

# Supplementary material 2

for

## Heterocyclic cathinones as inhibitors of kynurenine aminotransferase II – design, synthesis, and evaluation

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<sup>6</sup> Department of Biotechnology, Faculty of Food and Biochemical Technology, UCT Prague, Technická 5, 16628 Prague, Czech Republic

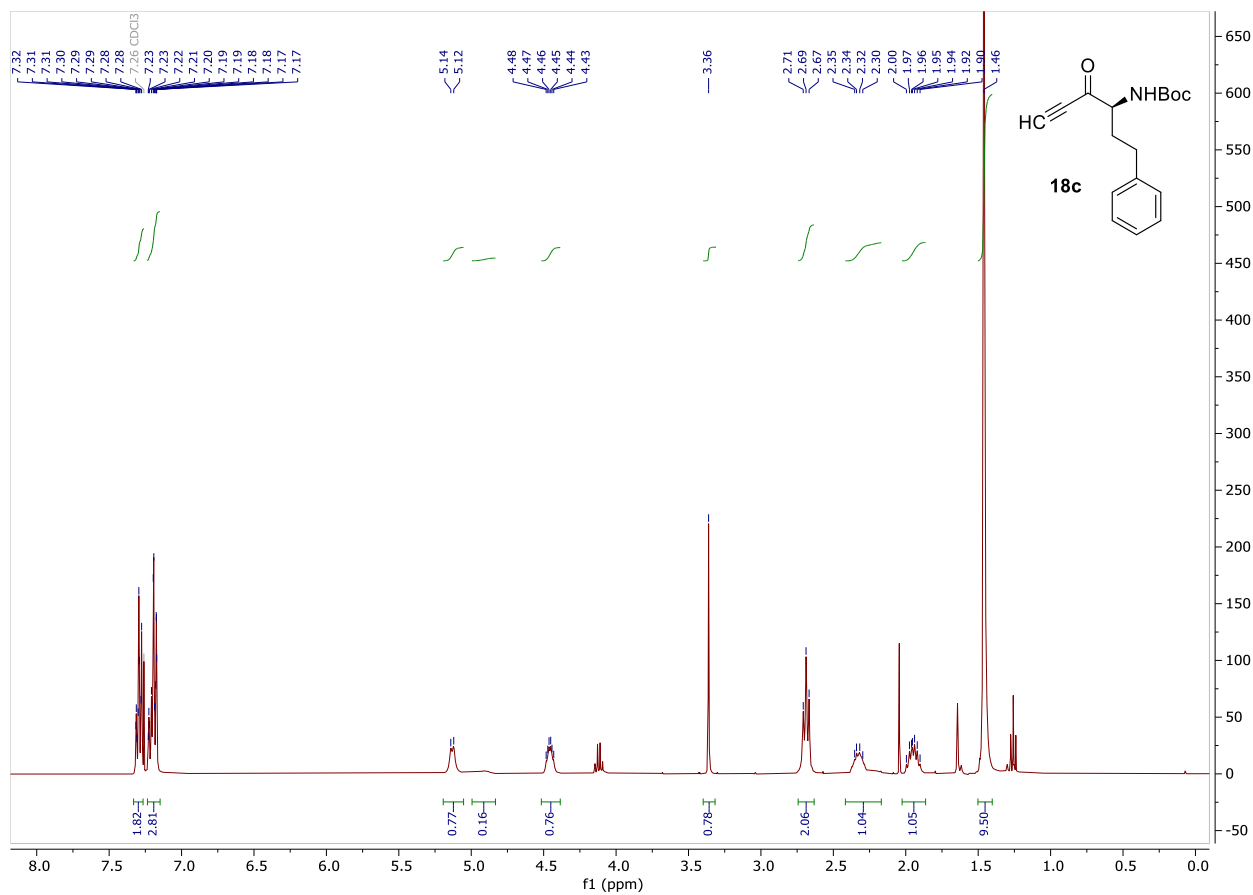
\* Correspondence: martin.kuchar@vscht.cz; Tel.: +420 220 444 431

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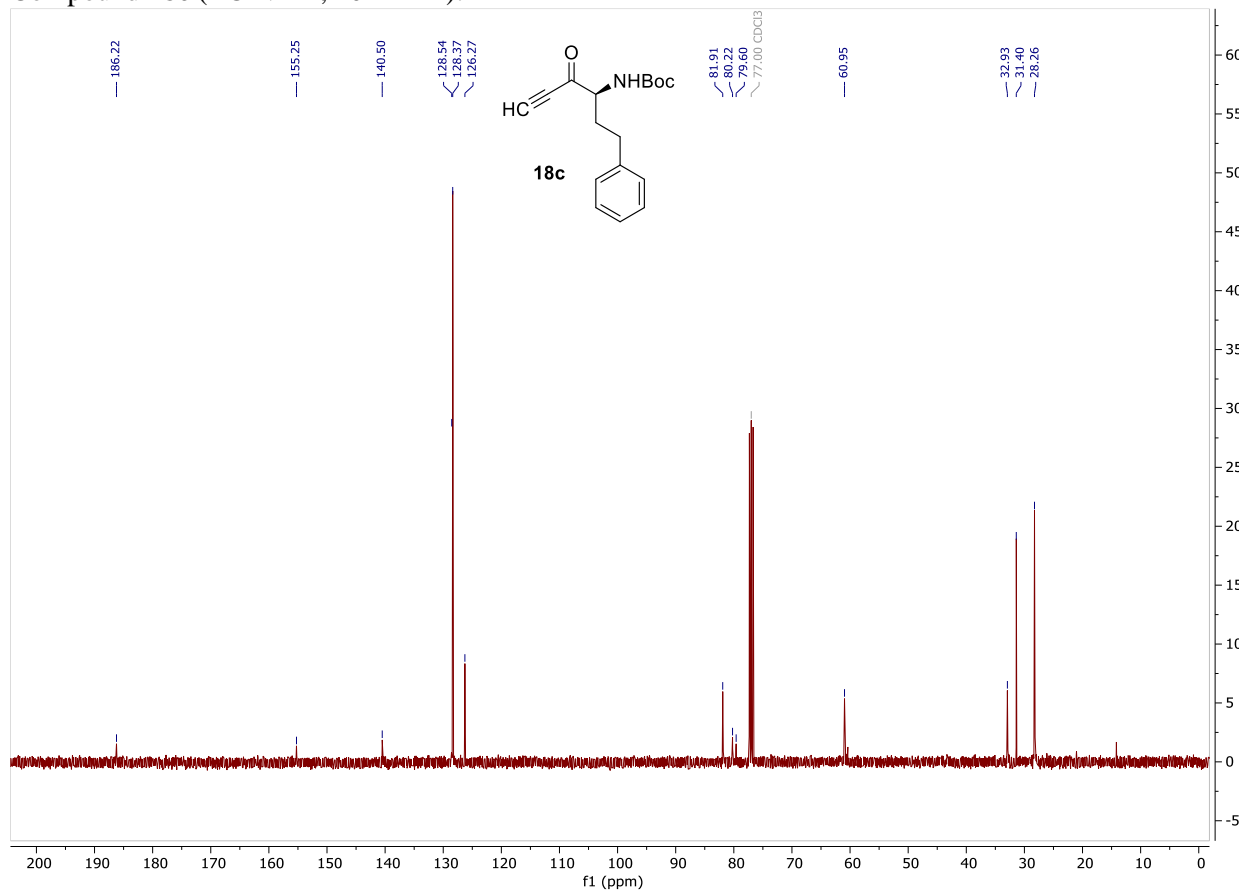
1. NMR spectra of new compounds .....	2
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## 1. NMR spectra of new compounds

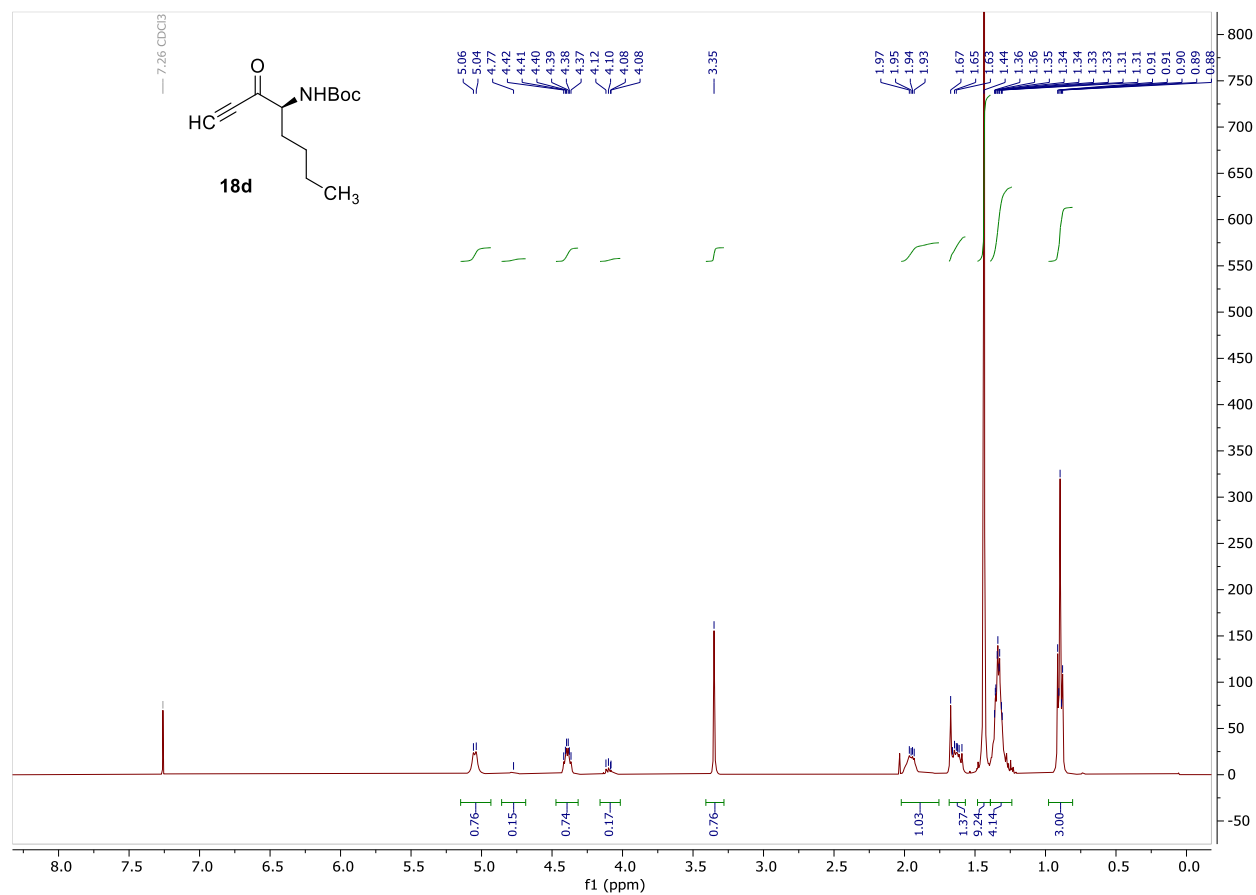
Compound **18c** ( $^1\text{H}$  NMR, 400 MHz):



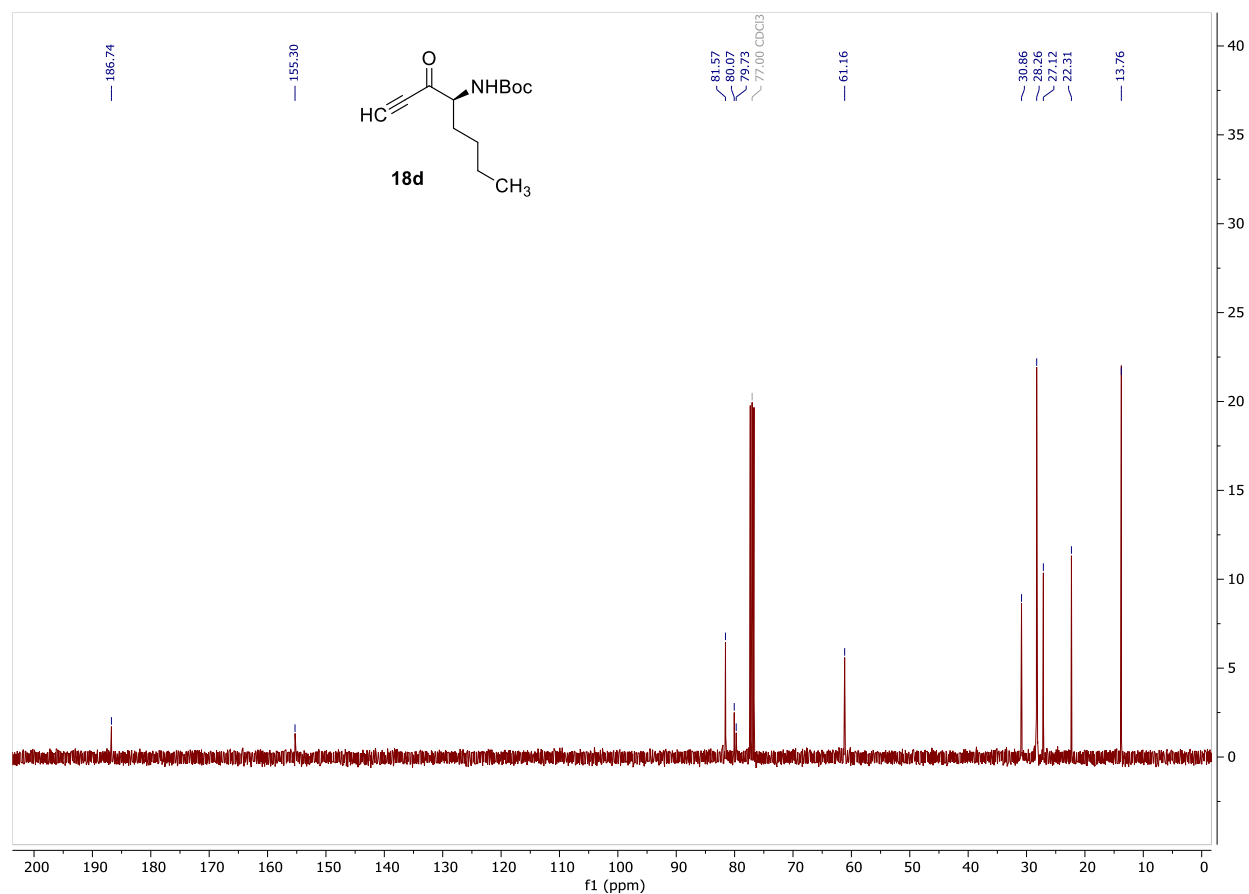
Compound **18c** ( $^{13}\text{C}$  NMR, 101 MHz):



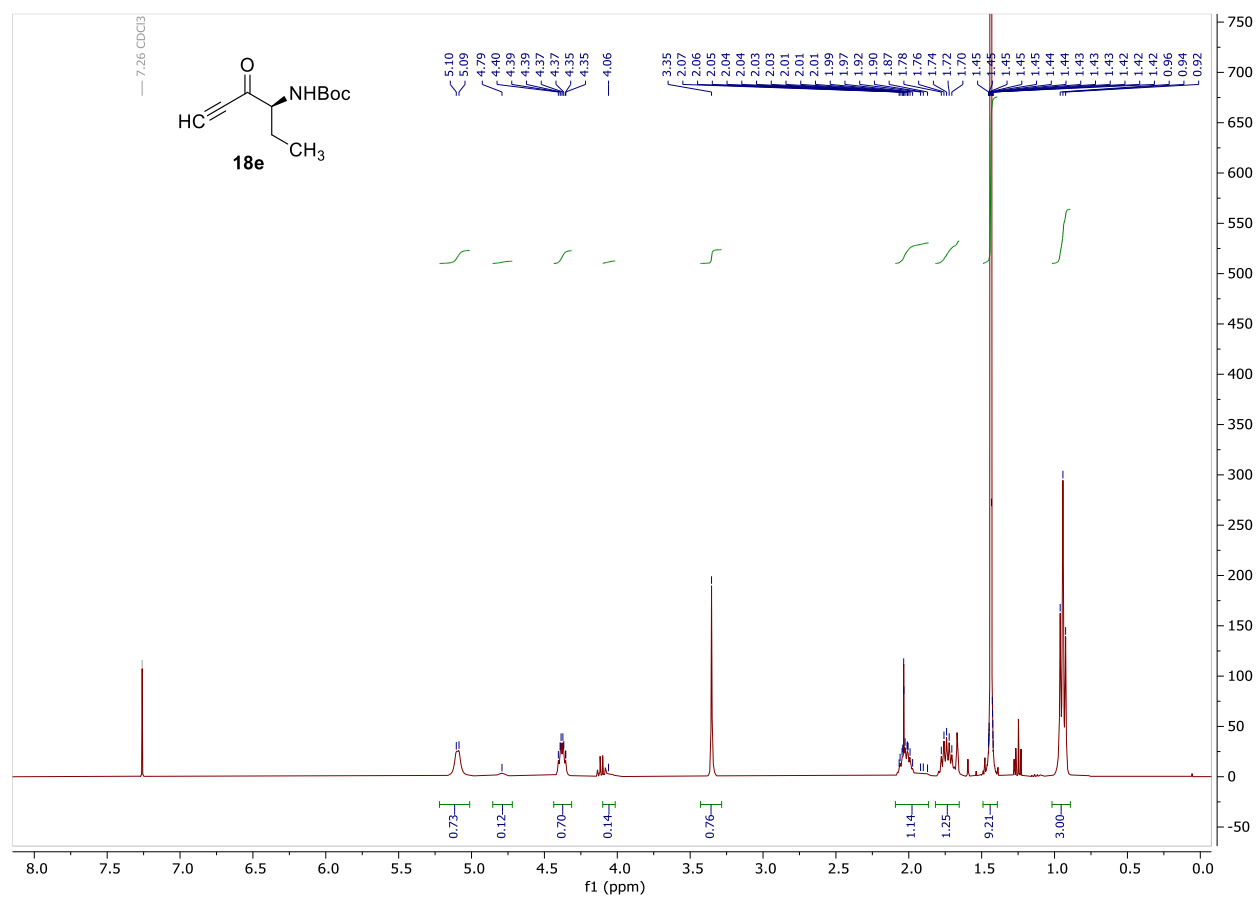
Compound **18d** ( $^1\text{H}$  NMR, 400 MHz):



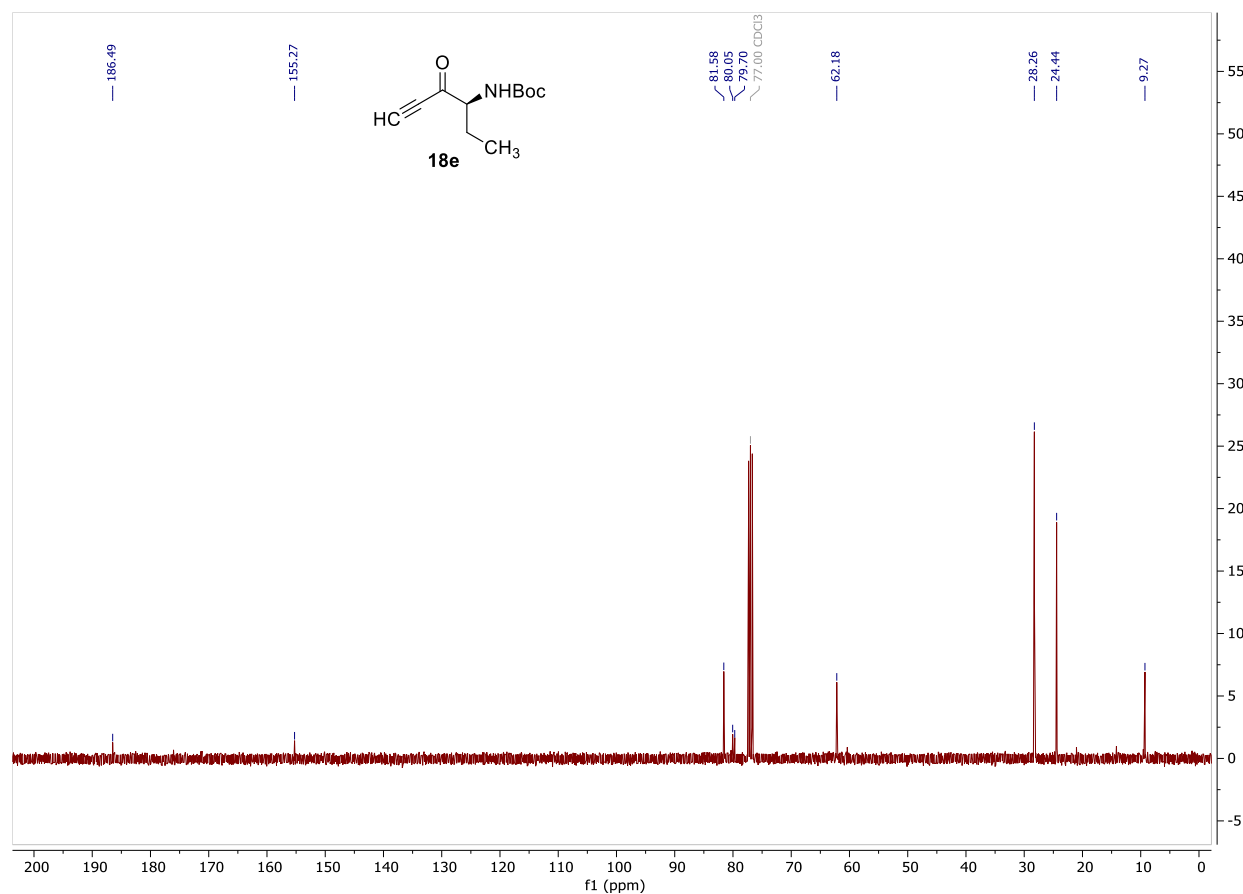
Compound **18d** ( $^{13}\text{C}$  NMR, 101 MHz):



Compound **18e** ( $^1\text{H}$  NMR, 400 MHz):

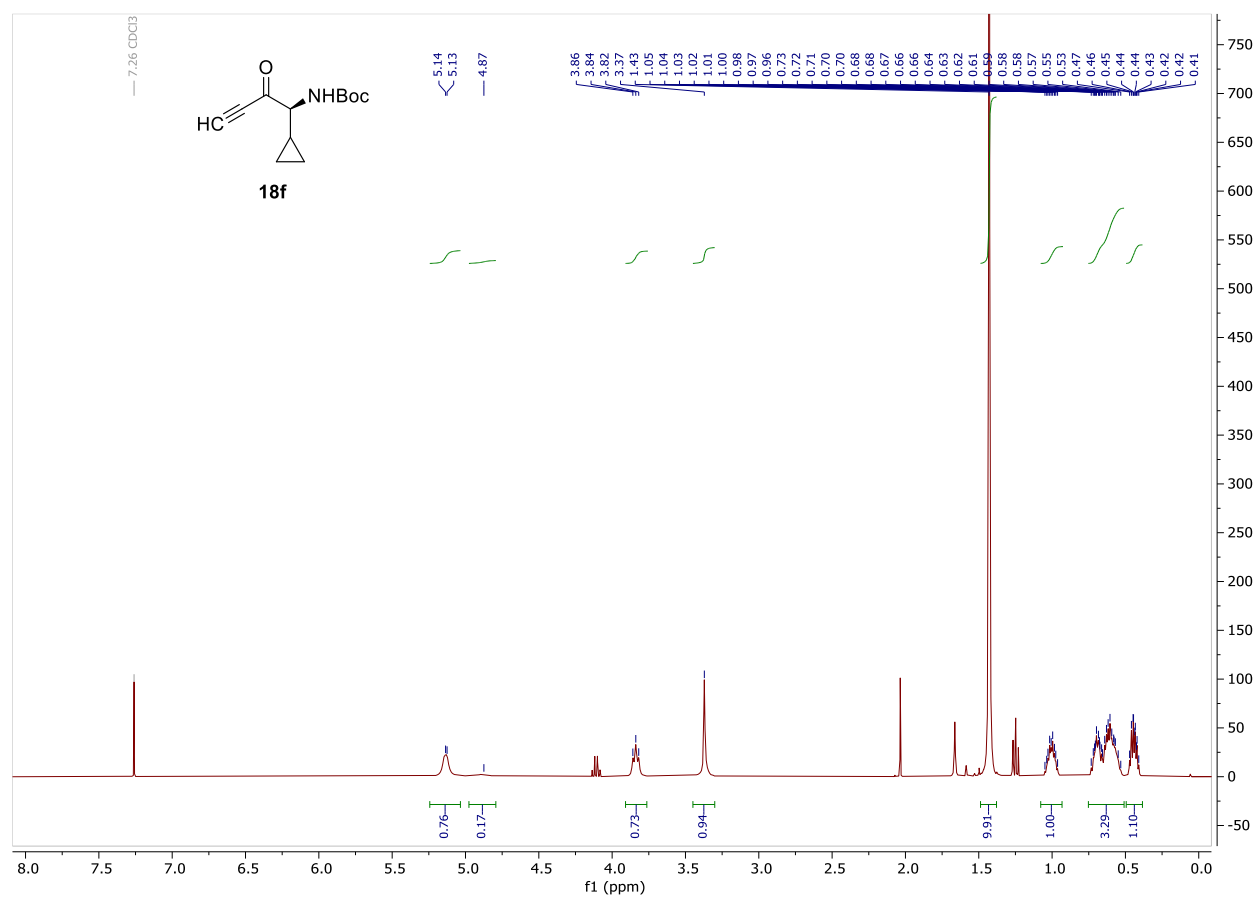


Compound **18e** ( $^{13}\text{C}$  NMR, 101 MHz):

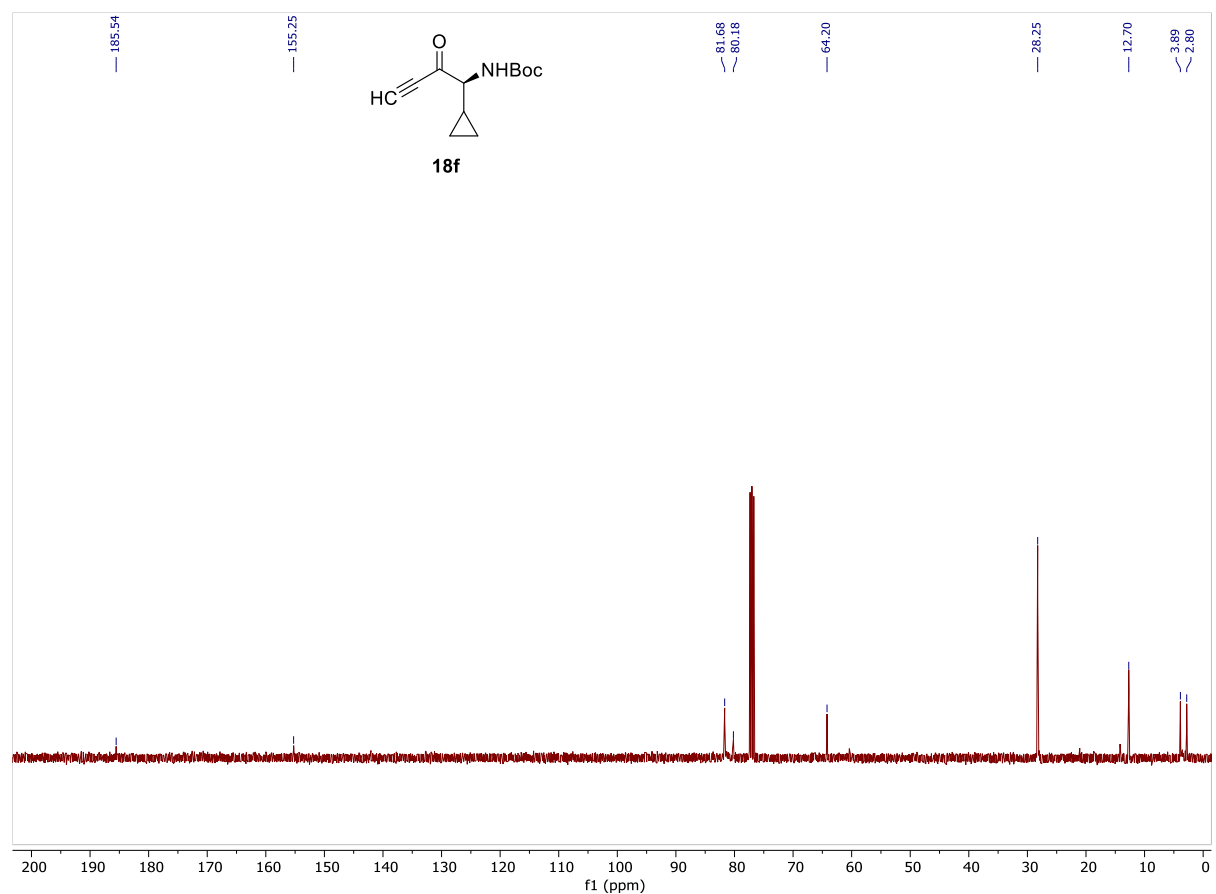




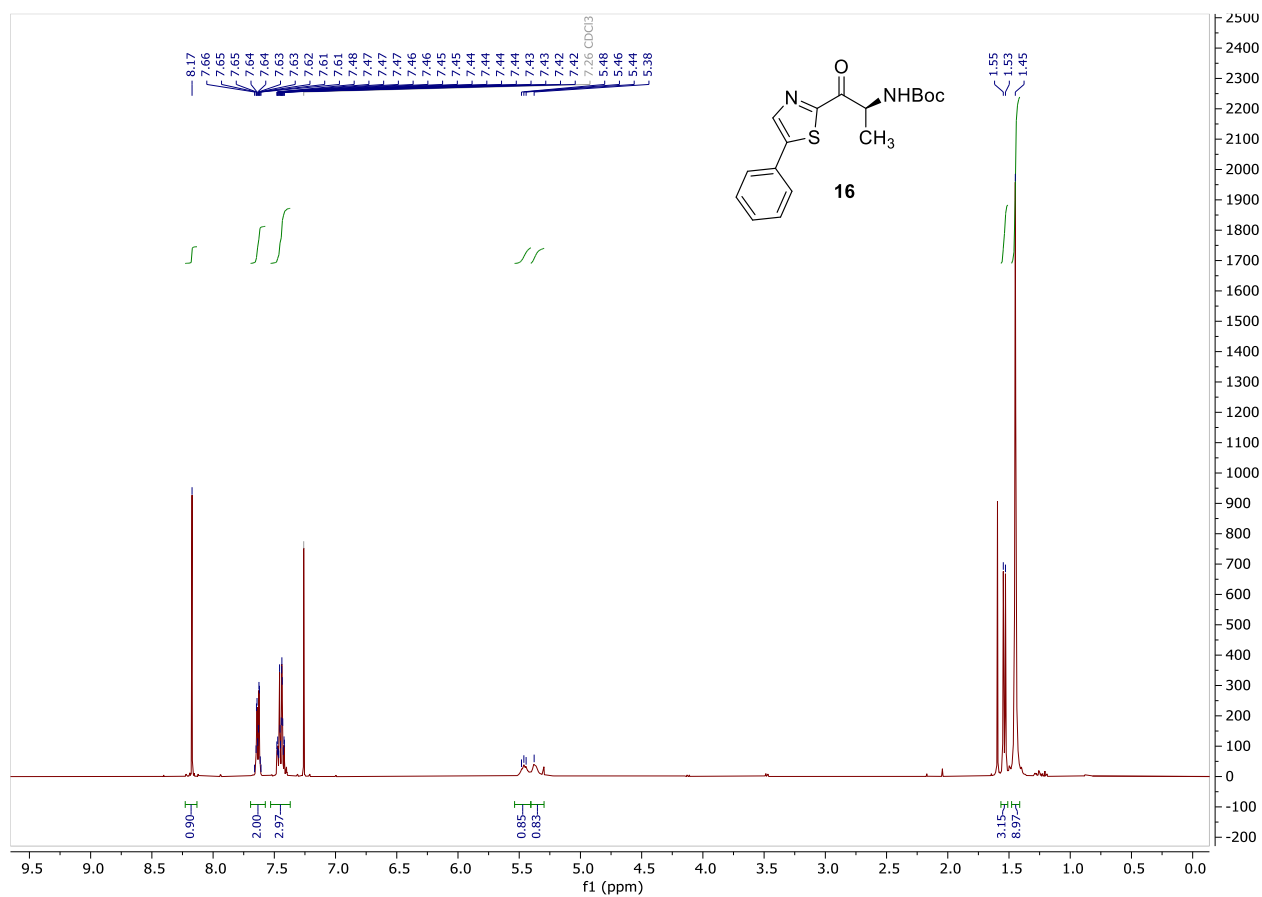
Compound **18f** ( $^1\text{H}$  NMR, 400 MHz):



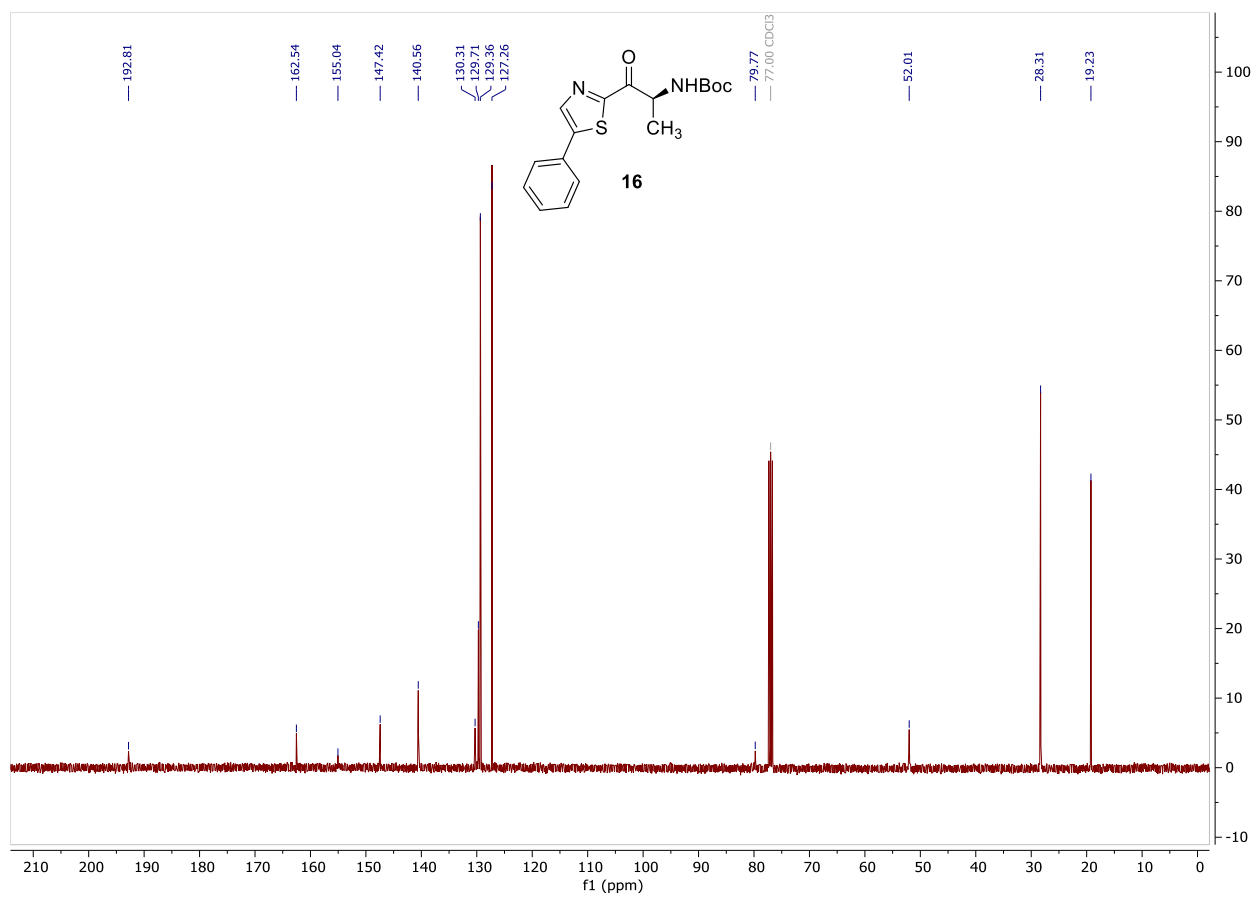
Compound **18f** ( $^{13}\text{C}$  NMR, 101 MHz):



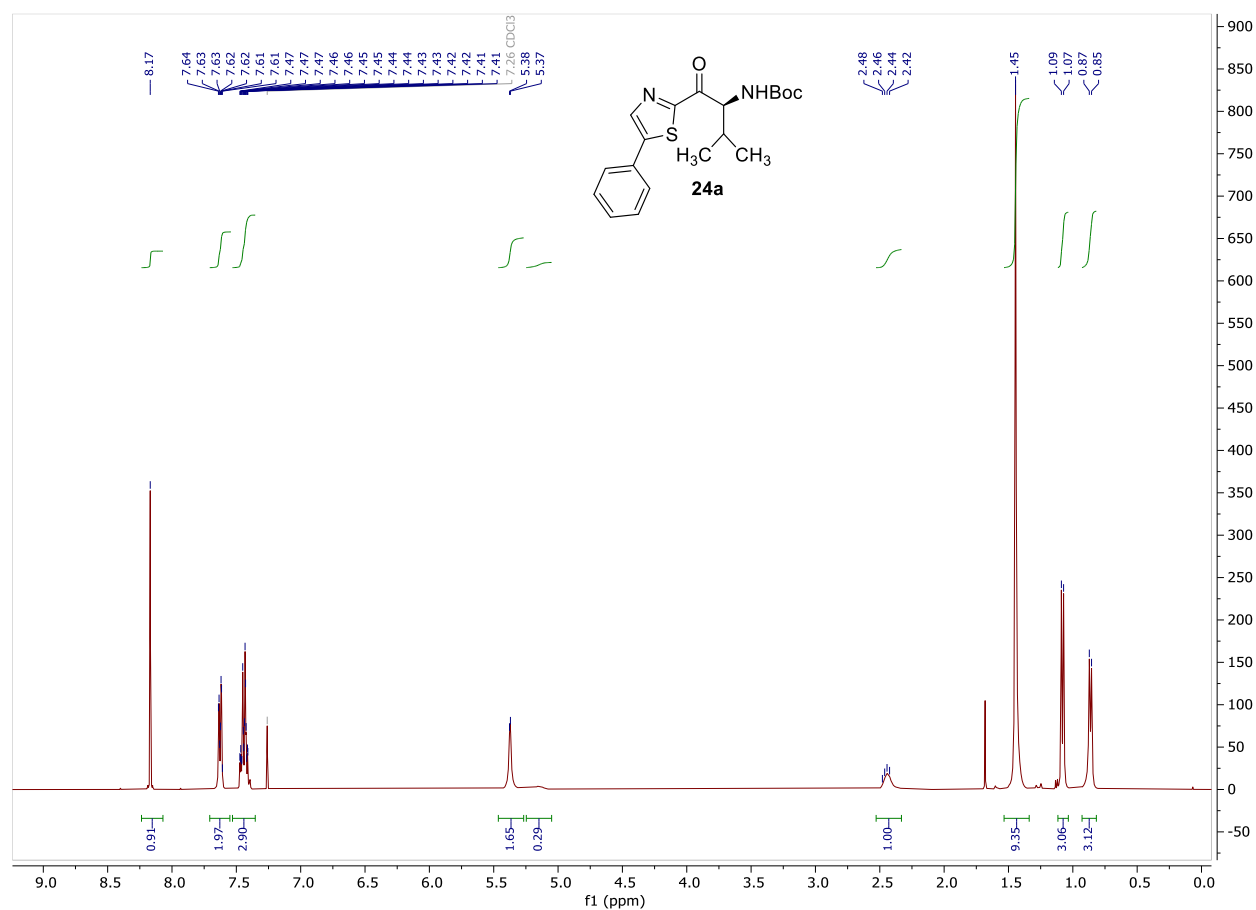
Compound **16** (<sup>1</sup>H NMR, 400 MHz):



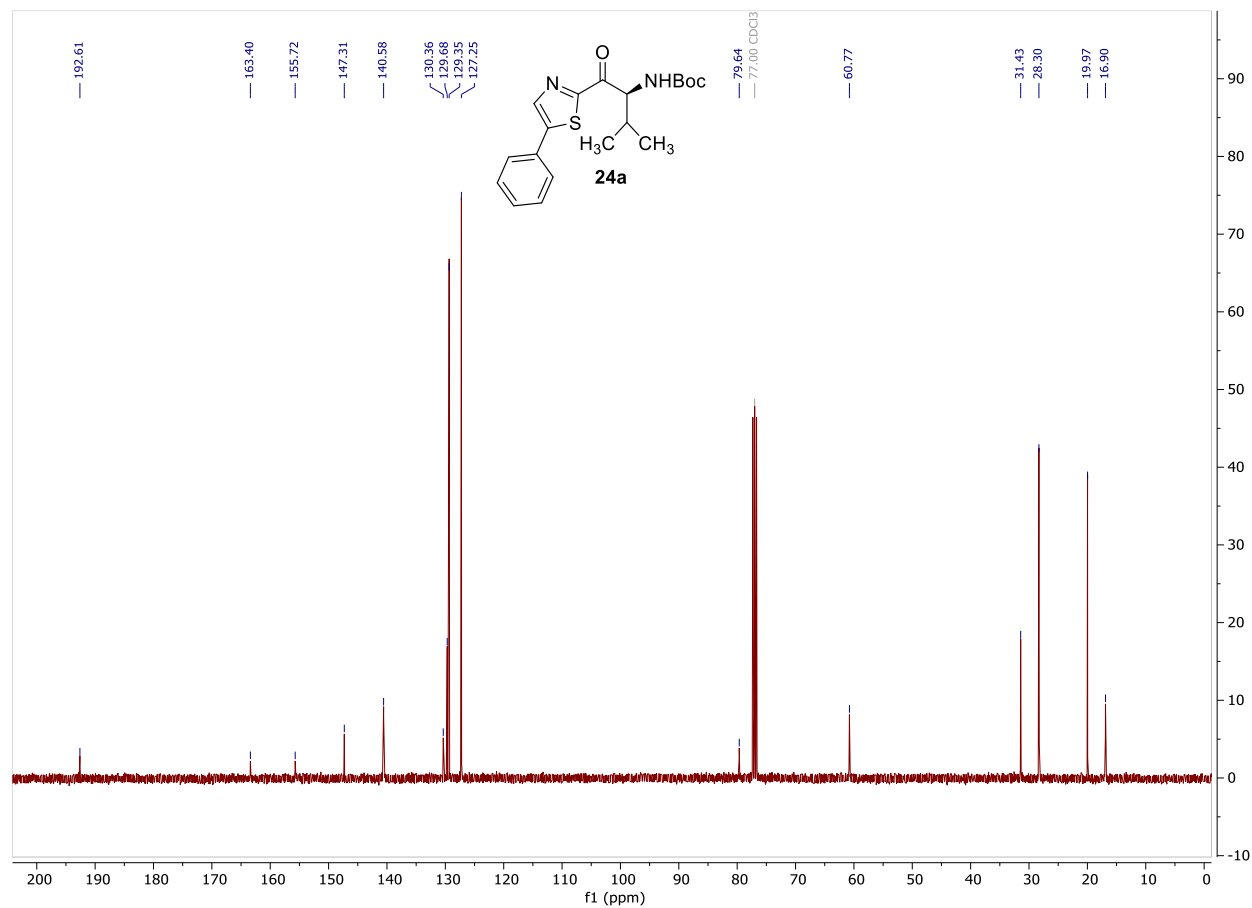
Compound **16** (<sup>13</sup>C NMR, 101 MHz):



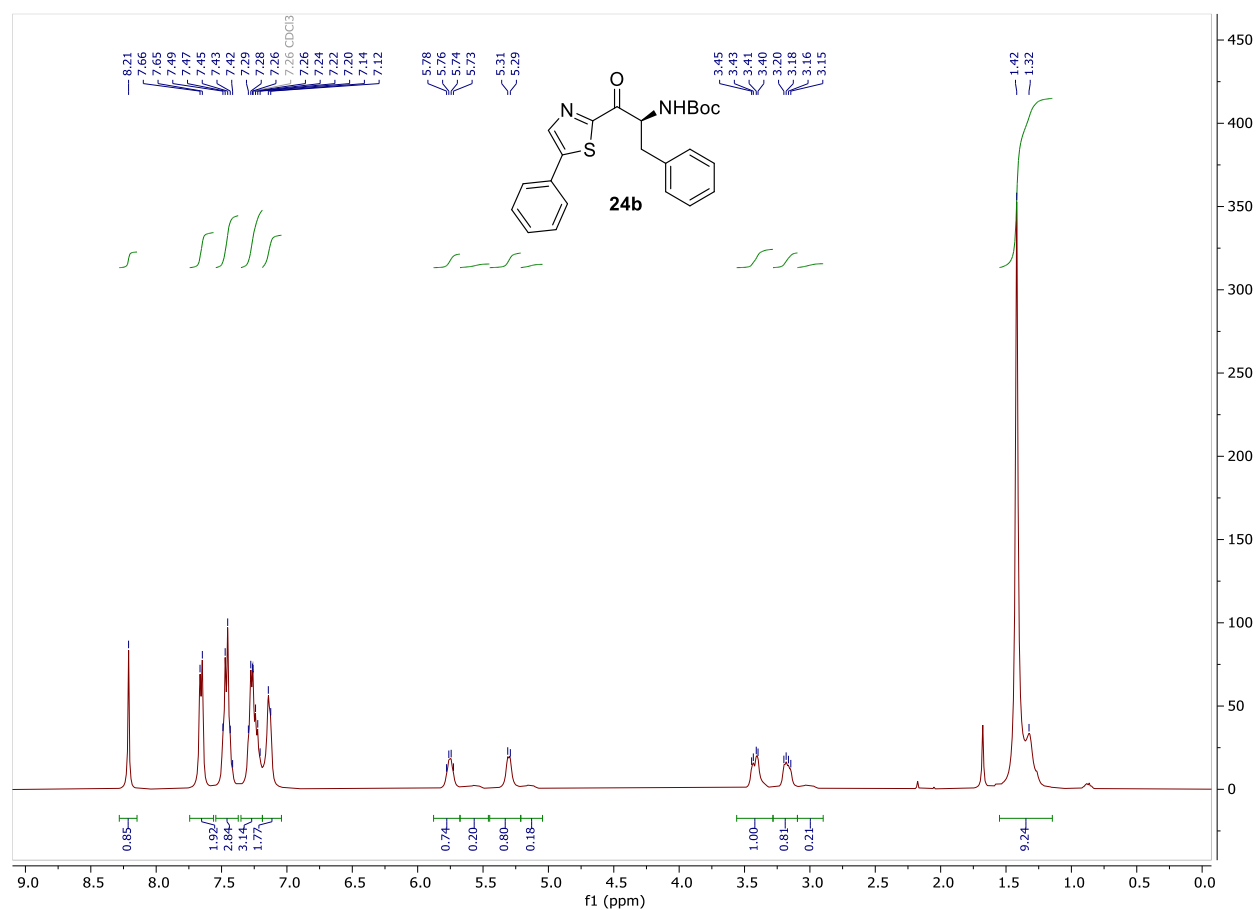
Compound **24a** ( $^1\text{H}$  NMR, 400 MHz):



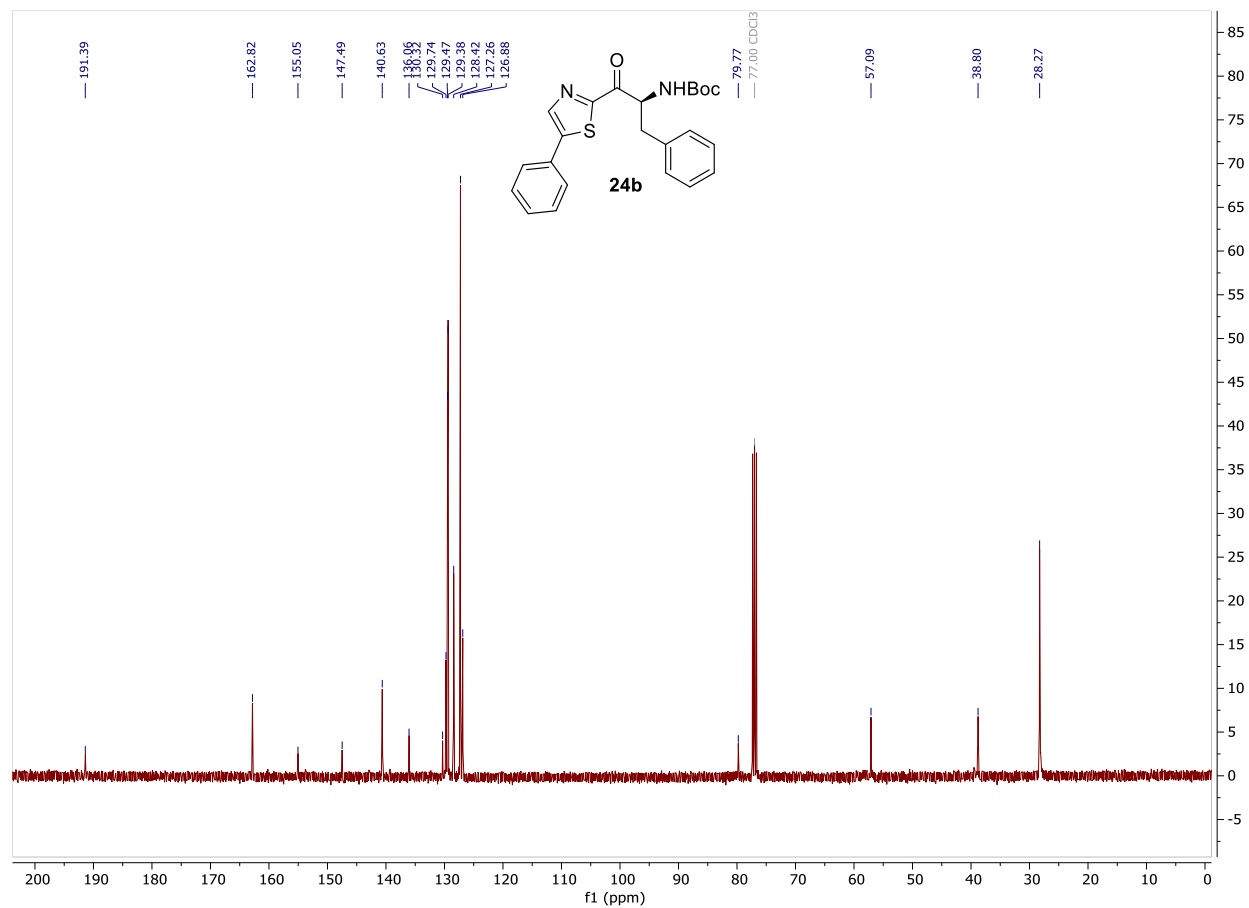
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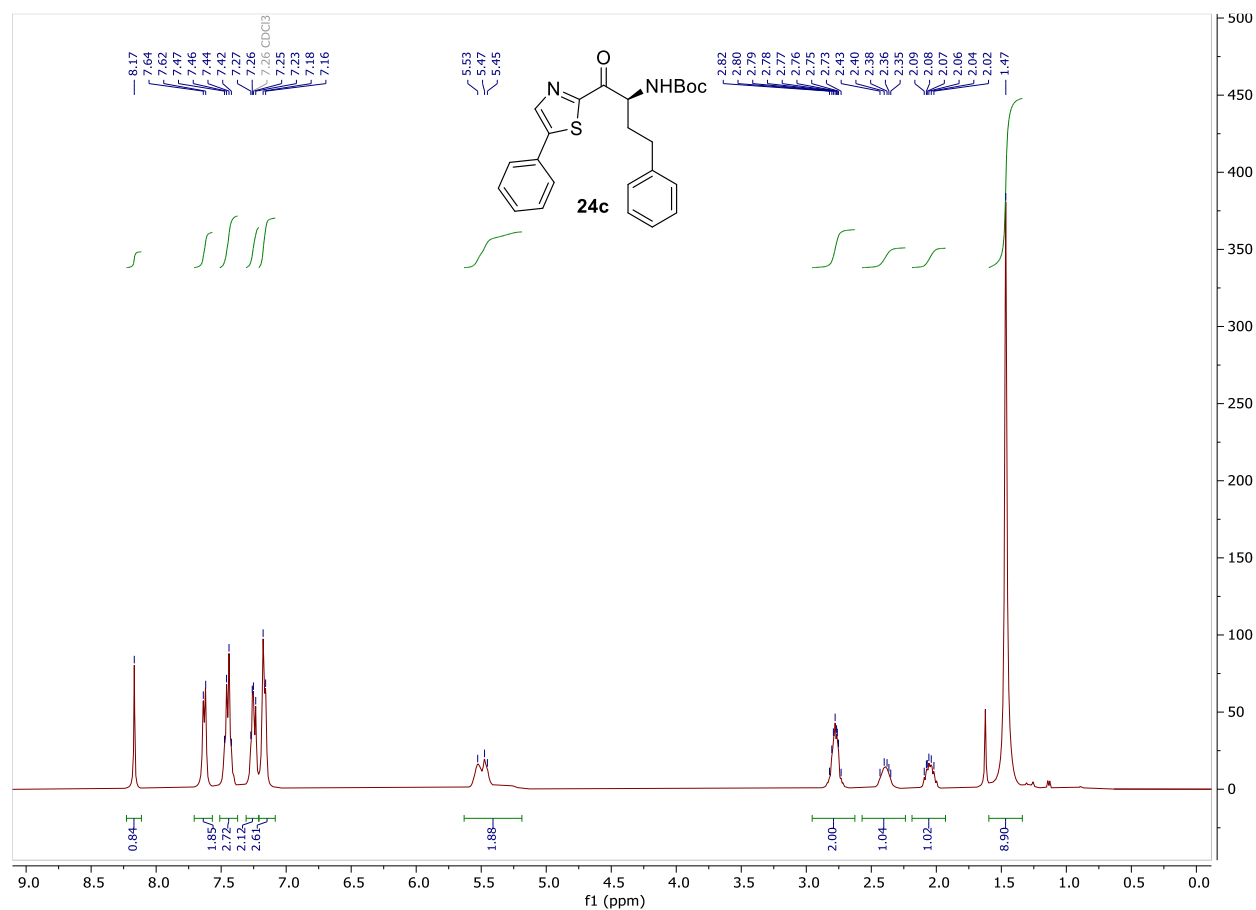
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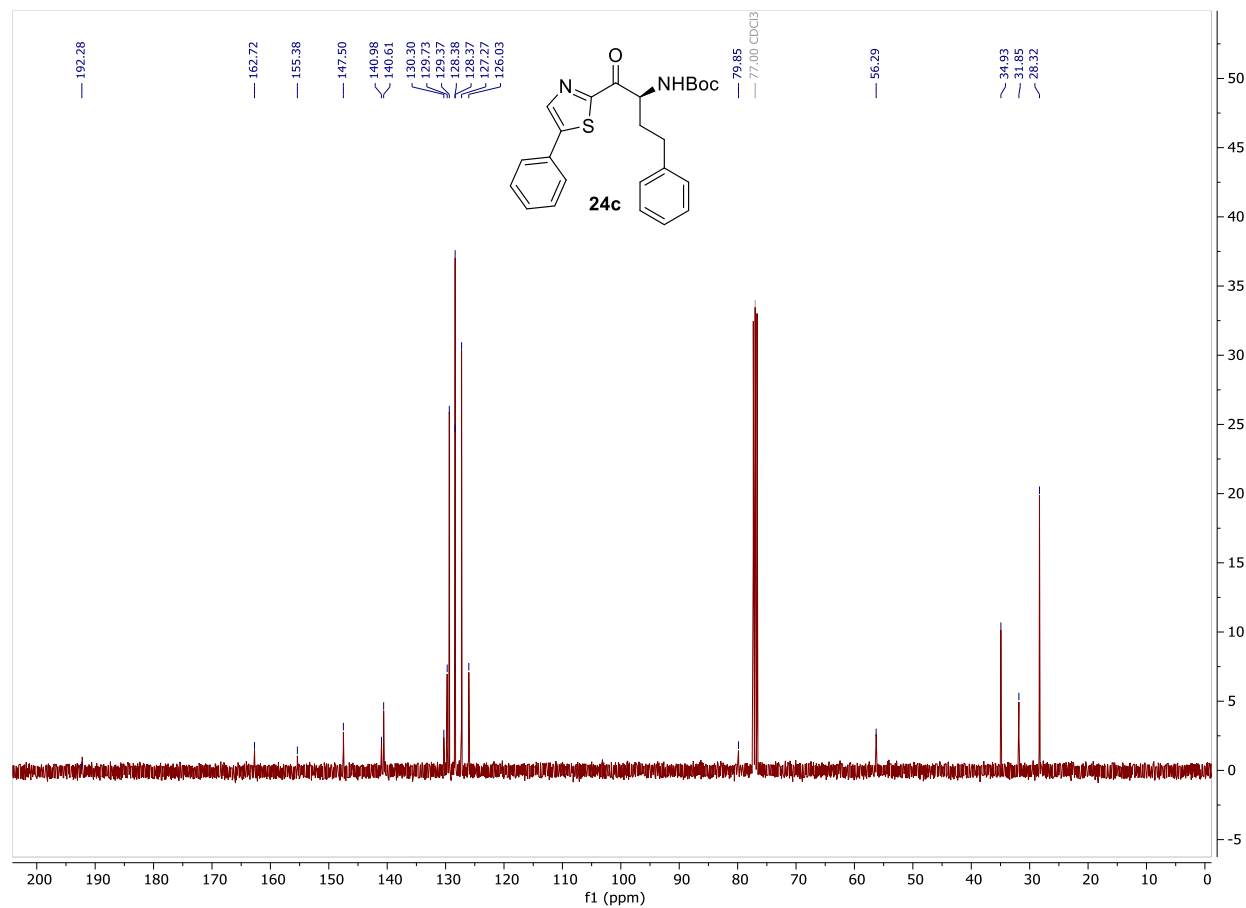
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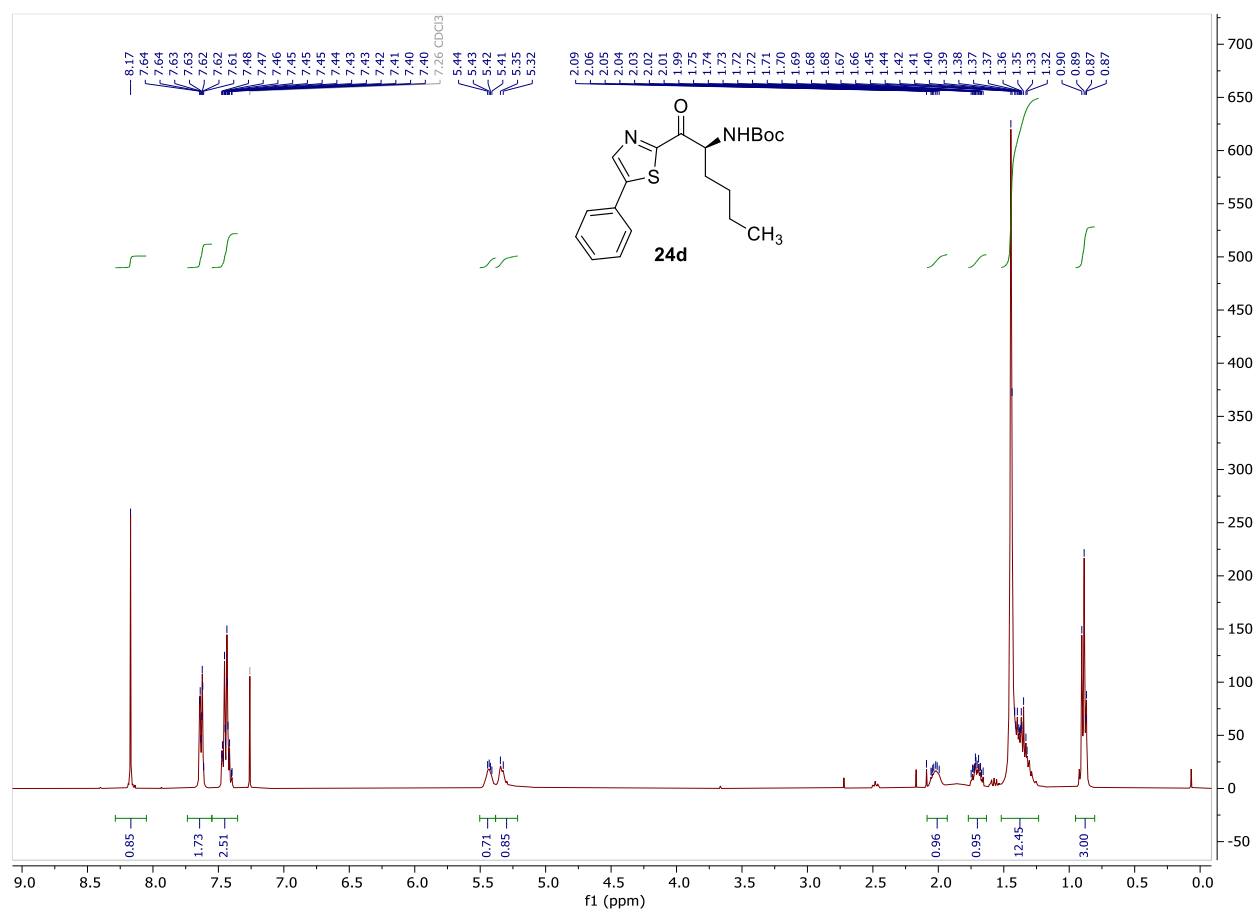
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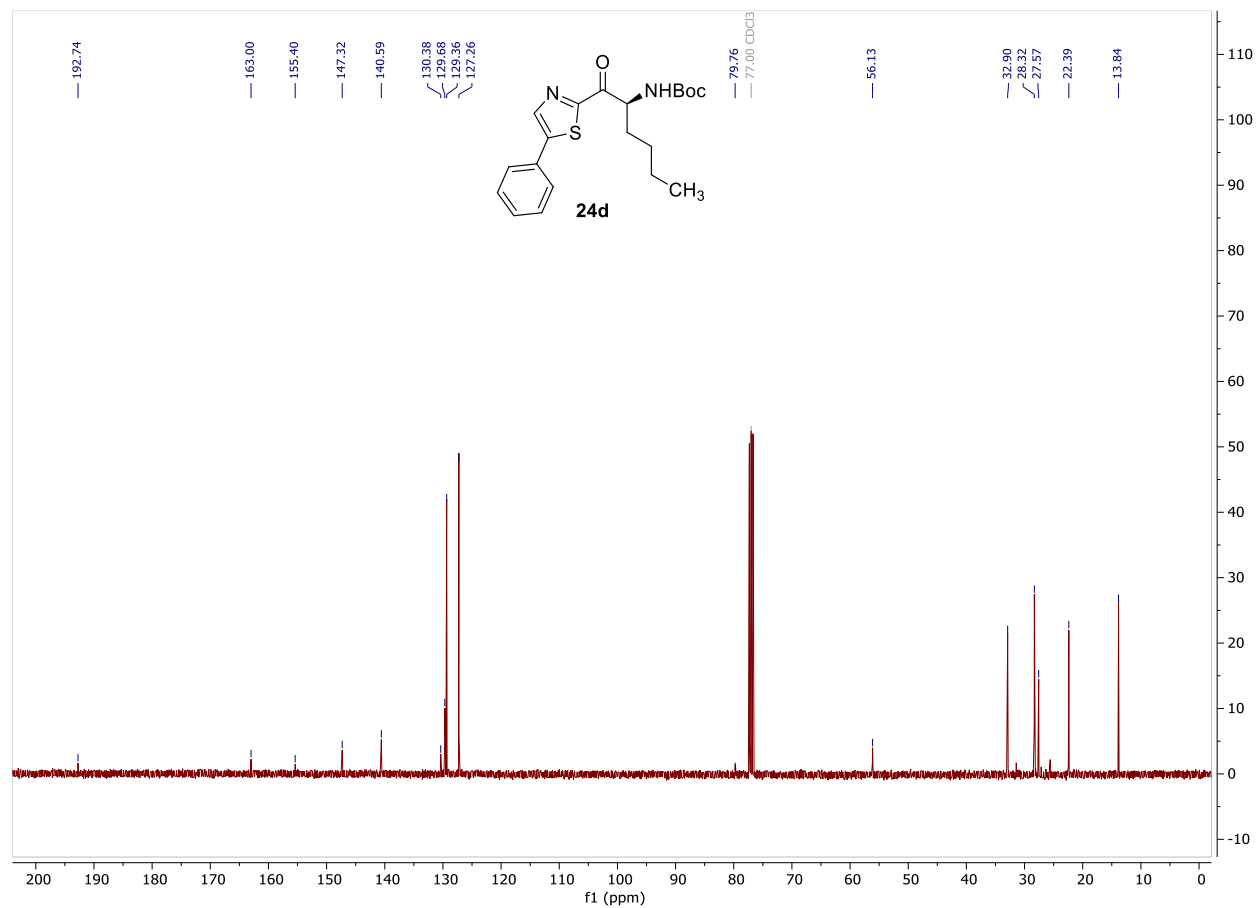
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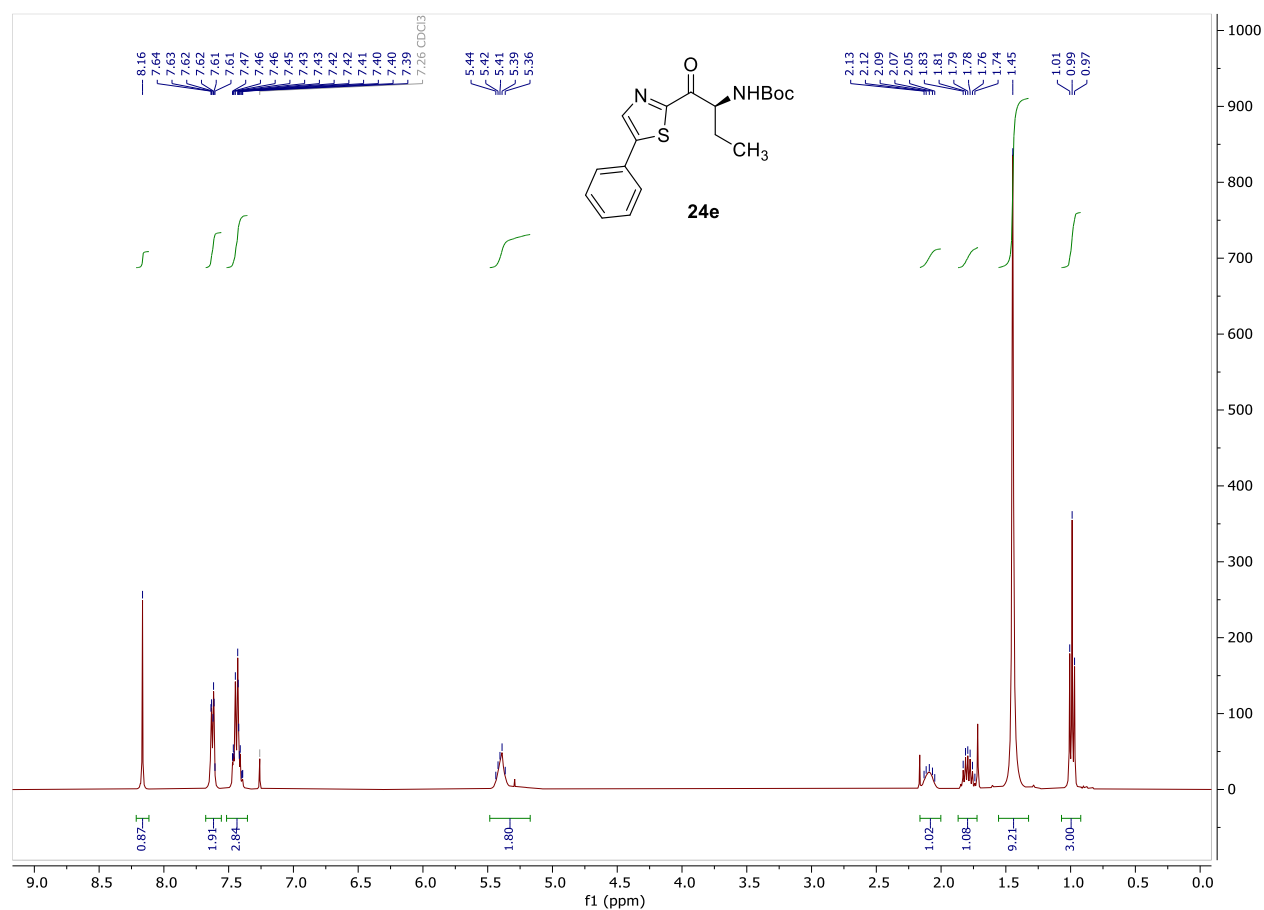
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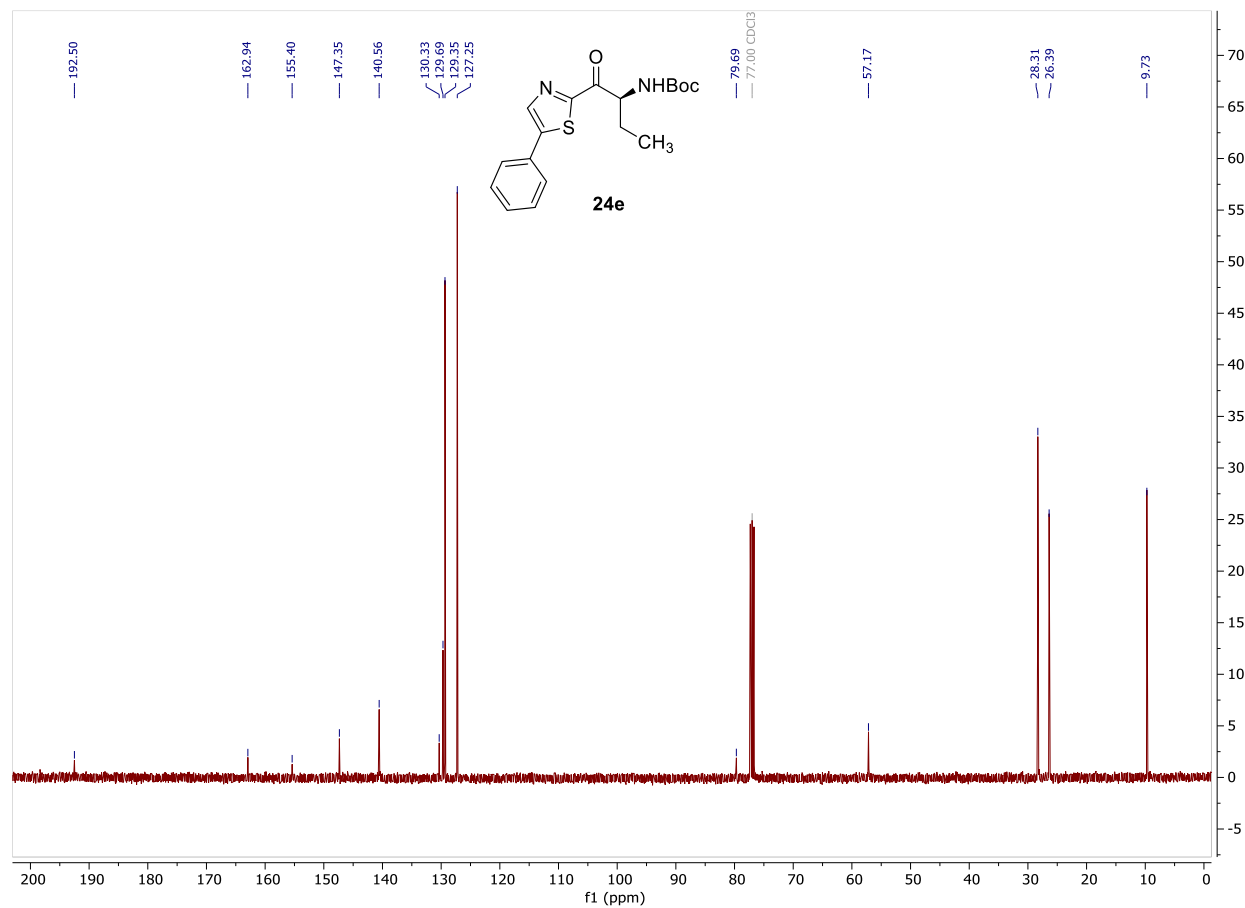
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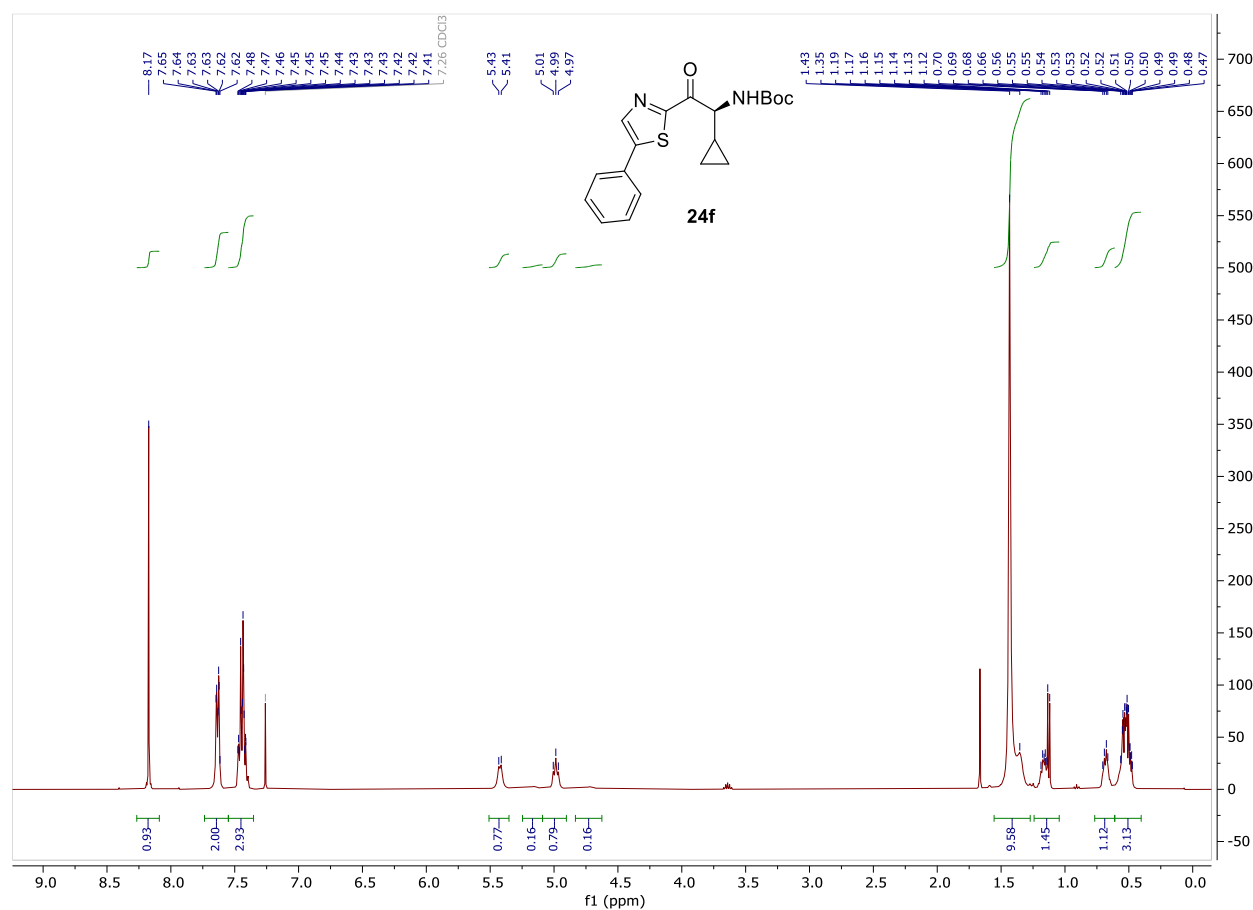
Compound **24e** ( $^1\text{H}$  NMR, 400 MHz):



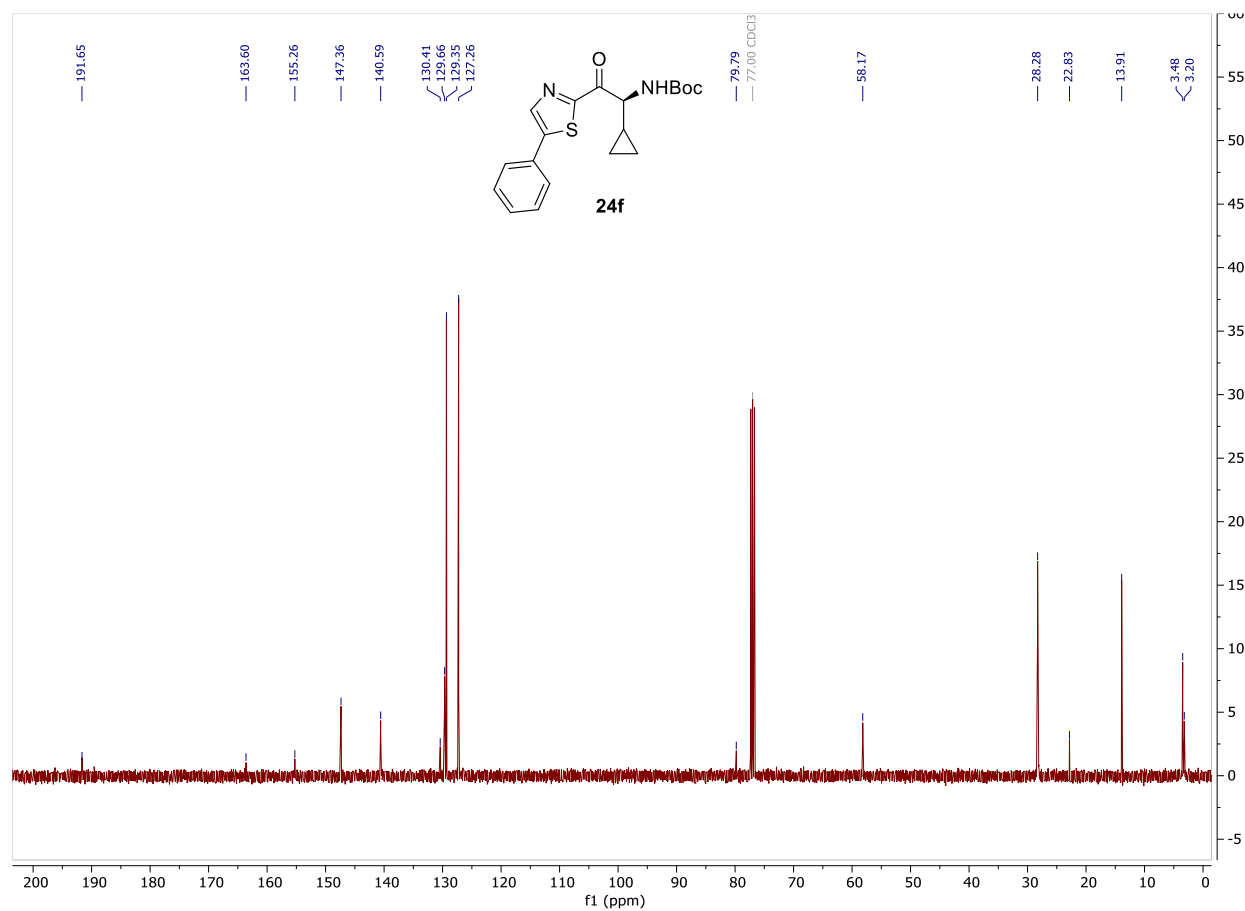
Compound **24e** ( $^{13}\text{C}$  NMR, 101 MHz):



Compound **24f** ( $^1\text{H}$  NMR, 400 MHz):

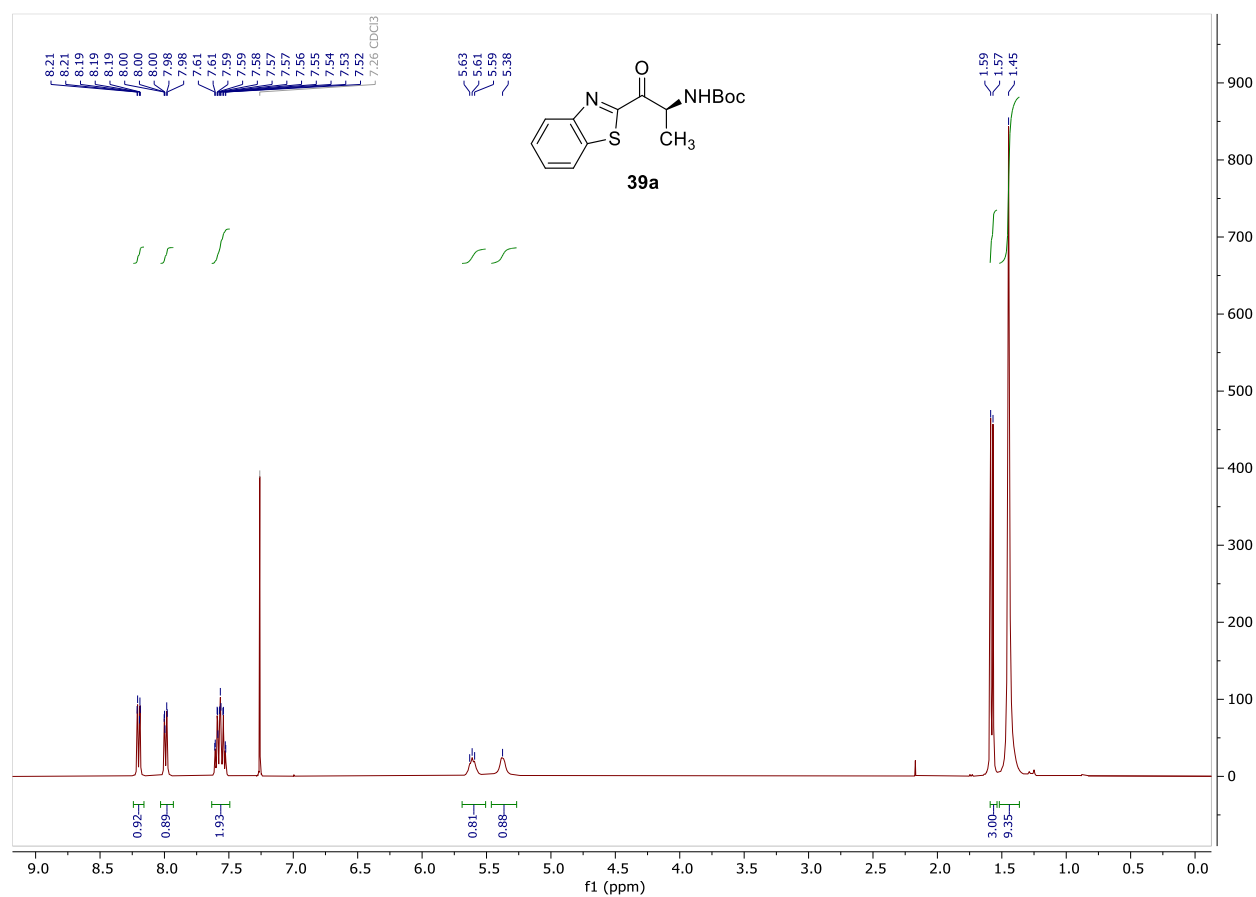


Compound **24f** ( $^{13}\text{C}$  NMR, 101 MHz):

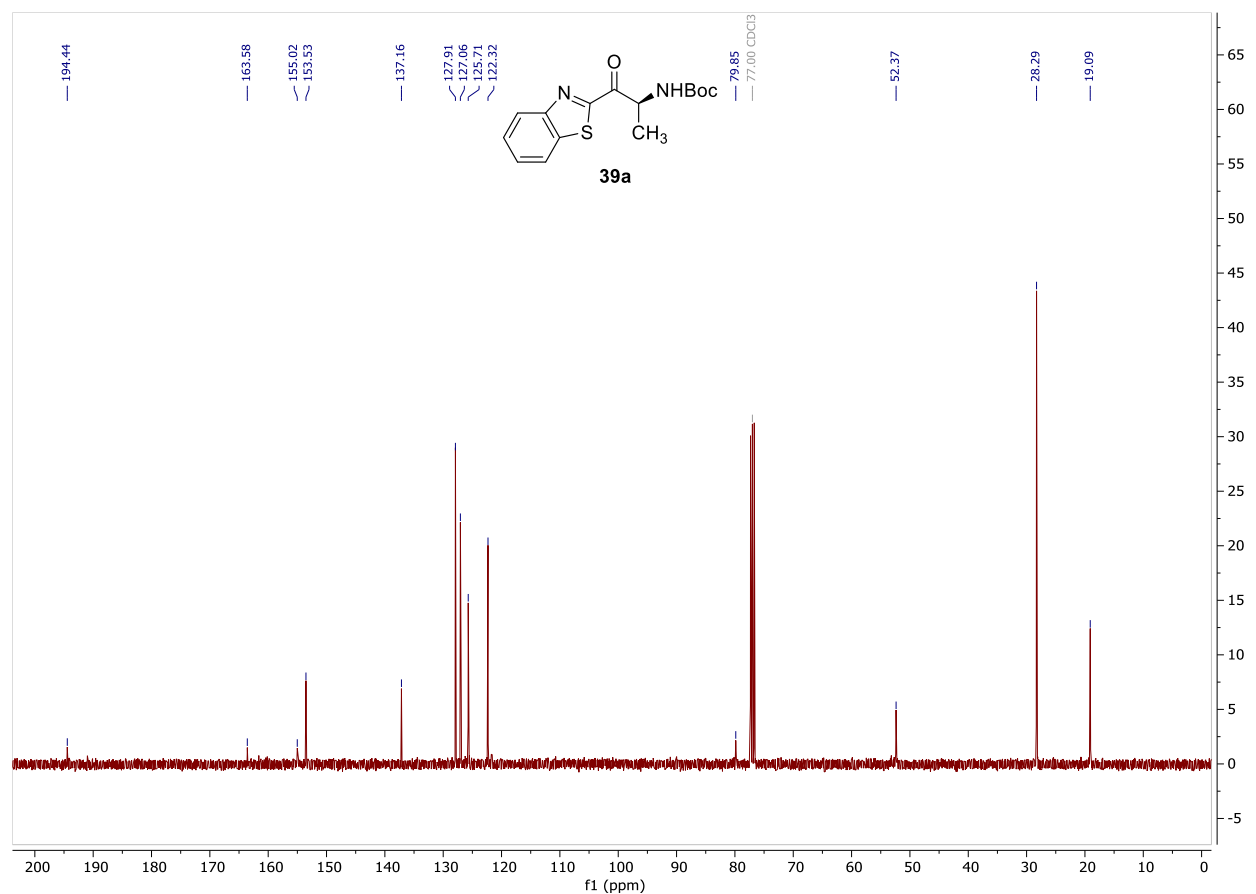




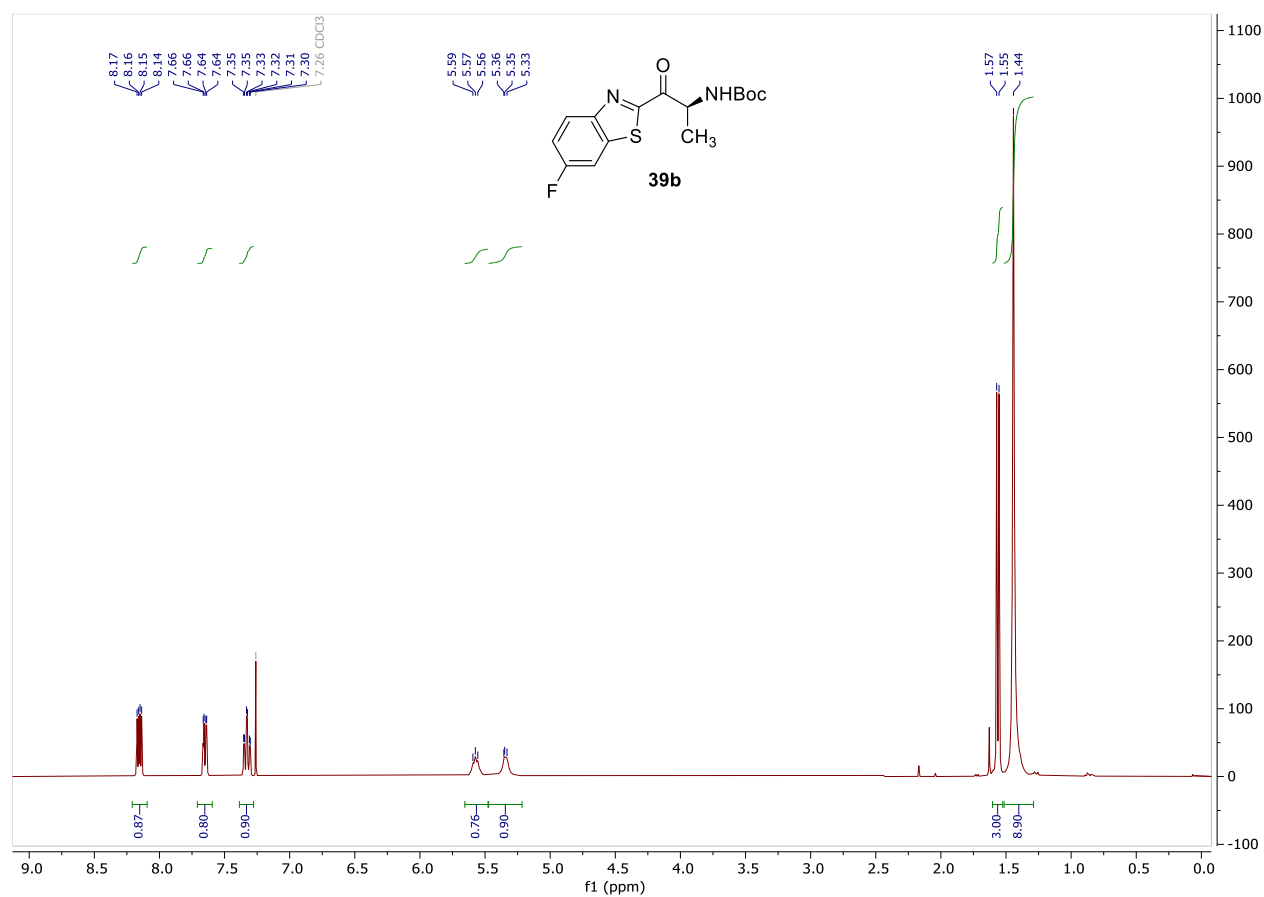
Compound **39a** ( $^1\text{H}$  NMR, 400 MHz):



