

Supporting Information

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Synthesis of sp^3 -enriched β -fluoro sulfonyl chlorides

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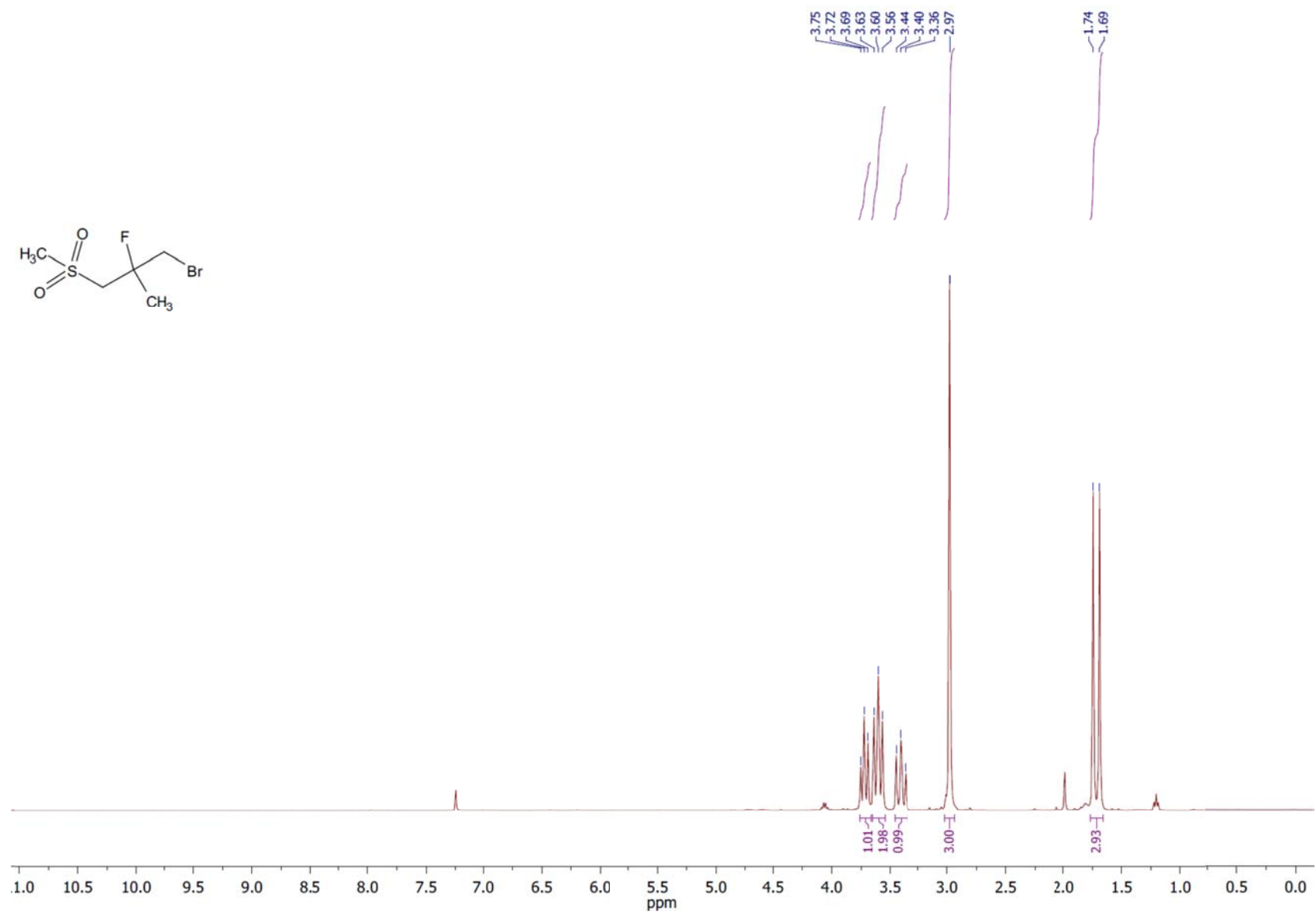
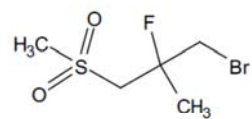
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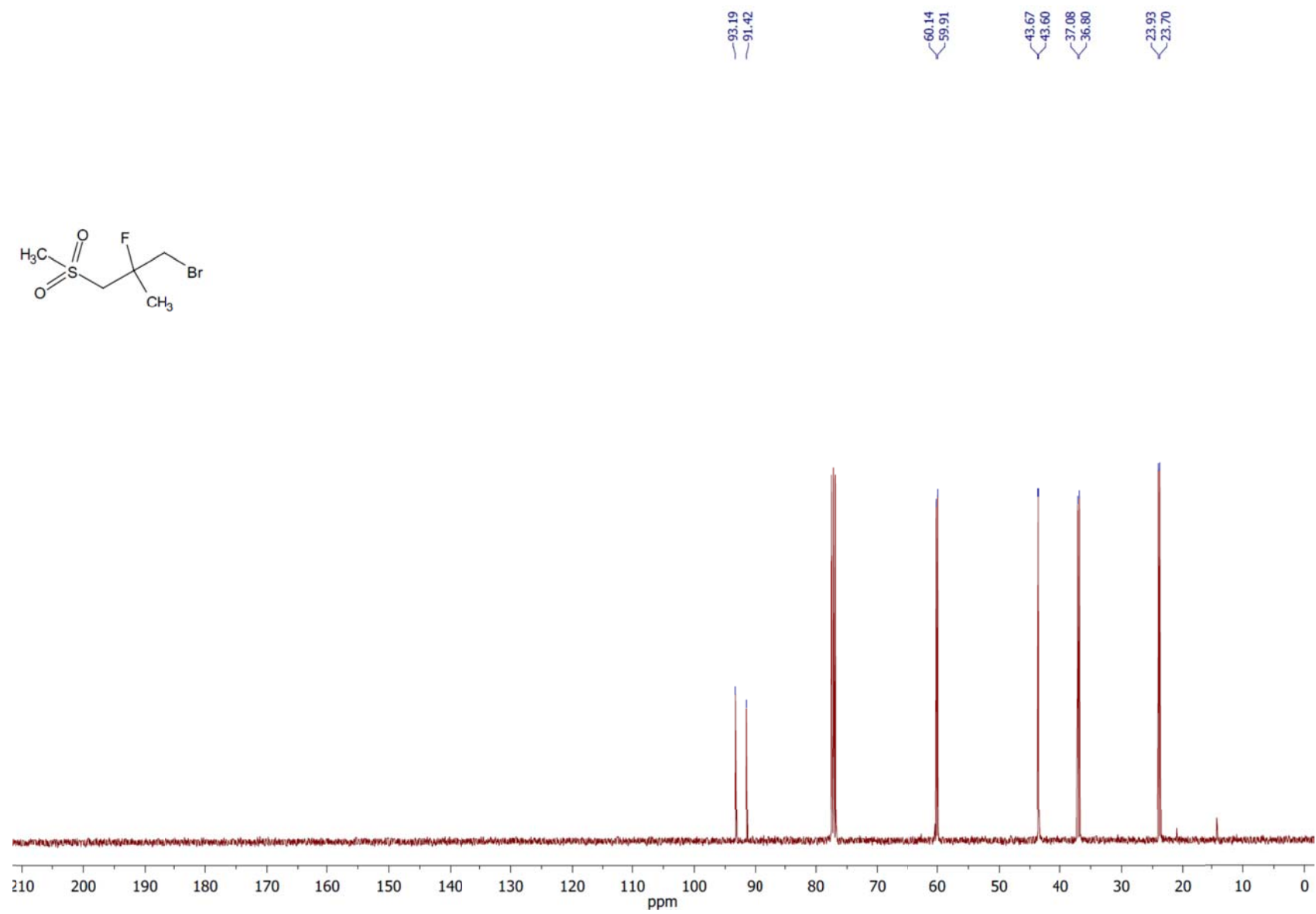
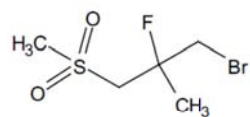
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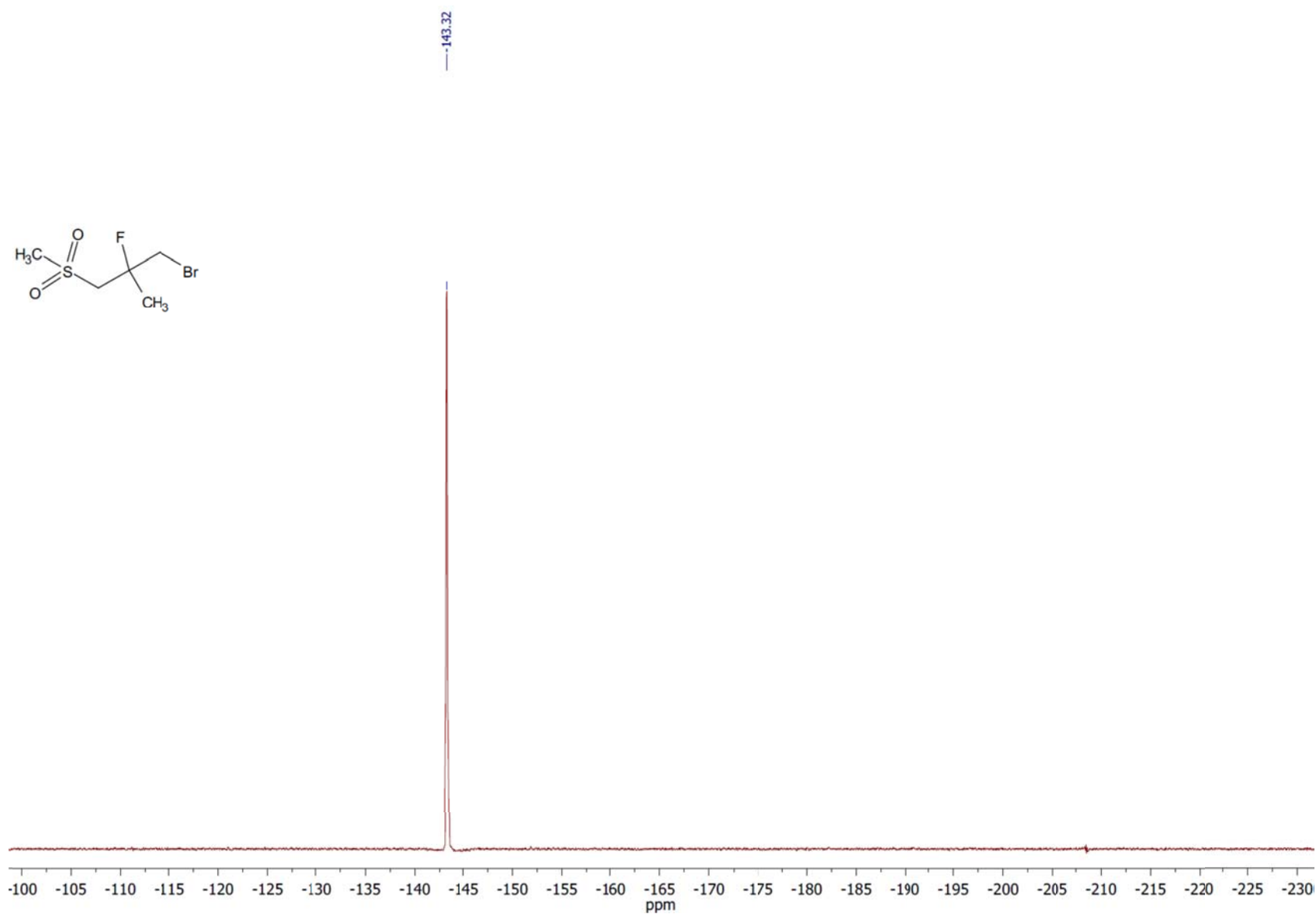
^1H NMR spectrum of the compound **2c**.



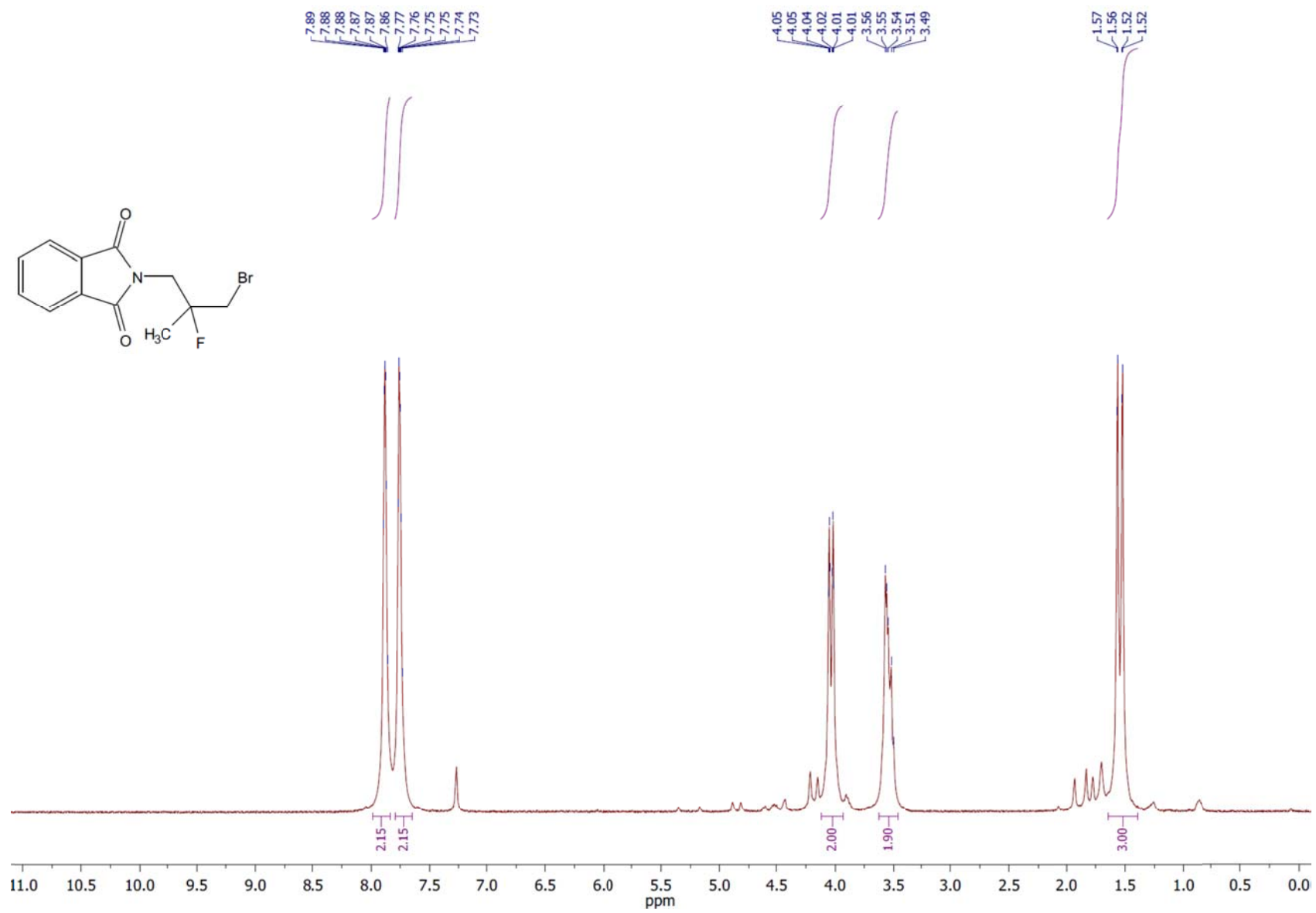
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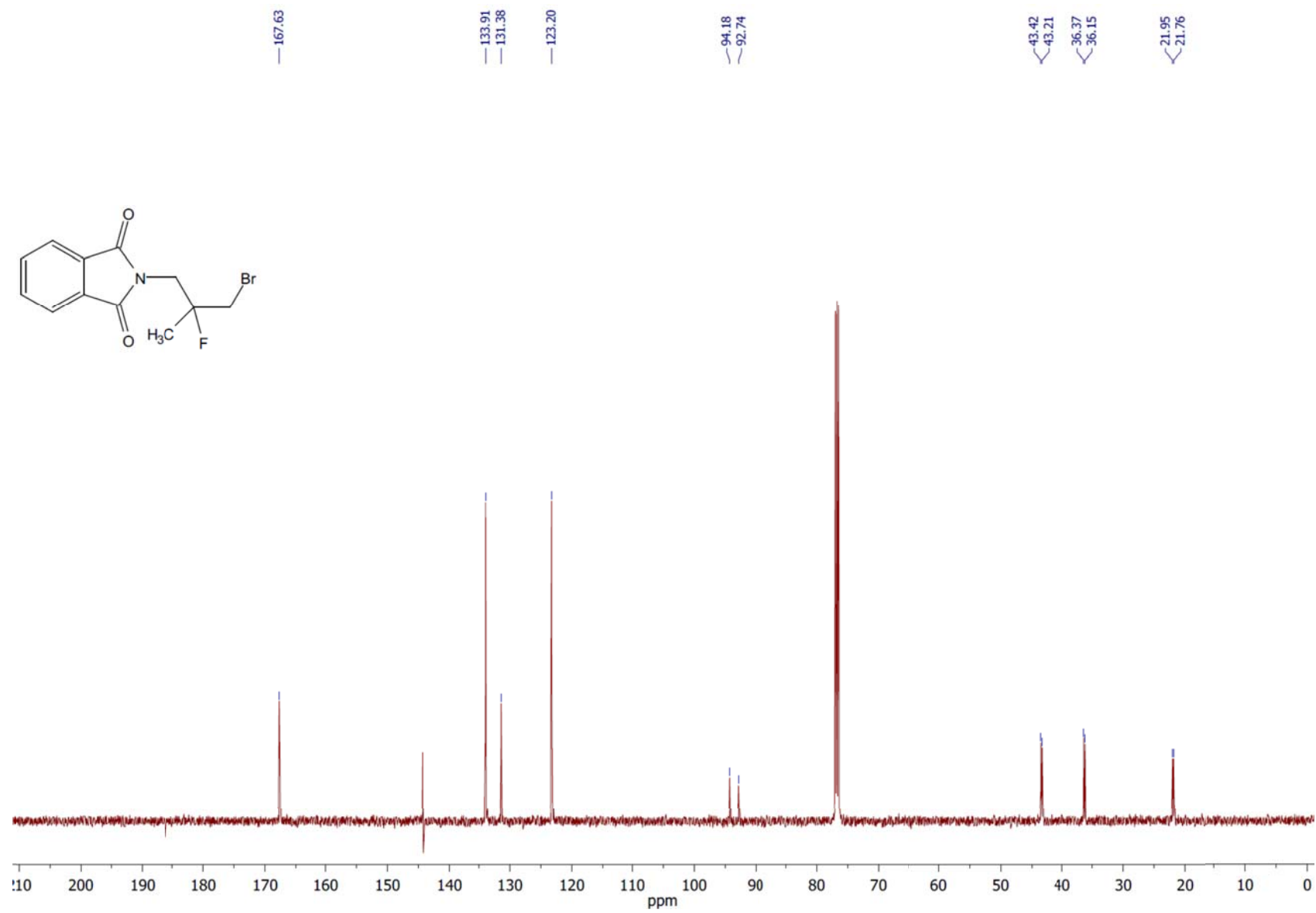
^{19}F NMR spectrum of the compound **2c**.



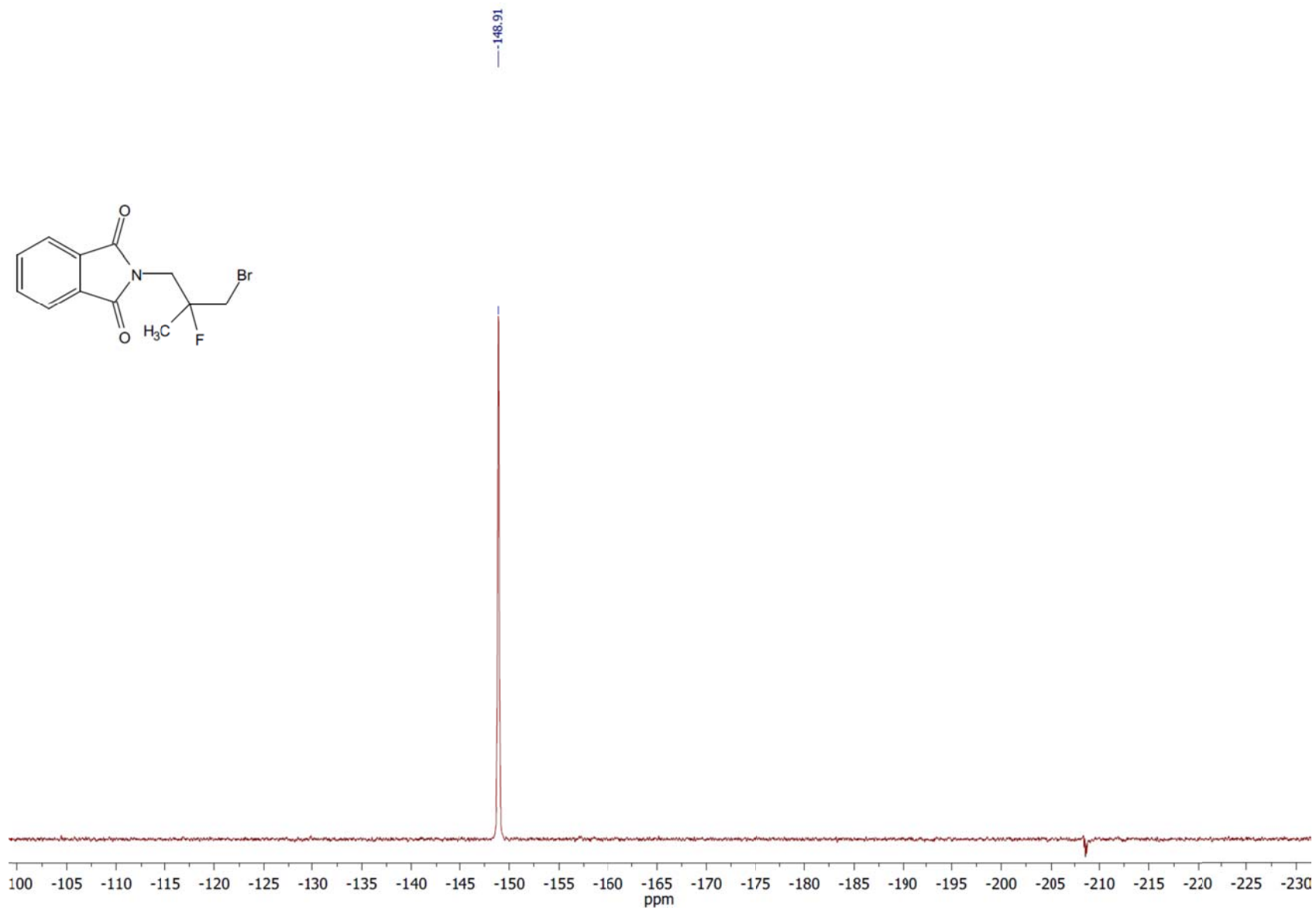
¹H NMR spectrum of the compound **2d**.



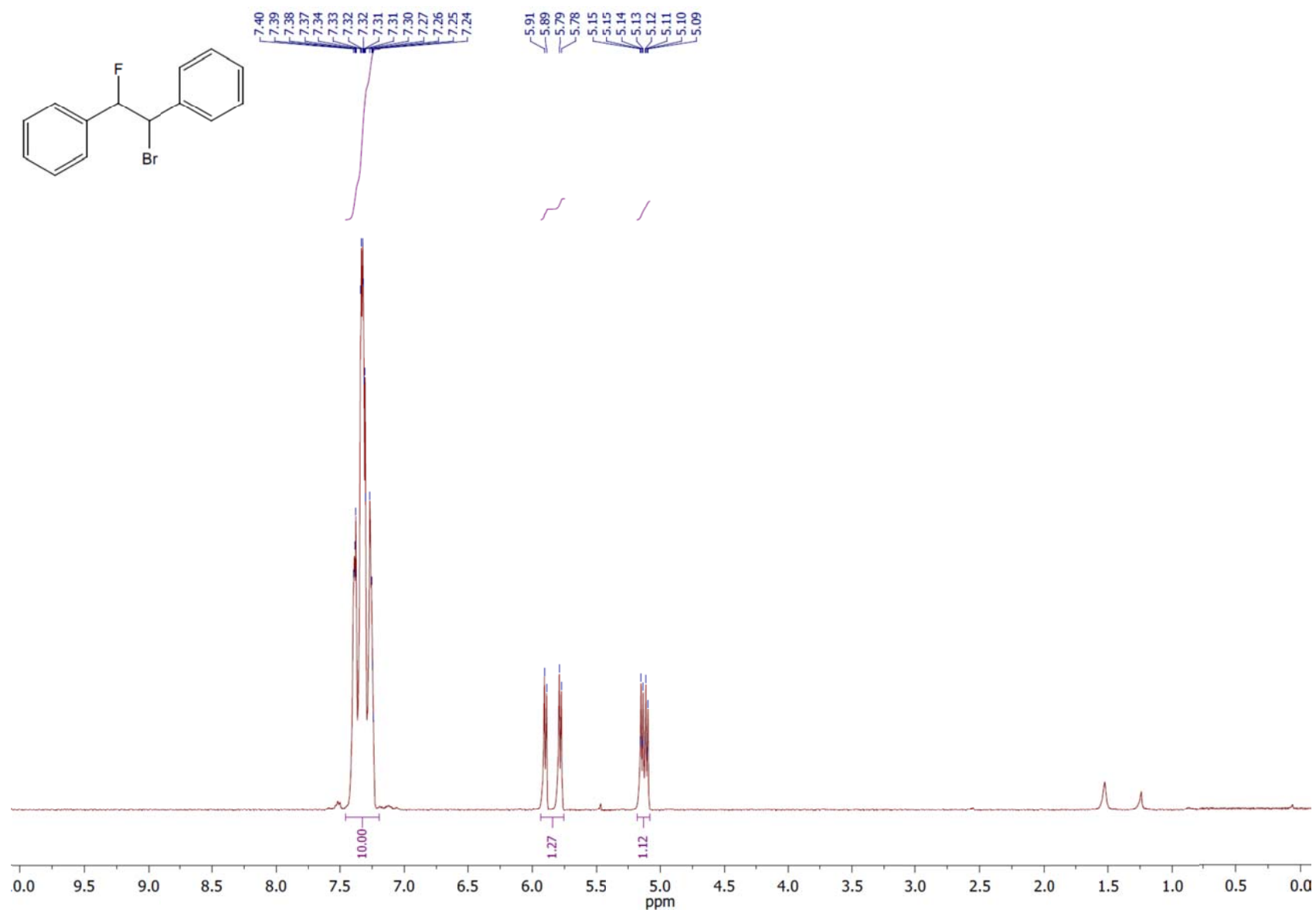
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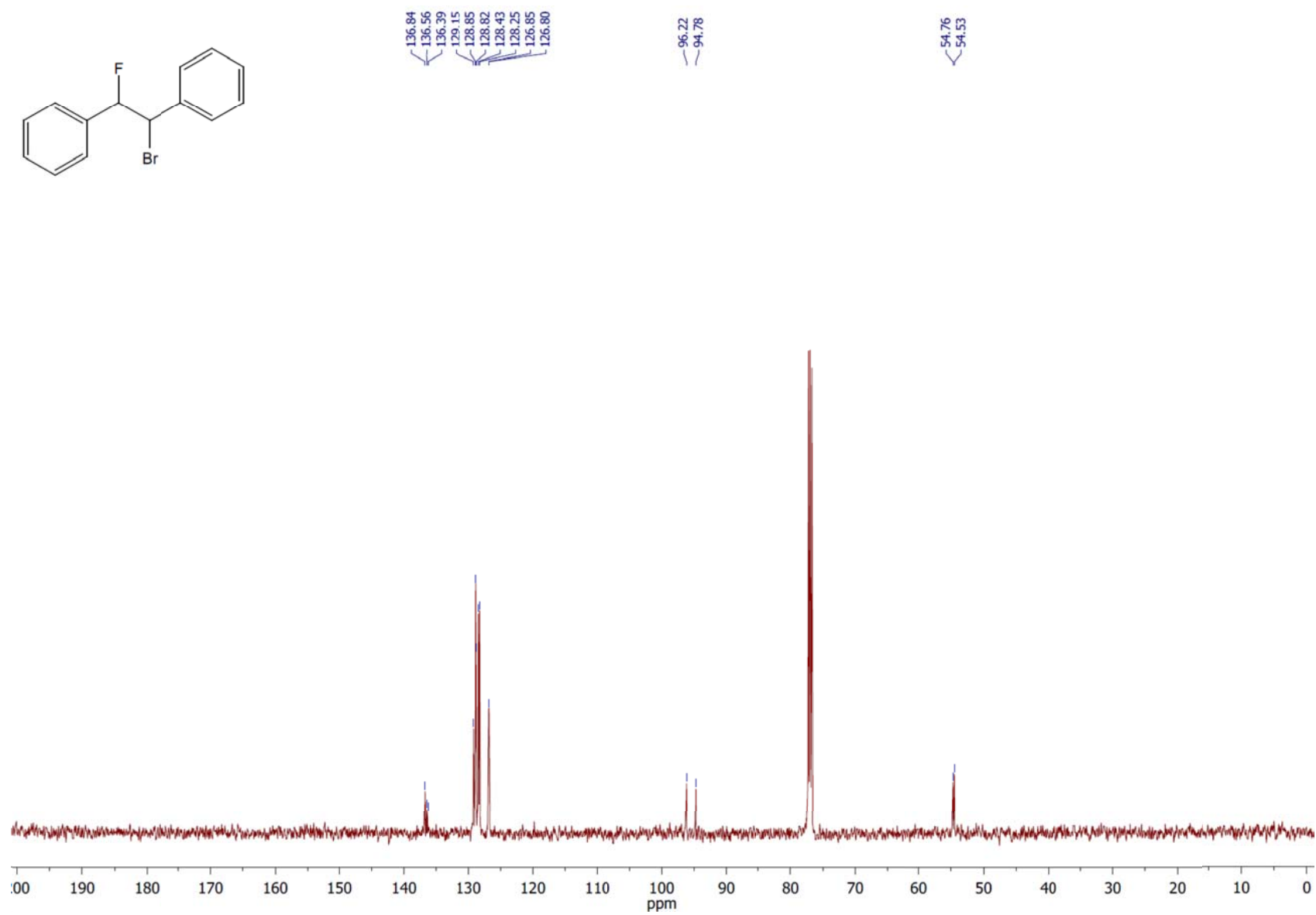
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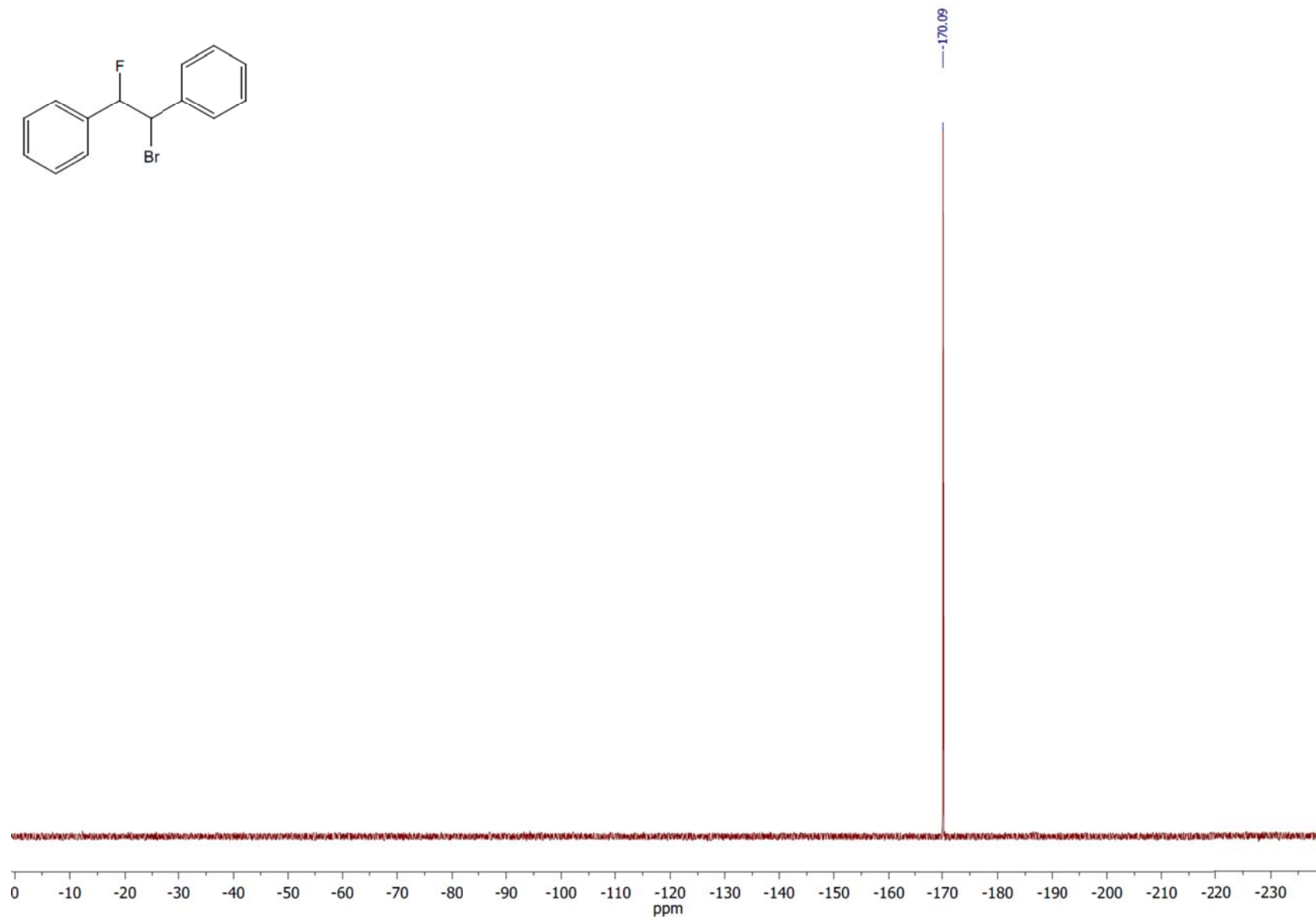
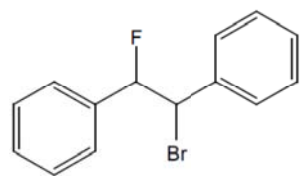
¹H NMR spectrum of the compound **2f**.



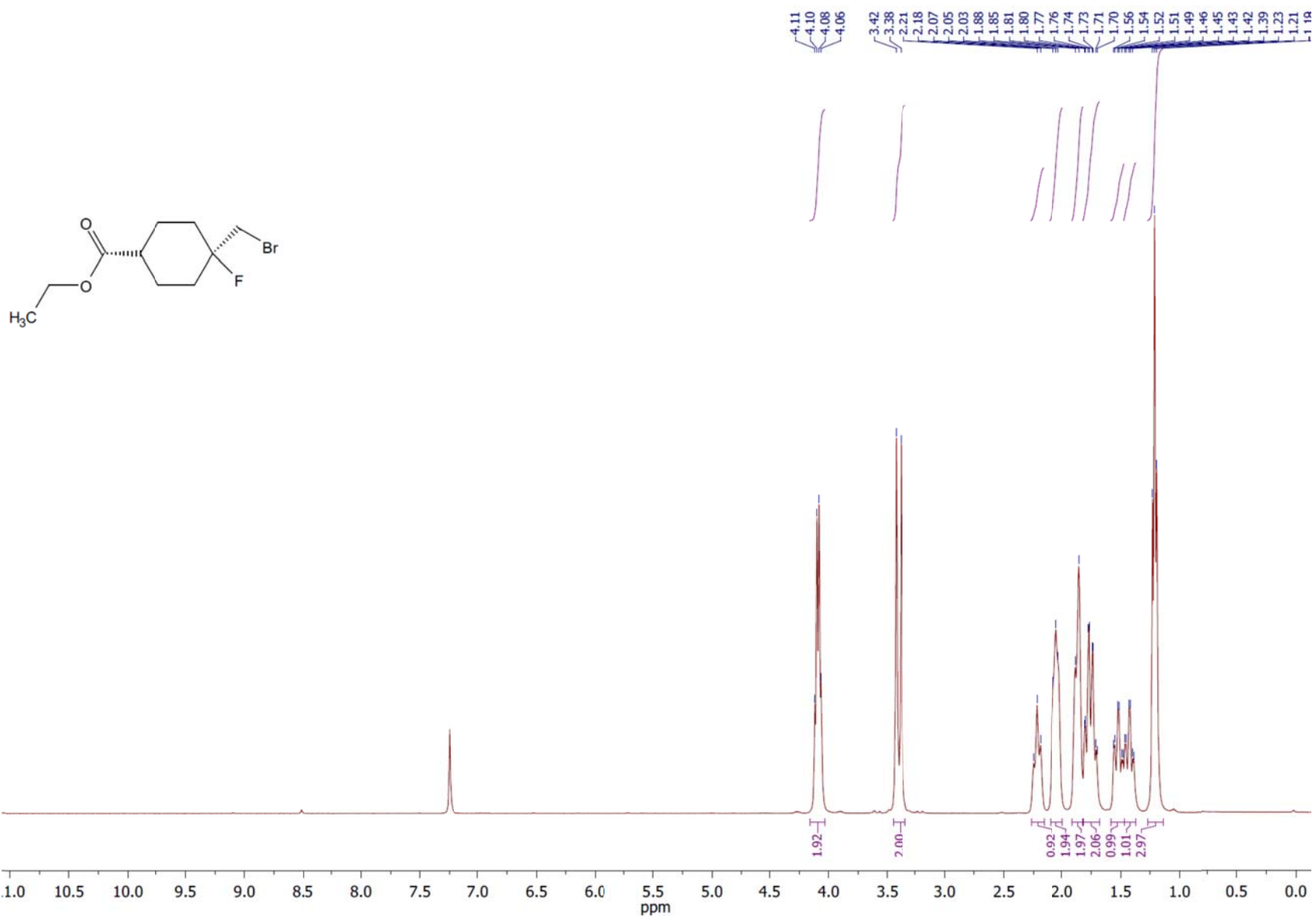
^{13}C NMR spectrum of the compound **2f**.



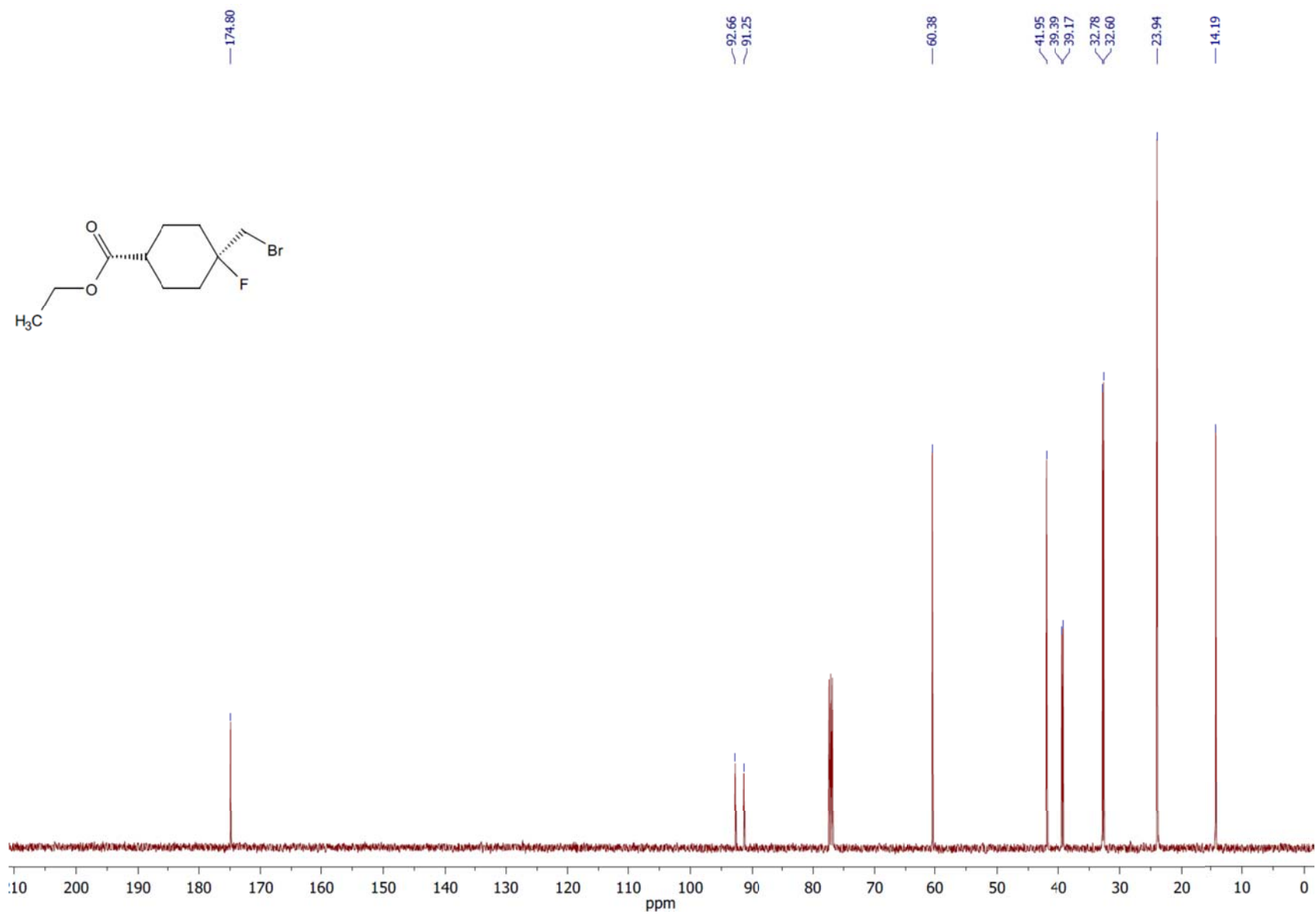
^{19}F NMR spectrum of the compound **2f**.



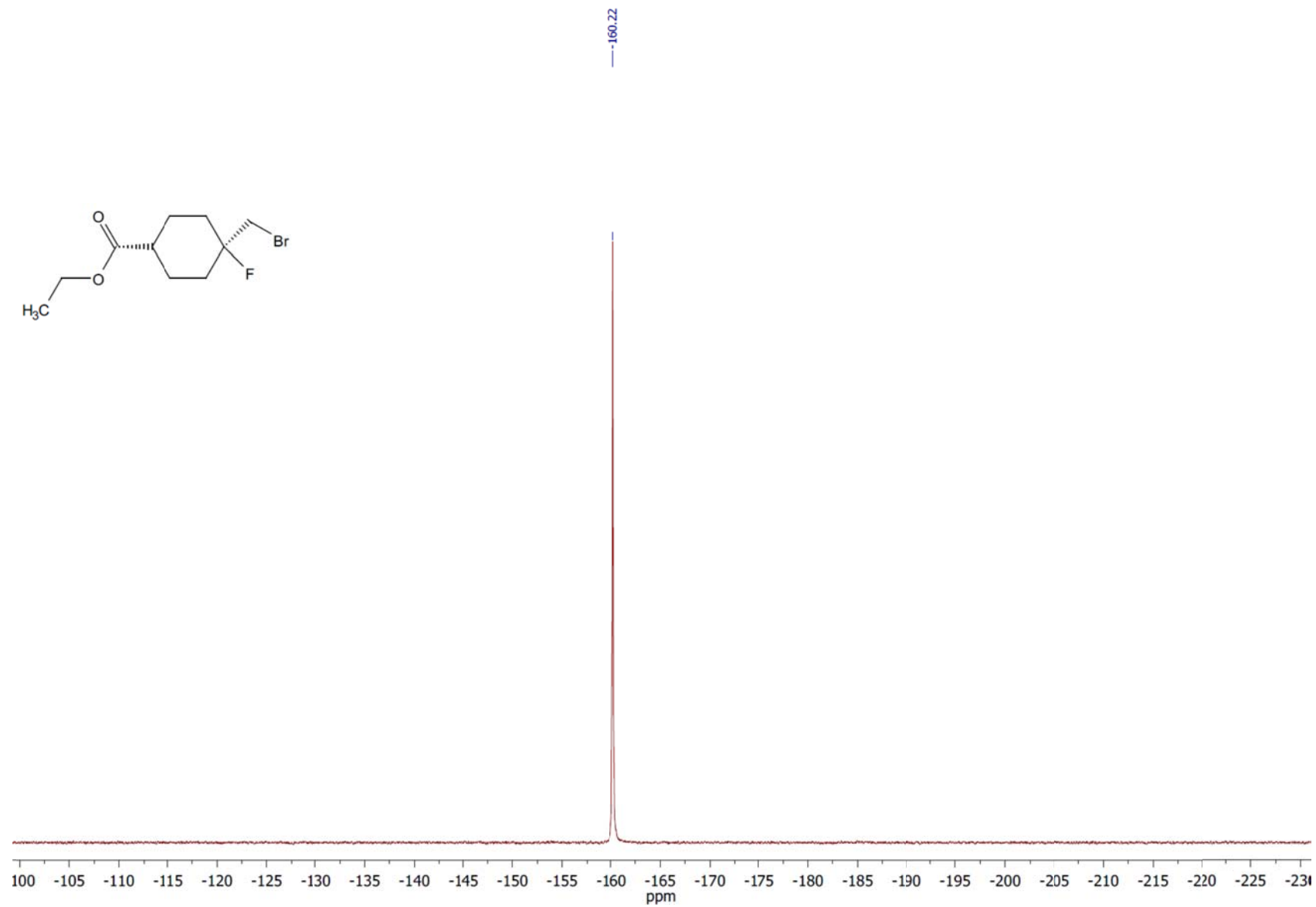
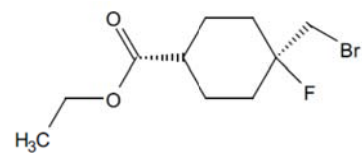
^1H NMR spectrum of the compound **21**.



^{13}C NMR spectrum of the compound **21**.

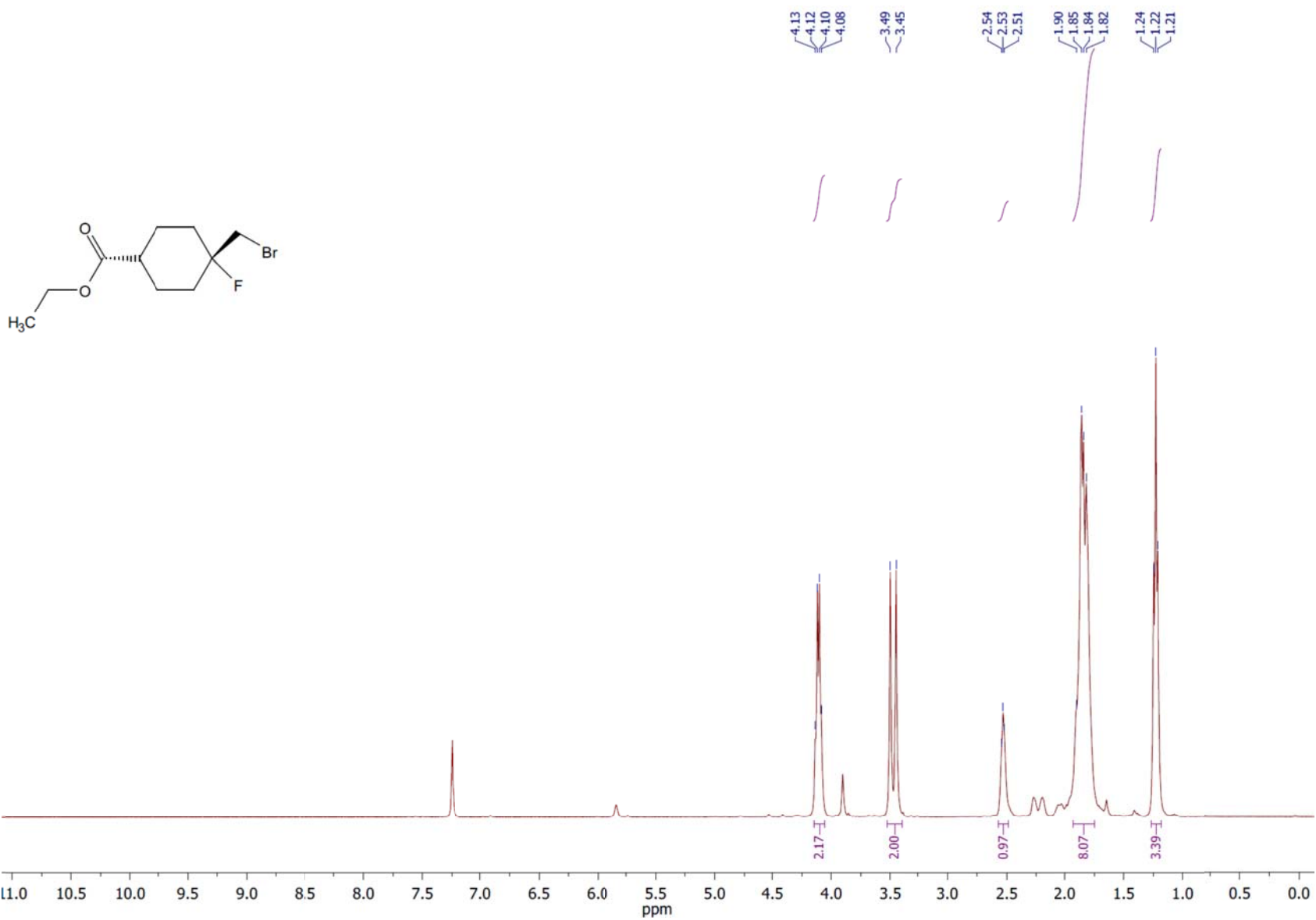


^{19}F NMR spectrum of the compound **21**.

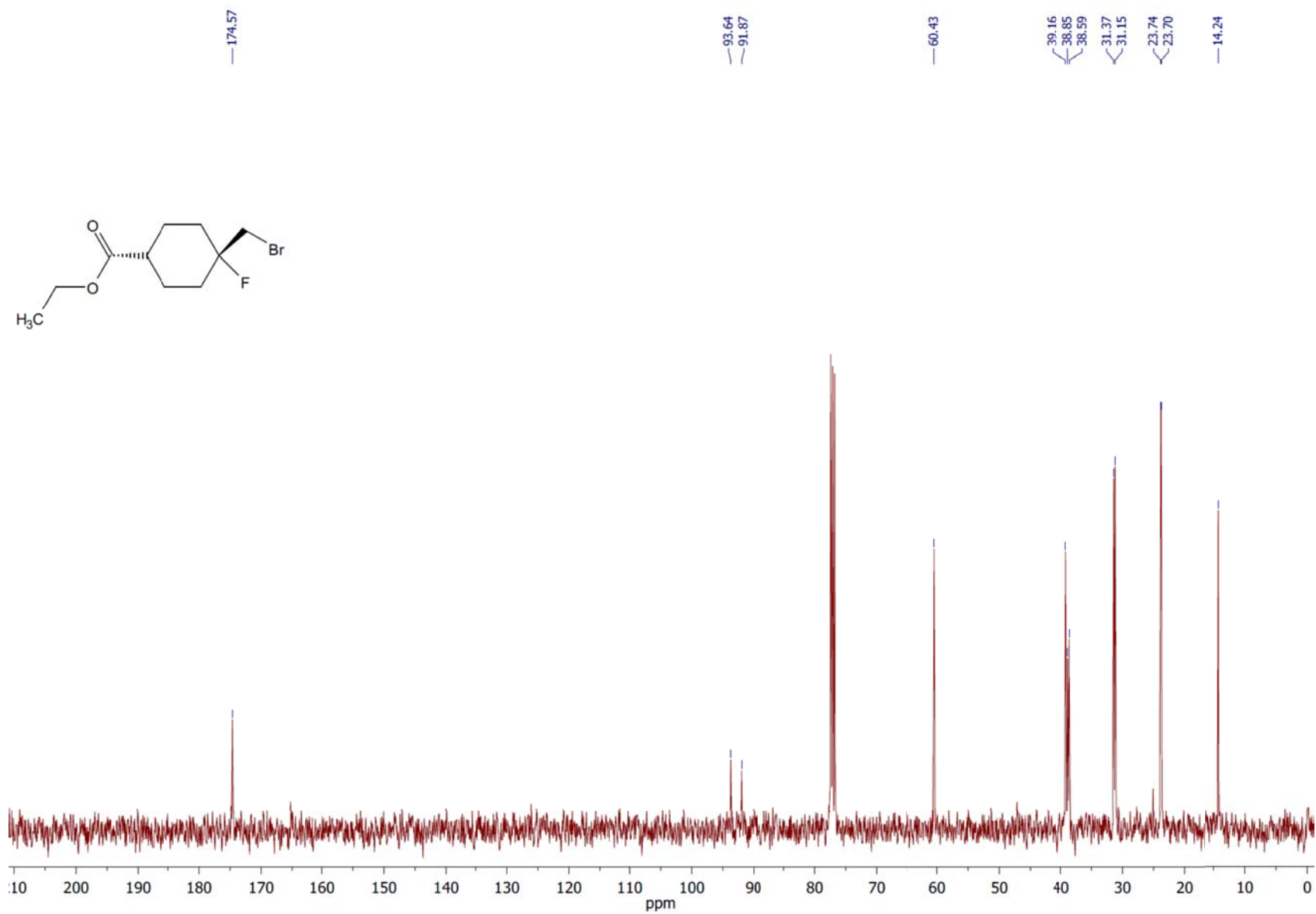


S20

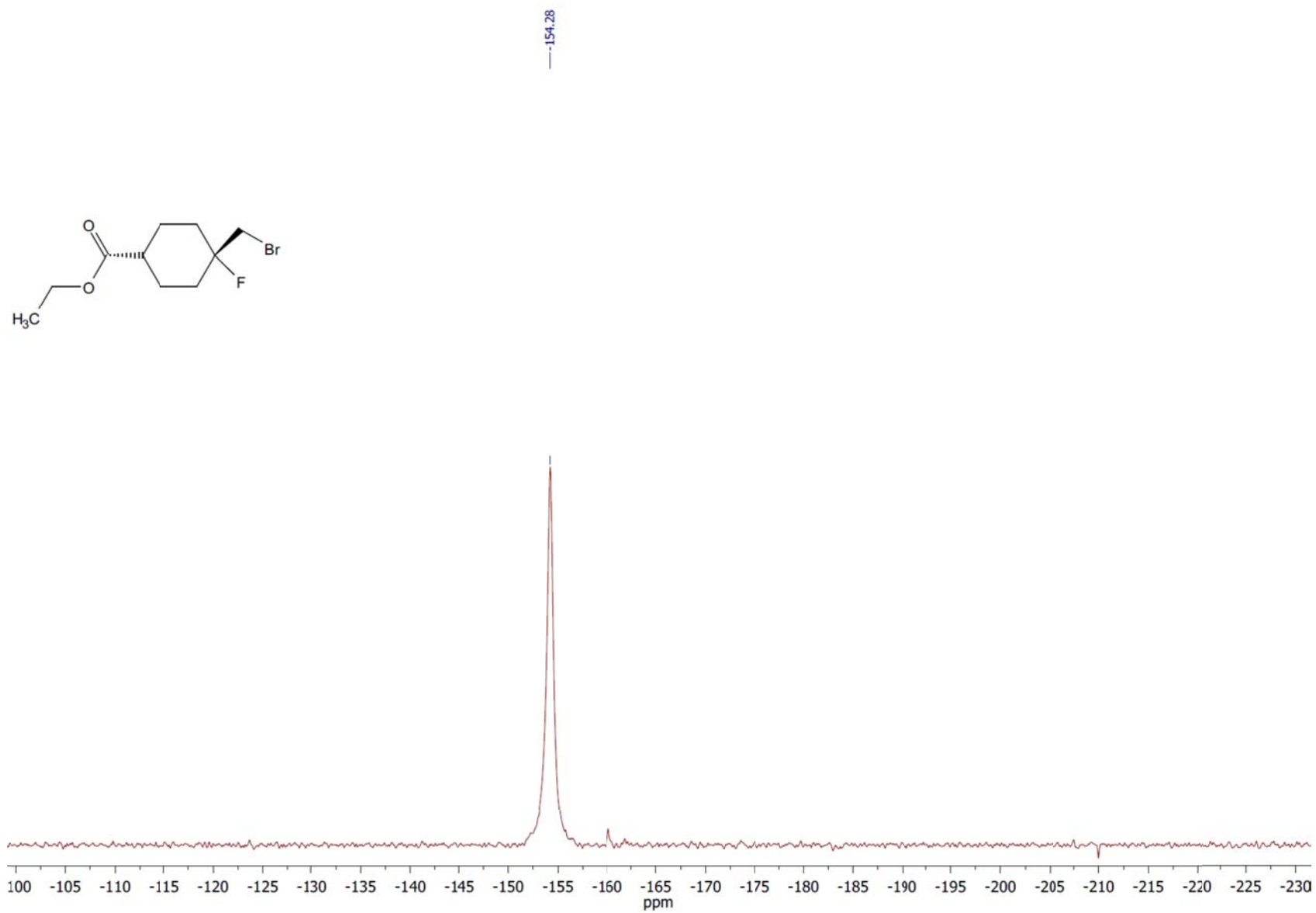
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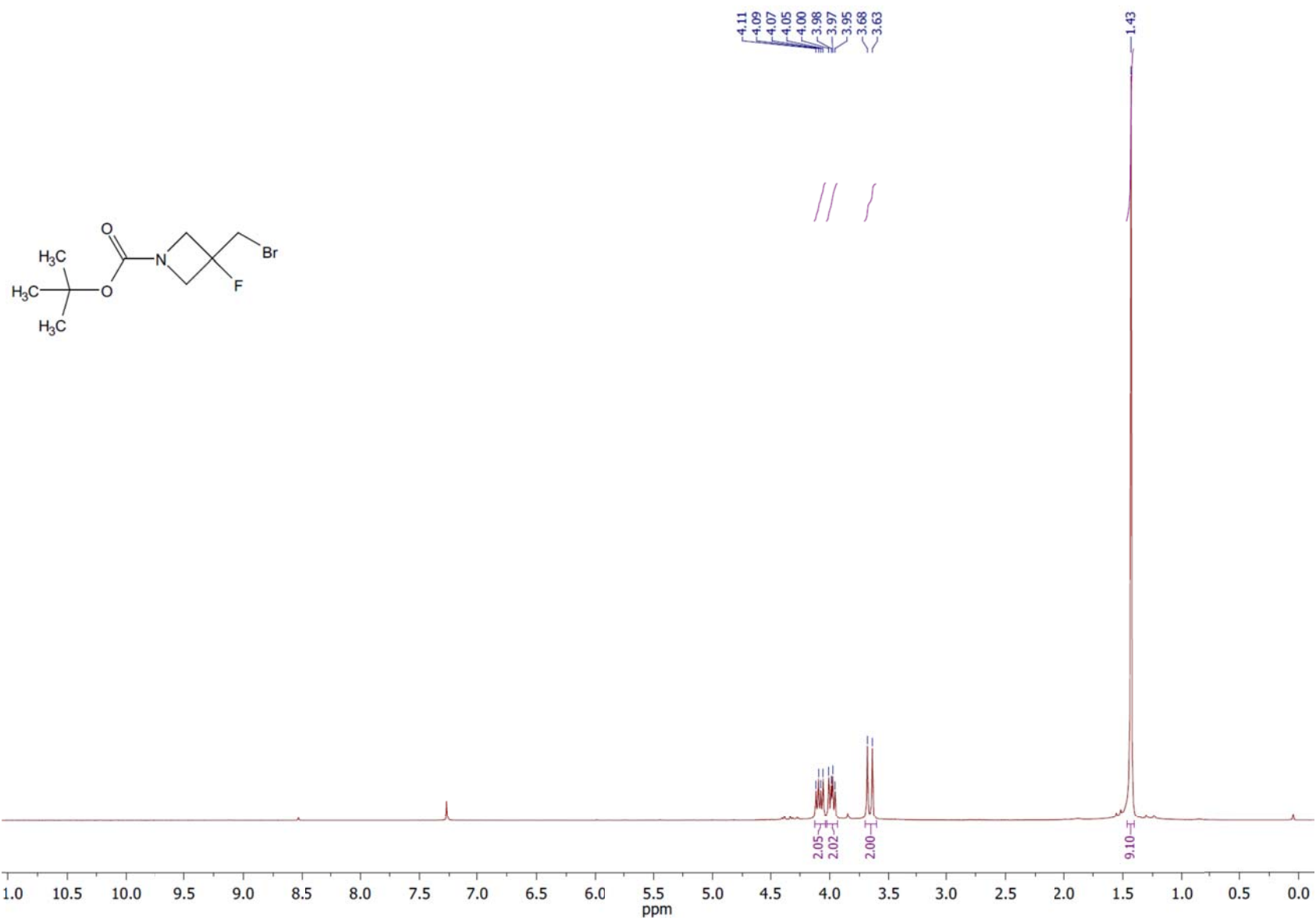
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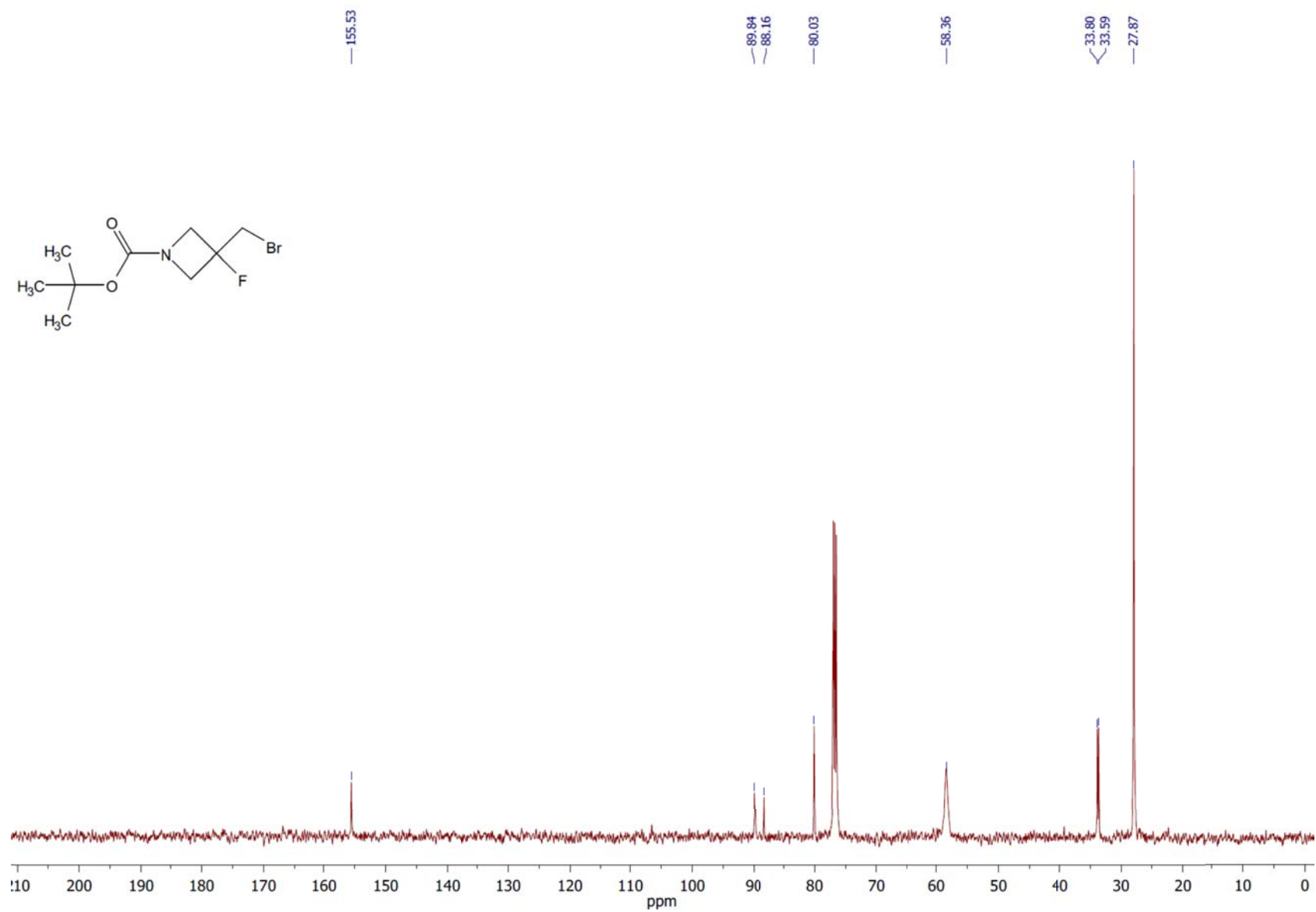
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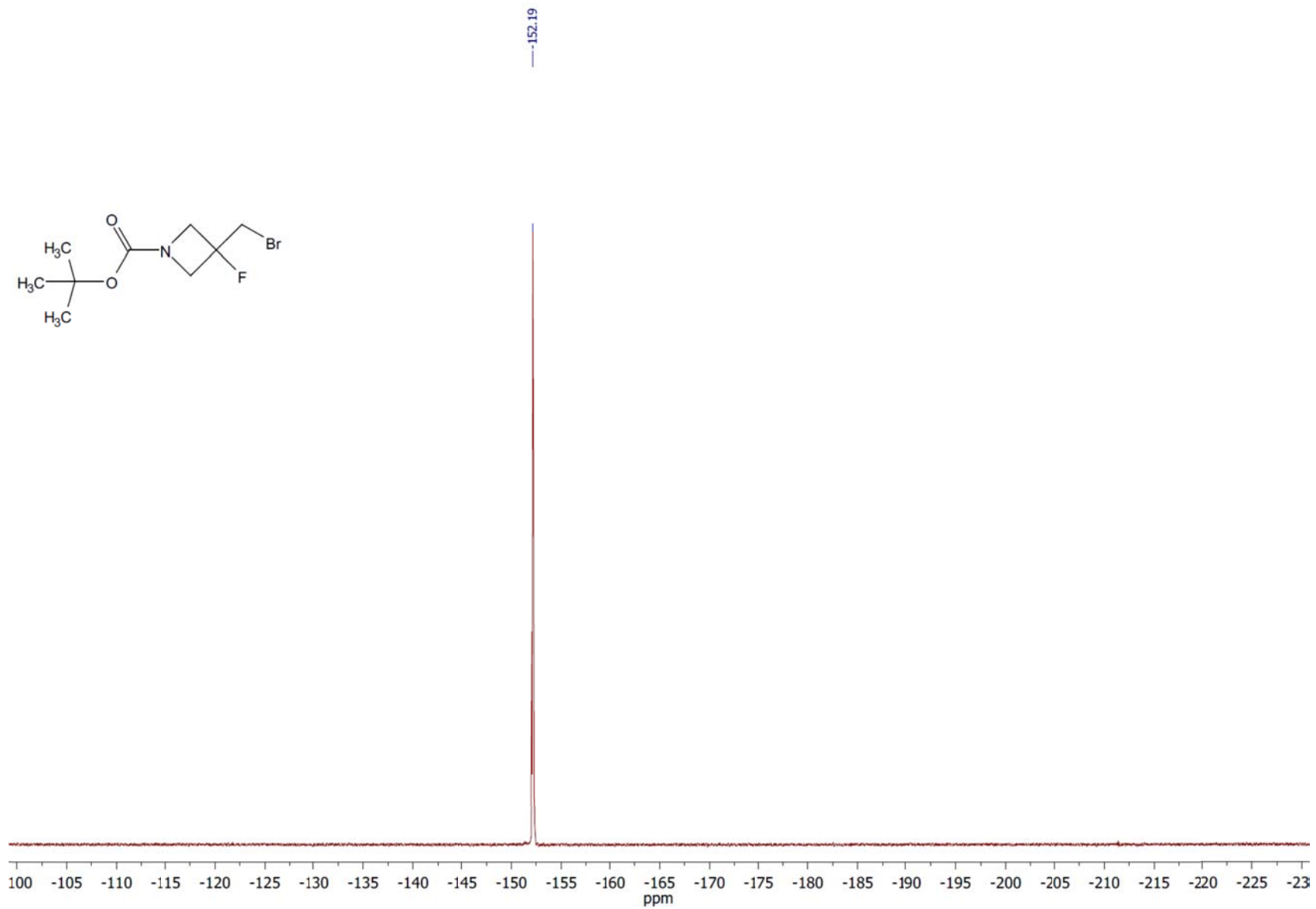
¹H NMR spectrum of the compound **2n**.



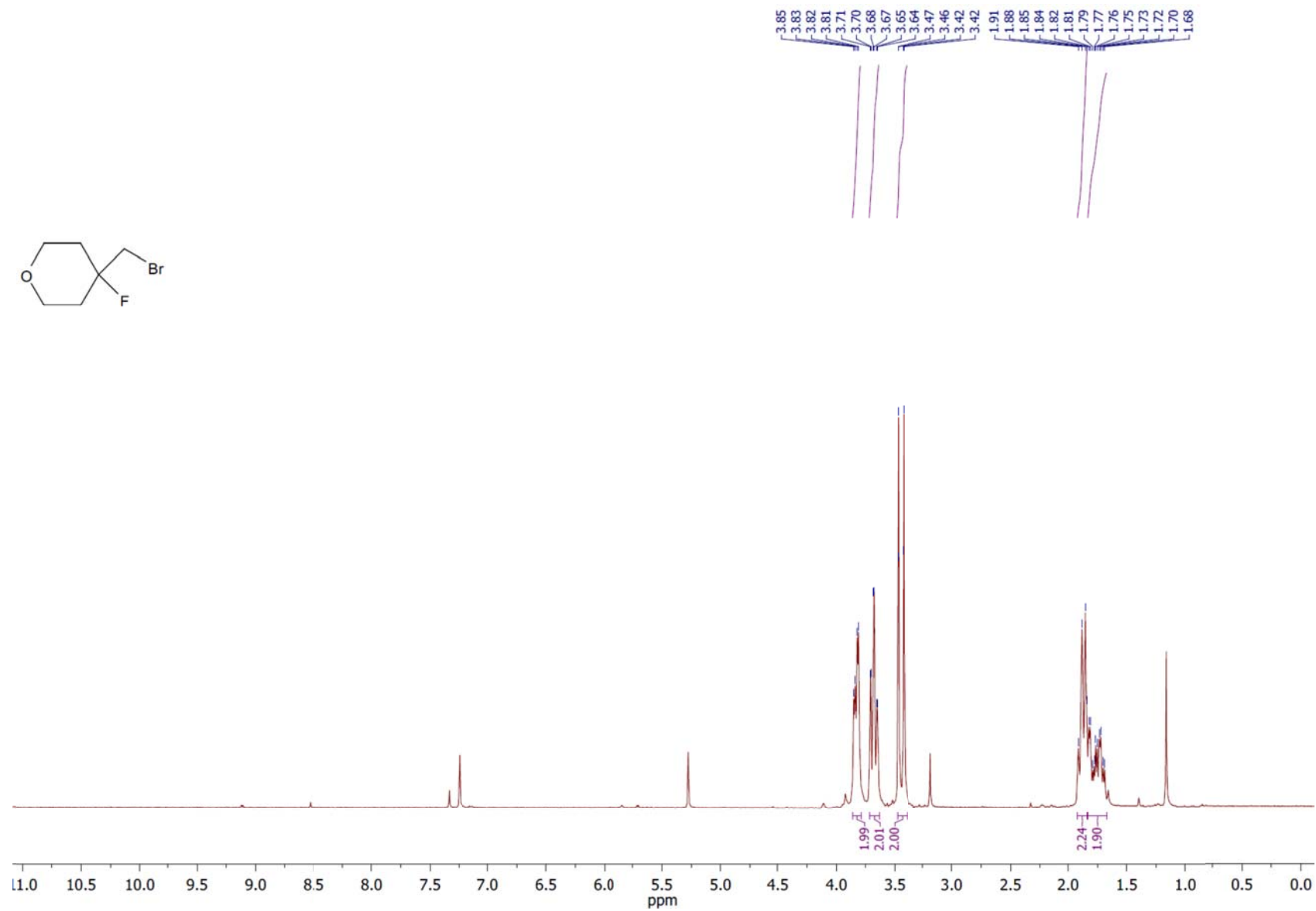
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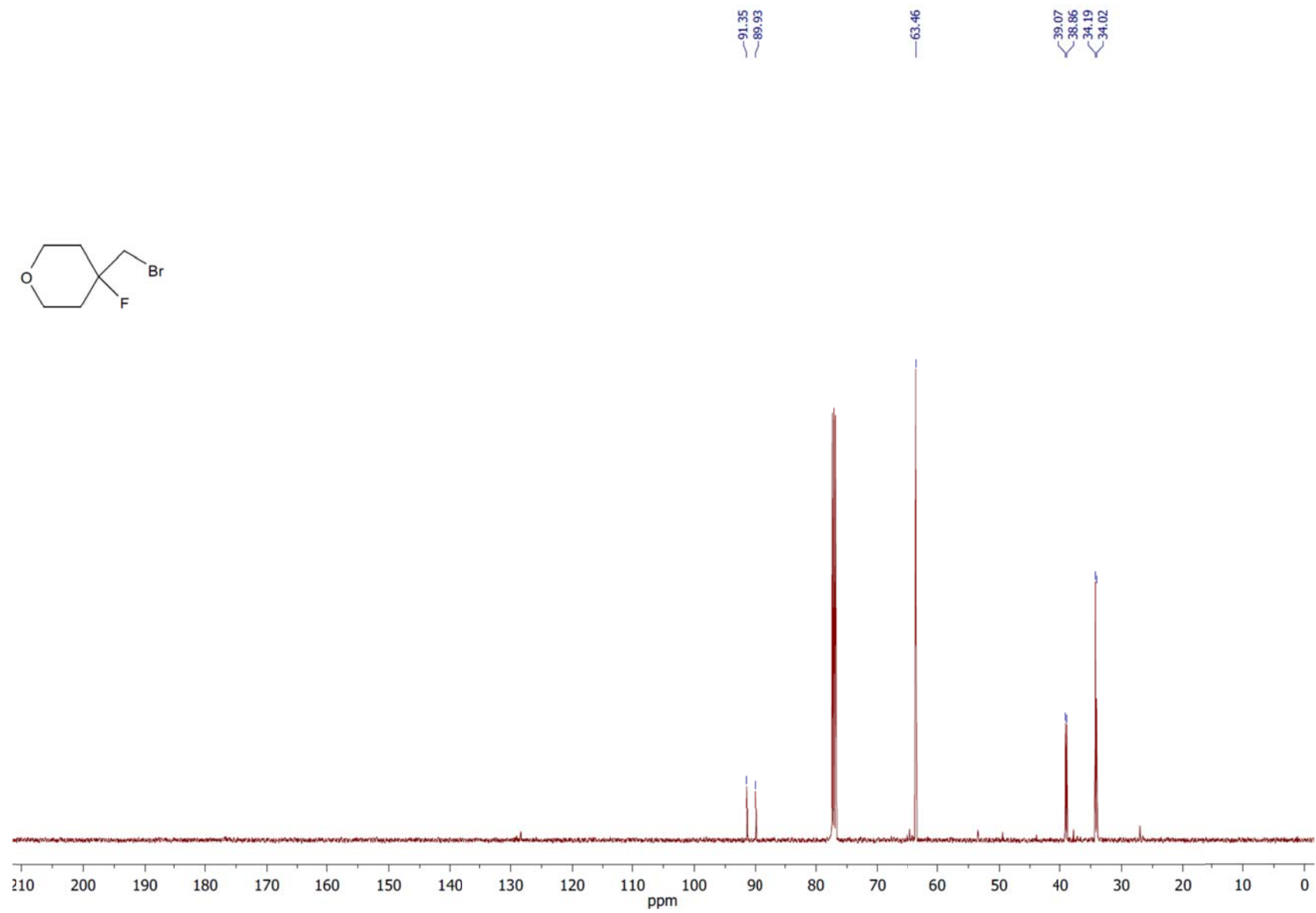
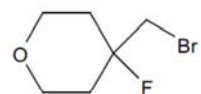
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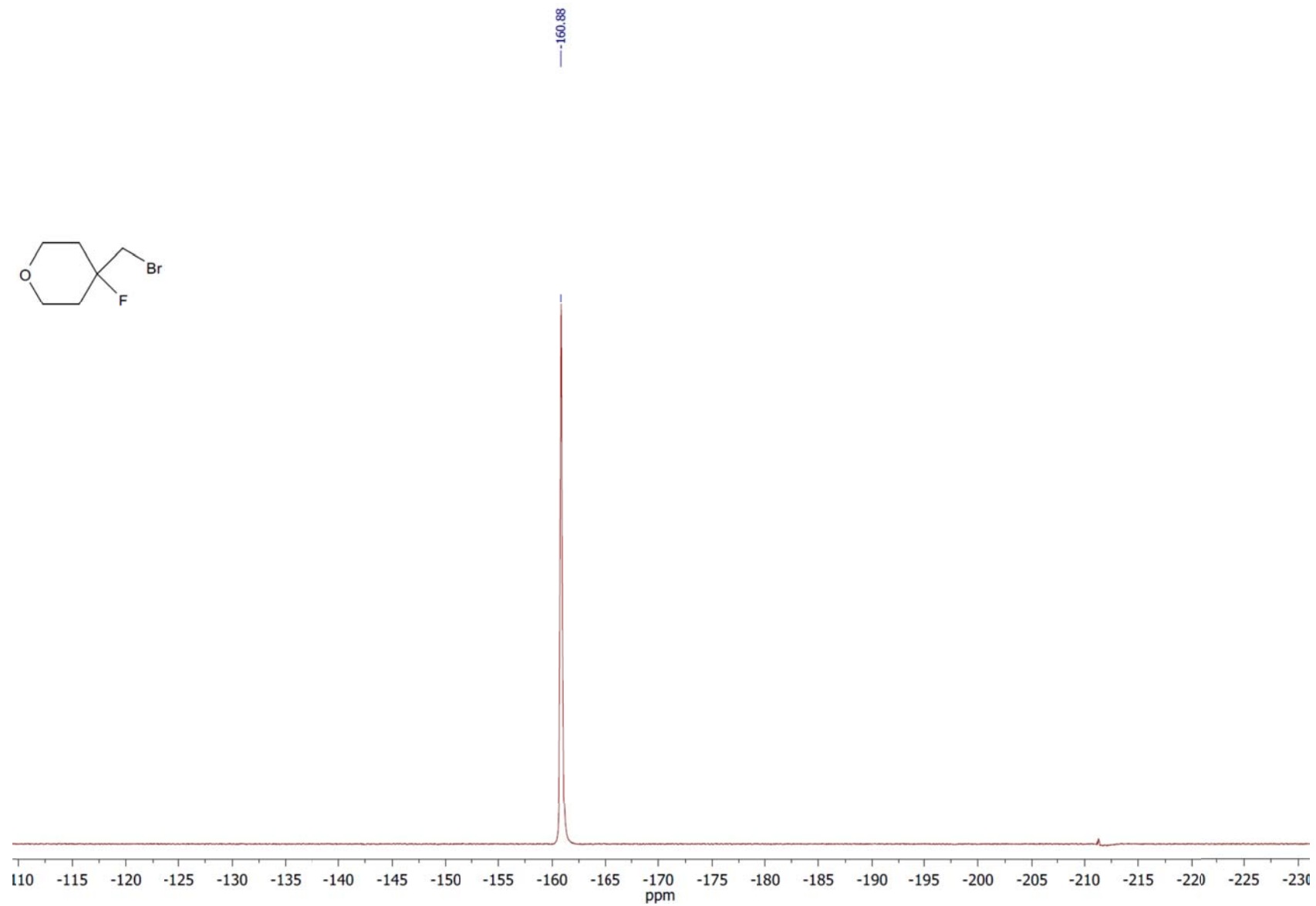
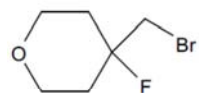
^1H NMR spectrum of the compound **2p**.



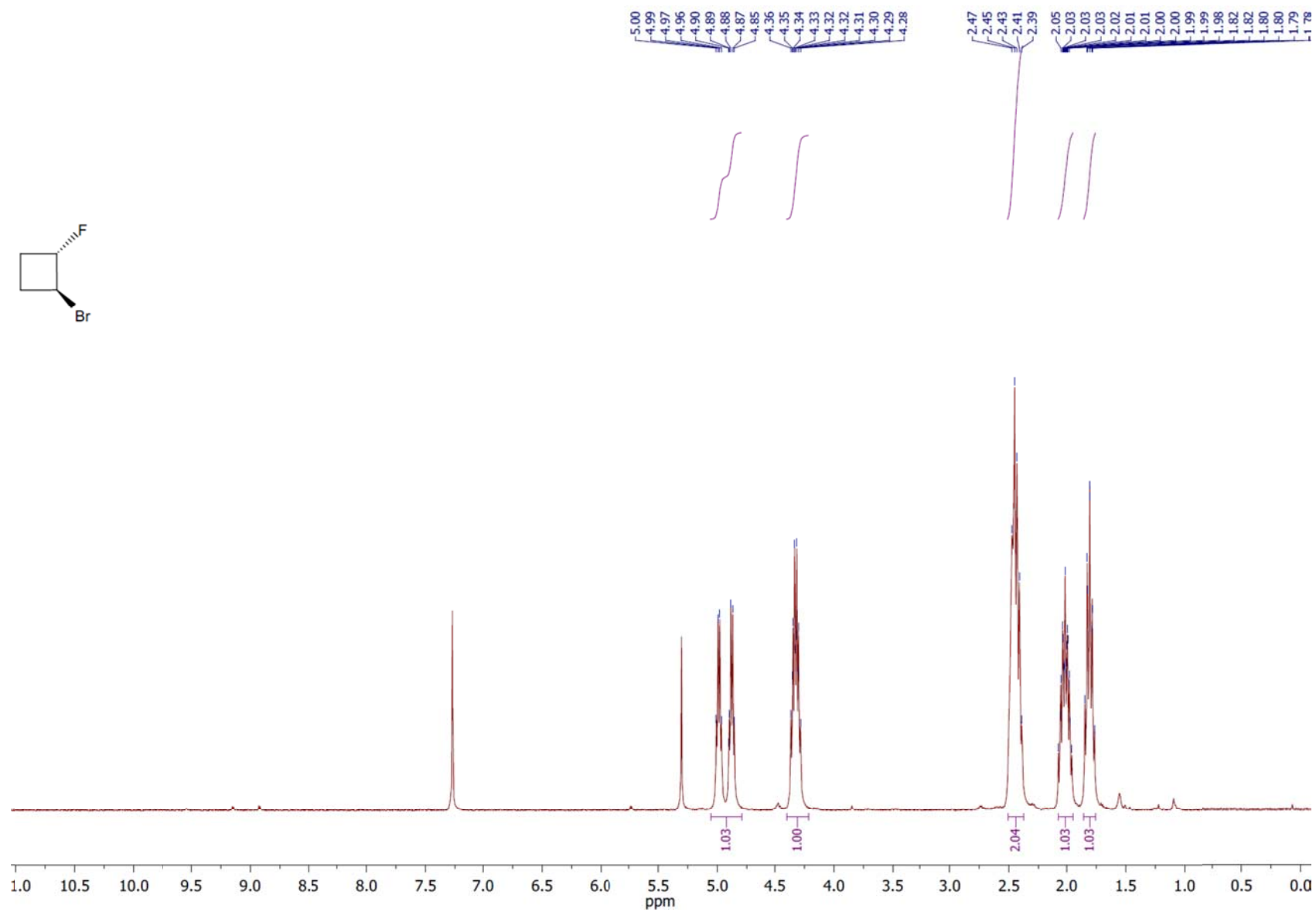
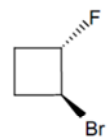
^{13}C NMR spectrum of the compound **2p**.



