*Electronic Supplementary Information (ESI)*

# Rh(III)-catalyzed direct *ortho*-C-H diarylation of arylsulfoximines with arylsilanes

Xiuqi Zhang, jie Zhang, Lin Li, Fukuan Zhang, Xuzhong Luo, Haiqing Luo*

*Department of Chemistry & Chemical Engineering, Gannan Normal University, Ganzhou 341000, China*
*E-mail: luohaiq@sina.com;*

# 1. General Information

## Analytical methods

Proton nuclear magnetic resonance ($^{1}$H NMR) and carbon nuclear magnetic resonance ($^{13}$C NMR) spectroscopy were performed on a Bruker Advance 300, 400 and 500 NMR spectrometers. Chemical shifts $^{1}$H NMR spectra are reported as in units of parts per million (ppm) downfield from $SiMe_4$ (0.0) and relative to the signal of chloroform-*d* (*J* = 7.264, singlet). Multiplicities were given as: s (singlet); d (doublet); t (triplet); q (quartet); dd (doublet of doublets); ddd (doublet of doublets of doublets); dddd (doublet of doublets of doublets of doublets); dt (doublet of triplets); m (multiplets) and etc. The number of protons (n) for a given resonance is indicated by nH. Coupling constants are reported as a *J* value in Hz. Carbon nuclear magnetic resonance spectra ($^{13}$C NMR) are reported as d in units of parts per million (ppm) downfield from $SiMe_4$ (0.0) and relative to the signal of chloroform-*d* (*J* = 77.03, triplet). High resolution mass spectral analysis (HRMS) was performed on LCMS Q-TOF (SHIMADZU Corporation) ESI spectrometer. Infrared spectra were recorded on a Nicolet IS50 Fourier transform spectrometer (FT-IR) and are reported in wave numbers ($cm^{-1}$).

## Materials

Unless otherwise noted, all reagents were purchased energy chemistry and tansoole, and used without further purification.

# 2. Selected molecules featuring sulfoximine scaffold

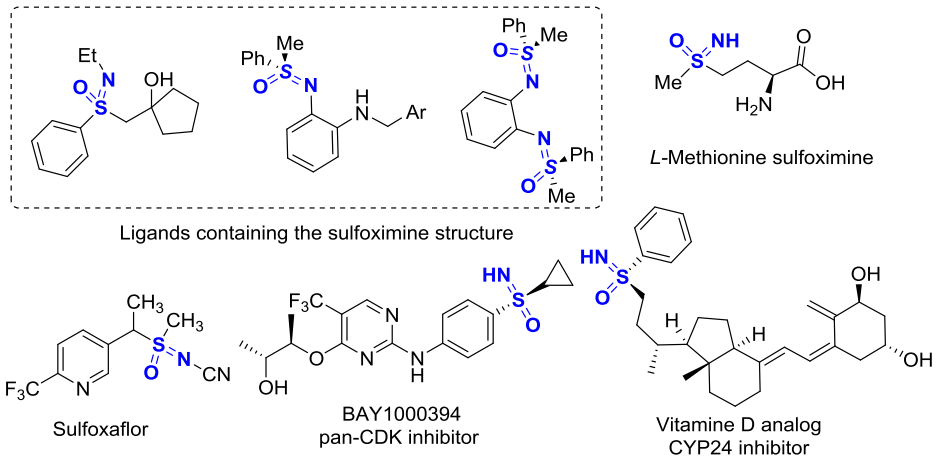
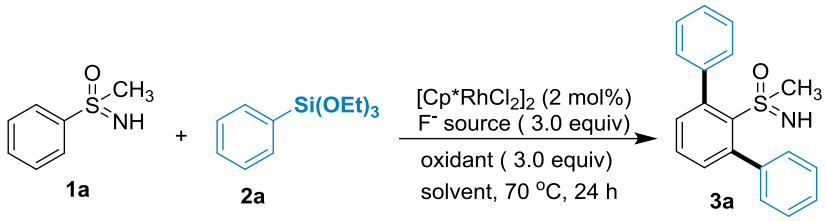



**Fig. S1**

## 3. Optimization of reaction conditions

**Table S1 Optimization of Reaction Conditions**[a,b]

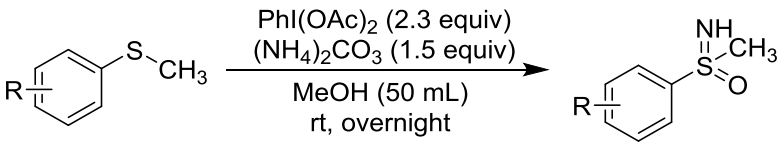



| Entry | Oxidant | F⁻ source | Solvent | Yield (%) |
|---|---|---|---|---|
| 1 | $Ag_2O$ | KF | DMA | n.d. |
| 2 | $Ag_2O$ | TBAF | DMA | n.d. |
| 3 | $Ag_2O$ | CsF | DMA | n.d. |
| 4 | $CuF_2$ (3.0 equiv) | | DMA | 31 |
| 5 | AgF (3.0 equiv) | | DMA | 54 |
| 6 | AgF (3.0 equiv) | | THF | 51 |
| 7 | AgF (3.0 equiv) | | DMSO | 31 |
| 8 | AgF (3.0 equiv) | | DMF | 17 |
| 9 | AgF (3.0 equiv) | | dioxane | 61 |
| 10 | AgF (3.0 equiv) | | PhCl | 79 |
| 11 | AgF (3.0 equiv) | | MeCN | 17 |
| 12 | AgF (3.0 equiv) | | acetone | 38 |
| 13[c] | AgF (3.0 equiv) | | PhCl | 77 |
| 14[d] | AgF (3.0 equiv) | | PhCl | 62 |
| 15[e] | AgF (3.0 equiv) | | PhCl | 83 |
| 16[f] | AgF (3.0 equiv) | | DMA | n.d. |
| 17[g] | AgF (3.0 equiv) | | DMA | 28% |

[a]Reaction conditions: **1a** (0.2 mmol), **2a** (3.0 equiv), Rh catalyst (2.0 mol%), F⁻ resource (3.0 equiv), Solvent (1.0 mL), at 70 °C for 24 h. [b]Isolated yield, n.d. (no desired product) was determined by TLC. [c]T = 60 ℃. [e]T= 80 ℃. [e]1.0 equiv HOAc. [f][(*p*-cymene)$RuCl_2$]$_2$(5 mol%) instead of [Cp*$RhCl_2$]$_2$. [g]1.0 mmol $PhSi(OEt)_3$ was used.

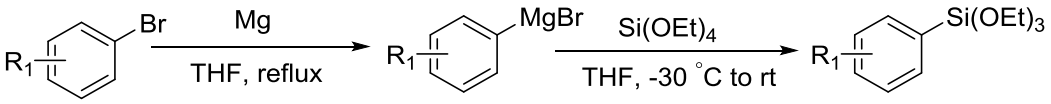
## 4. General procedure

## 4.1 General procedure for the synthesis of the sulfoximines[1]



To a 100 mL round bottom flask equipped with a magnetic bar, added phenyl methyl sulphide (5 mmol, 1.0 equiv) and $(NH_4)_2CO_3$ (1.5 equiv) in MeOH (50 mL), the mixture was allowed stirred in room temperature for 10 minutes. After that, $PhI(OAc)_2$ (2.3 equiv) was added and the solution was stirred overnight. After the reaction was complete monitored by TLC, the solvent was removed under reduced pressure and the crude product was purified with silica gel chromatography (petroleum ether/ethyl acetate) to provide pure product.

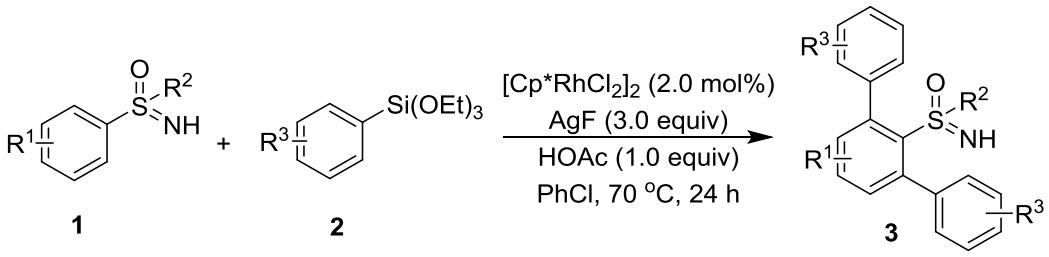
## 4.2 General procedure for the synthesis of the arylsilanes[2]




(a) Unless otherwise indicated, all reactions were performed on a 30 mmol scale. A 250 mL three-neck, pear-shaped flask was fitted with an addition funnel, a reflux condenser, a rubber septum, and a stir bar. The flask was then charged with freshly washed magnesium turnings (0.792 g, 33.0 mmol), iodine pellets (1 pellet about 10 mg), and back-filled with nitrogen. Then THF (30 mL) was added via syringe. The addition funnel was charged with the aryl halide (30 mmol) in 10 mL THF. The reaction was initiated by addition of 5-10 drops of the aryl halide solution to the flask with stirring, followed by gentle heating. The rest of the aryl halide solution was then added and the THF maintained a moderate reflux.

(b) A round-bottom flask, which was fitted tetraethyl orthosilicate (90 mmol) in 30 mL of THF. The silane solution was cooled to -30 ℃, and then the arylmagnesiumhalide solution was added dropwise (one drop per second). The solution was allowed to stir at -30 ℃ for 1 h and then at room temperature for 12 h. After the reaction finished, the mixture was then poured into 50 mL of hexane, and stirred for some time. Then the solution was washed with 3 × 25 mL of water, dried over $Na_2SO_4$, and concentrated in vacuo. Purification of the residue by micro-pressure distillation could obtain pure aryltriethoxysilane. All the silicon reagent are known compounds.

## 4.3 General procedure for Rh(III)-catalyzed direct *ortho*-C-H diarylation of arylsulfoximines with arylsilanes



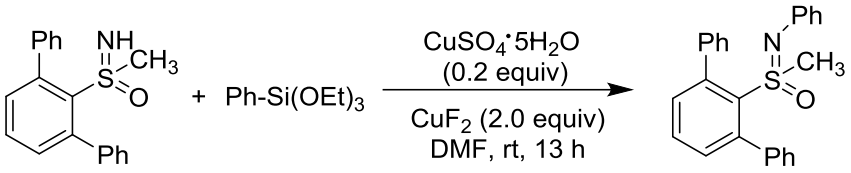

To a 15 mL of seal tube equipped with a magnetic bar were added sulfoximine **1** (0.2 mmol, 1.0 equiv), arylsilane **2** (0.6 mmol, 3.0 equiv), $[Cp^*RhCl_2]_2$ (0.004 mmol, 2.0 mol%), AgF (0.6 mmol, 3.0 equiv), HOAc (0.2 mmol, 1.0 equiv) and PhCl (1 mL) was added subsequently. The reaction mixture was allowed to stir at 70 $^oC$(oil bath) for 24 h. After completed, the reaction was cooled to room temperature, then diluted with 10 mL water and extracted with EtOAc (3*10 mL). The combined organic layers were washed with brine, dried over $Na_2SO_4$, evaporated under vacuum. The residue was purified with silica gel chromatography (petroleum ether/ethyl acetate) to provide pure product **3**.

## 5. Procedure for the synthesis of 3a on gram scale

To a 50 mL of seal tube equipped with a magnetic bar were added sulfoximine 1 (5.0 mmol, 1.0 equiv), arylsilane 2 (15.0 mmol, 3.0 equiv), $[Cp^*RhCl_2]_2$ (0.1 mmol, 2.0 mol%), AgF (15.0 mmol, 3.0 equiv), HOAc (5.0 mmol, 1.0 equiv) and PhCl (20 mL) was added subsequently. The reaction mixture was allowed to stir at 70 $^oC$(oil bath) for 24 h. After completed, the reaction was cooled to room temperature, then diluted with 20 mL water and extracted with EtOAc (3*30 mL). The combined organic layers were washed with brine, dried over $Na_2SO_4$, evaporated under vacuum. The residue was purified with silica gel chromatography (petroleum ether/ethyl acetate) to provide pure product **3a** (1.11 g, 72% yield).

## 6. Synthetic application of 3a

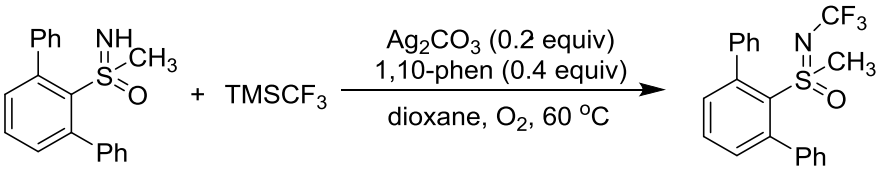
### 6.1 N-H arylation




**3a** **5a**, 72%

To a 15 mL of seal tube equipped with a magnetic bar, added 2'-(S-methylsulfonimidoyl)-1,1':3',1''-terphenyl **3a** (0.2 mmol), phenyltriethoxysilane acid (0.4 mmol, 2.0 equiv), $CuSO_4 \cdot H_2O$ (0.2 equiv), $CuF_2$ (2.0 equiv), DMF (1 mL) was added subsequently. The reaction mixture was allowed to stir at rt for 13 h. After completed, the mixture was diluted with 10 mL water and extracted with EtOAc (3*10 mL). The combined organic layers were washed with brine, dried over Na2SO4, evaporated under vacuum. The residue was purified with silica gel chromatography (petroleum ether/ethyl acetate) to give the desired product **5a** in 72%.

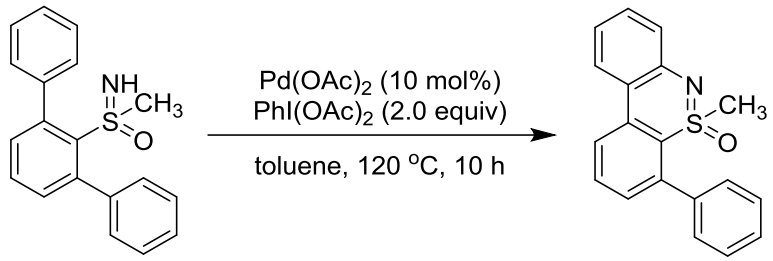
### 6.2 N-H trifluoromethylation




**3a** **5b**, 60%

To a 15 mL of seal tube equipped with a magnetic bar, added 2'-(S-methyl -sulfonimidoyl)-1,1':3',1''-terphenyl **3a** (0.1 mmol), $TMSCF_3$ (0.5 mmol), $Ag_2CO_3$ (0.2 equiv), 1,10-phen (0.4 equiv), dioxane (2 mL) was added subsequently. The reaction mixture was allowed to stir at 60 $^oC$ for 10 h under $O_2$. After completed, the mixture was diluted with 10 mL water and extracted with EtOAc (3*10 mL). The combined organic layers were washed with brine, dried over $Na_2SO_4$, evaporated under vacuum. The residue was purified with silica gel chromatography (petroleum ether/ethyl acetate) to give the desired product **5b** in 60%.[3]

### 6.3 Intramolecular cyclization



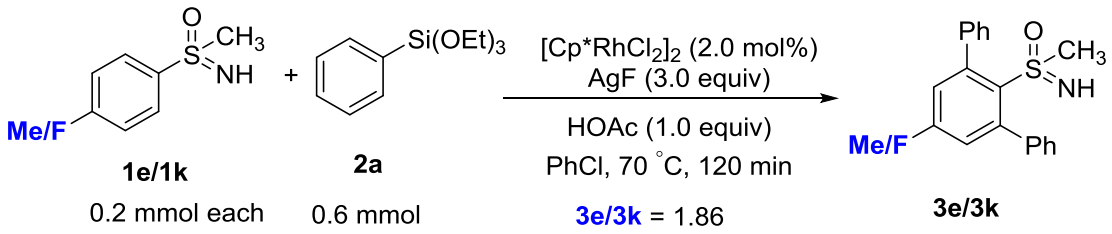

**3a** **5c**, 71%

To a 15 mL of seal tube equipped with a magnetic bar, added 2'-(S-methylsulfonimidoyl)-1,1':3',1''-terphenyl **3a** (0.2 mmol), $Pd(OAc)_2$ (10 mol%), $PhI(OAc)_2$ (2.0 equiv), toluene (1 mL) was added subsequently. The reaction mixture was allowed to stir at 120 °C for 10 h. After completed, the mixture was diluted with 10 mL water and extracted with EtOAc (3*10 mL). The combined organic layers were washed with brine, dried over $Na_2SO_4$, evaporated under vacuum. The residue was purified with silica gel chromatography (petroleum ether/ethyl acetate) to give the desired product **5c** in 71%.[4]

## 7. Preliminary mechanistic studies

## 7.1 Intermolecular competitive reactions

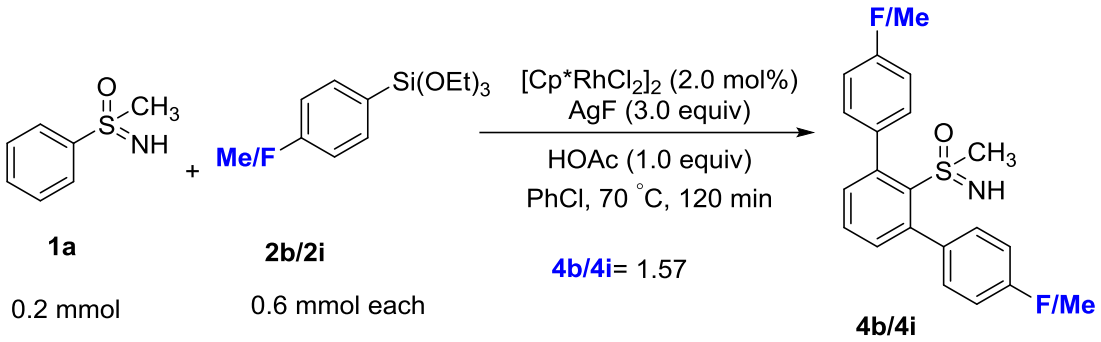
### (a) Competitive experiment between 1e and 1k




**1e/1k** 0.2 mmol each **2a** 0.6 mmol **3e/3k** = 1.86 **3e/3k**

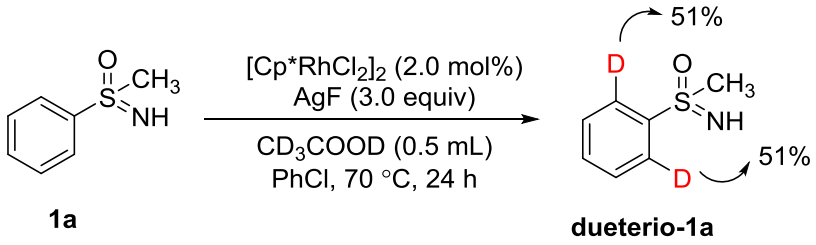
To a 15 mL of seal tube equipped with a magnetic bar were added **1e** (0.2 mmol, 1.0 equiv) and **1k** (0.2 mmol, 1.0 equiv), phenyltriethoxysilane **2a** (0.6 mmol, 3.0 equiv), $[Cp^*RhCl_2]_2$ (0.004 mmol, 2.0 mol%), AgF (0.6 mmol, 3.0 equiv), HOAc (0.2 mmol, 1.0 equiv) and PhCl (1 mL) was added subsequently. The reaction mixture was allowed to stir at 70 °C(oil bath) for 120 min. After completed, the reaction was cooled to room temperature, then diluted with 10 mL water and extracted with EtOAc (3*10 mL). The combined organic layers were washed with brine, dried over $Na_2SO_4$, evaporated under vacuum. The residue was purified with silica gel chromatography (petroleum ether/ethyl acetate) to provide pure product **3e** and **3k,** the ratio of the two products was determined by $^1H$ NMR is 1.86.

**(b) Competitive experiment between 2b and 2i**



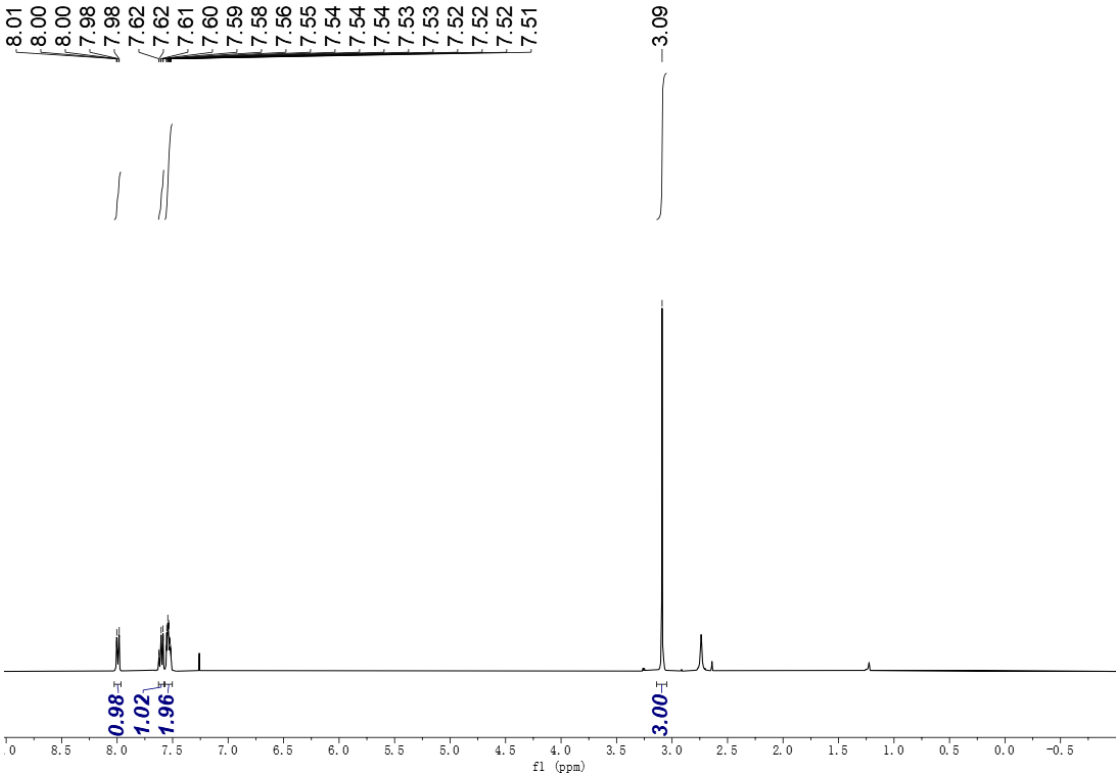

To a 15 mL of seal tube equipped with a magnetic bar were added sulfoximine **1a** (0.2 mmol, 1.0 equiv), arylsilane **2b** and **2i** (0.4mmol ecach, 3.0 equiv), $[Cp^*RhCl_2]_2$ (0.004 mmol, 2.0 mol%), AgF (0.6 mmol, 3.0 equiv), HOAc (0.2 mmol, 1.0 equiv) and PhCl (1 mL) was added subsequently. The reaction mixture was allowed to stir at 70 °C(oil bath) for 120 min. After completed, the reaction was cooled to room temperature, then diluted with 10 mL water and extracted with EtOAc (3*10 mL). The combined organic layers were washed with brine, dried over $Na_2SO_4$, evaporated under vacuum. The residue was purified with silica gel chromatography (petroleum ether/ethyl acetate) to provide pure product **4b** and **4i**, the ratio of the two products was determined by $^1H$ NMR is 1.57.

## 7.2 Deuterium-labelling experiments



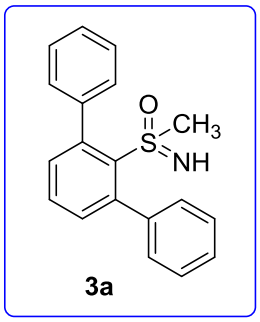

To a 15 mL of seal tube equipped with a magnetic bar were added **1a** (0.2 mmol, 1.0 equiv), $[Cp^*RhCl_2]_2$ (0.004 mmol, 2.0 mol%), AgF (0.6 mmol, 3.0 equiv), $CD_3COOD$ (0.5 mL) and PhCl (1.0 mL) was added subsequently. The reaction mixture was allowed to stir at 70 °C(oil bath) for 24 h. After completed, the reaction was cooled to room temperature, then diluted with 10 mL water and extracted with EtOAc (3*10 mL). The combined organic layers were washed with brine, dried over $Na_2SO_4$, evaporated under vacuum. The residue was purified with silica gel chromatography (petroleum ether/ethyl acetate) to provide pure product **dueterio-1a**. The deuterium rate (51%) was obtained from $^1H$ NMR. Deuterium was observed at

both *ortho*-positions, which indicated the possibility of the reaction pathway via *ortho* C-H activation.



## 8. Characterization data for the products

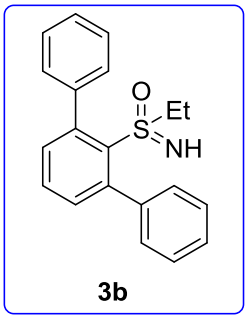
**2'-(*S*-methylsulfonimidoyl)-1,1':3',1''-terphenyl (3a).**




**3a**

Following the general procedure (eluent: petroleum ether/ethyl acetate = 2/1), the desired product **3a** was obtained as a pale yellow solid (51.0 mg, 83% yield); mp = 131-133 °C; **$^1$H NMR** (400 MHz, $CDCl_3$) δ 7.6 (s, 4H), 7.5 – 7.4 (m, 8H), 7.3 (d, *J* = 7.6 Hz, 2H), 2.5 (s, 3H). **$^{13}$C NMR** (101 MHz, $CDCl_3$) δ 143.3, 140.9, 140.5, 132.0, 129.9, 129.7, 128.5, 128.4, 46.5. This compound is known[4].

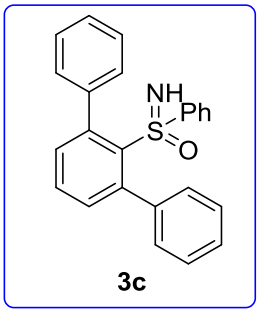
**2'-(*S*-ethylsulfonimidoyl)-1,1':3',1''-terphenyl (3b).**




**3b**

Following the general procedure (eluent: petroleum ether/ethyl acetate = 2/1), the desired product **3b** was obtained as a yellow solid (49.5 mg, 77% yield); mp = 139-141 °C; **$^1$H NMR** (400 MHz, $CDCl_3$) δ 7.6 (s, 4H), 7.5 – 7.4 (m, 7H), 7.3 (d, *J* = 7.6 Hz, 2H), 2.6 – 2.5 (m, 1H), 2.4 (dq, *J* = 14.2, 7.2 Hz, 1H), 0.9 (t, *J* = 7.3 Hz, 3H). **$^{13}$C NMR** (101 MHz, $CDCl_3$) δ 141.9, 140.6, 140.3, 132.2, 129.9, 129.6, 128.3, 128.3, 50.5, 8.4. This compound is known[4].

**2'-(*S*-phenylsulfonimidoyl)-1,1':3',1''-terphenyl (3c).**



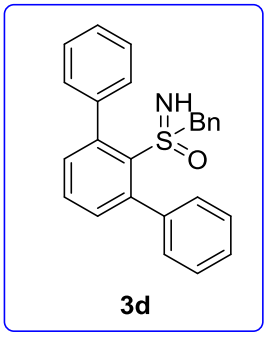

**3c**

Following the general procedure (eluent: petroleum ether/ethyl acetate = 2/1), the desired product **3c** was obtained as a white solid (62.7 mg, 85% yield); mp = 149-151 $^{o}$C; **$^{1}$H NMR** (400 MHz, $CDCl_3$) δ 7.6 (s, 2H), 7.5 (t, *J* = 7.6 Hz, 2H), 7.4 (s, 1H), 7.3 – 7.3 (m, 3H), 7.2 (dd, *J* = 13.1, 7.5 Hz, 5H), 7.2 – 7.1 (m, 3H), 7.0 (dd, *J* = 8.4, 7.3 Hz, 2H), 2.8 (s, 1H). **$^{13}$C NMR** (101 MHz, $CDCl_3$) δ 142.8, 142.3, 142.0, 140.0, 131.7, 130.8, 129.9, 129.6, 129.4, 127.9, 127.6, 126.7.

**IR (KBr) ν (cm$^{-1}$)** 3681, 3343, 3052, 2924, 2339, 1970, 1759, 1596, 1451, 1156, 1038, 946.

**HRMS (ESI) m/z:** $[M+H]^+$ Calcd for $C_{24}H_{20}NOS$ 370.1260; found 370.1267.

**2'-(*S*-benzylsulfonimidoyl)-1,1':3',1''-terphenyl (3d).**



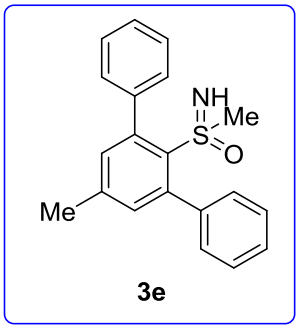

**3d**

Following the general procedure (eluent: petroleum ether/ethyl acetate = 2/1), the desired product **3d** was obtained as a colorless oil (44.5 mg, 58% yield): **$^{1}$H NMR** (400 MHz, $CDCl_3$) δ 7.6 – 7.6 (m, 4H), 7.6 – 7.5 (m, 1H), 7.5 – 7.4 (m, 6H), 7.4 (d, *J* = 7.6 Hz, 2H), 7.3 – 7.2 (m, 3H), 6.9 – 6.9 (m, 2H), 4.0 – 3.8 (m, 2H). **$^{13}$C NMR** (101 MHz, $CDCl_3$) δ 142.5, 141.0, 140.9, 132.5, 131.5, 130.3, 129.9, 128.3, 128.1, 128.0, 61.6.

**IR (KBr) ν (cm$^{-1}$)** 3364, 3058, 2930, 2606, 2340, 1956, 1735, 1598, 1494, 1156, 1074, 971.

**HRMS (ESI) m/z:** $[M+H]^+$ Calcd for $C_{25}H_{22}NOS$ 384.1417; found 384.1427.

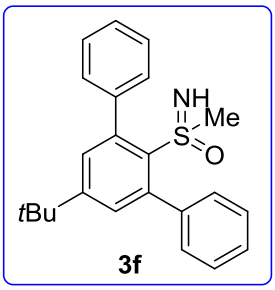
**5'-Methyl-2'-(*S*-methylsulfonimidoyl)-1,1':3',1''-terphenyl (3e).**




**3e**

Following the general procedure (eluent: petroleum ether/ethyl acetate = 2/1), the desired product **3e** was obtained as a white solid (57.2 mg, 89% yield); mp = 136-138 $^{o}$C; **$^{1}$H NMR** (400 MHz, $CDCl_3$) δ 7.6 (s, 4H), 7.5 – 7.4 (m, 6H), 7.1 (s, 2H), 2.4 (s, 3H), 2.4 (d, *J* = 0.7 Hz, 3H). **$^{13}$C NMR** (101 MHz, $CDCl_3$) δ 141.0, 140.7, 140.6, 140.2, 132.7, 129.7, 128.4, 128.3, 46.6, 20.8. This compound is known[5].

**5'-tert-butyl-2'-(*S*-methylsulfonimidoyl)-1,1':3',1''-terphenyl (3f).**



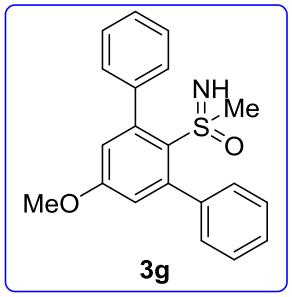

**3f**

Following the general procedure (eluent: petroleum ether/ethyl acetate = 2/1), the desired product **3f** was obtained as a white solid (58.1 mg, 80% yield); mp = 168-170 $^{o}$C; **$^{1}$H NMR** (400 MHz, $CDCl_3$) δ 7.6 (s, 4H), 7.5 – 7.4 (m, 7H), 7.3 (s, 2H), 2.4 (s, 3H), 1.4 (s, 9H). **$^{13}$C NMR** (101 MHz, $CDCl_3$) δ 153.3, 141.1, 140.7, 140.6, 129.8, 129.2, 128.5, 128.3, 46.6, 34.8, 31.0.

