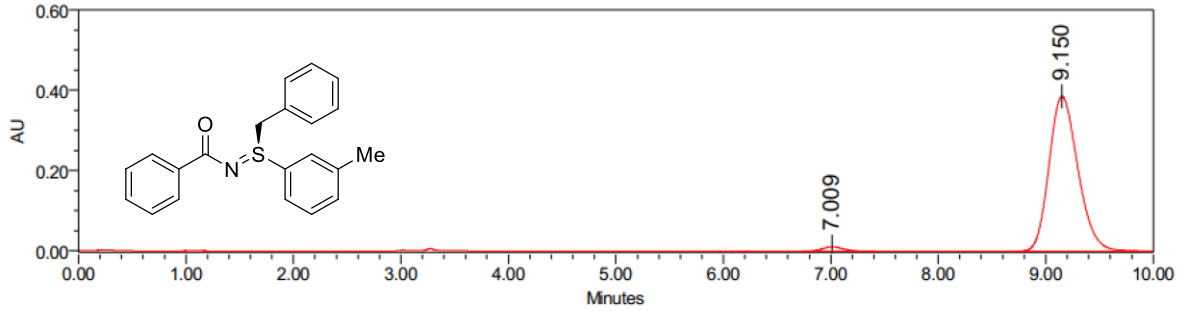
	Channel Description	RT	Height (μV)	Area (μV*sec)	% Area
1	2998 (210-400)nm	8.027	111463	1715946	12.32
2	2998 (210-400)nm	8.886	696792	12212759	87.68

(*S*)-*N*-(benzyl(*m*-tolyl)-λ^4-sulfaneylidene)benzamide (3ad)



Peak Results

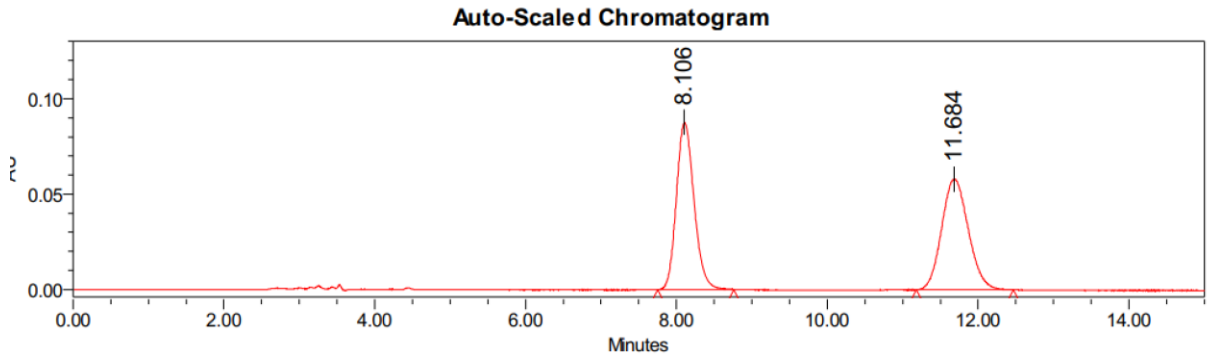
	Channel Description	RT	Height (μV)	Area (μV*sec)	% Area
1	2998 (210-400)nm	6.760	75291	982958	49.92
2	2998 (210-400)nm	8.778	55865	986135	50.08



Peak Results

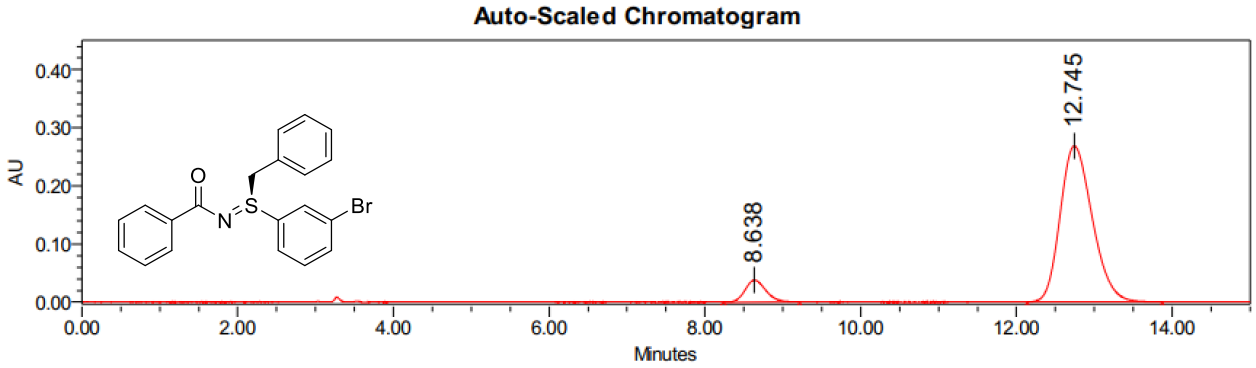
	Channel Description	RT	Height (μV)	Area (μV*sec)	% Area
1	2998 (210-400)nm	7.009	11475	155640	2.12
2	2998 (210-400)nm	9.150	385649	7190281	97.88

(*S*)-*N*-(benzyl(3-bromophenyl)-λ^4-sulfaneylidene)benzamide (3ae)



Peak Results

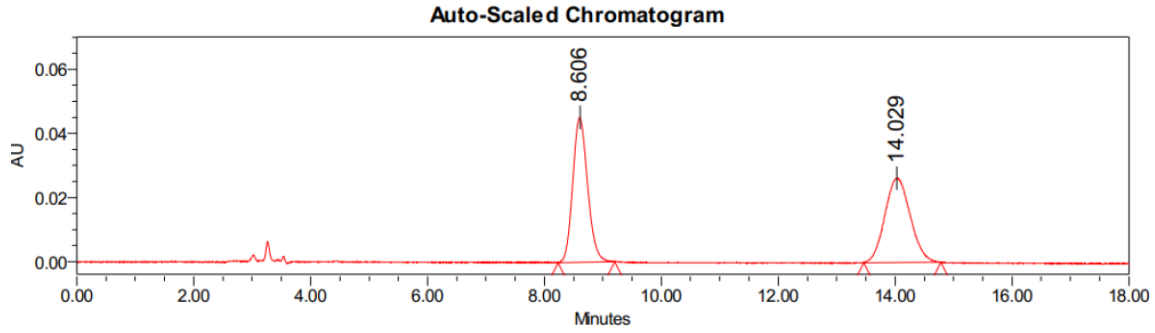
	Channel Description	RT	Height (μV)	Area (μV*sec)	% Area
1	2998 (210-400)nm	8.106	87595	1423213	50.04
2	2998 (210-400)nm	11.684	58057	1420980	49.96



Peak Results

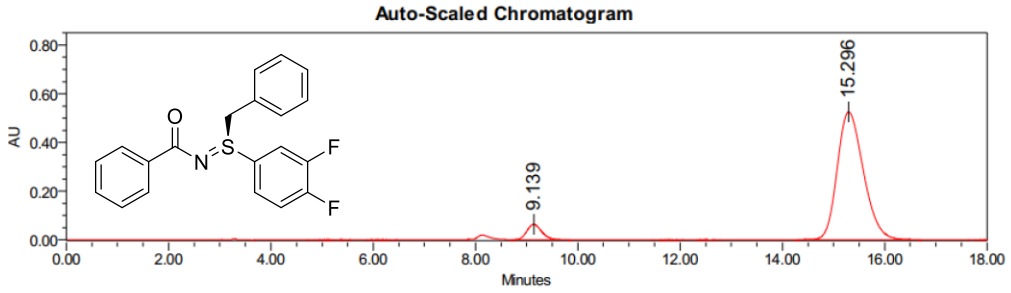
	Channel Description	RT	Height (μV)	Area (μV*sec)	% Area
1	2998 (210-400)nm	8.638	37866	711787	8.46
2	2998 (210-400)nm	12.745	268173	7701285	91.54

(*S*)-*N*-(benzyl(3,4-difluorophenyl)-λ^4-sulfaneylidene)benzamide (3af)



Peak Results

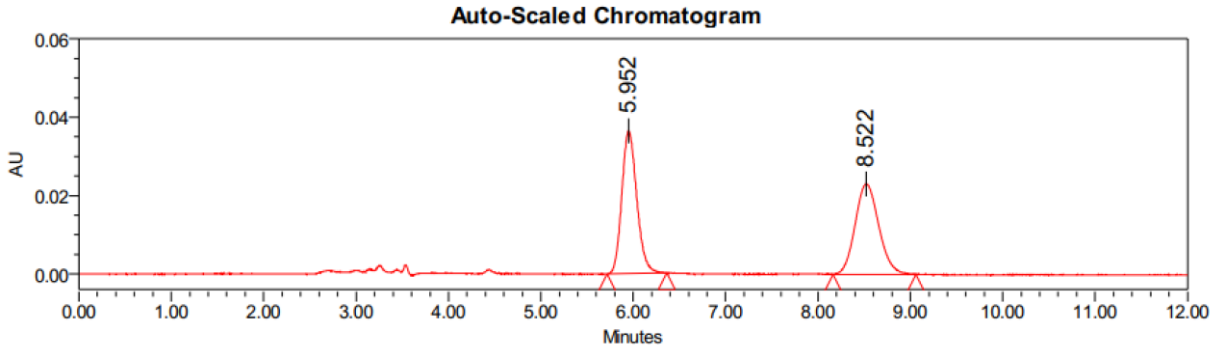
	Channel Description	RT	Height (μV)	Area (μV*sec)	% Area
1	2998 (210-400)nm	8.606	45104	799685	50.33
2	2998 (210-400)nm	14.029	26278	789172	49.67



Peak Results

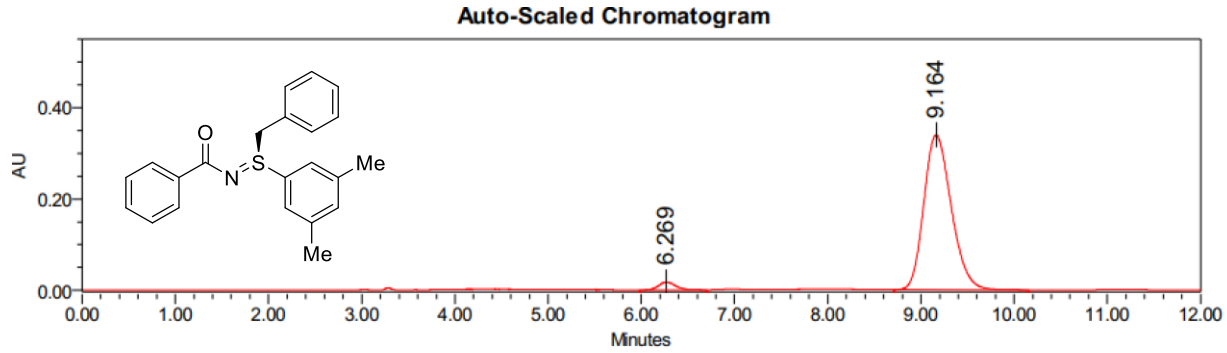
	Channel Description	RT	Height (μV)	Area (μV*sec)	% Area
1	2998 (210-400)nm	9.139	63130	1267146	6.34
2	2998 (210-400)nm	15.296	524980	18706058	93.66

(*S*)-*N*-(benzyl(3,5-dimethylphenyl)-λ^4-sulfaneylidene)benzamide (3ag)



Peak Results

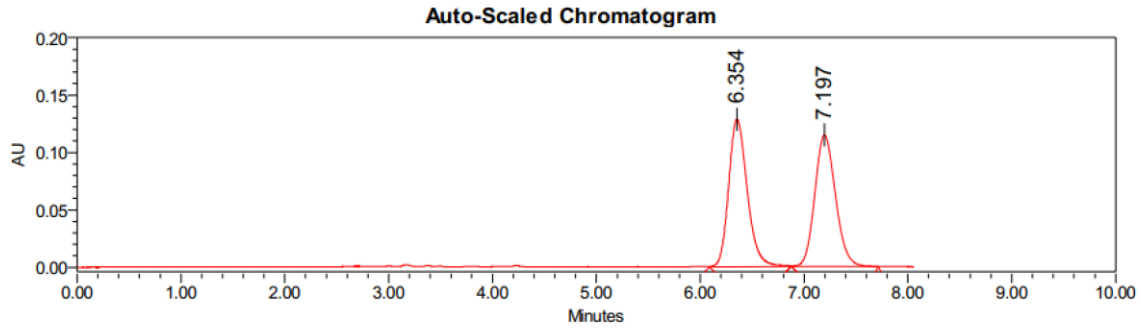
	Channel Description	RT	Height (μV)	Area (μV*sec)	% Area
1	2998 (210-400)nm	5.952	36484	411165	50.02
2	2998 (210-400)nm	8.522	23096	410786	49.98



Peak Results

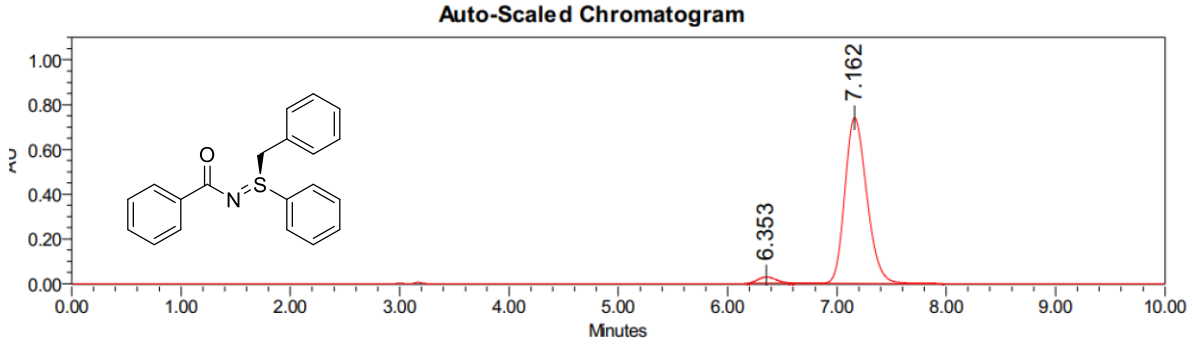
	Channel Description	RT	Height (μV)	Area (μV*sec)	% Area
1	2998 (210-400)nm	6.269	17300	221826	3.10
2	2998 (210-400)nm	9.164	339258	6938178	96.90

(*S*)-*N*-(benzyl(phenyl)-λ^4-sulfaneylidene)benzamide (3ah)