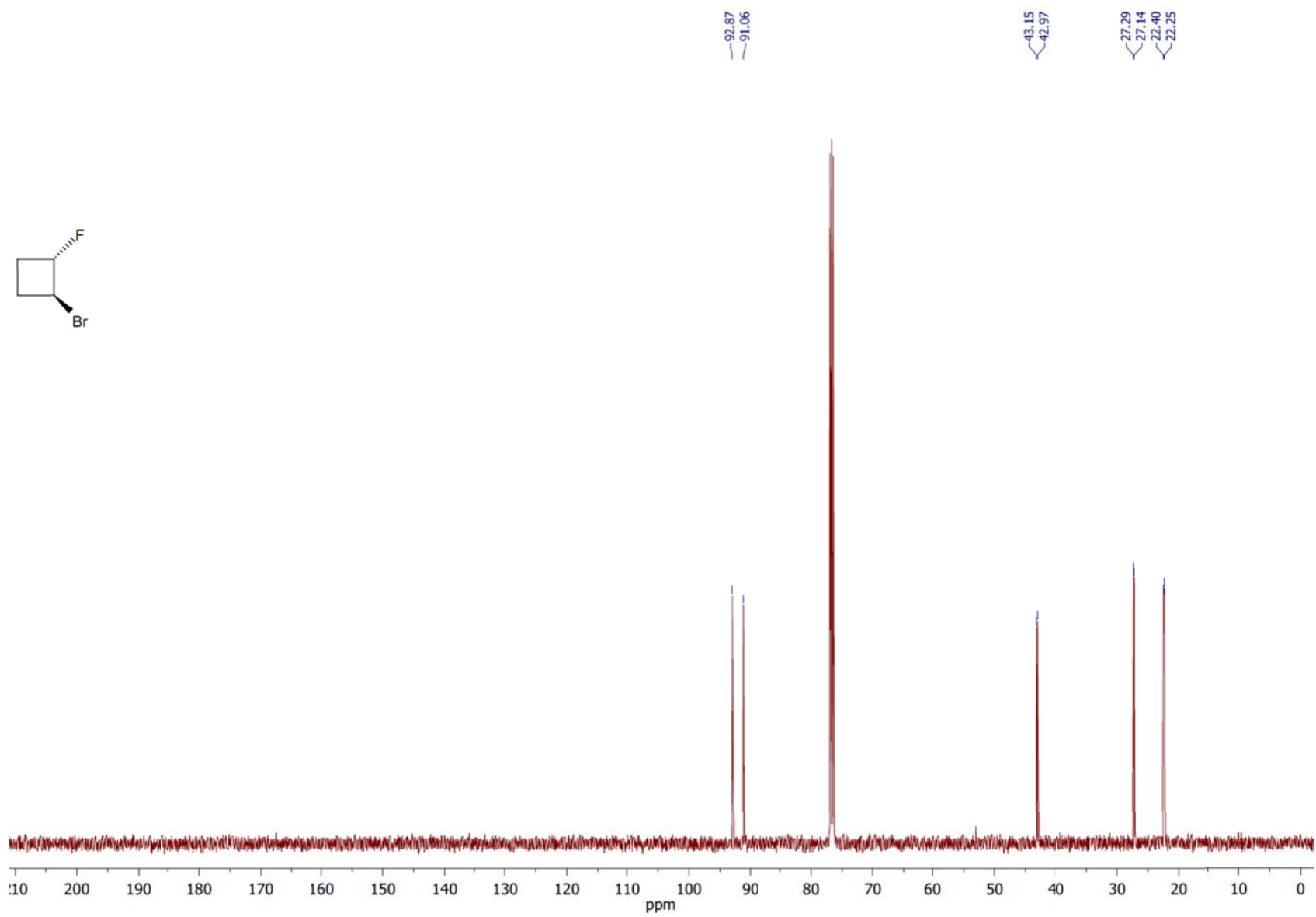
^{19}F NMR spectrum of the compound **2p**.



¹H NMR spectrum of the compound **2q**.

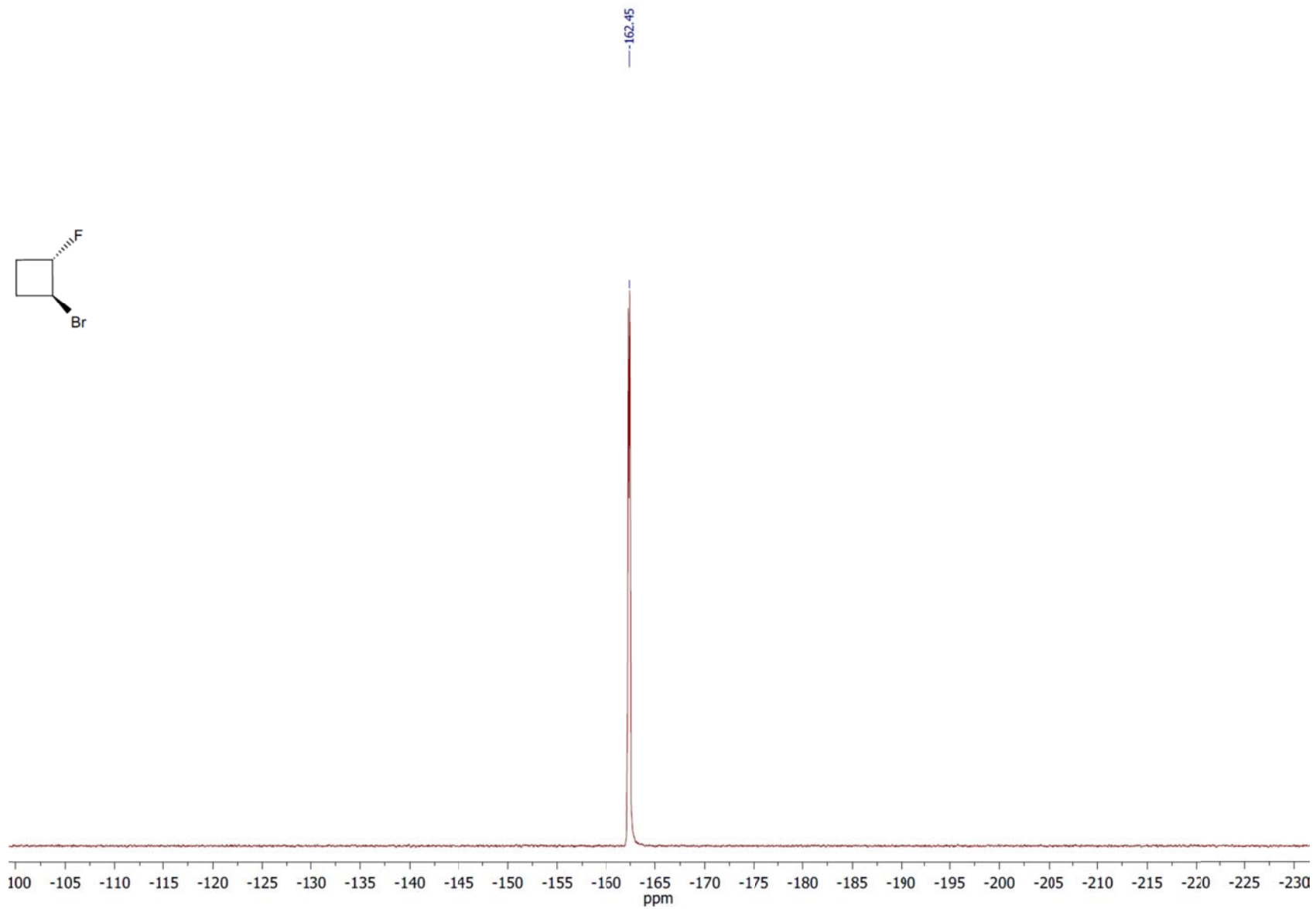


^{13}C NMR spectrum of the compound **2q**.

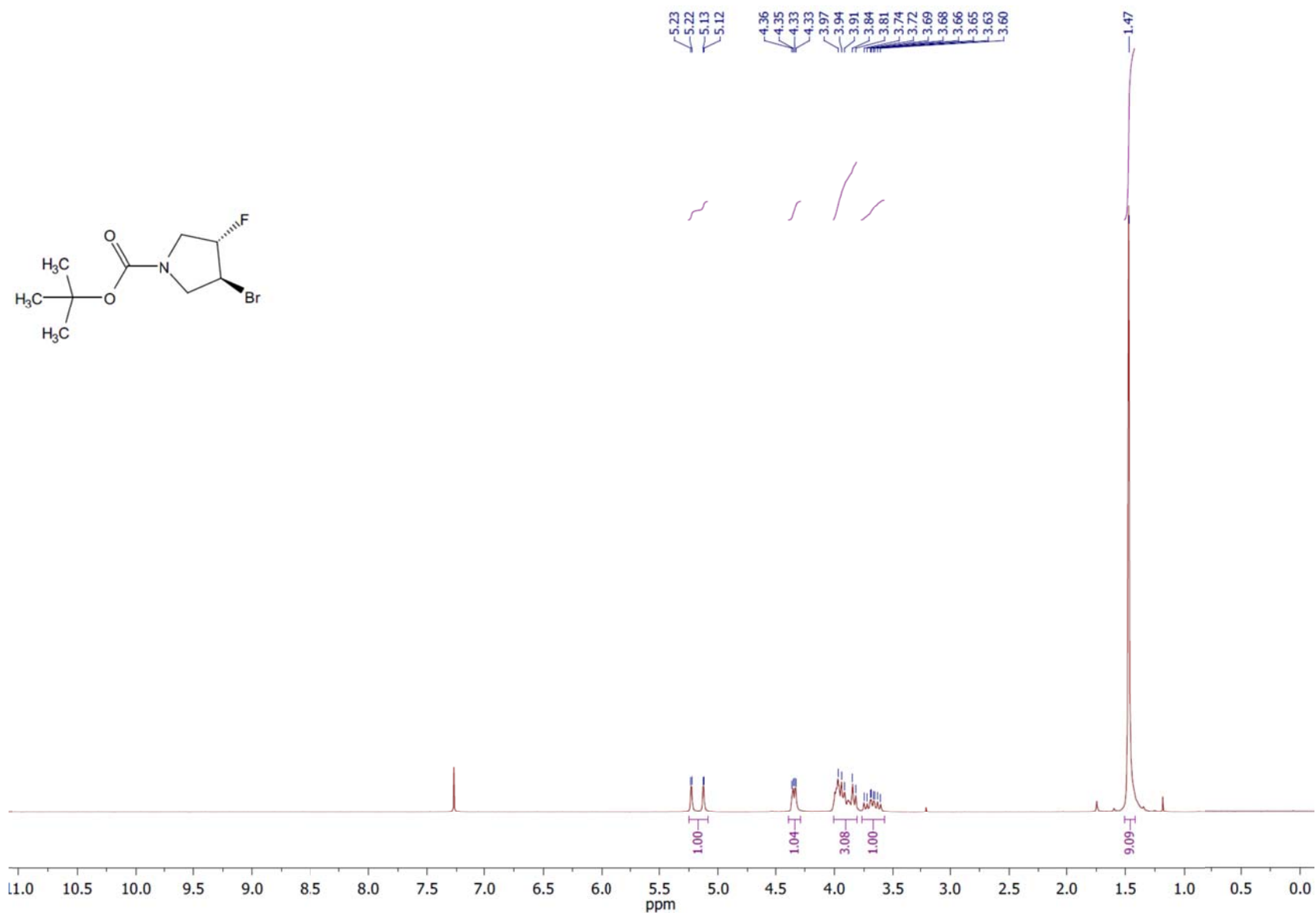


S31

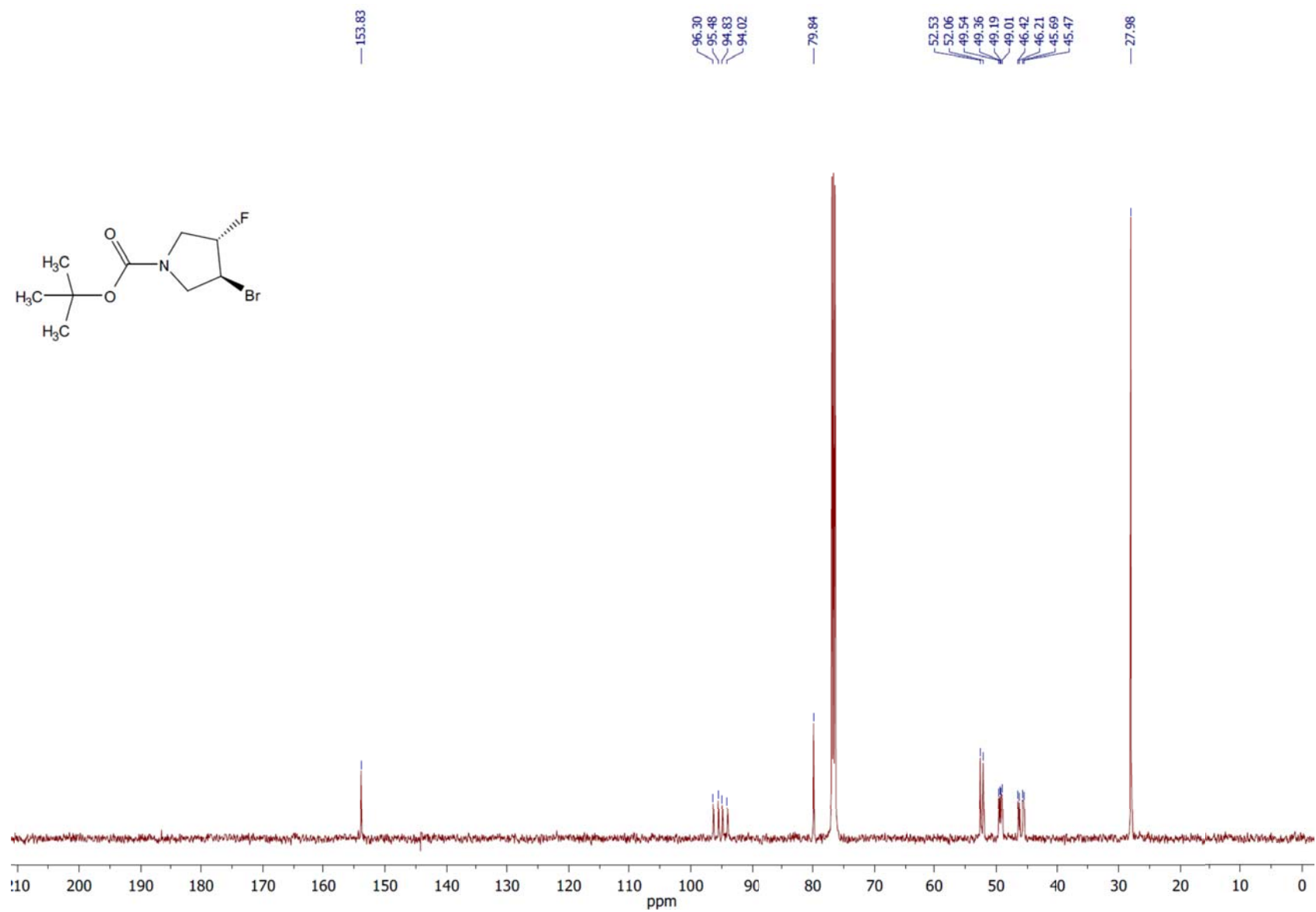
^{19}F NMR spectrum of the compound **2q**.



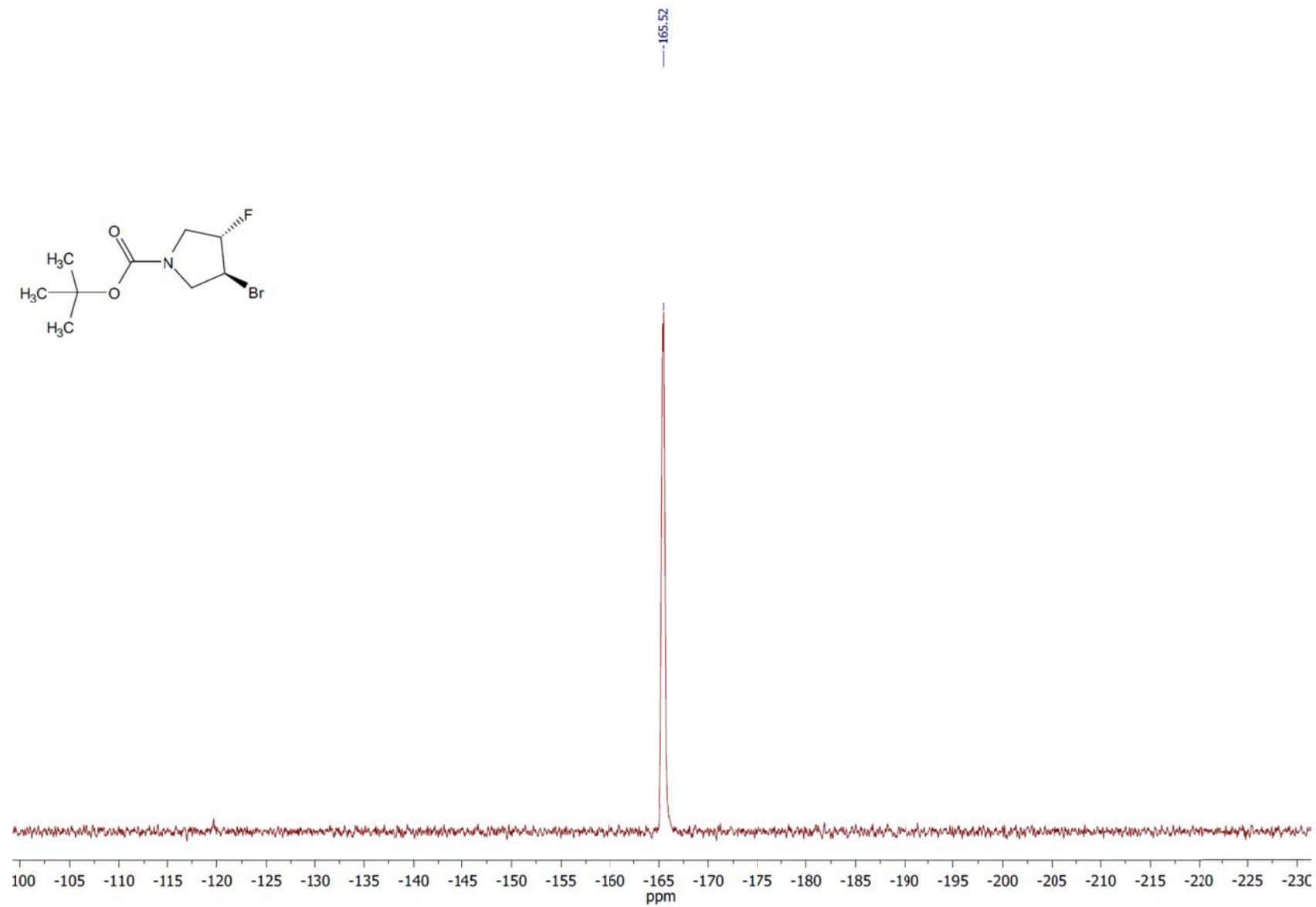
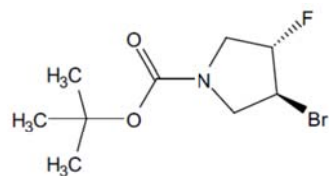
¹H NMR spectrum of the compound **2v**.



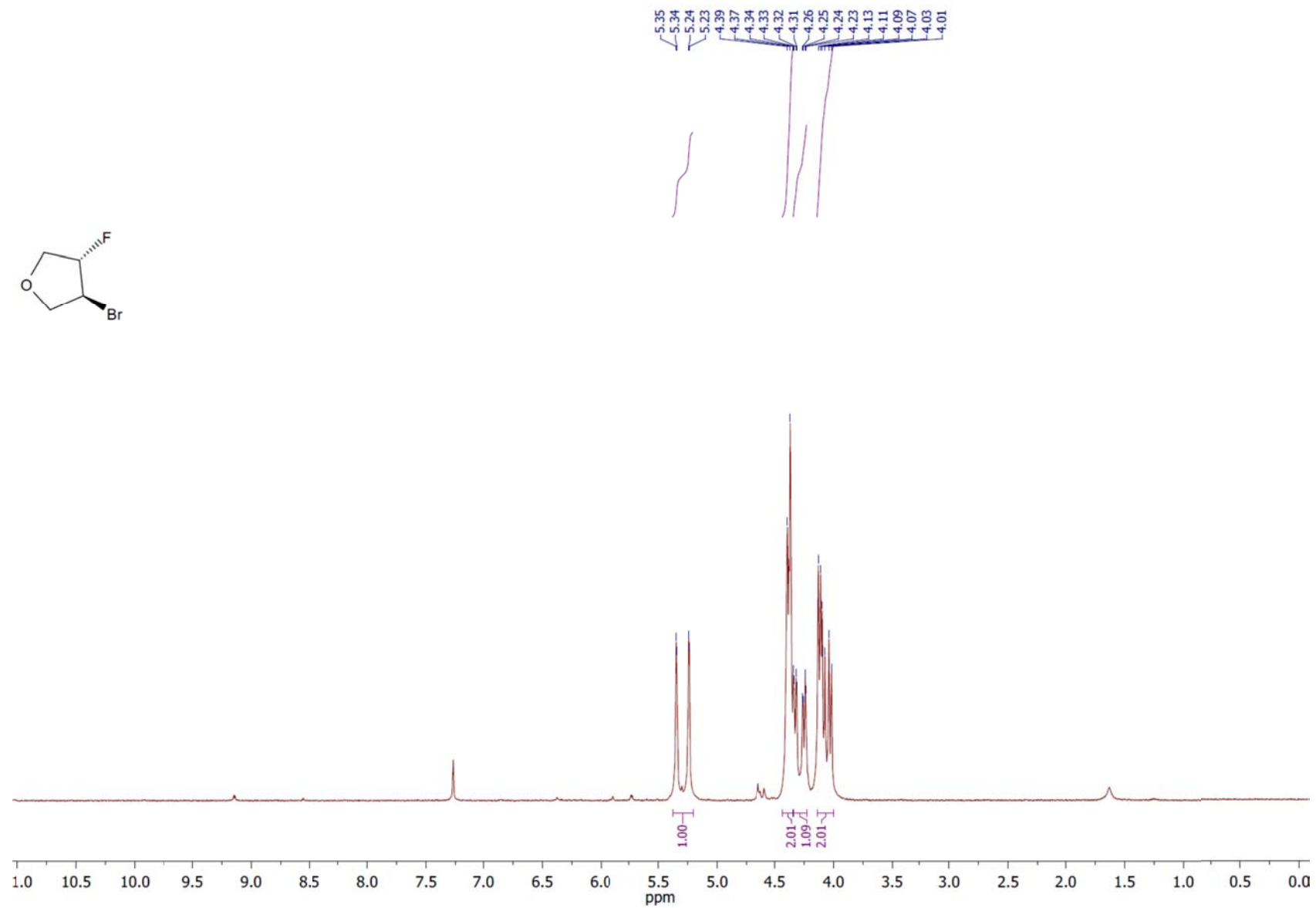
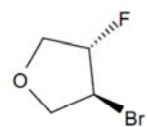
^{13}C NMR spectrum of the compound **2v**.



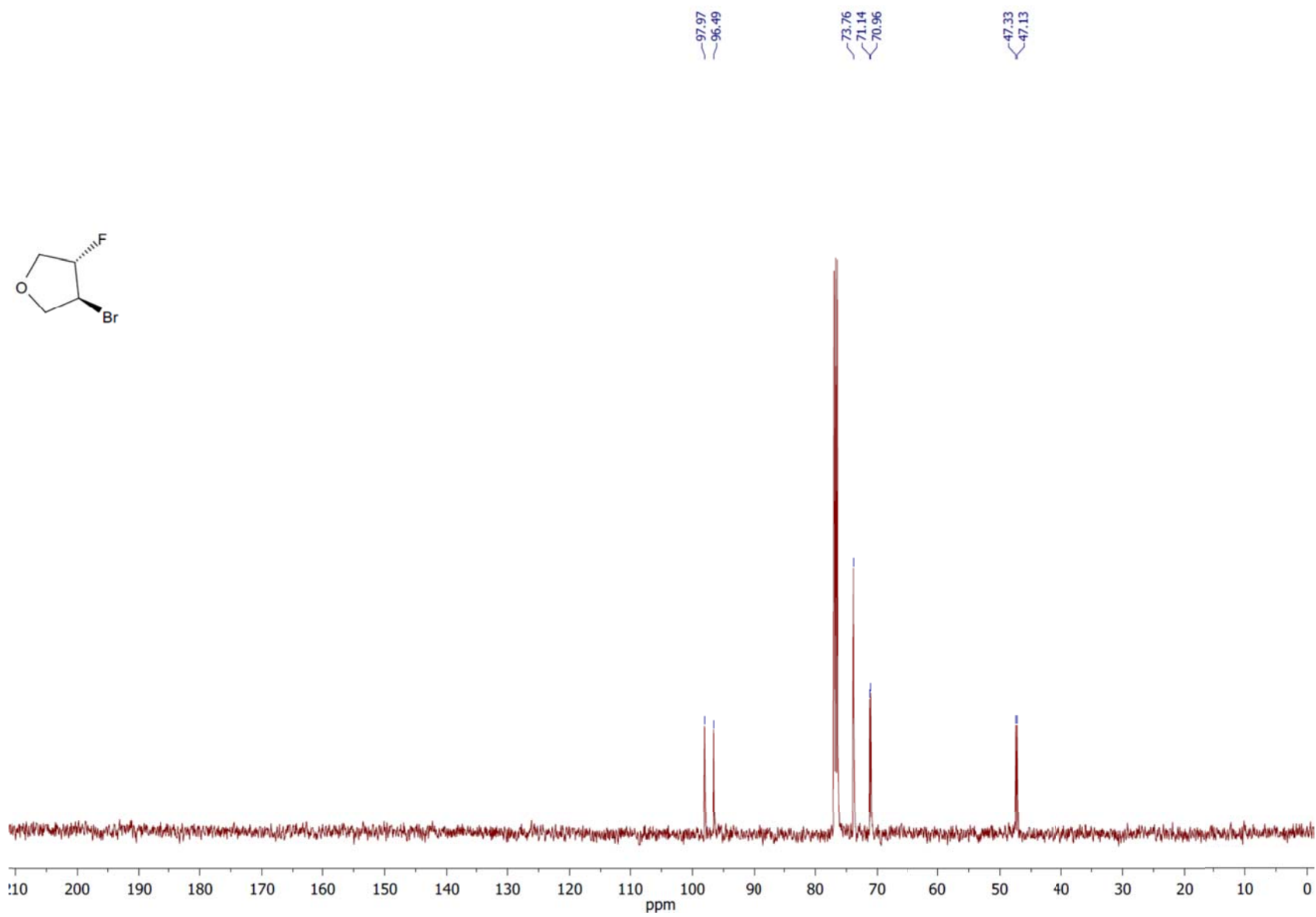
^{19}F NMR spectrum of the compound **2v**.



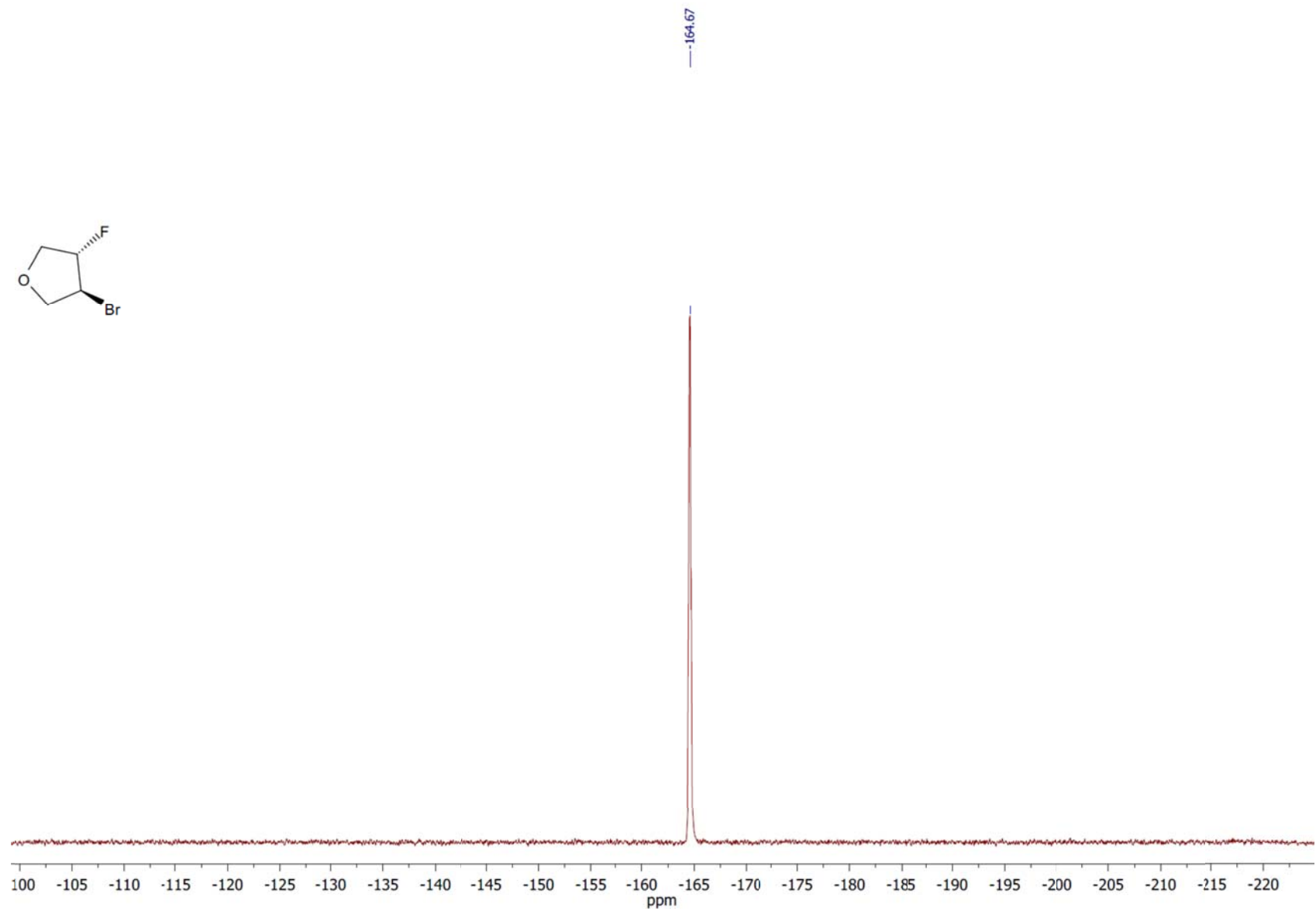
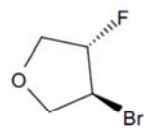
^1H NMR spectrum of the compound **2w**.



^{13}C NMR spectrum of the compound **2w**.

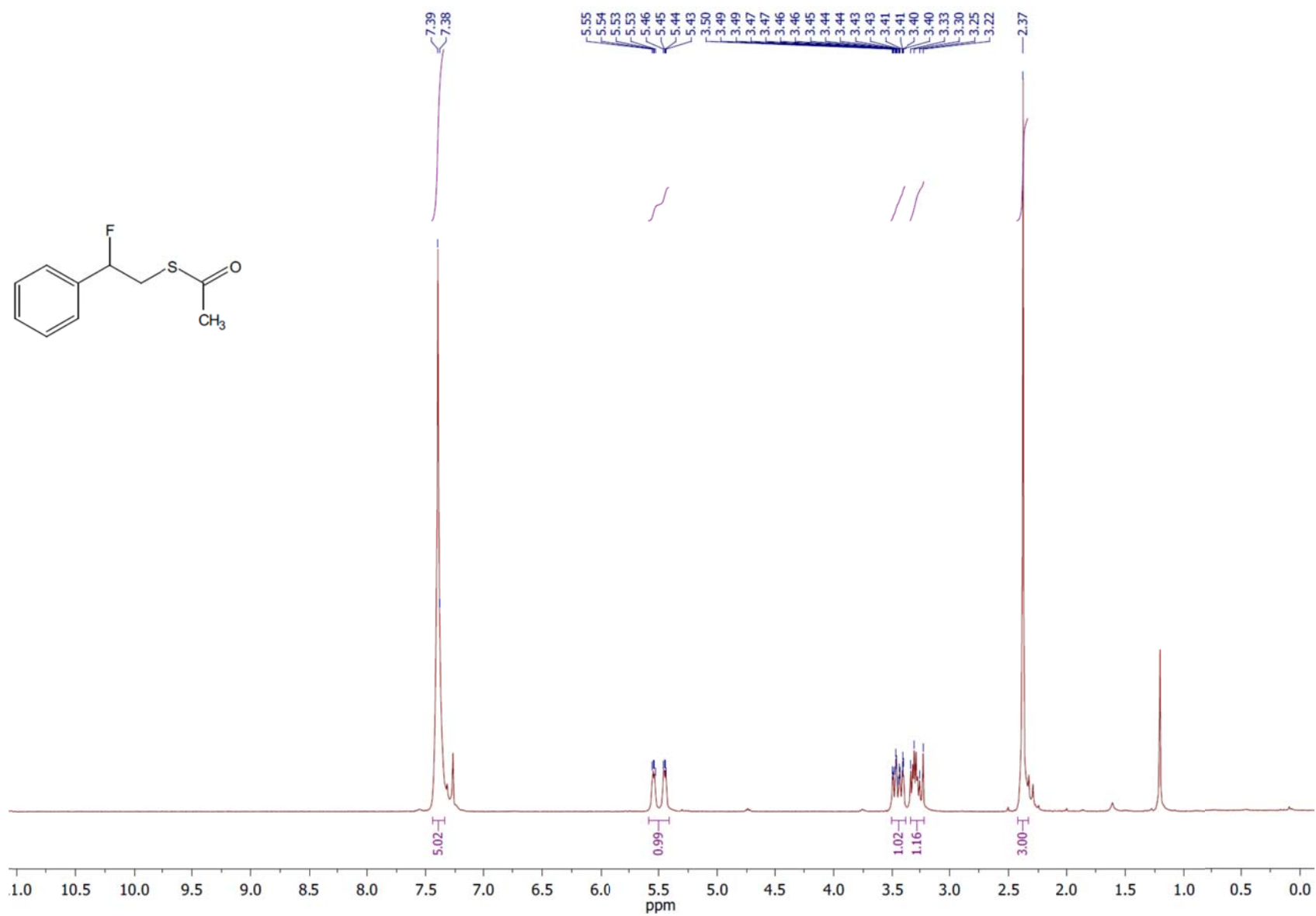


^{19}F NMR spectrum of the compound **2w**.

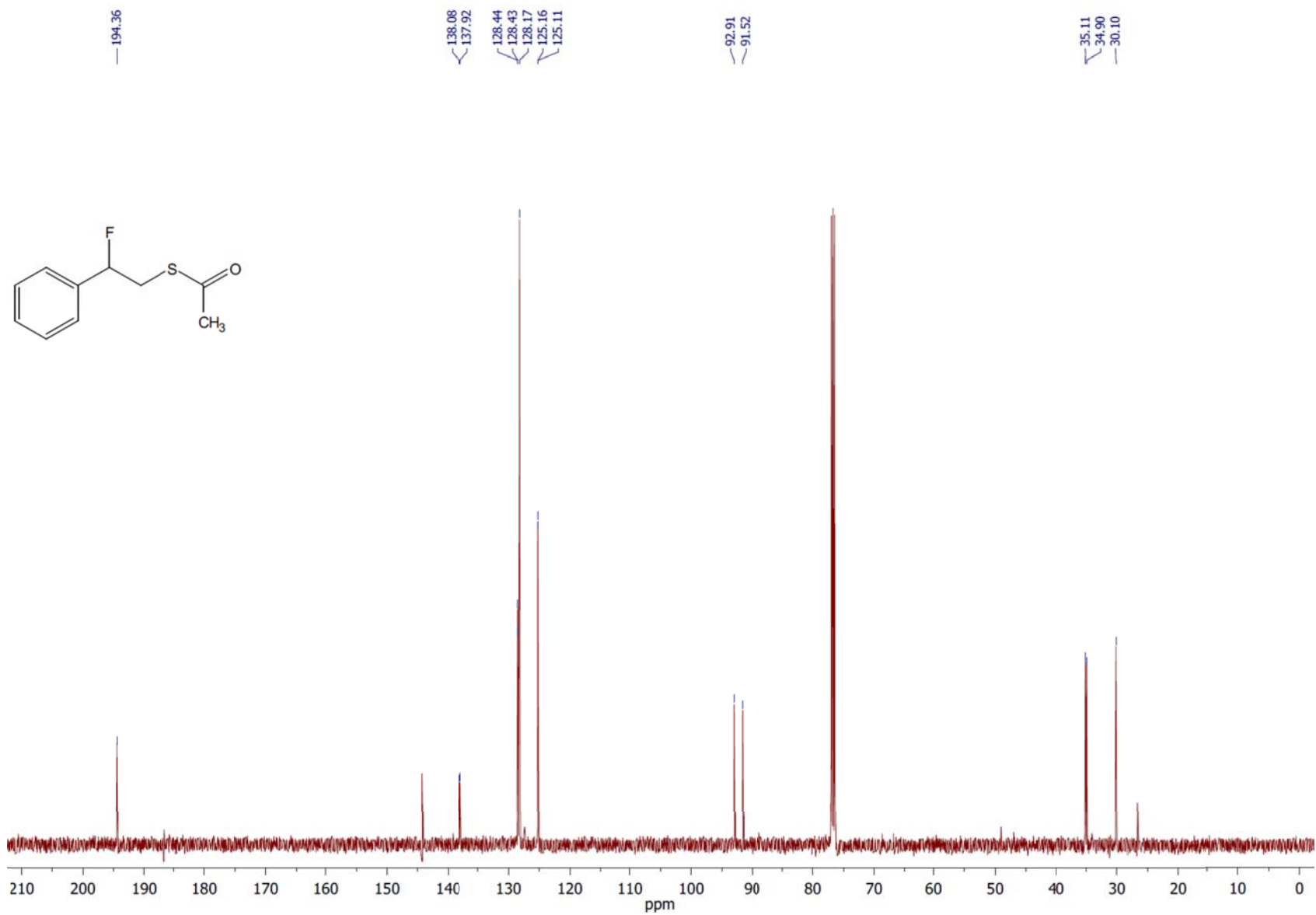


S38

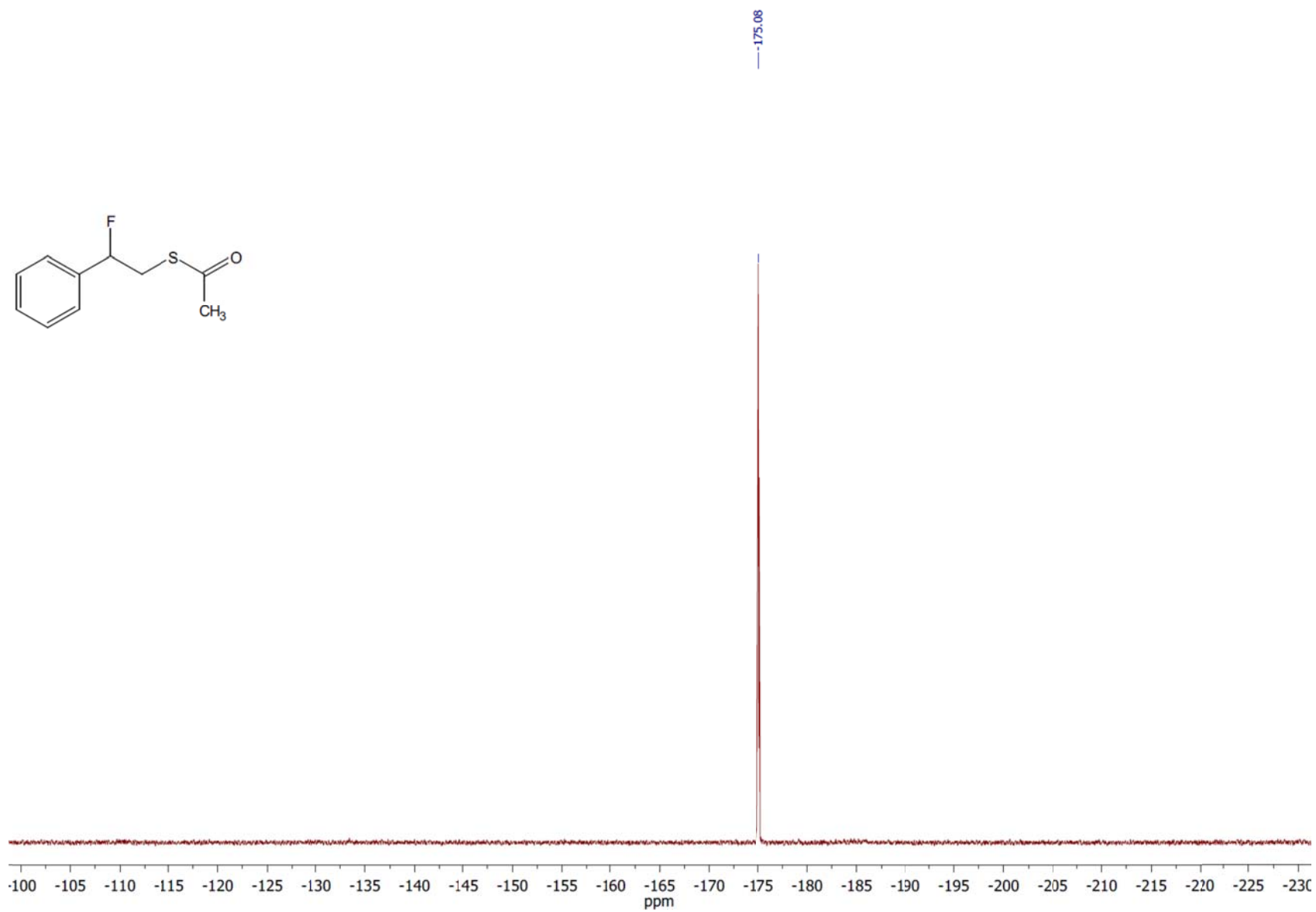
¹H NMR spectrum of the compound **3a**.



^{13}C NMR spectrum of the compound **3a**.

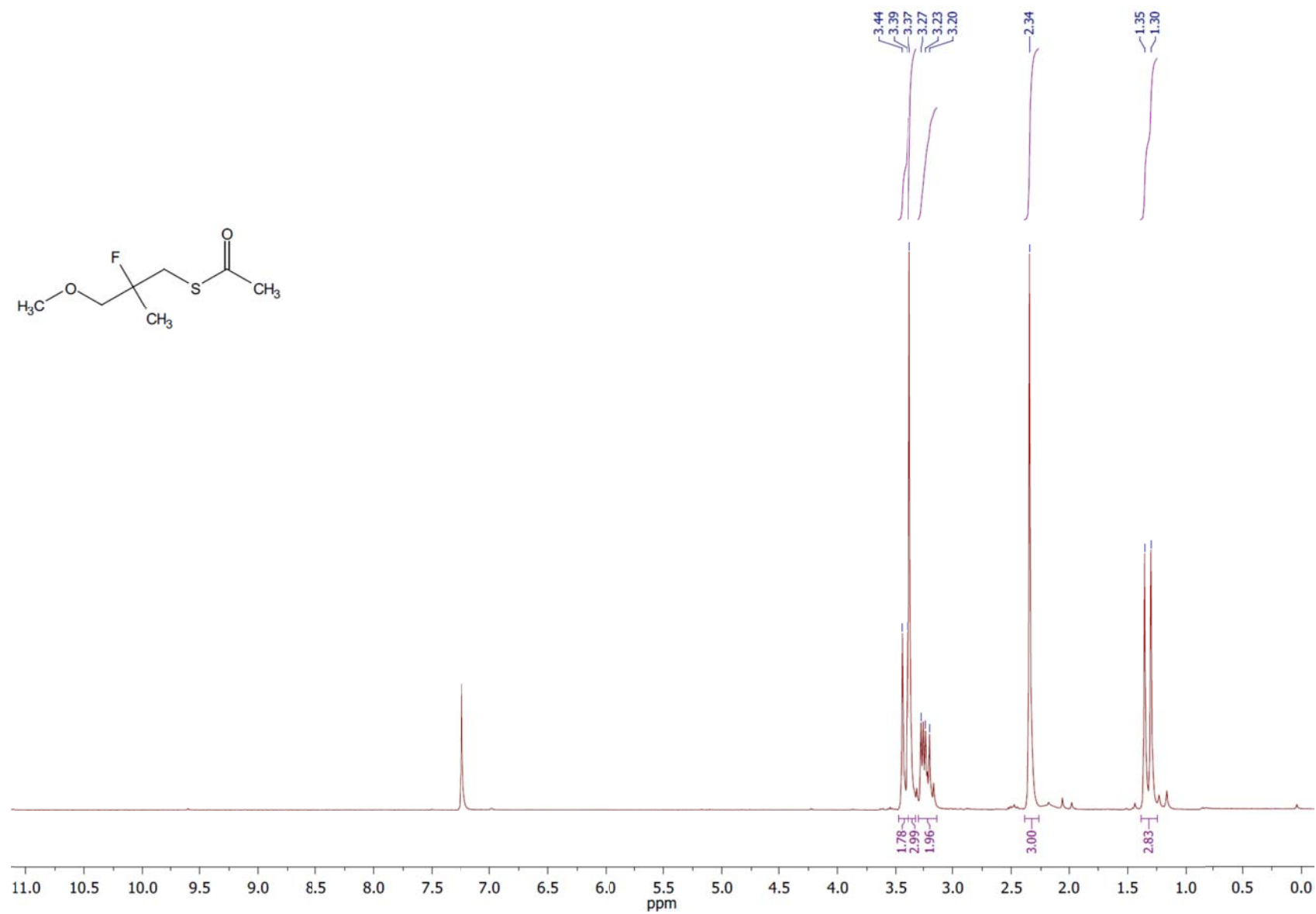
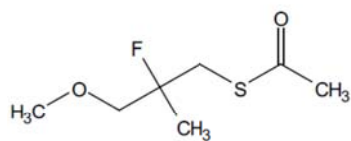


^{19}F NMR spectrum of the compound **3a**.

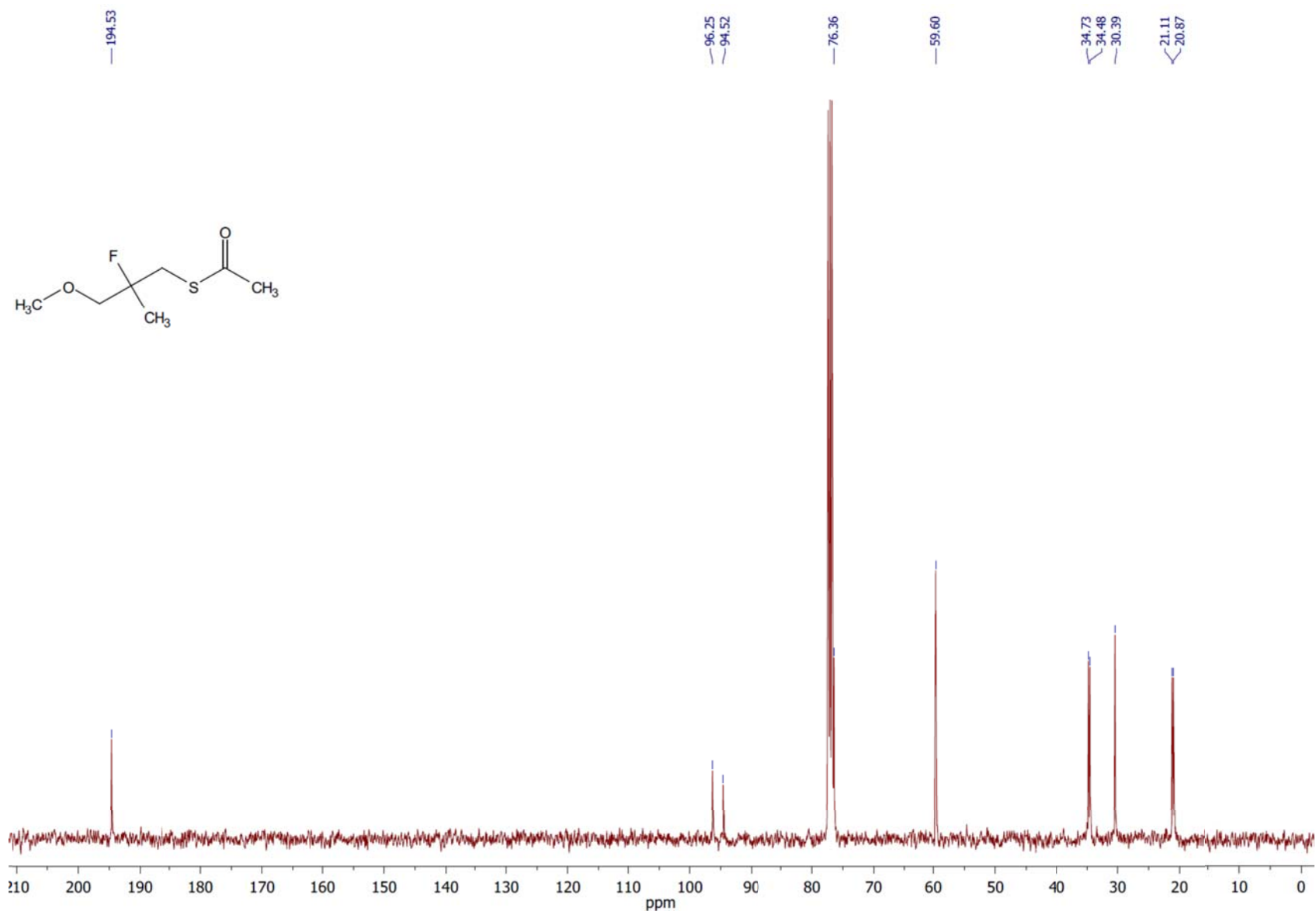


S41

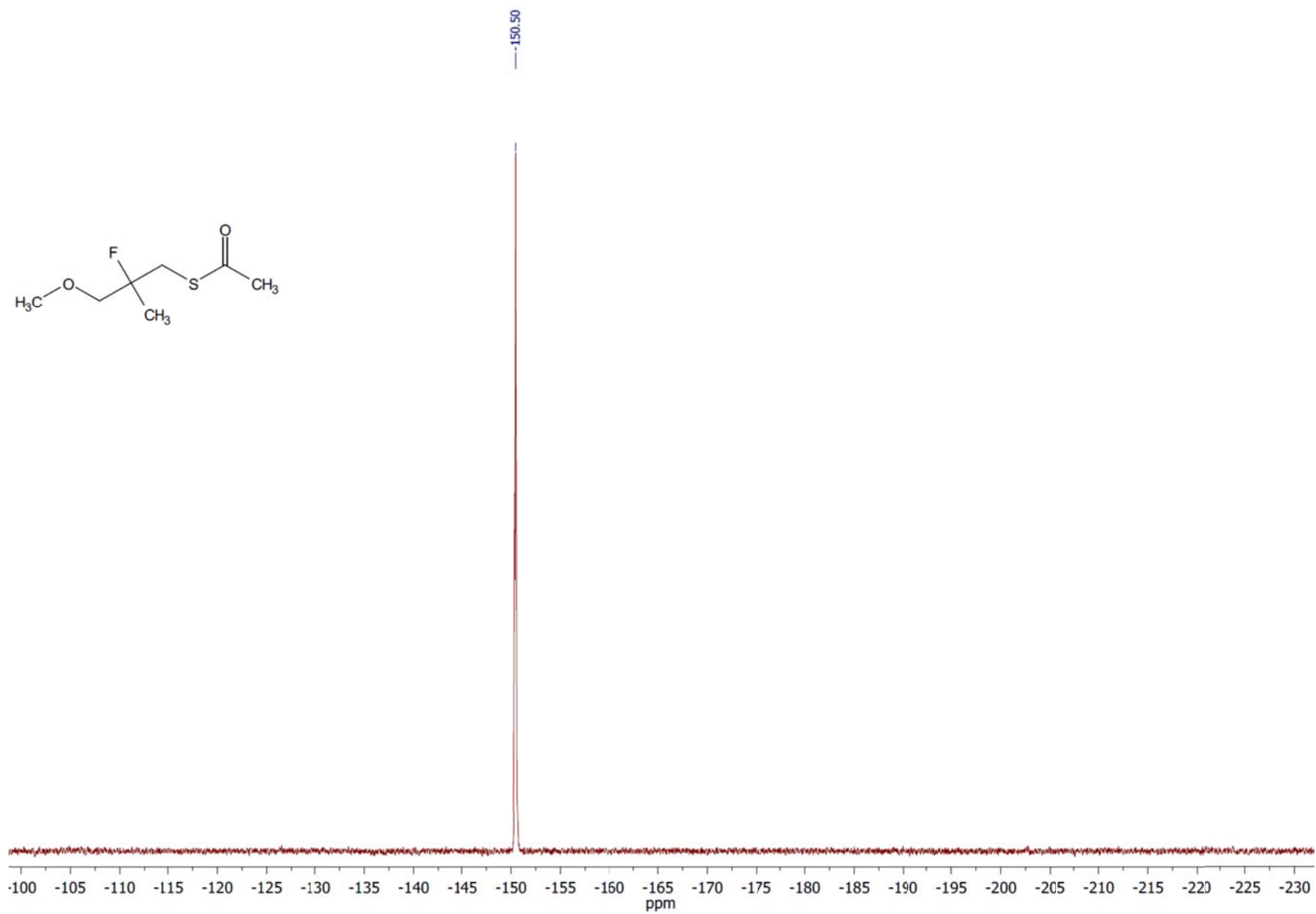
^1H NMR spectrum of the compound **3b**.



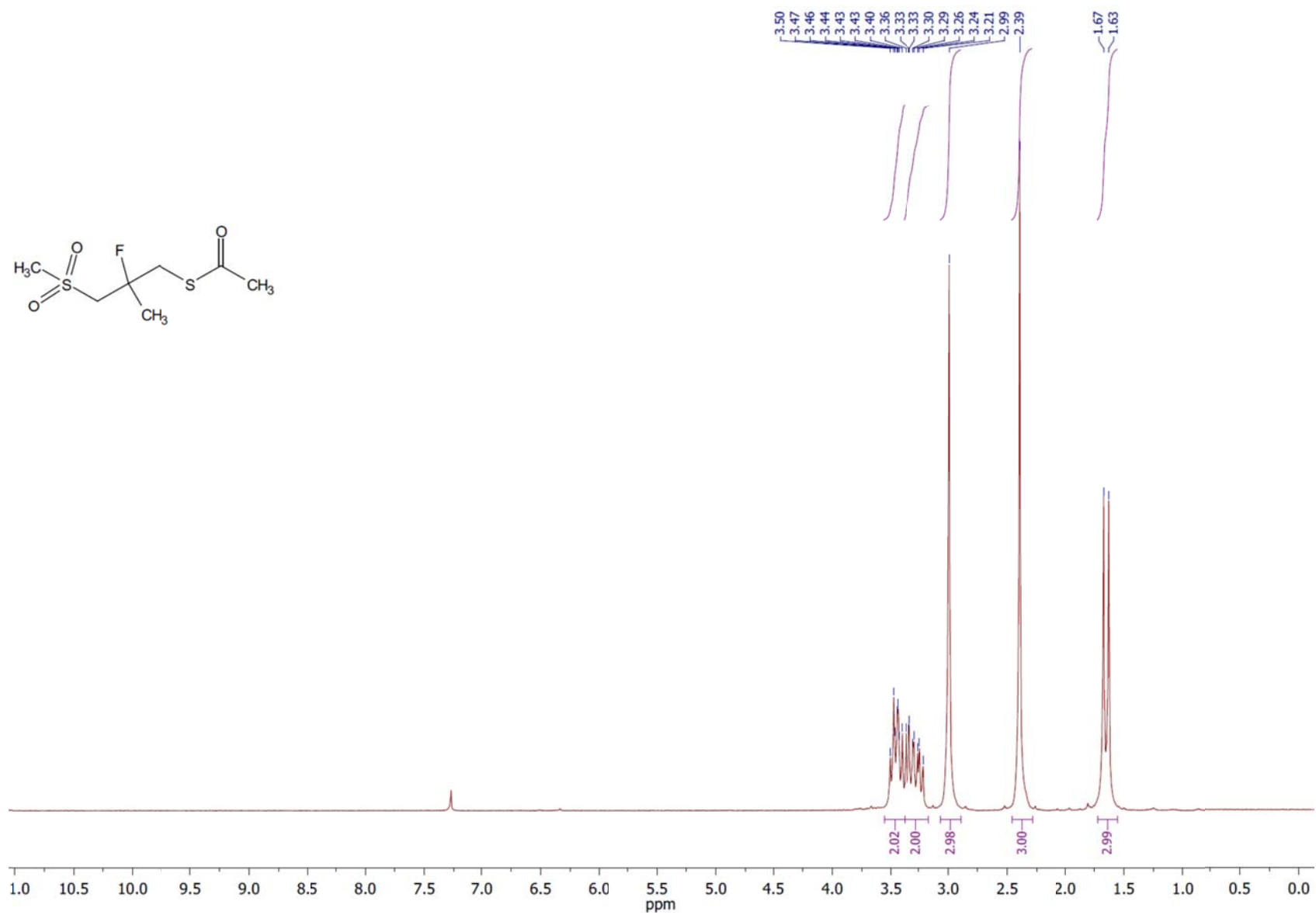
^{13}C NMR spectrum of the compound **3b**.



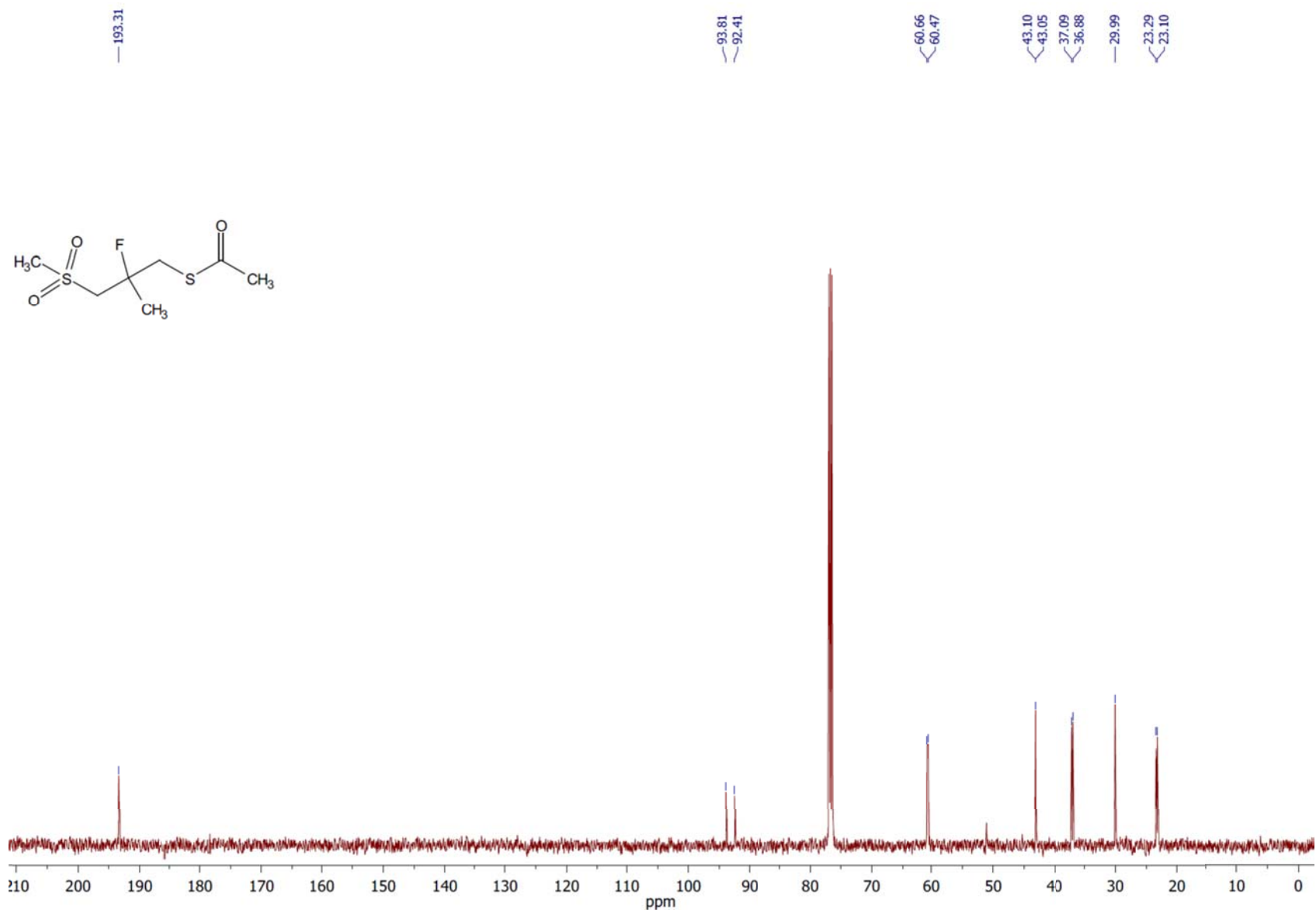
^{19}F NMR spectrum of the compound **3b**.



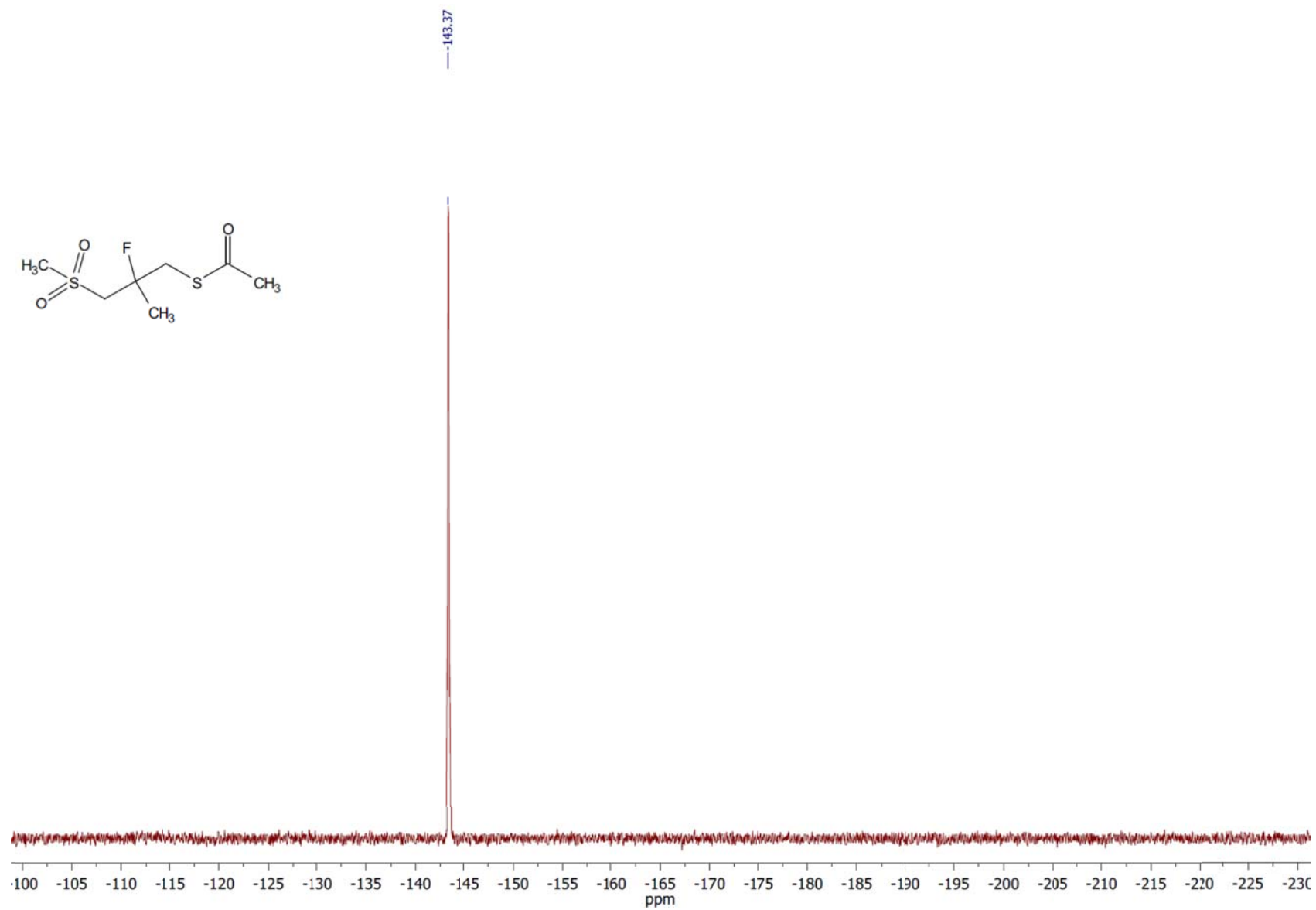
^1H NMR spectrum of the compound **3c**.



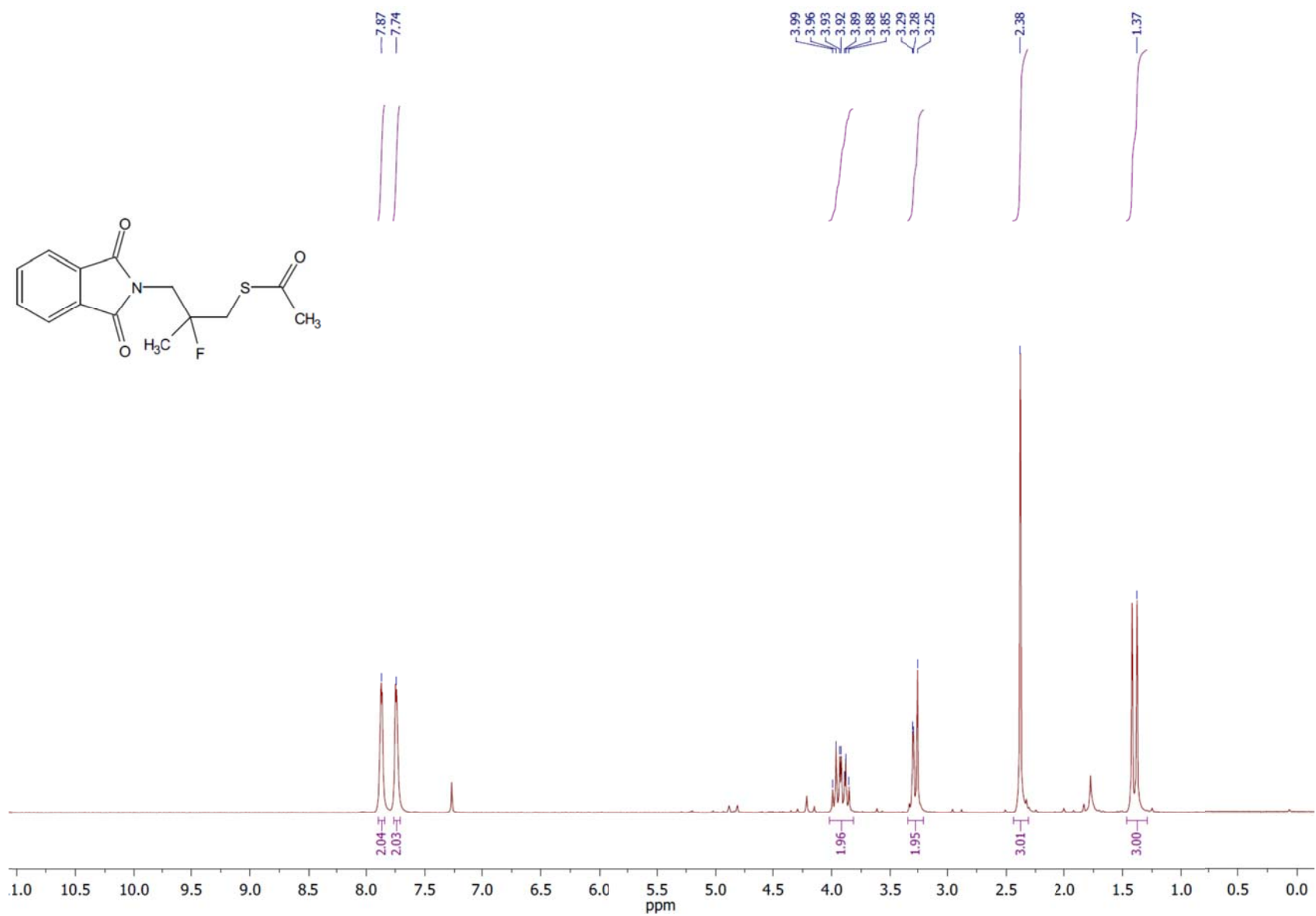
^{13}C NMR spectrum of the compound **3c**.



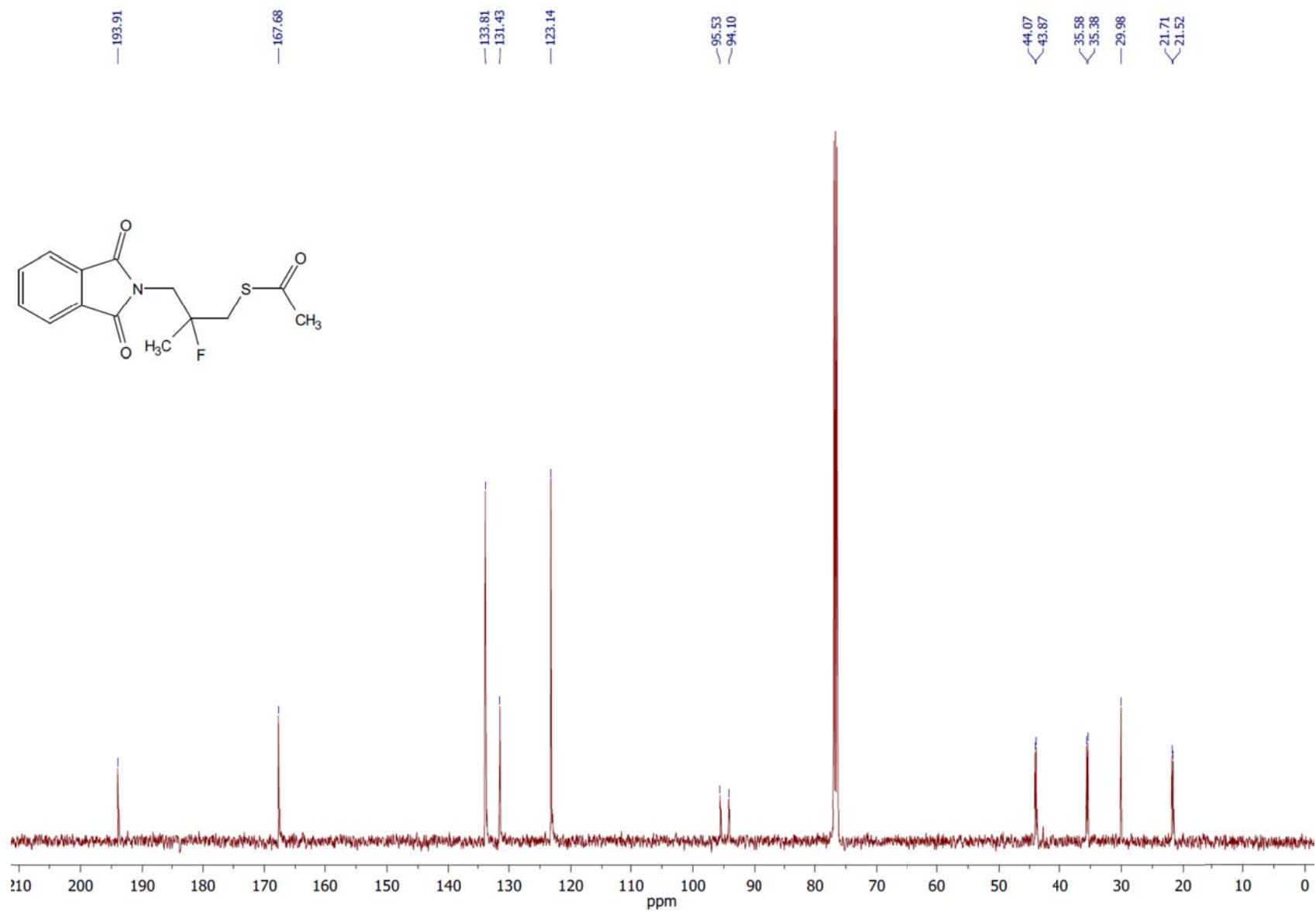
^{19}F NMR spectrum of the compound **3c**.



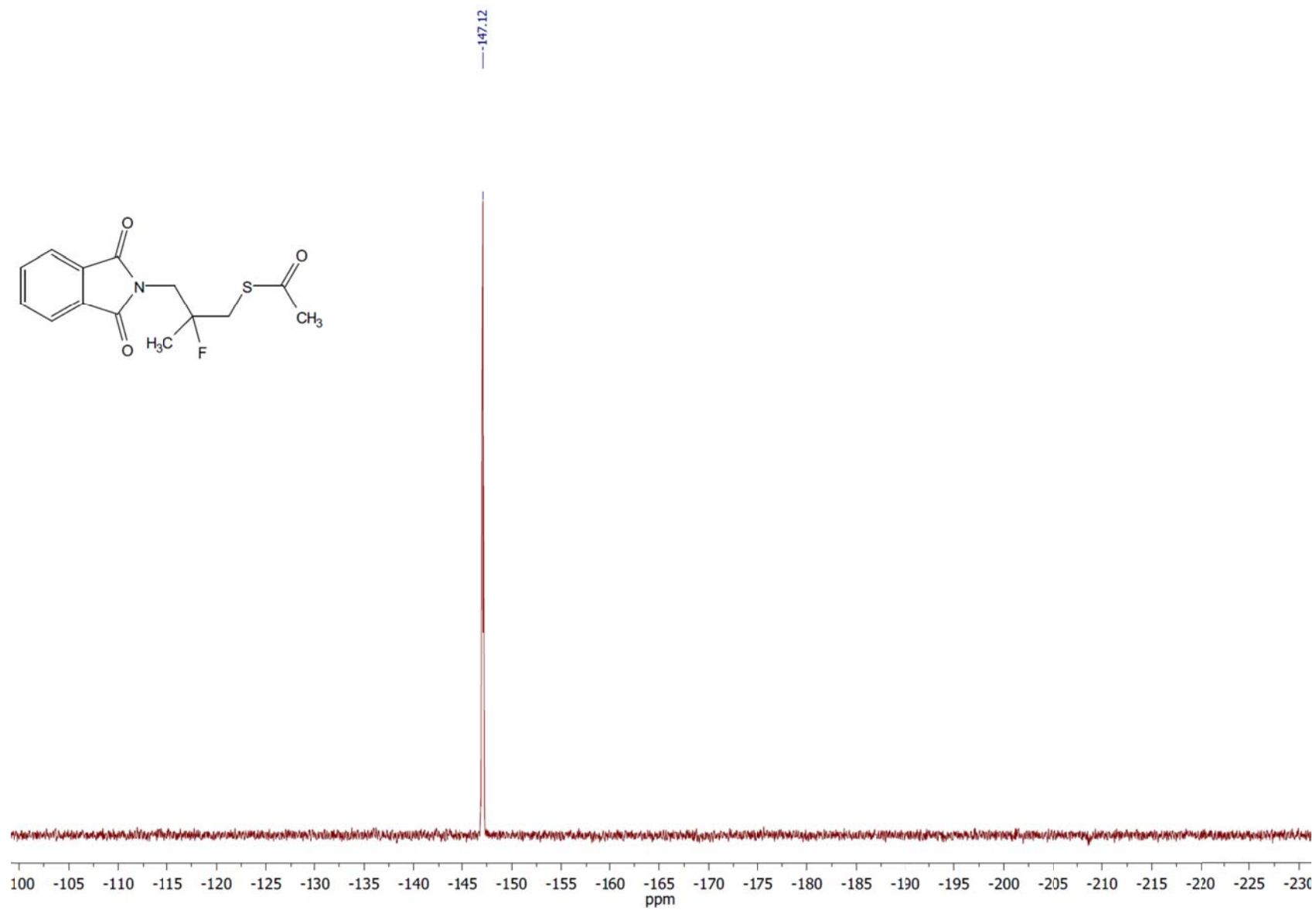
¹H NMR spectrum of the compound **3d**.



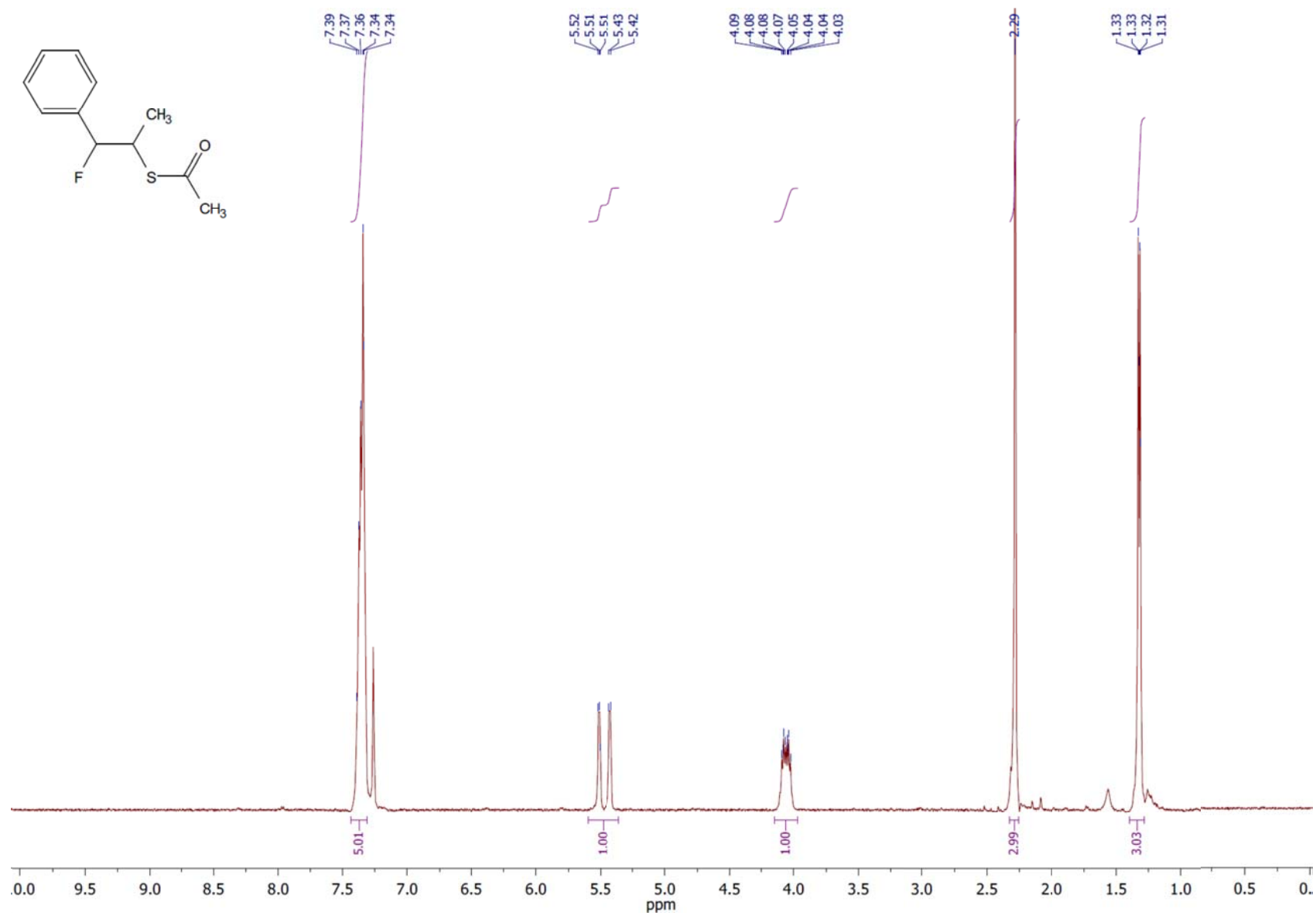
^{13}C NMR spectrum of the compound **3d**.



