

Metal-free NaI/TBHP-mediated sulfonylation of thiols with sulfonyl hydrazides

Qian Chen,^{*a,b} Yulin Huang,^a Xiaofeng Wang,^a Jiawei Wu^a and Guodian Yu^a

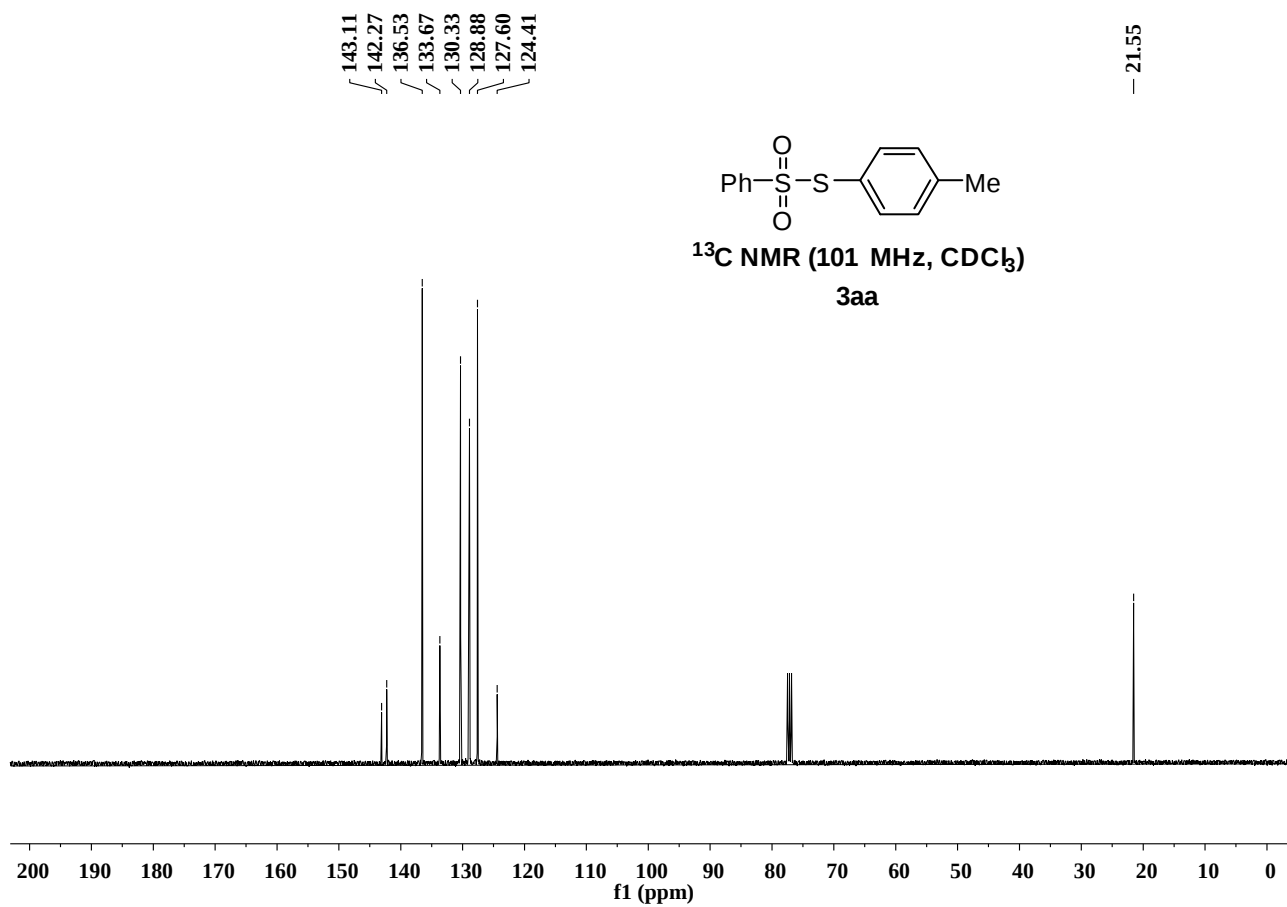
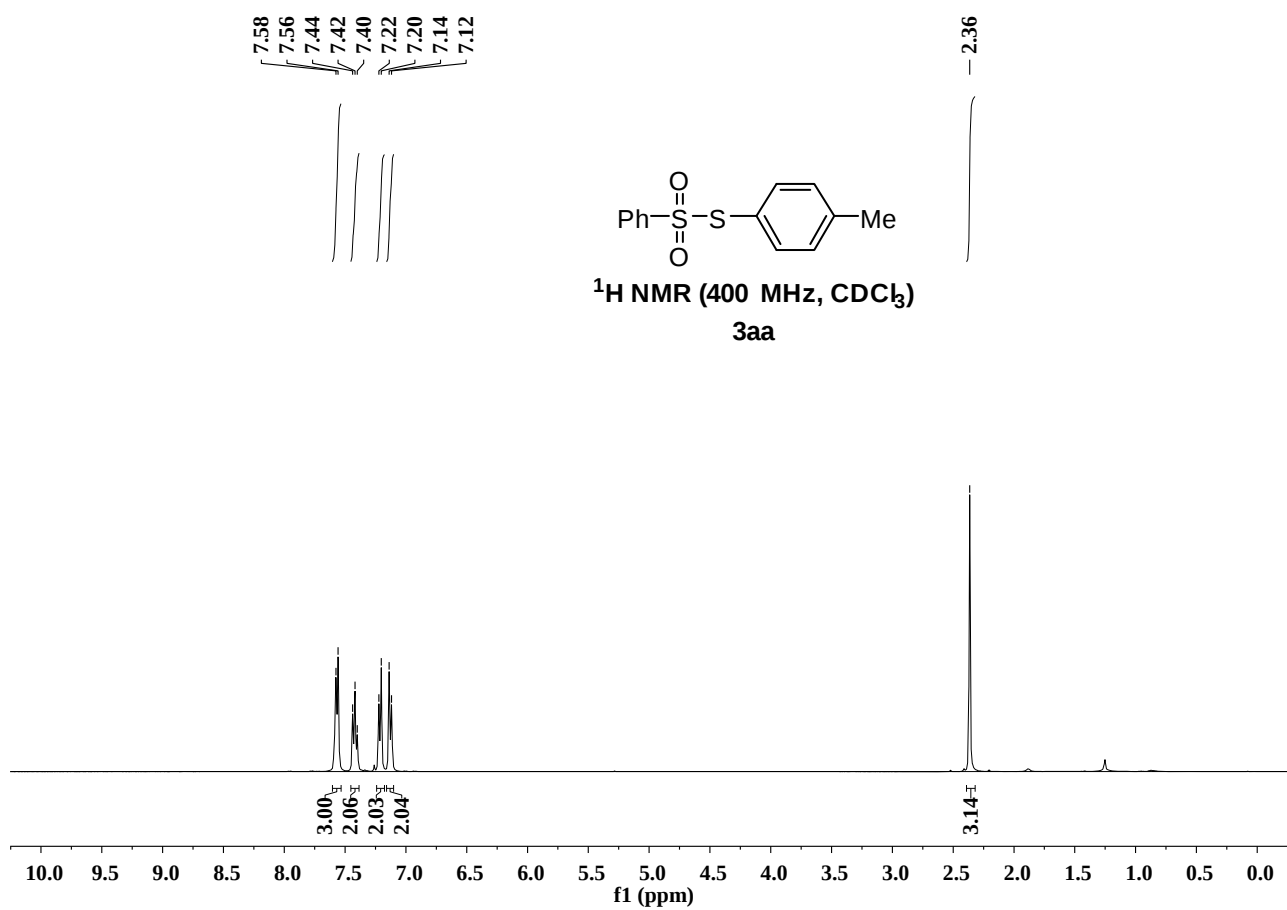
^a School of Chemical Engineering and Light Industry, Guangdong University of Technology, Guangzhou 510006, China; ^b Key Laboratory of Functional Molecular Engineering of Guangdong Province, South China University of Technology, Guangzhou 510640, China

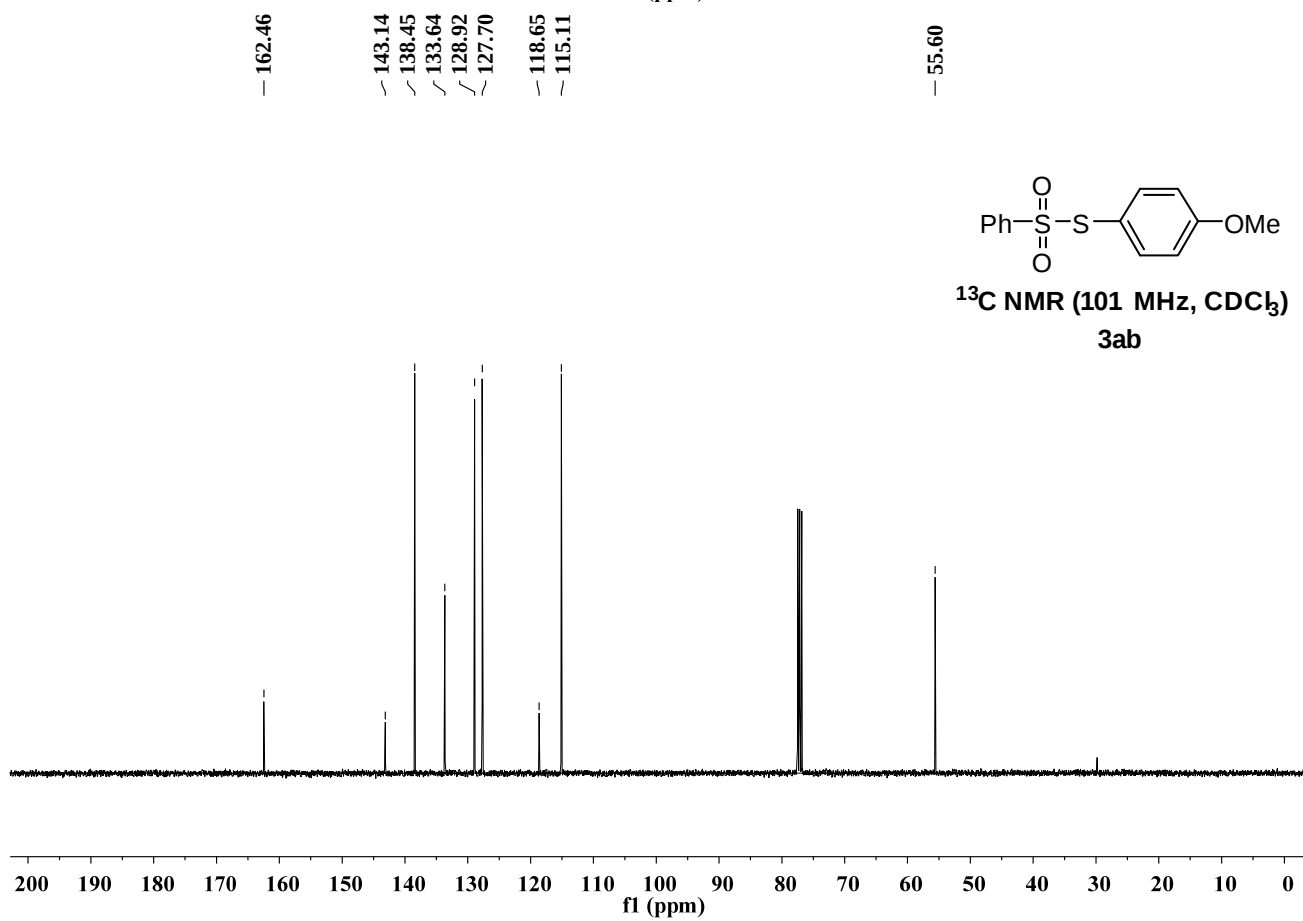
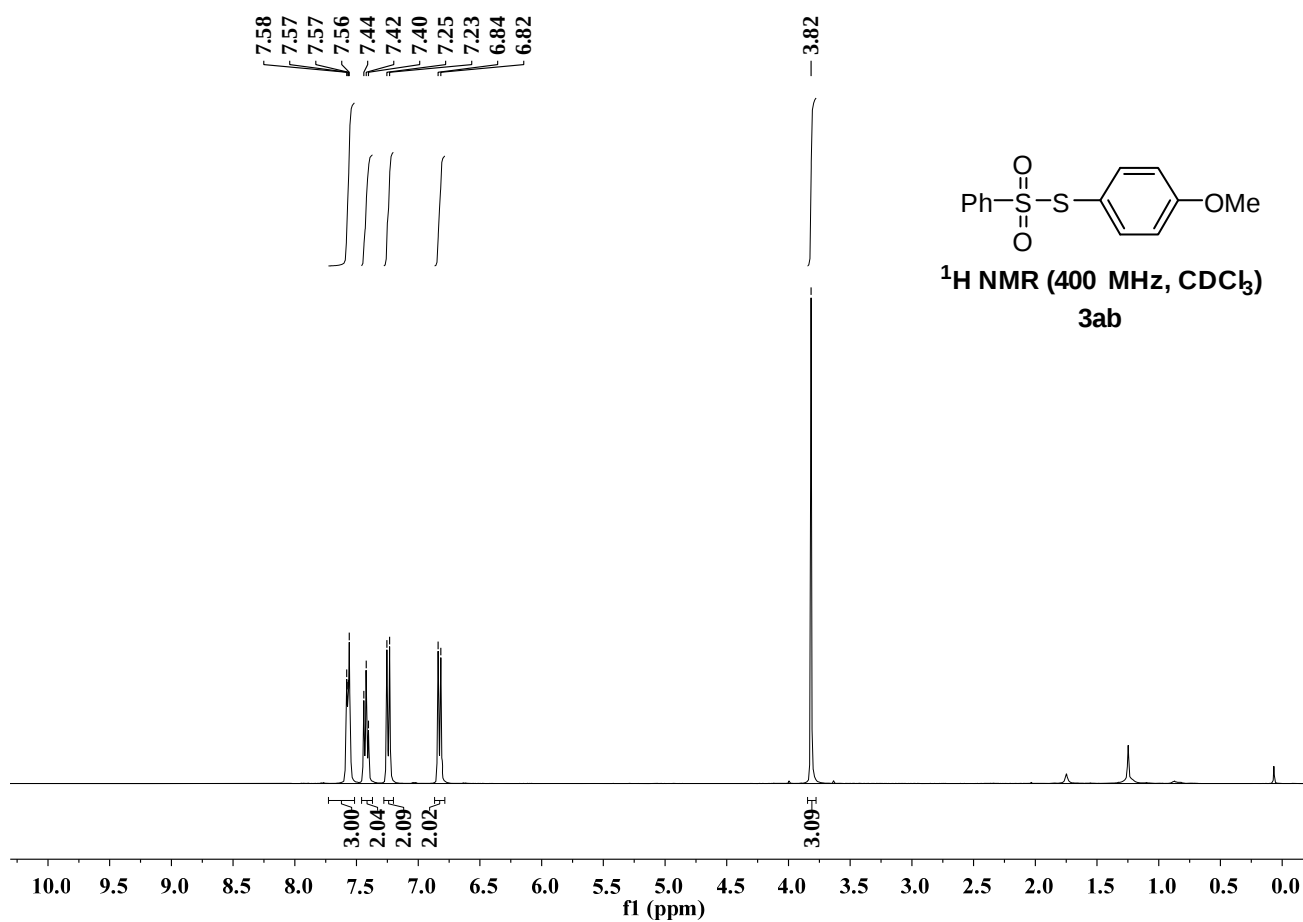
*E-mail: qianchen@gdut.edu.cn

Supporting Information

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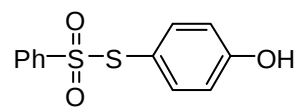
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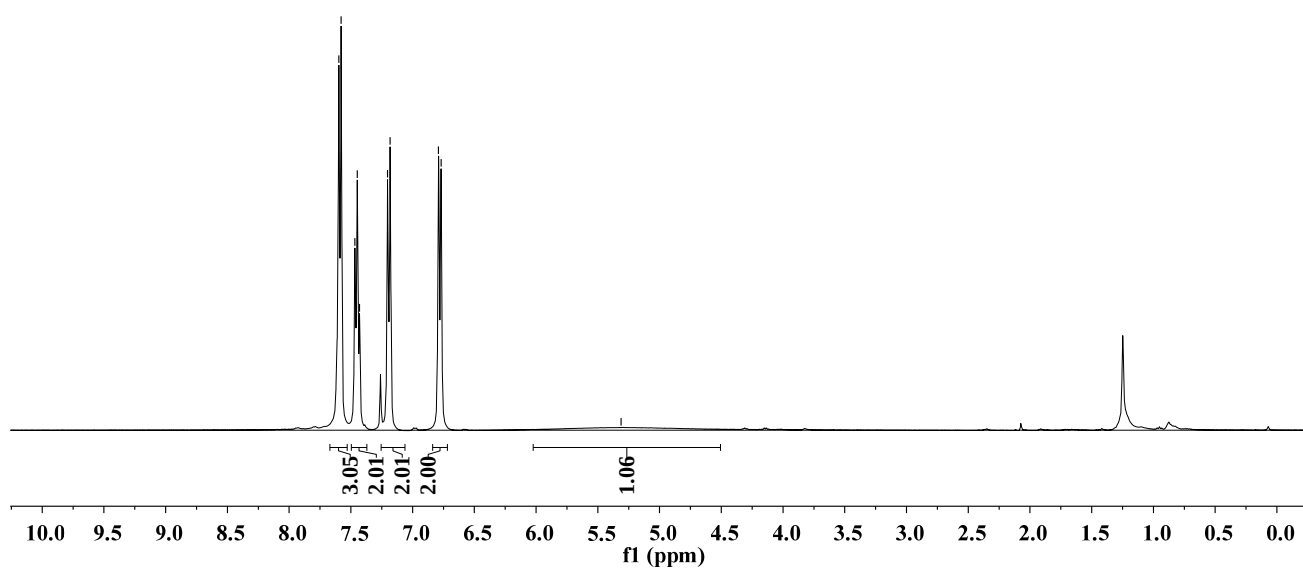


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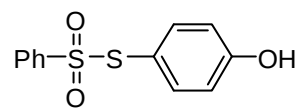
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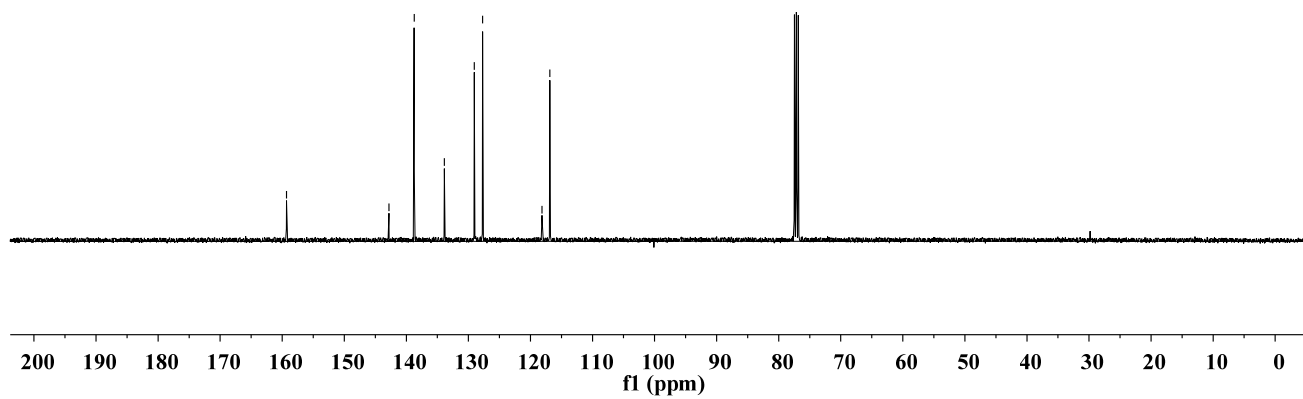
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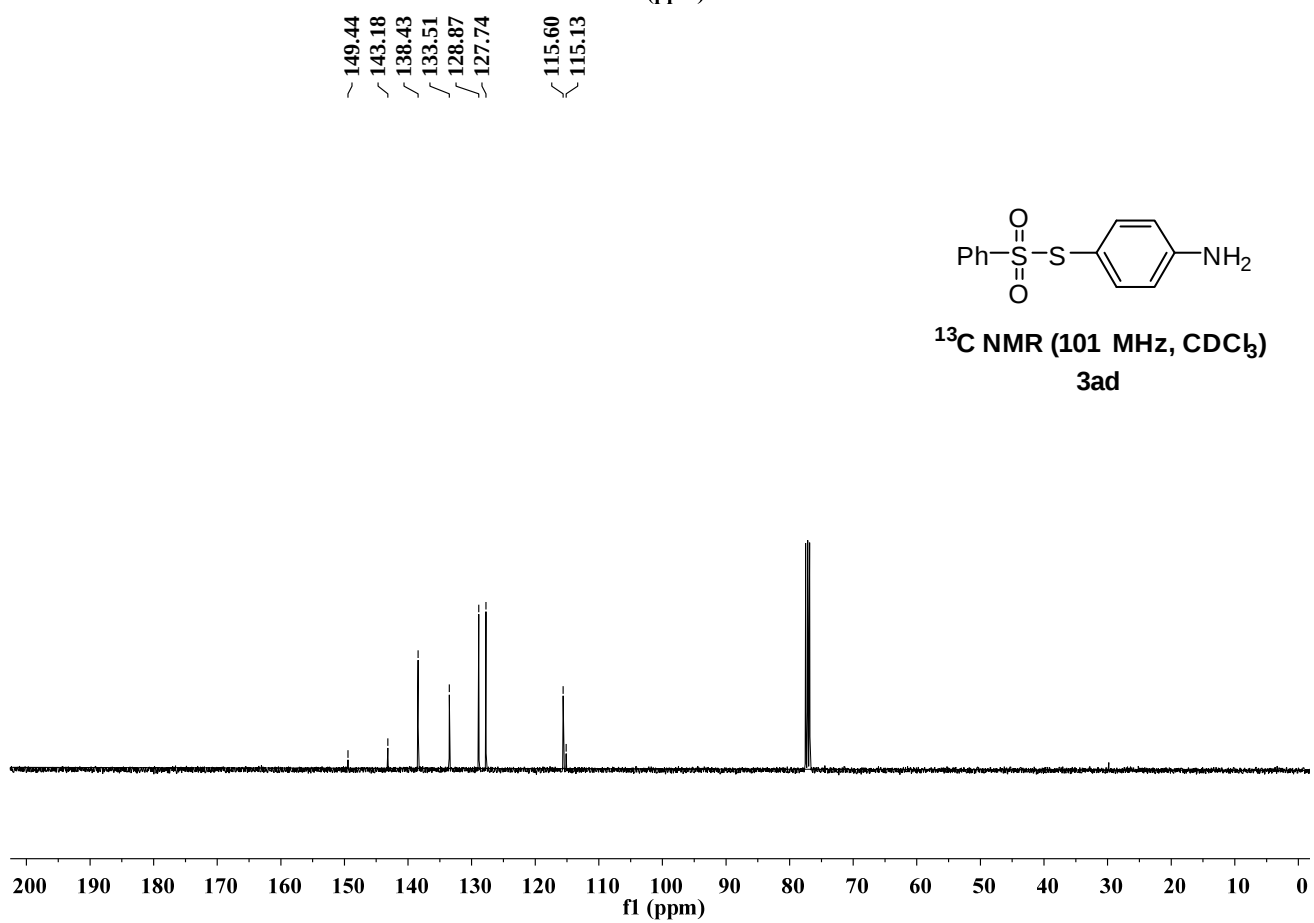
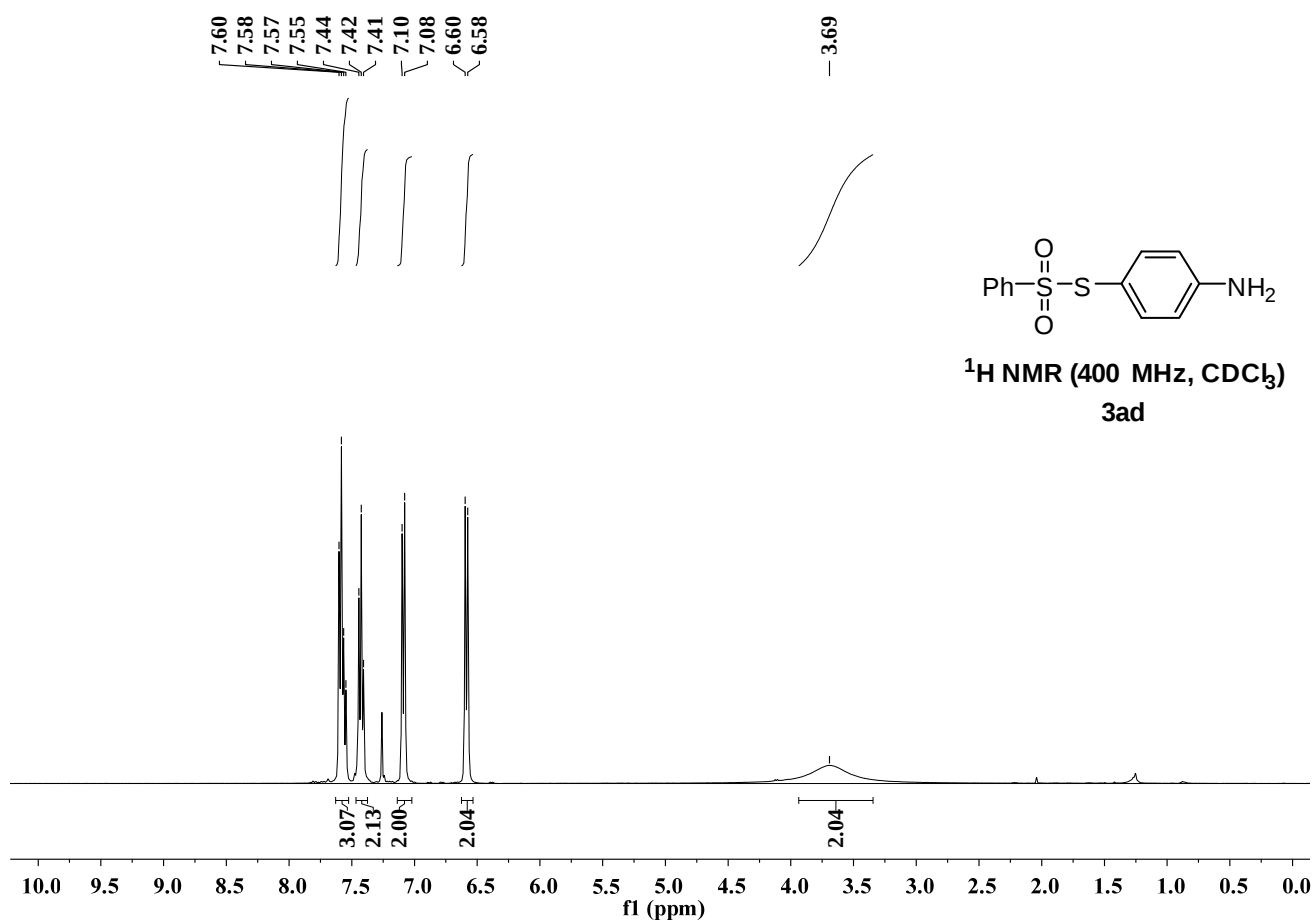


