Supplementary Information

Copper-catalyzed *N*-Methylation/ethylation of Sulfoximines

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1. General Considerations

Unless otherwise noted, all chemicals were purchased from commercial suppliers and used without further purification. ^{1}H NMR and ^{13}C NMR spectra were recorded at ambient temperature on a 400 MHz spectrometer (100 MHz for ^{13}C NMR). NMR experiments are reported in δ units, parts per million (ppm), and were referenced to $CDCl_3$ (δ 7.26 or 77.0 ppm) as the internal standard. The coupling constants J are given in Hertz. Column chromatography was performed using EM silica gel 60 (300−400 mesh).

2. Experimental Procedures

2.1 General procedure (0.2 mmol scale)

Under nitrogen, a 20 mL Schlenk tube equipped with a stir bar was charged with the sulfoximine (0.2 mmol), DTBP/bis(1,1-dimethylpropyl)peroxide (0.6 mmol), $Cu(OAc)_2$ (3.6 mg, 0.02 mmol) and DMSO (2 mL). The tube was sealed with a Teflon lined cap. The reaction mixture was stirred at 110 °C for 16 h. After completion of the reaction (monitored by TLC), the mixture was dissolved with saturated brine and extracted by EtOAc. The combined solvent was evaporated under reduced pressure. Then, the mixture was purified by flash column chromatography on silica gel with petroleum ether-EtOAc as the eluent to give the desired product.

2.2 General procedure (2.0 mmol scale; *N*-methylation of sulfoximine 1a)

Under nitrogen, a 50 mL Schlenk tube equipped with a stir bar was charged with the **1a** (2 mmol), DTBP (6 mmol), $Cu(OAc)_2$ (36 mg, 0.2 mmol) in DMSO (20 mL). The tube was sealed with a Teflon lined cap. The reaction mixture was stirred at 110 °C for 16 h. After completion of the reaction (monitored by TLC), the mixture was dissolved with saturated brine and extracted by EtOAc. The combined solvent was evaporated under reduced pressure. Then, the product was purified by flash column chromatography on silica gel with petroleum ether-EtOAc as the eluent to give the desired product **3a** in 82% yield.

3. Mechanistic Studies

3.1 Free Radical Capture Experiments

Fig S1.1 GC results of standard reaction.

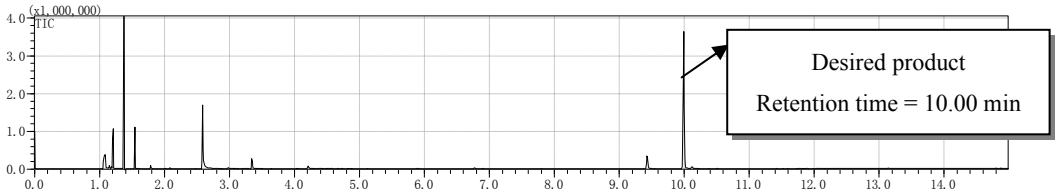


Fig S1.2 GC results after adding 2.0 equiv. TEMPO to the standard procedure.

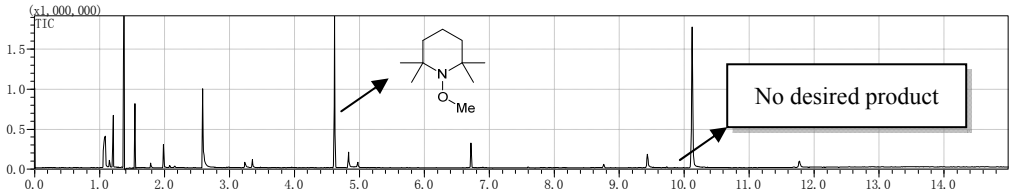


Fig S1.3 MS results of adduct 6.

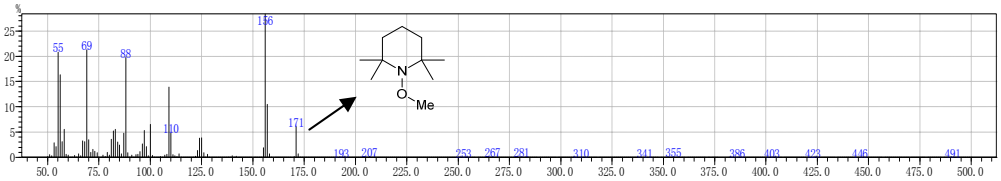


Fig S2.1 GC results after adding 2.0 equiv. BHT to the standard procedure.

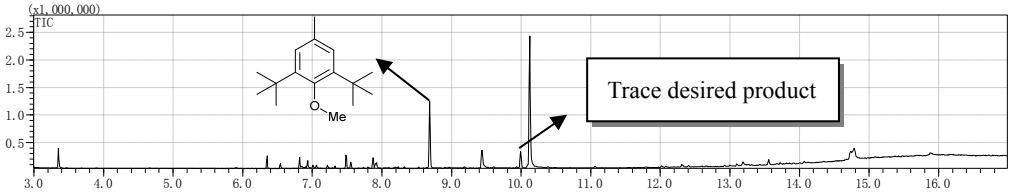
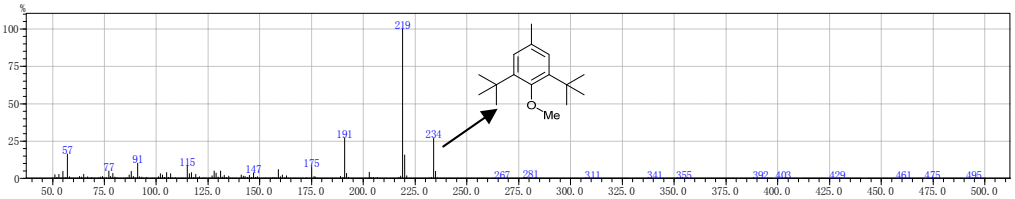


Fig S2.2 MS results of adduct 7.



3.2 The detection of acetone and *tert*-butanol

Fig S3.1 Detection of acetone.

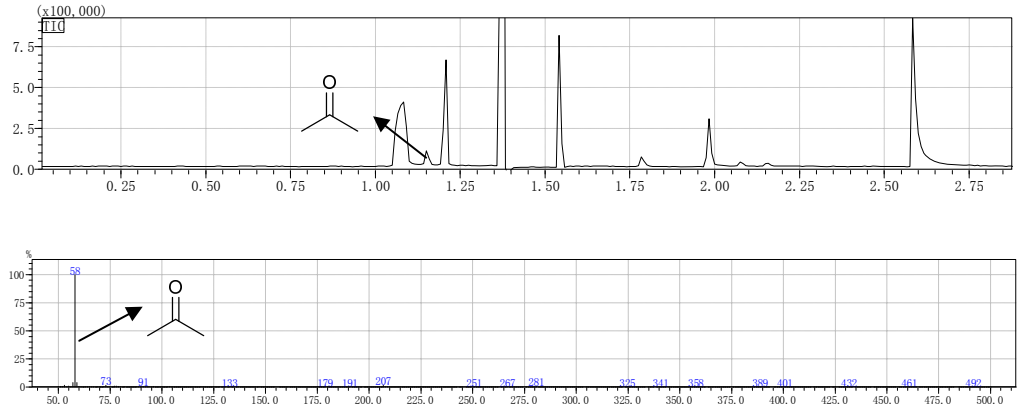
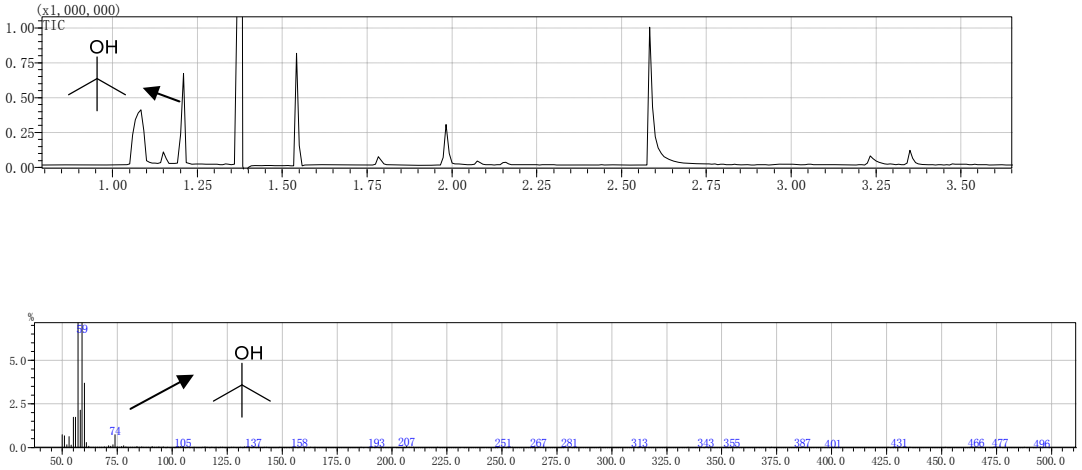
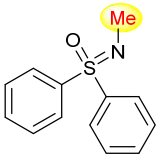


Fig S4.1 Detection of *tert*-butanol.



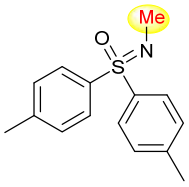
4. Characterization Data for the Products

N-(Methyl) diphenyl sulfoximine (3a):



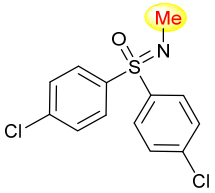
Flash column chromatography on silica gel (ethyl acetate/petroleum ether, 1:8) gave the product (39.3 mg, 85% yield) as a yellowish liquid; ^{1}H NMR ($CDCl_3$, 400 MHz) δ 2.82 (s, 3H), 7.45−7.51 (m, 6H), 7.95−7.98 (m, 4H); ^{13}C NMR ($CDCl_3$, 100 MHz) δ 29.6, 128.5, 129.2, 132.4, 140.4; MS (EI) 231 (M^+); HRMS (ESI) *m/z* calcd for $C_{13}H_{14}NOS^+$ $(M+H)^+$ 232.0791, found 232.0794; IR (KBr) 3062, 2920, 2873, 2804, 1446, 1249, 1149.

N-(Methyl)-4,4'-dimethyldiphenyl sulfoximine (3b):



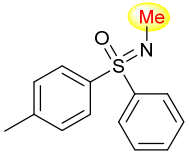
Flash column chromatography on silica gel (ethyl acetate/petroleum ether, 1:10) gave the product (39.9 mg, 77% yield) as a white solid: mp 92−94 °C; ^{1}H NMR ($CDCl_3$, 400 MHz) δ 2.34 (s, 6H), 2.79 (s, 3H), 7.24 (d, J = 8.1 Hz, 4H), 7.81 (d, J = 8.3 Hz, 4H); ^{13}C NMR ($CDCl_3$, 100 MHz) δ 21.3, 29.5, 128.3, 129.7, 137.6, 142.9; MS (EI) 259 (M^+); HRMS (ESI) *m/z* calcd for $C_{15}H_{18}NOS^+$ $(M+H)^+$ 260.1104, found 260.1109; IR (KBr) 3053,2983, 2946, 1611, 1496, 1483, 1396, 1156.

N-(Methyl)-4,4'-dichlorodiphenyl sulfoximine (3c):



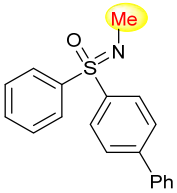
Flash column chromatography on silica gel (ethyl acetate/petroleum ether, 1:15) gave the product (43.1 mg, 74% yield) as a yellowish solid: mp 84−86 °C; ^{1}H NMR ($CDCl_3$, 400 MHz) δ 2.79 (s, 3H), 7.43 (d, J = 8.6 Hz, 4H), 7.86 (d, J = 8.6 Hz, 4H); ^{13}C NMR ($CDCl_3$, 100 MHz) δ 29.4, 129.5, 129.9, 138.6, 139.3; MS (EI) 299 (M^+); HRMS (ESI) *m/z* calcd for $C_{13}H_{12}Cl_2NOS^+$ $(M+H)^+$ 300.0011, found 300.0014; IR (KBr) 3053, 2983, 2946, 1612, 1497, 1483, 1396.

N-(Methyl)-4-methyldiphenyl sulfoximine (3d):



Flash column chromatography on silica gel (ethyl acetate/petroleum ether, 1:10) gave the product (28.9 mg, 59% yield) as a yellowish liquid; ^{1}H NMR ($CDCl_3$, 400 MHz) δ 2.36 (s, 3H), 2.81 (s, 3H), 7.25-7.27 (m, 2H), 7.43-7.48 (m, 3H), 7.82-7.84 (m, 2H), 7.93-7.95 (m, 2H); ^{13}C NMR ($CDCl_3$, 100 MHz) δ 21.4, 29.6, 128.3, 128.5, 129.1, 129.8, 132.2, 137.3, 140.7, 143.2; MS (EI) 245 (M^+); HRMS (ESI) *m/z* calcd for $C_{14}H_{16}NOS^+$ $(M+H)^+$ 246.0947, found 246.0950; IR (KBr) 3085, 3060, 2922, 2872, 2084, 1631, 1571, 1468, 1385, 1250, 1152.