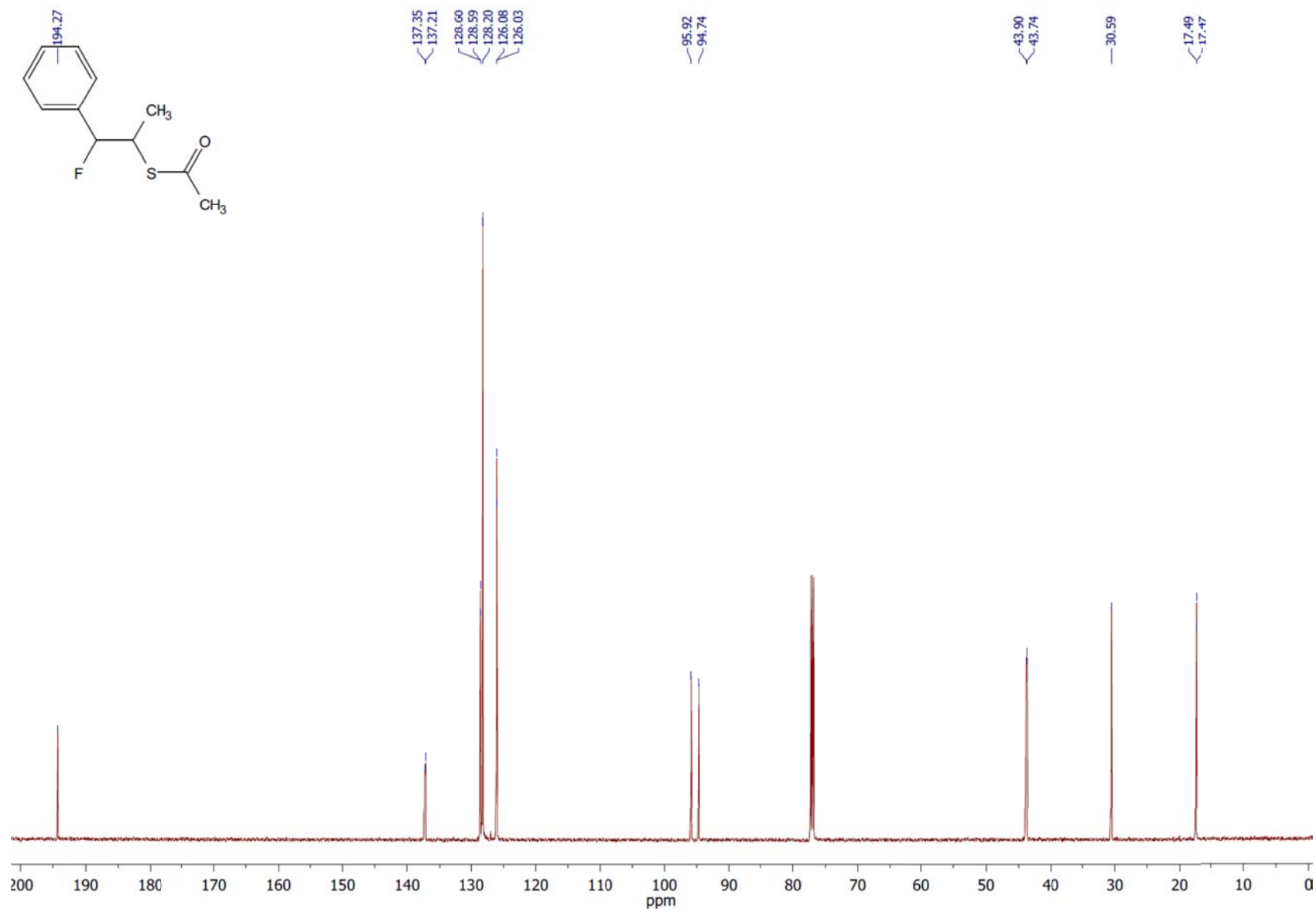
^{19}F NMR spectrum of the compound **3d**.



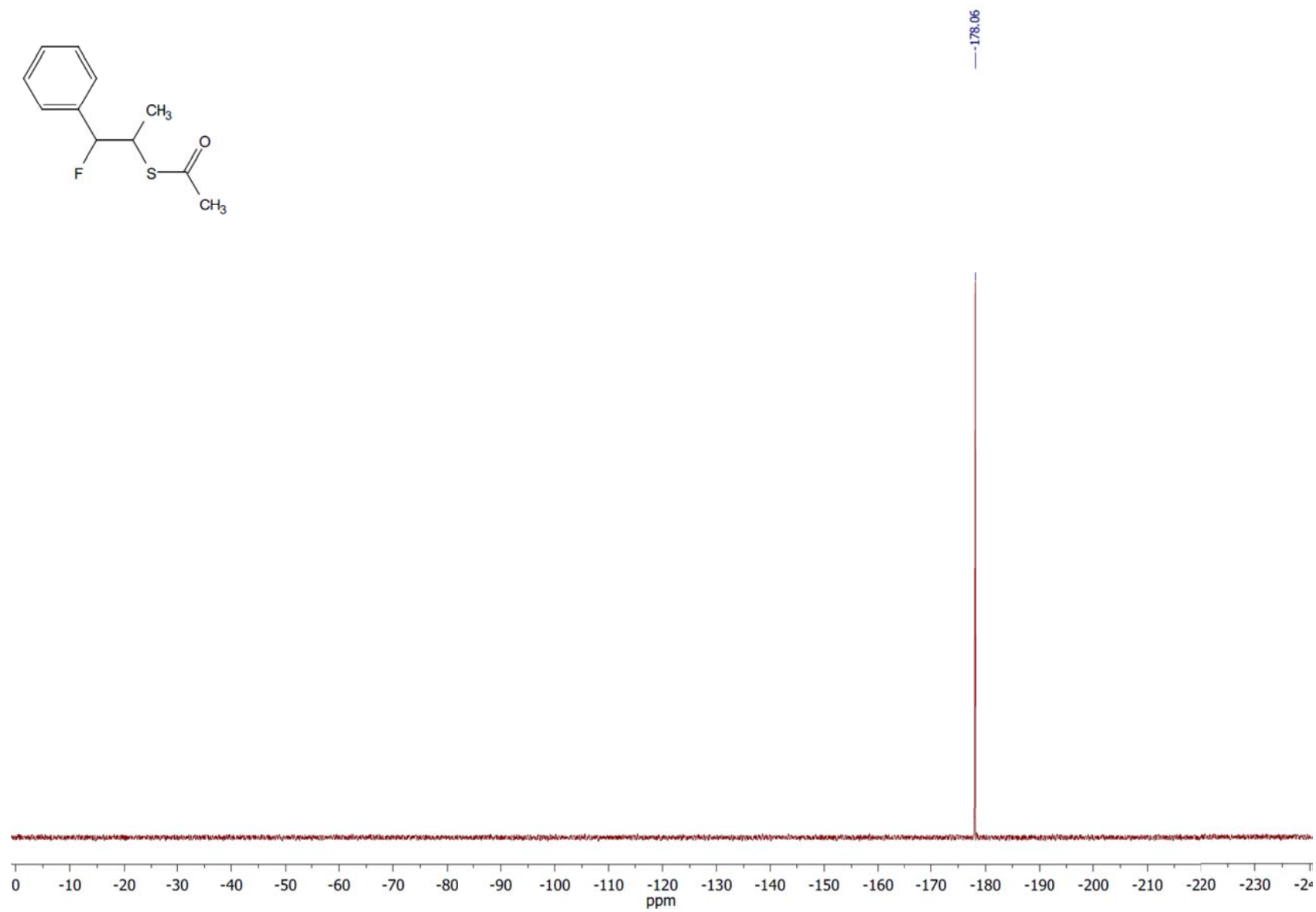
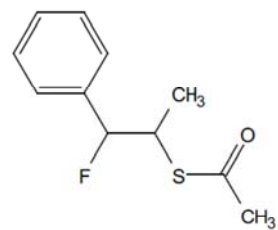
¹H NMR spectrum of the compound **3e**.



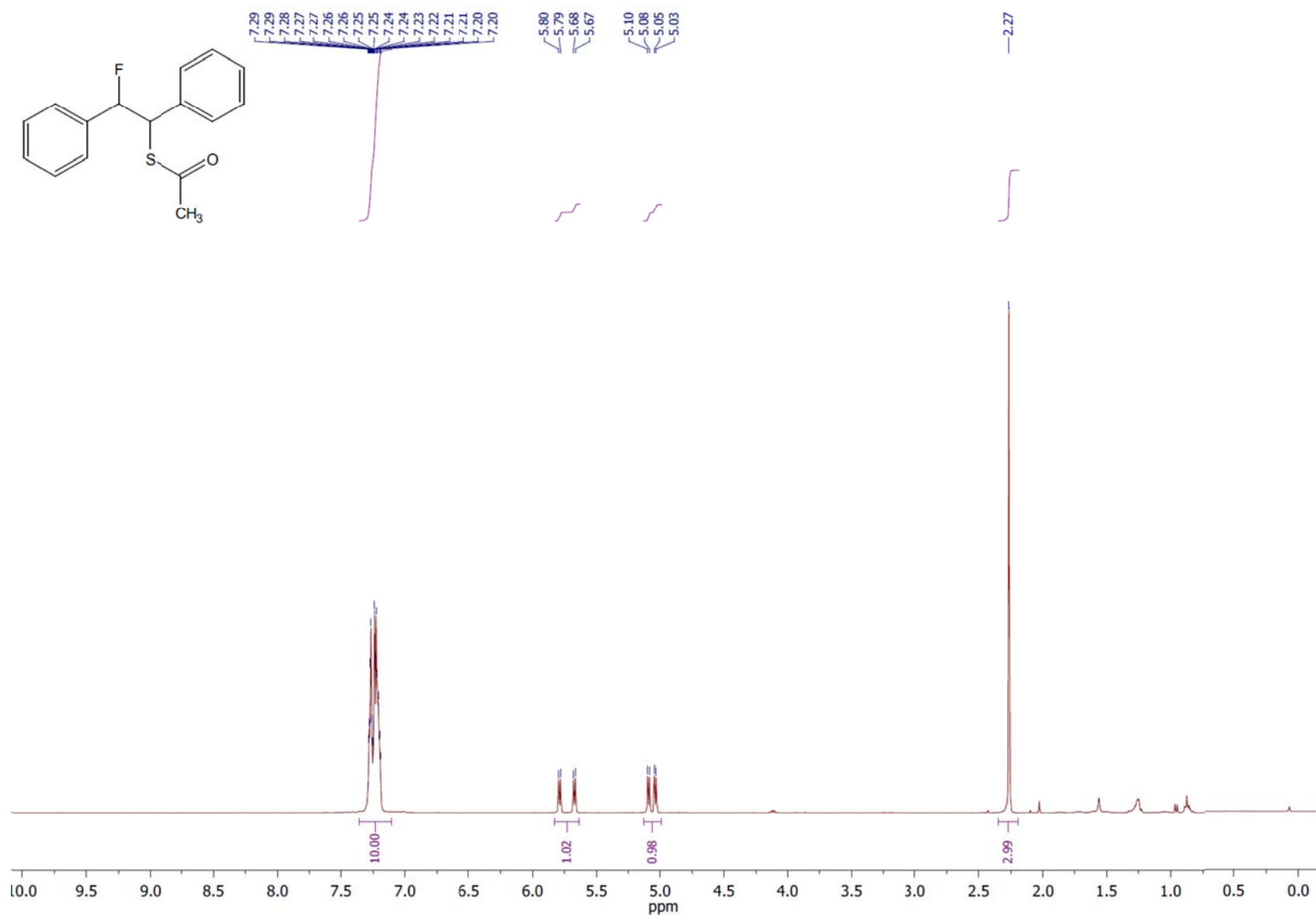
^{13}C NMR spectrum of the compound **3e**.



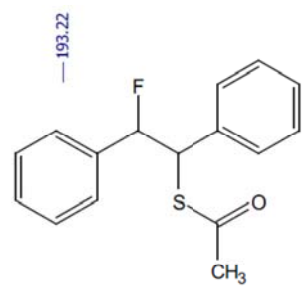
^{19}F NMR spectrum of the compound **3e**.



¹H NMR spectrum of the compound **3f**.



^{13}C NMR spectrum of the compound **3f**.

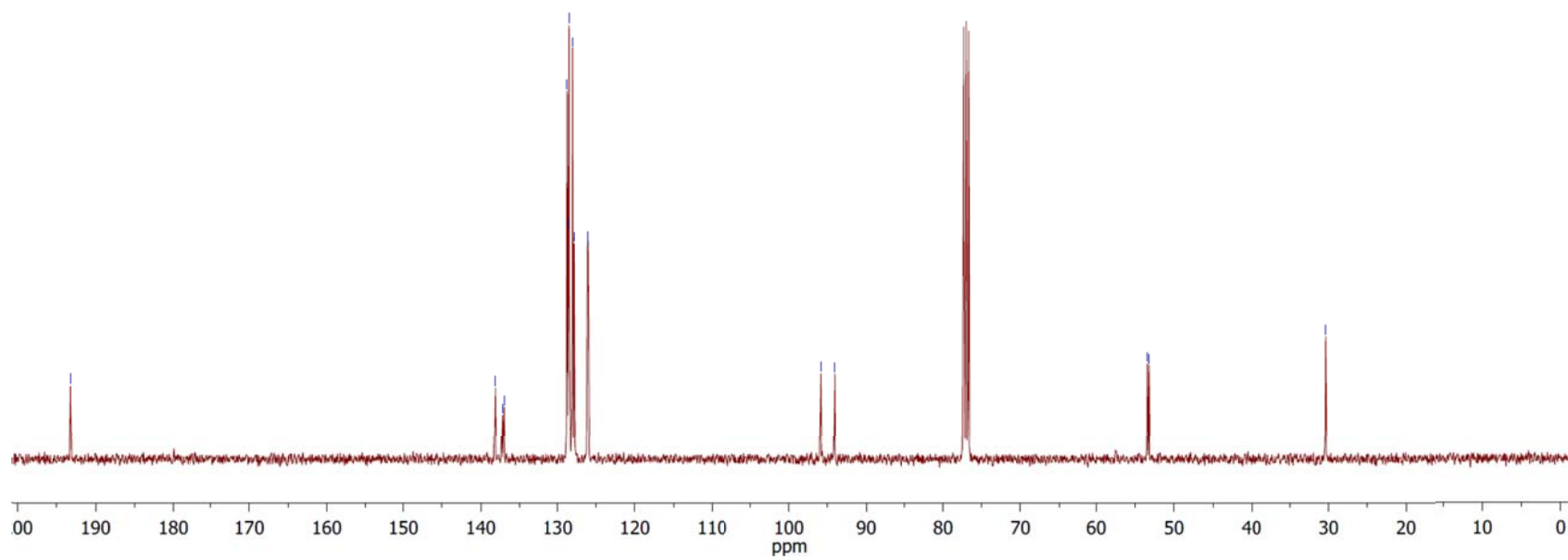


138.18
137.26
137.05
128.76
128.57
128.51
128.06
127.85
126.13
126.06

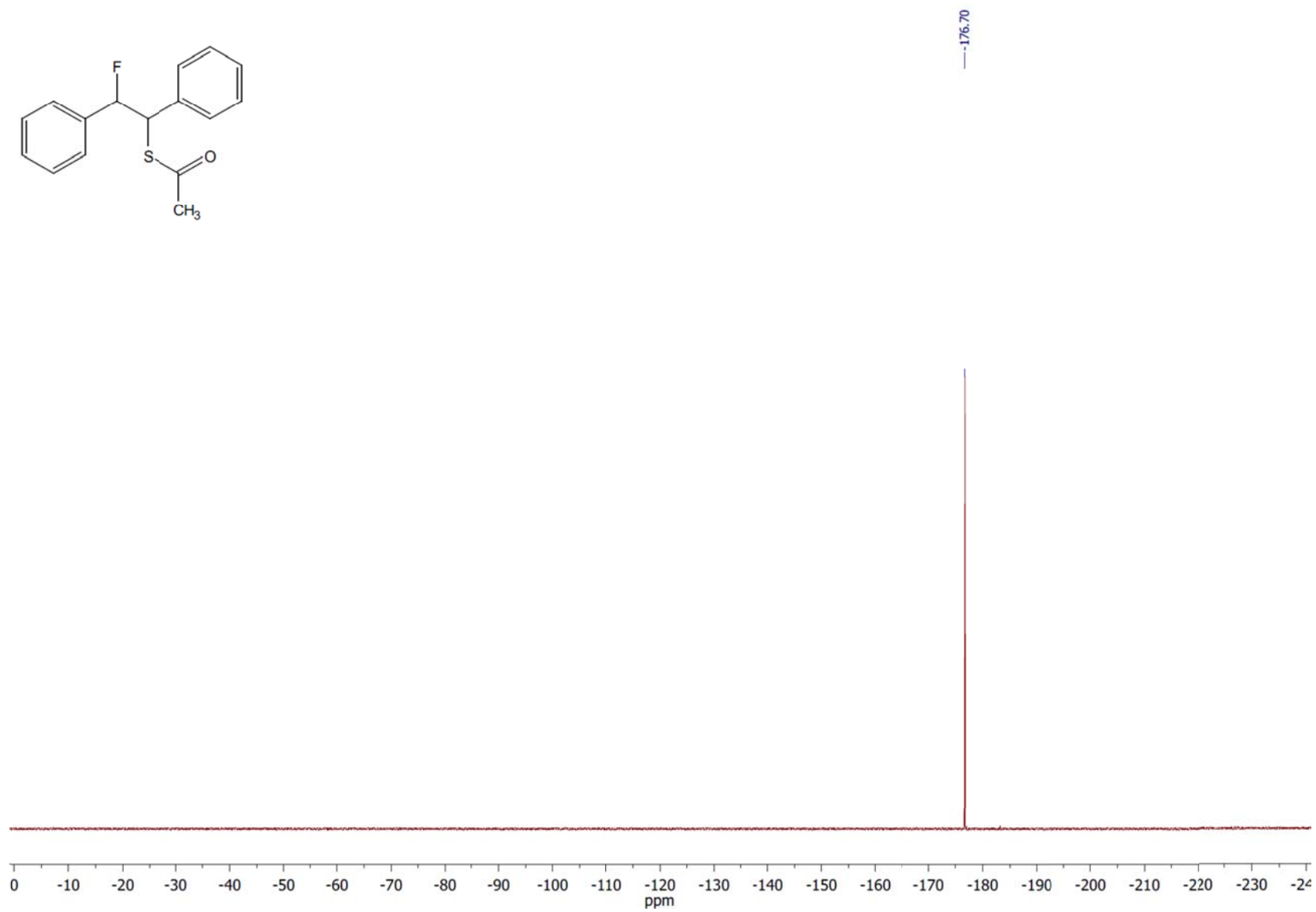
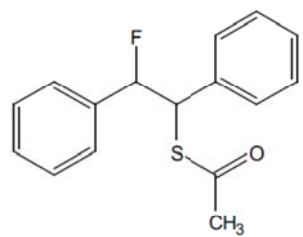
95.94
94.13

53.47
53.24

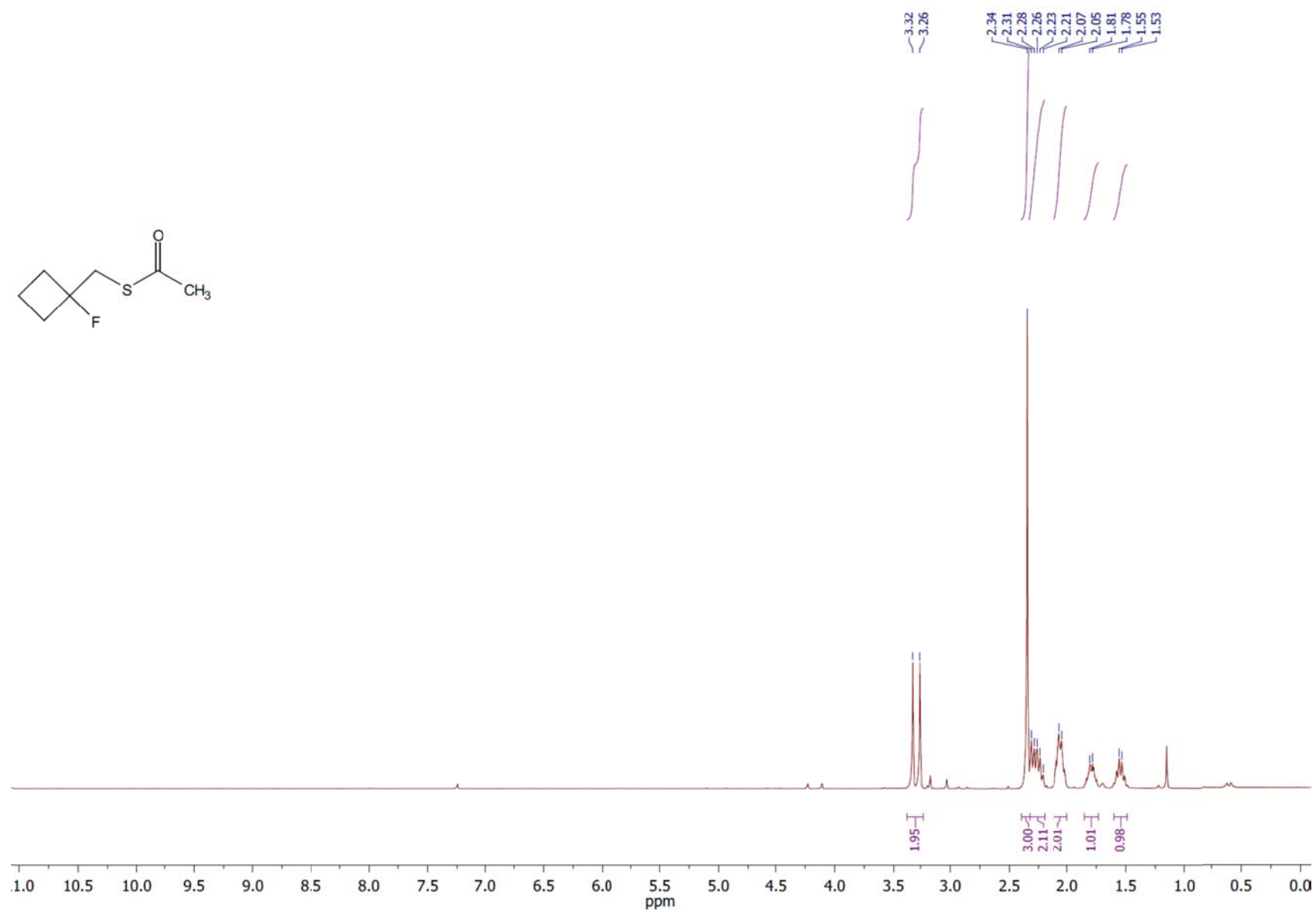
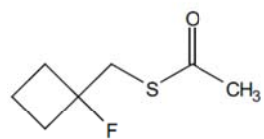
30.42



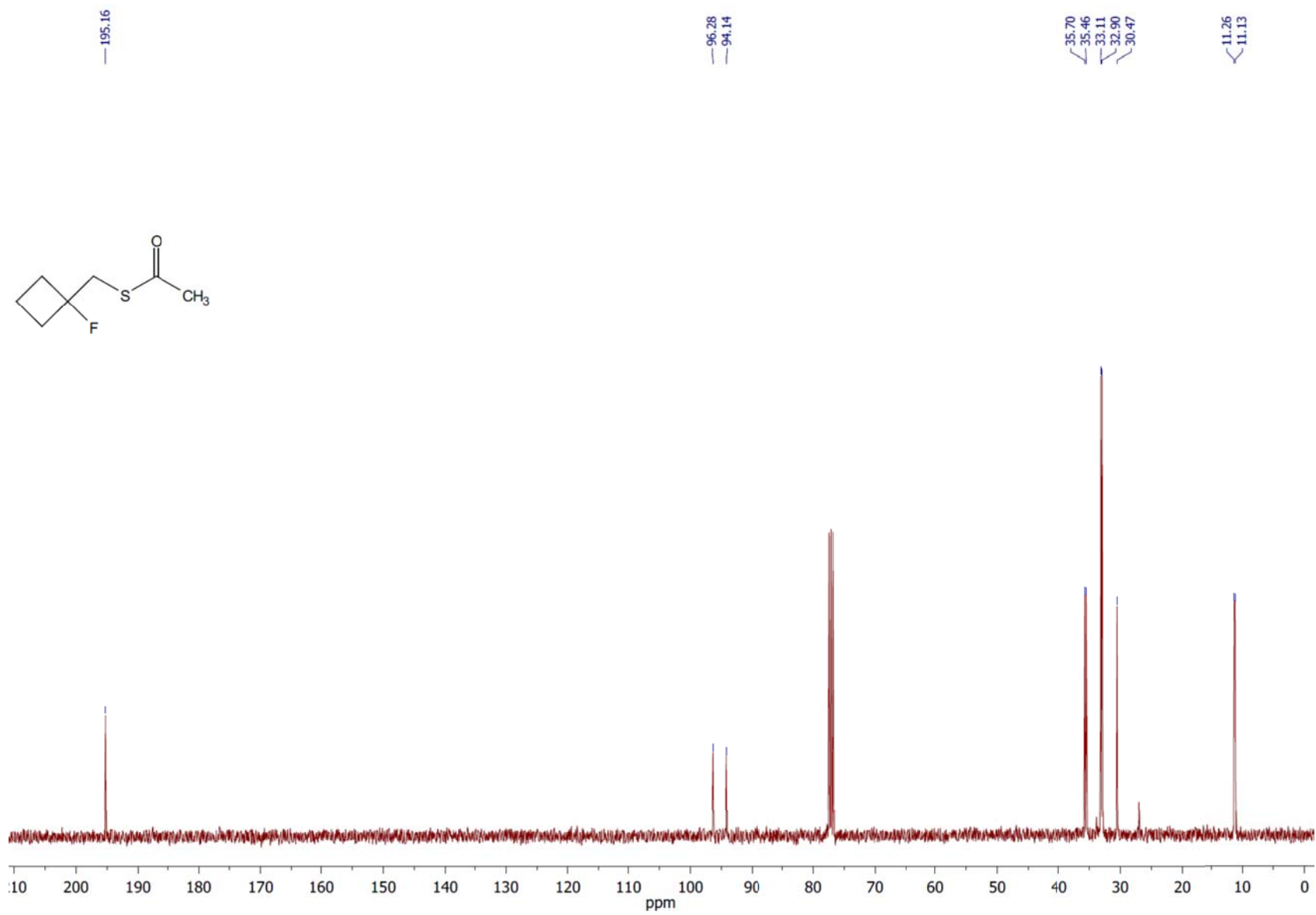
^{19}F NMR spectrum of the compound **3f**.



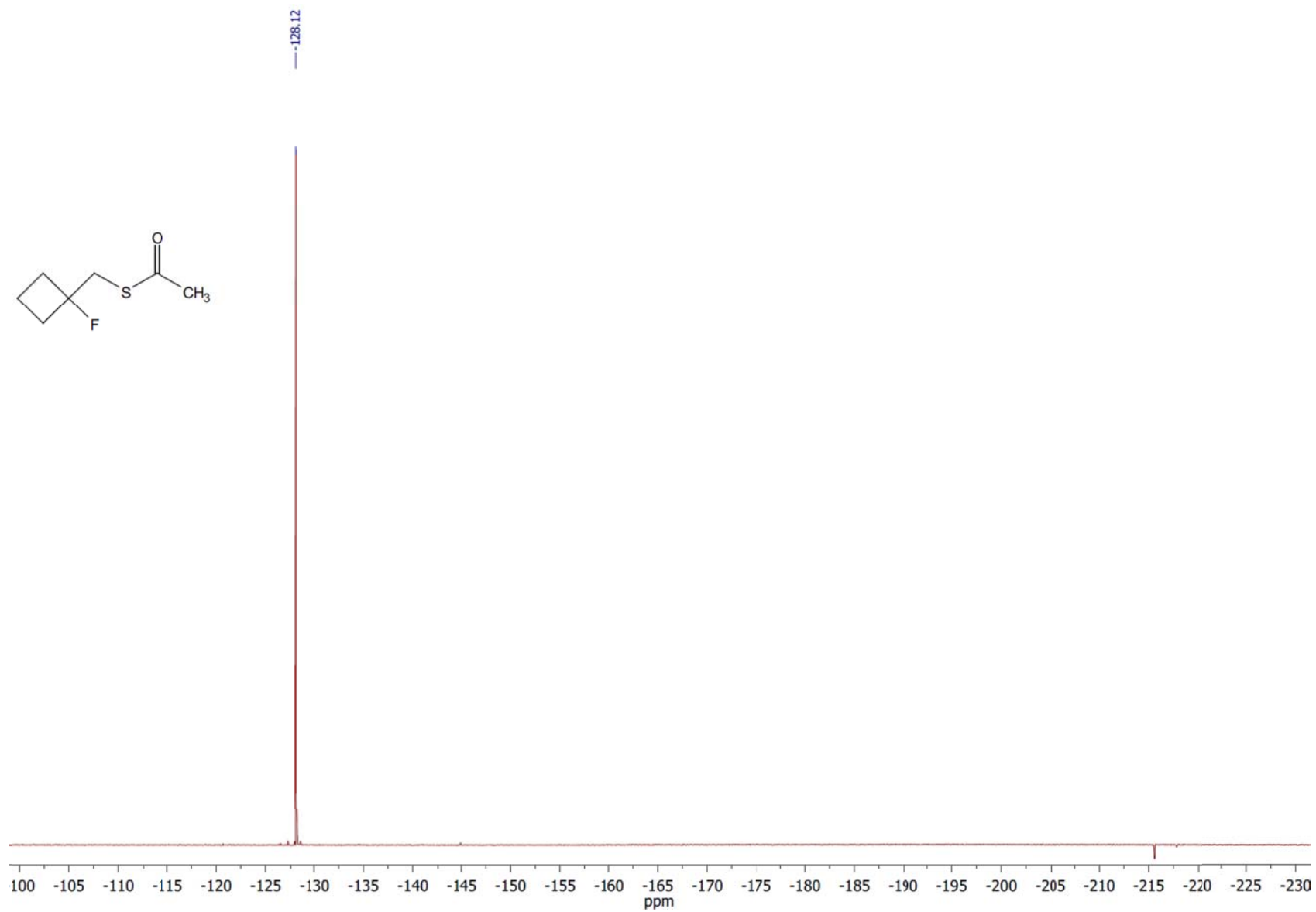
^1H NMR spectrum of the compound **3h**.



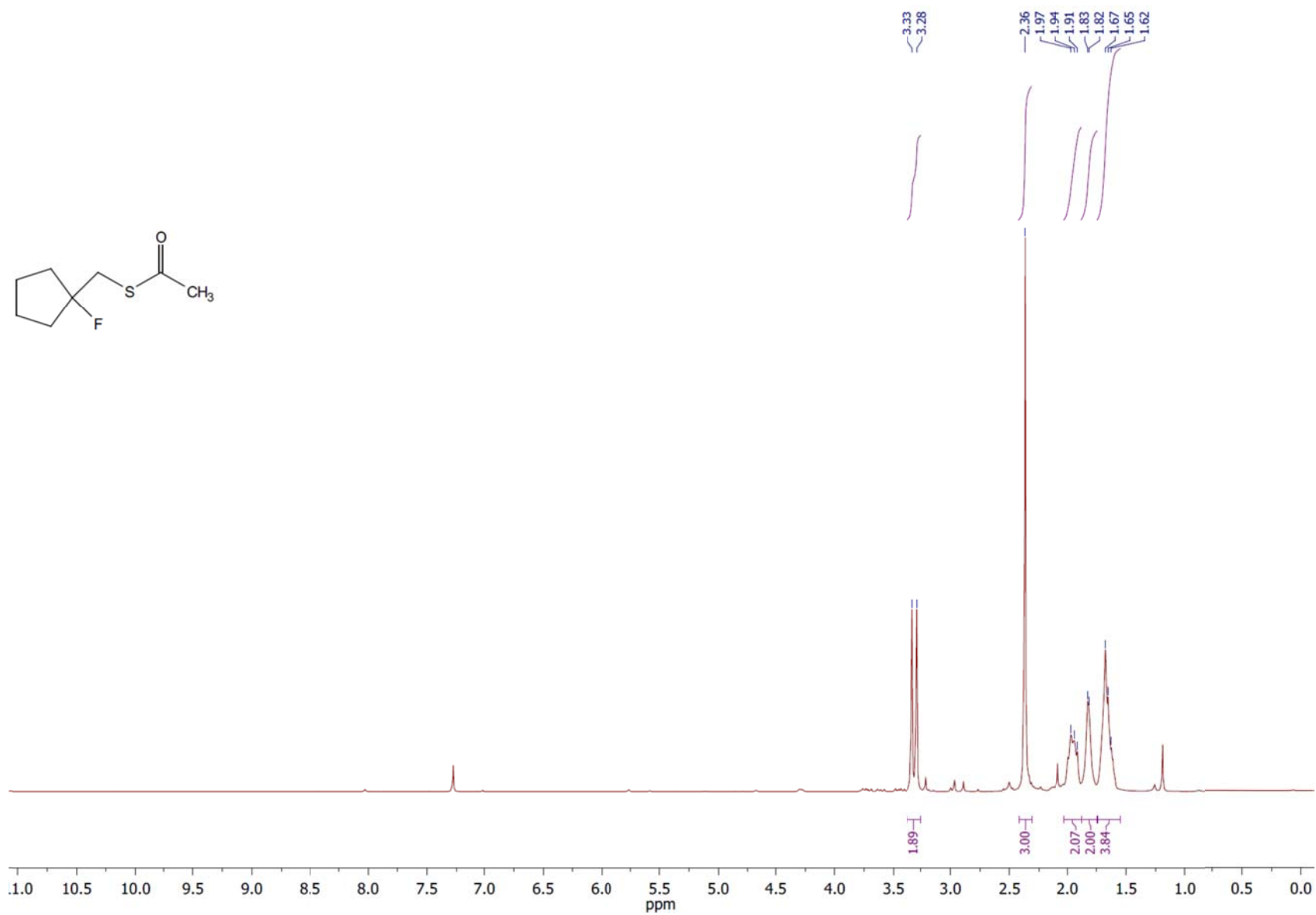
^{13}C NMR spectrum of the compound **3h**.



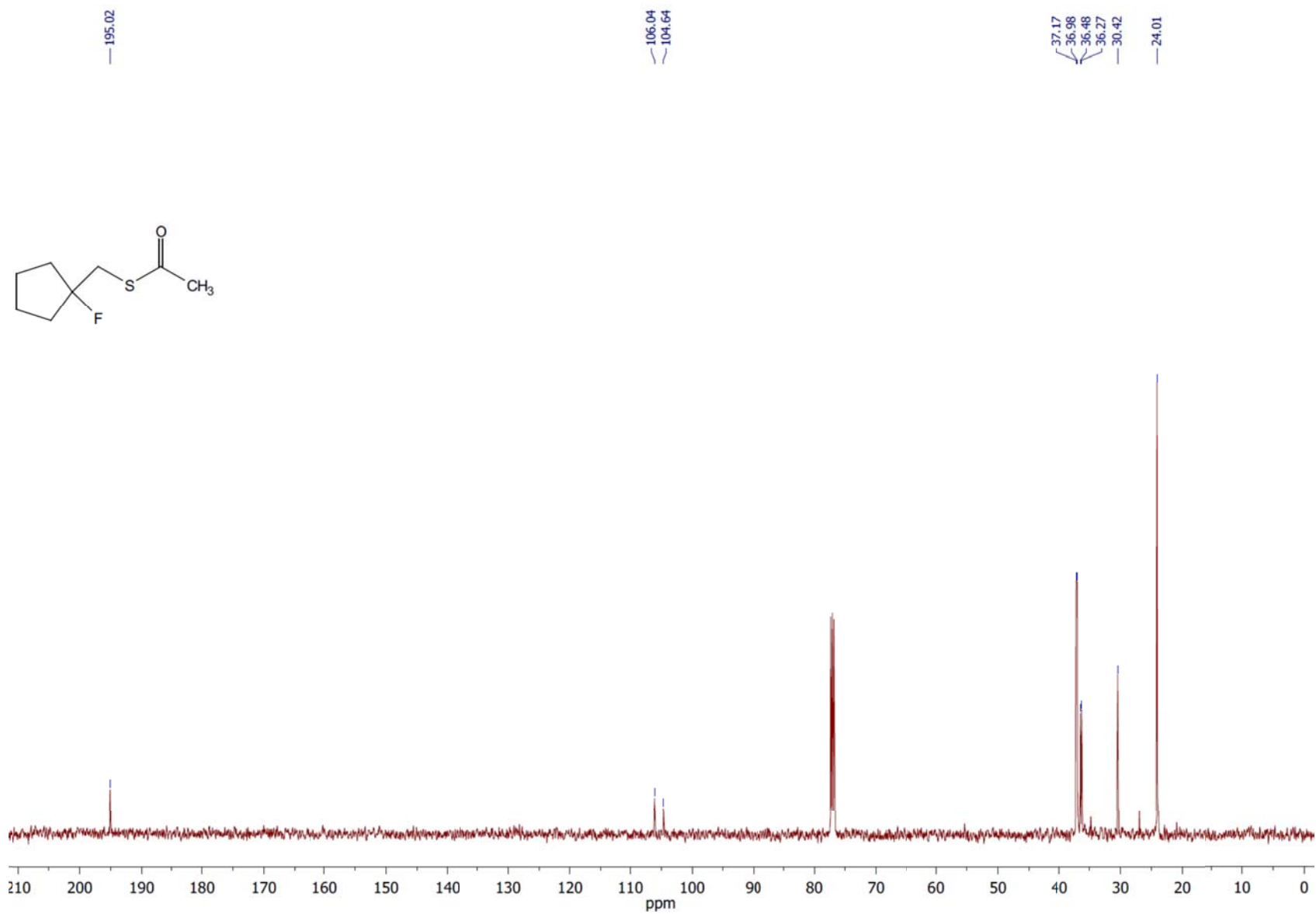
^{19}F NMR spectrum of the compound **3h**.



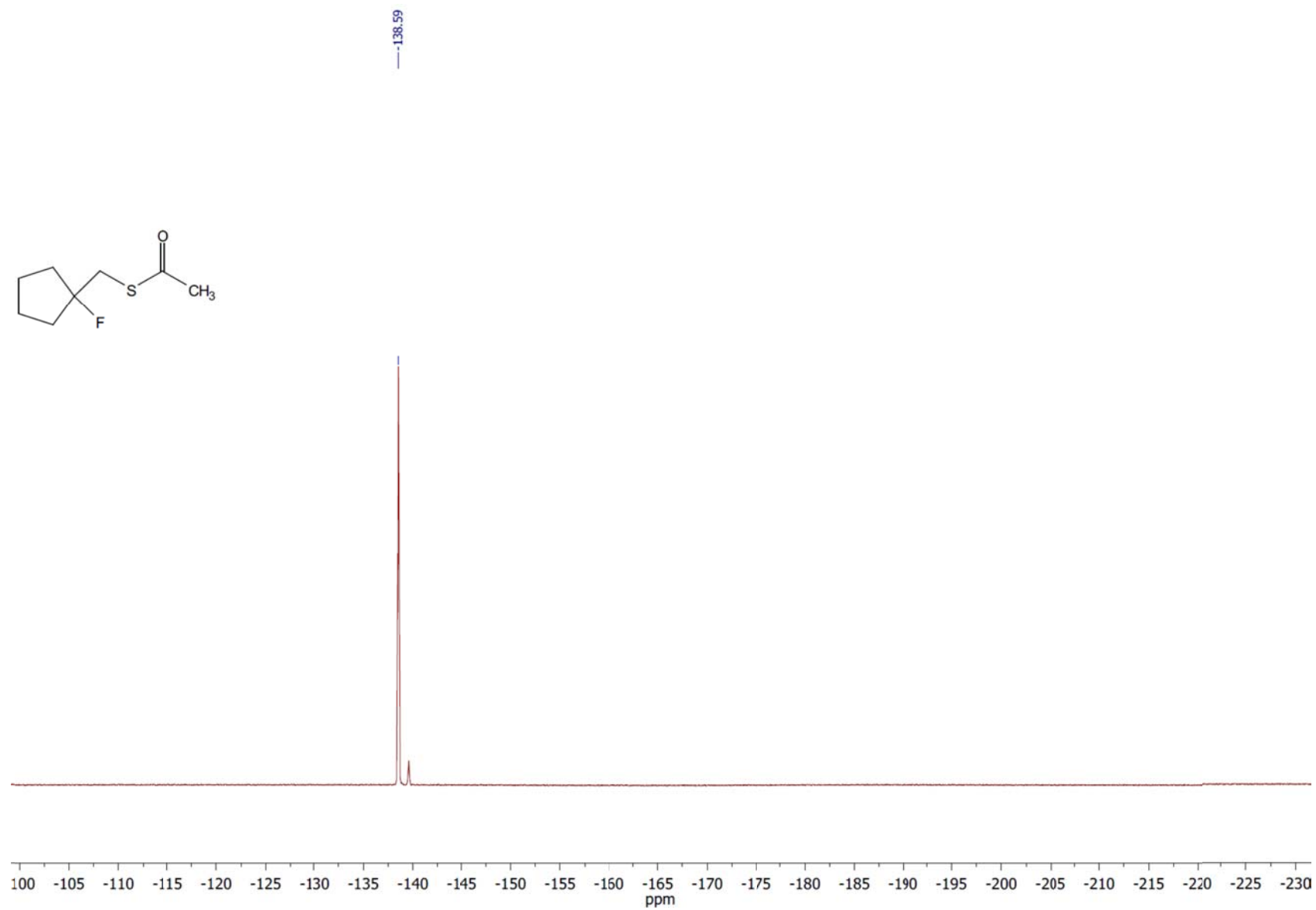
^1H NMR spectrum of the compound **3i**.



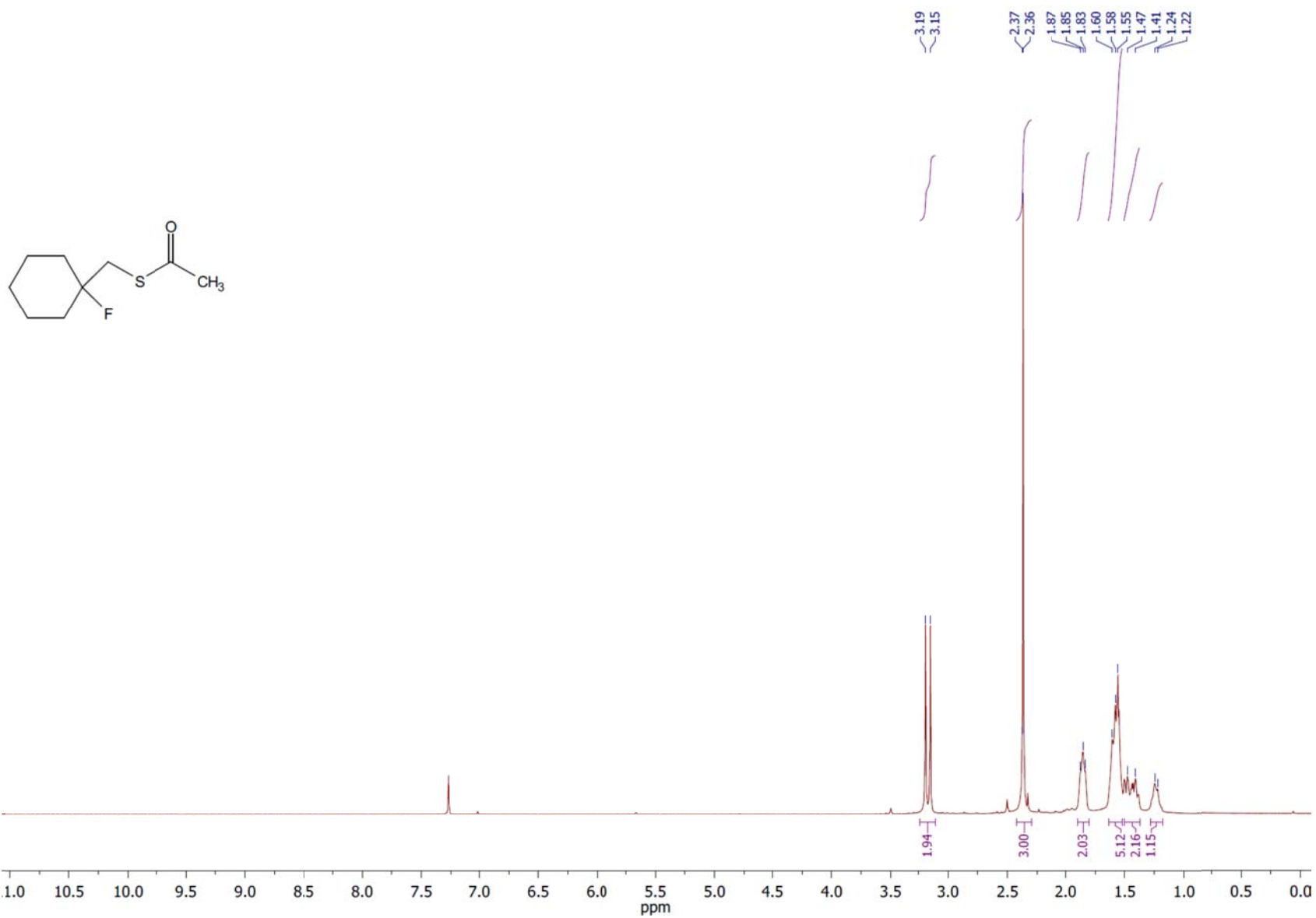
^{13}C NMR spectrum of the compound **3i**.



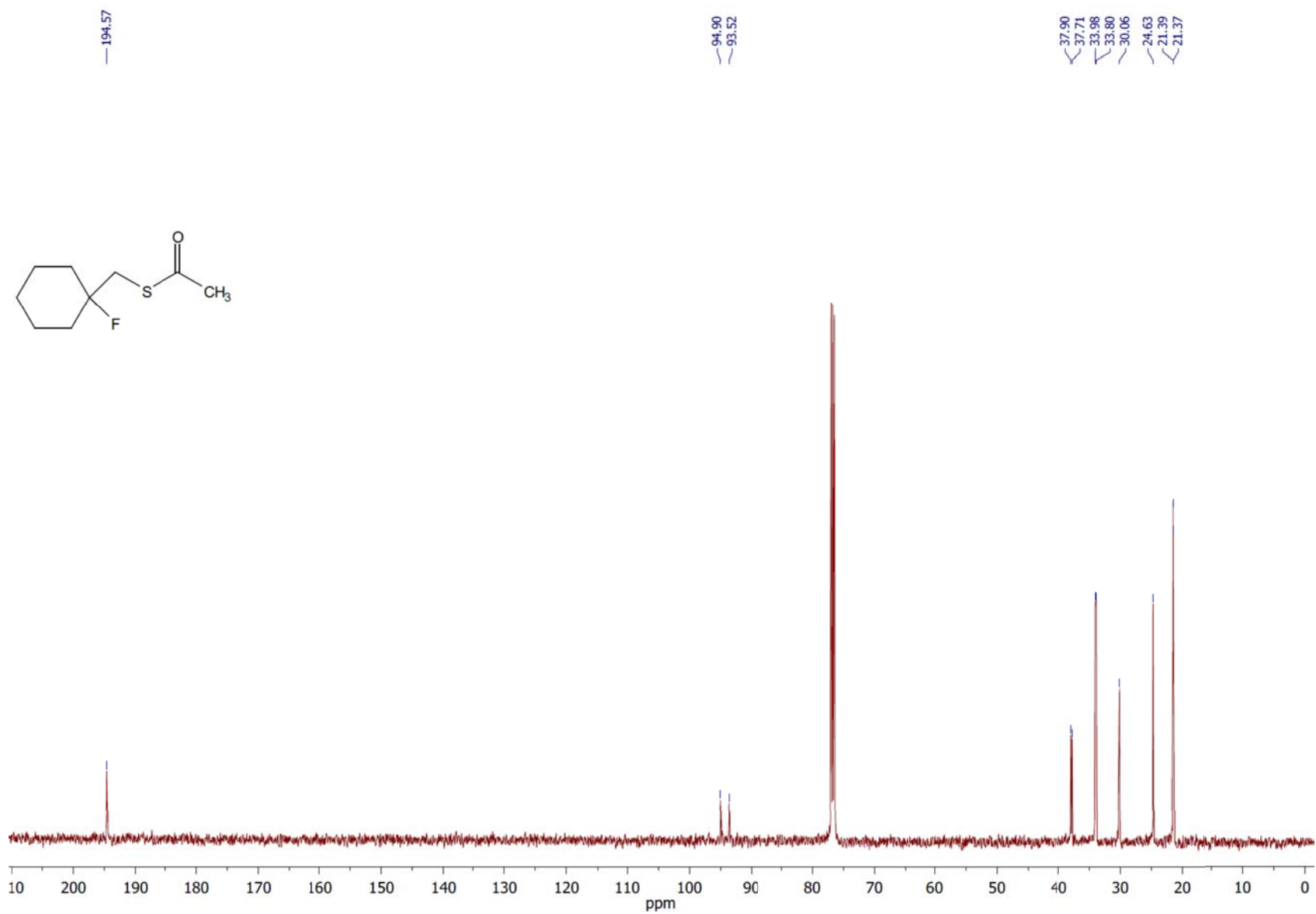
^{19}F NMR spectrum of the compound **3i**.



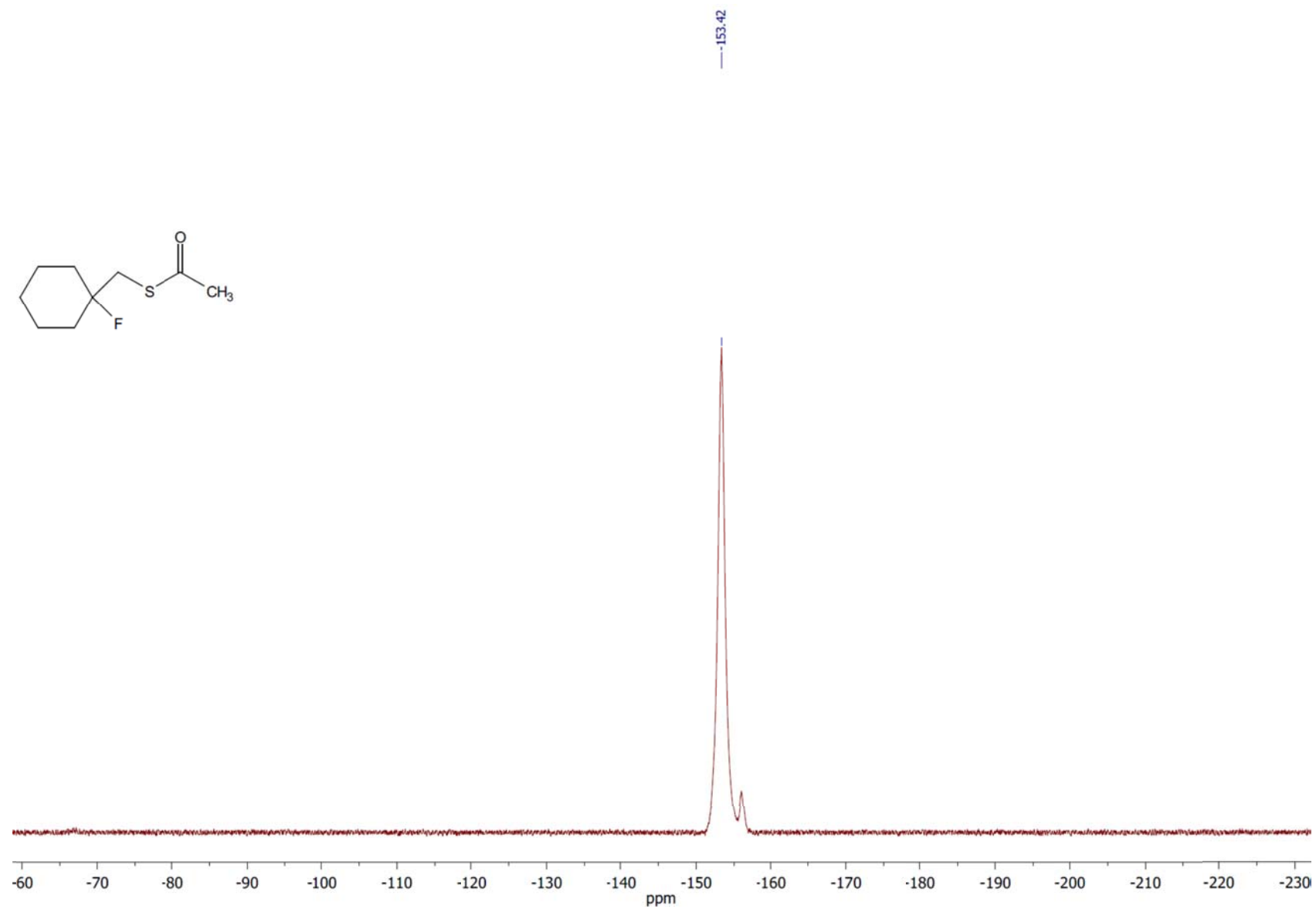
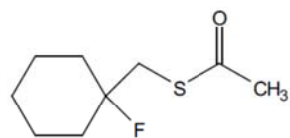
^1H NMR spectrum of the compound **3j**.



^{13}C NMR spectrum of the compound **3j**.

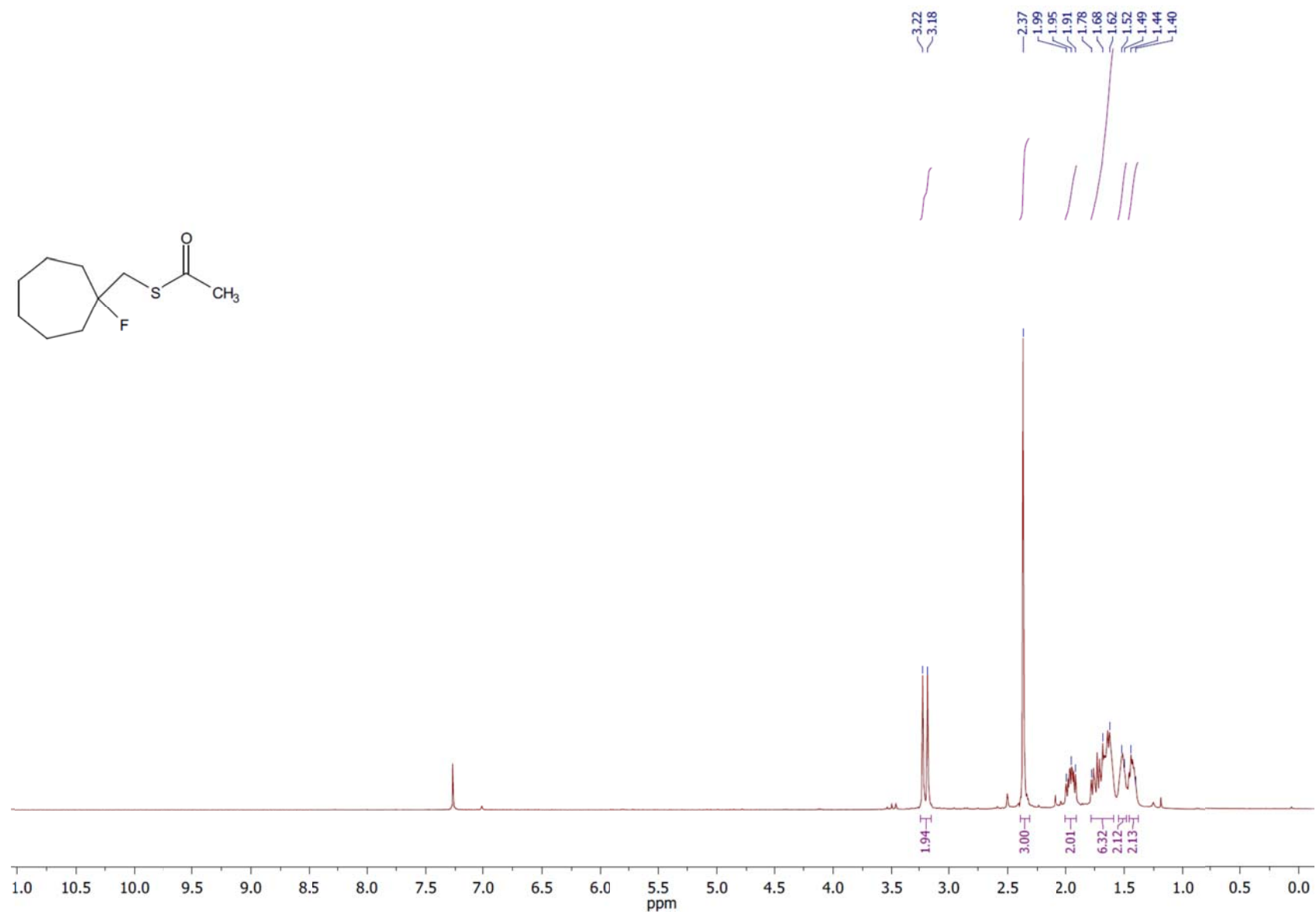
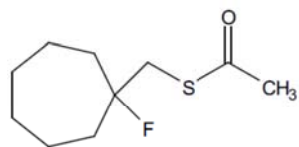


^{19}F NMR spectrum of the compound **3j**.

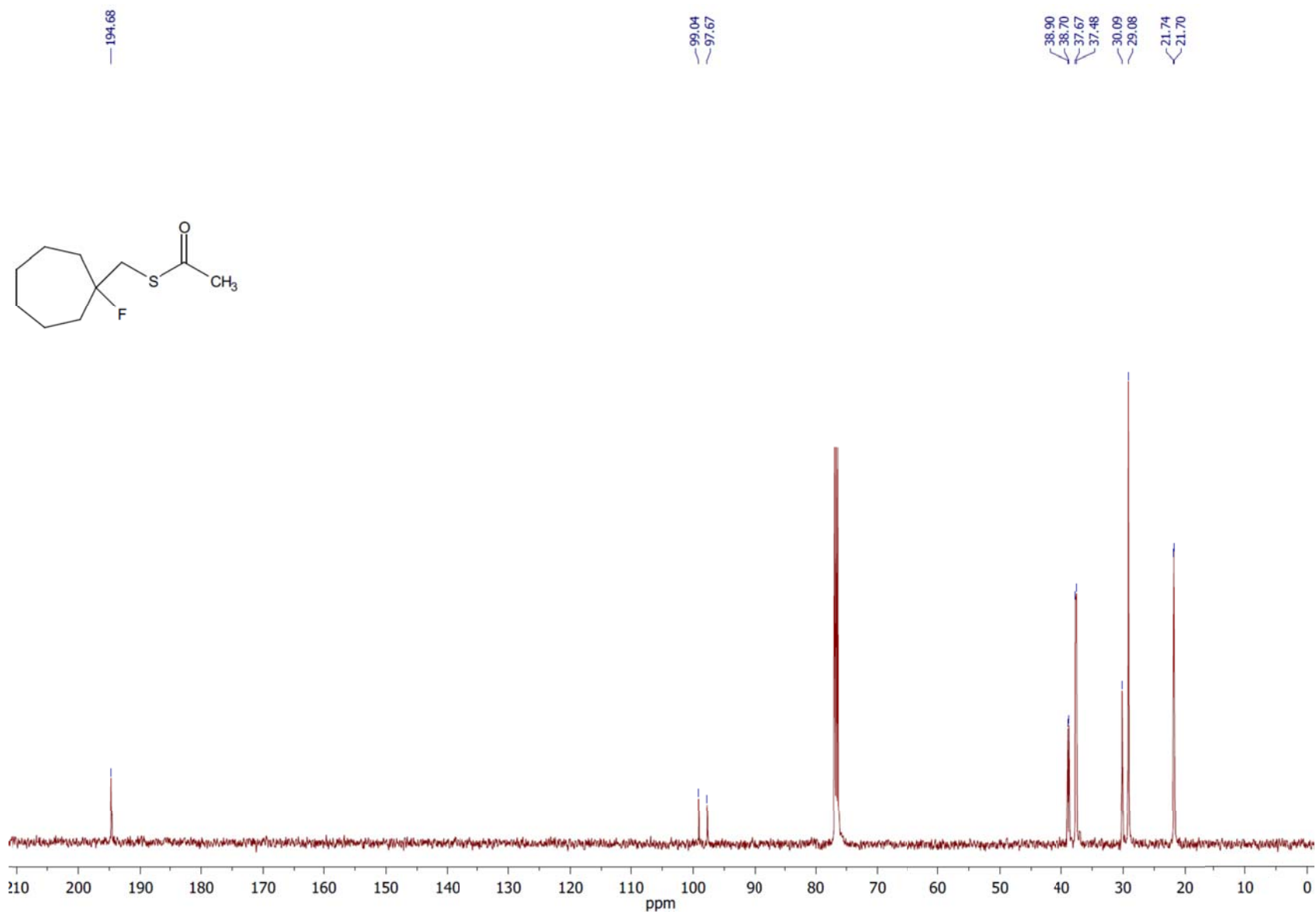


S65

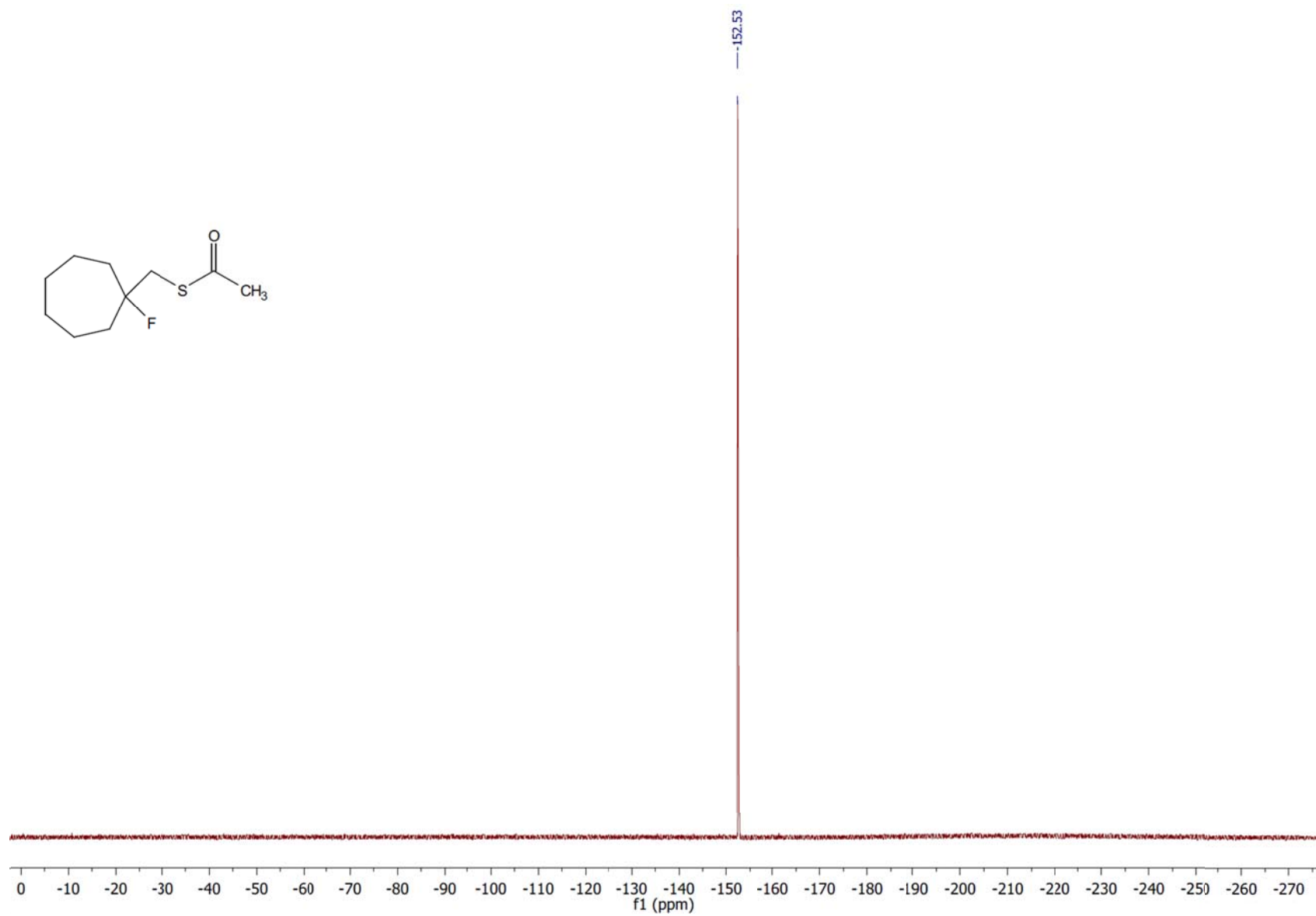
^1H NMR spectrum of the compound **3k**.



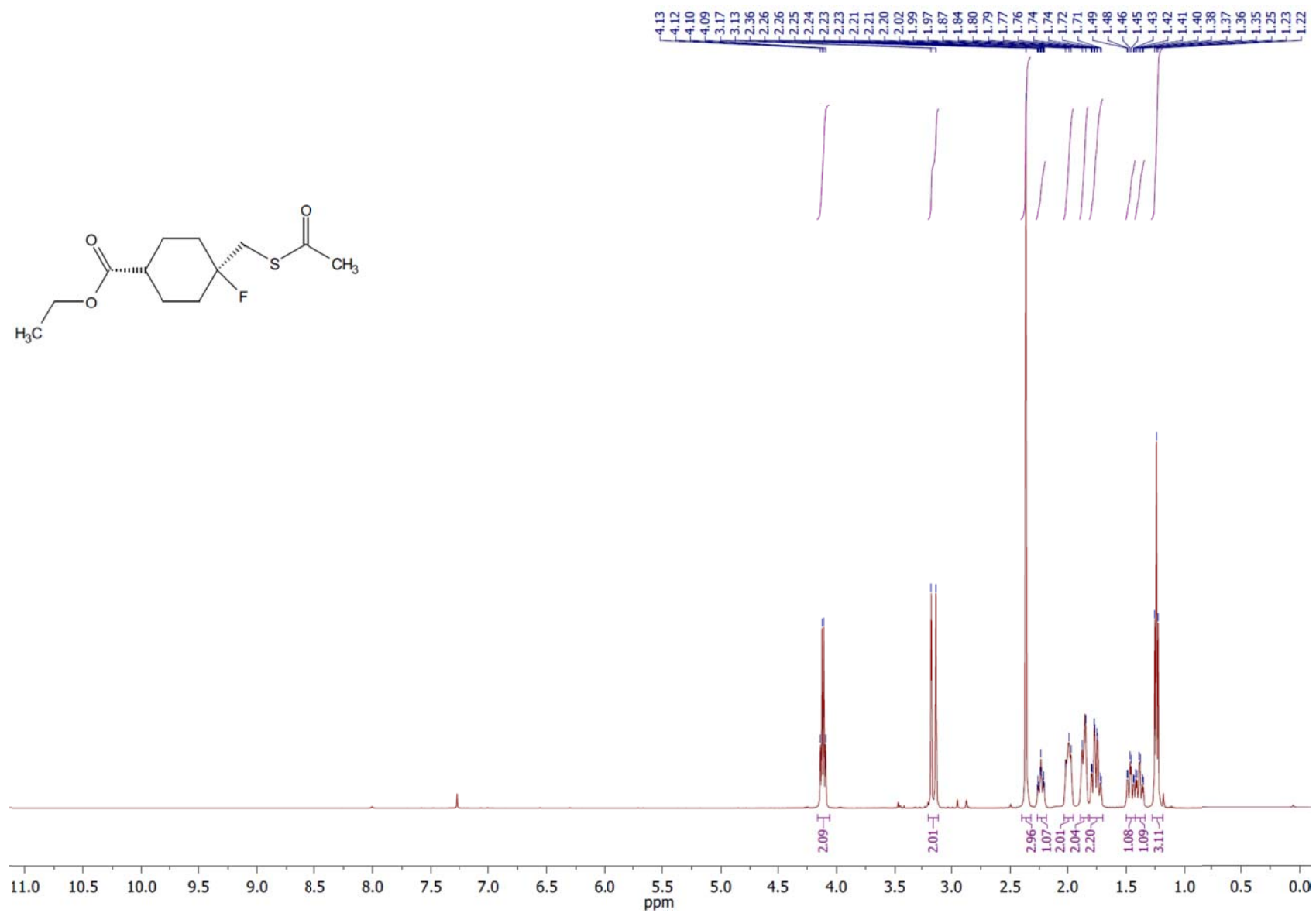
^{13}C NMR spectrum of the compound **3k**.



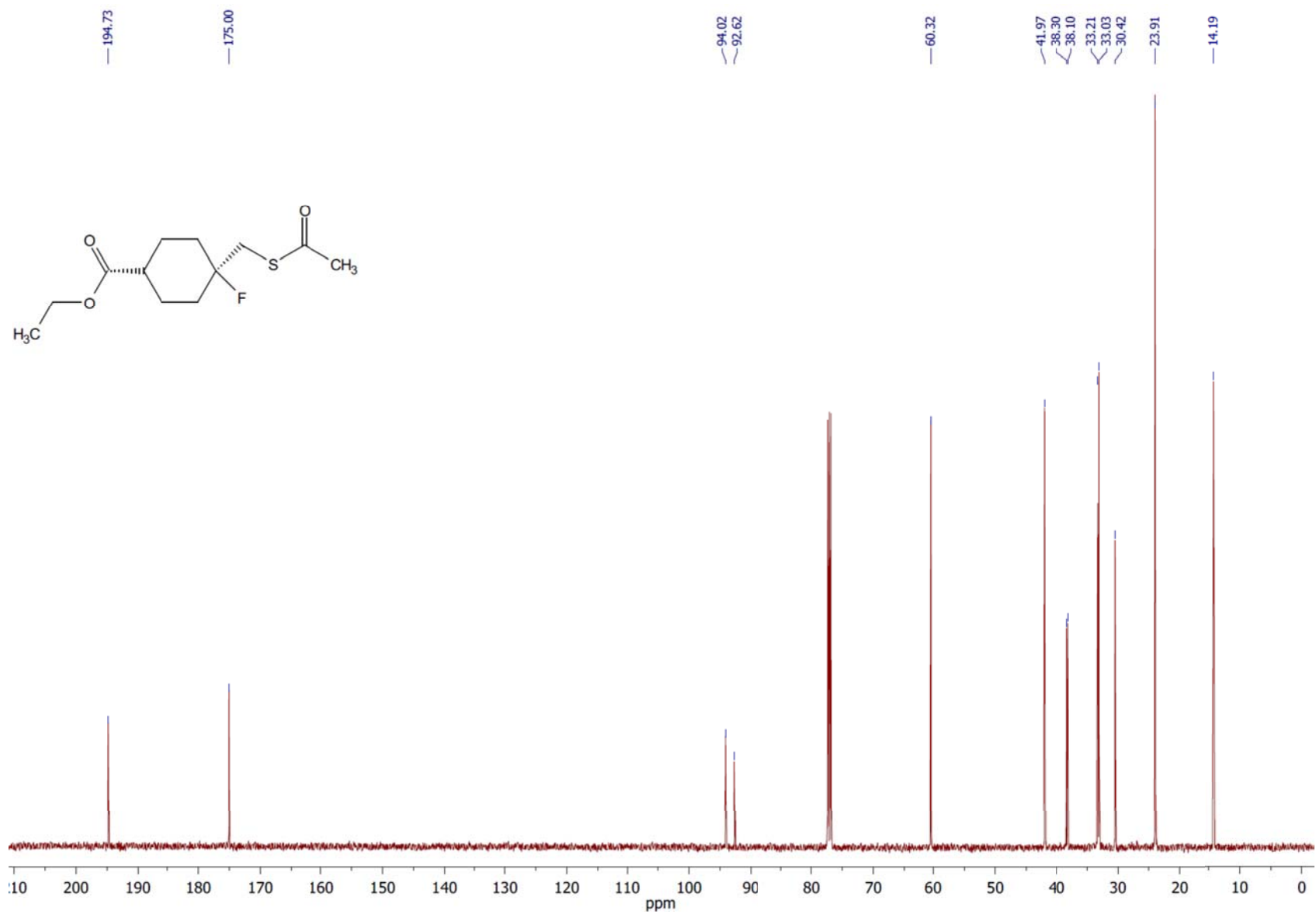
^{19}F NMR spectrum of the compound **3k**.



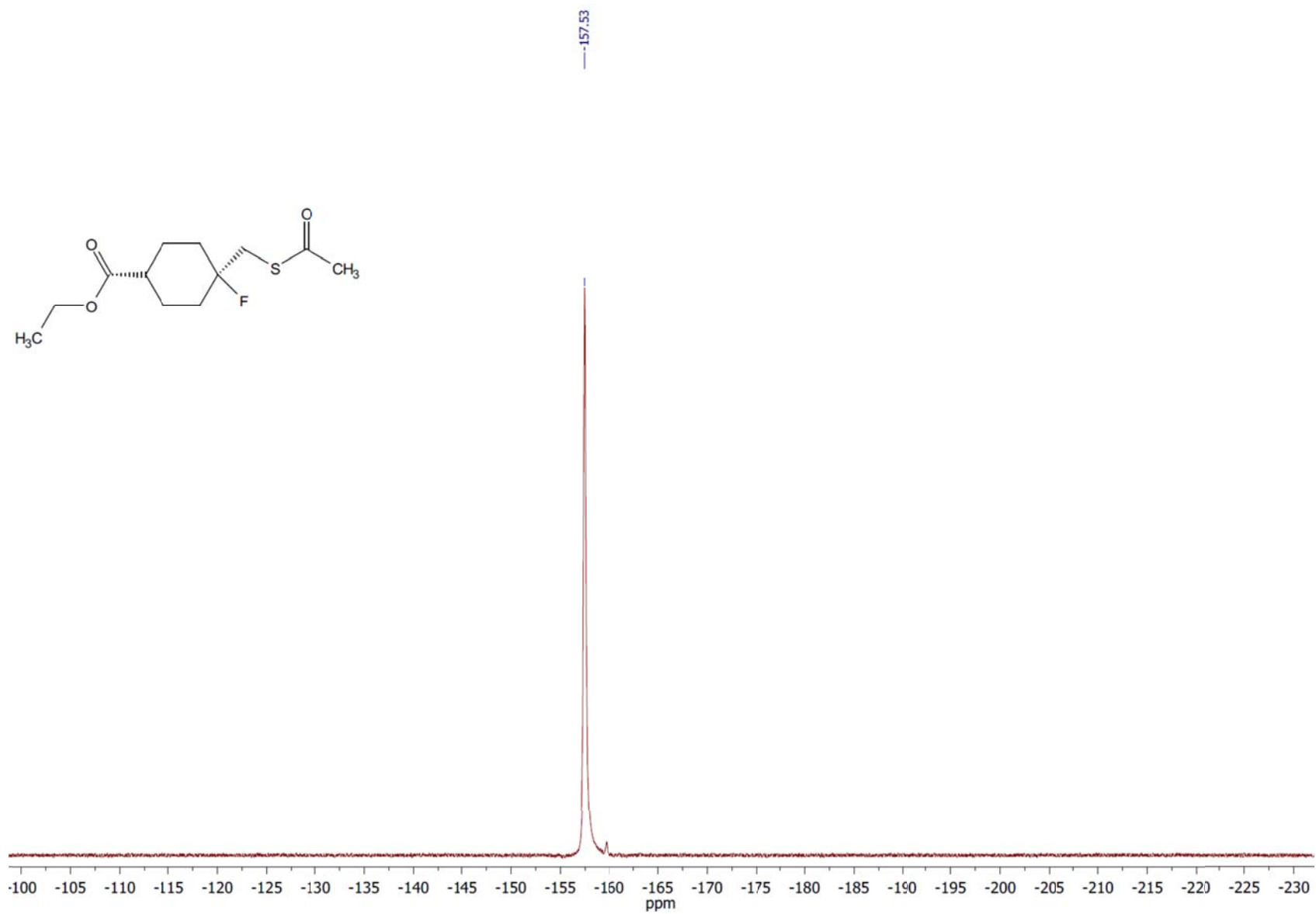
¹H NMR spectrum of the compound **31**.



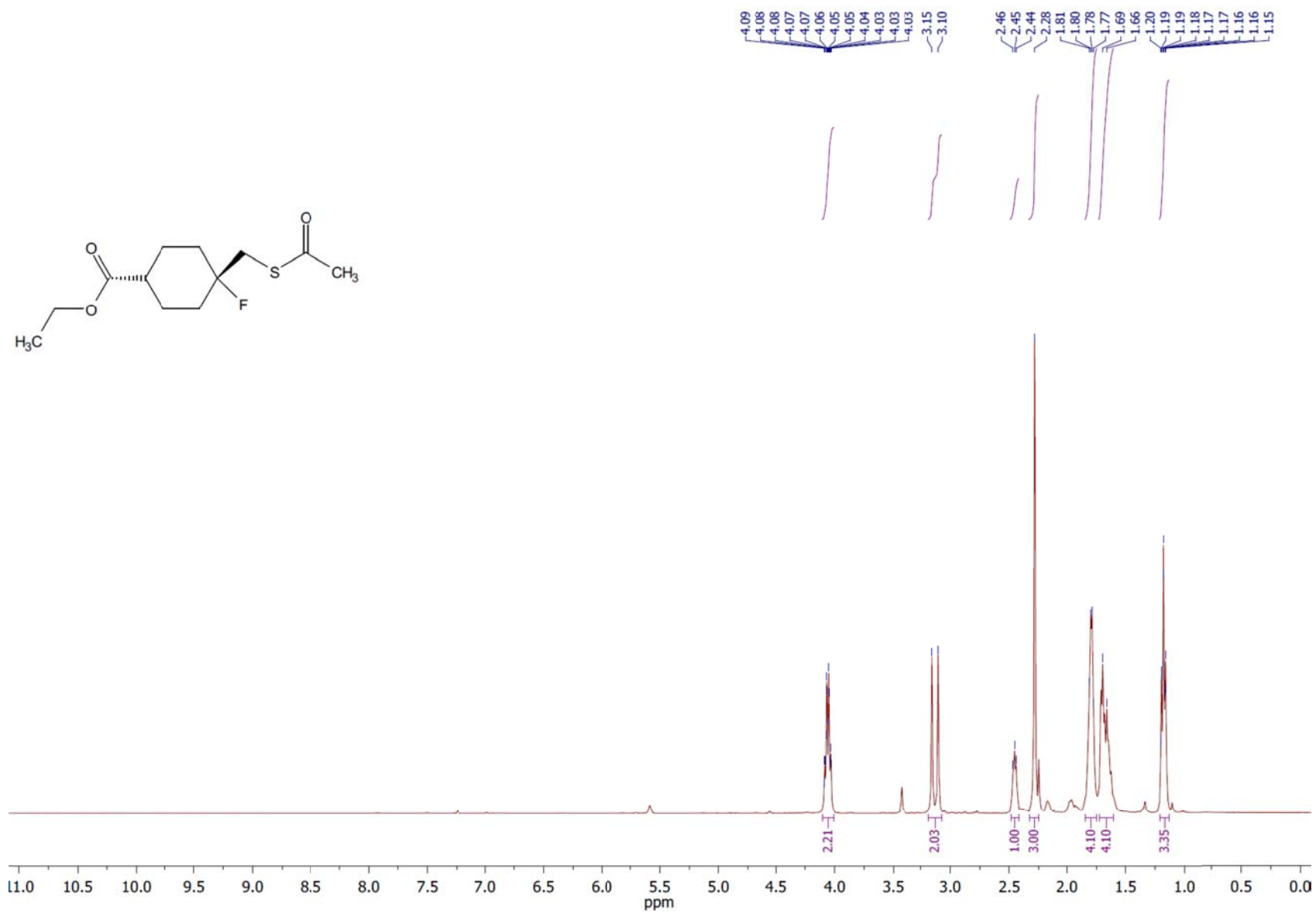
¹³C NMR spectrum of the compound **31**.



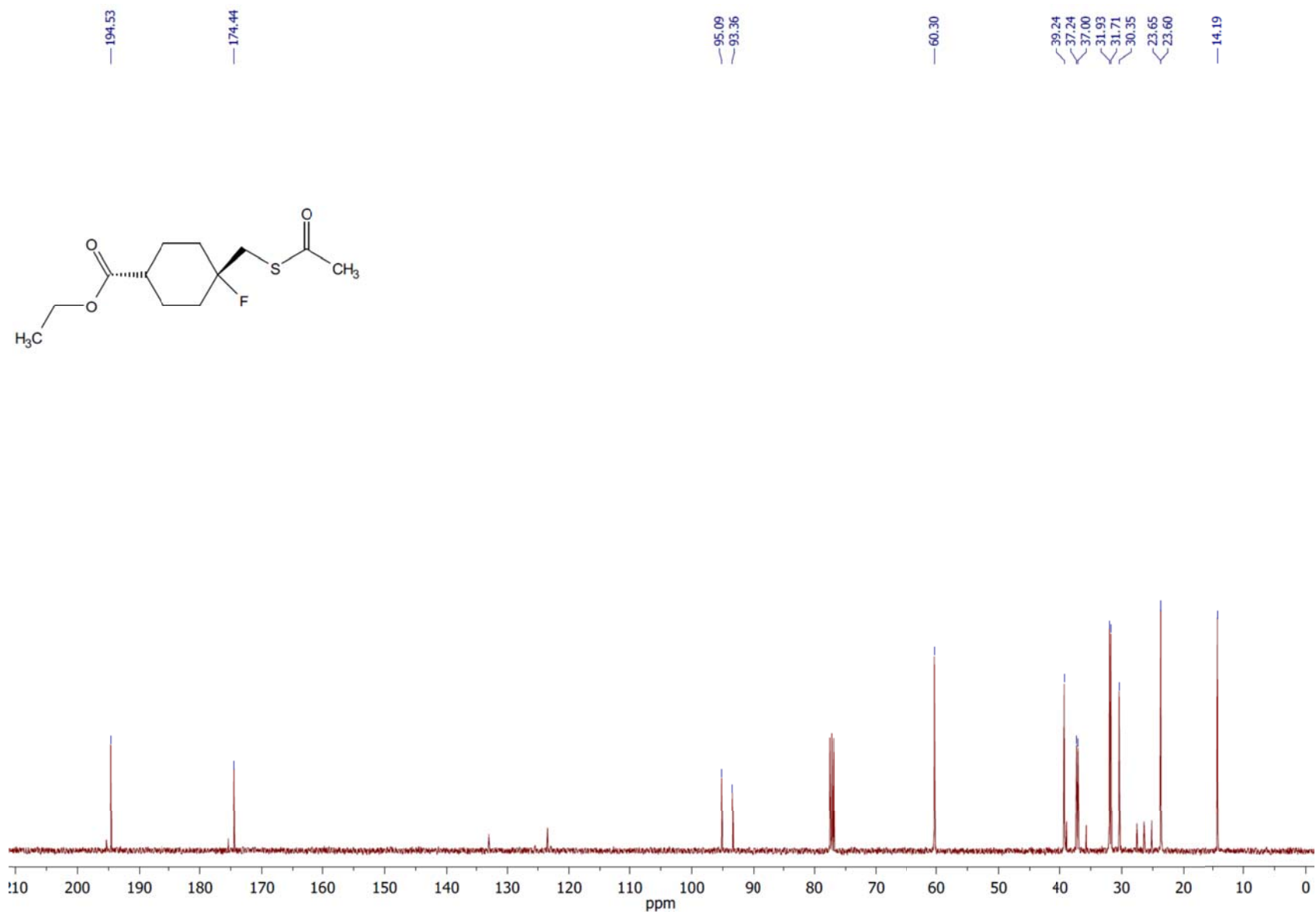
^{19}F NMR spectrum of the compound **31**.