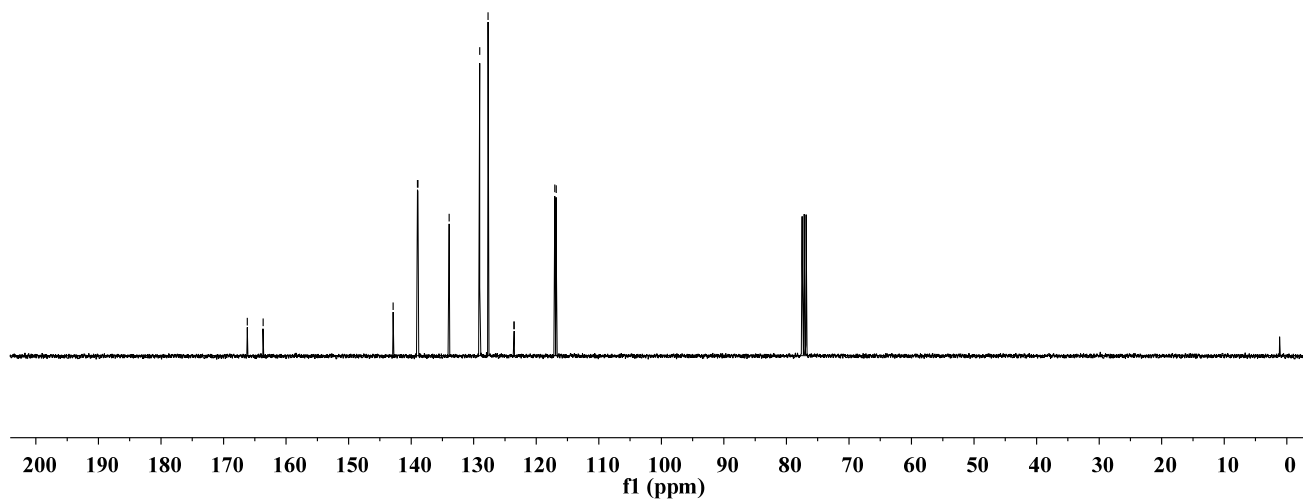
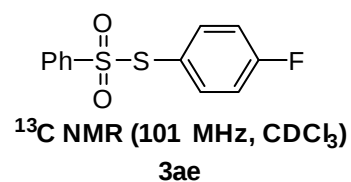
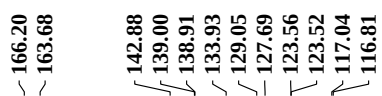
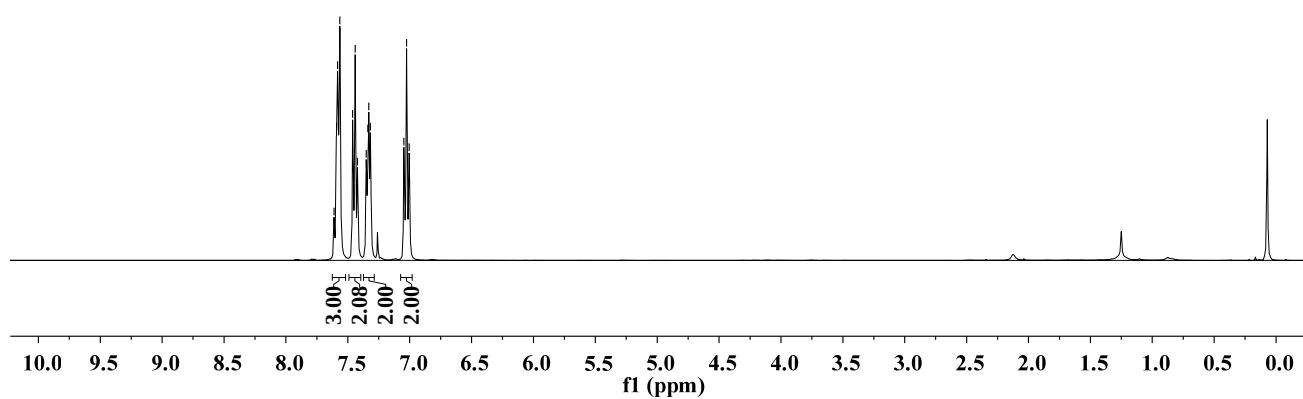
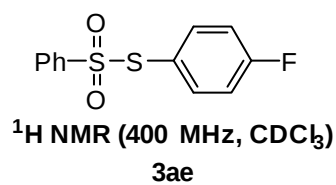
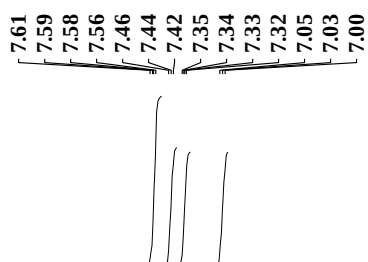
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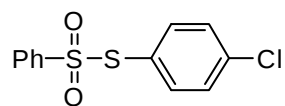
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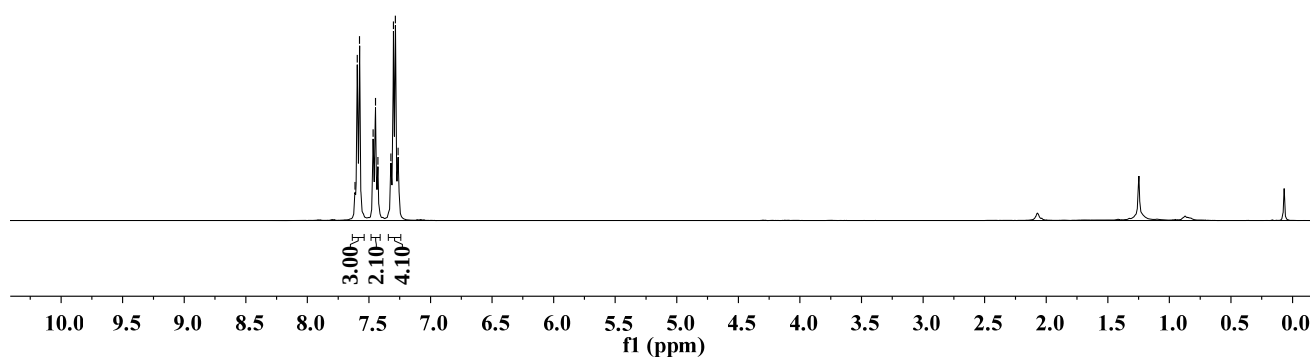


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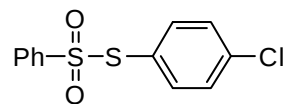


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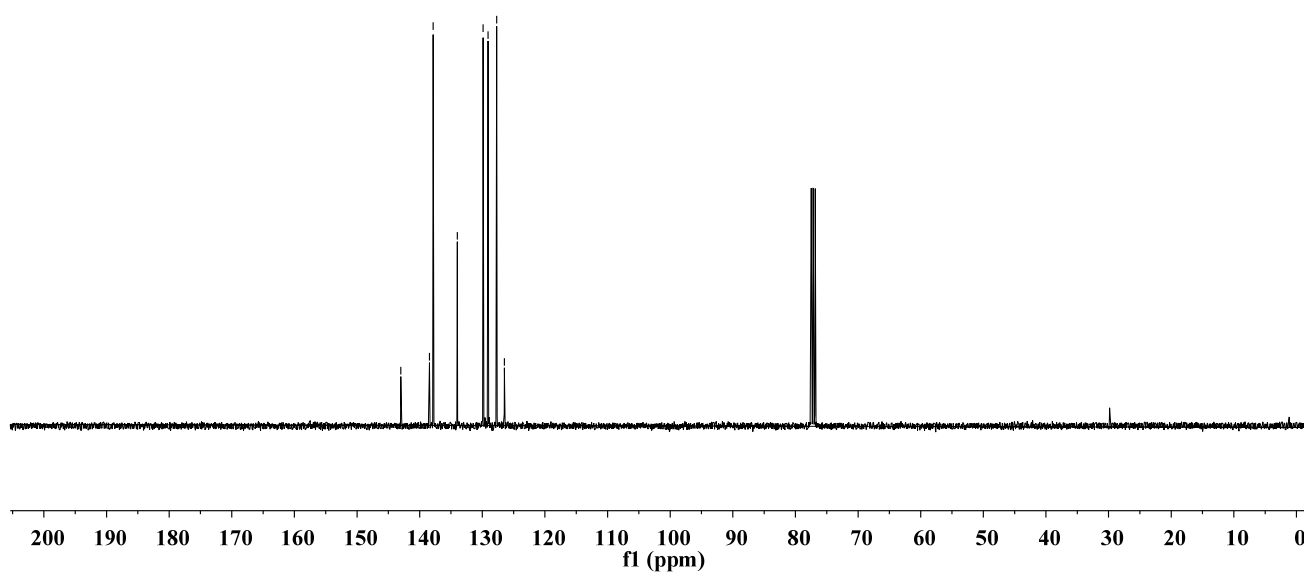


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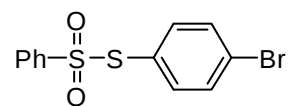


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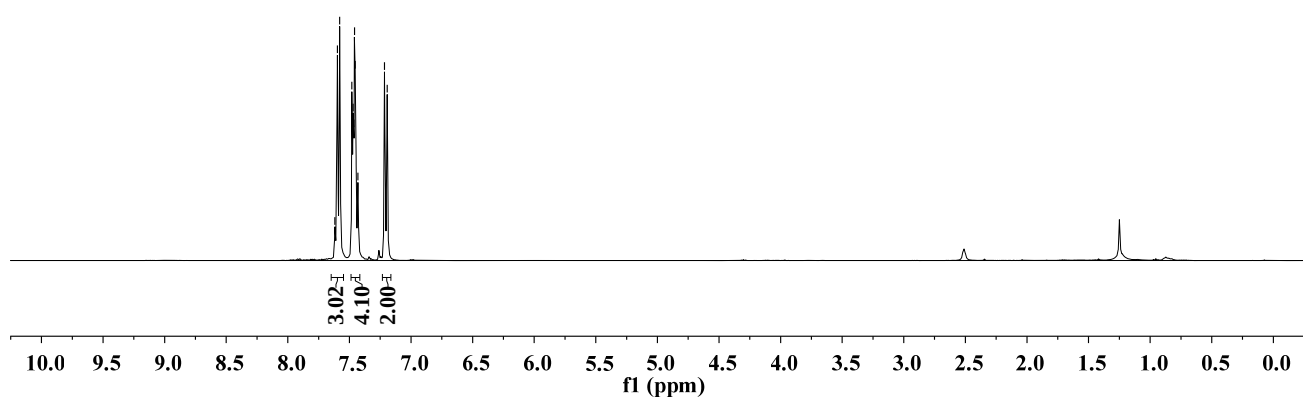


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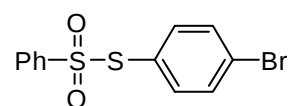


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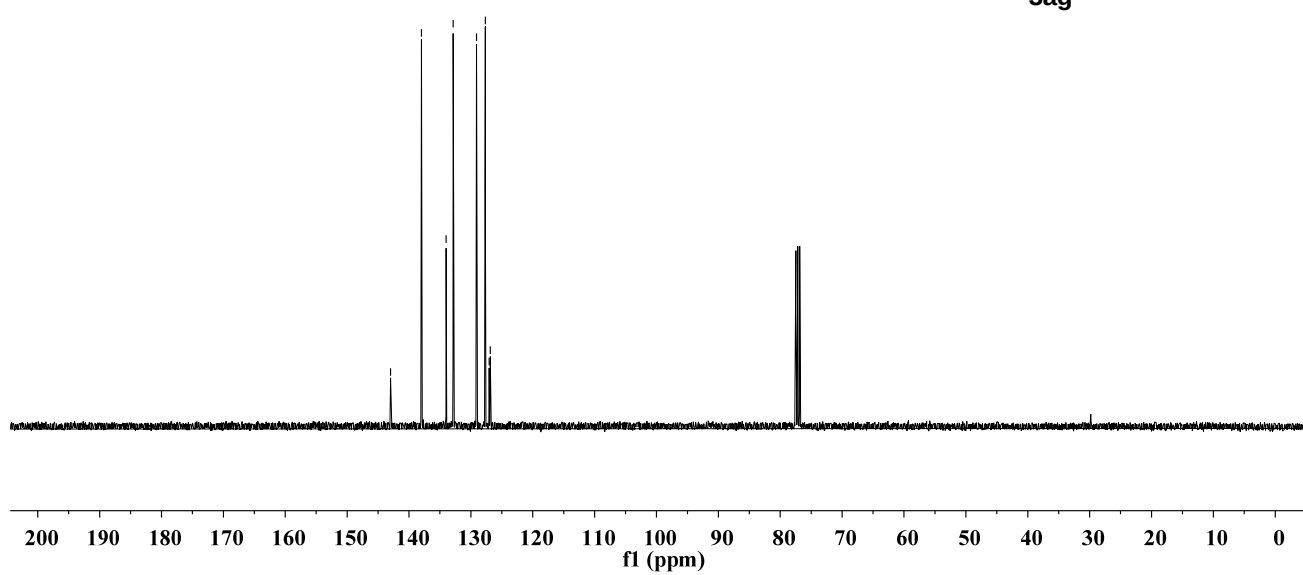


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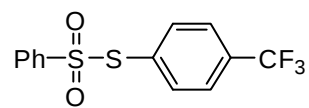


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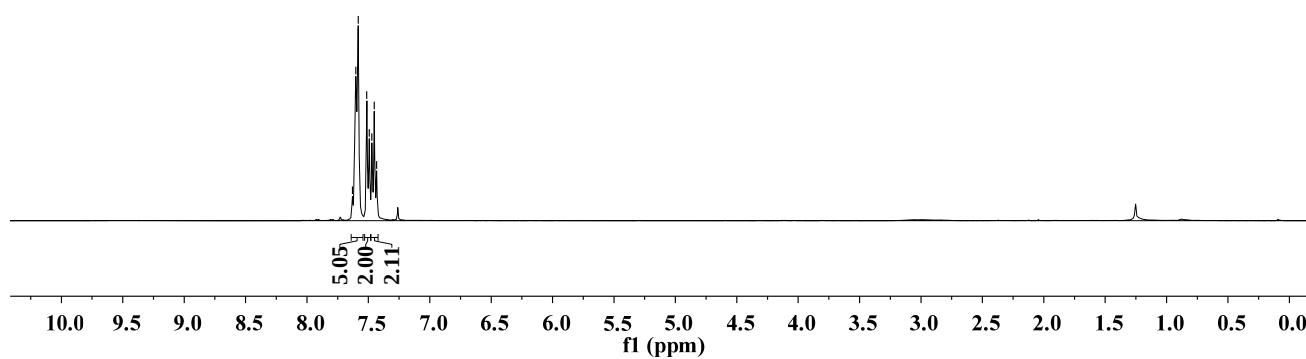
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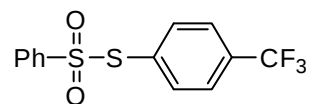
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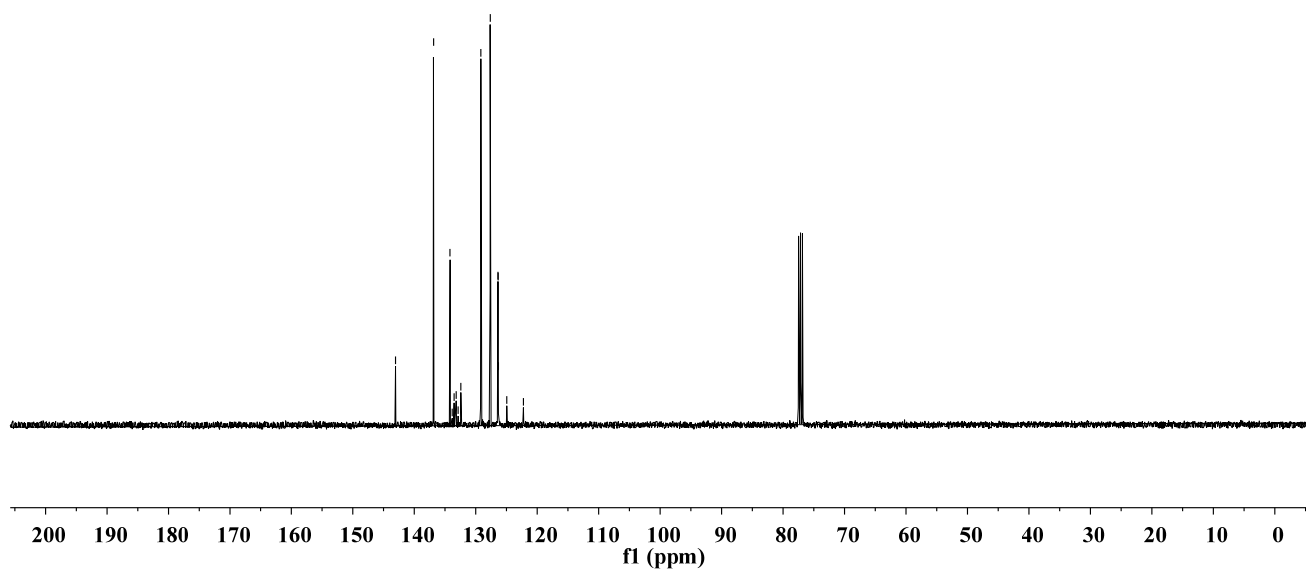
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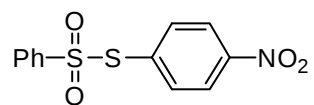
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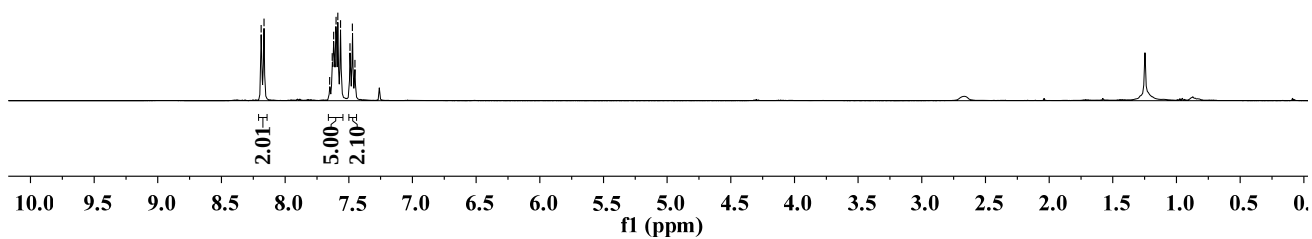


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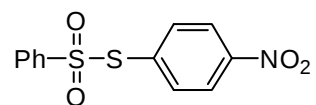


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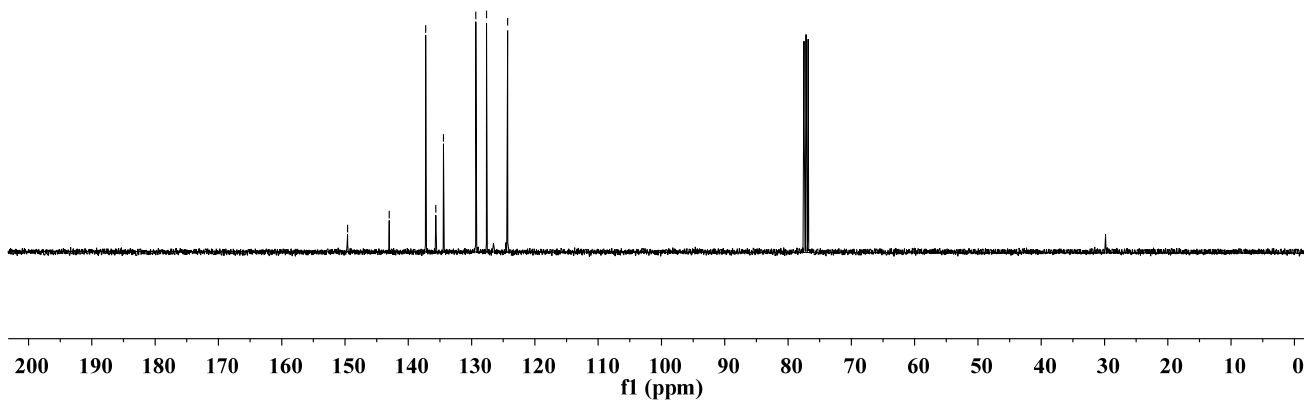


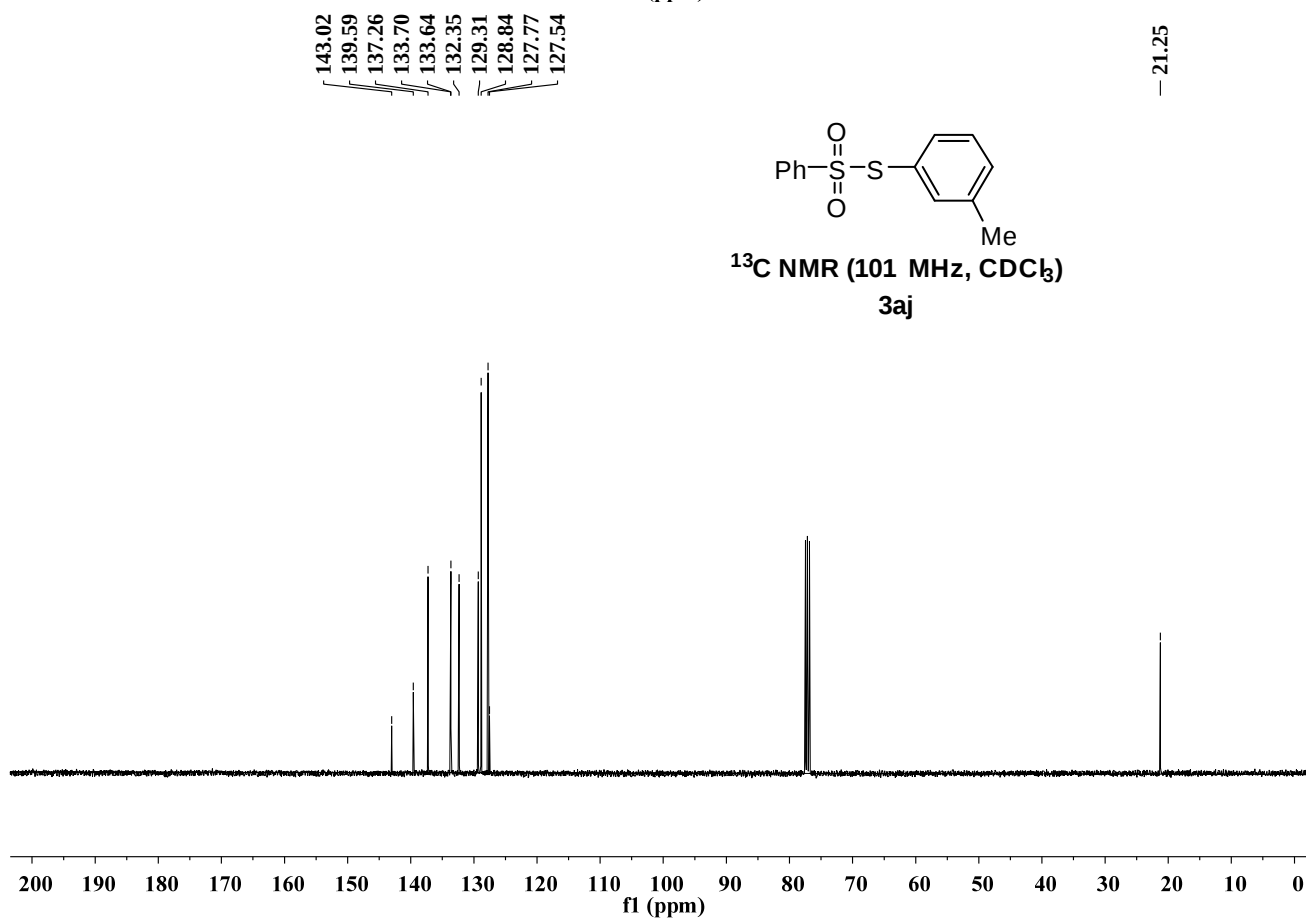
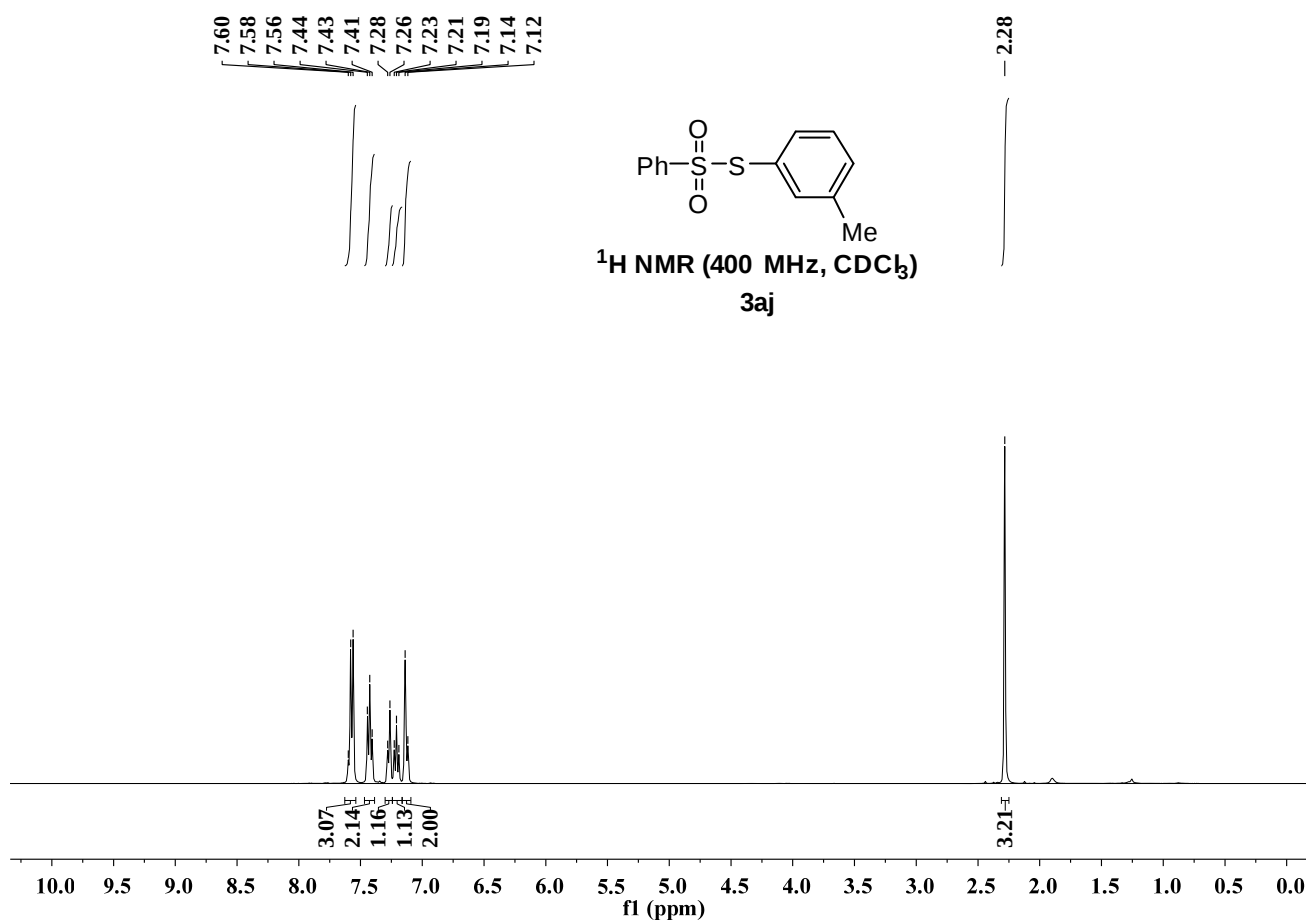
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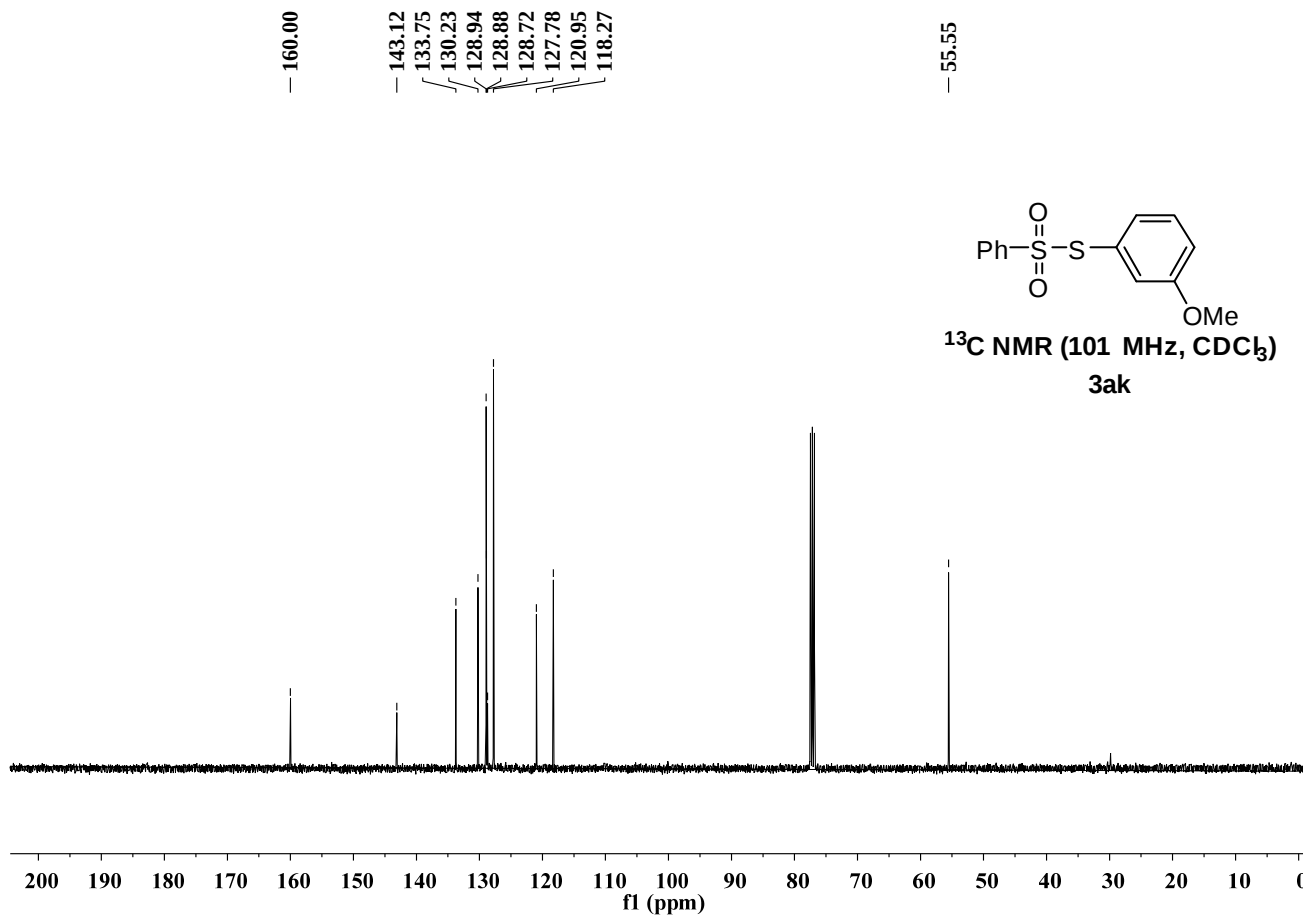
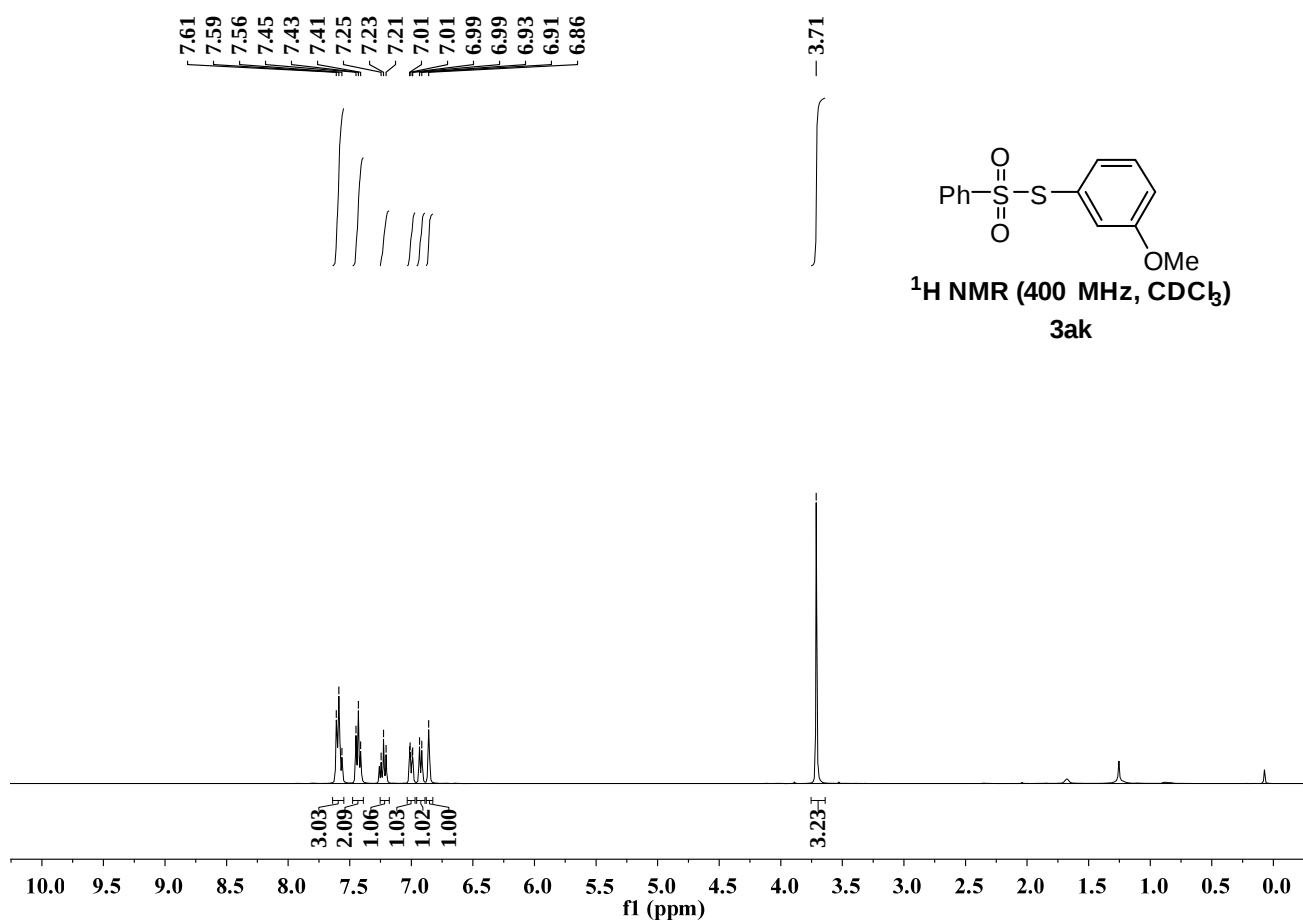


