

Supporting Information

for

**Lewis Acid-catalyzed 2,3-Dihydrofuran Acetal Ring-Opening Benzannulations
Toward Functionalized 1-Hydroxycarbazoles**

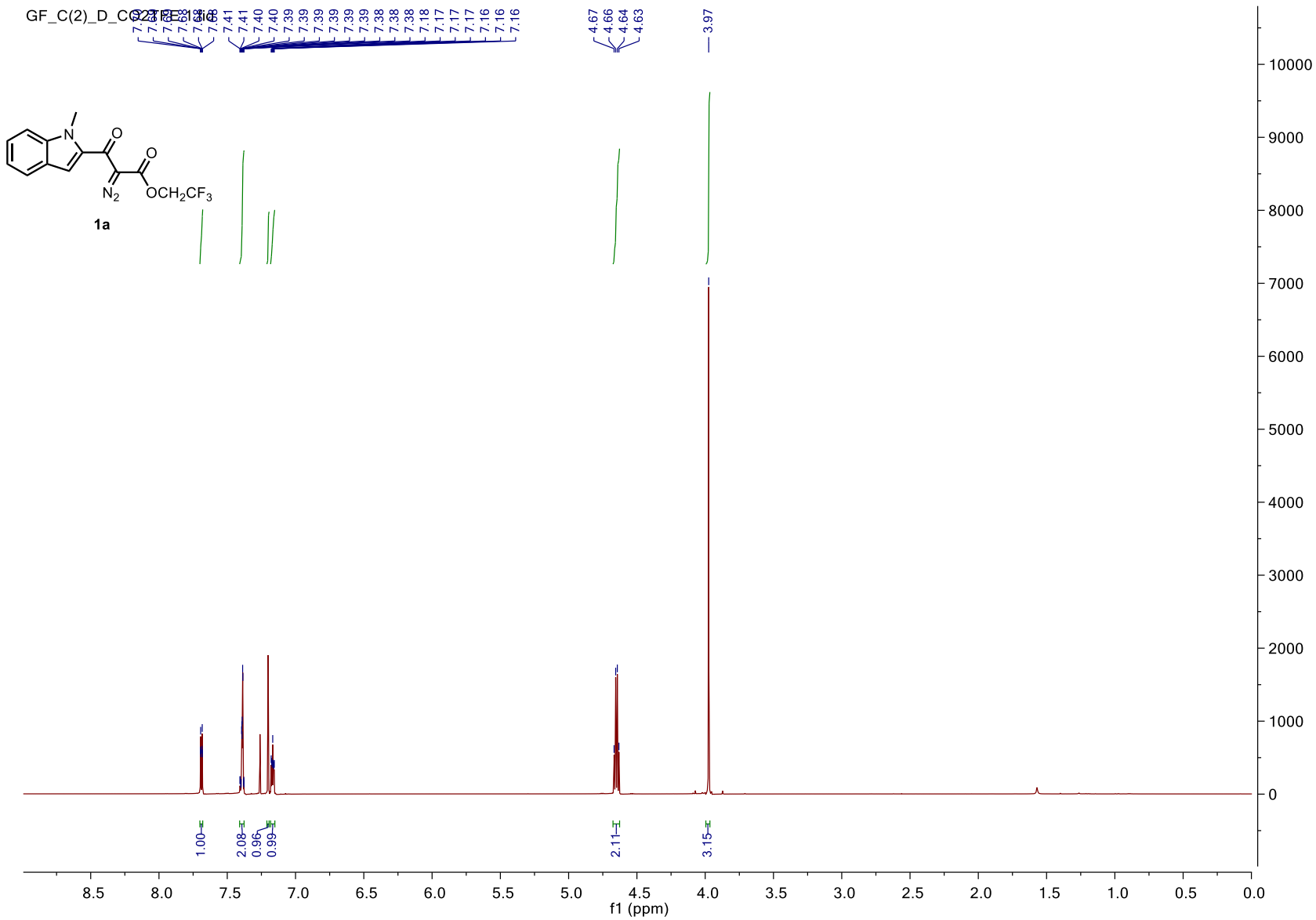
**Shaoren Yuan¹, Gabriel Guerra Faura¹, Hailey E. Archeart¹, Natalie Peulen¹, and
Stefan France^{1,2,*}**

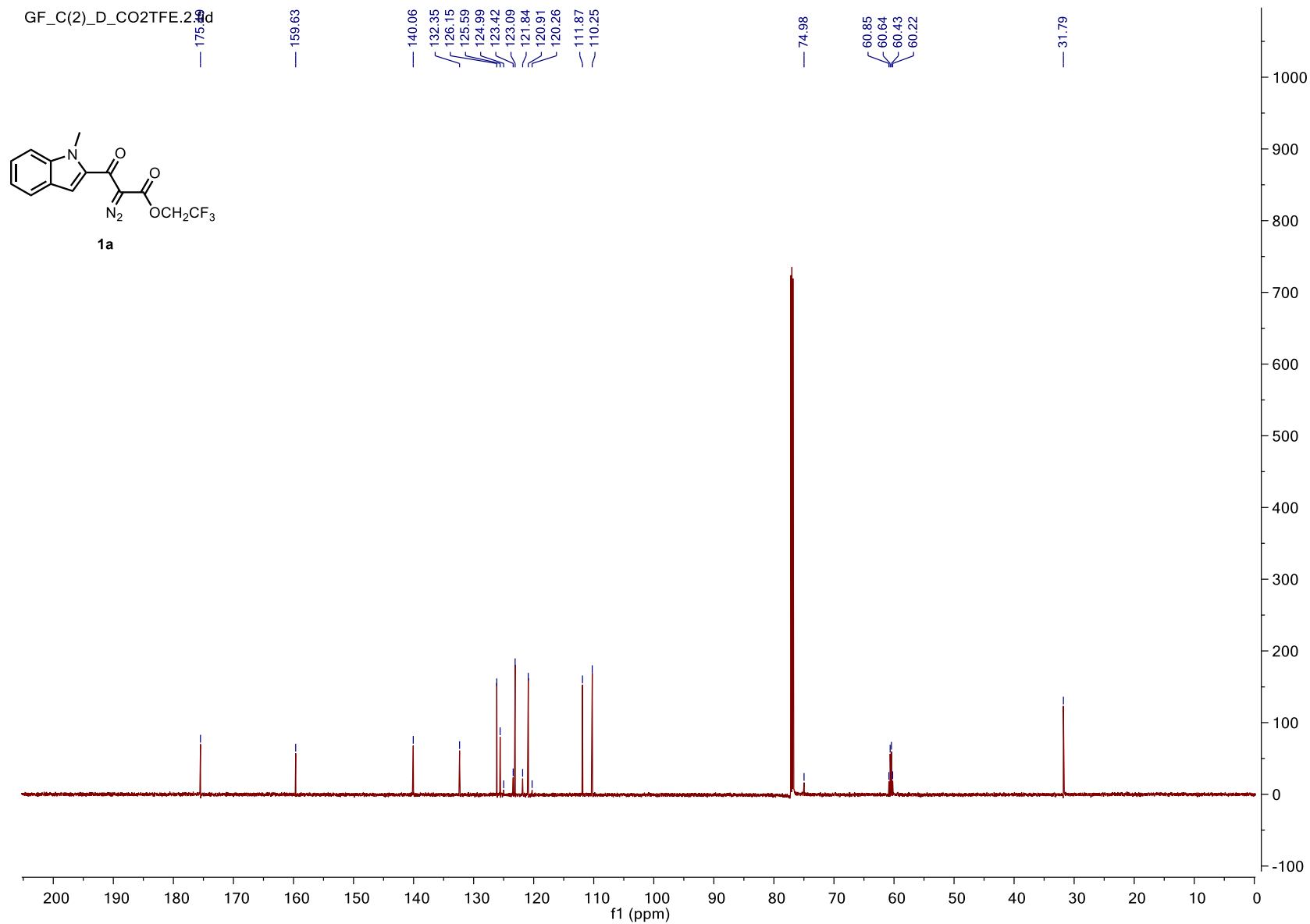
¹ School of Chemistry and Biochemistry, Georgia Institute of Technology, Atlanta, Georgia, 30332, United States

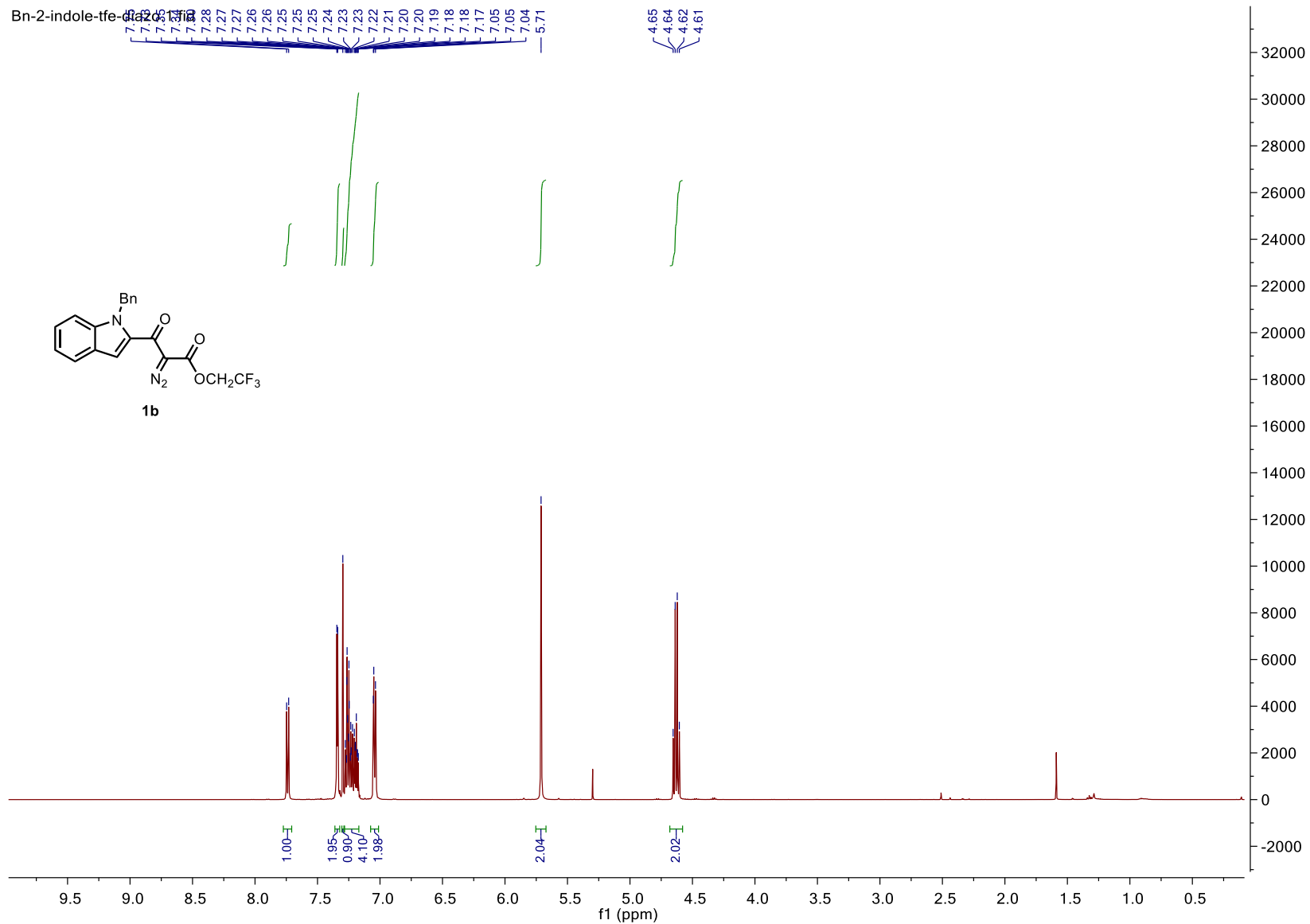
² Petit Institute for Bioengineering and Bioscience, Georgia Institute of Technology, Atlanta, Georgia, 30332; United States

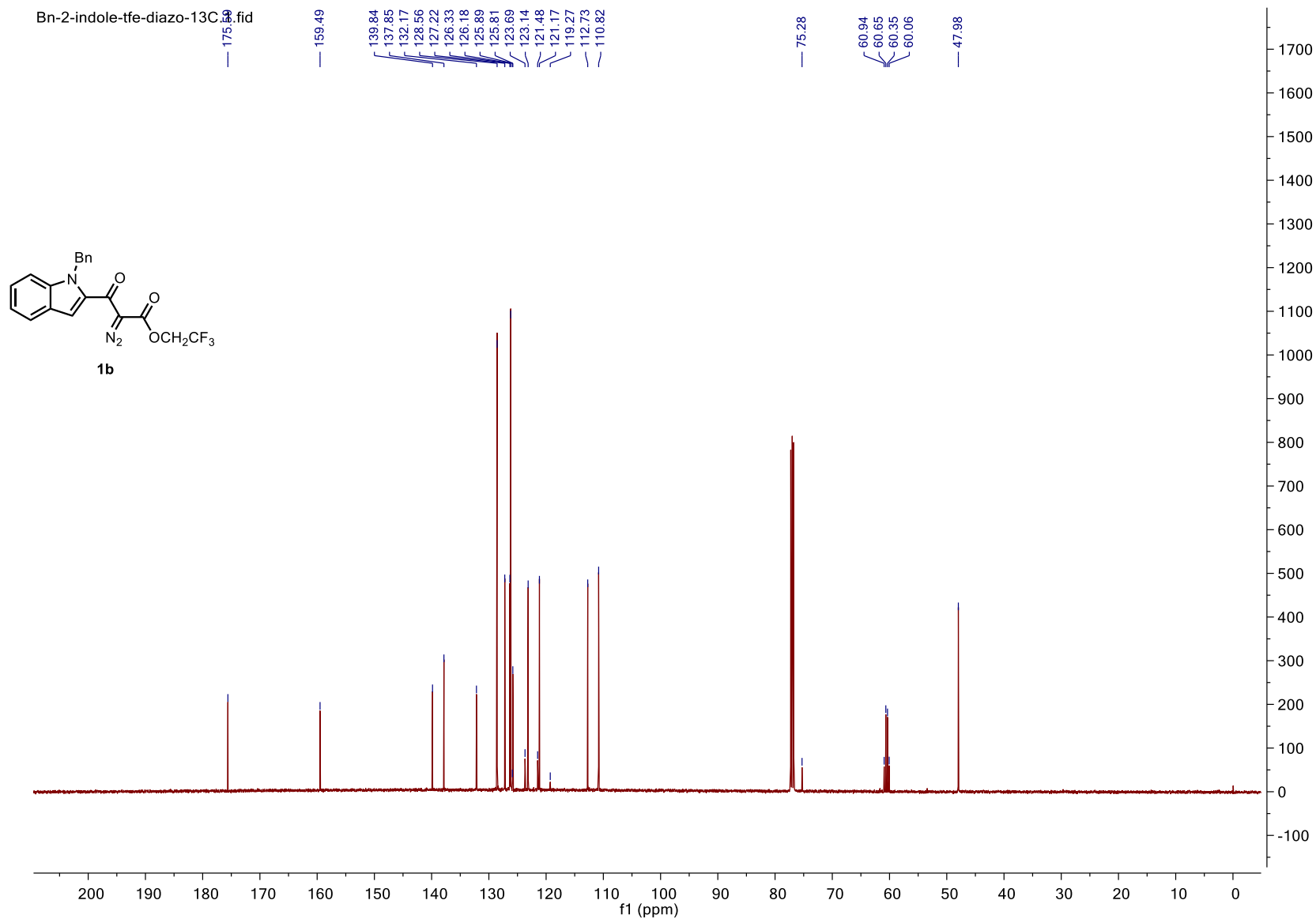
* Correspondence: stefan.france@chemistry.gatech.edu

NMR Spectra

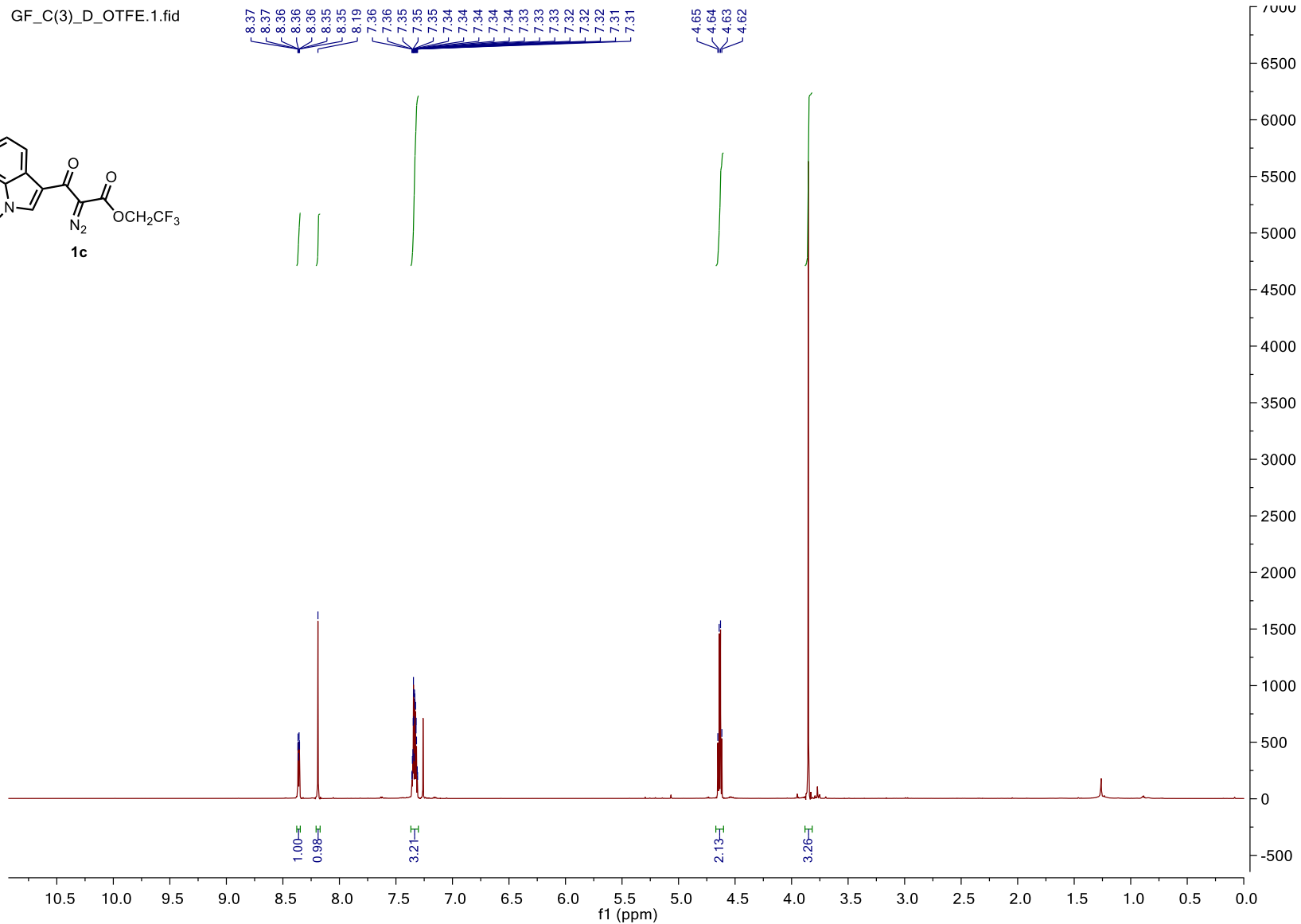
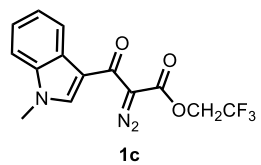