Peak Results

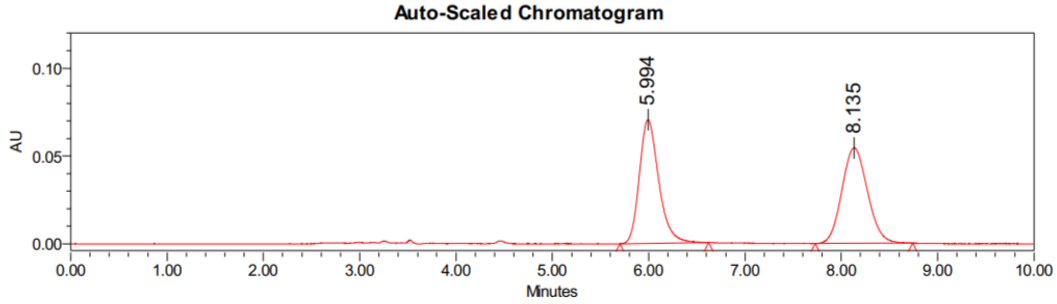
	Channel Description	RT	Height (μV)	Area (μV*sec)	% Area
1	2998 (210-400)nm	6.354	128617	1605543	50.17
2	2998 (210-400)nm	7.197	114633	1594732	49.83



Peak Results

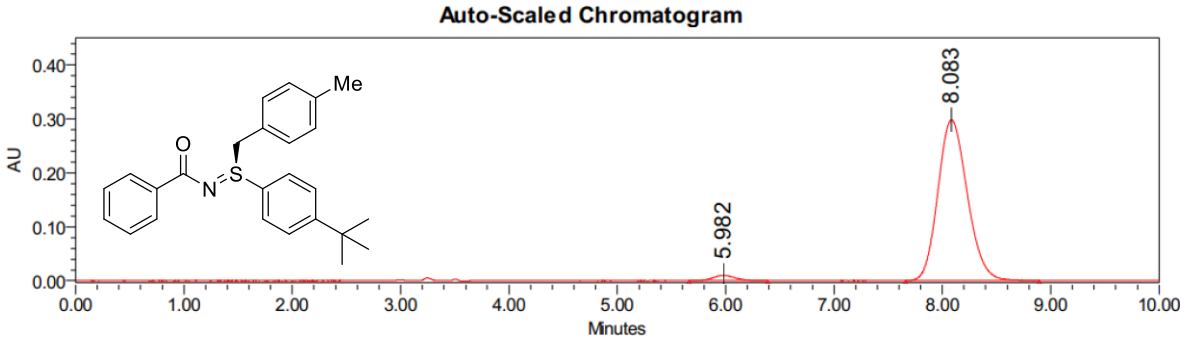
	Channel Description	RT	Height (μV)	Area (μV*sec)	% Area
1	2998 (210-400)nm	6.353	27587	313530	2.95
2	2998 (210-400)nm	7.162	739633	10322726	97.05

(*S*)-*N*-((4-(*tert*-butyl)phenyl)(4-methylbenzyl)-λ^4-sulfaneylidene)benzamide (3ai)



Peak Results

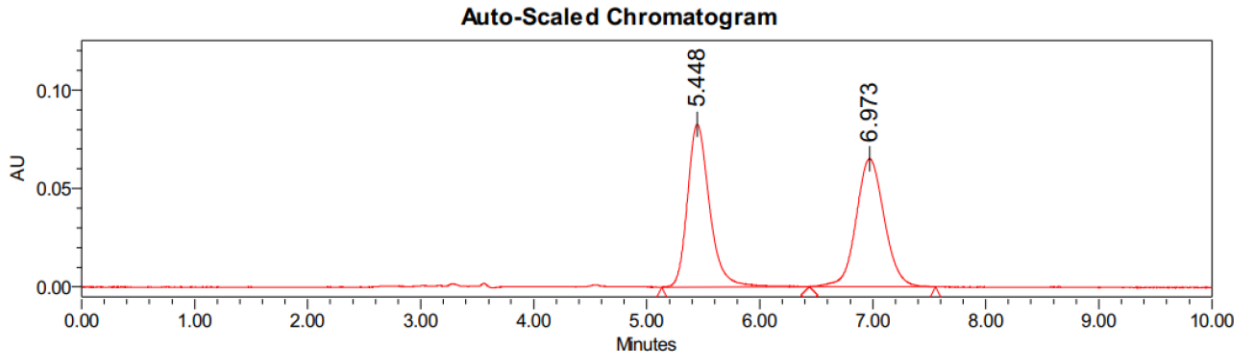
	Channel Description	RT	Height (μV)	Area (μV*sec)	% Area
1	2998 (210-400)nm	5.994	70371	985068	49.46
2	2998 (210-400)nm	8.135	54484	1006731	50.54



Peak Results

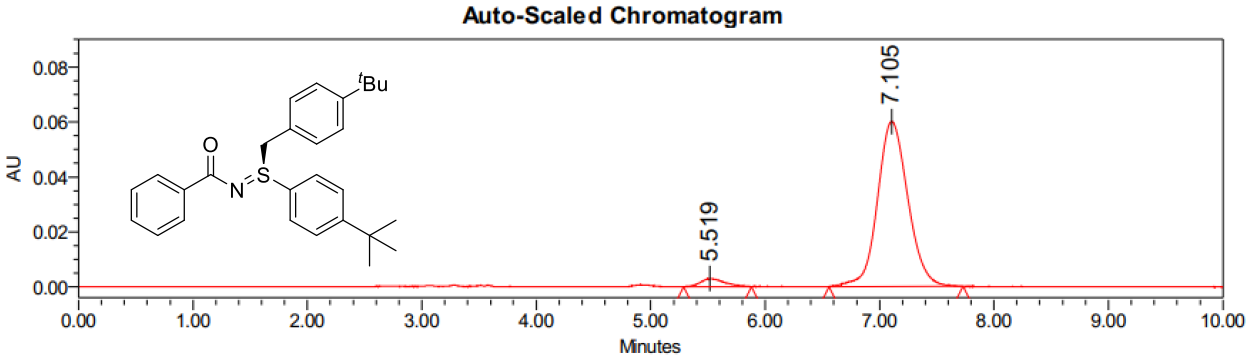
	Channel Description	RT	Height (μV)	Area (μV*sec)	% Area
1	2998 (210-400)nm	5.982	9928	145485	2.53
2	2998 (210-400)nm	8.083	297902	5612233	97.47

(*S*)-*N*-((4-(*tert*-butyl)benzyl)(4-(*tert*-butyl)phenyl)-λ^4-sulfaneylidene)benzamide (3aj)



Peak Results

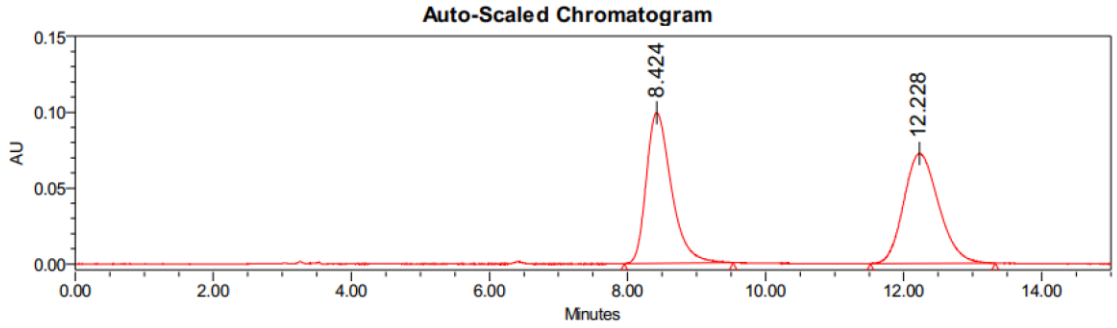
	Channel Description	RT	Height (μV)	Area (μV*sec)	% Area
1	2998 (210-400)nm	5.448	82625	1126504	49.88
2	2998 (210-400)nm	6.973	65109	1132070	50.12



Peak Results

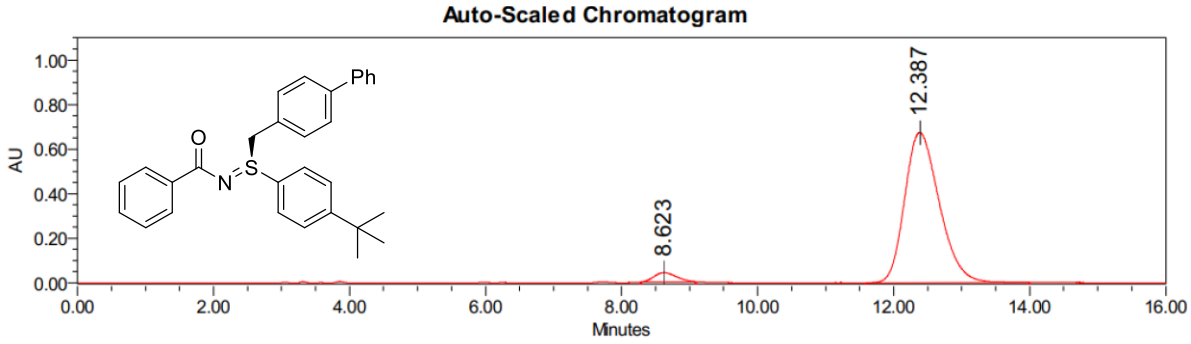
	Channel Description	RT	Height (μV)	Area (μV*sec)	% Area
1	2998 (210-400)nm	5.519	2915	41914	3.64
2	2998 (210-400)nm	7.105	60012	1109652	96.36

(*S*)-*N*-(([1,1'-biphenyl]-4-ylmethyl)(4-(*tert*-butyl)phenyl)-λ^4-sulfaneylidene)benzamide (3ak)



Peak Results

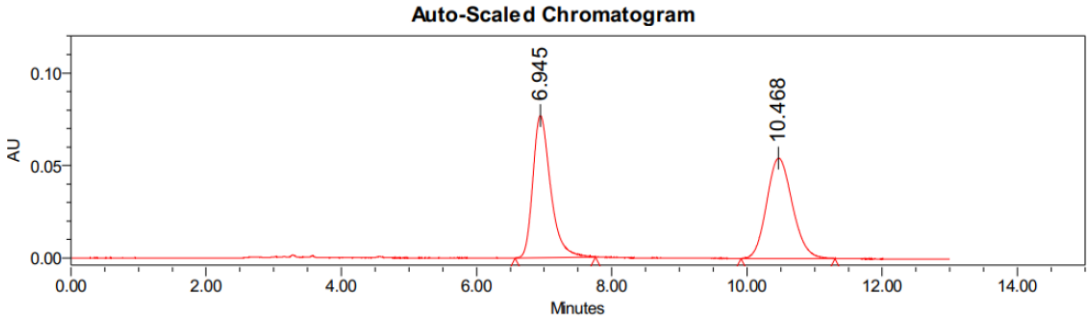
	Channel Description	RT	Height (μV)	Area (μV*sec)	% Area
1	2998 (210-400)nm	8.424	99242	2507143	49.58
2	2998 (210-400)nm	12.228	72472	2549276	50.42



Peak Results

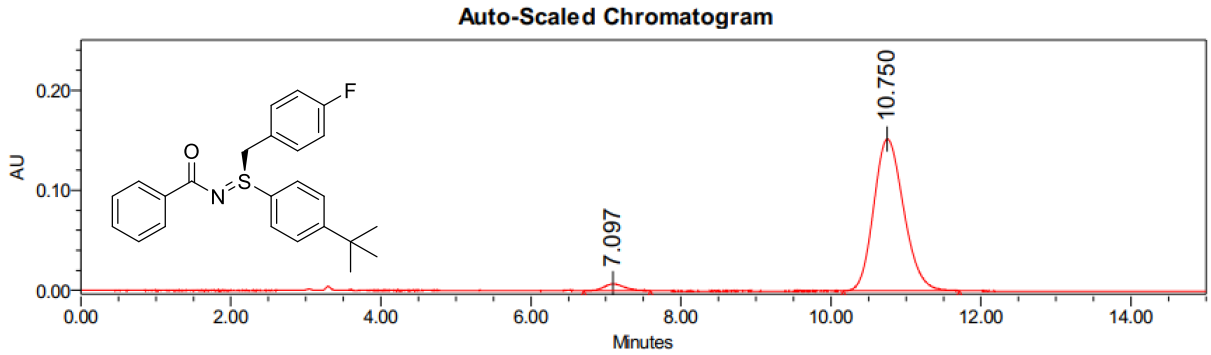
	Channel Description	RT	Height (μV)	Area (μV*sec)	% Area
1	2998 (210-400)nm	8.623	41445	939040	3.81
2	2998 (210-400)nm	12.387	674267	23723318	96.19

(*S*)-*N*-((4-(*tert*-butyl)phenyl)(4-fluorobenzyl)-λ^4-sulfaneylidene)benzamide (3al)



Peak Results

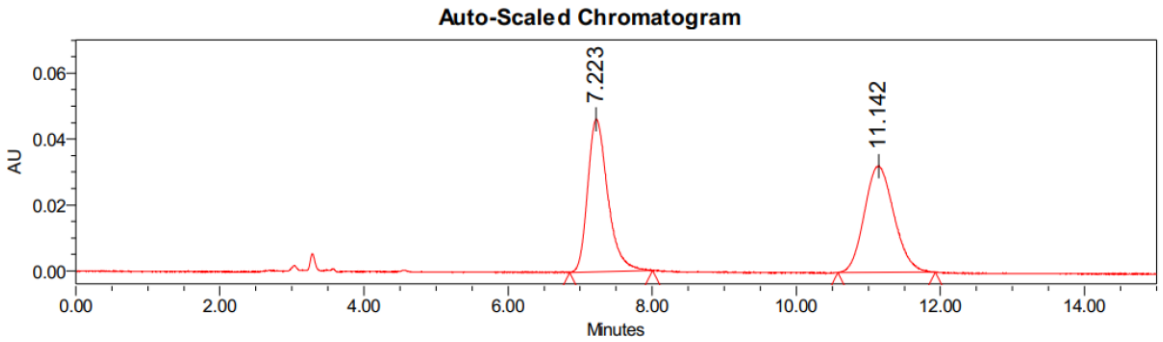
	Channel Description	RT	Height (μV)	Area (μV*sec)	% Area
1	2998 (210-400)nm	6.945	76726	1397420	49.34
2	2998 (210-400)nm	10.468	54253	1435006	50.66