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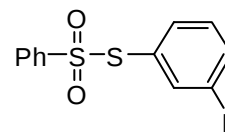
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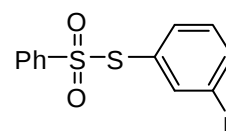
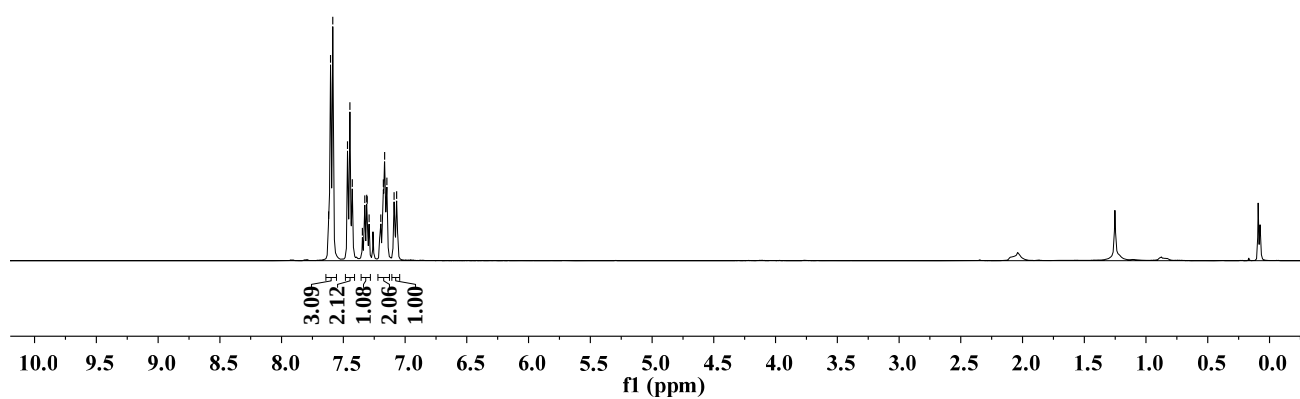


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7.45
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7.15
7.09
7.07



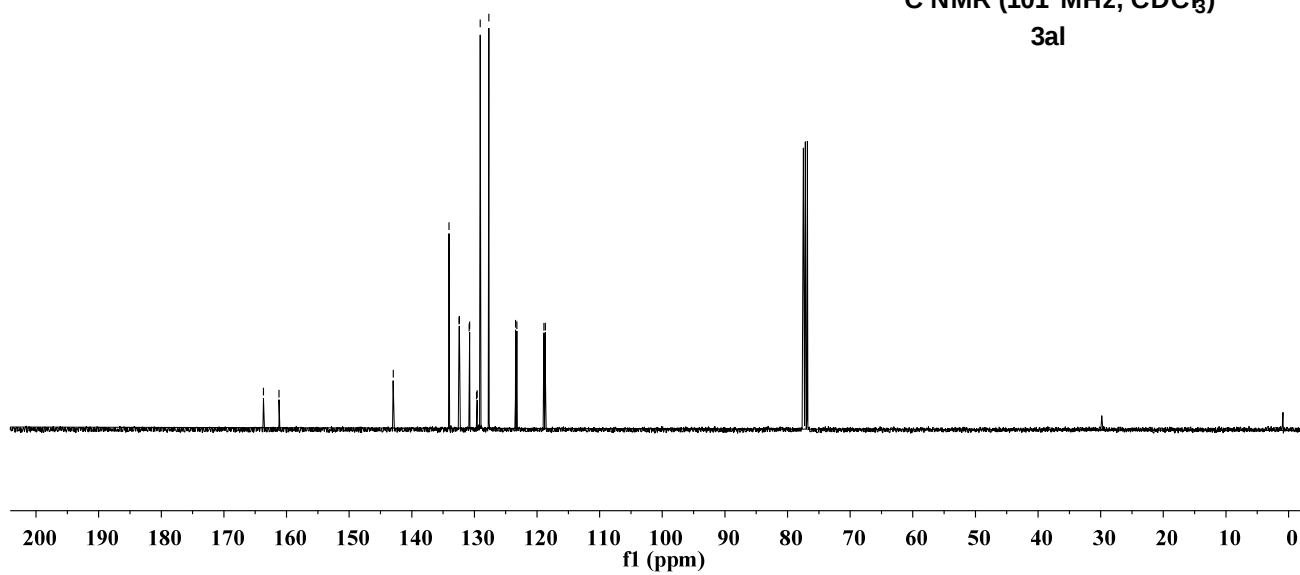
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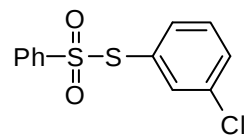
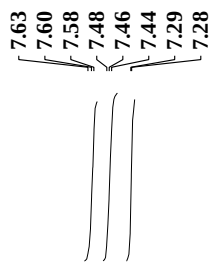
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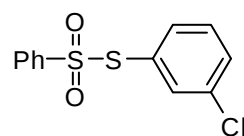
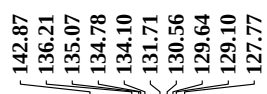
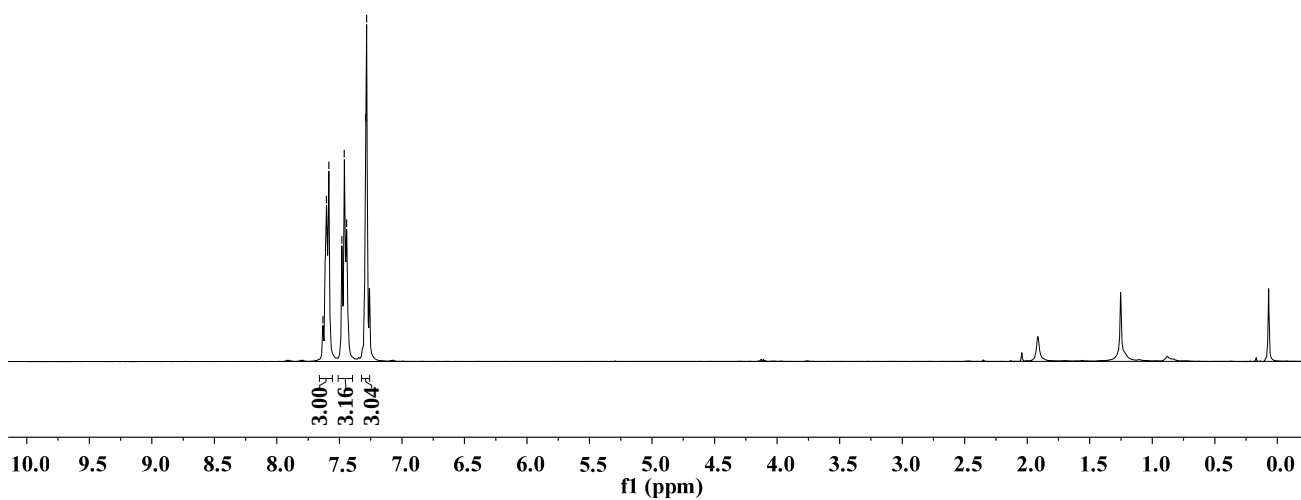
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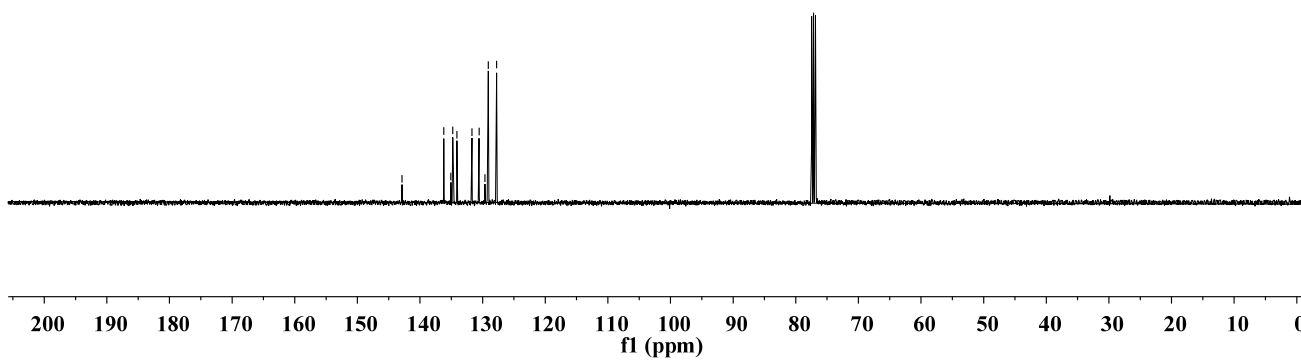




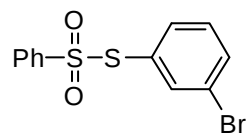
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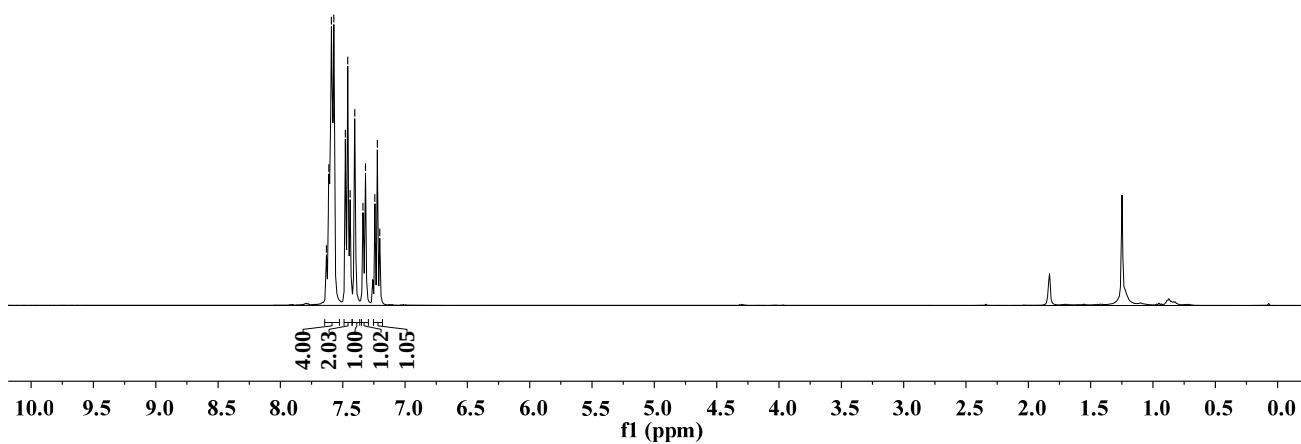
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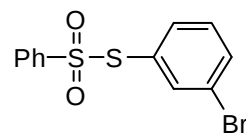
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7.20



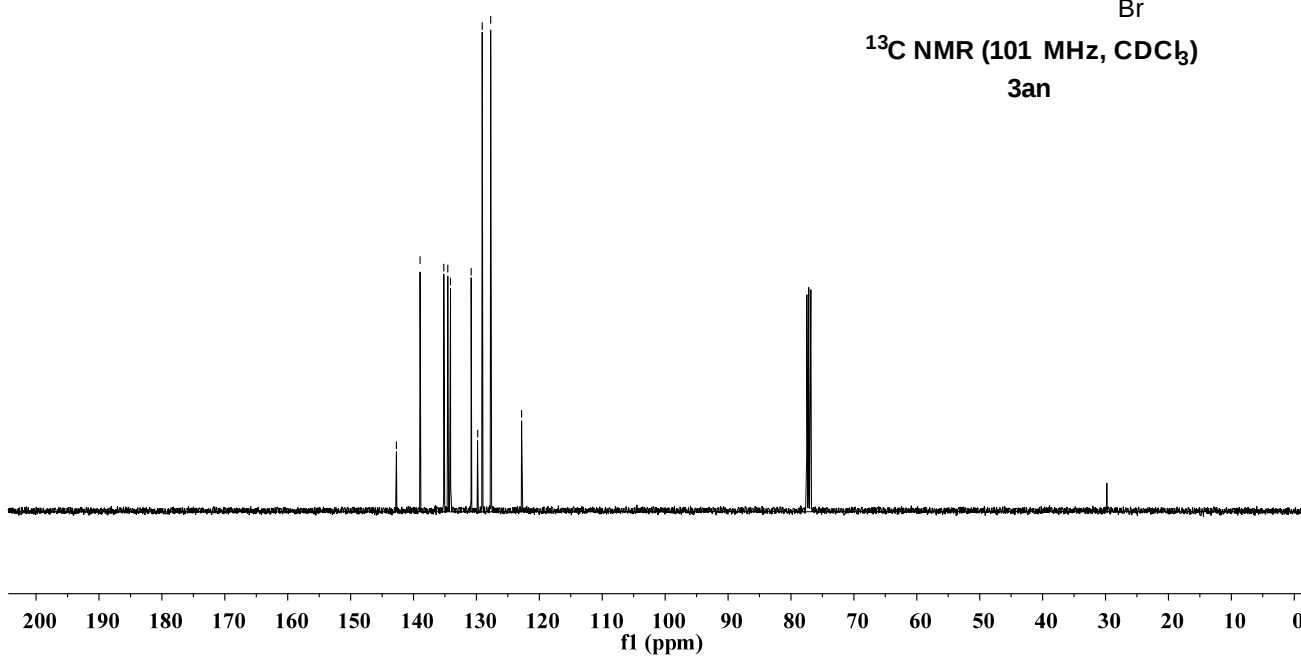
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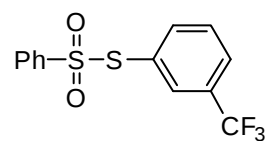
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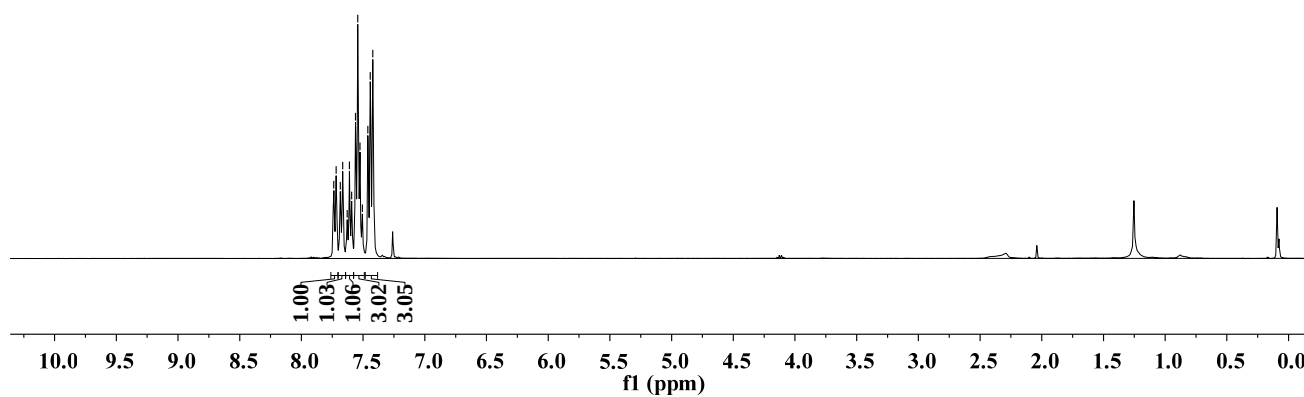
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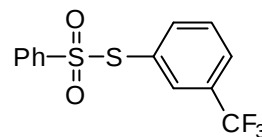
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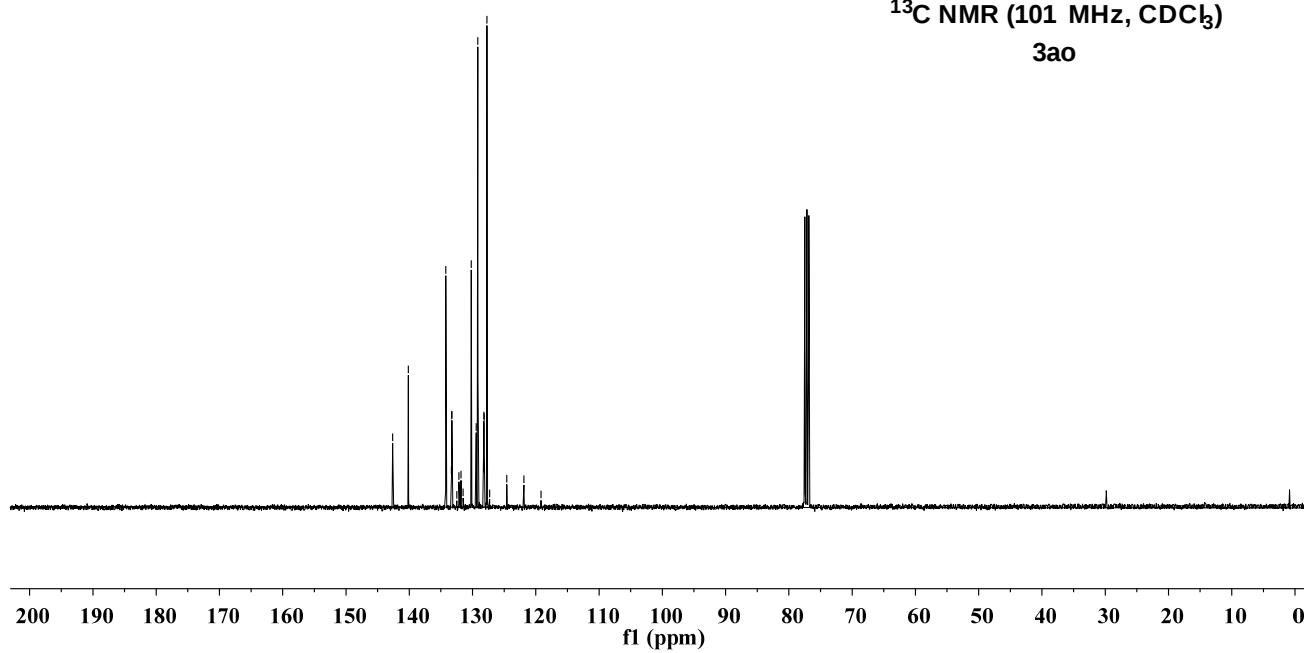
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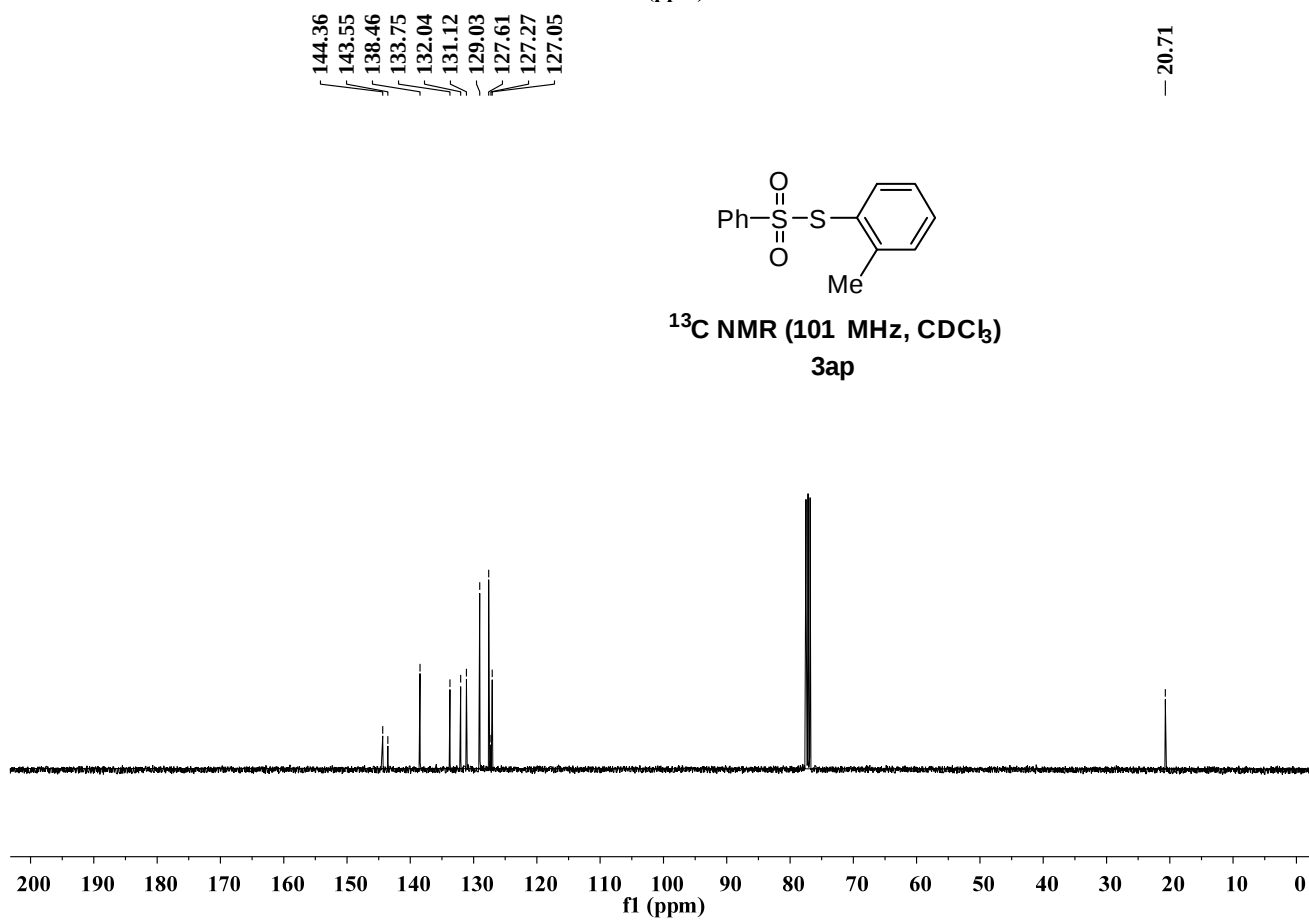
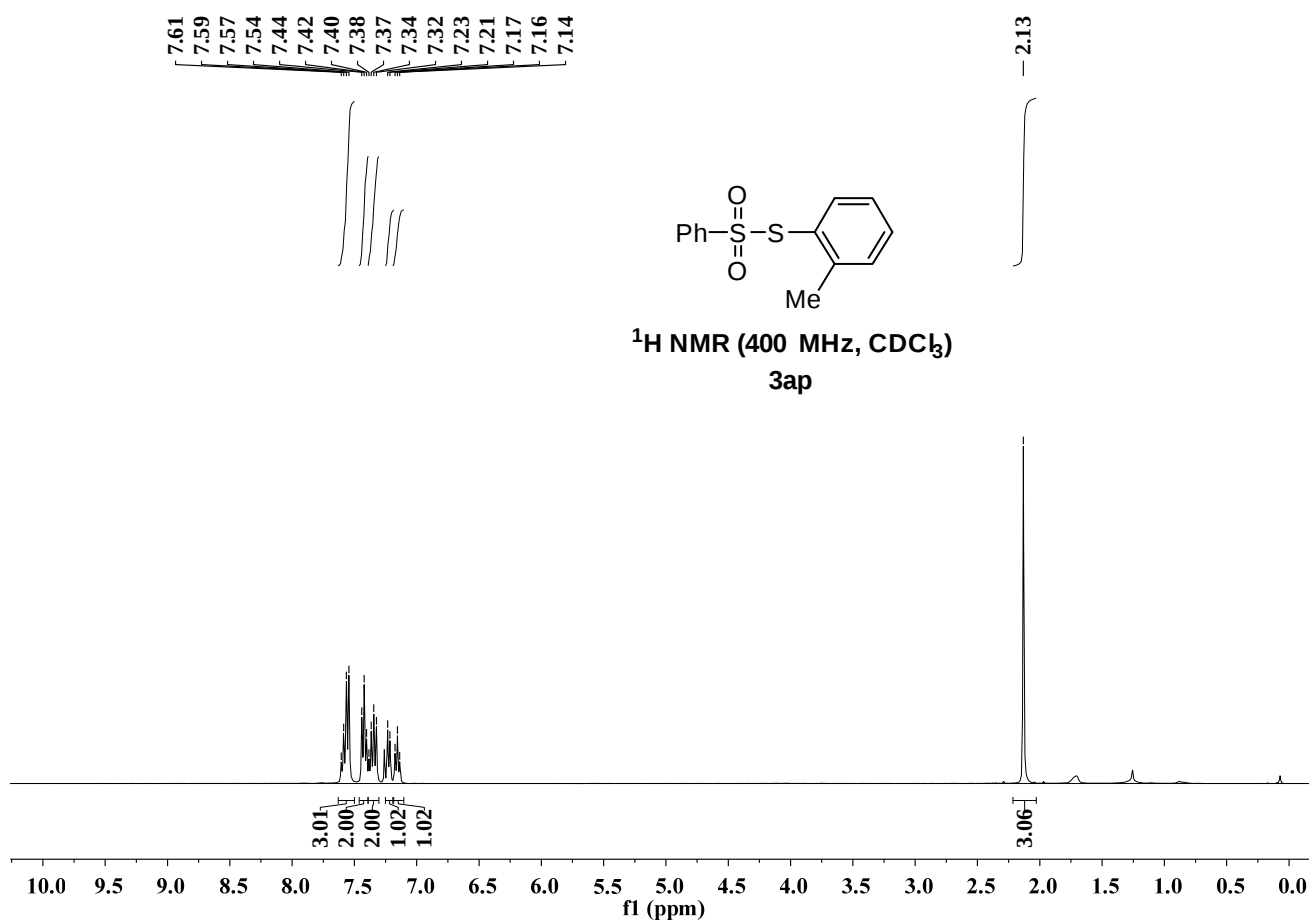


