

## Supporting Information

### Atom Transfer Radical Addition via Dual Photoredox/Manganese Catalytic System

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<sup>1</sup> *N. D. Zelinsky Institute of Organic Chemistry, Leninsky Prosp. 47, 119991 Moscow, Russia*

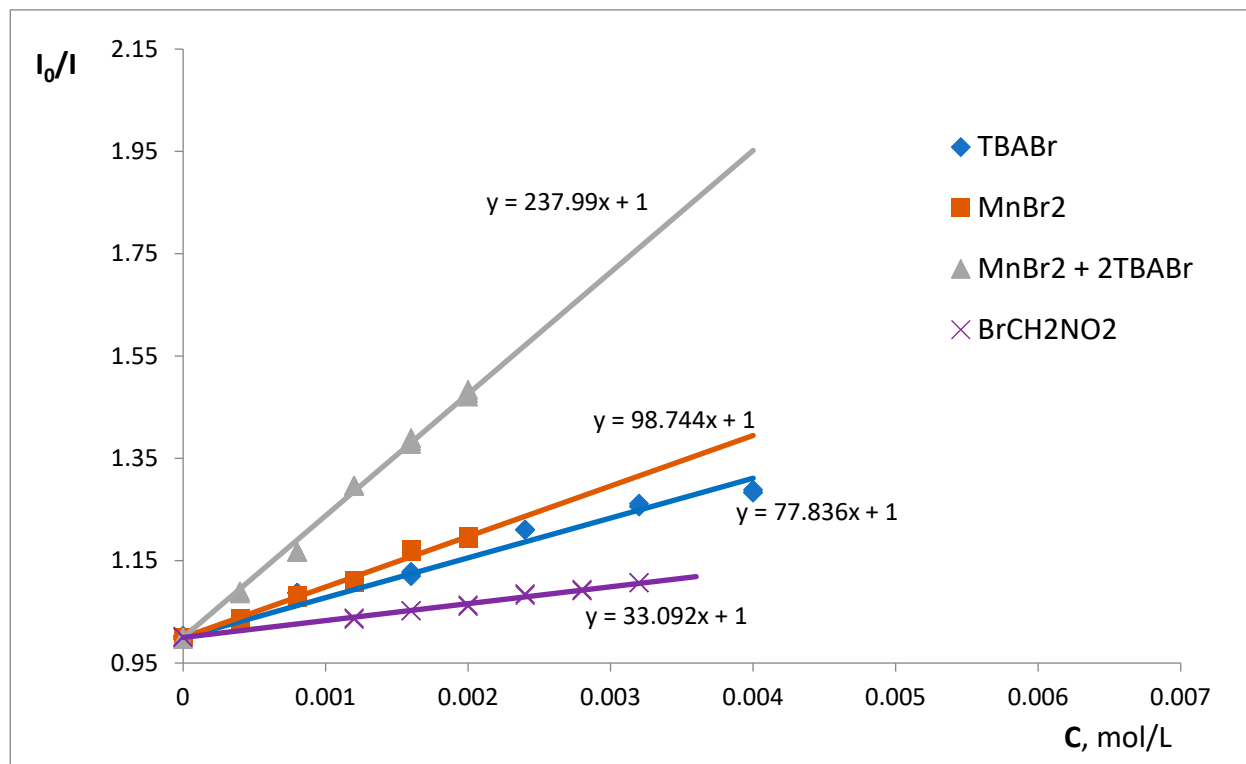
<sup>2</sup> *Department of Chemistry, Lomonosov Moscow State University, Leninskie Gory 1-3, 119991  
Moscow, Russia*

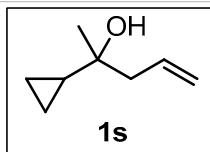
*E-mail: dilman@ioc.ac.ru*

## Stern-Volmer study

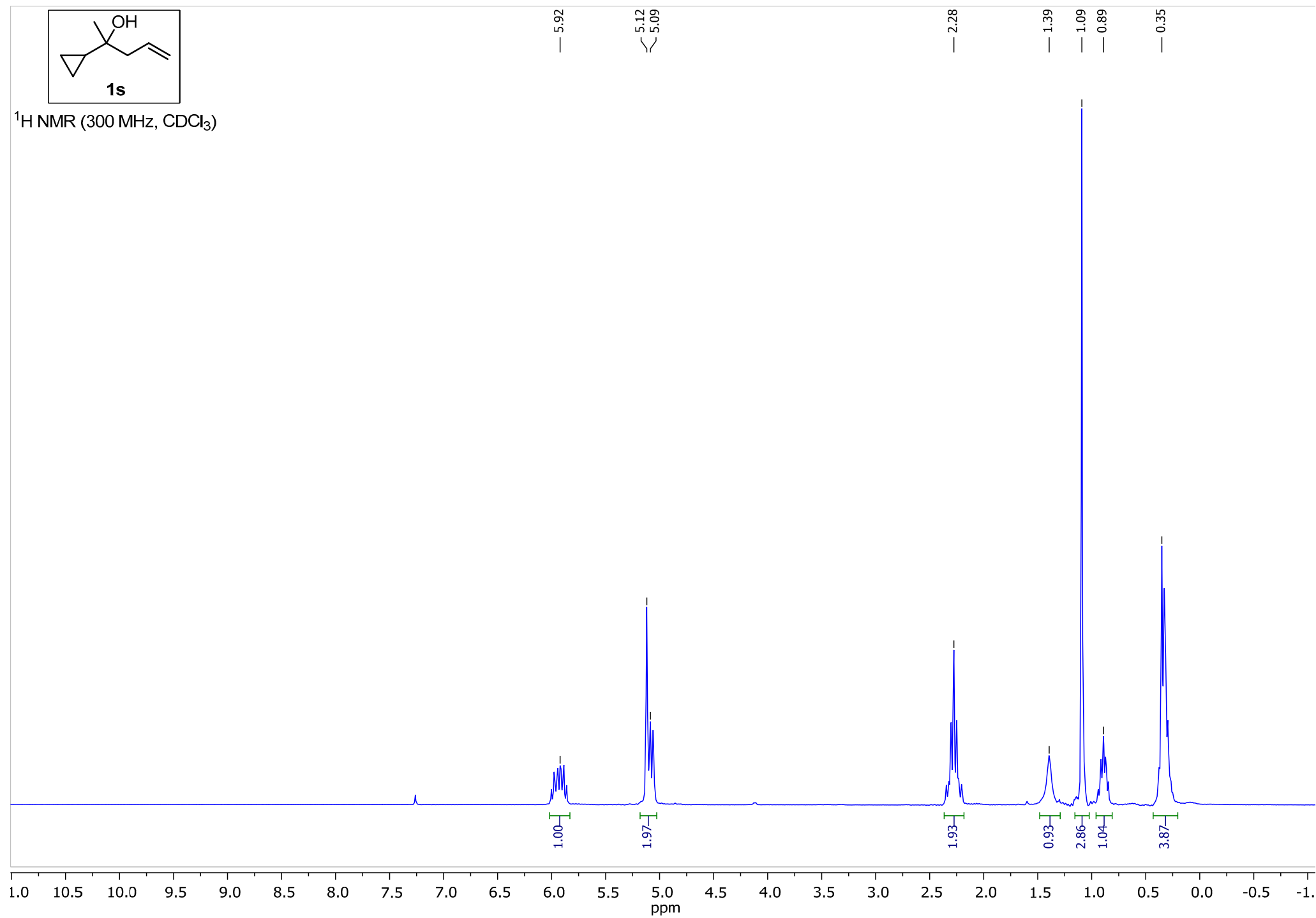
Fluorescence quenching of 4CzIPN photocatalyst.

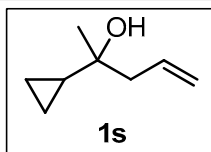
Experiments were performed in a screw-capped quartz vial (10×10 mm). The solvent was degassed, and the vial was filled with argon. The concentration of 4CzIPN was 0.1 mmol/L. Excitation wavelength 435 nm, fluorescence wavelength 541 nm. Measurements were performed at room temperature. For the experiment with  $\text{MnBr}_2/\text{TBABr}$  mixture, concentration on the abscissa axis matches  $\text{MnBr}_2$  concentration, and  $[\text{TBABr}] = 2 \times [\text{MnBr}_2]$  in each point.



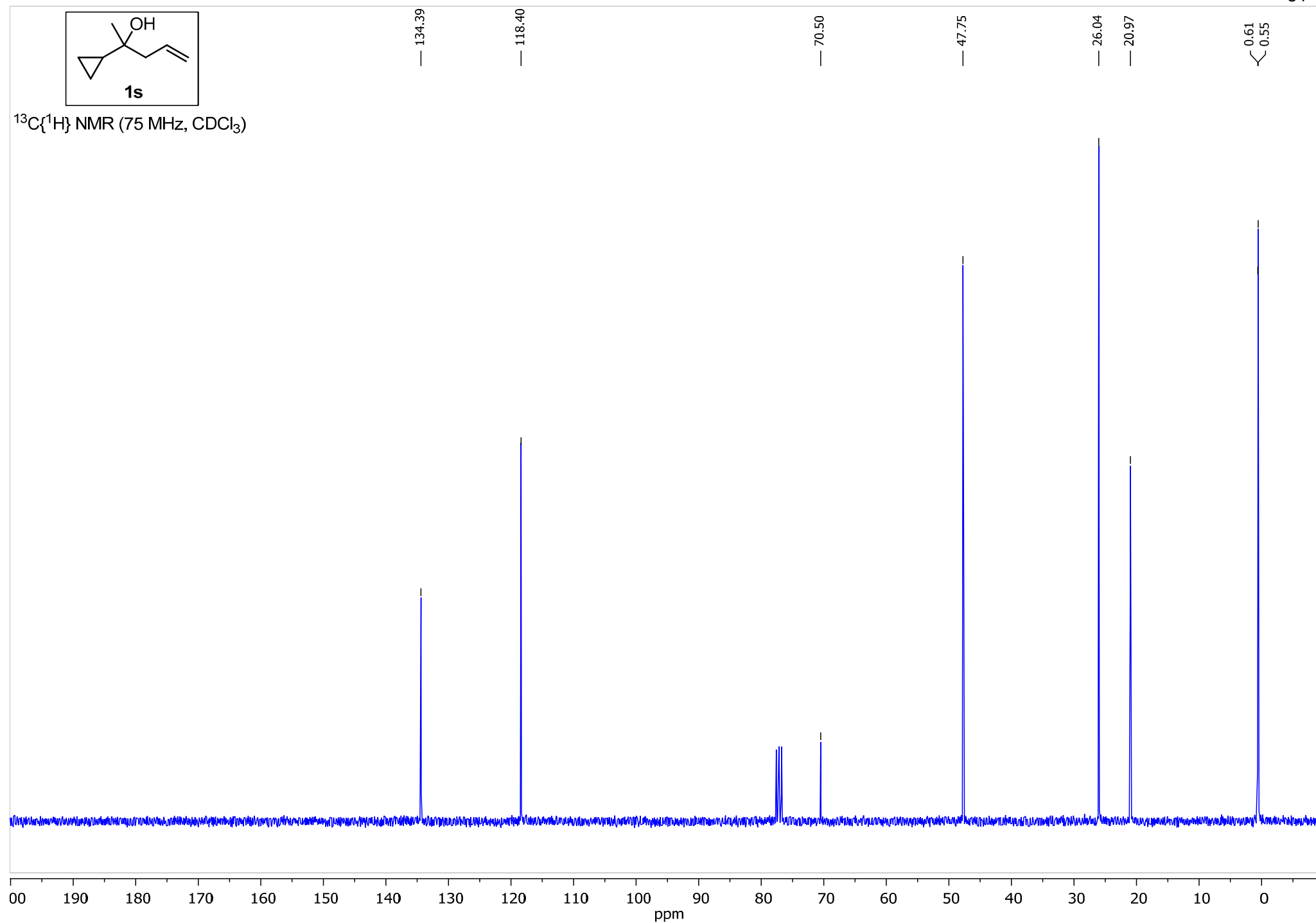


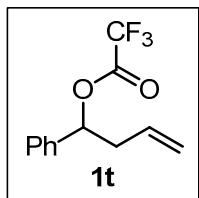
$^1\text{H}$  NMR (300 MHz,  $\text{CDCl}_3$ )



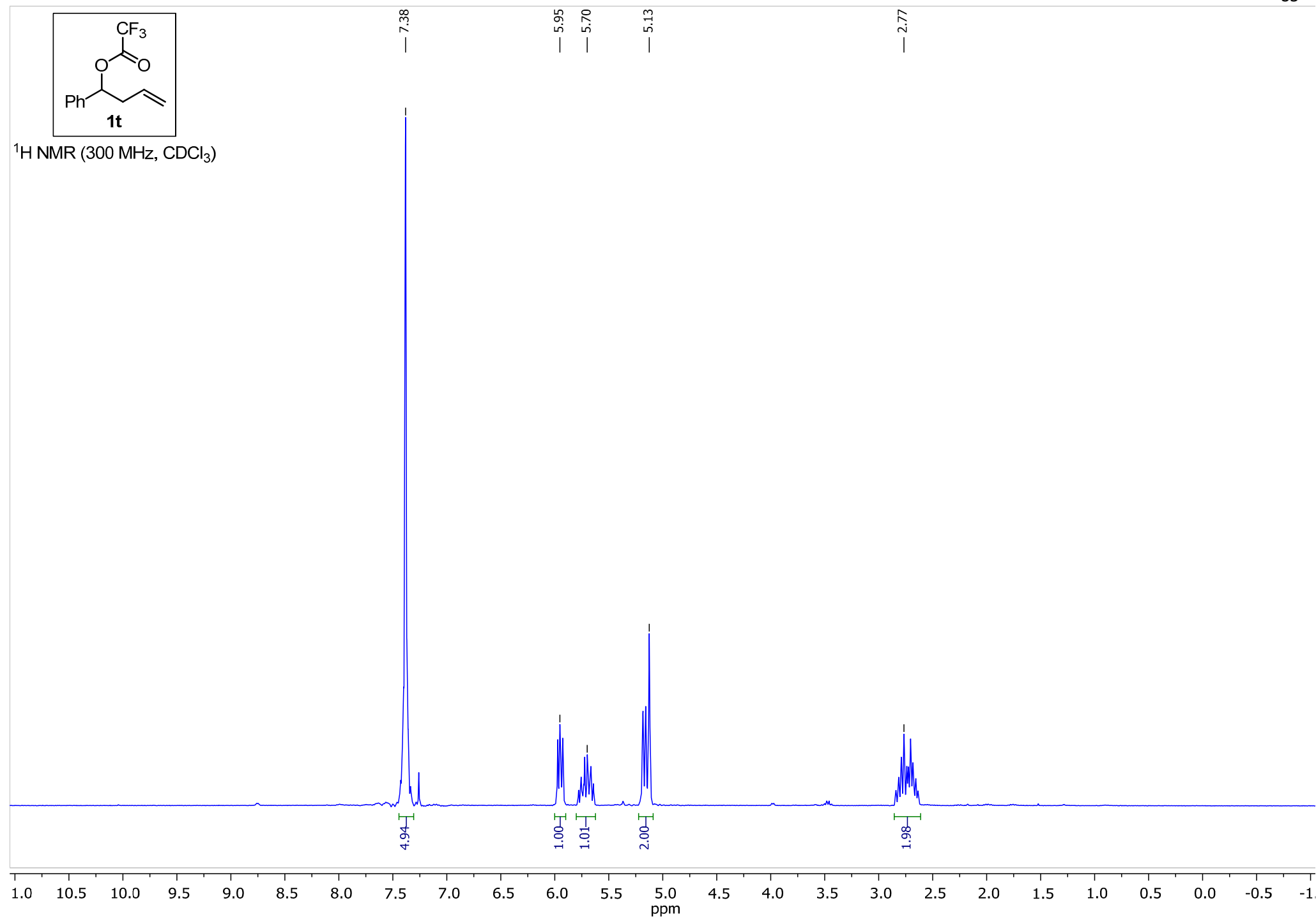


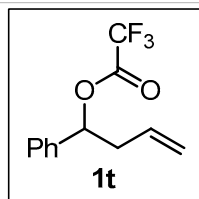
$^{13}\text{C}\{^1\text{H}\}$  NMR (75 MHz,  $\text{CDCl}_3$ )



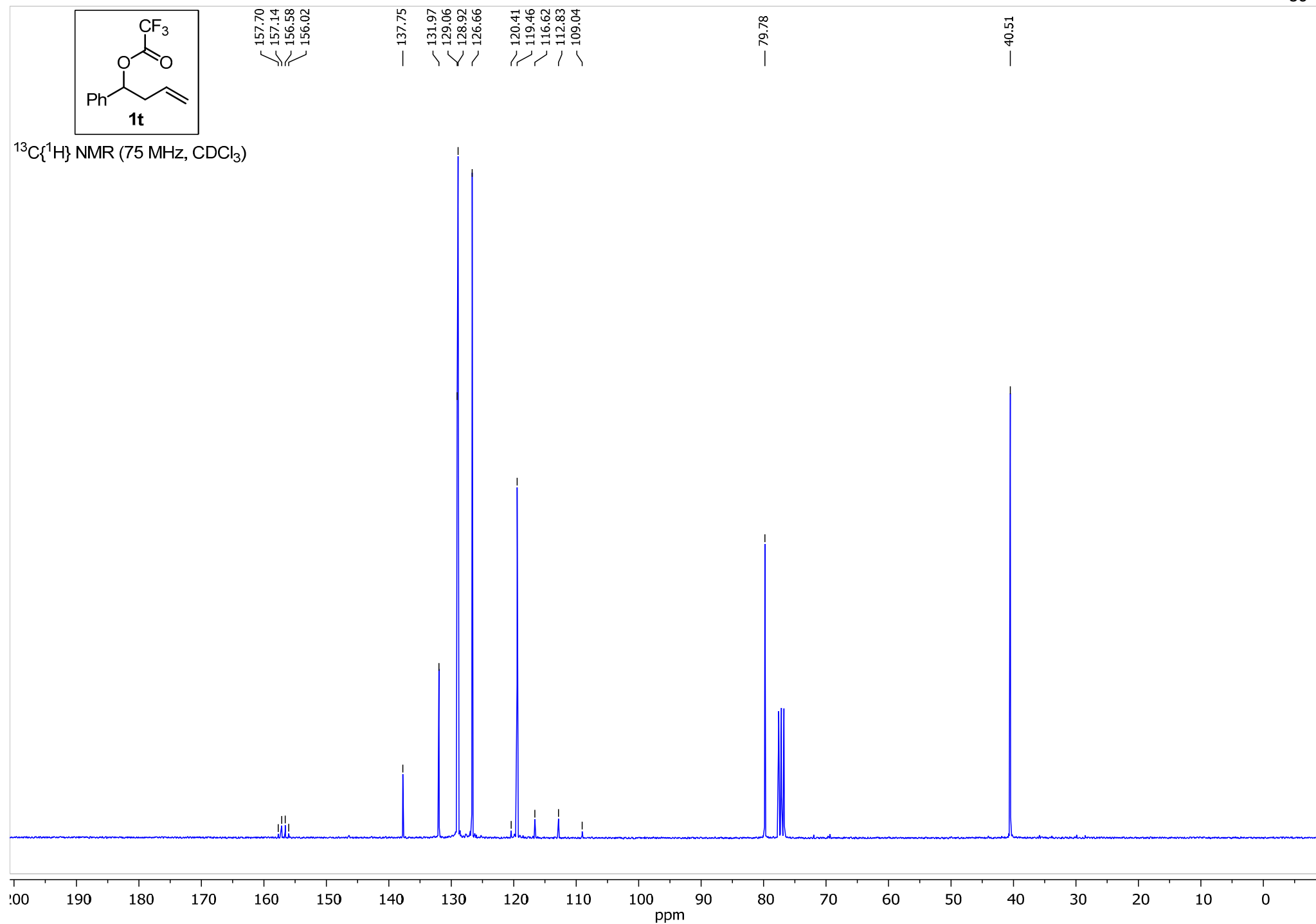


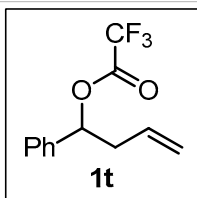
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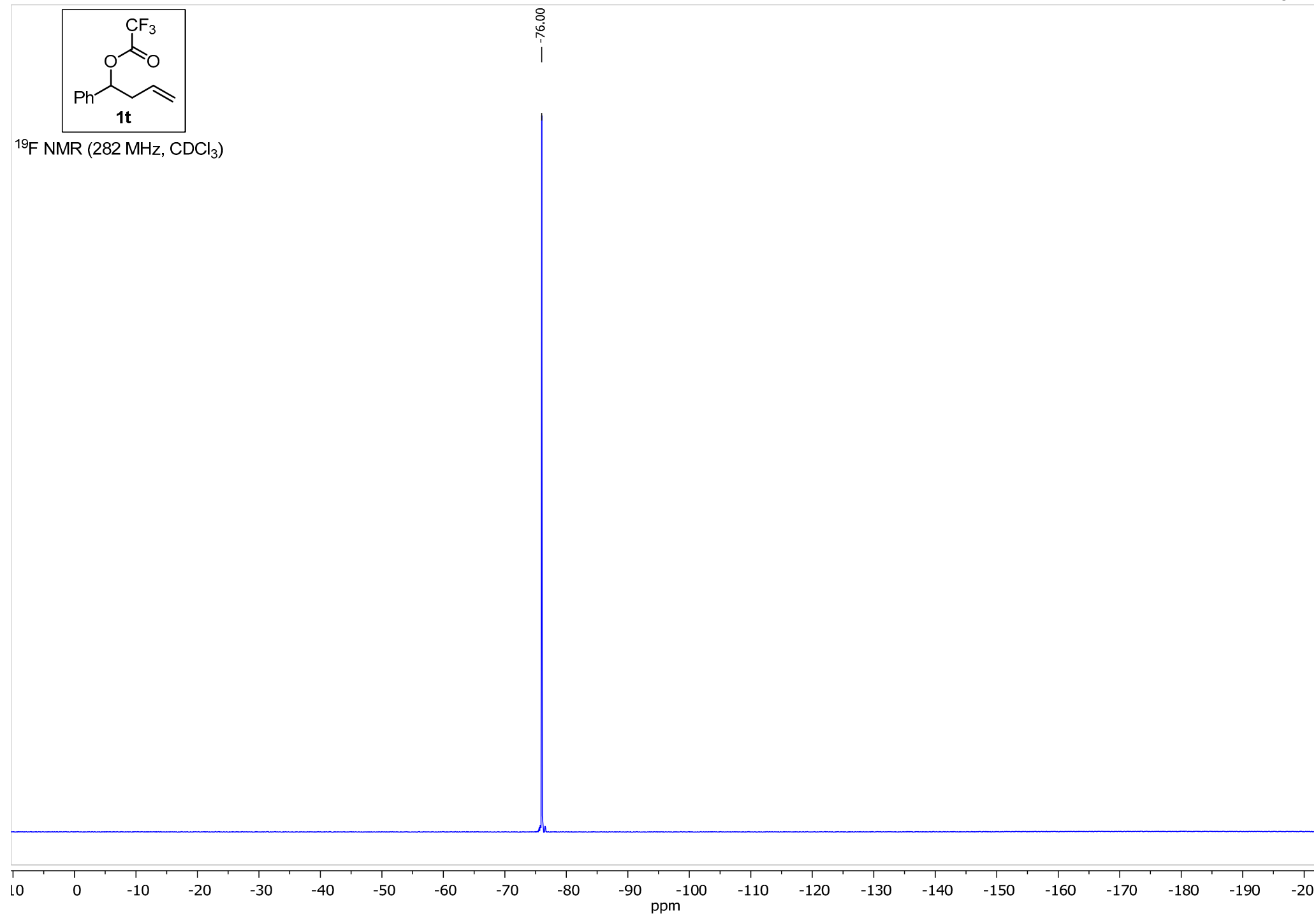


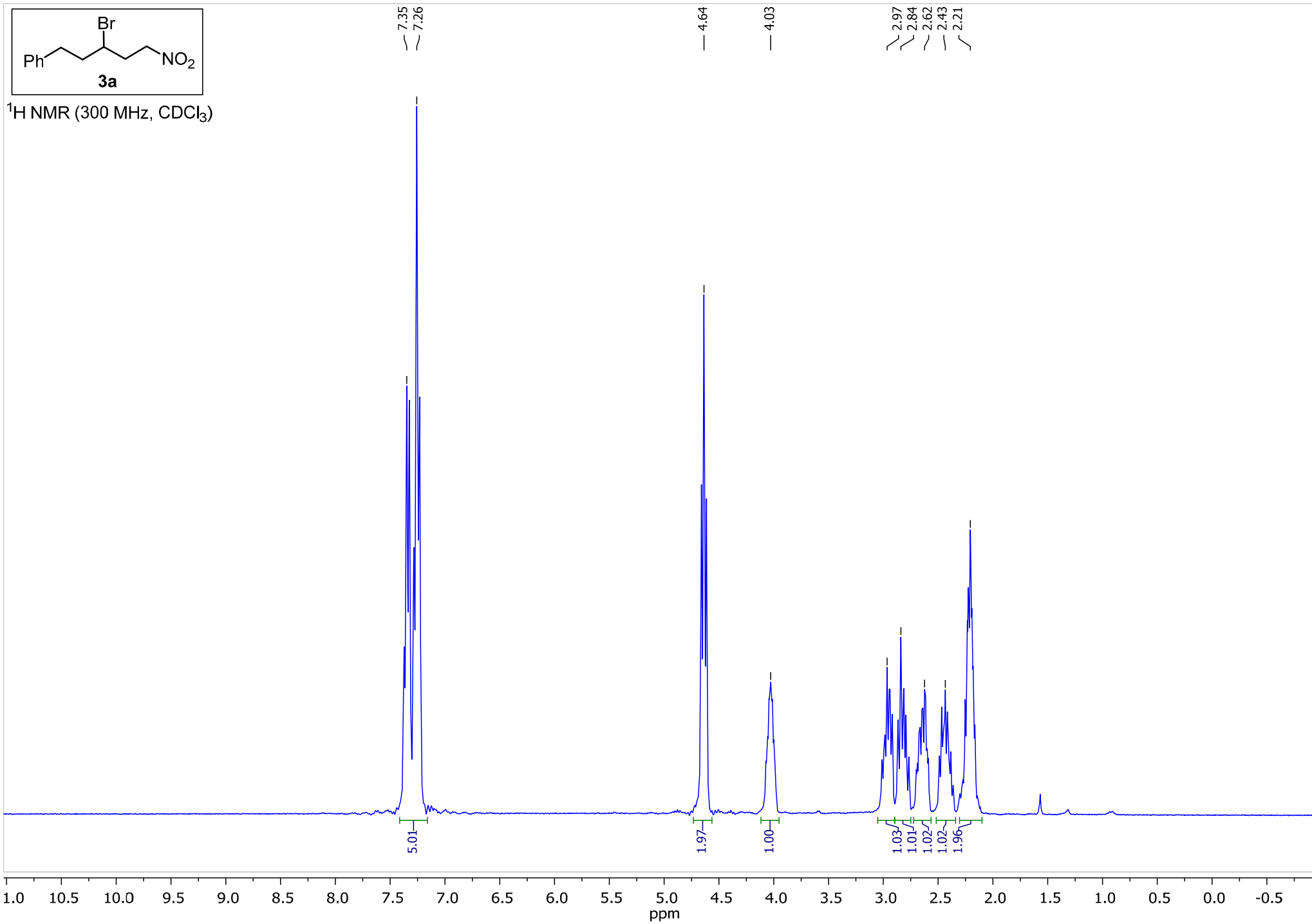
$^{13}\text{C}\{^1\text{H}\}$  NMR (75 MHz,  $\text{CDCl}_3$ )



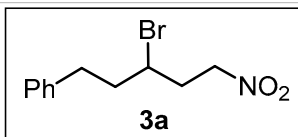


$^{19}\text{F}$  NMR (282 MHz,  $\text{CDCl}_3$ )

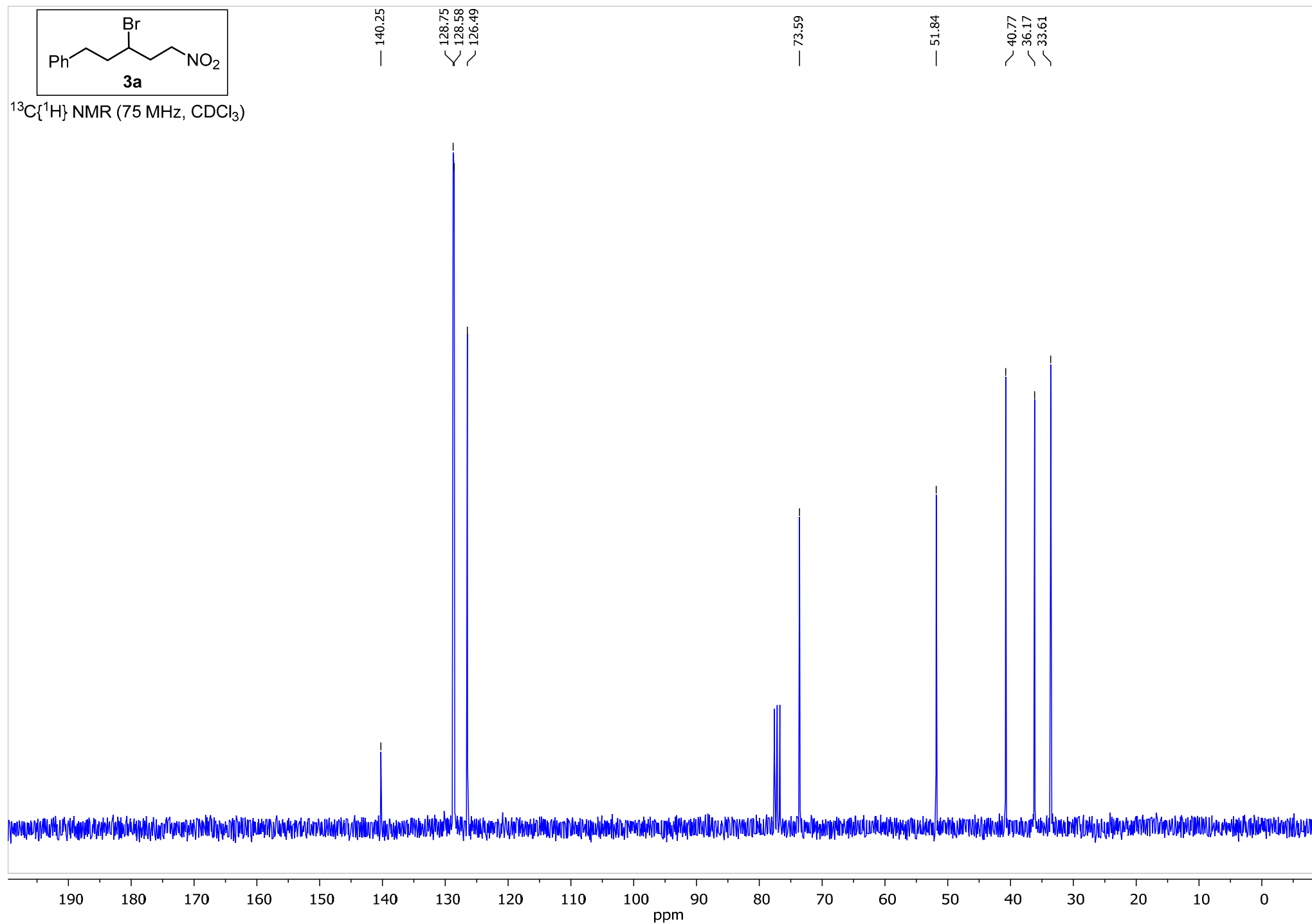


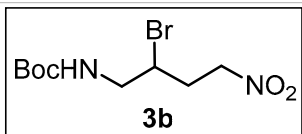




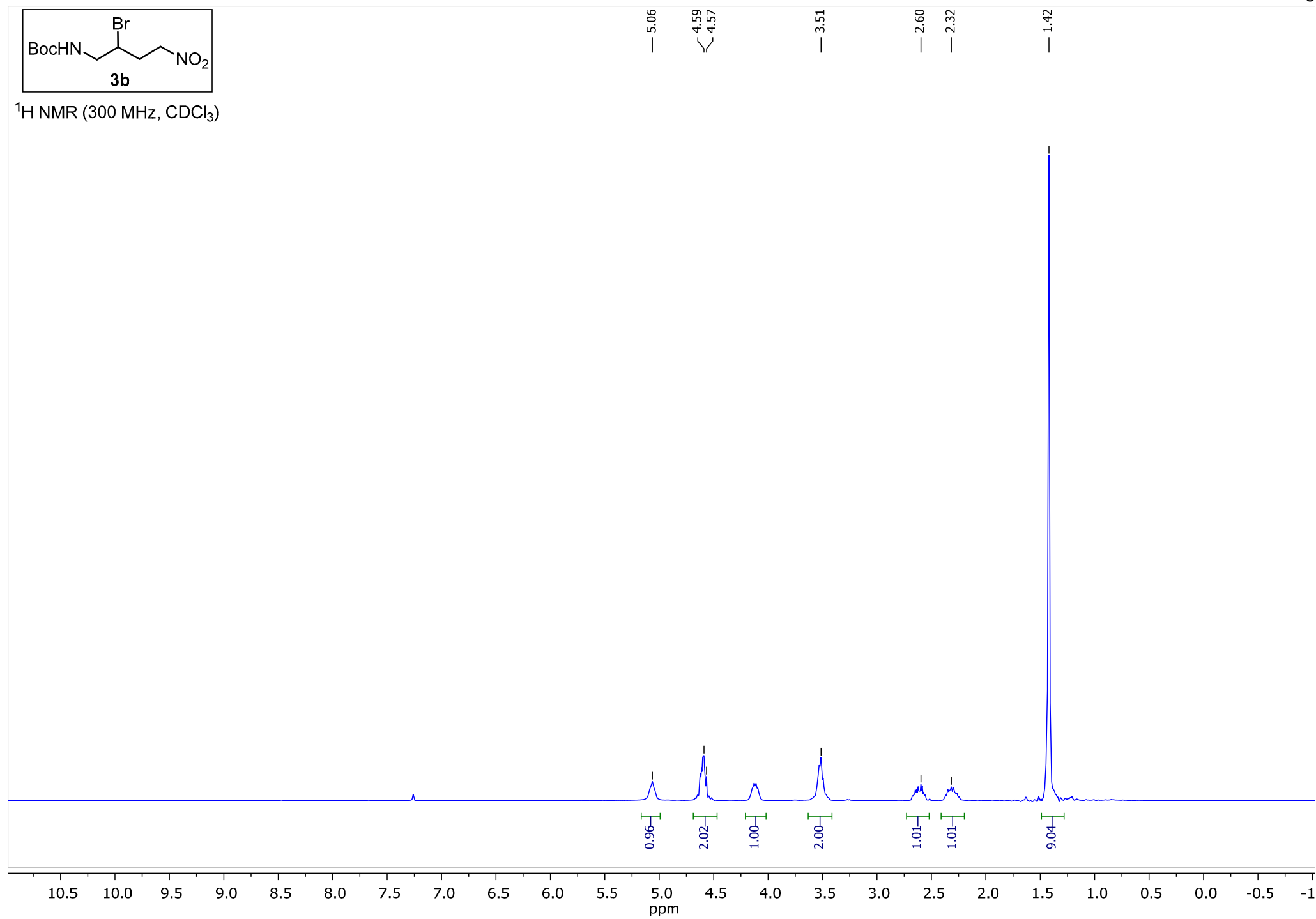


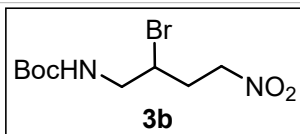
$^{13}\text{C}\{^1\text{H}\}$  NMR (75 MHz,  $\text{CDCl}_3$ )