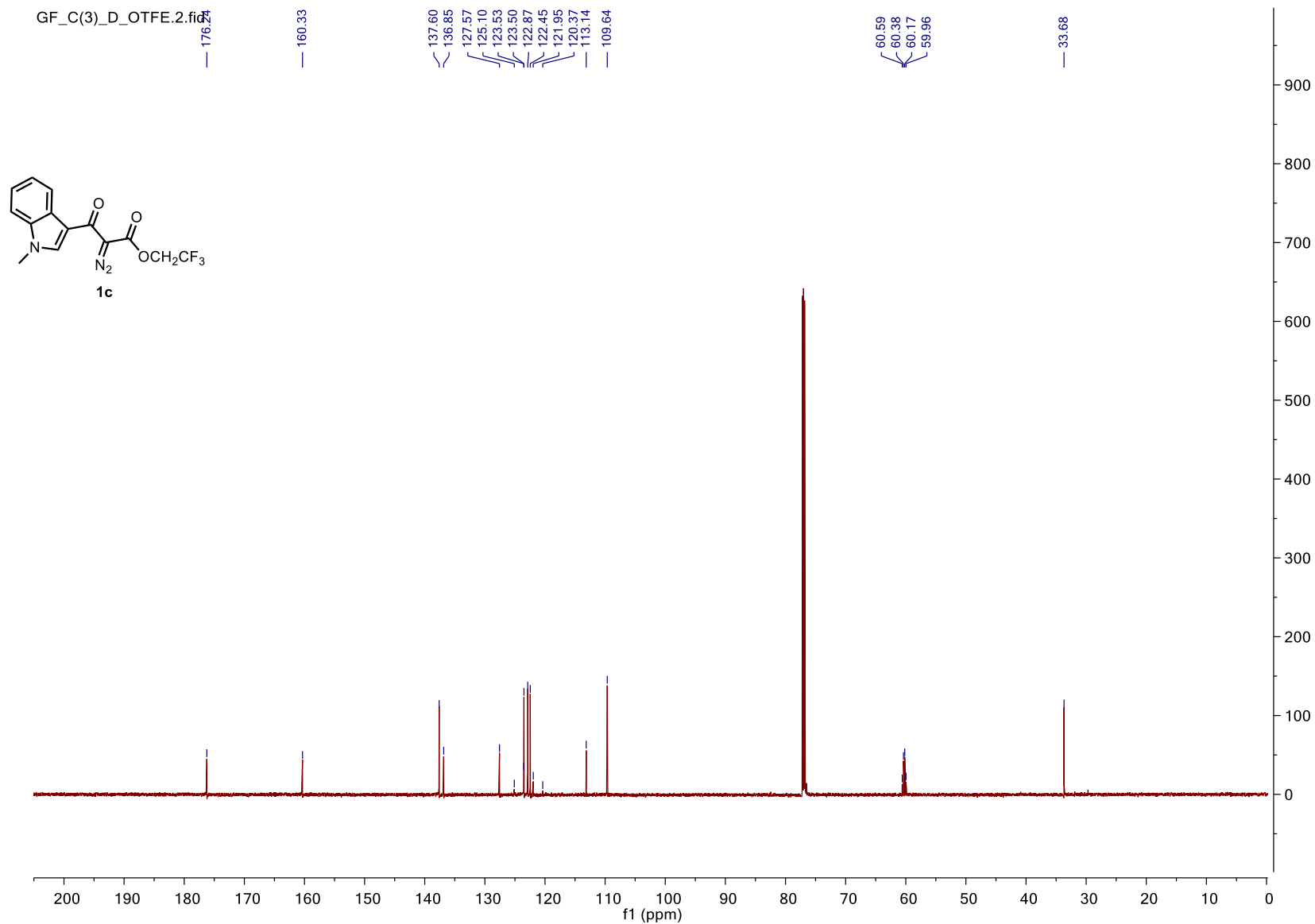


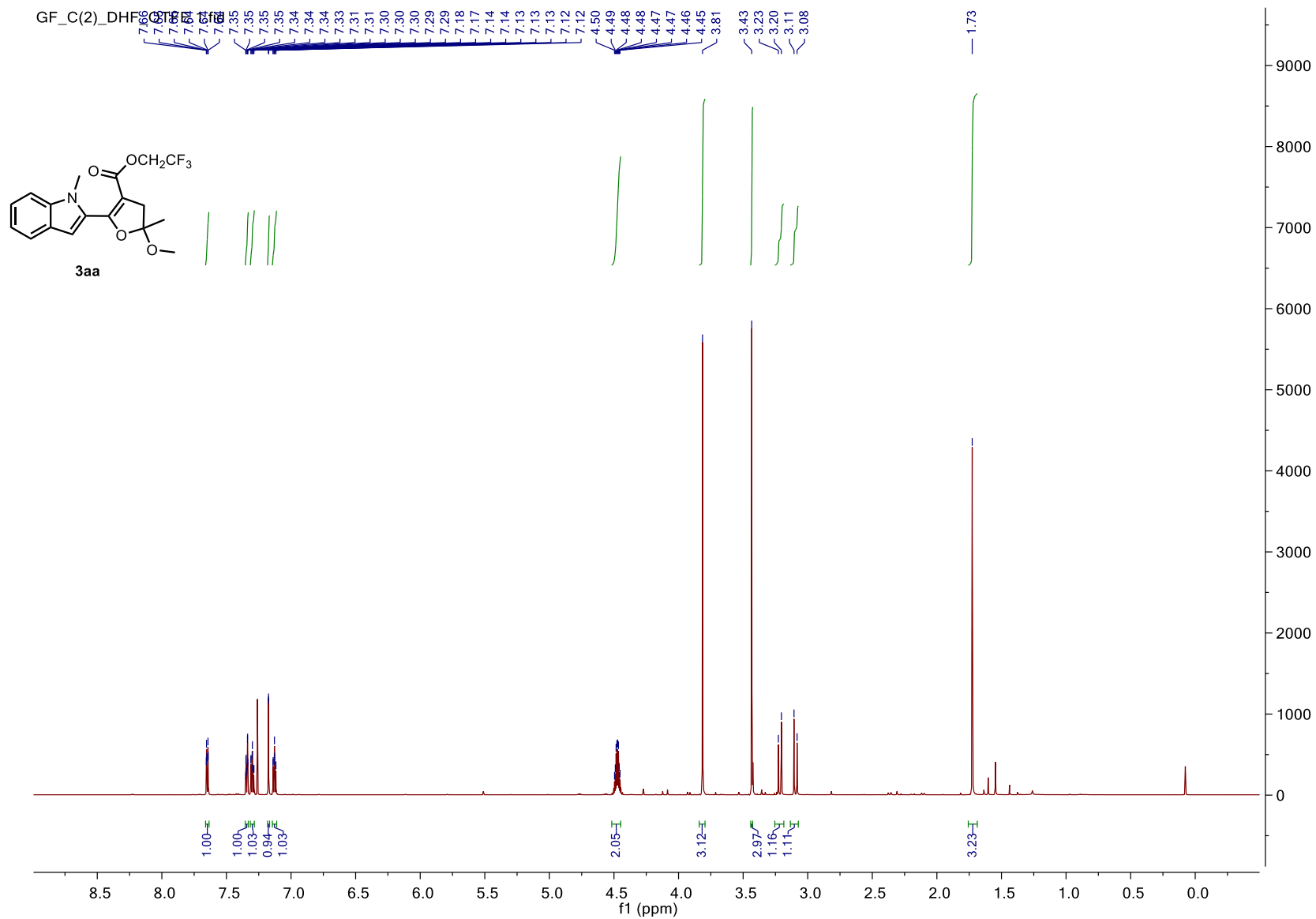




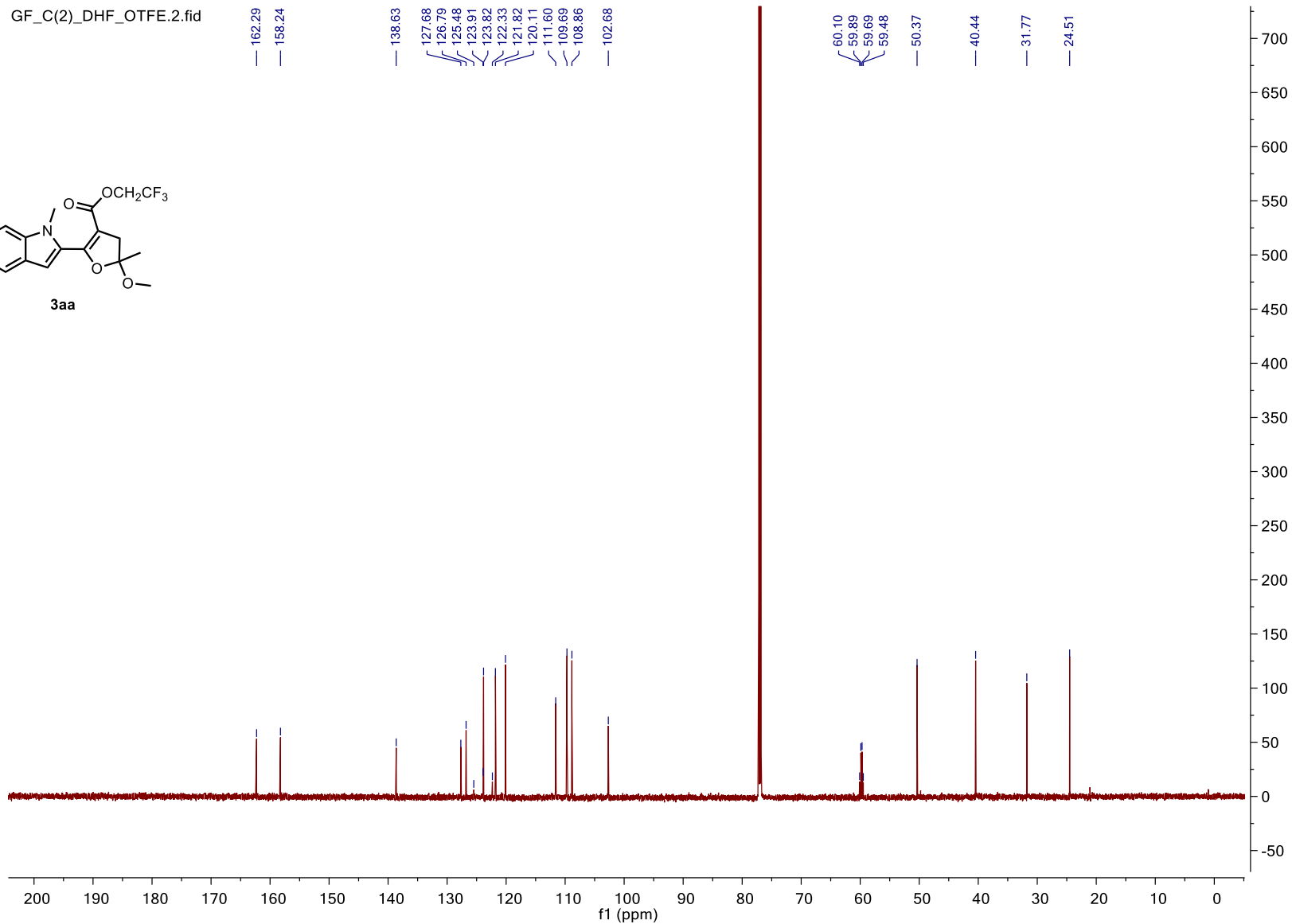
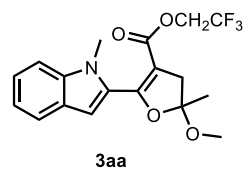
GF_C(3)_D_OTFE.1.fid





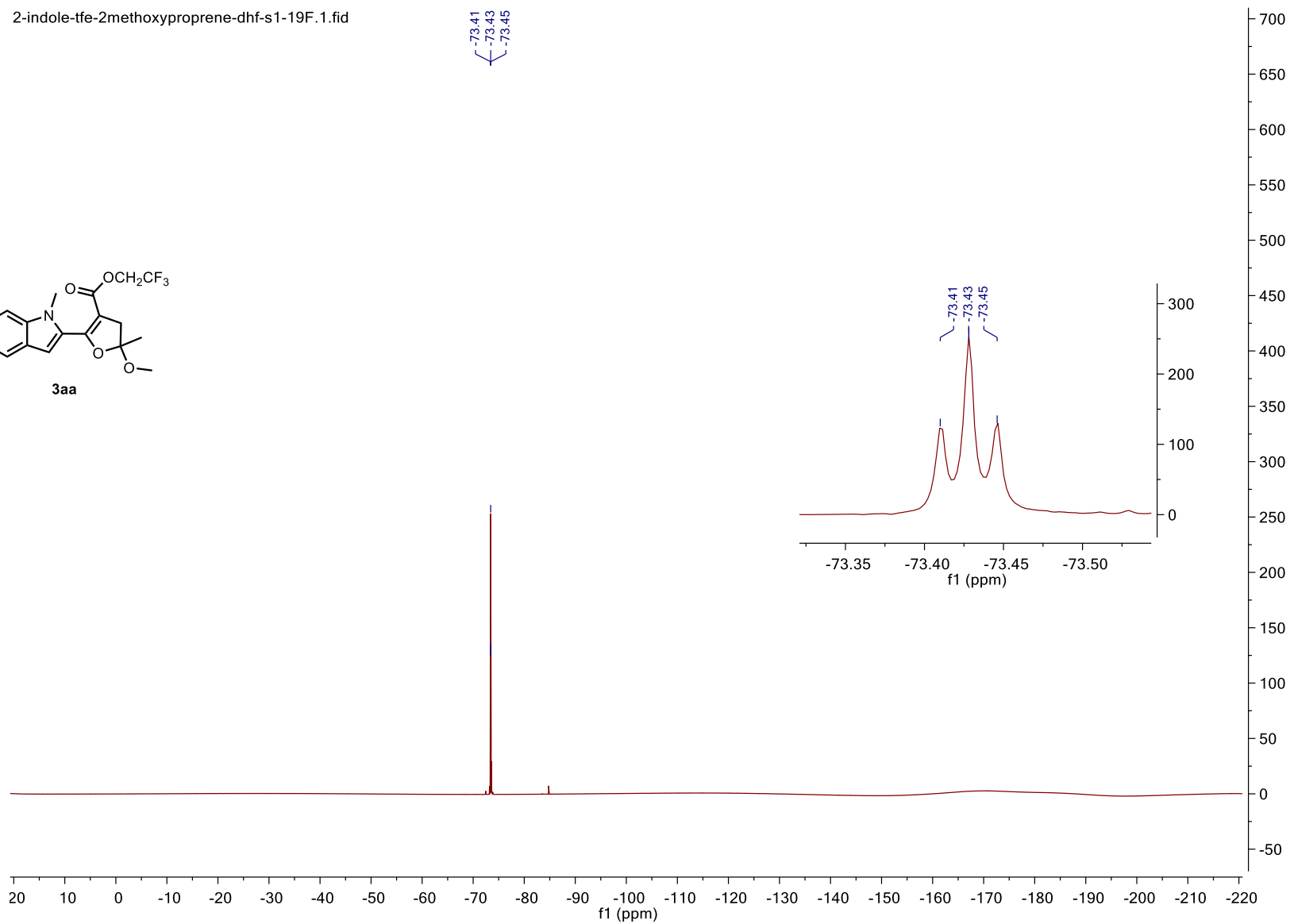
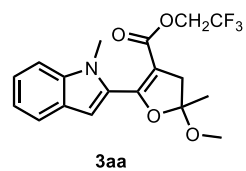


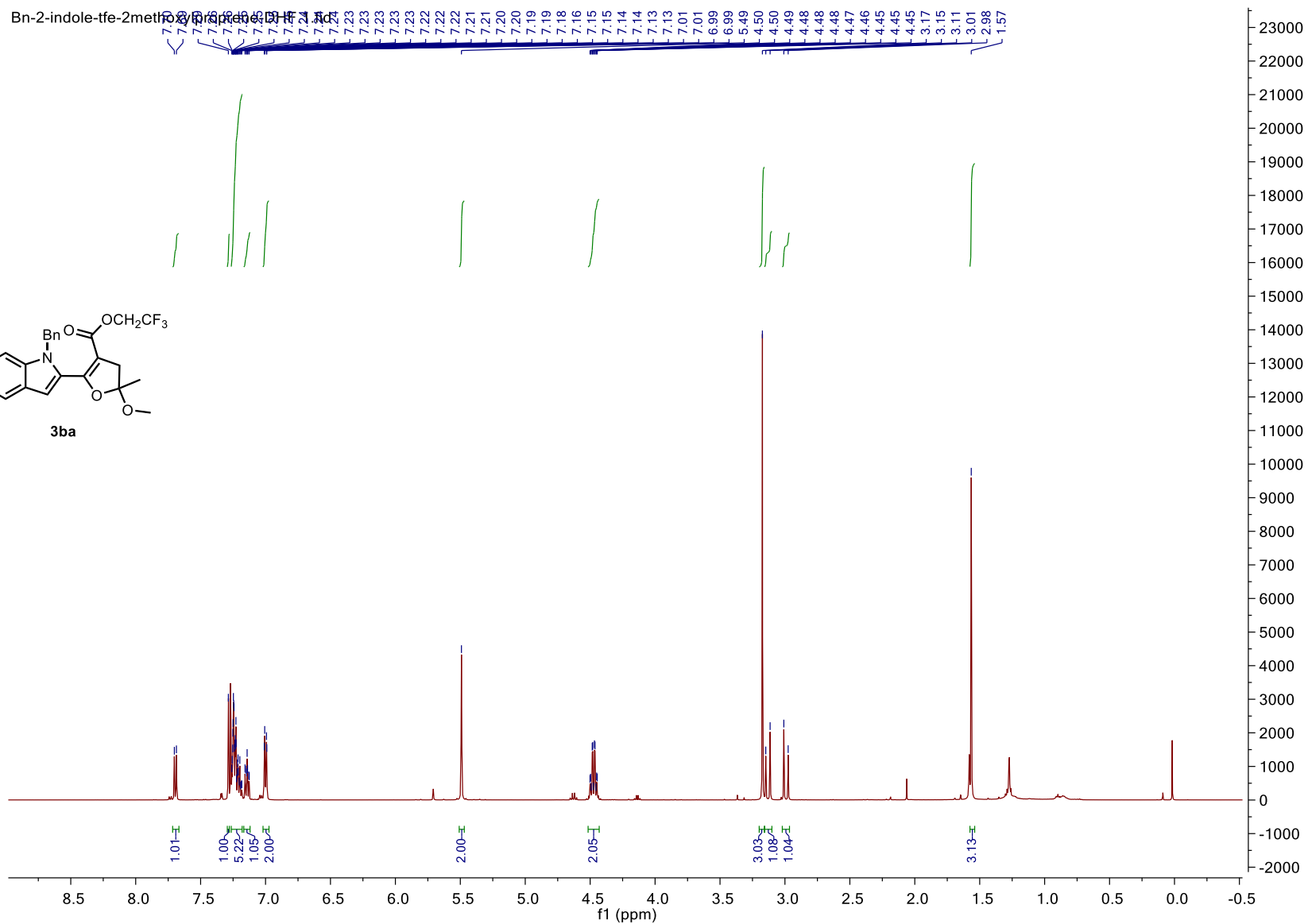
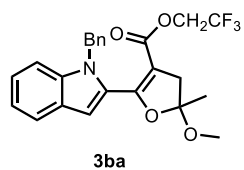
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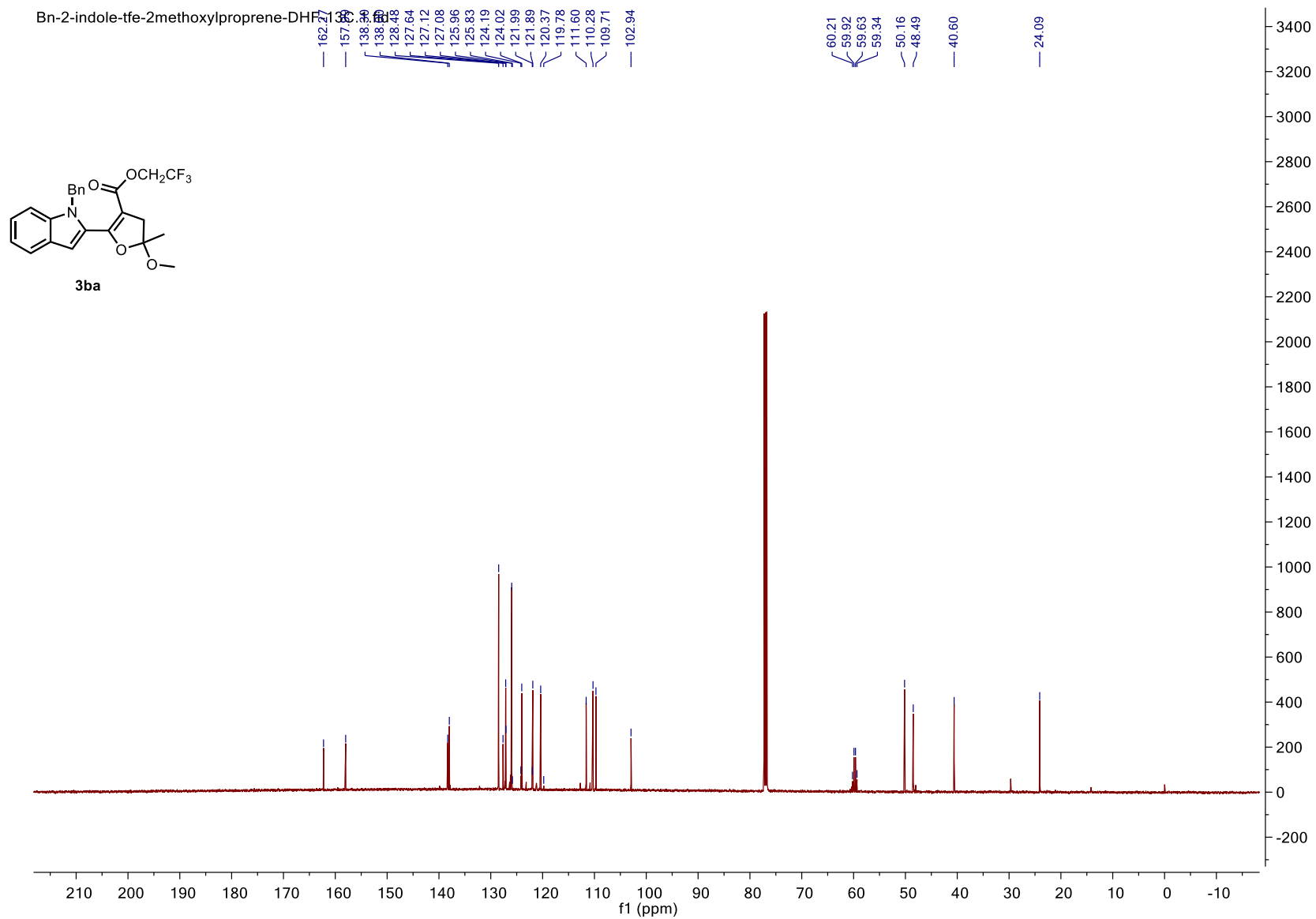


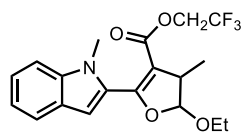
2-indole-tfe-2methoxypropene-dhf-s1-19F.1.fid

-73.41
-73.43
-73.45



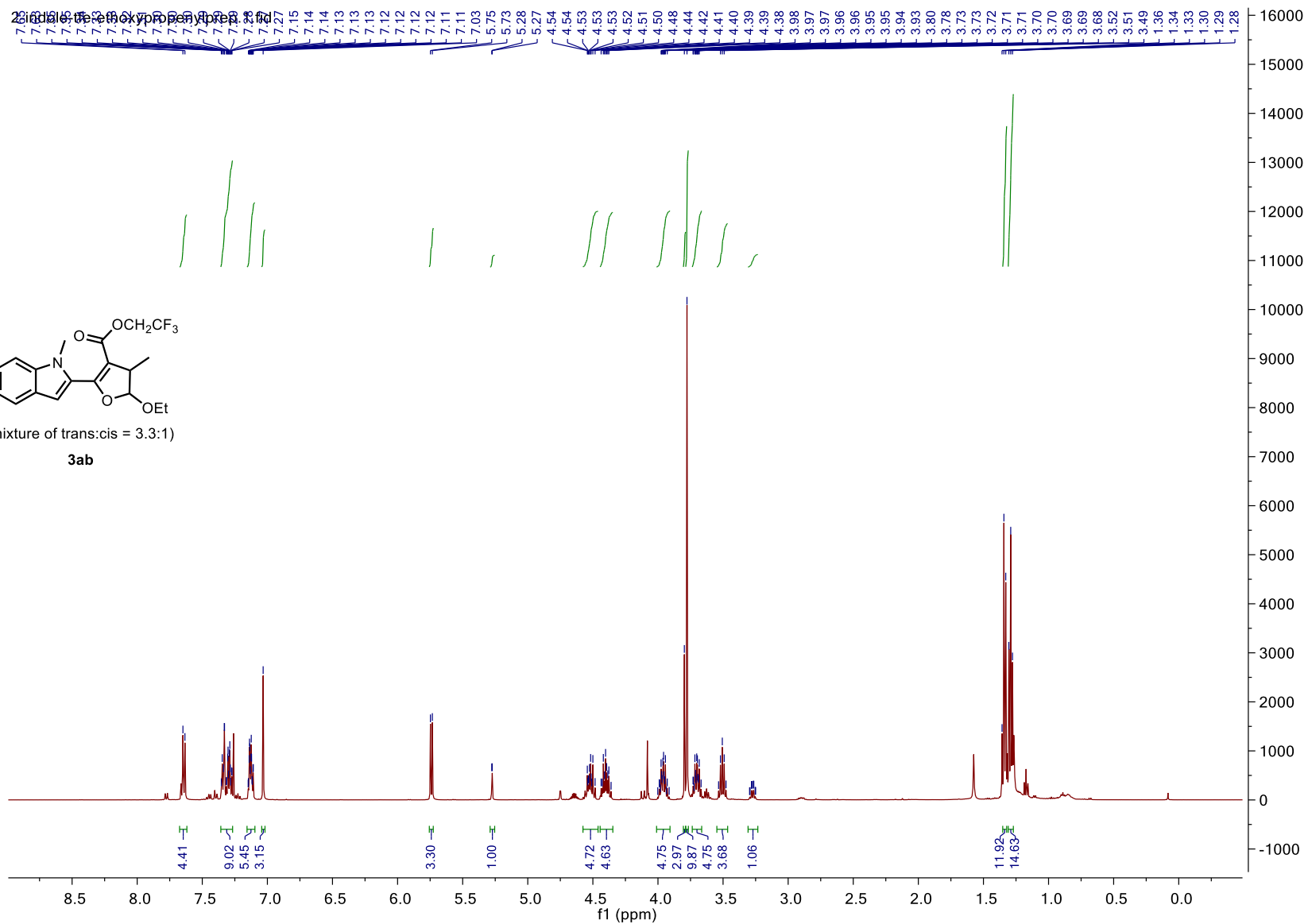


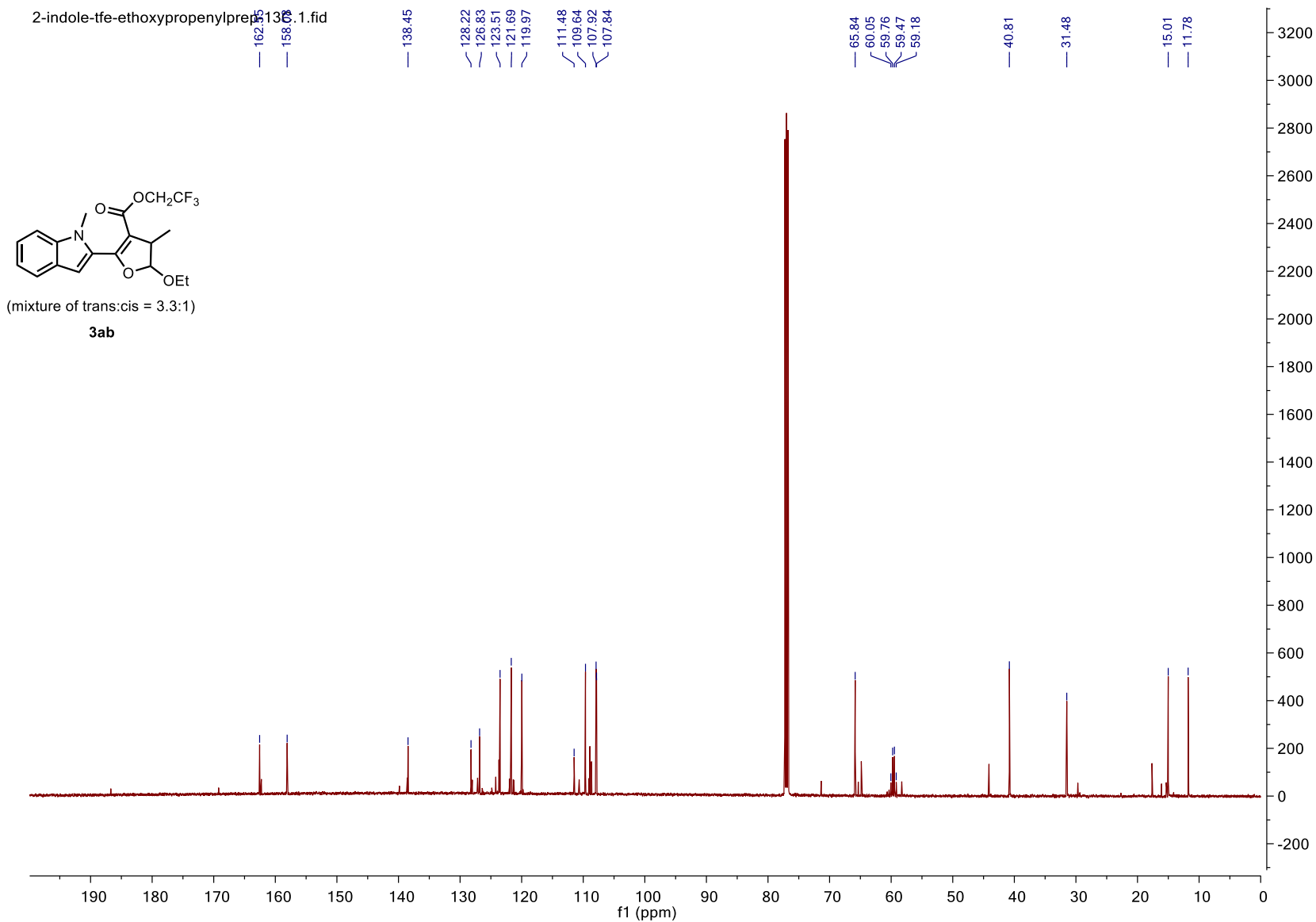


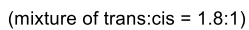


(mixture of trans:cis = 3.3:1)

