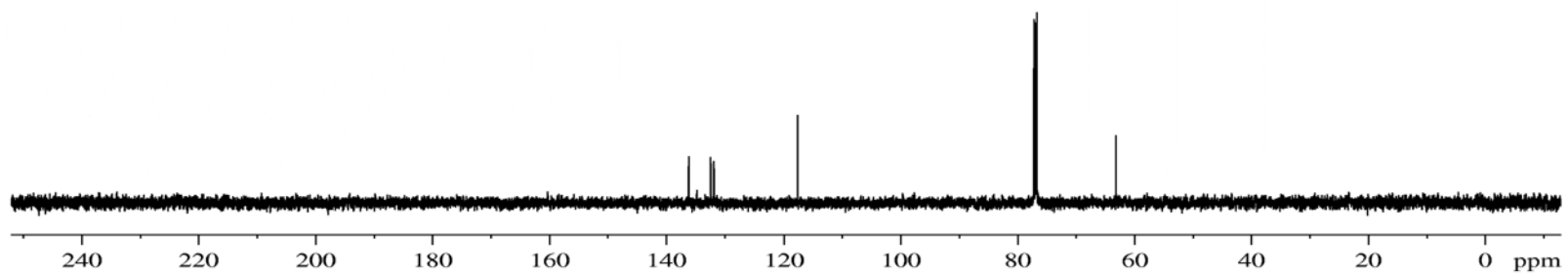
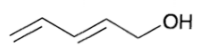
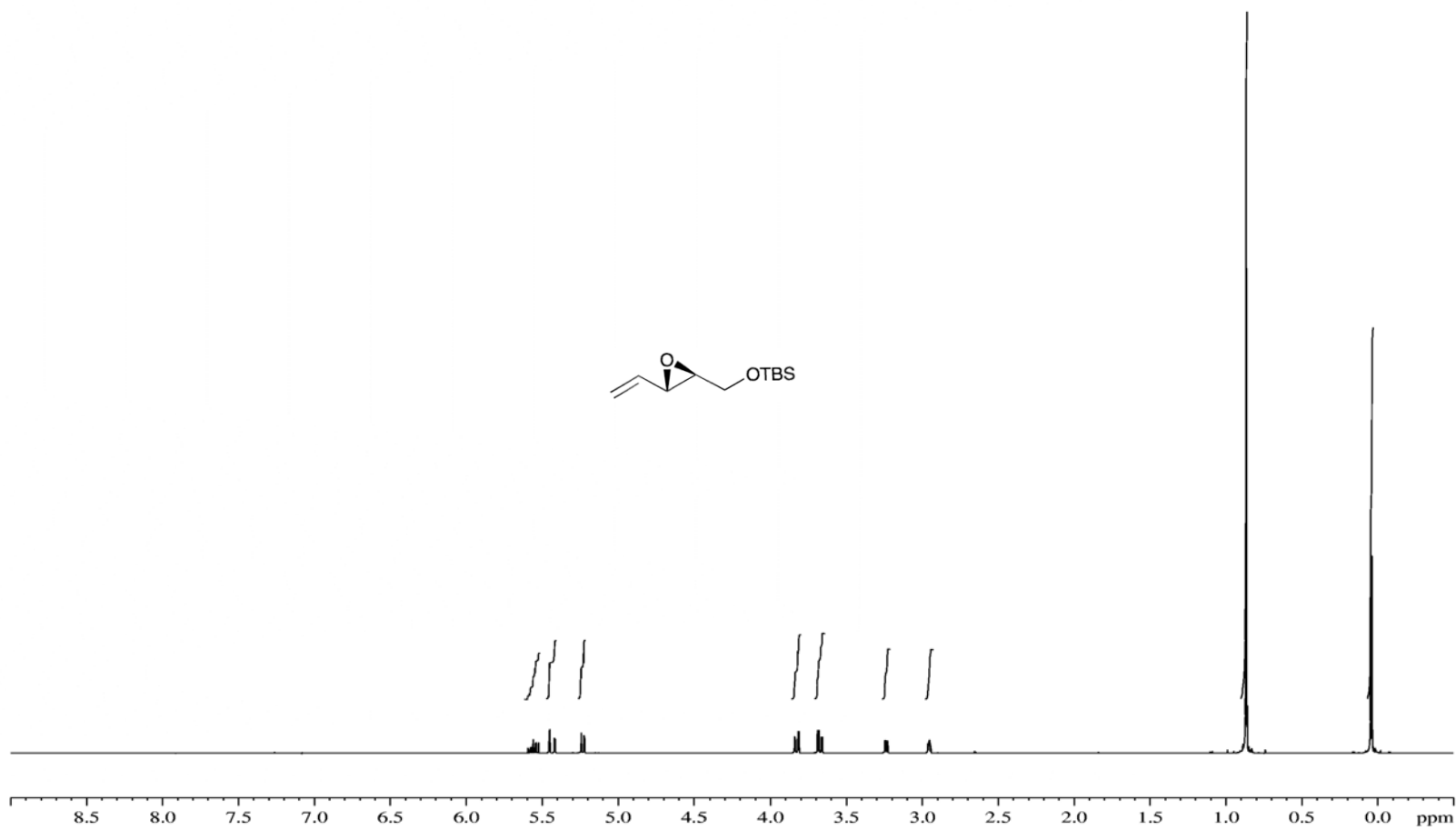


The  $^1\text{H}$  NMR Spectrum of Compound 17 in  $\text{CDCl}_3$

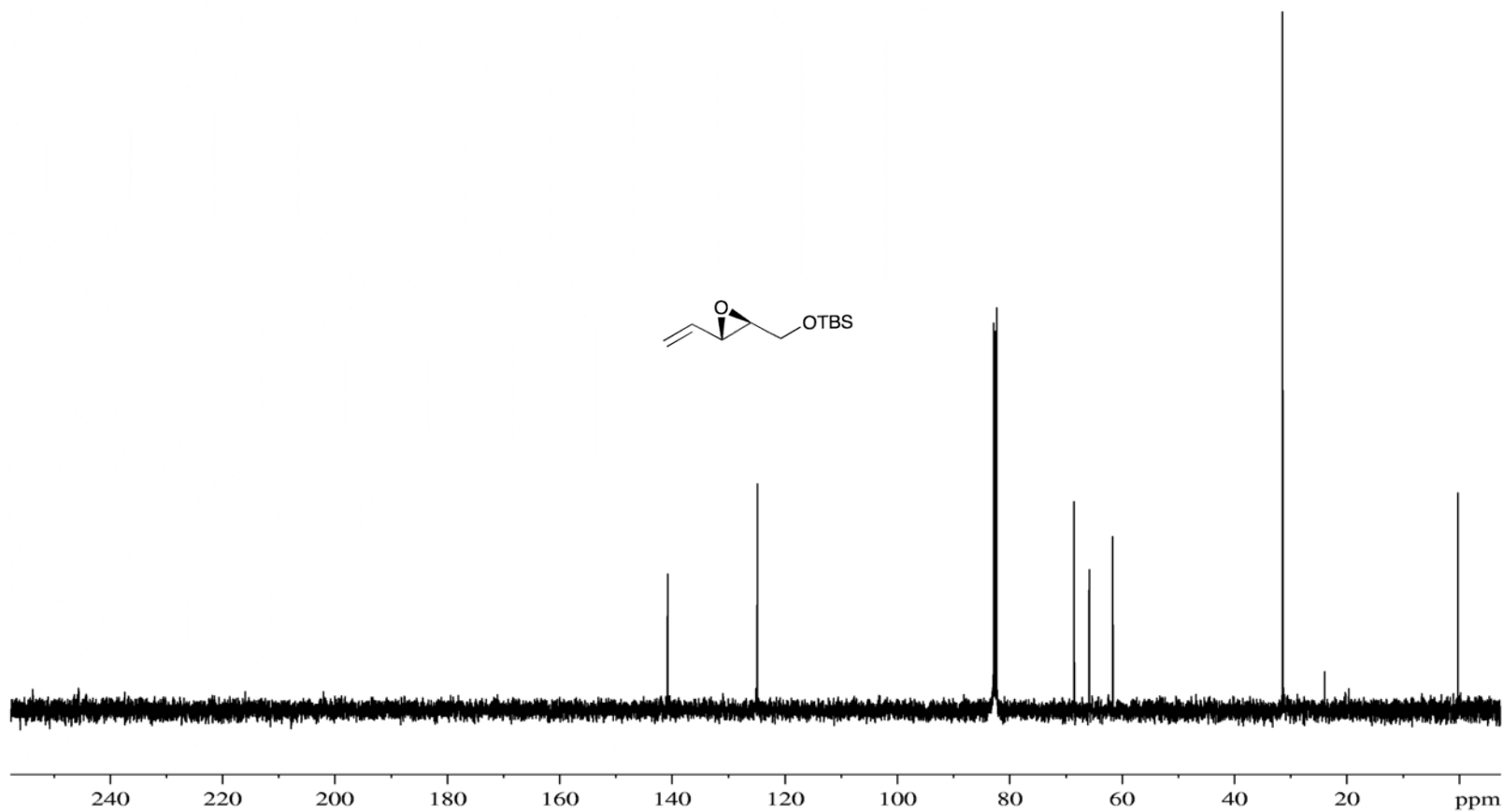


The  $^{13}\text{C}$  NMR Spectrum of Compound 17 in  $\text{CDCl}_3$

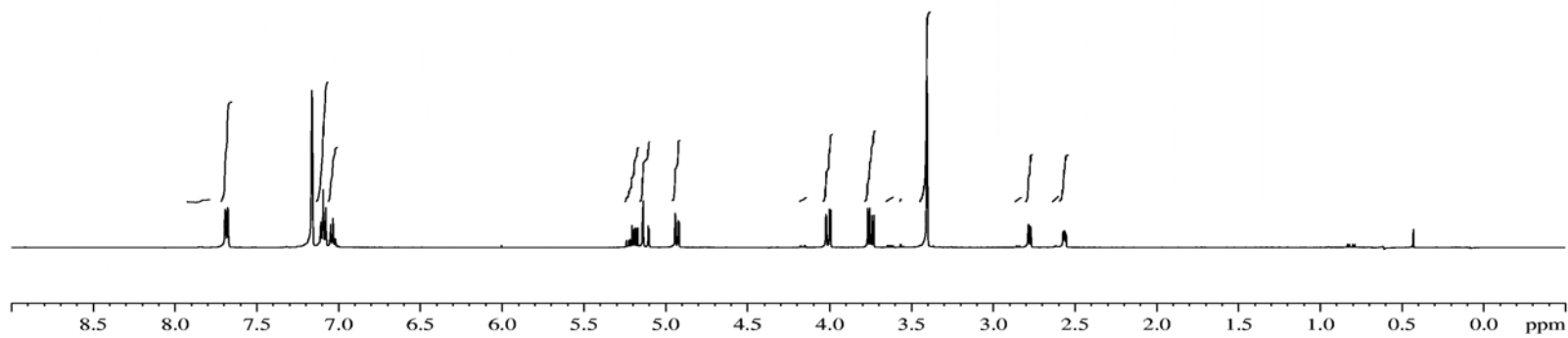
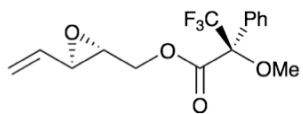
S97



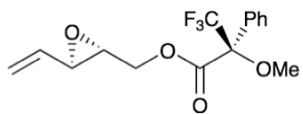
The <sup>1</sup>H NMR Spectrum of Compound (-)-14 in CDCl<sub>3</sub>



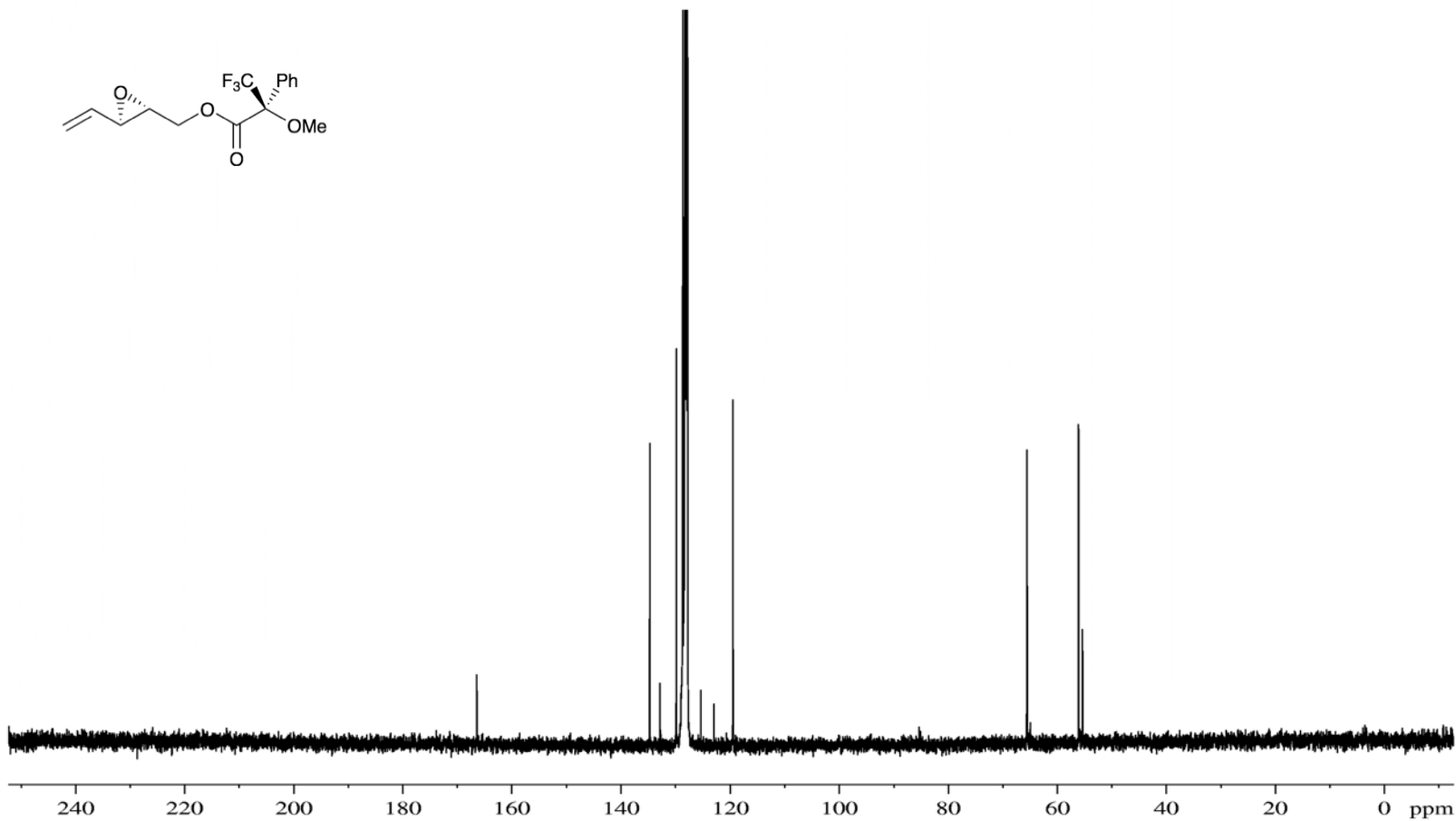
The  $^{13}\text{C}$  NMR Spectrum of Compound (-)-14 in  $\text{CDCl}_3$



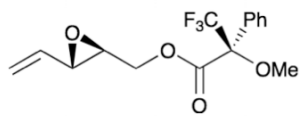
The <sup>1</sup>H NMR Spectrum of Compound (-)-**S1** in C<sub>6</sub>D<sub>6</sub>



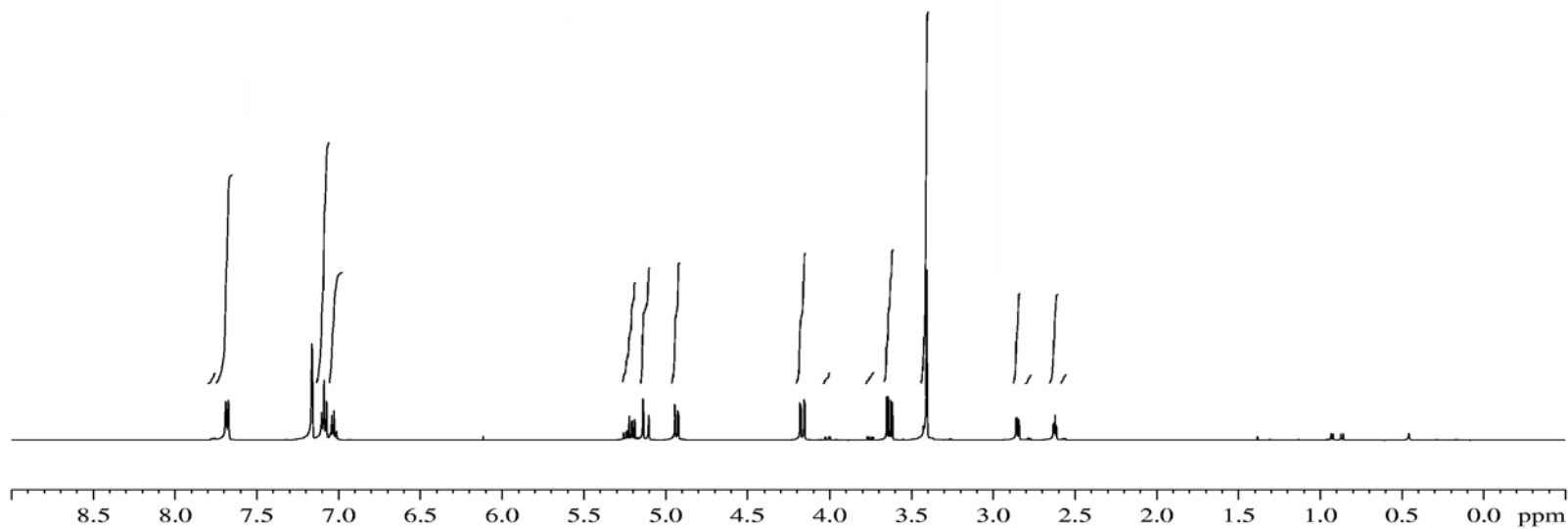
S100



The <sup>13</sup>C NMR Spectrum of Compound (-)-**S1** in C<sub>6</sub>D<sub>6</sub>

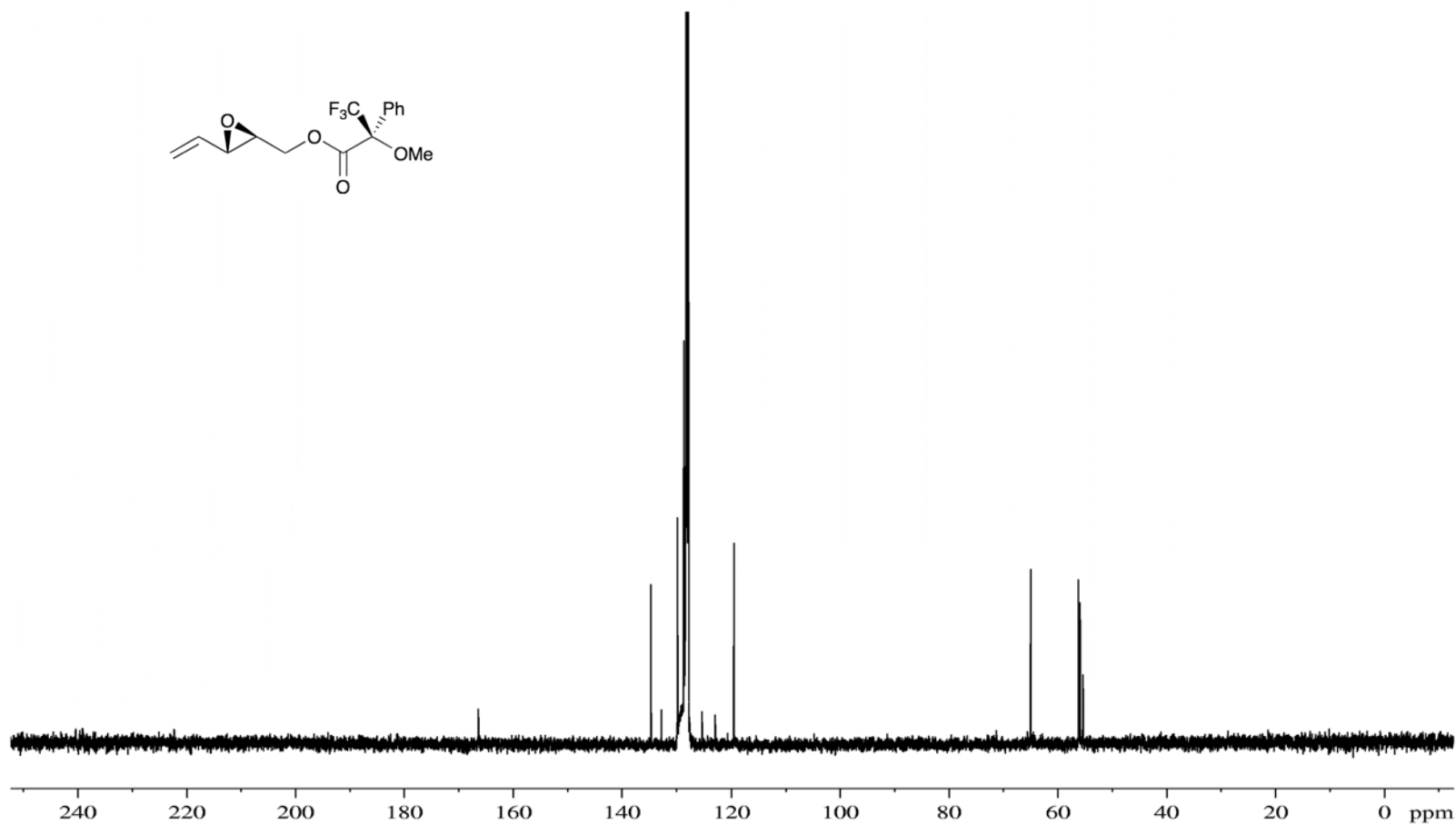


S101



The <sup>1</sup>H NMR Spectrum of Compound (-)-**S2** in C<sub>6</sub>D<sub>6</sub>

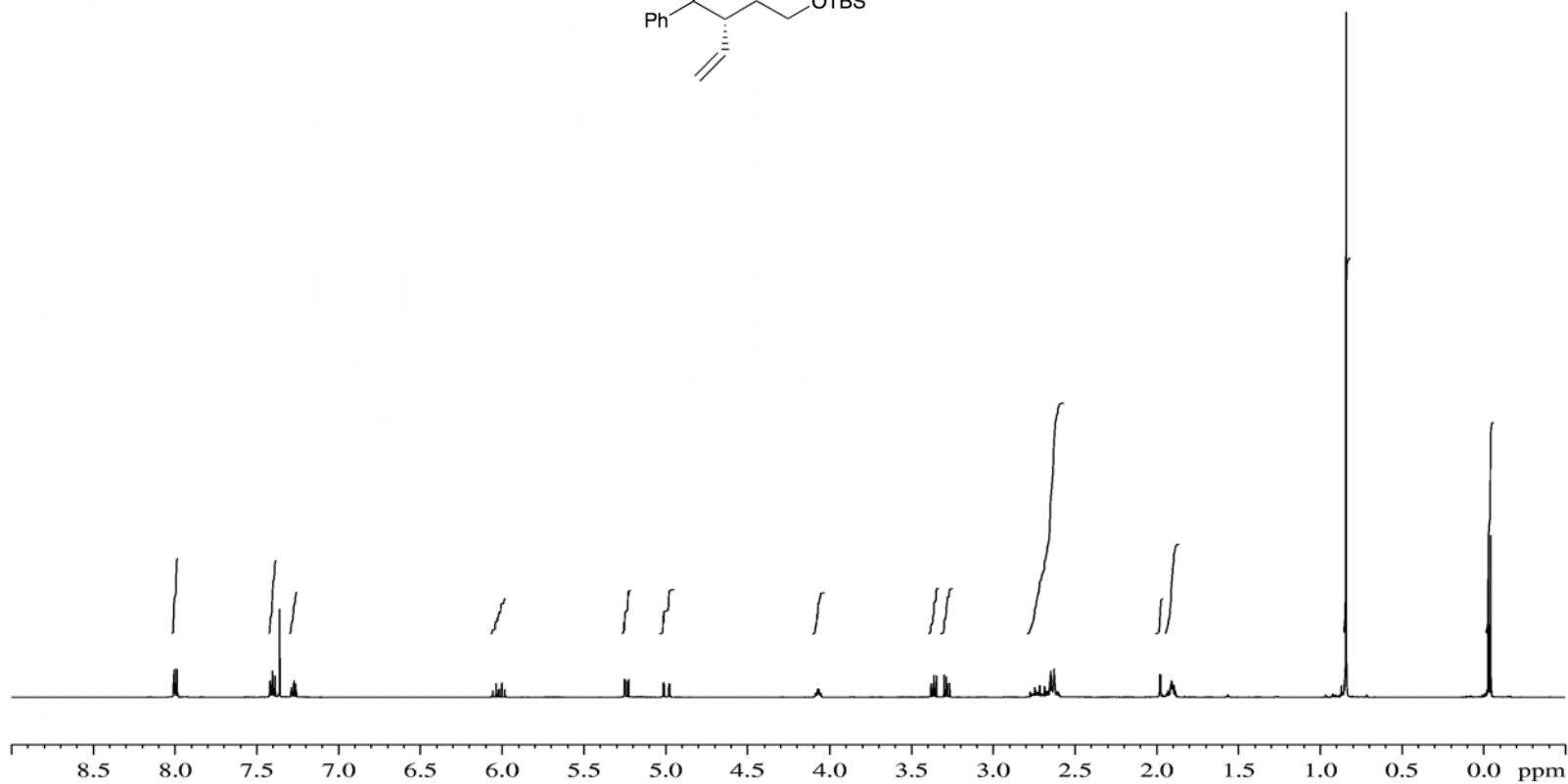
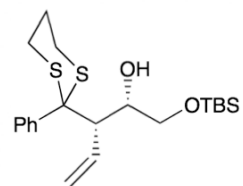
S102



The  $^{13}\text{C}$  NMR Spectrum of Compound (-)-**S2** in  $\text{C}_6\text{D}_6$

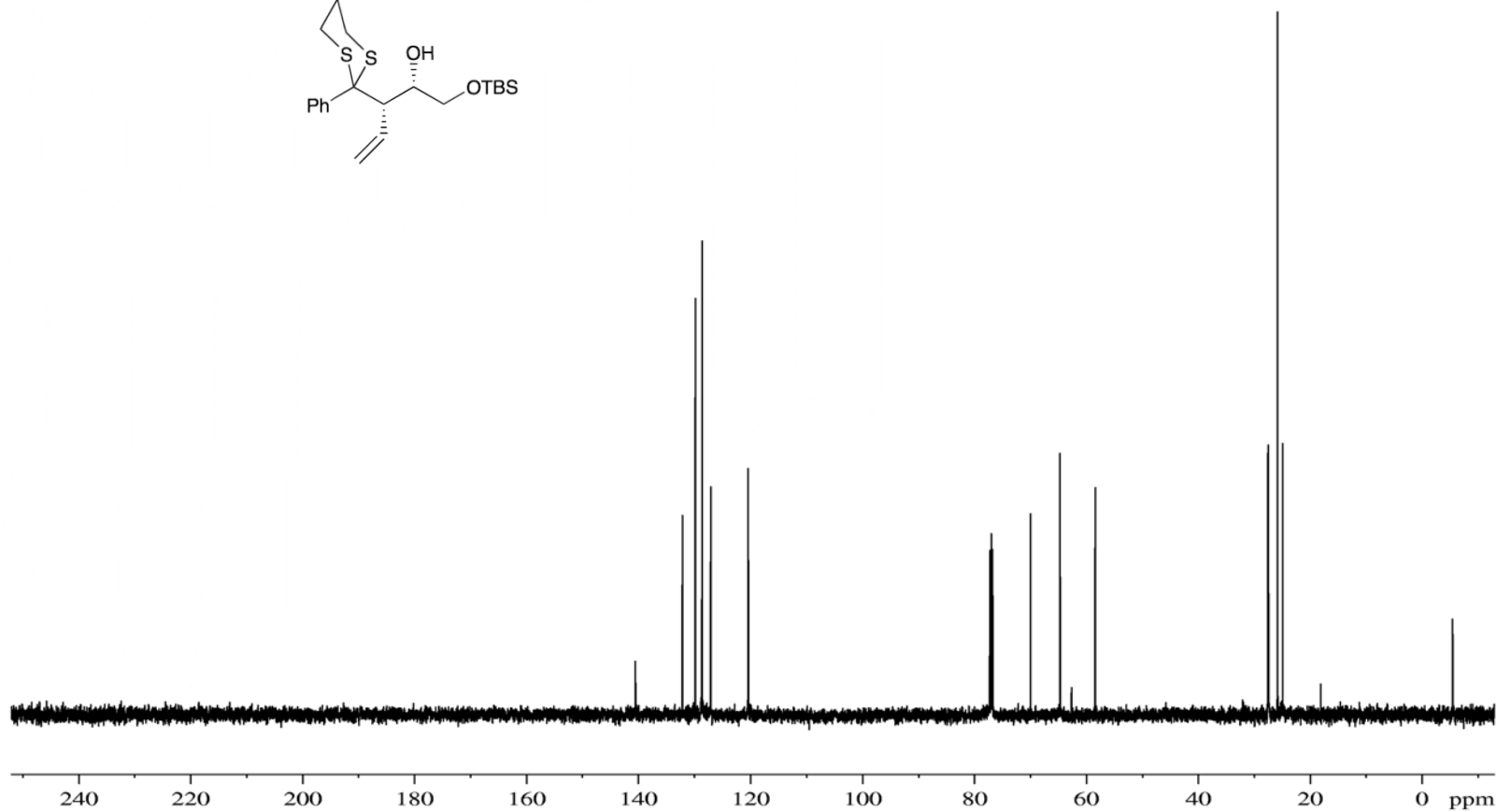
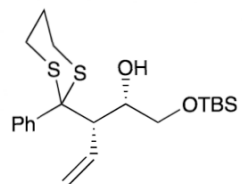


S103



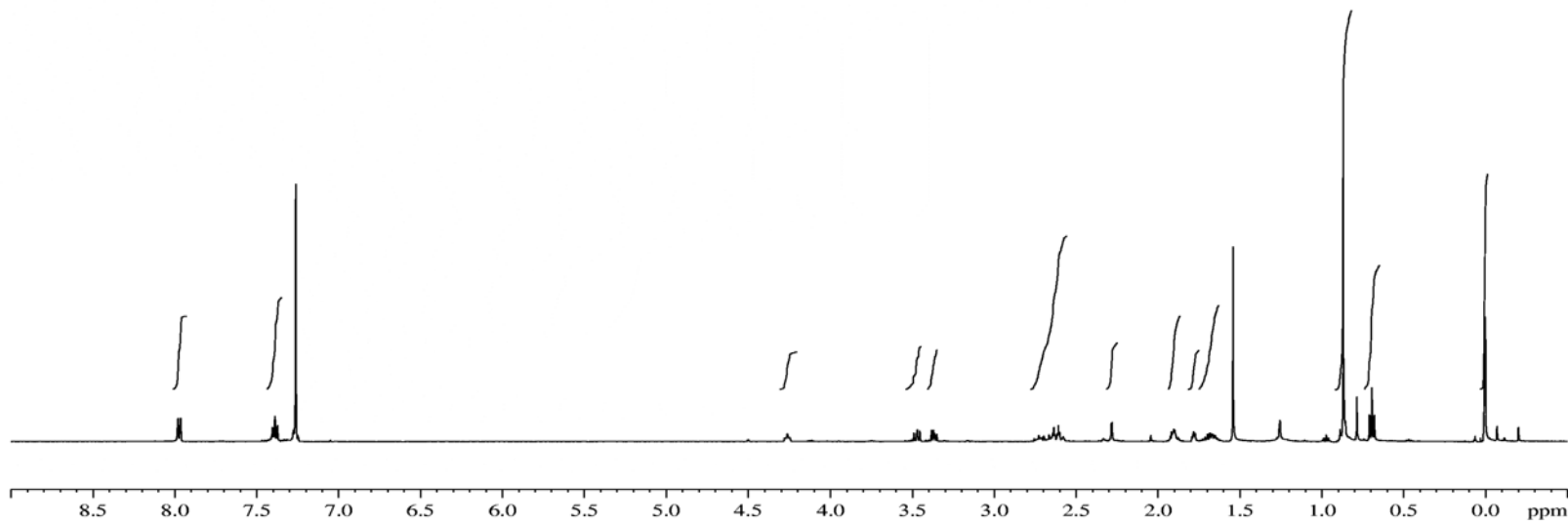
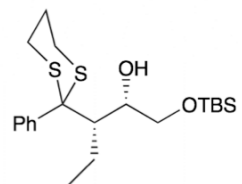
The  $^1\text{H}$  NMR Spectrum of Compound (+)-19 in  $\text{CDCl}_3$

S104



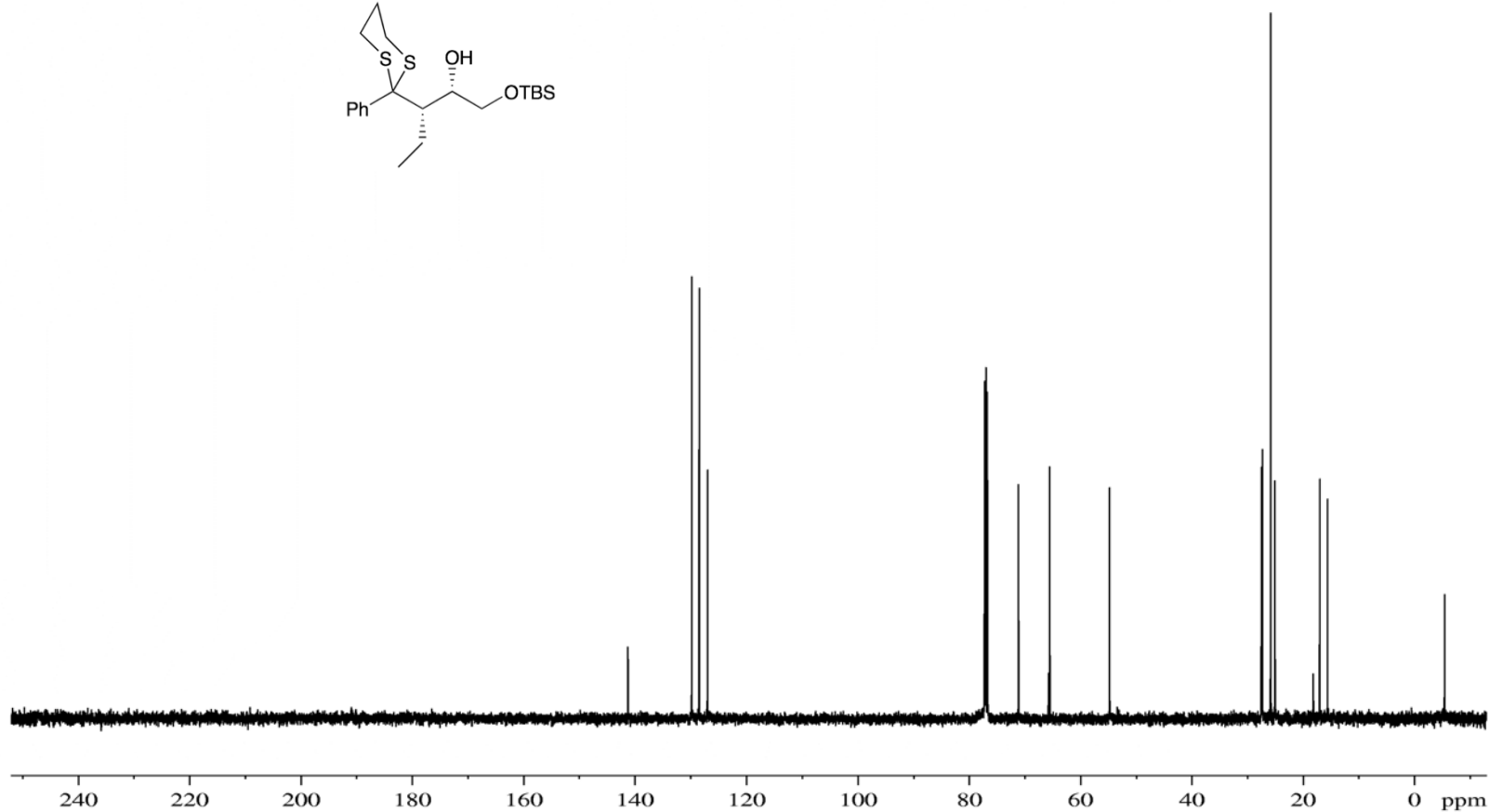
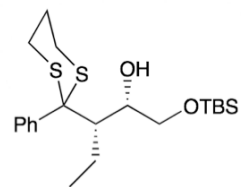
The  $^{13}\text{C}$  NMR Spectrum of Compound (+)-**19** in  $\text{CDCl}_3$

S105

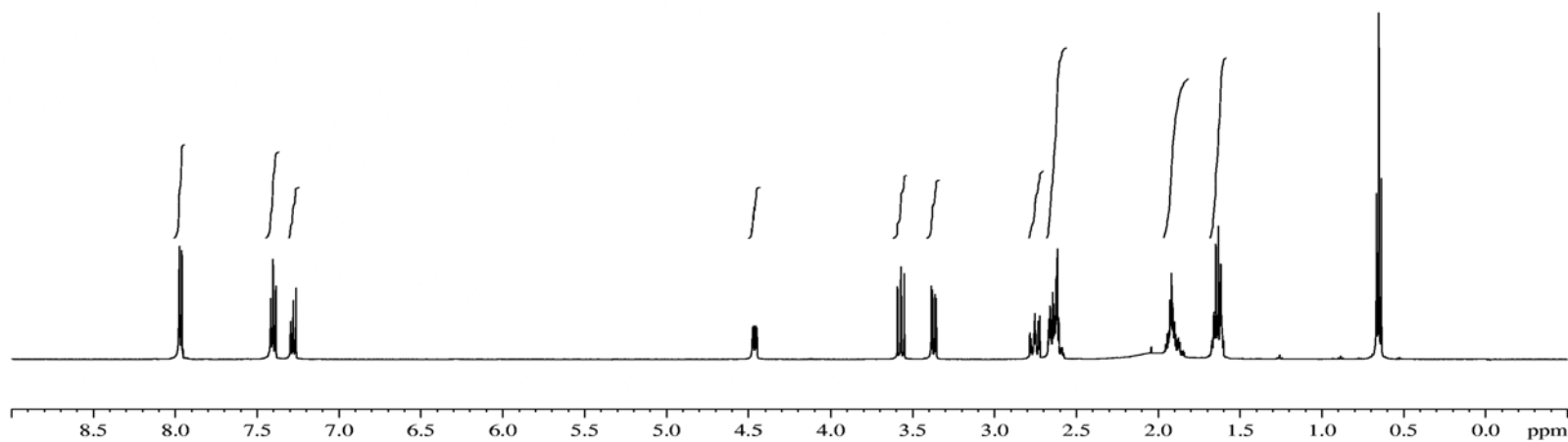
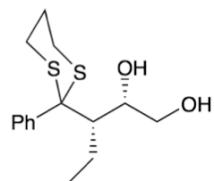


The <sup>1</sup>H NMR Spectrum of Compound (+)-**S3** in CDCl<sub>3</sub>

S106

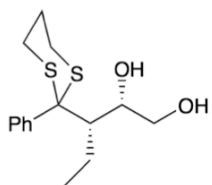


The  $^{13}\text{C}$  NMR Spectrum of Compound (+)-**S3** in  $\text{CDCl}_3$

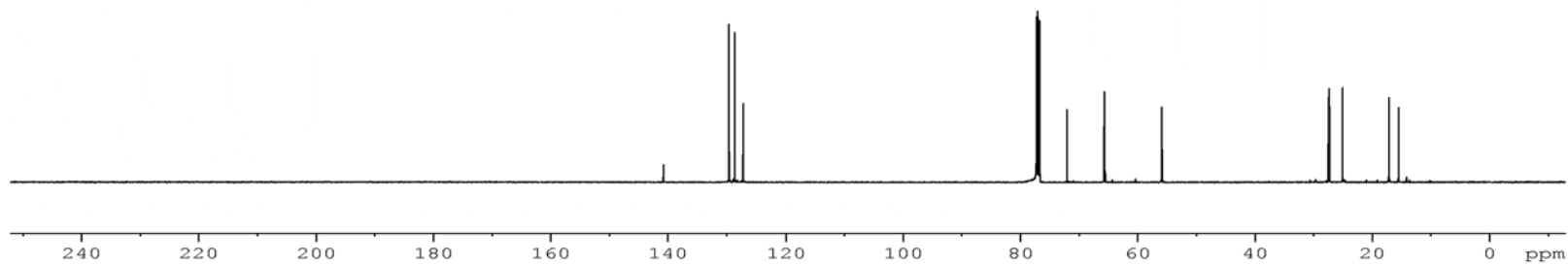


S107

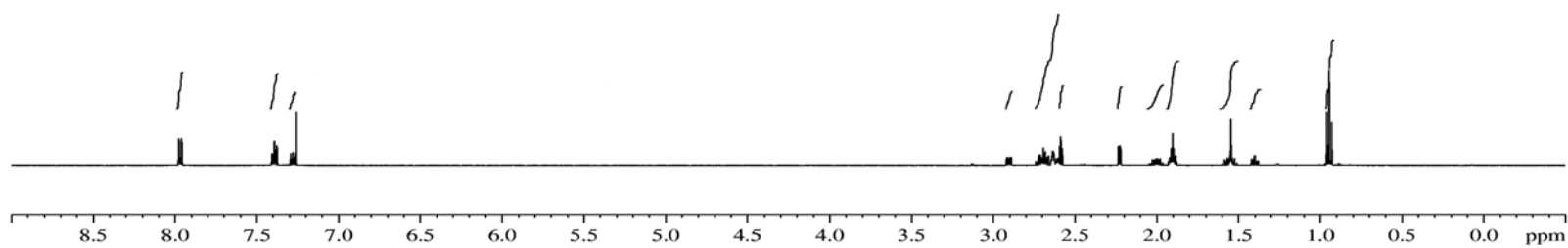
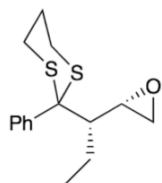
The <sup>1</sup>H NMR Spectrum of Compound (+)-10 in CDCl<sub>3</sub>



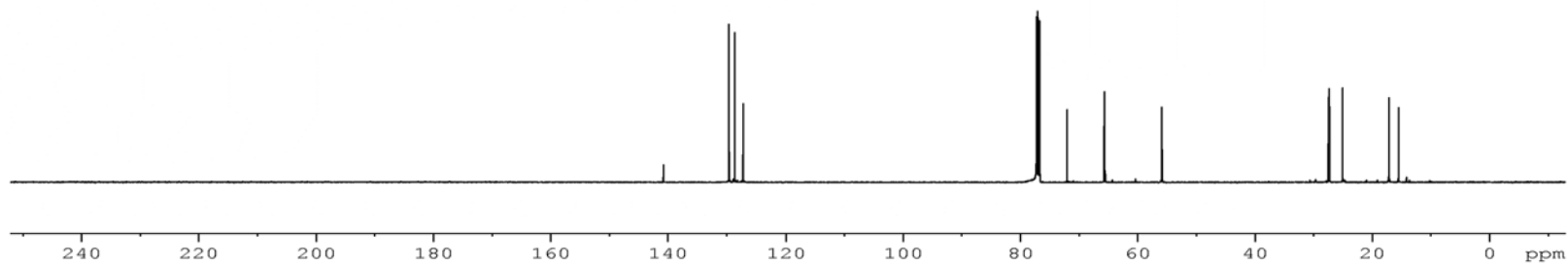
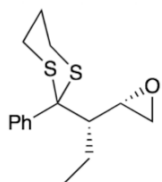
S108



The <sup>13</sup>C NMR Spectrum of Compound (+)-**10** in CDCl<sub>3</sub>



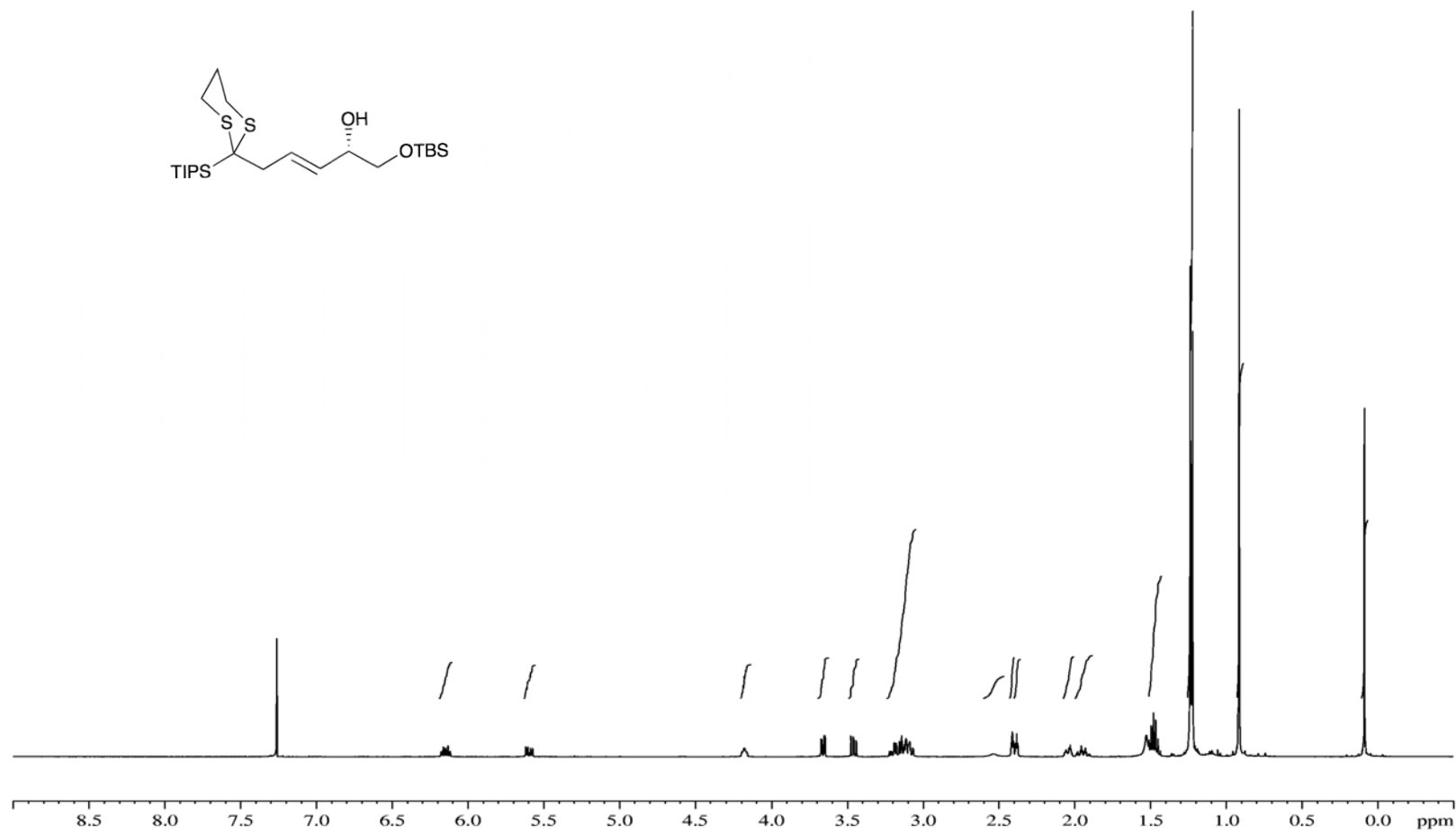
The <sup>1</sup>H NMR Spectrum of Compound (+)-**20** in CDCl<sub>3</sub>



The  $^{13}\text{C}$  NMR Spectrum of Compound (+)-**20** in  $\text{CDCl}_3$

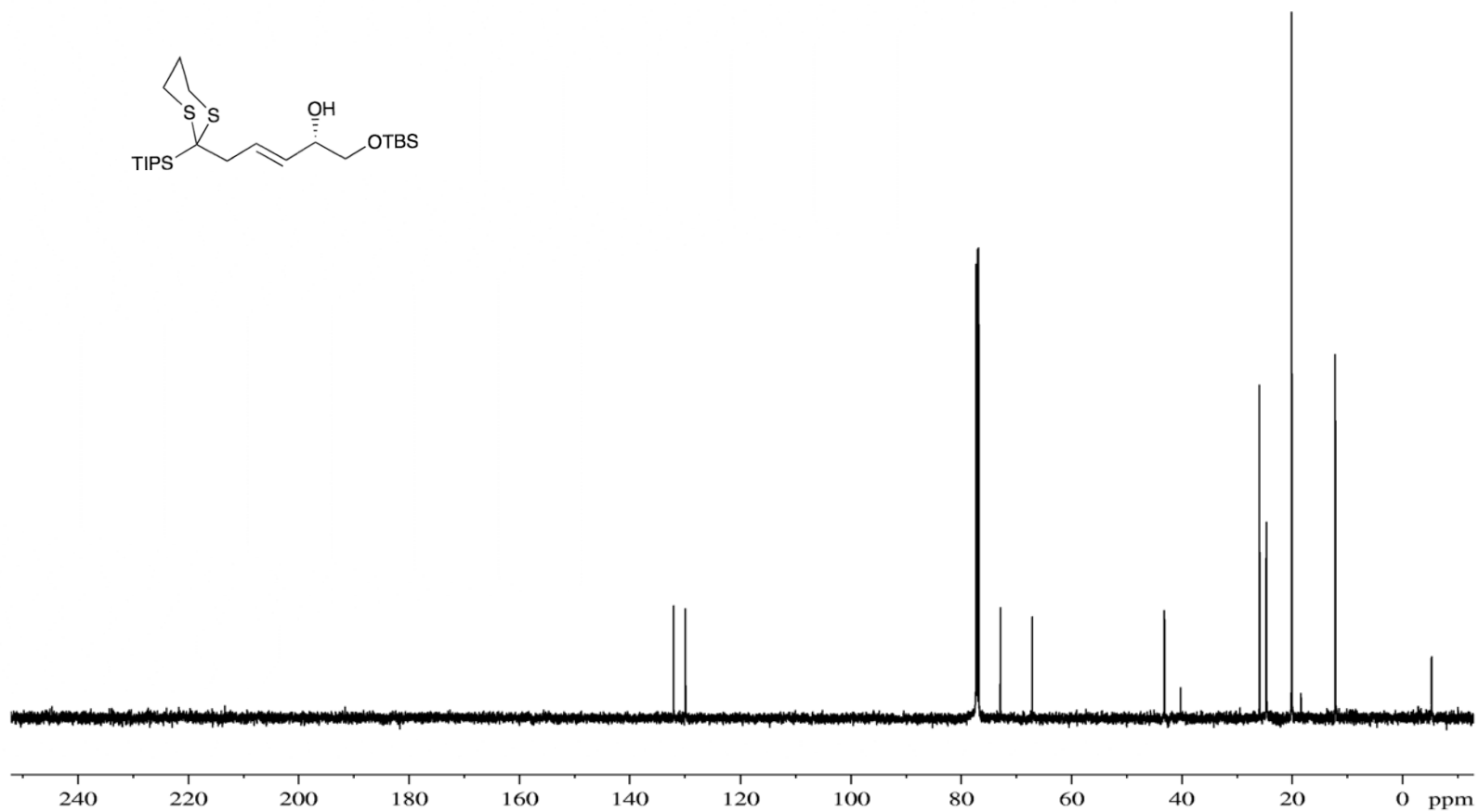


S111

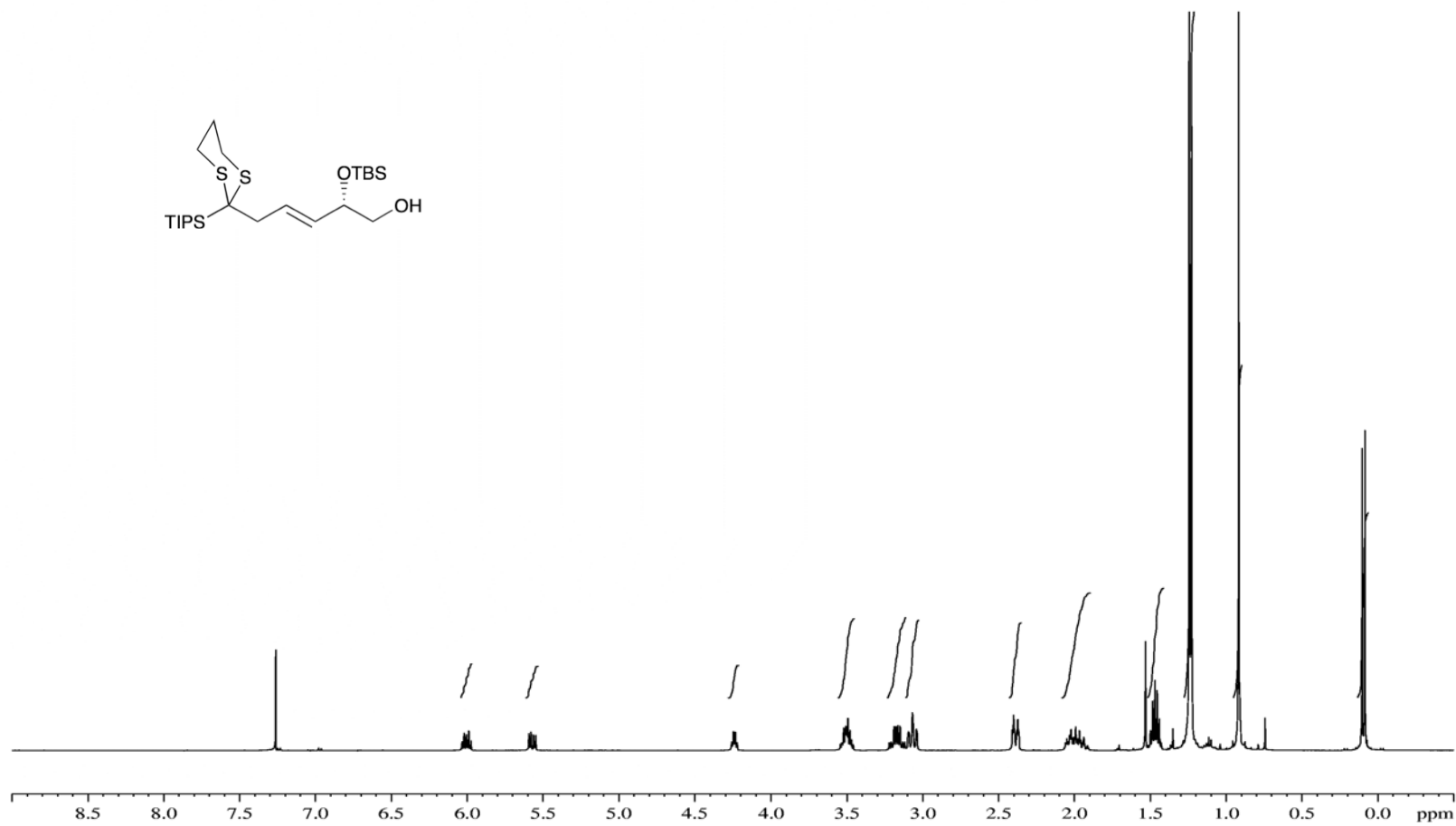


The  $^1\text{H}$  NMR Spectrum of Compound (+)-**22** in  $\text{CDCl}_3$

S112

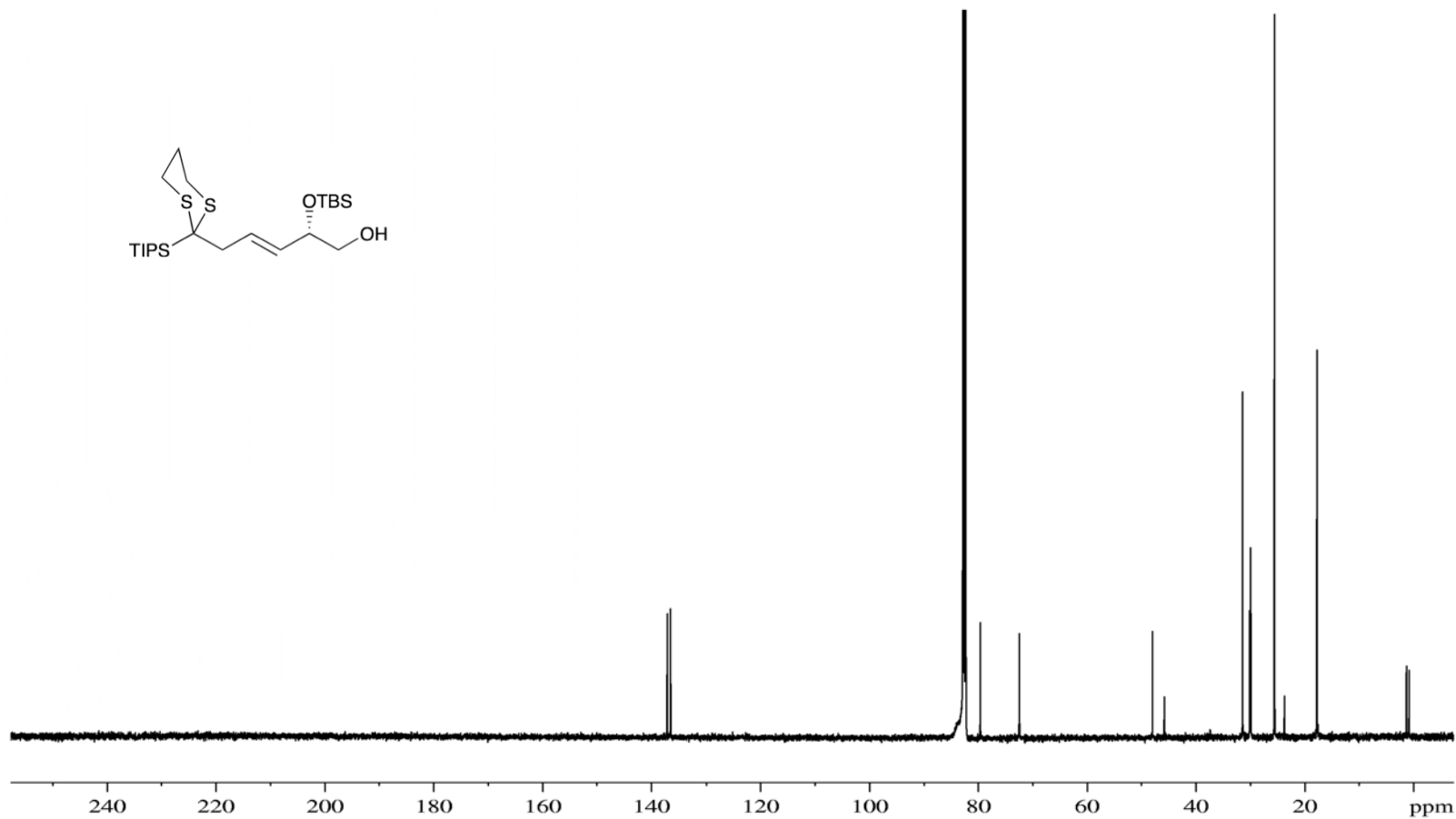


The <sup>13</sup>C NMR Spectrum of Compound (+)-**22** in CDCl<sub>3</sub>

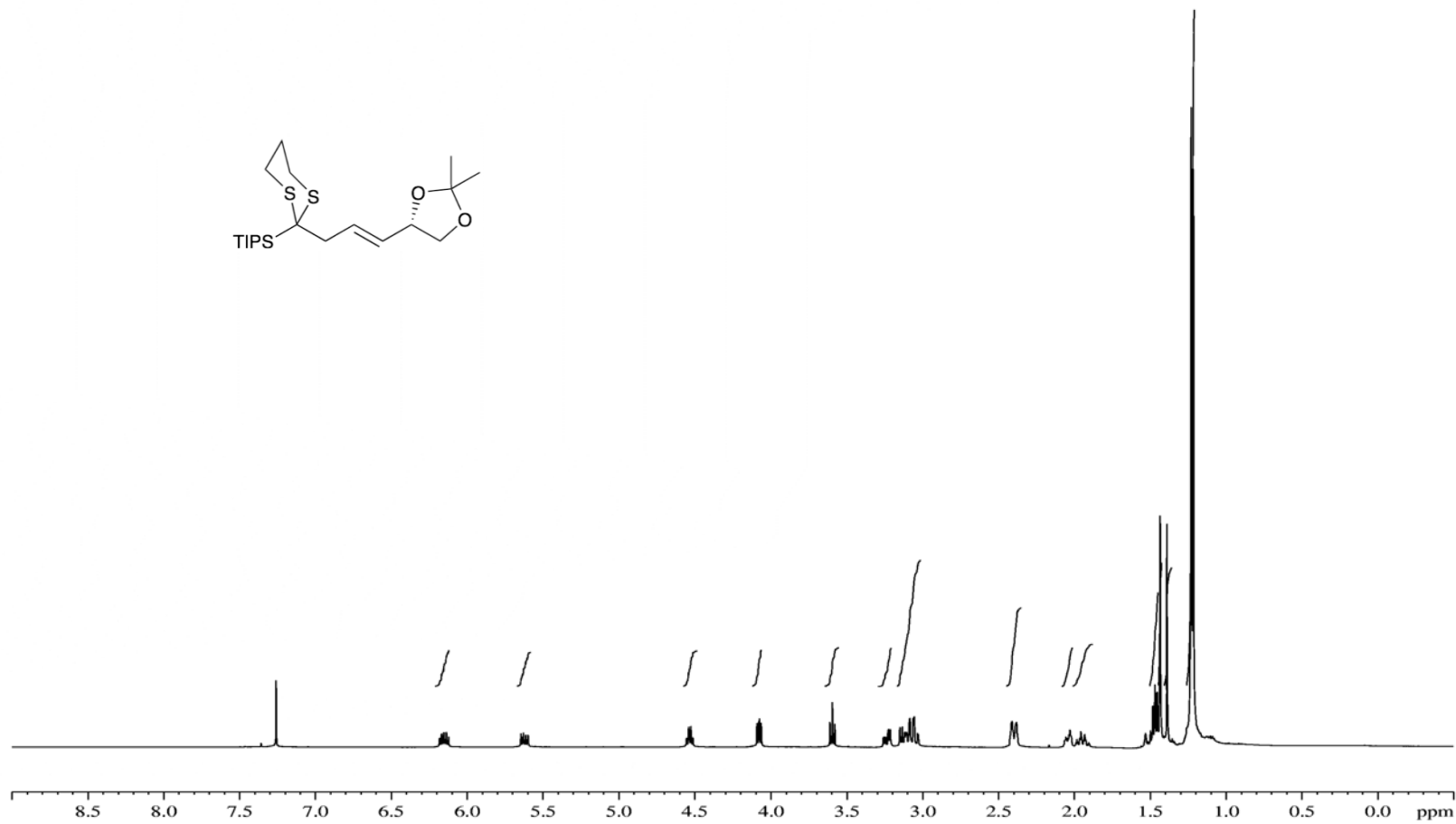


The  $^1\text{H}$  NMR Spectrum of Compound (+)-**23** in  $\text{CDCl}_3$

S114

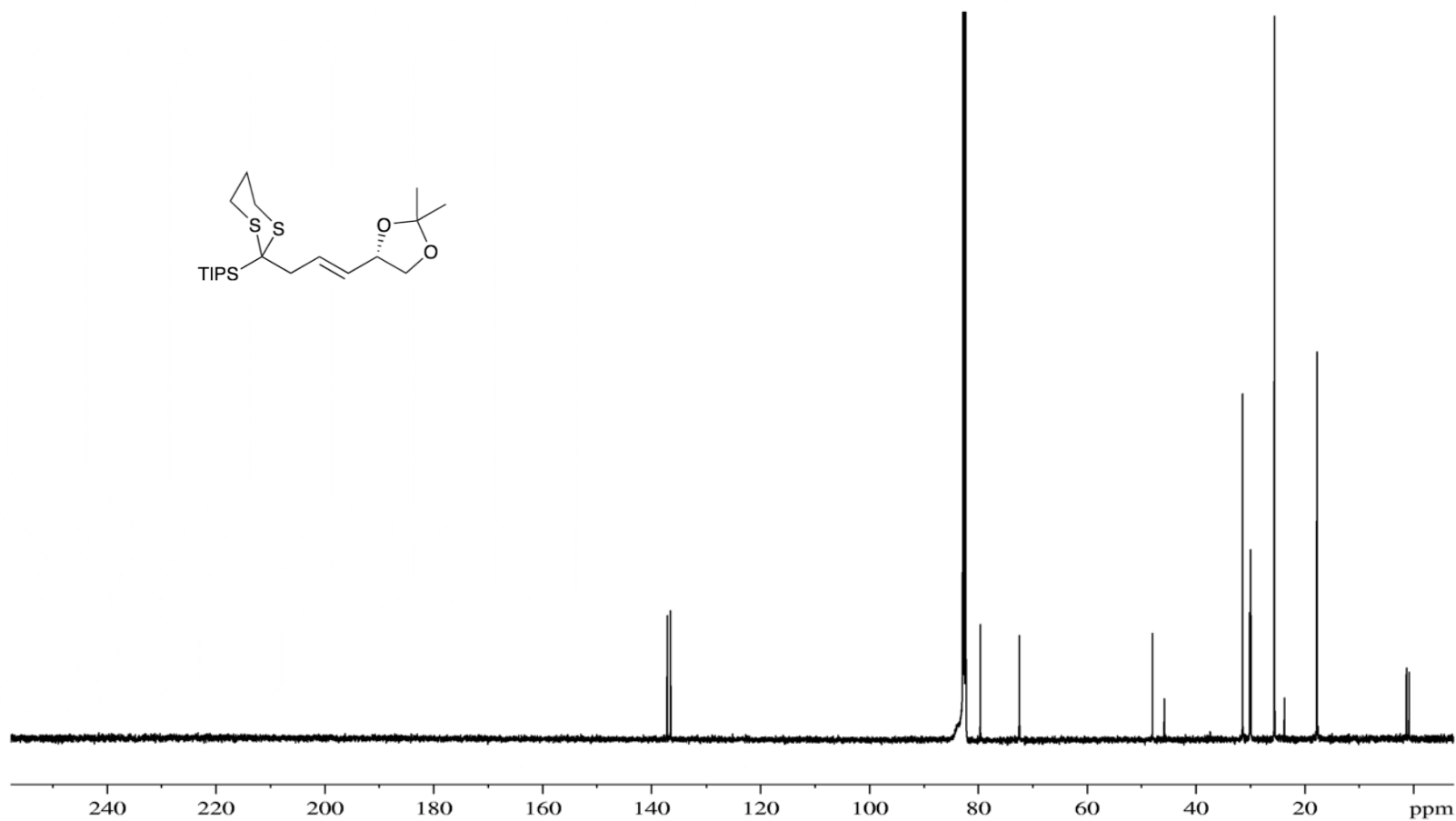


The  $^{13}\text{C}$  NMR Spectrum of Compound (+)-**23** in  $\text{CDCl}_3$



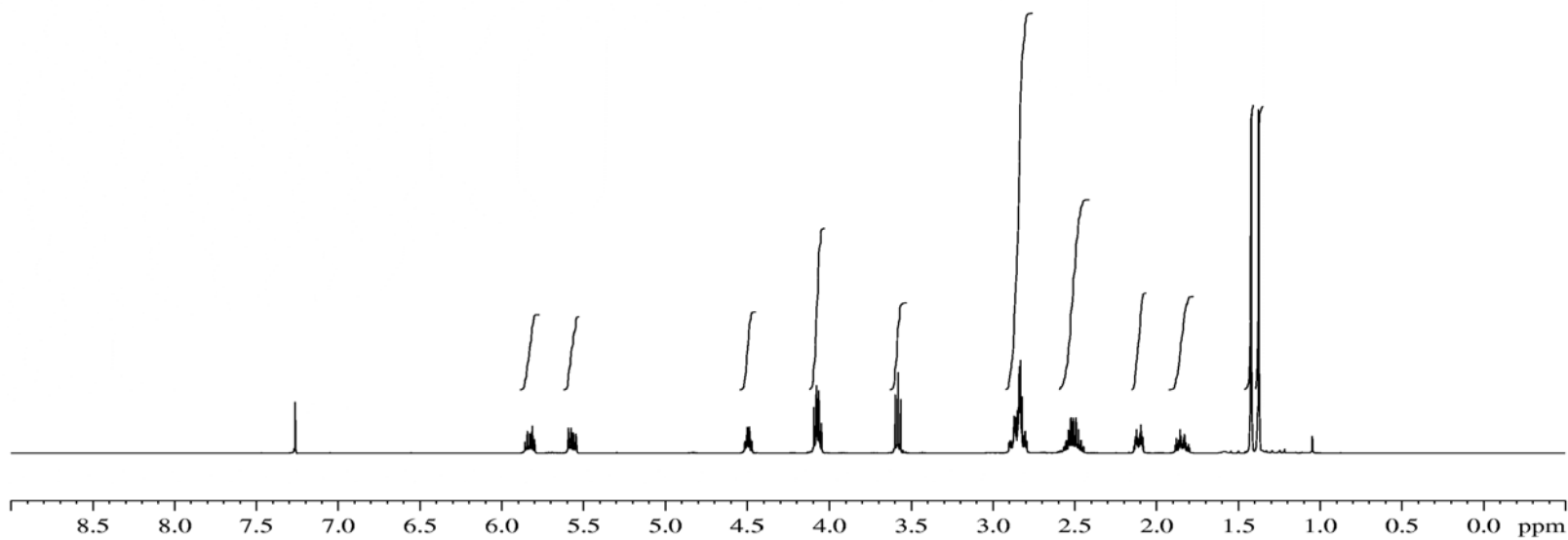
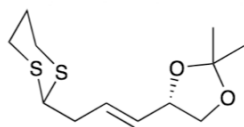
The <sup>1</sup>H NMR Spectrum of Compound (+)-**S4** in CDCl<sub>3</sub>

S116



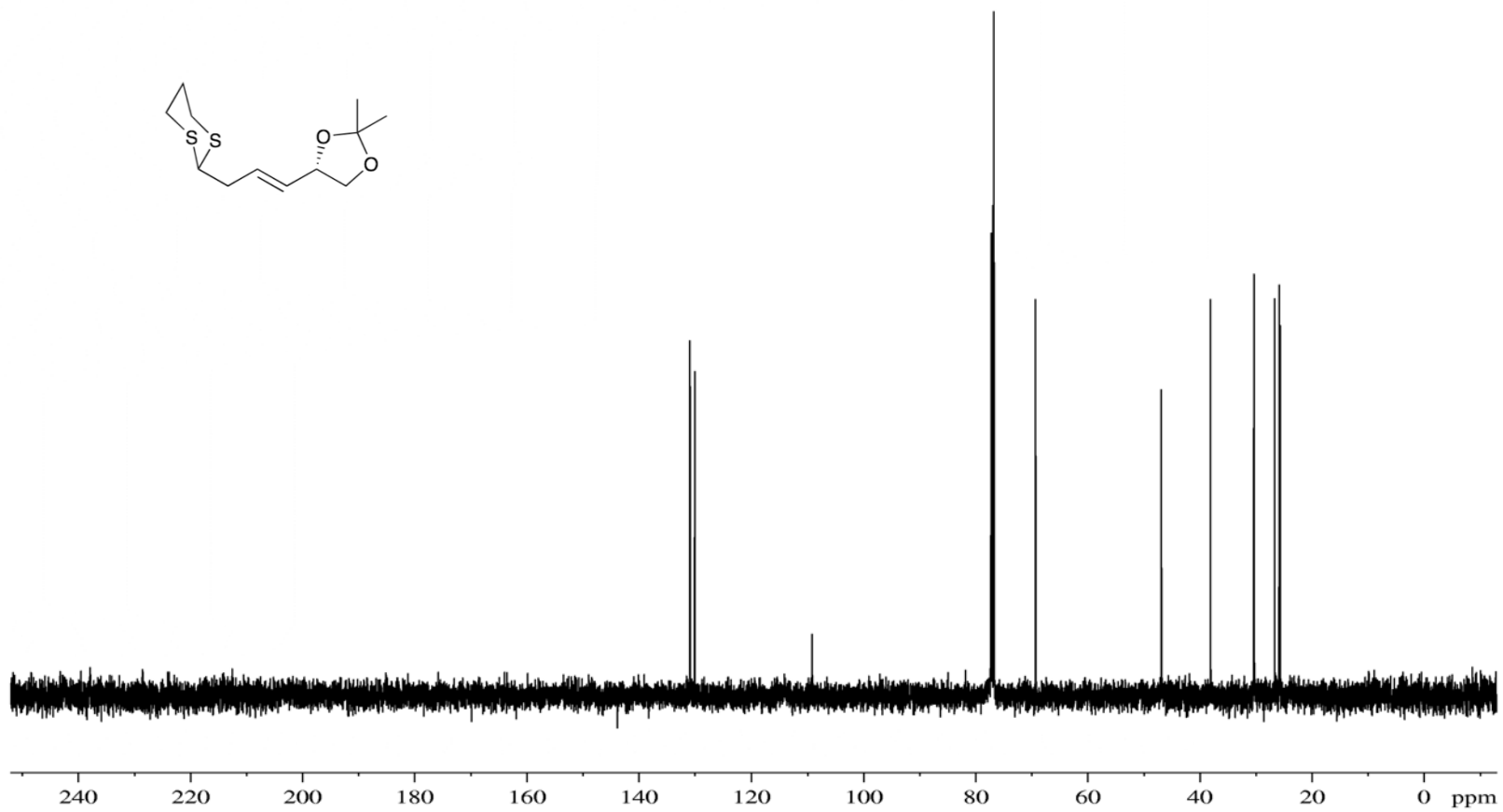
The  $^{13}\text{C}$  NMR Spectrum of Compound (+)-**S4** in  $\text{CDCl}_3$

S117



The <sup>1</sup>H NMR Spectrum of Compound (+)-**24** in CDCl<sub>3</sub>

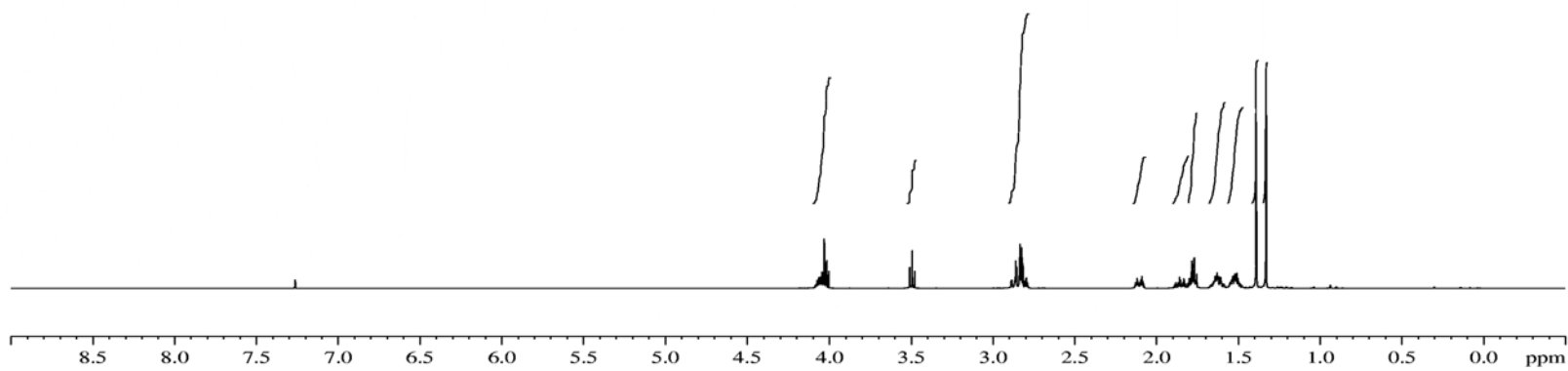
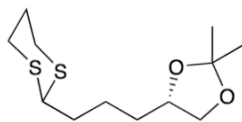
S118



The  $^{13}\text{C}$  NMR Spectrum of Compound (+)-**24** in  $\text{CDCl}_3$

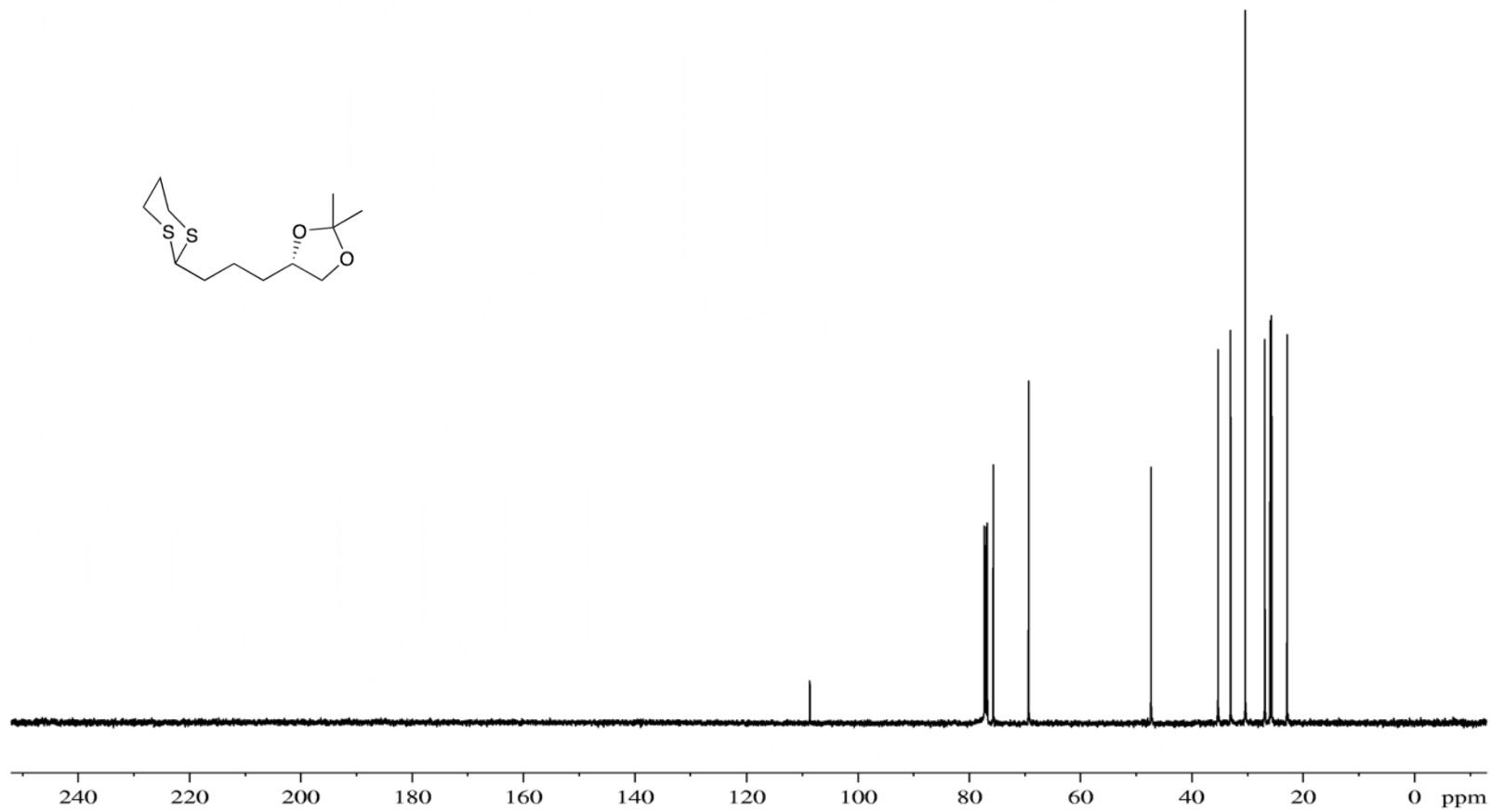
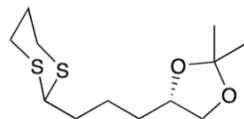


S119



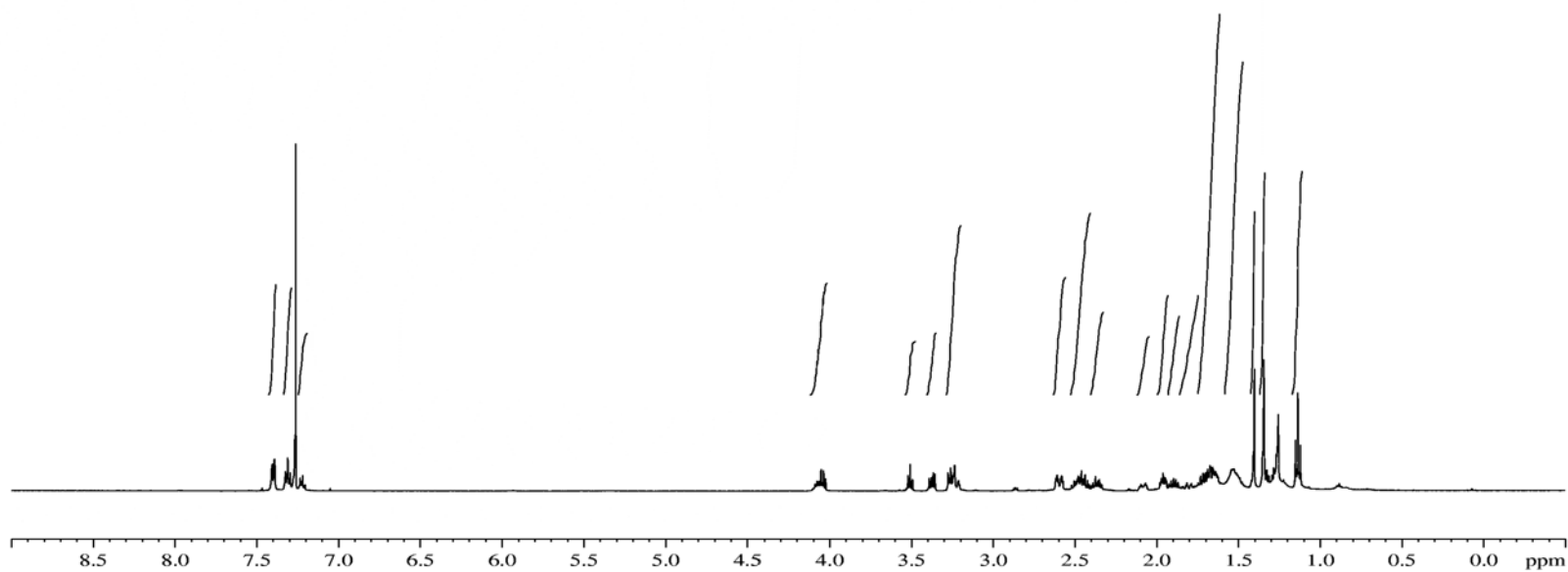
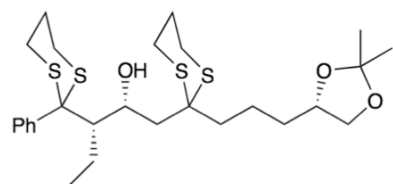
The <sup>1</sup>H NMR Spectrum of Compound (+)-**11** in CDCl<sub>3</sub>

S120

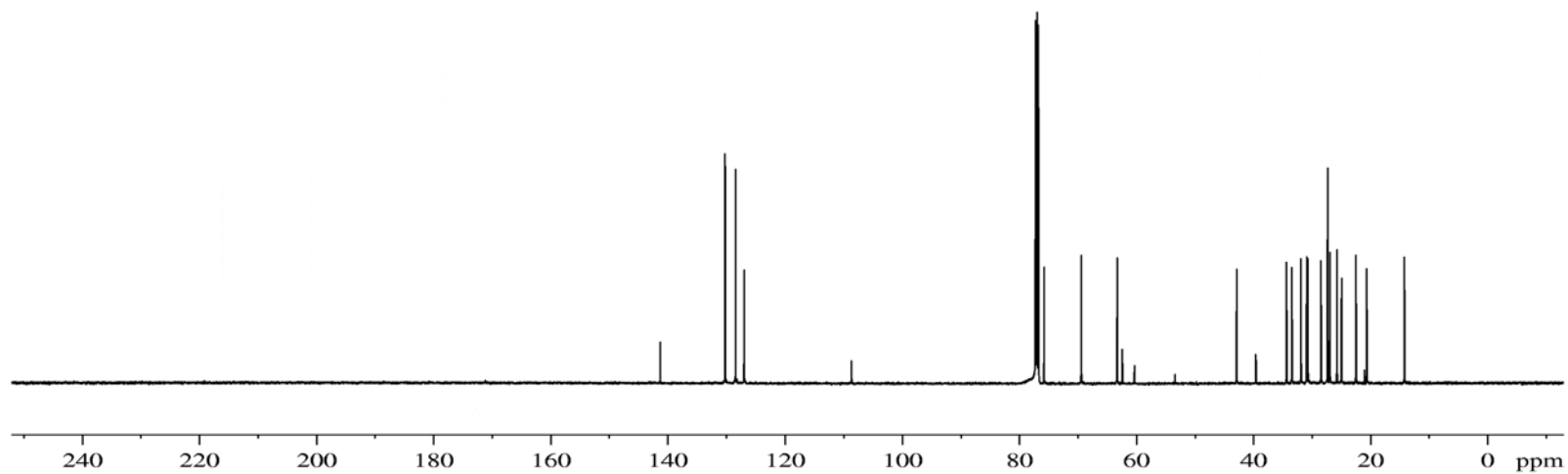
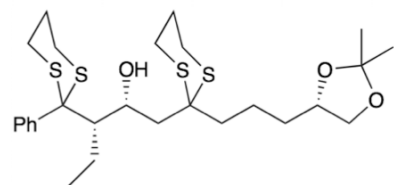


The <sup>13</sup>C NMR Spectrum of Compound (+)-**11** in CDCl<sub>3</sub>

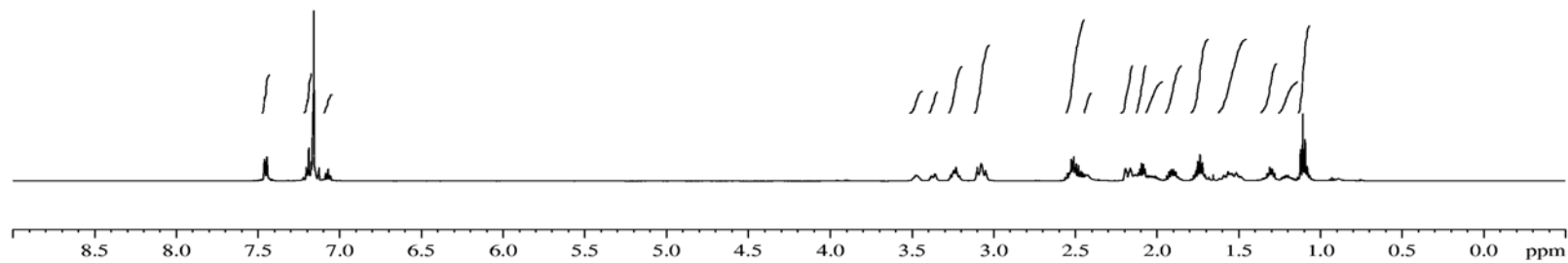
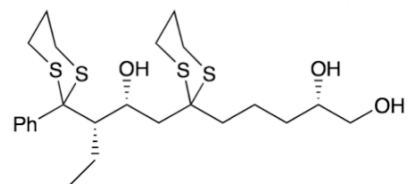
S121



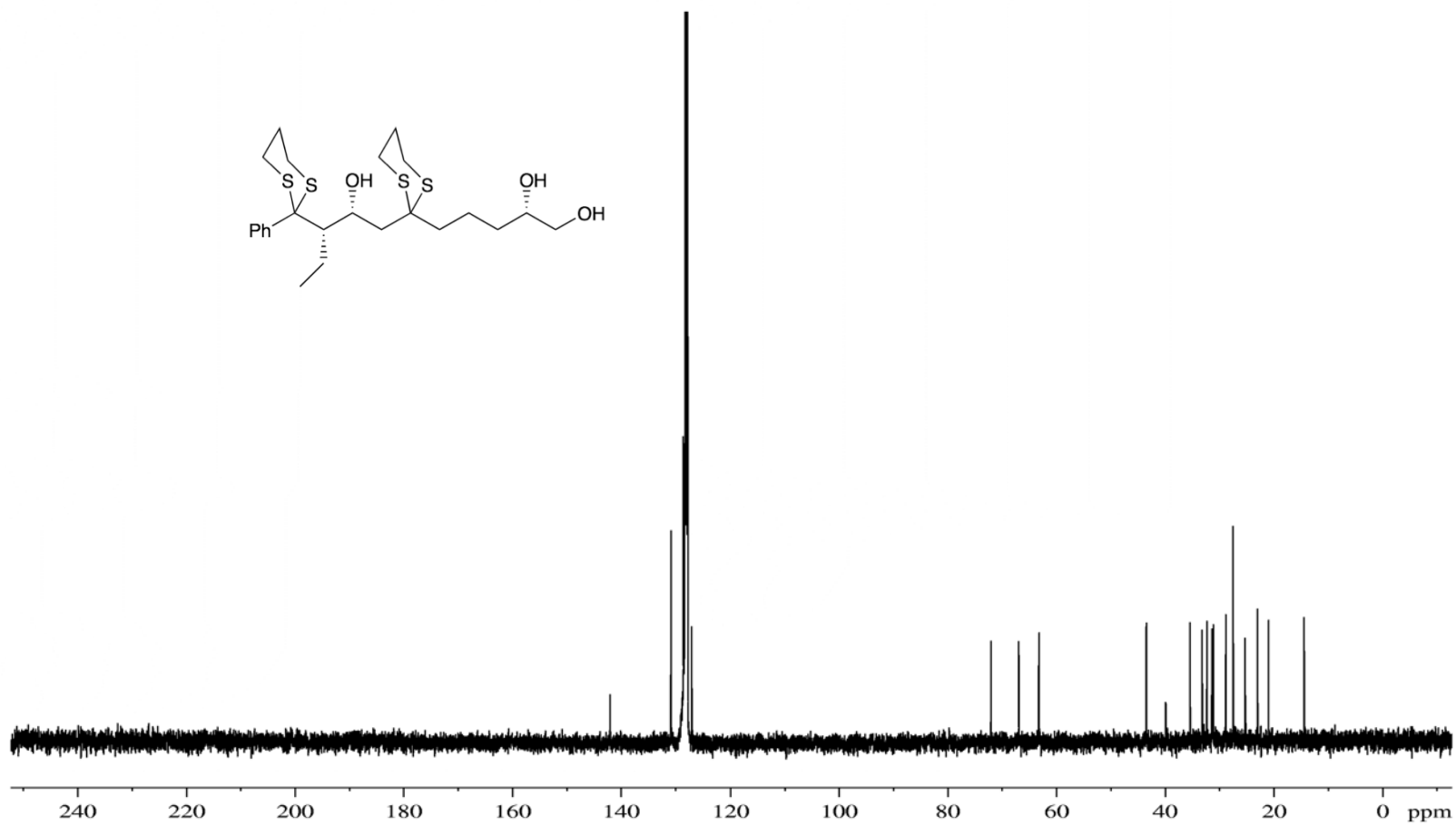
The <sup>1</sup>H NMR Spectrum of Compound (-)-25 in CDCl<sub>3</sub>

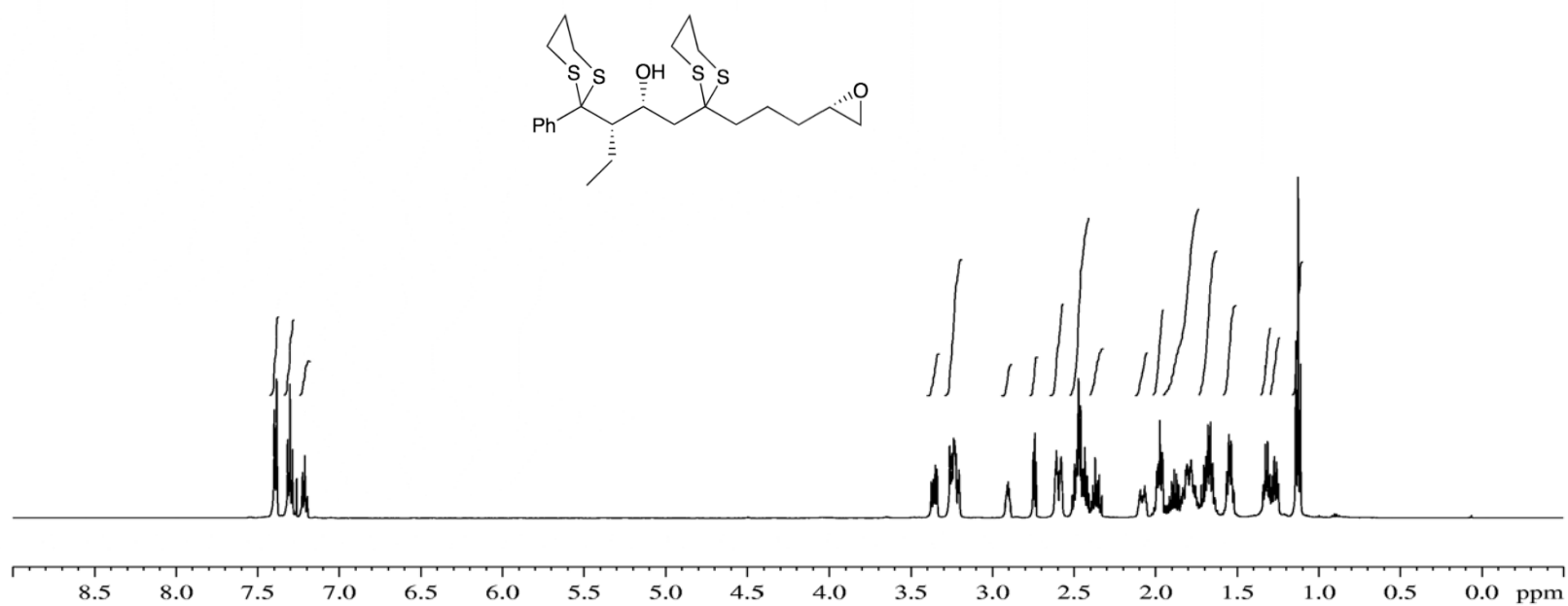


The  $^{13}\text{C}$  NMR Spectrum of Compound (-)-25 in  $\text{CDCl}_3$

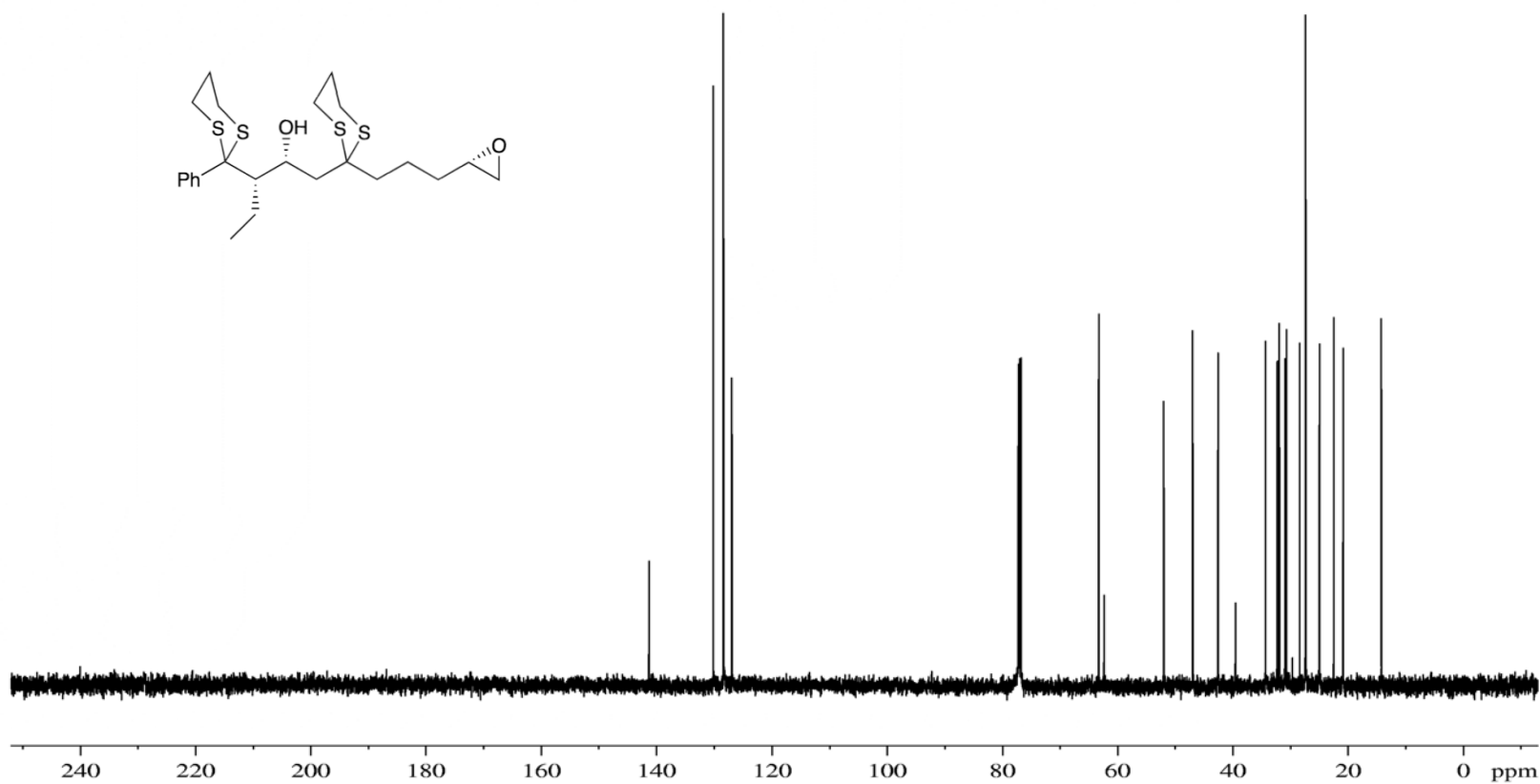


The <sup>1</sup>H NMR Spectrum of Compound (+)-**26** in C<sub>6</sub>D<sub>6</sub>

The  $^{13}\text{C}$  NMR Spectrum of Compound (+)-**26** in  $\text{C}_6\text{D}_6$



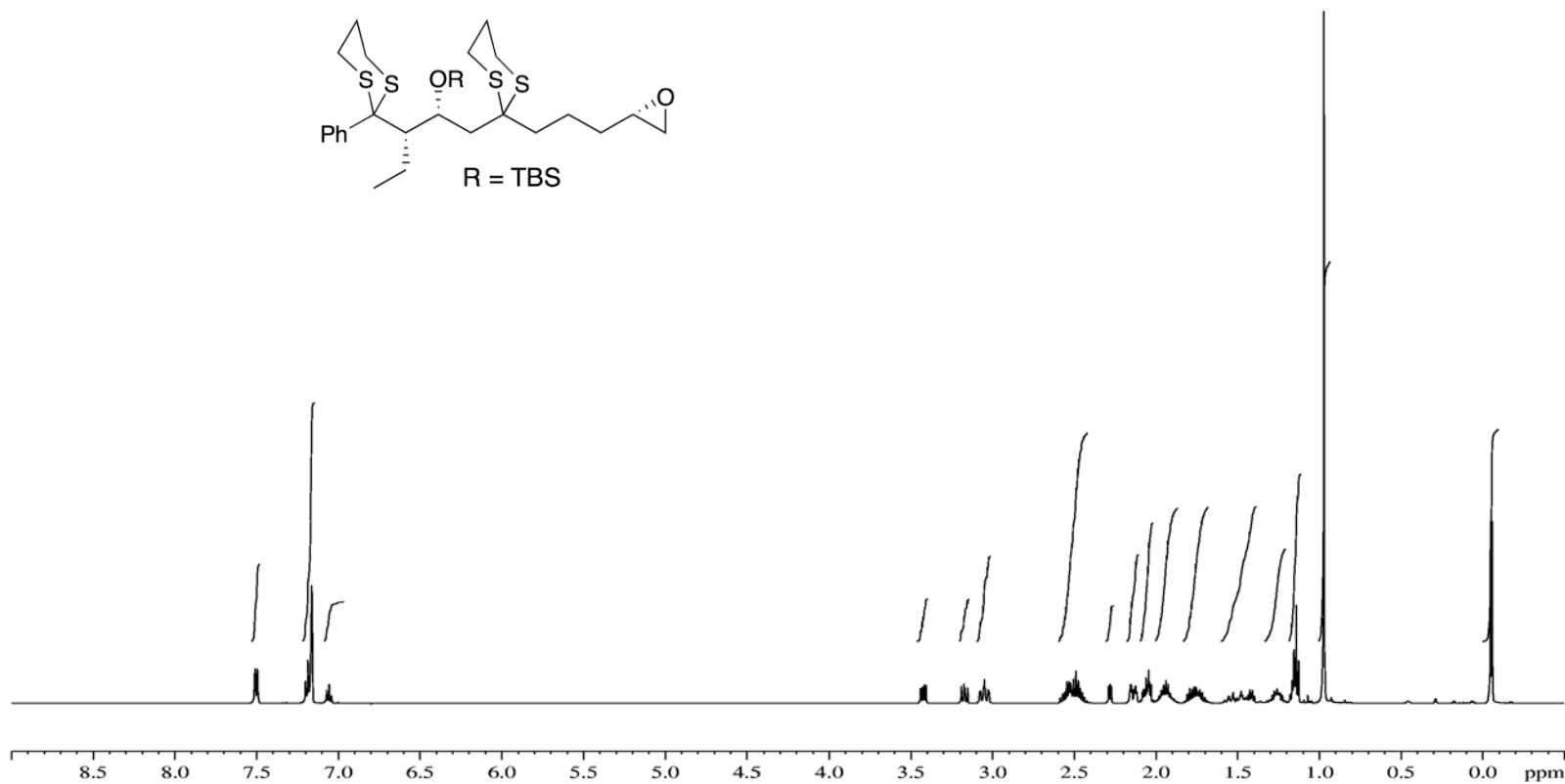
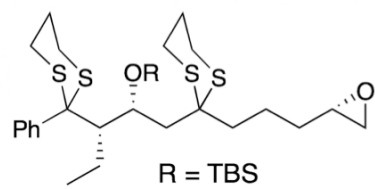
The  $^1\text{H}$  NMR Spectrum of Compound (+)-**S5** in  $\text{CDCl}_3$ .