Peak Results

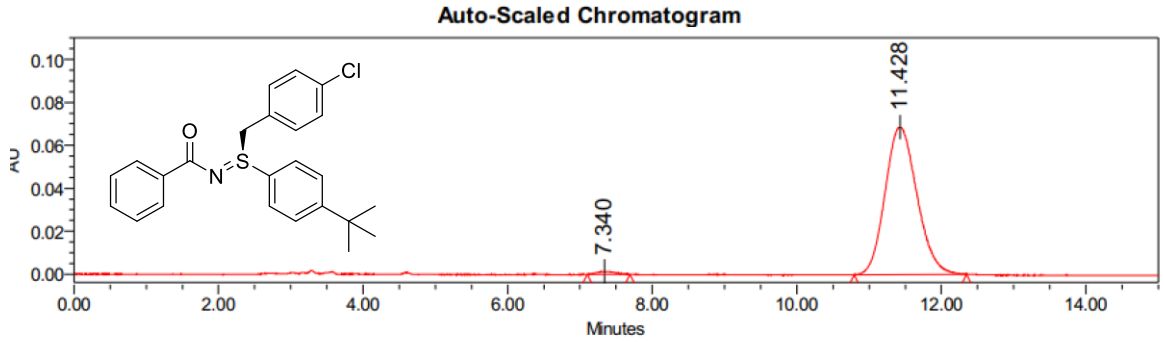
	Channel Description	RT	Height (μV)	Area (μV*sec)	% Area
1	2998 (210-400)nm	7.097	6959	134457	3.09
2	2998 (210-400)nm	10.750	151788	4219044	96.91

(*S*)-*N*-((4-(*tert*-butyl)phenyl)(4-chlorobenzyl)-λ^4-sulfaneylidene)benzamide (3am)



Peak Results

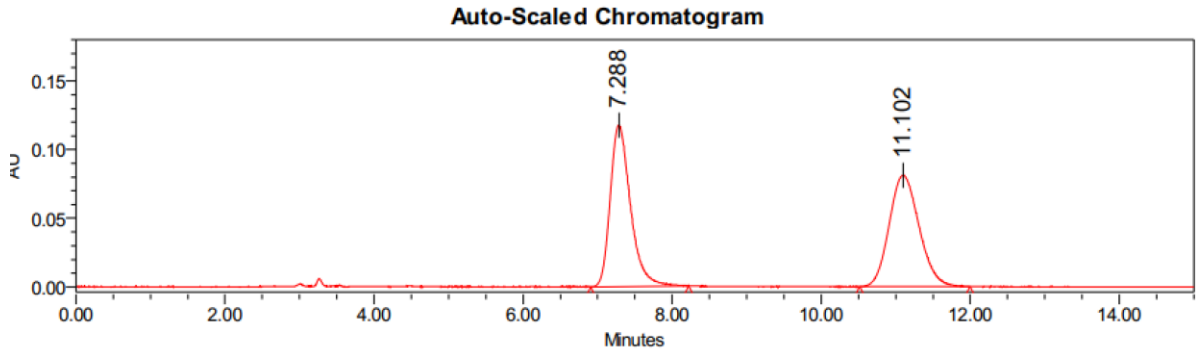
	Channel Description	RT	Height (μV)	Area (μV*sec)	% Area
1	2998 (210-400)nm	7.223	46287	898044	49.26
2	2998 (210-400)nm	11.142	32300	925054	50.74



Peak Results

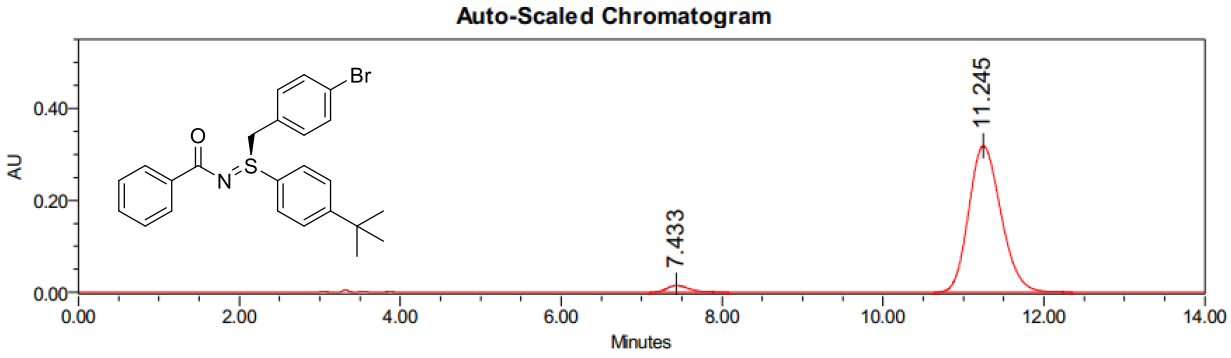
	Channel Description	RT	Height (μV)	Area (μV*sec)	% Area
1	2998 (210-400)nm	7.340	1374	24841	1.17
2	2998 (210-400)nm	11.428	68798	2099403	98.83

(*S*)-*N*-((4-bromobenzyl)(4-(*tert*-butyl)phenyl)-λ^4-sulfaneylidene)benzamide (3an)



Peak Results

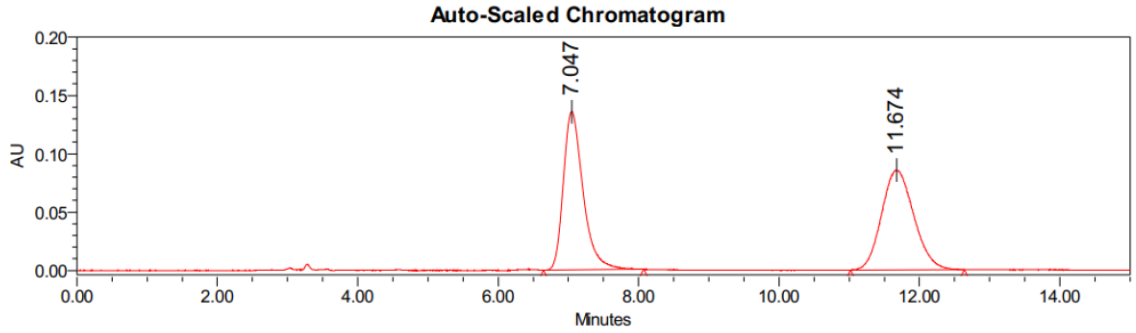
	Channel Description	RT	Height (μV)	Area (μV*sec)	% Area
1	2998 (210-400)nm	7.288	117863	2224694	49.54
2	2998 (210-400)nm	11.102	81186	2266418	50.46



Peak Results

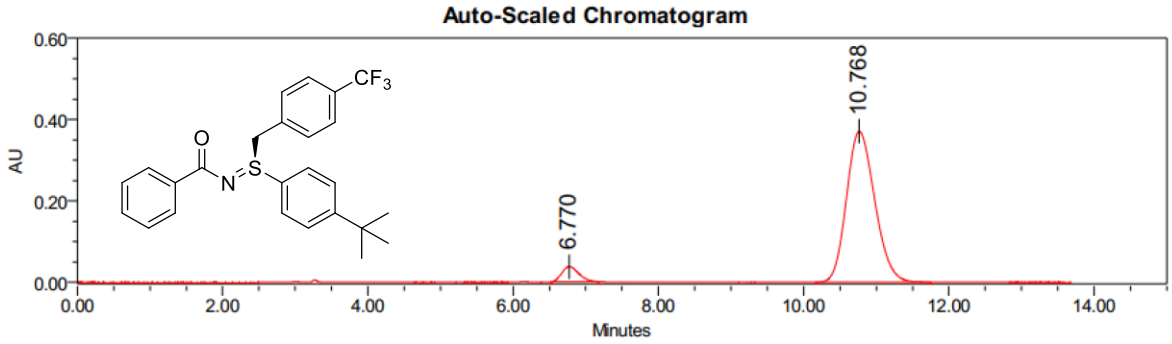
	Channel Description	RT	Height (μV)	Area (μV*sec)	% Area
1	2998 (210-400)nm	7.433	15025	287205	3.14
2	2998 (210-400)nm	11.245	318297	8857547	96.86

(*S*)-*N*-((4-(*tert*-butyl)phenyl)(4-(trifluoromethyl)benzyl)-λ^4-sulfaneylidene)benzamide (3ao)



Peak Results

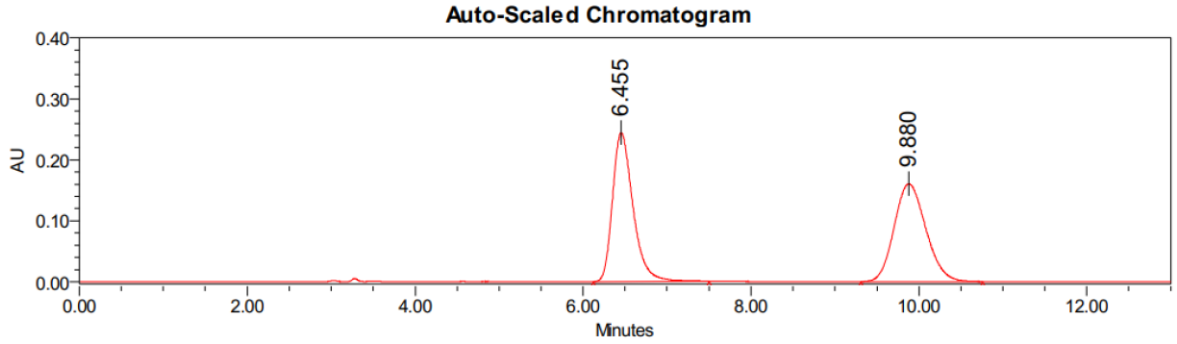
	Channel Description	RT	Height (μV)	Area (μV*sec)	% Area
1	2998 (210-400)nm	7.047	135725	2660897	49.50
2	2998 (210-400)nm	11.674	85422	2714698	50.50



Peak Results

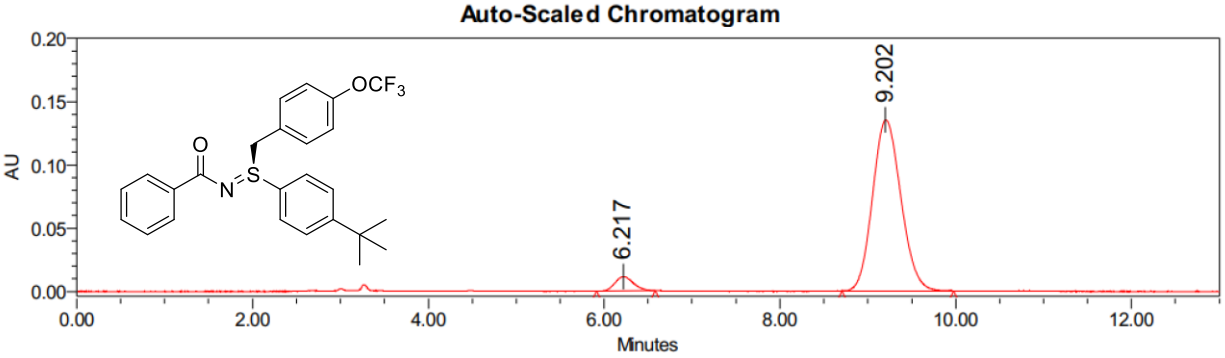
	Channel Description	RT	Height (μV)	Area (μV*sec)	% Area
1	2998 (210-400)nm	6.770	37391	609960	5.71
2	2998 (210-400)nm	10.768	370858	10067416	94.29

(*S*)-*N*-((4-(*tert*-butyl)phenyl)(4-(trifluoromethoxy)benzyl)-λ^4-sulfaneylidene)benzamide (3ap)



Peak Results

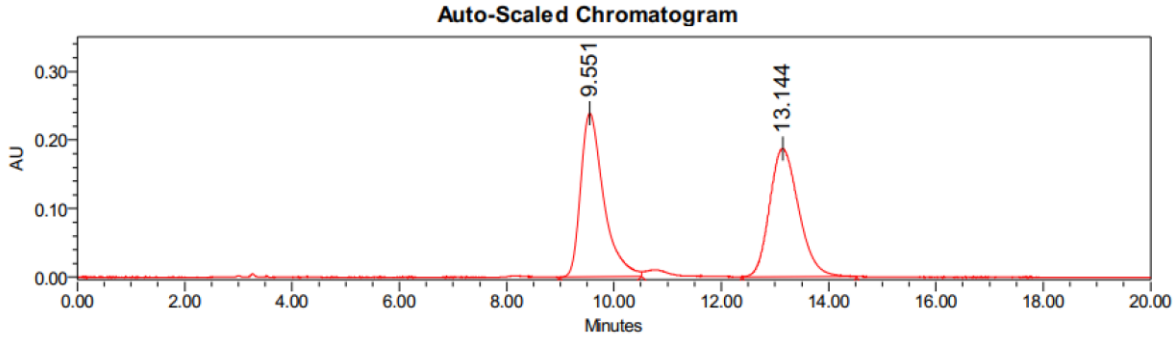
	Channel Description	RT	Height (μV)	Area (μV*sec)	% Area
1	2998 (210-400)nm	6.455	244416	4141826	49.72
2	2998 (210-400)nm	9.880	160230	4188689	50.28



Peak Results

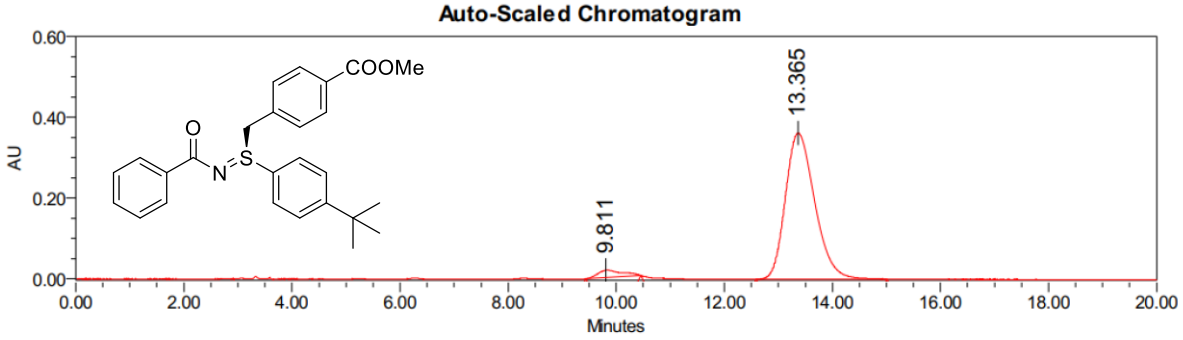
	Channel Description	RT	Height (μV)	Area (μV*sec)	% Area
1	2998 (210-400)nm	6.217	11383	167422	5.22
2	2998 (210-400)nm	9.202	135178	3042034	94.78

methyl (*S*)-4-((*N*-benzoyl-λ^4-(4-(*tert*-butyl)phenyl)sulfinimidoyl)methyl)benzoate (3aq)