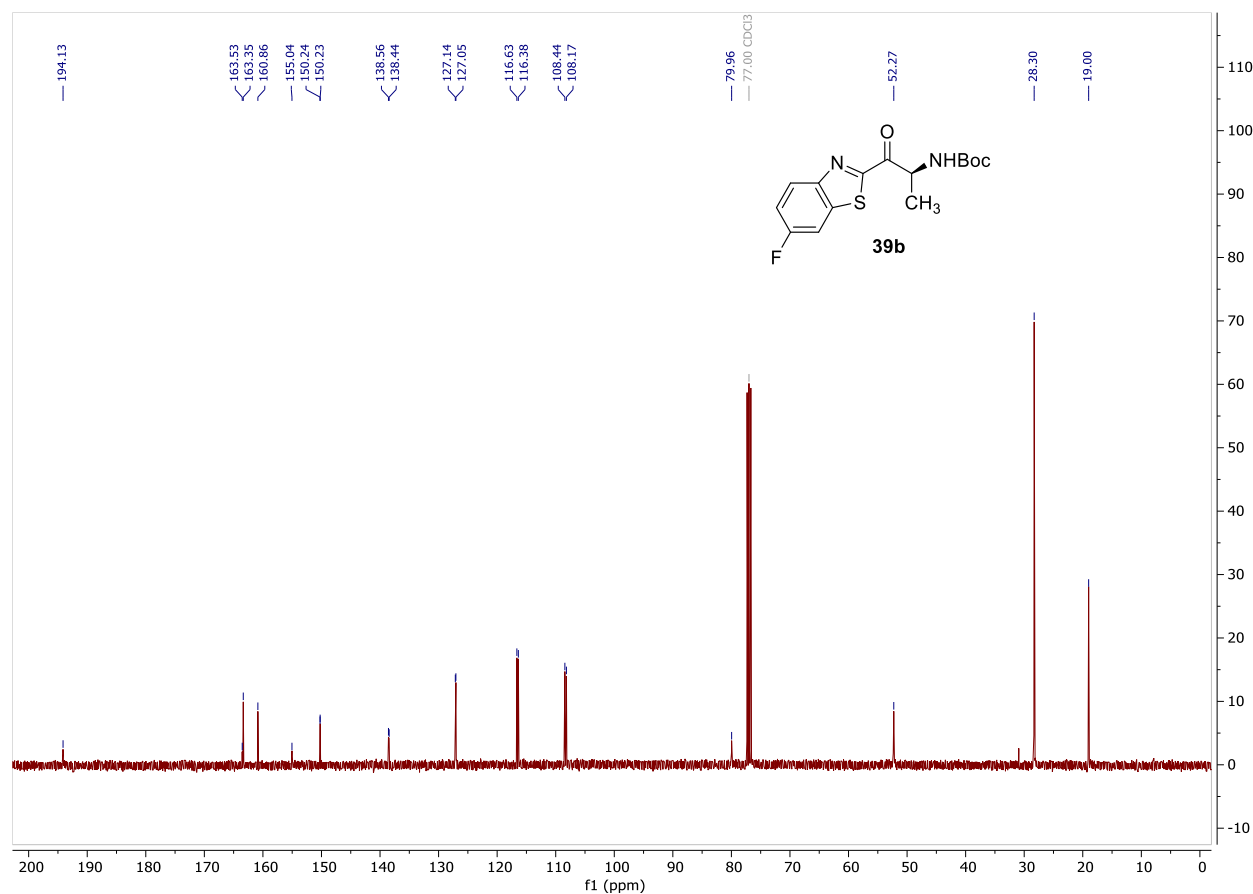
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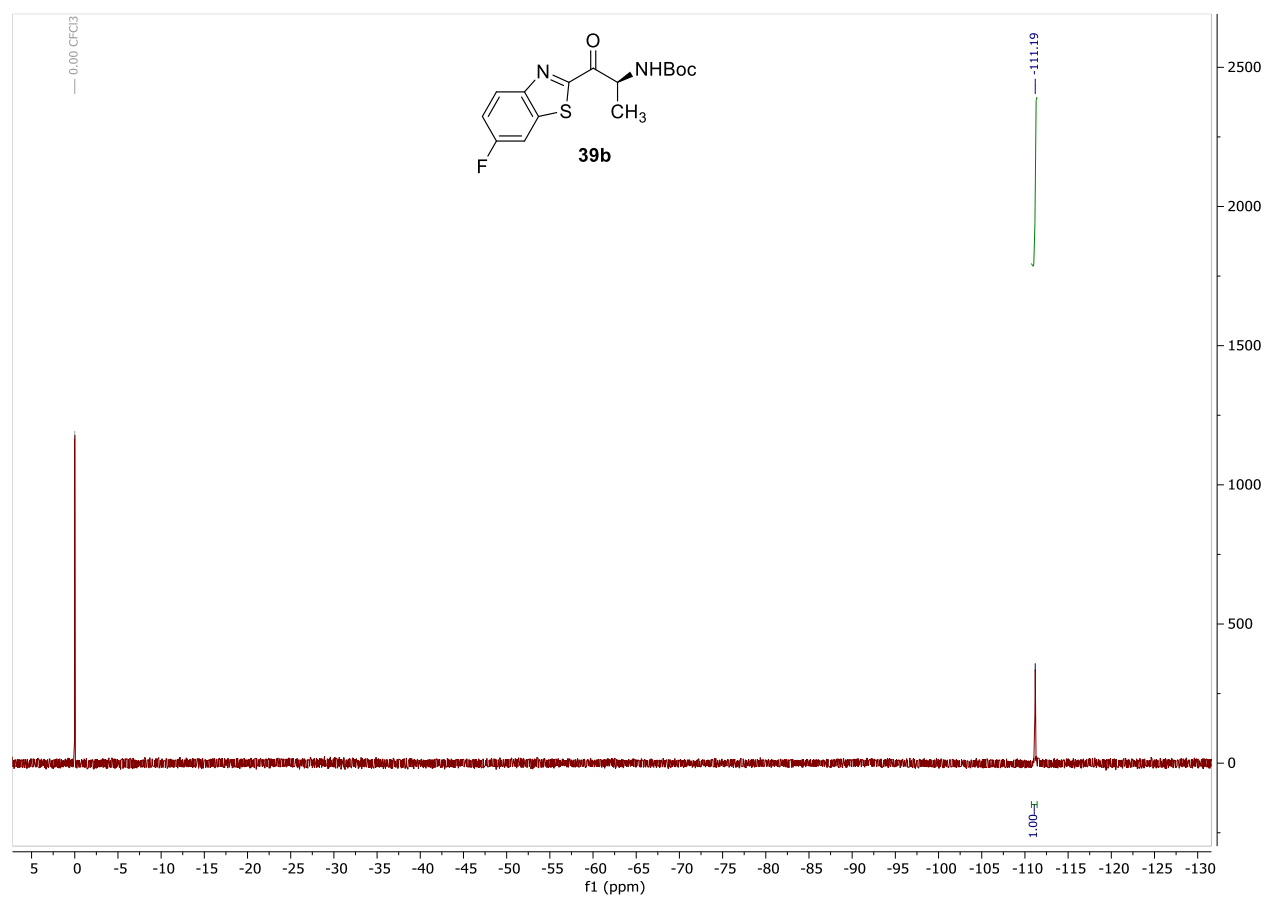
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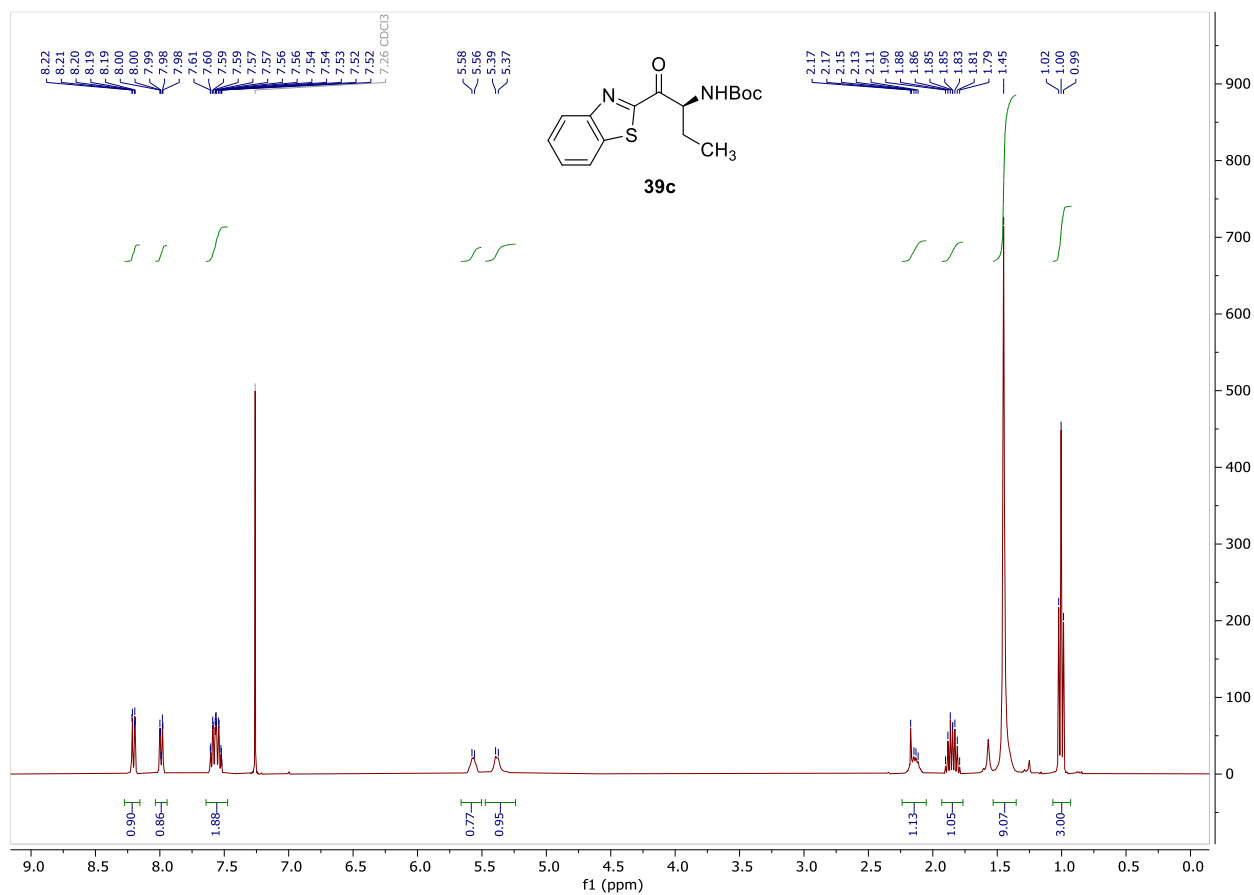
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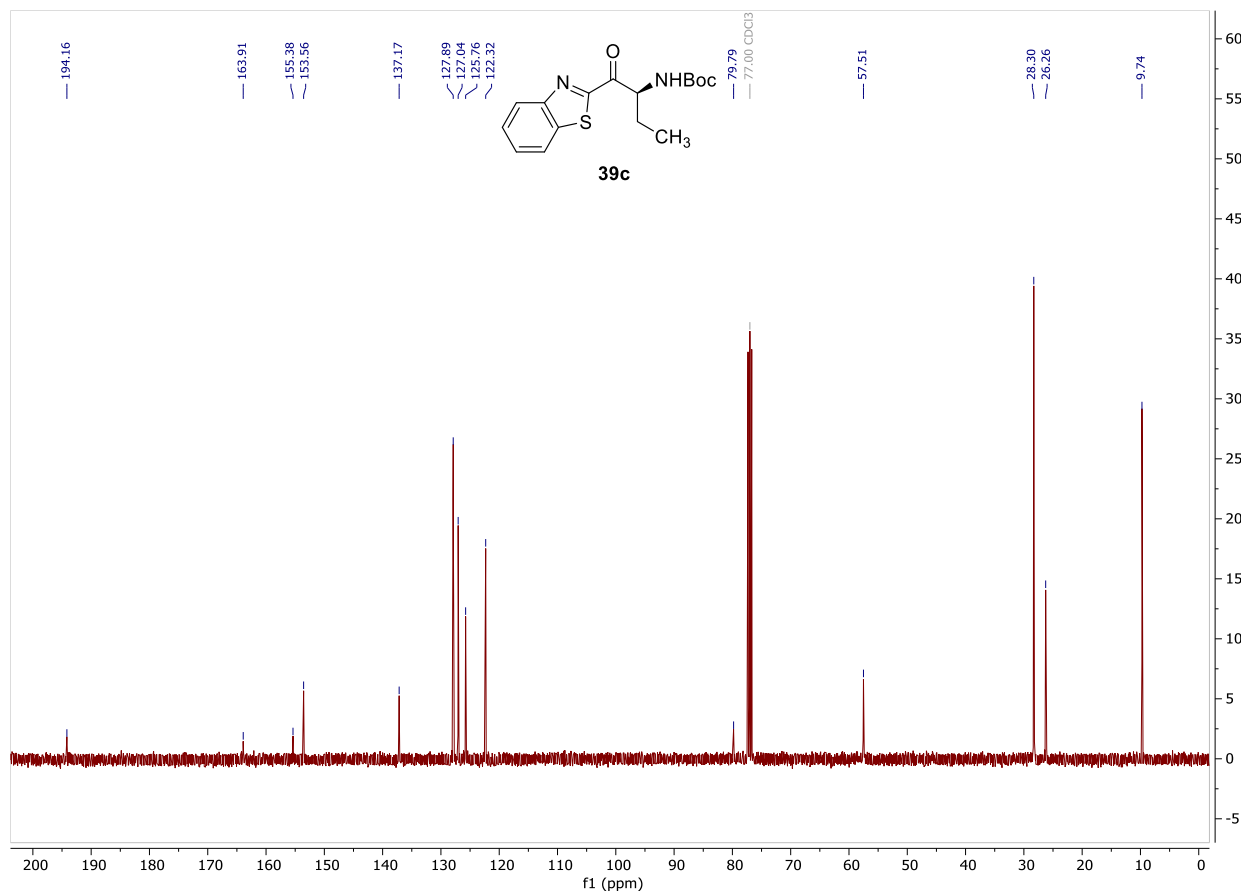
Compound **39b** ( $^{19}\text{F}$  NMR, 282 MHz):



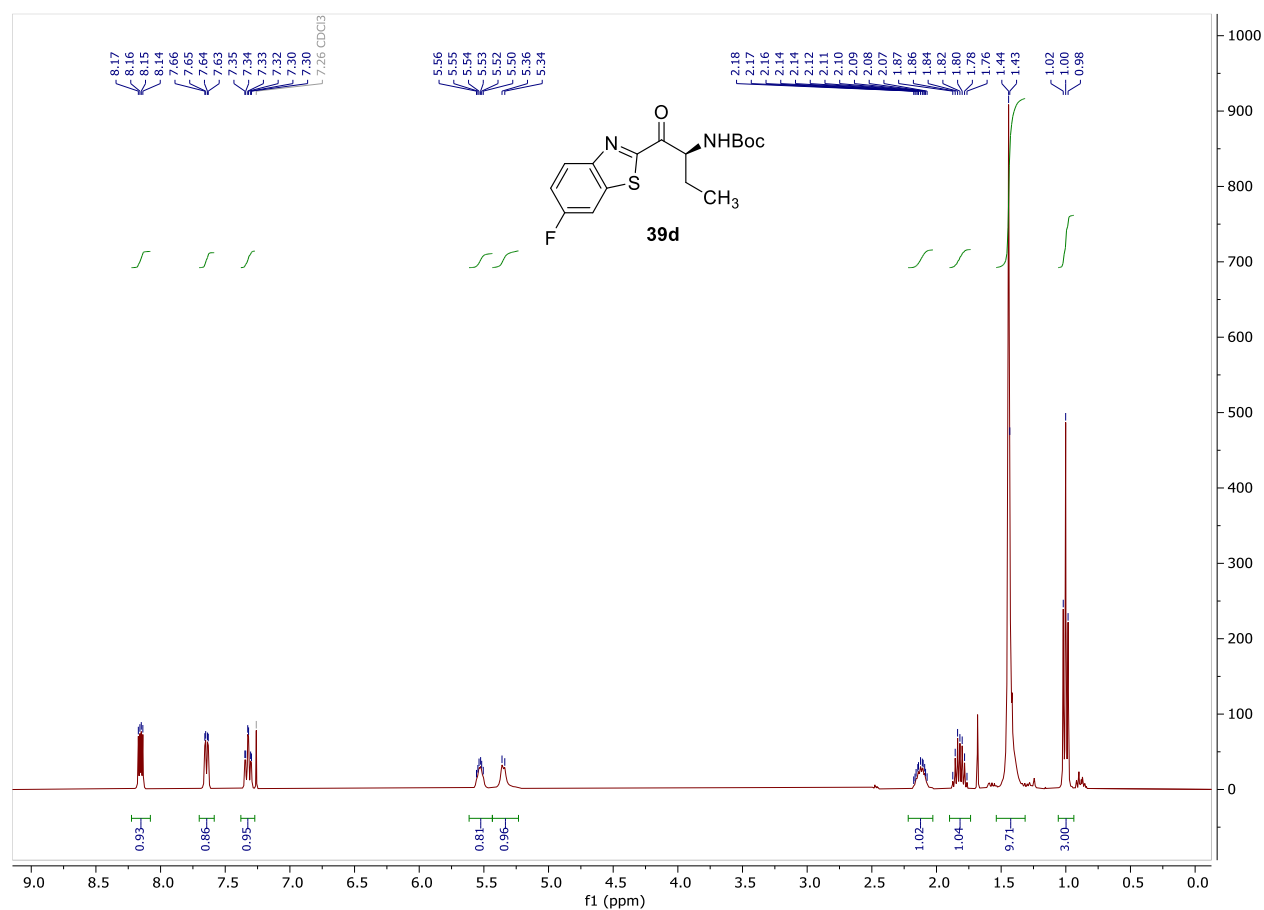
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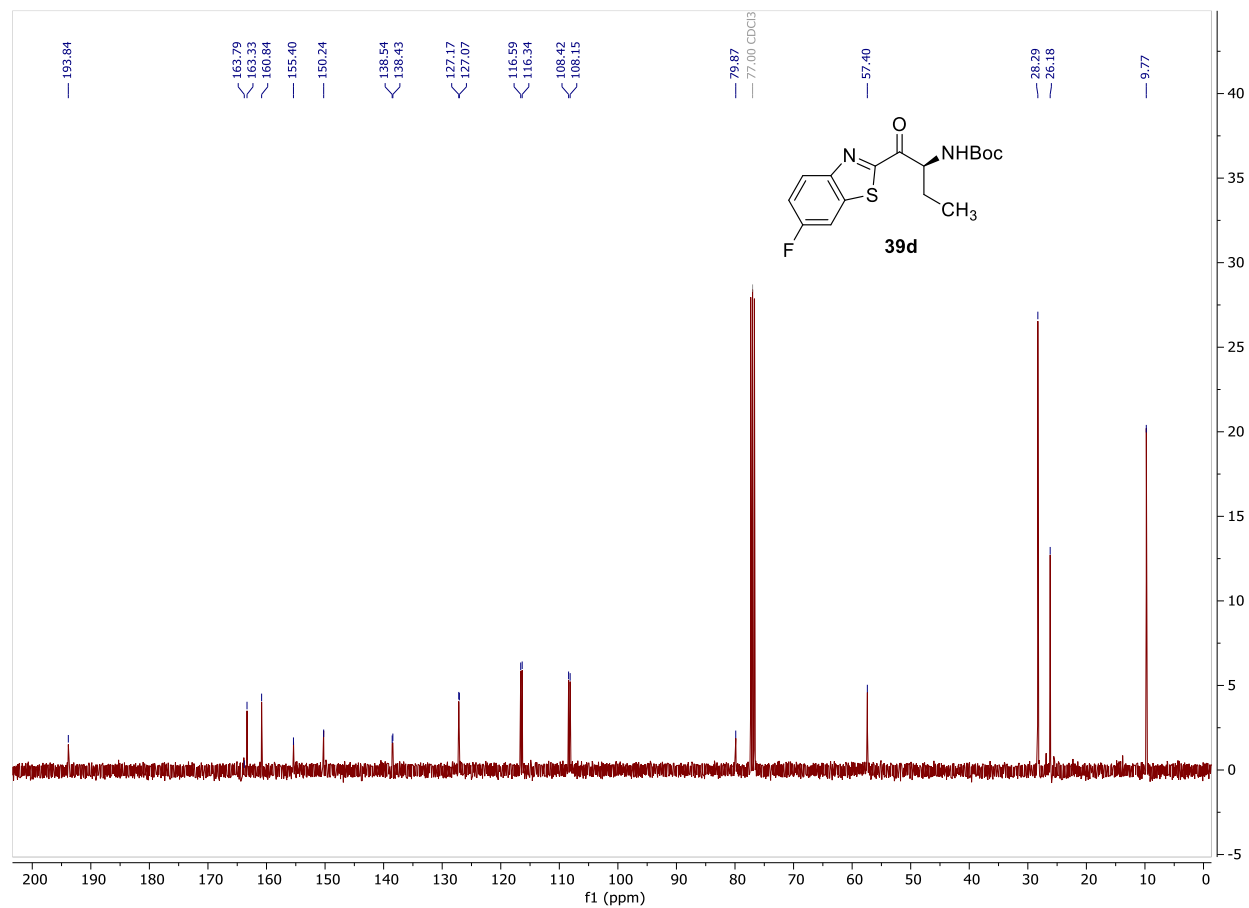
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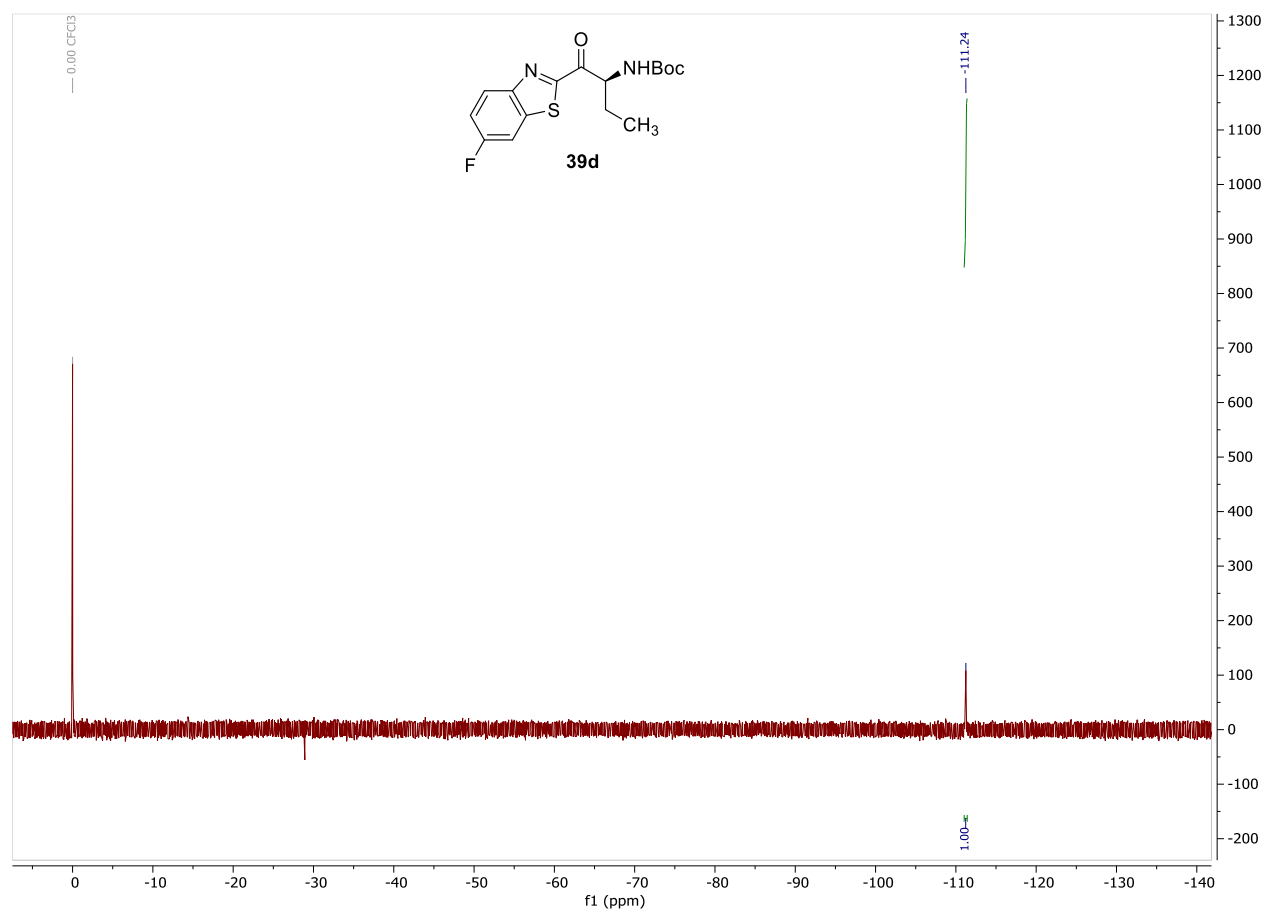
Compound **39d** ( $^1\text{H}$  NMR, 400 MHz):



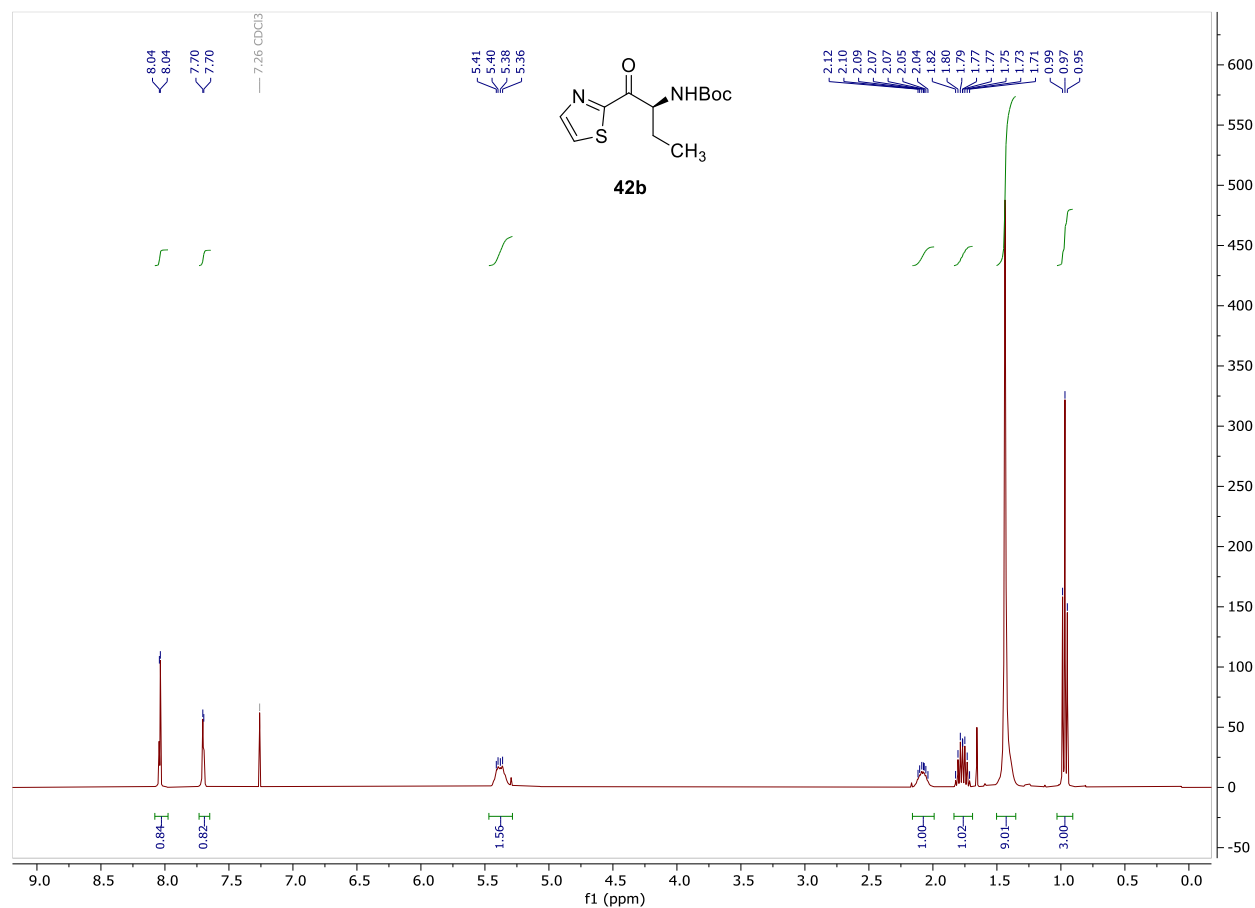
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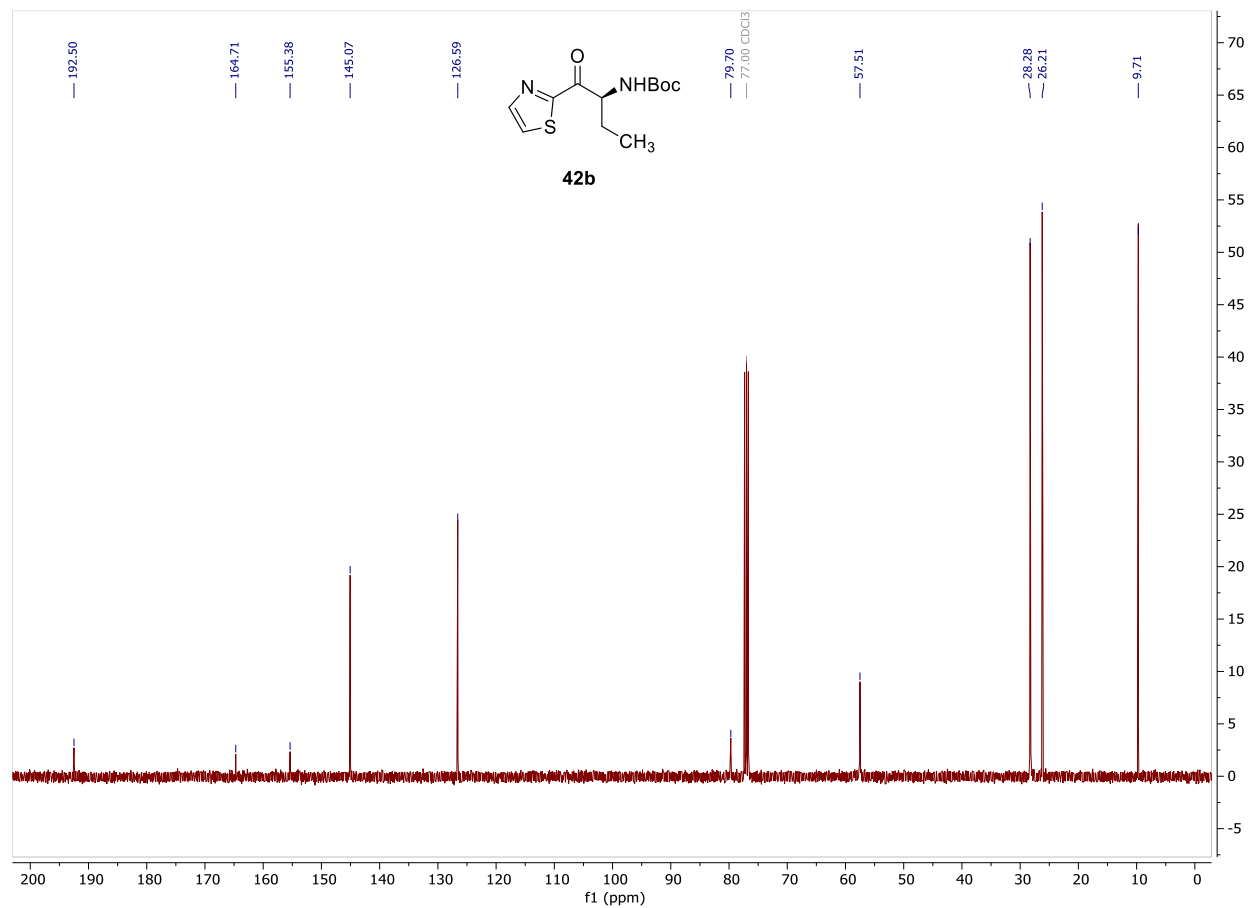
Compound **39d** ( $^{19}\text{F}$  NMR, 282 MHz):



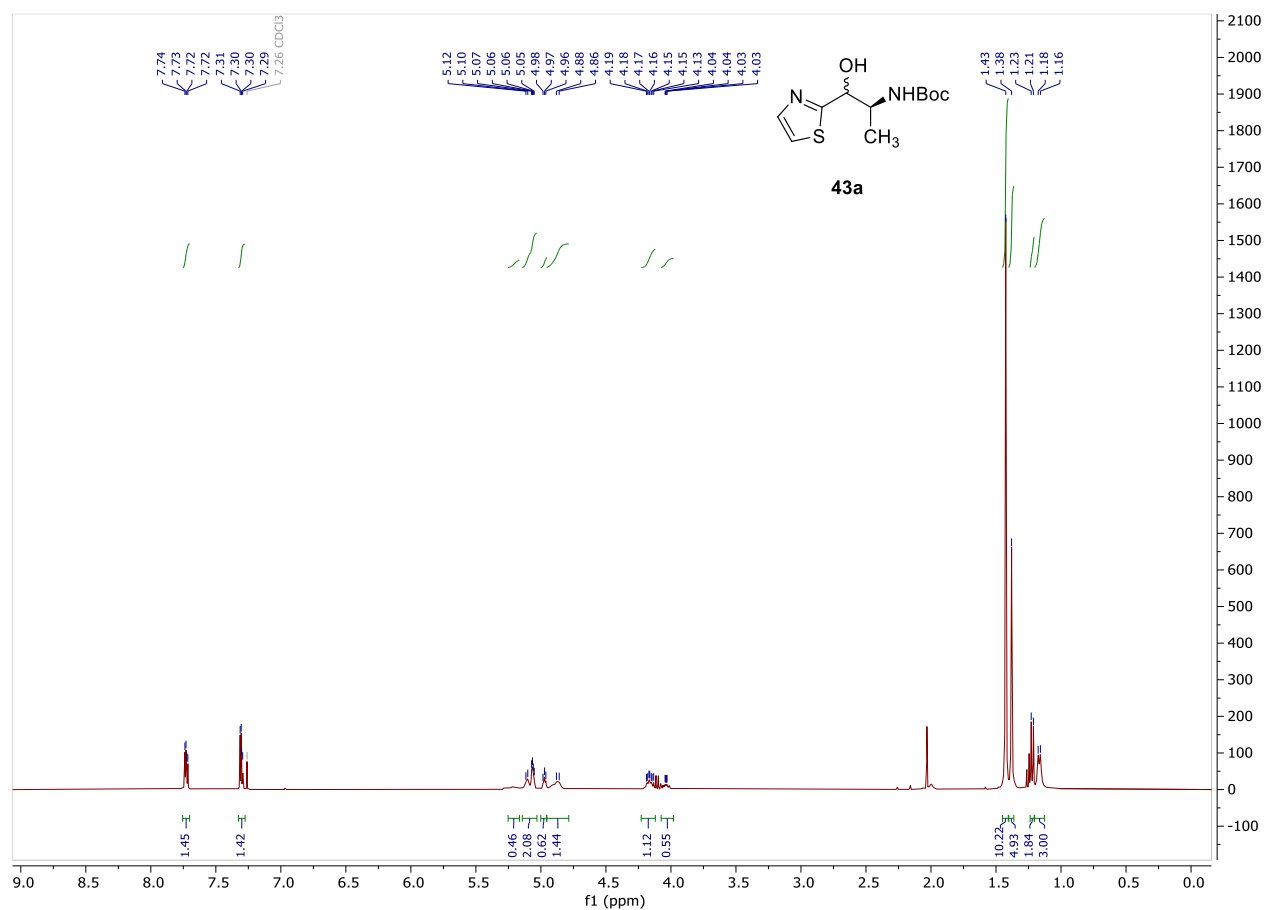
Compound **42b** ( $^1\text{H}$  NMR, 400 MHz):



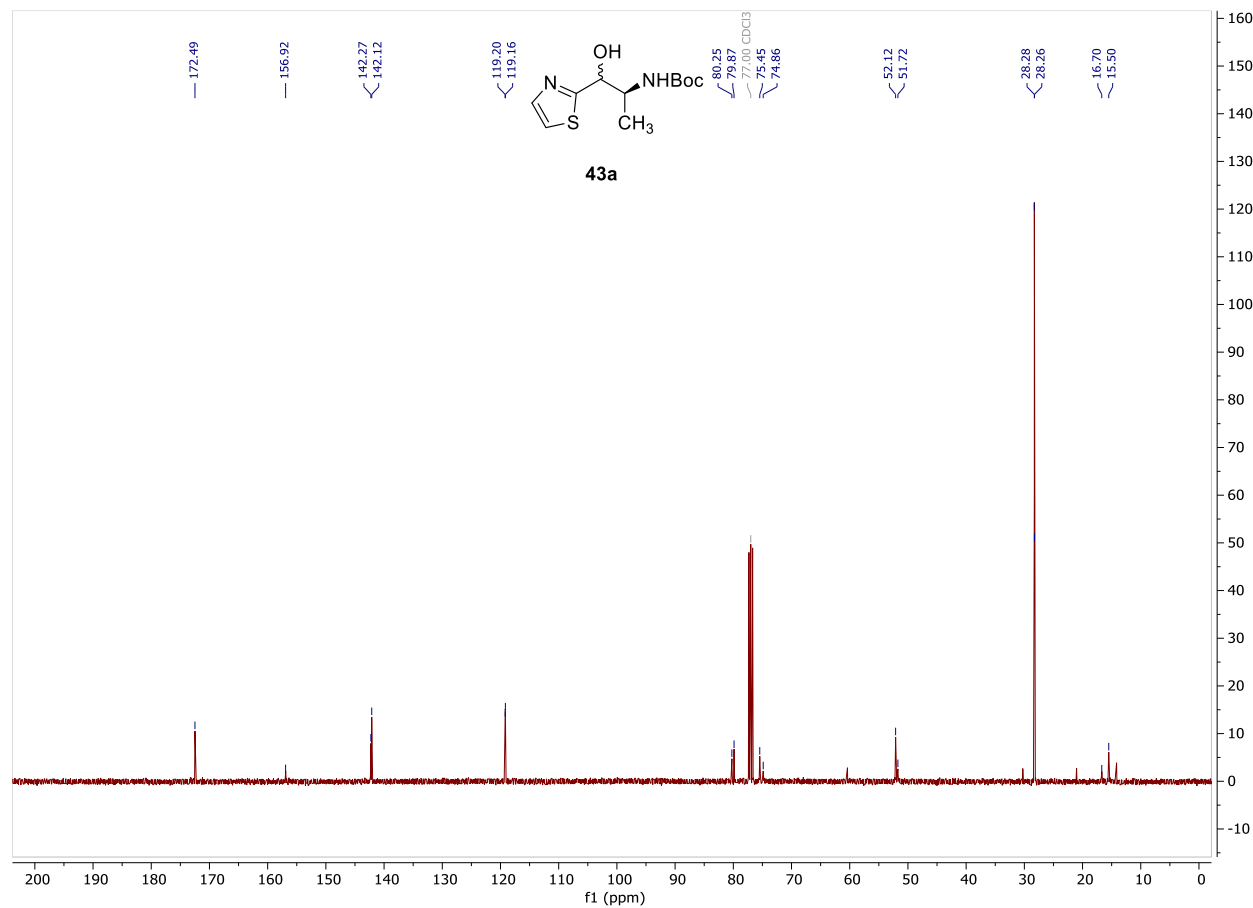
Compound **42b** ( $^{13}\text{C}$  NMR, 101 MHz):



Compound **43a** ( $^1\text{H}$  NMR, 400 MHz):

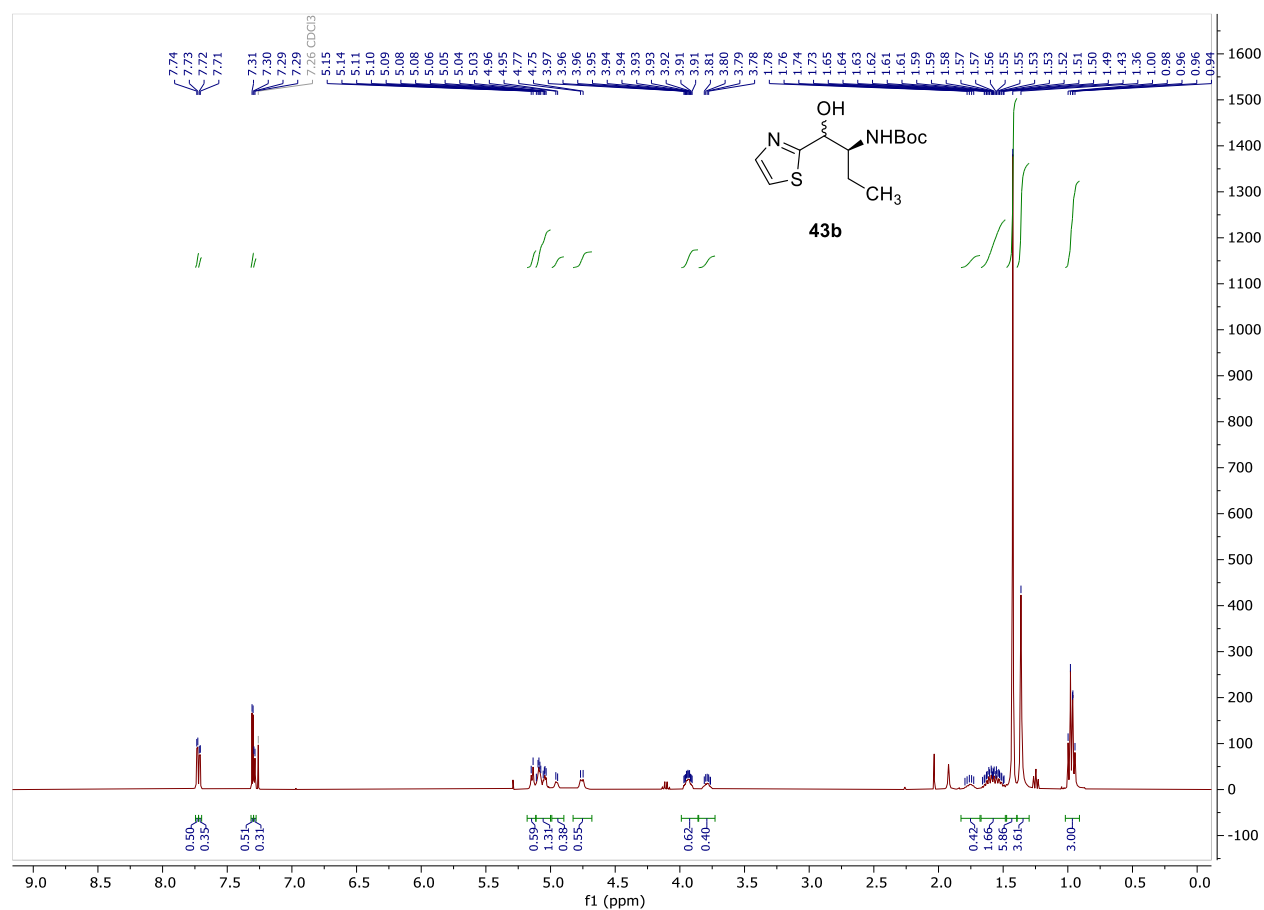


Compound **43a** ( $^{13}\text{C}$  NMR, 101 MHz):

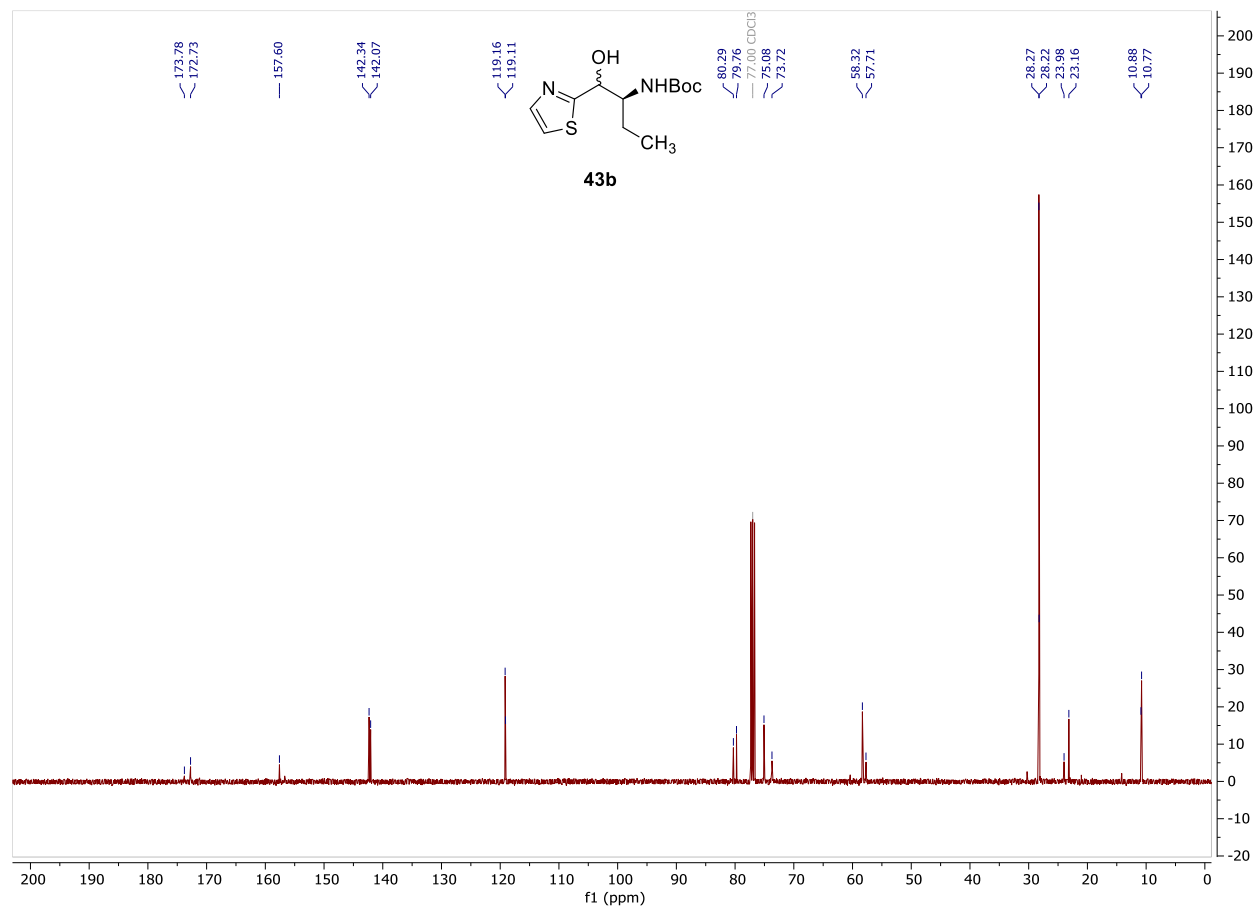




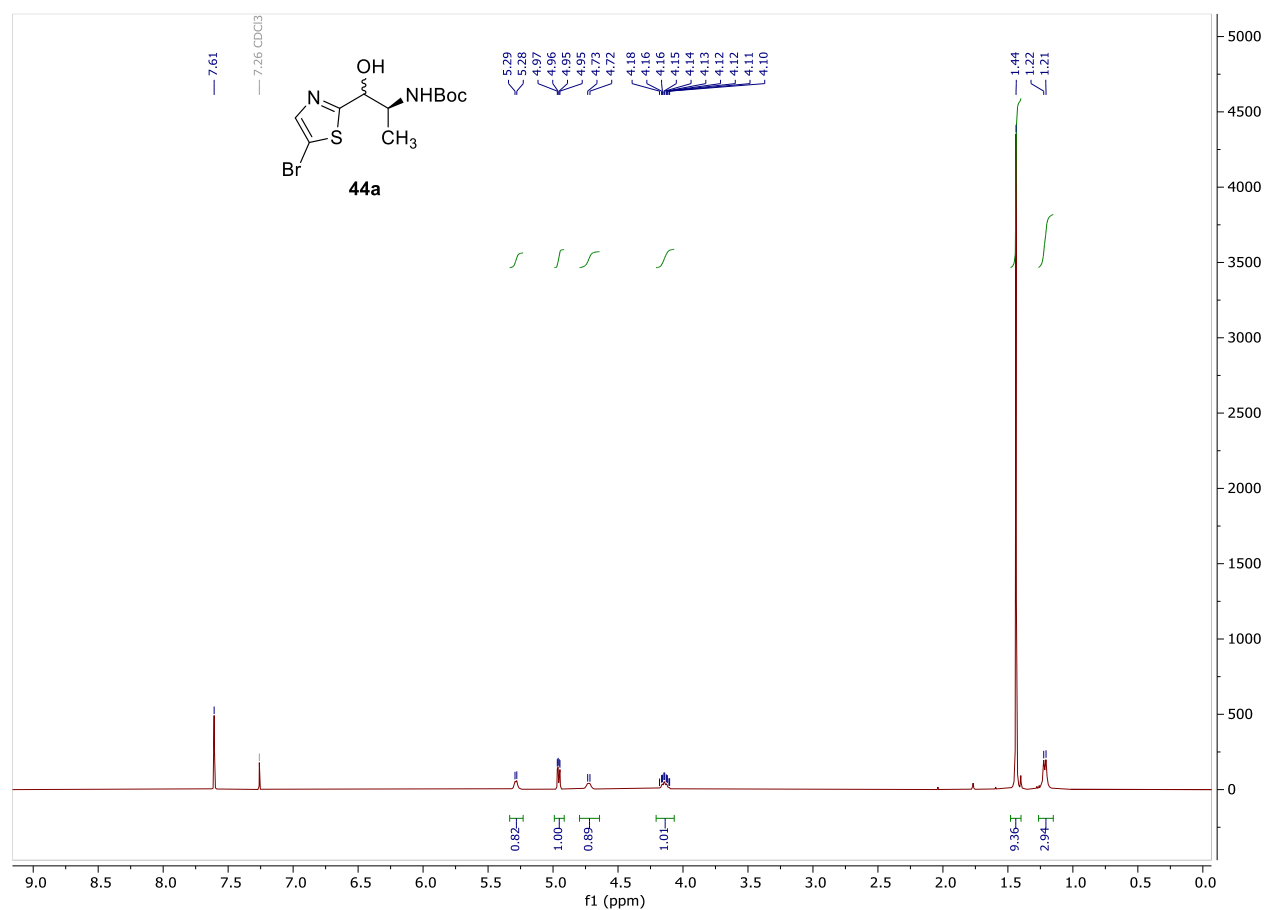
Compound **43b** ( $^1\text{H}$  NMR, 400 MHz):



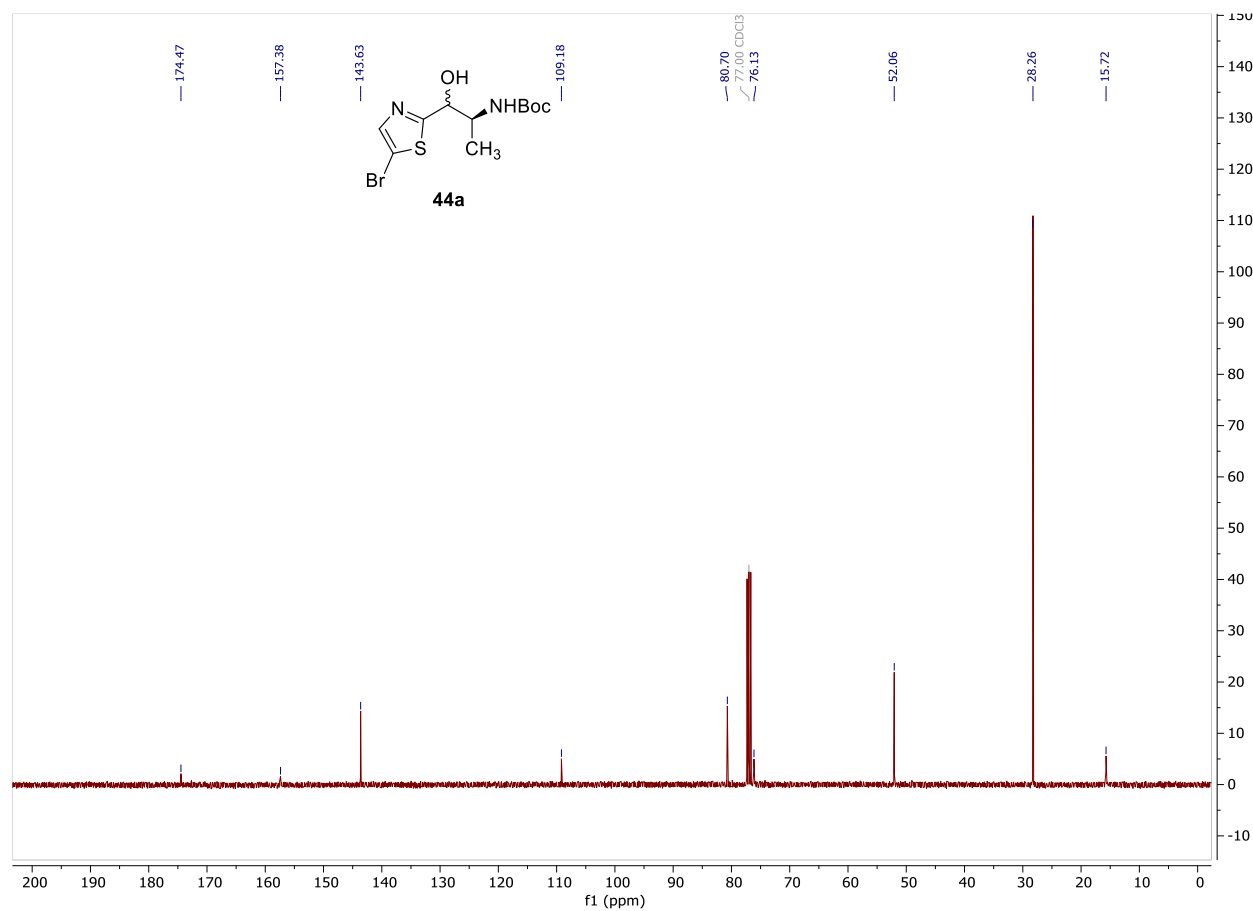
Compound **43b** ( $^{13}\text{C}$  NMR, 101 MHz):



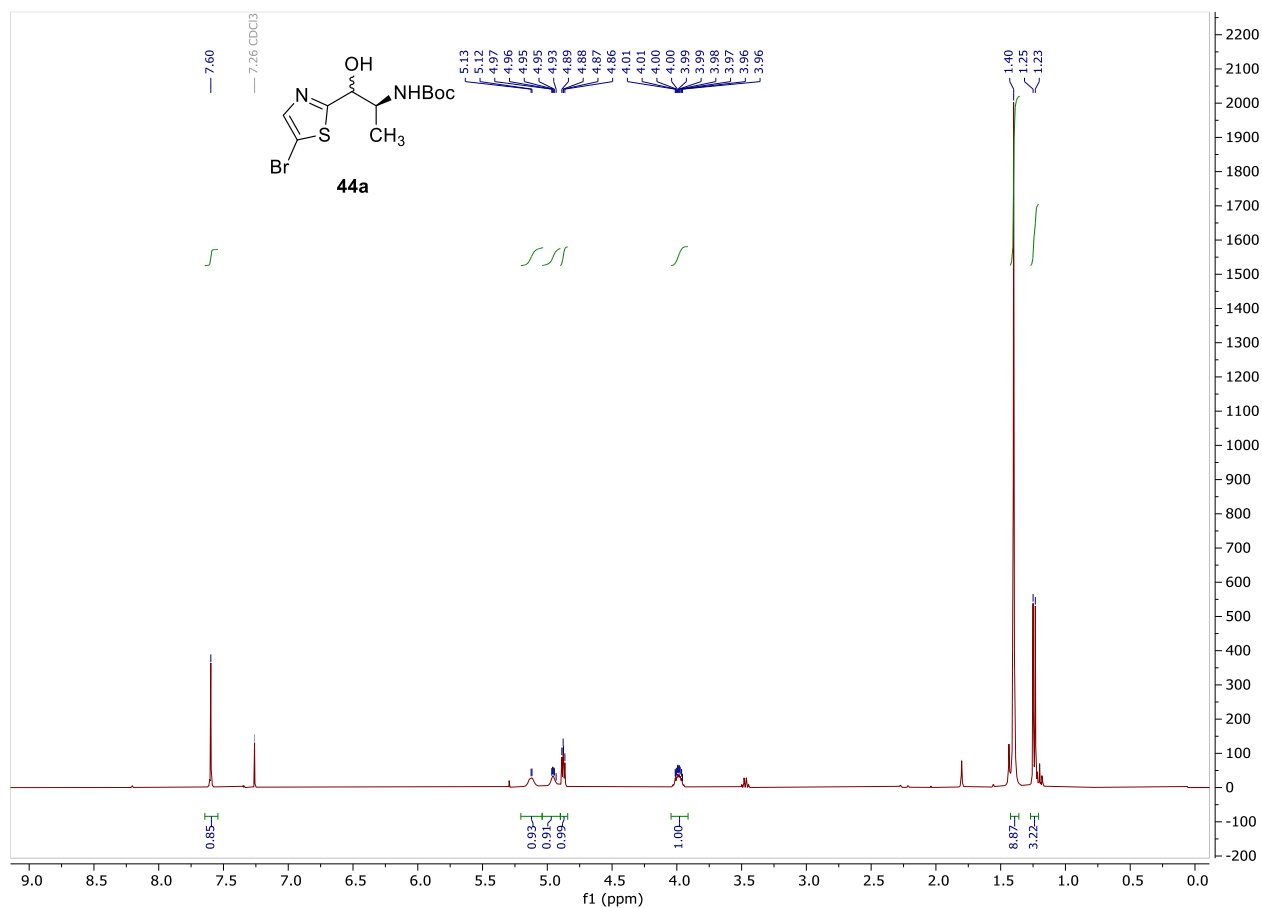
Compound **44a** – major diastereomer ( $^1\text{H}$  NMR, 400 MHz):



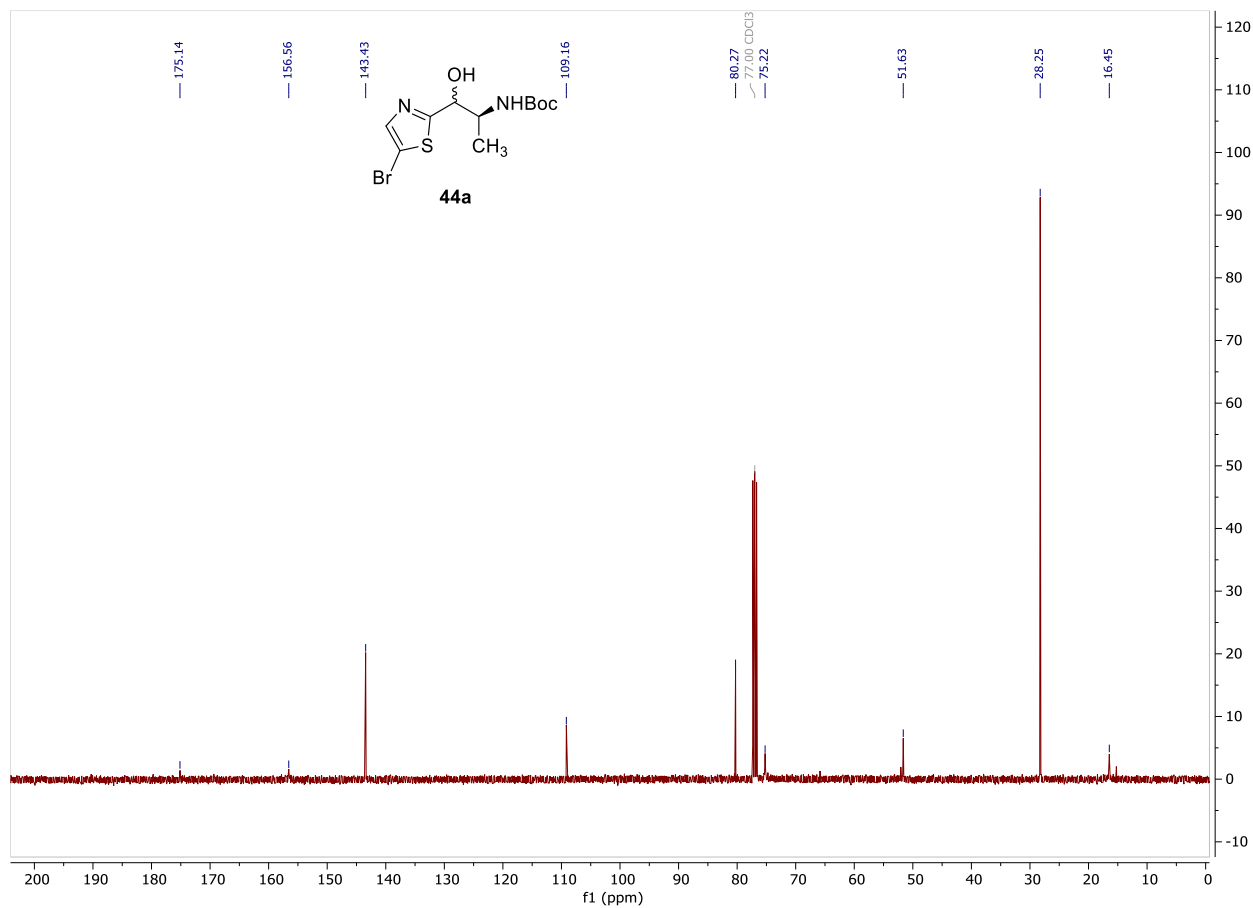
Compound **44a** – major diastereomer ( $^{13}\text{C}$  NMR, 101 MHz):



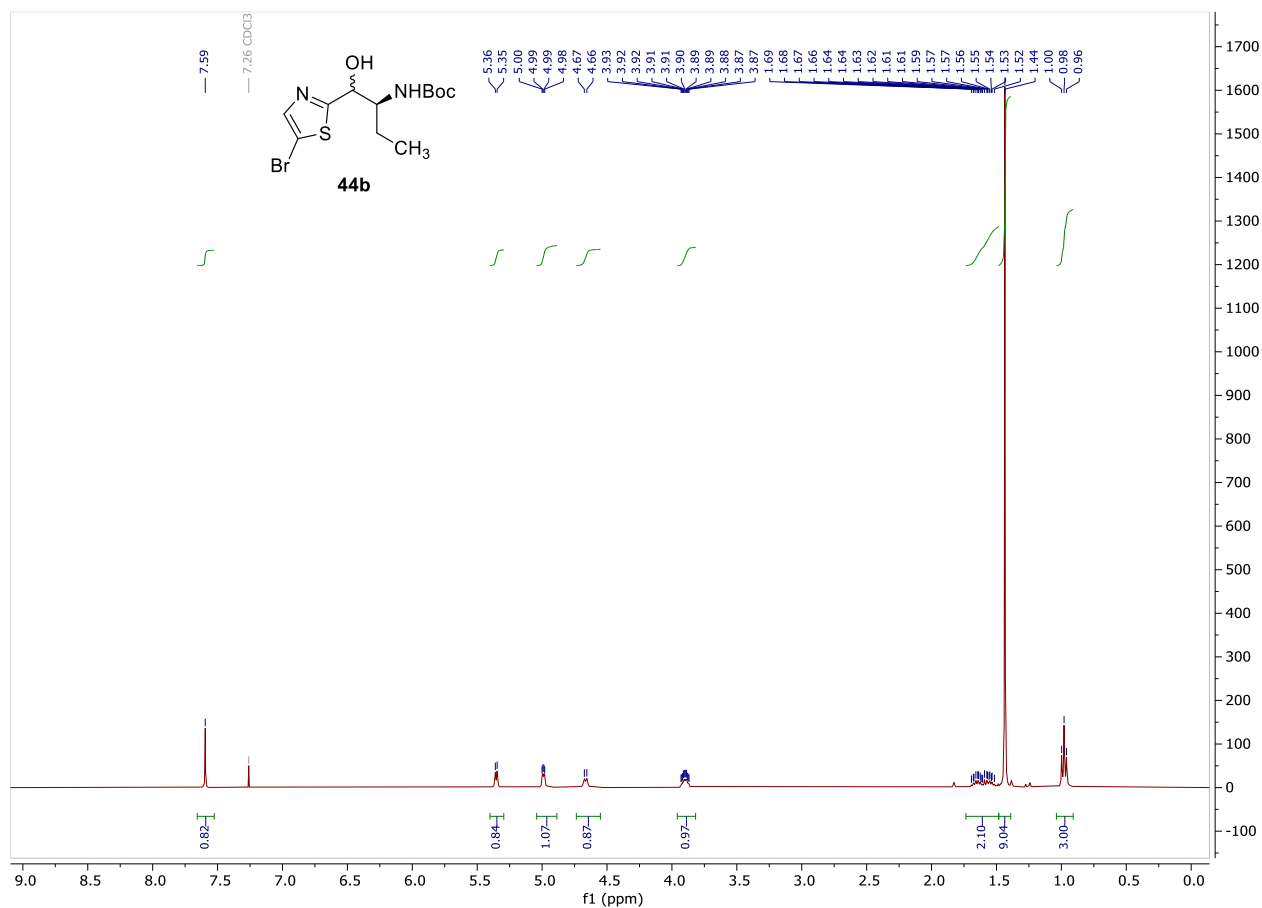
Compound **44a** – minor diastereomer ( $^1\text{H}$  NMR, 400 MHz):



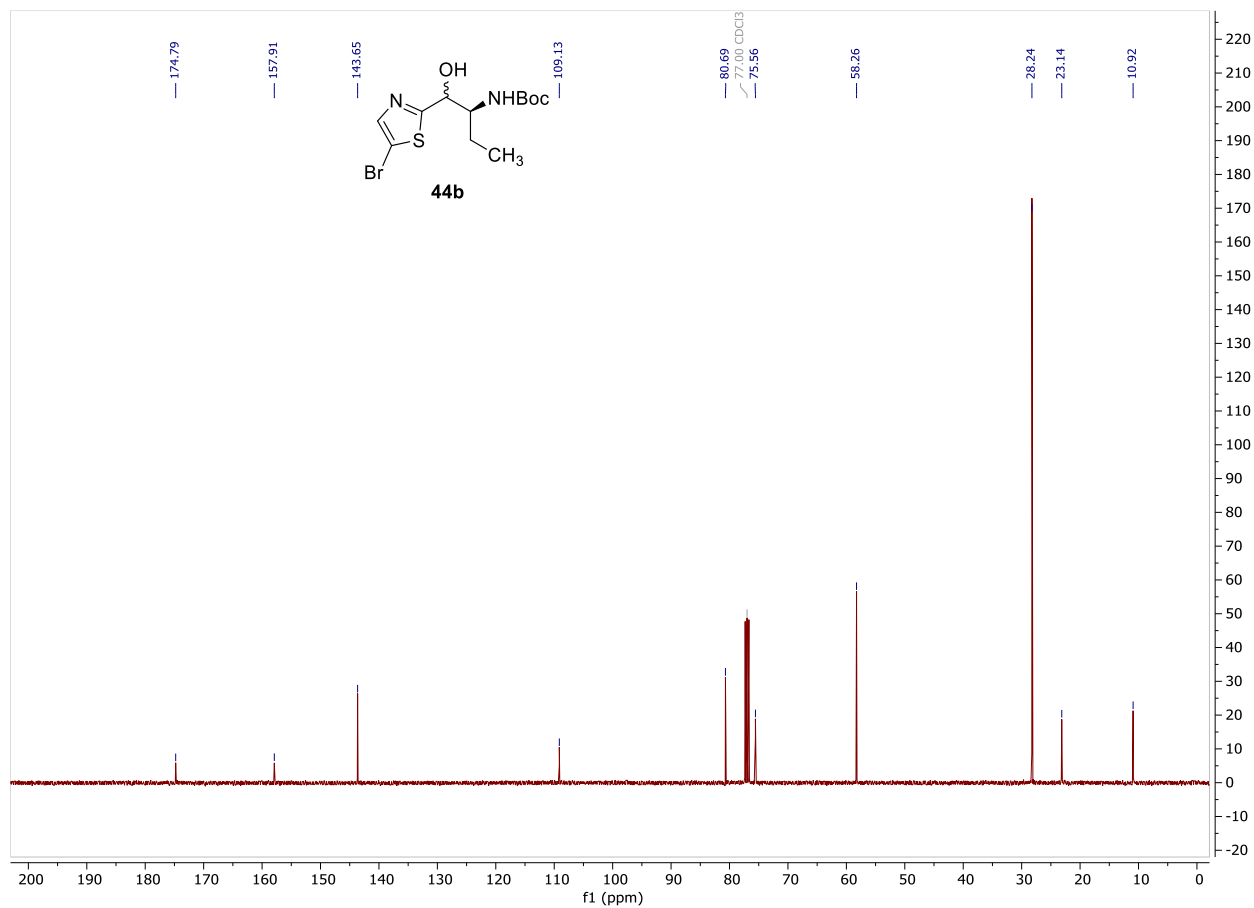
Compound **44a** – minor diastereomer ( $^{13}\text{C}$  NMR, 101 MHz):



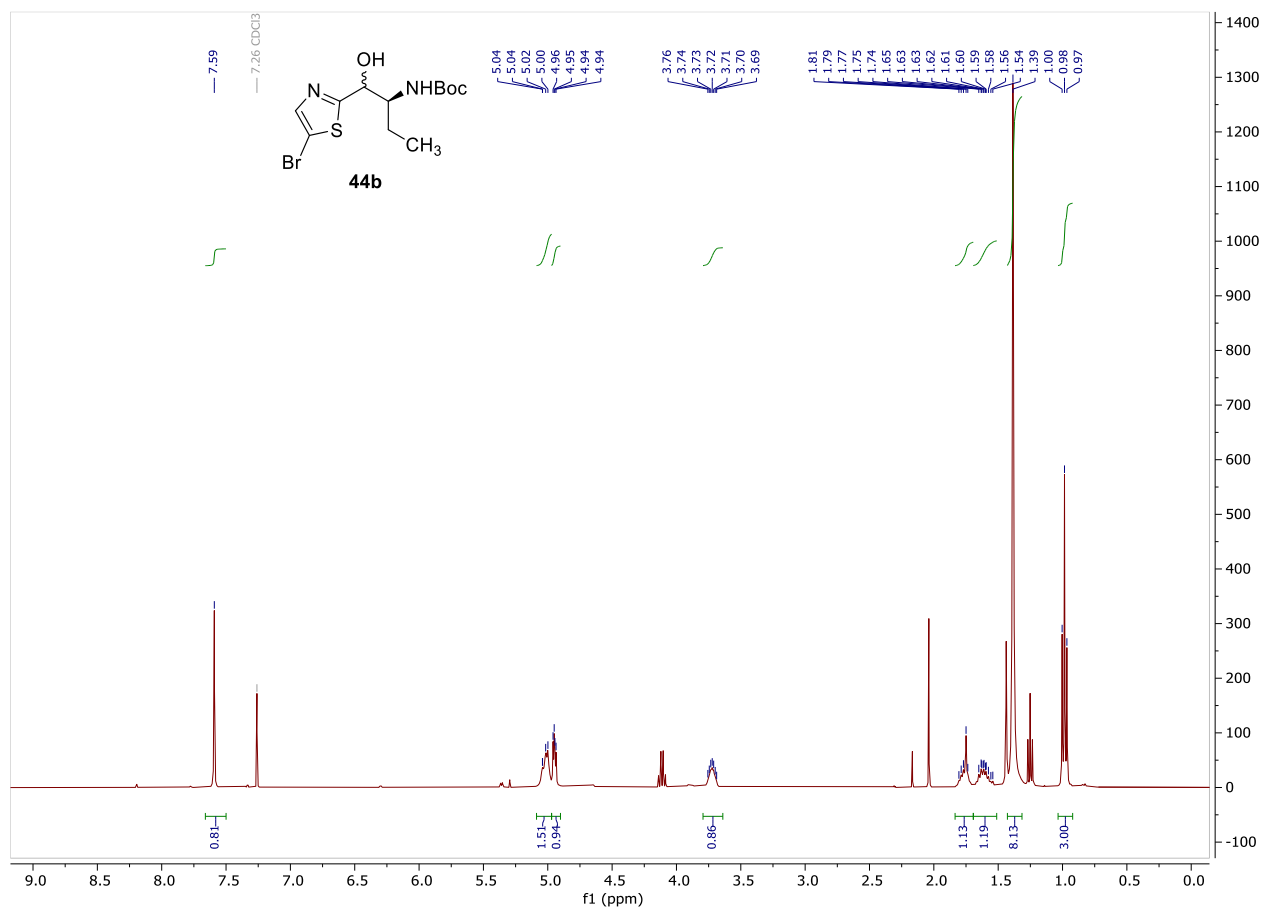
Compound **44b** – major diastereomer ( $^1\text{H}$  NMR, 400 MHz):



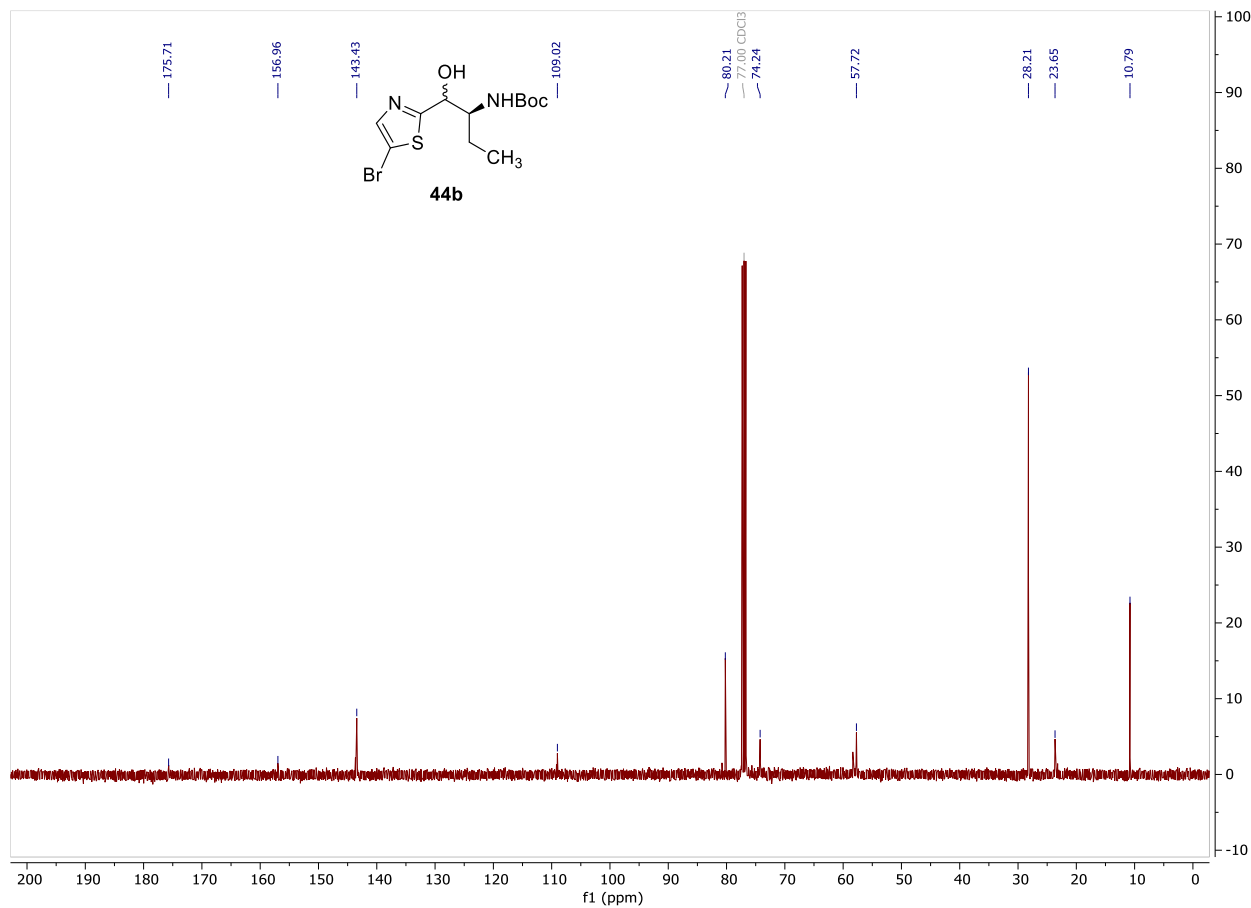
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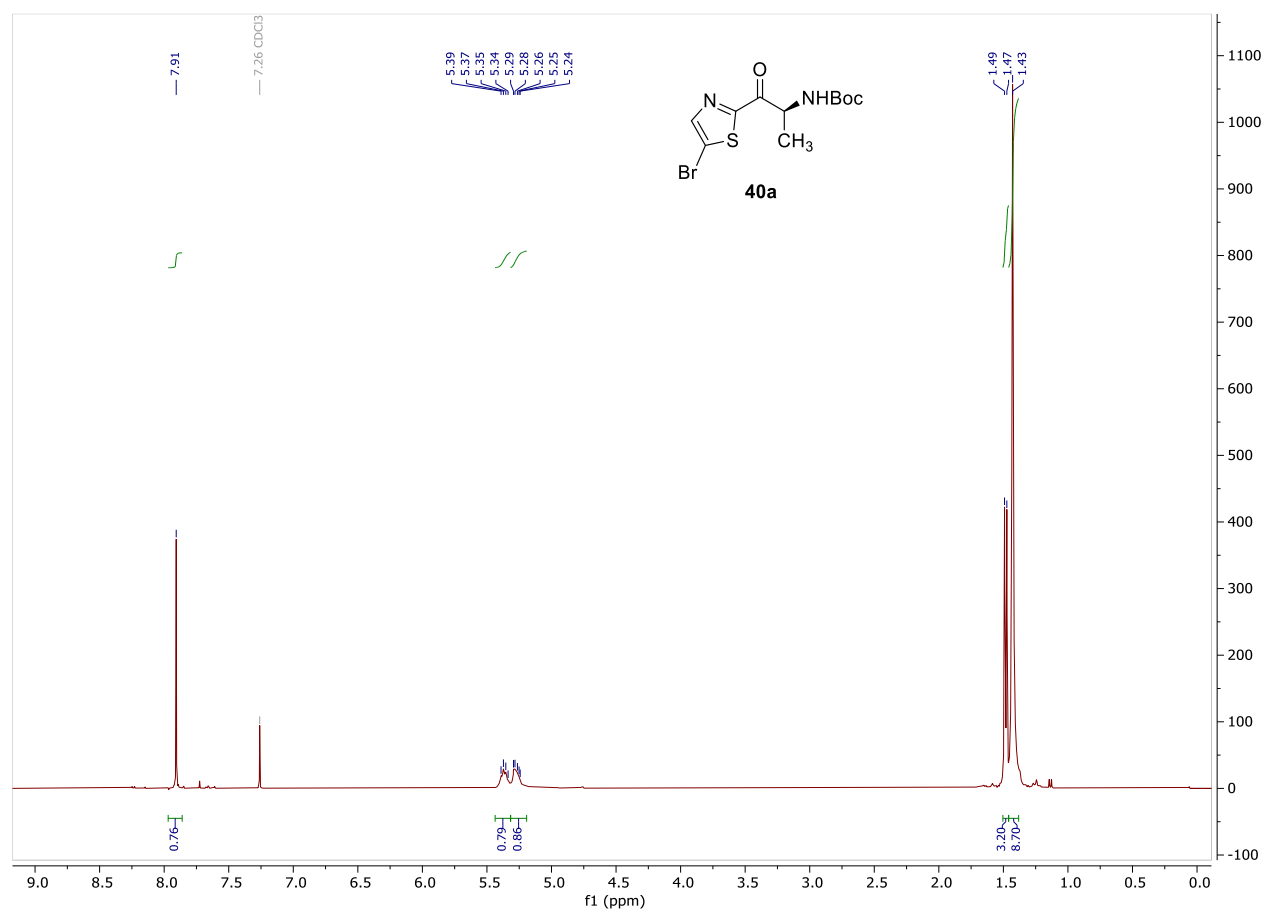
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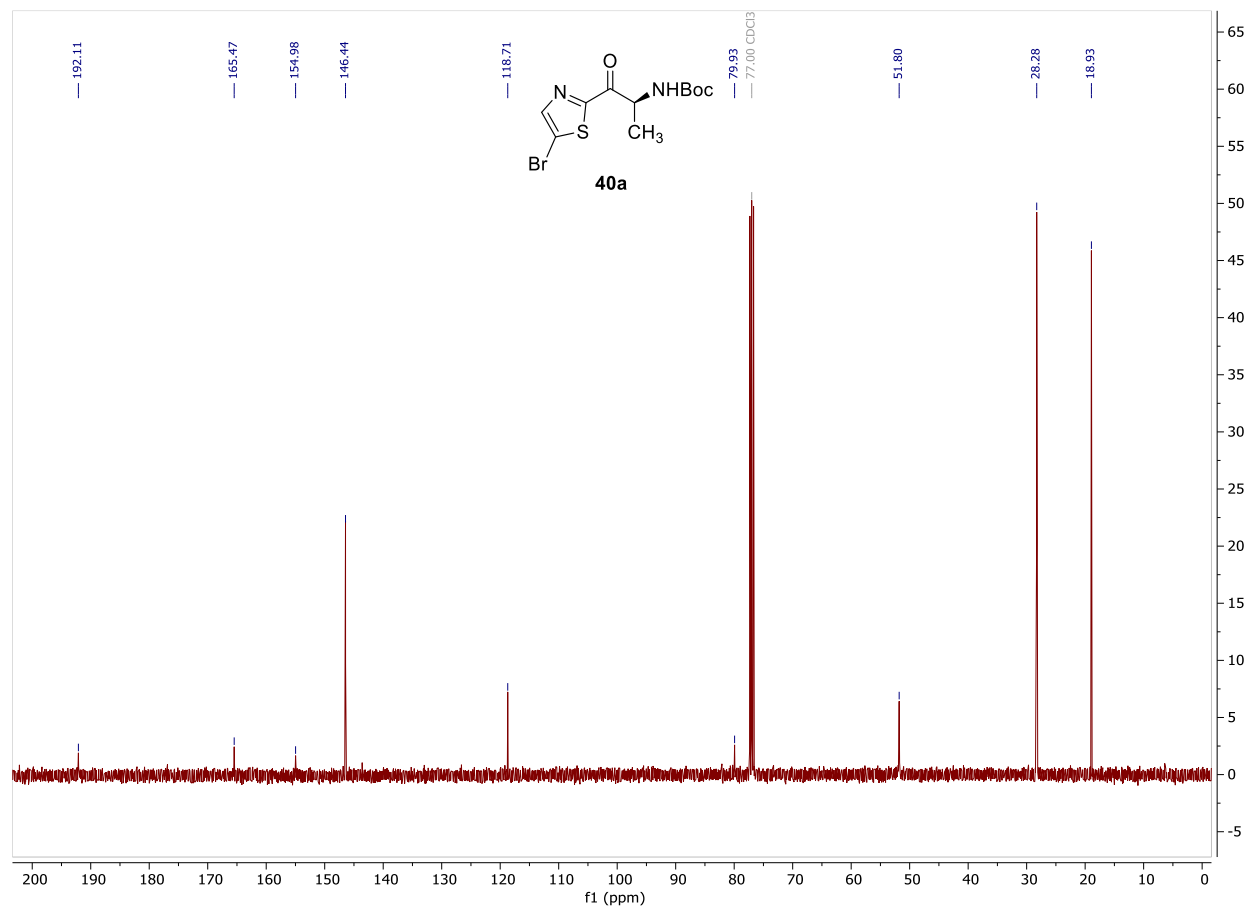
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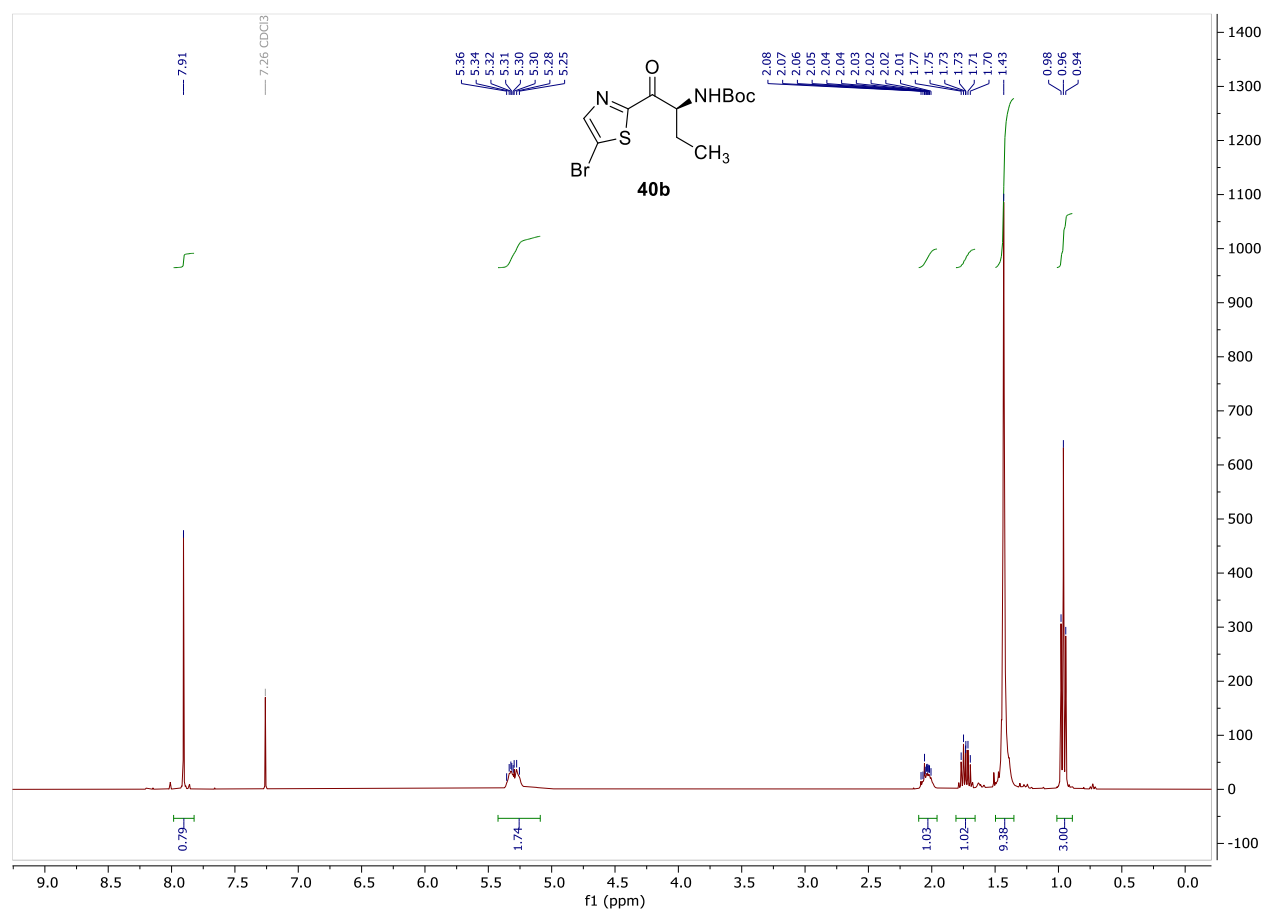
Compound **40a** ( $^1\text{H}$  NMR, 400 MHz):



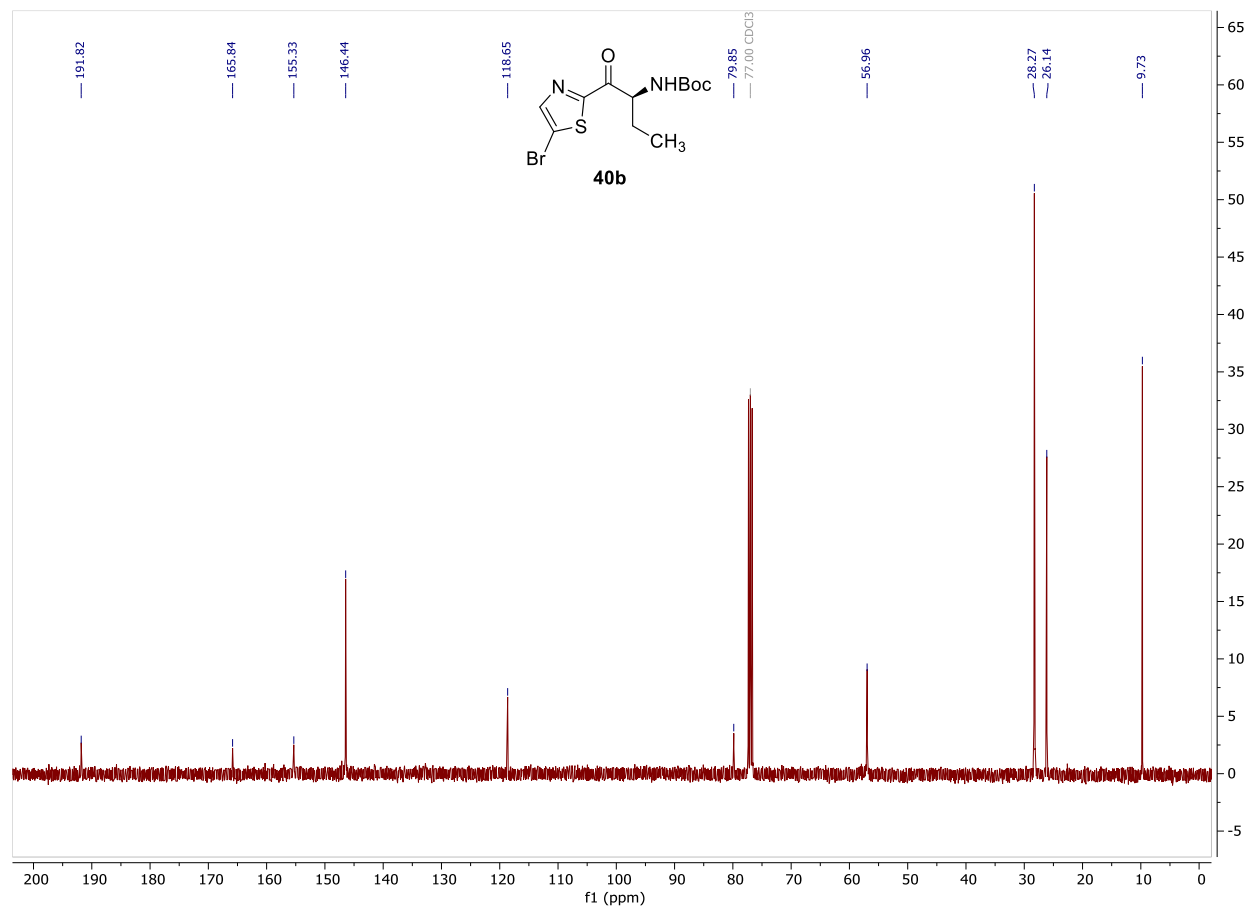
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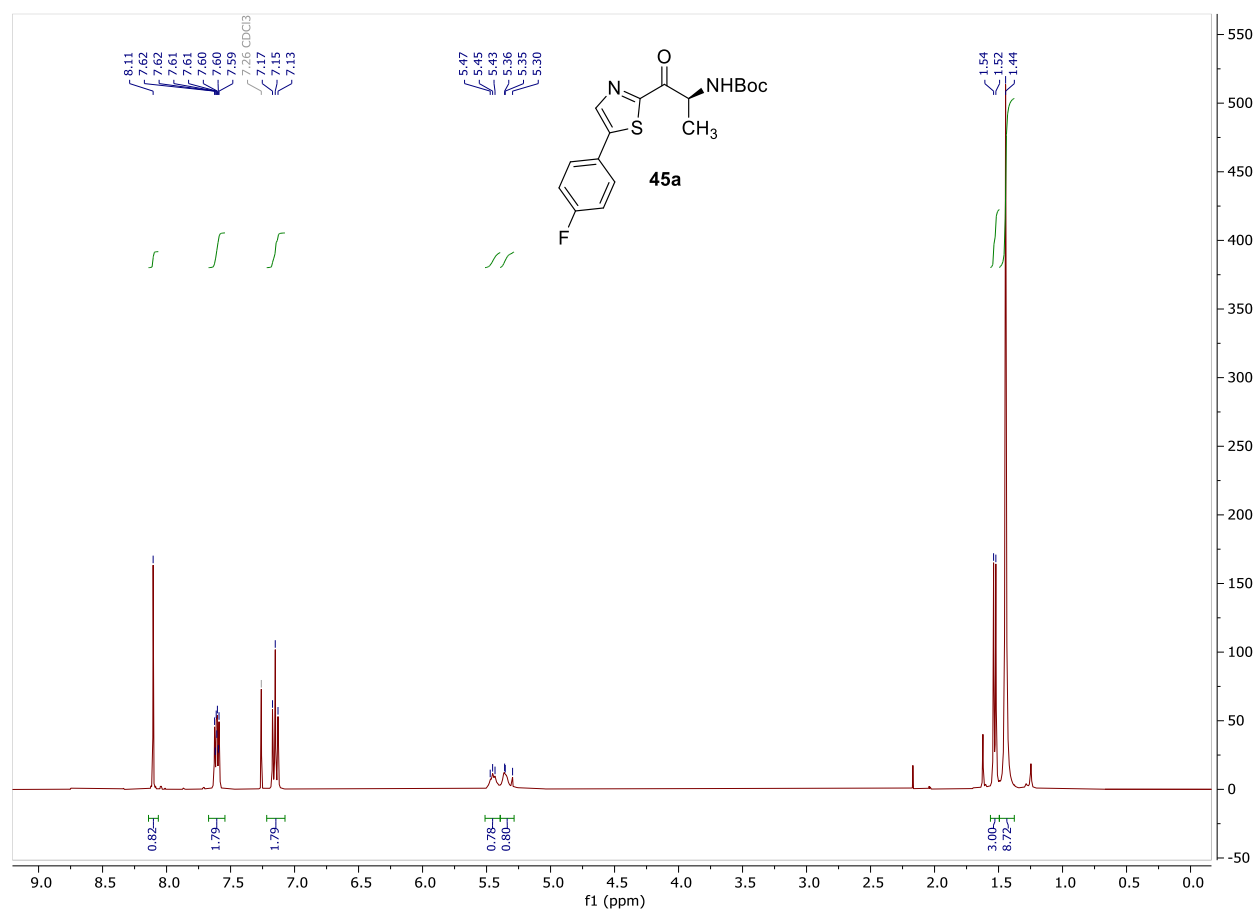
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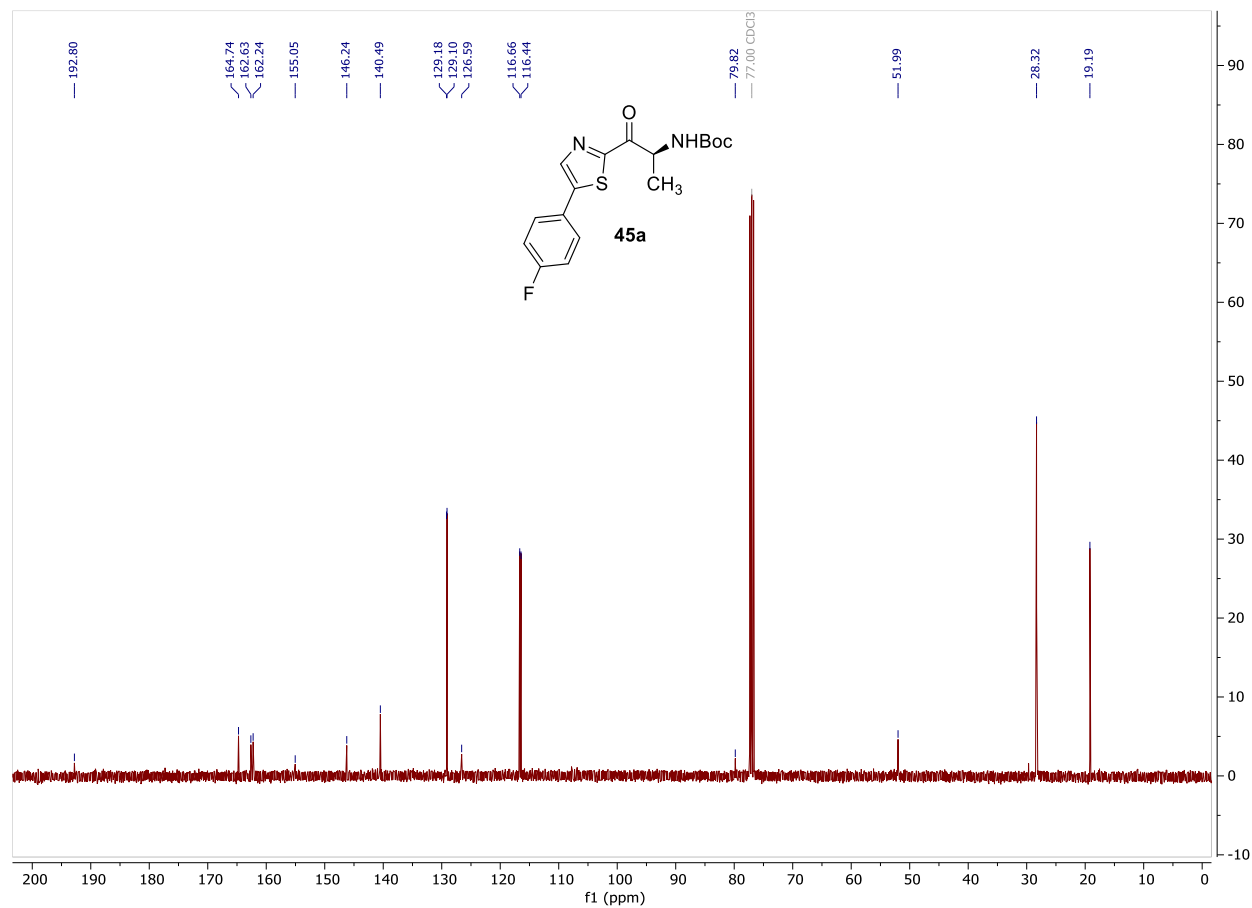
Compound **40b** ( $^{13}\text{C}$  NMR, 101 MHz):



Compound **45a** ( $^1\text{H}$  NMR, 400 MHz):

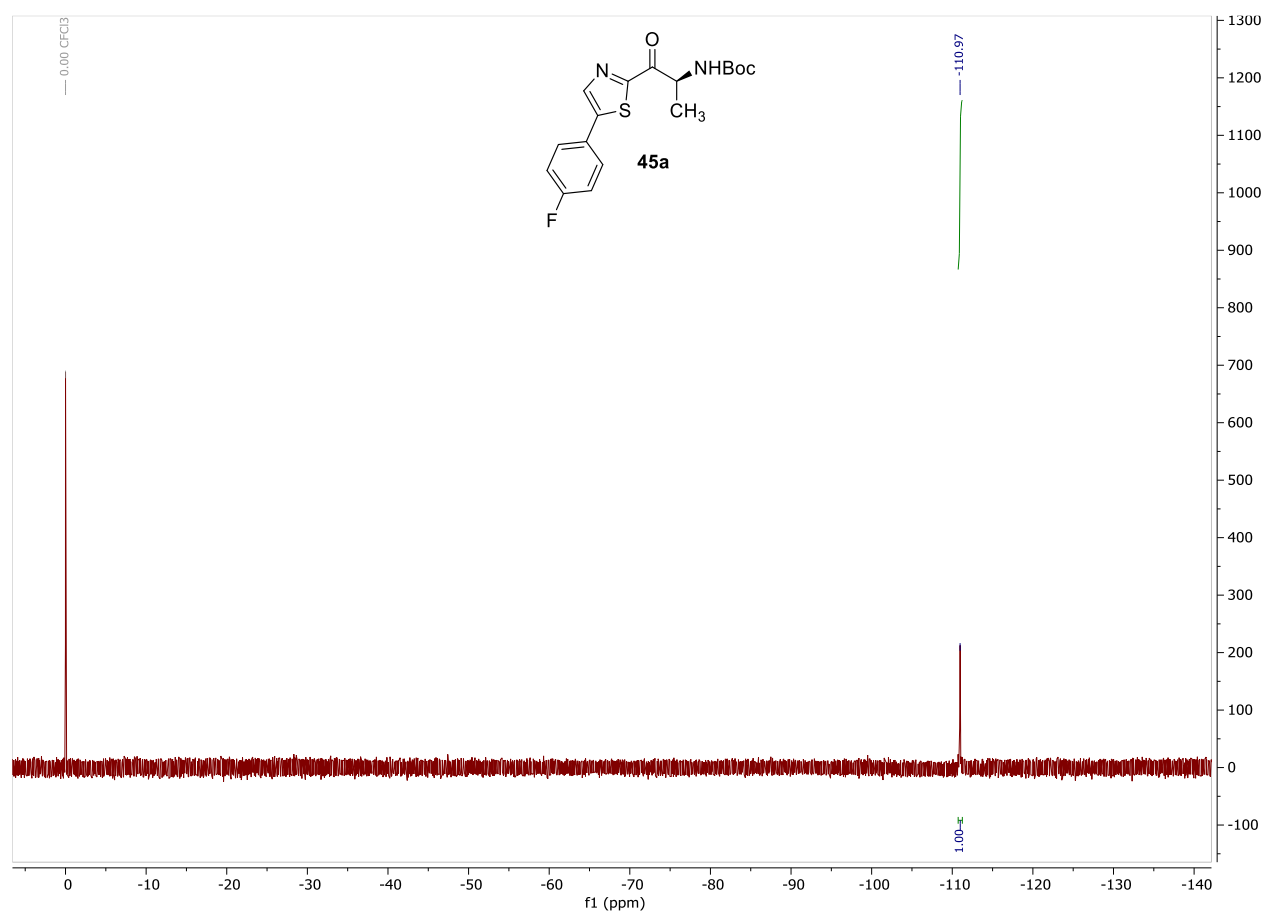


Compound **45a** ( $^{13}\text{C}$  NMR, 101 MHz):