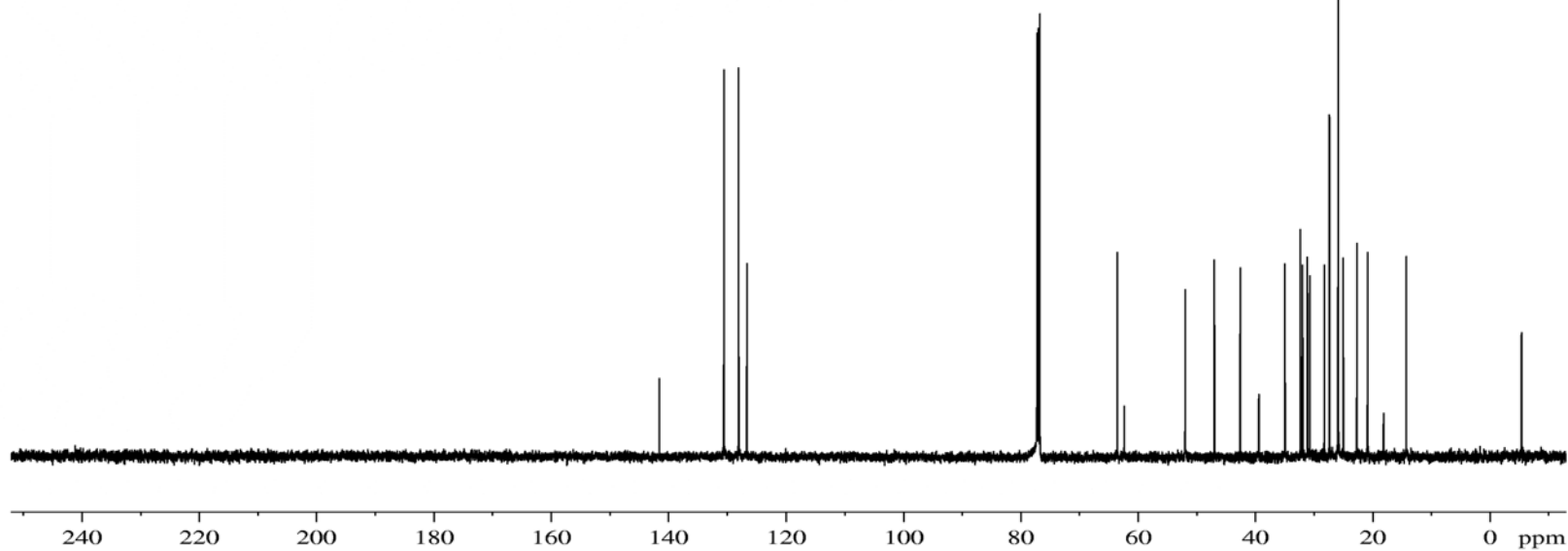
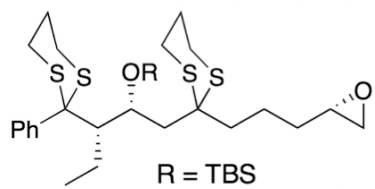
The  $^{13}\text{C}$  NMR Spectrum of Compound (+)-**S5** in  $\text{CDCl}_3$ .



S127

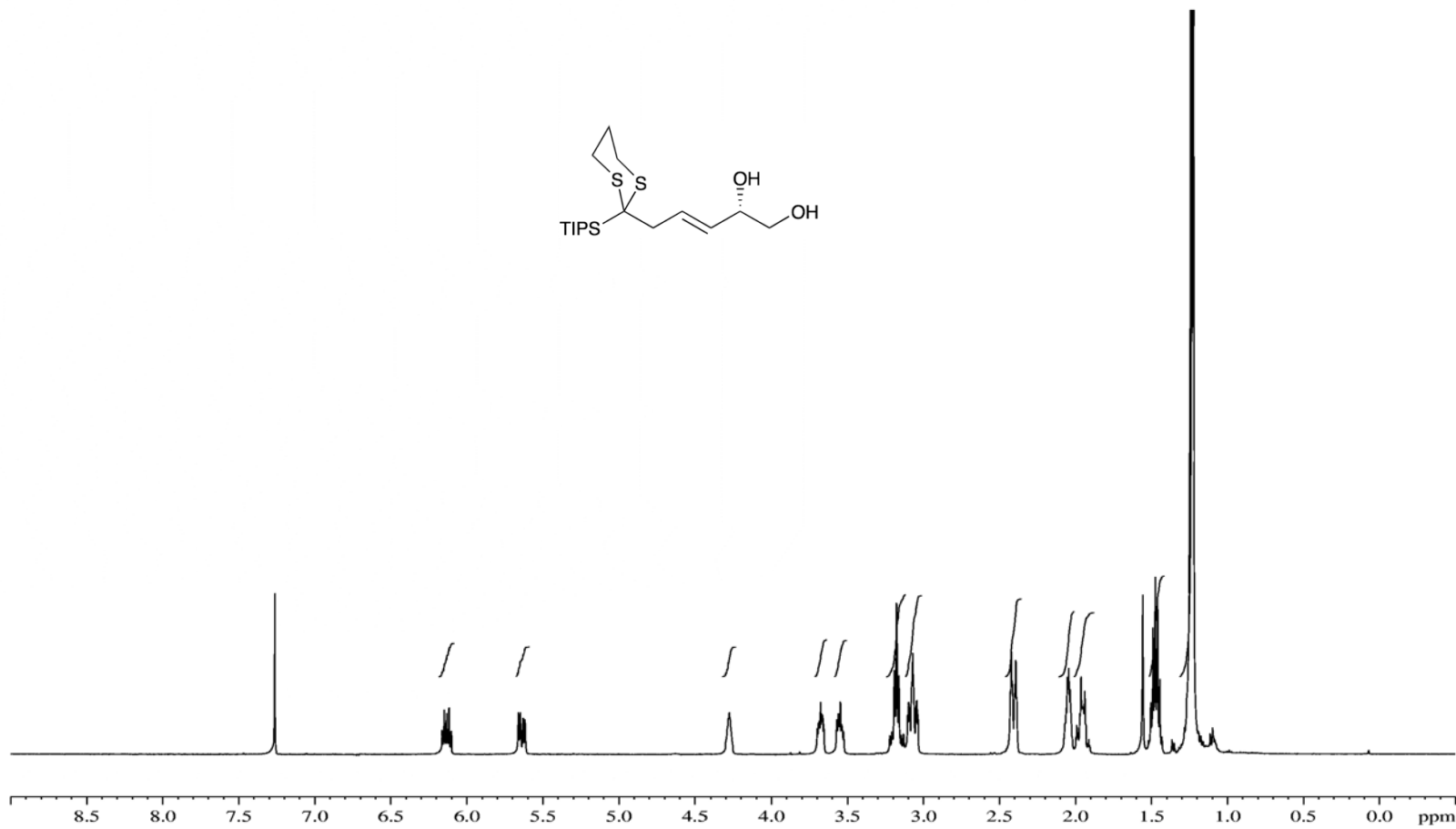


The <sup>1</sup>H NMR Spectrum of Compound (-)-7 in CDCl<sub>3</sub>

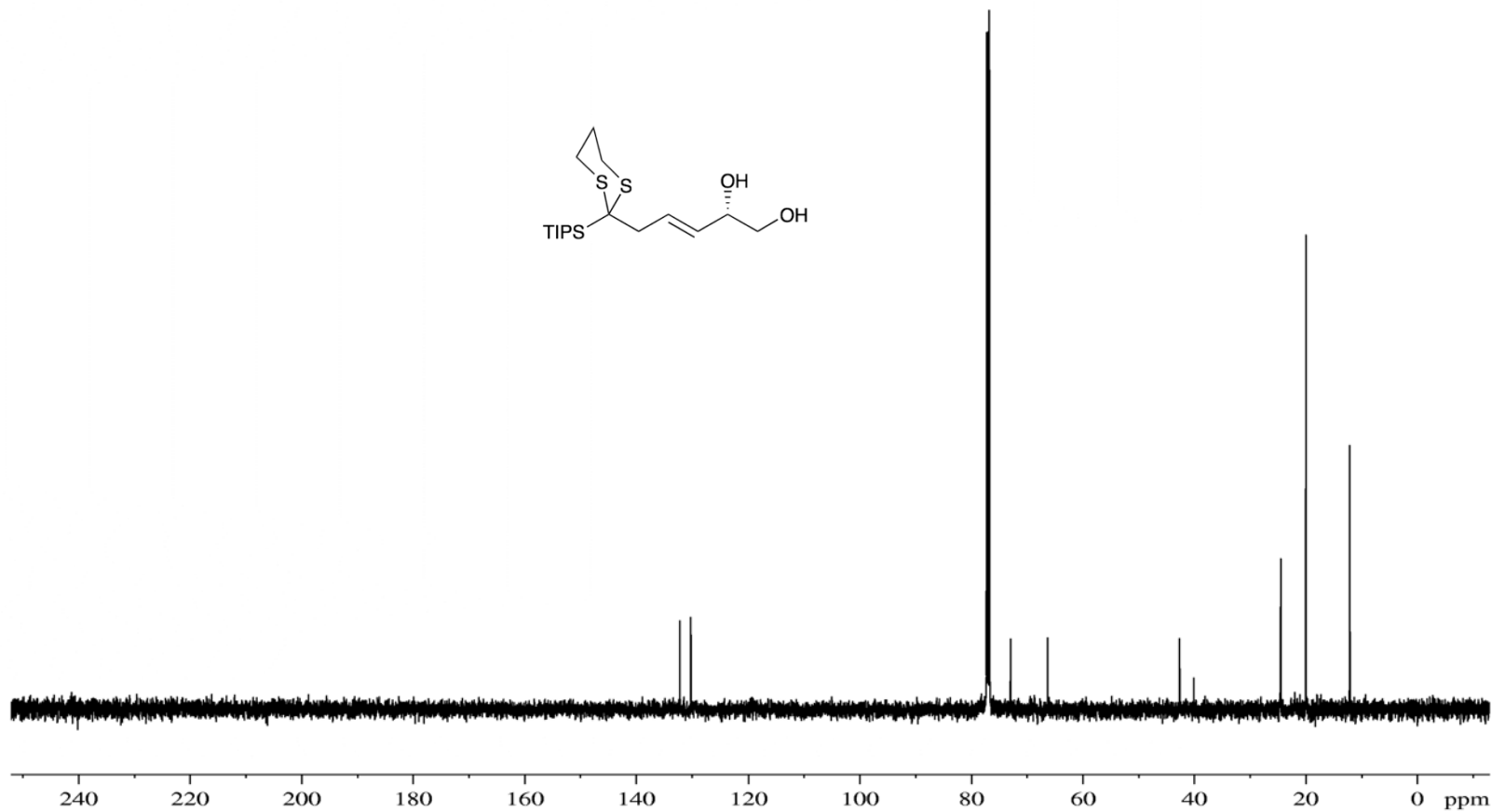
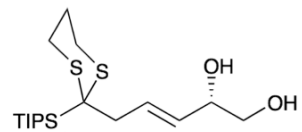


The  $^{13}\text{C}$  NMR Spectrum of Compound (-)-7 in  $\text{CDCl}_3$

S129

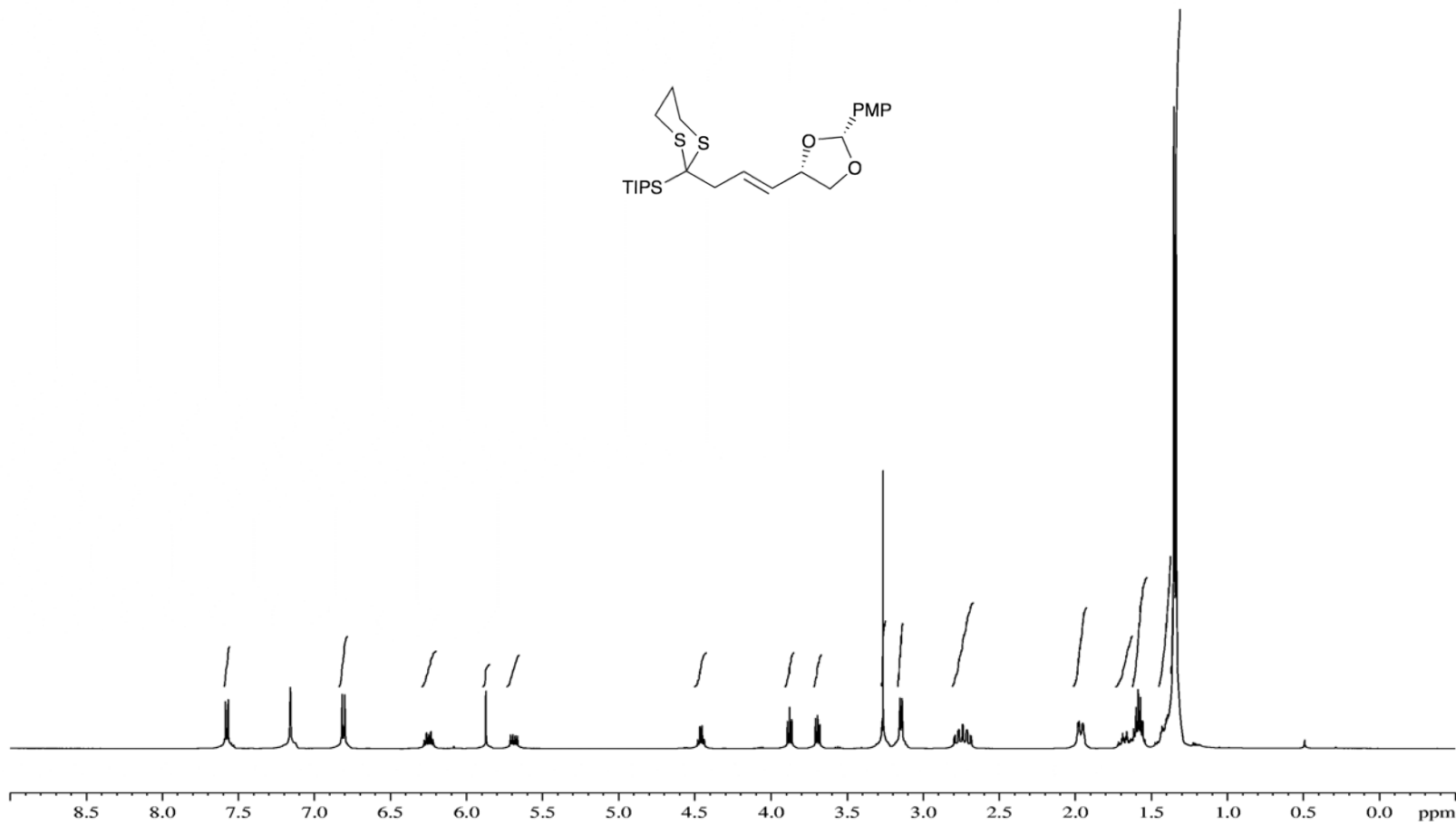


The <sup>1</sup>H NMR Spectrum of Compound (+)-27 in CDCl<sub>3</sub>



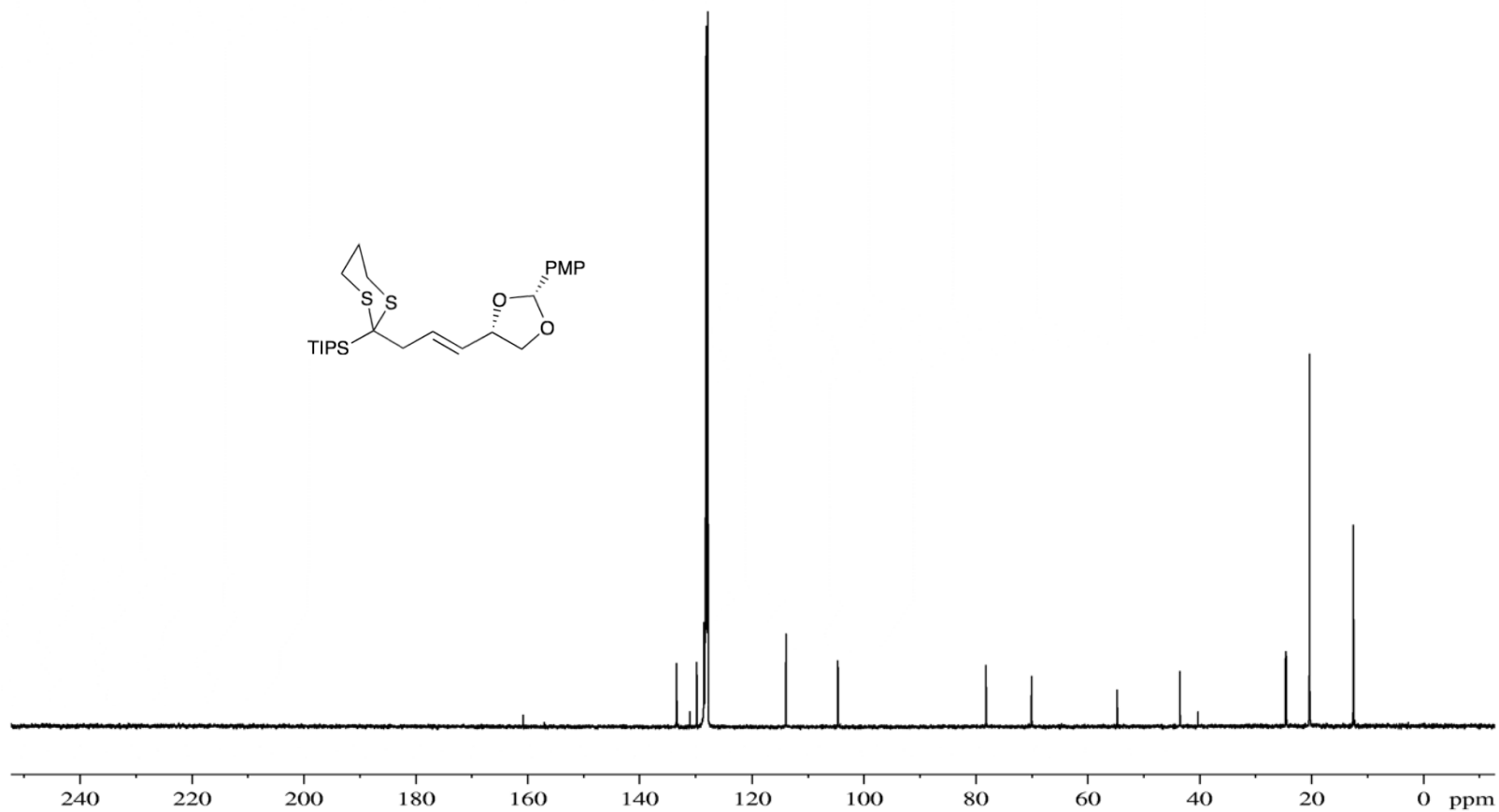
The  $^{13}\text{C}$  NMR Spectrum of Compound (+)-27 in  $\text{CDCl}_3$

S131



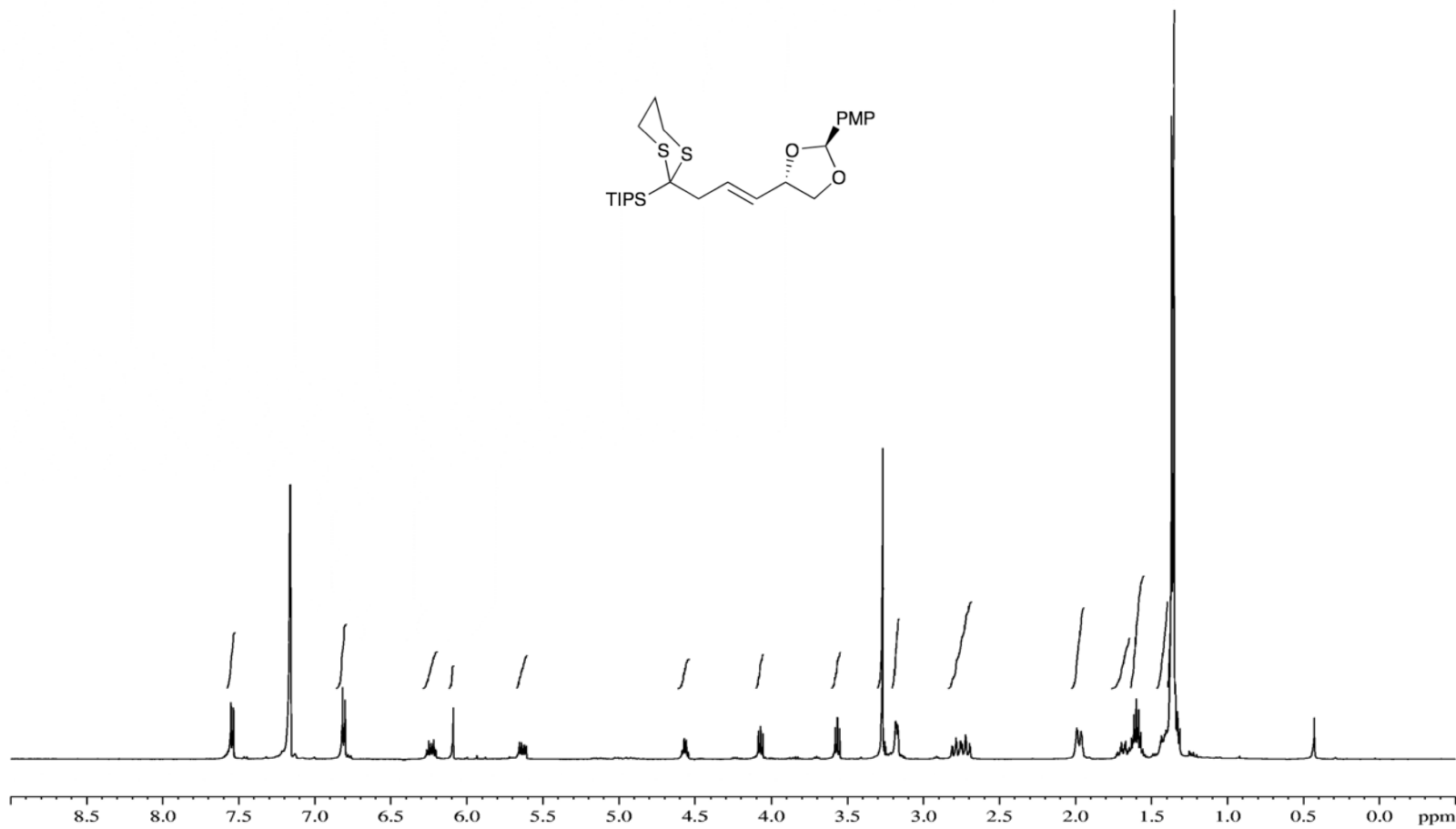
The <sup>1</sup>H NMR Spectrum of Compound (-)-**28** in C<sub>6</sub>D<sub>6</sub>

S132



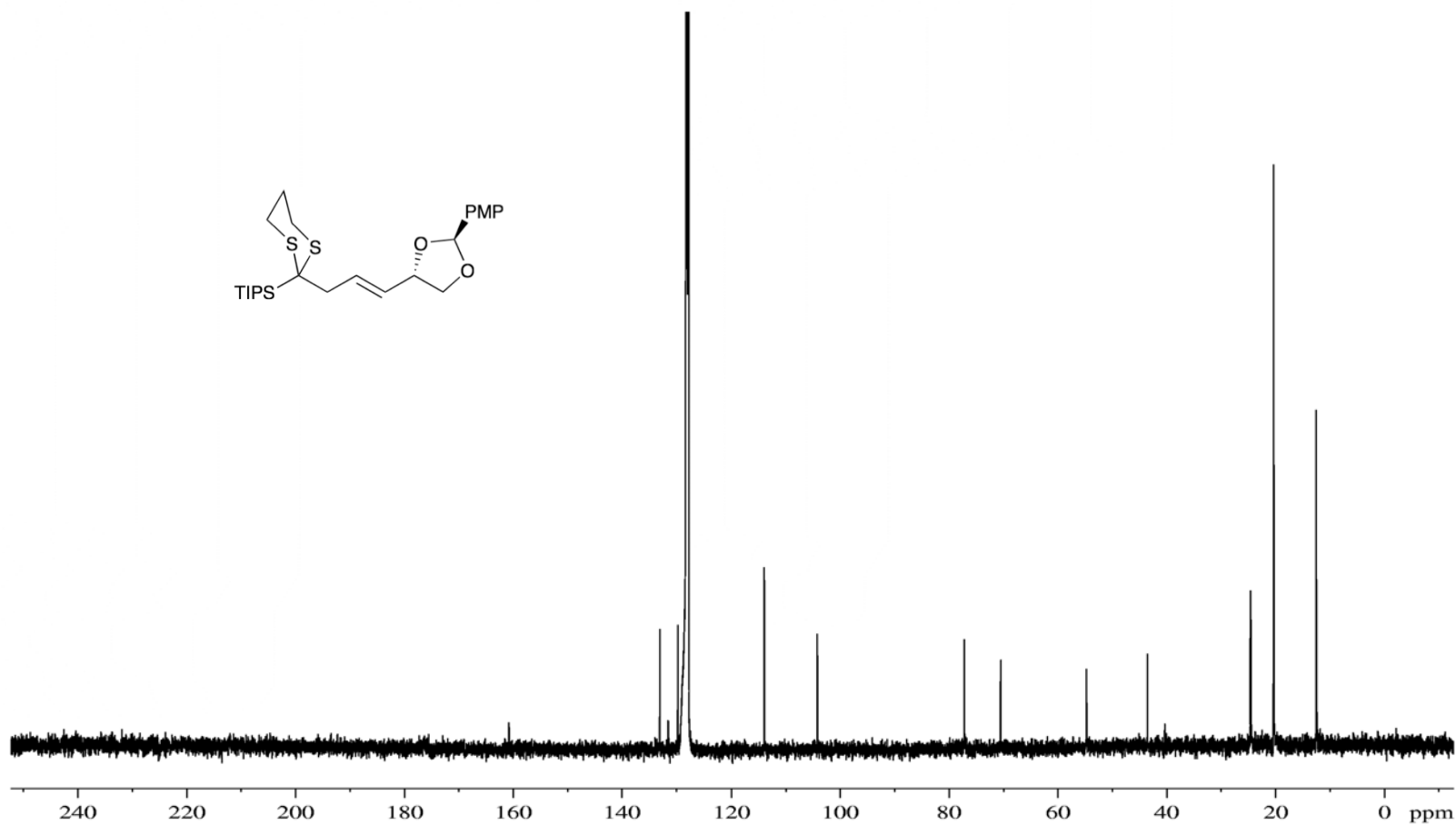
The  $^{13}\text{C}$  NMR Spectrum of Compound (-)-**28** in  $\text{C}_6\text{D}_6$

S133



The  $^1\text{H}$  NMR Spectrum of Compound (+)-**29** in  $\text{C}_6\text{D}_6$

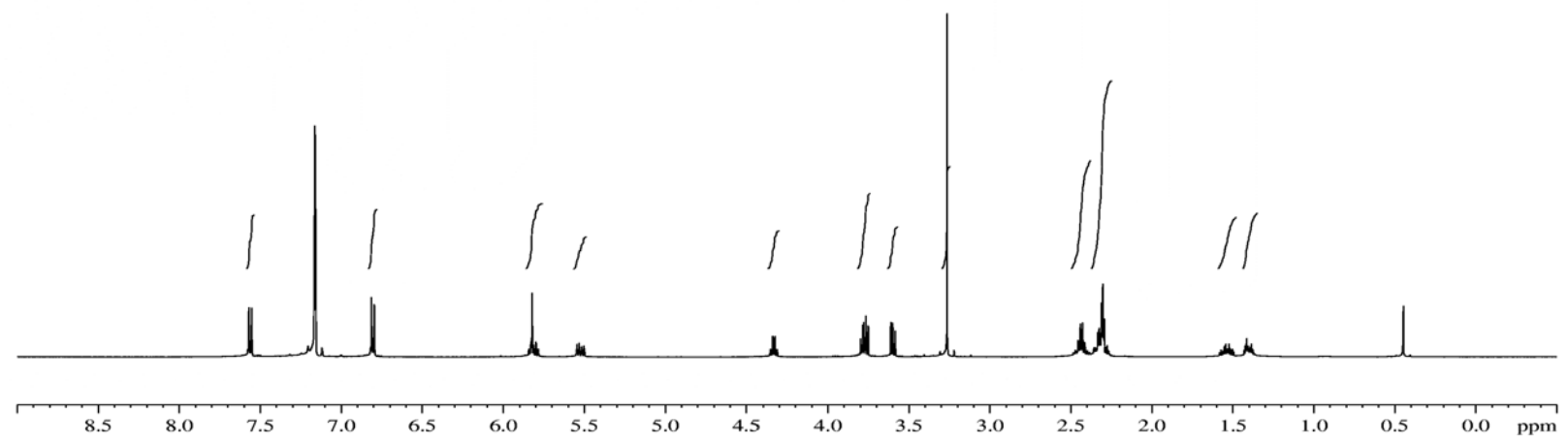
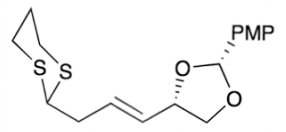
S134



The  $^{13}\text{C}$  NMR Spectrum of Compound (+)-**29** in  $\text{C}_6\text{D}_6$

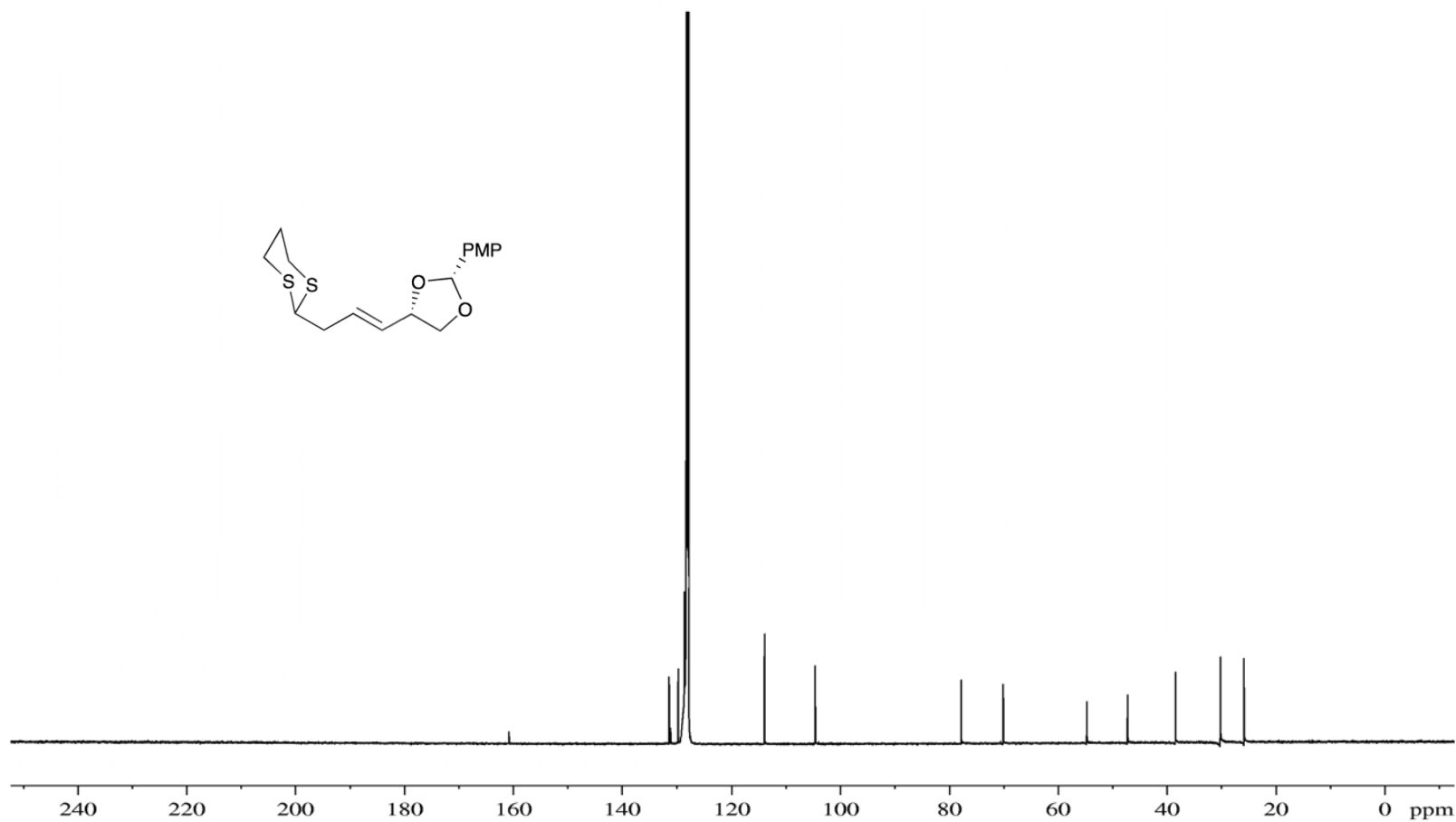


S135



The  $^1\text{H}$  NMR Spectrum of Compound (-)-S6 in  $\text{C}_6\text{D}_6$

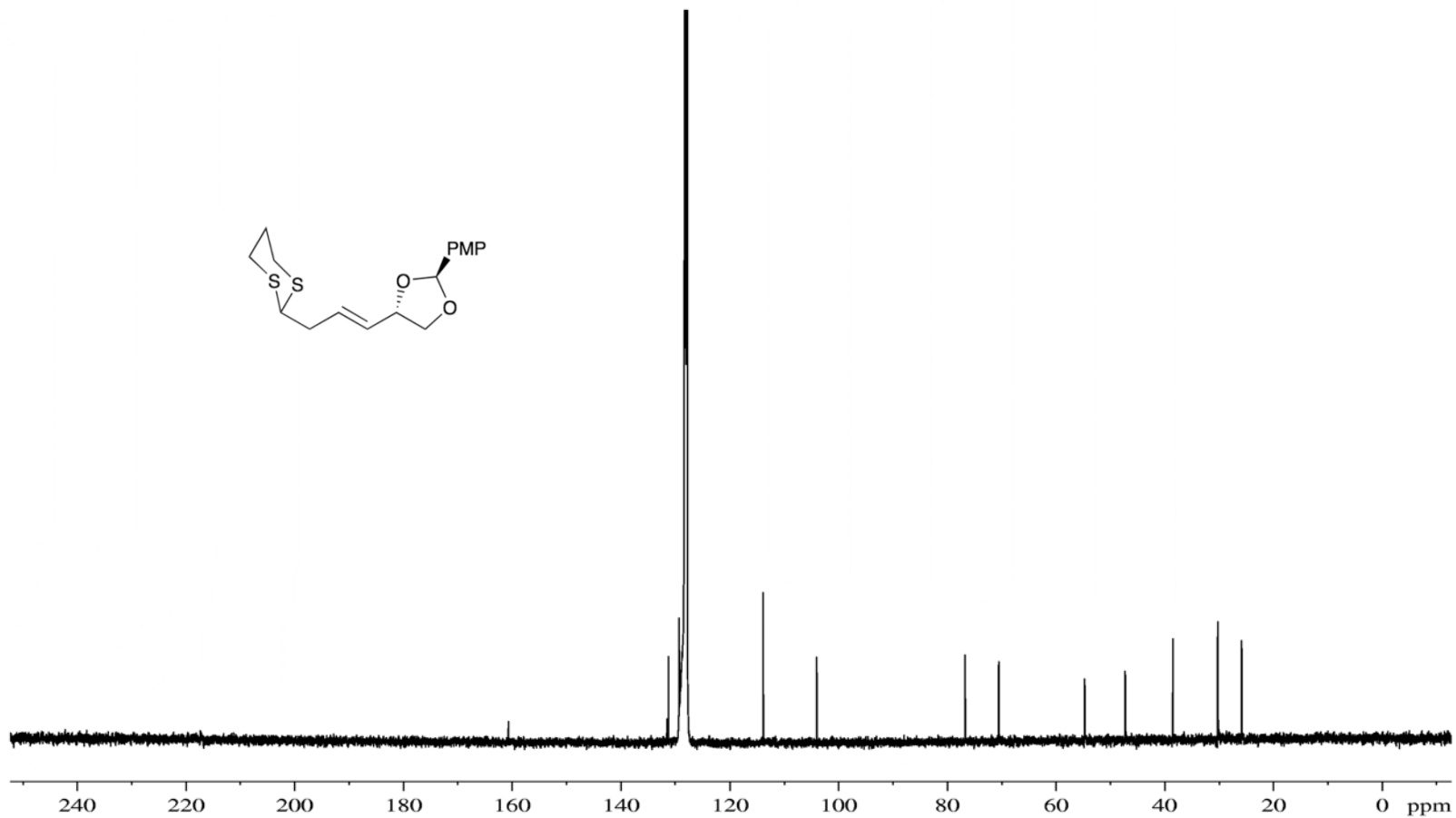
S136



The  $^{13}\text{C}$  NMR Spectrum of Compound (-)-**S6** in  $\text{C}_6\text{D}_6$

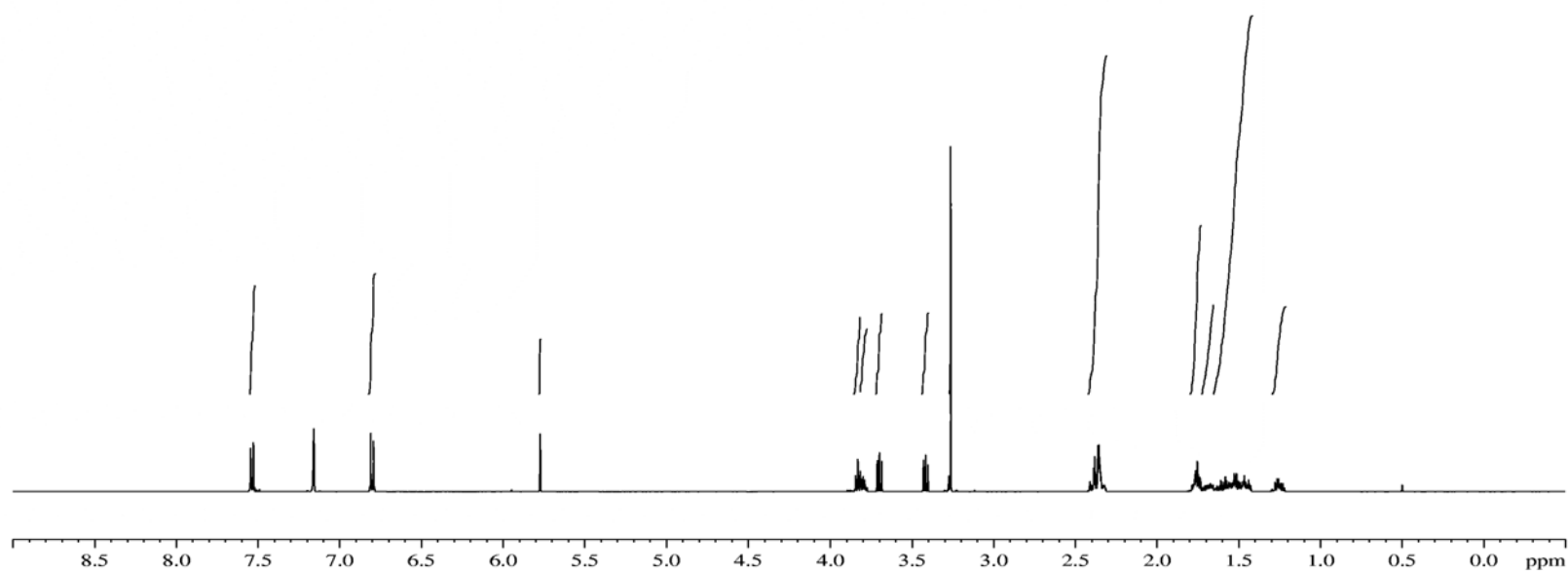
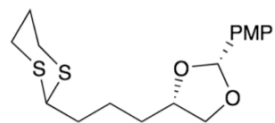


S138



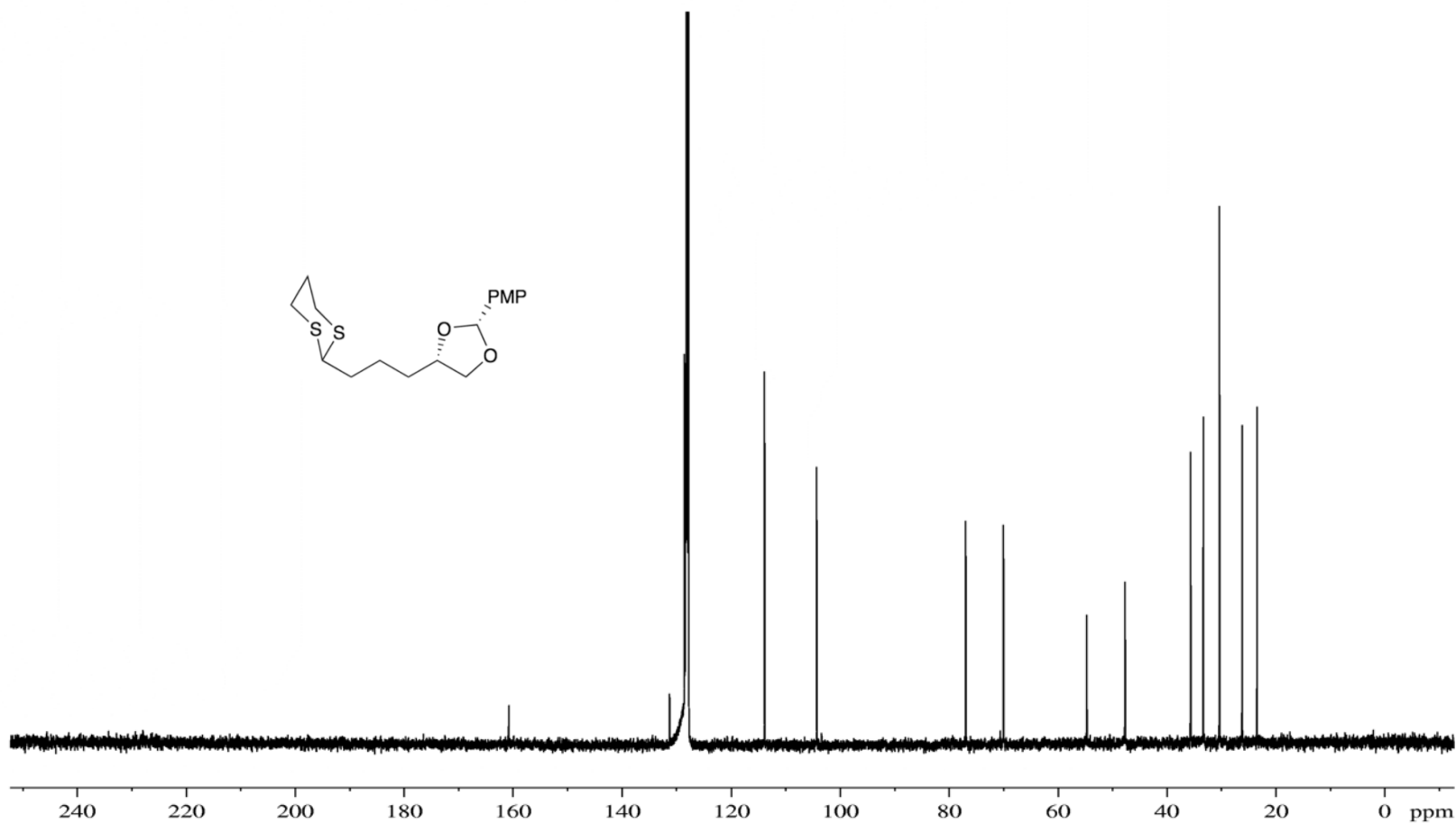
The  $^{13}\text{C}$  NMR Spectrum of Compound (+)-**S7** in  $\text{C}_6\text{D}_6$

S139



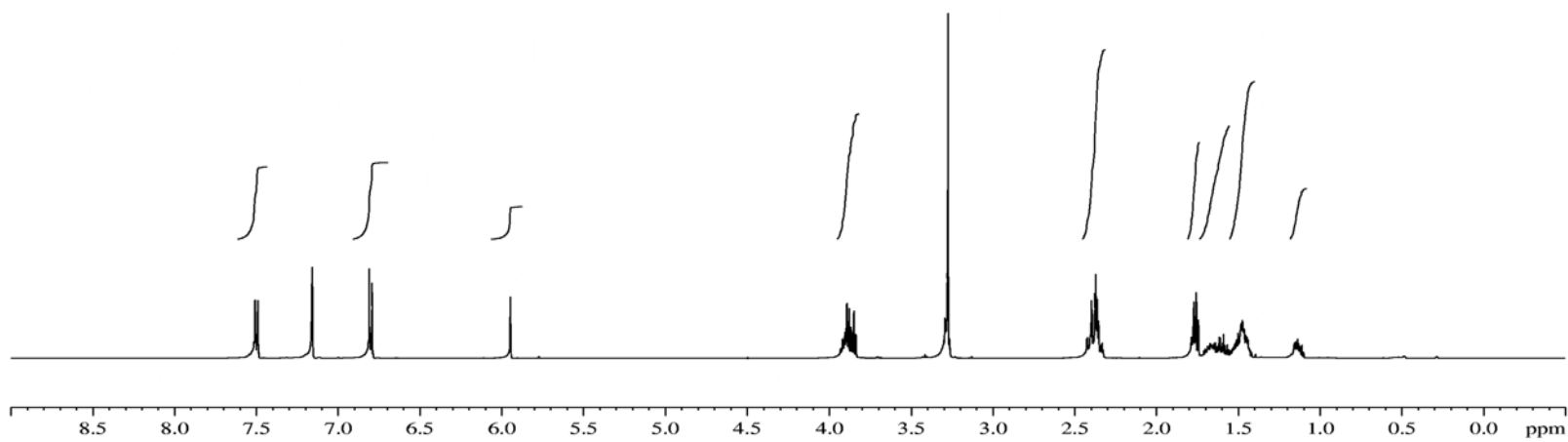
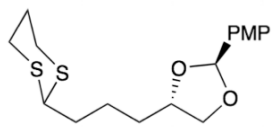
The  $^1\text{H}$  NMR Spectrum of Compound (-)-**30** in  $\text{C}_6\text{D}_6$

S140



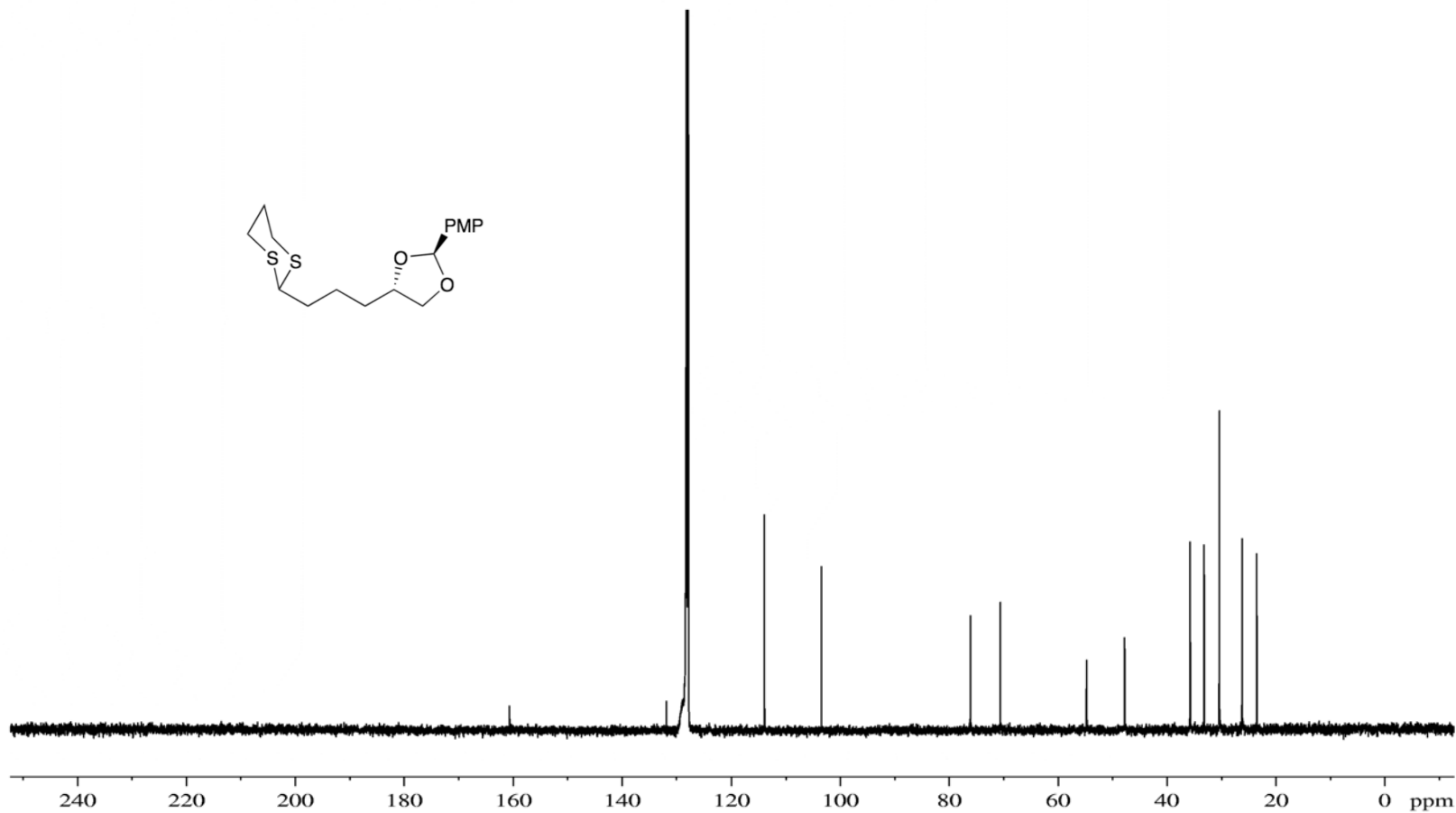
The  $^{13}\text{C}$  NMR Spectrum of Compound (-)-**30** in  $\text{C}_6\text{D}_6$

S141



The  $^1\text{H}$  NMR Spectrum of Compound (+)-S8 in  $\text{C}_6\text{D}_6$

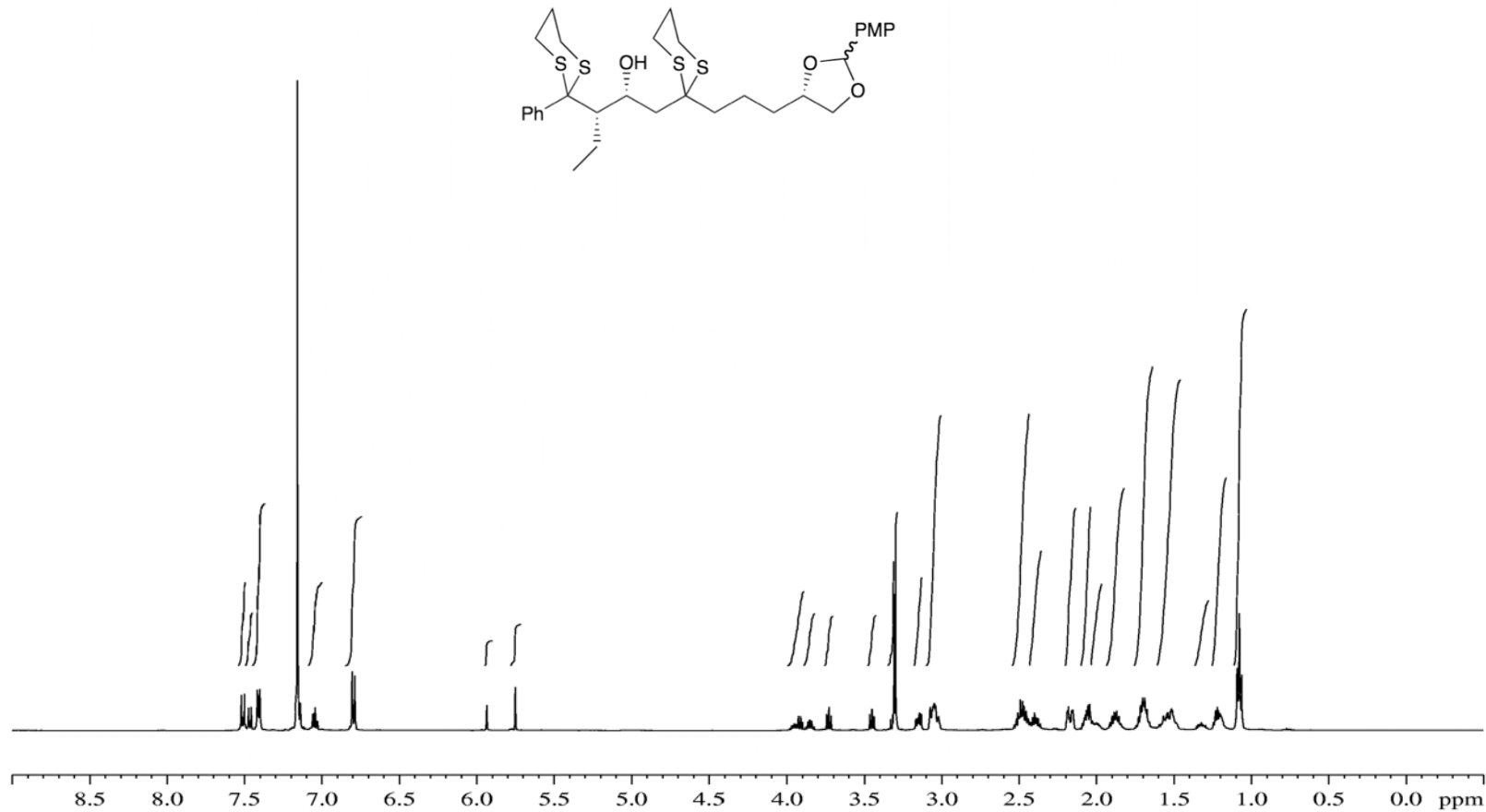
S142



The  $^{13}\text{C}$  NMR Spectrum of Compound (+)-**S8** in  $\text{C}_6\text{D}_6$

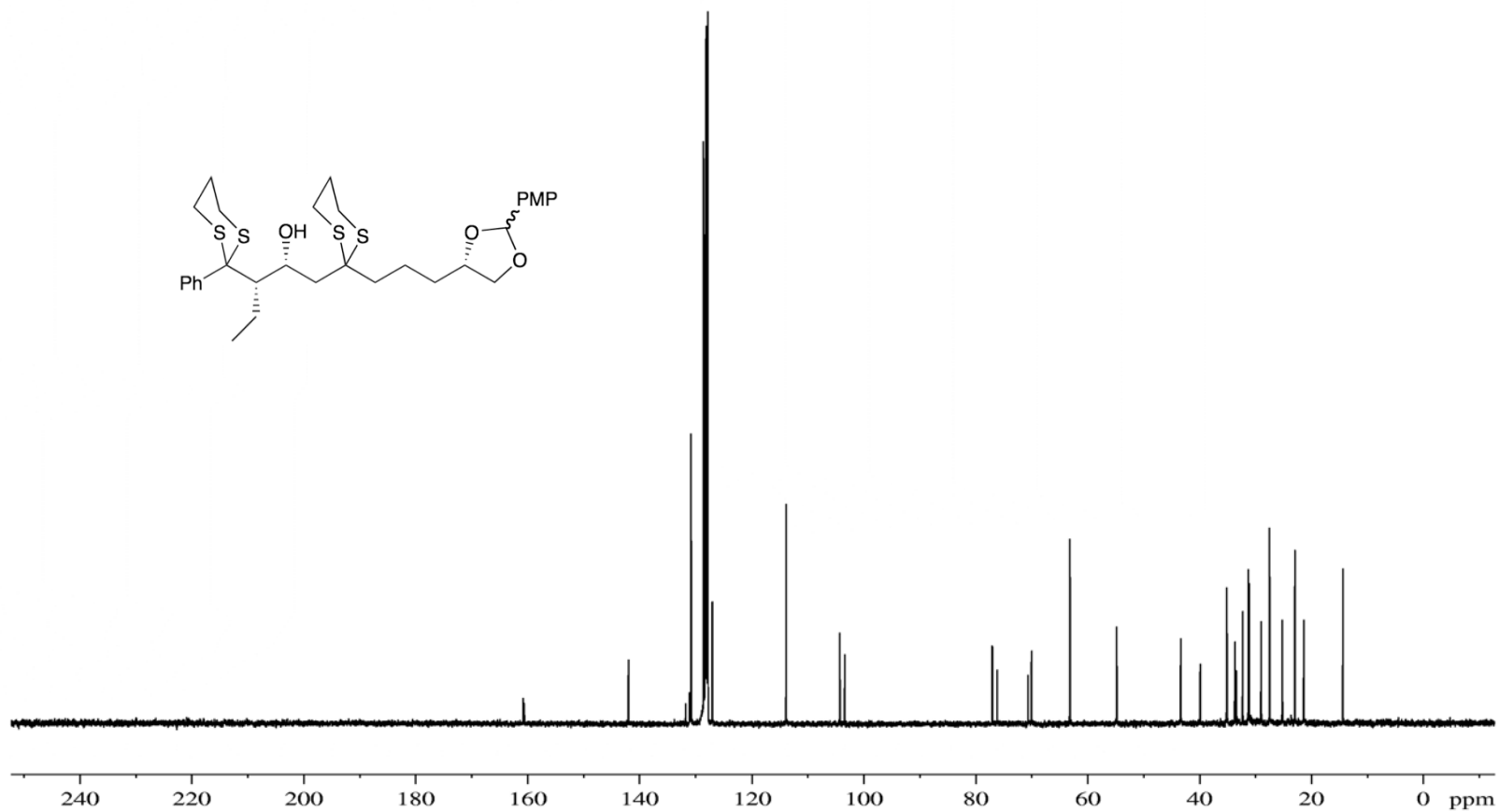


S143



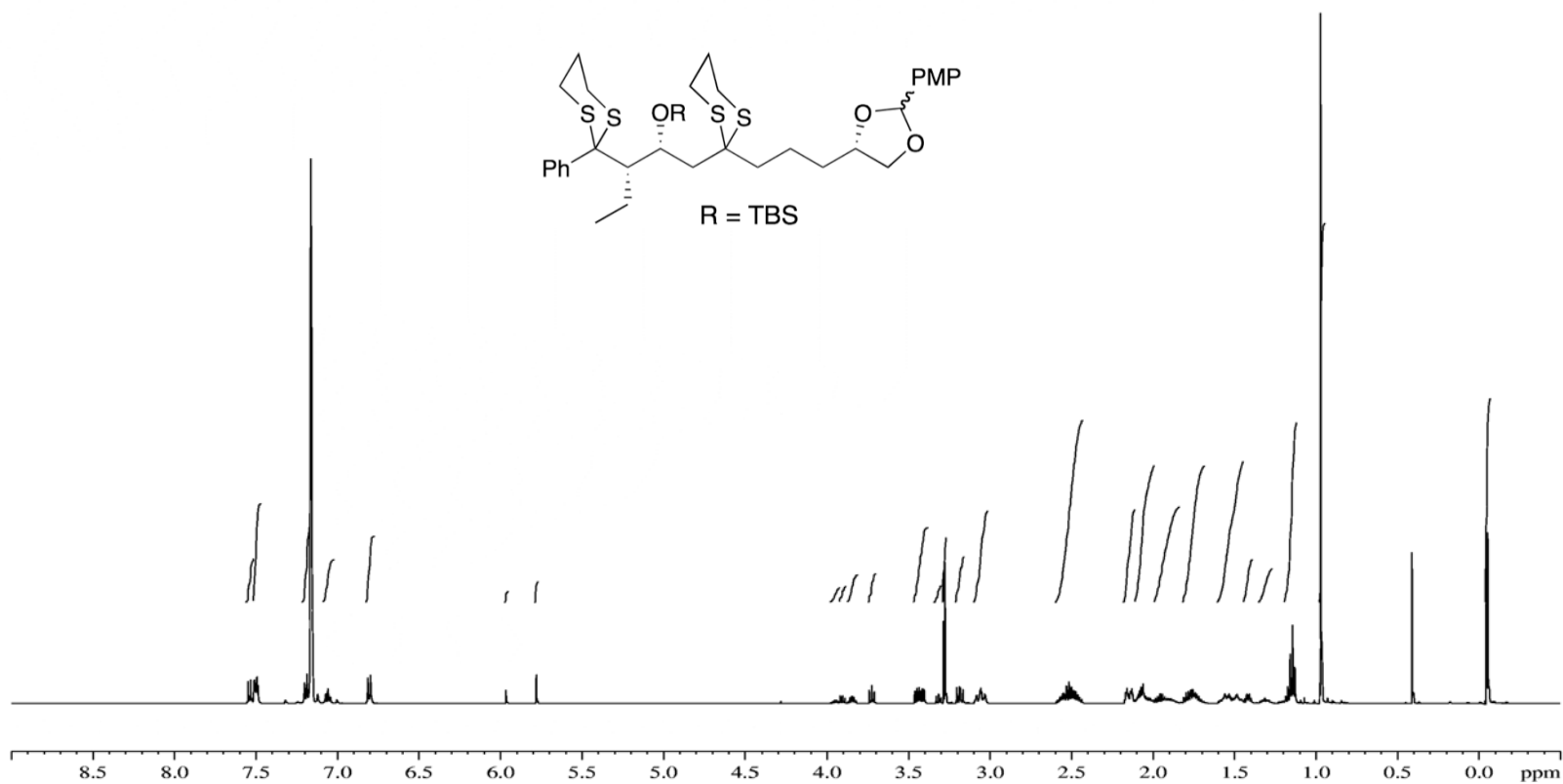
The <sup>1</sup>H NMR Spectrum of Compound **31** in C<sub>6</sub>D<sub>6</sub>

S144



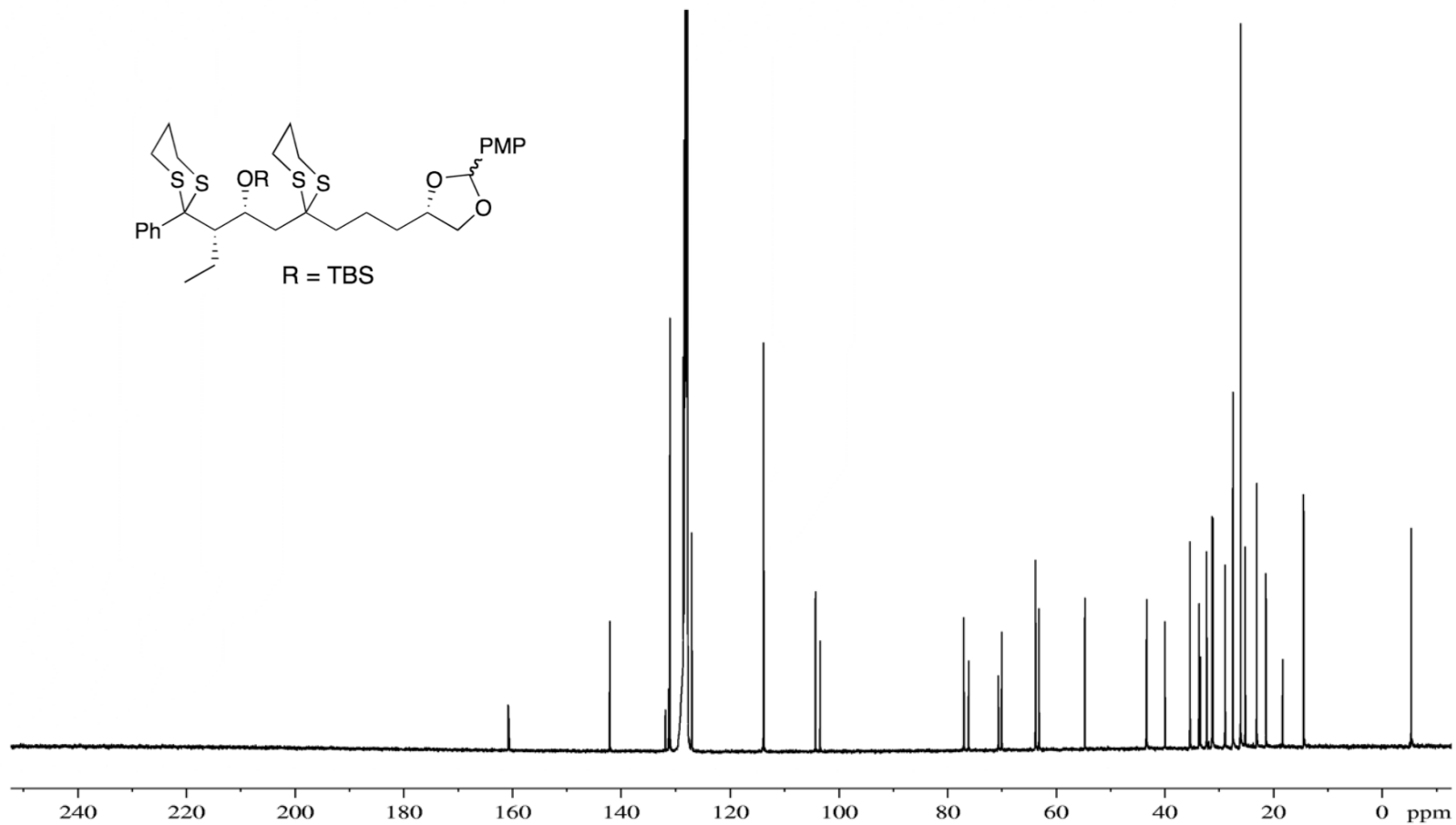
The  $^{13}\text{C}$  NMR Spectrum of Compound **31** in  $\text{C}_6\text{D}_6$

S145



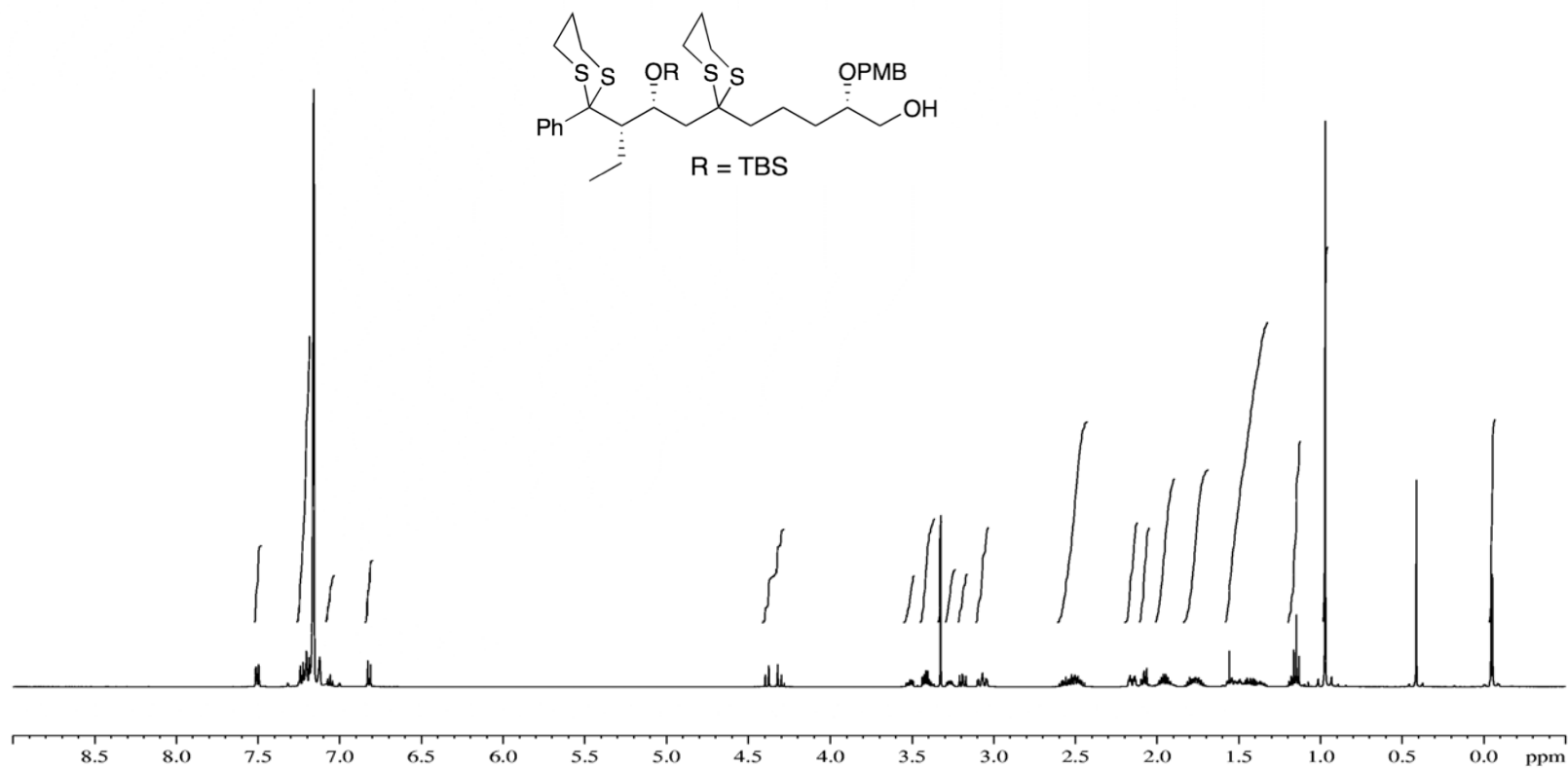
The <sup>1</sup>H NMR Spectrum of Compound **S9** in C<sub>6</sub>D<sub>6</sub>

S146



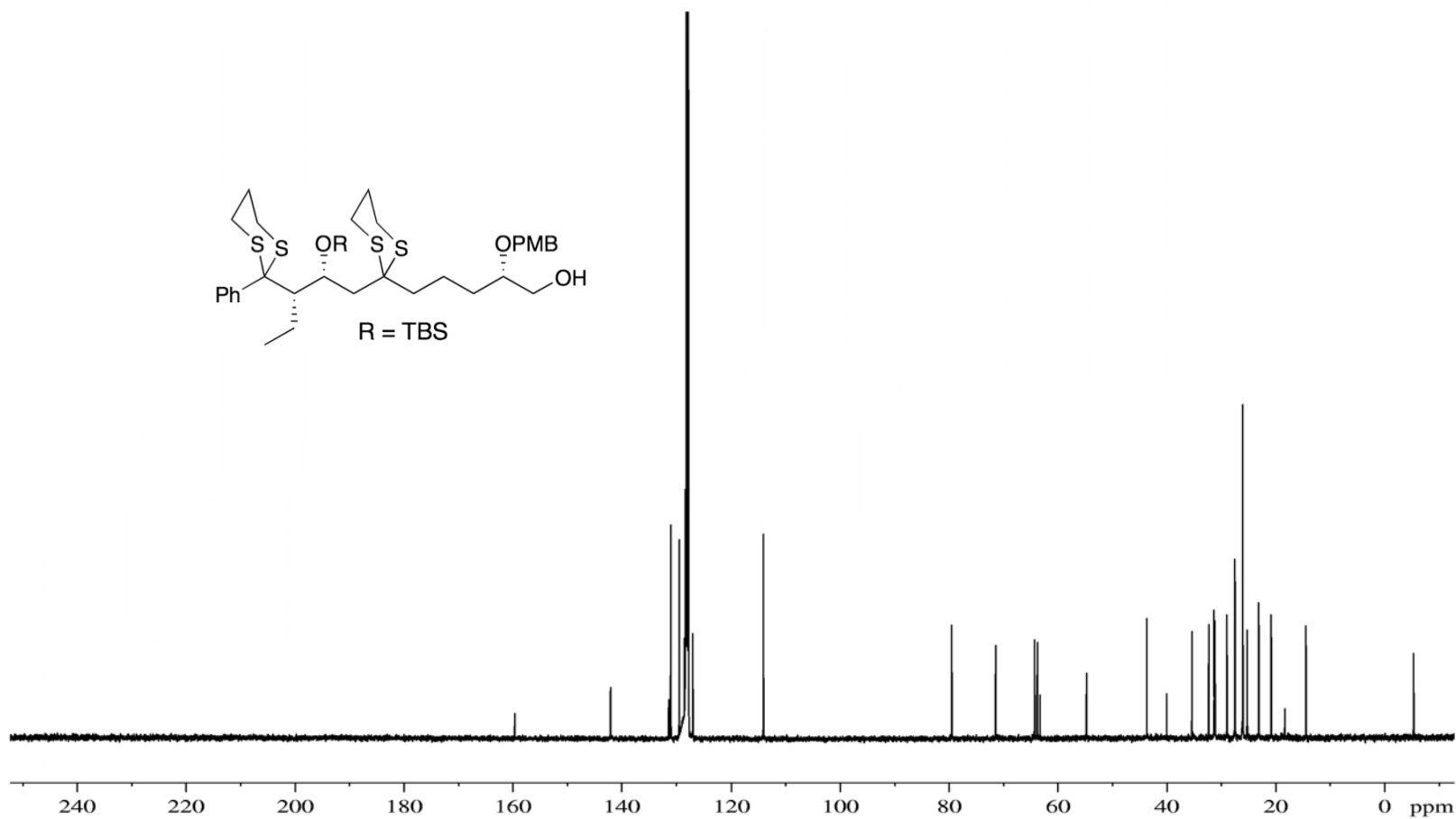
The  $^{13}\text{C}$  NMR Spectrum of Compound **S9** in  $\text{C}_6\text{D}_6$

S147



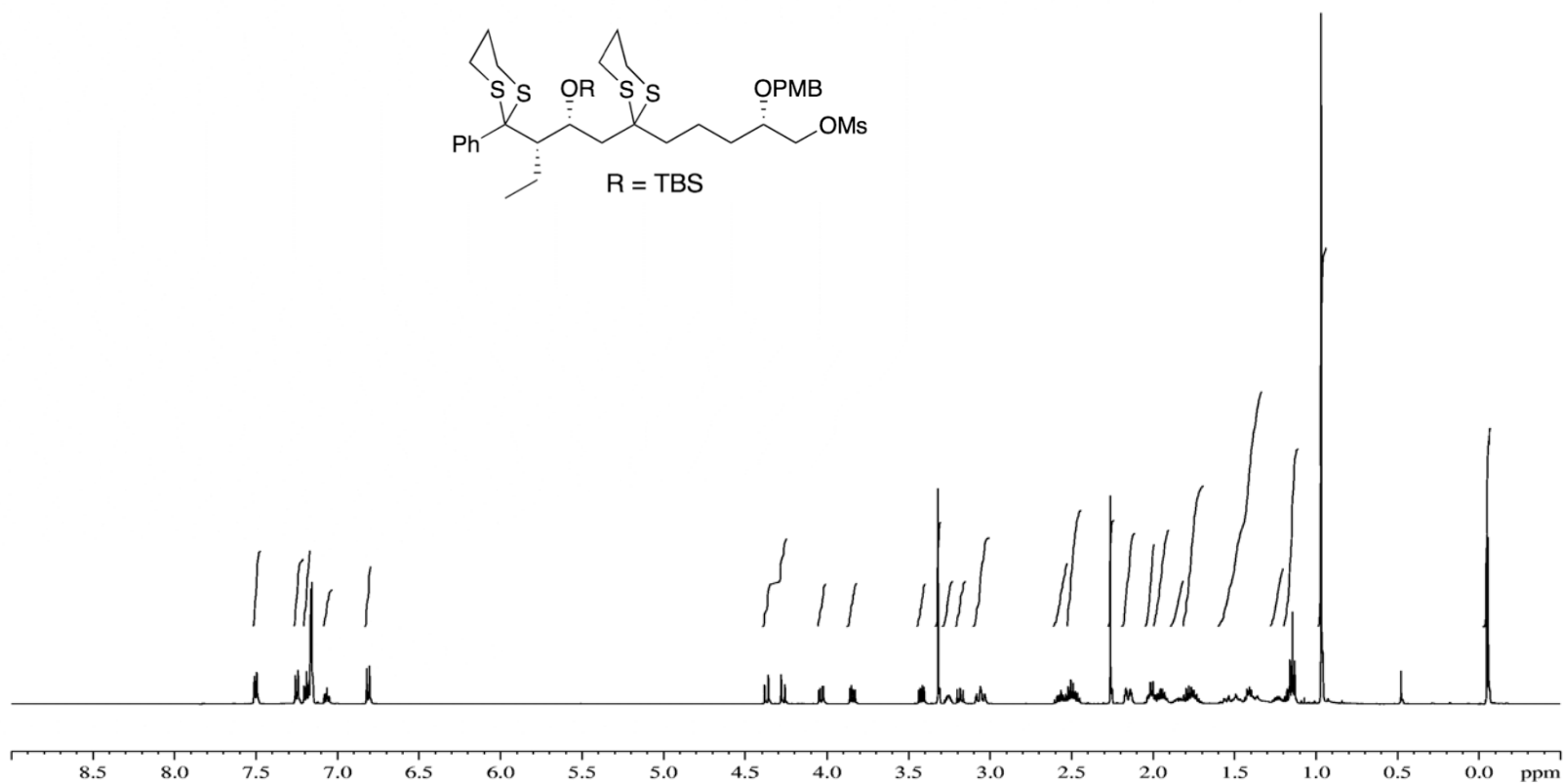
The <sup>1</sup>H NMR Spectrum of Compound (-)-**32** in C<sub>6</sub>D<sub>6</sub>