Peak Results

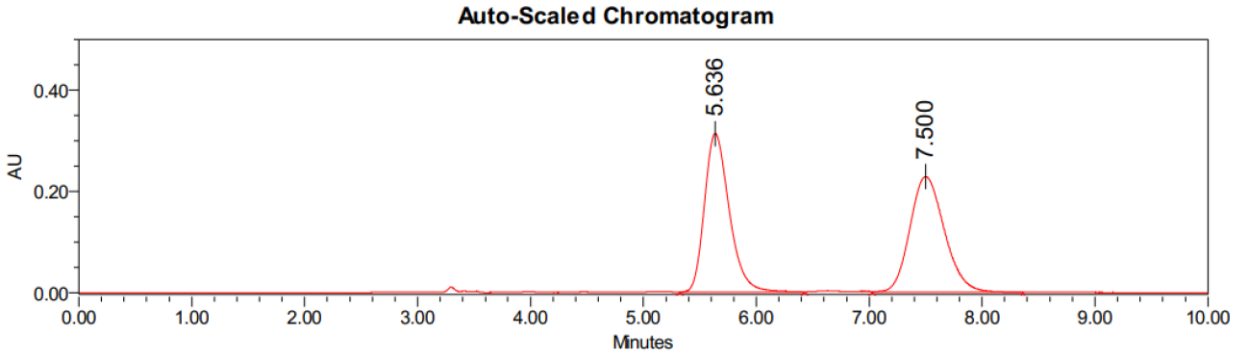
	Channel Description	RT	Height (μV)	Area (μV*sec)	% Area
1	2998 (210-400)nm	9.551	238613	7109127	50.37
2	2998 (210-400)nm	13.144	186780	7005544	49.63



Peak Results

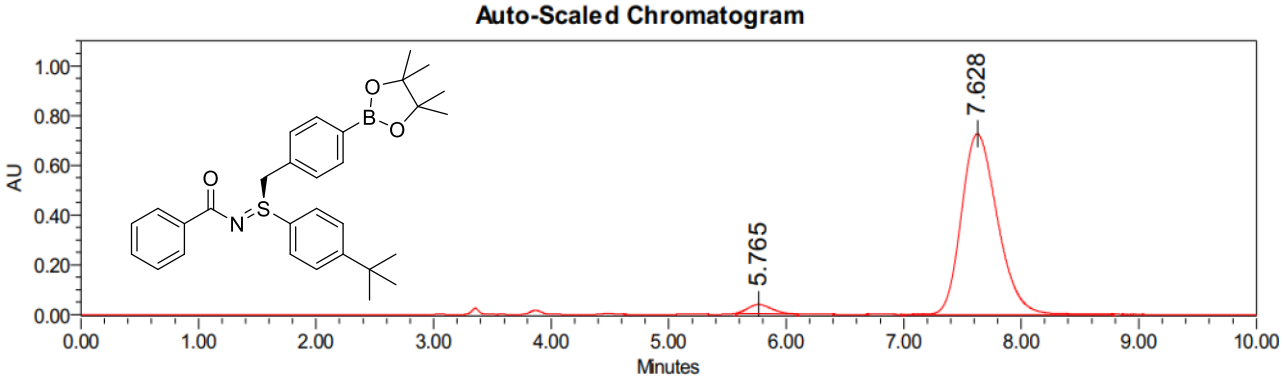
	Channel Description	RT	Height (μV)	Area (μV*sec)	% Area
1	2998 (210-400)nm	9.811	18145	568456	4.01
2	2998 (210-400)nm	13.365	362062	13620158	95.99

(*S*)-*N*-((4-(*tert*-butyl)phenyl)(4-(4,4,5,5-tetramethyl-1,3,2-dioxaborolan-2-yl)benzyl)-λ^4-sulfaneylidene)benzamide (3ar)



Peak Results

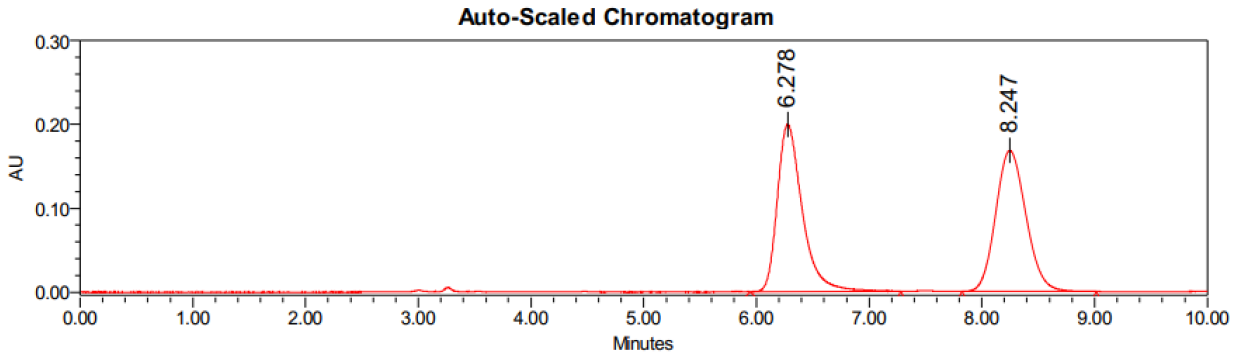
	Channel Description	RT	Height (μV)	Area (μV*sec)	% Area
1	2998 (210-400)nm	5.636	313969	4848016	49.90
2	2998 (210-400)nm	7.500	228781	4866853	50.10



Peak Results

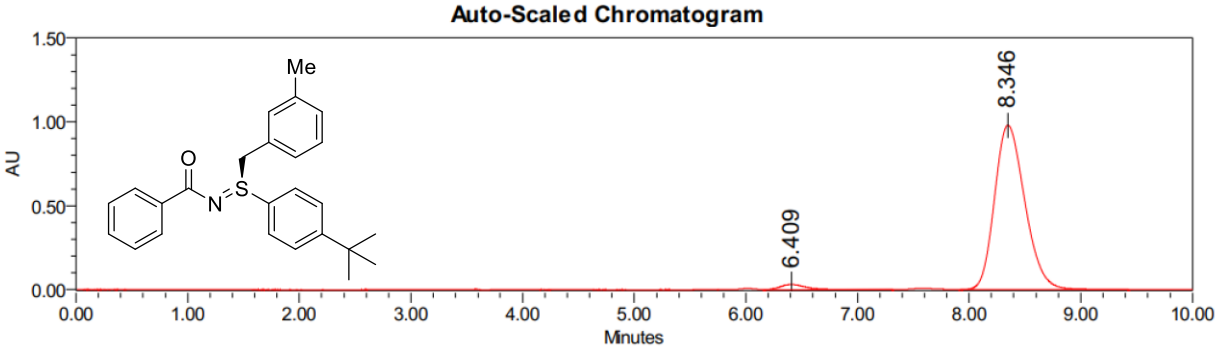
	Channel Description	RT	Height (μV)	Area (μV*sec)	% Area
1	2998 (210-400)nm	5.765	35925	493469	3.10
2	2998 (210-400)nm	7.628	726144	15401880	96.90

(*S*)-*N*-((4-(*tert*-butyl)phenyl)(3-methylbenzyl)-λ^4-sulfaneylidene)benzamide (3as)



Peak Results

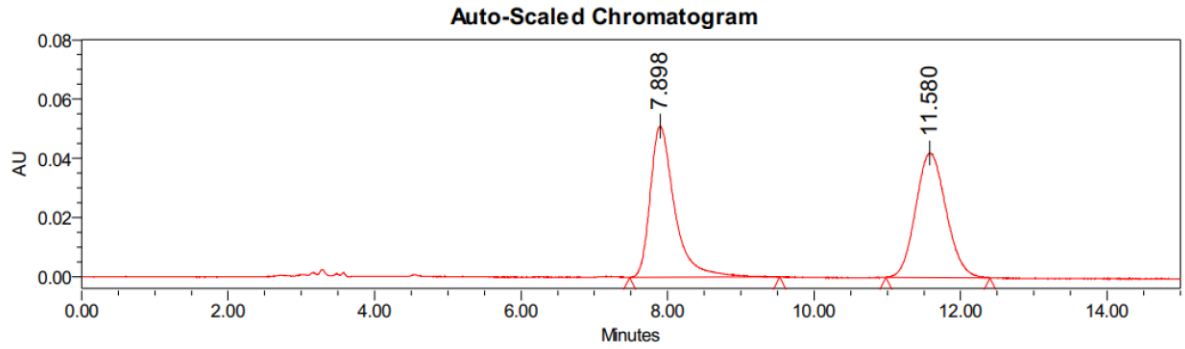
	Channel Description	RT	Height (μV)	Area (μV*sec)	% Area
1	2998 (210-400)nm	6.278	199639	3081260	49.47
2	2998 (210-400)nm	8.247	168301	3147625	50.53



Peak Results

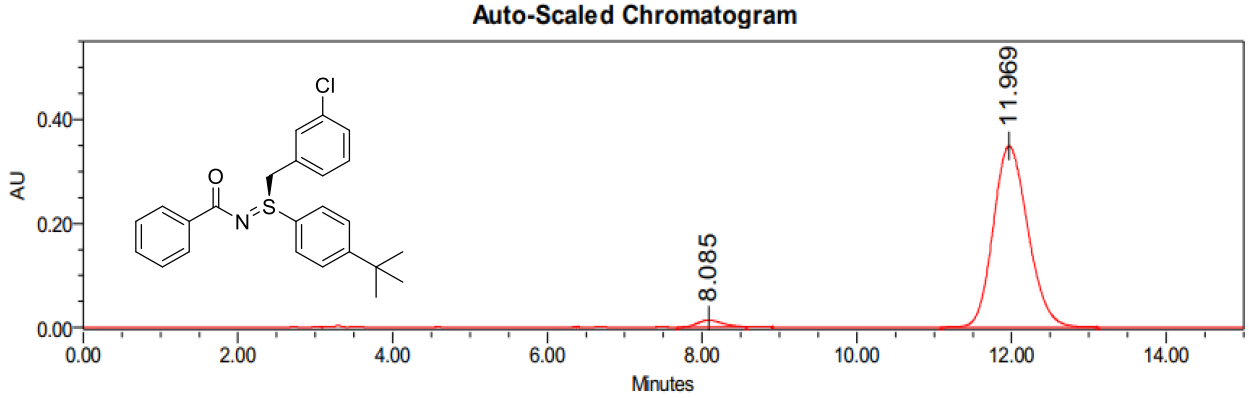
	Channel Description	RT	Height (μV)	Area (μV*sec)	% Area
1	2998 (210-400)nm	6.409	31054	515786	2.71
2	2998 (210-400)nm	8.346	980170	18532665	97.29

(*S*)-*N*-((4-(*tert*-butyl)phenyl)(3-chlorobenzyl)-λ^4-sulfaneylidene)benzamide (3at)



Peak Results

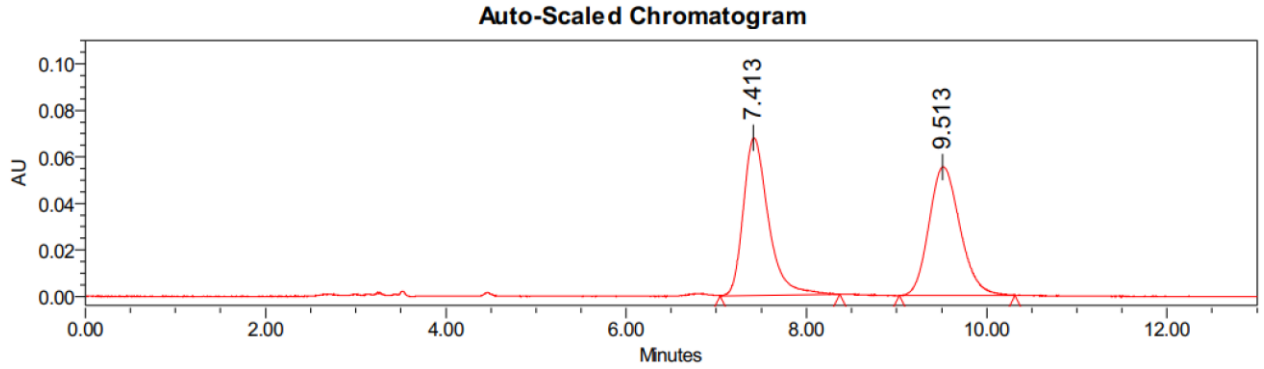
	Channel Description	RT	Height (μV)	Area (μV*sec)	% Area
1	2998 (210-400)nm	7.898	51084	1178611	49.39
2	2998 (210-400)nm	11.580	42059	1207836	50.61



Peak Results

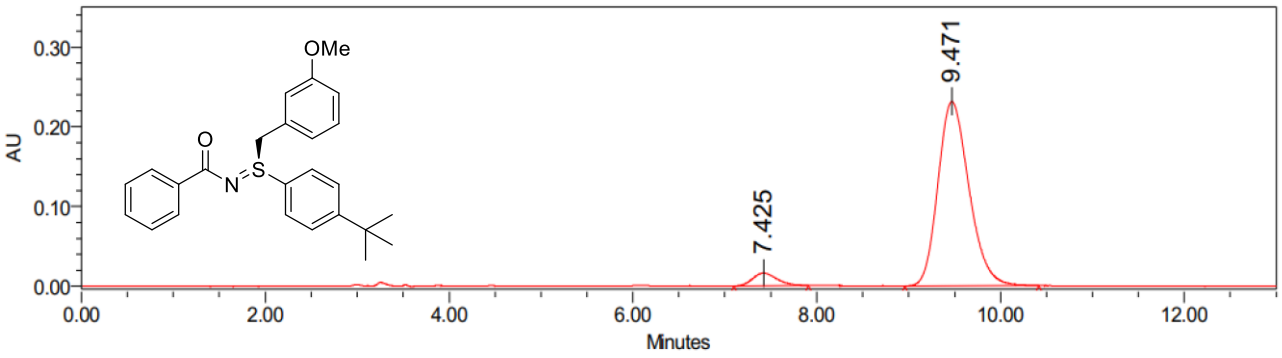
	Channel Description	RT	Height (μV)	Area (μV*sec)	% Area
1	2998 (210-400)nm	8.085	13237	293000	2.63
2	2998 (210-400)nm	11.969	348632	10852999	97.37

(*S*)-*N*-((4-(*tert*-butyl)phenyl)(3-methoxybenzyl)-λ^4-sulfaneylidene)benzamide (3au)



