

Supplementary Information

(2-Fluoroallyl)boronates: new reagents for diastereoselective 2-fluoroallylboration of aldehydes

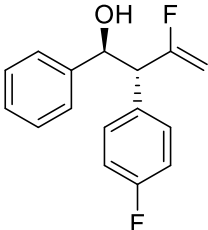
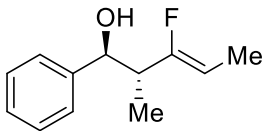
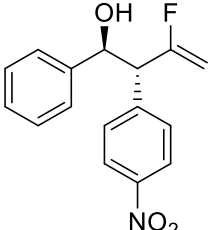
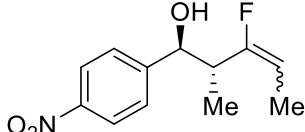
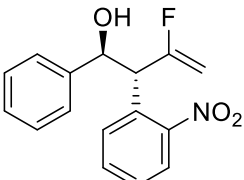
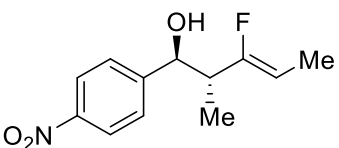
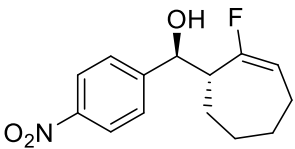
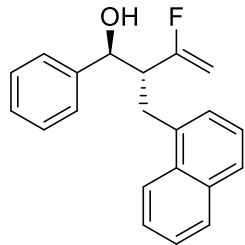
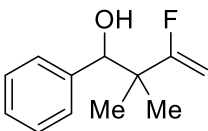
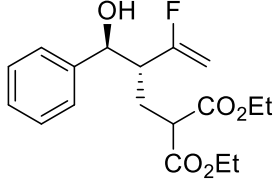
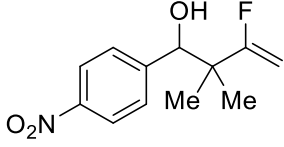
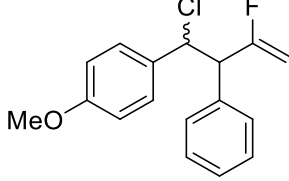
Maxim A. Novikov*, and Oleg M. Nefedov

N.D. Zelinsky Institute of Organic Chemistry, Russian Academy of Sciences, 47 Leninsky prosp., 119991 Moscow, Russian Federation

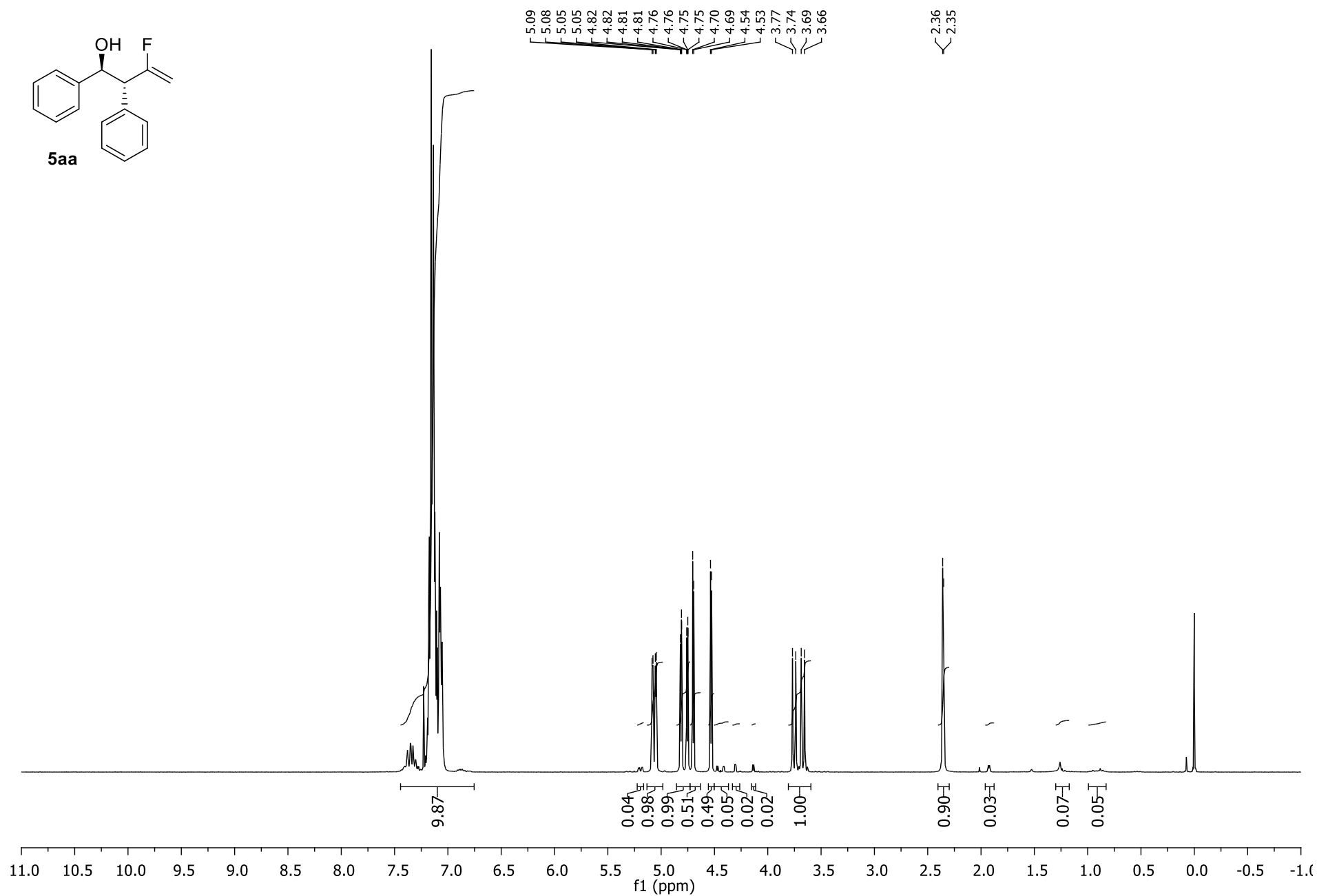
Fax: +7499 135 63 90; e-mail: manovikov@ioc.ac.ru

Copies of ^1H , ^{19}F , ^{13}C NMR.

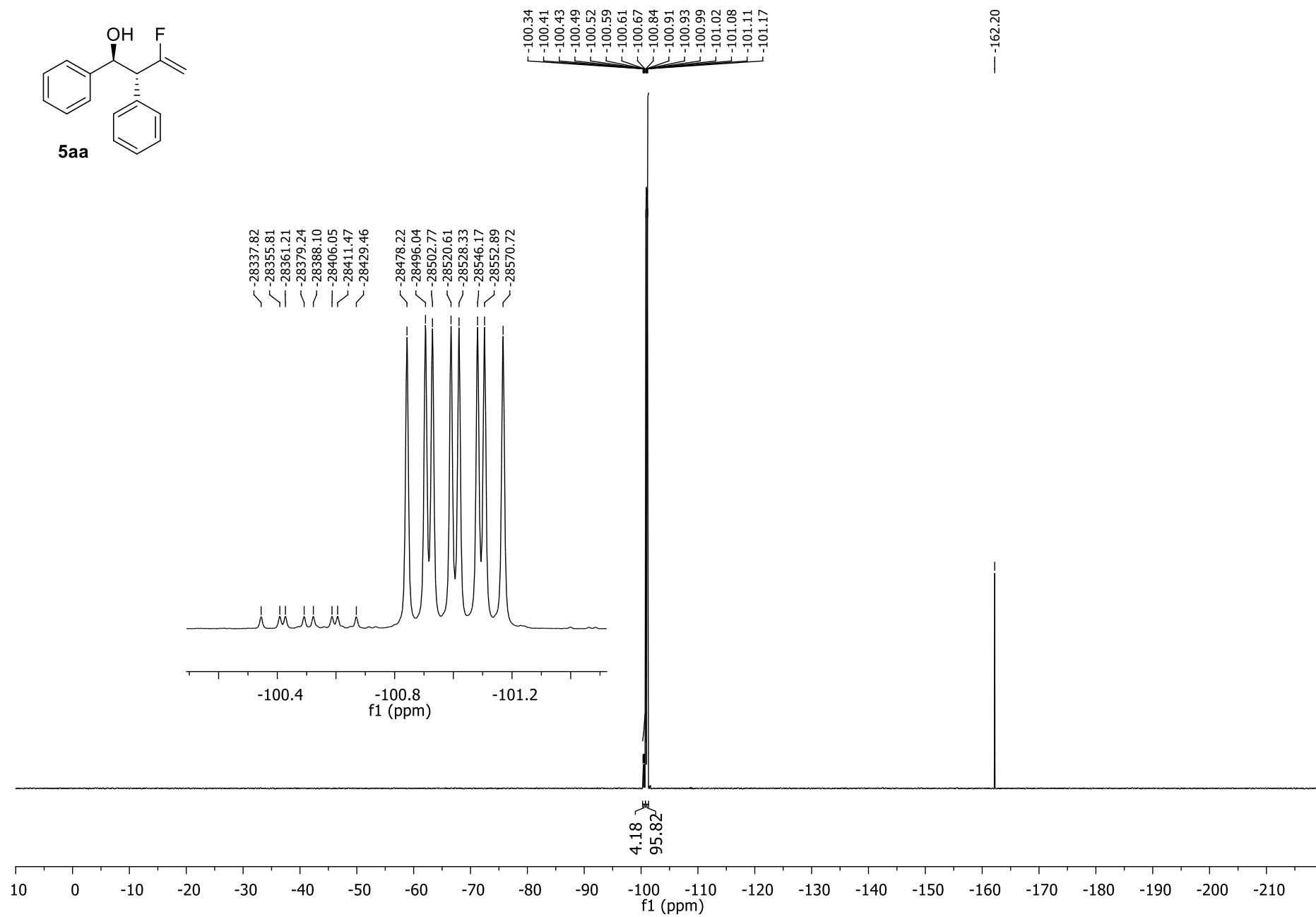
5aa ^1H ^{19}F ^{13}C	5ae ^1H ^{19}F ^{13}C
5ab ^1H ^{19}F ^{13}C	5af ^1H ^{19}F ^{13}C
5ac ^1H ^{19}F ^{13}C	5ag ^1H ^{19}F ^{13}C
5ad ^1H ^{19}F ^{13}C	5ah ^1H ^{19}F ^{13}C

5ba		<u>¹H</u>	<u>¹⁹F</u>	<u>¹³C</u>
5ga		<u>¹H</u>	<u>¹⁹F</u>	<u>¹³C</u>
5ca		<u>¹H</u>	<u>¹⁹F</u>	<u>¹³C</u>
5gb		<u>¹H</u>	<u>¹⁹F</u>	<u>¹³C</u>
5da		<u>¹H</u>	<u>¹⁹F</u>	<u>¹³C</u>
Z-5gb		<u>¹H</u>	<u>¹⁹F</u>	<u>¹³C</u>
5eb		<u>¹H</u>	<u>¹⁹F</u>	<u>¹³C</u>
5ha		<u>¹H</u>	<u>¹⁹F</u>	<u>¹³C</u>
5fa		<u>¹H</u>	<u>¹⁹F</u>	<u>¹³C</u>
5ia		<u>¹H</u>	<u>¹⁹F</u>	<u>¹³C</u>
5fb		<u>¹H</u>	<u>¹⁹F</u>	<u>¹³C</u>
6		<u>¹H</u>	<u>¹⁹F</u>	<u>¹³C</u>

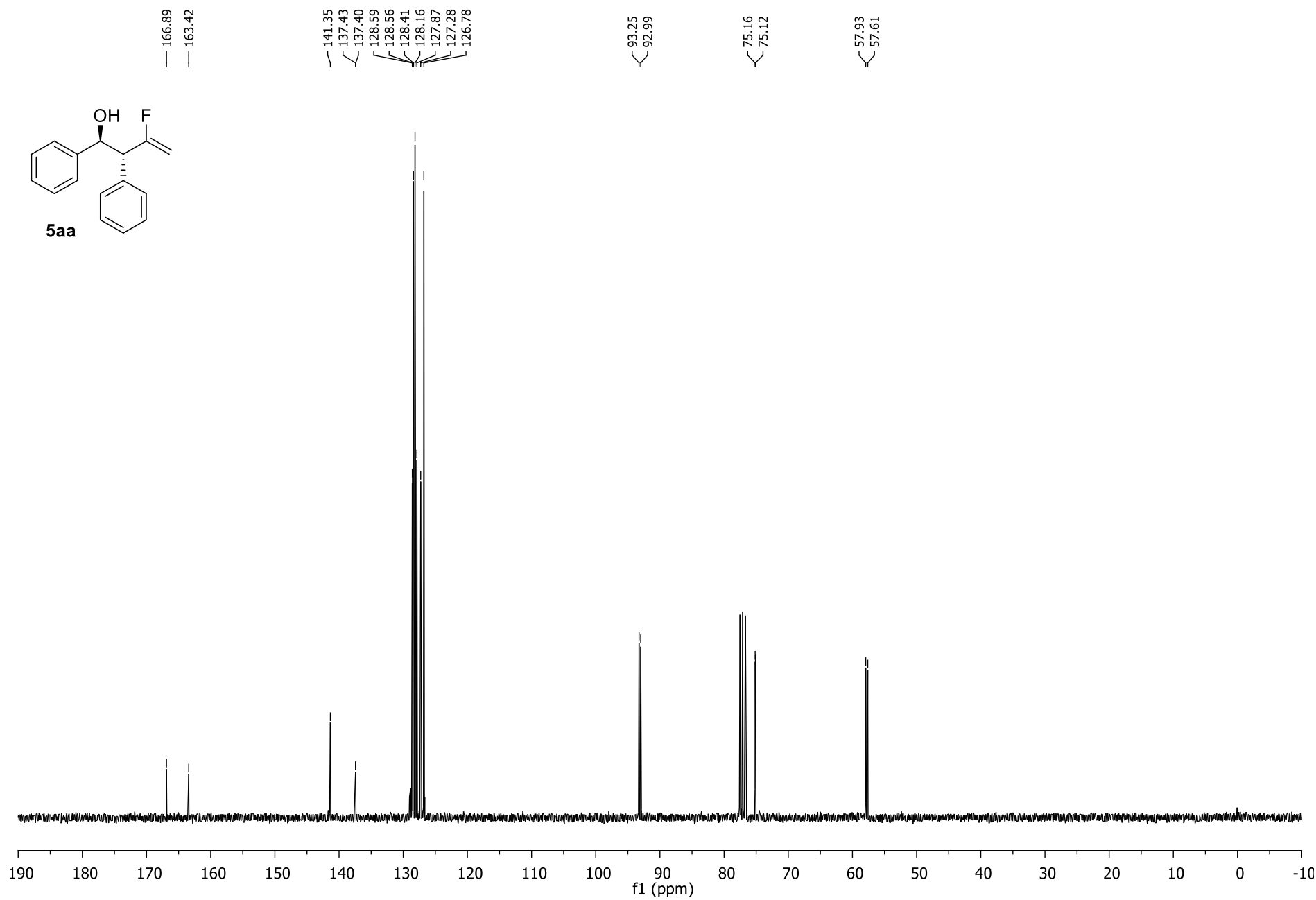
^1H NMR (300.1 MHz, CDCl_3) of **5aa** (*anti/syn* = 96/4).



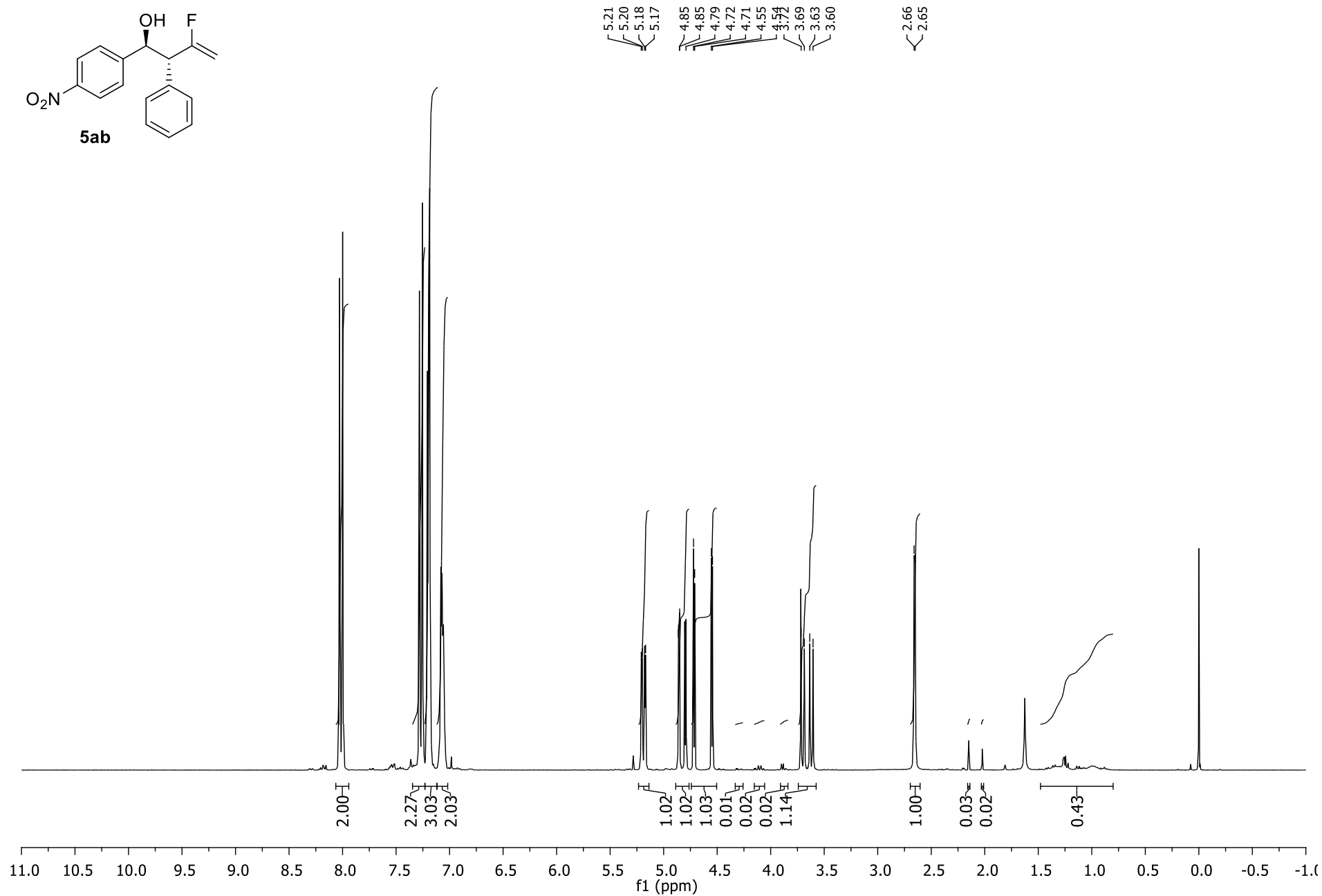
^{19}F NMR (282.4 MHz, CDCl_3) of **5aa** (*anti*/*syn* = 96/4).



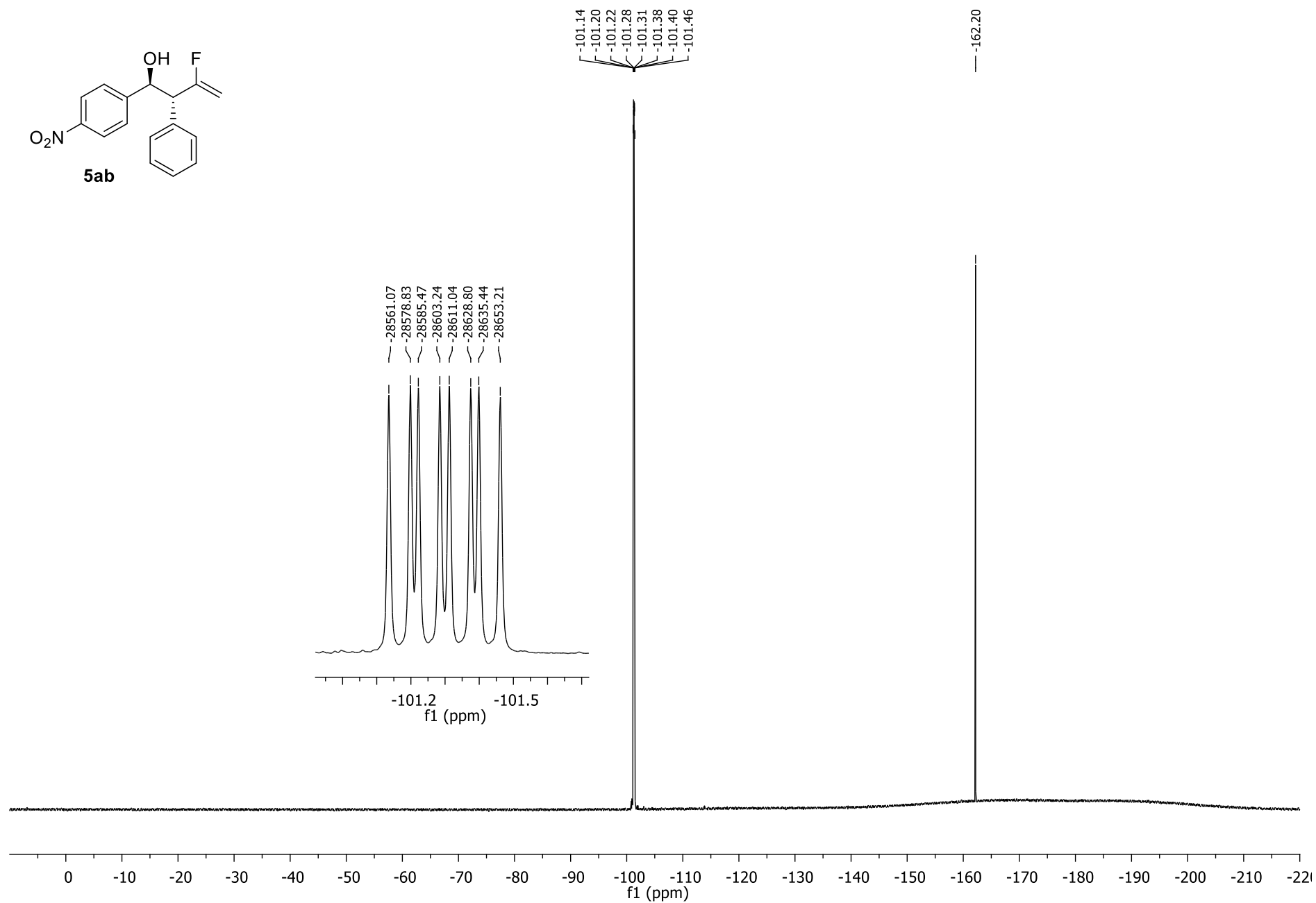
^{13}C NMR (75.5 MHz, CDCl_3) of **5aa** (*anti*/*syn* = 96/4).



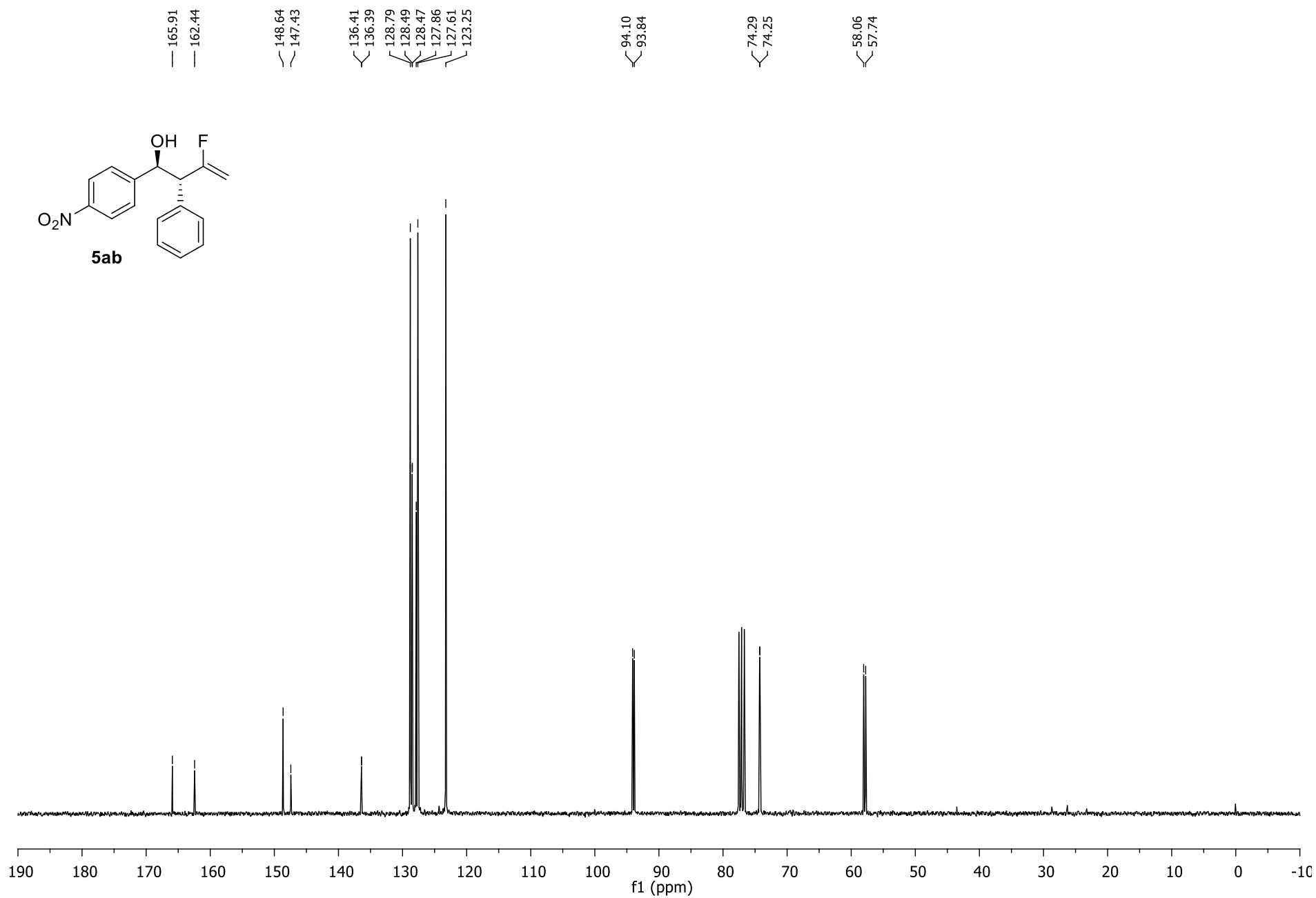
^1H NMR (300.1 MHz, CDCl_3) of **5ab** (*anti/syn* > 20/1).



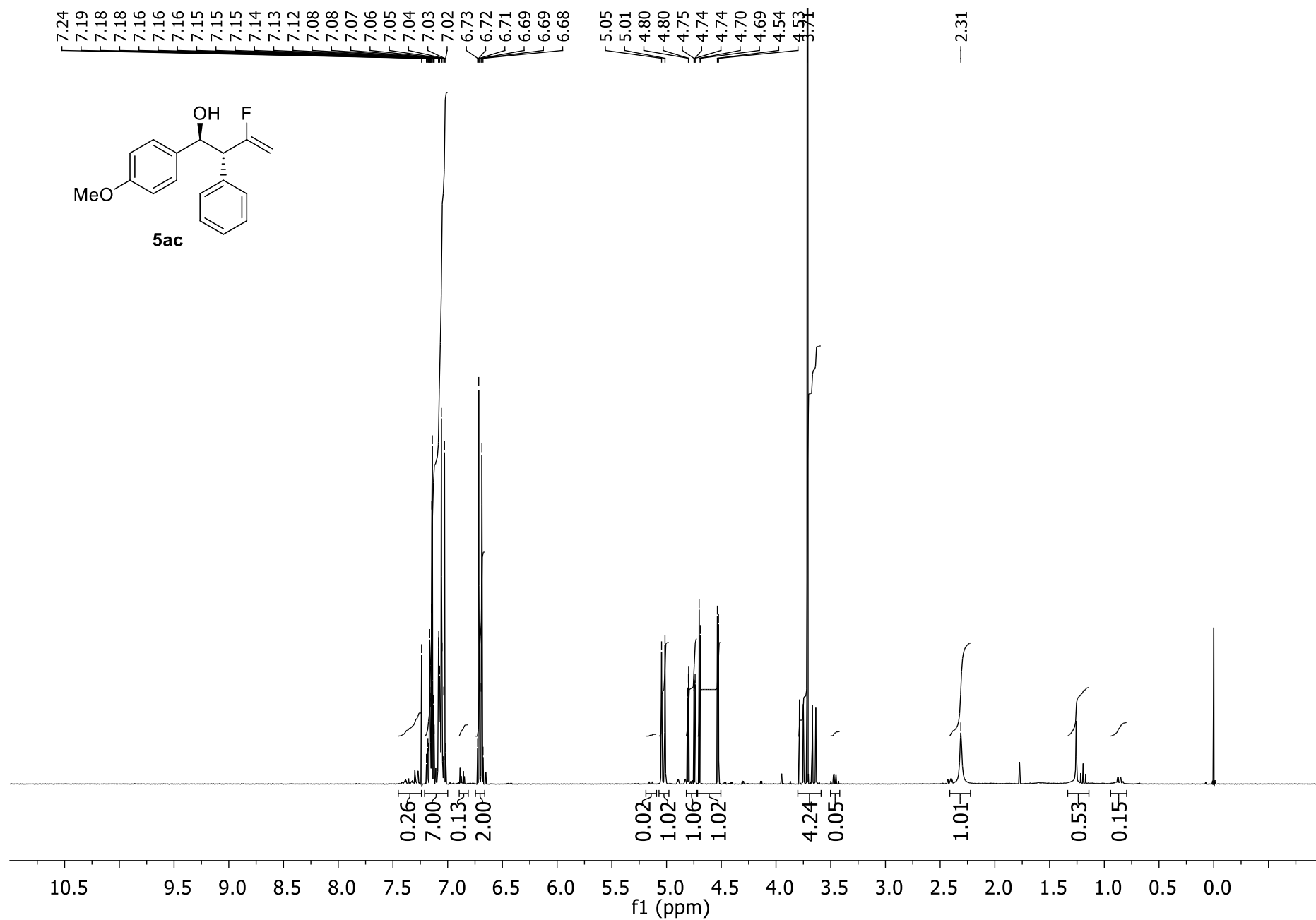
^{19}F NMR (282.4 MHz, CDCl_3) of **5ab** (*anti/syn* > 20/1).