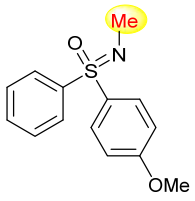
N-(Methyl)-4-phenyldiphenyl sulfoximine (3e):



Flash column chromatography on silica gel (ethyl acetate/petroleum ether, 1:10) gave the product (53.4 mg, 87% yield) as white solid: mp 97−99 °C; ^{1}H NMR ($CDCl_3$, 400 MHz) δ 2.86 (s, 3H), 7.34-7.39 (m, 1H), 7.42-7.46 (m, 2H),

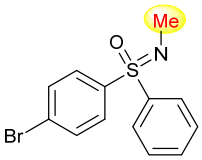
7.48-7.50 (m, 3H), 7.54-7.56 (m, 2H), 7.66-7.70 (m, 2H), 8.00-8.03 (m, 4H); ^{13}C NMR ($CDCl_3$, 100 MHz) δ 29.6, 127.3, 127.8, 128.3, 128.4, 128.9, 129.0, 129.1, 132.4, 138.9, 139.3, 140.4, 145.3; MS (EI) 307 (M^+); HRMS (ESI) *m/z* calcd for $C_{19}H1_8NOS^+$ $(M+H)^+$ 308.1104, found 308.1109; IR (KBr) 3056, 2928, 2856, 2799, 1637, 1590, 1444, 1249, 1147.

N-(Methyl)-4-methoxyldiphenyl sulfoximine (3f):



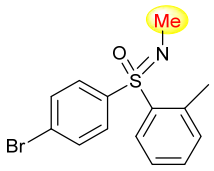
Flash column chromatography on silica gel (ethyl acetate/petroleum ether, 1:6) gave the product (42.3 mg, 81% yield) as a yellowish liquid; ^{1}H NMR ($CDCl_3$, 400 MHz) δ 2.80 (s, 3H), 3.81 (s, 3H), 6.92-6.95 (m, 2H), 7.42-7.48 (m, 3H), 7.87-7.93 (m, 4H); ^{13}C NMR ($CDCl_3$, 100 MHz) δ 29.6, 55.5, 114.4, 128.2, 129.0, 130.6, 131.6, 132.0, 141.0, 162.8; MS (EI) 261 (M^+); HRMS (ESI) *m/z* calcd for $C_{14}H_{16}NO_2S^+$ $(M+H)^+$ 262.0896, found 262.0898; IR (KBr) 3063, 3004, 2918, 2873, 2803, 1591, 1494, 1250, 1147.

N-(Methyl)-4-bromodiphenyl sulfoximine (3g):



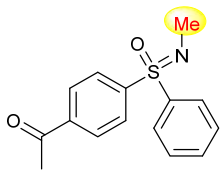
Flash column chromatography on silica gel (ethyl acetate/petroleum ether, 1:12) gave the product (38.3 mg, 62% yield) as a redish liquid; ^{1}H NMR ($CDCl_3$, 400 MHz) δ 2.80 (s, 3H), 7.44-7.53 (m, 3H), 7.56-7.60 (m, 2H), 7.79-7.82 (m, 2H), 7.92-7.94 (m, 2H); ^{13}C NMR ($CDCl_3$, 100 MHz) δ 29.5, 127.5, 128.4, 129.2, 130.1, 132.4, 132.6, 139.5, 139.9; MS (EI) 309 (M^+); HRMS (ESI) *m/z* calcd for $C_{13}H_{13}BrNOS^+$ $(M+H)^+$ 309.9896, found 309.9899; IR (KBr) 3083, 3063, 2916, 2873, 2805, 1638, 1570, 1467, 1445, 1386, 1252, 1152.

N-(Methyl)-4-bromo-2'-methyldiphenyl sulfoximine (3h):



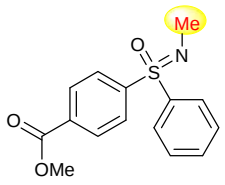
Flash column chromatography on silica gel (ethyl acetate/petroleum ether, 1:12) gave the product (27.8 mg, 43% yield) as a yellowish liquid; ^{1}H NMR ($CDCl_3$, 400 MHz) δ 2.40 (s, 3H), 2.78 (s, 3H), 7.20-7.22 (m, 1H), 7.35-7.39 (m, 1H), 7.42-7.46 (m, 1H), 7.58-7.62 (m, 2H), 7.75-7.78 (m, 2H), 8.22-8.25 (m, 1H); ^{13}C NMR ($CDCl_3$, 100 MHz) δ 20.2, 29.3, 126.6, 127.3, 130.0, 131.0, 132.1, 132.9, 133.0, 137.2, 138.2, 139.4; MS (EI) 323 (M^+); HRMS (ESI) *m/z* calcd for $C_{14}H_{15}BrNOS^+$ $(M+H)^+$ 324.0052, found 324.0058; IR (KBr) 3066, 2919, 2873, 1445, 1249, 1151.

N-(Methyl)-4- acetyldiphenyl sulfoximine (3i):



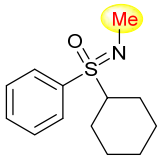
Flash column chromatography on silica gel (ethyl acetate/petroleum ether, 1:12) gave the product (27.9 mg, 51% yield) as a yellowish liquid; ^{1}H NMR ($CDCl_3$, 400 MHz) δ 2.60 (s, 3H), 2.82 (s, 3H), 7.46-7.53 (m, 3H), 7.95-7.97 (m, 2H), 8.00-8.05 (m, 4H); ^{13}C NMR ($CDCl_3$, 100 MHz) δ 26.8, 29.5, 128.6, 128.8, 128.9, 129.3, 132.8, 139.6, 139.7, 144.6, 196.9; MS (EI) 273 (M^+); HRMS (ESI) *m/z* calcd for $C_{15}H_{16}NO_2S^+$ $(M+H)^+$ 274.0896, found 274.0898; IR (KBr) 3082, 3061, 2967, 2882, 1692, 1437, 1261, 1154.

N-(Methyl)-4-methoxycarbonyl diphenyl sulfoximine (3j):



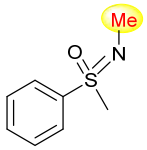
Flash column chromatography on silica gel (ethyl acetate/petroleum ether, 1:12) gave the product (41.6 mg, 72% yield) as a yellowish liquid; ^{1}H NMR ($CDCl_3$, 400 MHz) δ 2.81 (s, 3H), 3.90 (s, 3H), 7.45-7.52 (m, 3H), 7.94-7.96 (m, 2H), 7.99-8.02 (m, 2H), 8.09-8.12 (m, 2H); ^{13}C NMR ($CDCl_3$, 100 MHz) δ 29.5, 52.5, 128.5, 128.6, 129.3, 130.3, 132.7, 133.5, 139.6, 144.6, 165.7; MS (EI) 289 (M^+); HRMS (ESI) *m/z* calcd for $C_{15}H_{16}NO_3S^+$ $(M+H)^+$ 290.0845, found 290.0846; IR (KBr) 3079, 3057, 2976, 2879, 1678, 1432, 1253, 1112, 1058.

N-(Methyl) cyclohexyl phenyl sulfoximine (3k):



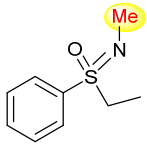
Flash column chromatography on silica gel (ethyl acetate/petroleum ether, 1:10) gave the product (34.6 mg, 73% yield) as a yellowish liquid; ^{1}H NMR ($CDCl_3$, 400 MHz) δ 1.06-1.22 (m, 3H), 1.28-1.39 (m, 2H), 1.59-1.62 (m, 1H), 1.78-1.89 (m, 3H), 2.24-2.27 (m, 1H), 2.64 (s, 3H), 2.89-2.95 (m, 1H), 7.51-7.58 (m, 3H), 7.76-7.78 (m, 2H); ^{13}C NMR ($CDCl_3$, 100 MHz) δ 25.1, 25.2, 25.3, 25.3, 26.1, 29.4, 63.5, 129.1, 130.3, 132.6, 135.6; MS (EI) 237 (M^+); HRMS (ESI) *m/z* calcd for $C_{13}H_{20}NOS^+$ $(M+H)^+$ 238.1260, found 238.1262; IR (KBr) 3062, 2933, 2857, 2801, 1629, 1447, 1239, 1146.

N-(Methyl) methyl phenyl sulfoximine (3l):



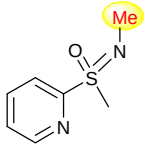
Flash column chromatography on silica gel (ethyl acetate/petroleum ether, 1:5) gave the product (22.0 mg, 65% yield) as a yellowish liquid; ^{1}H NMR ($CDCl_3$, 400 MHz) δ 2.65 (s, 3H), 3.08 (s, 3H), 7.55-7.62 (m, 3H), 7.88-7.90 (m, 2H); ^{13}C NMR ($CDCl_3$, 100 MHz) δ 29.5, 44.9, 128.7, 129.4, 132.8, 138.7; MS (EI) 169 (M^+); HRMS (ESI) *m/z* calcd for $C_8H_{12}NOS^+$ $(M+H)^+$ 170.0634, found 170.0634; IR (KBr) 3063, 3015, 2927, 2877, 2804, 1446, 1246, 1150.

N-(Methyl) ethyl phenyl sulfoximine (3m):



Flash column chromatography on silica gel (ethyl acetate/petroleum ether, 1:8) gave the product (15.4 mg, 42% yield) as a yellowish liquid; ^{1}H NMR ($CDCl_3$, 400 MHz) δ 1.20-1.24 (m, 3H), 2.67 (s, 3H), 3.08-3.22 (m, 2H), 7.56-7.61 (m, 3H), 7.82-7.85 (m, 2H); ^{13}C NMR ($CDCl_3$, 100 MHz) δ 7.42, 29.5, 50.8, 129.4, 129.6, 132.9, 136.9; MS (EI) 183 (M^+); HRMS (ESI) *m/z* calcd for $C_9H_{14}NOS^+$ $(M+H)^+$ 184.0791, found 184.0790; IR (KBr) 3063, 2973, 2928, 2873, 2808, 1640, 1445, 1244, 1147.

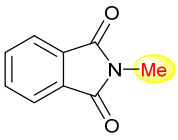
N-(Methyl) methyl pyridyl sulfoximine (3n):[1]



Flash column chromatography on silica gel (ethyl acetate/petroleum ether, 1:10) gave the product (23.6 mg, 69% yield) as a yellow liquid; ^{1}H NMR ($CDCl_3$, 400 MHz) δ 2.64 (s, 3H), 3.22 (s, 3H), 7.47-7.50 (m, 1H), 7.91-7.96 (m, 1H), 8.08-8.10 (m, 1H), 8.74-8.75 (m, 1H); ^{13}C NMR ($CDCl_3$, 100 MHz) δ 29.5, 40.9, 123.4,

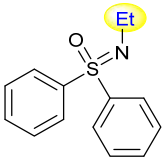
126.5, 137.8, 150.4, 157.2.

2-Methylisoindoline-1,3-dione (3o):[2]



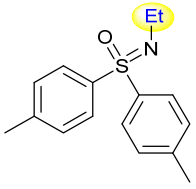
Flash column chromatography on silica gel (ethyl acetate/petroleum ether, 1:15) gave the product (11.6 mg, 36% yield) as a white solid; ^{1}H NMR ($CDCl_3$, 400 MHz) δ 3.15 (s, 3H), 7.67-7.69 (m, 2H), 7.80−7.82 (m, 2H); ^{13}C NMR ($CDCl_3$, 100 MHz) δ 23.8, 123.1, 132.2, 133.8, 168.4.

N-(Ethyl) diphenyl sulfoximine (5a):



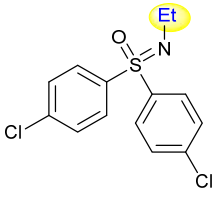
Flash column chromatography on silica gel (ethyl acetate/petroleum ether, 1:10) gave the product (39.7 mg, 81% yield) as a yellowish liquid; ^{1}H NMR ($CDCl_3$, 400 MHz) δ 1.26 (t, J = 7.2 Hz, 3H), 3.10 (q, J = 7.2 Hz, 2H), 7.42-7.49 (m, 6H), 7.95-7.97 (m, 4H); ^{13}C NMR ($CDCl_3$, 100 MHz) δ 18.5, 38.6, 128.4, 129.0, 132.2, 140.8; MS (EI) 245 (M^+); HRMS (ESI) *m/z* calcd for $C_{14}H_{16}NOS^+$ $(M+H)^+$ 246.0947, found 246.0950； IR (KBr) 3081, 3057, 2974, 2930, 2886, 1240, 1238, 1142.

N-(Ethyl)-4,4'-dimethyldiphenyl sulfoximine (5b)



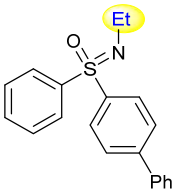
Flash column chromatography on silica gel (ethyl acetate/petroleum ether, 1:15) gave the product (31.7 mg, 58% yield) as a yellowish liquid; ^{1}H NMR ($CDCl_3$, 400 MHz) δ 1.25 (t, J = 7.1 Hz, 3H), 2.35 (s, 6H), 3.09 (q, J = 7.1 Hz, 2H), 7.23 (d, J = 8.0 Hz, 4H), 7.83 (d, J = 8.1 Hz, 4H); ^{13}C NMR ($CDCl_3$, 100 MHz) δ 18.5, 21.3, 38.7, 128.4, 129.6, 138.2, 142.8; MS (EI) 273 (M^+); HRMS (ESI) *m/z* calcd for $C_{16}H_{20}NOS^+$ $(M+H)^+$ 274.1260, found 274.1260; IR (KBr) 3060, 2967, 2924, 2852, 1595, 1490, 1237, 1145.

