^{1}H NMR of **4m** (500 MHz, CDCl$_3$)

^{13}C {^{1}H} NMR of **4m** (126 MHz, CDCl$_3$)

^{1}H NMR of **4n** (500 MHz, CDCl$_3$)

8.030
8.013
7.809
7.502
7.488
7.475
7.443
7.110
7.095
7.080
7.031
7.016
7.001
6.733
6.717

4.280

0.892
0.876
0.861
0.672
0.658
0.642
0.625
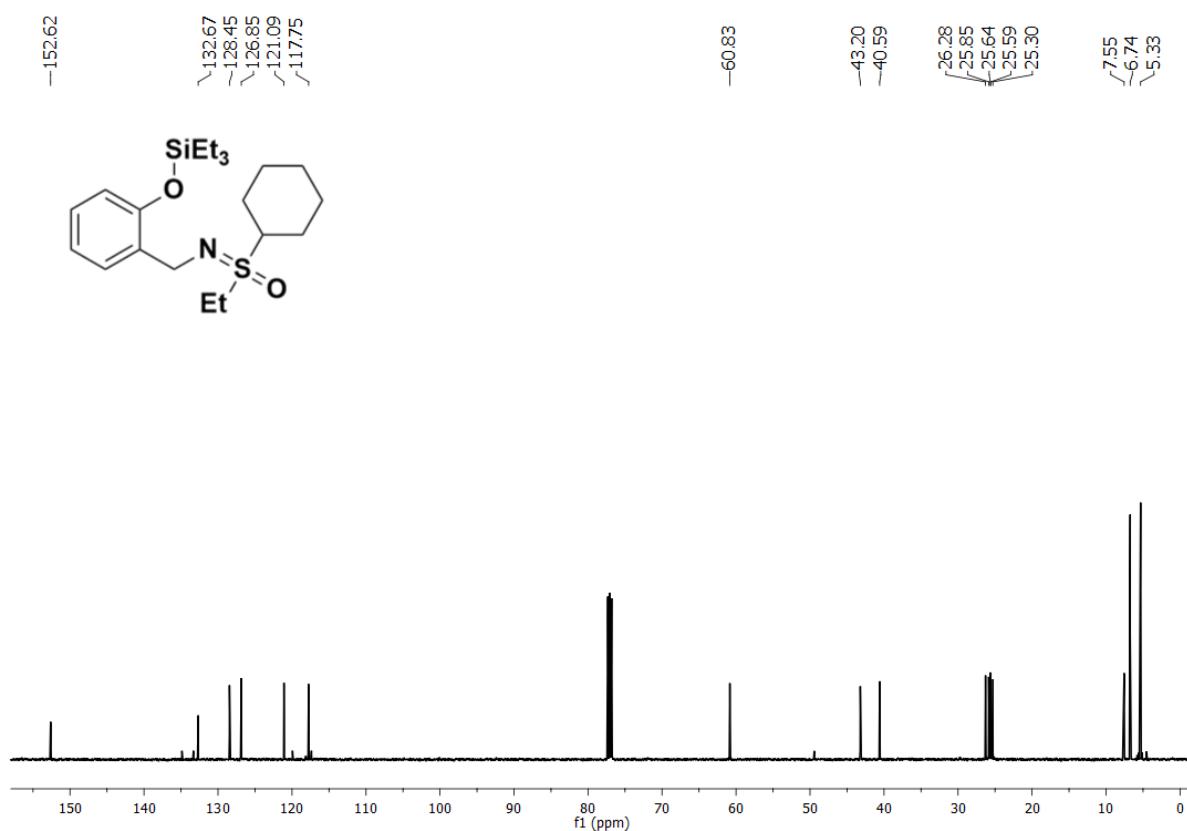
4.21
1.04
6.31
1.09
1.07
1.03
2.05
9.12
6.23
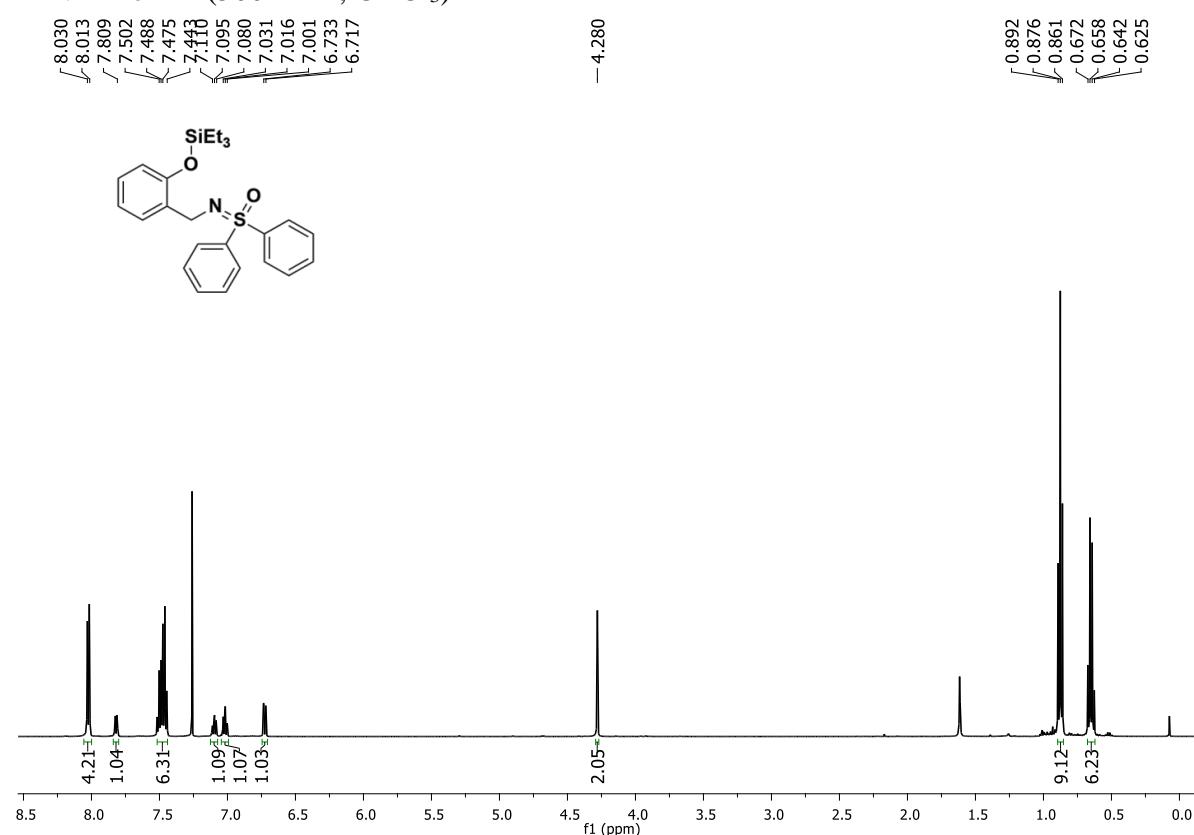
^{13}C {^{1}H} NMR of **4n** (126 MHz, CDCl$_3$)