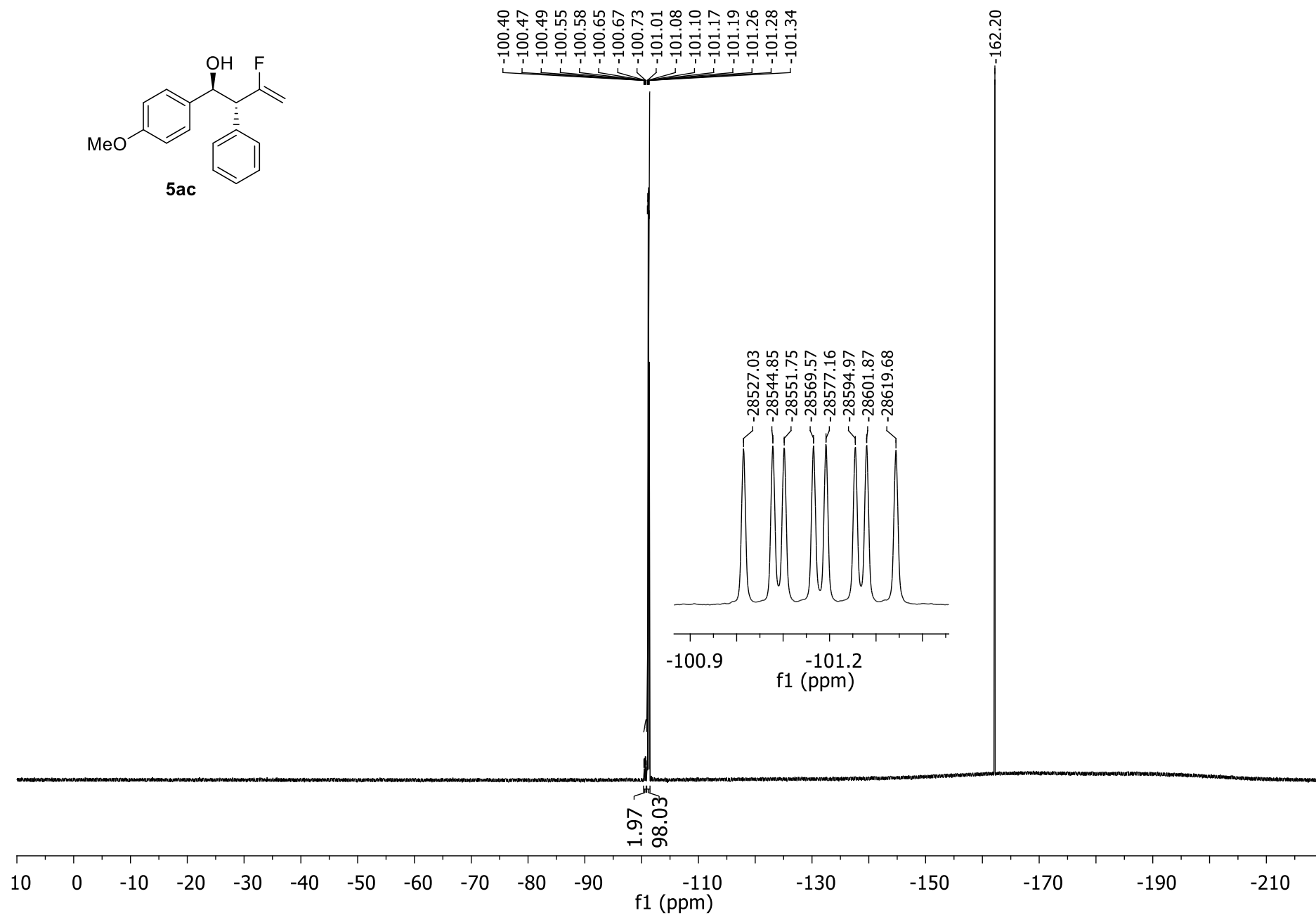
^{13}C NMR (75.5 MHz, CDCl_3) of **5ab** (*anti/syn* > 20/1).



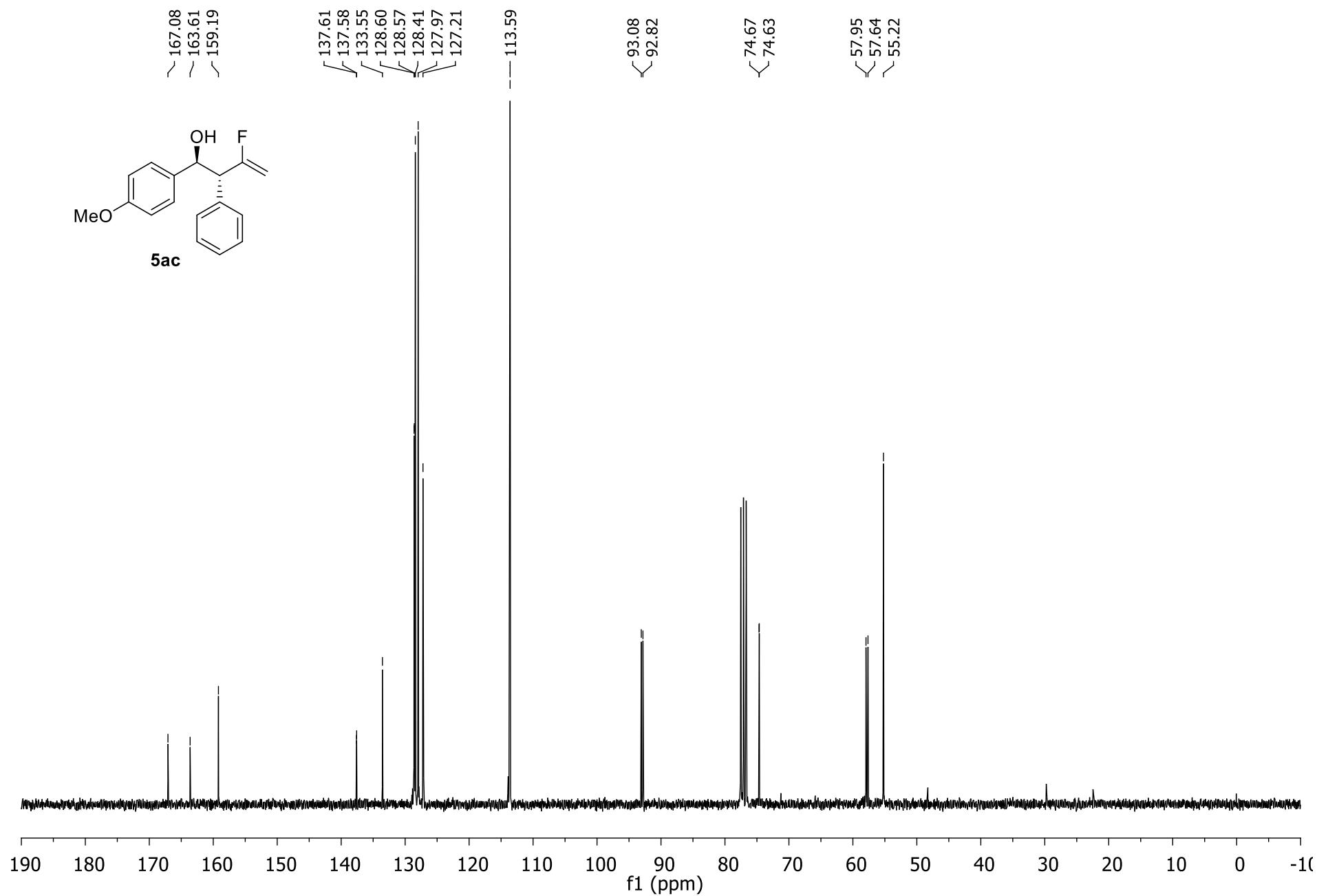
^1H NMR (300.1 MHz, CDCl_3) of **5ac** (*anti/syn* = 98/2).



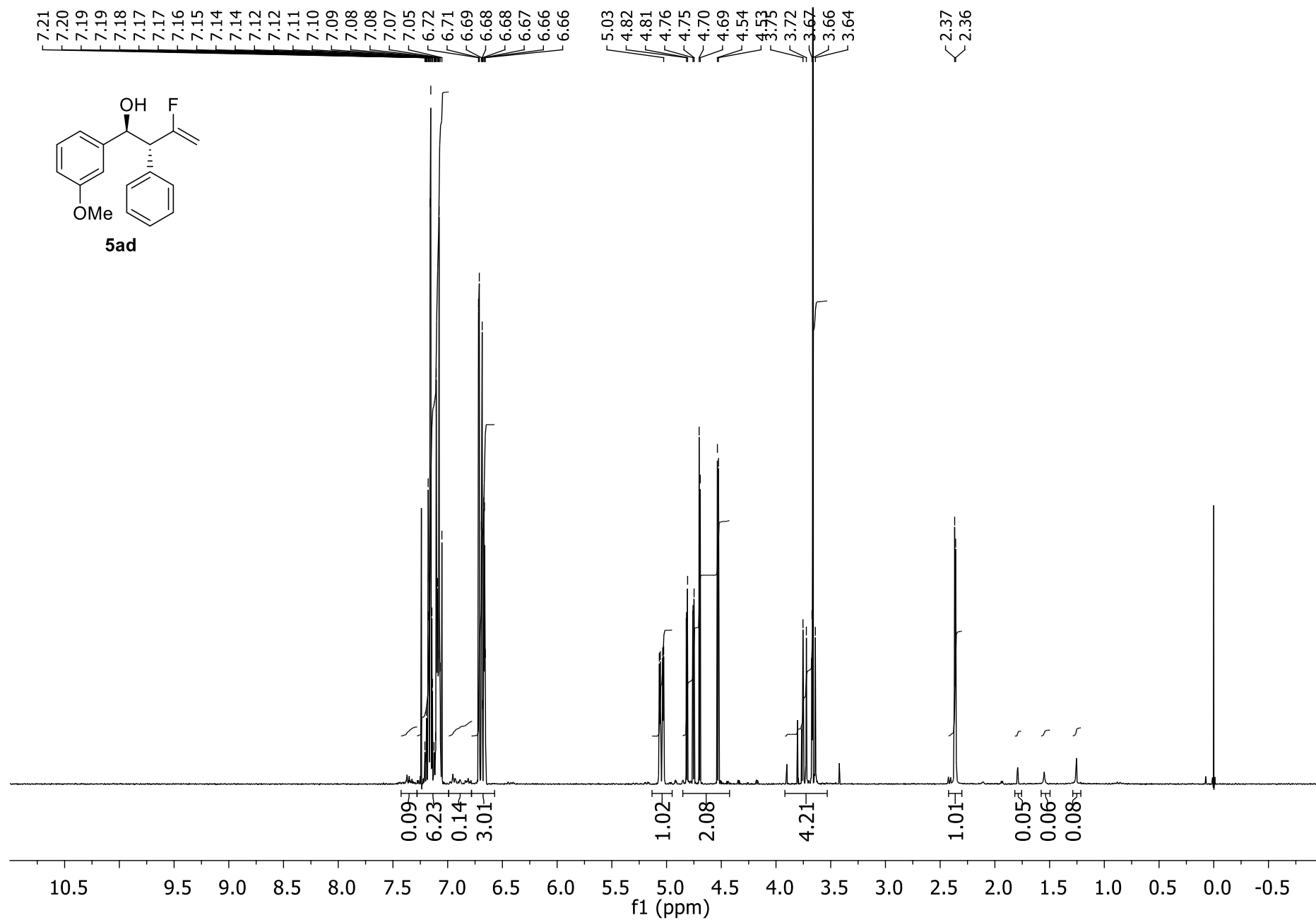
^{19}F NMR (282.4 MHz, CDCl_3) of **5ac** (*anti/syn* = 98/2).



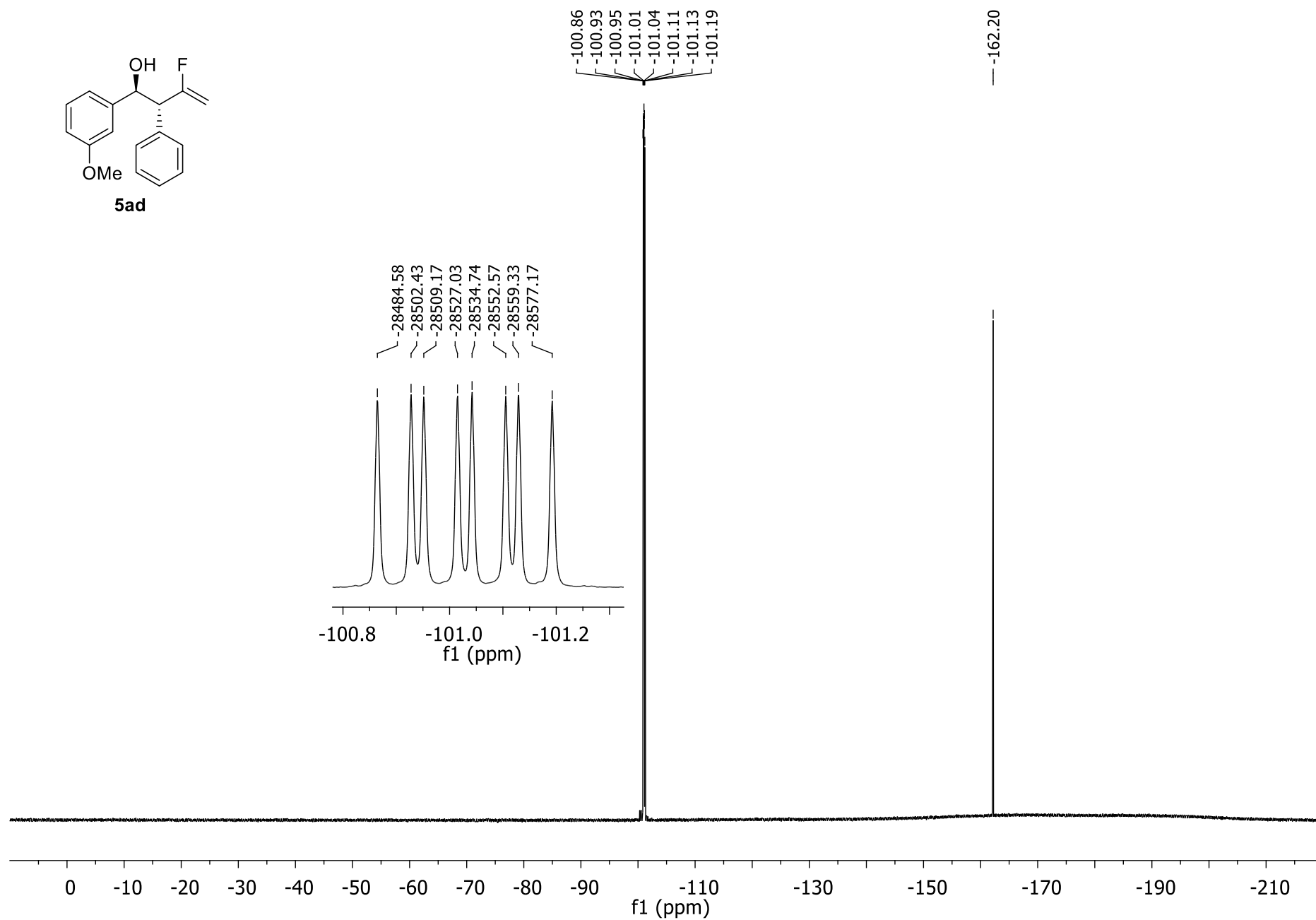
^{13}C NMR (75.5 MHz, CDCl_3) of **5ac** (*anti/syn* = 98/2).



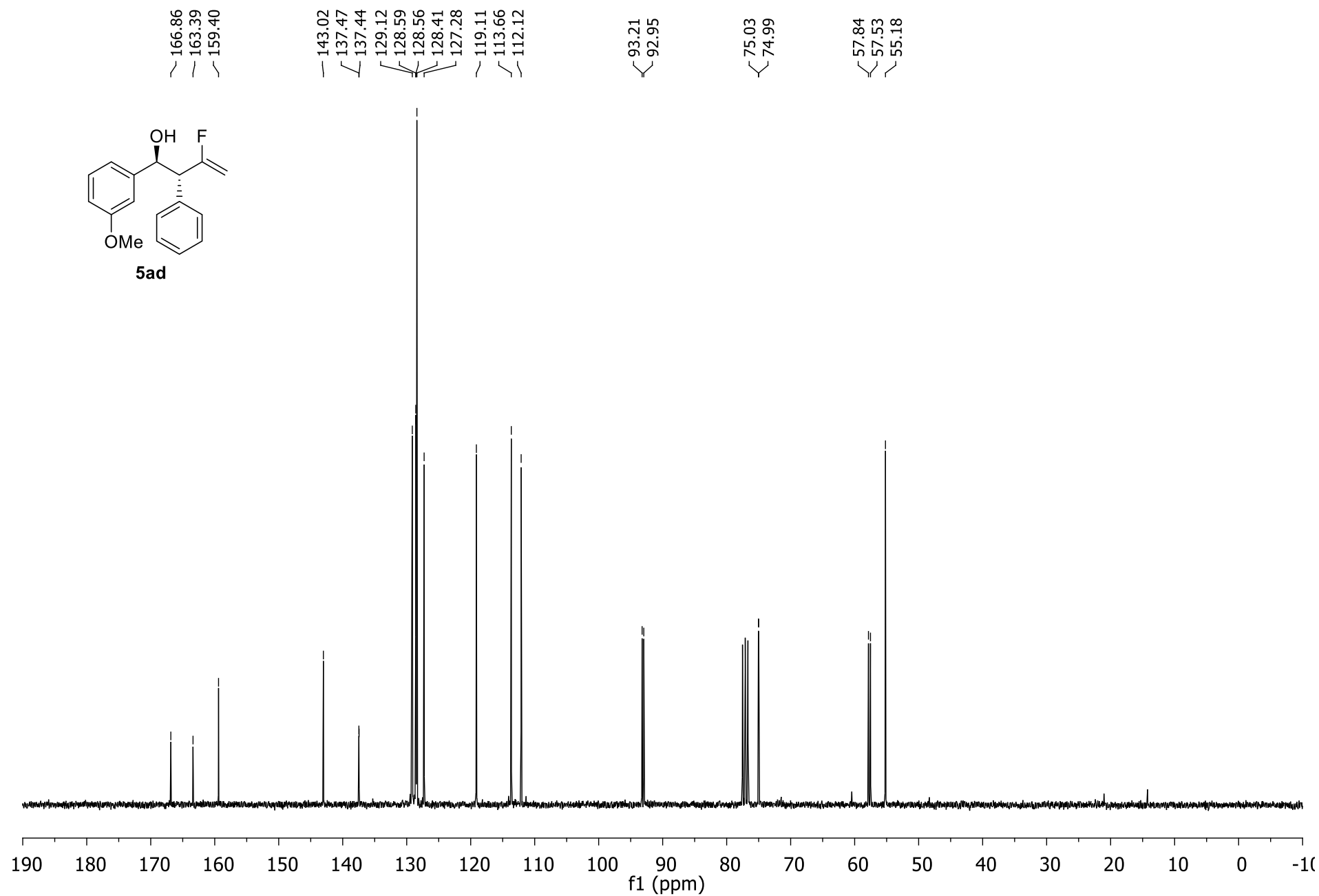
^1H NMR (300.1 MHz, CDCl_3) of **5ad** (*anti/syn* = 99/1).



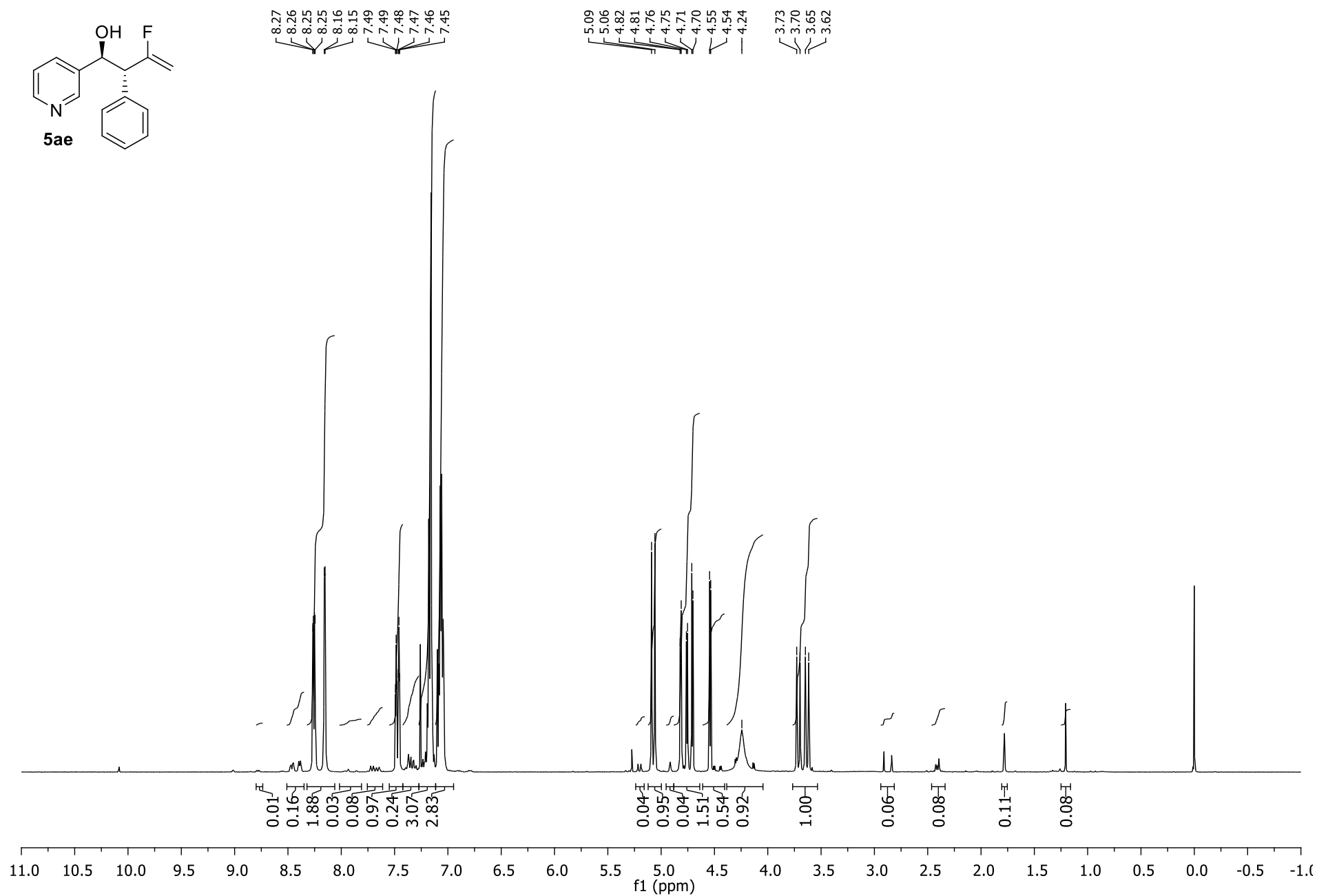
^{19}F NMR (282.4 MHz, CDCl_3) of **5ad** (*anti*/*syn* = 99/1).



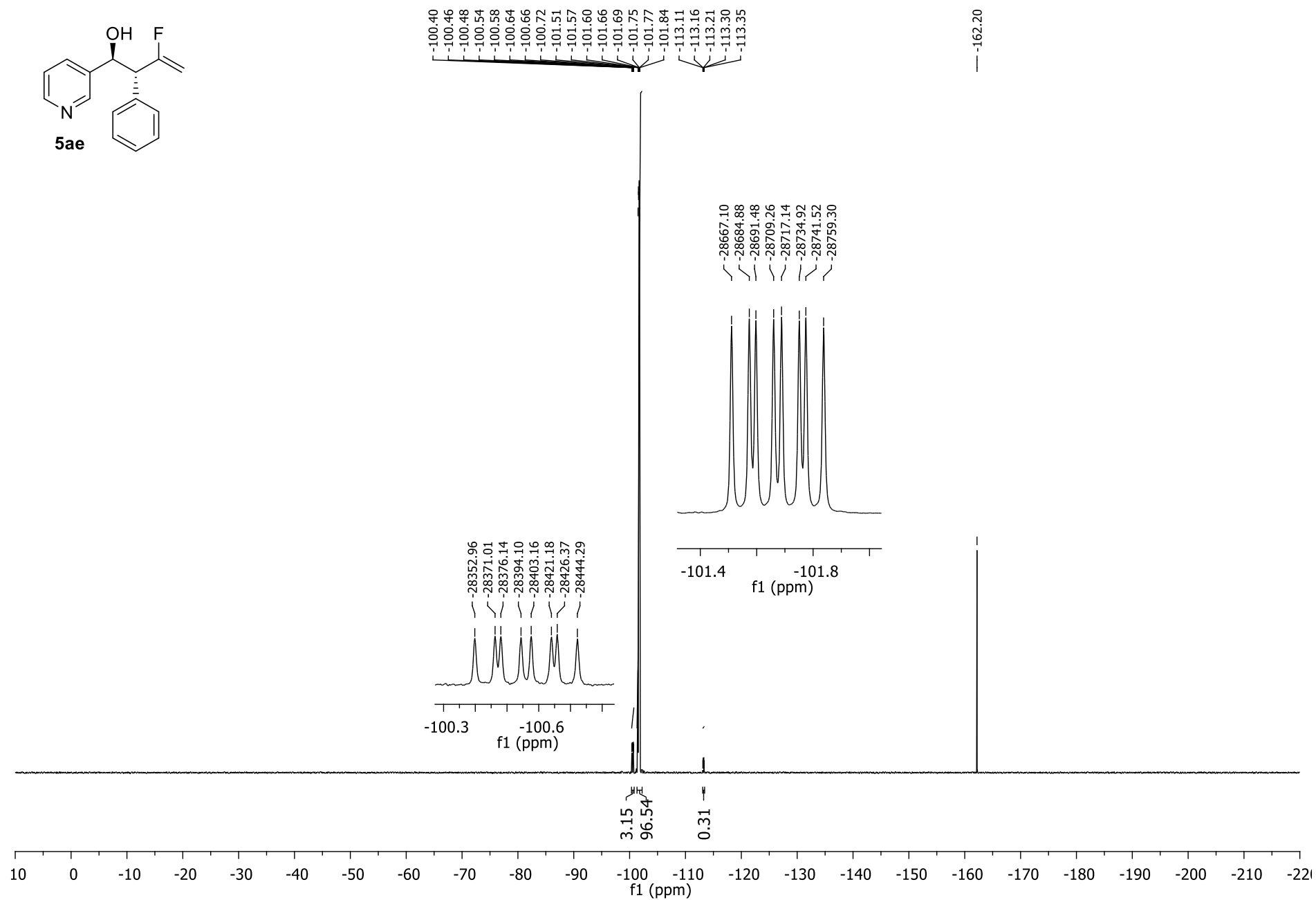
^{13}C NMR (75.5 MHz, CDCl_3) of **5ad** (*anti/syn* = 99/1).