**IR (KBr) ν (cm$^{-1}$)** 3361, 3081, 2962, 1950, 1584, 1492, 1362, 1231, 1151, 1062, 1026, 957.

**HRMS (ESI) m/z:** $[M+H]^+$ Calcd for $C_{23}H_{26}NOS$ 364.1730; found 364.1734.

**5'-methoxy-2'-(*S*-methylsulfonimidoyl)-1,1':3',1''-terphenyl (3g).**



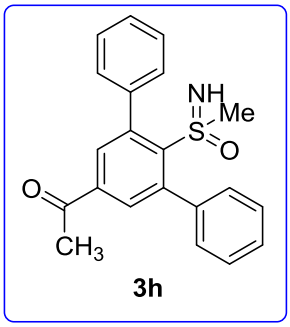

**3g**

Following the general procedure (eluent: petroleum ether/ethyl acetate = 2/1), the desired product **3g** was obtained as a yellow solid (51.9 mg, 77% yield); mp = 103-105 °C; **$^{1}$H NMR** (400 MHz, $CDCl_3$) δ 7.6 (s, 4H), 7.5 – 7.4 (m, 6H), 6.8 (s, 2H), 3.9 (s, 3H), 2.4 (s, 3H). **$^{13}$C NMR** (101 MHz, $CDCl_3$) δ 159.4, 143.4, 140.7, 135.9, 129.6, 128.4, 127.4, 117.1, 55.6, 46.8.

**IR (KBr) ν (cm$^{-1}$)** 3584, 3356, 2922, 2235, 1949, 1879, 1635, 1588, 1492, 1342, 1147, 1076.

**HRMS (ESI) m/z:** $[M+H]^+$ Calcd for $C_{20}H_{20}NO_2S$ 338.1209; found 338.1218.

**5'-acetyl-2'-(*S*-methylsulfonimidoyl)-1,1':3',1''-terphenyl (3h).**



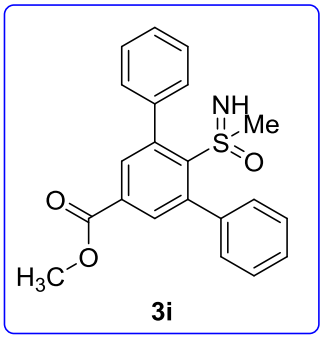

**3h**

Following the general procedure (eluent: petroleum ether/ethyl acetate = 2/1), the desired product **3h** was obtained as a white solid (18.6 mg, 27% yield); mp = 179-181 °C; **$^{1}$H NMR** (400 MHz, $CDCl_3$) δ 7.9 (s, 2H), 7.6 (s, 4H), 7.5 – 7.5 (m, 6H), 2.6 (s, 3H), 2.5 (s, 3H). **$^{13}$C NMR** (101 MHz, $CDCl_3$) δ 196.6, 147.1, 141.5, 139.8, 137.1, 131.5, 129.7, 128.9, 128.8, 46.3, 26.8.

**IR (KBr) ν (cm$^{-1}$)** 3360, 3055, 2924, 2355, 1672, 1561, 1407, 1228, 1151, 1075, 1042, 1029.

**HRMS (ESI) m/z:** $[M+H]^+$ Calcd for $C_{21}H_{20}NO_2S$ 350.1209; found 350.1219.

**5'-carboxylate-2'-(*S*-methylsulfonimidoyl)-1,1':3',1''-terphenyl (3i).**



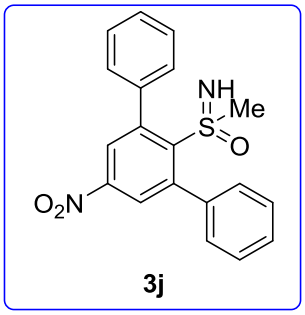

**3i**

Following the general procedure (eluent: petroleum ether/ethyl acetate = 2/1), the desired product **3i** was obtained as a yellow solid (45.7 mg, 63% yield); mp = 172-174 °C; **$^1$H NMR** (400 MHz, $CDCl_3$) δ 8.0 (s, 2H), 7.6 (s, 4H), 7.5 (dt, *J* = 8.5, 6.0 Hz, 6H), 3.9 (s, 3H), 2.5 (s, 3H). **$^{13}$C NMR** (101 MHz, $CDCl_3$) δ 165.3, 147.0, 141.2, 139.7, 132.7, 130.8, 129.7, 128.8, 128.7, 52.5, 46.3.

**IR (KBr) ν (cm$^{-1}$)** 3890, 3419, 3352, 3057, 2952, 2852, 1952, 1715, 1564, 1406, 1211, 997.

**HRMS (ESI) m/z:** $[M+H]^+$ Calcd for $C_{21}H_{20}NO_3S$ 366.1158; found 366.1166.

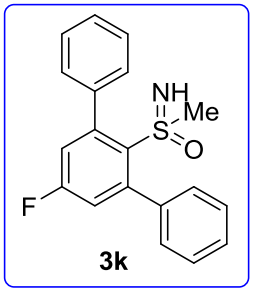
**5'-nitro-2'-(*S*-methylsulfonimidoyl)-1,1':3',1''-terphenyl (3j).**




**3j**

Following the general procedure (eluent: petroleum ether/ethyl acetate = 2/1), the desired product **3j** was obtained as a yellow solid (31.7 mg, 45% yield); mp = 192-194 °C;**$^1$H NMR** (400 MHz, $CDCl_3$) δ 8.2 (s, 2H), 7.7 (s, 4H), 7.6 – 7.5 (m, 6H), 2.5 (s, 3H). **$^{13}$C NMR** (101 MHz, $CDCl_3$) δ 148.9, 146.9, 142.9, 138.7, 129.6, 129.6, 129.1, 126.2, 46.2. This compound is known[4].

**5'-fluoro-2'-(*S*-methylsulfonimidoyl)-1,1':3',1''-terphenyl (3k).**



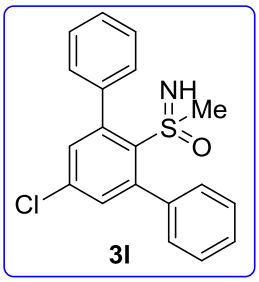
**3k**

Following the general procedure (eluent: petroleum ether/ethyl acetate = 2/1), the desired product **3k** was obtained as a yellow oil (57.2 mg, 88% yield): **$^{1}$H NMR** (400 MHz, $CDCl_3$) δ 7.6 (s, 4H), 7.5 – 7.4 (m, 6H), 7.1 (d, *J* = 8.6 Hz, 2H), 2.4 (s, 3H). **$^{13}$C NMR** (101 MHz, $CDCl_3$) δ 162.8, 160.2, 144.1, 144.1, 139.8, 139.7, 139.6, 139.6, 129.5, 128.9, 128.6, 118.7, 118.5, 46.6. **$^{19}$F NMR** (377 MHz, $CDCl_3$) δ -109.26.

**IR (KBr) ν (cm$^{-1}$)** 3364, 3058, 2929, 2342, 1735, 1586, 1447, 1336, 1220, 1142, 1043, 1029.

**HRMS (ESI) m/z:** $[M+H]^+$ Calcd for $C_{19}H_{17}FNOS$ 326.1009; found 326.1017.

**5'-chloro-2'-(*S*-methylsulfonimidoyl)-1,1':3',1''-terphenyl (3l).**



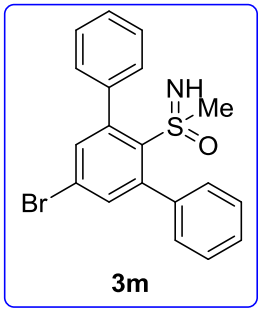
**3l**

Following the general procedure (eluent: petroleum ether/ethyl acetate = 2/1), the desired product **3l** was obtained as a white solid (47.2 mg, 69% yield); mp = 100-102 $^{o}$C; **$^{1}$H NMR** (400 MHz, $CDCl_3$) δ 7.6 (s, 4H), 7.5 (d, *J* = 6.5 Hz, 6H), 7.3 (s, 2H), 2.5 (s, 3H). **$^{13}$C NMR** (101 MHz, $CDCl_3$) δ 142.8, 142.0, 139.4, 135.6, 131.6, 129.6, 128.9, 128.7, 46.5.

**IR (KBr) ν (cm$^{-1}$)** 3363, 3056, 2929, 2250, 1892, 1735, 1600, 1493, 1397, 1219, 1146, 1059.

**HRMS (ESI) m/z:** $[M+H]^+$ Calcd for $C_{19}H_{17}ClNOS$ 342.0714; found 342.0724.

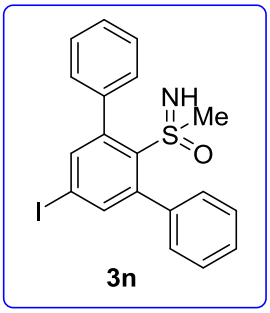
**5'-bromo-2'-(*S*-methylsulfonimidoyl)-1,1':3',1''-terphenyl (3m).**




**3m**

Following the general procedure (eluent: petroleum ether/ethyl acetate = 2/1), the desired product **3m** was obtained as a white solid (53.9 mg, 70% yield); mp = 140-142 °C; **$^{1}$H NMR** (400 MHz, $CDCl_3$) δ 7.6 (s, 4H), 7.5 – 7.5 (m, 8H), 2.4 (s, 3H). **$^{13}$C NMR** (101 MHz, $CDCl_3$) δ 142.8, 142.6, 139.3, 134.5, 129.6, 129.0, 128.7, 124.0, 46.5. This compound is known[4].

**5'-iodo-2'-(*S*-methylsulfonimidoyl)-1,1':3',1''-terphenyl (3n).**



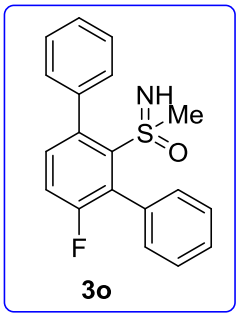

**3n**

Following the general procedure (eluent: petroleum ether/ethyl acetate = 2/1), the desired product **3n** was obtained as a white solid (65.0 mg, 75% yield); mp = 189-191 °C; **$^{1}$H NMR** (400 MHz, $CDCl_3$) δ 7.7 (s, 2H), 7.6 (bs, 4H), 7.5 (dt, *J* = 8.0, 2.8 Hz, 6H), 2.4 (s, 3H). **$^{13}$C NMR** (101 MHz, $CDCl_3$) δ 143.3, 142.3, 140.3, 139.0, 129.6, 128.8, 128.6, 96.5, 46.4.

**IR (KBr) ν (cm$^{-1}$)** 3357, 3054, 2930, 1547, 1489, 1445, 1384, 1310, 1075, 1047, 558, 524.

**HRMS (ESI) m/z:** $[M+H]^+$ Calcd for $C_{19}H_{17}INOS$ 434.0070; found 434.0081.

**4'-fluoro-2'-(*S*-methylsulfonimidoyl)-1,1':3',1''-terphenyl (3o).**



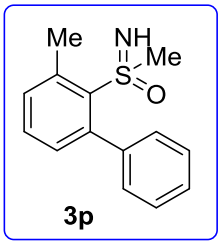
**3o**

Following the general procedure (eluent: petroleum ether/ethyl acetate = 2/1), the desired product **3o** was obtained as a yellow solid (46.1 mg, 71% yield); mp = 130-132 °C; **$^{1}$H NMR** (400 MHz, $CDCl_3$) δ 7.6 – 7.6 (m, 2H), 7.6 – 7.4 (m, 8H), 7.4 – 7.3 (m, 2H), 2.4 (s, 3H). **$^{13}$C NMR** (101 MHz, $CDCl_3$) δ 160.1, 157.7, 144.9, 139.8, 136.7, 136.7, 133.5, 133.4, 132.3, 130.8, 130.7, 129.7, 129.1, 128.6, 128.5, 128.4, 128.2, 128.0, 117.7, 117.5, 46.5. **$^{19}$F NMR** (377 MHz, $CDCl_3$) δ -111.73.

**IR (KBr) ν (cm$^{-1}$)** 3850, 3360, 3059, 2937, 2354, 1974, 1827, 1598, 1454, 1224, 1141, 1029.

**HRMS (ESI) m/z:** $[M+H]^+$ Calcd for $C_{19}H_{17}FNOS$ 326.1009; found 326.1017.

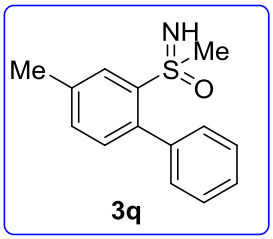
**3-Methyl-2-(*S*-methylsulfonimidoyl)-1,1'-biphenyl (3p).**



**3p**

Following the general procedure (eluent: petroleum ether/ethyl acetate = 2/1), the desired product **3p** was obtained as a yellow solid (36.8 mg, 75% yield); mp = 92-94 °C; **$^{1}$H NMR** (400 MHz, $CDCl_3$) δ 7.4 – 7.4 (m, 5H), 7.3 (dt, *J* = 7.9, 2.7 Hz, 2H), 7.1 (d, *J* = 5.7 Hz, 1H), 2.9 (s, 3H), 2.8 (s, 3H). **$^{13}$C NMR** (101 MHz, $CDCl_3$) δ 141.8, 141.1, 138.2, 132.8, 131.0, 130.6, 129.1, 128.6, 128.2, 127.7, 46.7, 22.9. This compound is known[4].

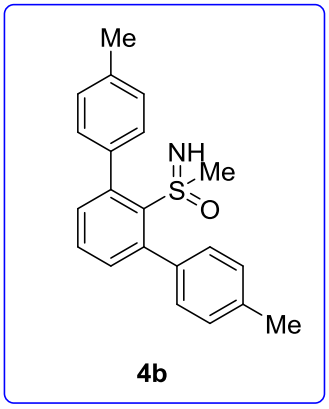
**4-Methyl-2-(*S*-methylsulfonimidoyl)-1,1'-biphenyl (3q).**



**3q**

Following the general procedure (eluent: petroleum ether/ethyl acetate = 2/1), the desired product **3q** was obtained as a pale yellow oil (45.1 mg, 92% yield): **$^{1}$H NMR** (400 MHz, $CDCl_3$) δ 8.0 (dd, *J* = 1.7, 0.8 Hz, 1H), 7.4 – 7.4 (m, 6H), 7.2 (d, *J* = 7.7 Hz, 1H), 2.8 (s, 3H), 2.5 (s, 3H). **$^{13}$C NMR** (101 MHz, $CDCl_3$) δ 141.8, 139.1, 138.1, 138.1, 132.8, 132.7, 129.9, 128.3, 127.9, 127.7, 44.6, 21.0. This compound is known[4].

**4,4''-Dimethyl-2'-(*S*-methylsulfonimidoyl)-1,1':3',1''-terphenyl (4b).**



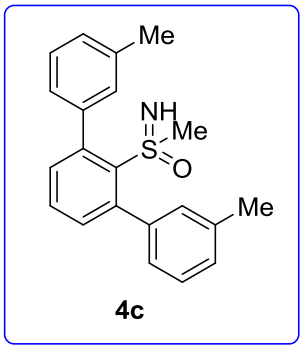
**4b**

Following the general procedure (eluent: petroleum ether/ethyl acetate = 2/1), the desired product **4b** was obtained as a white solid (44.9 mg, 67% yield); mp = 90-192 $^{o}$C; **$^{1}$H NMR** (400 MHz, $CDCl_3$) δ 7.6 – 7.4 (m, 5H), 7.3 (dd, *J* = 7.8, 4.3 Hz, 6H), 2.5 (s, 3H), 2.4 (s, 6H). **$^{13}$C NMR** (101 MHz, $CDCl_3$) δ 143.4, 140.9, 138.4, 137.6, 131.8, 129.8, 129.6, 129.3, 46.5, 21.2.

**IR (KBr) ν (cm$^{-1}$)** 3616, 3460, 336, 3045, 2372, 2206, 1950, 1821, 1671, 1563, 1115, 1046.

**HRMS (ESI) m/z:** $[M+H]^+$ Calcd for $C_{21}H_{22}NOS$ 336.1417; found 336.1424.

**3,3''-Dimethyl-2'-(*S*-methylsulfonimidoyl)-1,1':3',1''-terphenyl (4c).**



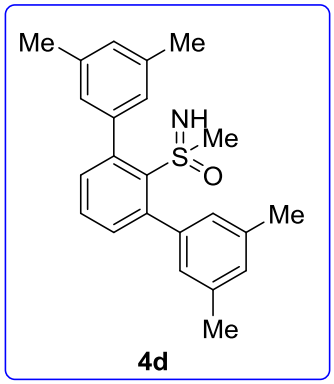
**4c**

Following the general procedure (eluent: petroleum ether/ethyl acetate = 2/1), the desired product **4c** was obtained as a colorless oil (41.6 mg, 62% yield): **$^{1}$H NMR** (400 MHz, $CDCl_3$) δ 7.5 – 7.3 (m, 7H), 7.3 (d, *J* = 7.6 Hz, 2H), 7.3 – 7.2 (m, 2H), 2.5 (s, 3H), 2.4 (s, 6H). **$^{13}$C NMR** (101 MHz, $CDCl_3$) δ143.3, 141.0, 140.5, 138.3, 131.8, 130.4, 129.7, 129.2, 128.4, 126.9, 46.4, 21.3.

**IR (KBr) ν (cm$^{-1}$)** 3361, 3050, 2922, 2862, 2733, 2248, 1948, 1603, 1487, 1171, 1102, 1044.

**HRMS (ESI) m/z:** $[M+H]^+$ Calcd for $C_{21}H_{22}NOS$ 336.1417; found 336.1429.

**3,3'',5,5''-tetramethyl-2'-(*S*-methylsulfonimidoyl)-1,1':3',1''-terphenyl (4d).**



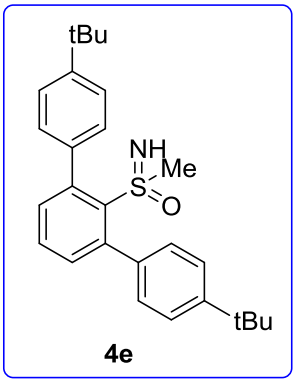
**4d**

Following the general procedure (eluent: petroleum ether/ethyl acetate = 2/1), the desired product **4d** was obtained as a white solid (21.8 mg, 30% yield); mp = 174-176 $^{o}$C; **$^{1}$H NMR** (400 MHz, $CDCl_3$) δ 7.5 (dd, *J* = 8.0, 7.1 Hz, 1H), 7.3 – 7.2 (m, 6H), 7.1 (d, *J* = 2.1 Hz, 2H), 2.5 (s, 3H), 2.4 (s, 12H). **$^{13}$C NMR** (101 MHz, $CDCl_3$) δ 143.3, 141.0, 140.5, 138.2, 131.7, 130.1, 129.6, 127.6, 46.5, 21.3.

**IR (KBr) ν (cm$^{-1}$)** 3858, 3626, 3360, 3003, 2733, 2424, 2056, 1887, 1736, 1570, 1173, 1004.

**HRMS (ESI) m/z:** $[M+H]^+$ Calcd for $C_{23}H_{26}NOS$ 364.1730; found 364.1736.

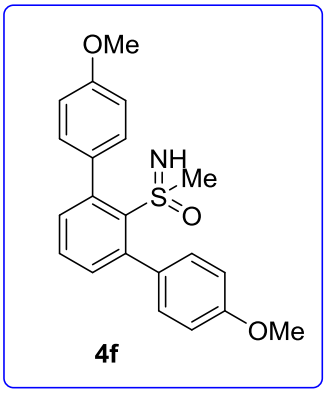
**4,4''-di-tertbutyl-2'-(*S*-methylsulfonimidoyl)-1,1':3',1''-terphenyl (4e).**



**4e**

Following the general procedure (eluent: petroleum ether/ethyl acetate = 2/1), the desired product **4e** was obtained as a white solid (54.5 mg, 65% yield); mp = 212-214 $^oC$; **$^1$H NMR** (400 MHz, $CDCl_3$) δ 7.6 (d, *J* = 7.4 Hz, 4H), 7.5 – 7.5 (m, 4H), 7.5 – 7.4 (m, 1H), 7.3 (d, *J* = 7.6 Hz, 2H), 2.4 (s, 3H), 1.4 (s, 18H). **$^{13}$C NMR** (101 MHz, $CDCl_3$) δ 151.6, 143.5, 140.8, 137.5, 131.8, 129.7, 129.4, 125.5, 46.4, 34.6, 31.3.
**IR (KBr) ν ($cm^{-1}$)** 3898, 3356, 2955, 2867, 1914, 1609, 1573, 1450, 1269, 1212, 1119, 1045.
**HRMS (ESI) m/z:** $[M+H]^+$ Calcd for $C_{27}H_{34}NOS$ 420.2356; found 420.2360.

**4,4''-Dimethoxy-2'-(*S*-methylsulfonimidoyl)-1,1':3',1''-terphenyl (4f).**

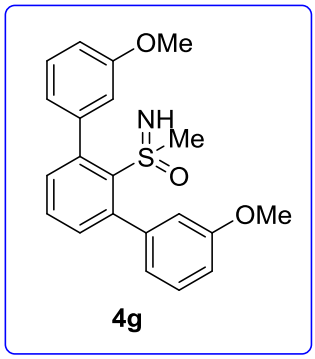


**4f**

Following the general procedure (eluent: petroleum ether/ethyl acetate = 2/1), the desired product **4f** was obtained as a pale yellow solid (38.2 mg, 52% yield); mp = 132-134 $^oC$; **$^1$H NMR** (400 MHz, $CDCl_3$) δ 7.6 – 7.5 (m, 4H), 7.5 (dd, *J* = 8.0, 7.2 Hz, 1H), 7.3 (d, *J* = 7.6 Hz, 2H), 7.0 – 7.0 (m, 4H), 3.9 (s, 6H), 2.5 (s, 3H). **$^{13}$C NMR**

(101 MHz, $CDCl_3$) δ 159.8, 143.5, 140.6, 132.7, 131.8, 131.0, 129.8, 114.1, 55.3, 46.5. This compound is known[4].

**3,3''-dimethoxy-2'-(*S*-methylsulfonimidoyl)-1,1':3',1''-terphenyl (4g).**



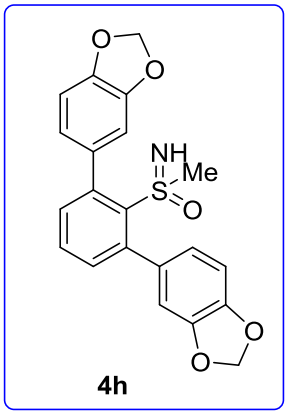

**4g**

Following the general procedure (eluent: petroleum ether/ethyl acetate = 2/1), the desired product **4g** was obtained as a yellow oil (64.6 mg, 88% yield): **$^1$H NMR** (400 MHz, $CDCl_3$) δ 7.5 (dd, *J* = 8.0, 7.1 Hz, 1H), 7.4 (dd, *J* = 10.6, 7.7 Hz, 4H), 7.2 (s, 4H), 7.0 (ddd, *J* = 8.3, 2.6, 1.0 Hz, 2H), 3.9 (s, 6H), 2.5 (s, 3H). **$^{13}$C NMR** (101 MHz, $CDCl_3$) δ 159.5, 143.4, 141.8, 140.7, 131.9, 129.8, 129.6, 122.1, 115.2, 114.4, 55.3, 46.4.

**IR (KBr) ν (cm$^{-1}$)** 3358, 3052, 2836, 2248, 1941, 1735, 1599, 1458, 1210, 1171, 1041, 997.

**HRMS (ESI) m/z:** $[M+H]^+$ Calcd for $C_{21}H_{22}NO_3S$ 368.1315; found 368.1326.

**5,5'-(2-(*S*-Methylsulfonimidoyl)-1,3-phenylene)bis(benzo[d][1,3]dioxole) (4h).**

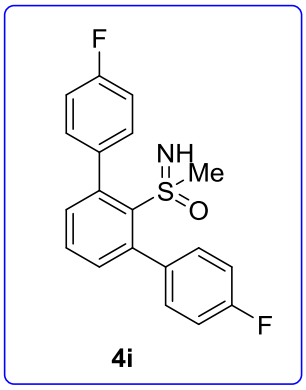



**4h**

Following the general procedure (eluent: petroleum ether/ethyl acetate = 2/1), the desired product **4h** was obtained as a yellow solid (47.4 mg, 60% yield); mp = 171-173 °C; **$^1$H NMR** (400 MHz, $CDCl_3$) δ 7.5 (dd, *J* = 8.0, 7.2 Hz, 1H), 7.3 (d, *J* = 7.6 Hz, 2H), 7.1 (s, 4H), 6.9 (d, *J* = 8.0 Hz, 2H), 6.0 (s, 4H), 2.6 (s, 3H). **$^{13}$C NMR**

(101 MHz, $CDCl_3$) δ 147.9, 147.7, 143.4, 140.5, 134.0, 131.9, 129.8, 123.6, 110.2, 108.3, 101.4, 46.5. This compound is known[4].

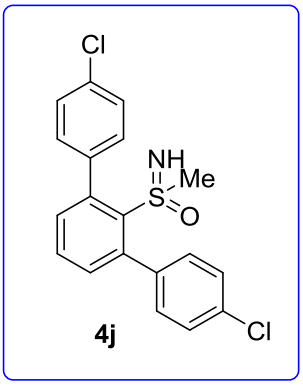
**4,4''-Difluoro-2'-(*S*-methylsulfonimidoyl)-1,1':3',1''-terphenyl (4i).**



**4i**

Following the general procedure (eluent: petroleum ether/ethyl acetate = 2/1), the desired product **4i** was obtained as a yellow solid (46.7 mg, 68% yield); mp = 177-179 °C; **$^1$H NMR** (400 MHz, $CDCl_3$) δ 7.6 (s, 4H), 7.5 (dd, *J* = 8.0, 7.2 Hz, 1H), 7.3 (d, *J* = 7.5 Hz, 2H), 7.2 – 7.1 (m, 4H), 2.5 (s, 3H). **$^{13}$C NMR** (101 MHz, $CDCl_3$) δ 164.0, 161.5, 143.3, 140.1, 136.4, 136.4, 132.3, 131.5, 131.4, 130.1, 115.7, 115.5, 46.7. **$^{19}$F NMR** (377 MHz, $CDCl_3$) δ -112.65. This compound is known[4].

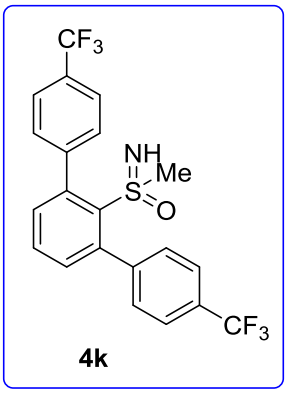
**4,4''-Dichloro-2'-(*S*-methylsulfonimidoyl)-1,1':3',1''-terphenyl (4j).**



**4j**

Following the general procedure (eluent: petroleum ether/ethyl acetate = 2/1), the desired product **4j** was obtained as a yellow solid (54.2 mg, 72% yield); mp = 124-126 °C; **$^1$H NMR** (400 MHz, $CDCl_3$) δ 7.5 (dt, *J* = 7.6, 3.7 Hz, 5H), 7.5 – 7.4 (m, 4H), 7.3 (d, *J* = 7.6 Hz, 2H), 2.5 (s, 3H). **$^{13}$C NMR** (101 MHz, $CDCl_3$) δ 142.9, 140.1, 138.8, 134.6, 132.3, 130.9, 130.2, 128.7, 46.7. This compound is known[4].

**4,4''-Bis(trifluoromethyl)-2'-(*S*-methylsulfonimidoyl)-1,1':3',1''-terphenyl (4k).**



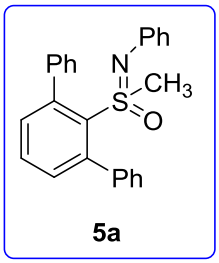
**4k**

Following the general procedure (eluent: petroleum ether/ethyl acetate = 2/1), the desired product **4k** was obtained as a yellow solid (49.8 mg, 45% yield); mp = 152-154 ºC; **$^{1}$H NMR** (400 MHz, $CDCl_3$) δ 7.7 (q, *J* = 8.1 Hz, 8H), 7.6 (t, *J* = 7.6 Hz, 1H), 7.4 (d, *J* = 7.6 Hz, 2H), 2.6 (s, 3H). **$^{13}$C NMR** (101 MHz, $CDCl_3$) δ 144.2, 142.6, 140.3, 132.7, 130.6, 130.5 (d, *J* = 33.2 Hz), 130.0, 125.3, 122.5, 46.9. **$^{19}$F NMR** (377 MHz, $CDCl_3$) -62.70.

**IR (KBr) ν (cm$^{-1}$)** 3343, 3282, 3055, 2926, 2302, 1708, 1616, 1451, 1412, 1326, 1065, 849.

**HRMS (ESI) m/z:** $[M+H]^+$ Calcd for $C_{21}H_{16}F_6NOS$ 444.0851; found 444.0856.

***rac*-*N*-Phenyl-*S*-triphenyl-*S*-methylsulfoximine (5a).**



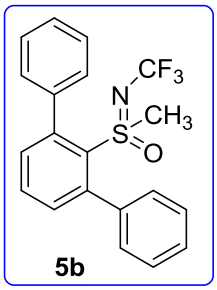
**5a**

Following the general procedure (eluent: petroleum ether/ethyl acetate = 2/1), the desired product **5a** was obtained as a yellow oil (55.2 mg, 72% yield): **$^{1}$H NMR** (400 MHz, $CDCl_3$) δ 7.6 – 7.5 (m, 5H), 7.4 (dd, *J* = 5.2, 2.0 Hz, 6H), 7.3 (d, *J* = 7.6 Hz, 2H), 7.2 – 7.1 (m, 2H), 7.0 – 6.9 (m, 1H), 6.8 (dd, *J* = 8.4, 1.2 Hz, 2H), 2.7 (s, 3H). **$^{13}$C NMR** (101 MHz, $CDCl_3$) δ 144.8, 143.2, 141.1, 138.2, 132.7, 130.9, 129.5, 128.8, 127.7, 127.7, 123.6, 121.8, 45.1.

**IR (KBr) ν (cm$^{-1}$)** 3368, 3054, 2925, 2054, 1732, 1592, 1487, 1446, 1265, 1207, 1055, 758.

**HRMS (ESI) m/z:** $[M+H]^+$ Calcd for $C_{25}H_{22}NOS$ 384.1417; found 384.1427.

***N*-Trifluoromethyl-*S*-triphenyl-*S*-methylsulfoximine (5b).**

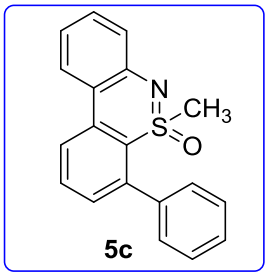



Following the general procedure (eluent: petroleum ether/ethyl acetate = 15/1), the desired product **5b** was obtained as a yellow solid (45.0 mg, 60% yield); mp = 117-119 $^{o}$C; **$^{1}$H NMR** (400 MHz, $CDCl_3$) δ 7.7 – 7.5 (m, 5H), 7.5 – 7.4 (m, 6H), 7.4 (d, *J* = 7.6 Hz, 2H), 2.7 (s, 3H). **$^{13}$C NMR** (101 MHz, $CDCl_3$) δ 142.8, 139.9, 136.9, 132.8, 131.8, 129.6, 128.2, 127.9, 121.4 (d, *J* = 256.0 Hz), 47.1. **$^{19}$F NMR** (377 MHz, $CDCl_3$) -42.25.