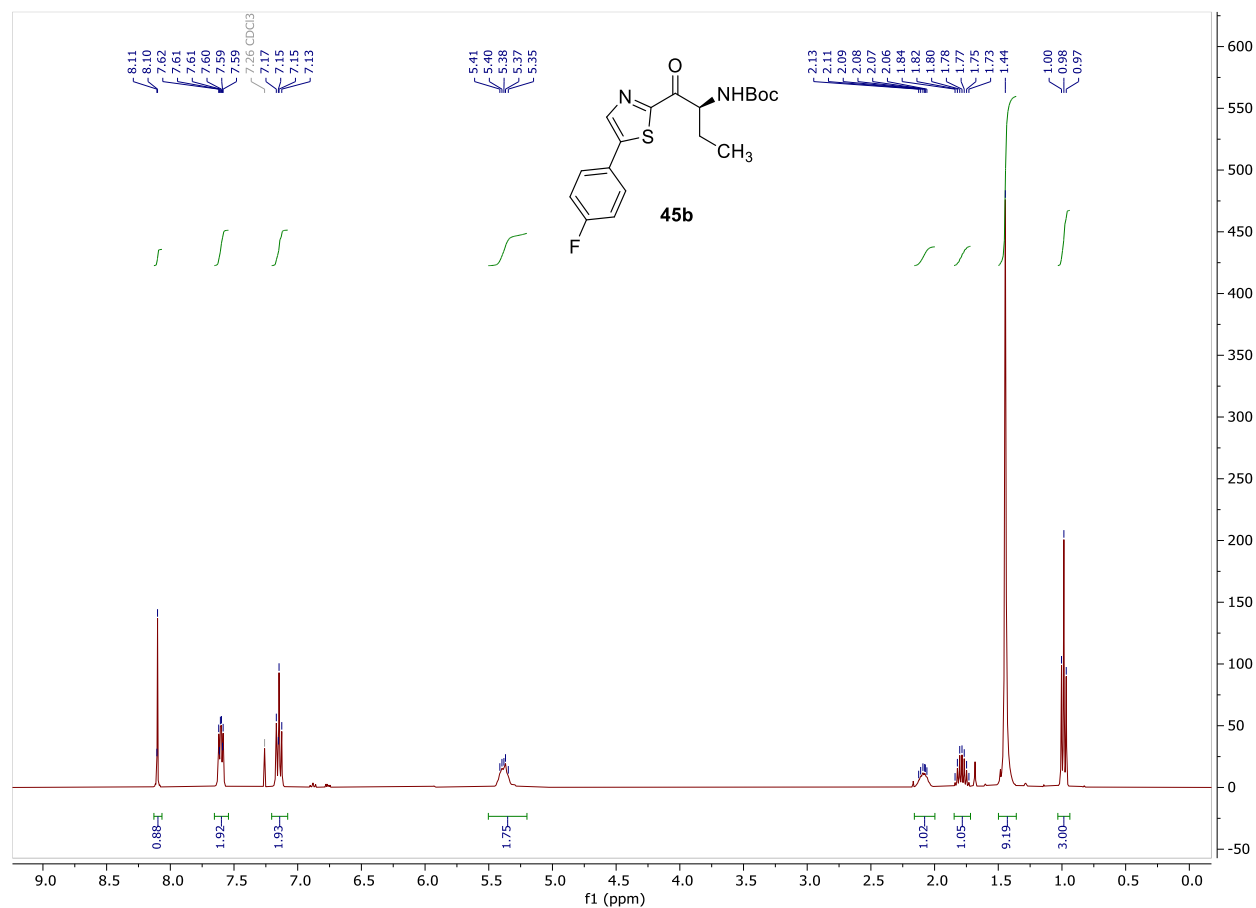




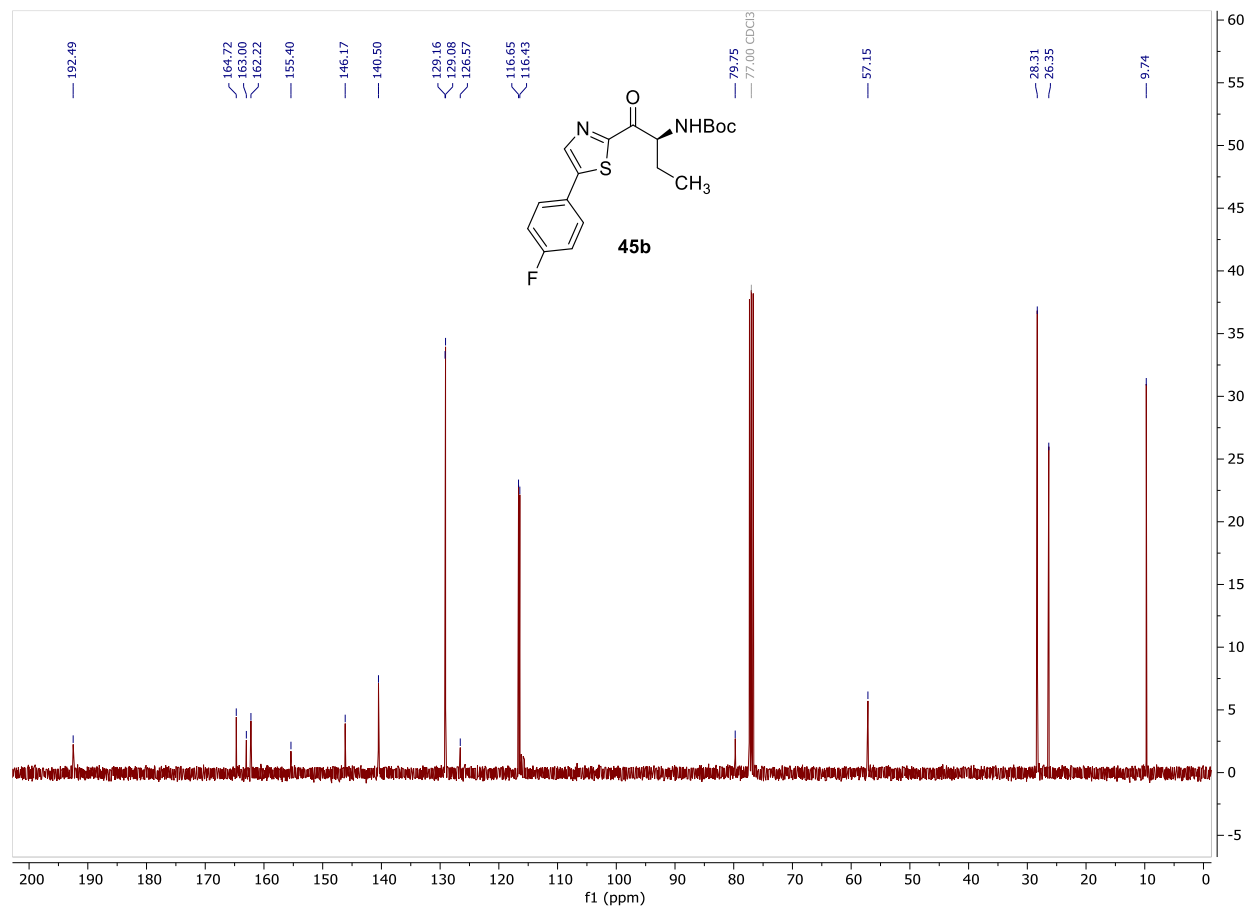
Compound **45a** ( $^{19}\text{F}$  NMR, 282 MHz):



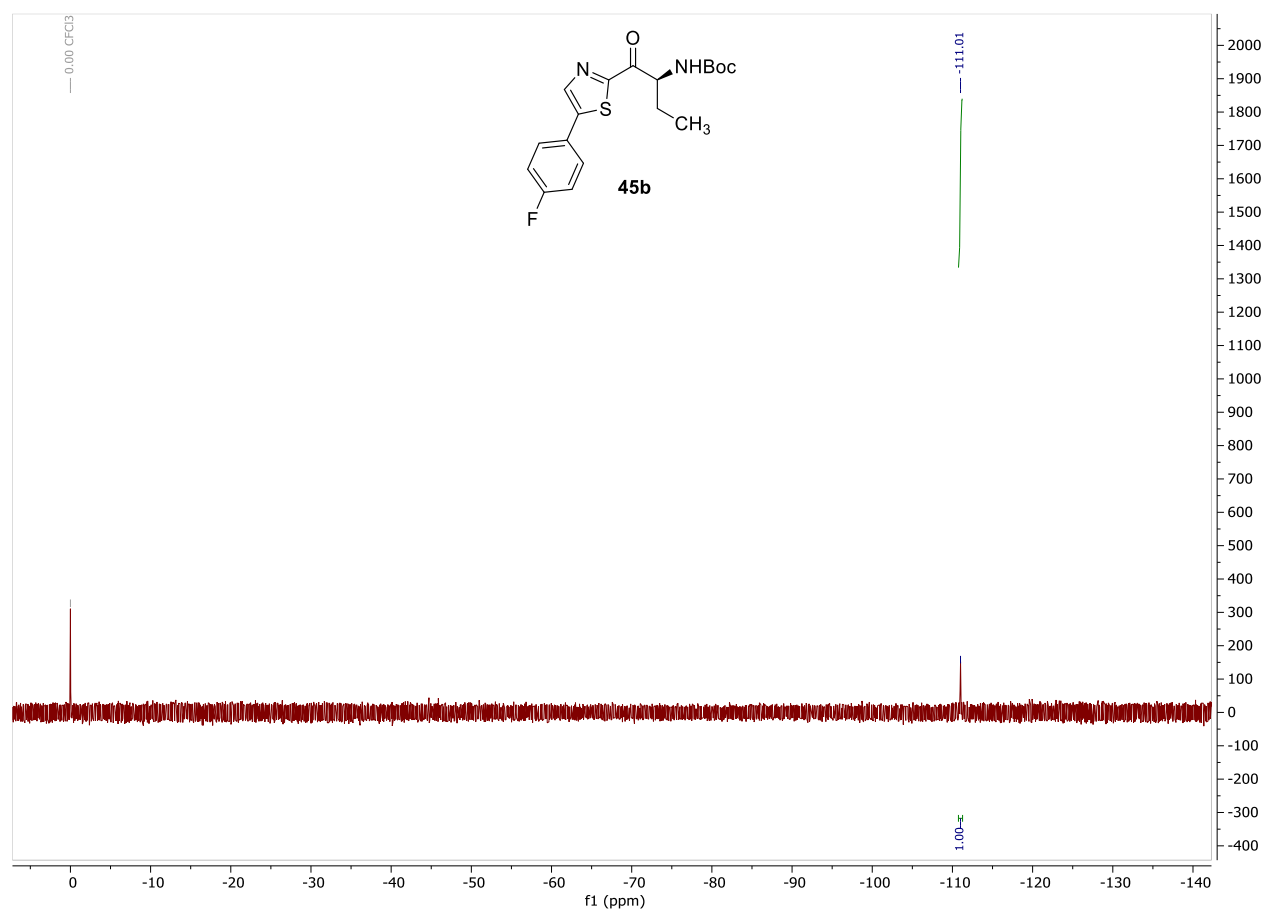
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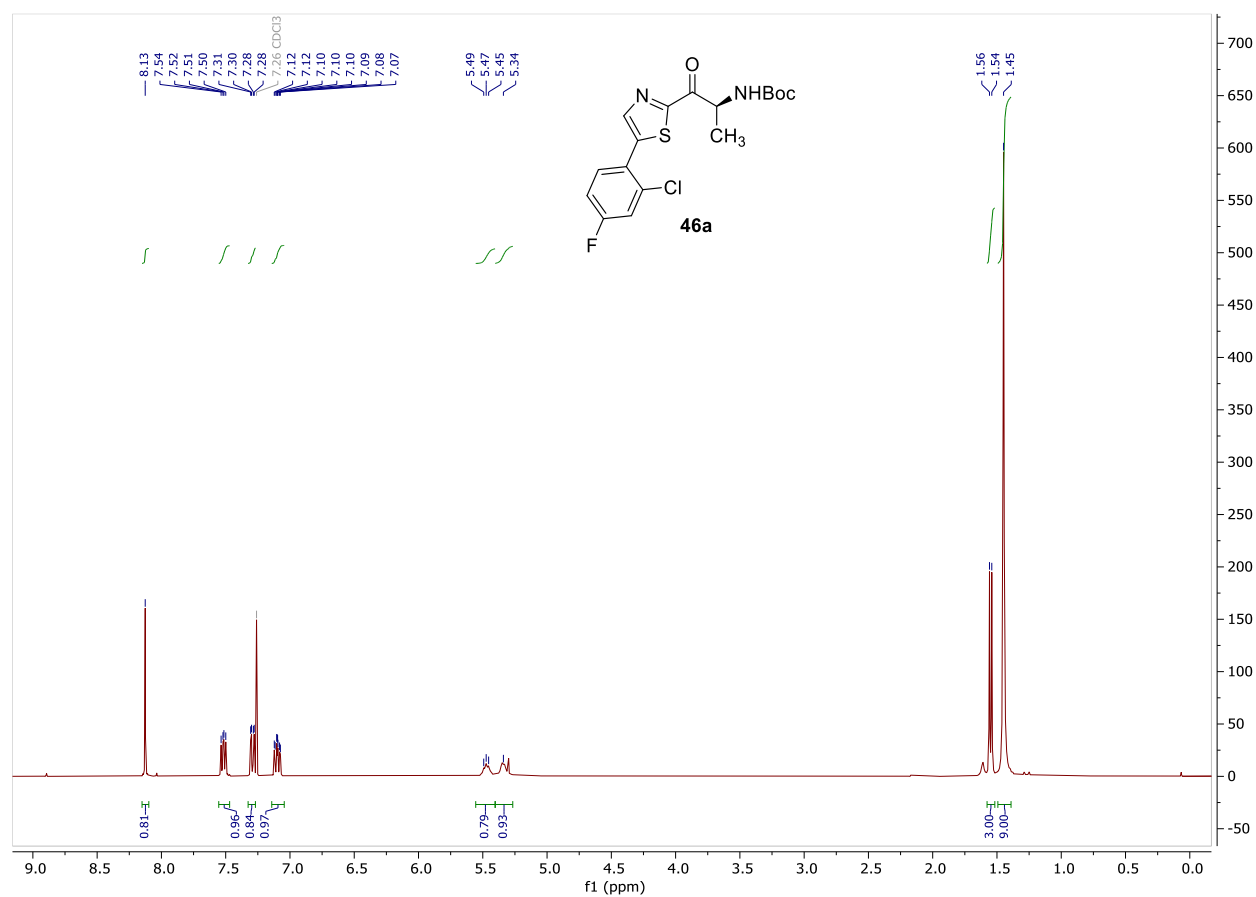
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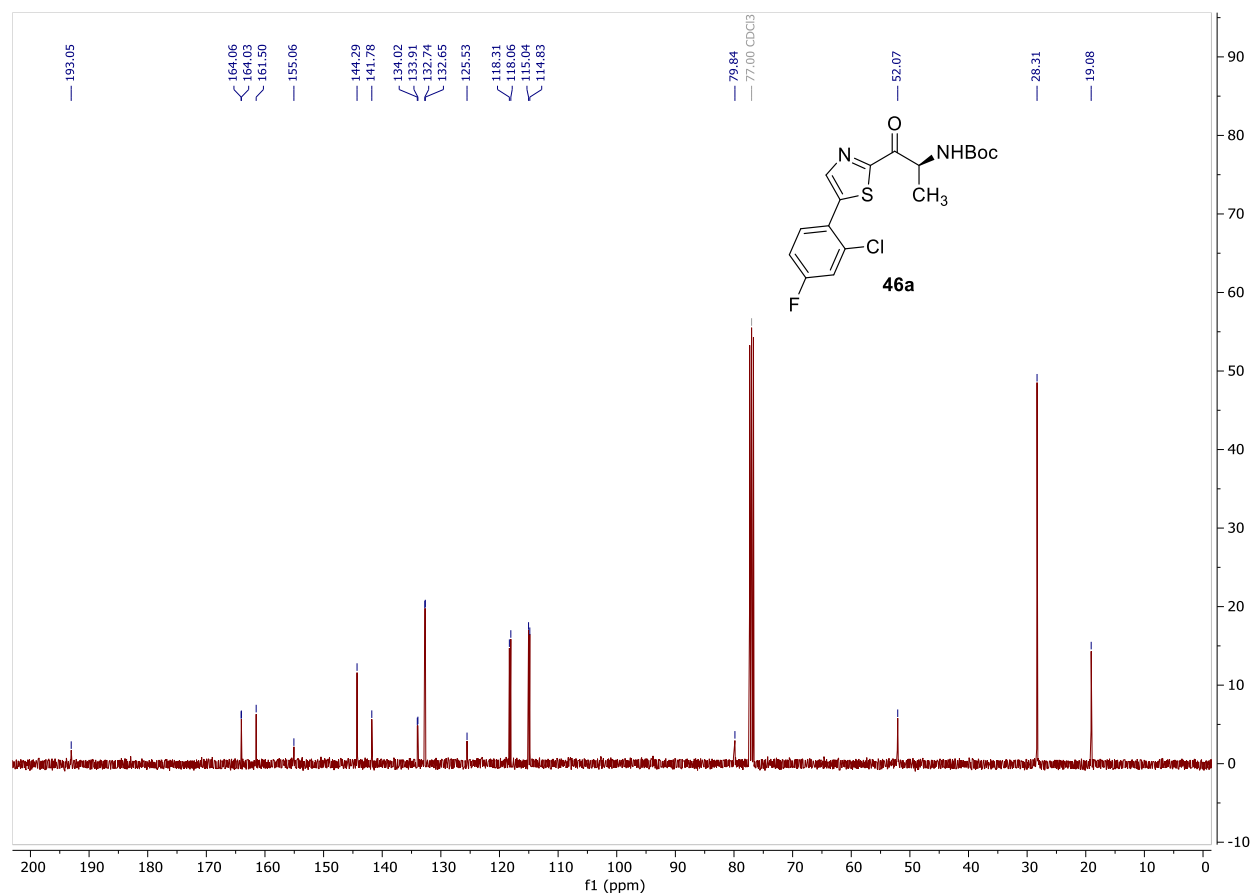
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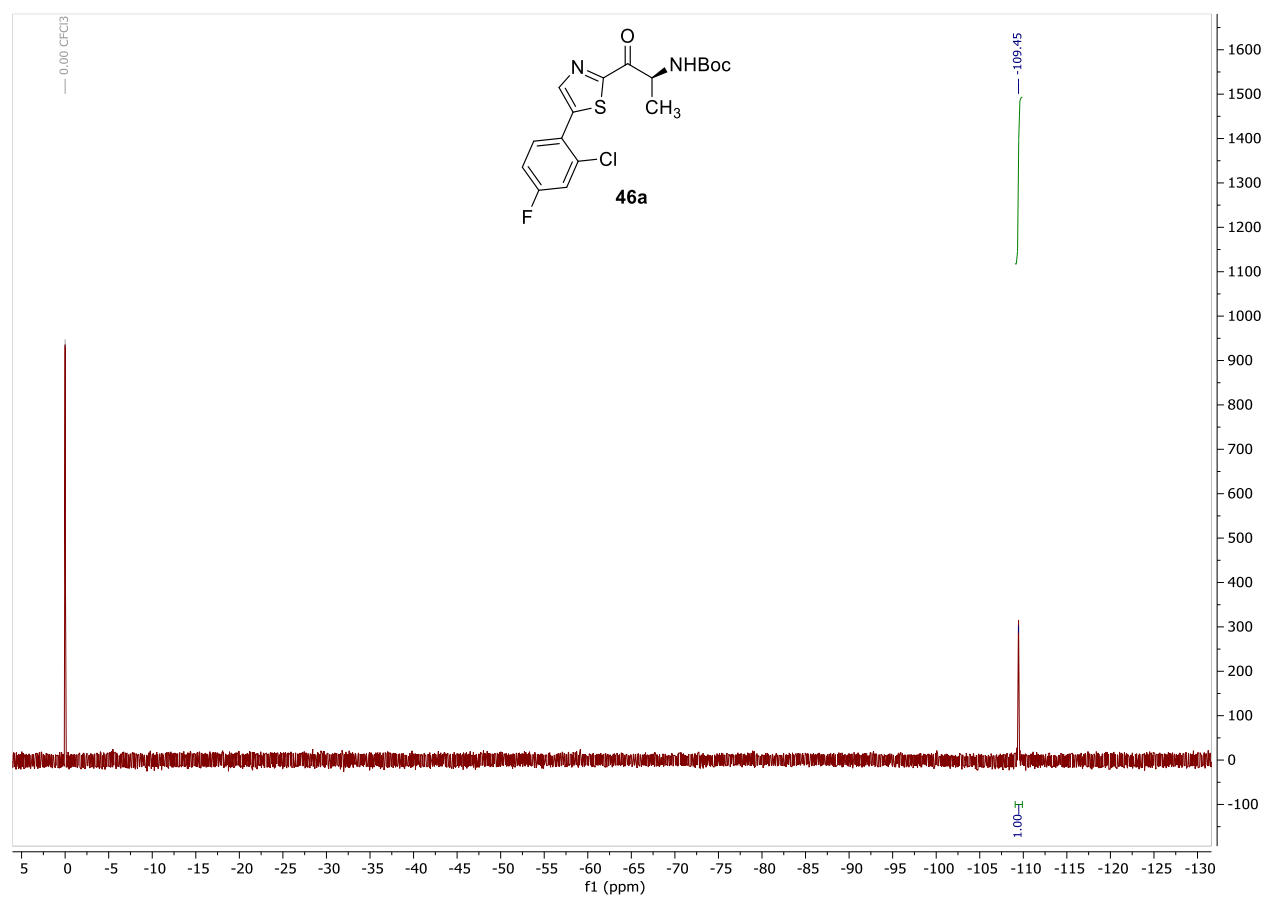
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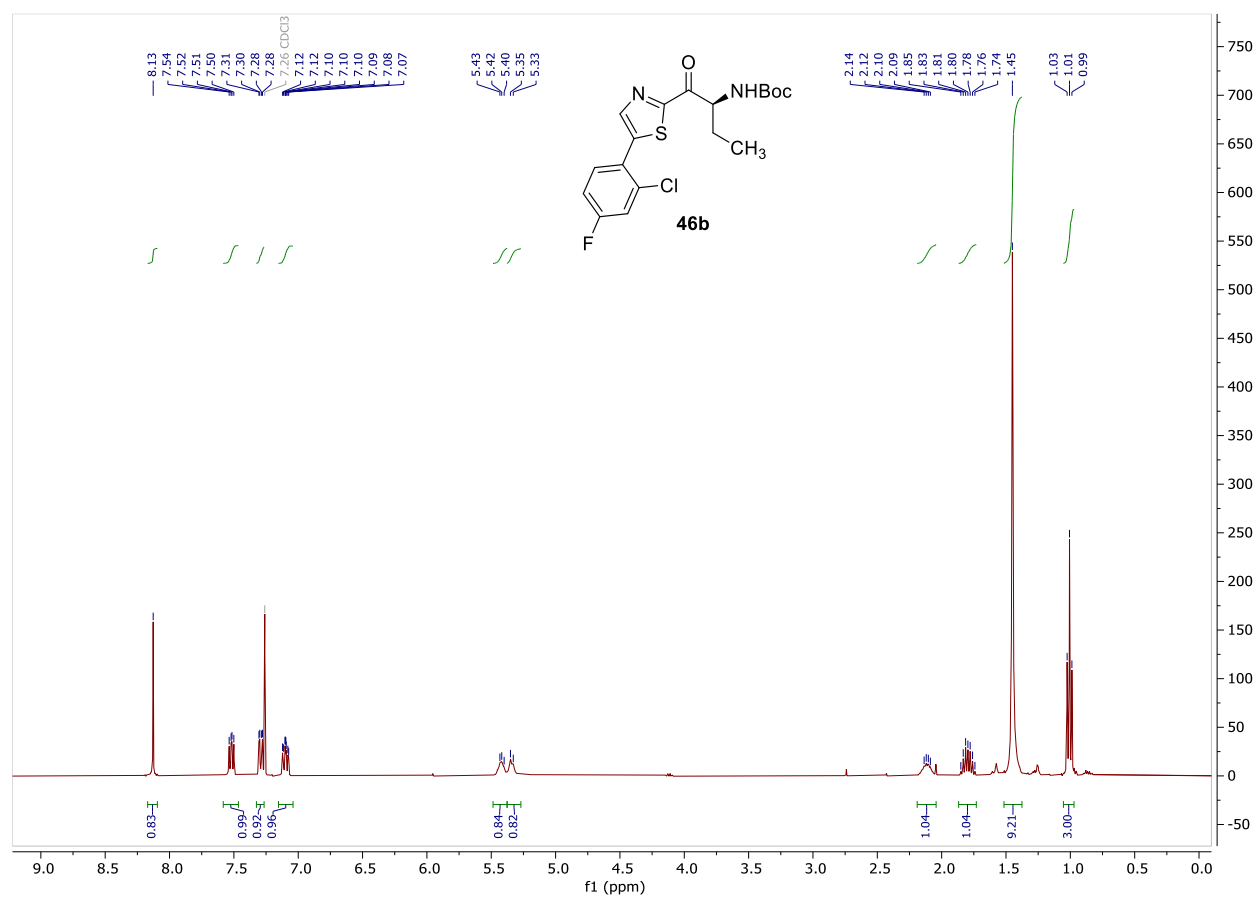
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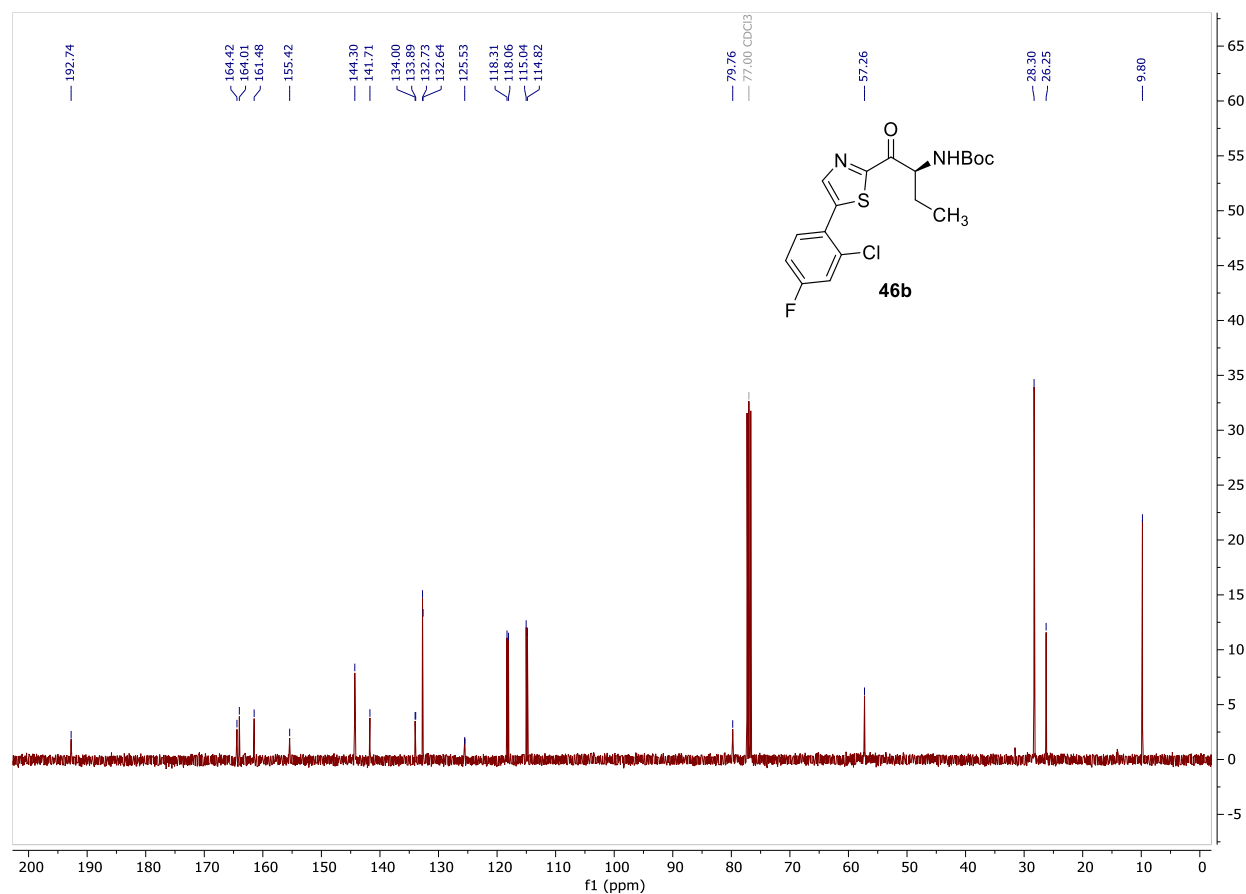
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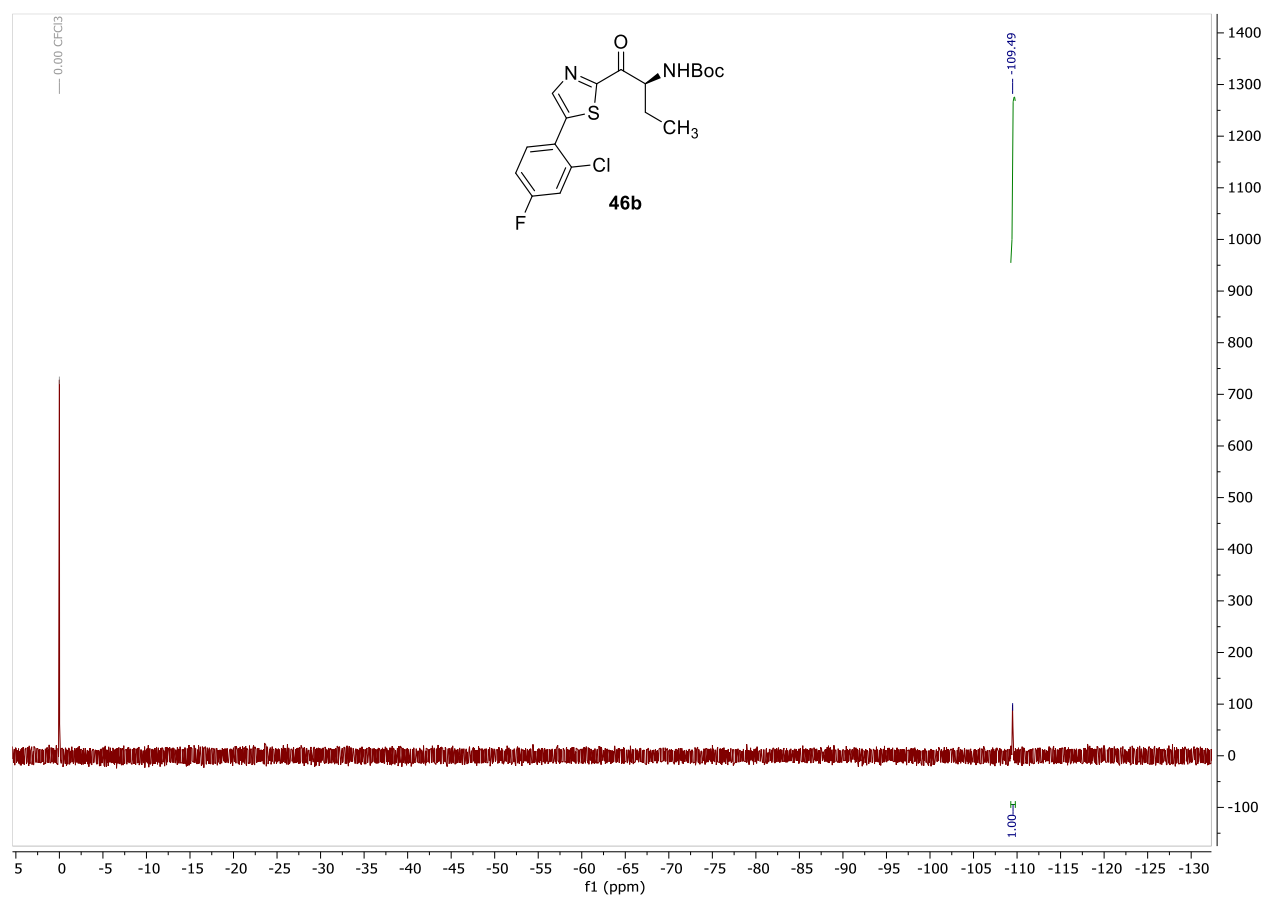
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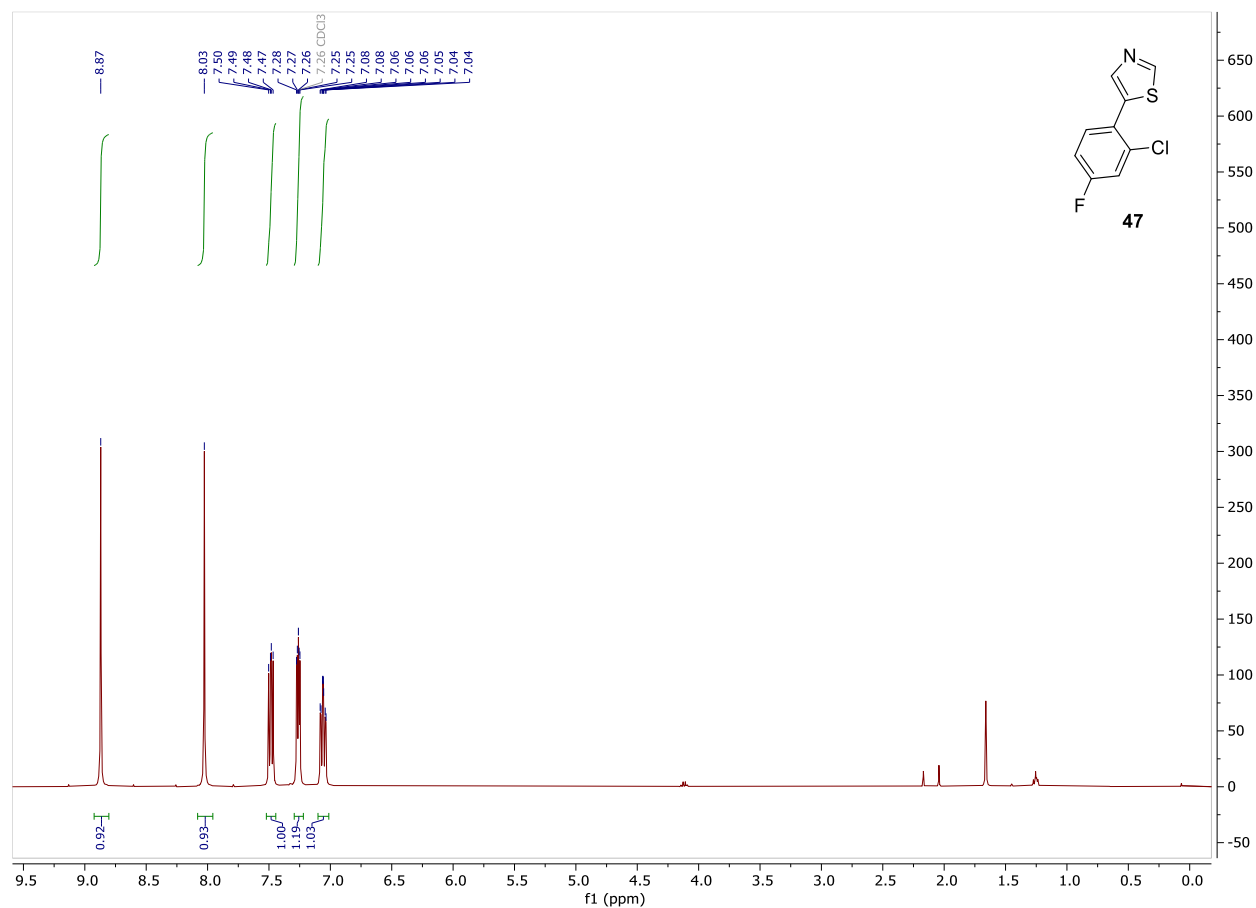
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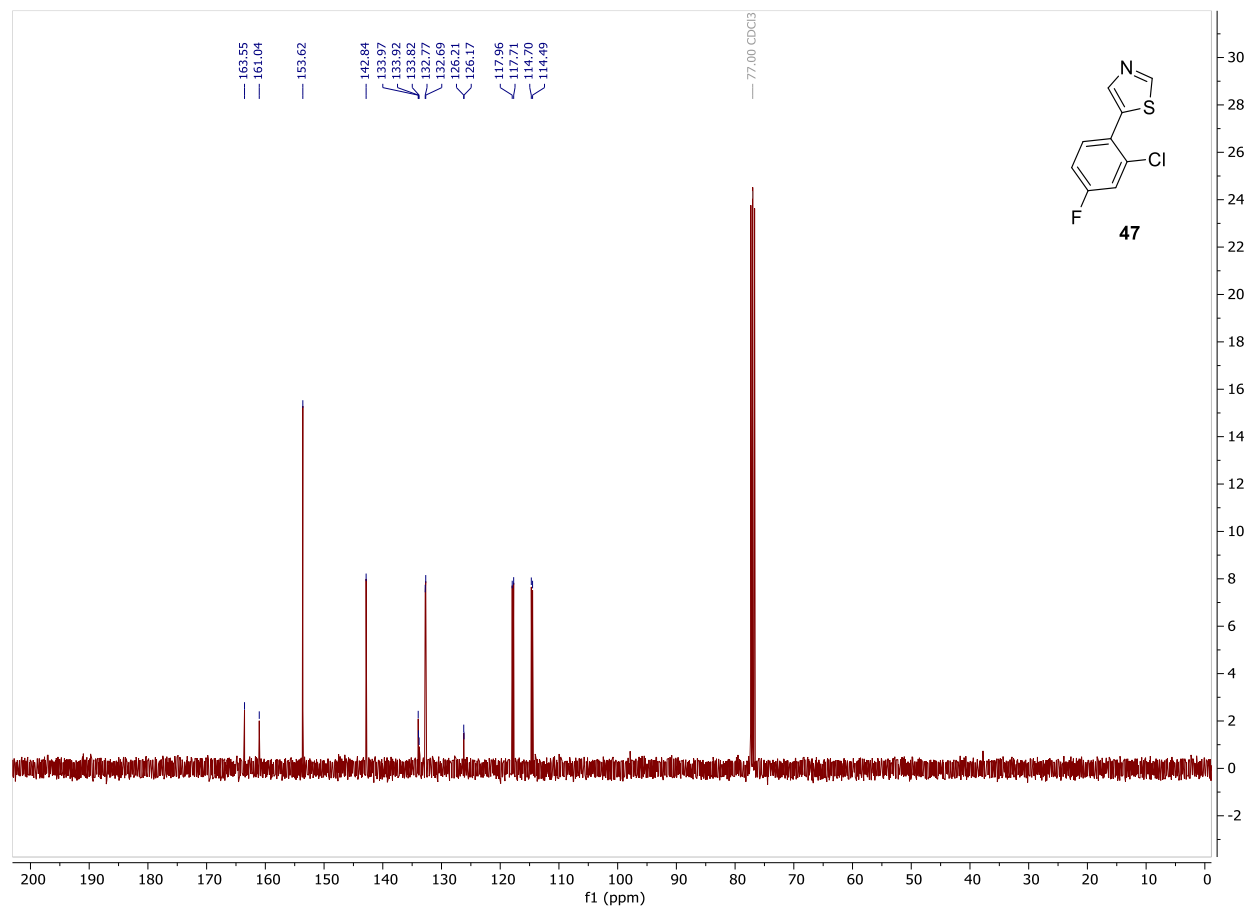
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Compound **47** ( $^1\text{H}$  NMR, 400 MHz):

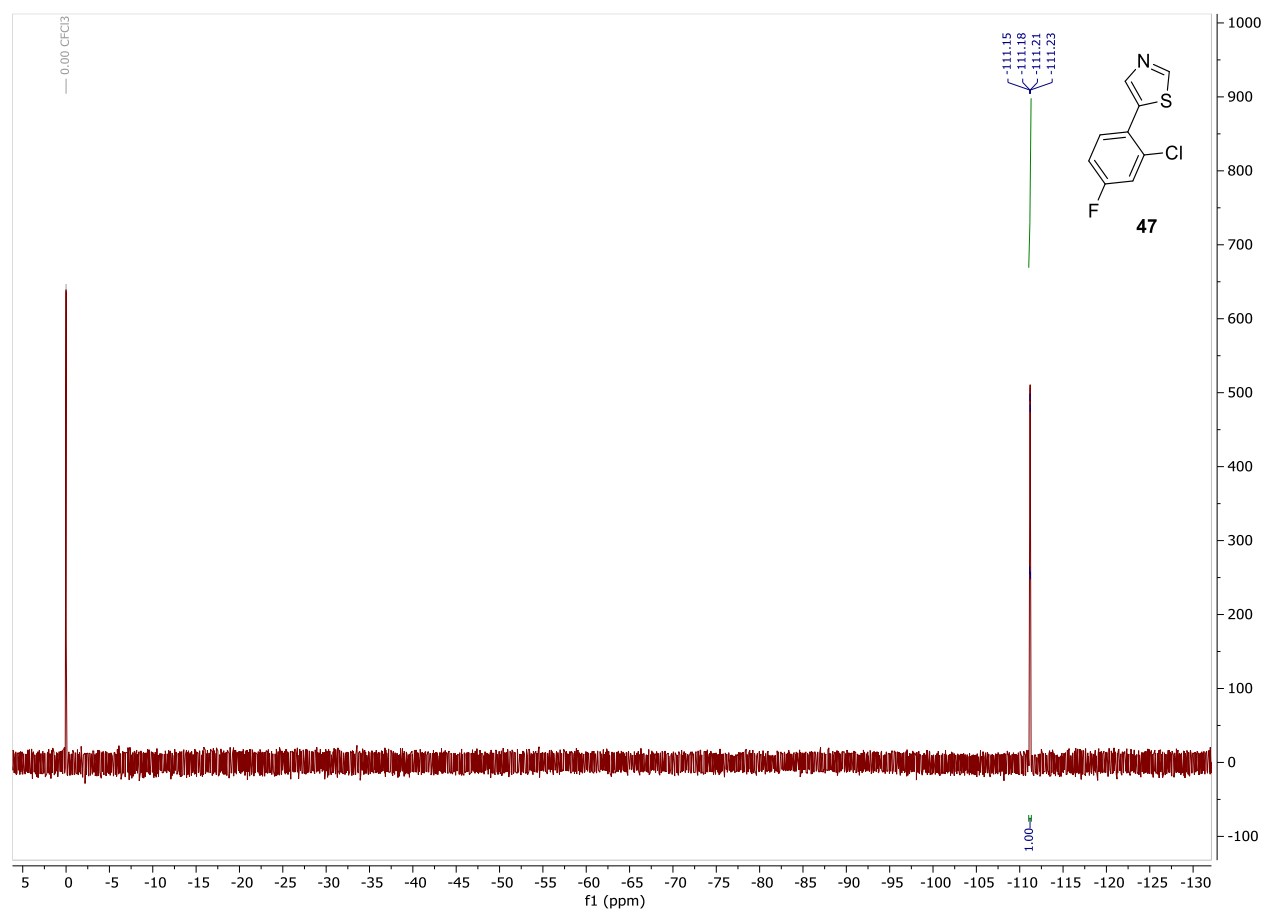


Compound **47** ( $^{13}\text{C}$  NMR, 101 MHz):

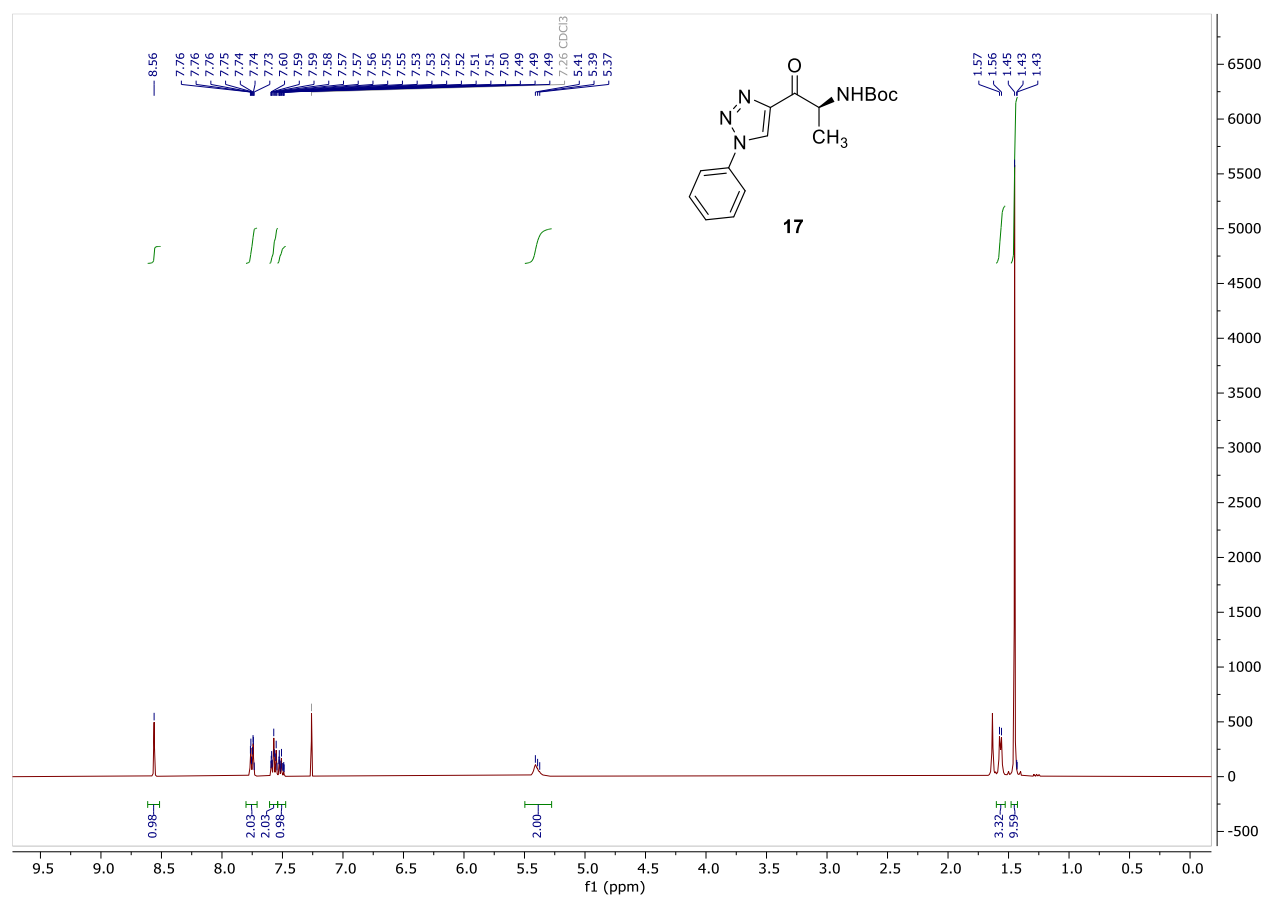




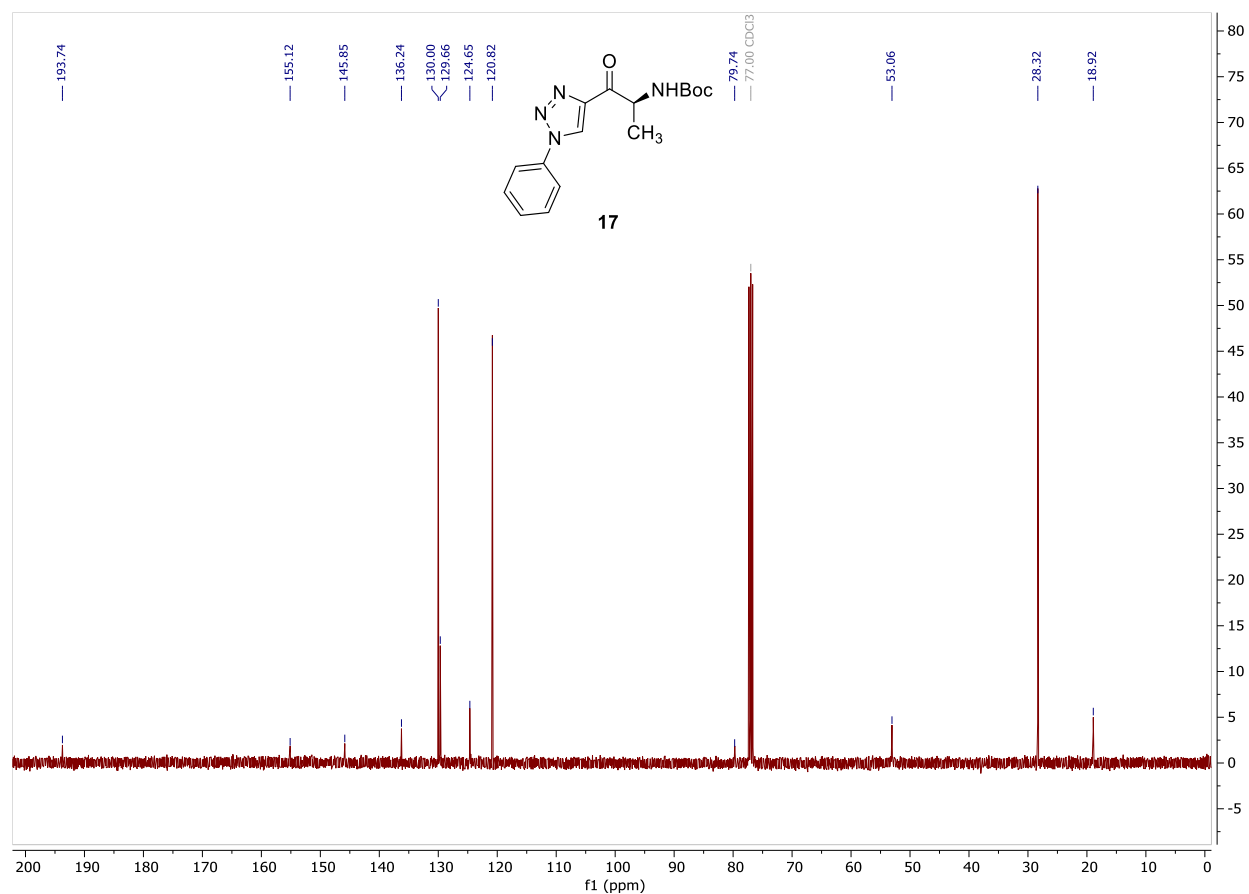
Compound **47** ( $^{19}\text{F}$  NMR, 282 MHz):



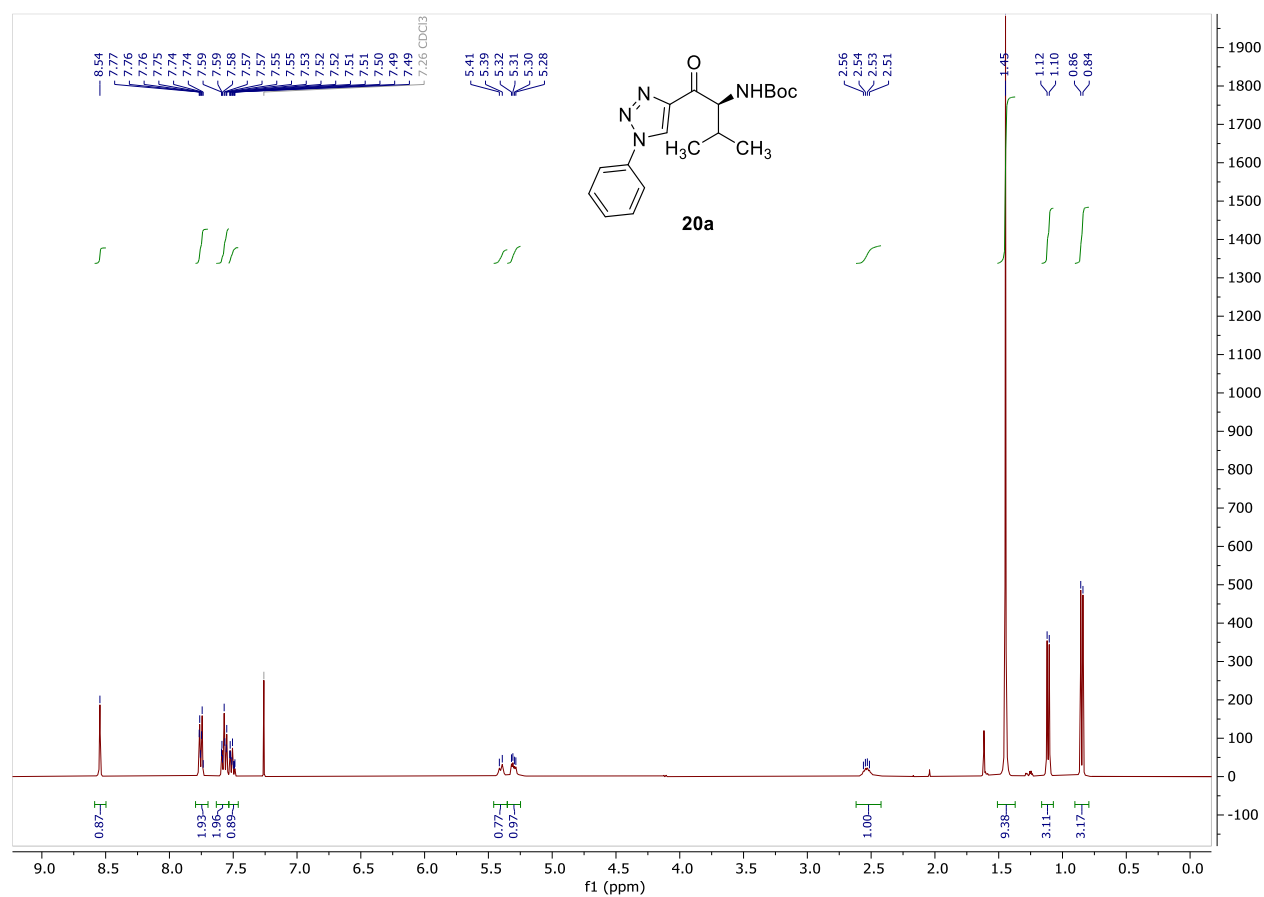
Compound **17** ( $^1\text{H}$  NMR, 400 MHz):



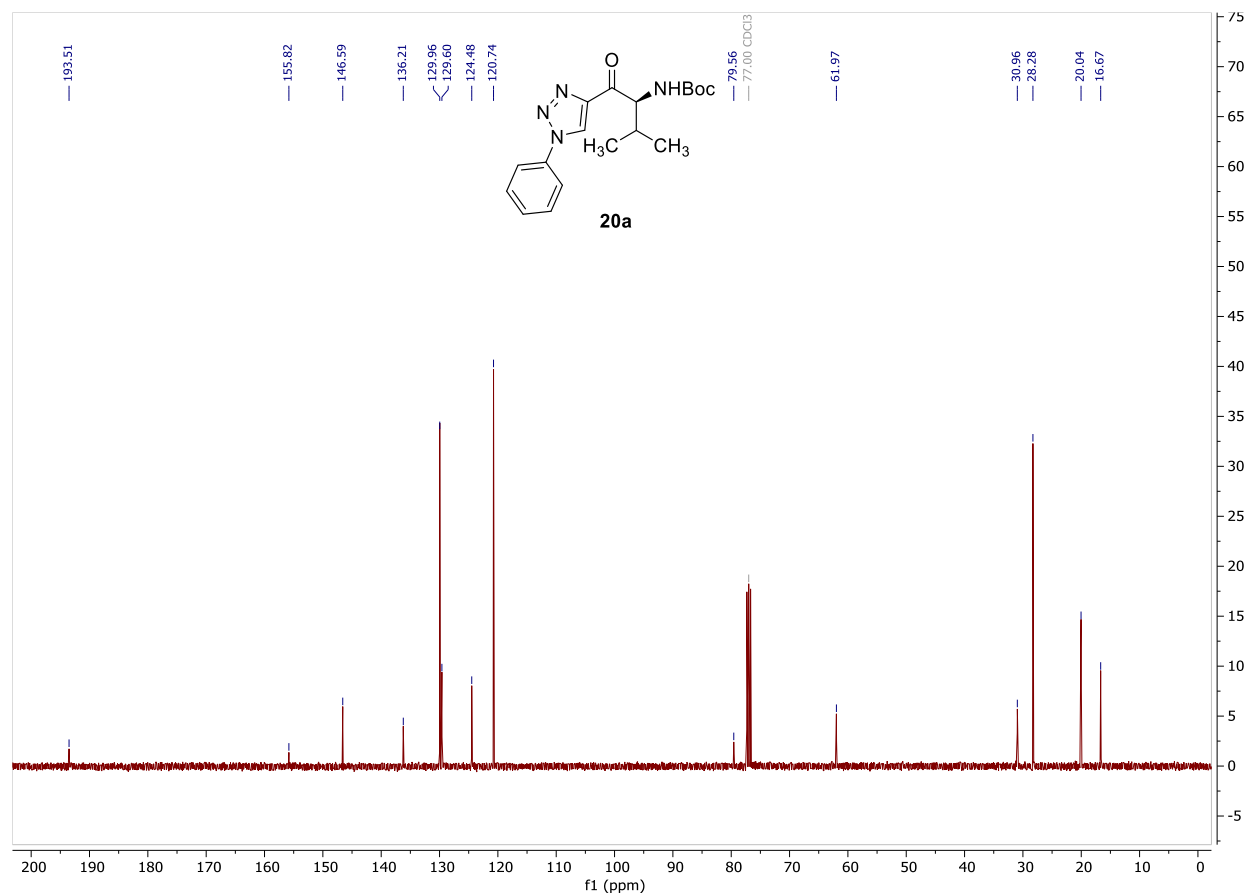
Compound **17** ( $^{13}\text{C}$  NMR, 101 MHz):



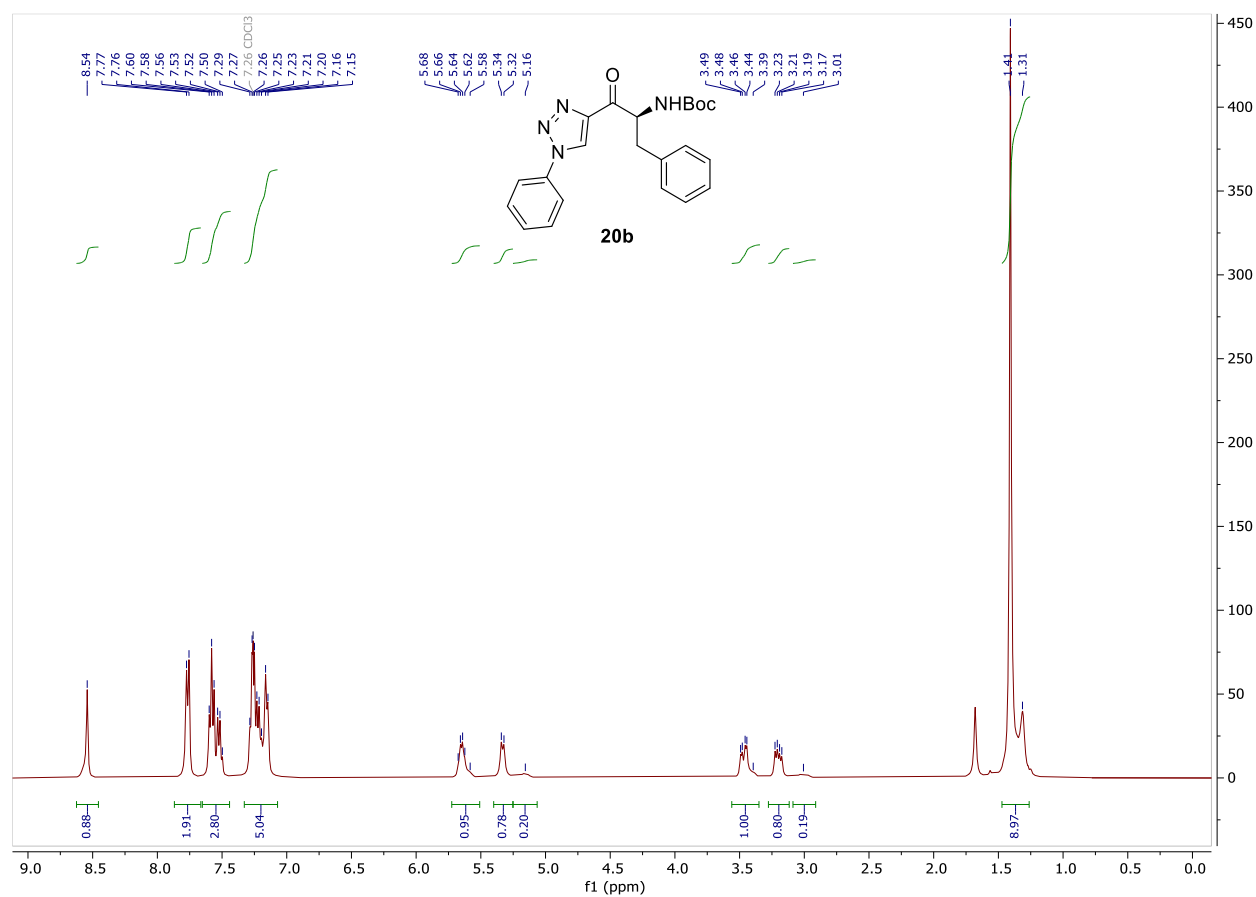
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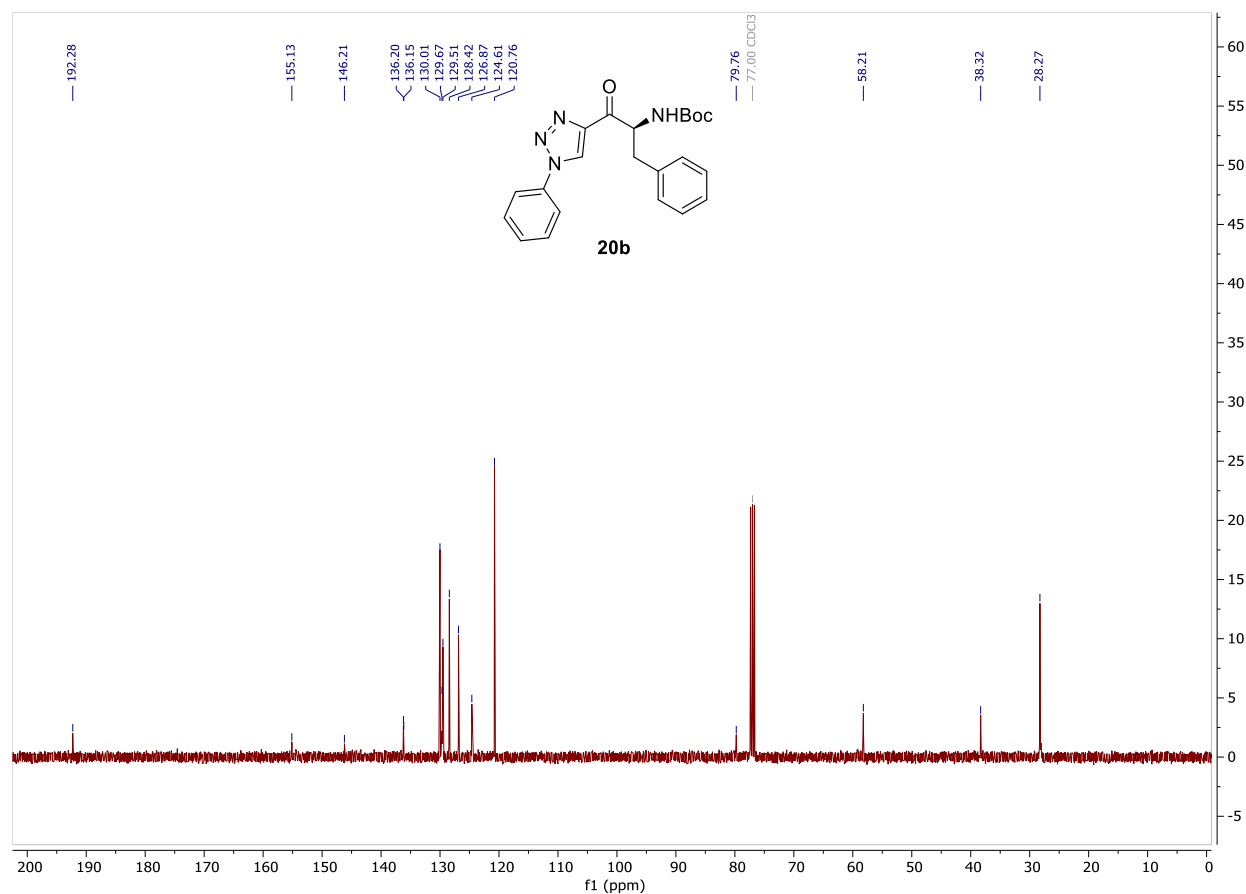
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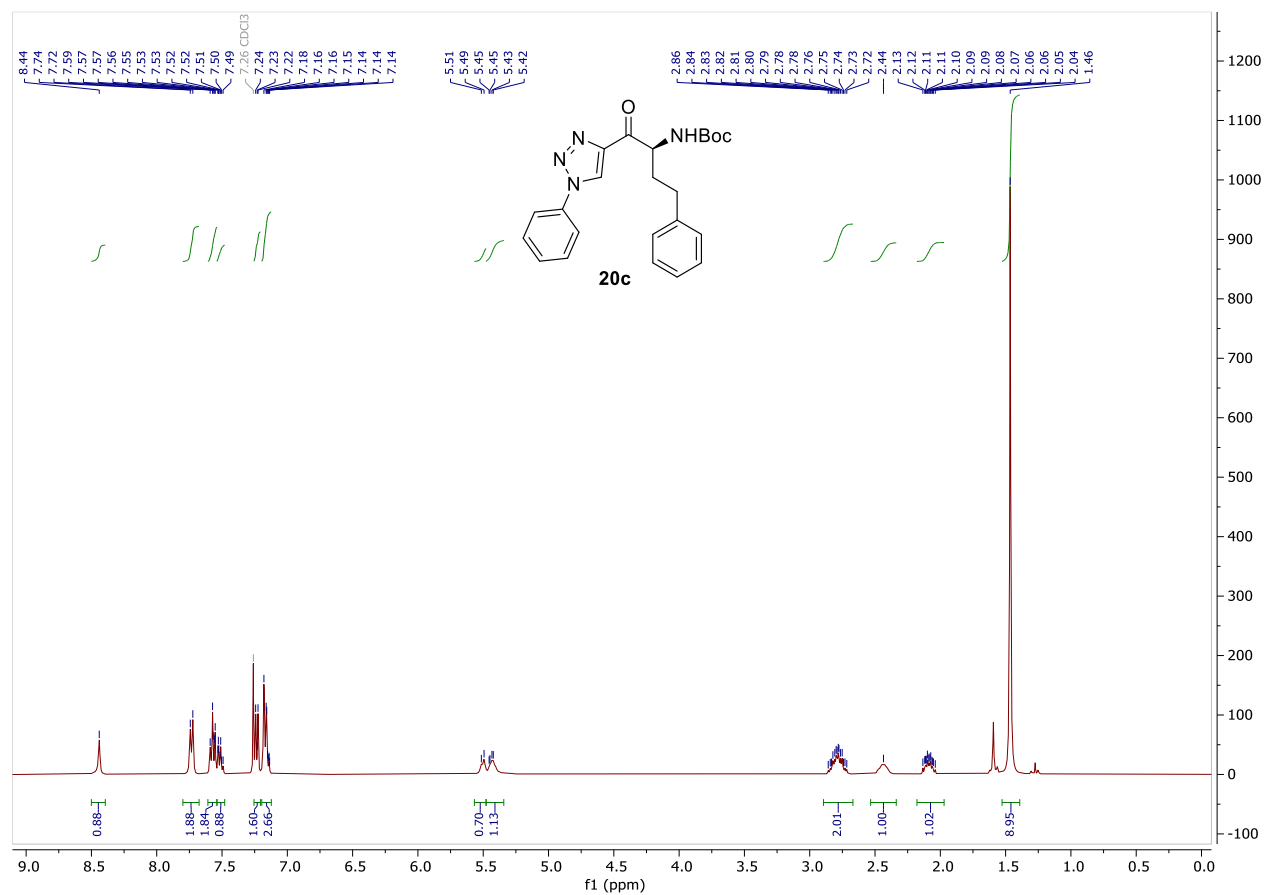
Compound **20b** ( $^1\text{H}$  NMR, 400 MHz):



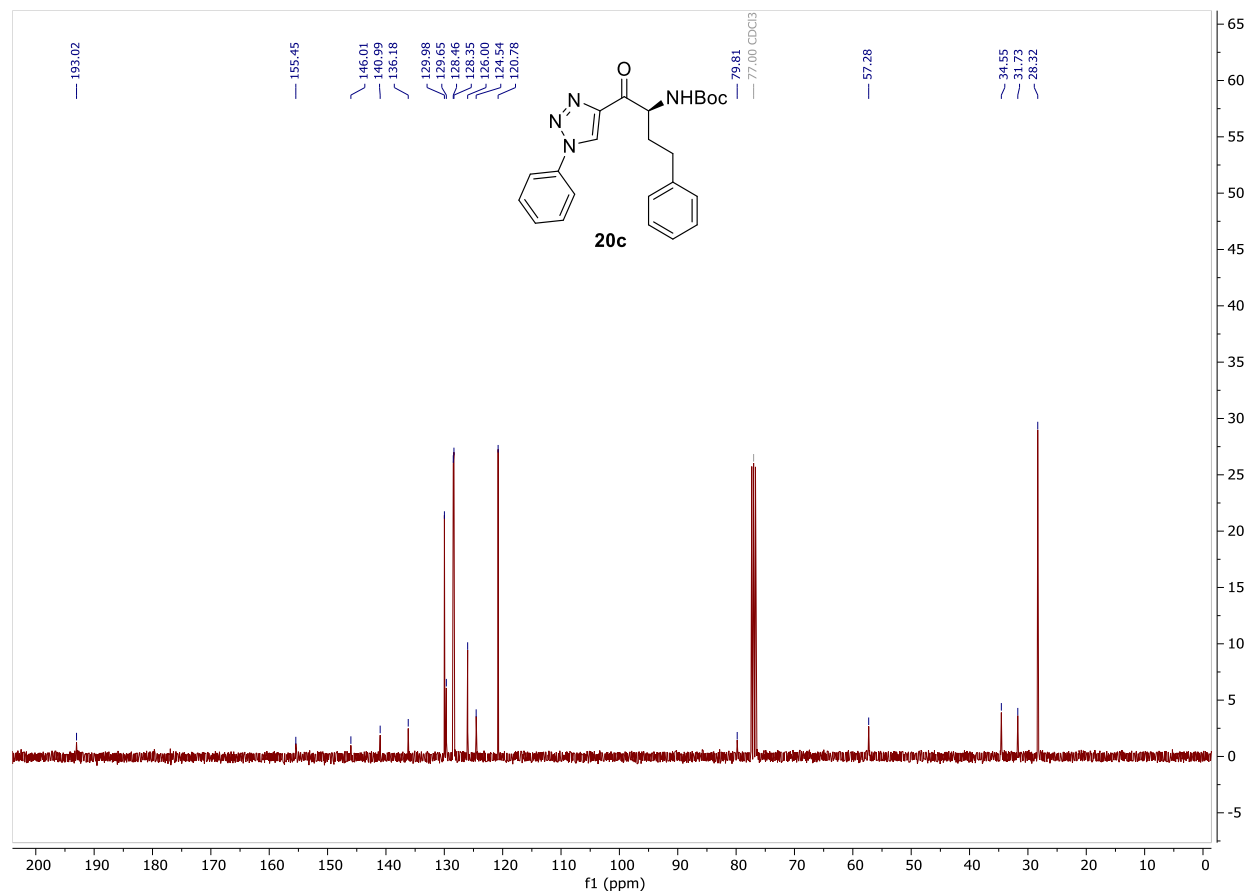
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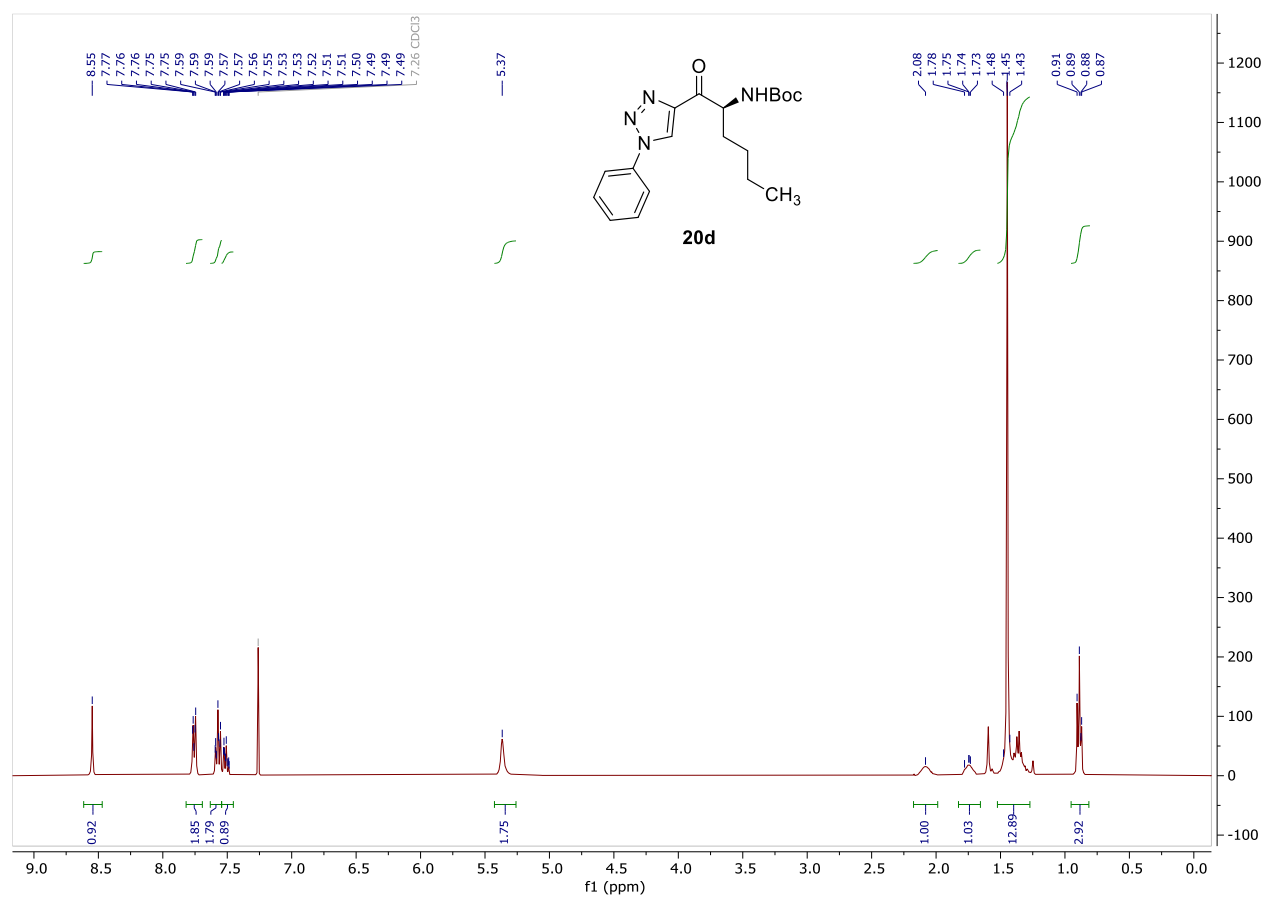
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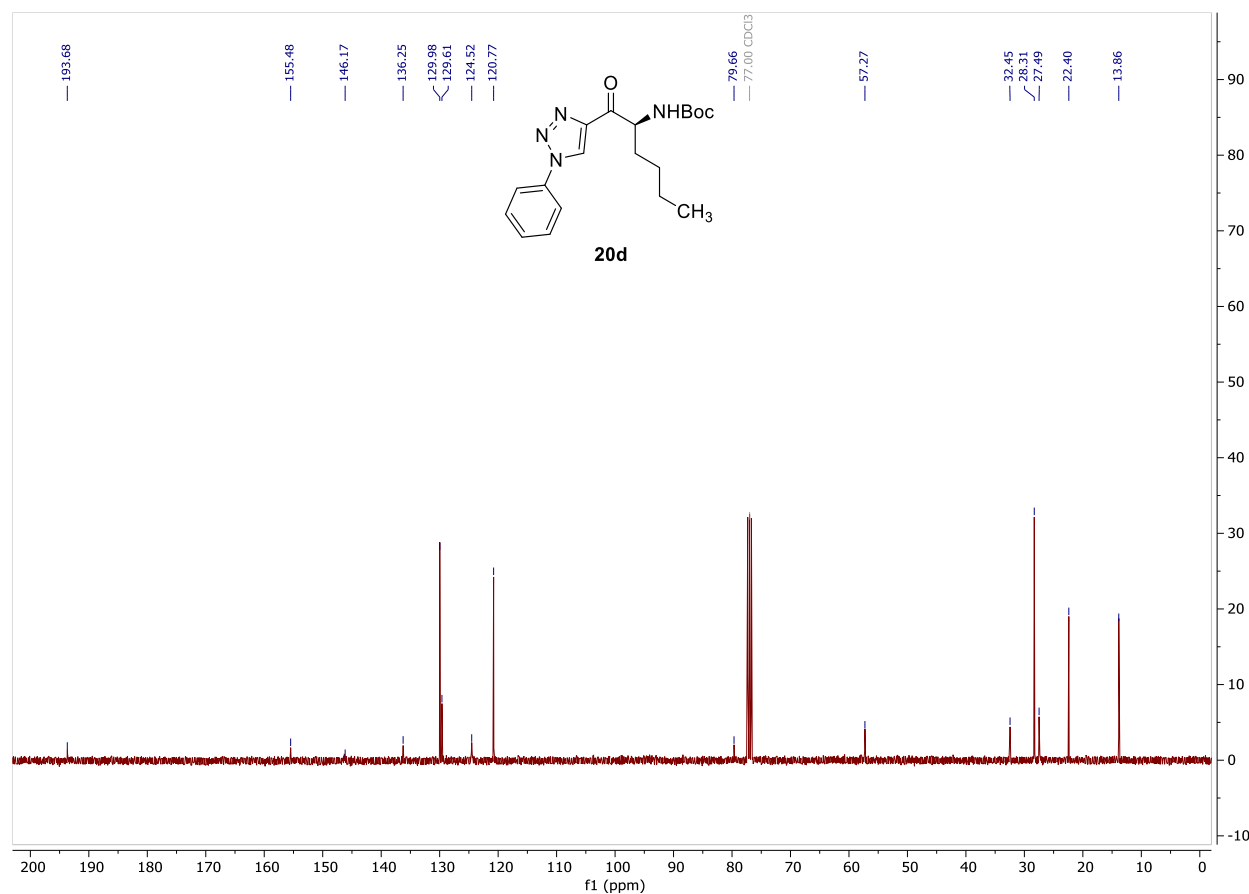
Compound **20c** ( $^{13}\text{C}$  NMR, 101 MHz):



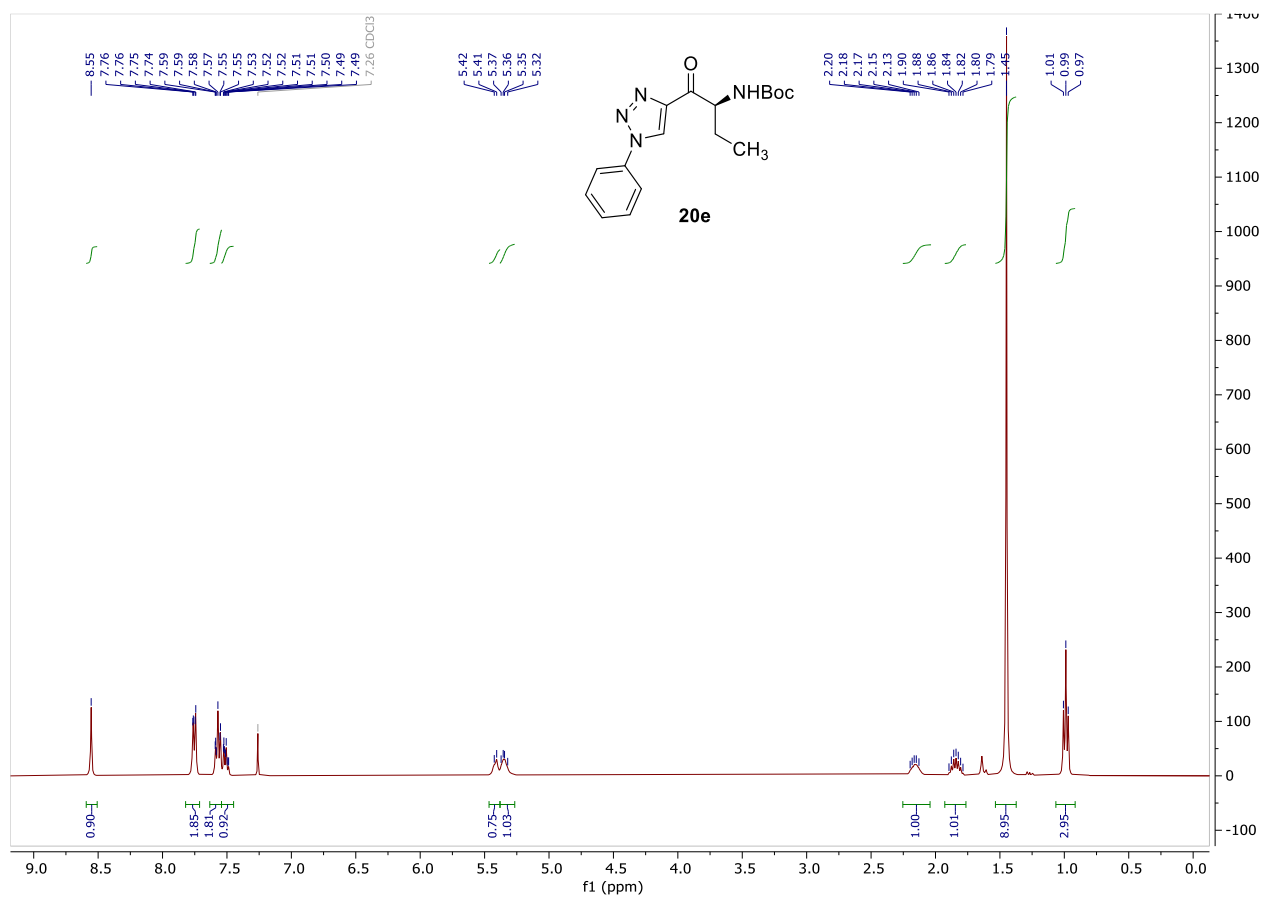
Compound **20d** ( $^1\text{H}$  NMR, 400 MHz):



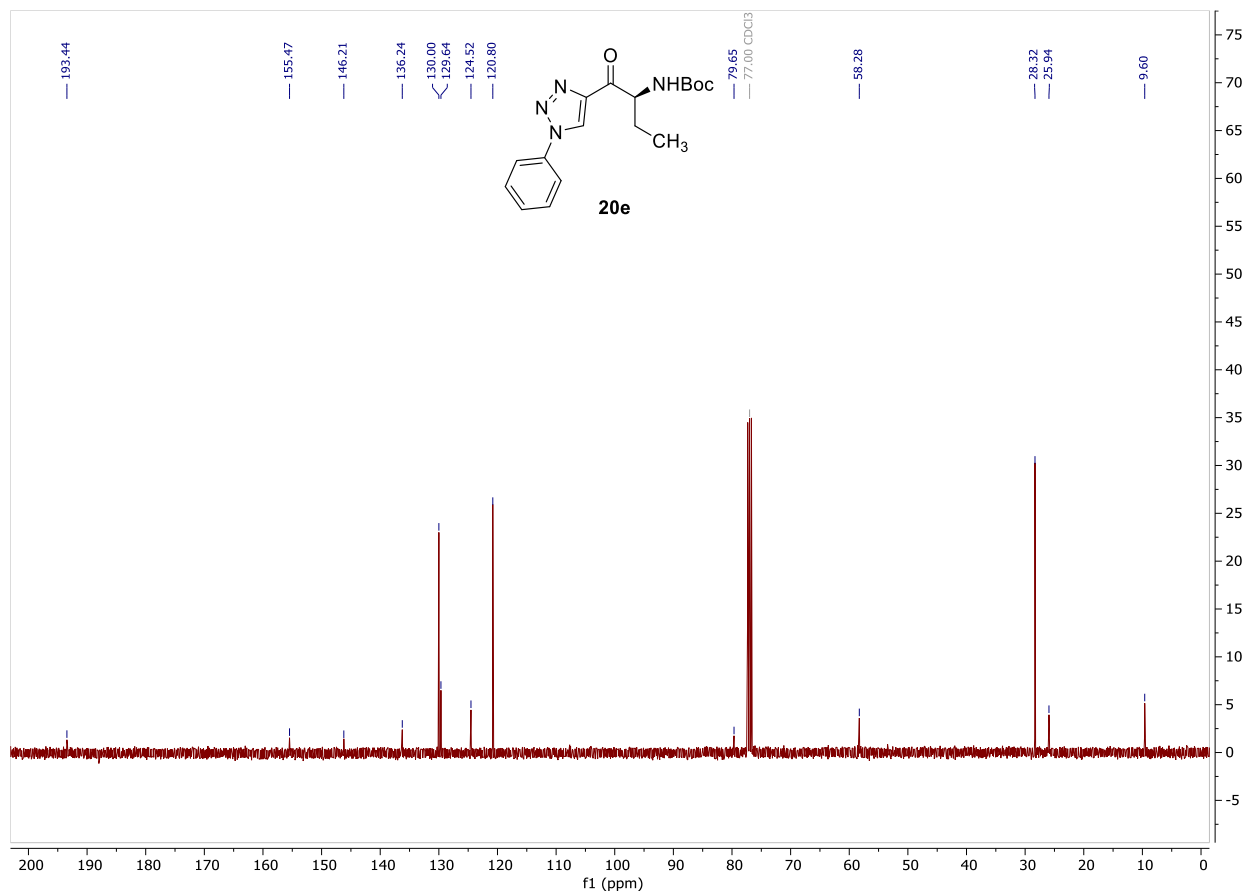
Compound **20d** ( $^{13}\text{C}$  NMR, 101 MHz):



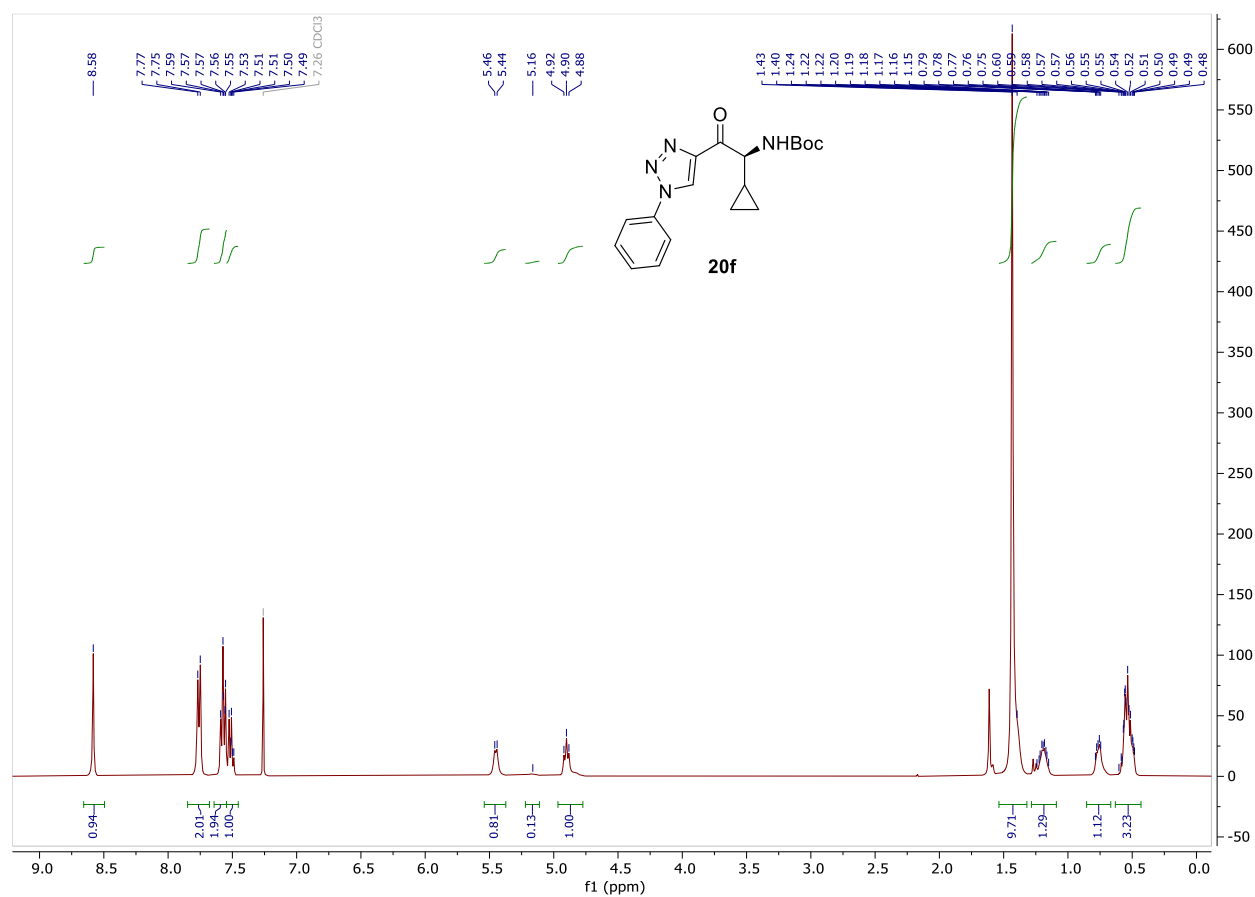
Compound **20e** ( $^1\text{H}$  NMR, 400 MHz):



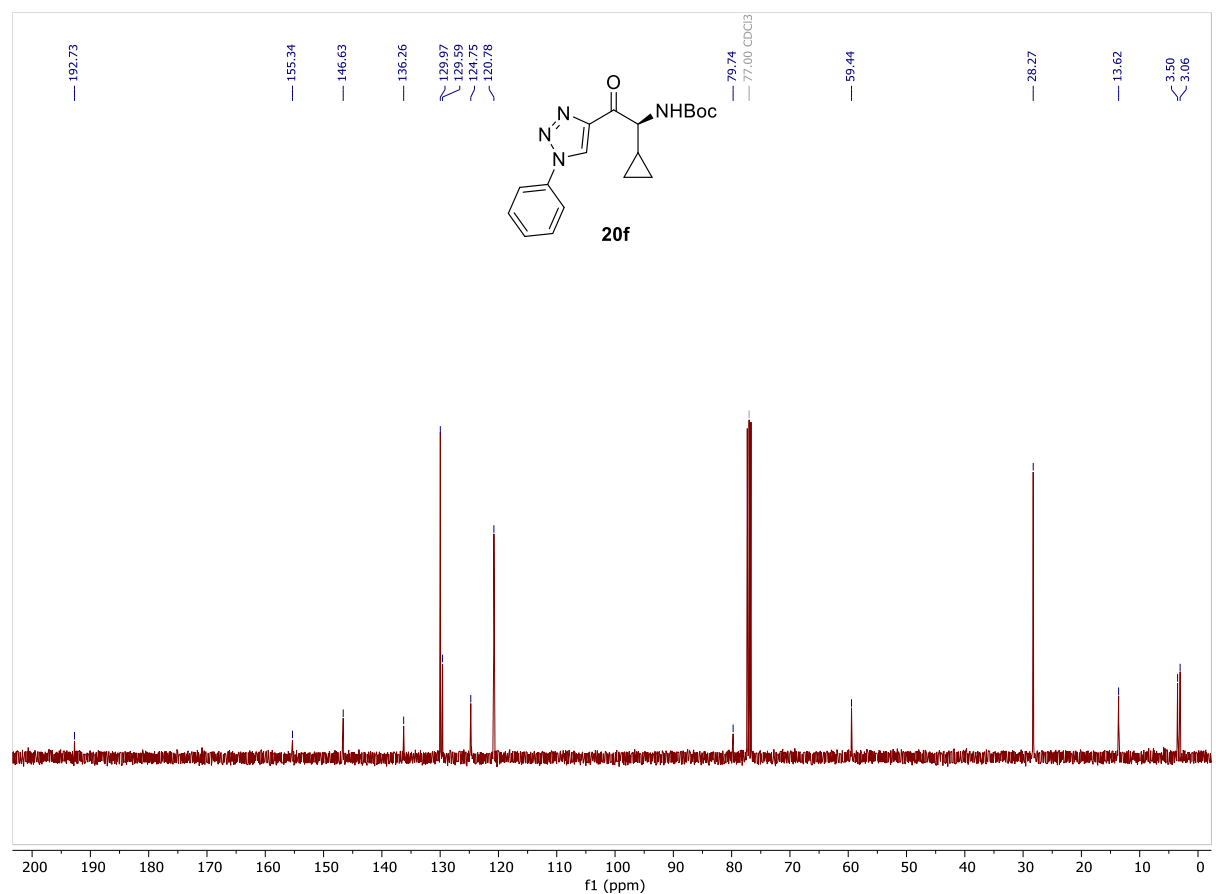
Compound **20e** ( $^{13}\text{C}$  NMR, 101 MHz):



Compound **20f** ( $^1\text{H}$  NMR, 400 MHz):

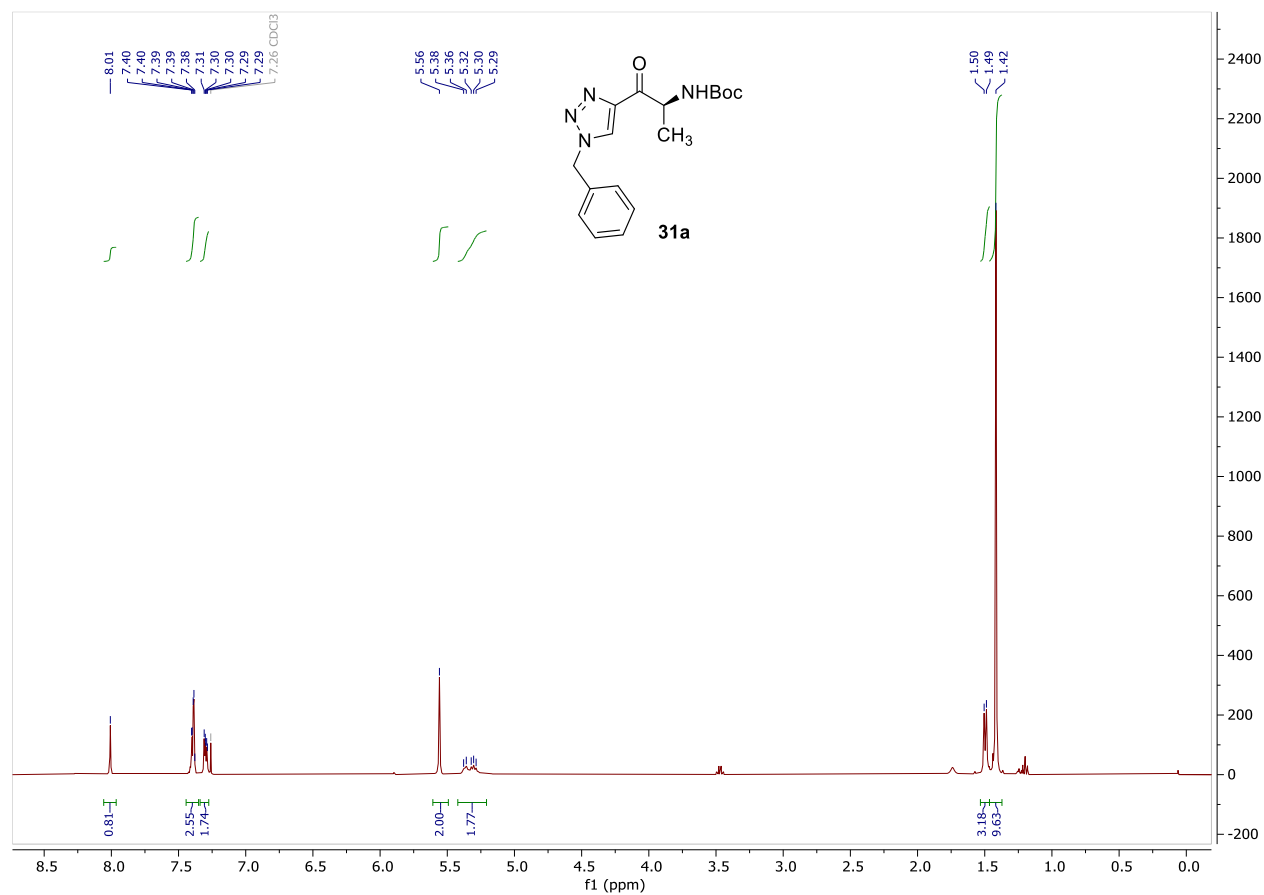


Compound **20f** ( $^{13}\text{C}$  NMR, 101 MHz):