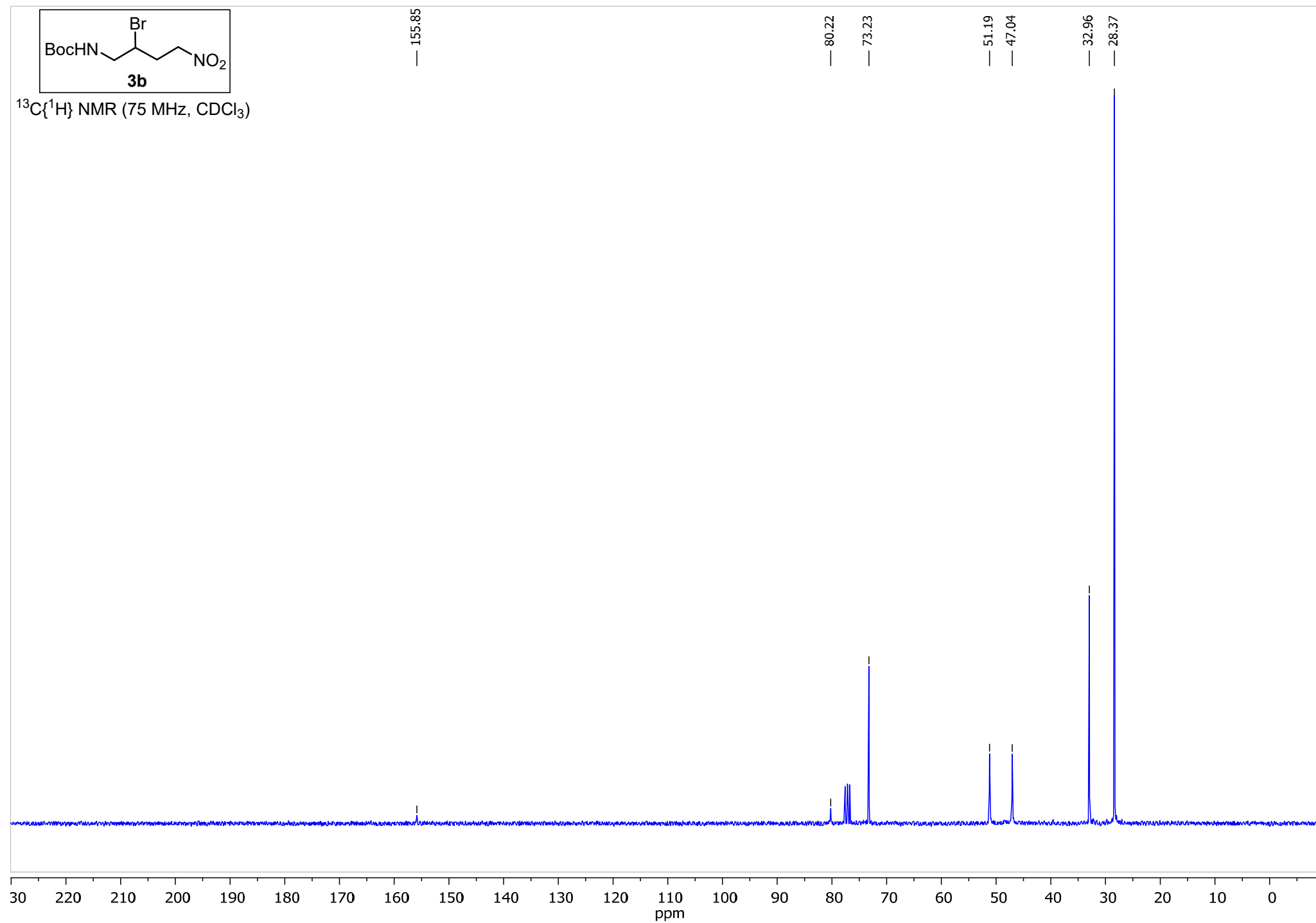


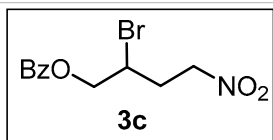
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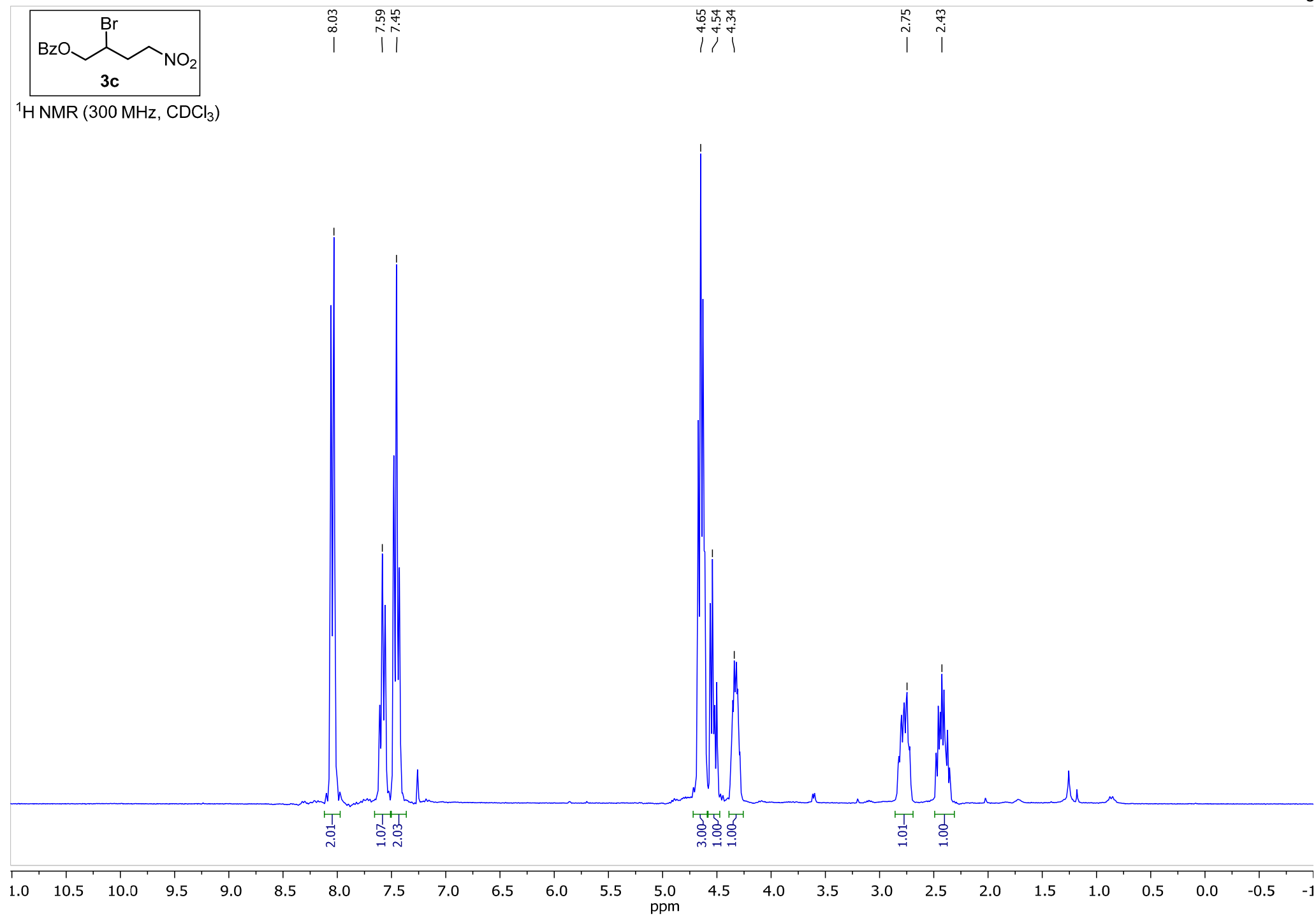


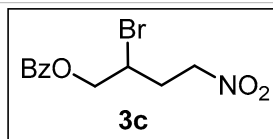
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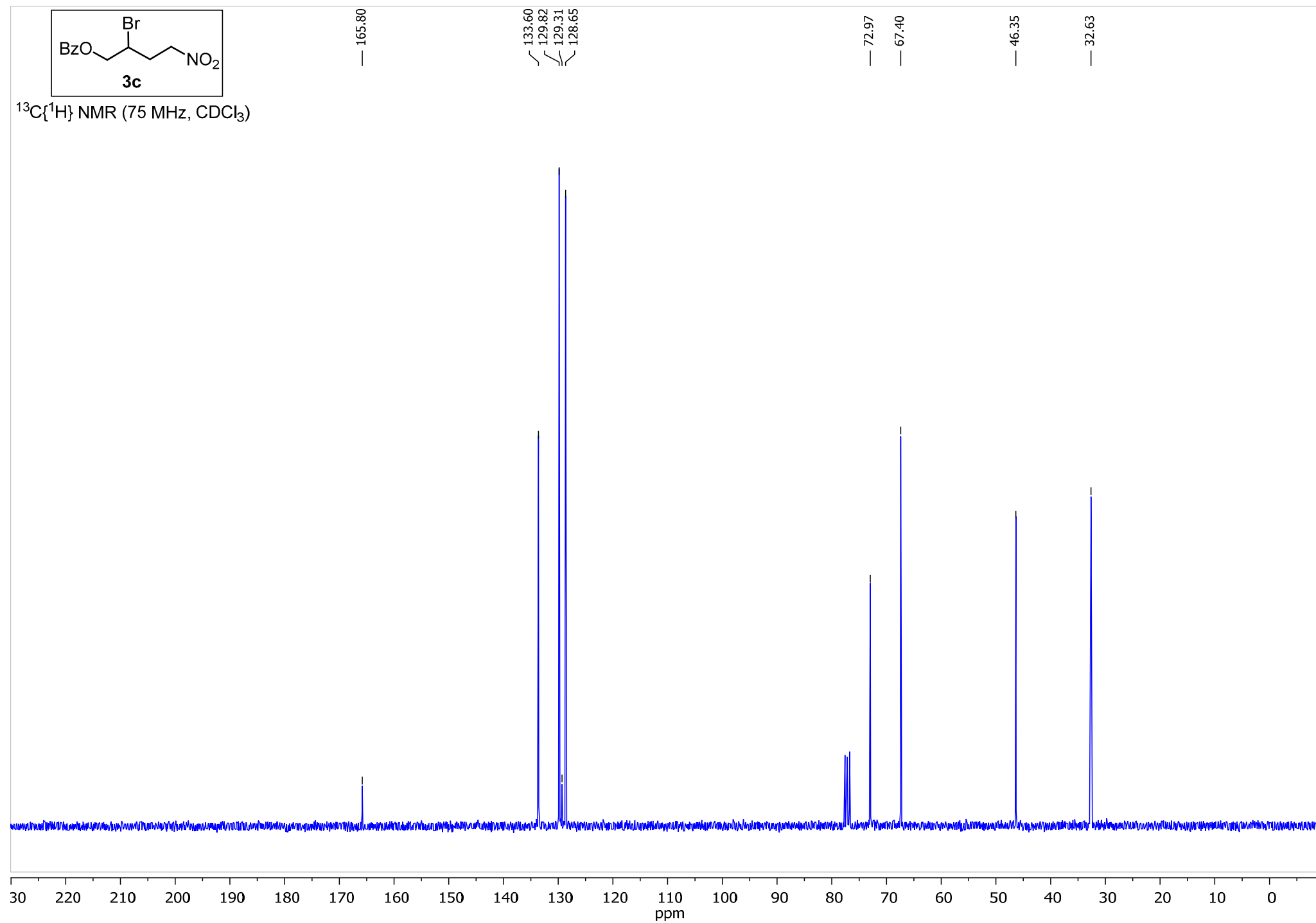


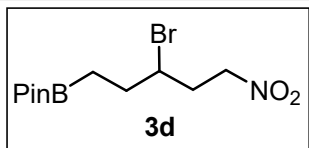
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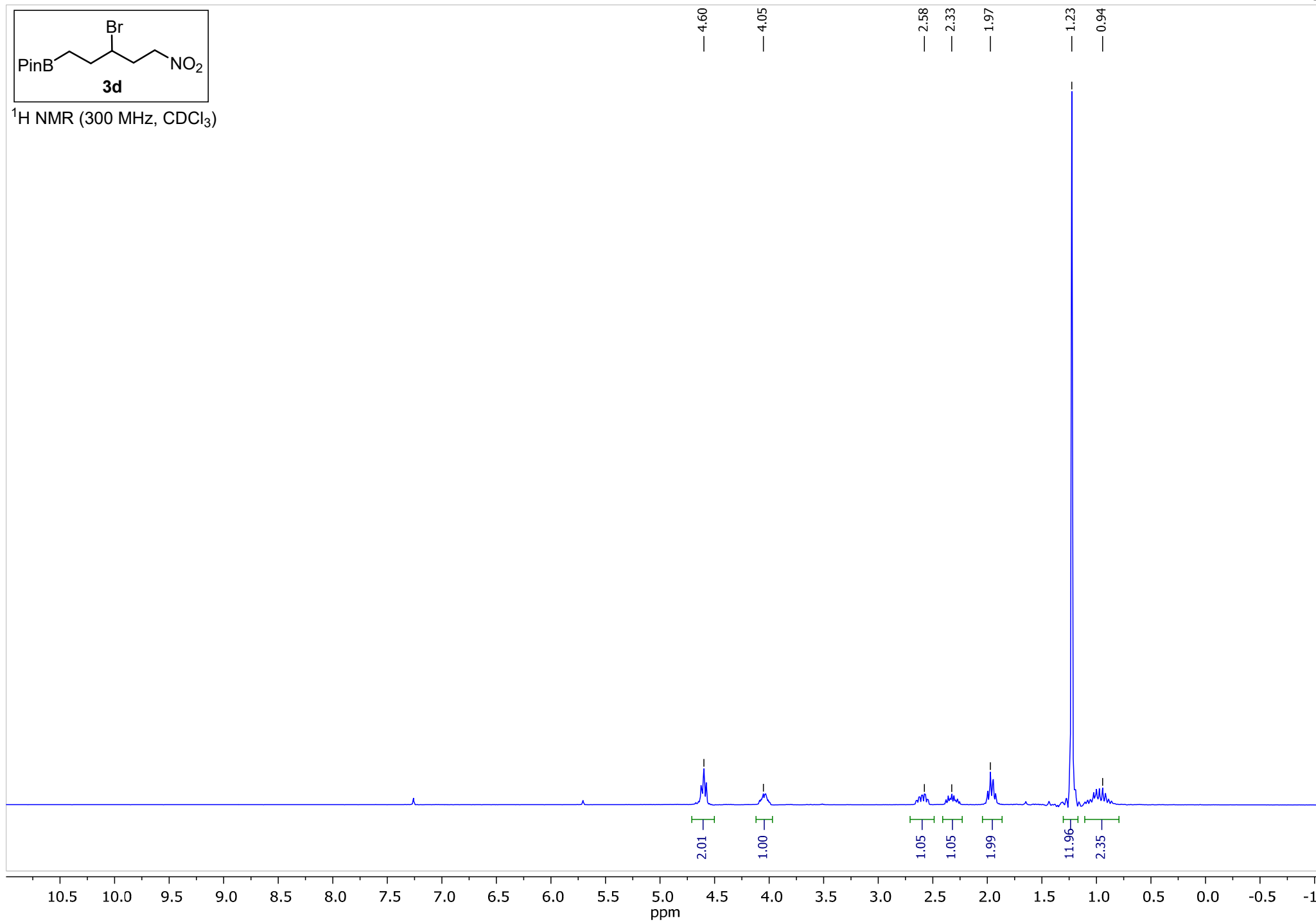


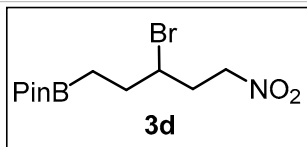
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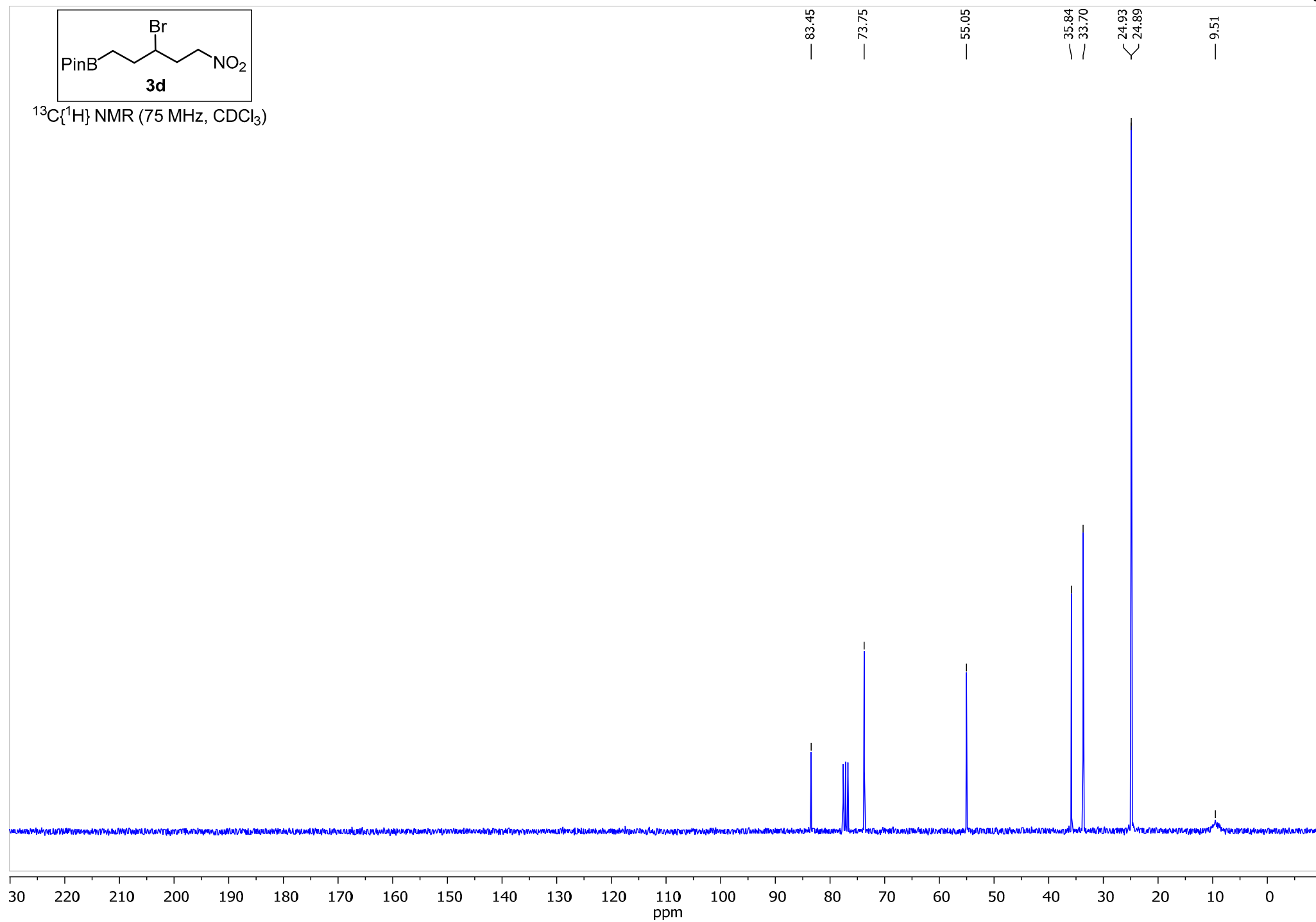


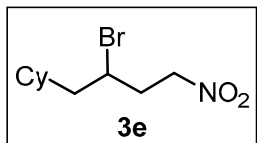
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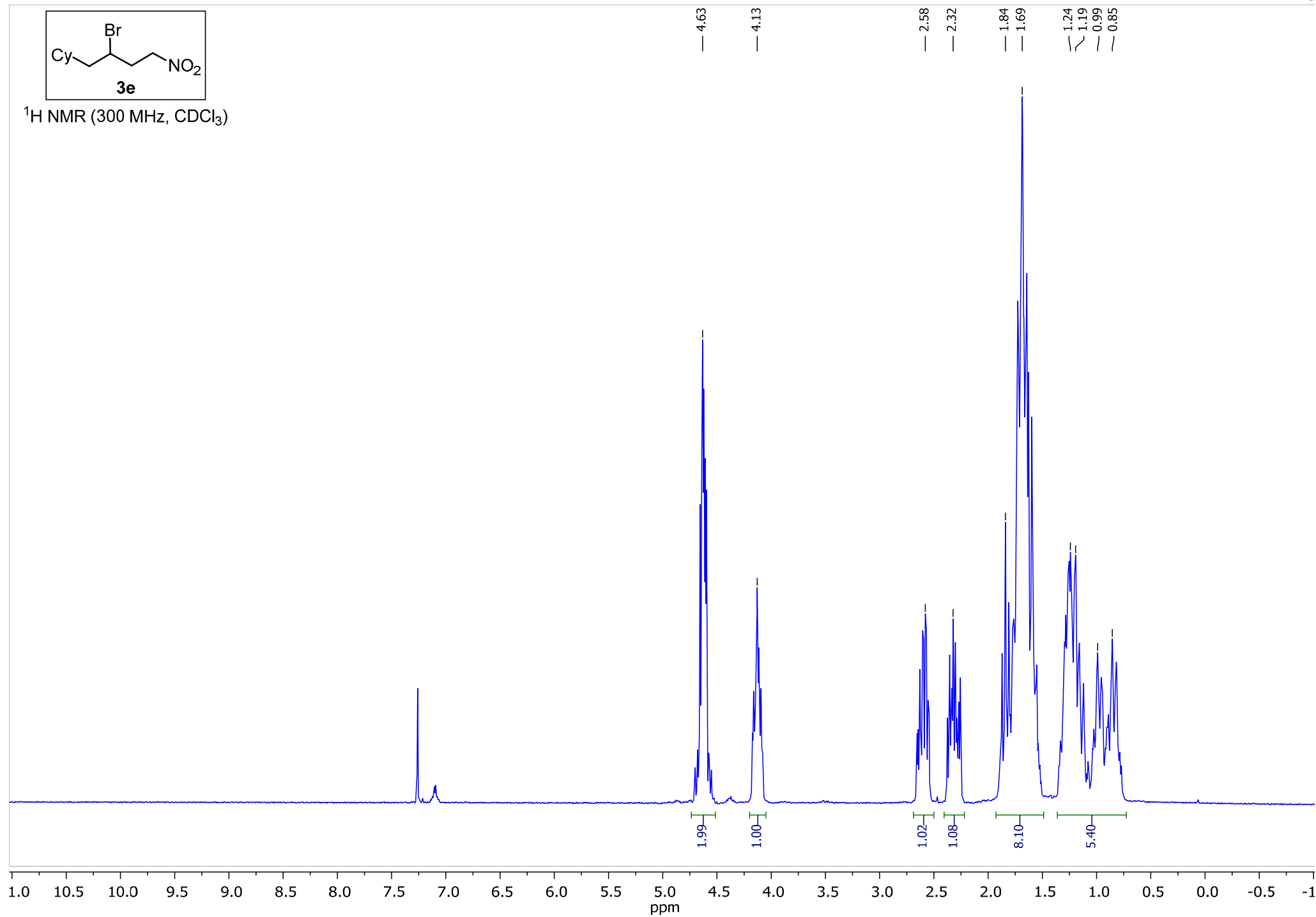


$^{13}\text{C}\{^1\text{H}\}$  NMR (75 MHz,  $\text{CDCl}_3$ )

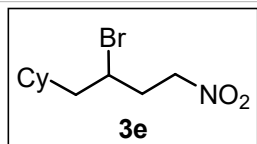




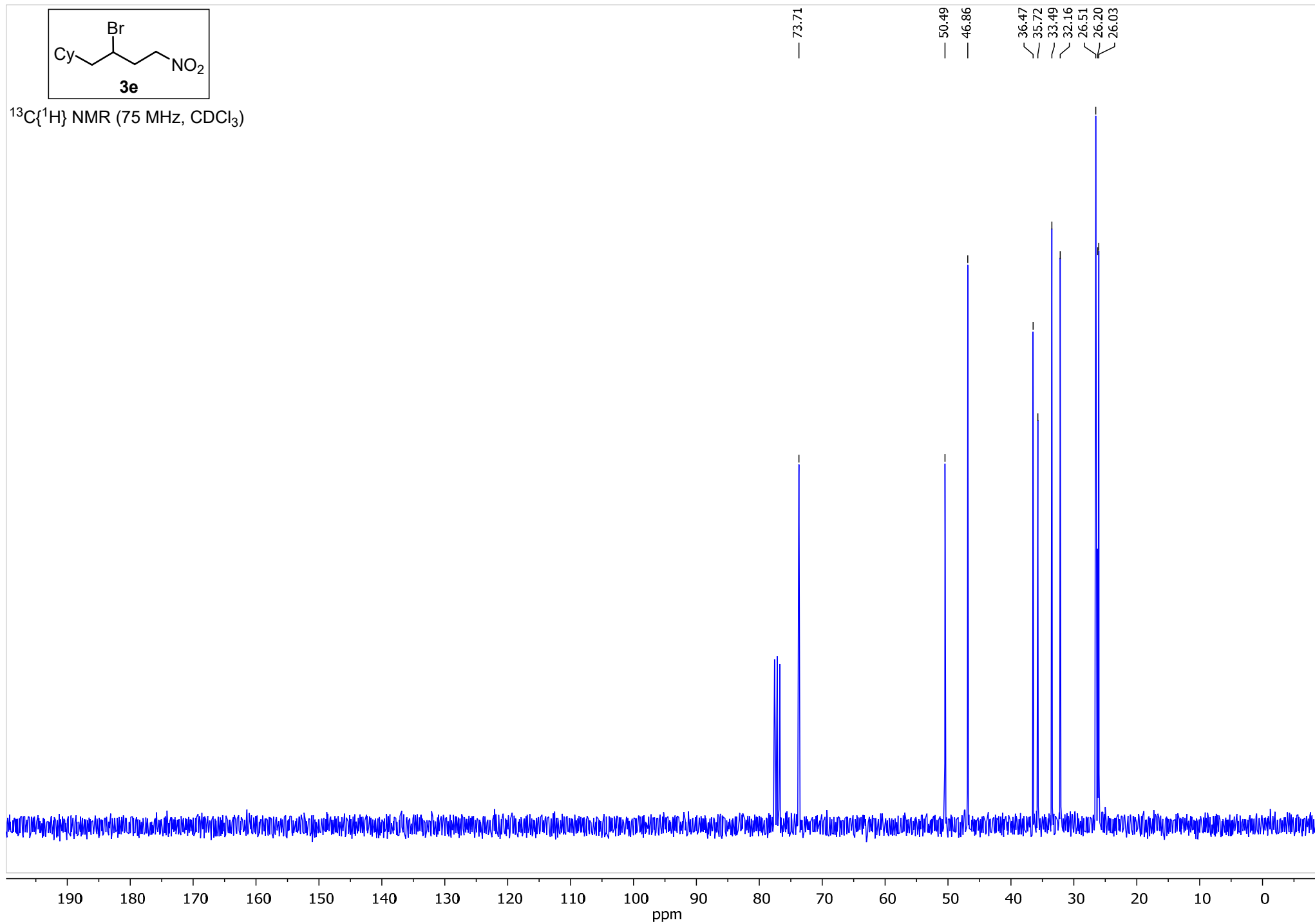
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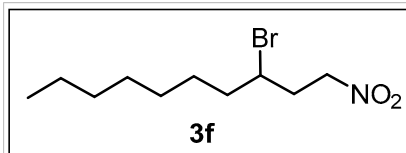




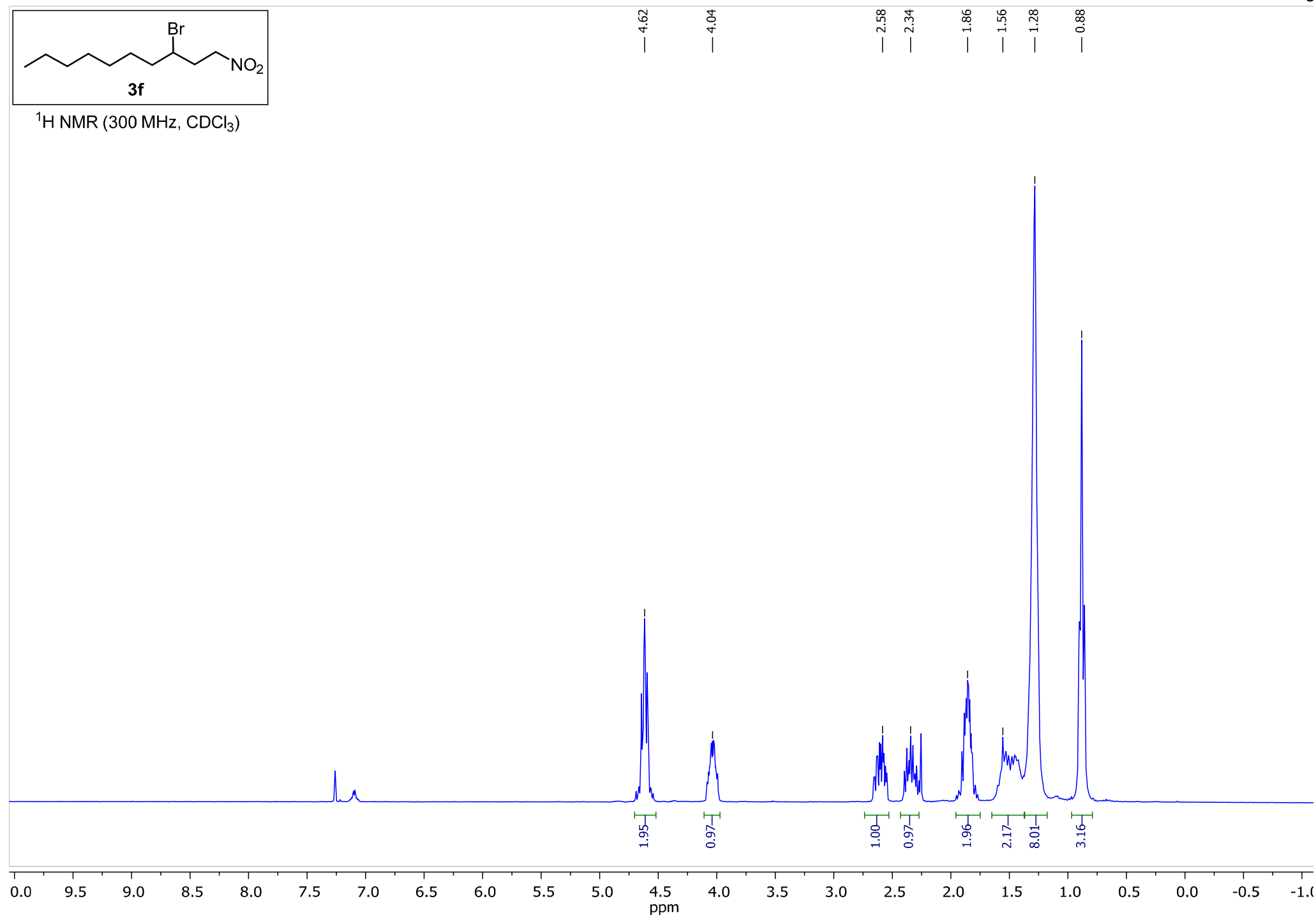


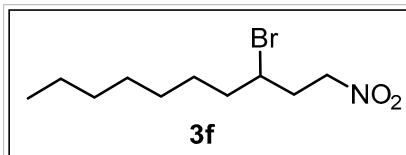
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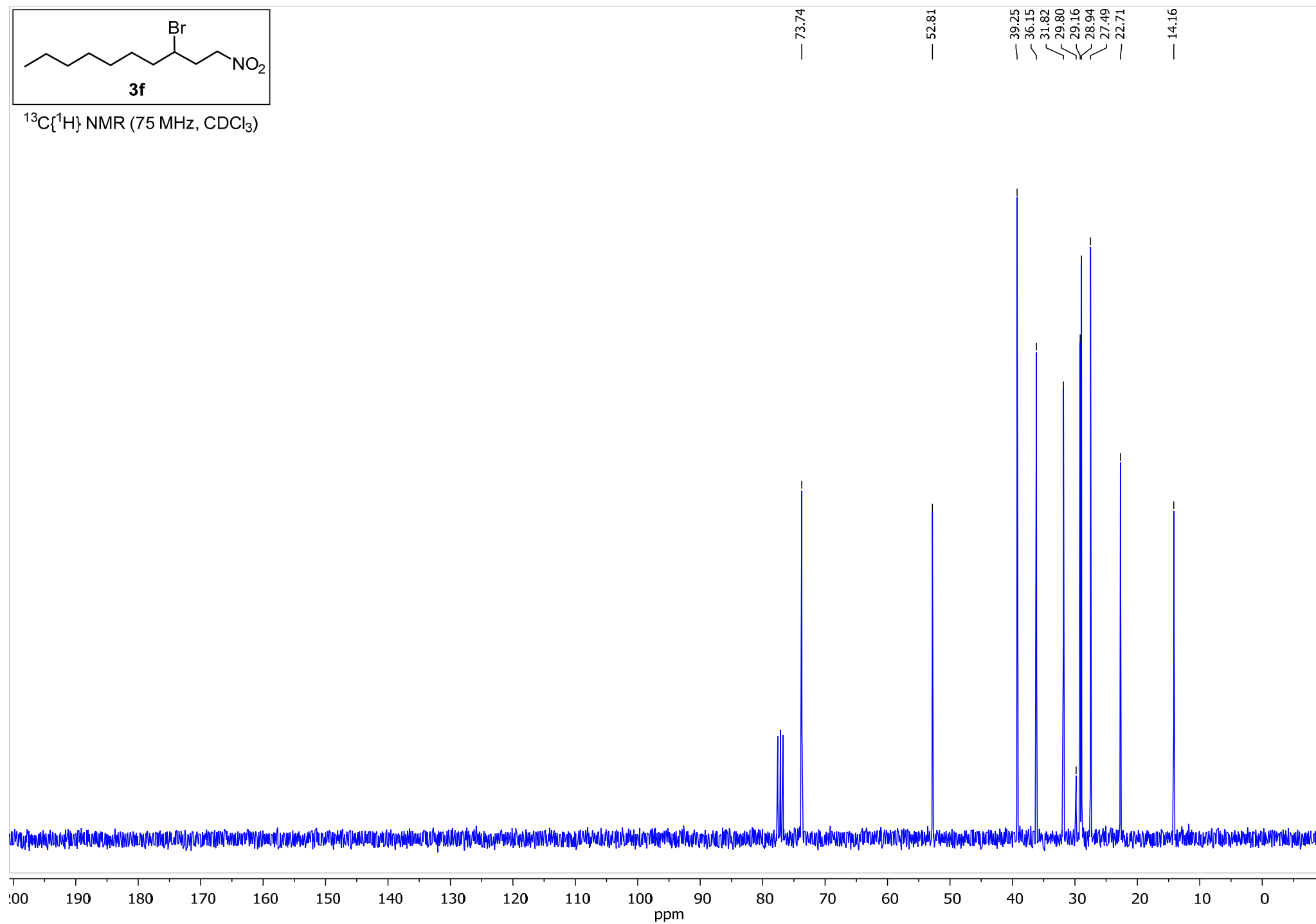