152.80

140.95

132.46
132.30
129.23
128.77
128.38
127.05
121.28
117.95

42.12

6.75
5.36
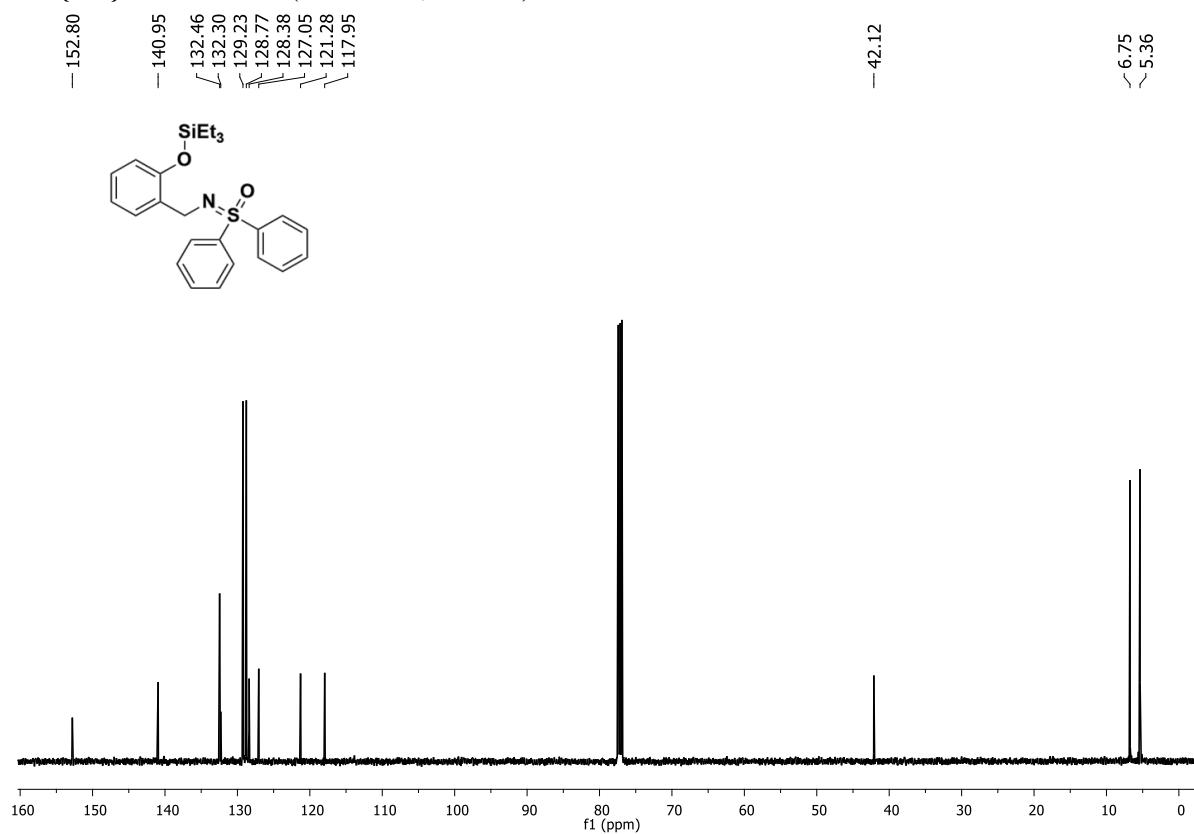
^{1}H NMR of **4o** (500 MHz, CDCl$_3$)
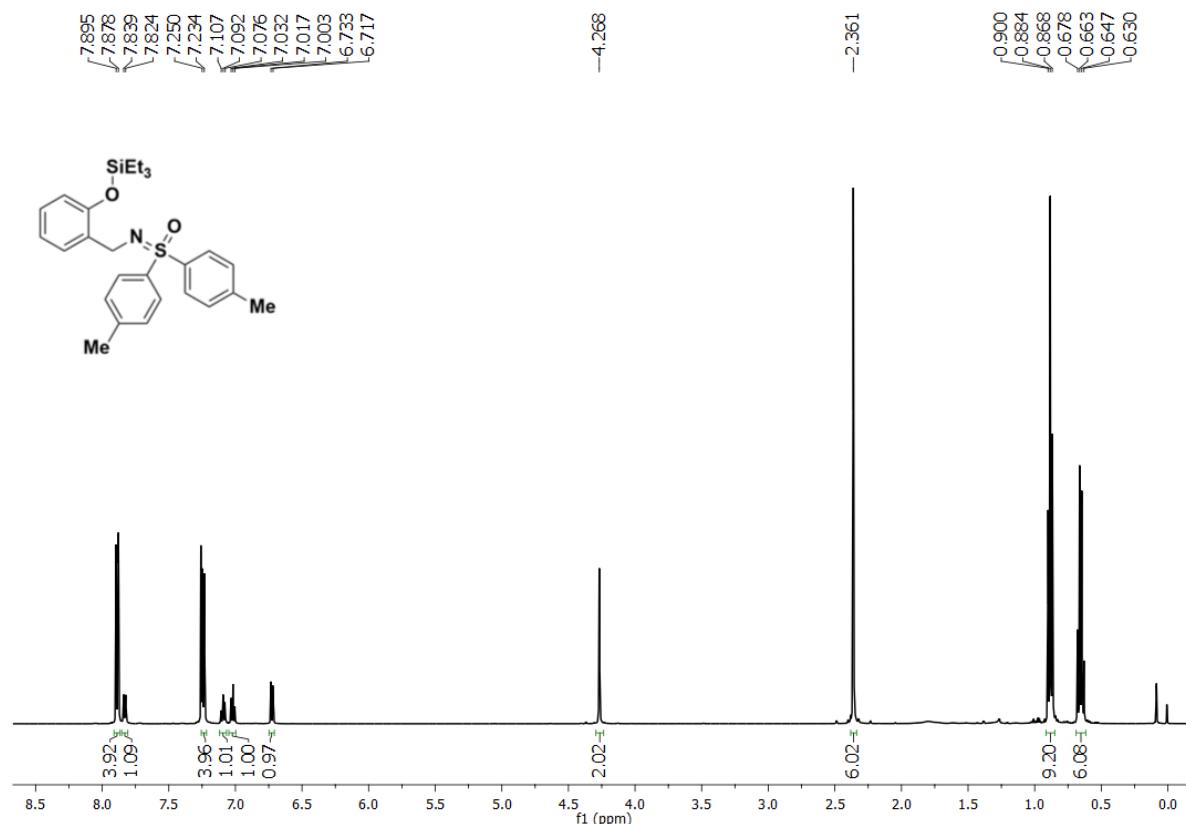
^{13}C {^{1}H} NMR of **4o** (126 MHz, CDCl$_3$)