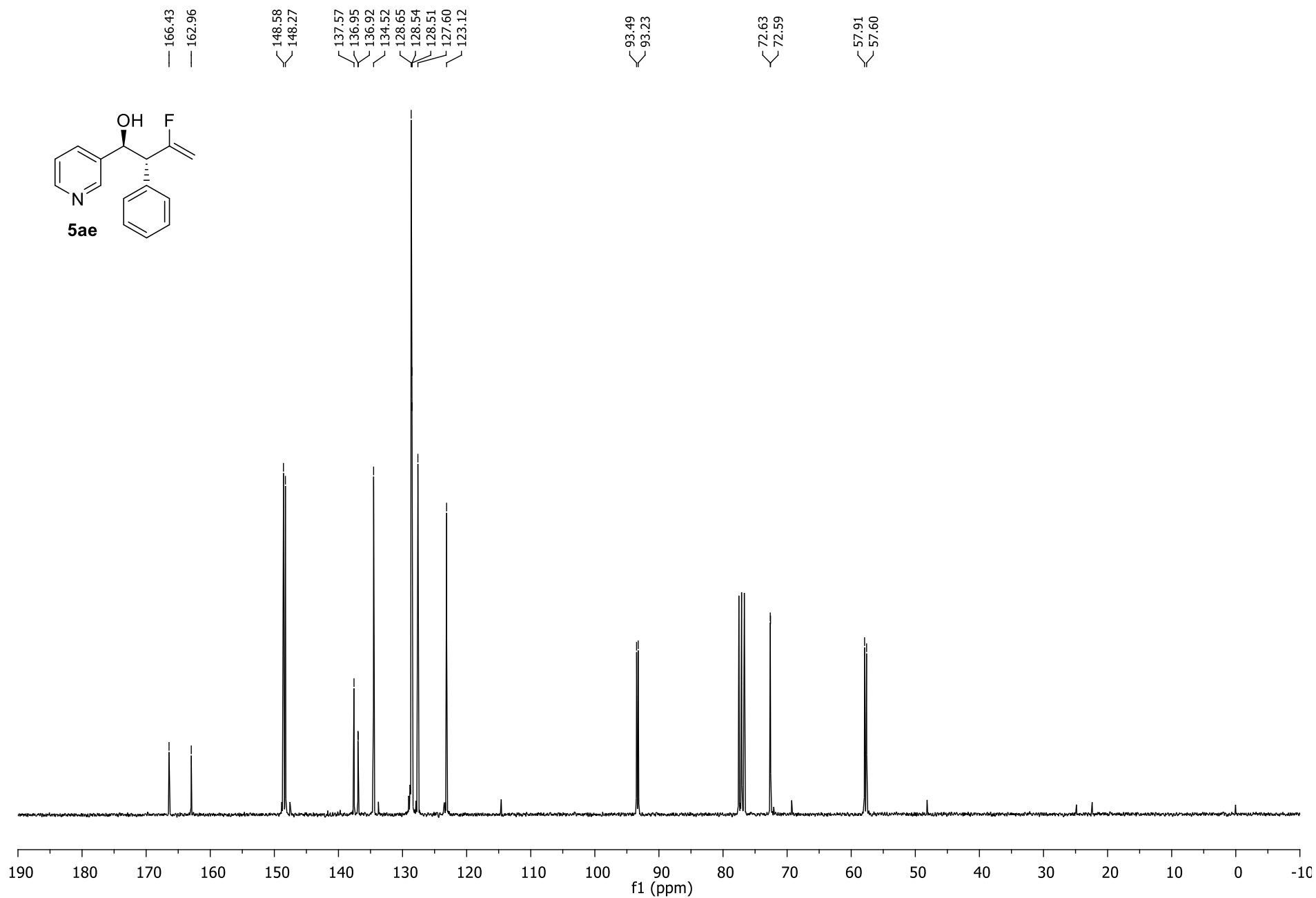
^1H NMR (300.1 MHz, CDCl_3) of **5ae** (*anti/syn* = 97/3).



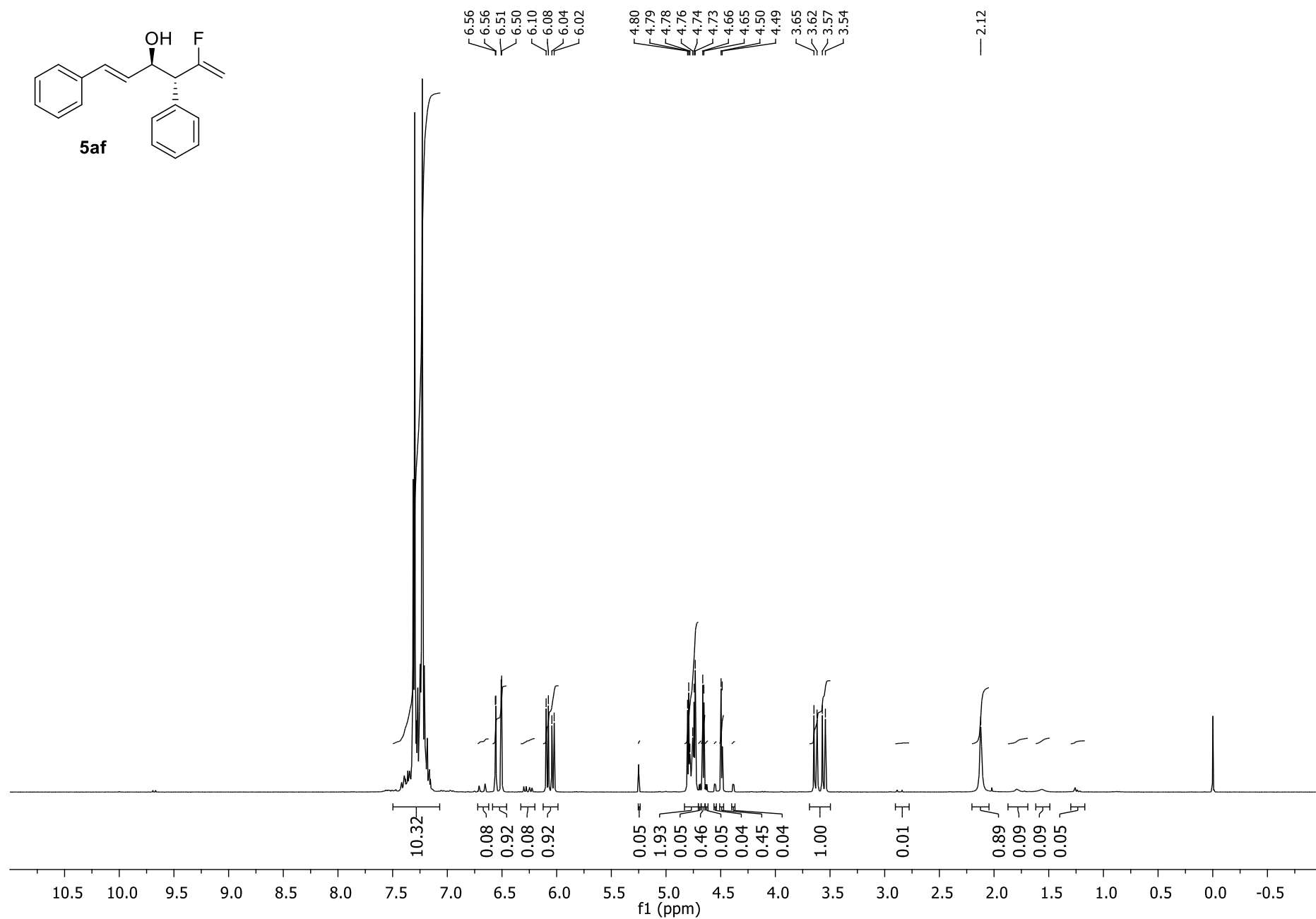
^{19}F NMR (282.4 MHz, CDCl_3) of **5ae** (*anti/syn* = 97/3).



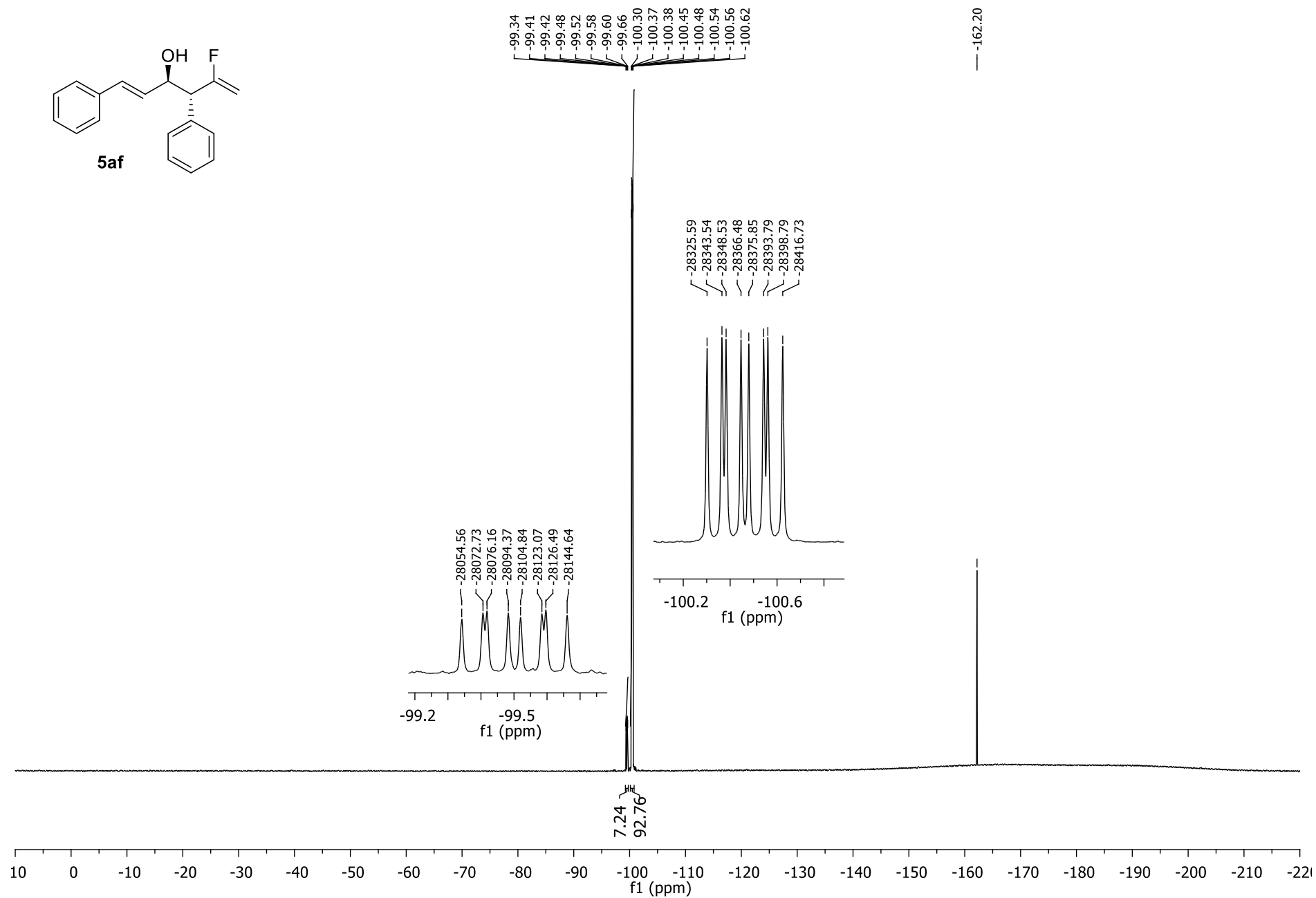
^{13}C NMR (75.5 MHz, CDCl_3) of **5ae** (*anti/syn* = 97/3).



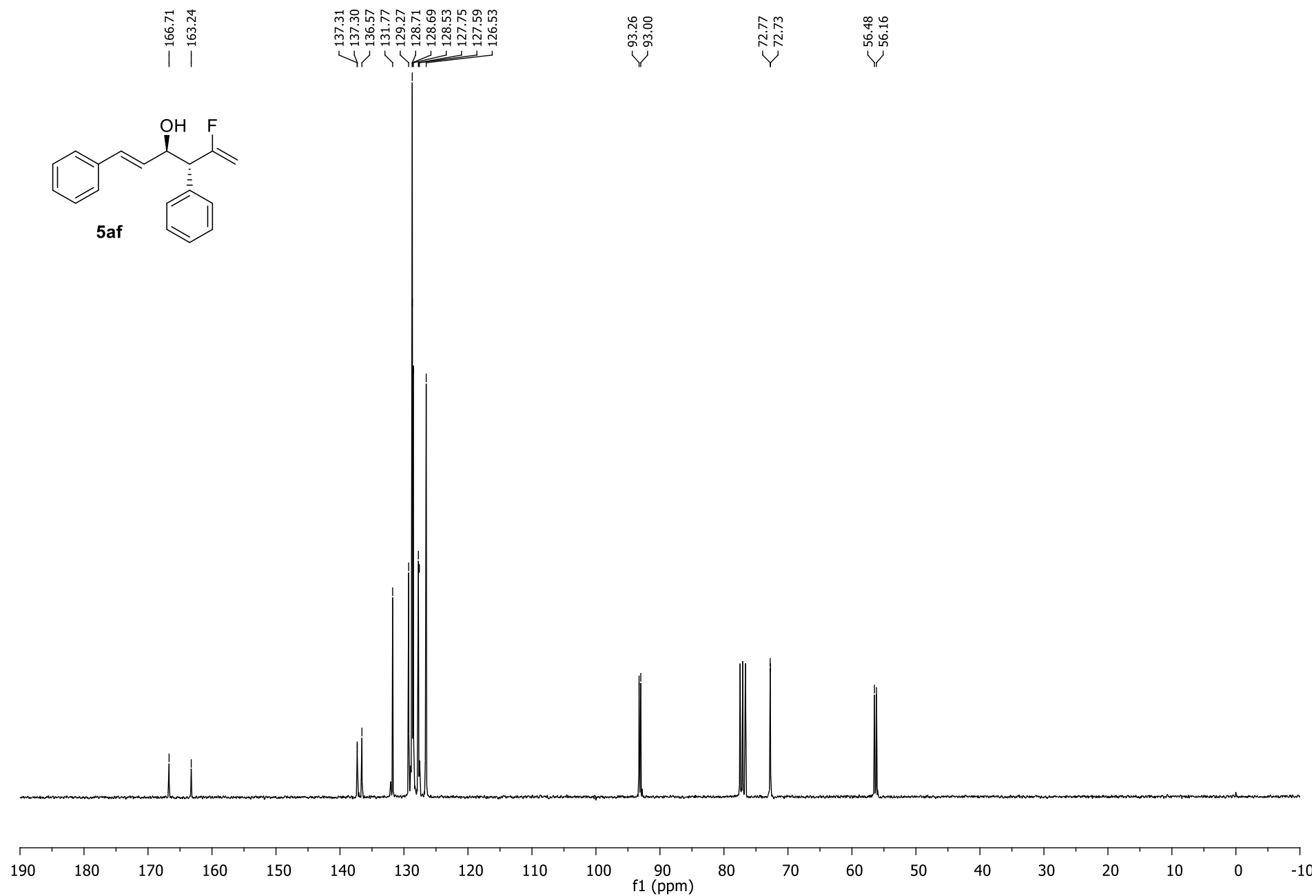
^1H NMR (300.1 MHz, CDCl_3) of **5af** (*anti/syn* = 93/7).



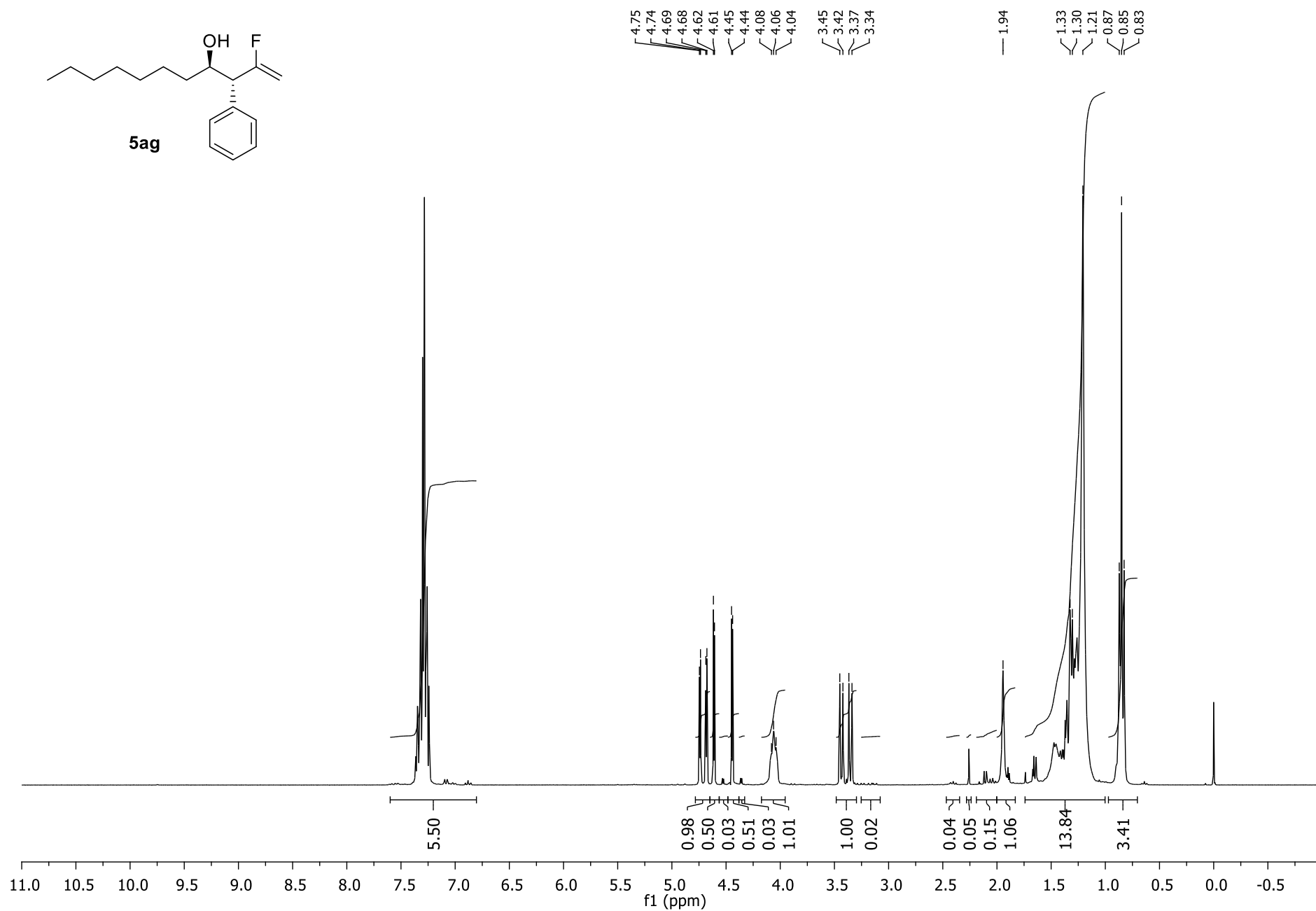
^{19}F NMR (282.4 MHz, CDCl_3) of **5af** (*anti*/*syn* = 93/7).



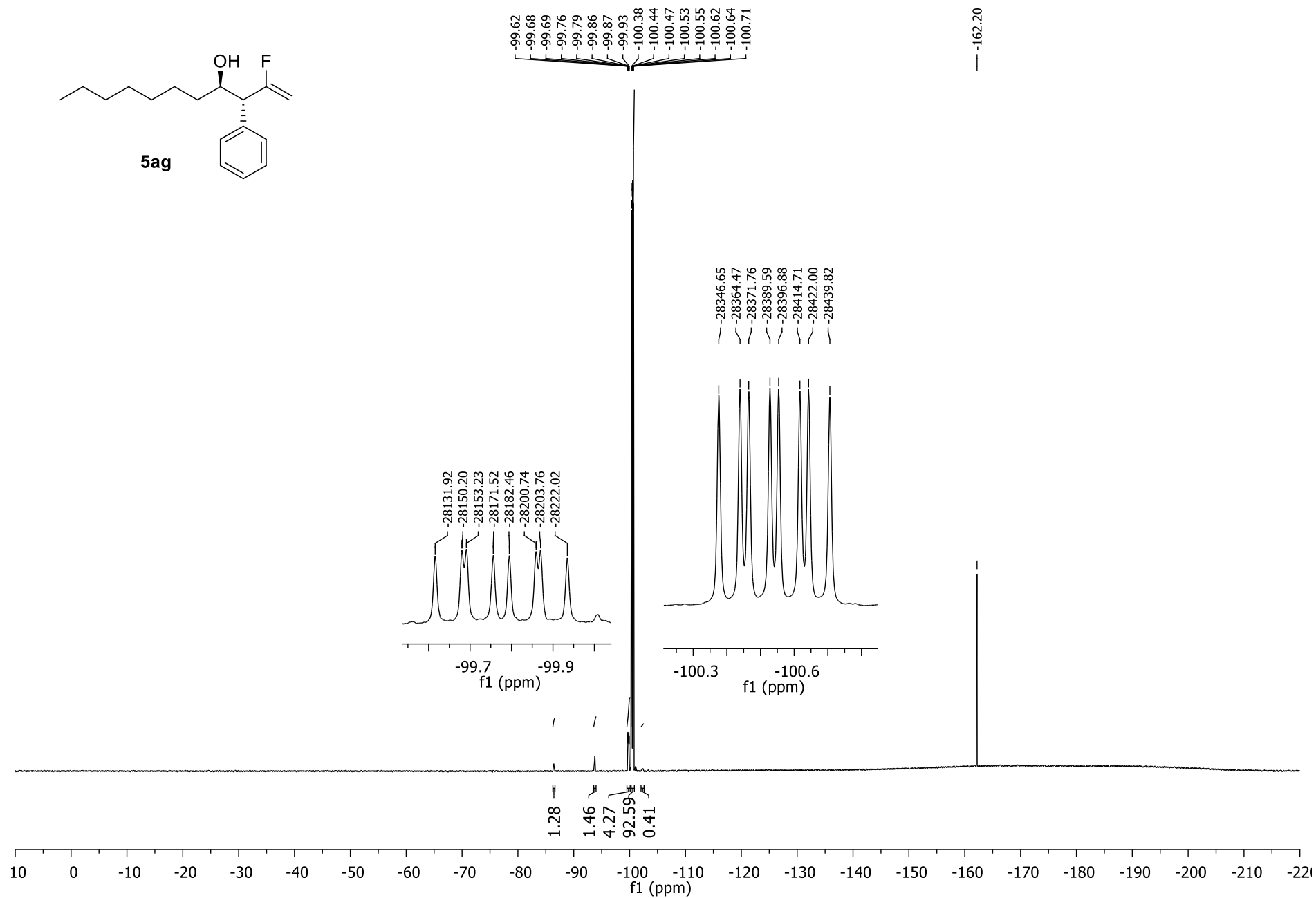
^{13}C NMR (75.5 MHz, CDCl_3) of **5af** (*anti/syn* = 93/7).



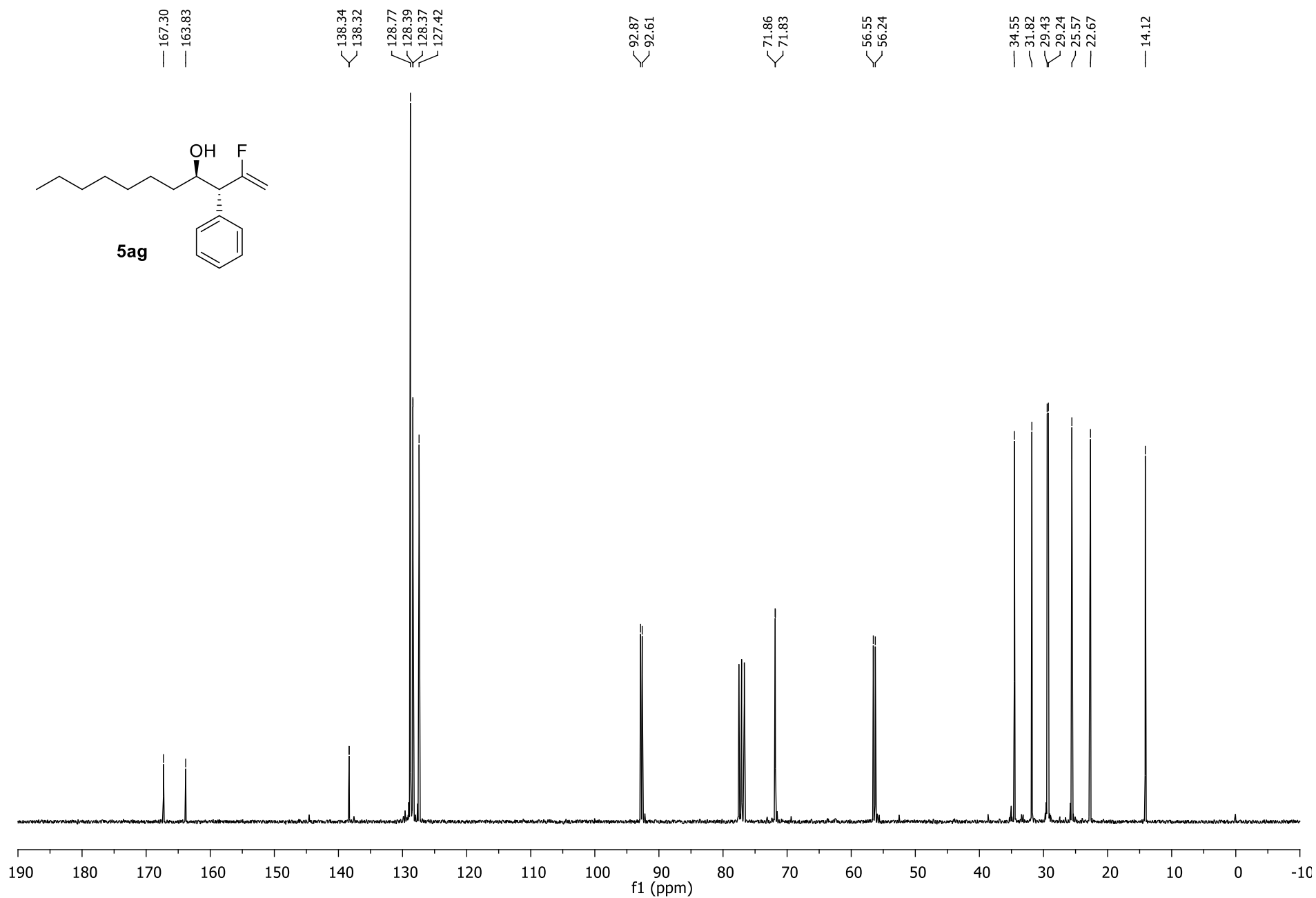
^1H NMR (300.1 MHz, CDCl_3) of **5ag** (*anti/syn* = 96/4).



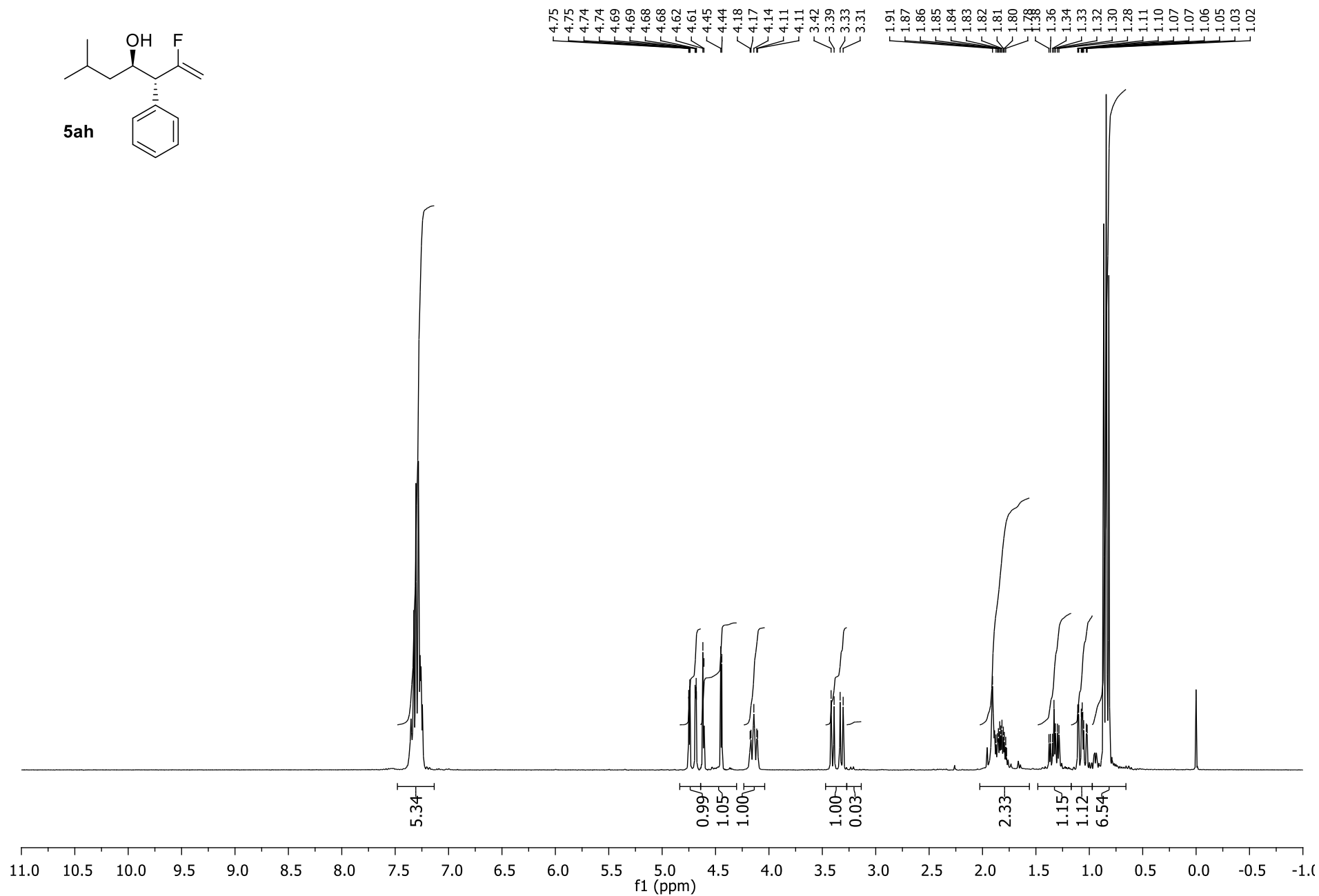
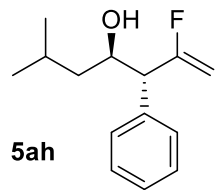
^{19}F NMR (282.4 MHz, CDCl_3) of **5ag** (*anti/syn* = 96/4).