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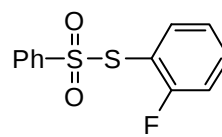
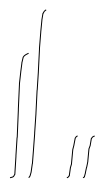


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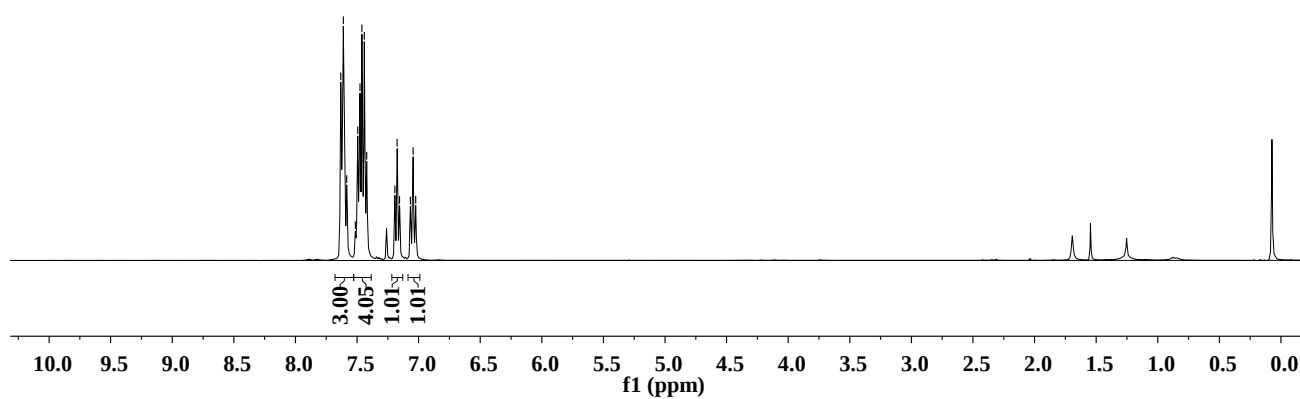




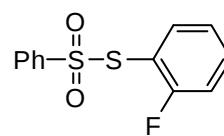
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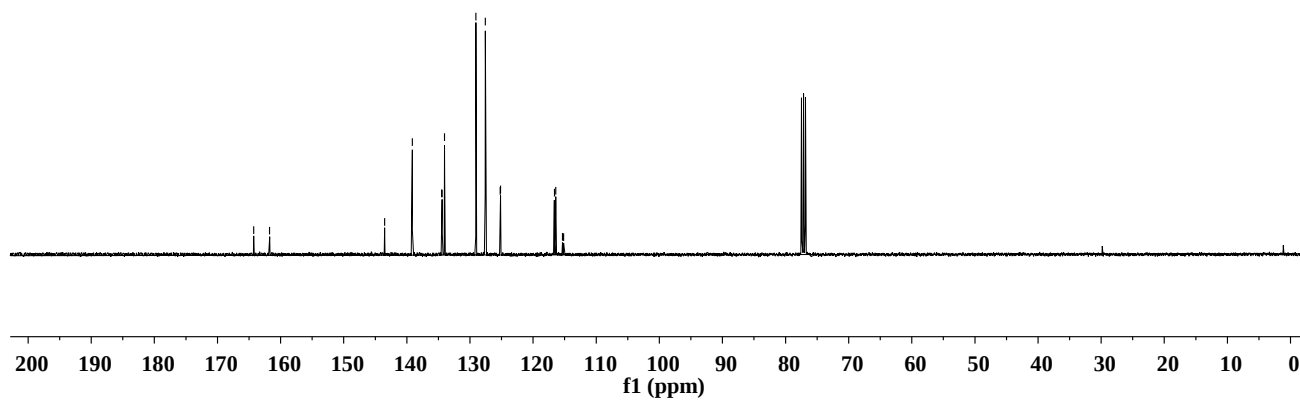
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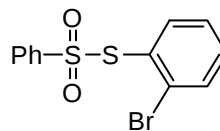
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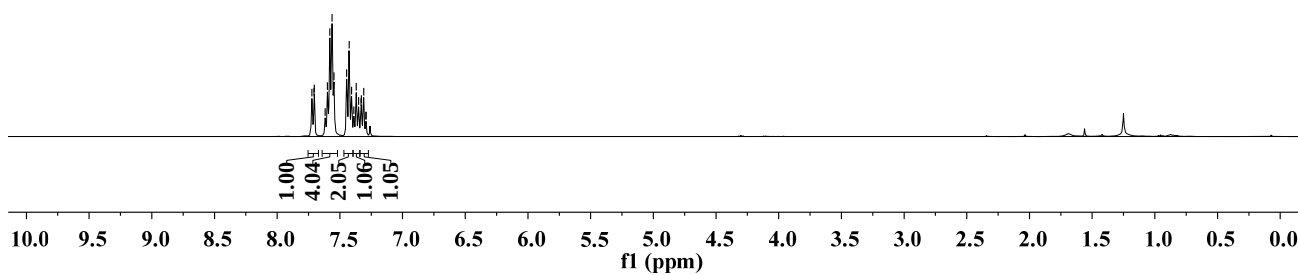
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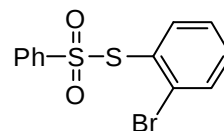


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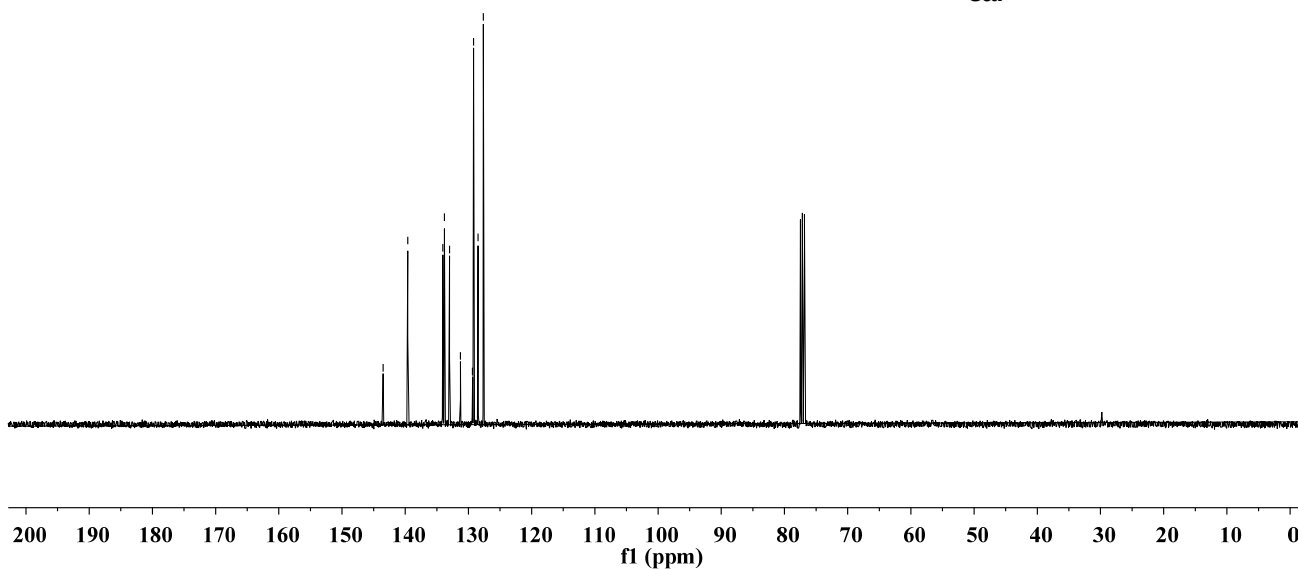


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1.05

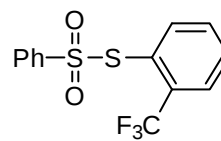
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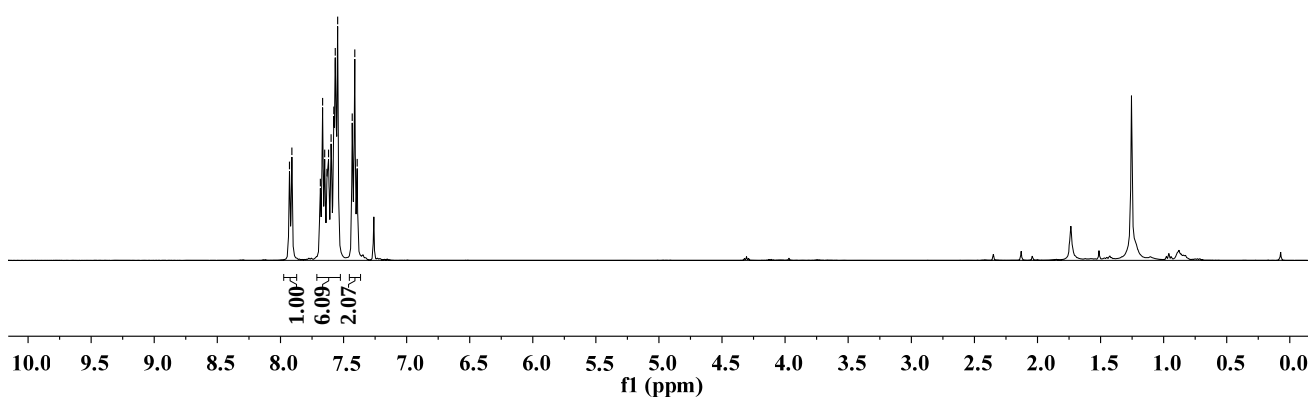
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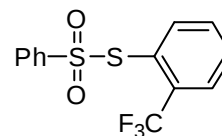
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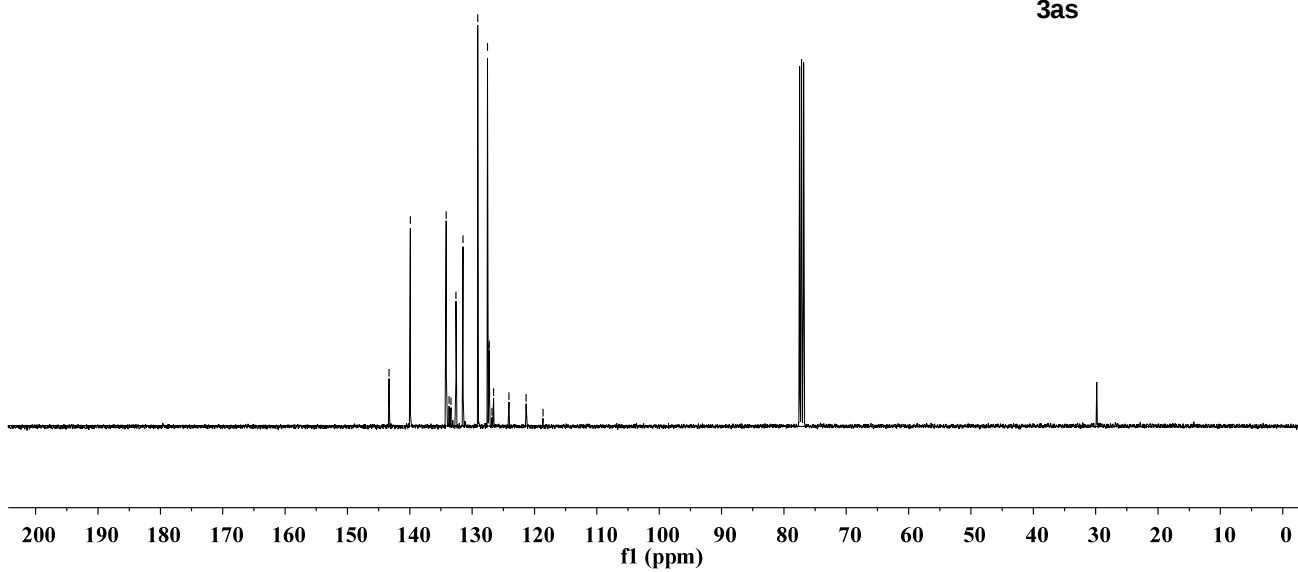
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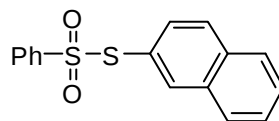
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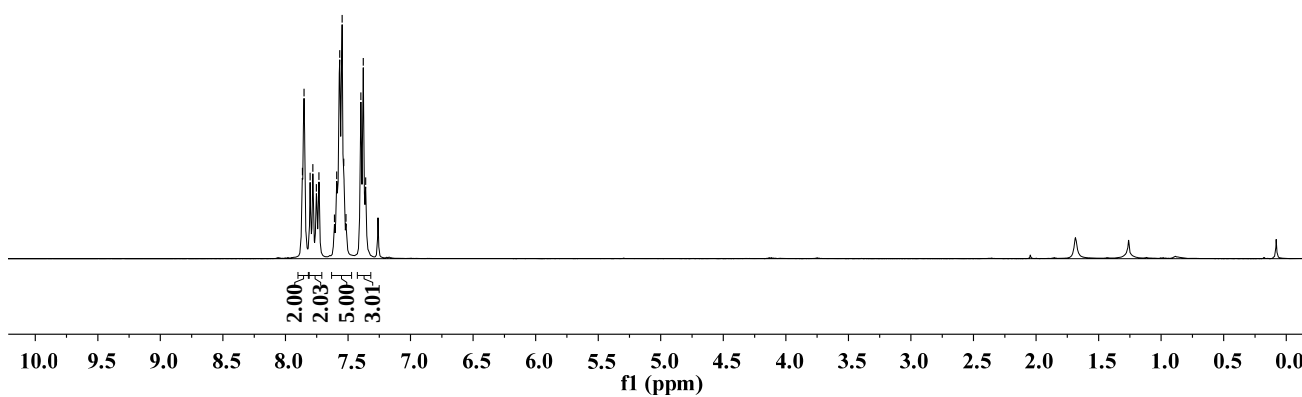
^{13}C NMR (101 MHz, CDCl_3)
3as



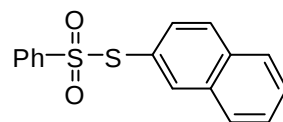
7.86
7.85
7.80
7.78
7.75
7.73
7.61
7.59
7.57
7.55
7.53
7.52
7.40
7.38
7.36



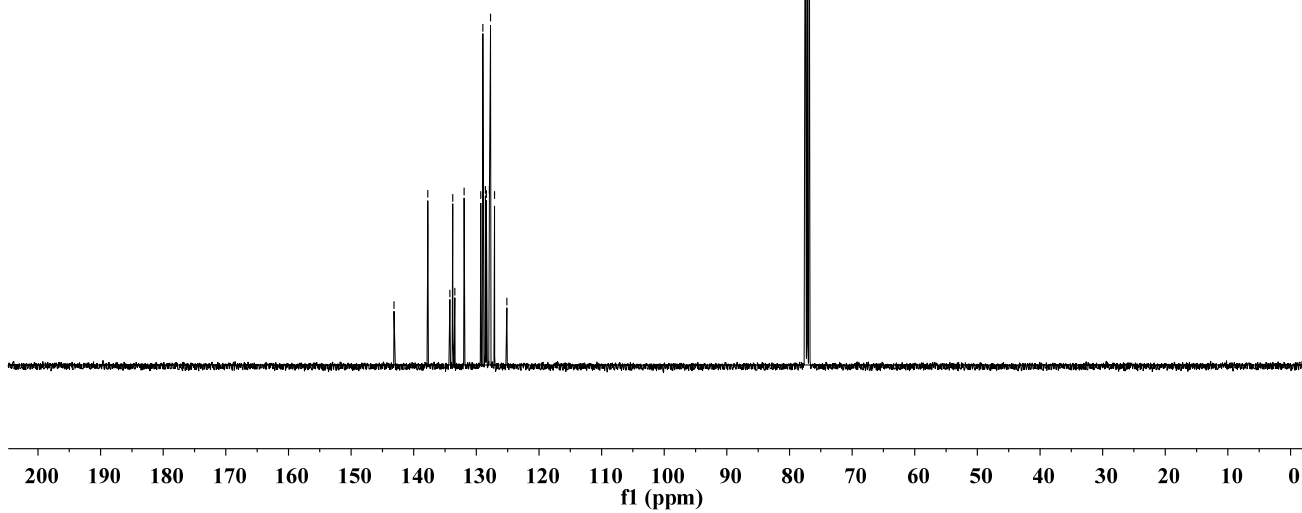
^1H NMR (400 MHz, CDCl_3)
3at

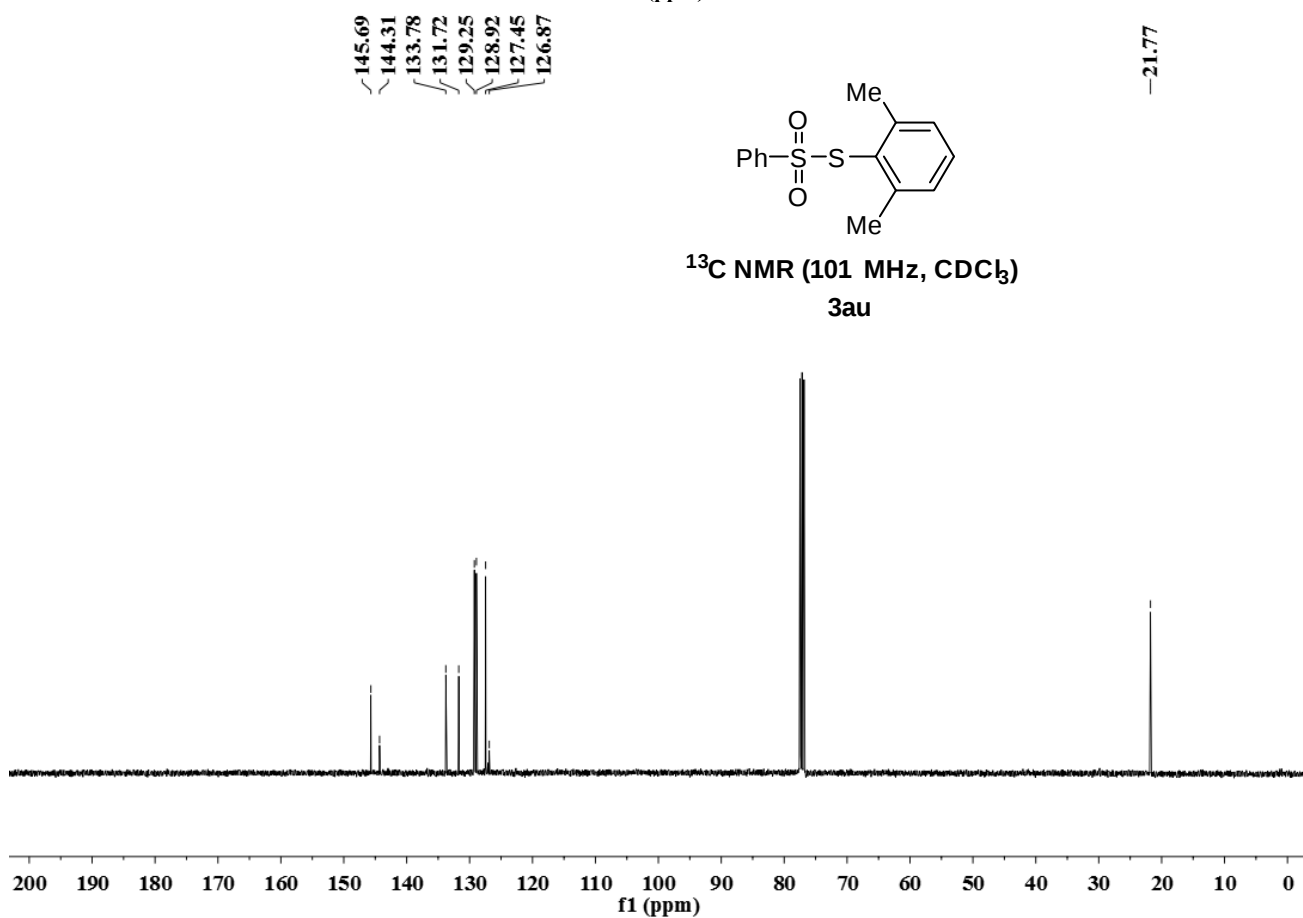
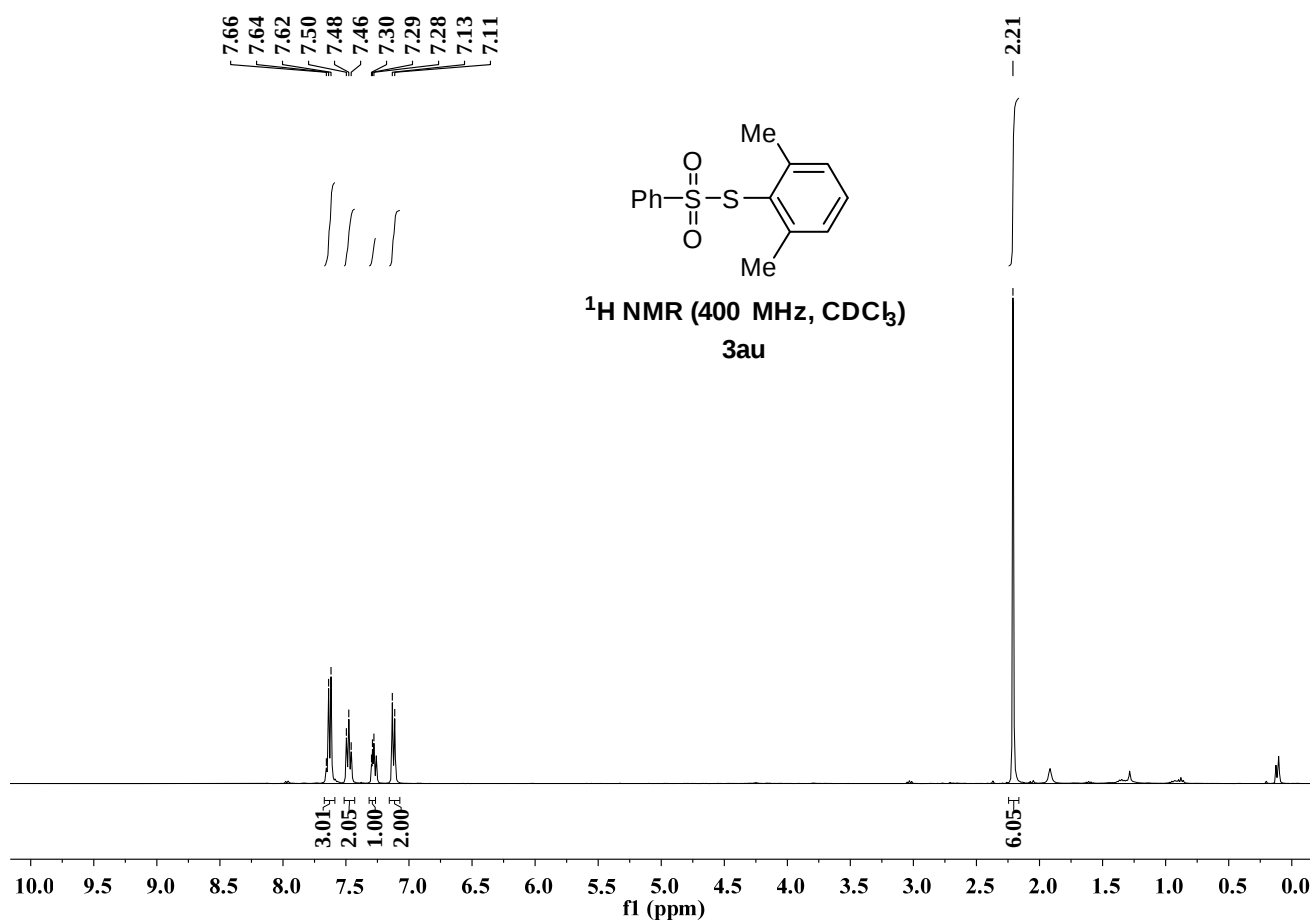