¹H NMR of **4p** (500 MHz, CDCl₃)
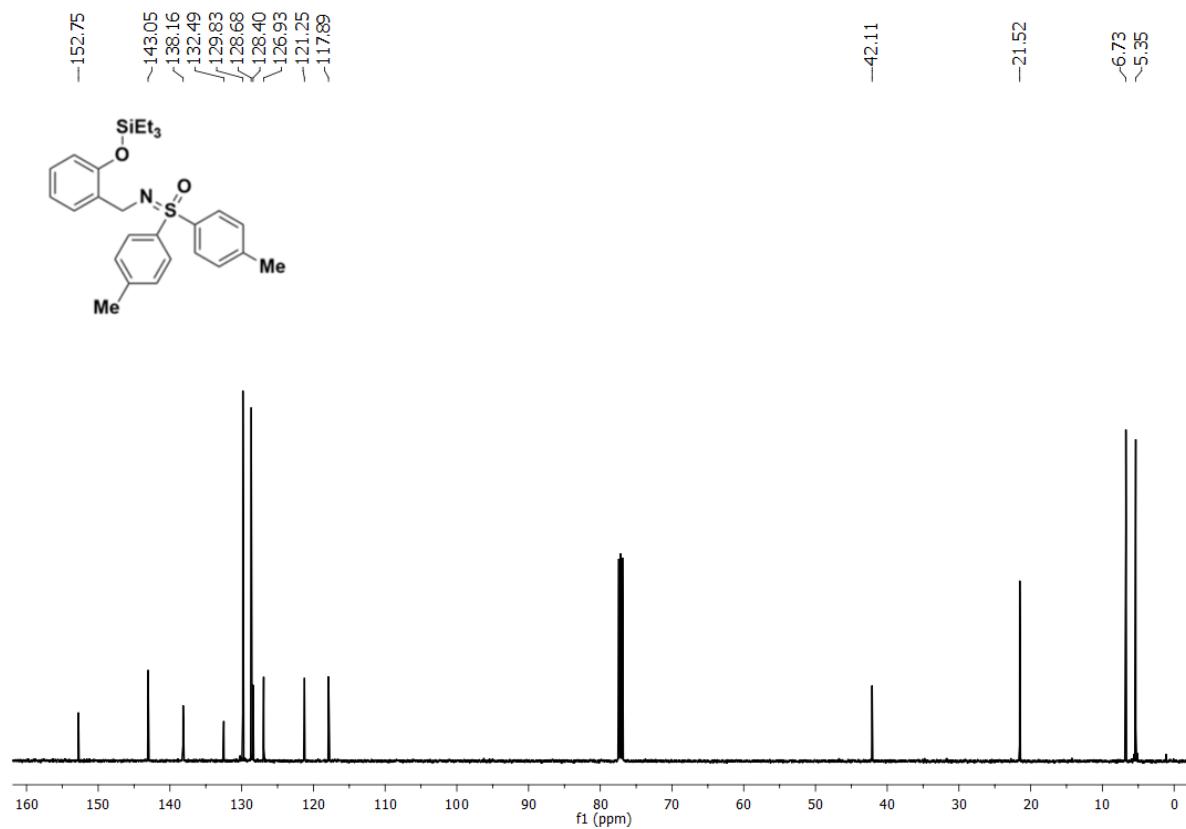
¹H NMR of **4p** (500 MHz, CDCl₃)
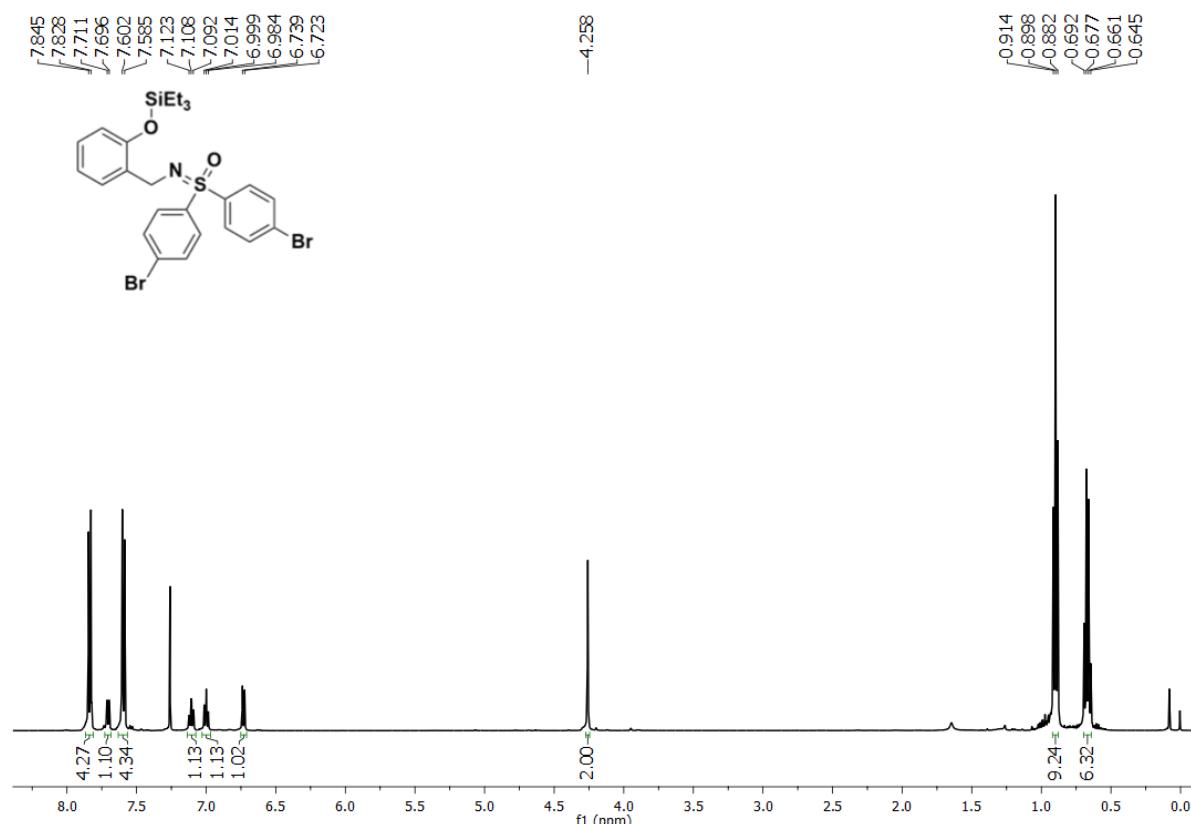
¹³C {¹H} NMR of **4p** (126 MHz, CDCl₃)
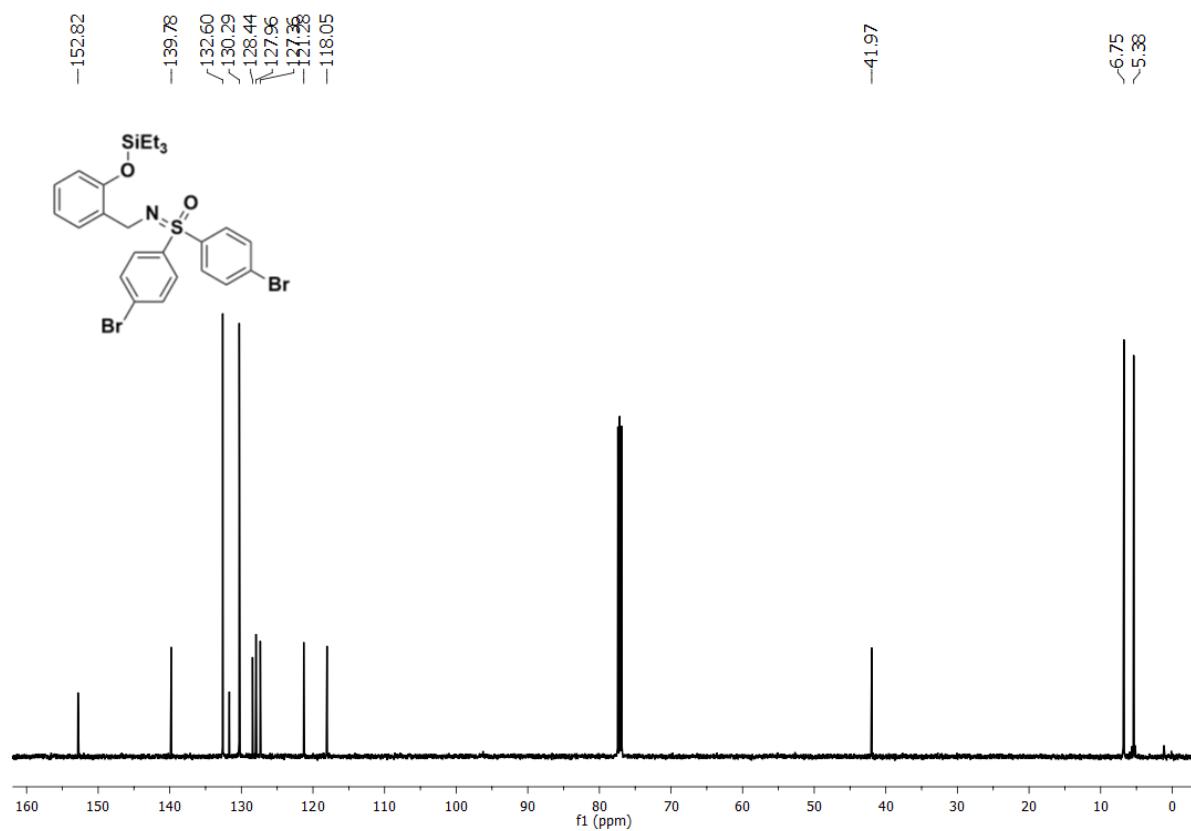
¹H NMR of **4q** (500 MHz, CDCl₃)
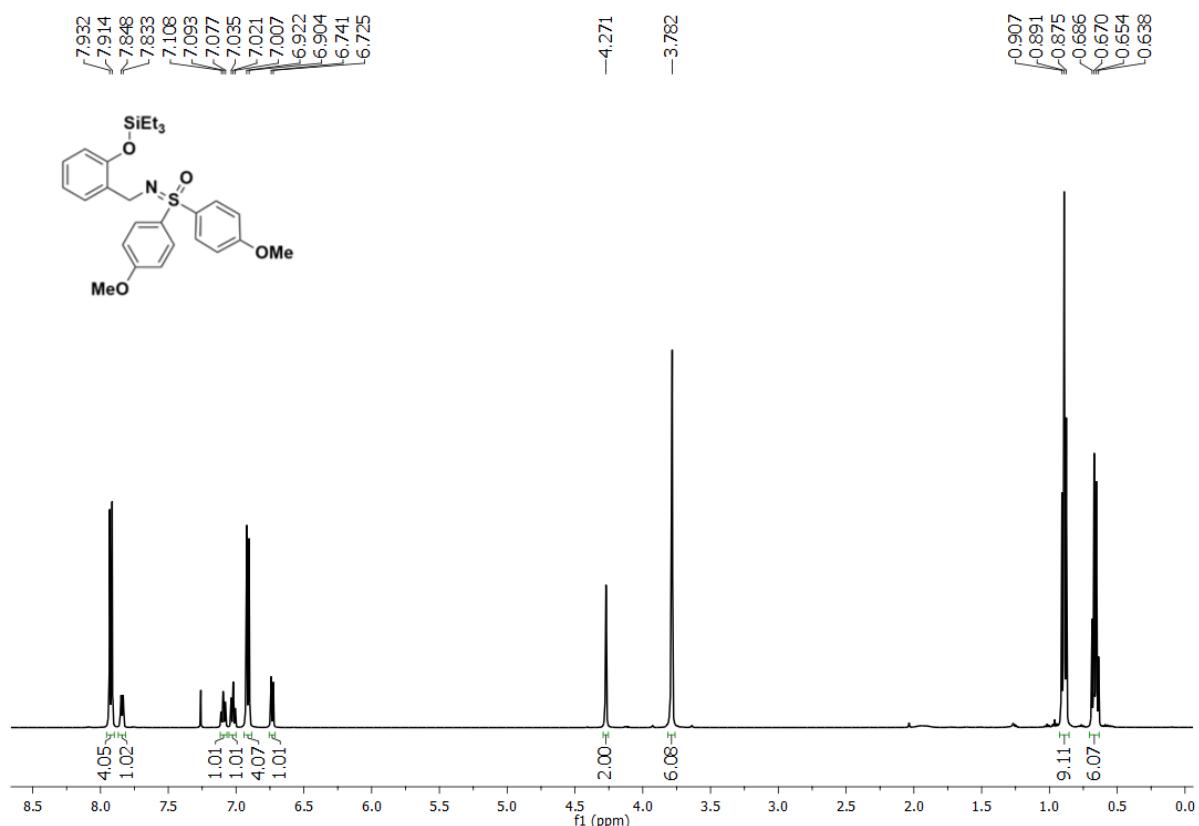
¹³C {¹H} NMR of **4q** (126 MHz, CDCl₃)

^{1}H NMR of **4r** (500 MHz, CDCl$_3$)

8.029
8.012
7.842
7.827
7.502
7.473
7.458
7.441
7.092
7.077
7.061
7.009
6.995
6.980
6.736
6.720