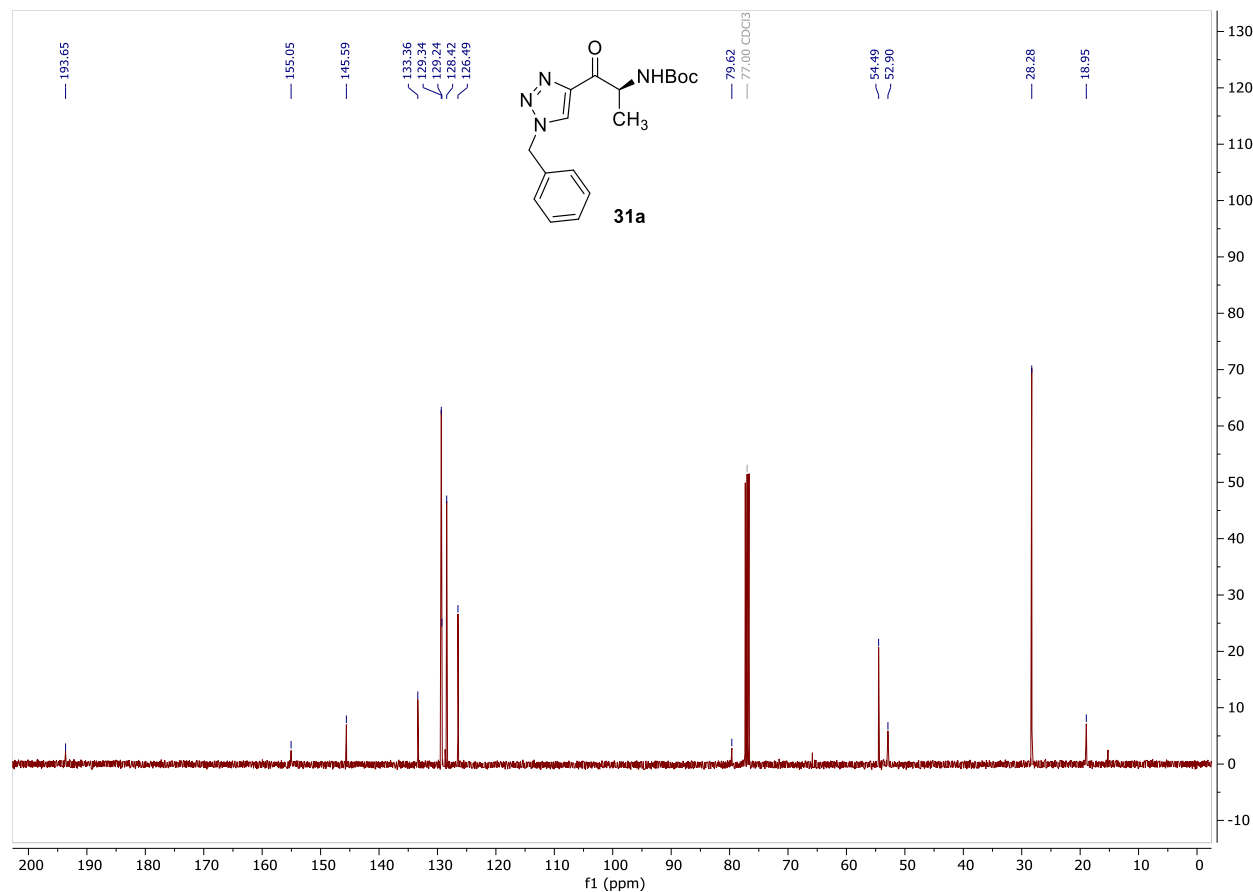




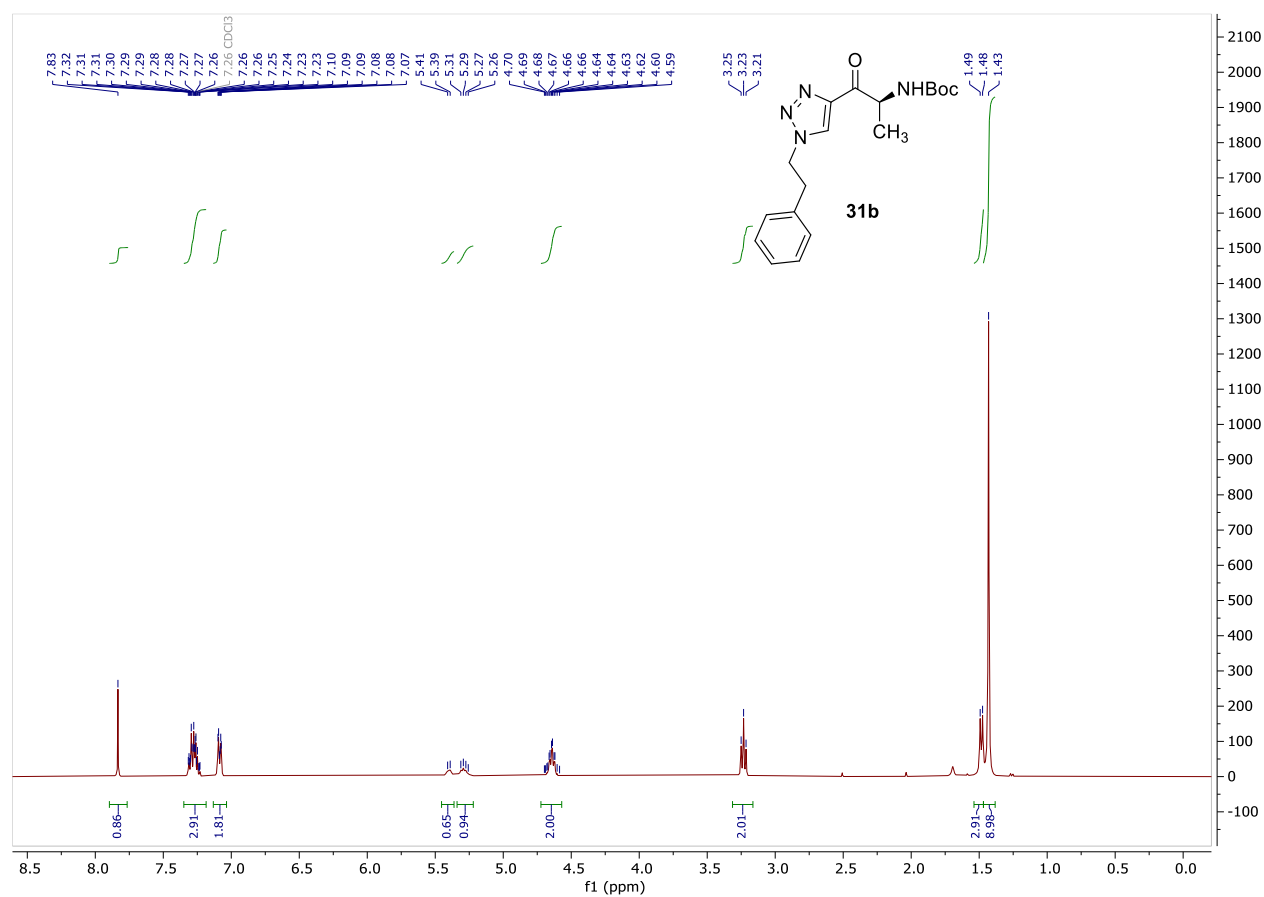
Compound **31a** ( $^1\text{H}$  NMR, 400 MHz):



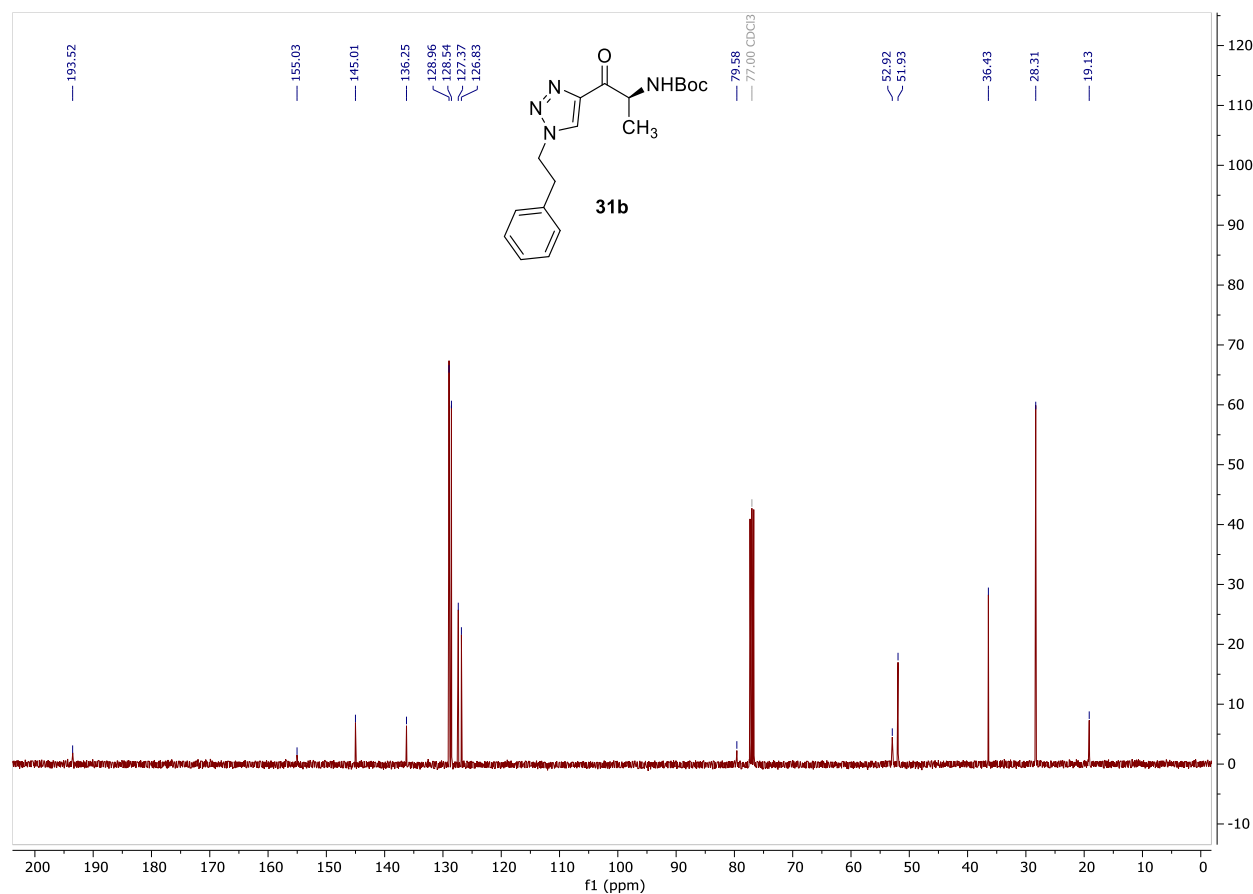
Compound **31a** ( $^{13}\text{C}$  NMR, 101 MHz):



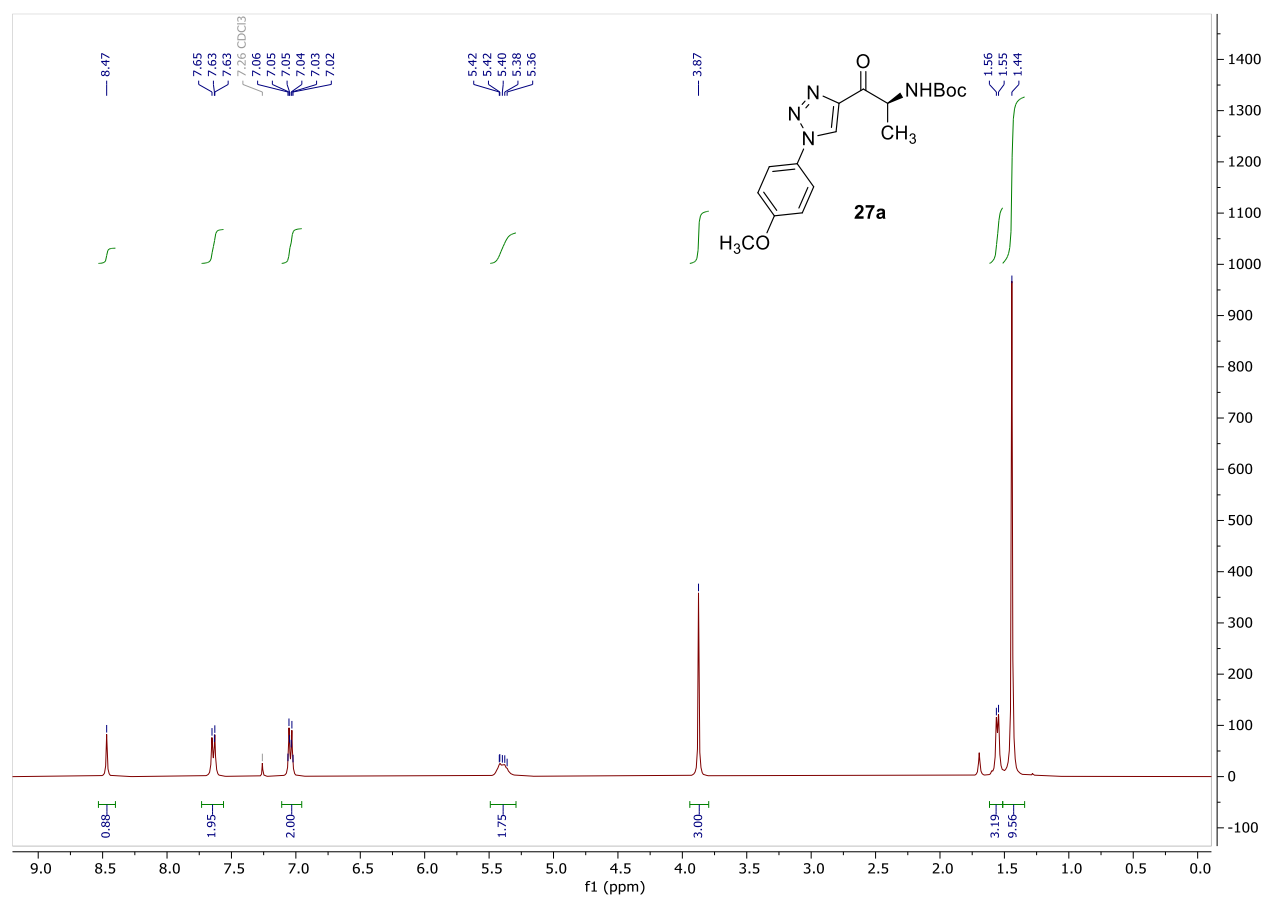
Compound **31b** ( $^1\text{H}$  NMR, 400 MHz):



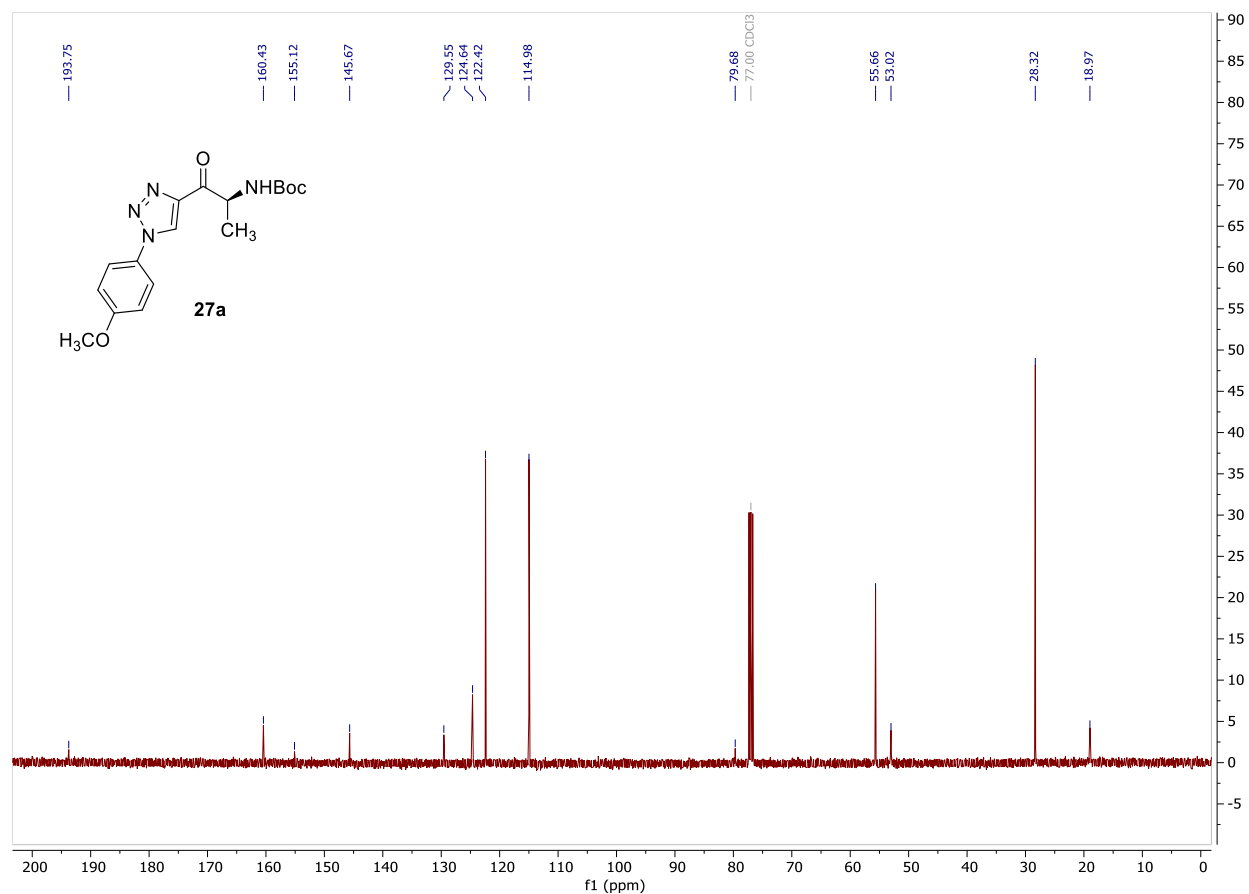
Compound **31b** ( $^{13}\text{C}$  NMR, 101 MHz):



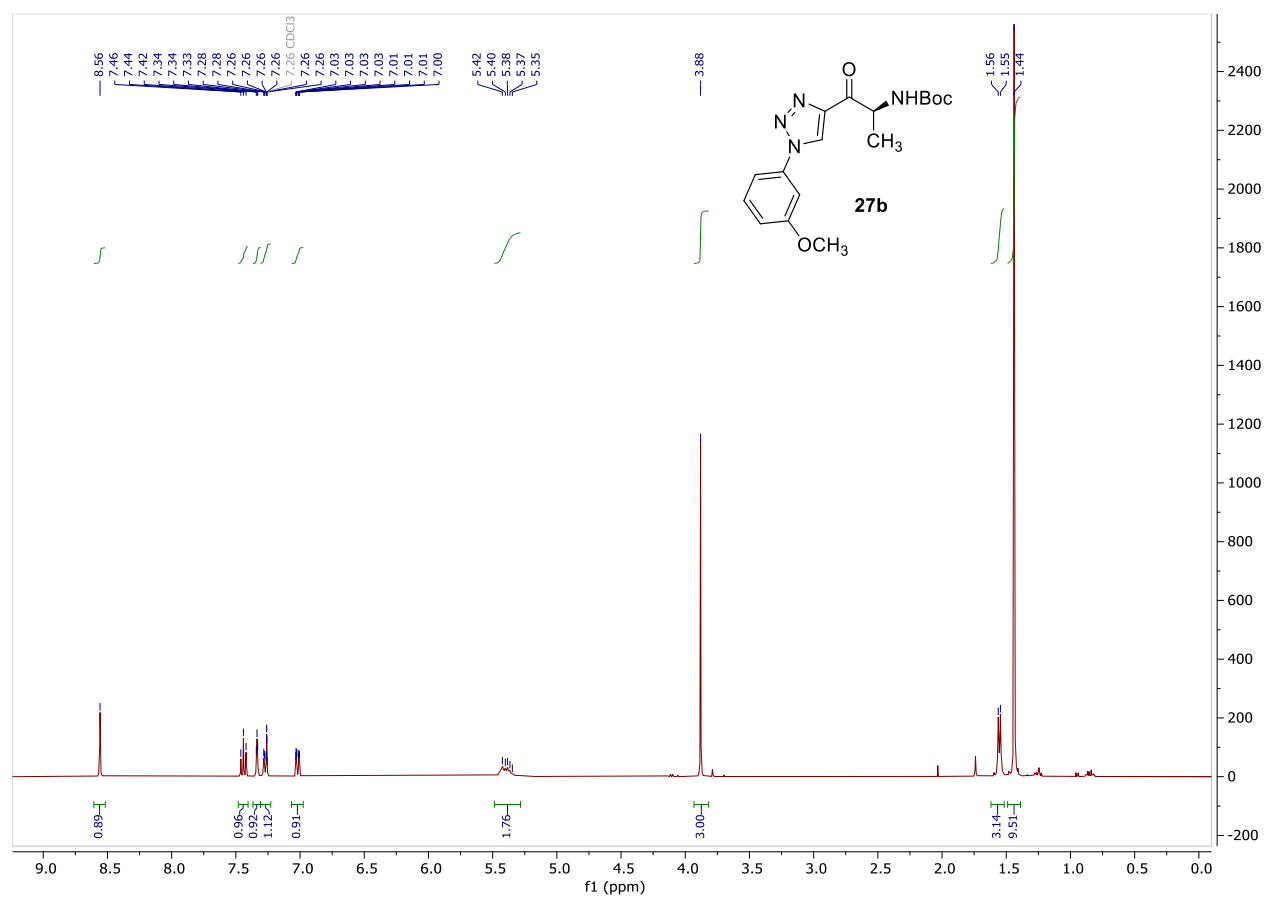
Compound **27a** ( $^1\text{H}$  NMR, 400 MHz):



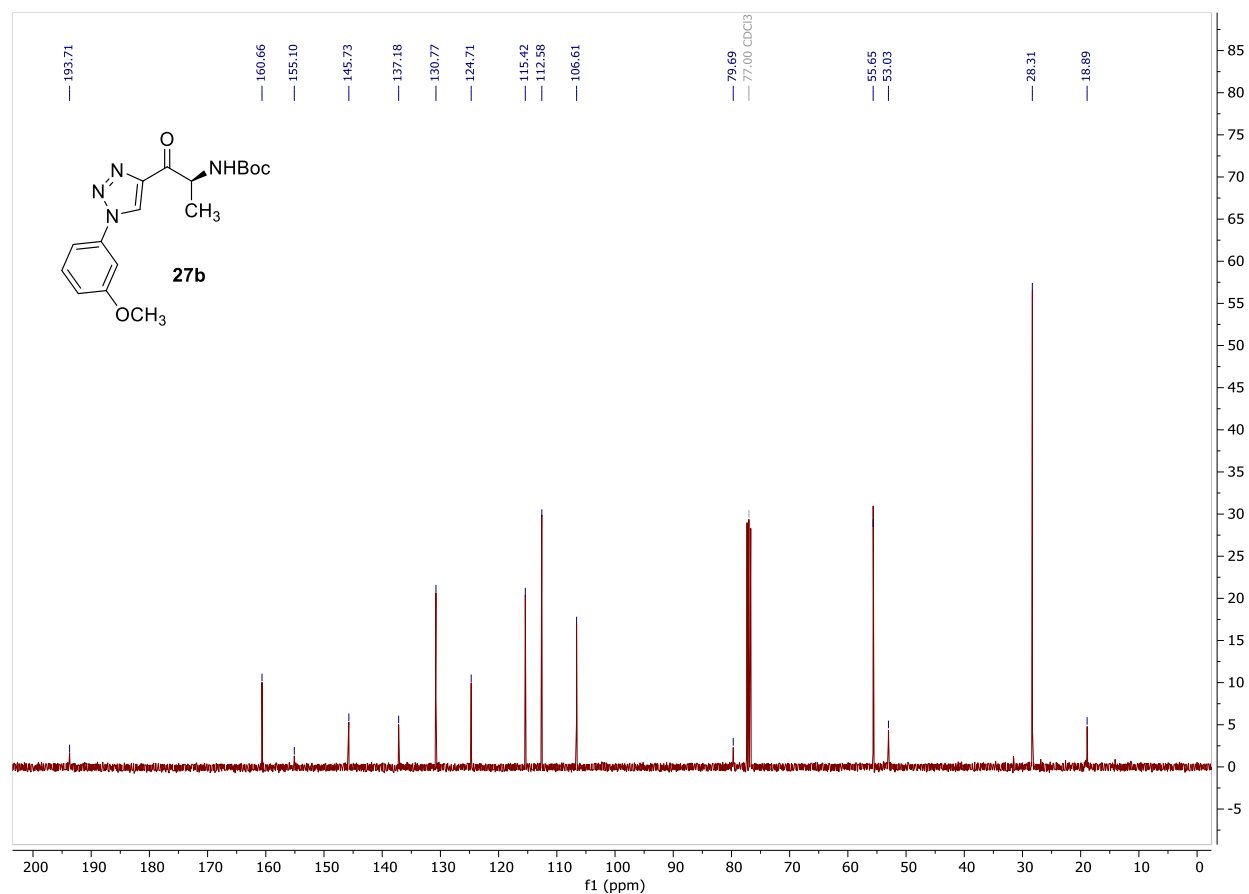
Compound **27a** ( $^{13}\text{C}$  NMR, 101 MHz):



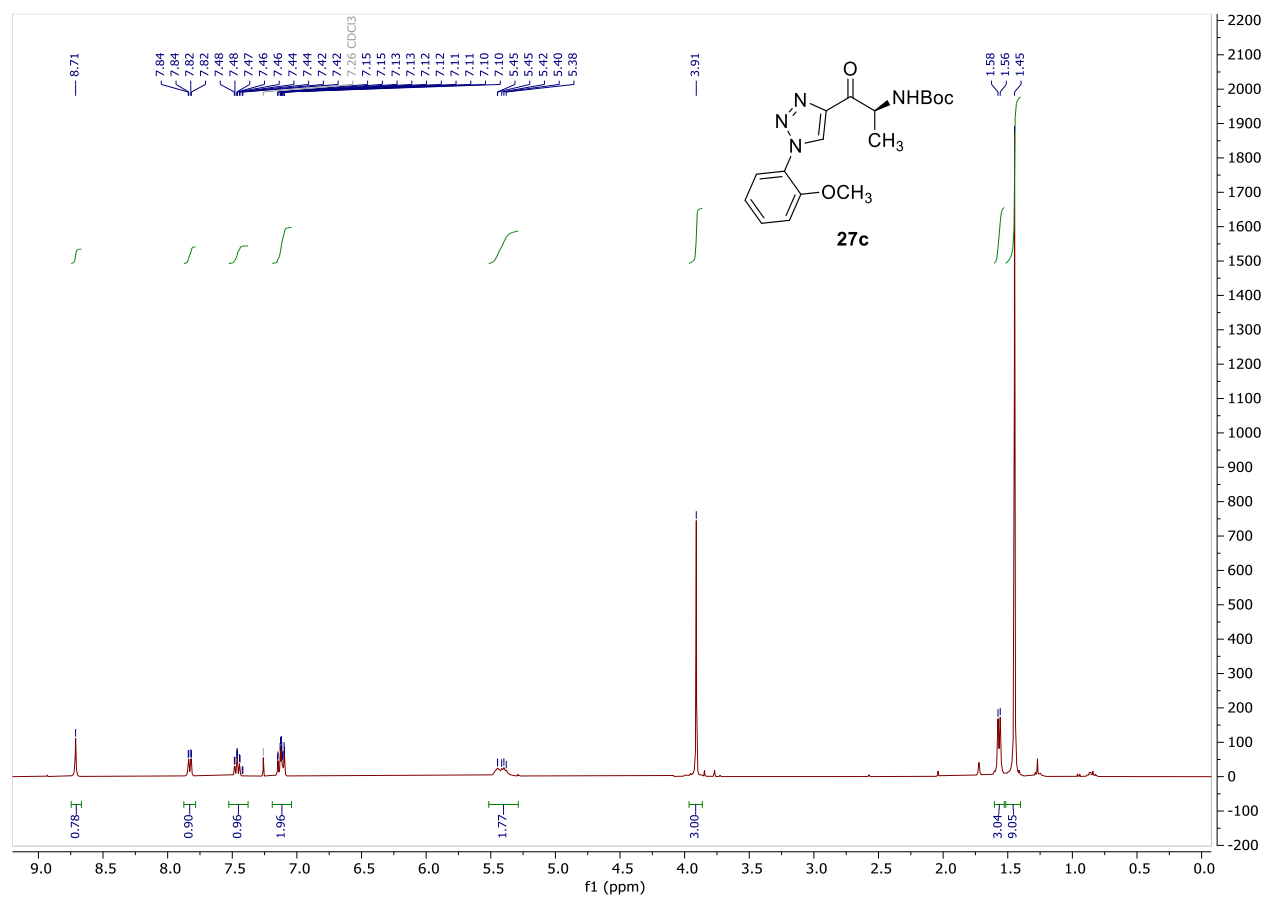
Compound **27b** ( $^1\text{H}$  NMR, 400 MHz):



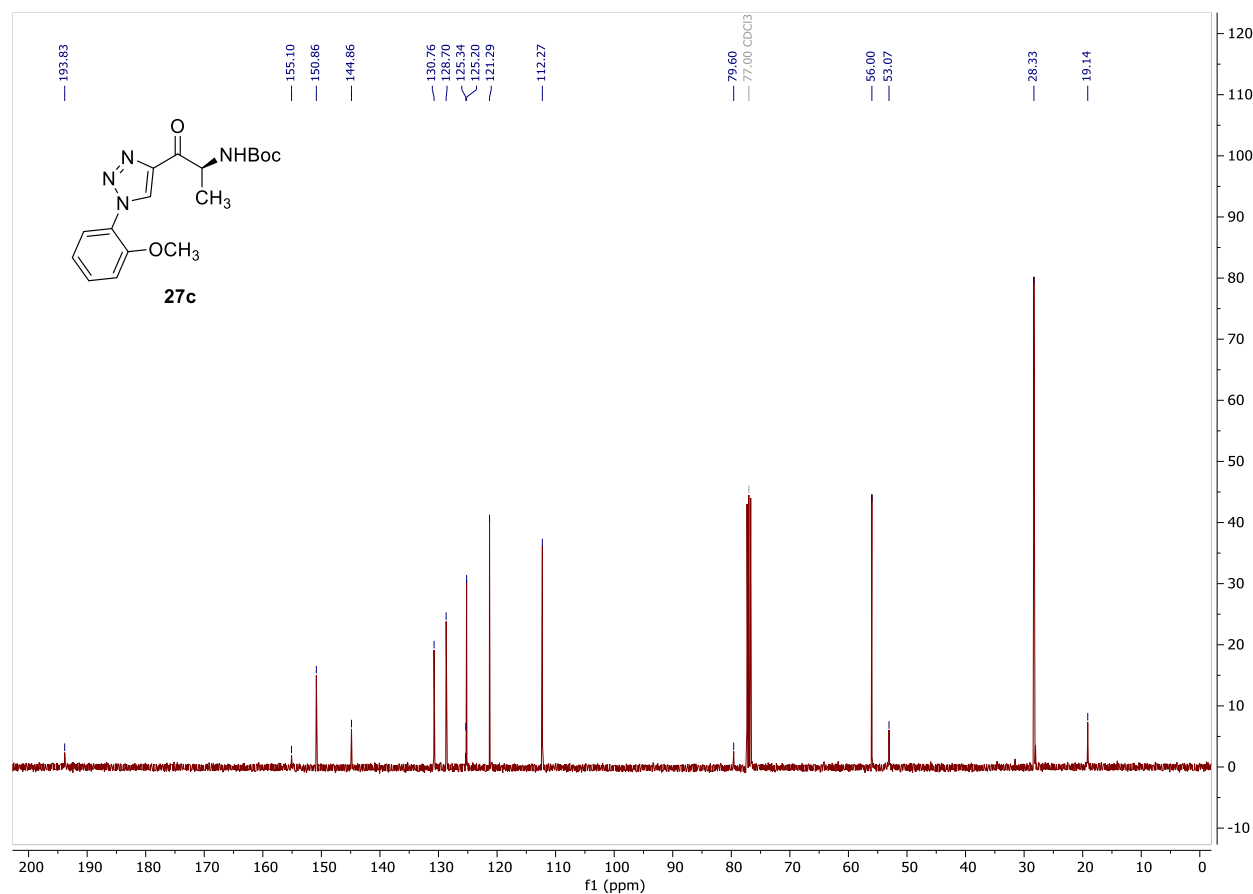
Compound **27b** ( $^{13}\text{C}$  NMR, 101 MHz):



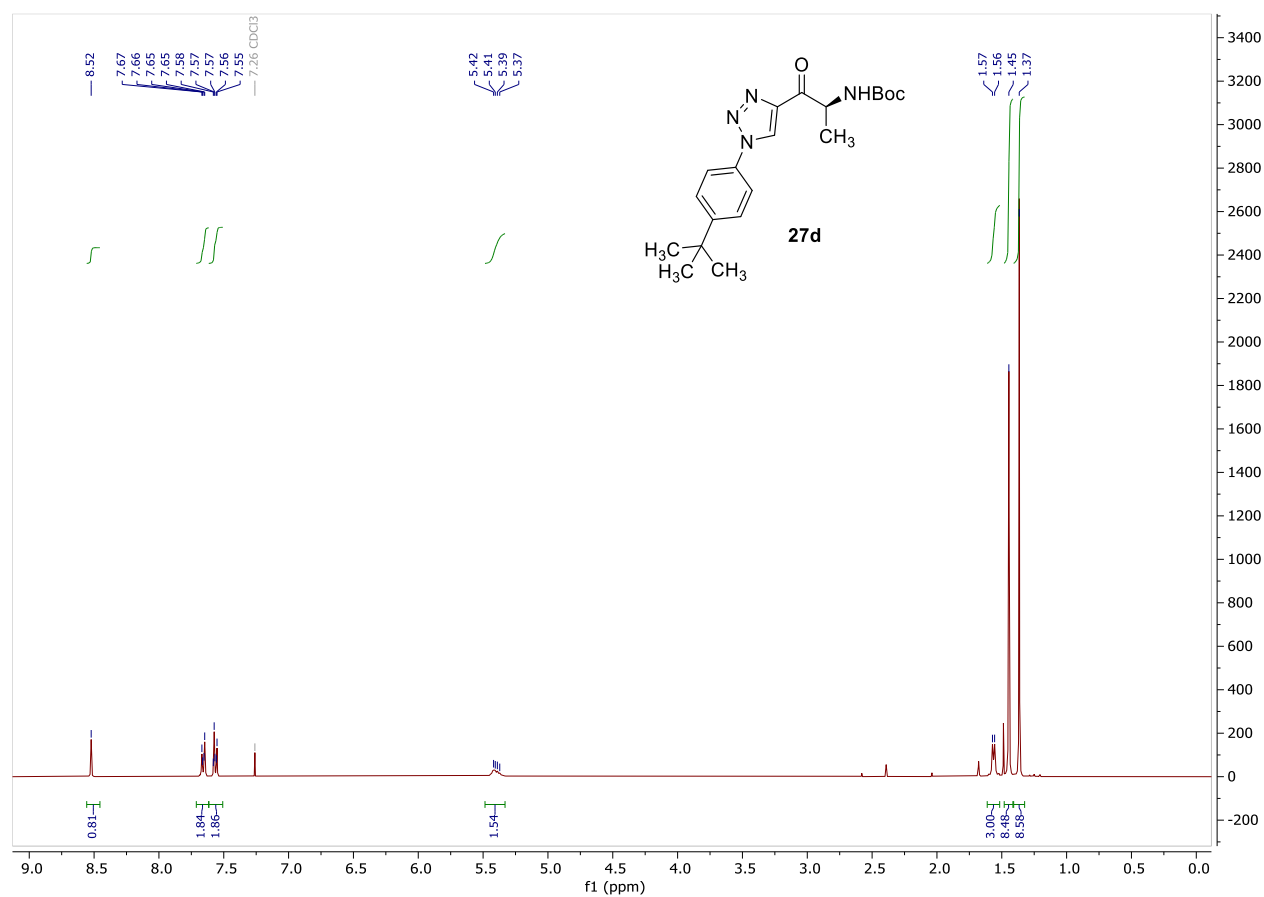
Compound **27c** ( $^1\text{H}$  NMR, 400 MHz):



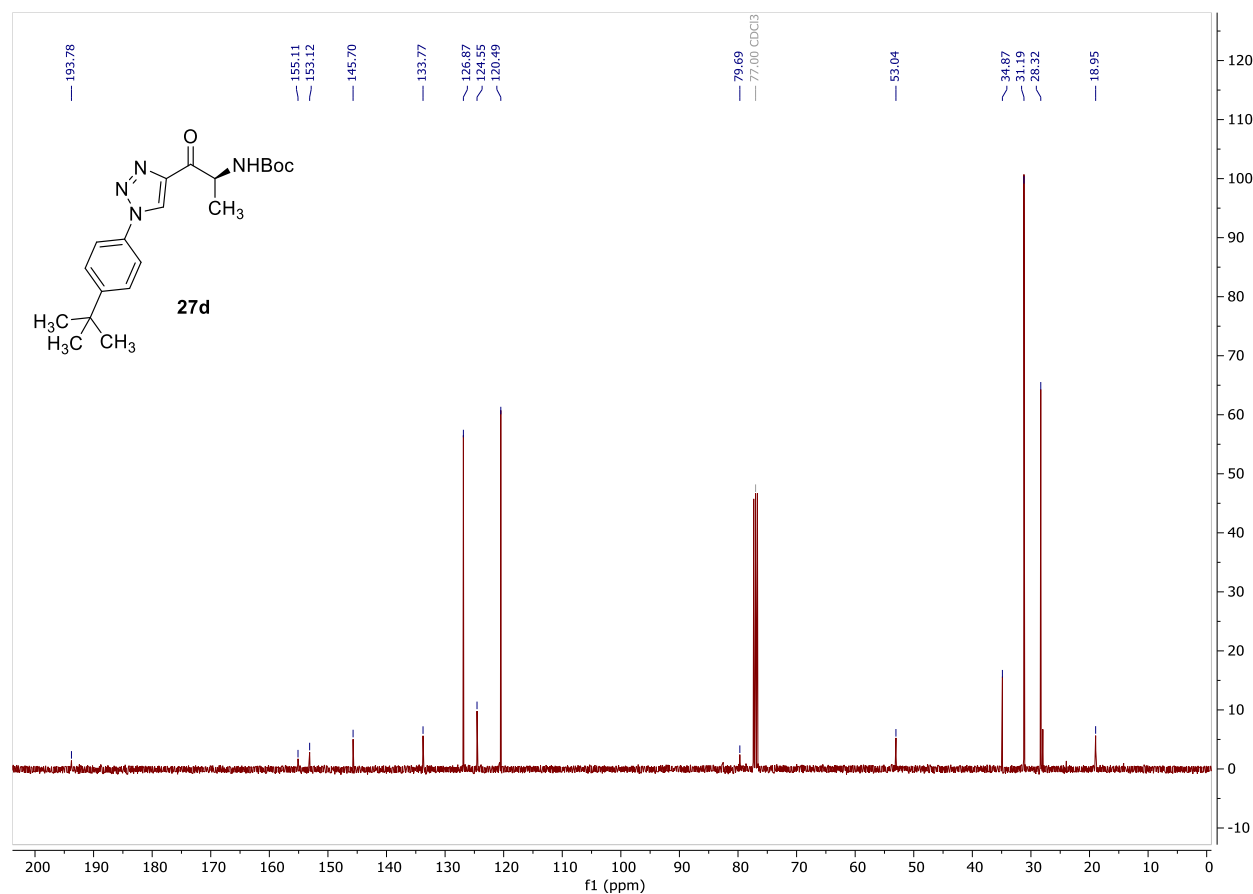
Compound **27c** ( $^{13}\text{C}$  NMR, 101 MHz):



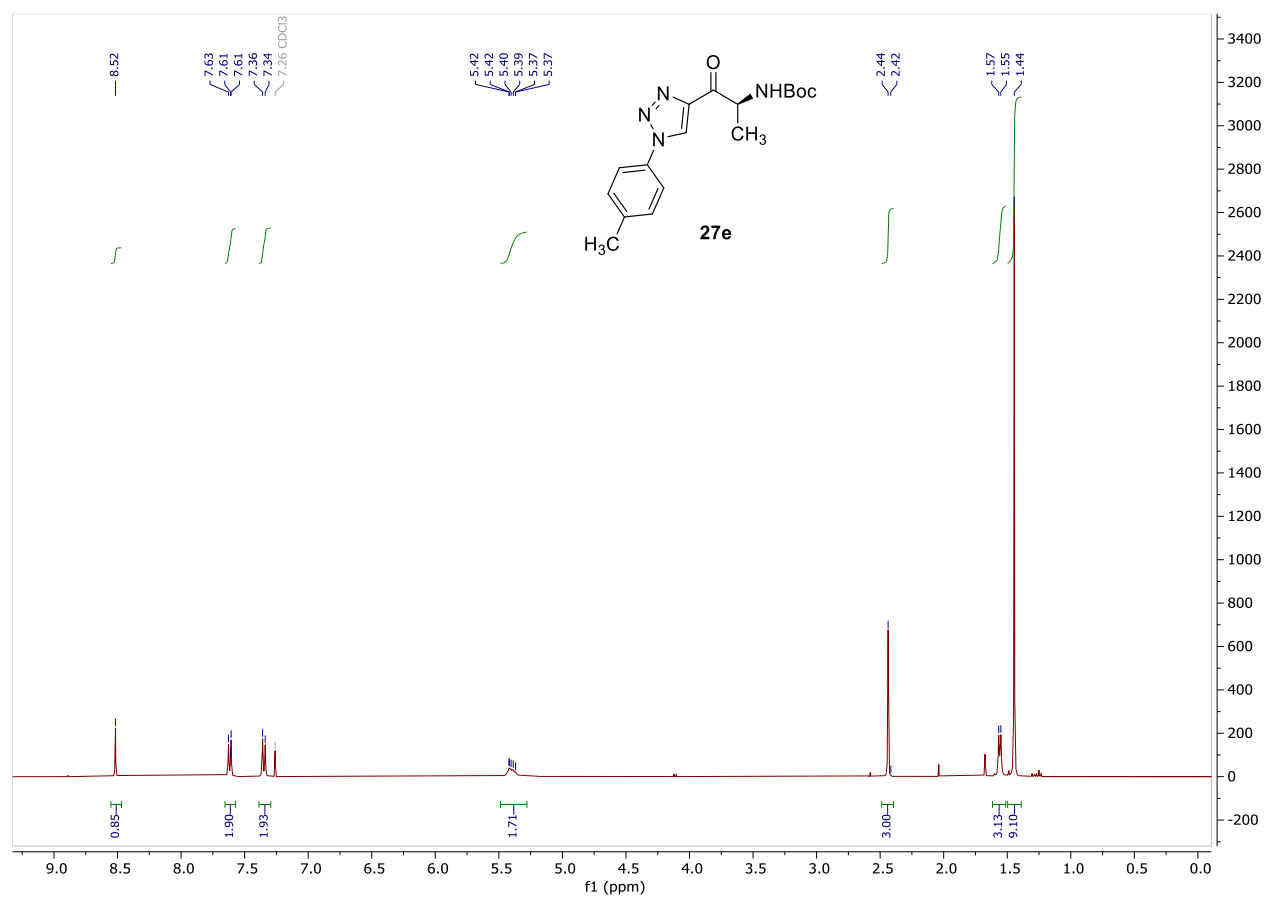
Compound **27d** ( $^1\text{H}$  NMR, 400 MHz):



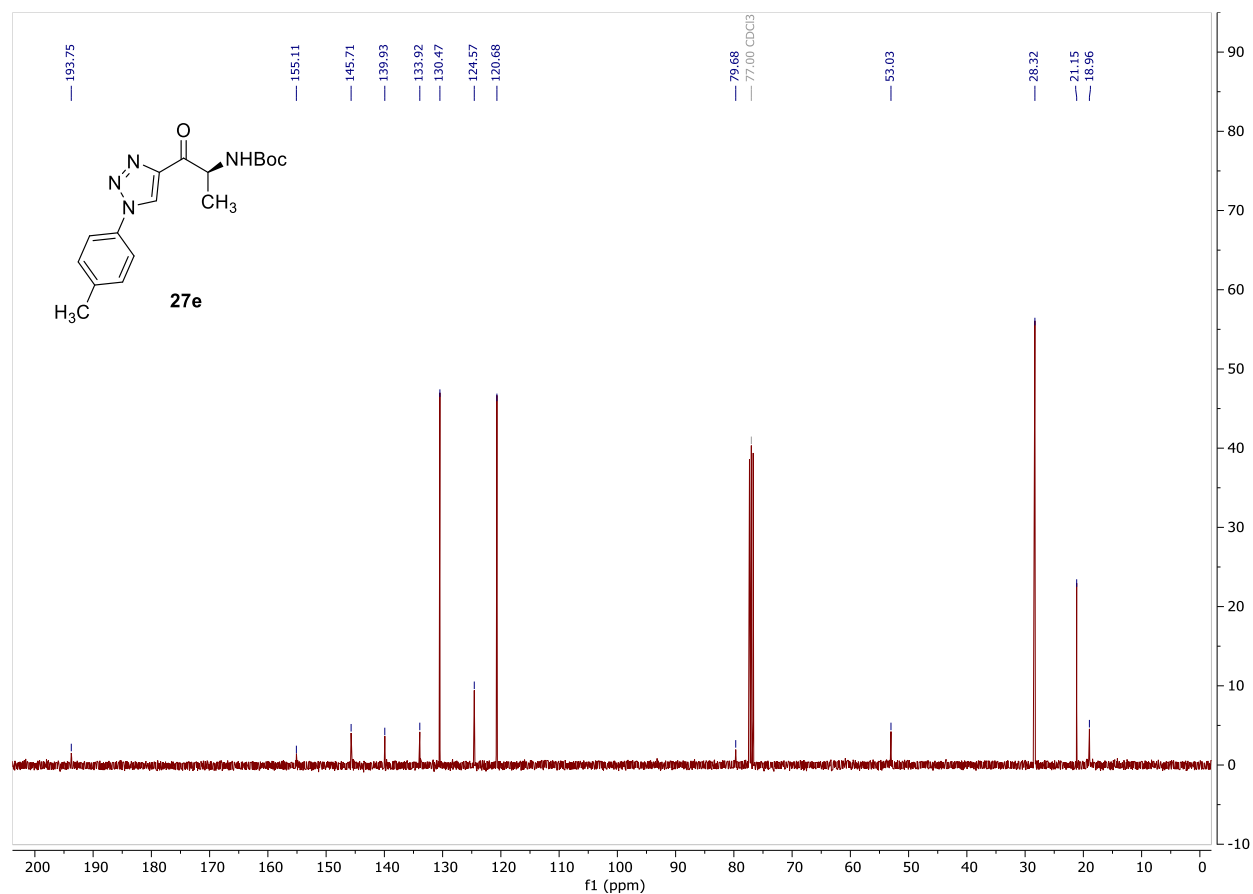
Compound **27d** ( $^{13}\text{C}$  NMR, 101 MHz):



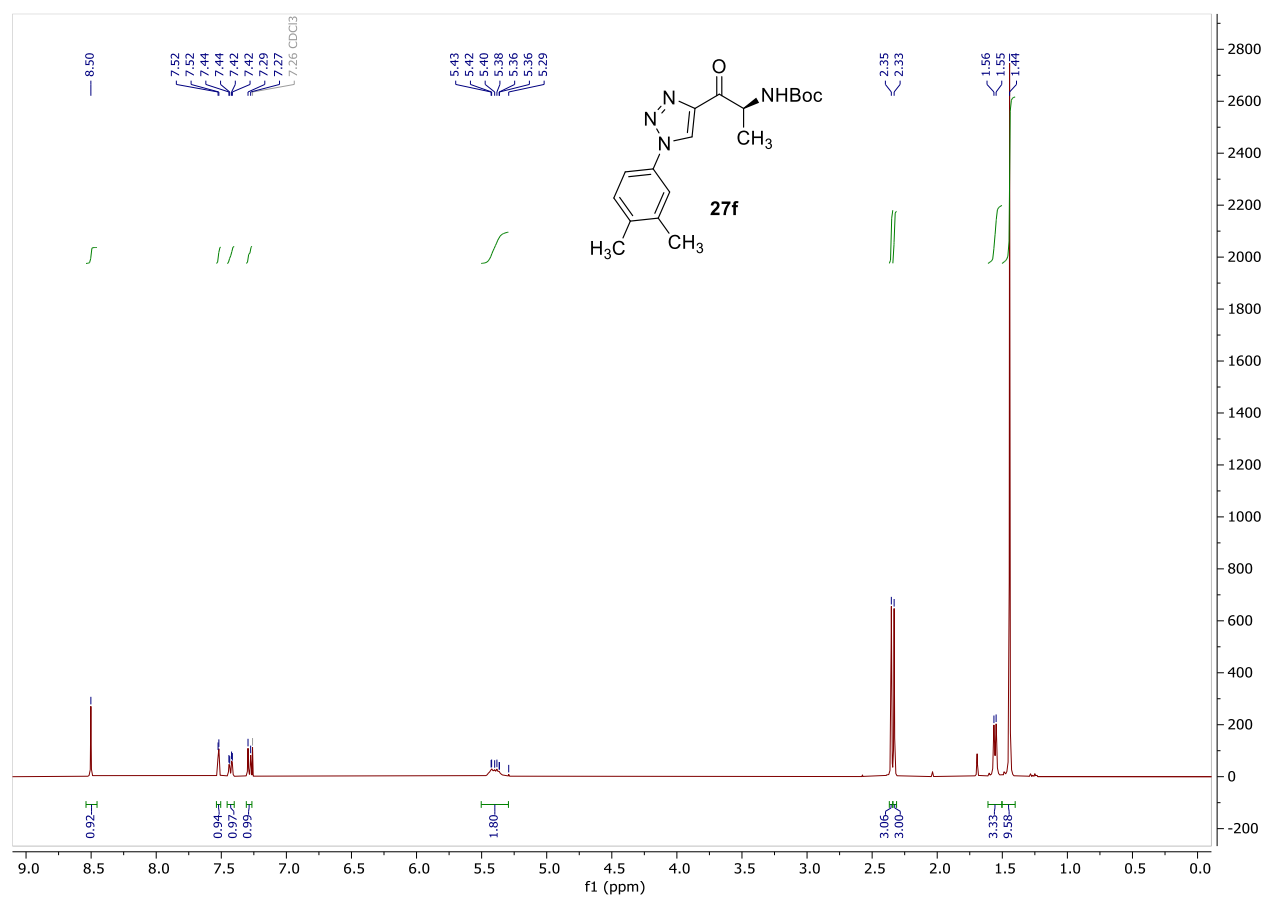
Compound **27e** ( $^1\text{H}$  NMR, 400 MHz):



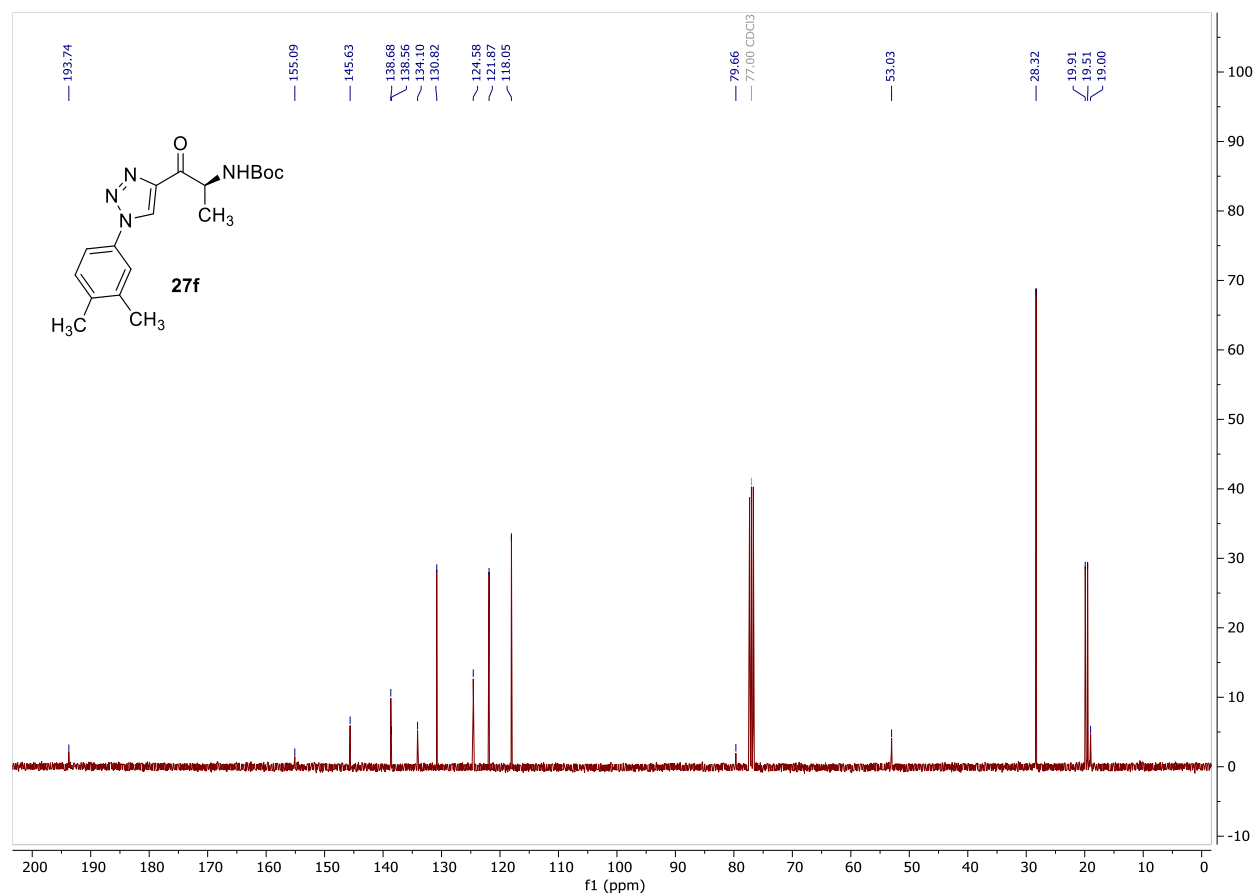
Compound **27e** ( $^{13}\text{C}$  NMR, 101 MHz):



Compound **27f** ( $^1\text{H}$  NMR, 400 MHz):

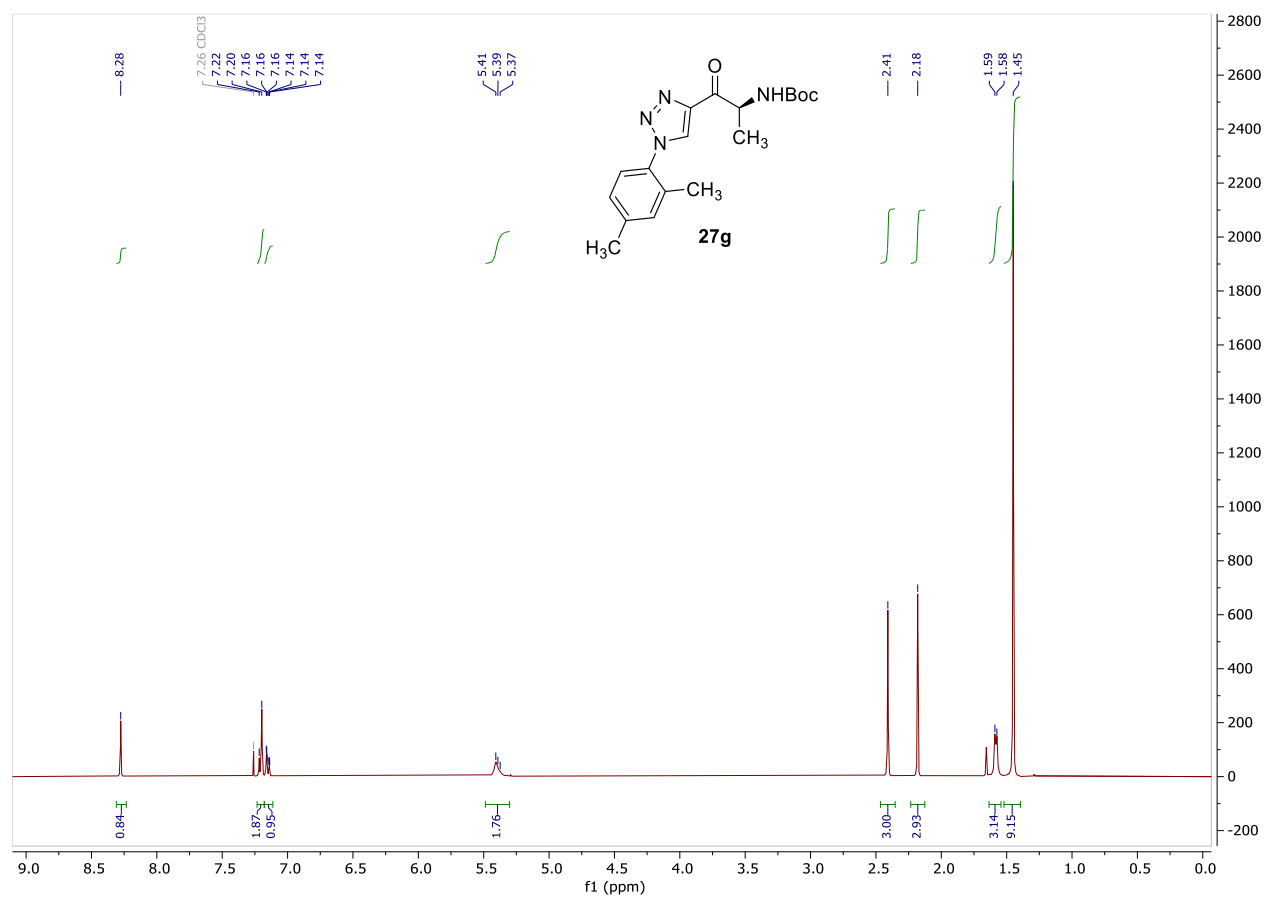


Compound **27f** ( $^{13}\text{C}$  NMR, 101 MHz):

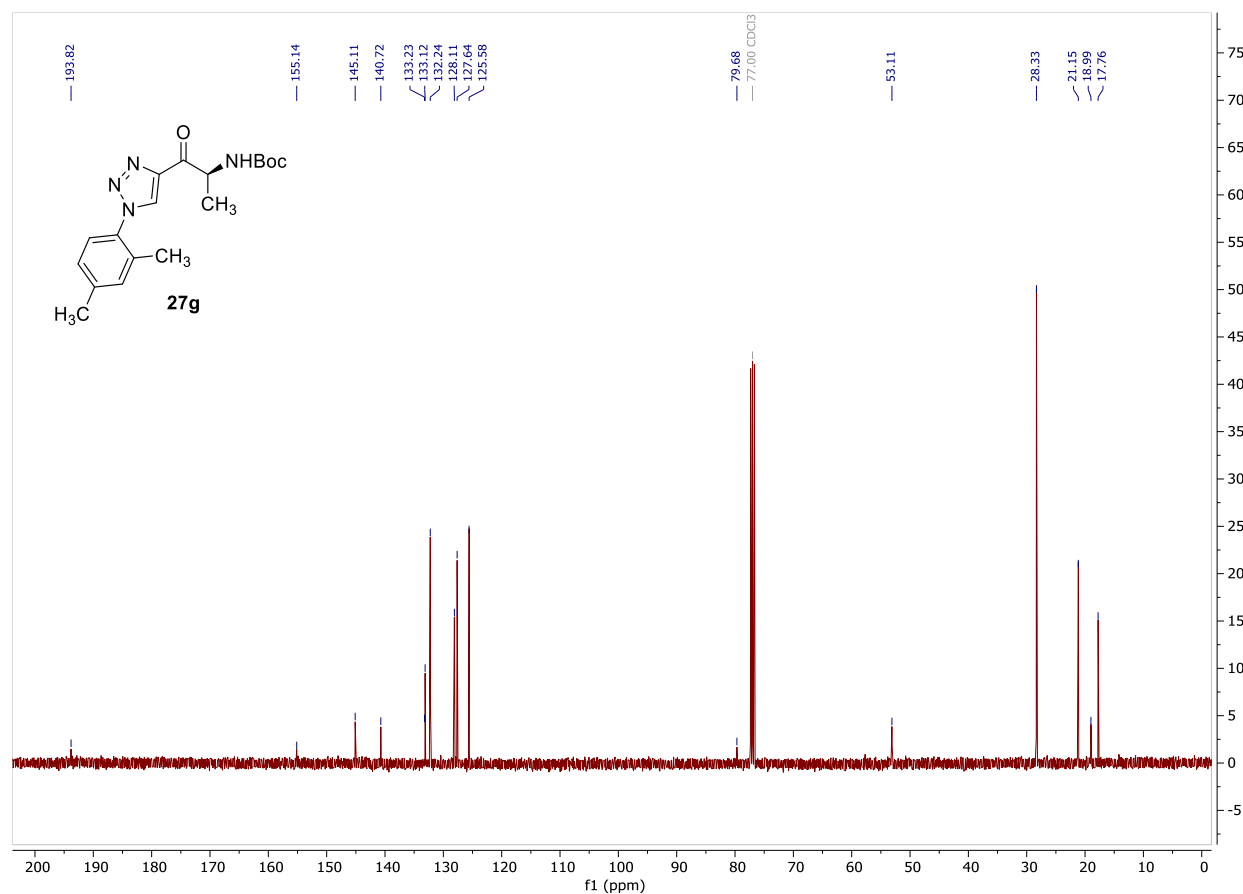




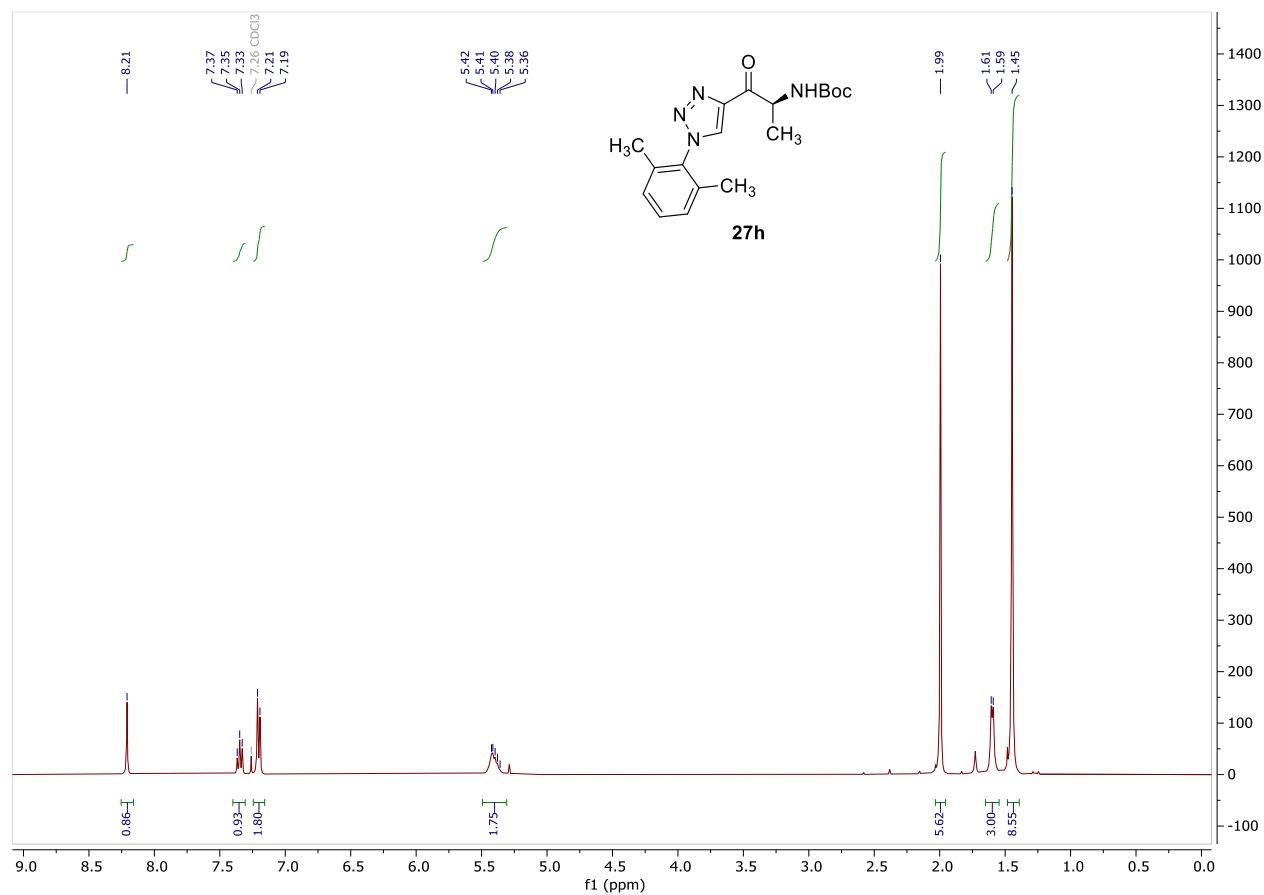
Compound **27g** ( $^1\text{H}$  NMR, 400 MHz):



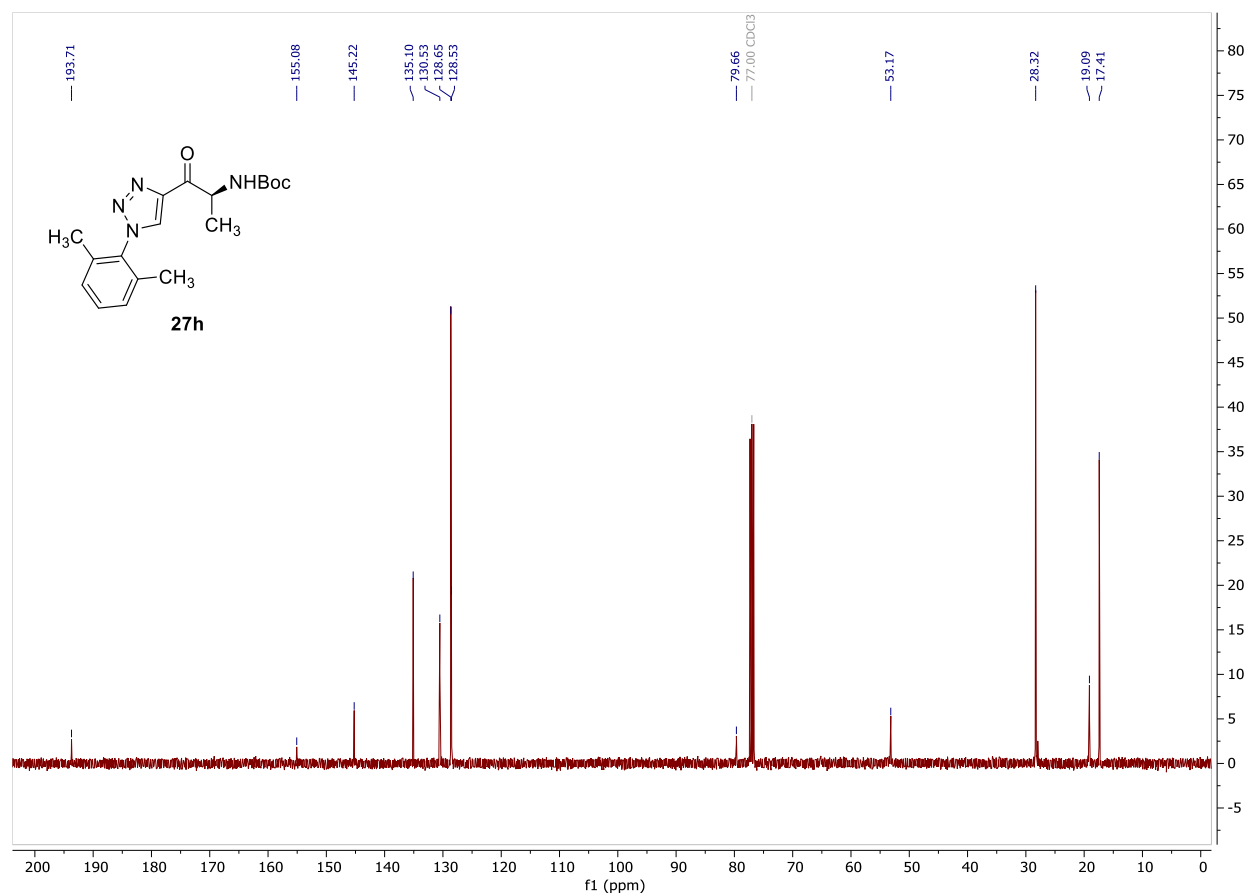
Compound **27g** ( $^{13}\text{C}$  NMR, 101 MHz):



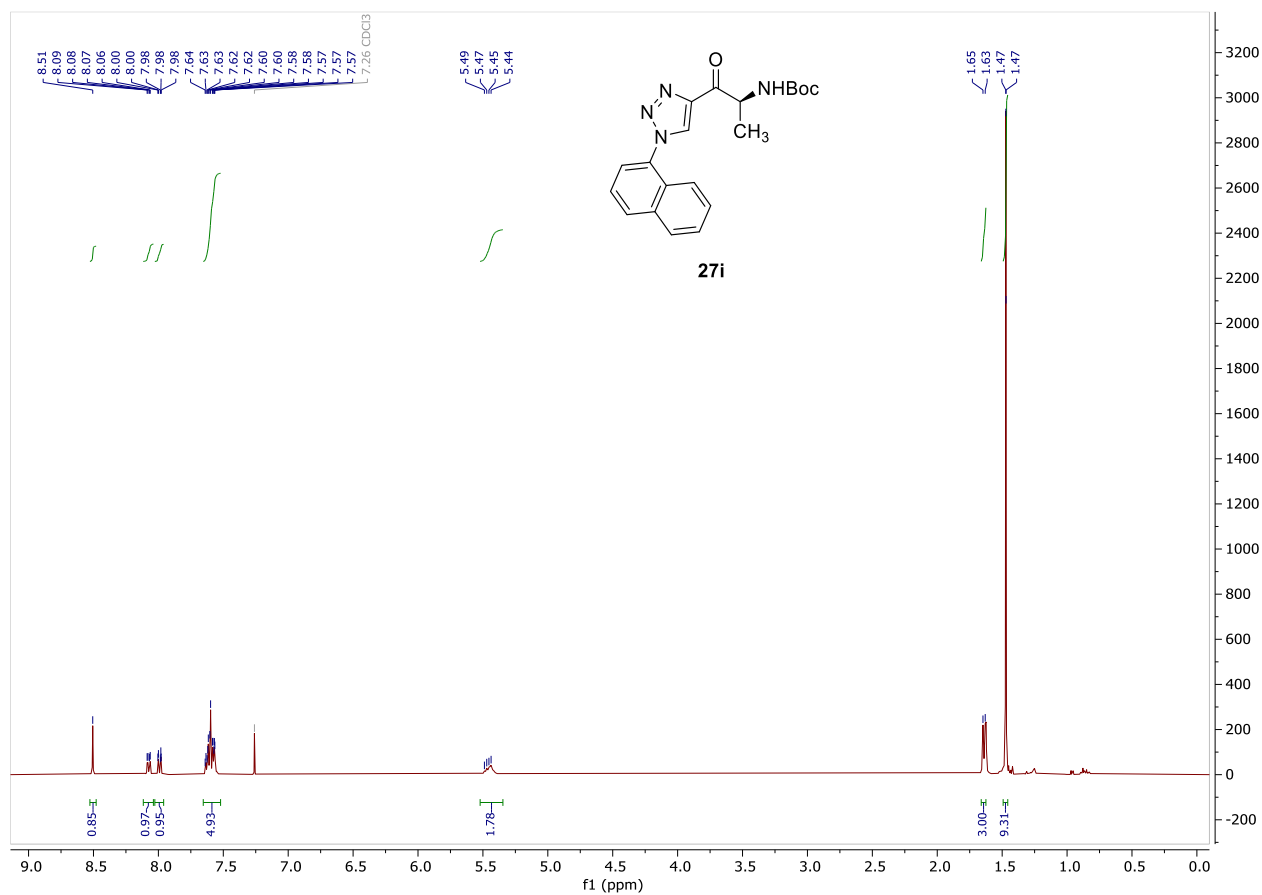
Compound **27h** ( $^1\text{H}$  NMR, 400 MHz):



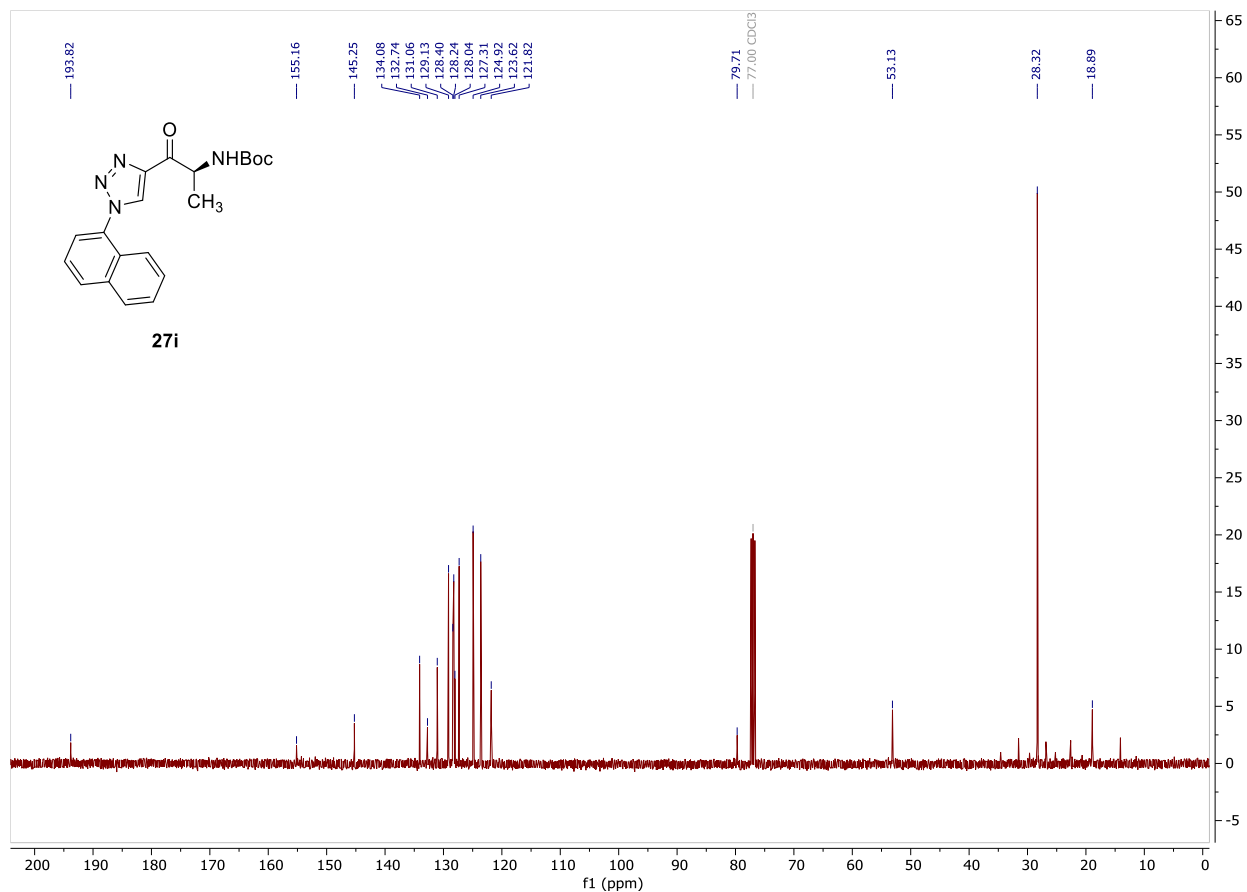
Compound **27h** ( $^{13}\text{C}$  NMR, 101 MHz):



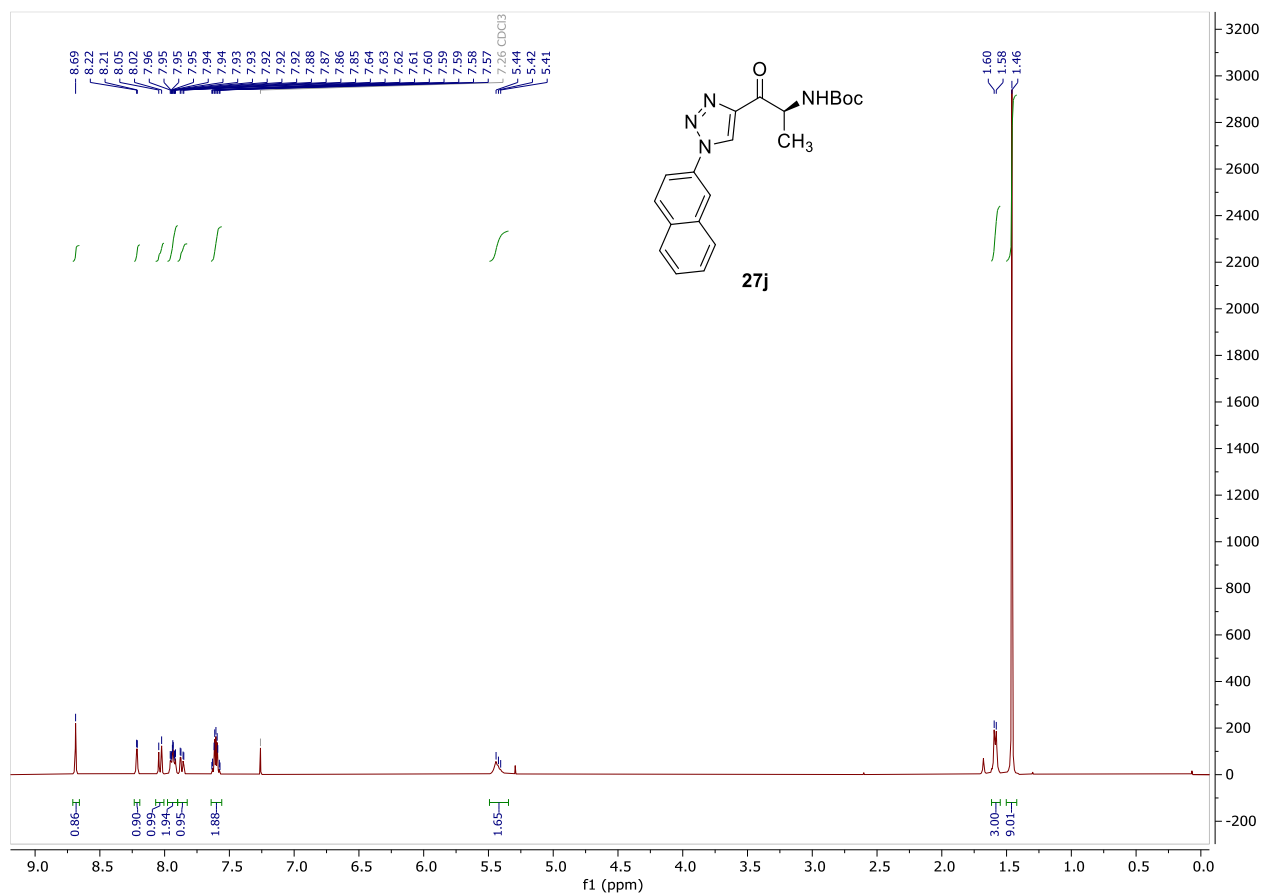
Compound **27i** ( $^1\text{H}$  NMR, 400 MHz):



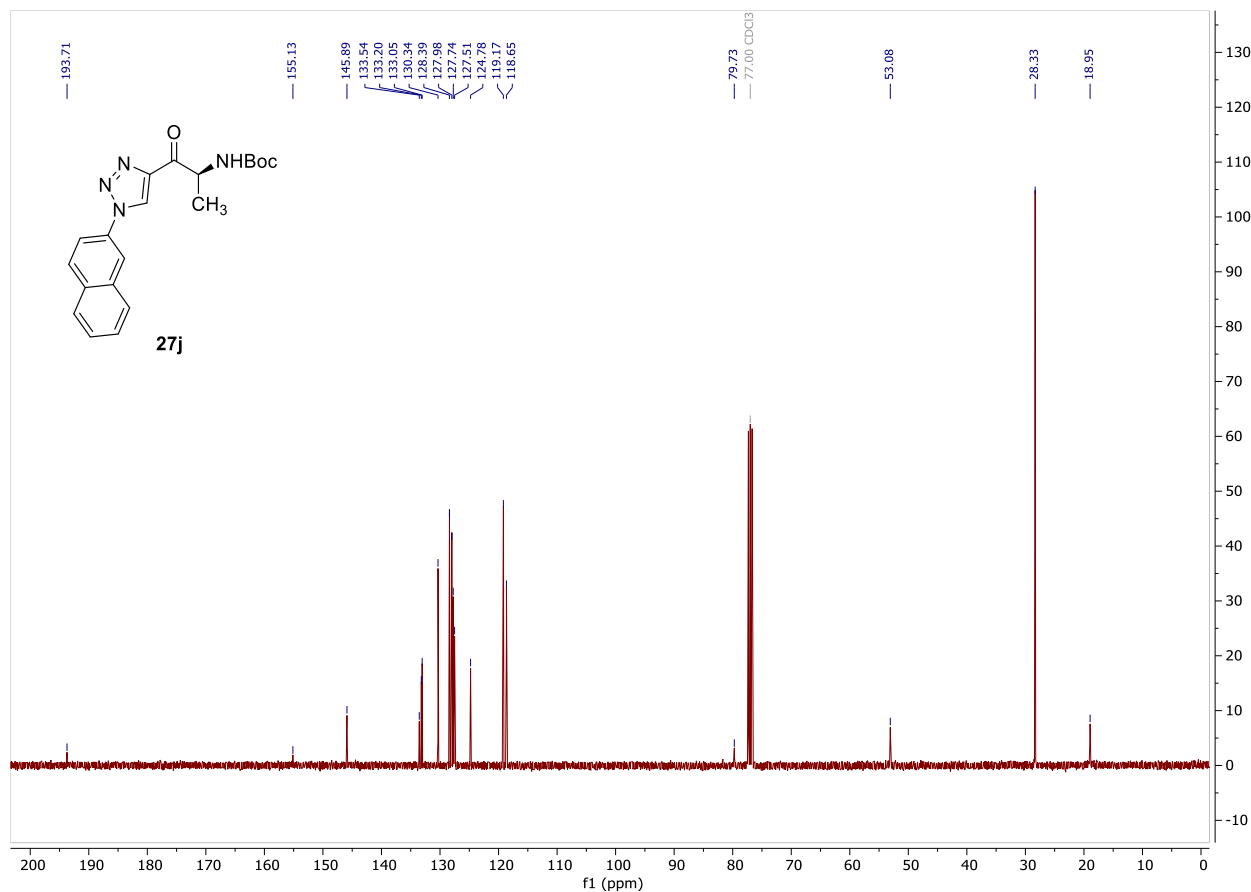
Compound **27i** ( $^{13}\text{C}$  NMR, 101 MHz):



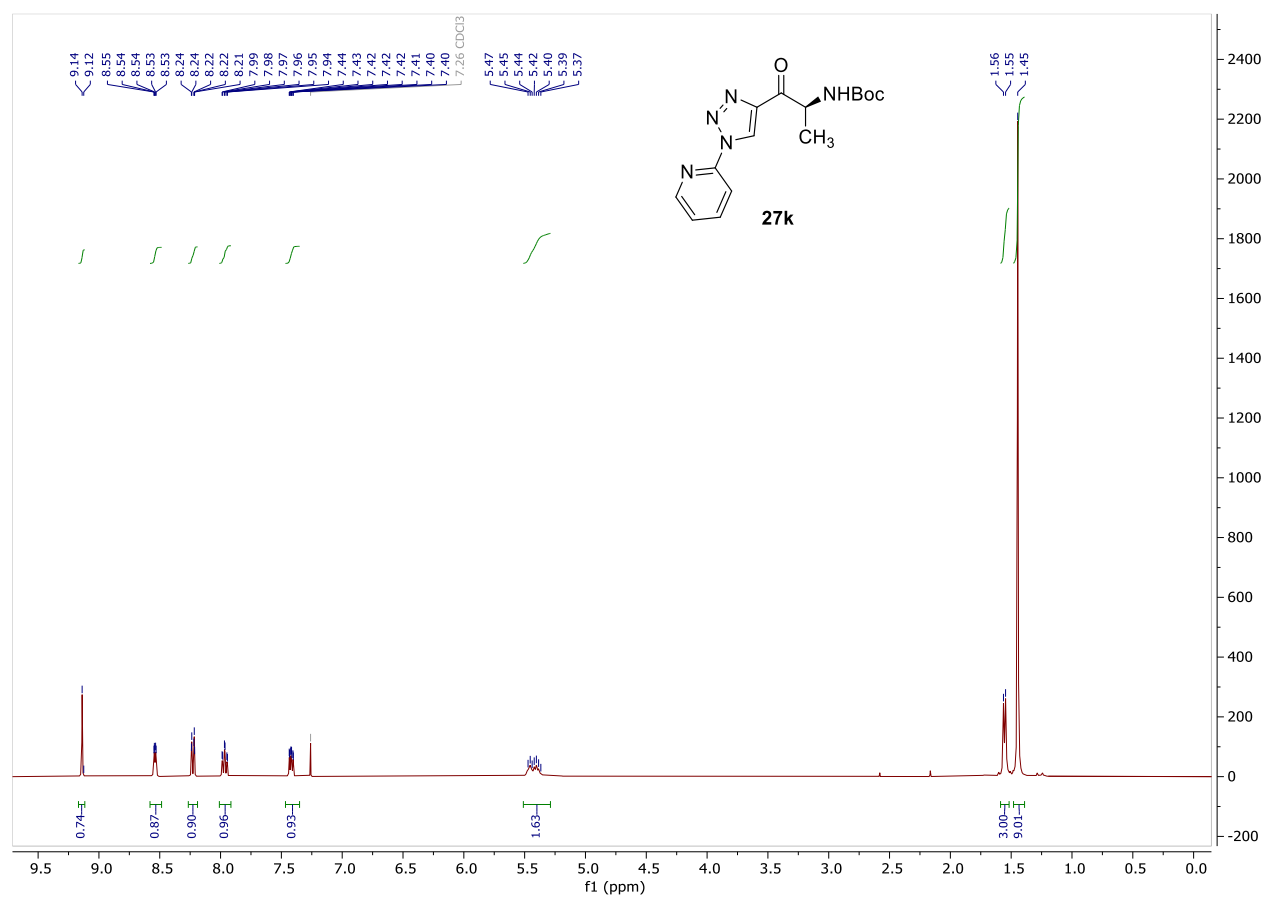
Compound **27j** ( $^1\text{H}$  NMR, 400 MHz):



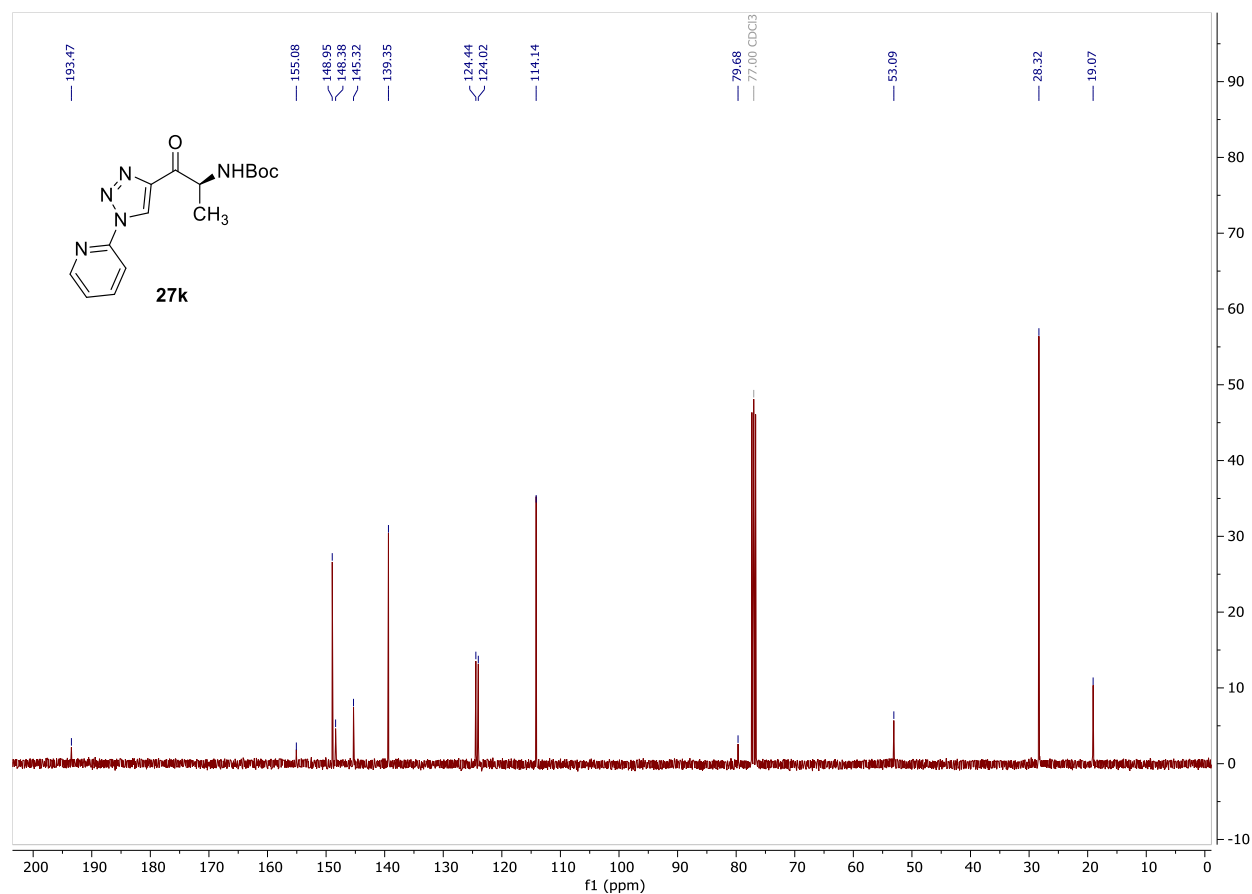
Compound **27j** ( $^{13}\text{C}$  NMR, 101 MHz):



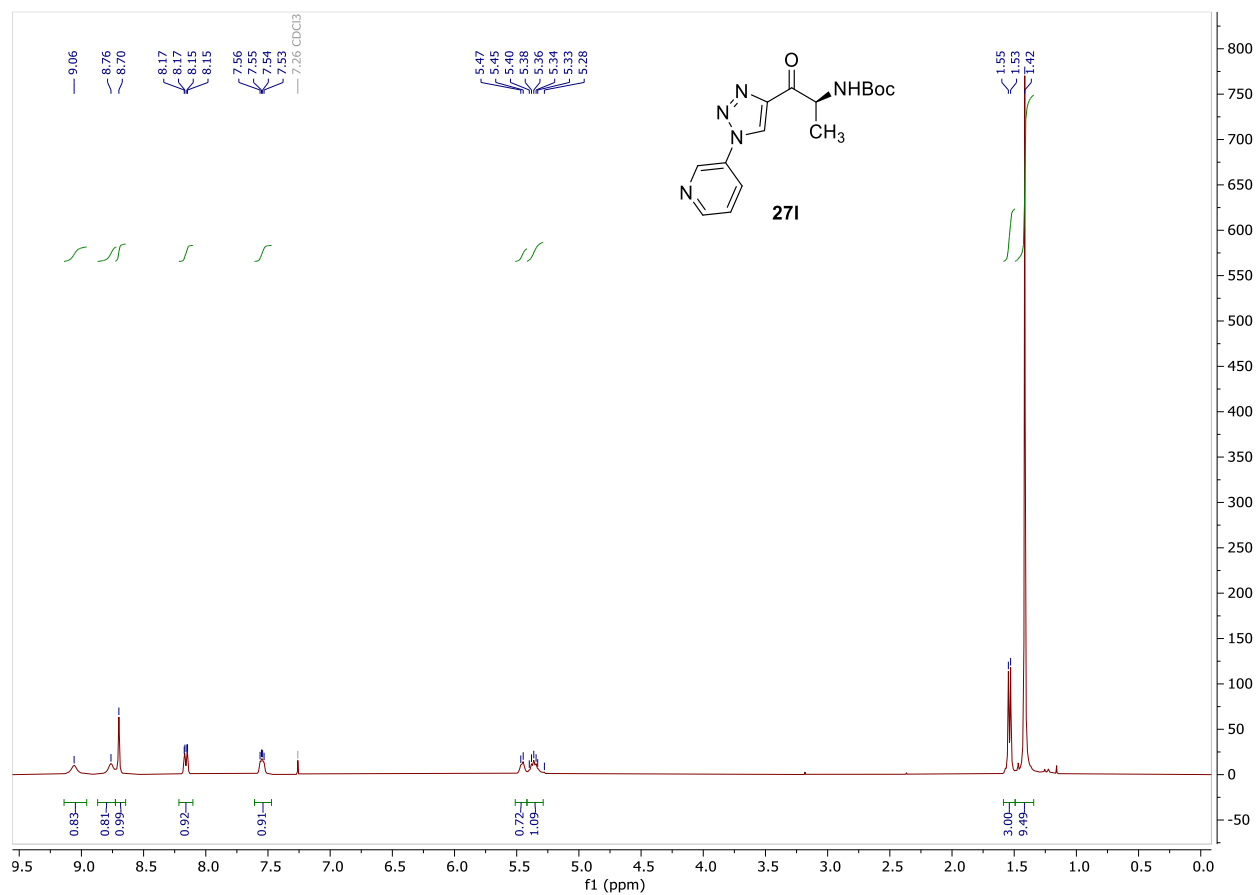
Compound **27k** ( $^1\text{H}$  NMR, 400 MHz):



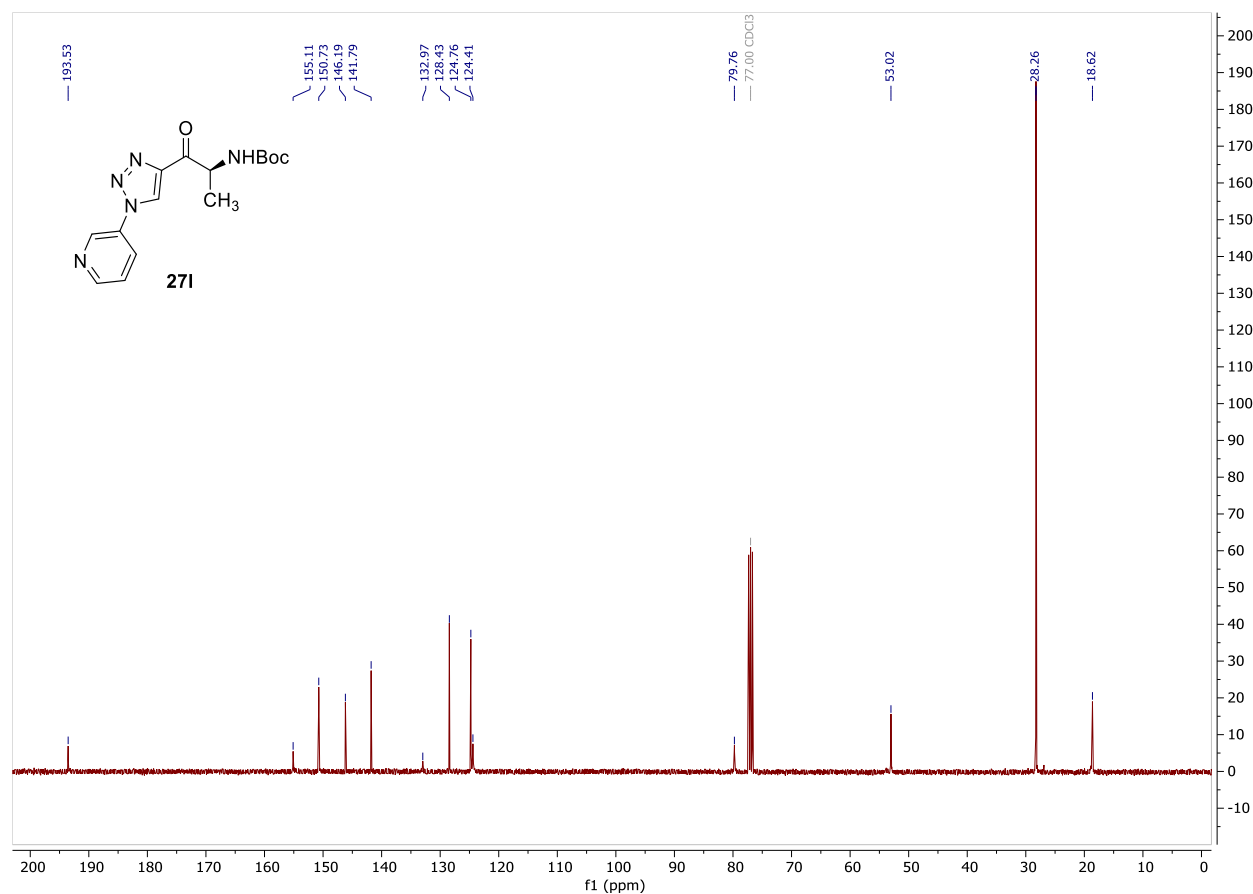
Compound **27k** ( $^{13}\text{C}$  NMR, 101 MHz):