N-(Ethyl) 4,4'-dichlorodiphenyl sulfoximine (5c):



Flash column chromatography on silica gel (ethyl acetate/petroleum ether, 1:15) gave the product (45.7 mg, 73% yield) as a yellowish liquid; ^{1}H NMR ($CDCl_3$, 400 MHz) δ 1.25 (t, J = 7.2 Hz, 3H), 3.08 (q, J = 7.2 Hz, 2H), 7.42−7.44 (m, 4H), 7.86−7.88 (m, 4H); ^{13}C NMR ($CDCl_3$, 100 MHz) δ 18.4, 38.6, 129.4, 129.9, 139.2, 139.2; MS (EI) 313 (M^+); HRMS (ESI) *m/z* calcd for $C_{14}H_{14}Cl_2NOS^+$ $(M+H)^+$ 314.0168, found 314.0170; IR (KBr) 3087, 2969, 2928, 2854, 1576, 1242, 1149, 1086.

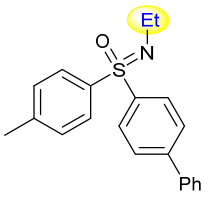
N-(Ethyl)-4-phenyldiphenyl sulfoximine (5d):



Flash column chromatography on silica gel (ethyl acetate/petroleum ether, 1:10) gave the product (52.0 mg, 81% yield) as a yellowish liquid; ^{1}H NMR ($CDCl_3$, 400 MHz) δ 1.30 (t, J = 7.2 Hz, 3H), 3.16 (q, J = 7.2 Hz, 2H), 7.36-7.51 (m, 6H), 7.54-7.56 (m, 2H), 7.65-7.67 (m, 2H), 8.01-8.04 (m, 4H); ^{13}C NMR ($CDCl_3$,

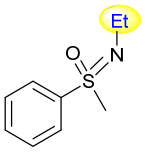
100 MHz) δ 18.6, 38.7, 127.2, 127.7, 128.3, 128.5, 128.9, 129.0, 129.1, 132.2, 139.4, 139.4, 141.0, 145.2; MS (EI) 321 (M^+); HRMS (ESI) *m/z* calcd for $C_{20}H_{20}NOS^+$ $(M+H)^+$ 322.1260, found 322.1266; IR (KBr) 3063, 2967, 2927, 2853, 1592, 1445, 1239, 1146.

N-(Ethyl)-4-phenyl-4'-methylphenyl sulfoximine (5e):



Flash column chromatography on silica gel (ethyl acetate/petroleum ether, 1:12) gave the product (40.2 mg, 60% yield) as a yellowish liquid; ^{1}H NMR ($CDCl_3$, 400 MHz) δ 1.30 (t, J = 7.2 Hz, 3H), 2.38 (s, 3H), 3.15 (q, J = 7.1 Hz, 2H), 7.27-7.29 (m, 2H), 7.38-7.39 (m, 1H), 7.42-7.46 (m, 2H), 7.54-7.56 (m, 2H), 7.64-7.66 (m, 2H), 7.88-7.91 (m, 2H), 8.01-8.03 (m, 2H); ^{13}C NMR ($CDCl_3$, 100 MHz) δ 18.6, 21.4, 38.7, 127.2, 127.7, 128.2, 128.5, 128.9, 128.9, 129.8, 137.9, 139.4, 139.8, 143.1, 145.0; MS (EI) 335 (M^+); HRMS (ESI) *m/z* calcd for $C_{21}H_{22}NOS^+$ $(M+H)^+$ 336.1417, found 336.1420; IR (KBr) 3061, 3028, 2966, 2924, 2852, 1593, 1478, 1238, 1146.

N-(Methyl) methyl phenyl sulfoximine (5f):



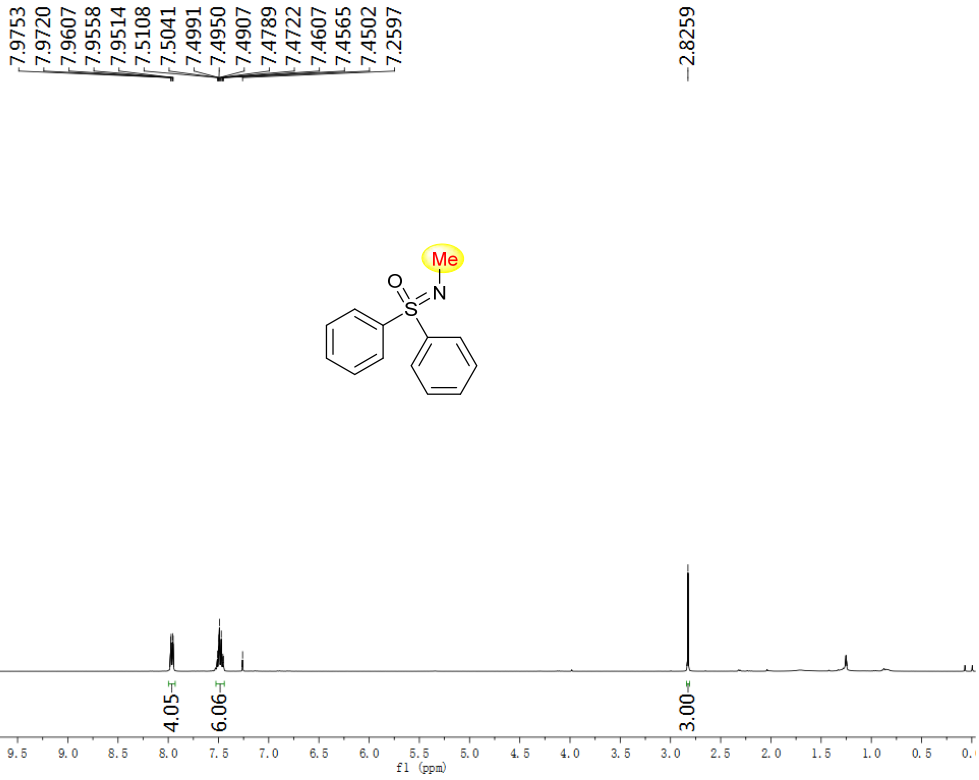
Flash column chromatography on silica gel (ethyl acetate/petroleum ether, 1:6) gave the product (27.4 mg, 75% yield) as a colorless liquid; ^{1}H NMR ($CDCl_3$, 400 MHz) δ 1.13-1.17 (m, 3H), 2.77-3.03 (m, 2H), 3.05 (s, 3H), 7.51-7.60 (m, 3H), 7.87-7.89 (m, 2H); ^{13}C NMR ($CDCl_3$, 100 MHz) δ 18.2, 38.4, 45.2, 128.6, 129.3, 132.7, 139.6; MS (EI) 183 (M^+); HRMS (ESI) *m/z* calcd for $C_9H_{14}NOS^+$ $(M+H)^+$ 184.0791, found 184.0791; IR (KBr) 3063, 2969, 2929, 2853, 1445, 1229, 1143.

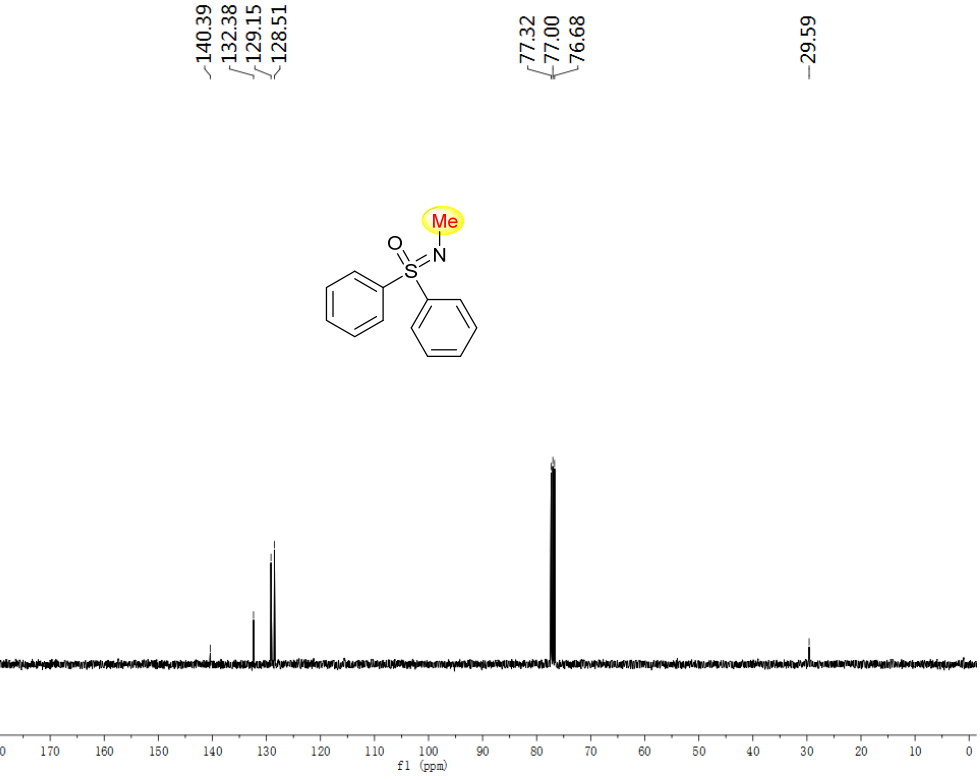
5. References

1. Y. Brussaard, F. Olbrich and E. Schaumann, *Inorg. Chem.,* 2013, **52**, 13160.
2. N. J. Peraino, H.-J. Ho, M. Mondal and N. J. Kerrigan, *Tetrahedron Lett.,* 2014, **55**, 4260.

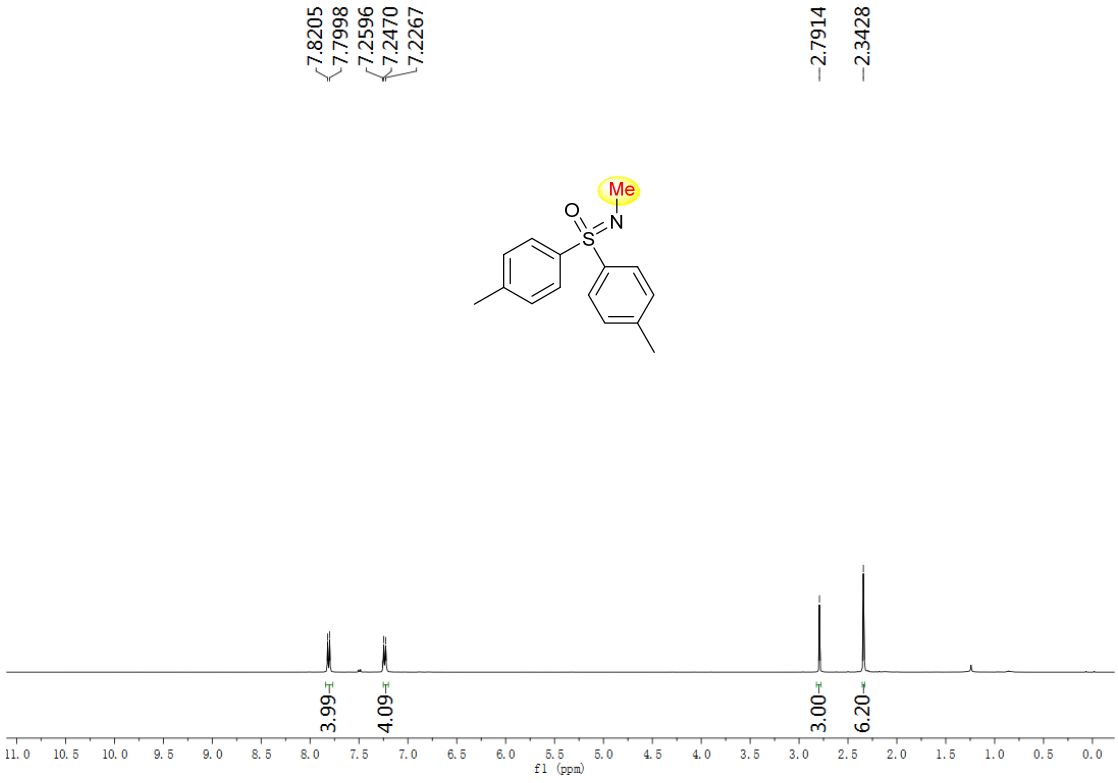
6. Copies of the ^{1}H NMR and ^{13}C NMR Spectra