4.317

1.213
1.198
1.183
1.167
1.153
0.995
0.981

Si(*i*-Pr)$_3$

4.07
1.03
6.30
1.00
1.07
1.10
2.00
3.16
18.98

8.5 8.0 7.5 7.0 6.5 6.0 5.5 5.0 4.5 4.0 3.5 3.0 2.5 2.0 1.5 1.0 0.5 0.0
f1 (ppm)
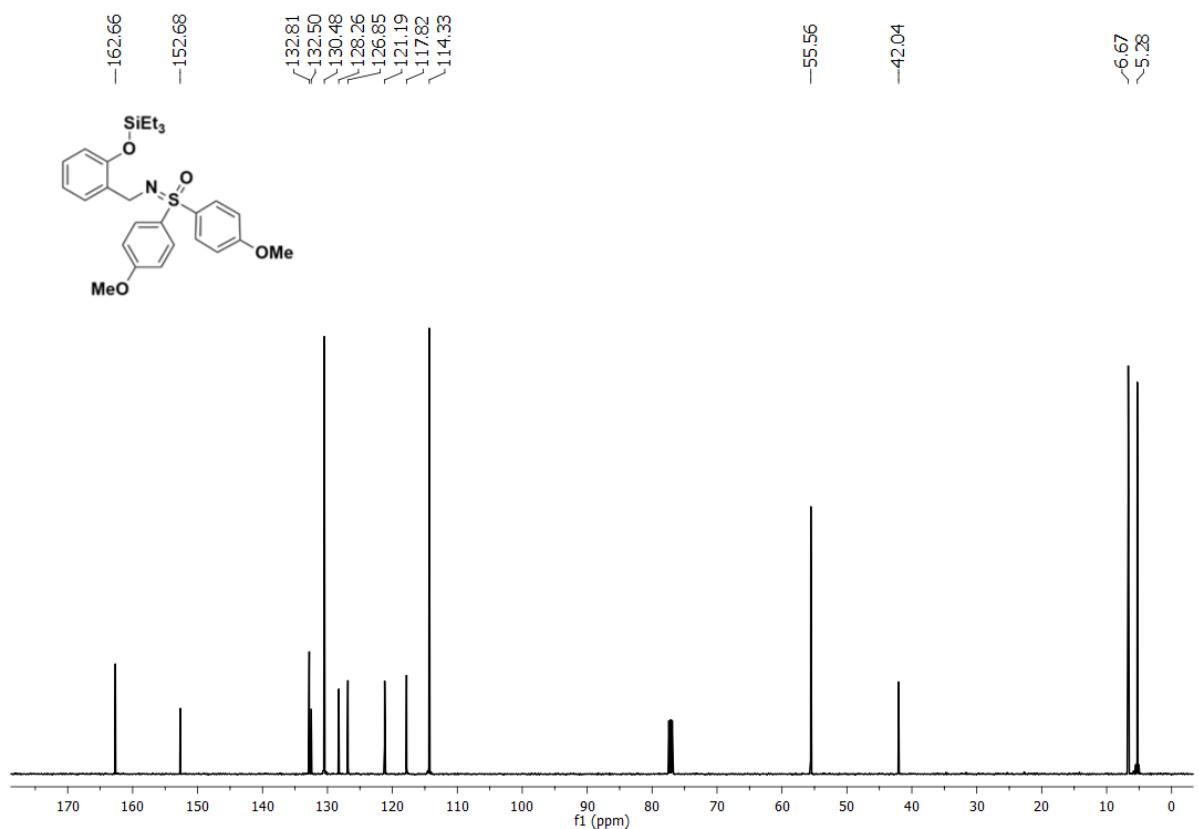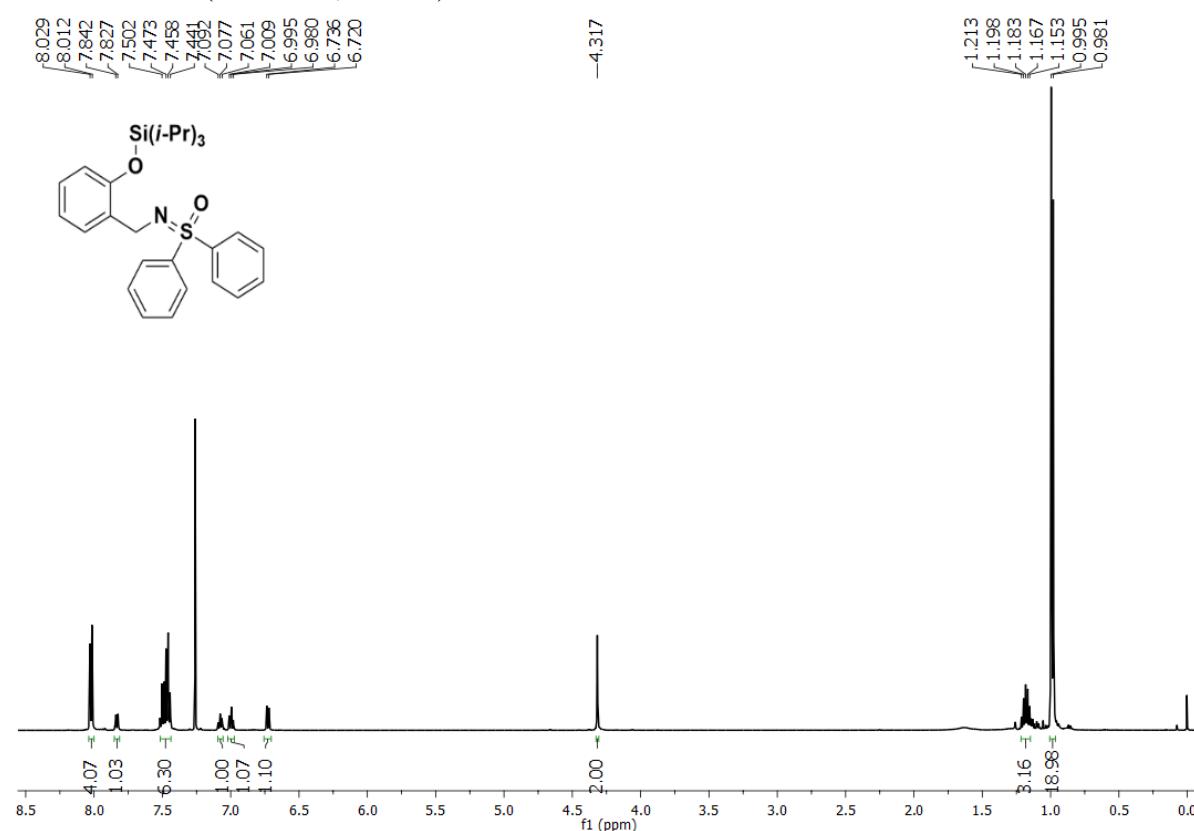
^{13}C {^{1}H} NMR of **4r** (126 MHz, CDCl$_3$)

153.02
140.86
132.47
129.23
128.81
128.25
126.95
126.85
117.53

42.51

18.12
13.08

Si(*i*-Pr)$_3$

160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0
f1 (ppm)

¹H NMR of **4s** (500 MHz, CDCl₃)

7.885
7.868
7.841
7.826
7.250
7.233
7.081
7.067
7.051
7.003
6.988
6.973
6.720
6.705

4.298

2.367

1.188
1.173
1.158
1.141
1.126
0.990
0.975

4.02
1.14
4.17
1.20
1.09
1.03
2.03
6.28
3.11
18.17

8.0 7.5 7.0 6.5 6.0 5.5 5.0 4.5 4.0 3.5 3.0 2.5 2.0 1.5 1.0 0.5 0.0
f1 (ppm)
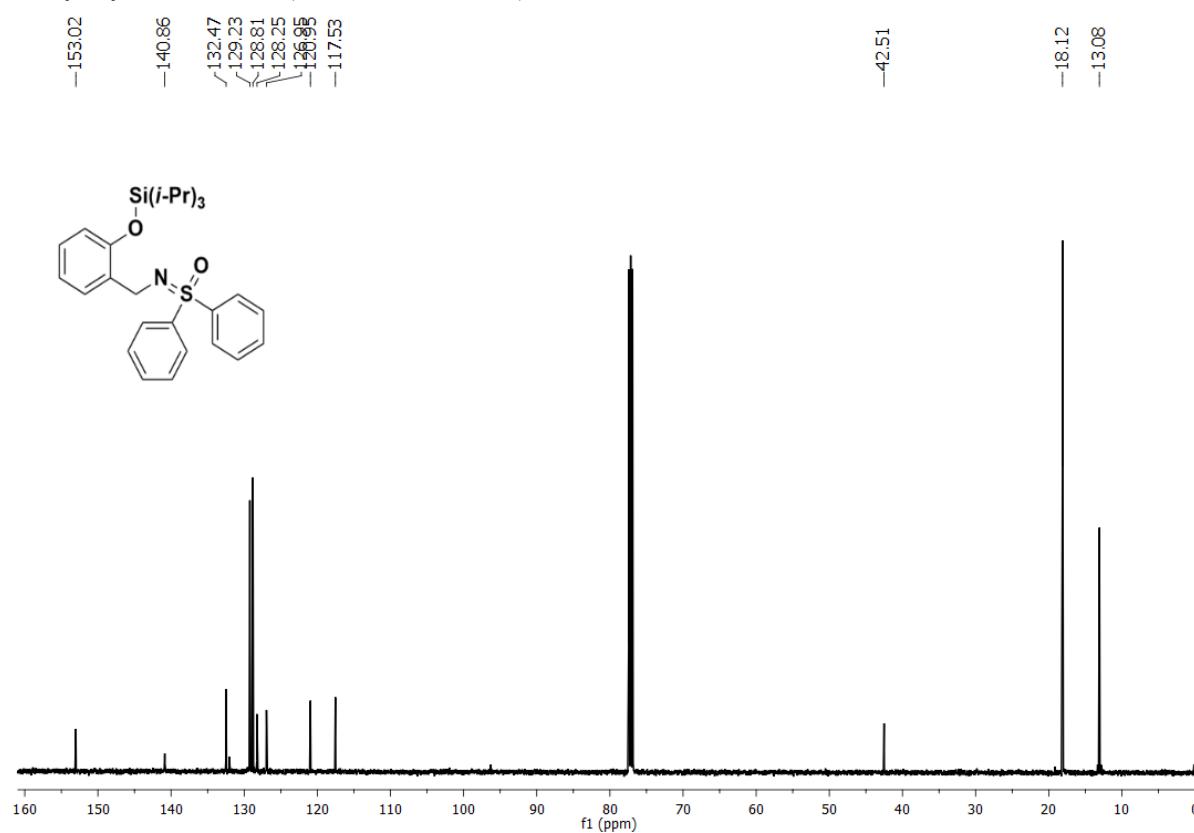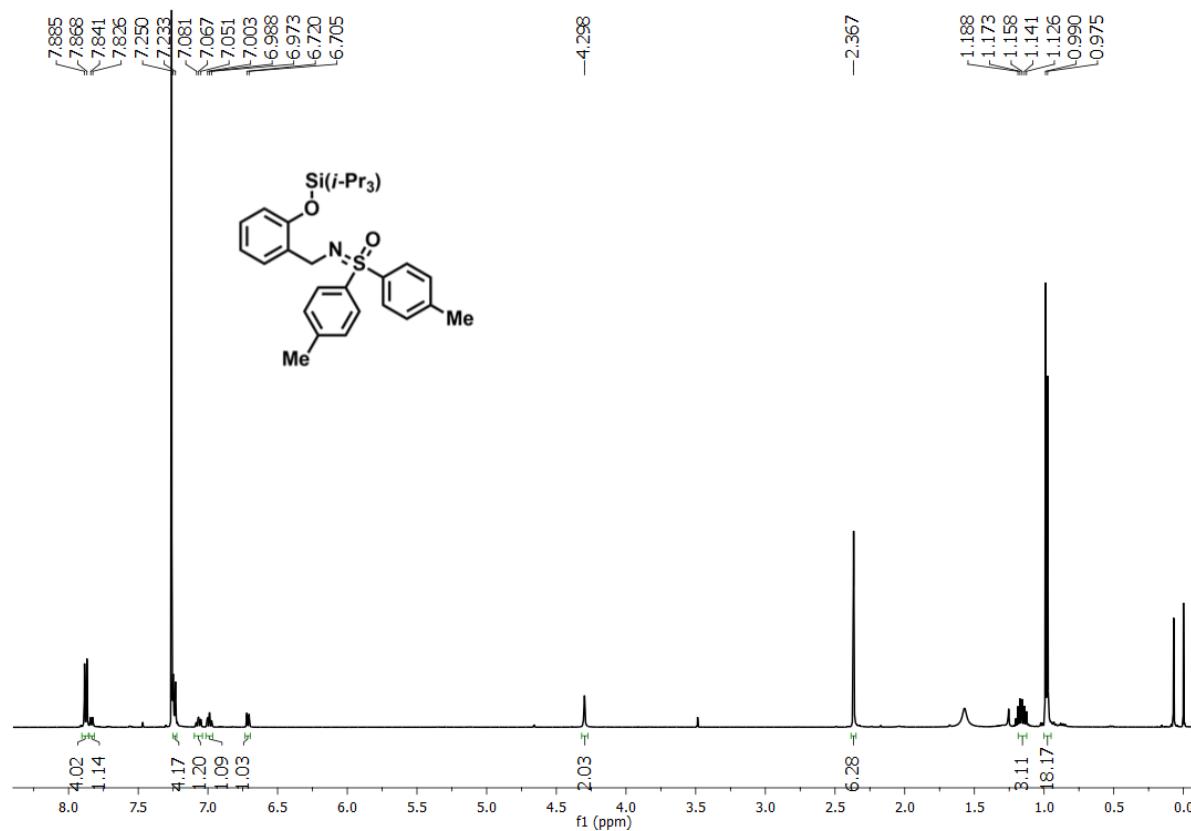
¹³C {¹H} NMR of **4s** (126 MHz, CDCl₃)