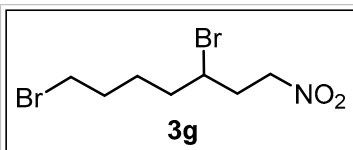
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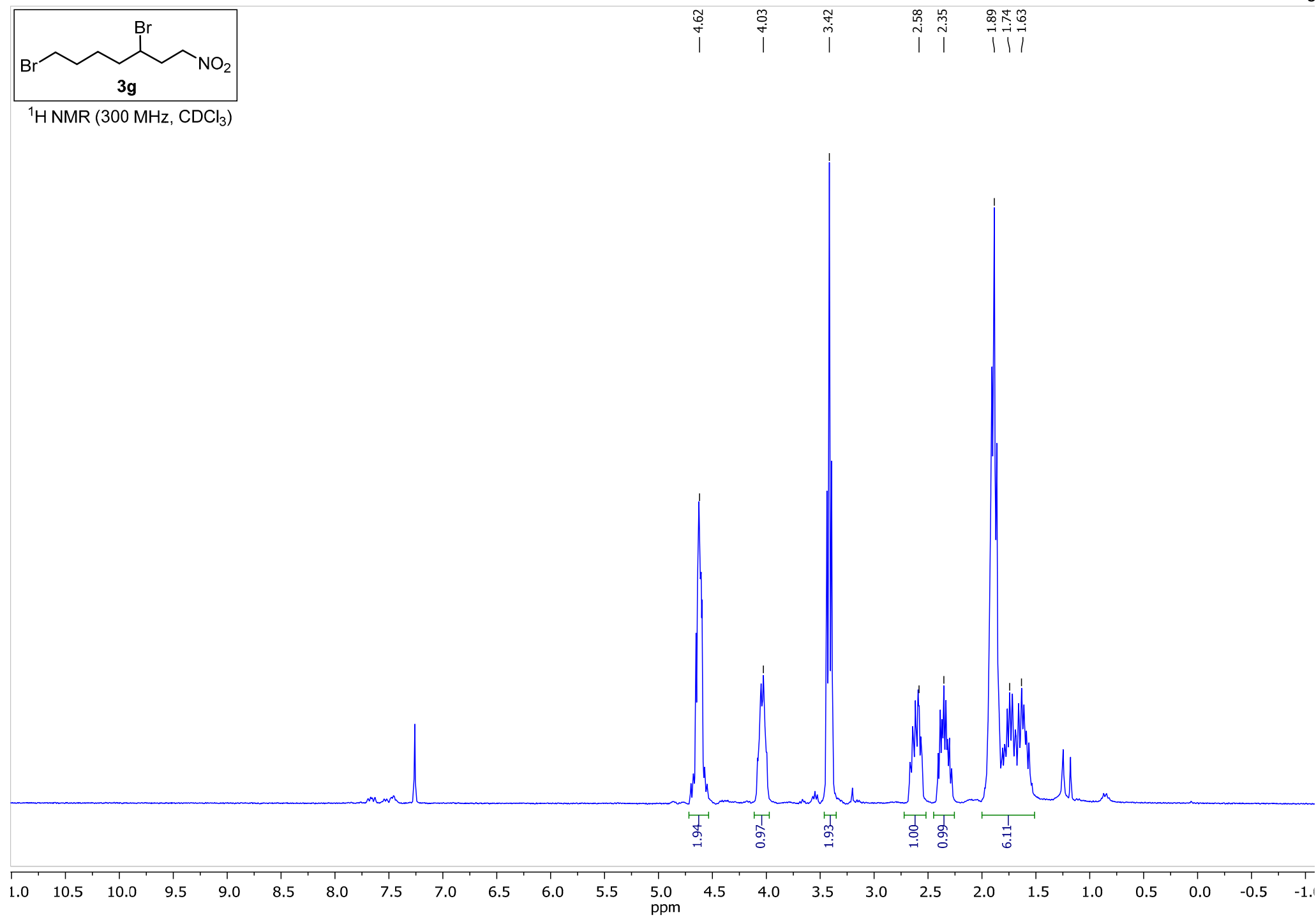


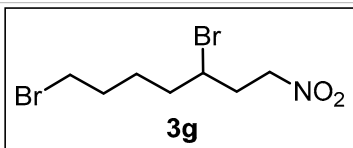
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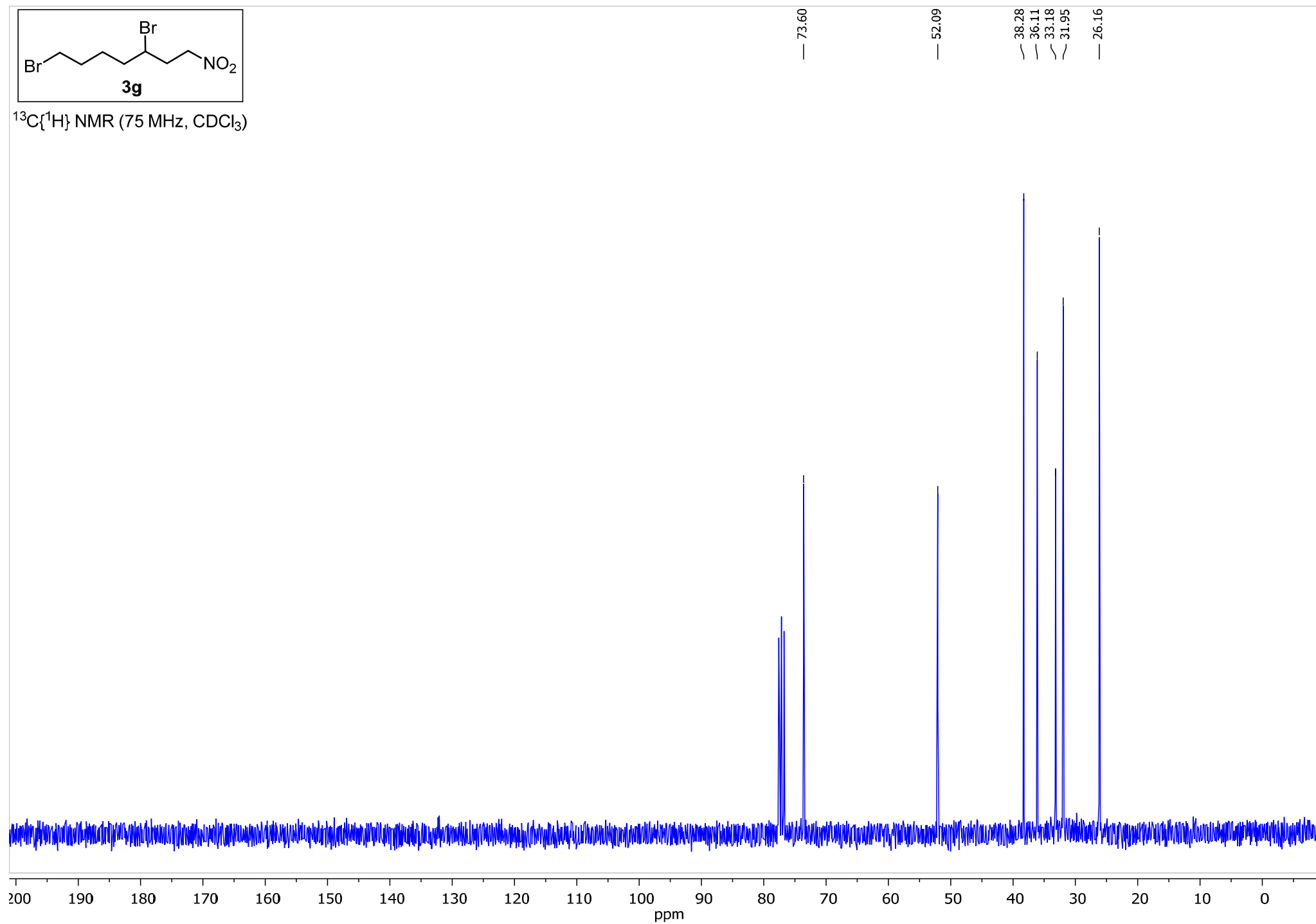


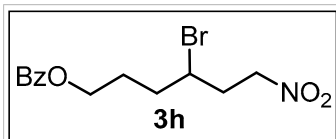
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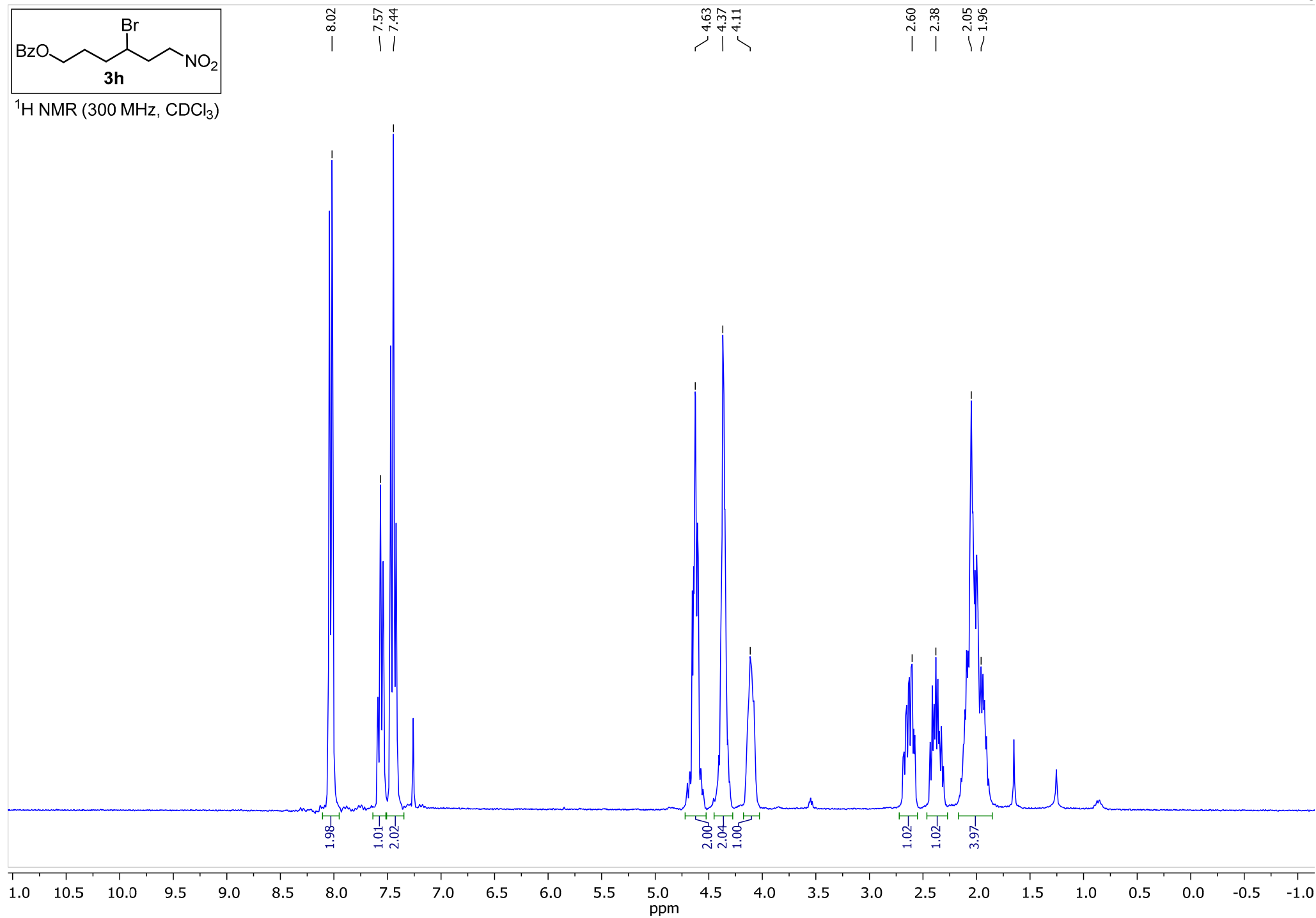


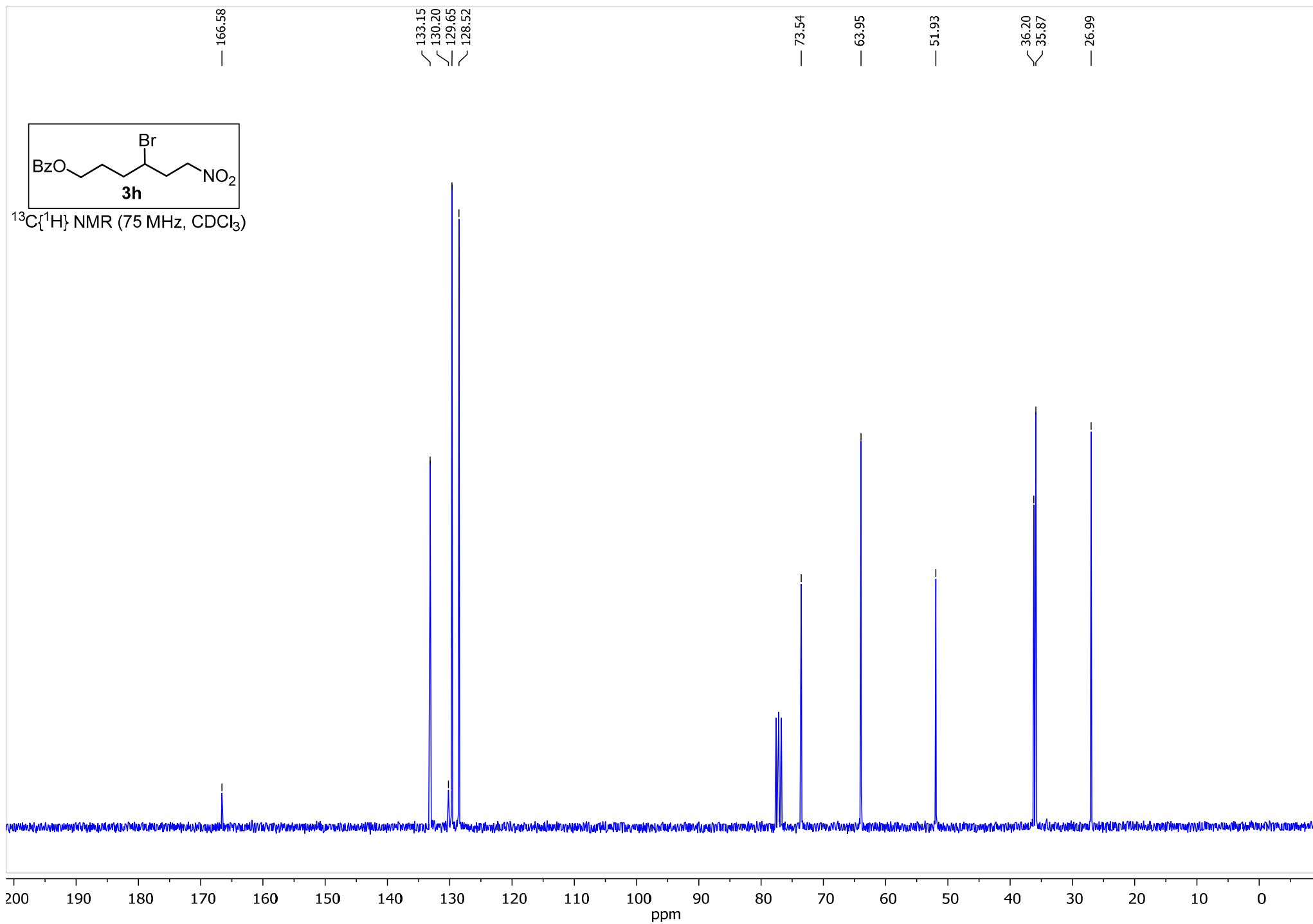
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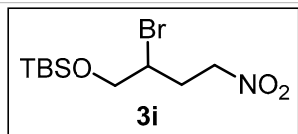




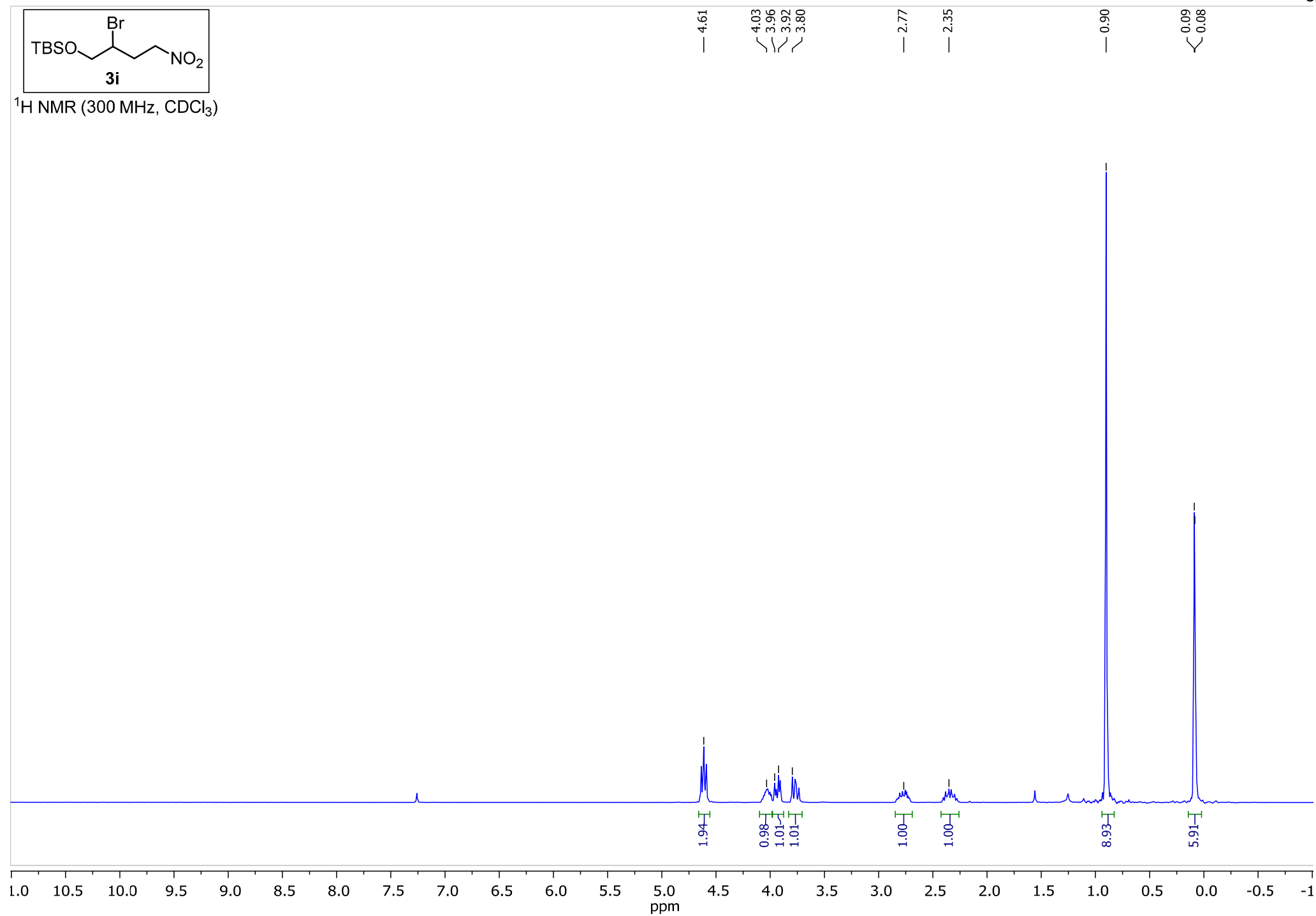
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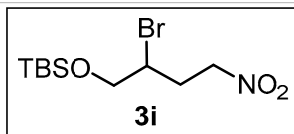




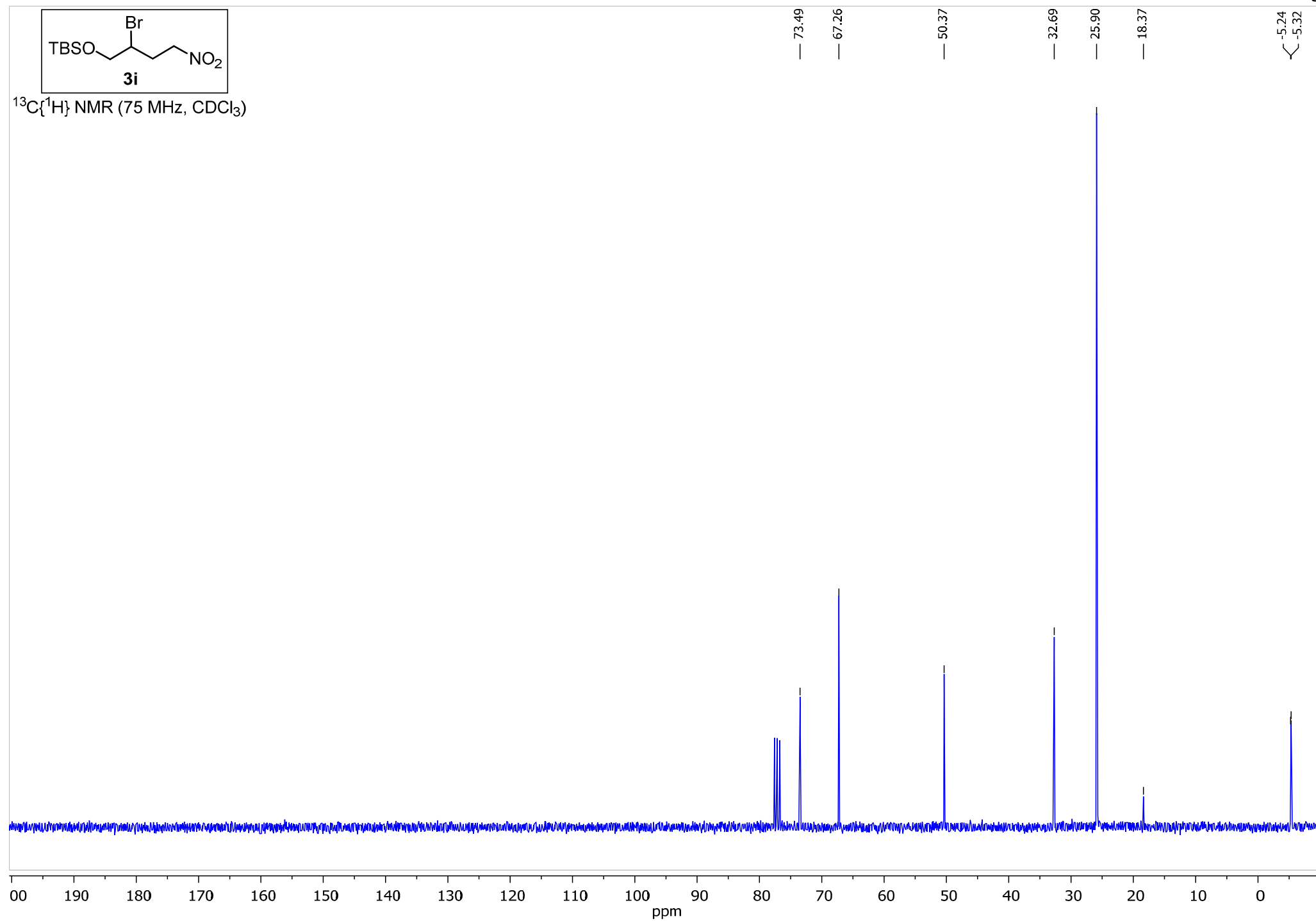
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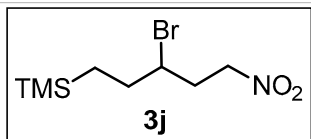




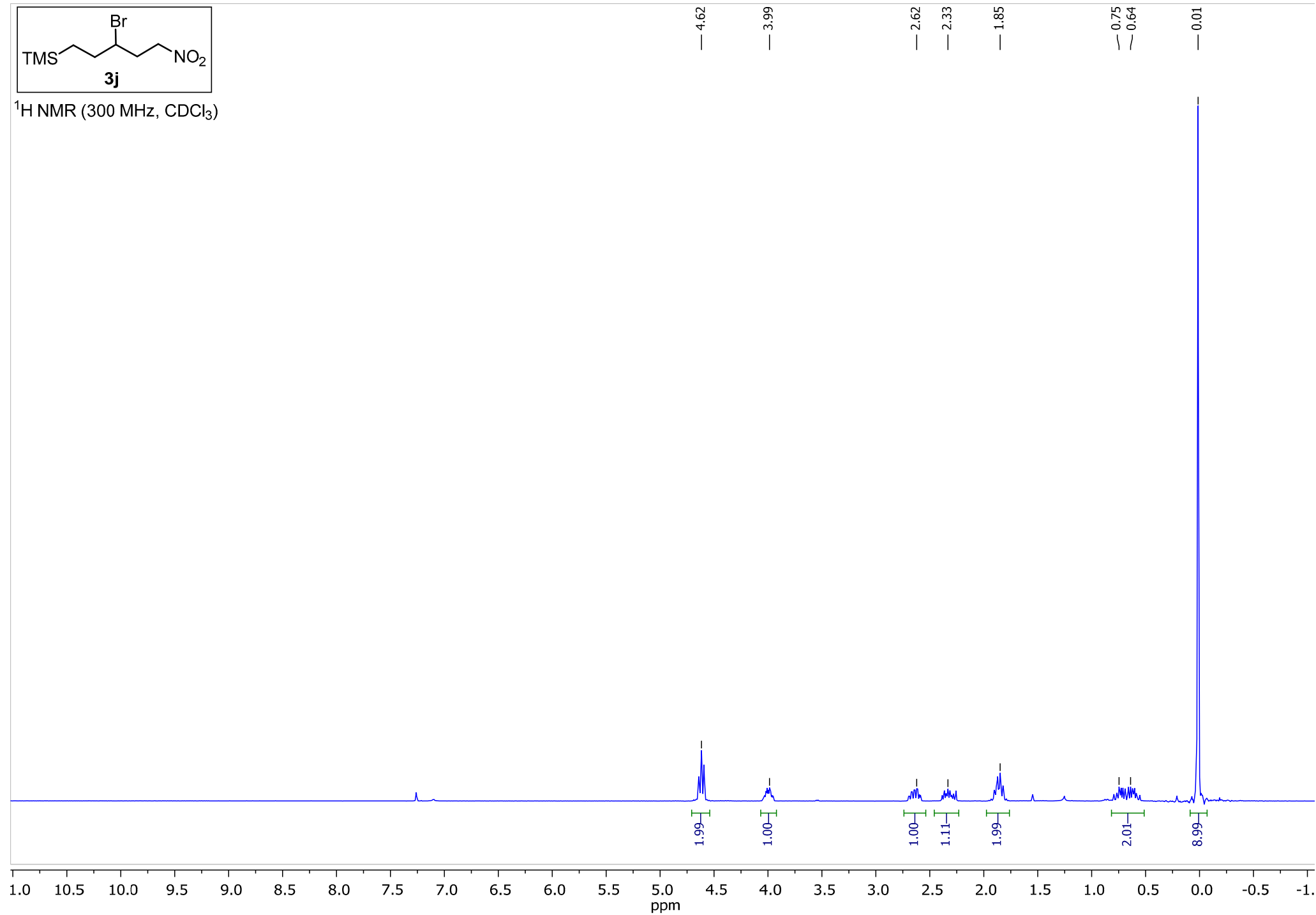


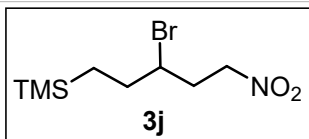
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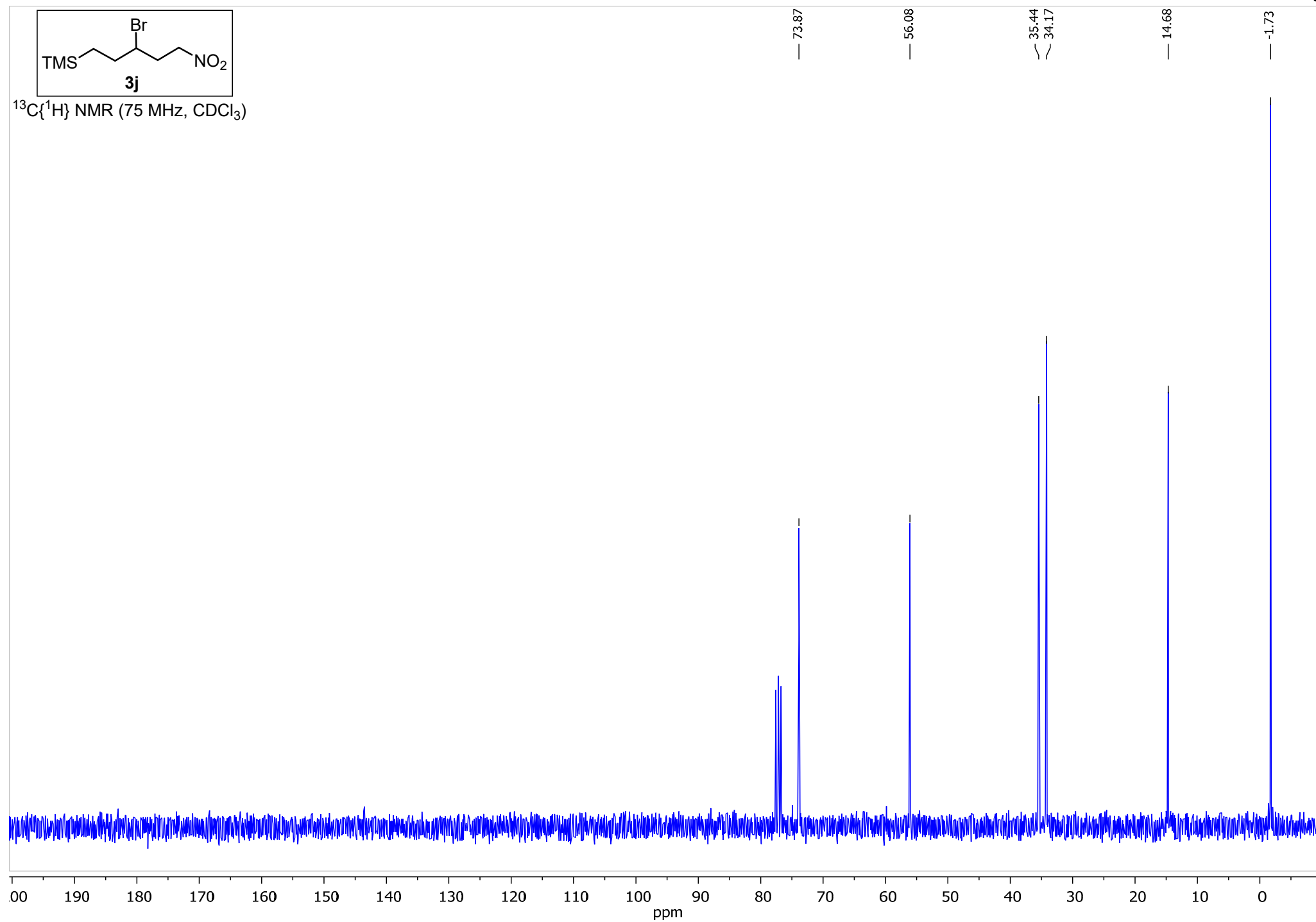