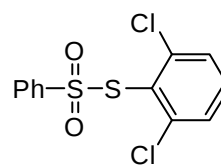
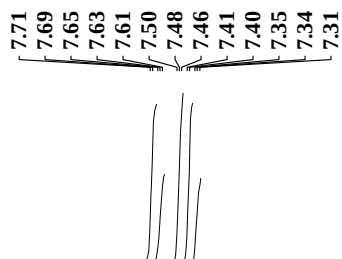
143.16
137.75
134.24
133.76
133.43
131.94
129.29
128.97
128.56
128.39
127.92
127.74
127.10
125.12



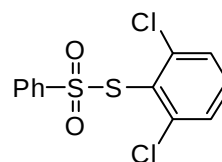
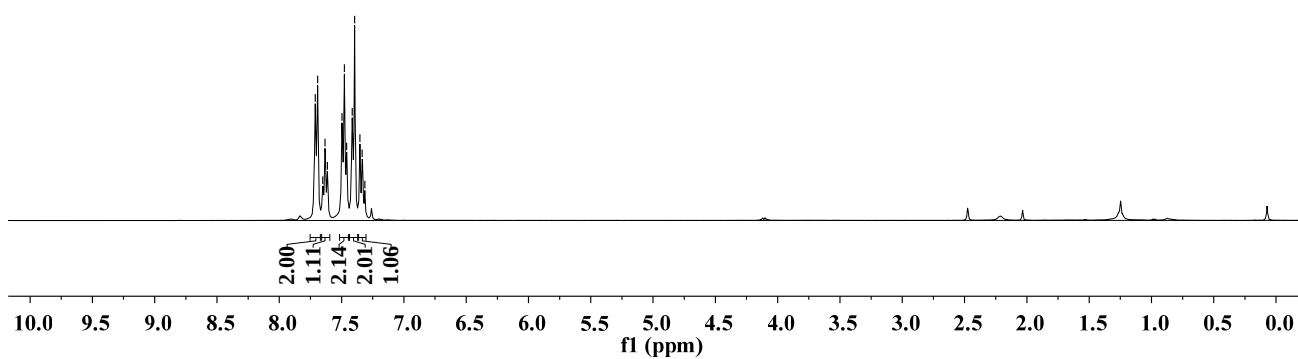
^{13}C NMR (101 MHz, CDCl_3)
3at



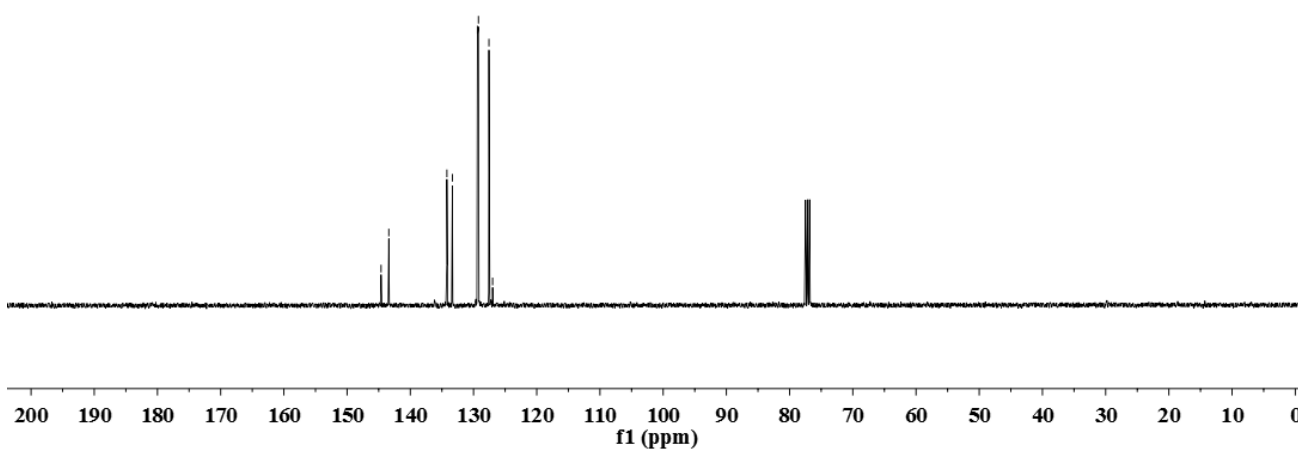


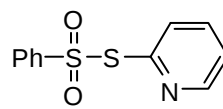
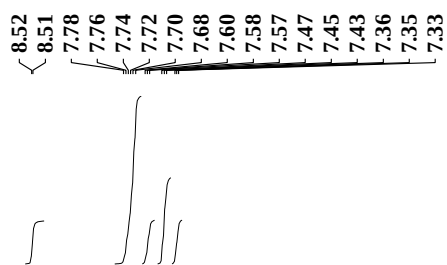


¹H NMR (400 MHz, CDCl₃)
3av



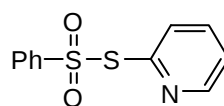
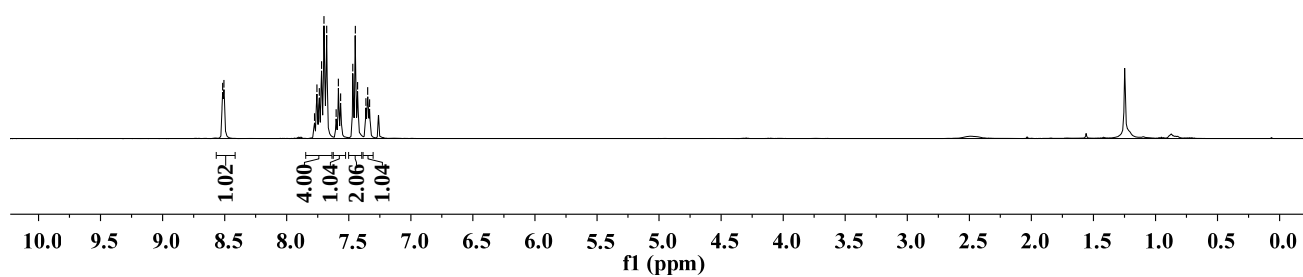
¹³C NMR (101 MHz, CDCl₃)
3av





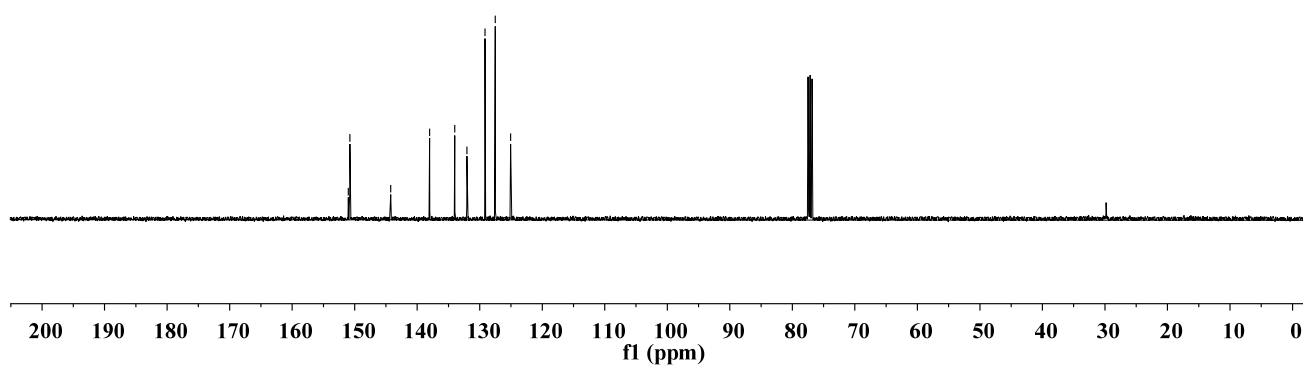
¹H NMR (400 MHz, CDCl₃)

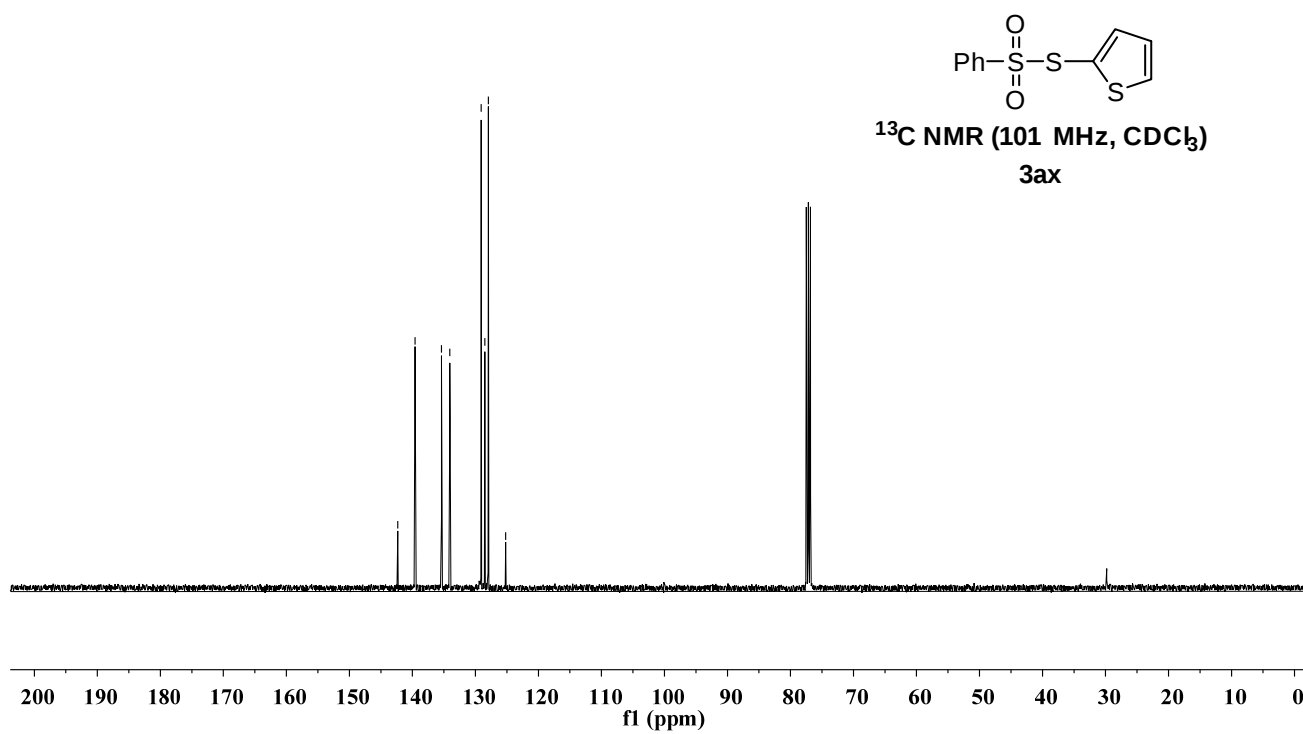
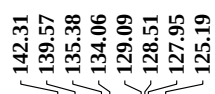
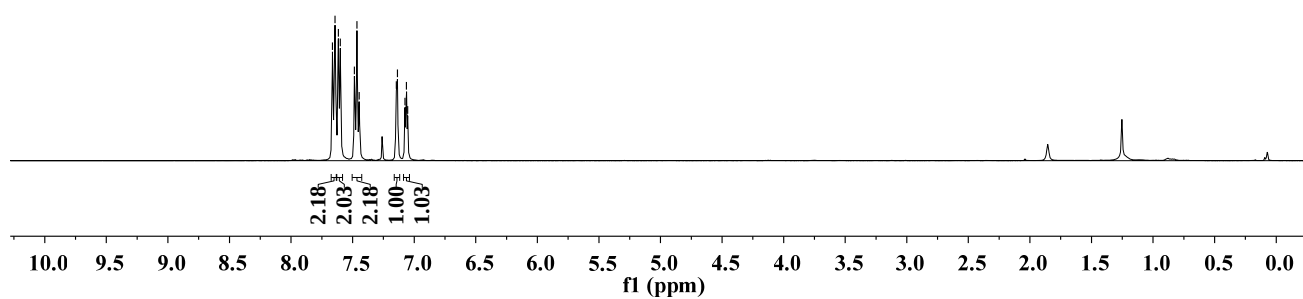
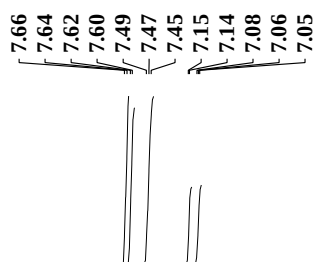
3aw



¹³C NMR (101 MHz, CDCl₃)

3aw

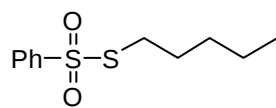




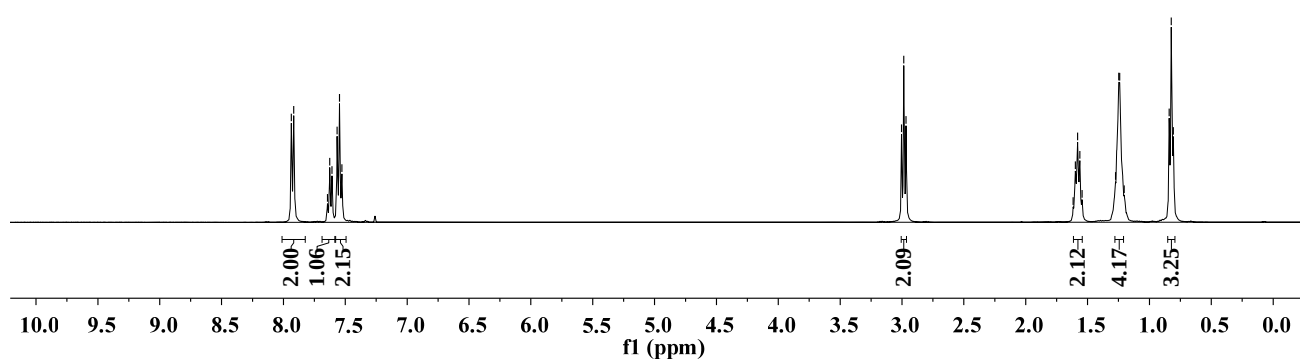
7.94
7.92
7.64
7.63
7.61
7.57
7.55
7.53

3.00
2.99
2.97

1.62
1.60
1.58
1.56
1.54
1.27
1.25
1.24
1.20
0.84
0.82
0.81

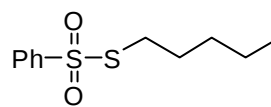


¹H NMR (400 MHz, CDCl₃)
3ay

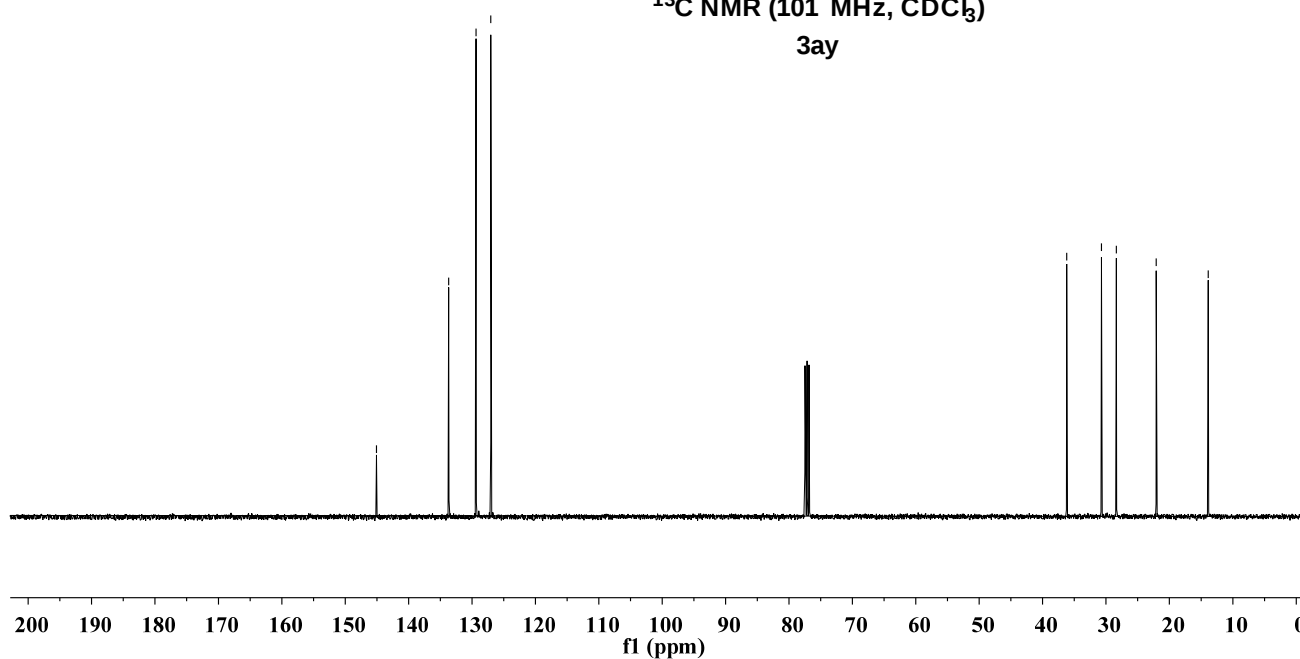


145.06
133.67
129.36
127.03

36.19
30.71
28.38
22.08
13.88



¹³C NMR (101 MHz, CDCl₃)
3ay

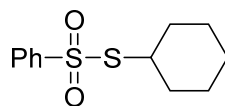


7.95
7.93
7.63
7.62
7.60
7.56
7.54
7.52
7.26

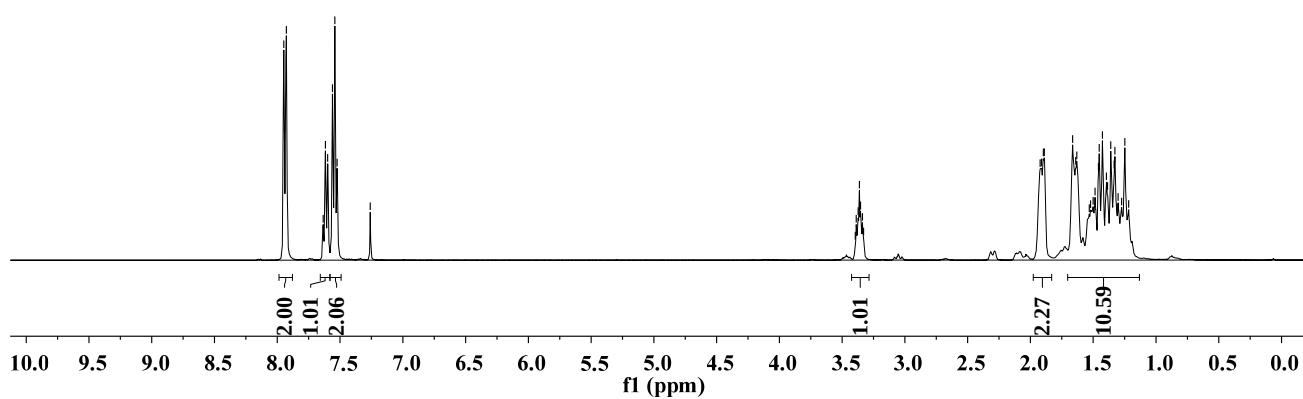
3.40
3.39
3.37
3.36
3.35
3.34
3.33

1.92
1.91
1.90
1.89
1.66
1.64
1.63
1.45
1.43
1.36
1.33
1.33
1.25

∫ ∫



¹H NMR (400 MHz, CDCl₃)
3ay'



145.87

133.56

129.33

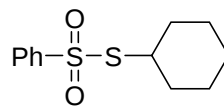
126.93

50.57

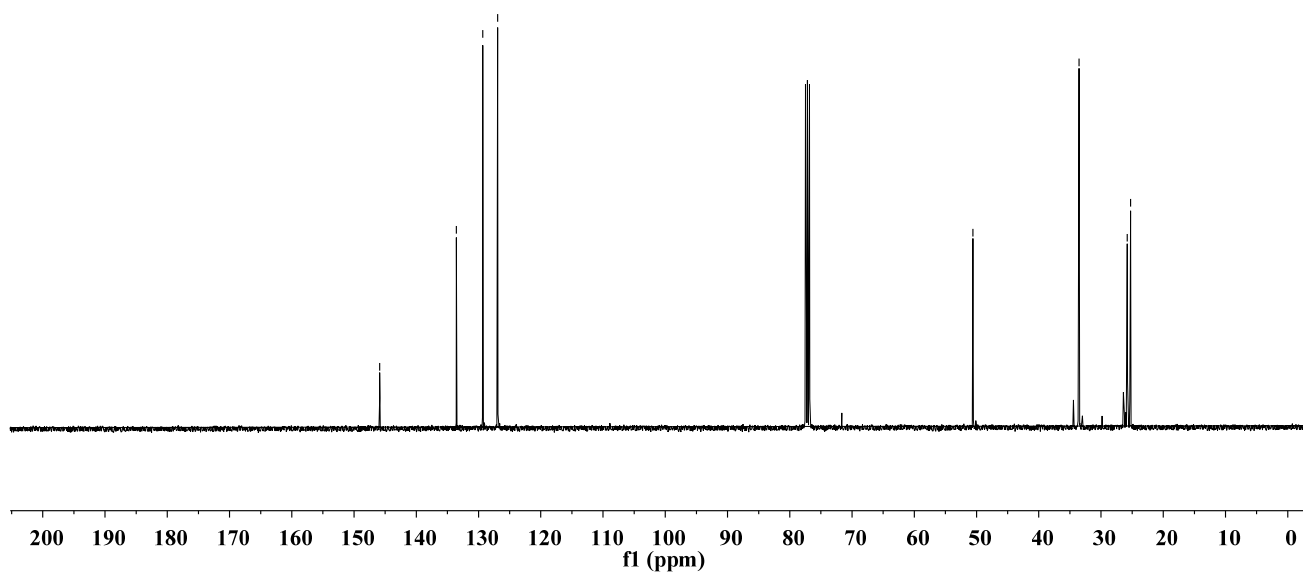
33.54

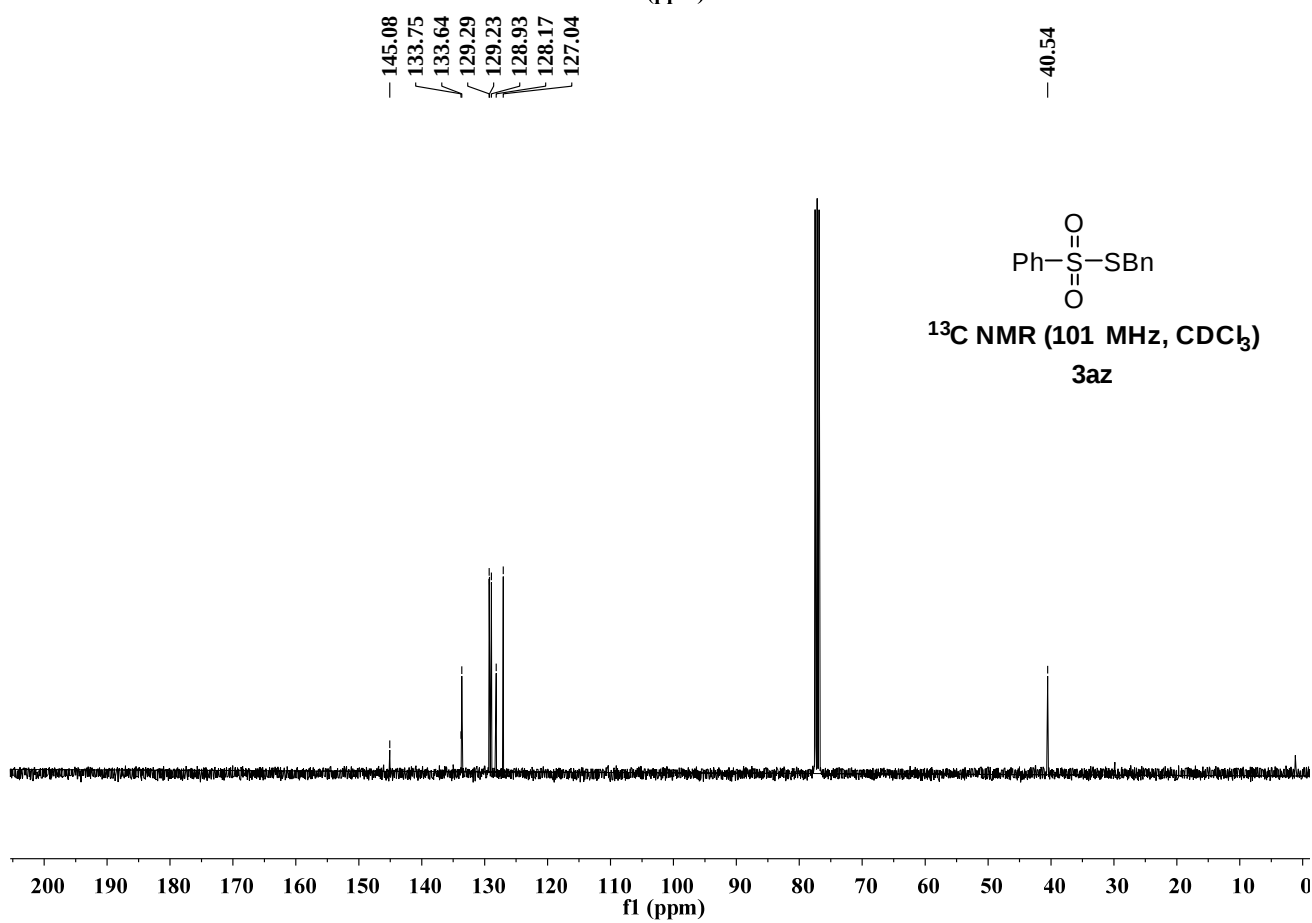
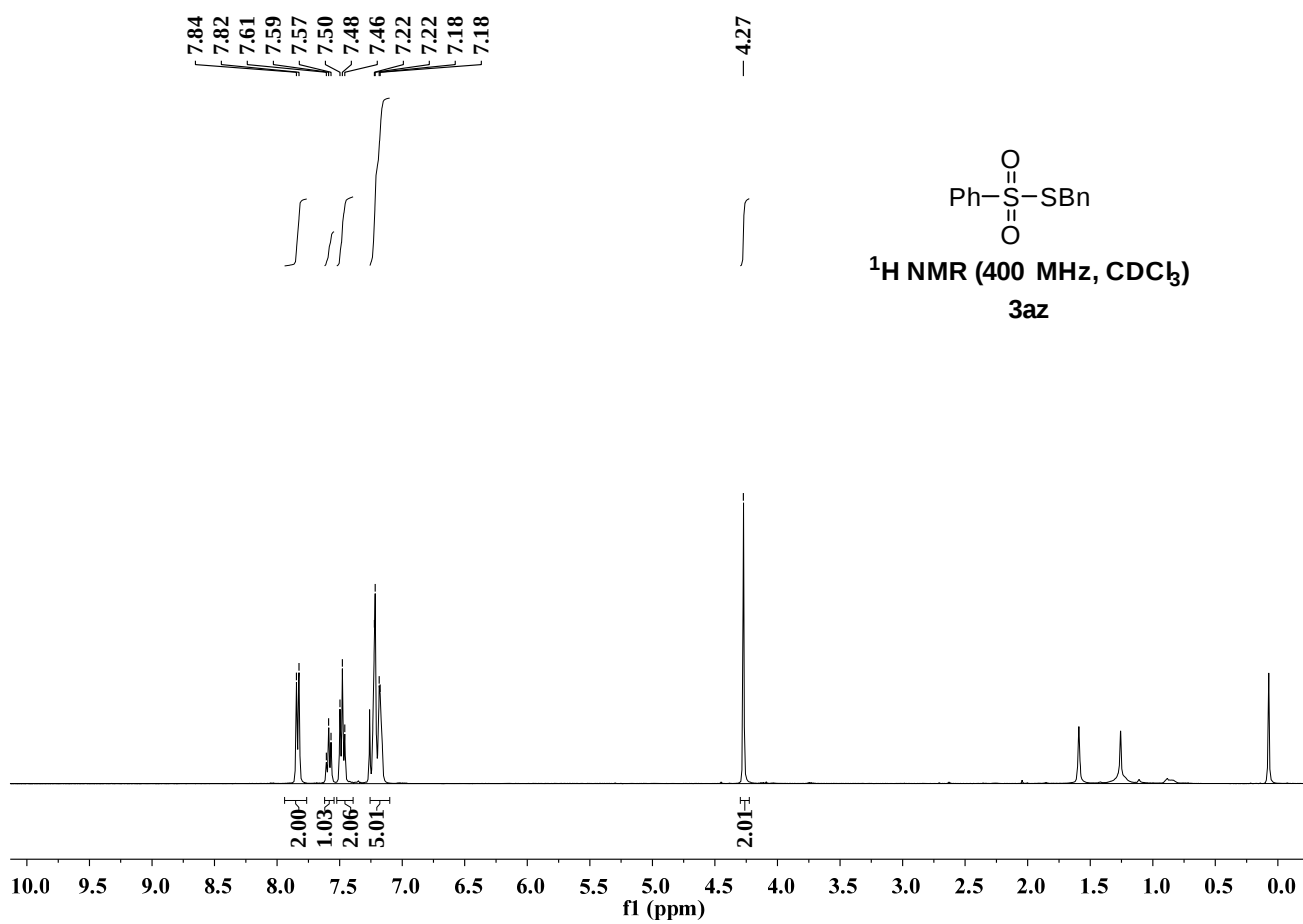
25.78