**IR (KBr) ν (cm$^{-1}$)** 3361, 3084, 2928, 2514, 2356, 2083, 1959, 1734, 1450, 1396, 1102, 953.

**HRMS (ESI) m/z:** $[M+H]^+$ Calcd for $C_{20}H_{17}F_3NOS$ 376.0977; found 376.0998.

**5-Methyl-4-phenyldibenzo[c,e][1,2]thiazine 5-oxide (5c).**




Following the general procedure (eluent: petroleum ether/ethyl acetate = 5/1), the desired product **5c** was obtained as a white Solid (43.3 mg, 71% yield); mp = 171-173 $^{o}$C; **$^{1}$H NMR** (400 MHz, $CDCl_3$) δ 8.2 (dd, *J* = 8.4, 1.2 Hz, 1H), 8.1 (dd, *J* = 8.1, 1.5 Hz, 1H), 7.9 (s, 1H), 7.7 (dd, *J* = 8.2, 7.4 Hz, 1H), 7.5 – 7.5 (m, 3H), 7.5 – 7.4 (m, 3H), 7.3 – 7.3 (m, 1H), 7.1 (ddd, *J* = 8.3, 7.1, 1.4 Hz, 1H), 2.8 (s, 3H). **$^{13}$C NMR** (101 MHz, $CDCl_3$) δ 141.9, 138.8, 138.5, 134.1, 131.4, 130.4, 130.3, 128.7, 126.3, 124.4, 124.1, 123.9, 120.9, 118.6, 45.2. This compound is known[4].

## 9. X-ray analysis of 4f

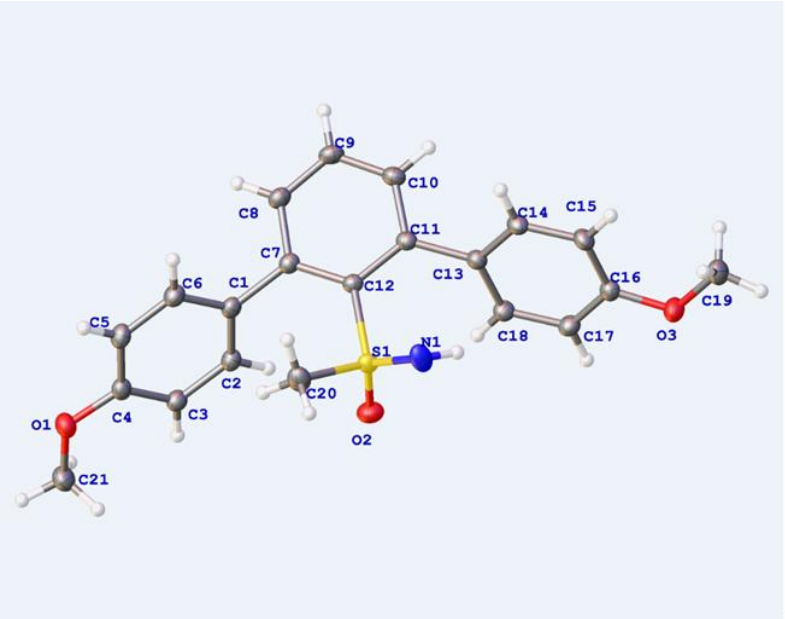
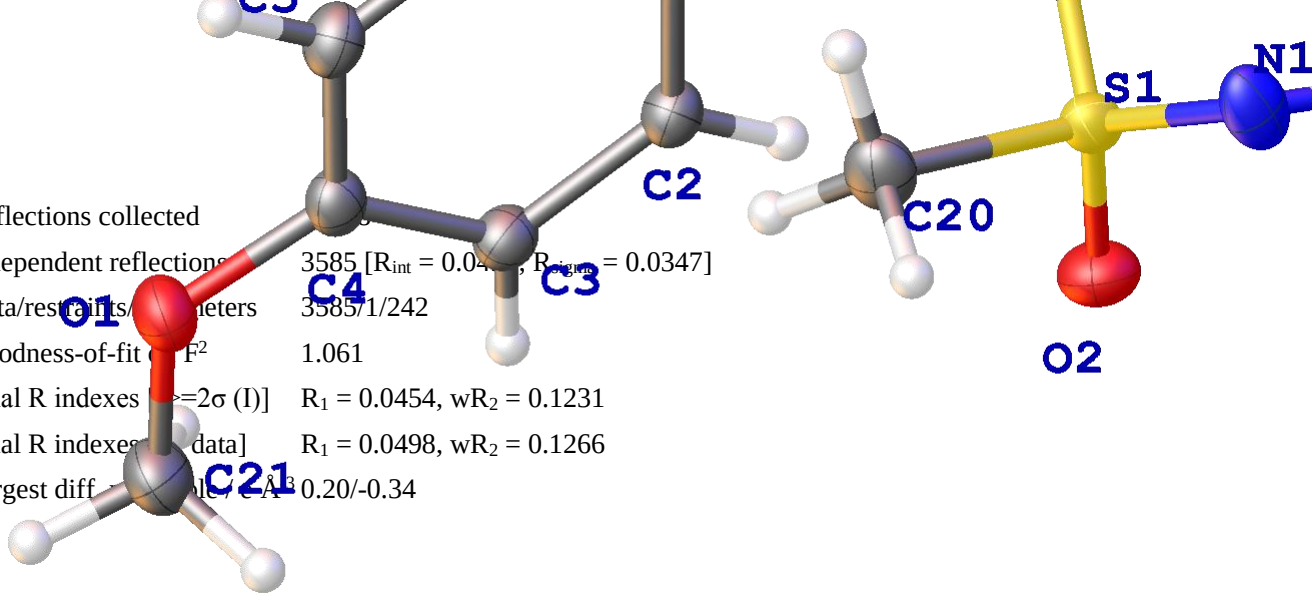



**Table S2 Crystal data and structure refinement for 2a-p-OMe.**

| | |
|---|---|
| Identification code | 2a-p-OMe |
| Empirical formula | $C_{21}H_{21}NO_3S$ |
| Formula weight | 367.45 |
| Temperature/K | 294.67(12) |
| Crystal system | triclinic |
| Space group | P-1 |
| a/Å | 9.0766(3) |
| b/Å | 9.3193(3) |
| c/Å | 11.4115(4) |
| α/° | 73.245(3) |
| β/° | 83.671(3) |
| γ/° | 84.492(2) |
| Volume/Å$^3$ | 916.57(6) |
| Z | 2 |
| $\rho_{calc}$g/cm$^3$ | 1.331 |
| μ/mm$^{-1}$ | 1.736 |
| F(000) | 388.0 |
| Crystal size/mm$^3$ | 0.16 × 0.14 × 0.12 |
| Radiation | Cu Kα (λ = 1.54184) |
| 2Θ range for data collection/° | 8.122 to 150.782 |
| Index ranges | $-11 \le h \le 10$, $-11 \le k \le 11$, $-14 \le l \le 14$ |

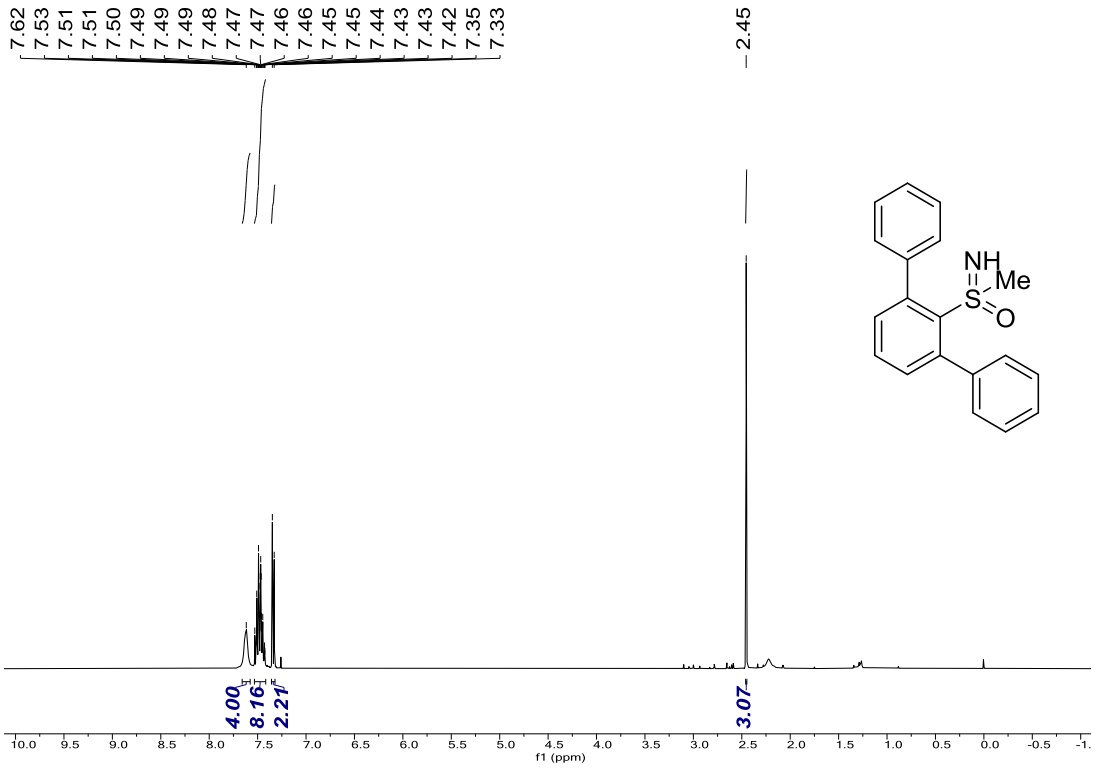



| | |
|---|---|
| Reflections collected | [illegible] |
| Independent reflections | 3585 [$R_{int}$ = 0.04[illegible], $R_{sigma}$ = 0.0347] |
| Data/restraints/parameters | 3585/1/242 |
| Goodness-of-fit on $F^2$ | 1.061 |
| Final R indexes [I>=2σ (I)] | $R_1$ = 0.0454, $wR_2$ = 0.1231 |
| Final R indexes [all data] | $R_1$ = 0.0498, $wR_2$ = 0.1266 |
| Largest diff. peak/hole / e Å$^{-3}$ | 0.20/-0.34 |

# 10. $^{1}H$, $^{13}C$ NMR spectra of the products

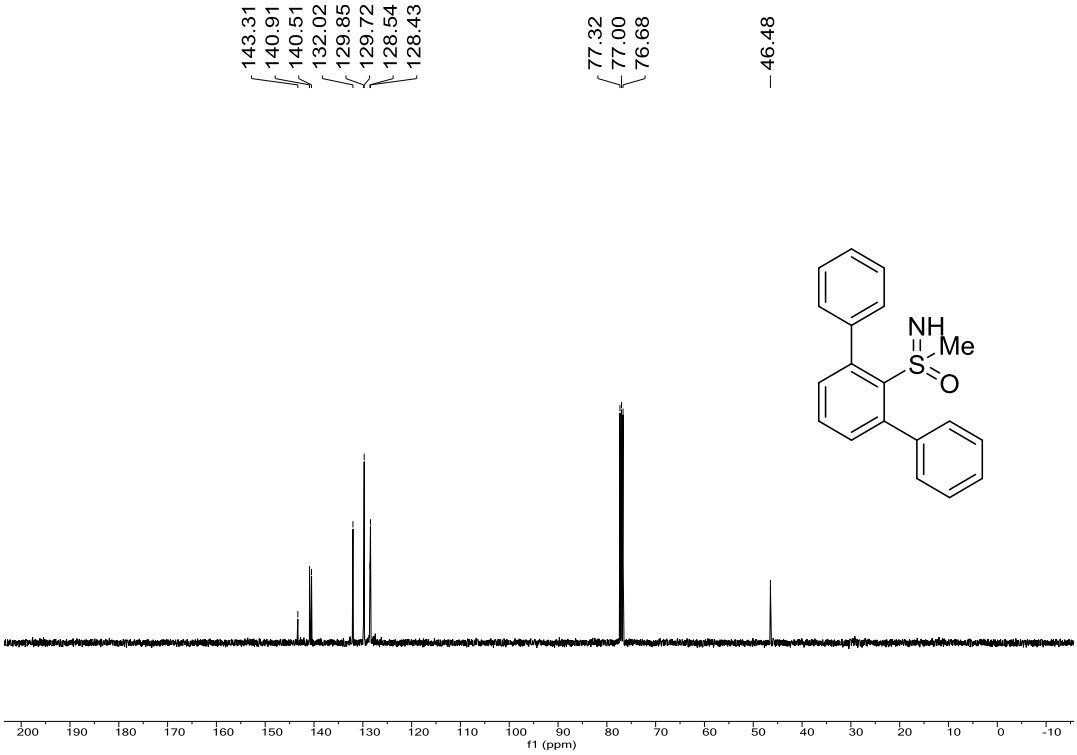
**2'-(*S*-methylsulfonimidoyl)-1,1':3',1''-terphenyl (3a).**

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



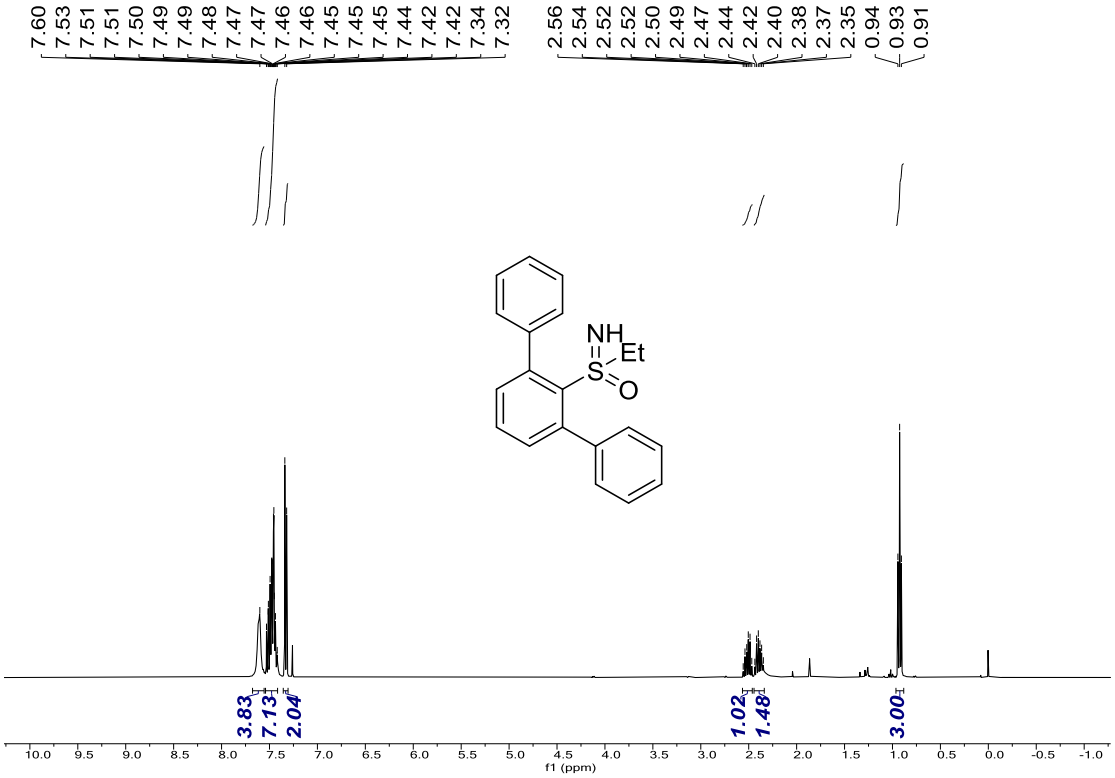

**2'-(*S*-methylsulfonimidoyl)-1,1':3',1''-terphenyl (3a).**

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



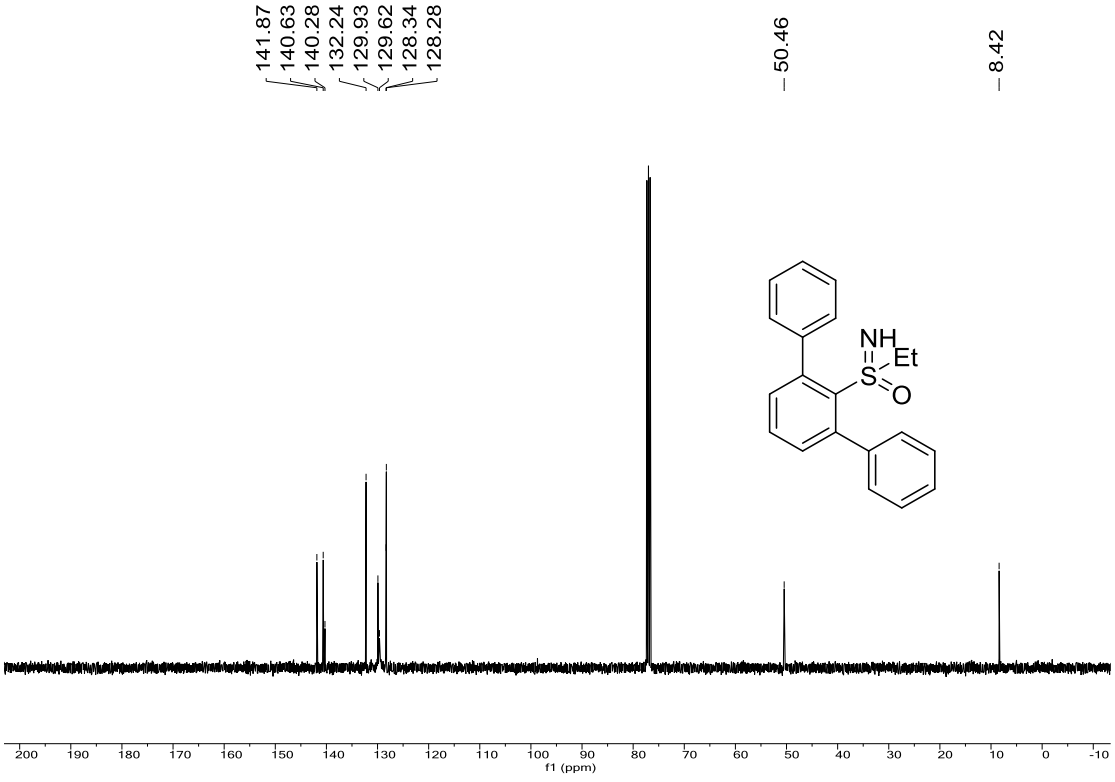
**2'-(*S*-ethylsulfonimidoyl)-1,1':3',1''-terphenyl (3b).**

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



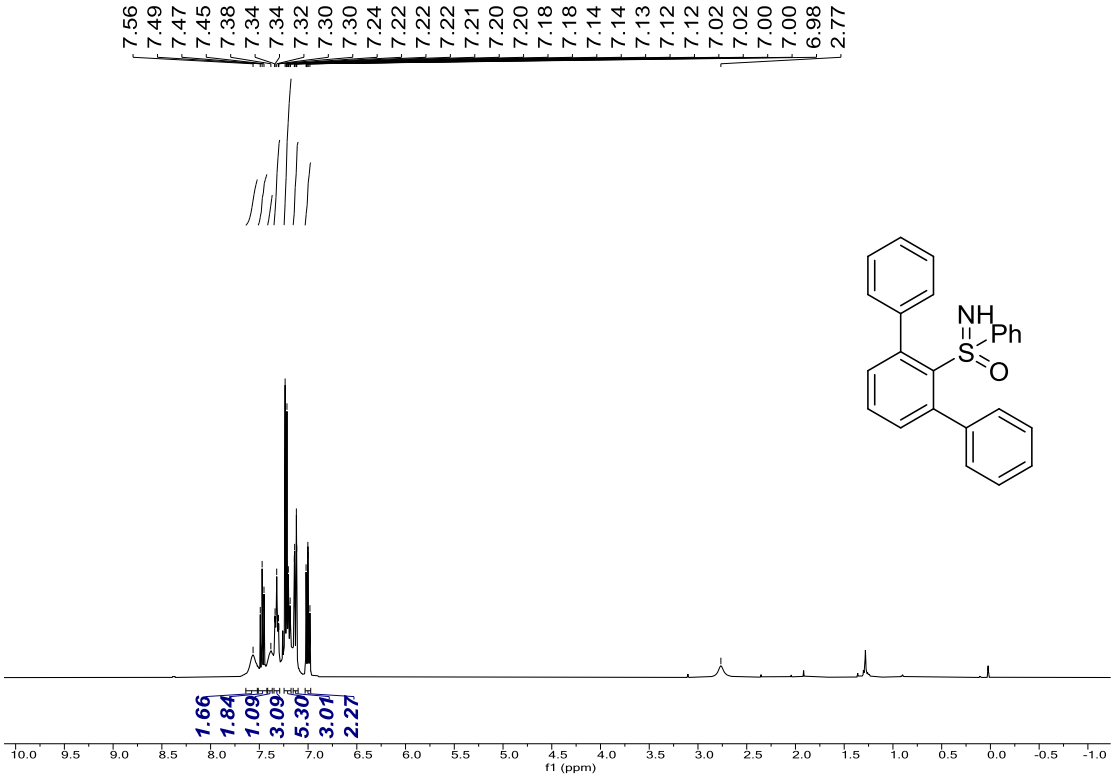

**2'-(*S*-ethylsulfonimidoyl)-1,1':3',1''-terphenyl (3b).**

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



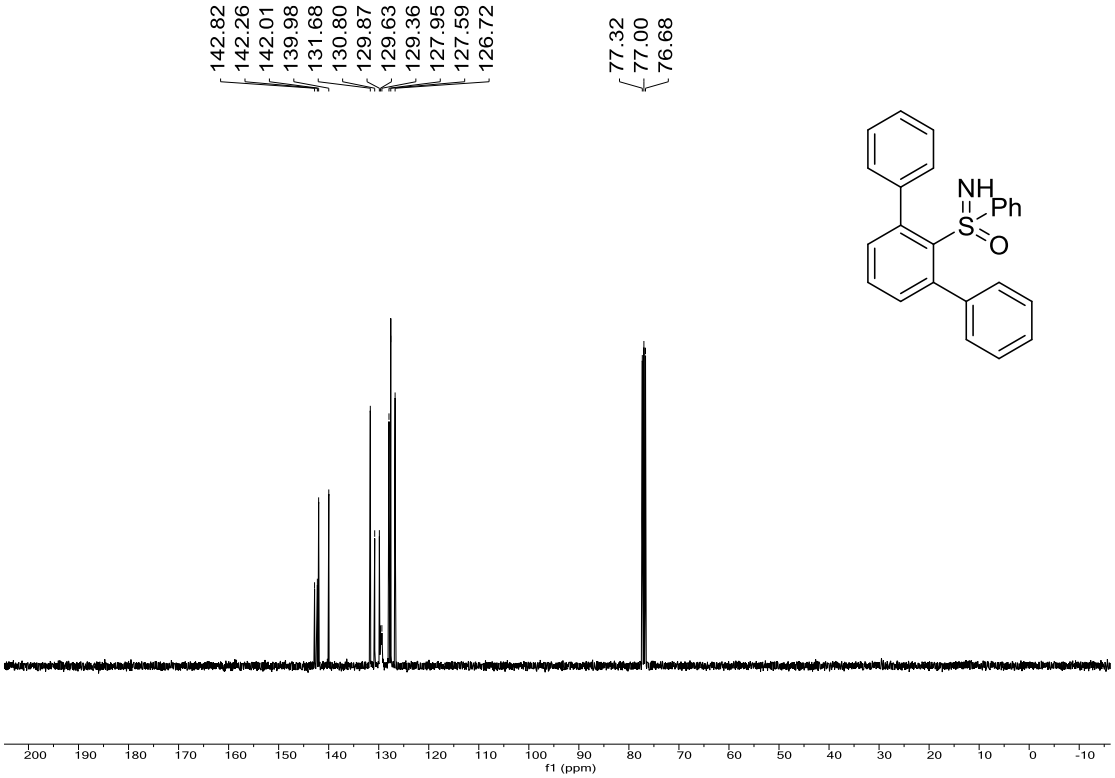
**2'-(*S*-phenylsulfonimidoyl)-1,1':3',1''-terphenyl (3c).**

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



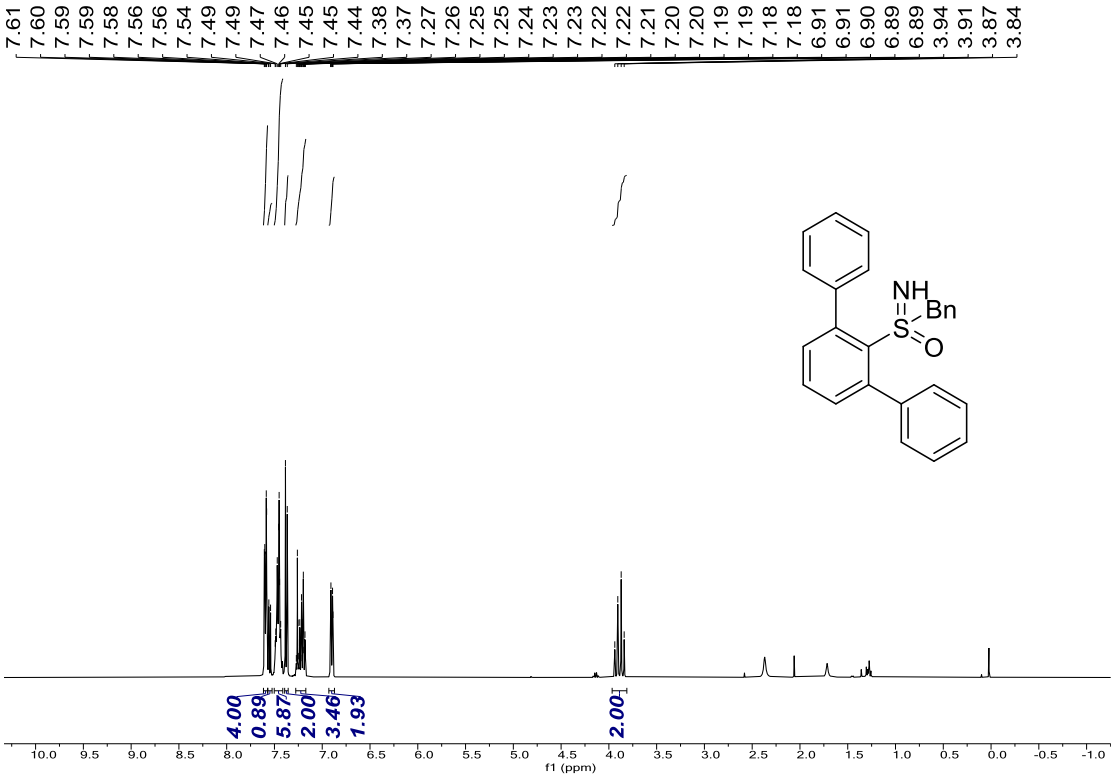

**2'-(*S*-phenylsulfonimidoyl)-1,1':3',1''-terphenyl (3c).**

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



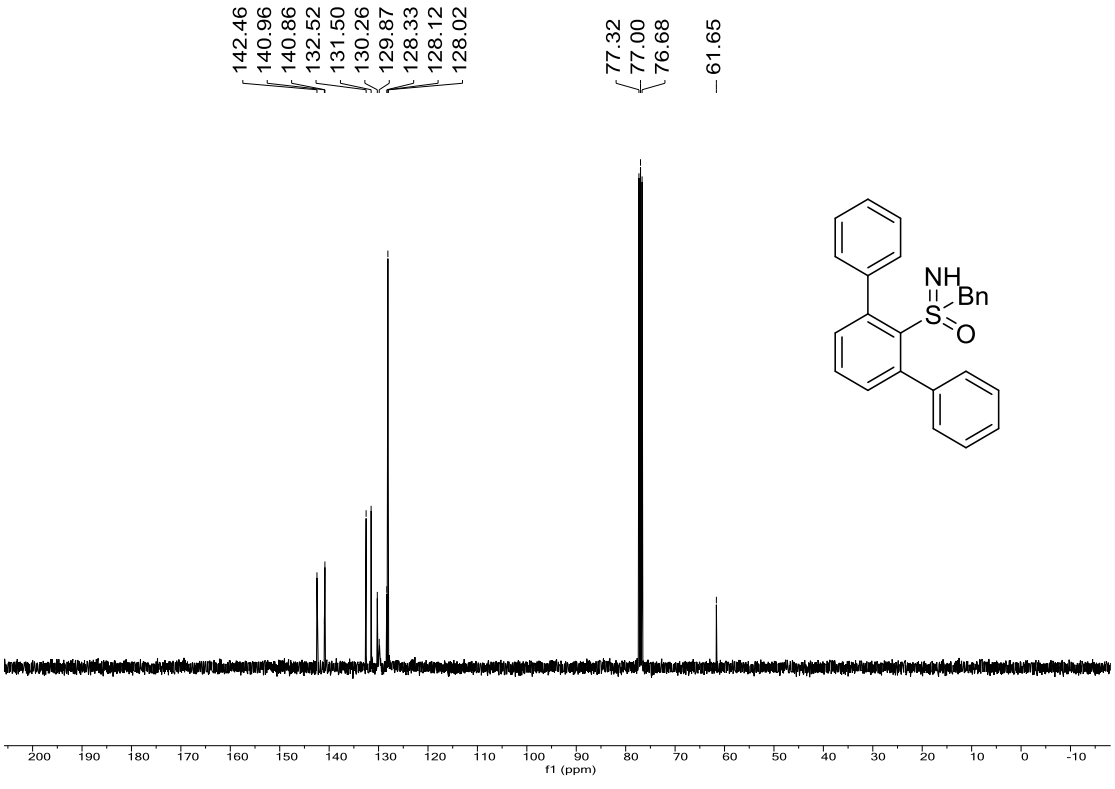
**2'-(*S*-benzylsulfonimidoyl)-1,1':3',1''-terphenyl (3d).**