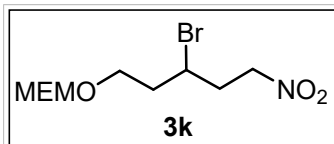
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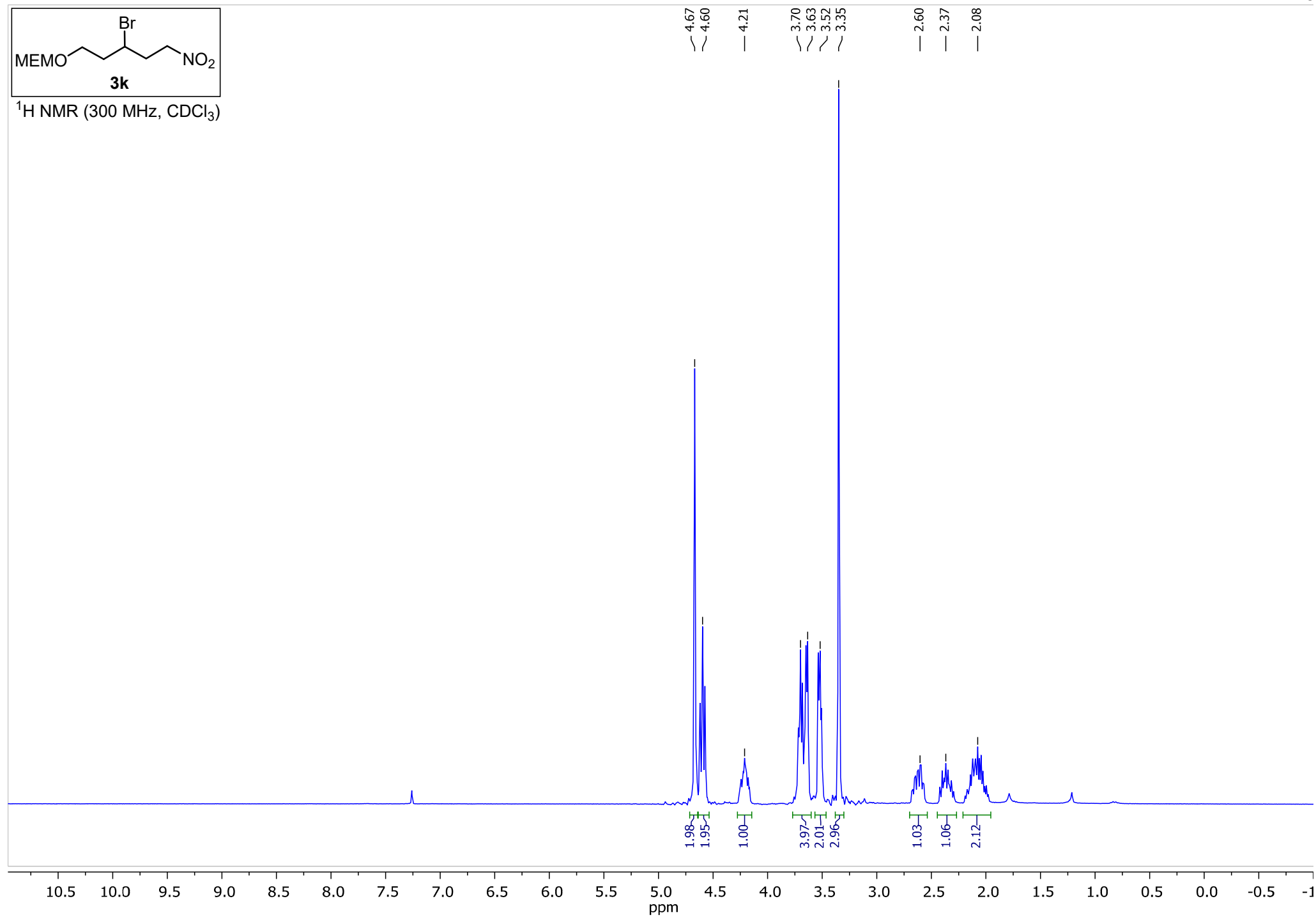


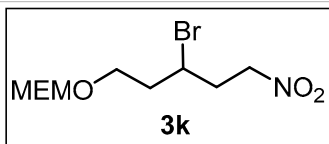
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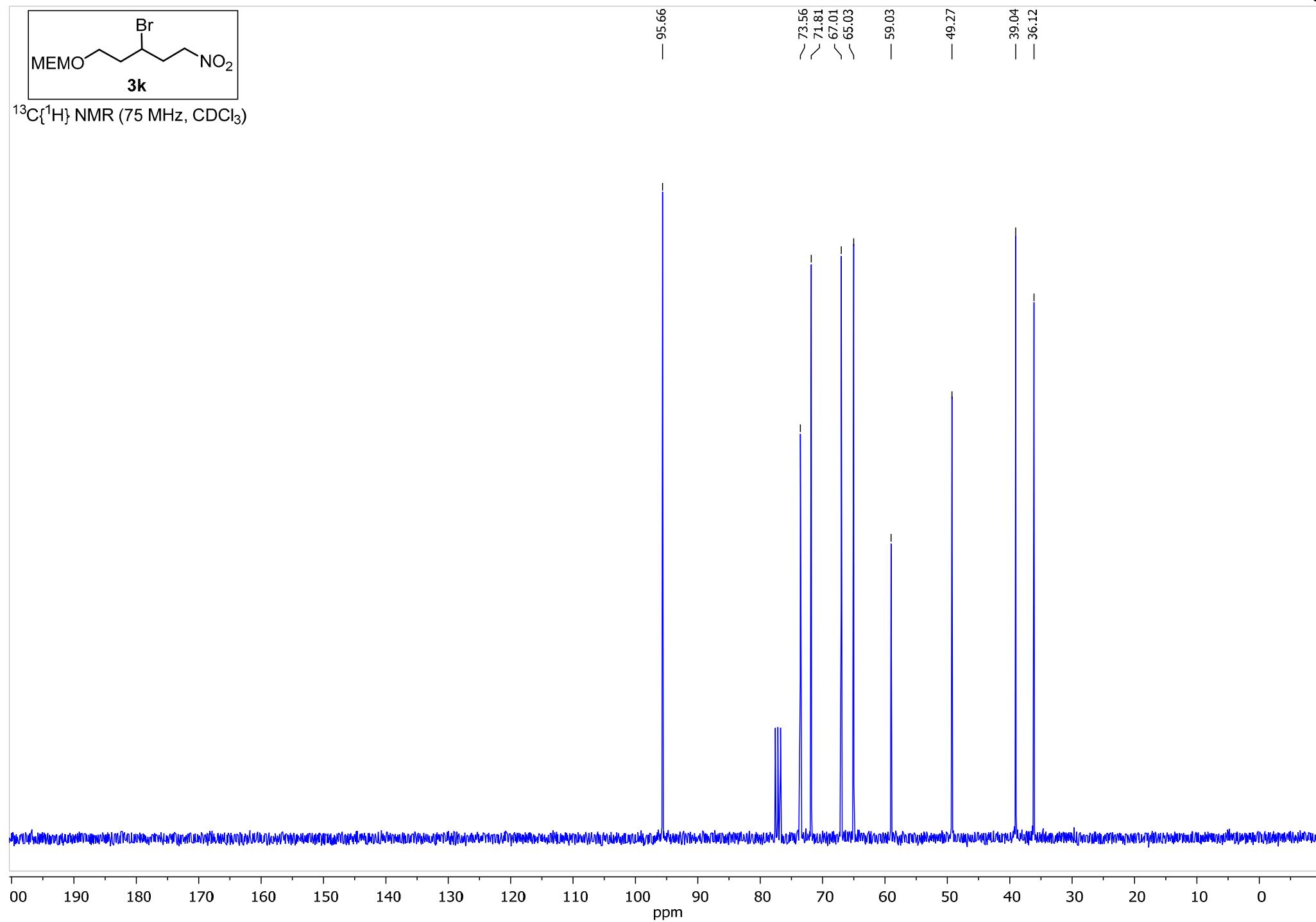


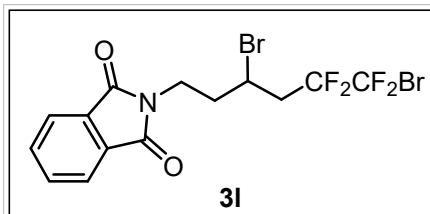
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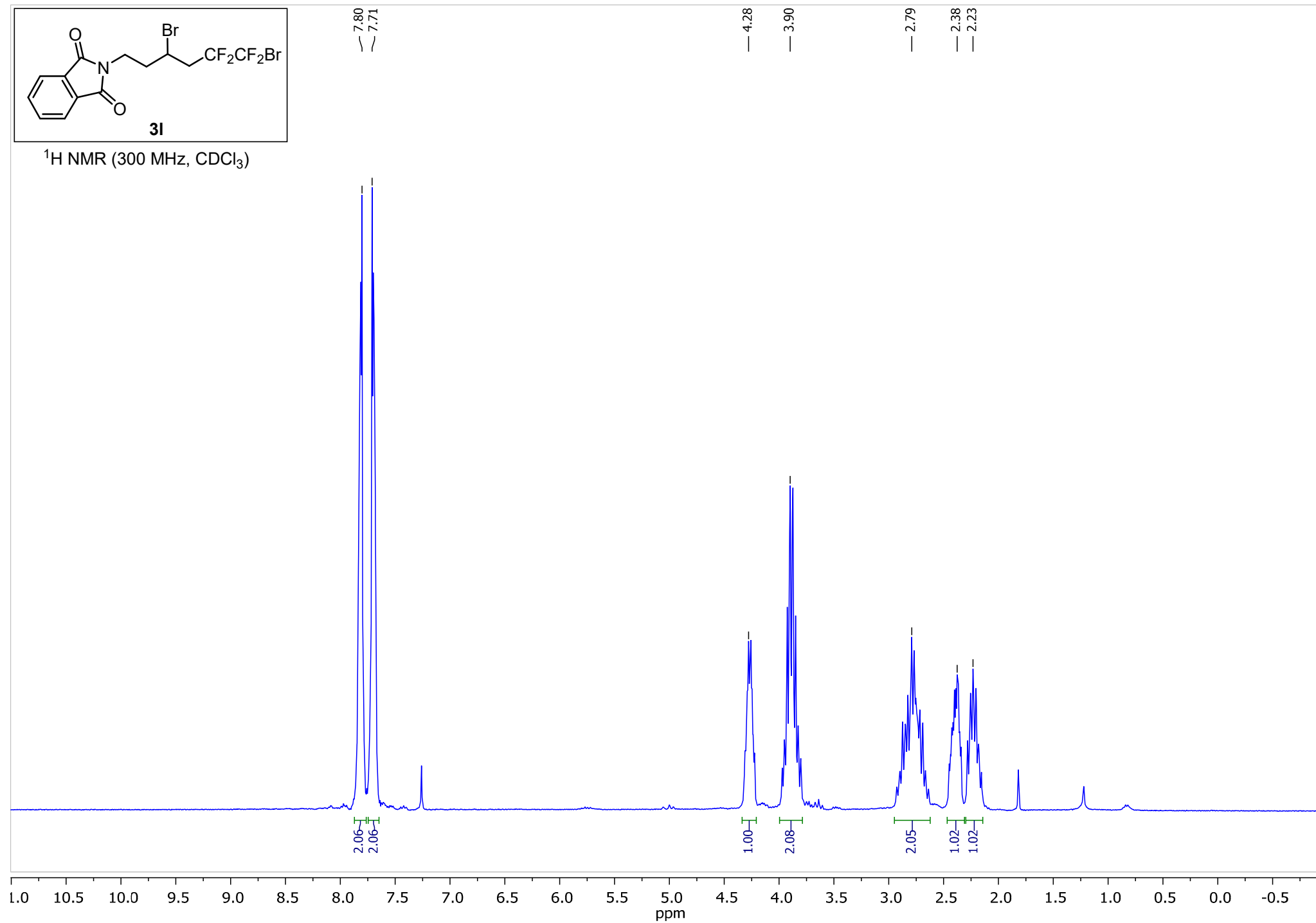


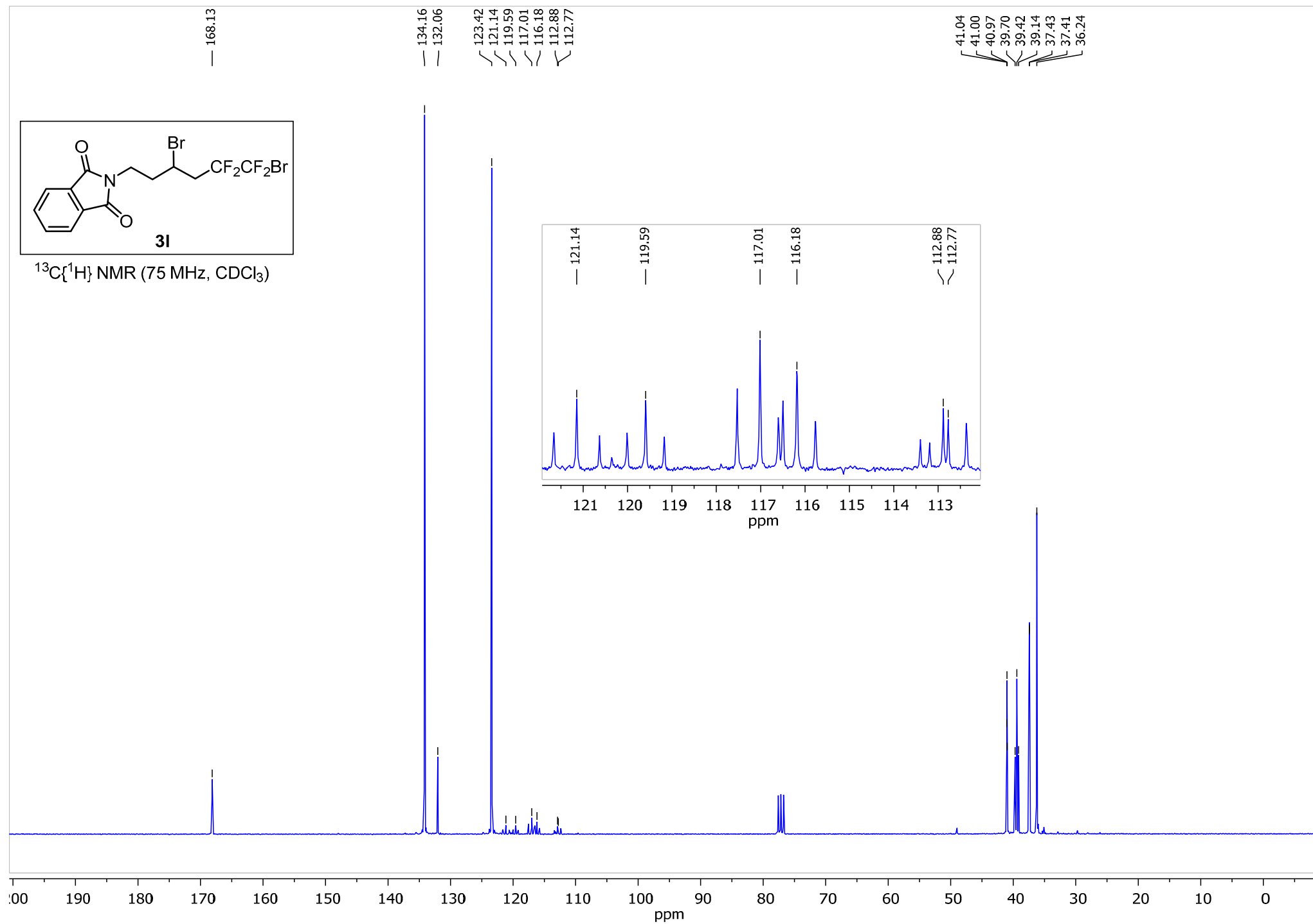
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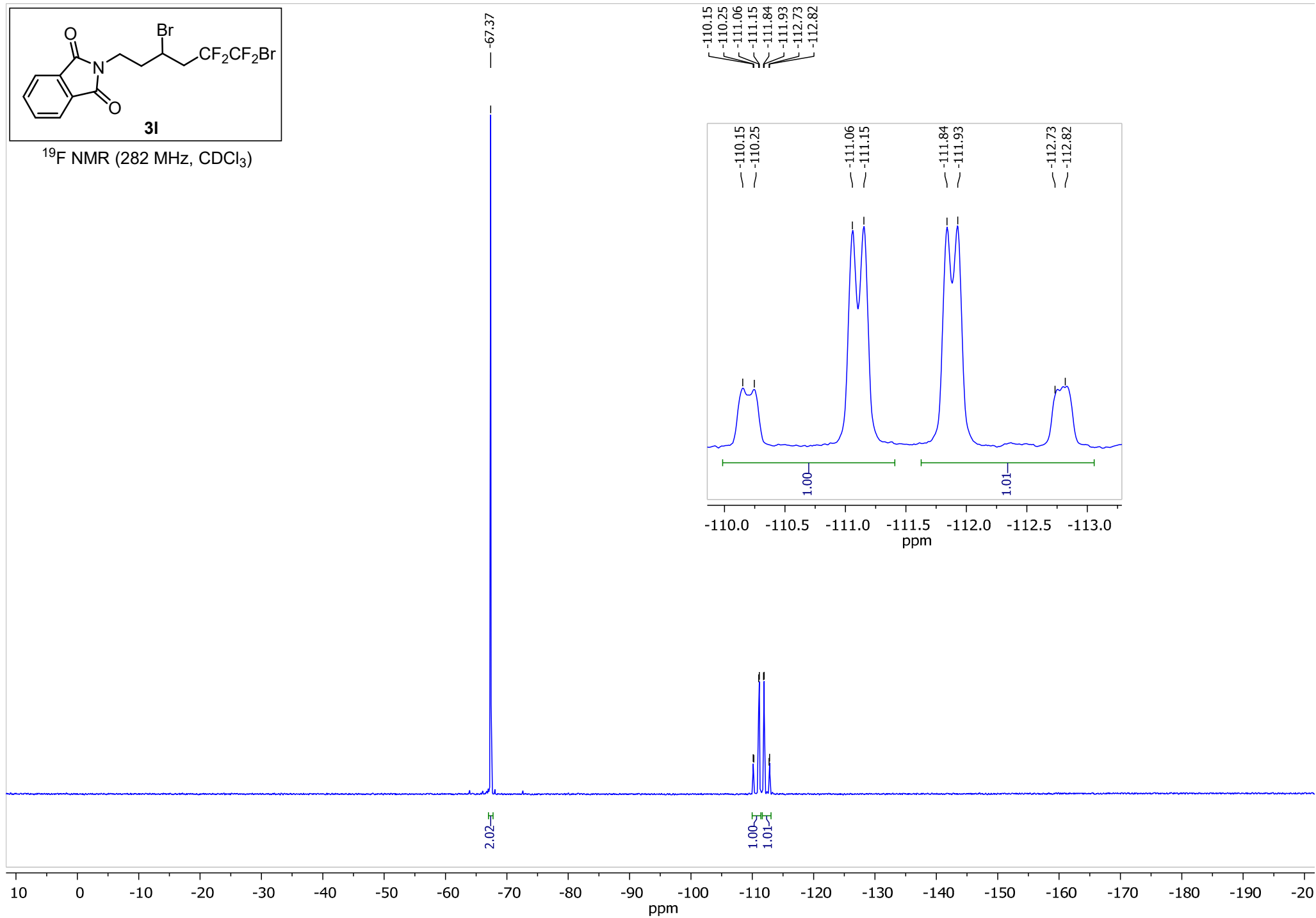




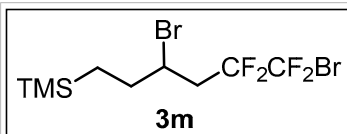
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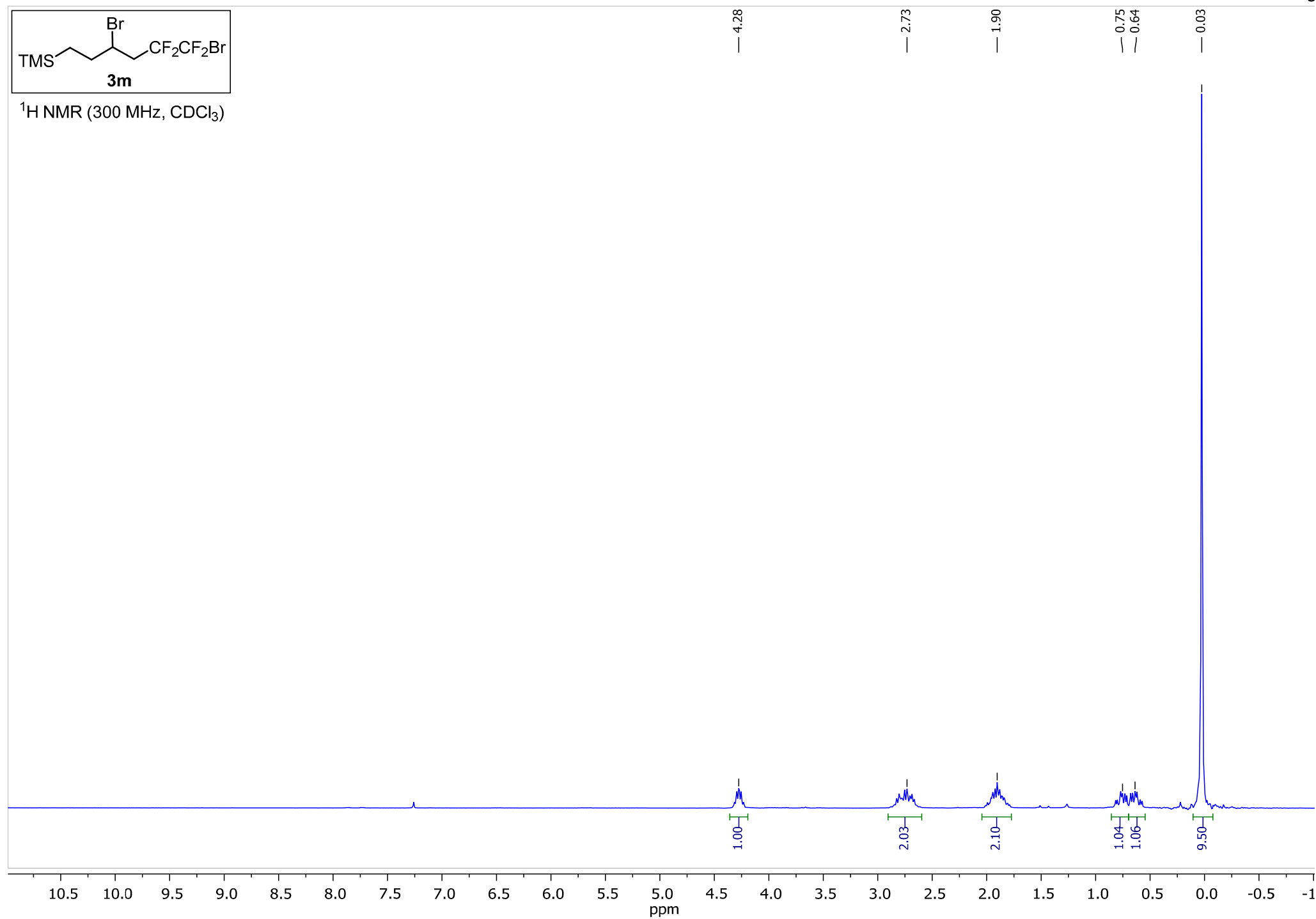


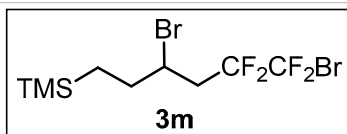






$^1\text{H}$  NMR (300 MHz,  $\text{CDCl}_3$ )





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117.38  
116.49  
113.25

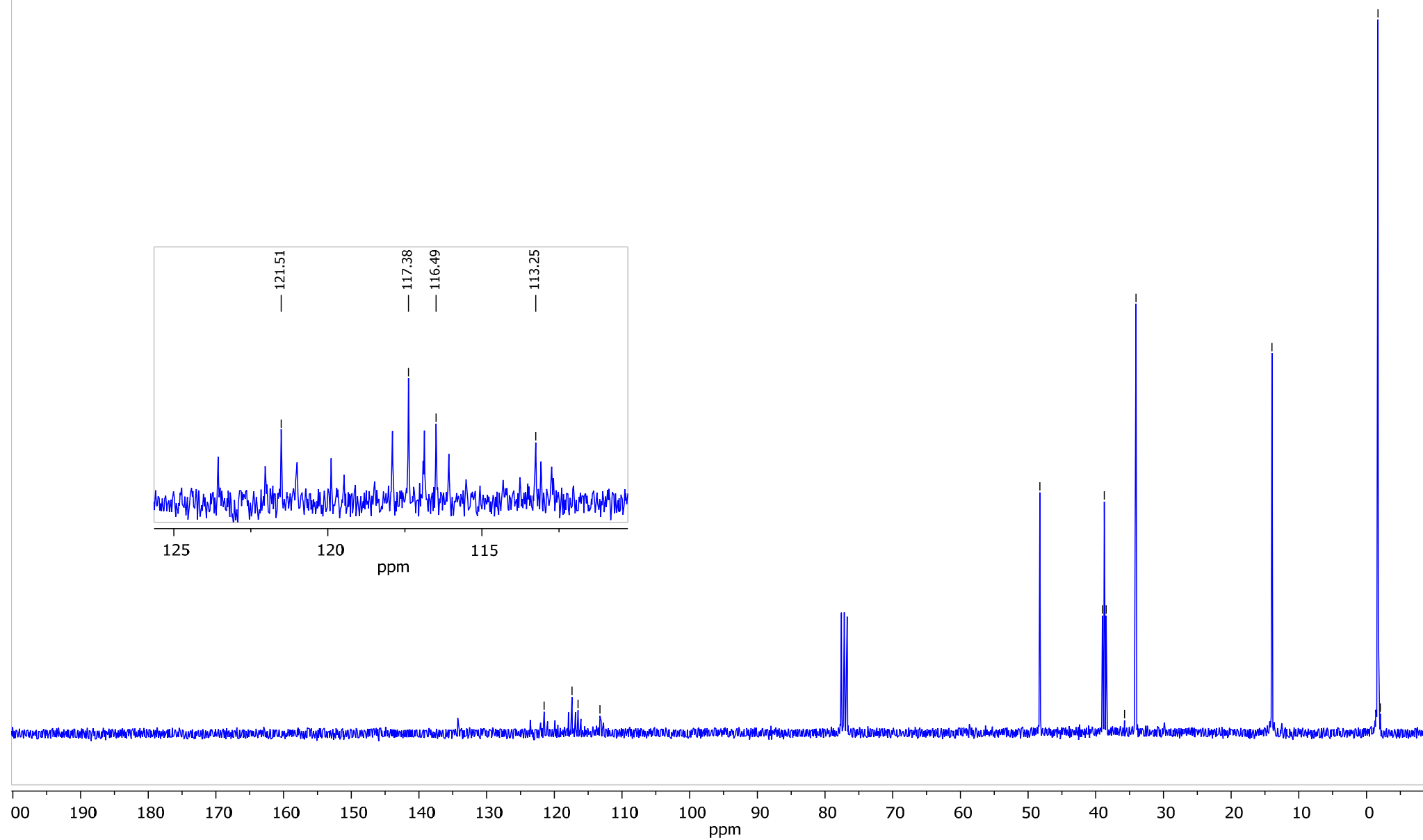
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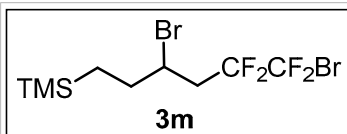
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34.06

13.96

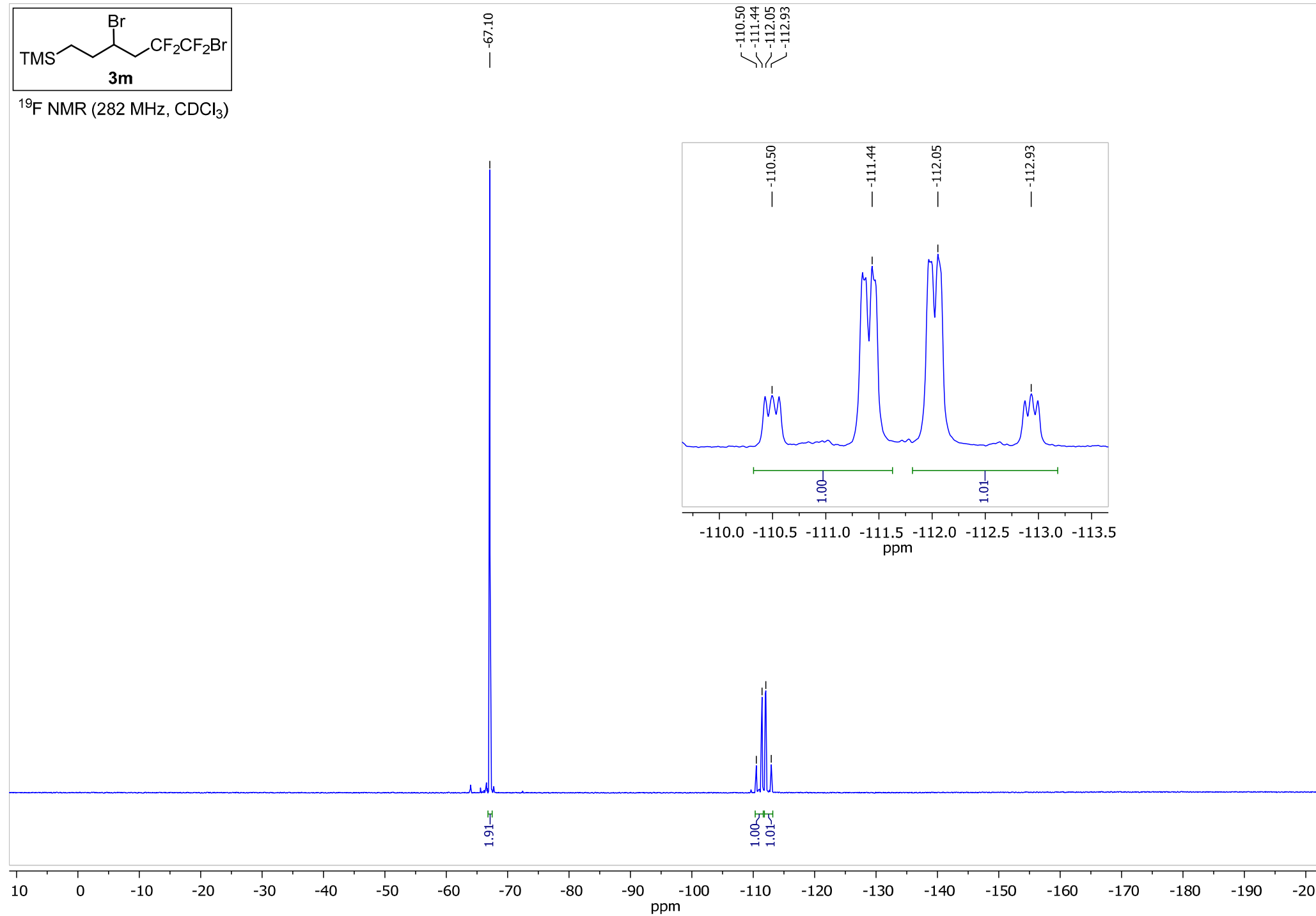
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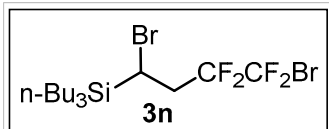
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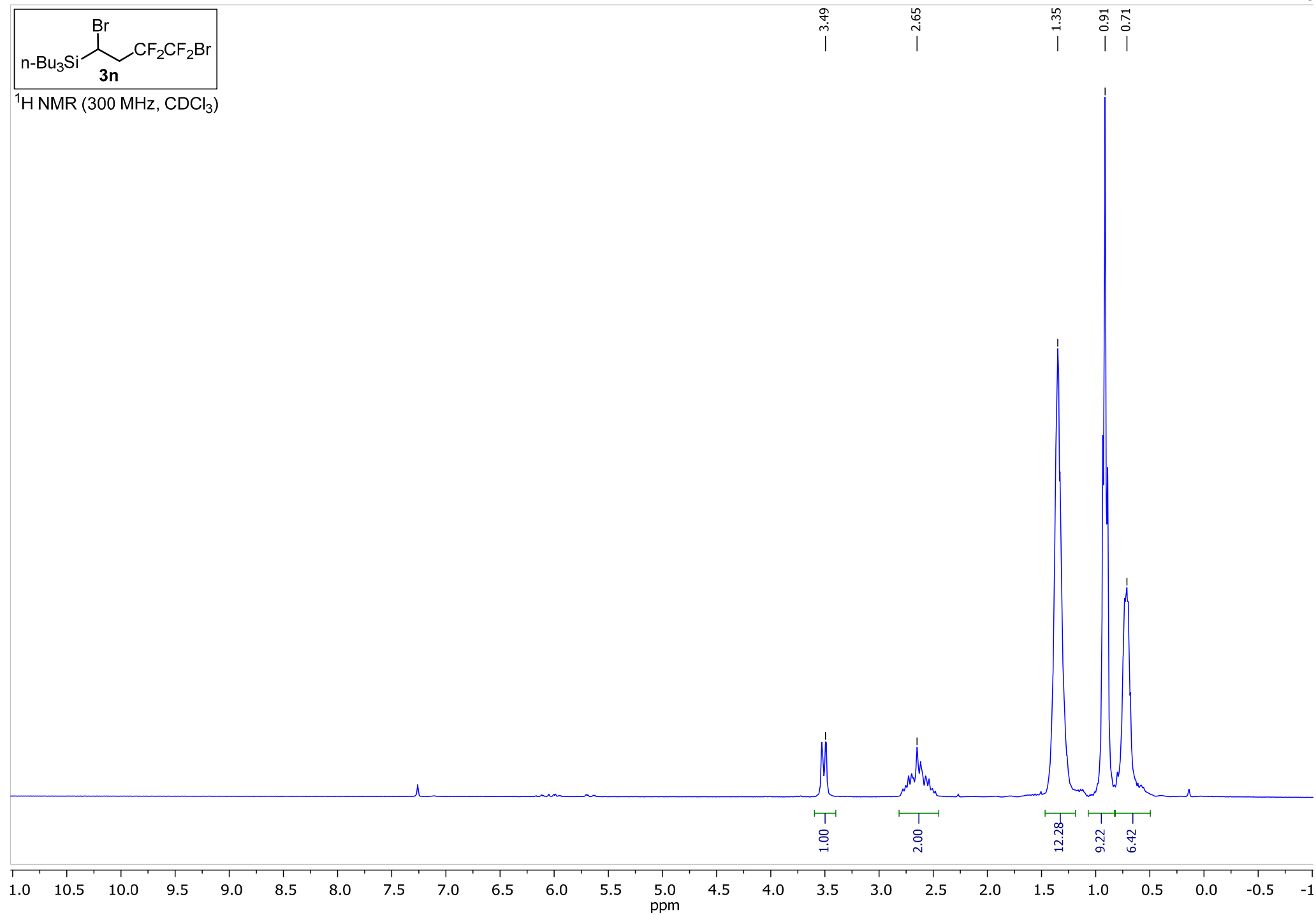