3ab







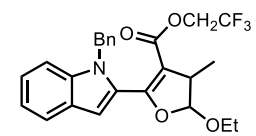
CC1=C(C(=O)OCC)OC(C1C2=CN(Cc3ccccc3)C=C4C=CC=CC=C42)C(=O)OCCF

mixture of trans:cis = 1.8:1)

3bb

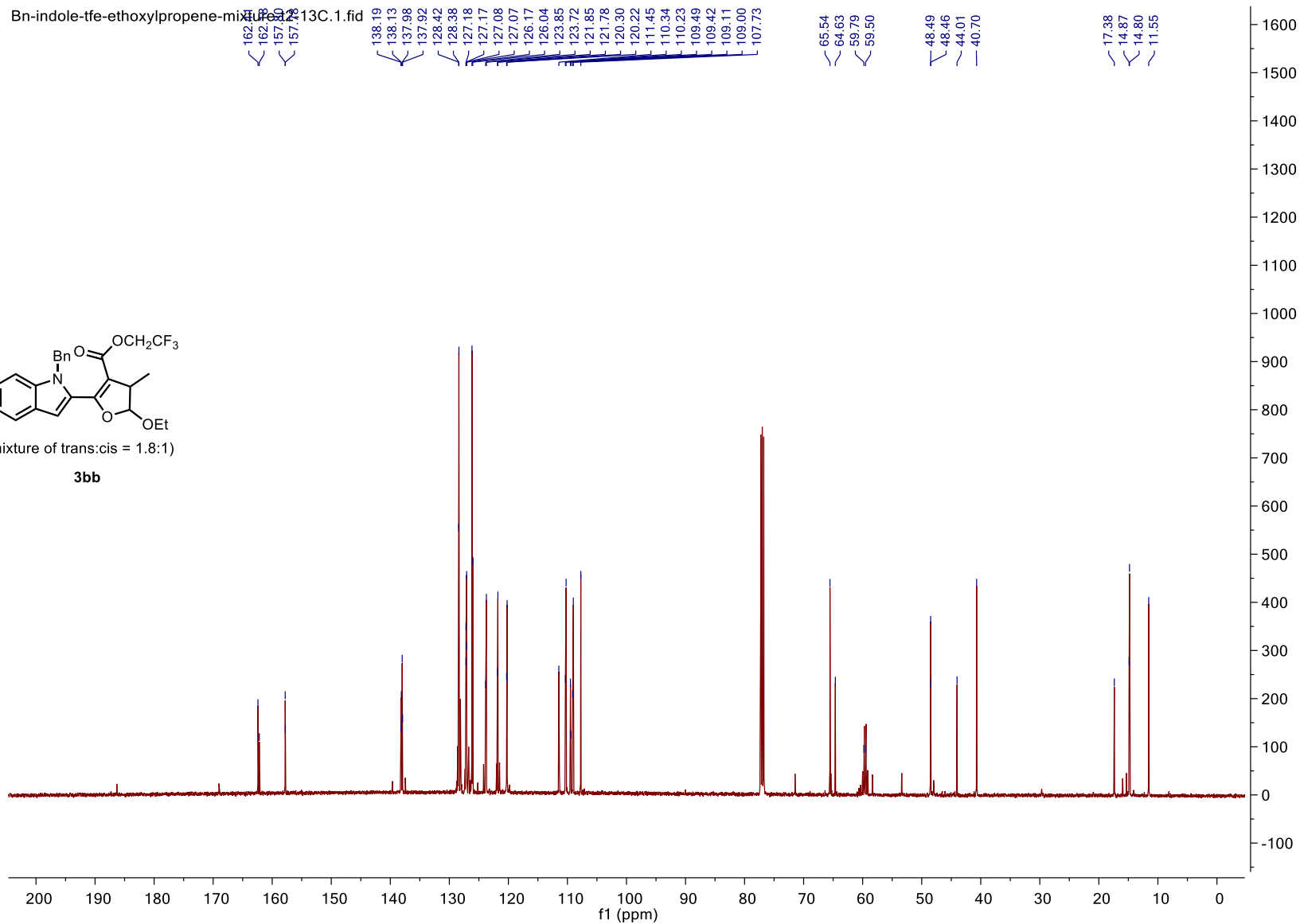
1H NMR spectrum (CDCl₃) of compound **3bb**. The spectrum shows peaks from 1.15 to 7.18 ppm. Integration values are provided below the peaks: 2.87, 17.36, 5.26, 5.68, 1.81, 5.64, 1.00, 3.18, 3.01, 2.92, 3.06, 1.88, 1.01, 8.87, and 8.94. A chemical structure of **3bb** is shown in the top left corner.

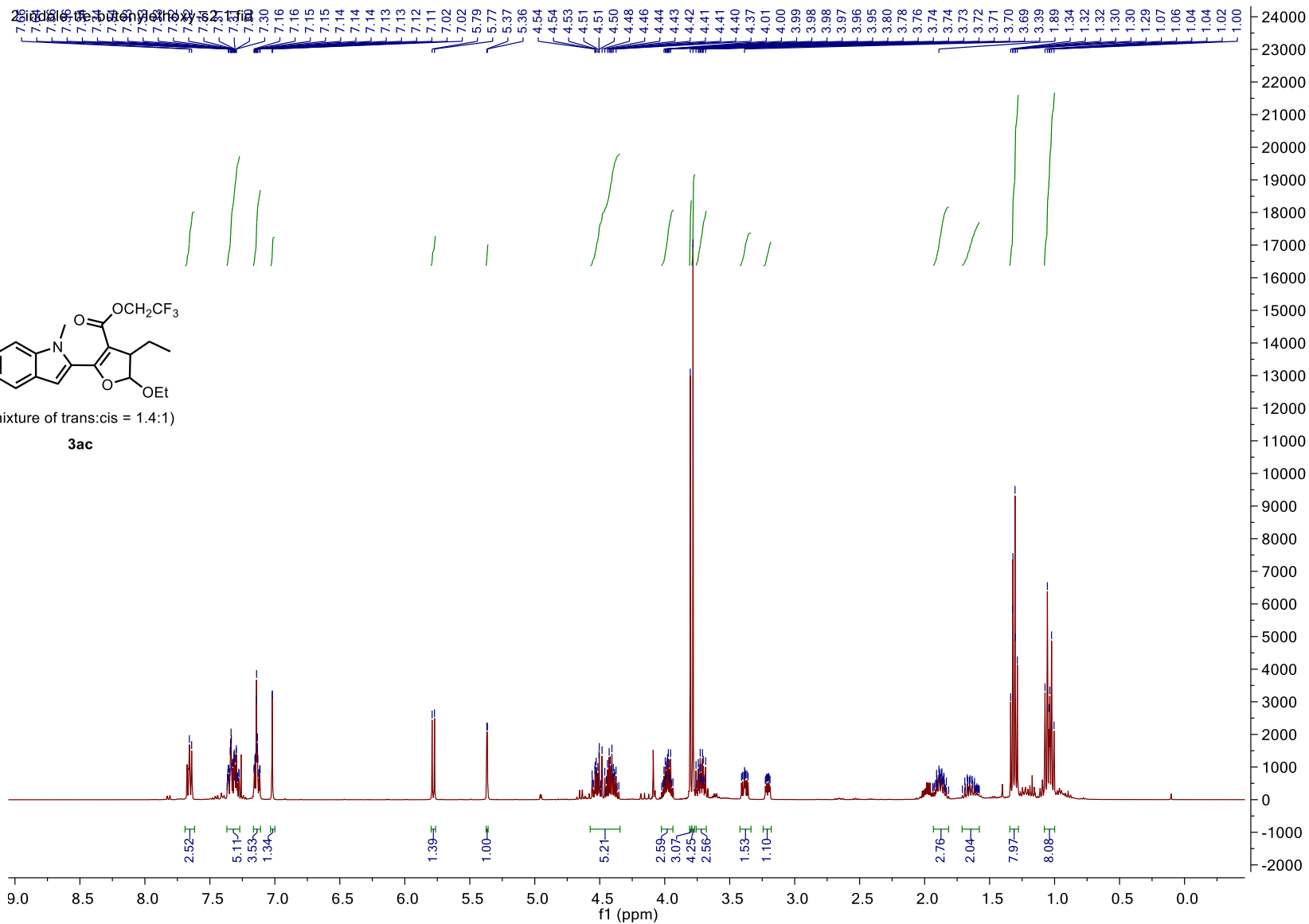
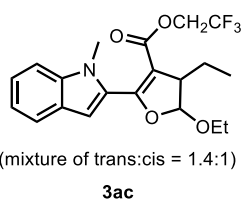
Bn-indole-1-ethoxypropene-mixture 13C.1.fid

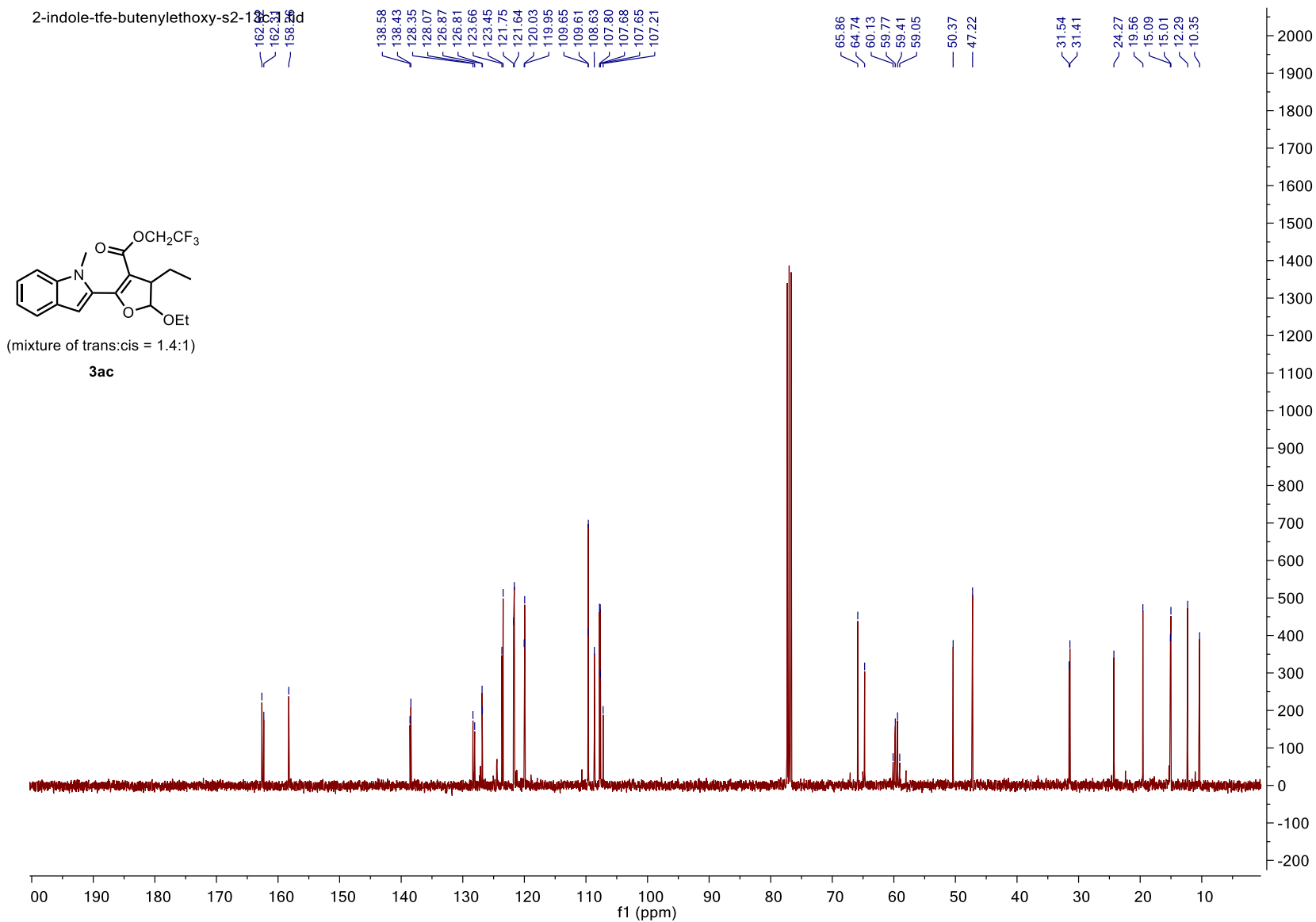


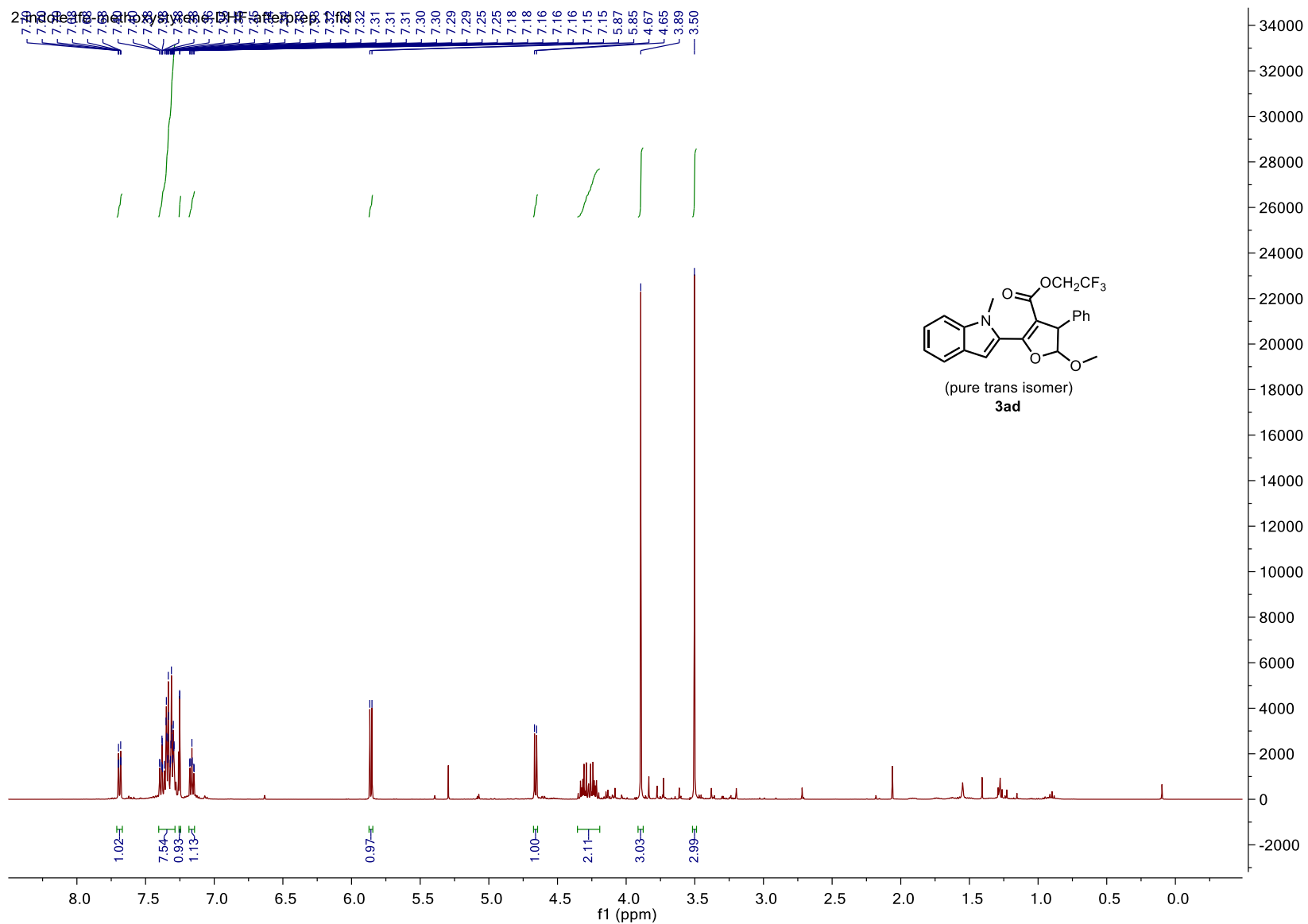
(mixture of trans:cis = 1.8:1)