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



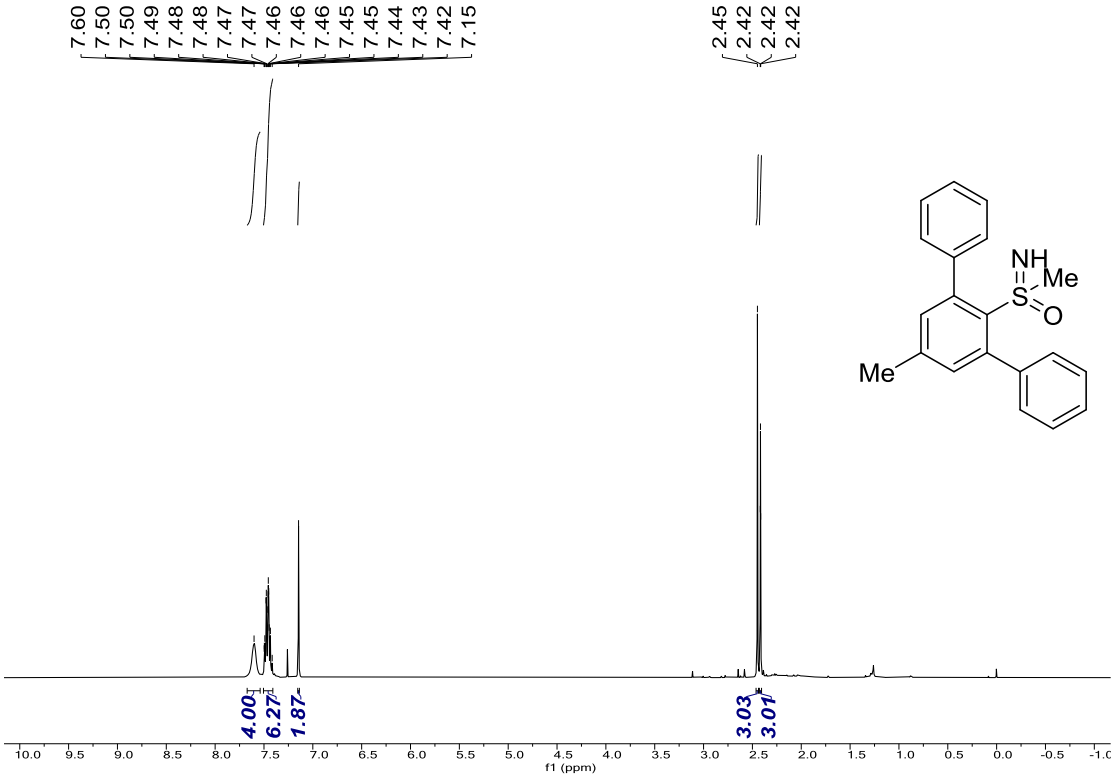

**2'-(*S*-benzylsulfonimidoyl)-1,1':3',1''-terphenyl (3d).**

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



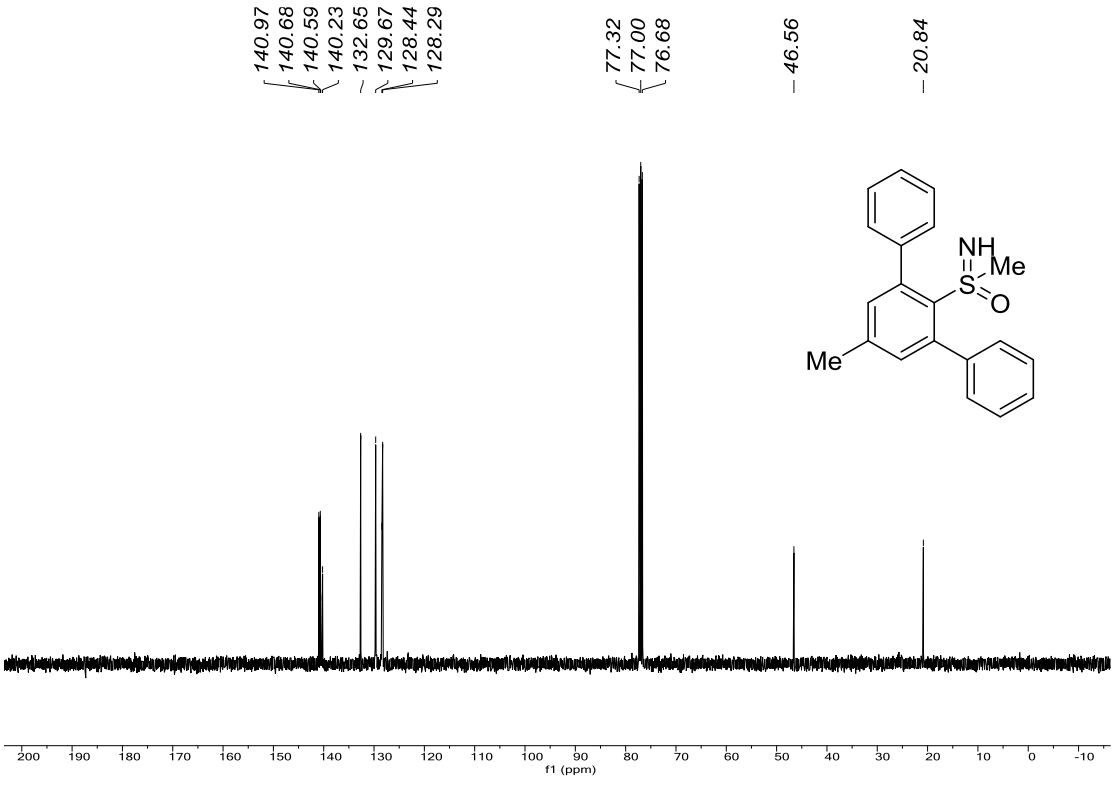
**5'-Methyl-2'-(*S*-methylsulfonimidoyl)-1,1':3',1''-terphenyl (3e).**

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



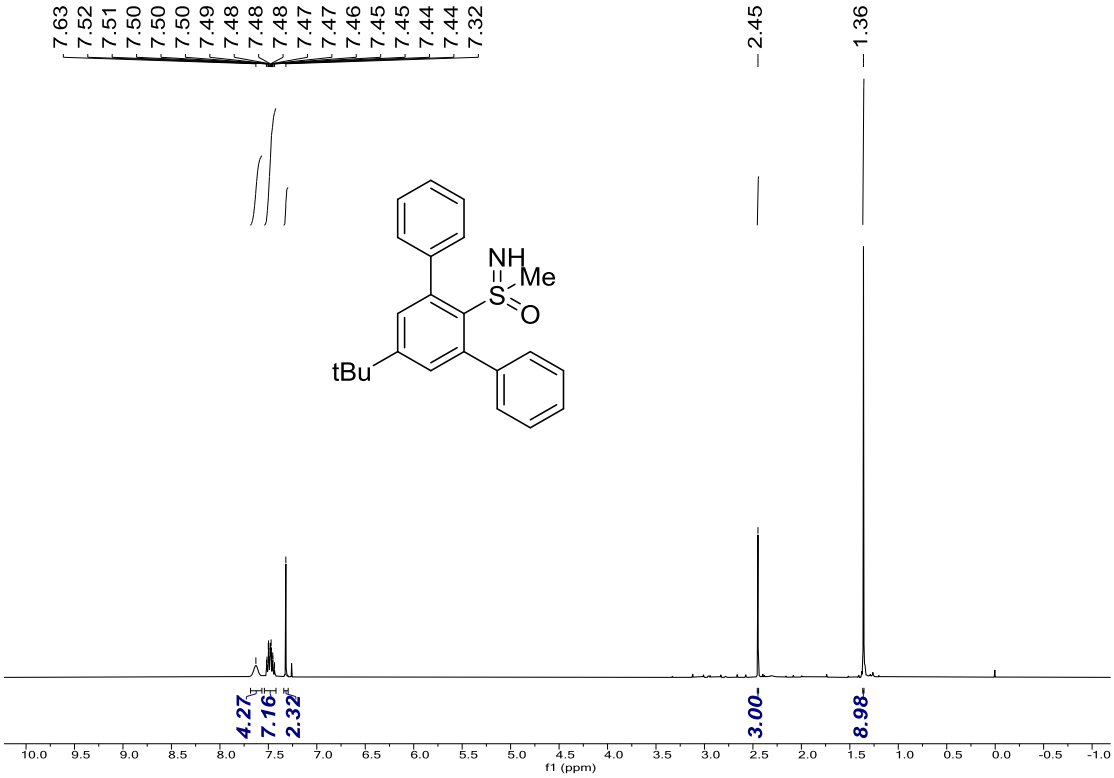

**5'-Methyl-2'-(*S*-methylsulfonimidoyl)-1,1':3',1''-terphenyl (3e).**

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



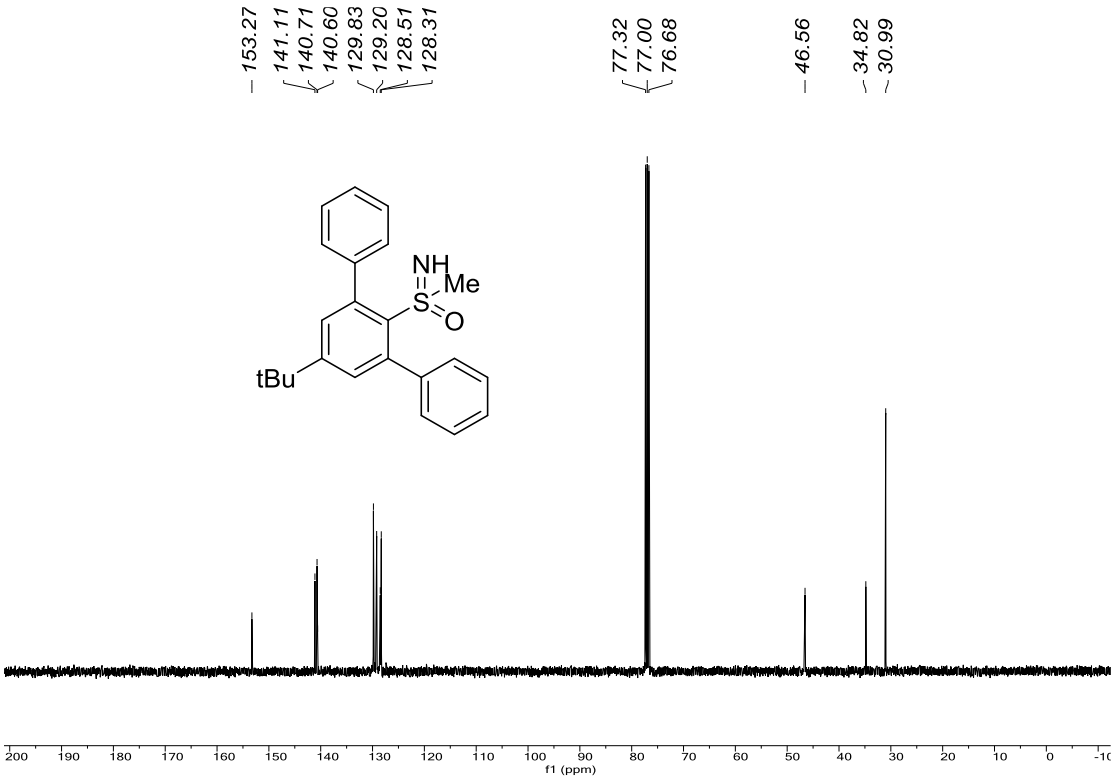
**5'-tert-butyl-2'-(*S*-methylsulfonimidoyl)-1,1':3',1''-terphenyl (3f).**

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



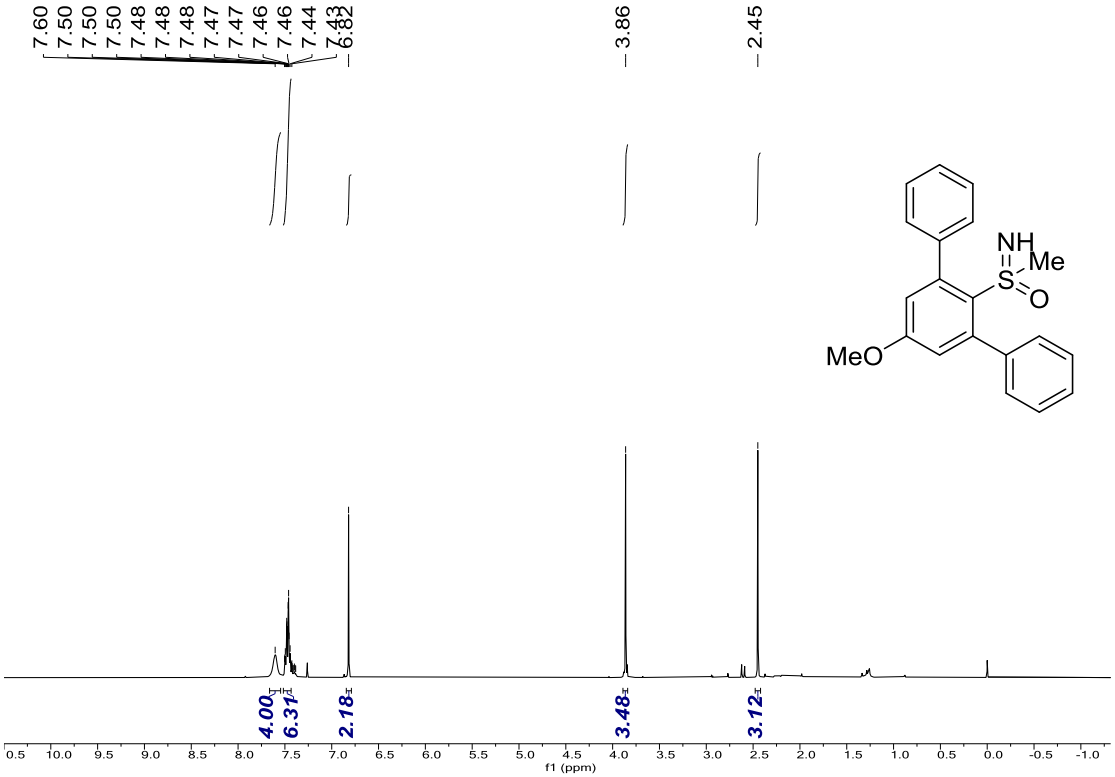

**5'-tert-butyl-2'-(*S*-methylsulfonimidoyl)-1,1':3',1''-terphenyl (3f).**

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



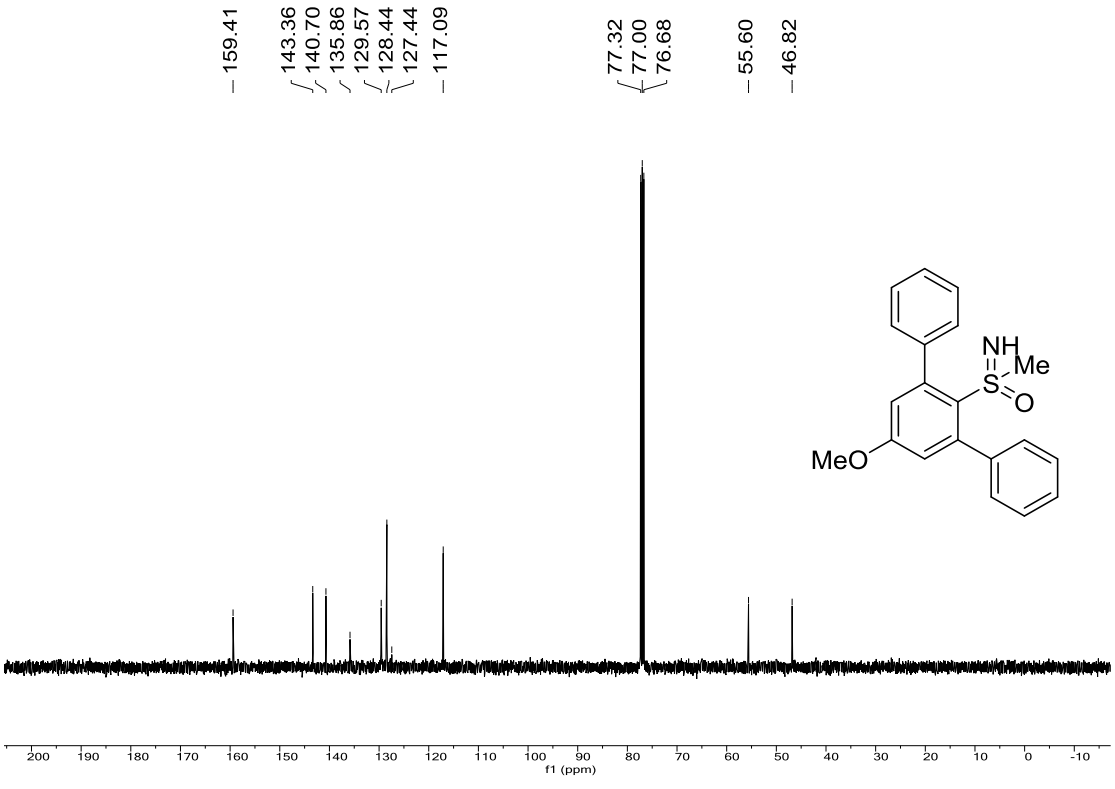
**5'-methoxy-2'-(*S*-methylsulfonimidoyl)-1,1':3',1''-terphenyl (3g).**

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



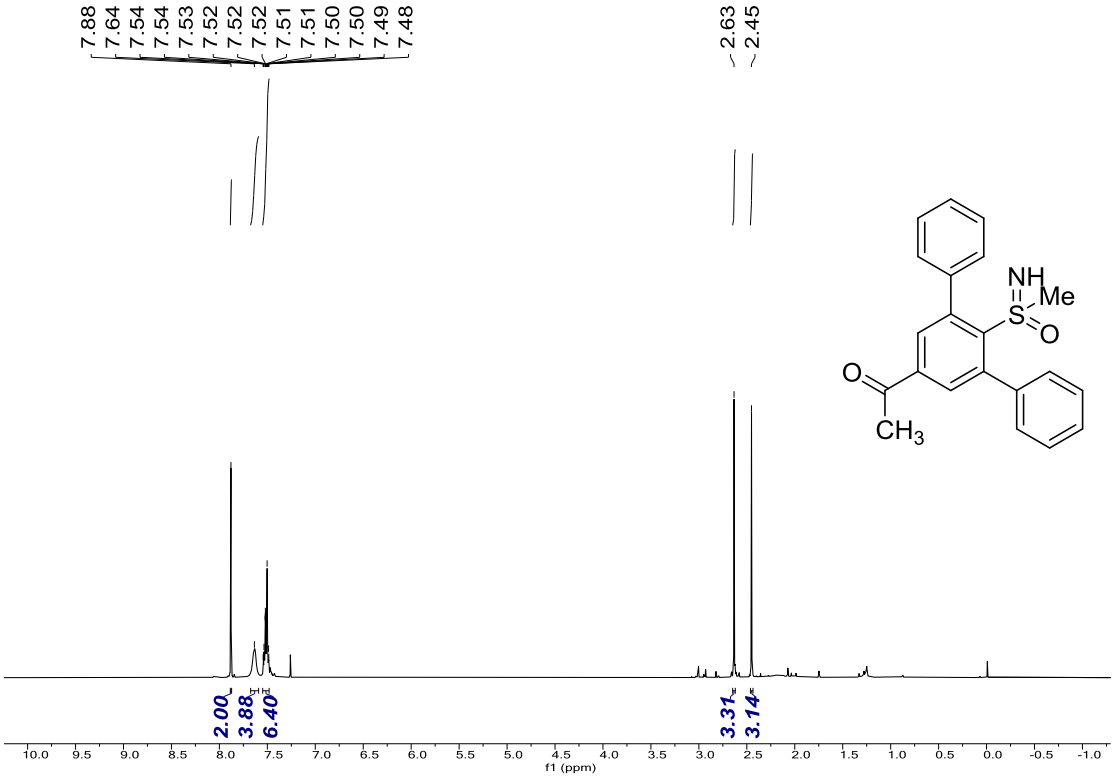

**5'-methoxy-2'-(*S*-methylsulfonimidoyl)-1,1':3',1''-terphenyl (3g).**

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



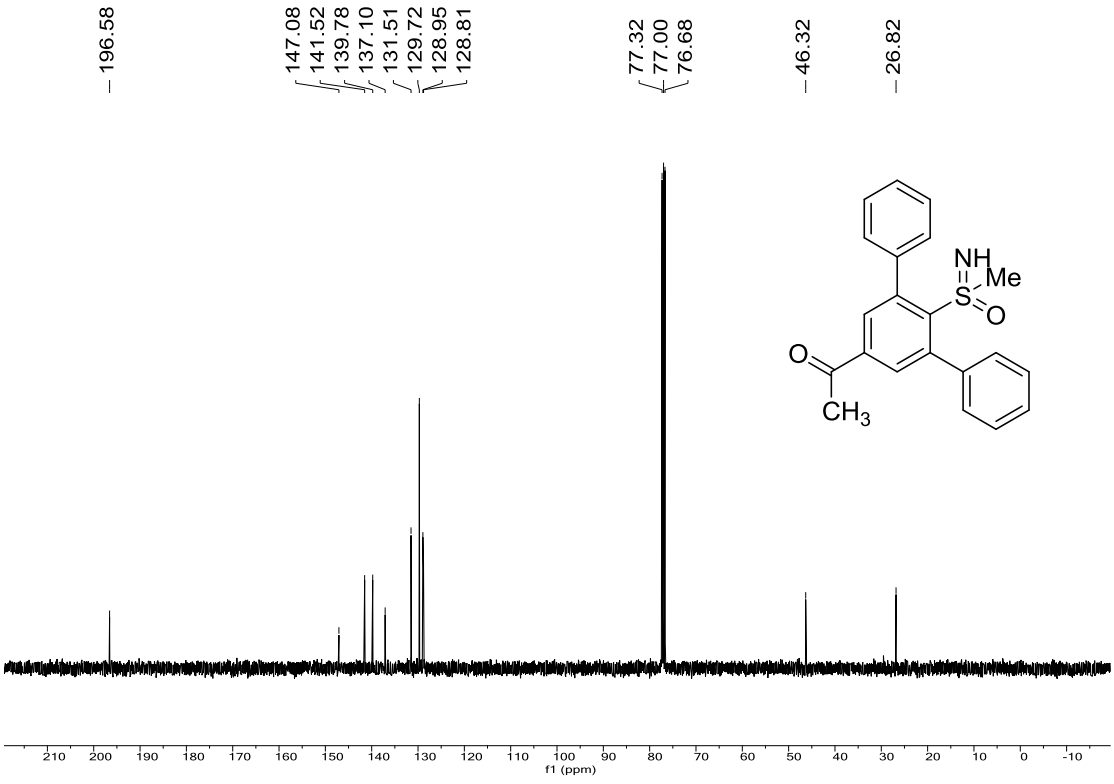
**5'-acetyl-2'-(*S*-methylsulfonimidoyl)-1,1':3',1''-terphenyl (3h).**

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



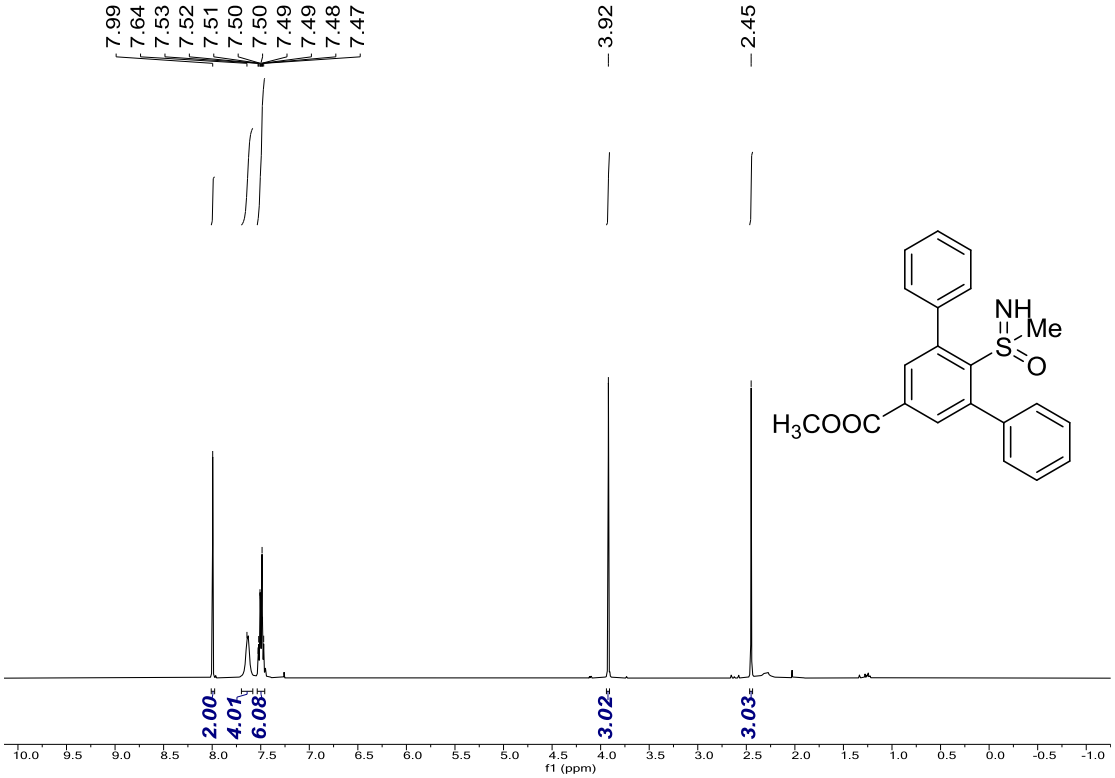

**5'-acetyl-2'-(*S*-methylsulfonimidoyl)-1,1':3',1''-terphenyl (3h).**

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



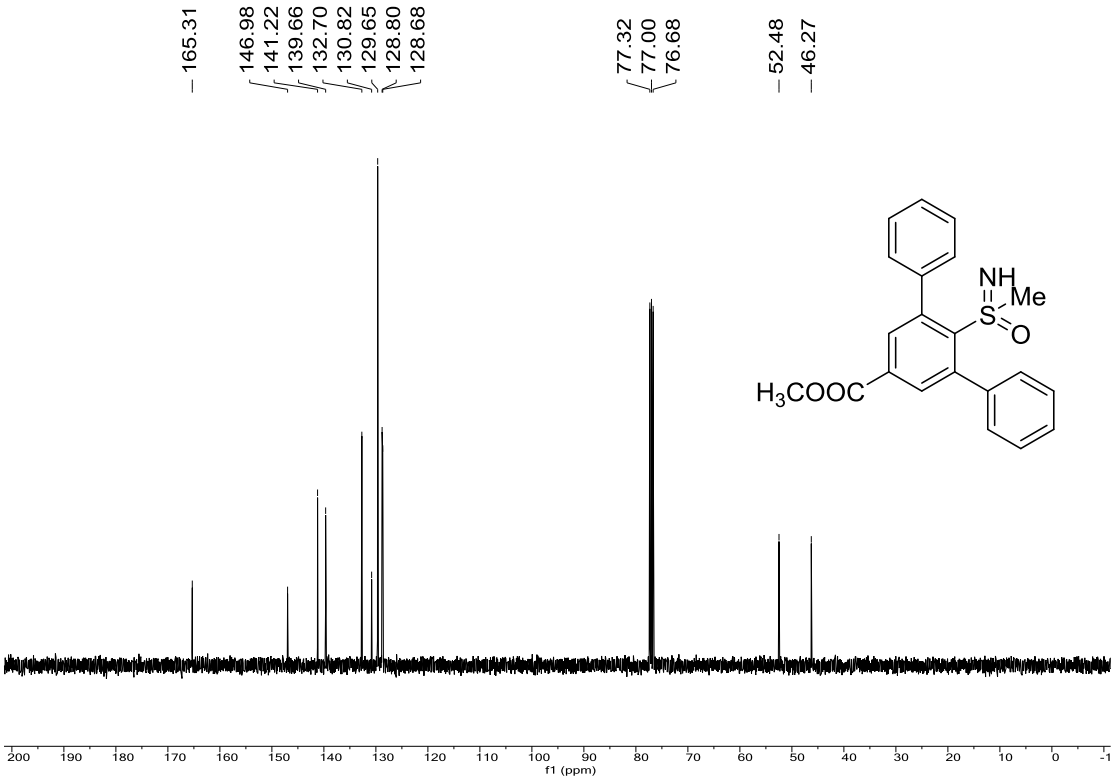
**5'-carboxylate-2'-(*S*-methylsulfonimidoyl)-1,1':3',1''-terphenyl (3i).**

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



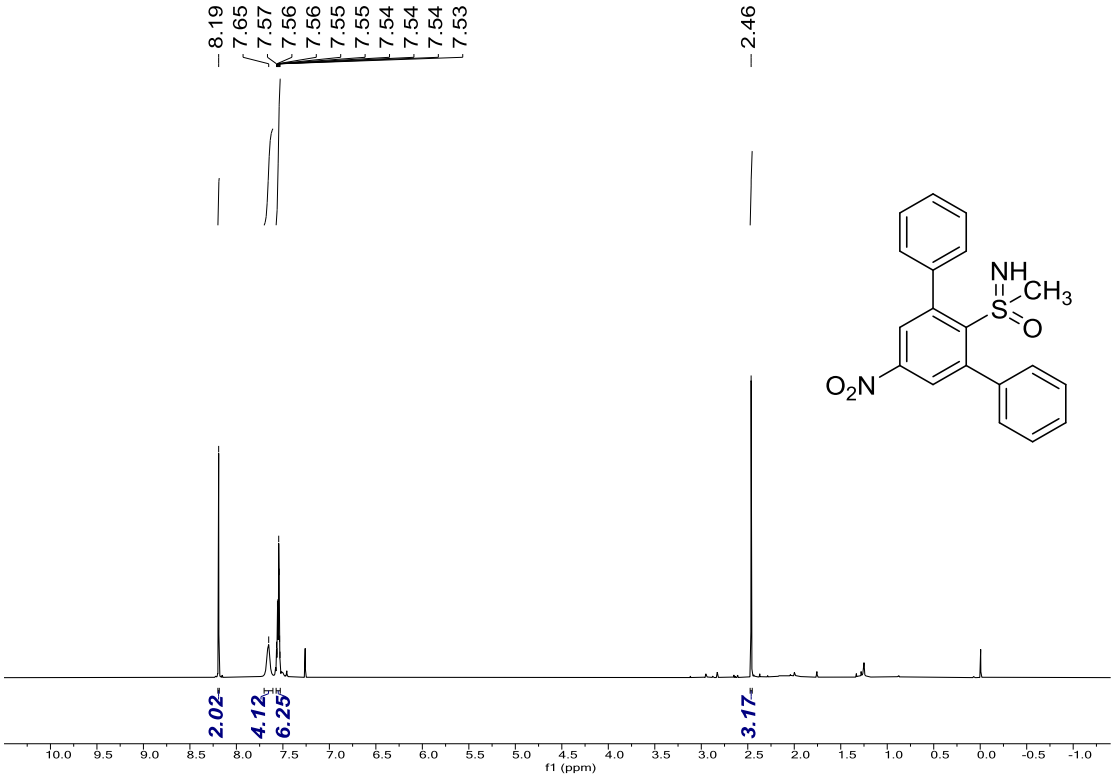

**5'-carboxylate-2'-(*S*-methylsulfonimidoyl)-1,1':3',1''-terphenyl (3i).**

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



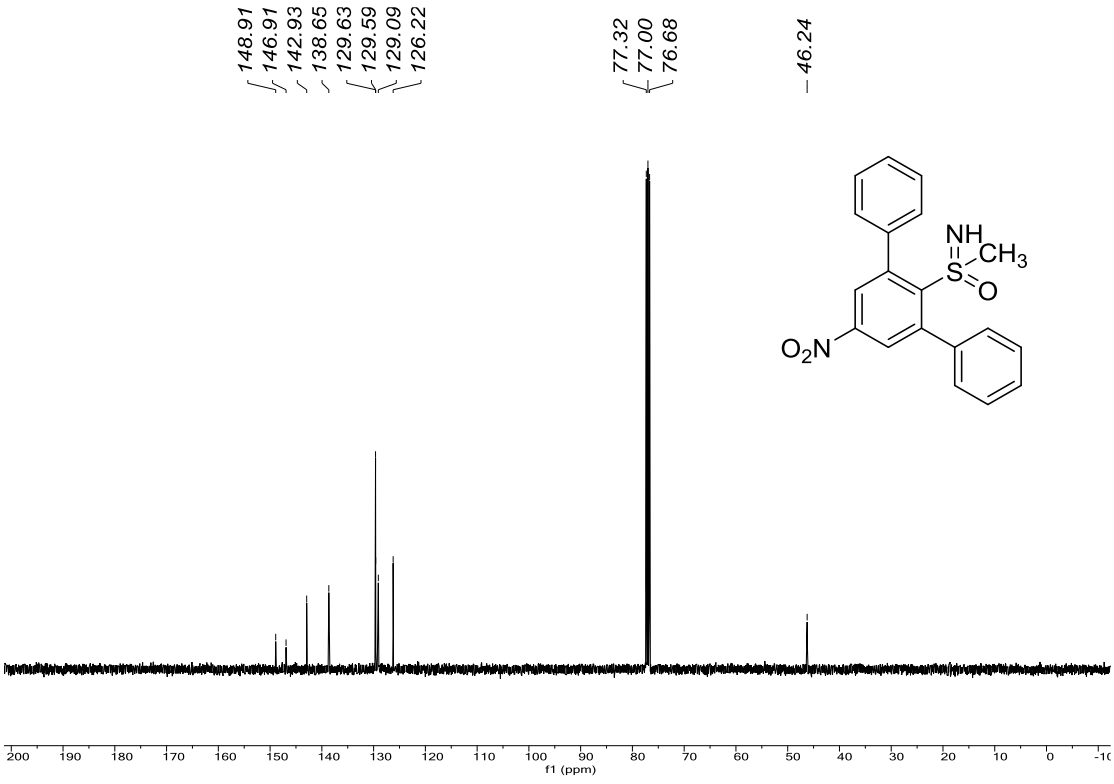
**5'-nitro-2'-(*S*-methylsulfonimidoyl)-1,1':3',1''-terphenyl (3j).**