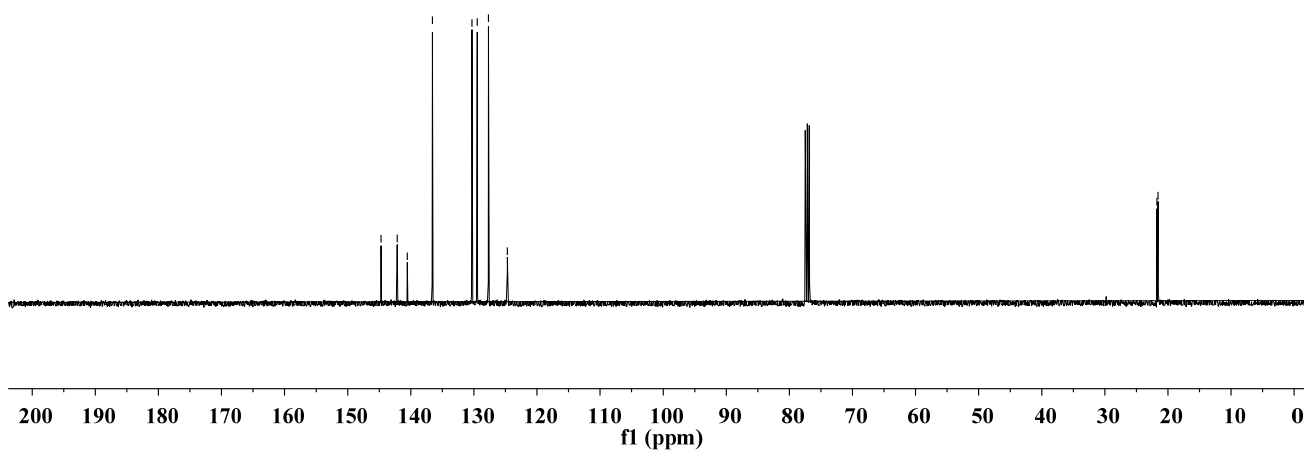
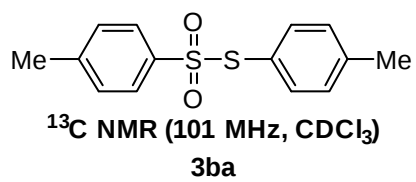
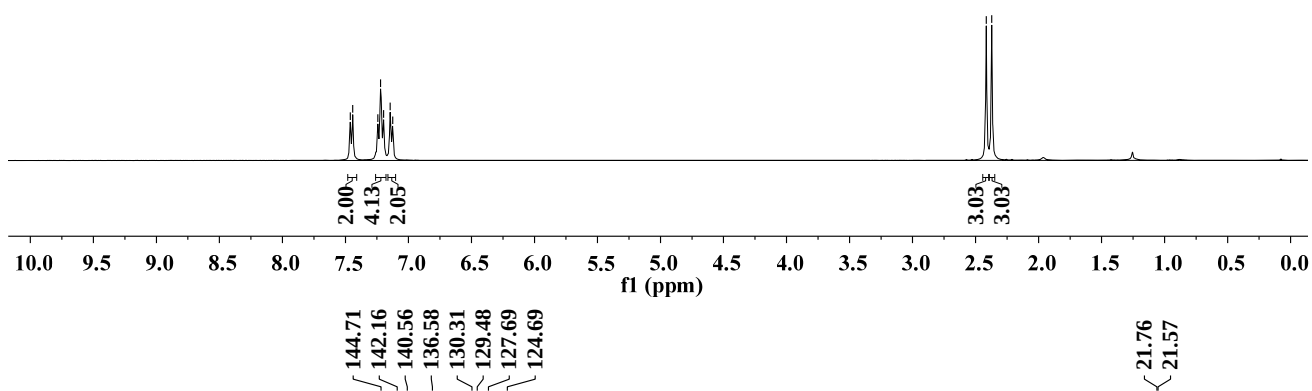
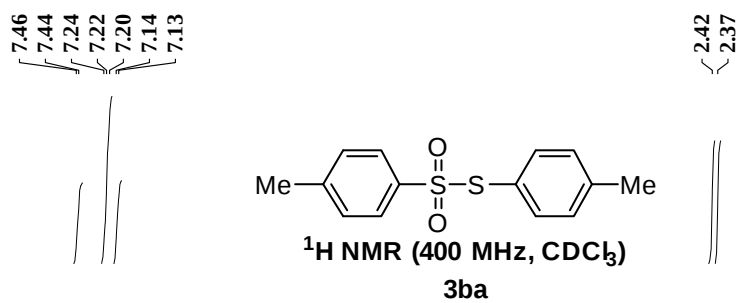
25.26

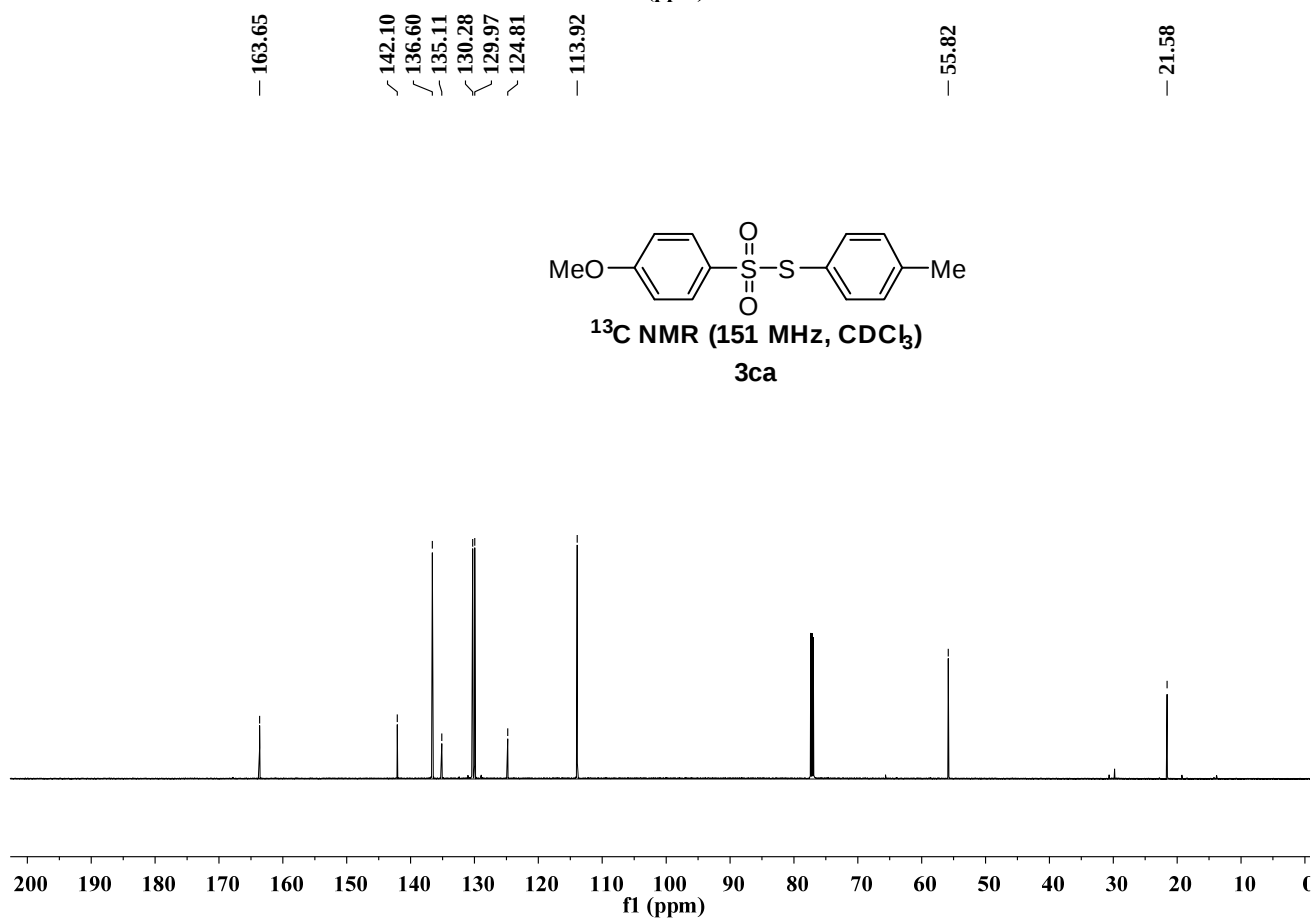
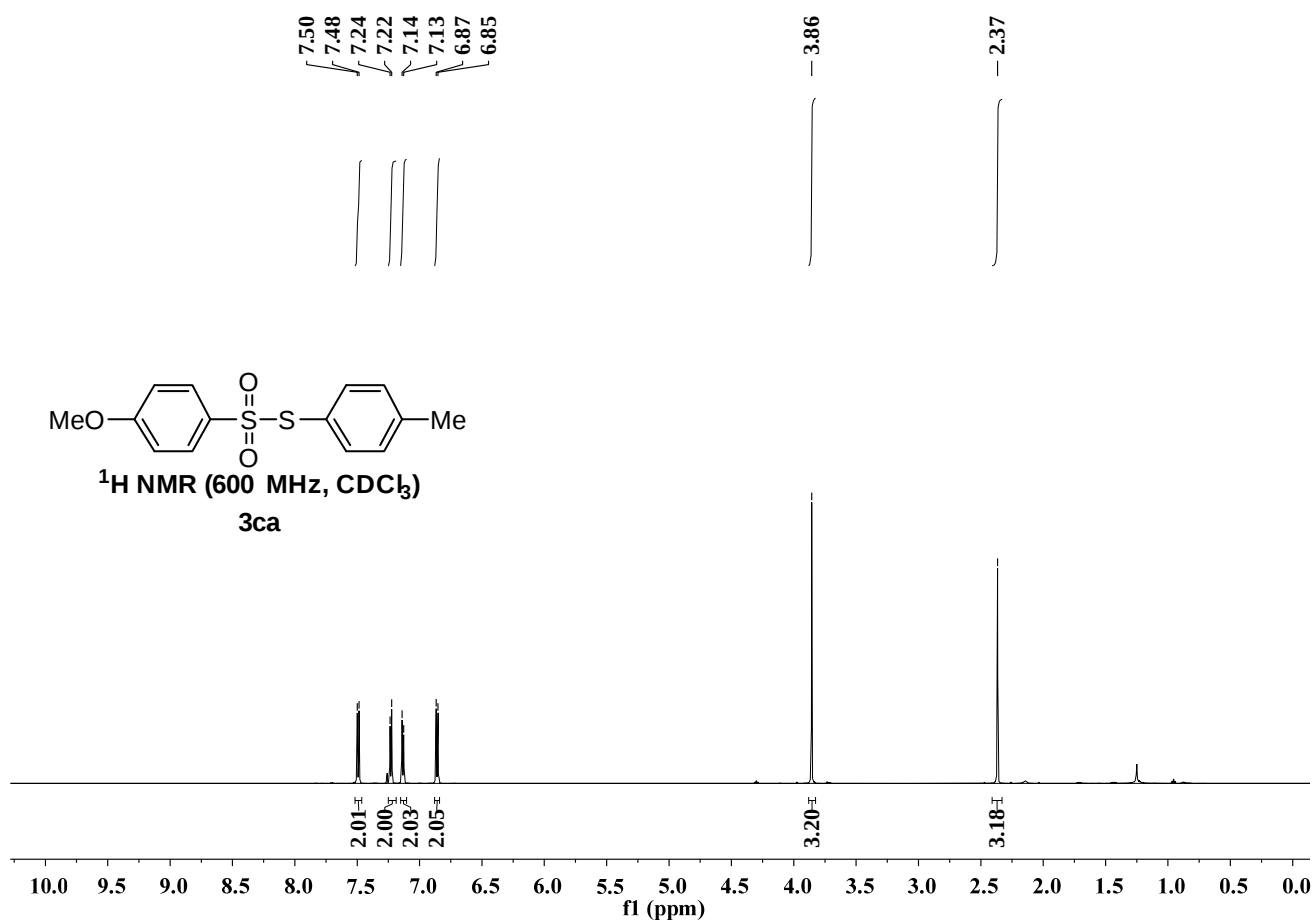


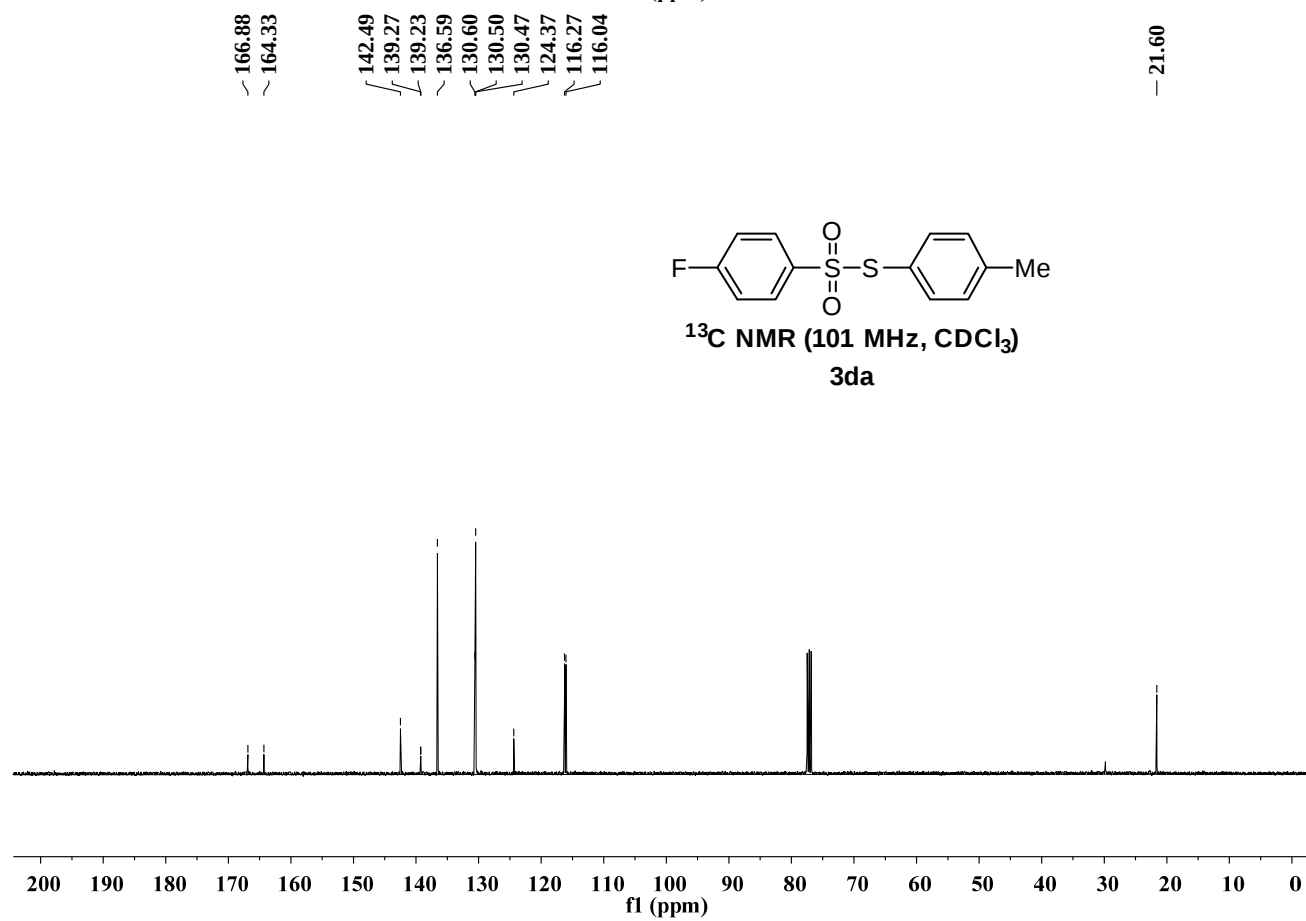
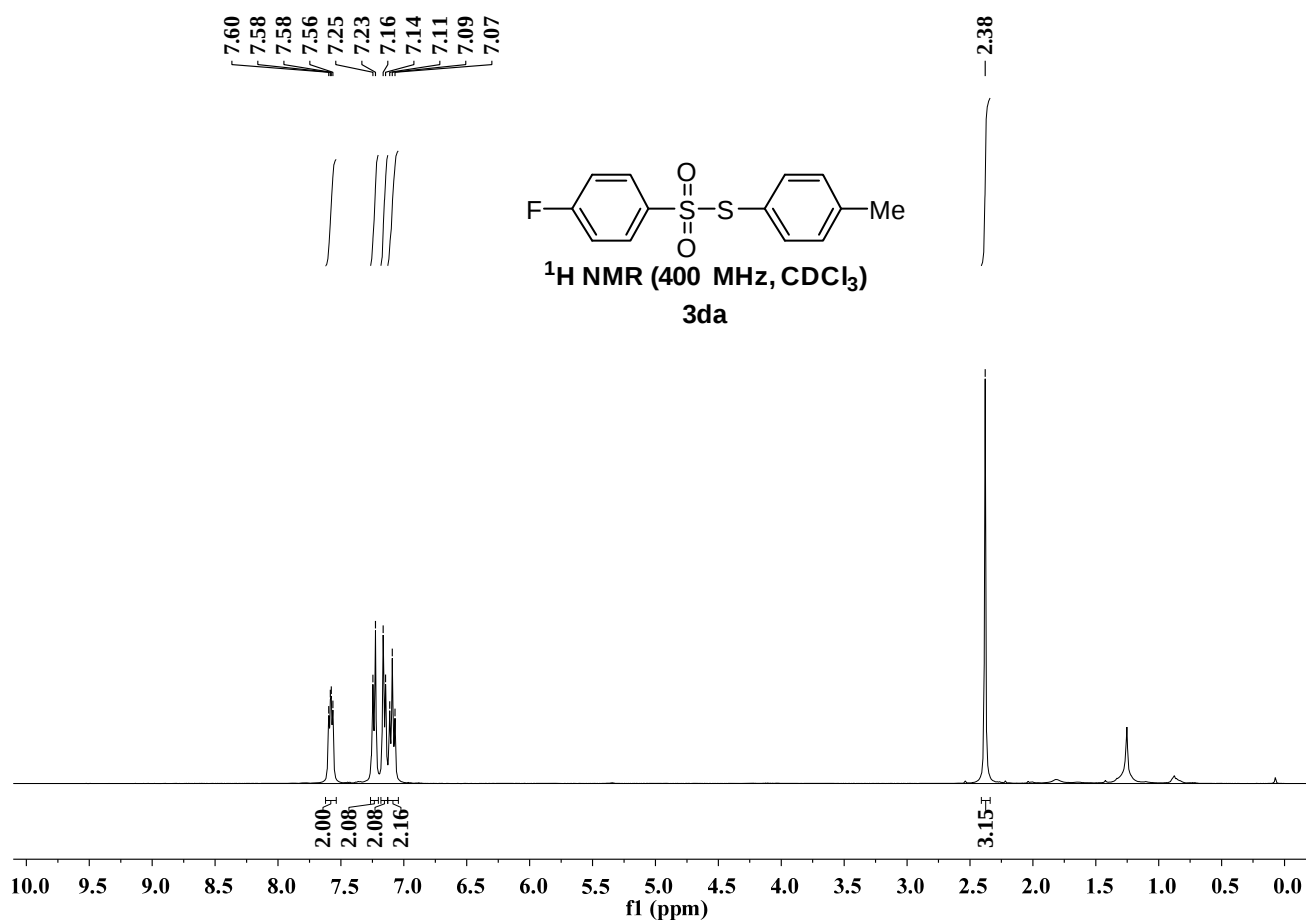
¹³C NMR (101 MHz, CDCl₃)
3ay'

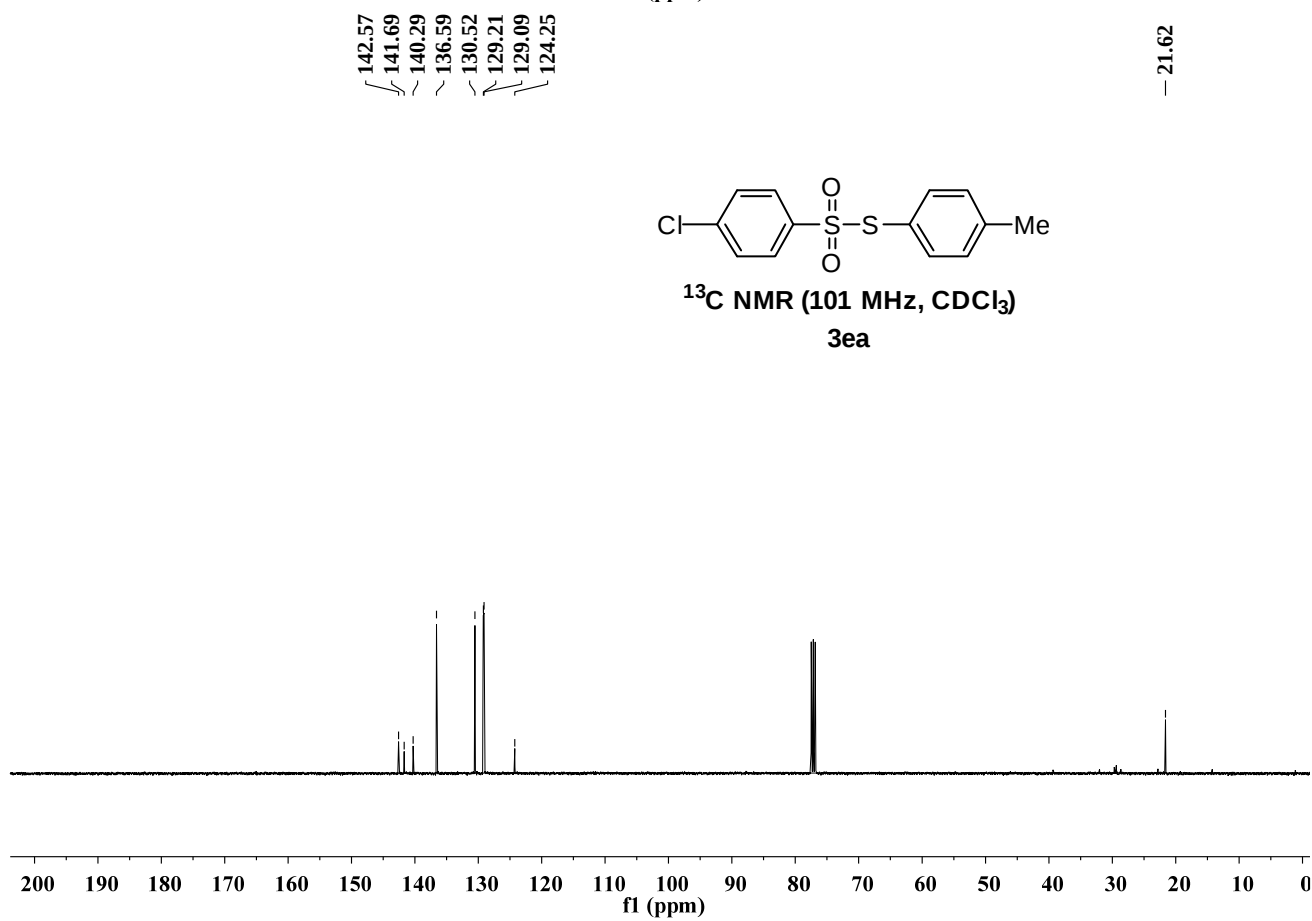
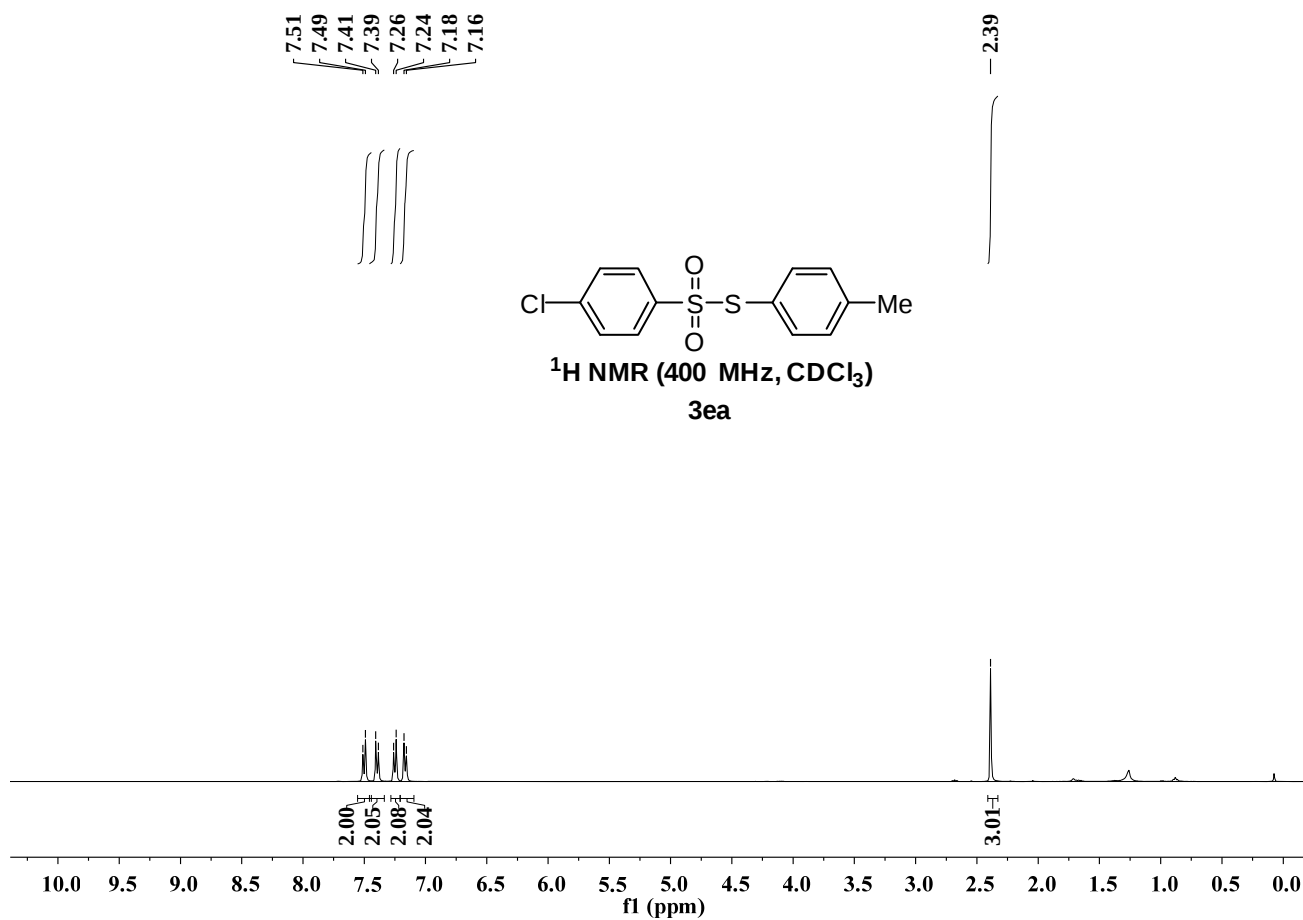