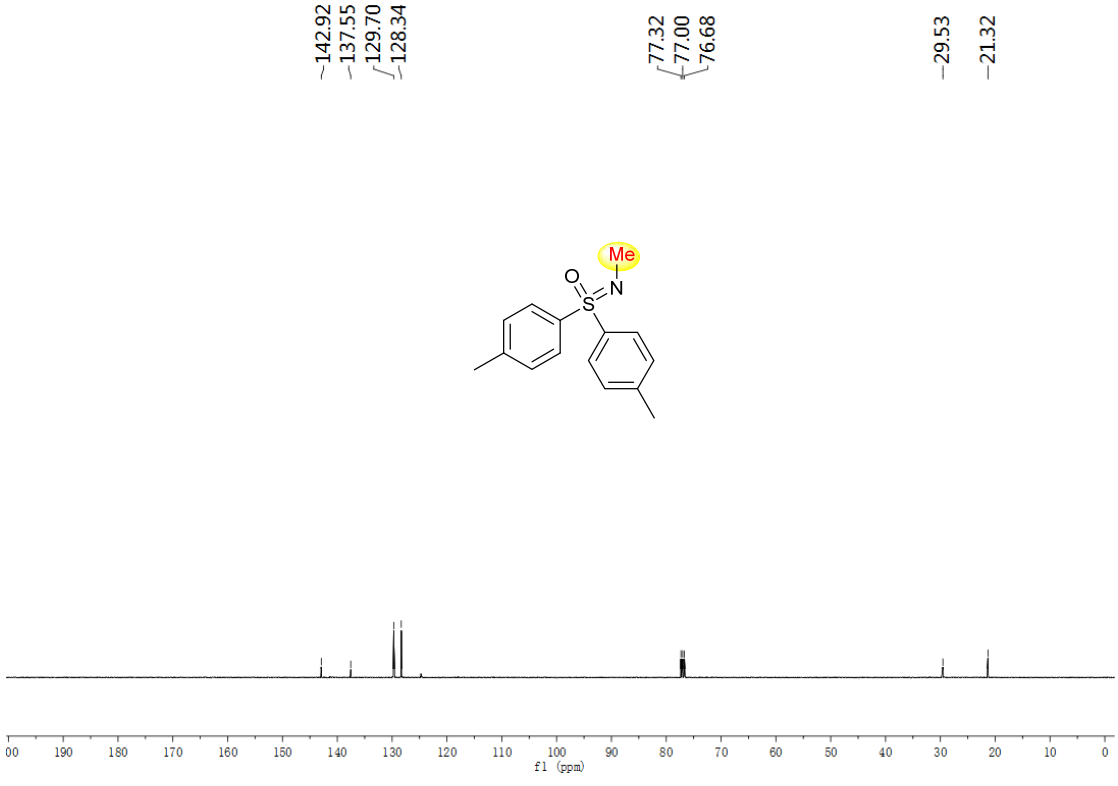
N-(Methyl) diphenyl sulfoximine (3a)



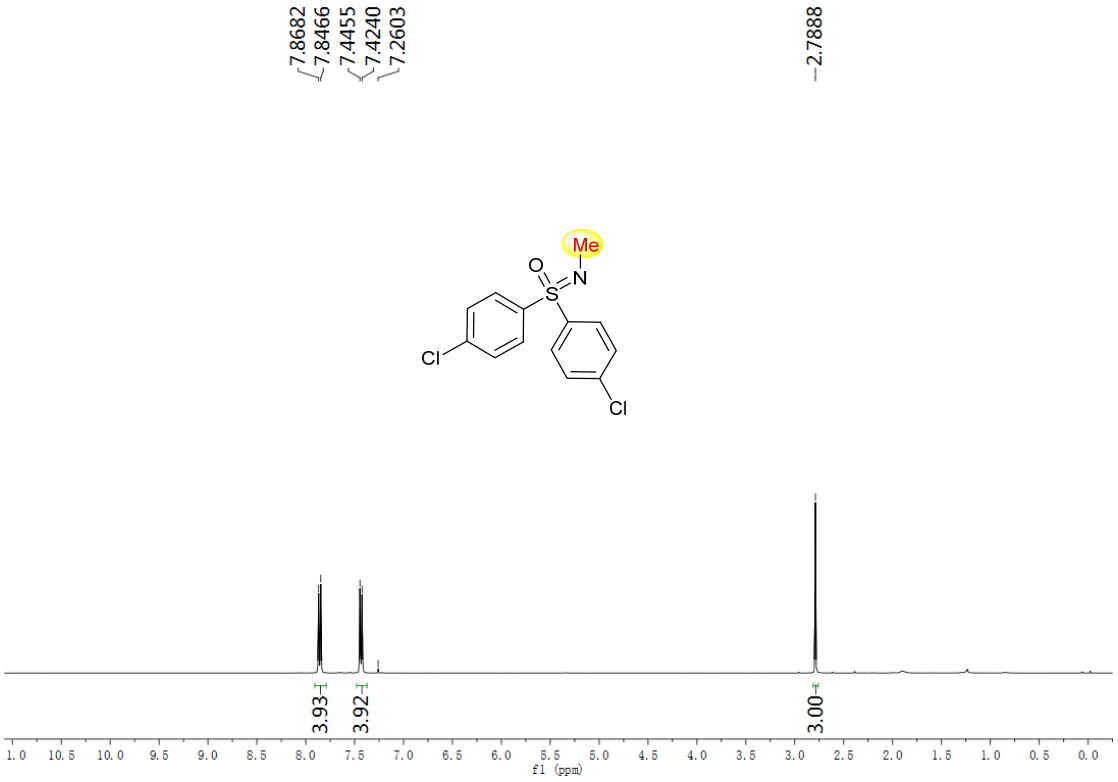


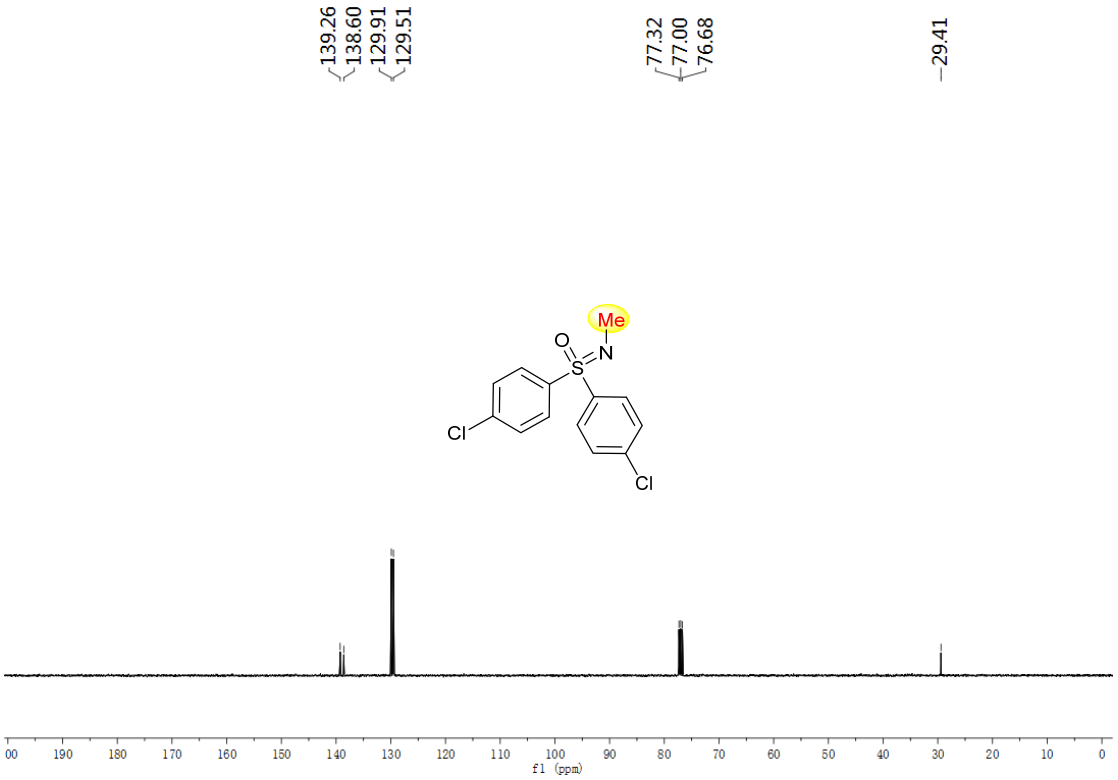
N-(Methyl)-4,4’-dimethyldiphenyl sulfoximine (3b)



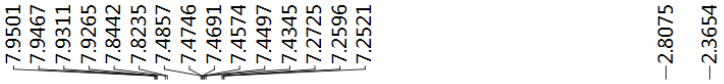


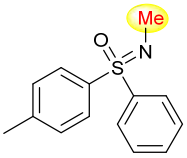
N-(Methyl) 4,4’-dichlorodiphenyl sulfoximine (3c)

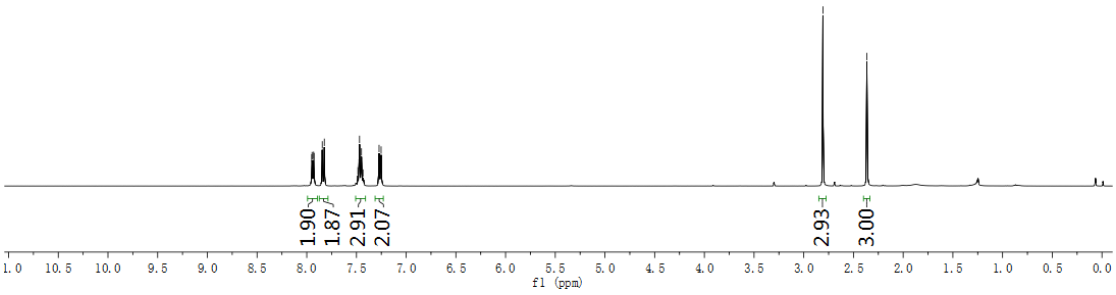


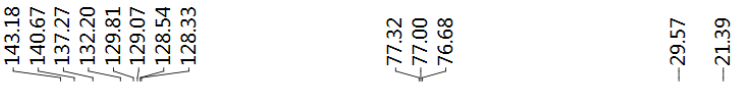


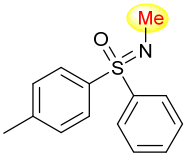
N-(Methyl)-4-methyldiphenyl sulfoximine (3d)

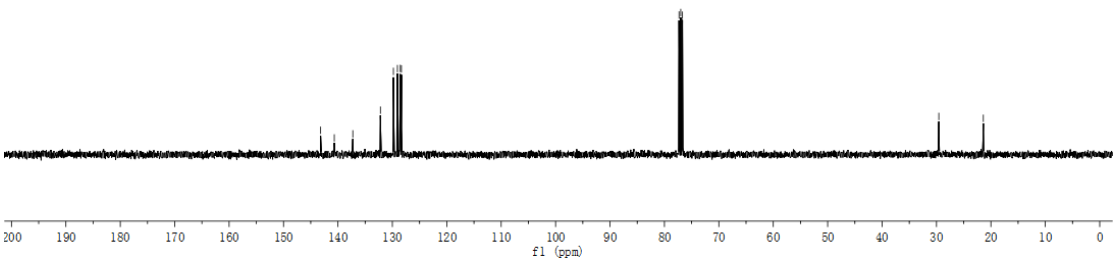




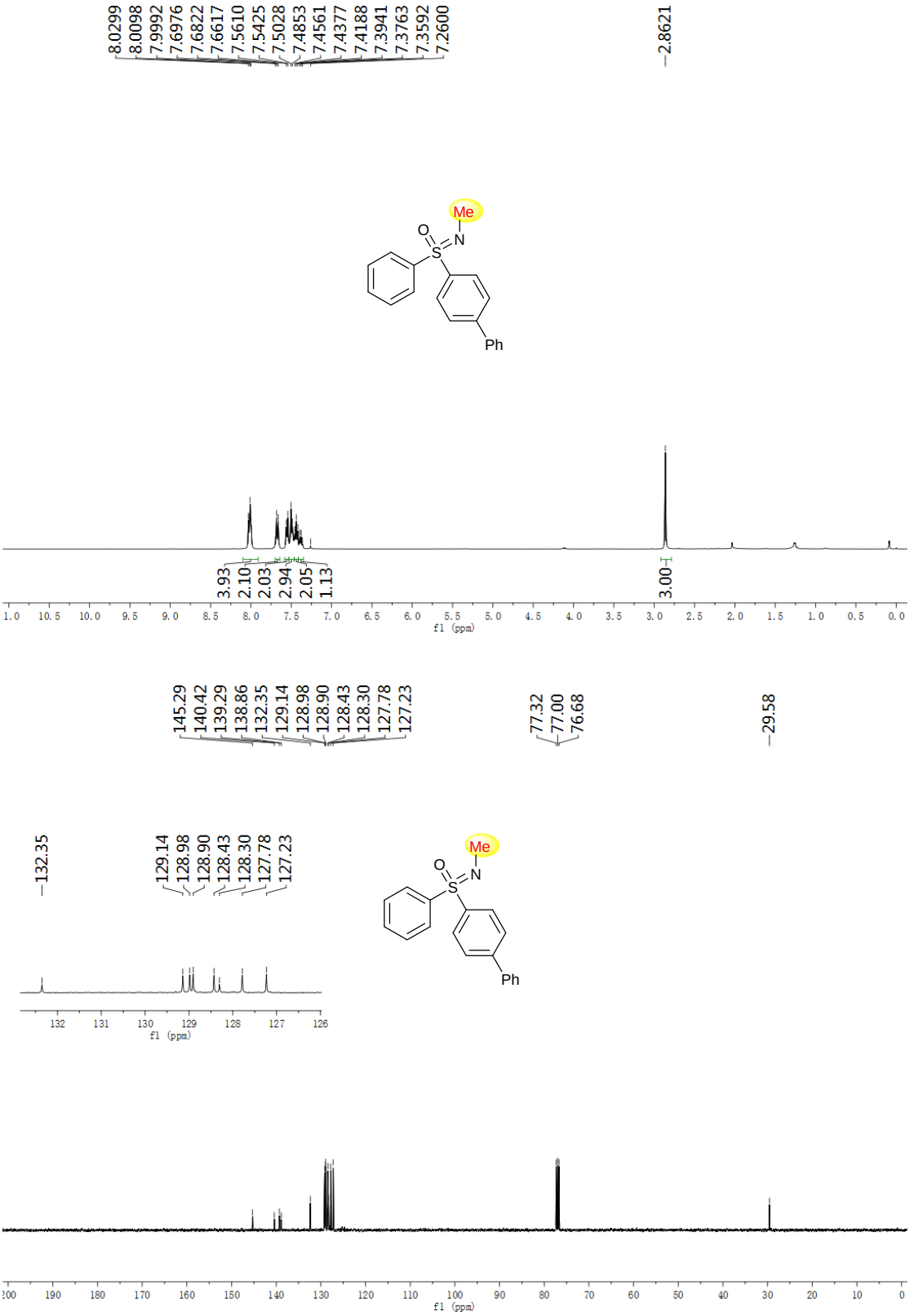




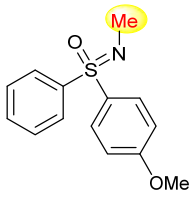


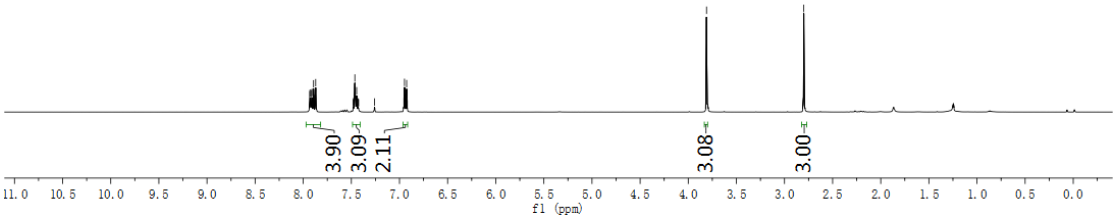


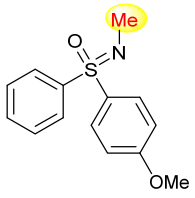
N-(Methyl)-4-phenyldiphenyl sulfoximine (3e)