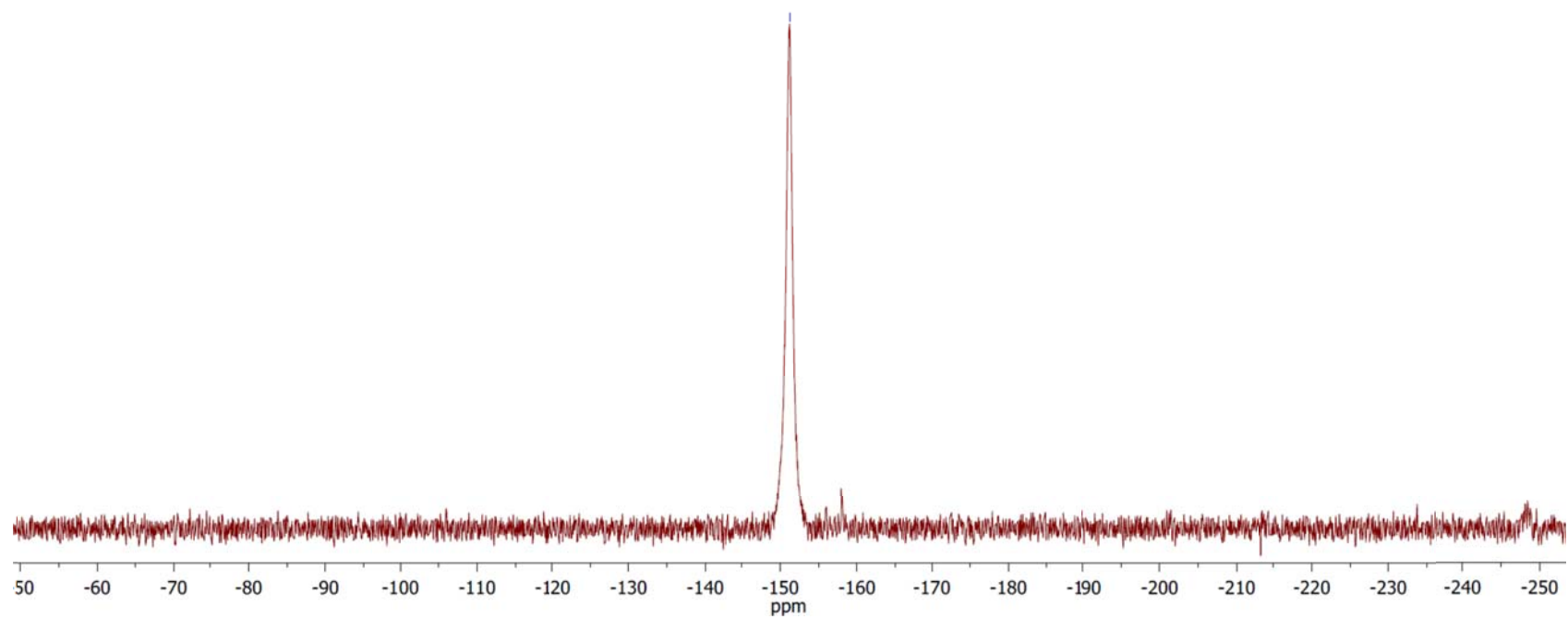
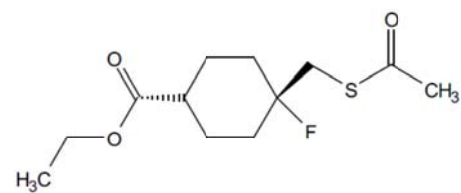
^1H NMR spectrum of the compound **3m**.



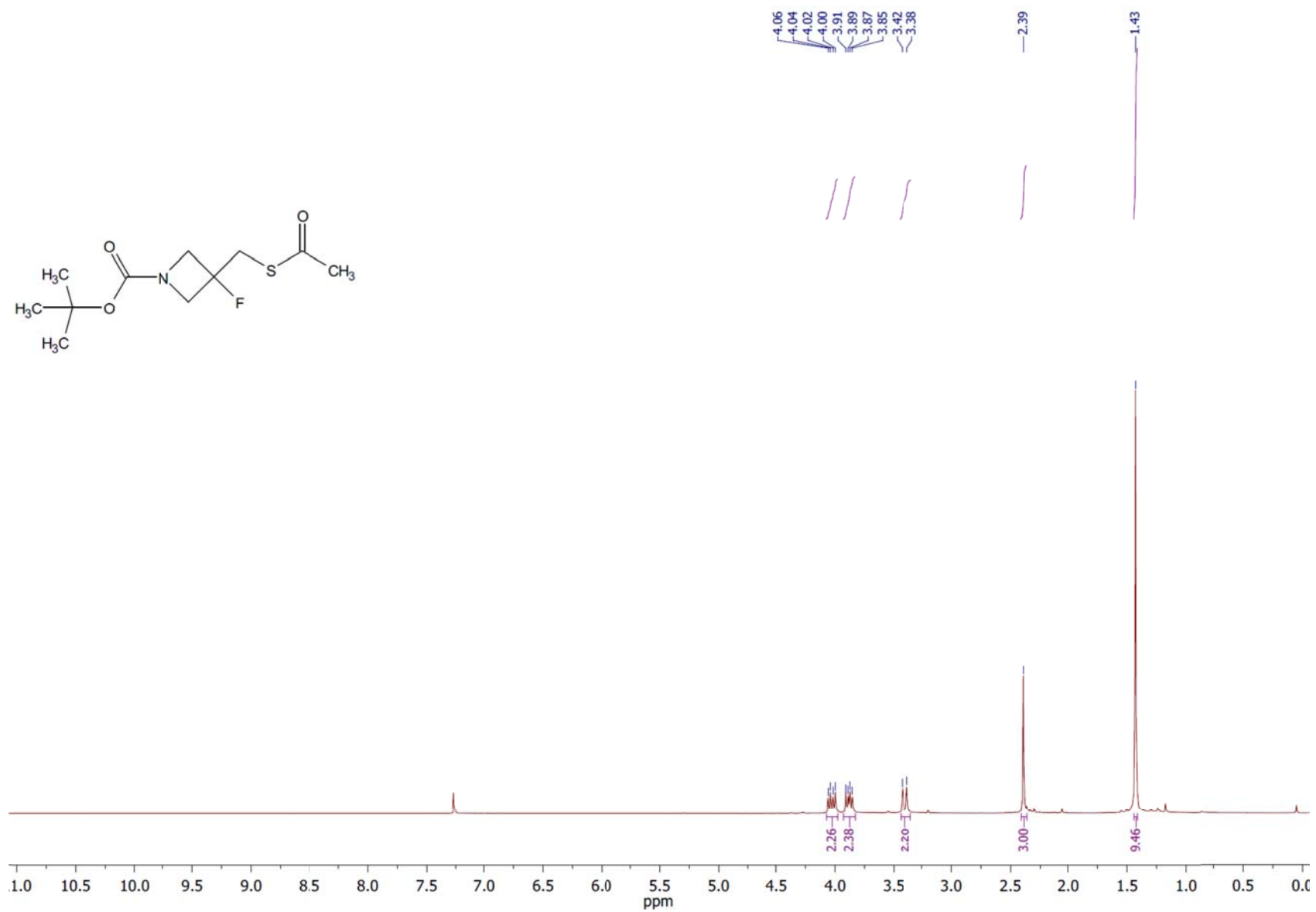
¹³C NMR spectrum of the compound **3m**.



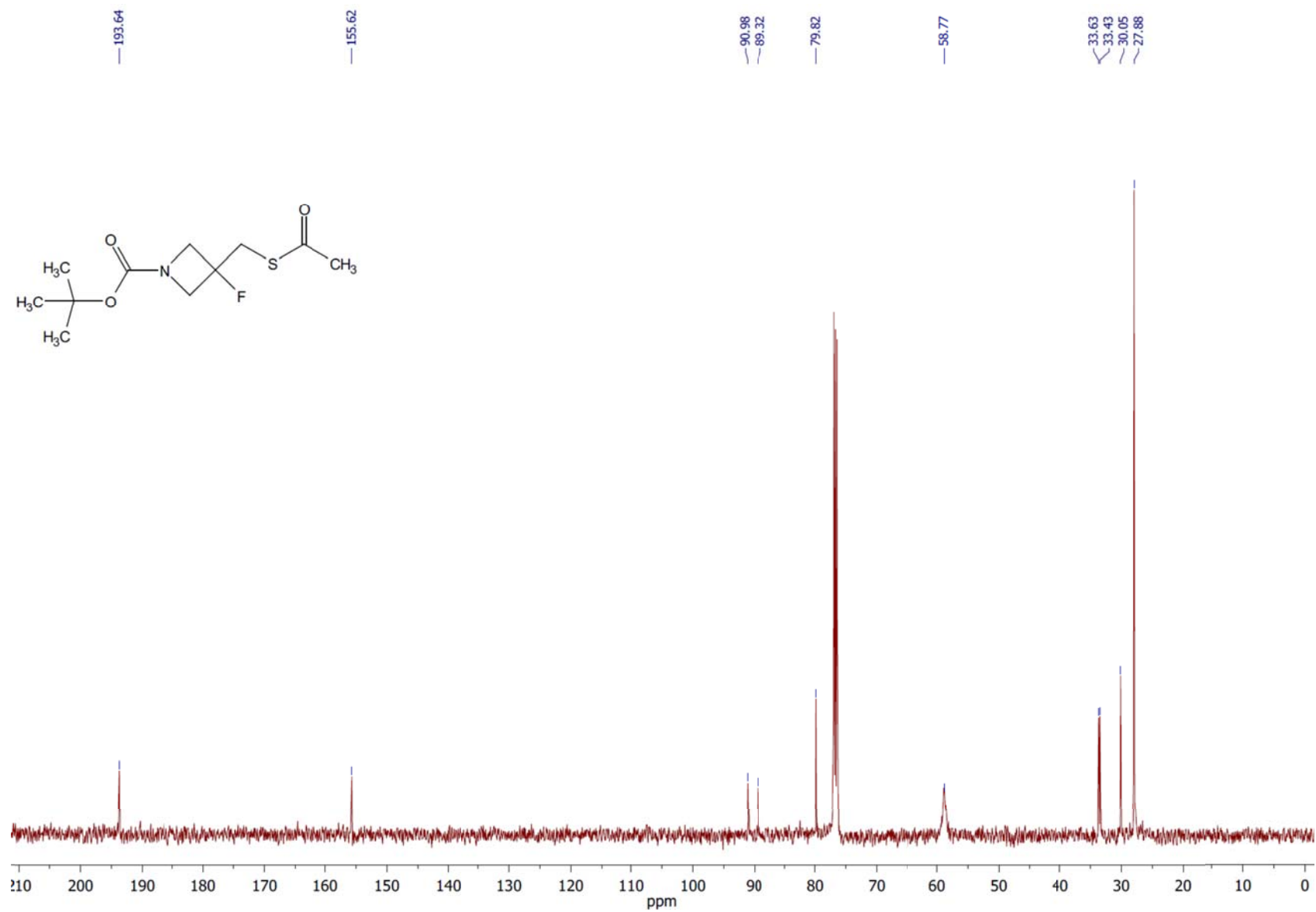
^{19}F NMR spectrum of the compound **3m**.



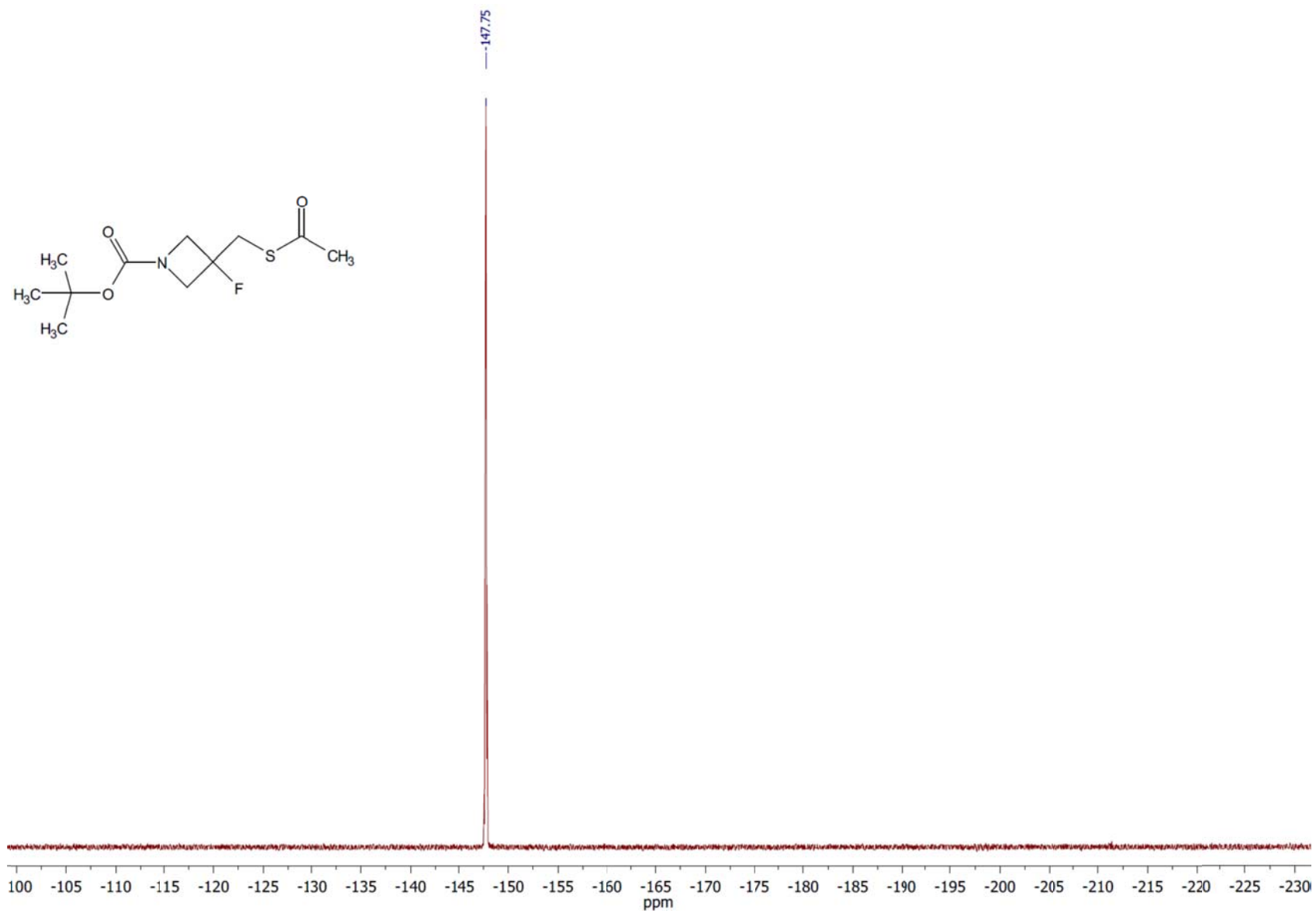
^1H NMR spectrum of the compound **3n**.



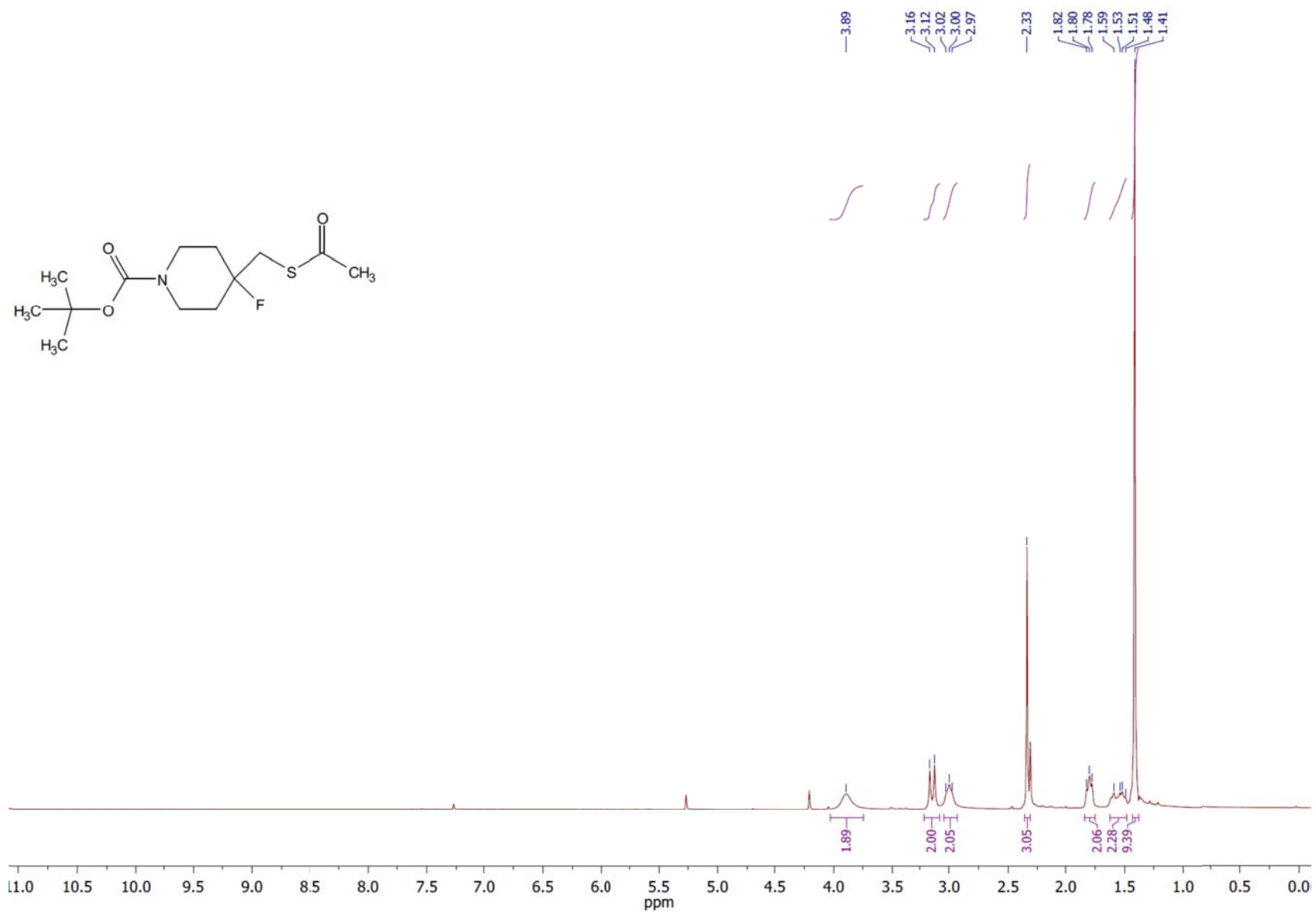
^{13}C NMR spectrum of the compound **3n**.



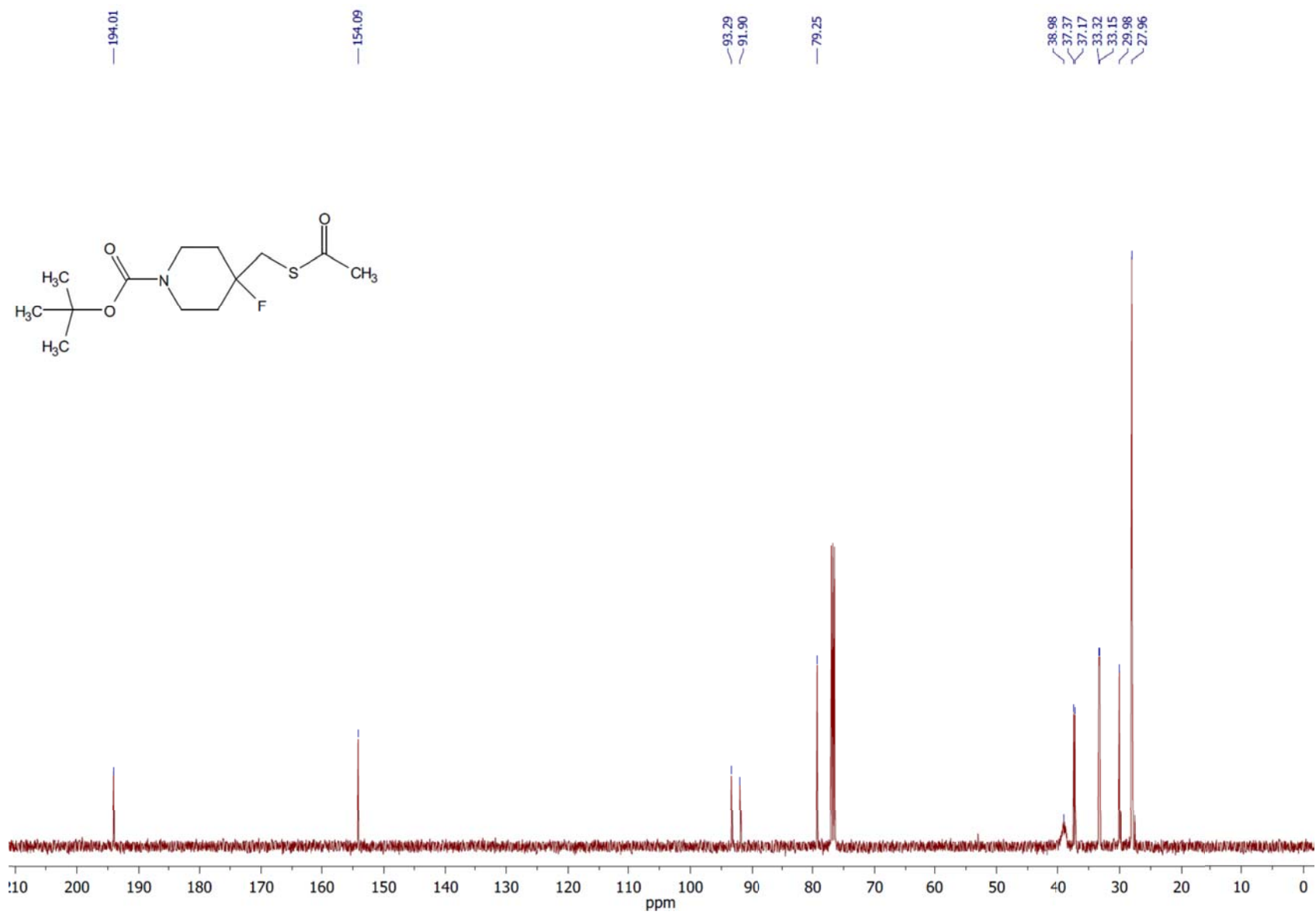
^{19}F NMR spectrum of the compound **3n**.



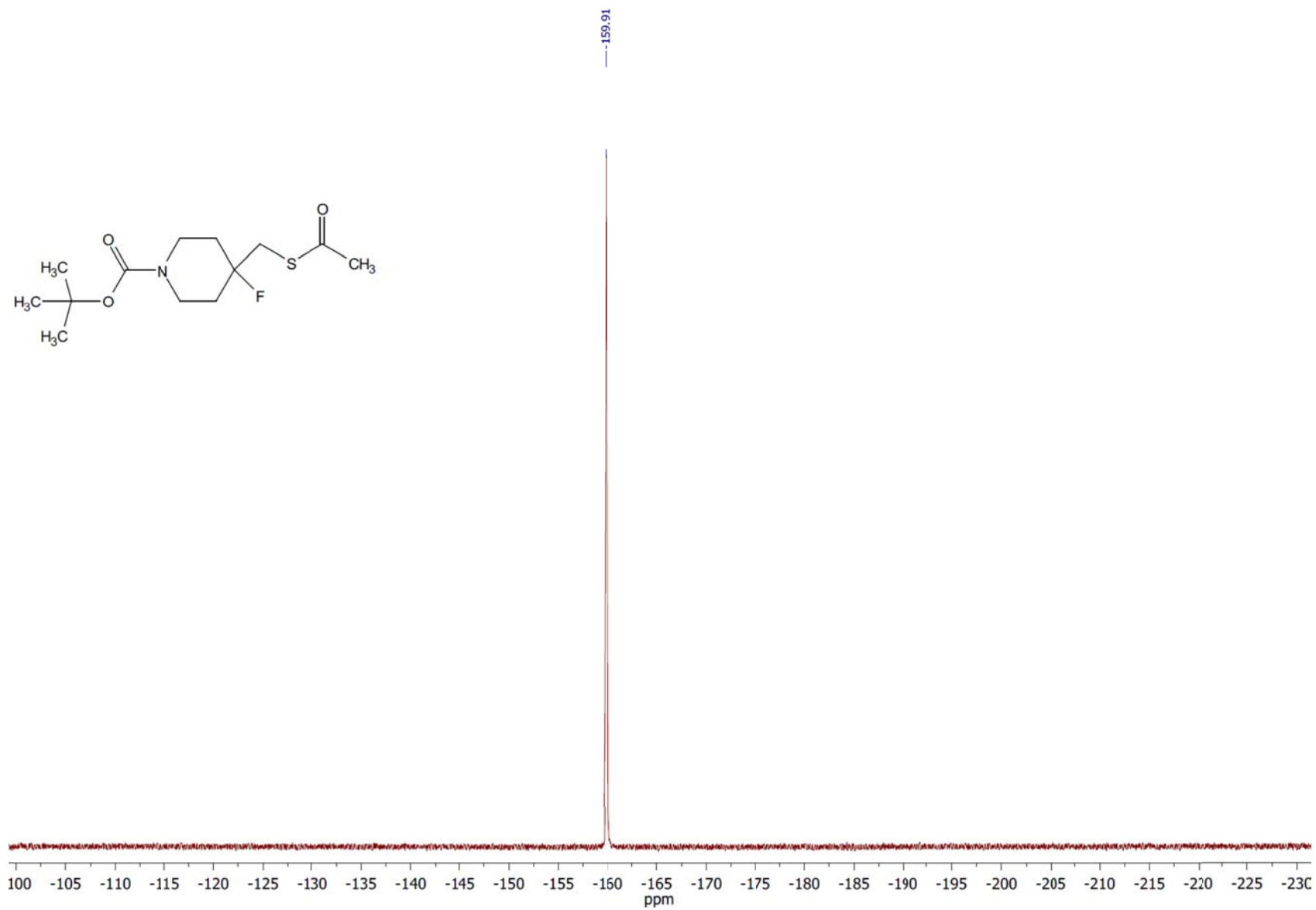
¹H NMR spectrum of the compound **30**.



^{13}C NMR spectrum of the compound **30**.

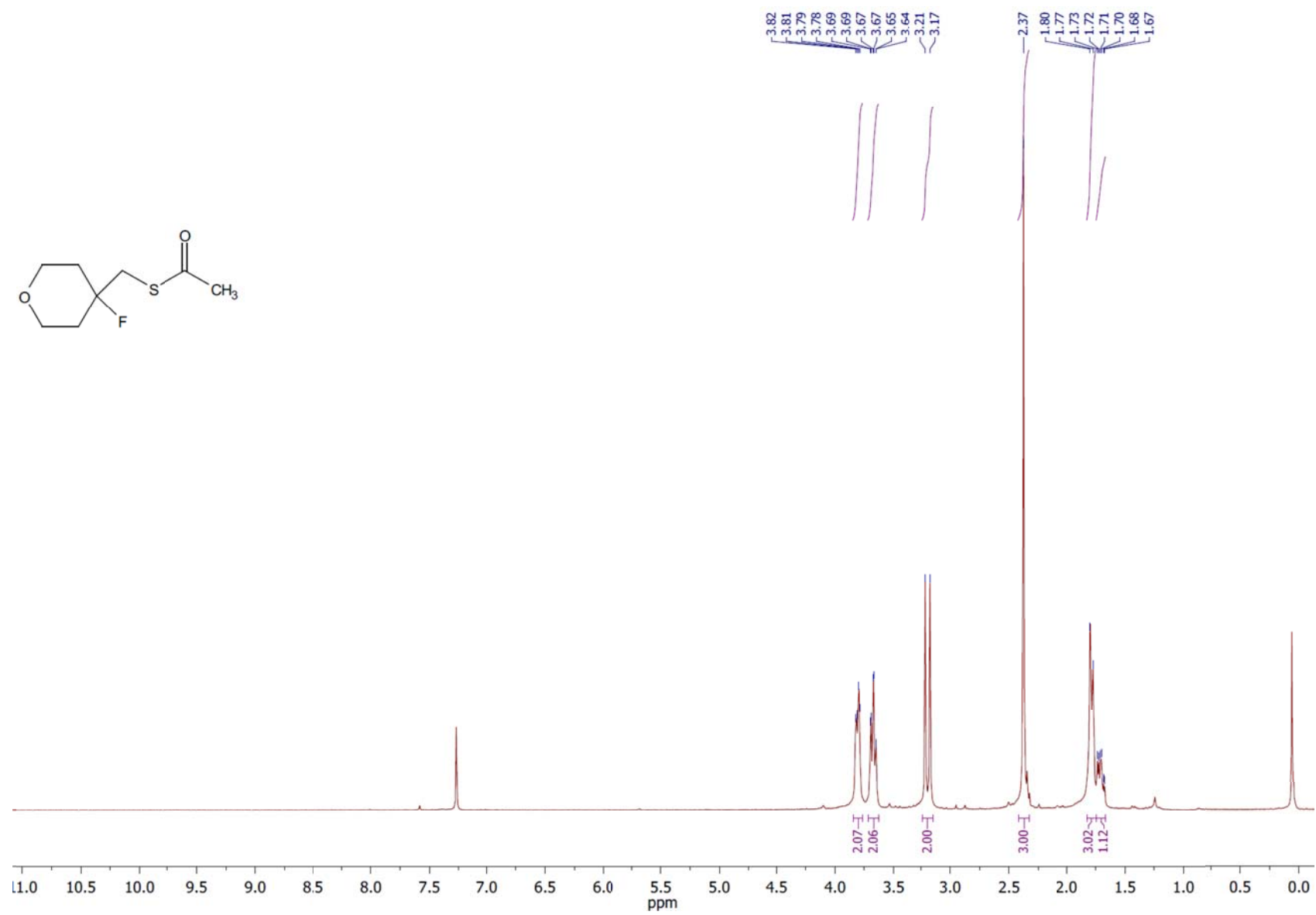
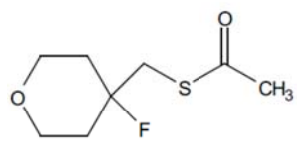


^{19}F NMR spectrum of the compound **30**.

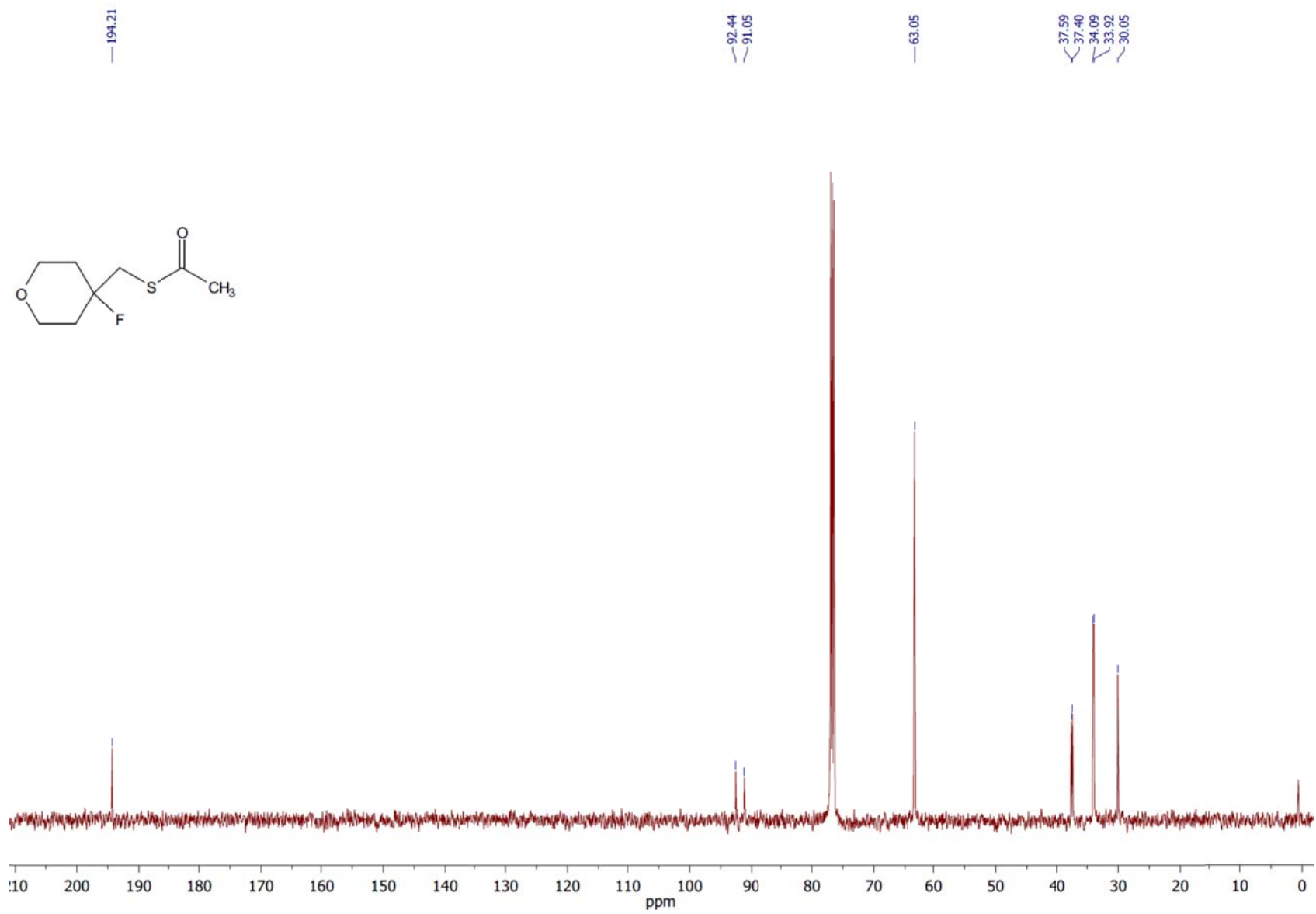


S80

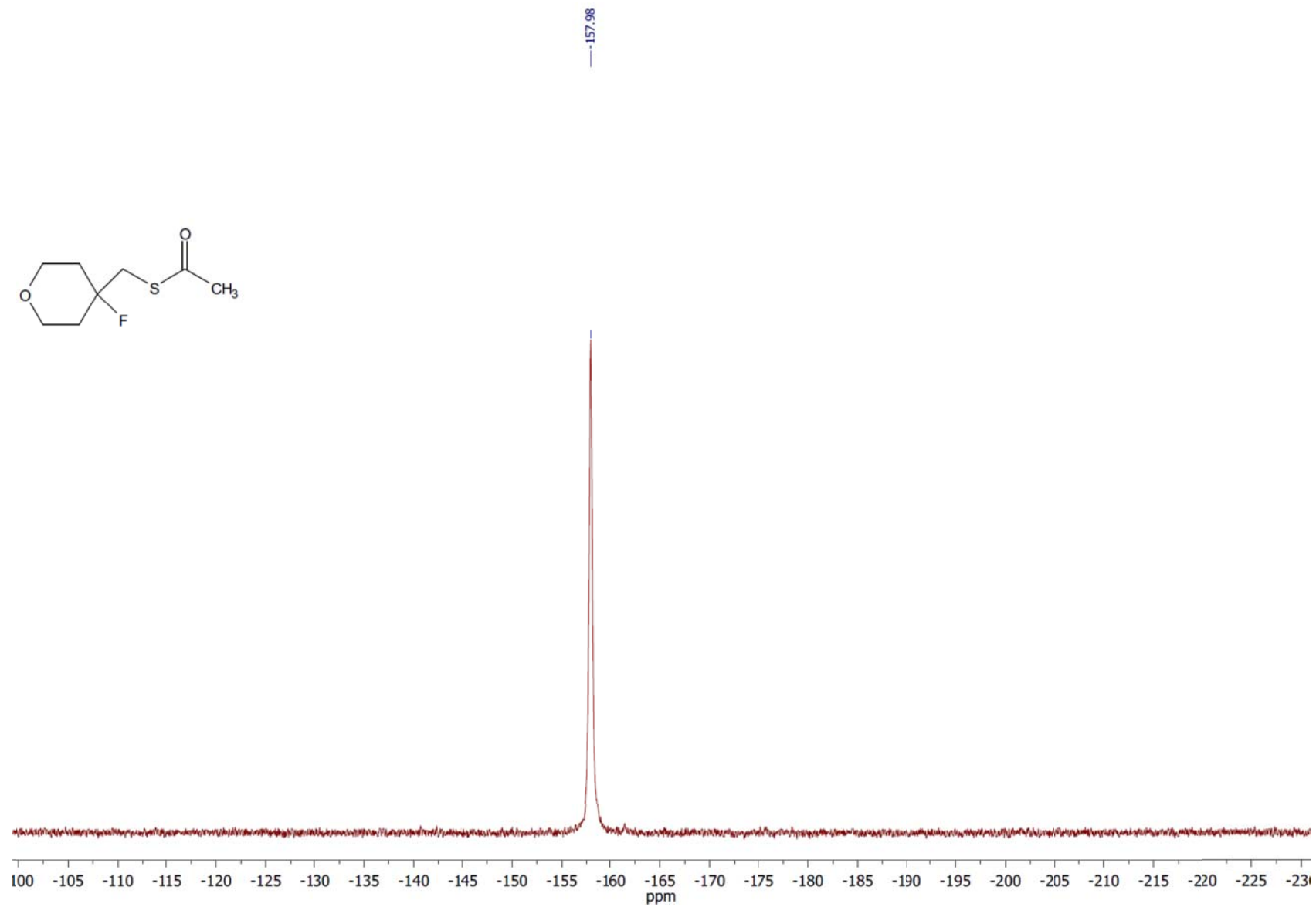
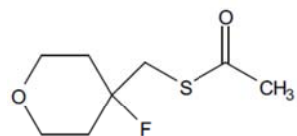
^1H NMR spectrum of the compound **3p**.



^{13}C NMR spectrum of the compound **3p**.

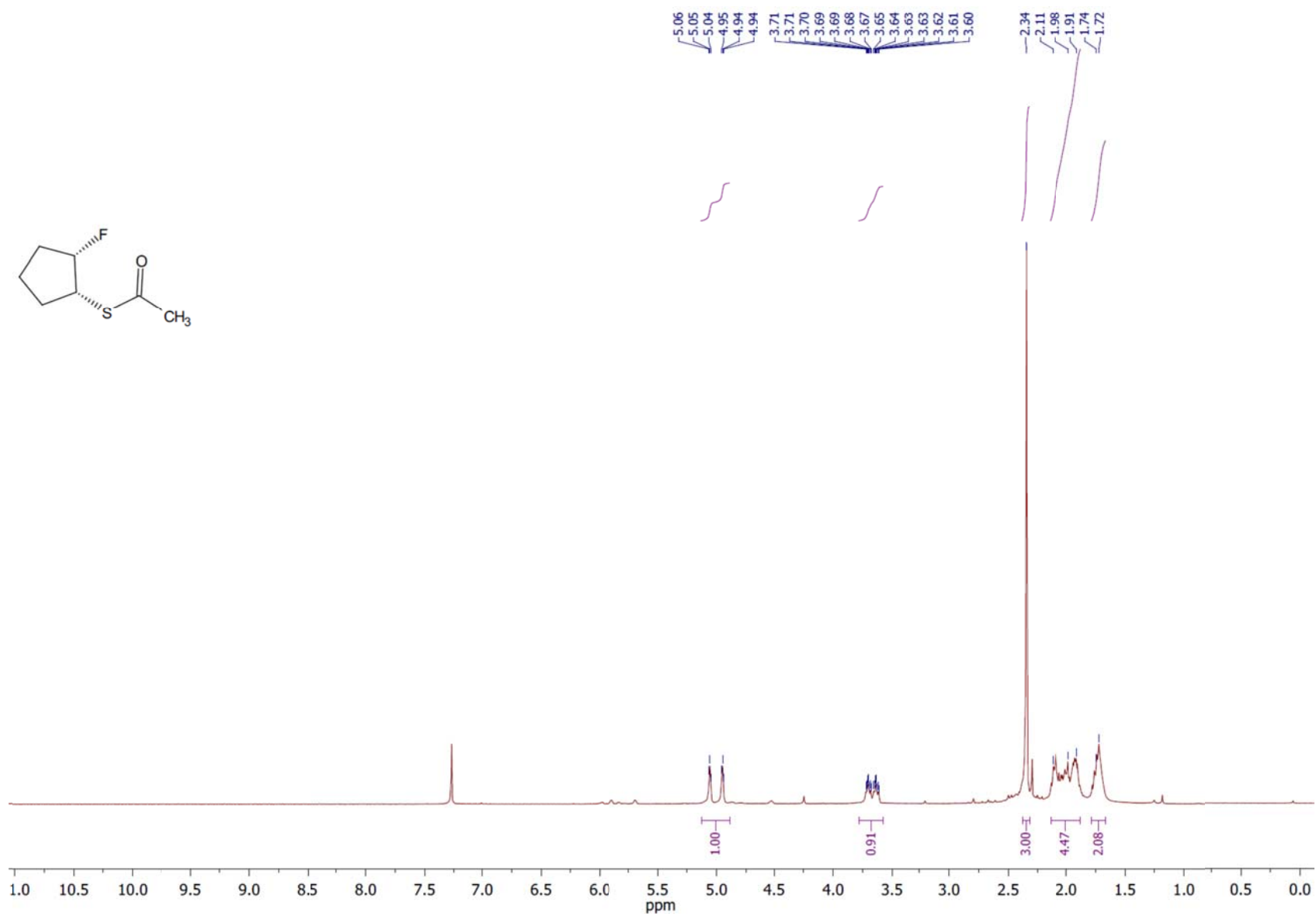


^{19}F NMR spectrum of the compound **3p**.

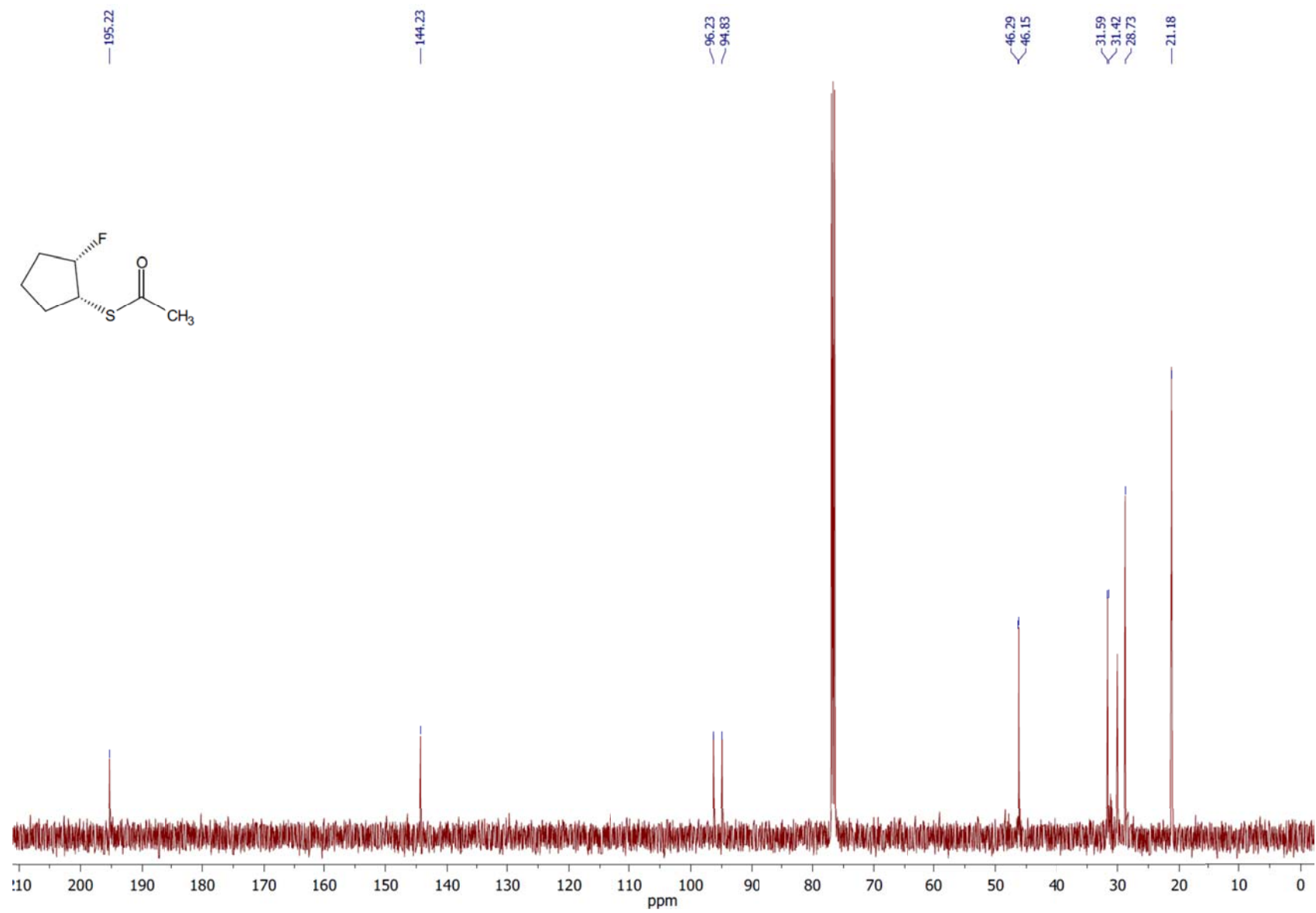


S83

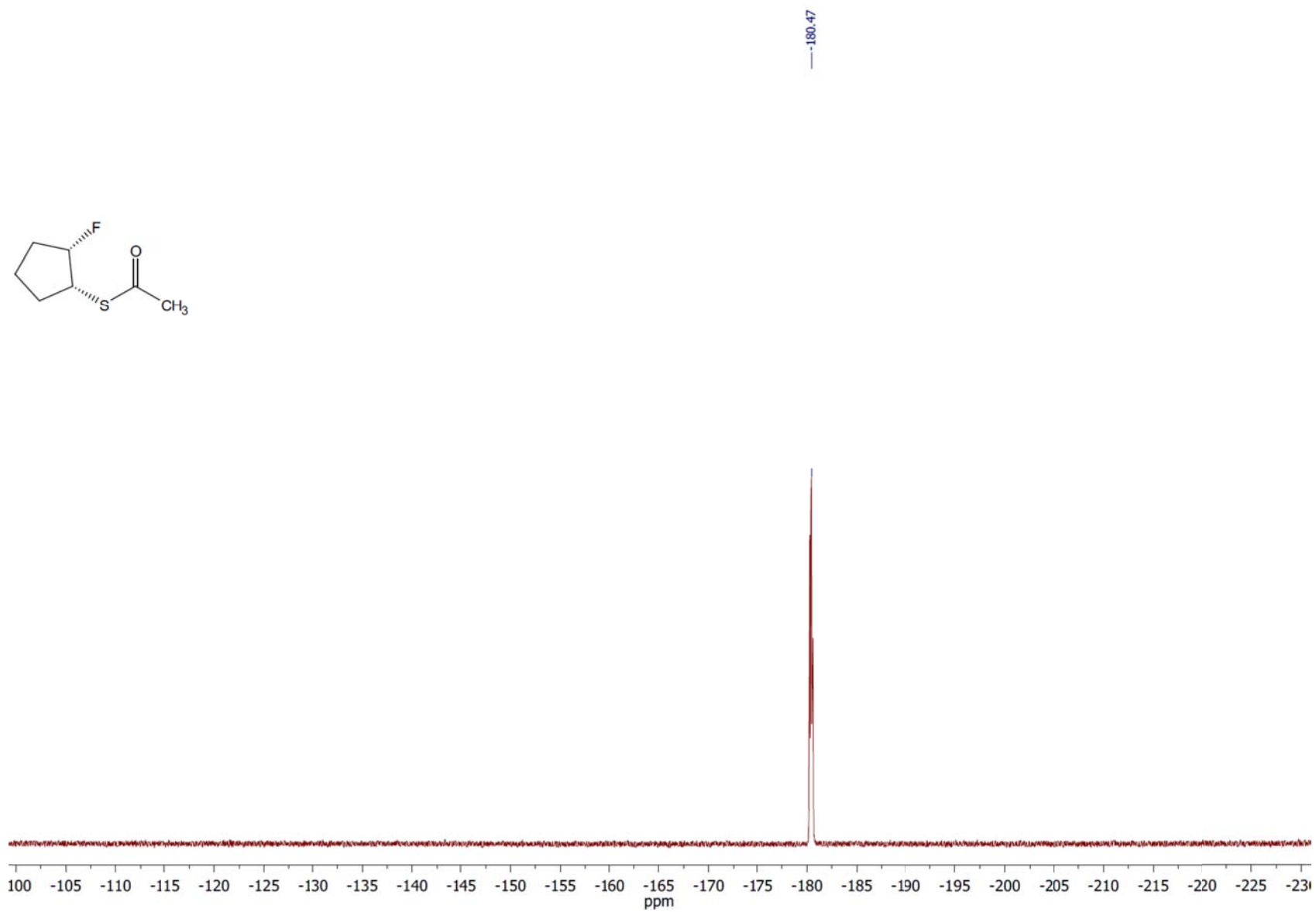
¹H NMR spectrum of the compound **3r**.



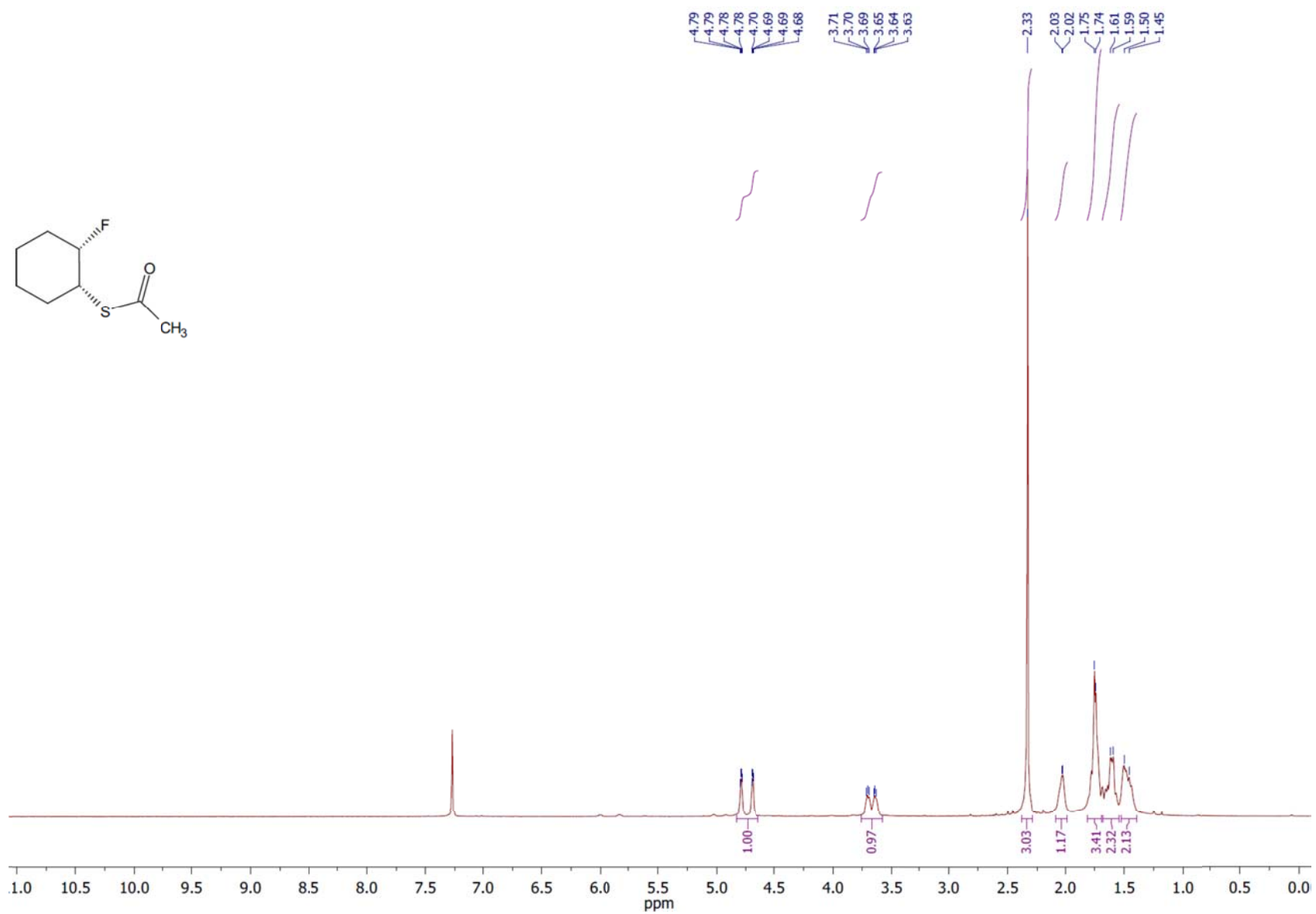
^{13}C NMR spectrum of the compound **3r**.



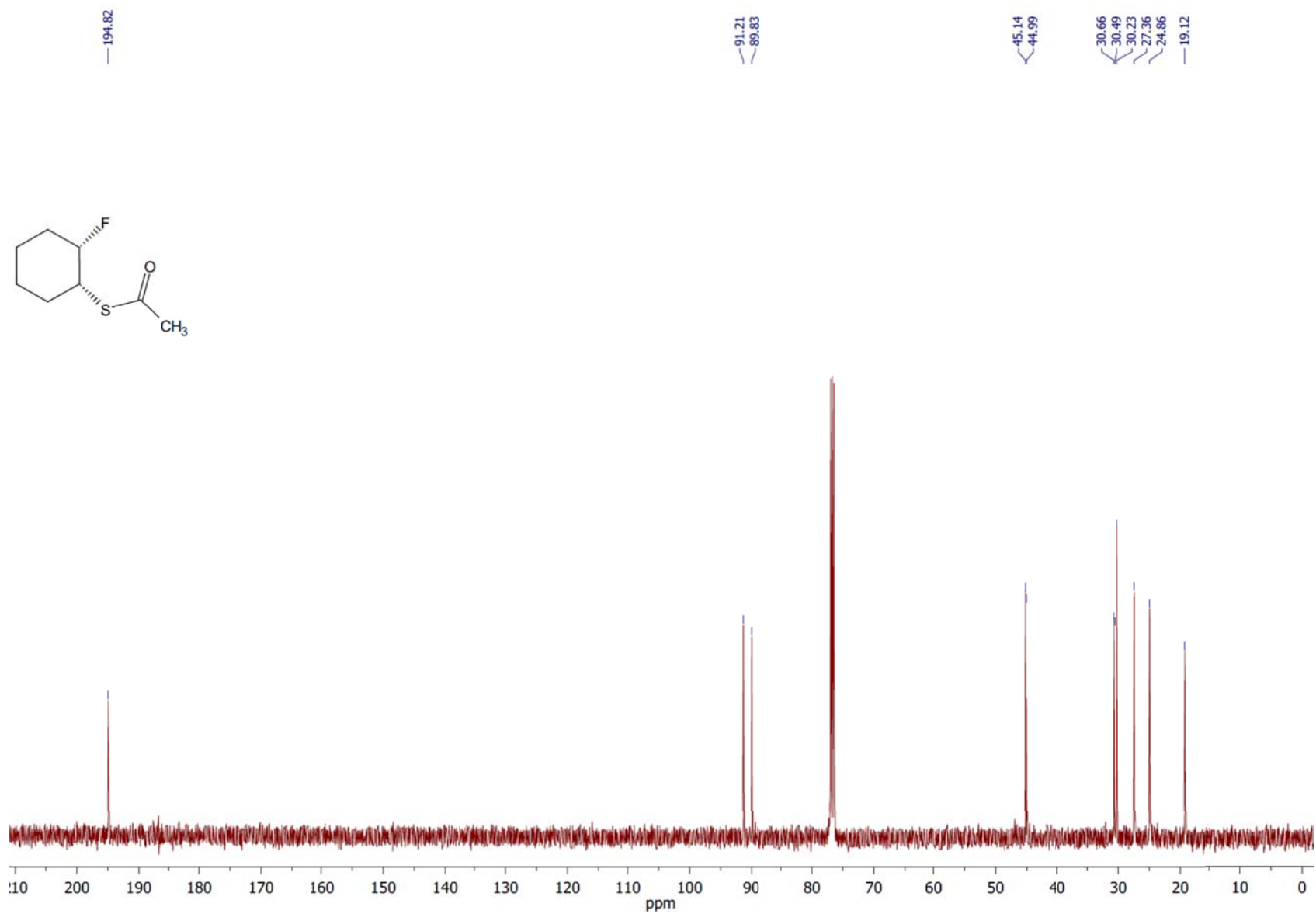
^{19}F NMR spectrum of the compound **3r**.



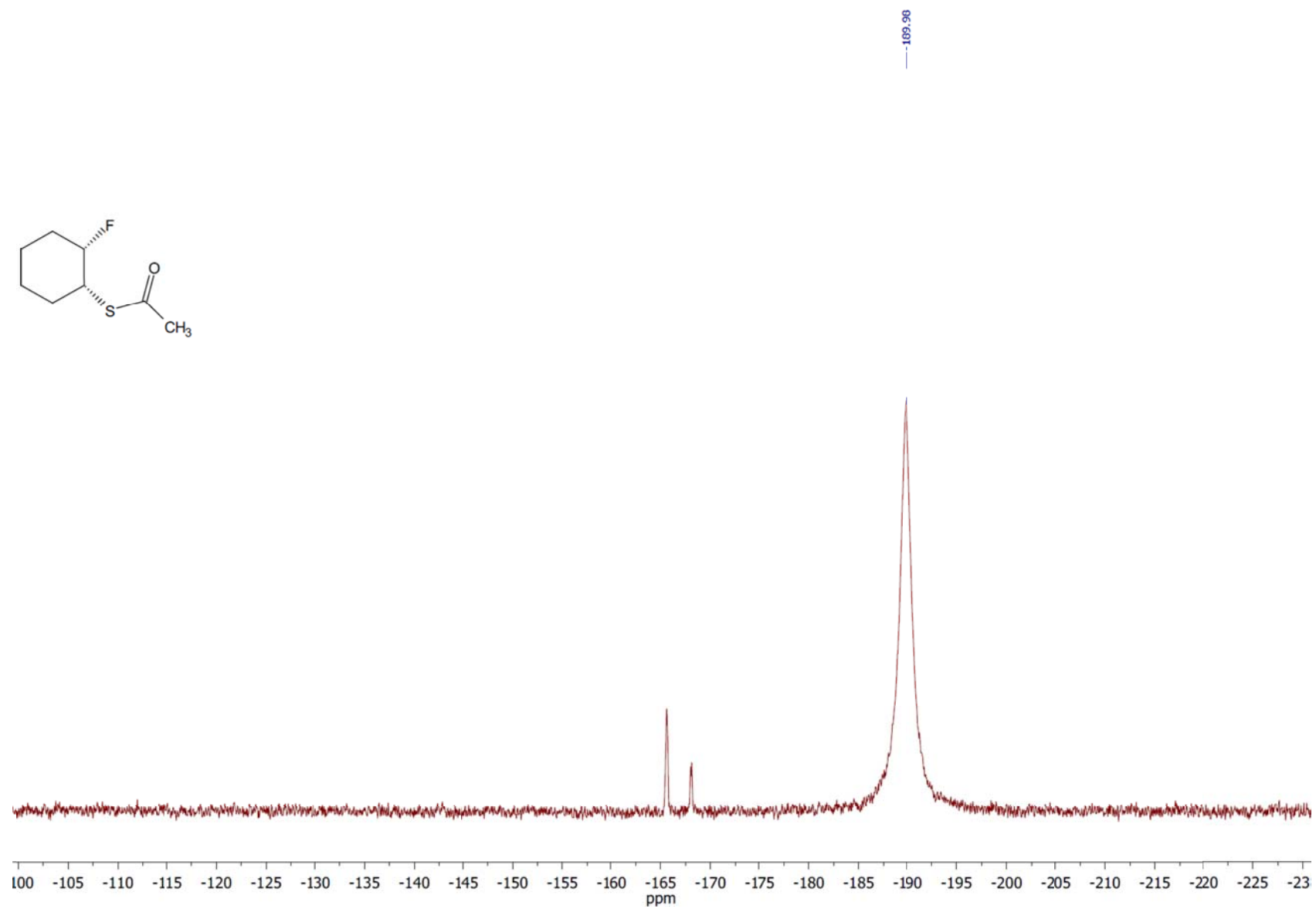
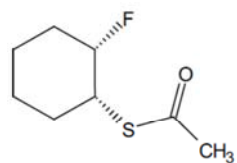
^1H NMR spectrum of the compound **3s**.



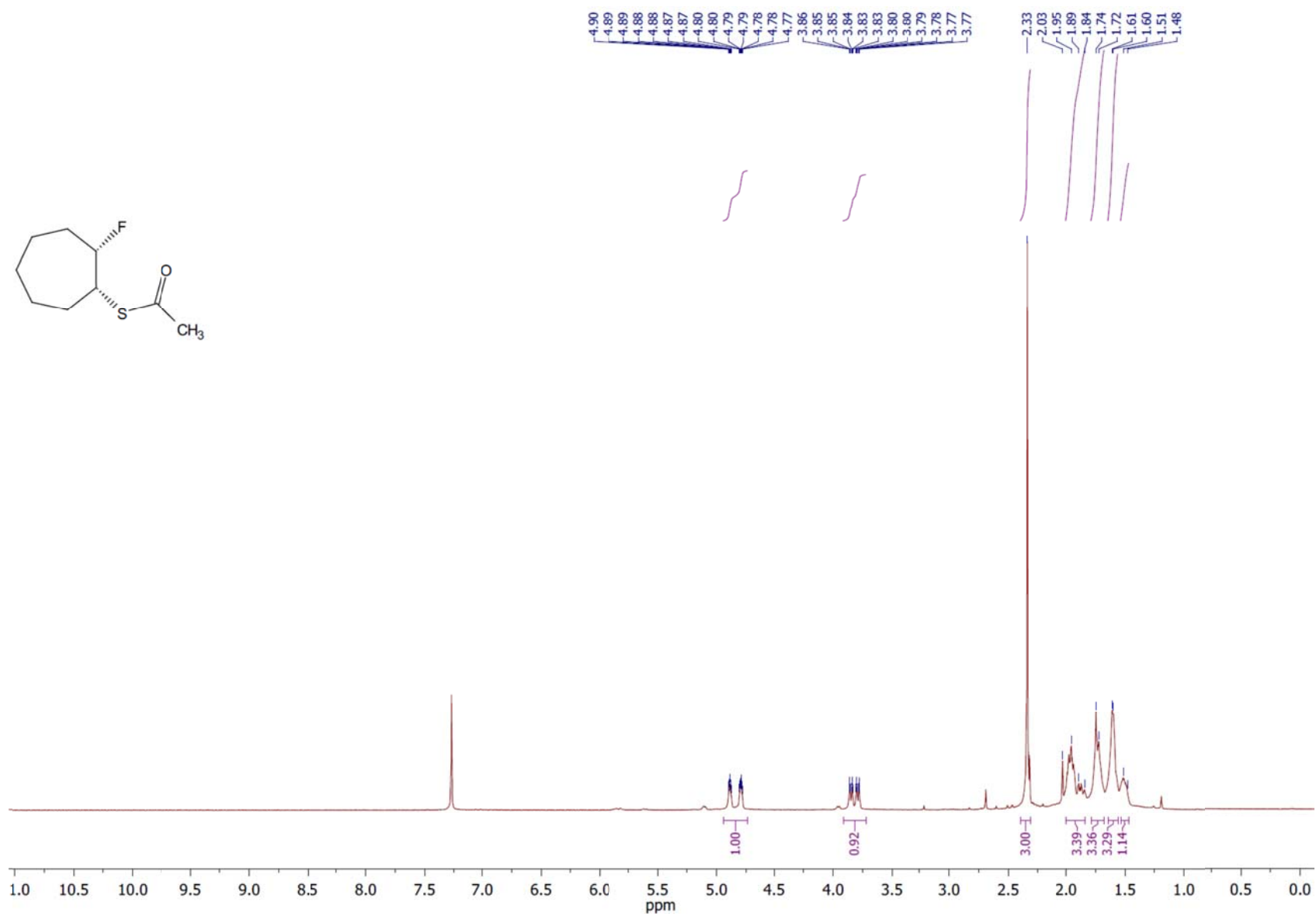
^{13}C NMR spectrum of the compound **3s**.



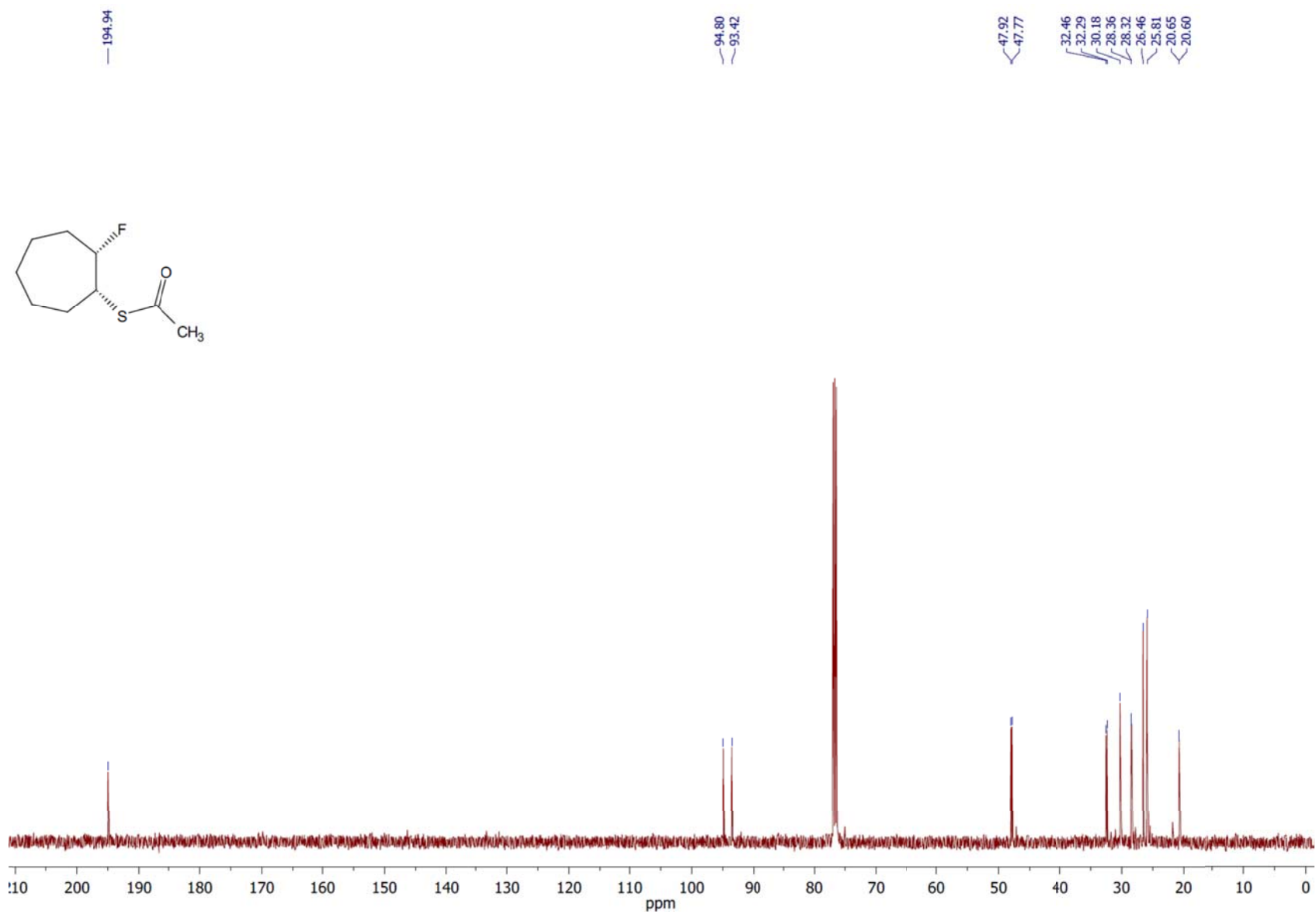
^{19}F NMR spectrum of the compound **3s**.



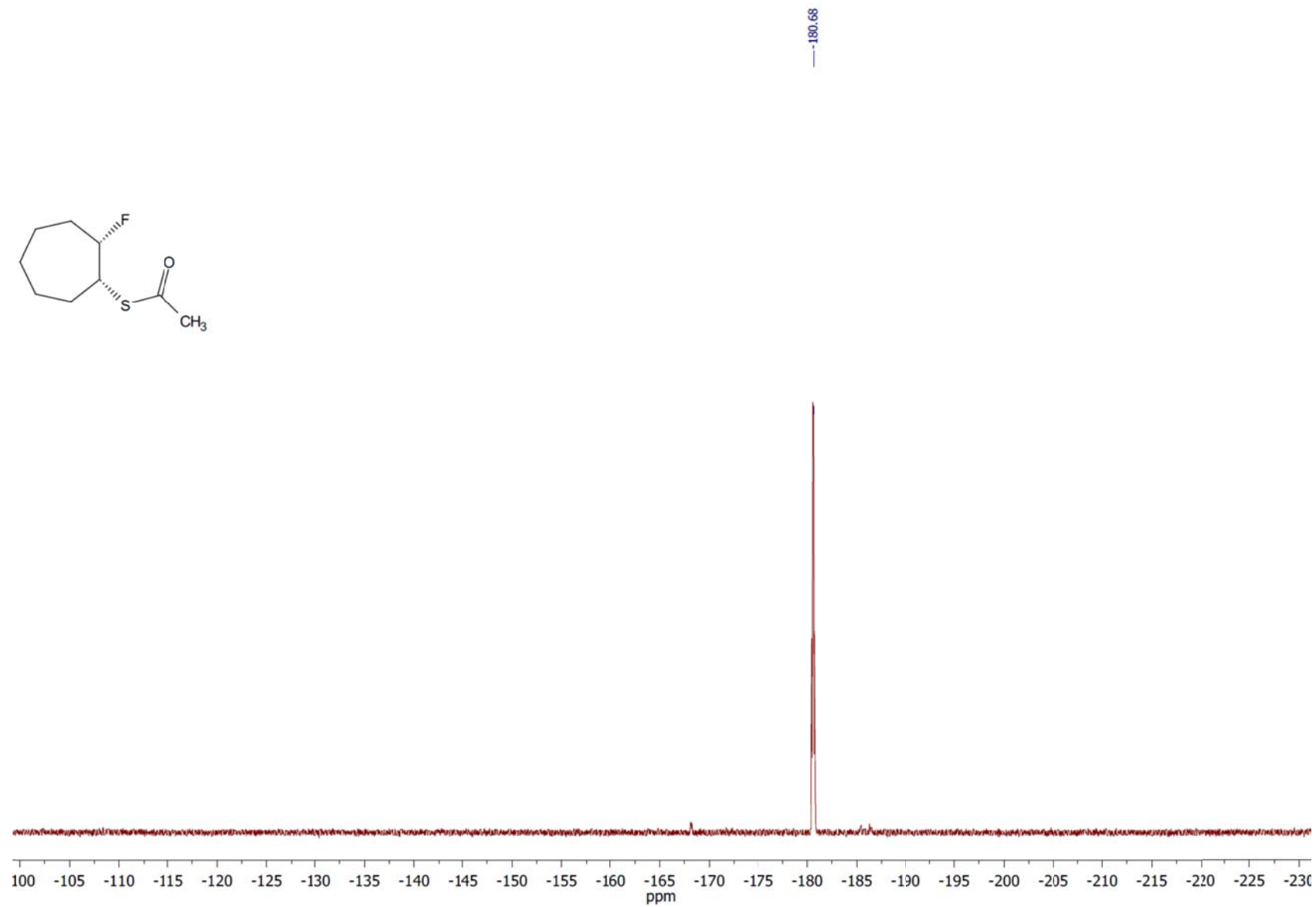
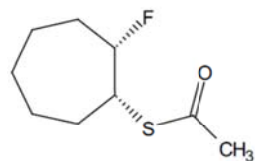
^1H NMR spectrum of the compound **3t**.



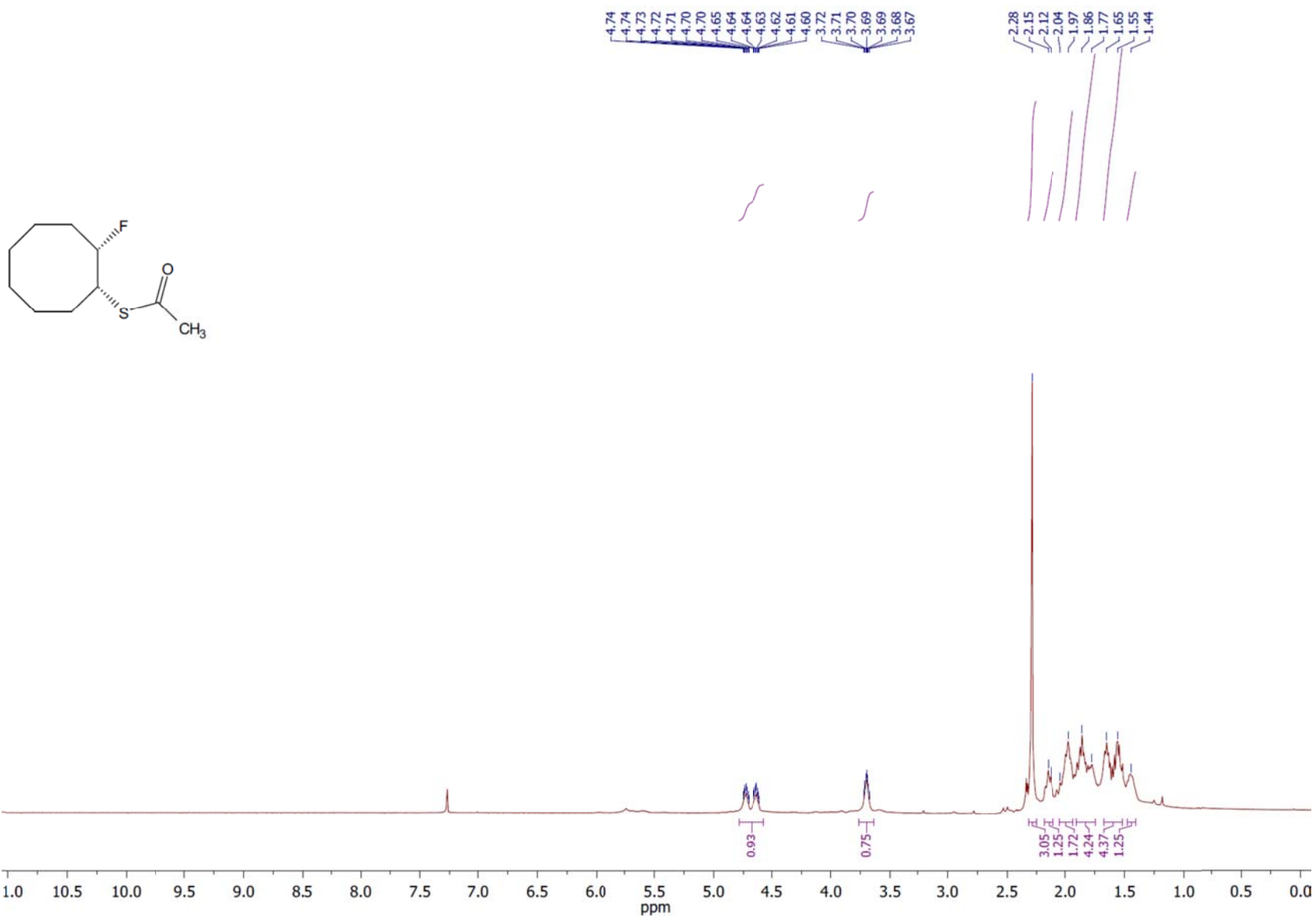
^{13}C NMR spectrum of the compound **3t**.



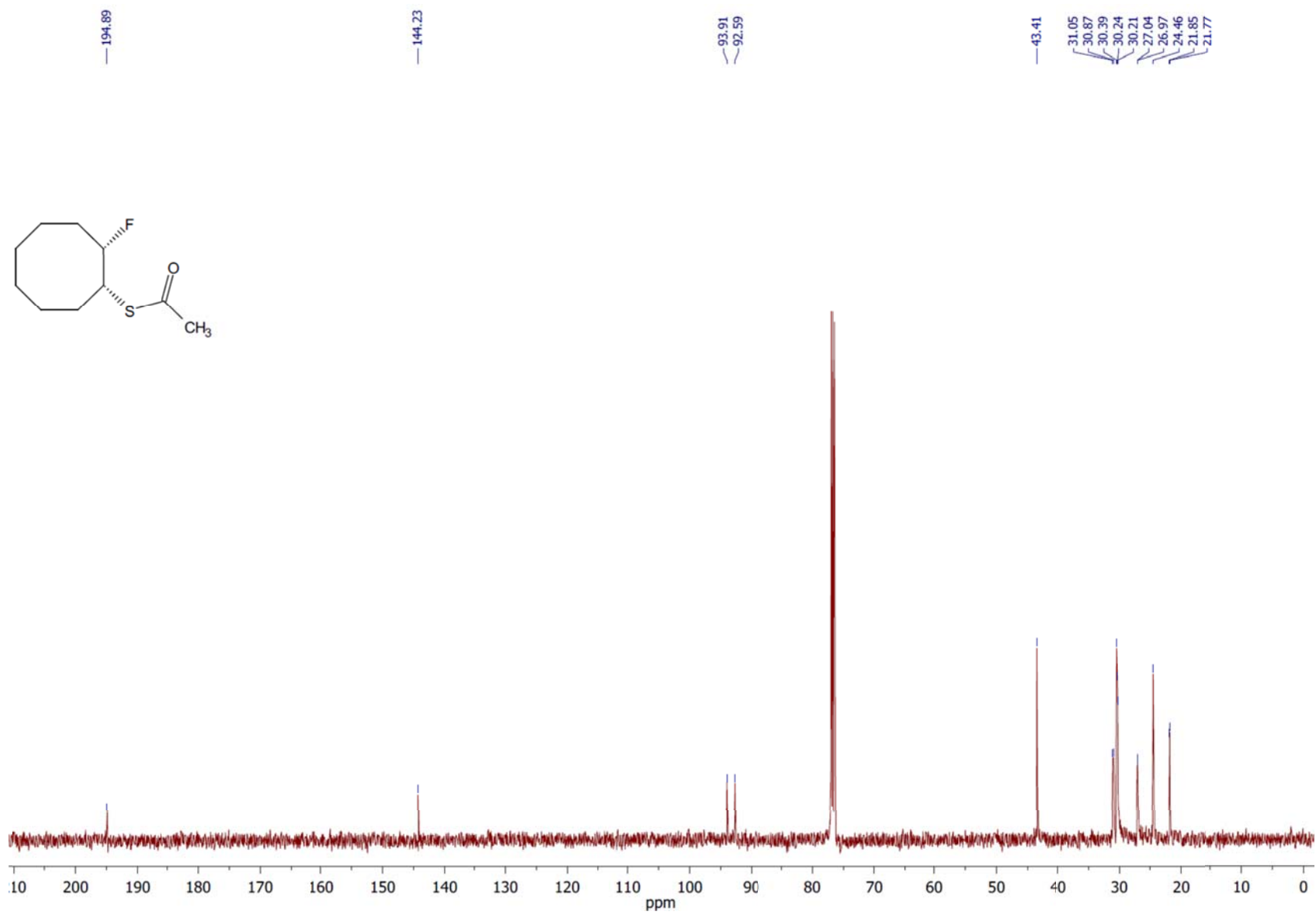
^{19}F NMR spectrum of the compound **3t**.



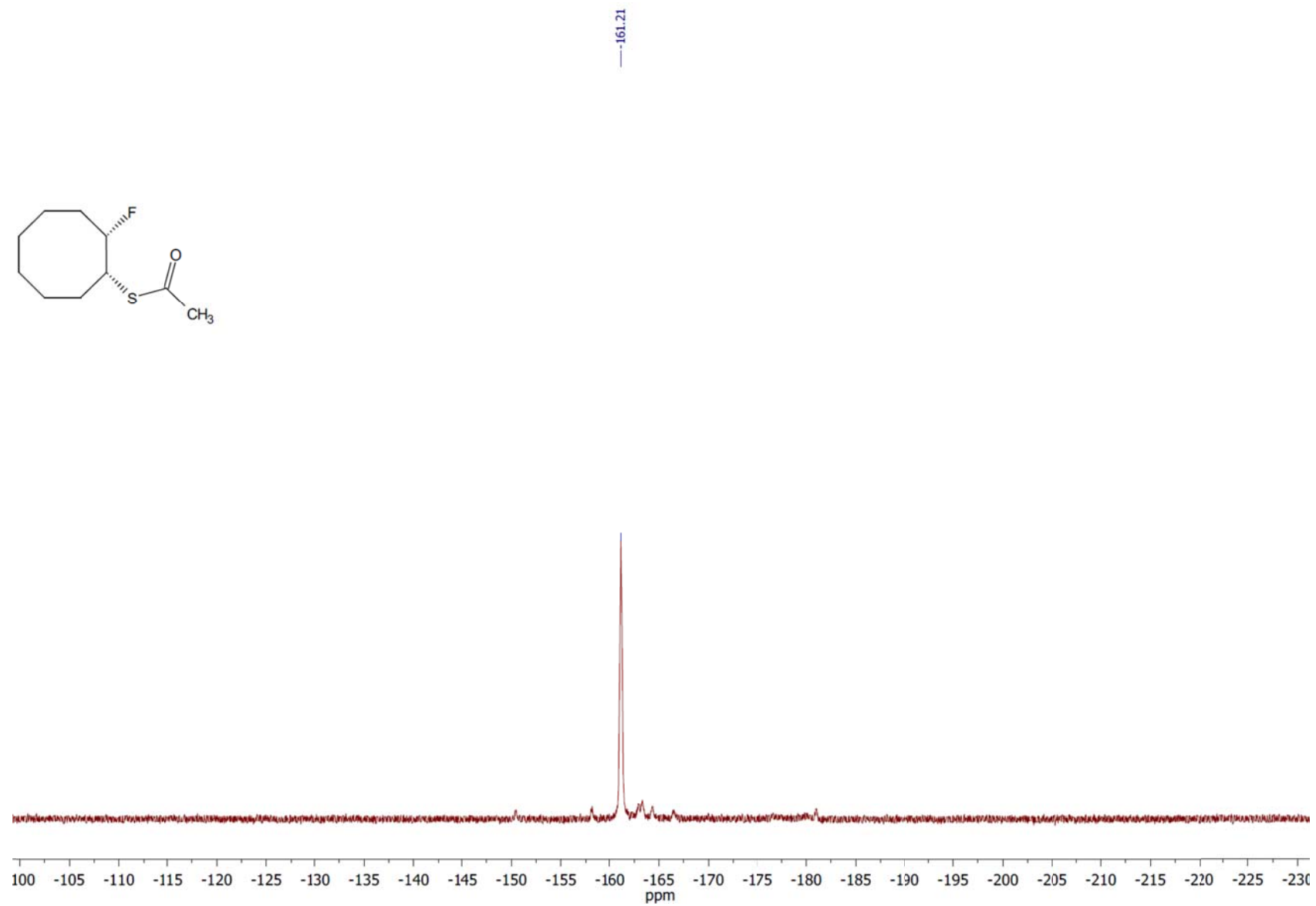
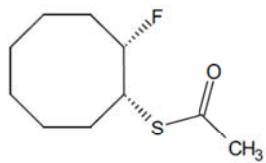
^1H NMR spectrum of the compound **3u**.