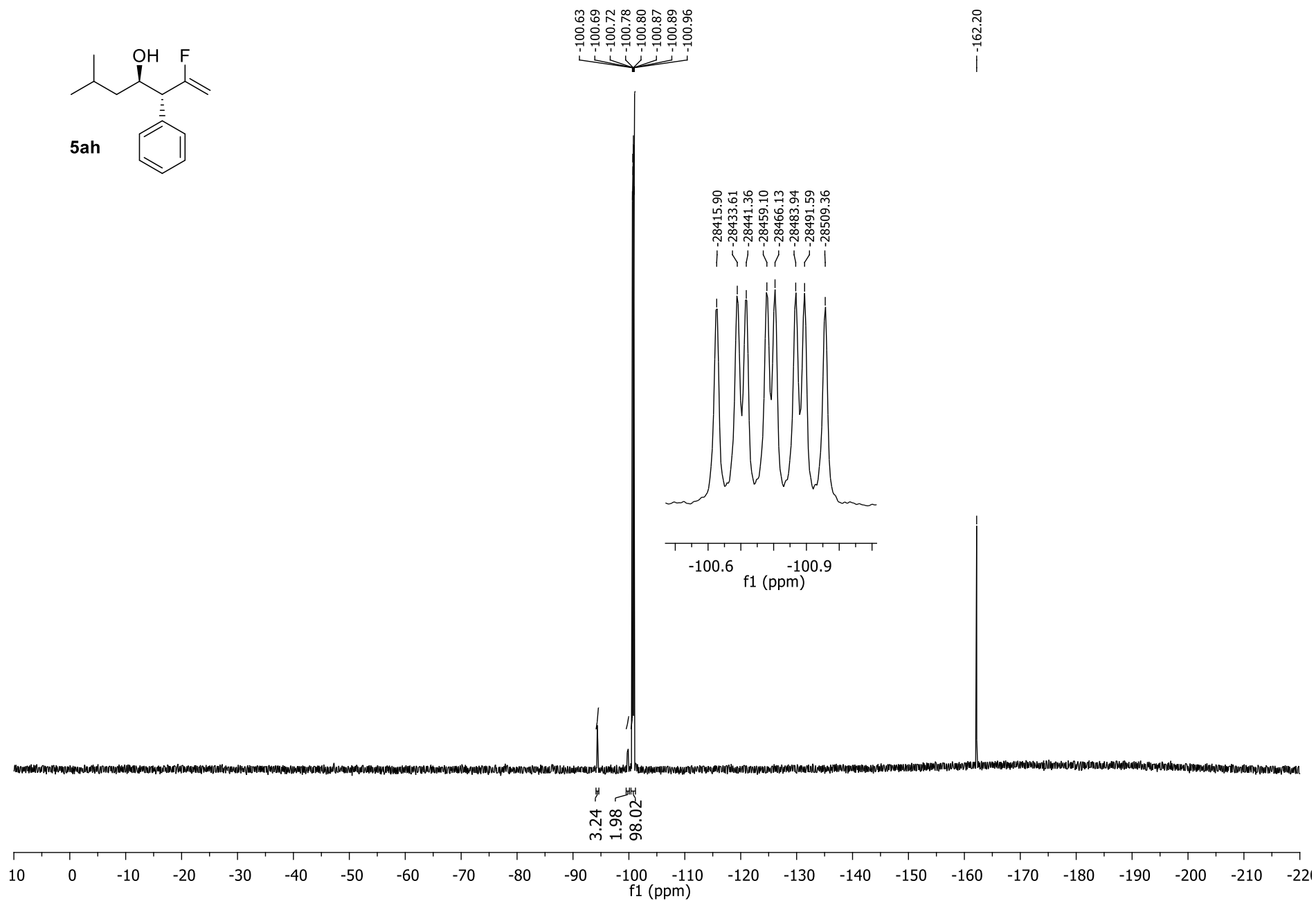
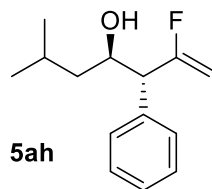
^{13}C NMR (75.5 MHz, CDCl_3) of **5ag** (*anti*/*syn* = 96/4).



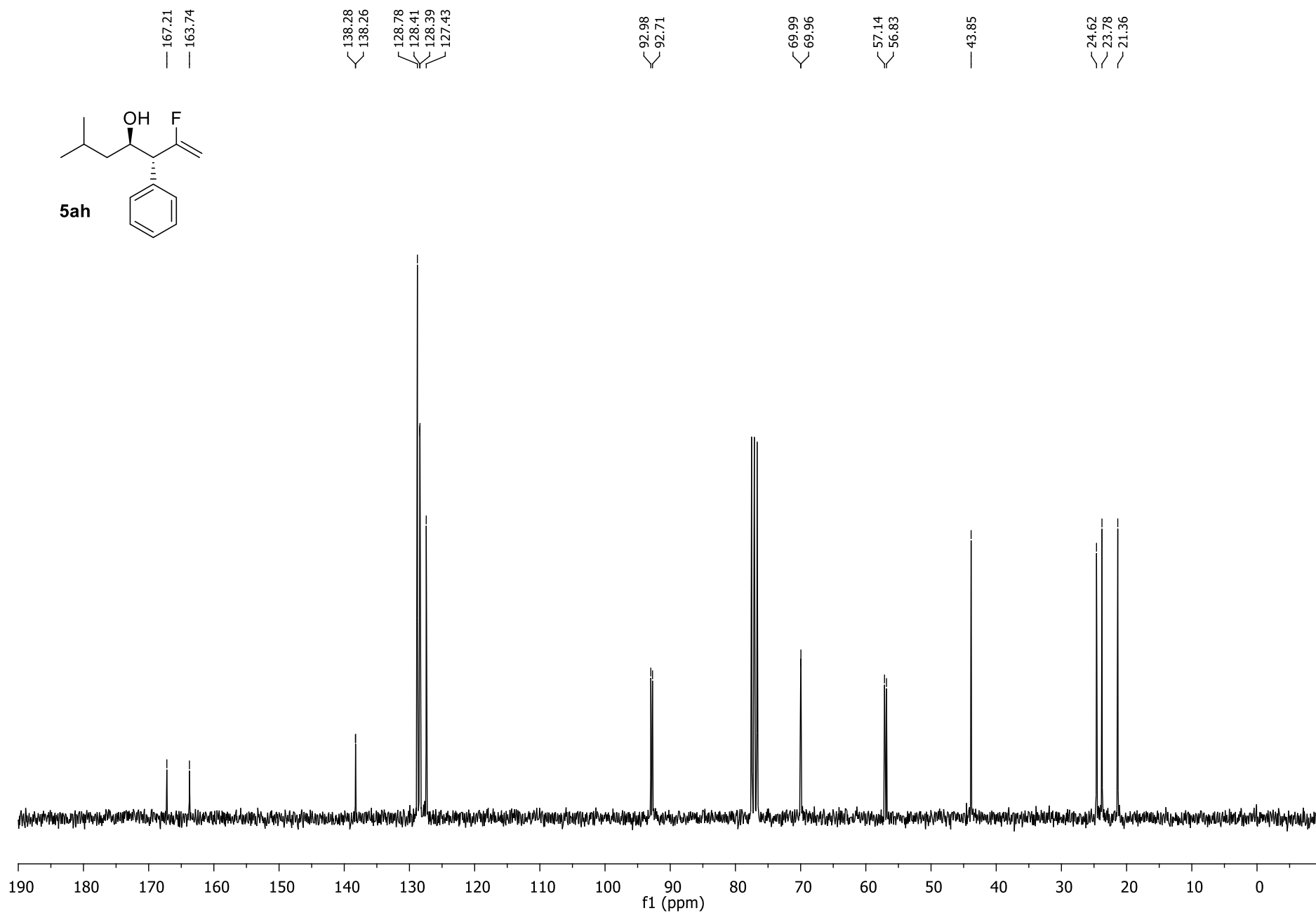
^1H NMR (300.1 MHz, CDCl_3) of **5ah** (*anti/syn* = 98/2).



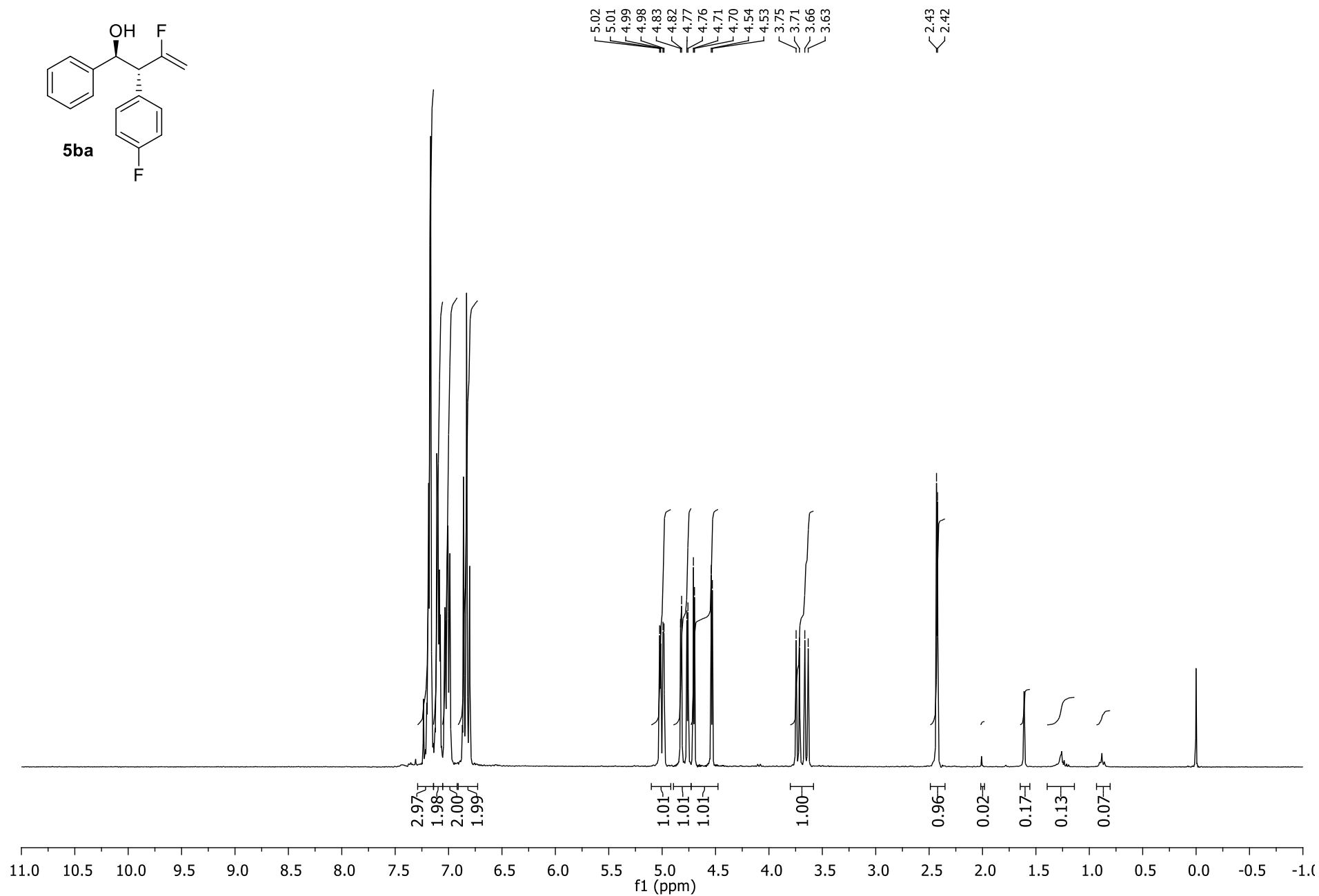
^{19}F NMR (282.4 MHz, CDCl_3) of **5ah** (*anti*/*syn* = 98/2).



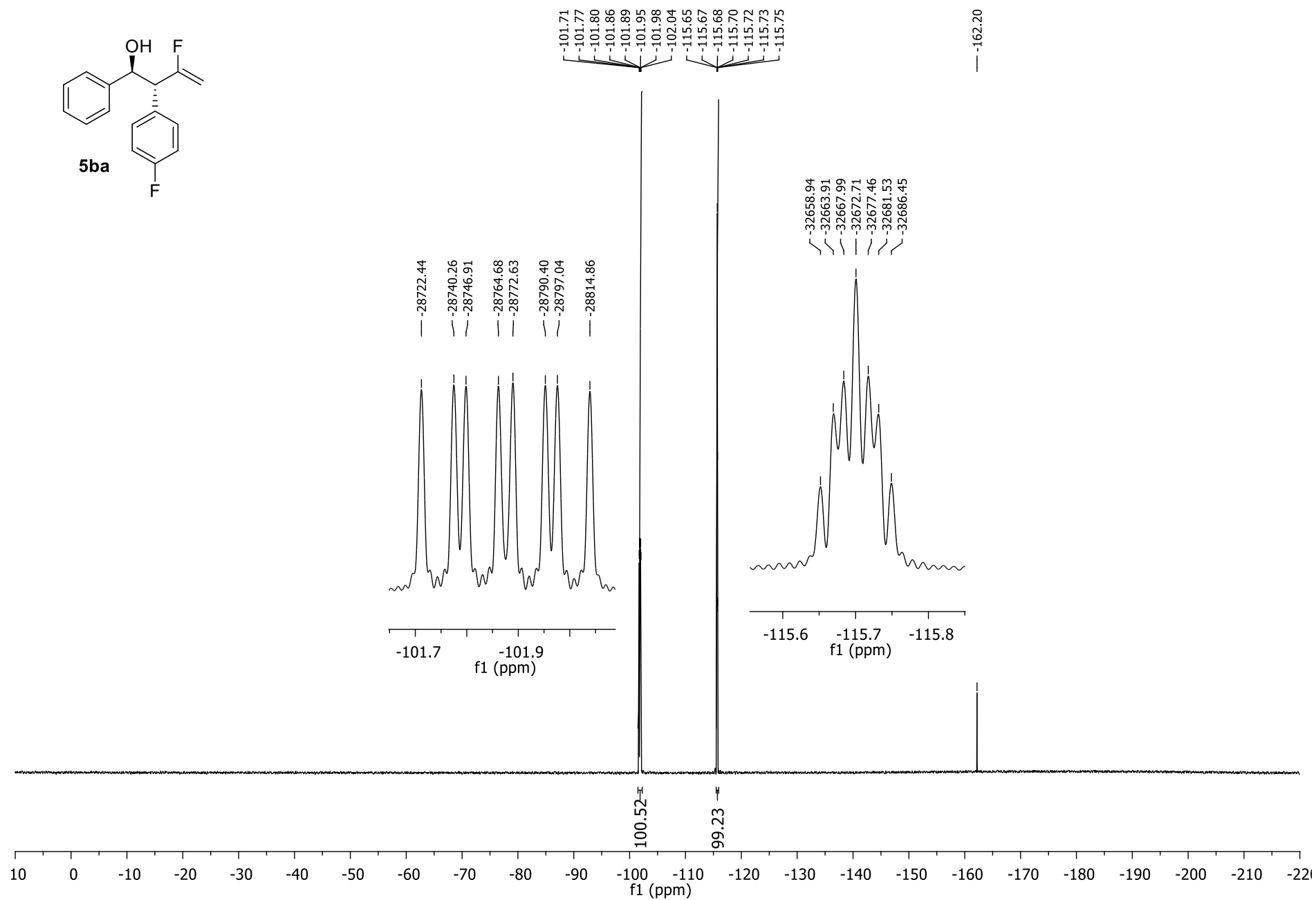
^{13}C NMR (75.5 MHz, CDCl_3) of **5ah** (*anti*/*syn* = 98/2).



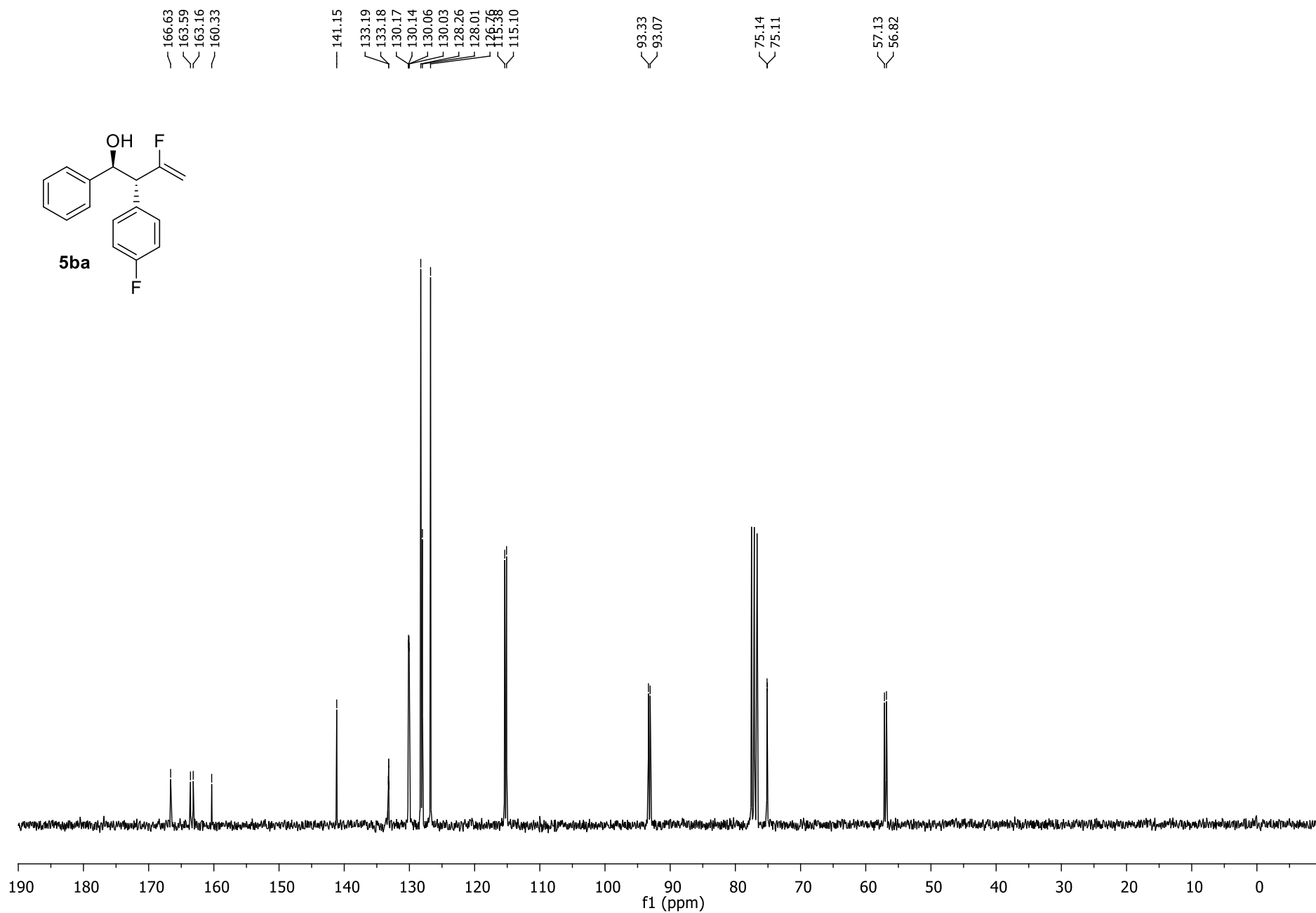
^1H NMR (300.1 MHz, CDCl_3) of **5ba** (*anti/syn* > 20/1).



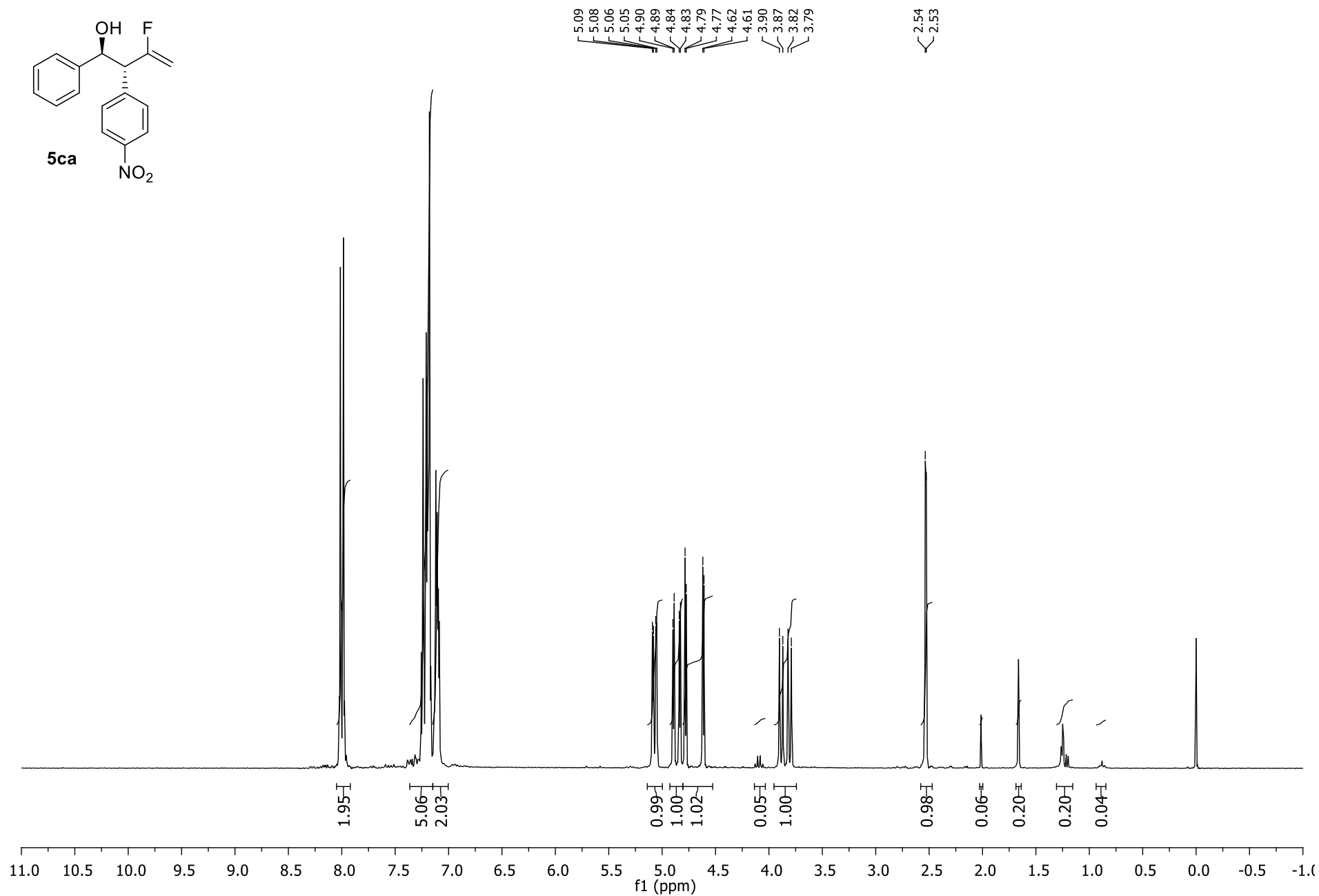
^{19}F NMR (282.4 MHz, CDCl_3) of **5ba** (*anti/syn* > 20/1).



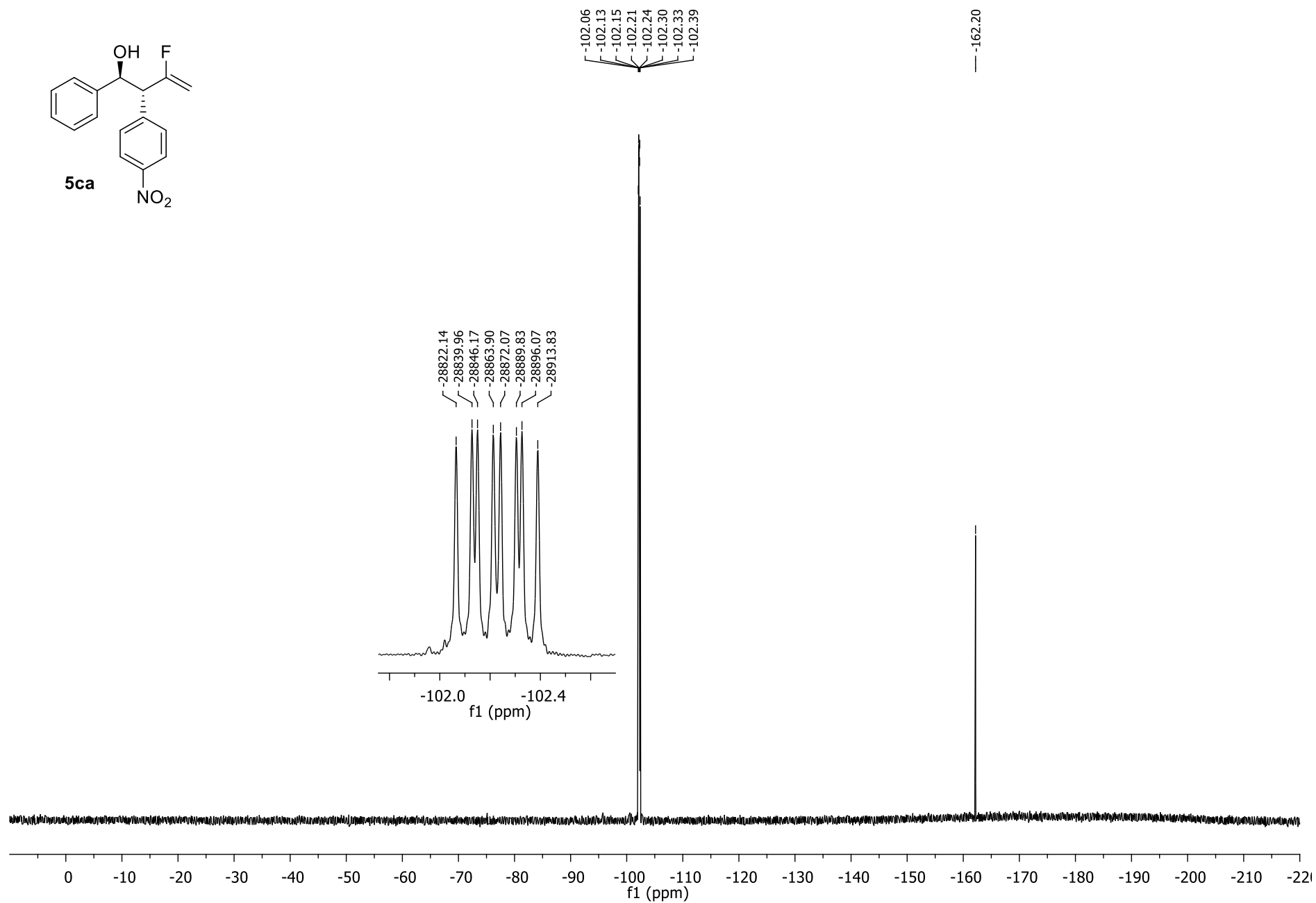
^{13}C NMR (75.5 MHz, CDCl_3) of **5ba** (*anti/syn* > 20/1).