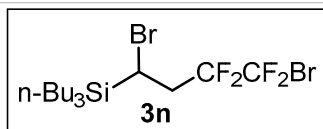
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$^1\text{H}$  NMR (300 MHz,  $\text{CDCl}_3$ )



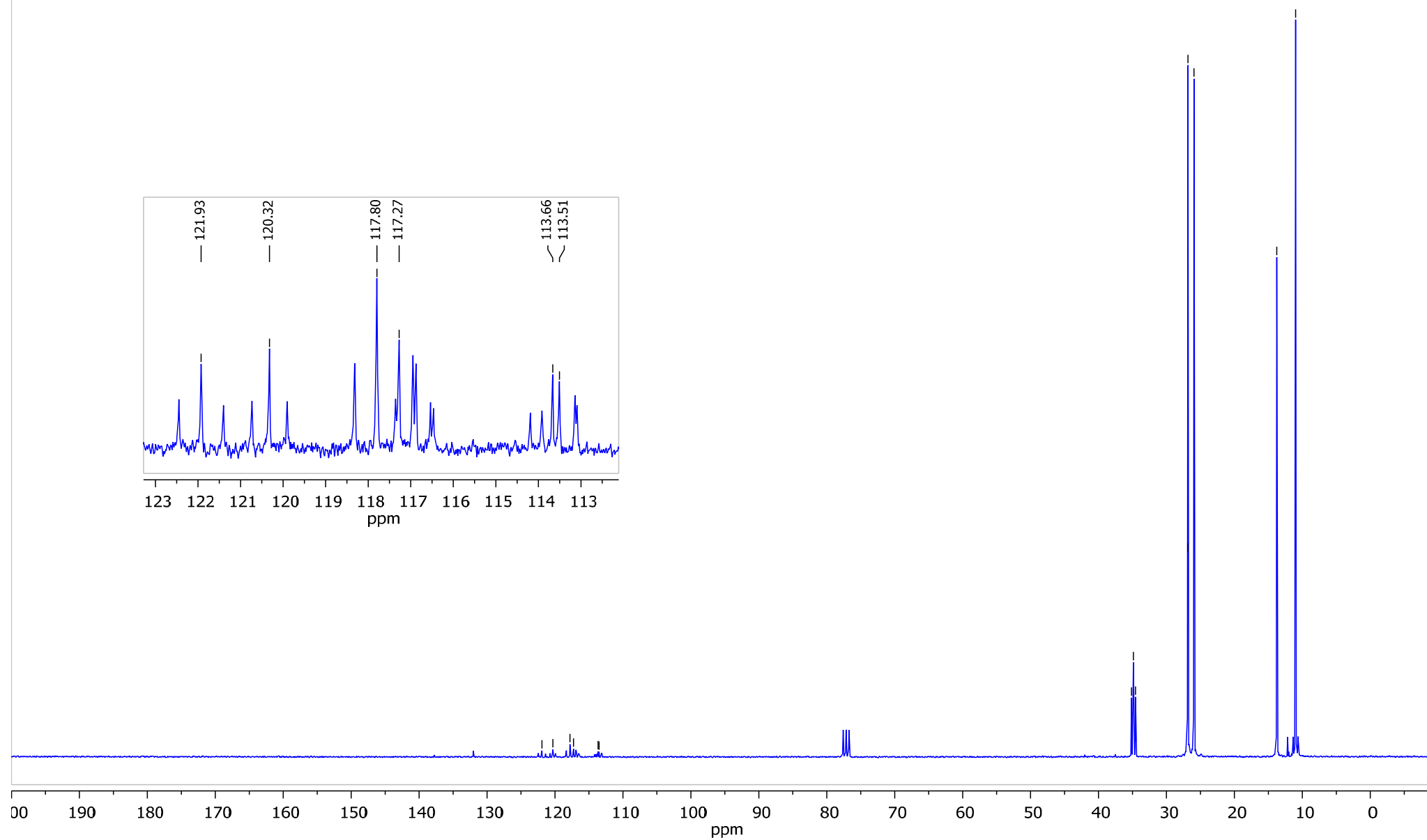


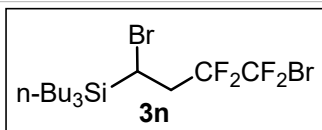
121.93  
120.32  
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117.27  
113.66  
113.51

35.15  
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26.83  
25.95

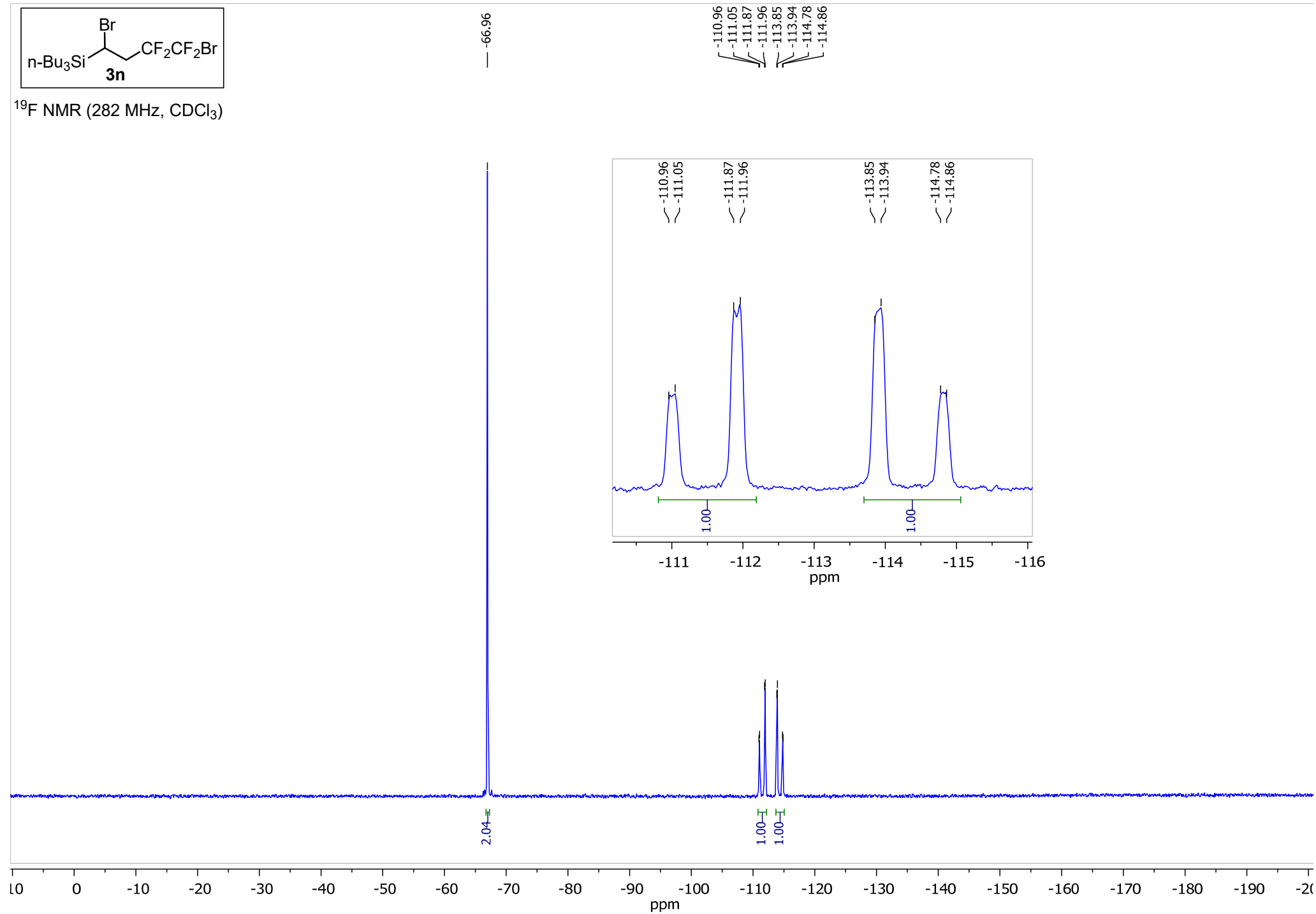
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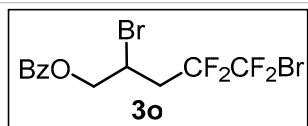
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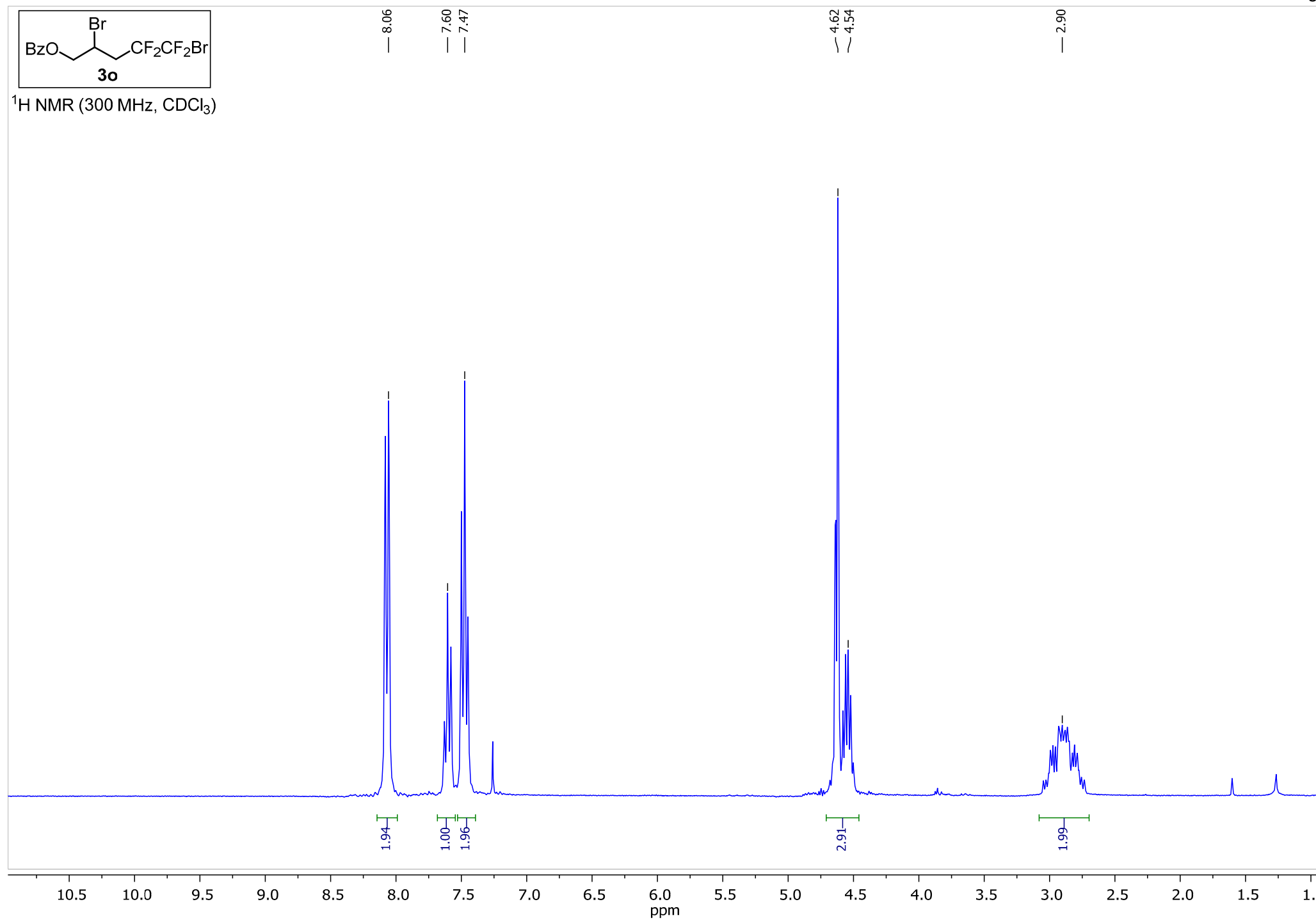


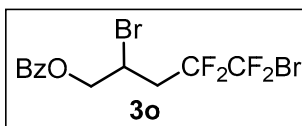
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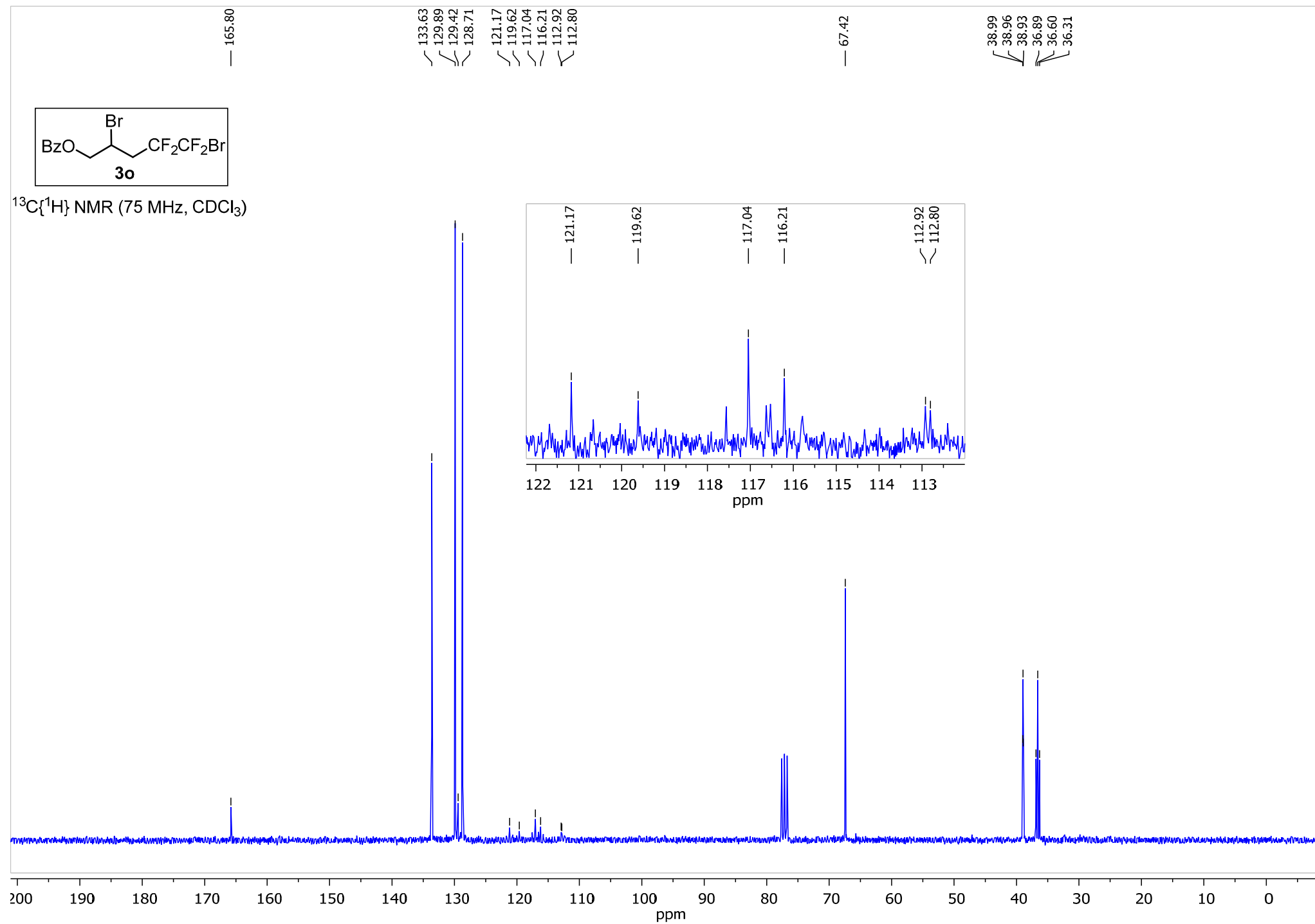


$^1\text{H}$  NMR (300 MHz,  $\text{CDCl}_3$ )

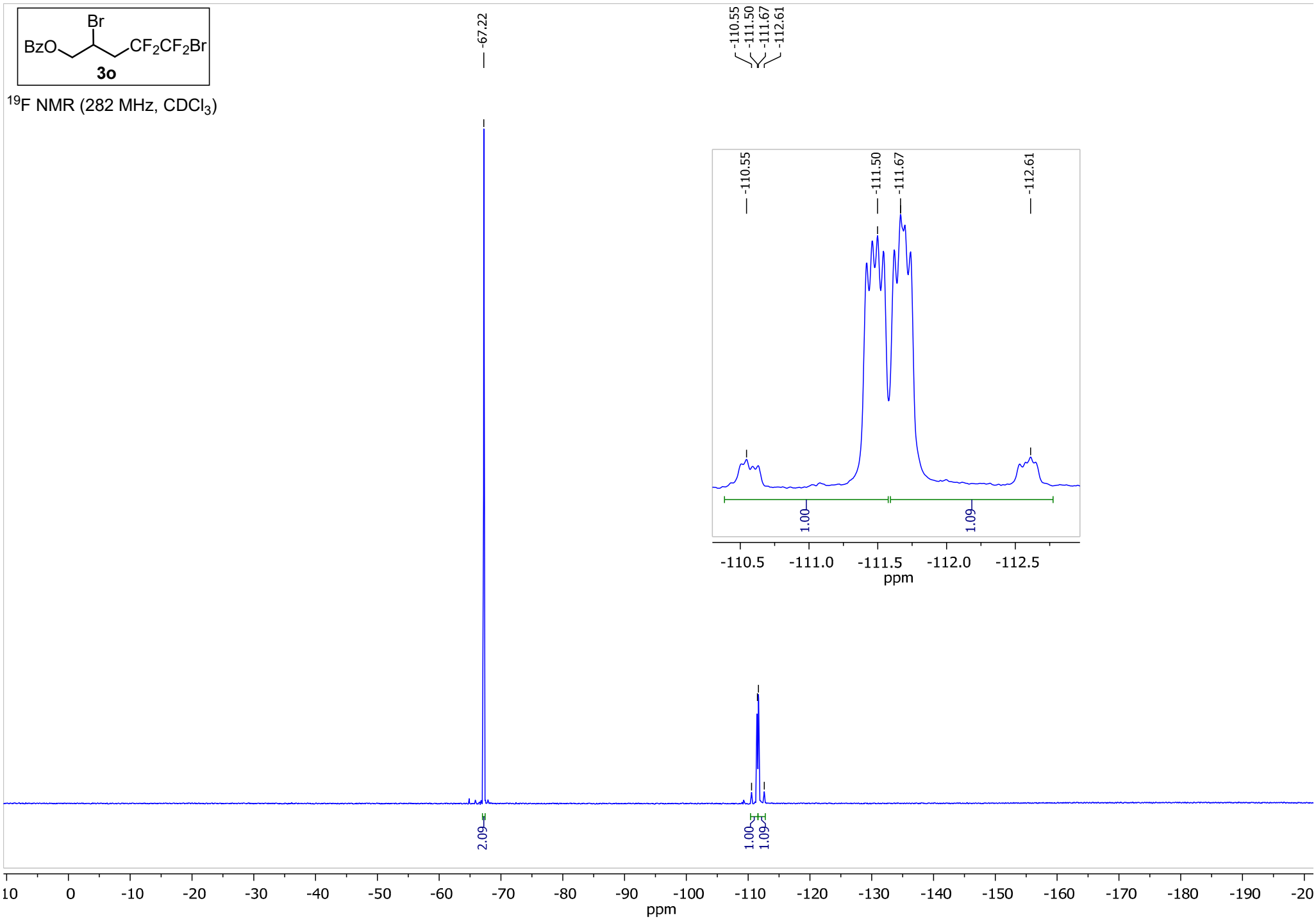


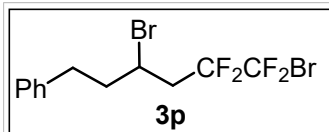


$^{13}\text{C}\{^1\text{H}\}$  NMR (75 MHz,  $\text{CDCl}_3$ )

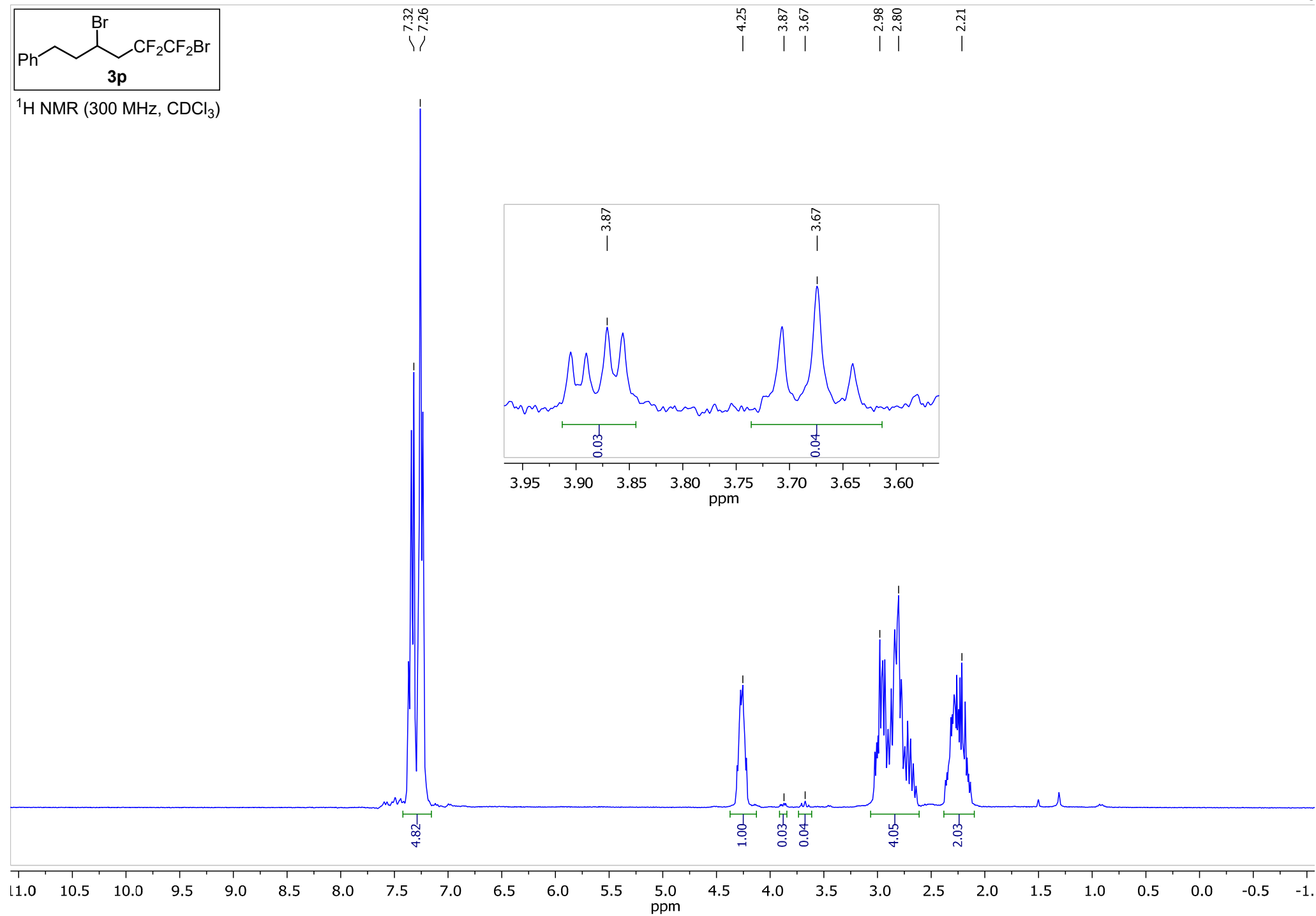


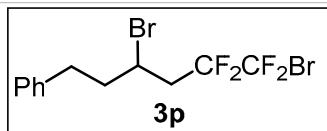




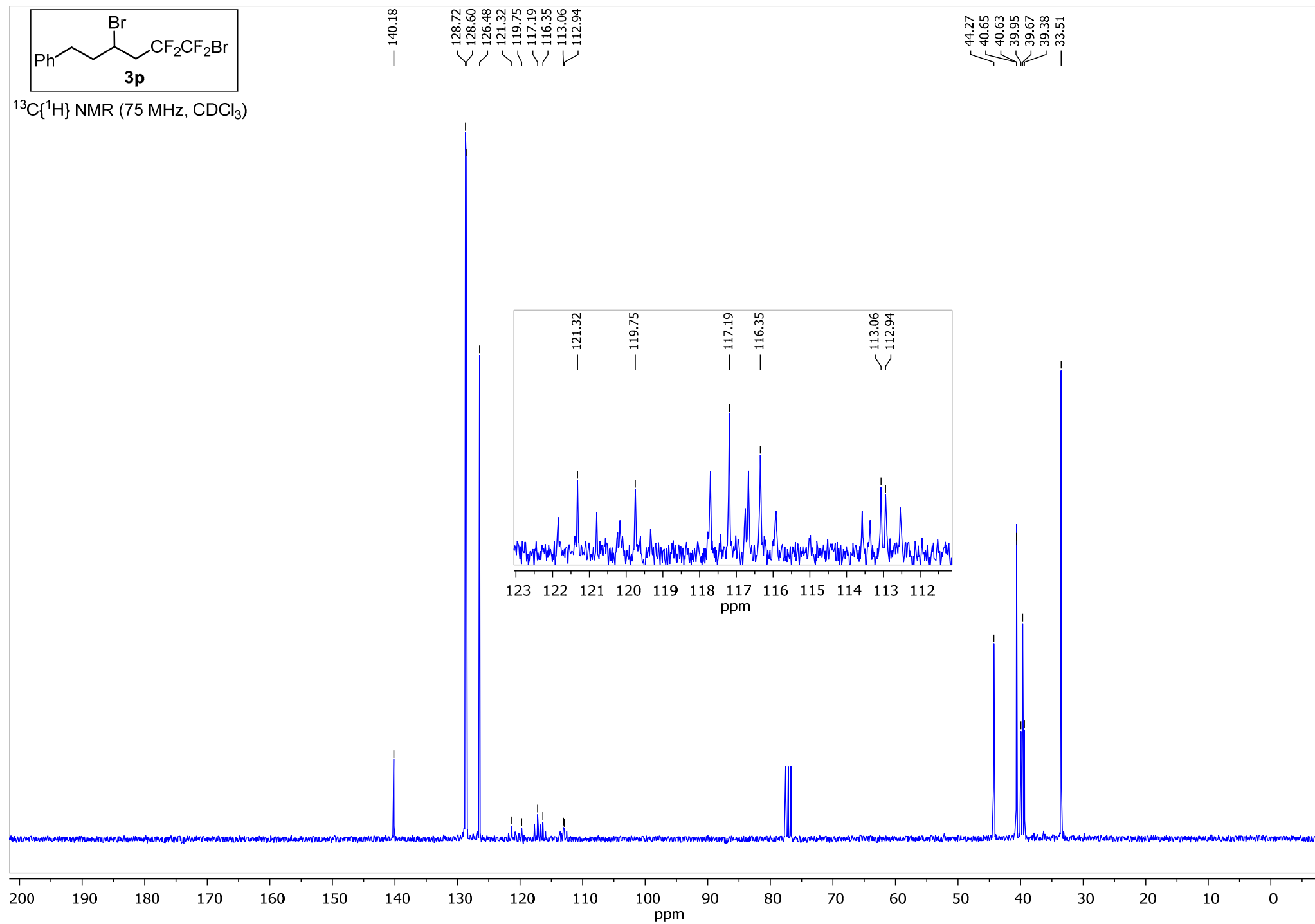


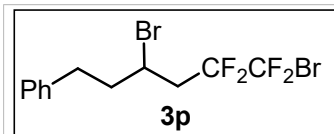
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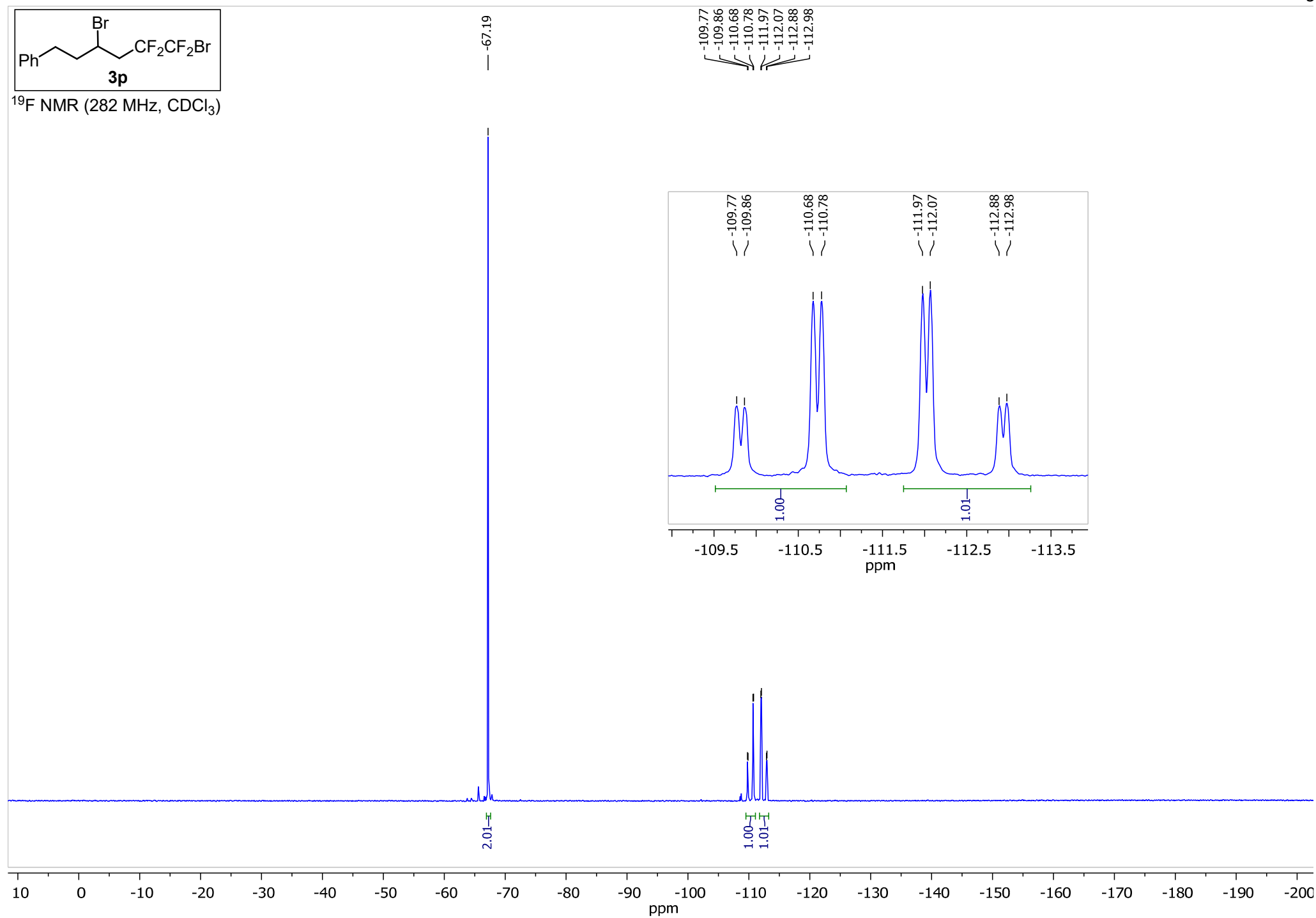


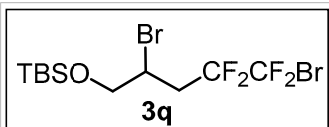
$^{13}\text{C}\{^1\text{H}\}$  NMR (75 MHz,  $\text{CDCl}_3$ )