^{13}C NMR spectrum of the compound **3u**.



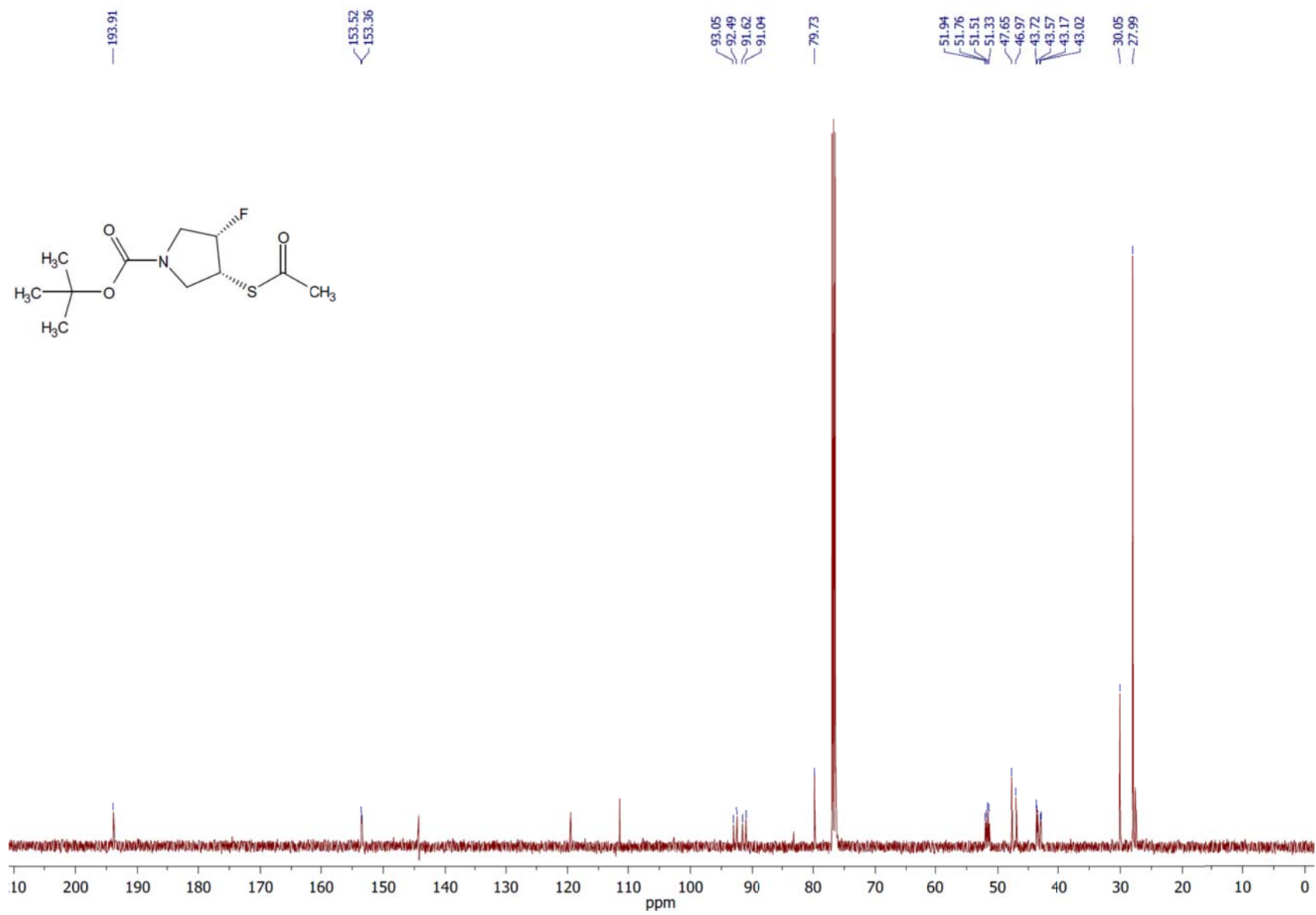
^{19}F NMR spectrum of the compound **3u**.



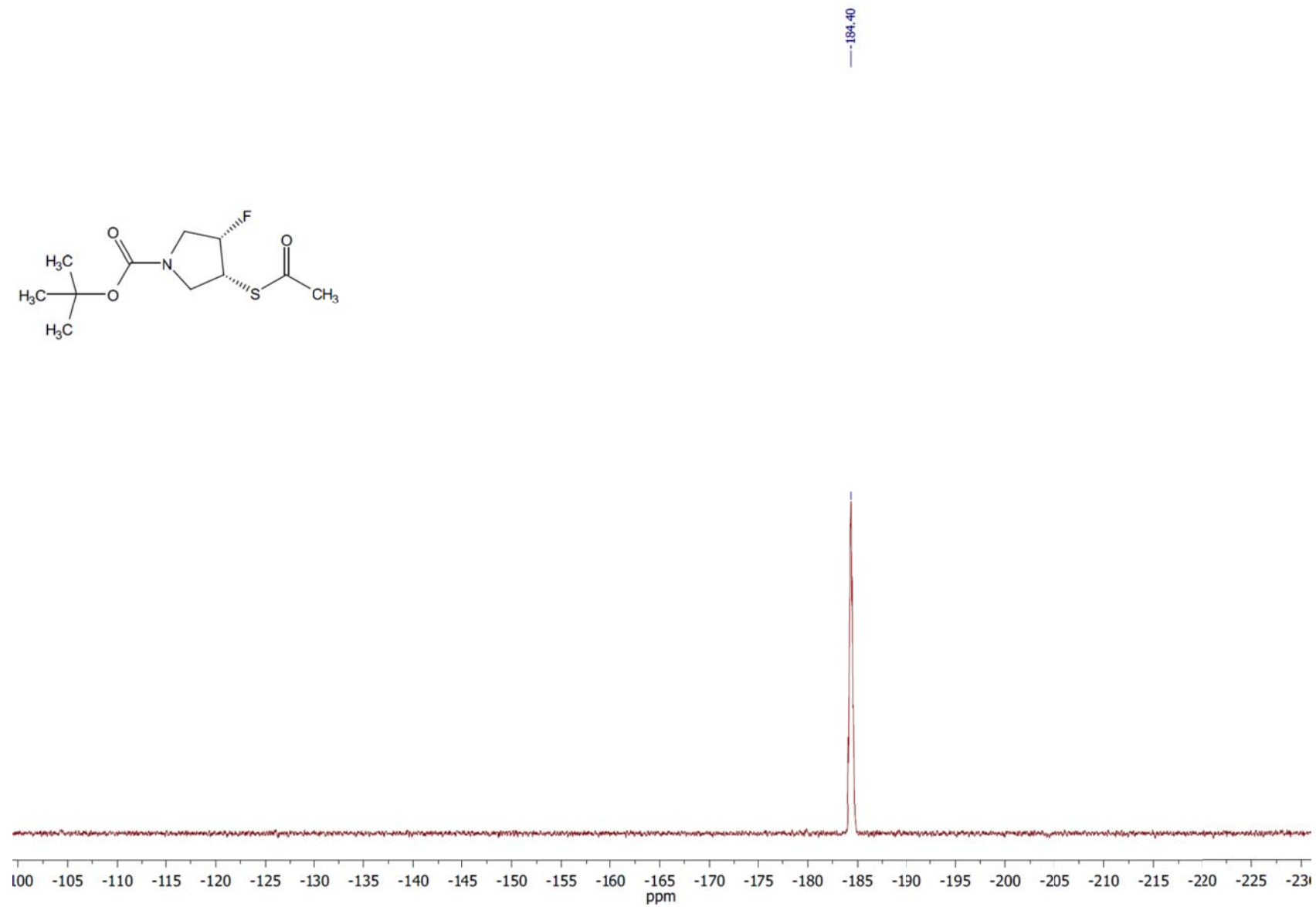
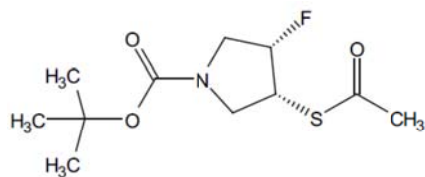
¹H NMR spectrum of the compound **3v**.



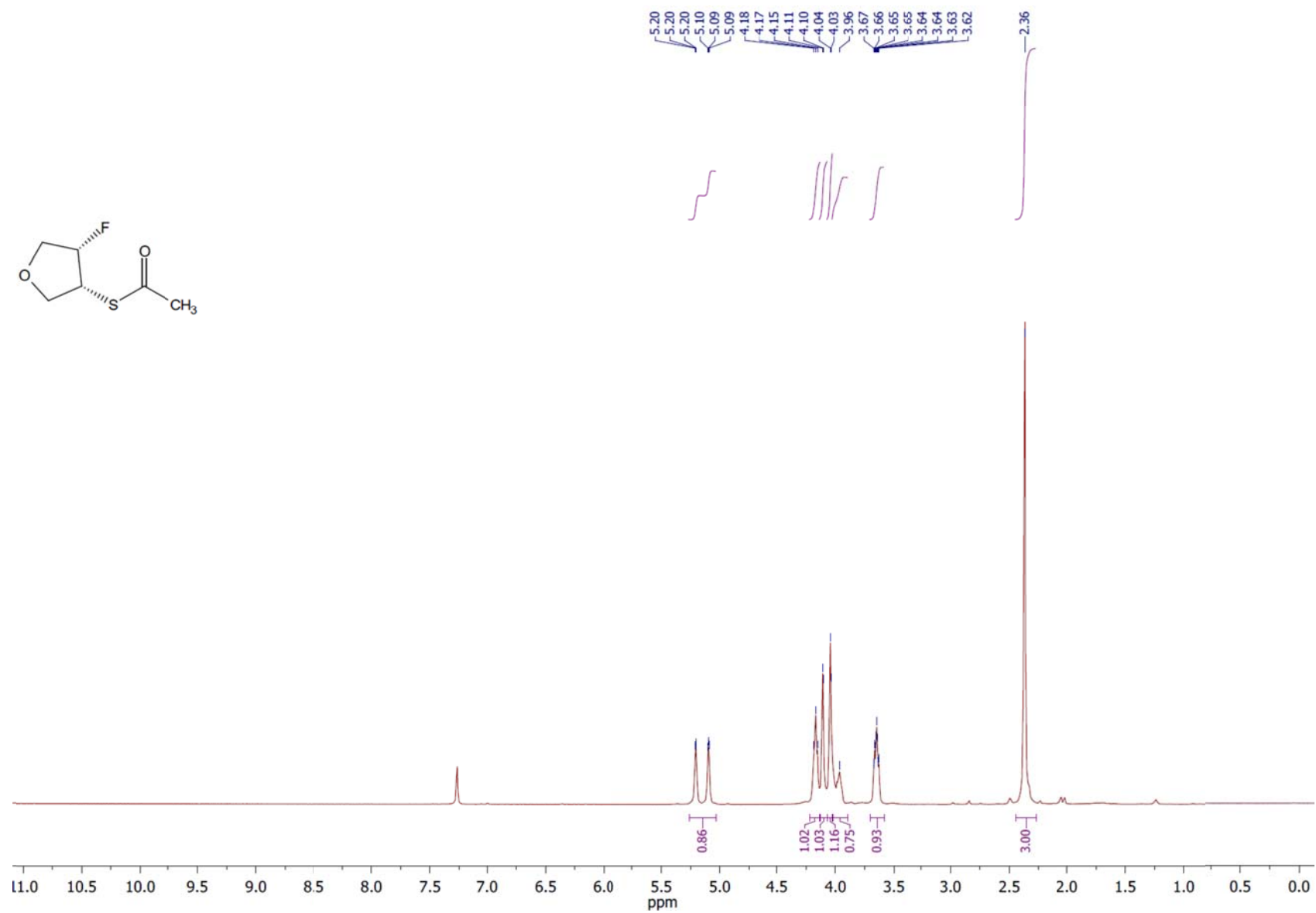
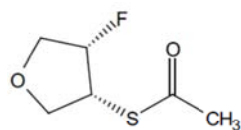
^{13}C NMR spectrum of the compound **3v**.



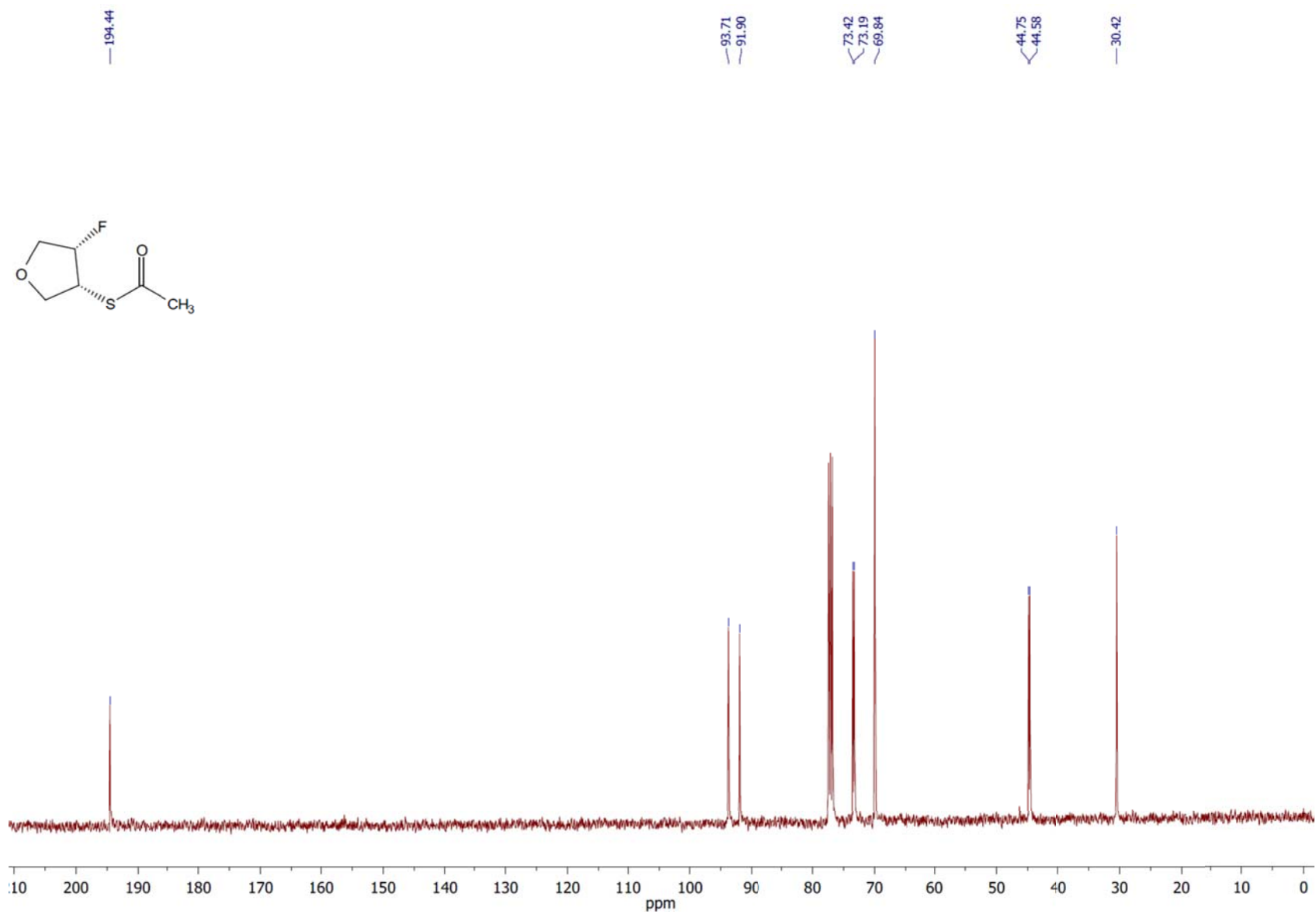
^{19}F NMR spectrum of the compound **3v**.



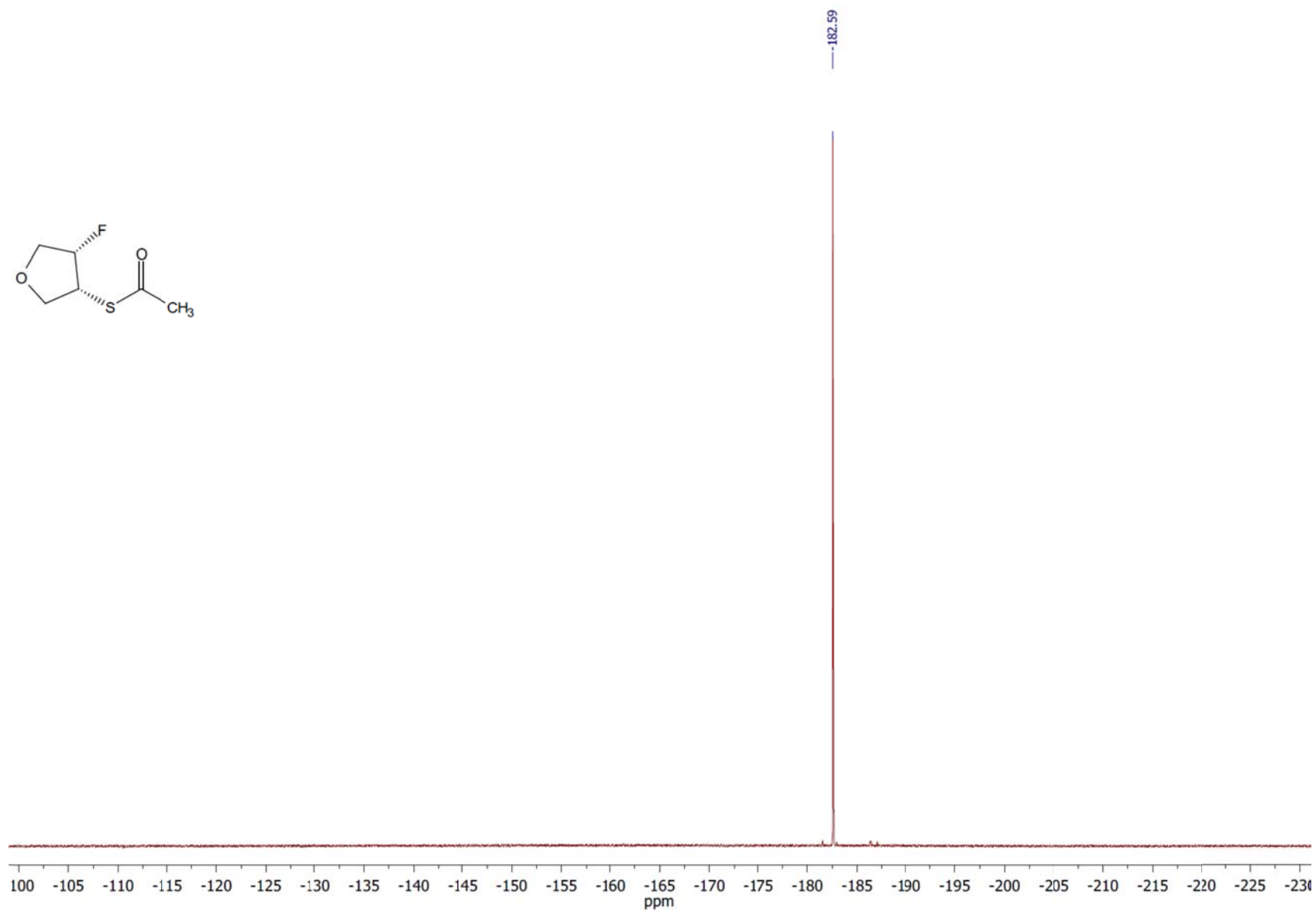
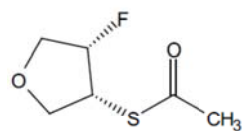
¹H NMR spectrum of the compound **3w**.



^{13}C NMR spectrum of the compound **3w**.

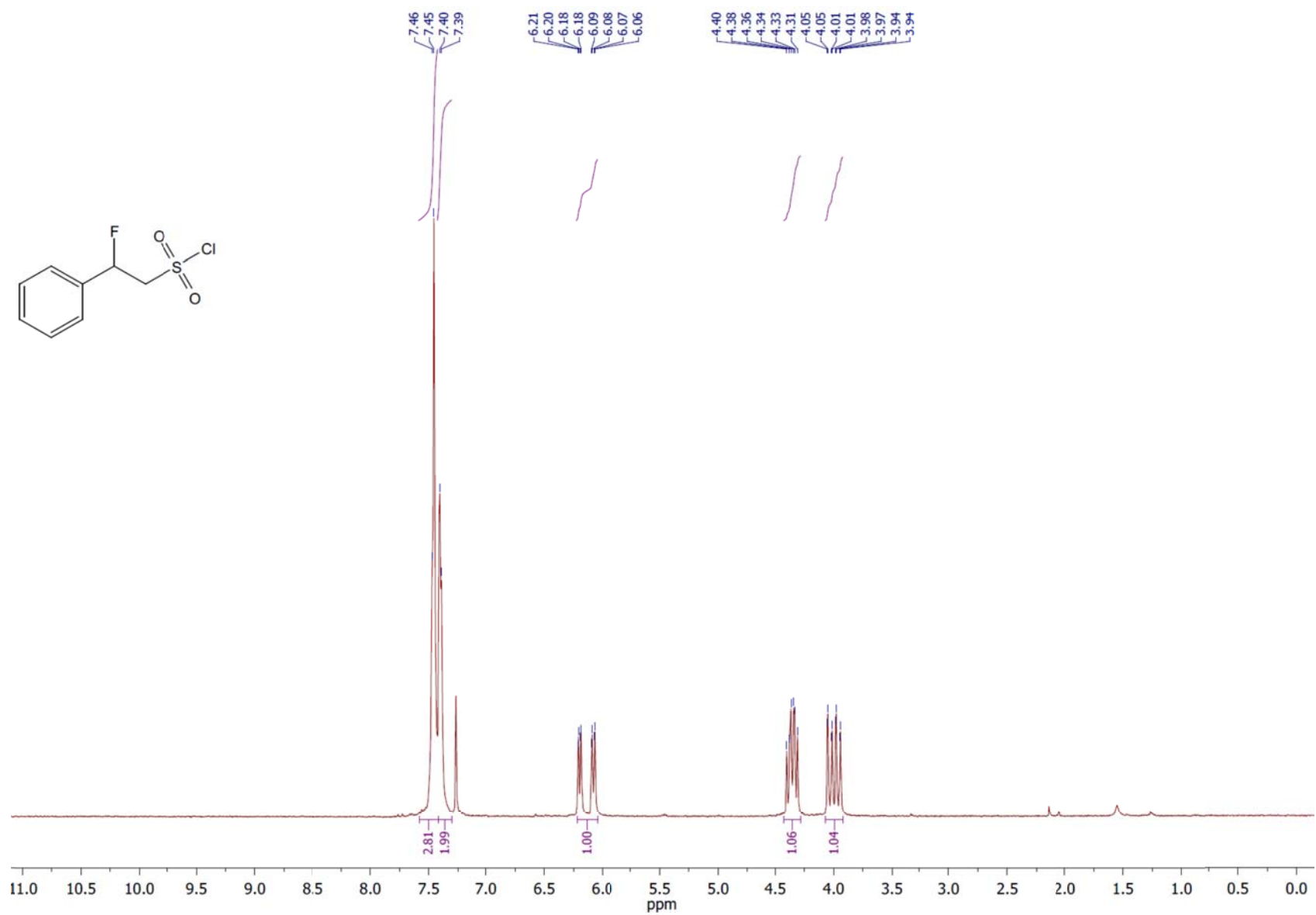


^{19}F NMR spectrum of the compound **3w**.

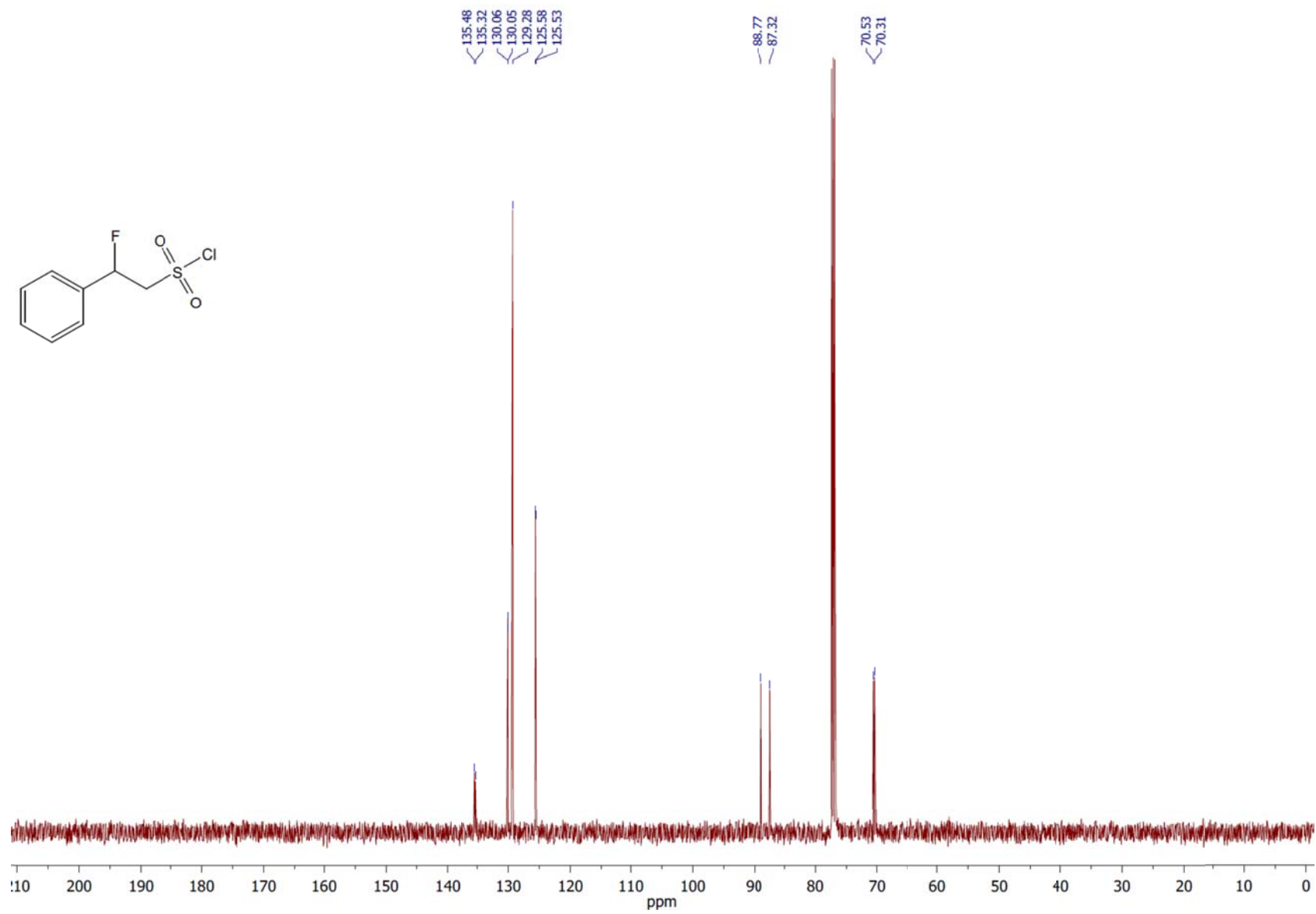


S101

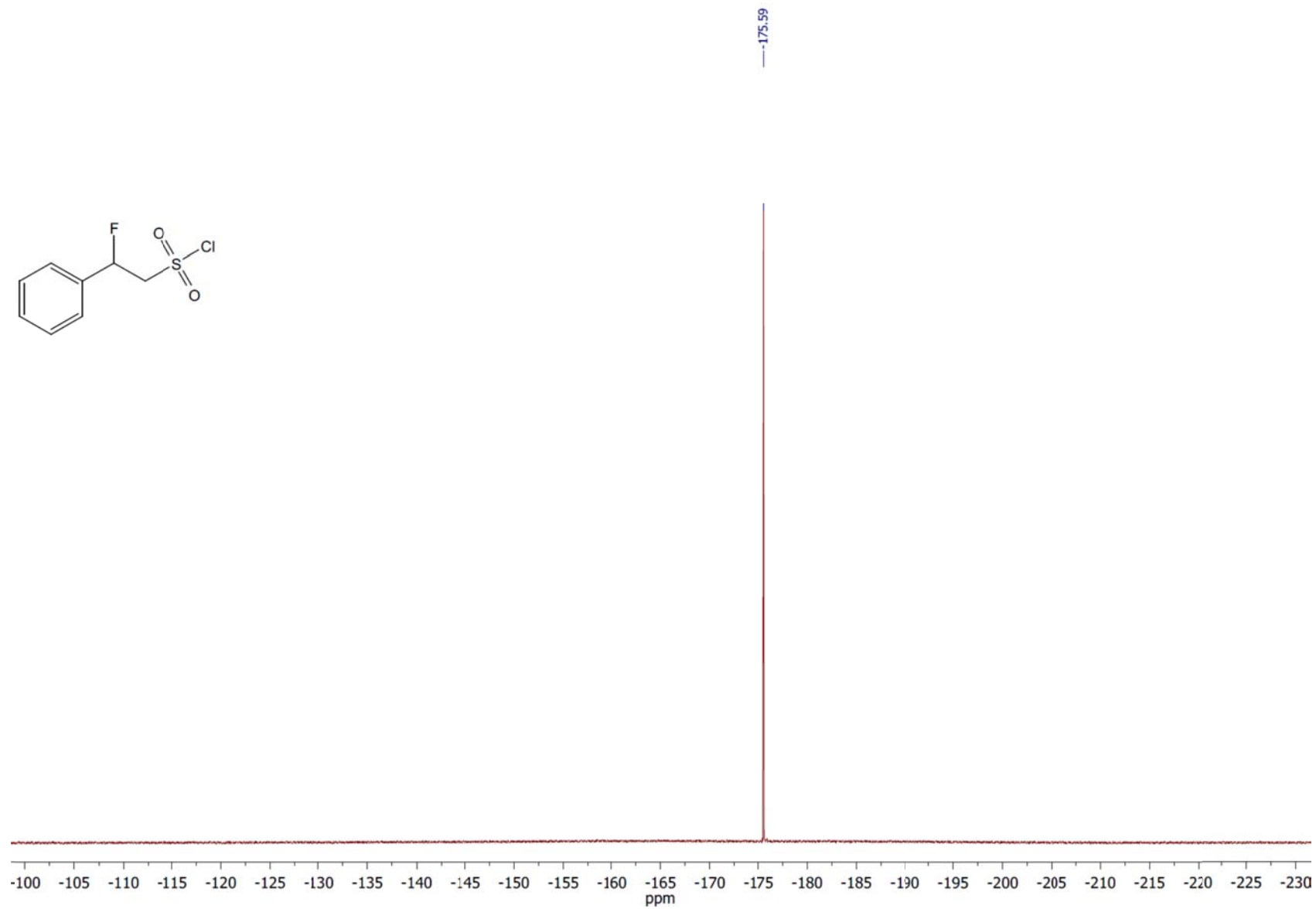
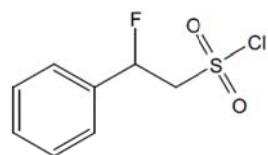
¹H NMR spectrum of the compound **4a**.



^{13}C NMR spectrum of the compound **4a**.

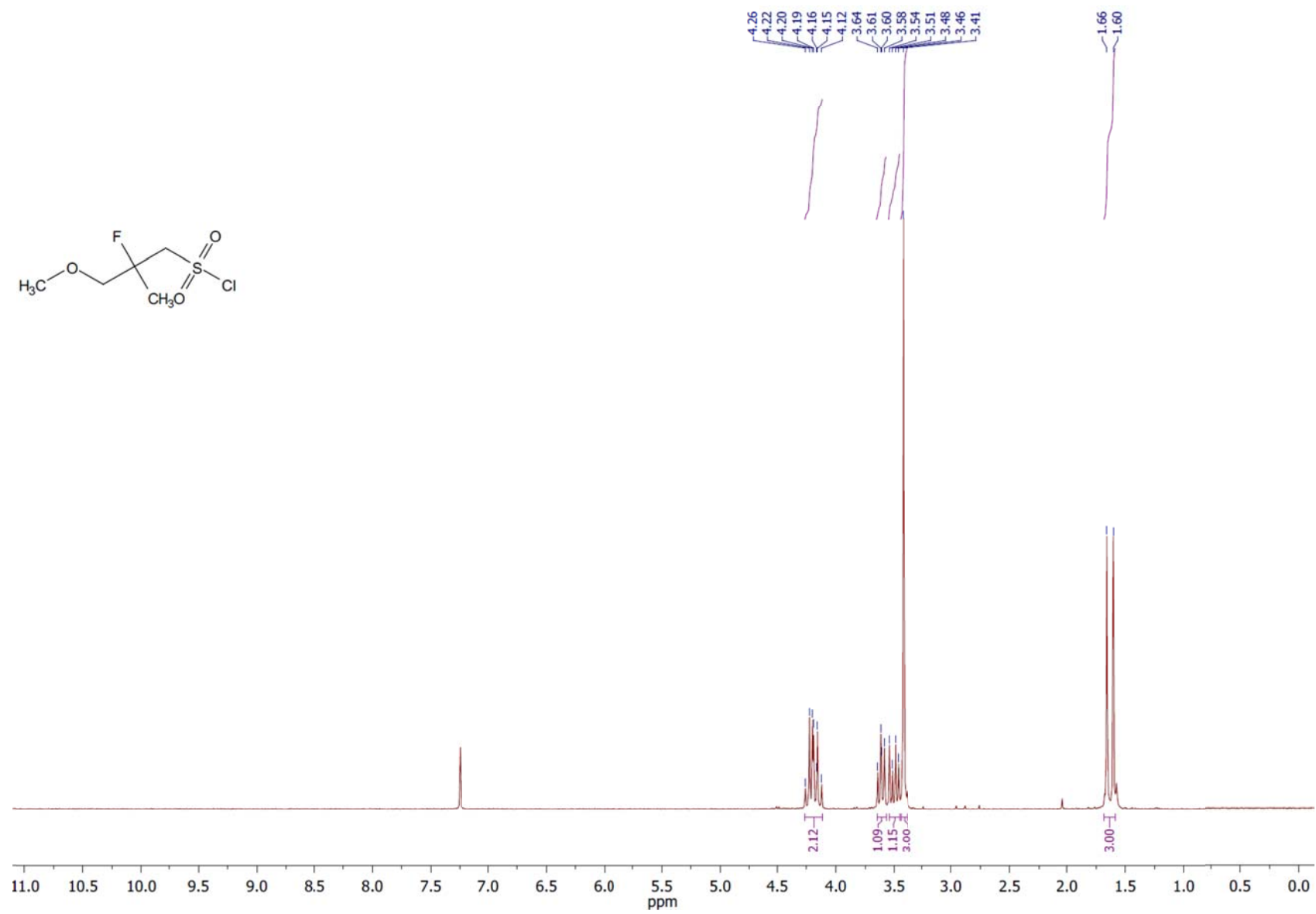
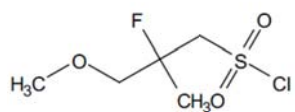


^{19}F NMR spectrum of the compound **4a**.



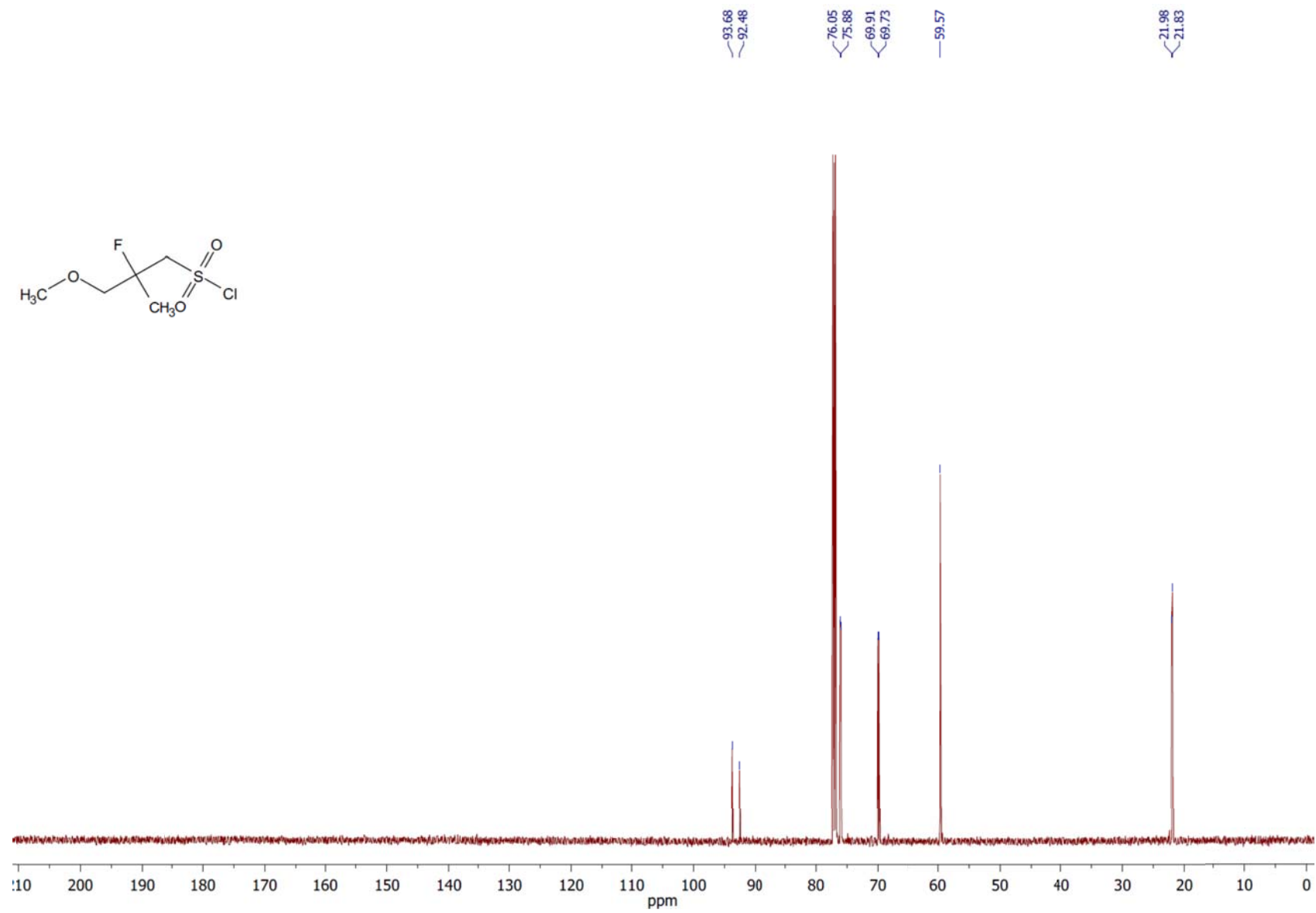
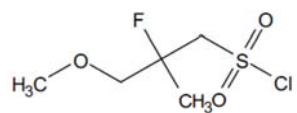
S104

¹H NMR spectrum of the compound **4b**.



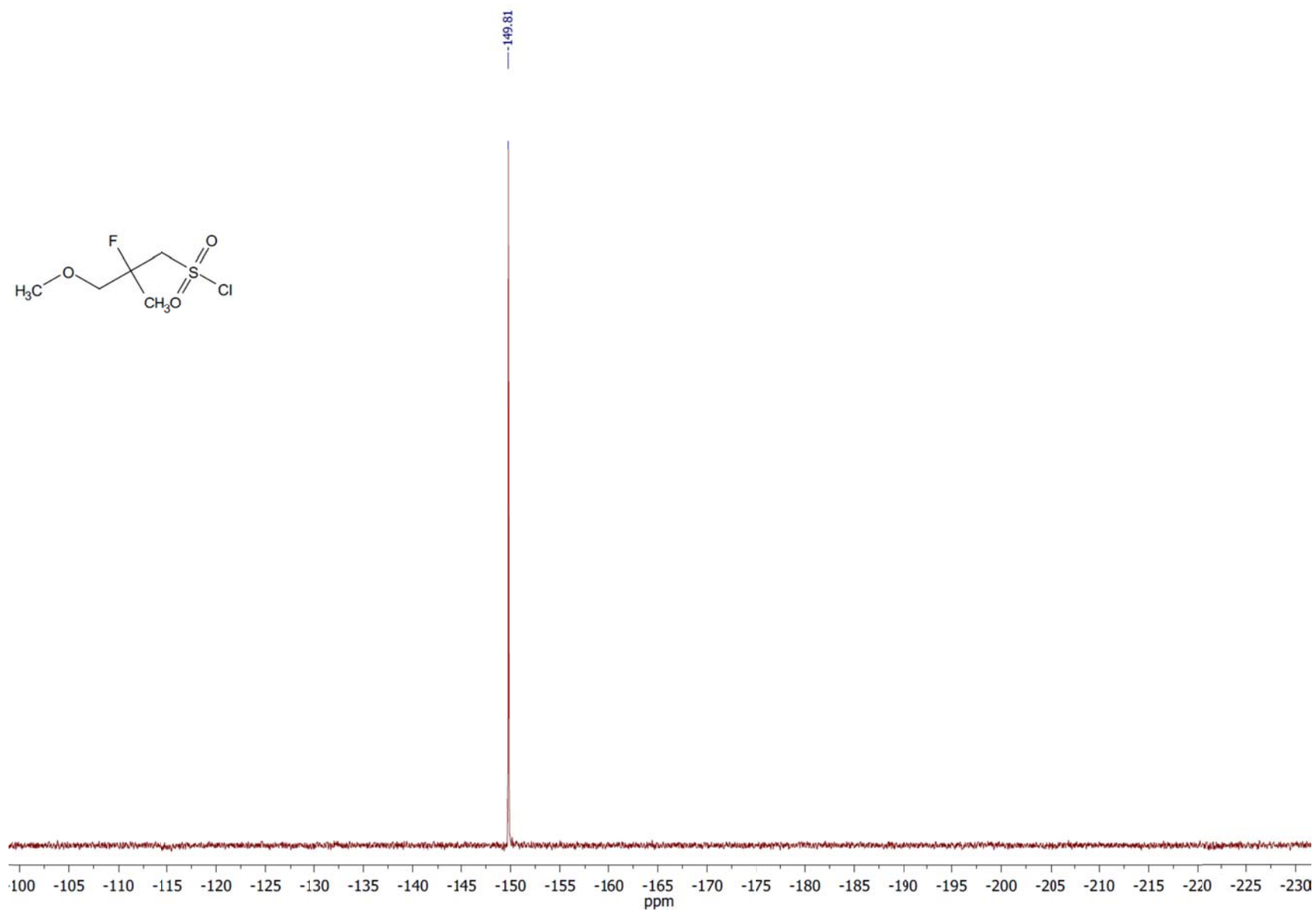
S105

^{13}C NMR spectrum of the compound **4b**.



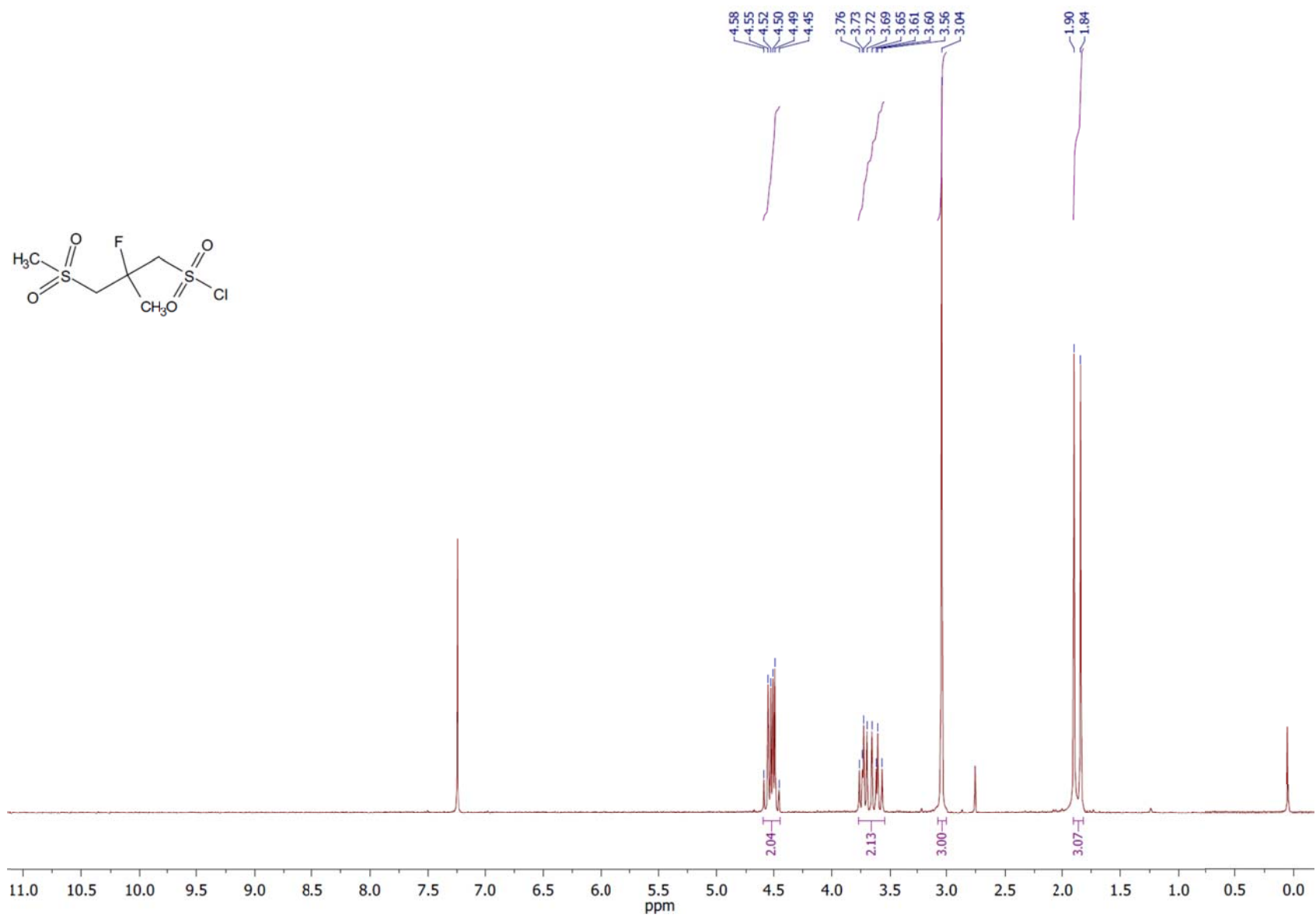
S106

^{19}F NMR spectrum of the compound **4b**.

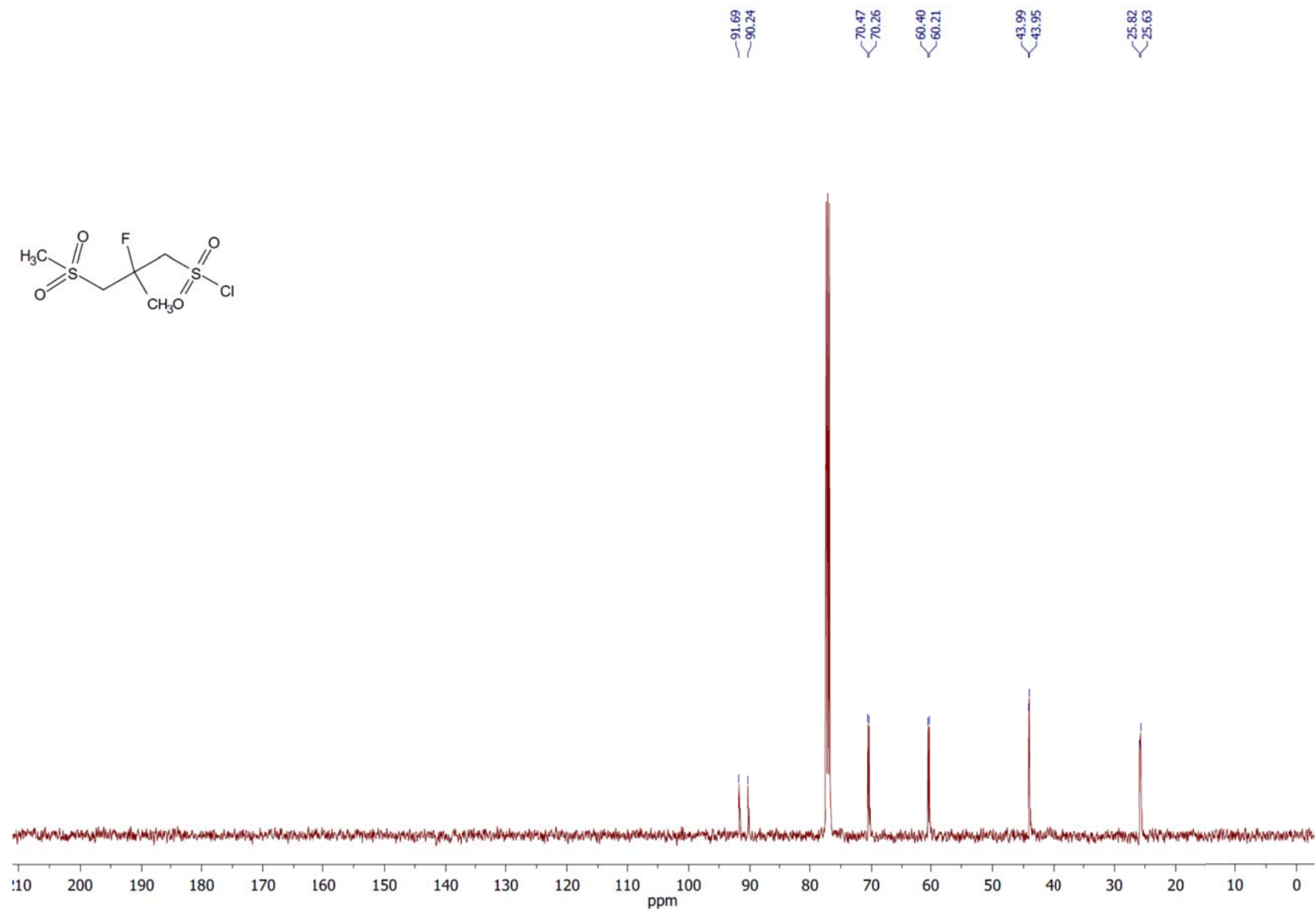
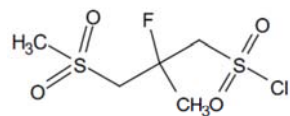


S107

¹H NMR spectrum of the compound **4c**.

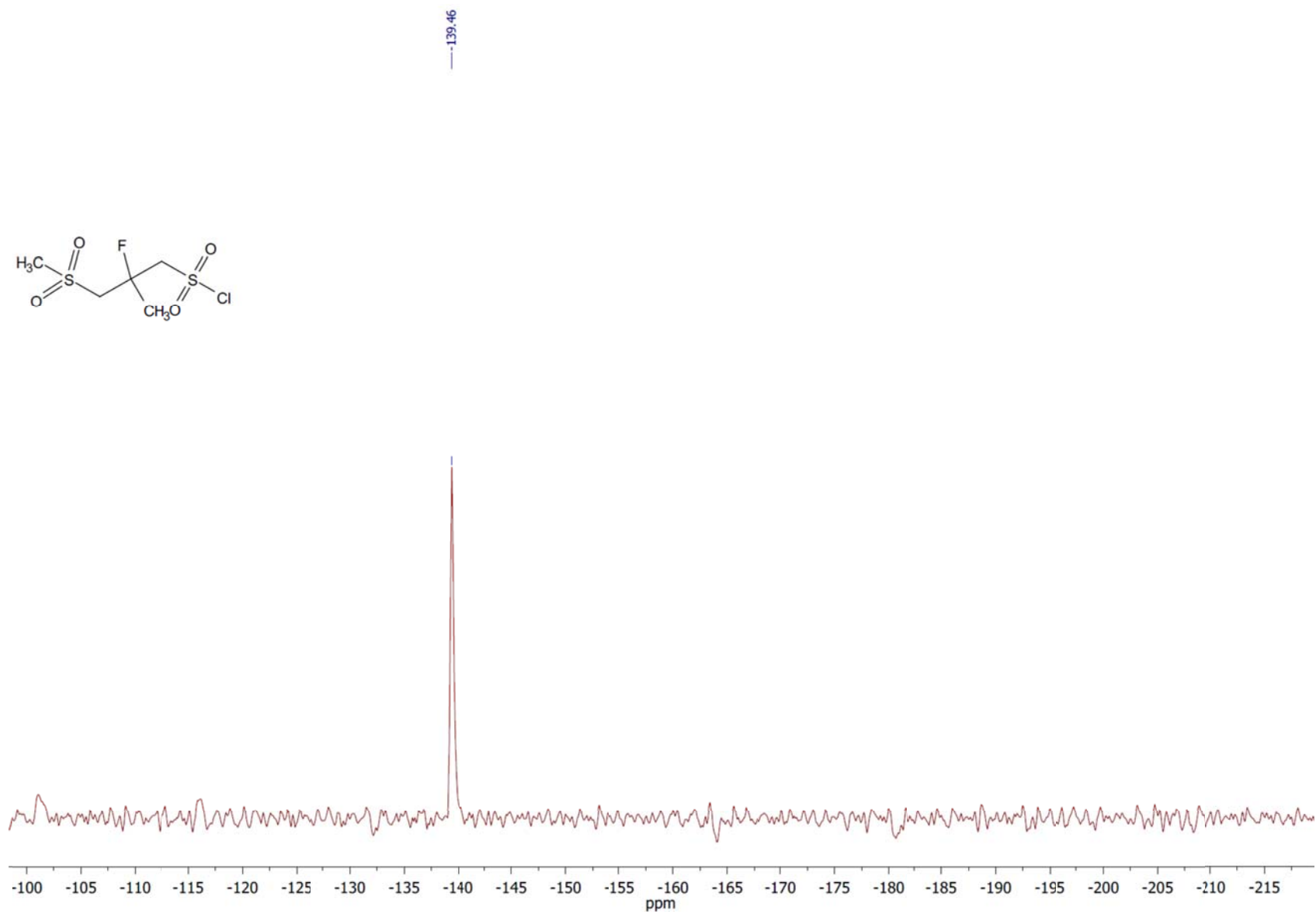


^{13}C NMR spectrum of the compound **4c**.



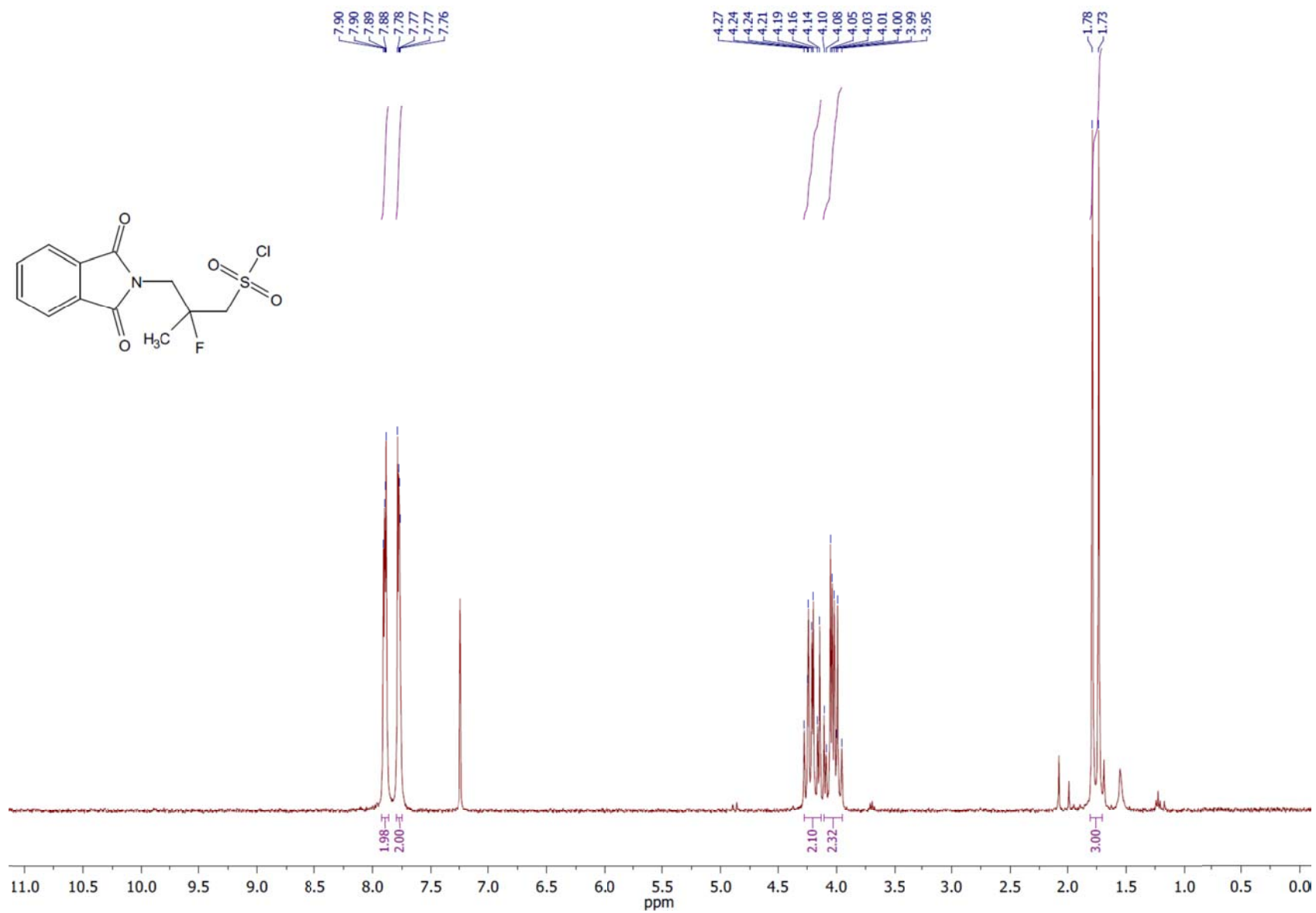
S109

^{19}F NMR spectrum of the compound **4c**.

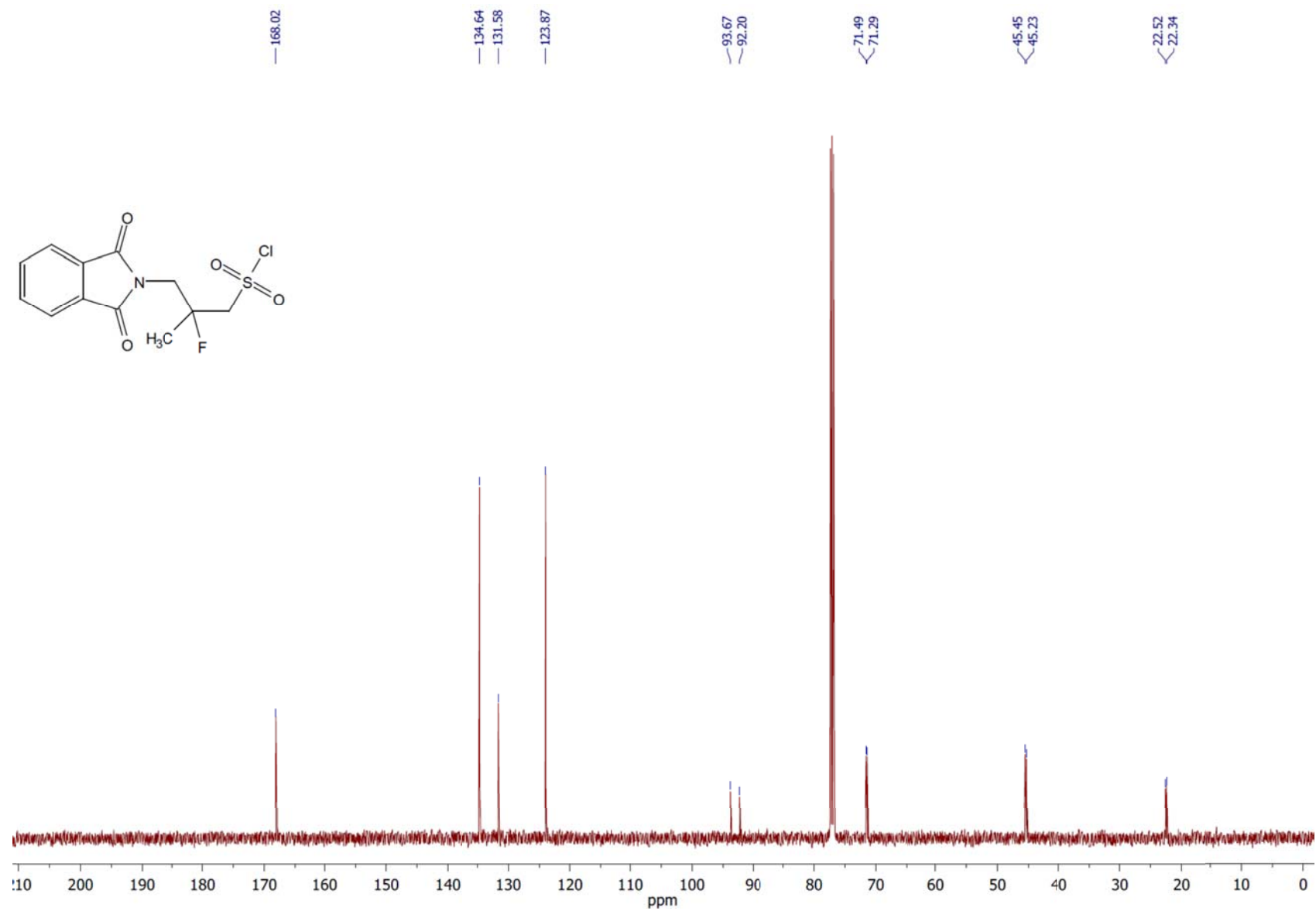


S110

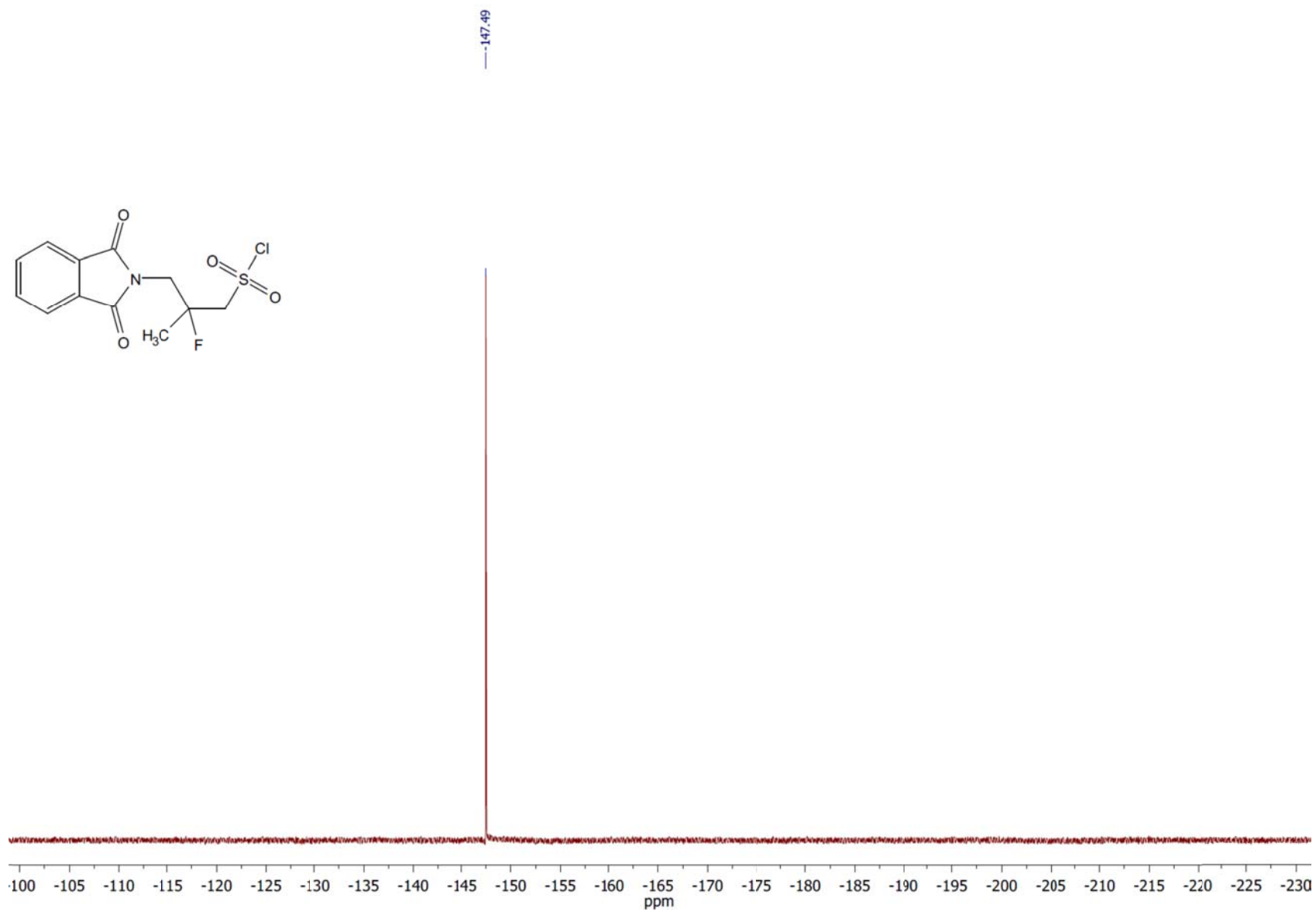
¹H NMR spectrum of the compound **4d**.



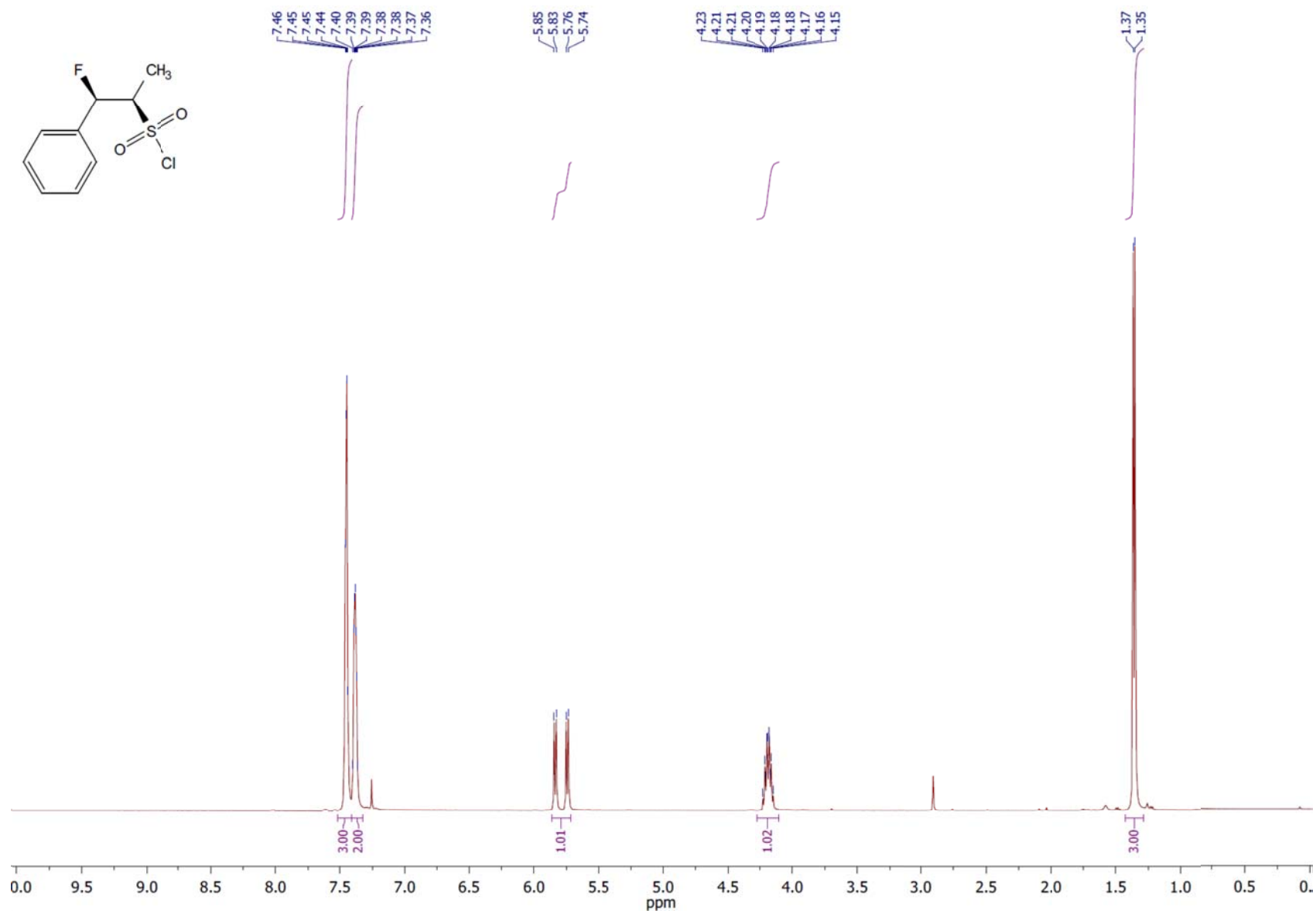
^{13}C NMR spectrum of the compound **4d**.



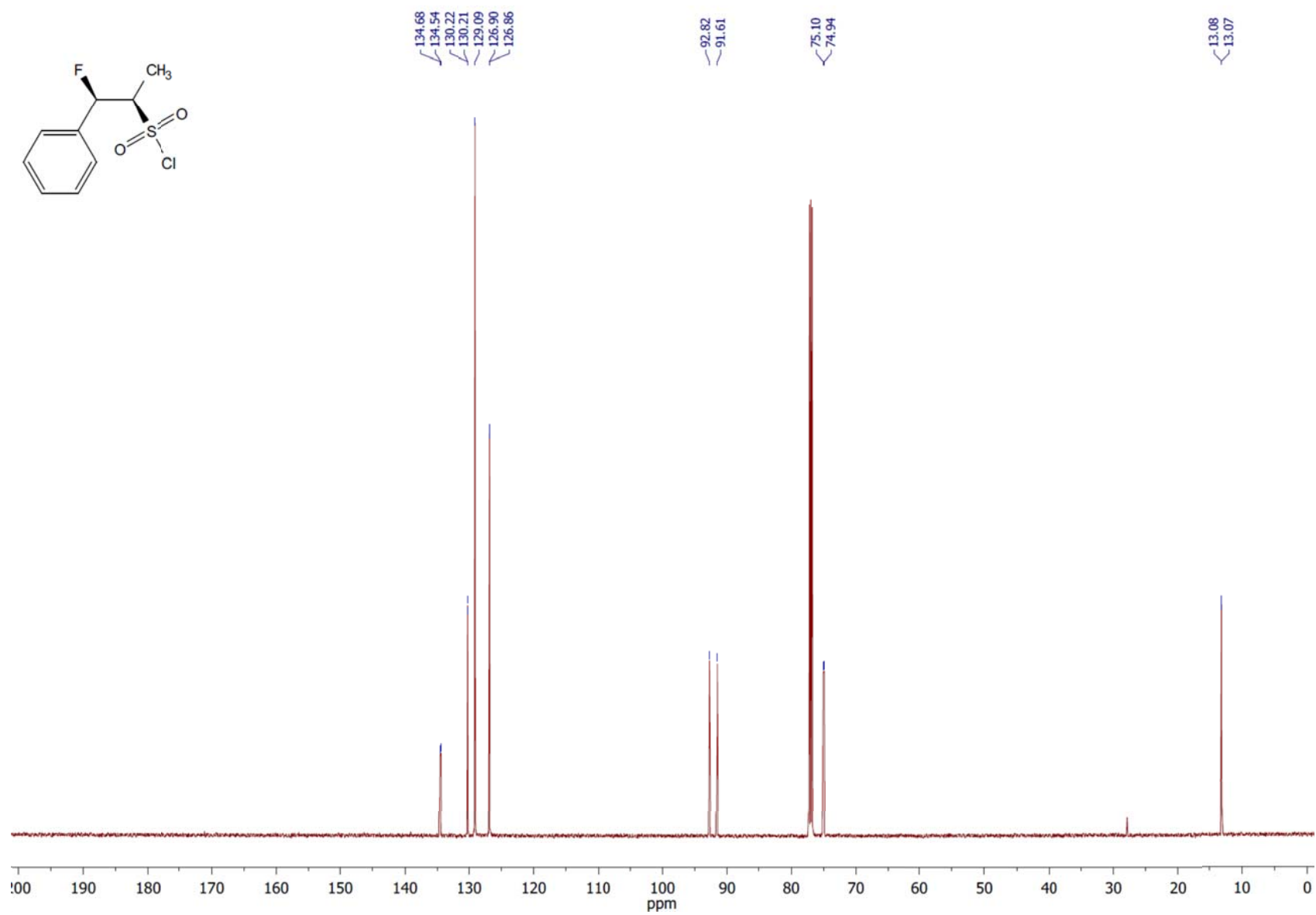
^{19}F NMR spectrum of the compound **4d**.



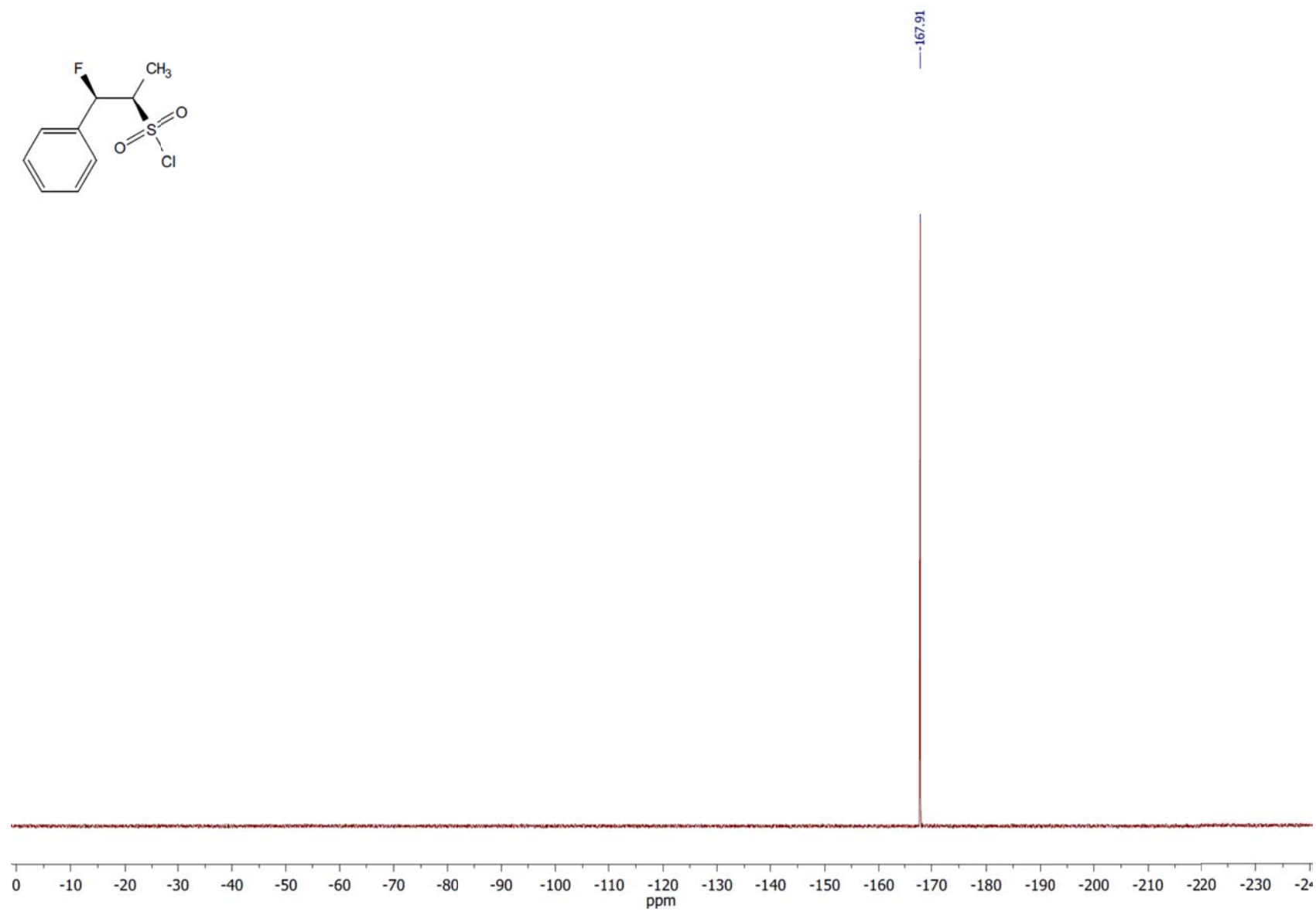
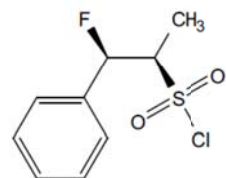
¹H NMR spectrum of the compound **4e**.



^{13}C NMR spectrum of the compound **4e**.

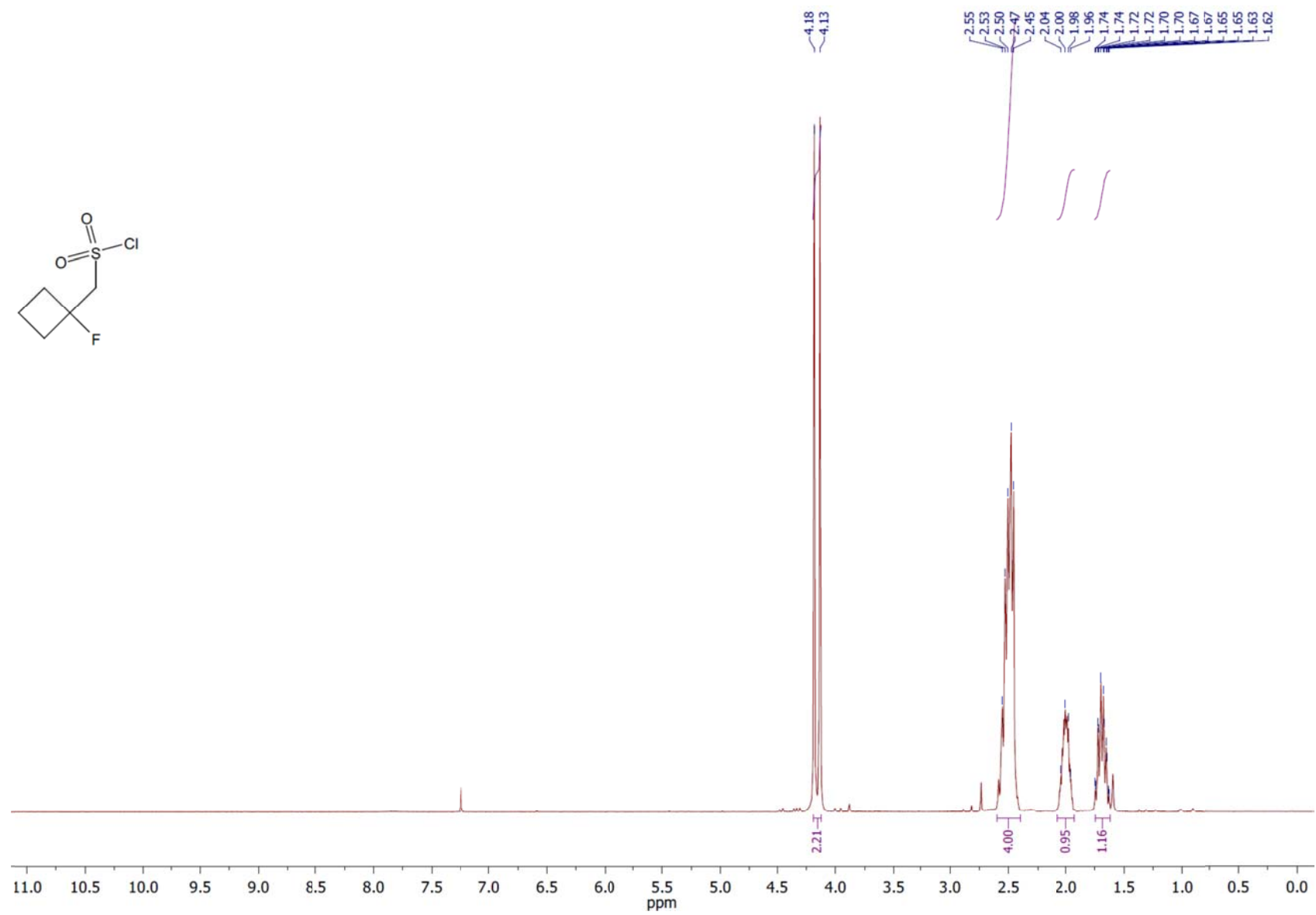
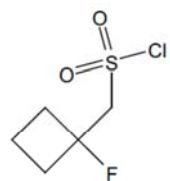


^{19}F NMR spectrum of the compound **4e**.