Peak Results

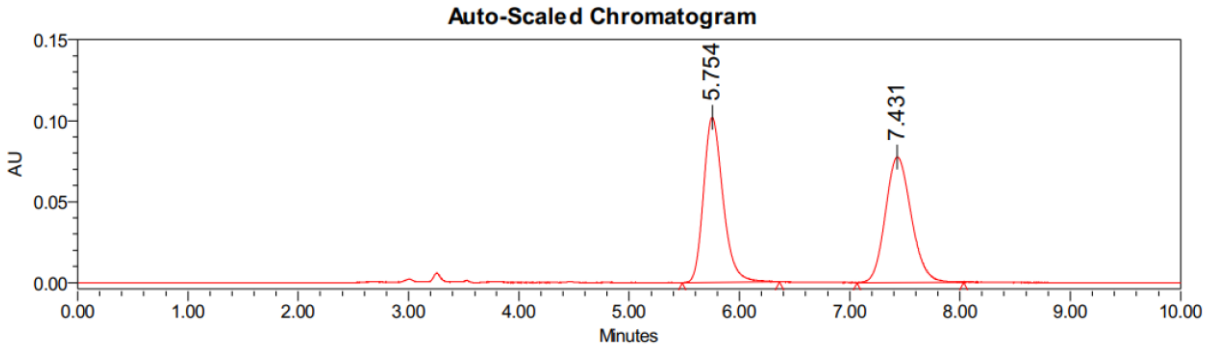
	Channel Description	RT	Height (μV)	Area (μV*sec)	% Area
1	2998 (210-400)nm	7.413	67766	1310974	49.67
2	2998 (210-400)nm	9.513	55366	1328316	50.33



Peak Results

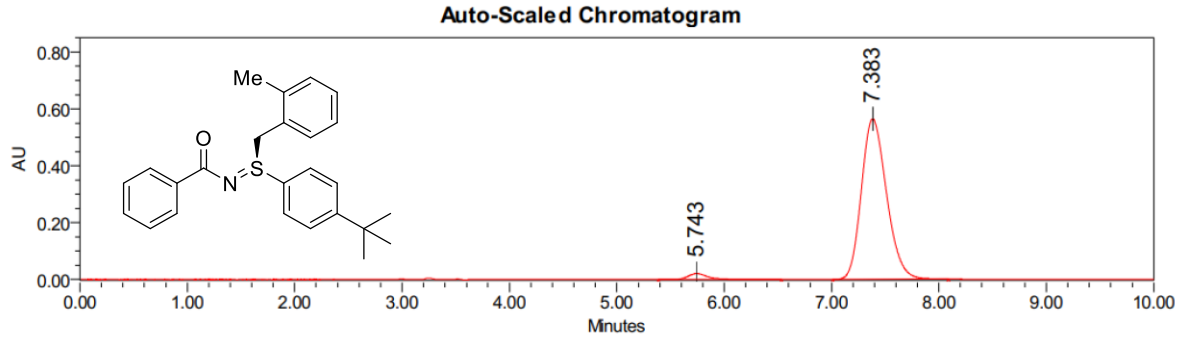
	Channel Description	RT	Height (μV)	Area (μV*sec)	% Area
1	2998 (210-400)nm	7.425	16074	296957	5.18
2	2998 (210-400)nm	9.471	231139	5438044	94.82

(*S*)-*N*-((4-(*tert*-butyl)phenyl)(2-methylbenzyl)-λ^4-sulfaneylidene)benzamide (3av)



Peak Results

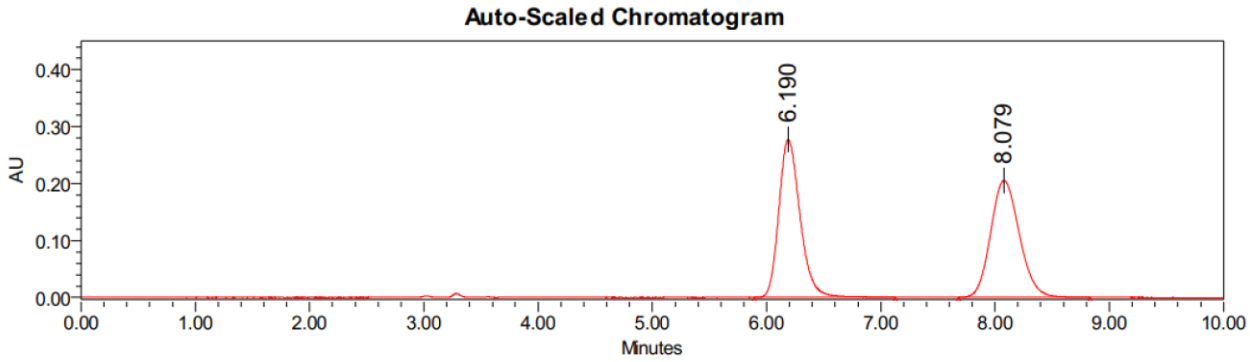
	Channel Description	RT	Height (μV)	Area (μV*sec)	% Area
1	2998 (210-400)nm	5.754	101873	1254241	49.87
2	2998 (210-400)nm	7.431	77420	1260831	50.13



Peak Results

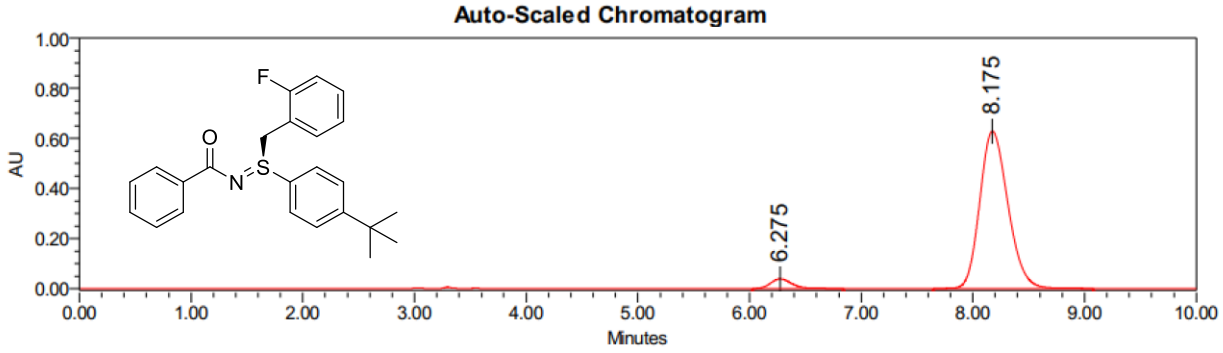
	Channel Description	RT	Height (μV)	Area (μV*sec)	% Area
1	2998 (210-400)nm	5.743	20673	277191	2.93
2	2998 (210-400)nm	7.383	563982	9183434	97.07

(*S*)-*N*-((4-(*tert*-butyl)phenyl)(2-fluorobenzyl)-λ^4-sulfaneylidene)benzamide (3aw)



Peak Results

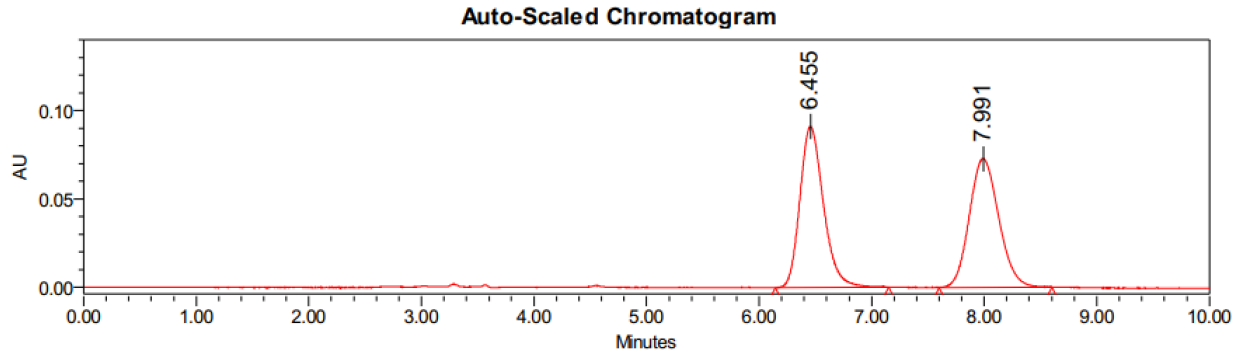
	Channel Description	RT	Height (μV)	Area (μV*sec)	% Area
1	2998 (210-400)nm	6.190	277346	3588067	50.00
2	2998 (210-400)nm	8.079	204949	3587889	50.00



Peak Results

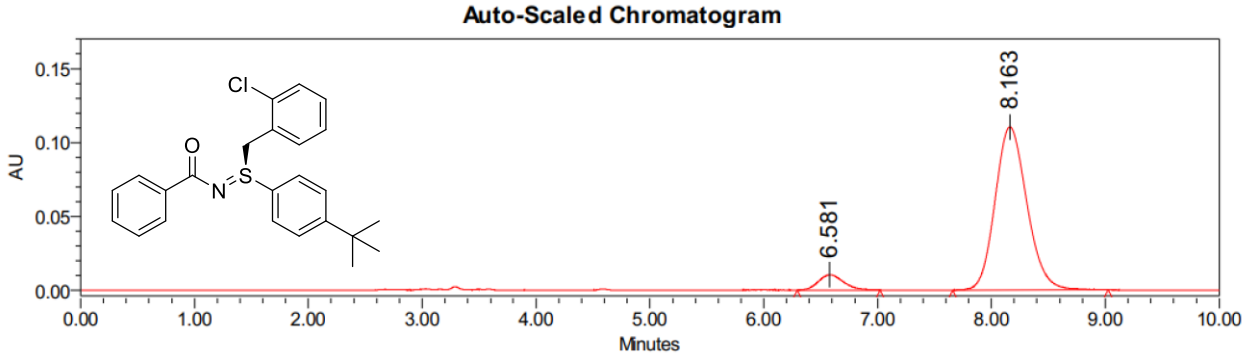
	Channel Description	RT	Height (μV)	Area (μV*sec)	% Area
1	2998 (210-400)nm	6.275	38963	511367	4.43
2	2998 (210-400)nm	8.175	628614	11033986	95.57

(*S*)-*N*-((4-(*tert*-butyl)phenyl)(2-chlorobenzyl)-λ^4-sulfaneylidene)benzamide (3ax)



Peak Results

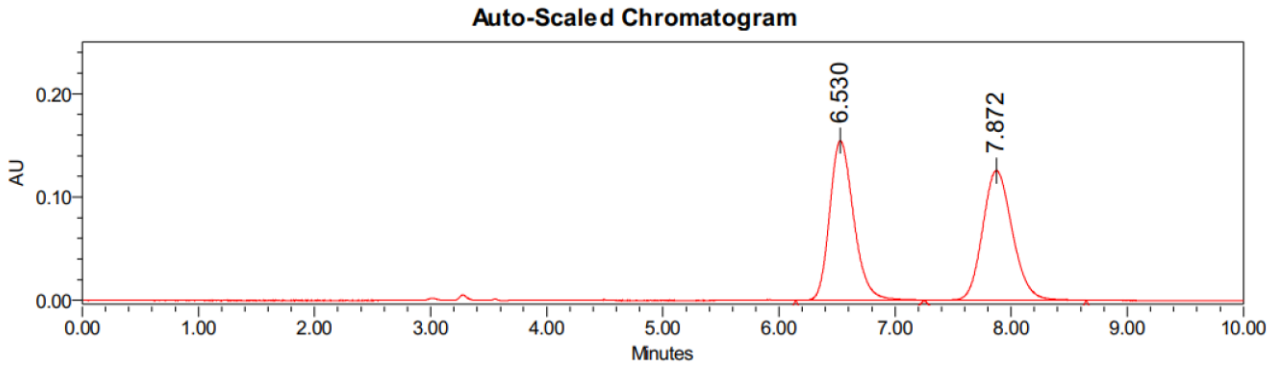
	Channel Description	RT	Height (μV)	Area (μV*sec)	% Area
1	2998 (210-400)nm	6.455	91285	1327122	50.09
2	2998 (210-400)nm	7.991	72873	1322240	49.91



Peak Results

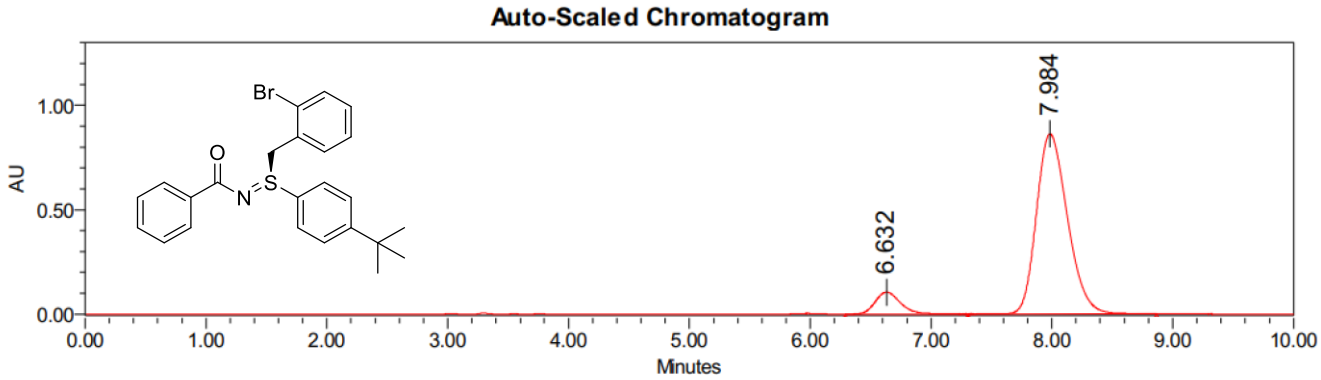
	Channel Description	RT	Height (μV)	Area (μV*sec)	% Area
1	2998 (210-400)nm	6.581	10285	156094	6.78
2	2998 (210-400)nm	8.163	110448	2145144	93.22

(*S*)-*N*-((2-bromobenzyl)(4-(*tert*-butyl)phenyl)-λ^4-sulfaneylidene)benzamide (3ay)