S148

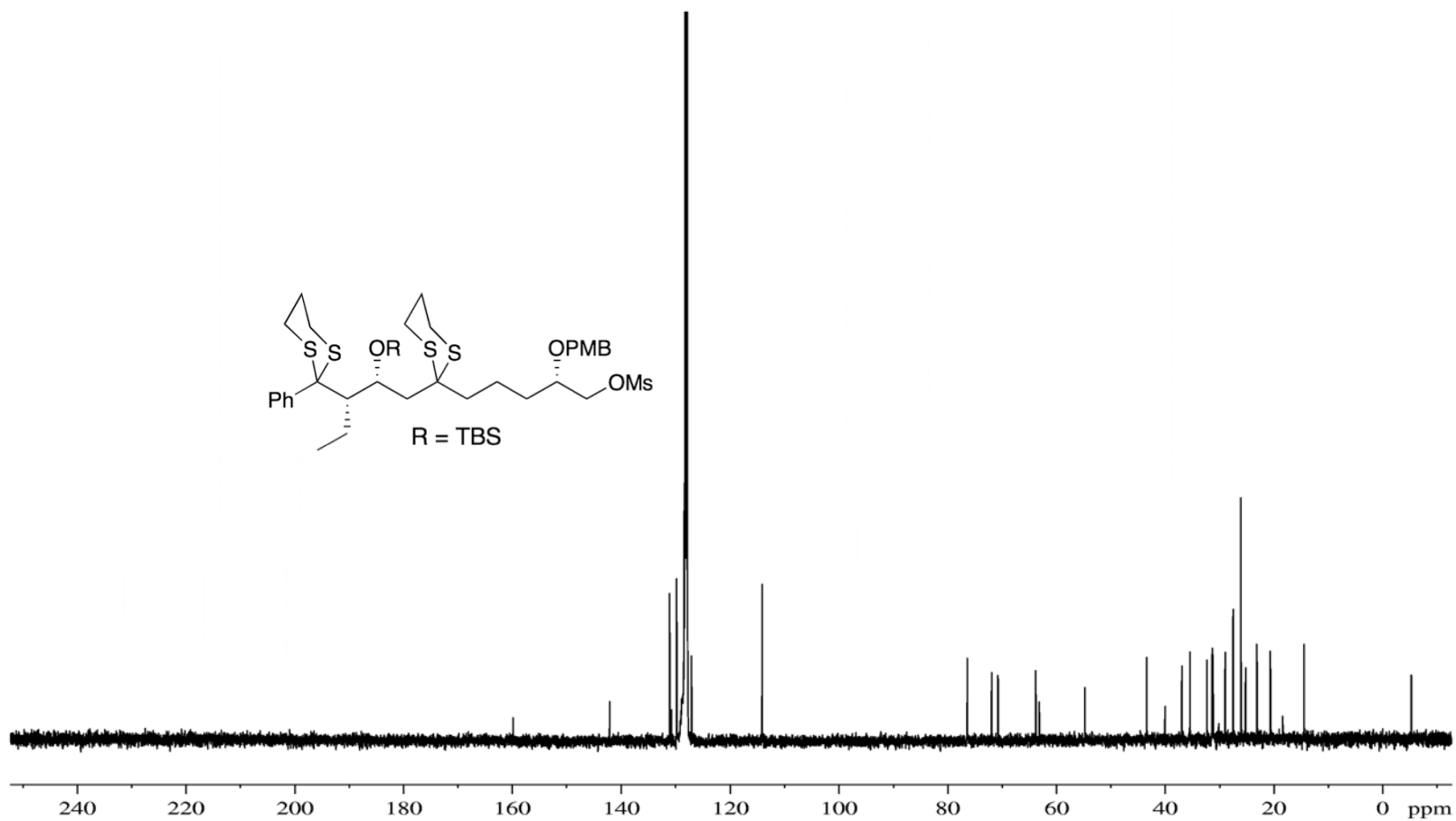


The  $^{13}\text{C}$  NMR Spectrum of Compound (-)-**32** in  $\text{C}_6\text{D}_6$

S149



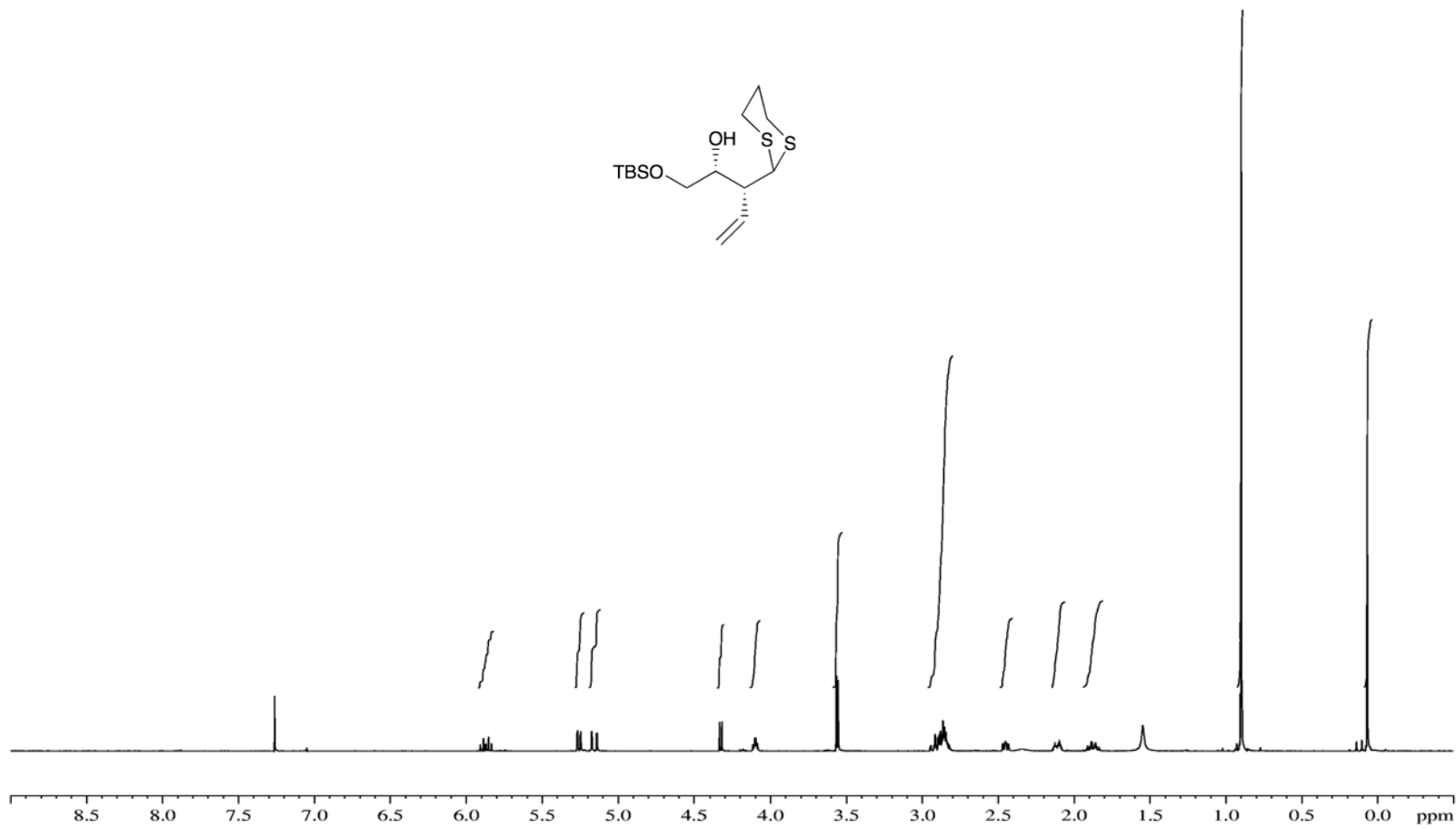
The  $^1\text{H}$  NMR Spectrum of Compound **(-)-S10** in  $\text{C}_6\text{D}_6$



The  $^{13}\text{C}$  NMR Spectrum of Compound (-)-**S10** in  $\text{C}_6\text{D}_6$

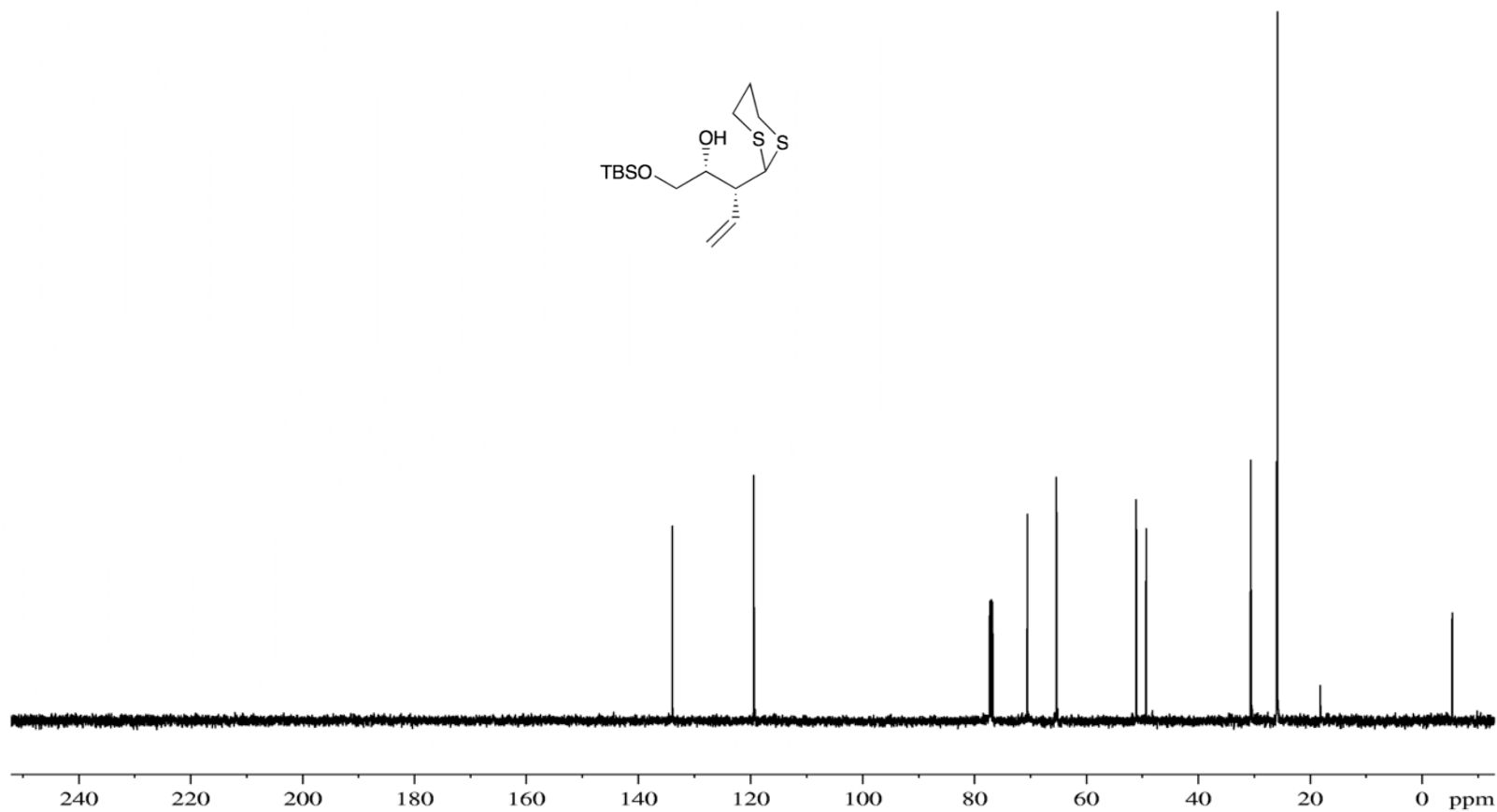


S151



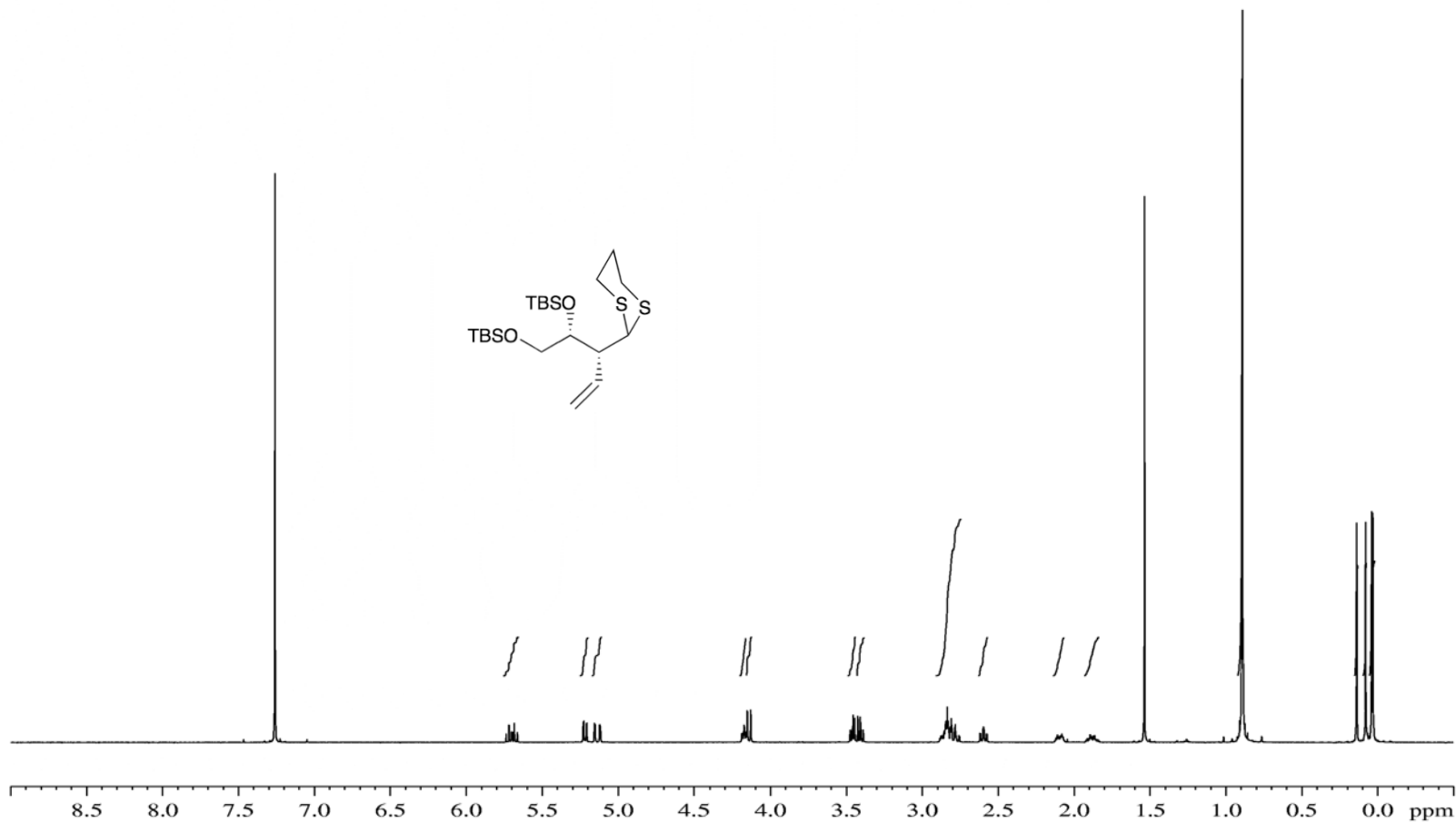
The <sup>1</sup>H NMR Spectrum of Compound mono-protected (-)-**12** in CDCl<sub>3</sub>

S152



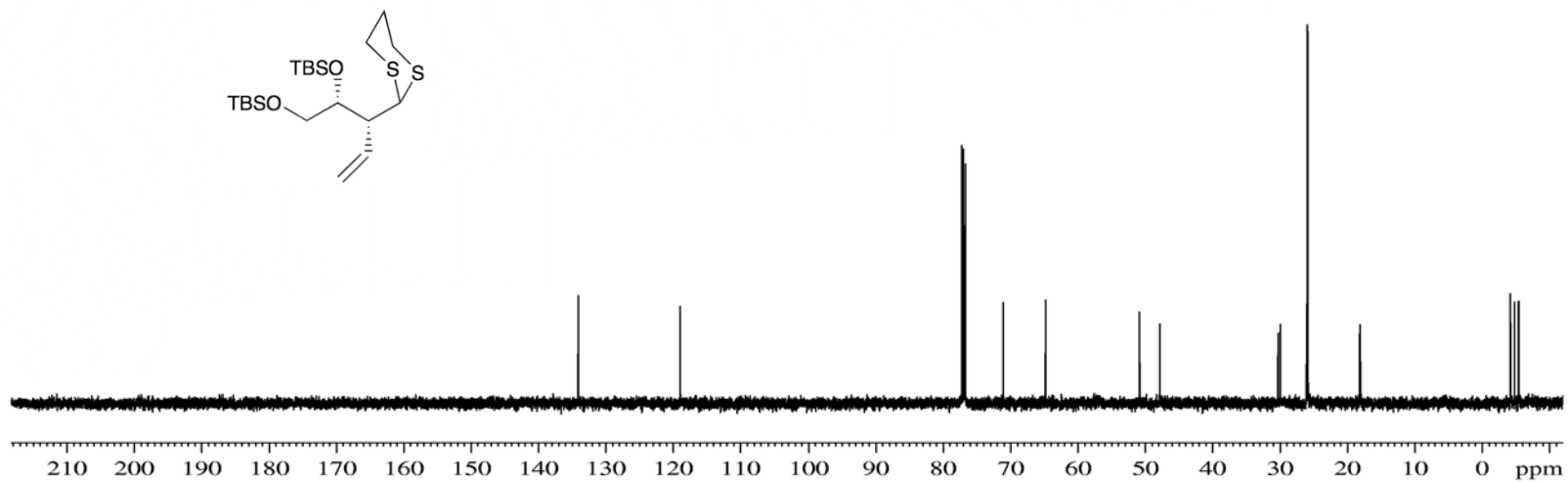
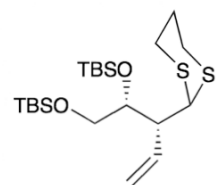
The  $^{13}\text{C}$  NMR Spectrum of Compound mono-protected (-)-12 in  $\text{CDCl}_3$

S153



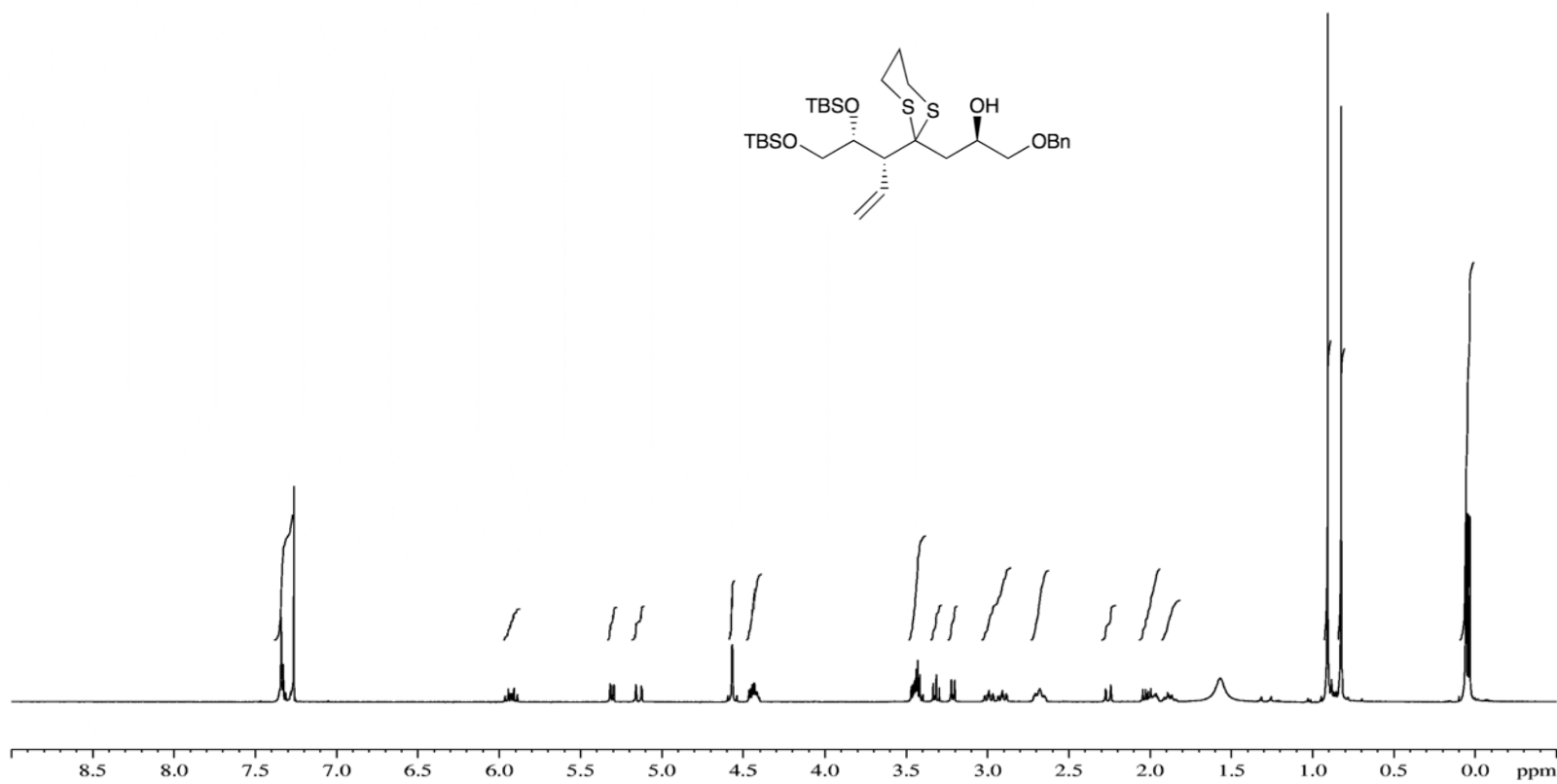
The <sup>1</sup>H NMR Spectrum of Compound (-)-12 in CDCl<sub>3</sub>

S154



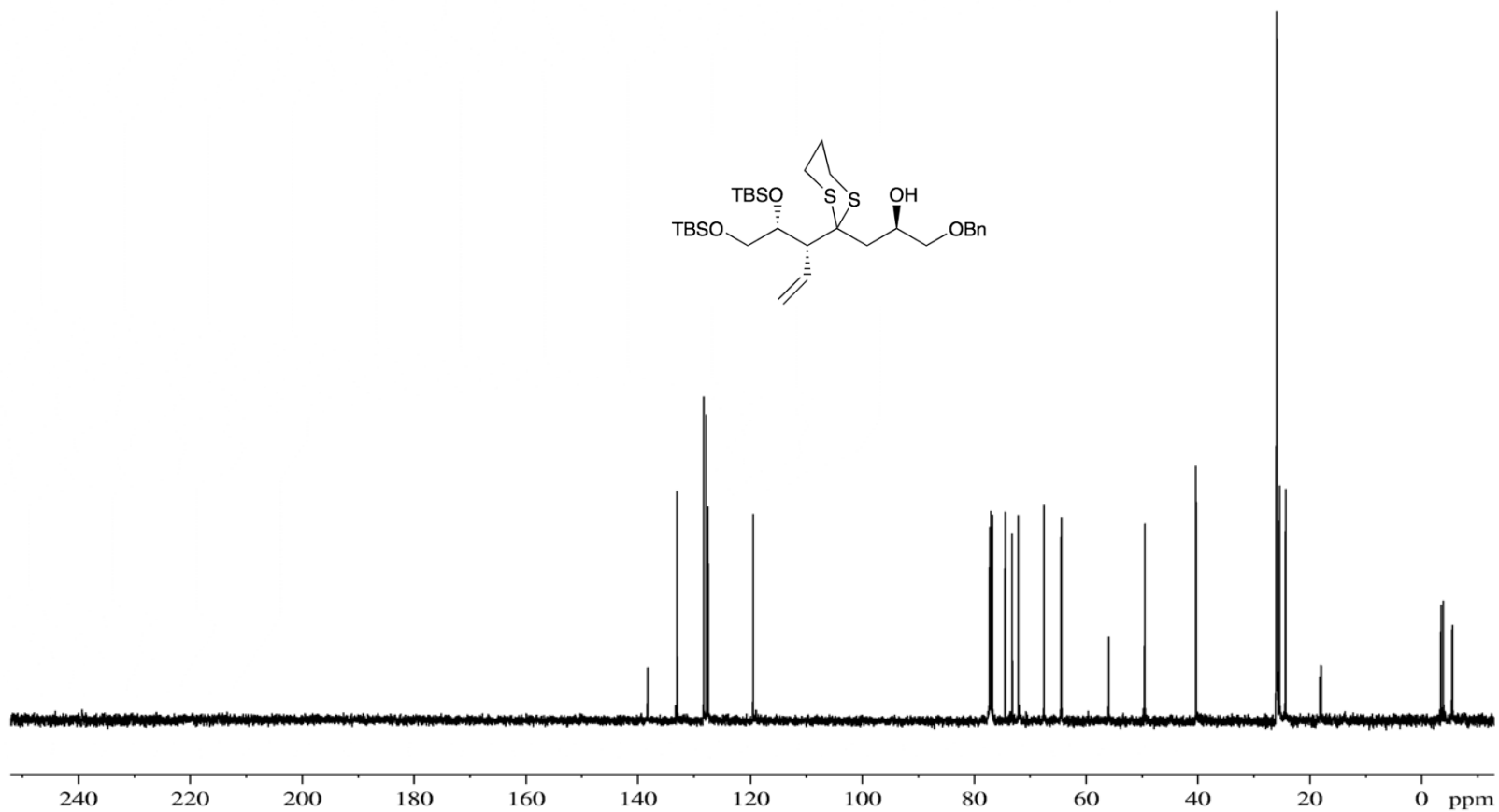
The <sup>13</sup>C NMR Spectrum of Compound (-)-**12** in CDCl<sub>3</sub>

S155



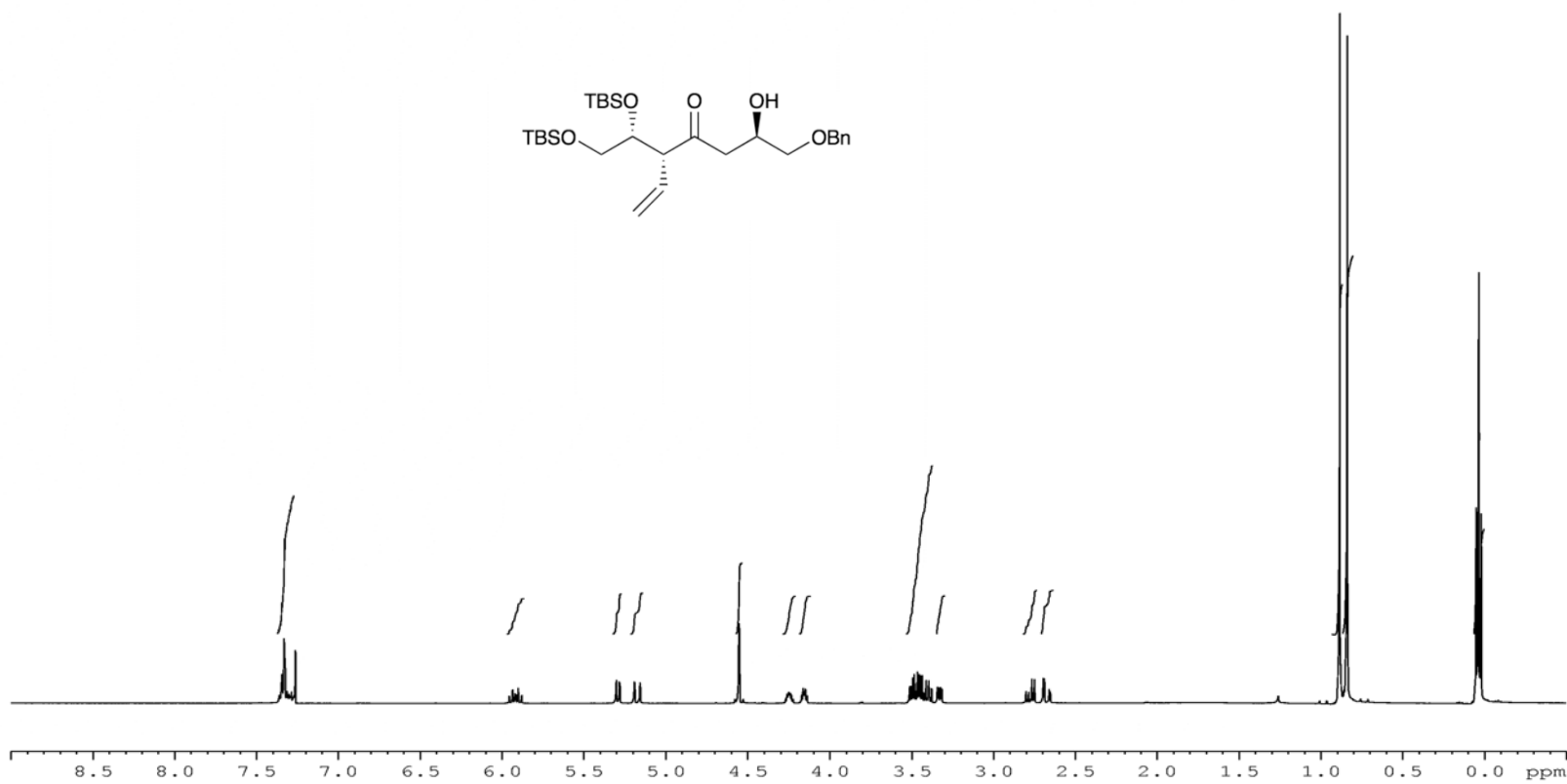
The <sup>1</sup>H NMR Spectrum of Compound (-)-34 in CDCl<sub>3</sub>

S156



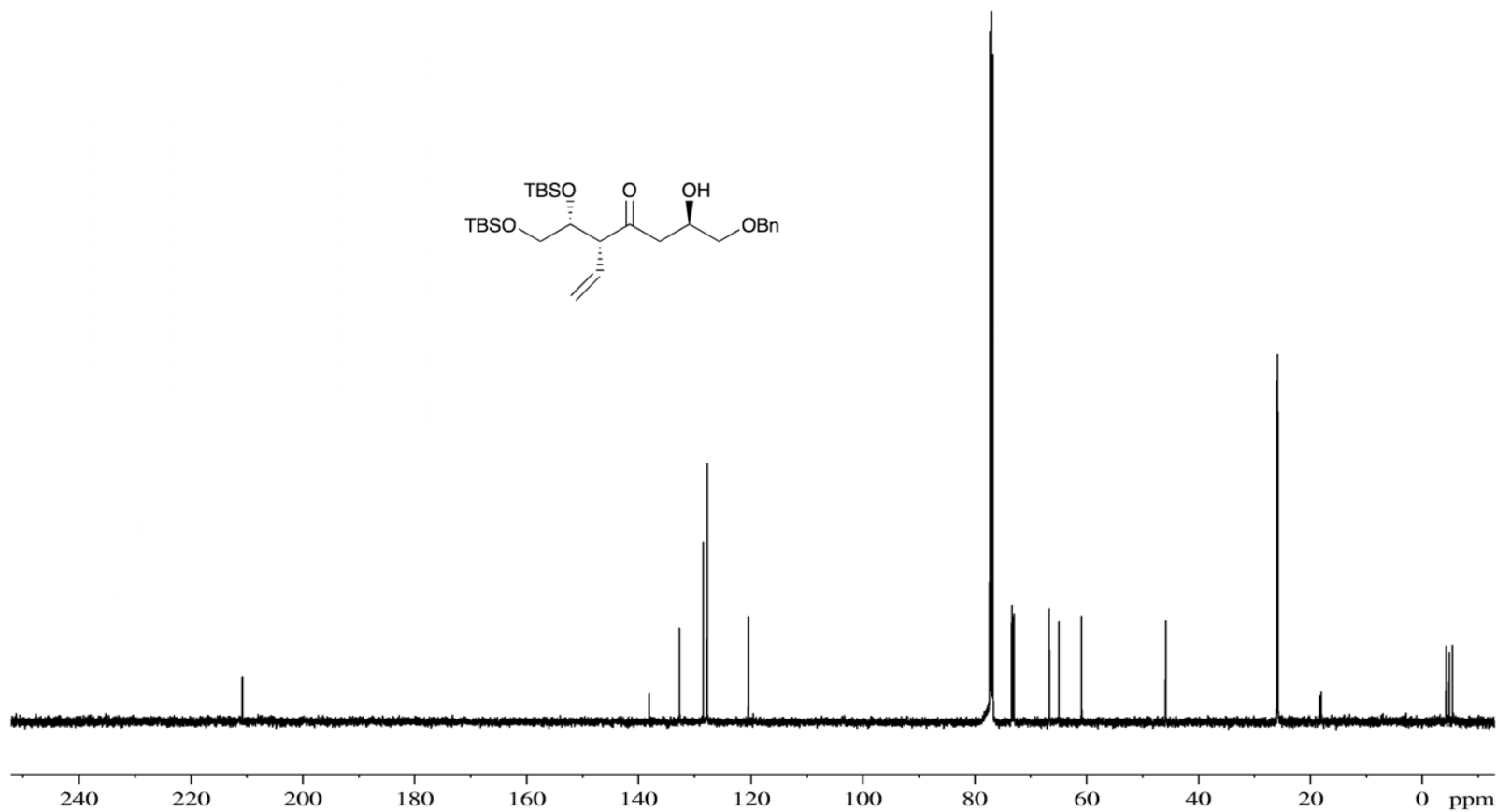
The  $^{13}\text{C}$  NMR Spectrum of Compound (-)-**34** in  $\text{CDCl}_3$

S157



The <sup>1</sup>H NMR Spectrum of Compound (+)-**S11** in CDCl<sub>3</sub>

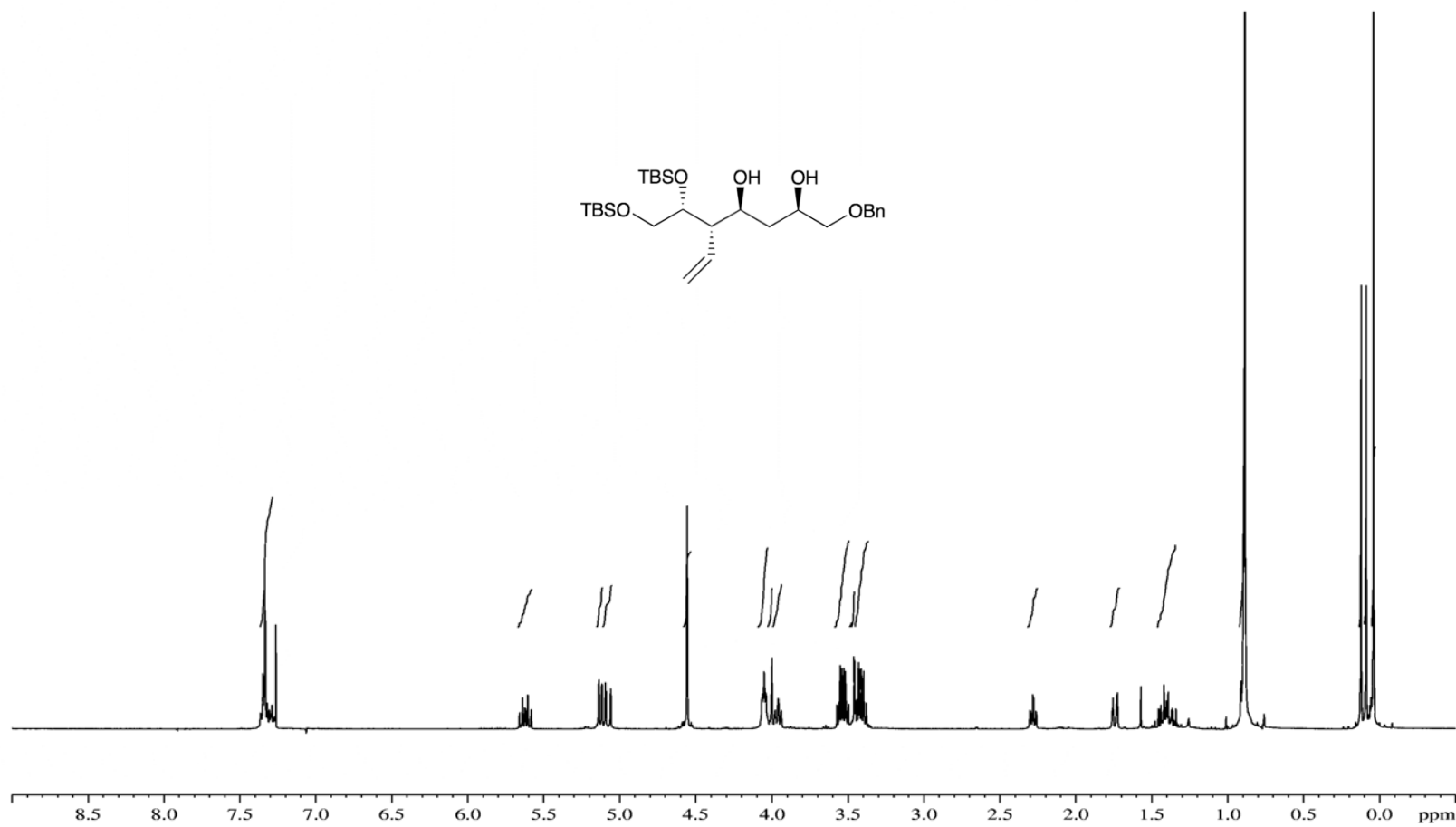
S158



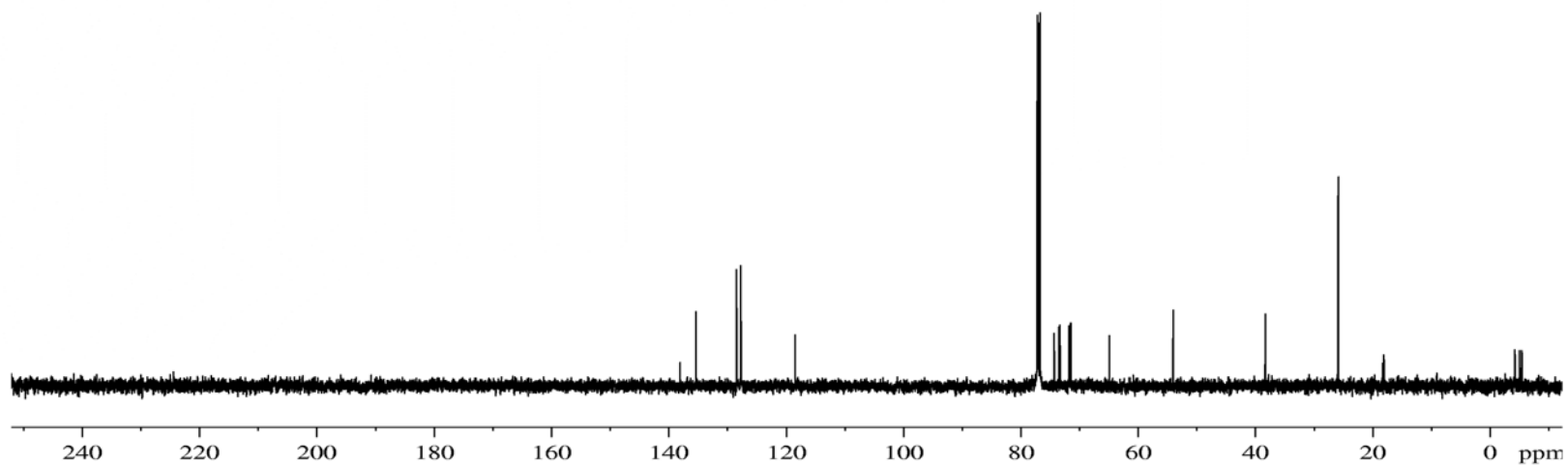
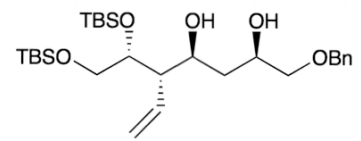
The <sup>13</sup>C NMR Spectrum of Compound (+)-**S11** in CDCl<sub>3</sub>



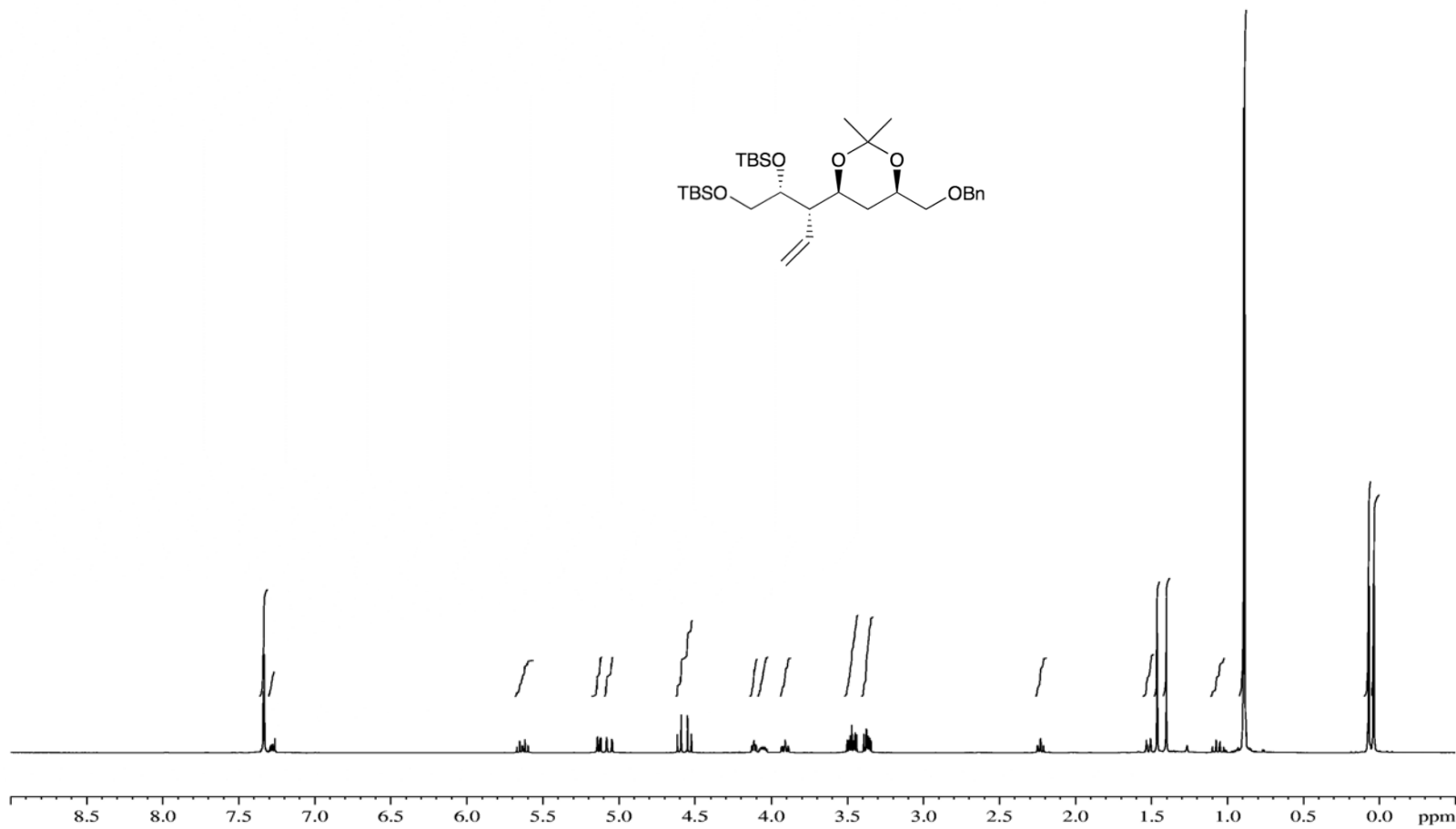
S159



The <sup>1</sup>H NMR Spectrum of Compound (+)-35 in CDCl<sub>3</sub>

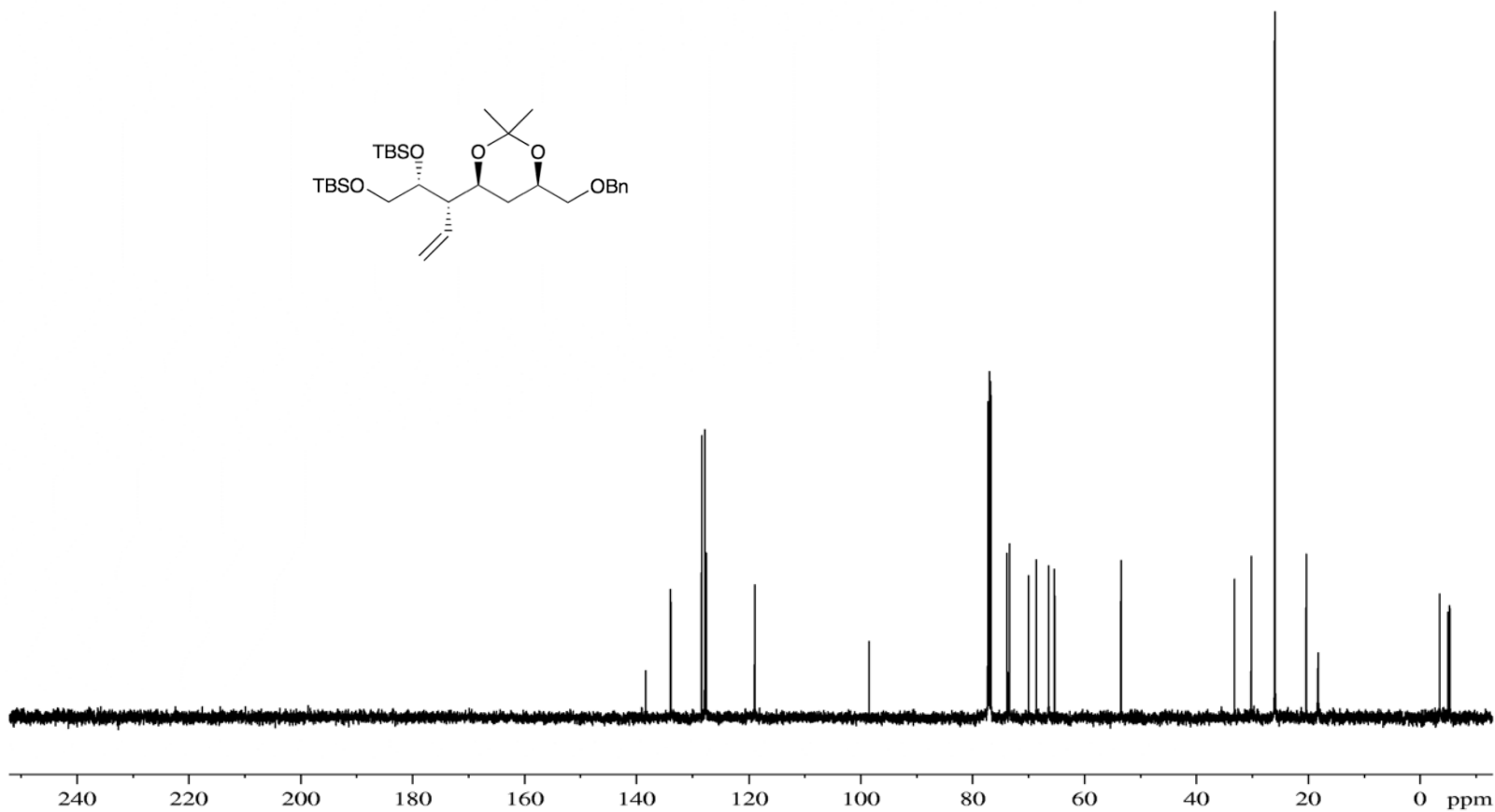
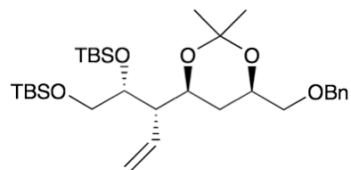


The  $^{13}\text{C}$  NMR Spectrum of Compound (+)-**35** in  $\text{CDCl}_3$



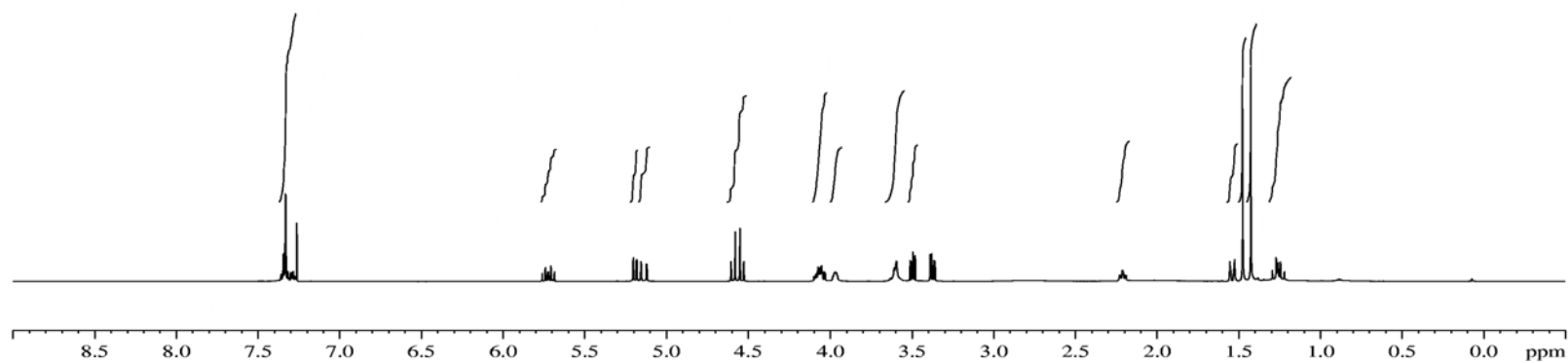
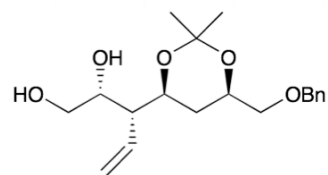
The <sup>1</sup>H NMR Spectrum of Compound (+)-**36** in CDCl<sub>3</sub>

S162



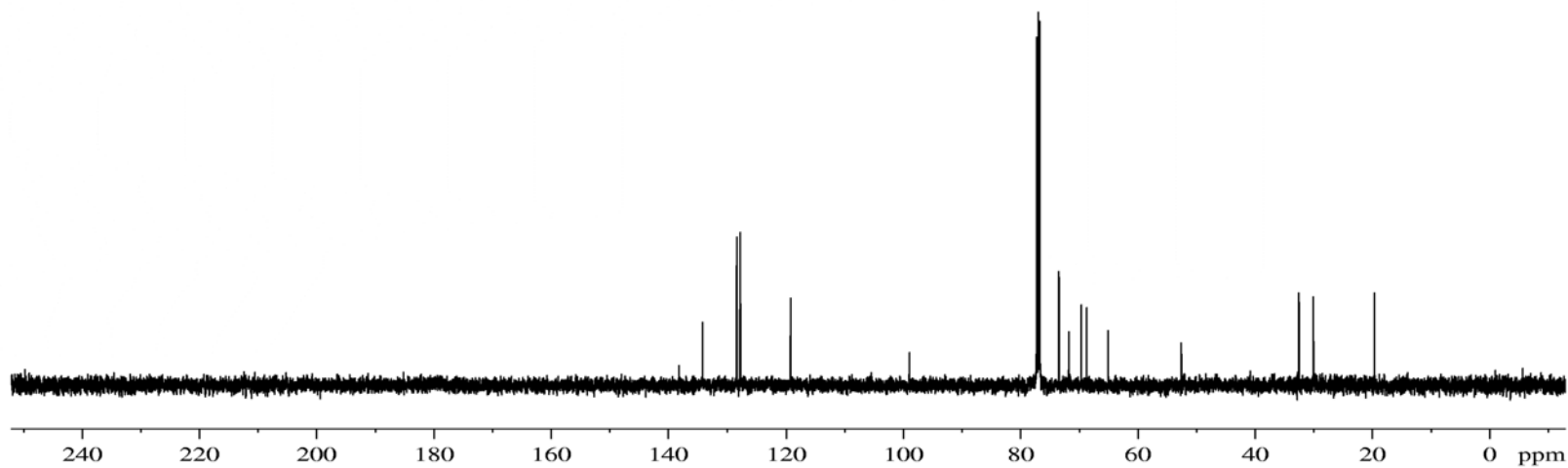
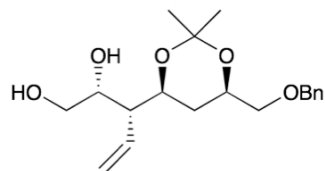
The <sup>13</sup>C NMR Spectrum of Compound (+)-**36** in CDCl<sub>3</sub>

S163



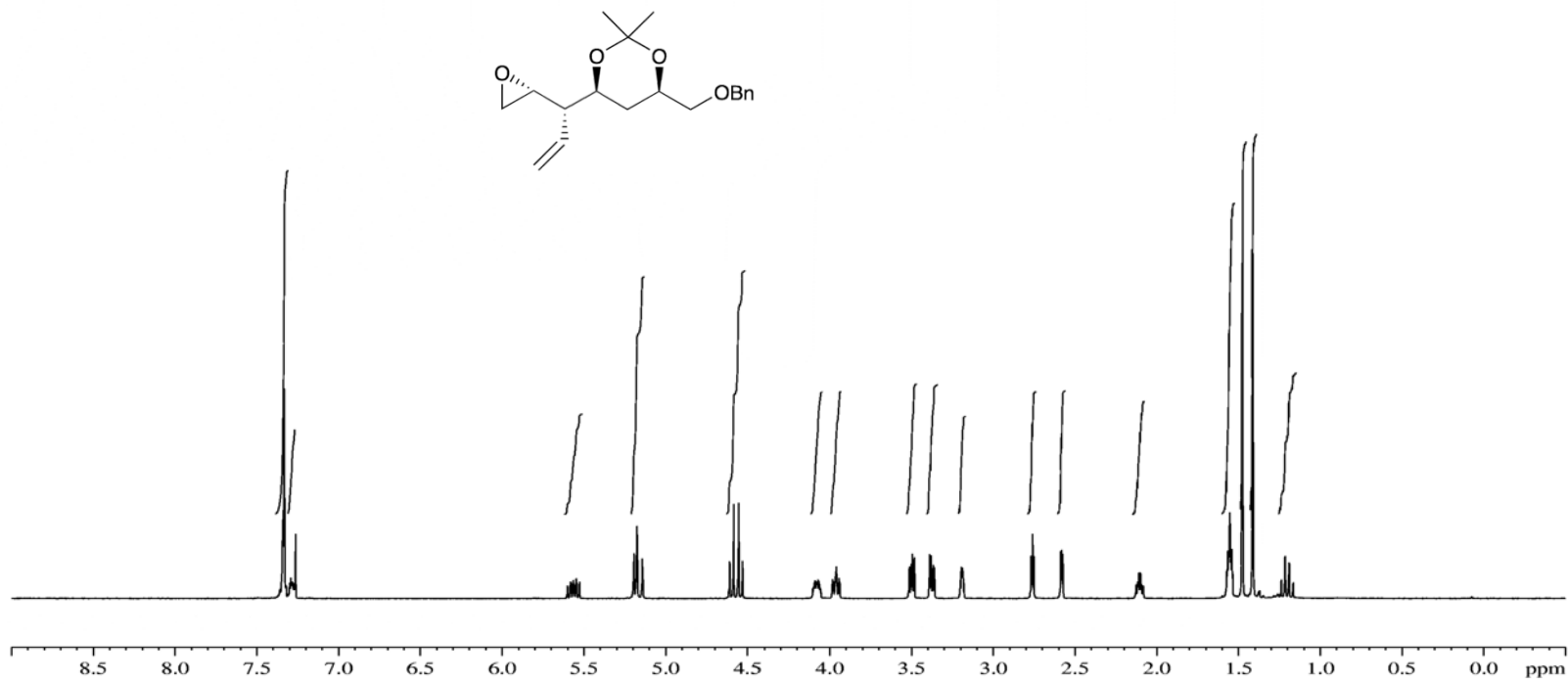
The <sup>1</sup>H NMR Spectrum of Compound (+)-**S12** in CDCl<sub>3</sub>

S164



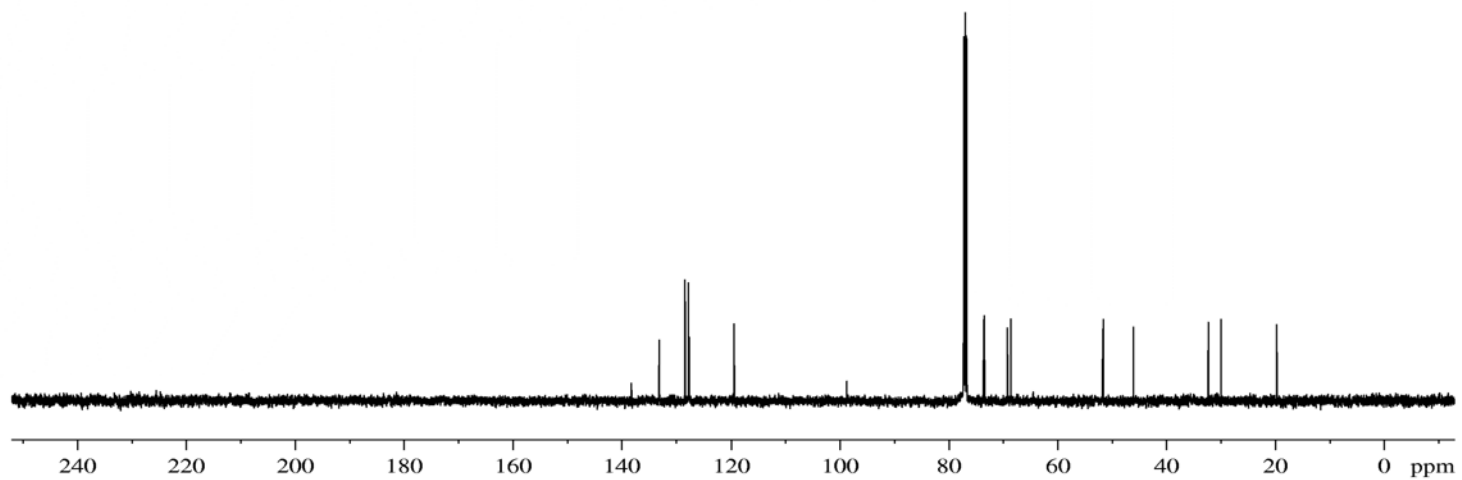
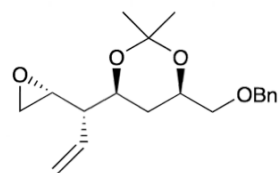
The <sup>13</sup>C NMR Spectrum of Compound (+)-**S12** in CDCl<sub>3</sub>

S165



The <sup>1</sup>H NMR Spectrum of Compound (+)-9 in CDCl<sub>3</sub>

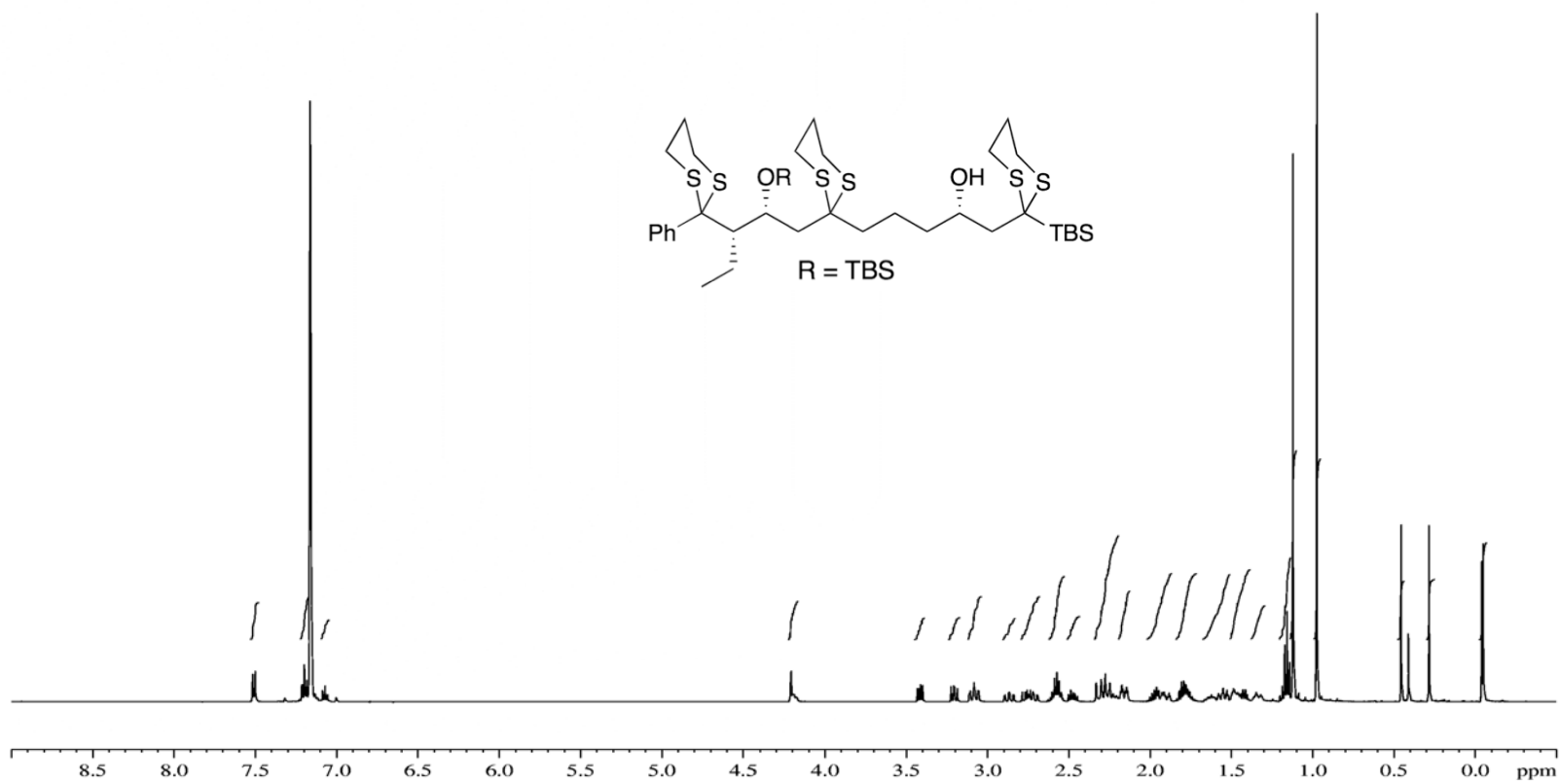
S166



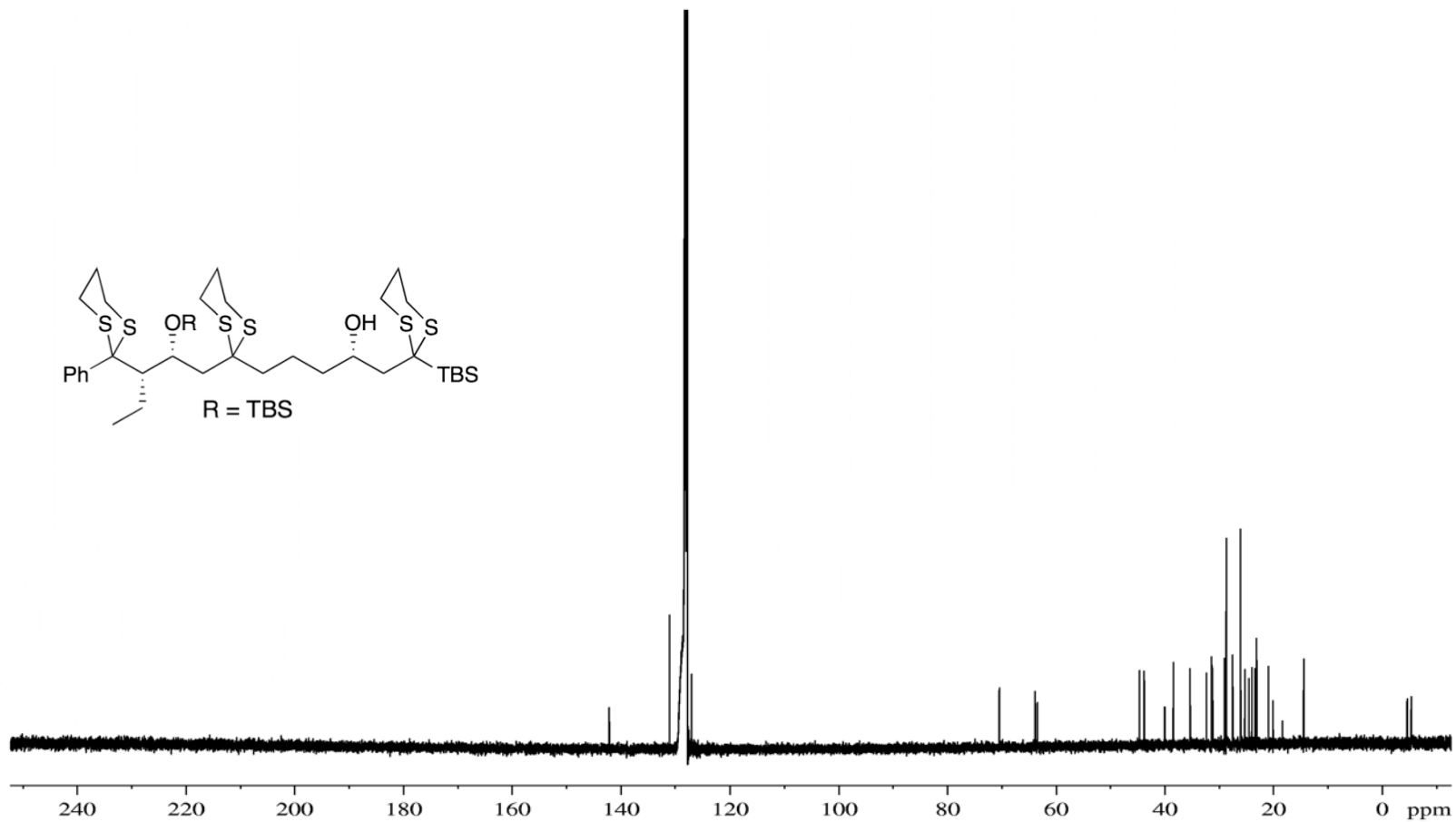
The <sup>13</sup>C NMR Spectrum of Compound (+)-**9** in CDCl<sub>3</sub>



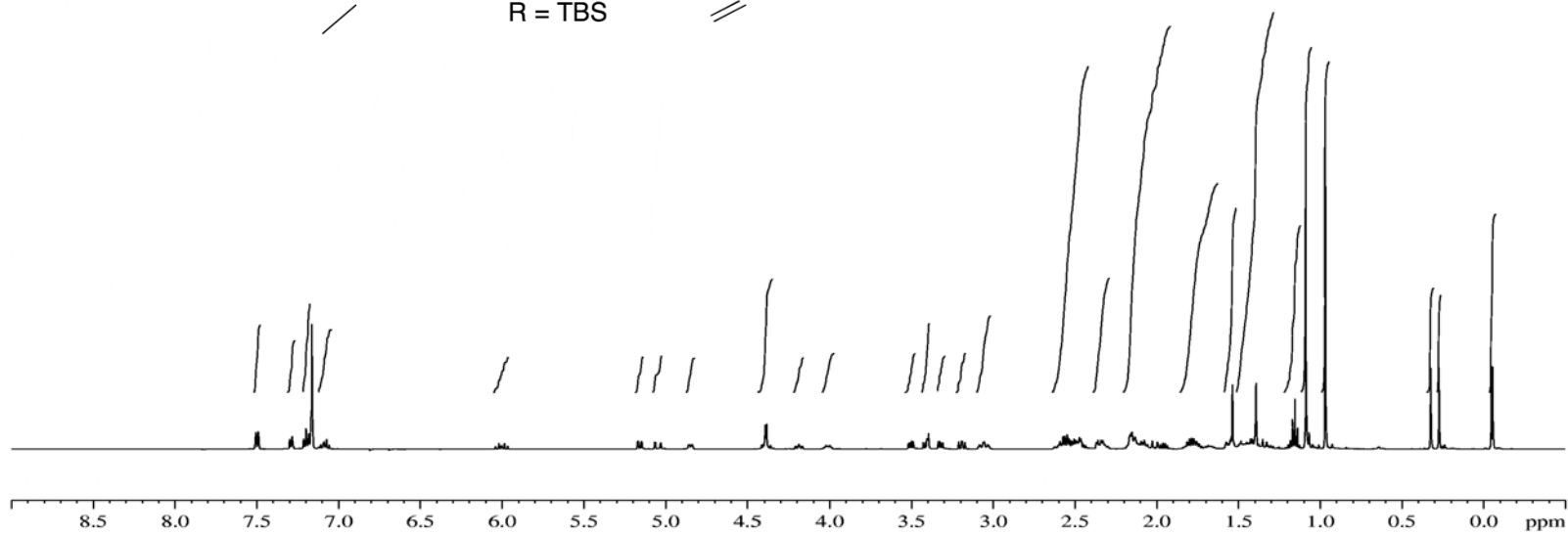
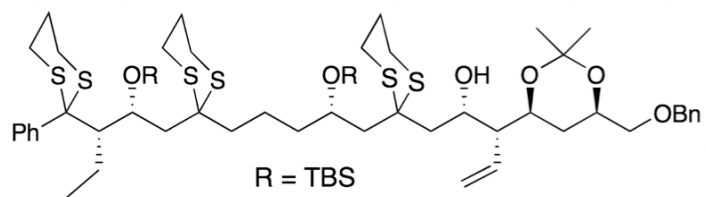
S167



The  $^1\text{H}$  NMR Spectrum of Compound (-)-**37** in  $\text{C}_6\text{D}_6$

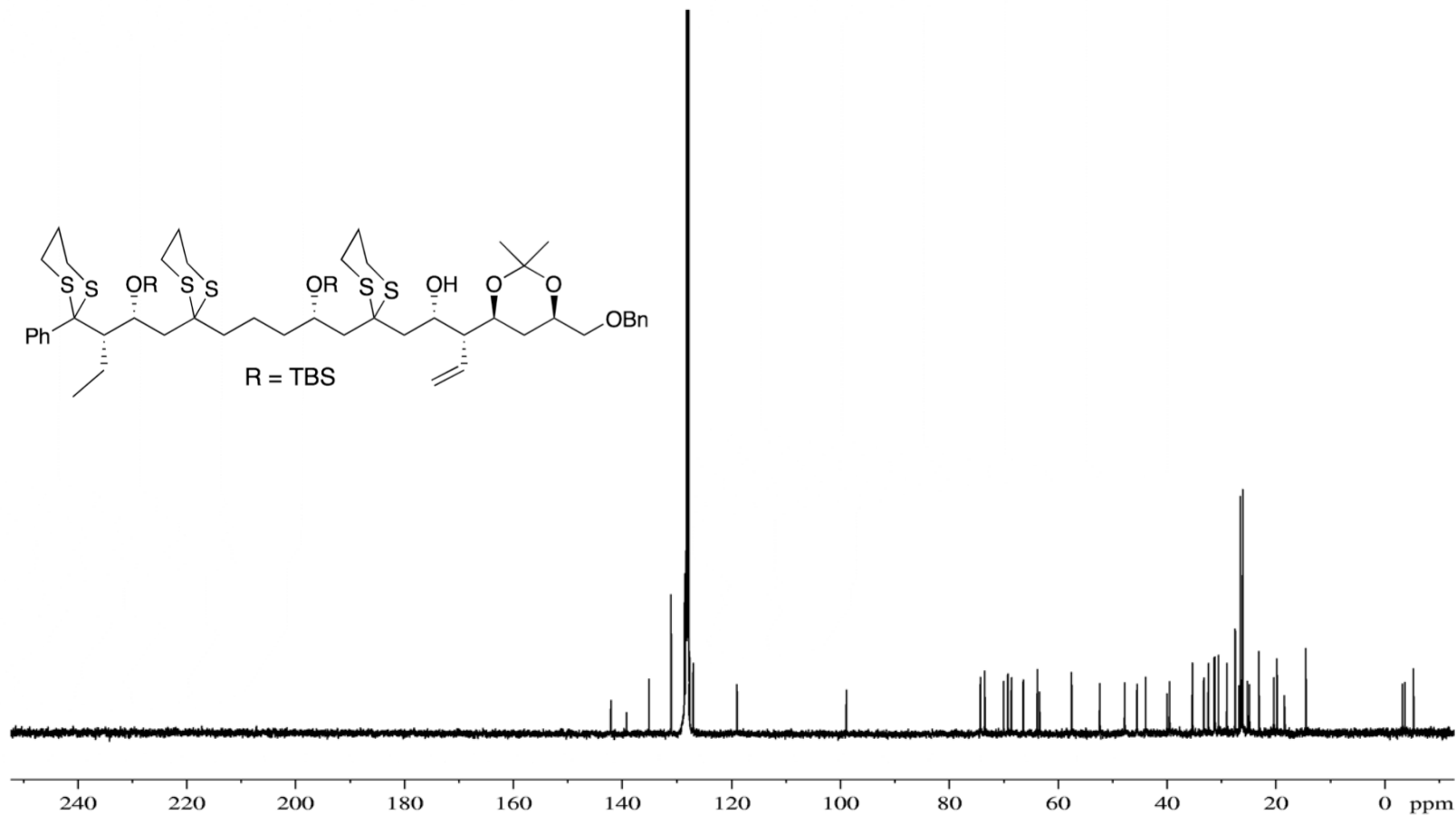
The  $^{13}\text{C}$  NMR Spectrum of Compound (-)-**37** in  $\text{C}_6\text{D}_6$

S169



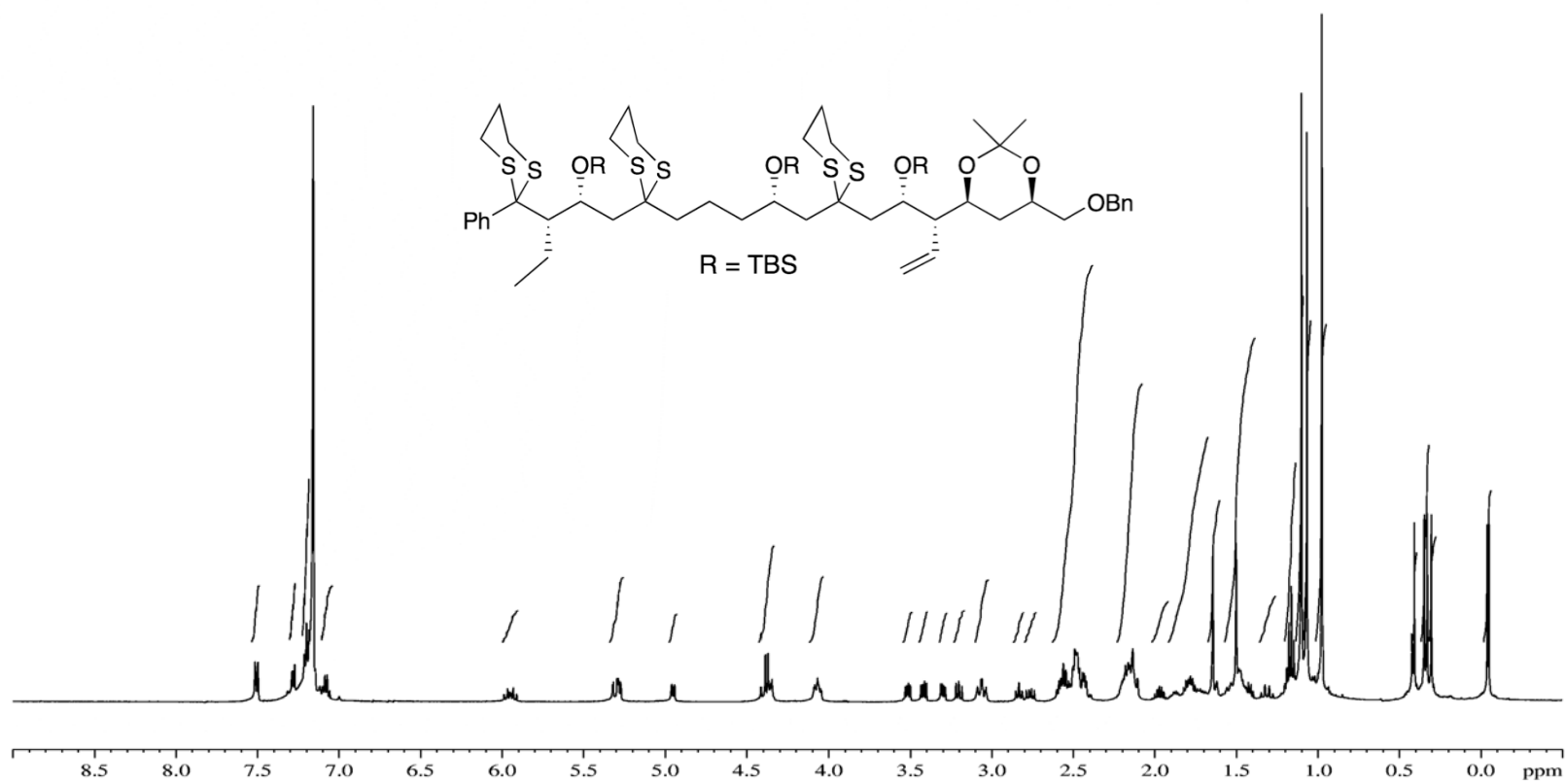
The <sup>1</sup>H NMR Spectrum of Compound (-)-40 in C<sub>6</sub>D<sub>6</sub>

S170



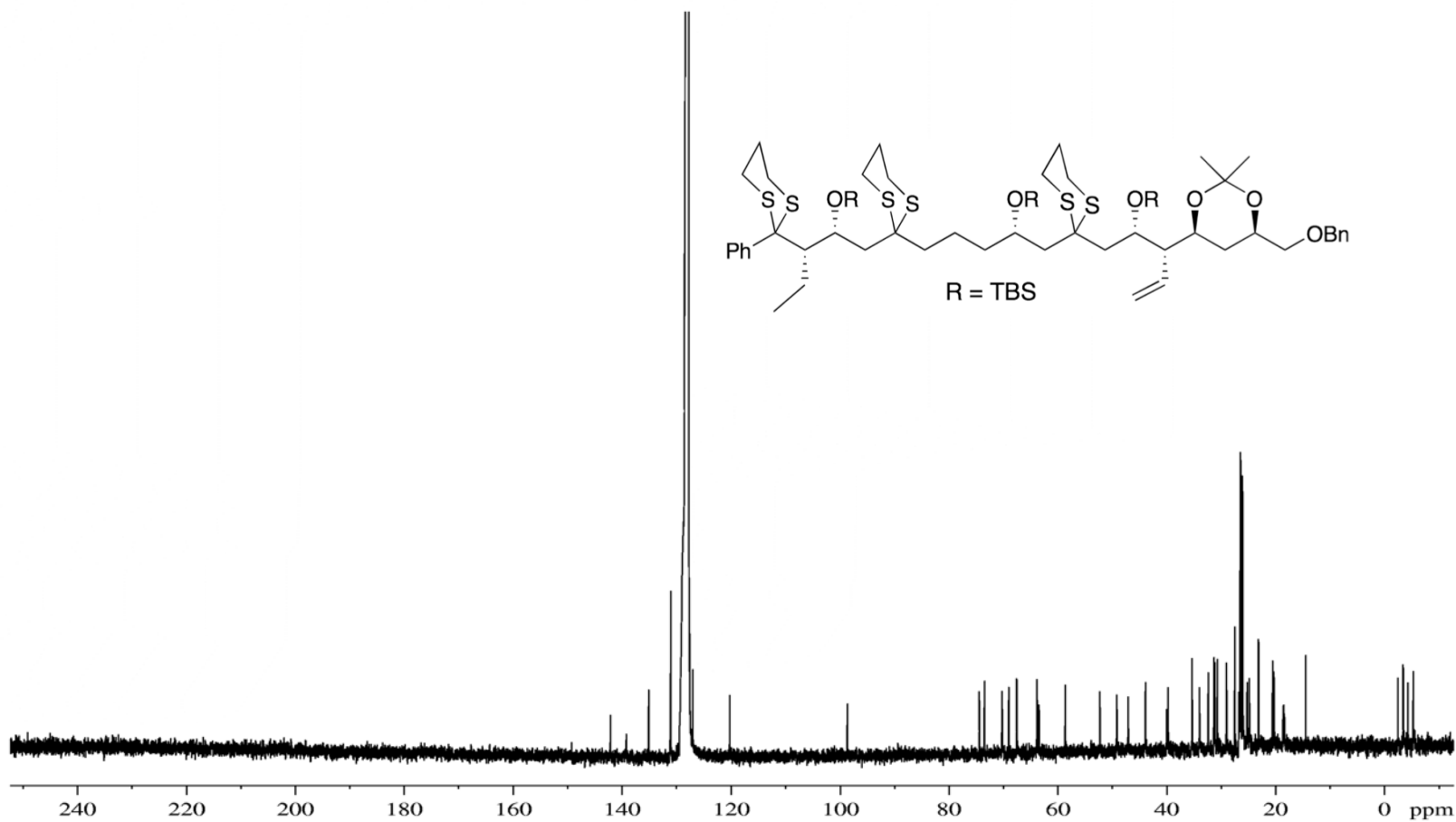
The  $^{13}\text{C}$  NMR Spectrum of Compound (-)-40 in  $\text{C}_6\text{D}_6$

S171



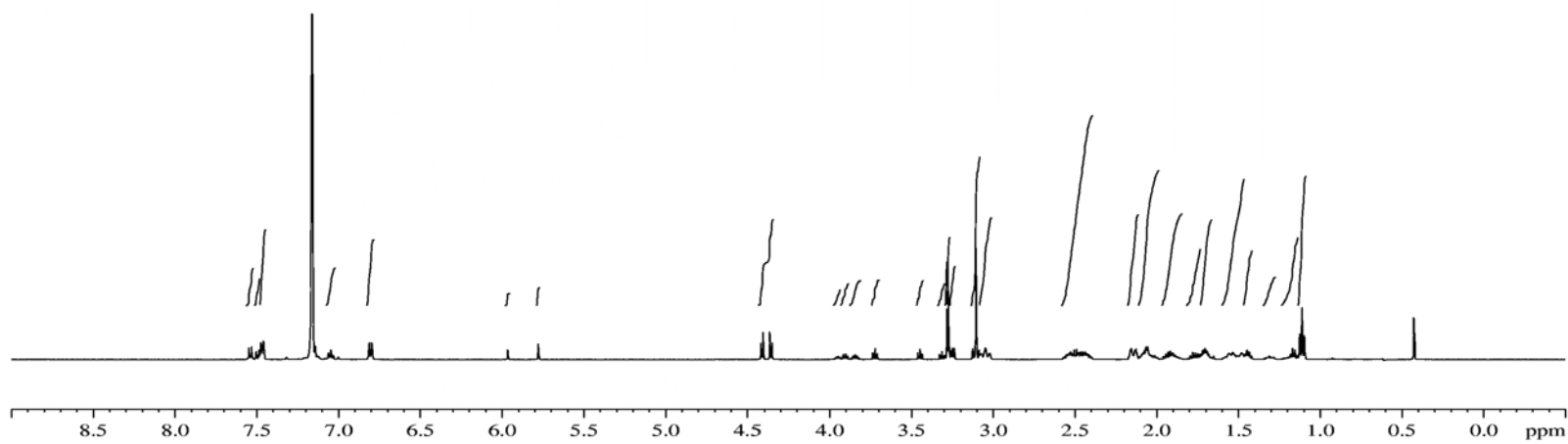
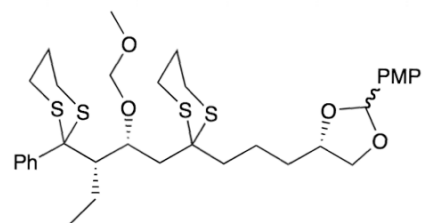
The  $^1\text{H}$  NMR Spectrum of Compound (+)-6 in  $\text{C}_6\text{D}_6$

S172



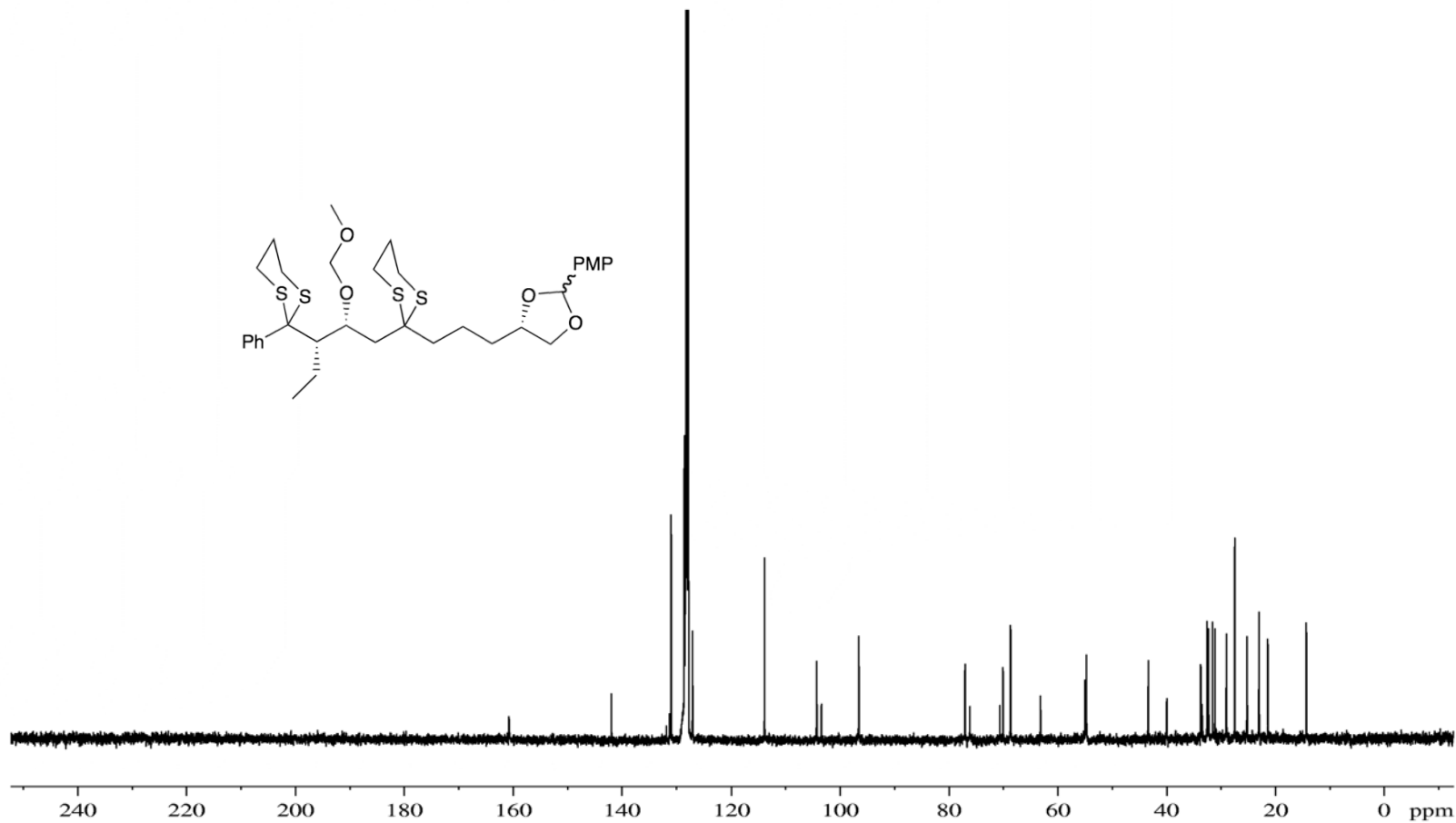
The  $^{13}\text{C}$  NMR Spectrum of Compound (+)-6 in  $\text{C}_6\text{D}_6$