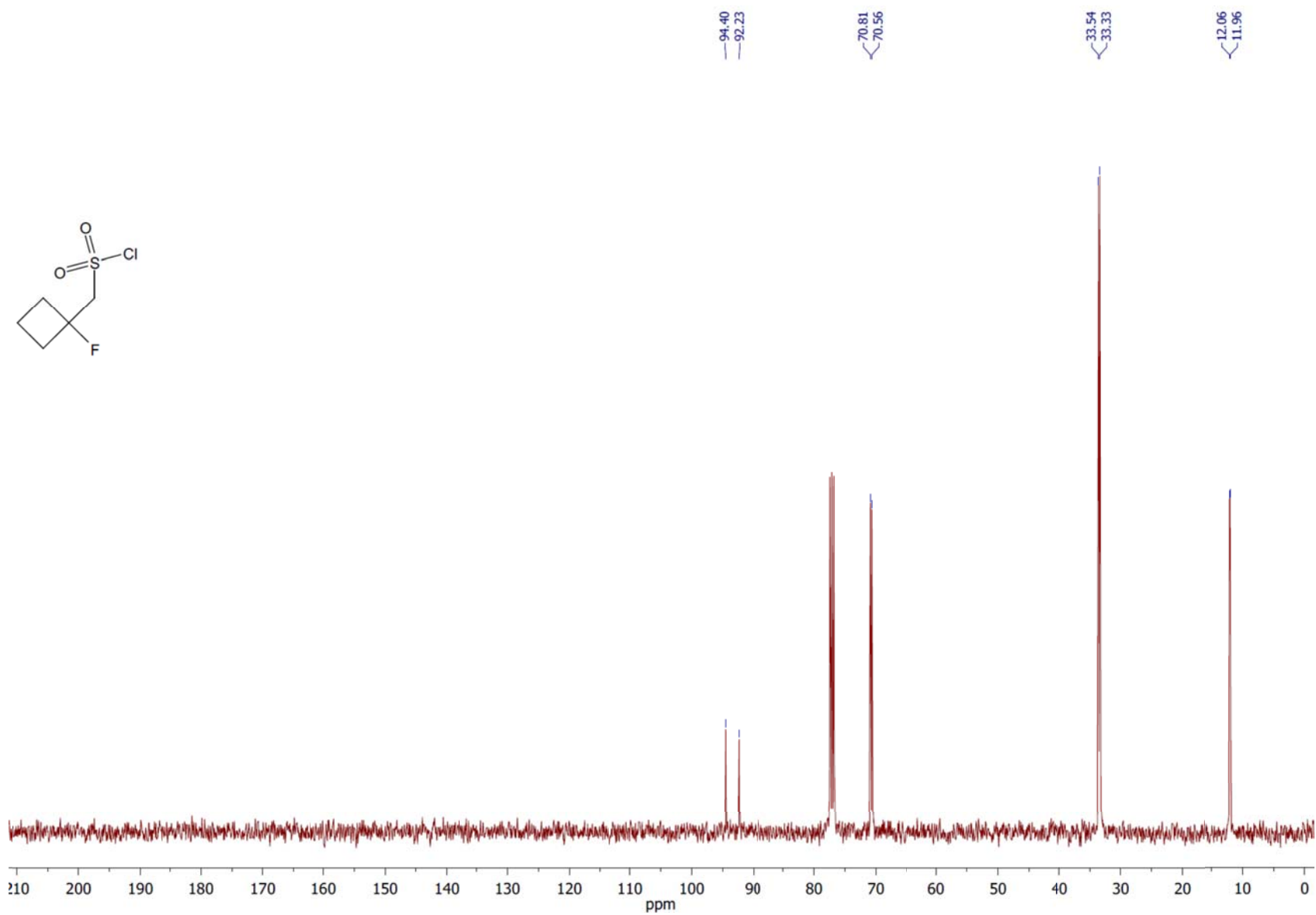
S116

^1H NMR spectrum of the compound **4h**.

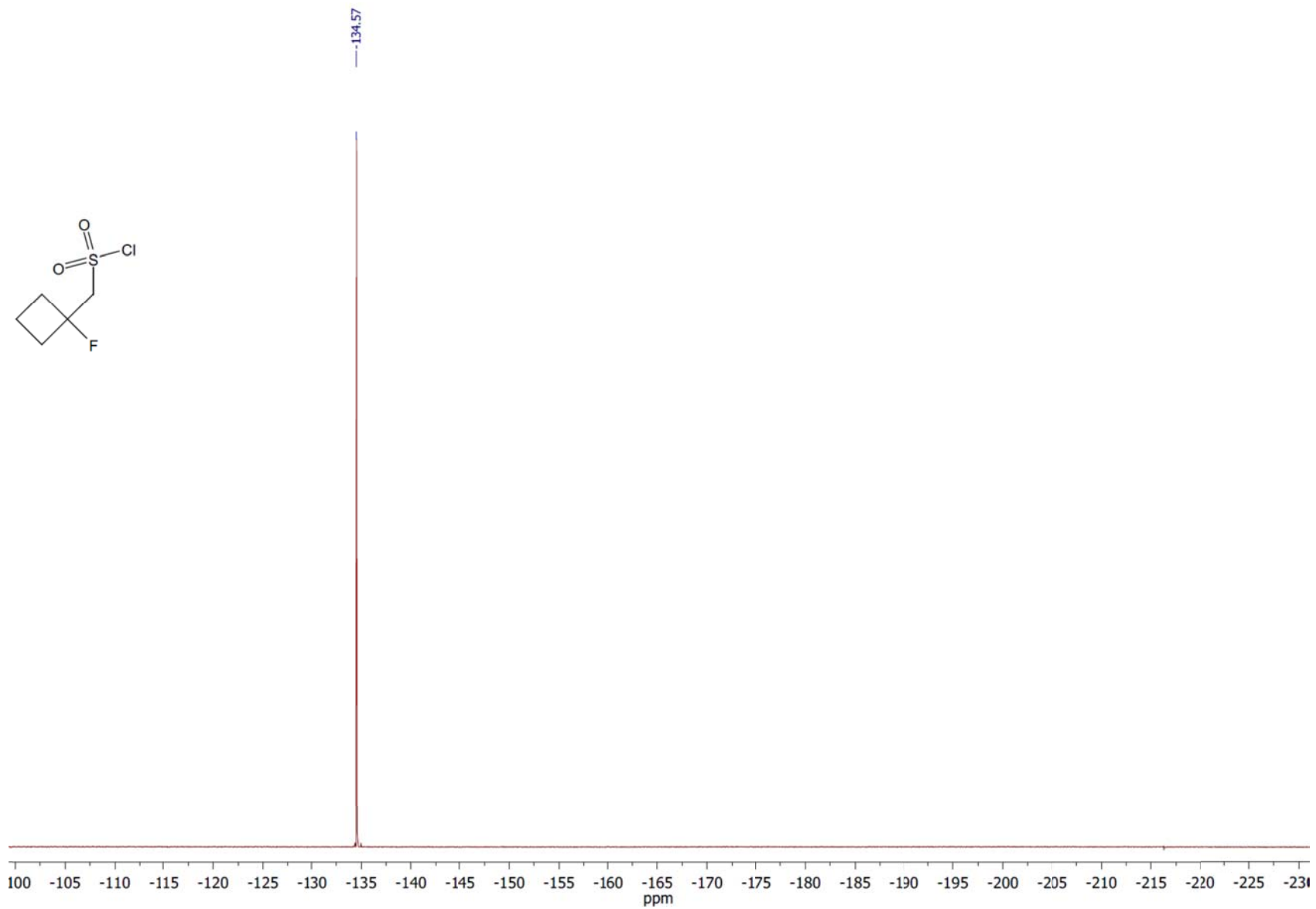


S117

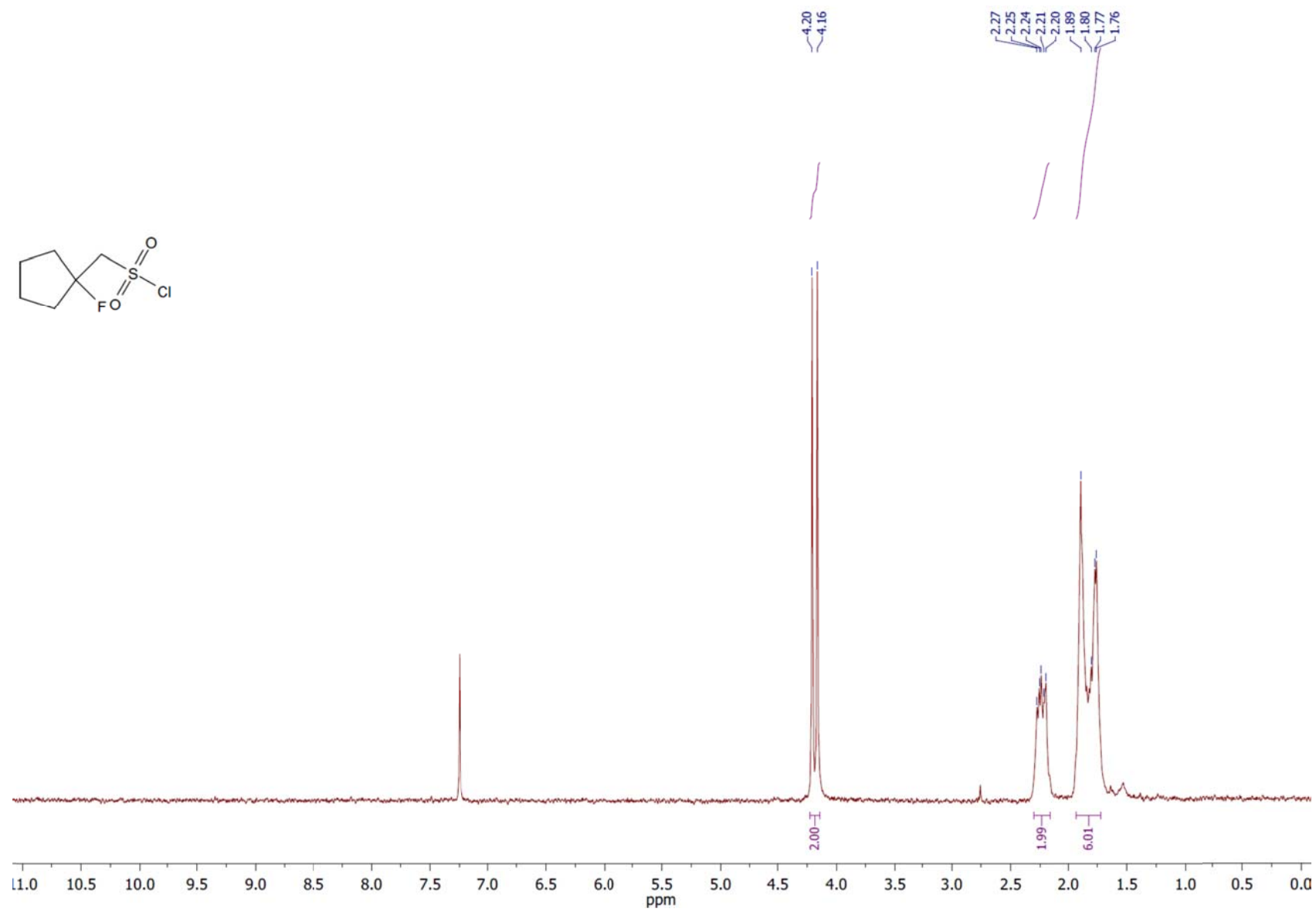
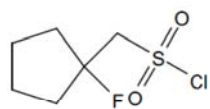
^{13}C NMR spectrum of the compound **4h**.



^{19}F NMR spectrum of the compound **4h**.

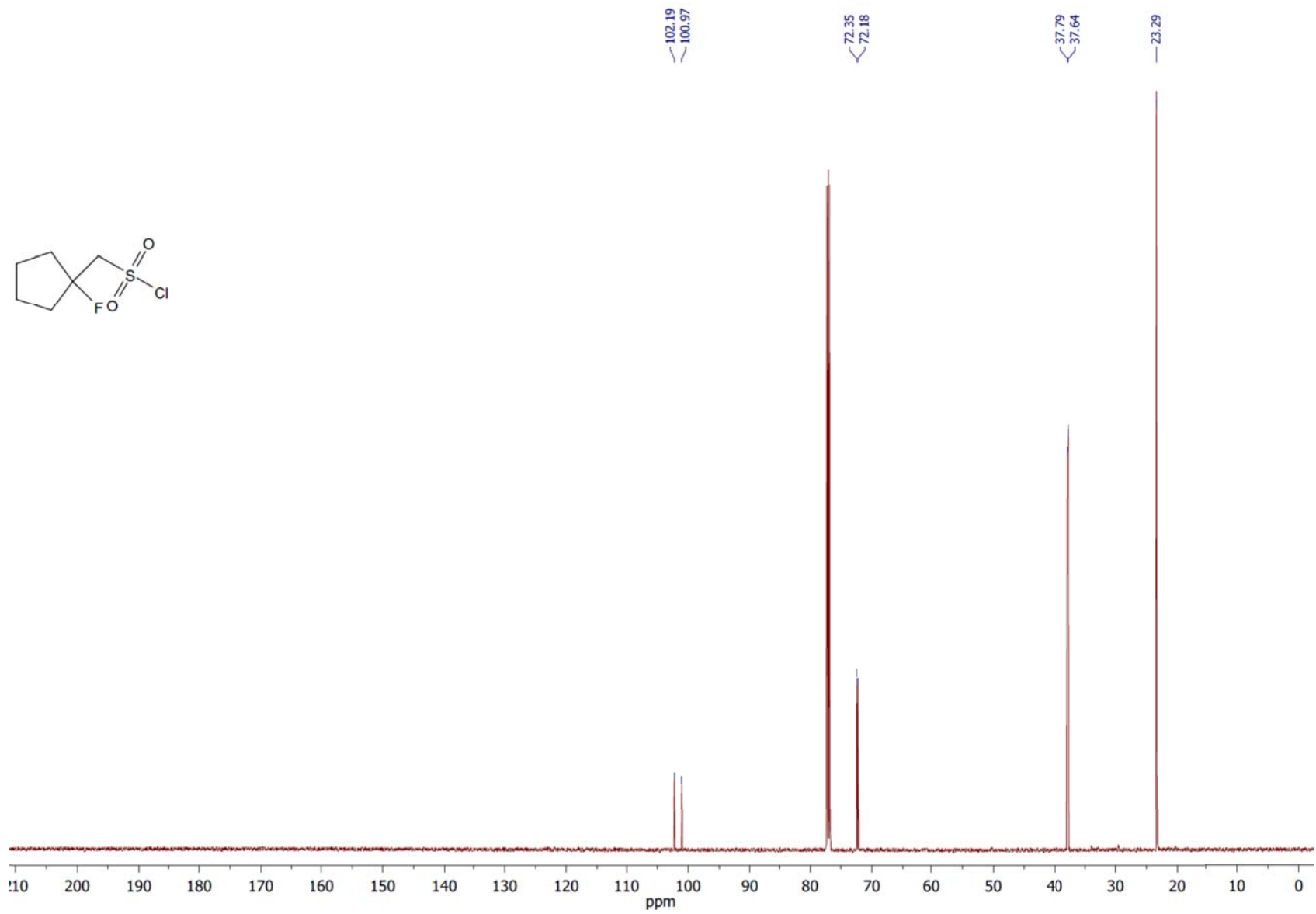


^1H NMR spectrum of the compound **4i**.



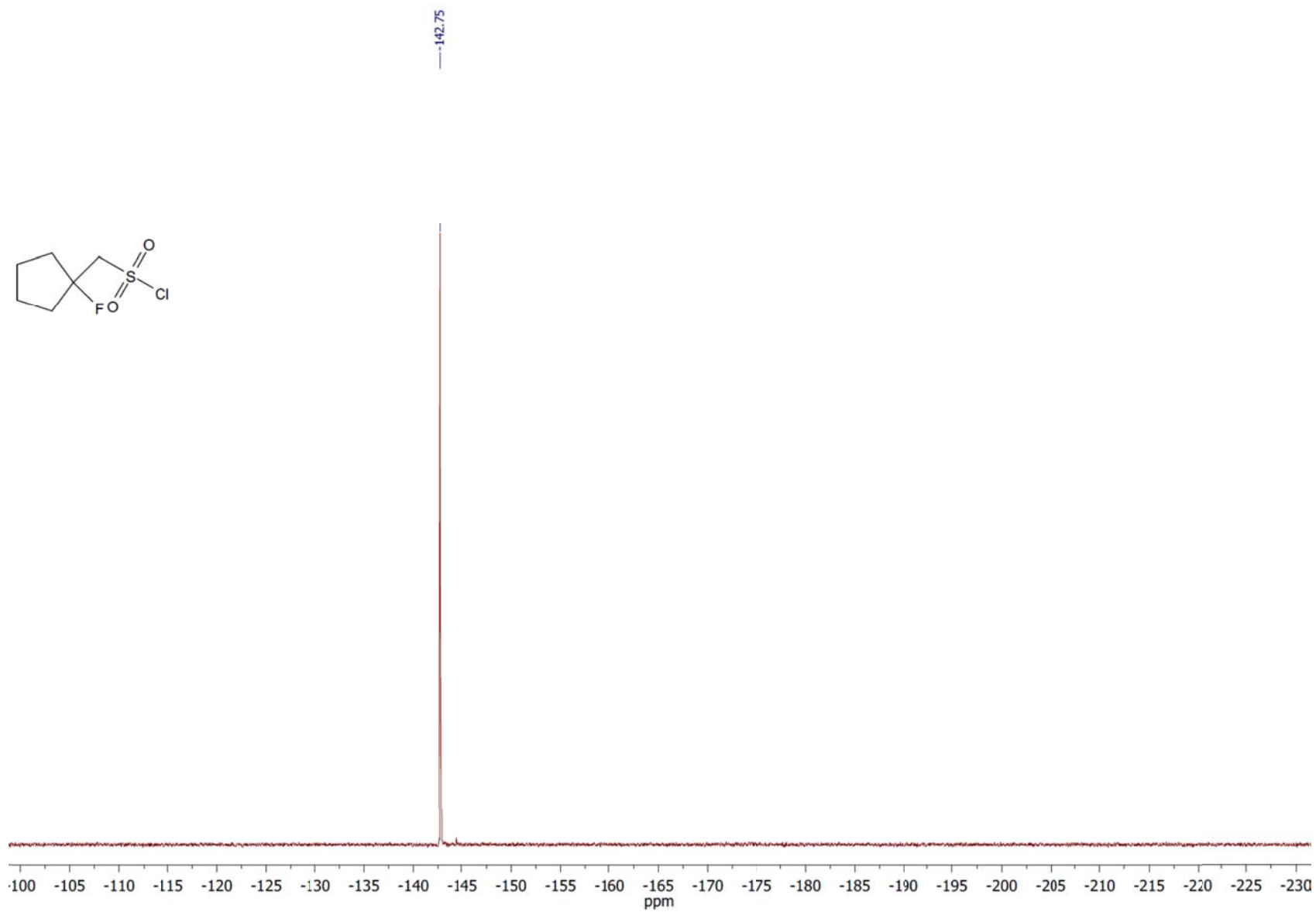
S120

^{13}C NMR spectrum of the compound **4i**.



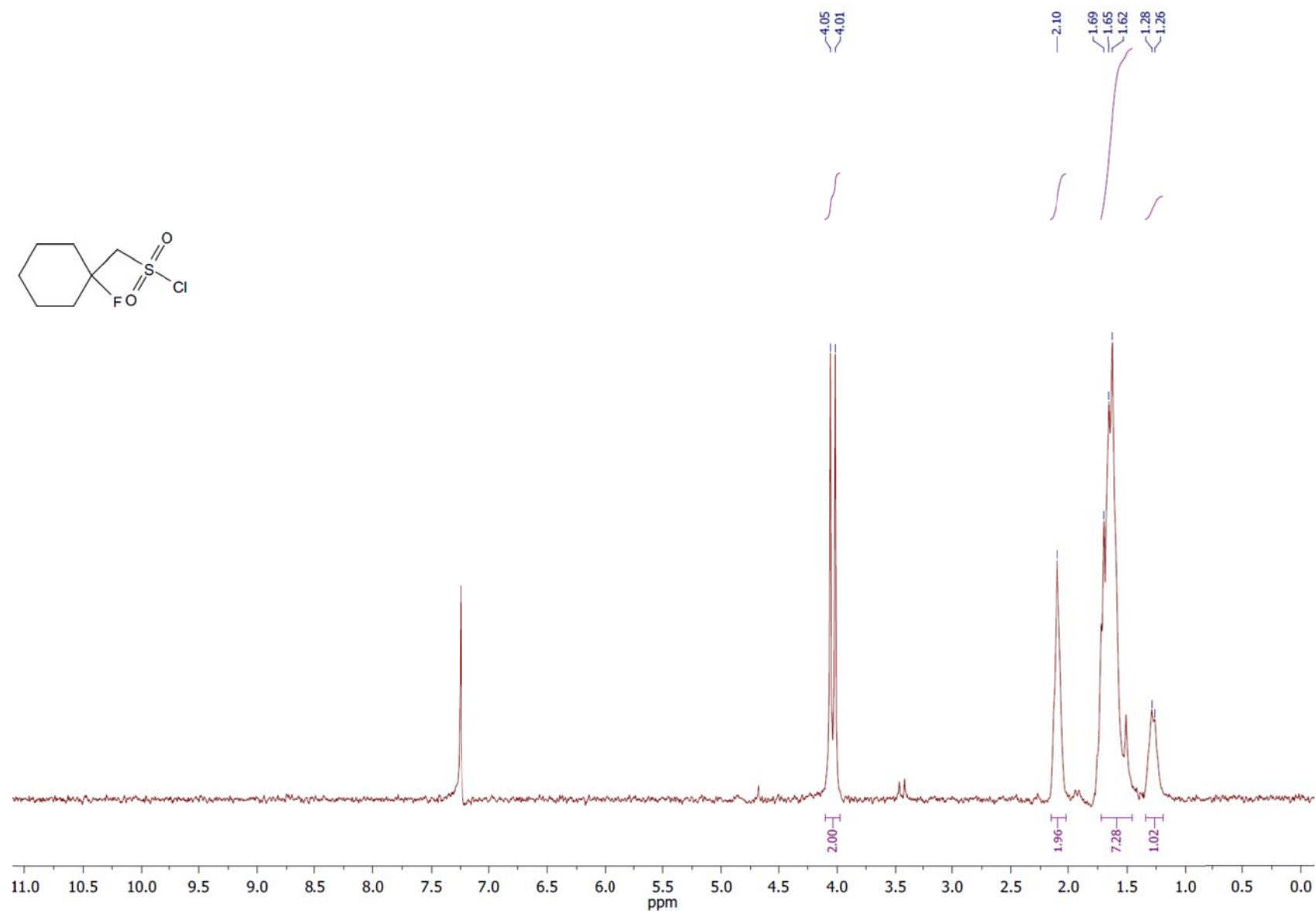
S121

^{19}F NMR spectrum of the compound **4i**.

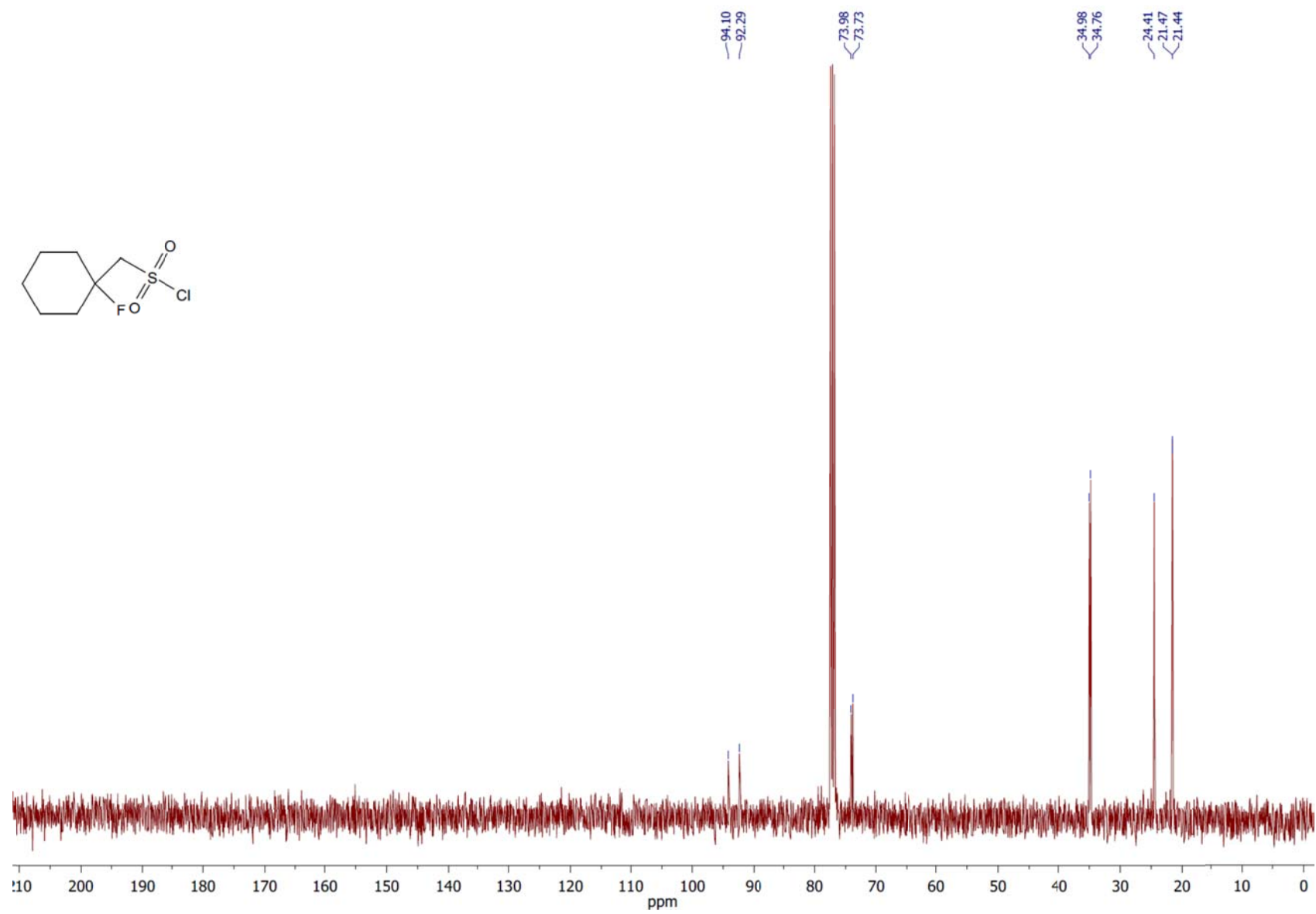


S122

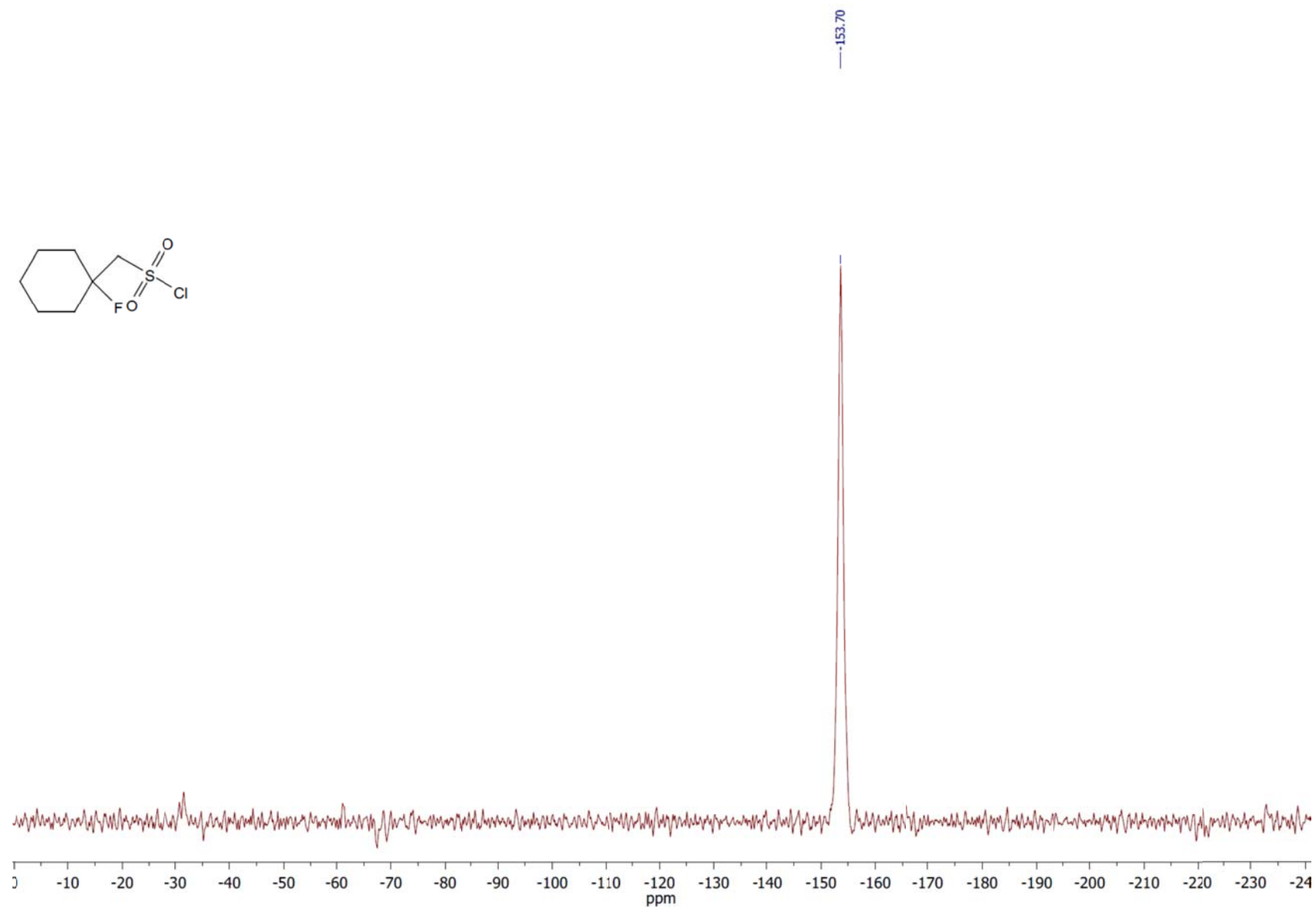
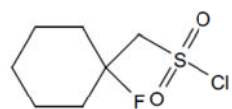
^1H NMR spectrum of the compound **4j**.



^{13}C NMR spectrum of the compound **4j**.

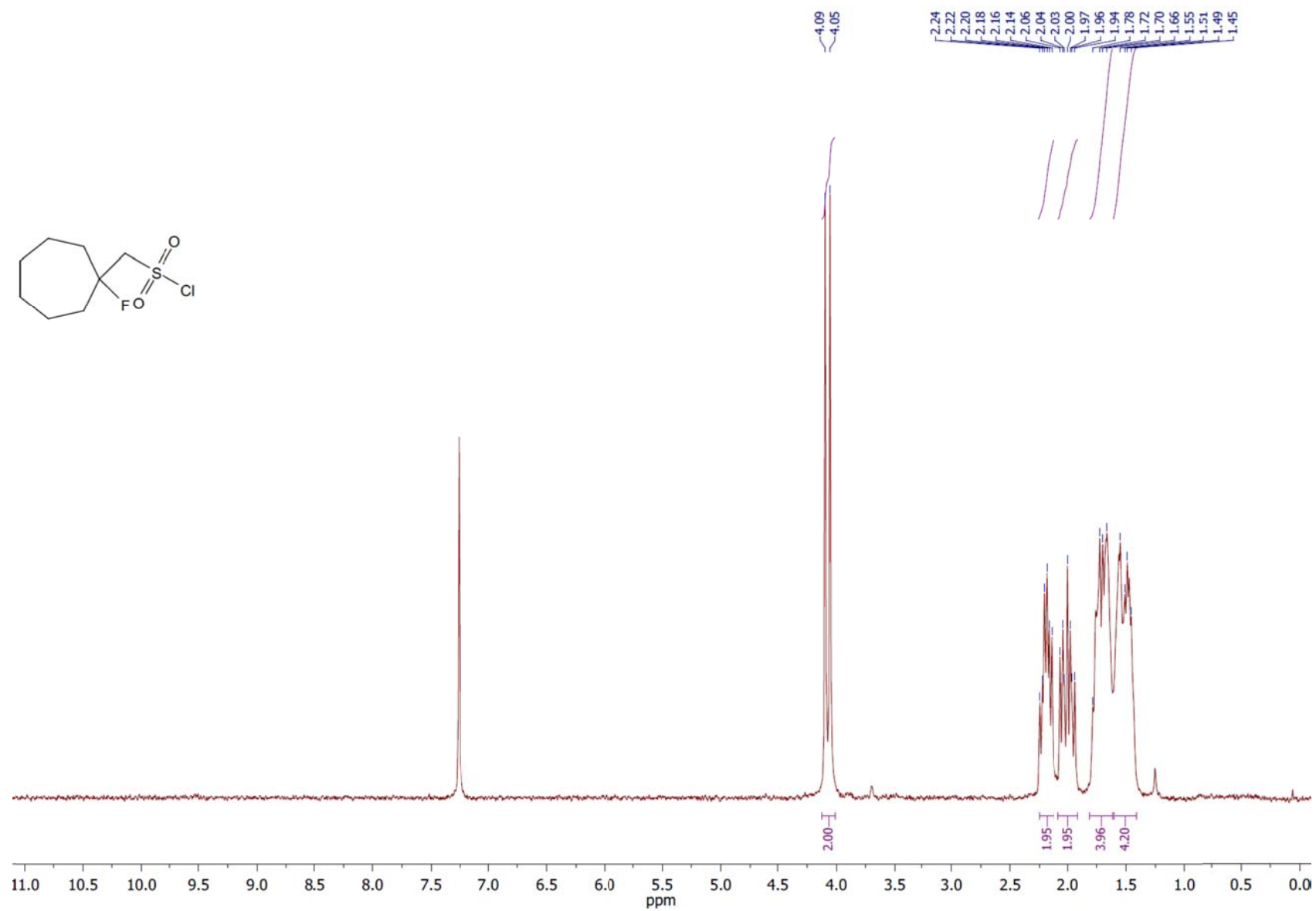
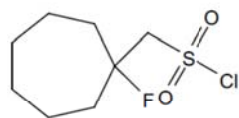


^{19}F NMR spectrum of the compound **4j**.

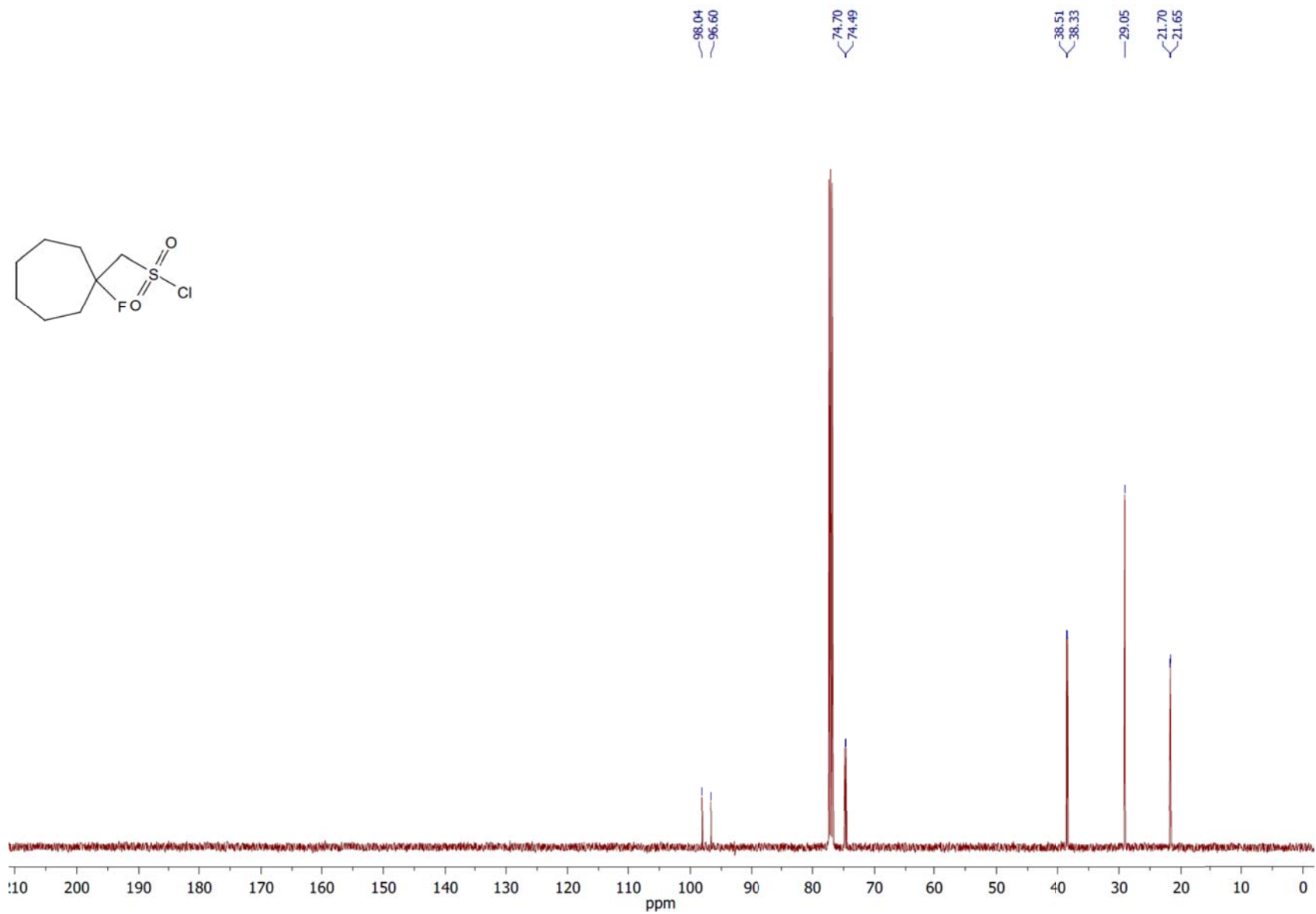


S125

^1H NMR spectrum of the compound **4k**.

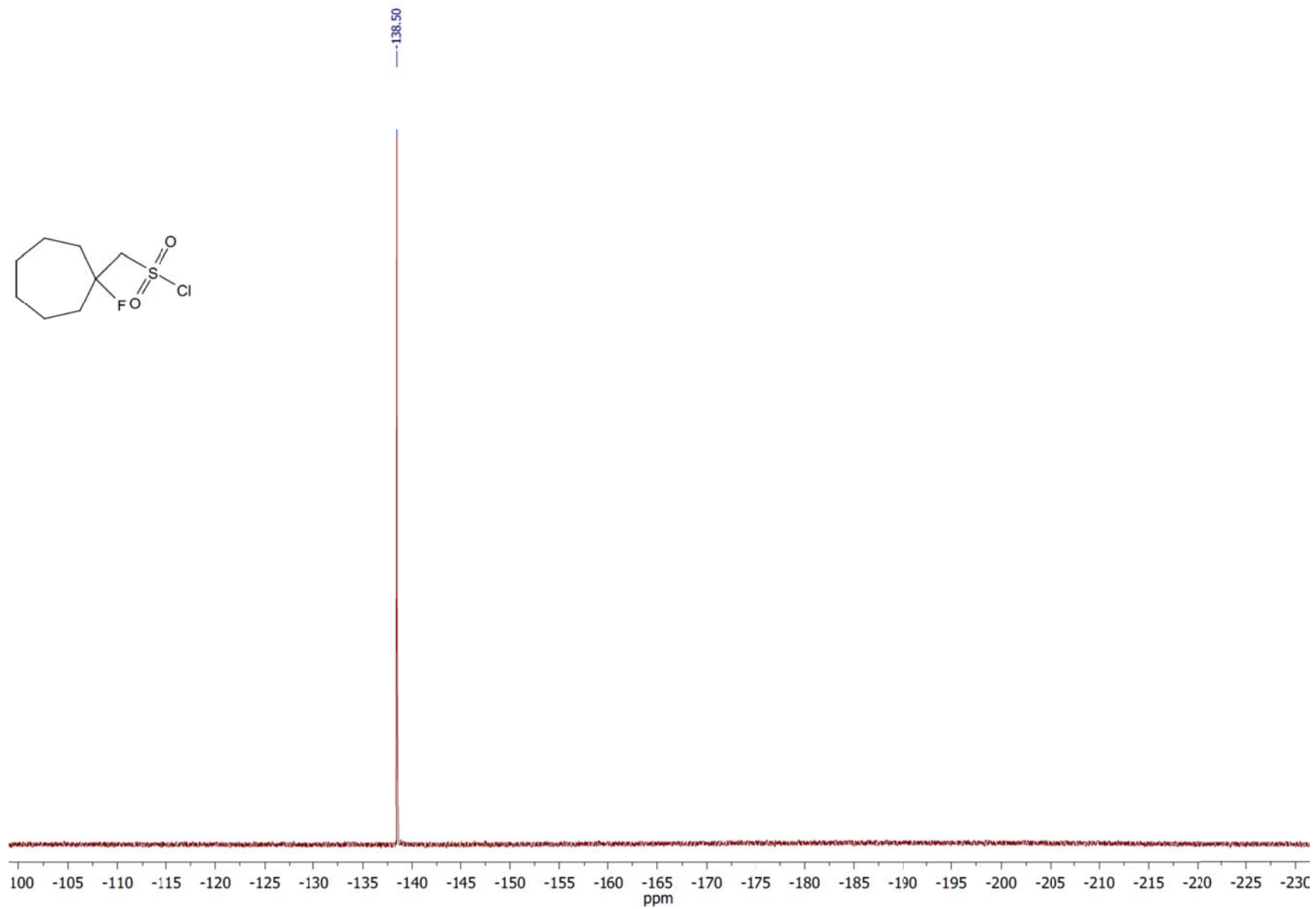


^{13}C NMR spectrum of the compound **4k**.

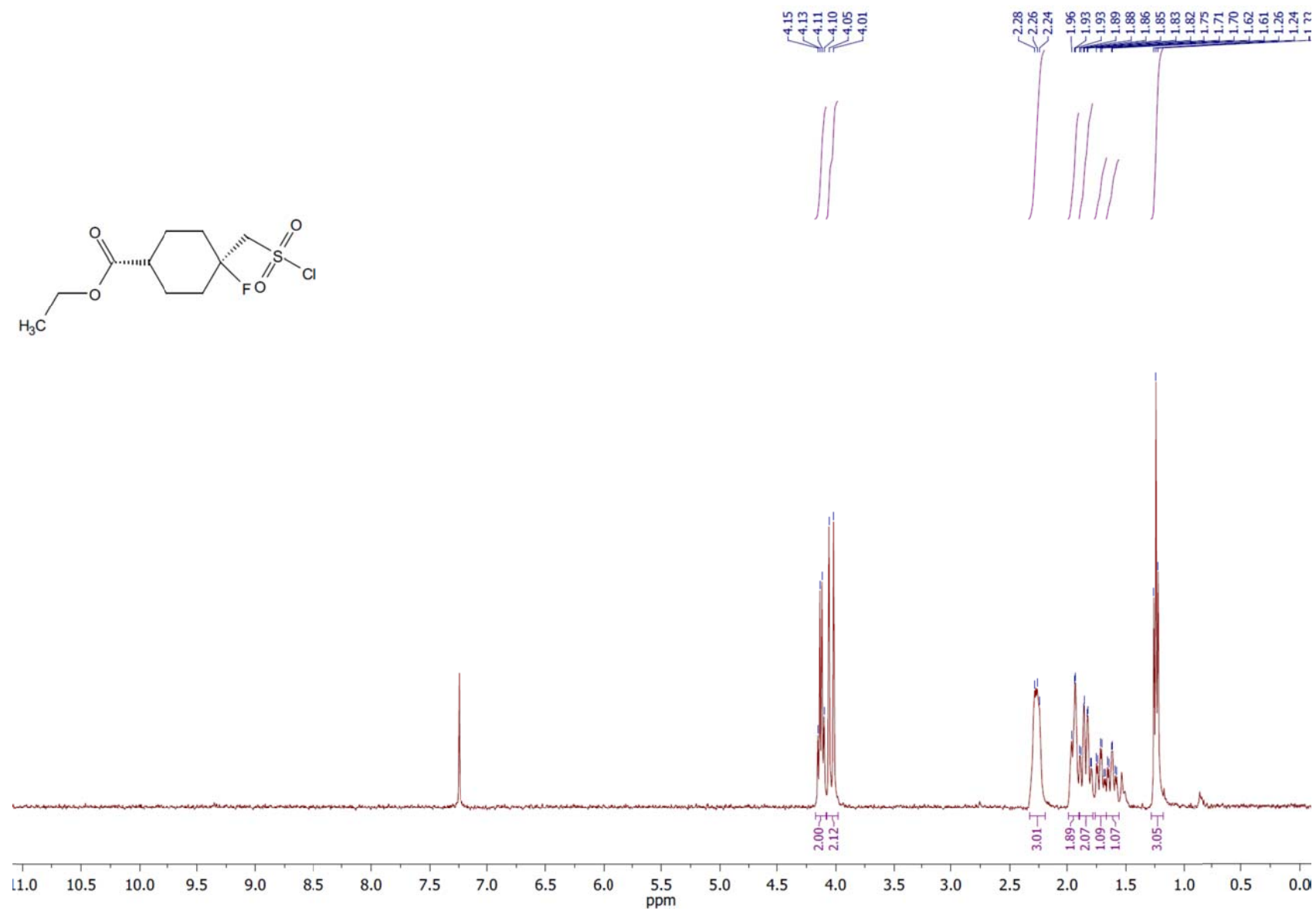
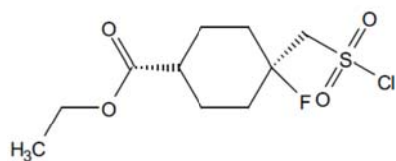


S127

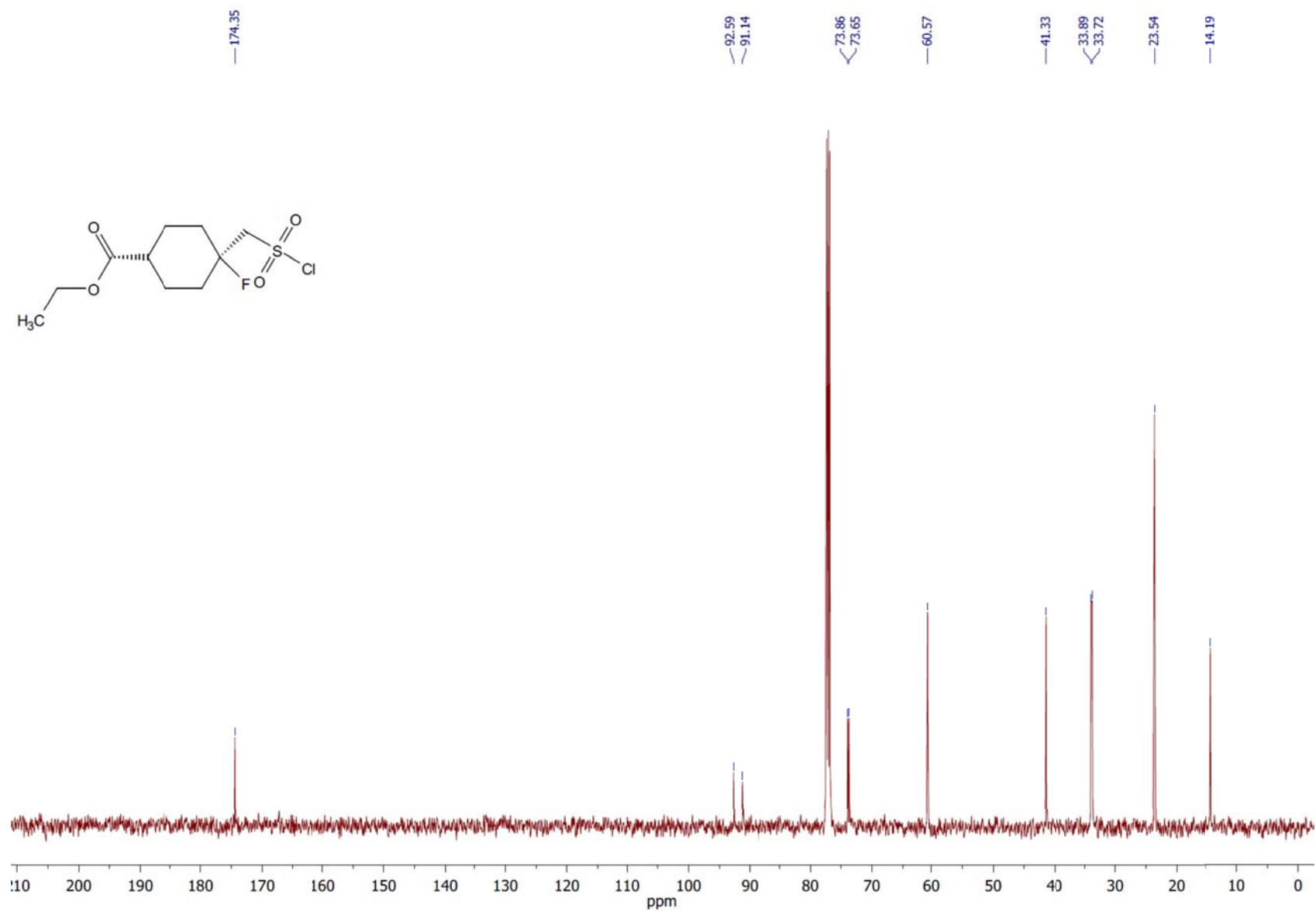
^{19}F NMR spectrum of the compound **4k**.



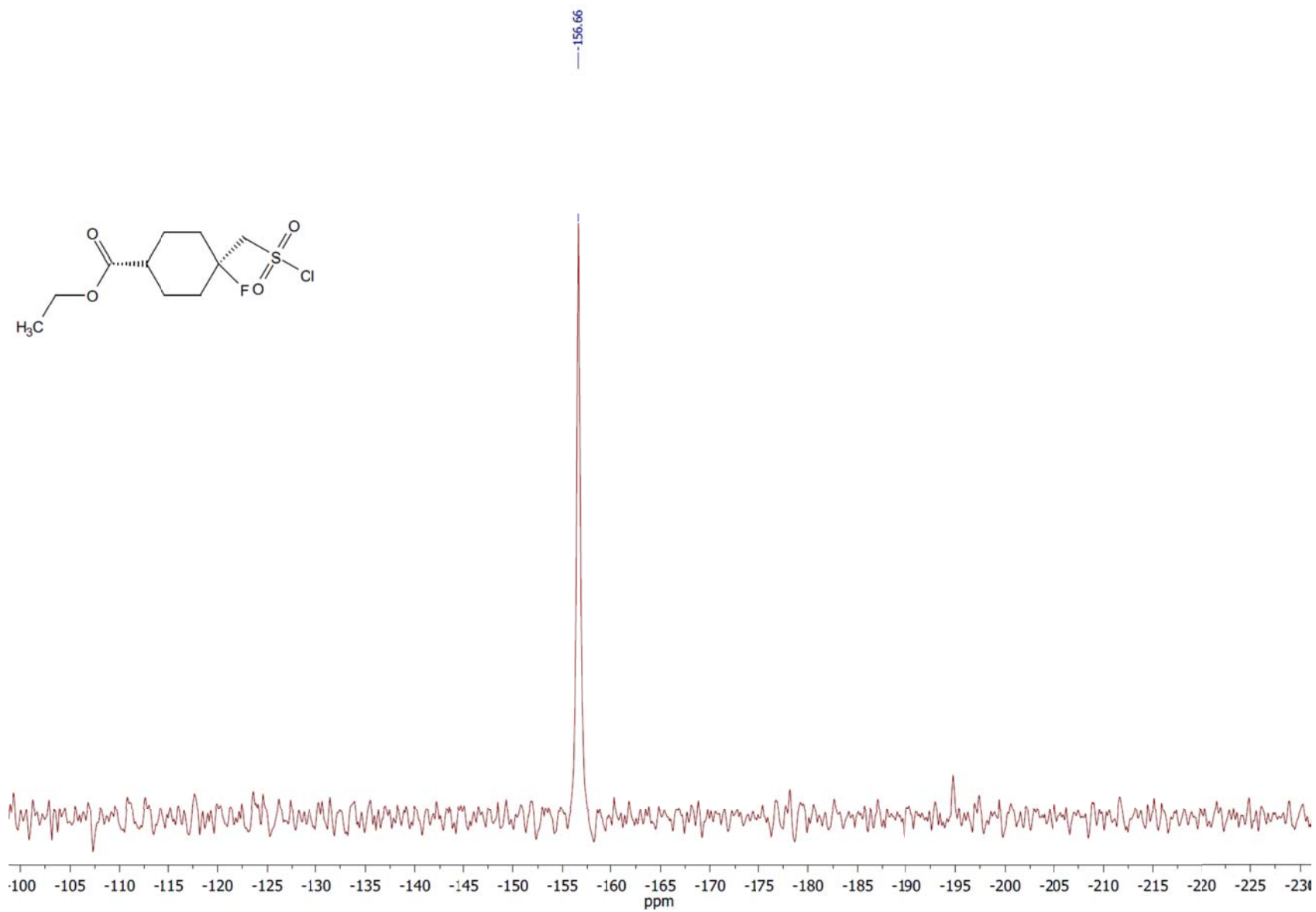
^1H NMR spectrum of the compound **4l**.



^{13}C NMR spectrum of the compound **41**.

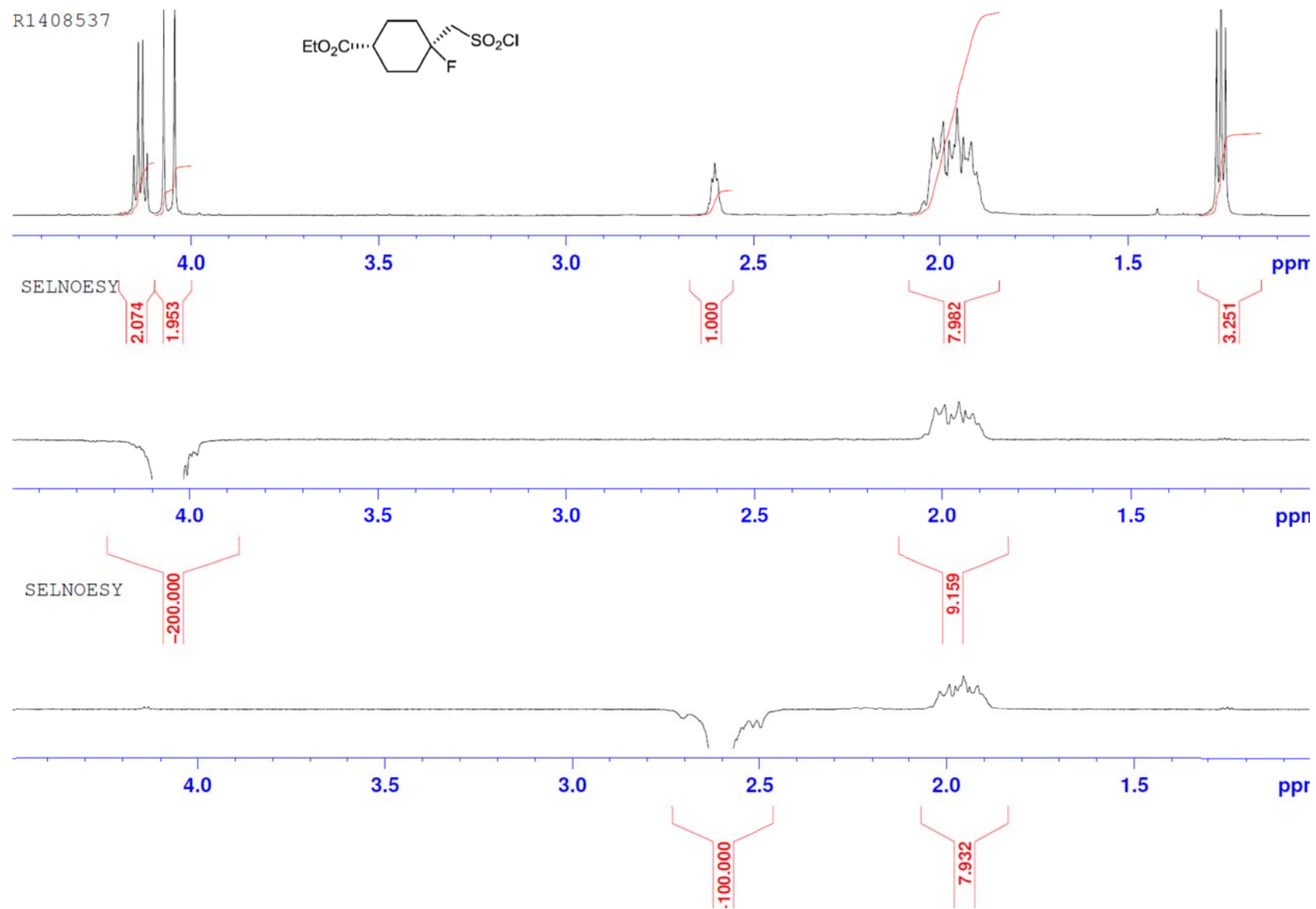


^{19}F NMR spectrum of the compound **4l**.



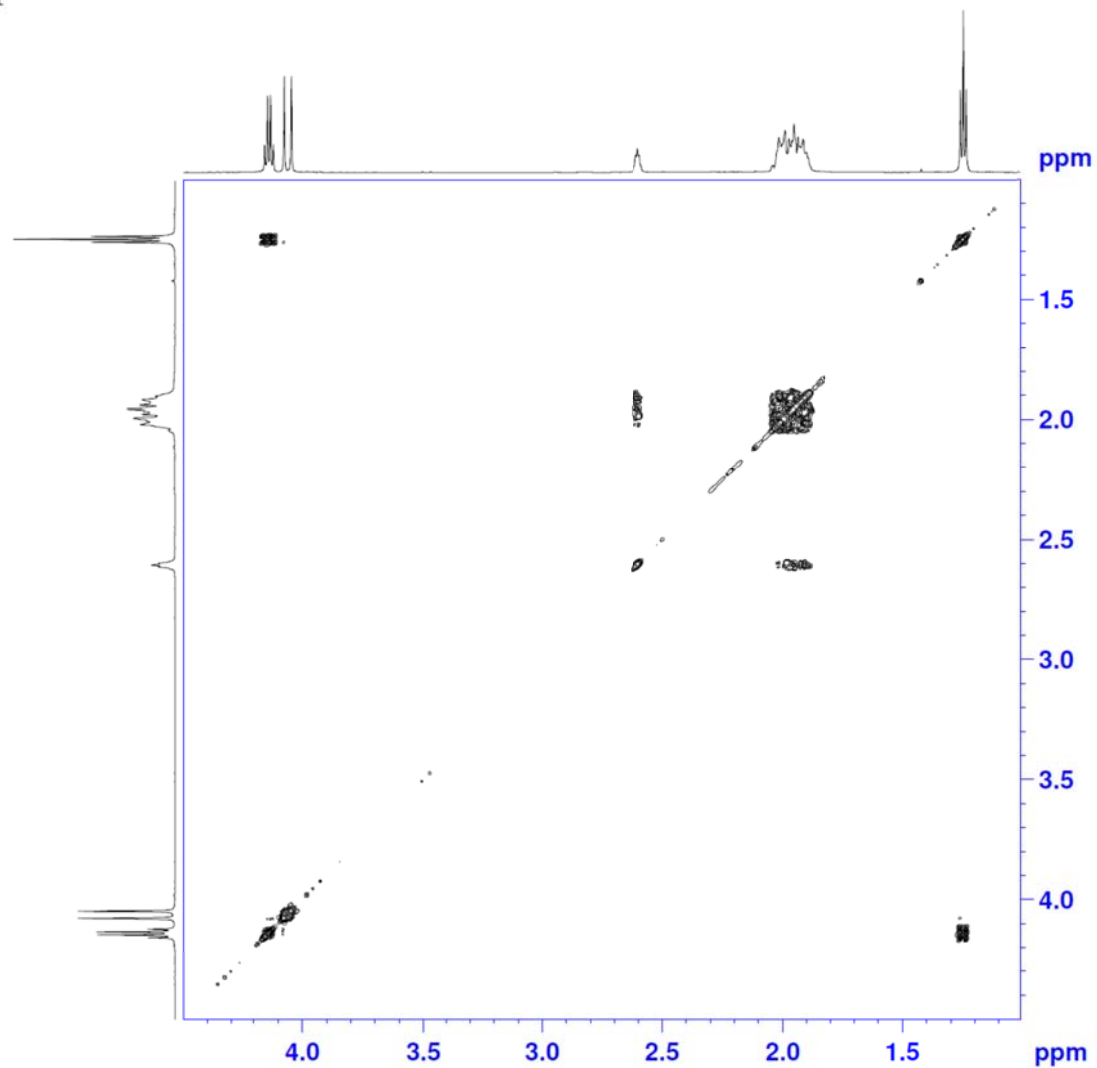
S131

NOE spectrum of the compound **4l**.

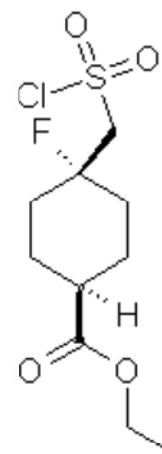


COSY spectrum of the compound **4l**.

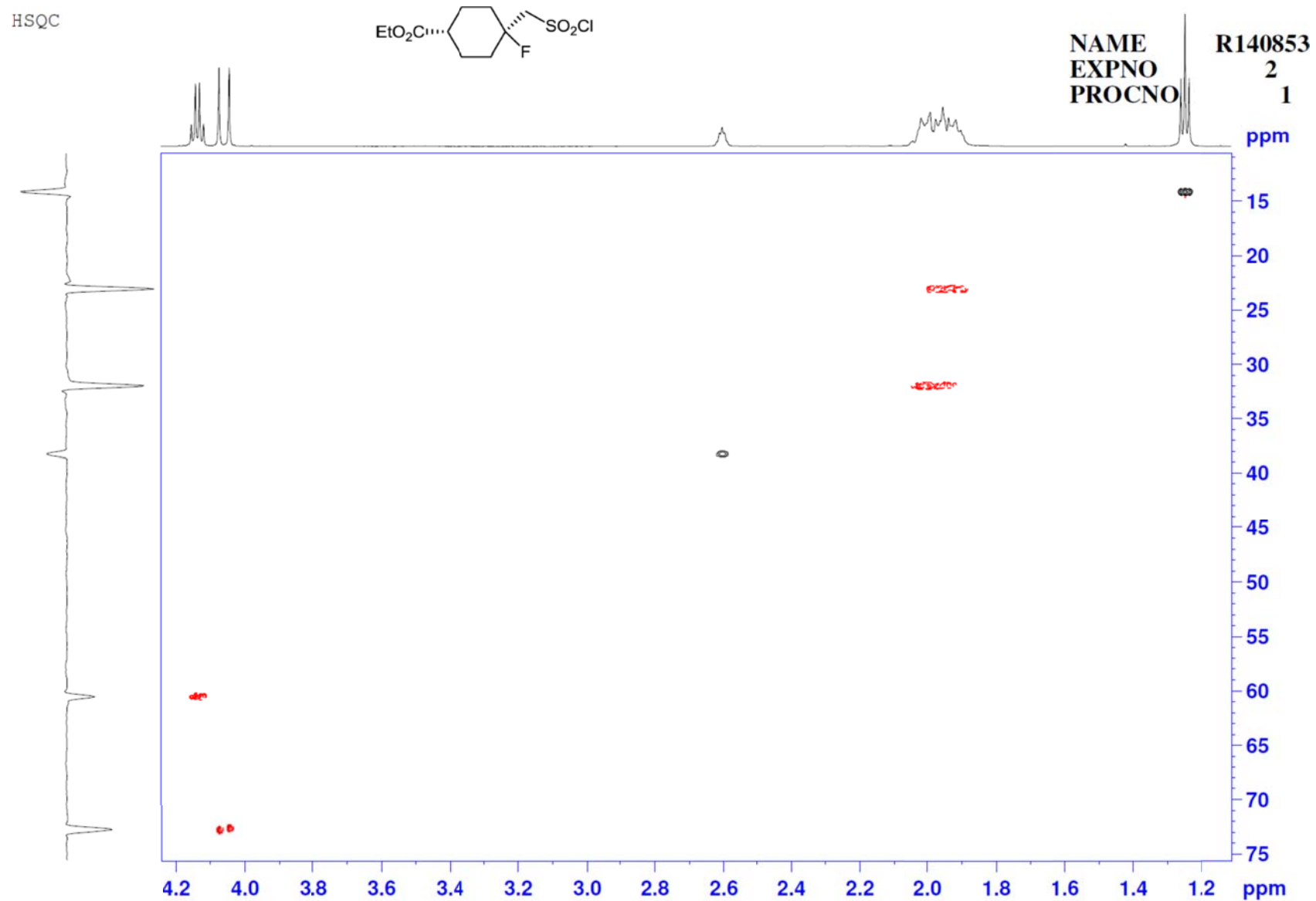
COSY



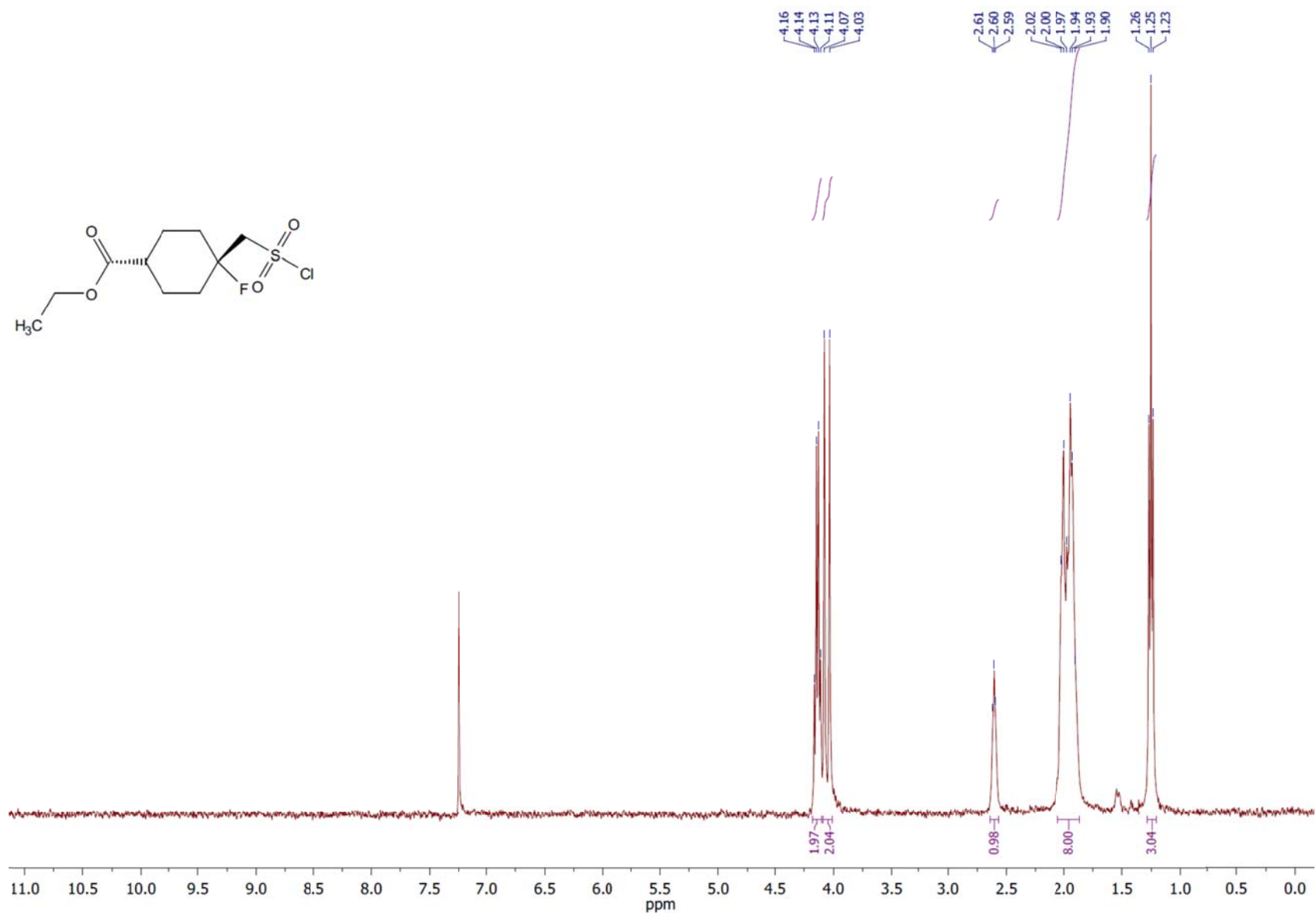
NAME R1408537
EXPNO 3
PROCNO 1



HSQC spectrum of the compound **4l**.

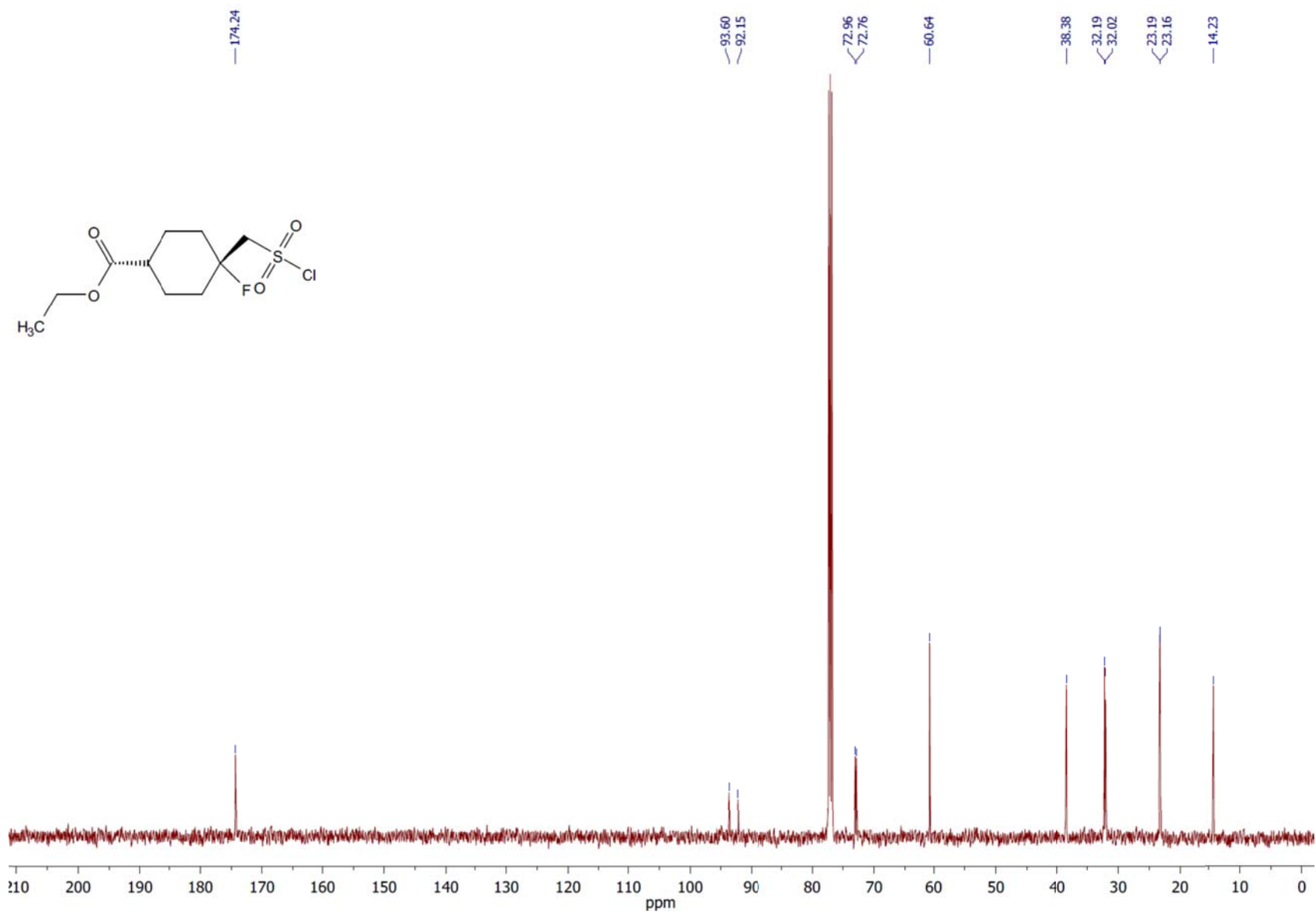


¹H NMR spectrum of the compound **4m**.

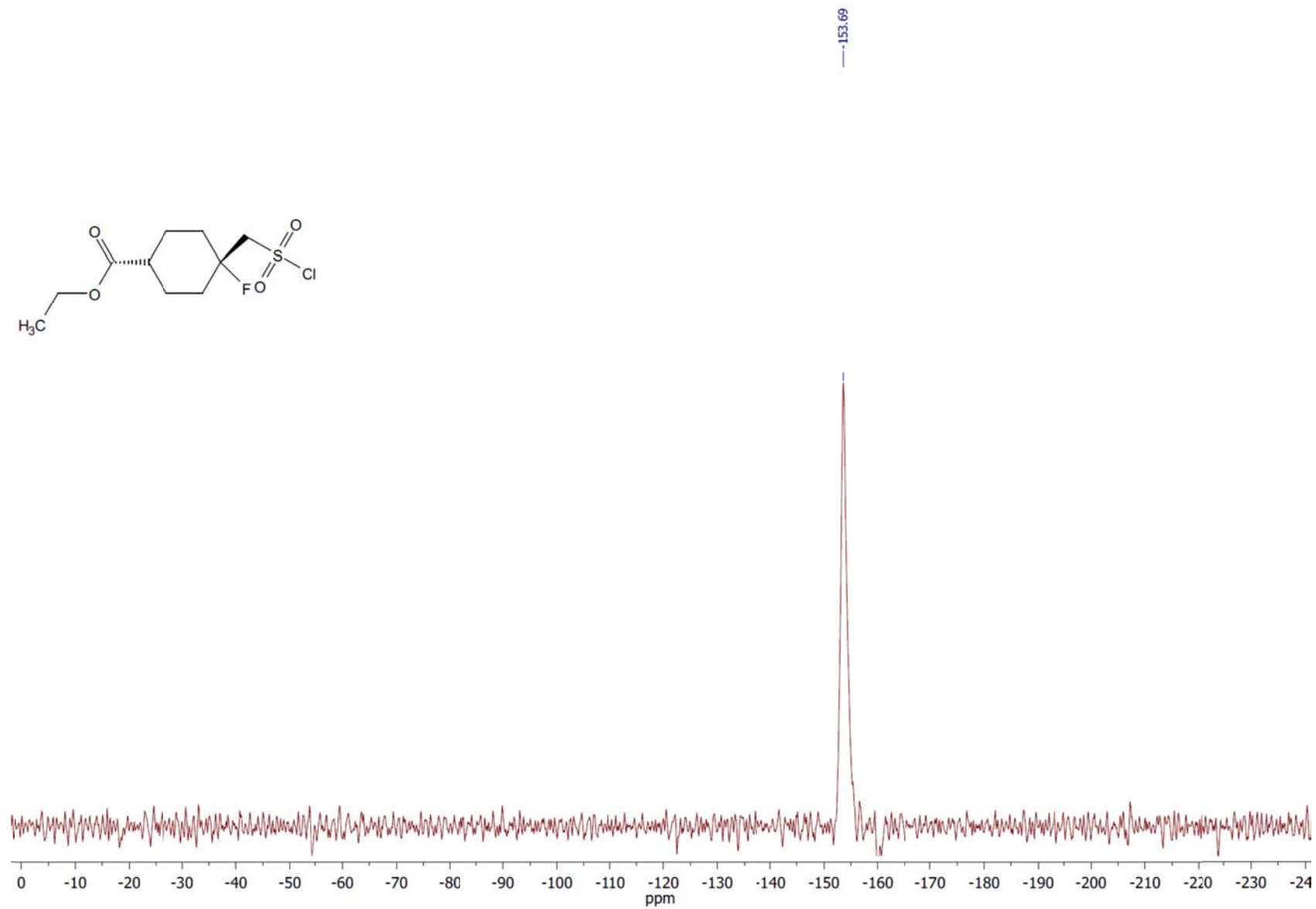
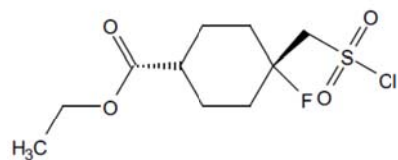


S135

¹³C NMR spectrum of the compound **4m**.

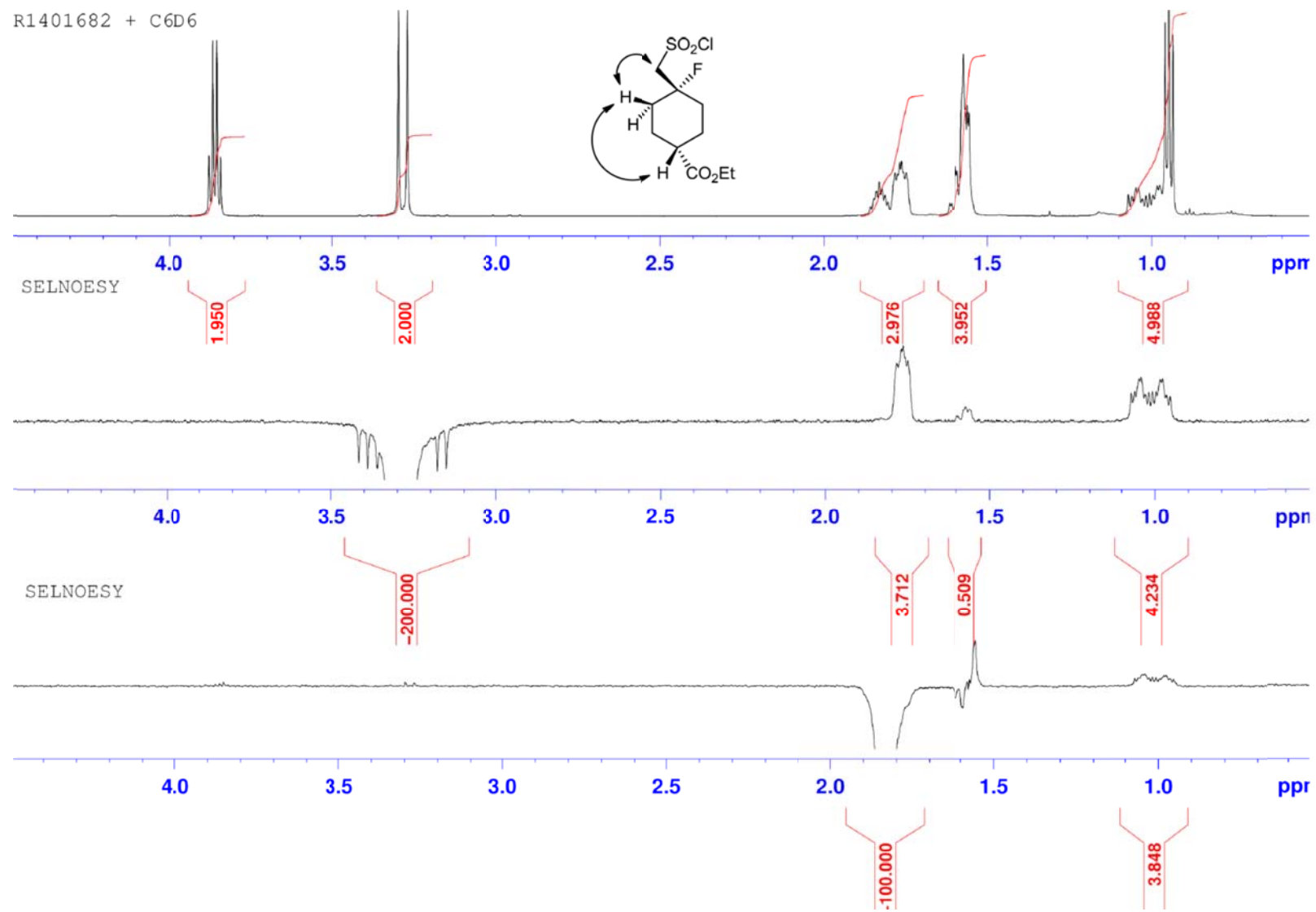


^{19}F NMR spectrum of the compound **4m**.