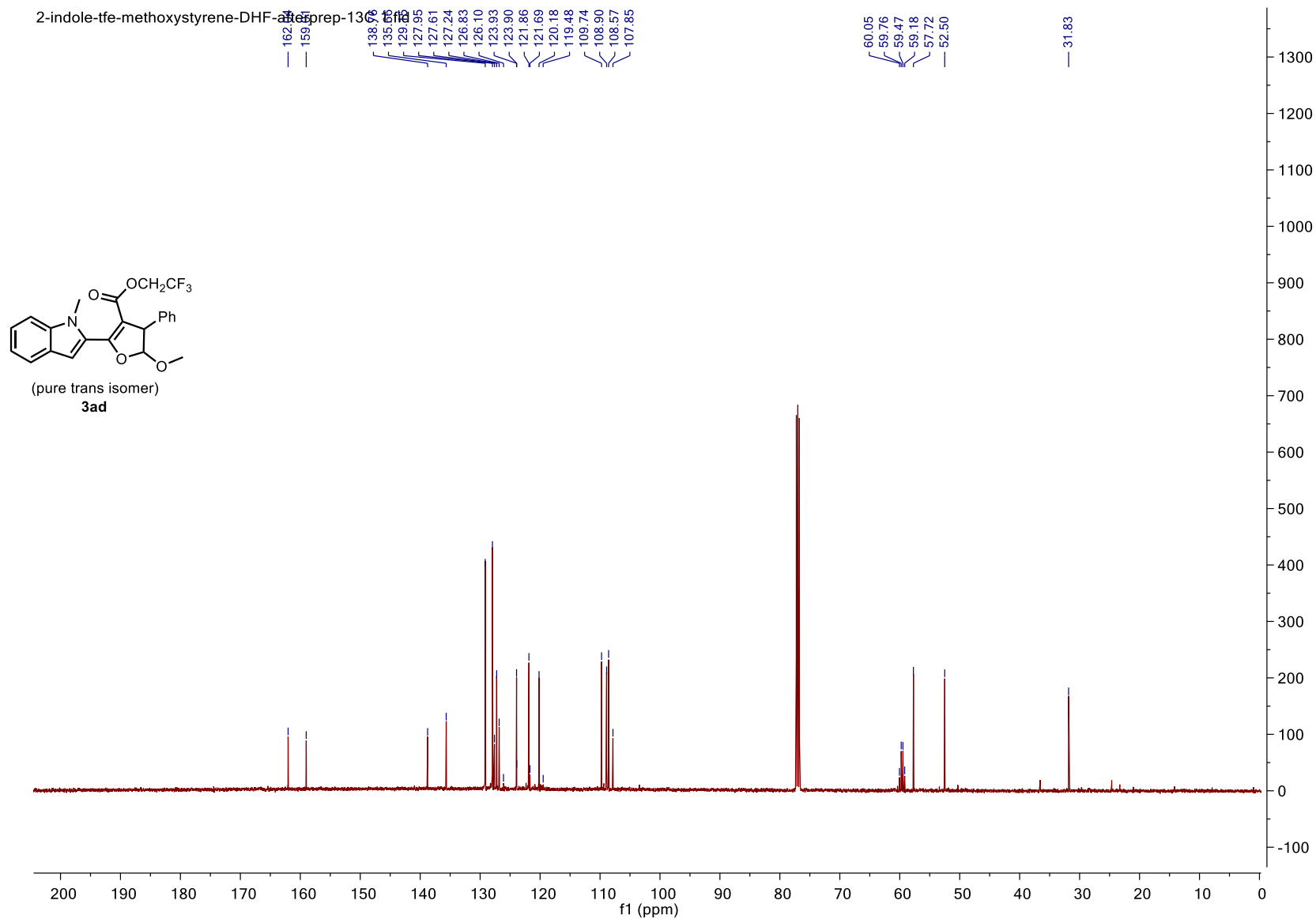
3bb

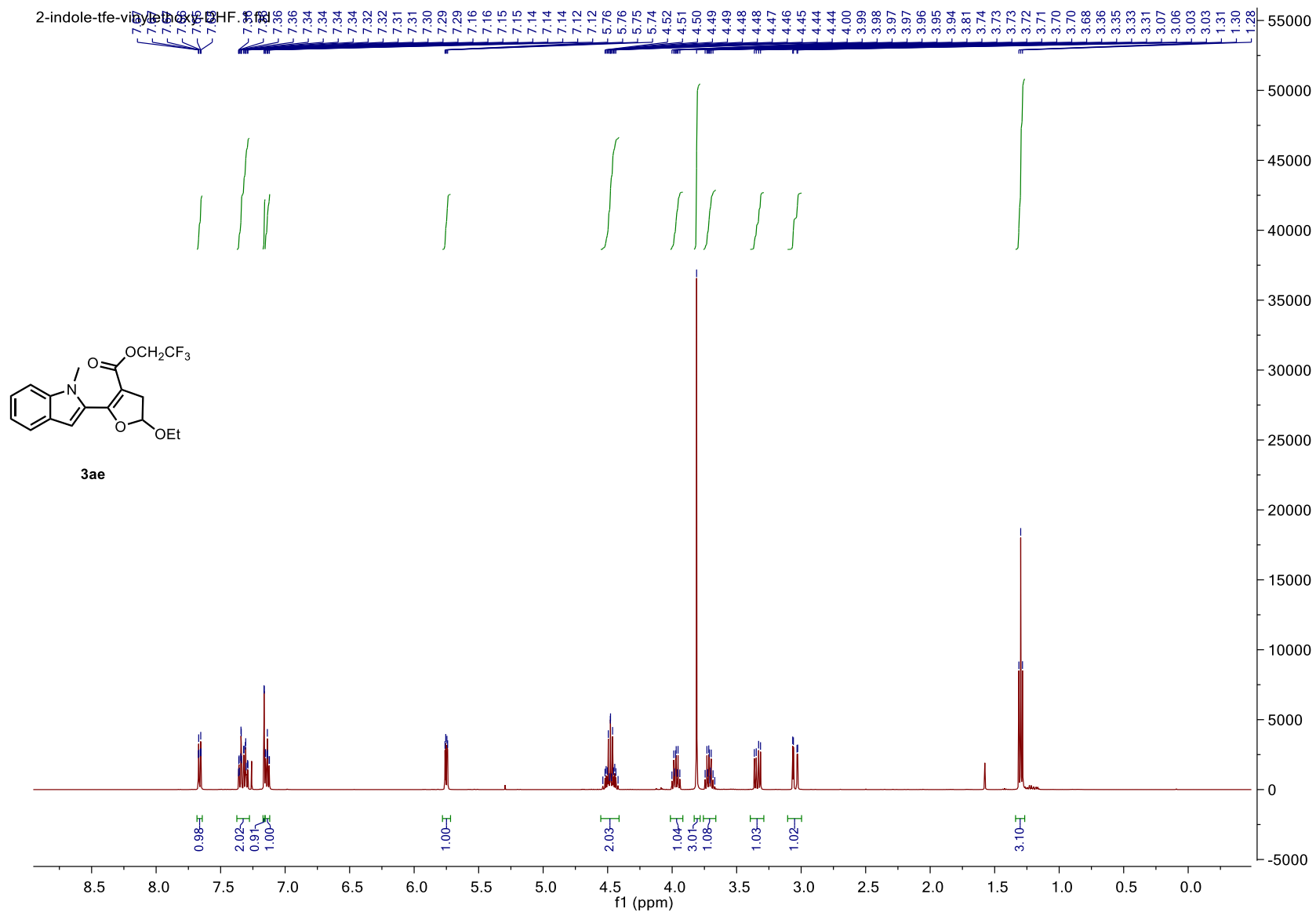




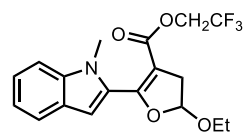




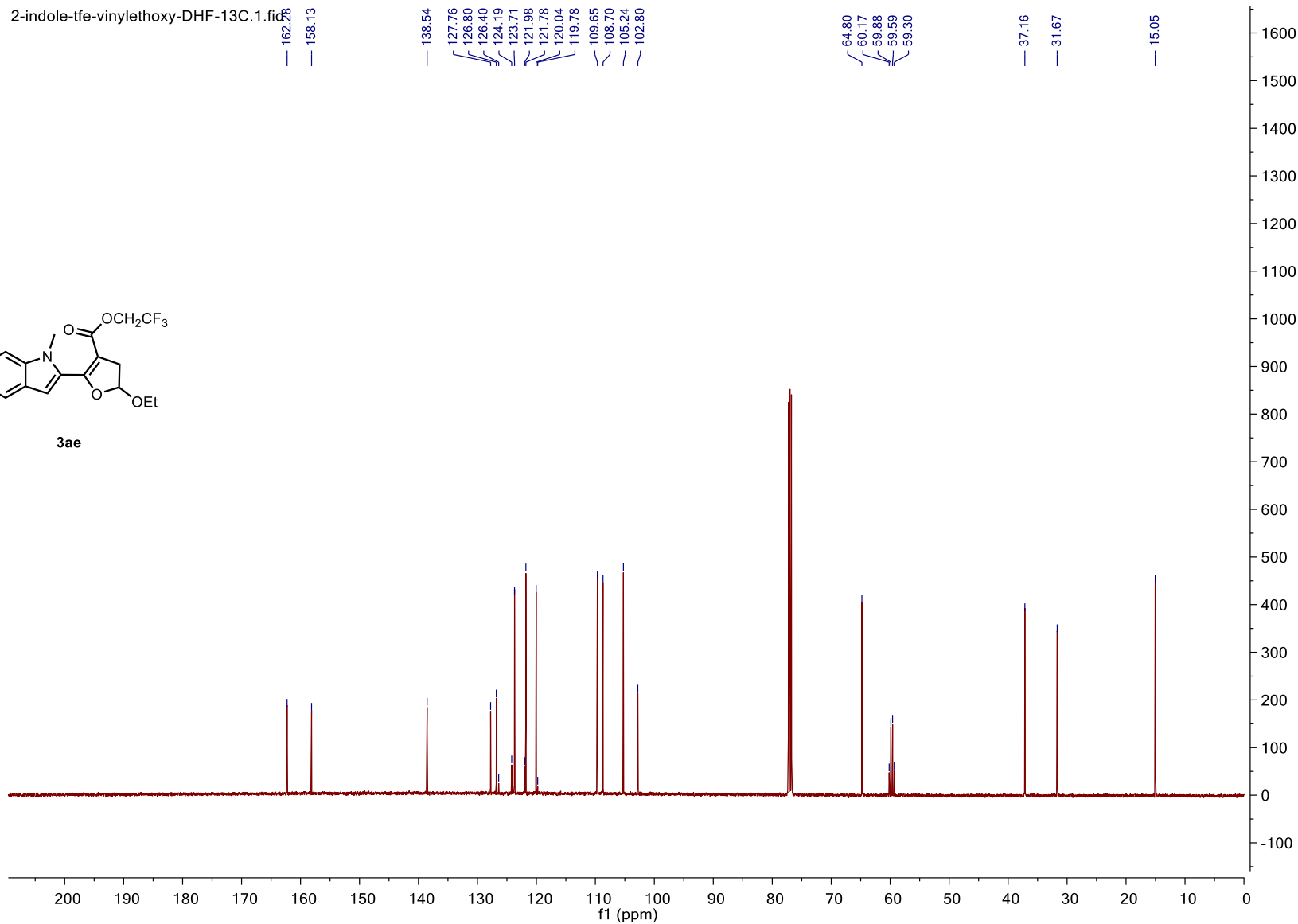


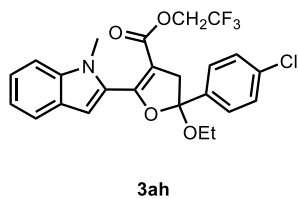
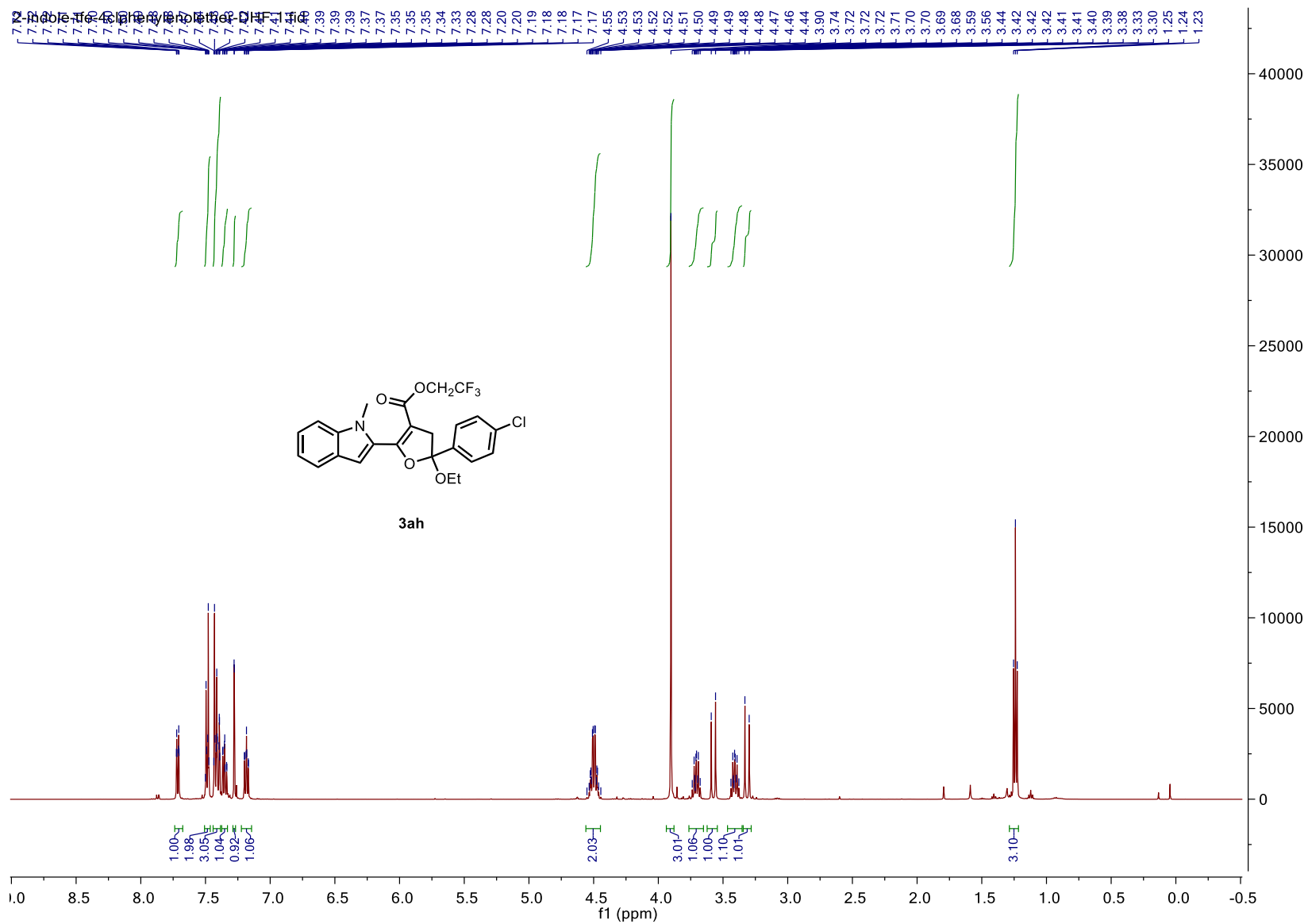


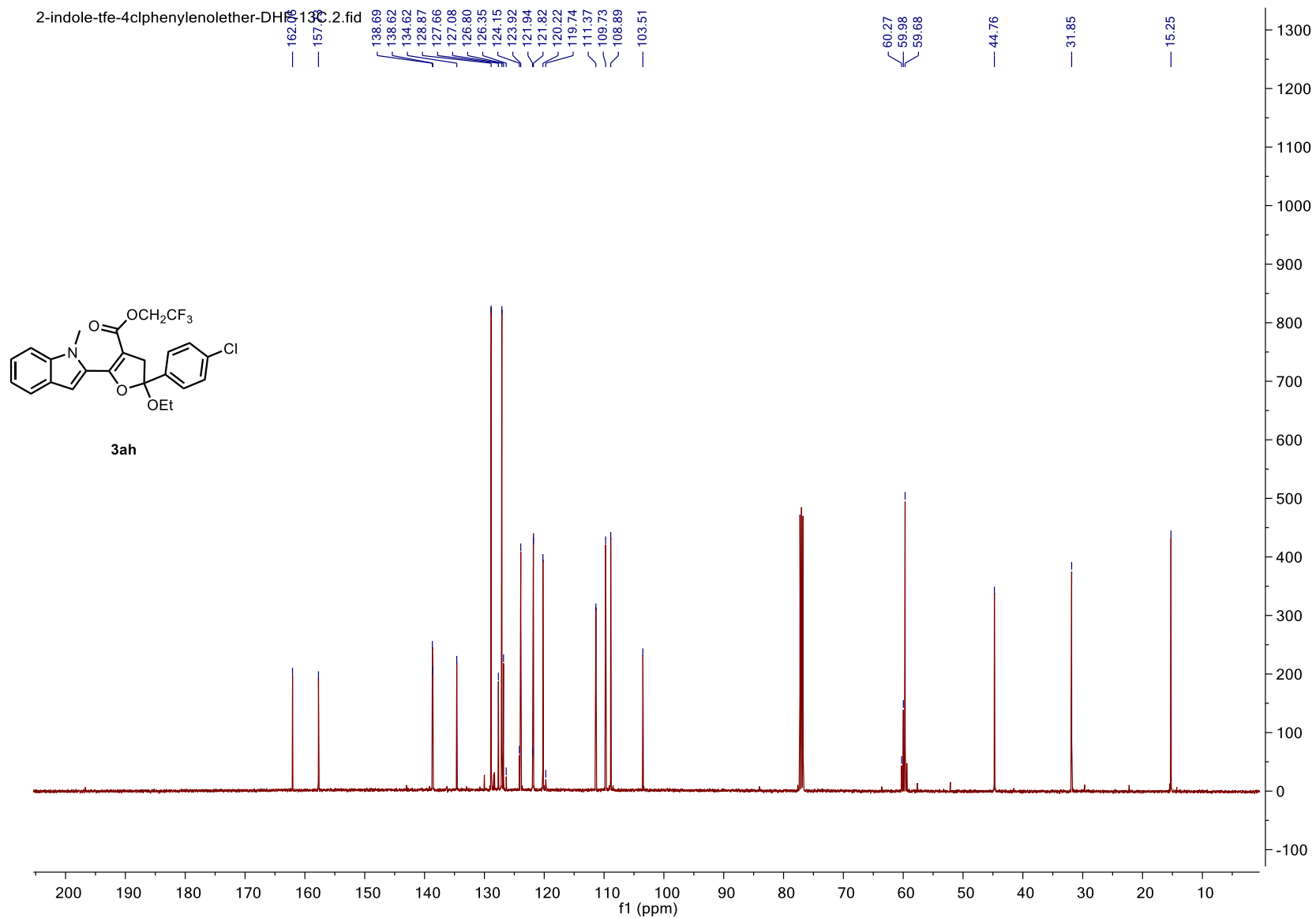
2-indole-tfe-vinylethoxy-DHF-13C.1 fig 6