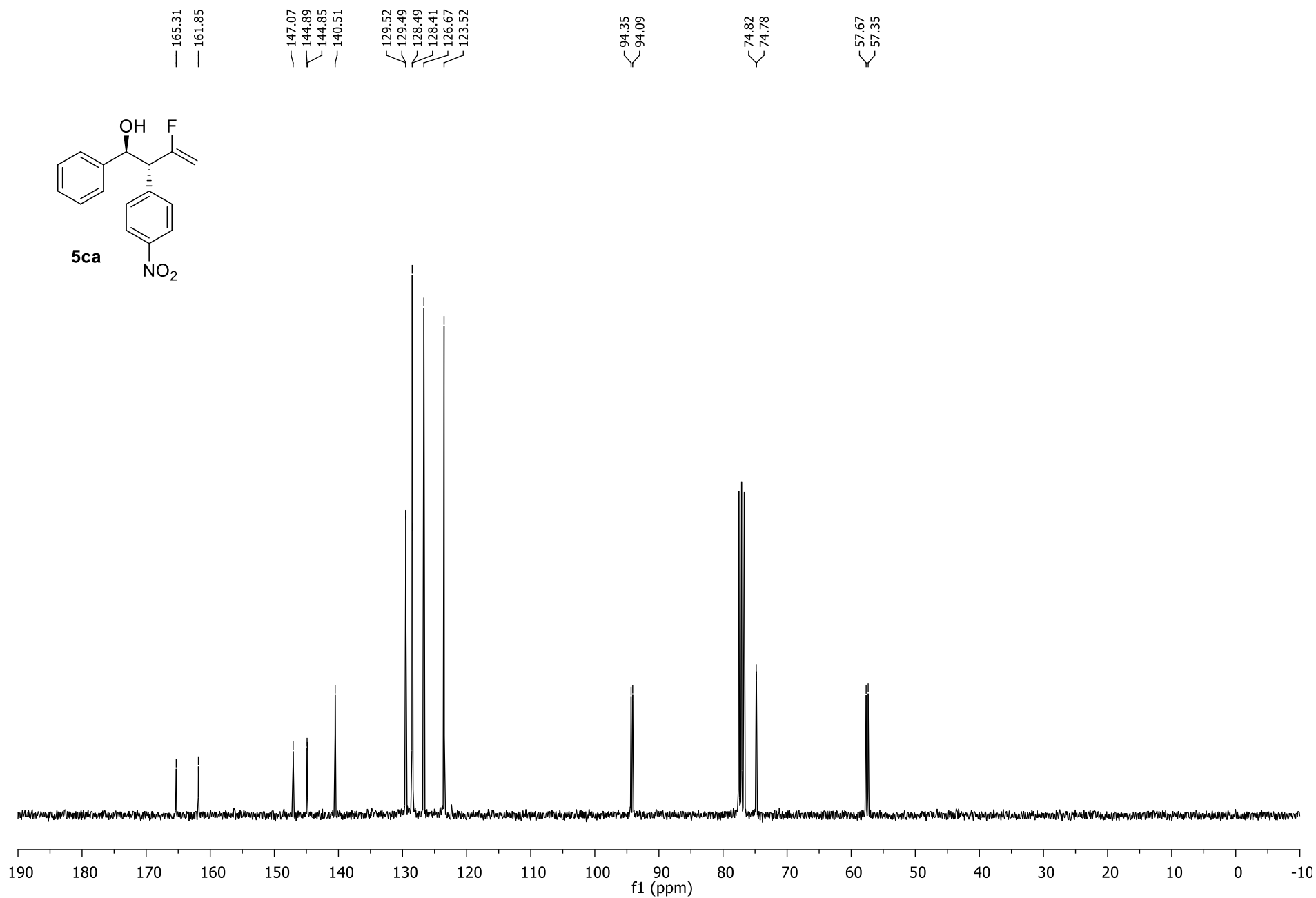
^1H NMR (300.1 MHz, CDCl_3) of **5ca** (*anti/syn* > 20/1).



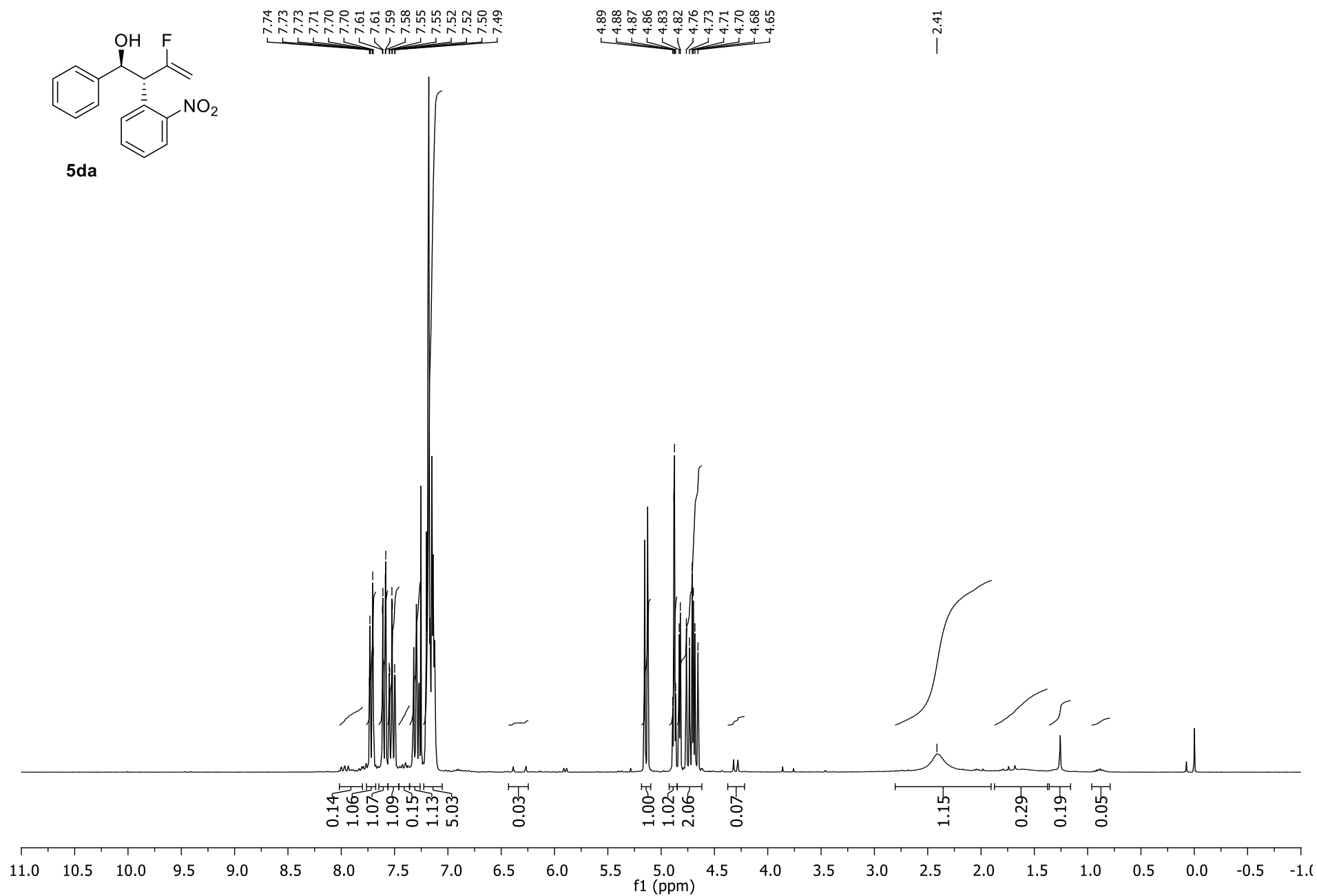
^{19}F NMR (282.4 MHz, CDCl_3) of **5ca** (*anti/syn* > 20/1).



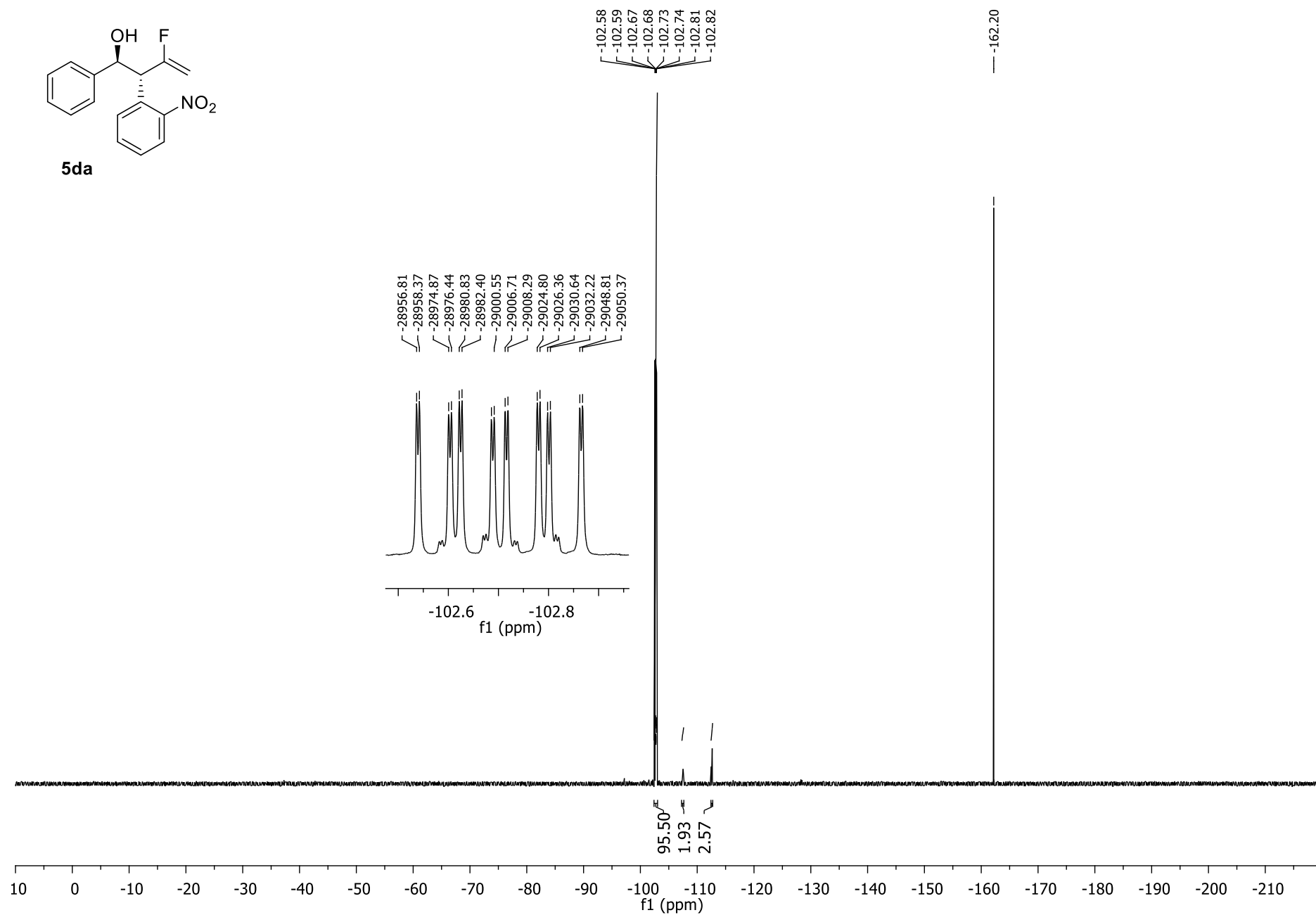
^{13}C NMR (75.5 MHz, CDCl_3) of **5ca** (*anti/syn* > 20/1).



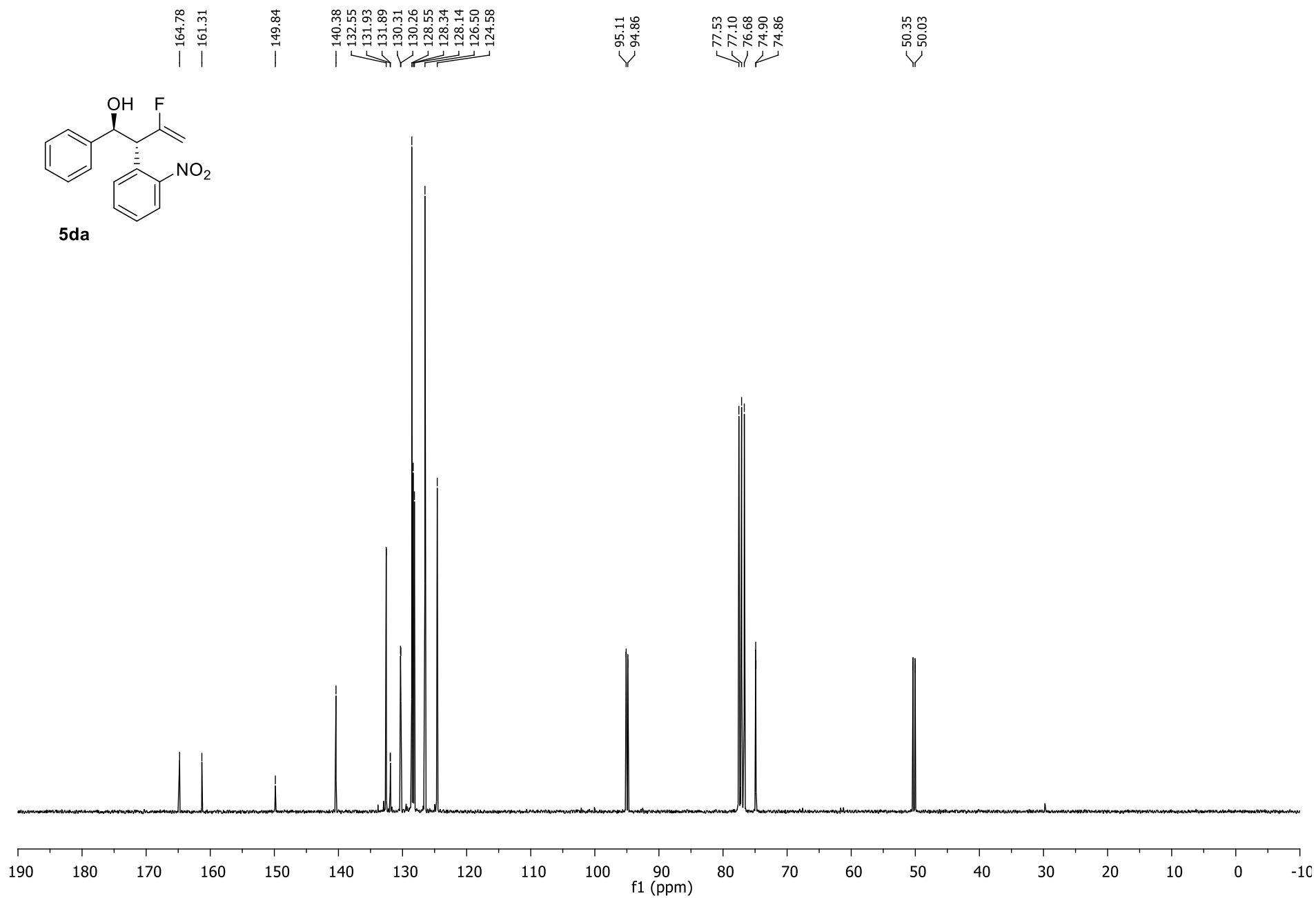
^1H NMR (300.1 MHz, CDCl_3) of **5da** (*anti/syn* > 20/1).



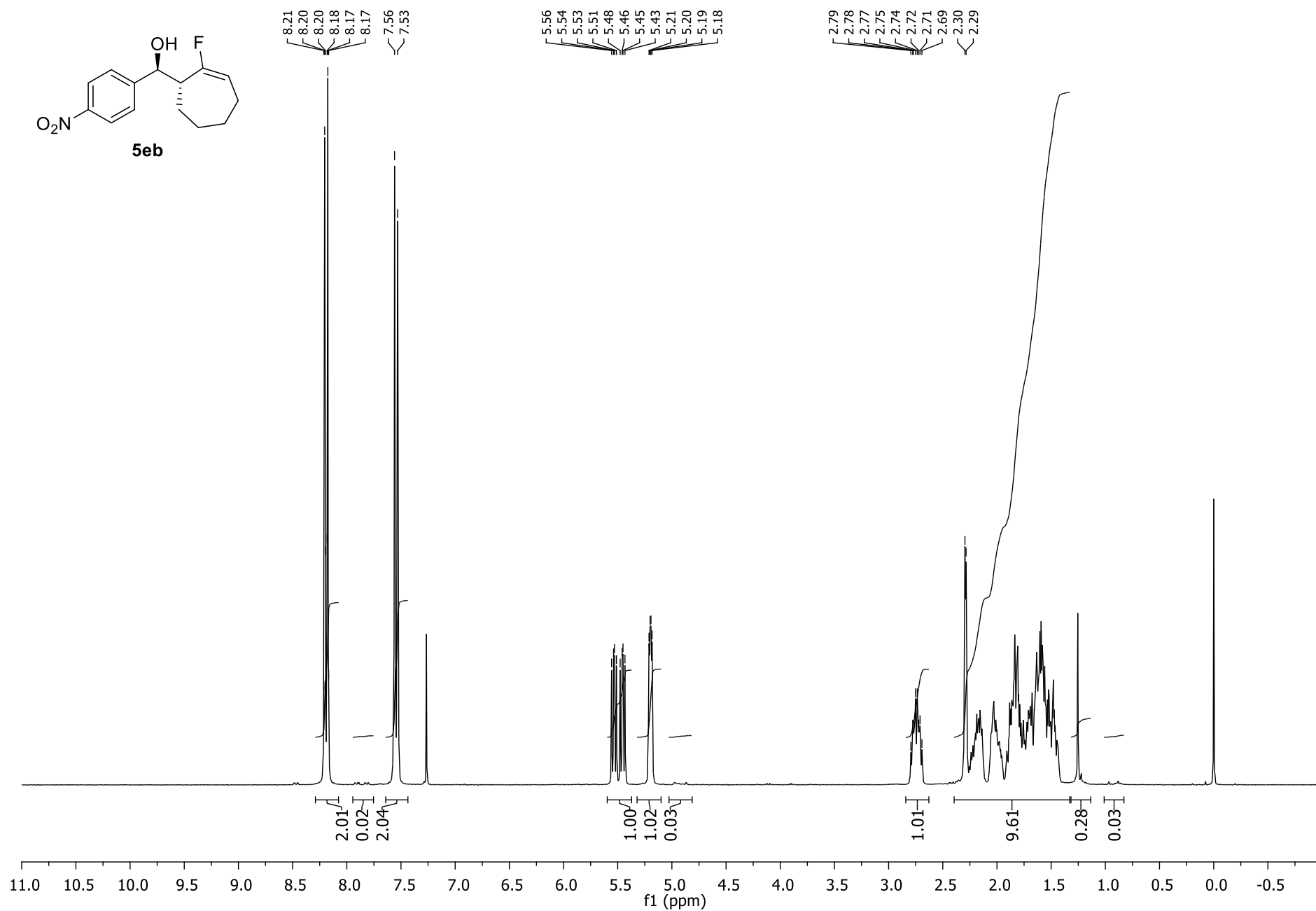
^{19}F NMR (282.4 MHz, CDCl_3) of **5da** (*anti/syn* > 20/1).



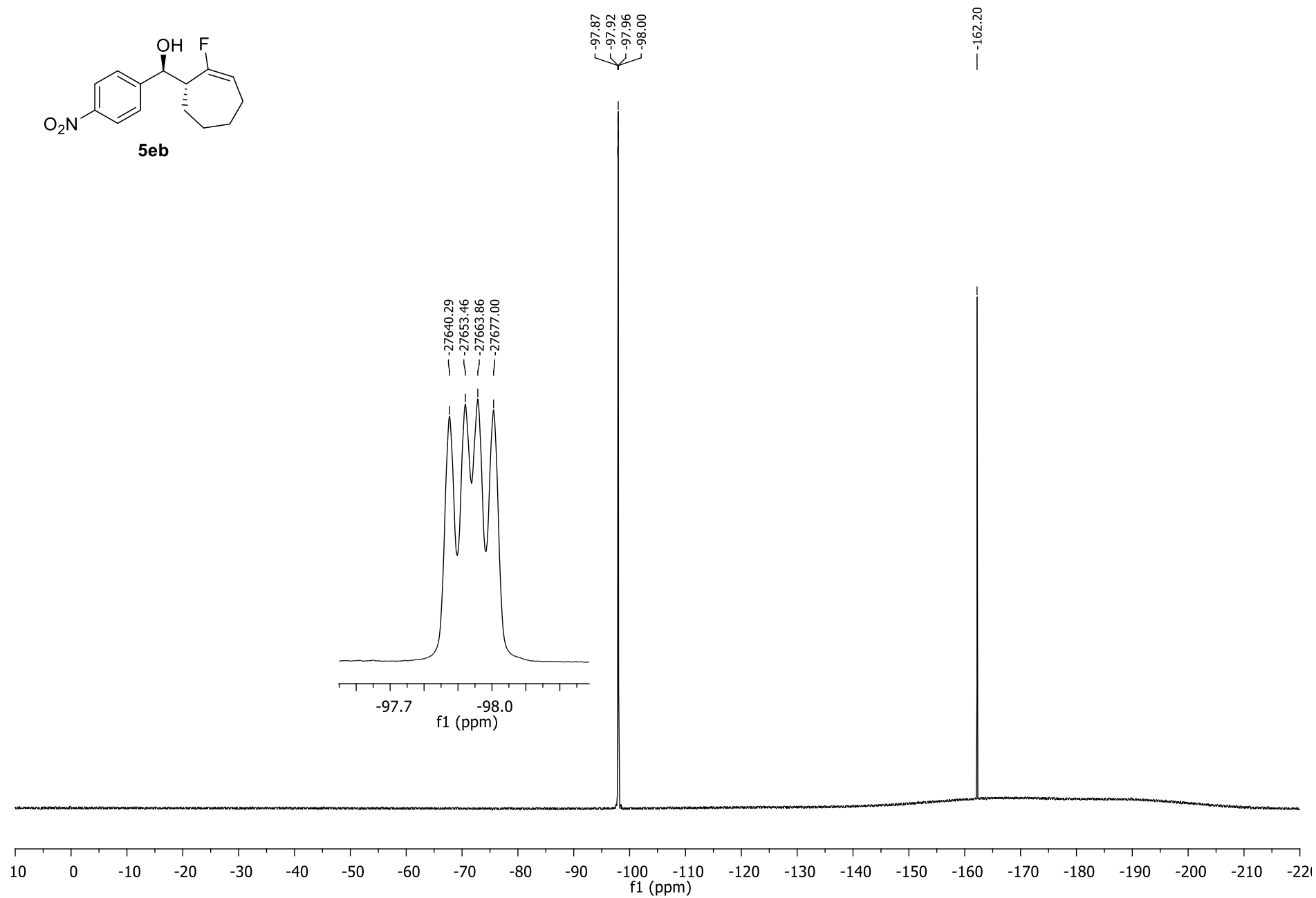
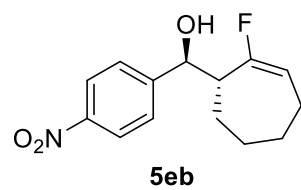
^{13}C NMR (75.5 MHz, CDCl_3) of **5da** (*anti/syn* > 20/1).



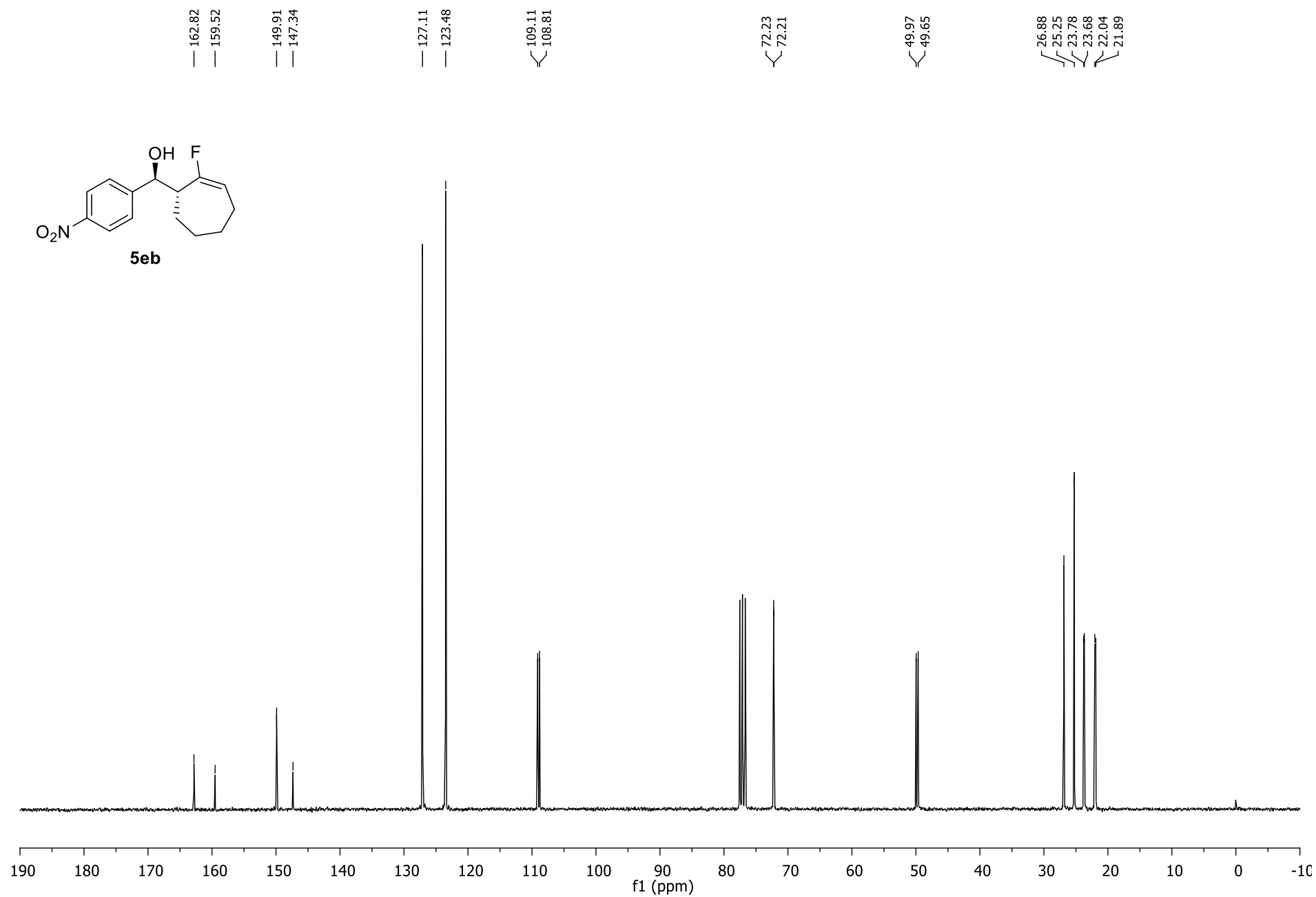
^1H NMR (300.1 MHz, CDCl_3) of **5eb** (*anti/syn* > 20/1).



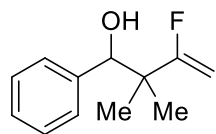
^{19}F NMR (282.4 MHz, CDCl_3) of **5eb** (*anti/syn* > 20/1).



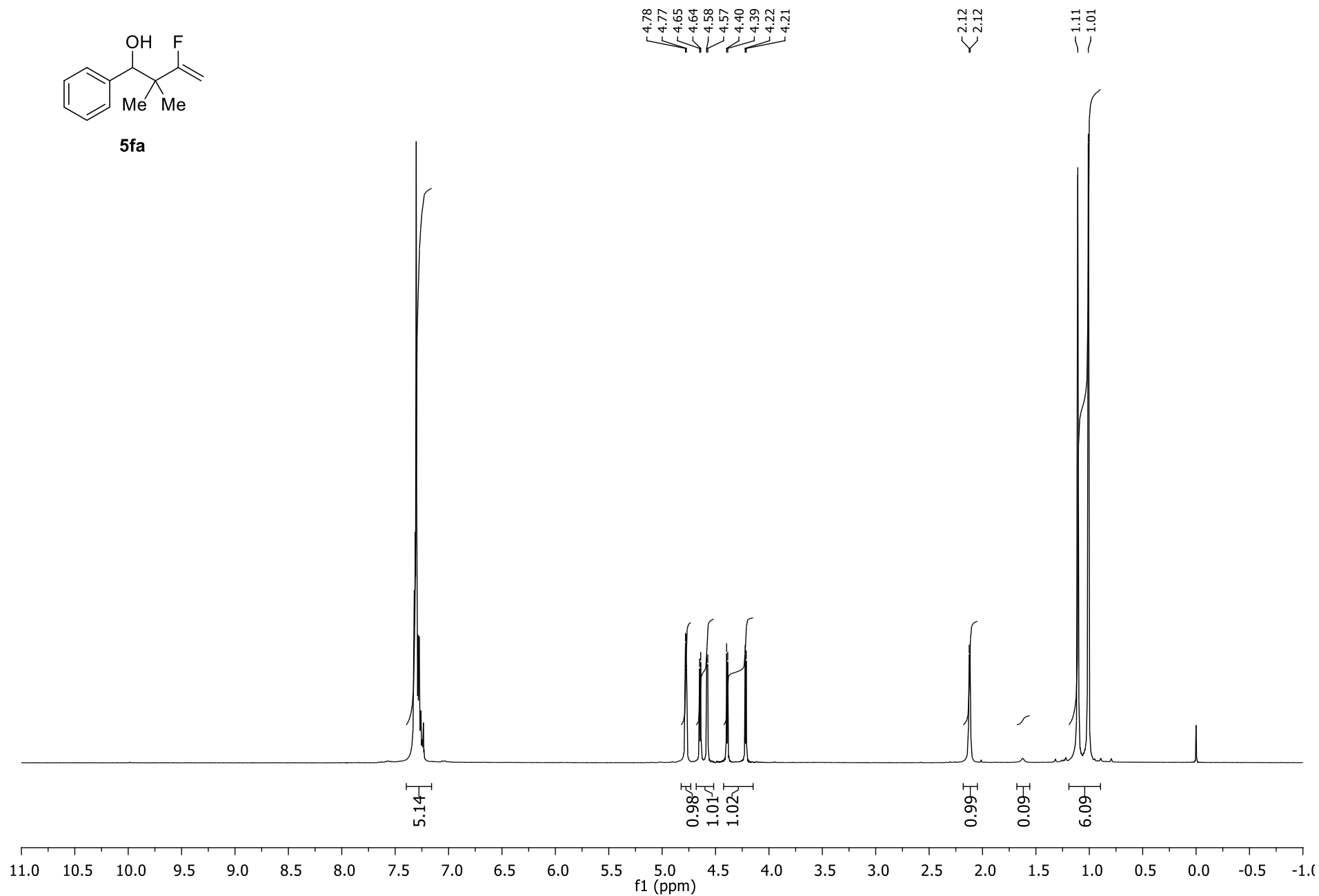
^{13}C NMR (75.5 MHz, CDCl_3) of **5eb** (*anti/syn* > 20/1).