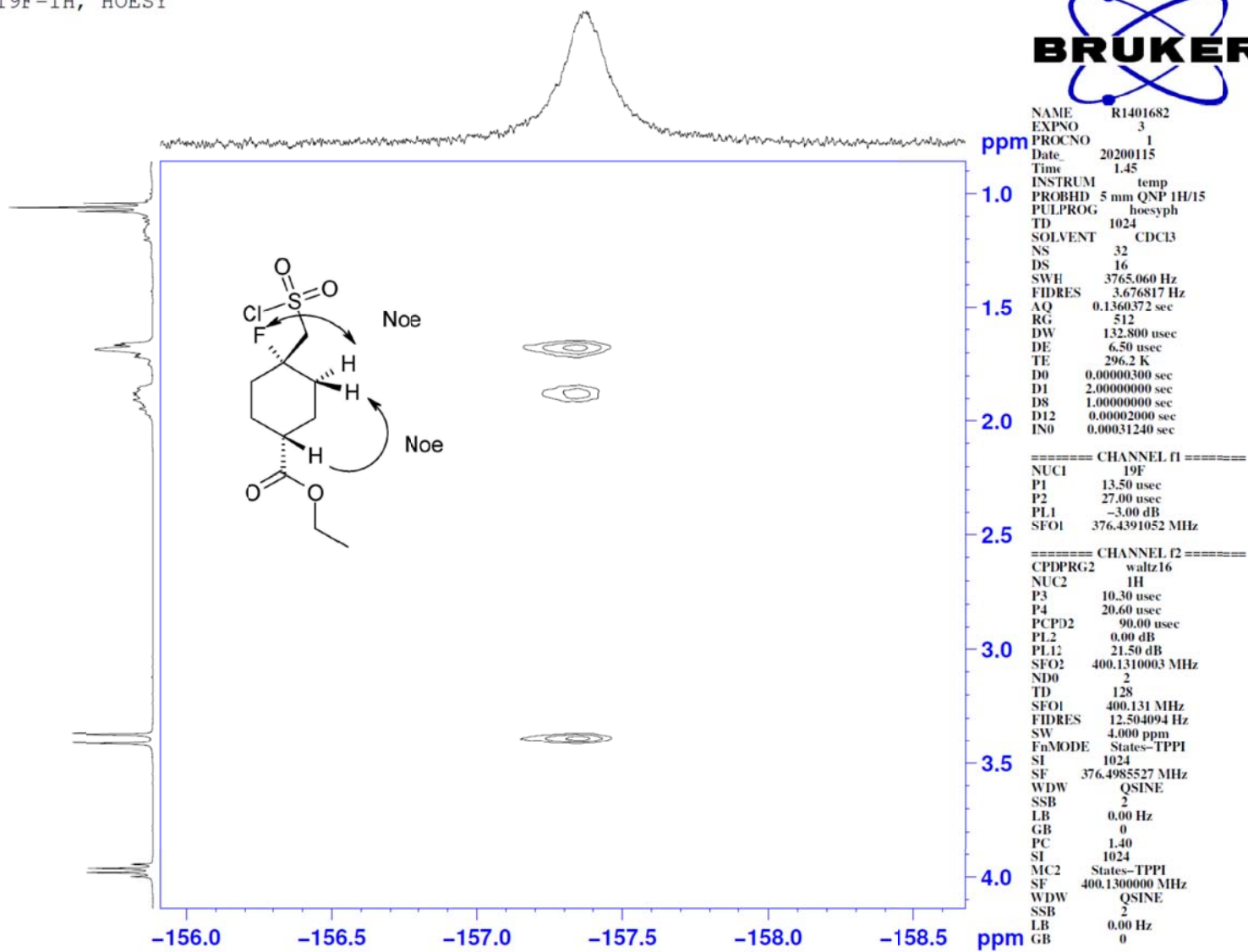
S137

NOE spectrum of the compound **4m**.



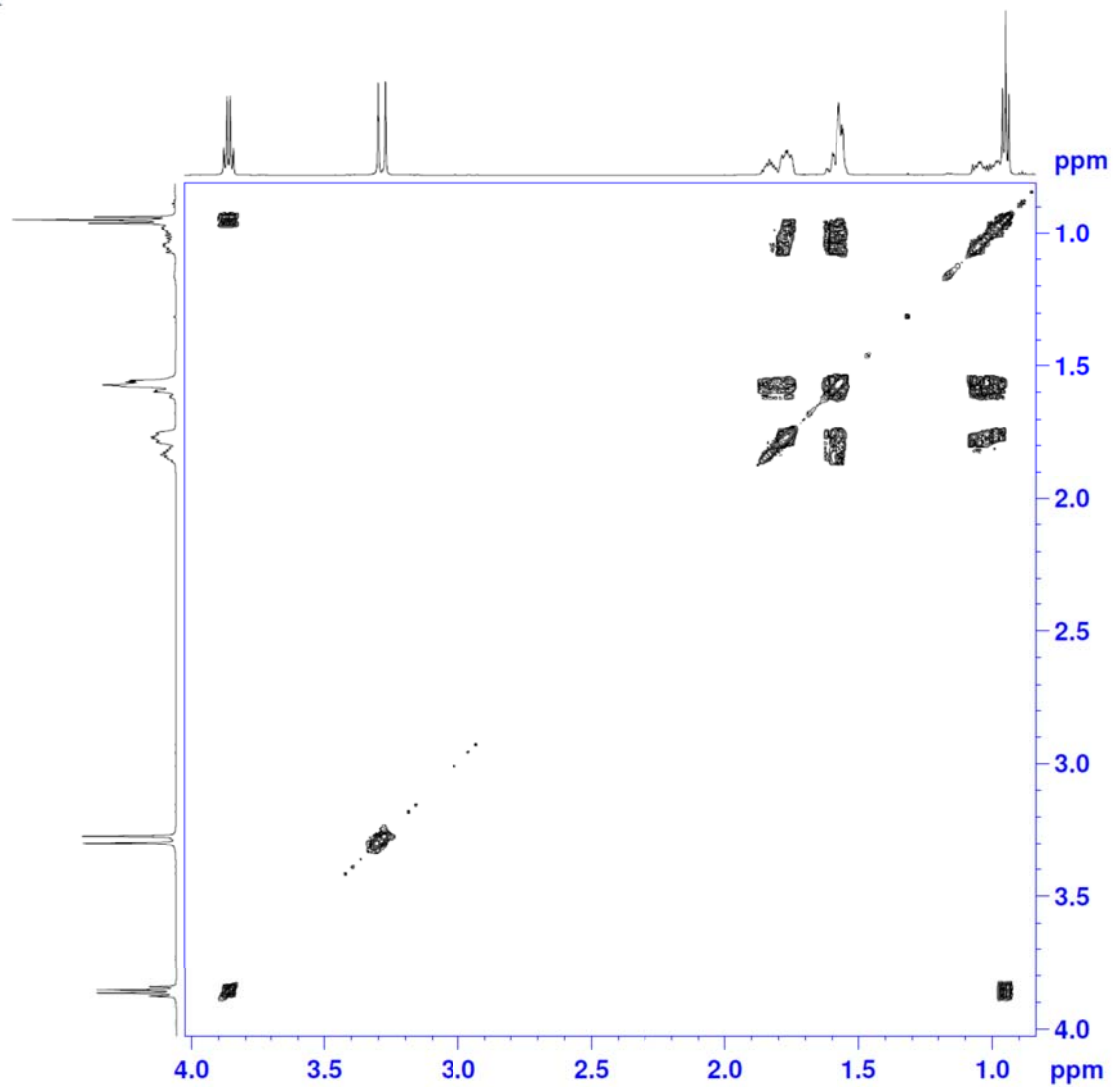
^{19}F — ^1H HOESY spectrum of the compound **4m**.

^{19}F - ^1H , HOESY

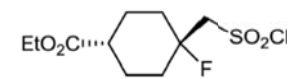


COSY spectrum of the compound **4m**.

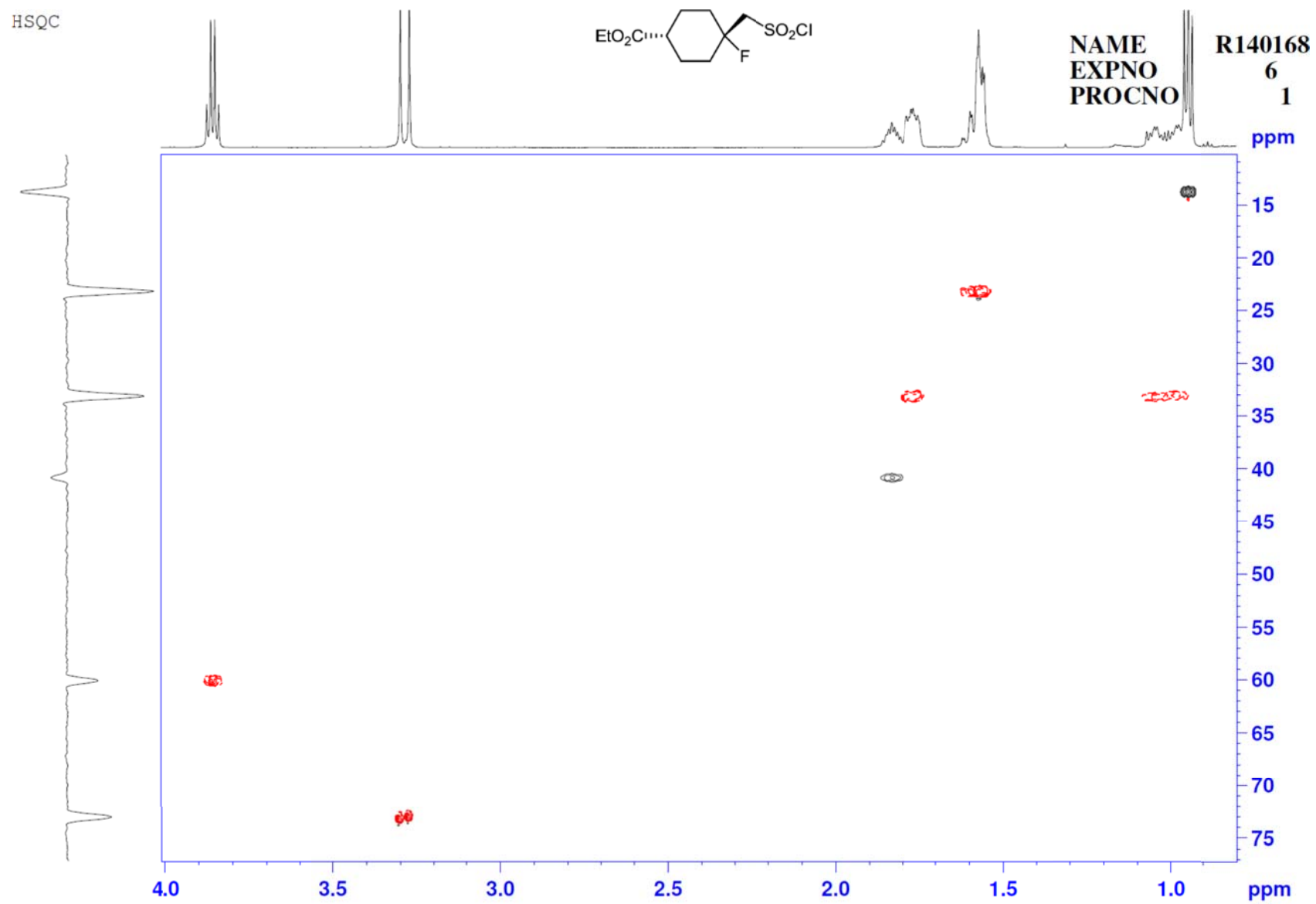
COSY



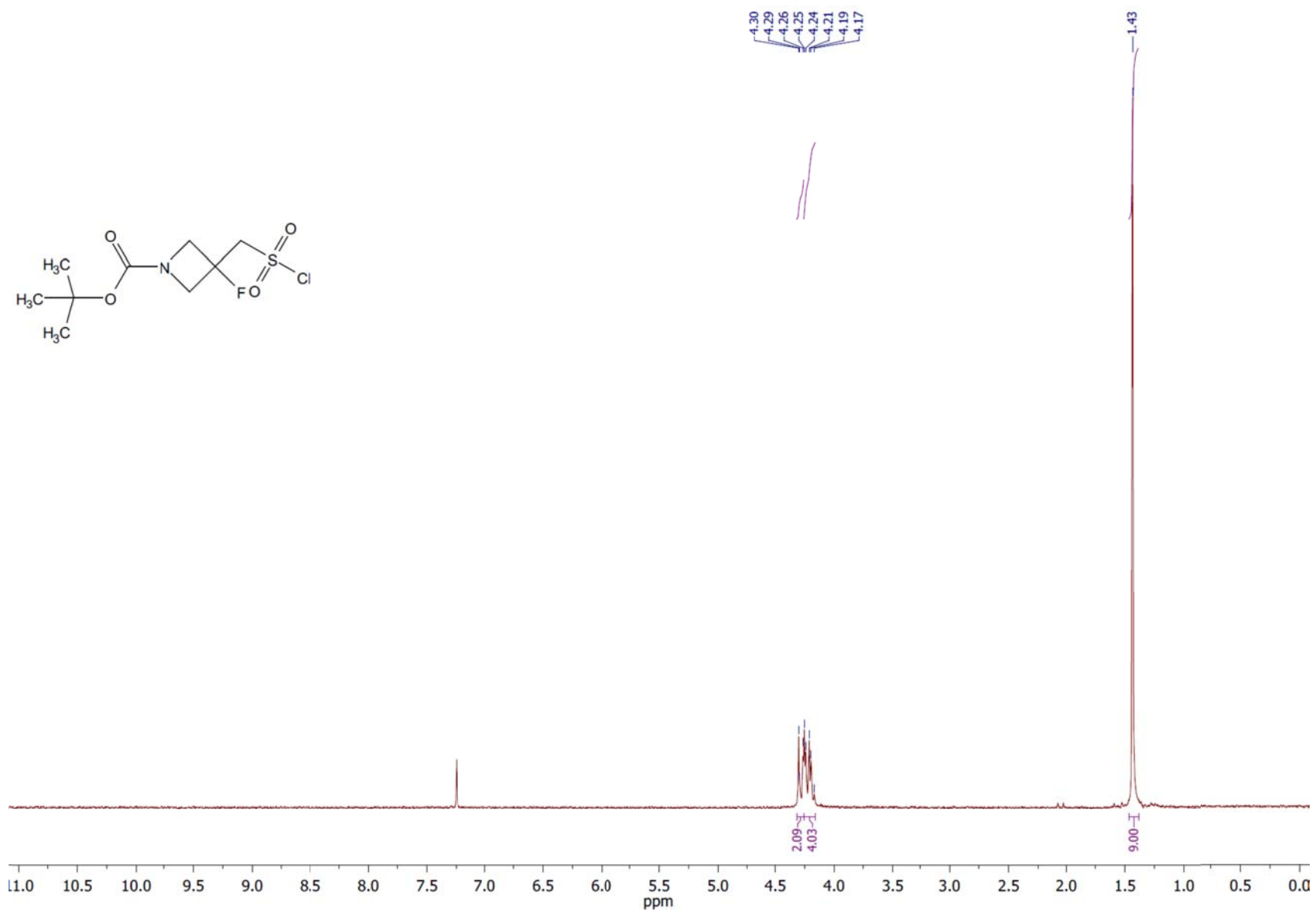
NAME R1401682
EXPNO 7
PROCNO 1



HSQC spectrum of the compound **4m**.

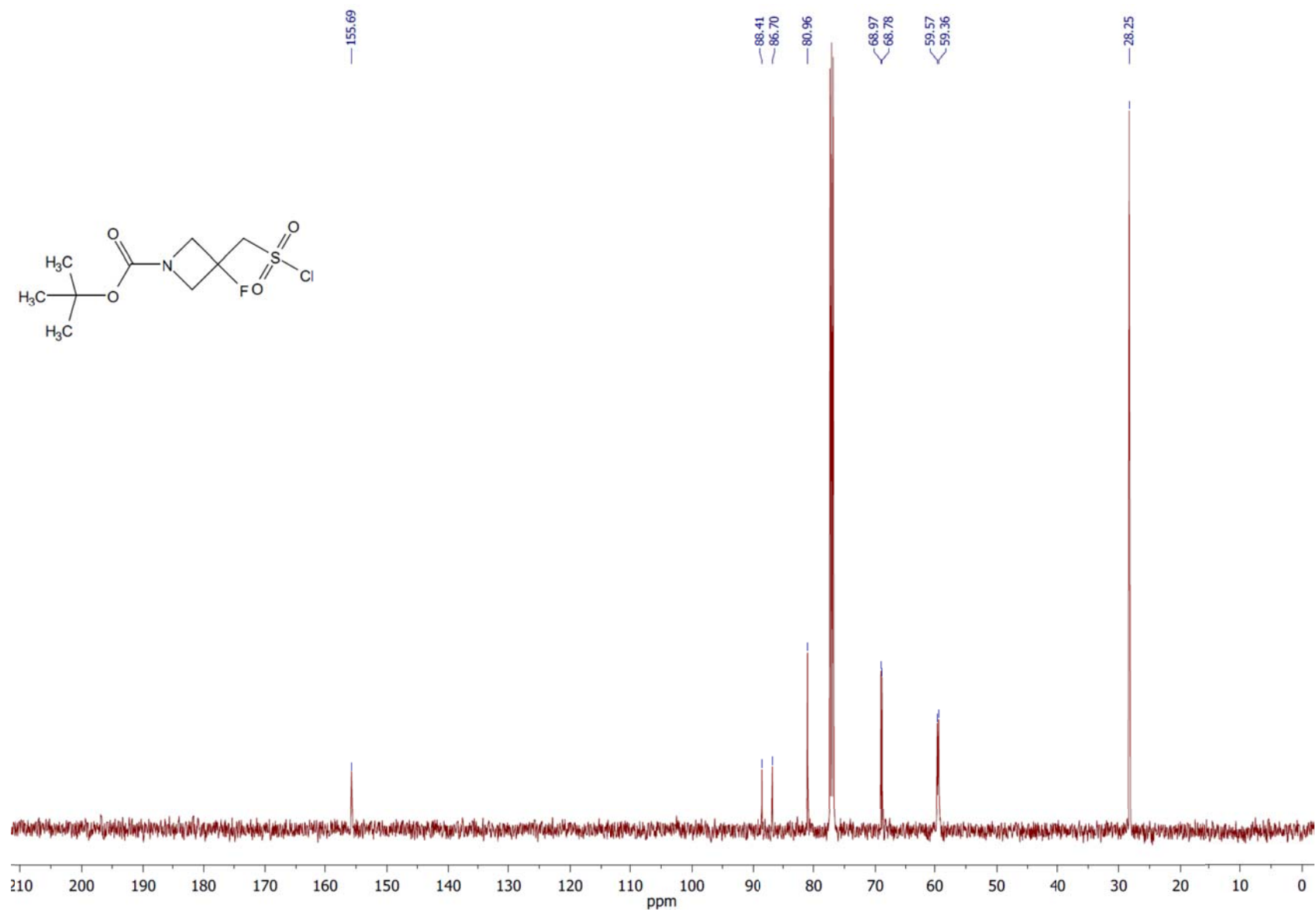


^1H NMR spectrum of the compound **4n**.

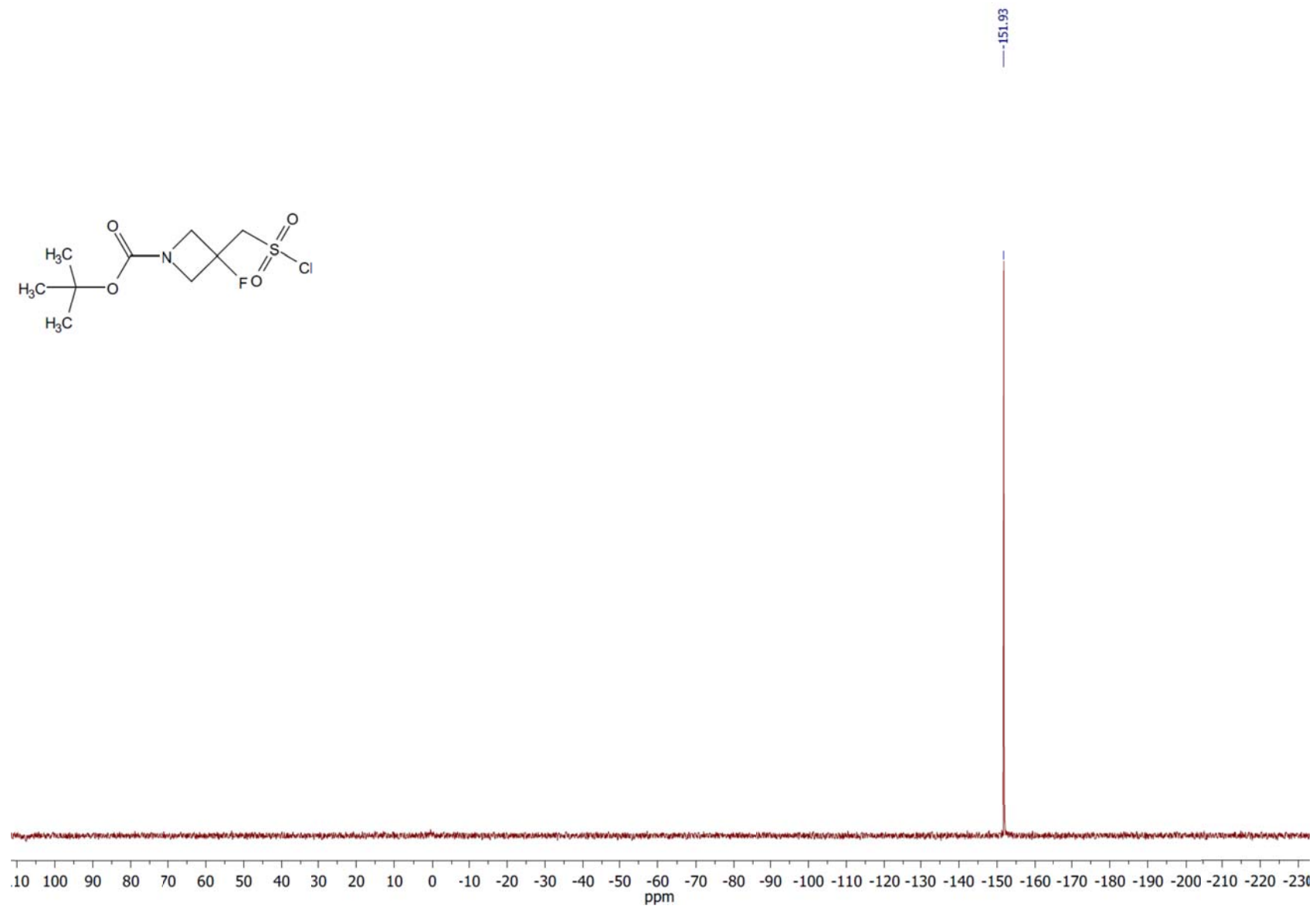
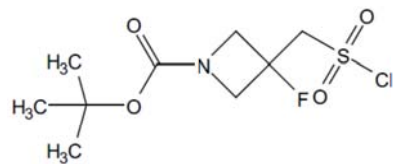


S142

^{13}C NMR spectrum of the compound **4n**.

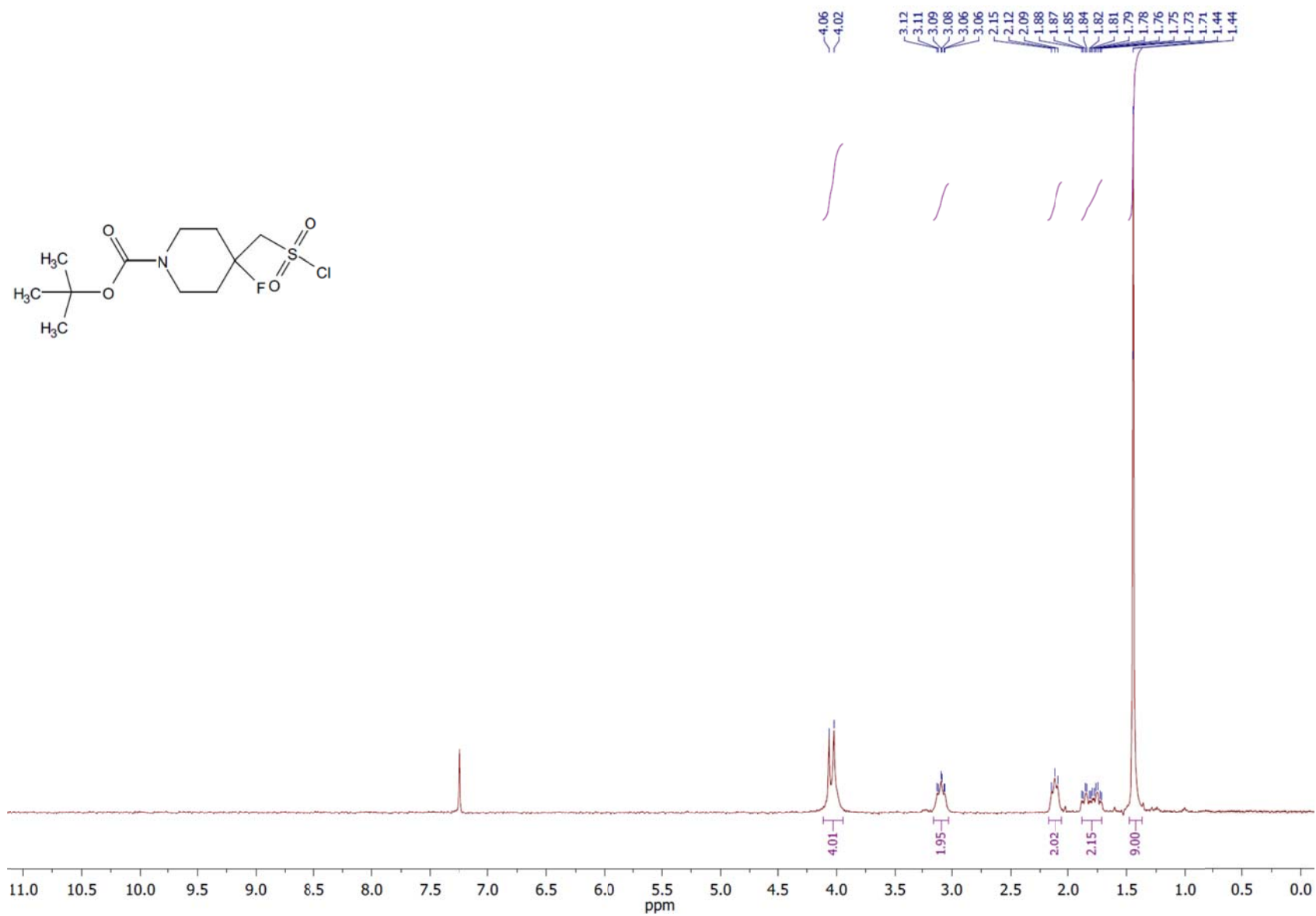


^{19}F NMR spectrum of the compound **4n**.



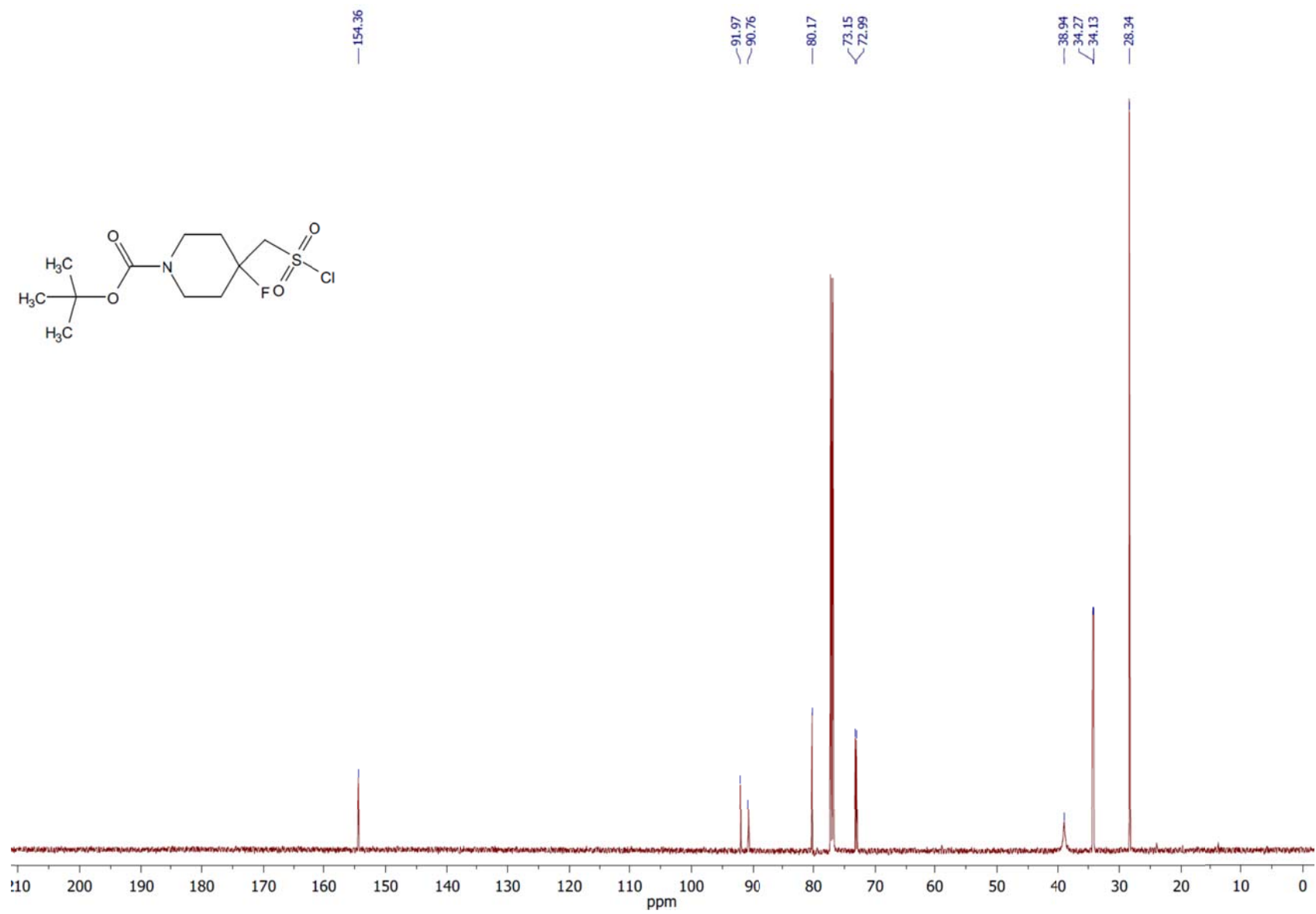
S144

¹H NMR spectrum of the compound **4o**.

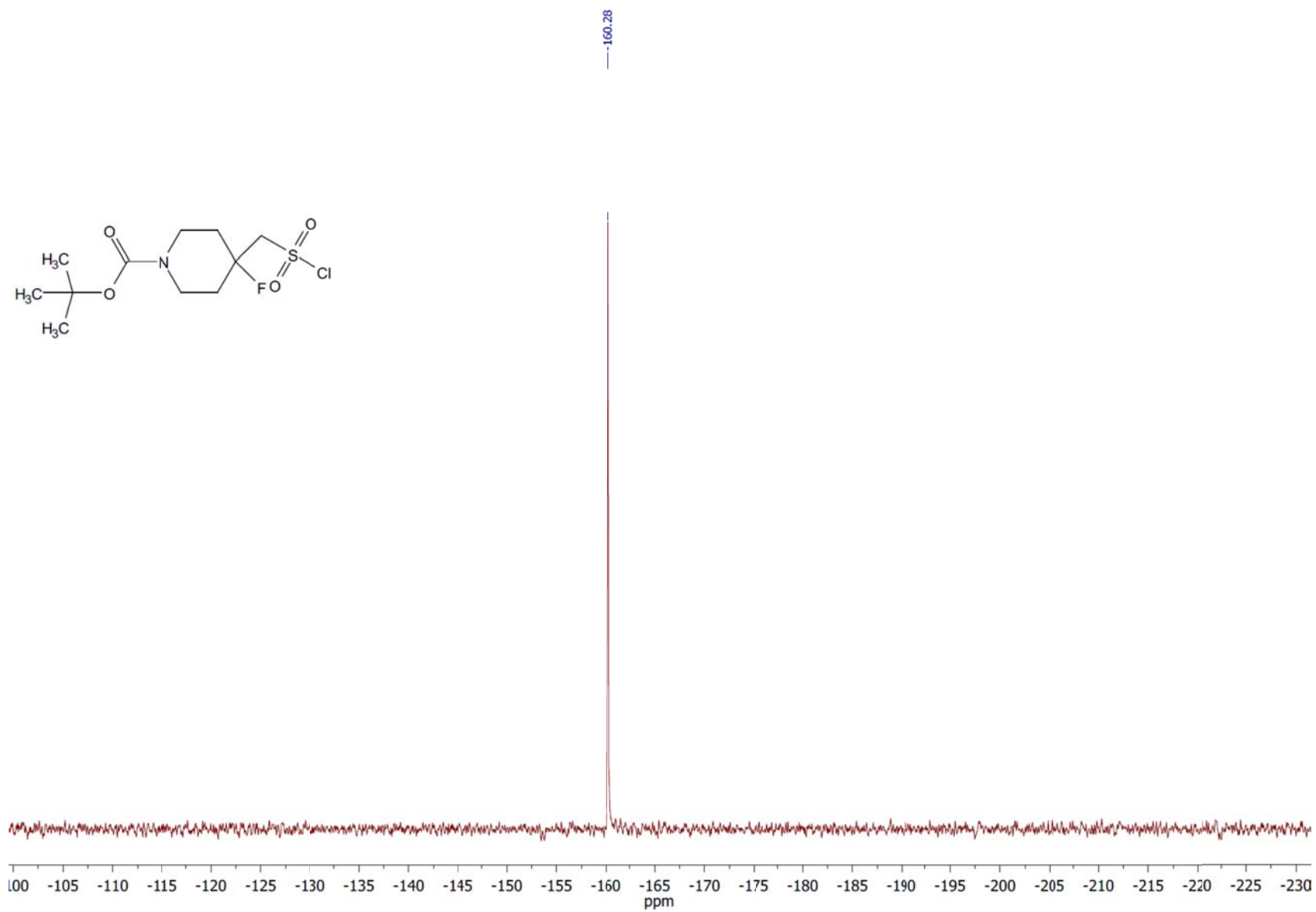


S145

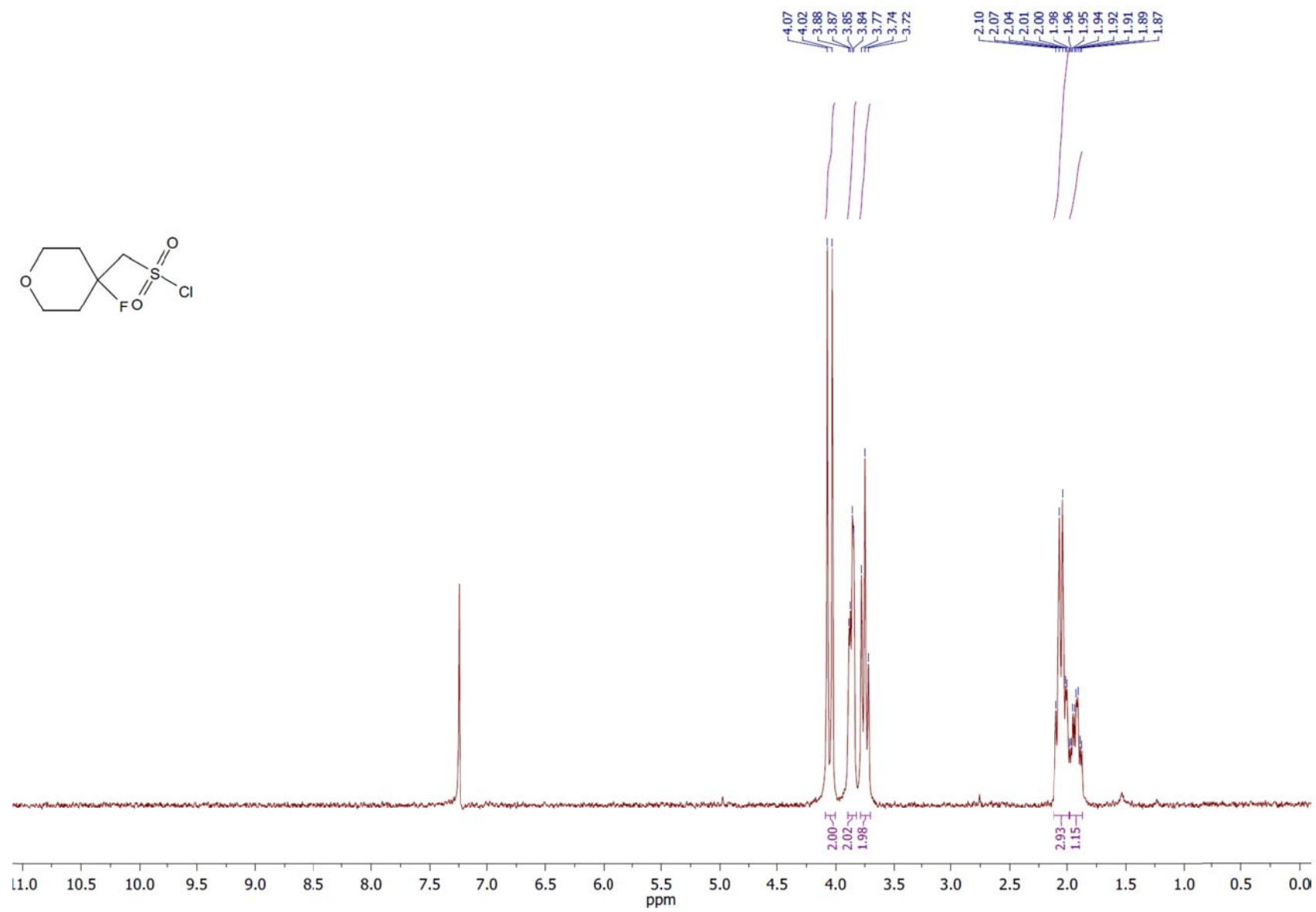
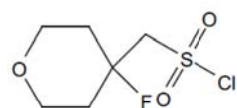
^{13}C NMR spectrum of the compound **4o**.



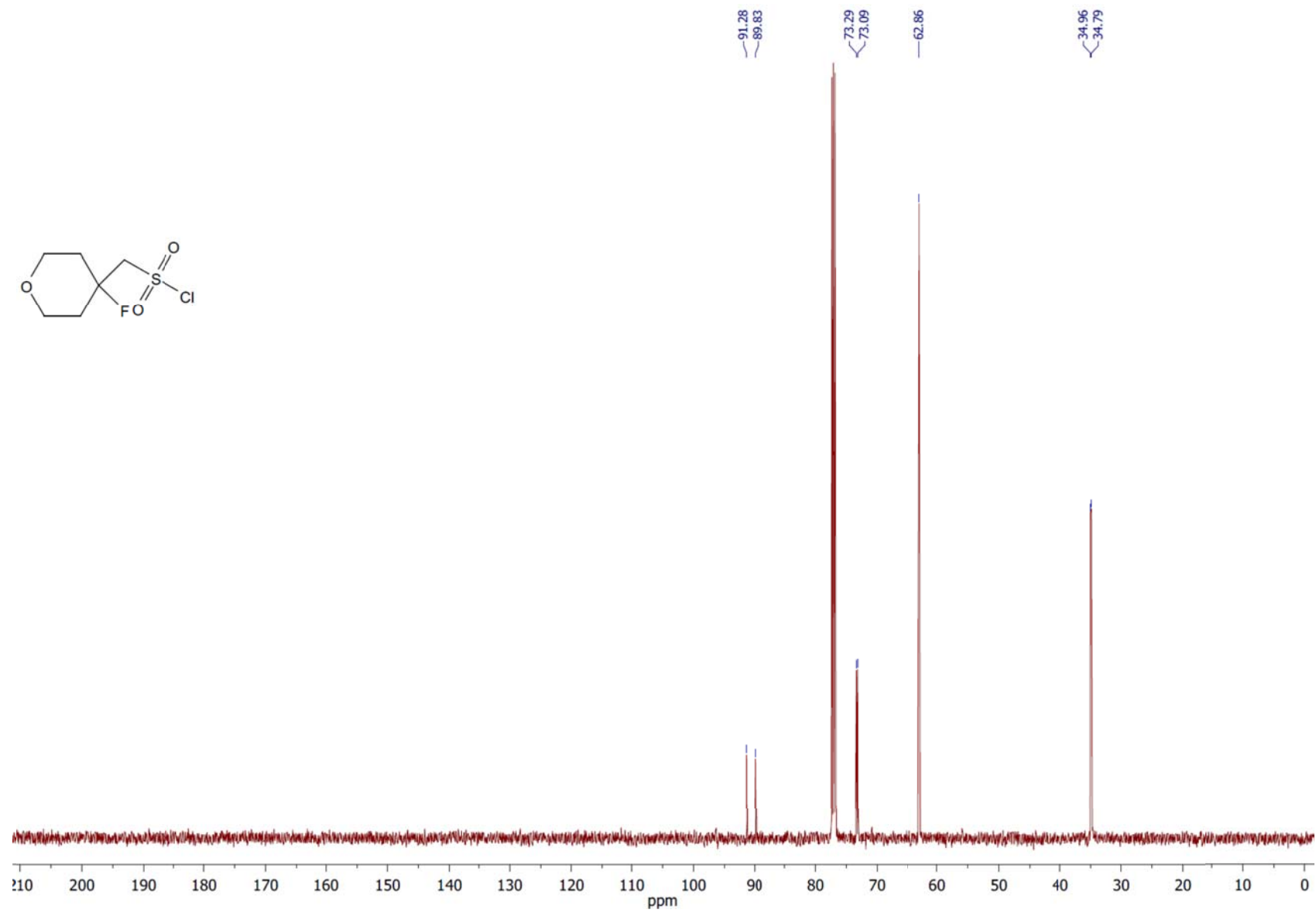
^{19}F NMR spectrum of the compound **40**.



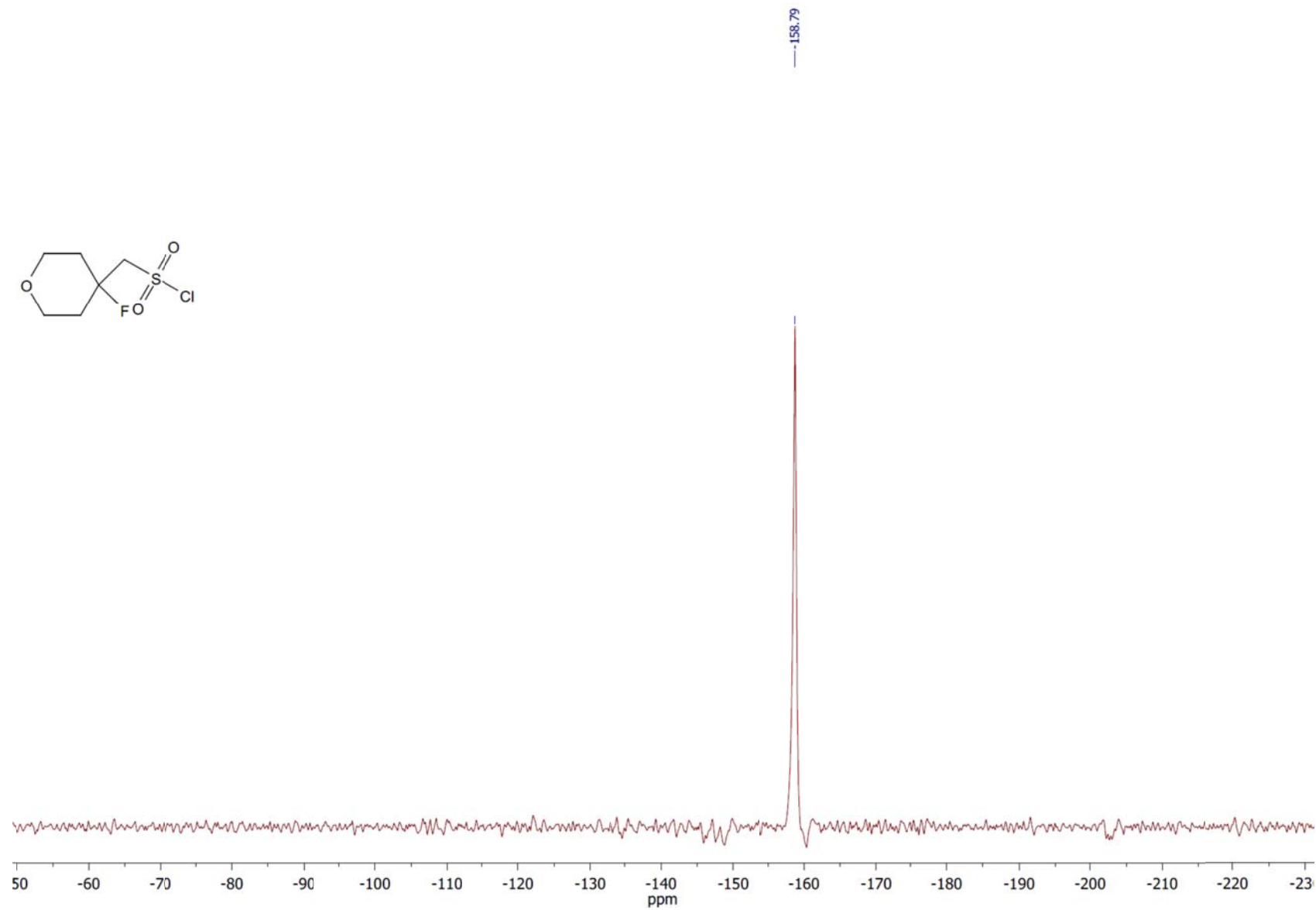
^1H NMR spectrum of the compound **4p**.



^{13}C NMR spectrum of the compound **4p**.

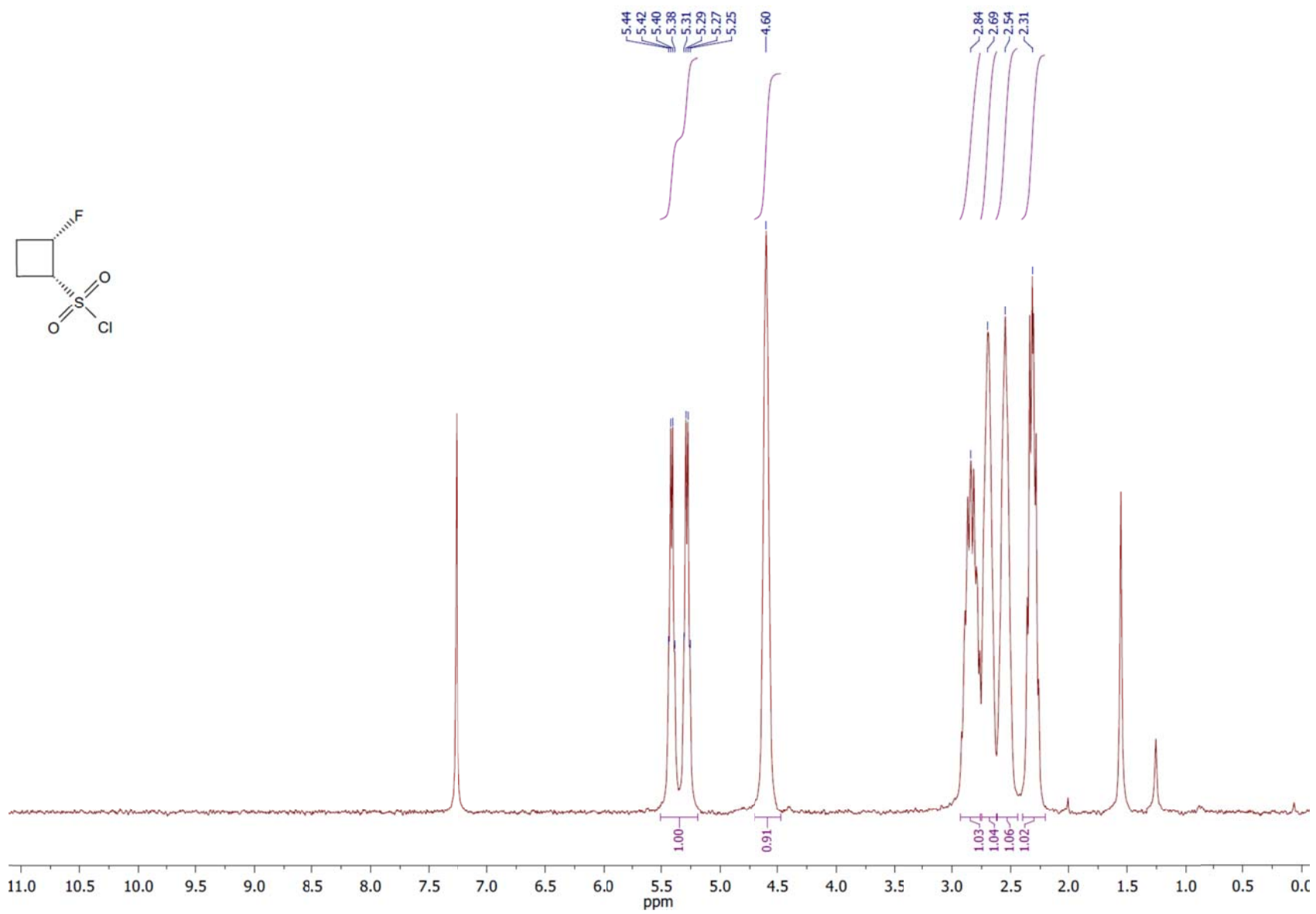


^{19}F NMR spectrum of the compound **4p**.



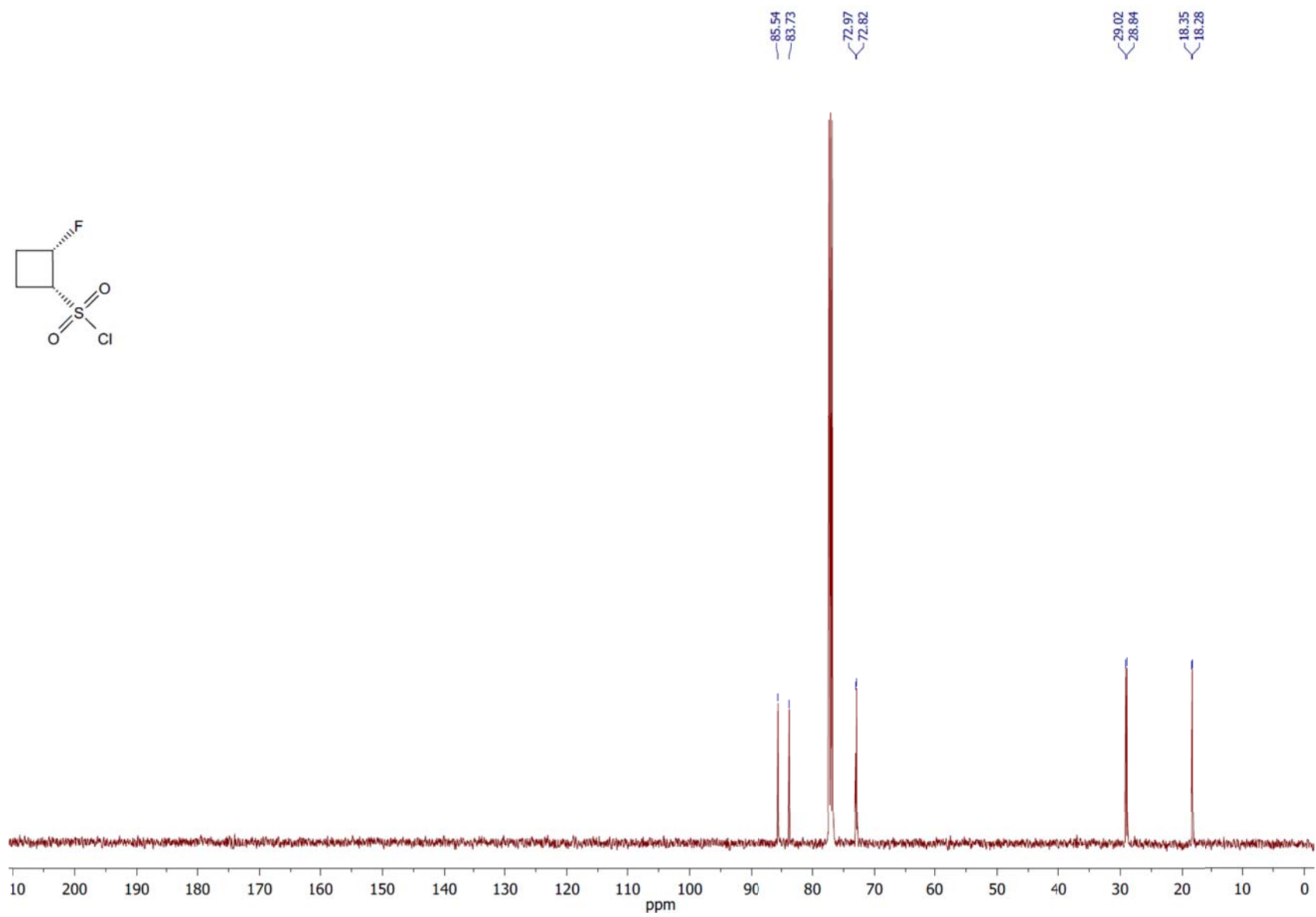
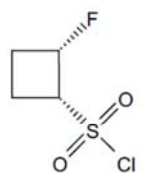
S150

¹H NMR spectrum of the compound **4q**.



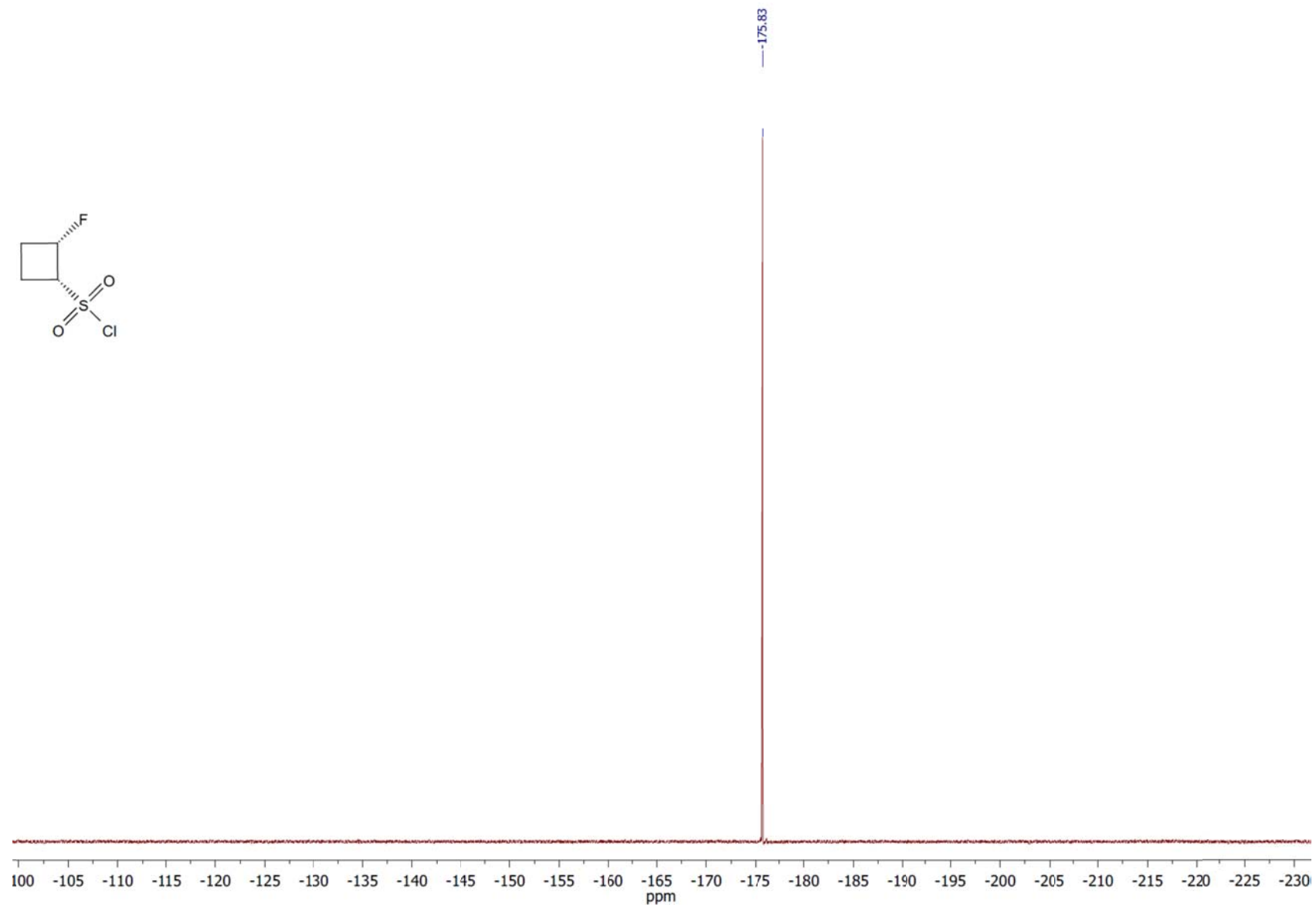
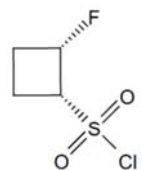
S151

^{13}C NMR spectrum of the compound **4q**.



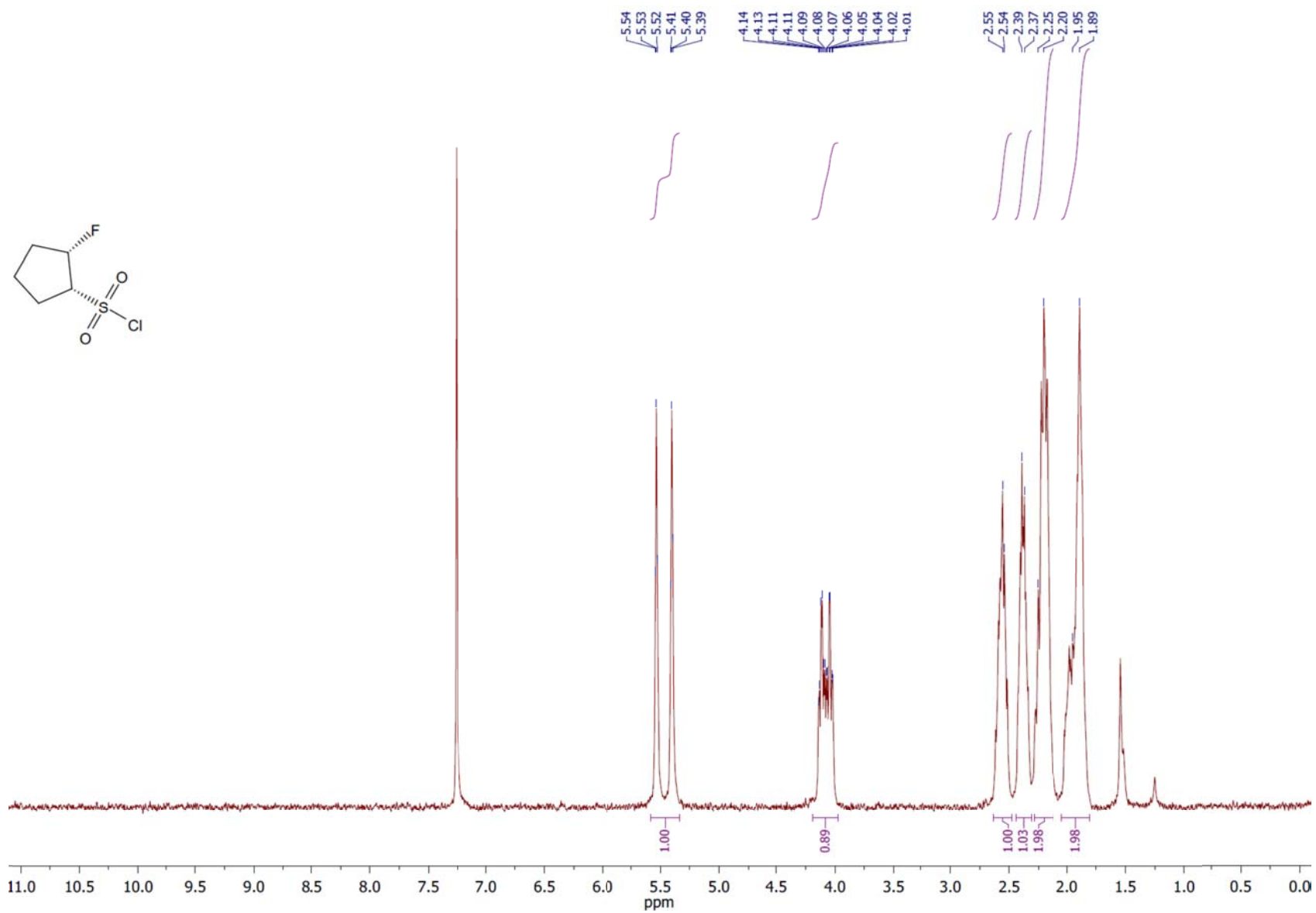
S152

^{19}F NMR spectrum of the compound **4q**.

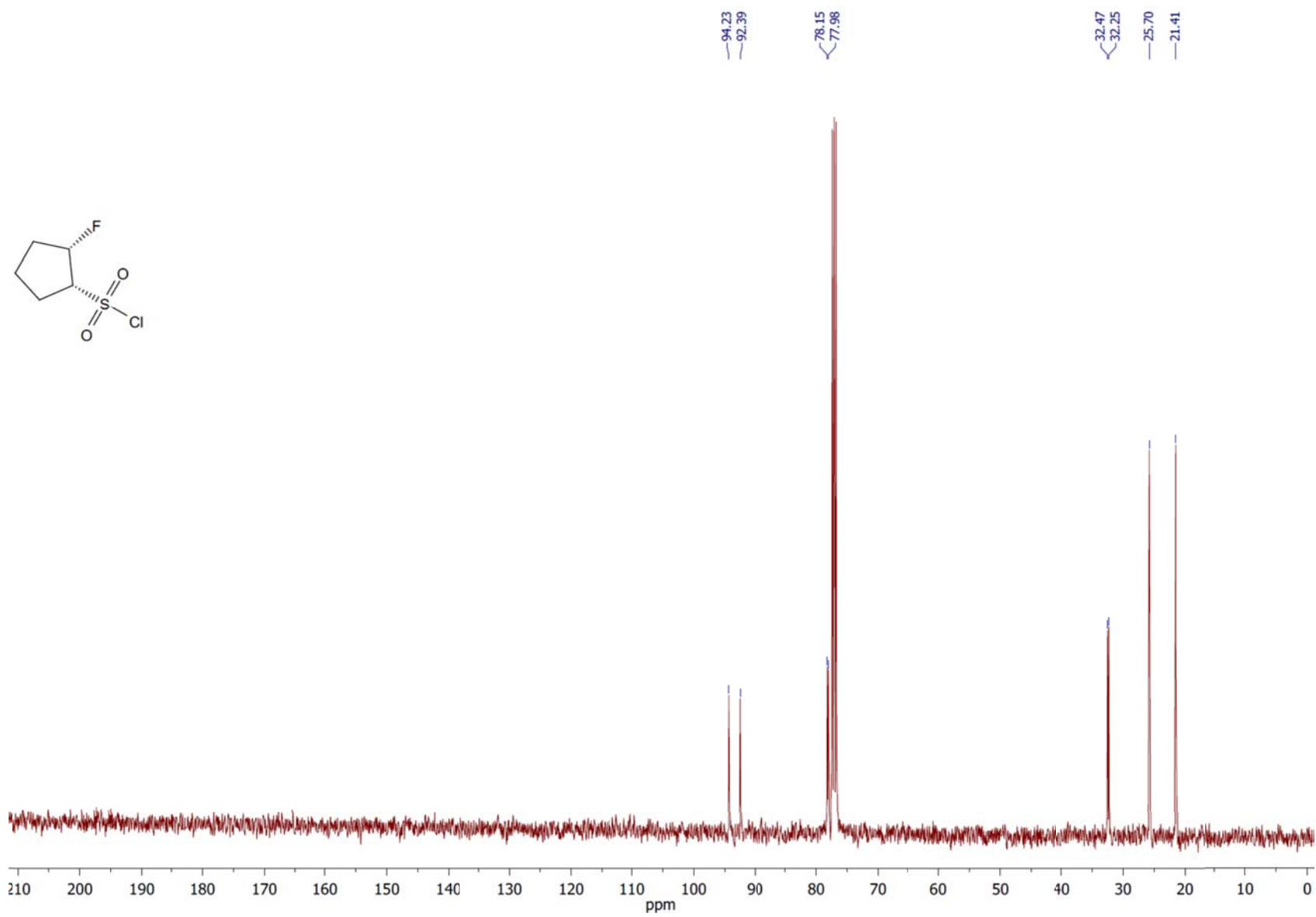


S153

¹H NMR spectrum of the compound **4r**.

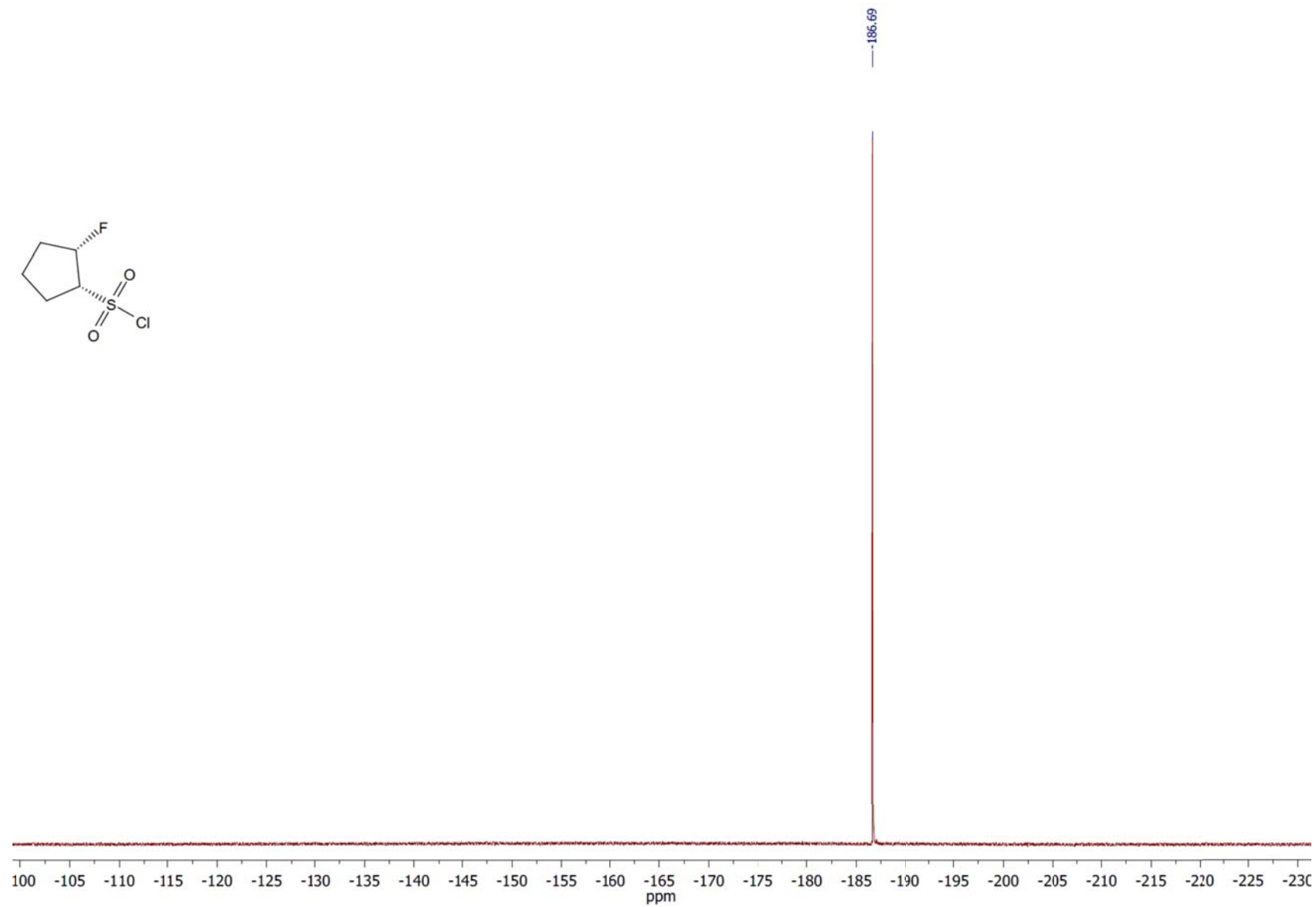
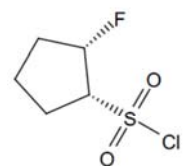


^{13}C NMR spectrum of the compound **4r**.



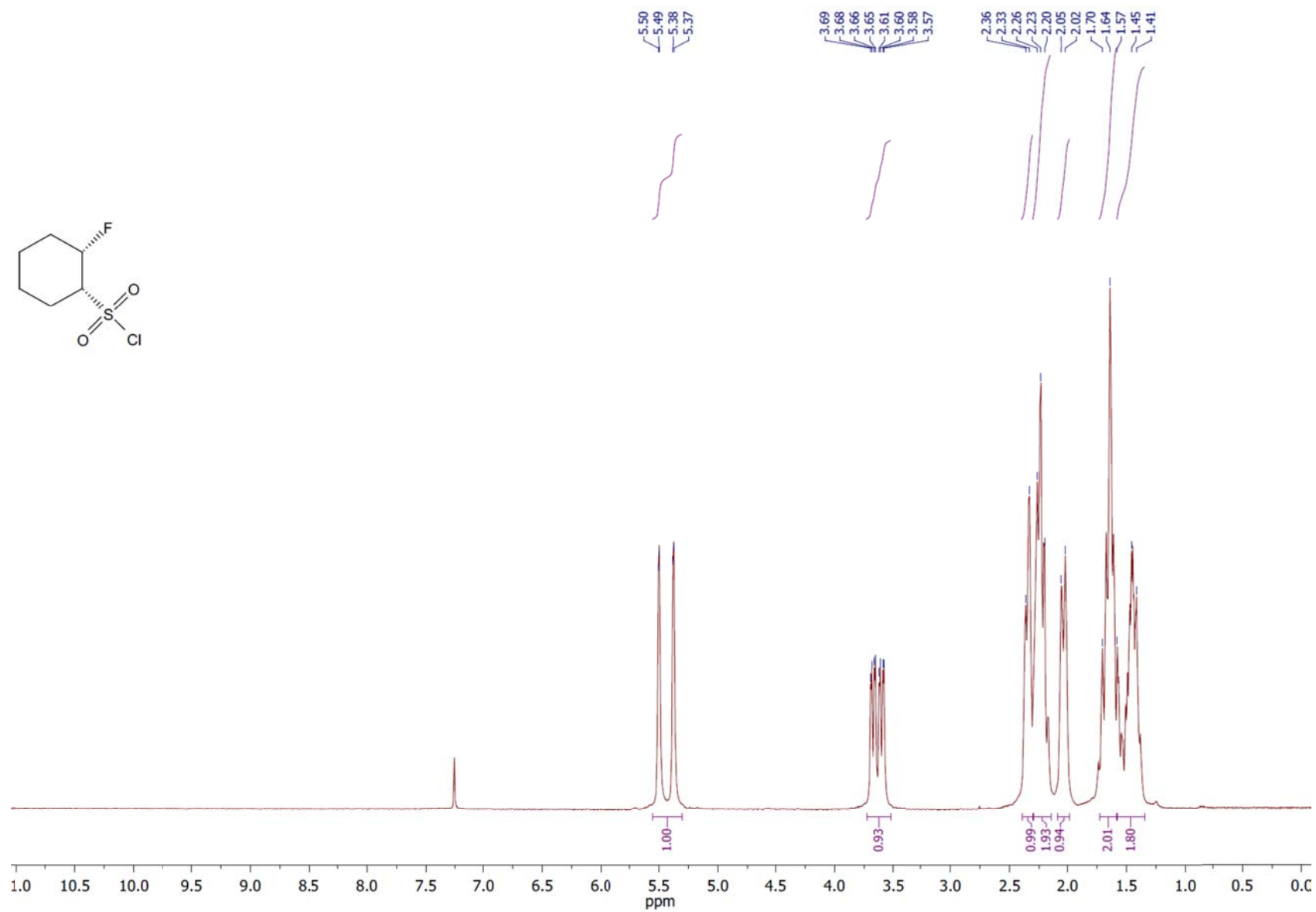
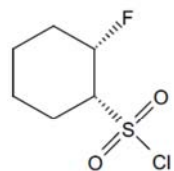
S155

^{19}F NMR spectrum of the compound **4r**.

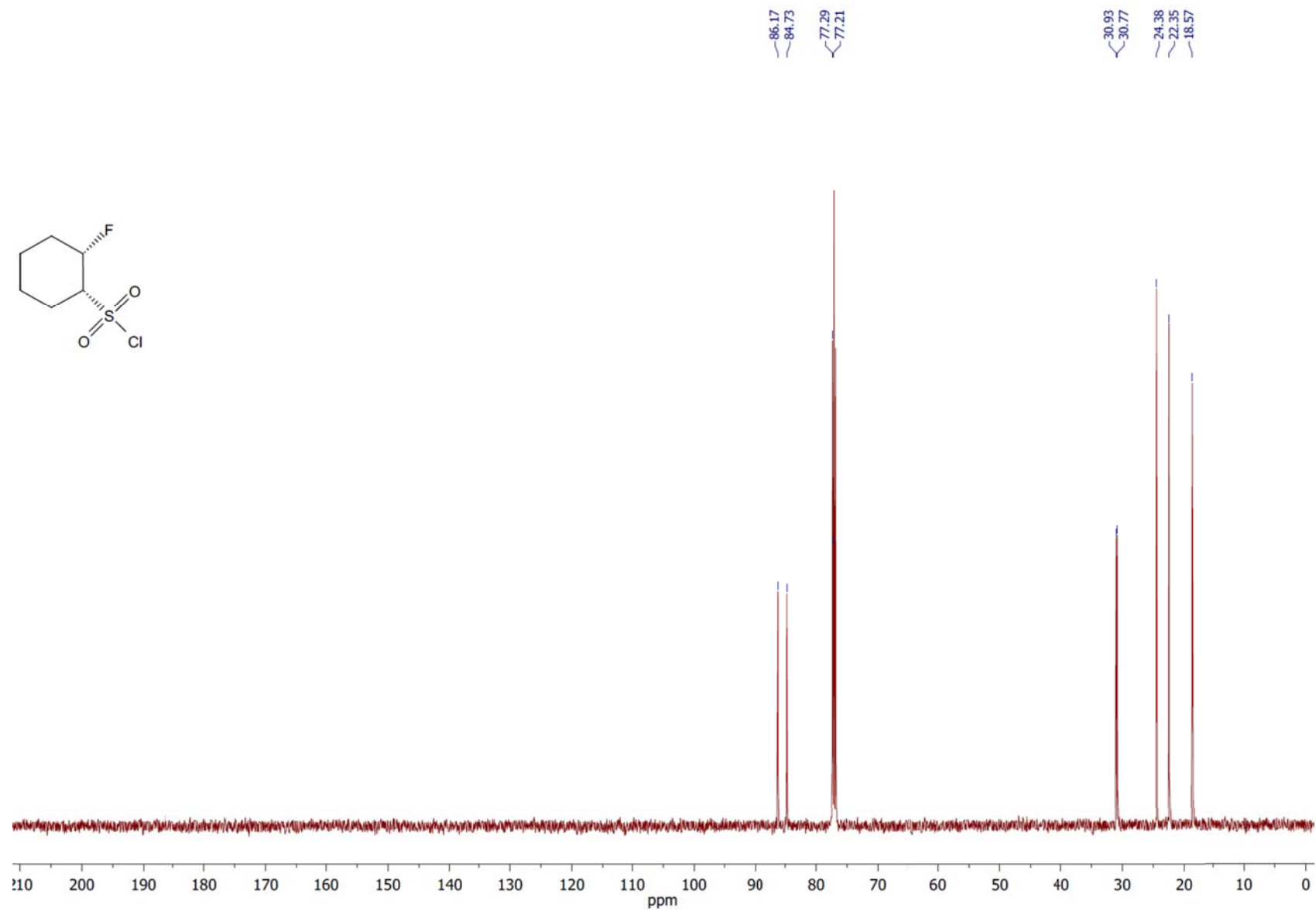
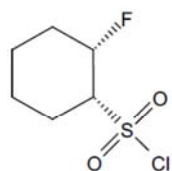


S156

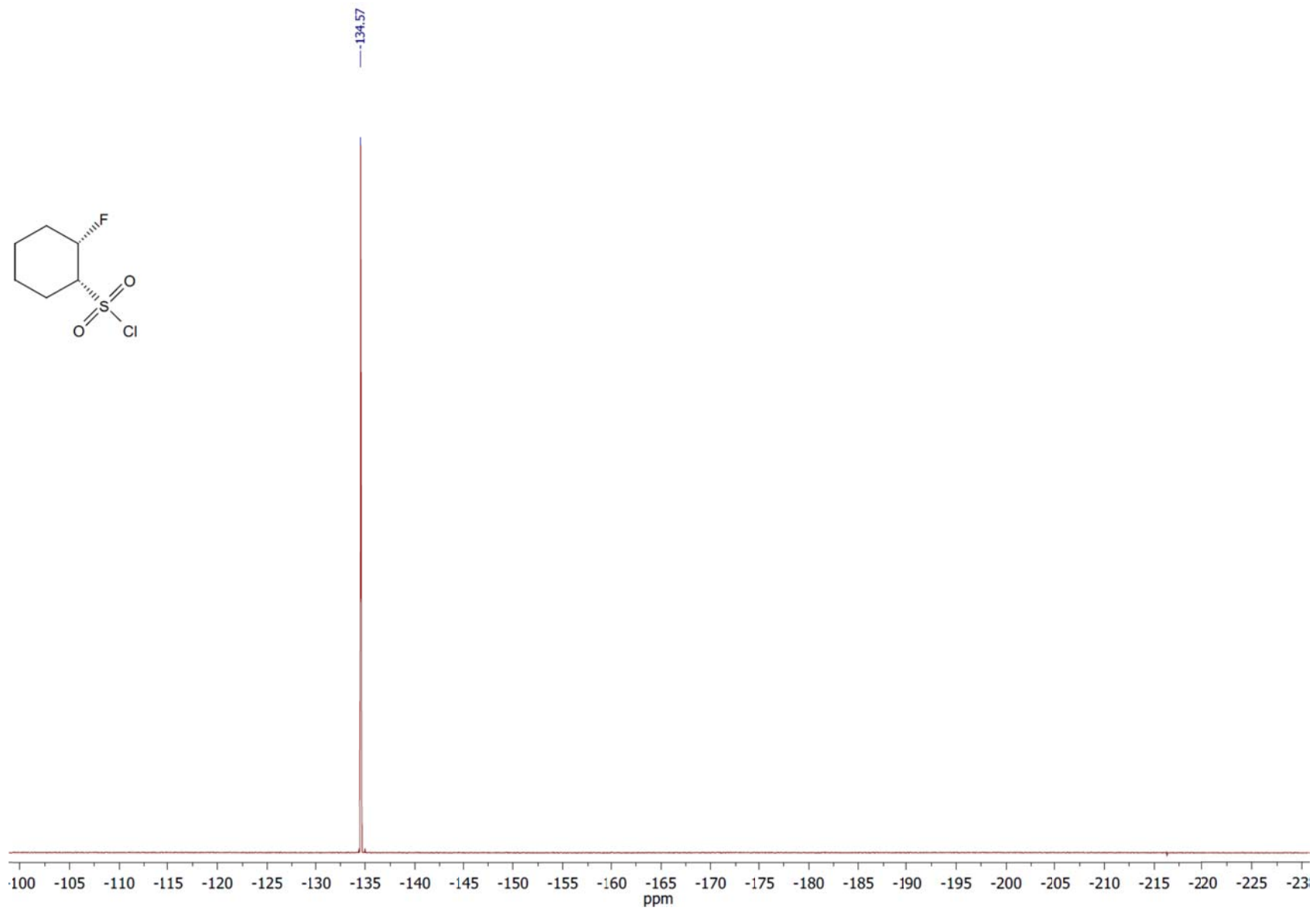
^1H NMR spectrum of the compound **4s**.



^{13}C NMR spectrum of the compound **4s**.



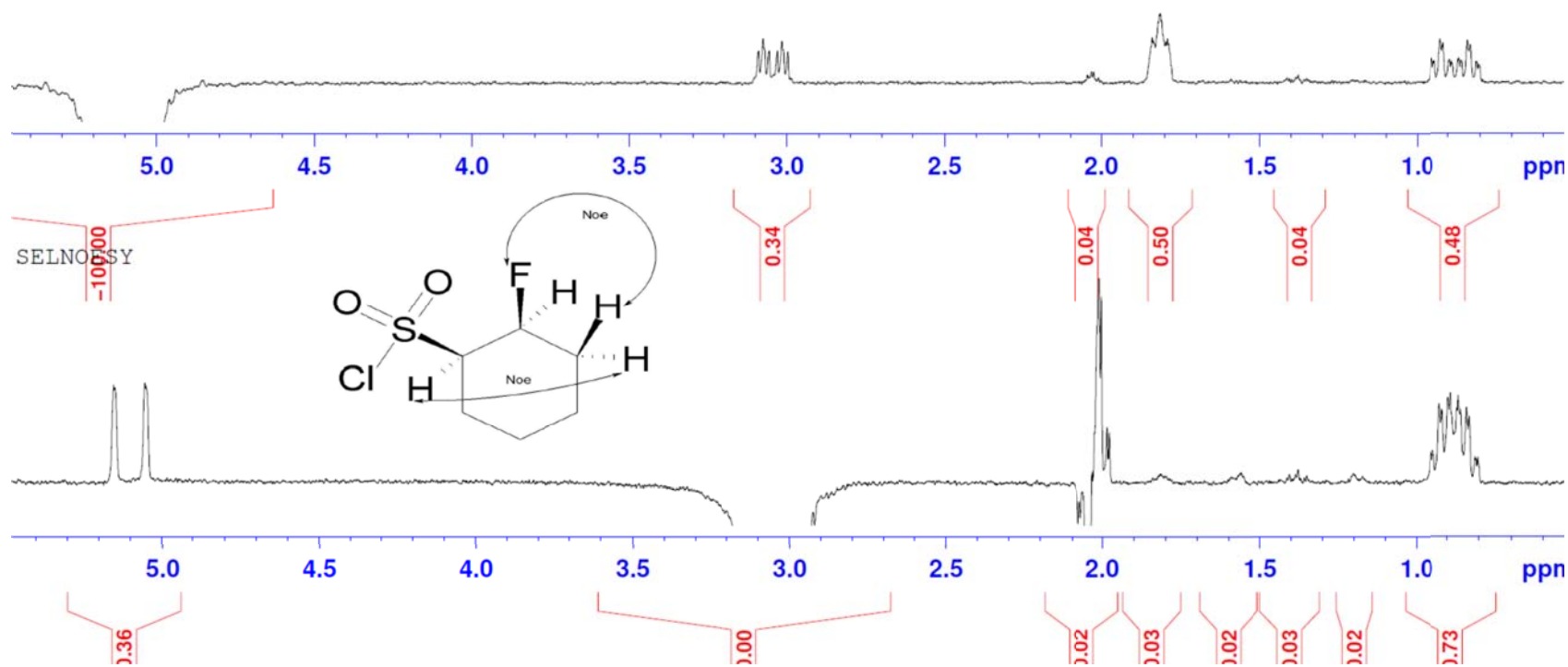
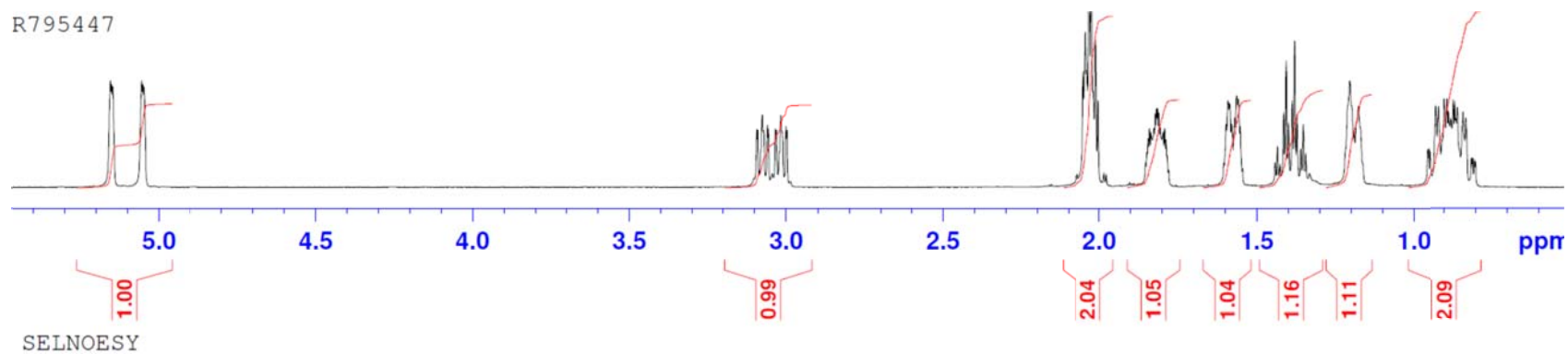
^{19}F NMR spectrum of the compound **4s**.