3ae

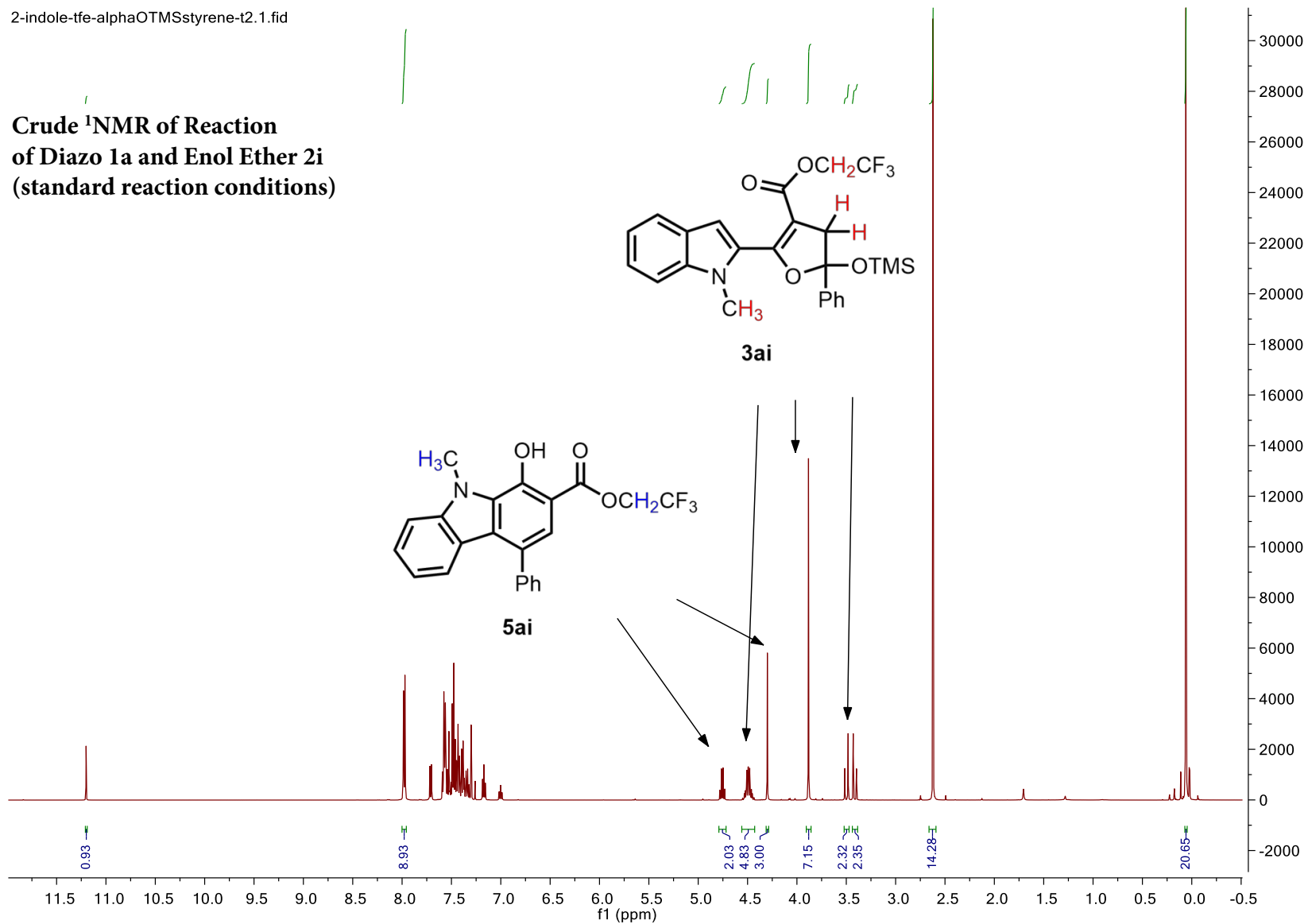


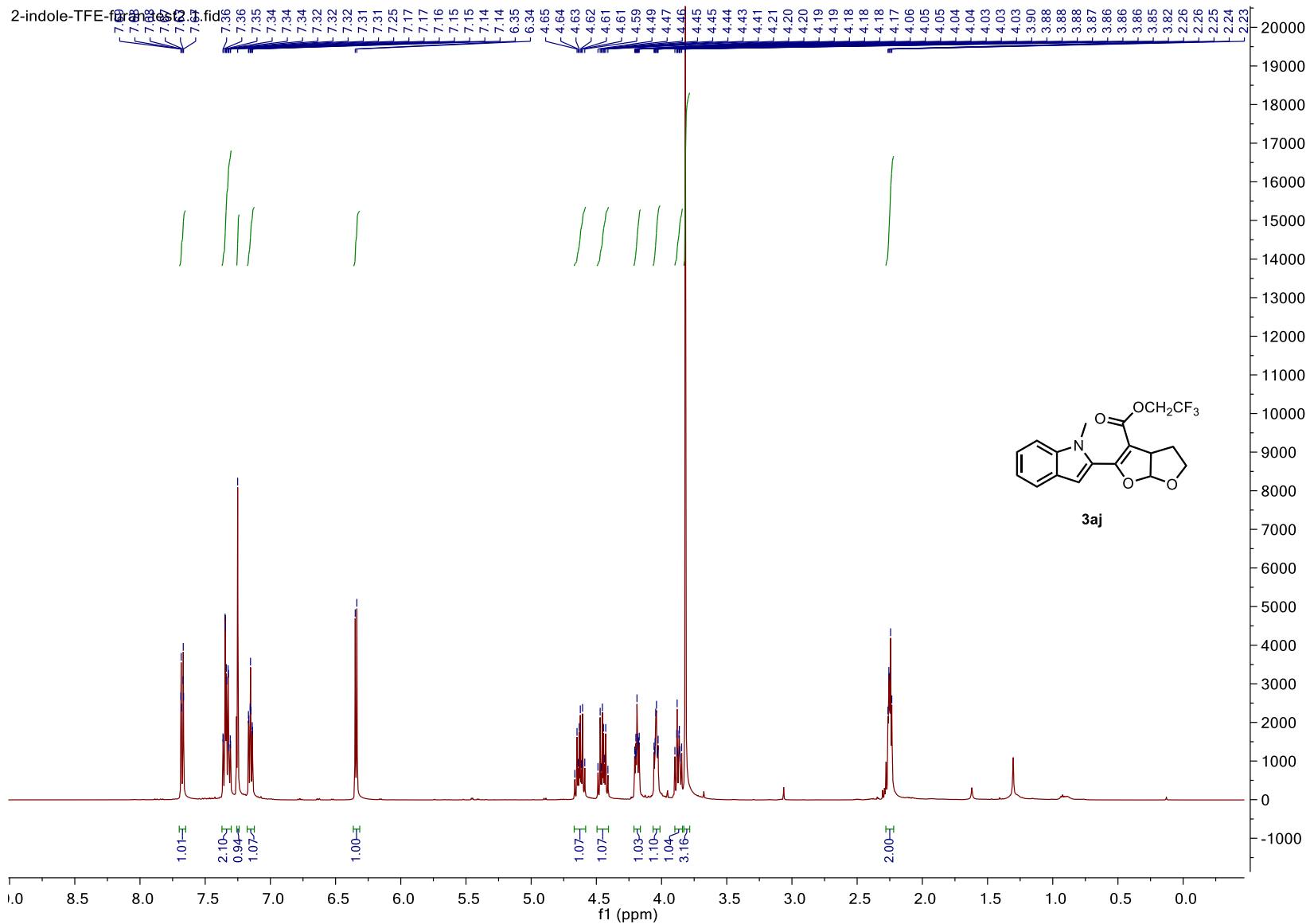




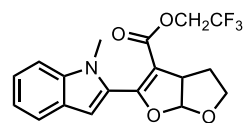
2-indole-tfe-alphaOTMSstyrene-t2.1.fid

**Crude ^1H NMR of Reaction
of Diazo 1a and Enol Ether 2i
(standard reaction conditions)**

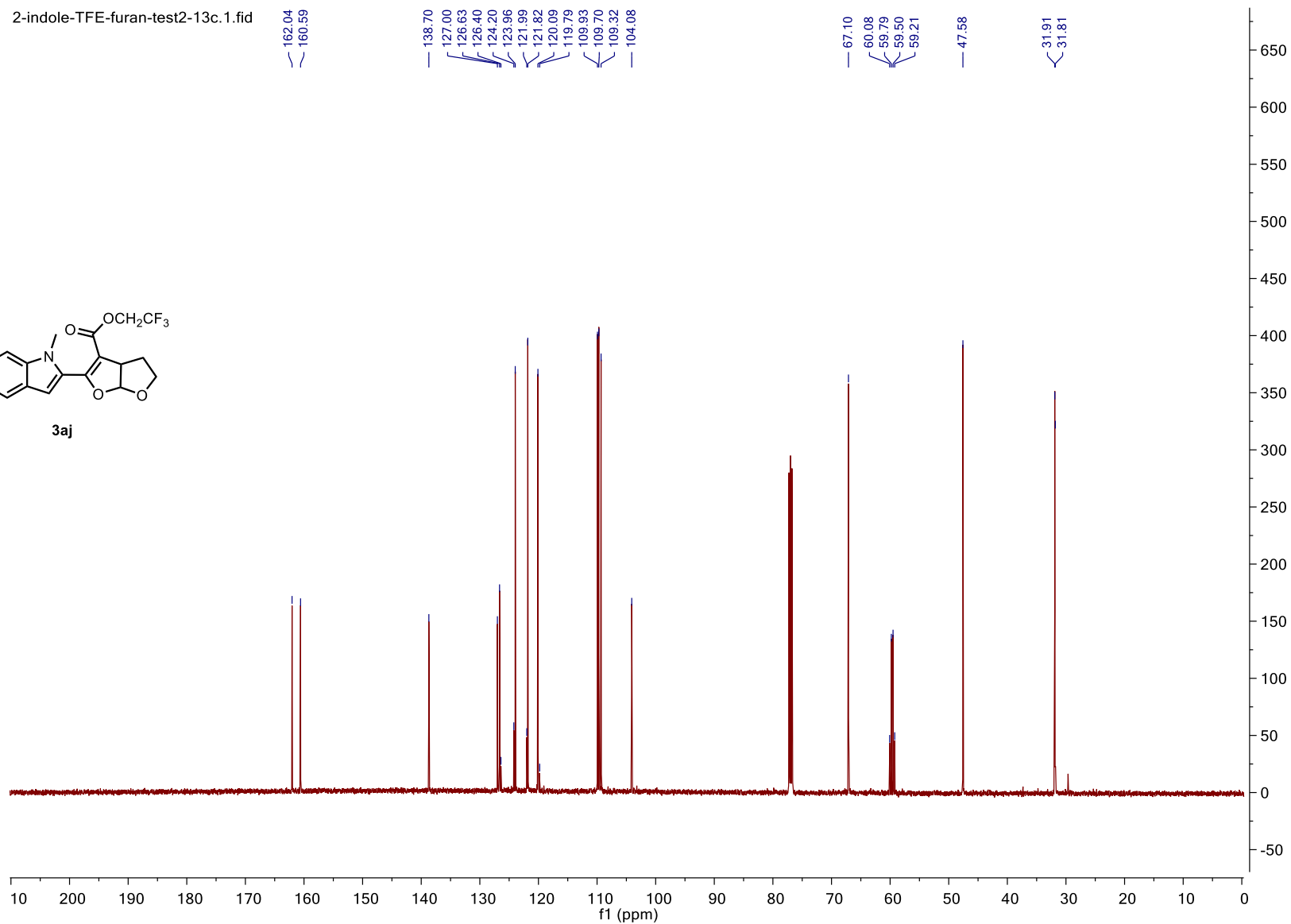


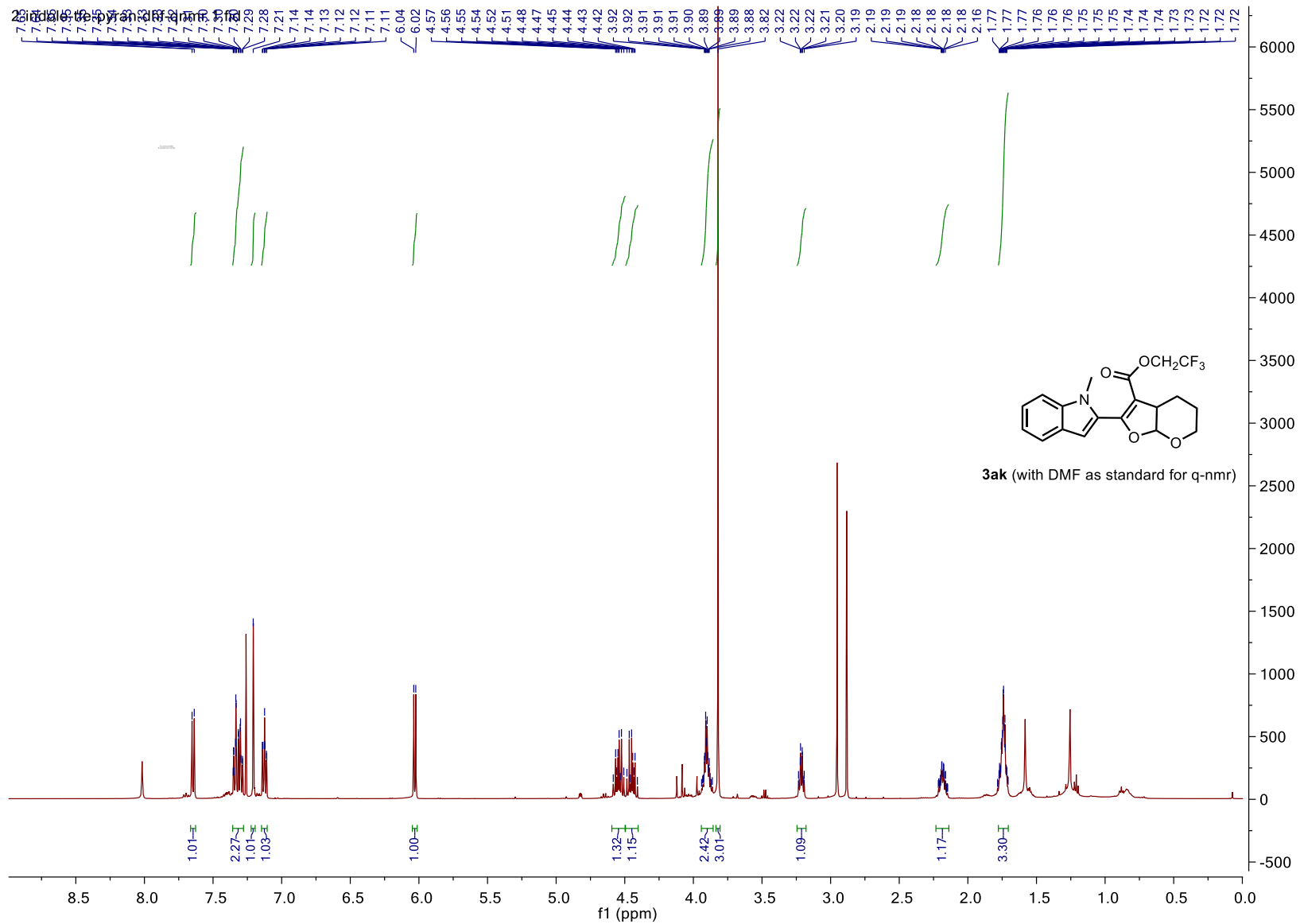


2-indole-TFE-furan-test2-13c.1.fid

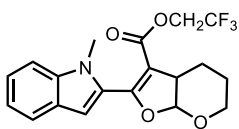


3aj

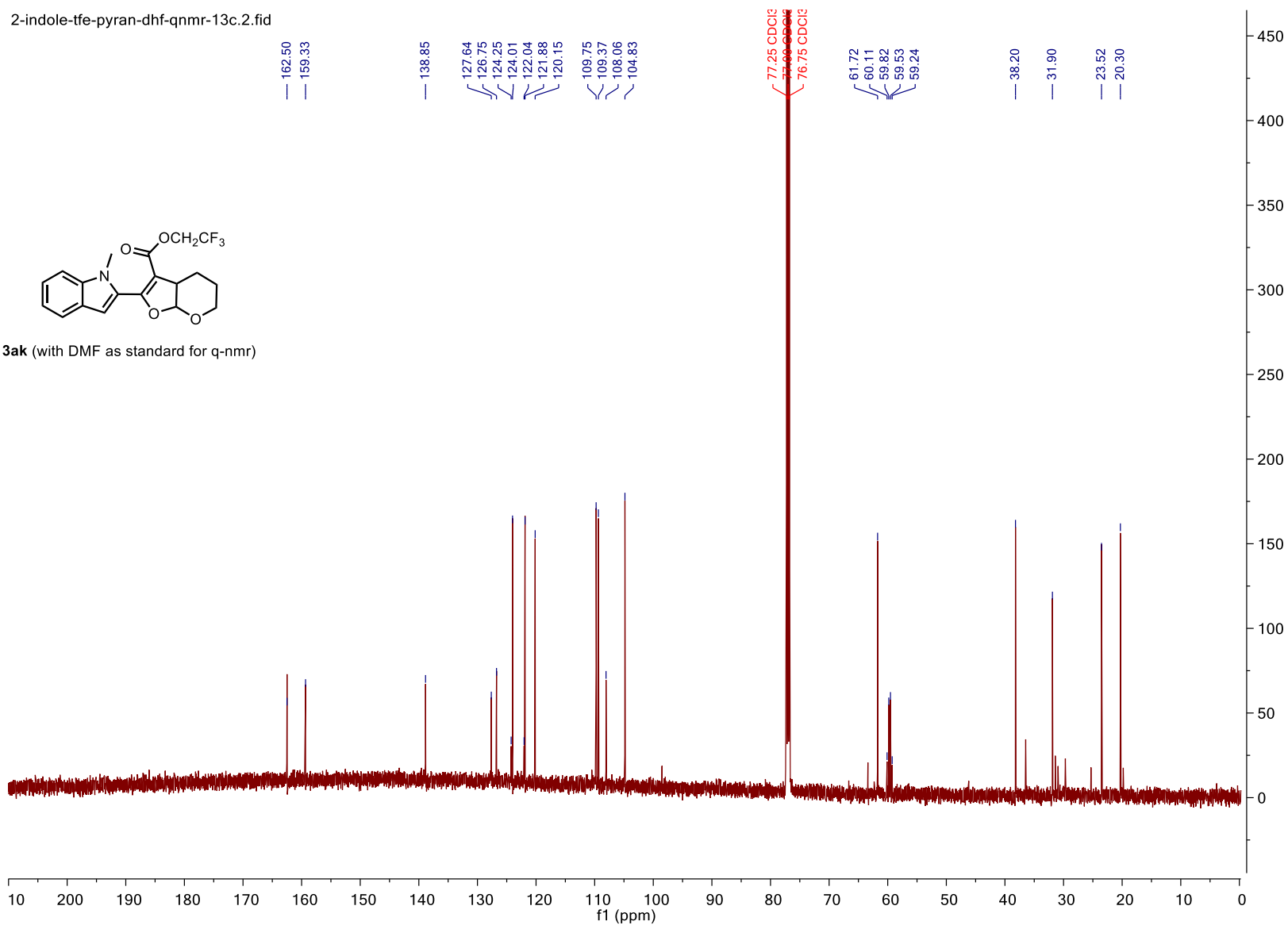




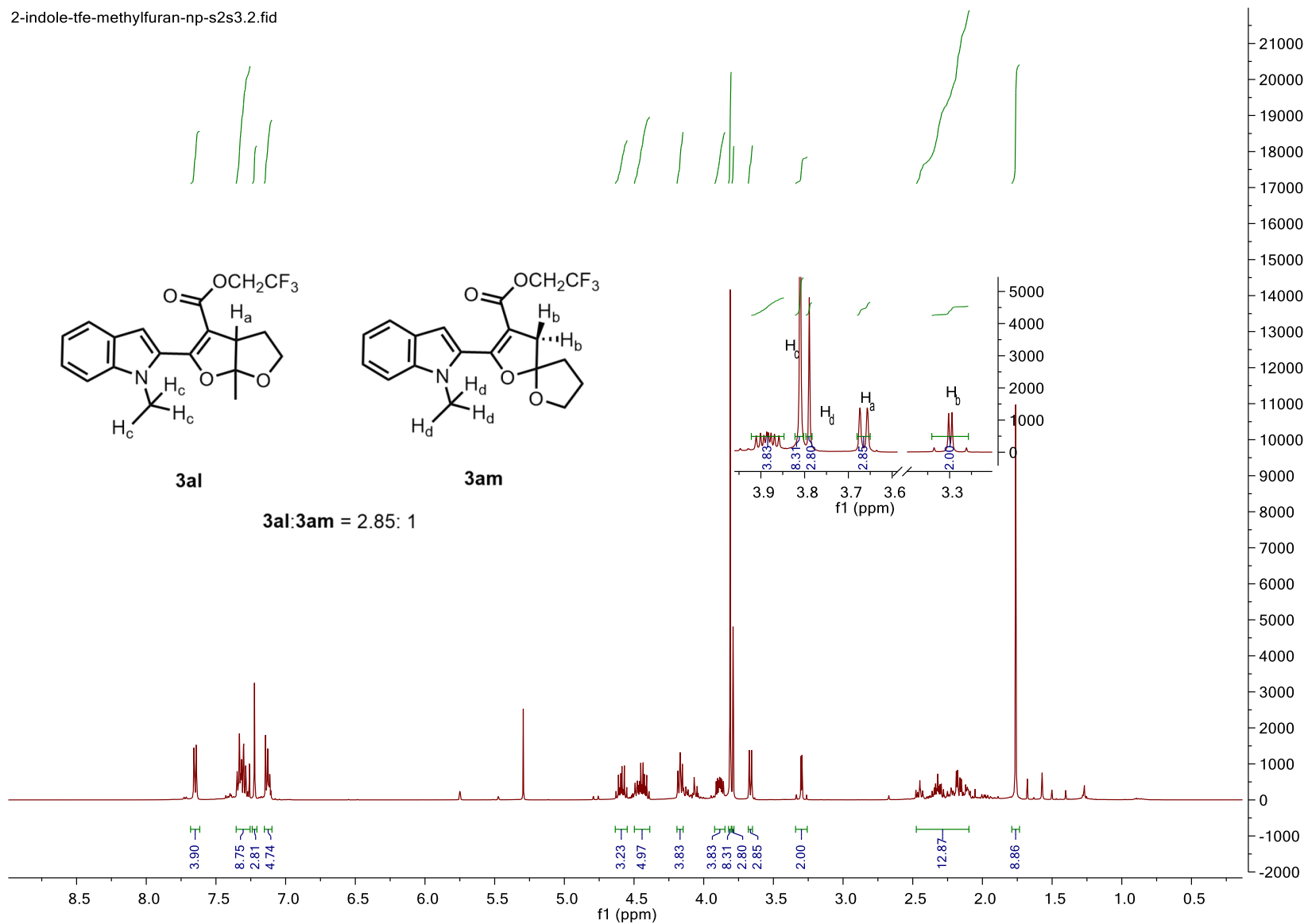
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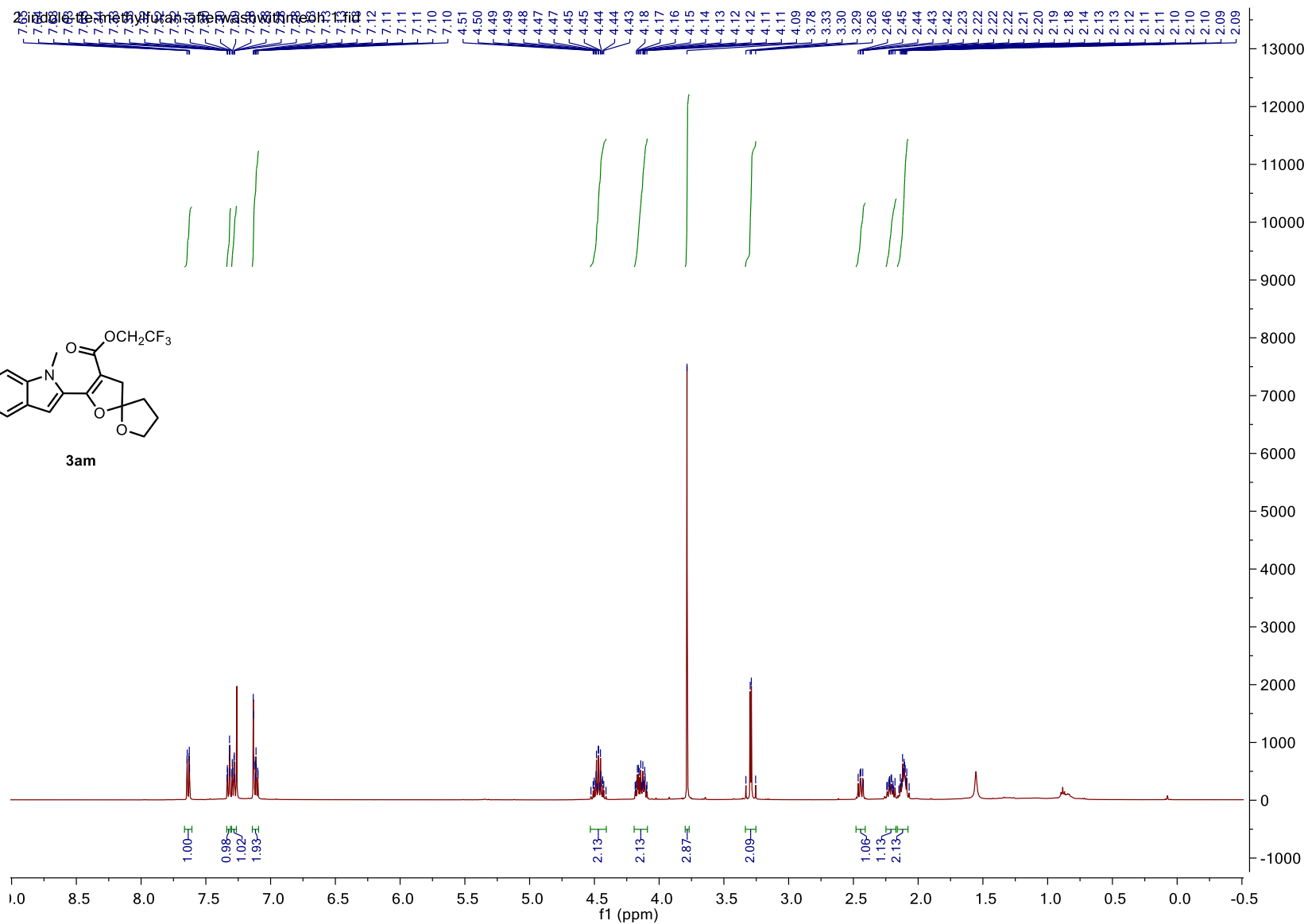
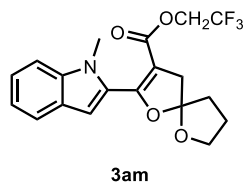


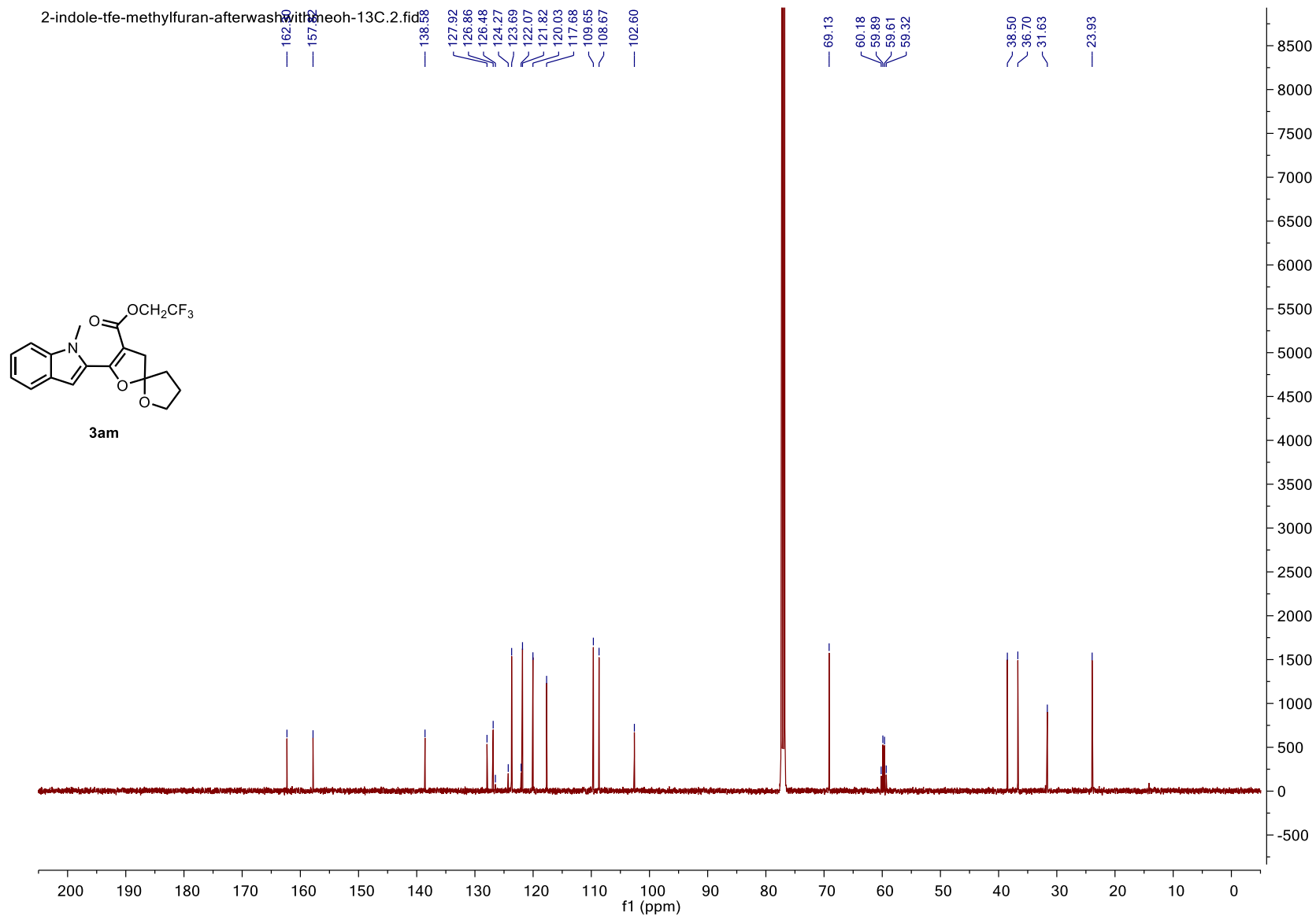
3ak (with DMF as standard for q-nmr)