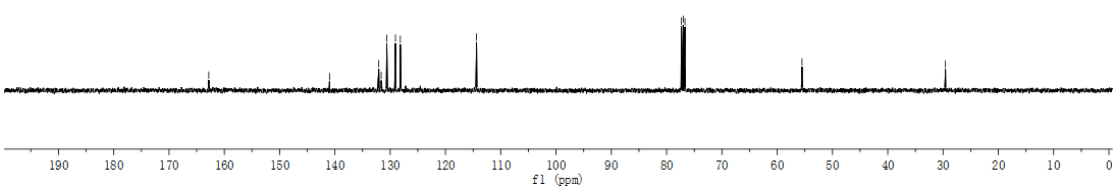


N-(Methyl)-4-methoxyldiphenyl sulfoximine (3f)

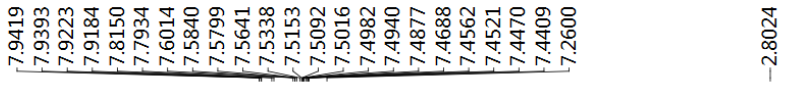


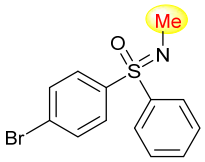


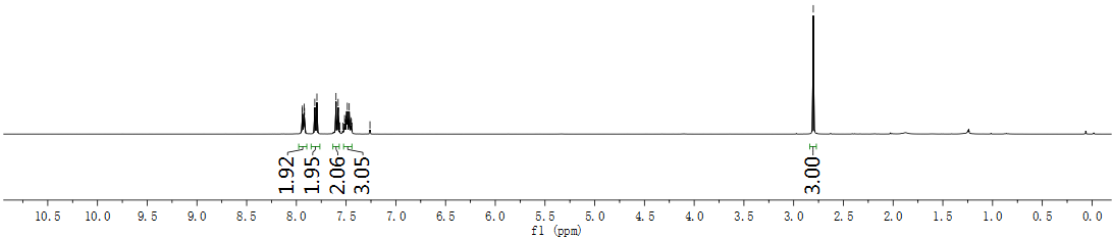


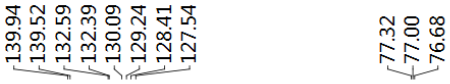


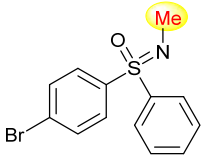
N-(Methyl)-4-bromodiphenyl sulfoximine (3g)

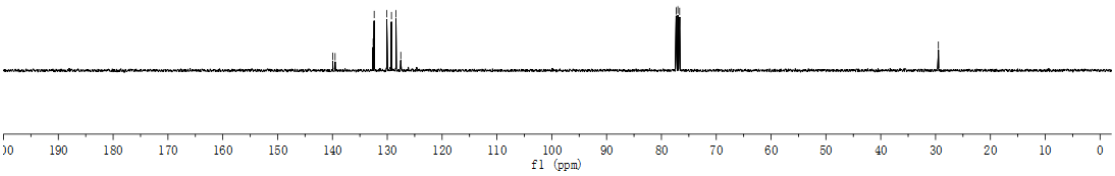




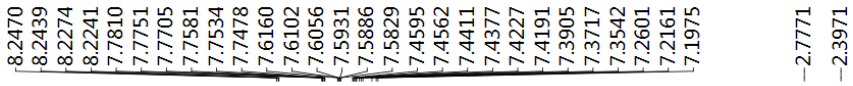


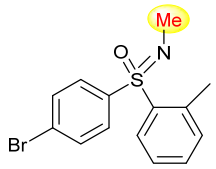


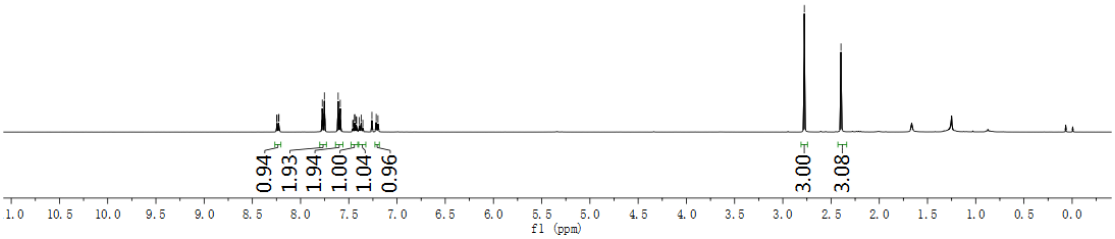


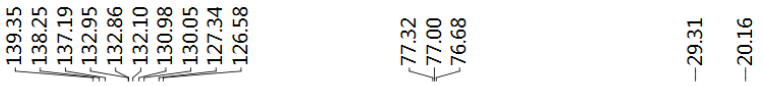


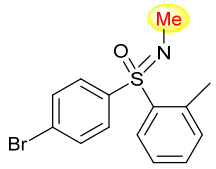
N-(Methyl)-4-bromo-2’-methyldiphenyl sulfoximine (3h)

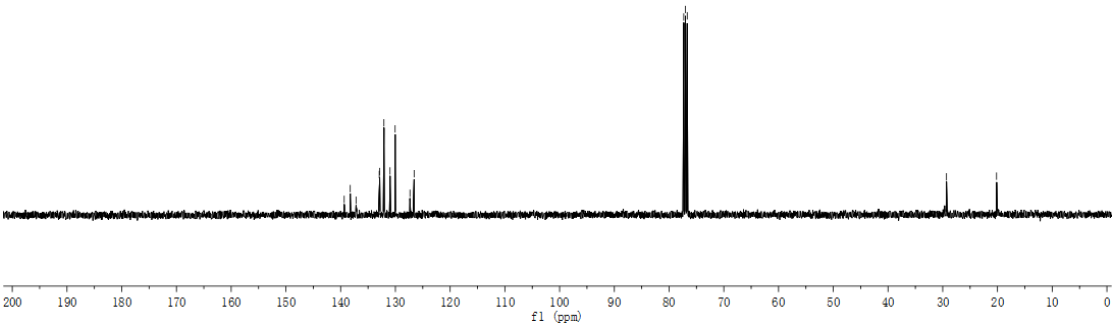




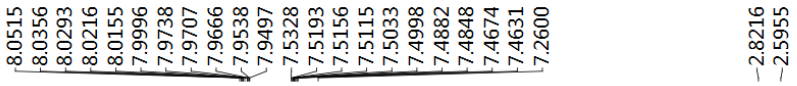


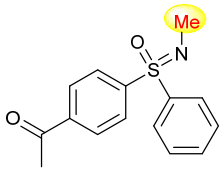


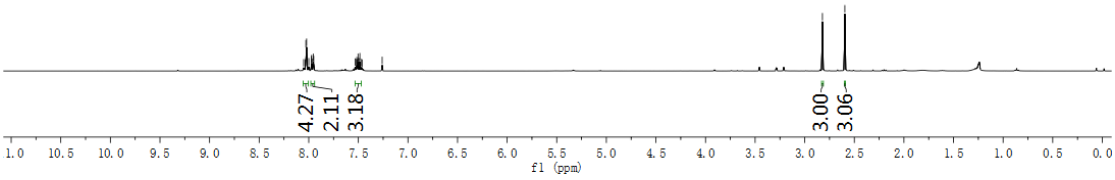


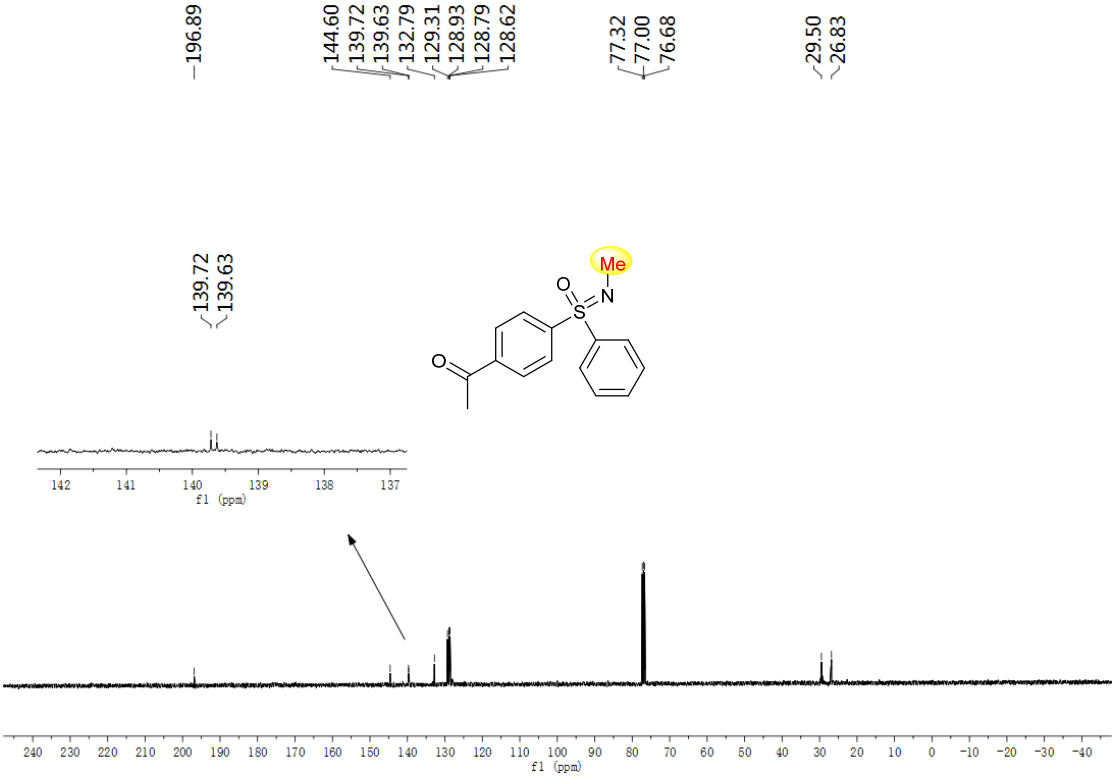


N-(Methyl)-4- acetyldiphenyl sulfoximine (3i)

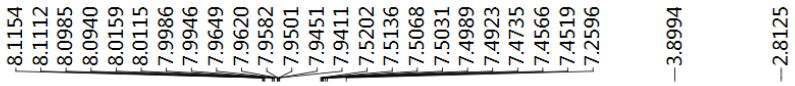


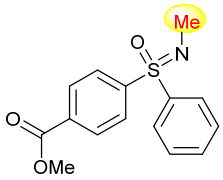


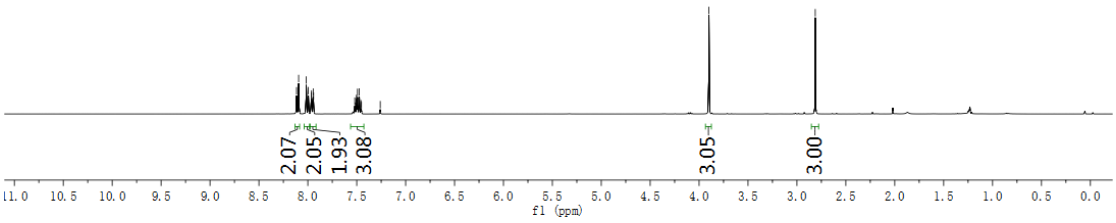


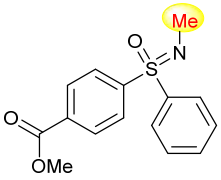


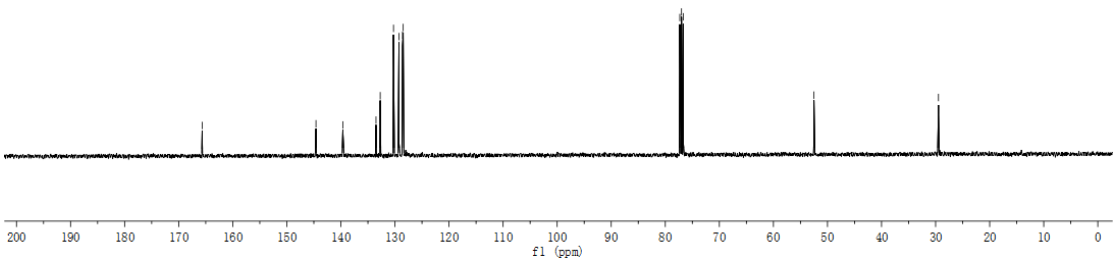
N-(Methyl)-4-methoxycarbonyl diphenyl sulfoximine (3j)