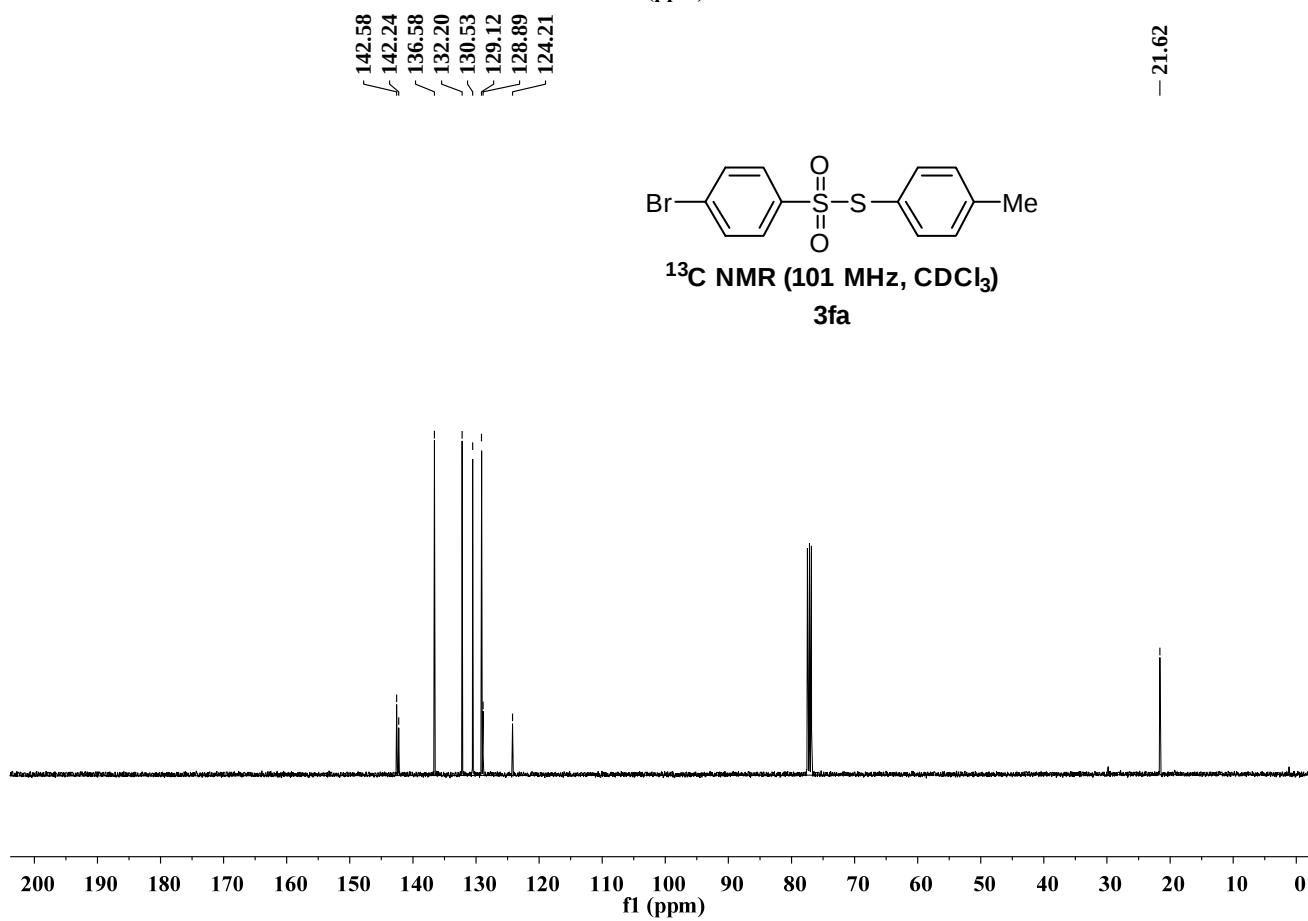
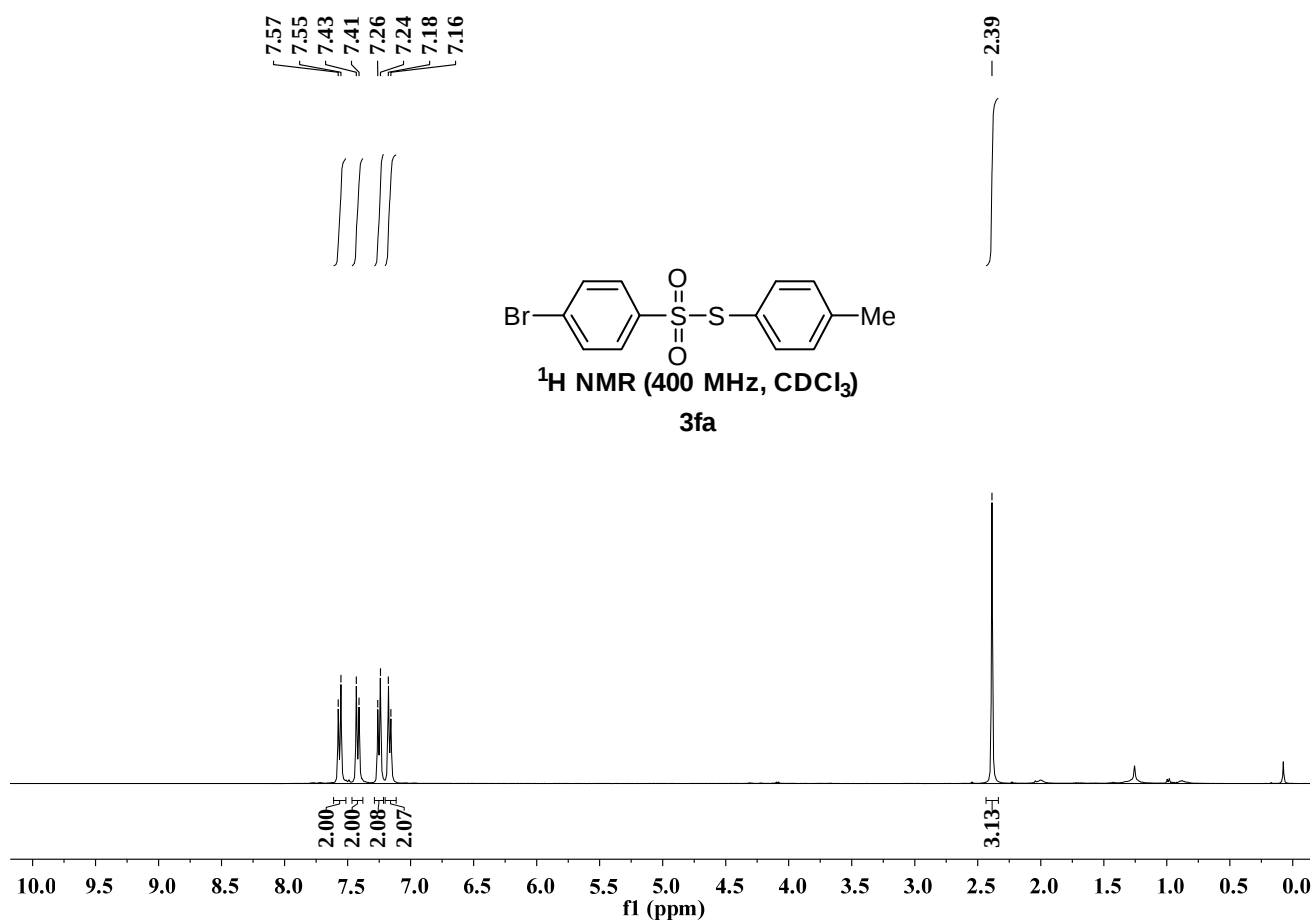


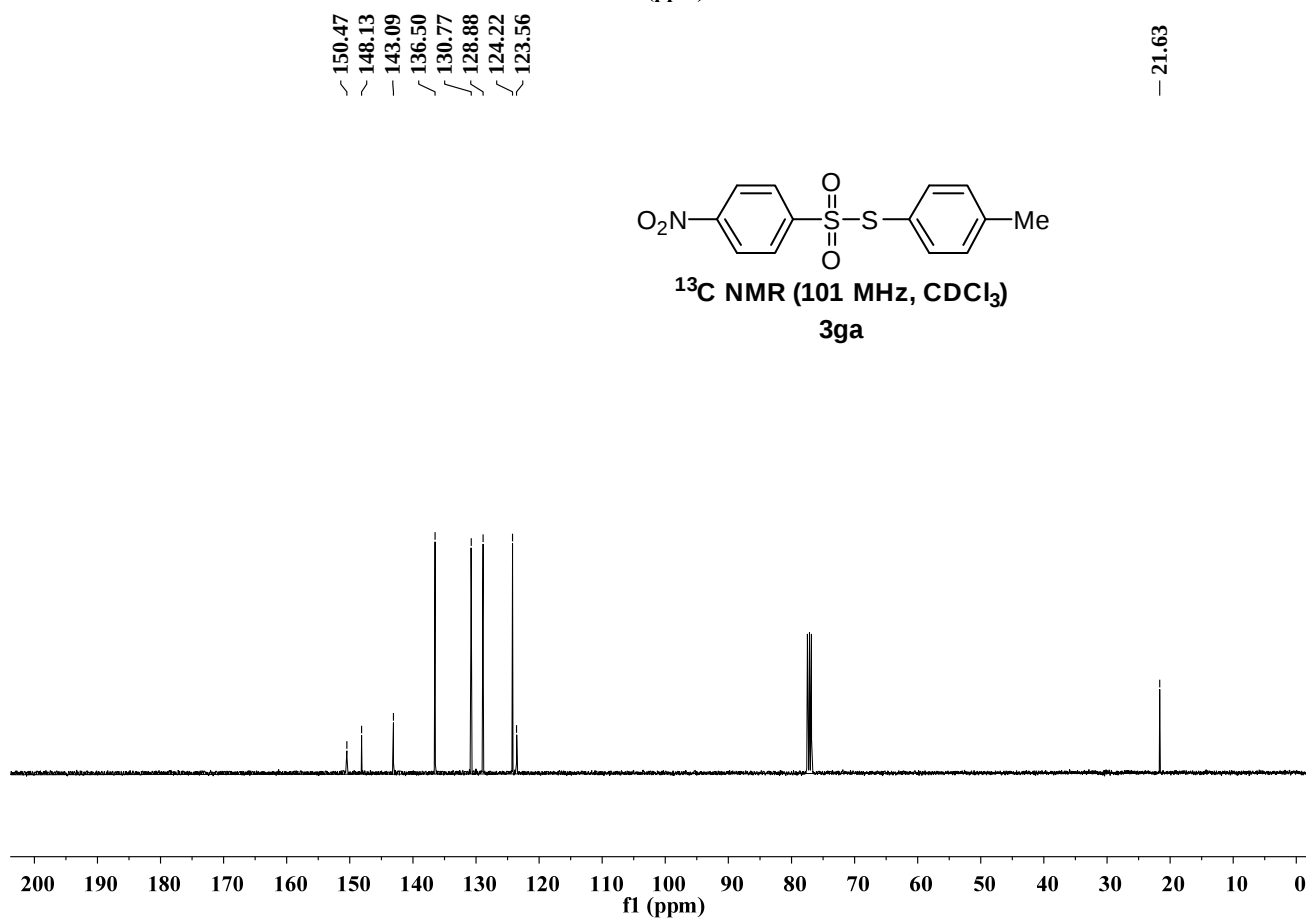
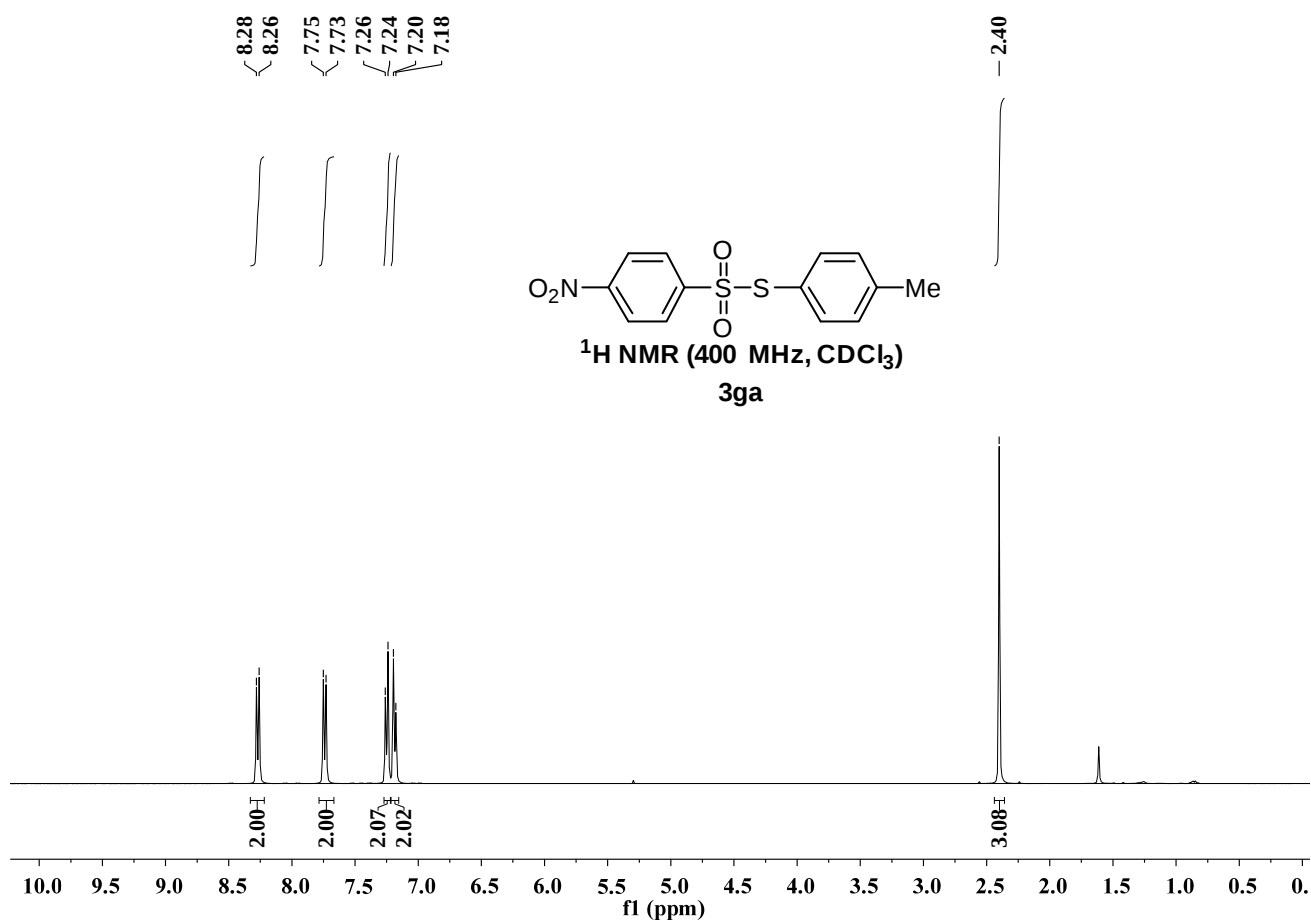


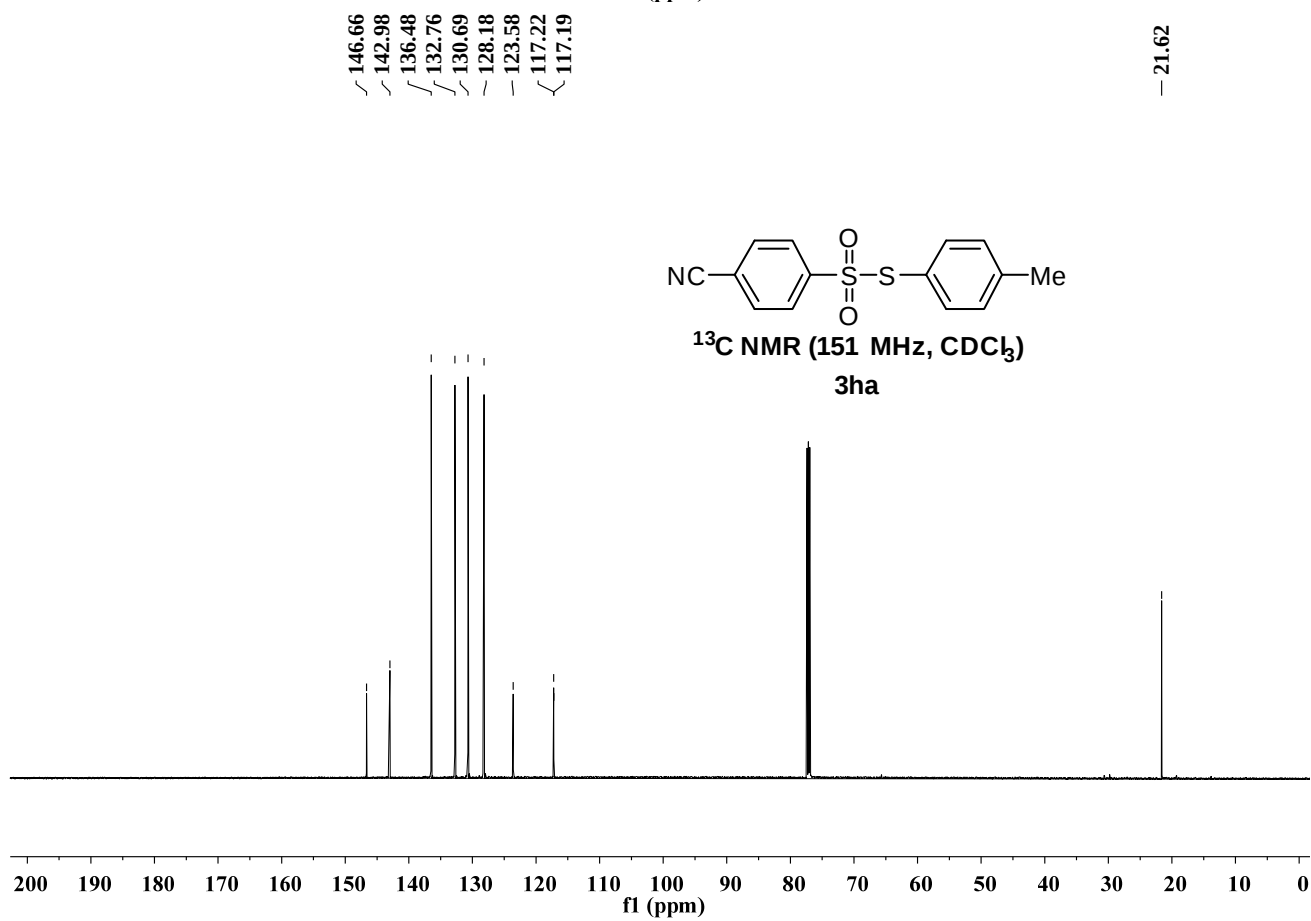
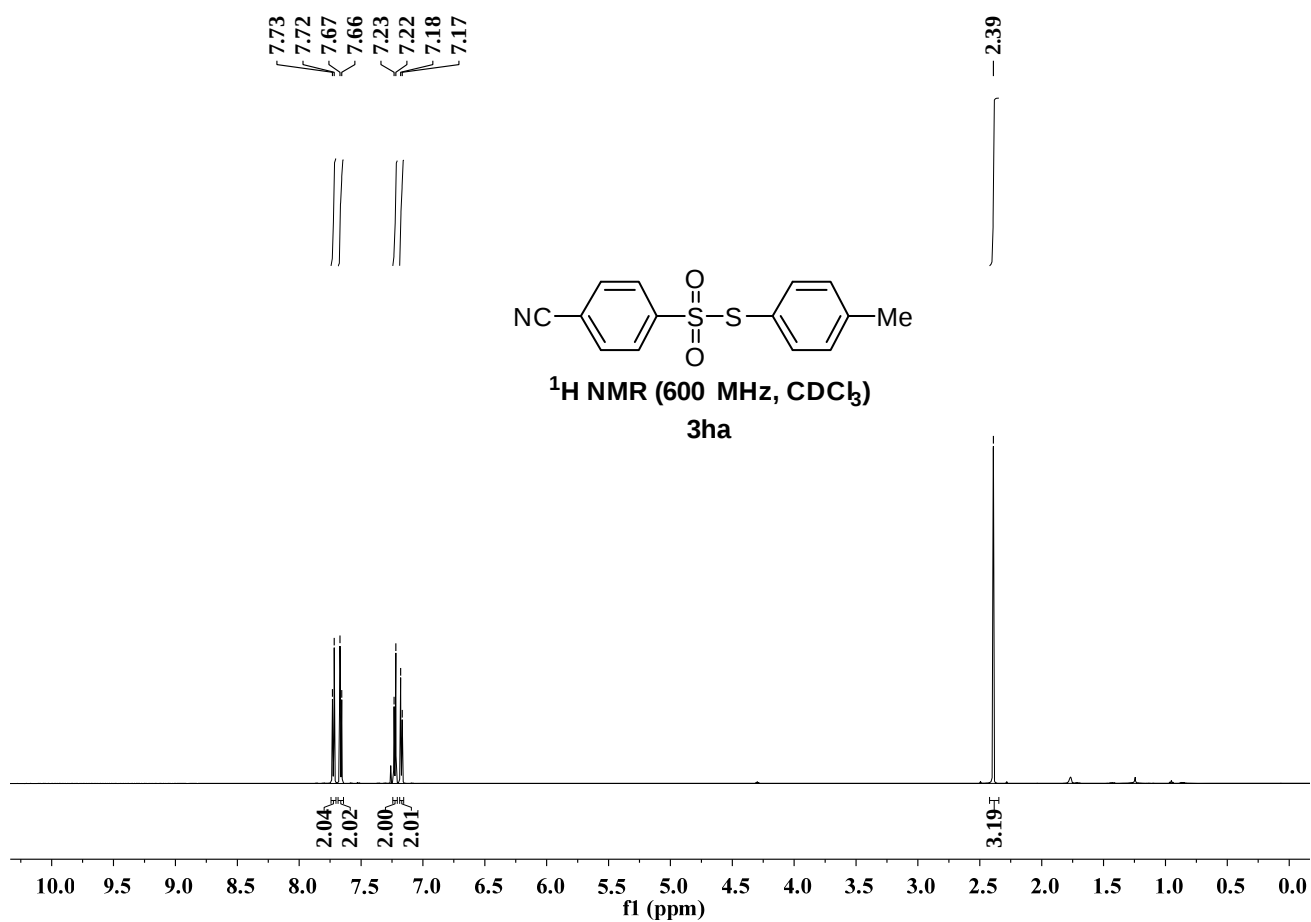


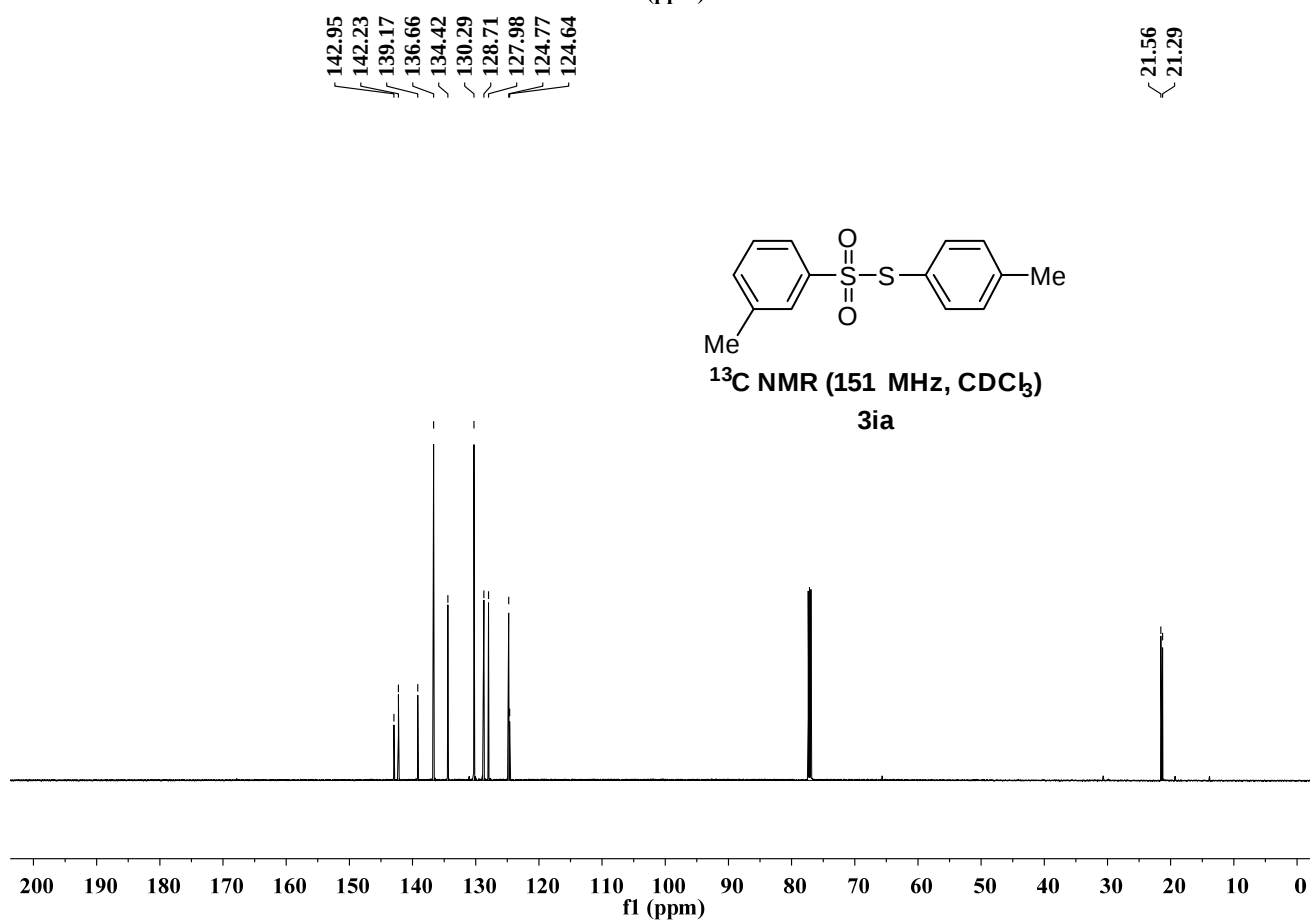
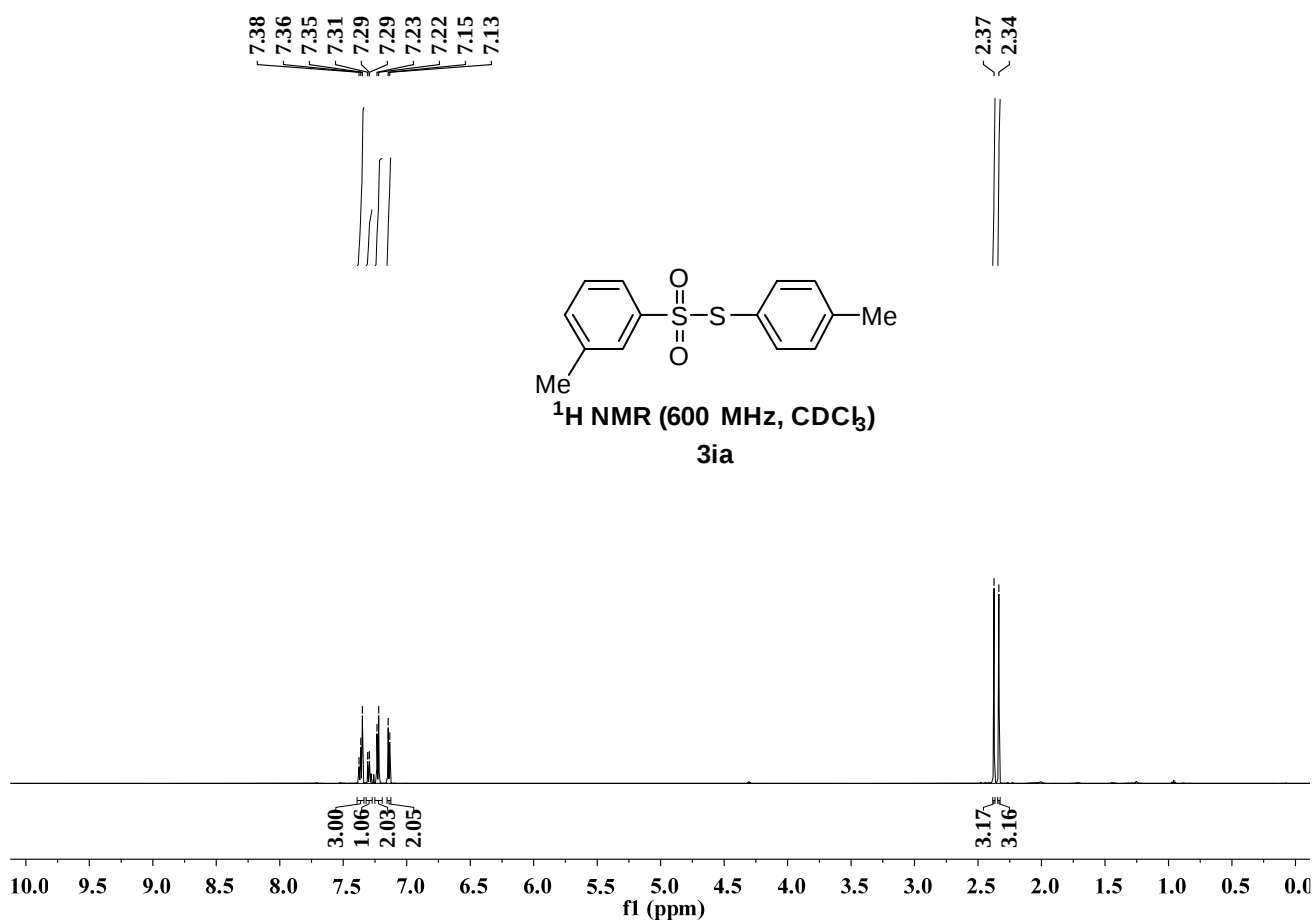