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



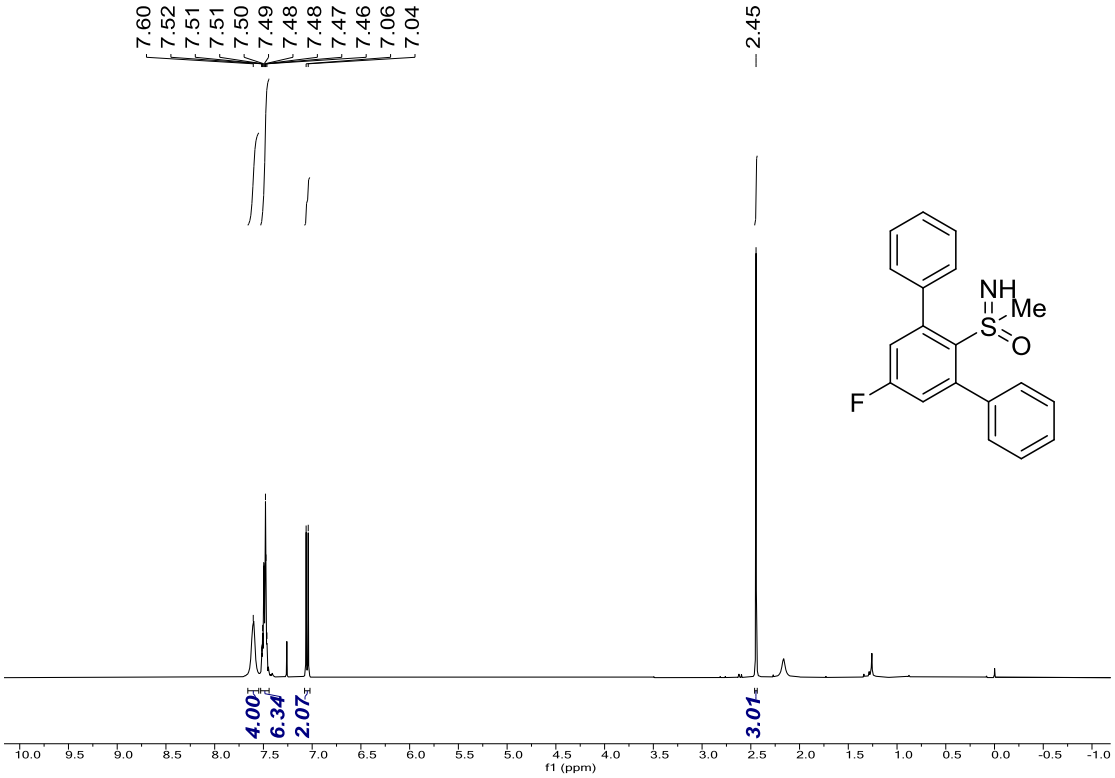

**5'-nitro-2'-(*S*-methylsulfonimidoyl)-1,1':3',1''-terphenyl (3j).**

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



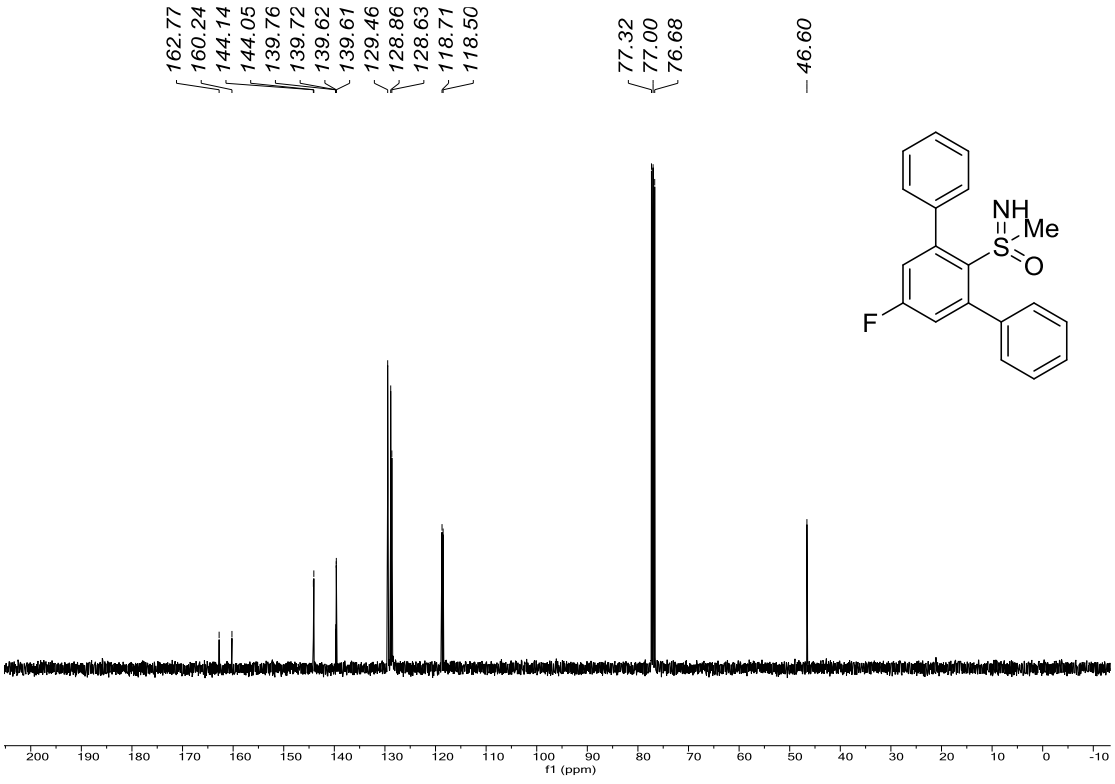
**5'-fluoro-2'-(*S*-methylsulfonimidoyl)-1,1':3',1''-terphenyl (3k).**

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



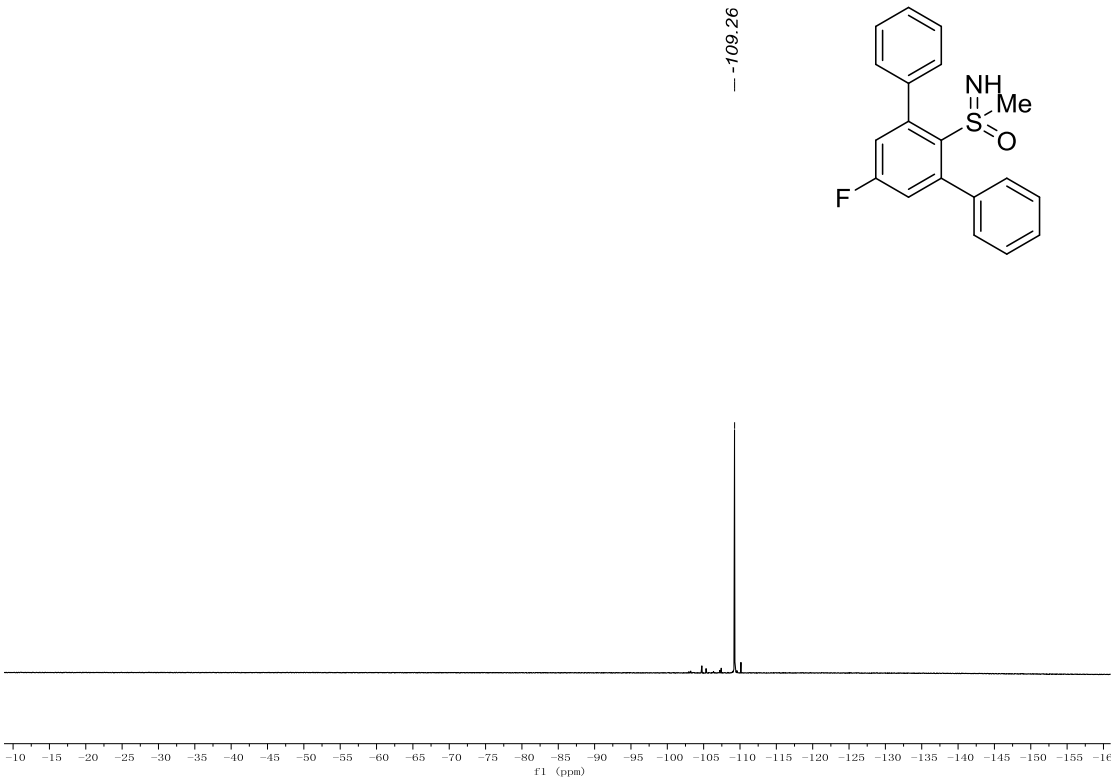

**5'-fluoro-2'-(*S*-methylsulfonimidoyl)-1,1':3',1''-terphenyl (3k).**

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



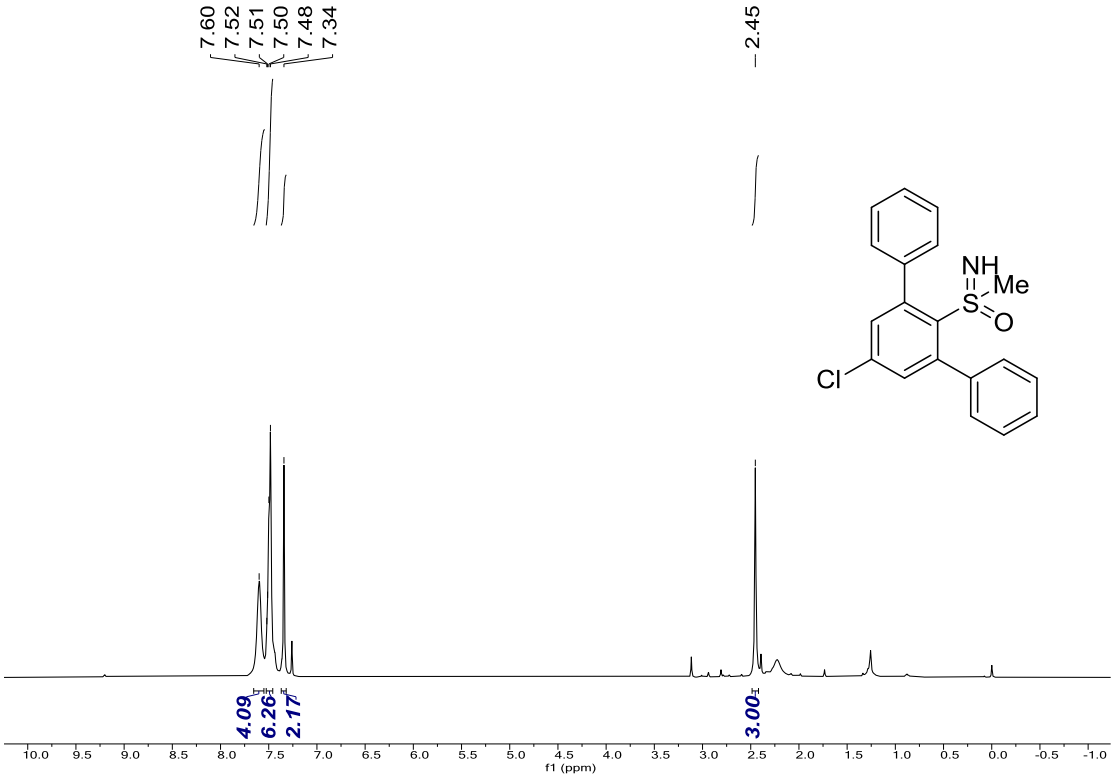
**5'-fluoro-2'-(*S*-methylsulfonimidoyl)-1,1':3',1''-terphenyl (3k).**

$^{19}F$ NMR (377 MHz, $CDCl_3$)



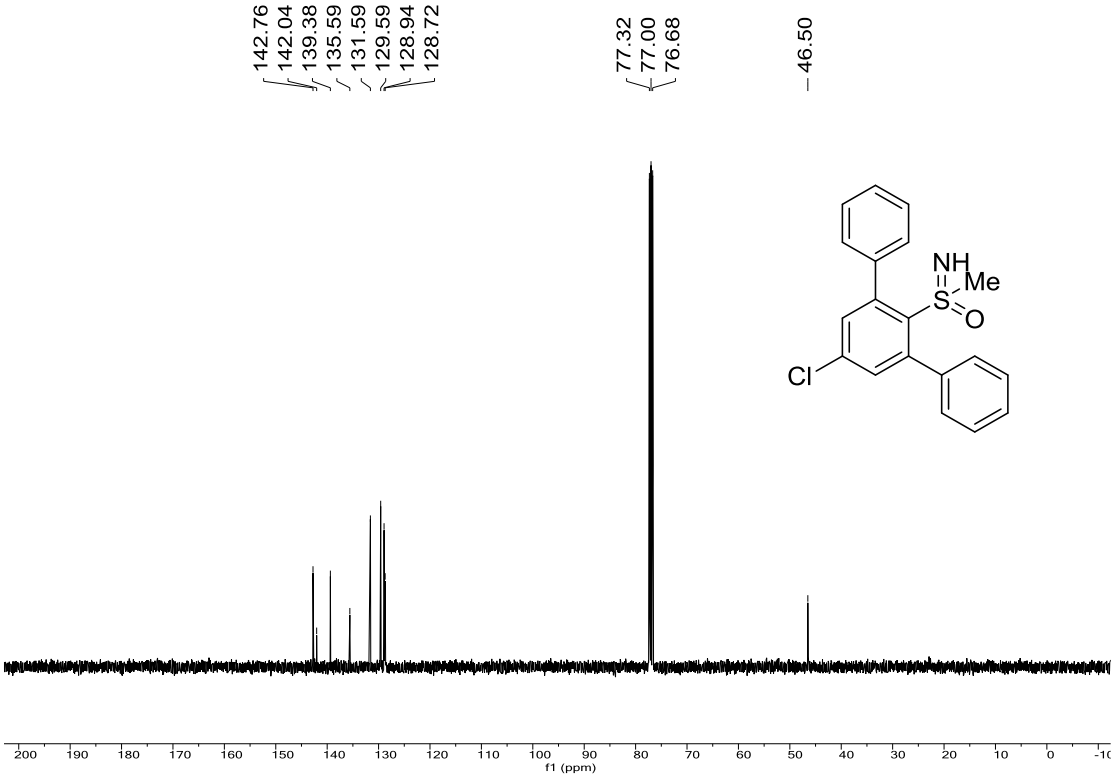

**5'-chloro-2'-(*S*-methylsulfonimidoyl)-1,1':3',1''-terphenyl (3l).**

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



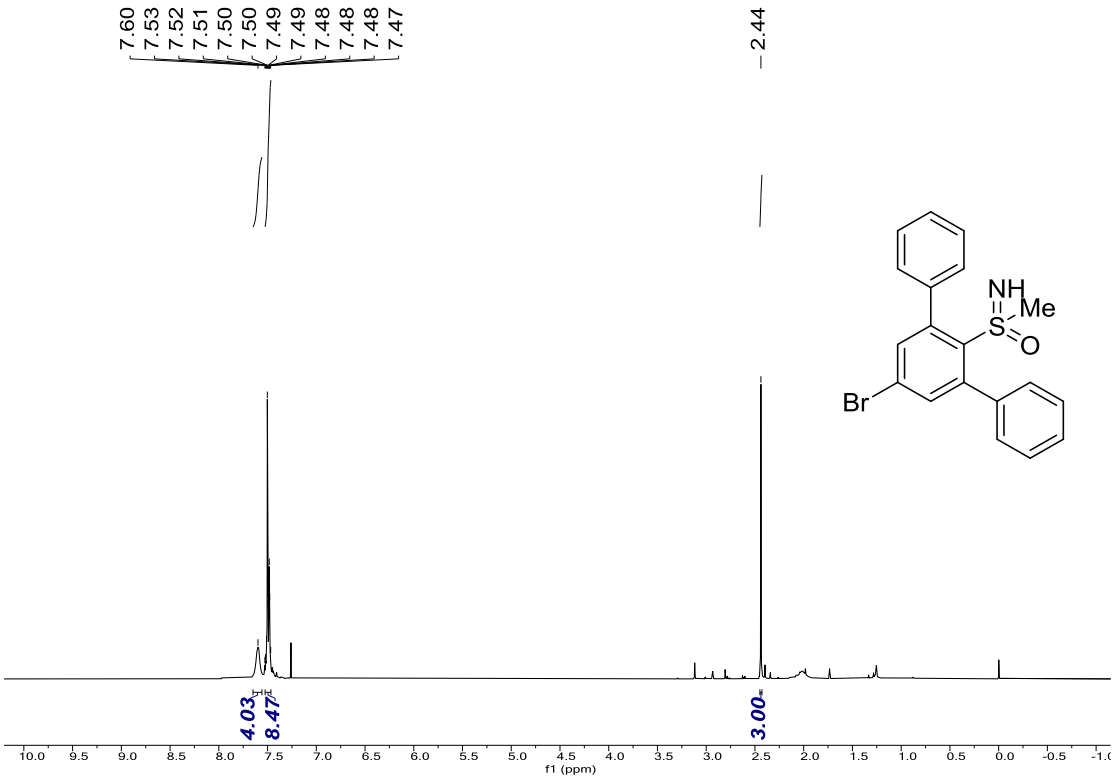
**5'-chloro-2'-(*S*-methylsulfonimidoyl)-1,1':3',1''-terphenyl (3l).**

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



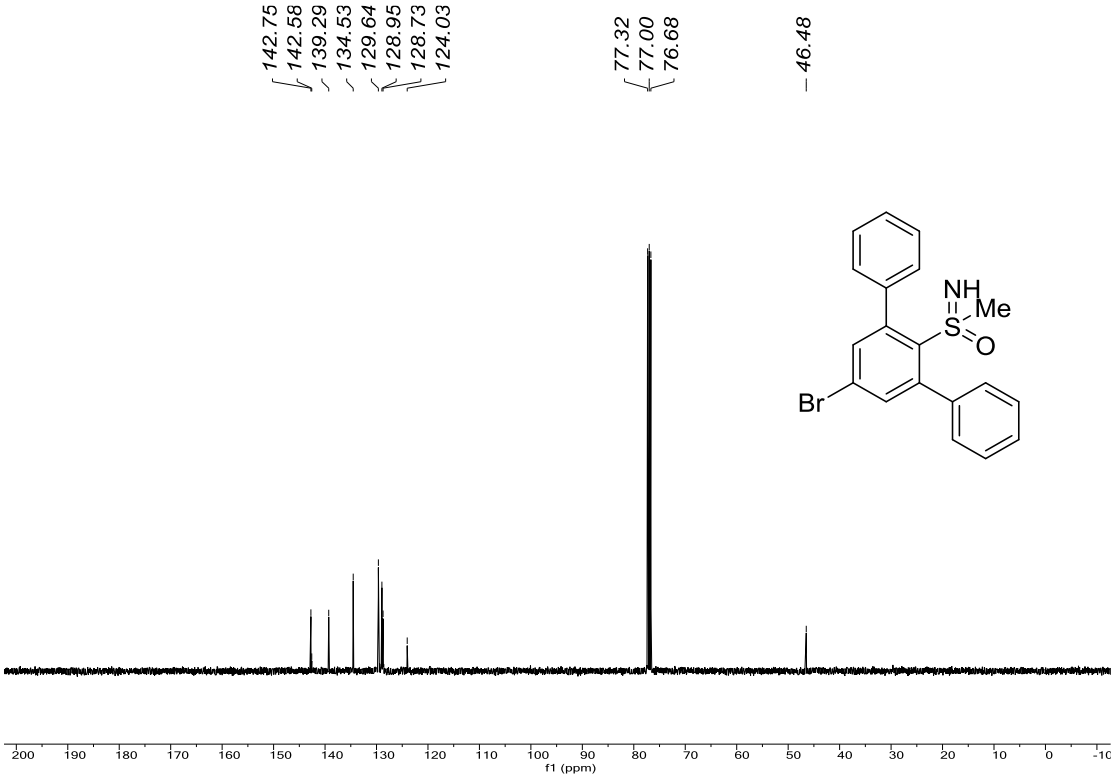

**5'-bromo-2'-(*S*-methylsulfonimidoyl)-1,1':3',1''-terphenyl (3m).**

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



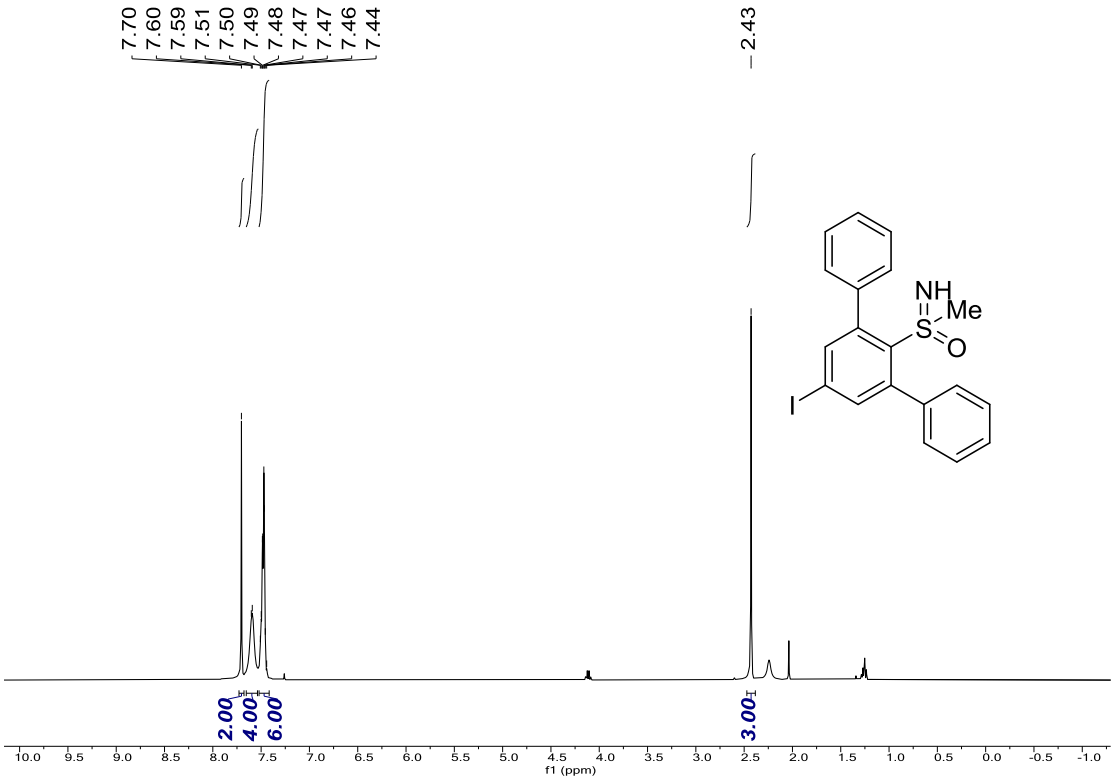

**5'-bromo-2'-(*S*-methylsulfonimidoyl)-1,1':3',1''-terphenyl (3m).**

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



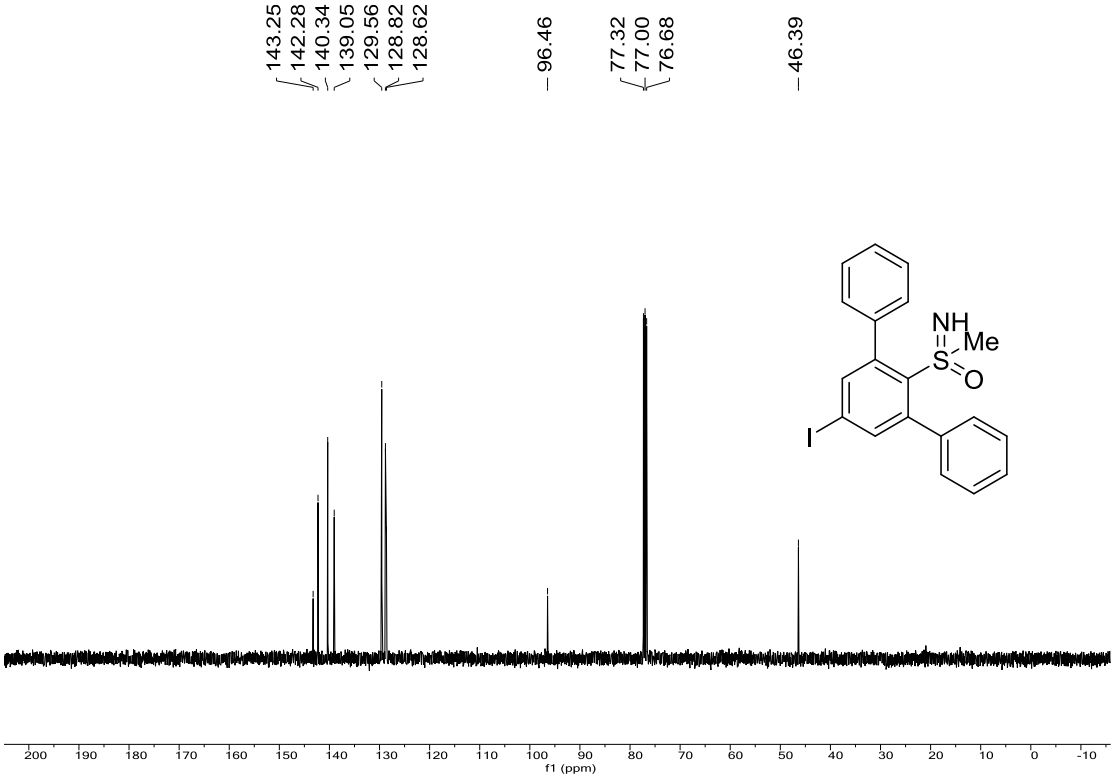

**5'-iodo-2'-(*S*-methylsulfonimidoyl)-1,1':3',1''-terphenyl (3n).**

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



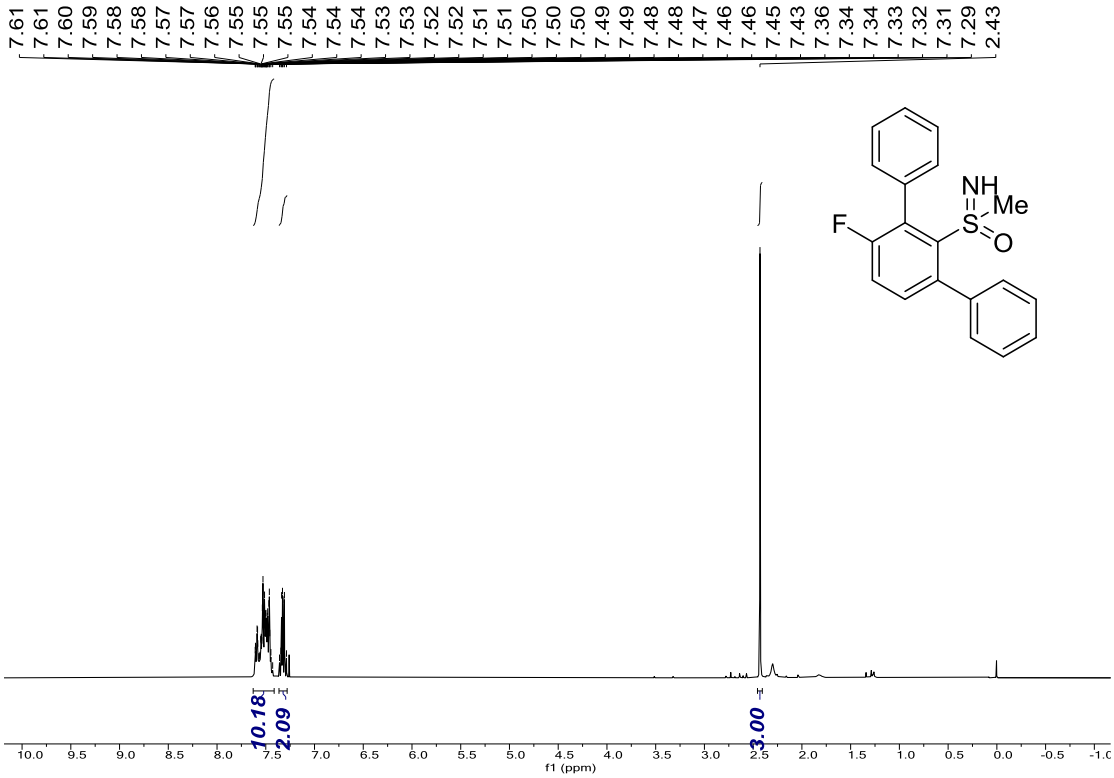
**5'-iodo-2'-(*S*-methylsulfonimidoyl)-1,1':3',1''-terphenyl (3n).**