S173



The <sup>1</sup>H NMR Spectrum of Compound **S13** in C<sub>6</sub>D<sub>6</sub>

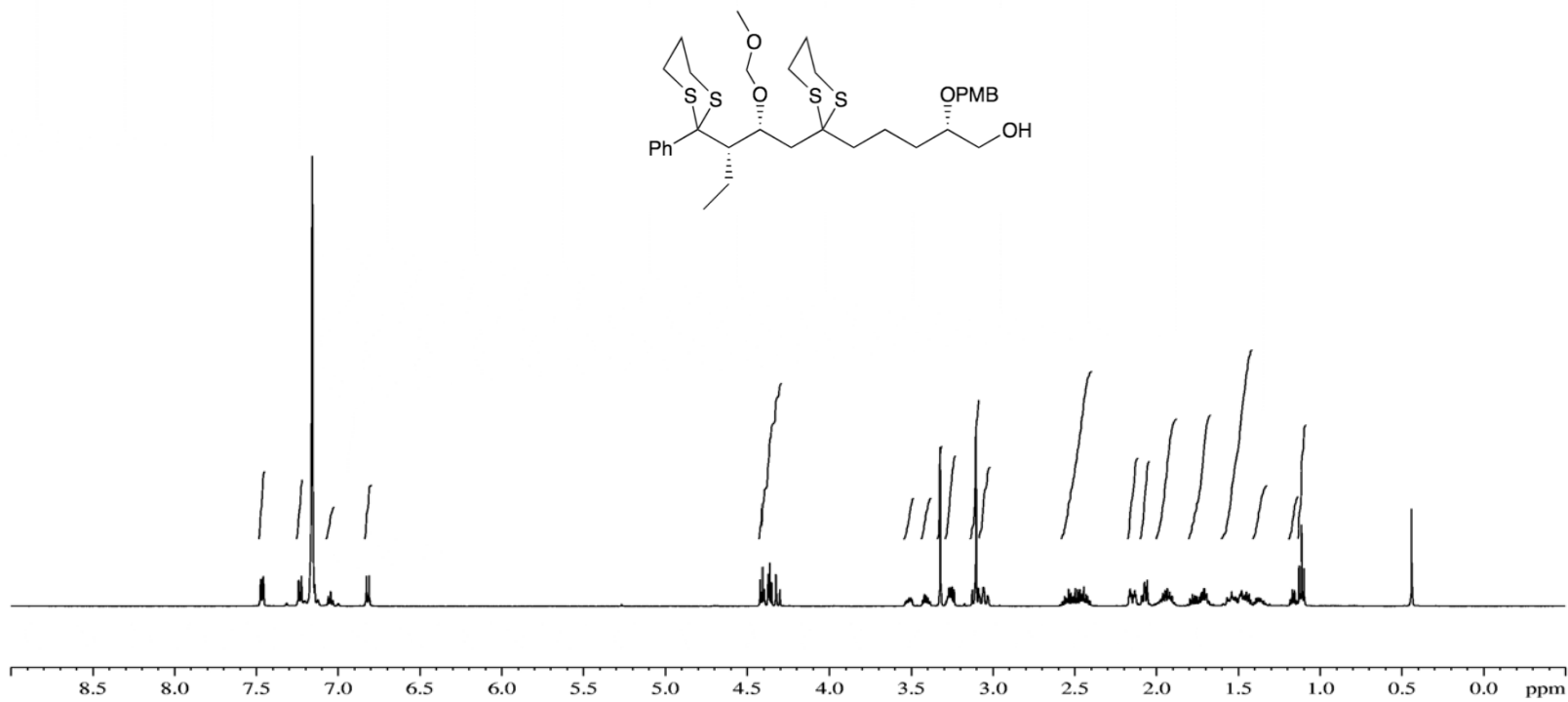
S174



The  $^{13}\text{C}$  NMR Spectrum of Compound **S13** in  $\text{C}_6\text{D}_6$

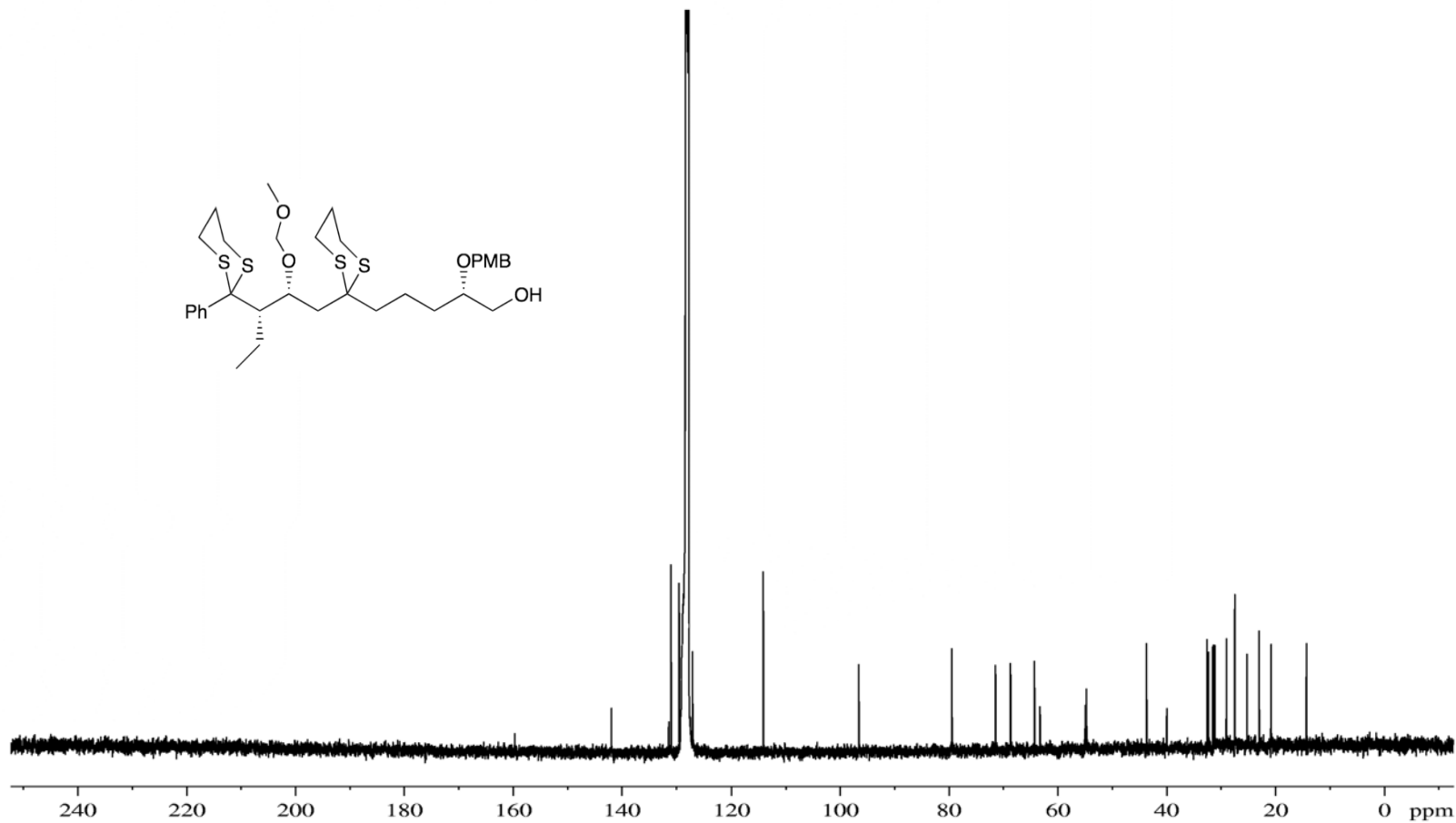


S175



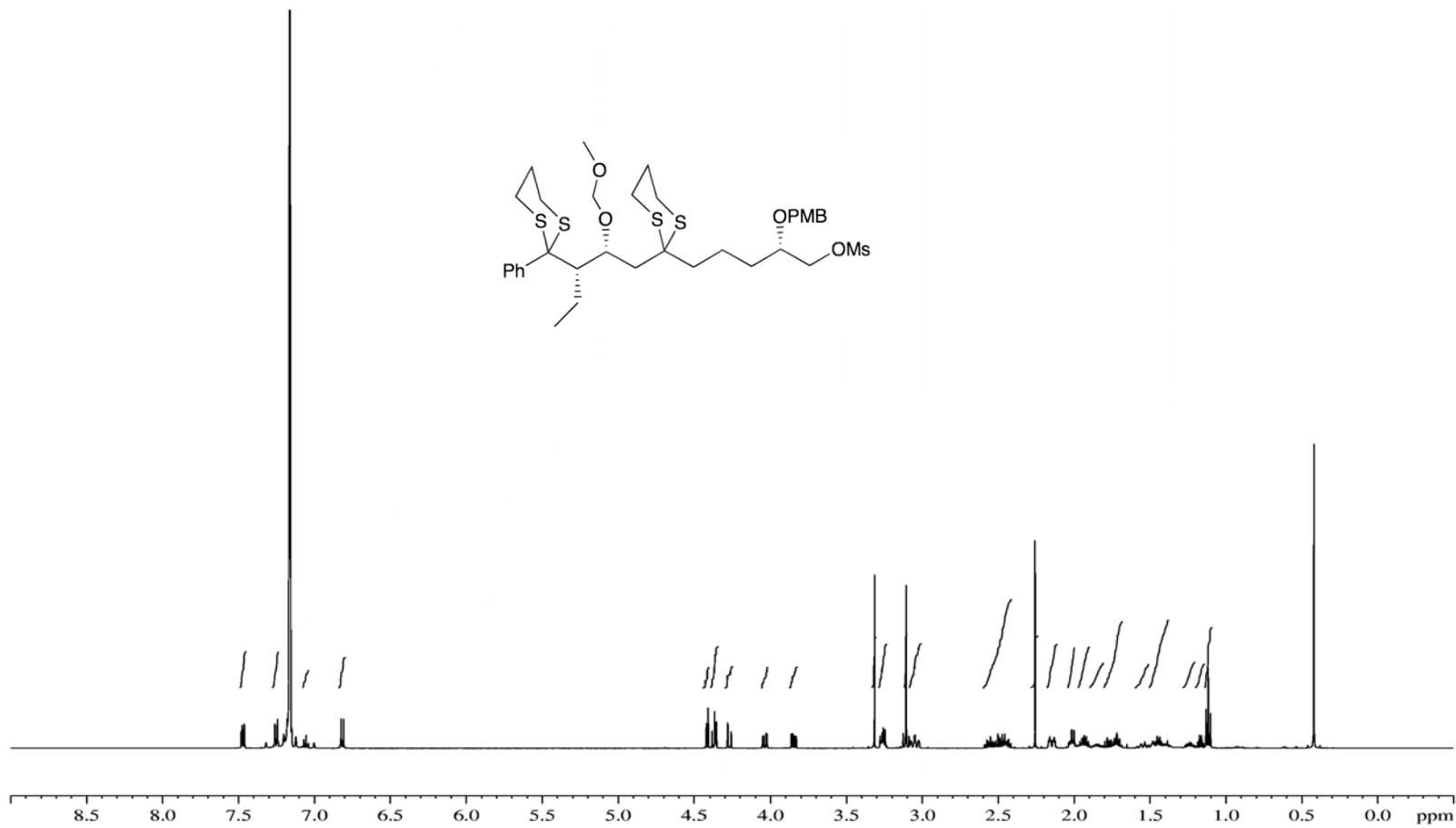
The <sup>1</sup>H NMR Spectrum of Compound (+)-S14 in C<sub>6</sub>D<sub>6</sub>

S176



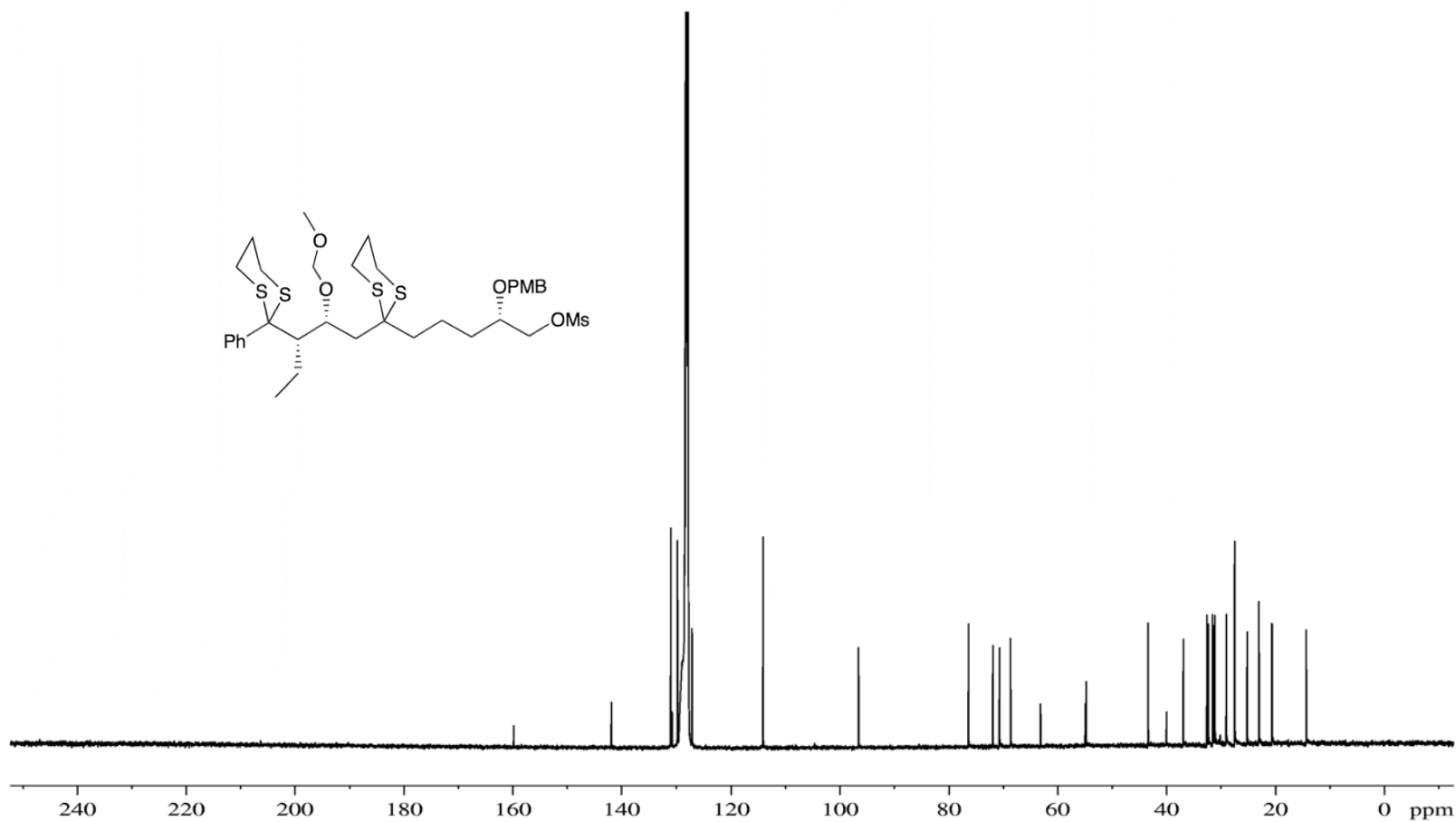
The  $^{13}\text{C}$  NMR Spectrum of Compound (+)-**S14** in  $\text{C}_6\text{D}_6$

S177



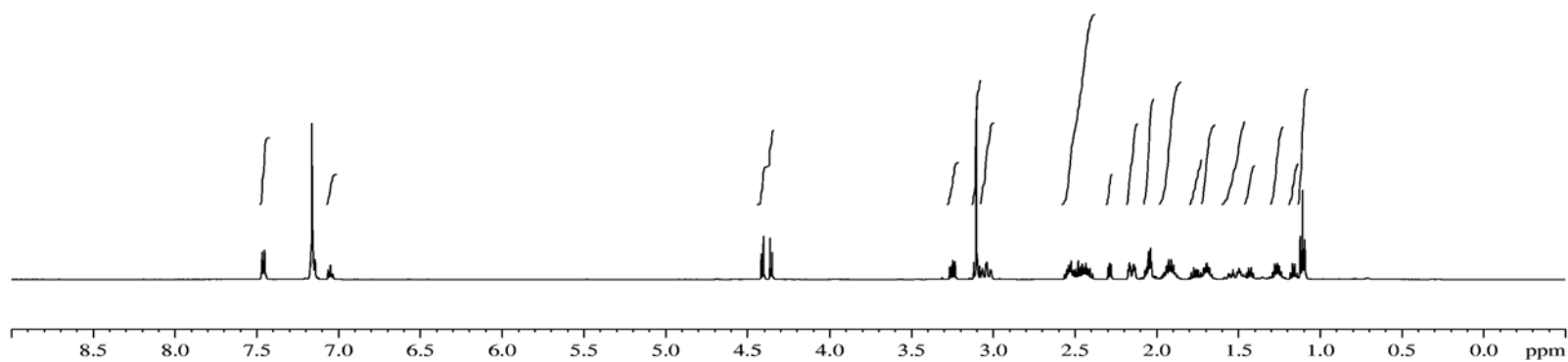
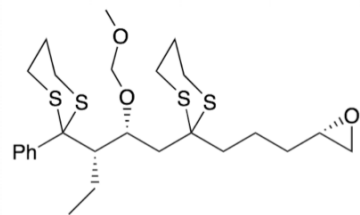
The <sup>1</sup>H NMR Spectrum of Compound (+)-S15 in C<sub>6</sub>D<sub>6</sub>

S178



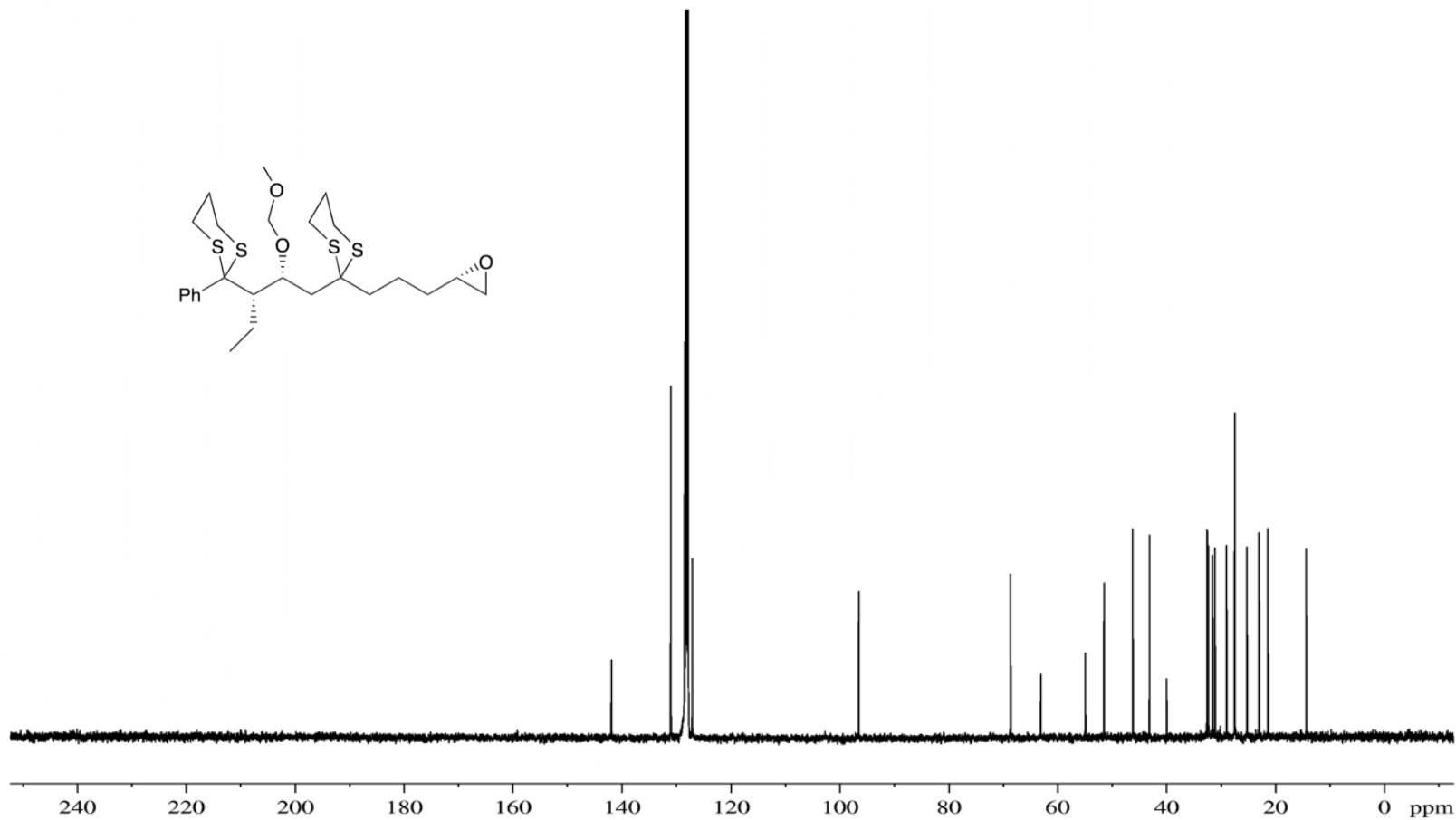
The  $^{13}\text{C}$  NMR Spectrum of Compound (+)-**S15** in  $\text{C}_6\text{D}_6$

S179



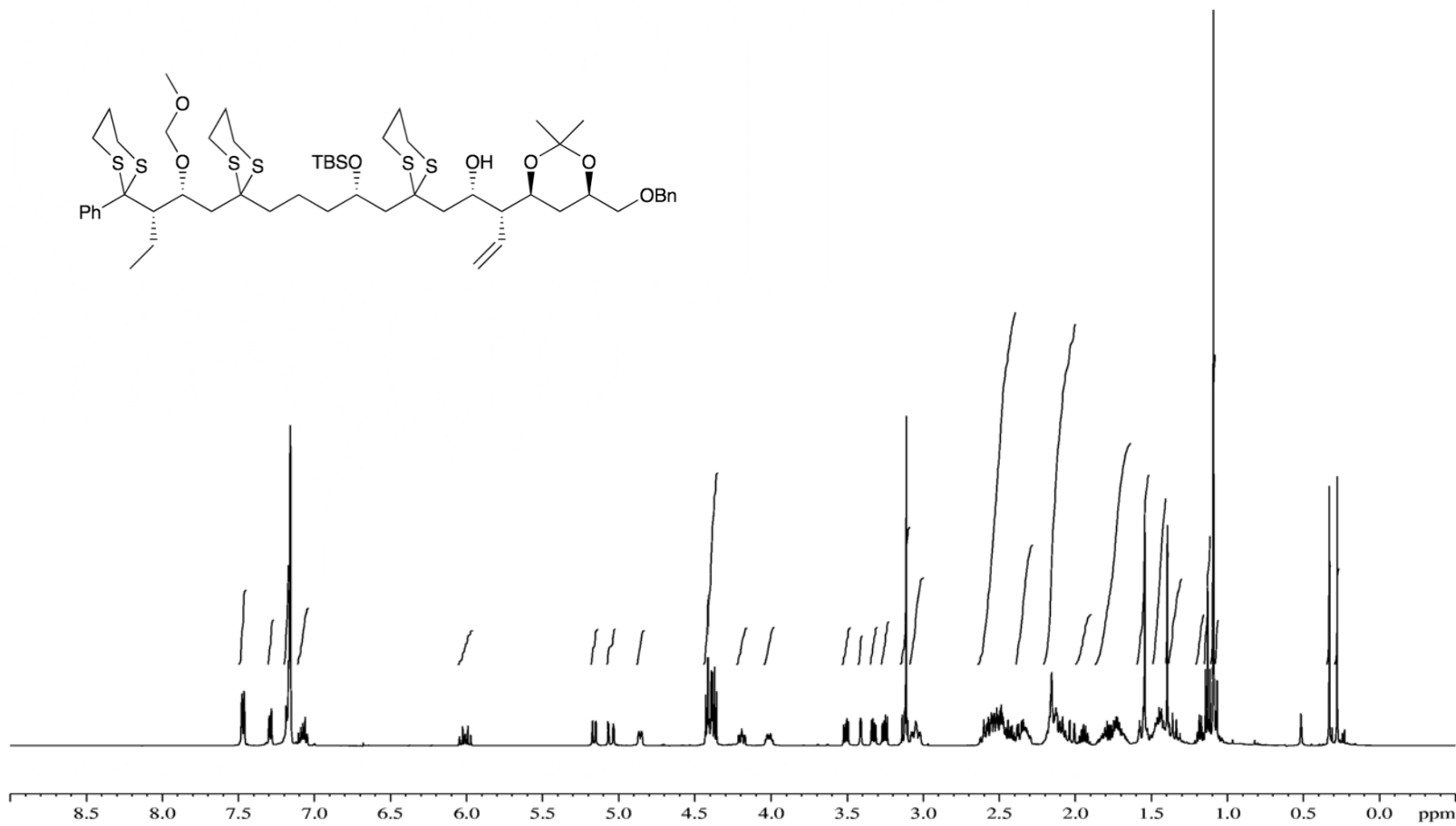
The  $^1\text{H}$  NMR Spectrum of Compound (-)-**41** in  $\text{C}_6\text{D}_6$

S180



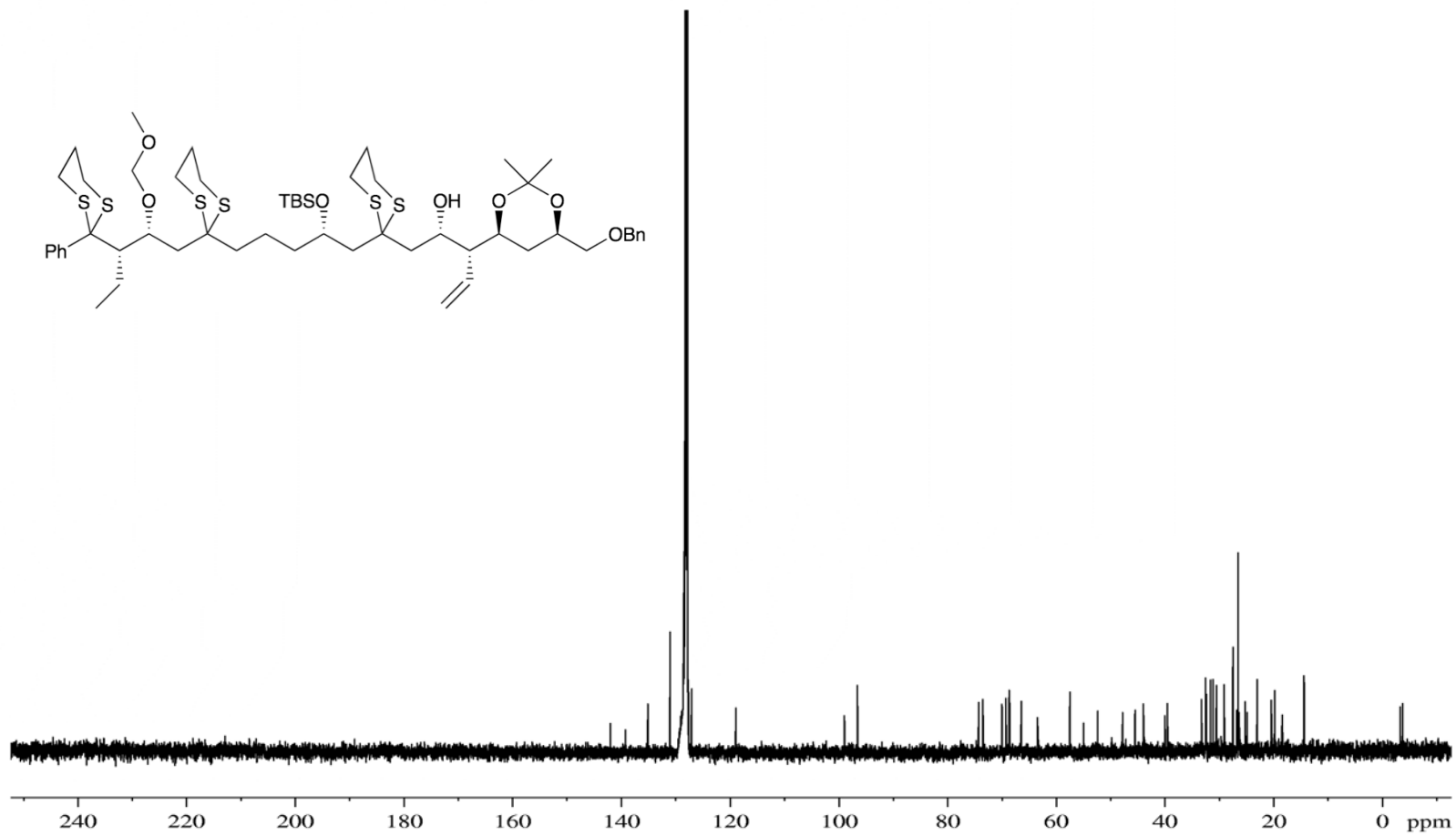
The  $^{13}\text{C}$  NMR Spectrum of Compound (-)-**41** in  $\text{C}_6\text{D}_6$

S181



The <sup>1</sup>H NMR Spectrum of Compound (-)-42 in C<sub>6</sub>D<sub>6</sub>

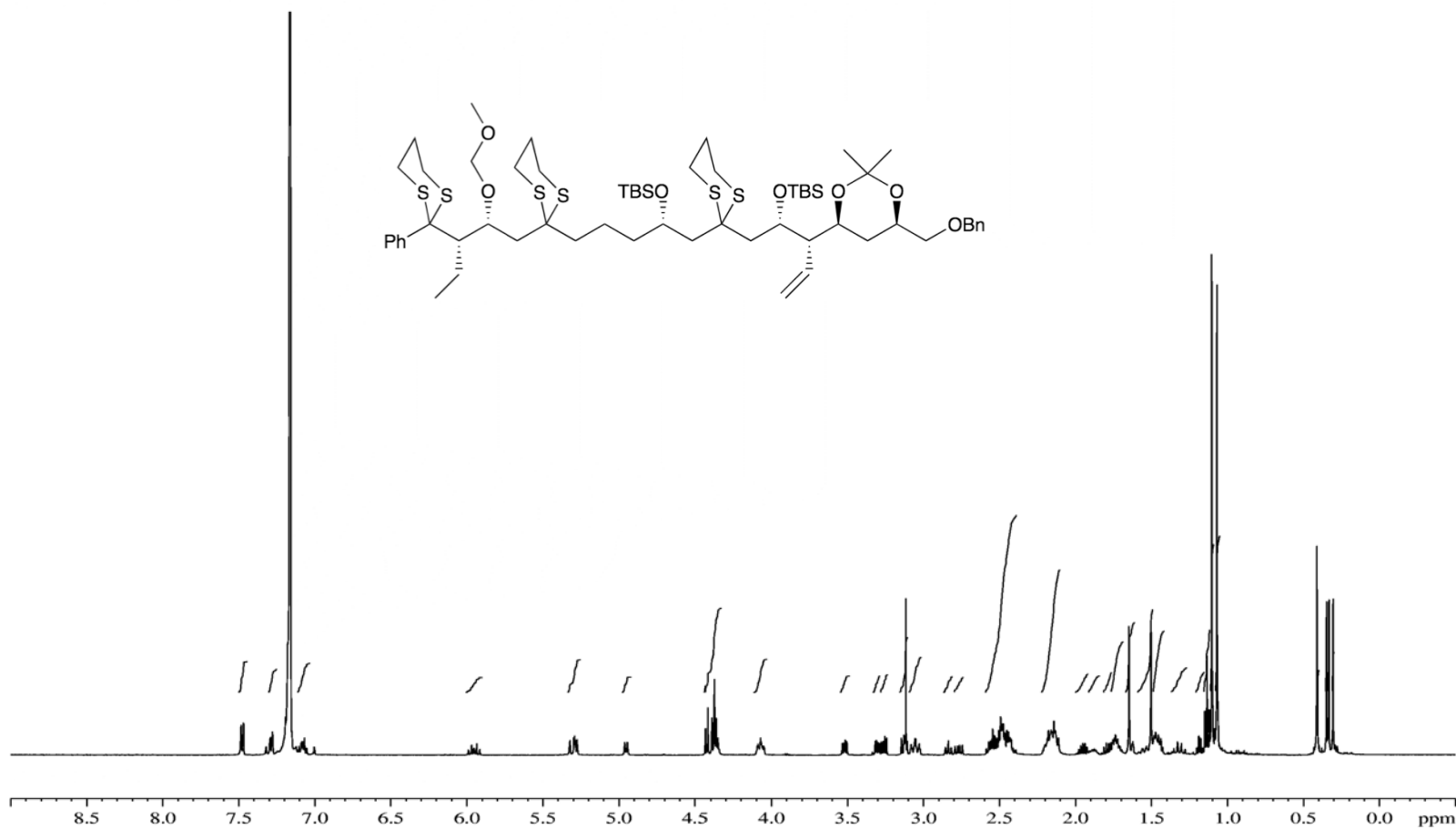
S182



The  $^{13}\text{C}$  NMR Spectrum of Compound (-)-42 in  $\text{C}_6\text{D}_6$

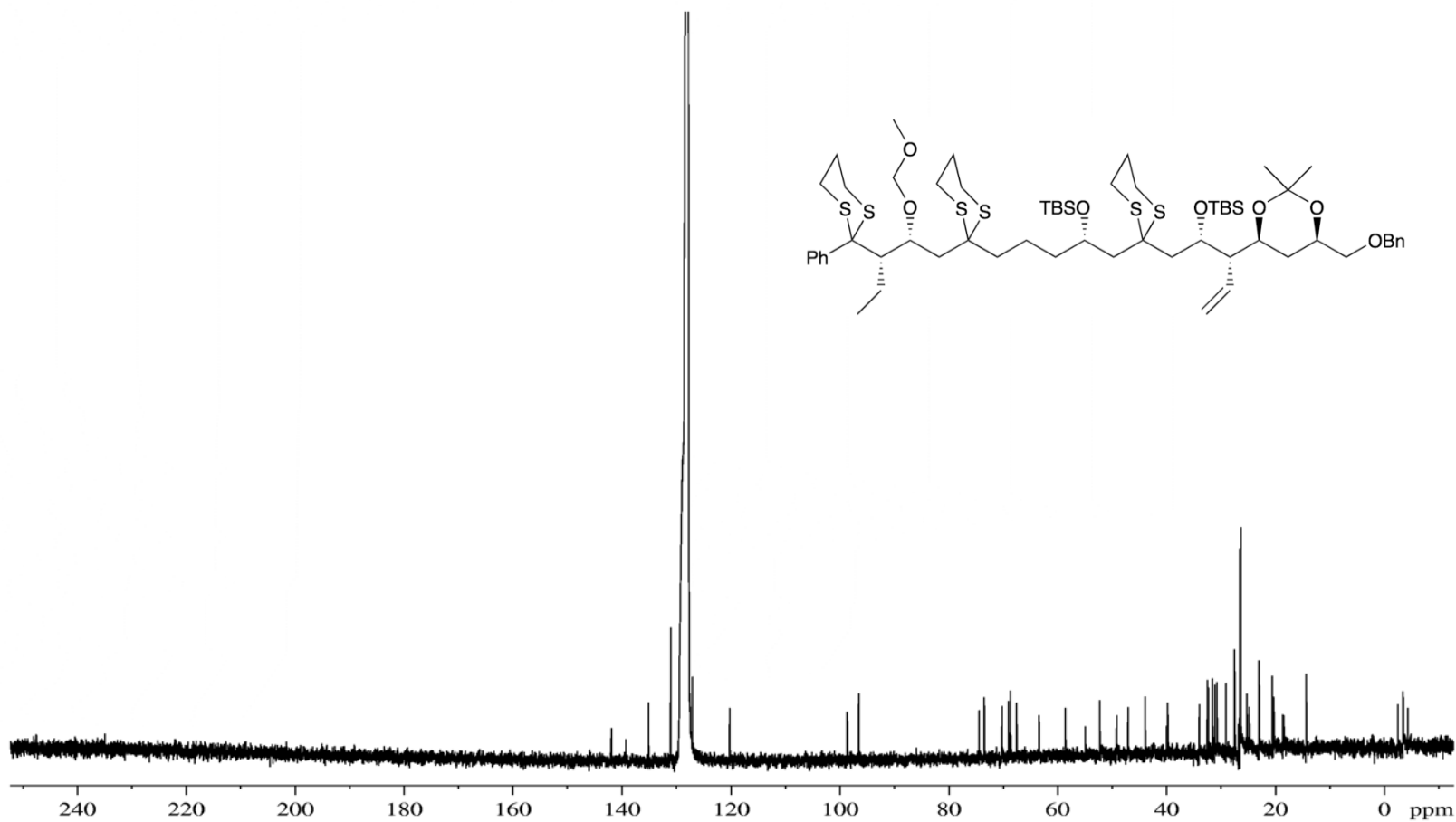


S183



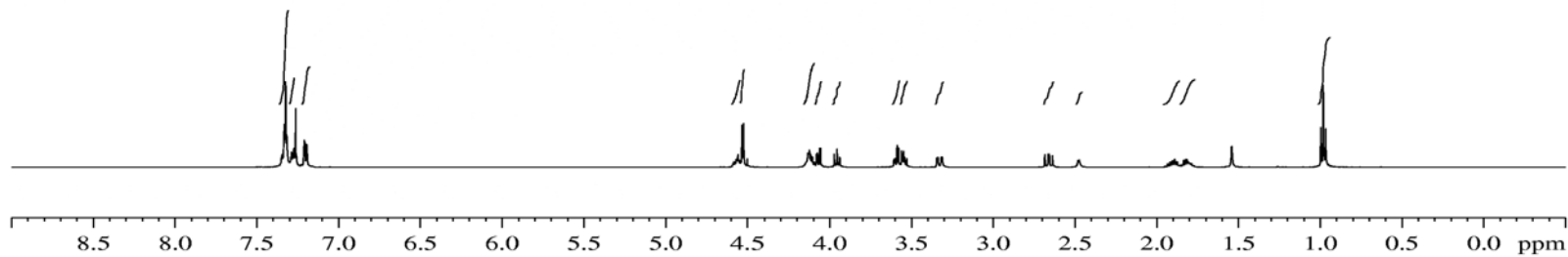
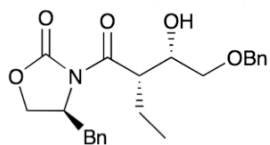
The <sup>1</sup>H NMR Spectrum of Compound (+)-43 in C<sub>6</sub>D<sub>6</sub>

S184



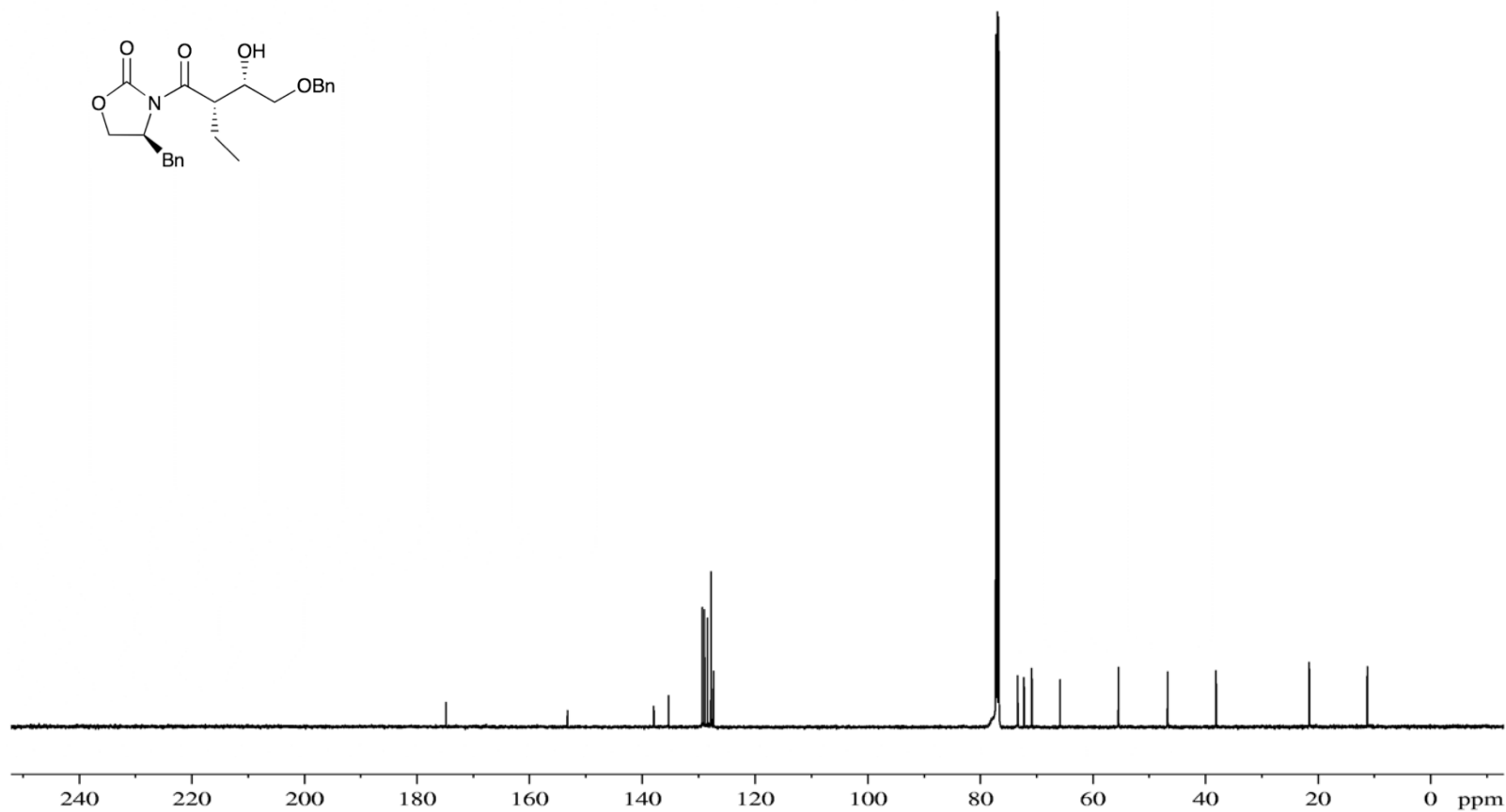
The  $^{13}\text{C}$  NMR Spectrum of Compound (+)-43 in  $\text{C}_6\text{D}_6$

S185



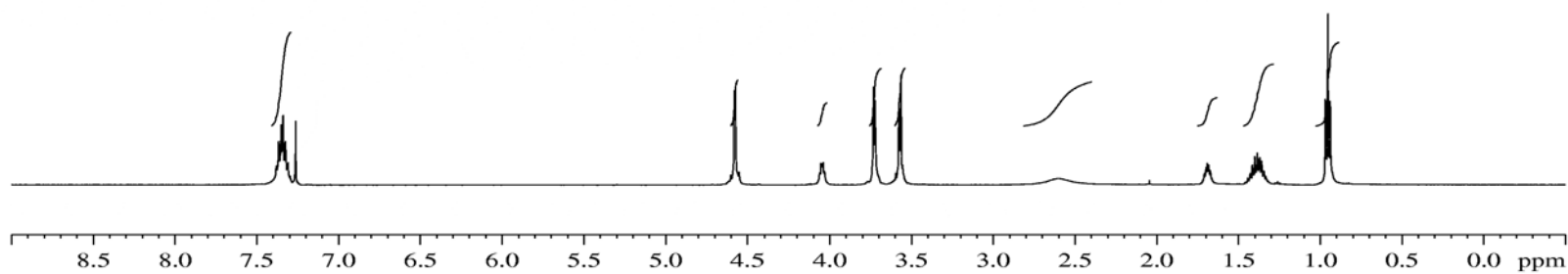
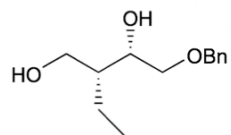
The <sup>1</sup>H NMR Spectrum of Compound (+)-48 in CDCl<sub>3</sub>

S186

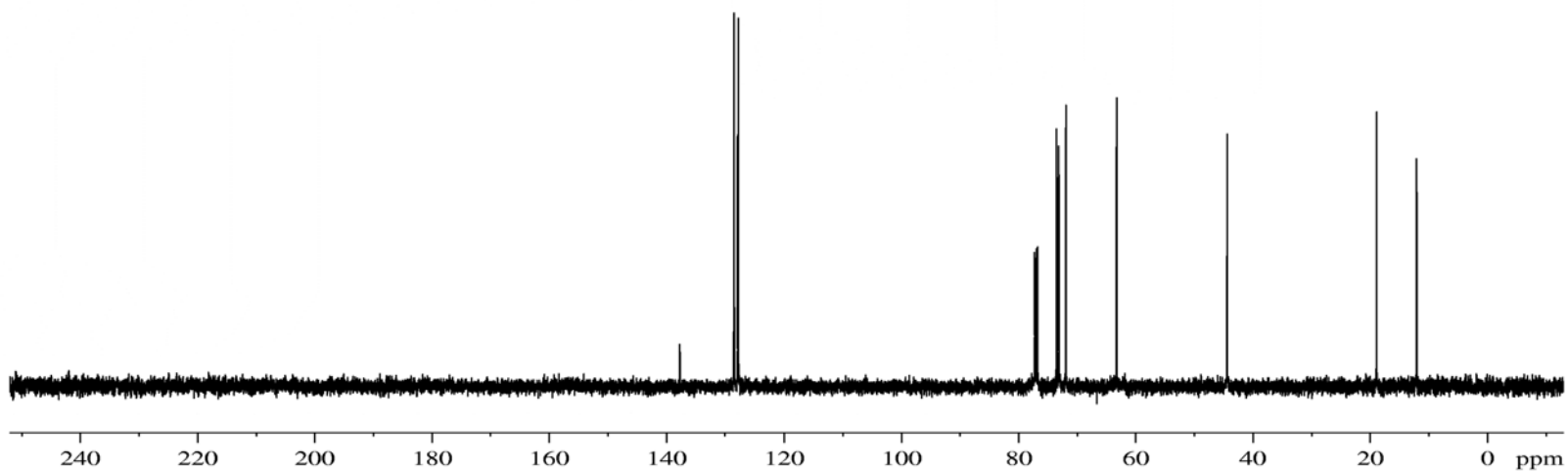
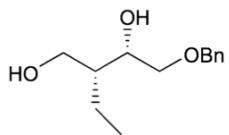


The <sup>13</sup>C NMR Spectrum of Compound (+)-48 in CDCl<sub>3</sub>

S187

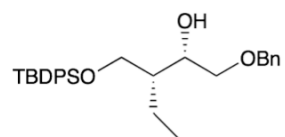


The <sup>1</sup>H NMR Spectrum of Compound (+)-**S16** in CDCl<sub>3</sub>

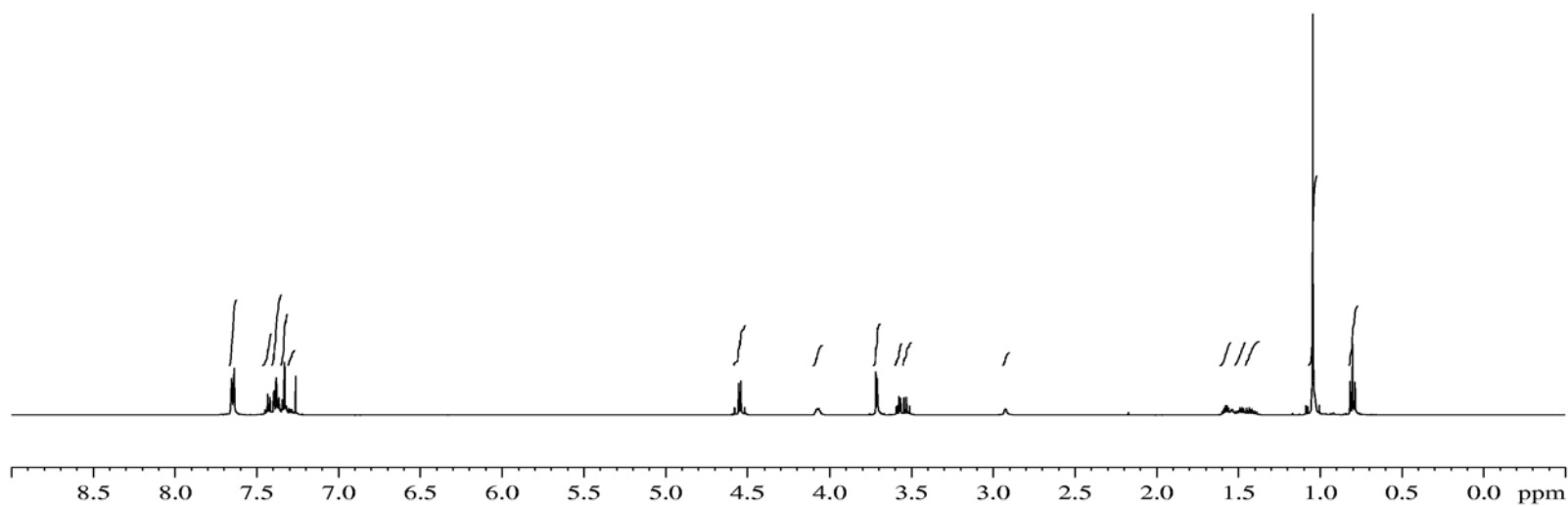


S188

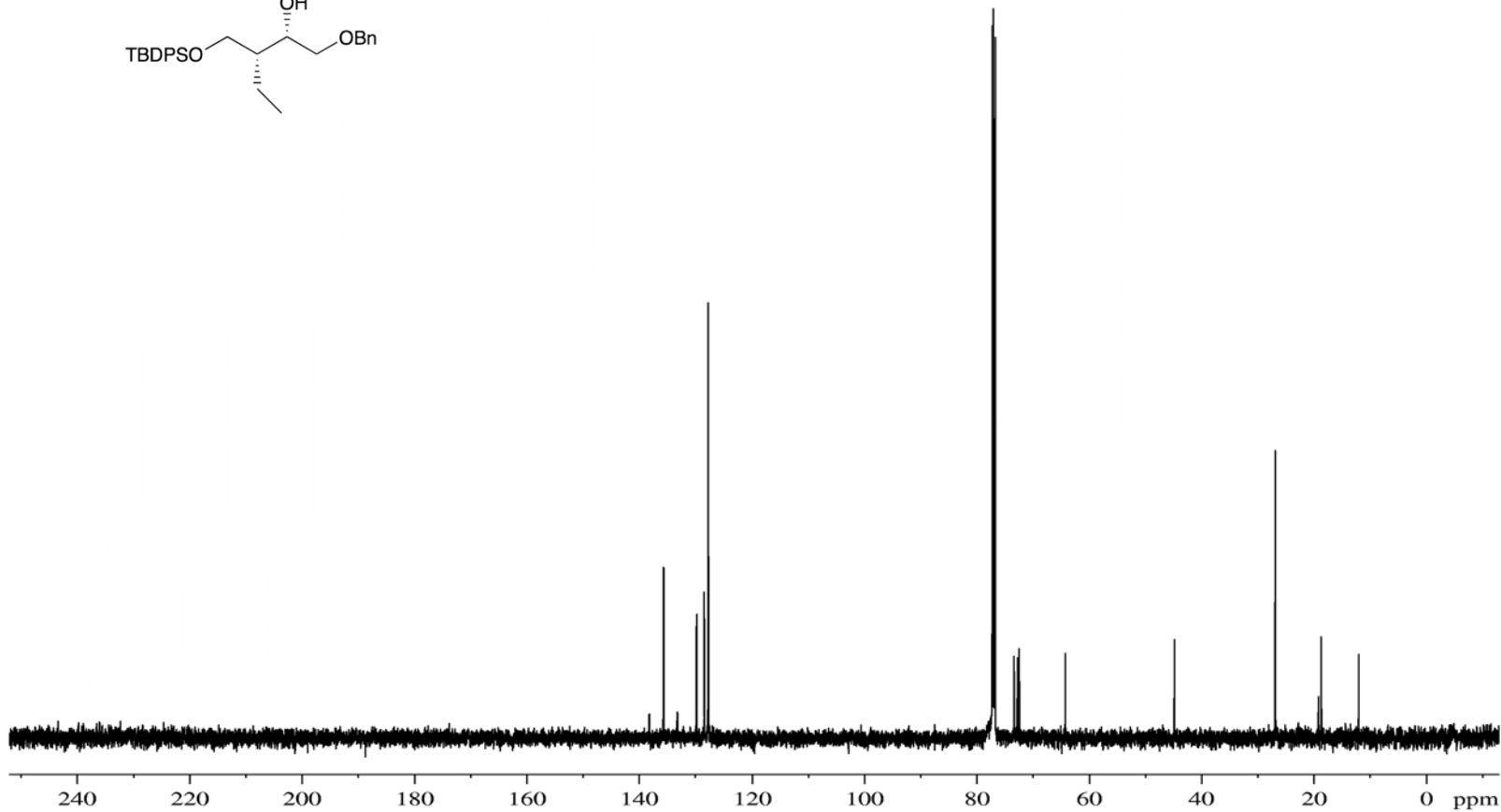
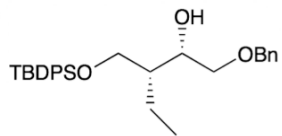
The  $^{13}\text{C}$  NMR Spectrum of Compound (+)-S16 in  $\text{CDCl}_3$



S189



The <sup>1</sup>H NMR Spectrum of Compound (-)-49 in CDCl<sub>3</sub>

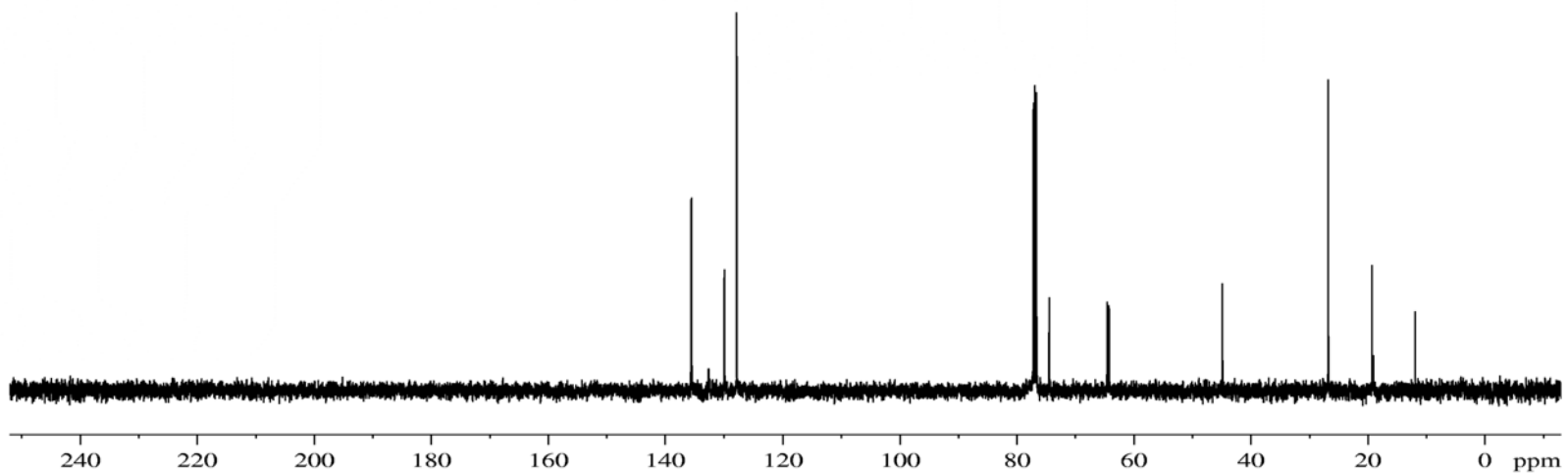
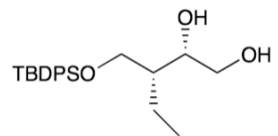


S190

The <sup>13</sup>C NMR Spectrum of Compound (-)-49 in CDCl<sub>3</sub>

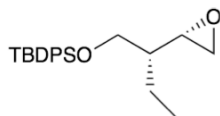




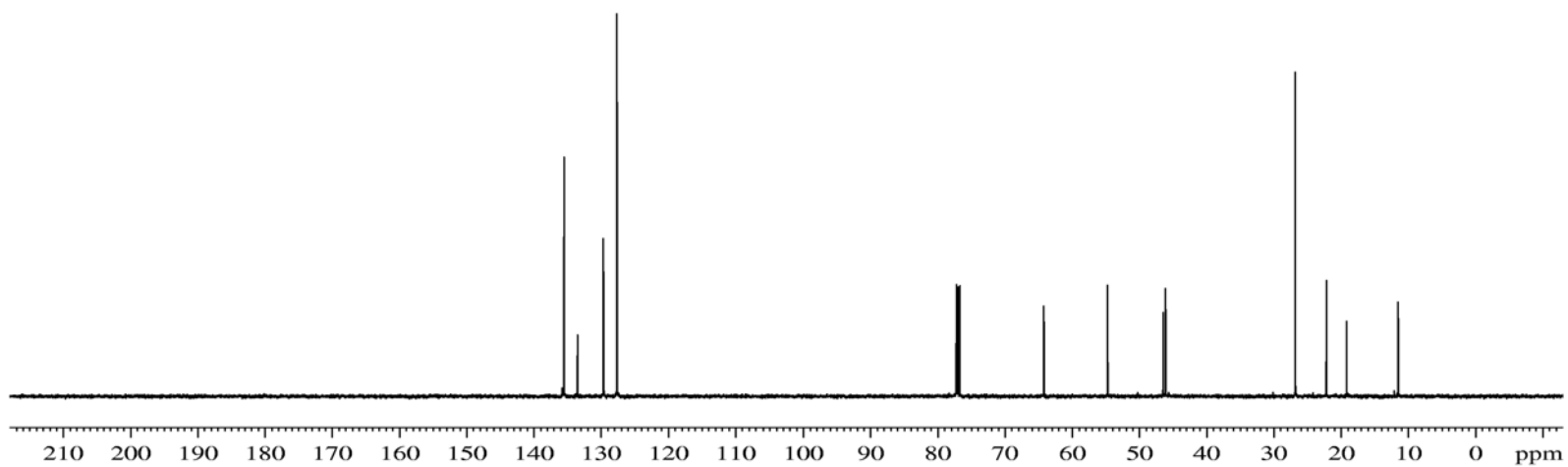


The  $^{13}\text{C}$  NMR Spectrum of Compound (-)-**S17** in  $\text{CDCl}_3$



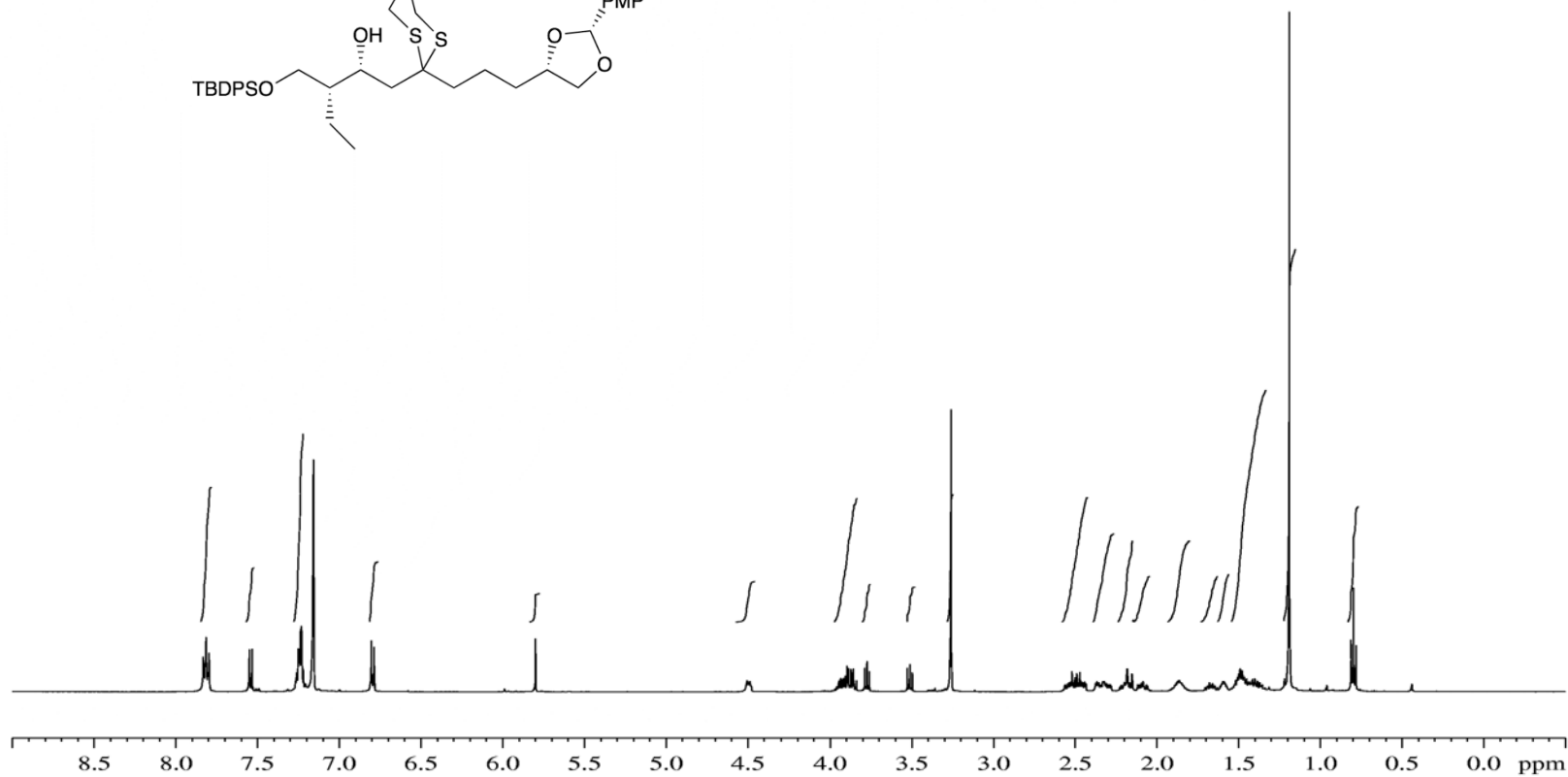
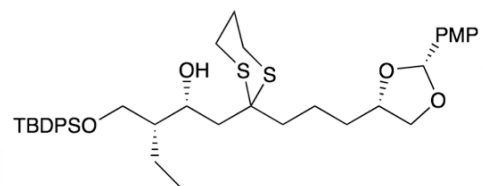


S194



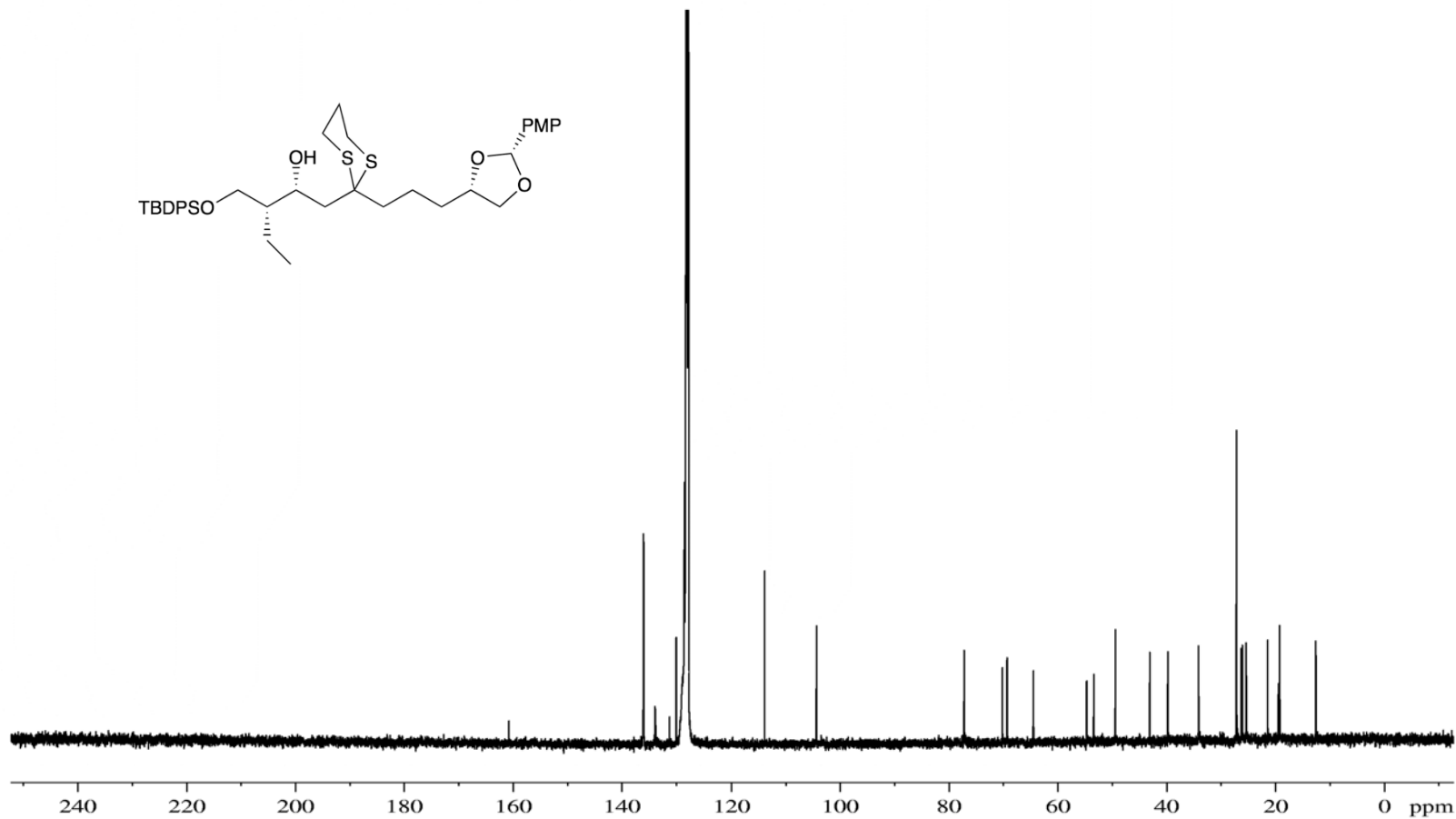
The  $^{13}\text{C}$  NMR Spectrum of Compound (+)-45 in  $\text{CDCl}_3$

S195



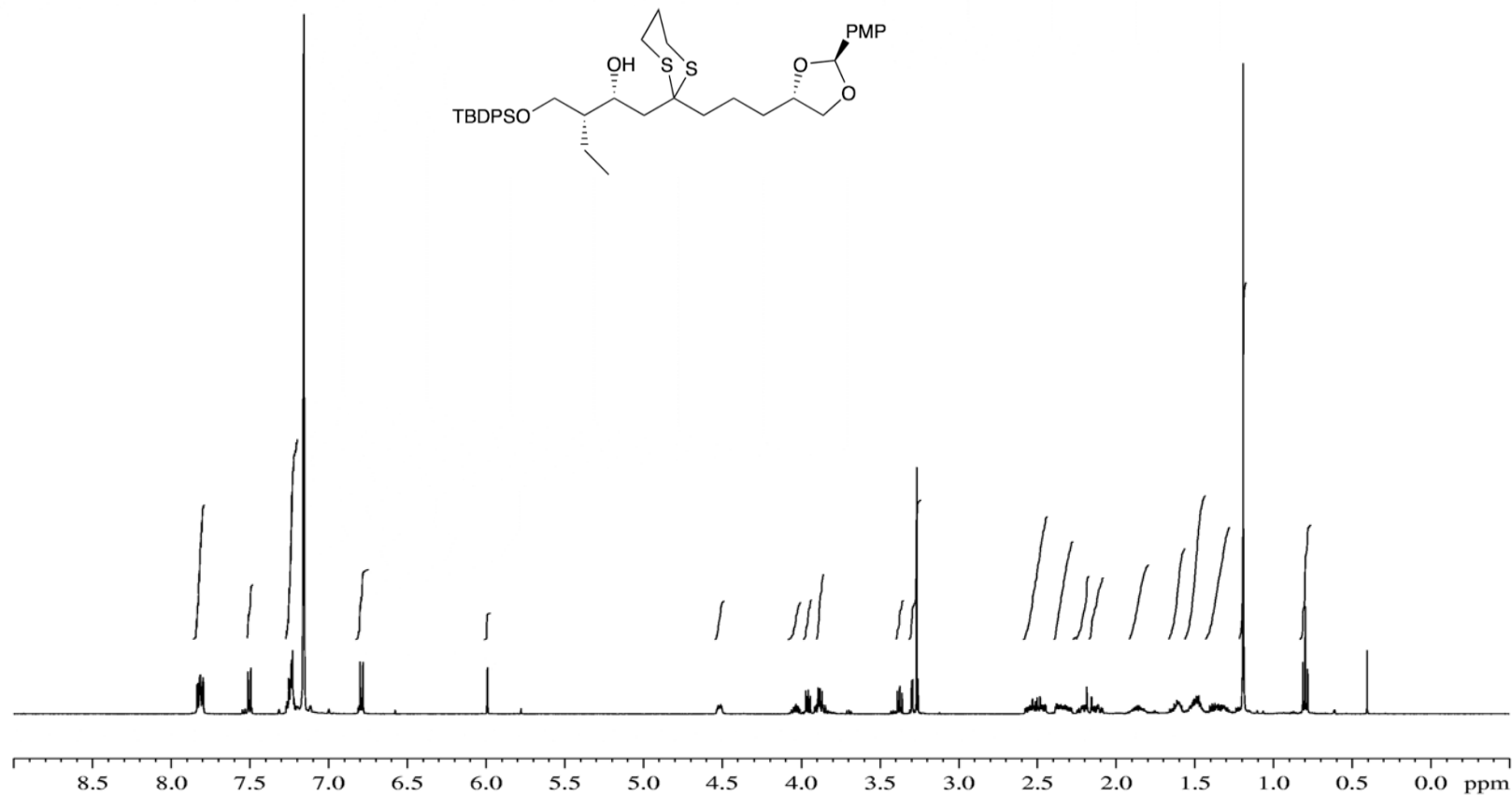
The <sup>1</sup>H NMR Spectrum of Compound (-)-**50** in C<sub>6</sub>D<sub>6</sub>

S196



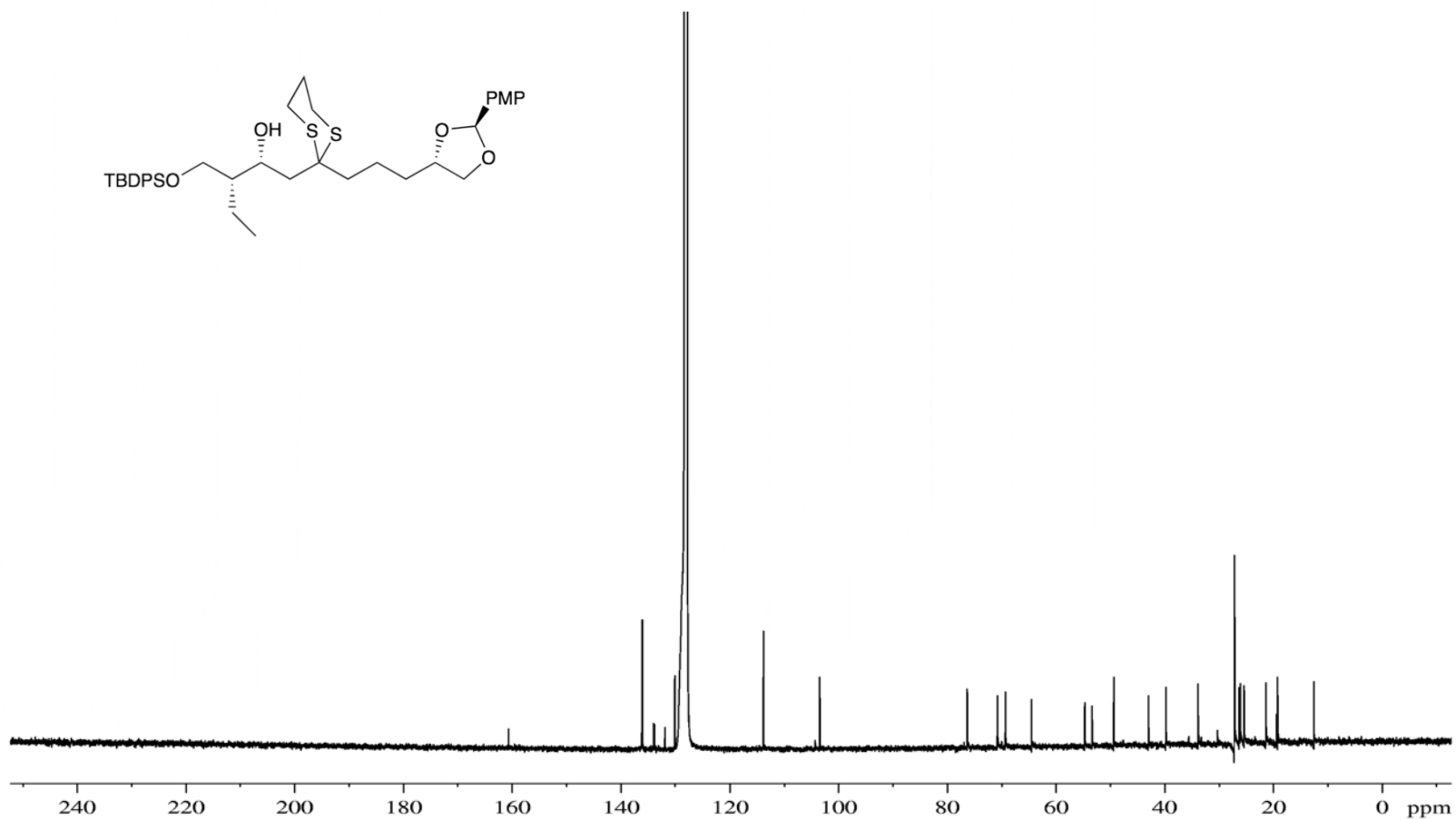
The  $^{13}\text{C}$  NMR Spectrum of Compound (-)-50 in  $\text{C}_6\text{D}_6$

S197



The <sup>1</sup>H NMR Spectrum of the Minor Diastereomer in C<sub>6</sub>D<sub>6</sub>

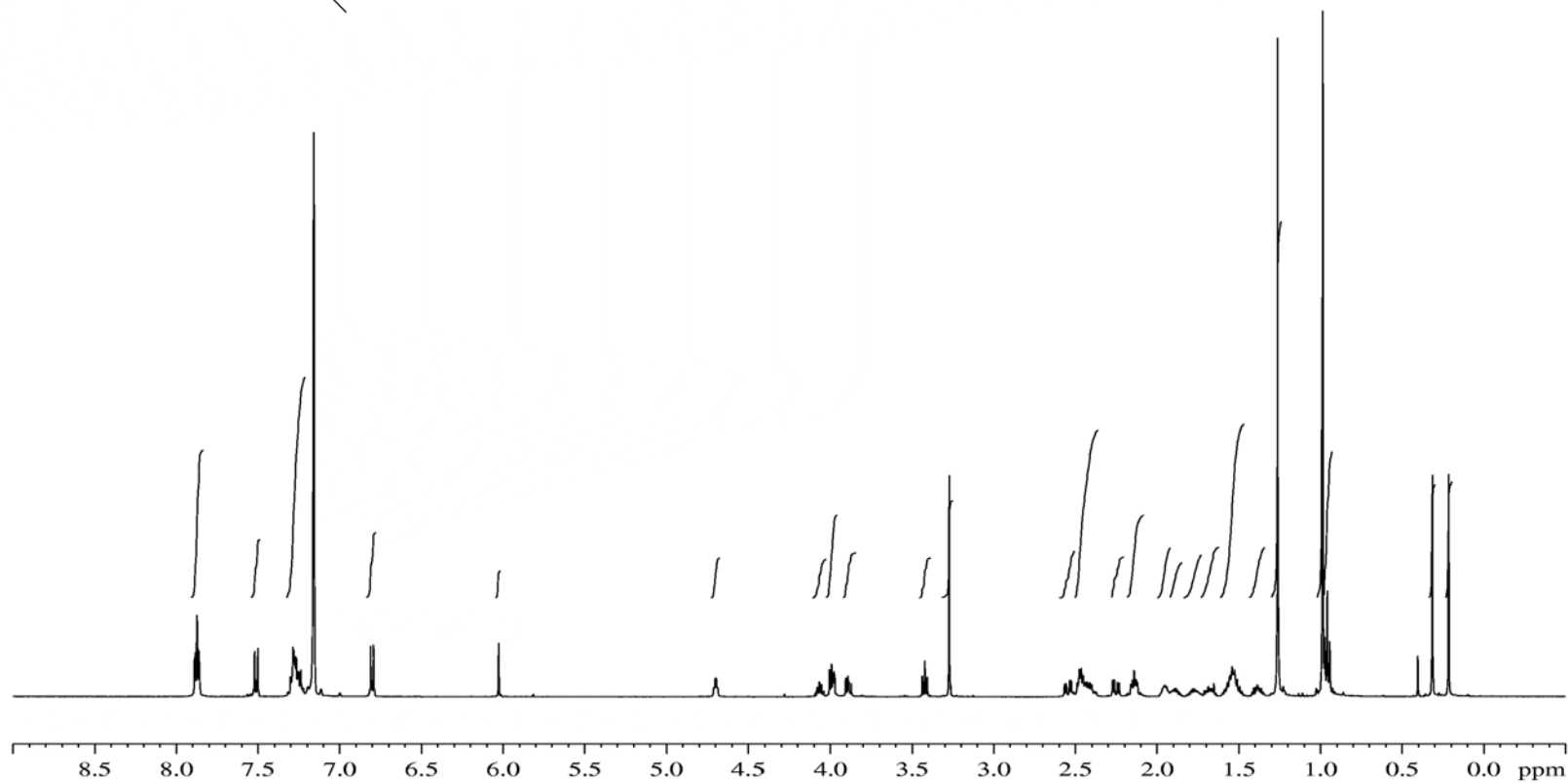
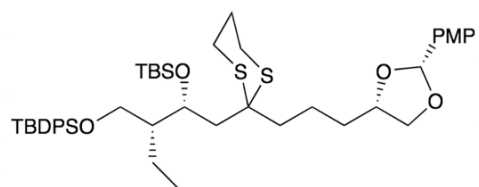
861S



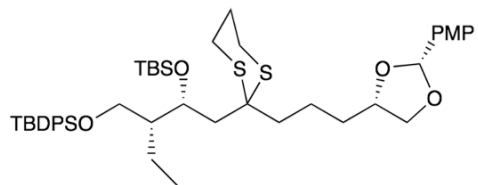
The <sup>13</sup>C NMR Spectrum of the Minor Diastereomer in C<sub>6</sub>D<sub>6</sub>



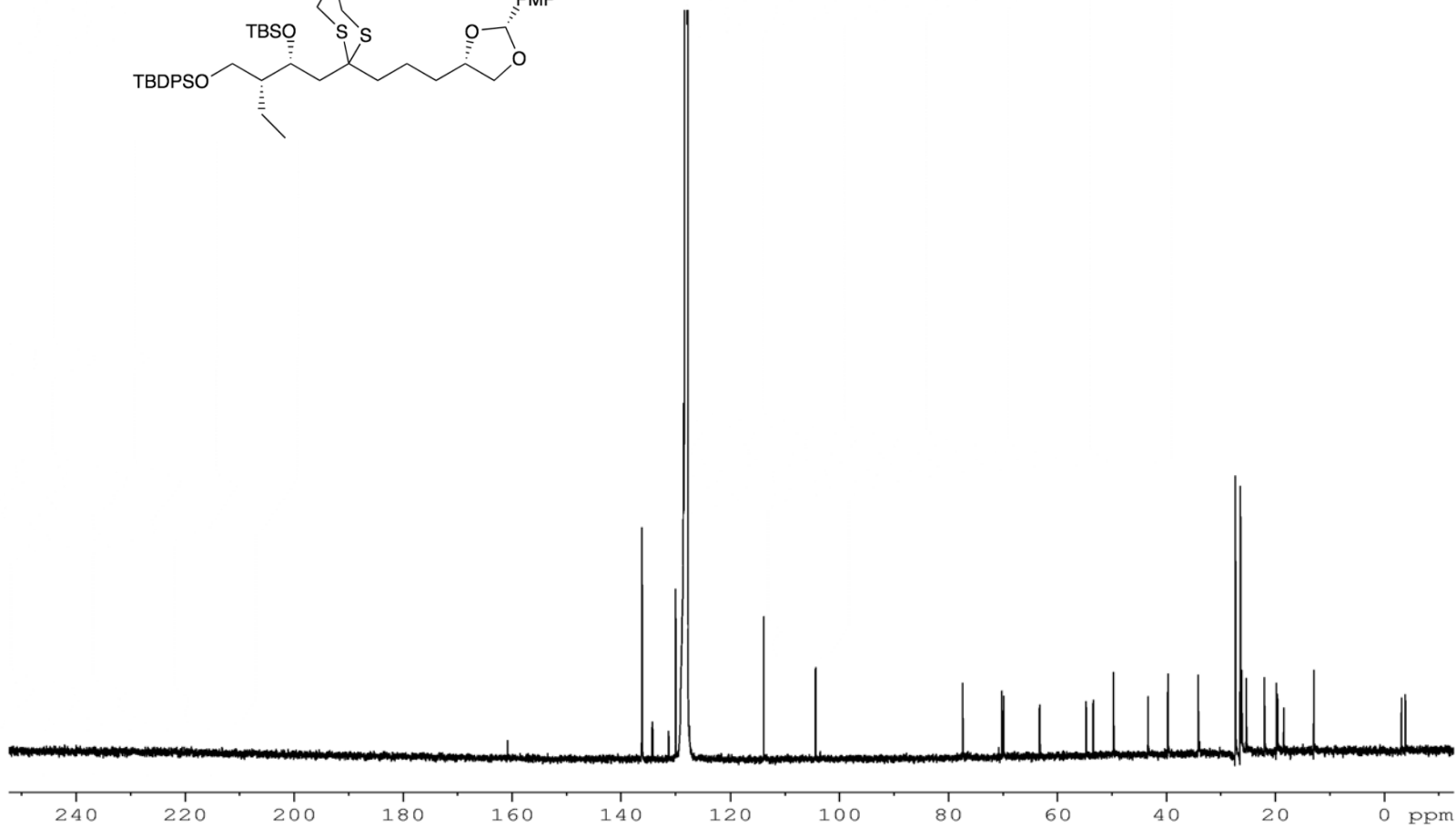
S199



The <sup>1</sup>H NMR Spectrum of Compound (-)-**51** in C<sub>6</sub>D<sub>6</sub>

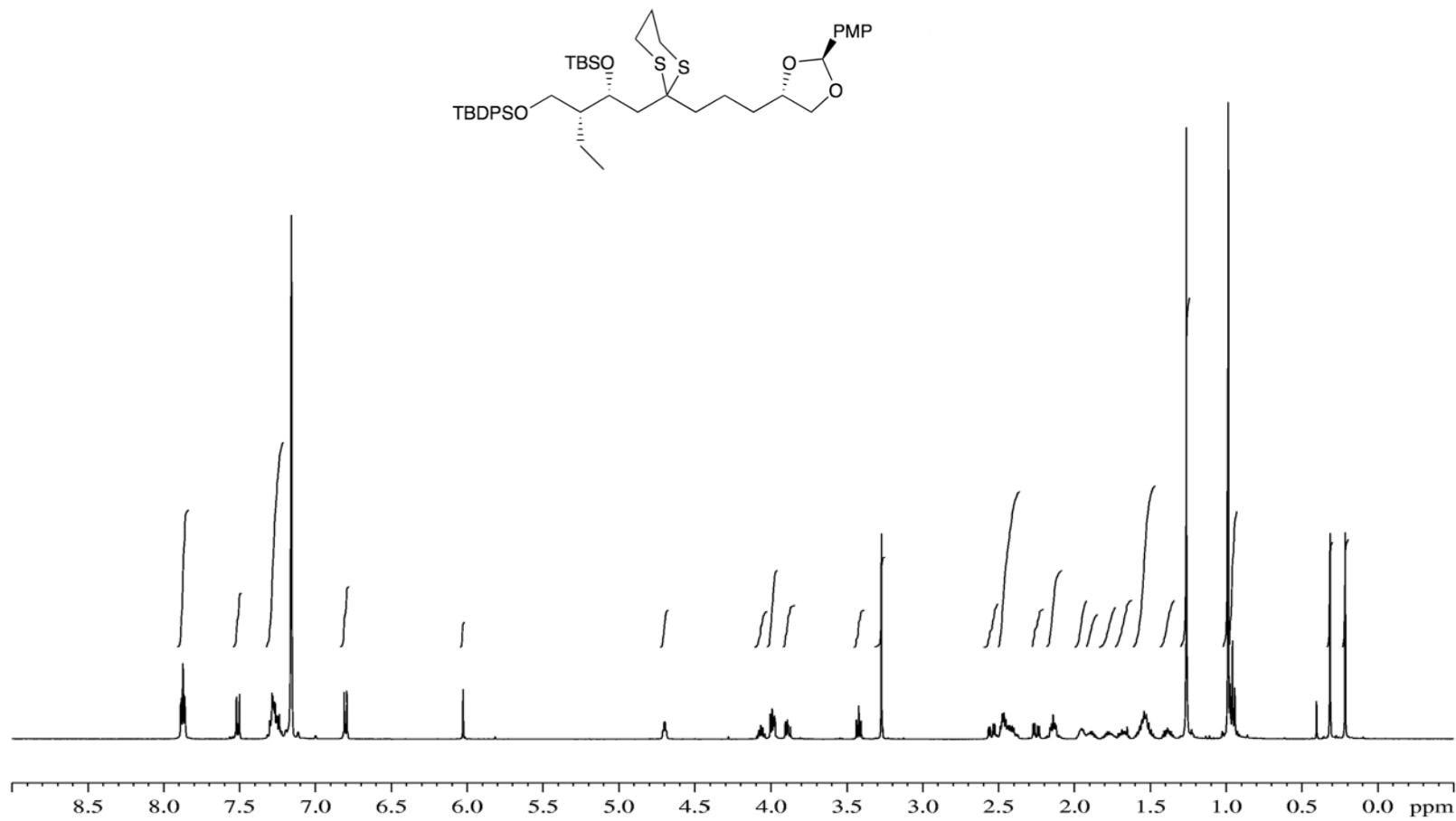


S200



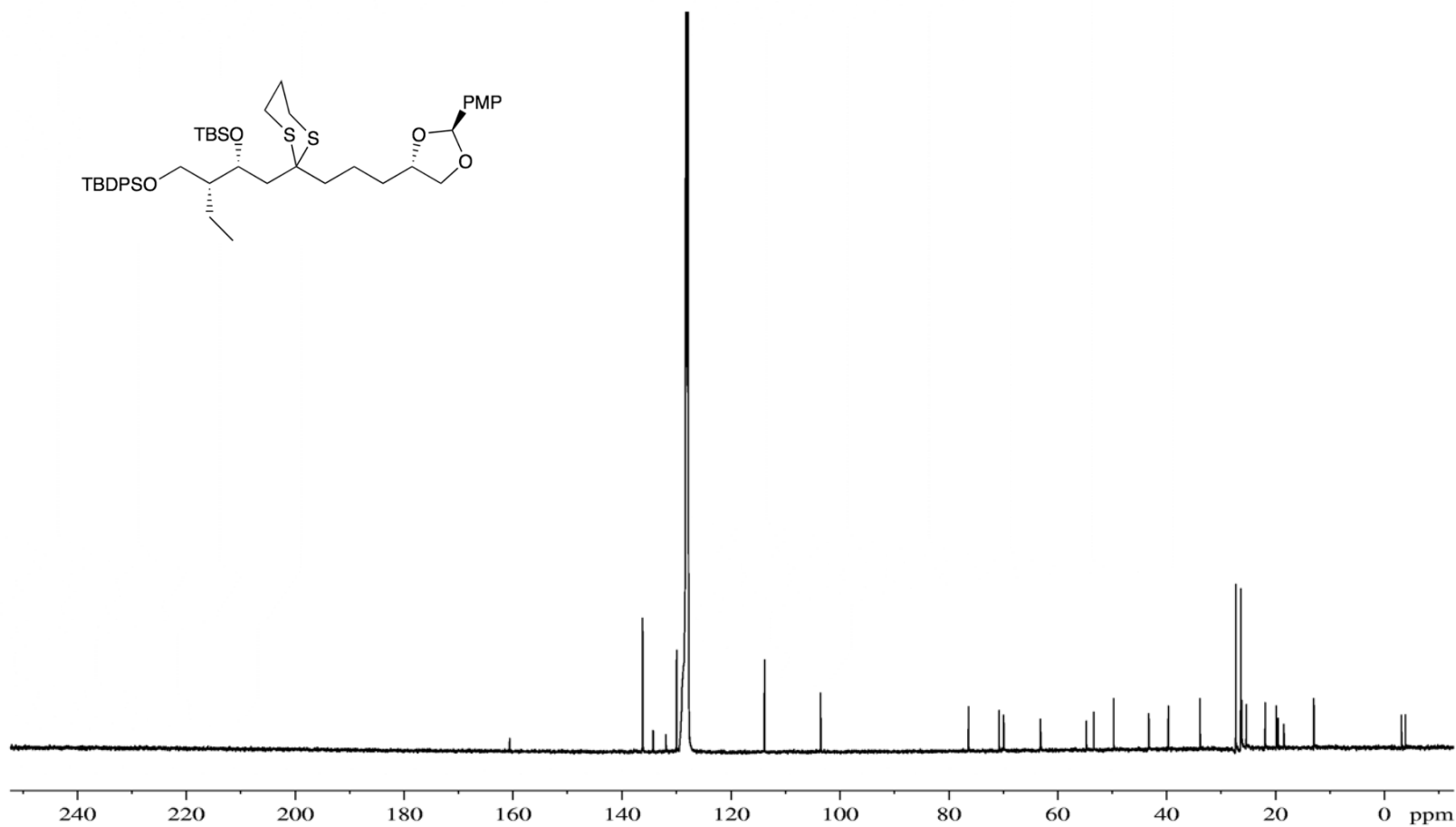
The  $^{13}\text{C}$  NMR Spectrum of Compound (-)-51 in  $\text{C}_6\text{D}_6$