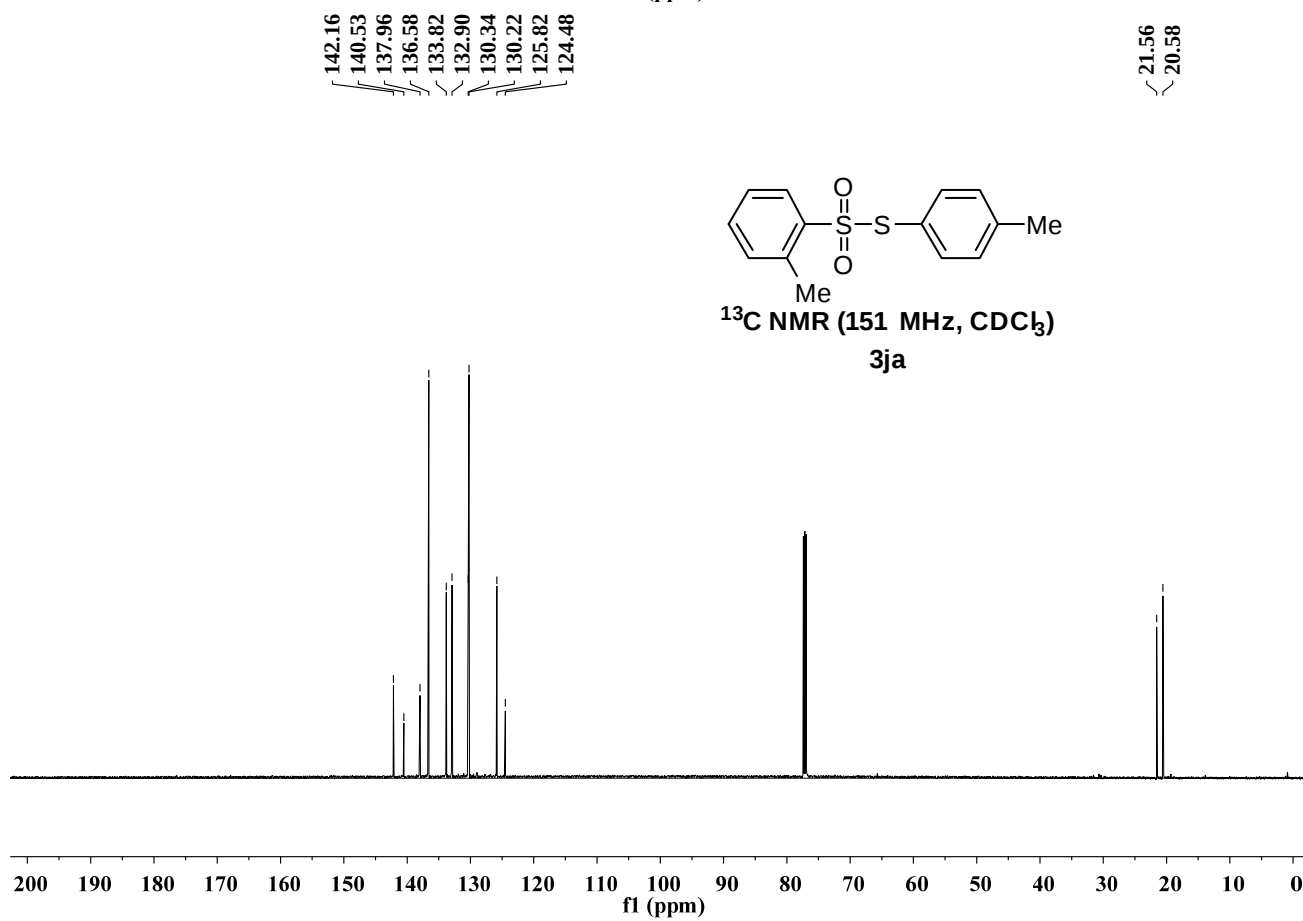
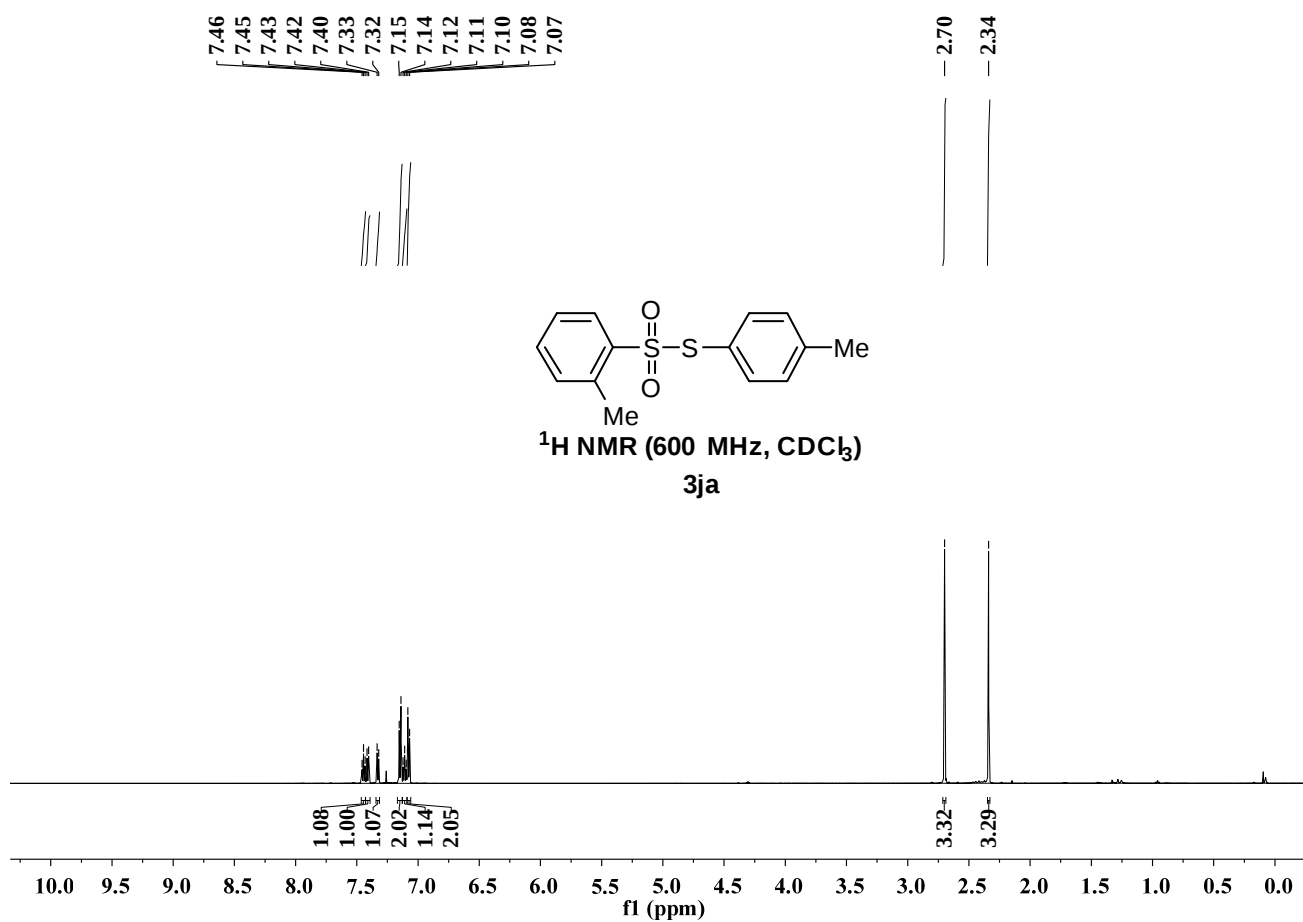


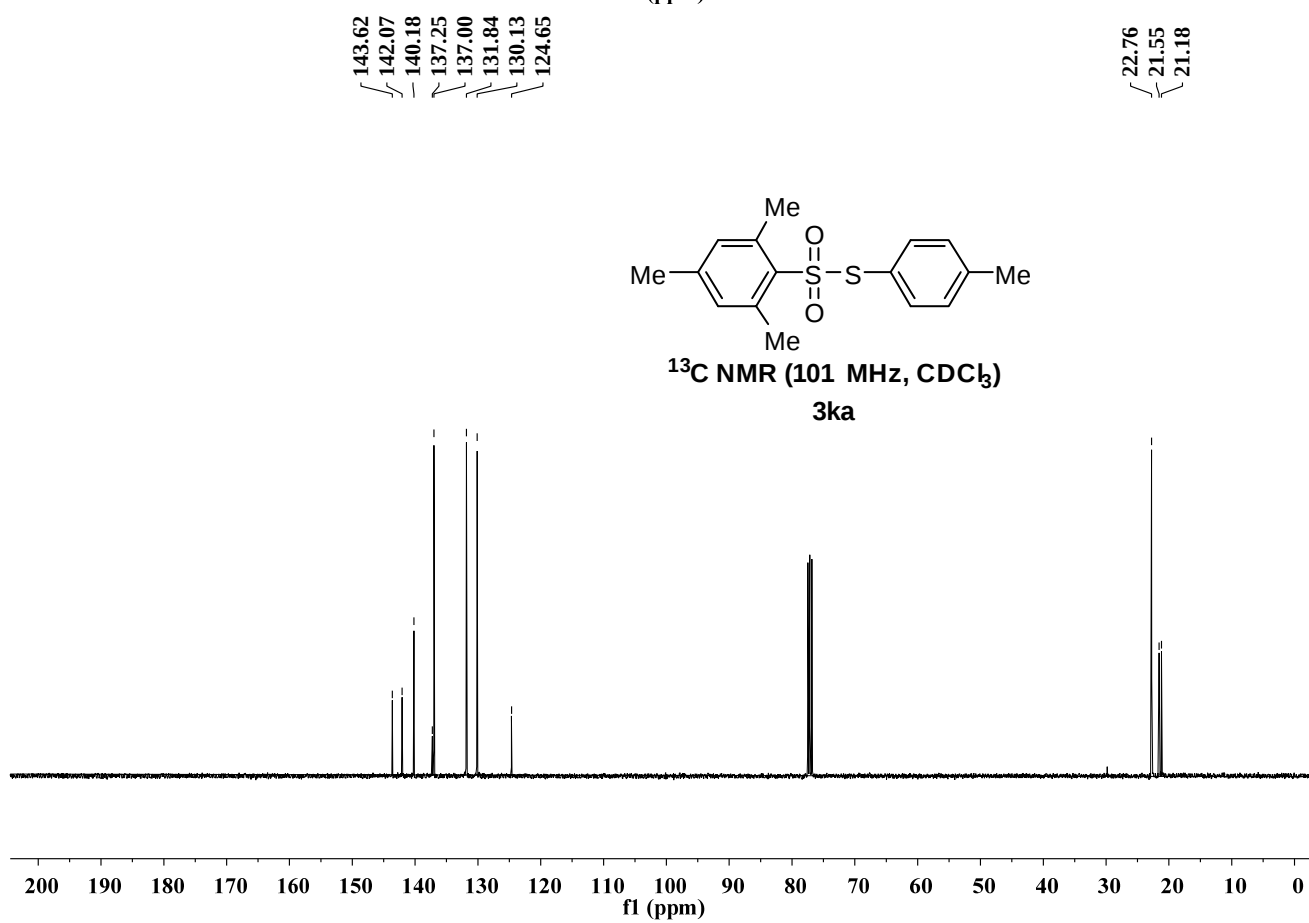
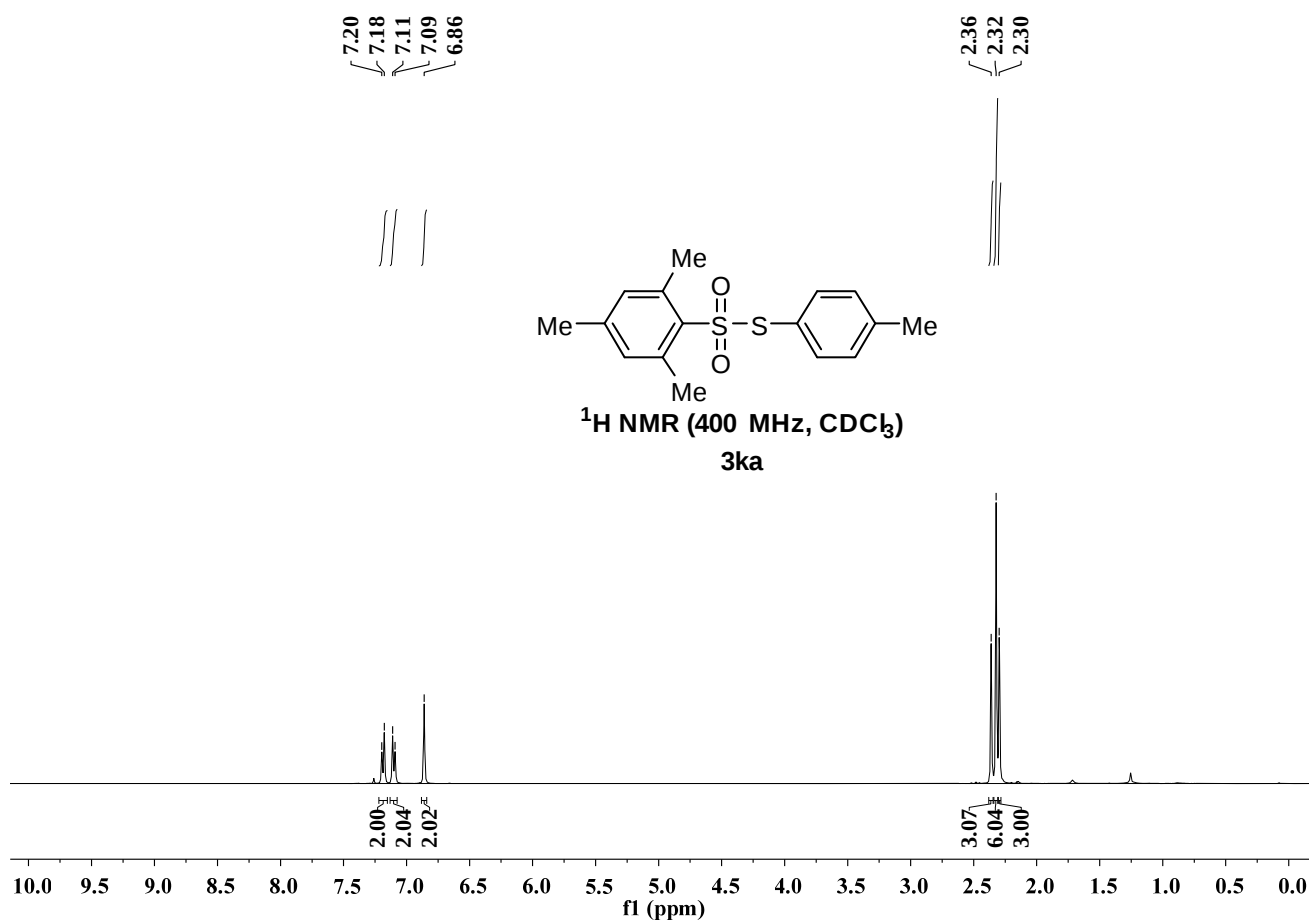


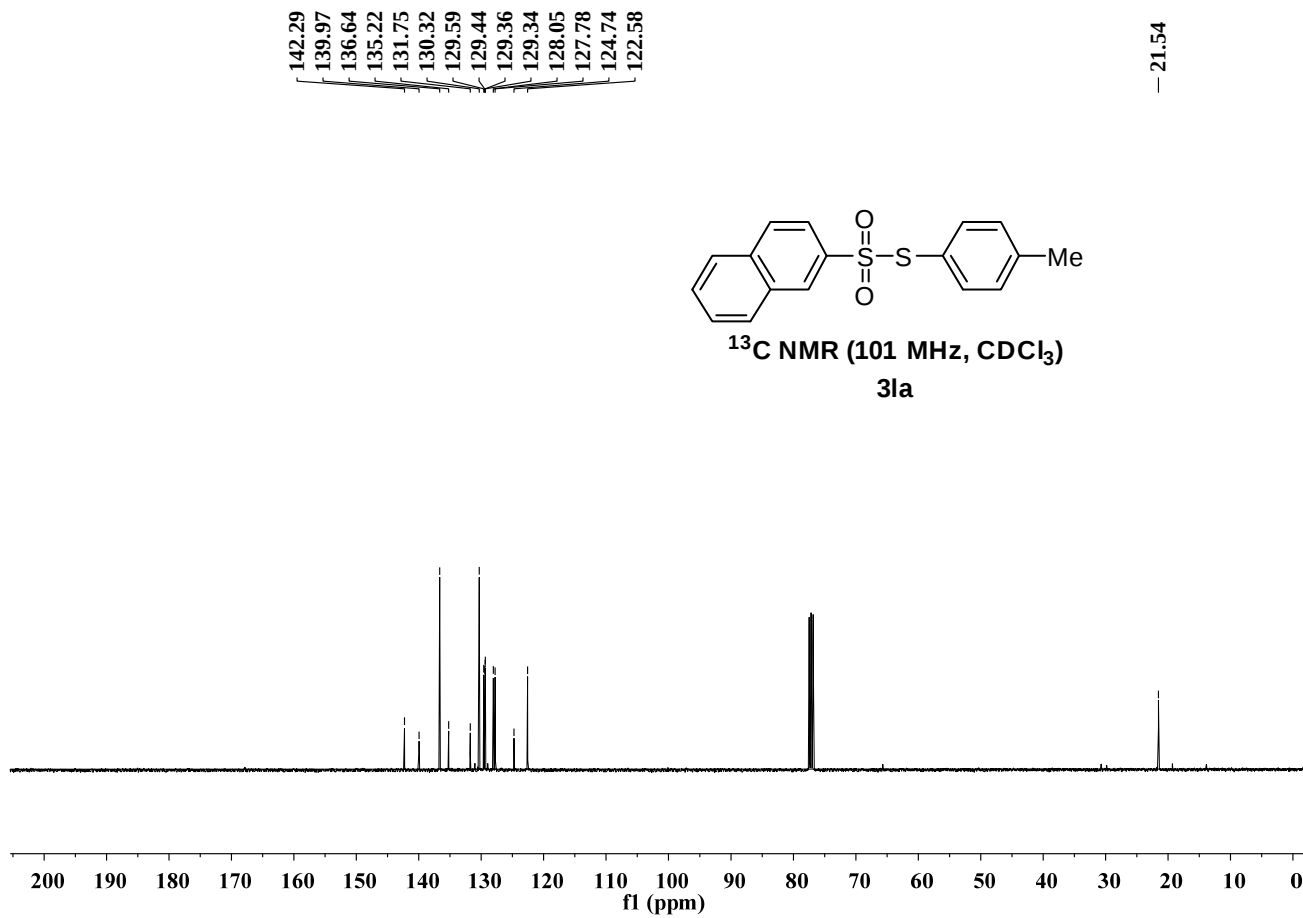
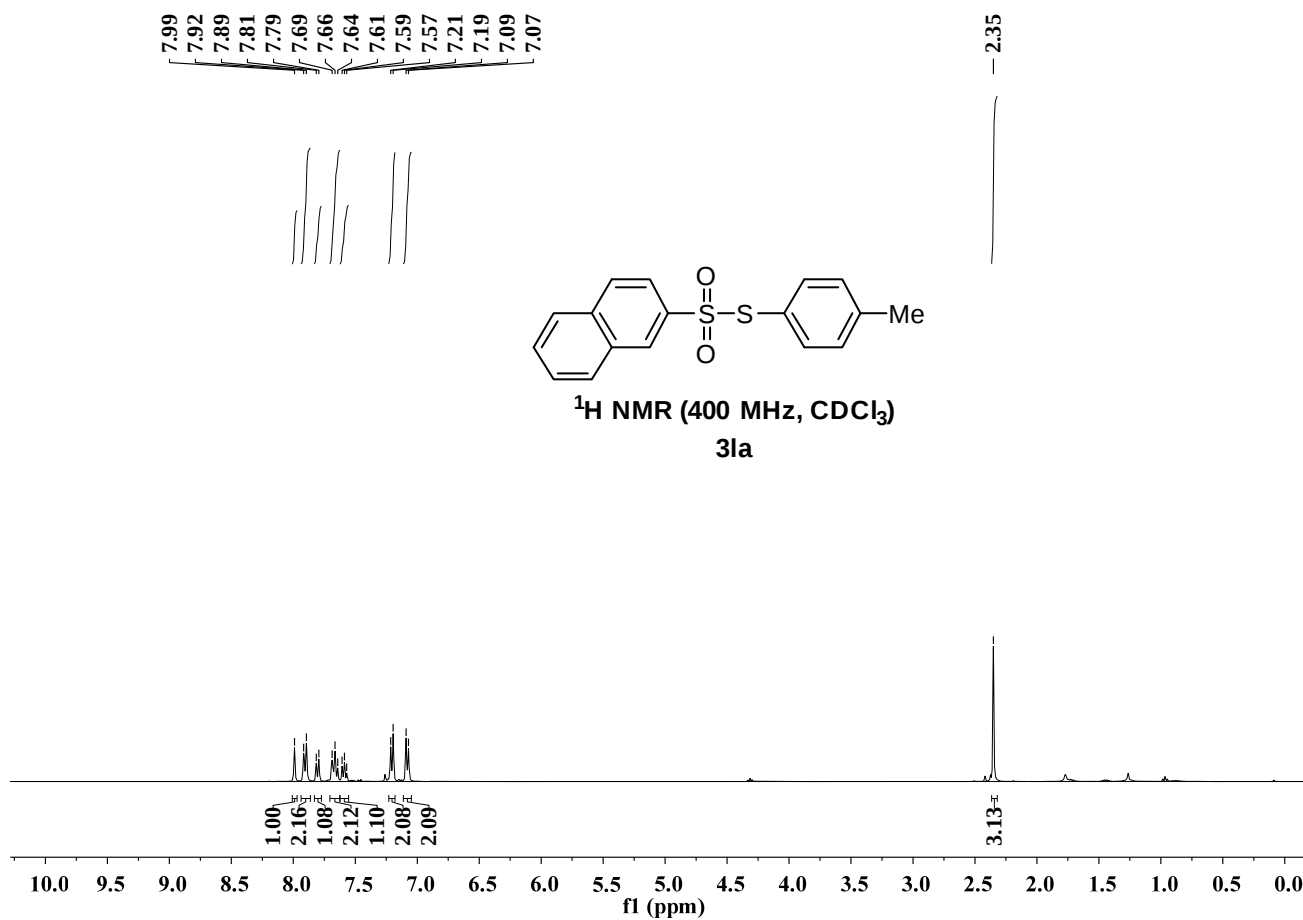












7.59
7.57
7.30
7.28

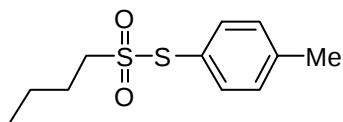
3.20
3.19
3.17

2.42

1.92
1.90
1.88

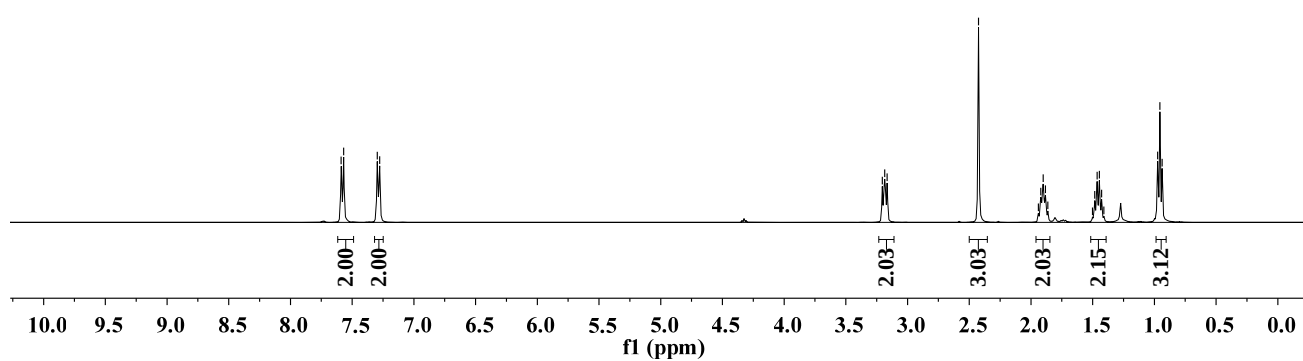
1.46

1.45
0.97
0.96
0.94



¹H NMR (400 MHz, CDCl₃)

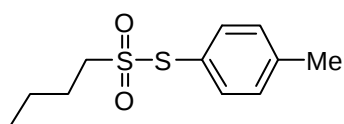
3ma



142.33
136.23
130.69
124.59

58.91

25.47
21.55
21.33
13.65



¹³C NMR (101 MHz, CDCl₃)

3ma