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



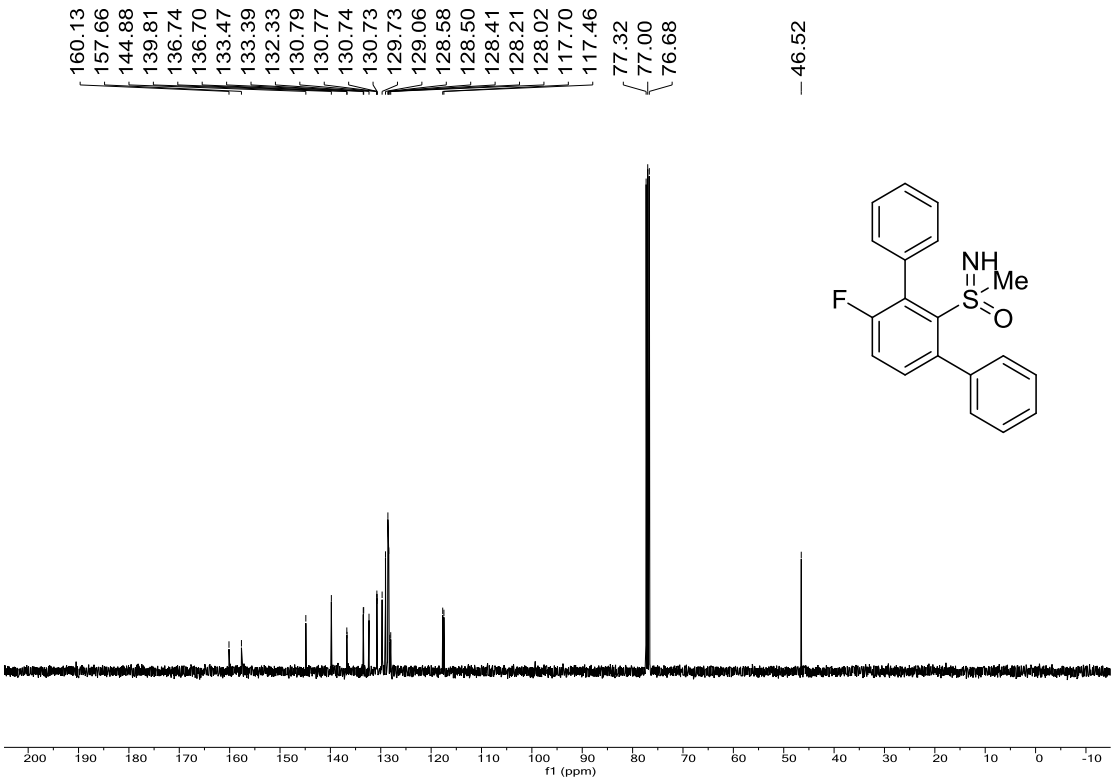

**4'-fluoro-2'-(*S*-methylsulfonimidoyl)-1,1':3',1''-terphenyl (3o).**

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



**4'-fluoro-2'-(*S*-methylsulfonimidoyl)-1,1':3',1''-terphenyl (3o).**

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

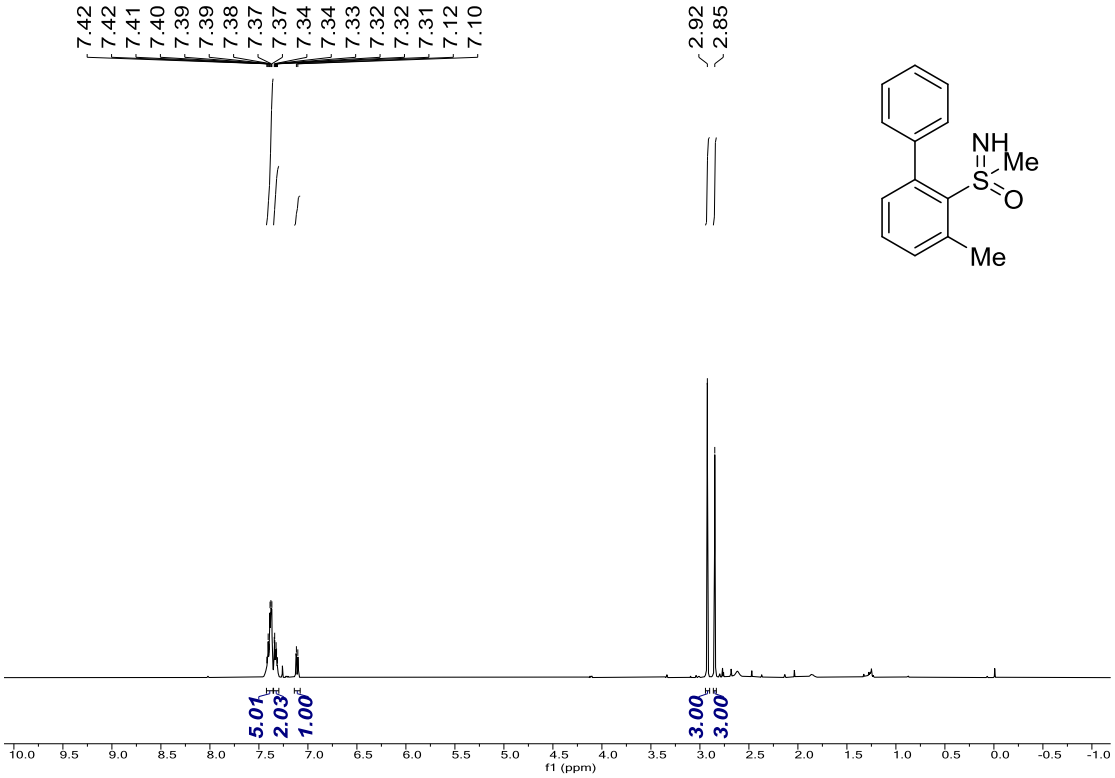



**4'-fluoro-2'-(*S*-methylsulfonimidoyl)-1,1':3',1''-terphenyl (3o).**

$^{19}F$ NMR (377 MHz, $CDCl_3$)

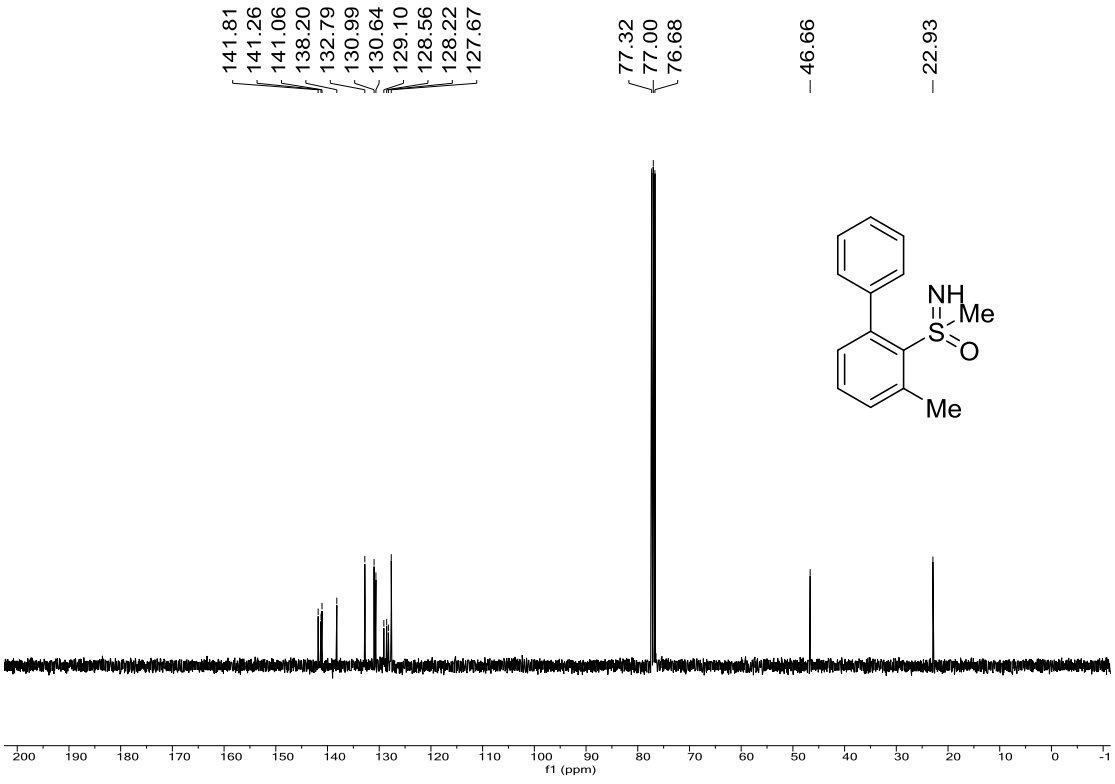
**3-Methyl-2-(*S*-methylsulfonimidoyl)-1,1'-biphenyl (3p).**

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



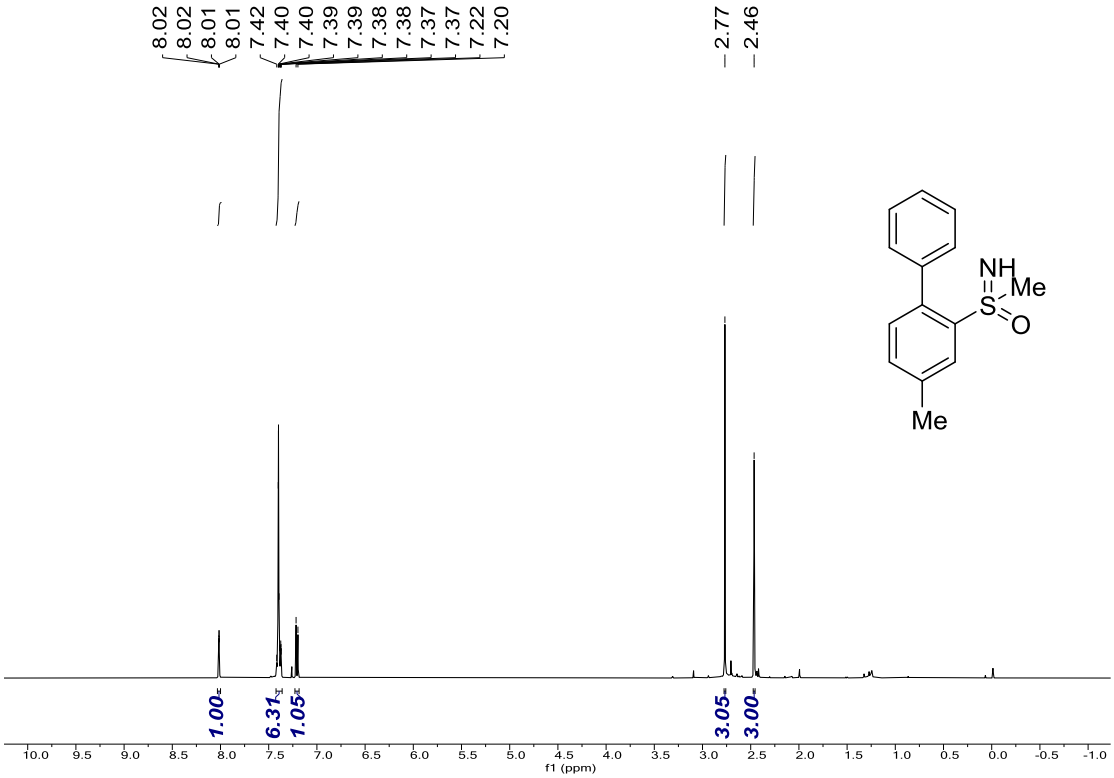

**3-Methyl-2-(*S*-methylsulfonimidoyl)-1,1'-biphenyl (3p).**

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



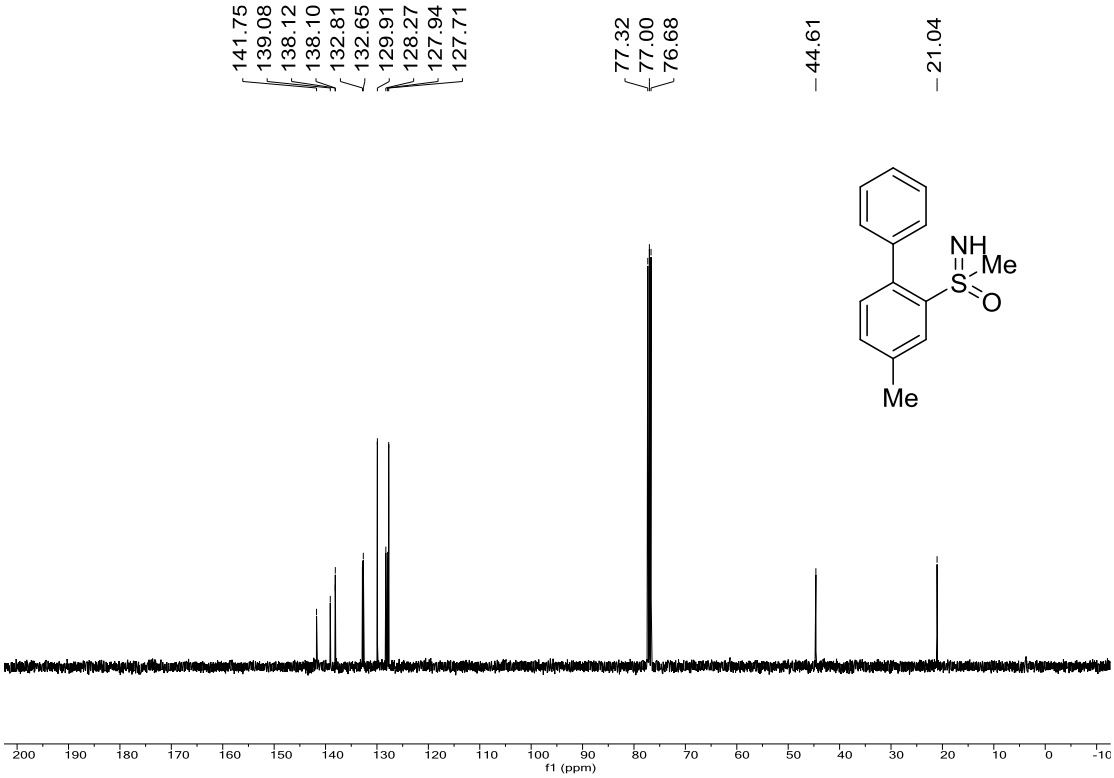

**4-Methyl-2-(*S*-methylsulfonimidoyl)-1,1'-biphenyl (3q).**

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



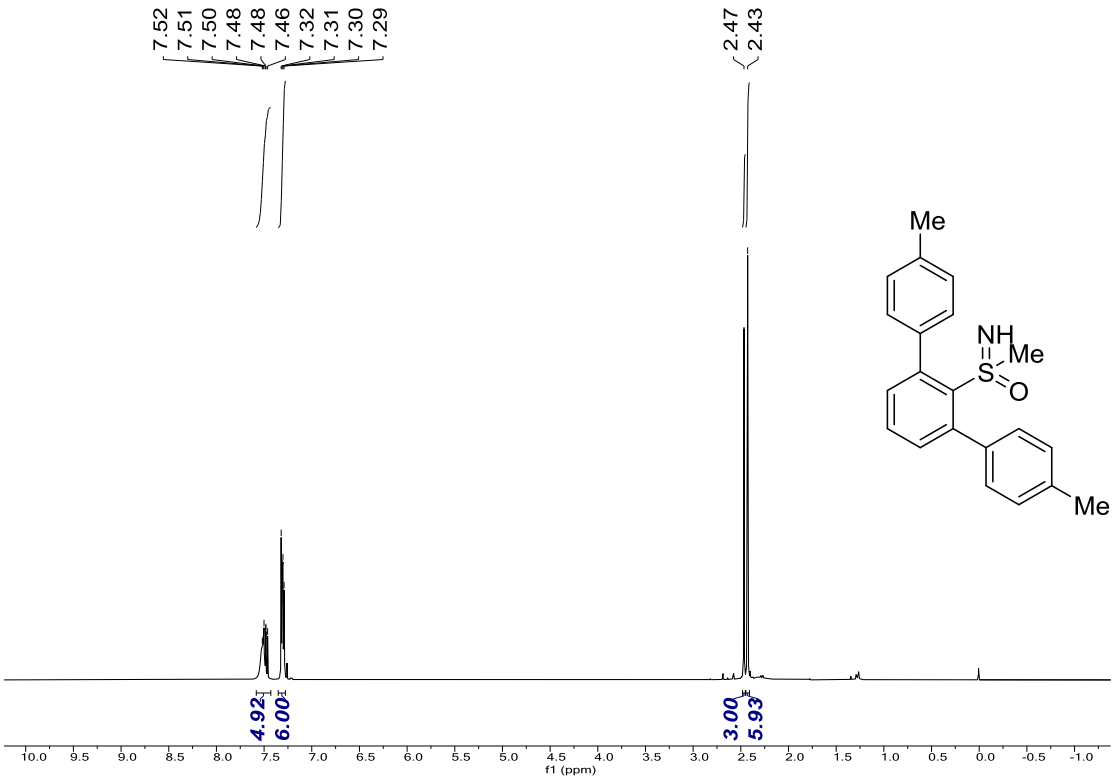

**4-Methyl-2-(*S*-methylsulfonimidoyl)-1,1'-biphenyl (3q).**

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



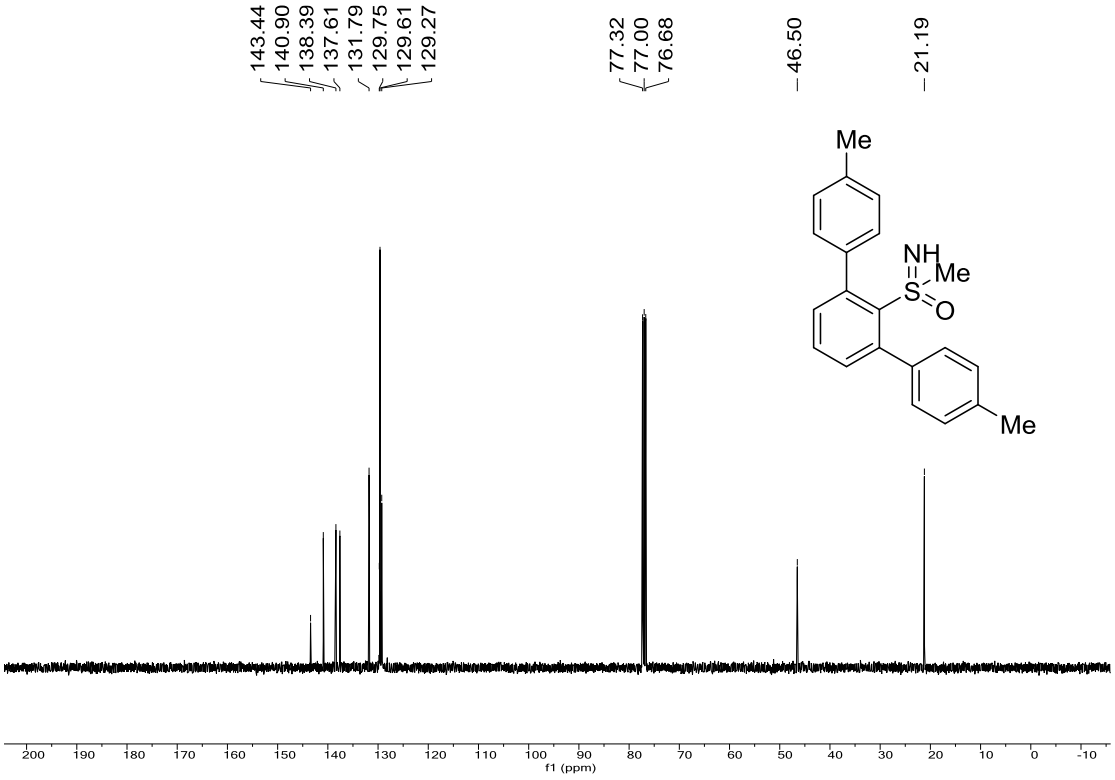
**4,4''-Dimethyl-2'-(*S*-methylsulfonimidoyl)-1,1':3',1''-terphenyl (4b).**

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



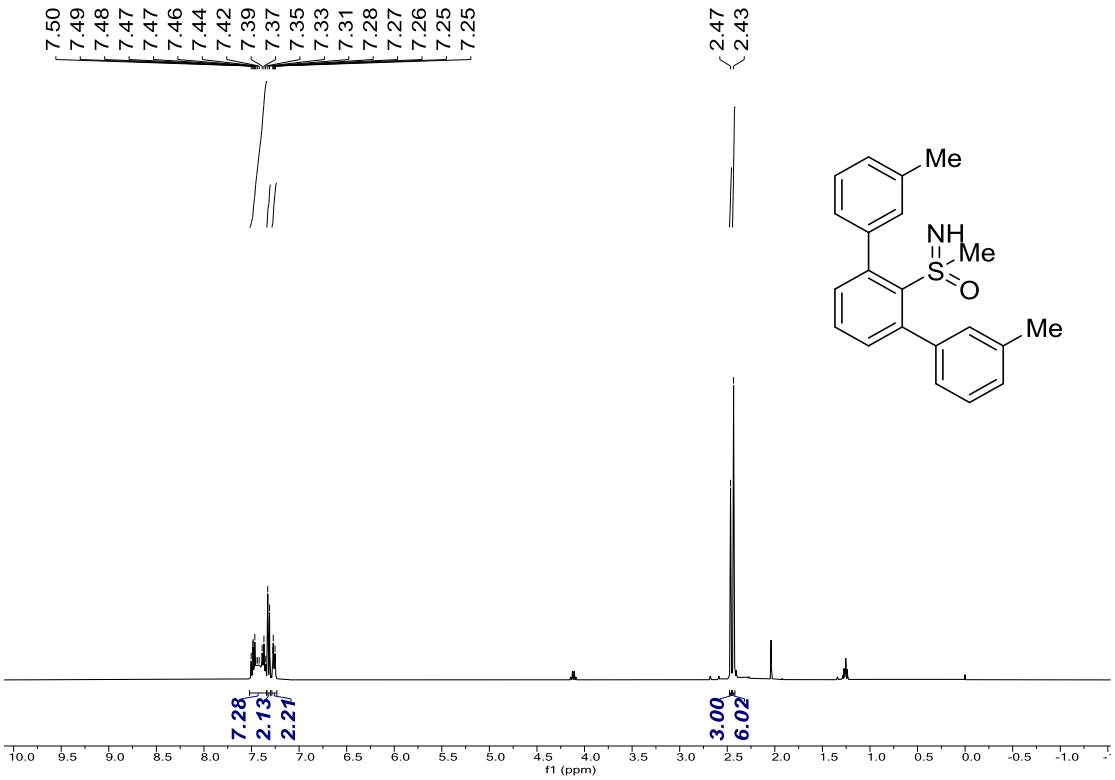

**4,4''-Dimethyl-2'-(*S*-methylsulfonimidoyl)-1,1':3',1''-terphenyl (4b).**

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



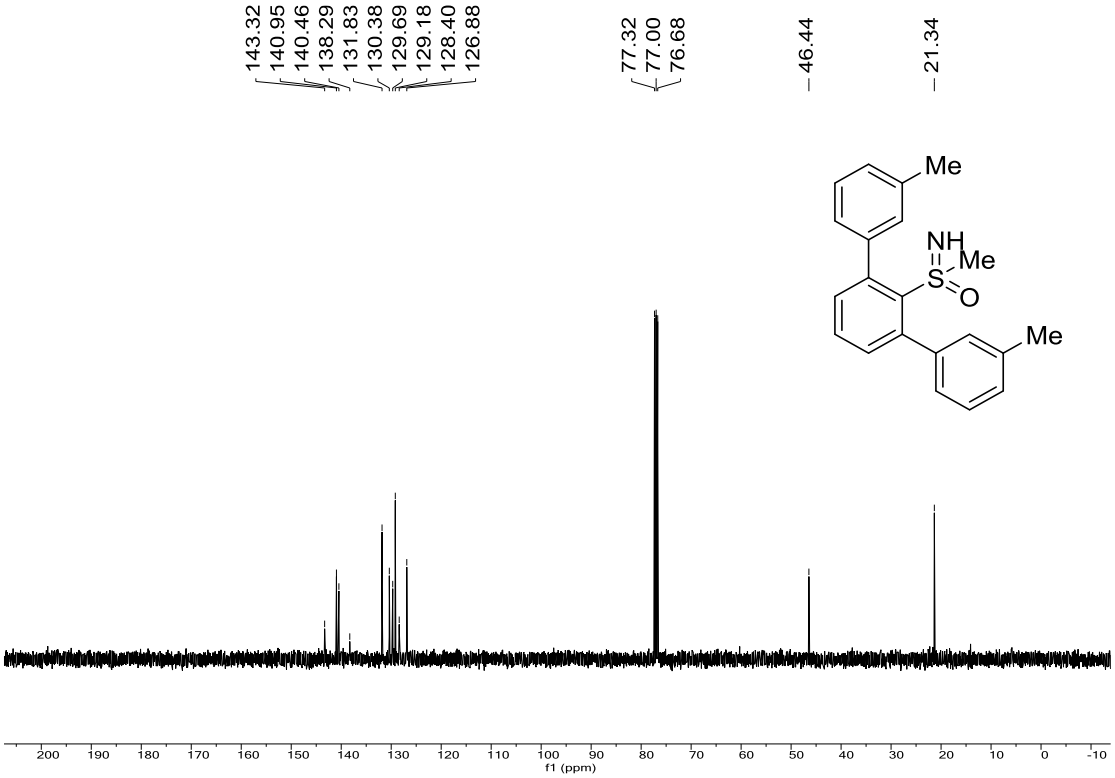
**3,3''-Dimethyl-2'-(*S*-methylsulfonimidoyl)-1,1':3',1''-terphenyl (4c).**

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



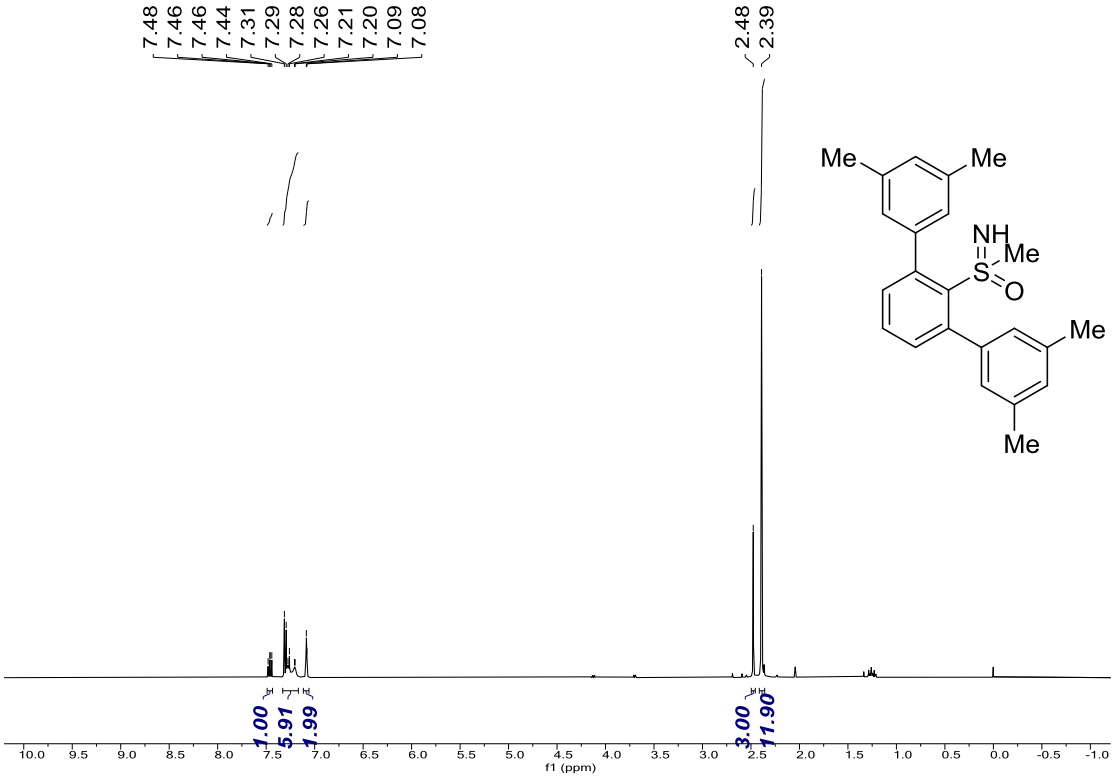

**3,3''-Dimethyl-2'-(*S*-methylsulfonimidoyl)-1,1':3',1''-terphenyl (4c).**

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



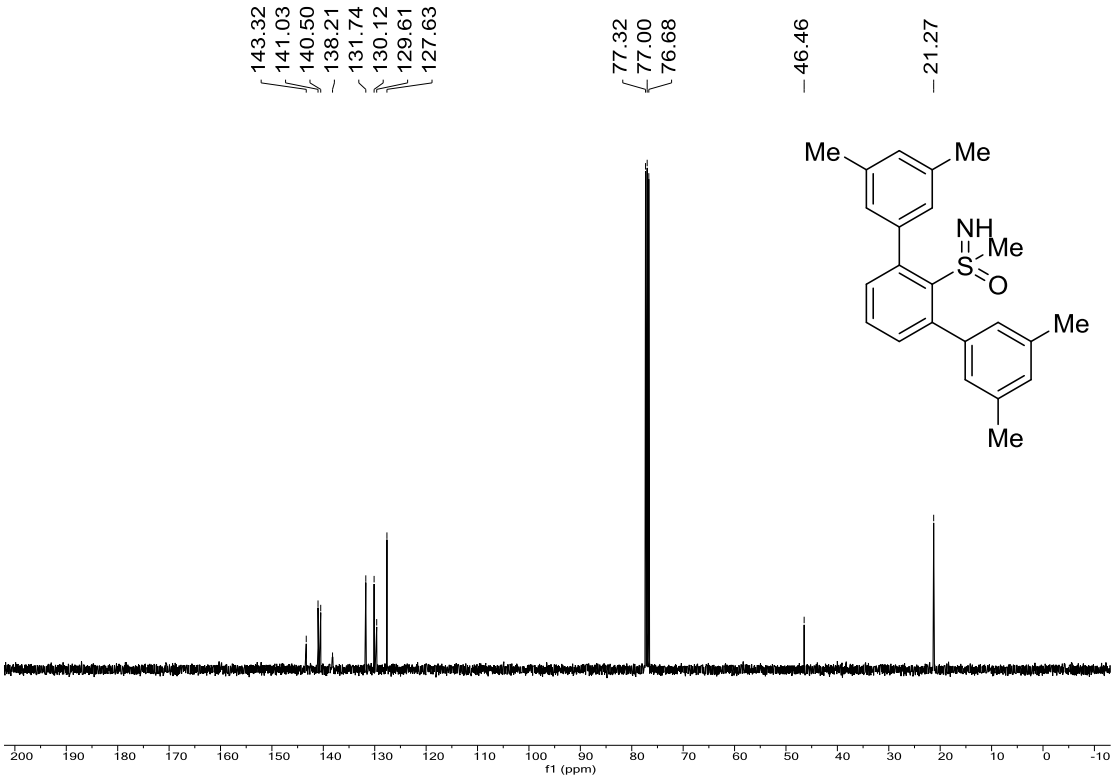
**3,3'',5,5''-tetramethyl-2'-(*S*-methylsulfonimidoyl)-1,1':3',1''-terphenyl (4d).**