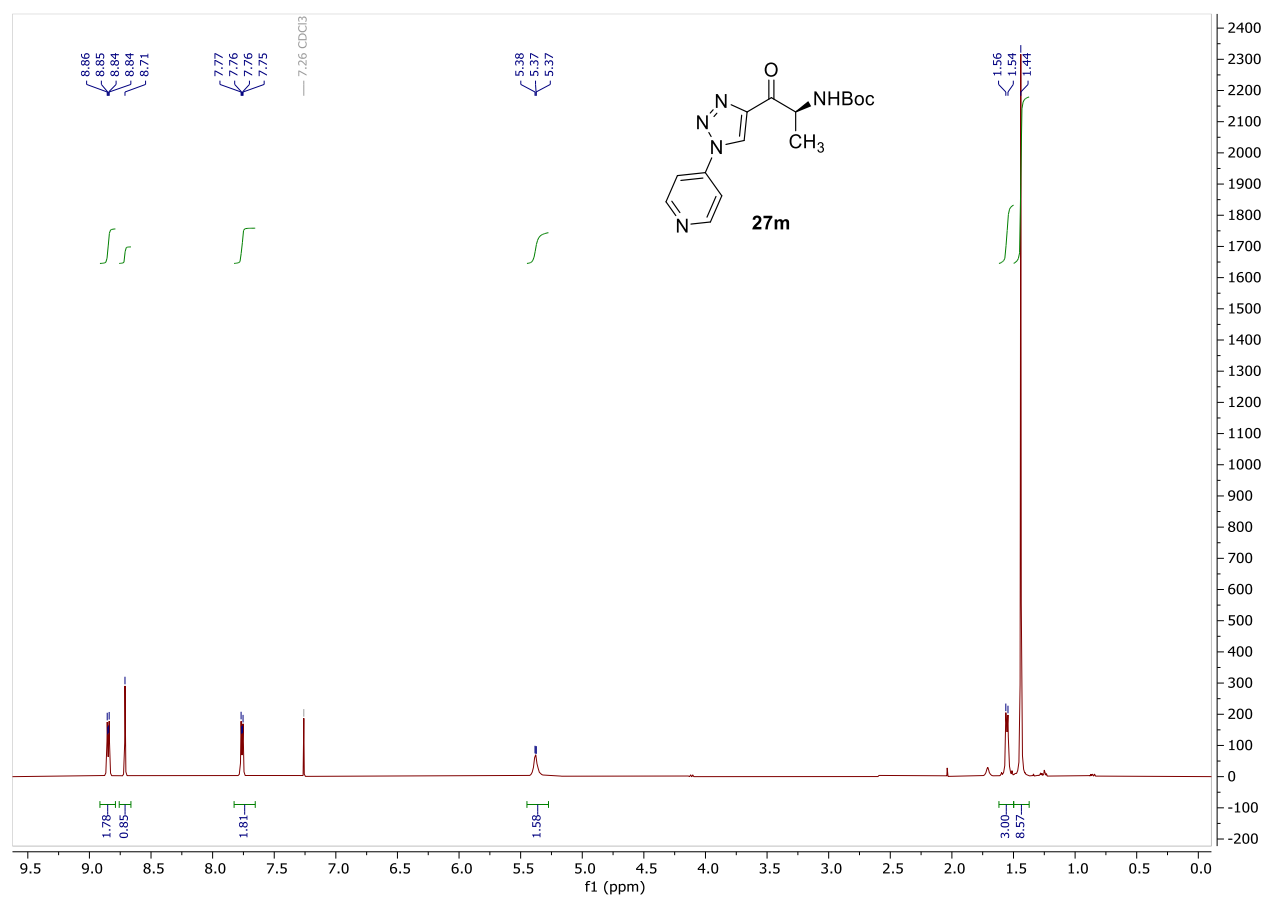
Compound **27I** ( $^1\text{H}$  NMR, 400 MHz):



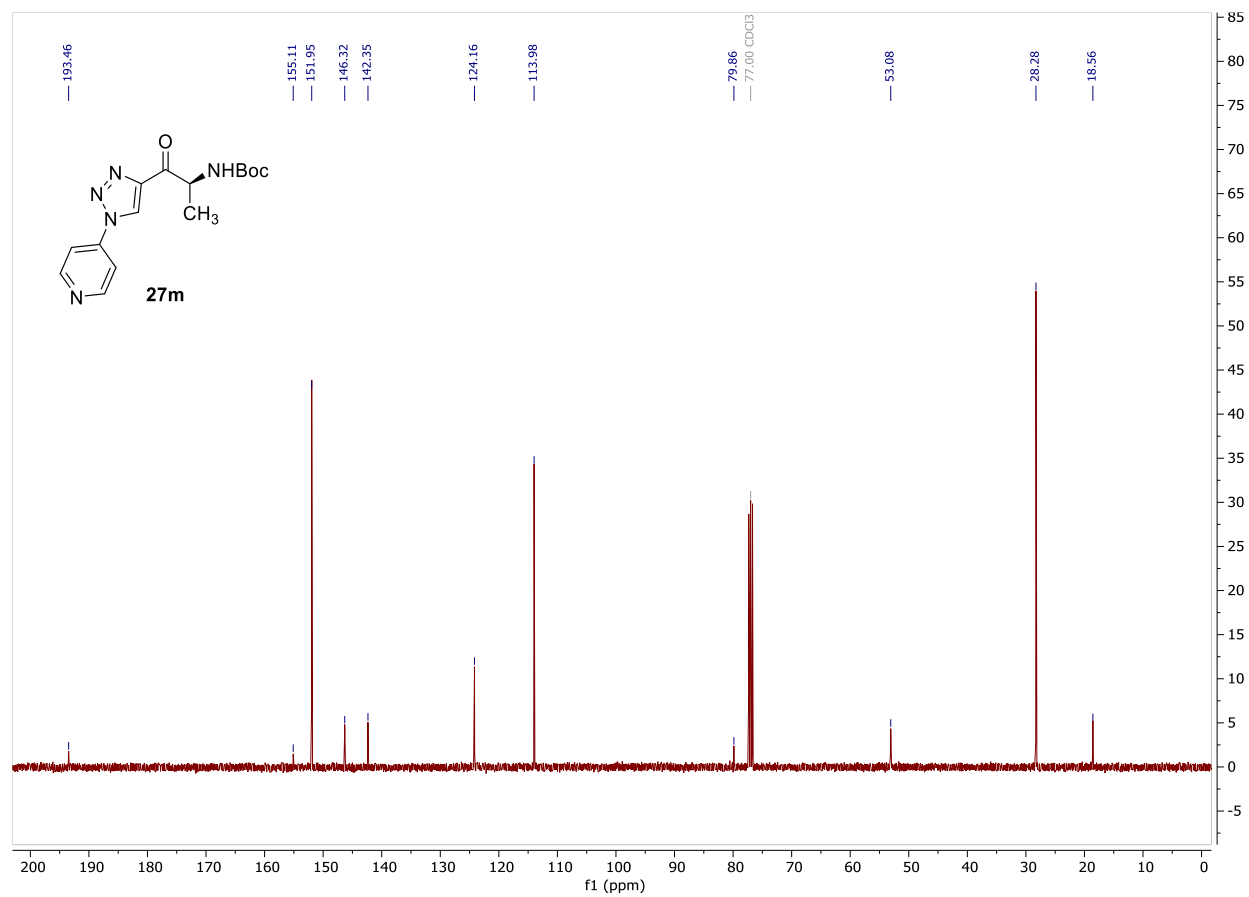
Compound **27I** ( $^{13}\text{C}$  NMR, 101 MHz):



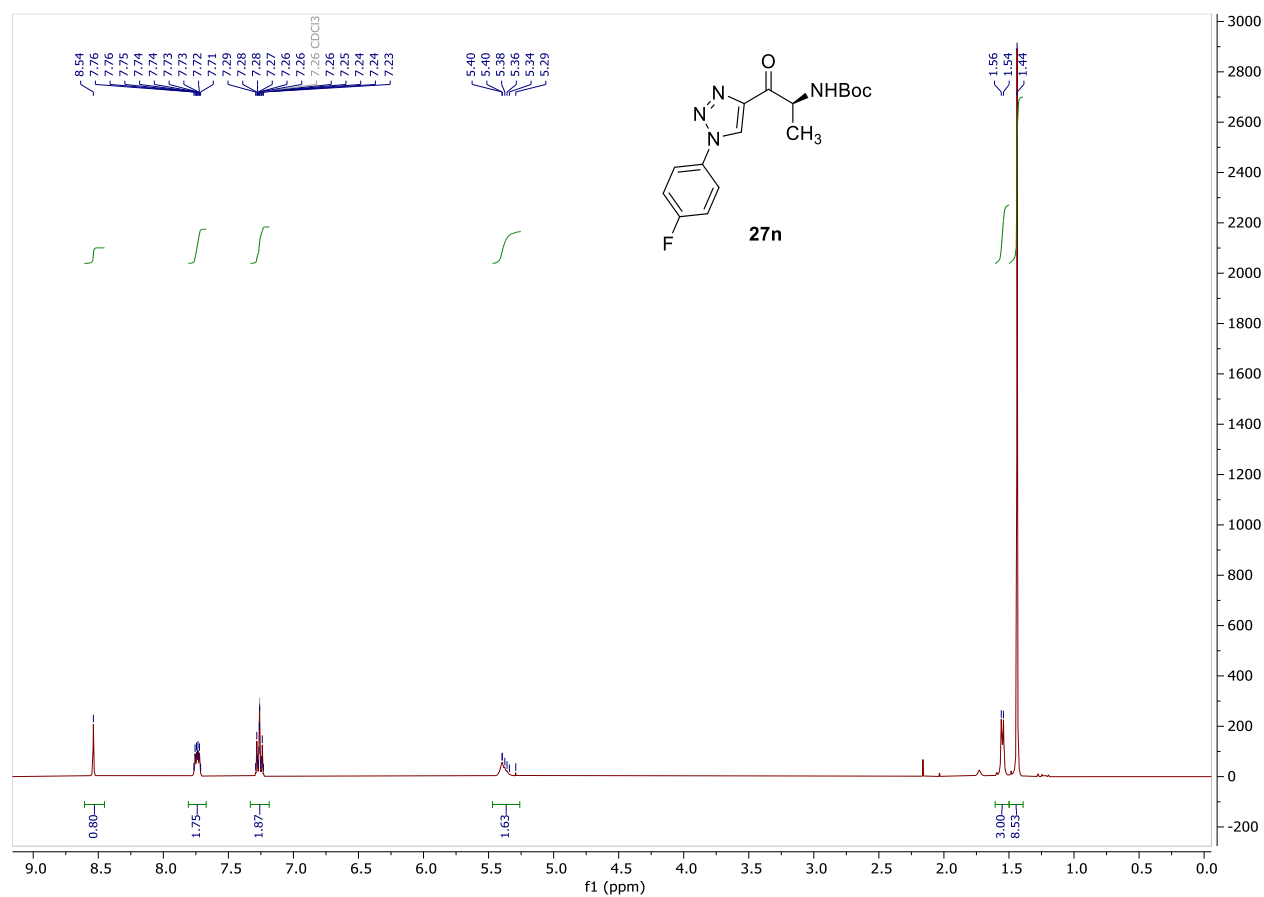
Compound **27m** ( $^1\text{H}$  NMR, 400 MHz):



Compound **27m** ( $^{13}\text{C}$  NMR, 101 MHz):

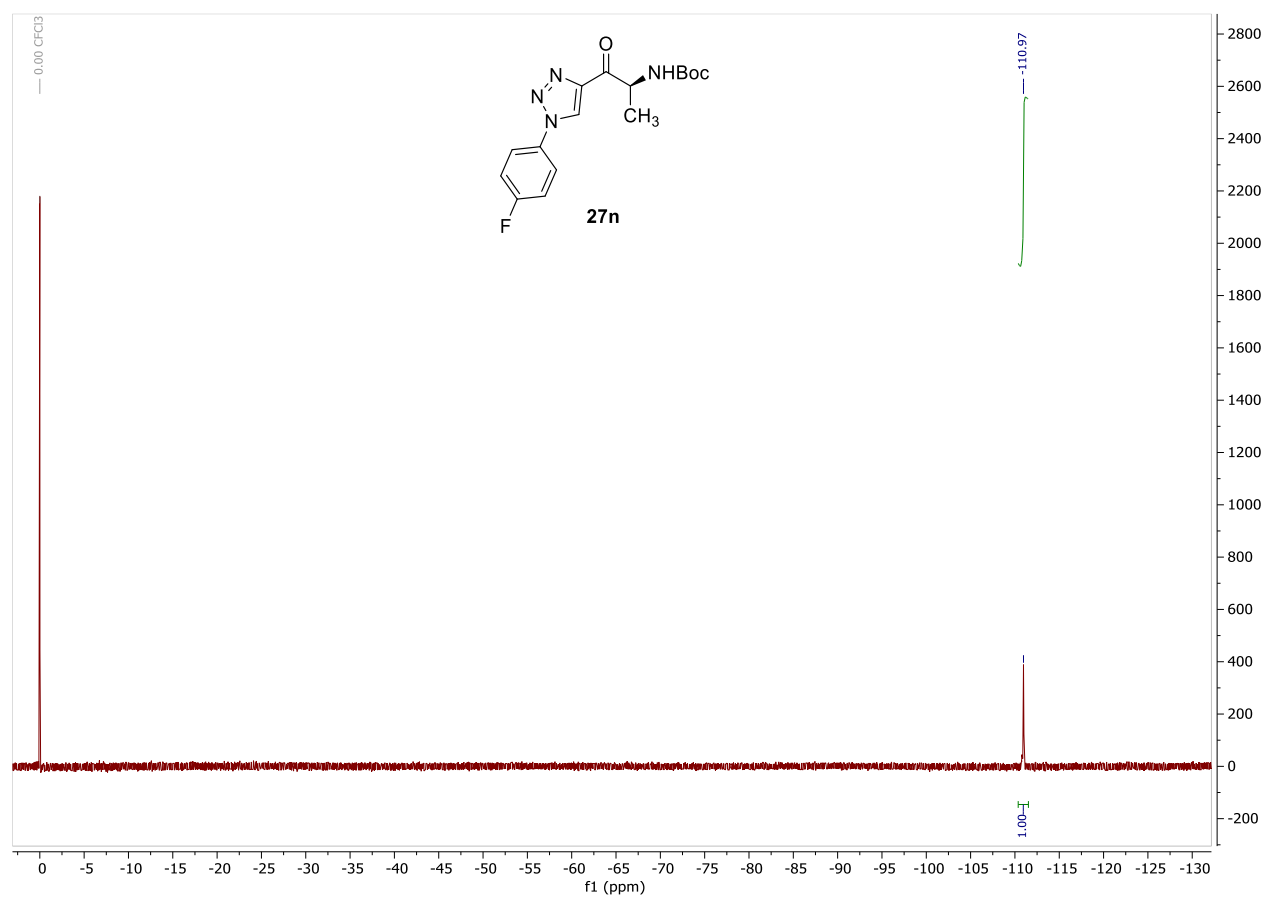


Compound **27n** ( $^1\text{H}$  NMR, 400 MHz):

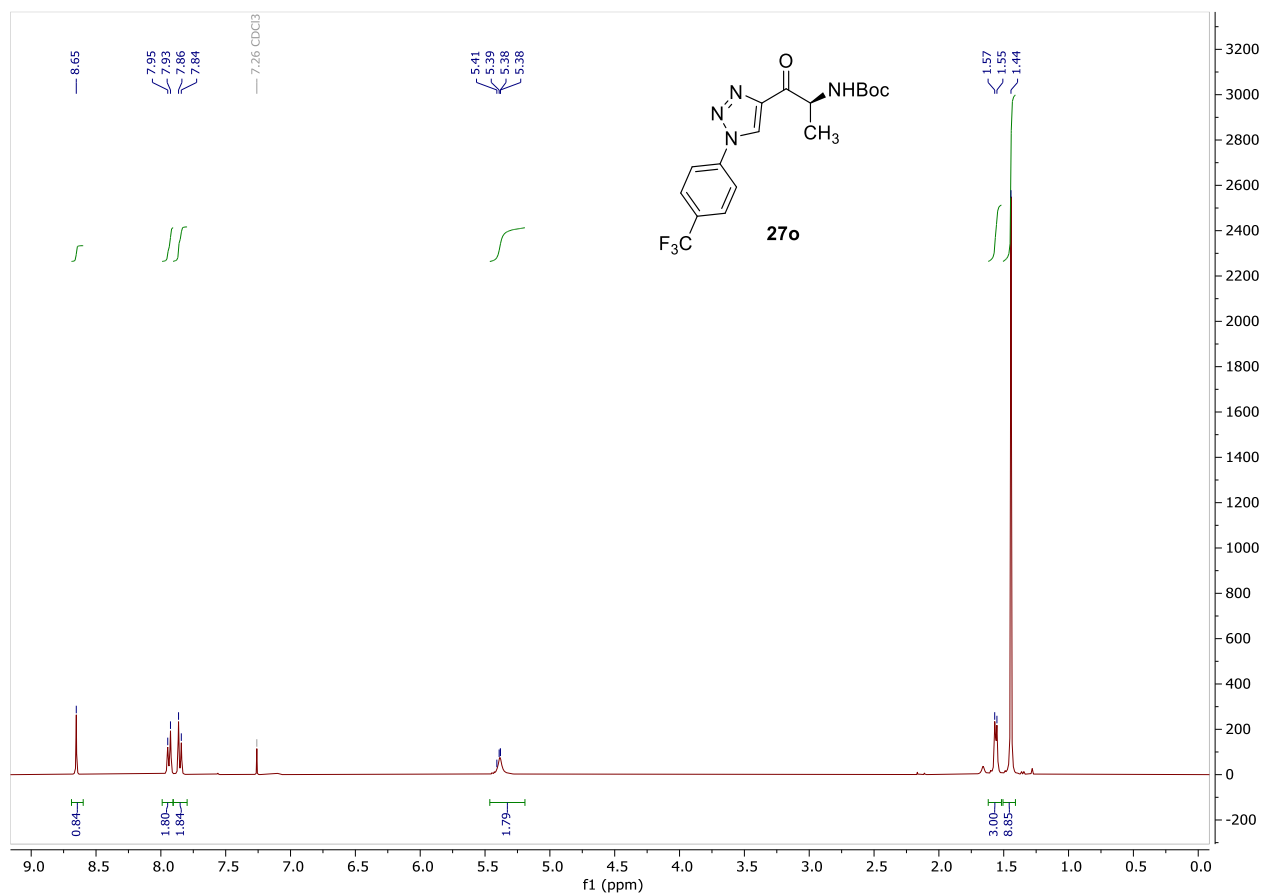




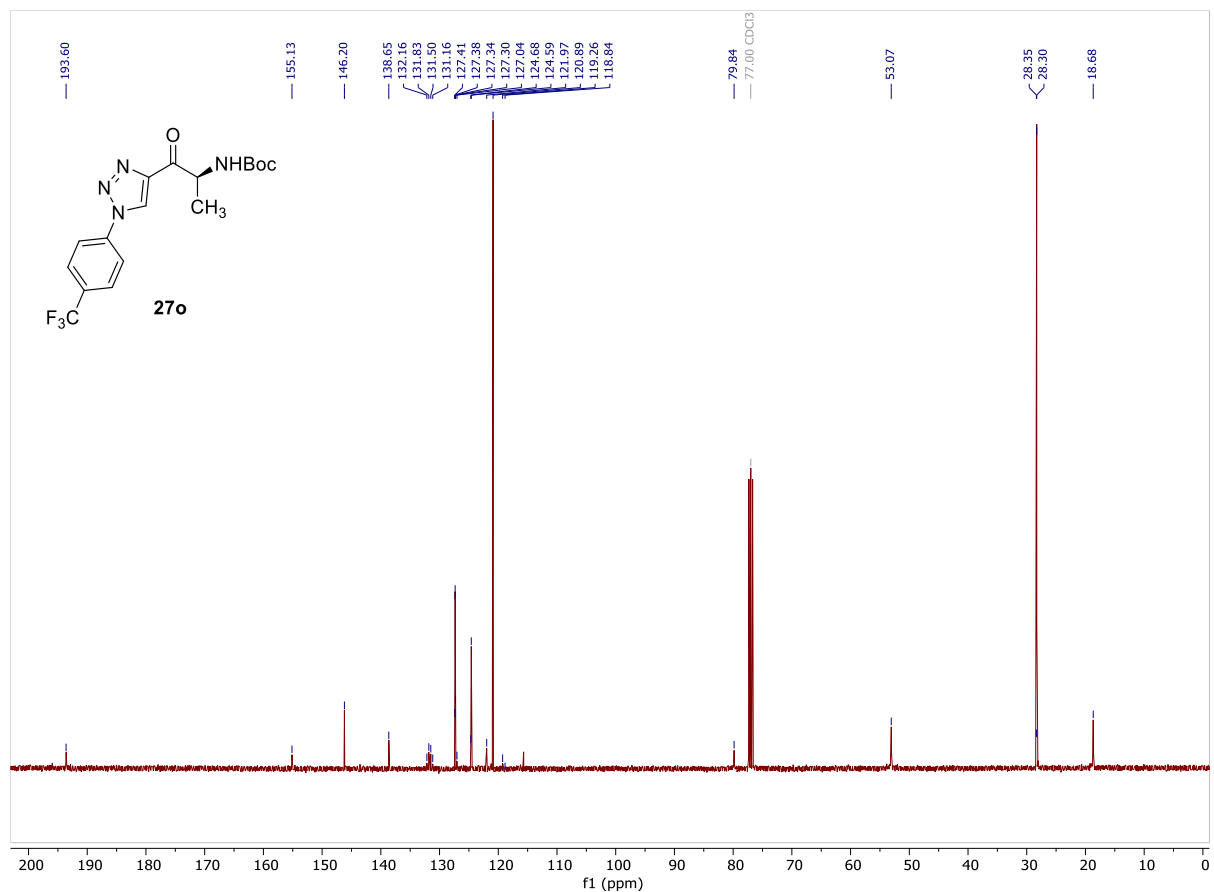
Compound **27n** ( $^{19}\text{F}$  NMR, 282 MHz):



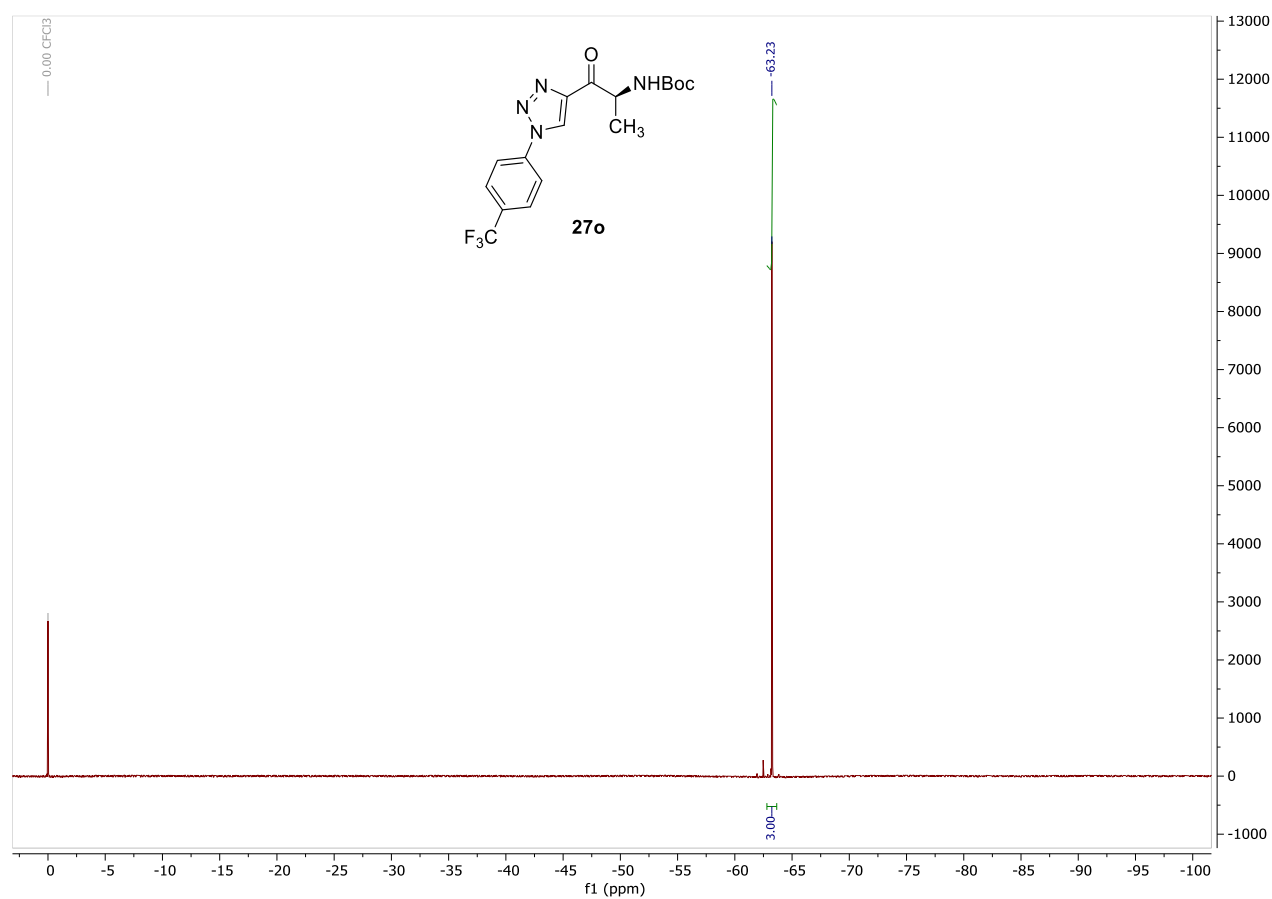
Compound **27o** ( $^1\text{H}$  NMR, 400 MHz):



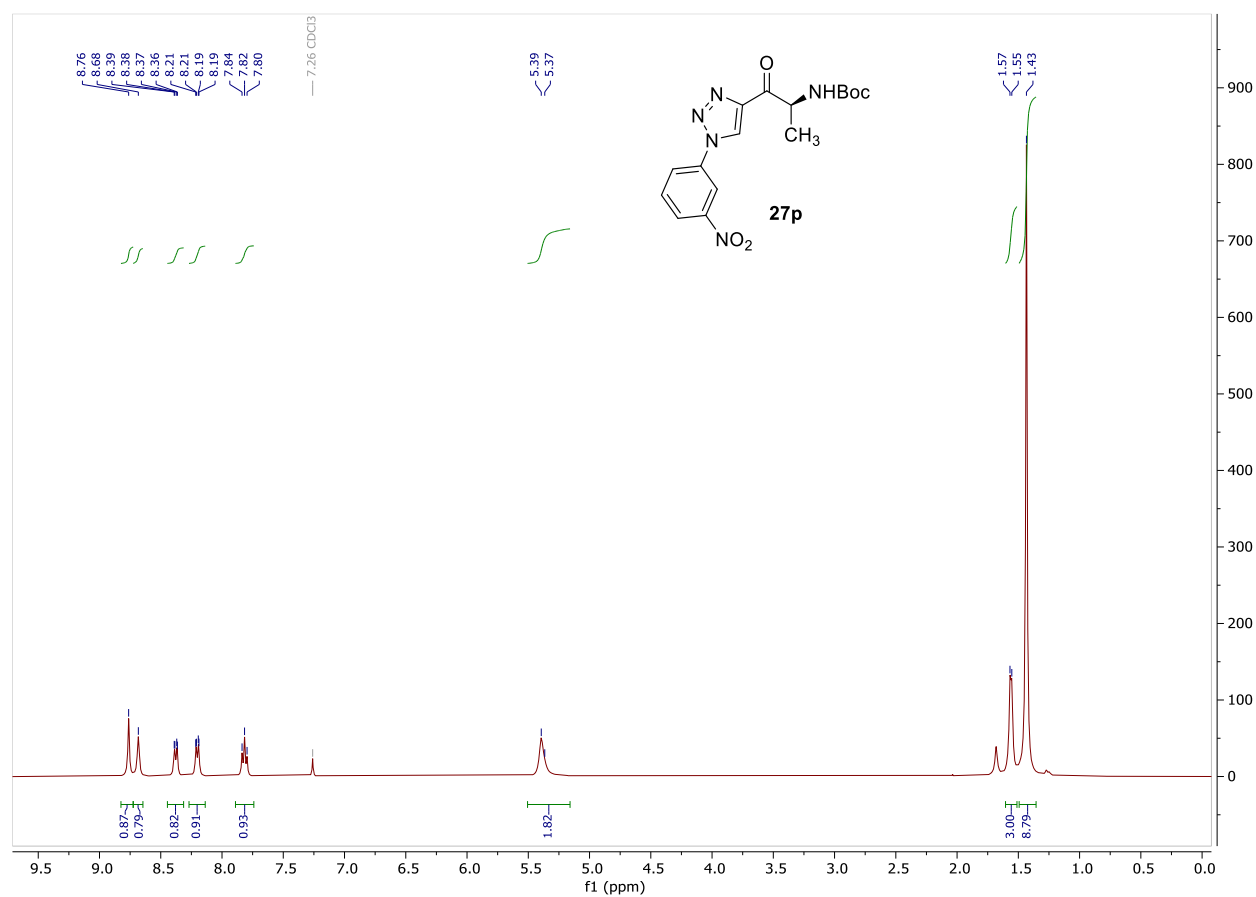
Compound **27o** ( $^{13}\text{C}$  NMR, 101 MHz):



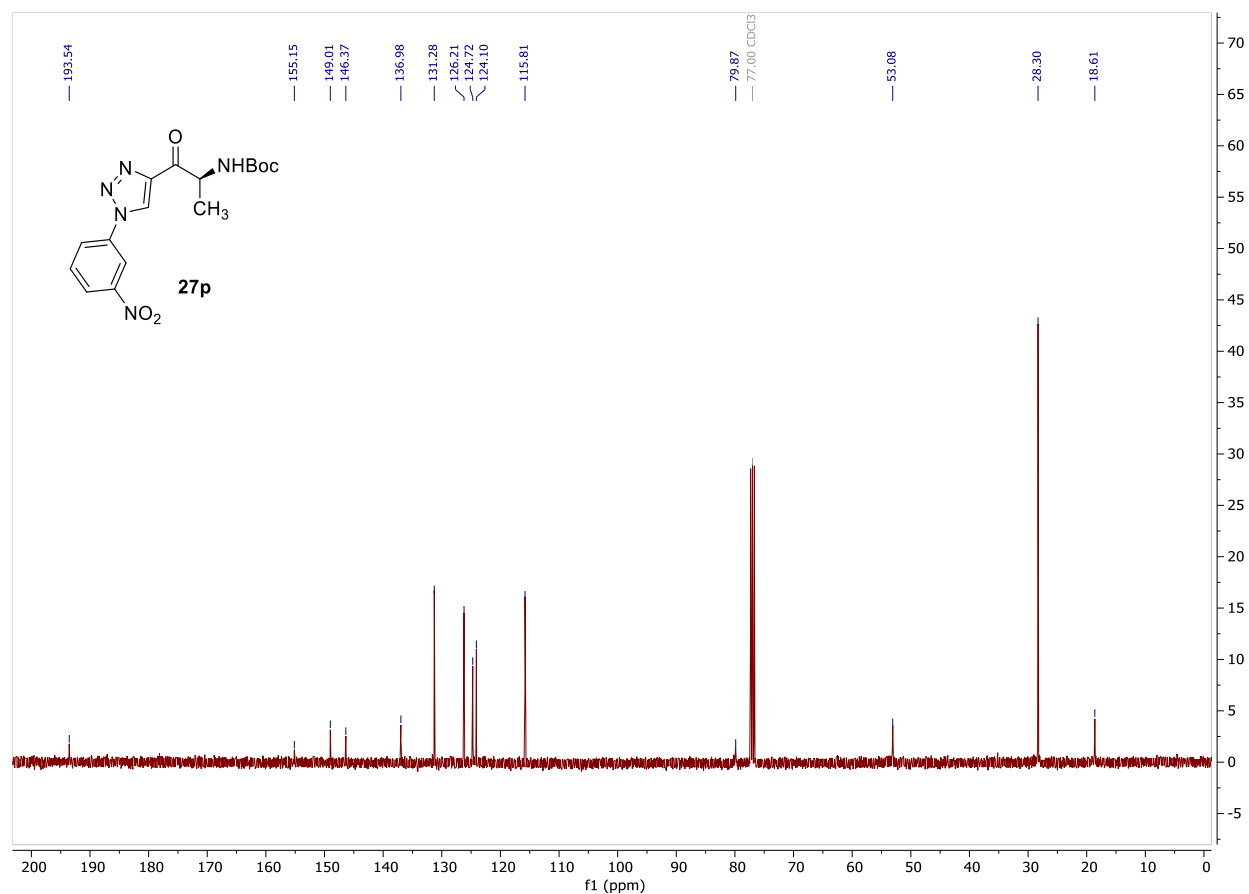
Compound **27o** ( $^{19}\text{F}$  NMR, 282 MHz):



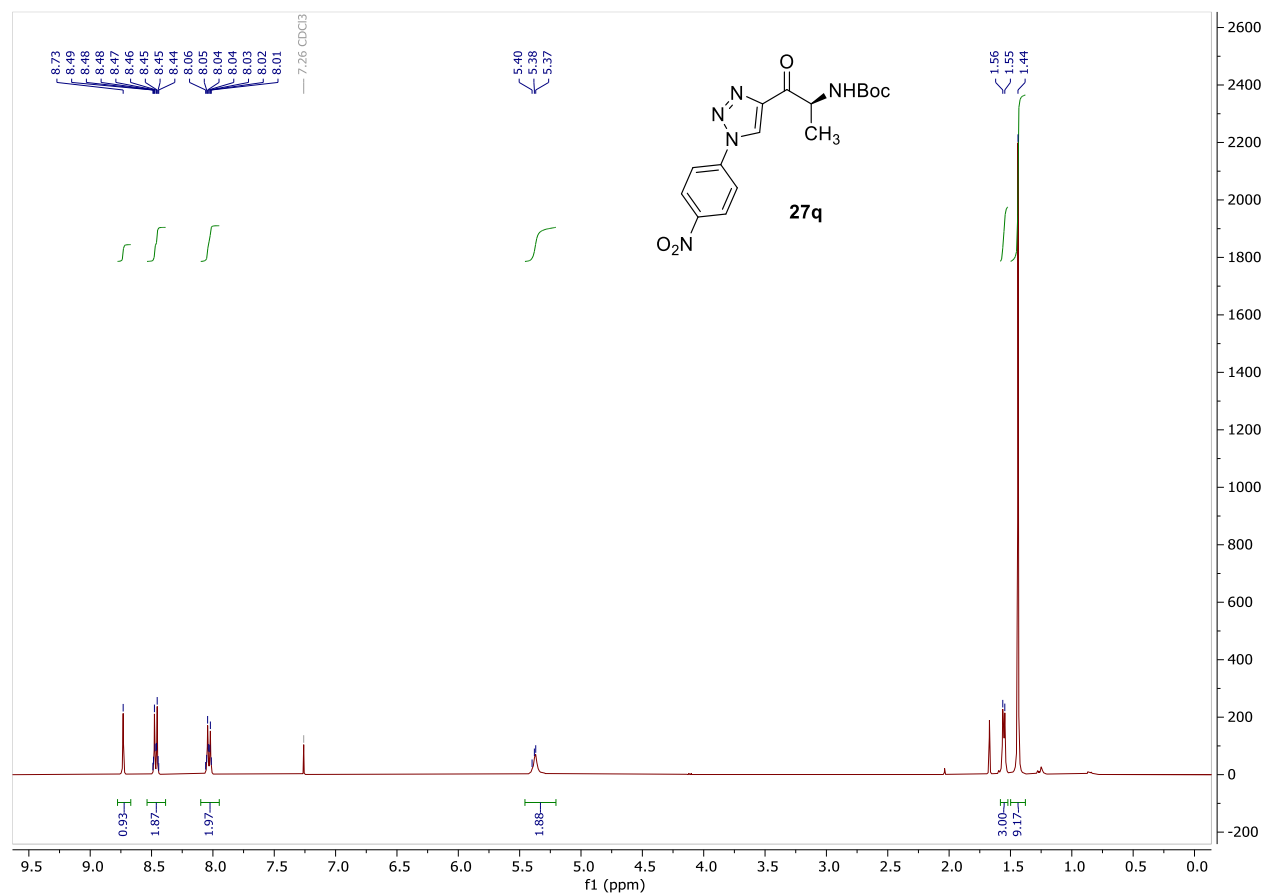
Compound **27p** ( $^1\text{H}$  NMR, 400 MHz):



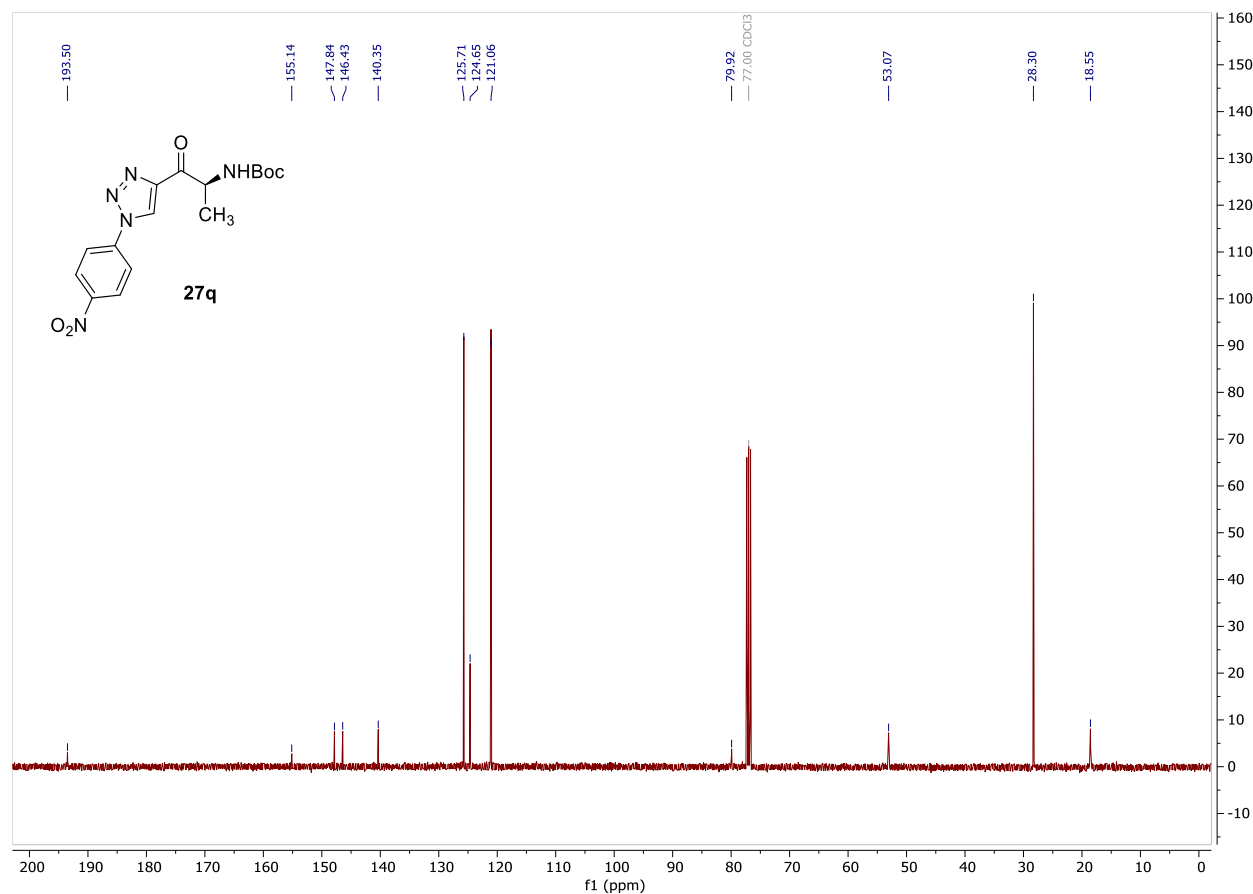
Compound **27p** ( $^{13}\text{C}$  NMR, 101 MHz):



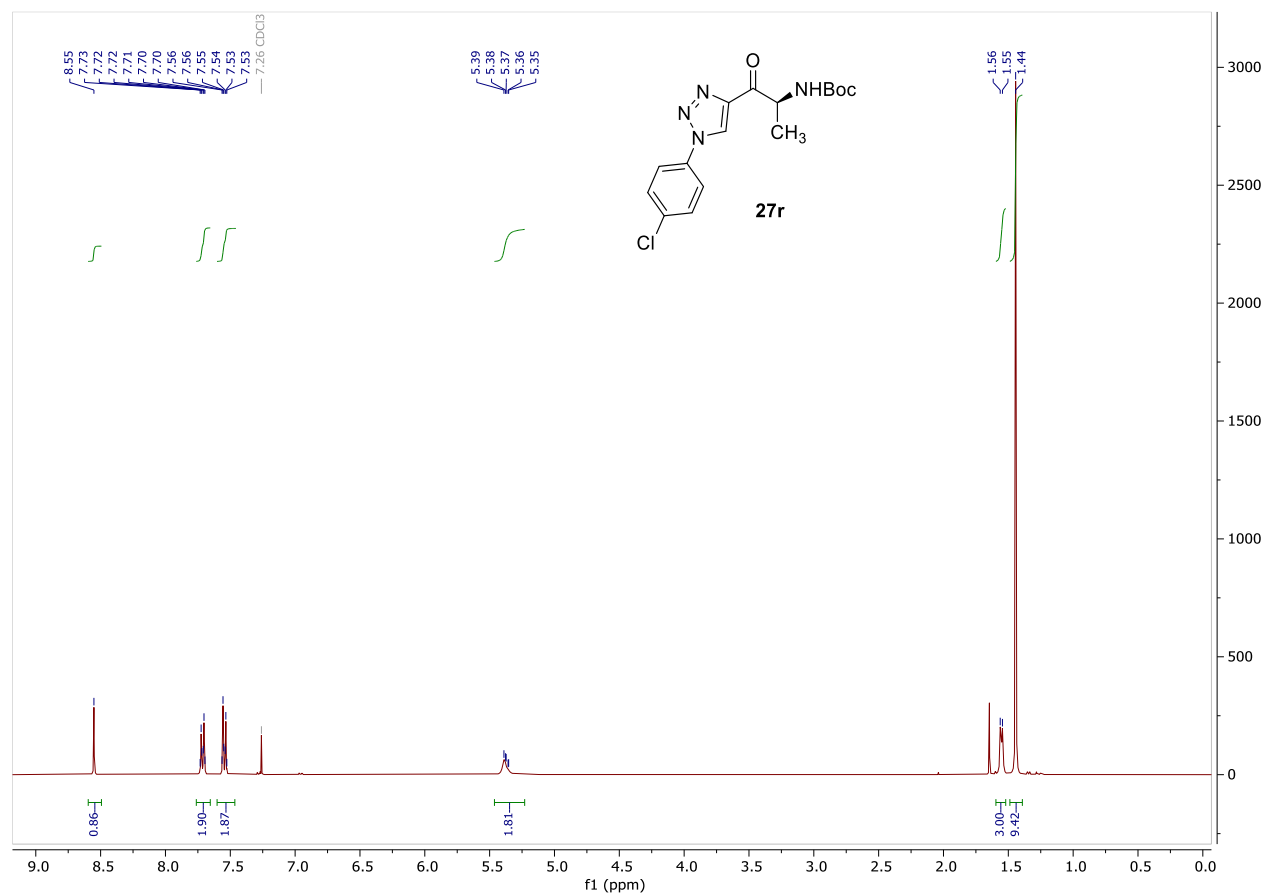
Compound **27q** ( $^1\text{H}$  NMR, 400 MHz):



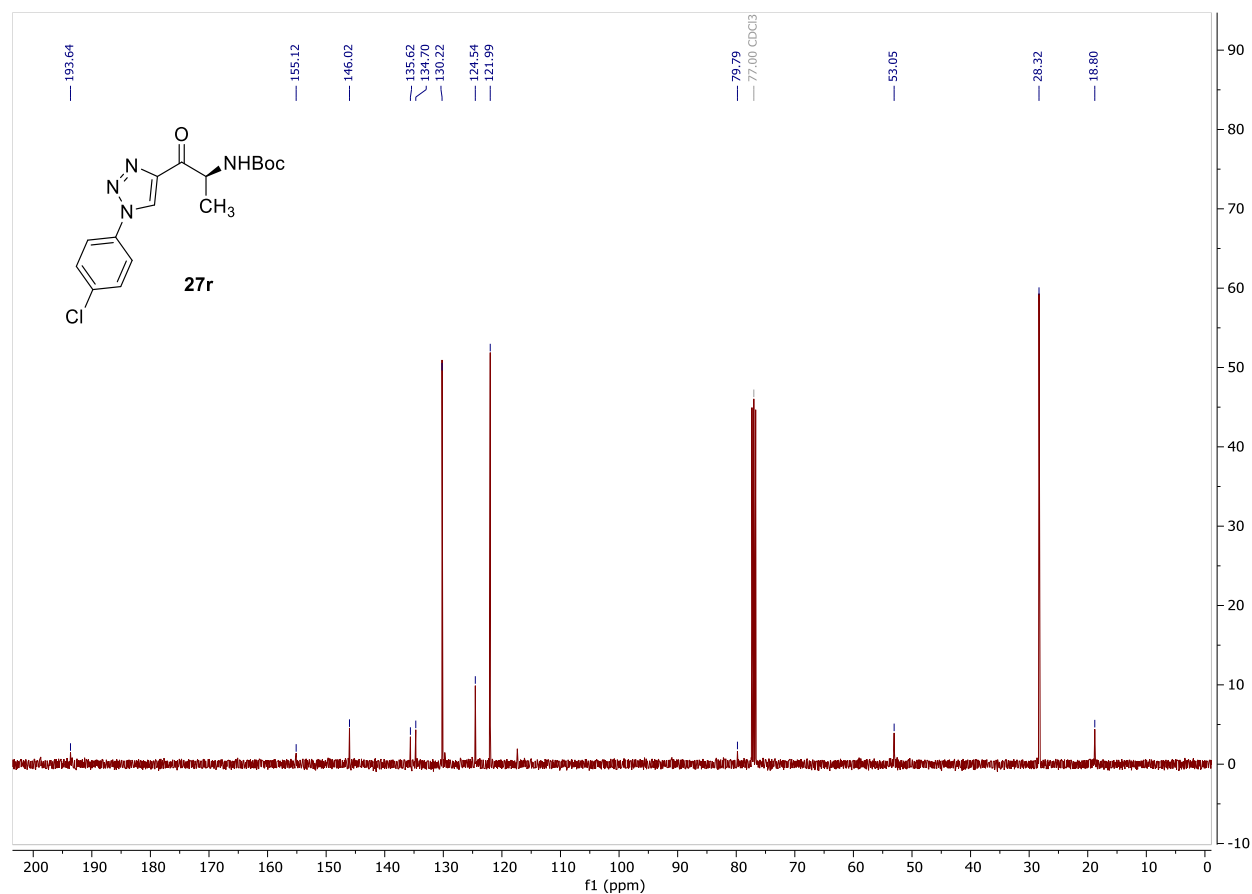
Compound **27q** ( $^{13}\text{C}$  NMR, 101 MHz):



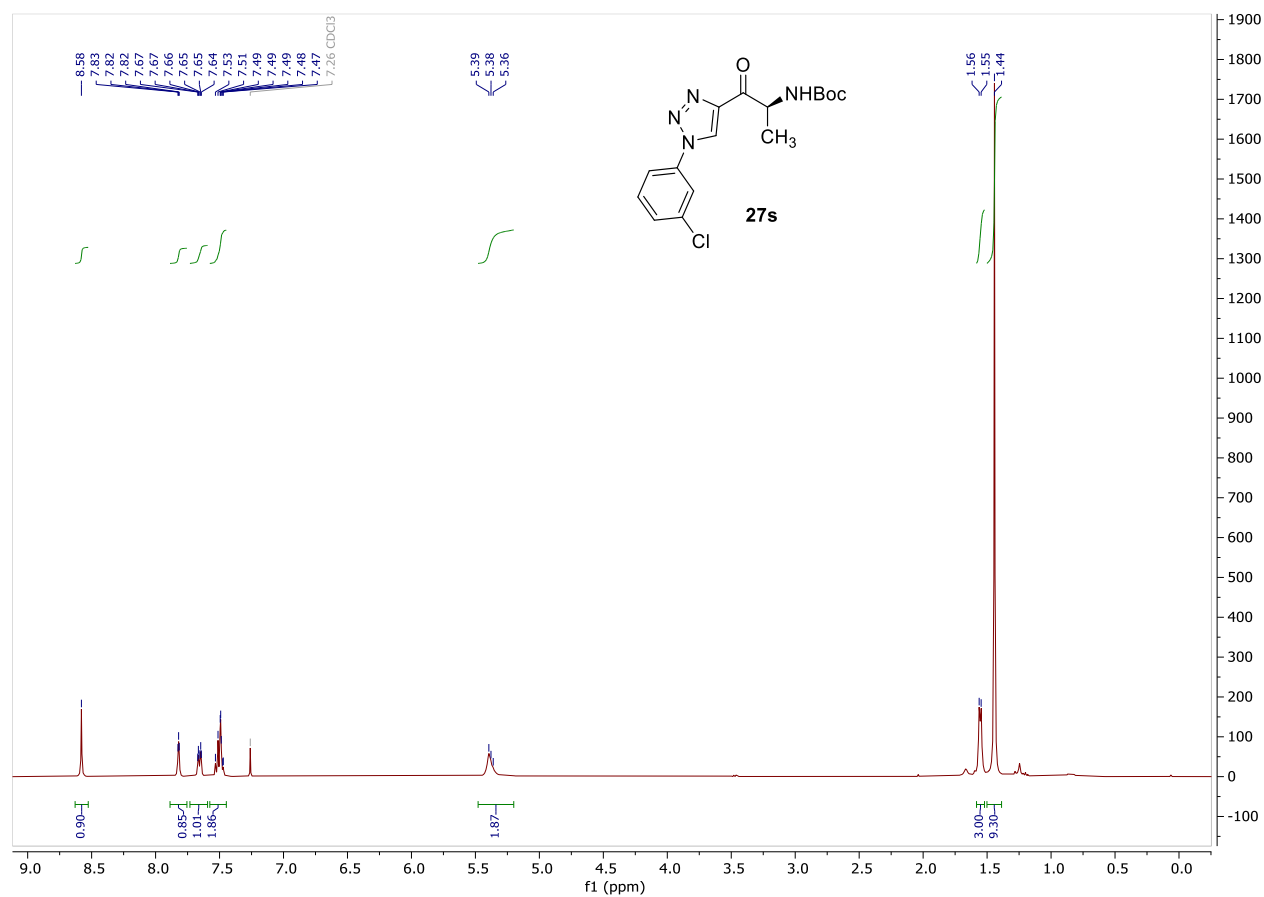
Compound **27r** ( $^1\text{H}$  NMR, 400 MHz):



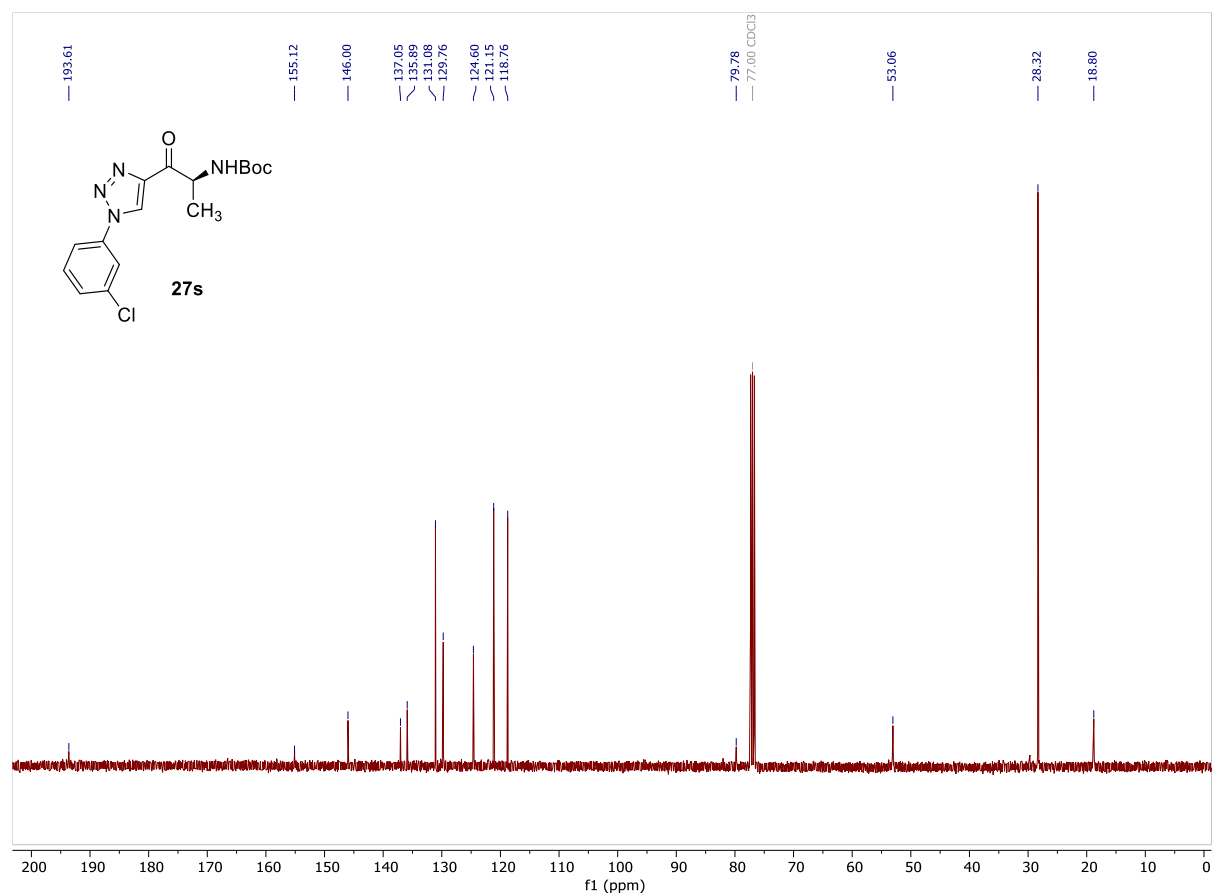
Compound **27r** ( $^{13}\text{C}$  NMR, 101 MHz):



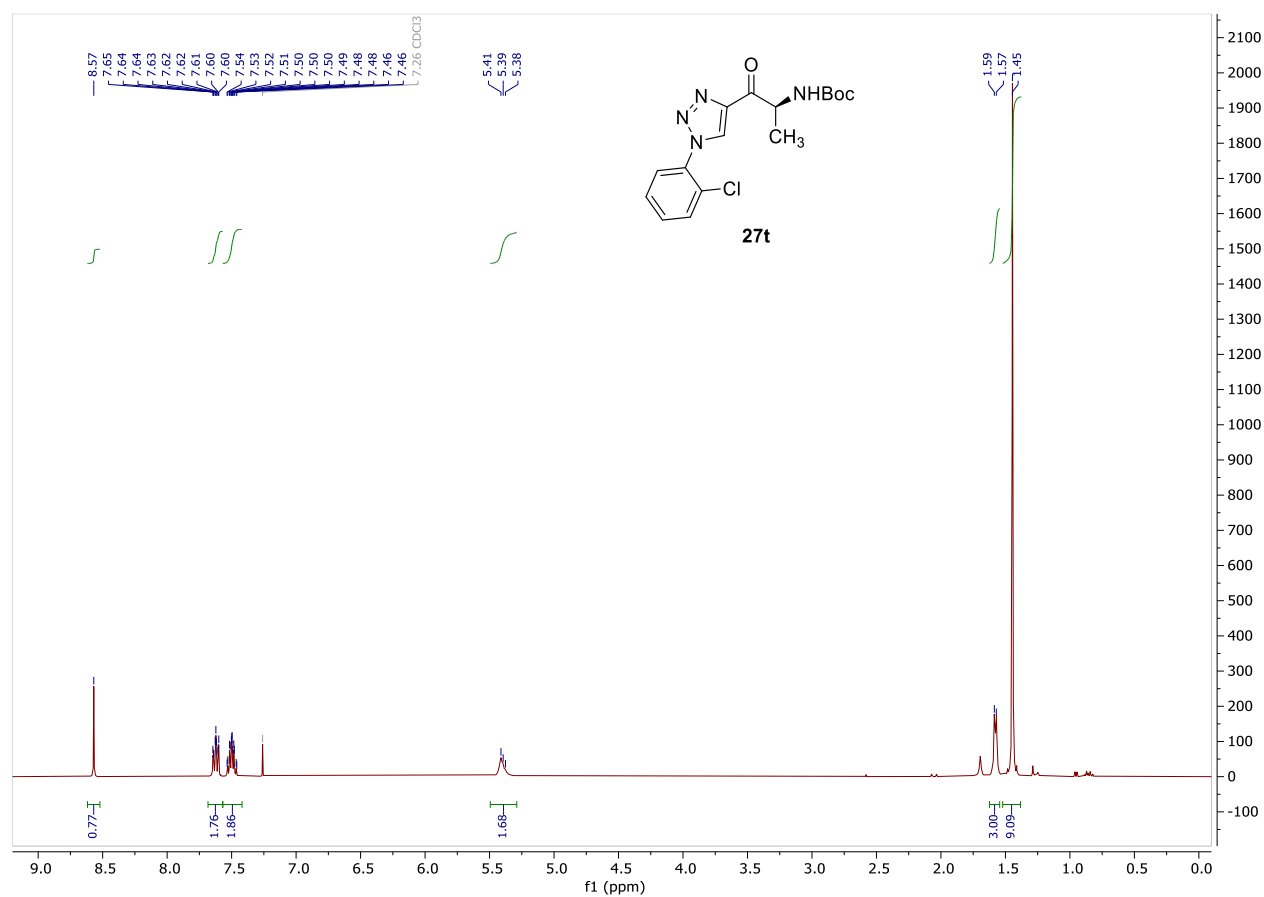
Compound **27s** ( $^1\text{H}$  NMR, 400 MHz):



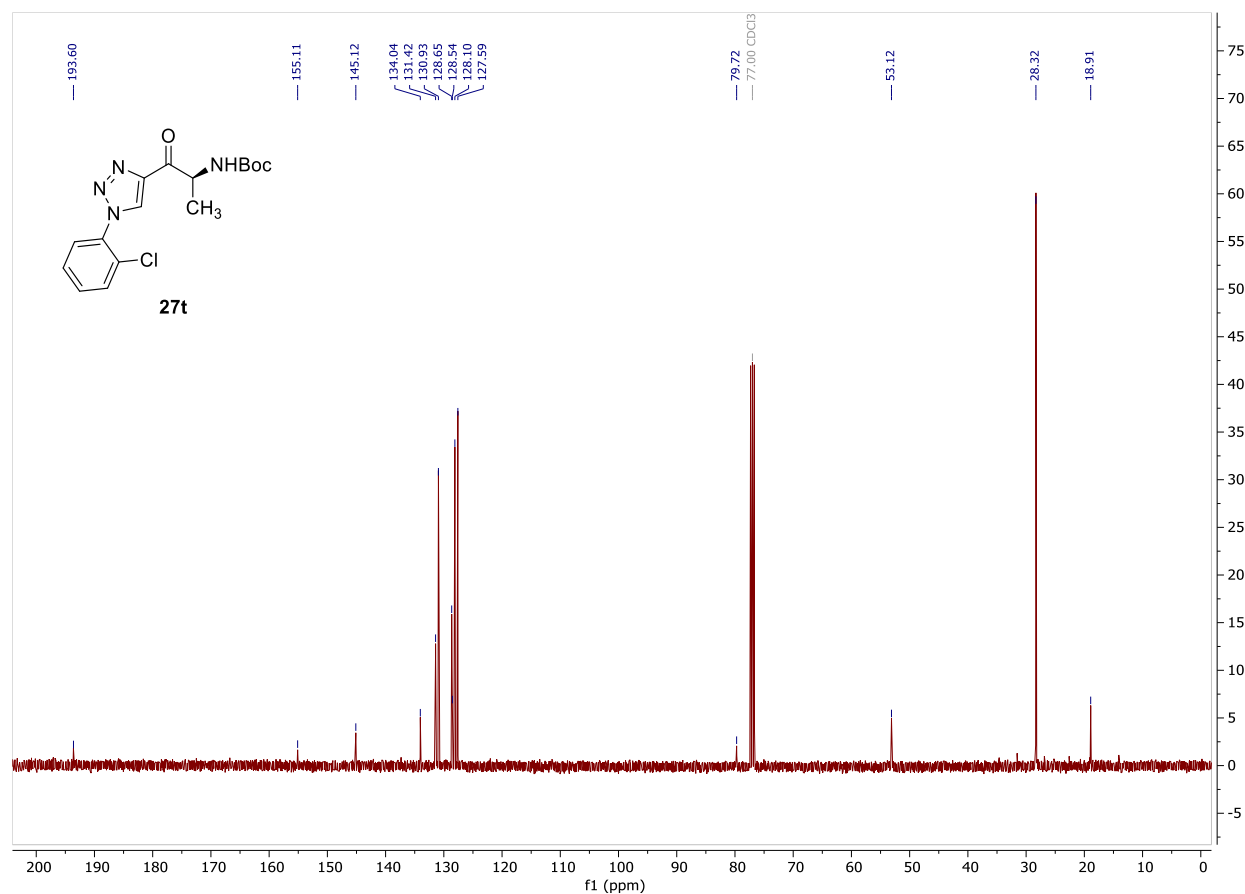
Compound **27s** ( $^{13}\text{C}$  NMR, 101 MHz):



Compound **27t** ( $^1\text{H}$  NMR, 400 MHz):

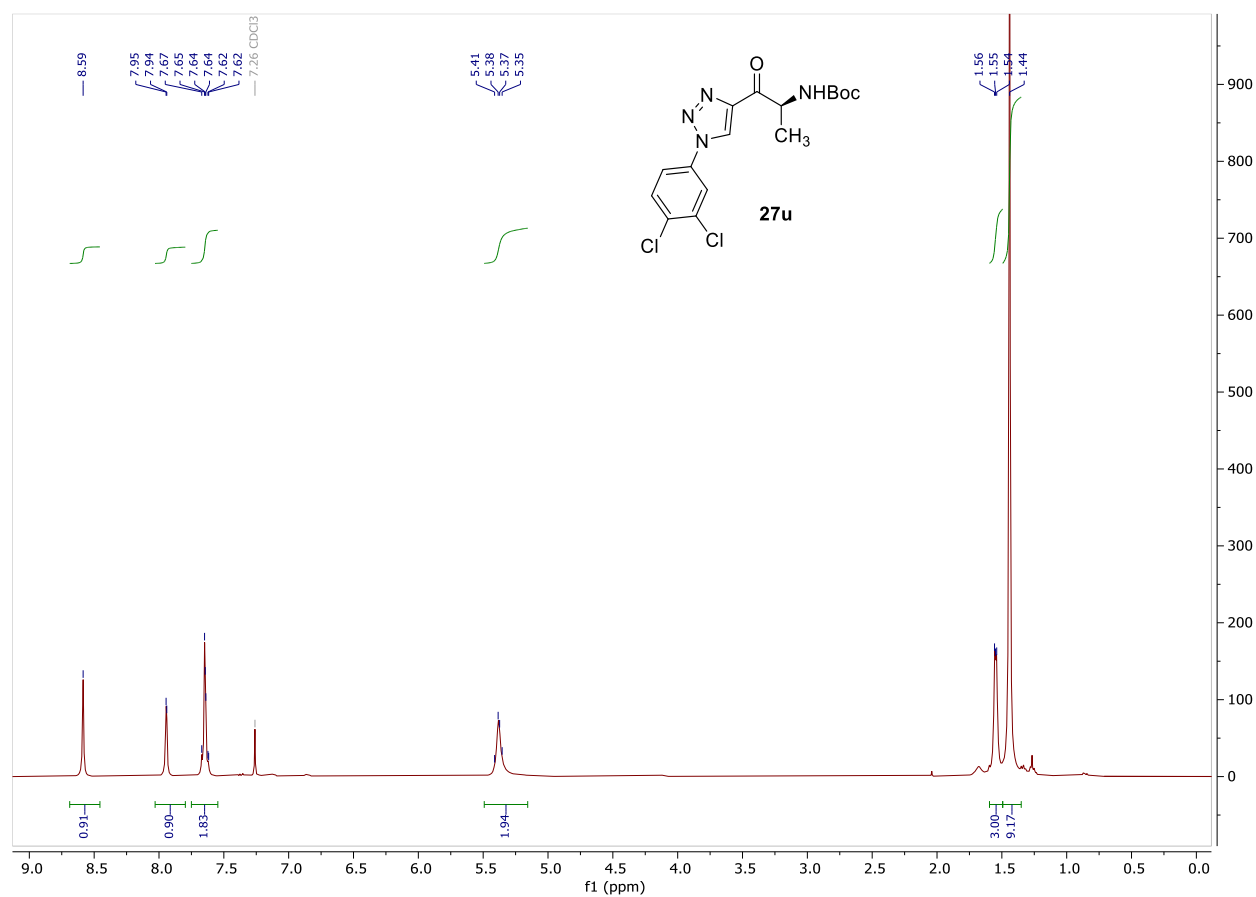


Compound **27t** ( $^{13}\text{C}$  NMR, 101 MHz):

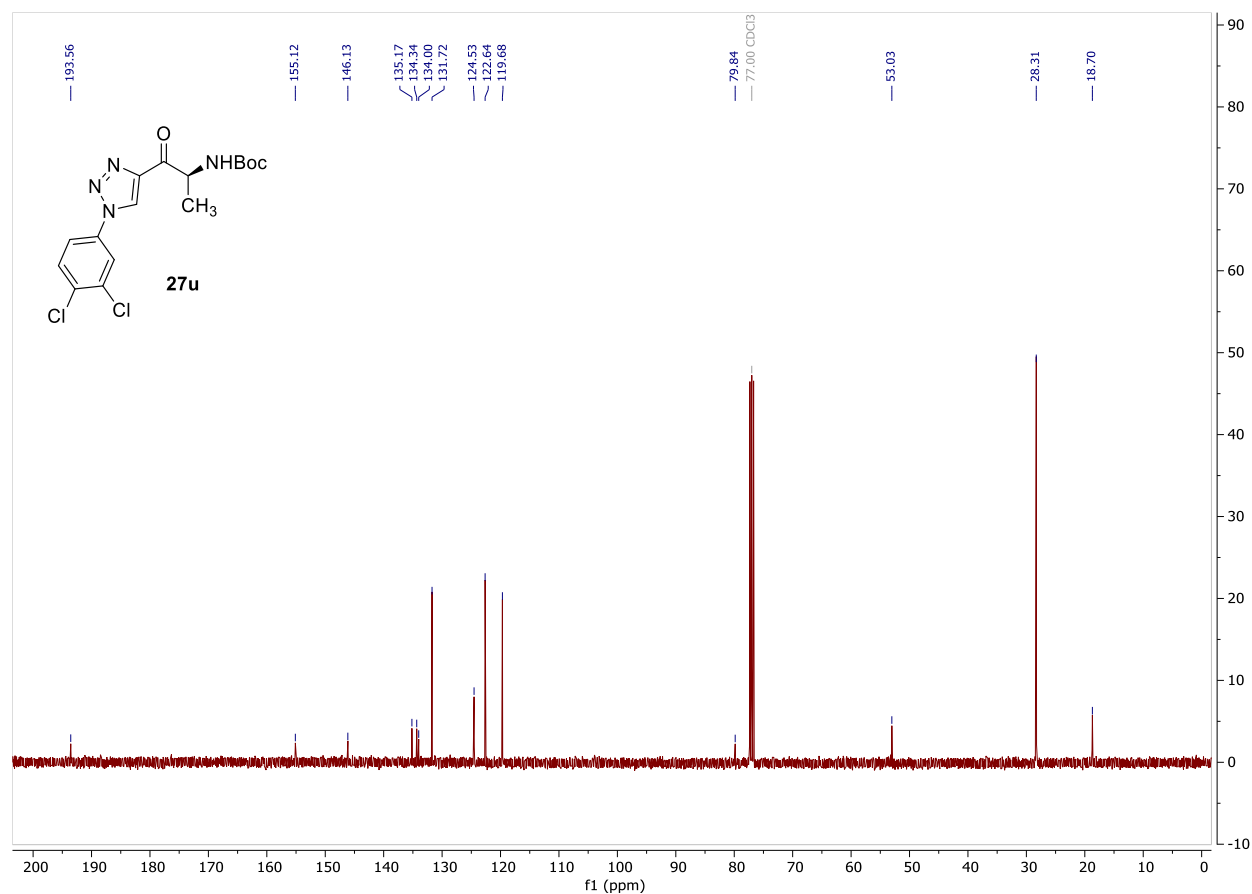




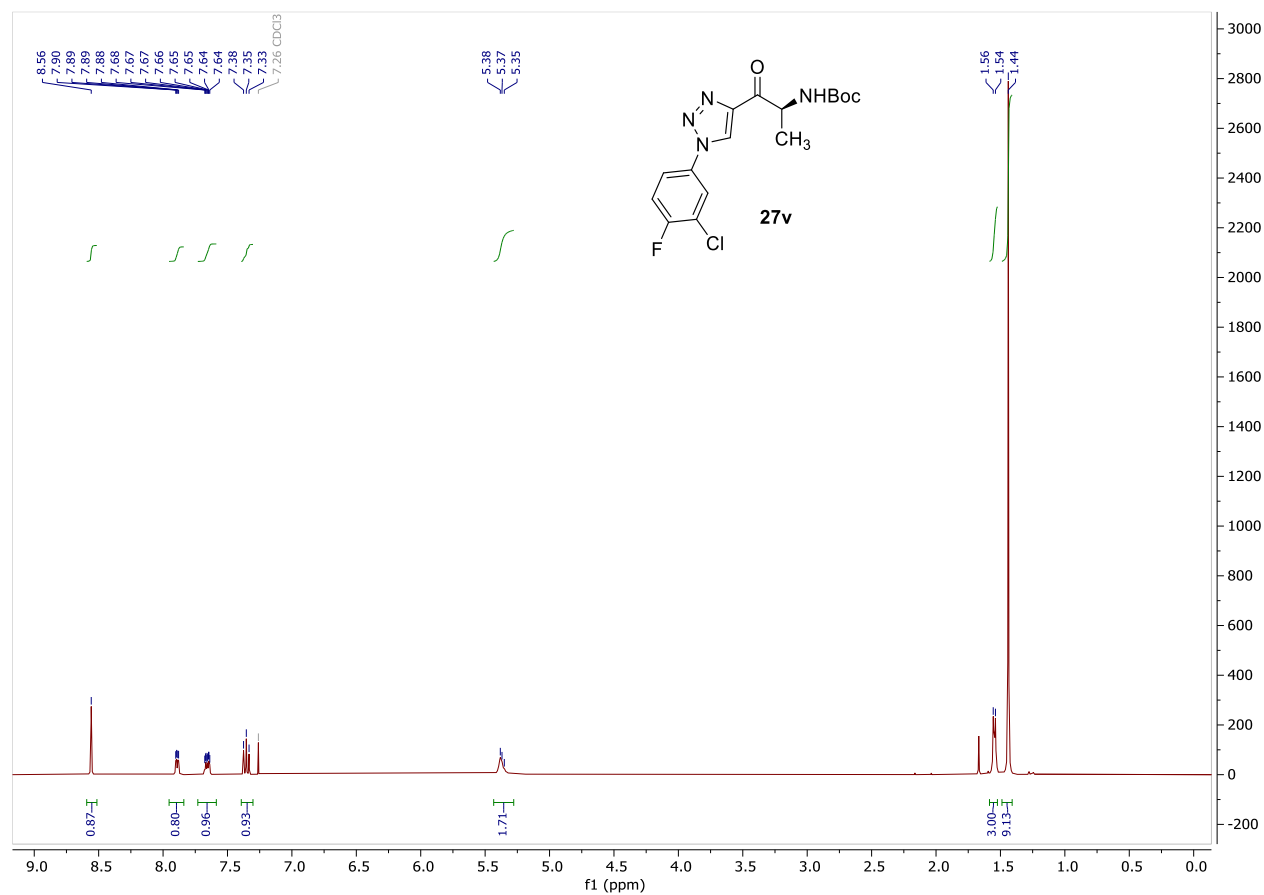
Compound **27u** ( $^1\text{H}$  NMR, 400 MHz):



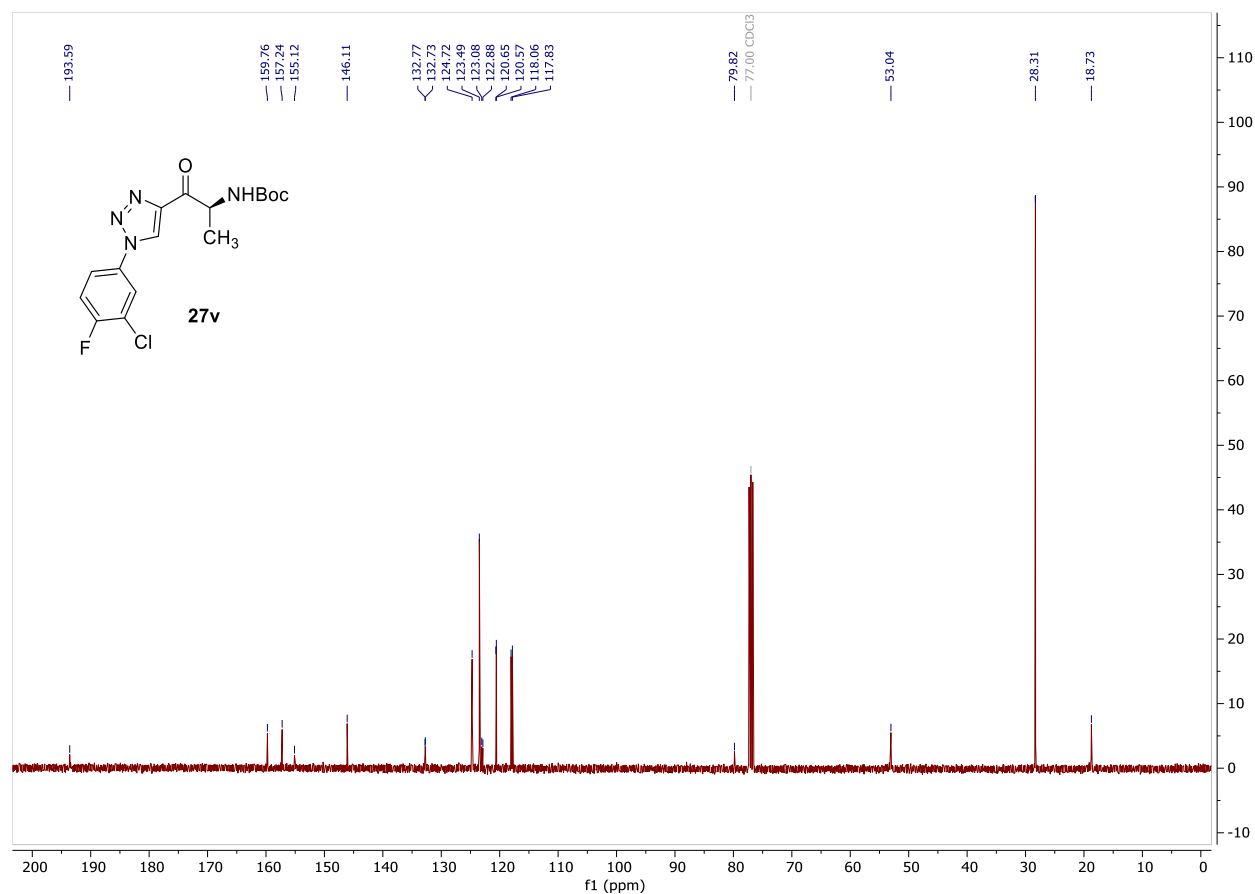
Compound **27u** ( $^{13}\text{C}$  NMR, 101 MHz):



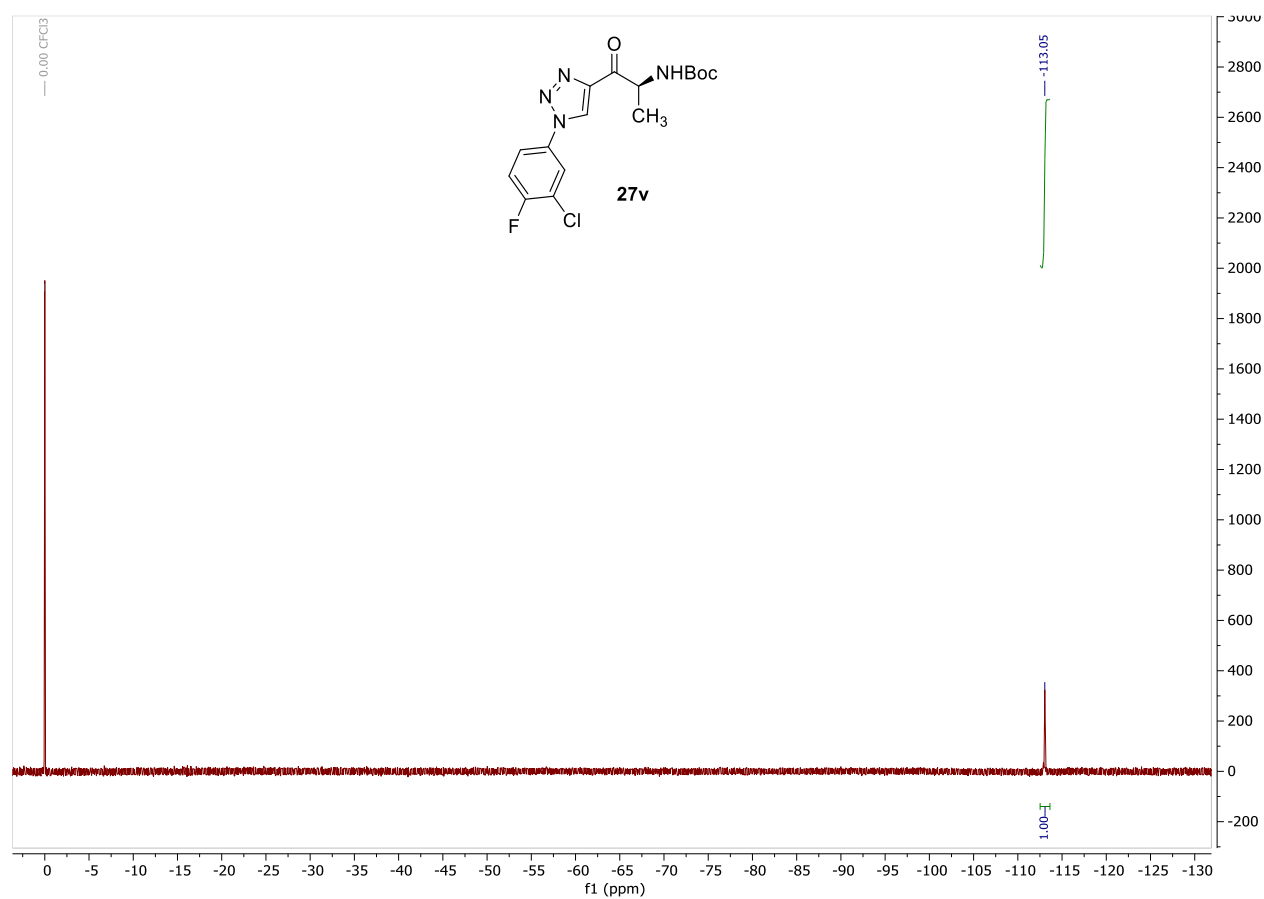
Compound **27v** ( $^1\text{H}$  NMR, 400 MHz):



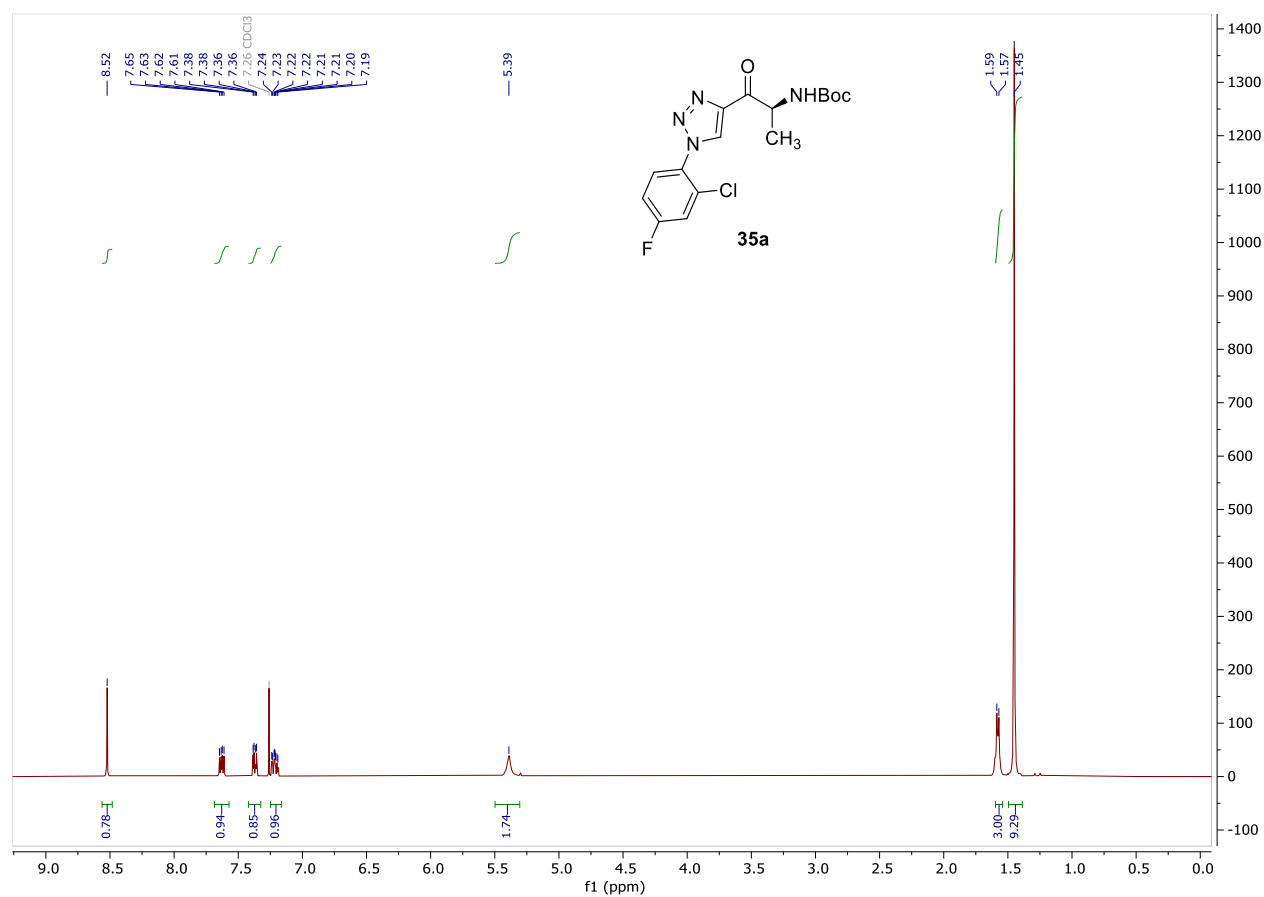
Compound **27v** ( $^{13}\text{C}$  NMR, 101 MHz):



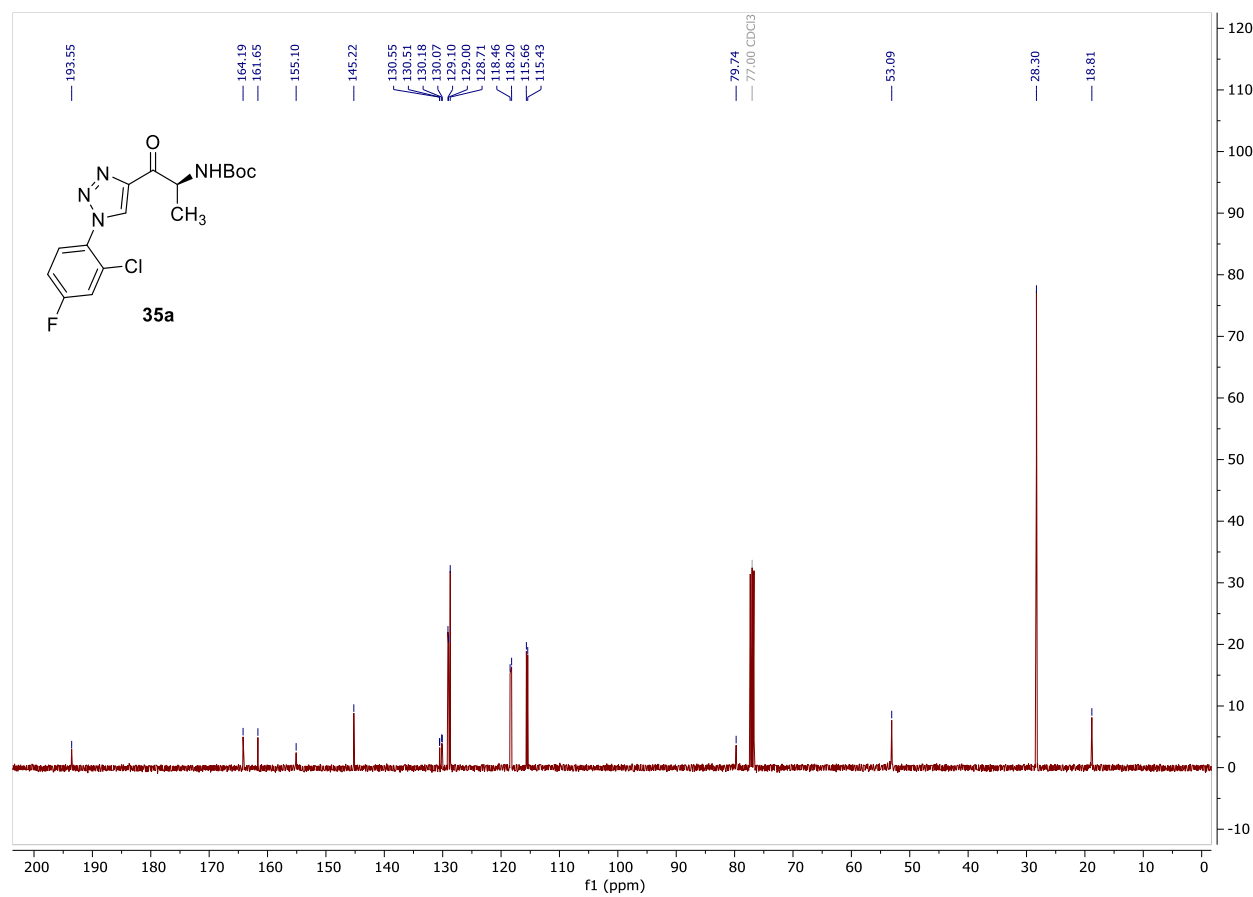
Compound **27v** ( $^{19}\text{F}$  NMR, 282 MHz):



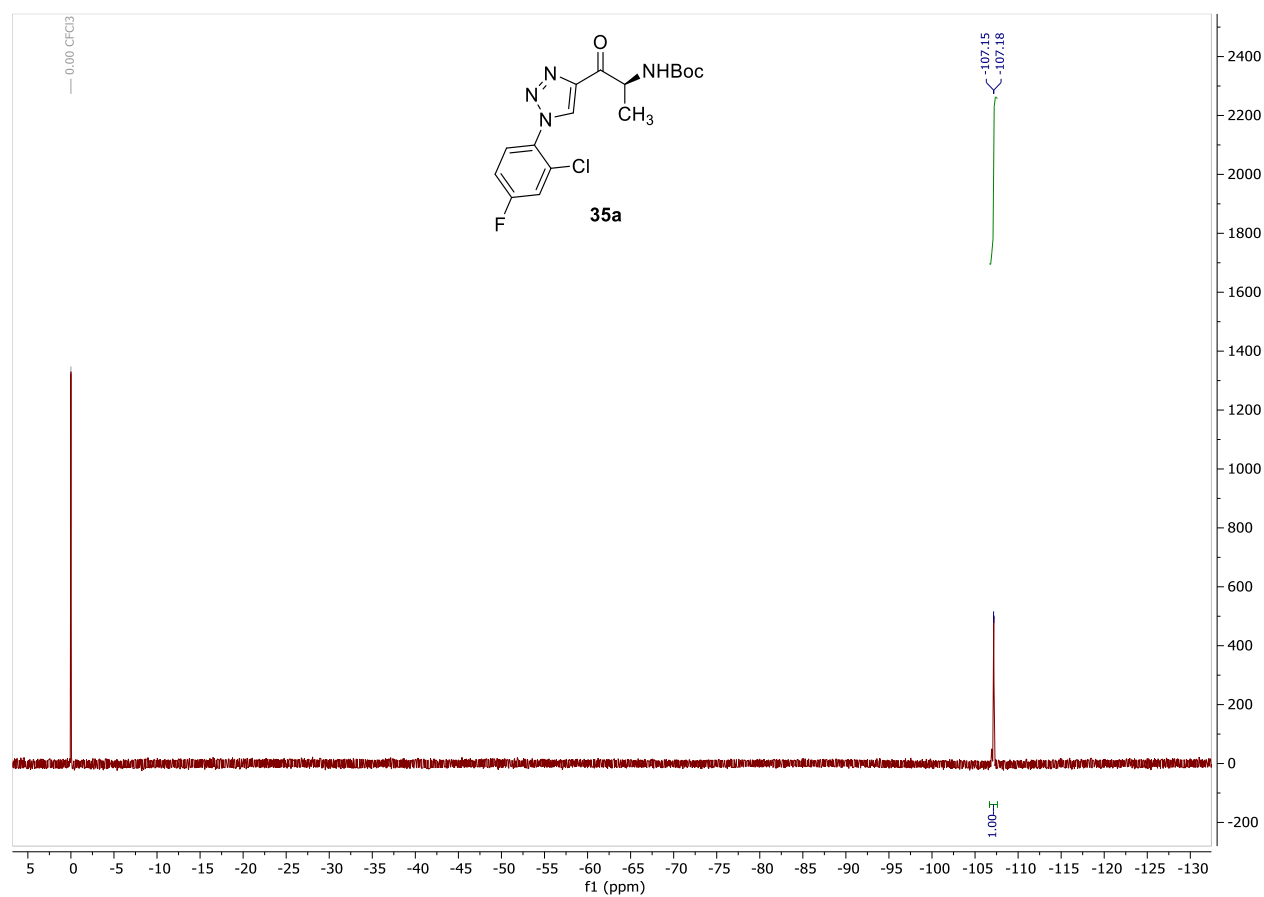
Compound **35a** ( $^1\text{H}$  NMR, 400 MHz):



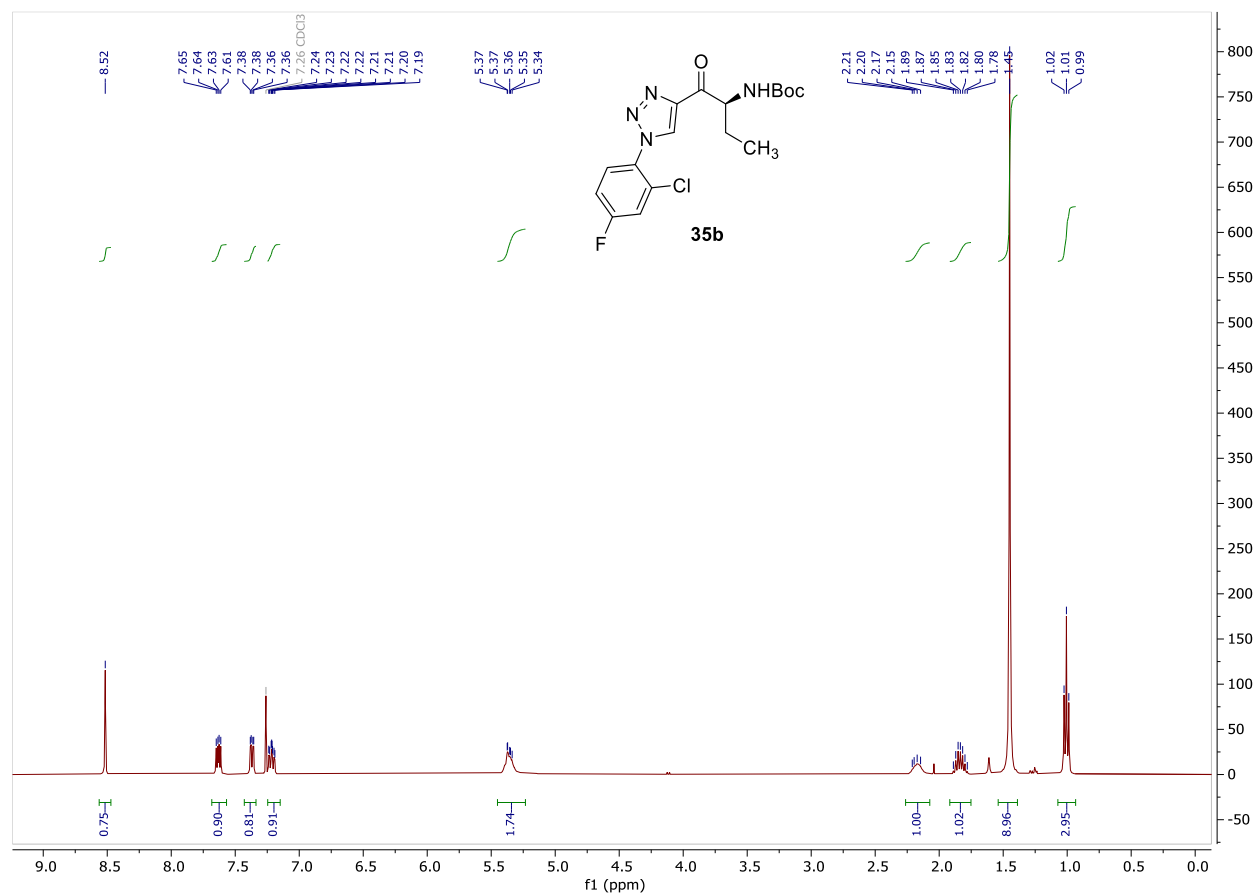
Compound **35a** ( $^{13}\text{C}$  NMR, 101 MHz):



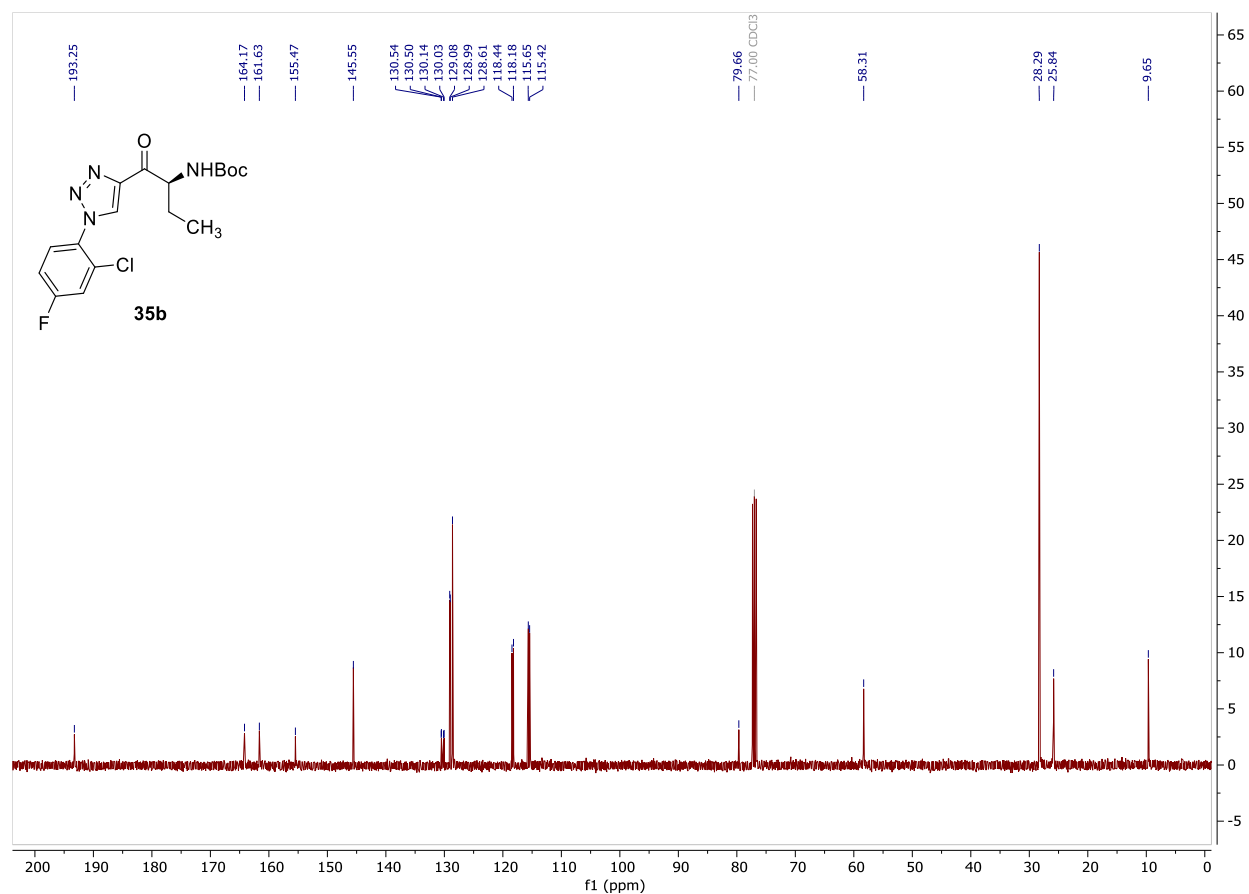
Compound **35a** ( $^{19}\text{F}$  NMR, 282 MHz):