S201

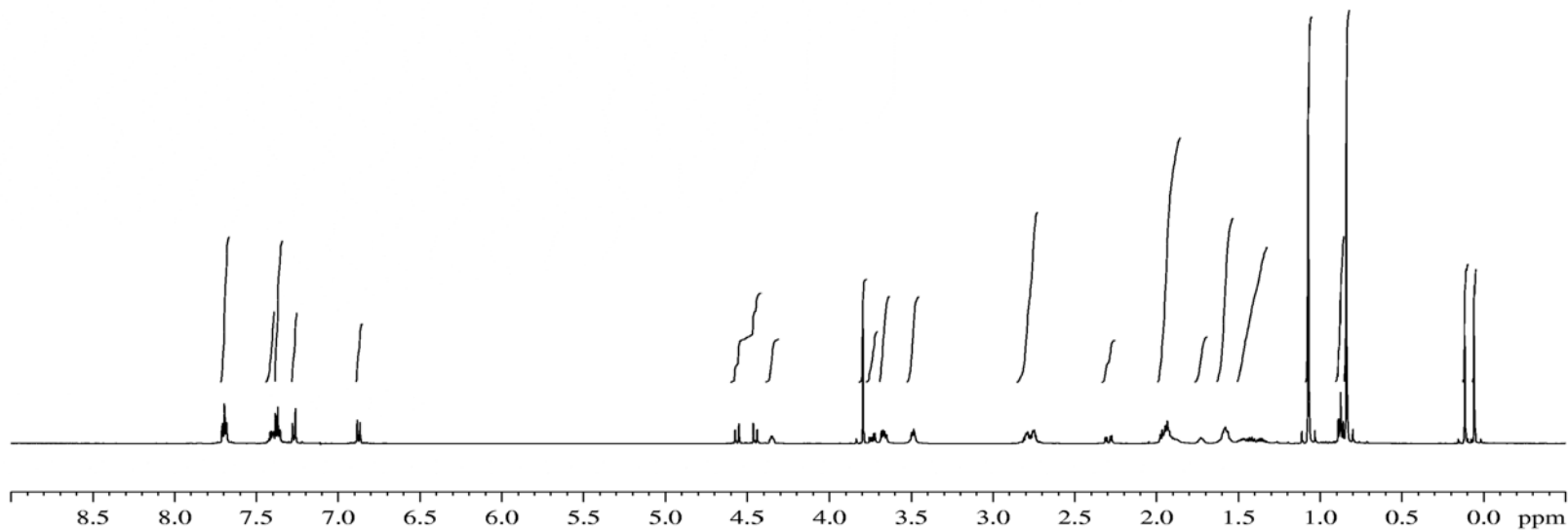
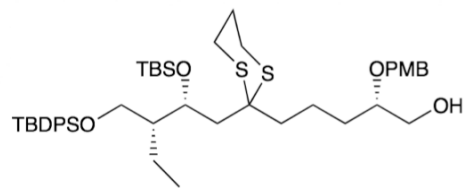


The <sup>1</sup>H NMR Spectrum of Compound (+)-**S18** in C<sub>6</sub>D<sub>6</sub>

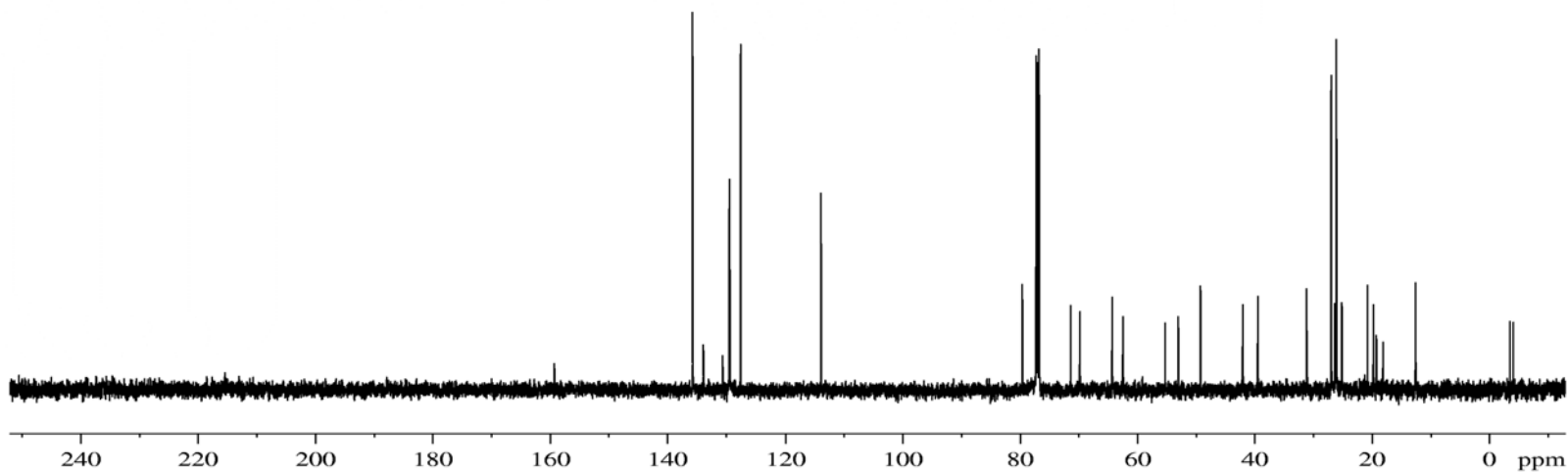
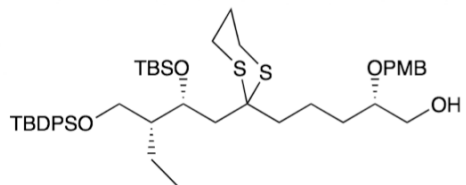
S202



The <sup>13</sup>C NMR Spectrum of Compound (+)-**S18** in C<sub>6</sub>D<sub>6</sub>

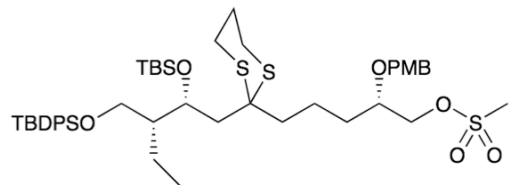


The <sup>1</sup>H NMR Spectrum of Compound (+)-S19 in CDCl<sub>3</sub>

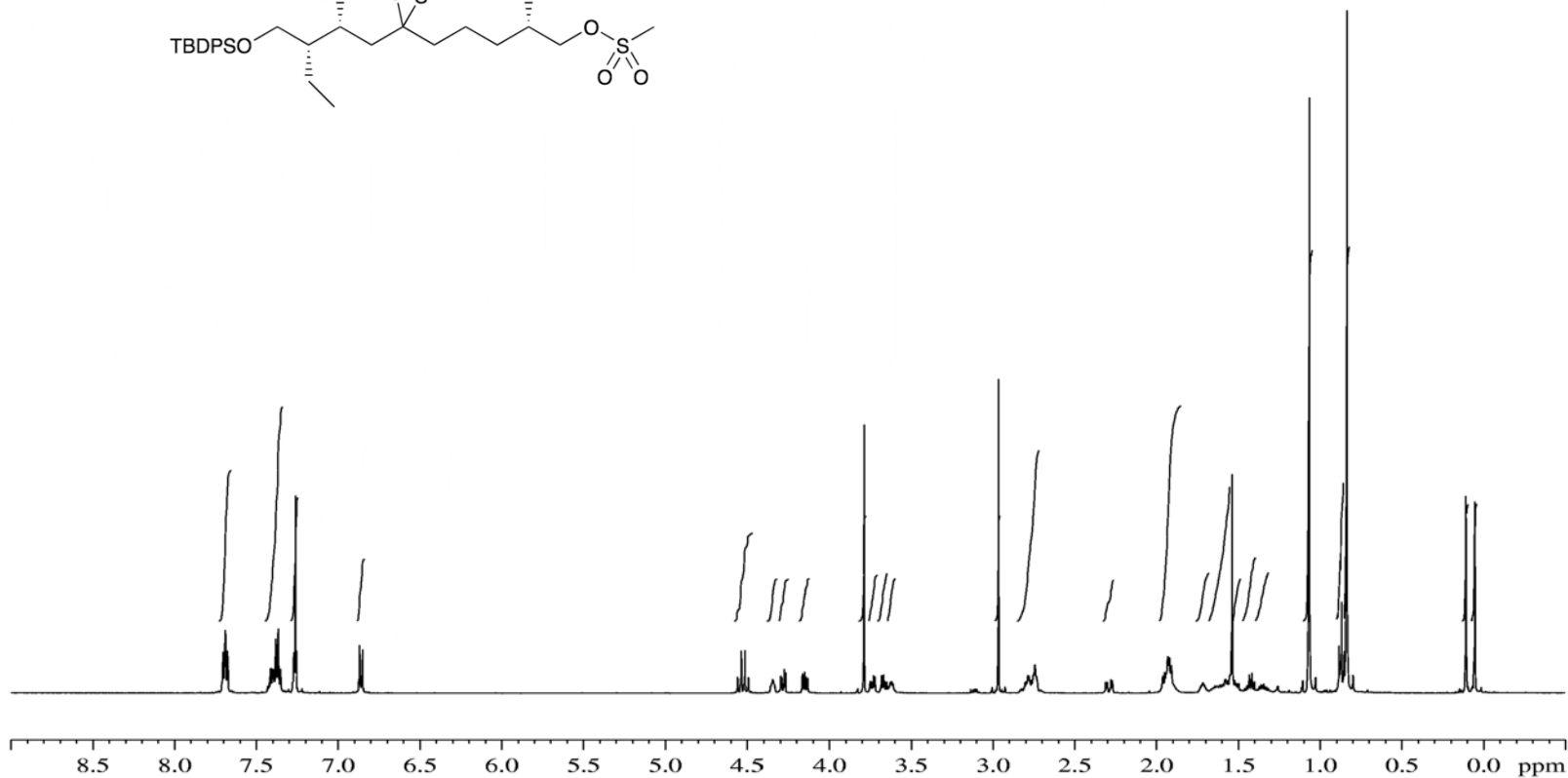


S204

The <sup>13</sup>C NMR Spectrum of Compound (+)-**S19** in CDCl<sub>3</sub>

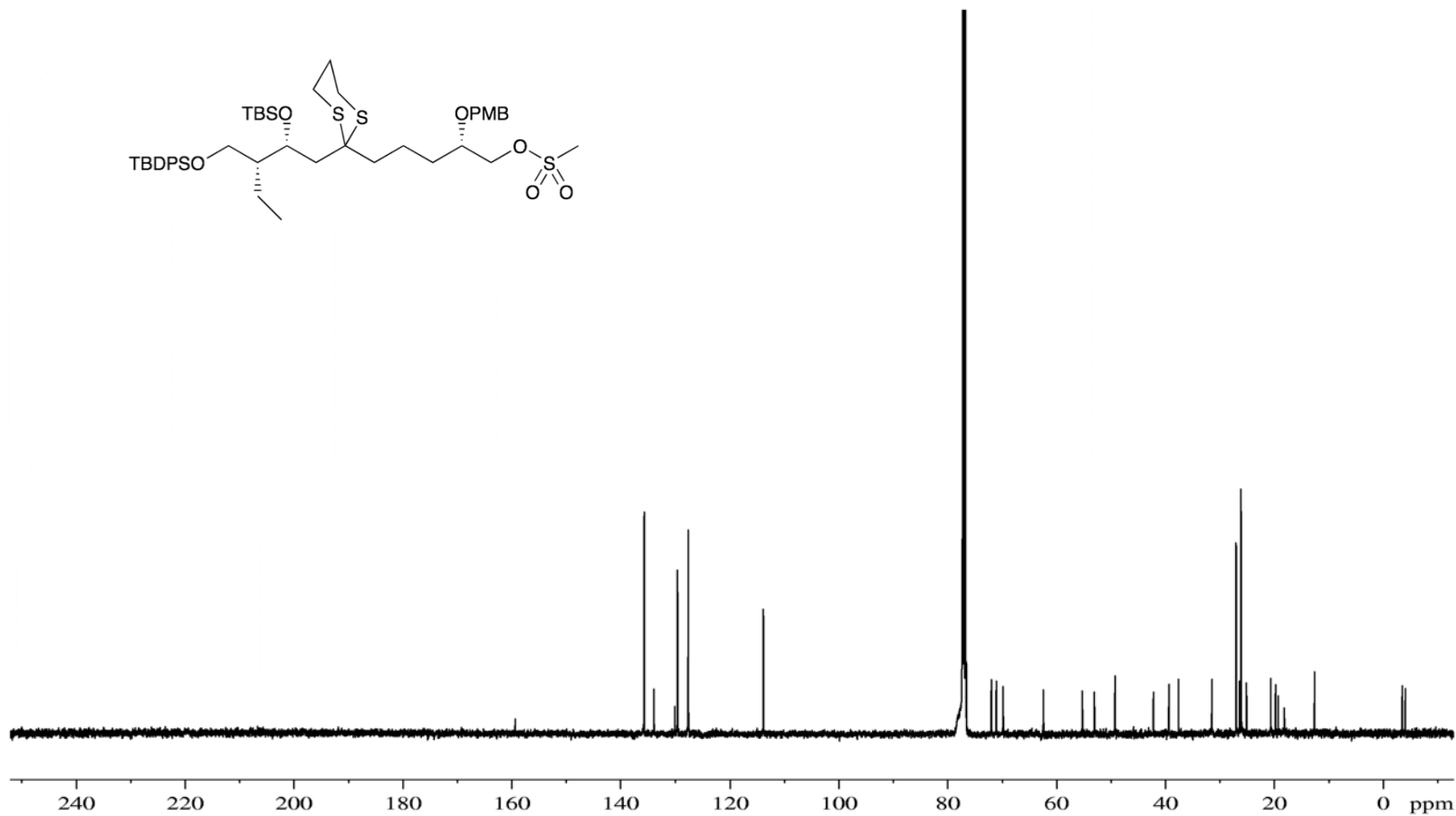


S205



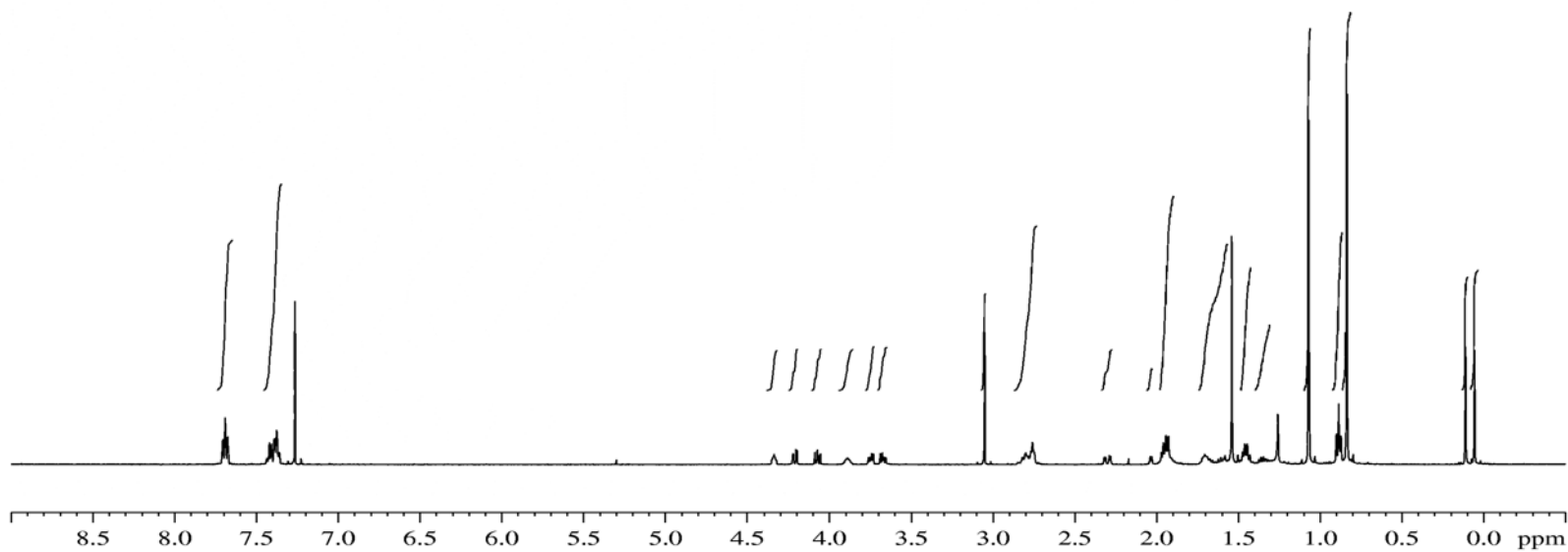
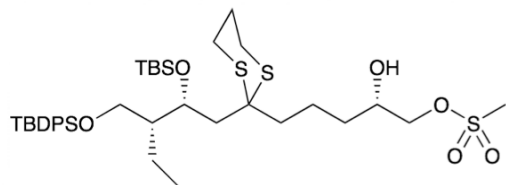
The <sup>1</sup>H NMR Spectrum of Compound (+)-S20 in CDCl<sub>3</sub>

S206



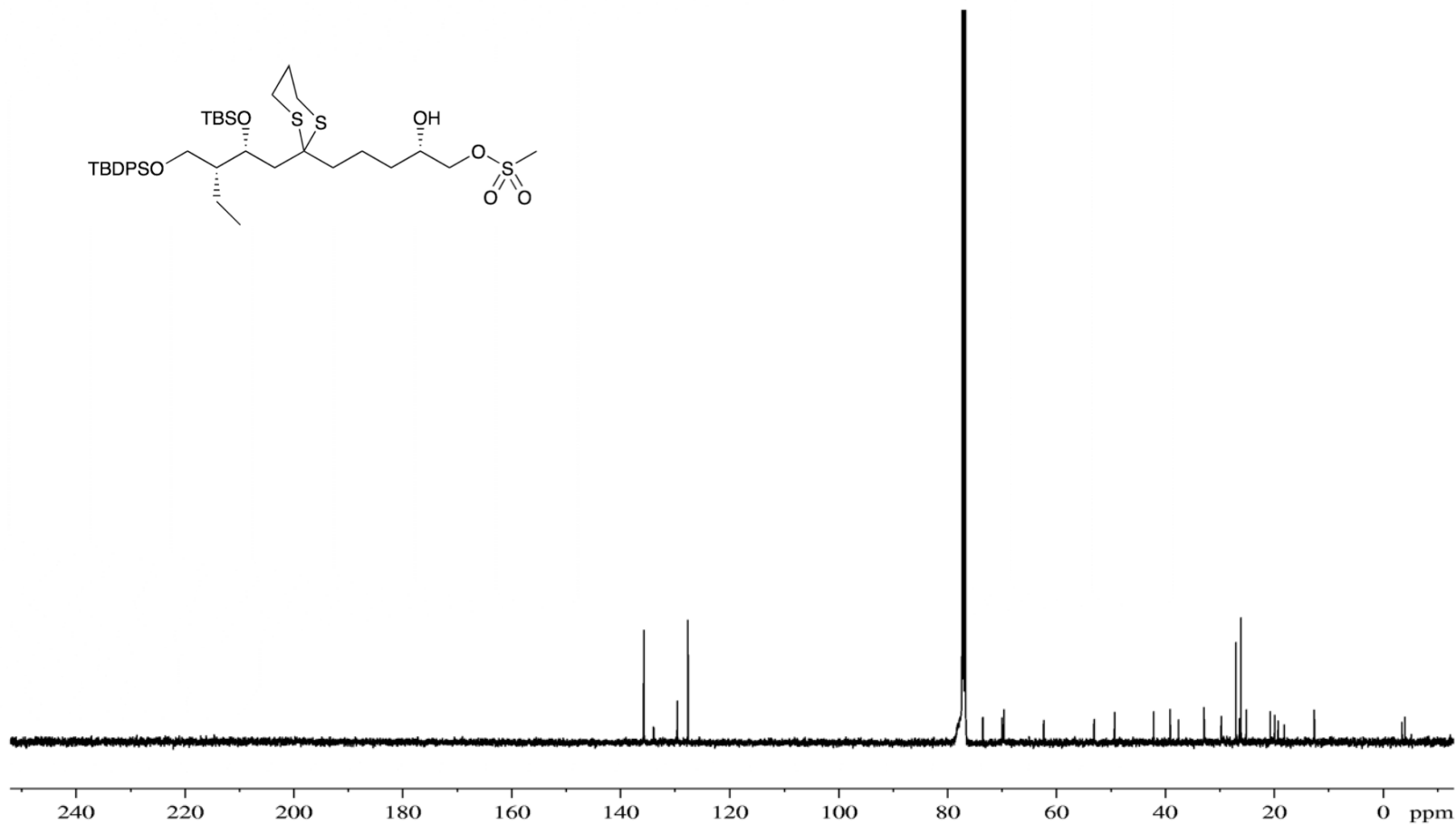
The  $^{13}\text{C}$  NMR Spectrum of Compound (+)-S20 in  $\text{CDCl}_3$



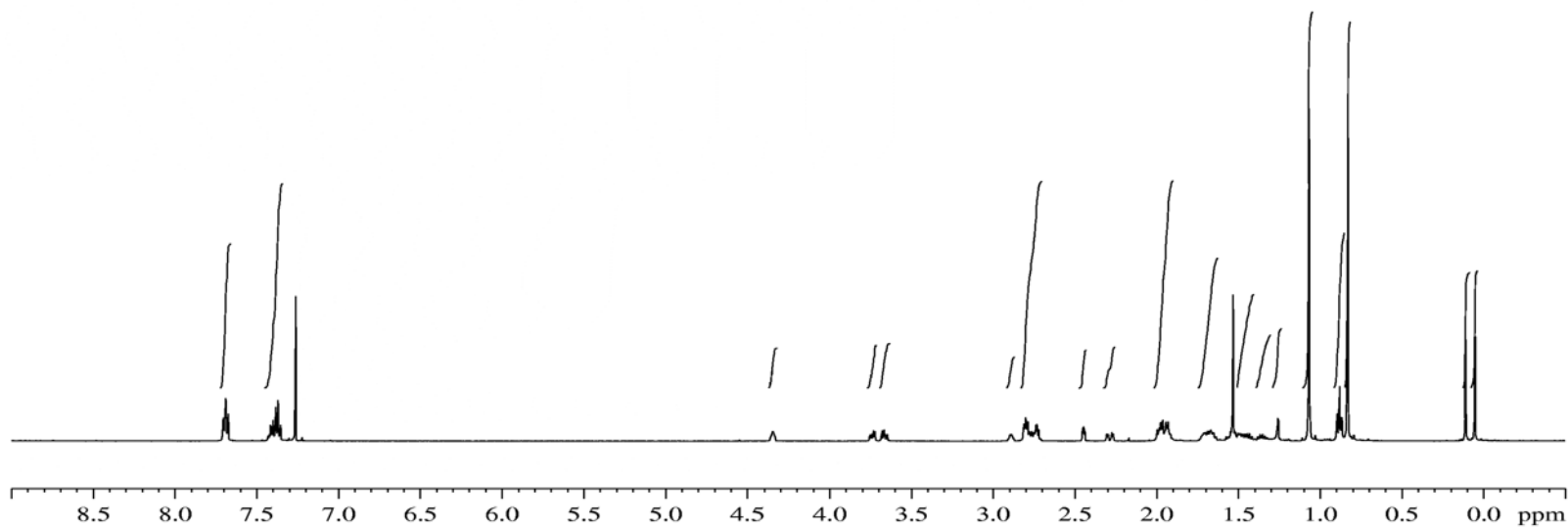
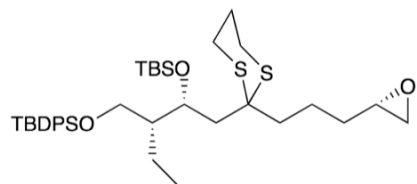


The <sup>1</sup>H NMR Spectrum of Compound (-)-S21 in CDCl<sub>3</sub>

S208



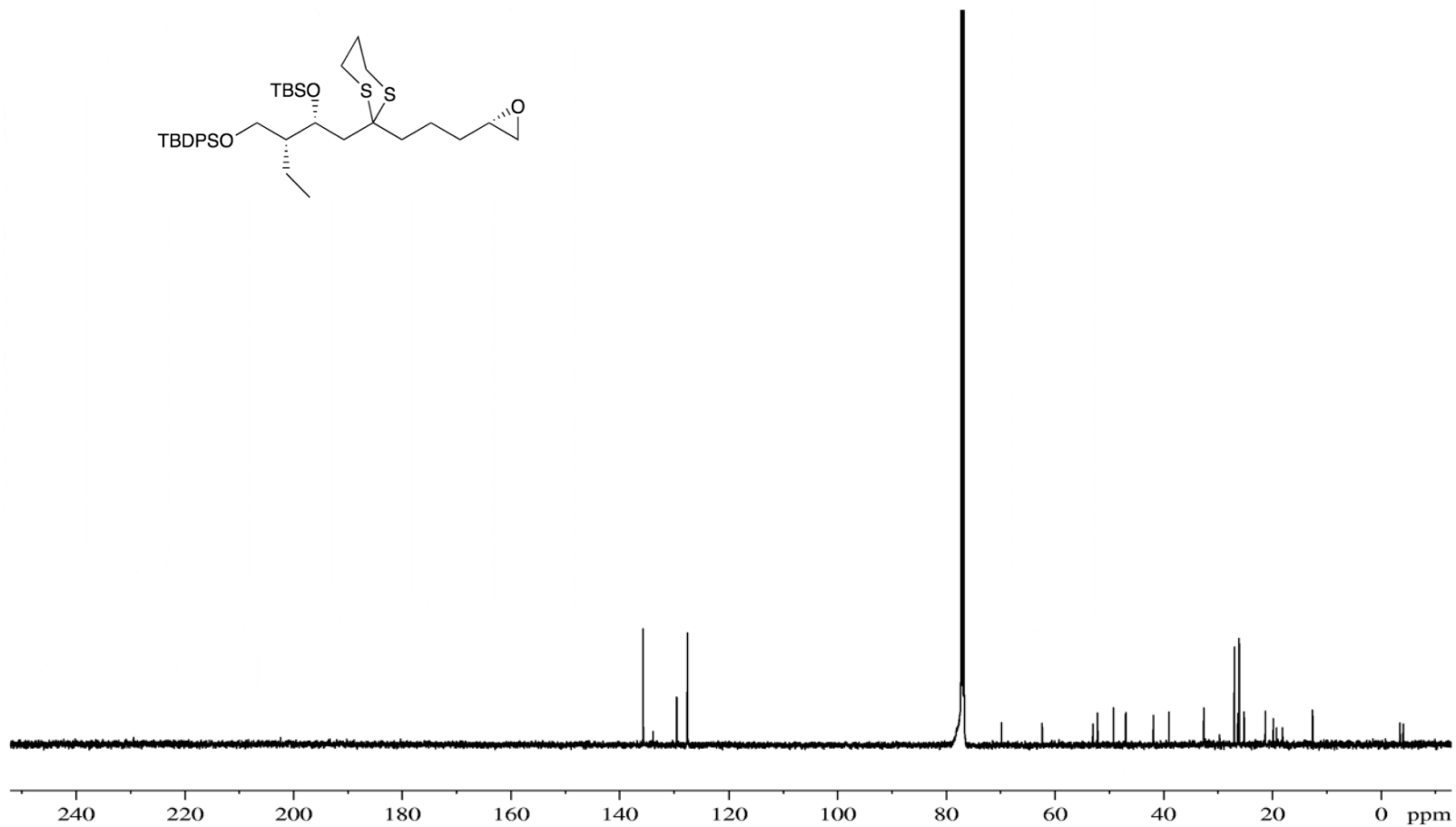
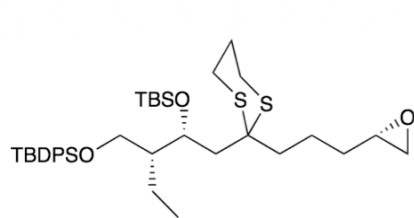
The  $^{13}\text{C}$  NMR Spectrum of Compound (-)-S21 in  $\text{CDCl}_3$



S209

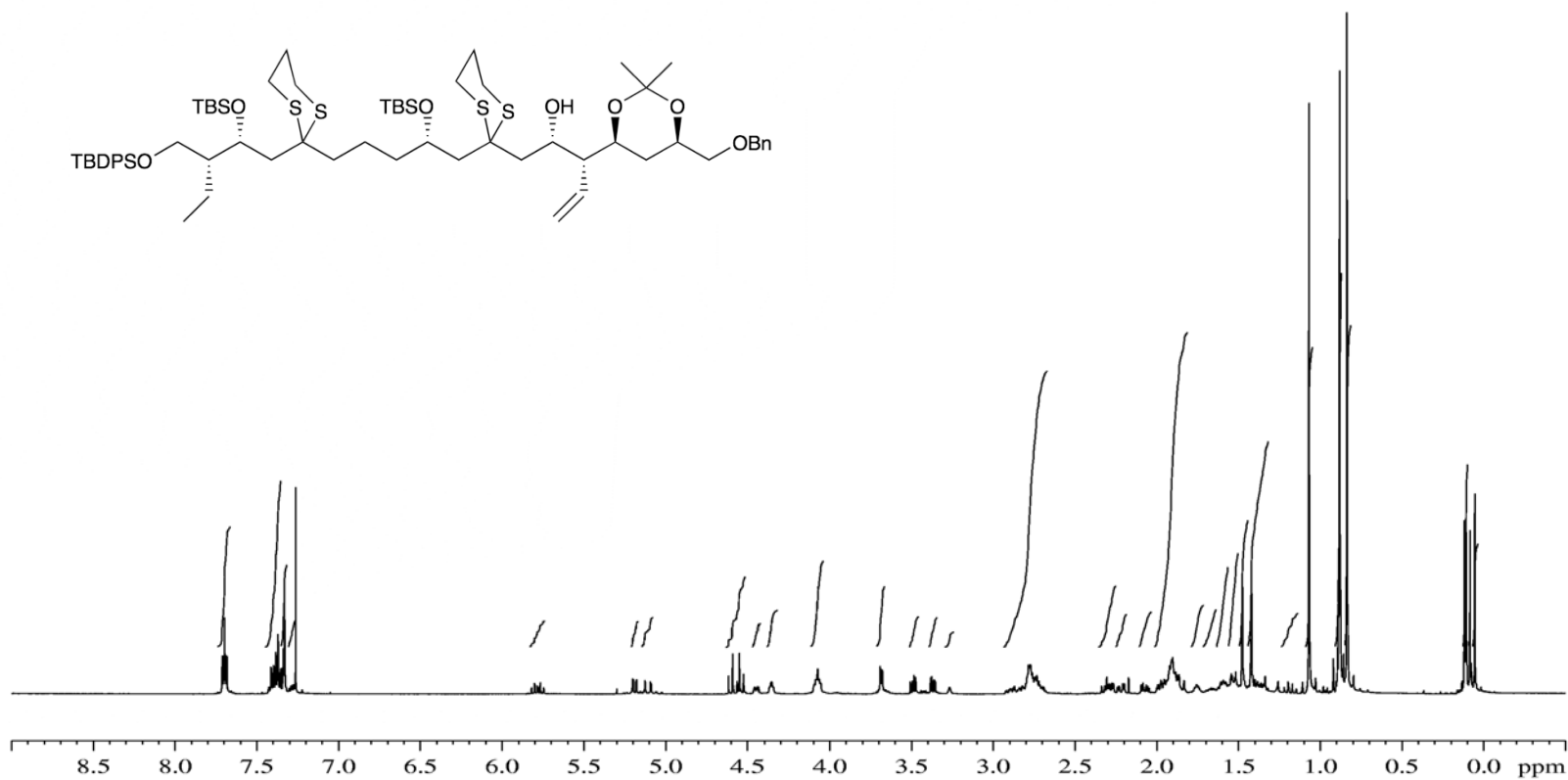
The  $^1\text{H}$  NMR Spectrum of Compound (-)-44 in  $\text{CDCl}_3$

S210



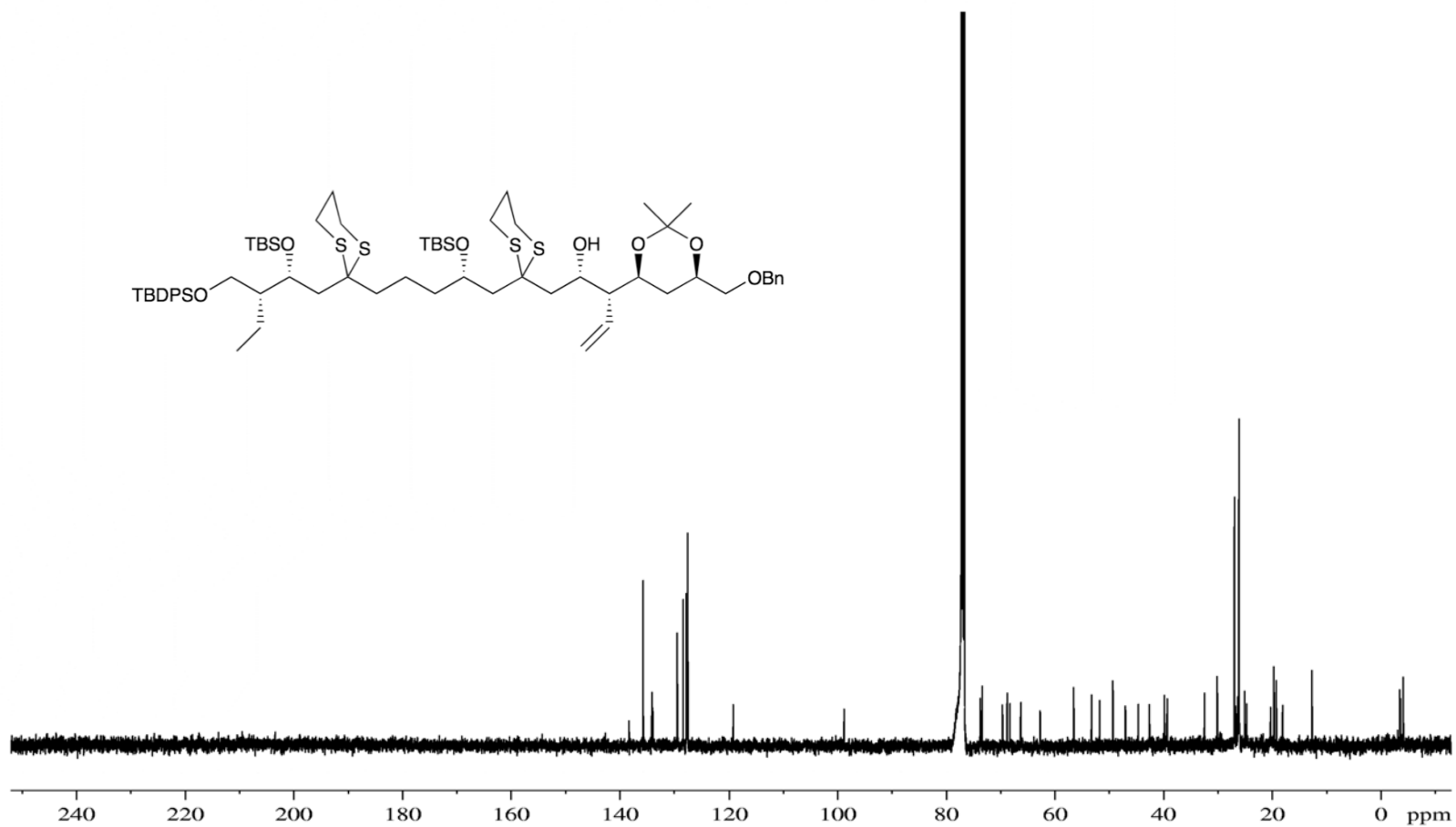
The  $^{13}\text{C}$  NMR Spectrum of Compound (-)-44 in  $\text{CDCl}_3$

S211



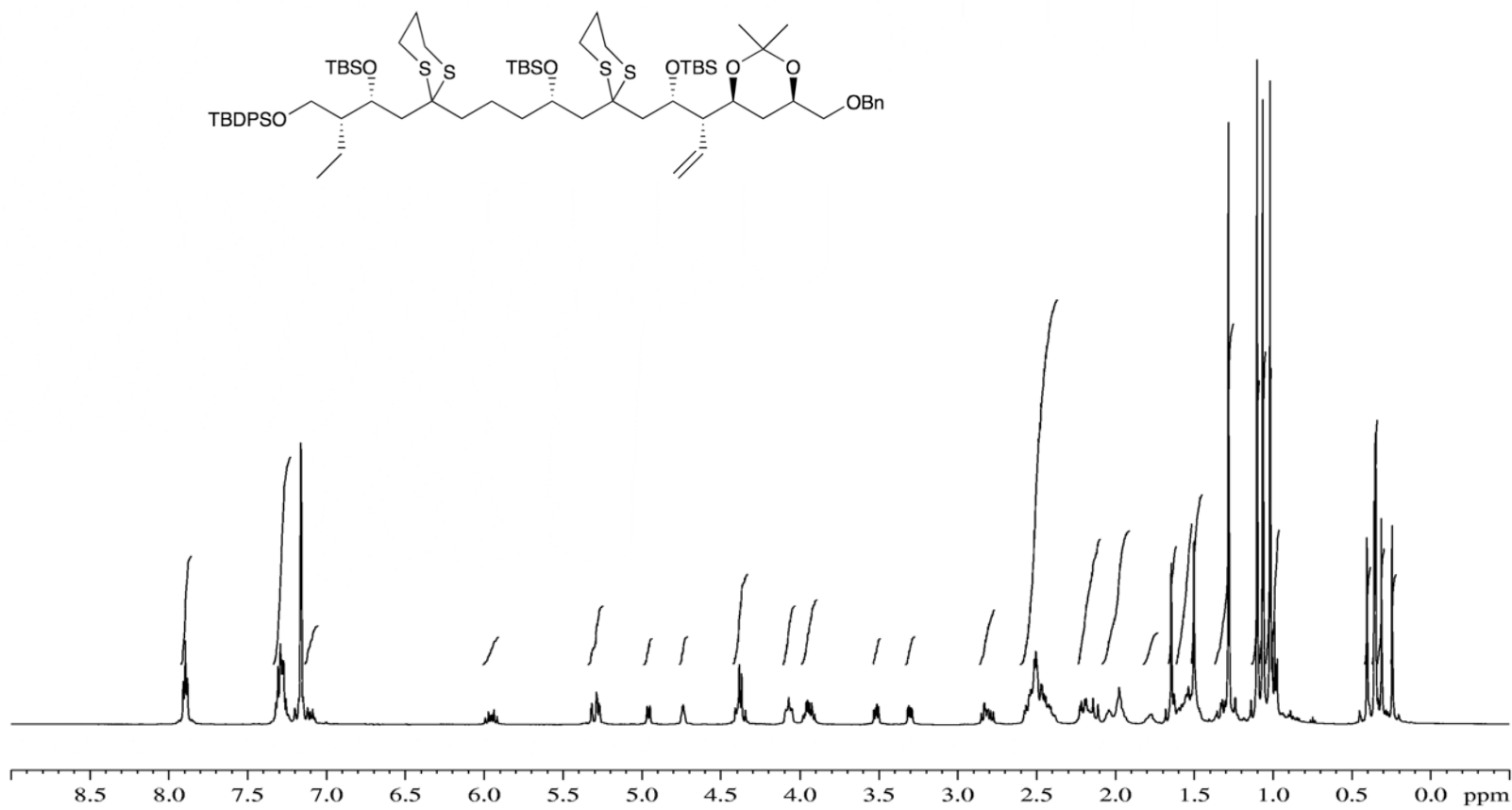
The <sup>1</sup>H NMR Spectrum of Compound (-)-52 in CDCl<sub>3</sub>

S212



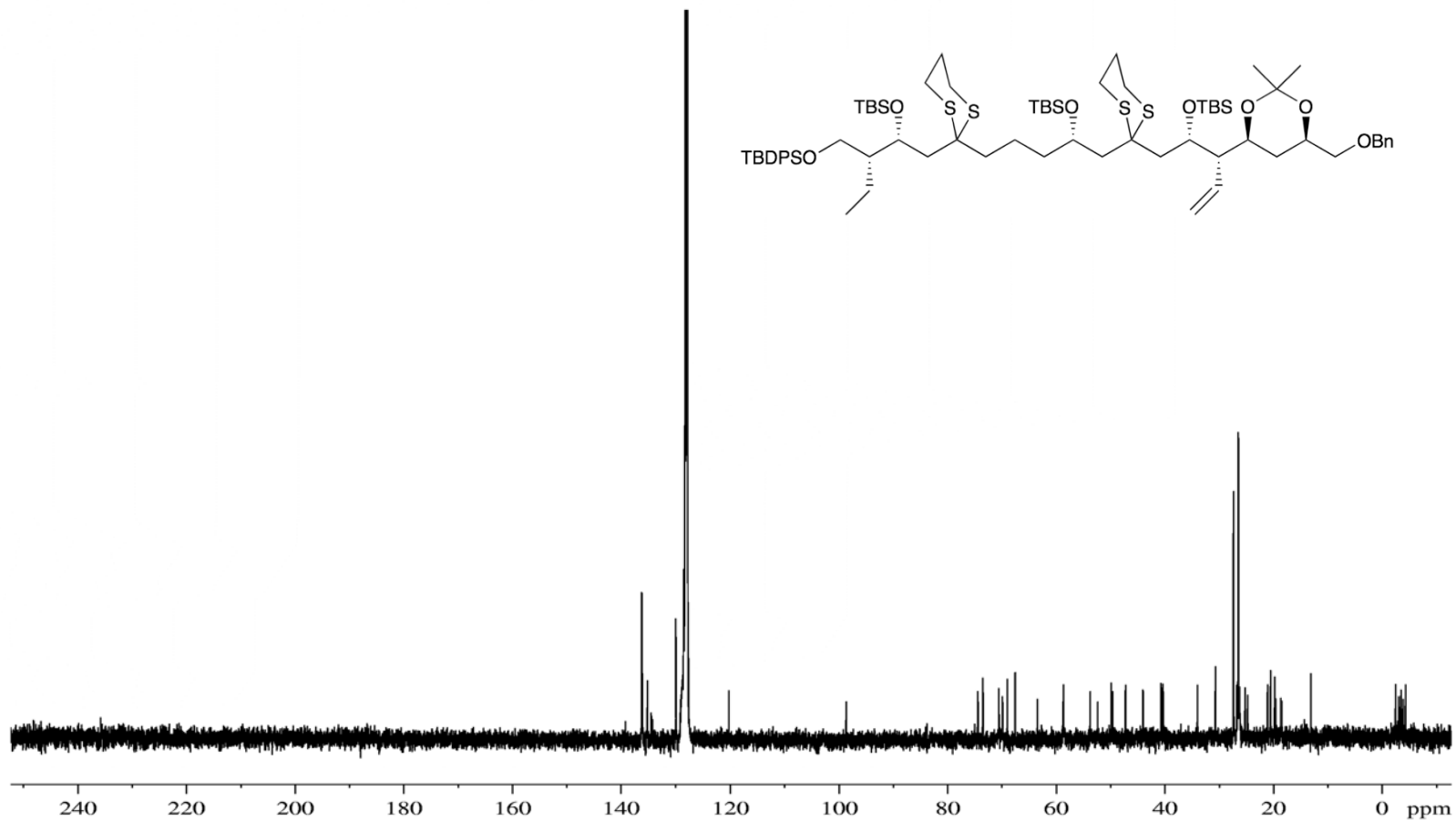
The  $^{13}\text{C}$  NMR Spectrum of Compound (-)-52 in  $\text{CDCl}_3$

S213



The <sup>1</sup>H NMR Spectrum of Compound (+)-53 in C<sub>6</sub>D<sub>6</sub>

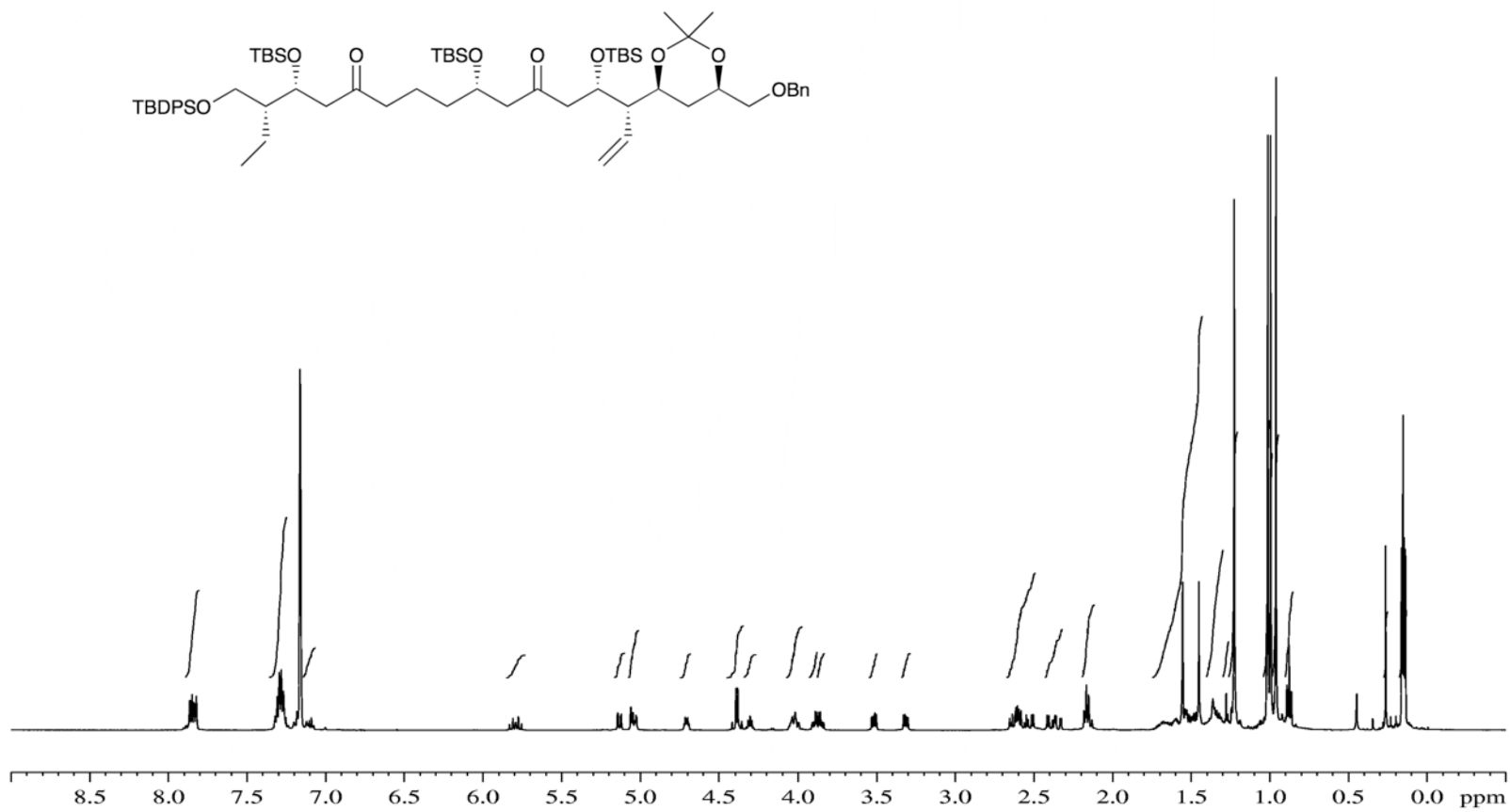
S214



The  $^{13}\text{C}$  NMR Spectrum of Compound (+)-53 in  $\text{C}_6\text{D}_6$

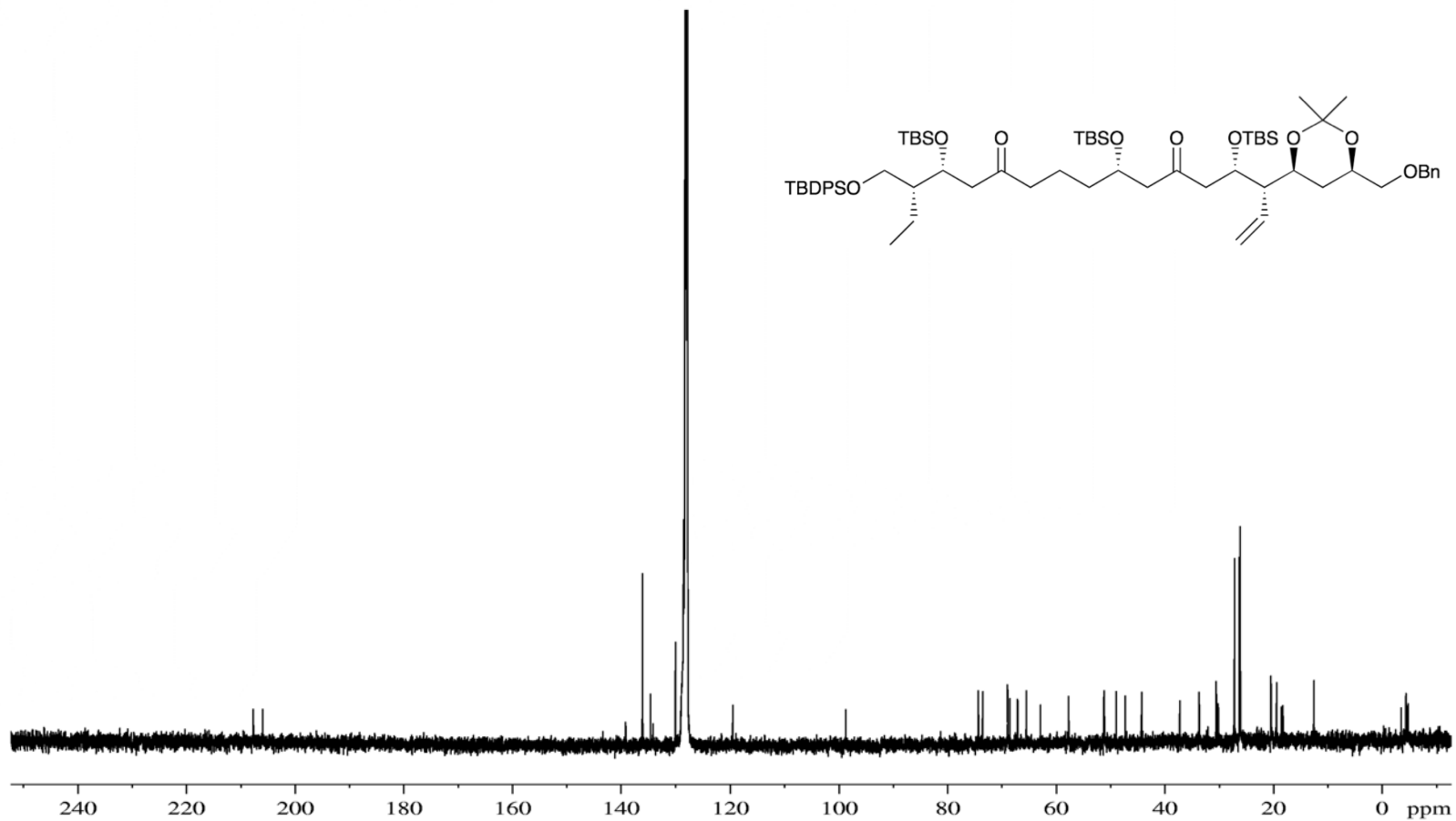


S215



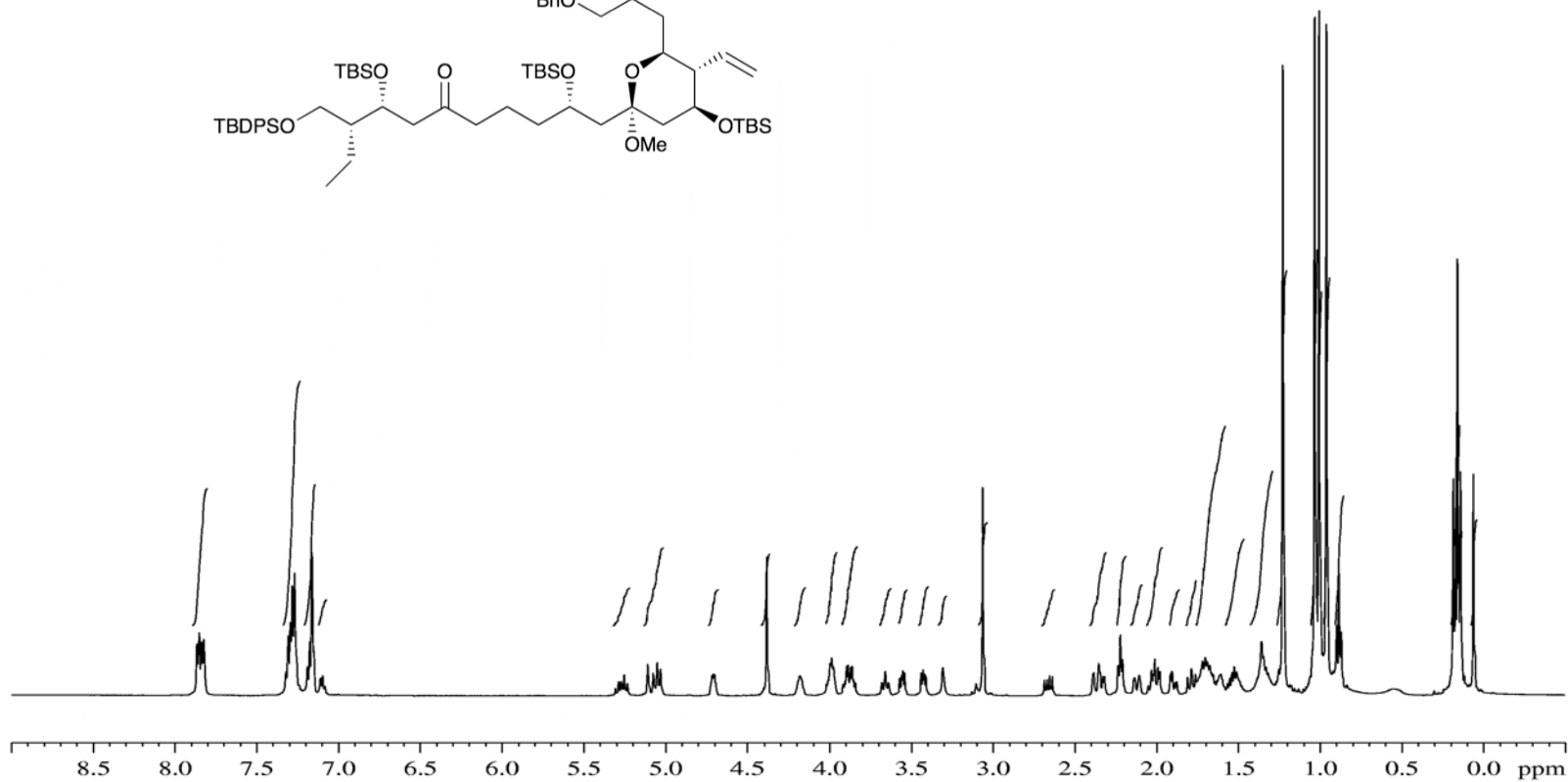
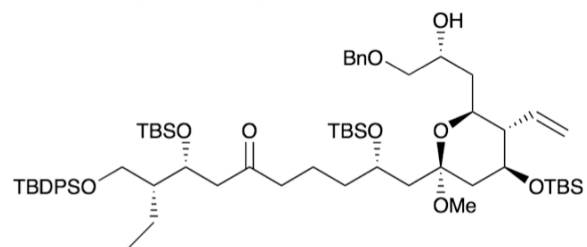
The <sup>1</sup>H NMR Spectrum of Compound (-)-54 in C<sub>6</sub>D<sub>6</sub>

S216



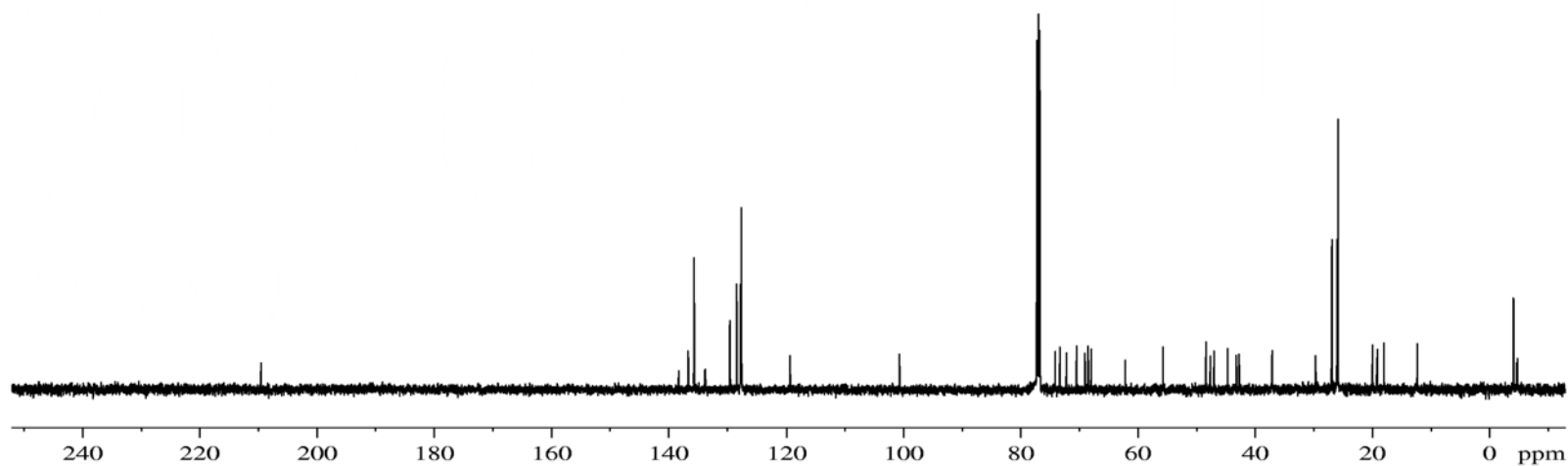
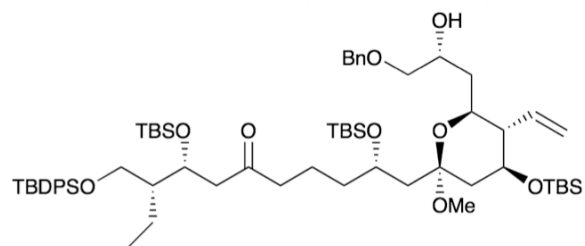
The  $^{13}\text{C}$  NMR Spectrum of Compound (-)-54 in  $\text{C}_6\text{D}_6$

S217



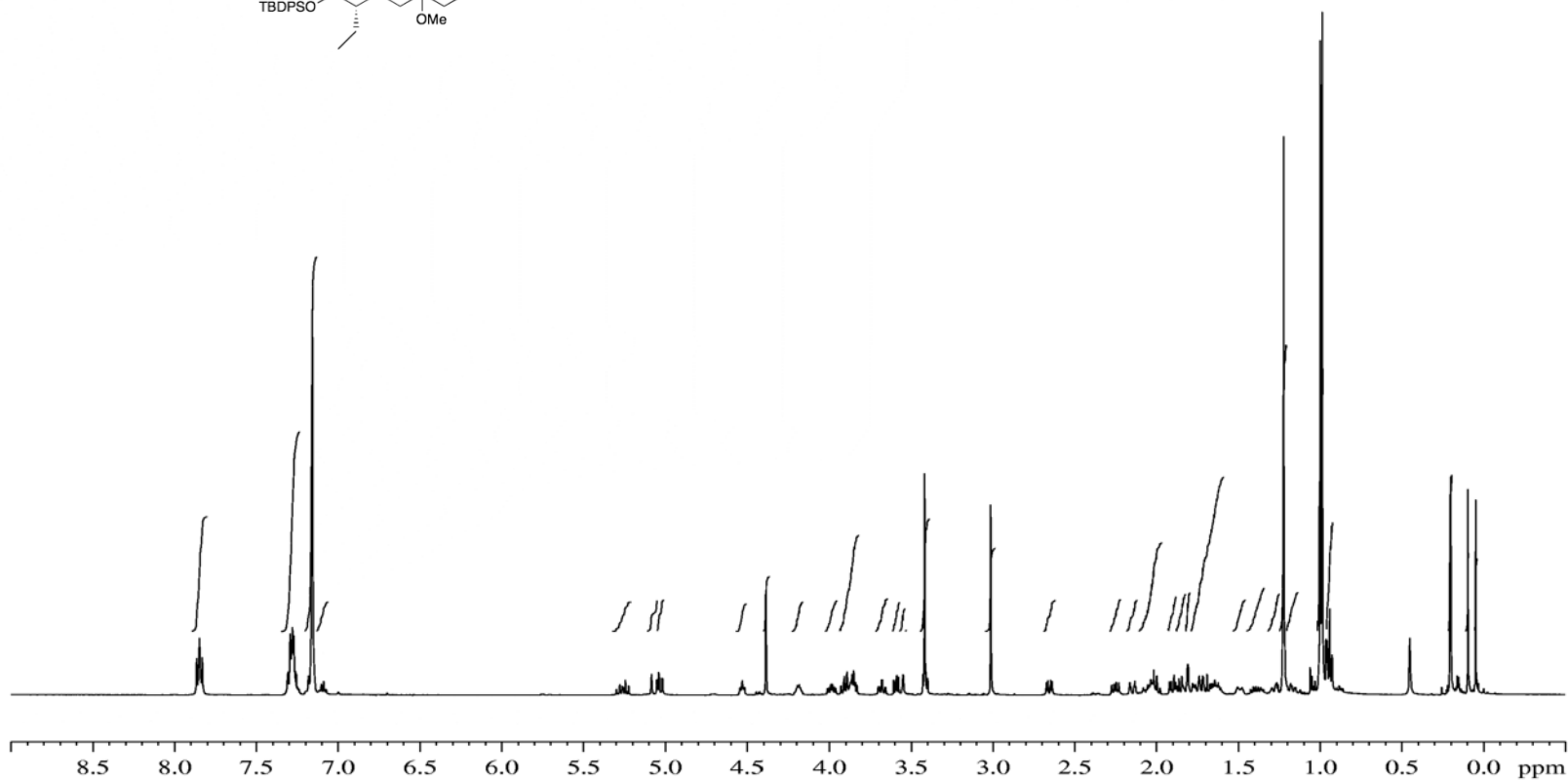
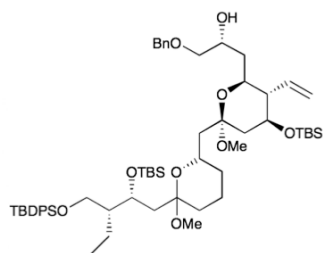
The <sup>1</sup>H NMR Spectrum of Compound (-)-55 in C<sub>6</sub>D<sub>6</sub>

S218



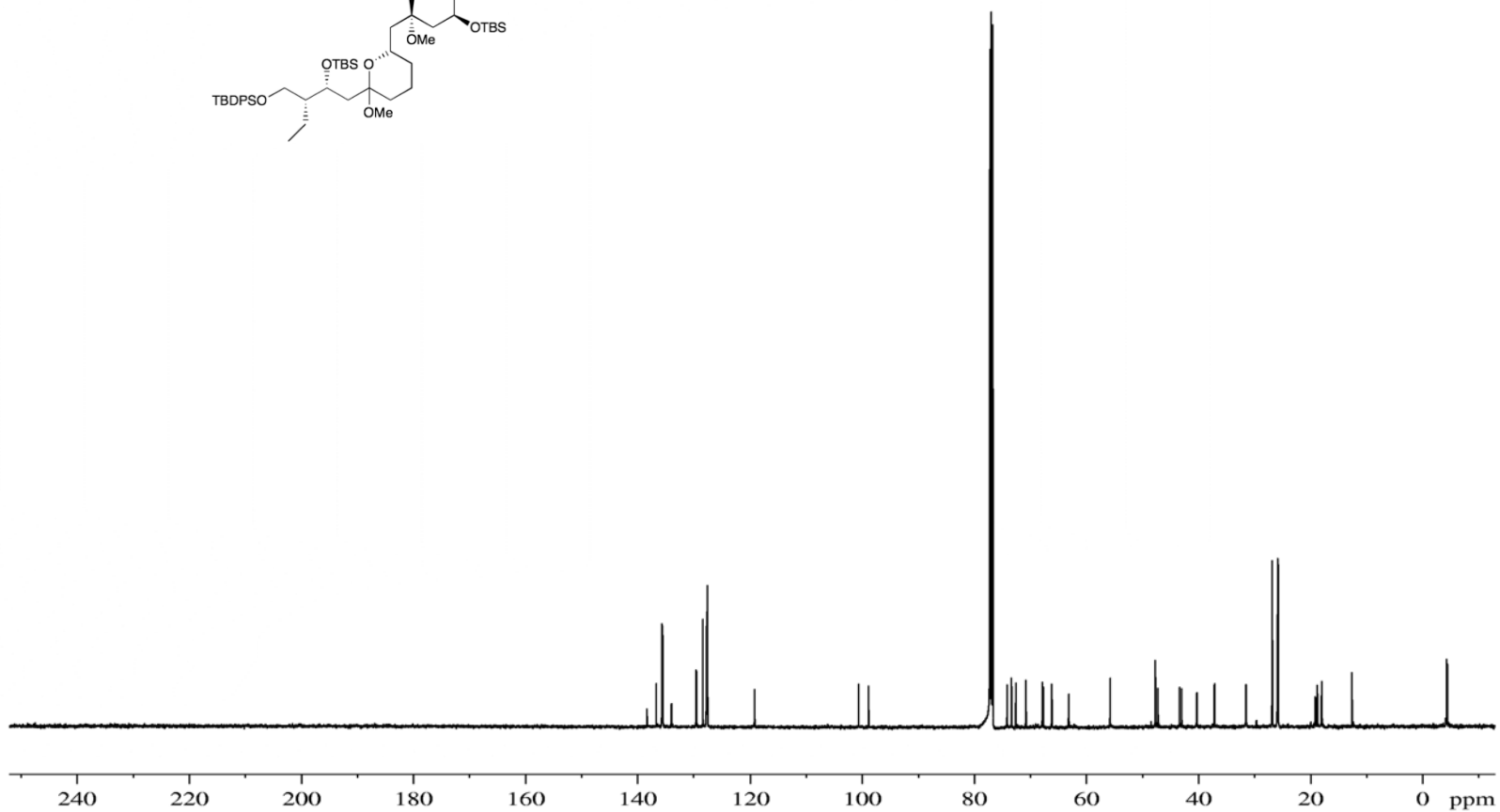
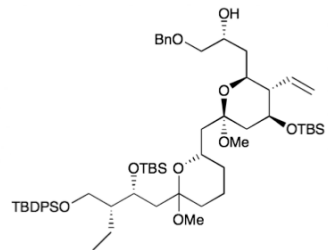
The <sup>13</sup>C NMR Spectrum of Compound (-)-55 in CDCl<sub>3</sub>

S219



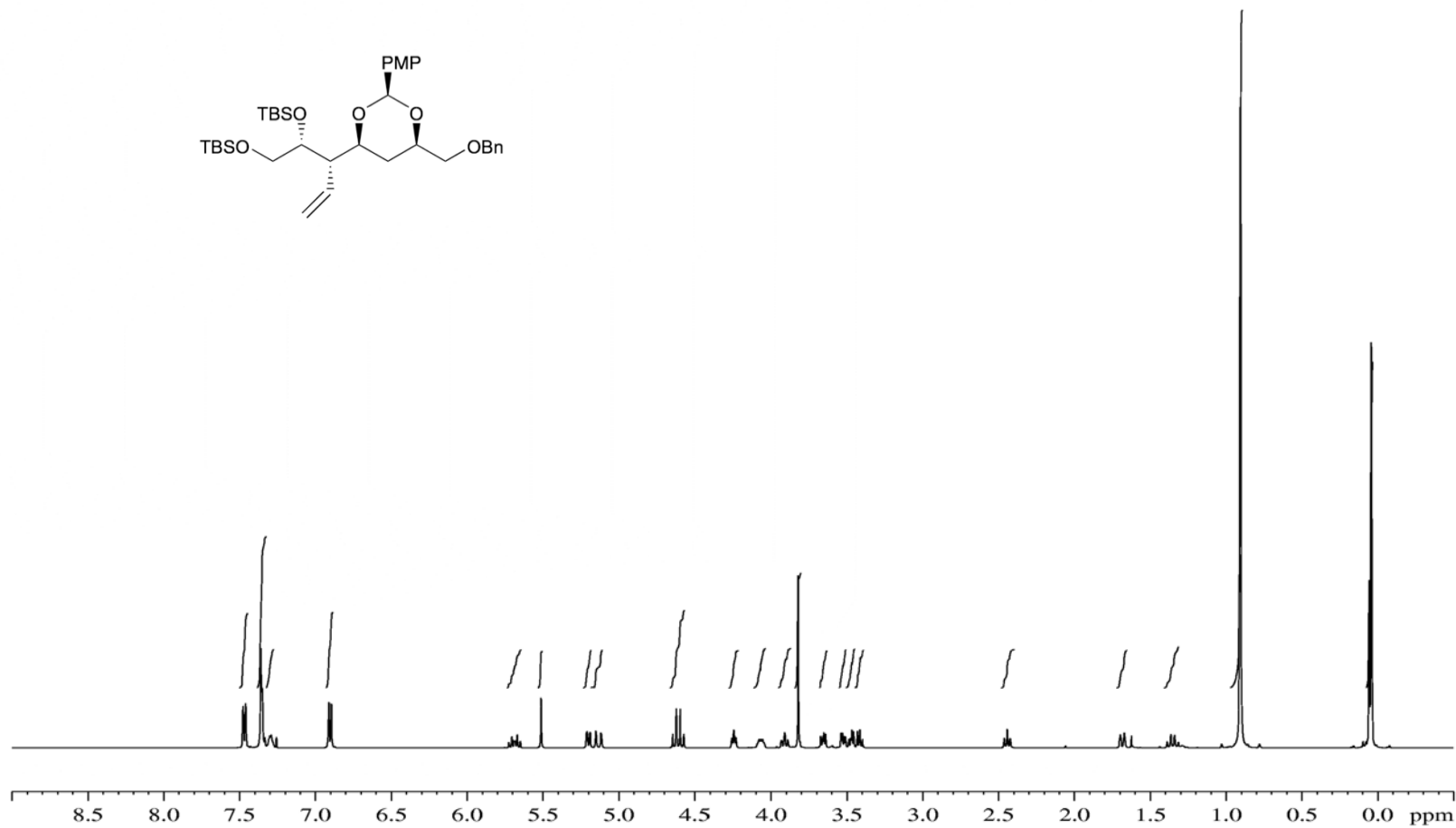
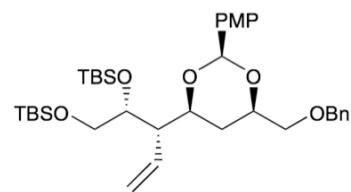
The <sup>1</sup>H NMR Spectrum of Compound (-)-56 in C<sub>6</sub>D<sub>6</sub>

S220

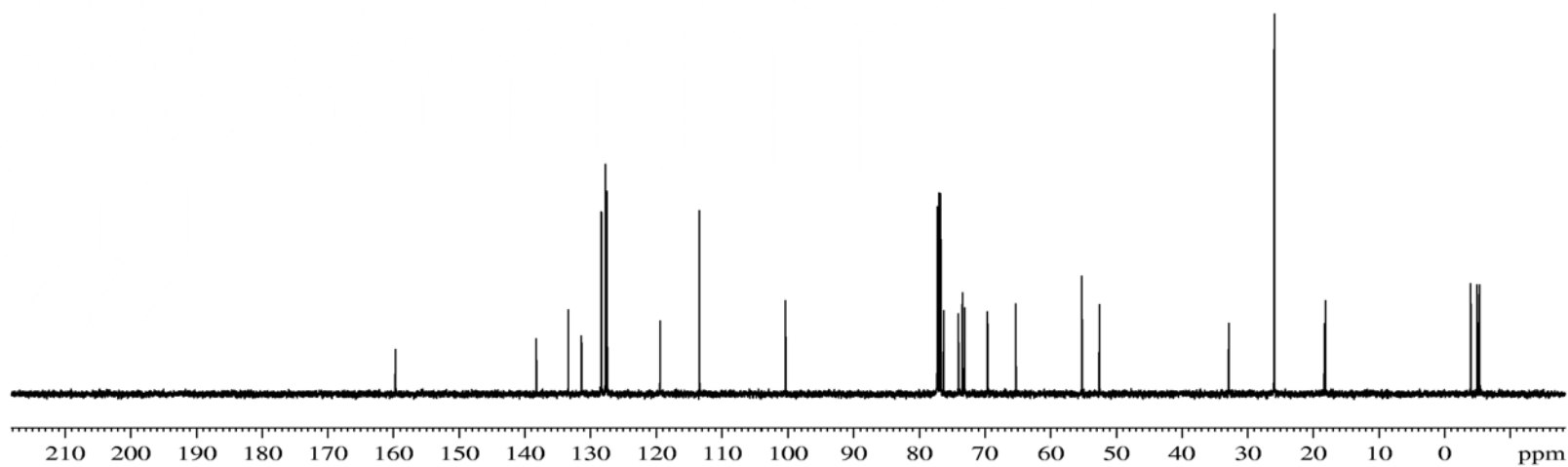
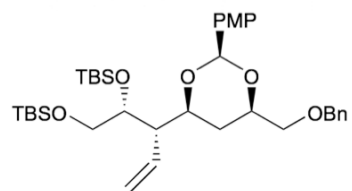


The <sup>13</sup>C NMR Spectrum of Compound (-)-56 in CDCl<sub>3</sub>

S221

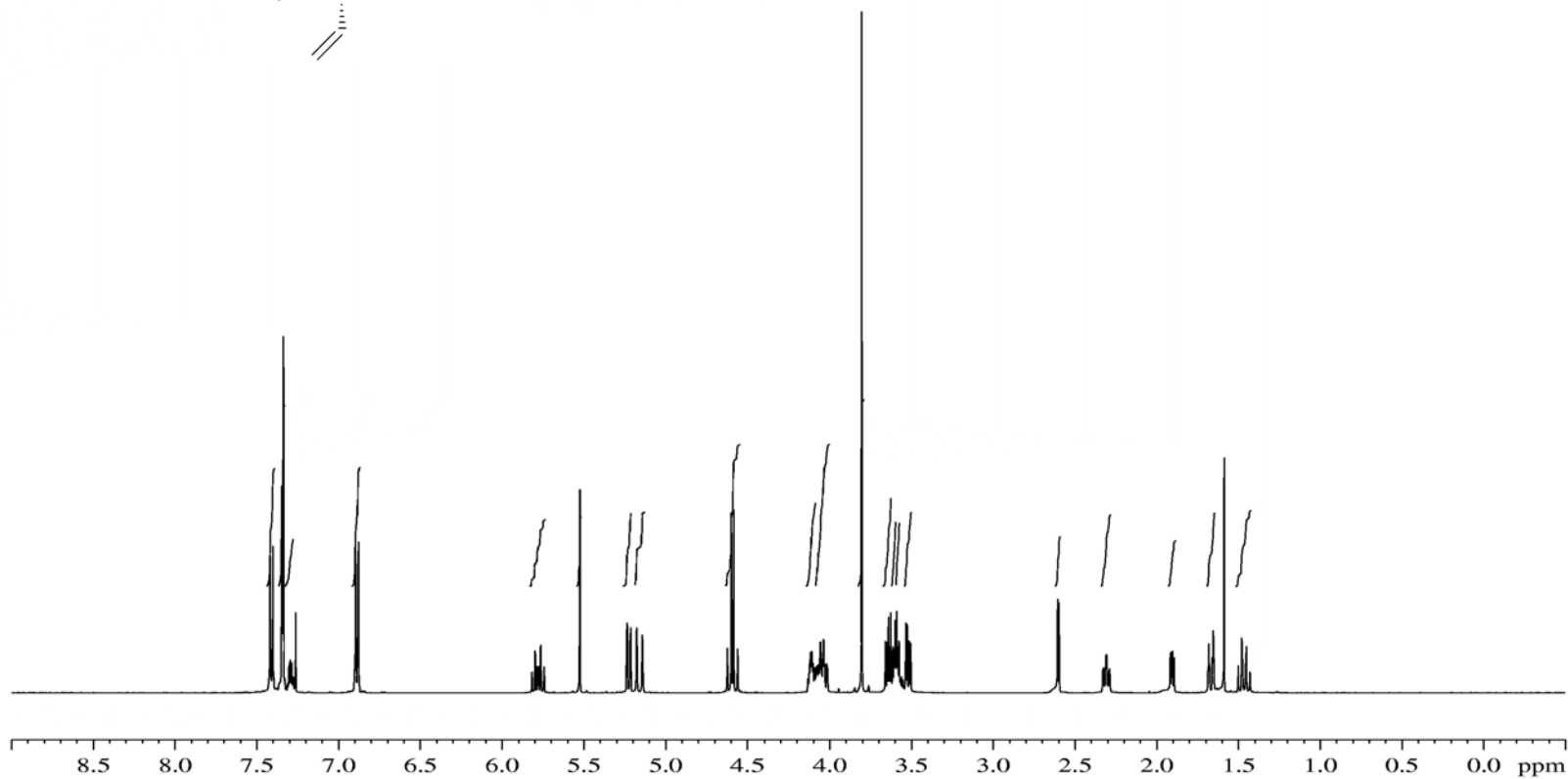
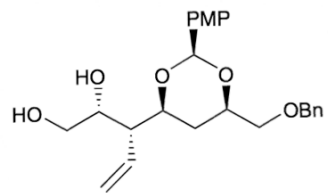


The  $^1\text{H}$  NMR Spectrum of Compound (-)-**S22** in  $\text{CDCl}_3$



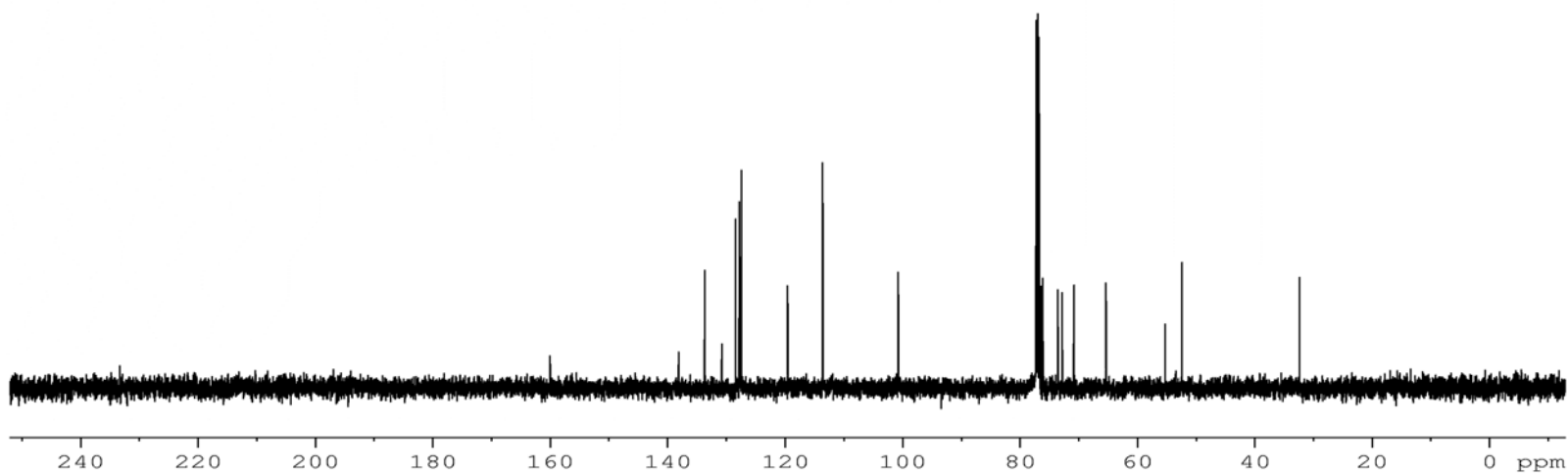
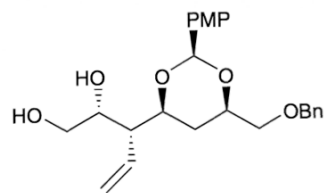
The <sup>13</sup>C NMR Spectrum of Compound (-)-S22 in CDCl<sub>3</sub>



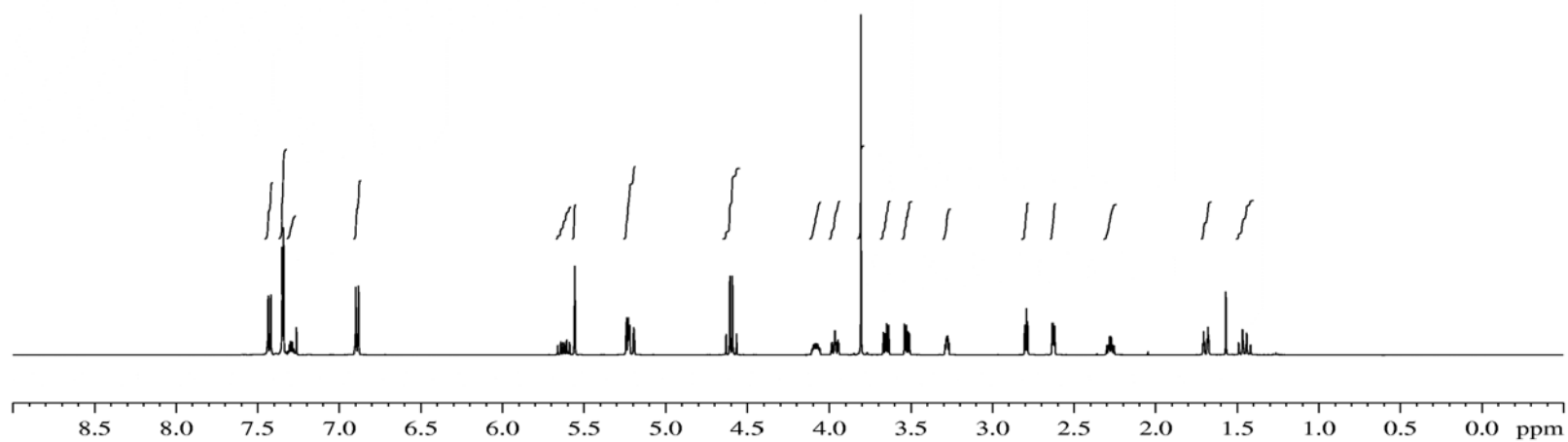
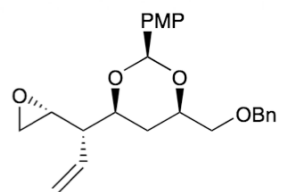


S223

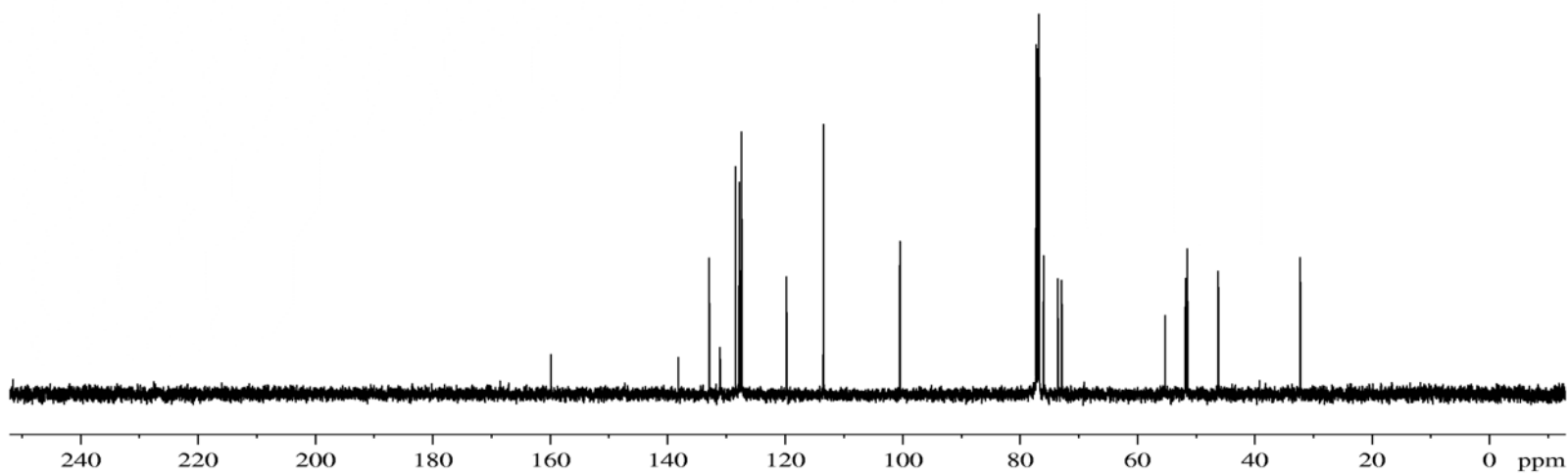
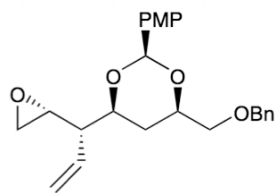
The <sup>1</sup>H NMR Spectrum of Compound (-)-**S23** in CDCl<sub>3</sub>



The <sup>13</sup>C NMR Spectrum of Compound (-)-S23 in CDCl<sub>3</sub>

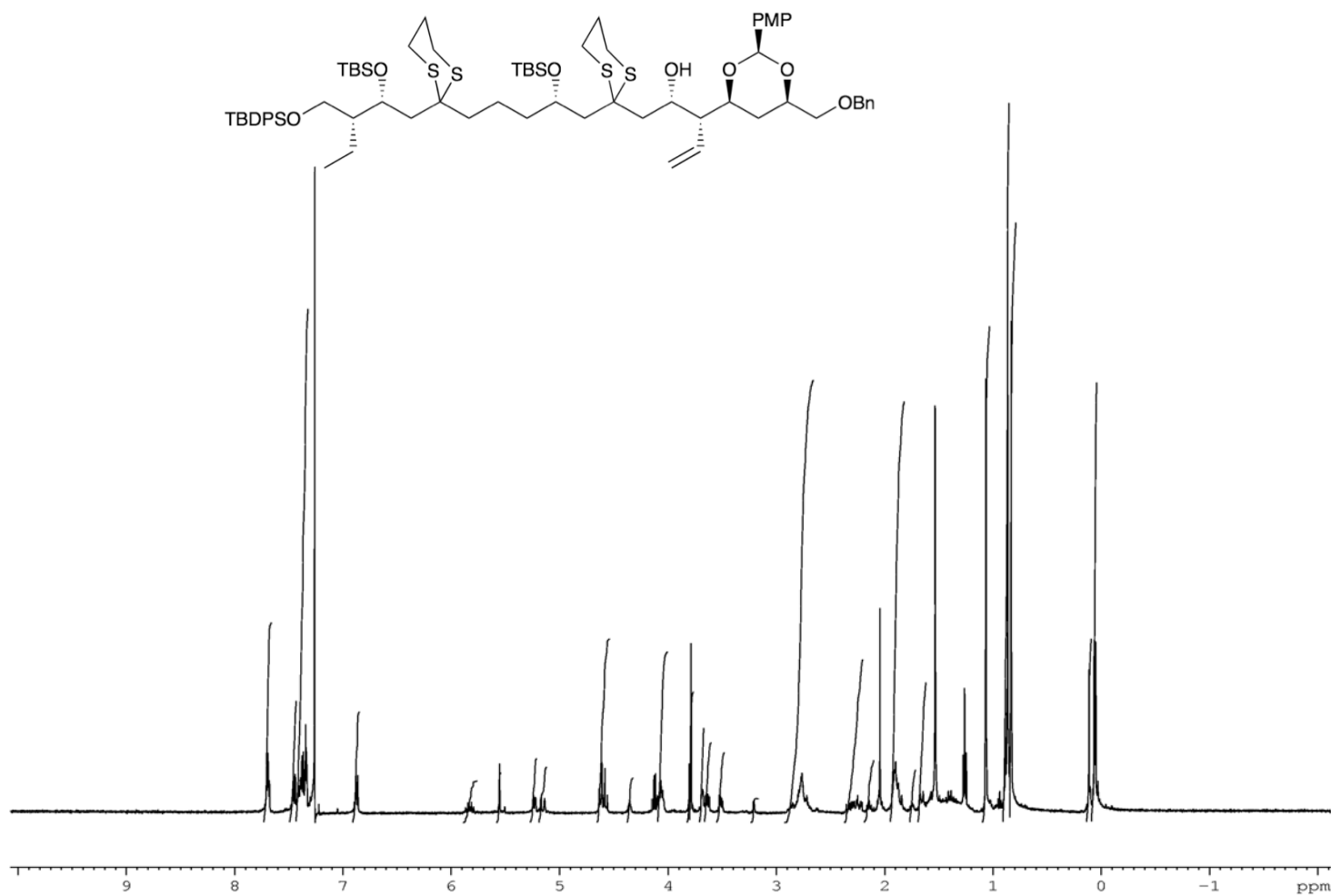


The <sup>1</sup>H NMR Spectrum of Compound (-)-57 in CDCl<sub>3</sub>



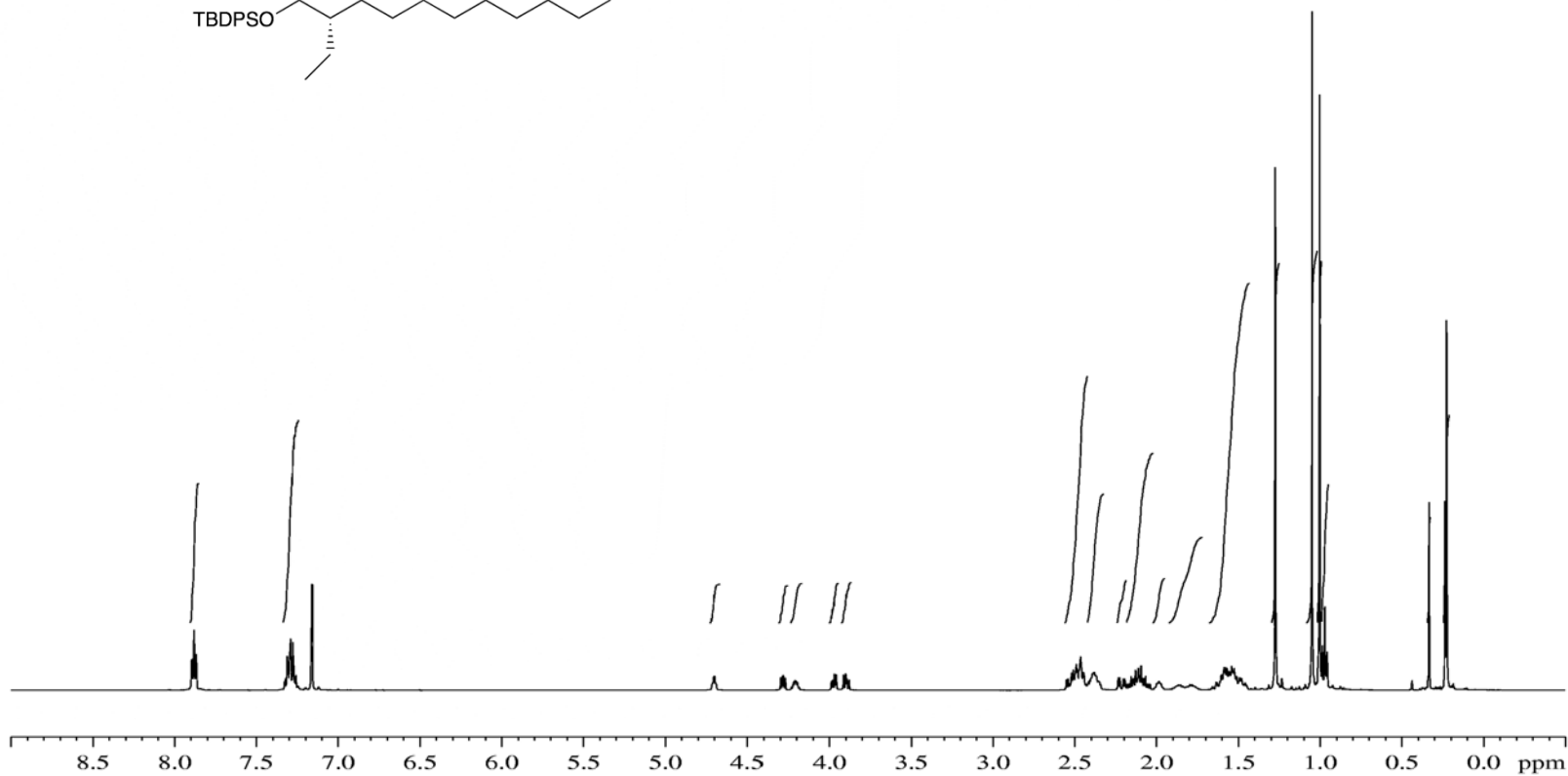
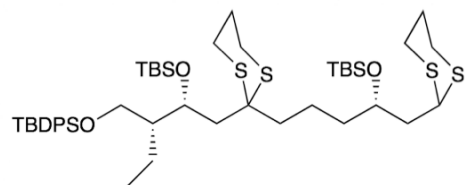
The  $^{13}\text{C}$  NMR Spectrum of Compound (-)-57 in  $\text{CDCl}_3$