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



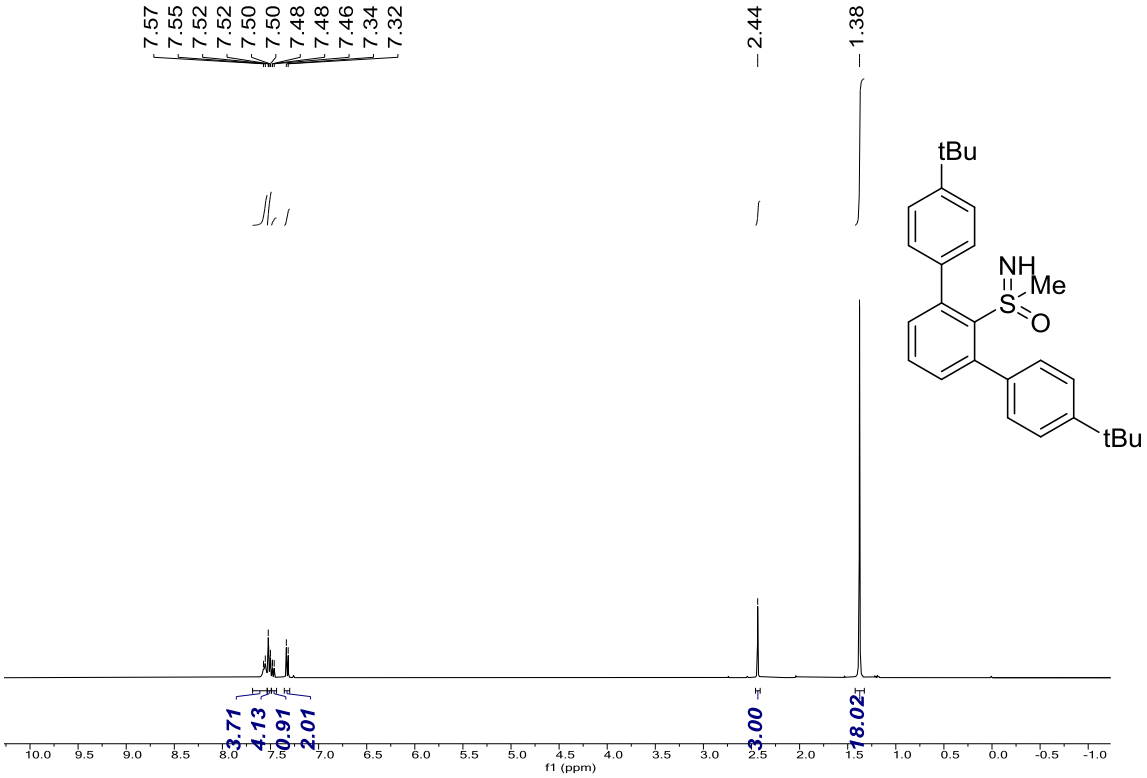

**3,3'',5,5''-tetramethyl-2'-(*S*-methylsulfonimidoyl)-1,1':3',1''-terphenyl (4d).**

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



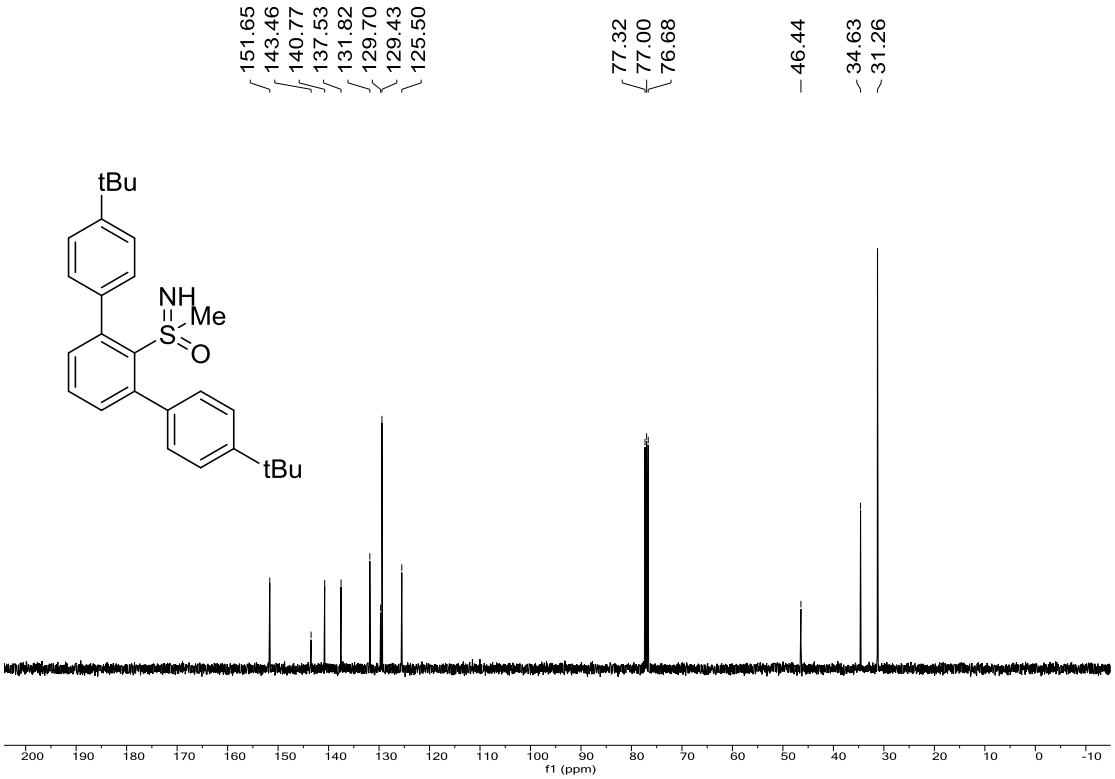
**4,4''-di-tertbutyl-2'-(*S*-methylsulfonimidoyl)-1,1':3',1''-terphenyl (4e).**

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



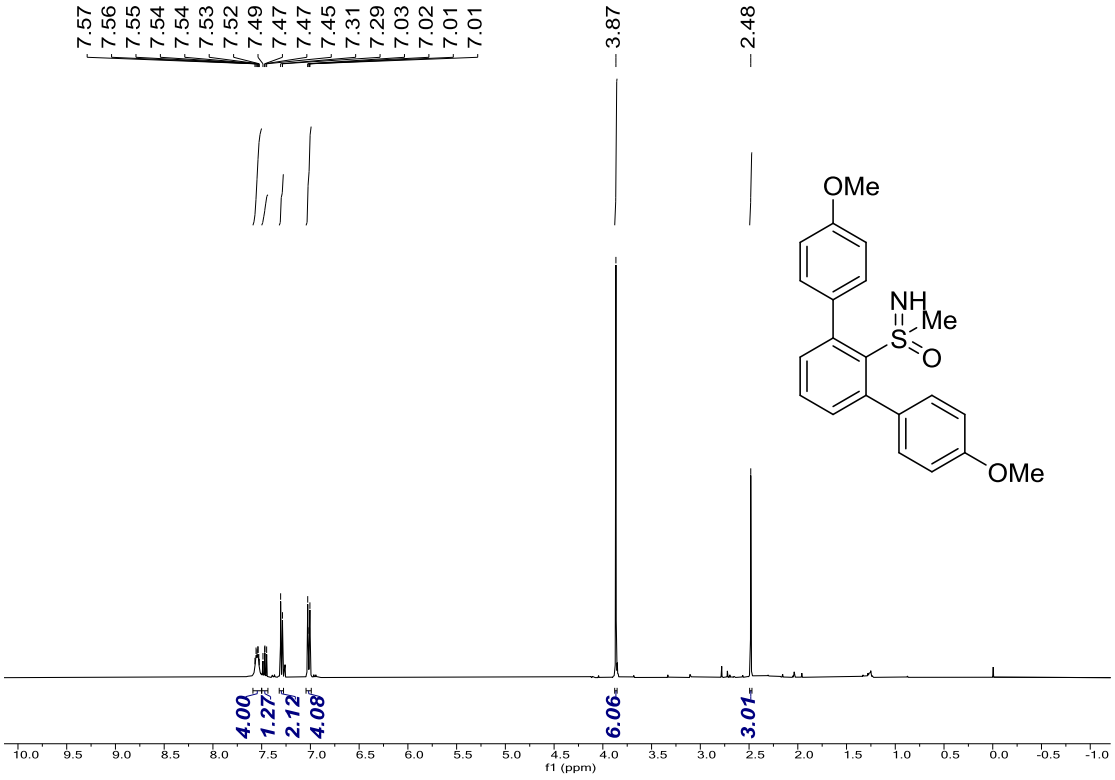

**4,4''-di-tertbutyl-2'-(*S*-methylsulfonimidoyl)-1,1':3',1''-terphenyl (4e).**

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



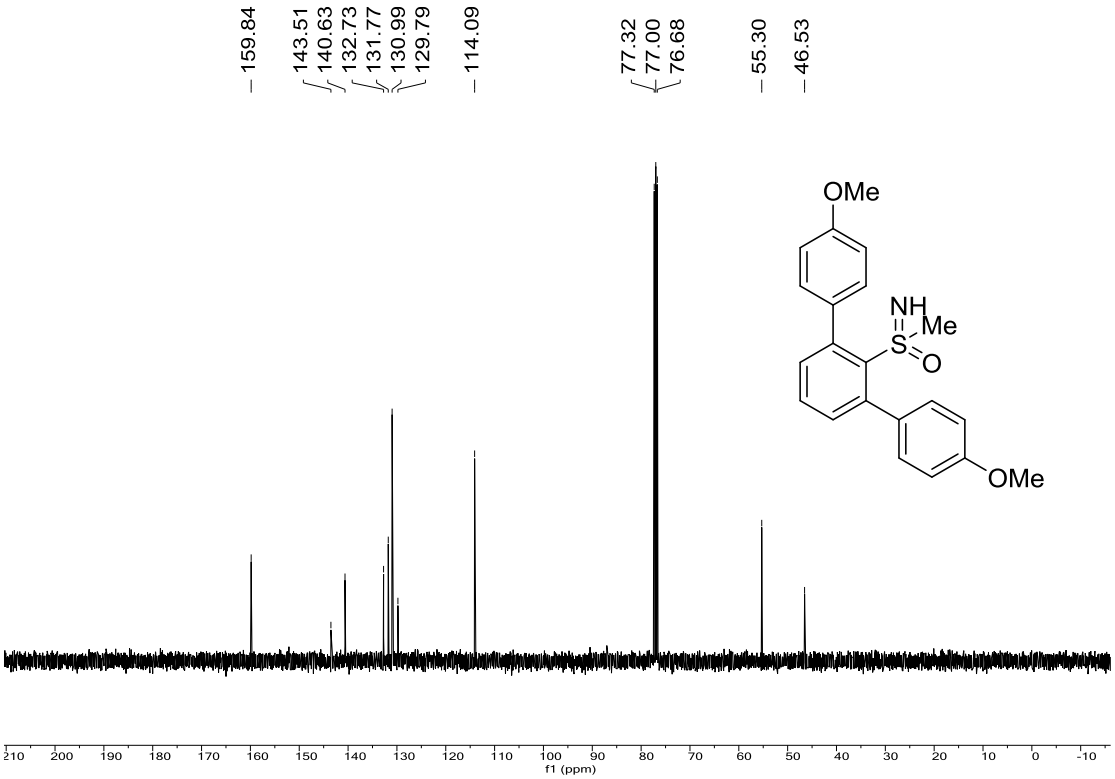
**4,4''-Dimethoxy-2'-(*S*-methylsulfonimidoyl)-1,1':3',1''-terphenyl (4f).**

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



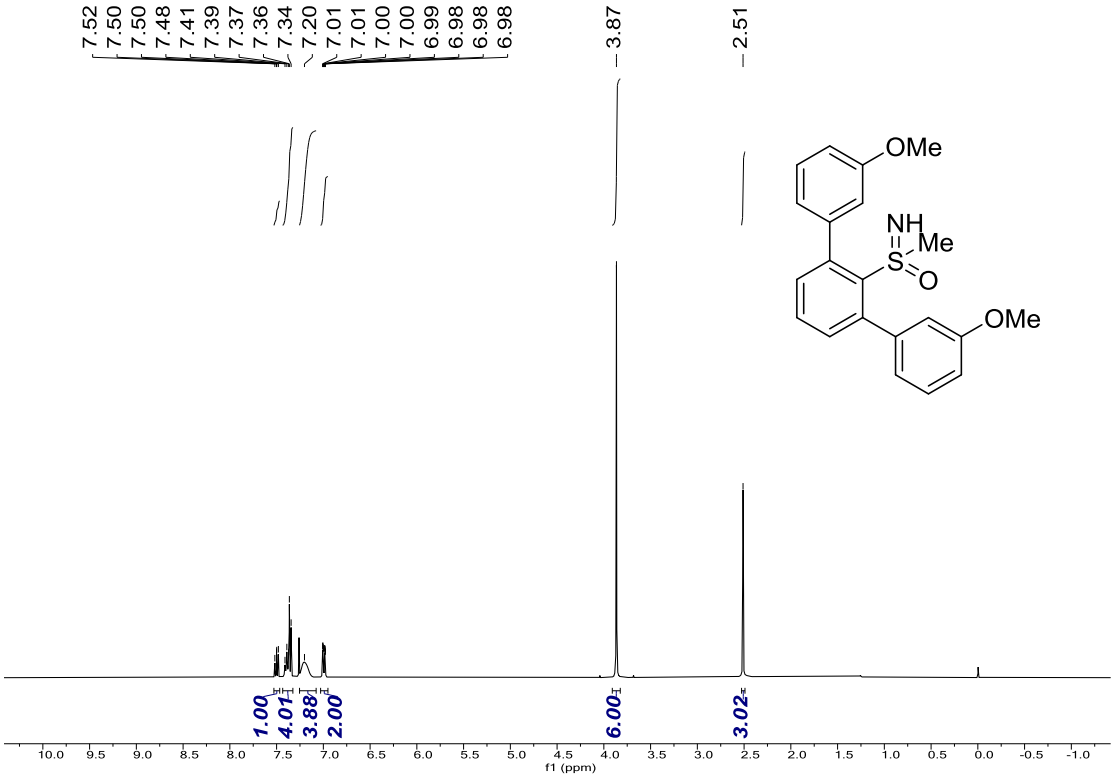

**4,4''-Dimethoxy-2'-(*S*-methylsulfonimidoyl)-1,1':3',1''-terphenyl (4f).**

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



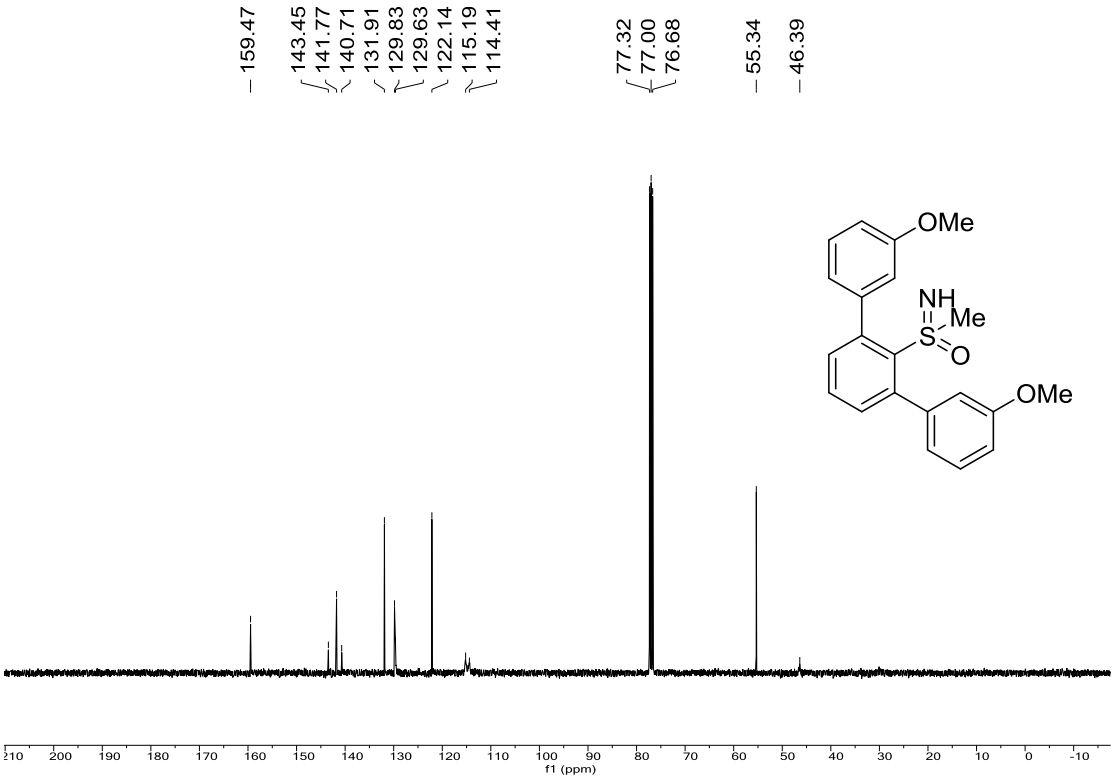
**3,3''-dimethoxy-2'-(*S*-methylsulfonimidoyl)-1,1':3',1''-terphenyl (4g).**

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



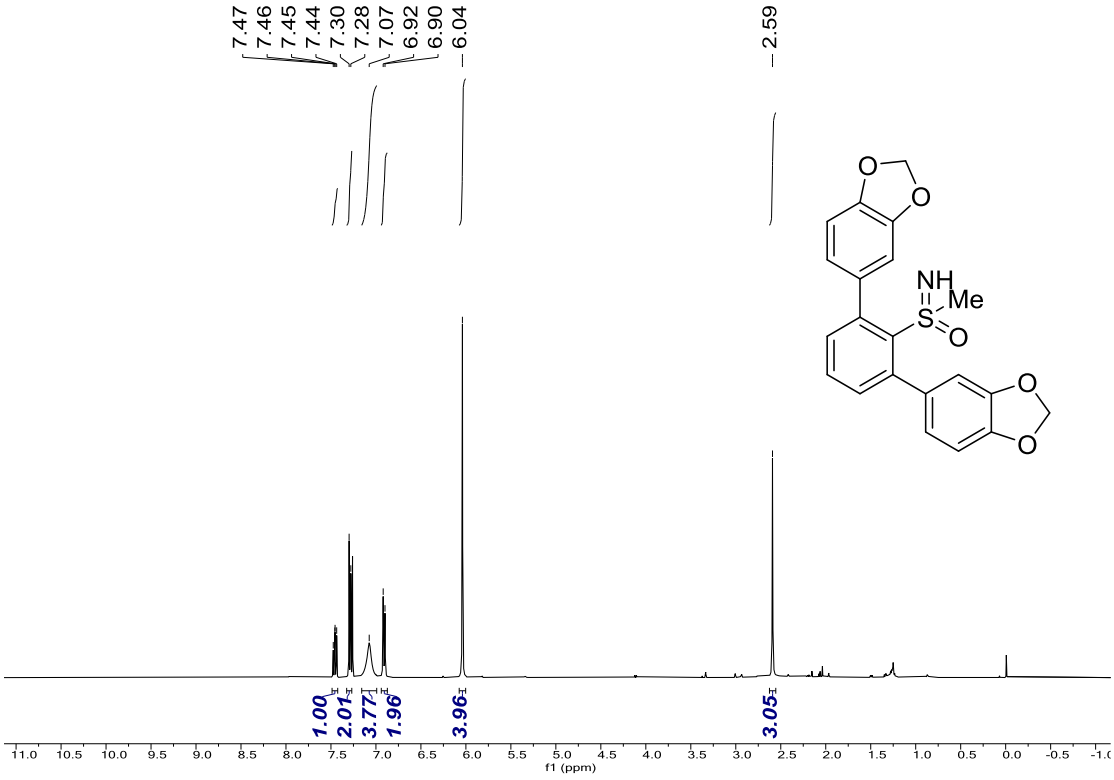

**3,3''-dimethoxy-2'-(*S*-methylsulfonimidoyl)-1,1':3',1''-terphenyl (4g).**

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



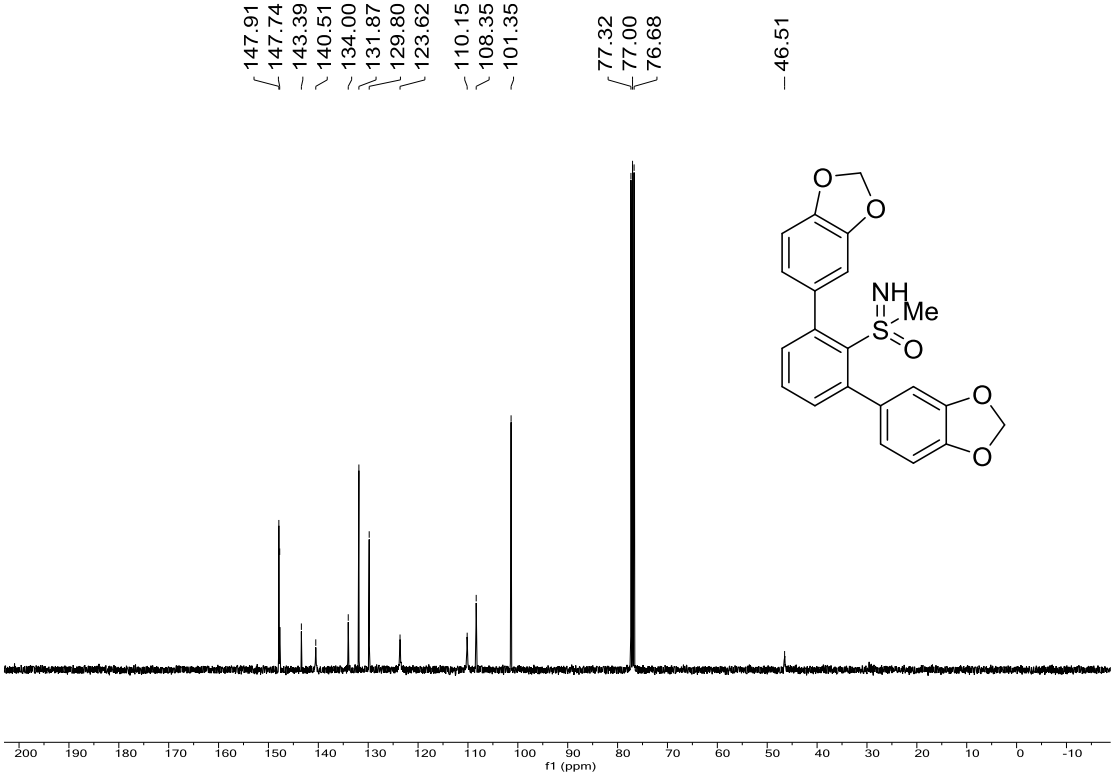
**5,5'-(2-(*S*-Methylsulfonimidoyl)-1,3-phenylene)bis(benzo[d][1,3]dioxole) (4h).**

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



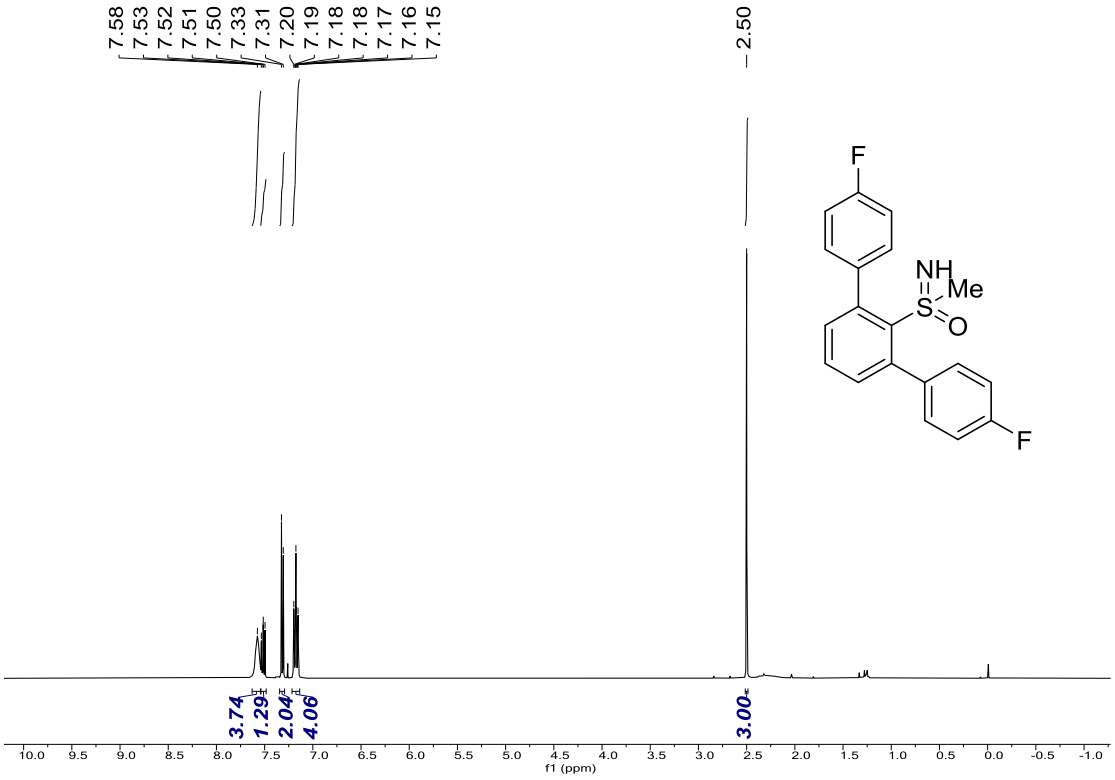

**5,5'-(2-(*S*-Methylsulfonimidoyl)-1,3-phenylene)bis(benzo[d][1,3]dioxole) (4h).**

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



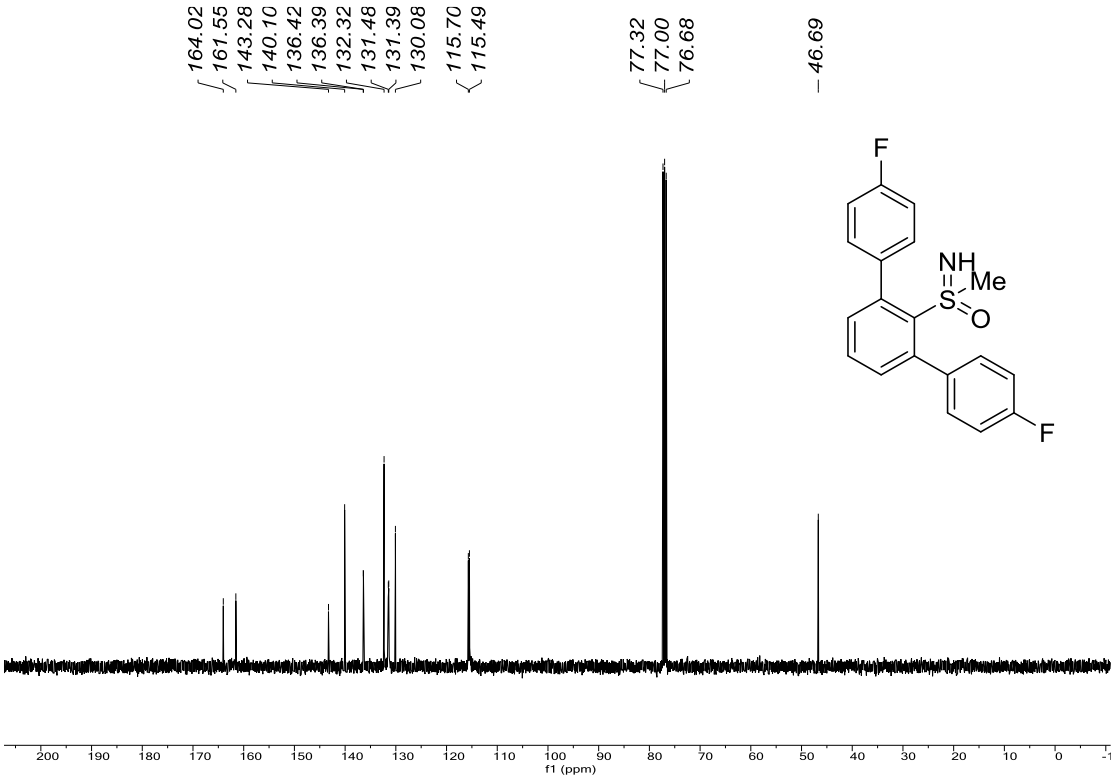
**4,4''-Difluoro-2'-(*S*-methylsulfonimidoyl)-1,1':3',1''-terphenyl (4i).**

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



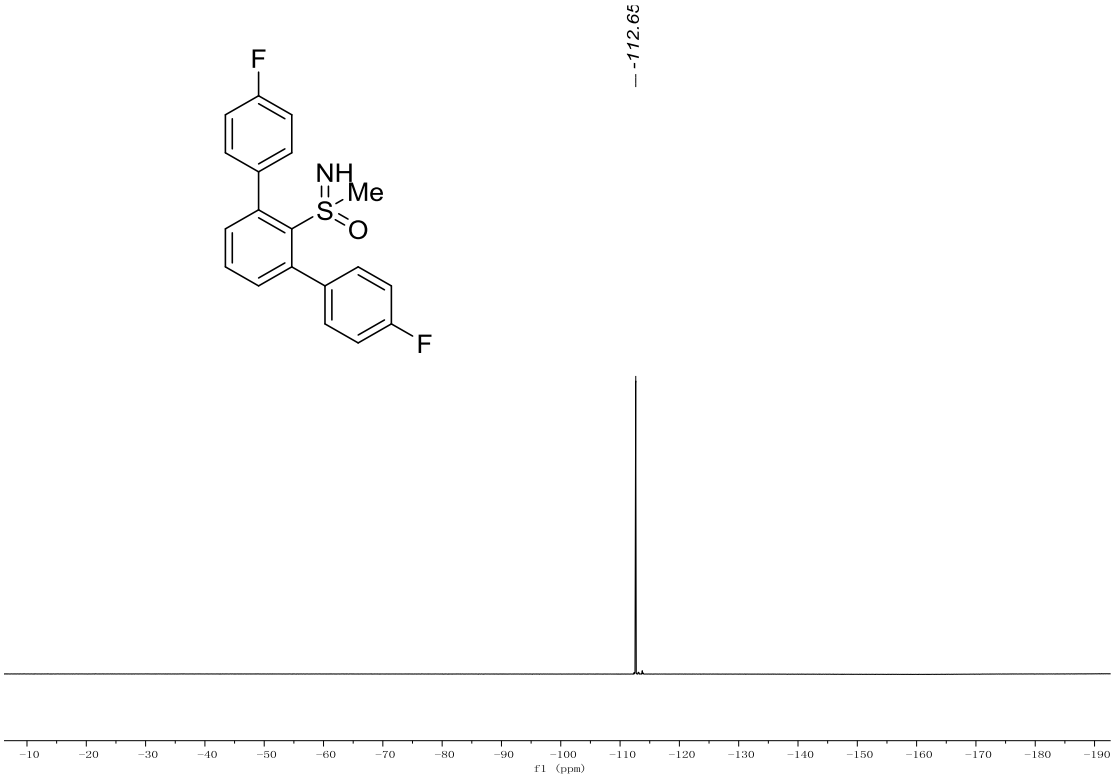

**4,4''-Difluoro-2'-(*S*-methylsulfonimidoyl)-1,1':3',1''-terphenyl (4i).**

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



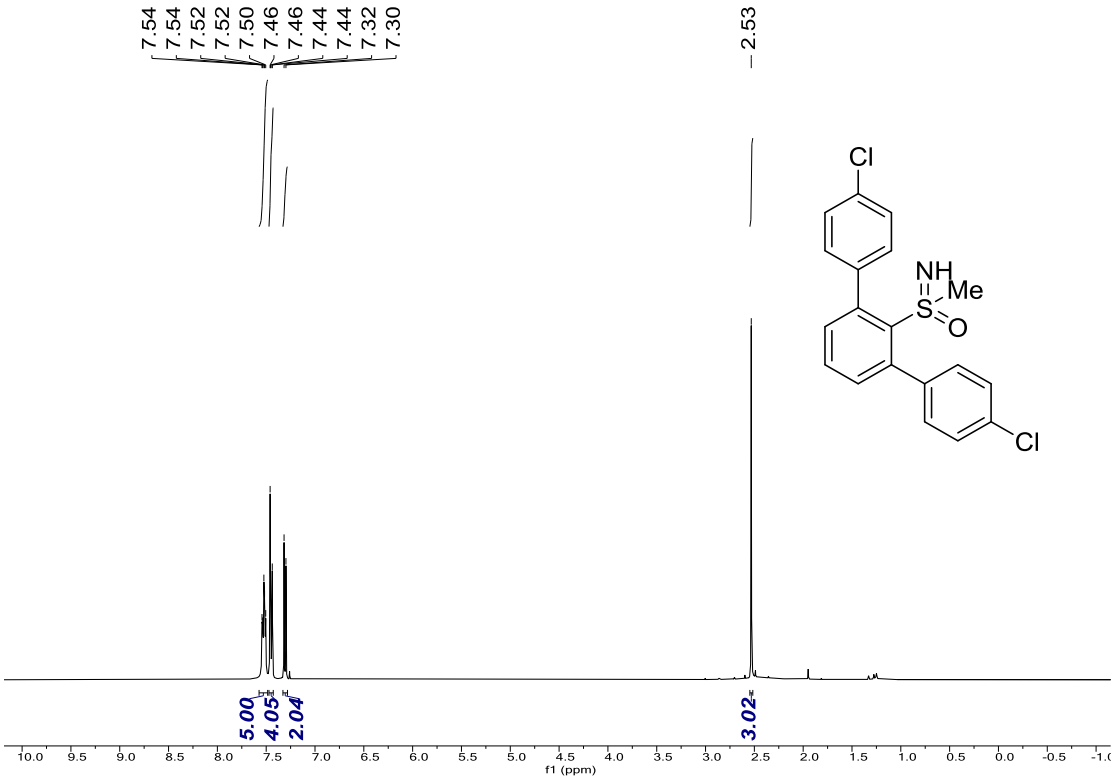
**4,4''-Difluoro-2'-(*S*-methylsulfonimidoyl)-1,1':3',1''-terphenyl (4i).**