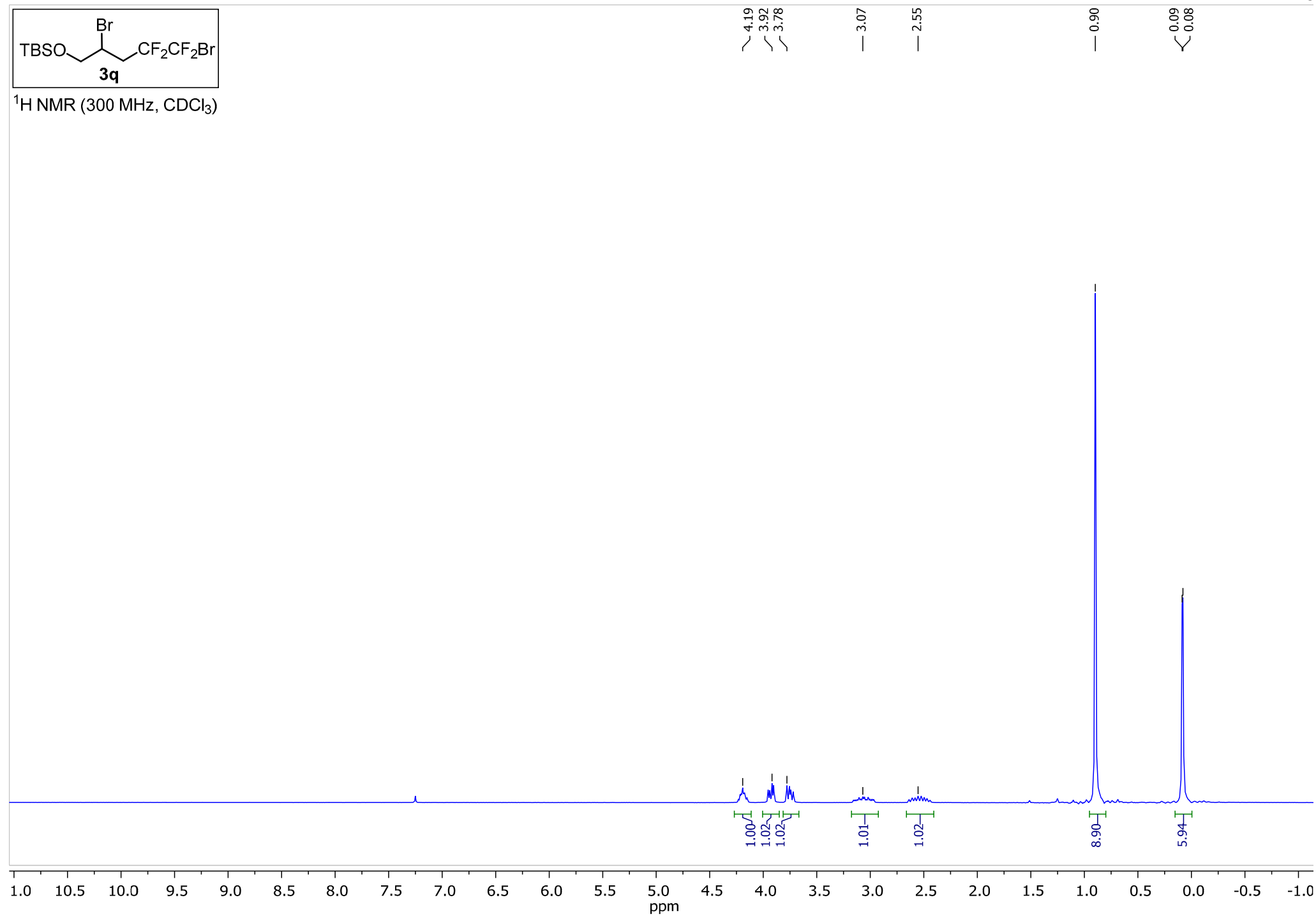


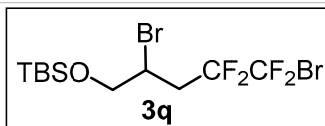
$^{19}\text{F}$  NMR (282 MHz,  $\text{CDCl}_3$ )





$^1\text{H}$  NMR (300 MHz,  $\text{CDCl}_3$ )





121.56  
120.02  
117.43  
116.62  
113.30

66.85

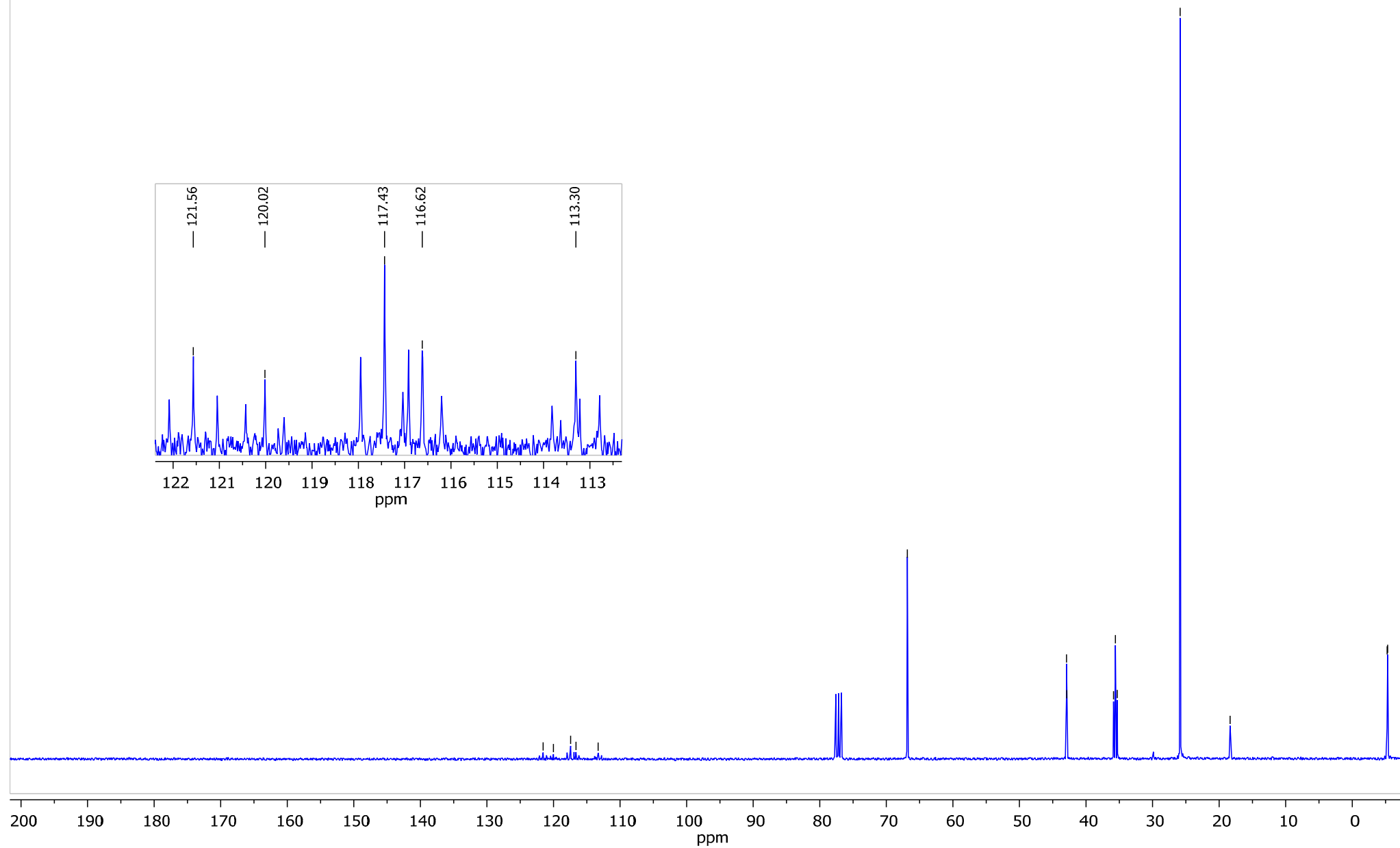
42.92  
42.89  
35.87  
35.59  
35.30

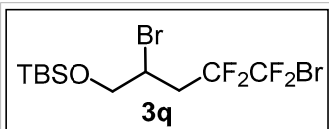
25.86

18.36

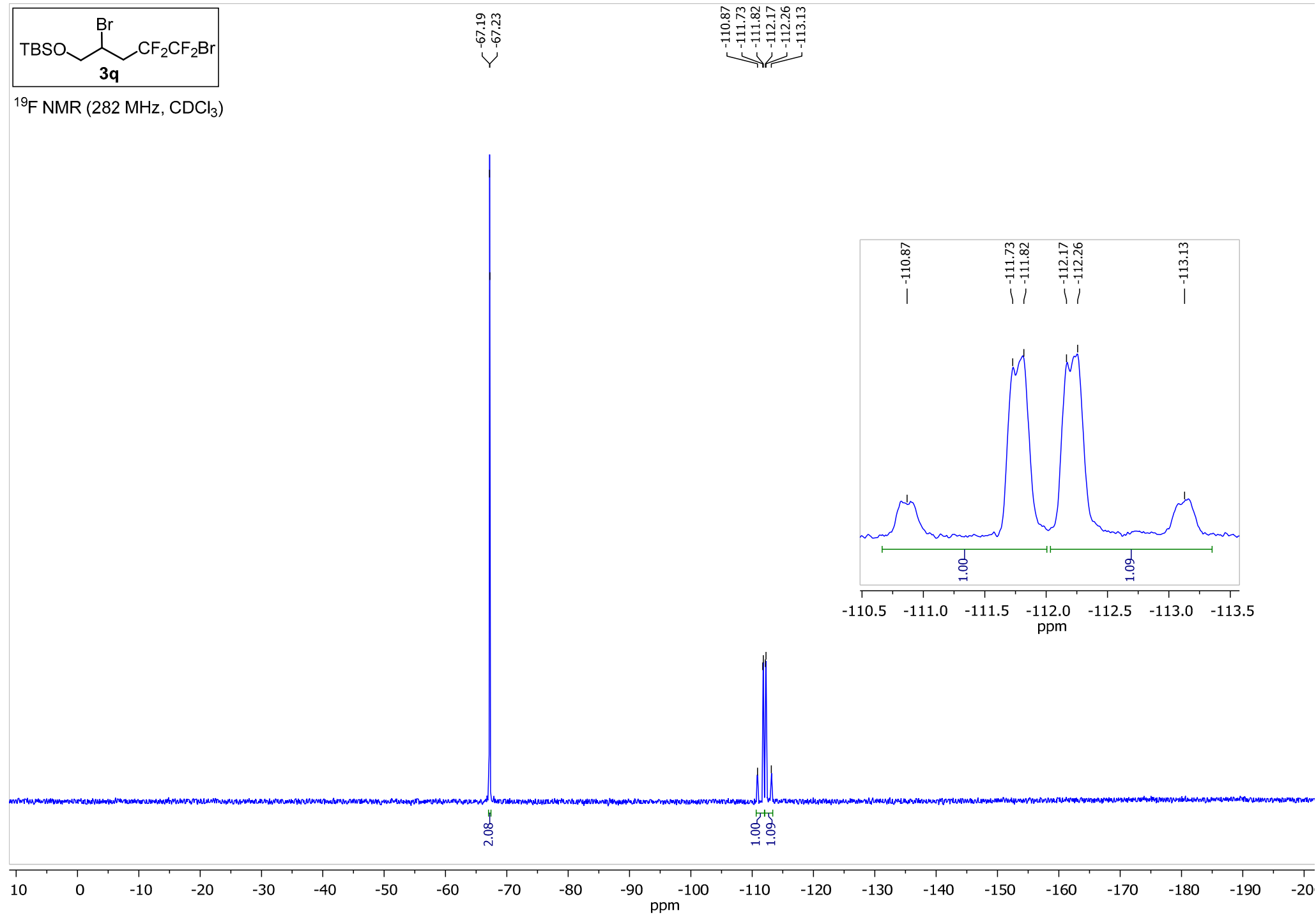
-5.24  
-5.31

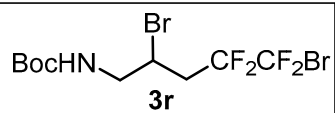
$^{13}\text{C}\{^1\text{H}\}$  NMR (75 MHz,  $\text{CDCl}_3$ )



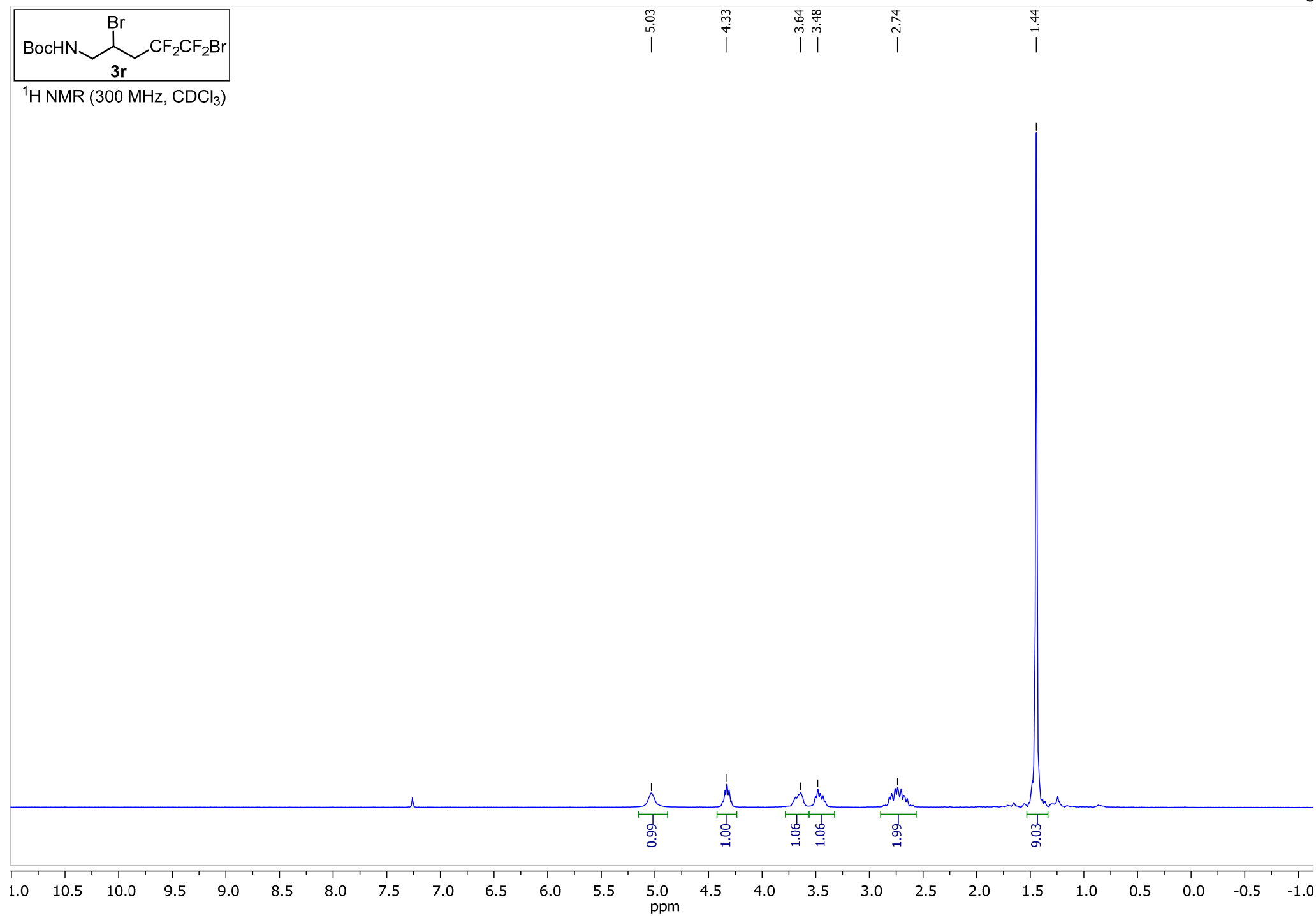


$^{19}\text{F}$  NMR (282 MHz,  $\text{CDCl}_3$ )

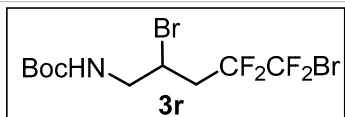




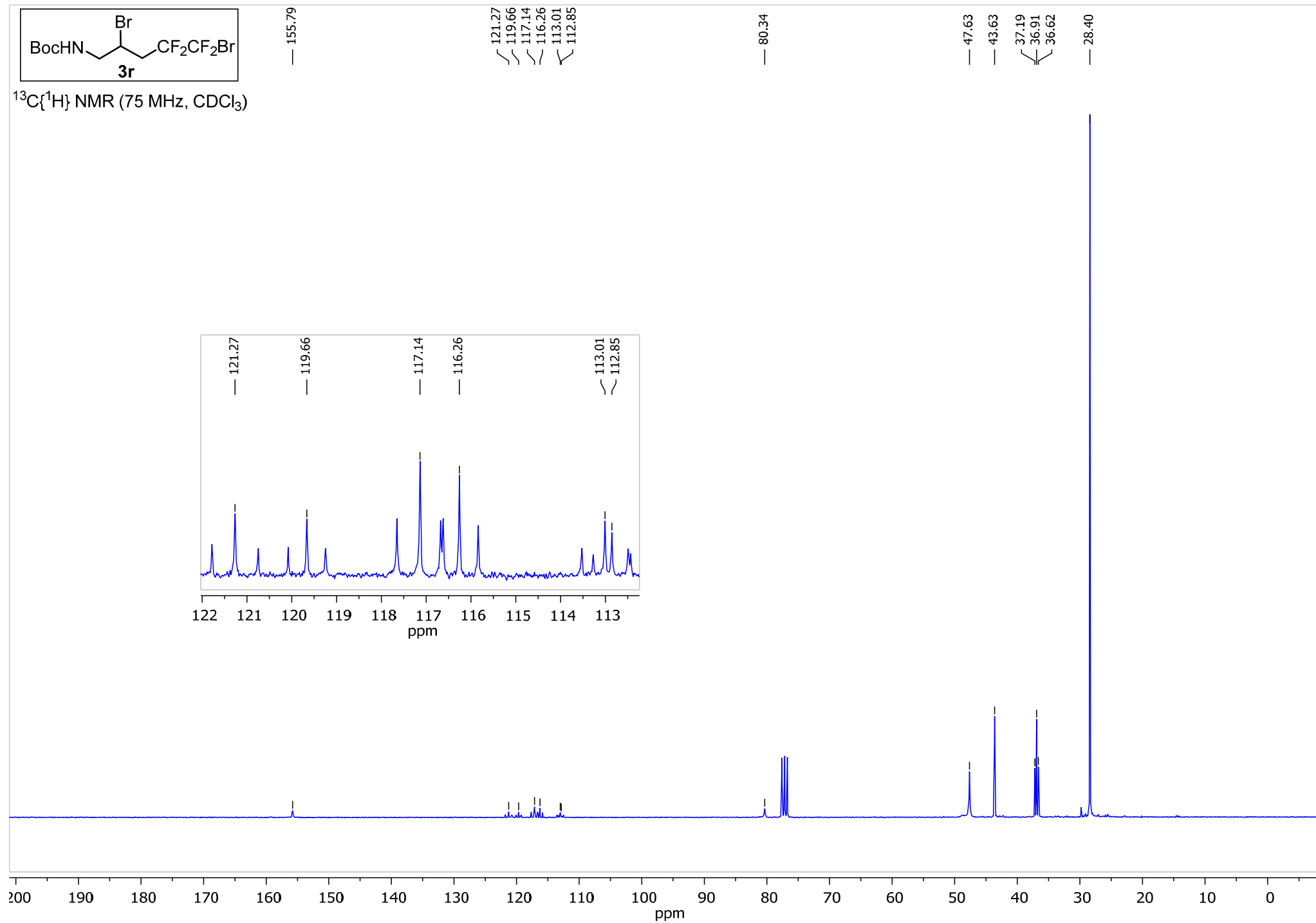
$^1\text{H}$  NMR (300 MHz,  $\text{CDCl}_3$ )

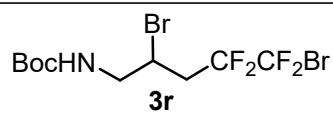




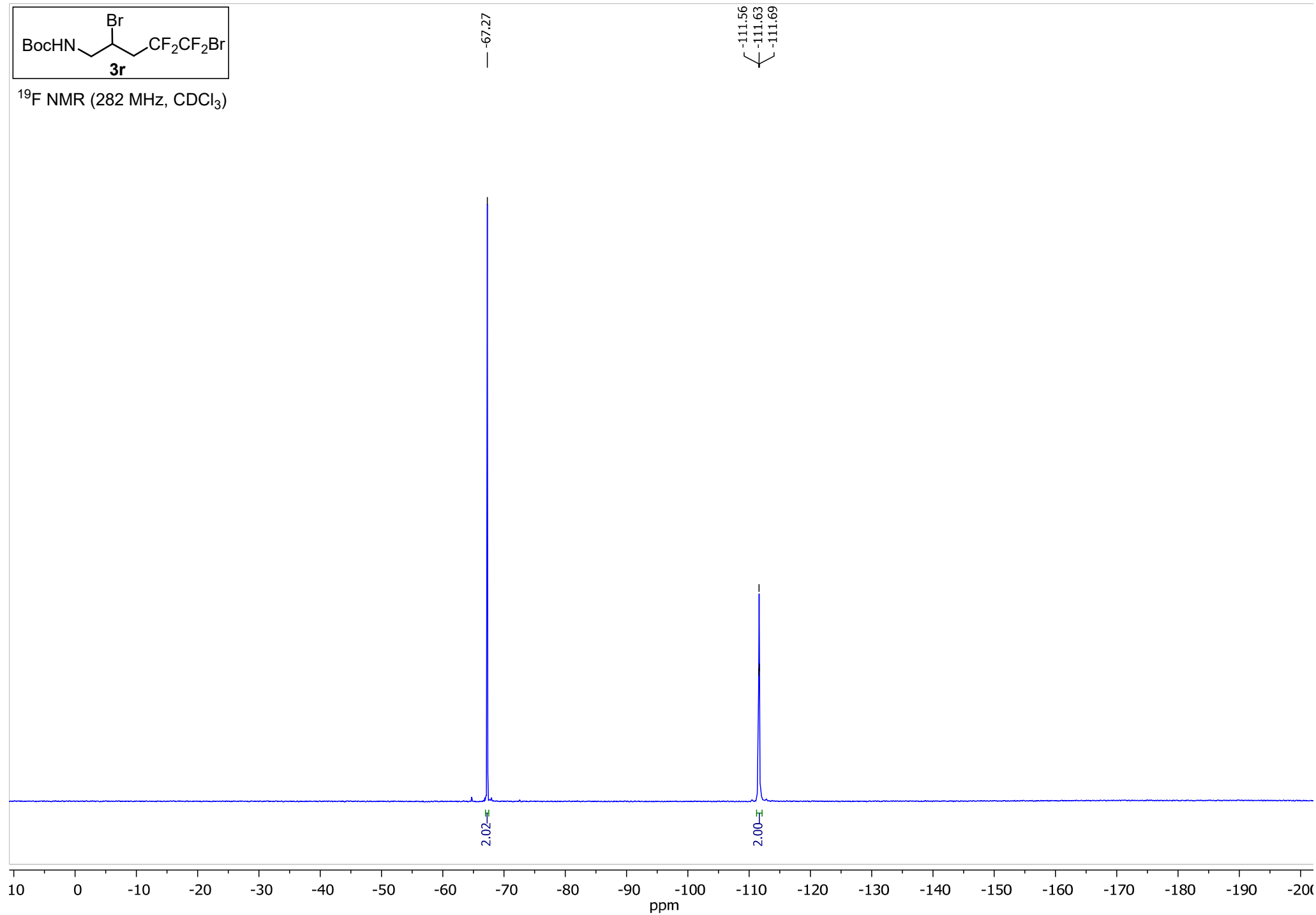


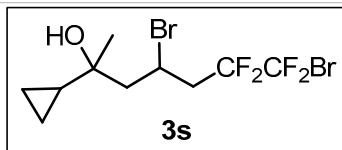
$^{13}\text{C}\{^1\text{H}\}$  NMR (75 MHz,  $\text{CDCl}_3$ )



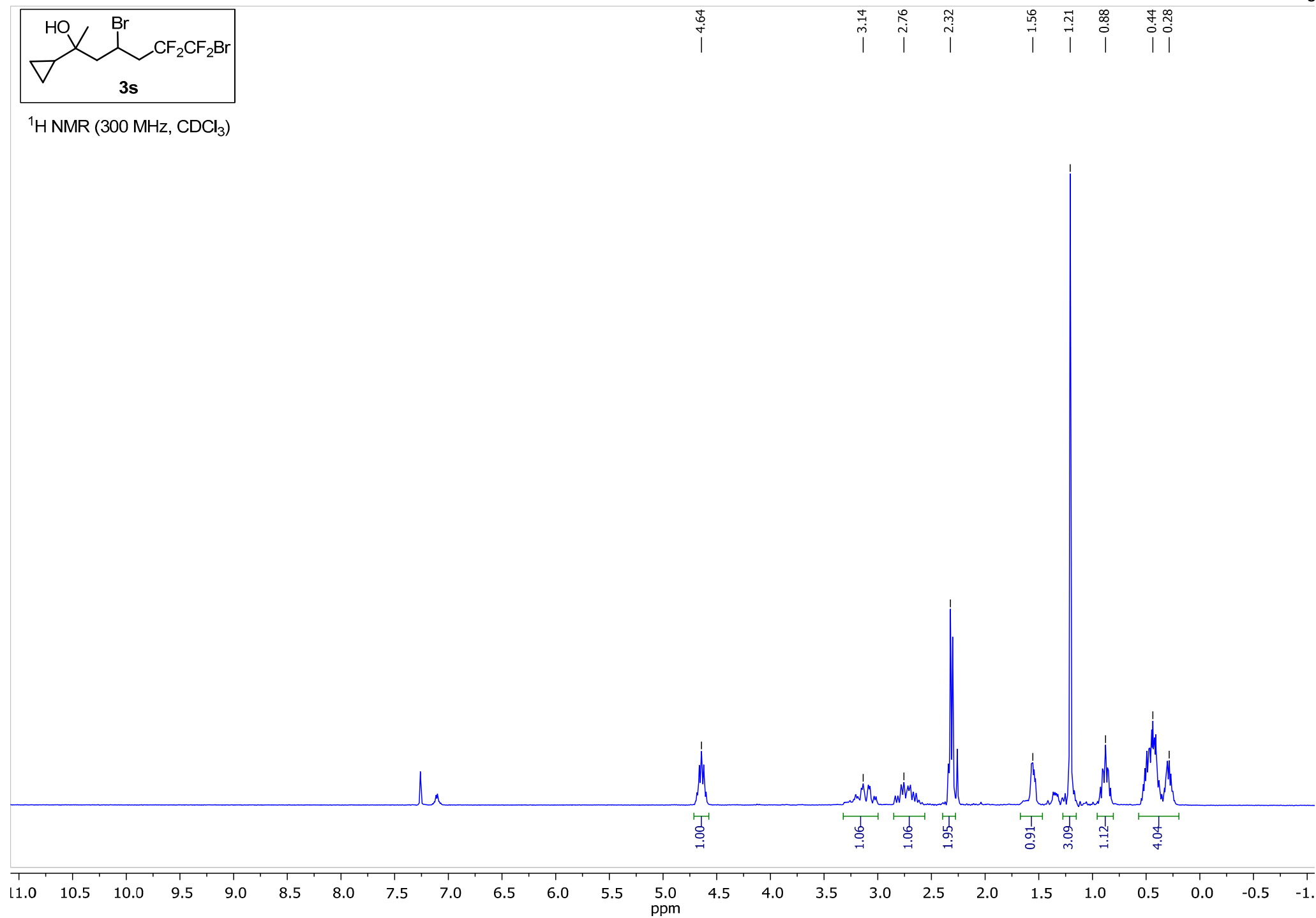


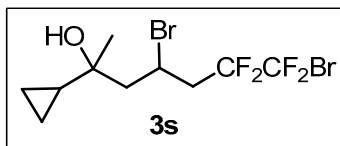
$^{19}\text{F}$  NMR (282 MHz,  $\text{CDCl}_3$ )





$^1\text{H}$  NMR (300 MHz,  $\text{CDCl}_3$ )





$^{13}\text{C}\{^1\text{H}\}$  NMR (75 MHz,  $\text{CDCl}_3$ )