152.98

143.23
138.92
132.18
129.90
128.77
128.38
126.92
120.96
117.50

41.83

21.58
18.12
13.09

170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0
f1 (ppm)
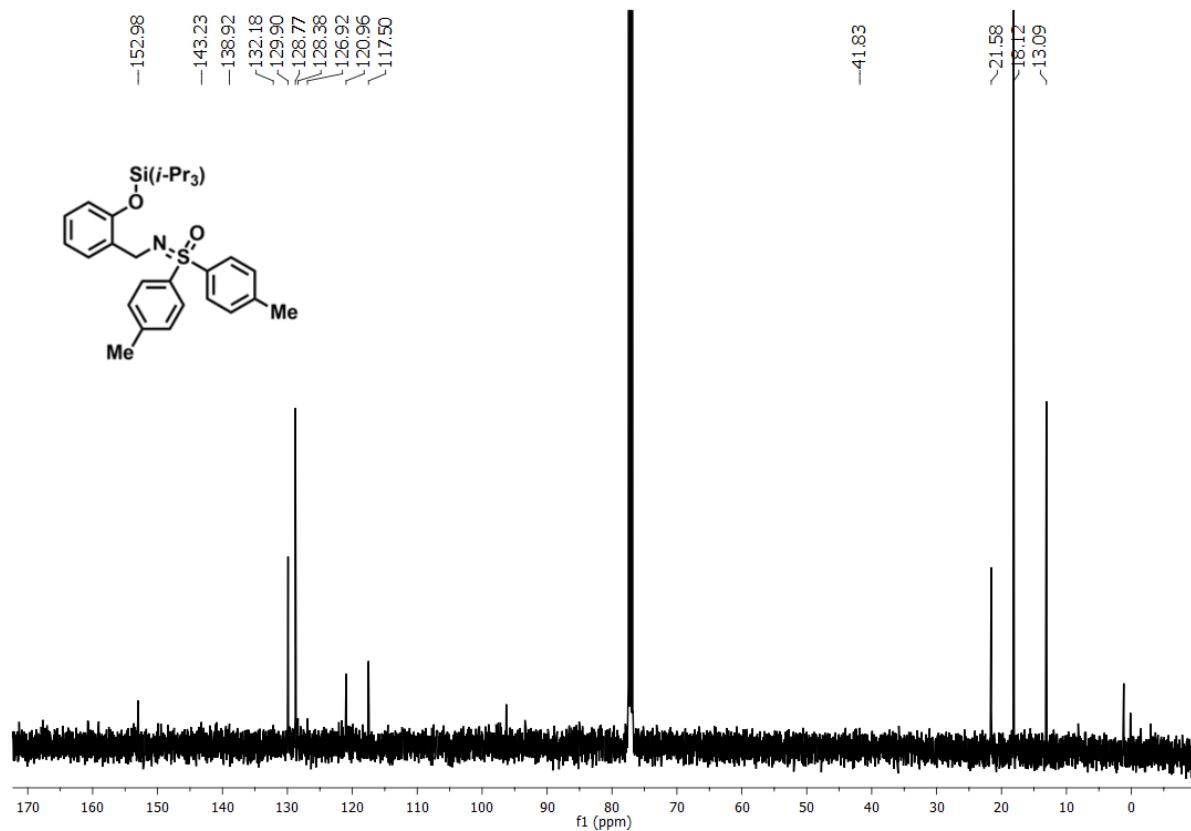
^{1}H NMR of **4t** (500 MHz, CDCl$_3$)
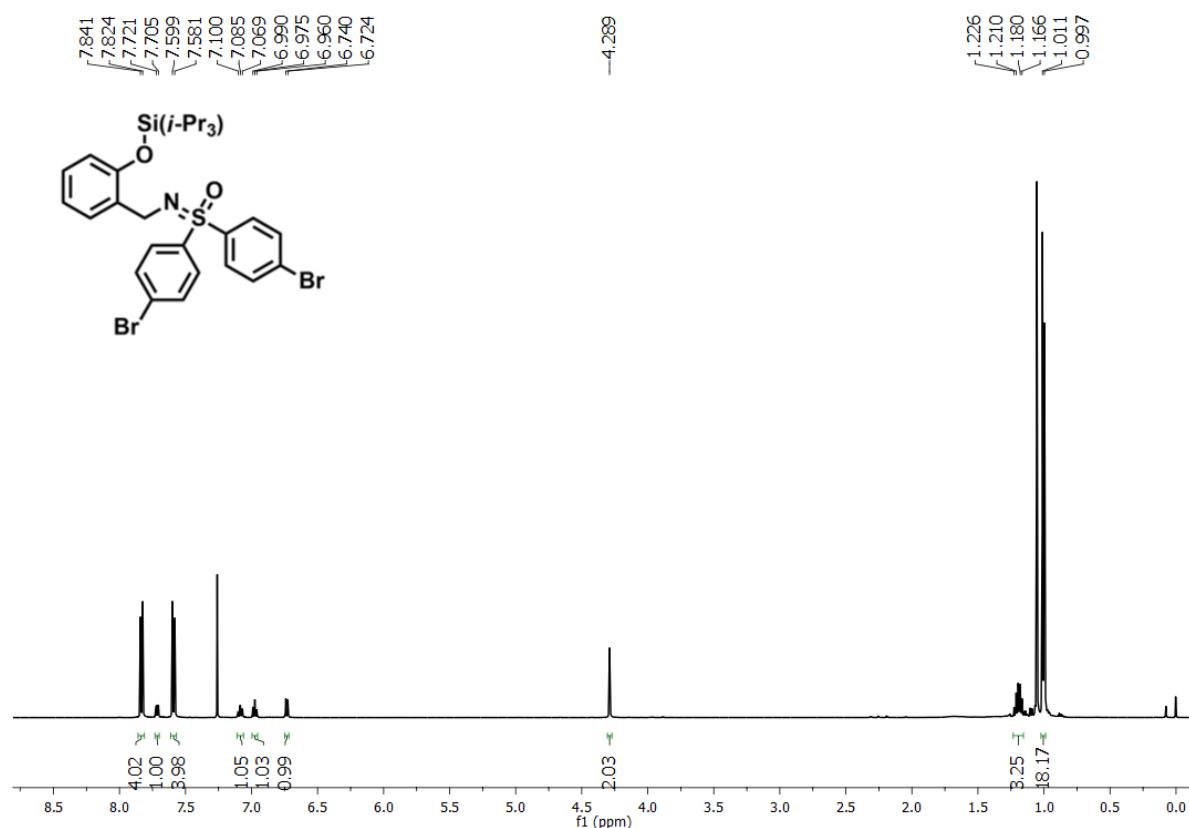
^{13}C {^{1}H} NMR of **4t** (126 MHz, CDCl$_3$)