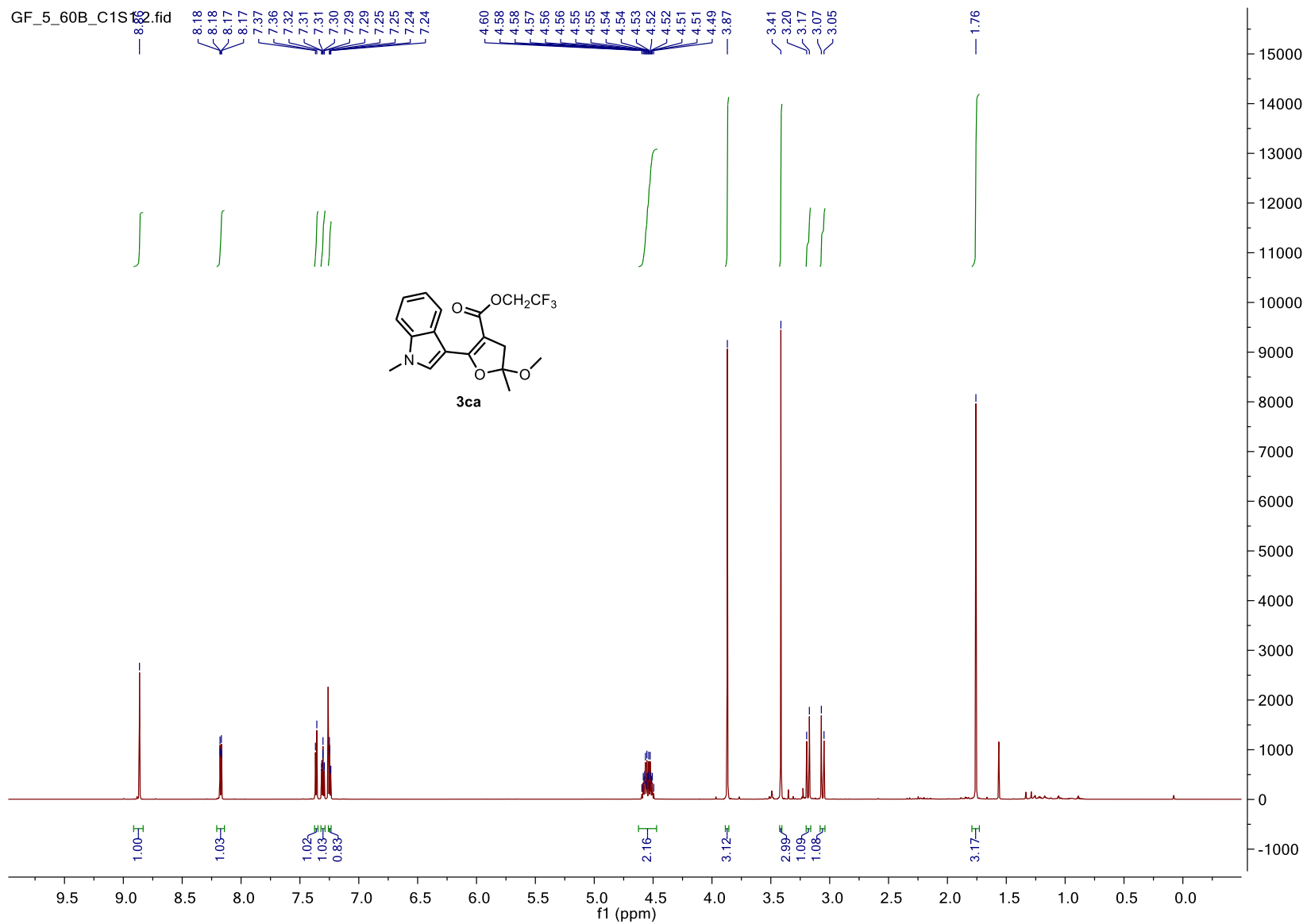
2-indole-tfe-methylfuran-np-s2s3.2.fid



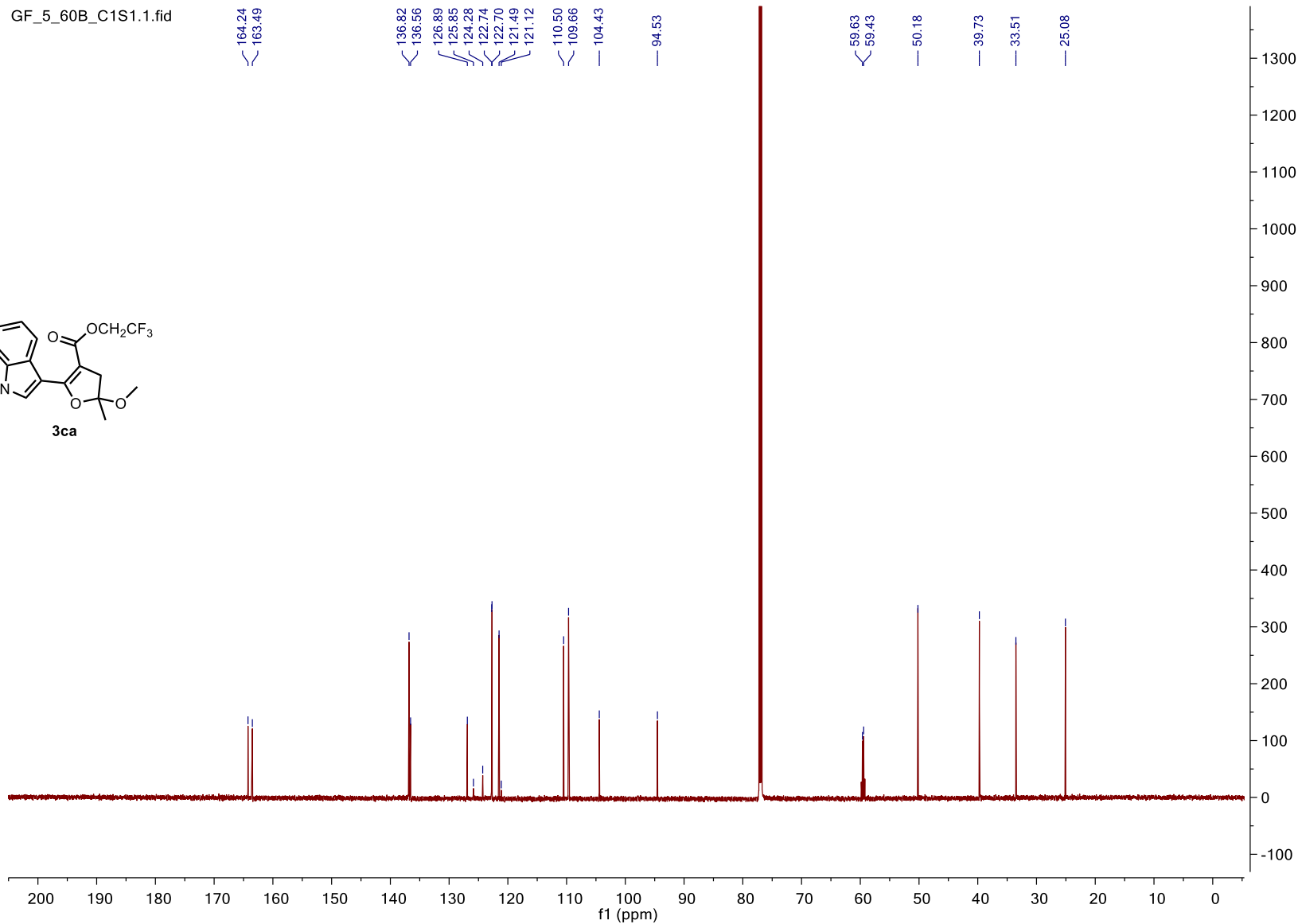
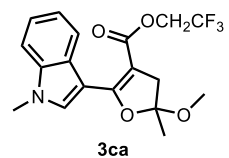




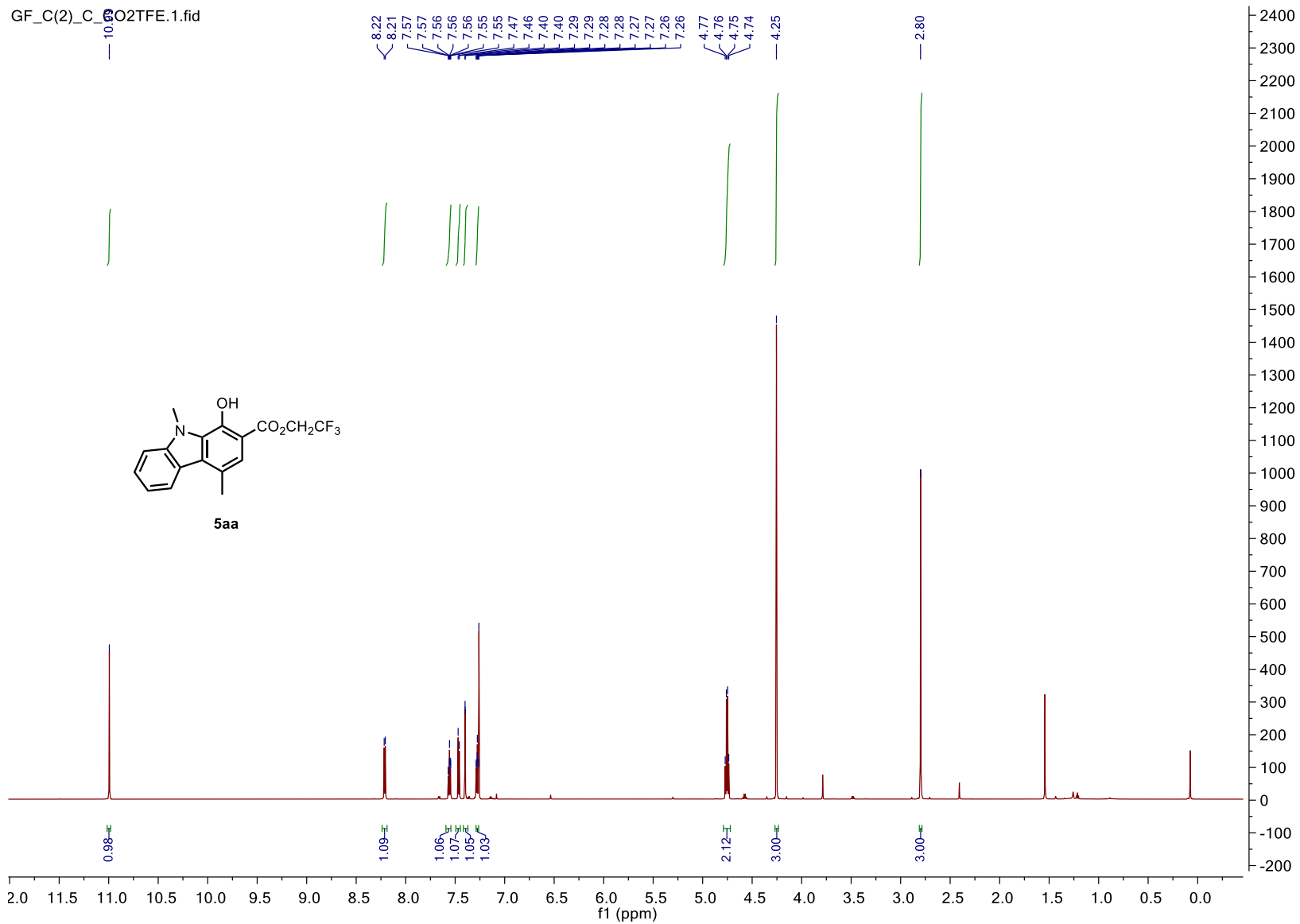
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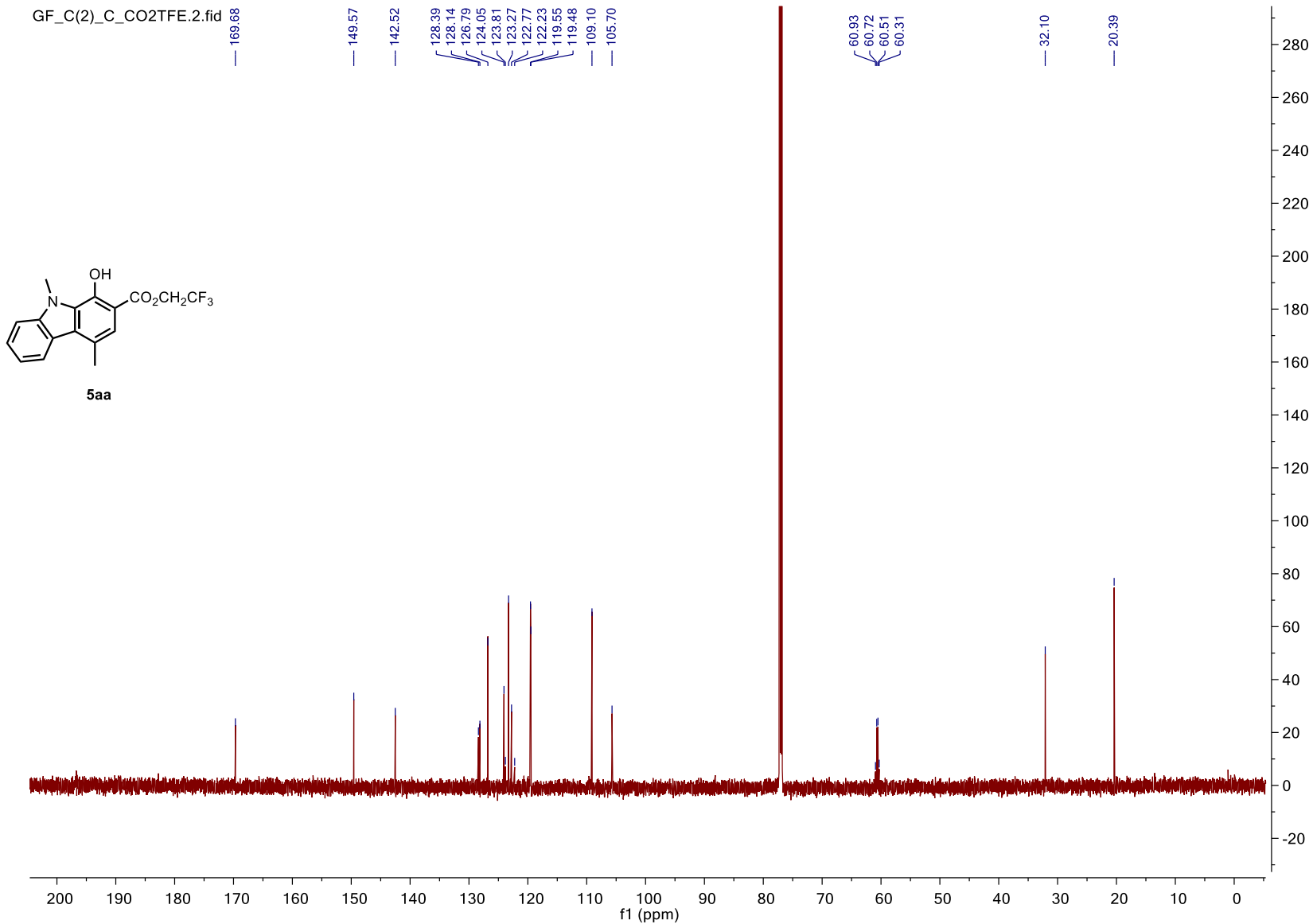


GF_5_60B_C1S1.1.fid



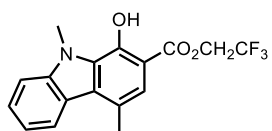
GF_C(2)_C_6O2TFE.1.fid



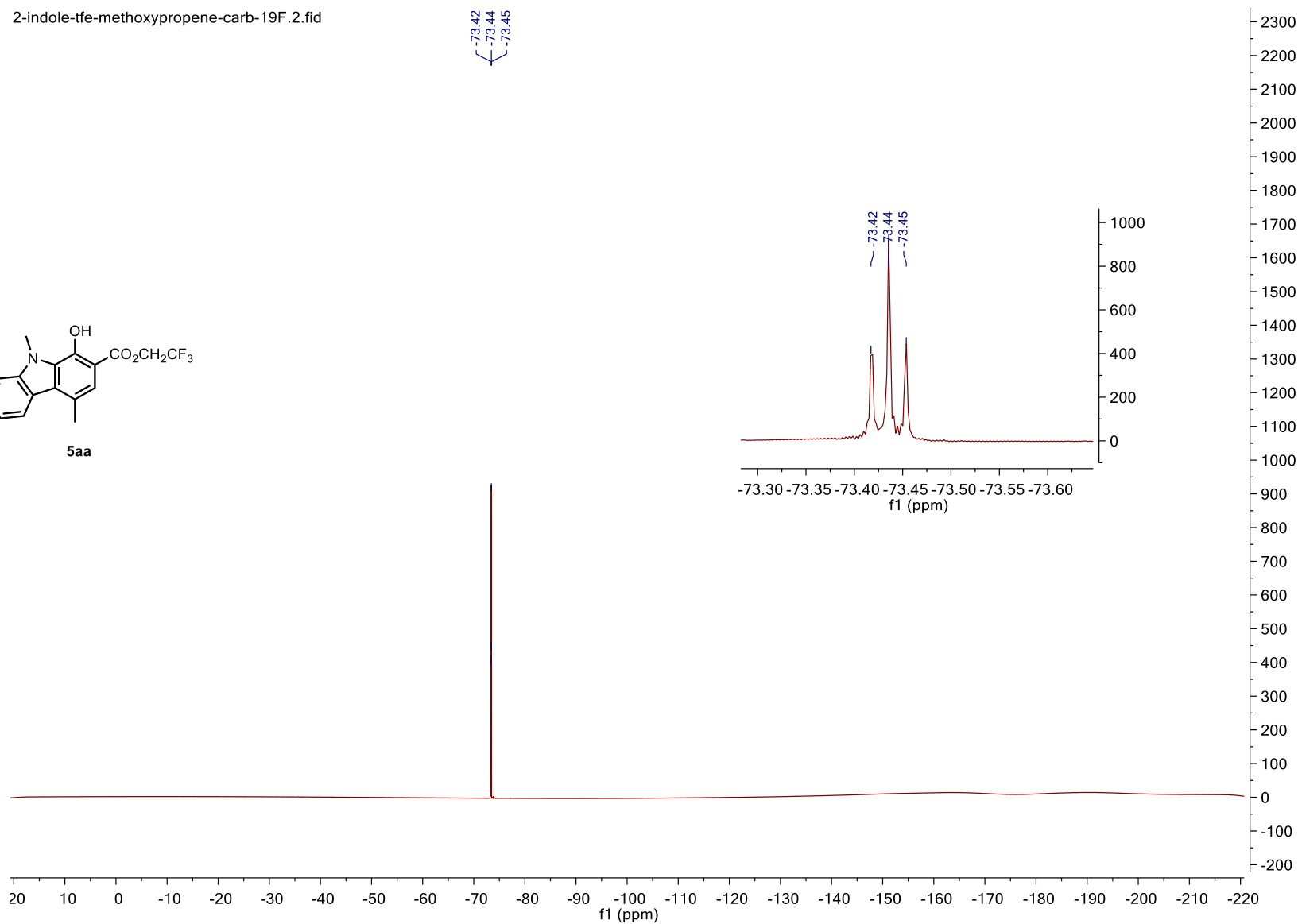


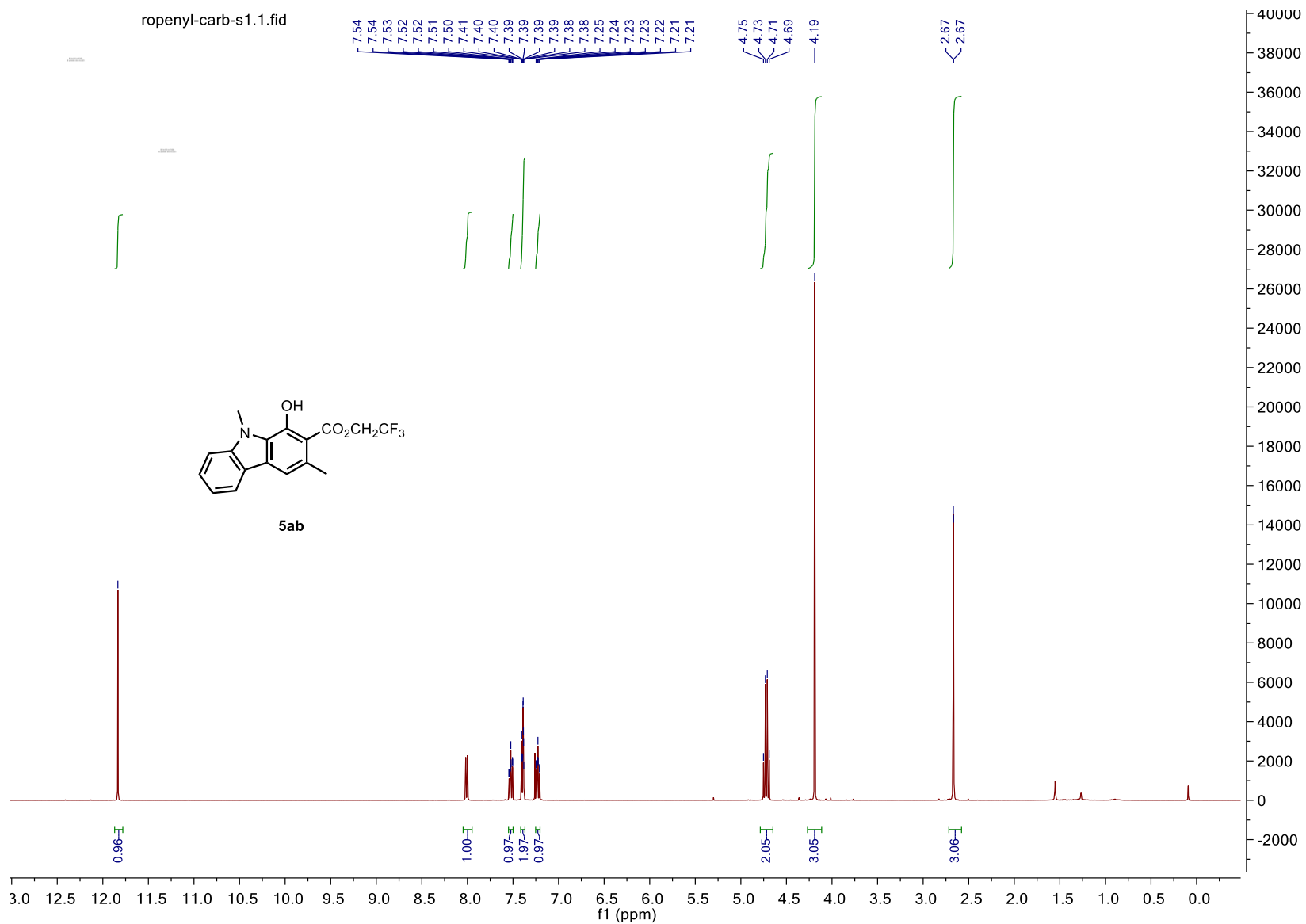
2-indole-tfe-methoxypropene-carb-19F.2.fid

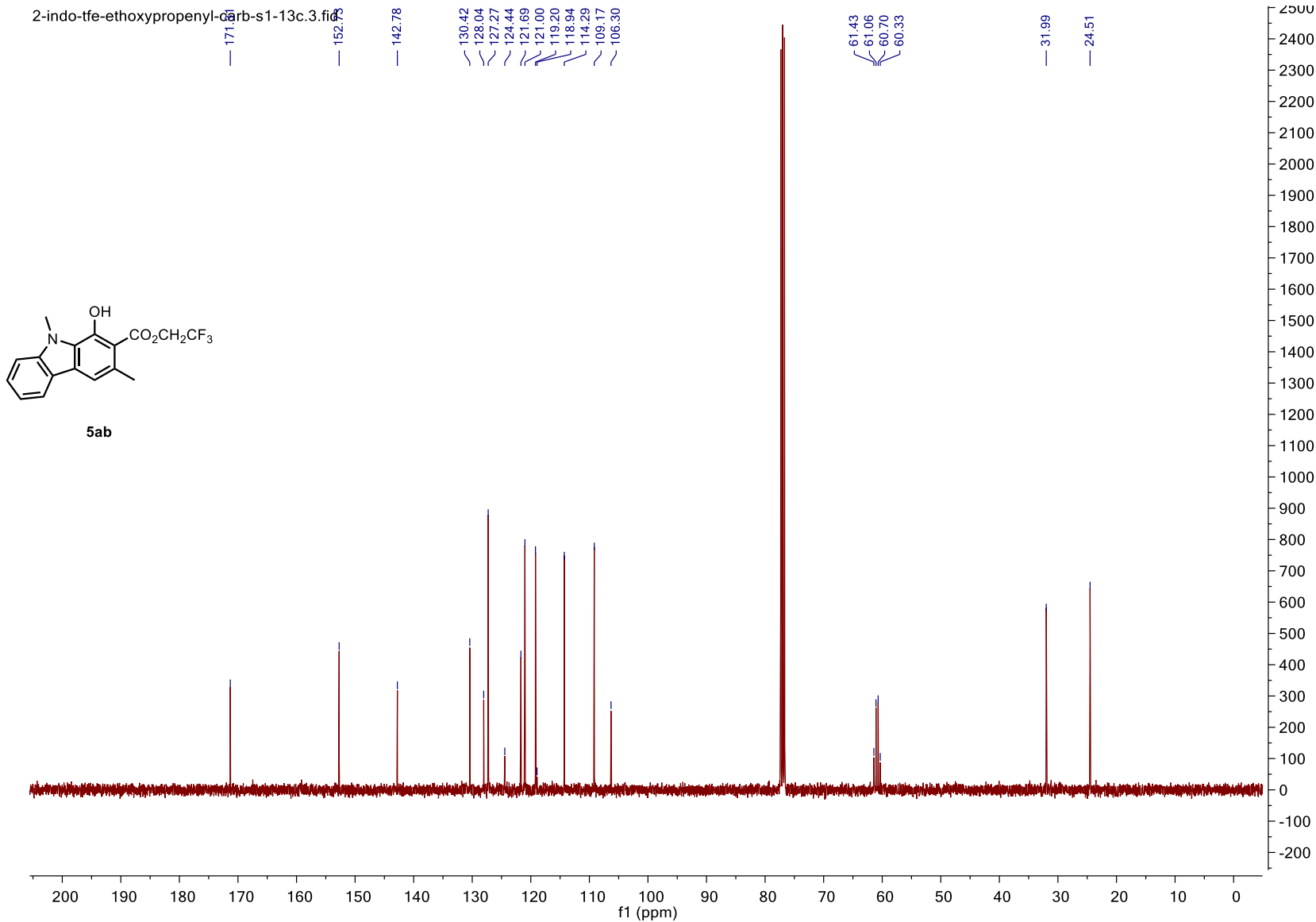
-73.42
-73.44
-73.45



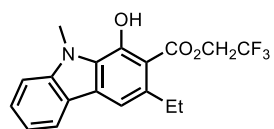
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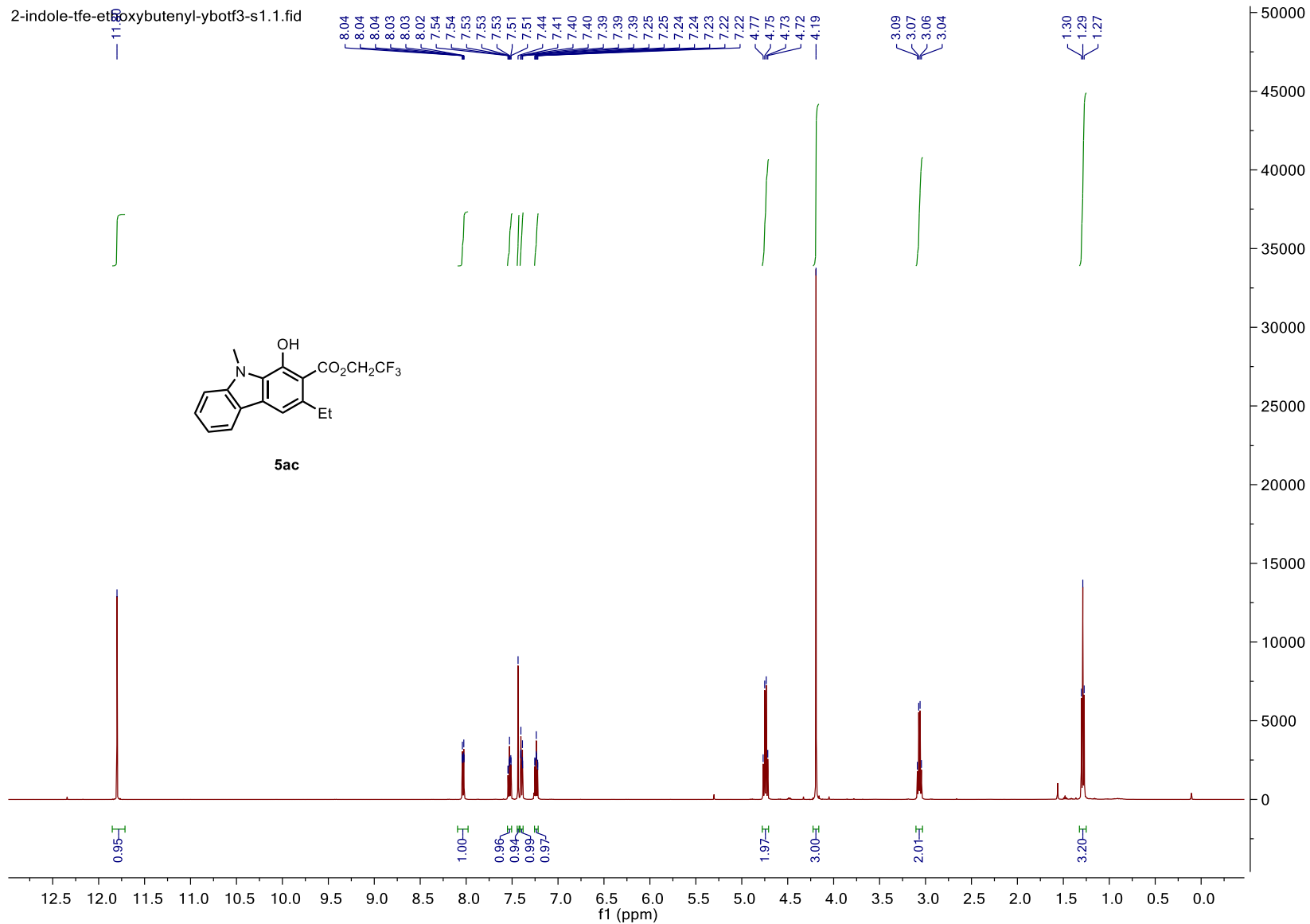