Peak Results

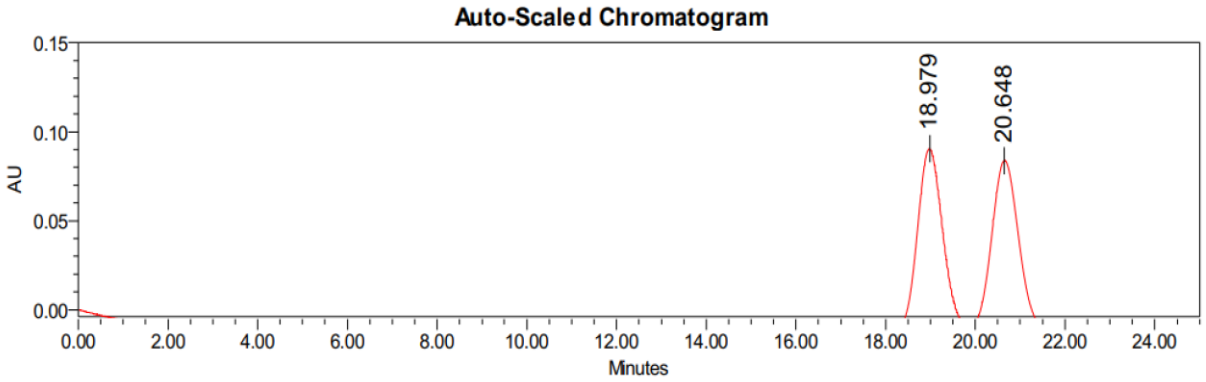
	Channel Description	RT	Height (μV)	Area (μV*sec)	% Area
1	2998 (210-400)nm	6.530	154697	2222195	49.88
2	2998 (210-400)nm	7.872	125617	2232998	50.12



Peak Results

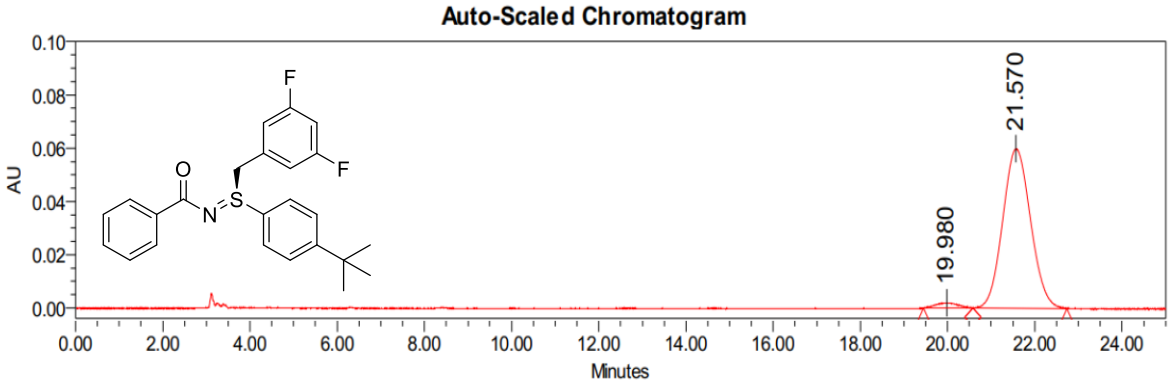
	Channel Description	RT	Height (μV)	Area (μV*sec)	% Area
1	2998 (210-400)nm	6.632	105500	1528418	9.05
2	2998 (210-400)nm	7.984	862165	15358561	90.95

(*S*)-*N*-((4-(*tert*-butyl)phenyl)(3,5-difluorobenzyl)-λ^4-sulfaneylidene)benzamide (3az)



Peak Results

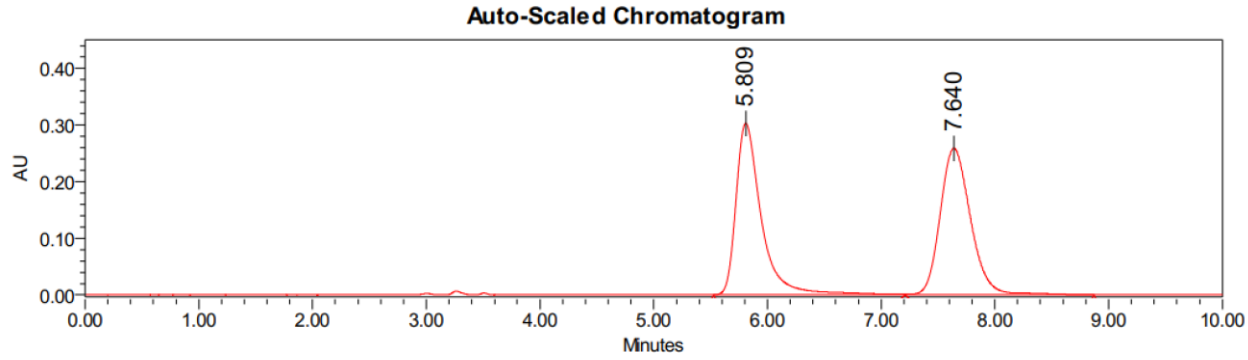
	Channel Description	RT	Height (μV)	Area (μV*sec)	% Area
1	2998 (210-400)nm	18.979	102202	3972041	49.84
2	2998 (210-400)nm	20.648	95625	3997772	50.16



Peak Results

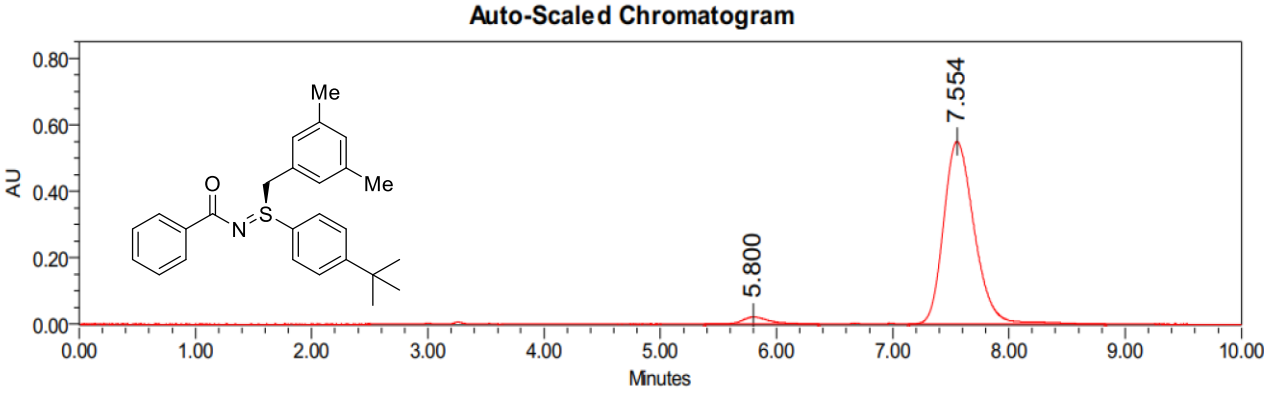
	Channel Description	RT	Height (μV)	Area (μV*sec)	% Area
1	2998 (210-400)nm	19.980	1973	69899	2.55
2	2998 (210-400)nm	21.570	59871	2667876	97.45

(*S*)-*N*-((4-(*tert*-butyl)phenyl)(3,5-dimethylbenzyl)-λ^4-sulfaneylidene)benzamide (3ba)



Peak Results

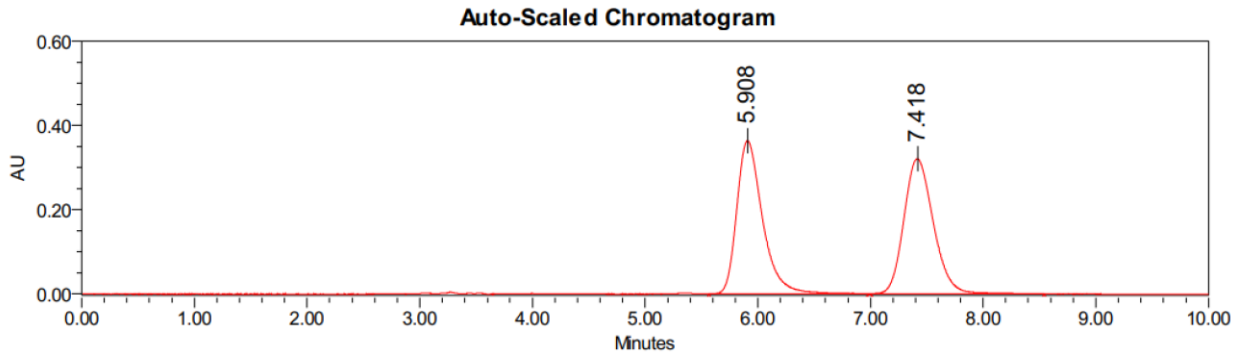
	Channel Description	RT	Height (μV)	Area (μV*sec)	% Area
1	2998 (210-400)nm	5.809	302730	4687252	49.52
2	2998 (210-400)nm	7.640	258625	4777943	50.48



Peak Results

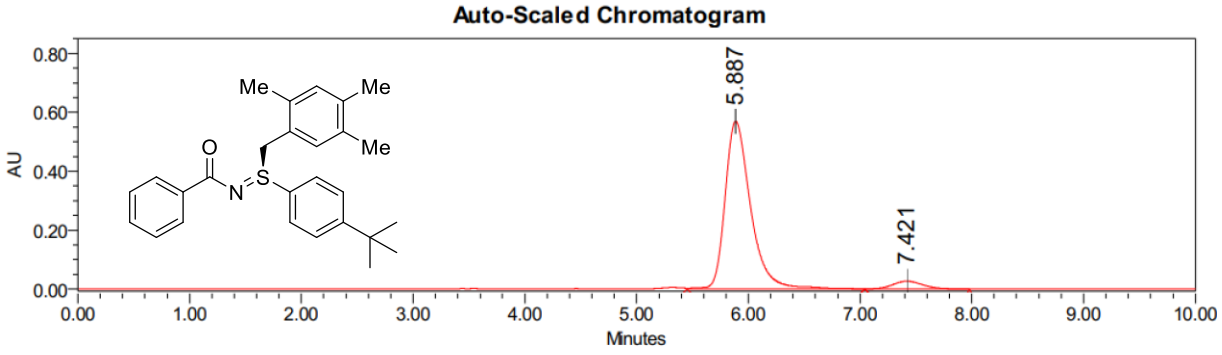
	Channel Description	RT	Height (μV)	Area (μV*sec)	% Area
1	2998 (210-400)nm	5.800	20887	333175	3.21
2	2998 (210-400)nm	7.554	549105	10059428	96.79

(*S*)-*N*-((4-(*tert*-butyl)phenyl)(2,4,5-trimethylbenzyl)-λ^4-sulfaneylidene)benzamide (3bb)



Peak Results

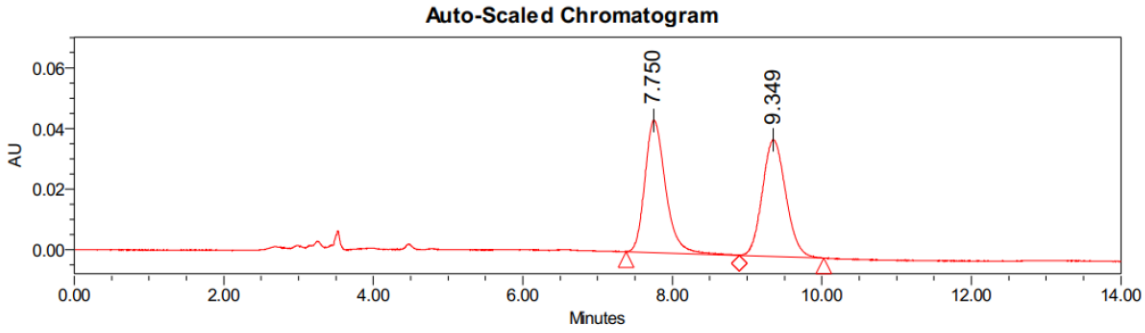
	Channel Description	RT	Height (μV)	Area (μV*sec)	% Area
1	2998 (210-400)nm	5.908	364207	5805846	49.78
2	2998 (210-400)nm	7.418	320913	5856604	50.22



Peak Results

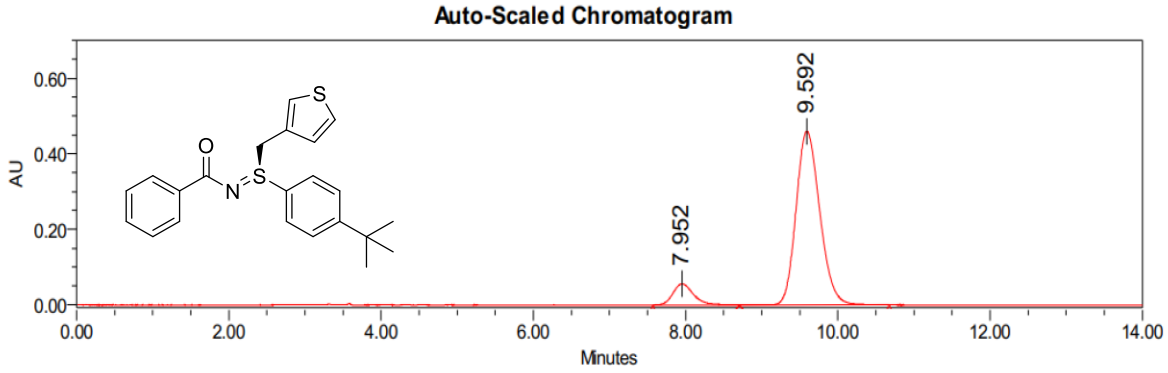
	Channel Description	RT	Height (μV)	Area (μV*sec)	% Area
1	2998 (210-400)nm	5.887	569304	9057513	94.81
2	2998 (210-400)nm	7.421	26385	496094	5.19

(*S*)-*N*-((4-(*tert*-butyl)phenyl)(thiophen-3-ylmethyl)-λ^4-sulfaneylidene)benzamide (3bc)



Peak Results

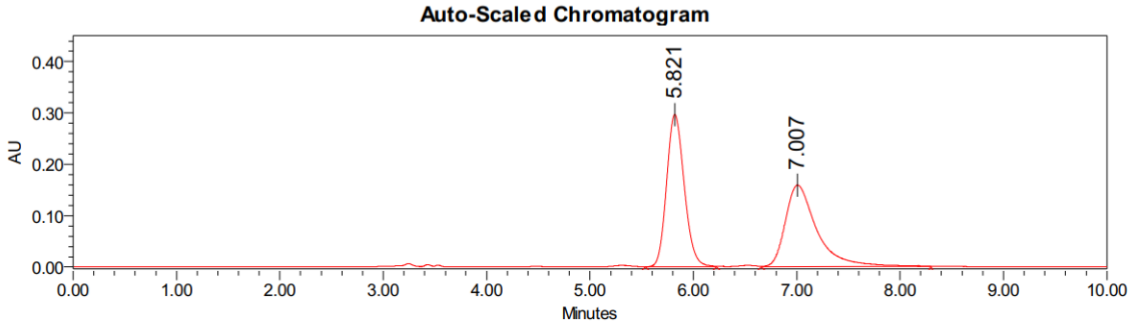
	Channel Description	RT	Height (μV)	Area (μV*sec)	% Area
1	2998 (210-400)nm	7.750	43660	840410	50.07
2	2998 (210-400)nm	9.349	38508	838062	49.93