^{1}H NMR of **5a** (500 MHz, CDCl$_3$)

7.905 7.890 7.617 7.603 7.588 7.560 7.545 7.530 7.394 7.379 7.307 7.292 7.278 7.212 7.198 7.183

4.268 4.239 4.053 4.024

3.319 3.290 3.261 3.252 3.223 3.194

1.276 1.261 1.246
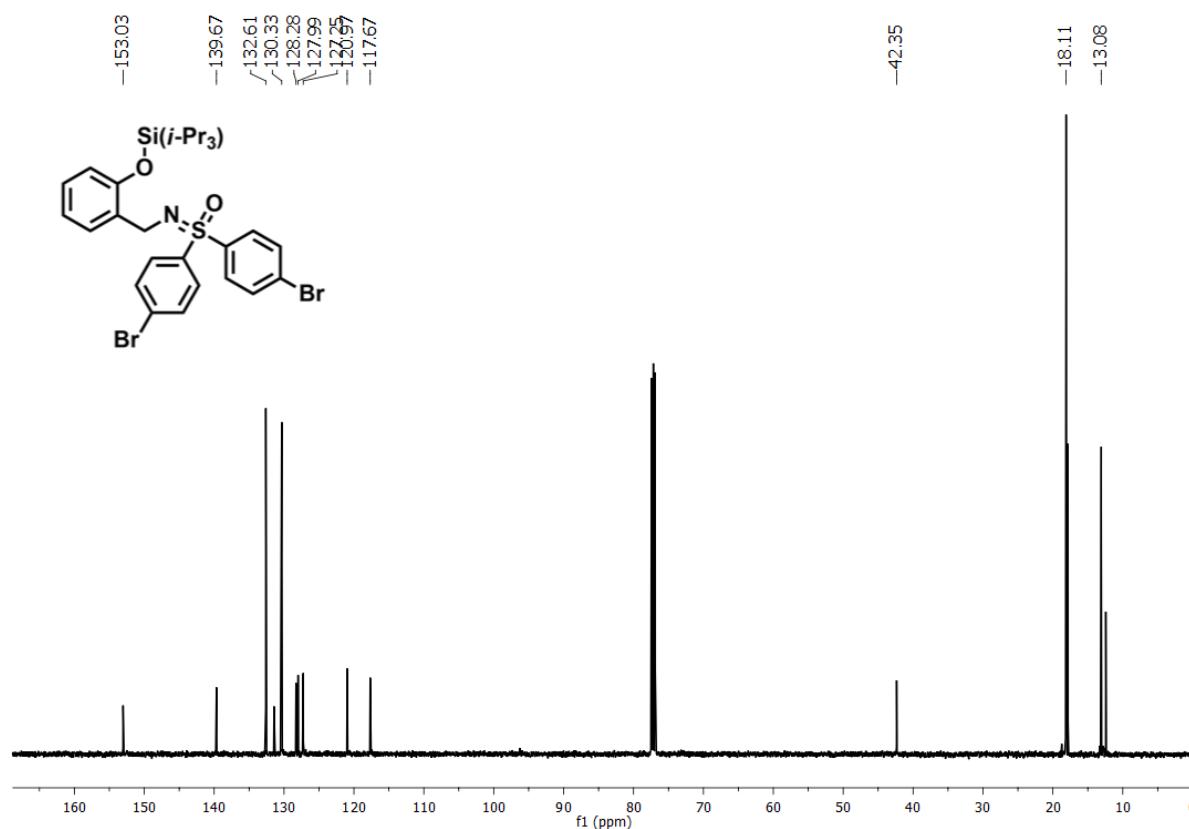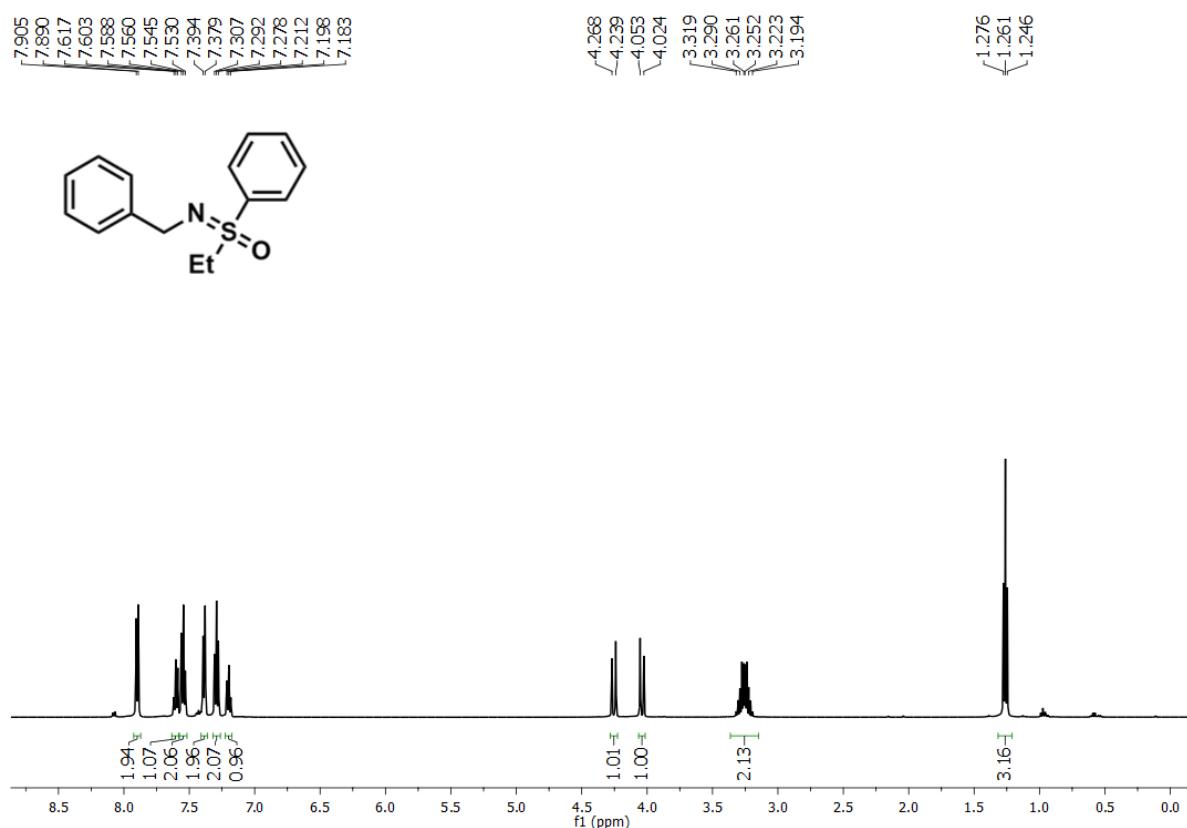
^{13}C {^{1}H} NMR of **5a** (126 MHz, CDCl$_3$)

141.51 137.59 133.01 129.59 129.46 128.31 127.69 126.58

51.01 47.22

7.55

^{1}H NMR of **5b** (500 MHz, CDCl$_3$)