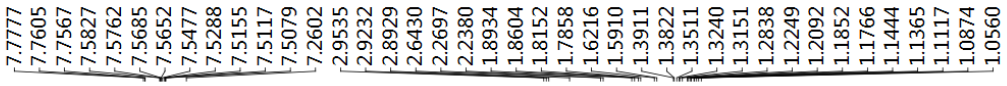


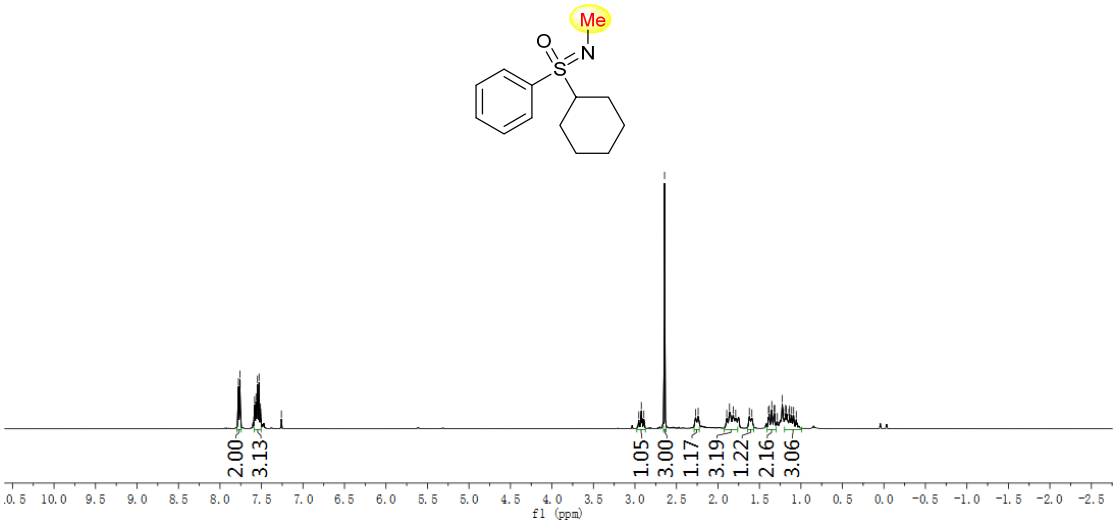


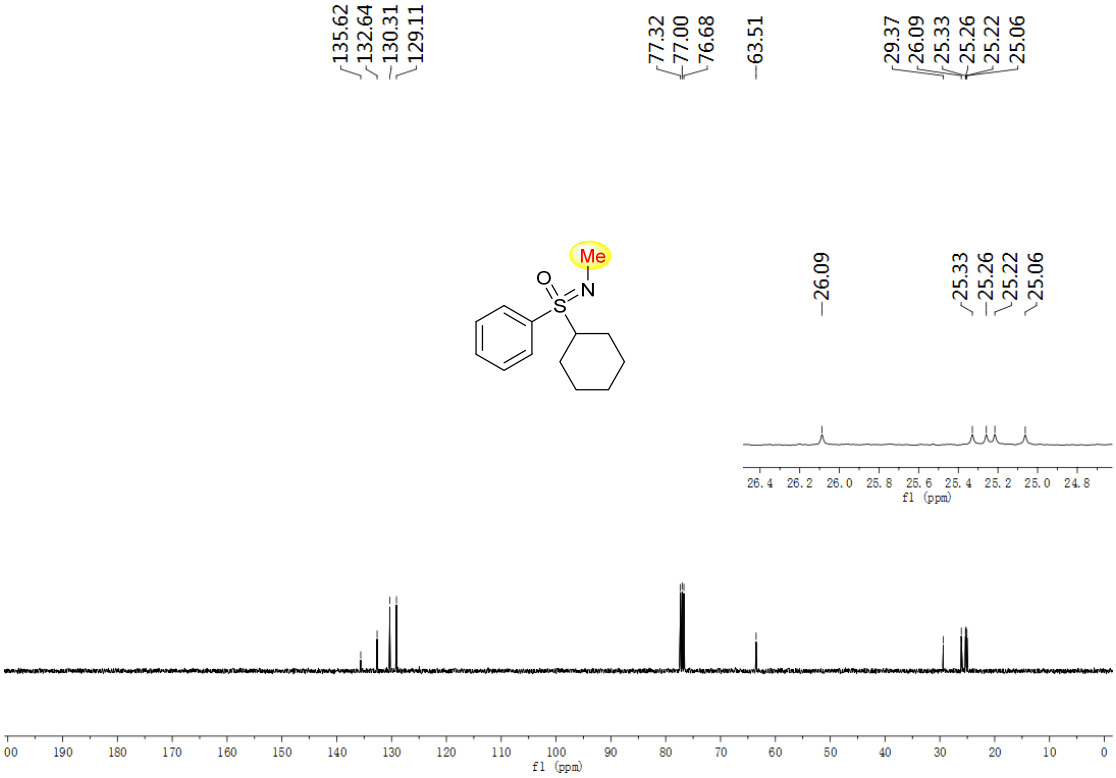




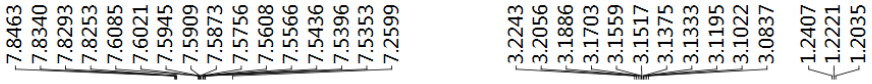
N-(Methyl) cyclohexyl phenyl sulfoximine (3k)

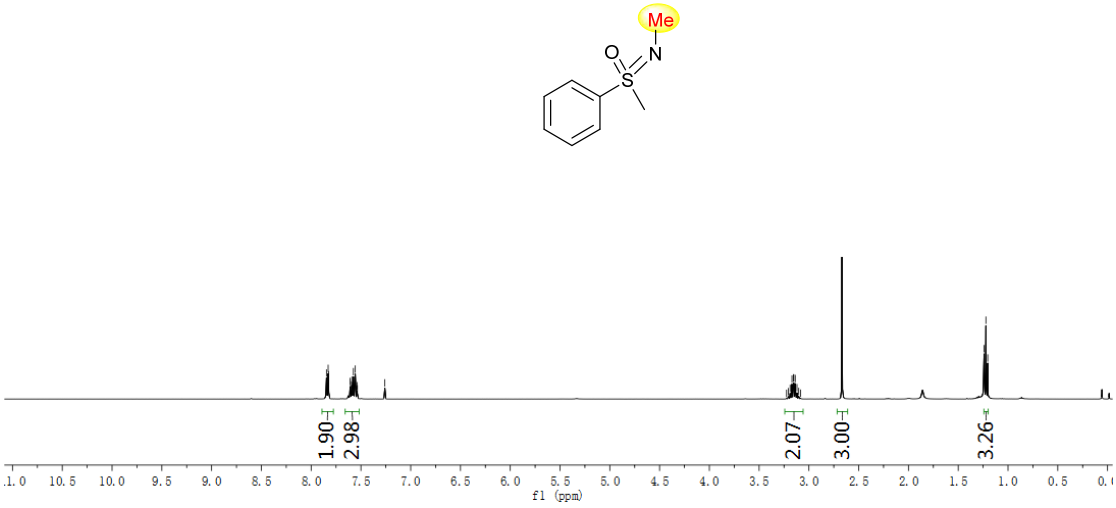


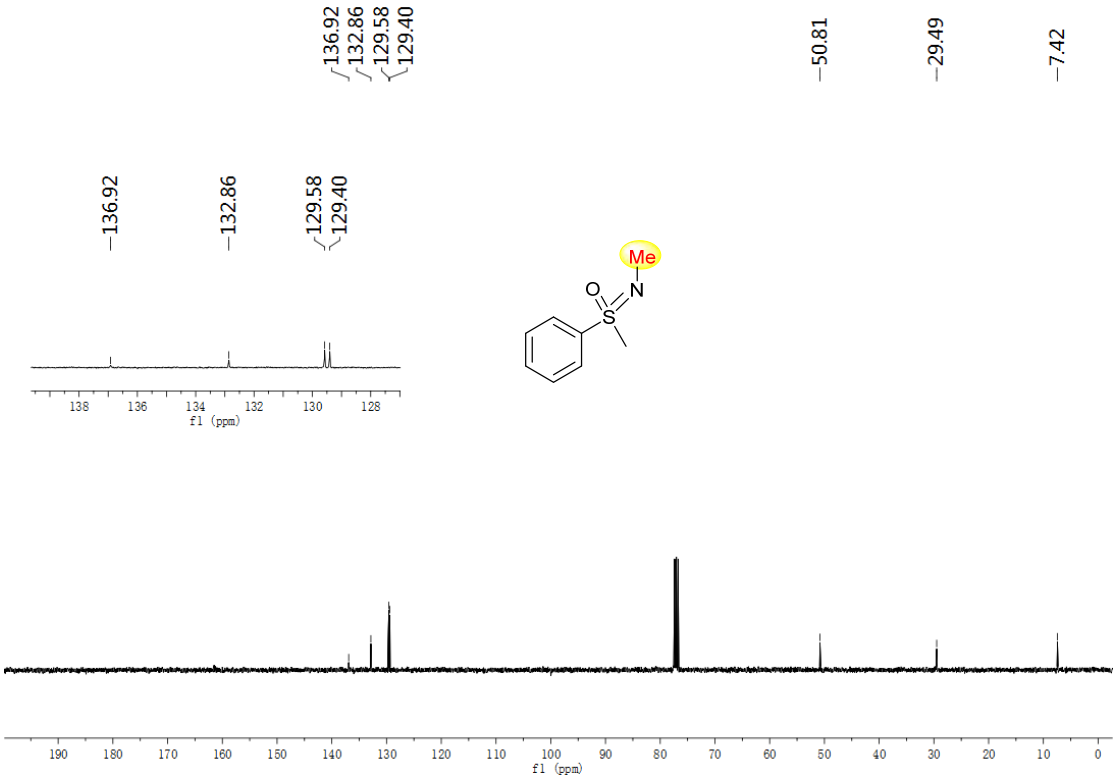




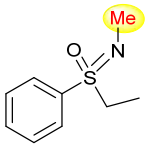
N-(Methyl) methyl phenyl sulfoximine (3l)

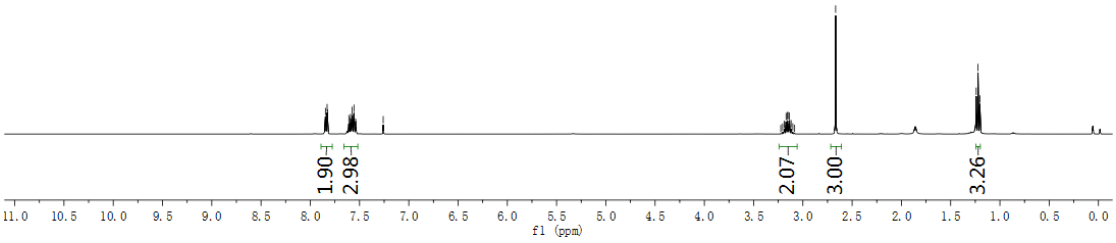


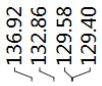


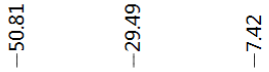


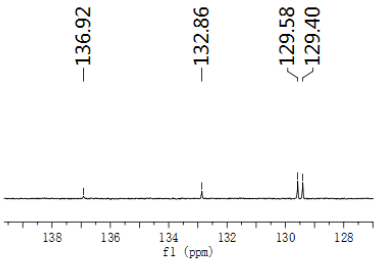
N-(Methyl) ethyl phenyl sulfoximine (3m)