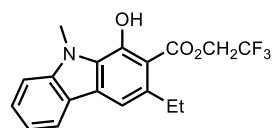
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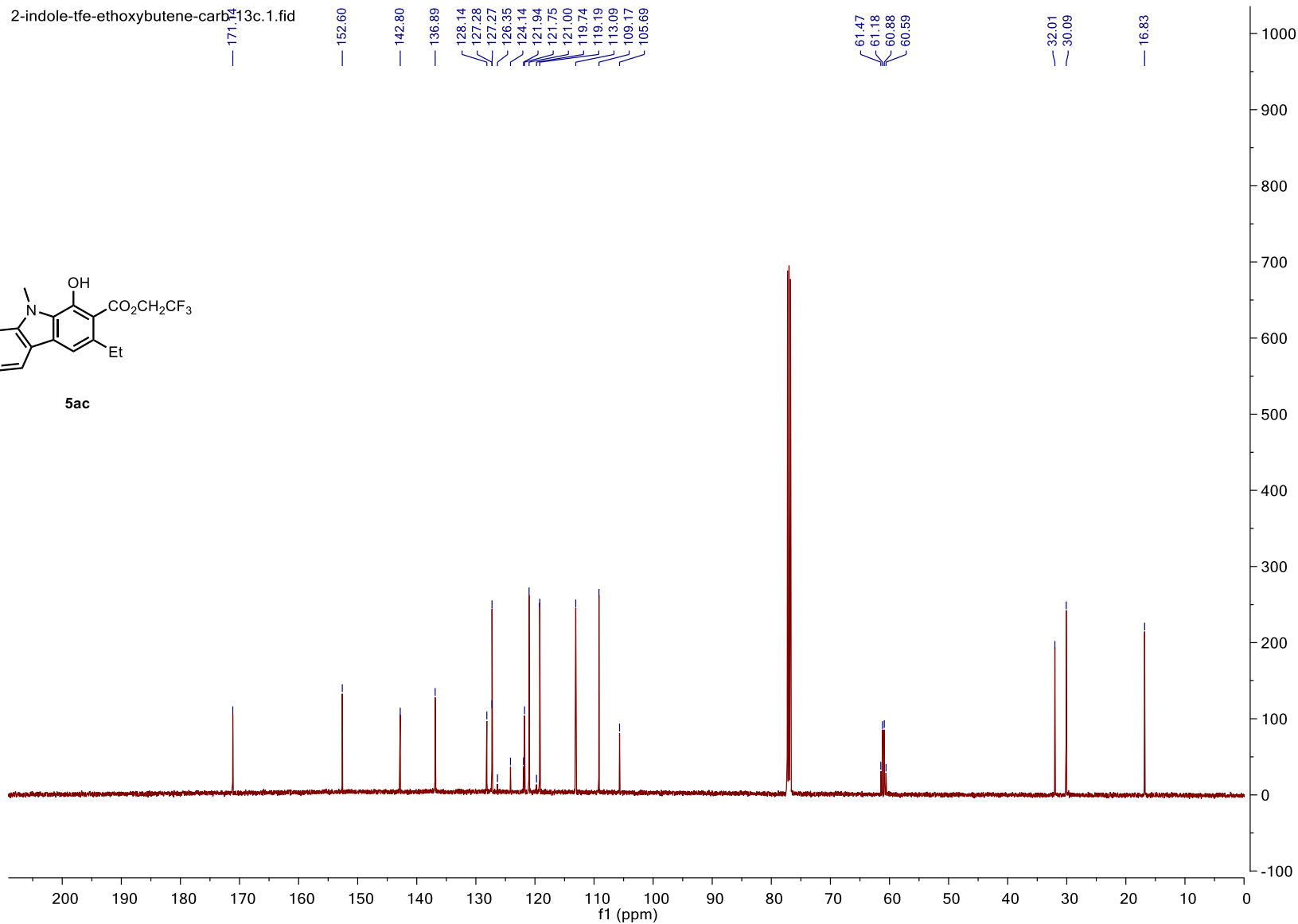
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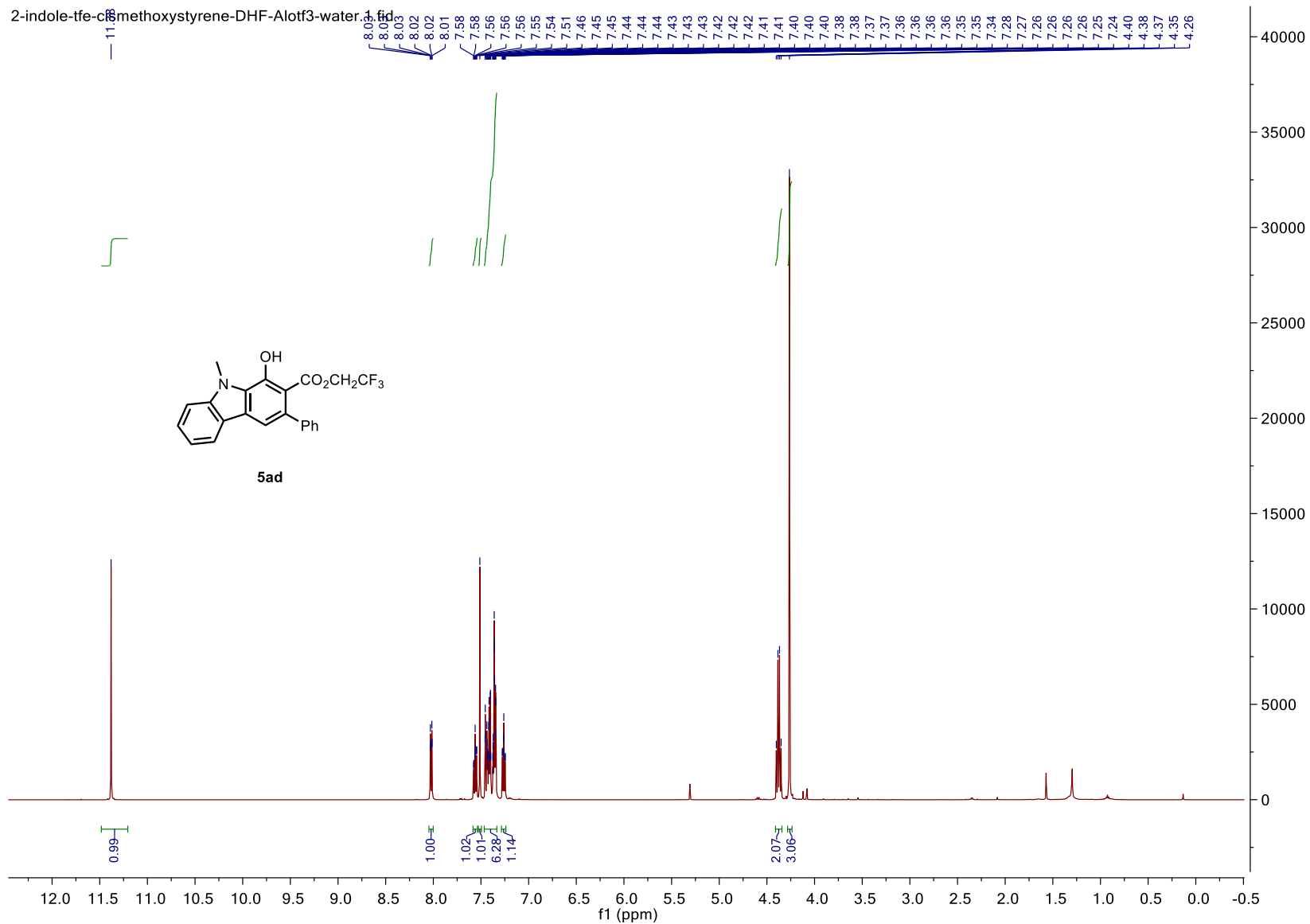
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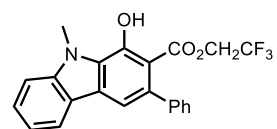
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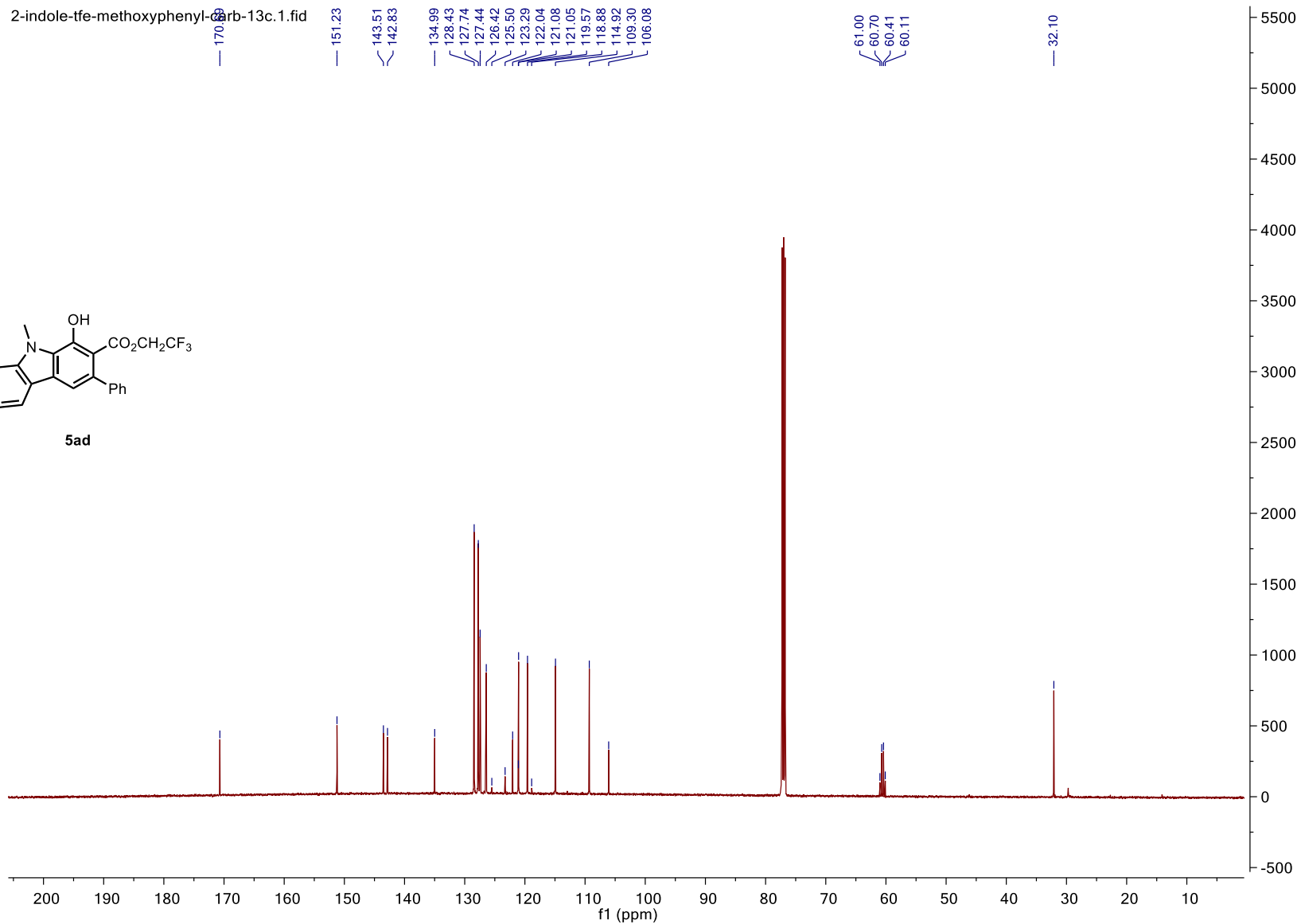
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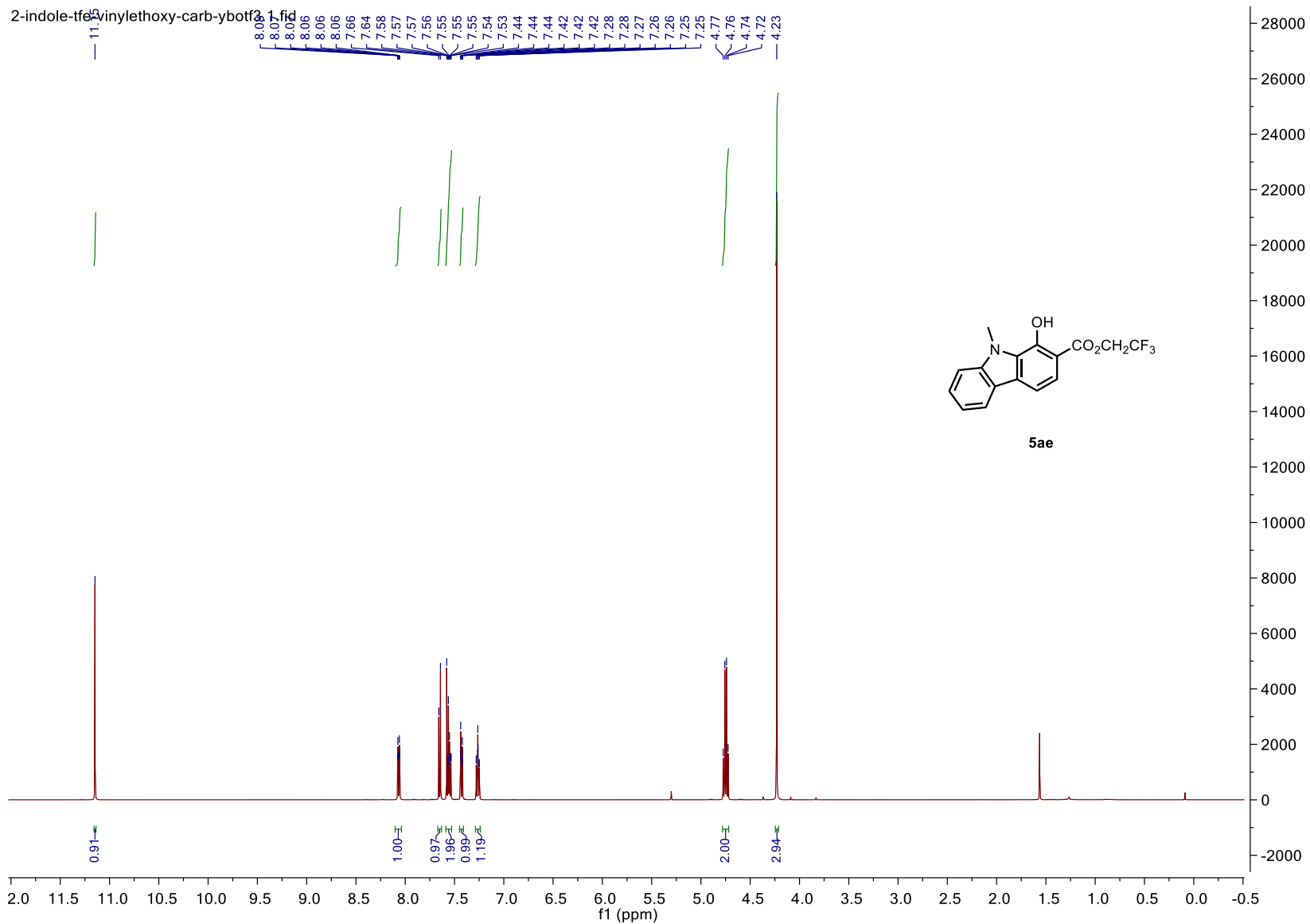


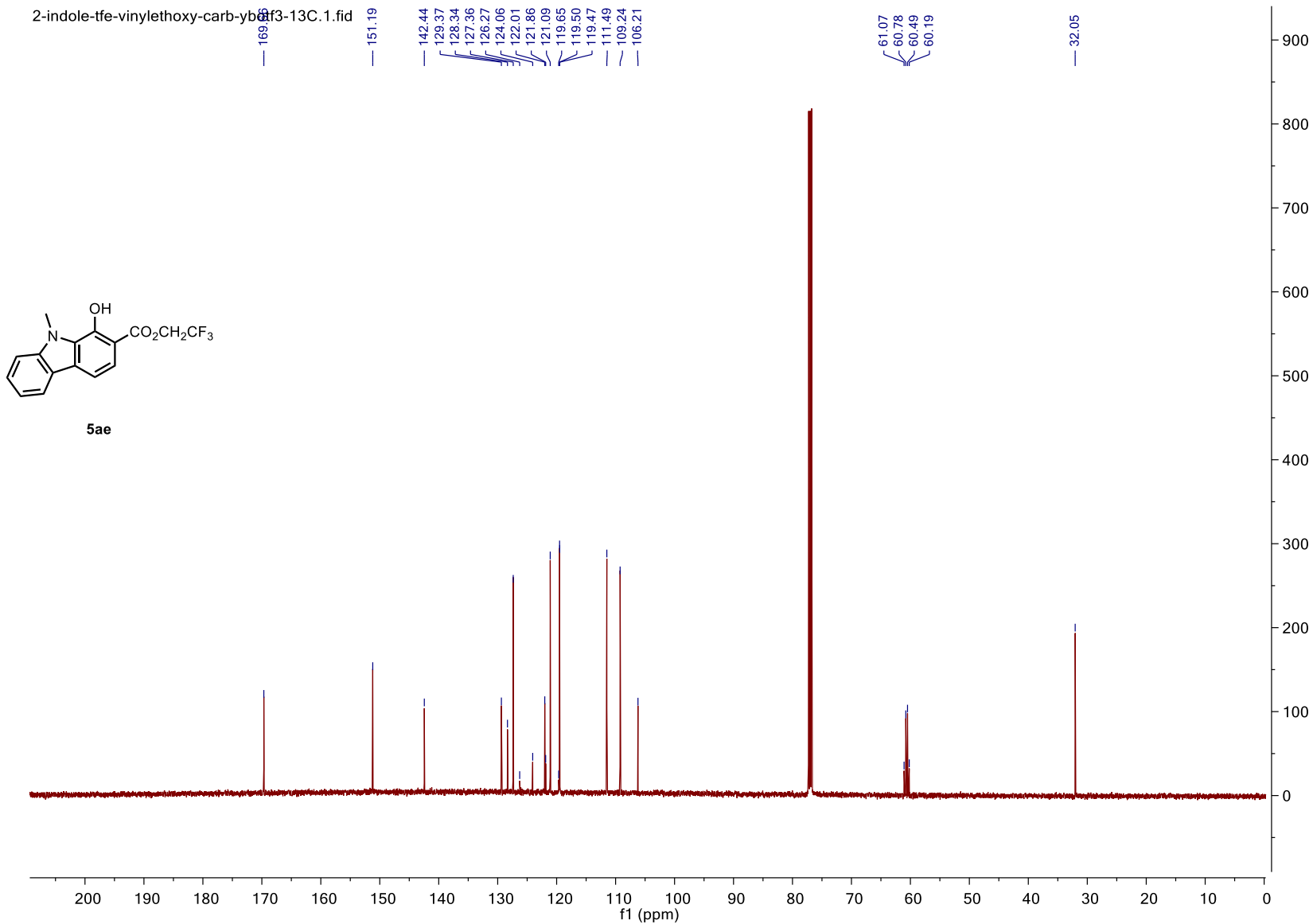
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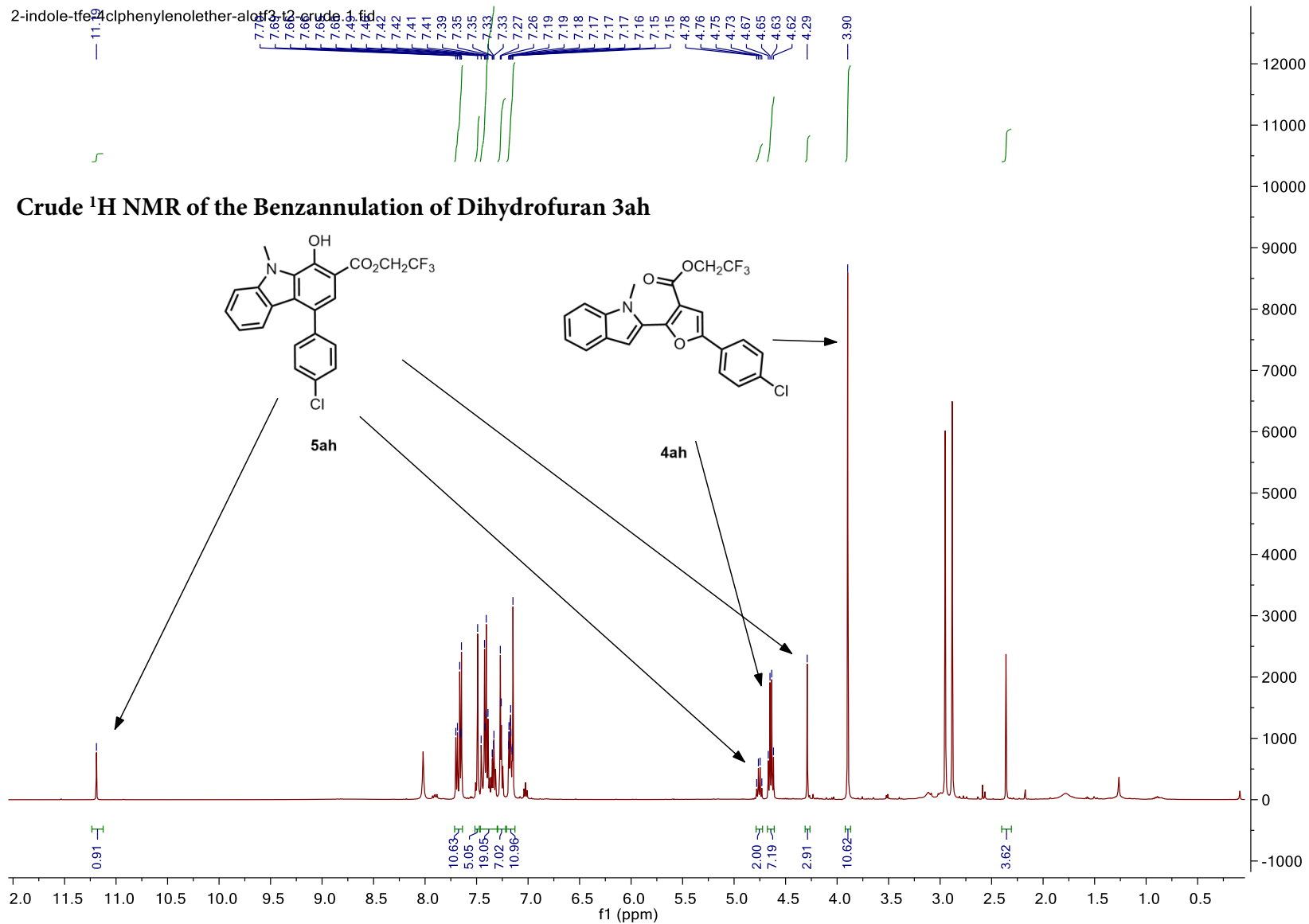