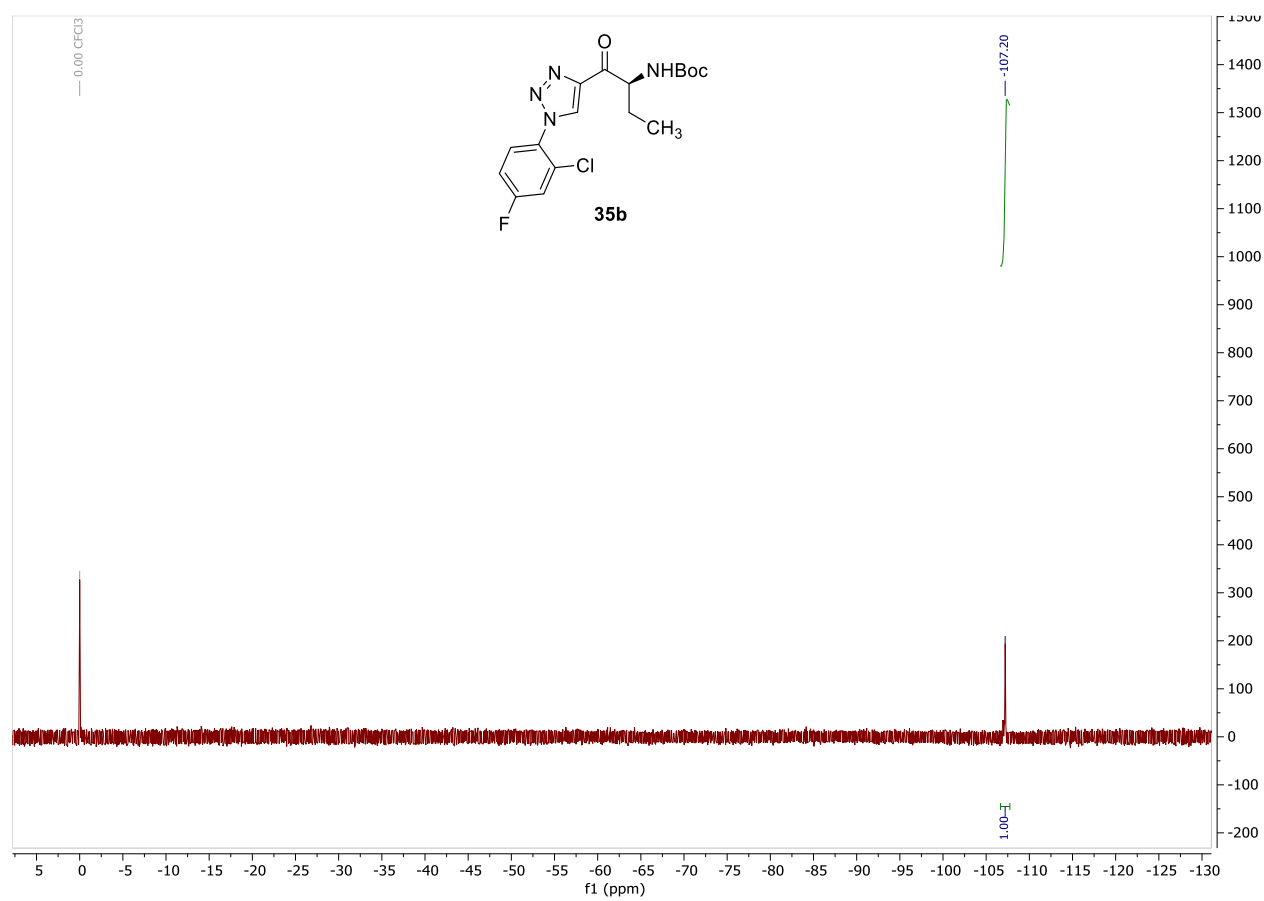
Compound **35b** ( $^1\text{H}$  NMR, 400 MHz):



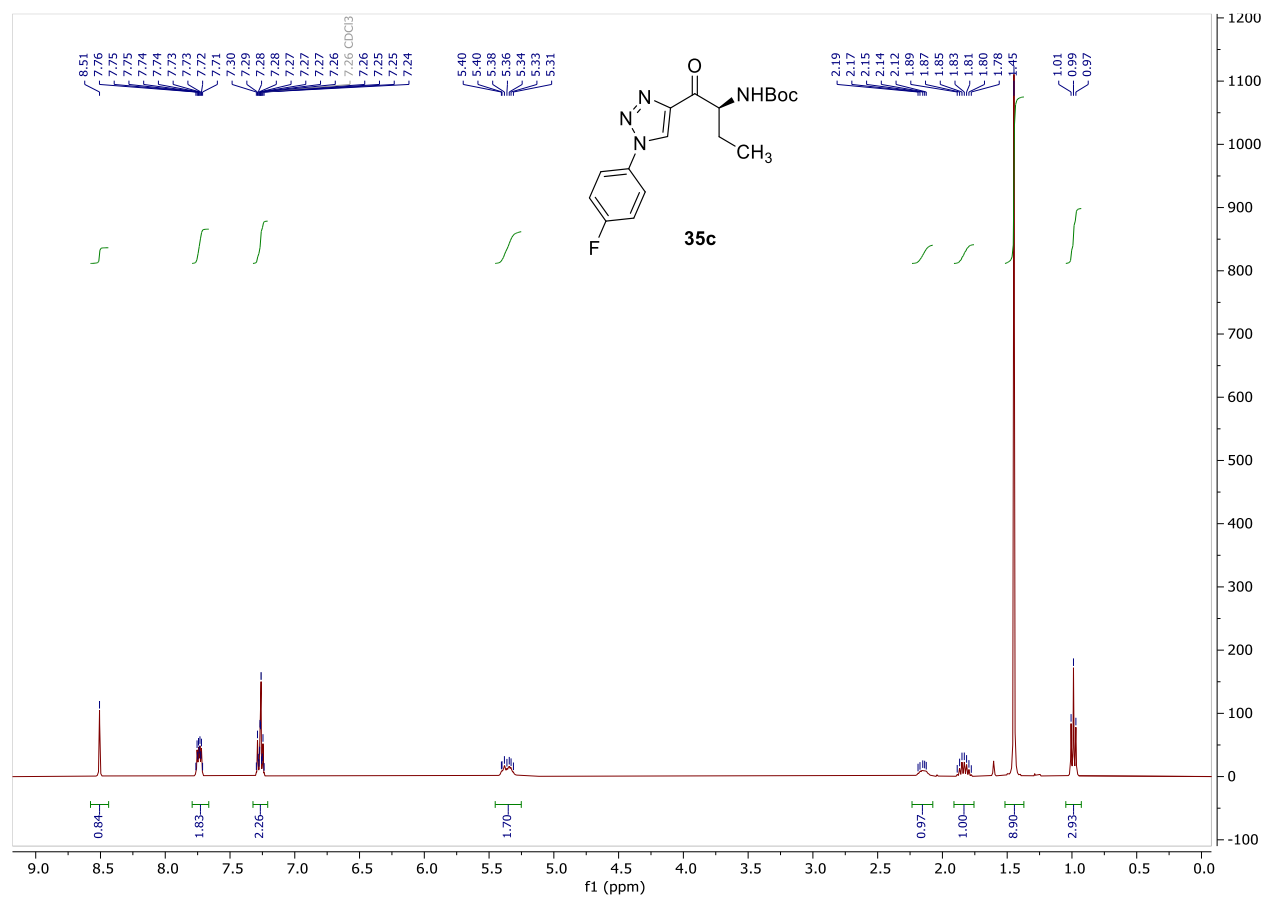
Compound **35b** ( $^{13}\text{C}$  NMR, 101 MHz):



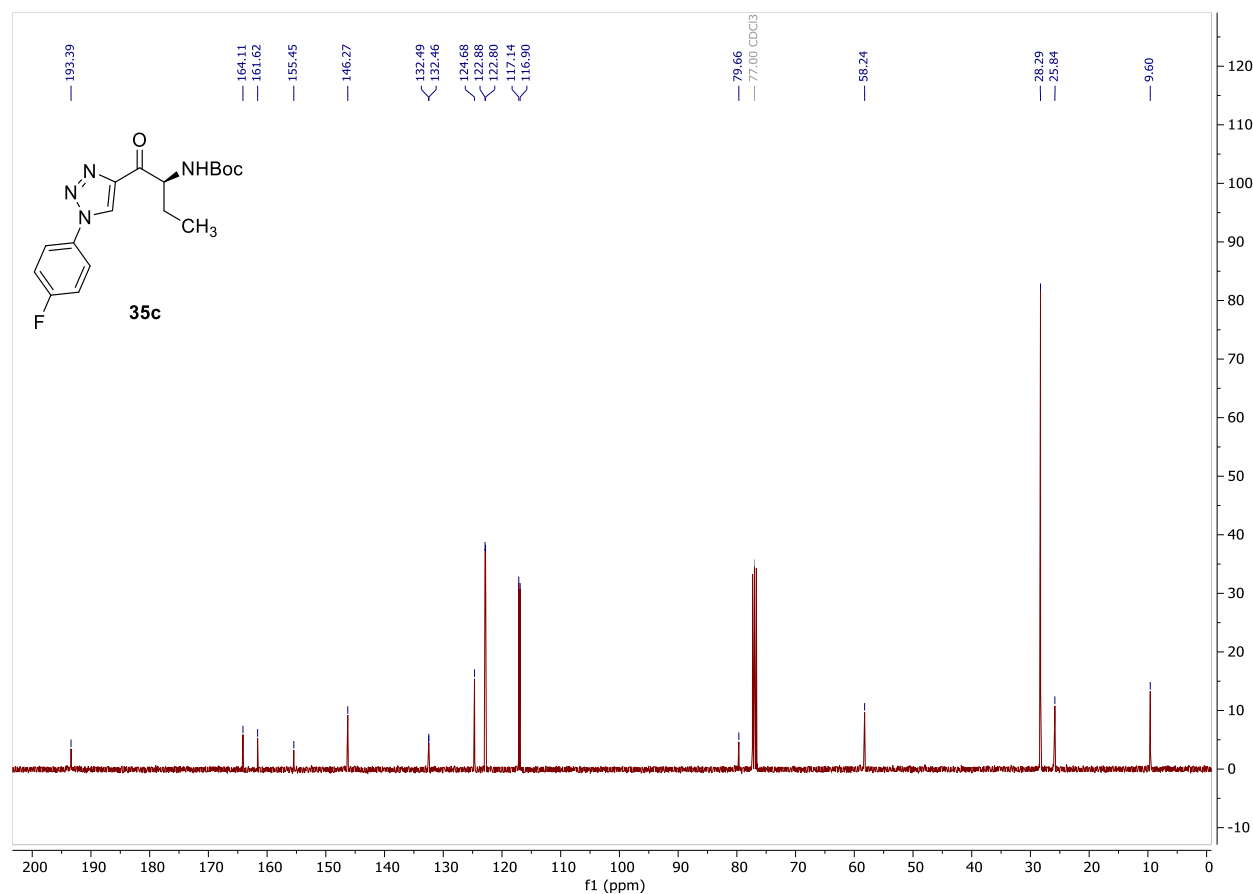
Compound **35b** ( $^{19}\text{F}$  NMR, 282 MHz):



Compound **35c** ( $^1\text{H}$  NMR, 400 MHz):

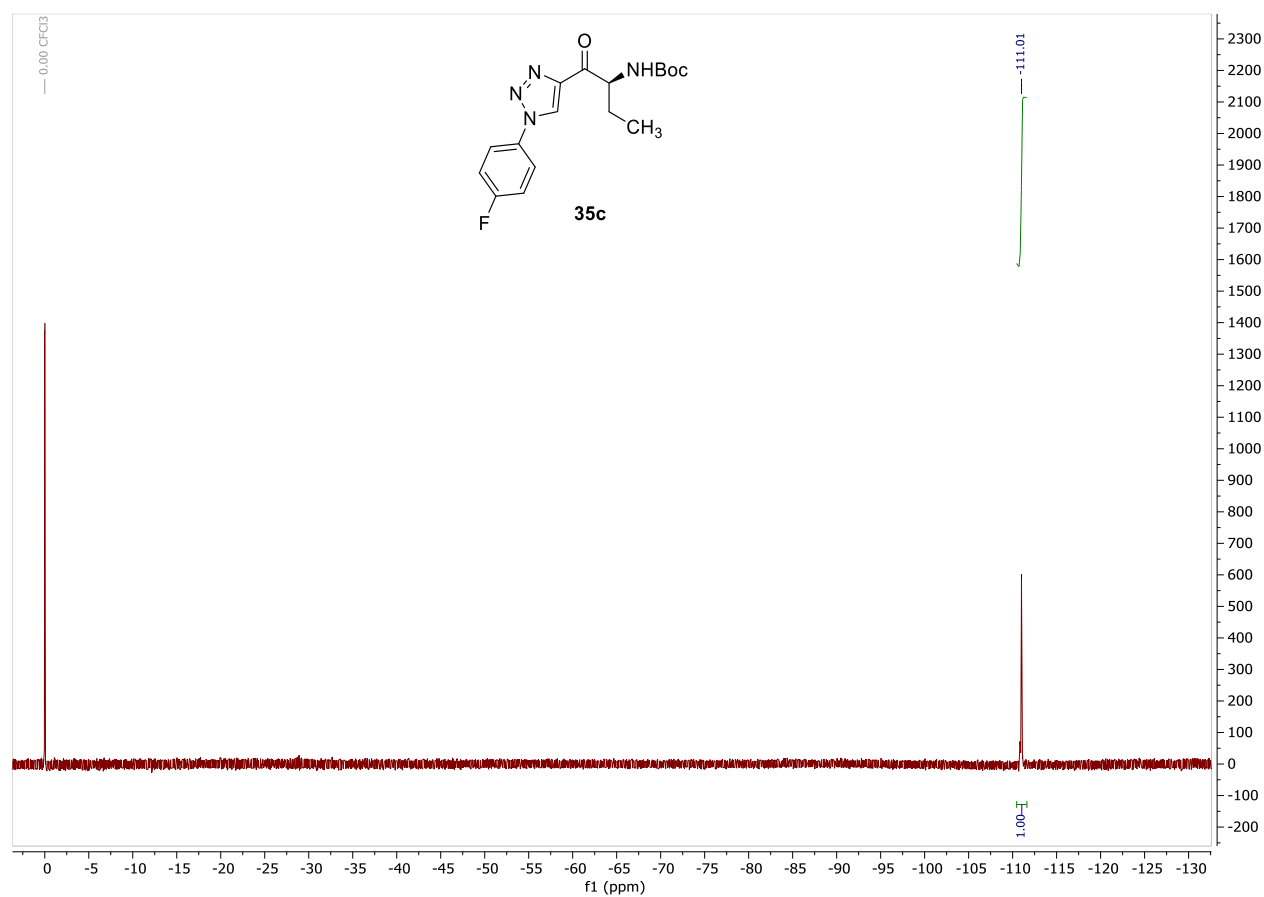


Compound **35c** ( $^{13}\text{C}$  NMR, 101 MHz):

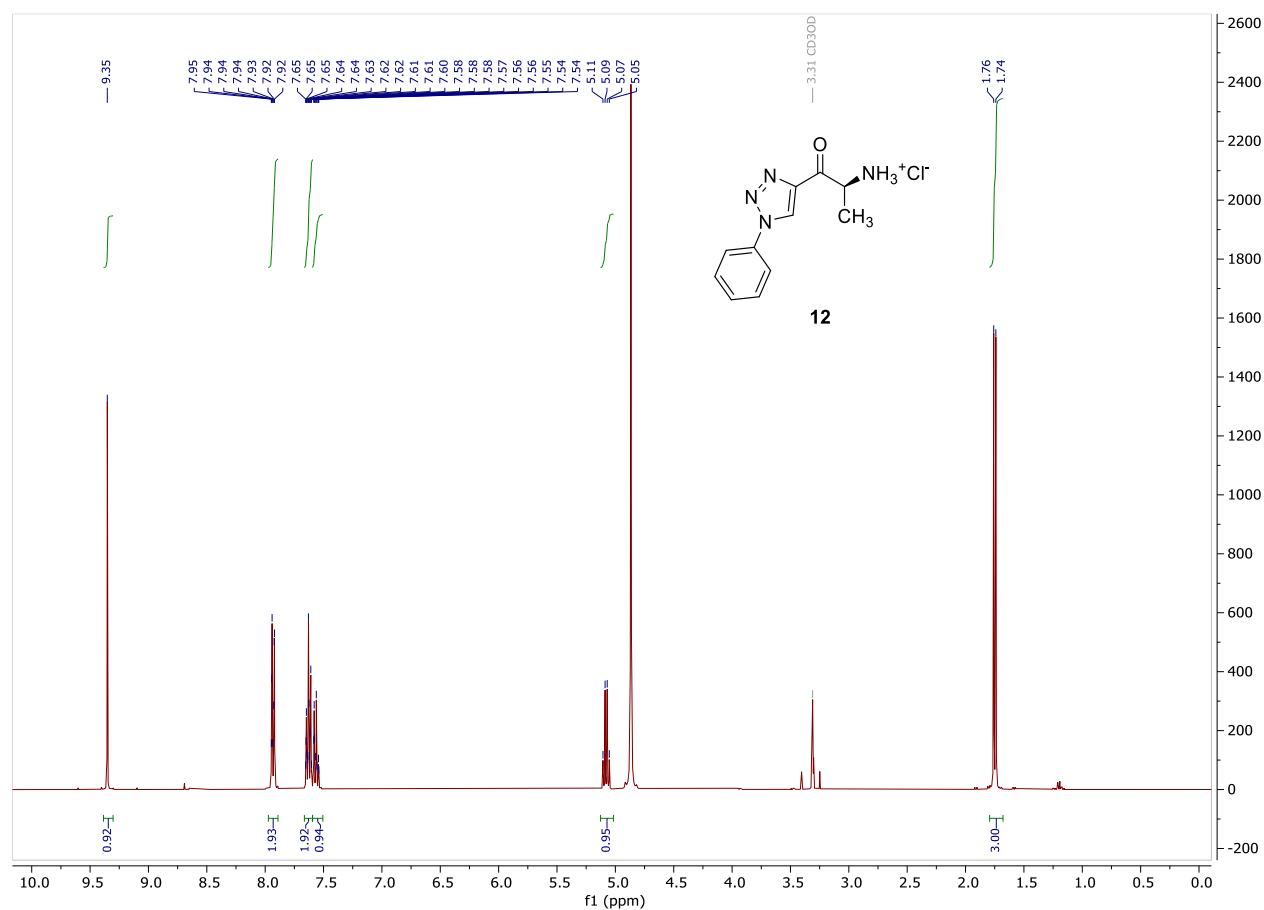




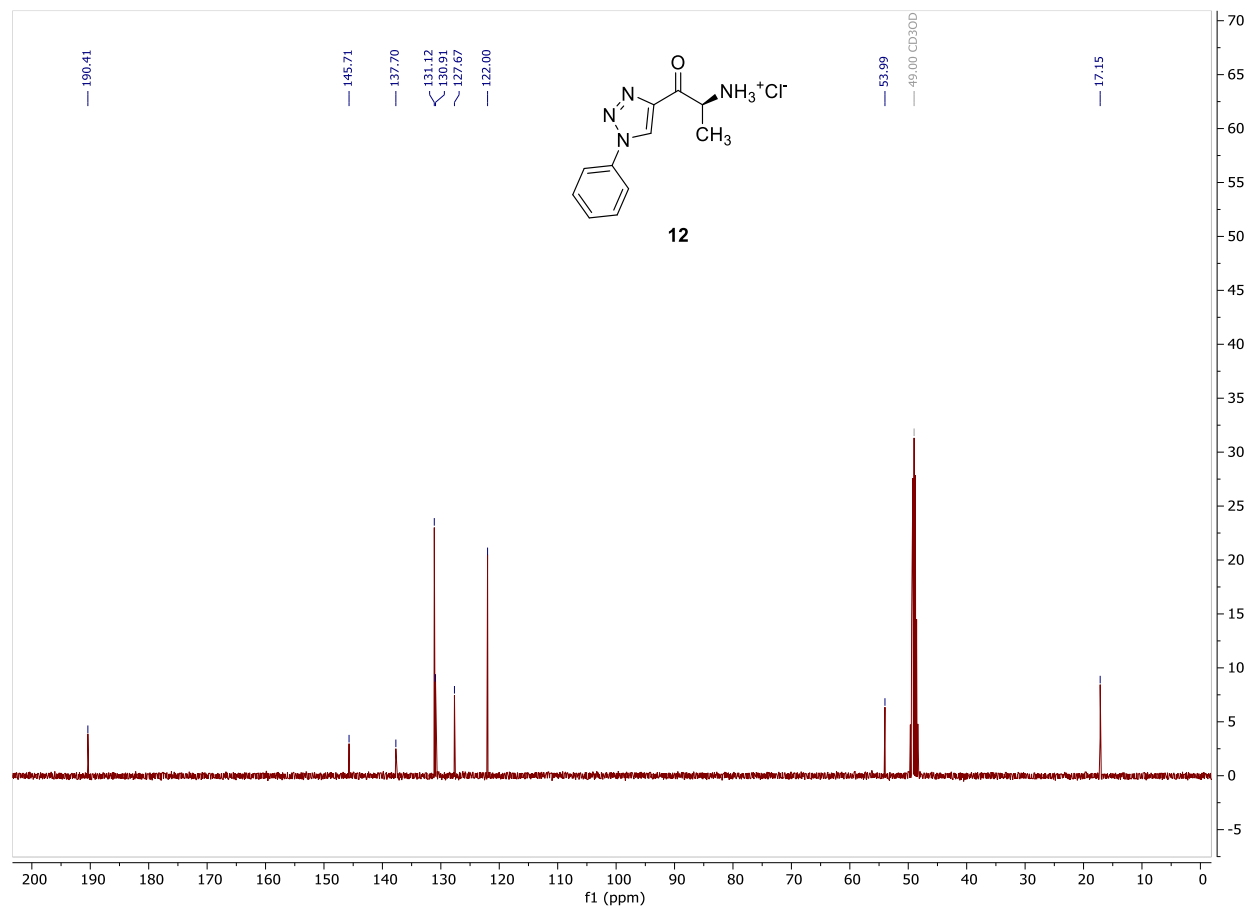
Compound **35c** ( $^{19}\text{F}$  NMR, 282 MHz):



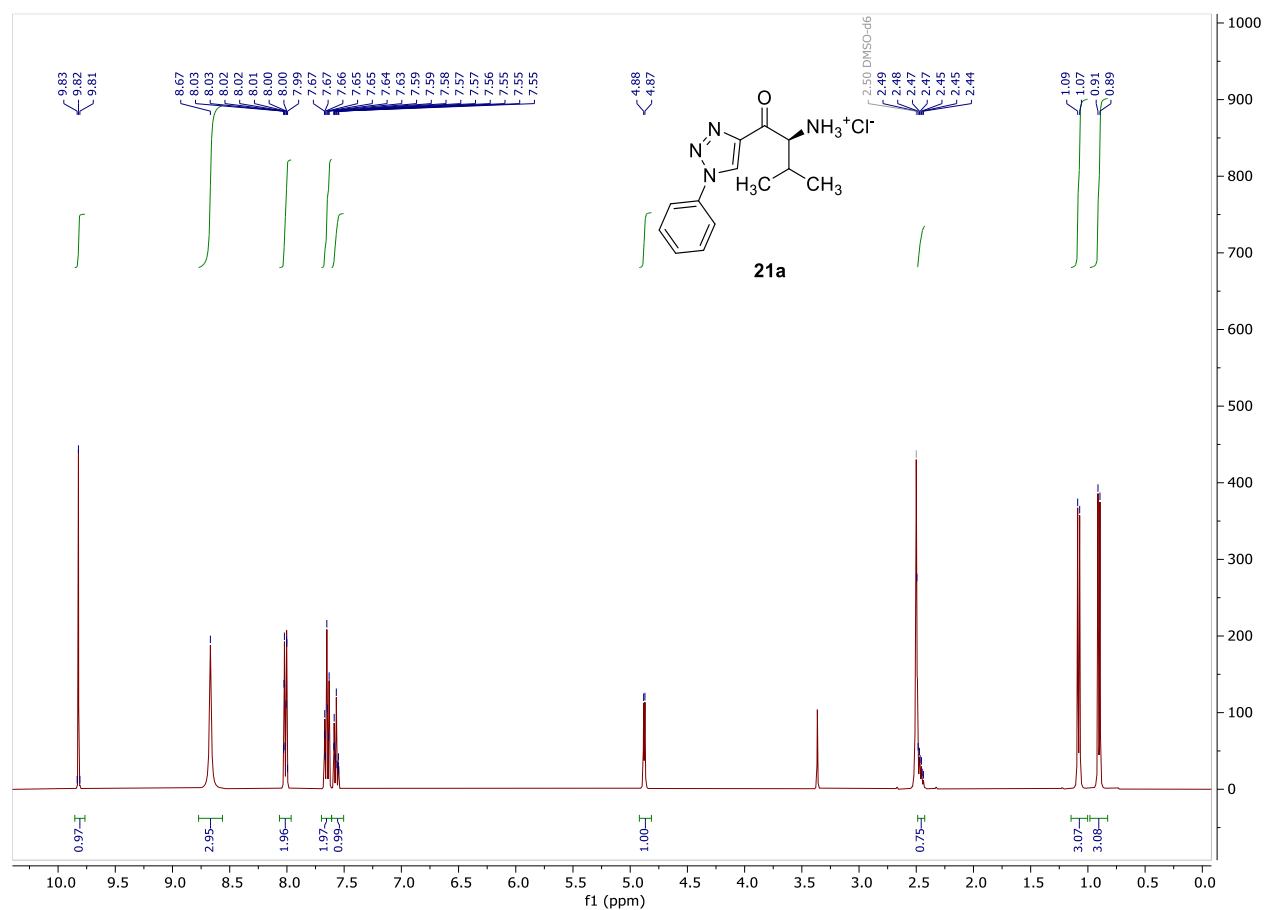
Compound **12** ( $^1\text{H}$  NMR, 400 MHz):



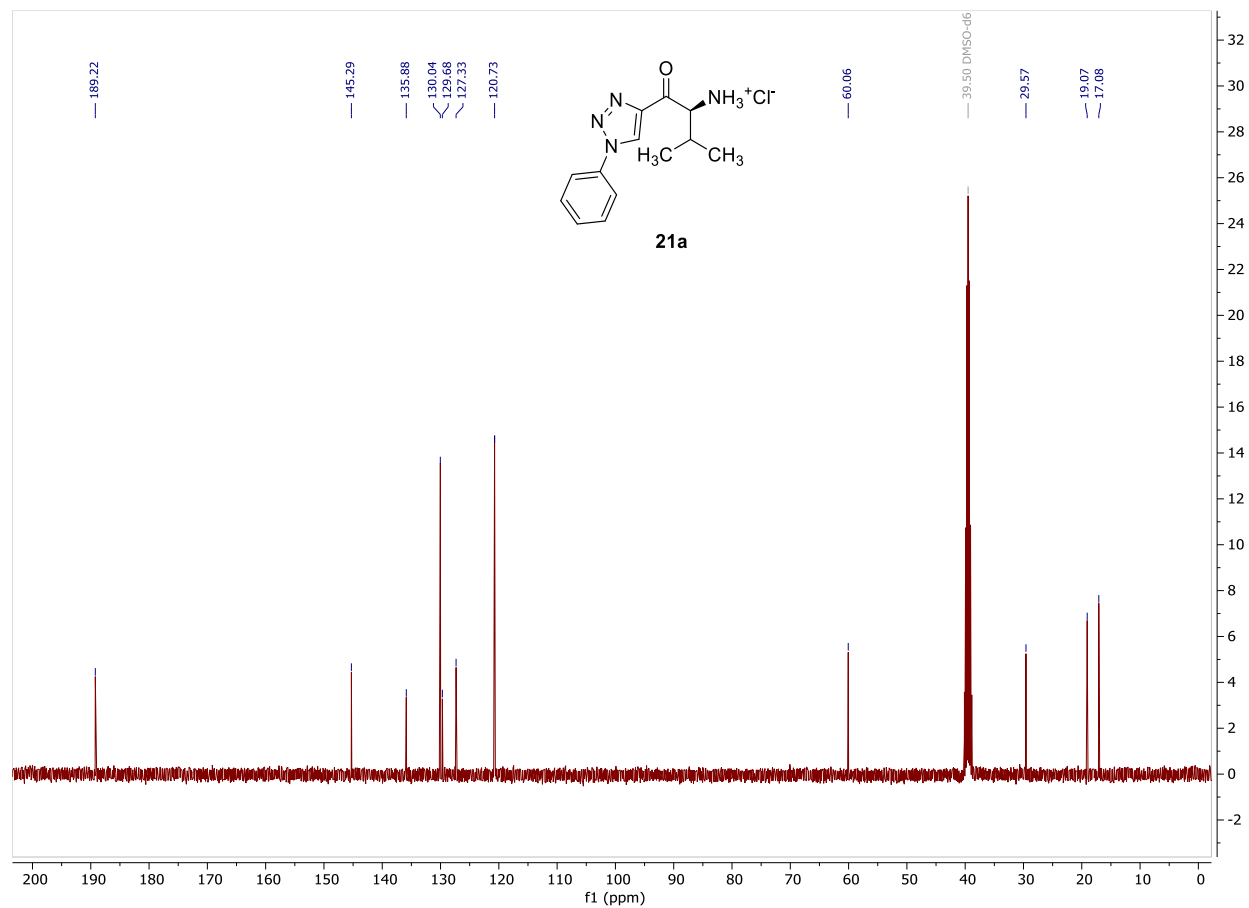
Compound **12** ( $^{13}\text{C}$  NMR, 101 MHz):



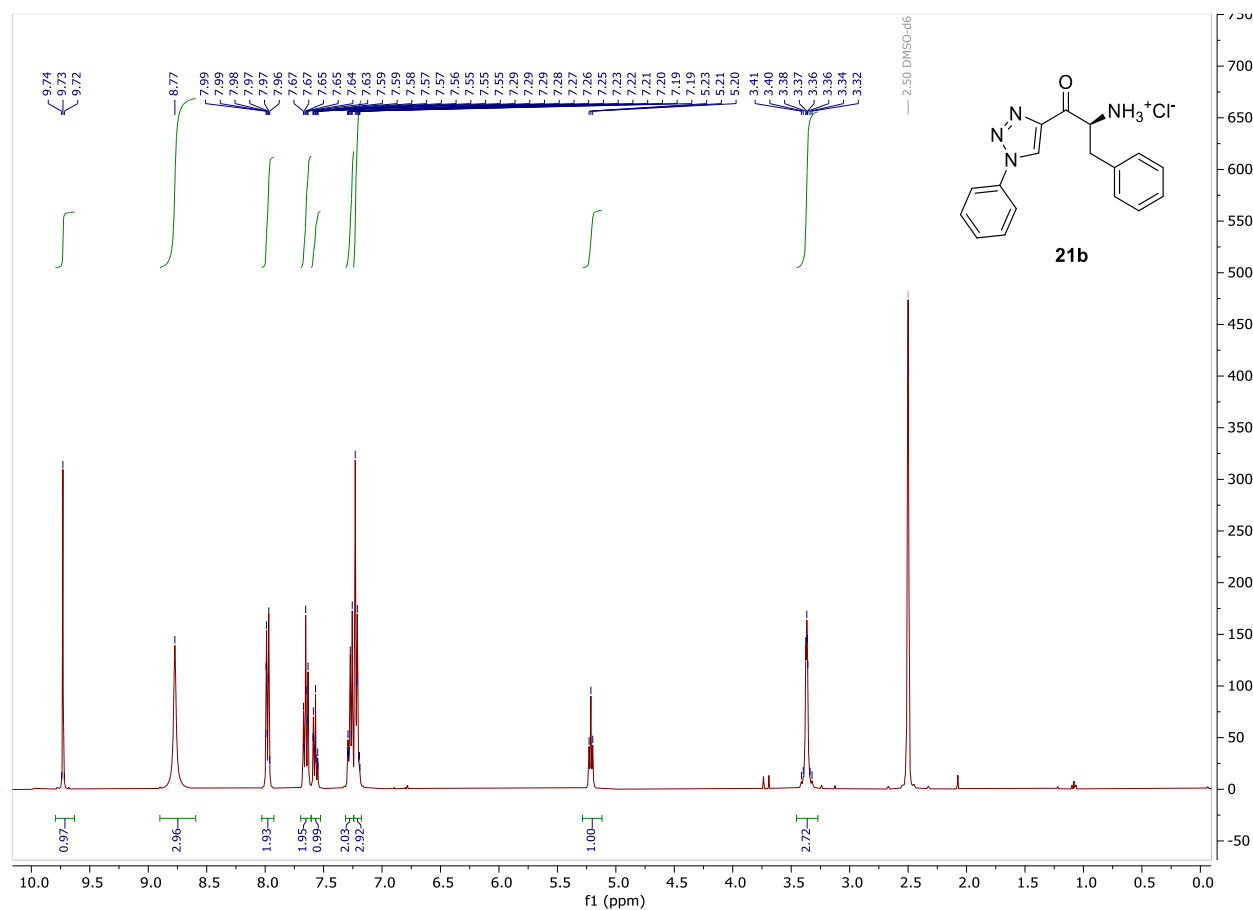
Compound **21a** ( $^1\text{H}$  NMR, 400 MHz):



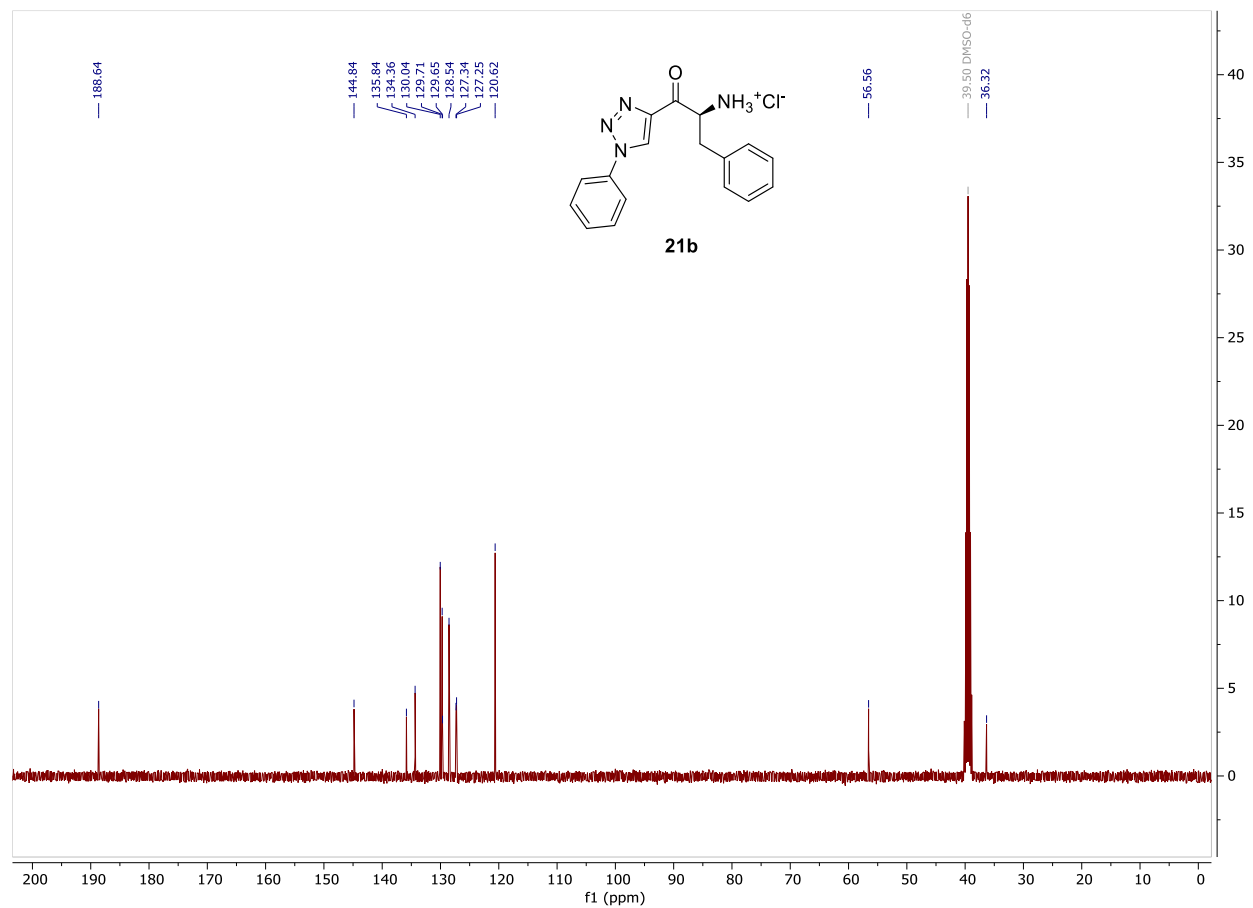
Compound **21a** ( $^{13}\text{C}$  NMR, 101 MHz):



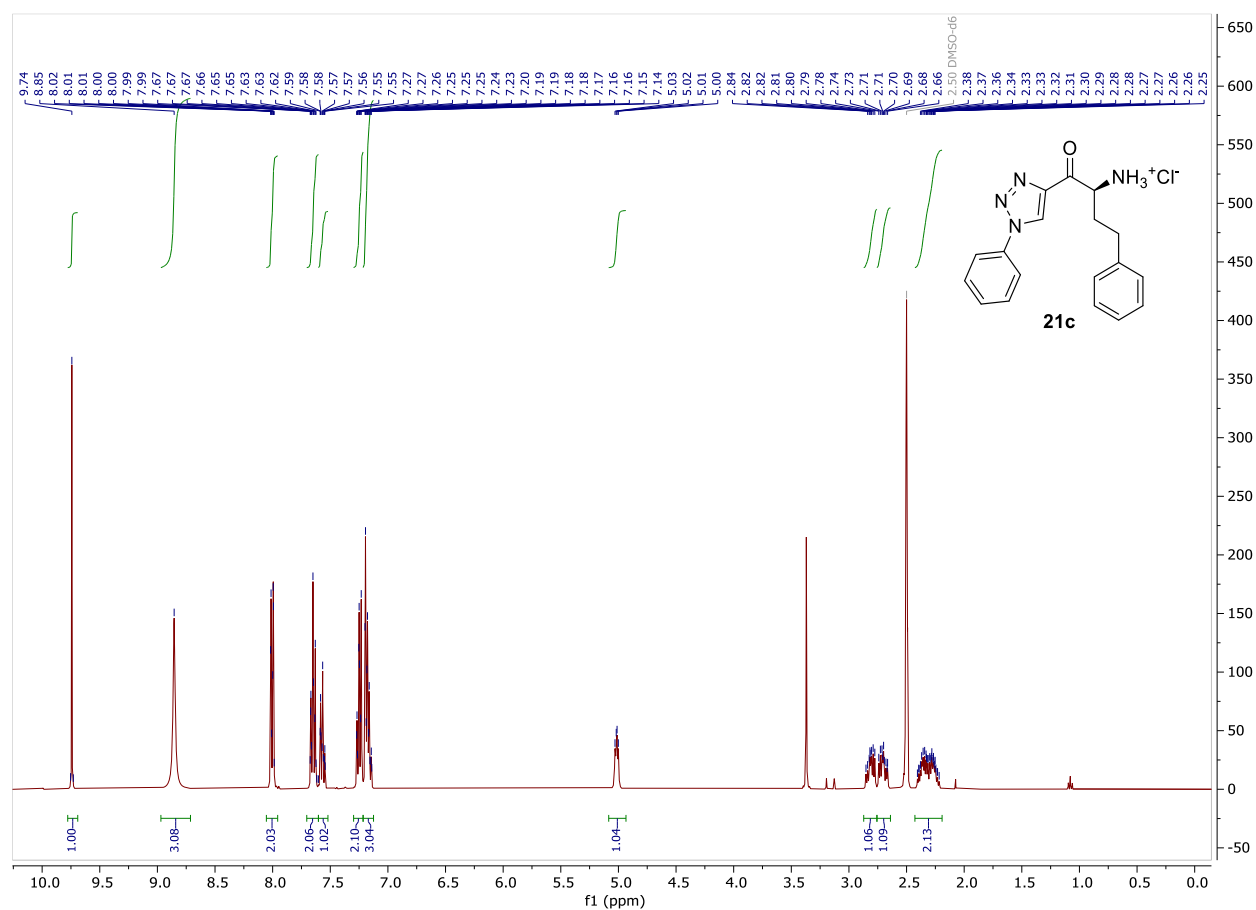
Compound **21b** ( $^1\text{H}$  NMR, 400 MHz):



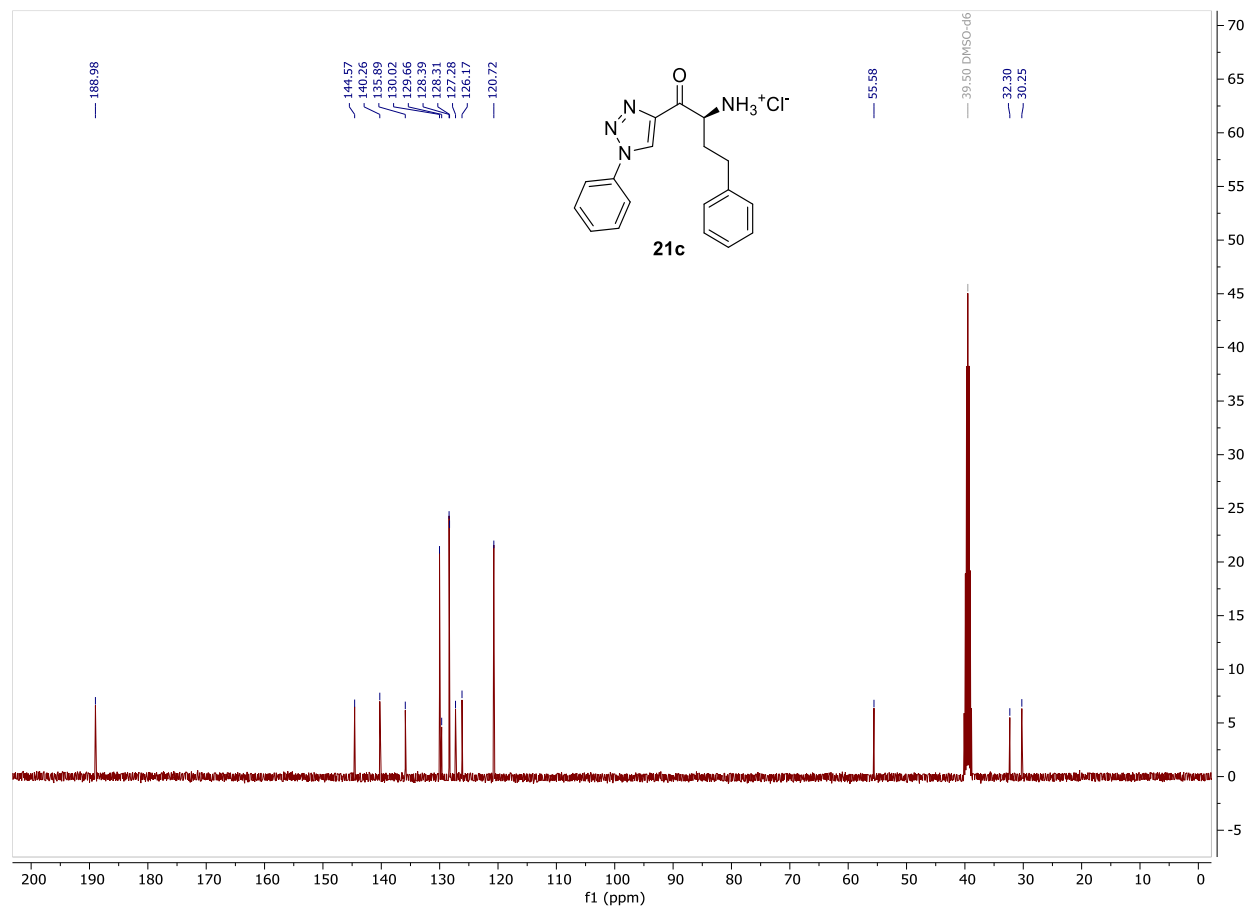
Compound **21b** ( $^{13}\text{C}$  NMR, 101 MHz):



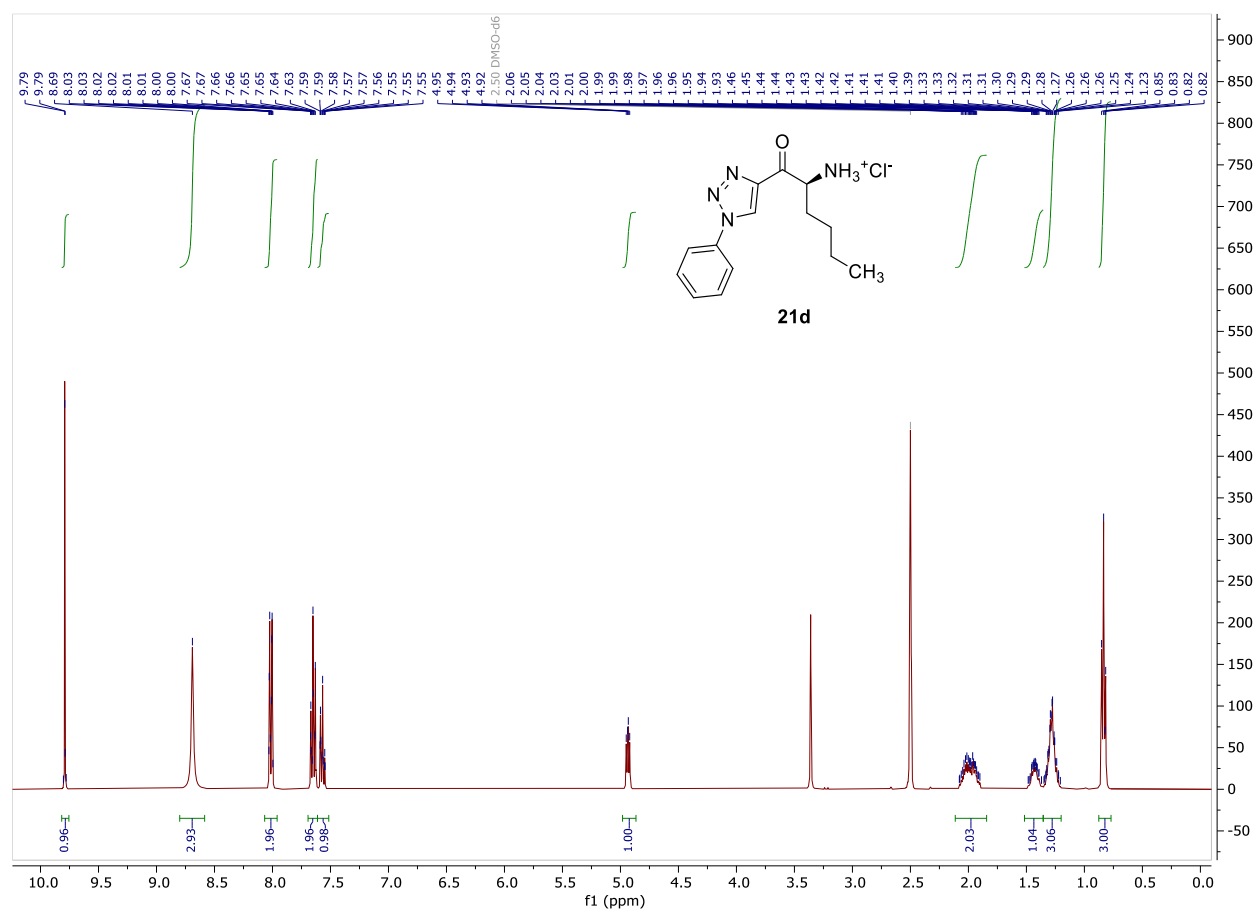
Compound **21c** ( $^1\text{H}$  NMR, 400 MHz):



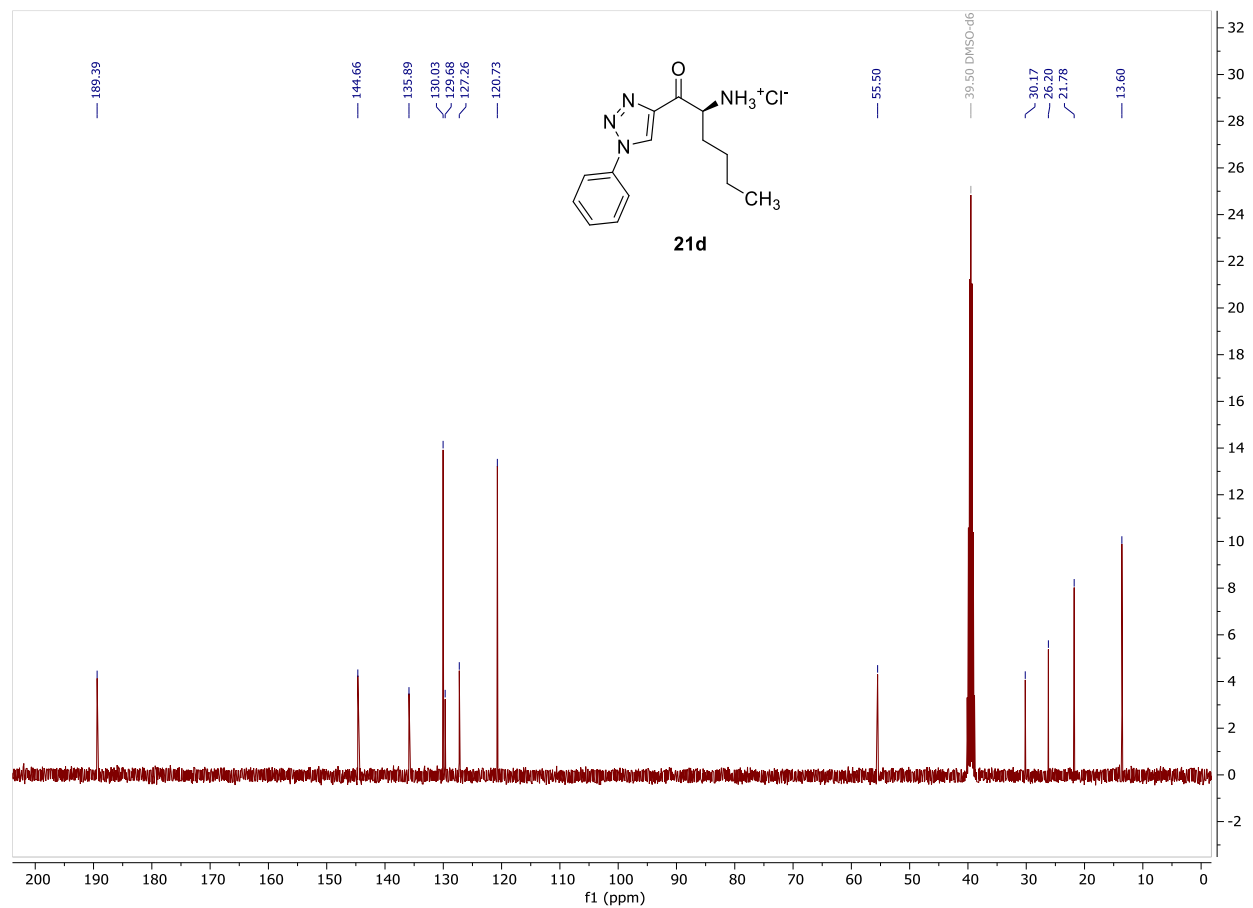
Compound **21c** ( $^{13}\text{C}$  NMR, 101 MHz):



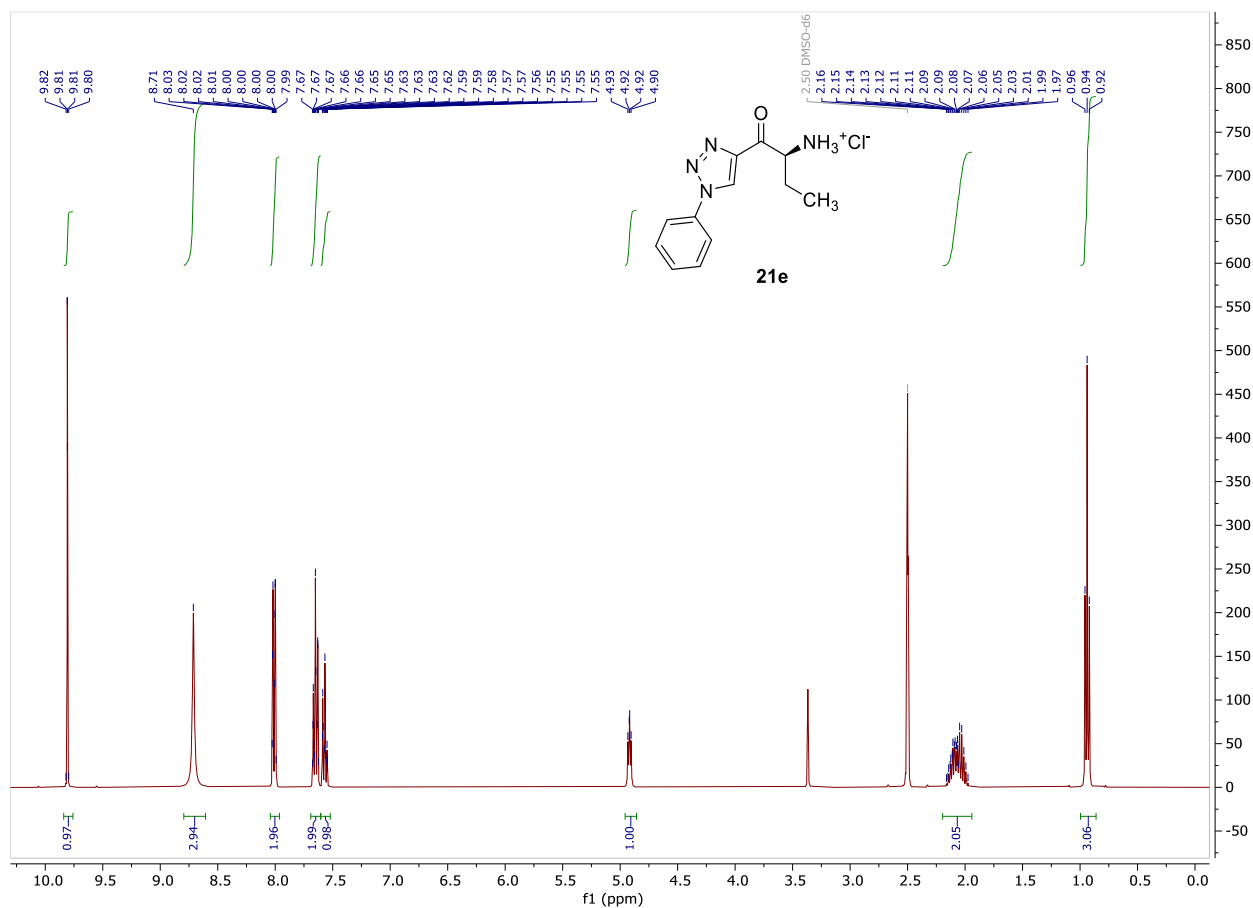
Compound **21d** ( $^1\text{H}$  NMR, 400 MHz):



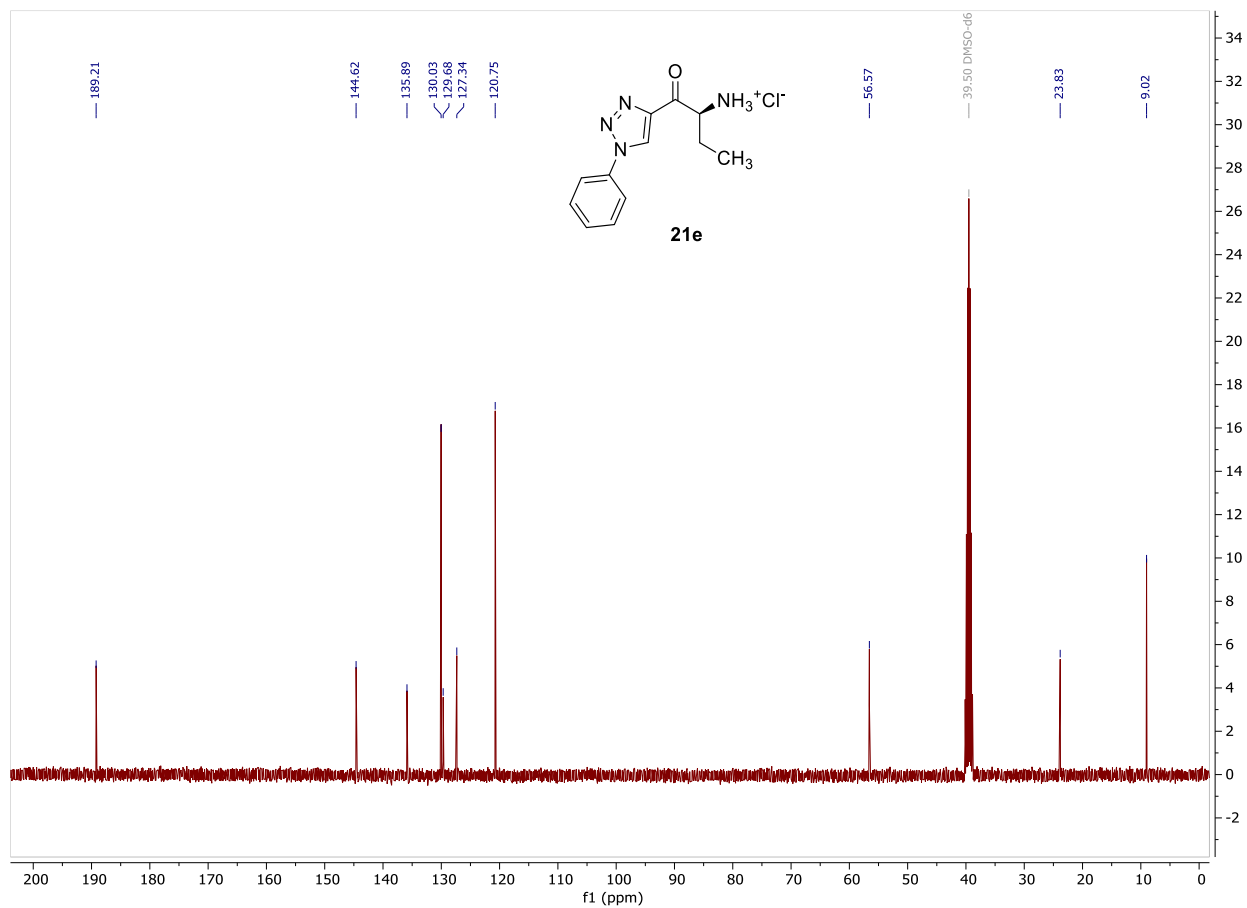
Compound **21d** ( $^{13}\text{C}$  NMR, 101 MHz):



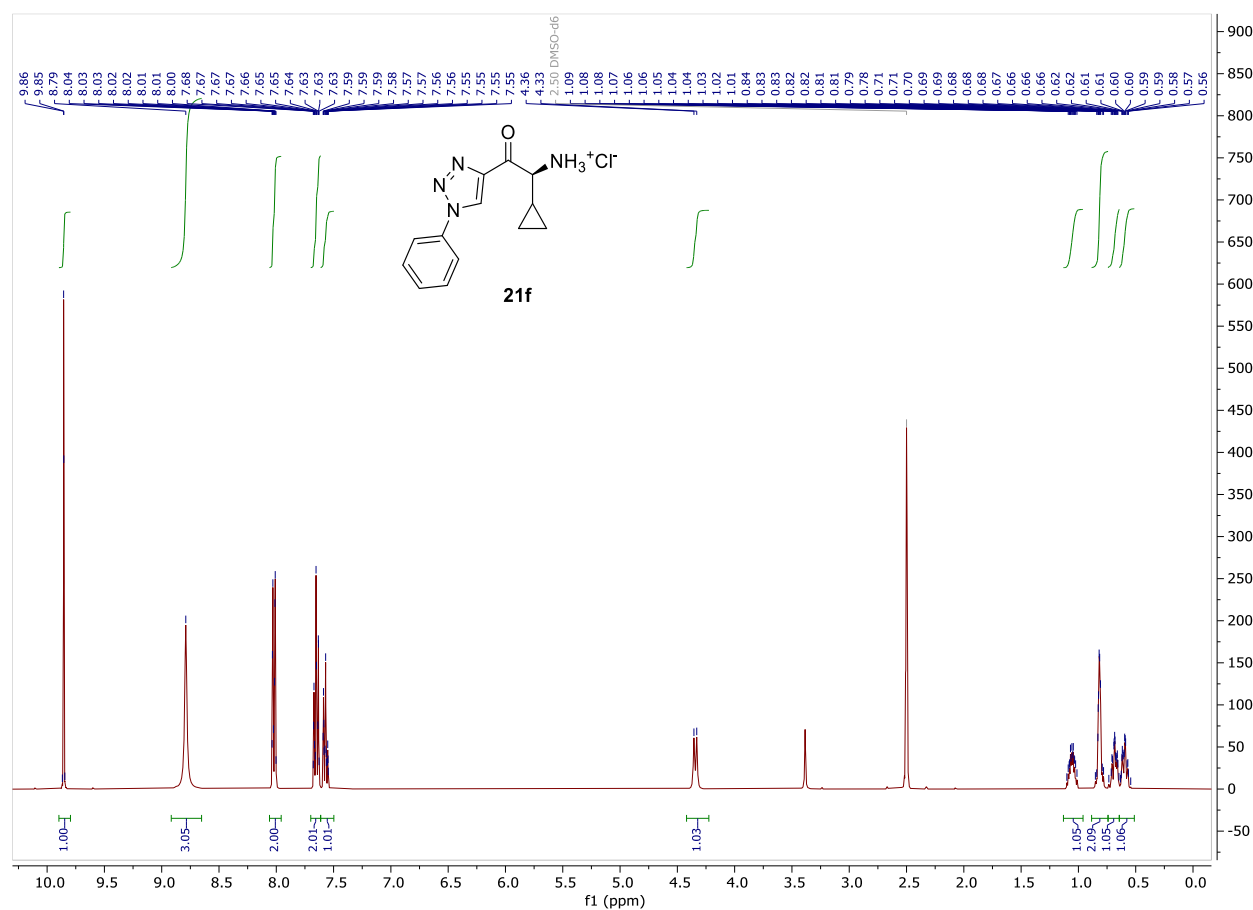
Compound **21e** ( $^1\text{H}$  NMR, 400 MHz):



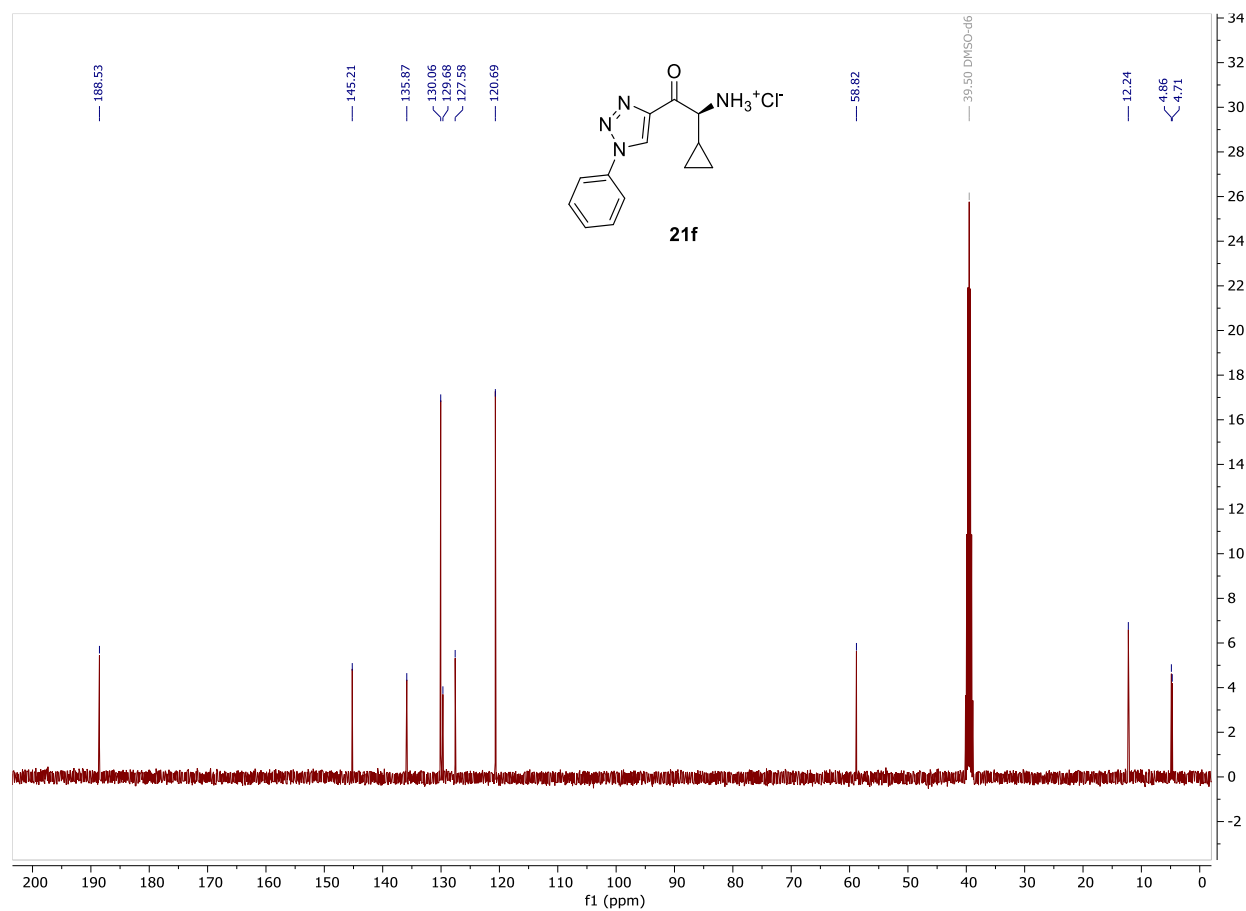
Compound **21e** ( $^{13}\text{C}$  NMR, 101 MHz):



Compound **21f** ( $^1\text{H}$  NMR, 400 MHz):

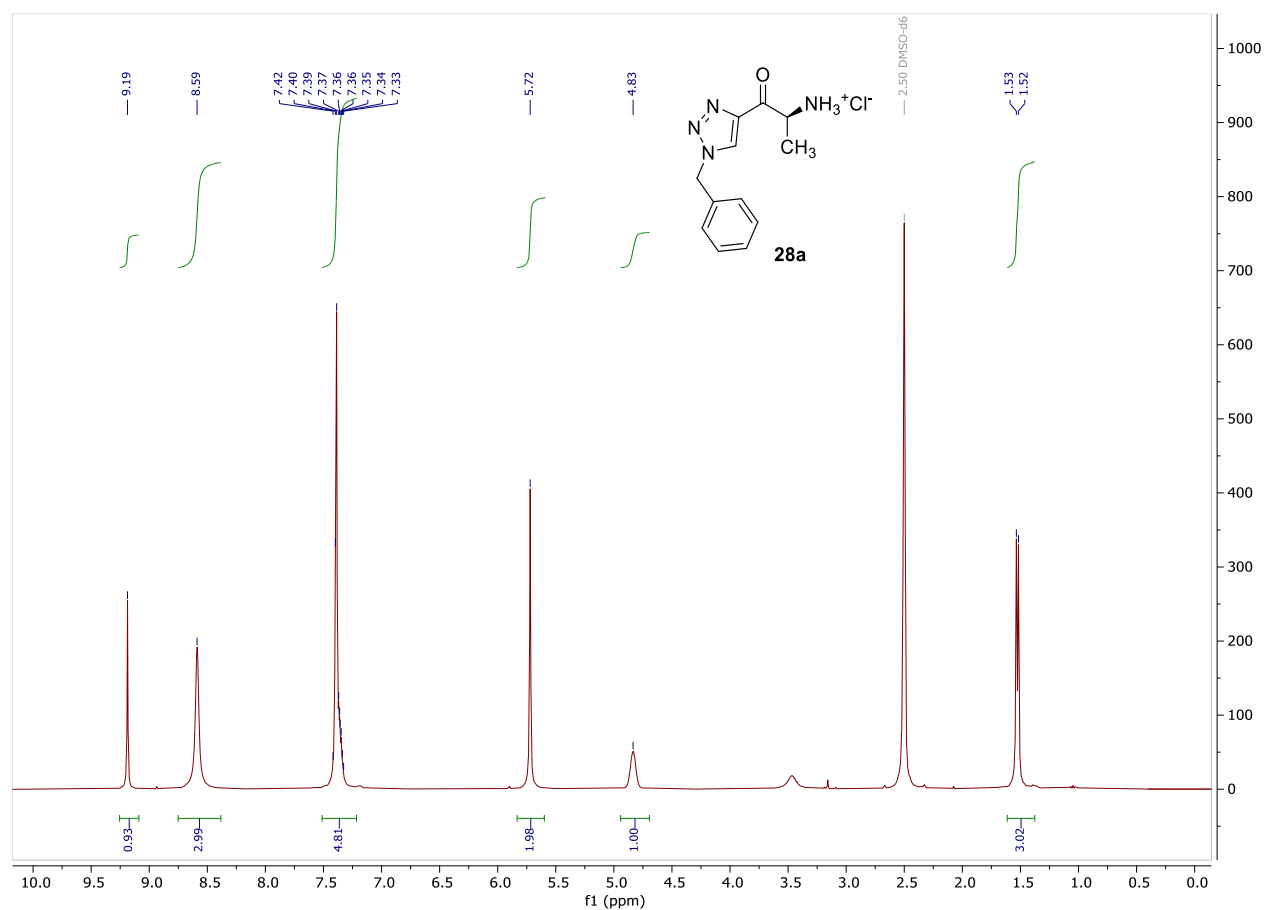


Compound **21f** ( $^{13}\text{C}$  NMR, 101 MHz):

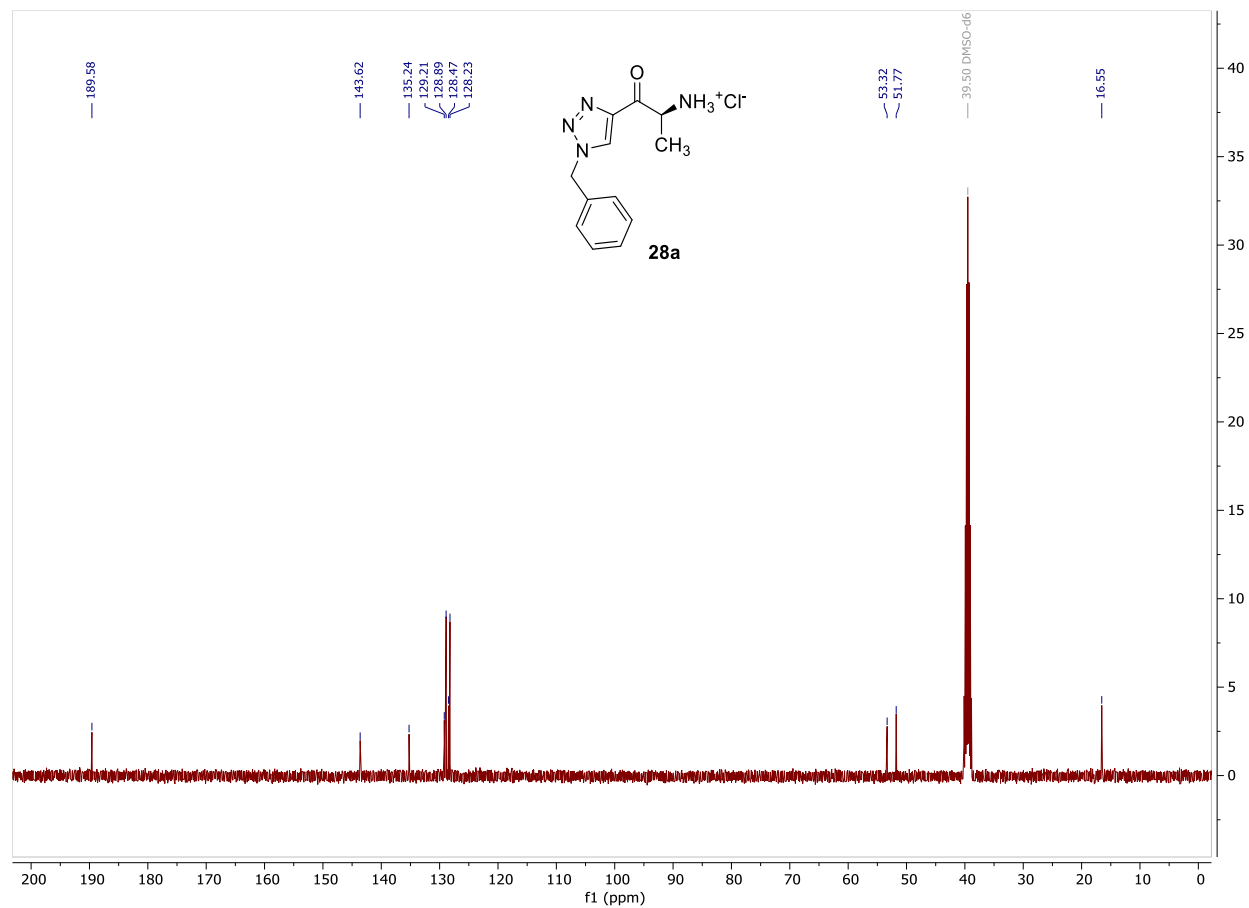




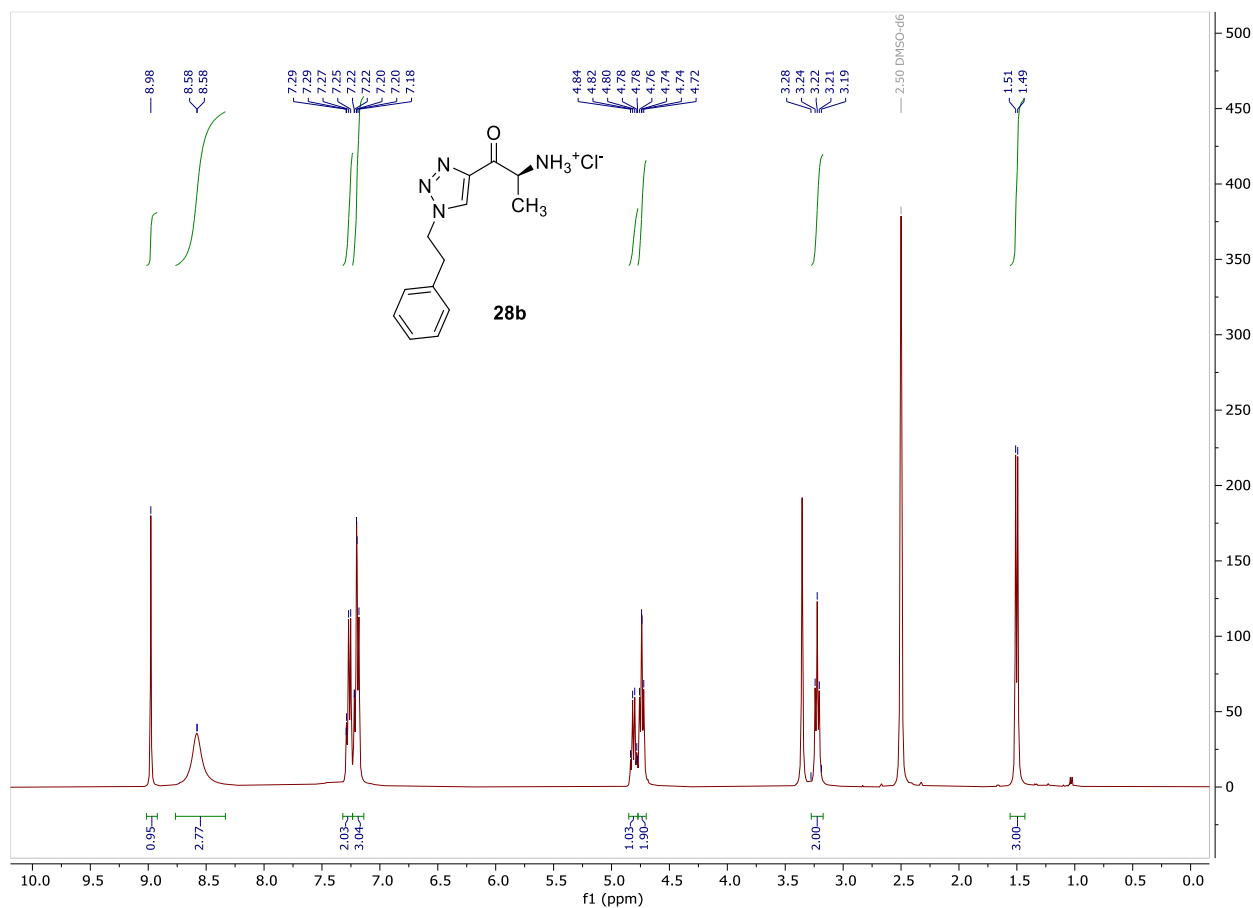
Compound **28a** ( $^1\text{H}$  NMR, 400 MHz):



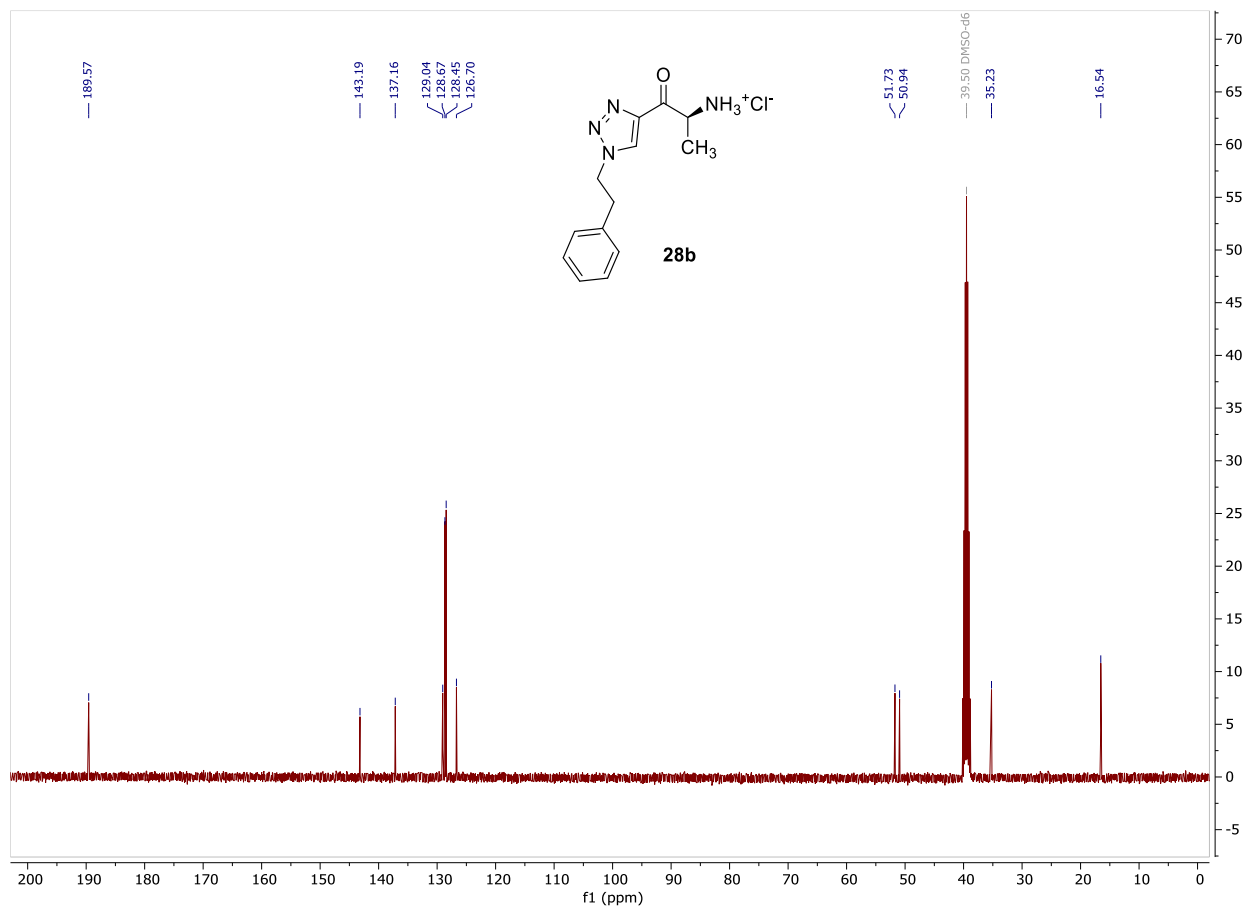
Compound **28a** ( $^{13}\text{C}$  NMR, 101 MHz):



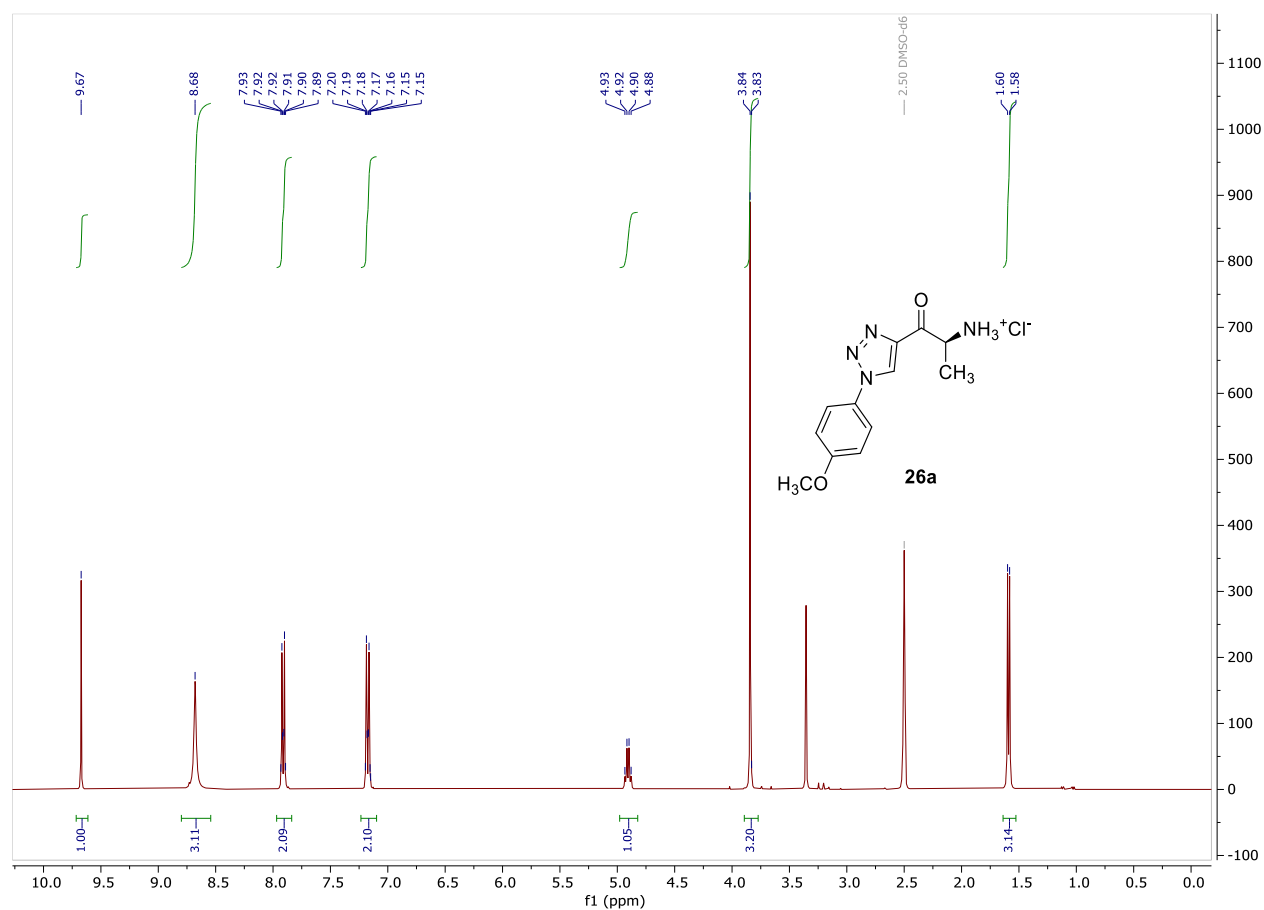
Compound **28b** ( $^1\text{H}$  NMR, 400 MHz):



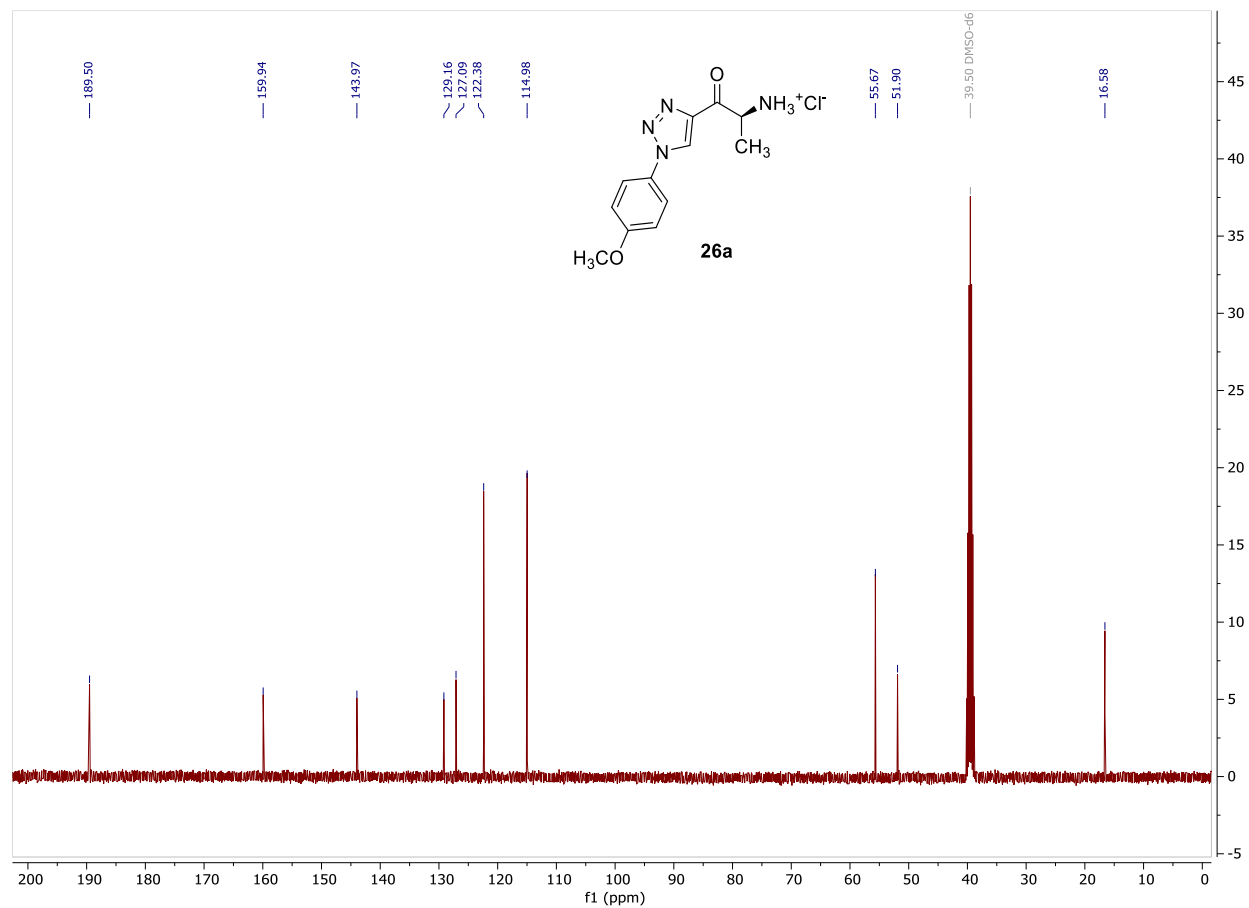
Compound **28b** ( $^{13}\text{C}$  NMR, 101 MHz):



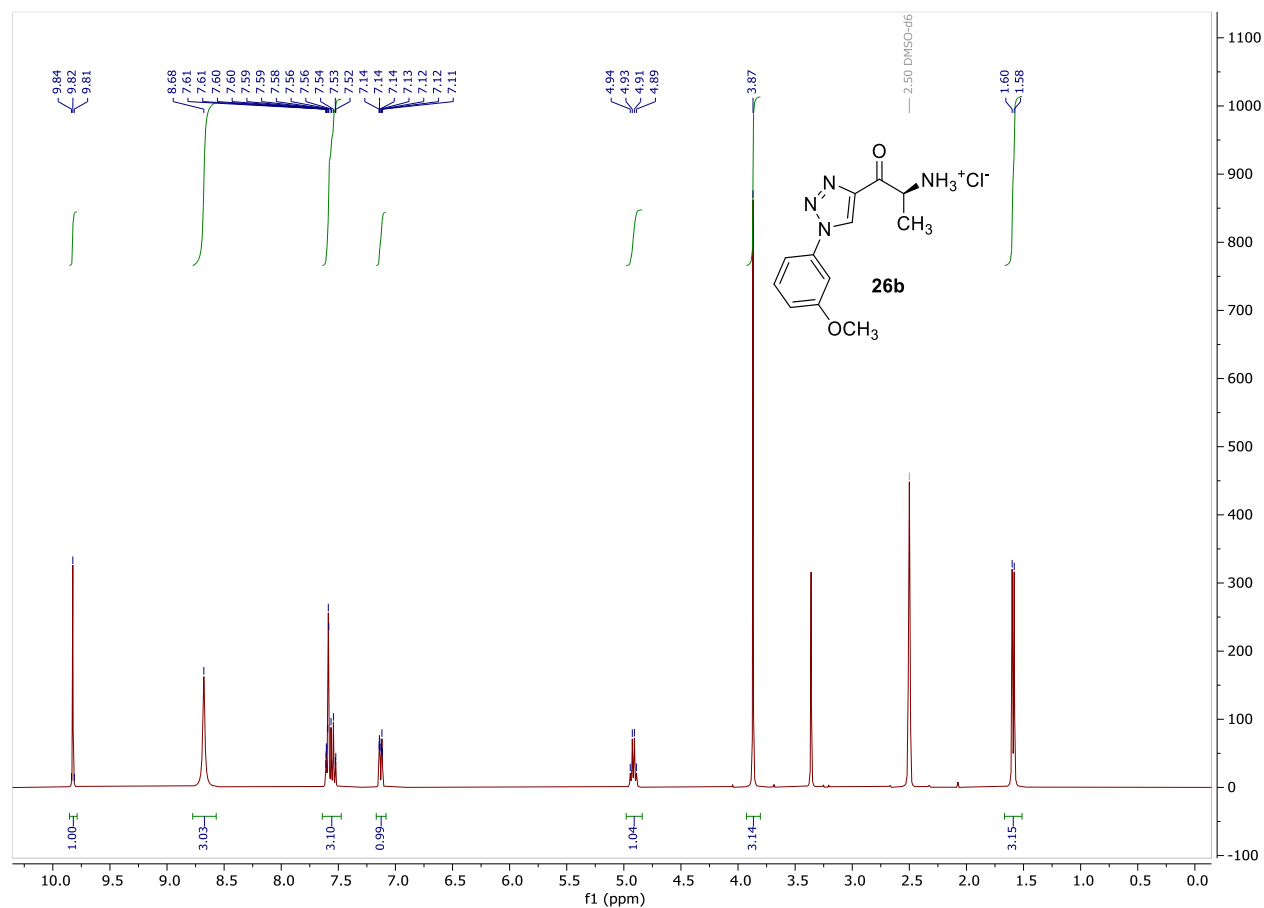
Compound **26a** ( $^1\text{H}$  NMR, 400 MHz):



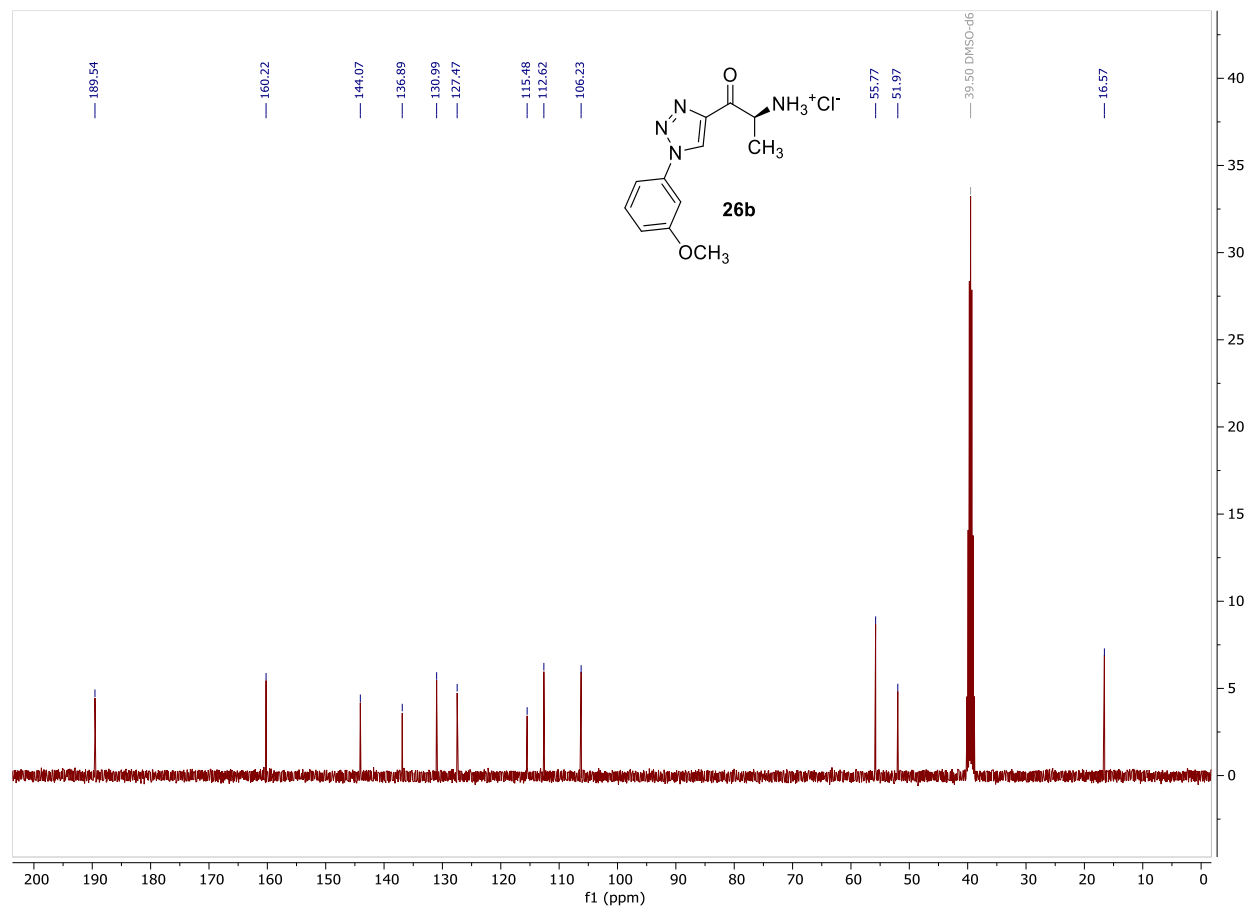
Compound **26a** ( $^{13}\text{C}$  NMR, 101 MHz):



Compound **26b** ( $^1\text{H}$  NMR, 400 MHz):



Compound **26b** ( $^{13}\text{C}$  NMR, 101 MHz):



**Chemical structure of 26c:** COc1ccccc1n2nc(C(=O)[C@H](N)Cl)c2

**<sup>1</sup>H NMR spectrum (DMSO-d<sub>6</sub>):**

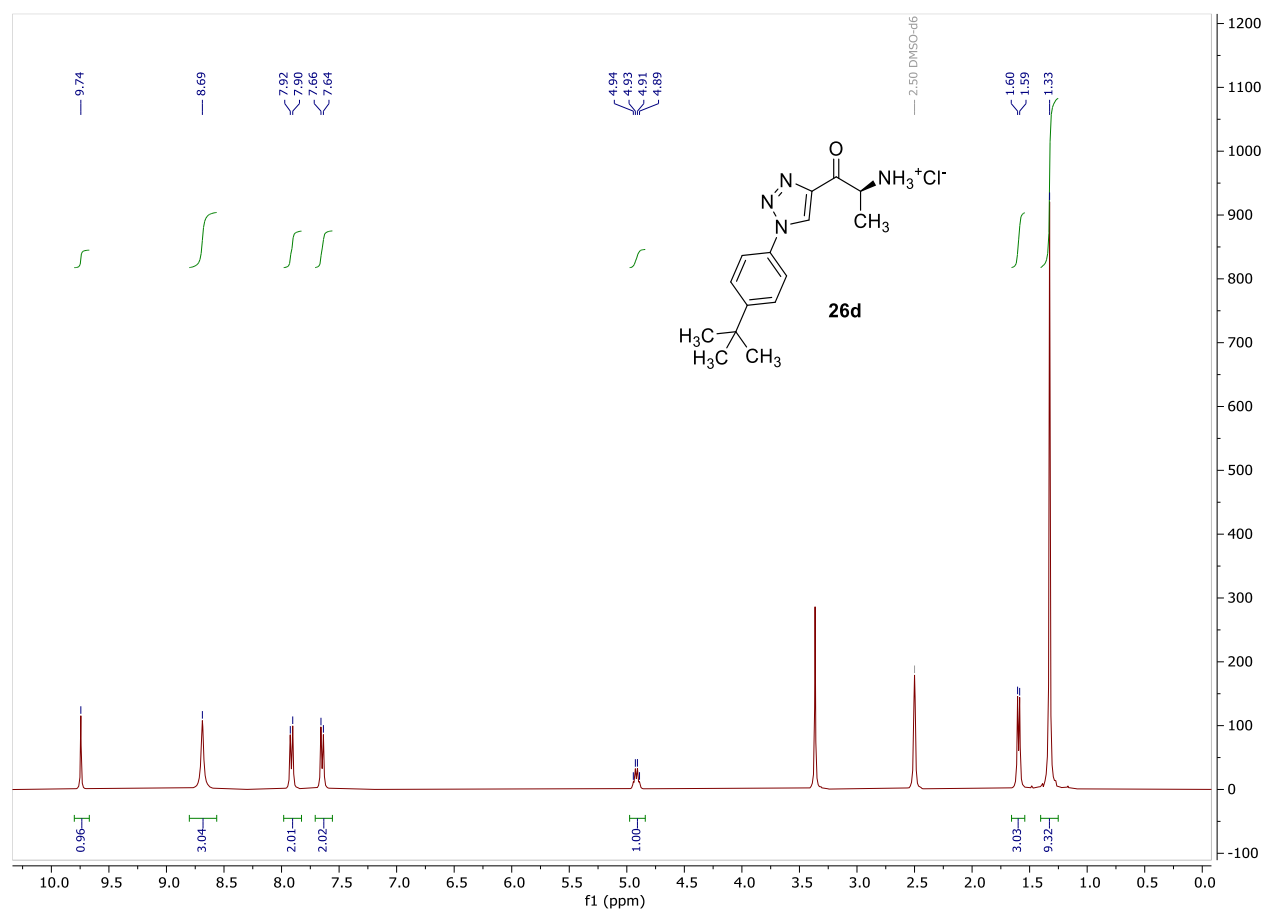
Chemical Shift (ppm)	Integration
9.37, 9.36, 9.35	0.87
8.65, 7.69, 7.67, 7.66, 7.63, 7.62, 7.61, 7.60, 7.59, 7.58, 7.38, 7.37, 7.36, 7.21, 7.20, 7.19, 7.18, 7.17, 7.16	2.98
4.93, 4.91	1.00
3.86	3.01
1.56, 1.59	3.01

Chemical structure of **26c** is shown above the spectrum. The structure is a benzimidazole derivative with a methoxy group and a chiral amine side chain.