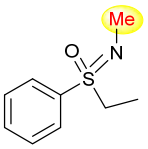


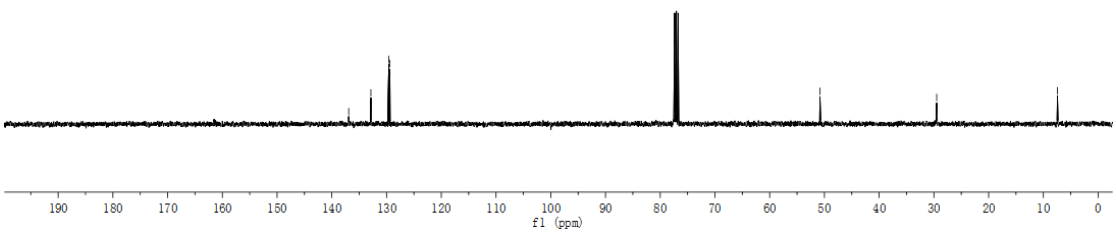




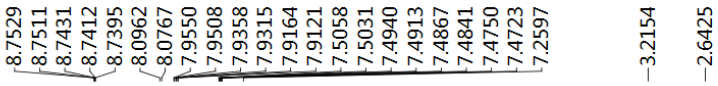


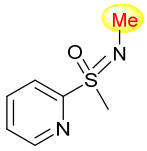


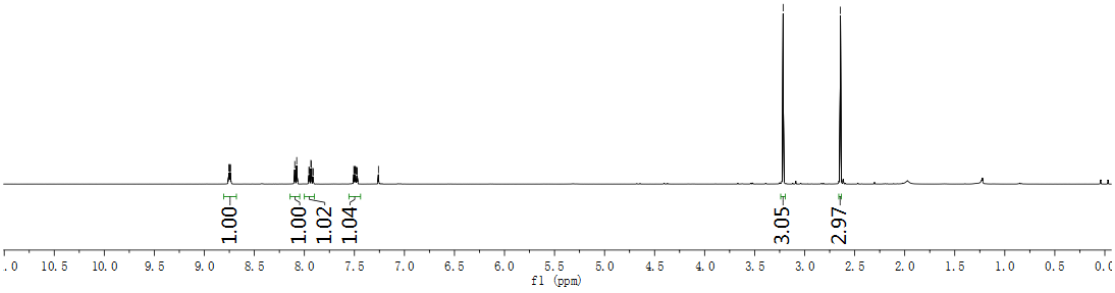


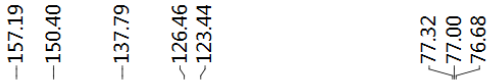


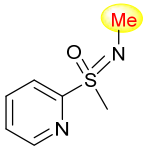
N-(Methyl) methyl pyridyl sulfoximine (3n)

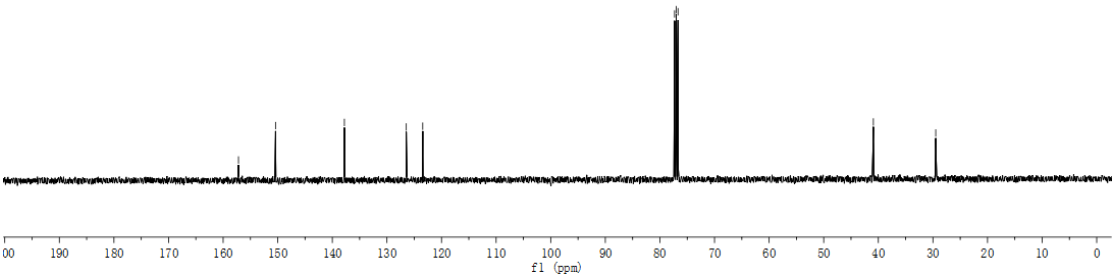




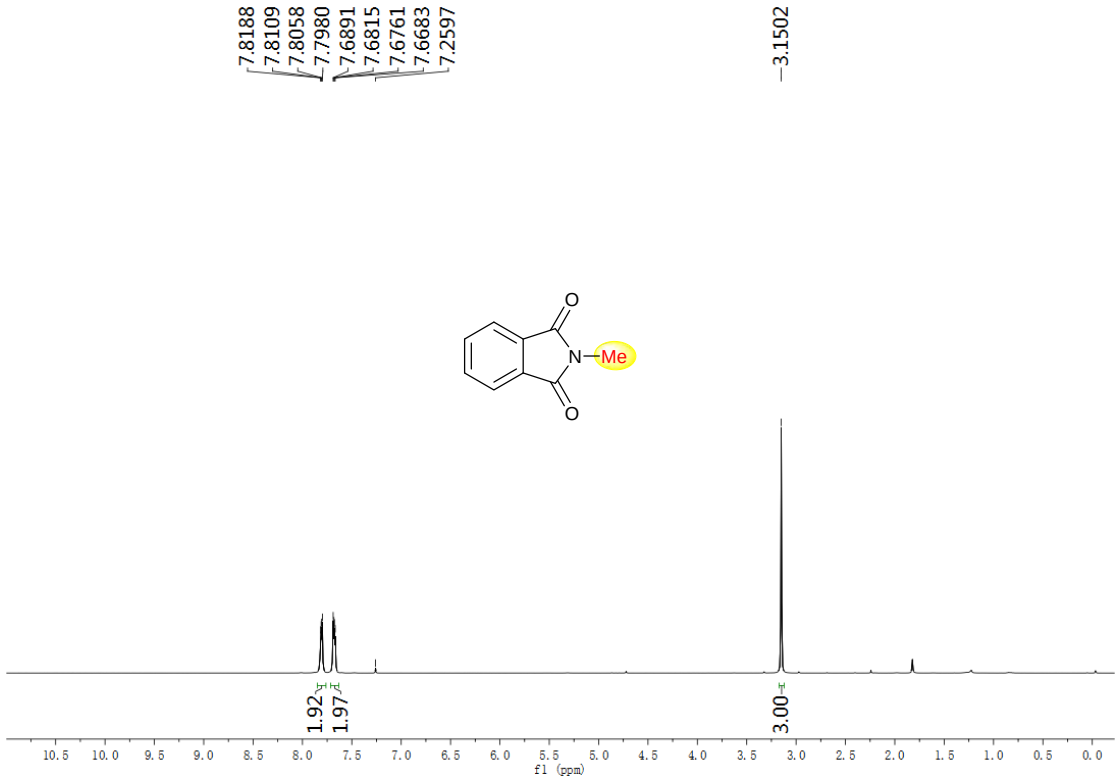


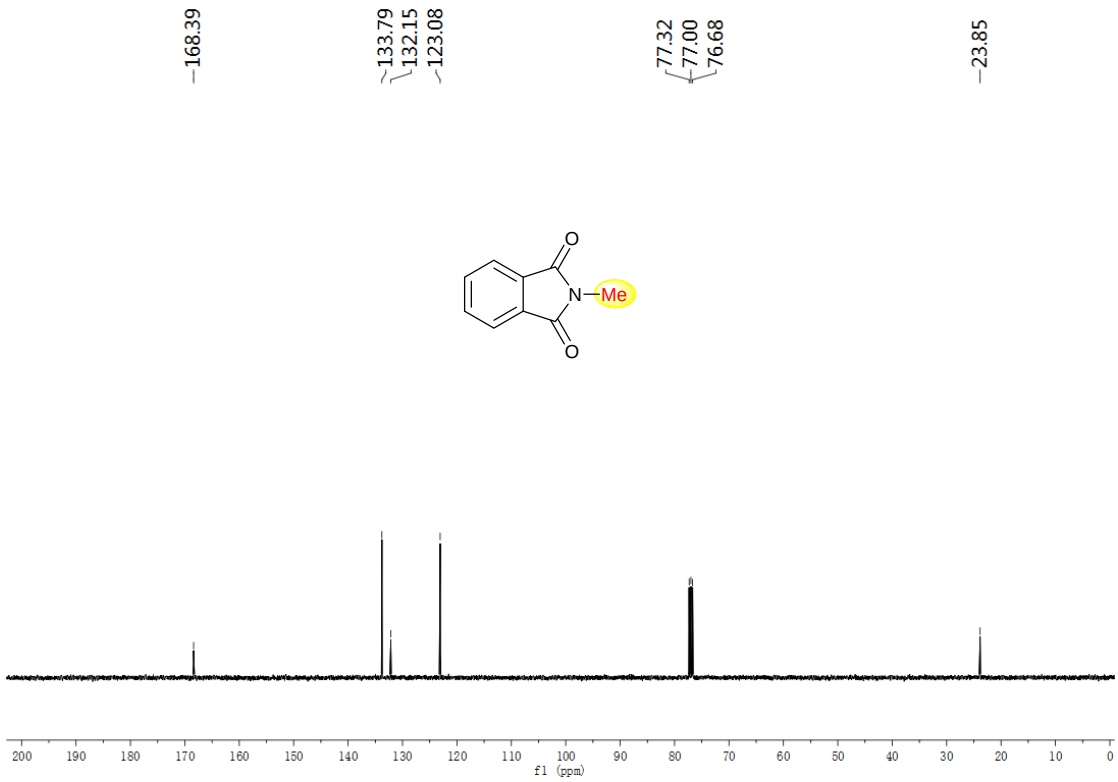




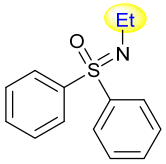


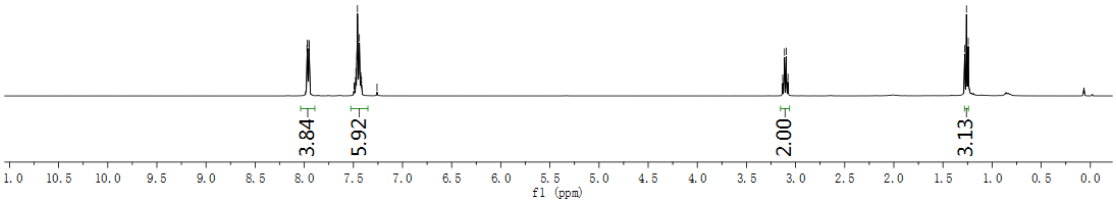
2-Methylisoindoline-1,3-dione (3o)

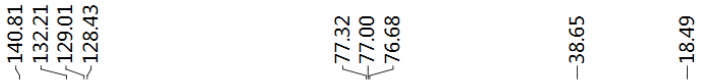


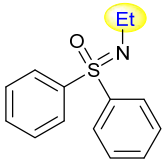


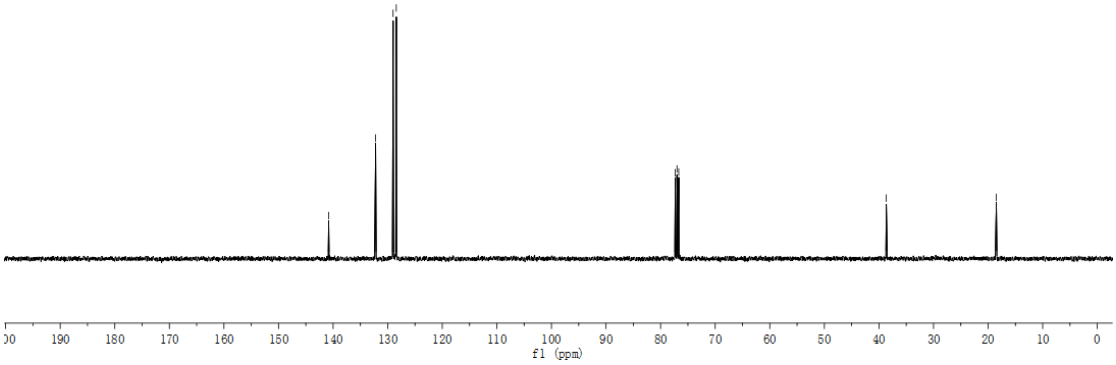
N-(Ethyl) diphenyl sulfoximine (5a)