$^{19}F$ NMR (377 MHz, $CDCl_3$)



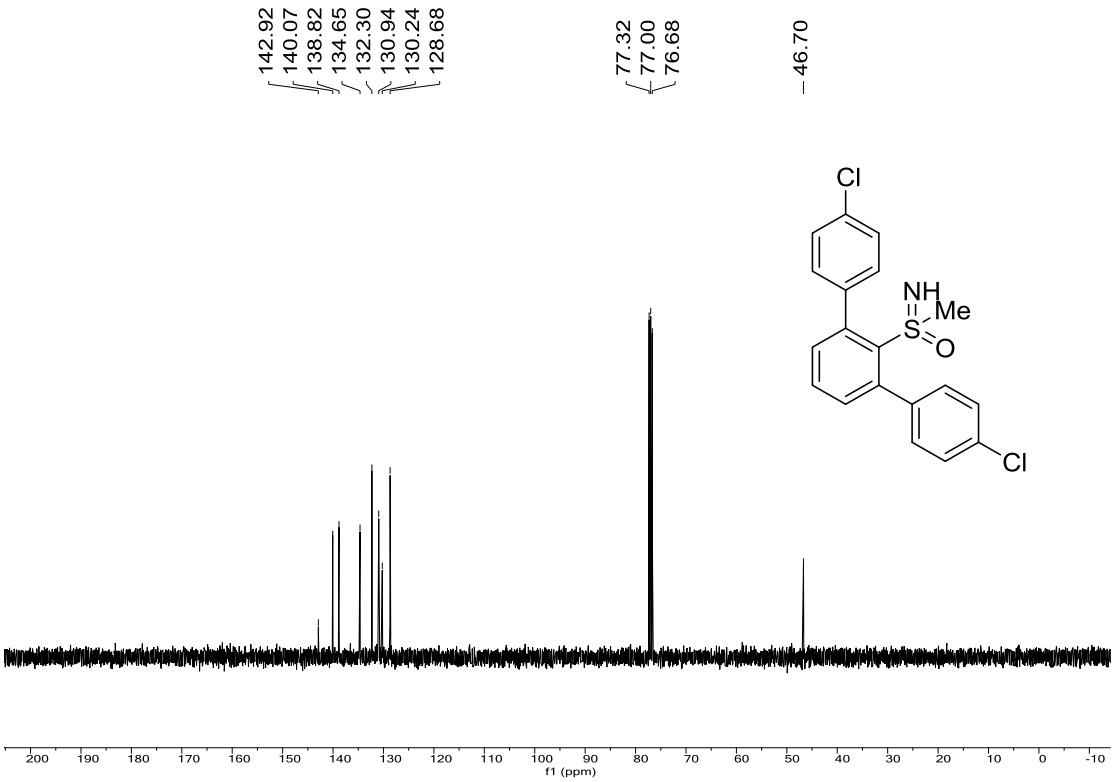

**4,4''-Dichloro-2'-(*S*-methylsulfonimidoyl)-1,1':3',1''-terphenyl (4j).**

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



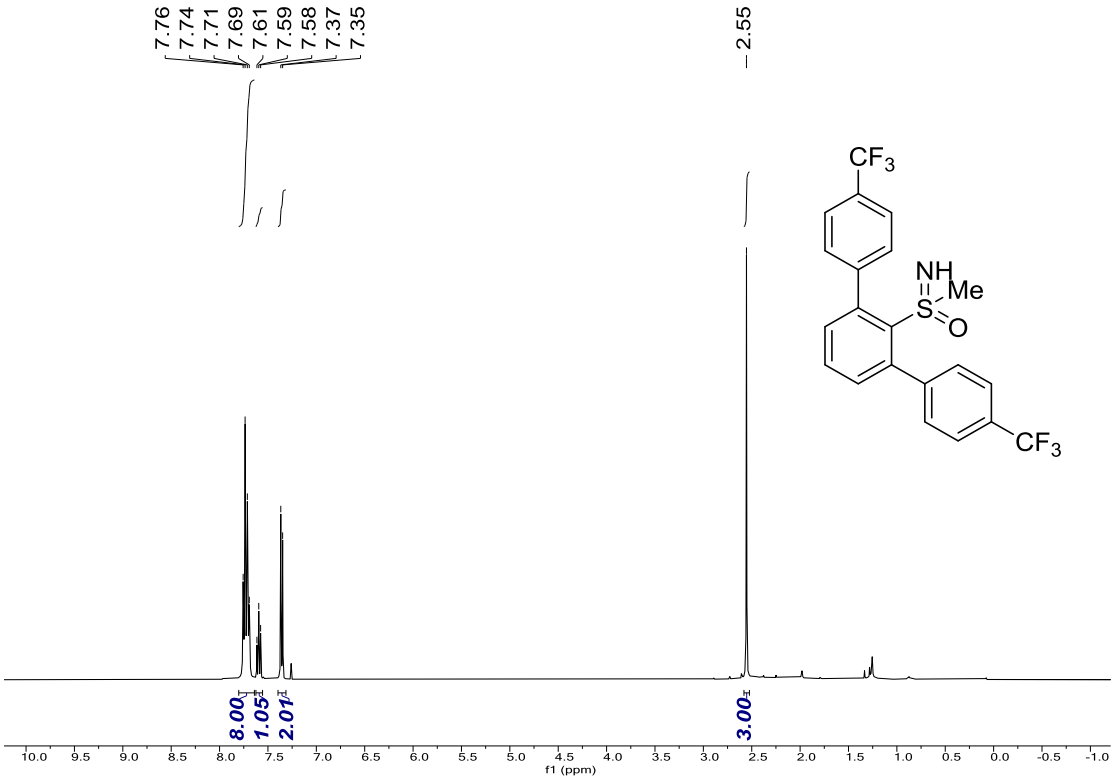

**4,4''-Dichloro-2'-(*S*-methylsulfonimidoyl)-1,1':3',1''-terphenyl (4j).**

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



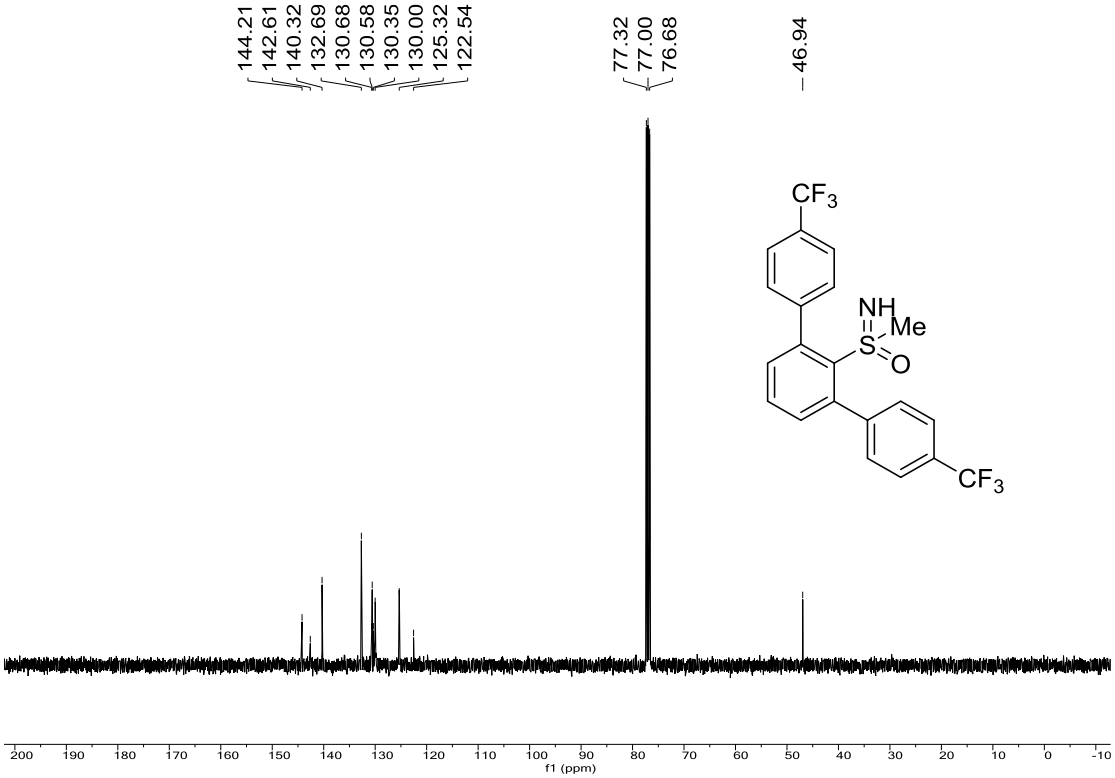

**4,4''-Bis(trifluoromethyl)-2'-(*S*-methylsulfonimidoyl)-1,1':3',1''-terphenyl (4k).**

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



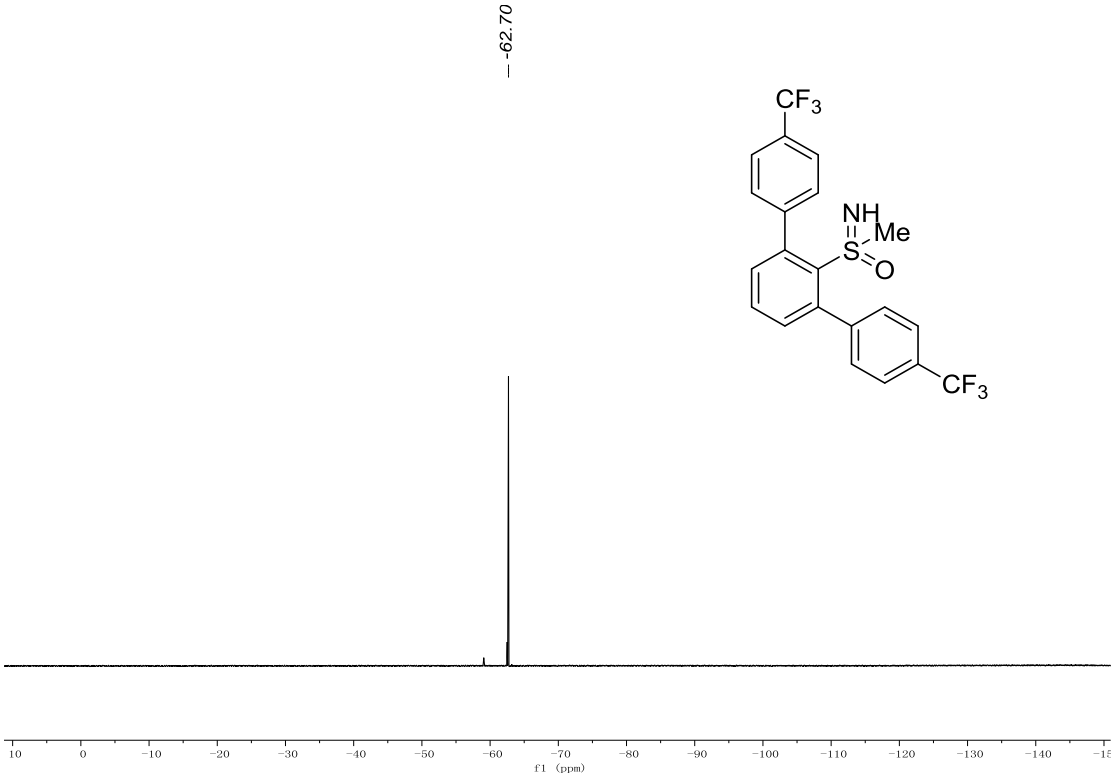
**4,4''-Bis(trifluoromethyl)-2'-(*S*-methylsulfonimidoyl)-1,1':3',1''-terphenyl (4k).**

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



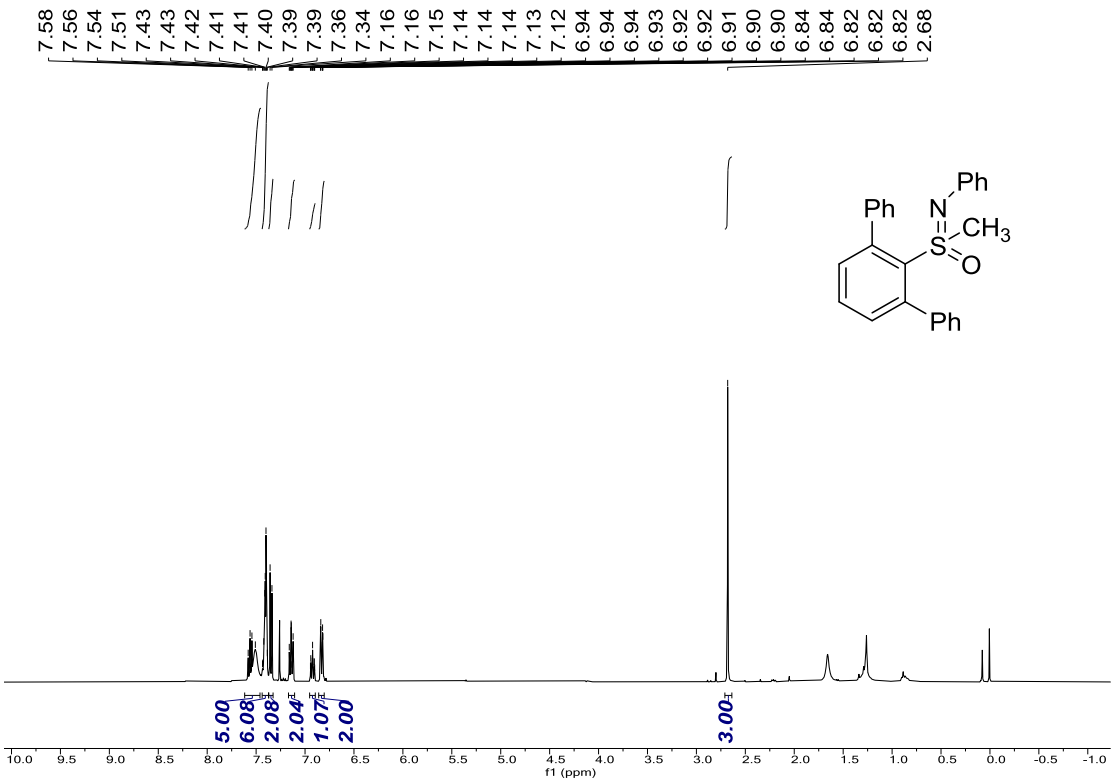

**4,4''-Bis(trifluoromethyl)-2'-(*S*-methylsulfonimidoyl)-1,1':3',1''-terphenyl (4k).**

$^{19}F$ NMR (377 MHz, $CDCl_3$)



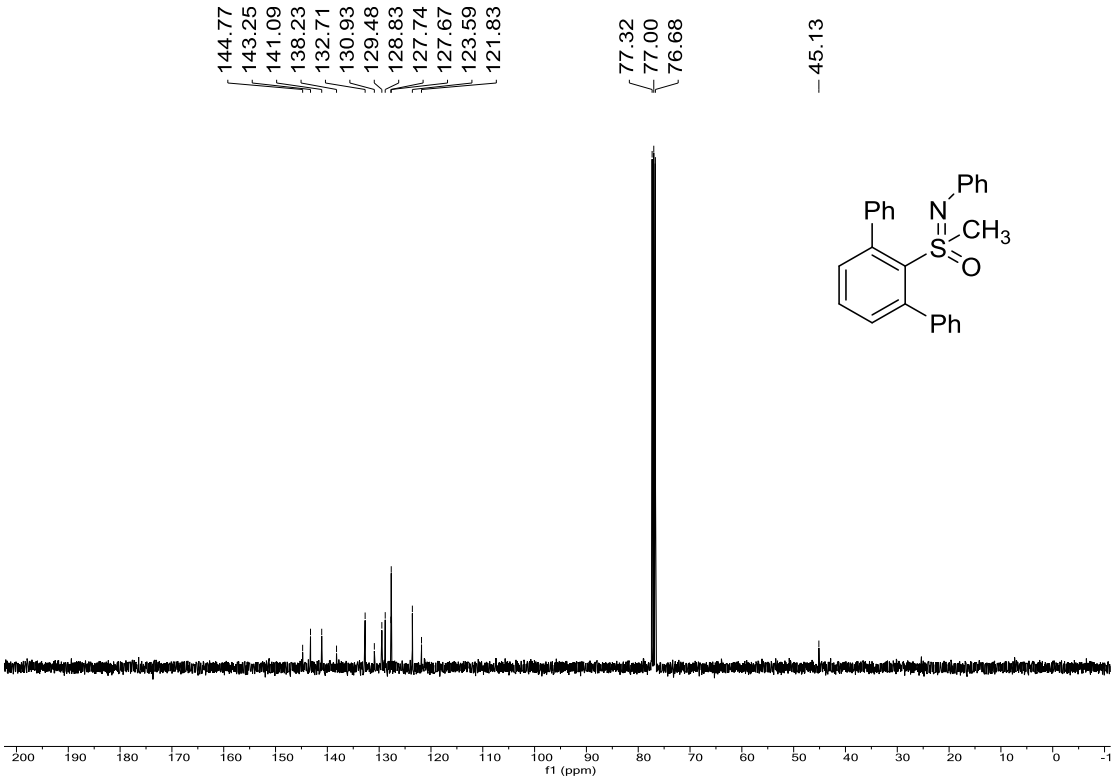
## *rac*-*N*-Phenyl-*S*-triphenyl-*S*-methylsulfoximine (5a).

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



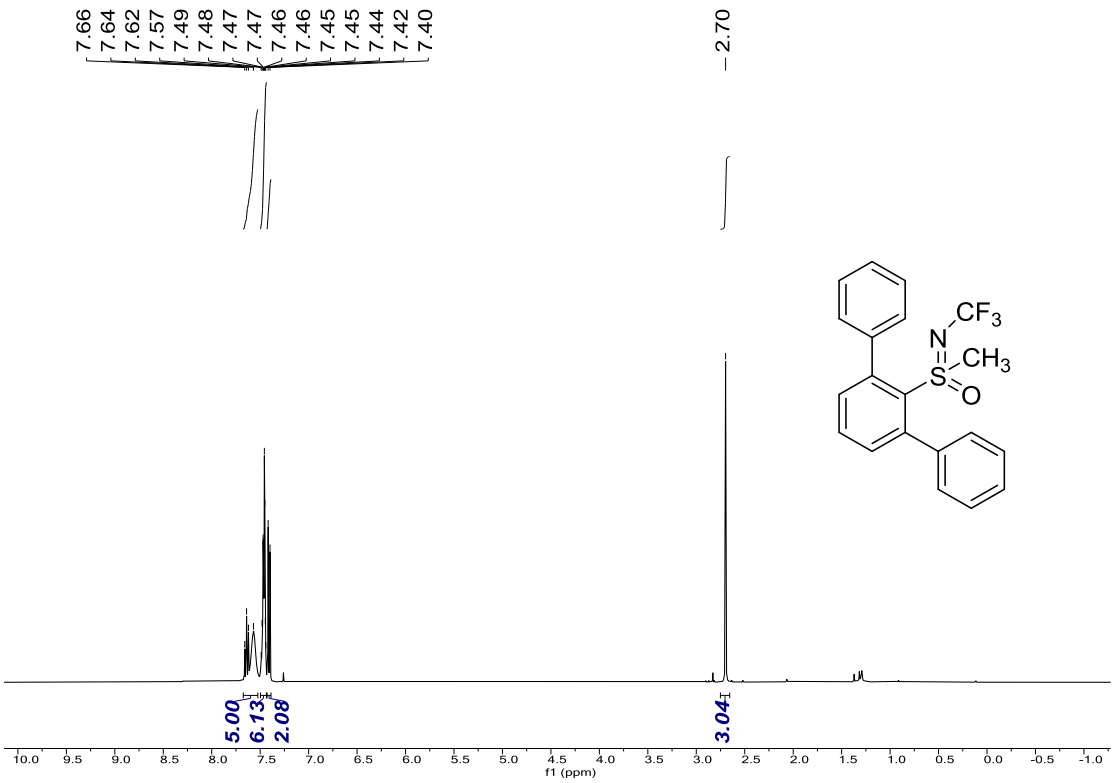

## *rac*-*N*-Phenyl-*S*-triphenyl-*S*-methylsulfoximine (5a).

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



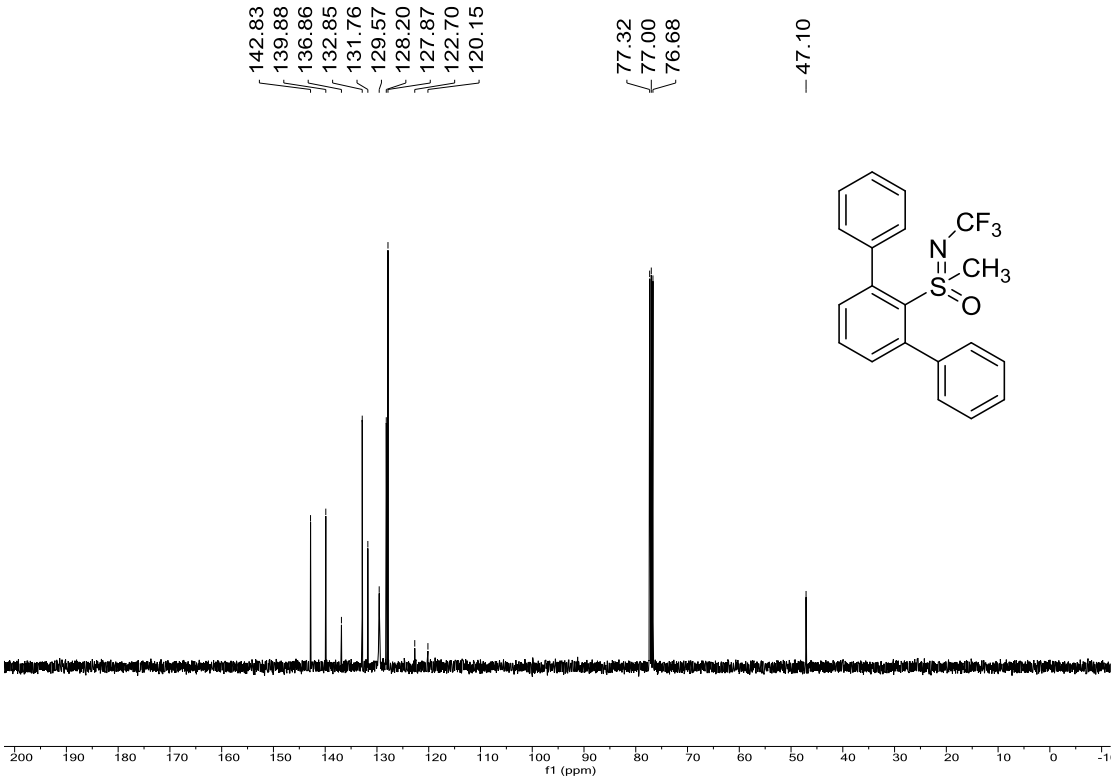
## *N*-Trifluoromethyl-*S*-triphenyl-*S*-methylsulfoximine (5b).

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



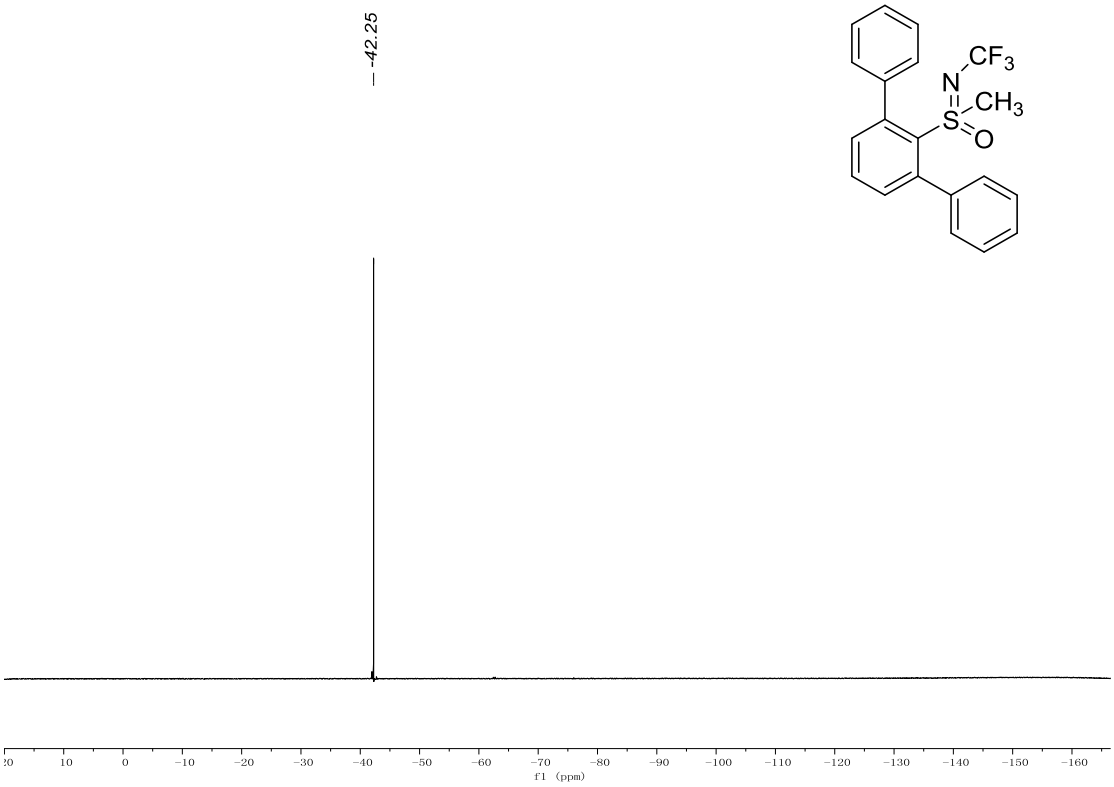

## *N*-Trifluoromethyl-*S*-triphenyl-*S*-methylsulfoximine (5b).

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



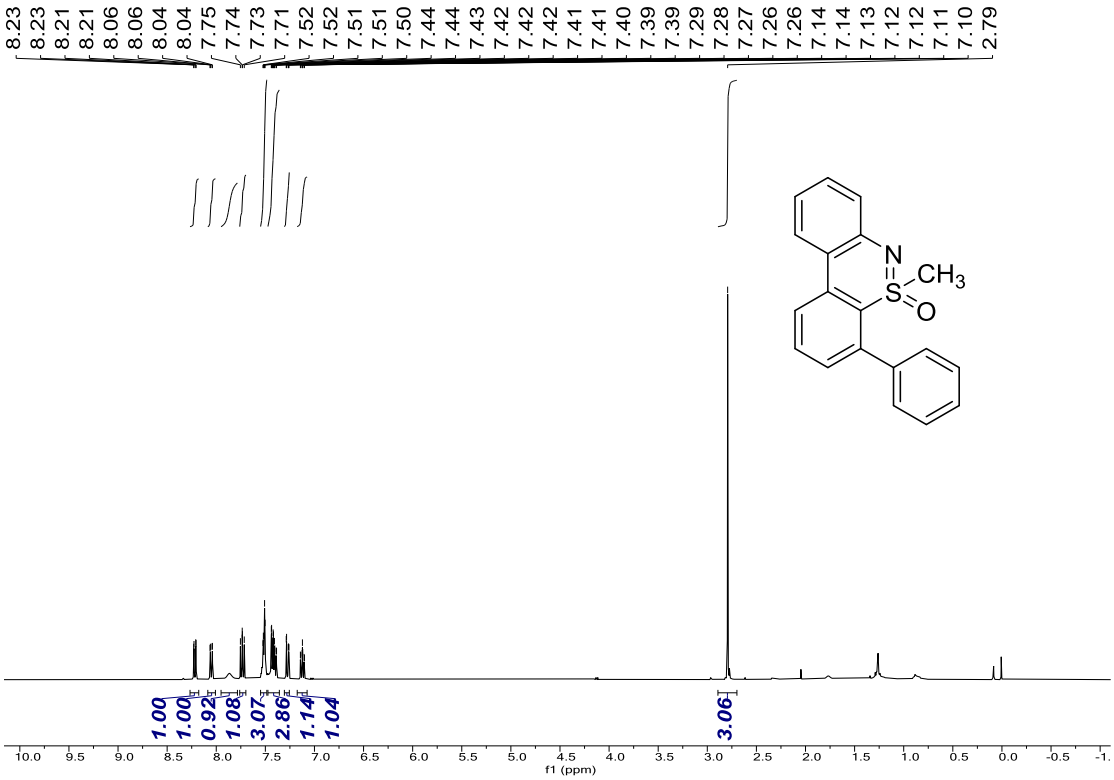
## *N*-Trifluoromethyl-*S*-triphenyl-*S*-methylsulfoximine (5b).

$^{19}$F NMR (377 MHz, $CDCl_3$)



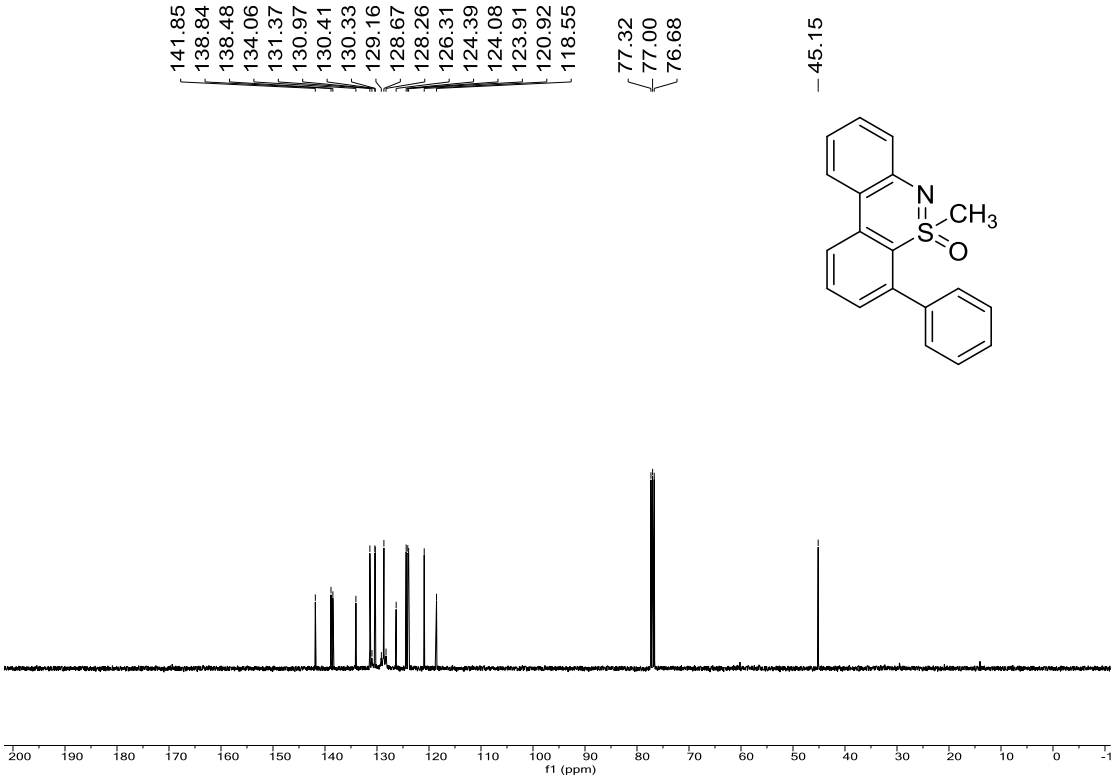

## 5-Methyl-4-phenyldibenzo[c,e][1,2]thiazine 5-oxide (5c).

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



**5-Methyl-4-phenyldibenzo[c,e][1,2]thiazine 5-oxide (5c).**

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



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