S159

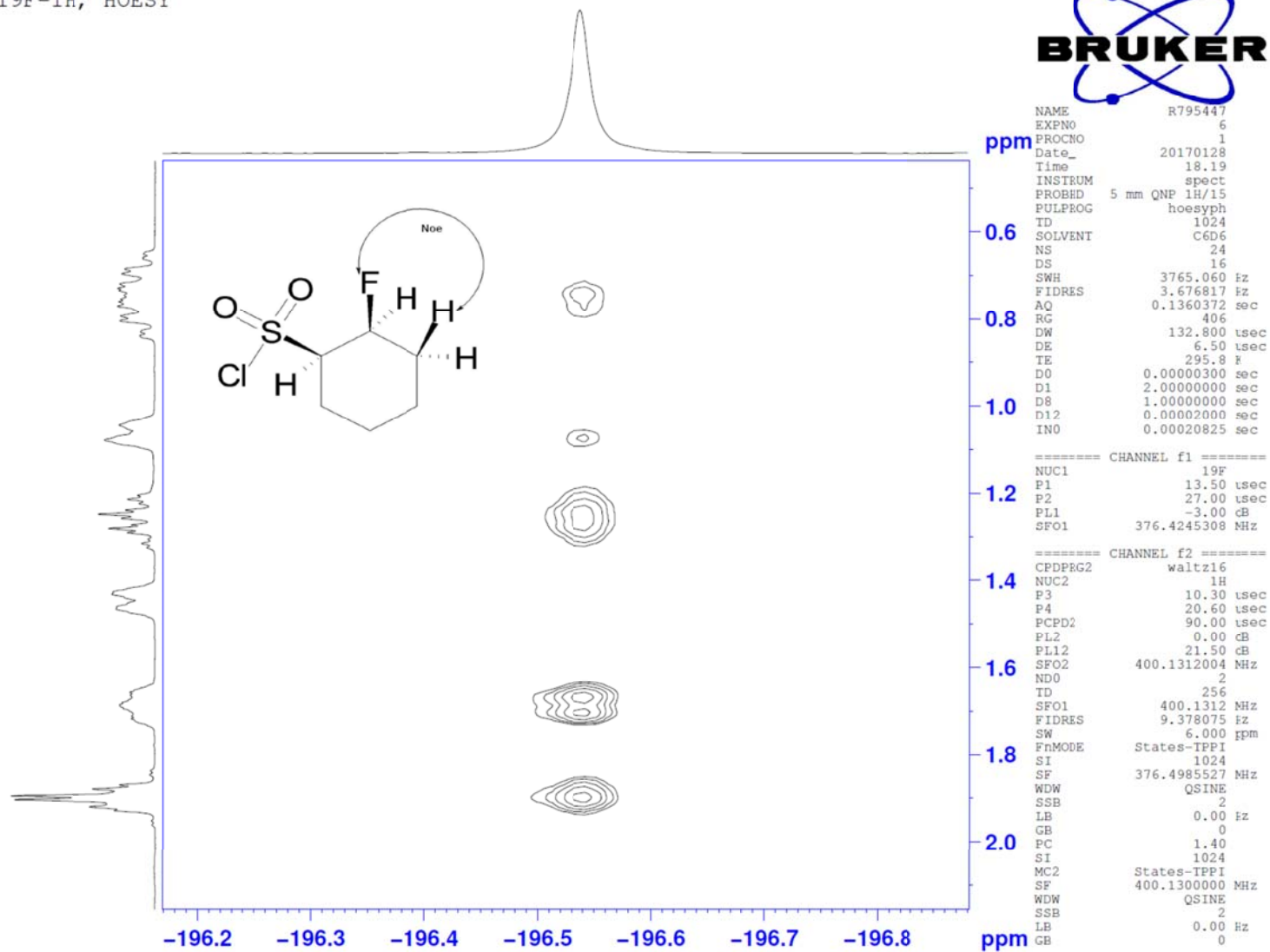
NOE spectrum of the compound 4s.

R795447

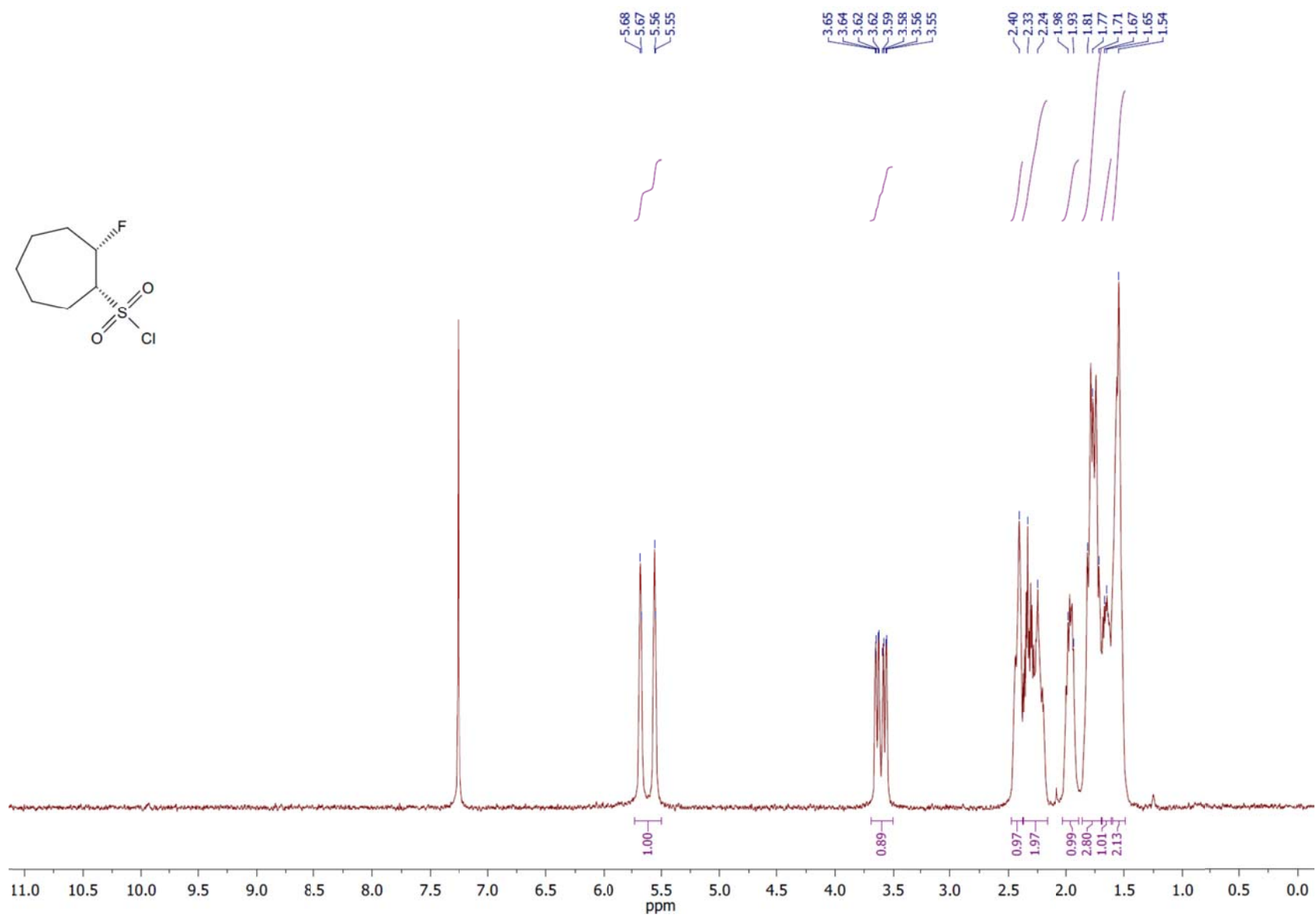


^{19}F - ^1H HOESY spectrum of the compound 4s.

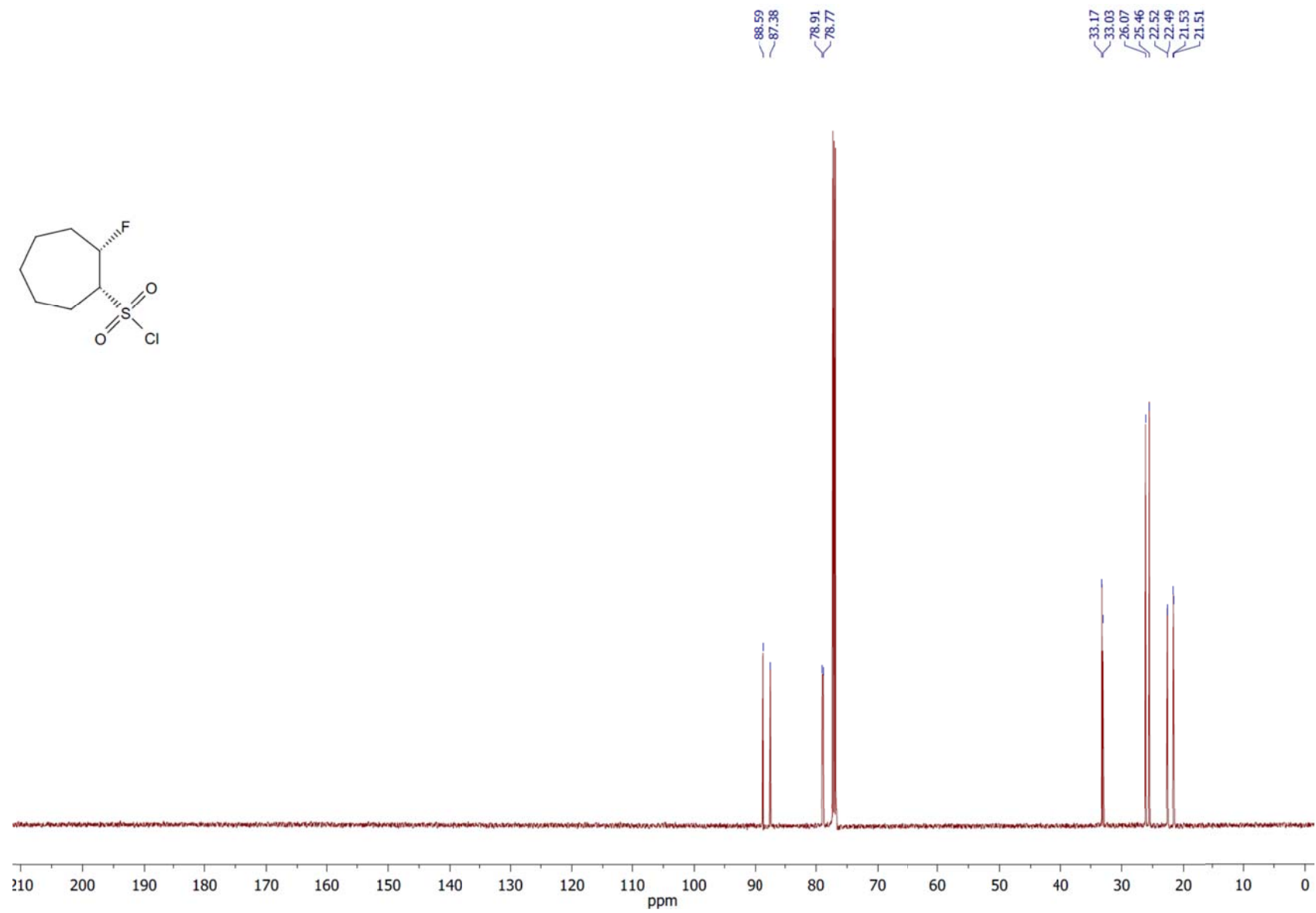
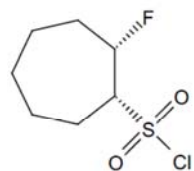
^{19}F - ^1H , HOESY



¹H NMR spectrum of the compound **4t**.

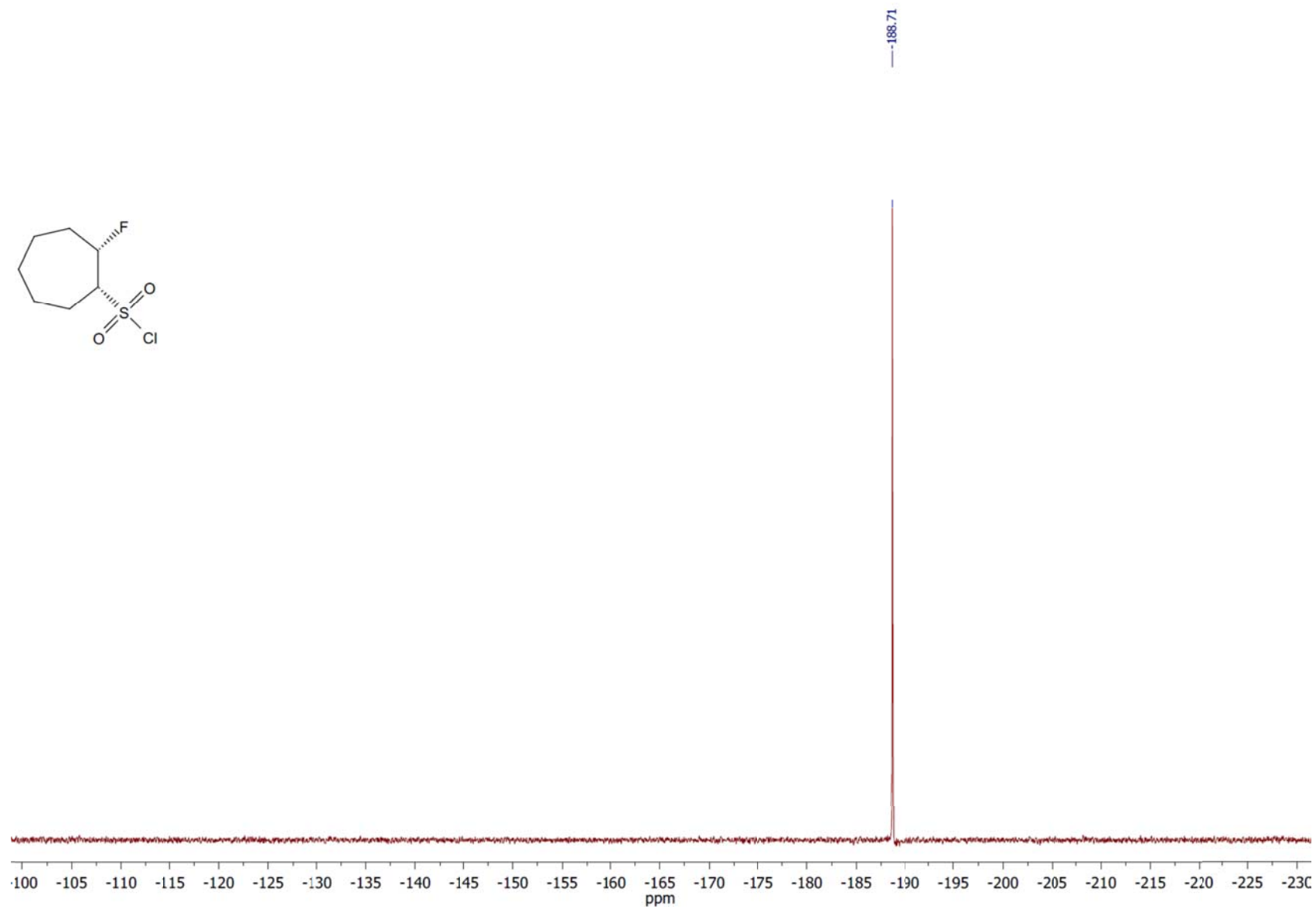
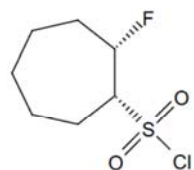


^{13}C NMR spectrum of the compound **4t**.



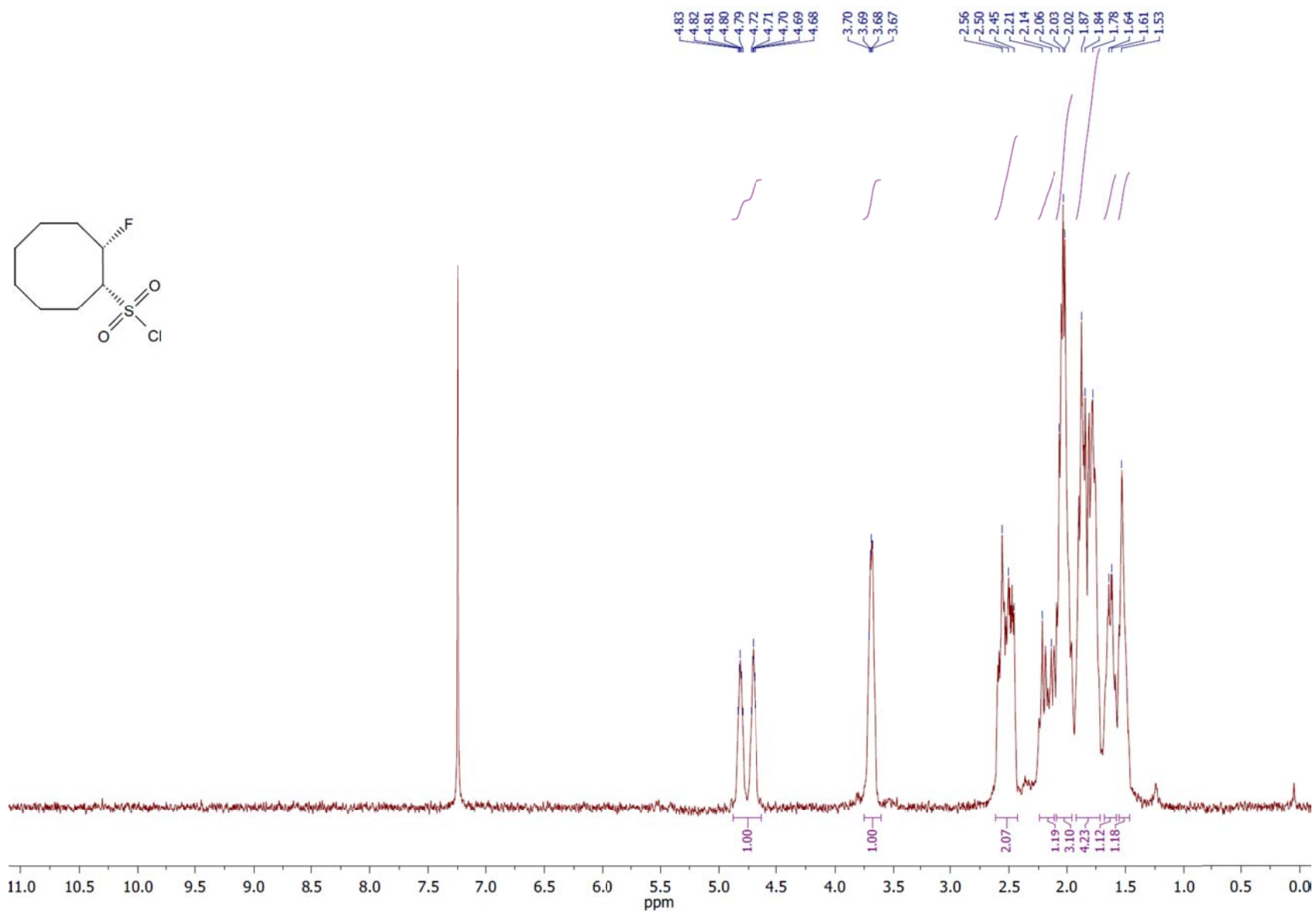
S163

^{19}F NMR spectrum of the compound **4t**.

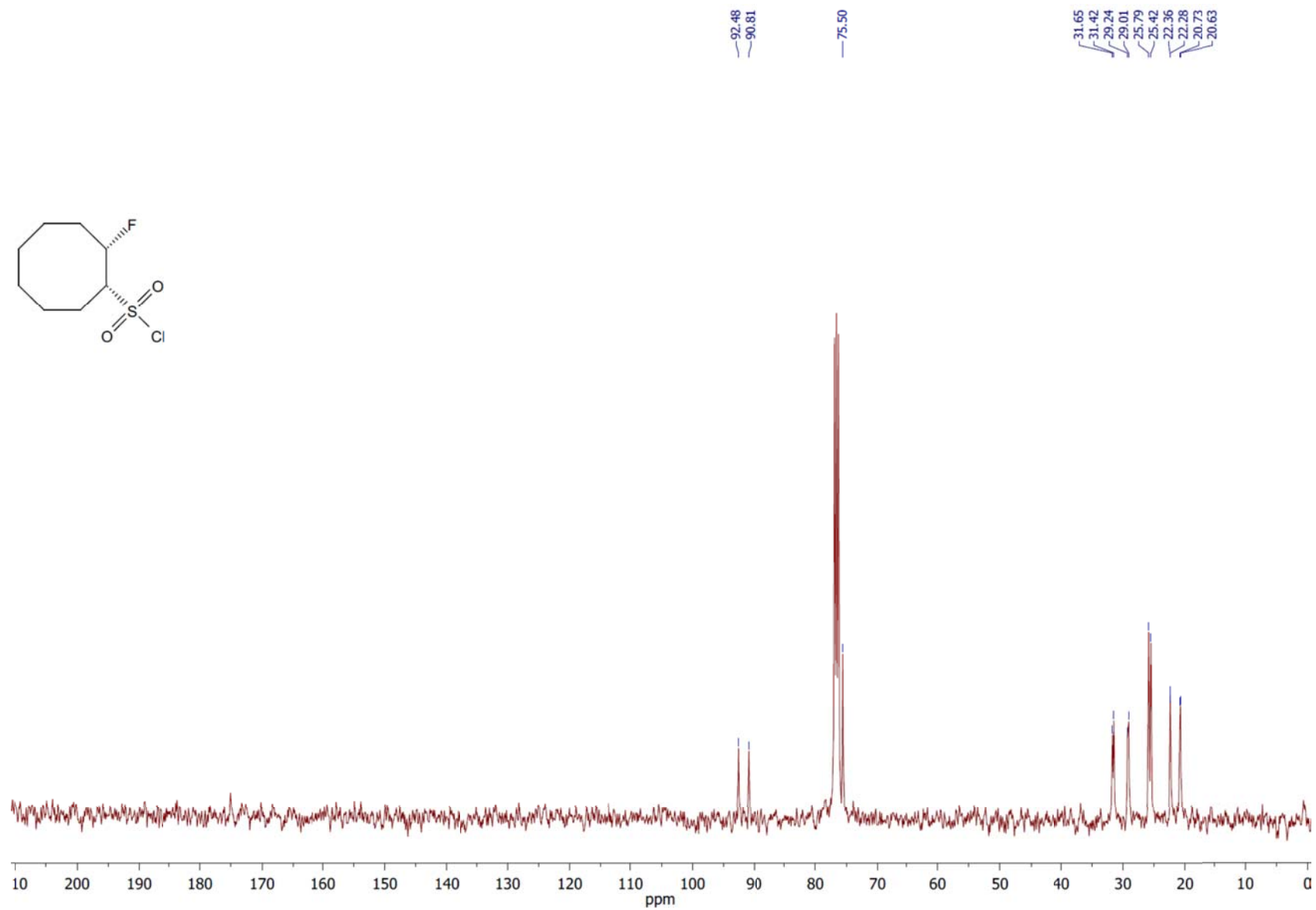
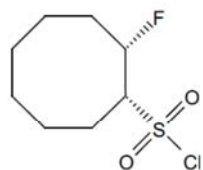


S164

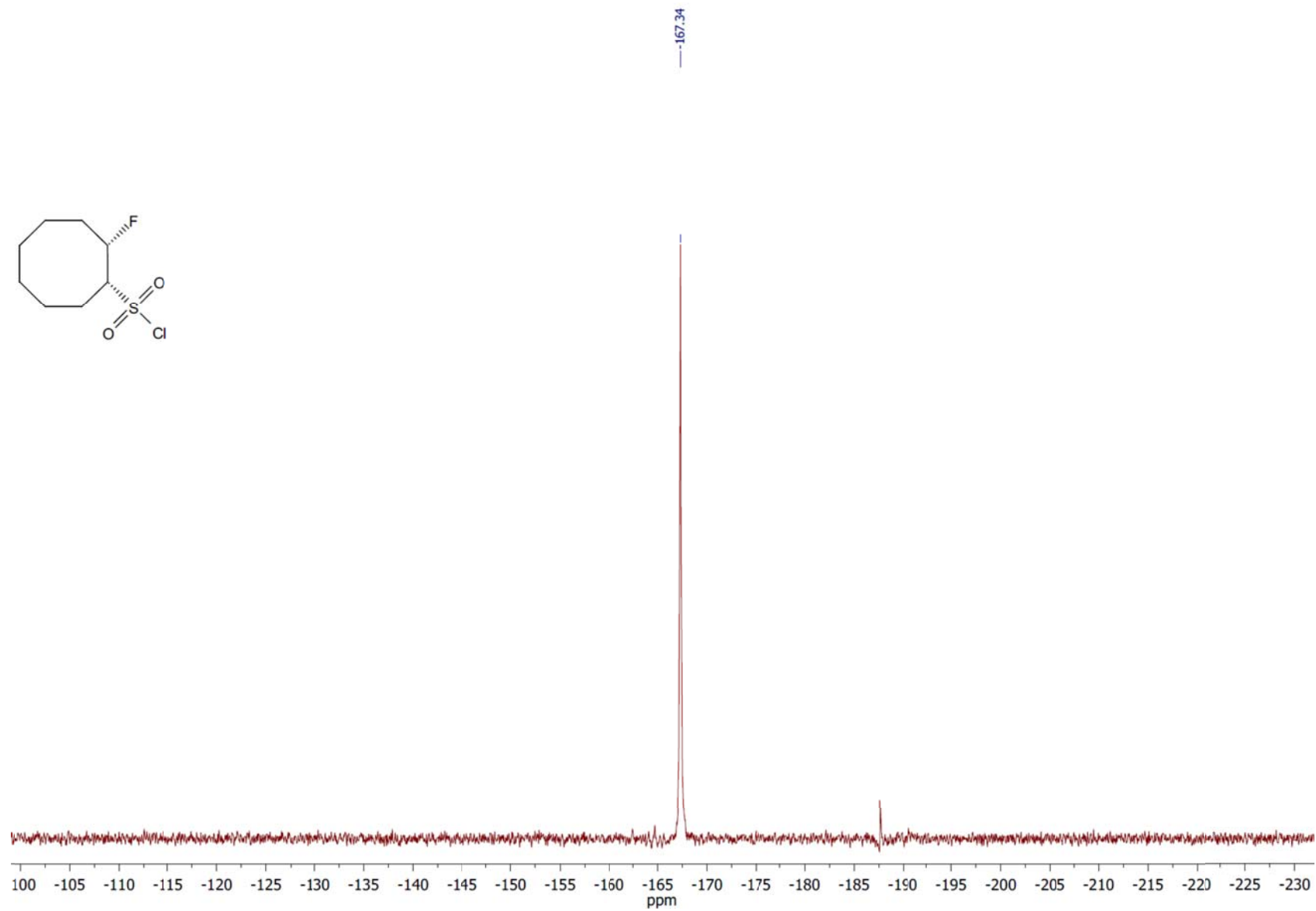
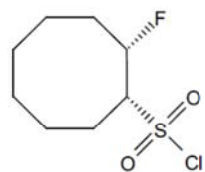
¹H NMR spectrum of the compound **4u**.



^{13}C NMR spectrum of the compound **4u**.

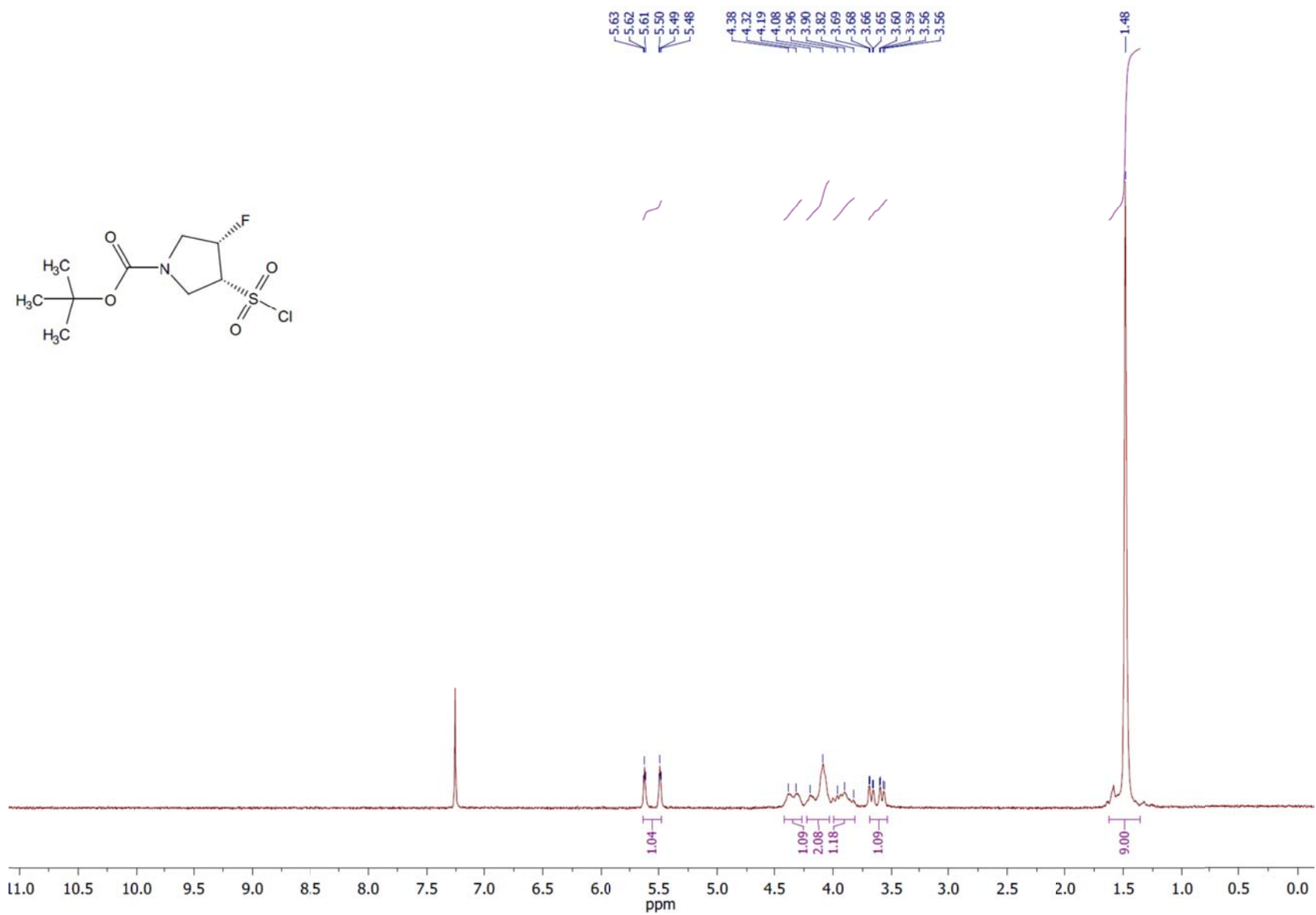


^{19}F NMR spectrum of the compound **4u**.



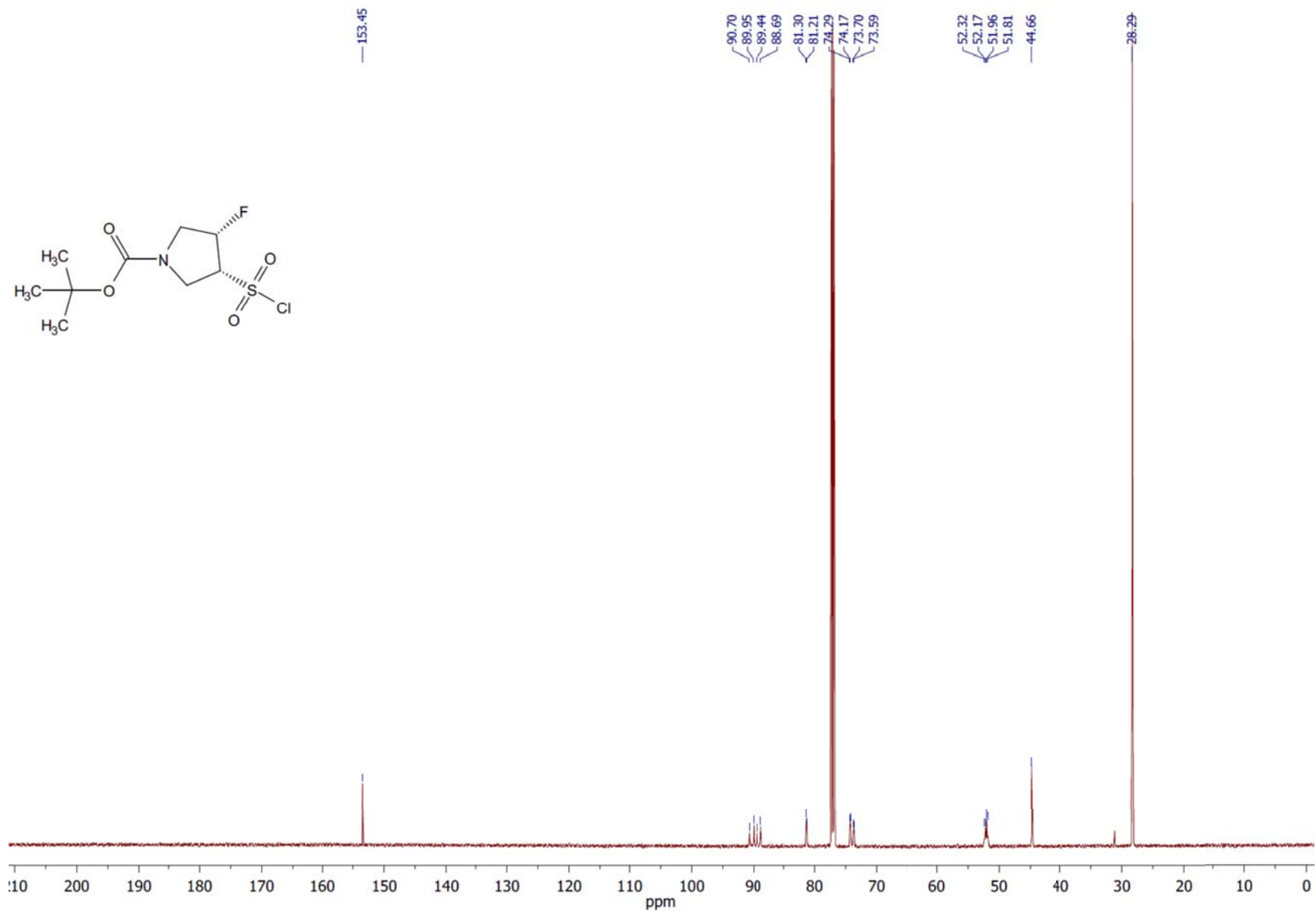
S167

¹H NMR spectrum of the compound **4v**.

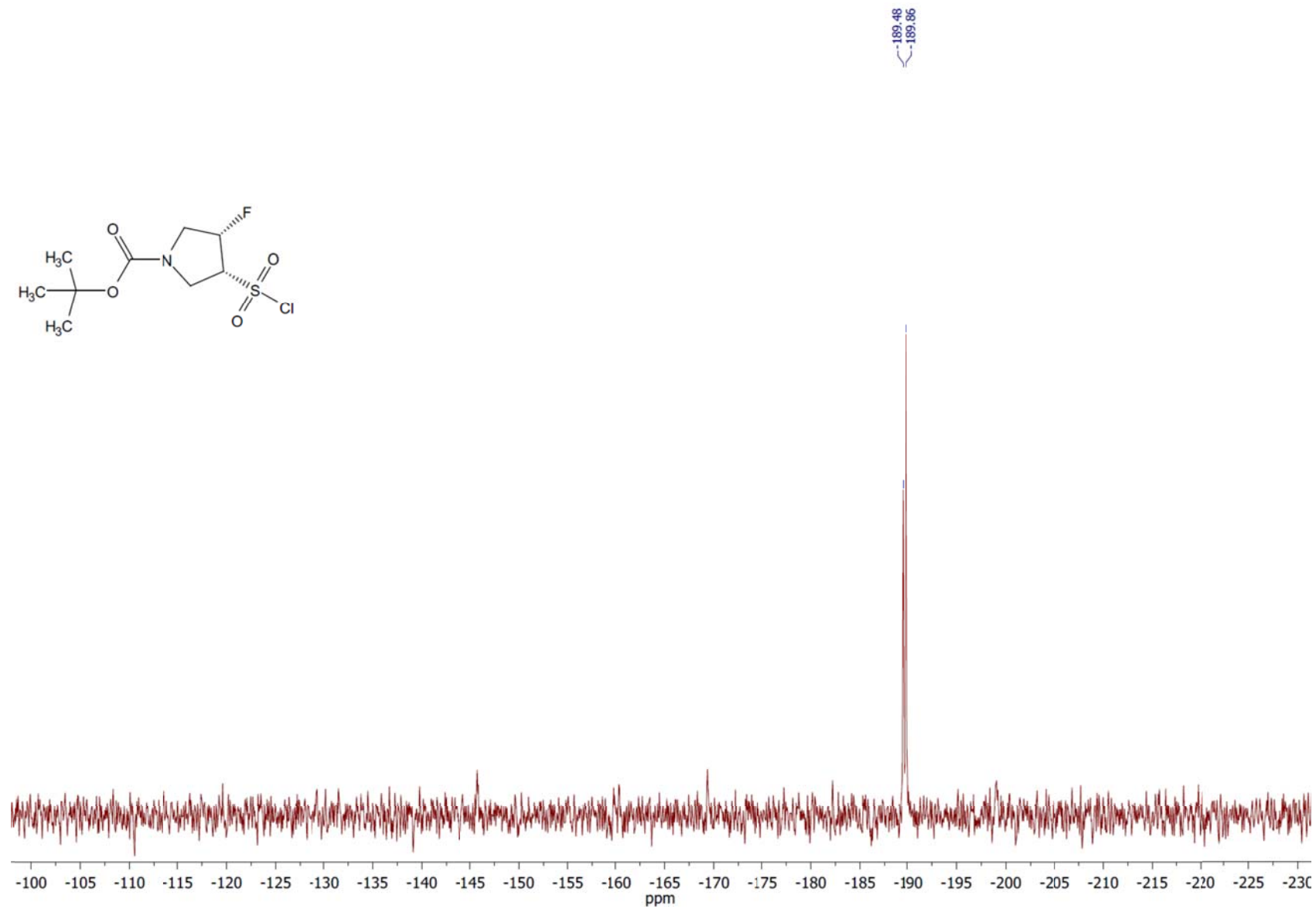
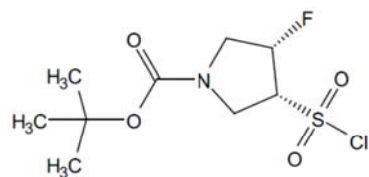


S168

^{13}C NMR spectrum of the compound **4v**.



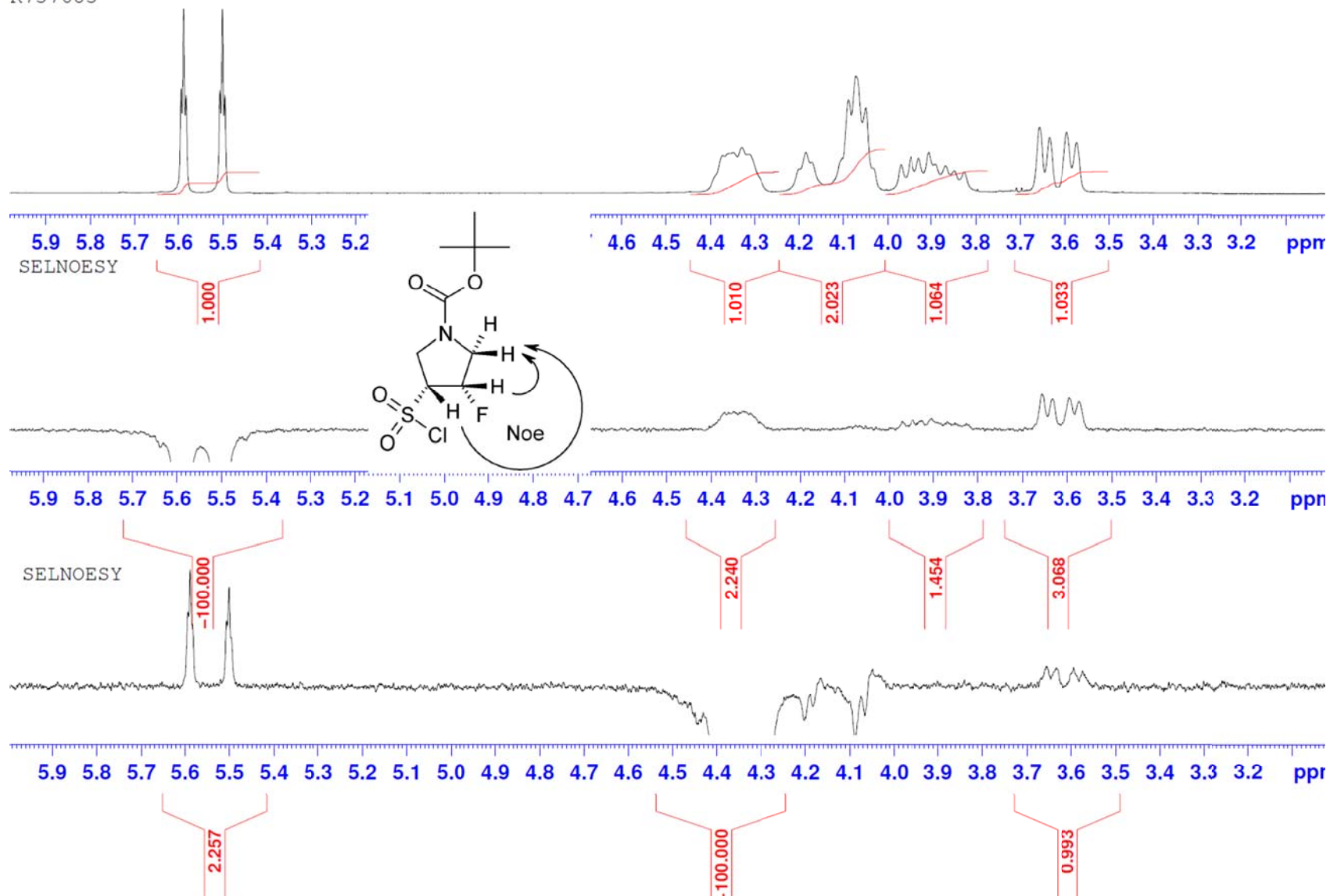
^{19}F NMR spectrum of the compound **4v**.



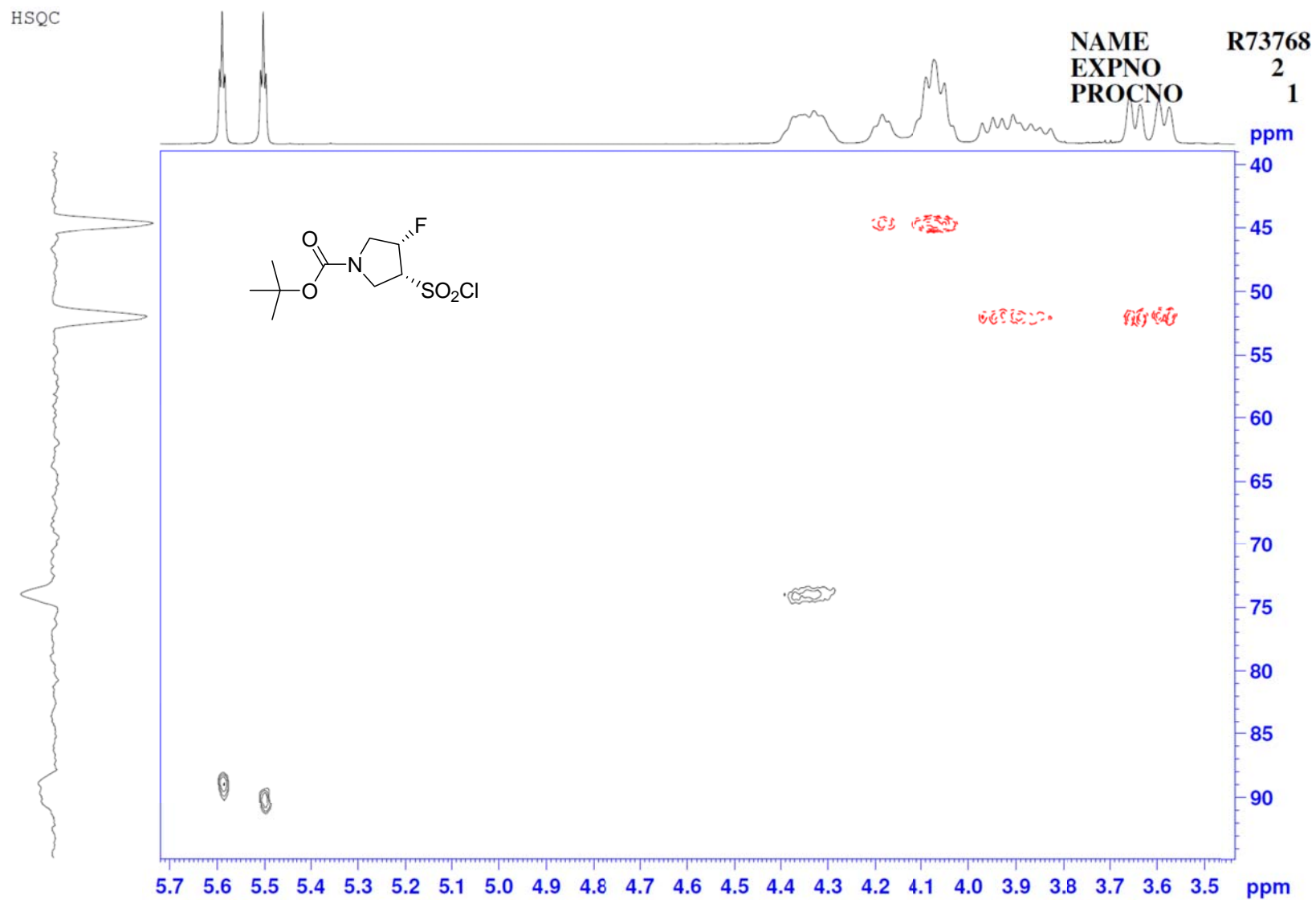
S170

NOE spectrum of the compound 4v.

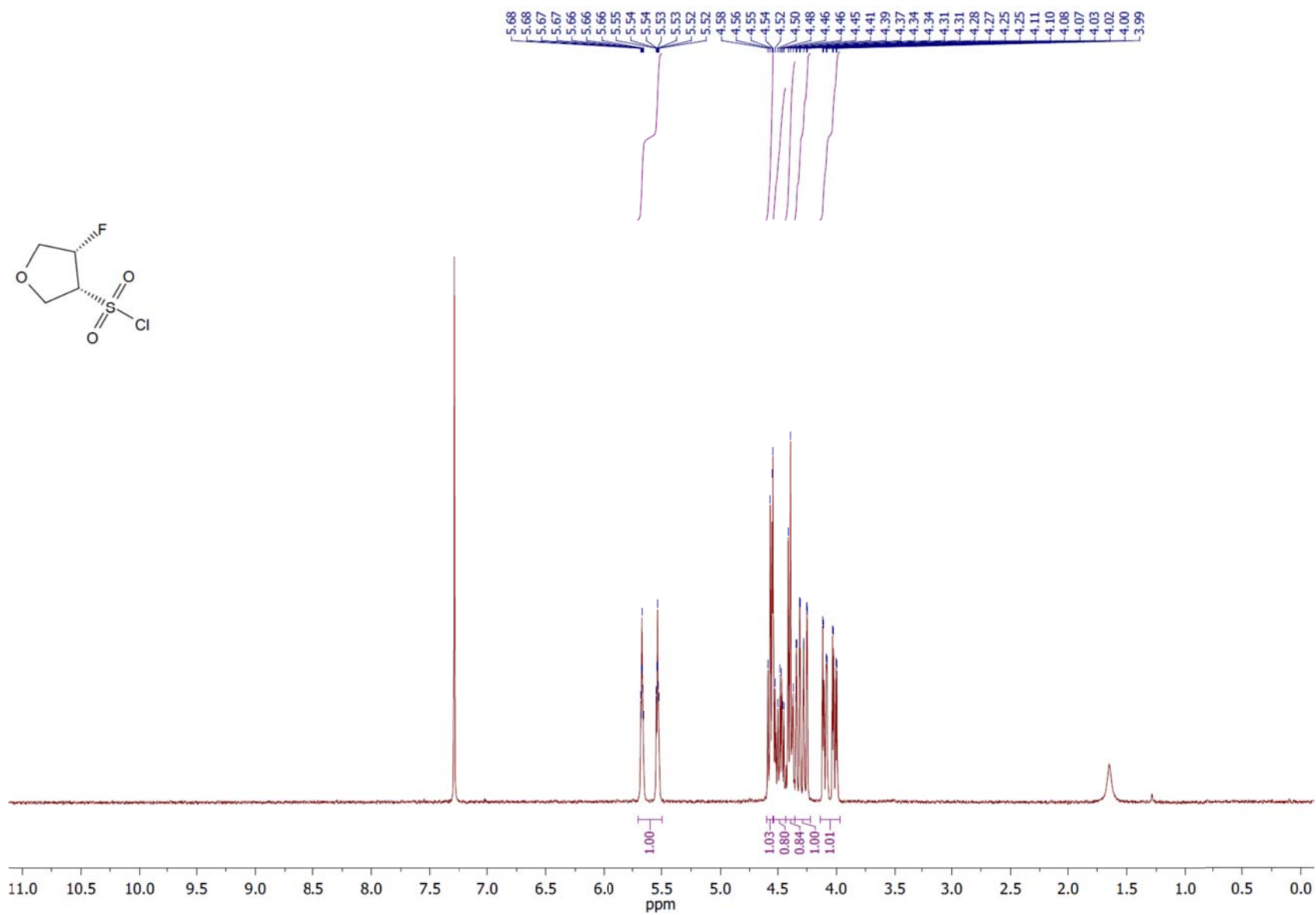
R737683



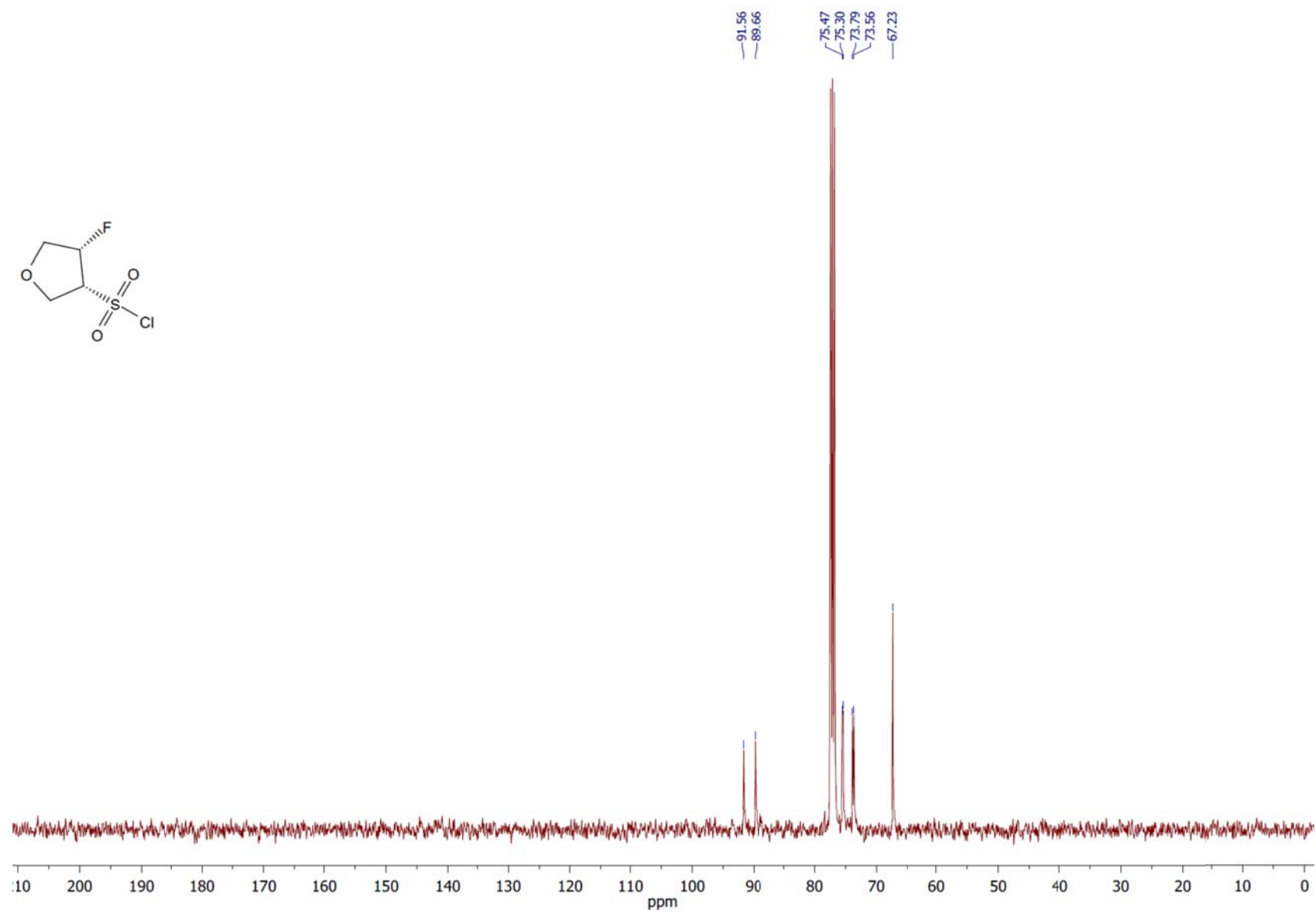
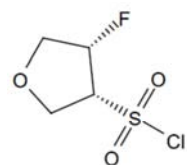
HSQC spectrum of the compound **4v**.



^1H NMR spectrum of the compound **4w**.

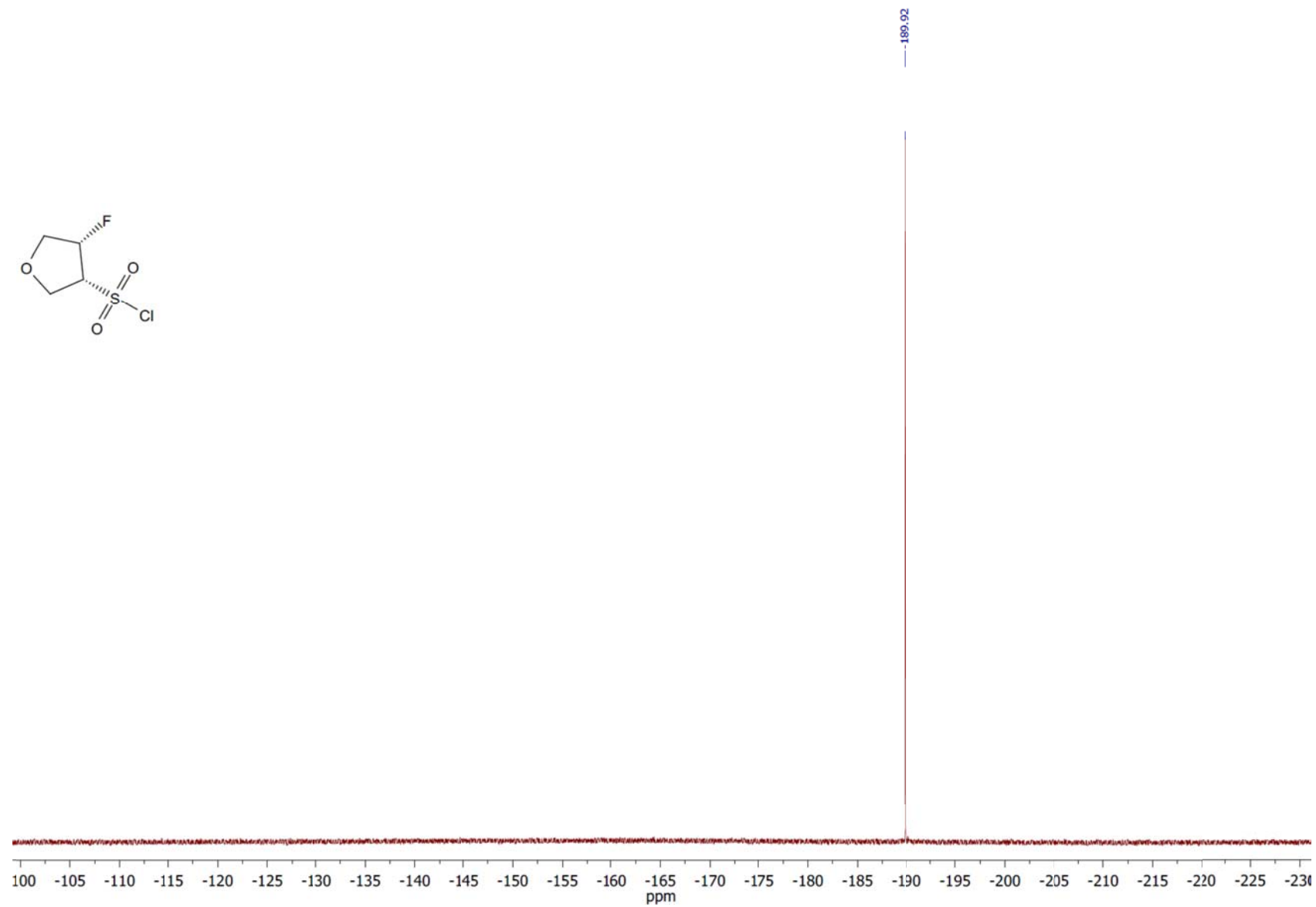
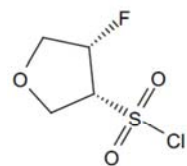


^{13}C NMR spectrum of the compound **4w**.



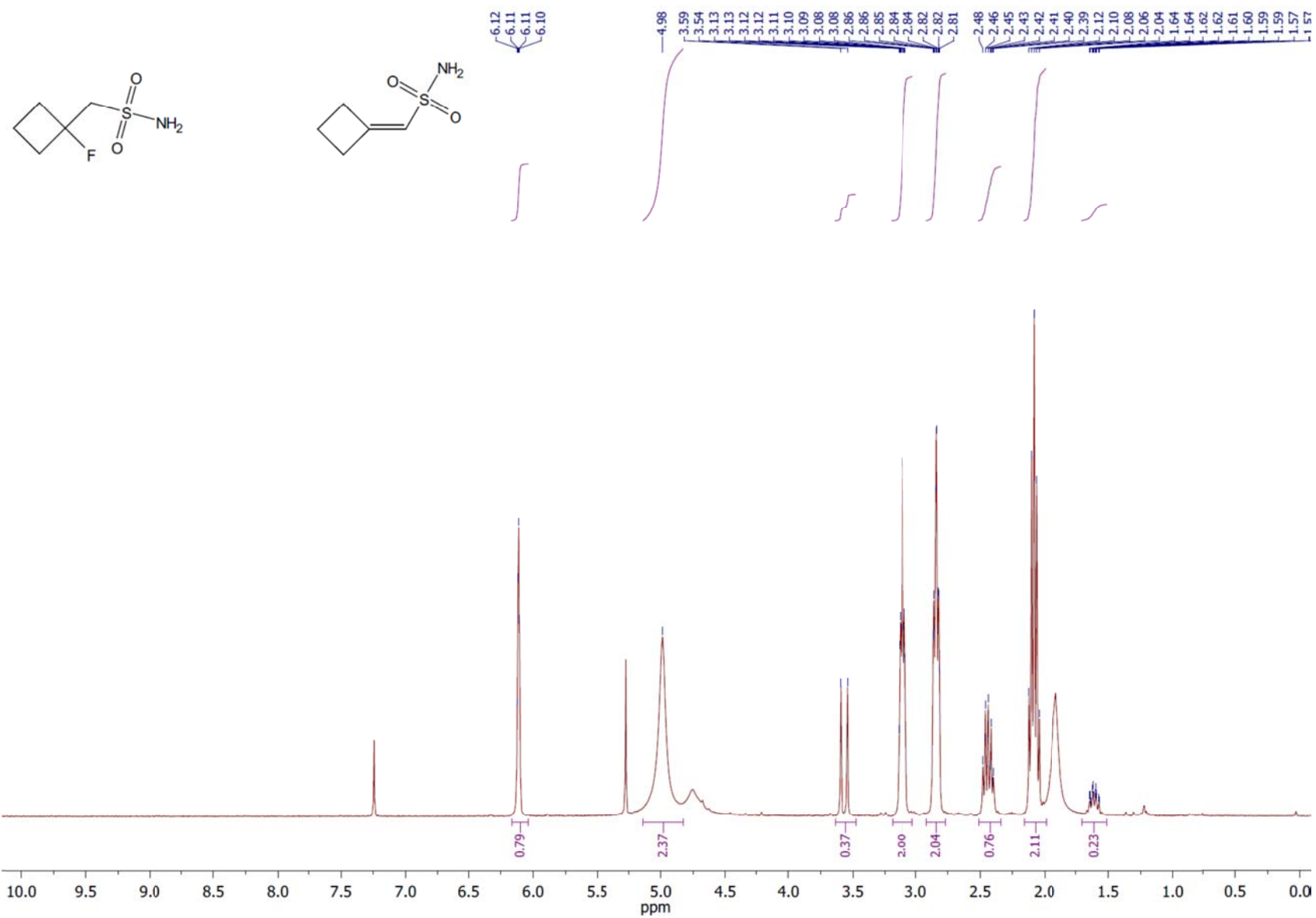
S174

^{19}F NMR spectrum of the compound **4w**.

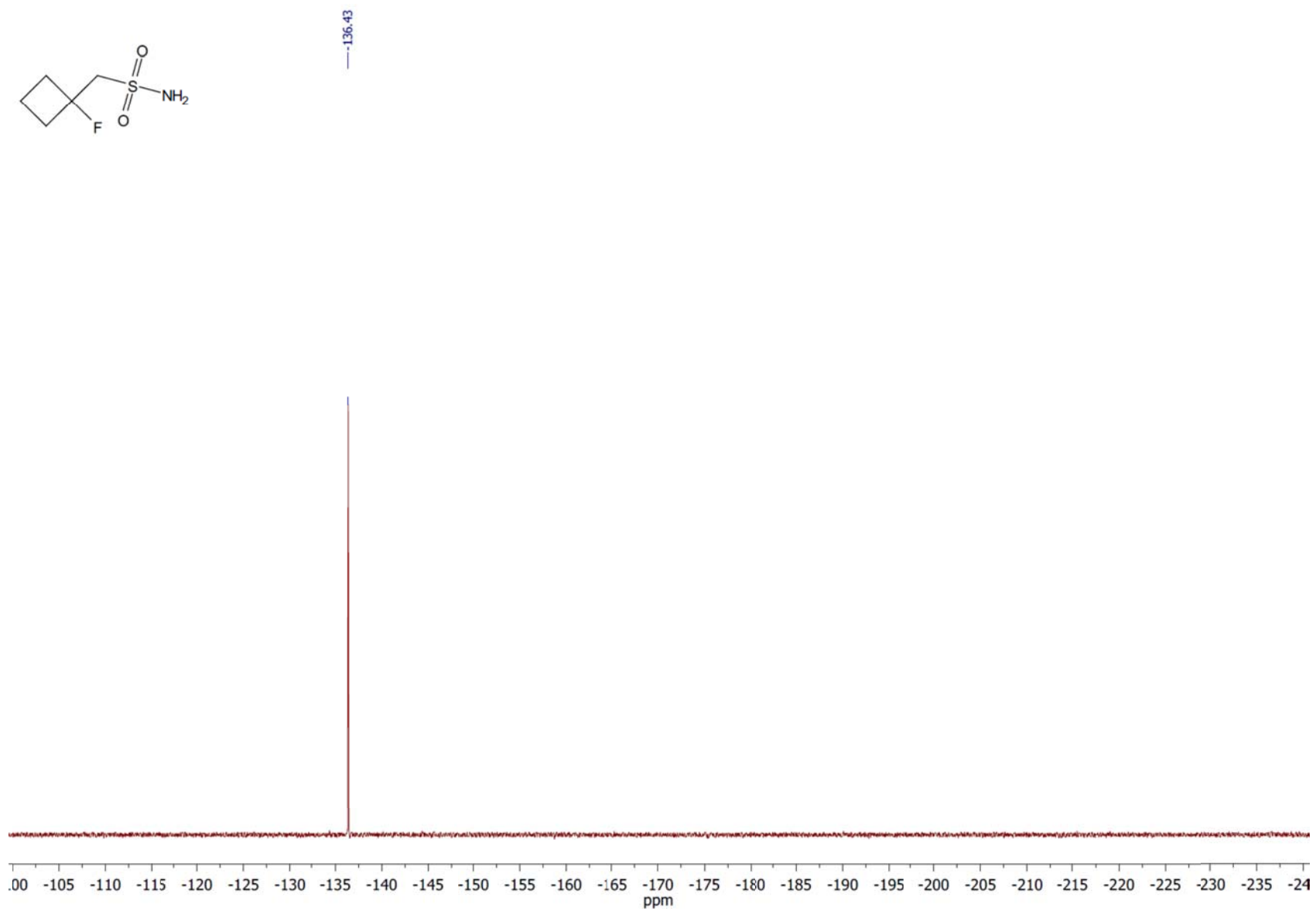


S175

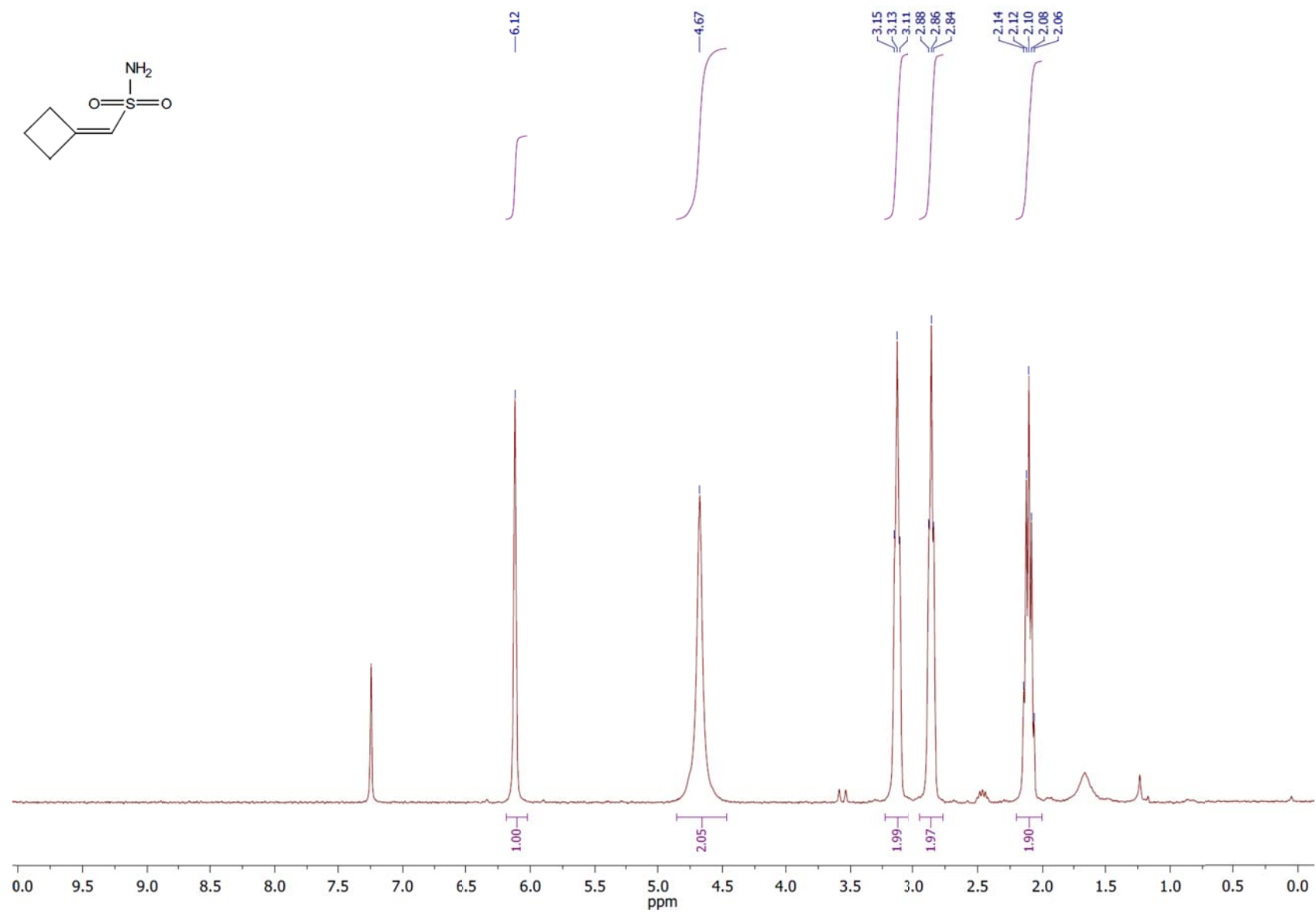
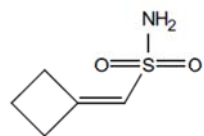
^1H NMR spectrum of a mixture of **7a** and **8a** (1:6).



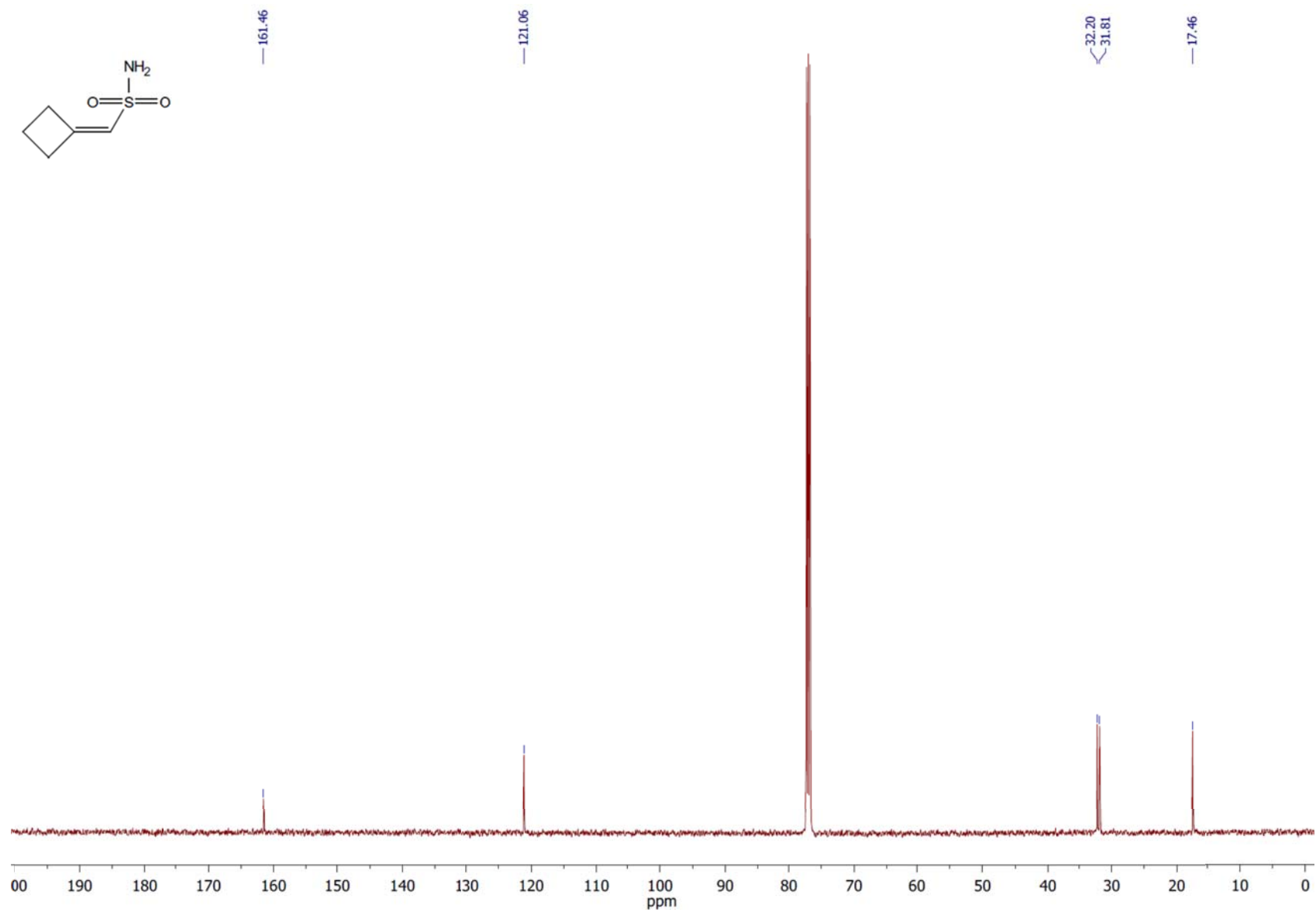
^{19}F NMR spectrum of the compound **7a**.



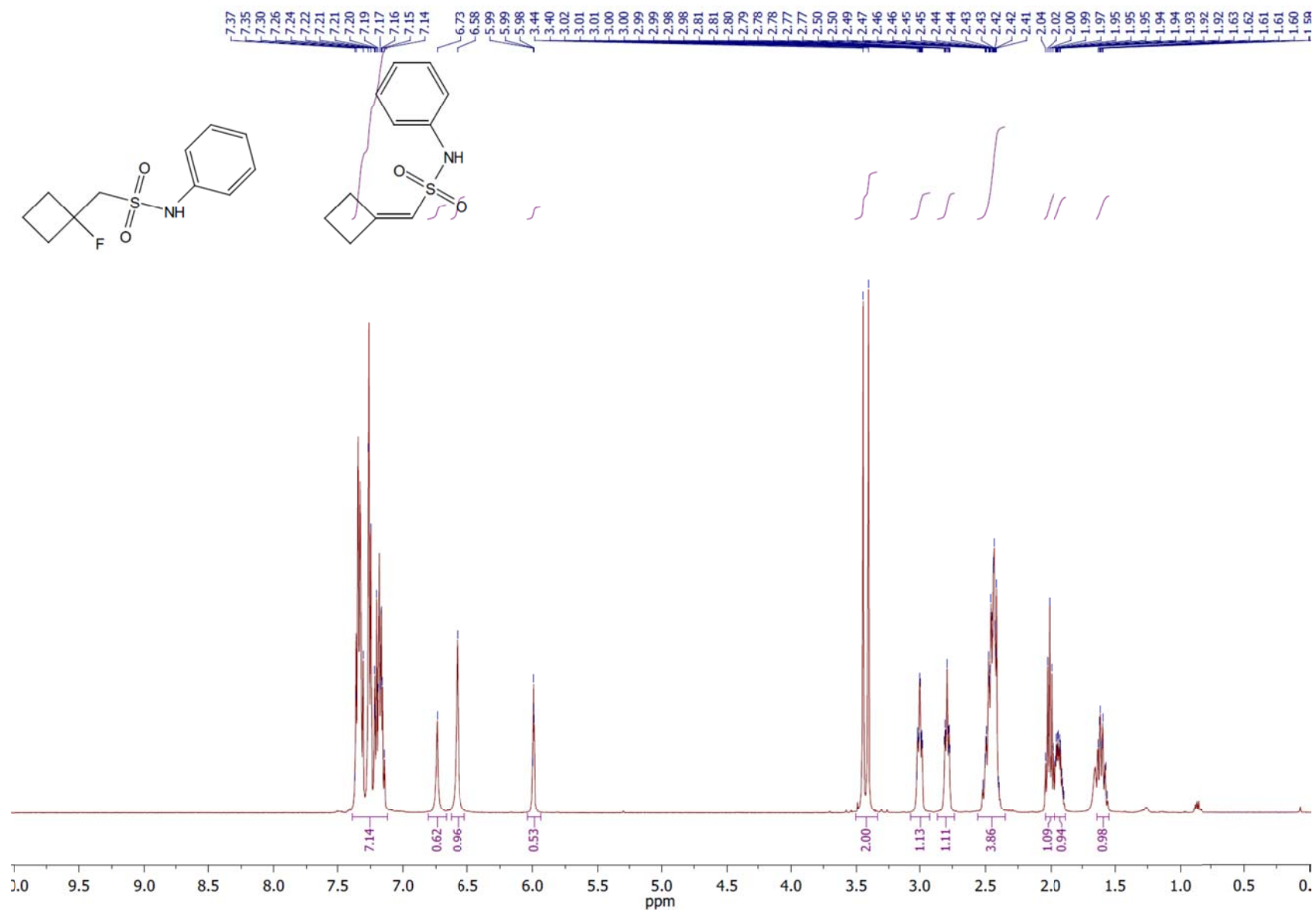
¹H NMR spectrum of the compound **8a**.



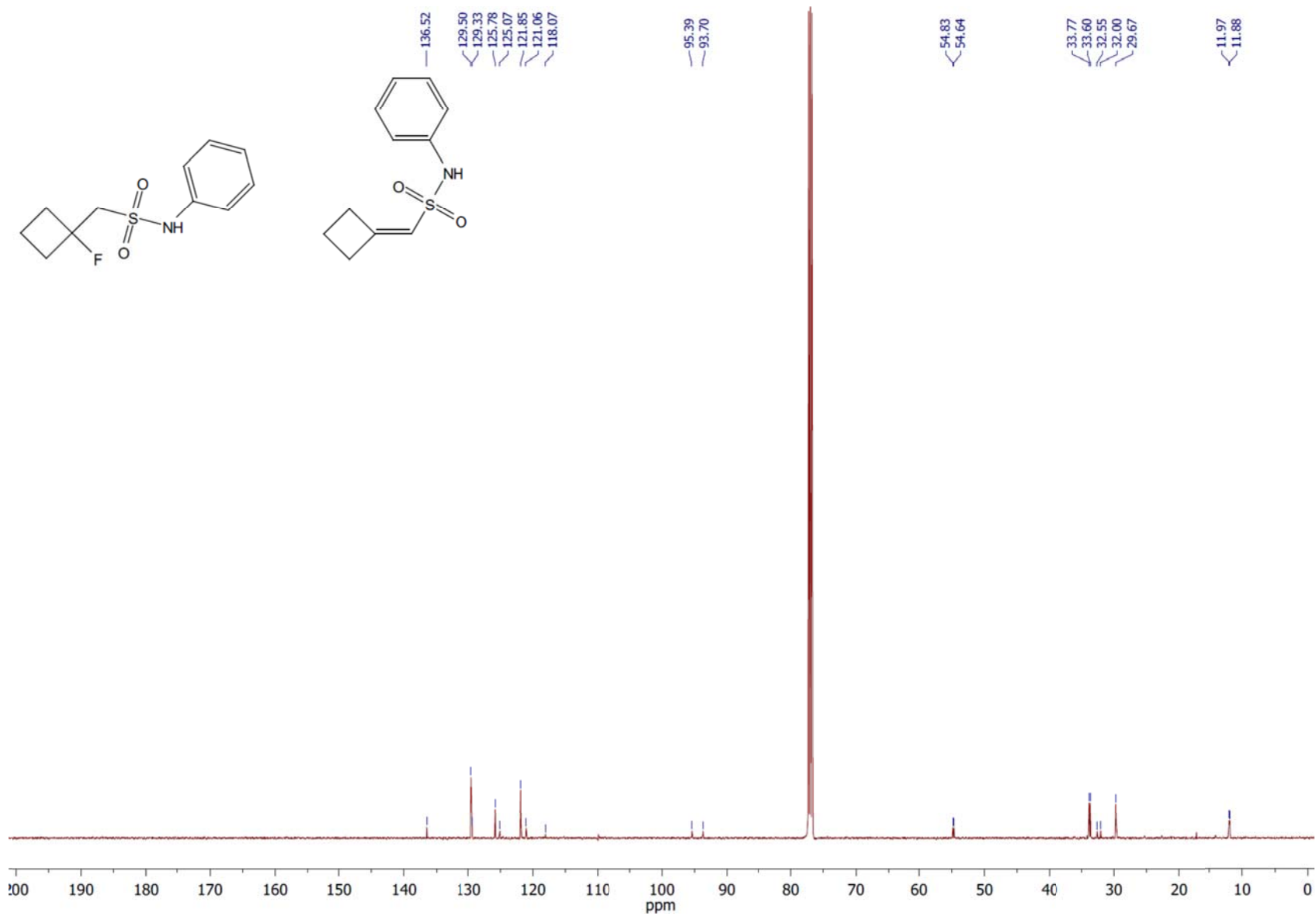
^{13}C NMR spectrum of the compound **8a**.



^1H NMR spectrum of a mixture of **7b** and **8b** (1.7:1).



¹³C NMR spectrum of a mixture of **7b** and **8b** (1.7:1).



^{19}F NMR spectrum of the compound **7b**.