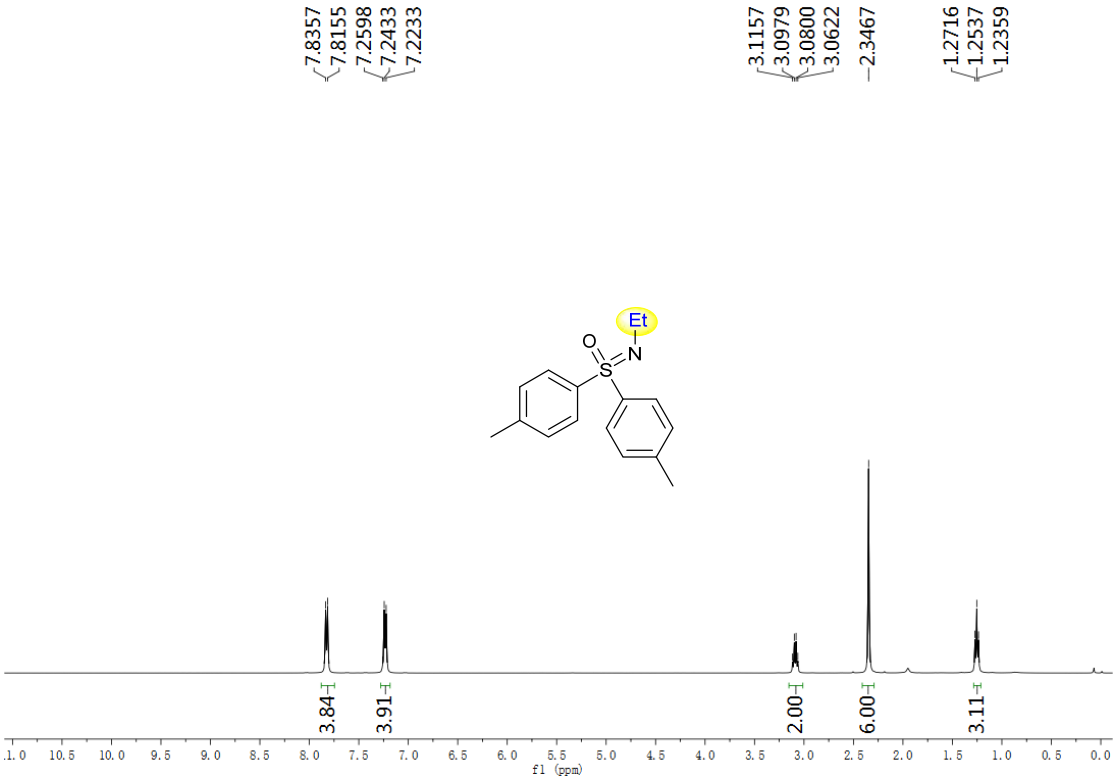


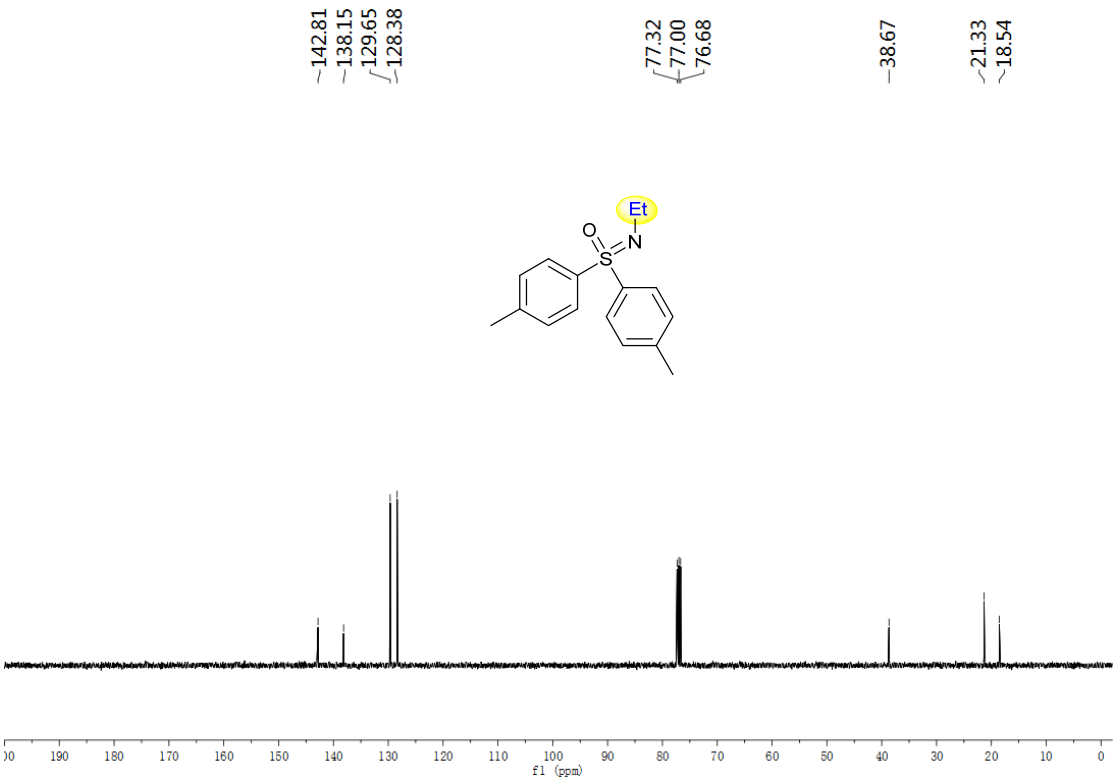




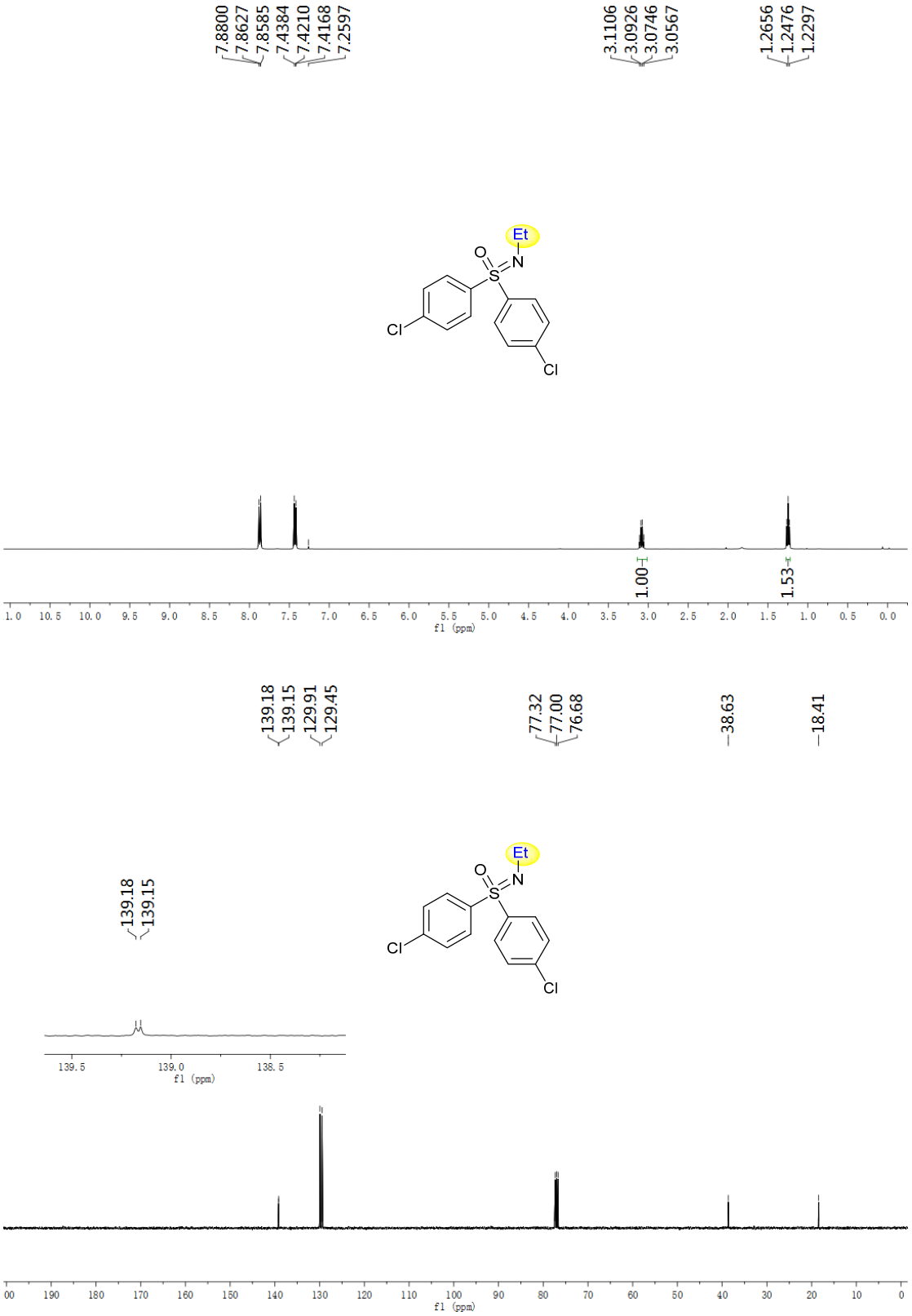


N-(Ethyl)-4,4’-dimethyldiphenyl sulfoximine (5b)

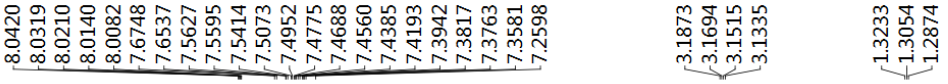


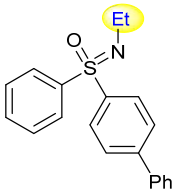


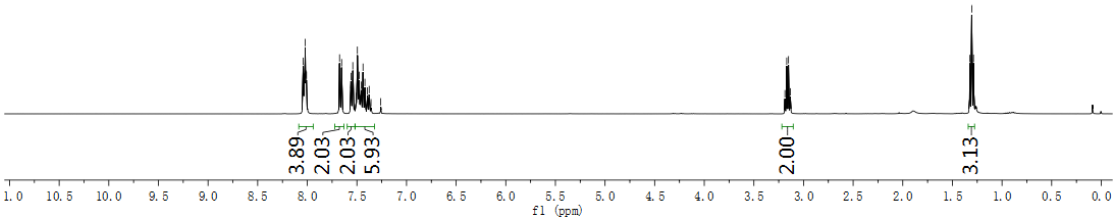
N-(Ethyl) 4,4’-dichlorodiphenyl sulfoximine (5c)

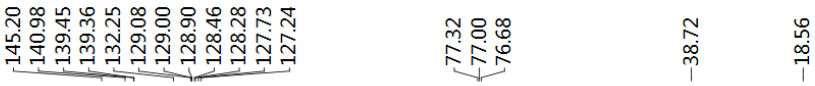


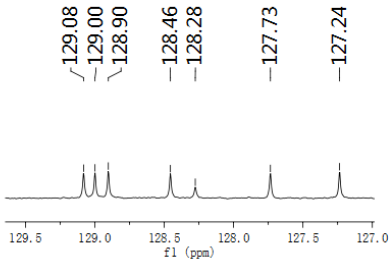
N-(Ethyl)-4-phenyldiphenyl sulfoximine (5d)

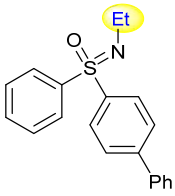


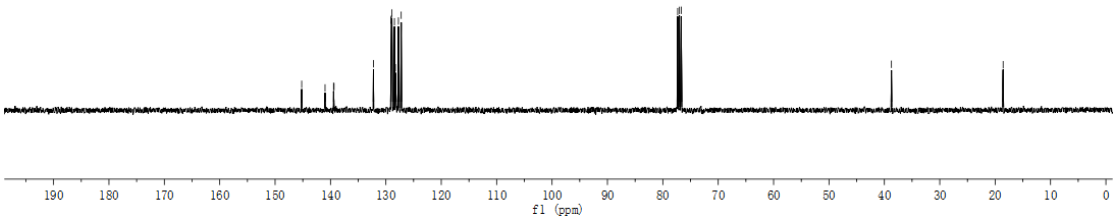




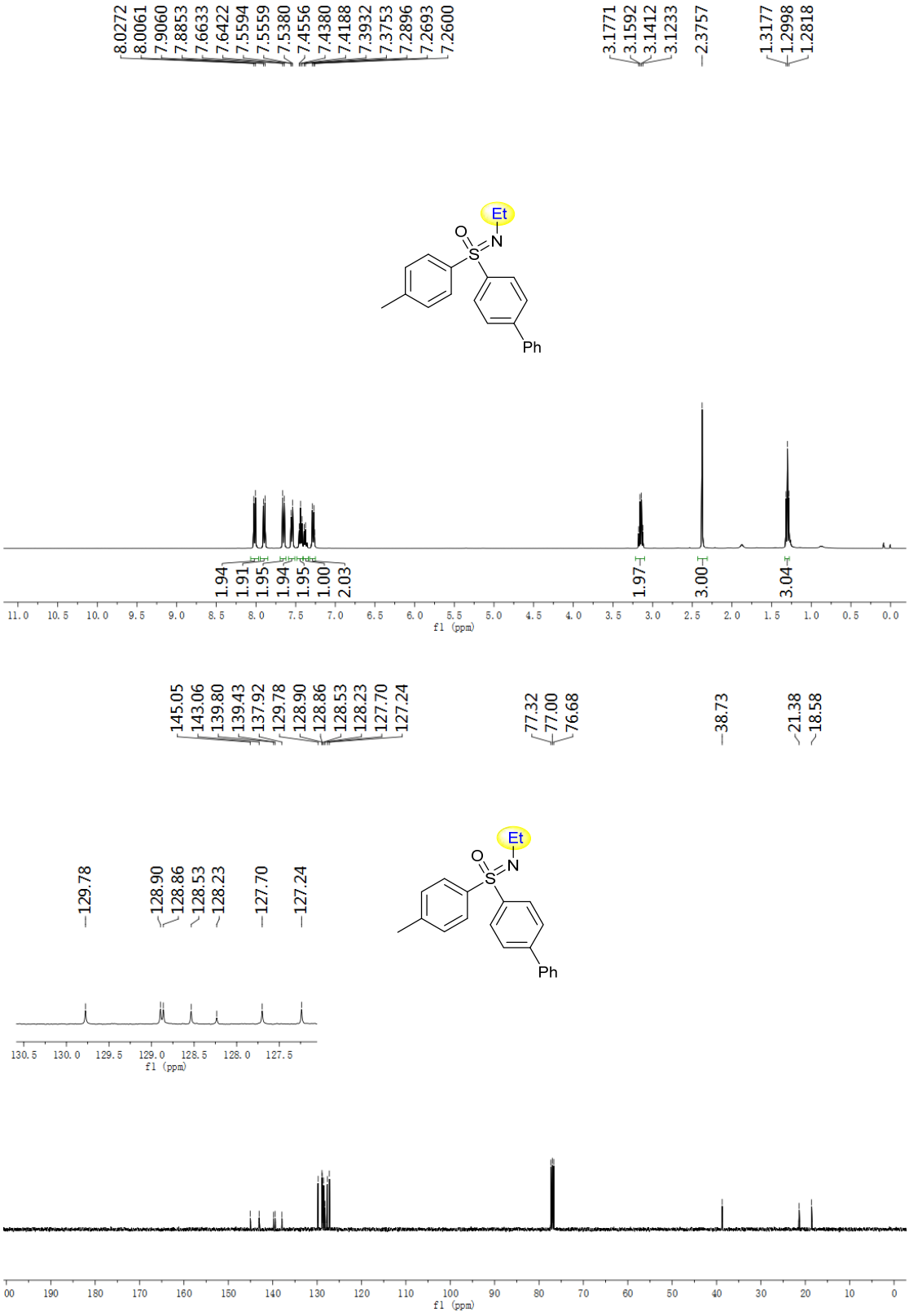








N-(Ethyl)-4-phenyl-4’-methylphenyl sulfoximine (5e)



N-(Methyl) methyl phenyl sulfoximine (5f)