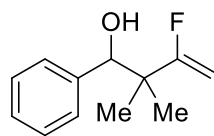
^1H NMR (300.1 MHz, CDCl_3) of **5fa**.



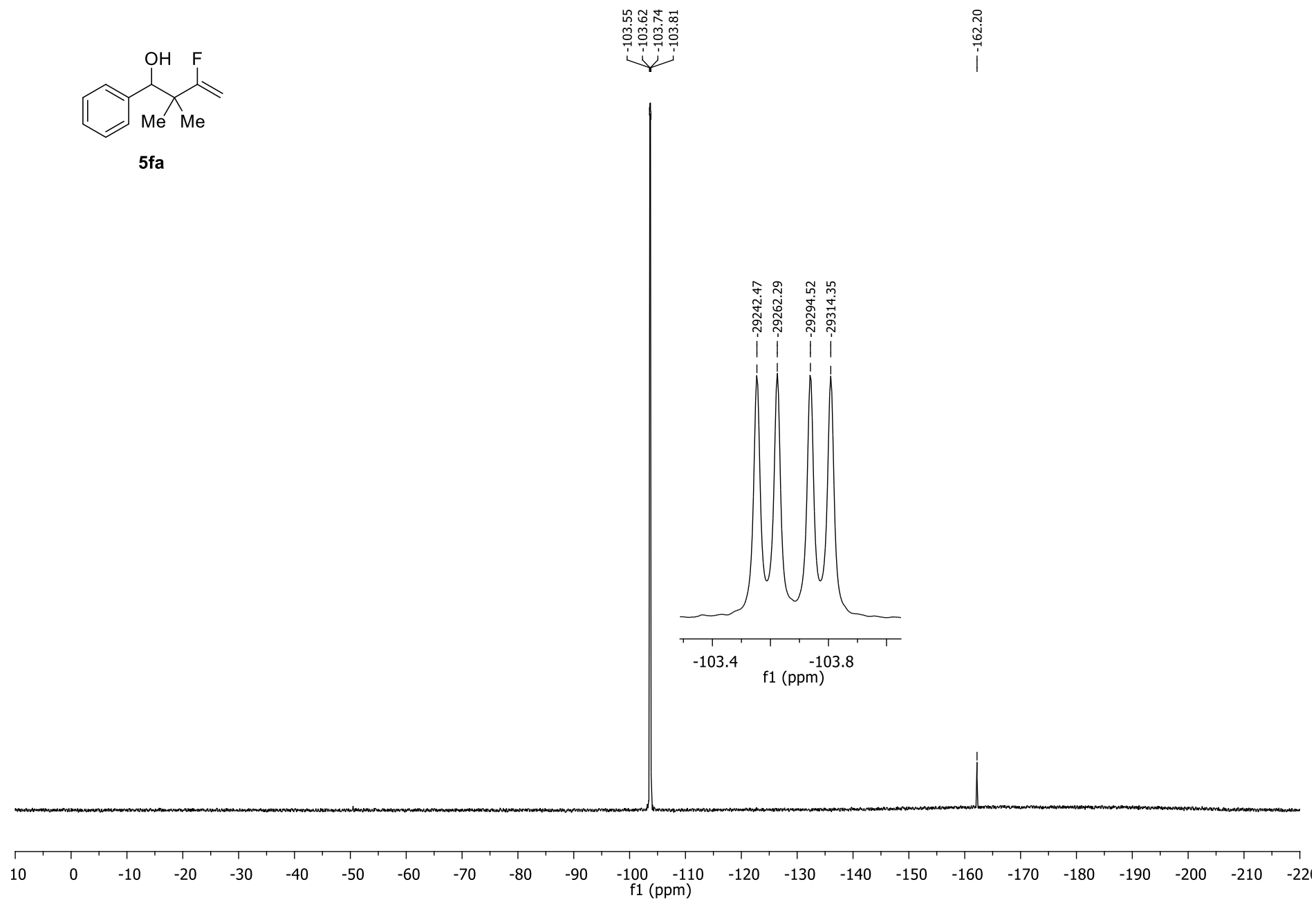
5fa



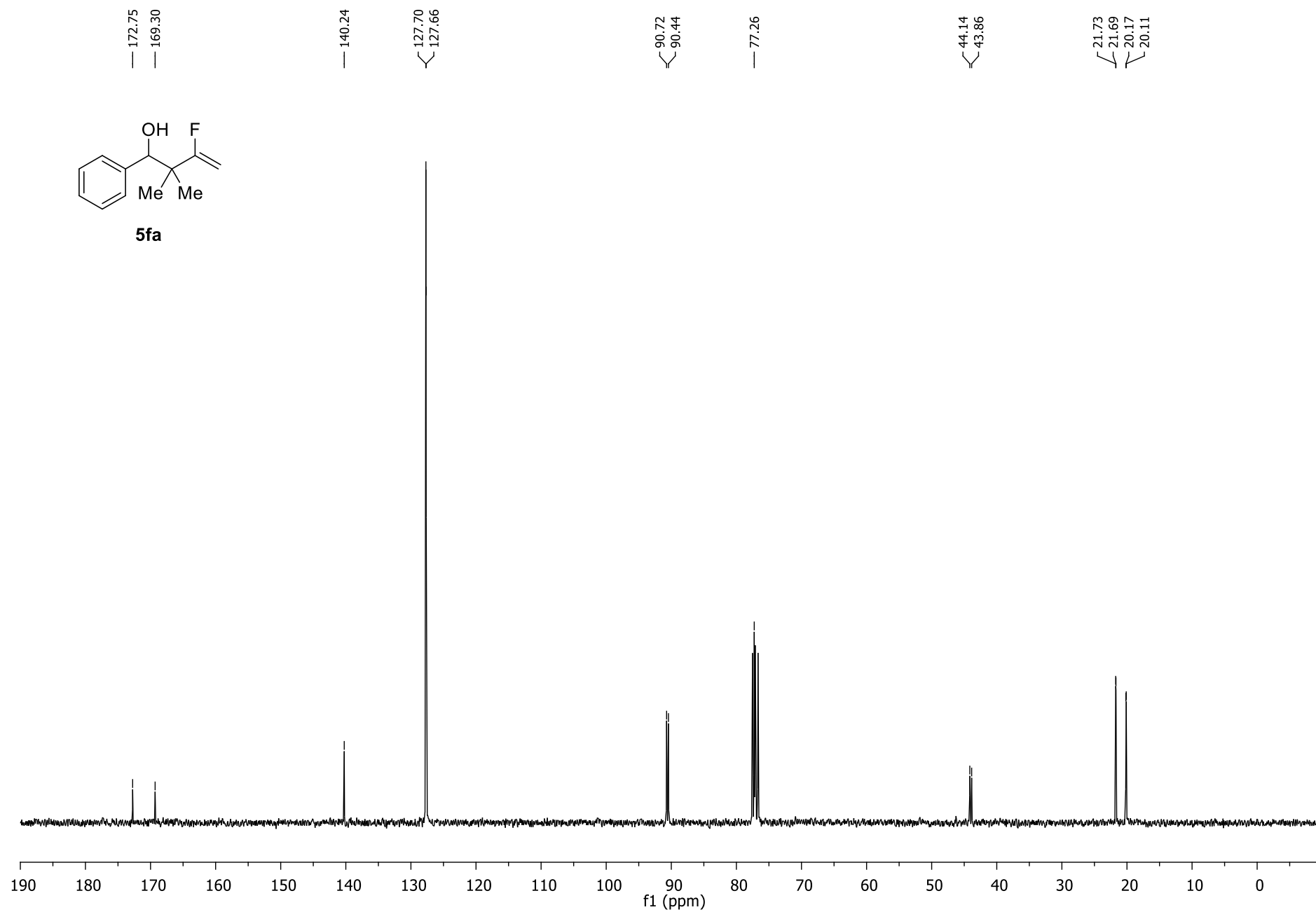
^{19}F NMR (282.4 MHz, CDCl_3) of **5fa**.



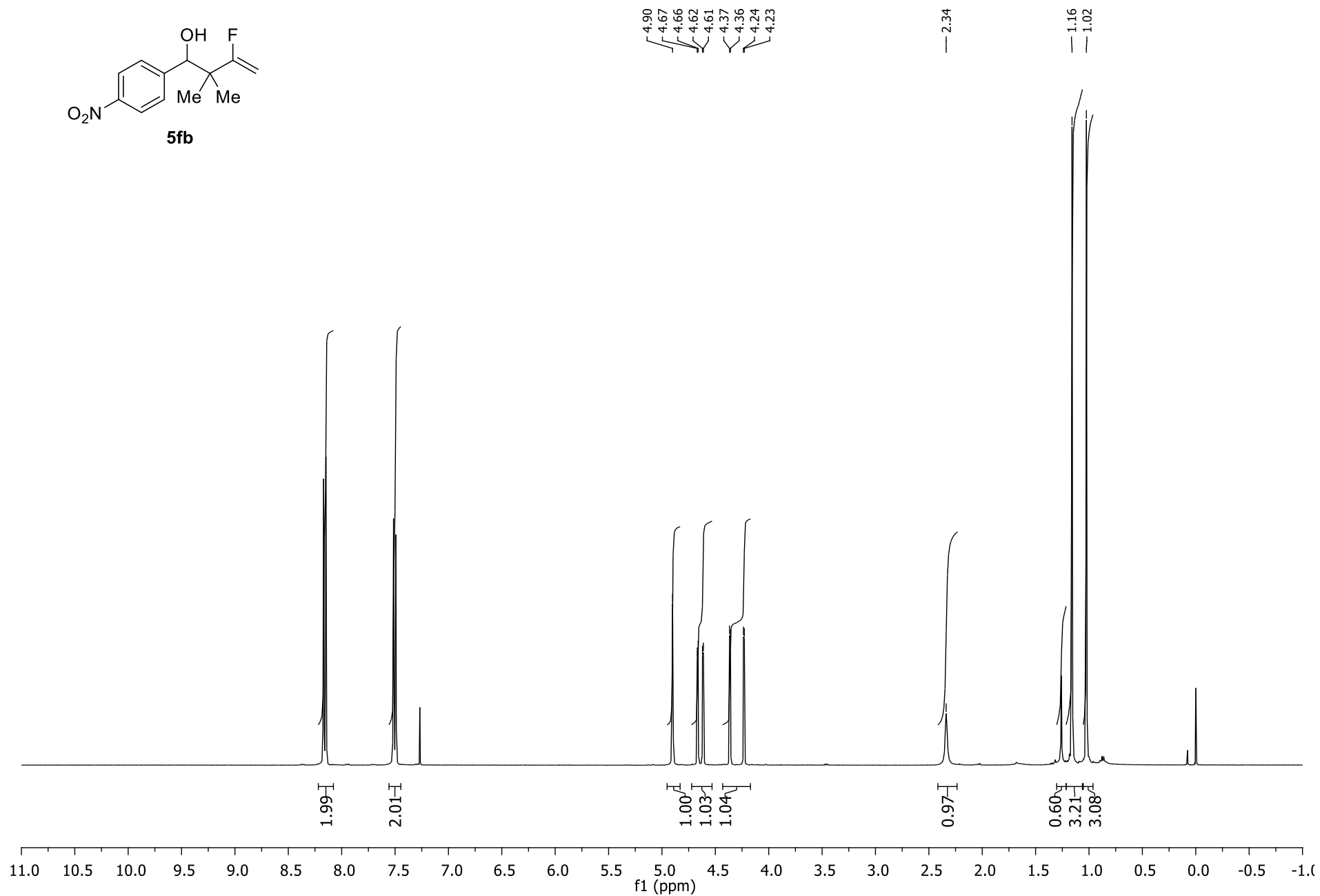
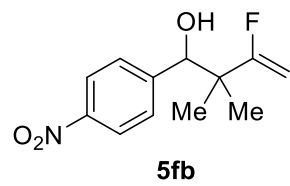
5fa



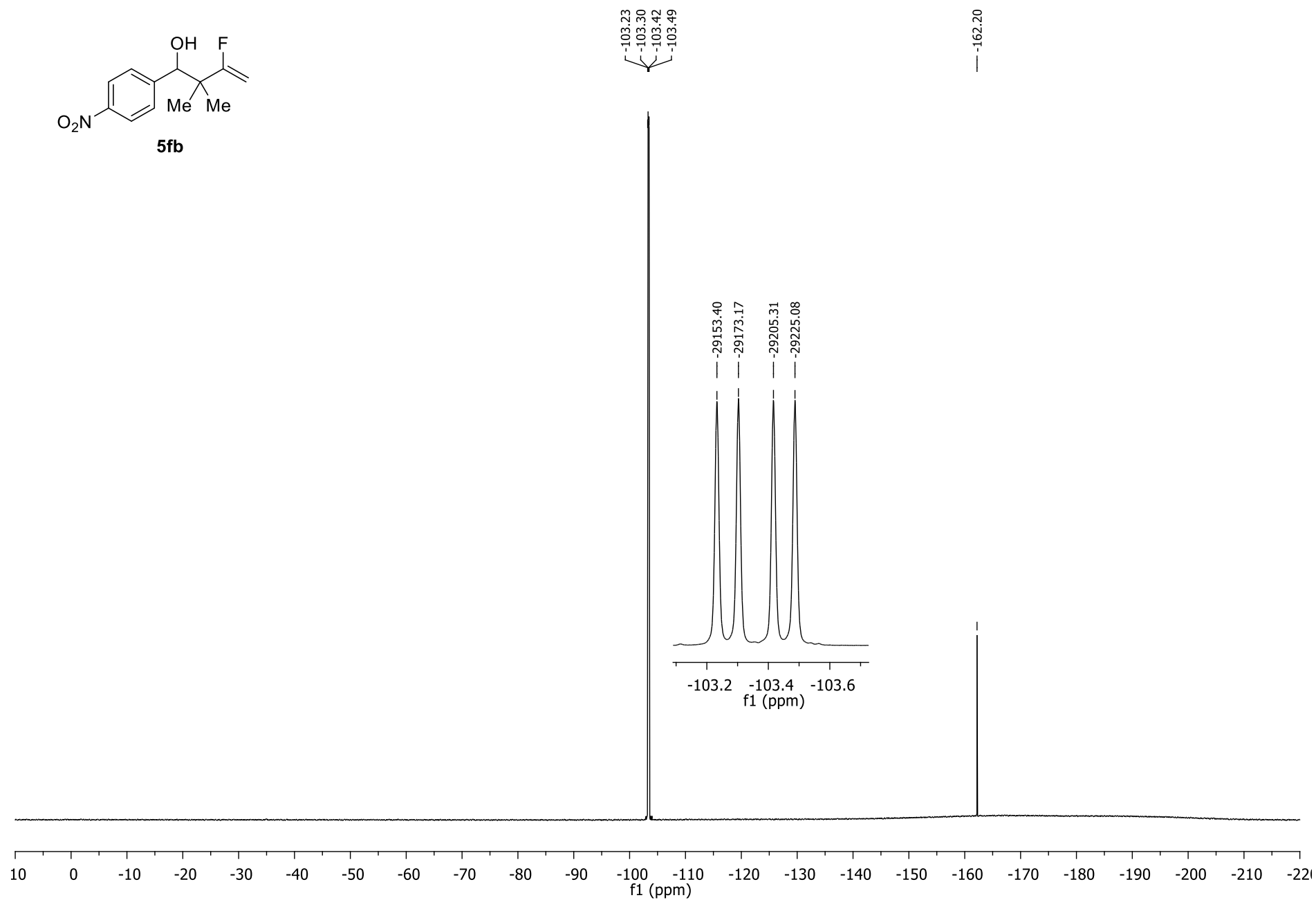
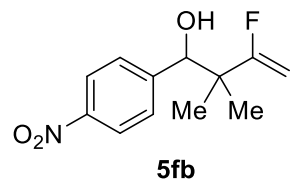
^{13}C NMR (75.5 MHz, CDCl_3) of **5fa**.



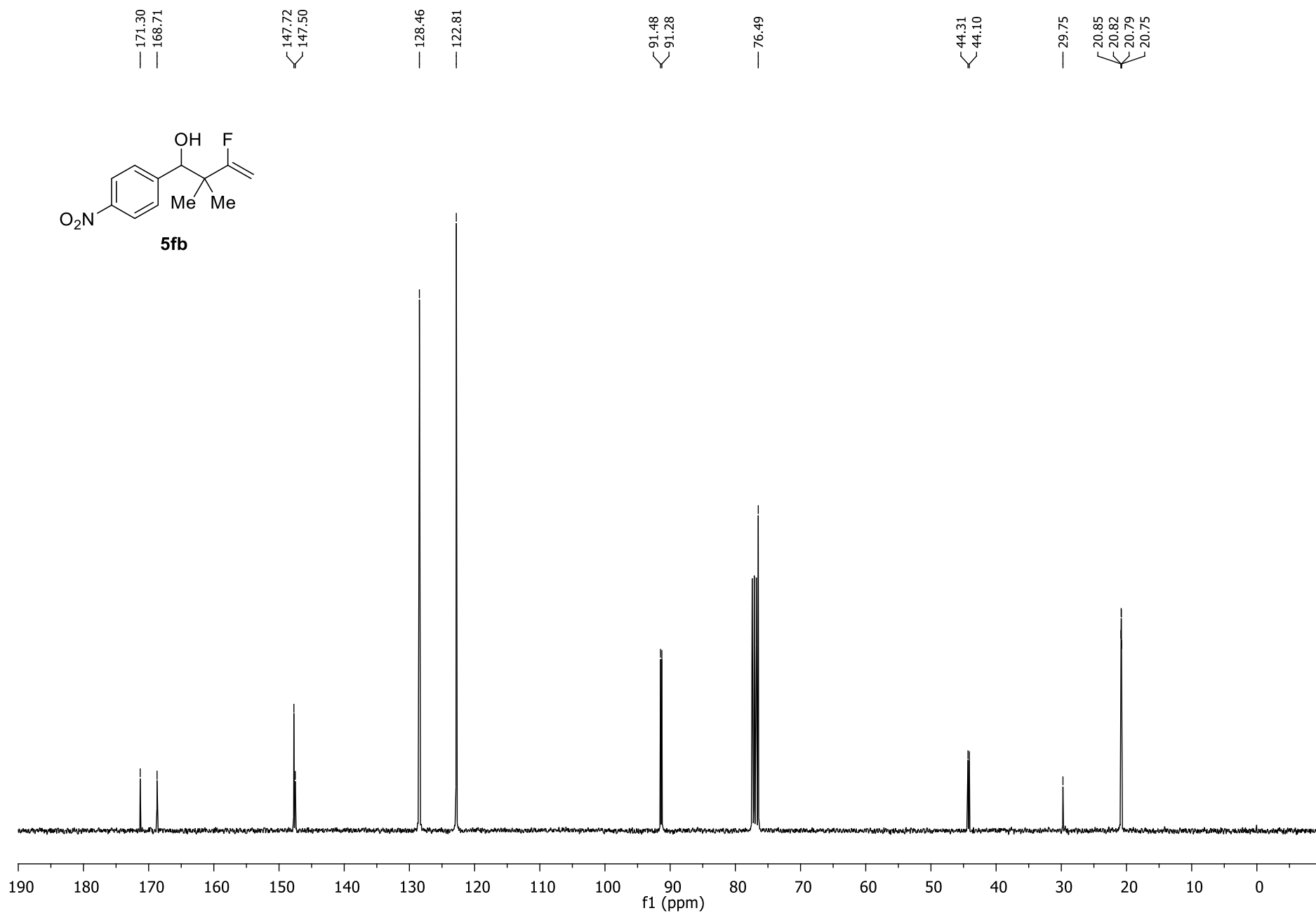
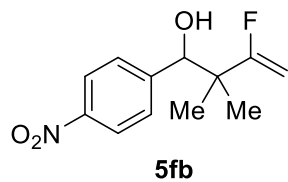
^1H NMR (400.1 MHz, CDCl_3) of **5fb**.



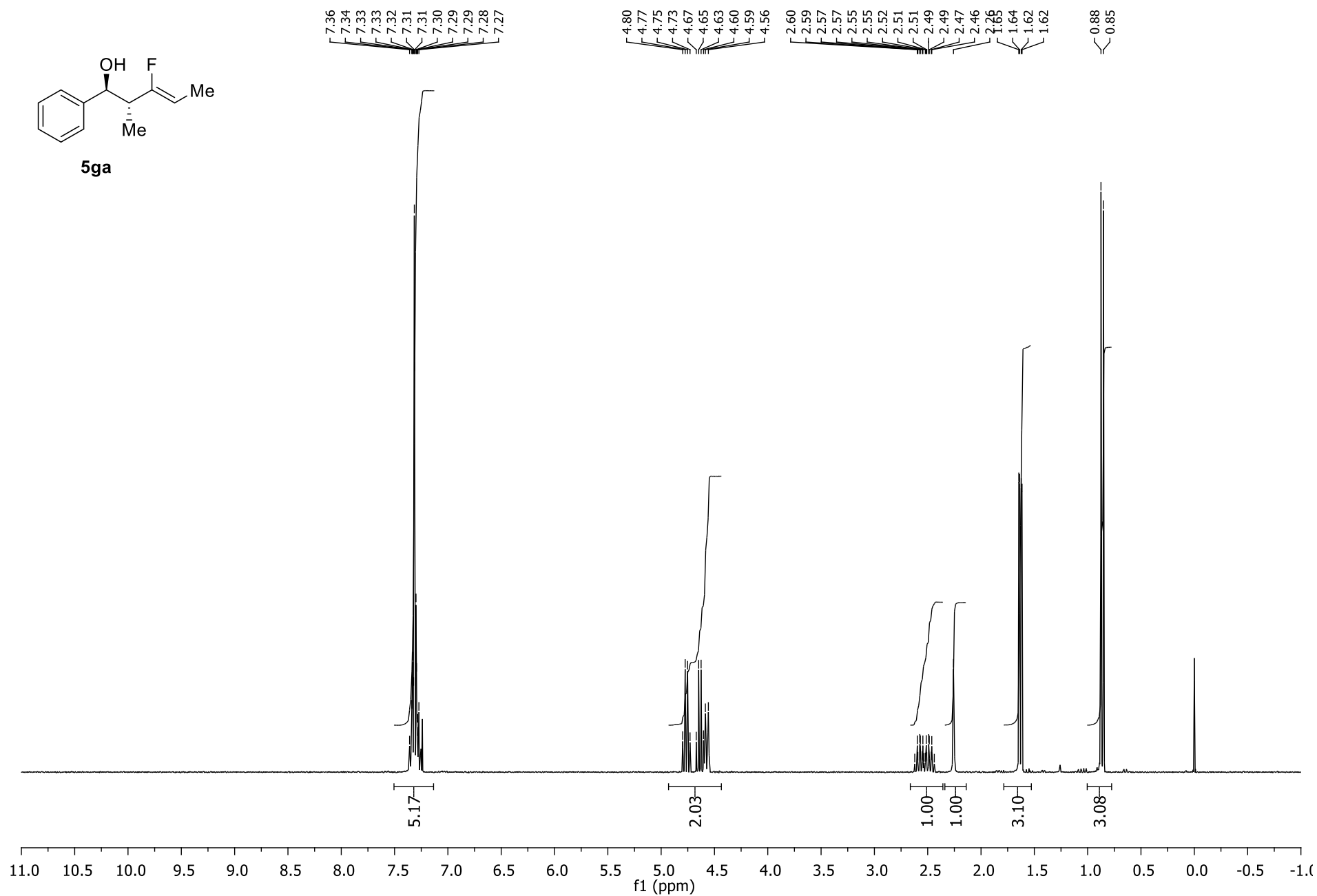
^{19}F NMR (282.4 MHz, CDCl_3) of **5fb**.



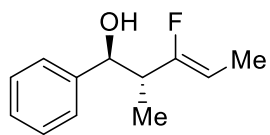
^{13}C NMR (100.6 MHz, CDCl_3) of **5fb**.



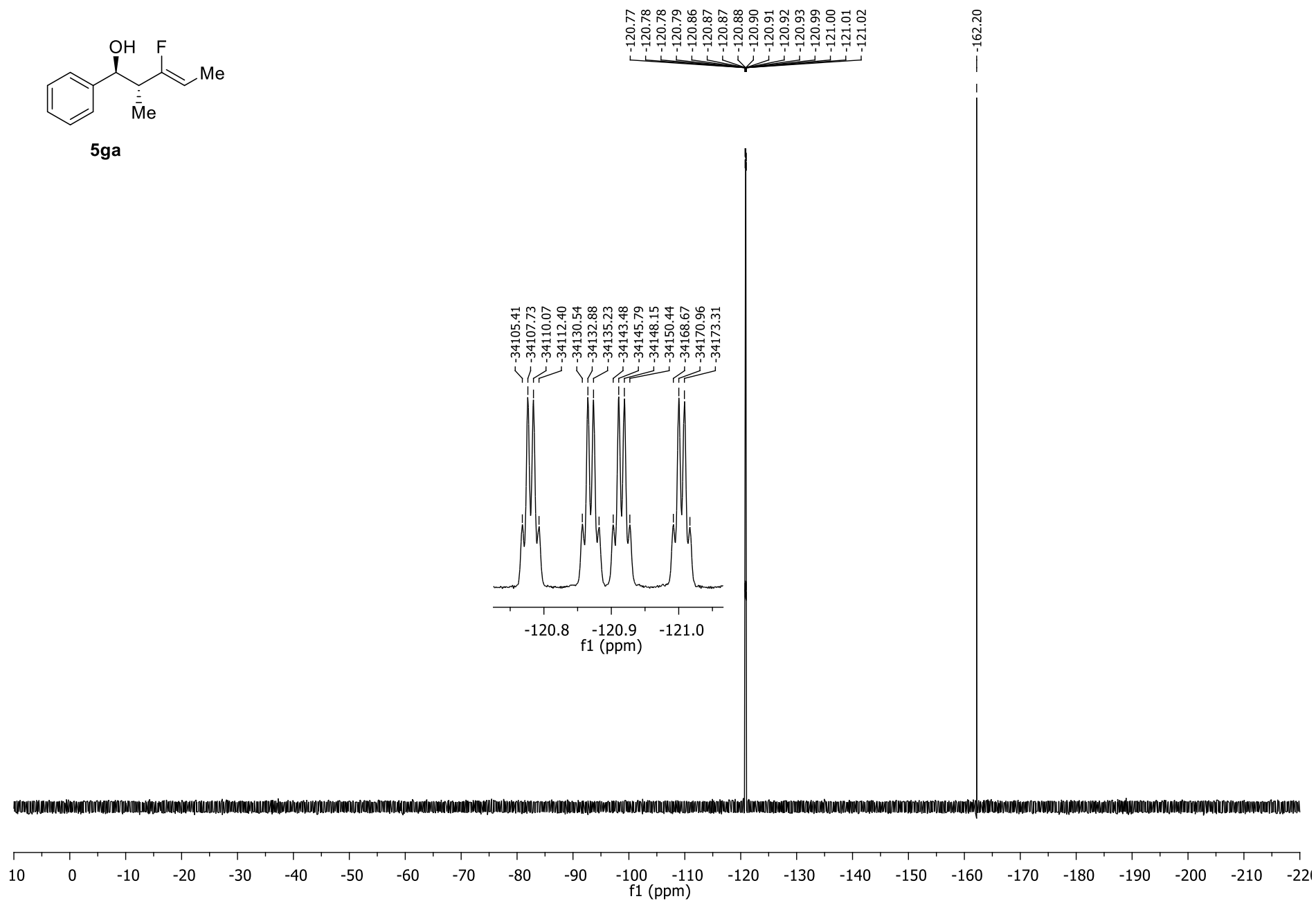
^1H NMR (300.1 MHz, CDCl_3) of **5ga** (*anti/syn* > 20/1, *Z/E* > 20/1).