Peak Results

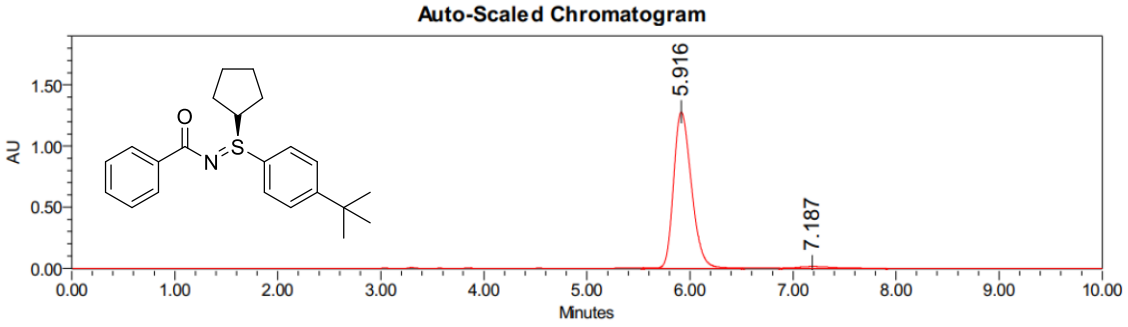
	Channel Description	RT	Height (μV)	Area (μV*sec)	% Area
1	2998 (210-400)nm	7.952	55785	1047592	9.53
2	2998 (210-400)nm	9.592	459920	9950416	90.47

(*S*)-*N*-((4-(*tert*-butyl)phenyl)(cyclopentyl)-λ^4-sulfaneylidene)benzamide (3bd)



Peak Results

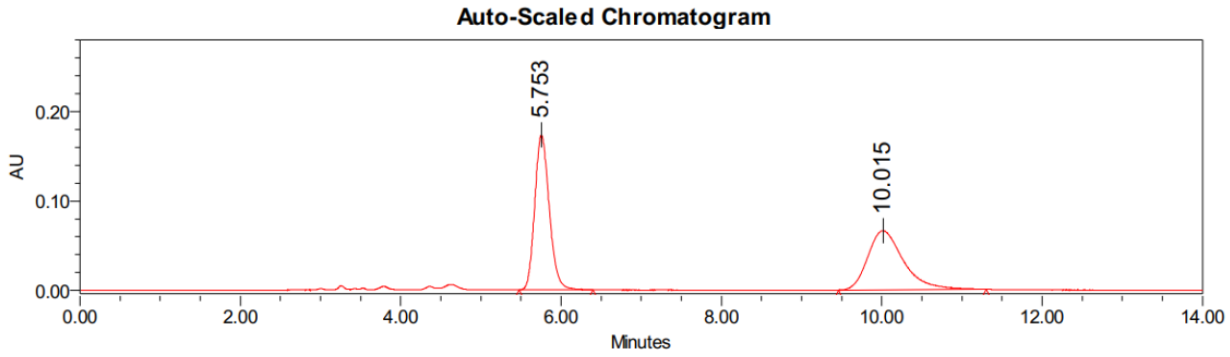
	Channel Description	RT	Height (μV)	Area (μV*sec)	% Area
1	2998 (210-400)nm	5.821	296620	3517441	51.32
2	2998 (210-400)nm	7.007	158410	3336238	48.68



Peak Results

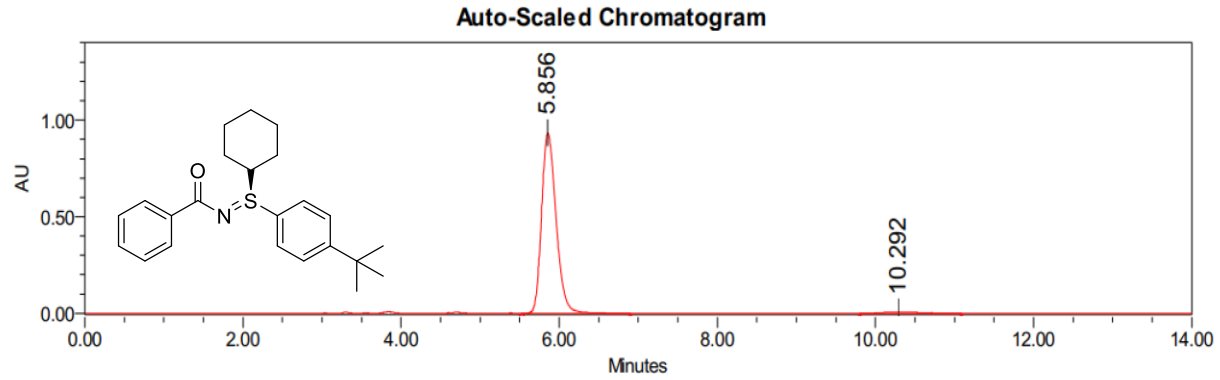
	Channel Description	RT	Height (μV)	Area (μV*sec)	% Area
1	2998 (210-400)nm	5.916	1279625	15382250	98.04
2	2998 (210-400)nm	7.187	14298	308284	1.96

(*S*)-*N*-((4-(*tert*-butyl)phenyl)(cyclohexyl)-λ^4-sulfaneylidene)benzamide (3be)



Peak Results

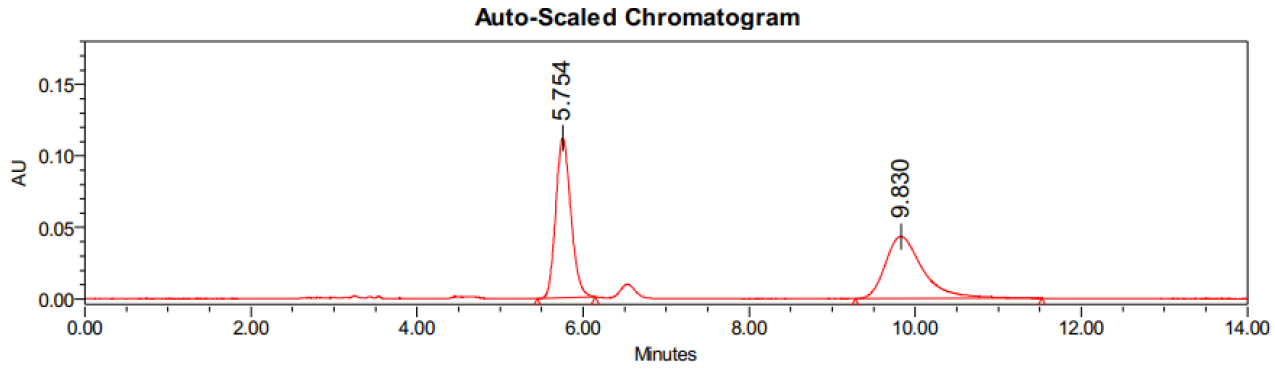
	Channel Description	RT	Height (μV)	Area (μV*sec)	% Area
1	2998 (210-400)nm	5.753	173248	2182263	51.40
2	2998 (210-400)nm	10.015	66281	2063180	48.60



Peak Results

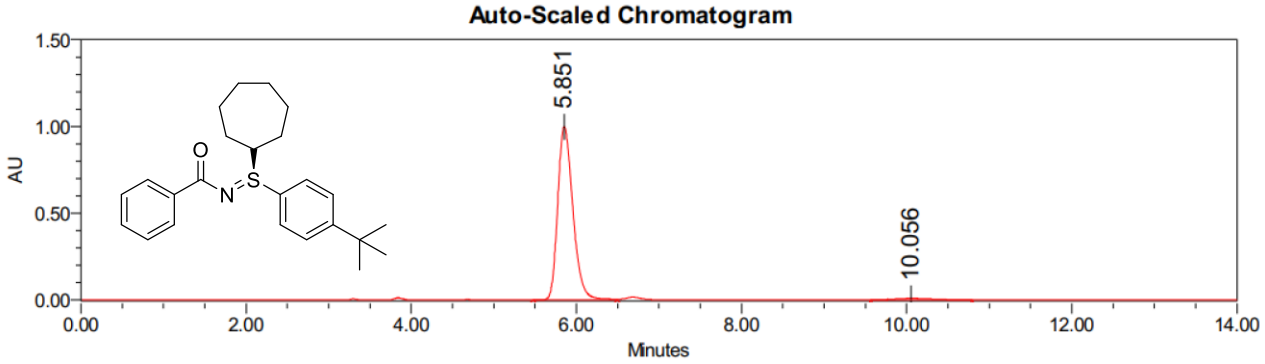
	Channel Description	RT	Height (μV)	Area (μV*sec)	% Area
1	2998 (210-400)nm	5.856	932513	11906760	97.93
2	2998 (210-400)nm	10.292	8227	252021	2.07

(*S*)-*N*-((4-(*tert*-butyl)phenyl)(cycloheptyl)-λ^4-sulfaneylidene)benzamide (3bf)



Peak Results

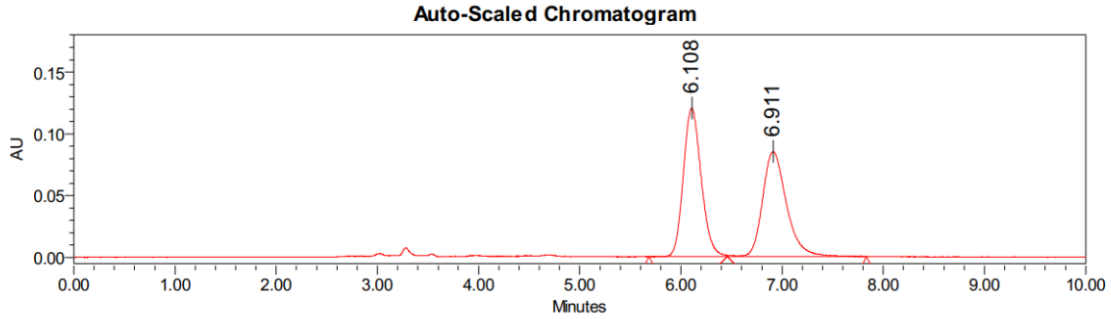
	Channel Description	RT	Height (μV)	Area (μV*sec)	% Area
1	2998 (210-400)nm	5.754	111681	1407790	50.74
2	2998 (210-400)nm	9.830	43490	1366537	49.26



Peak Results

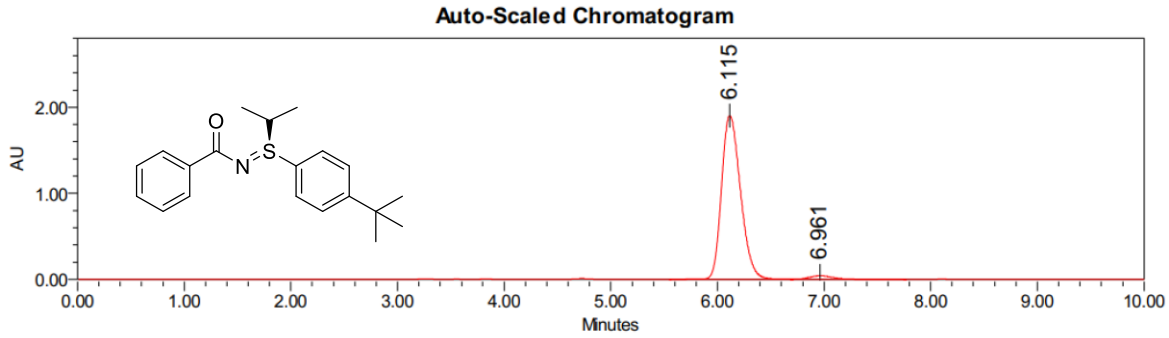
	Channel Description	RT	Height (μV)	Area (μV*sec)	% Area
1	2998 (210-400)nm	5.851	998062	12720665	97.76
2	2998 (210-400)nm	10.056	9800	291998	2.24

(*S*)-*N*-((4-(*tert*-butyl)phenyl)(isopropyl)-λ^4-sulfaneylidene)benzamide (3bg)



Peak Results

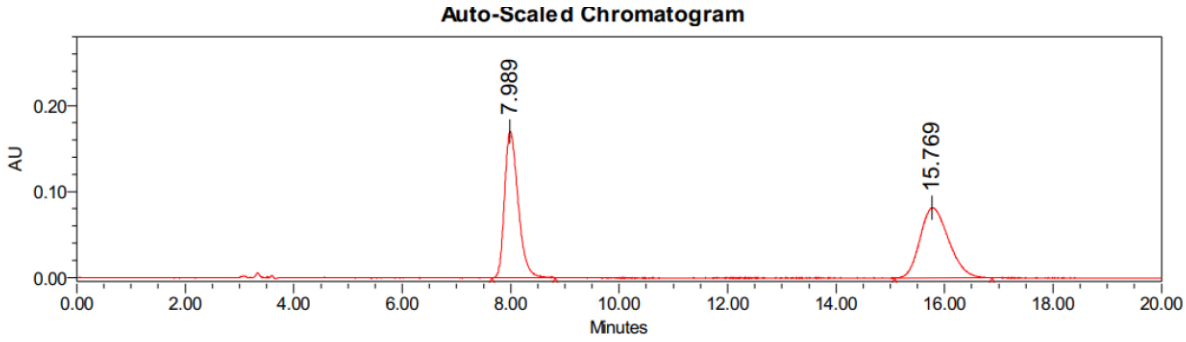
	Channel Description	RT	Height (μV)	Area (μV*sec)	% Area
1	2998 (210-400)nm	6.108	120207	1471355	51.30
2	2998 (210-400)nm	6.911	85024	1396604	48.70