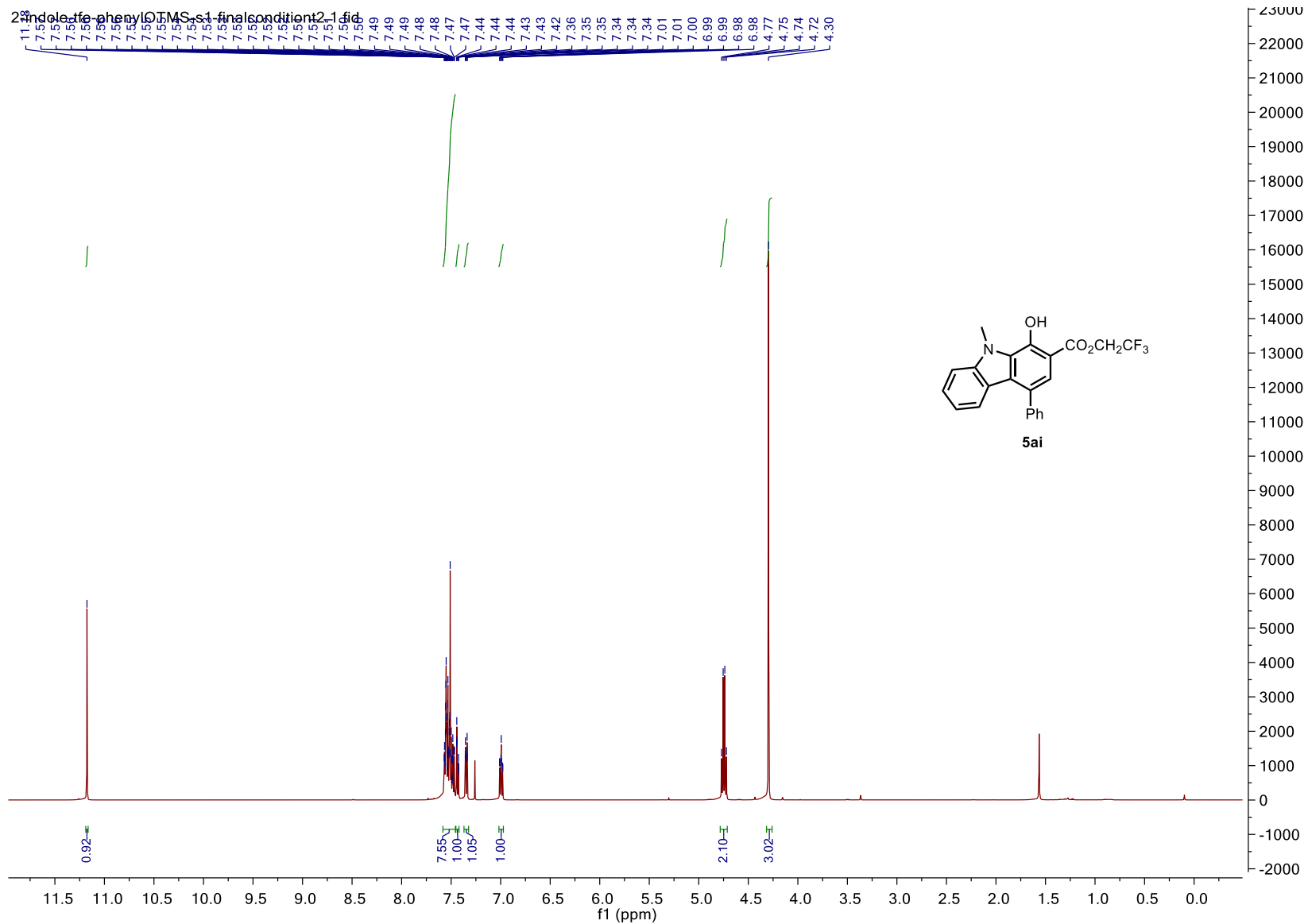
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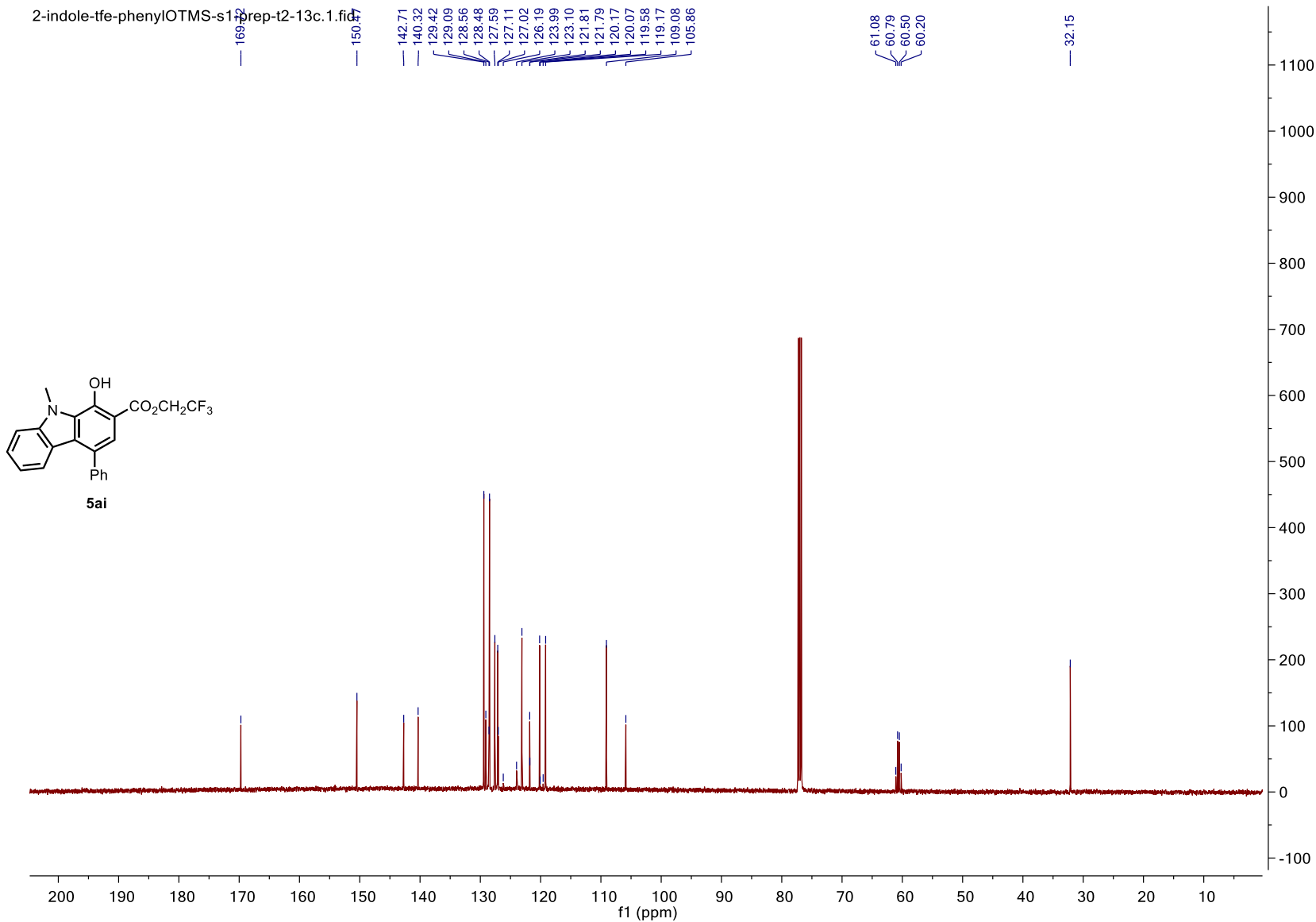




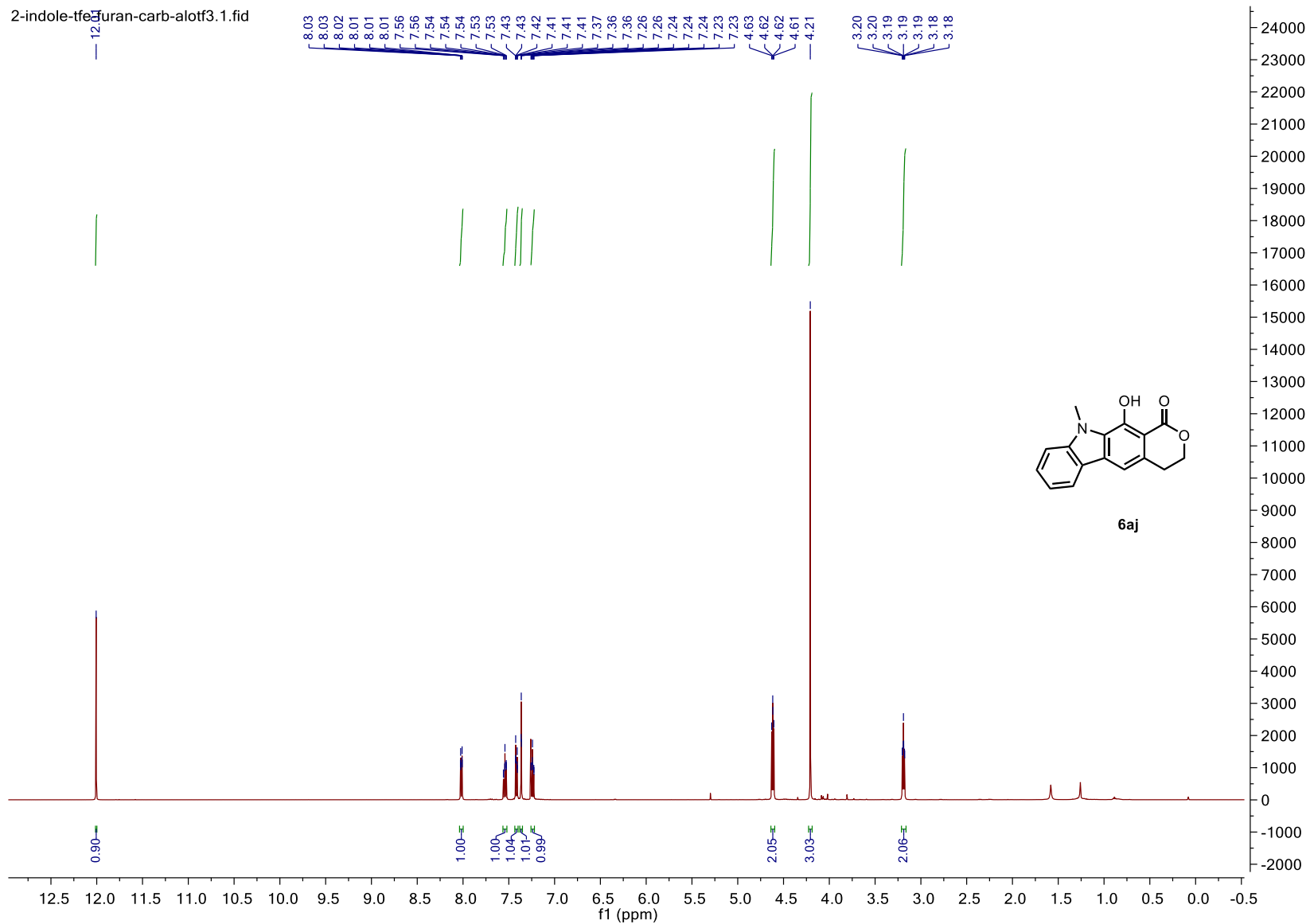




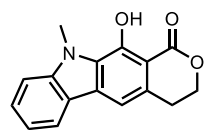




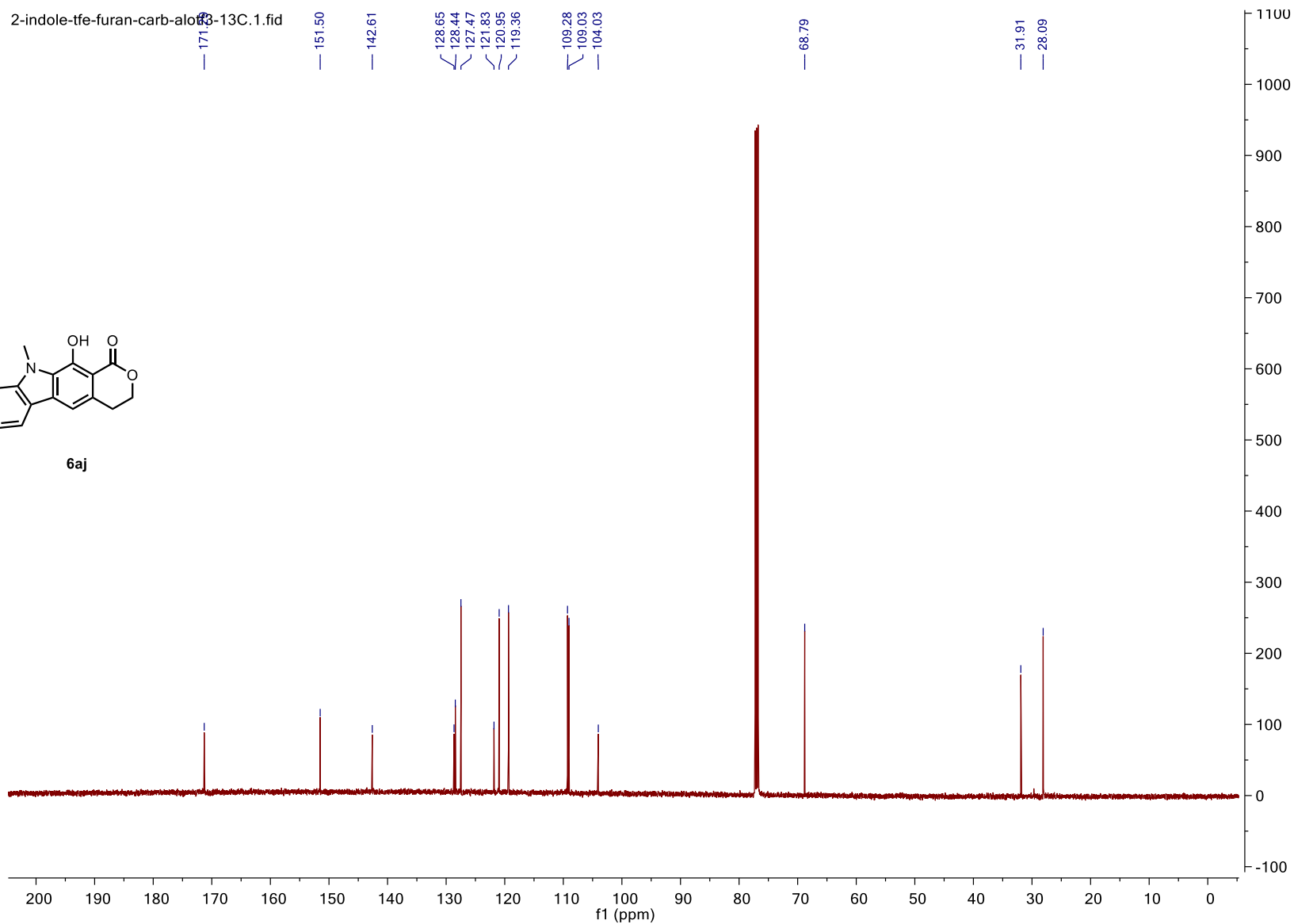
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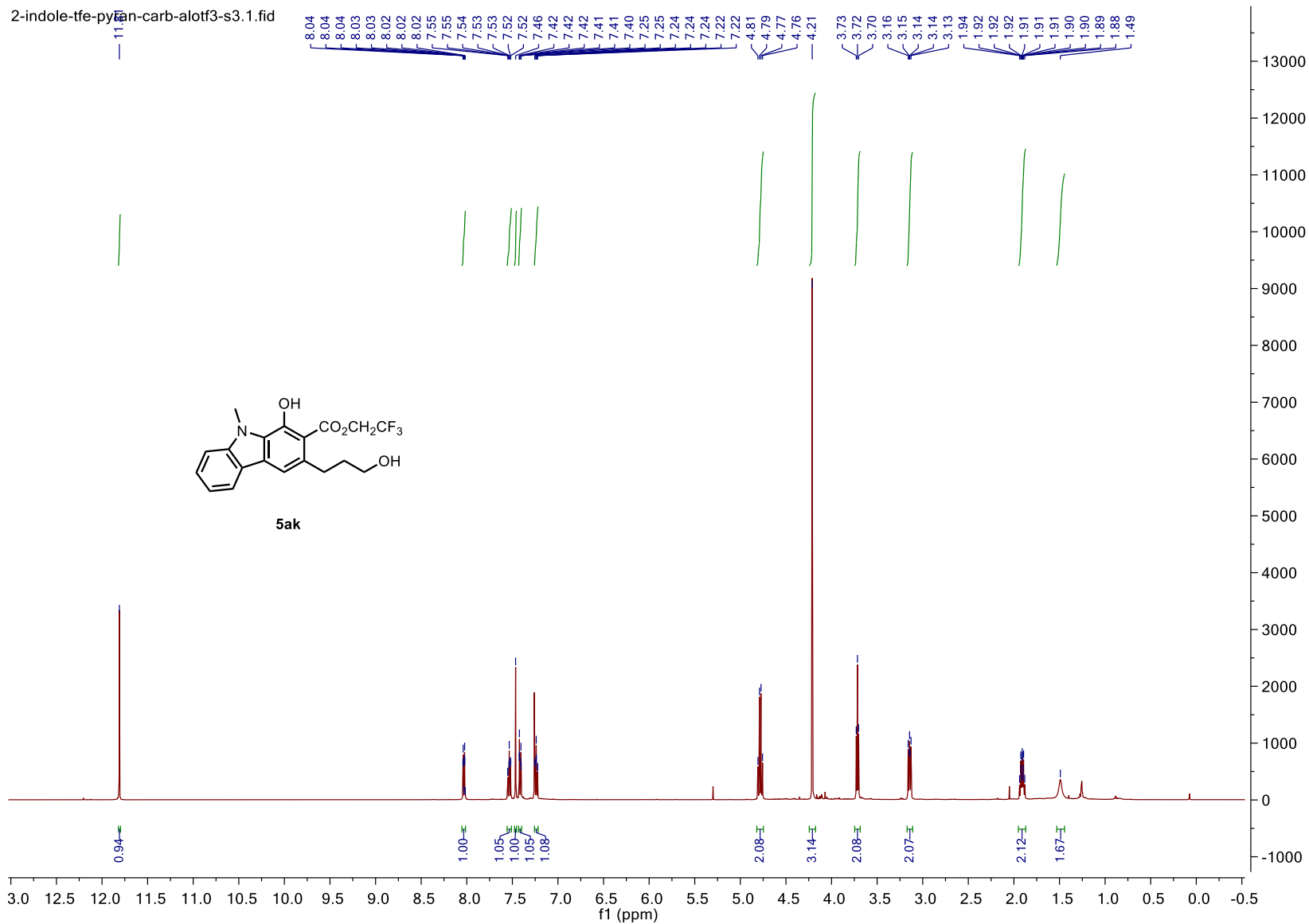
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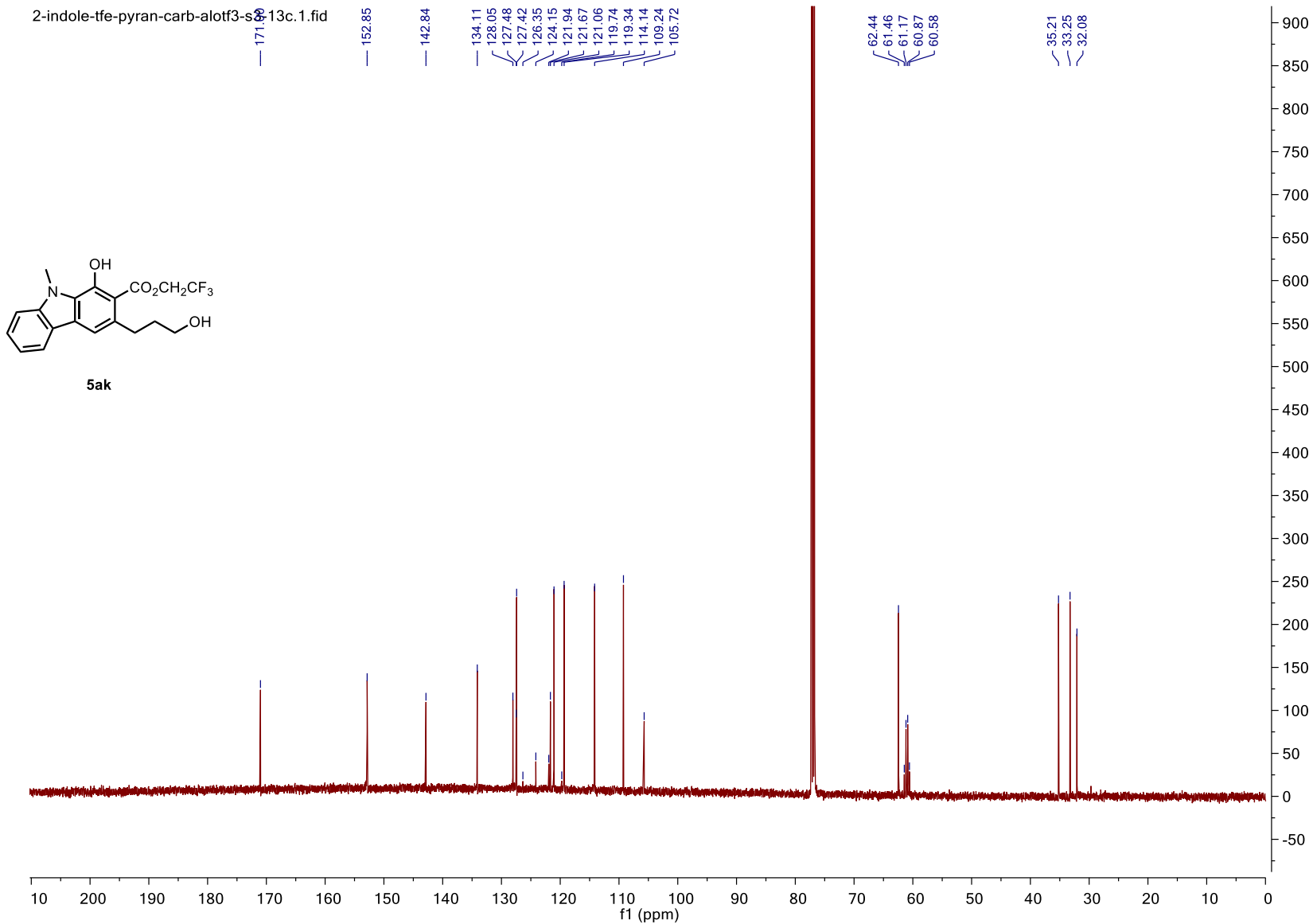


6aj



2-indole-tfe-pyran-carb-alotf3-s3.1.fid





2-indole-trimethylfuran-carb-test2-s2.1.fid