7.734
7.717
7.268
7.264
7.255
7.247
7.203
7.188
7.172
7.112
7.097
7.082

4.107
4.078
3.892
3.863

3.034

2.346

2.00
4.00
2.17
1.01
1.00
1.00
3.07
2.95

8.5 8.0 7.5 7.0 6.5 6.0 5.5 5.0 4.5 4.0 3.5 3.0 2.5 2.0 1.5 1.0 0.5 0.0
f1 (ppm)
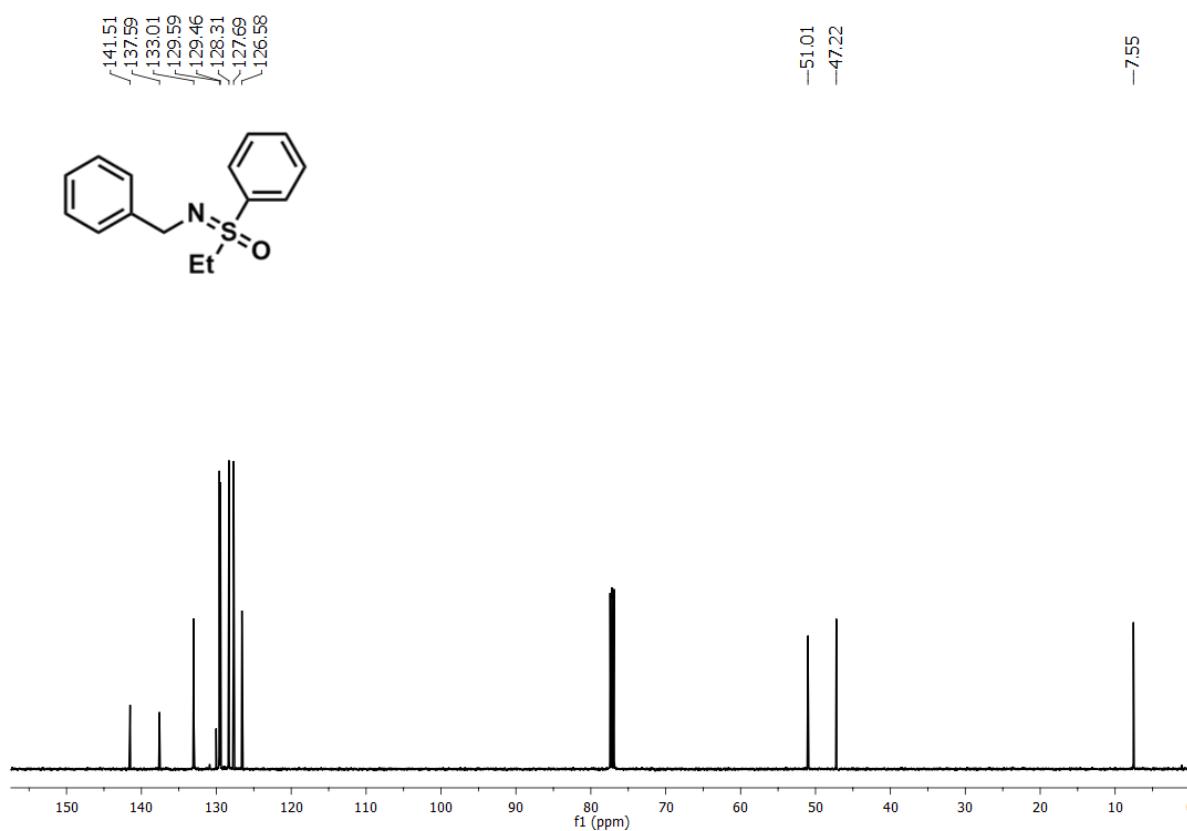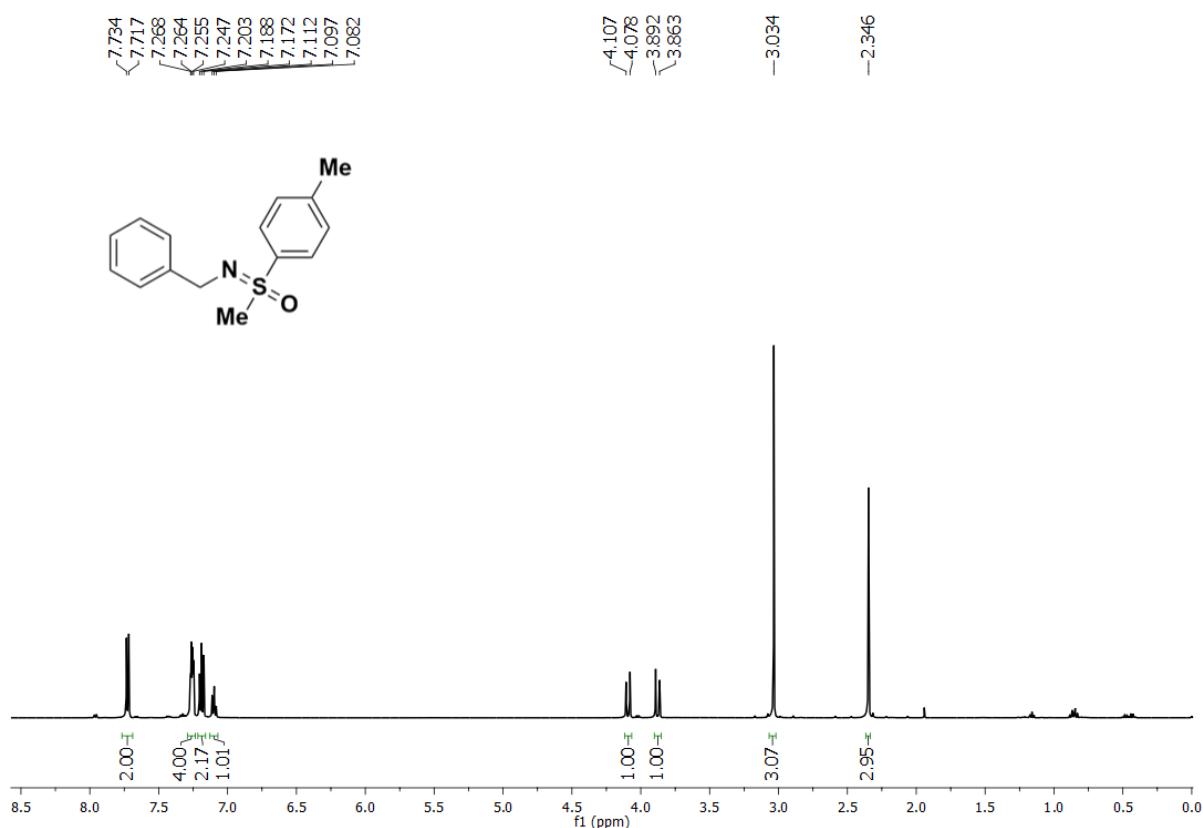
^{13}C {^{1}H} NMR of **5b** (126 MHz, CDCl$_3$)

143.80
141.29
136.21
130.12
128.74
128.23
127.61
126.49

47.33
45.31

21.50

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0
f1 (ppm)

S10

¹H NMR of **5c** (500 MHz, CDCl₃)

7.849
7.832
7.604
7.589
7.575
7.553
7.538
7.522

3.205
3.157
3.114
2.984
2.969
2.959
2.945
2.930
2.814
2.799
2.790
2.775
2.760

1.543
1.528
1.283
1.232
1.213
1.199
1.184
0.853
0.840
0.825

O=S(N–C₆H₁₃)(Et)(C₆H₅)

2.00
1.05
2.04

2.11
1.06
1.06

2.12
6.27
3.33

3.10

8.5 8.0 7.5 7.0 6.5 6.0 5.5 5.0 4.5 4.0 3.5 3.0 2.5 2.0 1.5 1.0 0.5 0.0
f1 (ppm)
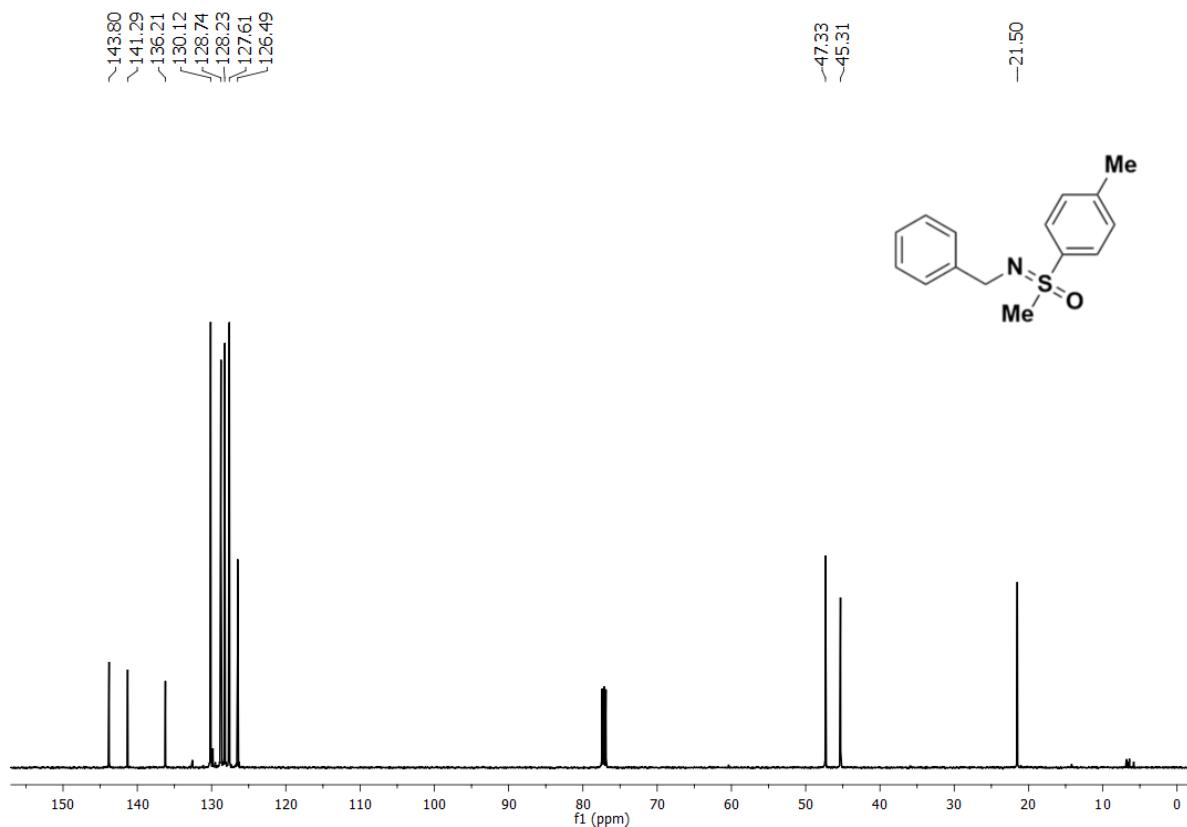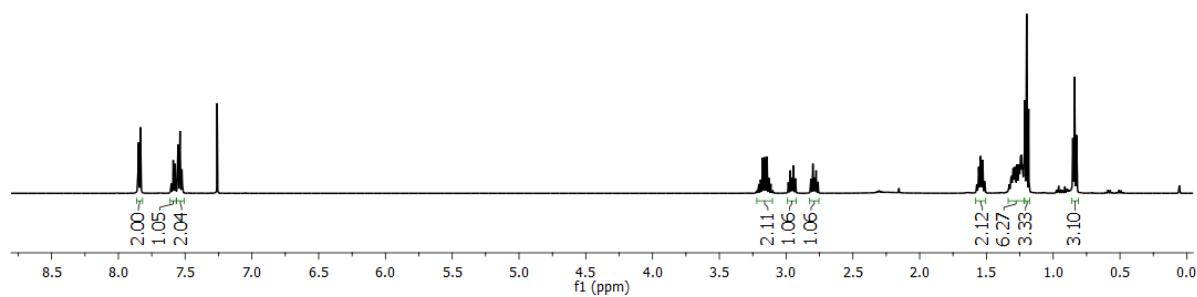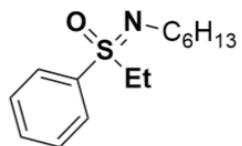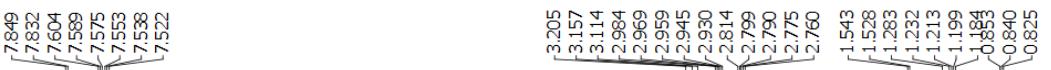
¹³C {¹H} NMR of **5c** (126 MHz, CDCl₃)