129.71  
125.92  
121.50  
119.85  
117.37  
116.44  
113.24

71.38  
71.22

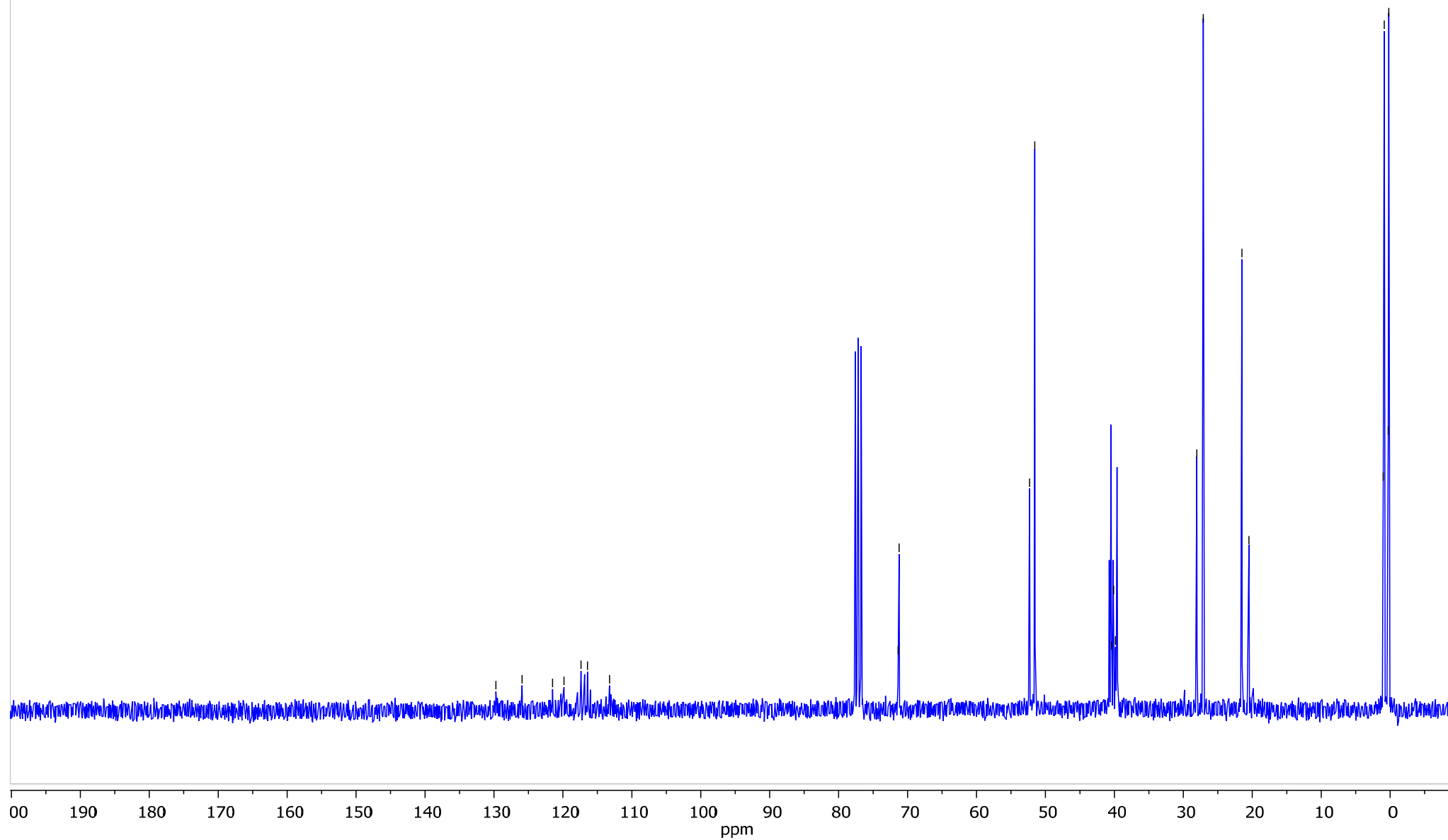
52.31  
51.55

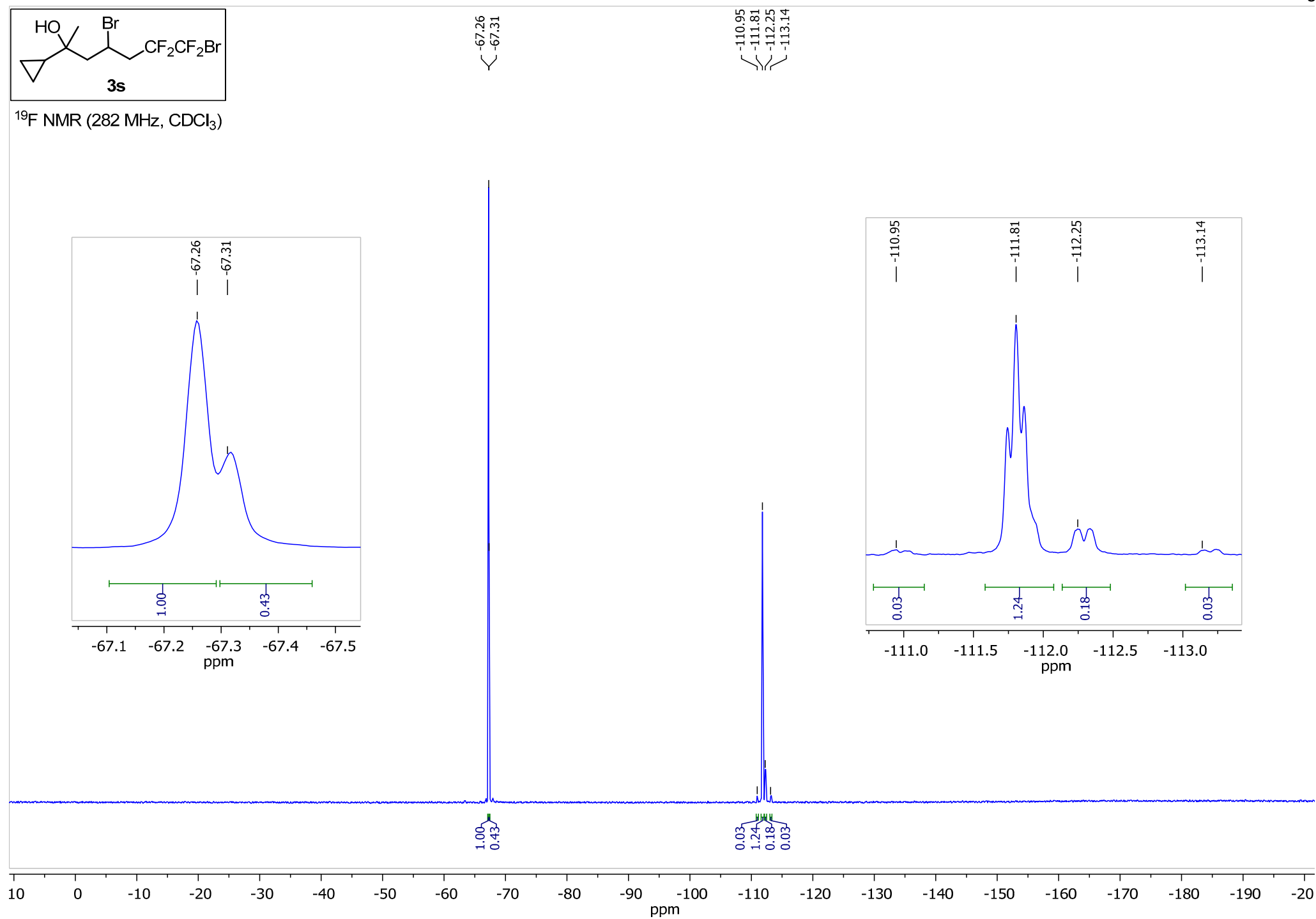
40.39  
40.12  
39.84

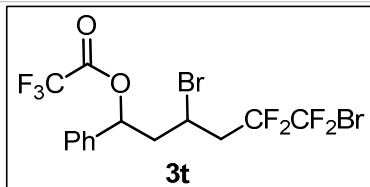
28.05  
27.11

21.51  
20.48

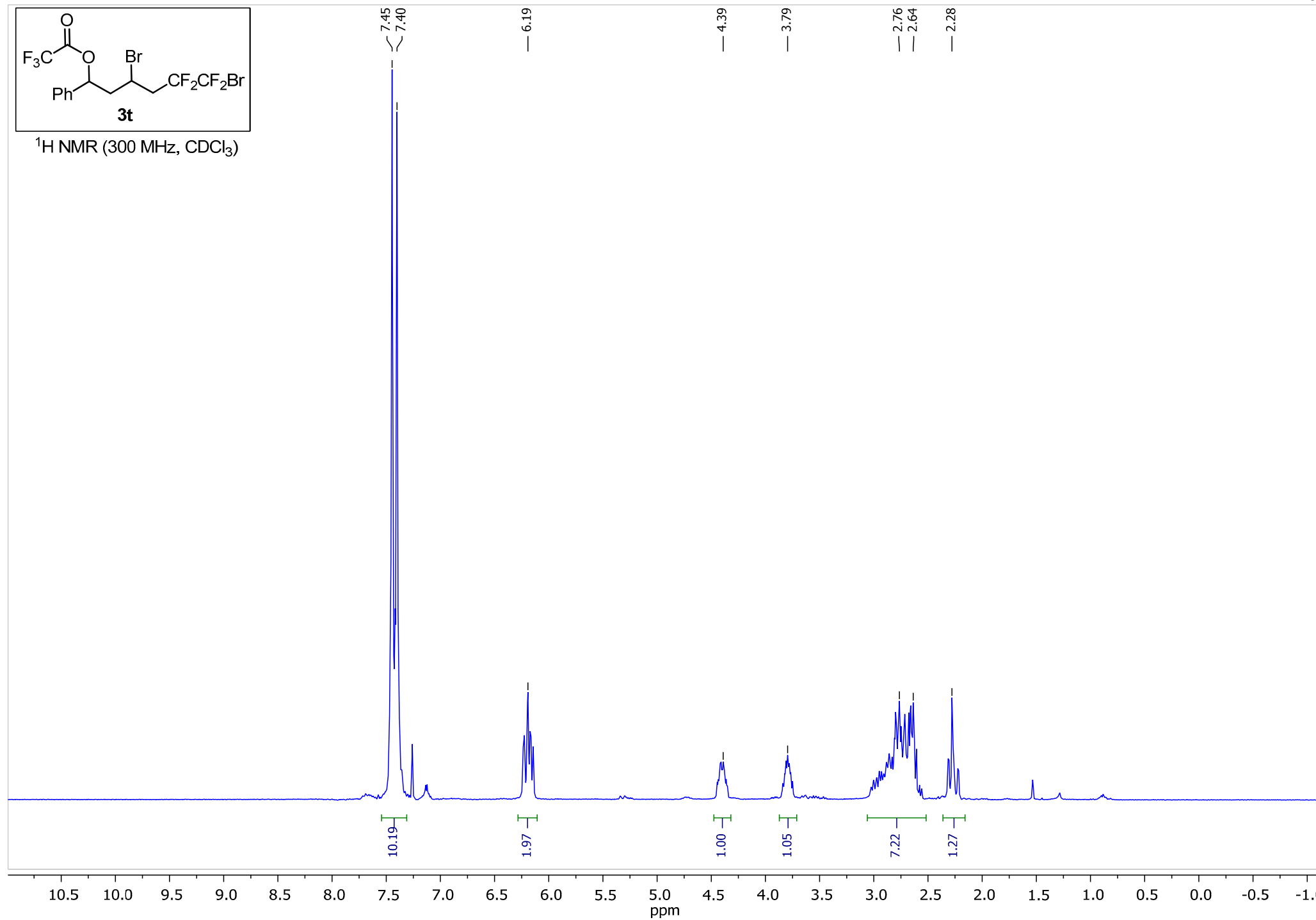
1.01  
0.85  
0.28  
0.19

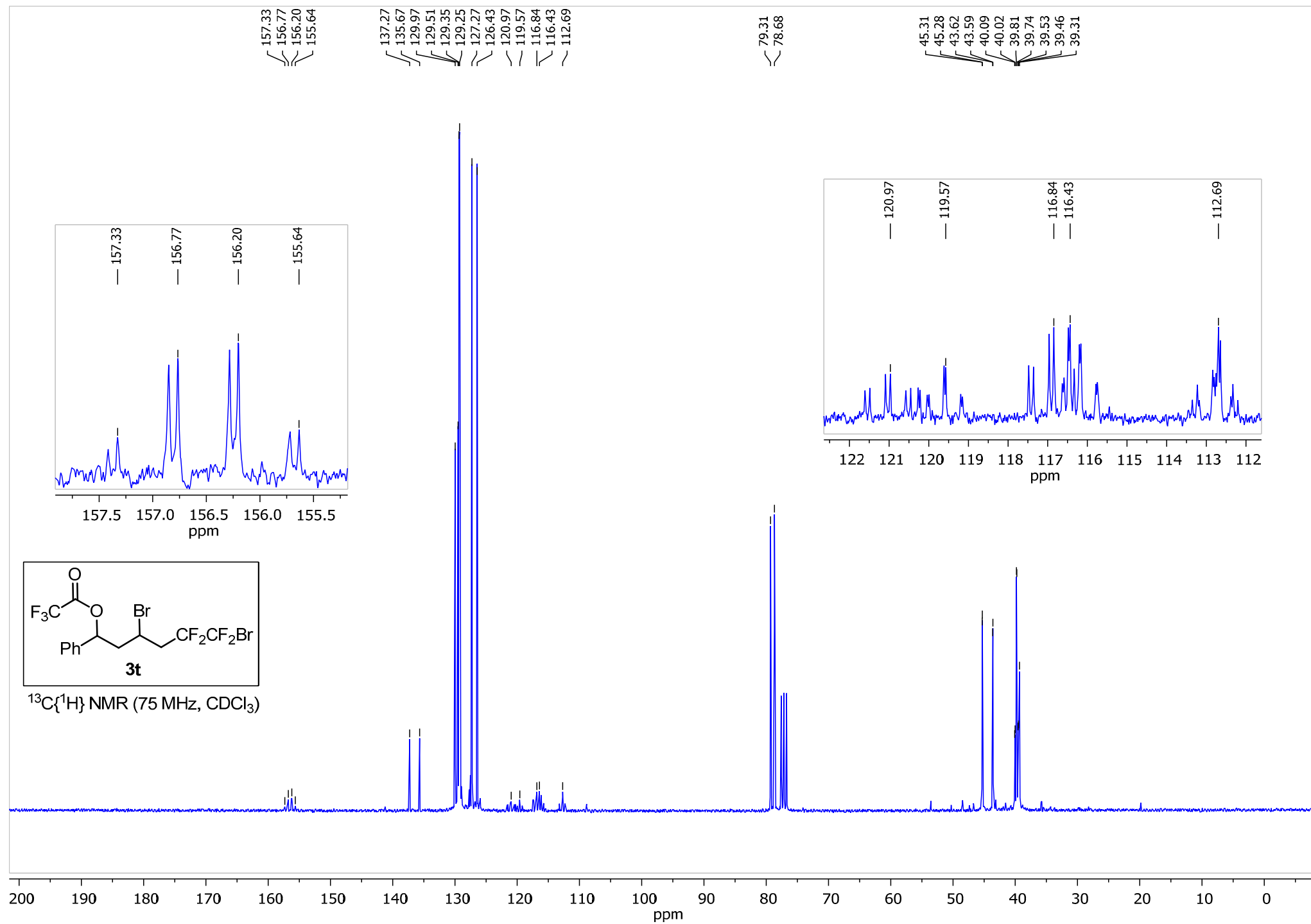


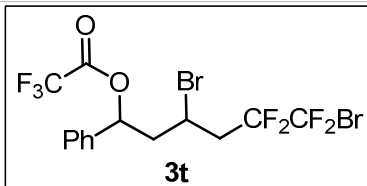




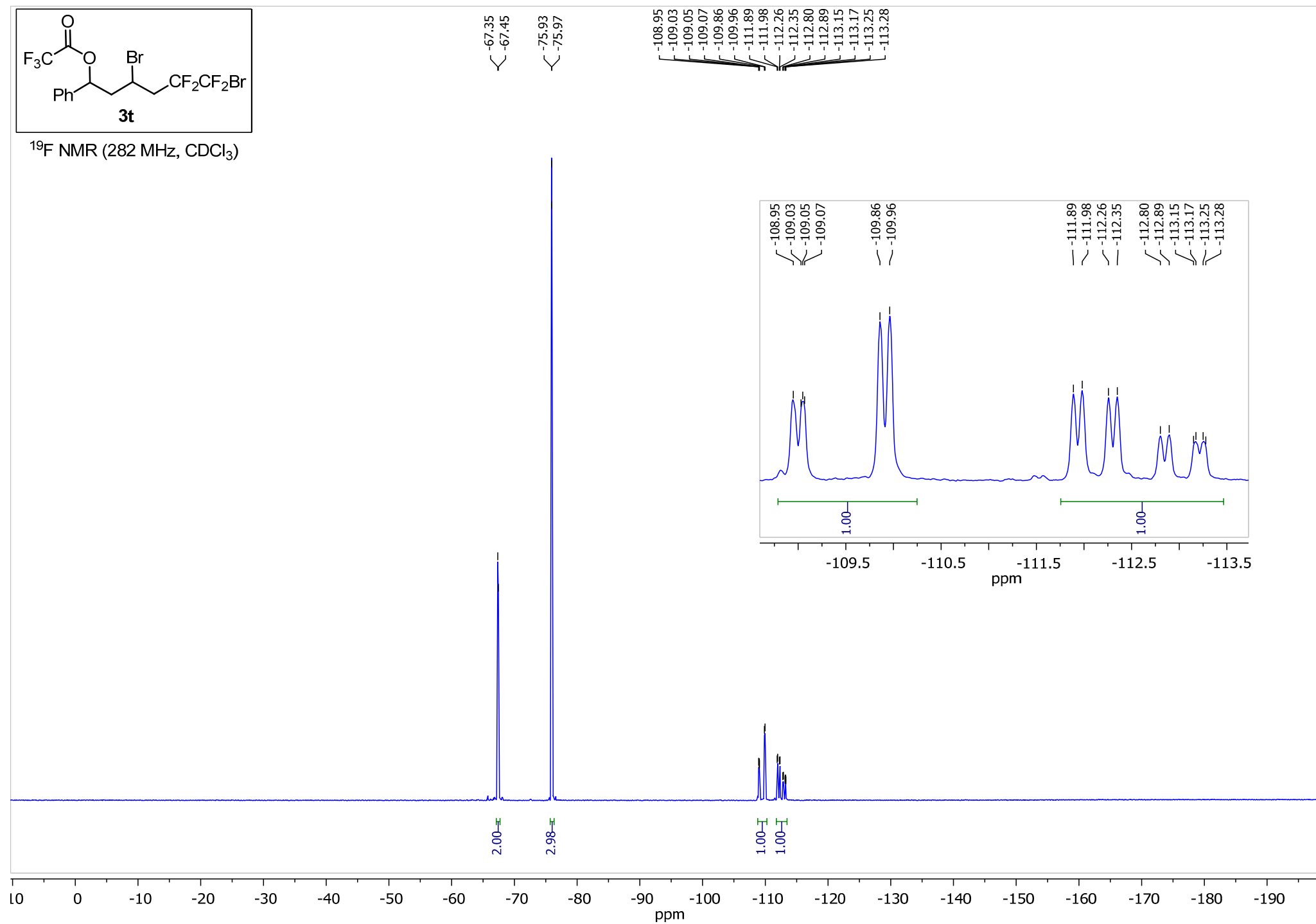
<sup>1</sup>H NMR (300 MHz, CDCl<sub>3</sub>)



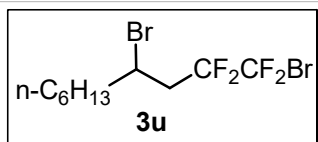




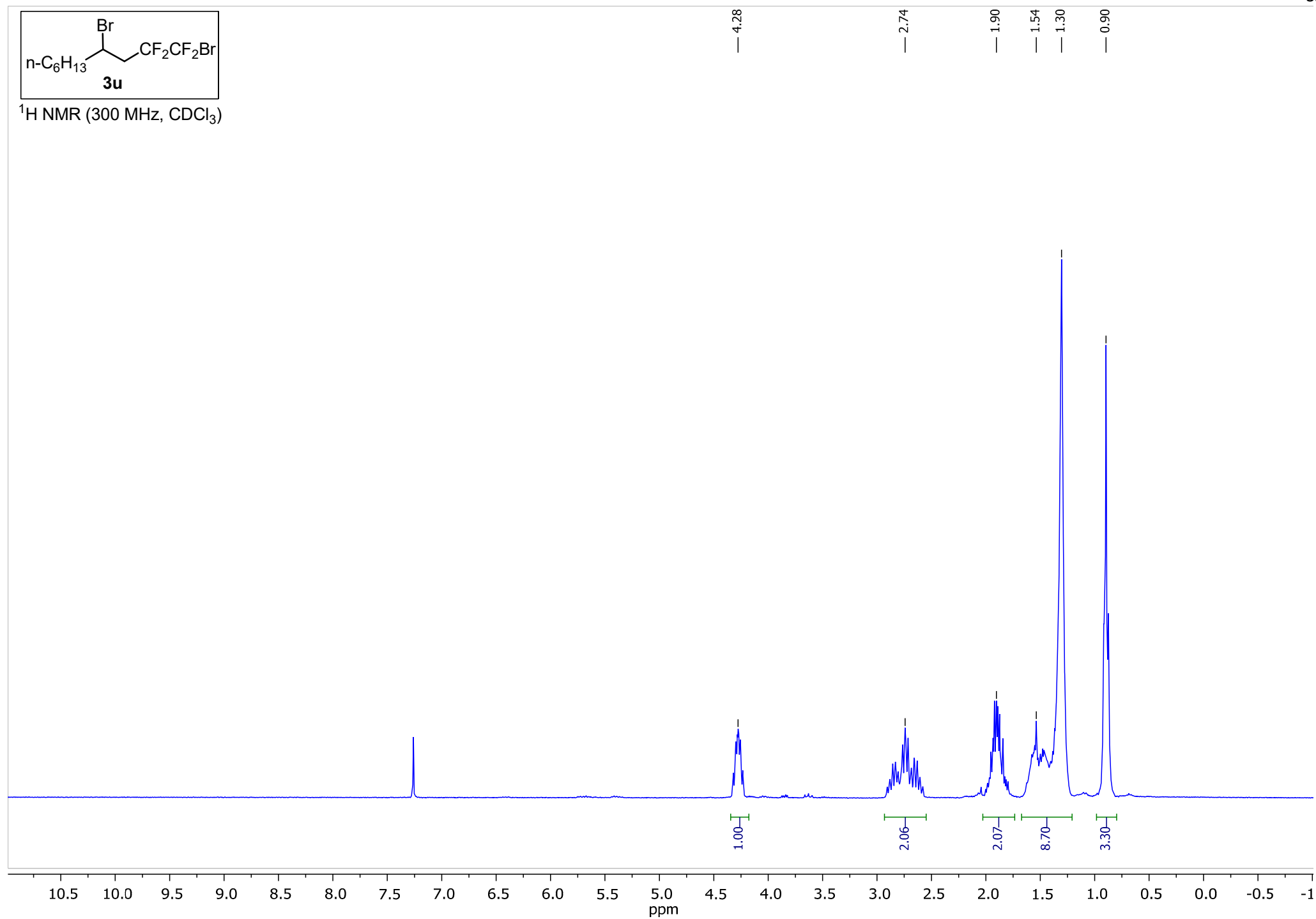
$^{19}\text{F}$  NMR (282 MHz,  $\text{CDCl}_3$ )

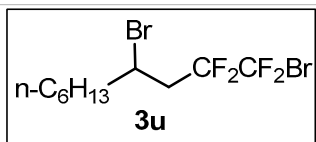






$^1\text{H}$  NMR (300 MHz,  $\text{CDCl}_3$ )

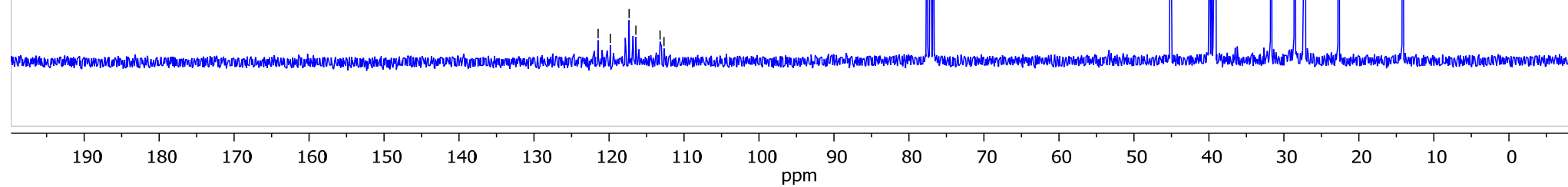
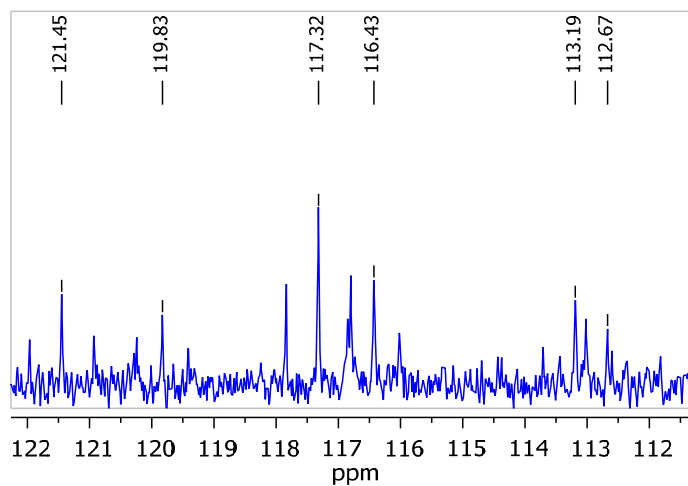


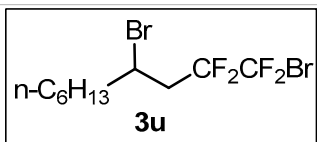


$^{13}\text{C}\{^1\text{H}\}$  NMR (75 MHz,  $\text{CDCl}_3$ )

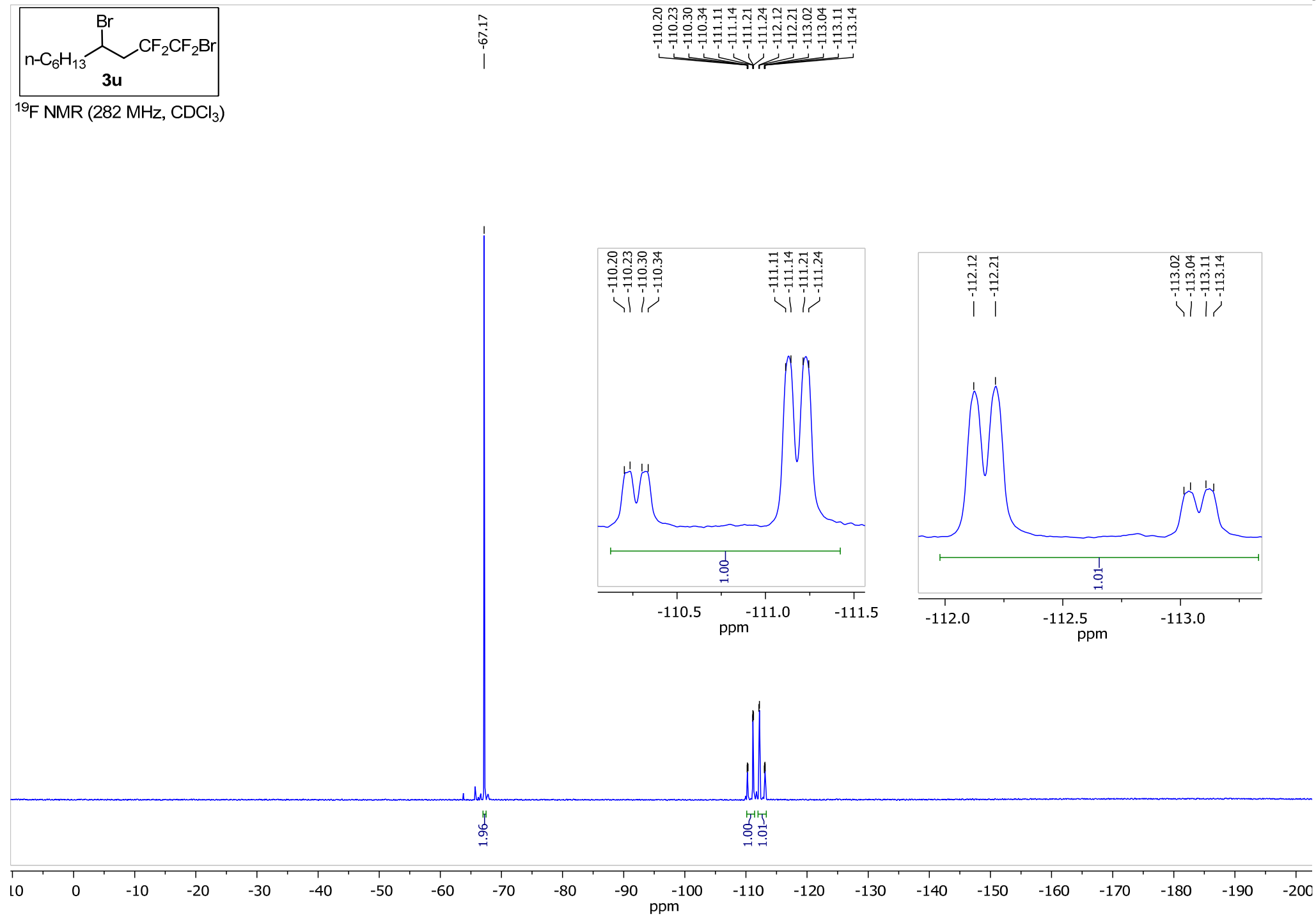
121.45  
119.83  
117.32  
116.43  
113.19  
112.67

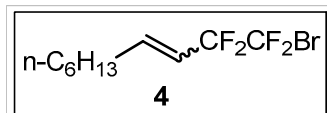
45.11  
39.93  
39.65  
39.37  
39.21  
39.19  
31.73  
28.56  
27.27  
22.69  
14.17



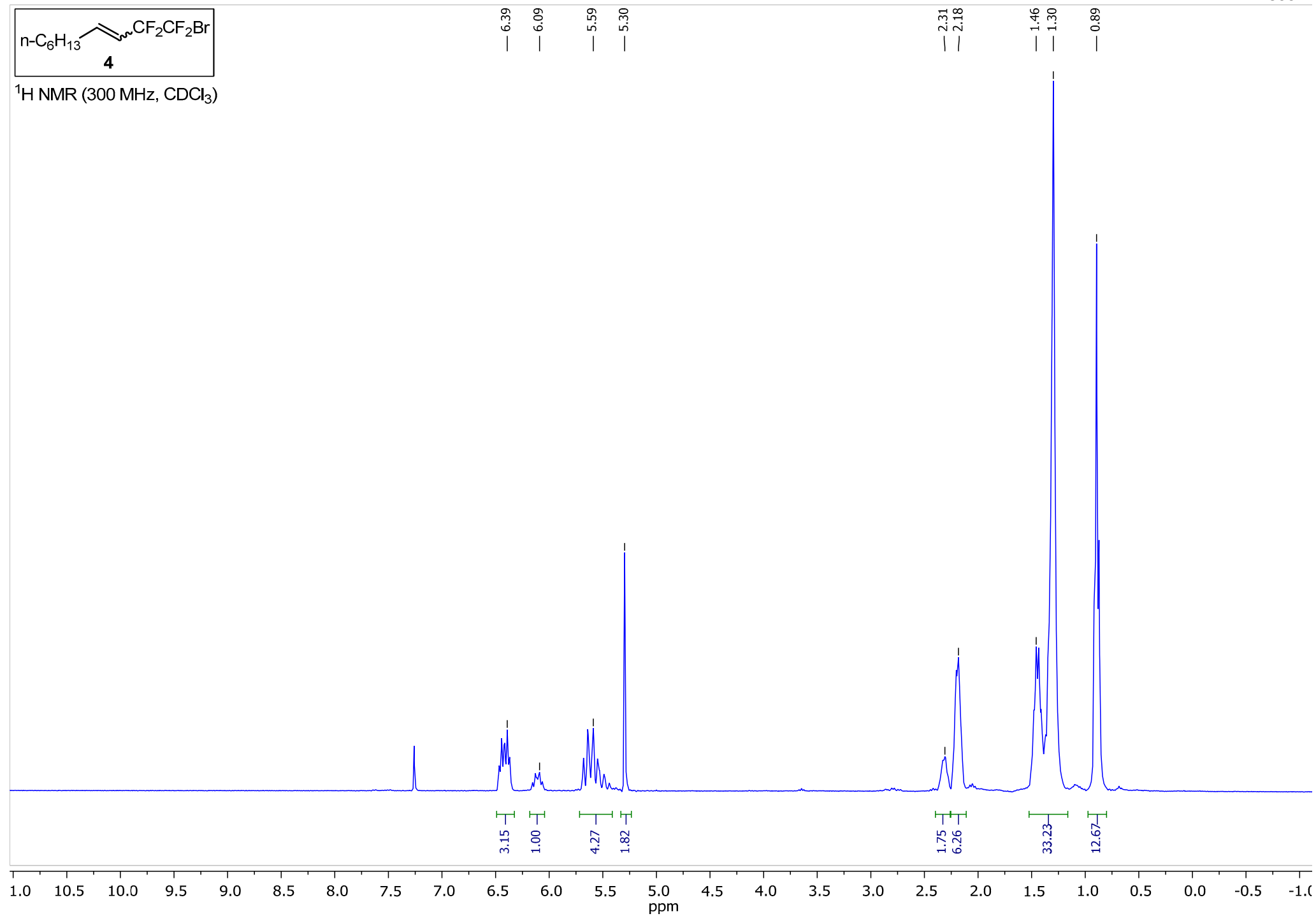


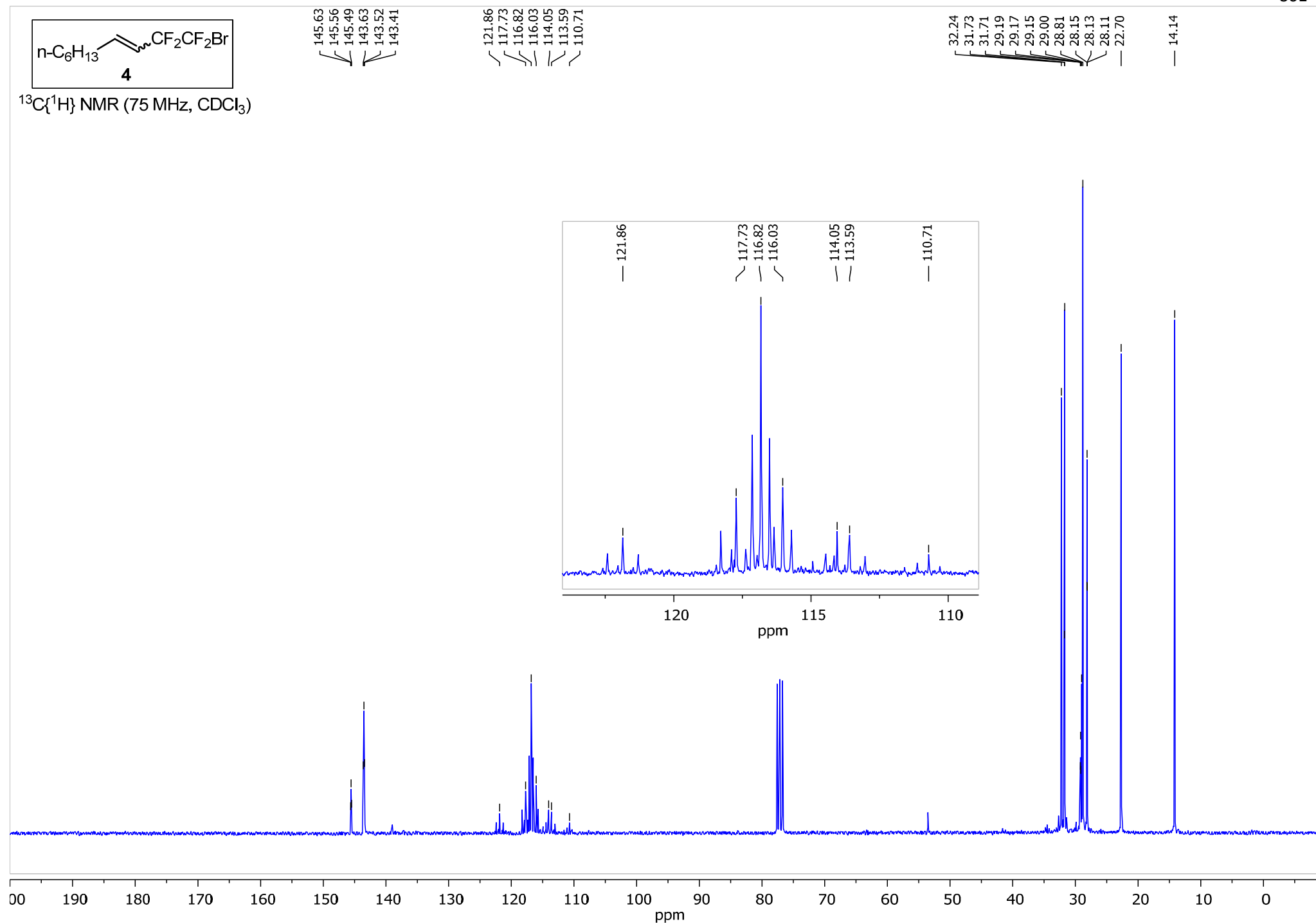
$^{19}\text{F}$  NMR (282 MHz,  $\text{CDCl}_3$ )

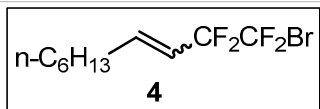




$^1\text{H}$  NMR (300 MHz,  $\text{CDCl}_3$ )







$^{19}\text{F}$  NMR (282 MHz,  $\text{CDCl}_3$ )