S227



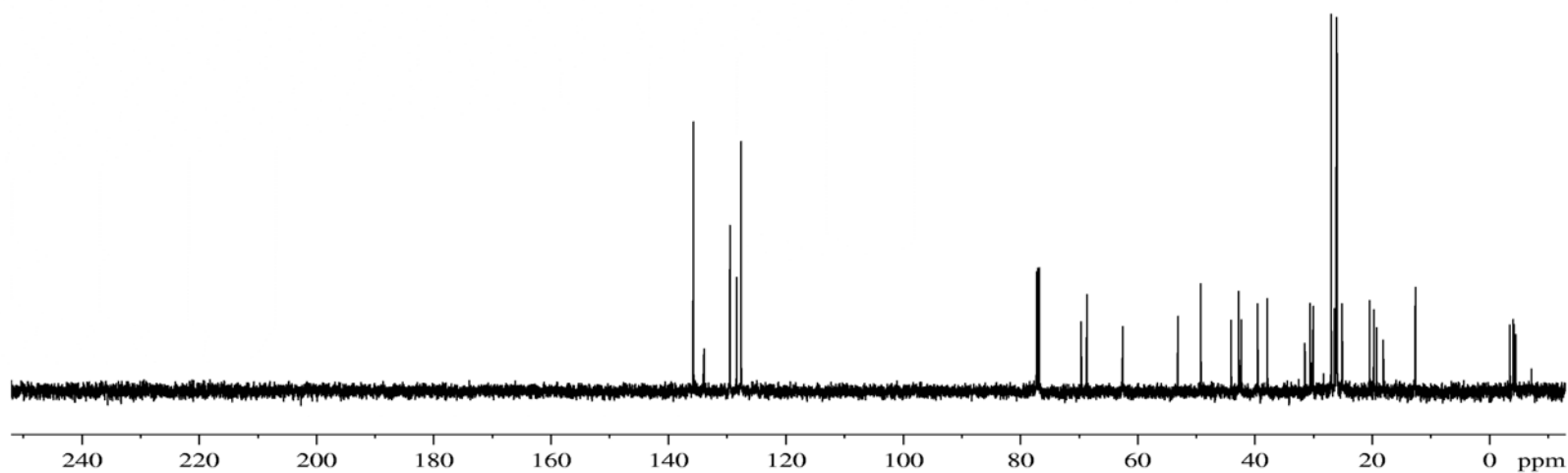
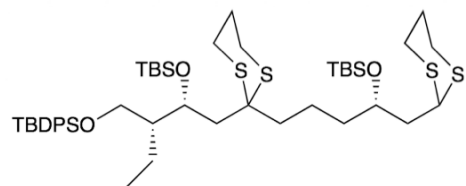
The  $^1\text{H}$  NMR Spectrum of Compound **58** in  $\text{CDCl}_3$

S228

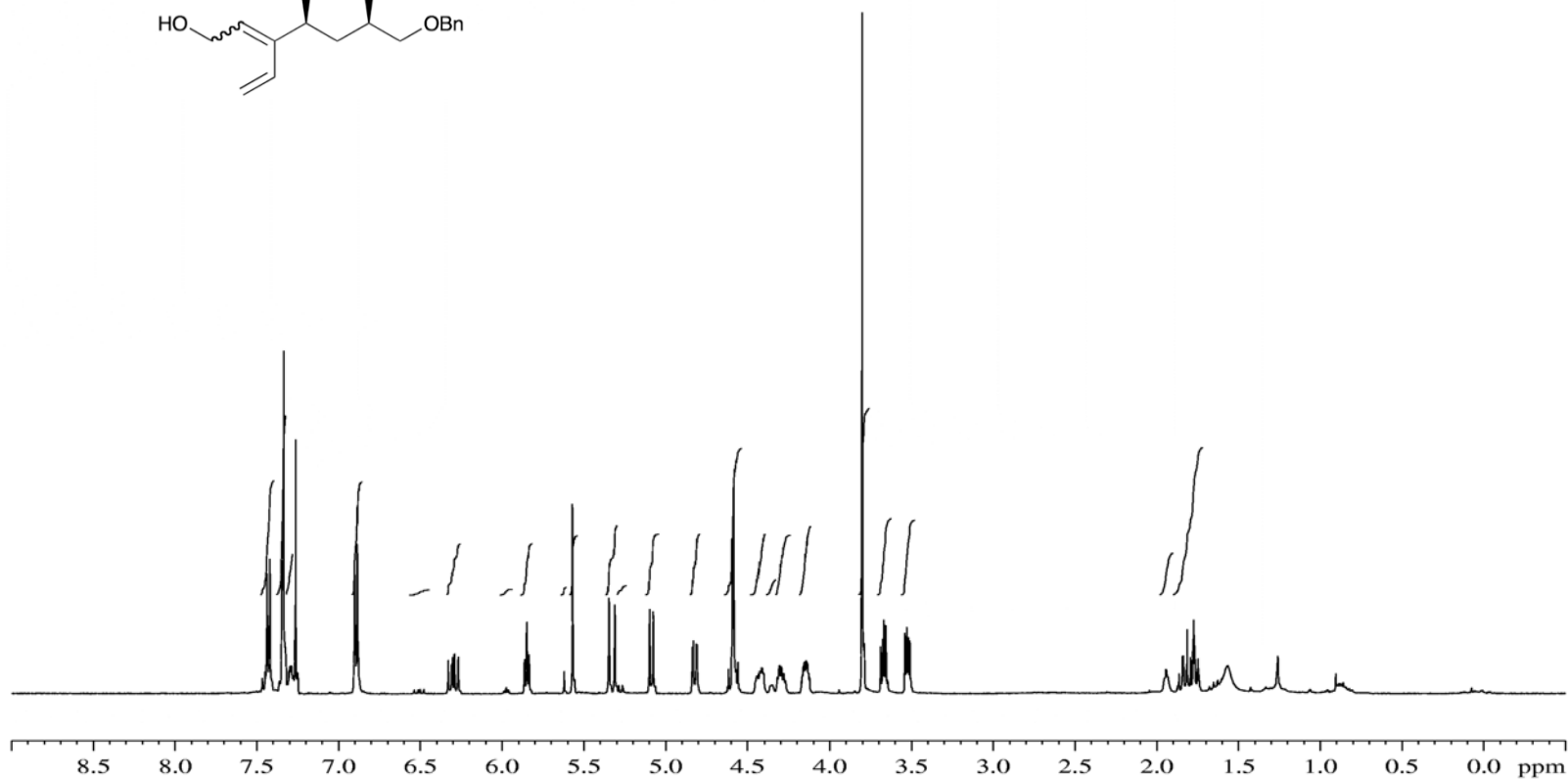
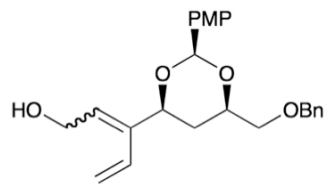


The <sup>1</sup>H NMR Spectrum of Compound (+)-**59** in C<sub>6</sub>D<sub>6</sub>

S229



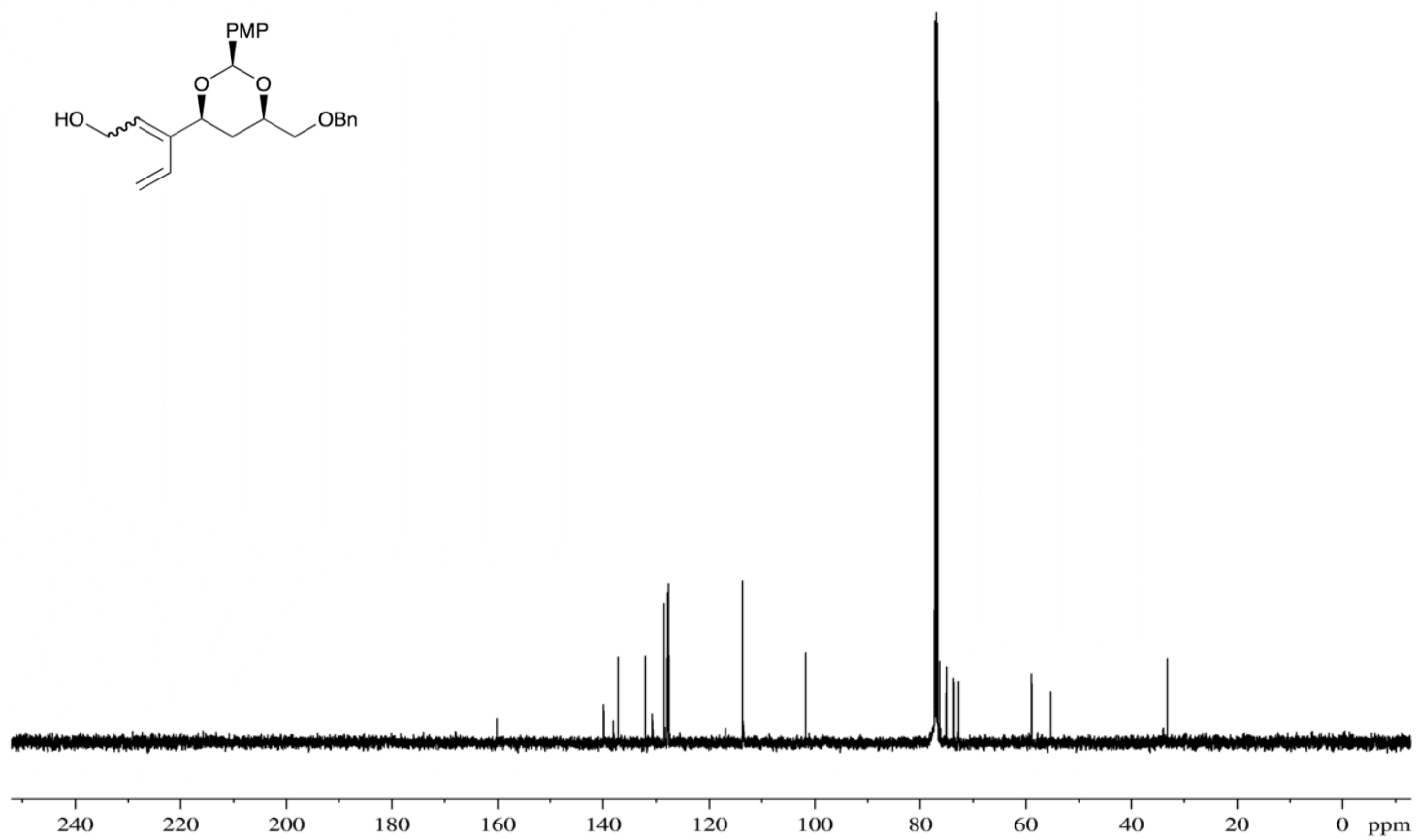
The  $^{13}\text{C}$  NMR Spectrum of Compound (+)-59 in  $\text{CDCl}_3$



The <sup>1</sup>H NMR Spectrum of Compound (+)-**60** in CDCl<sub>3</sub>

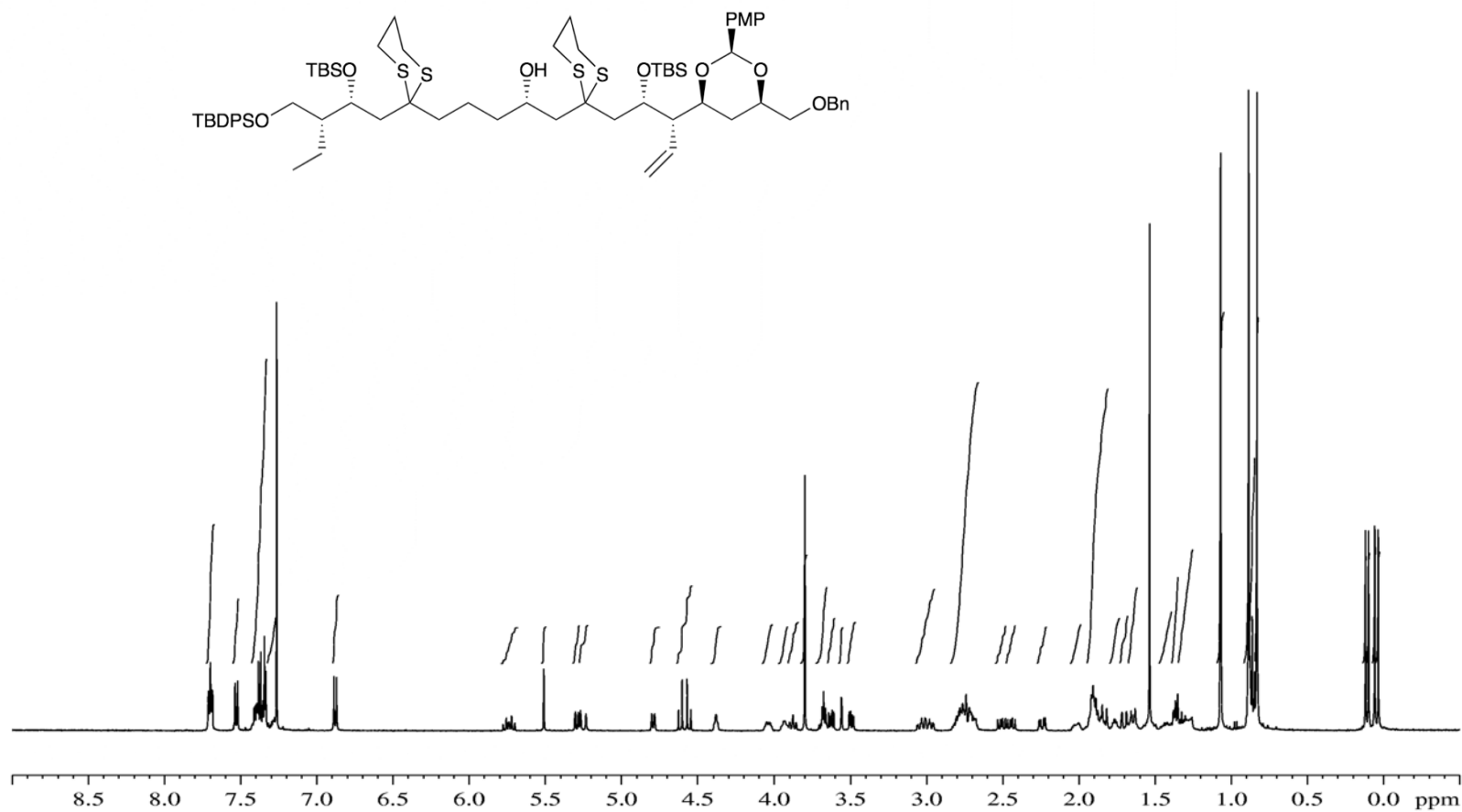


S231

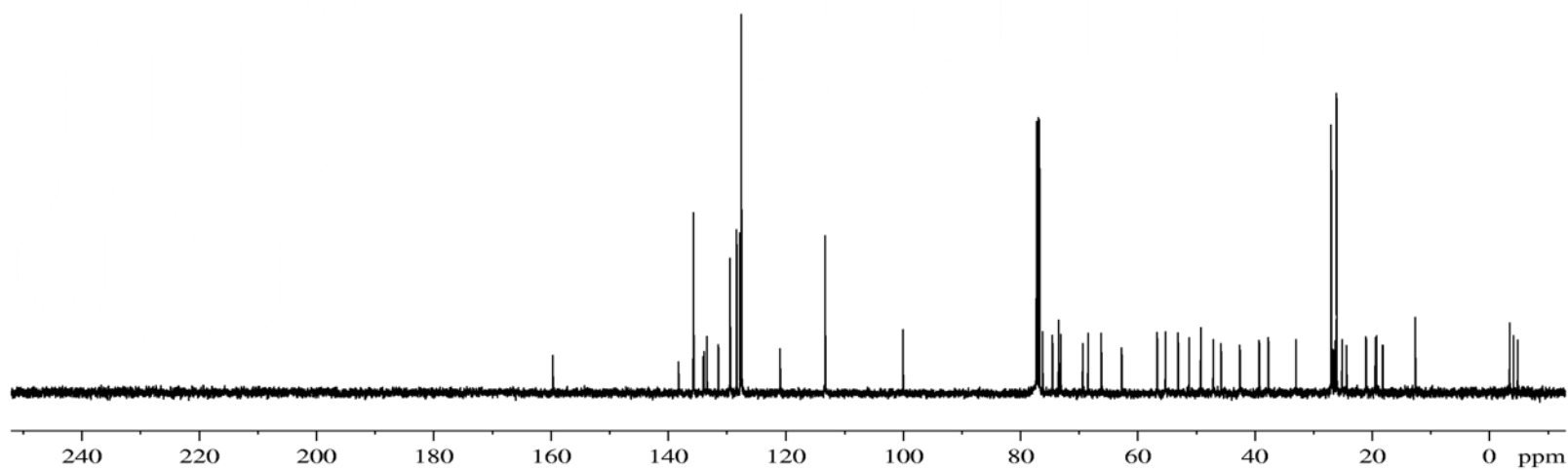
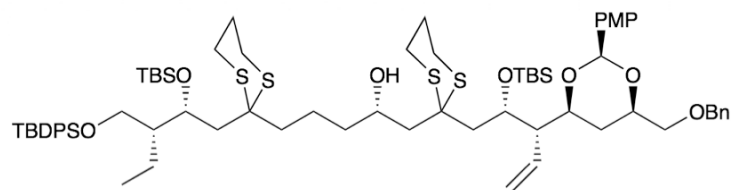


The  $^{13}\text{C}$  NMR Spectrum of Compound (+)-60 in  $\text{CDCl}_3$

S232



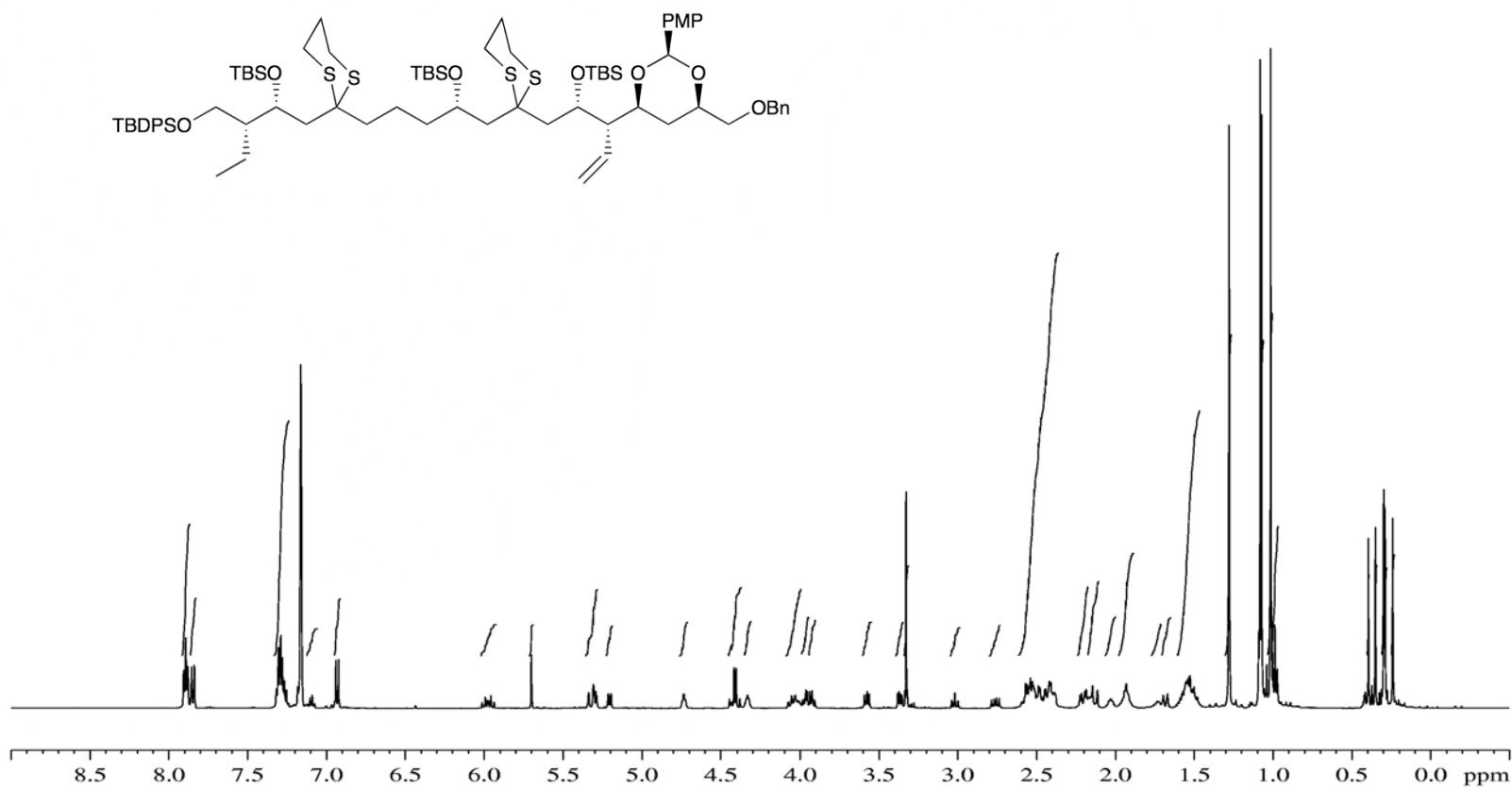
The <sup>1</sup>H NMR Spectrum of Compound (-)-61 in CDCl<sub>3</sub>



S233

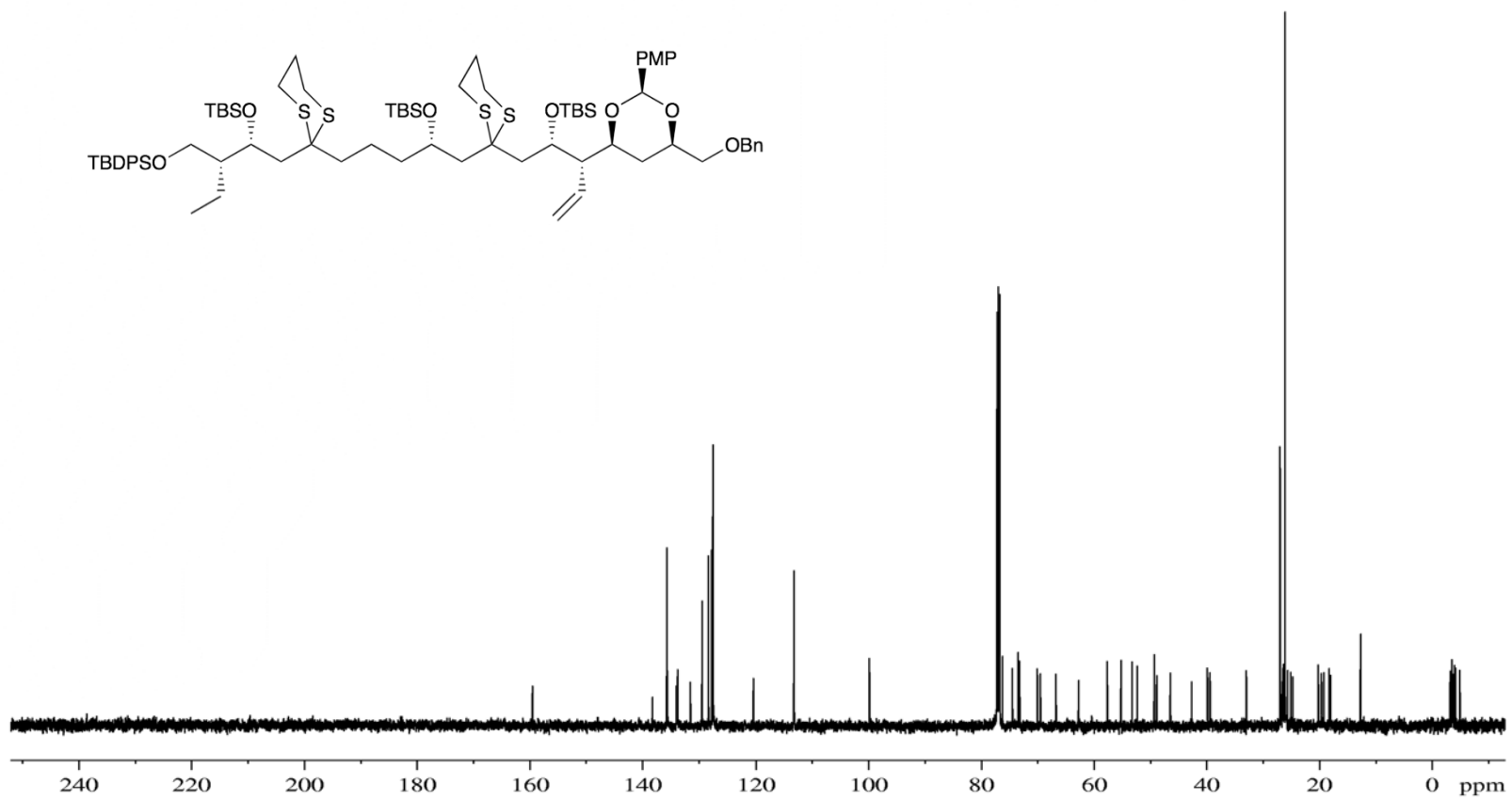
The  $^{13}\text{C}$  NMR Spectrum of Compound (-)-61 in  $\text{CDCl}_3$

S234



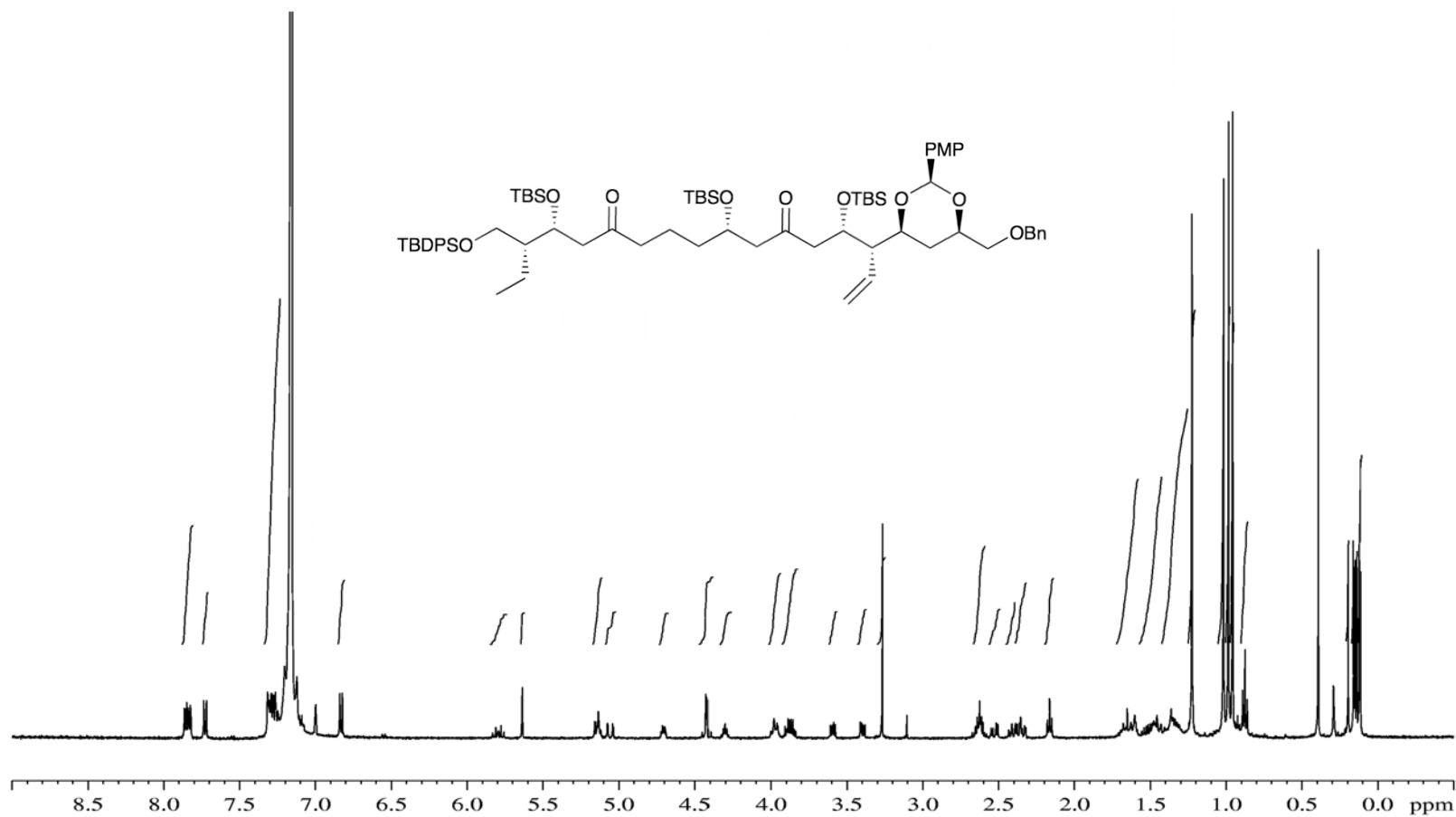
The <sup>1</sup>H NMR Spectrum of Compound (-)-S24 in C<sub>6</sub>D<sub>6</sub>

S235



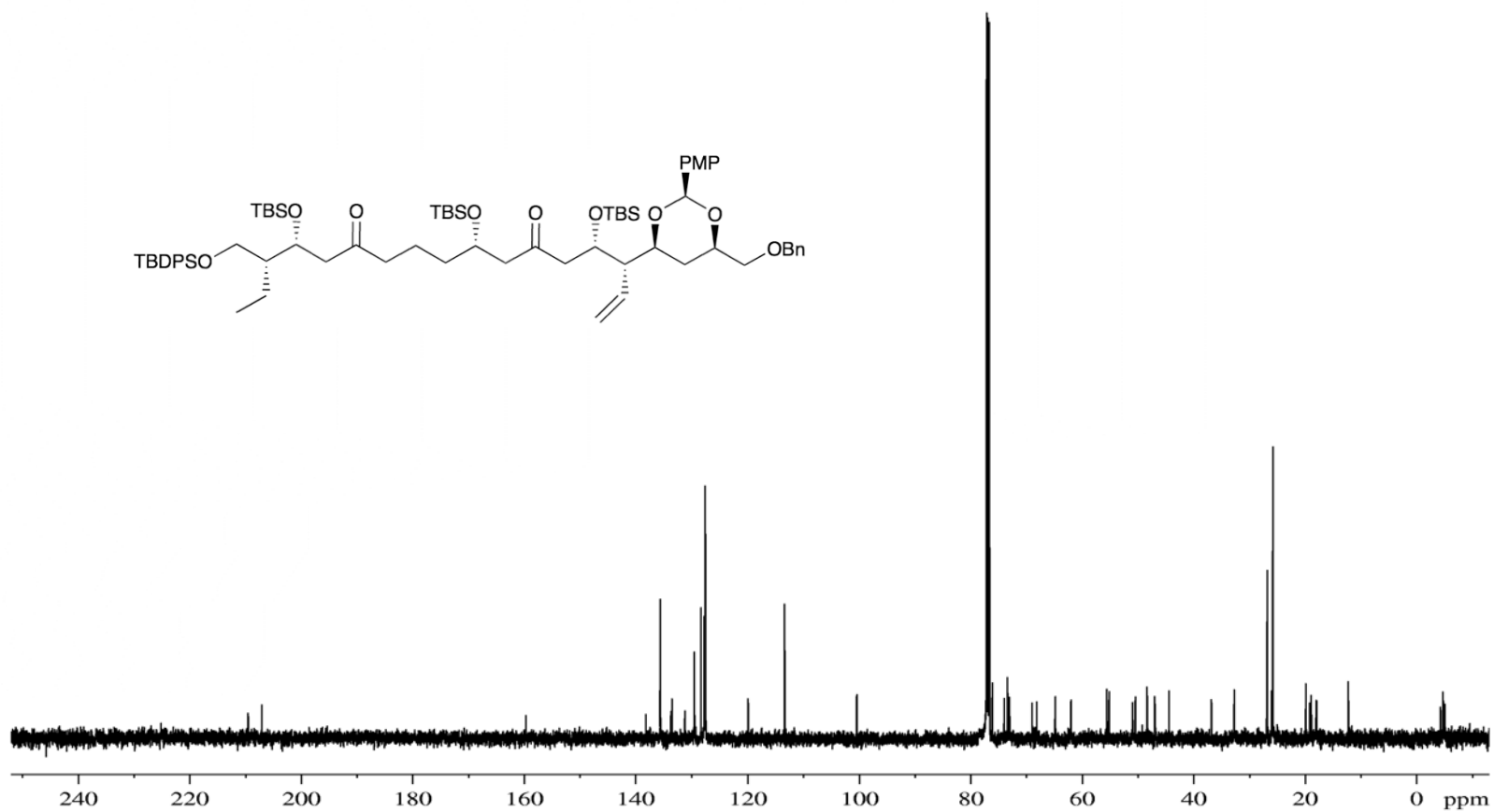
The <sup>13</sup>C NMR Spectrum of Compound (-)-S24 in CDCl<sub>3</sub>

S236



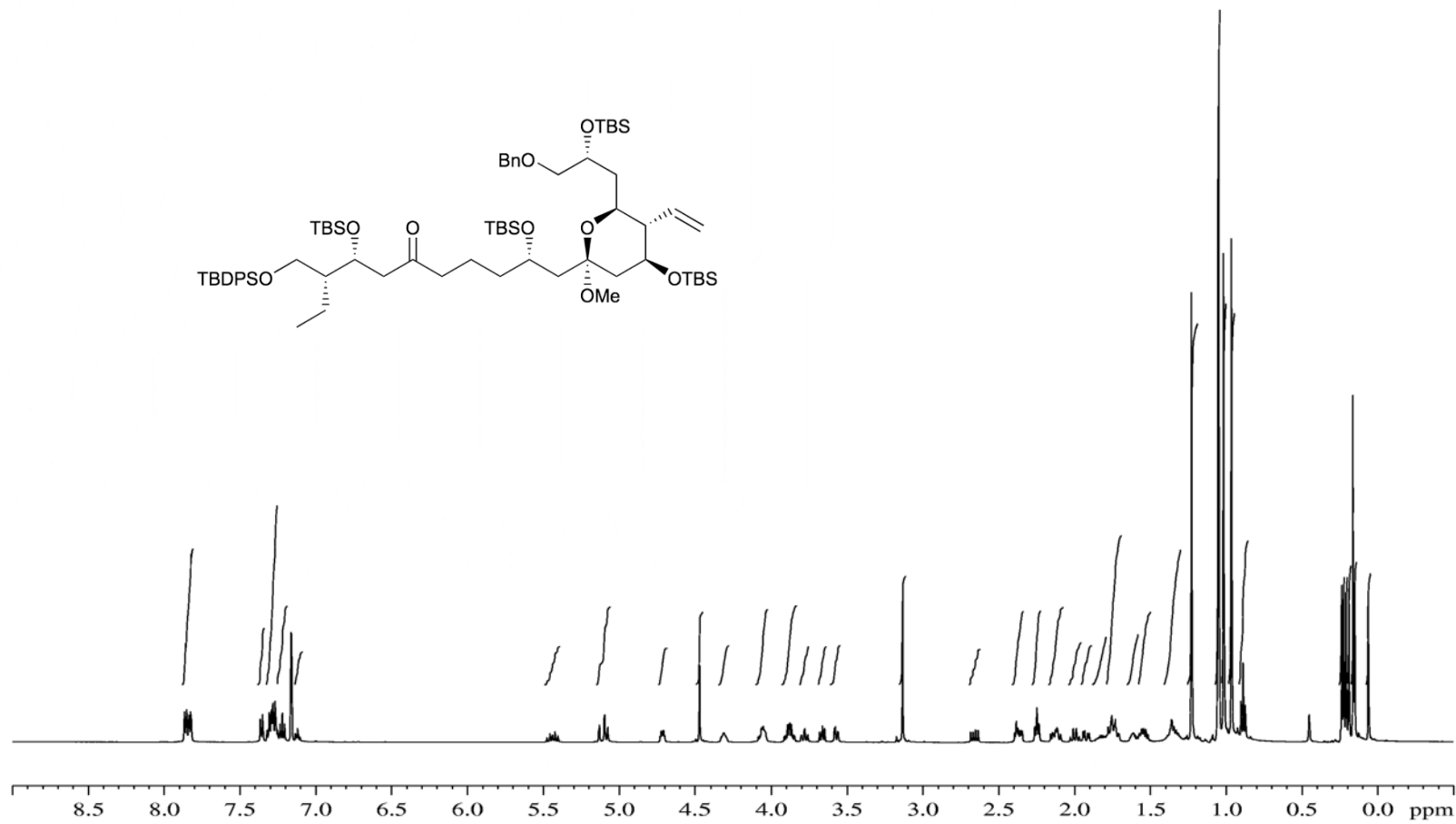
The <sup>1</sup>H NMR Spectrum of Compound (+)-62 in C<sub>6</sub>D<sub>6</sub>

S237



The  $^{13}\text{C}$  NMR Spectrum of Compound (+)-62 in  $\text{CDCl}_3$

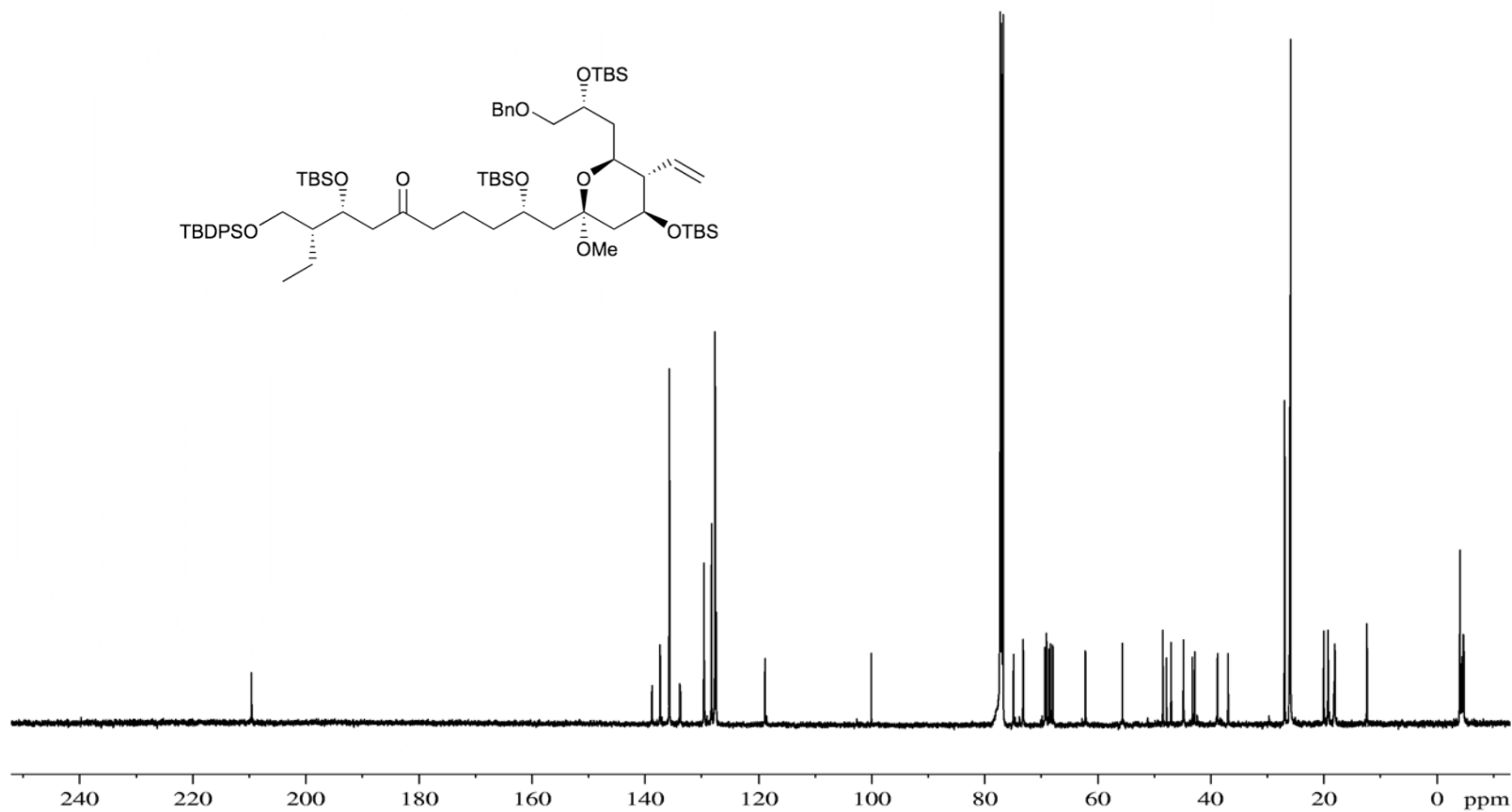
S238



The <sup>1</sup>H NMR Spectrum of Compound (-)-63 in C<sub>6</sub>D<sub>6</sub>

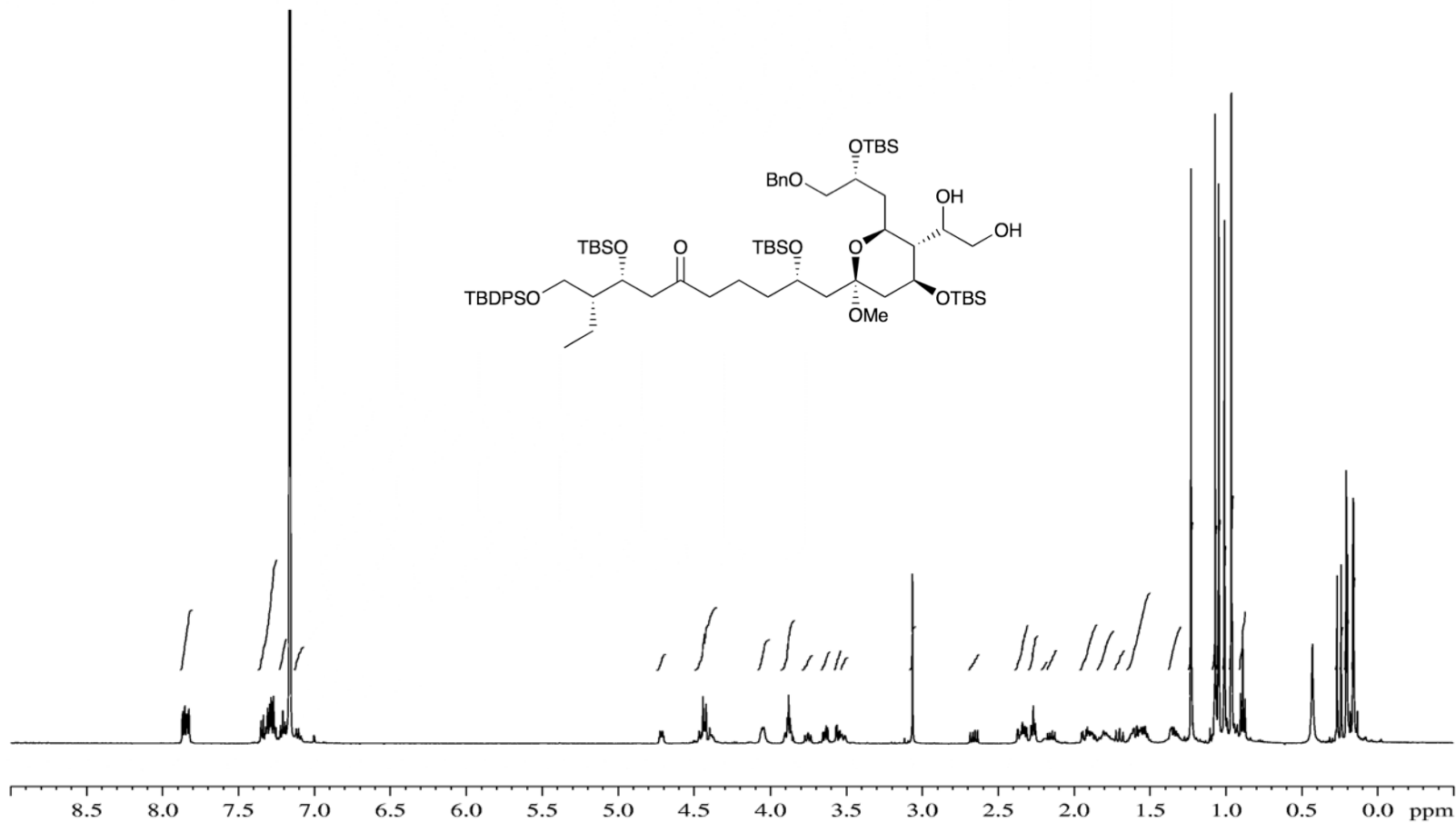


S239



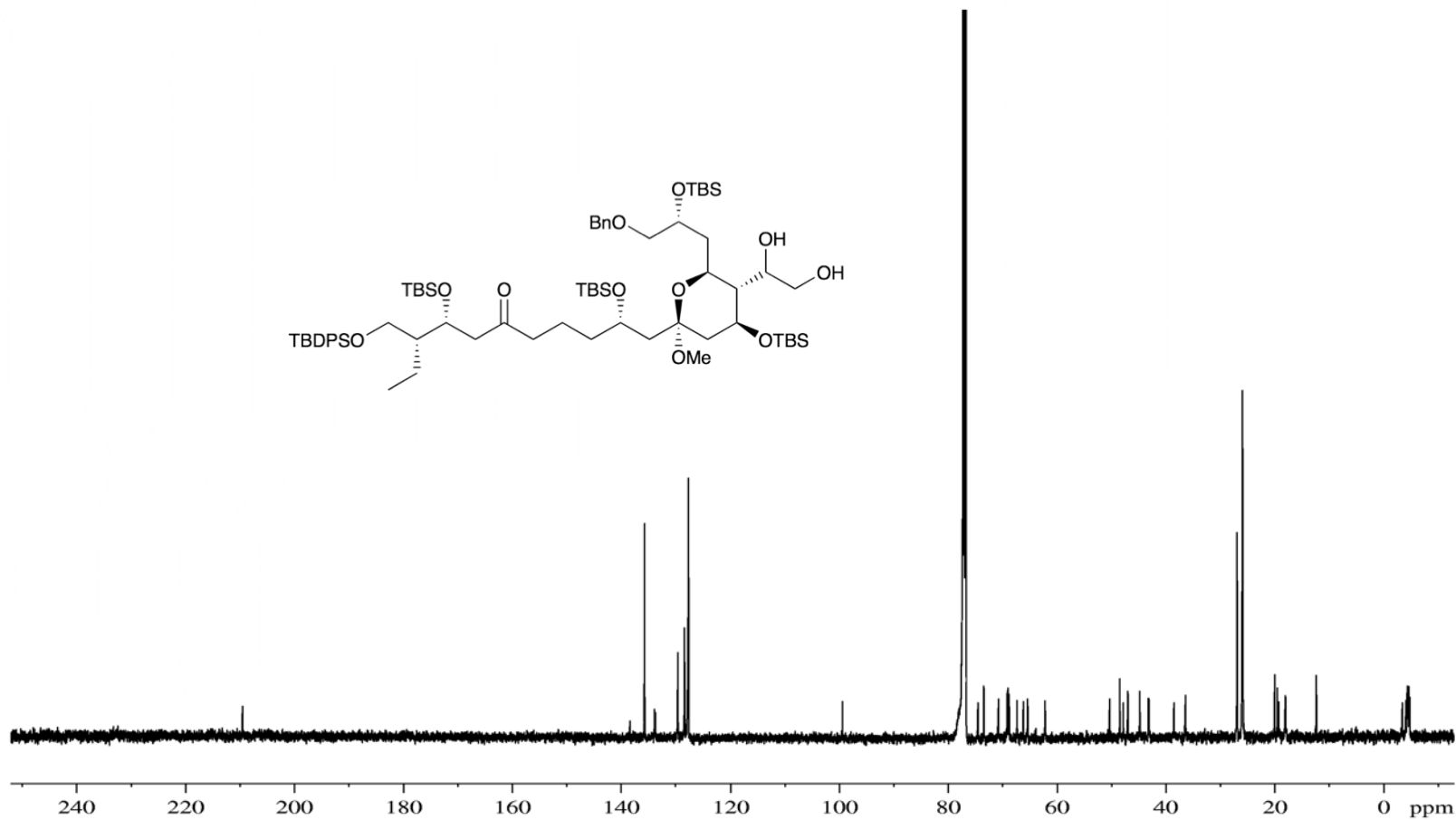
The  $^{13}\text{C}$  NMR Spectrum of Compound (-)-63 in  $\text{CDCl}_3$

S240



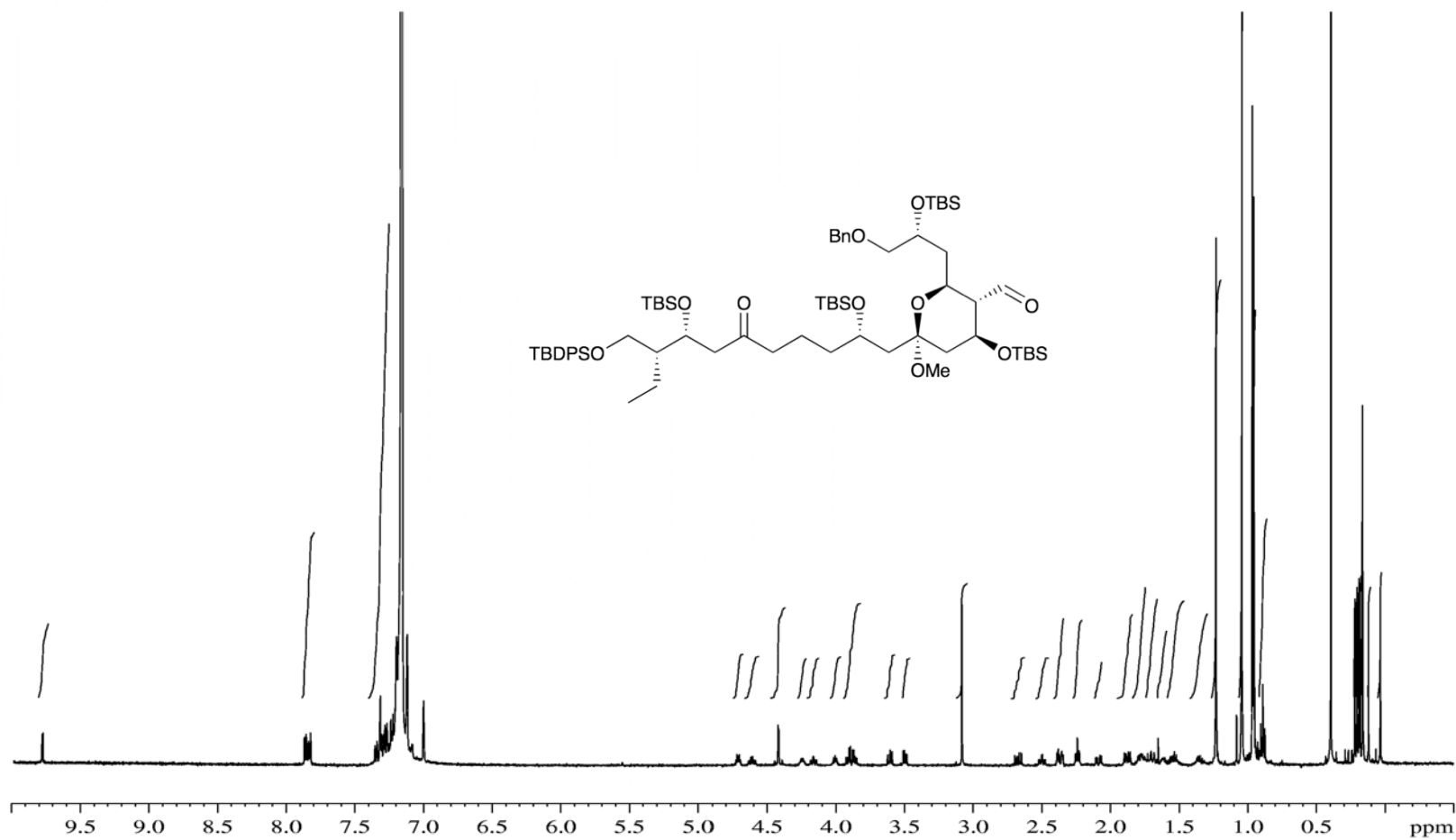
The <sup>1</sup>H NMR Spectrum of Compound (-)-S25 in C<sub>6</sub>D<sub>6</sub>

S241



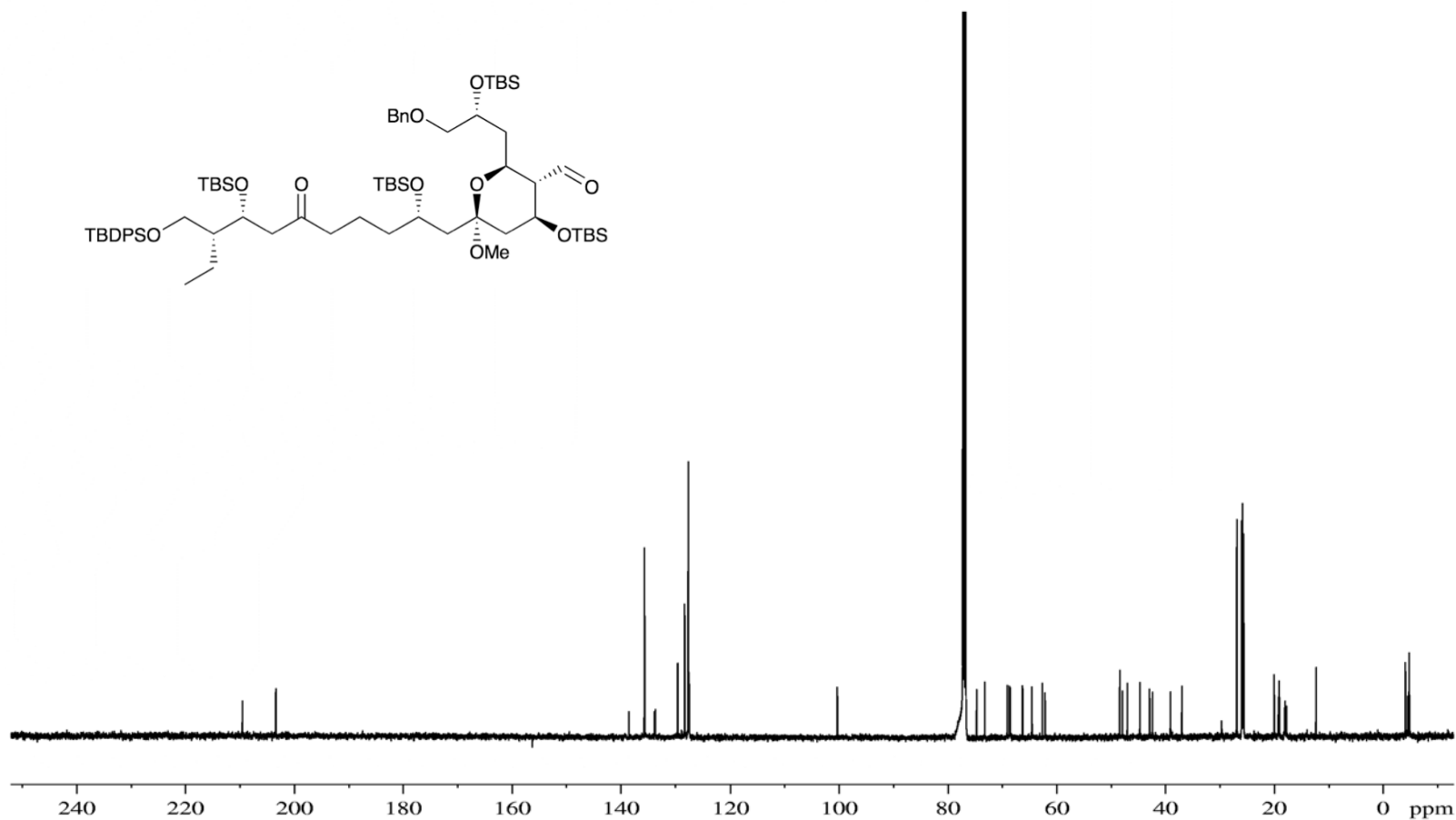
The <sup>13</sup>C NMR Spectrum of Compound (-)-S25 in CDCl<sub>3</sub>

S242



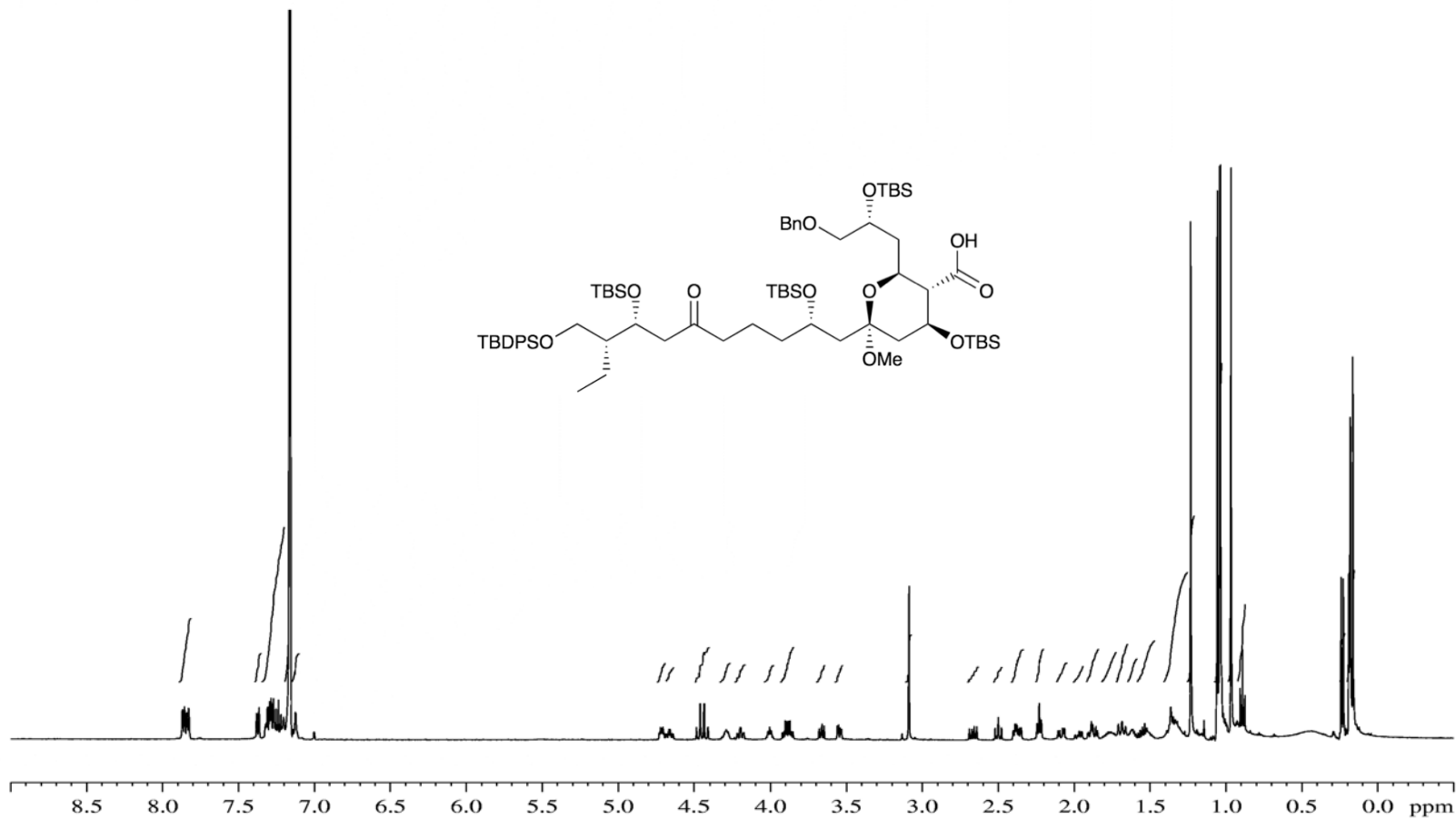
The <sup>1</sup>H NMR Spectrum of Compound (-)-64 in C<sub>6</sub>D<sub>6</sub>

S243



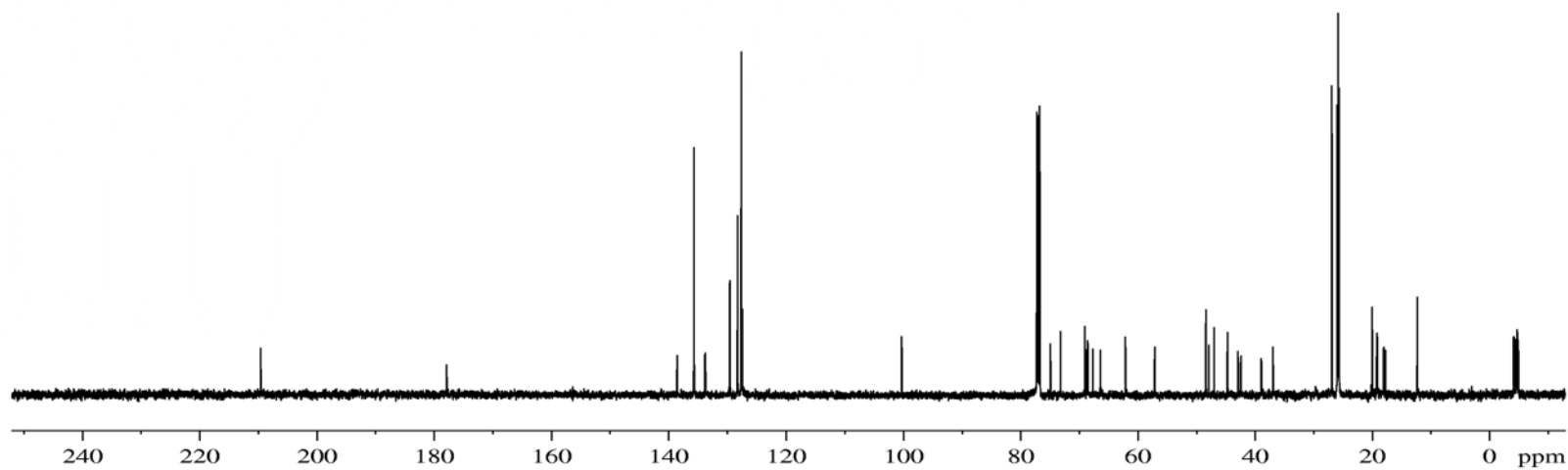
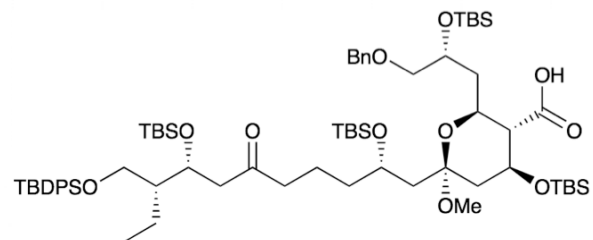
The <sup>13</sup>C NMR Spectrum of Compound (-)-64 in CDCl<sub>3</sub>

S244



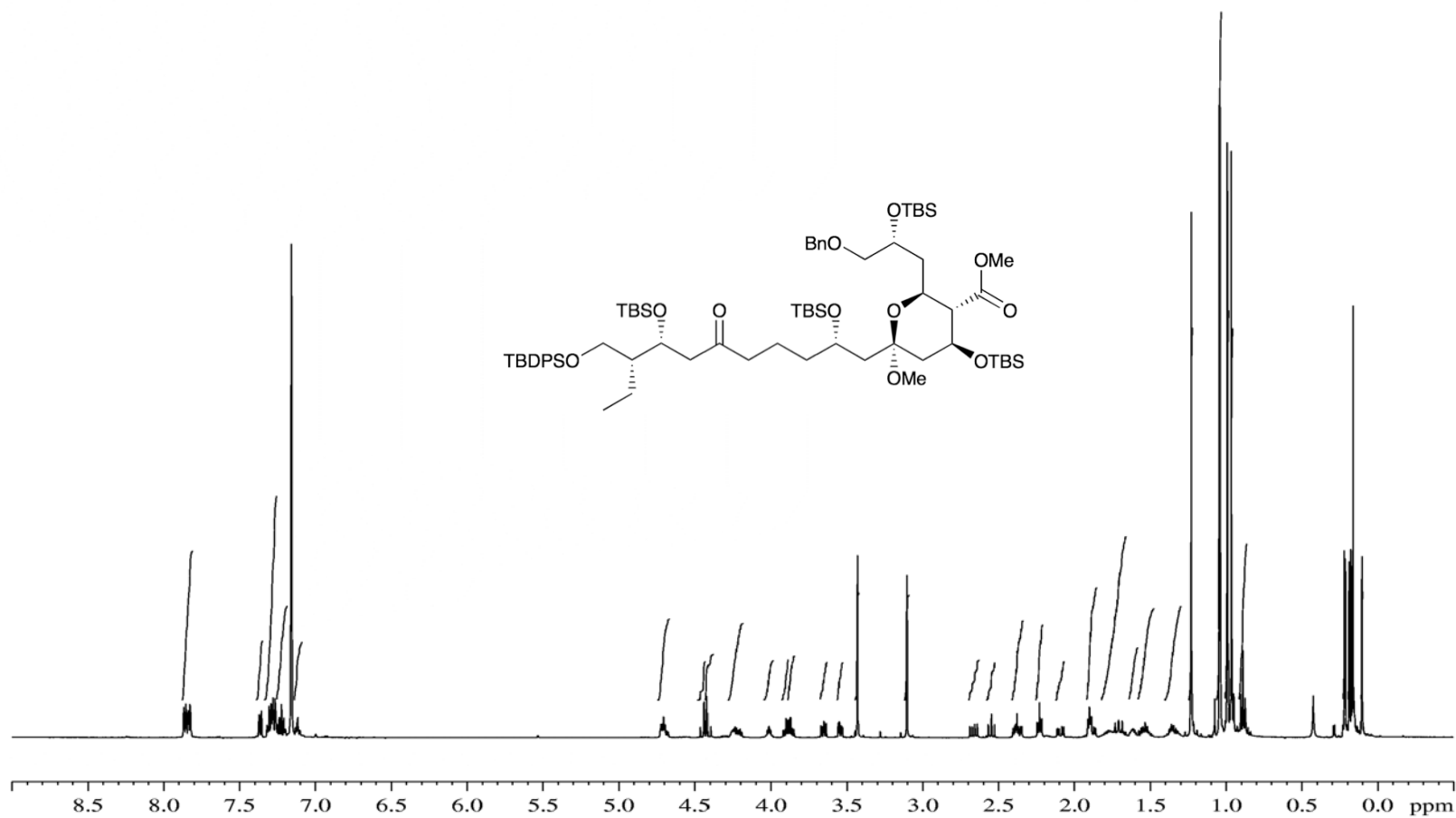
The <sup>1</sup>H NMR Spectrum of Compound (-)-S26 in C<sub>6</sub>D<sub>6</sub>

S245



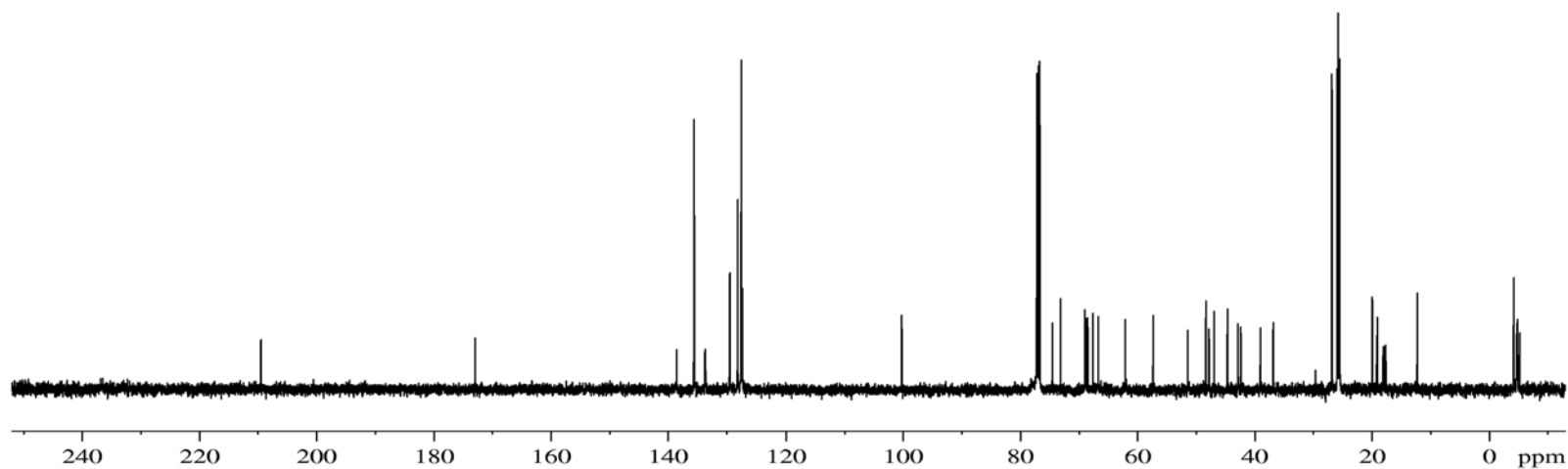
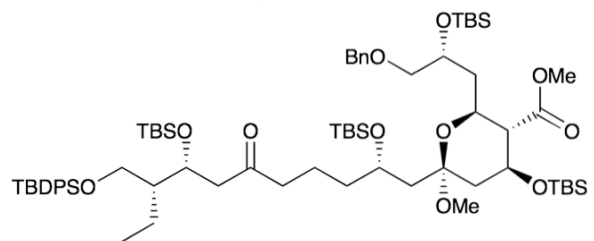
The  $^{13}\text{C}$  NMR Spectrum of Compound (-)-S26 in  $\text{CDCl}_3$

S246



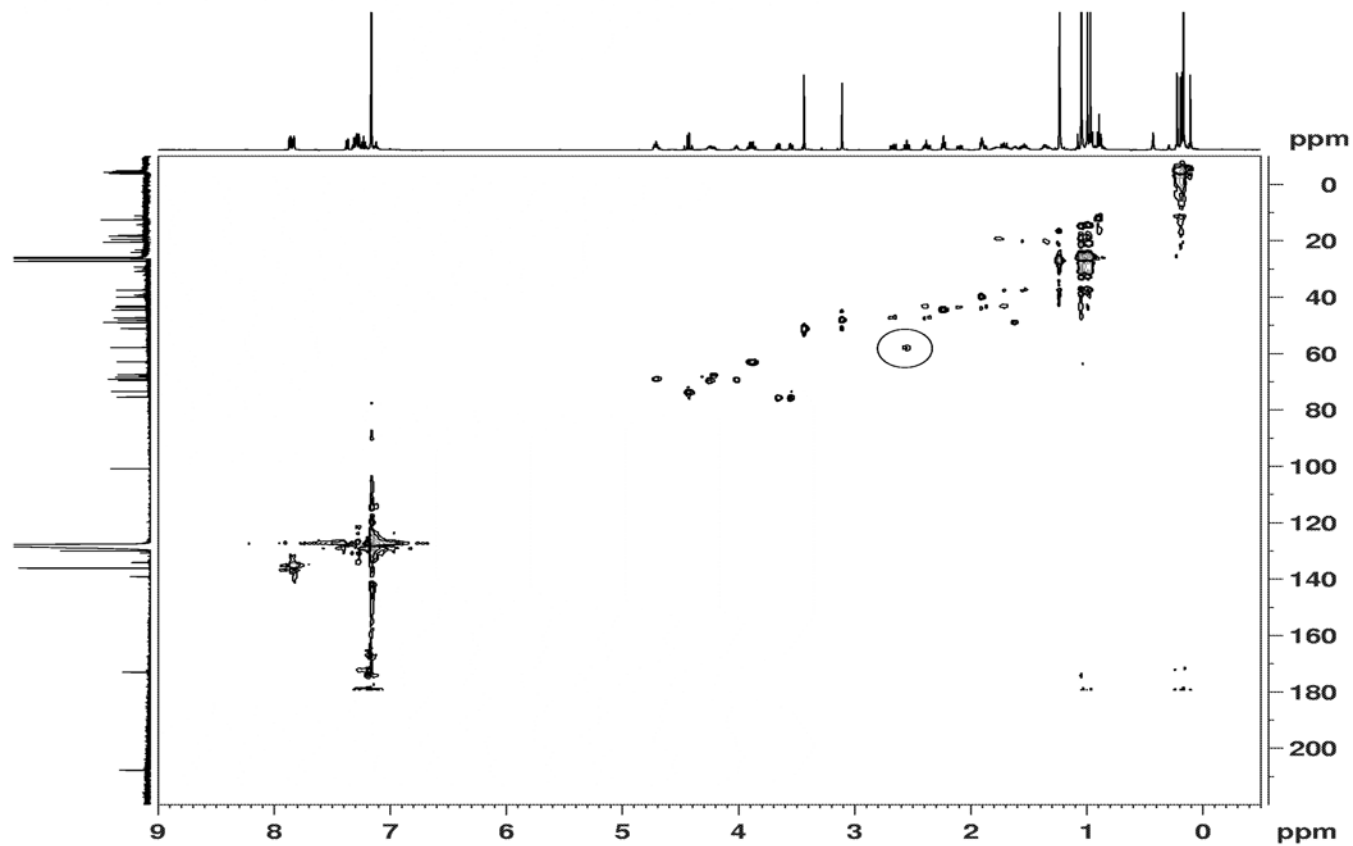
The <sup>1</sup>H NMR Spectrum of Compound (-)-65 in C<sub>6</sub>D<sub>6</sub>





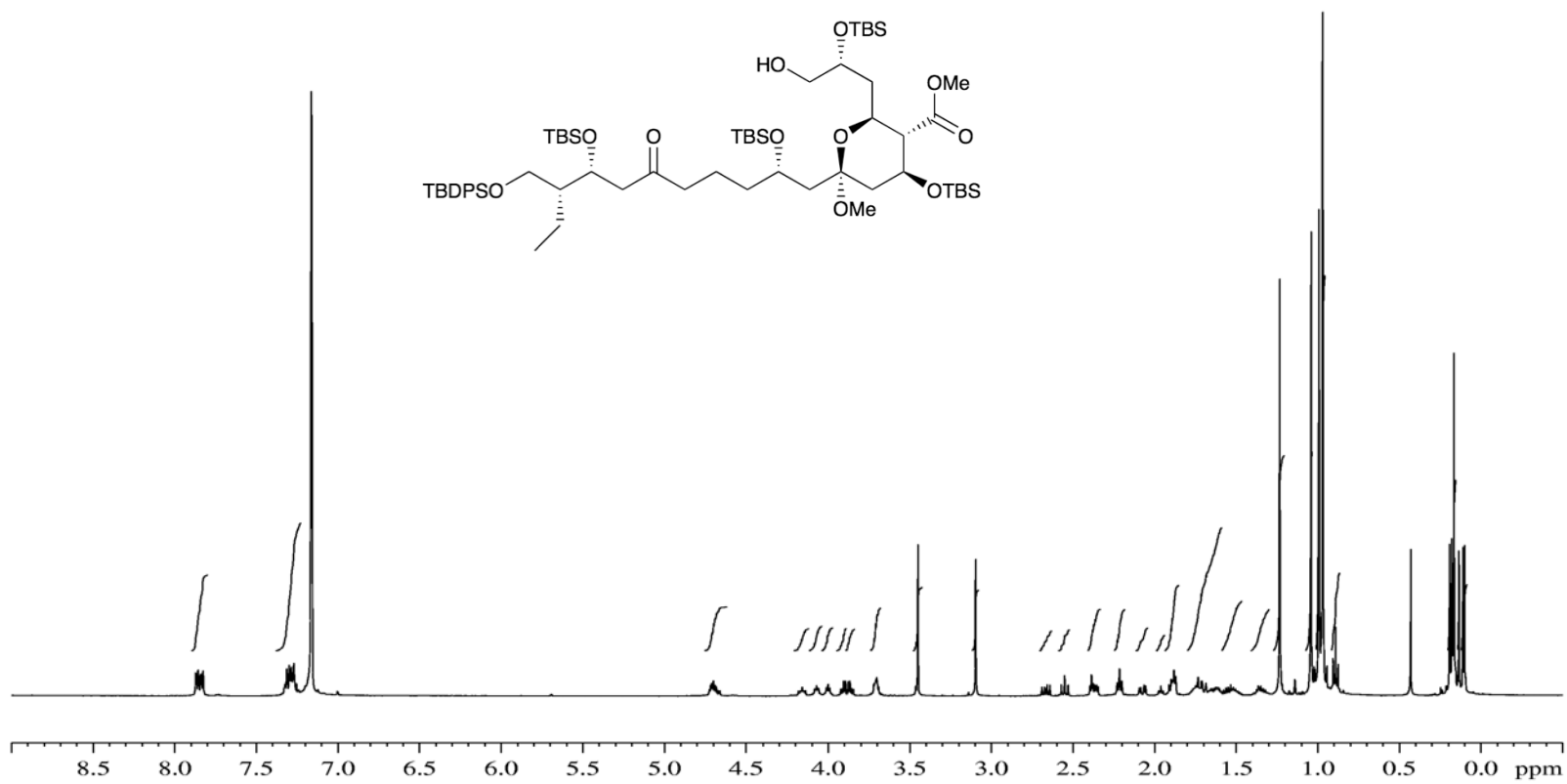
The  $^{13}\text{C}$  NMR Spectrum of Compound (-)-**65** in  $\text{CDCl}_3$

S248



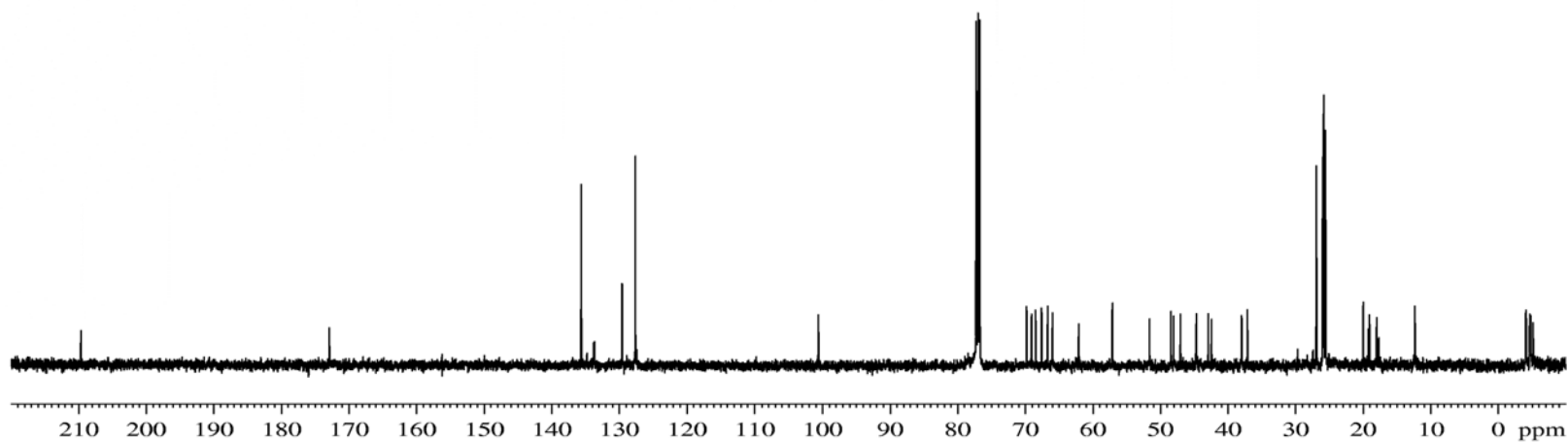
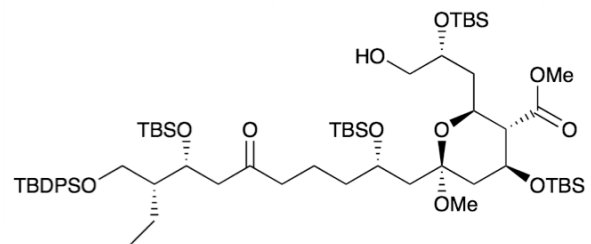
The HMQC Spectrum of Compound (-)-**65** in  $\text{C}_6\text{D}_6$

S249



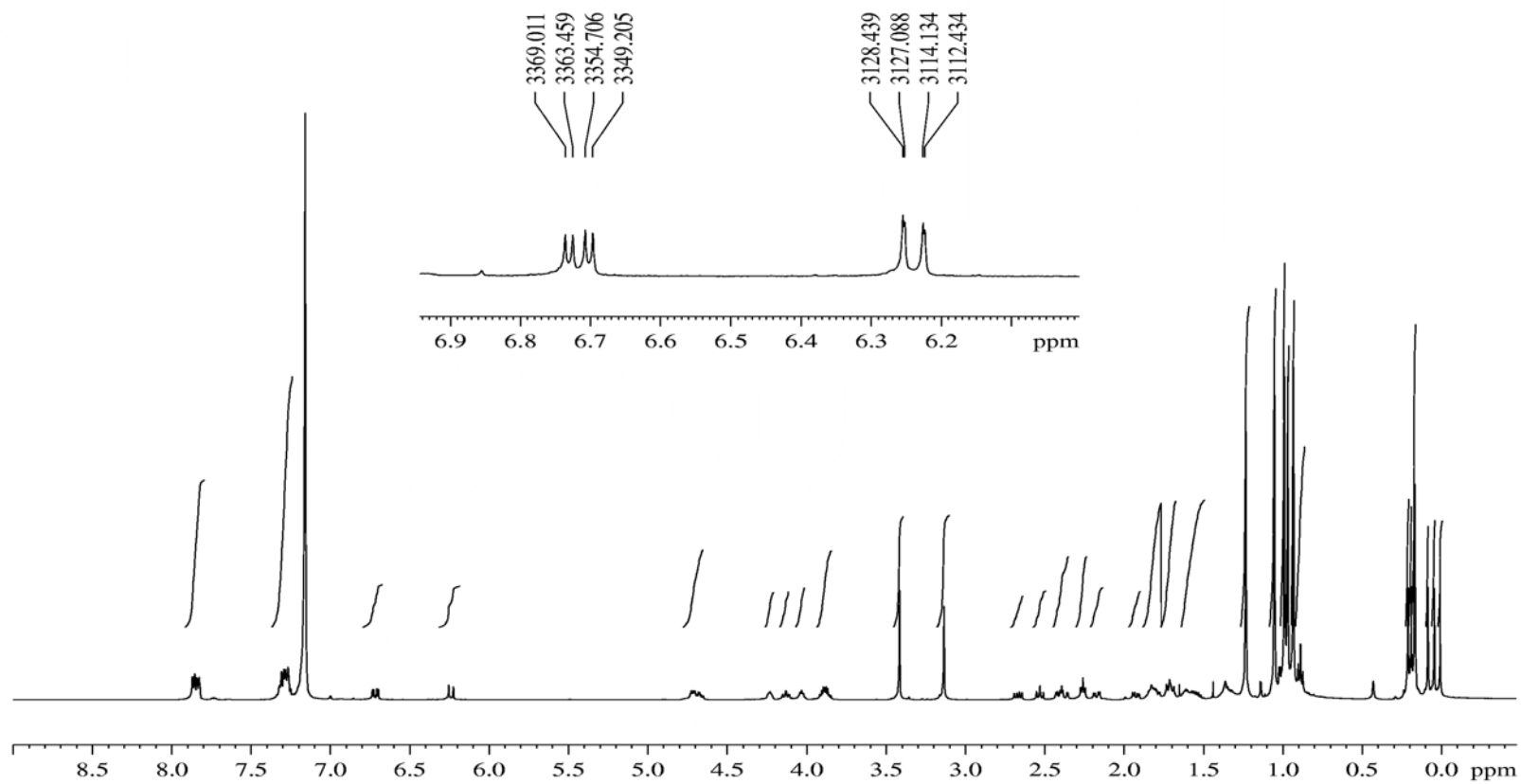
The  $^1\text{H}$  NMR Spectrum of Compound **(-)-66** in  $\text{C}_6\text{D}_6$

S250



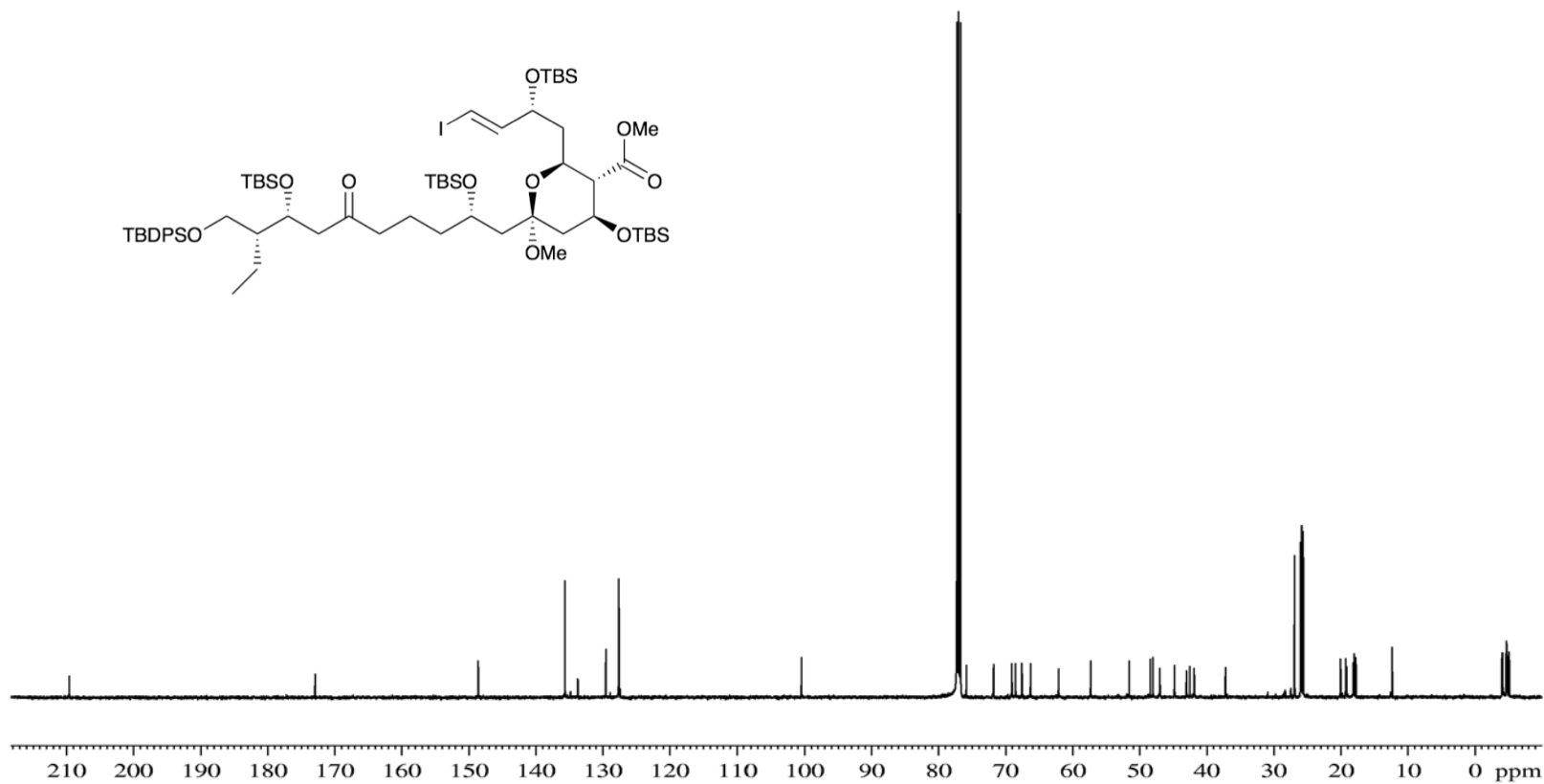
The  $^{13}\text{C}$  NMR Spectrum of Compound (-)-66 in  $\text{CDCl}_3$