138.02
132.81
129.60
129.37

50.94

43.94

33.08
31.75
27.05
22.76

14.18

7.59

O=S(N–C₆H₁₃)(Et)(C₆H₅)

145 140 135 130 125 120 115 110 105 100 95 90 85 80 75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0
f1 (ppm)

S11

¹H NMR of **5d** (500 MHz, CDCl₃)

7.873
7.856
7.608
7.593
7.579
7.543
7.527
7.513
6.857
6.852
6.778
6.762
6.724
6.707

4.139
4.110
3.912
3.884

3.277
3.234
3.195
3.152

1.264
1.249
1.234
0.998
0.990
0.982
0.974
0.967
0.958
0.766
0.751
0.734
0.718
0.701

1.97
1.02
2.01
1.00
0.99
1.02

1.01
1.00

2.04

3.13
18.23
12.34

¹³C {¹H} NMR of **5d** (126 MHz, CDCl₃)

146.45
145.26
137.74
134.68
132.84
129.45
129.29
120.29
120.13
119.88

51.07
46.49

7.53
6.74
6.71
5.11
5.08

S12

¹H NMR of **7** (500 MHz, CDCl₃)

8.208
8.192
8.176
7.635
7.621
7.606
7.567
7.552
7.537
7.341
7.326
7.191
7.173
7.137
7.122
7.106
6.884
6.866
6.835
6.817
6.763
6.748
6.724
4.481
4.452
4.132
4.102
3.824
2.966
2.923
2.893
2.747
2.717
2.674
1.120
1.105
1.090

1.16
1.00
1.25
1.04
1.90
1.22
4.27
1.23
1.00
1.12
3.03
1.11
1.09
3.11

8.5 8.0 7.5 7.0 6.5 6.0 5.5 5.0 4.5 4.0 3.5 3.0 2.5 2.0 1.5 1.0 0.5 0.0
f1 (ppm)
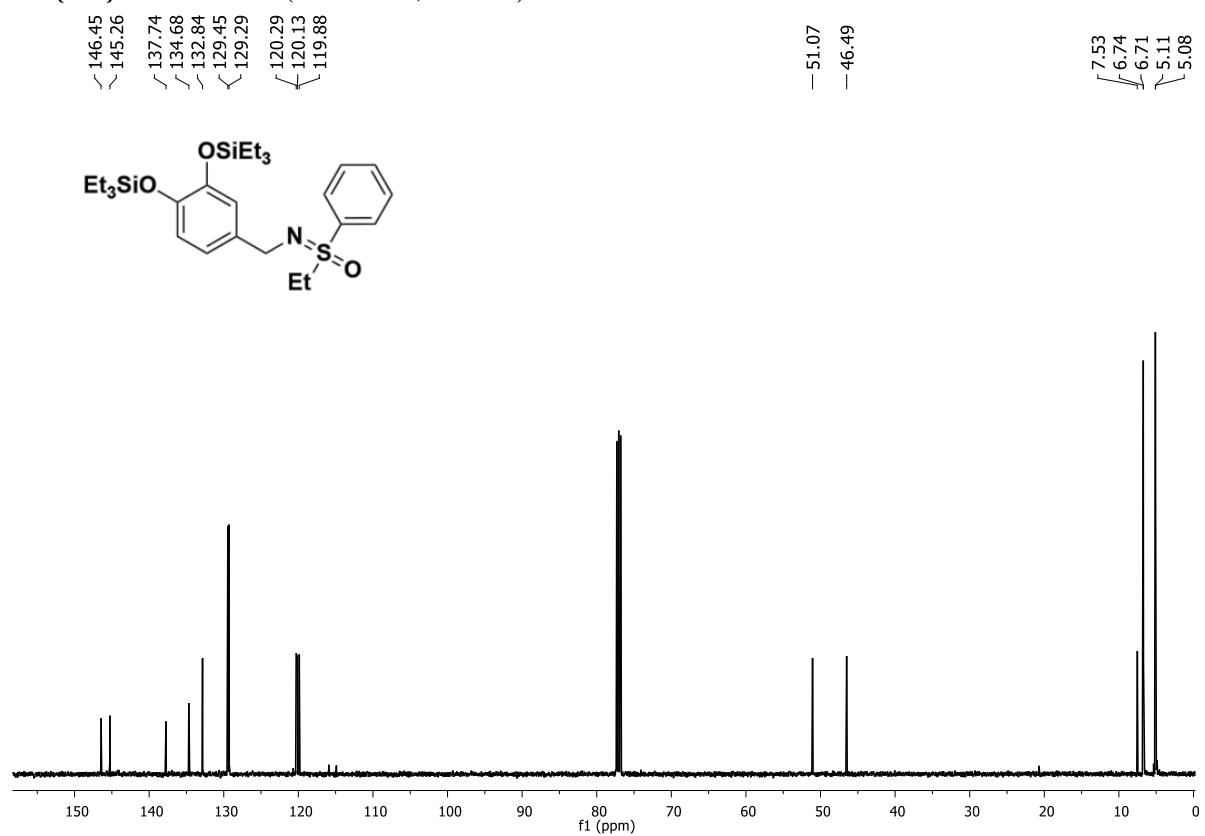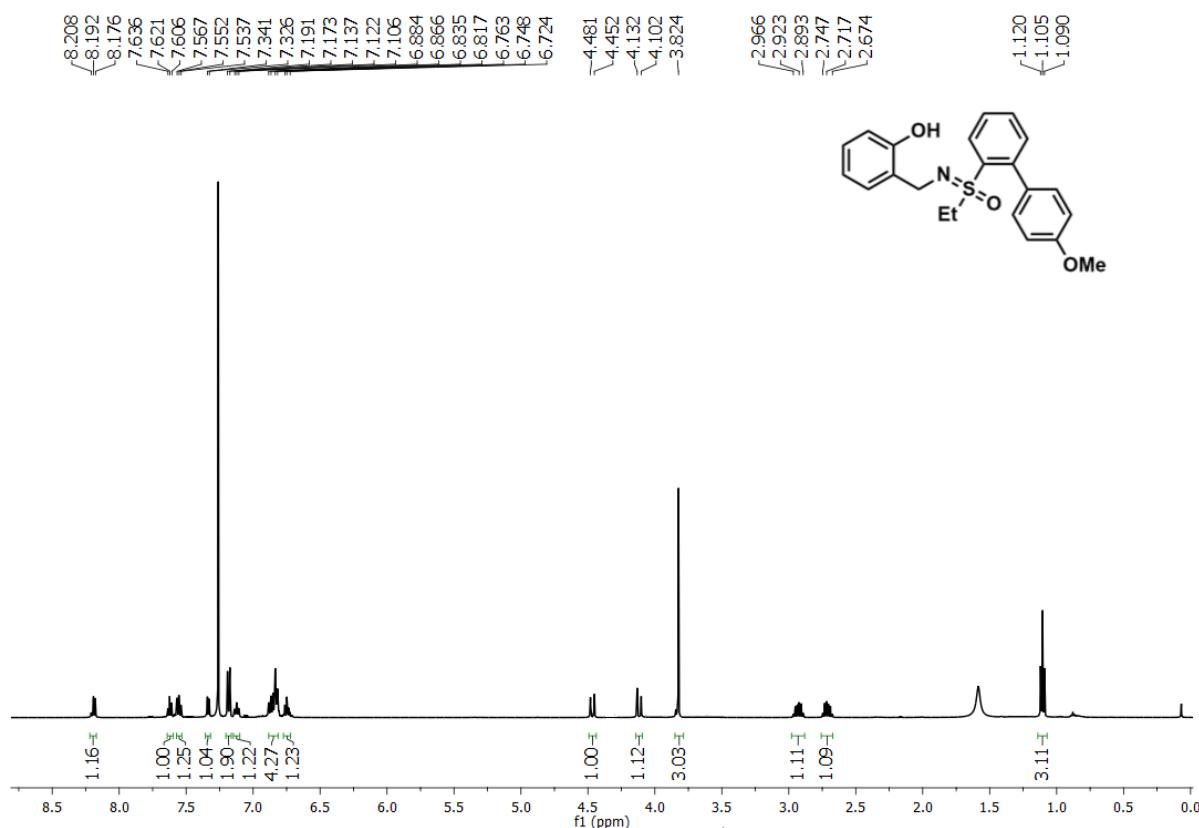
¹³C {¹H} NMR of **7** (126 MHz, CDCl₃)

159.75
157.46
142.19
135.41
133.55
132.95
131.46
130.71
130.48
128.12
128.01
127.76
124.16
121.15
119.27
113.43
55.41
49.13
46.58
6.84

170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0
f1 (ppm)

S13