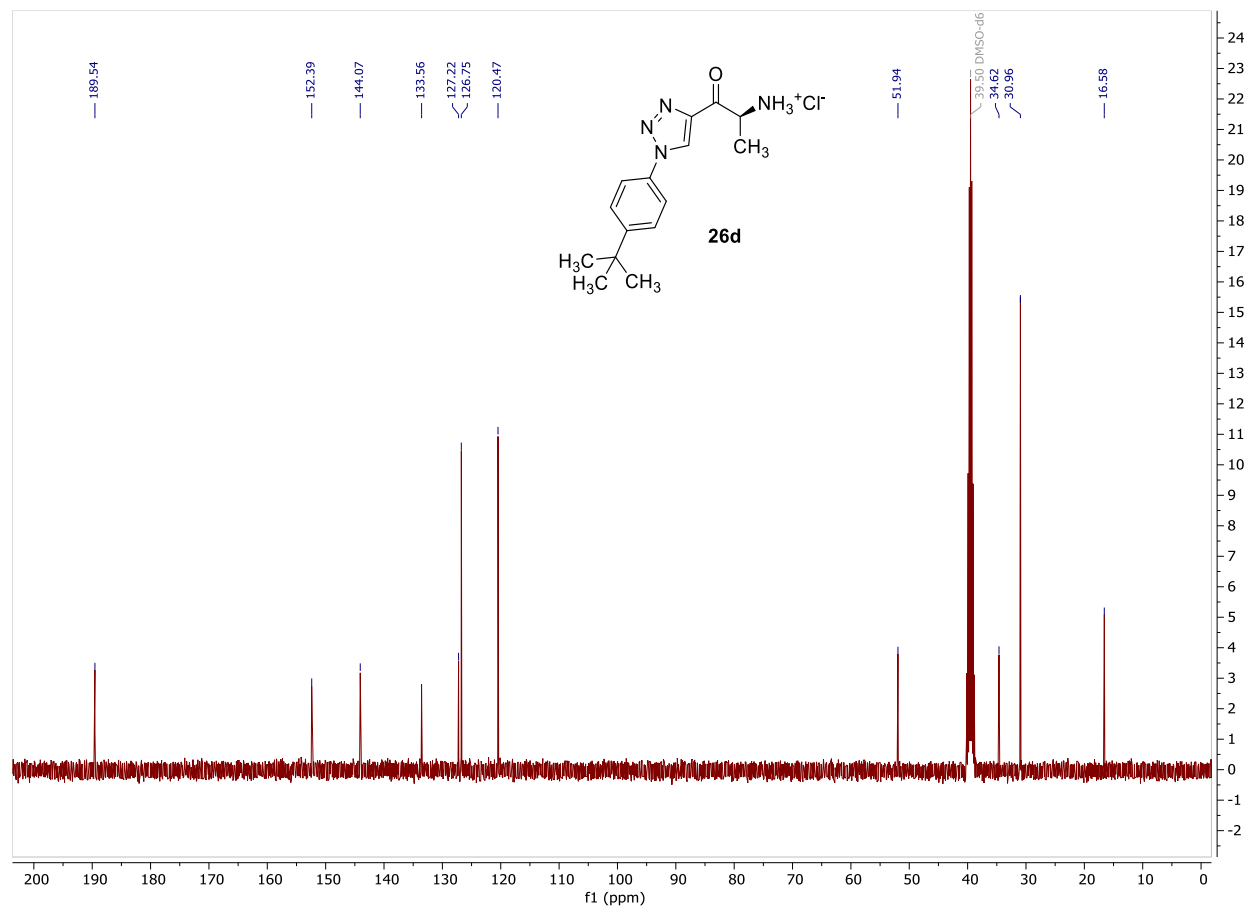
**1H NMR spectrum (DMSO-d<sub>6</sub>) data:**

Chemical Shift (ppm)	Integration
189.57	1.00
151.95	1.00
143.29	1.00
131.74	1.00
130.93	1.00
126.18	1.00
124.74	1.00
120.89	1.00
113.08	1.00
56.26	1.00
51.91	1.00
39.50	1.00
16.56	1.00

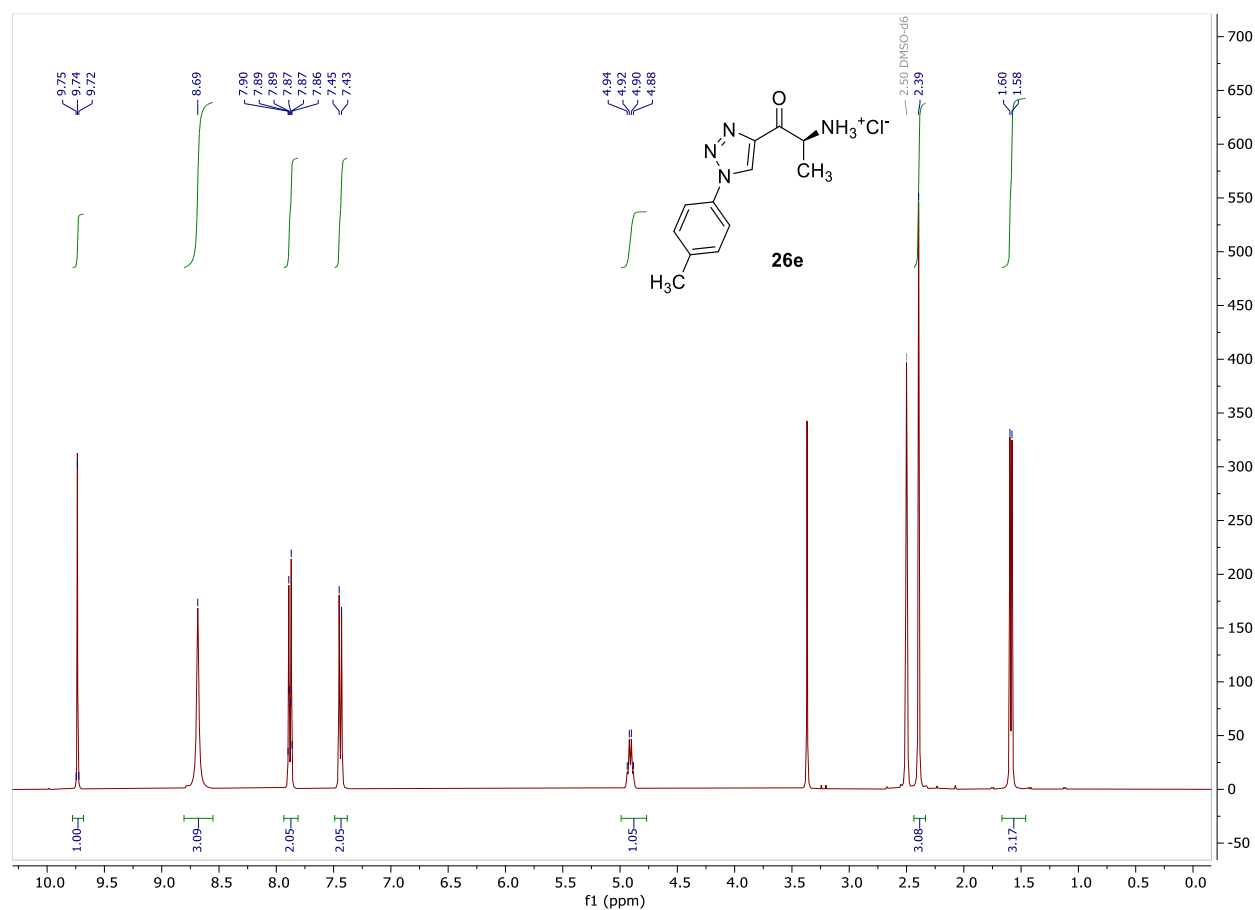
Compound **26d** ( $^1\text{H}$  NMR, 400 MHz):



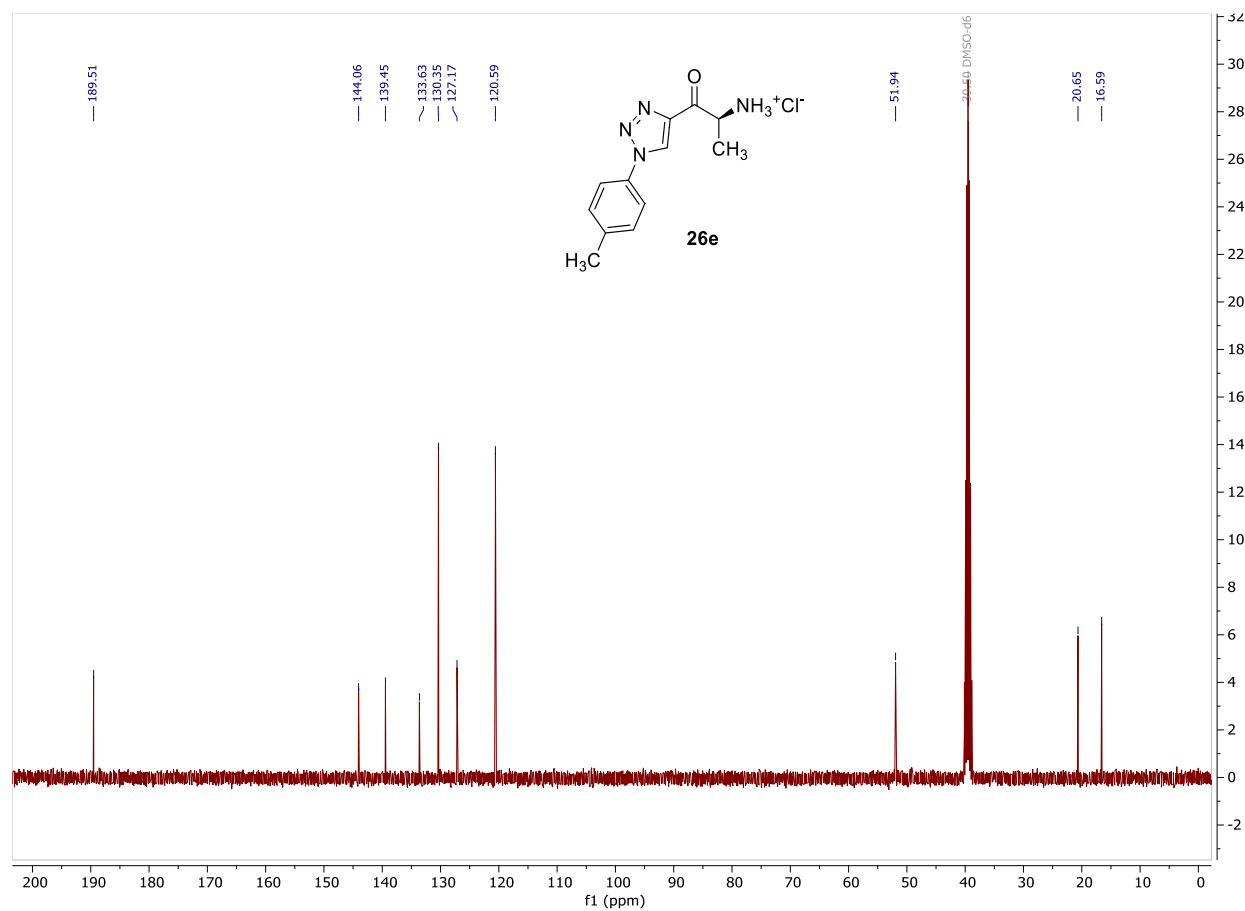
Compound **26d** ( $^{13}\text{C}$  NMR, 101 MHz):



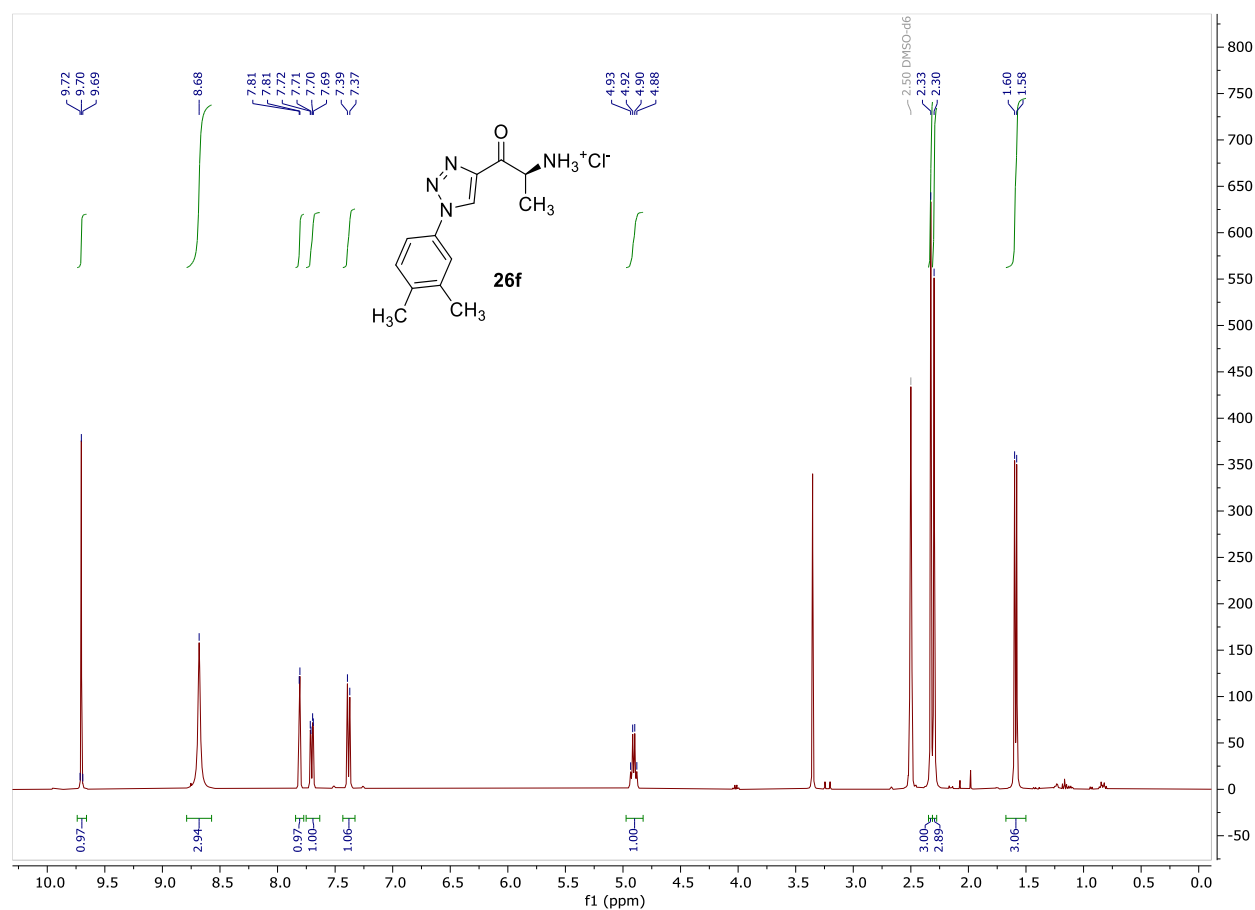
Compound **26e** ( $^1\text{H}$  NMR, 400 MHz):



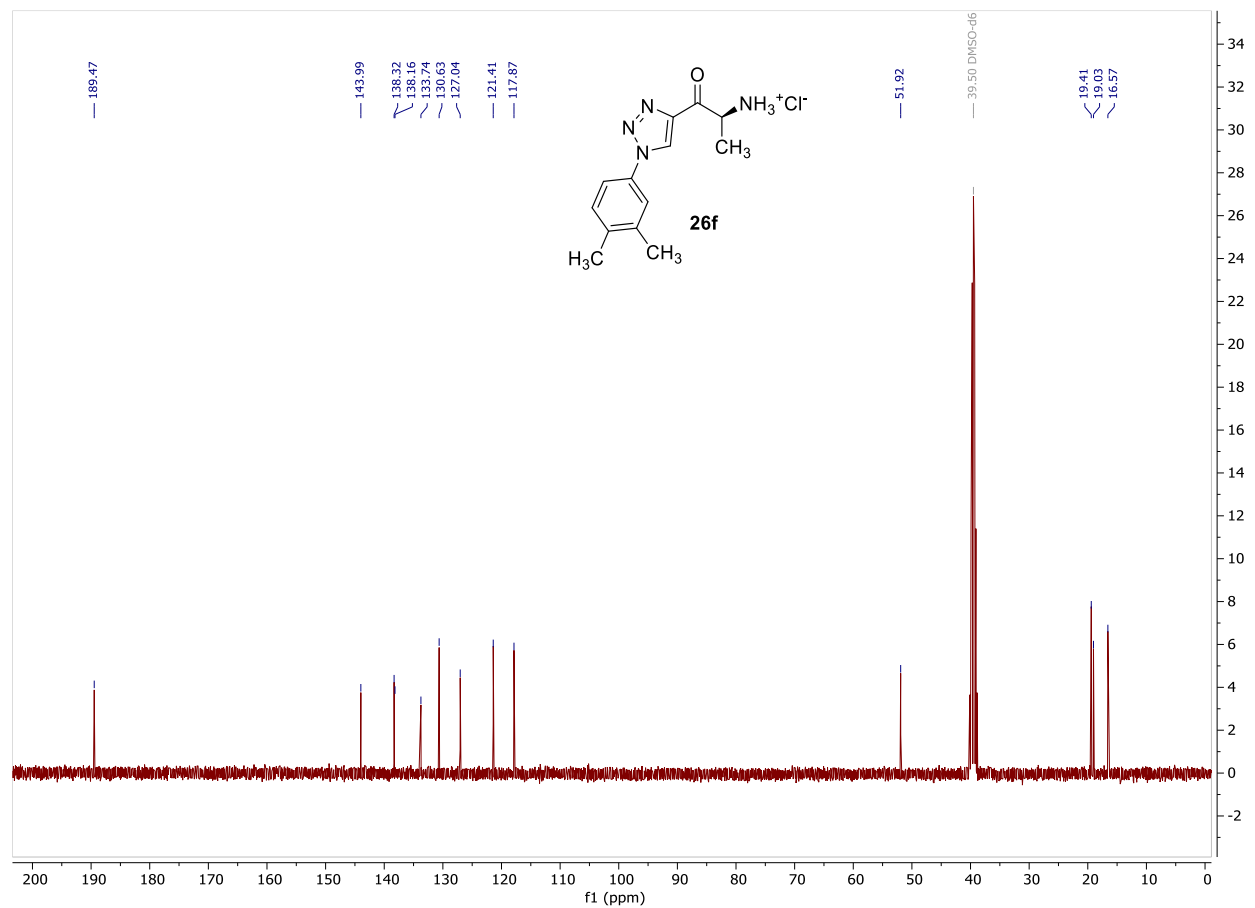
Compound **26e** ( $^{13}\text{C}$  NMR, 101 MHz):



Compound **26f** ( $^1\text{H}$  NMR, 400 MHz):

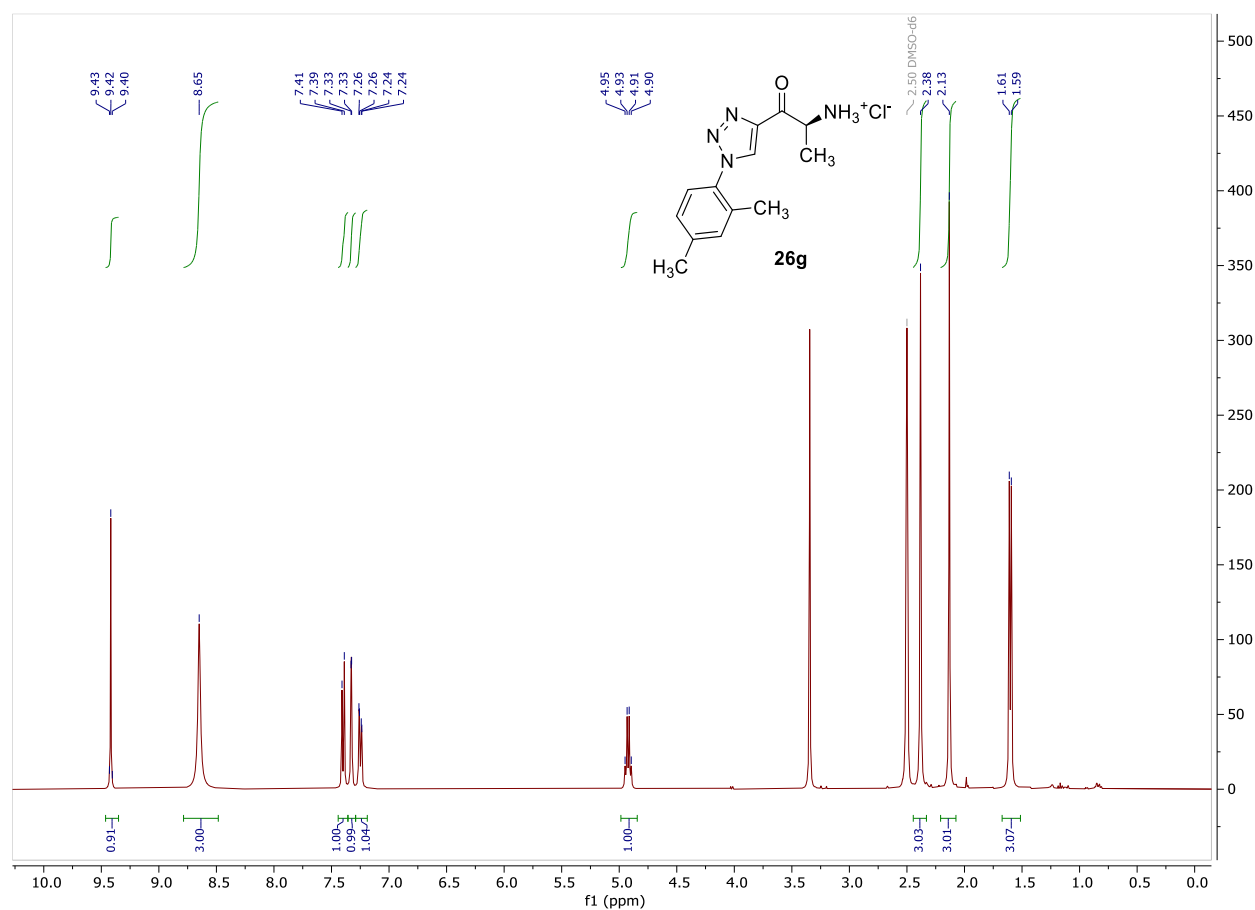


Compound **26f** ( $^{13}\text{C}$  NMR, 101 MHz):

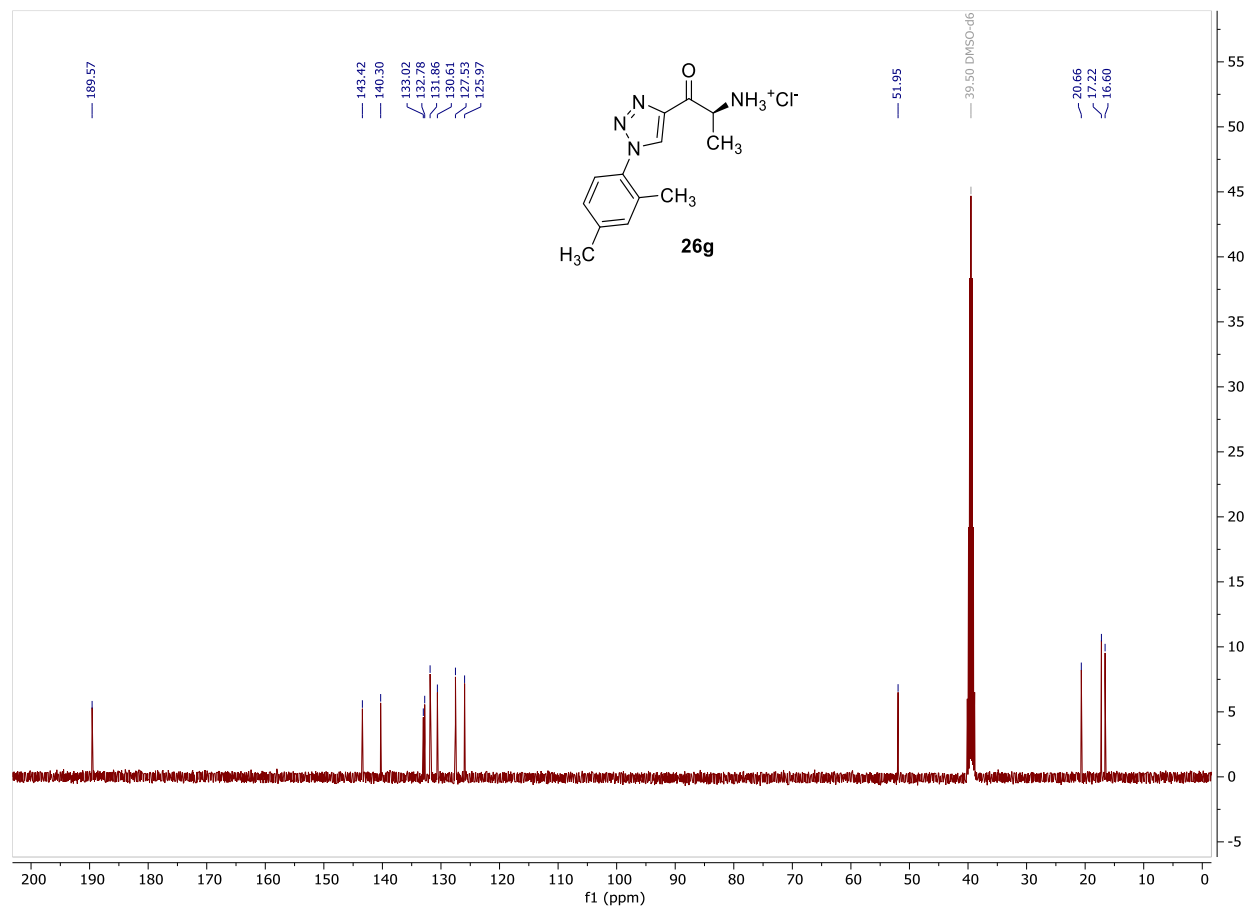




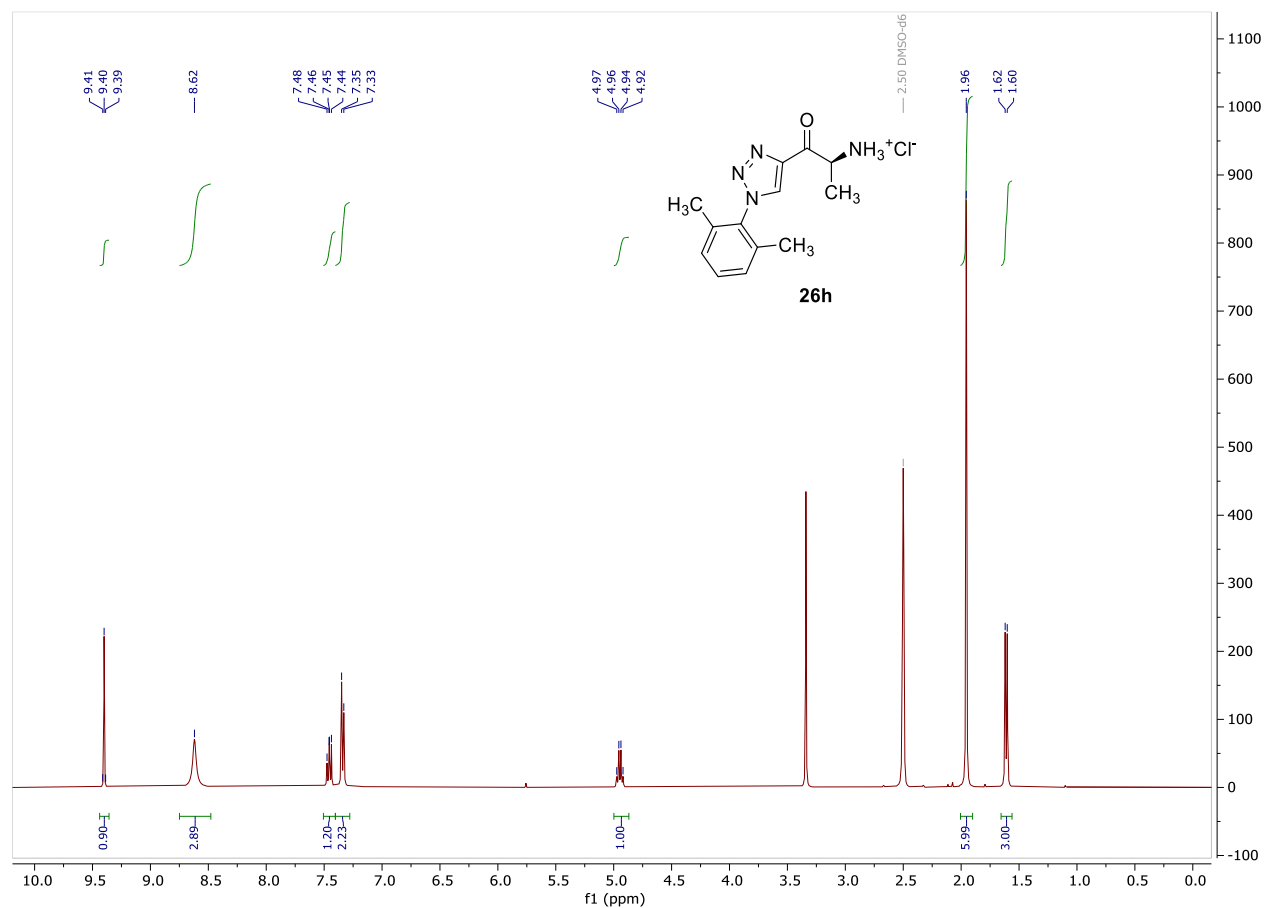
Compound **26g** ( $^1\text{H}$  NMR, 400 MHz):



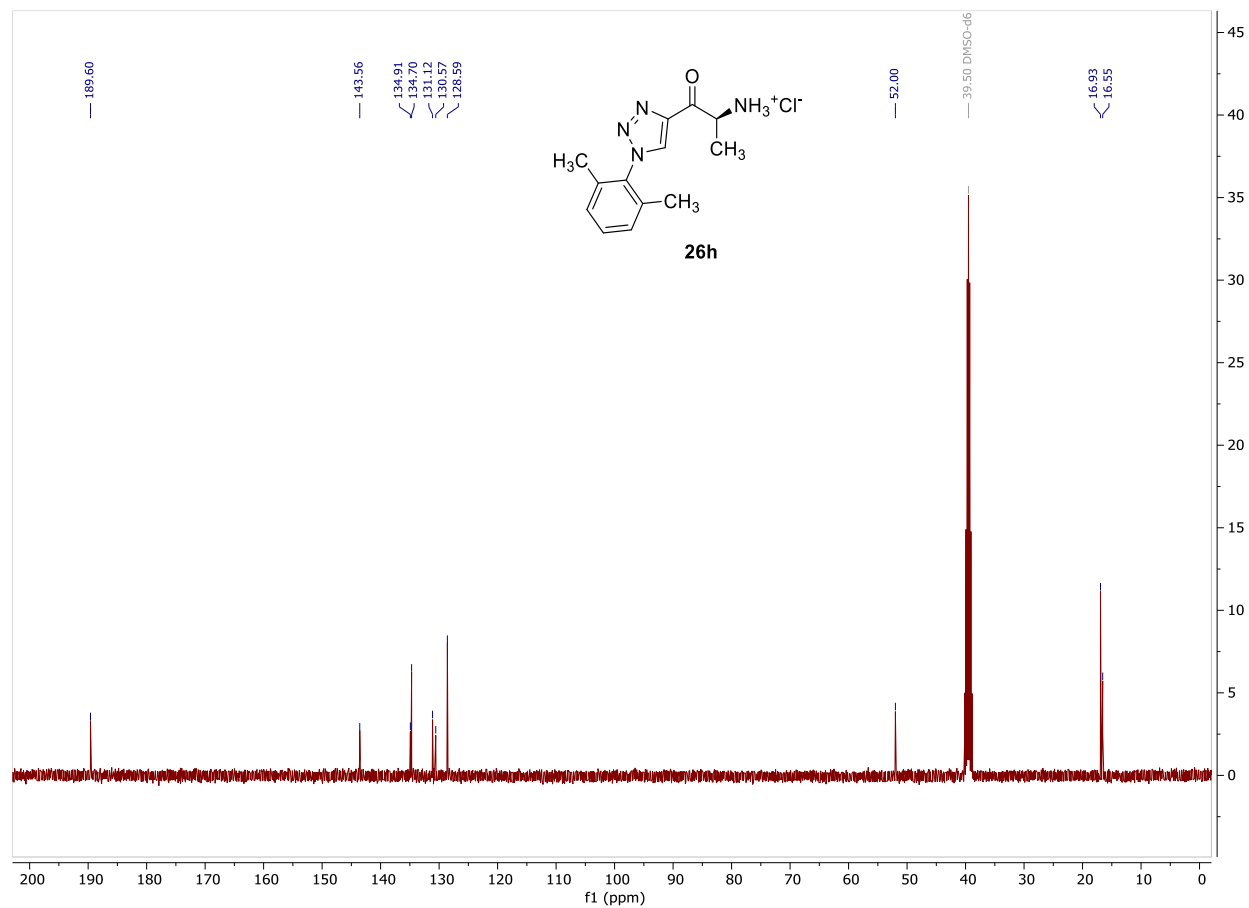
Compound **26g** ( $^{13}\text{C}$  NMR, 101 MHz):



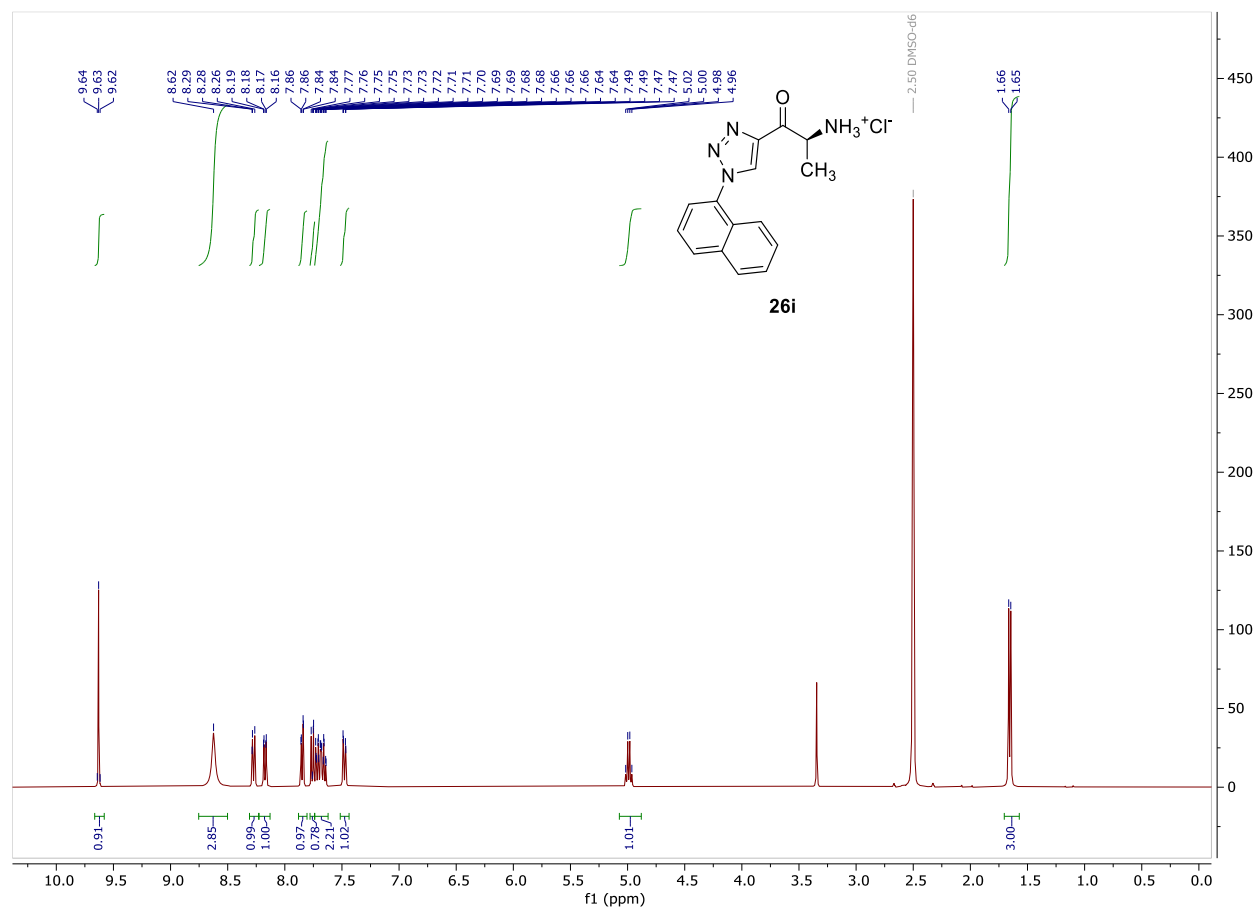
Compound **26h** ( $^1\text{H}$  NMR, 400 MHz):



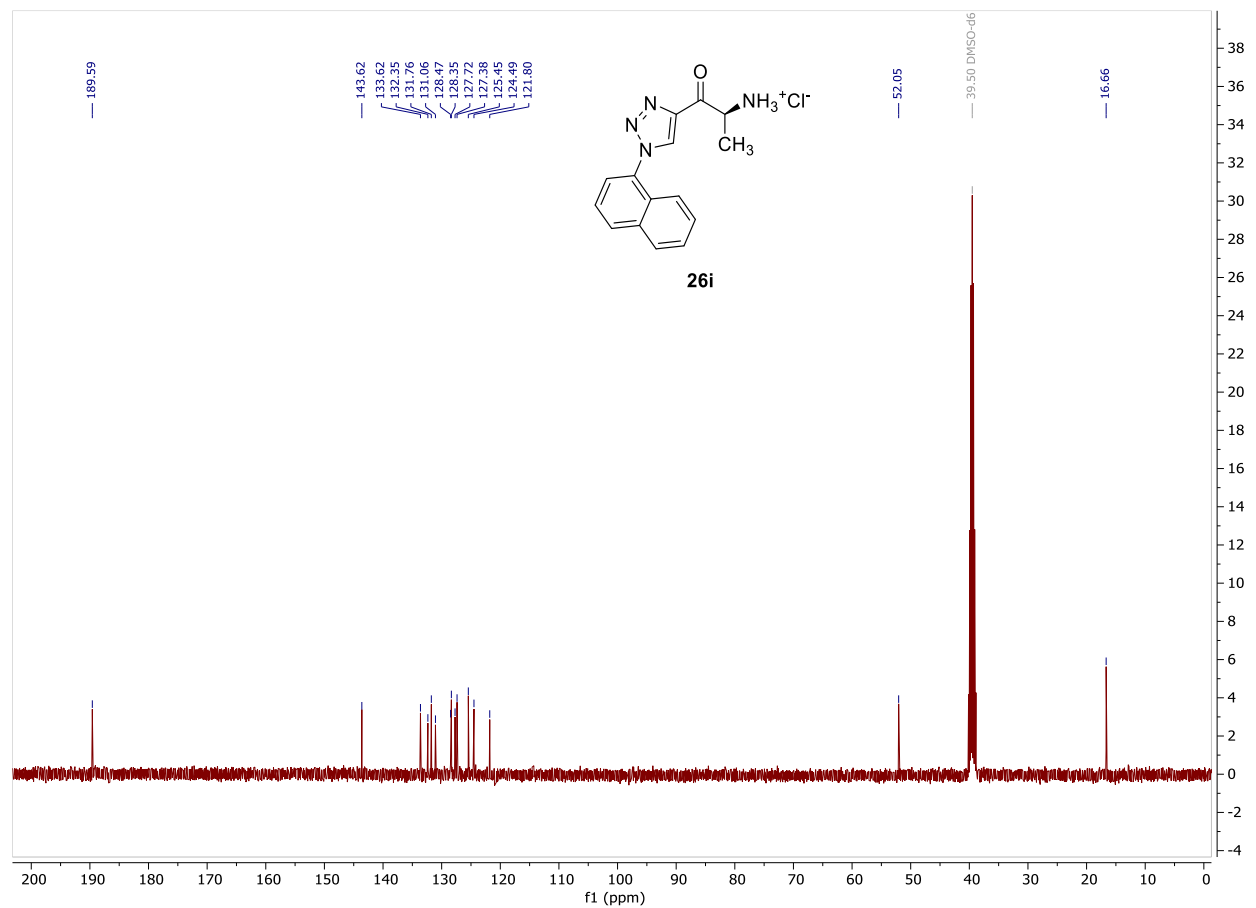
Compound **26h** ( $^{13}\text{C}$  NMR, 101 MHz):



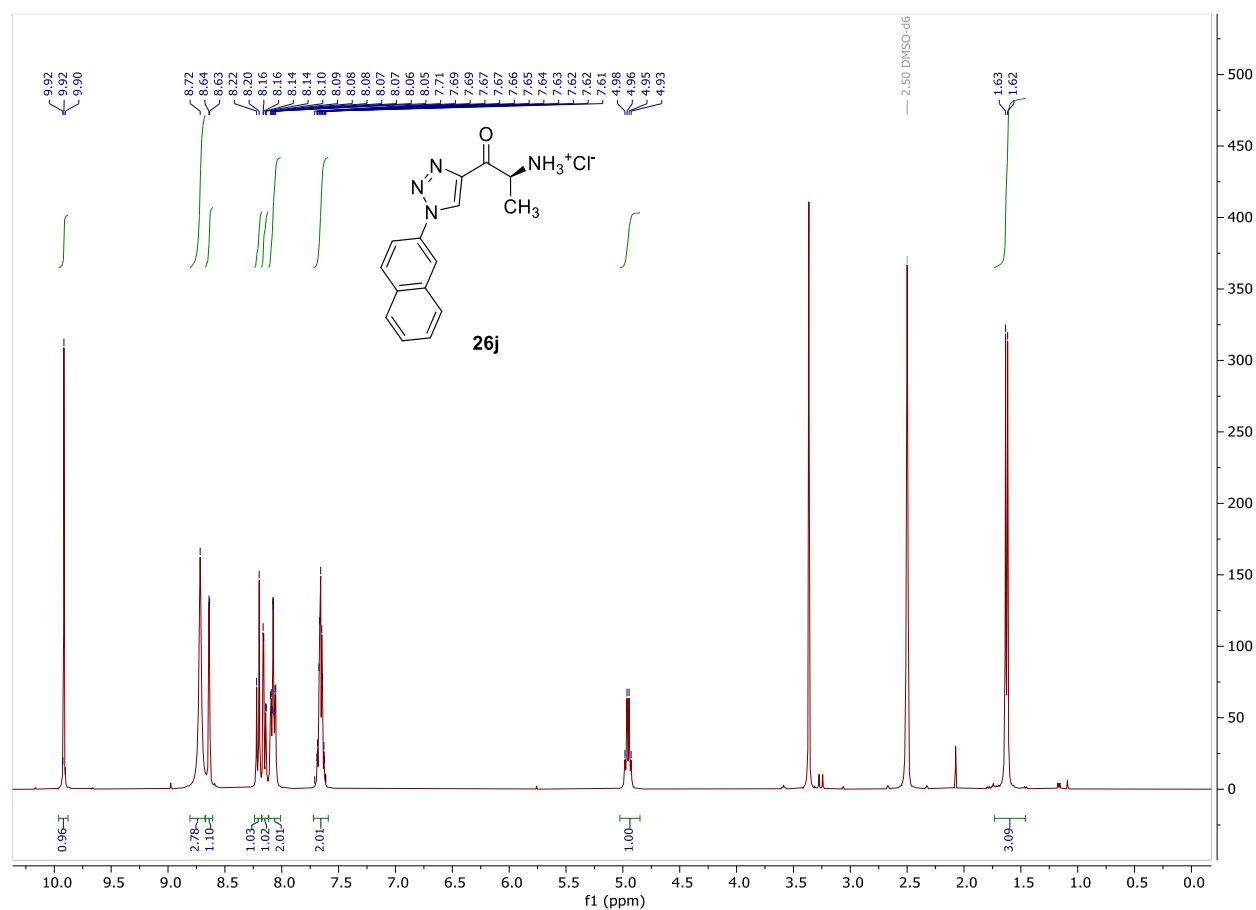
Compound **26i** ( $^1\text{H}$  NMR, 400 MHz):



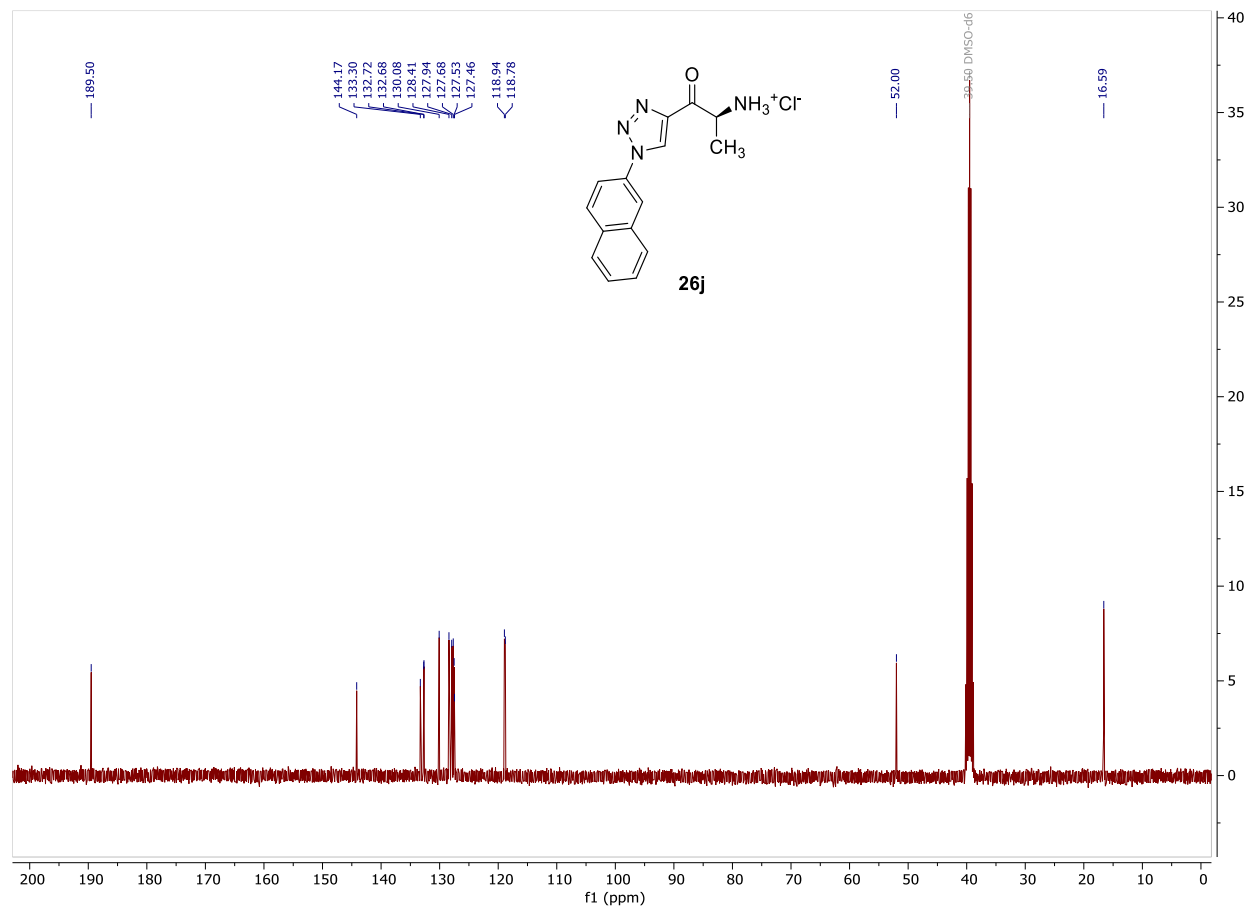
Compound **26i** ( $^{13}\text{C}$  NMR, 101 MHz):



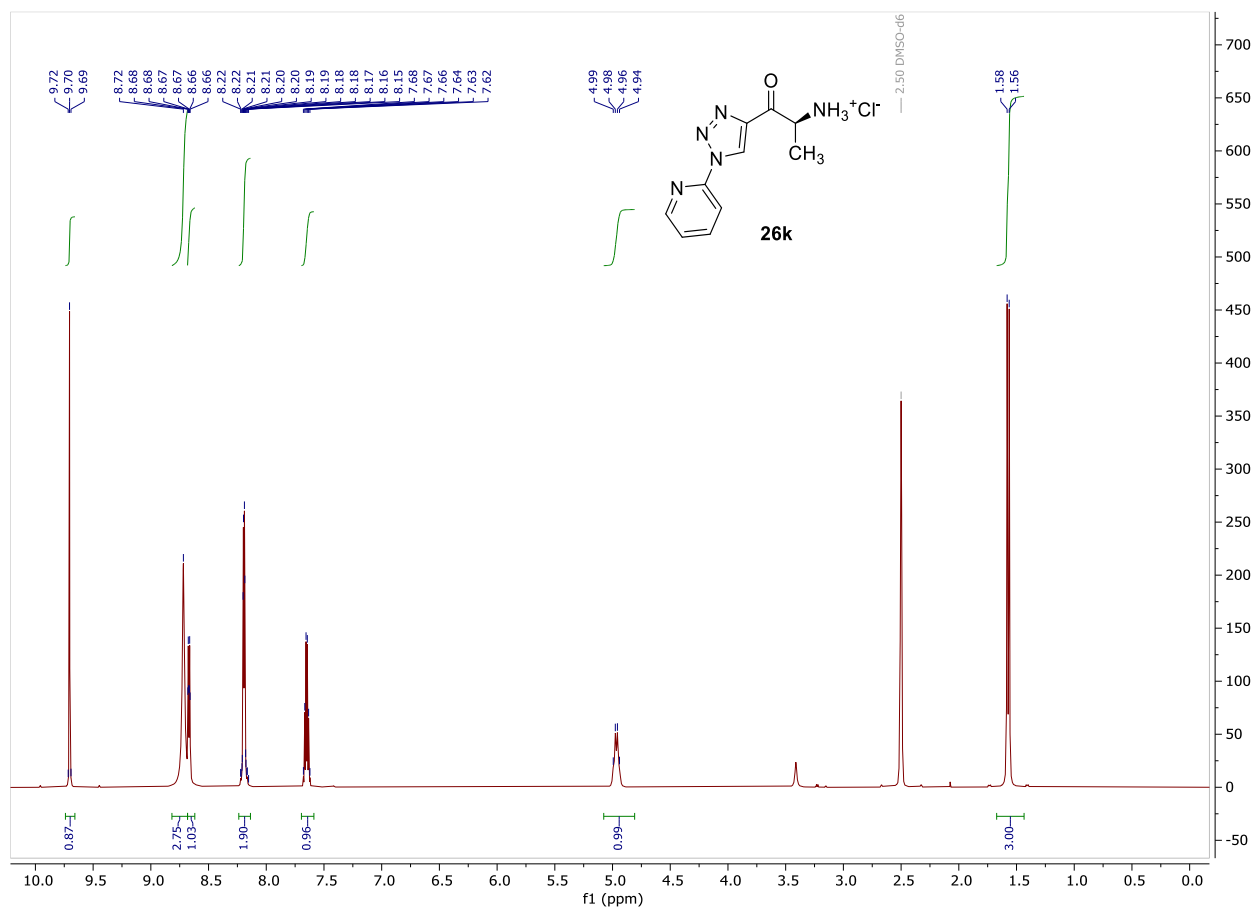
Compound **26j** ( $^1\text{H}$  NMR, 400 MHz):



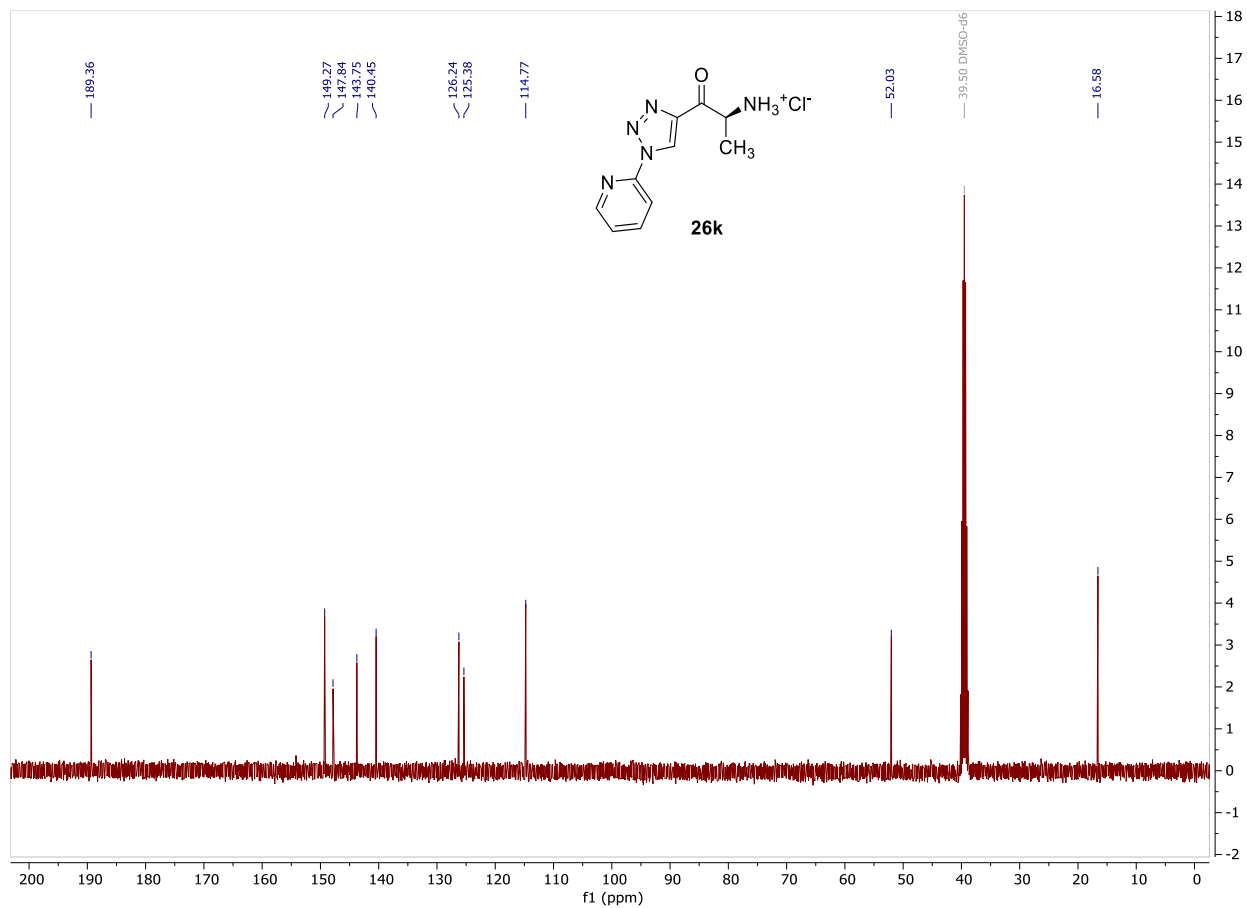
Compound **26j** ( $^{13}\text{C}$  NMR, 101 MHz):



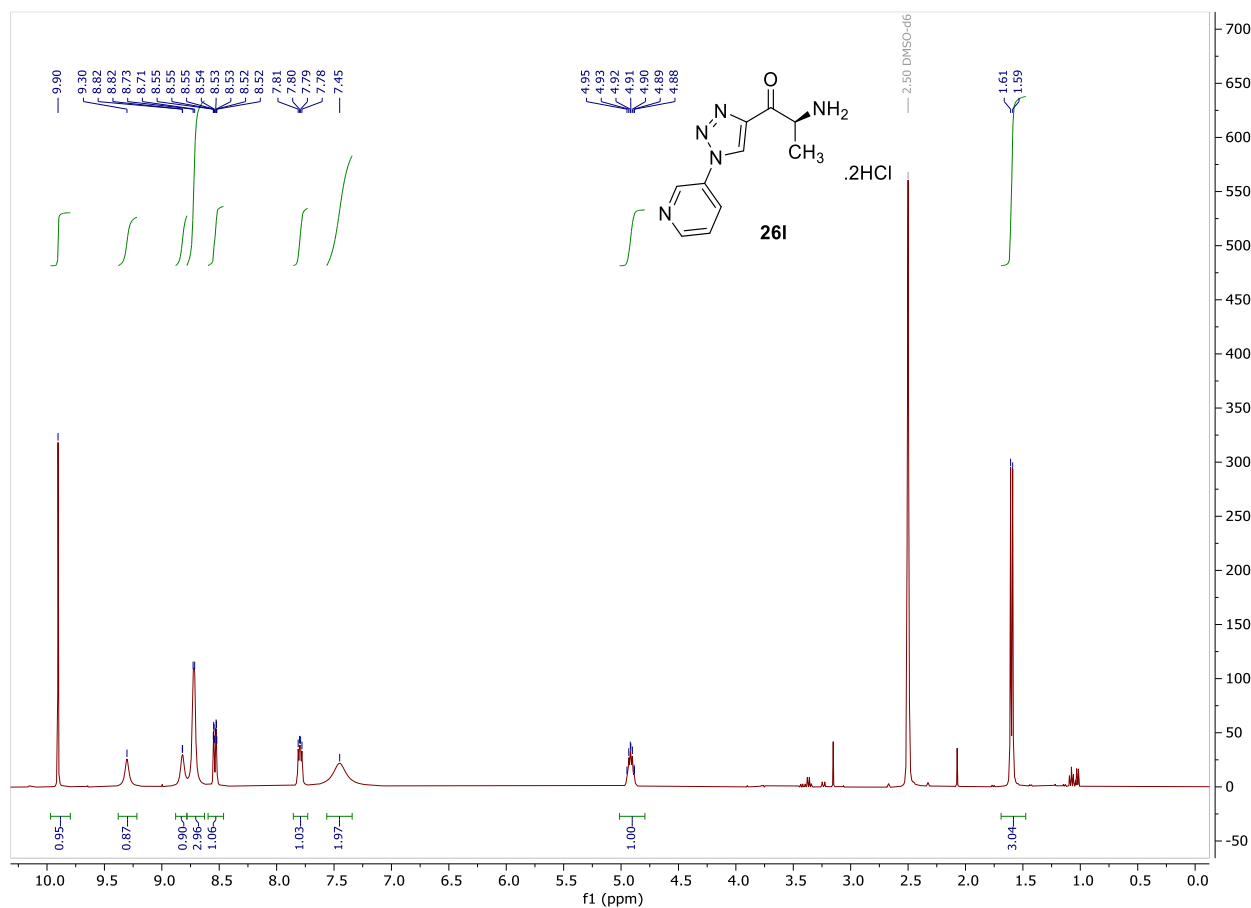
Compound **26k** ( $^1\text{H}$  NMR, 400 MHz):



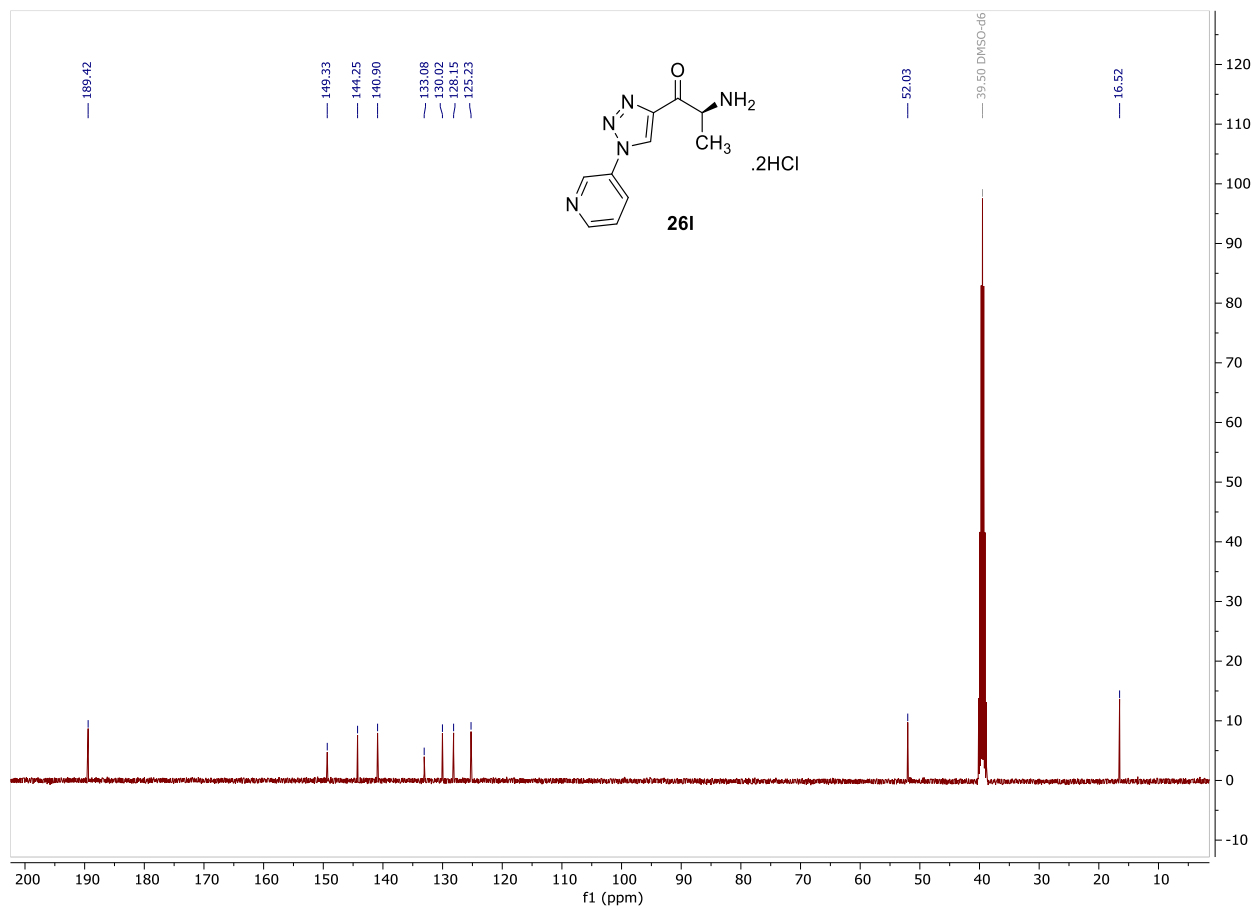
Compound **26k** ( $^{13}\text{C}$  NMR, 101 MHz):



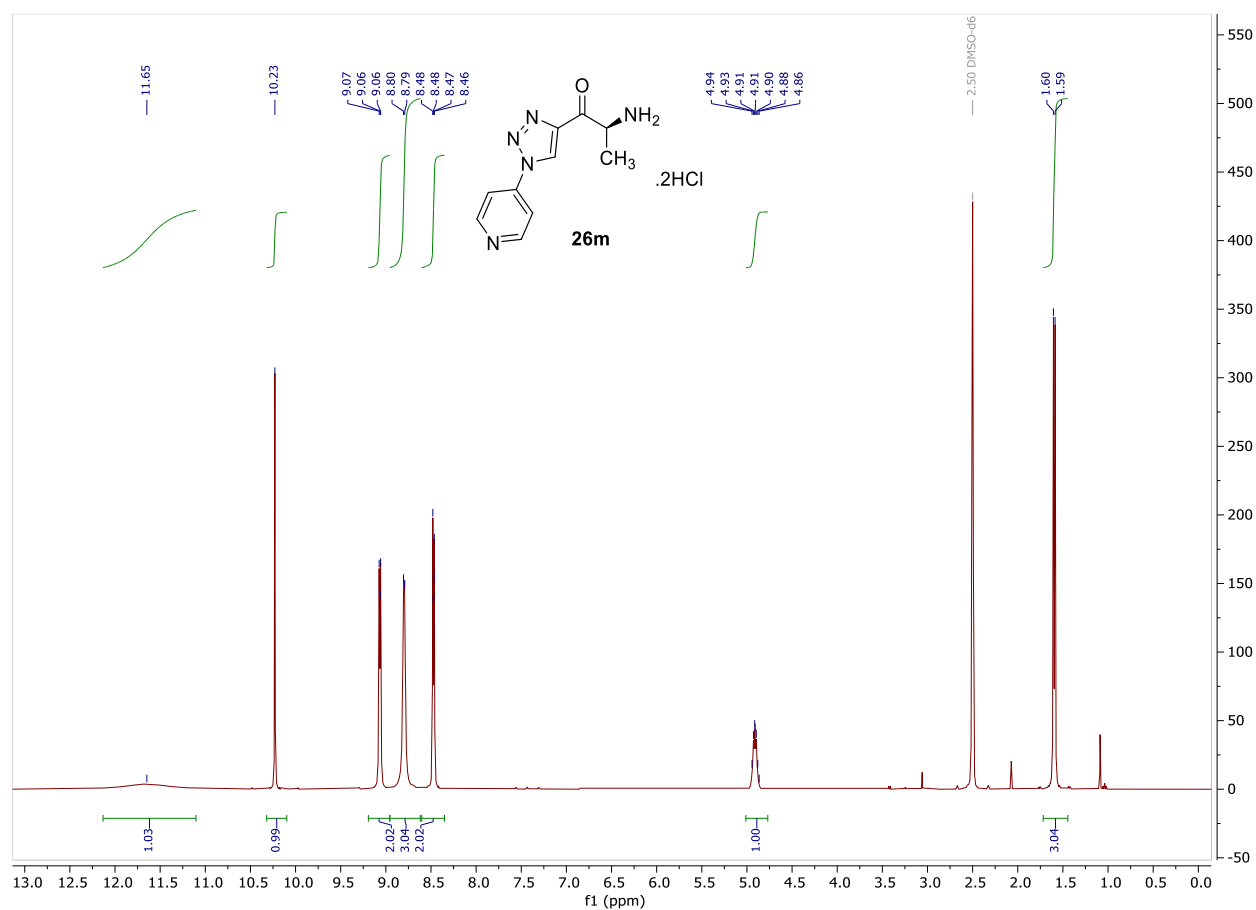
Compound **26l** ( $^1\text{H}$  NMR, 400 MHz):



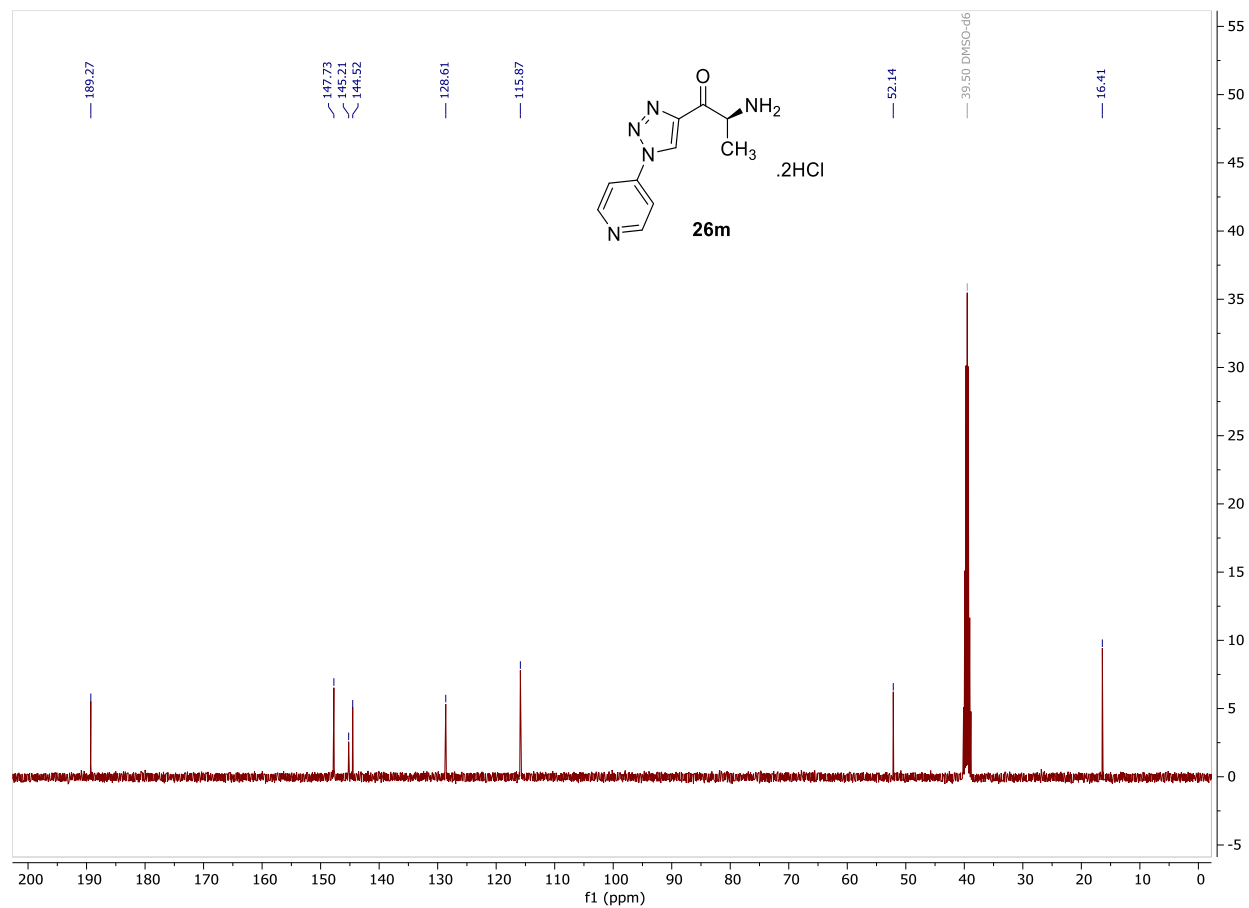
Compound **26l** ( $^{13}\text{C}$  NMR, 101 MHz):



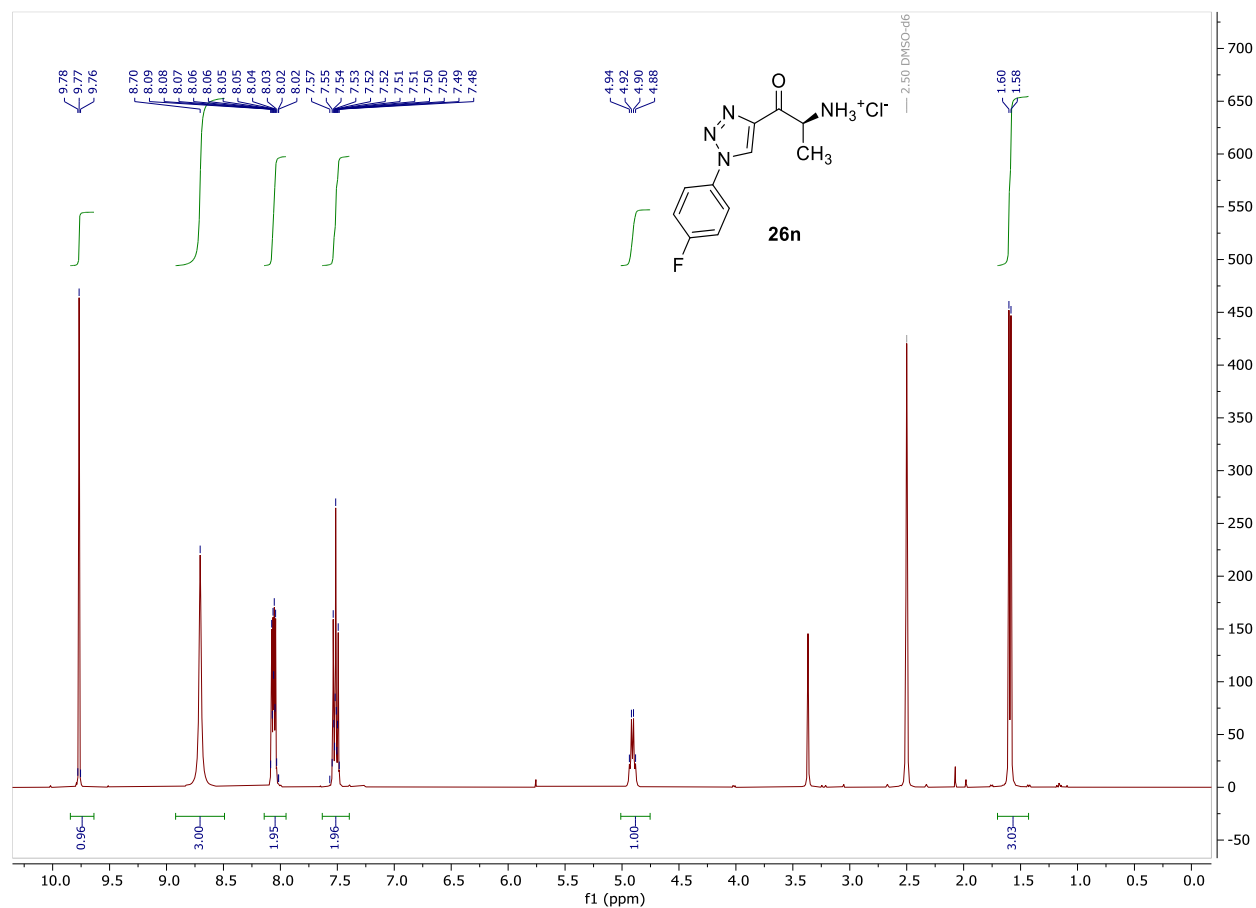
Compound **26m** ( $^1\text{H}$  NMR, 400 MHz):



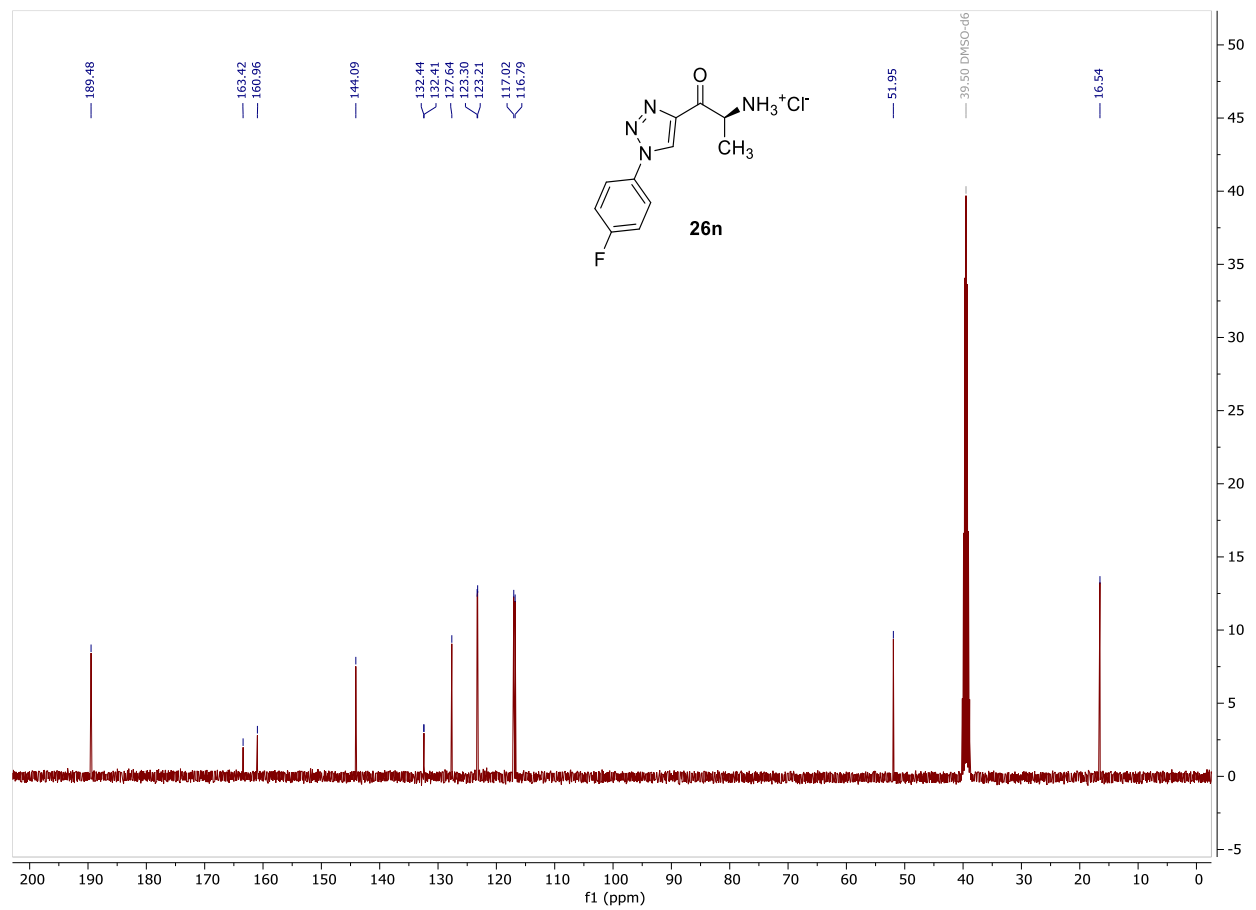
Compound **26m** ( $^{13}\text{C}$  NMR, 101 MHz):



Compound **26n** ( $^1\text{H}$  NMR, 400 MHz):

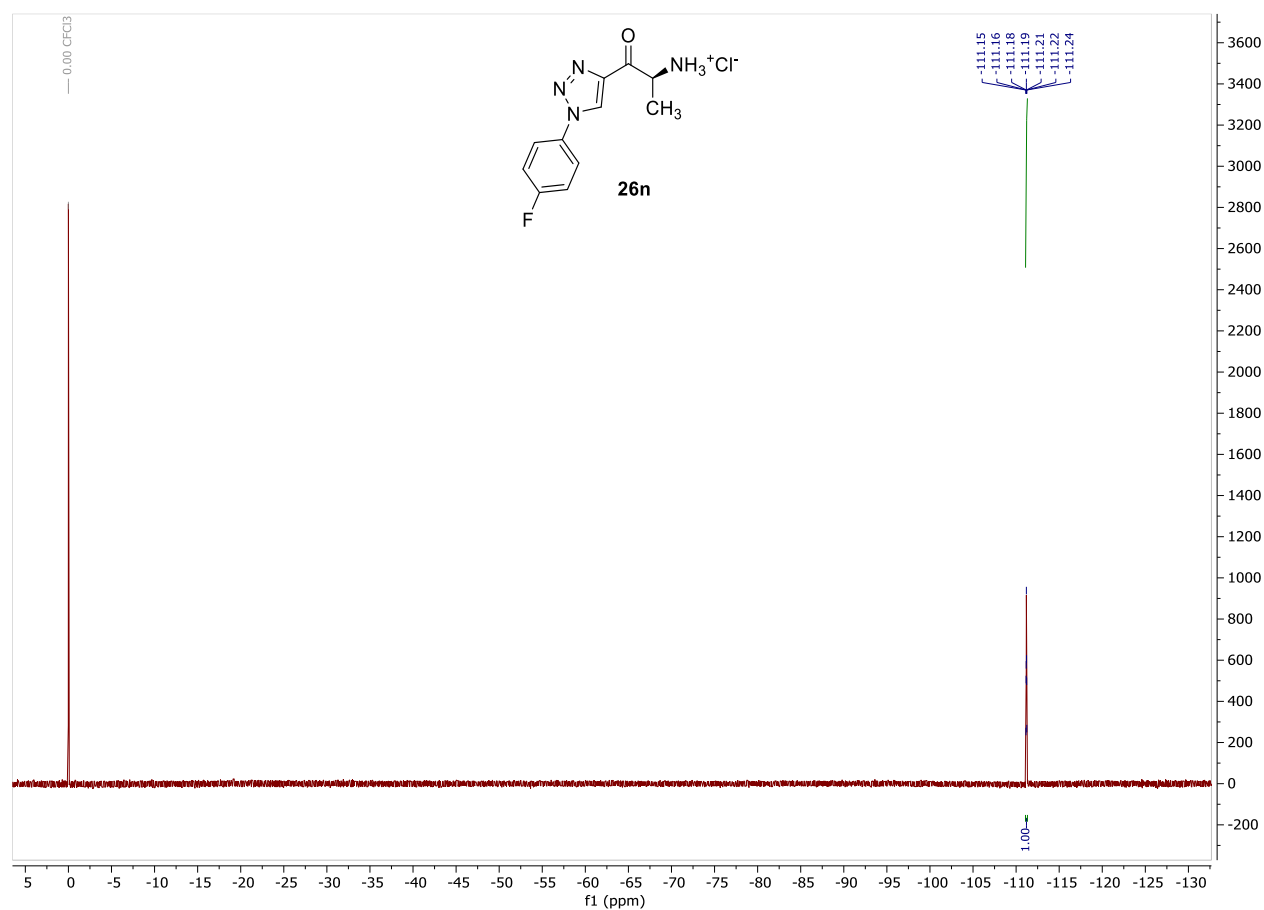


Compound **26n** ( $^{13}\text{C}$  NMR, 101 MHz):

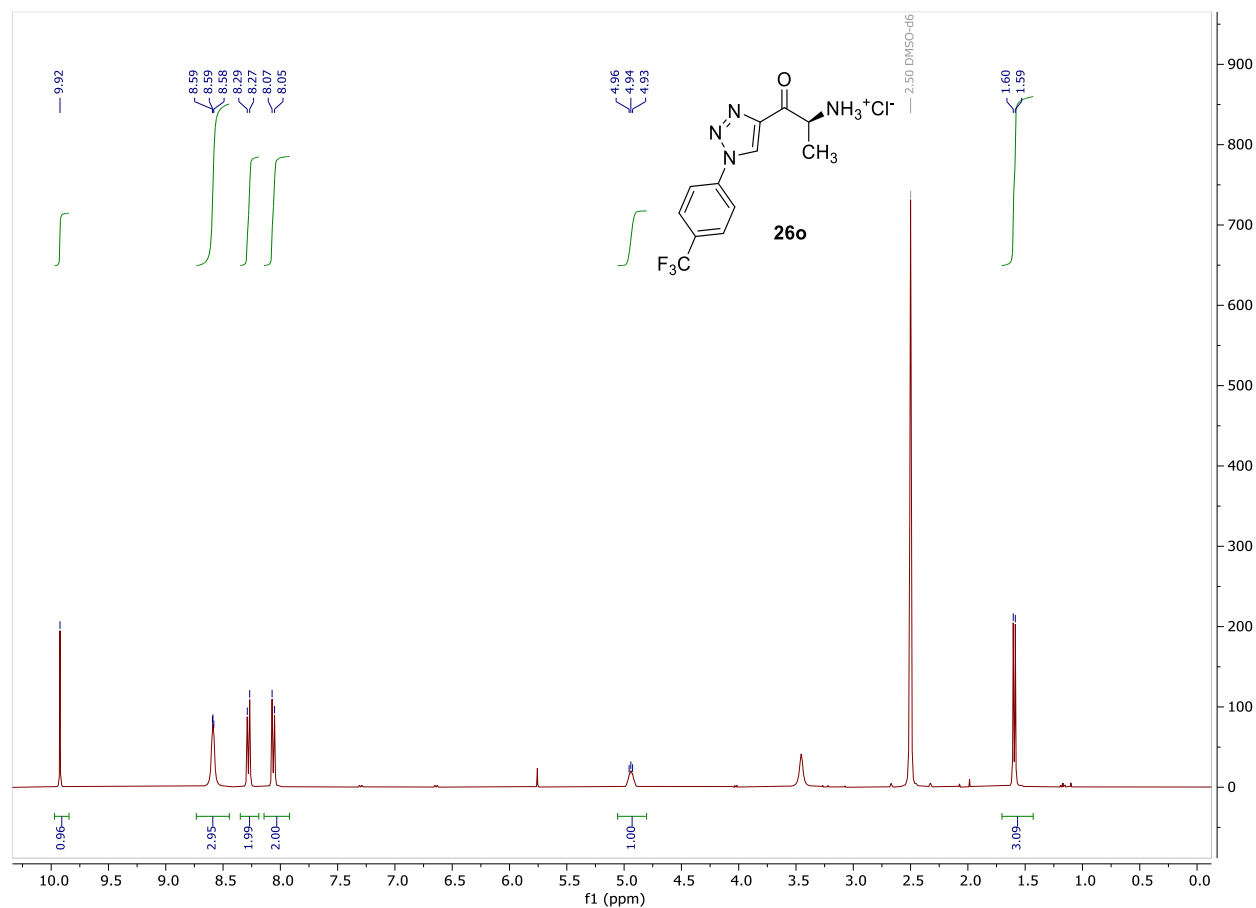




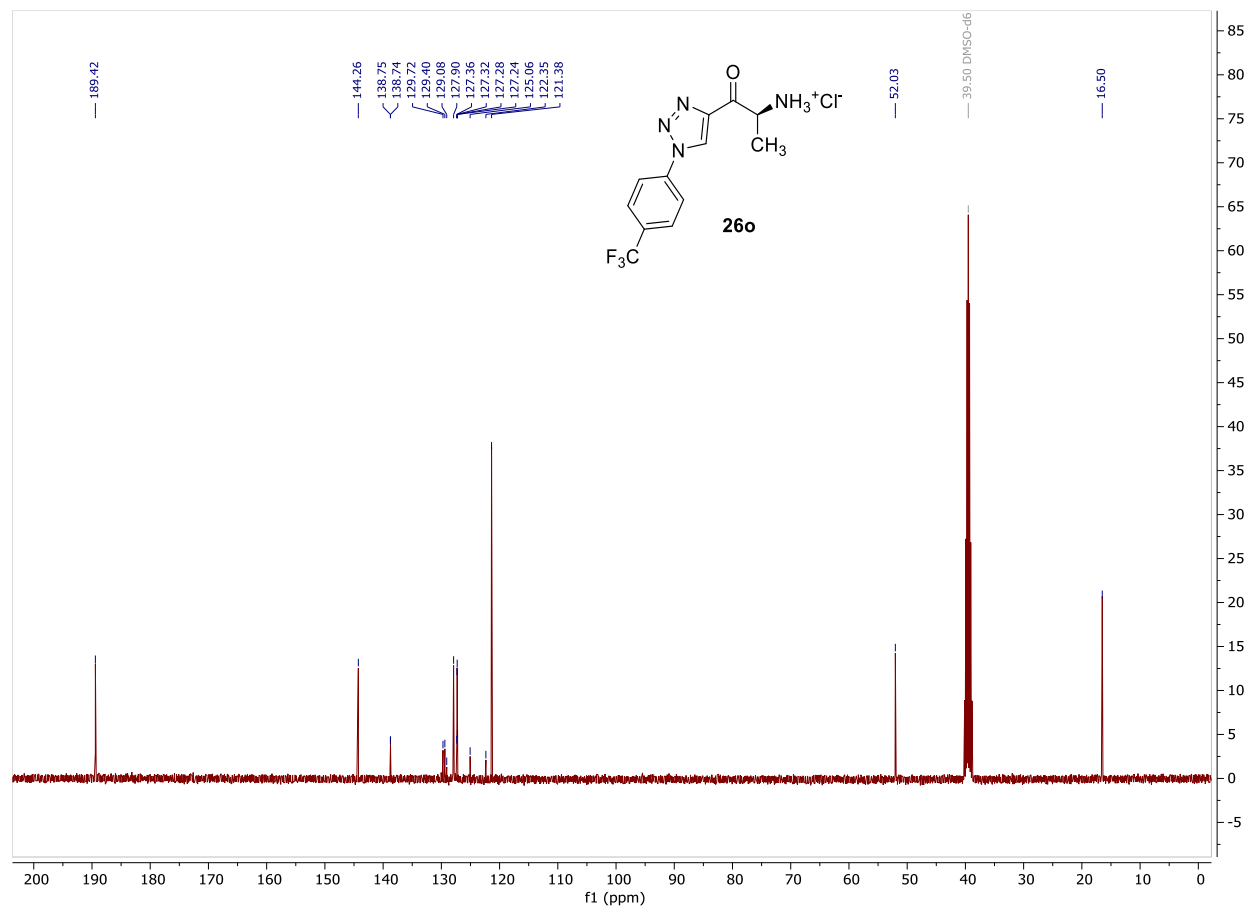
Compound **26n** ( $^{19}\text{F}$  NMR, 282 MHz):



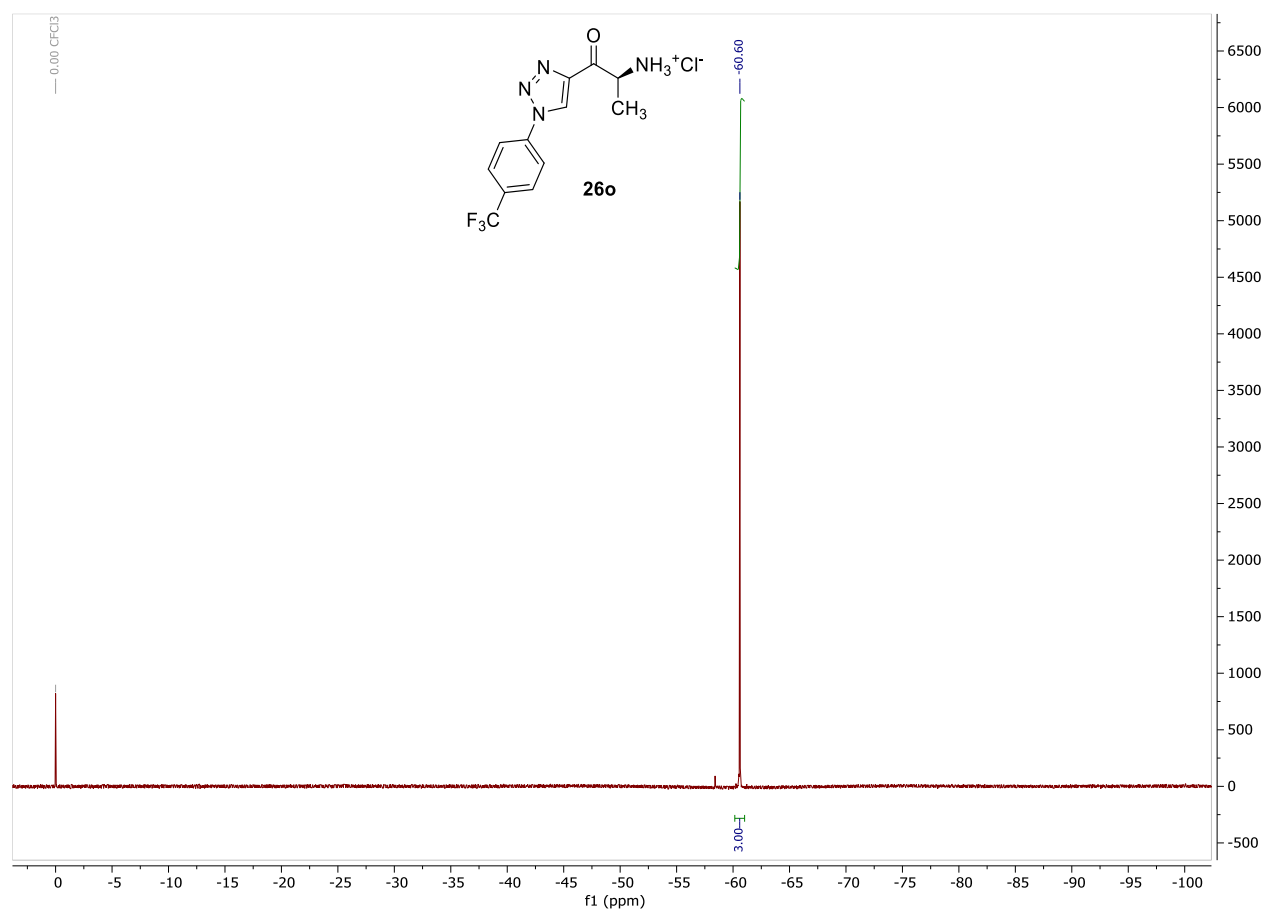
Compound **26o** ( $^1\text{H}$  NMR, 400 MHz):



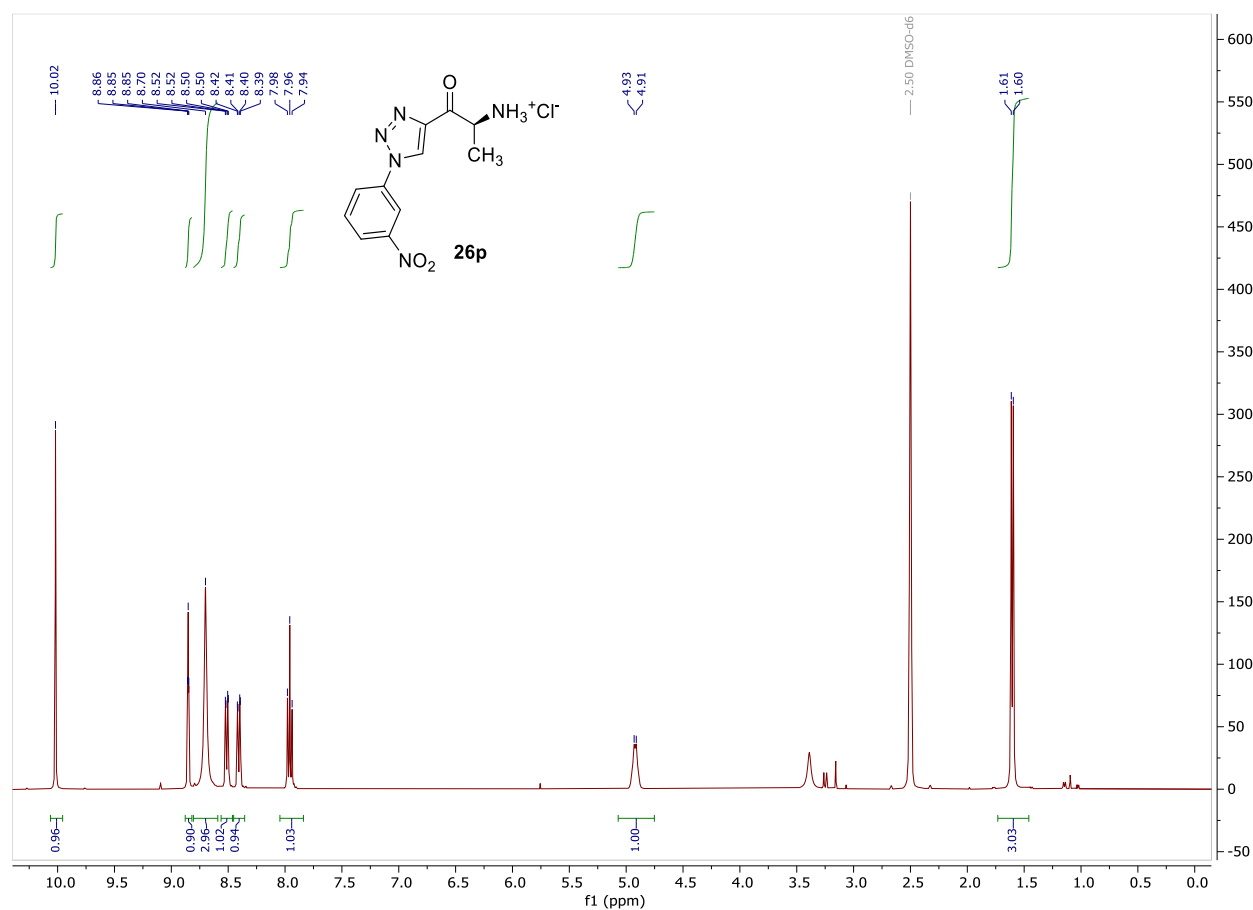
Compound **26o** ( $^{13}\text{C}$  NMR, 101 MHz):