S251



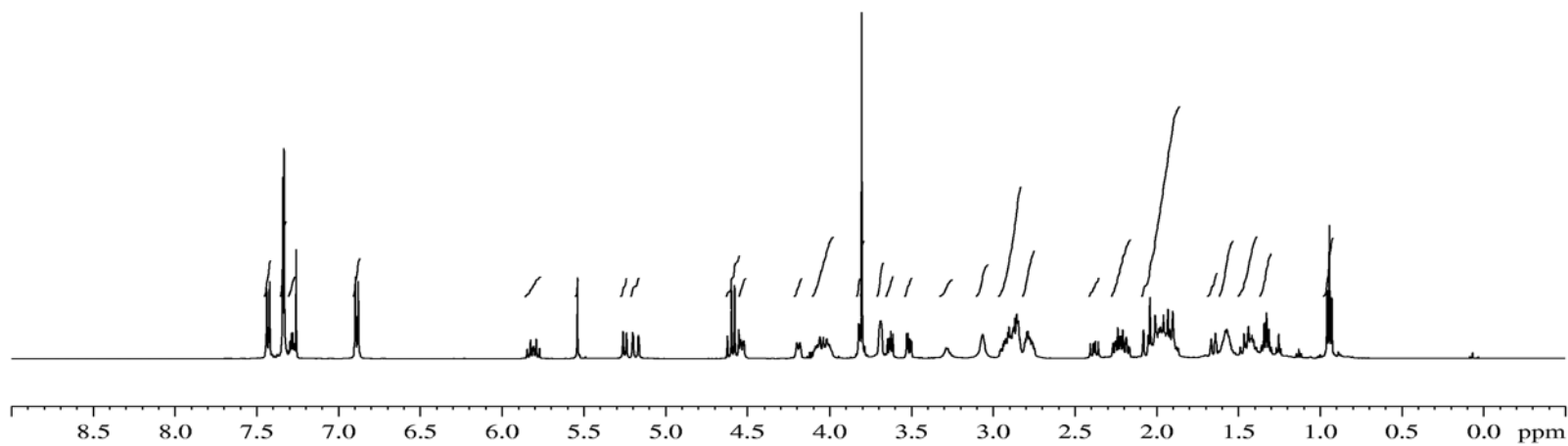
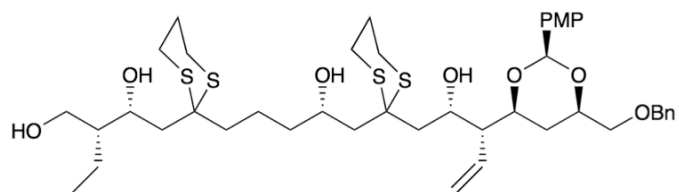
The  $^1\text{H}$  NMR Spectrum of Compound (-)-67 in  $\text{C}_6\text{D}_6$

S252



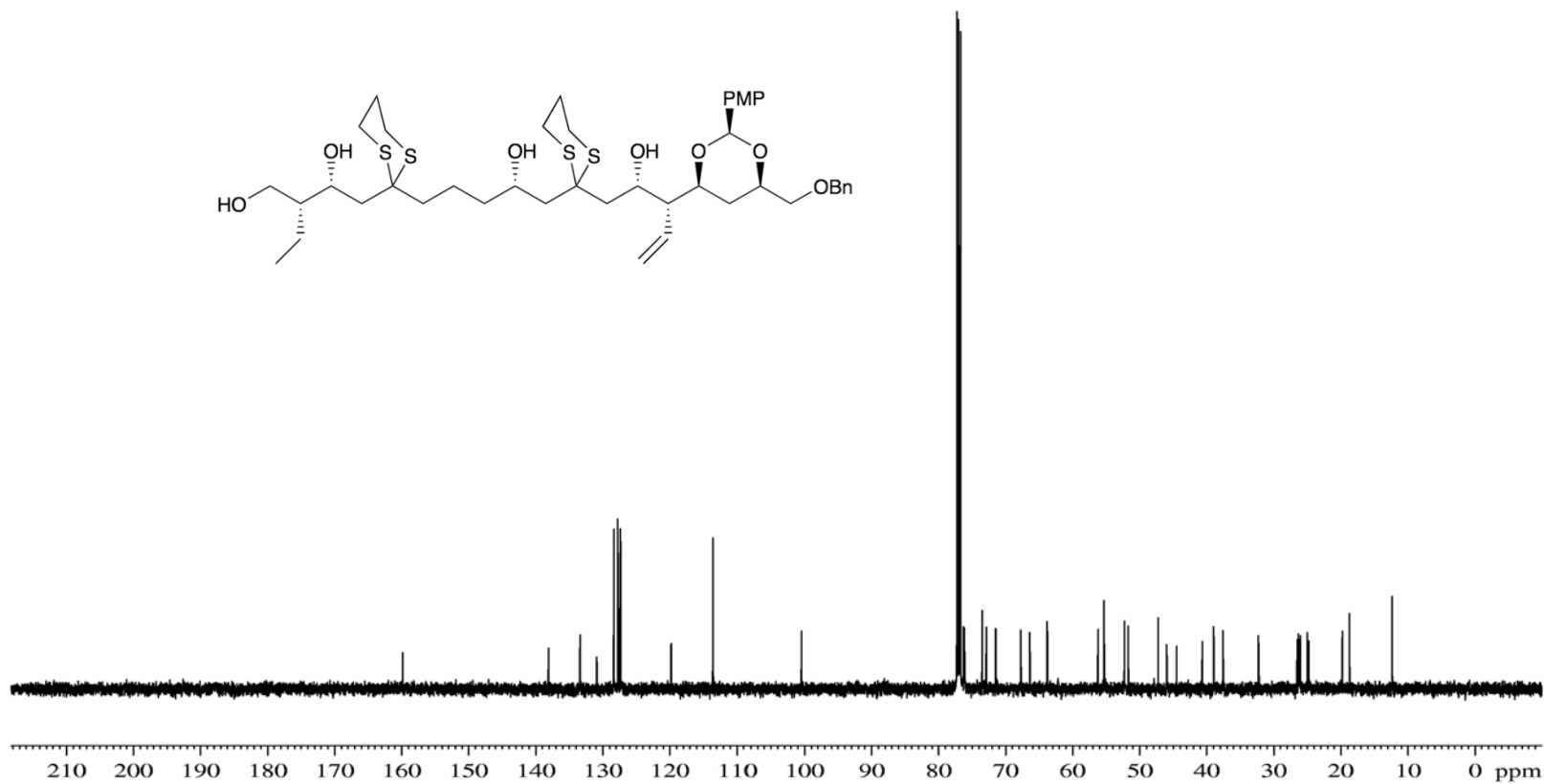
The <sup>13</sup>C NMR Spectrum of Compound (-)-67 in CDCl<sub>3</sub>

S253



The <sup>1</sup>H NMR Spectrum of Compound (-)-**S27** in CDCl<sub>3</sub>

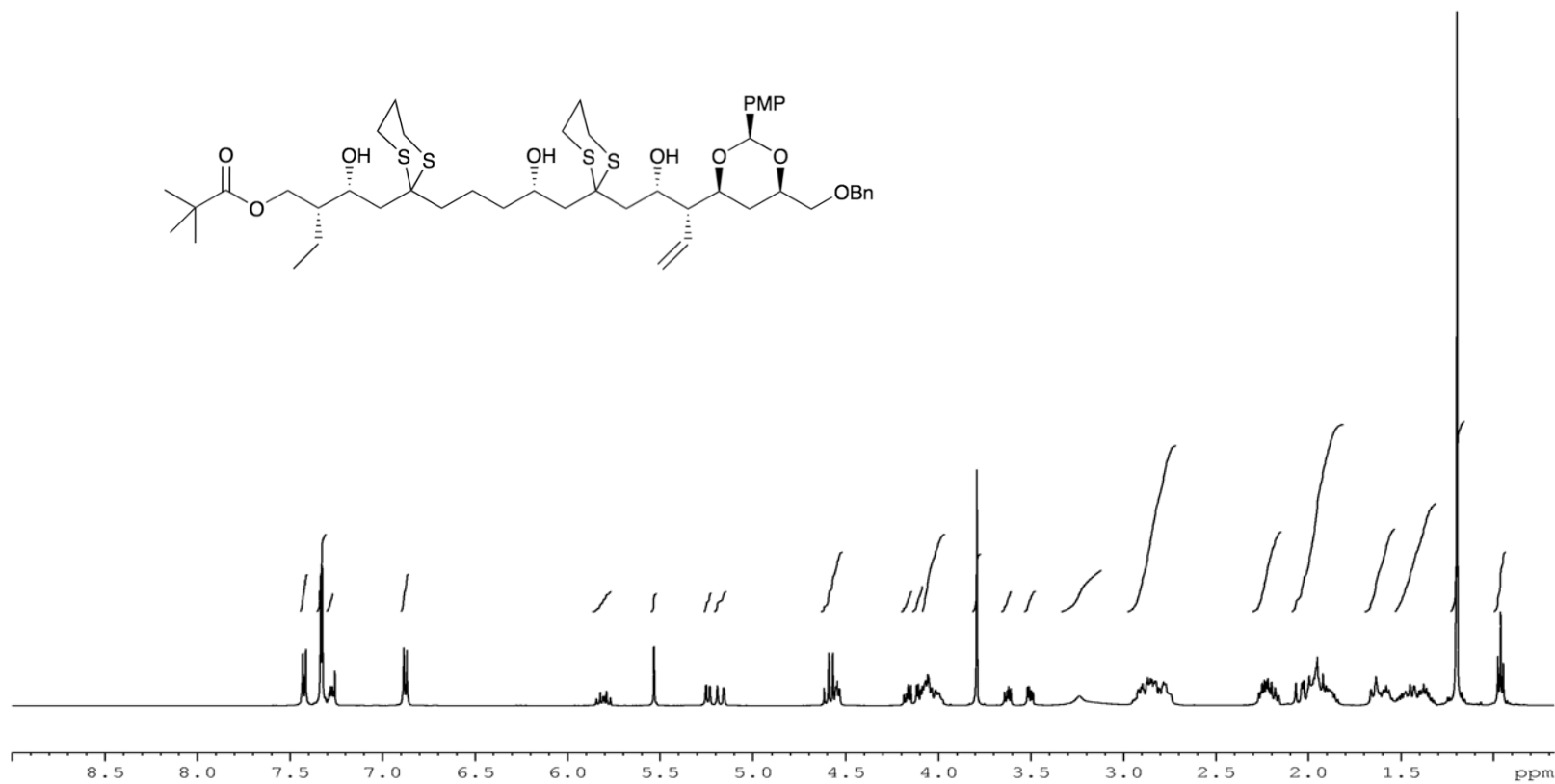
S254



The  $^{13}\text{C}$  NMR Spectrum of Compound (-)-S27 in  $\text{CDCl}_3$

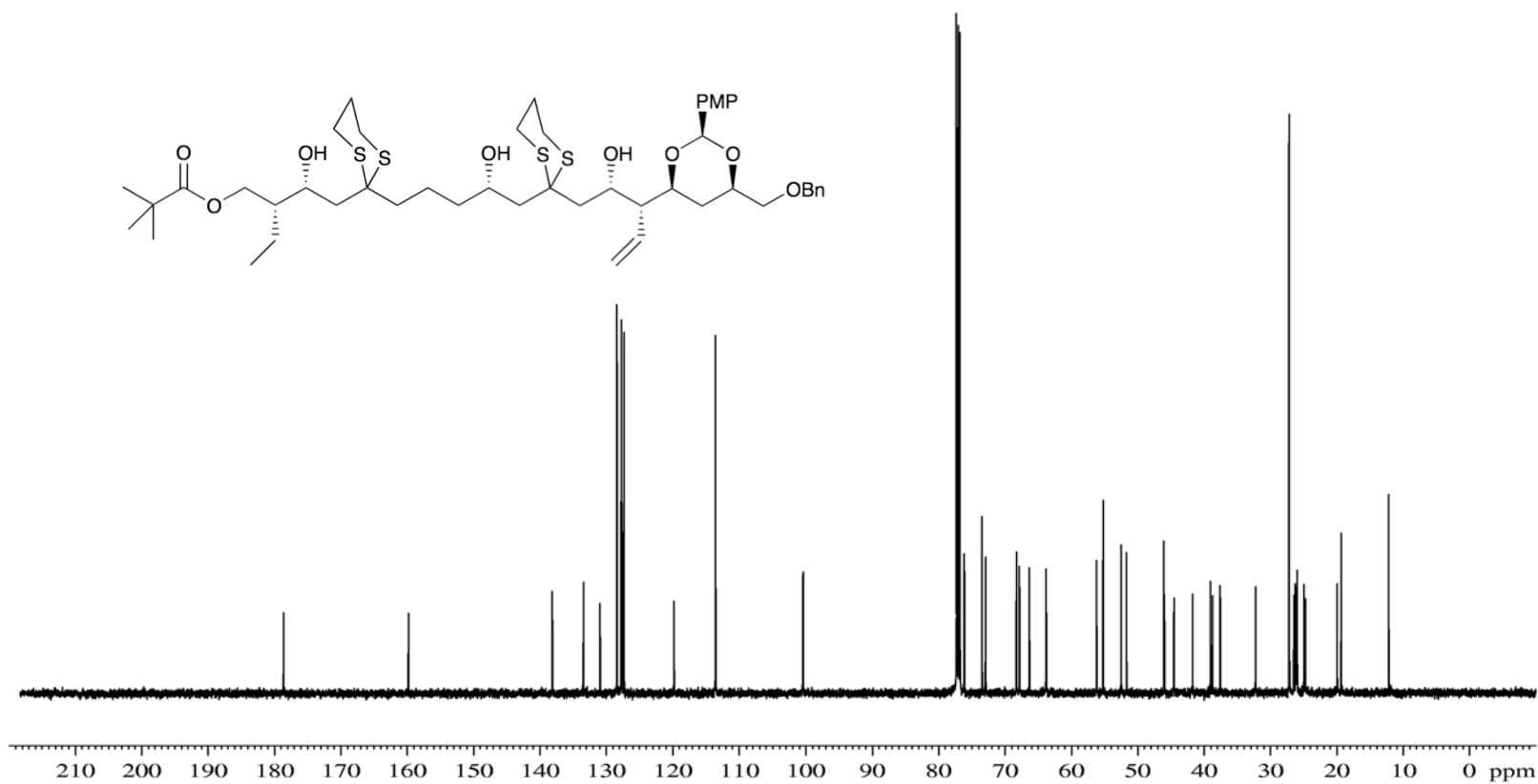


S255



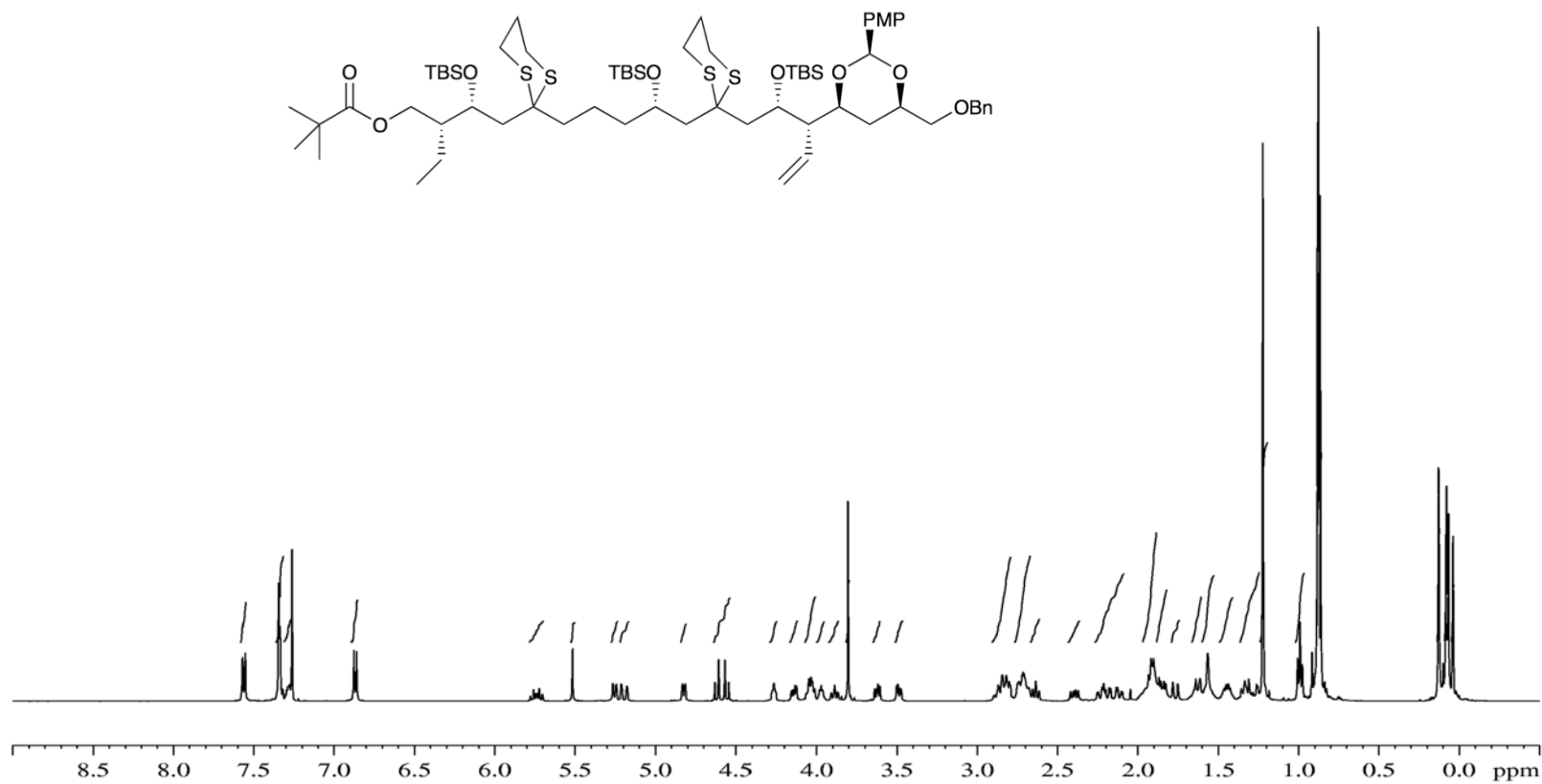
The  $^1\text{H}$  NMR Spectrum of Compound (-)-**S28** in  $\text{CDCl}_3$

S256



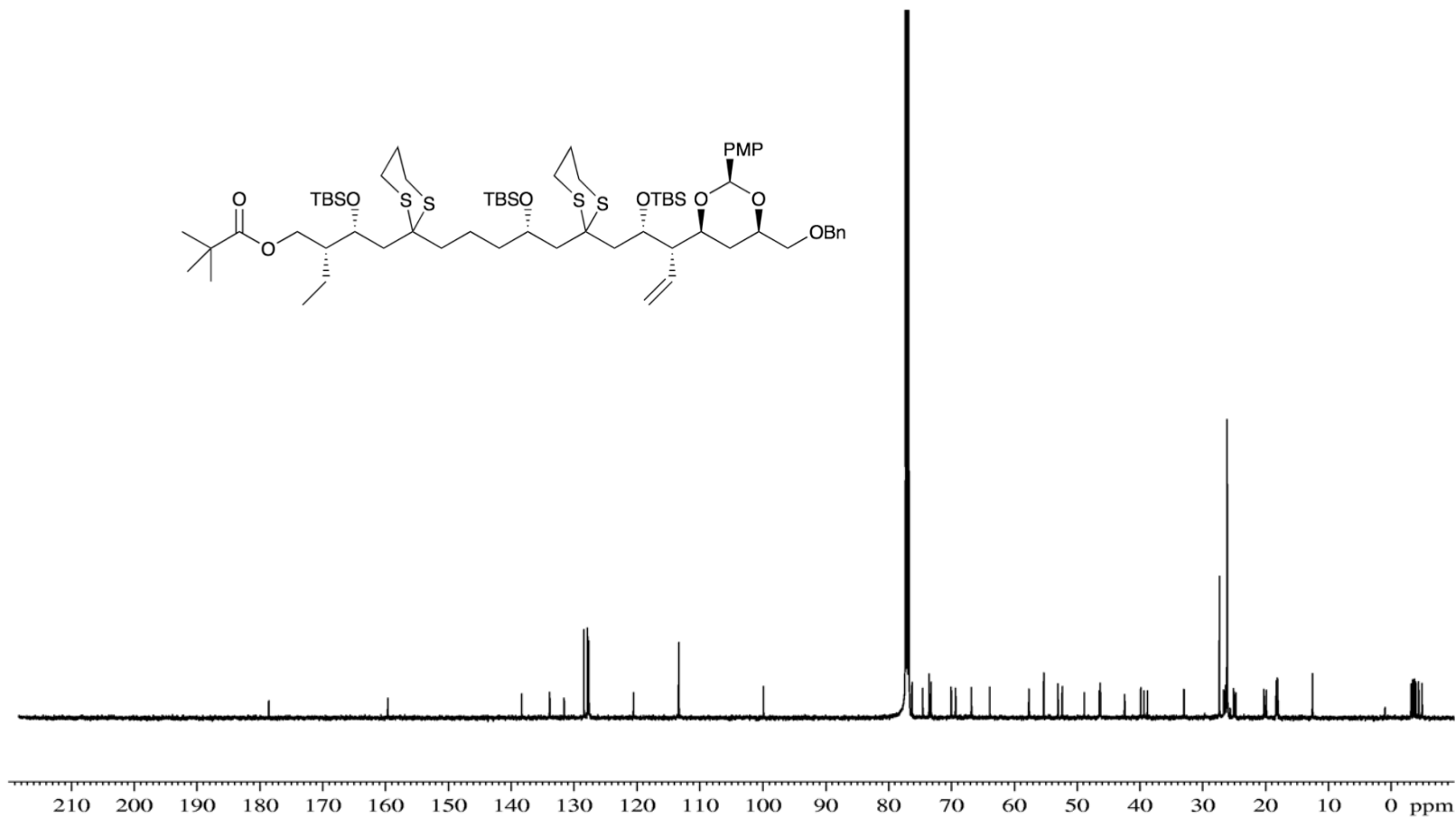
The <sup>13</sup>C NMR Spectrum of Compound (-)-S28 in CDCl<sub>3</sub>

S257



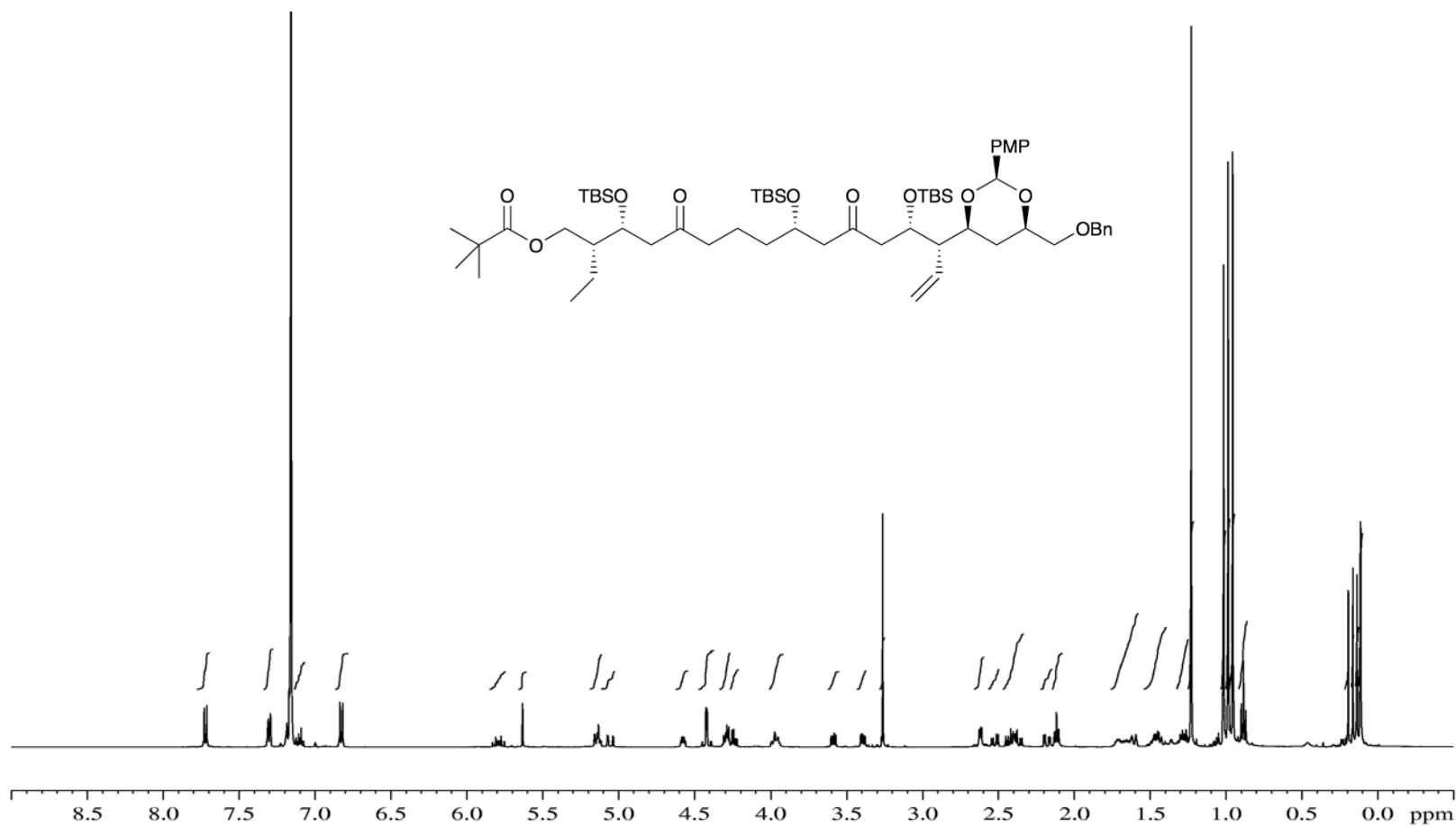
The <sup>1</sup>H NMR Spectrum of Compound (-)-69 in CDCl<sub>3</sub>

S258



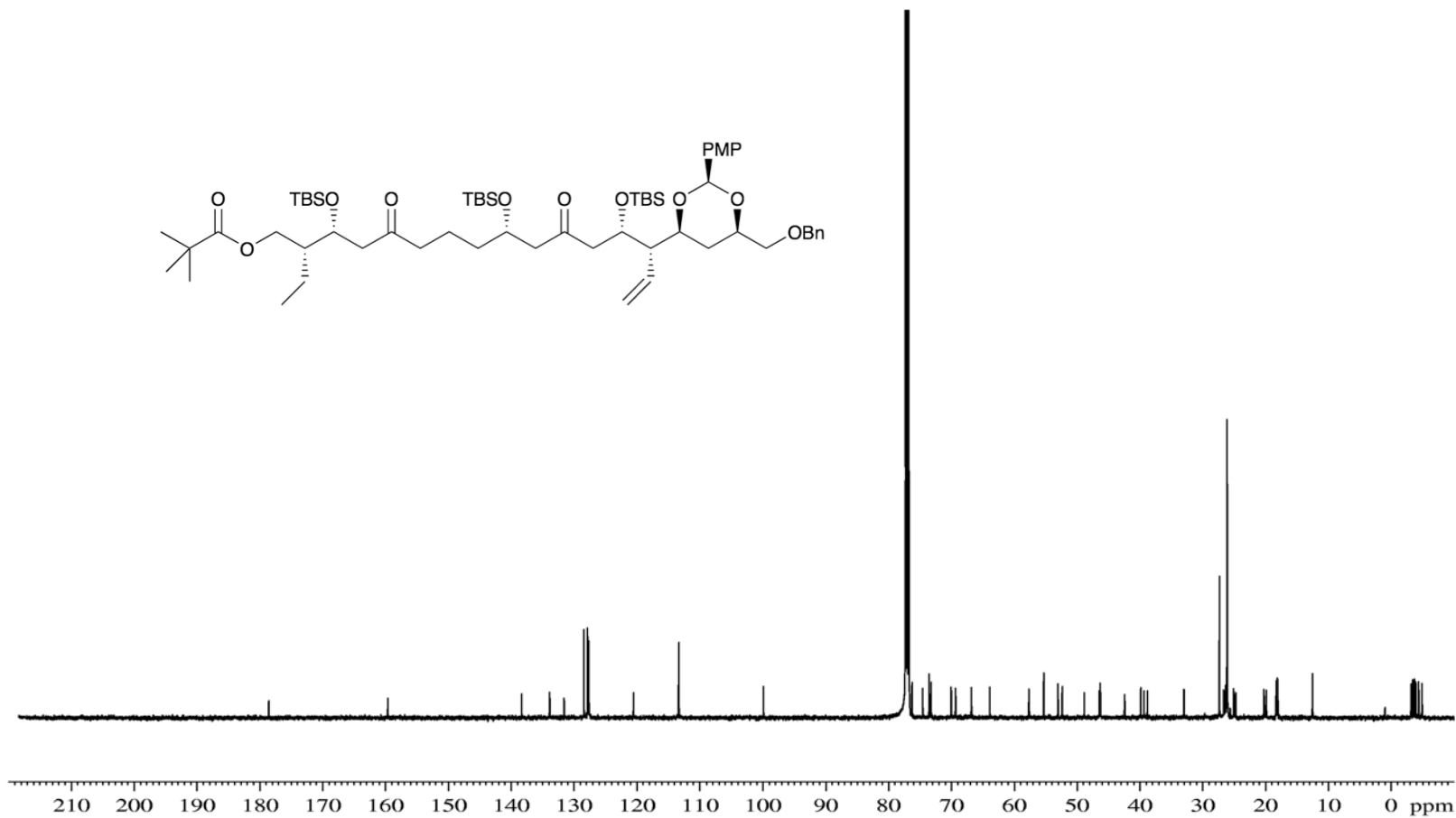
The <sup>13</sup>C NMR Spectrum of Compound (-)-69 in CDCl<sub>3</sub>

S259



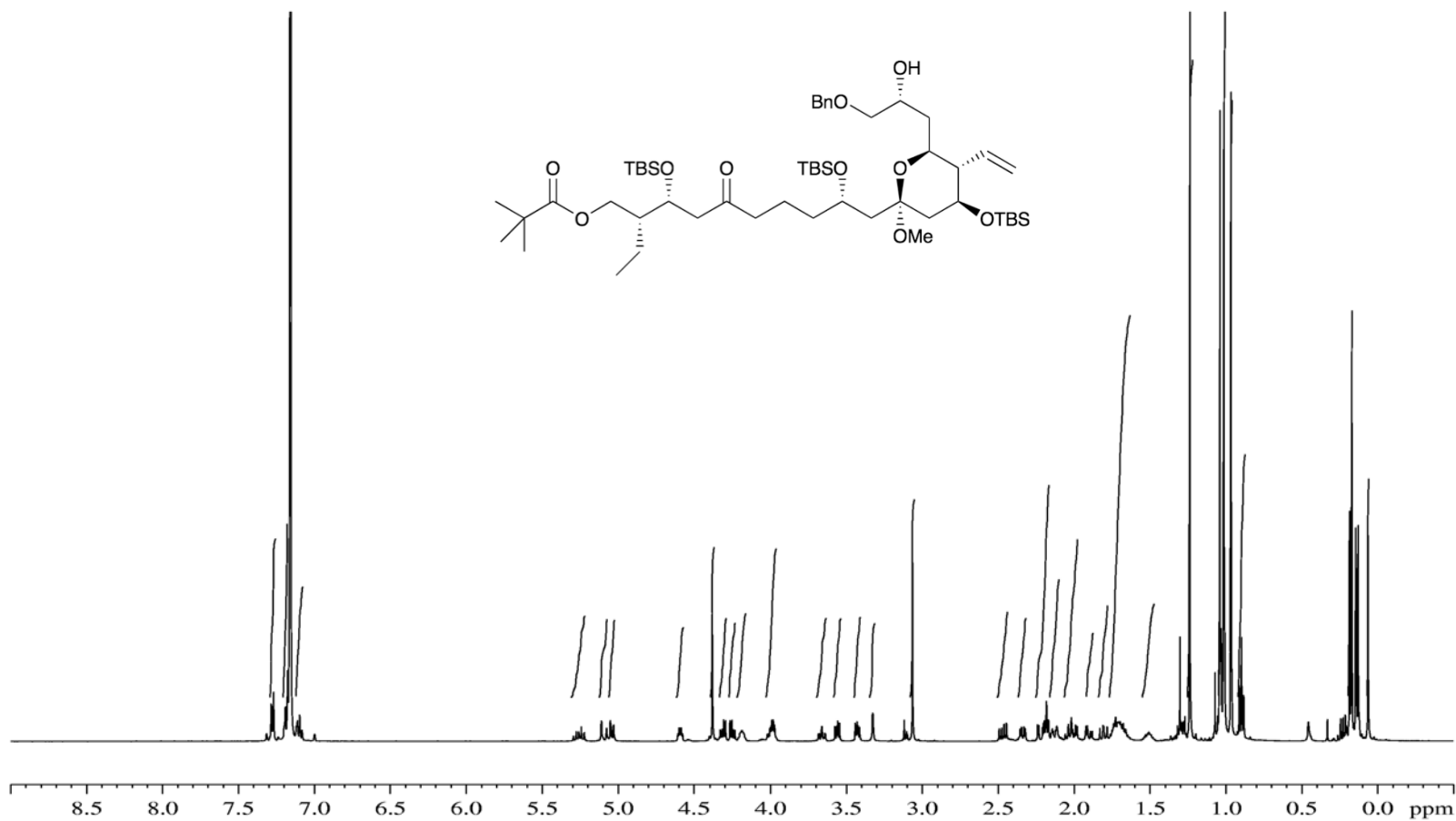
The <sup>1</sup>H NMR Spectrum of Compound (+)-S29 in C<sub>6</sub>D<sub>6</sub>

S260



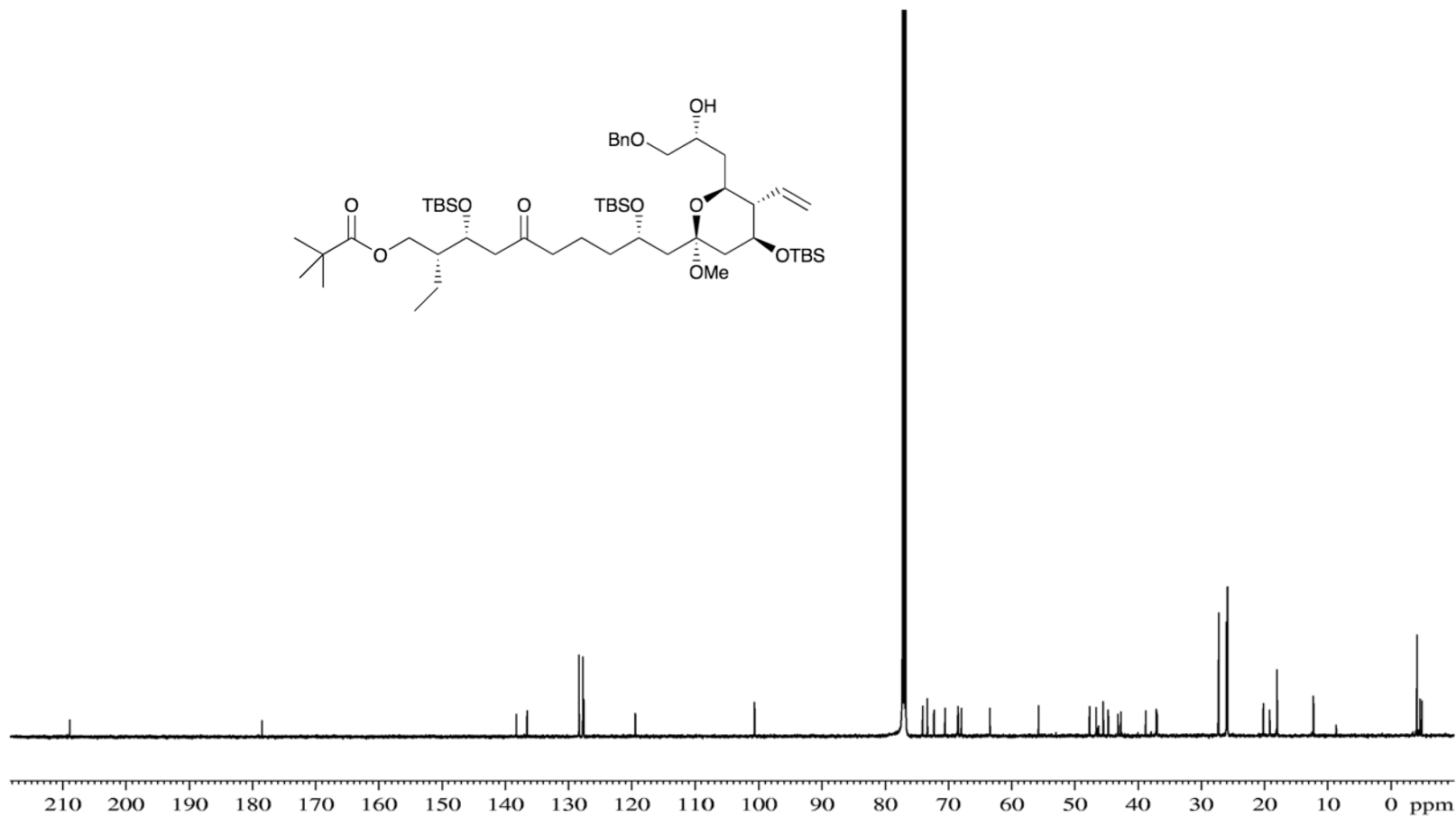
The  $^{13}\text{C}$  NMR Spectrum of Compound (+)-S29 in  $\text{CDCl}_3$

S261



The  $^1\text{H}$  NMR Spectrum of Compound (-)-70 in  $\text{C}_6\text{D}_6$

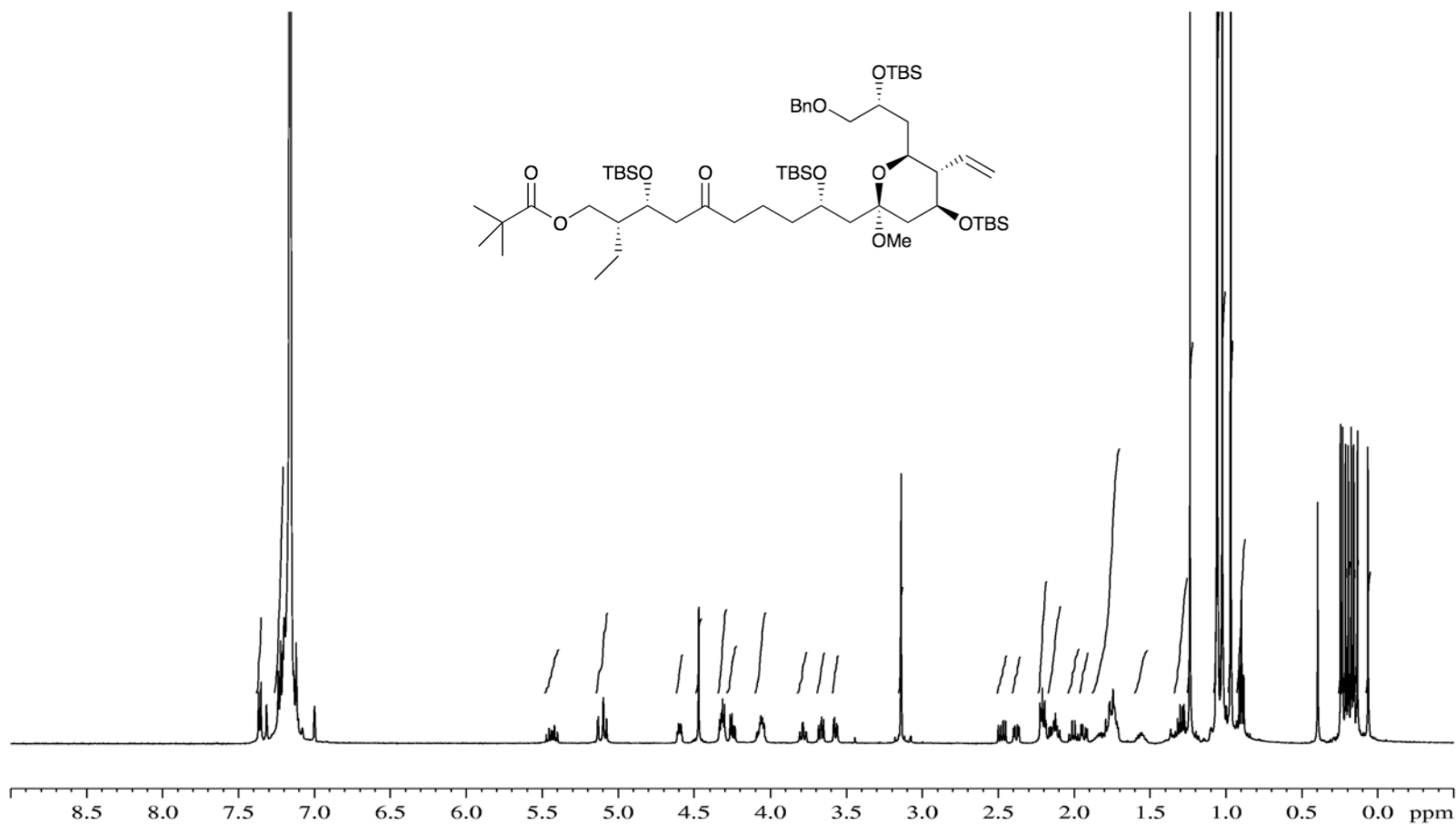
S262



The  $^{13}\text{C}$  NMR Spectrum of Compound (-)-70 in  $\text{CDCl}_3$

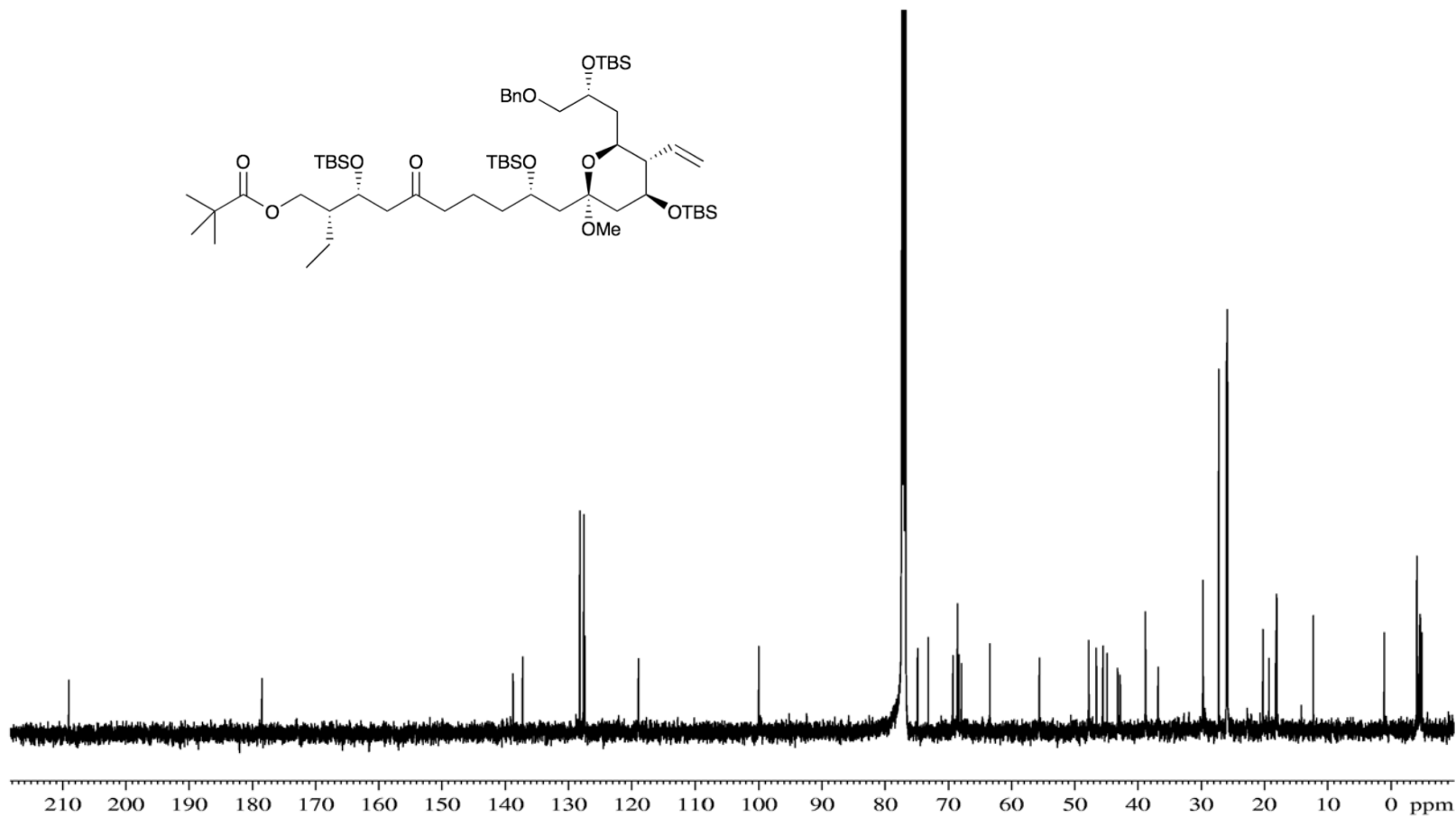


S263



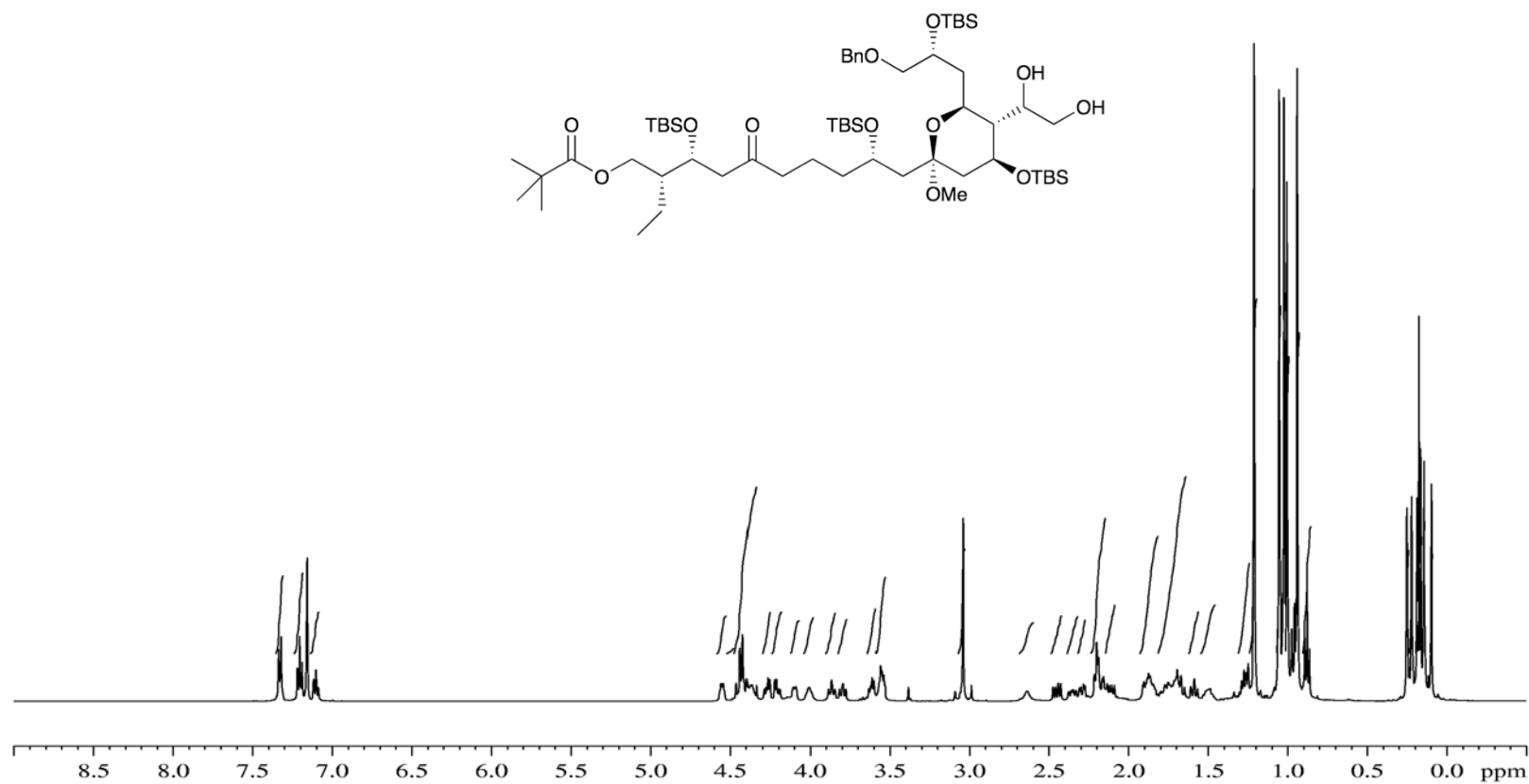
The  $^1\text{H}$  NMR Spectrum of Compound (-)-**S30** in  $\text{C}_6\text{D}_6$

S264



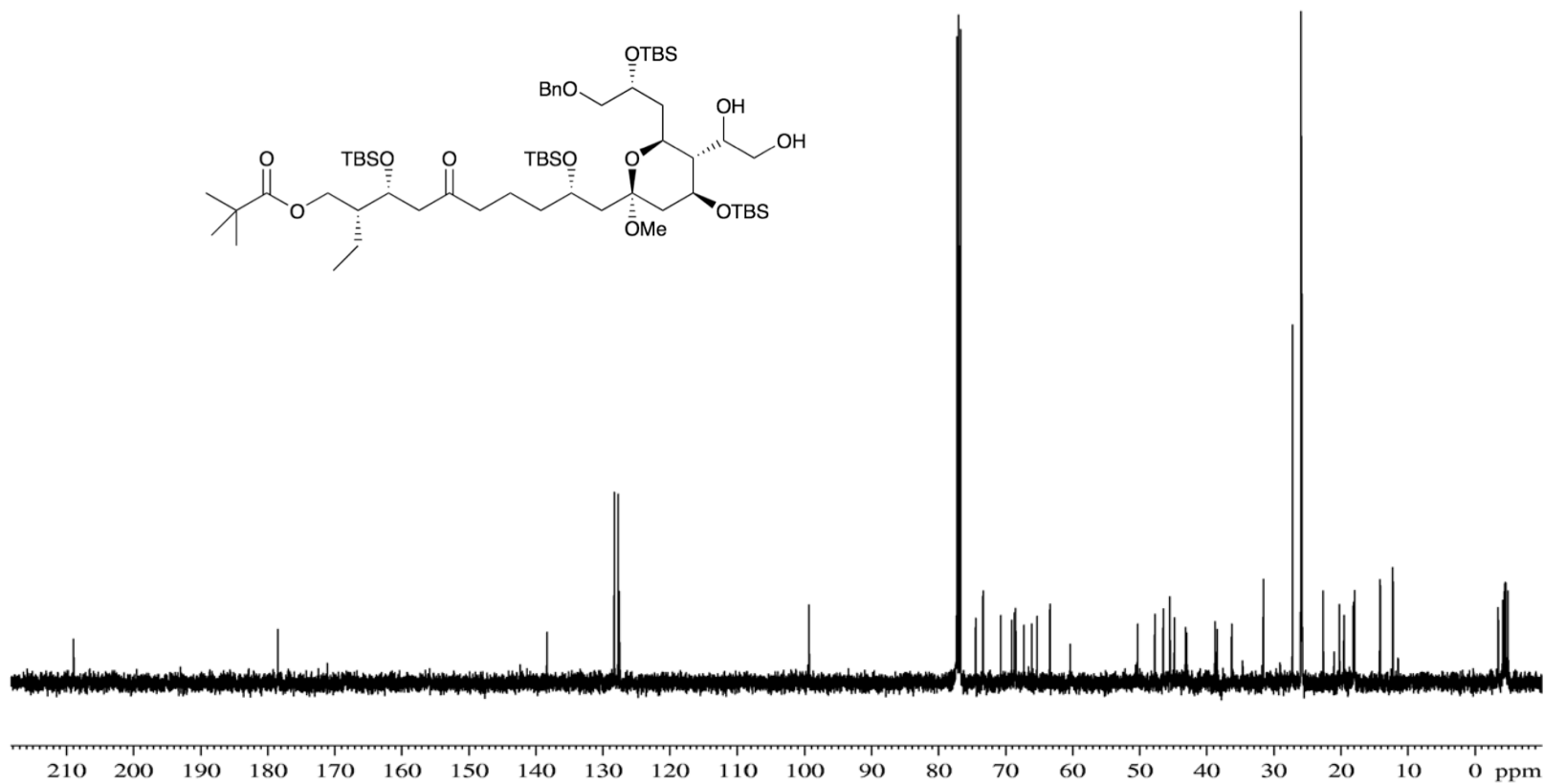
The <sup>13</sup>C NMR Spectrum of Compound (-)-S30 in CDCl<sub>3</sub>

S265



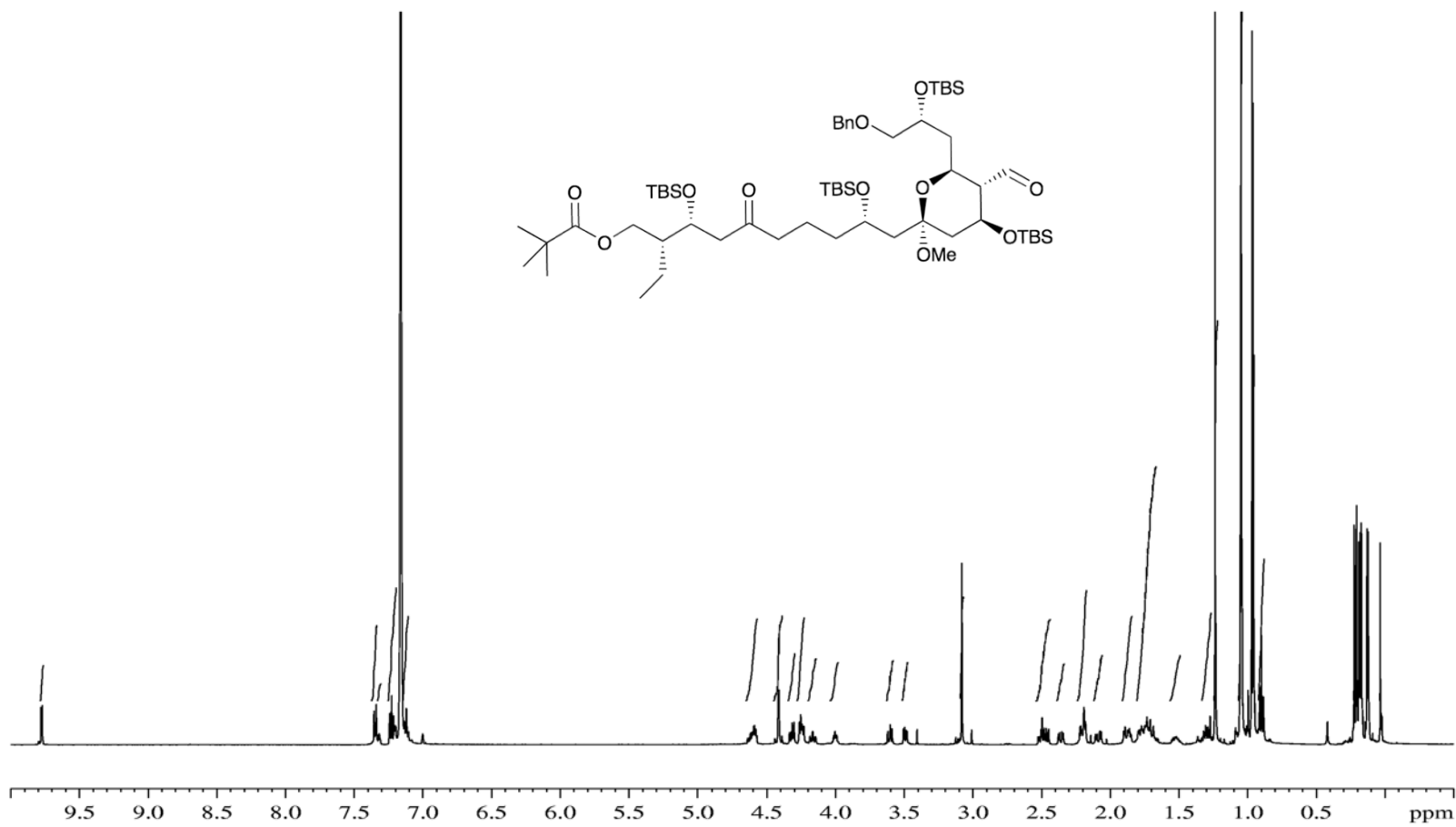
The <sup>1</sup>H NMR Spectrum of Compound (-)-S31 in C<sub>6</sub>D<sub>6</sub>

S266



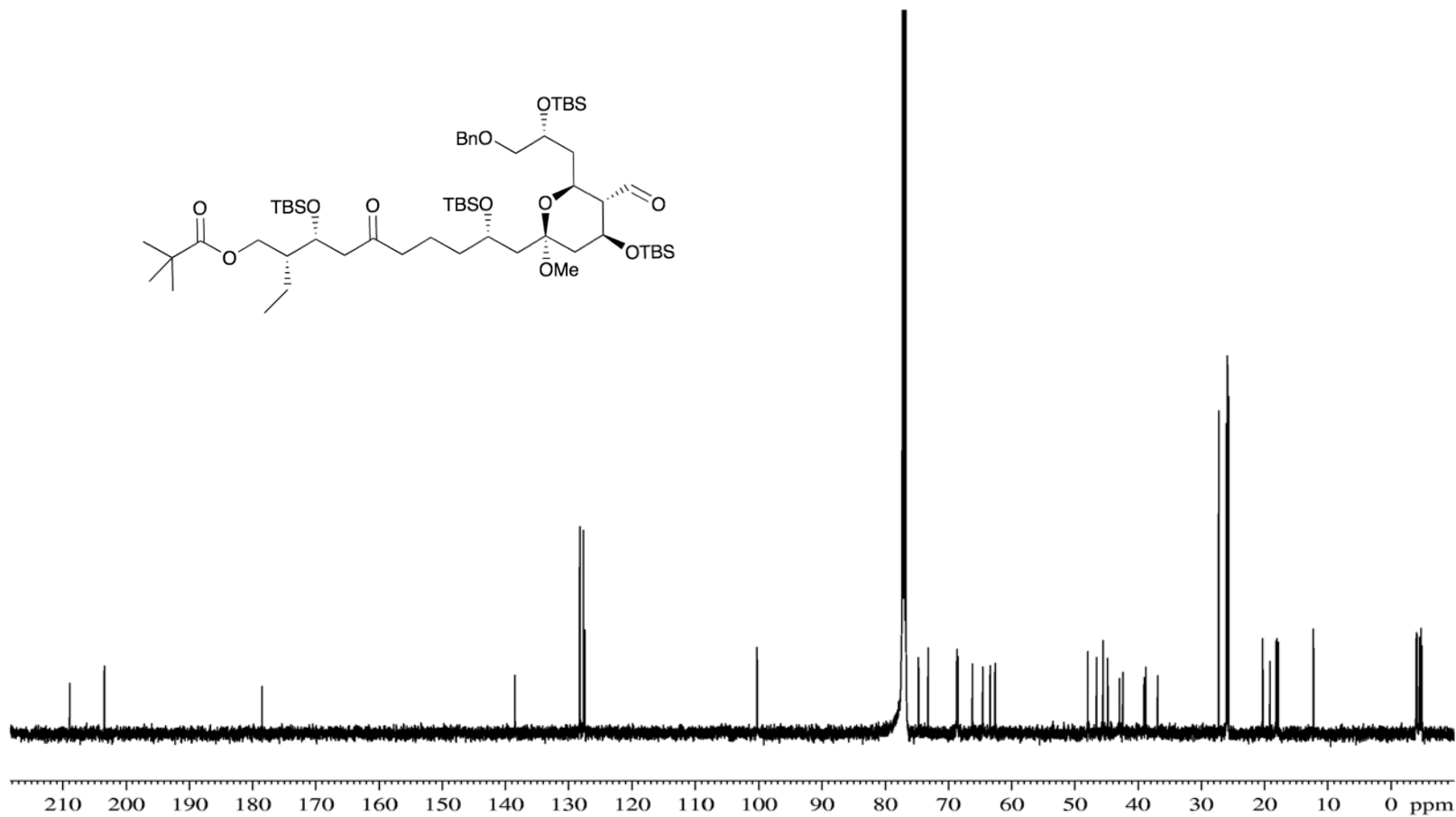
The <sup>13</sup>C NMR Spectrum of Compound (-)-S31 in CDCl<sub>3</sub>

S267



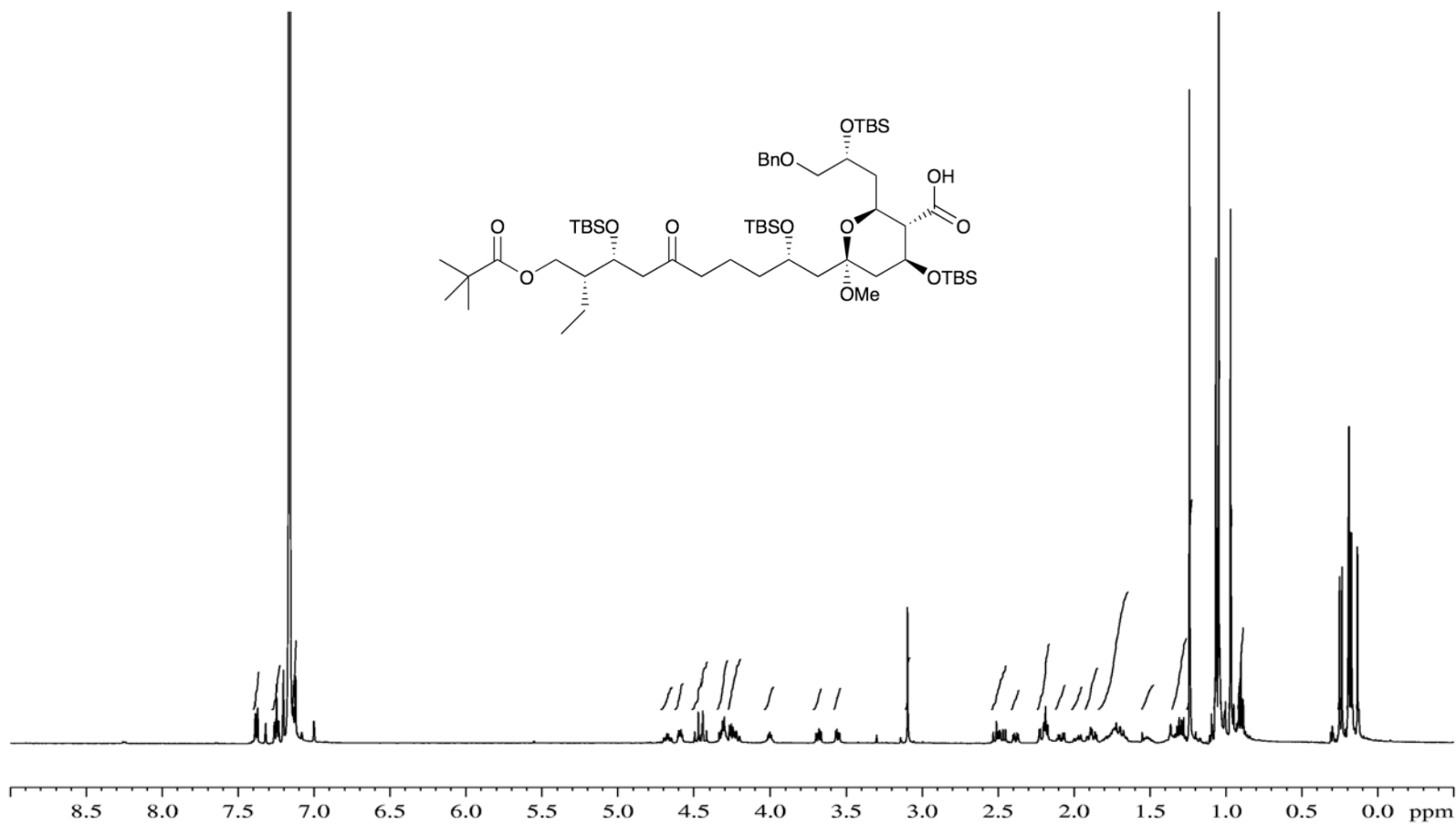
The <sup>1</sup>H NMR Spectrum of Compound (-)-71 in C<sub>6</sub>D<sub>6</sub>

S268



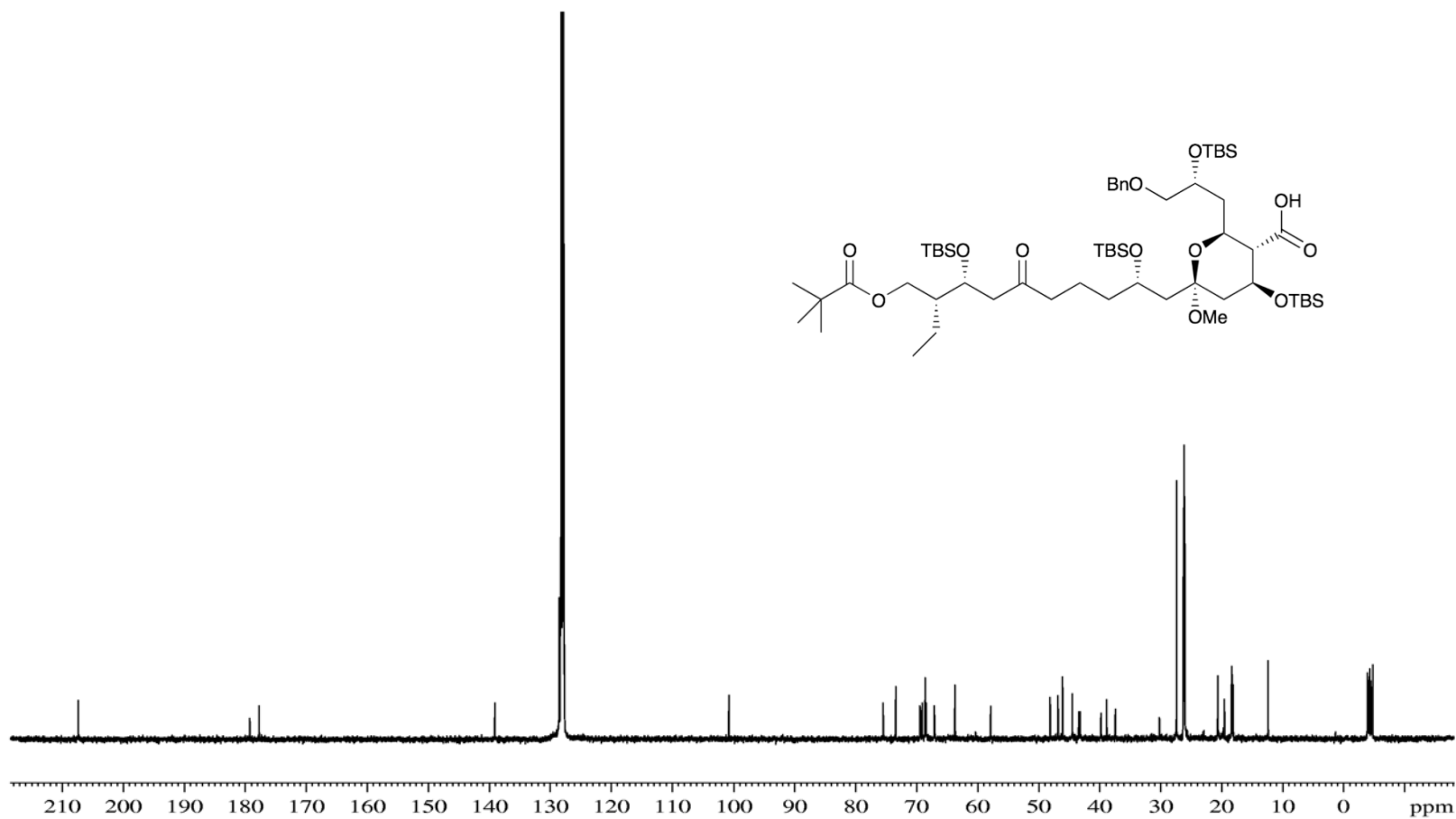
The  $^{13}\text{C}$  NMR Spectrum of Compound (-)-71 in  $\text{CDCl}_3$

S269



The  $^1\text{H}$  NMR Spectrum of Compound (-)-**S32** in  $\text{C}_6\text{D}_6$

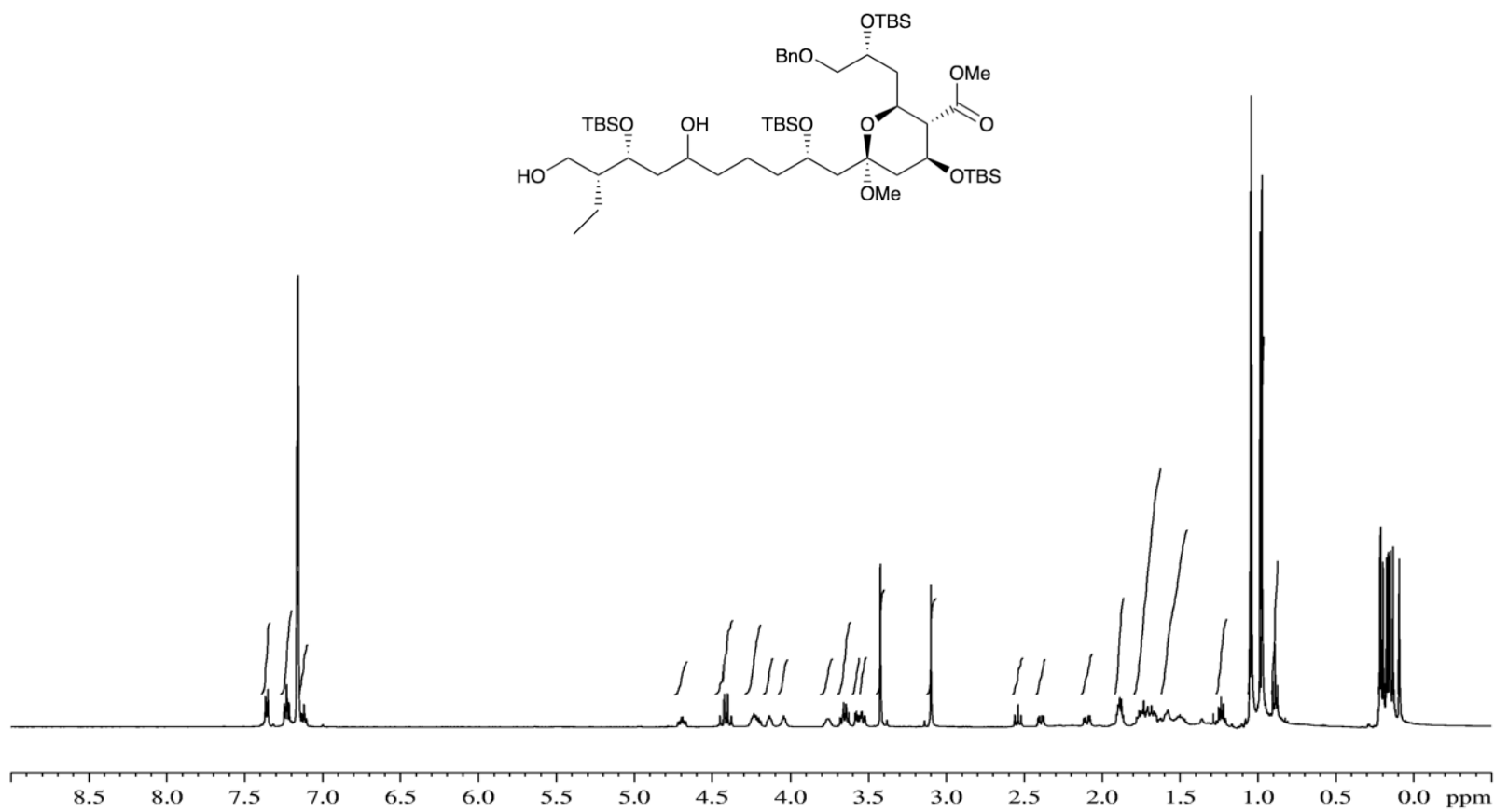
S270



The  $^{13}\text{C}$  NMR Spectrum of Compound (-)-S32 in  $\text{C}_6\text{D}_6$

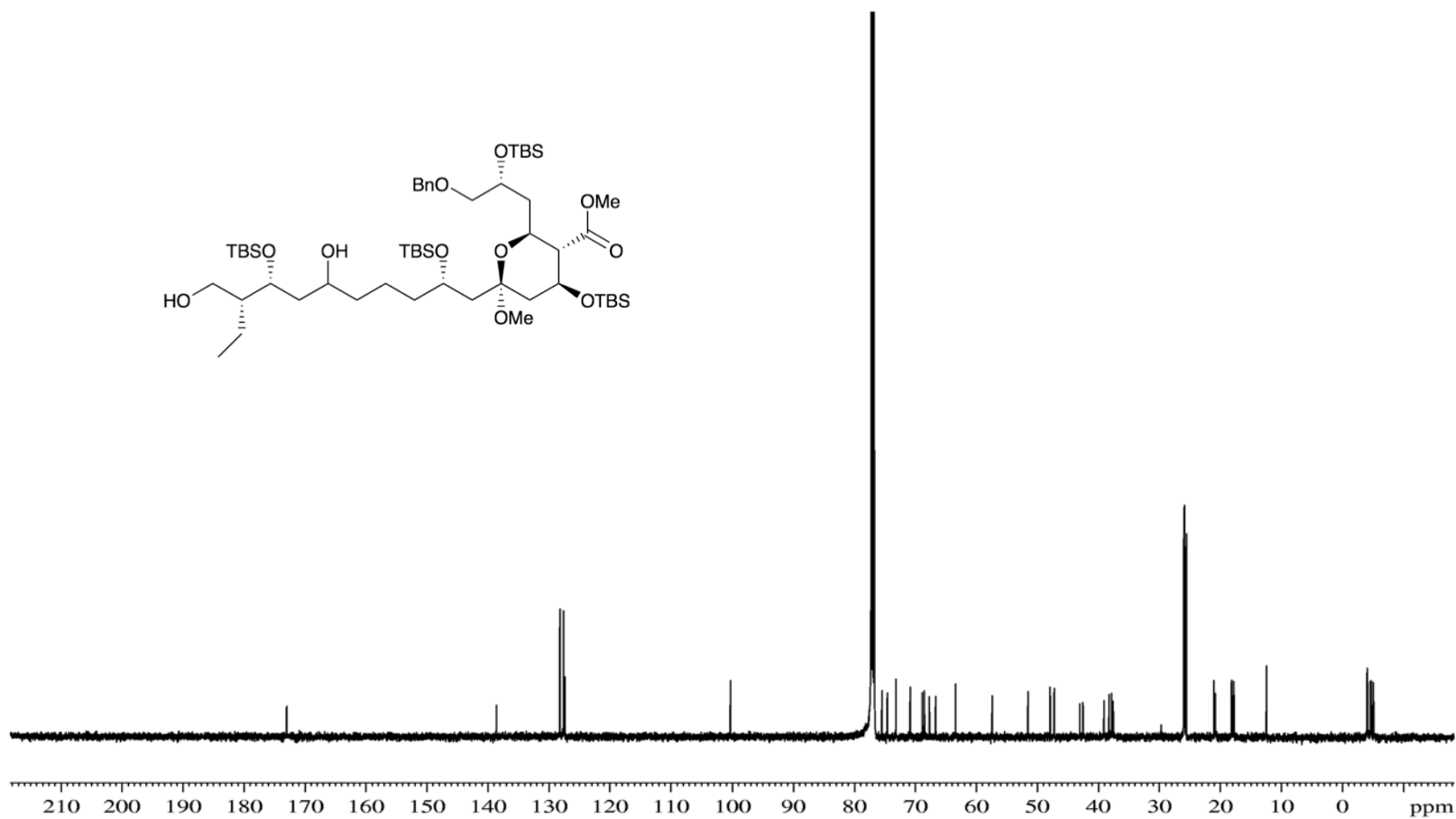


S271



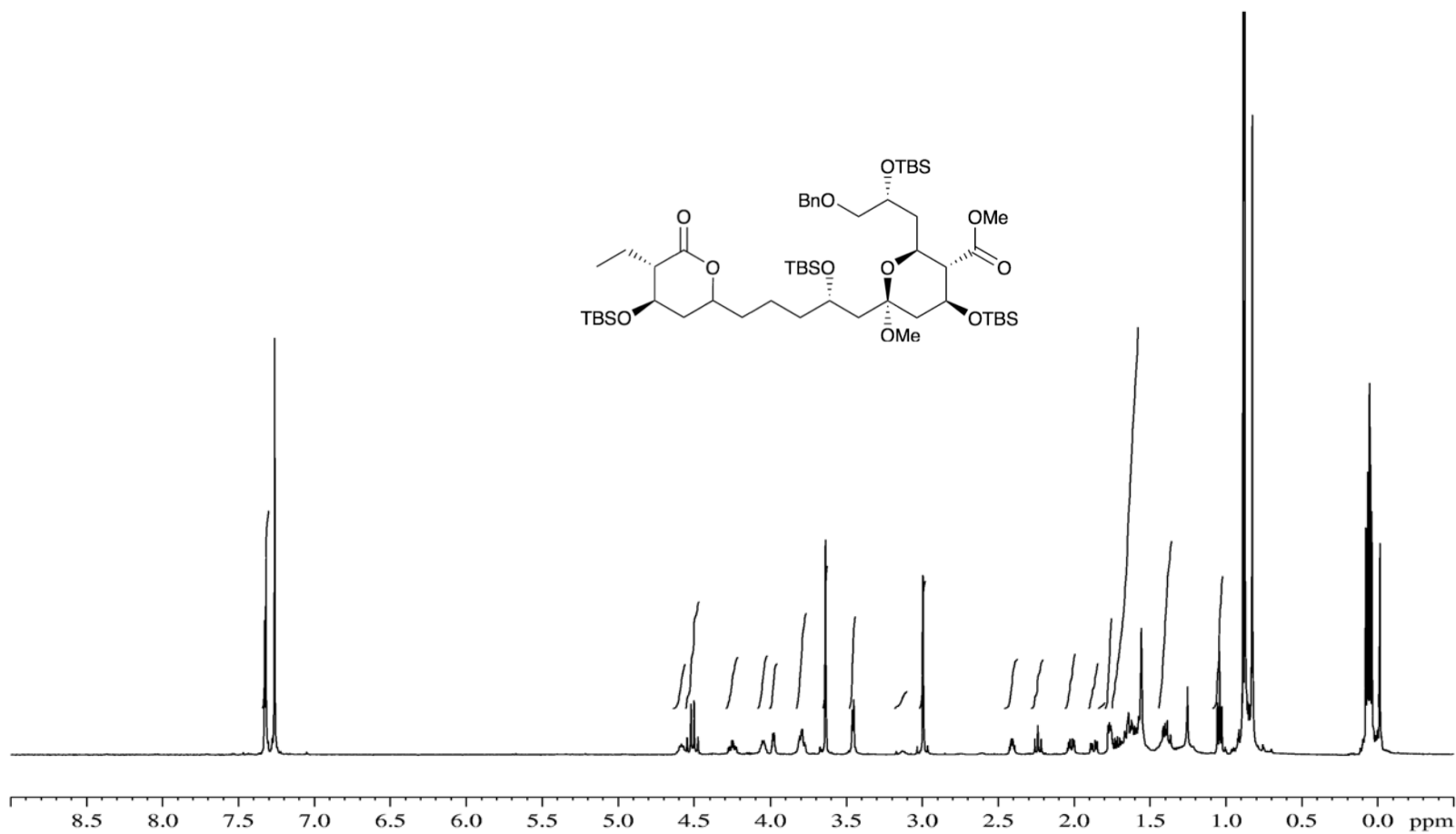
The <sup>1</sup>H NMR Spectrum of Compound (-)-72 in C<sub>6</sub>D<sub>6</sub>

S272



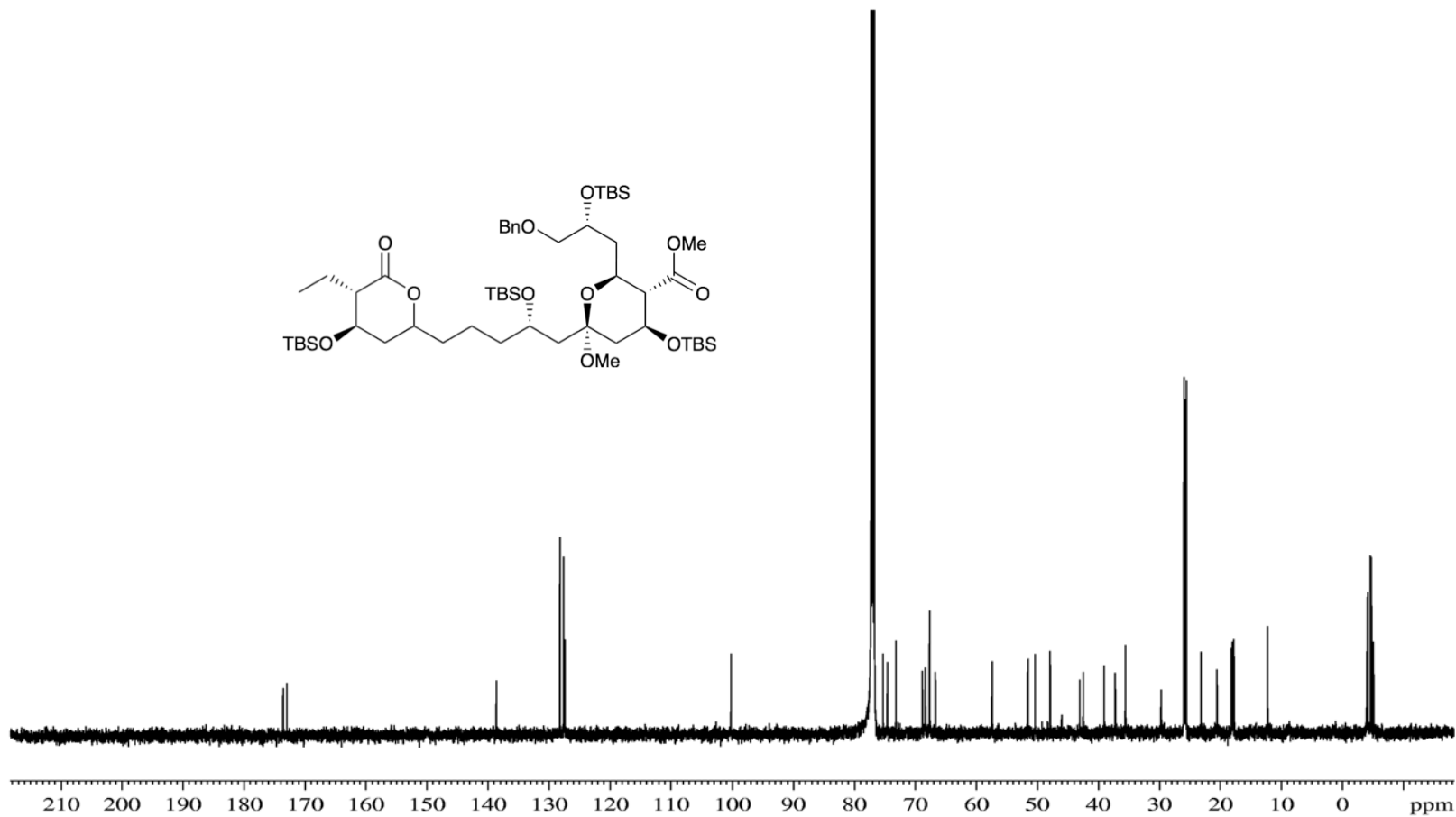
The <sup>13</sup>C NMR Spectrum of Compound (-)-72 in CDCl<sub>3</sub>

S273



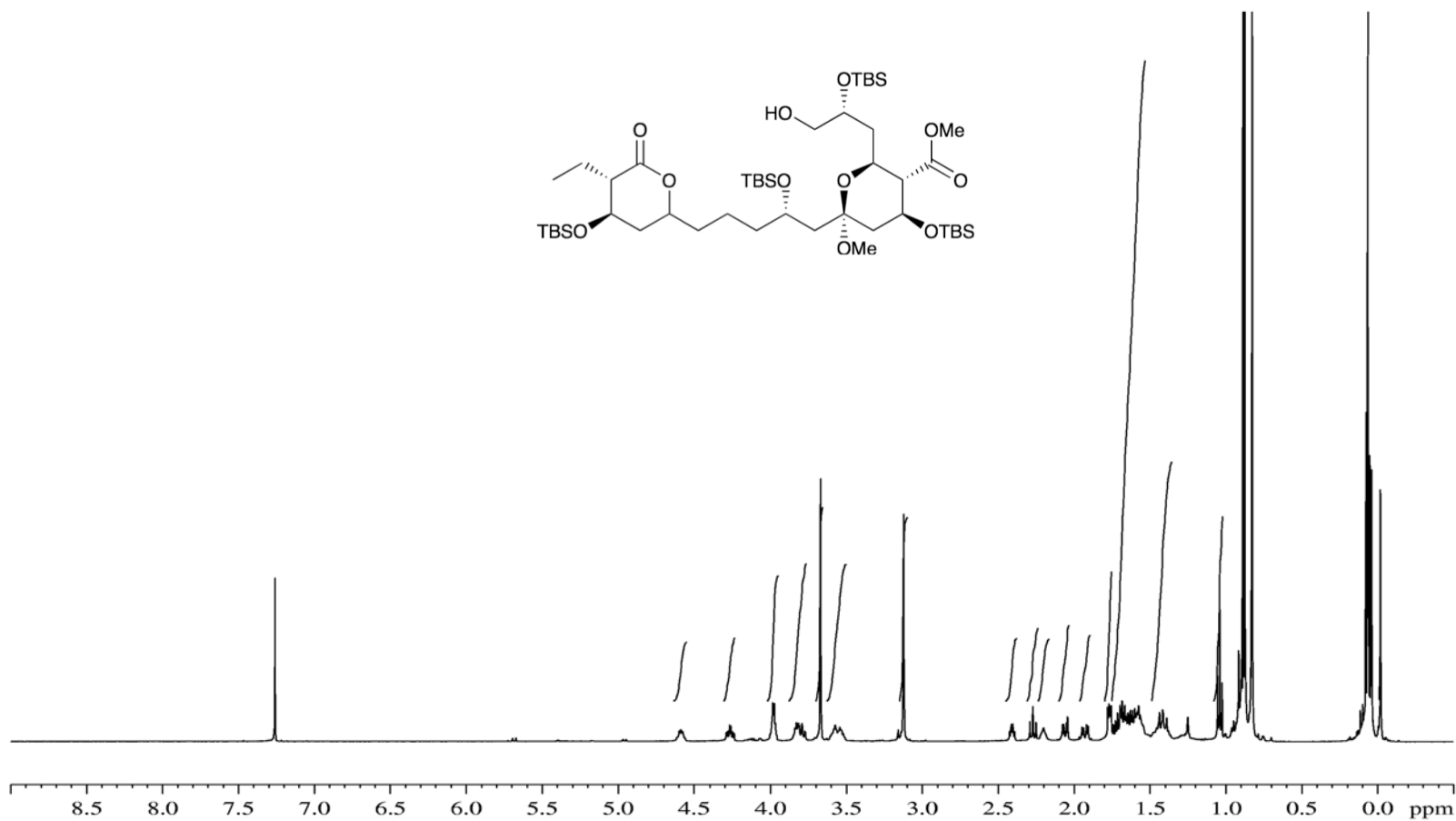
The <sup>1</sup>H NMR Spectrum of Compound (-)-74 in CDCl<sub>3</sub>