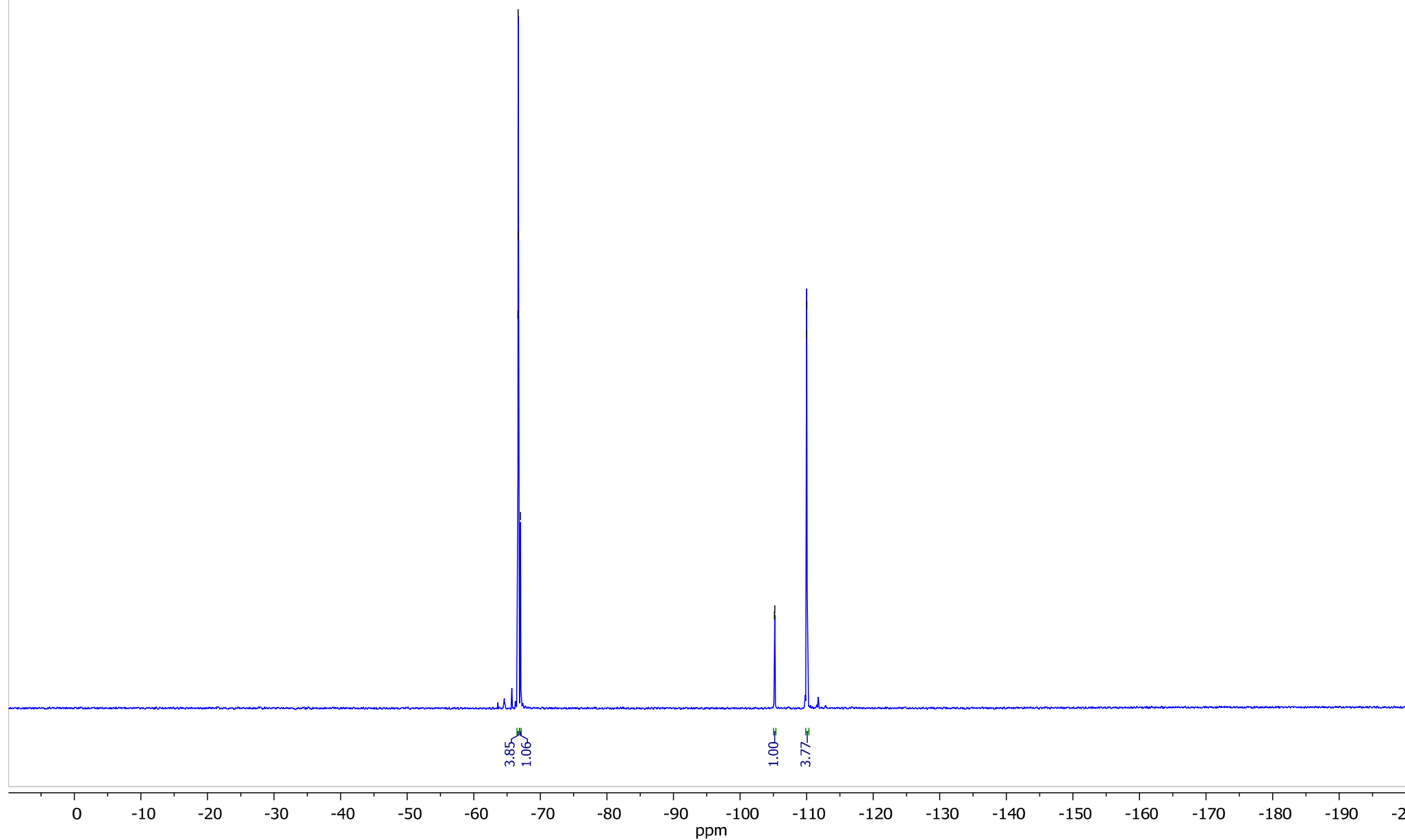
-66.64  
-66.66  
-66.69  
-67.03

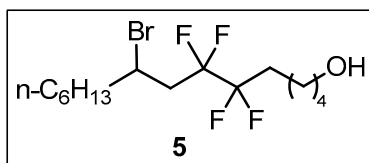
-105.16  
-105.22  
-109.99  
-110.03

3.85  
1.06

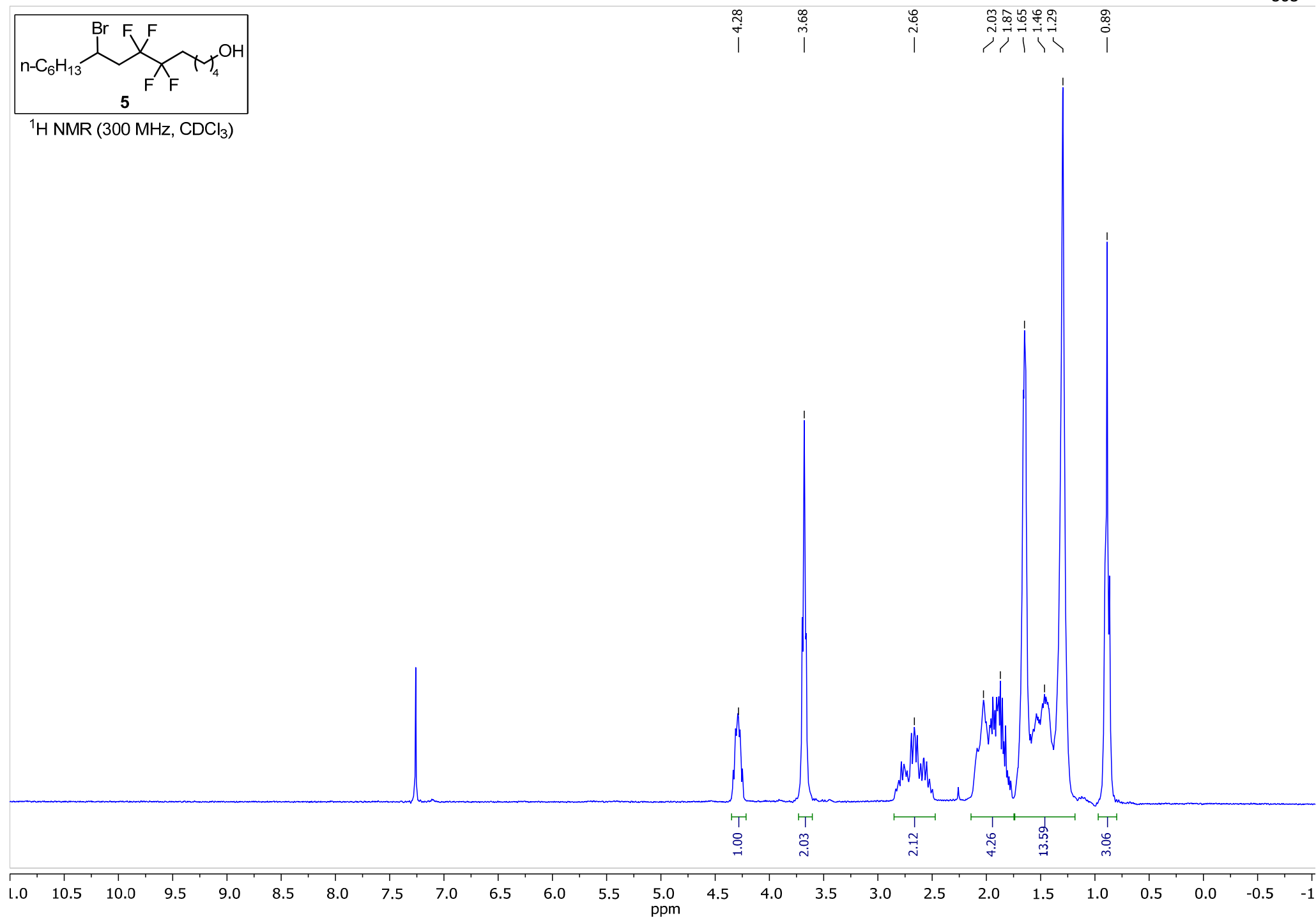
1.00

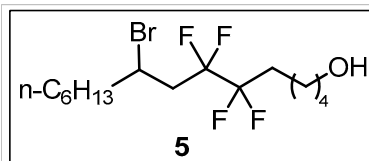
3.77



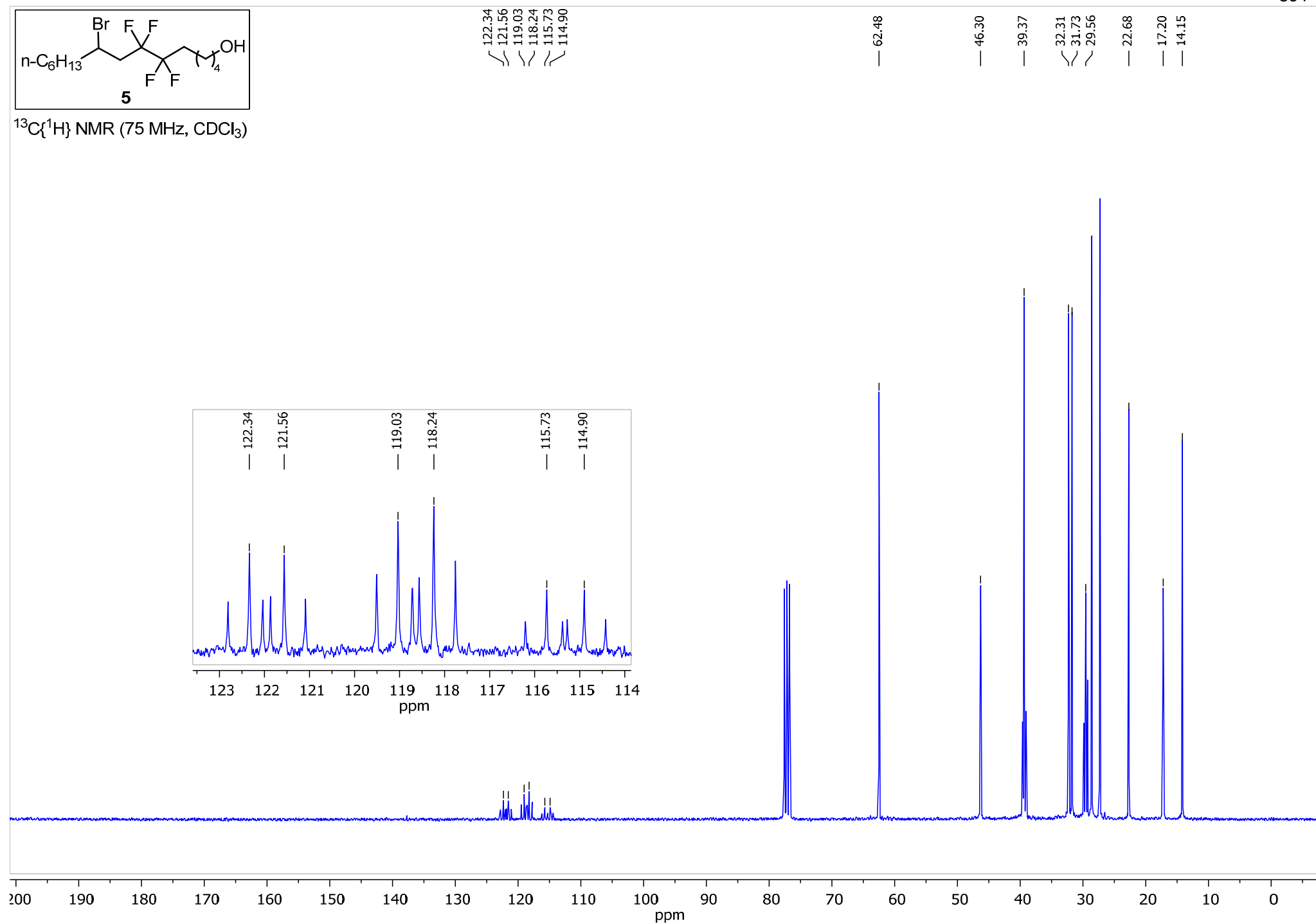


$^1\text{H}$  NMR (300 MHz,  $\text{CDCl}_3$ )

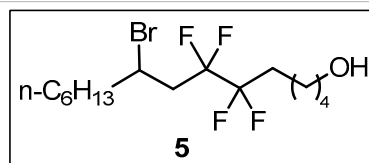




$^{13}\text{C}\{^1\text{H}\}$  NMR (75 MHz,  $\text{CDCl}_3$ )

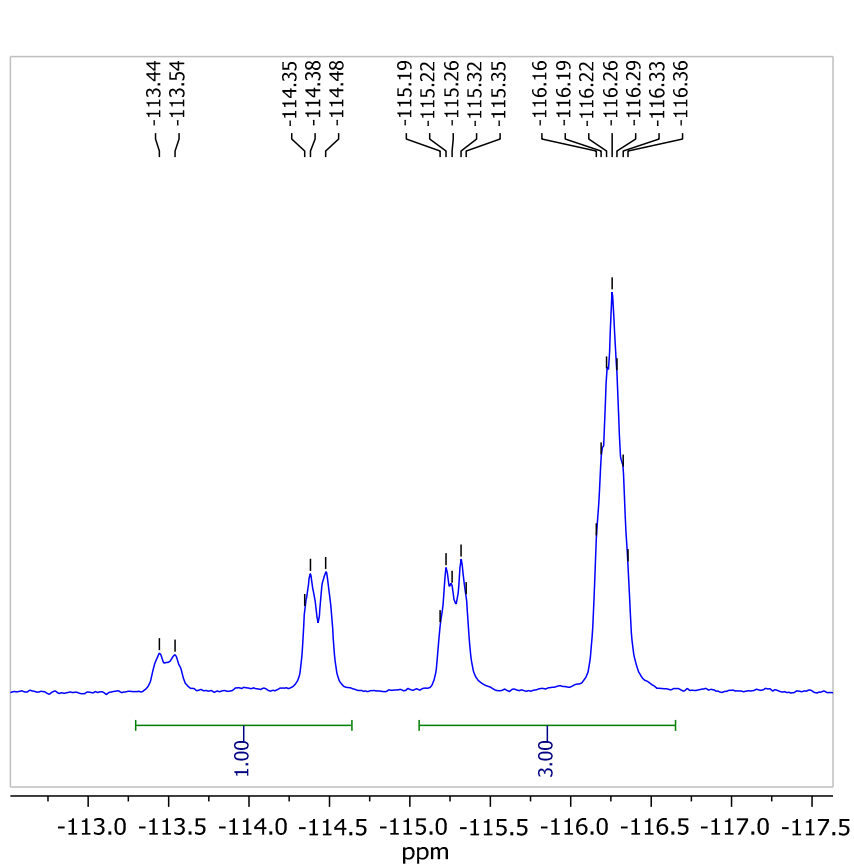






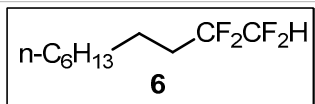
$^{19}\text{F}$  NMR (282 MHz,  $\text{CDCl}_3$ )

-113.44  
-113.54  
-114.35  
-114.38  
-114.48  
-115.19  
-115.22  
-115.26  
-115.32  
-115.35  
-116.16  
-116.19  
-116.22  
-116.26  
-116.29  
-116.33  
-116.36

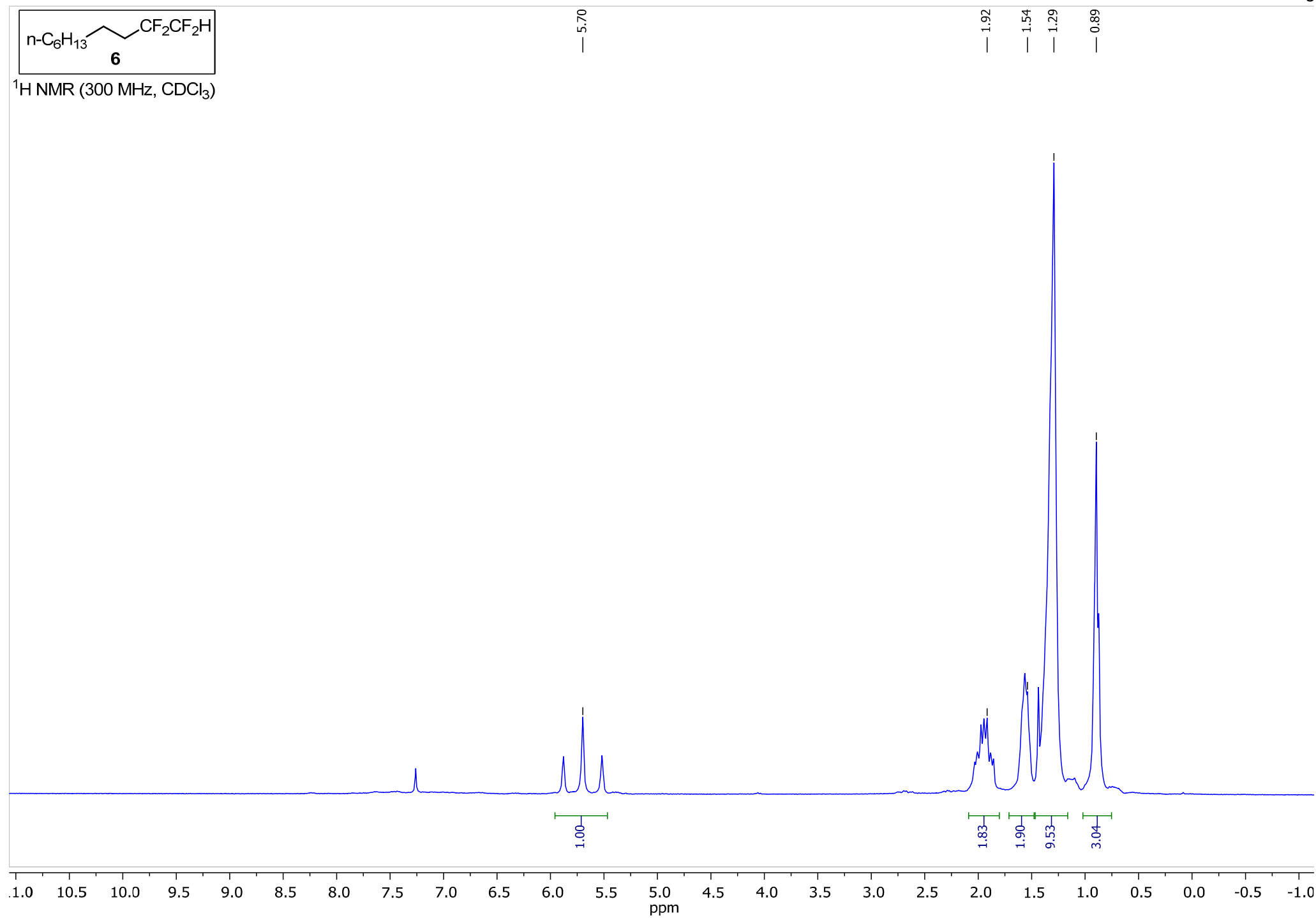


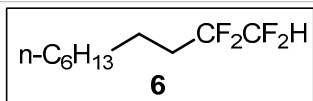
1.00  
3.00

10 0 -10 -20 -30 -40 -50 -60 -70 -80 -90 -100 -110 -120 -130 -140 -150 -160 -170 -180 -190 -200  
ppm

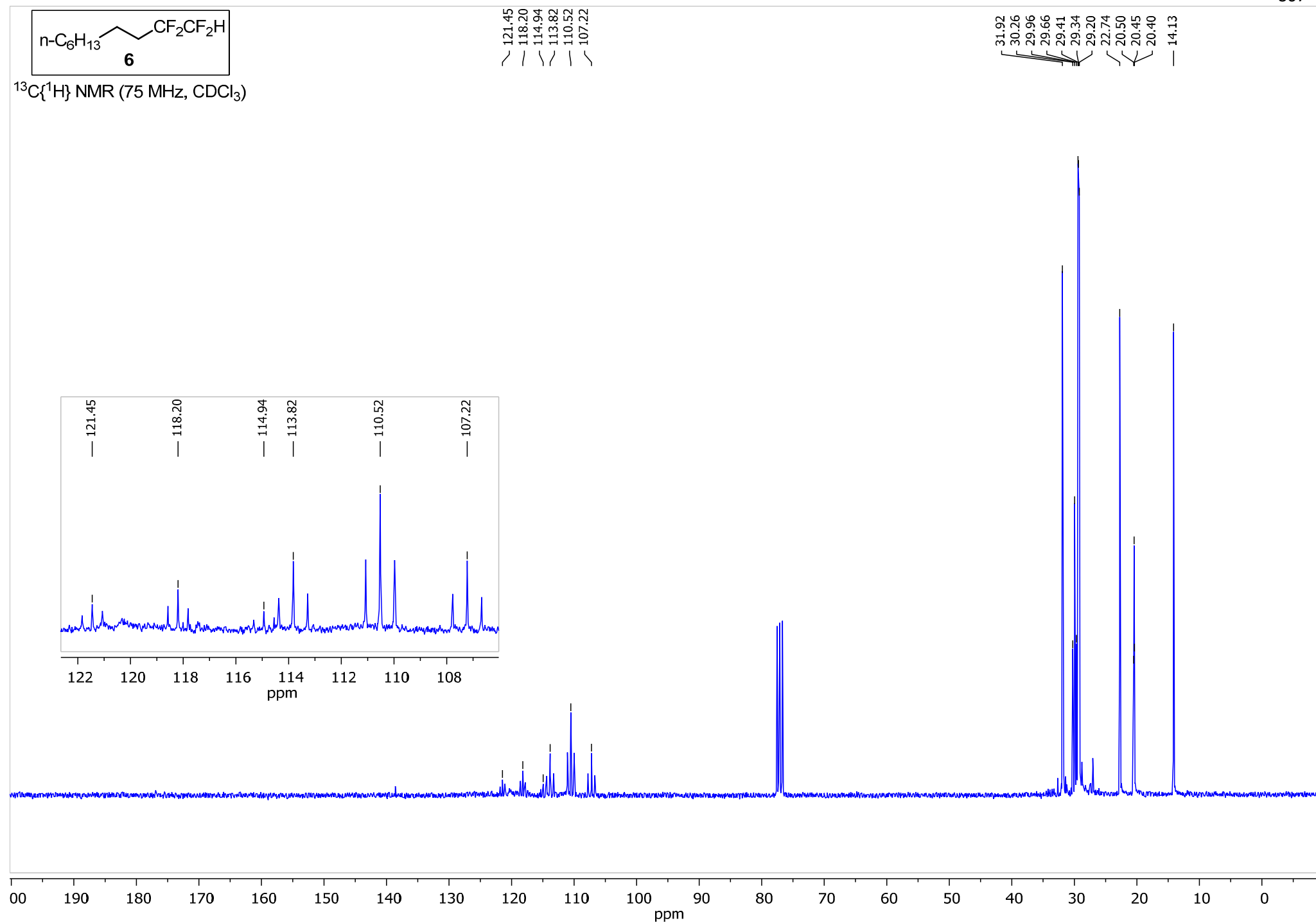


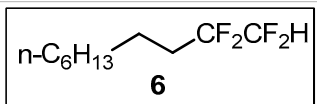
$^1\text{H}$  NMR (300 MHz,  $\text{CDCl}_3$ )



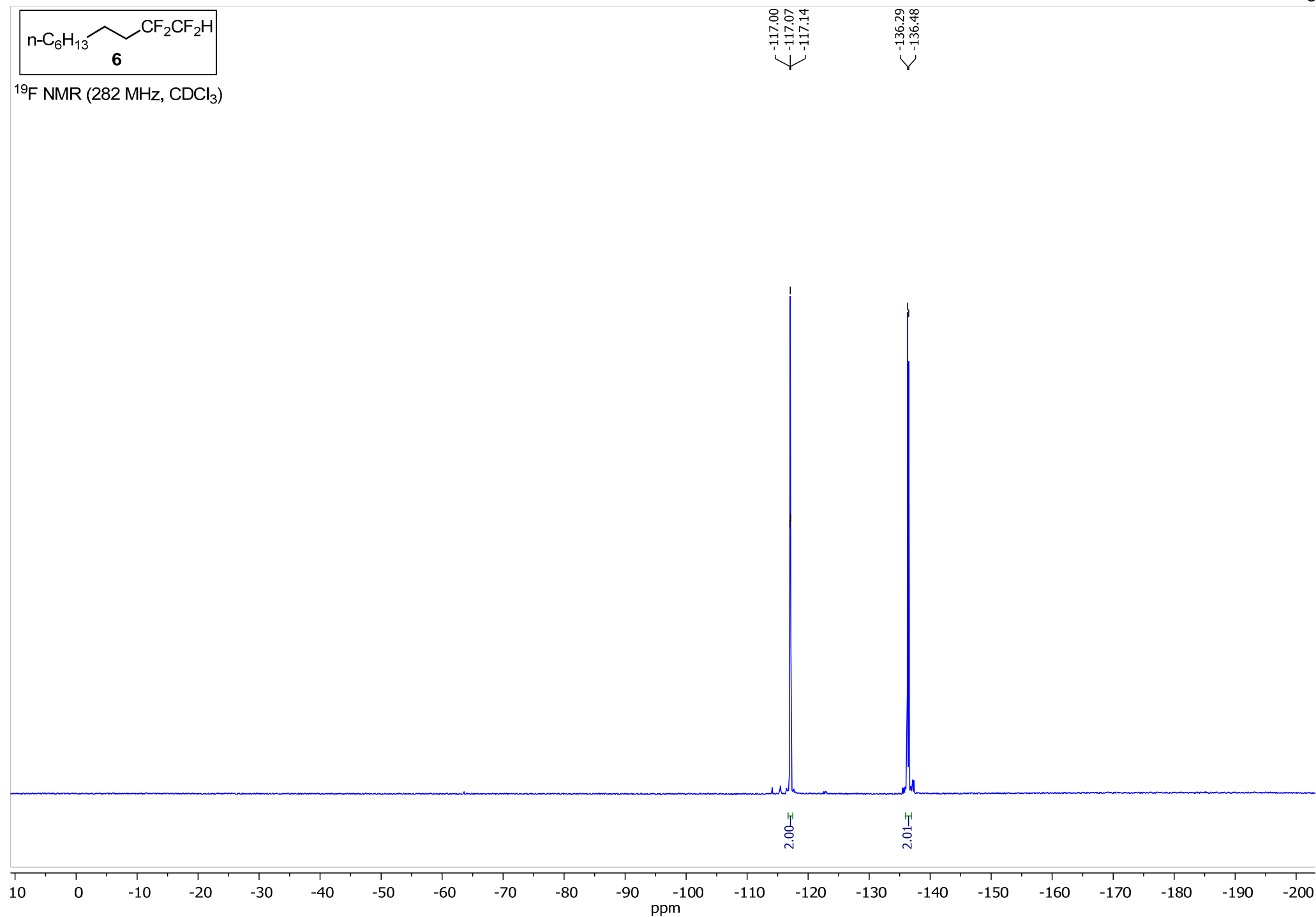


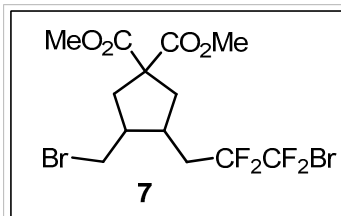
$^{13}\text{C}\{^1\text{H}\}$  NMR (75 MHz,  $\text{CDCl}_3$ )



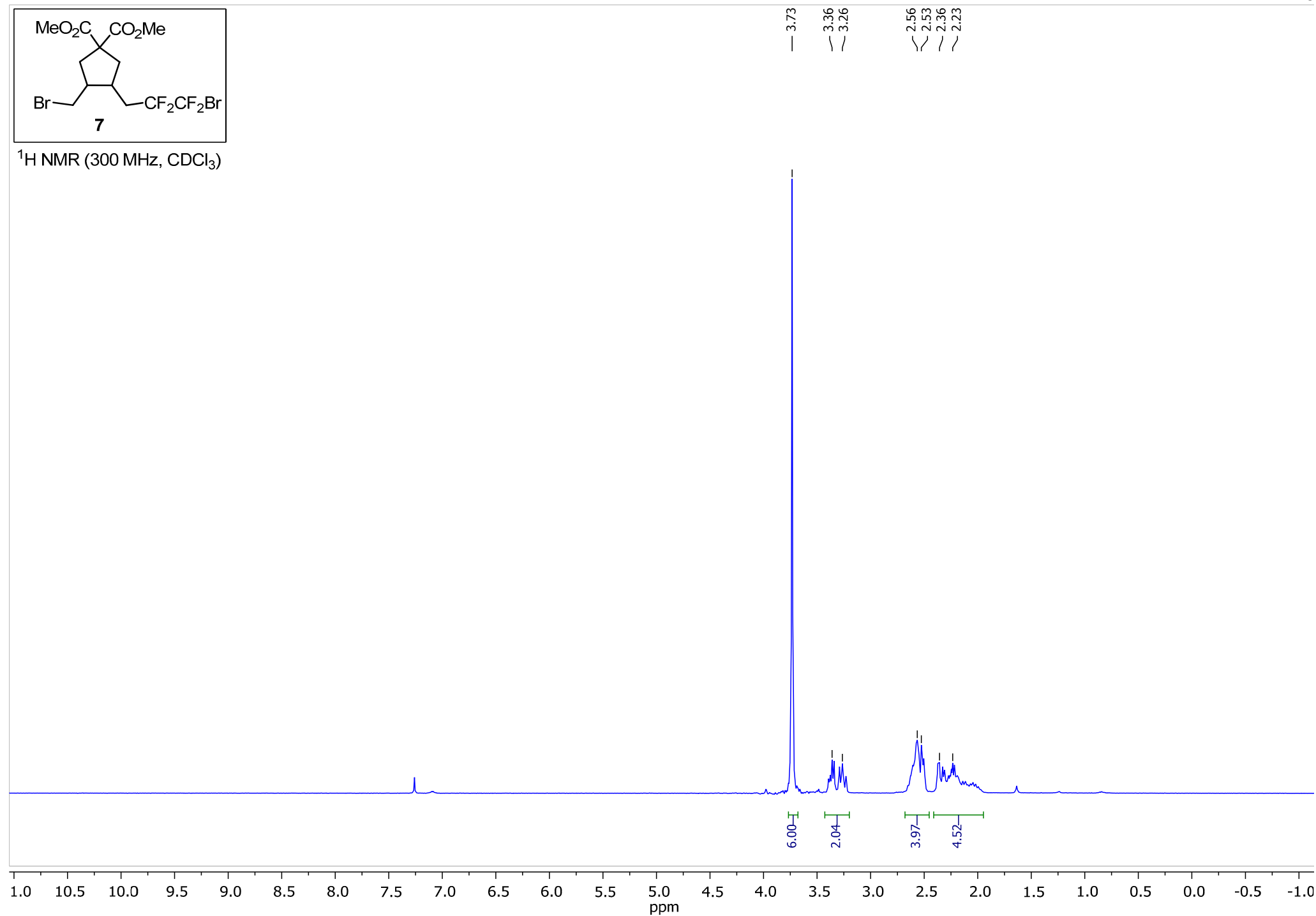


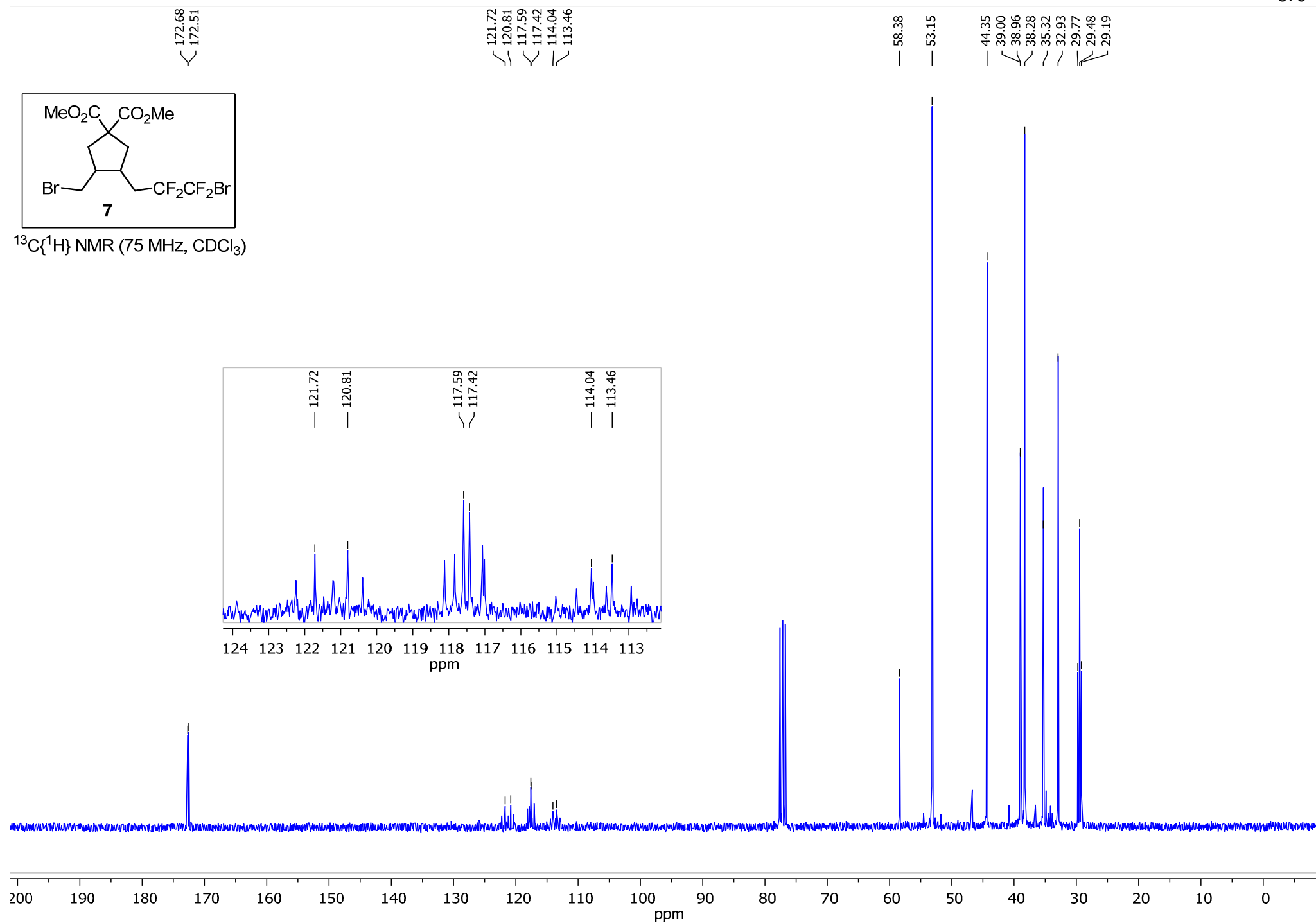
$^{19}\text{F}$  NMR (282 MHz,  $\text{CDCl}_3$ )

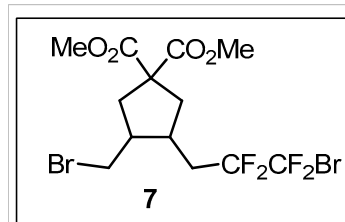




$^1\text{H}$  NMR (300 MHz,  $\text{CDCl}_3$ )







$^{19}\text{F}$  NMR (282 MHz,  $\text{CDCl}_3$ )