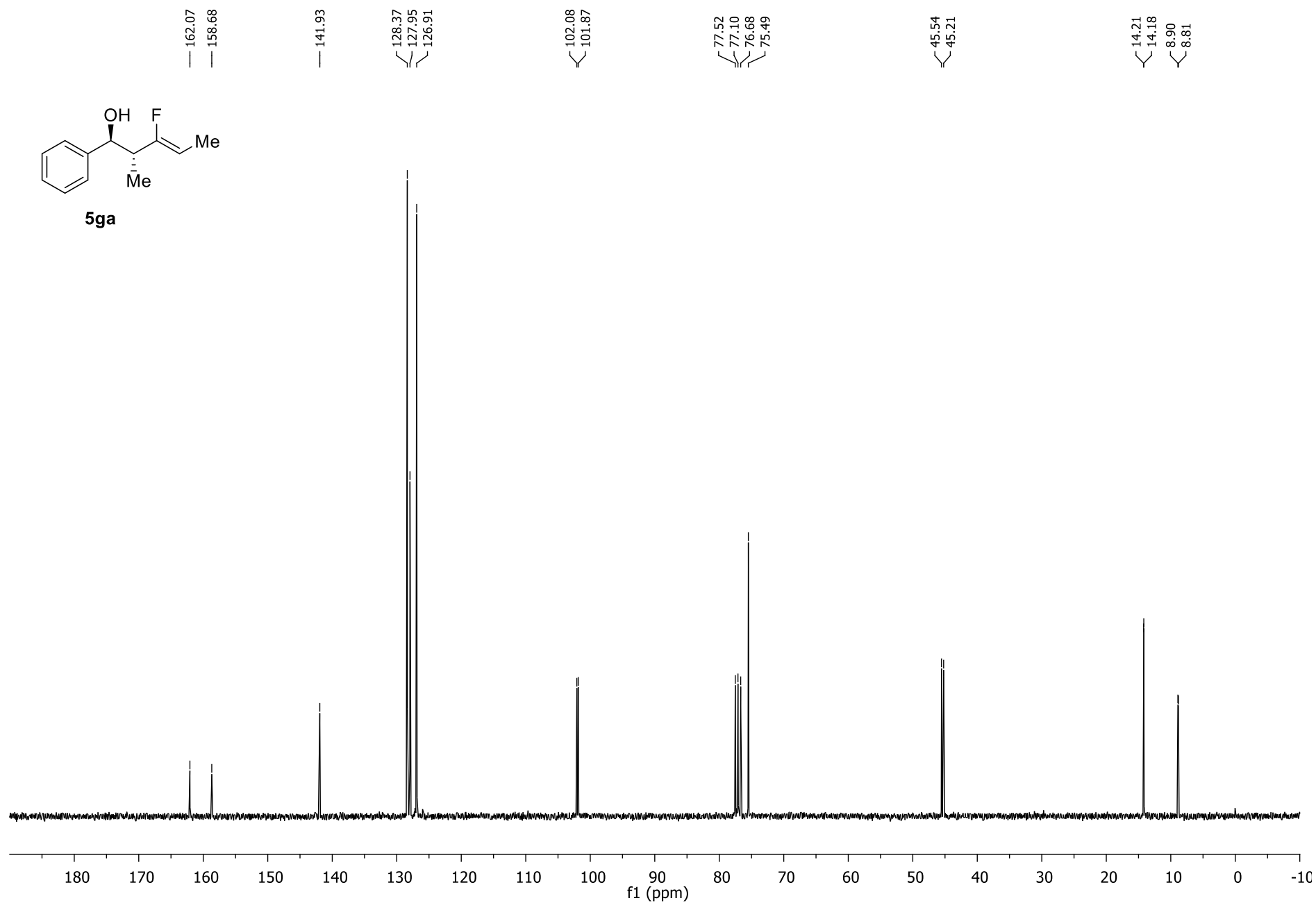
^{19}F NMR (282.4 MHz, CDCl_3) of **5ga** (*anti/syn* > 20/1, *Z/E* > 20/1).



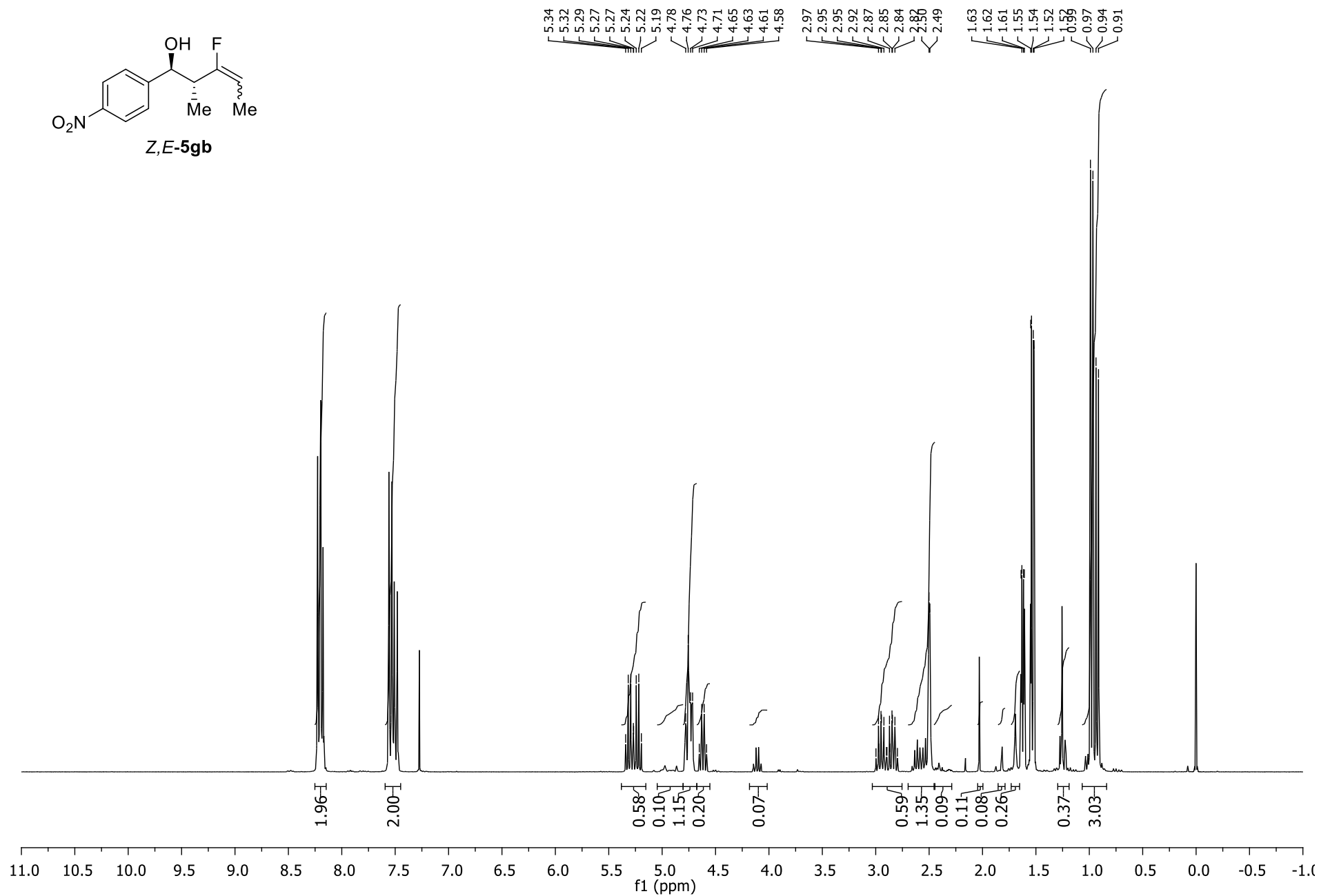
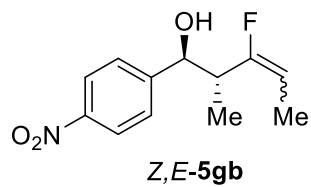
5ga



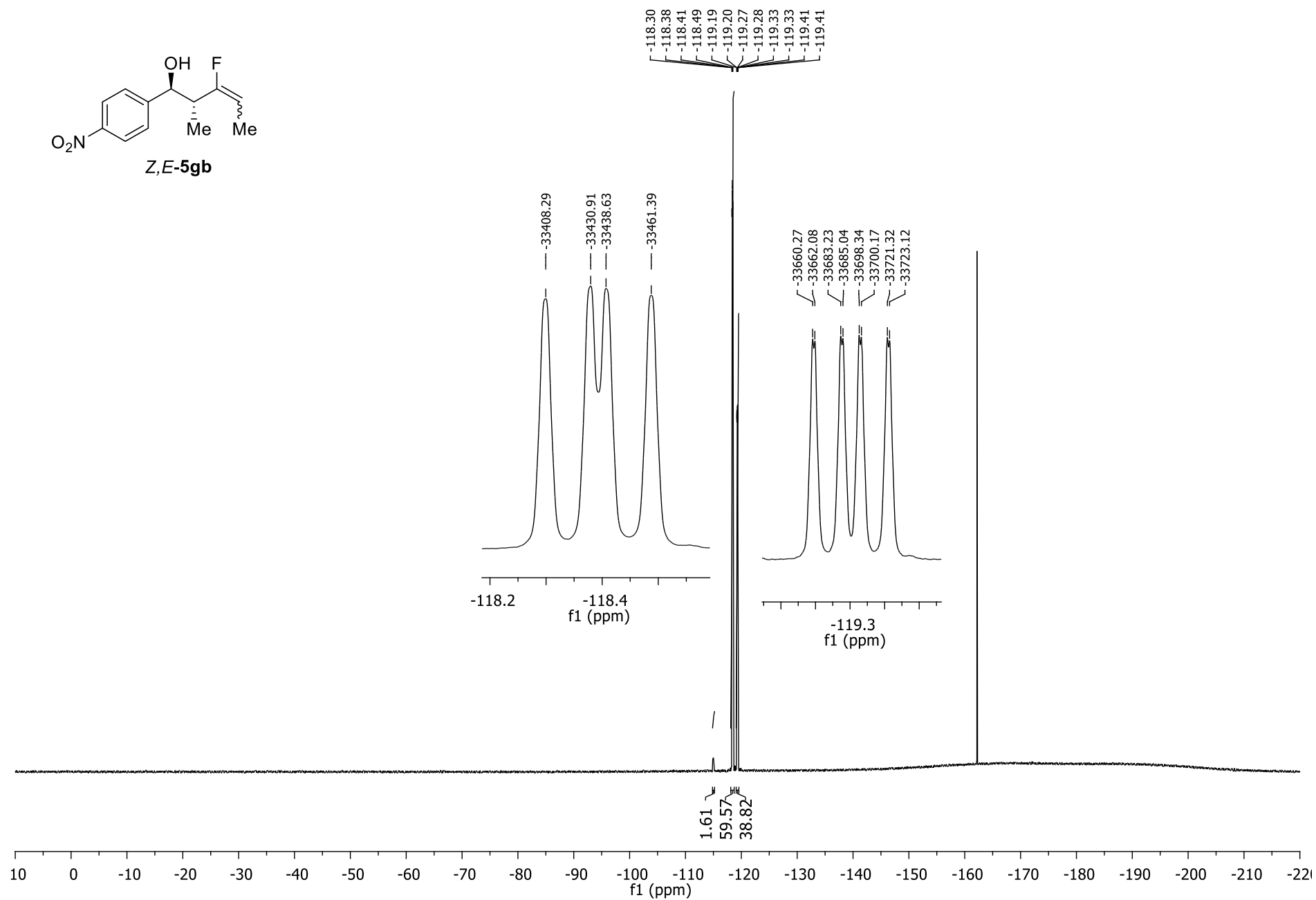
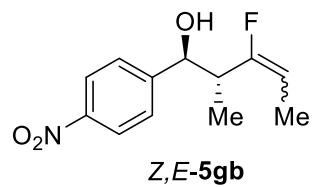
^{13}C NMR (75.5 MHz, CDCl_3) of **5ga** (*anti*/*syn* > 20/1, *Z*/*E* > 20/1).



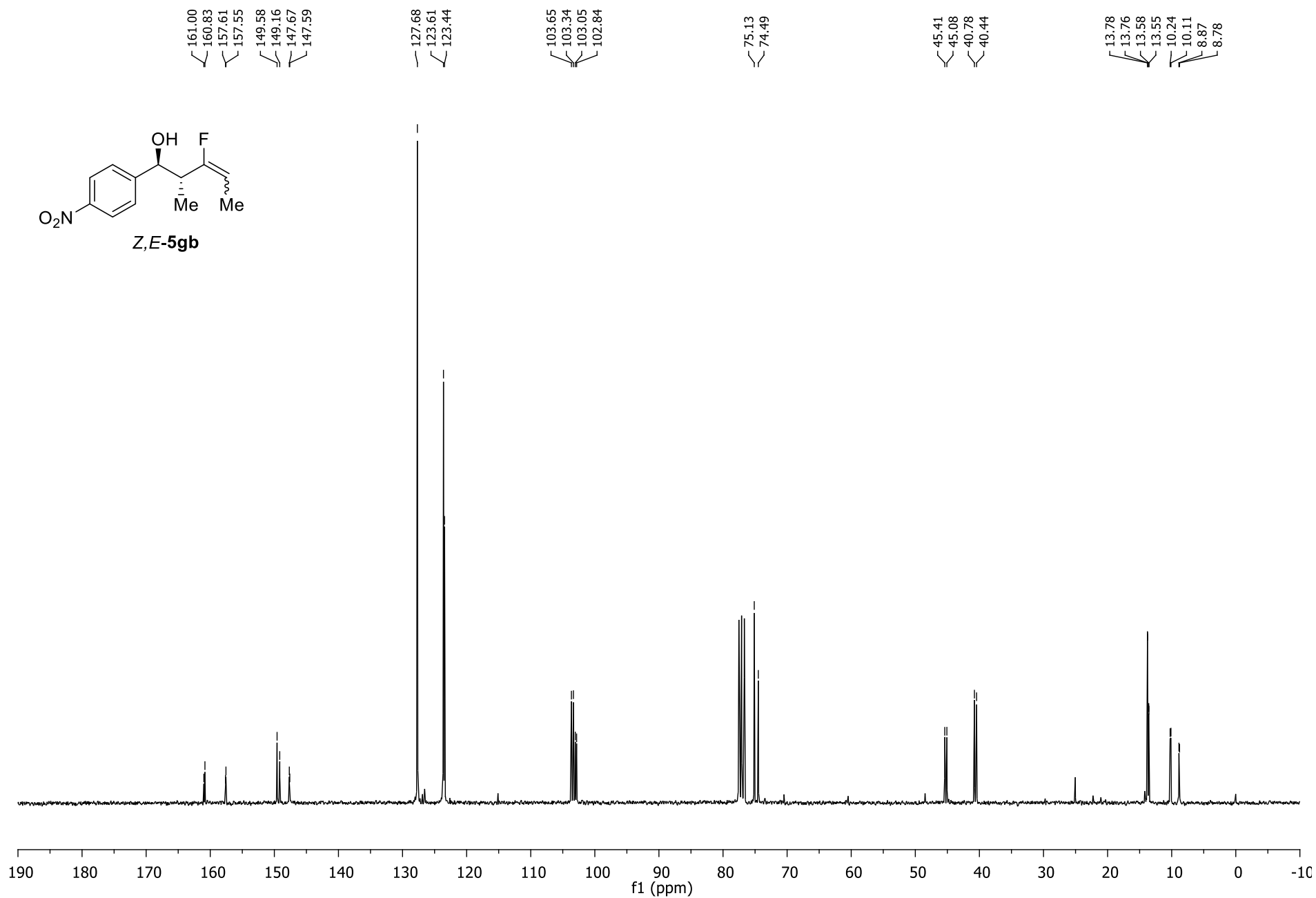
^1H NMR (300.1 MHz, CDCl_3) of **5gb** (*anti/syn* > 20/1, *Z/E* = 39/61).



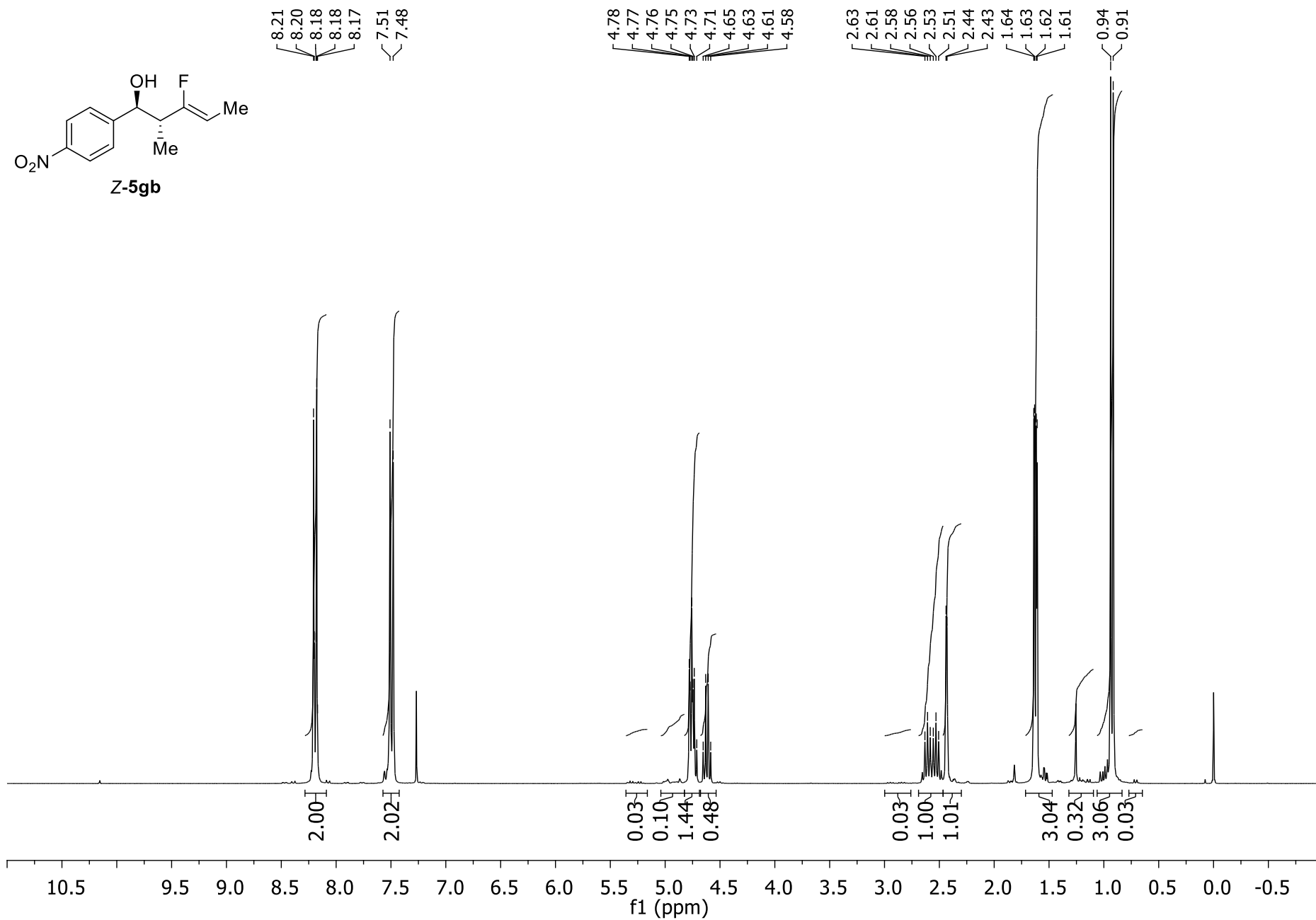
^{19}F NMR (282.4 MHz, CDCl_3) of **5gb** (*anti/syn* > 20/1, *Z/E* = 39/61).



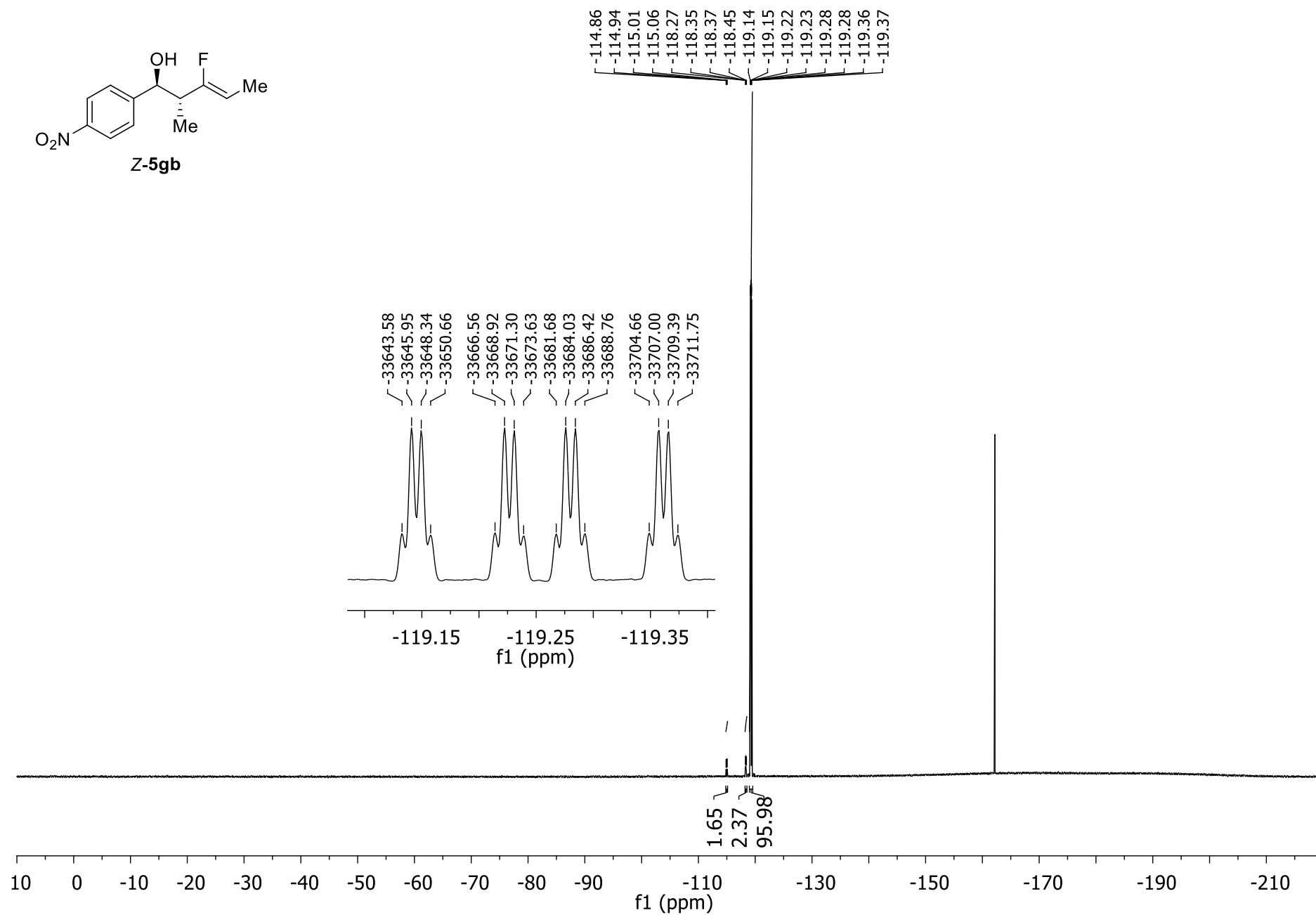
^{13}C NMR (75.5 MHz, CDCl_3) of **5gb** (*anti/syn* > 20/1, *Z/E* = 39/61).



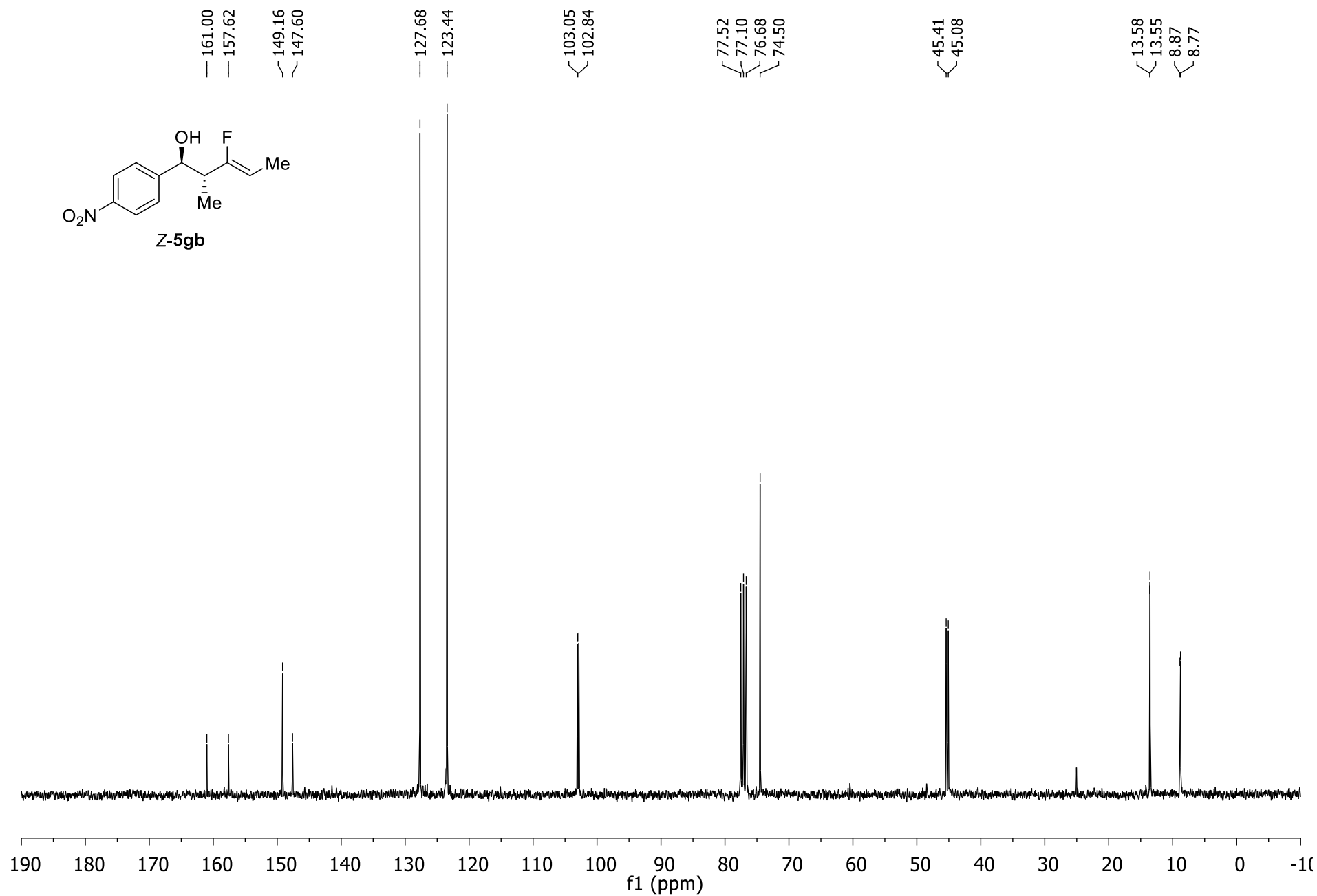
^1H NMR (300.1 MHz, CDCl_3) of **Z-5gb** (*anti/syn* > 20/1, *Z/E* = 98/2).



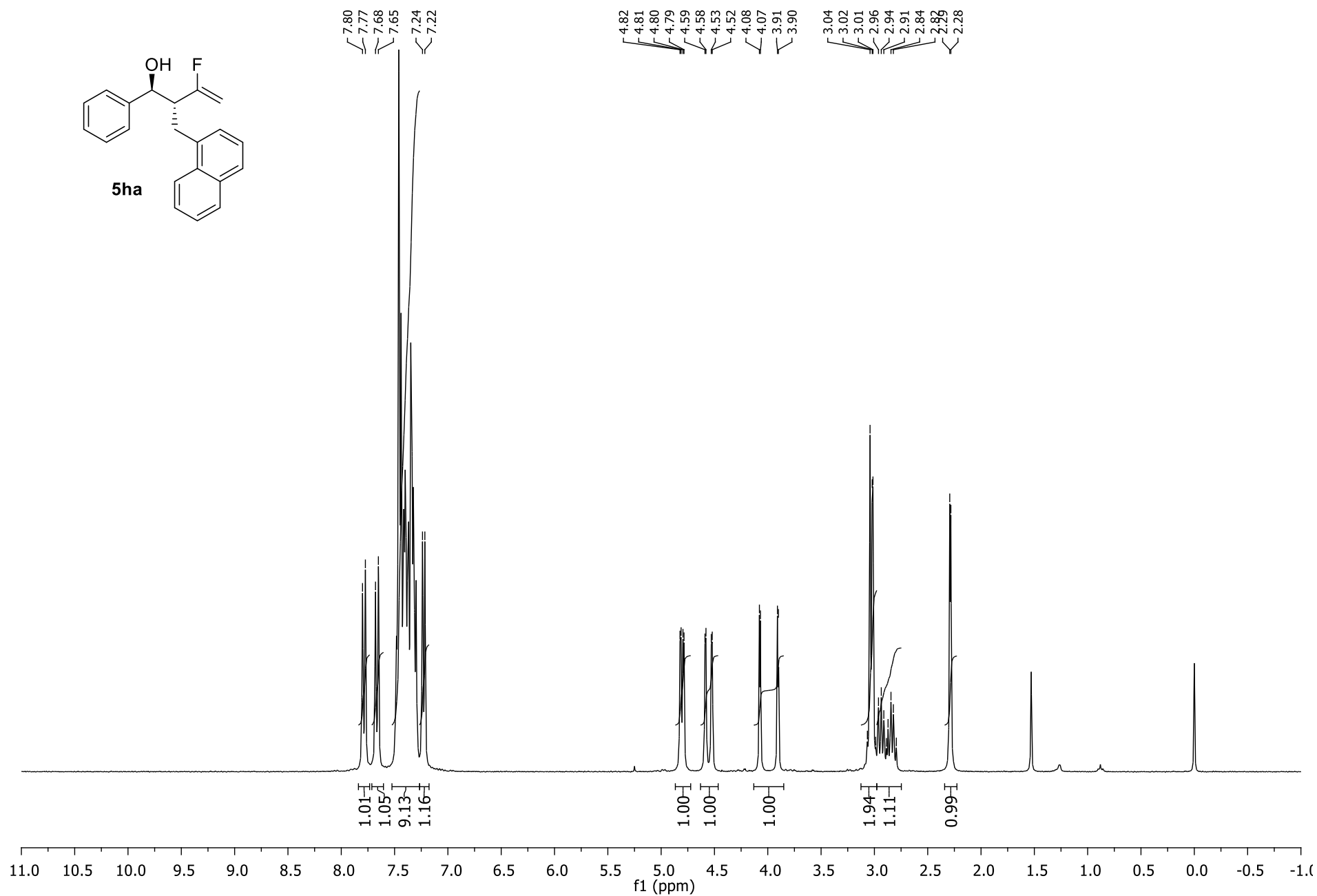
^{19}F NMR (282.4 MHz, CDCl_3) of **Z-5gb** (*anti/syn* > 20/1, *Z/E* = 98/2).