Peak Results

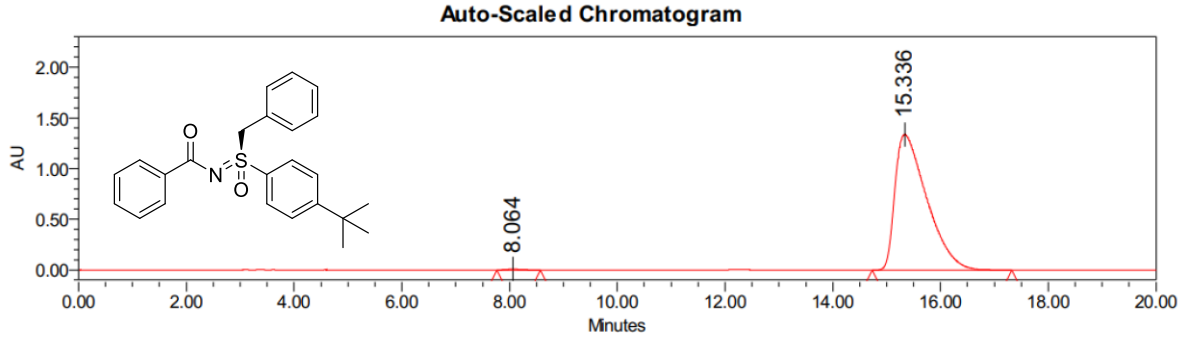
	Channel Description	RT	Height (μV)	Area (μV*sec)	% Area
1	2998 (210-400)nm	6.115	1901505	23610902	97.04
2	2998 (210-400)nm	6.961	42066	720171	2.96

(*R*)-*N*-(benzyl(4-(*tert*-butyl)phenyl)(oxo)-λ^6-sulfaneylidene)benzamide (4)



Peak Results

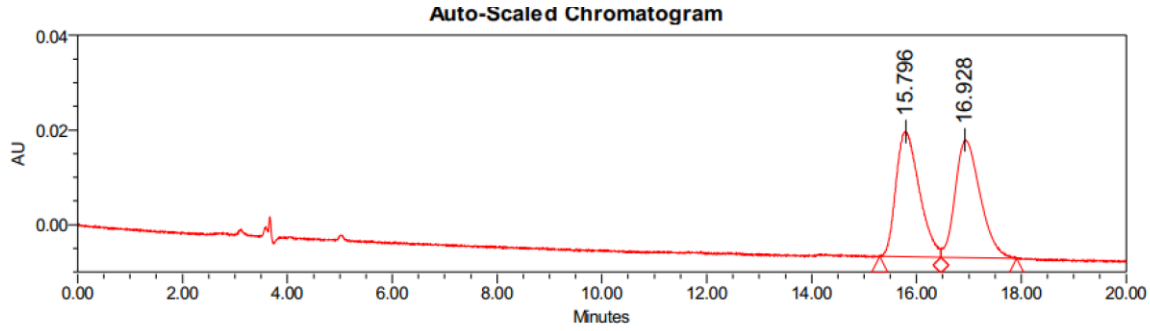
	Channel Description	RT	Height (μV)	Area (μV*sec)	% Area
1	2998 (210-400)nm	7.989	170385	2942922	49.72
2	2998 (210-400)nm	15.769	81722	2975698	50.28



Peak Results

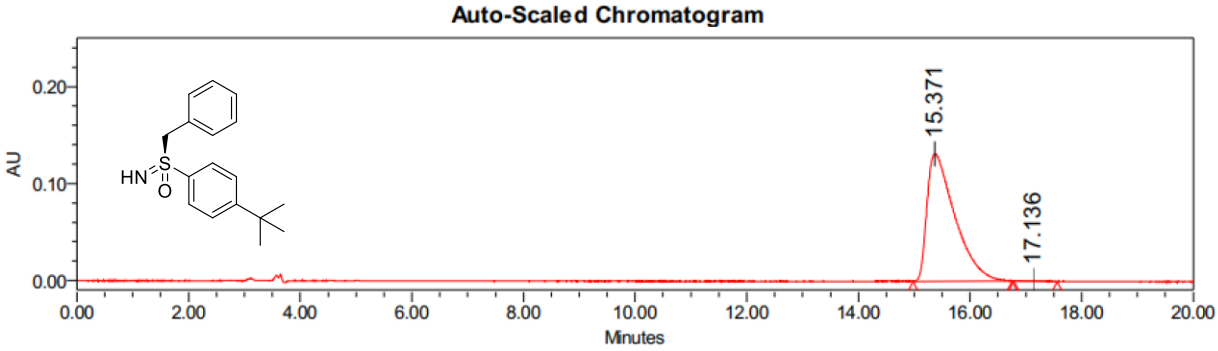
	Channel Description	RT	Height (μV)	Area (μV*sec)	% Area
1	2998 (210-400)nm	8.064	10261	186092	0.34
2	2998 (210-400)nm	15.336	1338878	54824391	99.66

(*R*)-benzyl(4-(*tert*-butyl)phenyl)(imino)-λ^6-sulfanone (5)



Peak Results

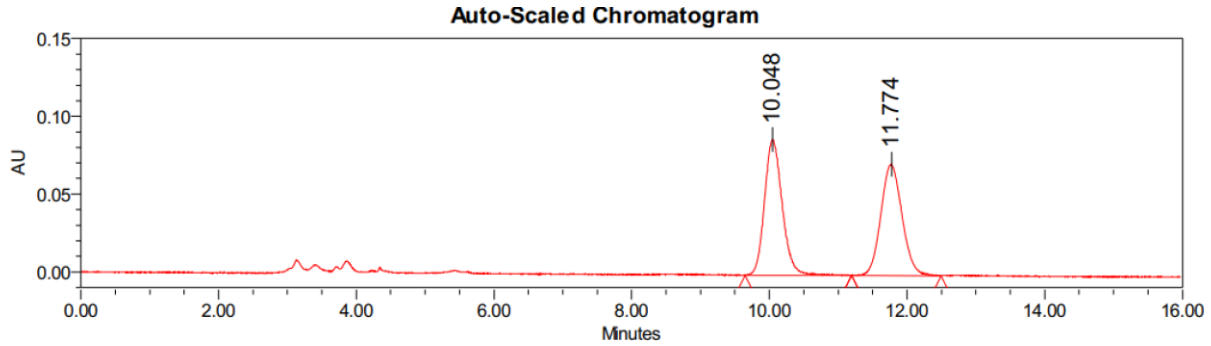
	Channel Description	RT	Height (μV)	Area (μV*sec)	% Area
1	2998 (210-400)nm	15.796	26459	811708	49.48
2	2998 (210-400)nm	16.928	24839	828789	50.52



Peak Results

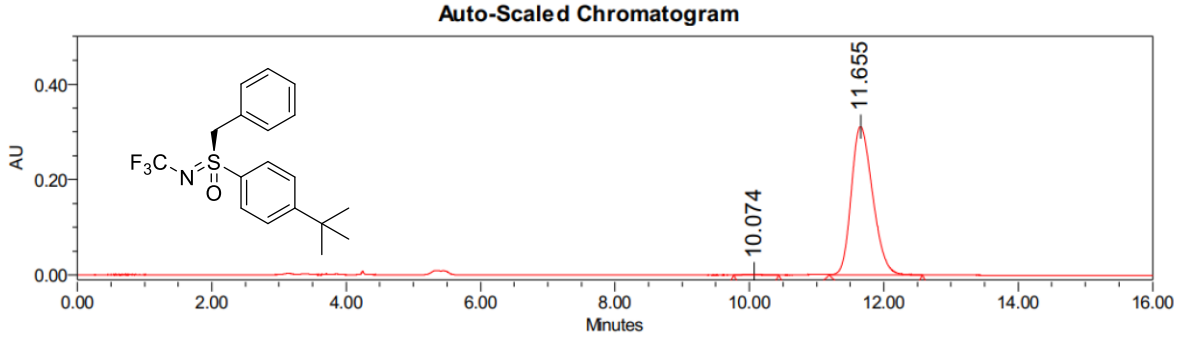
	Channel Description	RT	Height (μV)	Area (μV*sec)	% Area
1	2998 (210-400)nm	15.371	131469	4528127	99.91
2	2998 (210-400)nm	17.136	249	4239	0.09

(*R*)-benzyl(4-(*tert*-butyl)phenyl)((trifluoromethyl)imino)-λ^6-sulfanone (6)



Peak Results

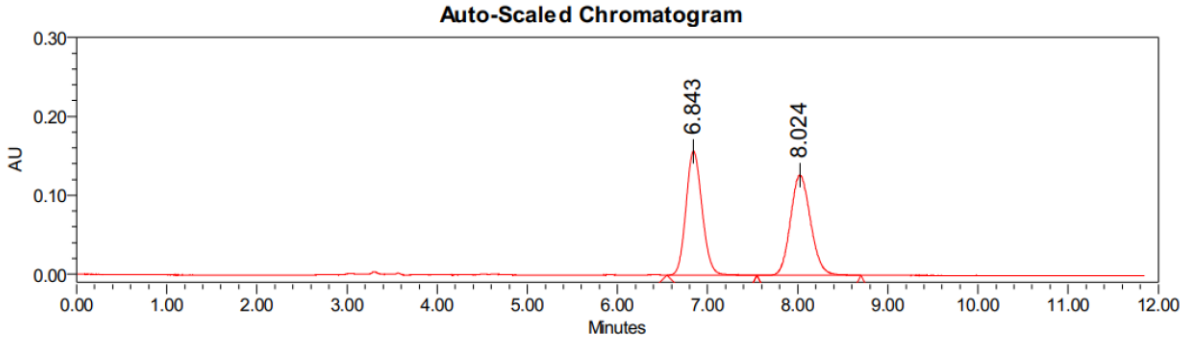
	Channel Description	RT	Height (μV)	Area (μV*sec)	% Area
1	2998 (210-400)nm	10.048	87179	1563559	50.35
2	2998 (210-400)nm	11.774	71479	1541837	49.65



Peak Results

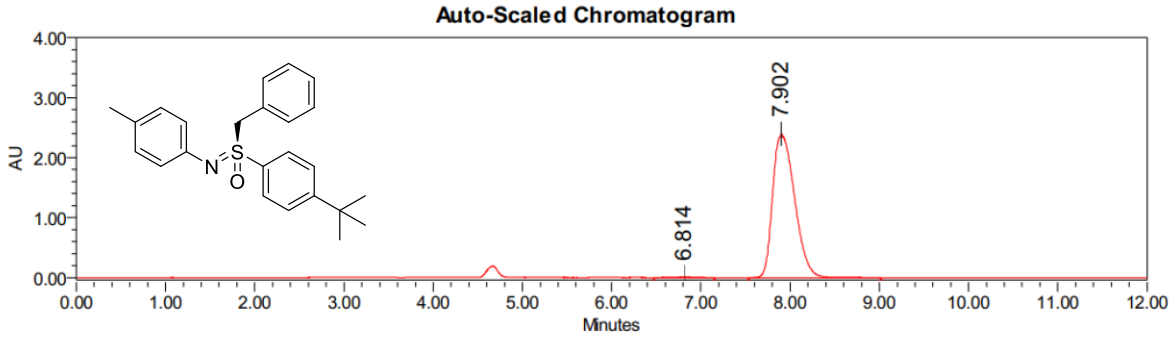
	Channel Description	RT	Height (μV)	Area (μV*sec)	% Area
1	2998 (210-400)nm	10.074	1607	32523	0.47
2	2998 (210-400)nm	11.655	311571	6904036	99.53

(*R*)-benzyl(4-(*tert*-butyl)phenyl)(*p*-tolylimino)-λ^6-sulfanone (7)



Peak Results

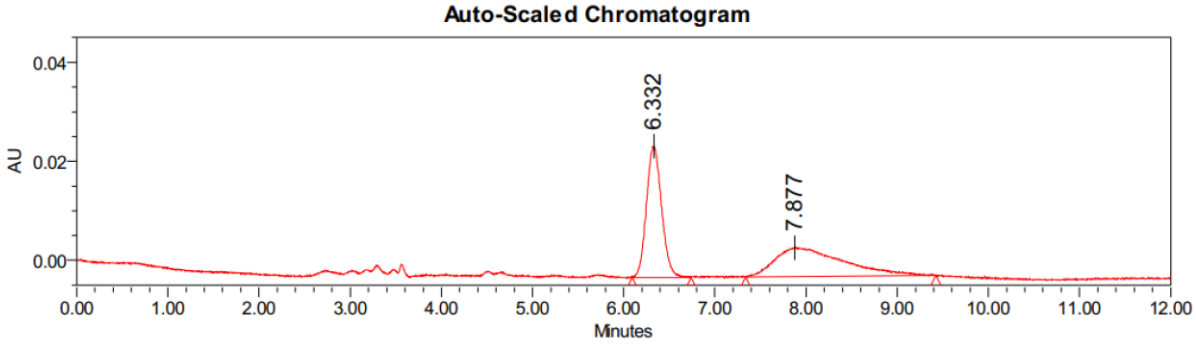
	Channel Description	RT	Height (μV)	Area (μV*sec)	% Area
1	2998 (210-400)nm	6.843	157180	1958439	49.84
2	2998 (210-400)nm	8.024	127015	1971246	50.16



Peak Results

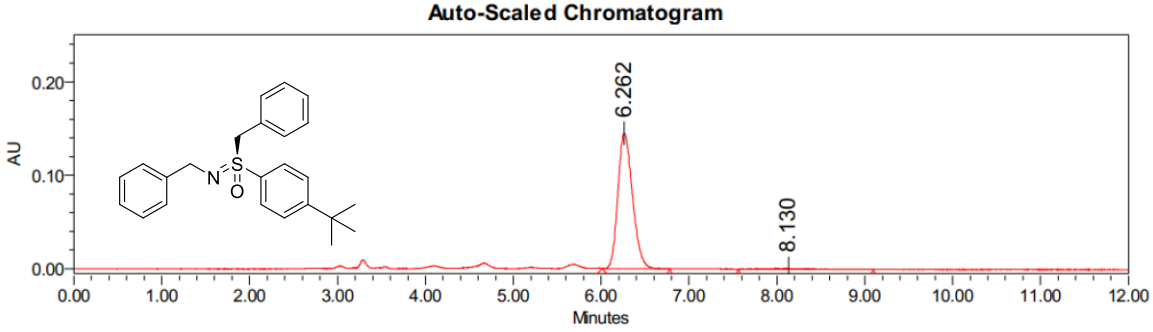
	Channel Description	RT	Height (μV)	Area (μV*sec)	% Area
1	2998 (210-400)nm	6.814	10538	136045	0.33
2	2998 (210-400)nm	7.902	2398601	40663675	99.67

(*R*)-benzyl(benzylimino)(4-(*tert*-butyl)phenyl)-λ^6-sulfanone (8)



Peak Results

	Channel Description	RT	Height (μV)	Area (μV*sec)	% Area
1	2998 (210-400)nm	6.332	26476	306195	50.33
2	2998 (210-400)nm	7.877	5857	302146	49.67



Peak Results

	Channel Description	RT	Height (μV)	Area (μV*sec)	% Area
1	2998 (210-400)nm	6.262	145259	1680170	98.91
2	2998 (210-400)nm	8.130	719	18585	1.09