S274

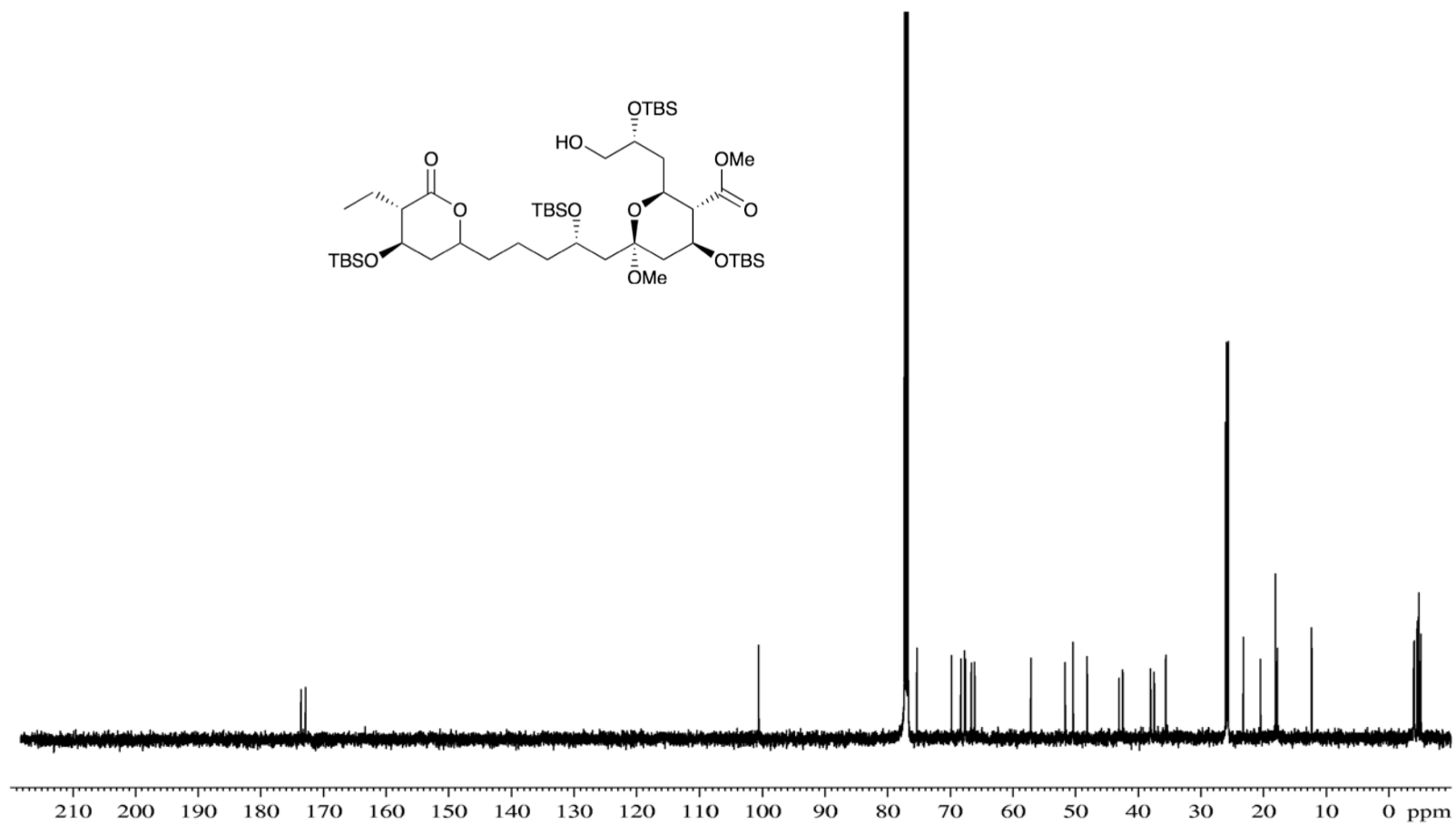


The <sup>13</sup>C NMR Spectrum of Compound (-)-74 in CDCl<sub>3</sub>

S275

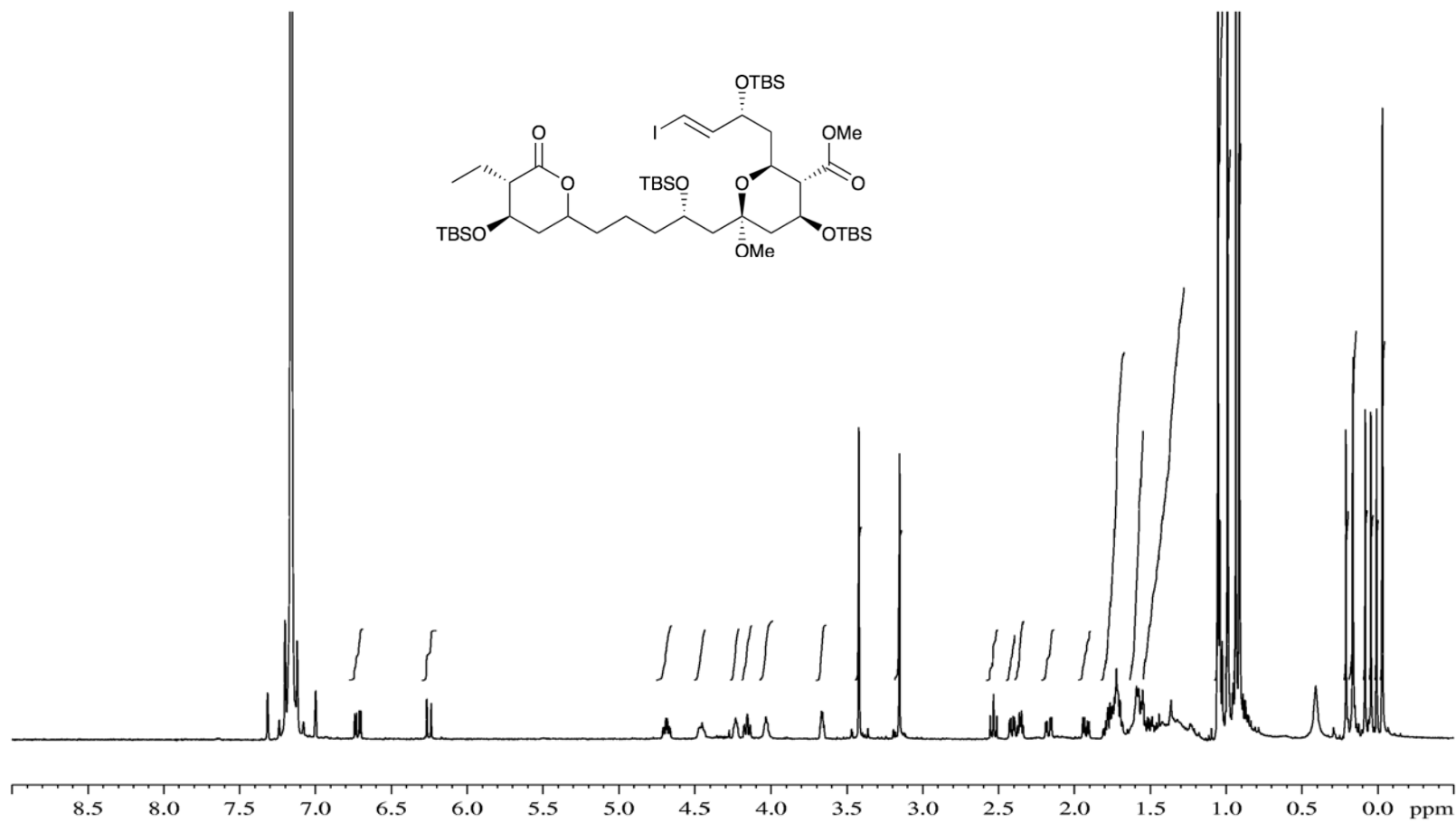


The  $^1\text{H}$  NMR Spectrum of Compound **(-)-S33** in  $\text{CDCl}_3$



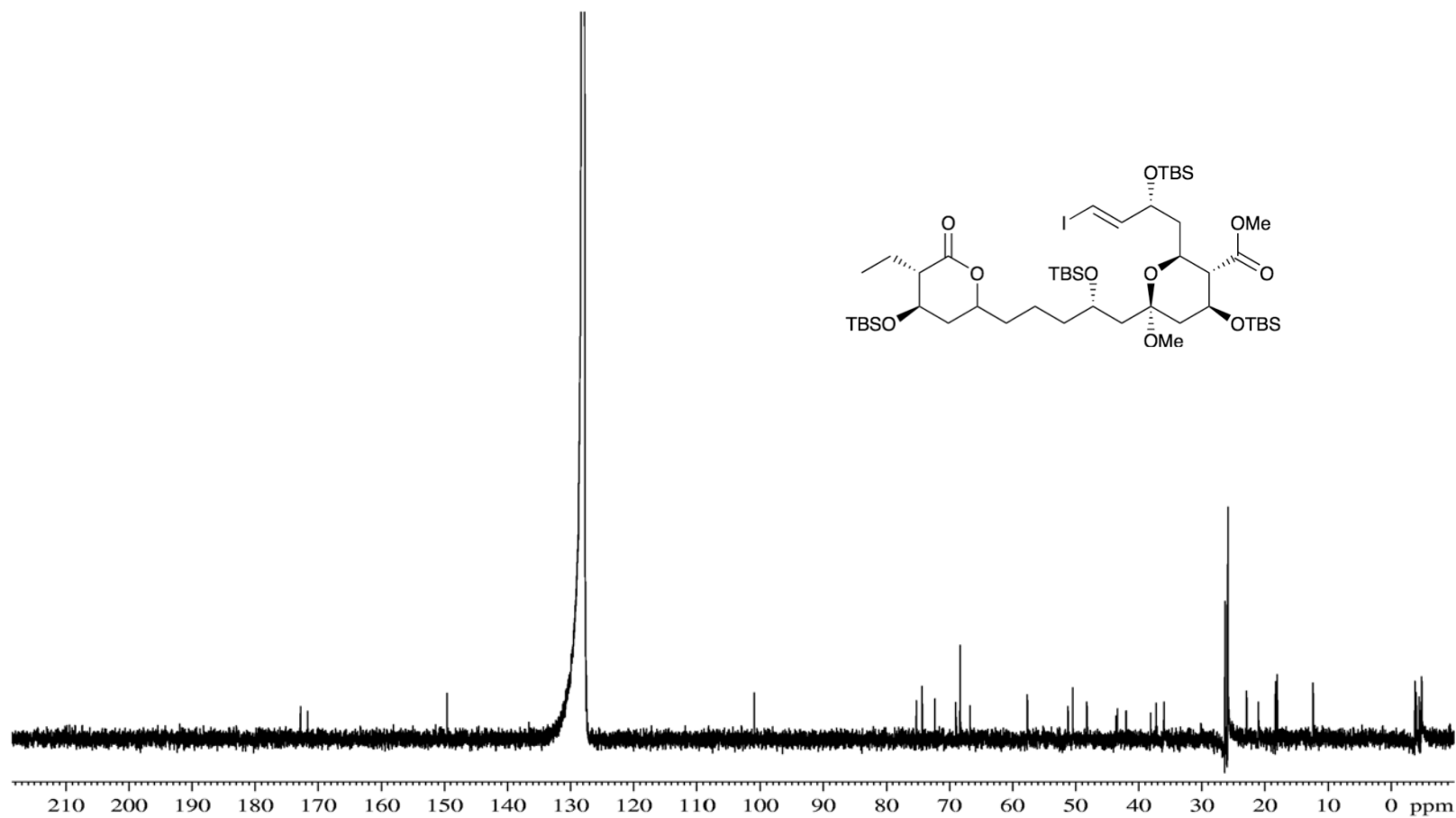
The  $^{13}\text{C}$  NMR Spectrum of Compound (-)-S33 in  $\text{CDCl}_3$

S277



The  $^1\text{H}$  NMR Spectrum of Compound (-)-75 in  $\text{C}_6\text{D}_6$

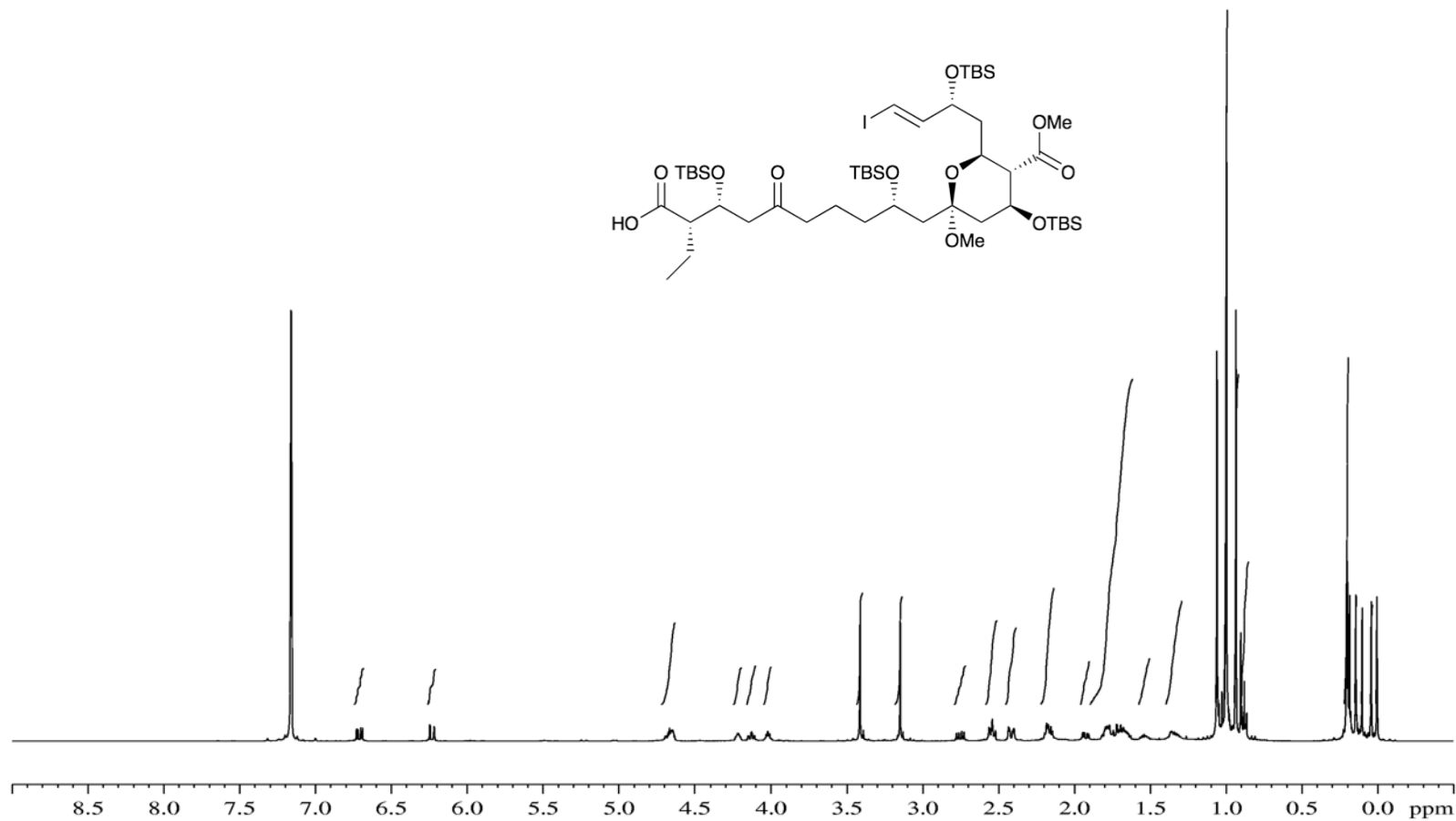
S278



The  $^{13}\text{C}$  NMR Spectrum of Compound (-)-75 in  $\text{C}_6\text{D}_6$

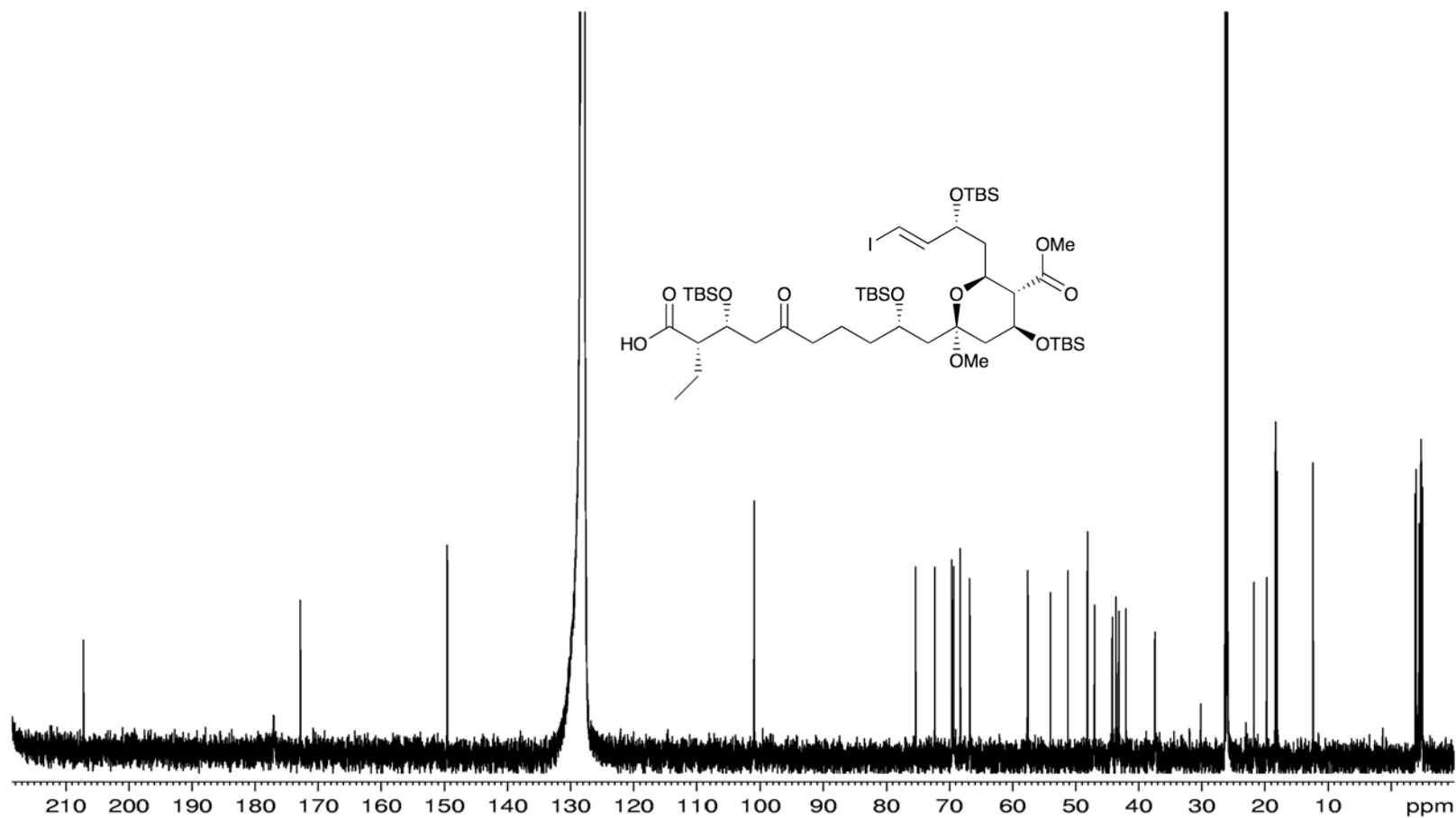


S279



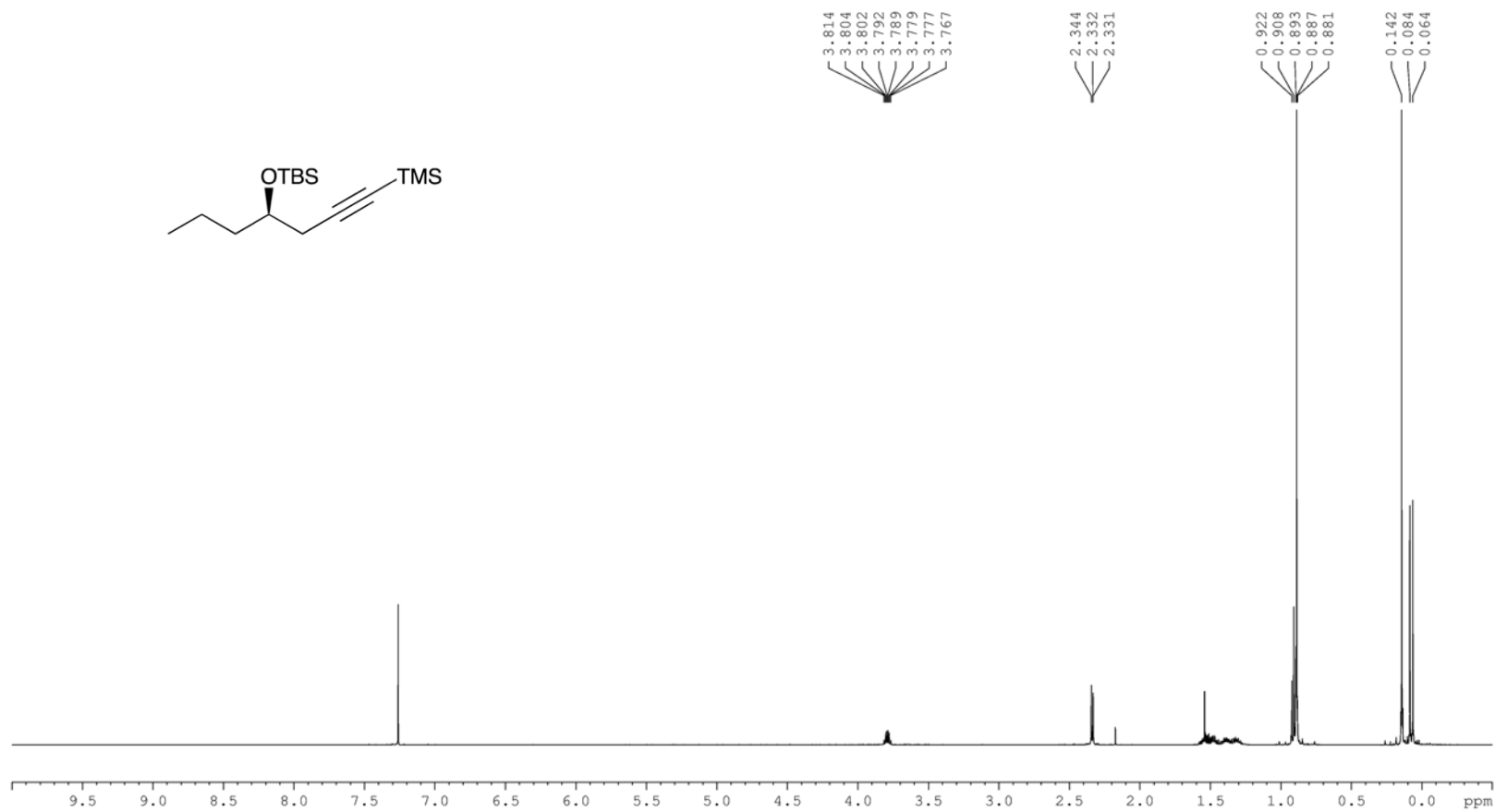
The  $^1\text{H}$  NMR Spectrum of Compound (-)-4 in  $\text{C}_6\text{D}_6$

S280



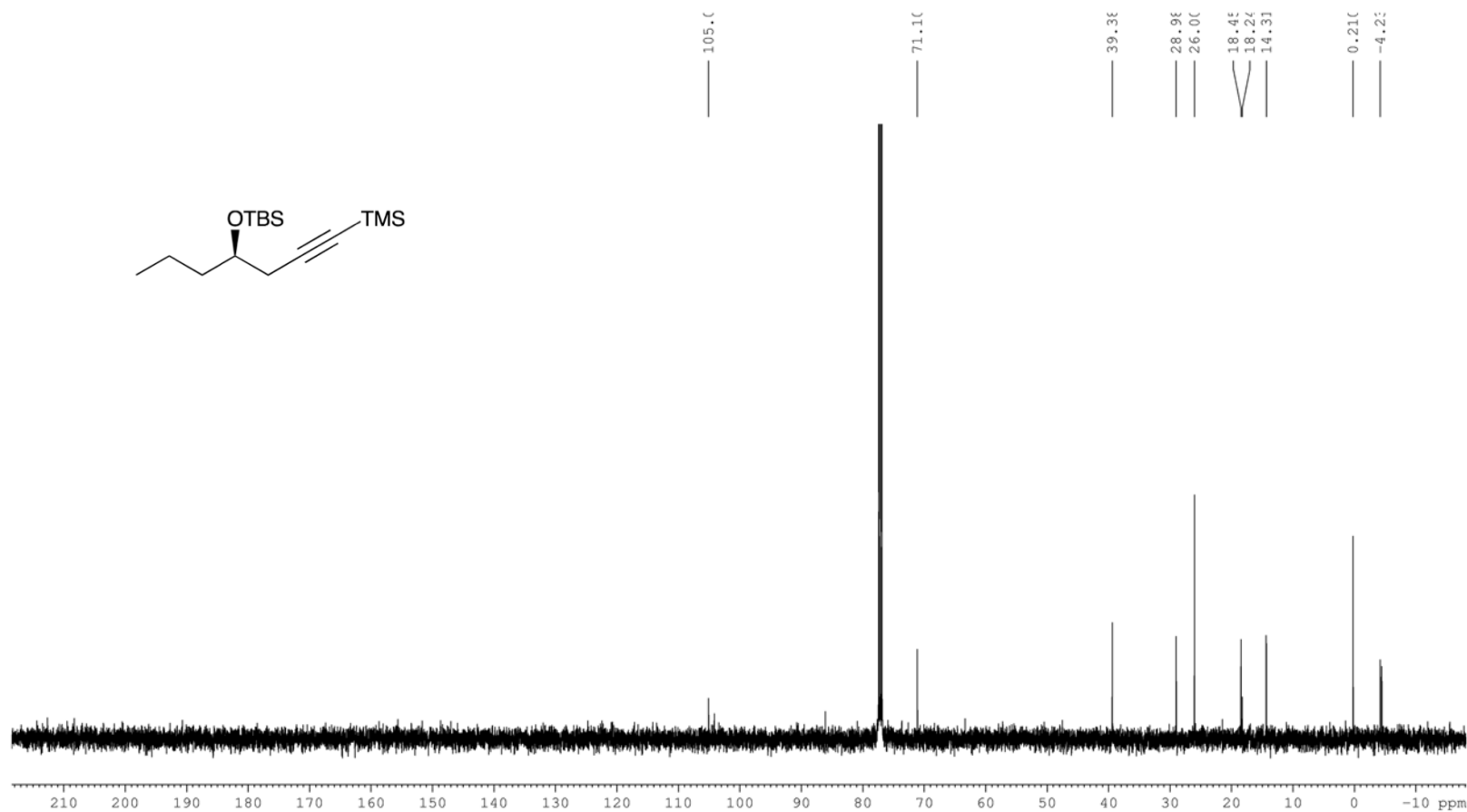
The  $^{13}\text{C}$  NMR Spectrum of Compound (-)-4 in  $\text{C}_6\text{D}_6$

S281



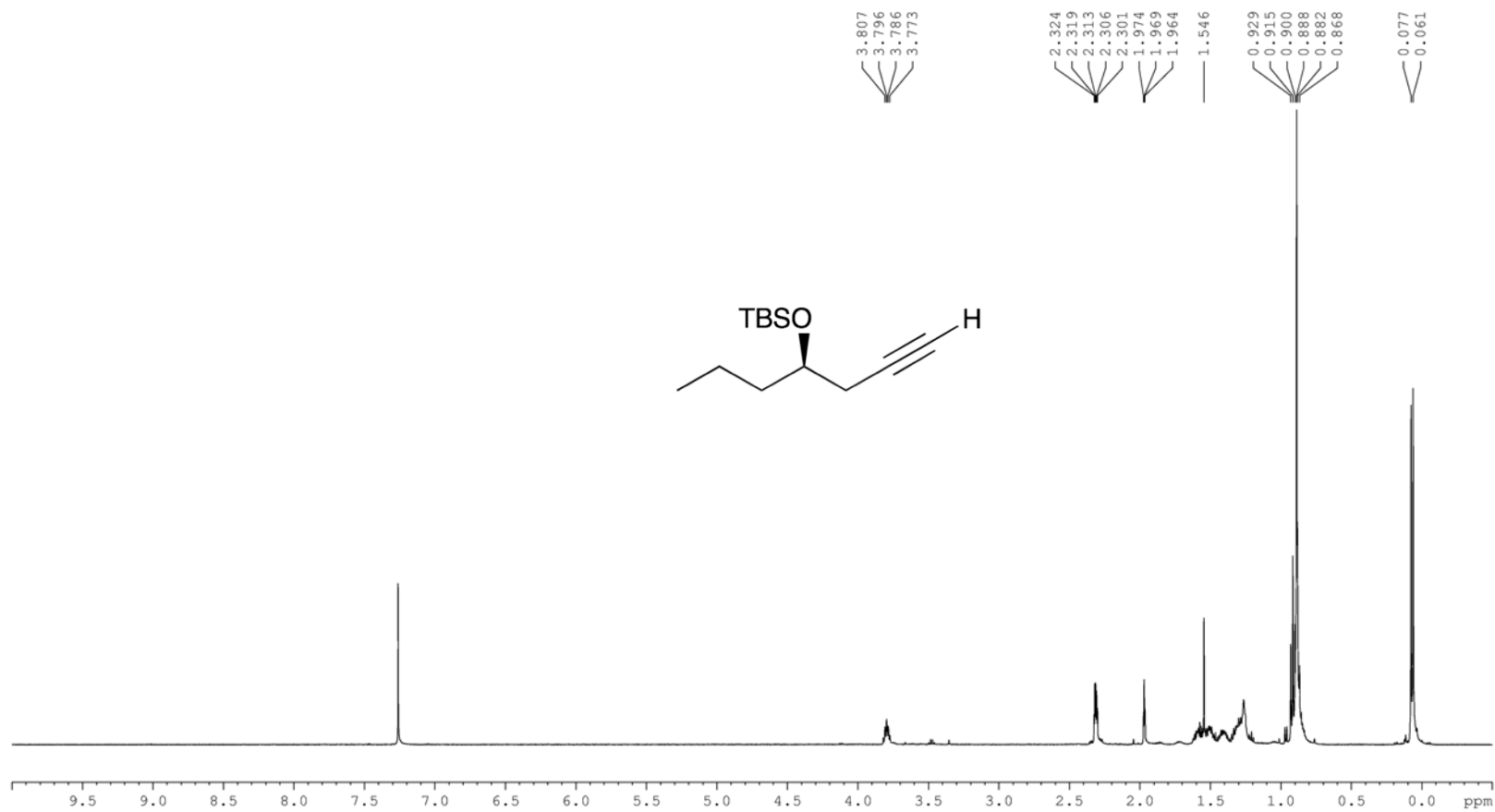
The <sup>1</sup>H NMR Spectrum of Compound (+)-S34 in CDCl<sub>3</sub>

S282



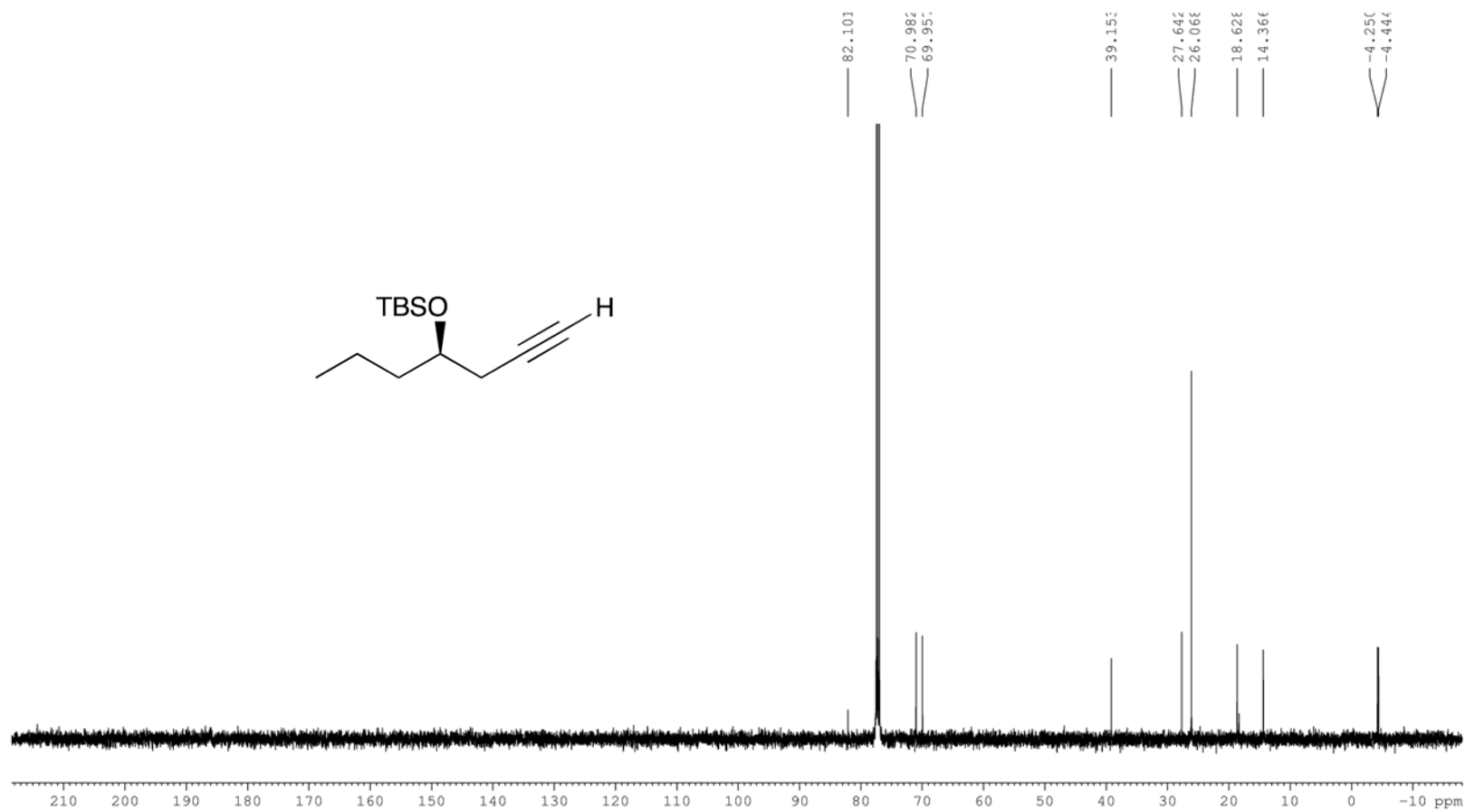
The <sup>13</sup>C NMR Spectrum of Compound (+)-S34 in CDCl<sub>3</sub>

S283



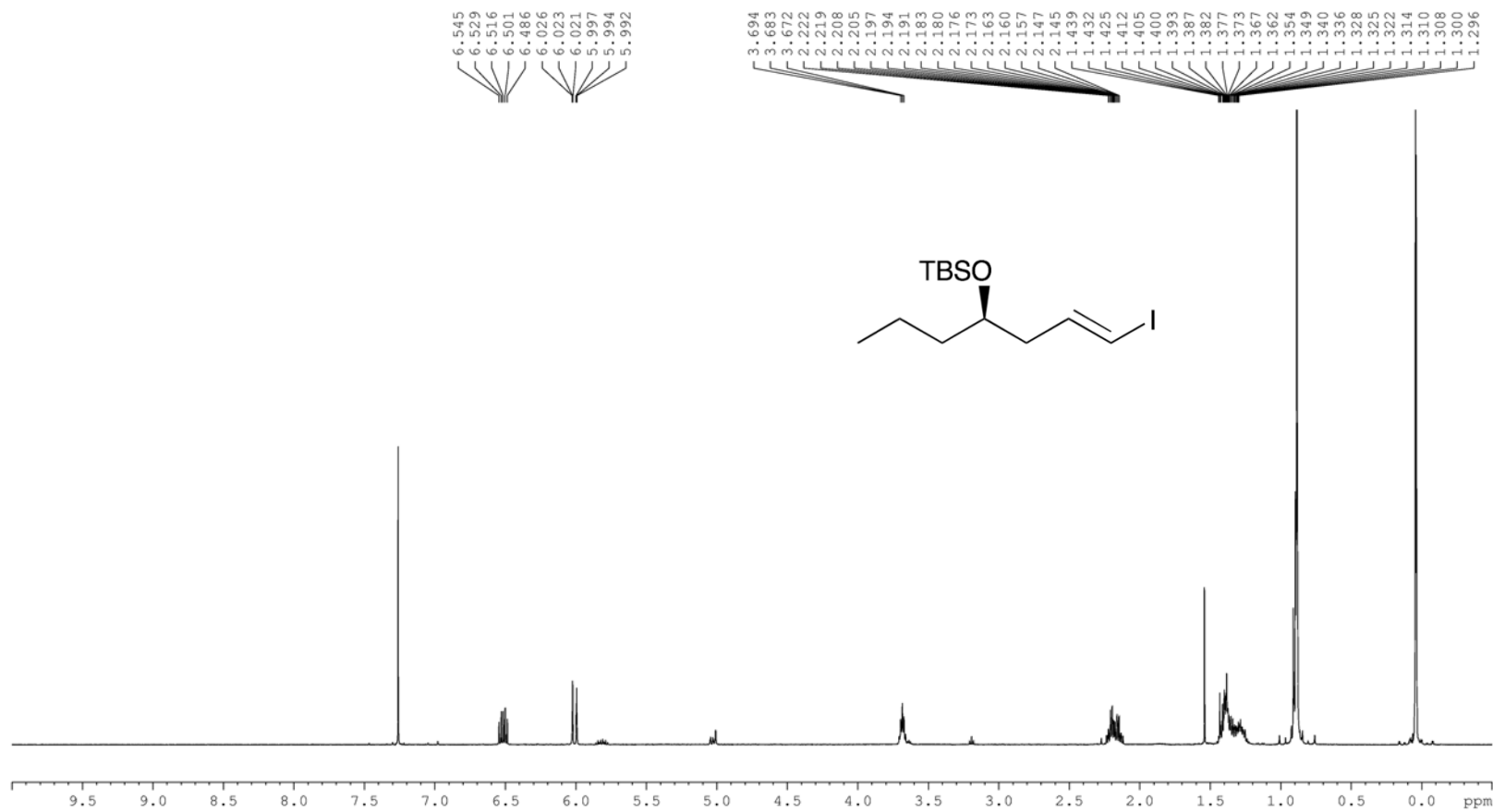
The <sup>1</sup>H NMR Spectrum of Compound (-)-78 in CDCl<sub>3</sub>

S284



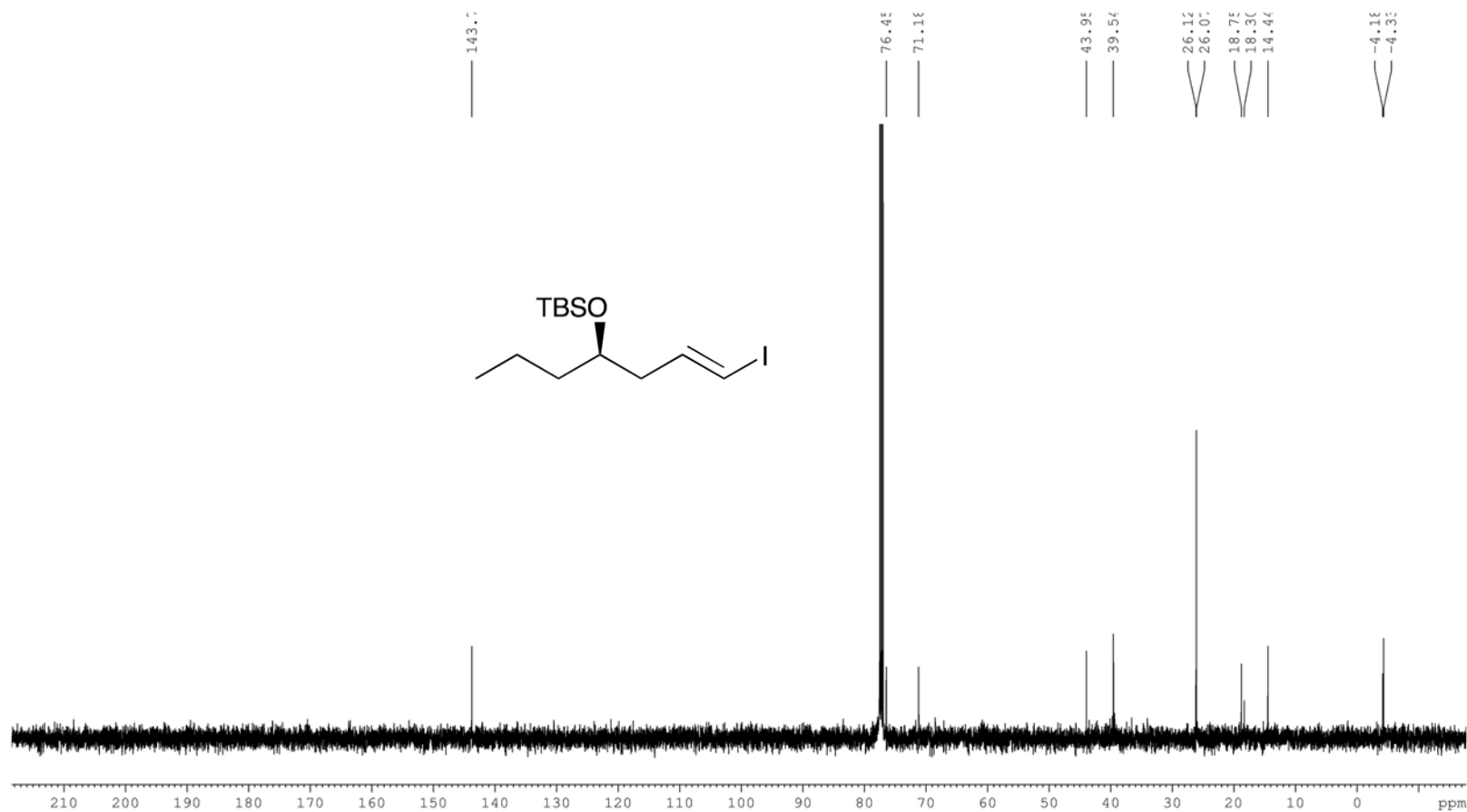
The  $^{13}\text{C}$  NMR Spectrum of Compound (-)-78 in  $\text{CDCl}_3$

S285



The  $^1\text{H}$  NMR Spectrum of Compound (-)-S35 in  $\text{CDCl}_3$

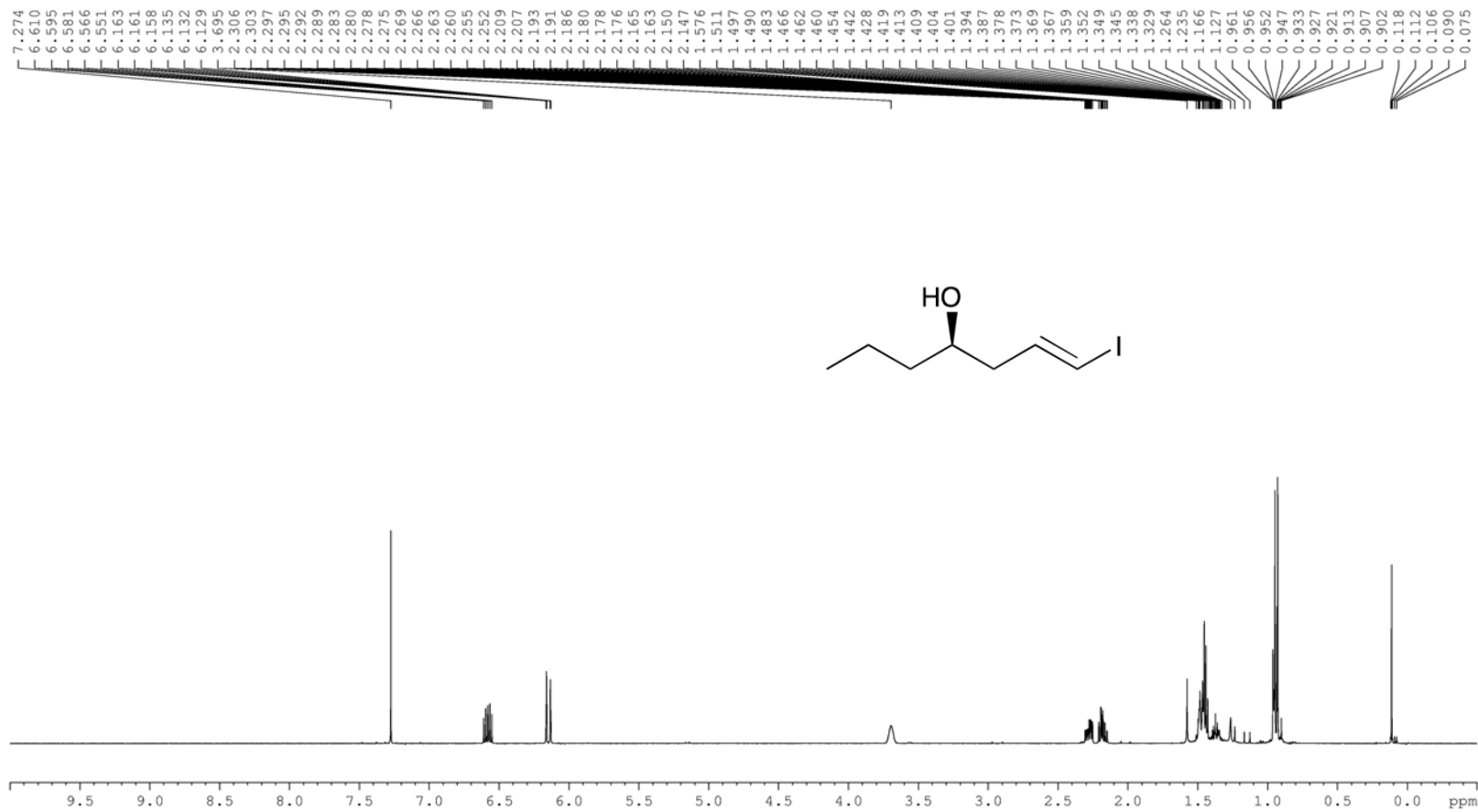
S286



The <sup>13</sup>C NMR Spectrum of Compound (-)-S35 in CDCl<sub>3</sub>

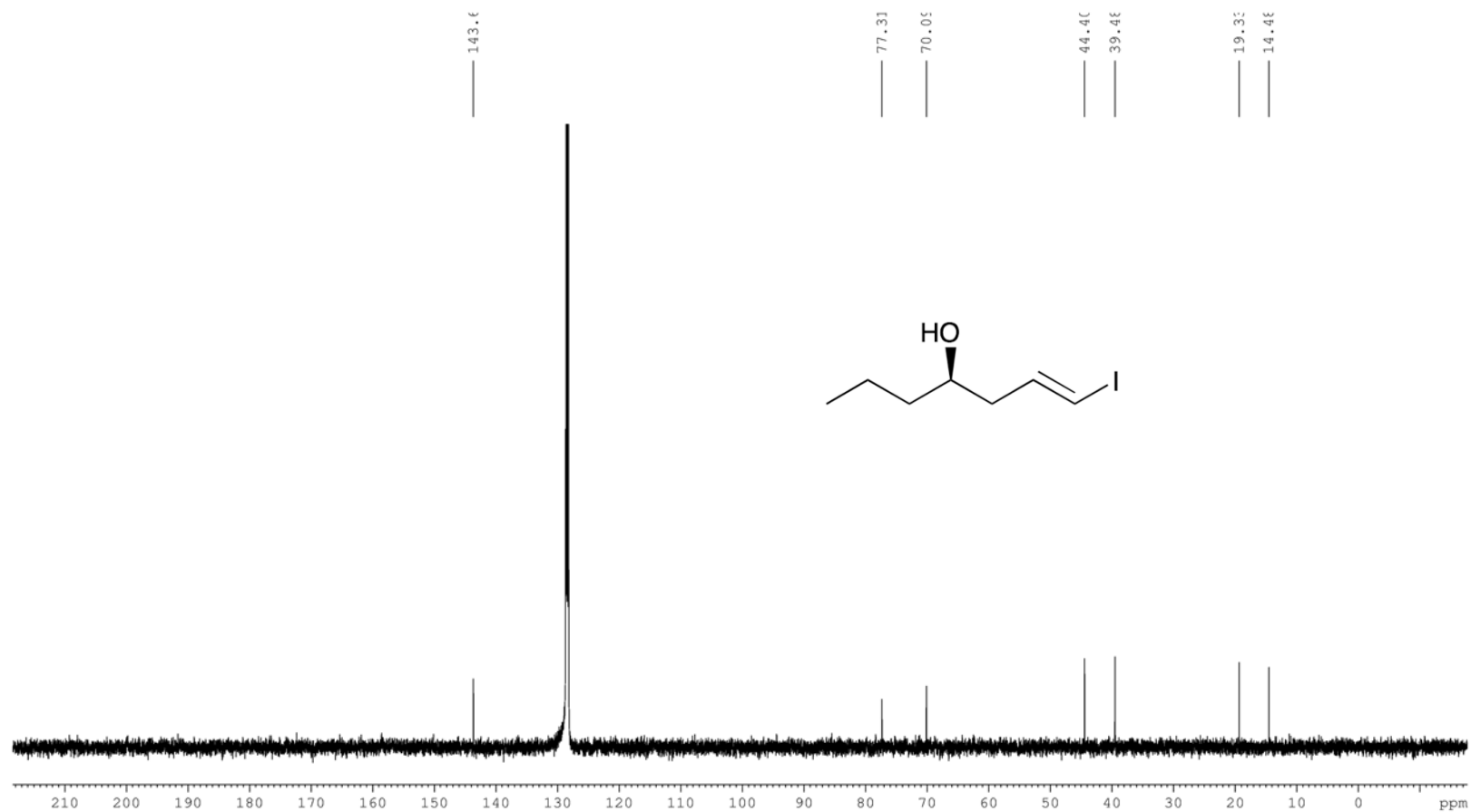


S287



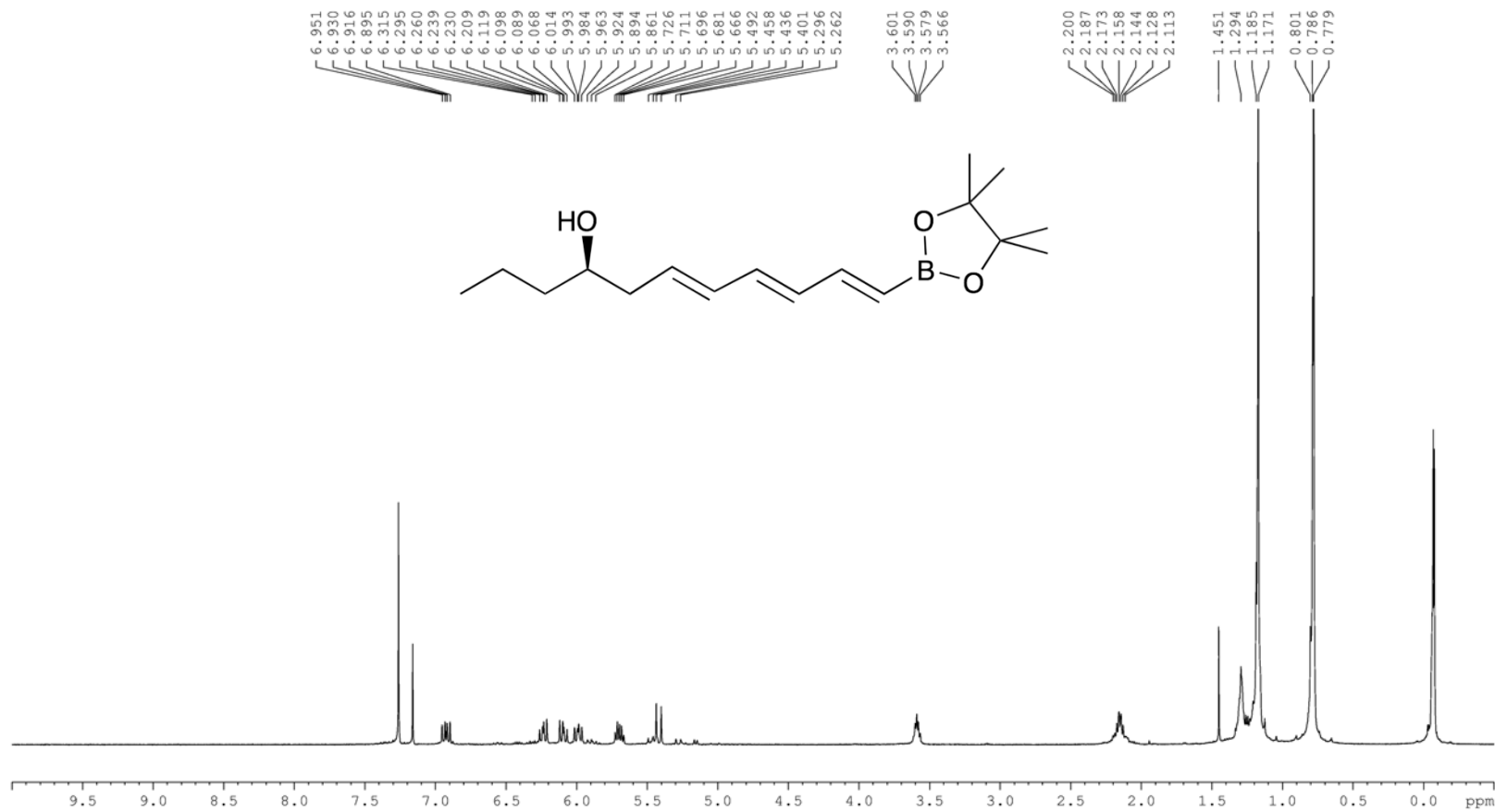
The <sup>1</sup>H NMR Spectrum of Compound (-)-79 in CDCl<sub>3</sub>

S288



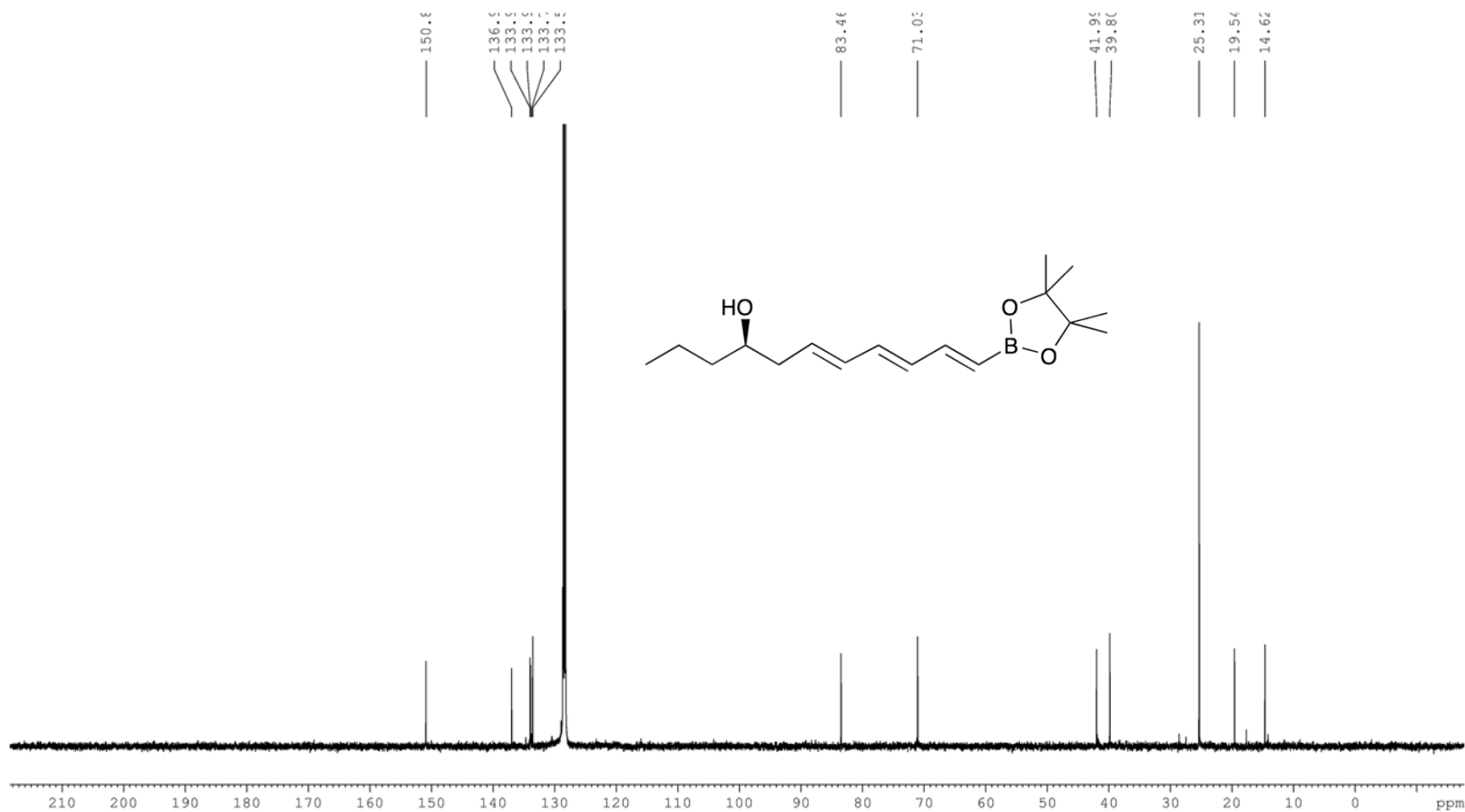
The  $^{13}\text{C}$  NMR Spectrum of Compound (-)-79 in  $\text{CDCl}_3$

S289



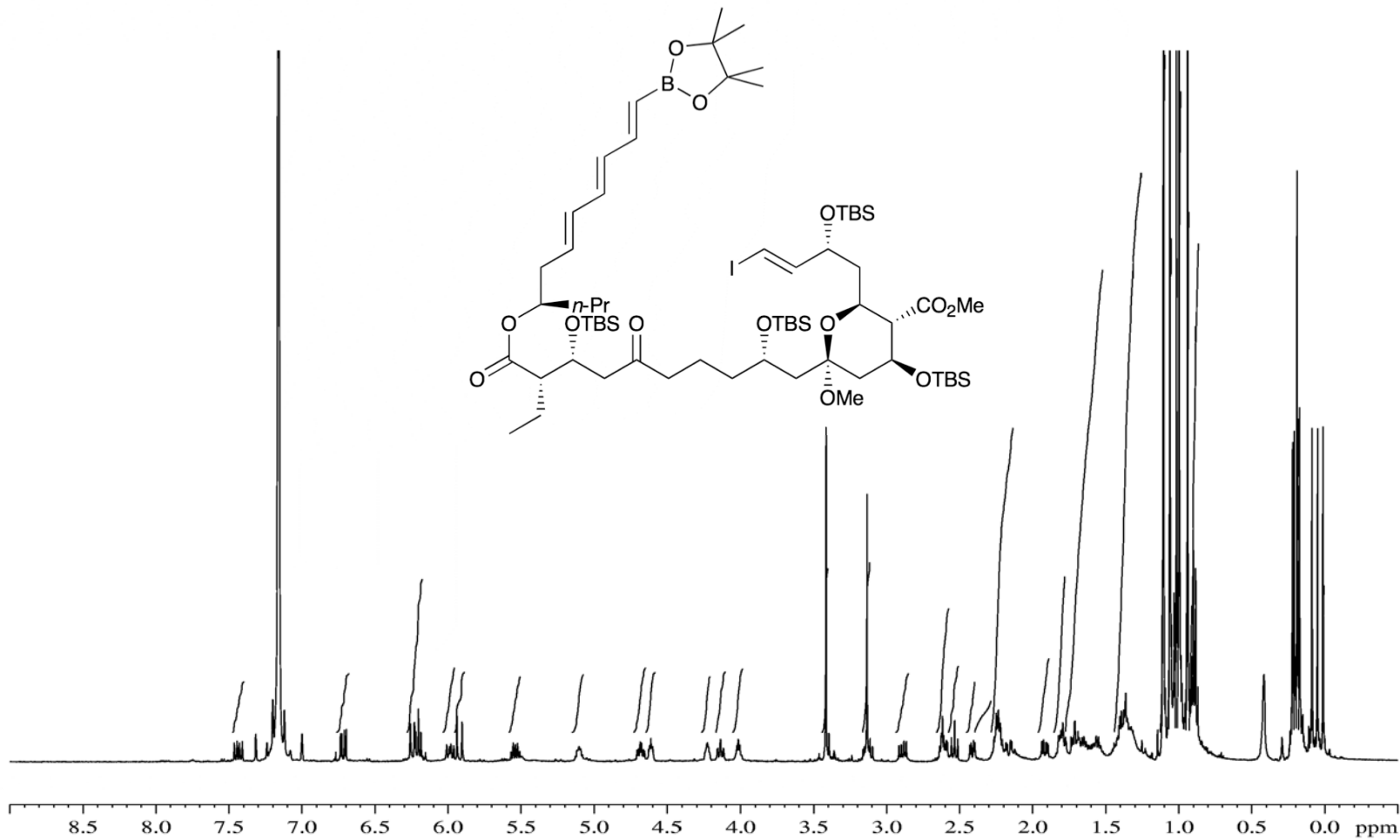
The <sup>1</sup>H NMR Spectrum of Compound (-)-3 in CDCl<sub>3</sub>

S290

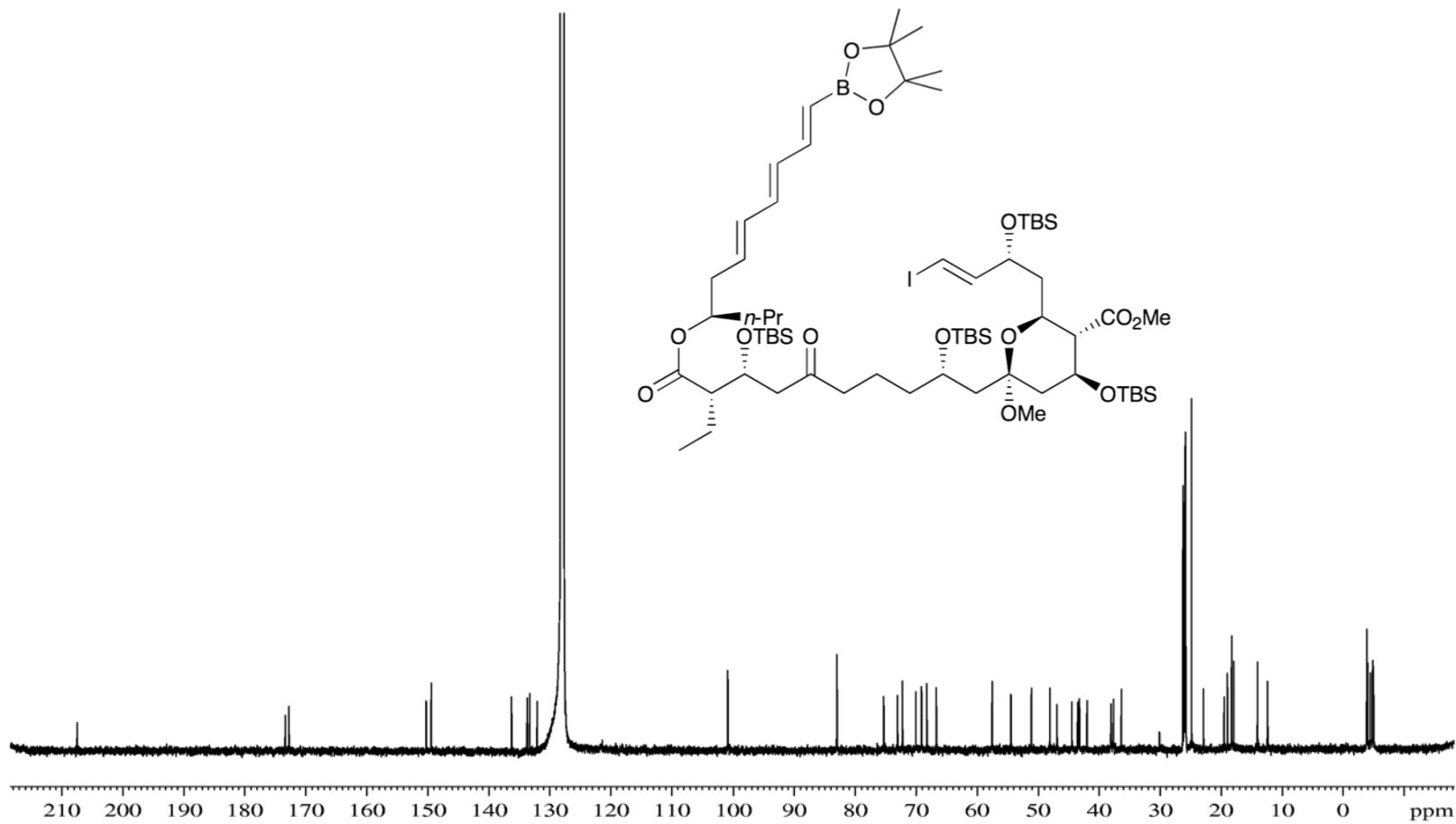


The <sup>1</sup>H NMR Spectrum of Compound (-)-**3** in CDCl<sub>3</sub>

S291

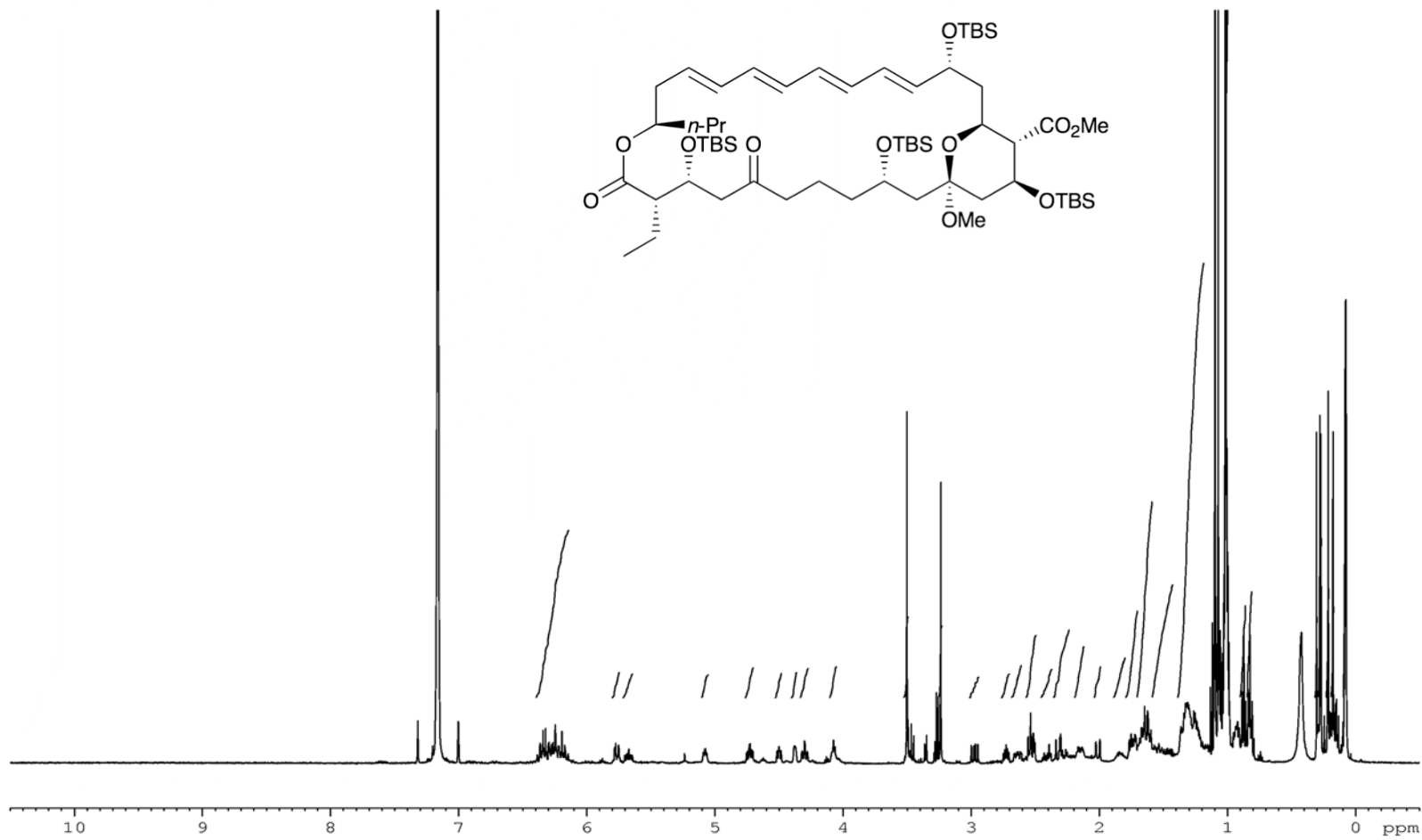


The  $^1\text{H}$  NMR Spectrum of the Product of the Yamaguchi Esterification in  $\text{C}_6\text{D}_6$



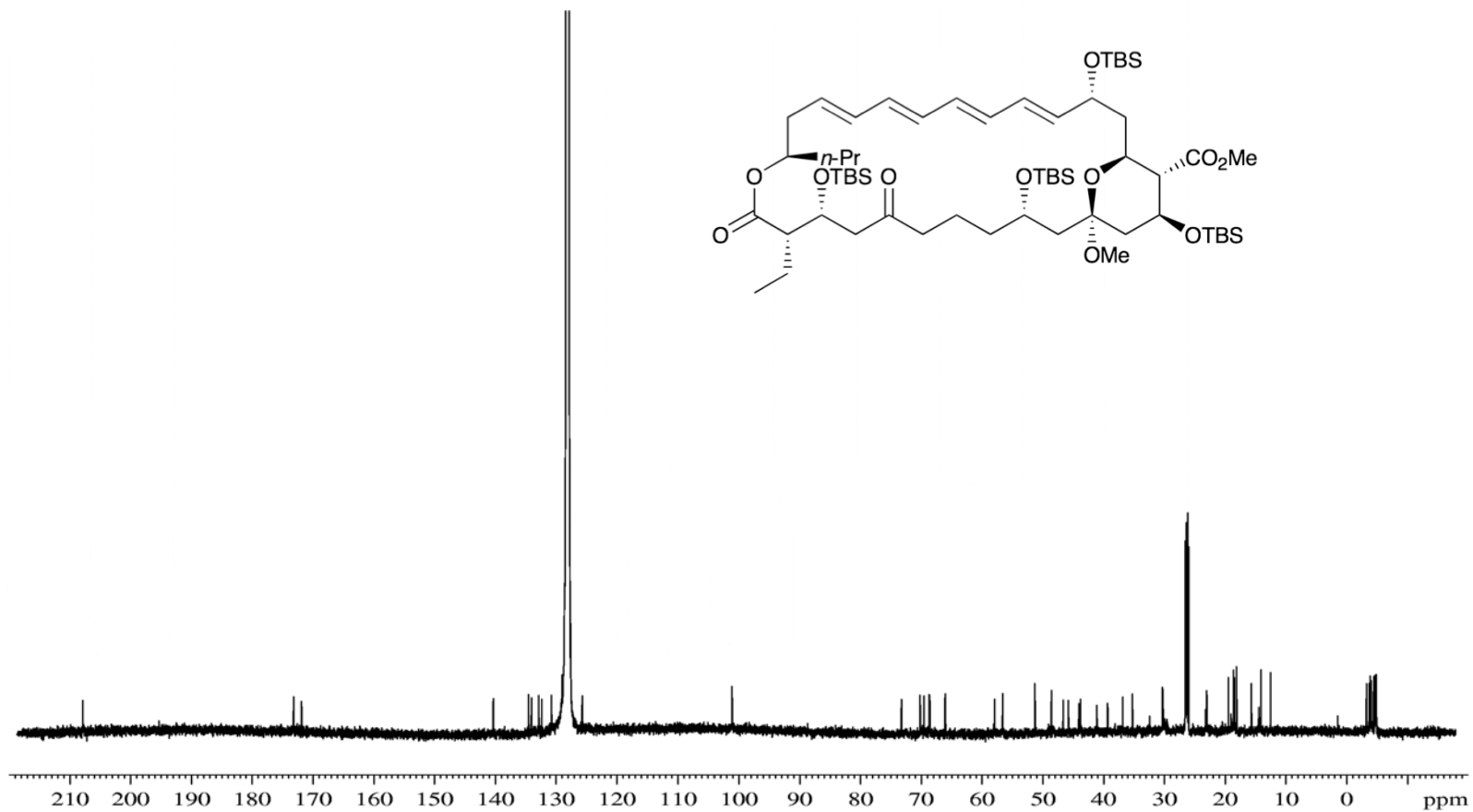
The  $^{13}\text{C}$  NMR Spectrum of the Product of the Yamaguchi Esterification in  $\text{C}_6\text{D}_6$

S293



The <sup>1</sup>H NMR Spectrum of Compound (-)-80 in C<sub>6</sub>D<sub>6</sub>

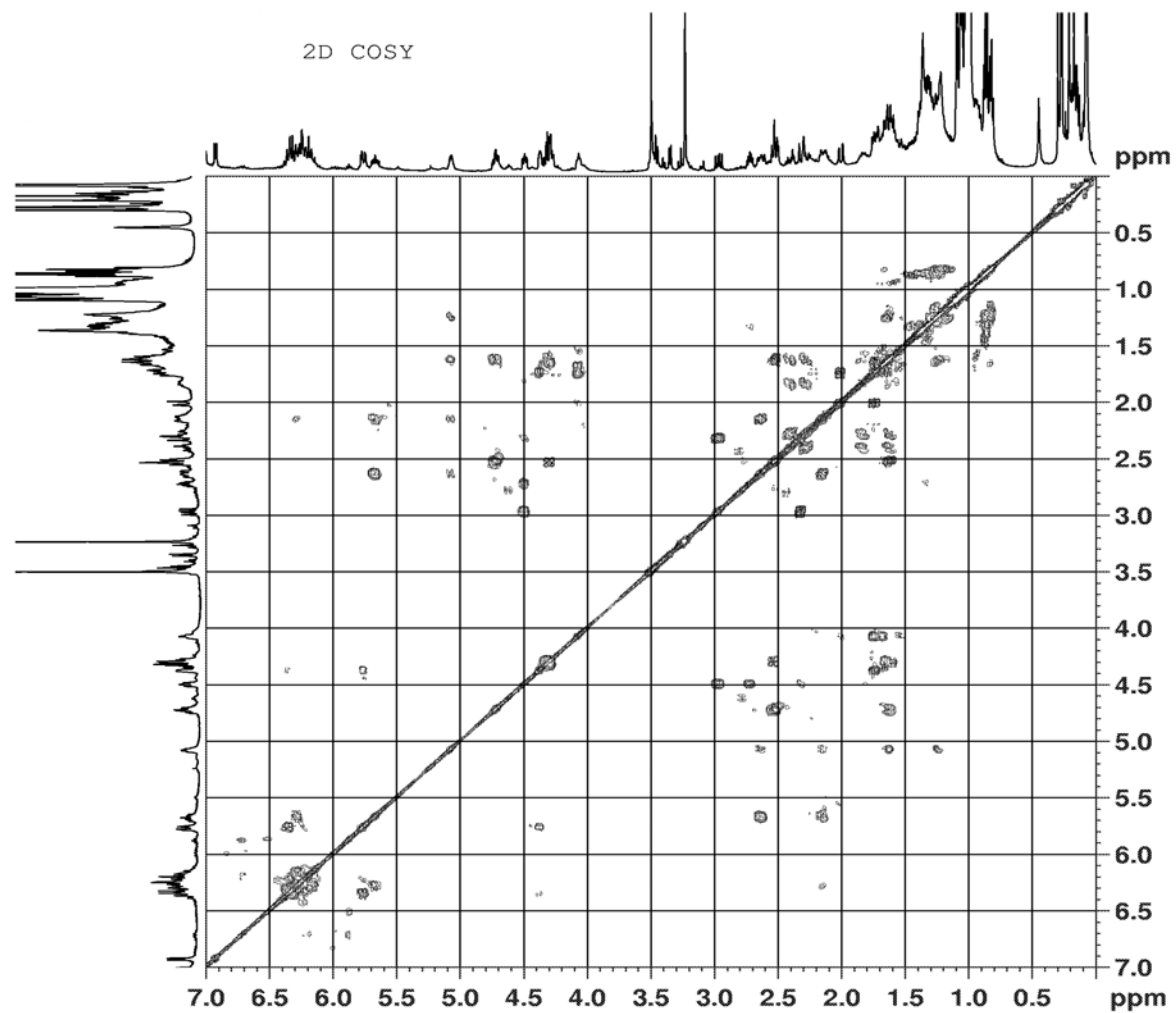
S294



The  $^{13}\text{C}$  NMR Spectrum of Compound (-)-80 in  $\text{C}_6\text{D}_6$



S295



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EXPNO     7
PROCNO    1

F2 - Acquisition Parameters
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Time      15.28
INSTRUM   spect
PROBHD    5 mm CPDCH 13C
PULPROG   cosygpgf
TD         2048
SOLVENT   C6D6
NS         4
DS         4
SWH        6009.615 Hz
FIDRES     2.934382 Hz
AQ         0.1704436 sec
RG         1030
DW         83.200 usec
DE         10.00 usec
TE         301.2 K
D0         0.0000300 sec
D1         1.48689198 sec
D13        0.0000400 sec
D16        0.0002000 sec
IN0        0.00016660 sec

----- CHANNEL f1 -----
NUC1       1H
P0         5.00 usec
P1         10.00 usec
PL1        4.00 dB
PL1W       11.39999962 W
SFO1       500.2020008 MHz

----- GRADIENT CHANNEL -----
GPNAM1     SINE.100
GPT1       10.00 %
P16        1000.00 usec

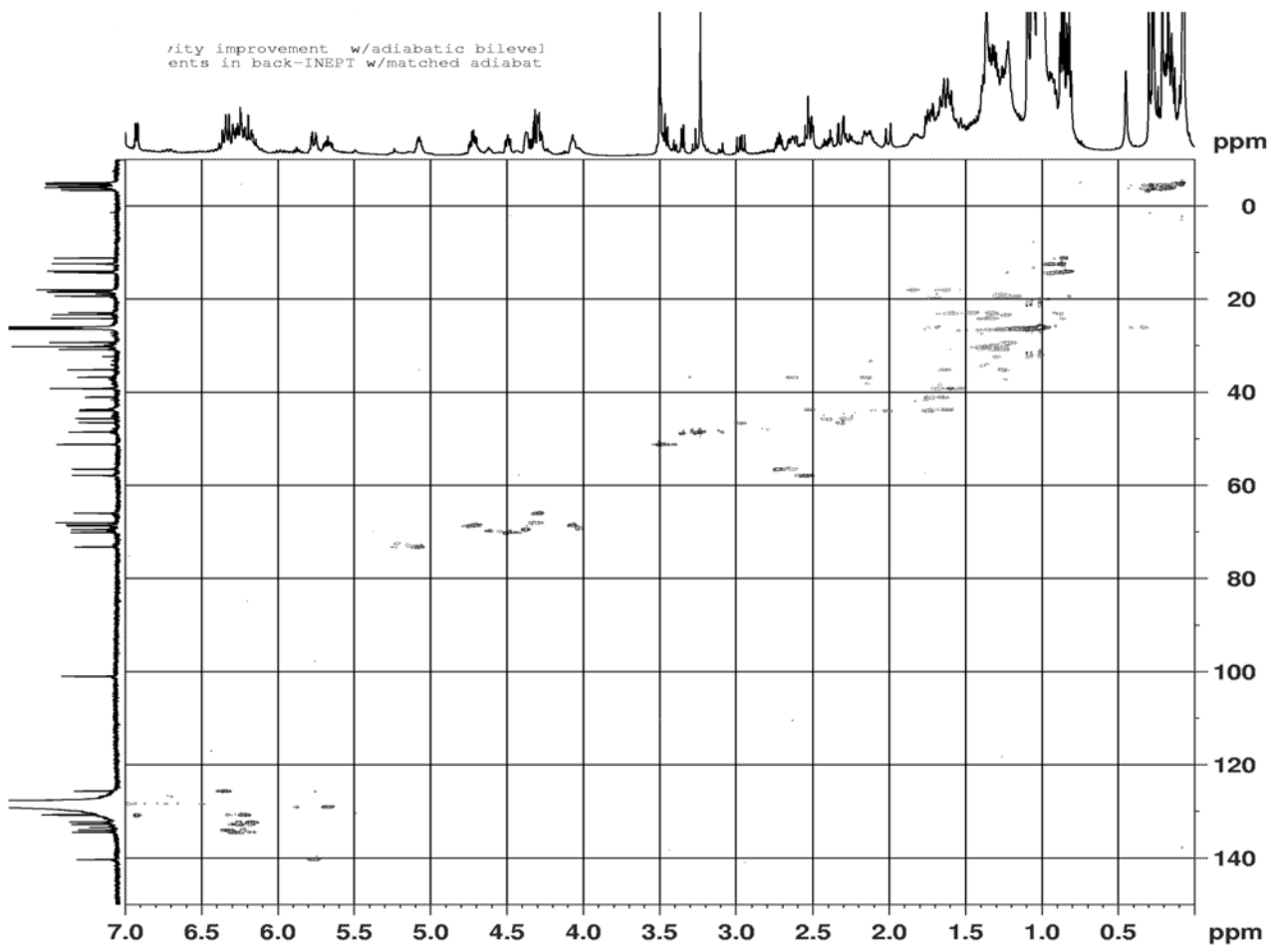
F1 - Acquisition parameters
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FIDRES      11.723484 Hz
SW          12.000 ppm
FnMODE      QF

F2 - Processing parameters
SI          2048
SF          500.200550 MHz
WDW         QSINE
SSB         0
LB          0.00 Hz
GB          0
PC          1.00

F1 - Processing parameters
SI          1024
MC2         QF
SF          500.200550 MHz
WDW         QSINE
SSB         0
LB          0.00 Hz
GB          0
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The COSY NMR Spectrum of Compound (-)-80 in C<sub>6</sub>D<sub>6</sub>

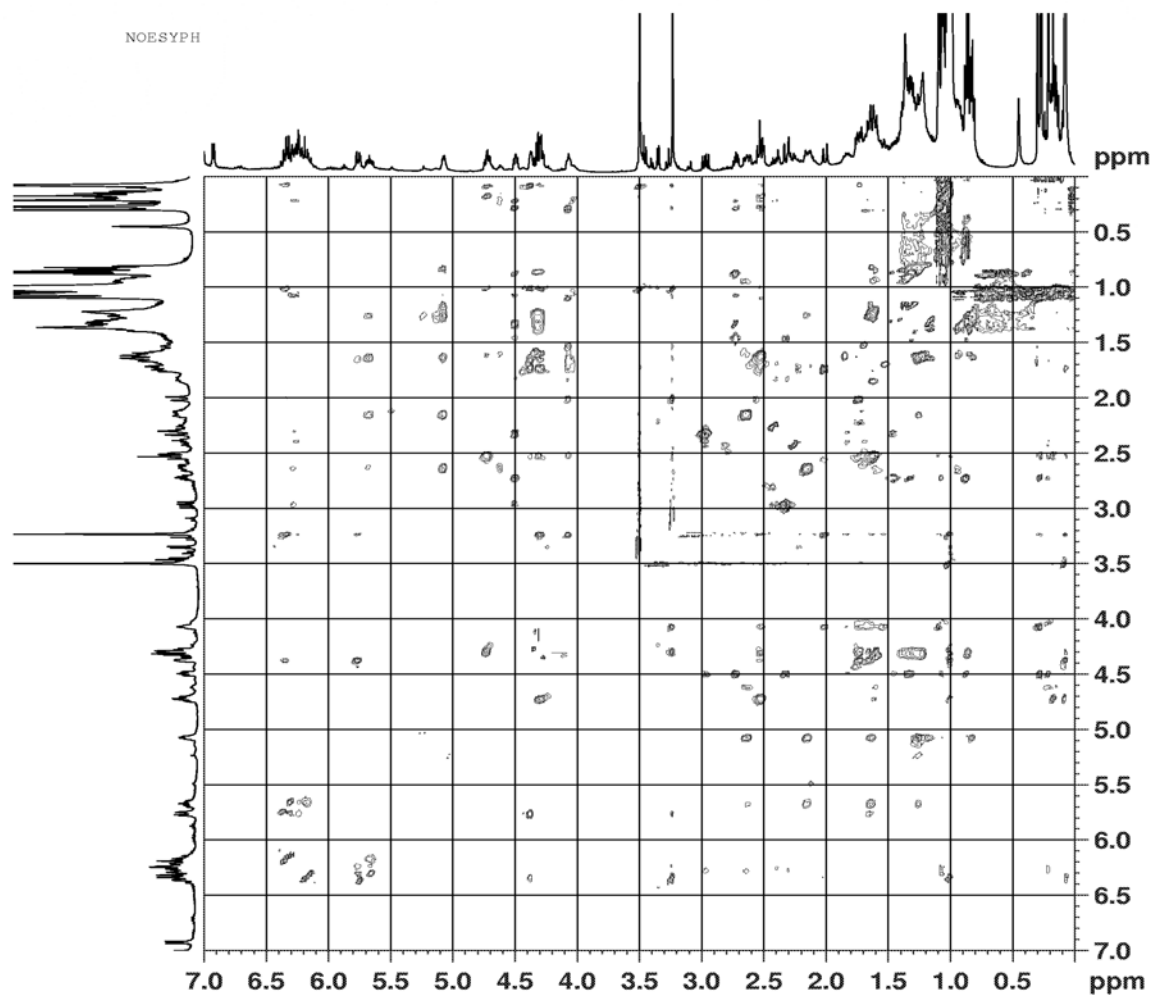
S296



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Current Data Parameters
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EXPNO     2
PROCNO    1
F2 - Acquiring Parameters
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Time     14:42
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PROBHD    5 mm CPCHN 130
PULPROG   zgpg30
SOLVENT   benzene-d6
NS        2048
DS        4
SWH        4000.410 Hz
FIDRES    0.174380 Hz
AQ        0.1440
AQ        0.20000000 sec
DE        83.20000000 sec
TE        301.2 K
NUC1      13C
NUC2      1H
CPDPRG2   0.00000000 sec
C1        1.00000000 sec
D4        0.00172414 sec
D11       0.00000000 sec
D15       0.00000000 sec
D22       0.00000000 sec
IND       0.00000000 sec
SFL       1
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NUC1      13C
P1        10.00000000 sec
P2        20.00000000 sec
P3        0.00000000 sec
P4        11.00000000 sec
P5        500.00000000 MHz
----- CHANNEL f2 -----
CPDPRG2   zgpg30
NUC1      1H
P1        10.00000000 sec
P2        0.00000000 sec
P3        0.00000000 sec
P4        100.00000000 sec
P5        4.00000000 sec
P6        0.00000000 sec
P7        0.00000000 sec
P8        0.00000000 sec
P9        125.76000000 MHz
P10       12.56000000 sec
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P15       12.56000000 sec
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P19       12.56000000 sec
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SPHM92    200.10000000 MHz
SPHM93    200.10000000 MHz
SPHM94    200.10000000 MHz
SPHM95    200.10000000 MHz
SPHM96    200.10000000 MHz
SPHM97    200.10000000 MHz
SPHM98    200.10000000 MHz
SPHM99    200.10000000 MHz
SPHM100   200.10000000 MHz
----- Acquisition parameters -----
NUC1      13C
NUC2      1H
PROBHD    5 mm CPCHN 130
PULPROG   zgpg30
SOLVENT   benzene-d6
NS        2048
DS        4
SWH        4000.410 Hz
FIDRES    0.174380 Hz
AQ        0.1440
AQ        0.20000000 sec
DE        83.20000000 sec
TE        301.2 K
----- Processing parameters -----
SI        32768
SF        500.13600000 MHz
WDW       EM
SSB       0
GB        0
PC        1.00
----- Processing parameters -----
SI        32768
SF        125.76000000 MHz
WDW       EM
SSB       0
GB        0
```

The HSQC NMR Spectrum of Compound (-)-80 in C<sub>6</sub>D<sub>6</sub>

S297



```

Current Data Parameters
NAME      IISD175
EXPNO    8
PROCNO   1

F2 - Acquisition Parameters
Date_    20090715
Time     16.35
INSTRUM  spect
PROBHD   5 mm CPDCH 13C
PULPROG  noesyph
TD       2048
SOLVENT  C6D6
NS       40
DS       16
SWH      6009.615 Hz
FIDRES   2.934382 Hz
AQ       0.170436 sec
RG       50.8
DW       83.200 usec
DE       10.00 usec
TE       301.2 K
DQ       0.0007057 sec
D1       2.0000000 sec
D8       0.8000001 sec
IN0      0.00016660 sec

----- CHANNEL f1 -----
NUC1     1H
P1       10.00 usec
PL1      4.00 dB
PL1W     11.39999962 W
SFO1     500.2020008 MHz

F1 - Acquisition parameters
ND0      1
TD       477
SFO1     500.202 MHz
FIDRES   12.583698 Hz
SW       12.000 ppm
FnMODE   States-TPPI

F2 - Processing parameters
SI       2048
SF       500.2000550 MHz
WDW      QSINE
SSB      2
LB       0.00 Hz
GB       0
PC       1.00

F1 - Processing parameters
SI       1024
MC2      States-TPPI
SF       500.2000550 MHz
WDW      QSINE
SSB      2
LB       0.00 Hz
GB       0

```

The NOESY NMR Spectrum of Compound (-)-**80** in  $C_6D_6$