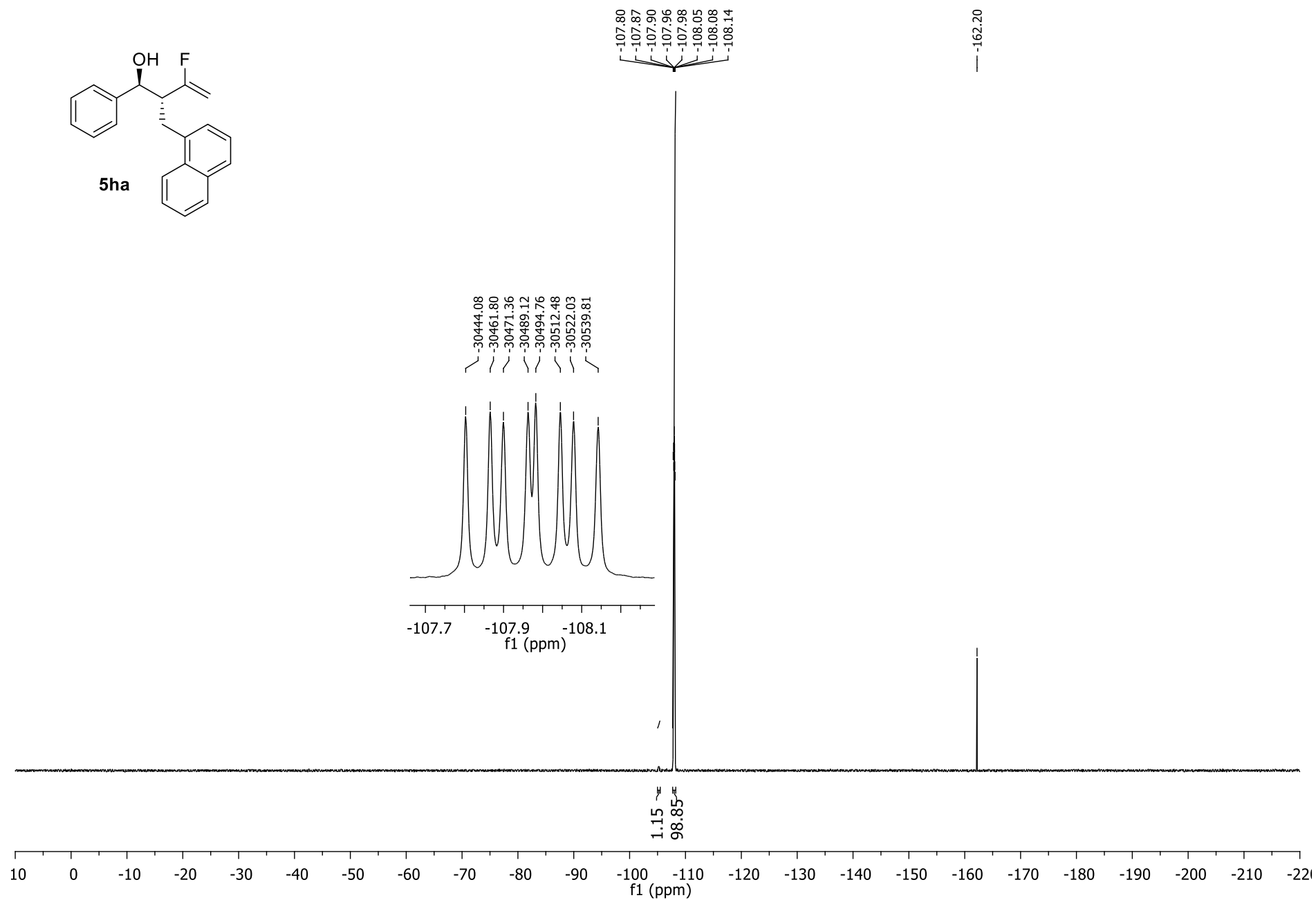
^{13}C NMR (75.5 MHz, CDCl_3) of **Z-5gb** (*anti/syn* > 20/1, *Z/E* = 98/2).



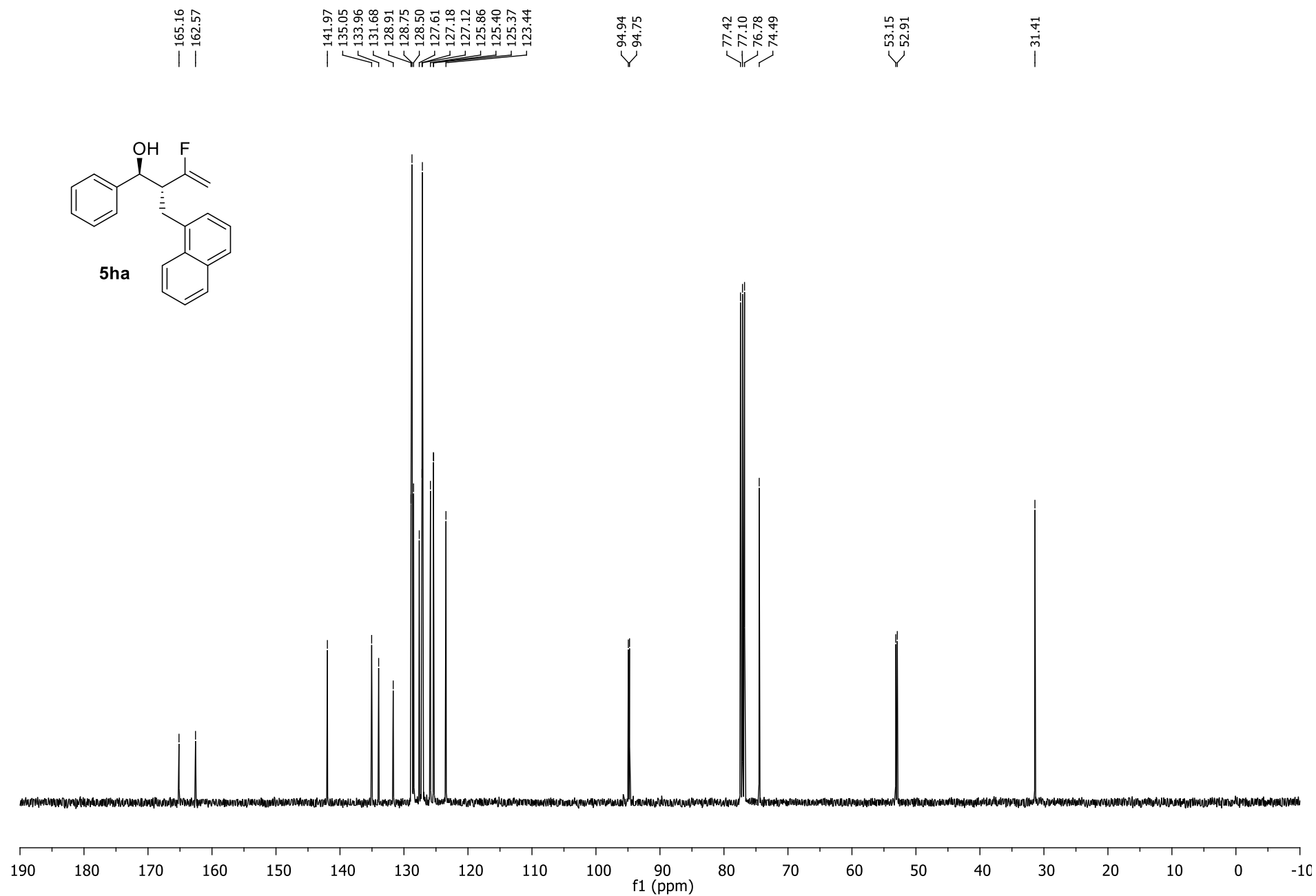
^1H NMR (300.1 MHz, CDCl_3) of **5ha** (*anti/syn* > 20/1).



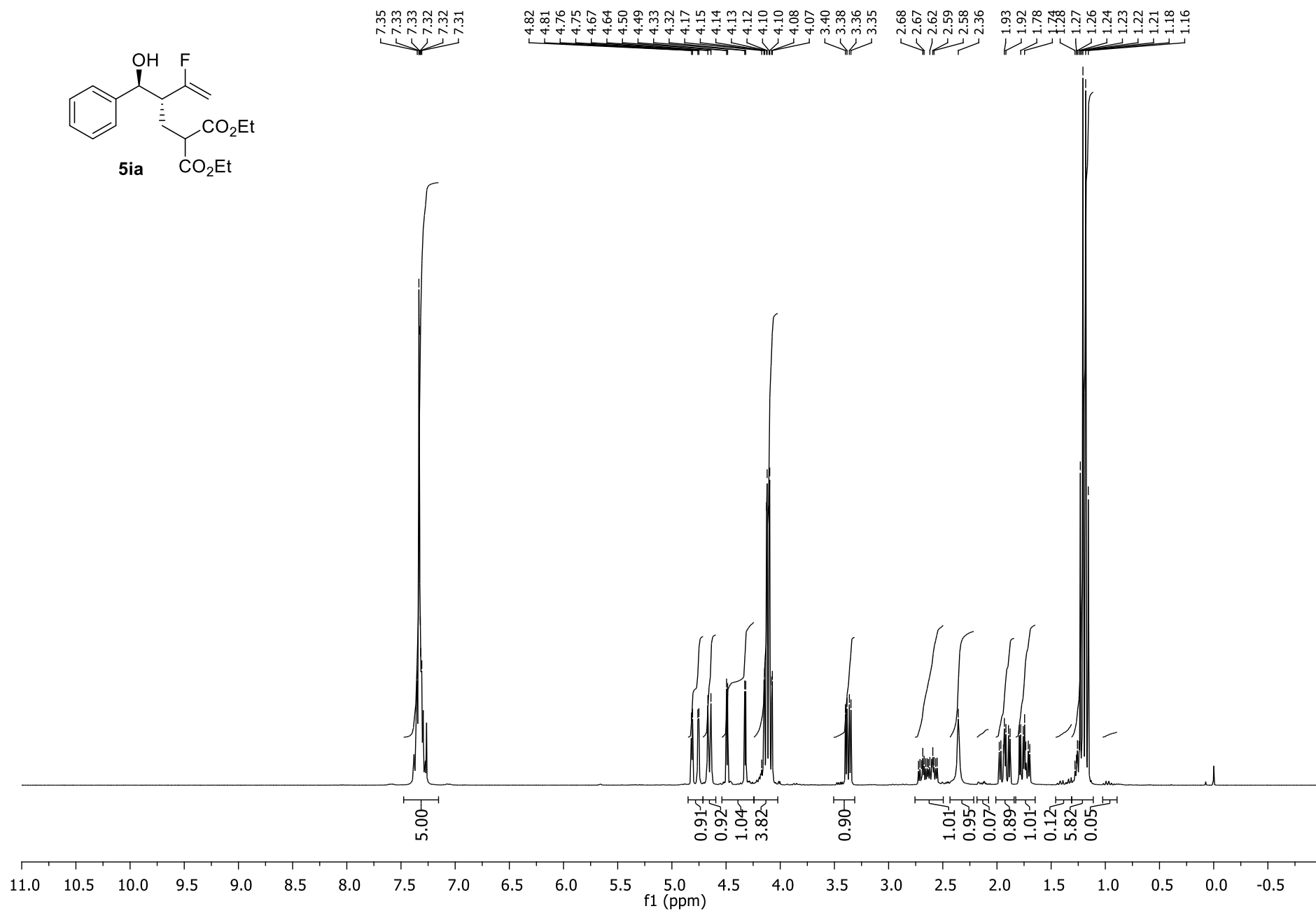
^{19}F NMR (282.4 MHz, CDCl_3) of **5ha** (*anti/syn* > 20/1).



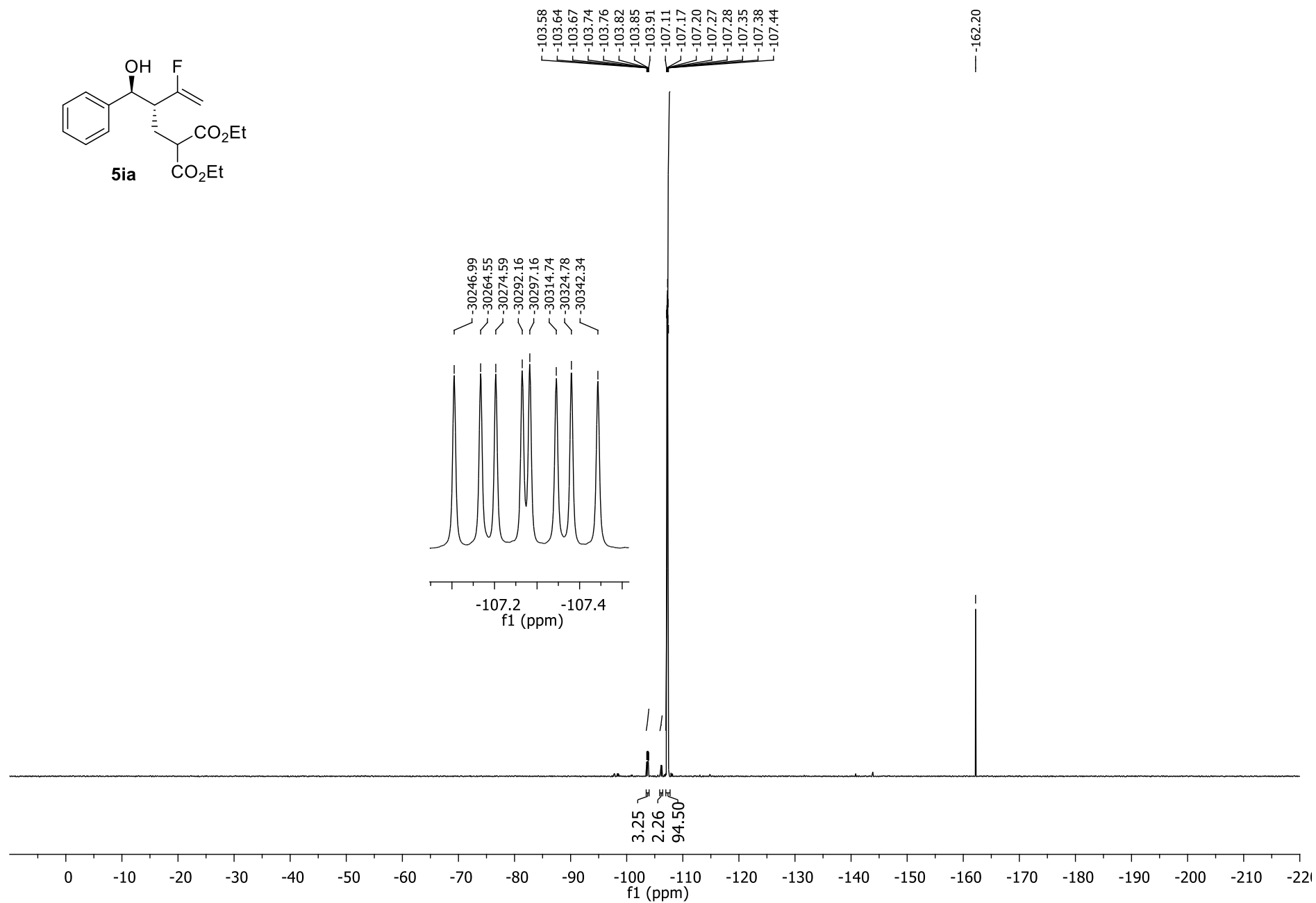
^{13}C NMR (75.5 MHz, CDCl_3) of **5ha** (*anti/syn* > 20/1).



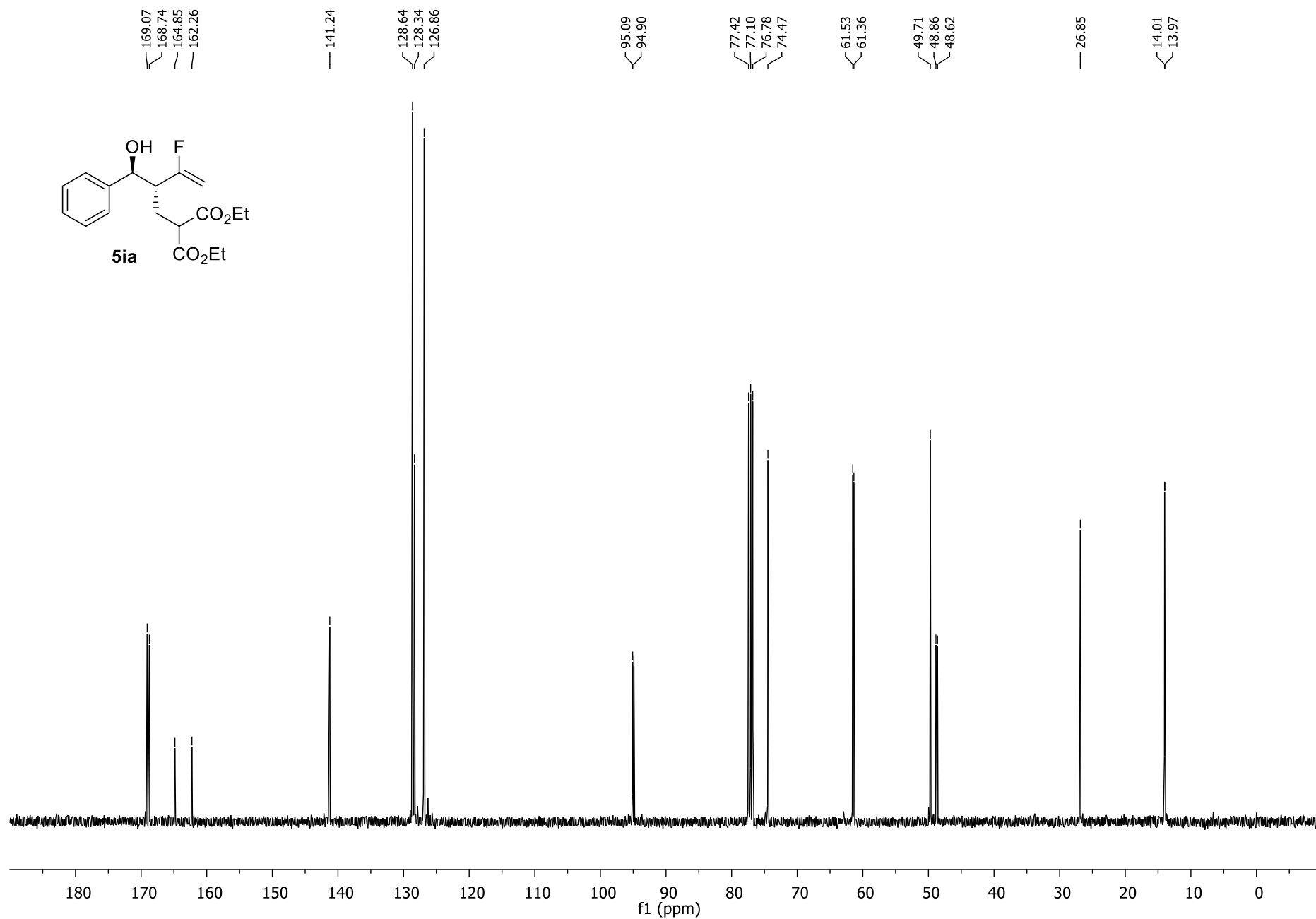
^1H NMR (300.1 MHz, CDCl_3) of **5ia** (*anti*/*syn* = 97/3).



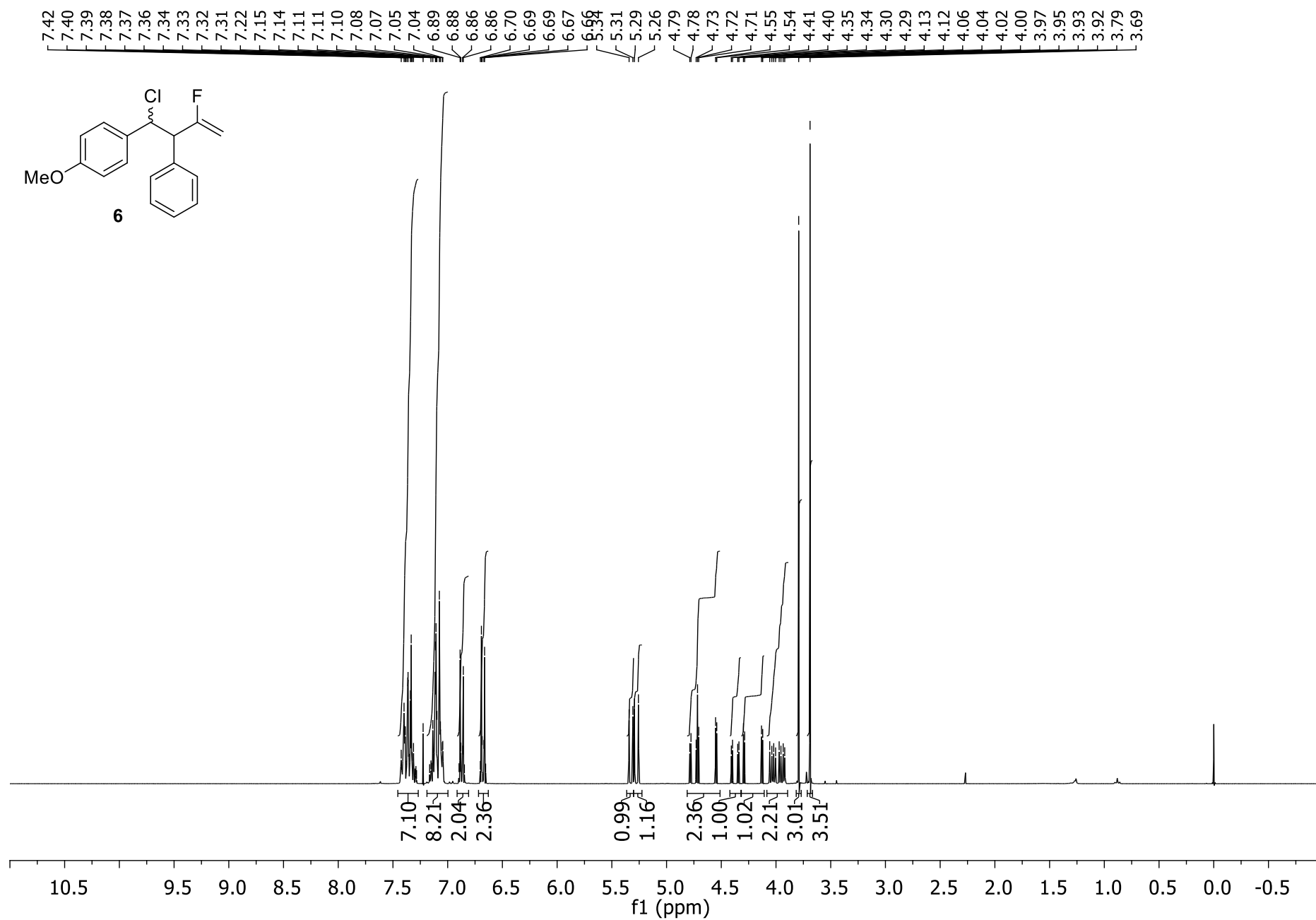
^{19}F NMR (282.4 MHz, CDCl_3) of **5ia** (*anti/syn* = 97/3).



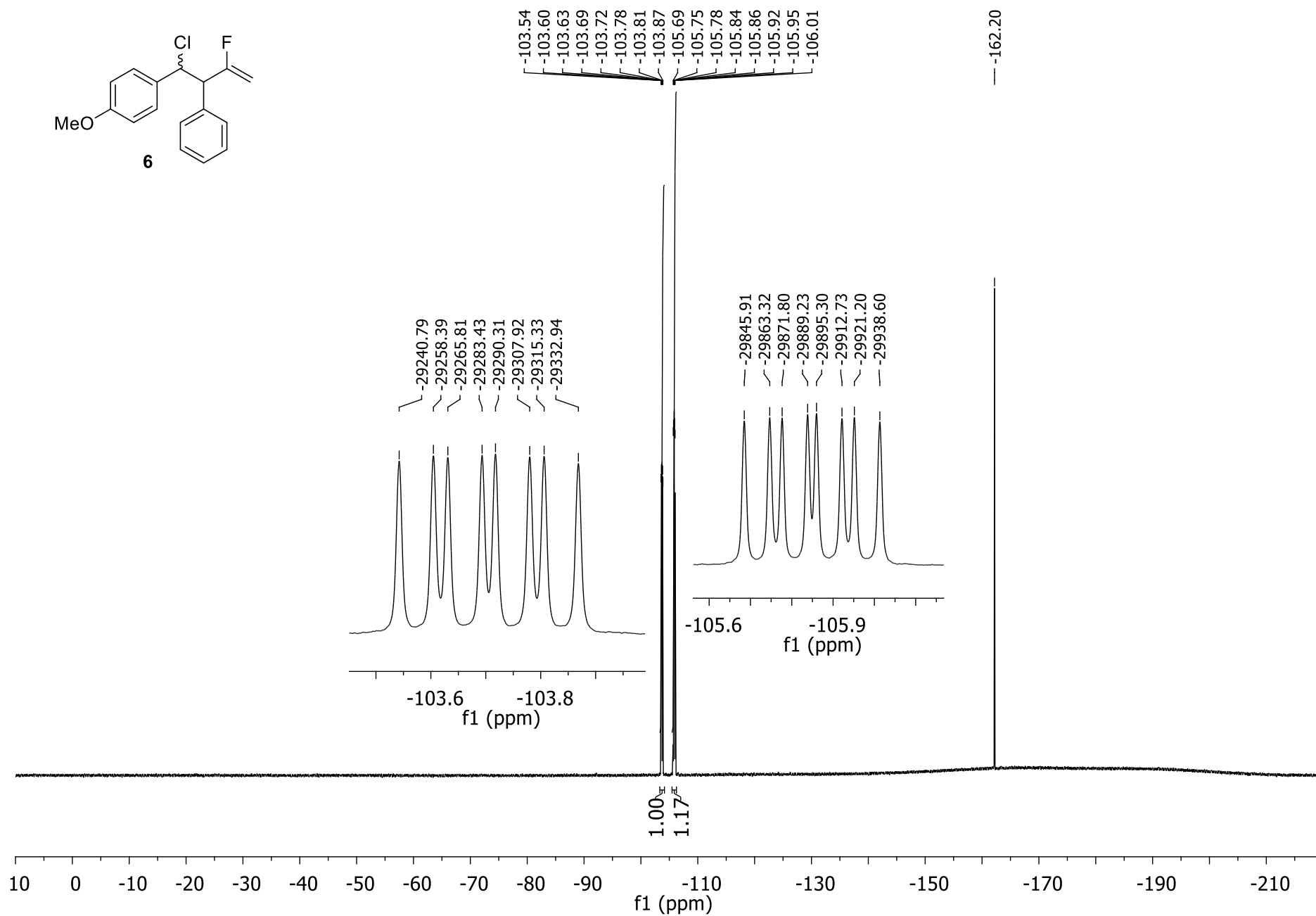
^{13}C NMR (75.5 MHz, CDCl_3) of **5ia** (*anti/syn* = 97/3).



^1H NMR (300.1 MHz, CDCl_3) of **6** (d.r. 54/46).



^{19}F NMR (282.4 MHz, CDCl_3) of **6** (d.r. 54/46).



^{13}C NMR (75.5 MHz, CDCl_3) of **6** (d.r. 54/46).