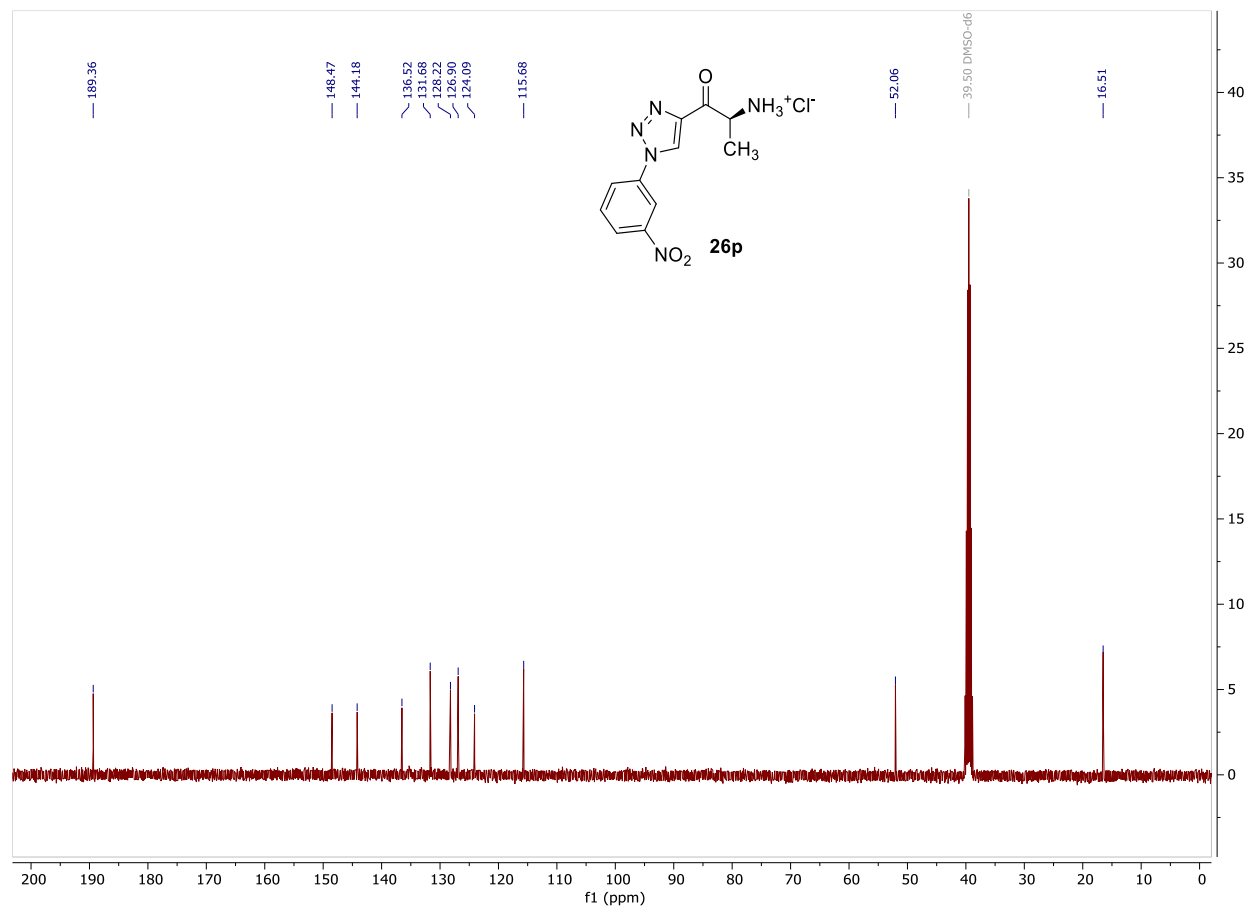
Compound **26o** ( $^{19}\text{F}$  NMR, 282 MHz):



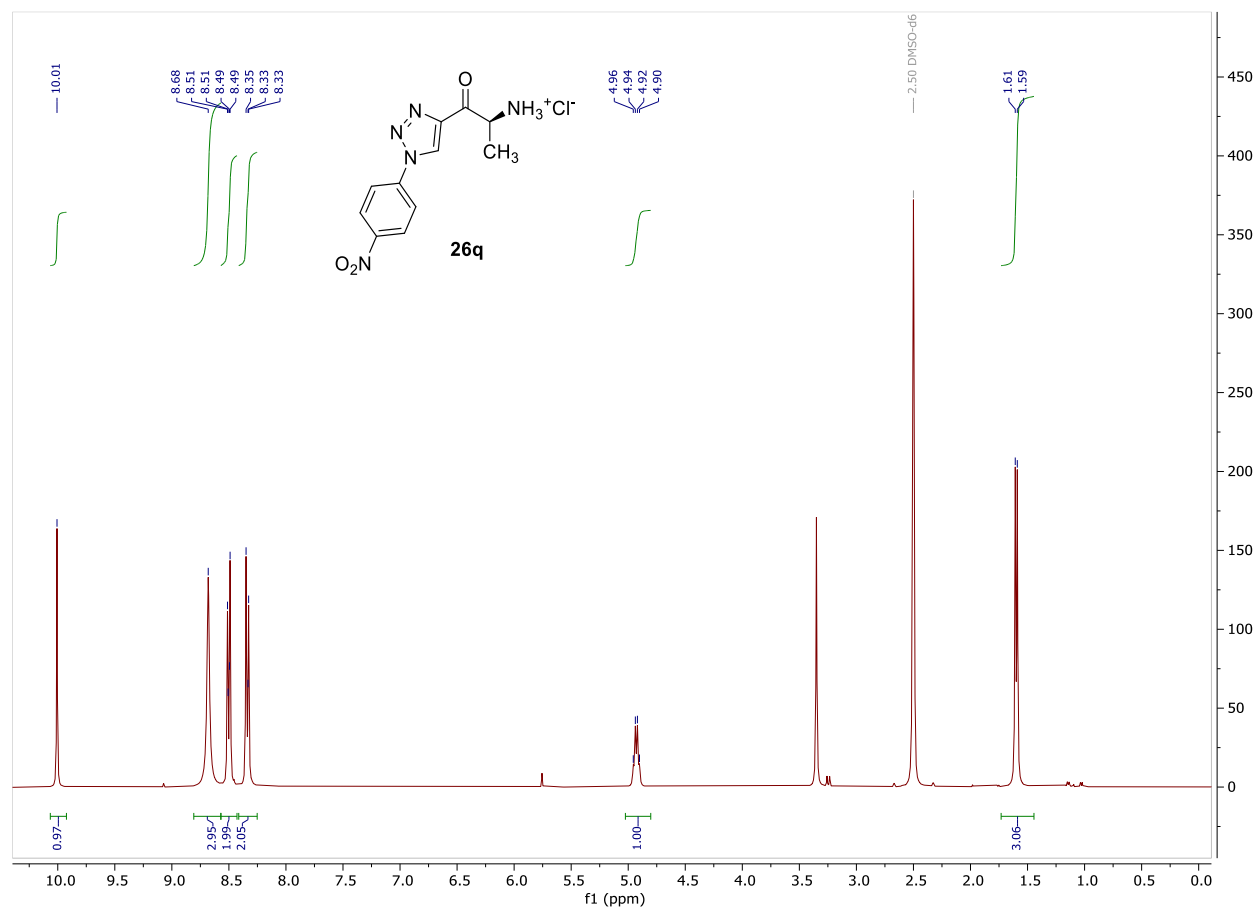
Compound **26p** ( $^1\text{H}$  NMR, 400 MHz):



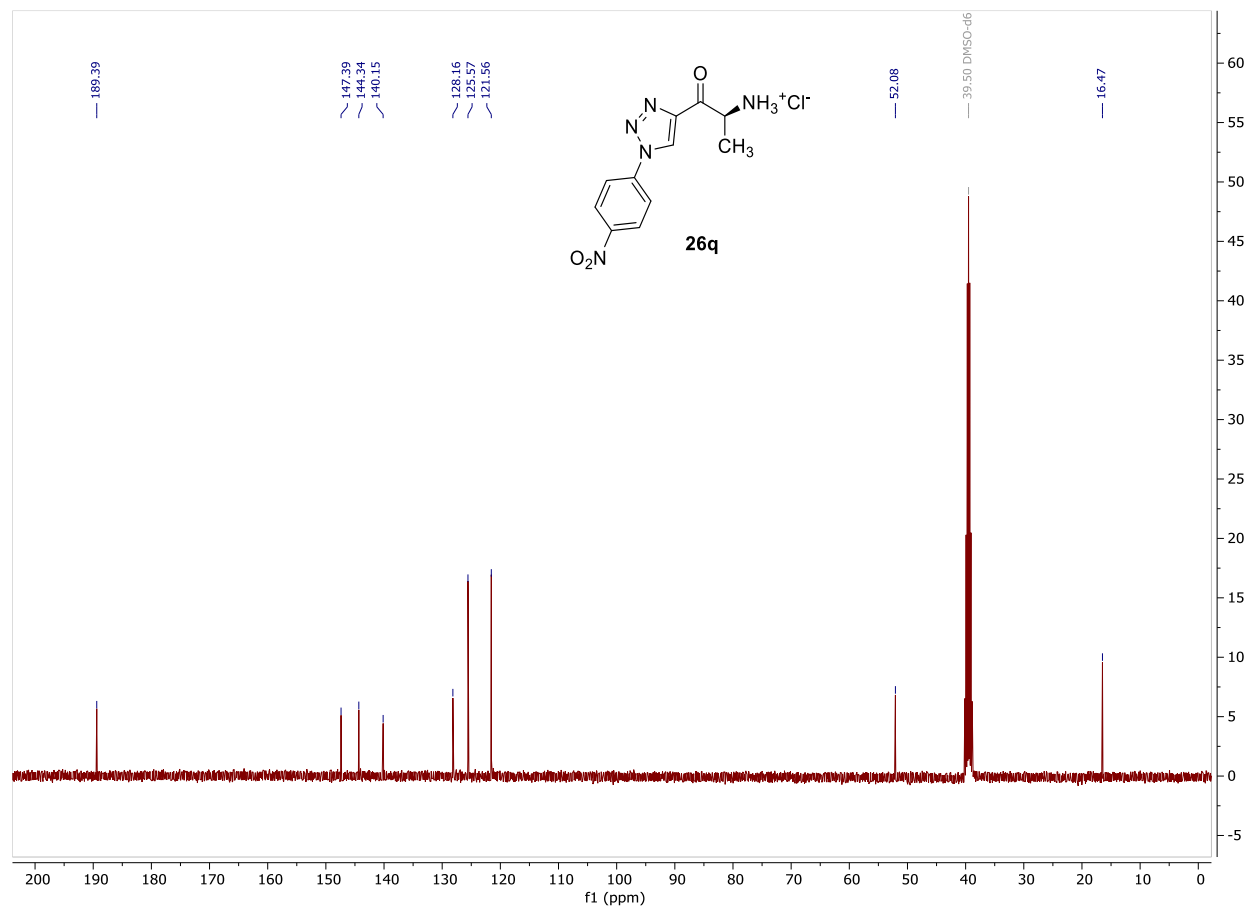
Compound **26p** ( $^{13}\text{C}$  NMR, 101 MHz):



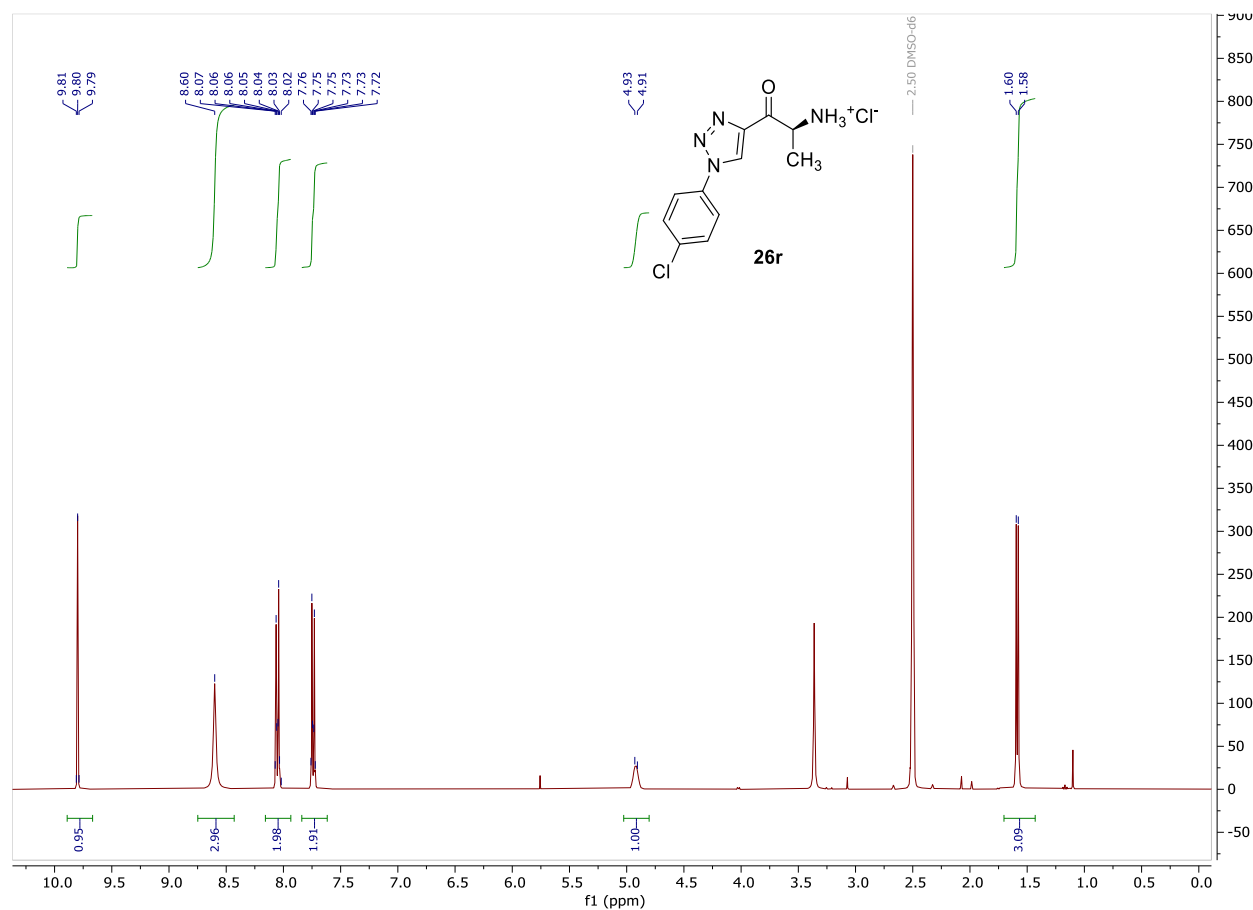
Compound **26q** ( $^1\text{H}$  NMR, 400 MHz):



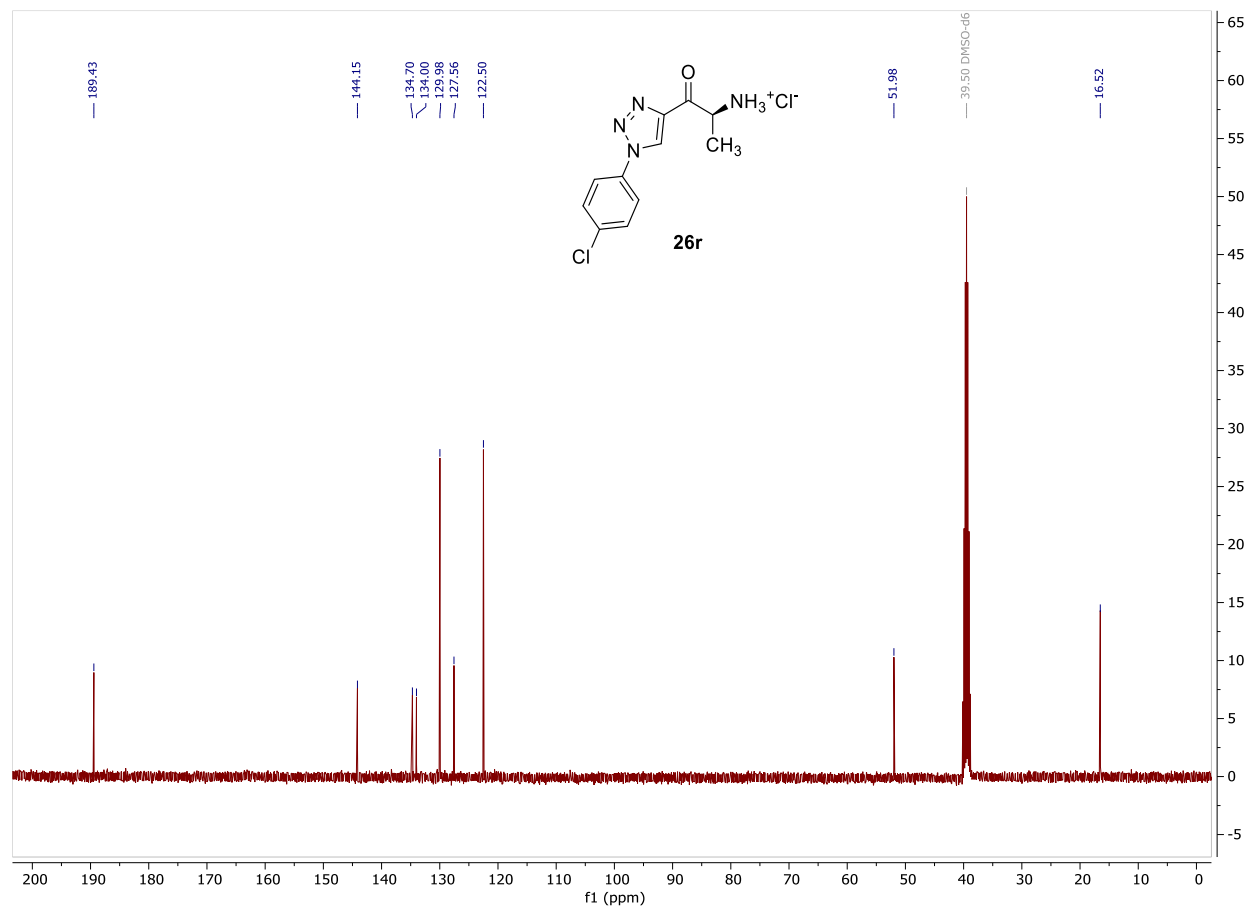
Compound **26q** ( $^{13}\text{C}$  NMR, 101 MHz):



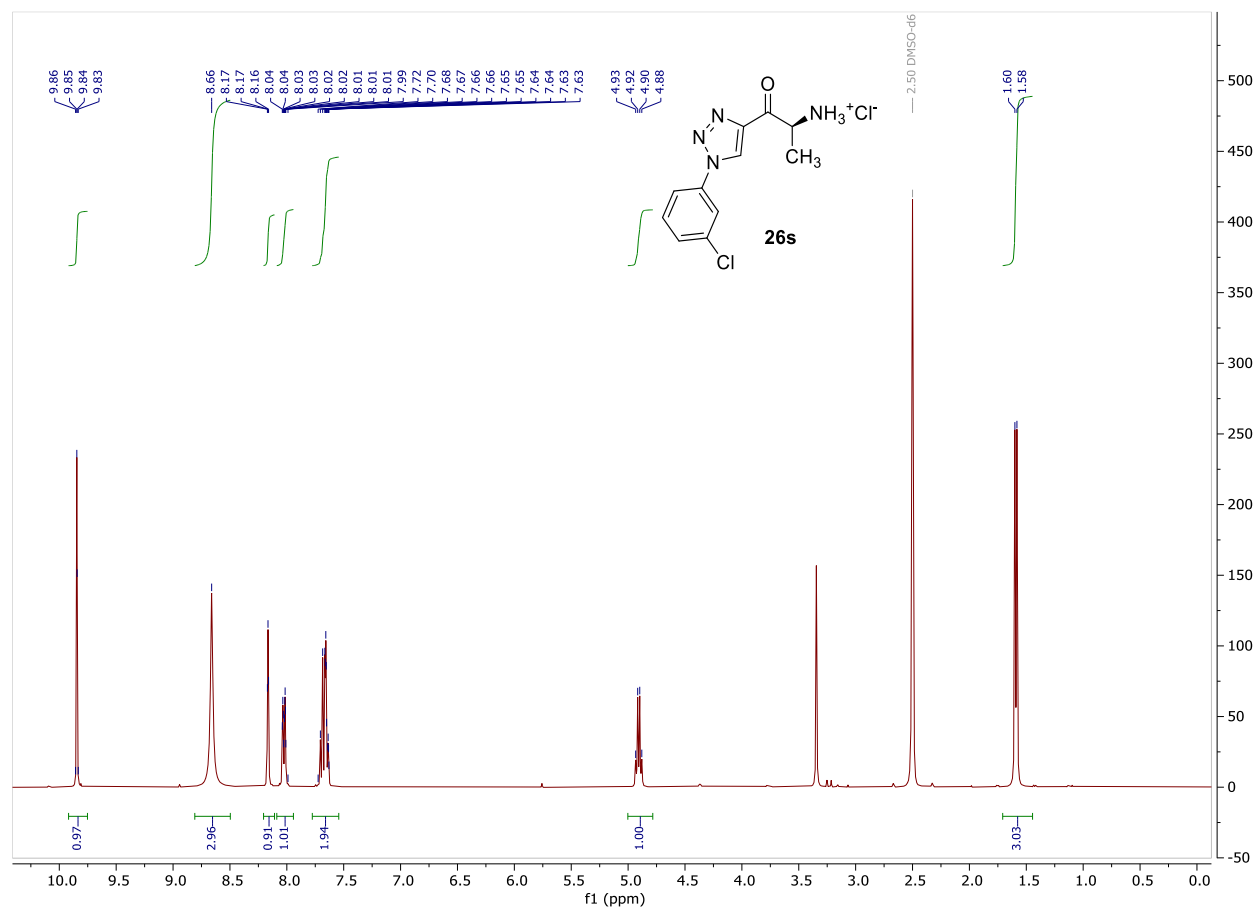
Compound **26r** ( $^1\text{H}$  NMR, 400 MHz):



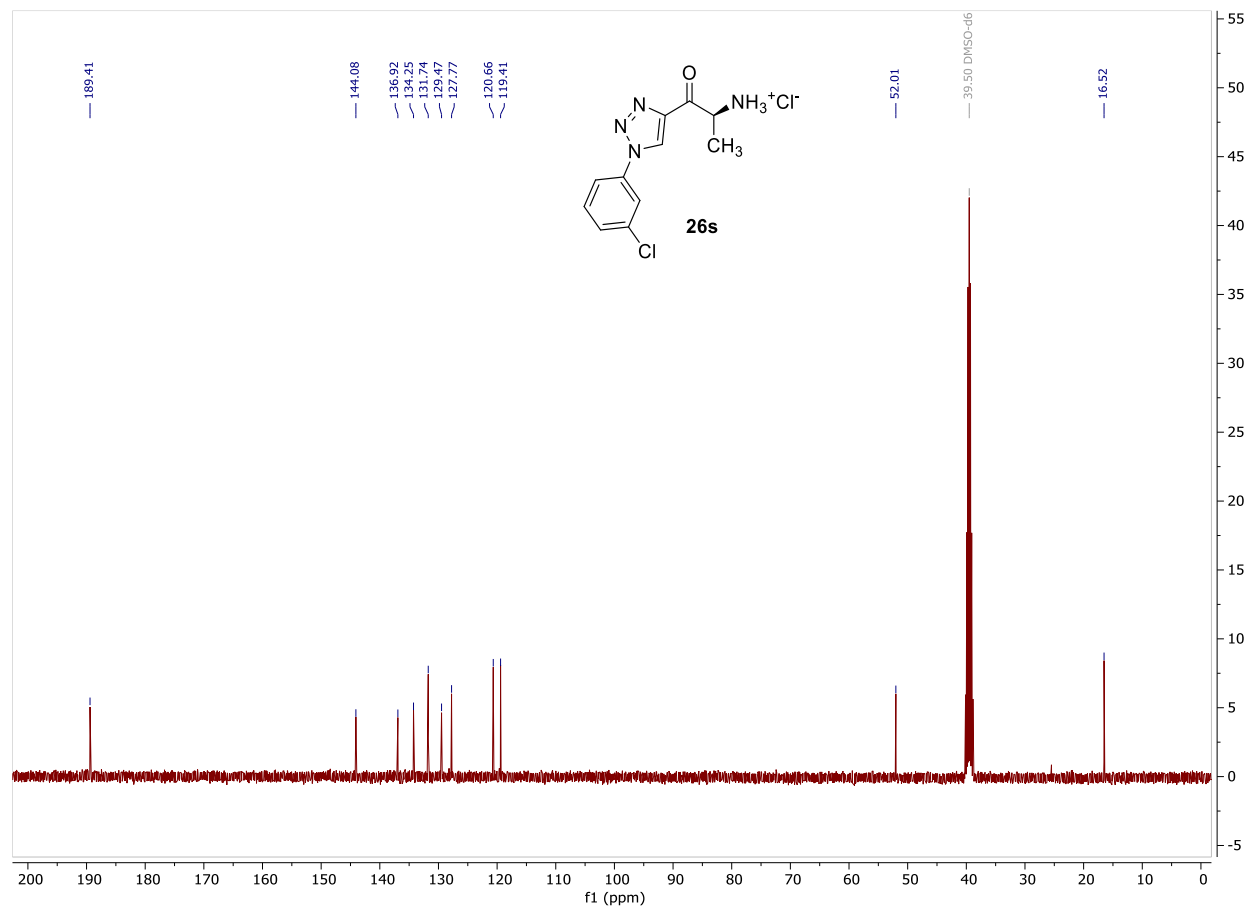
Compound **26r** ( $^{13}\text{C}$  NMR, 101 MHz):



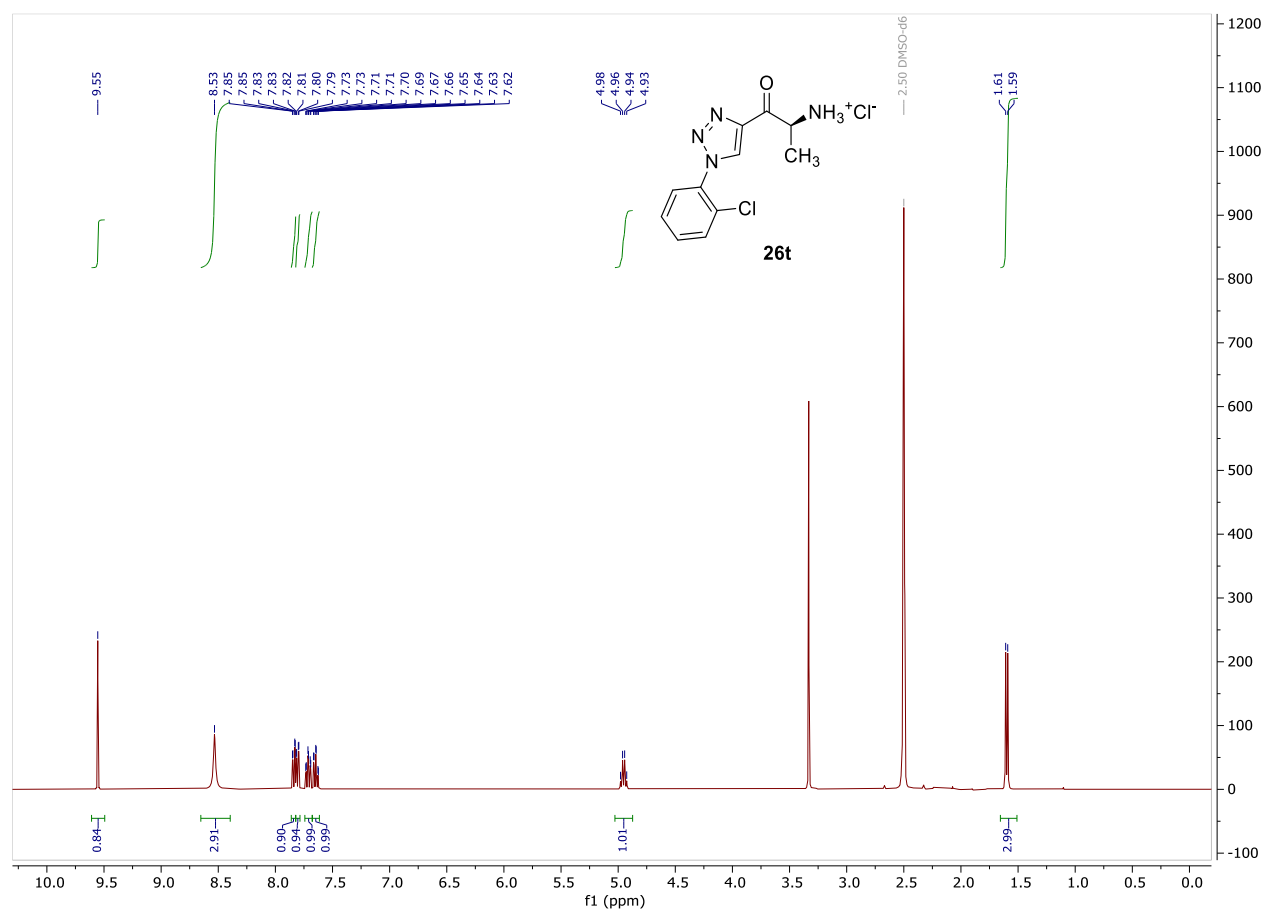
Compound **26s** ( $^1\text{H}$  NMR, 400 MHz):



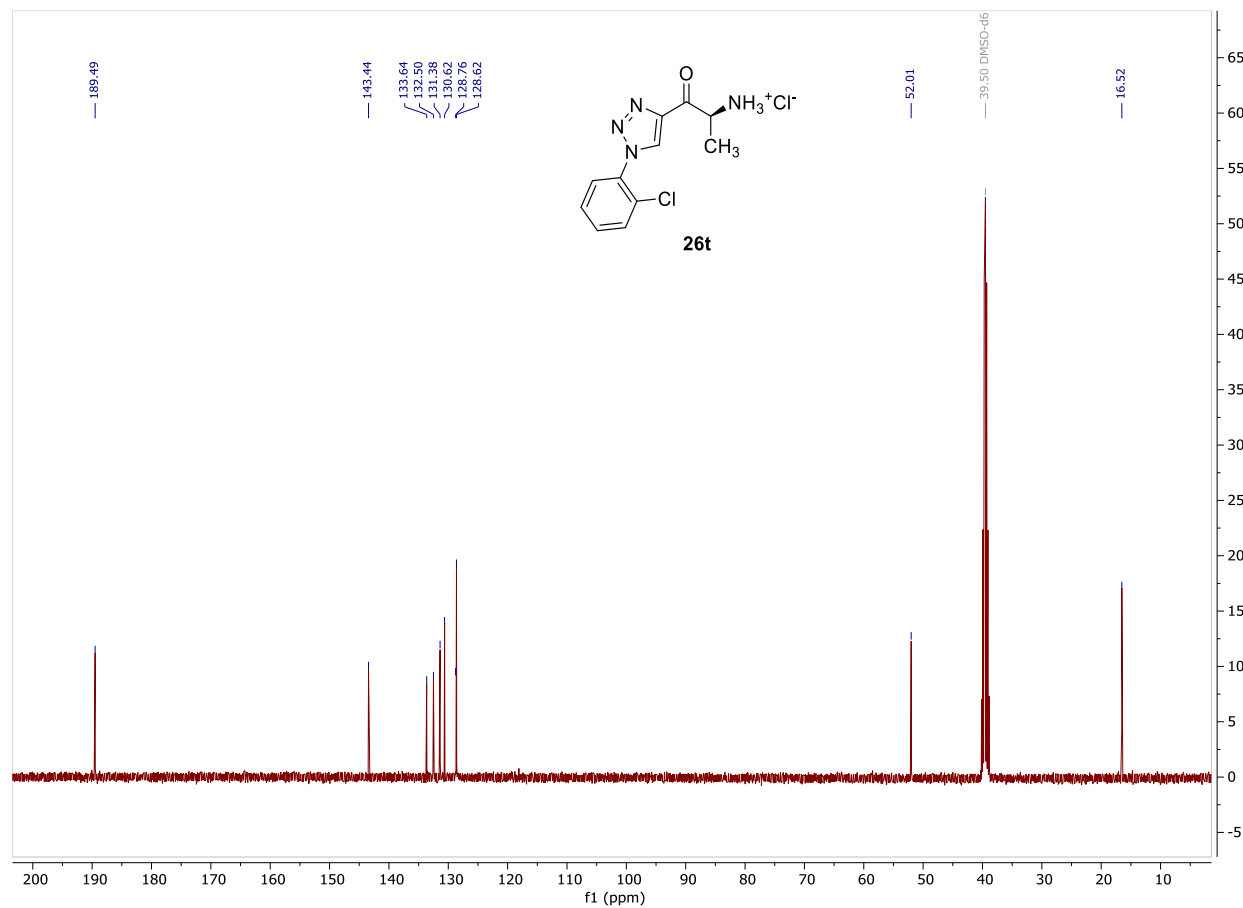
Compound **26s** ( $^{13}\text{C}$  NMR, 101 MHz):



Compound **26t** ( $^1\text{H}$  NMR, 400 MHz):

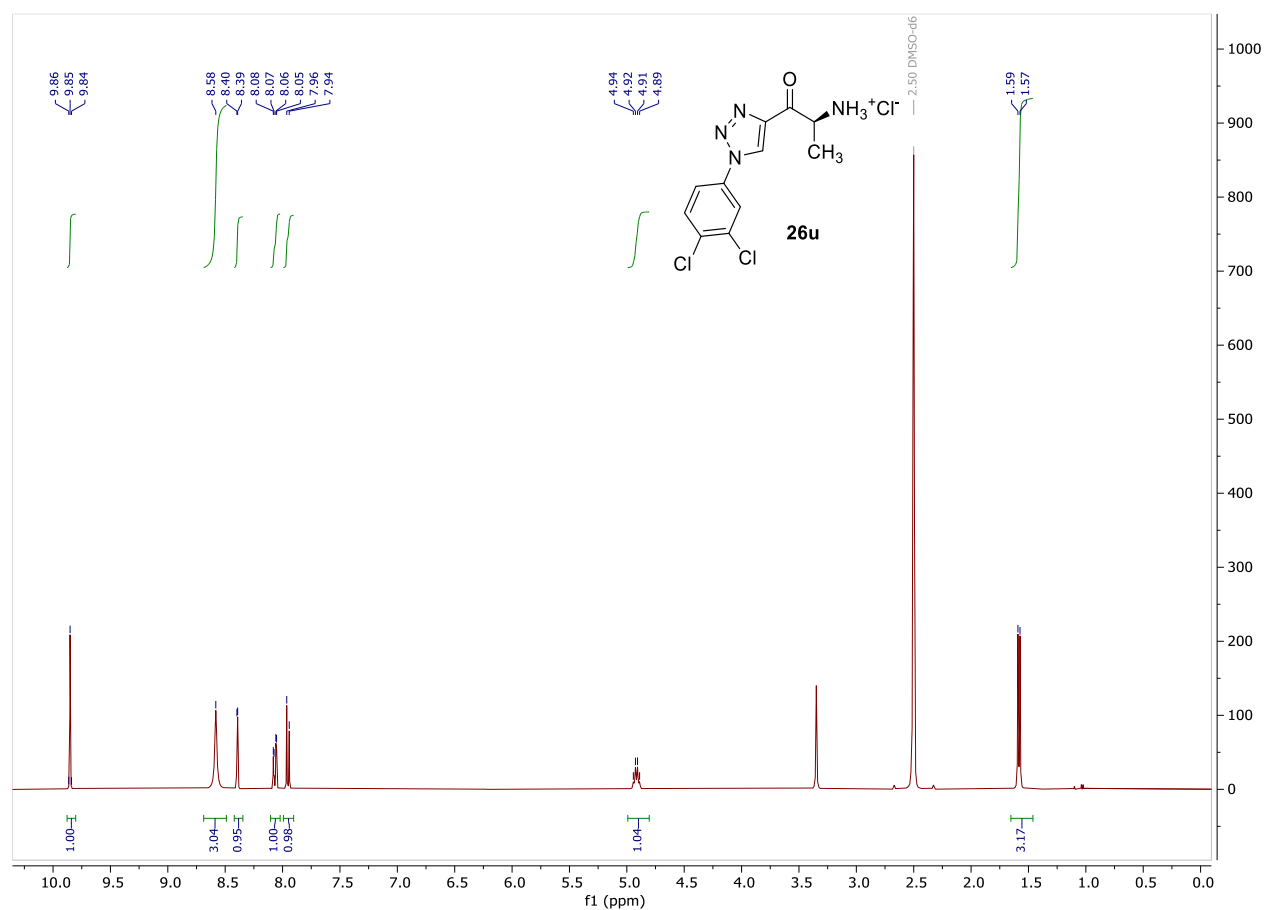


Compound **26t** ( $^{13}\text{C}$  NMR, 101 MHz):

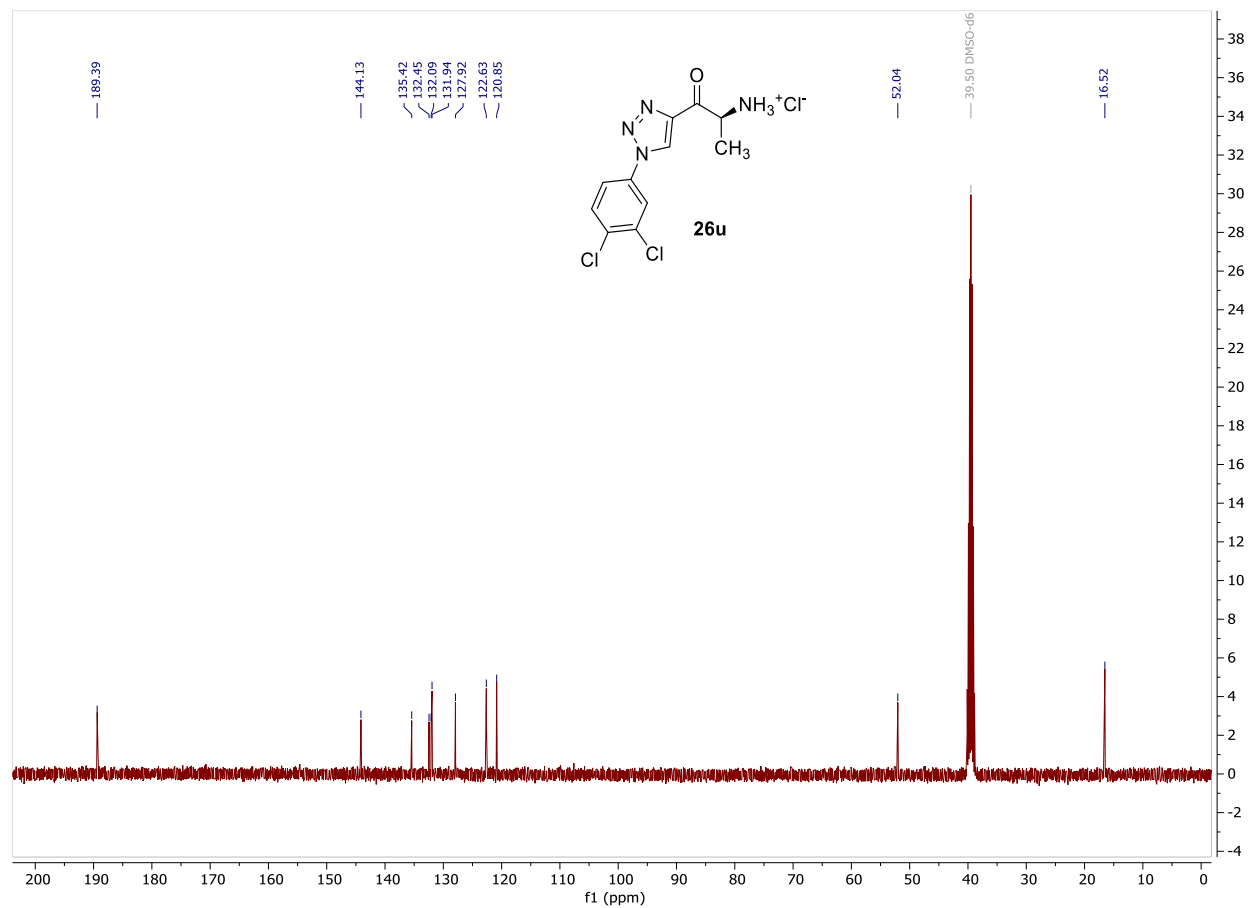




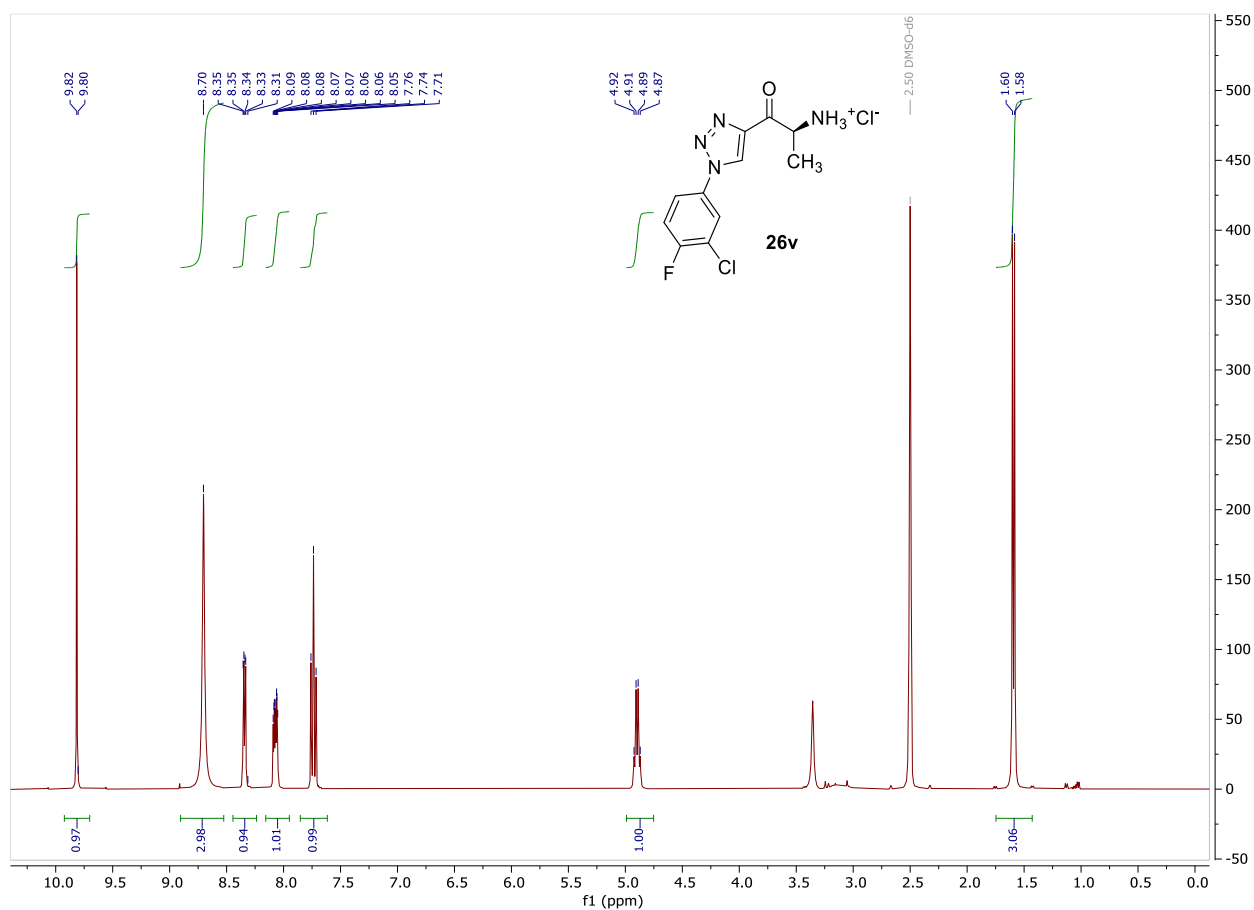
Compound **26u** ( $^1\text{H}$  NMR, 400 MHz):



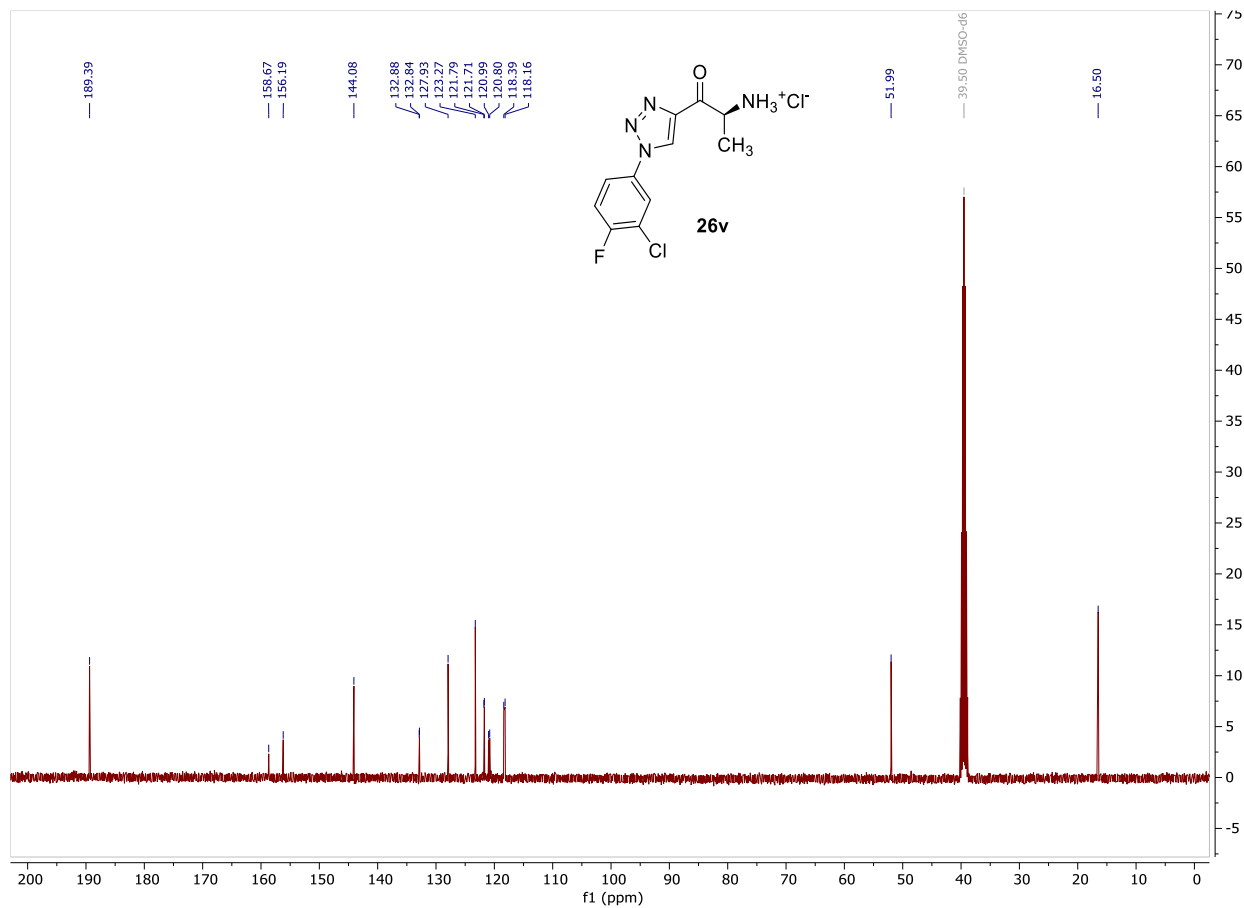
Compound **26u** ( $^{13}\text{C}$  NMR, 101 MHz):



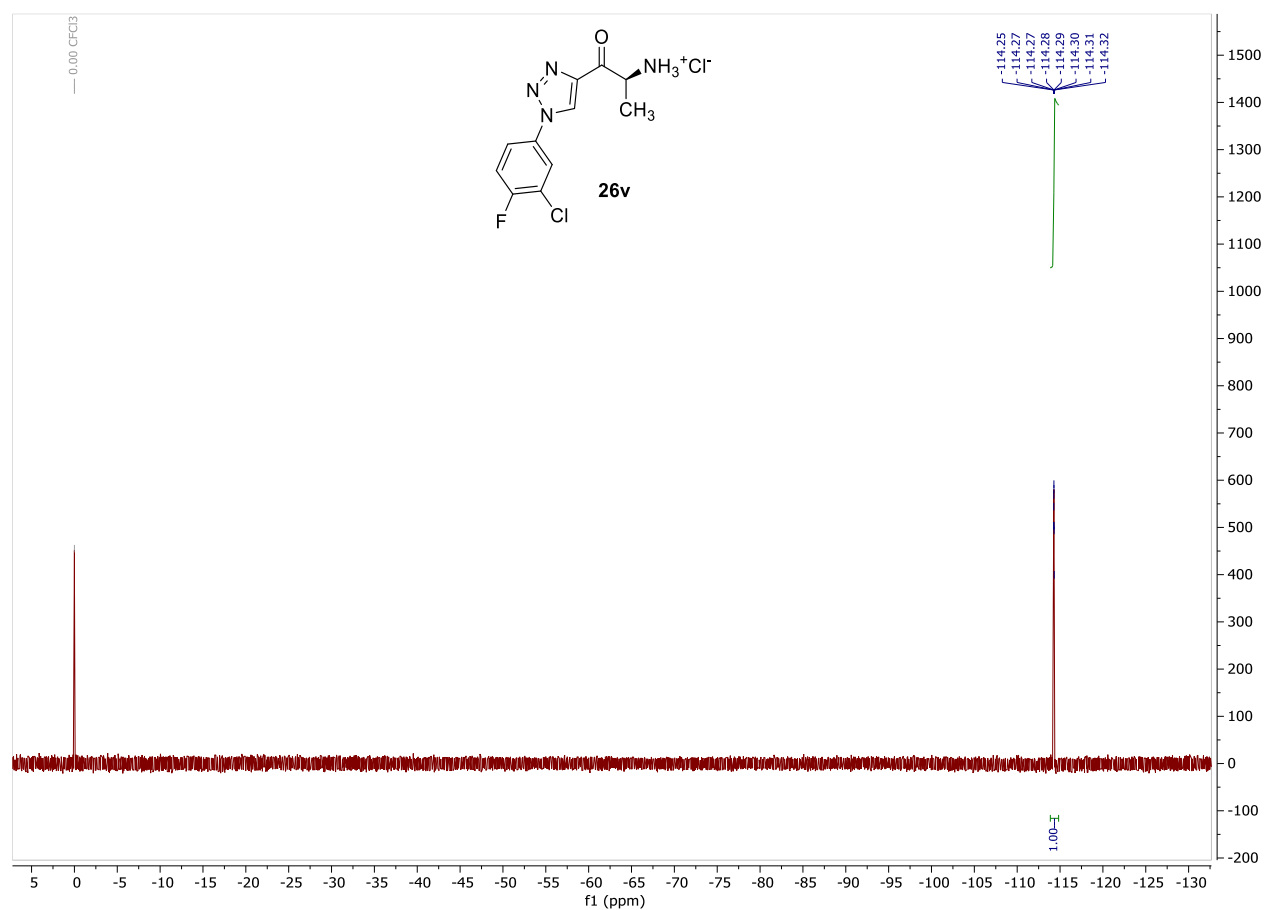
Compound **26v** ( $^1\text{H}$  NMR, 400 MHz):



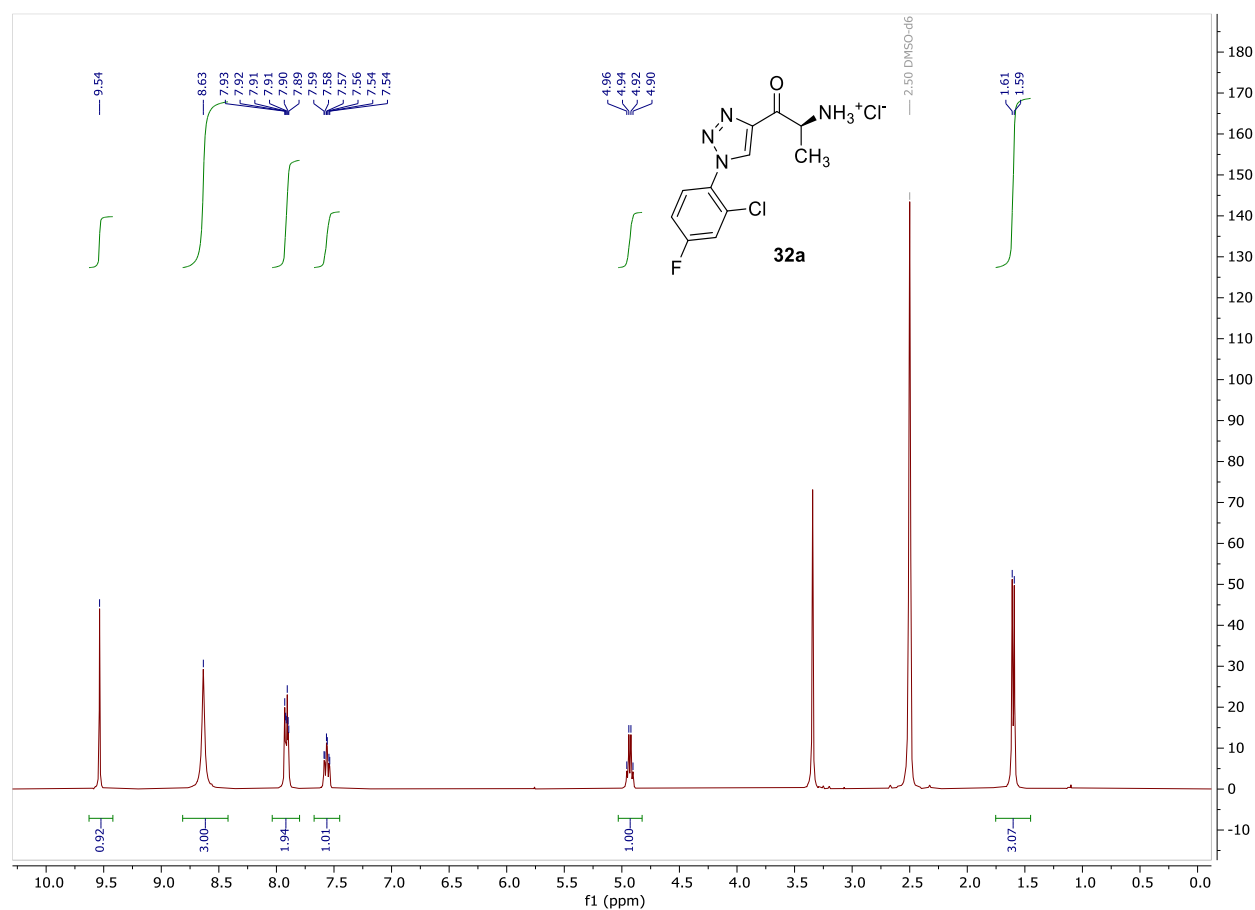
Compound **26v** ( $^{13}\text{C}$  NMR, 101 MHz):



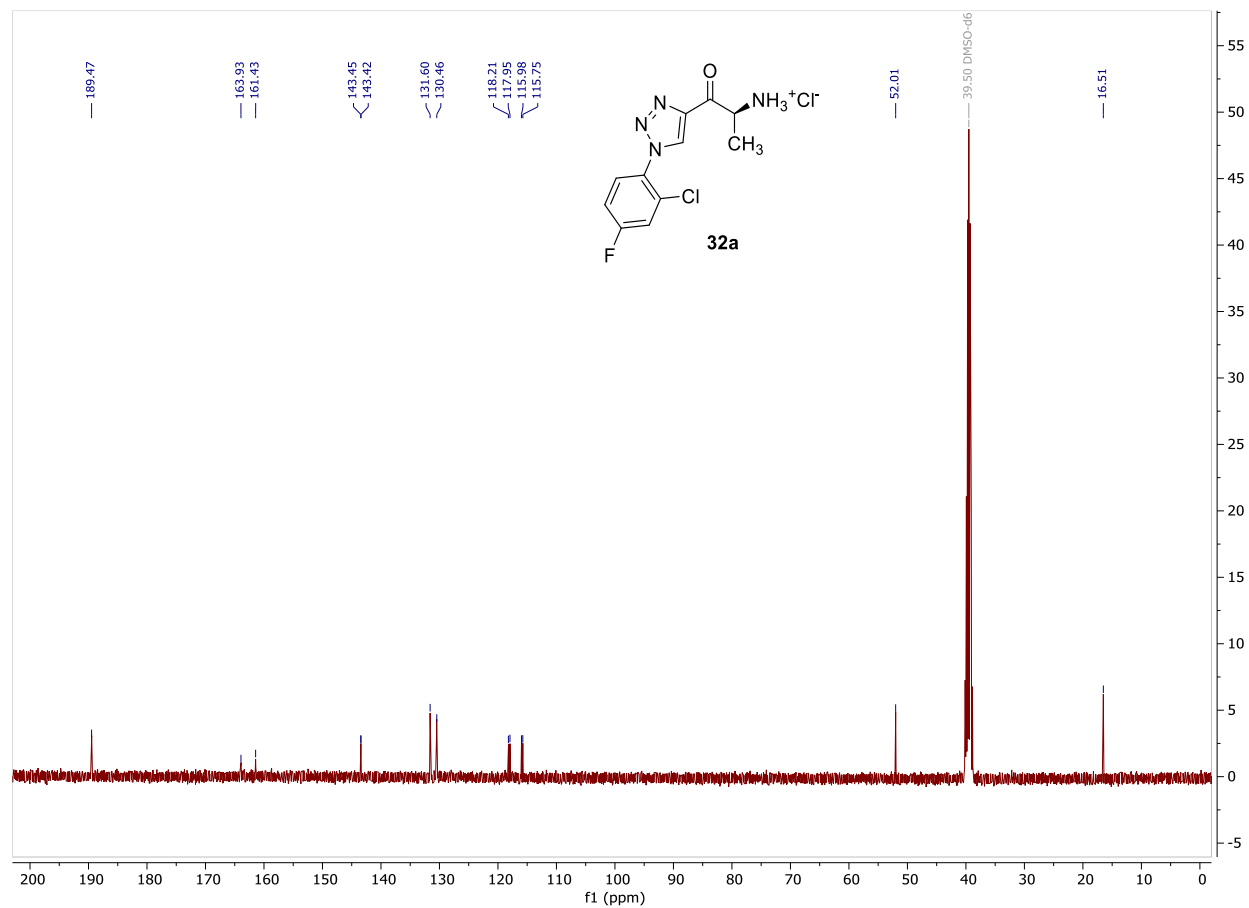
Compound **26v** ( $^{19}\text{F}$  NMR, 282 MHz):



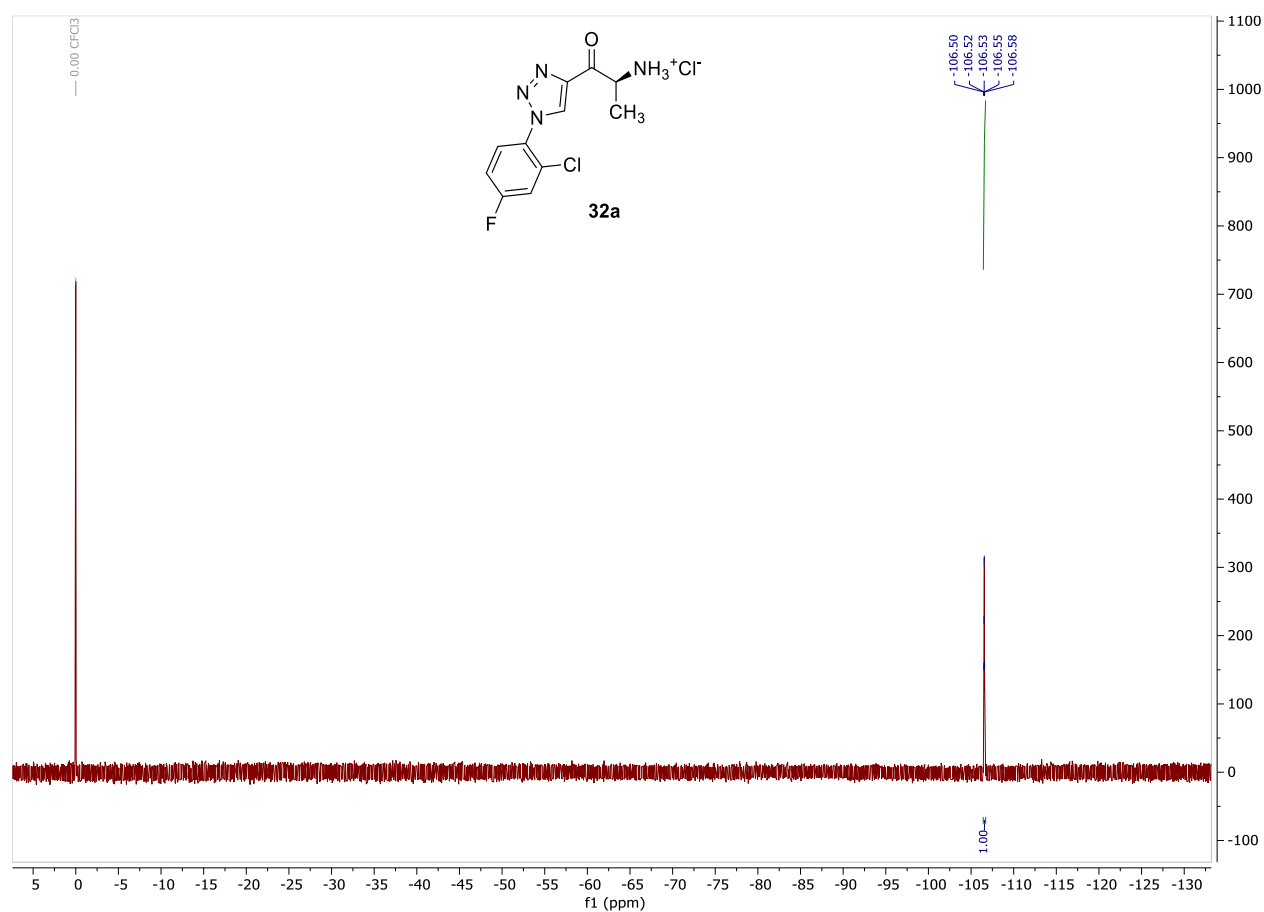
Compound **32a** ( $^1\text{H}$  NMR, 400 MHz):



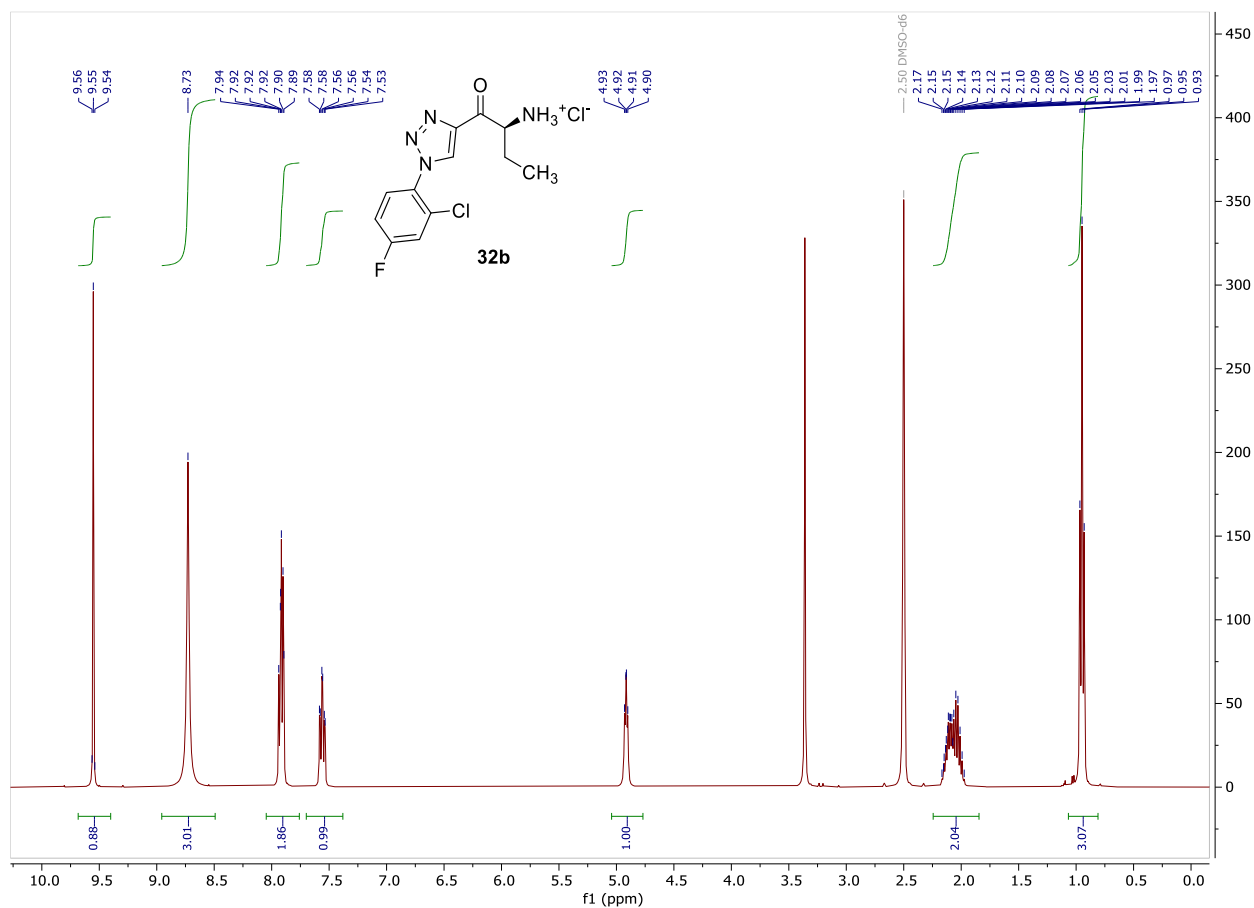
Compound **32a** ( $^{13}\text{C}$  NMR, 101 MHz):



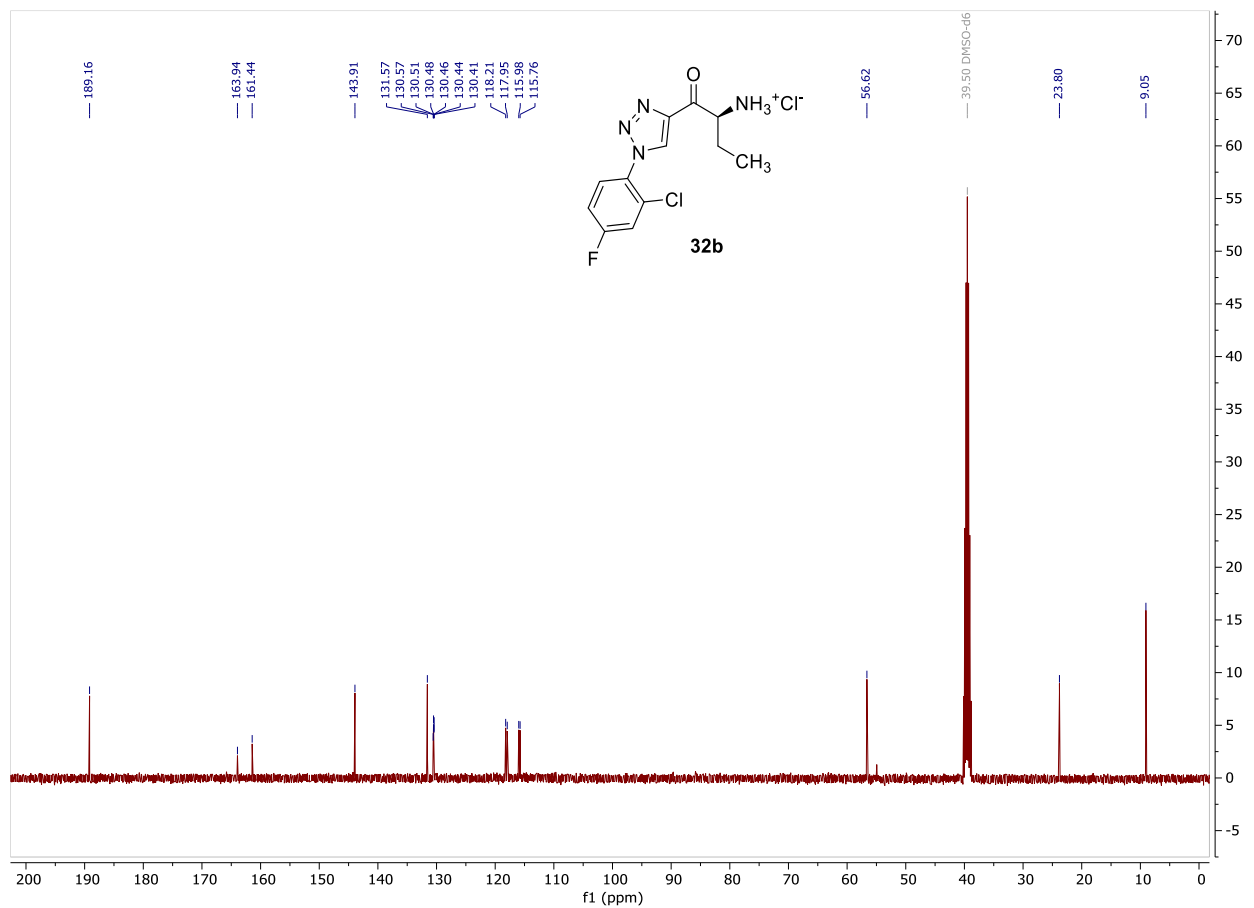
Compound **32a** ( $^{19}\text{F}$  NMR, 282 MHz):



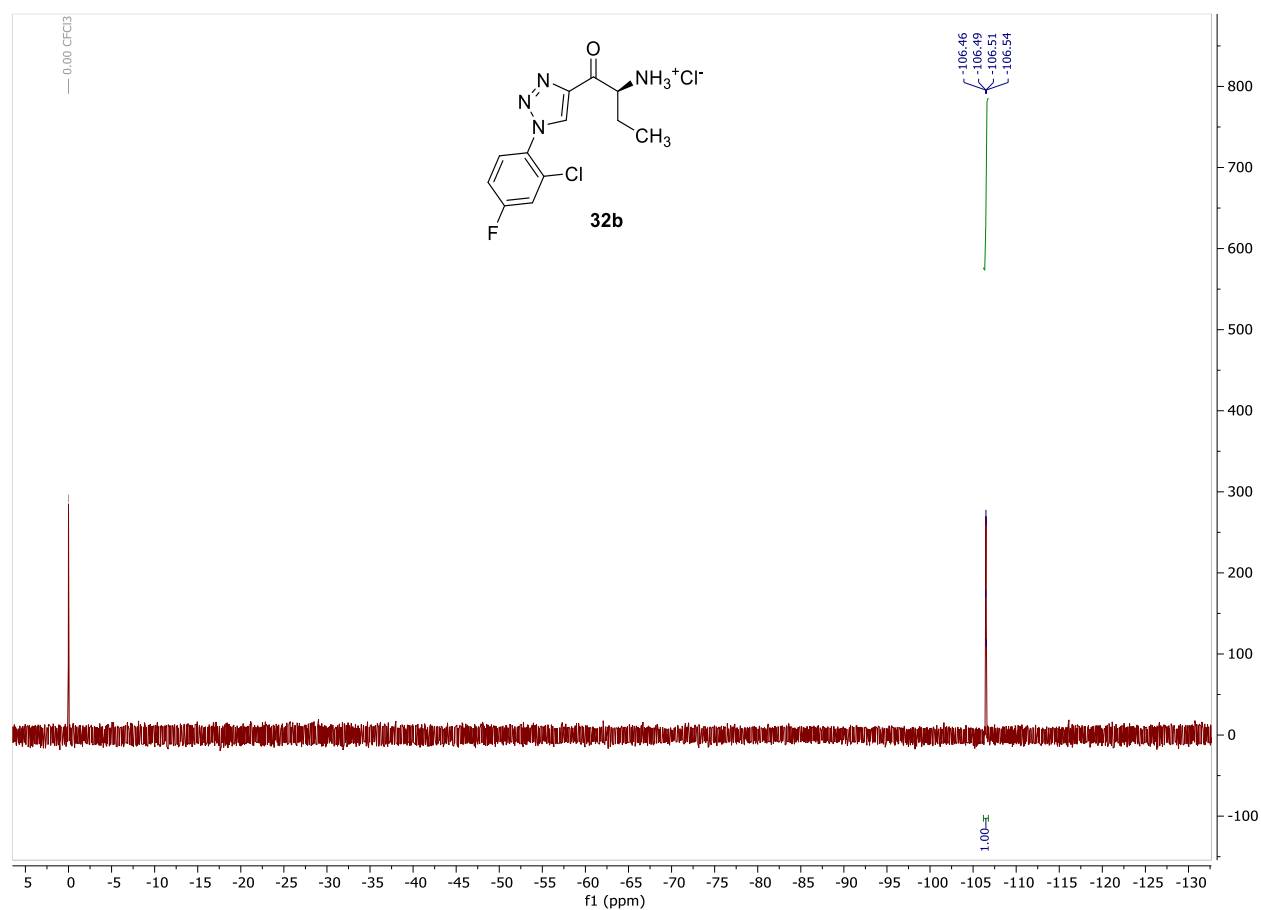
Compound **32b** ( $^1\text{H}$  NMR, 400 MHz):



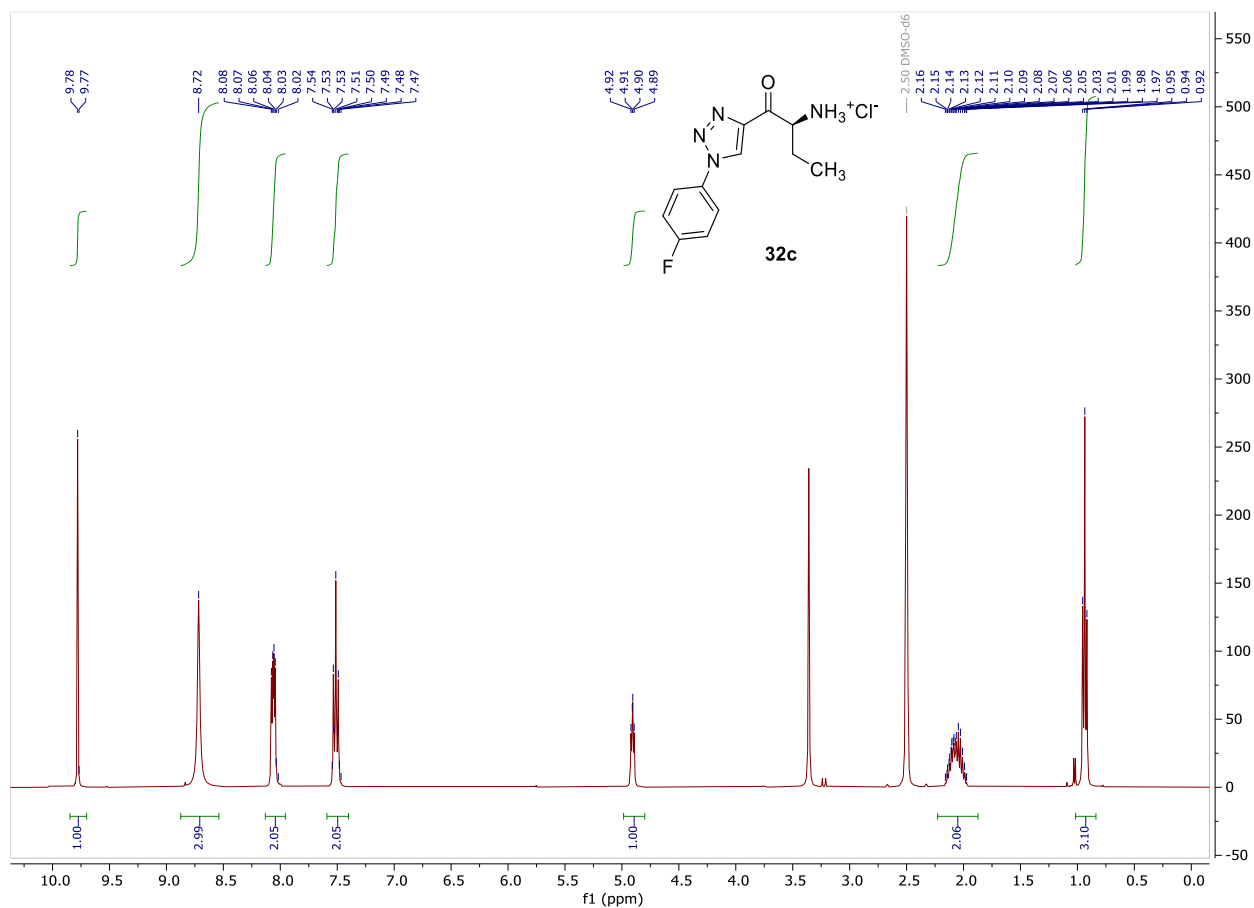
Compound **32b** ( $^{13}\text{C}$  NMR, 101 MHz):



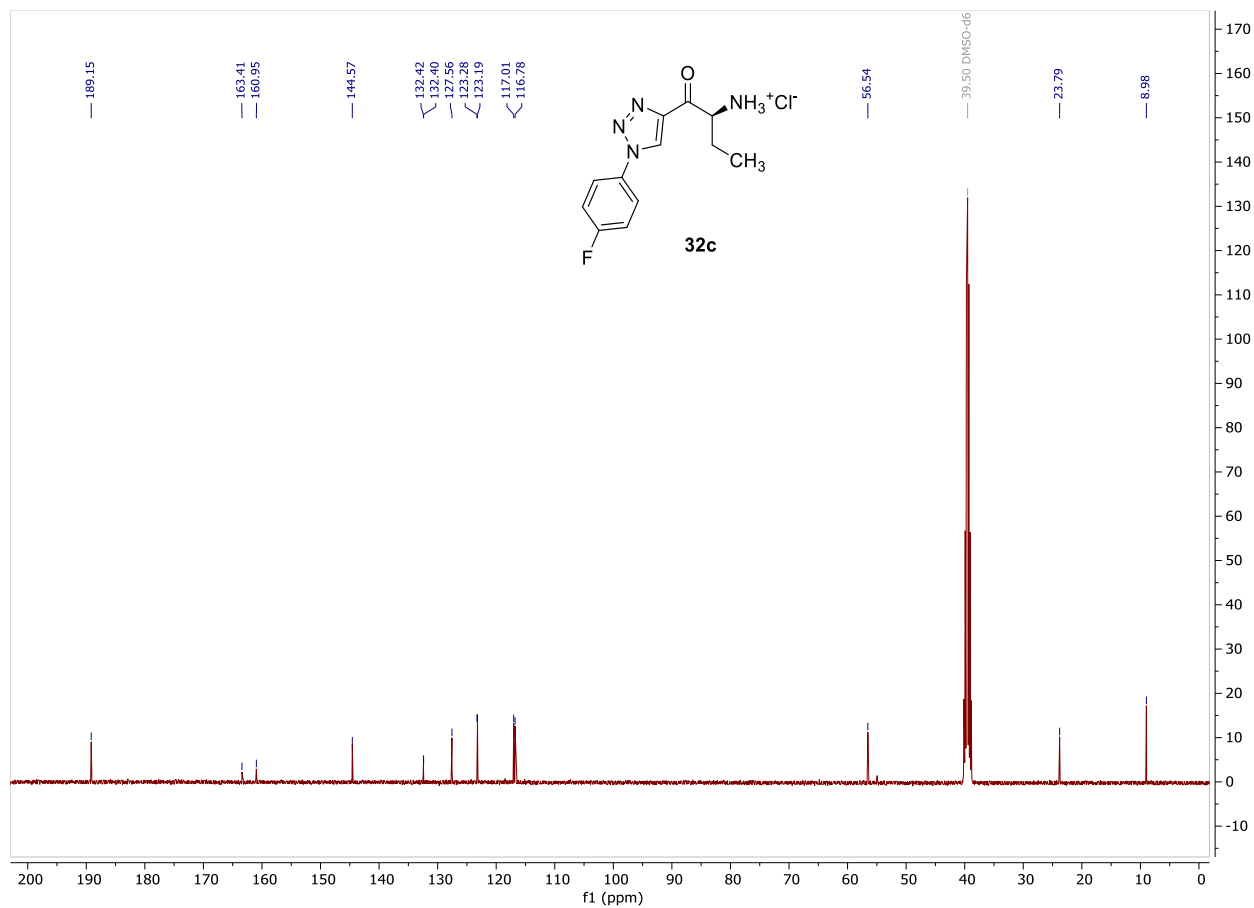
Compound **32b** ( $^{19}\text{F}$  NMR, 282 MHz):



Compound **32c** ( $^1\text{H}$  NMR, 400 MHz):

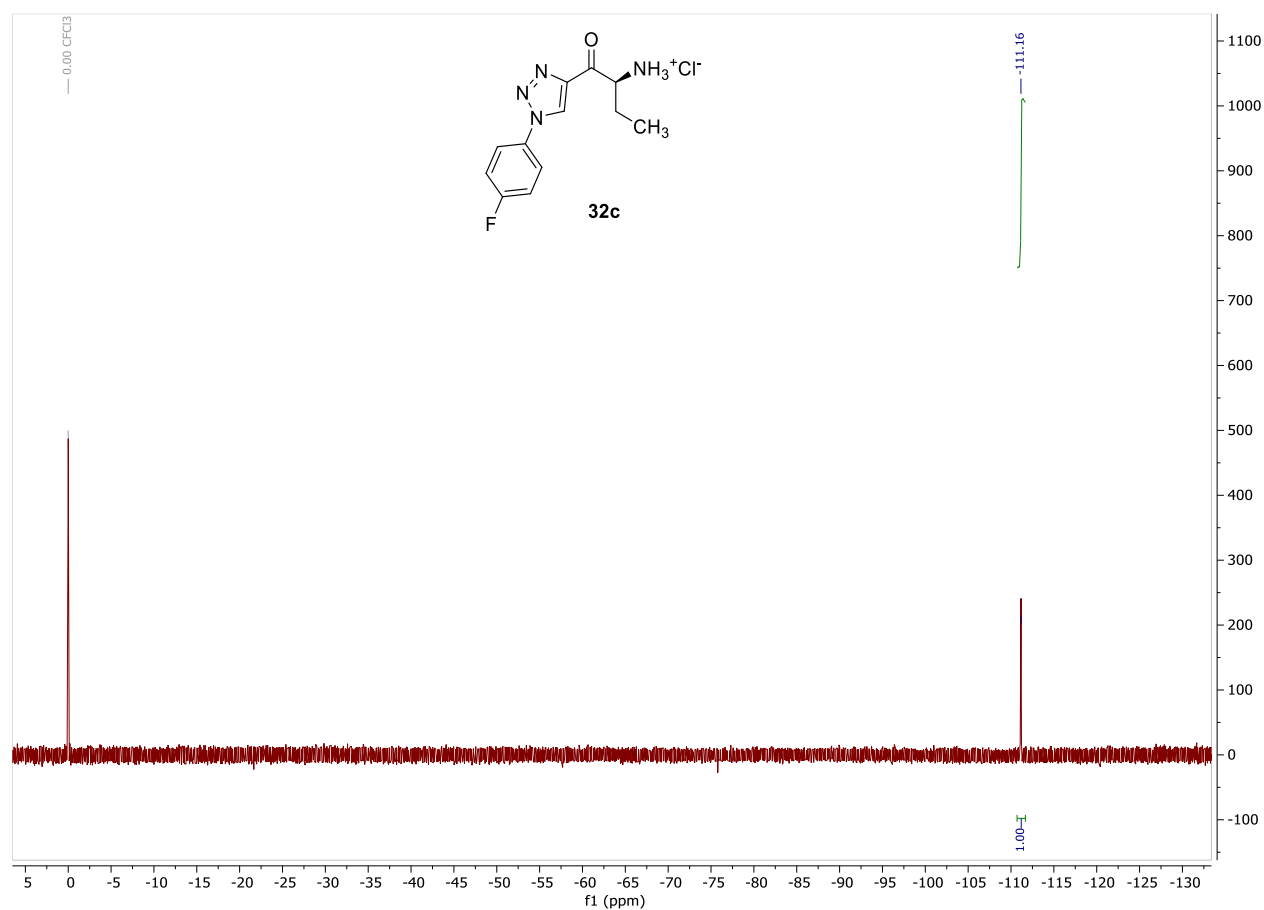


Compound **32c** ( $^{13}\text{C}$  NMR, 101 MHz):

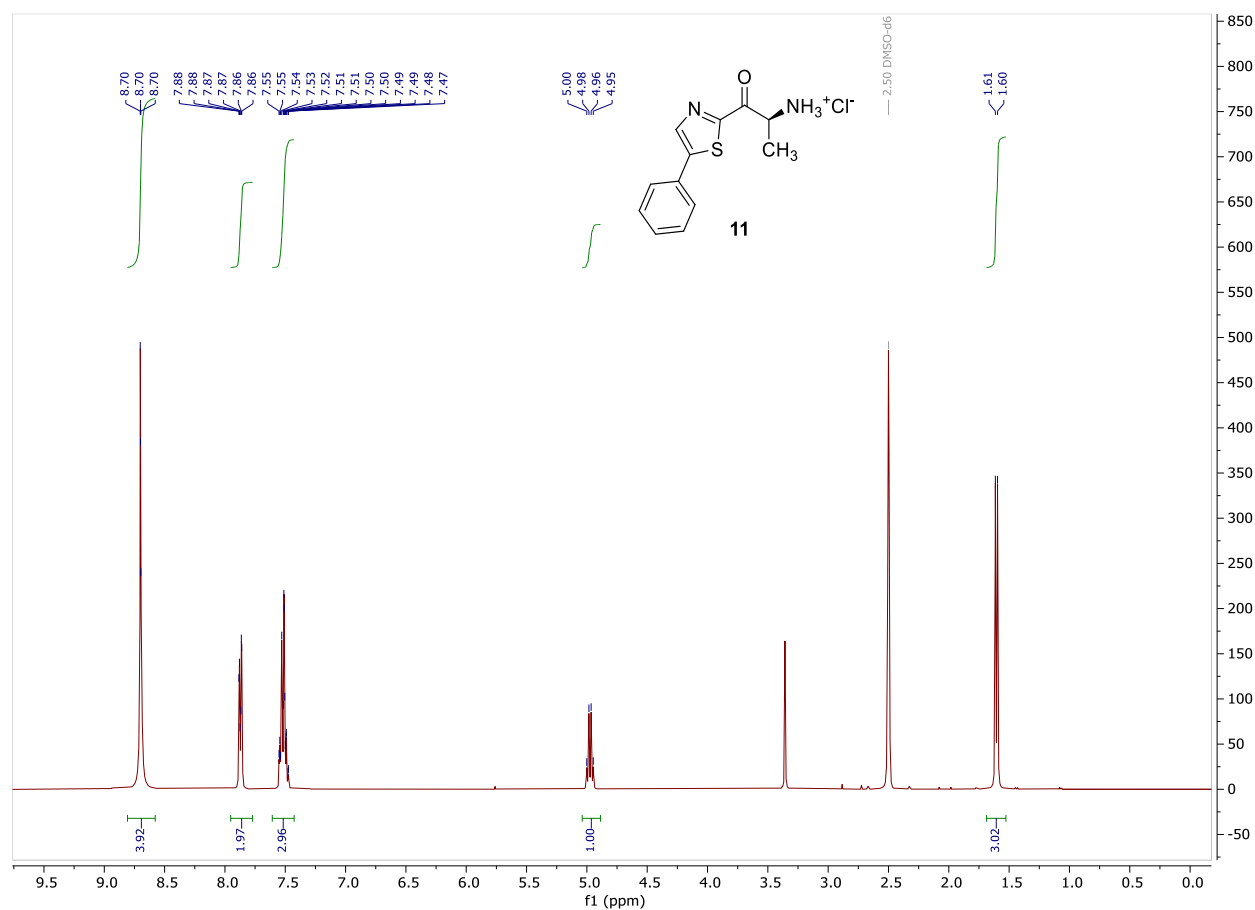




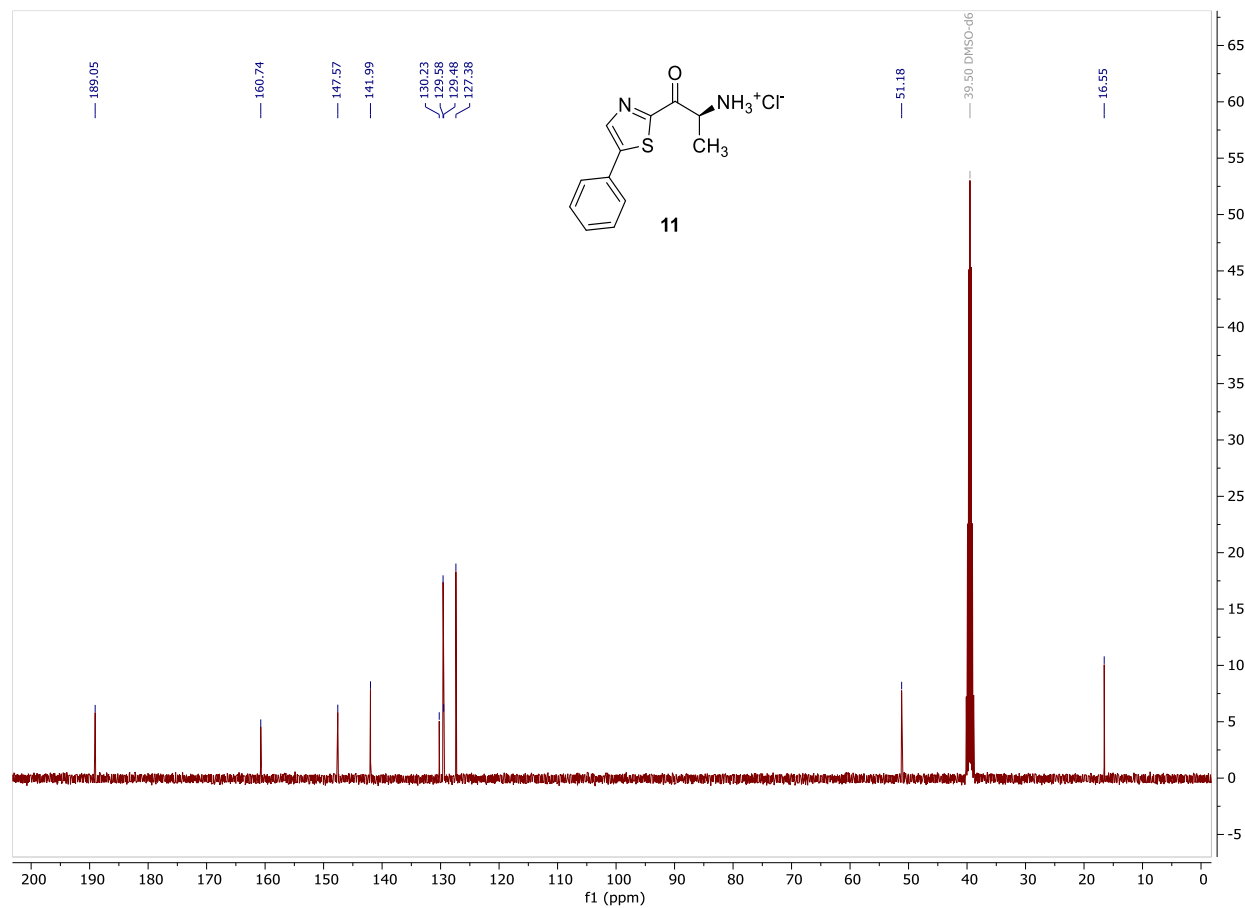
Compound **32c** ( $^{19}\text{F}$  NMR, 282 MHz):



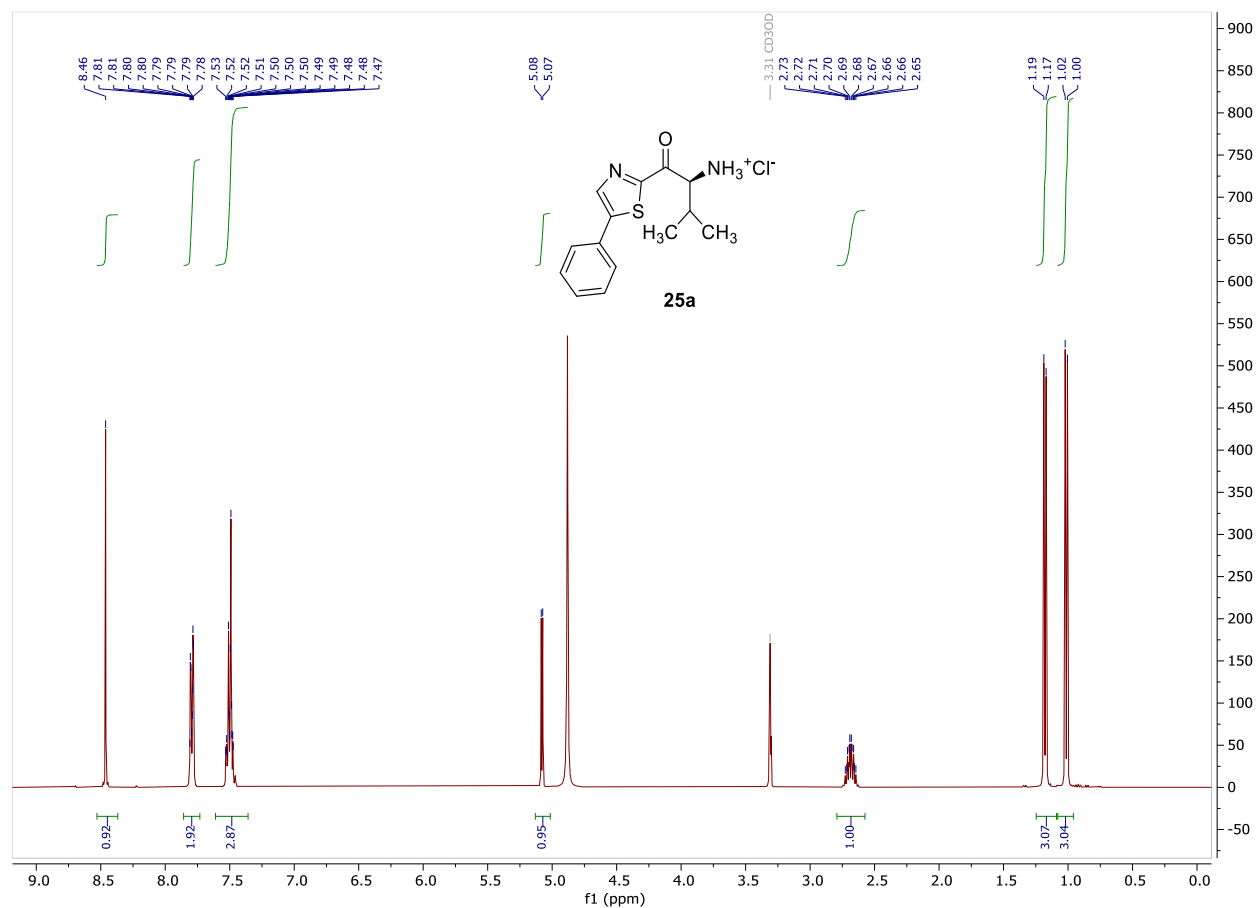
Compound **11** ( $^1\text{H}$  NMR, 400 MHz):



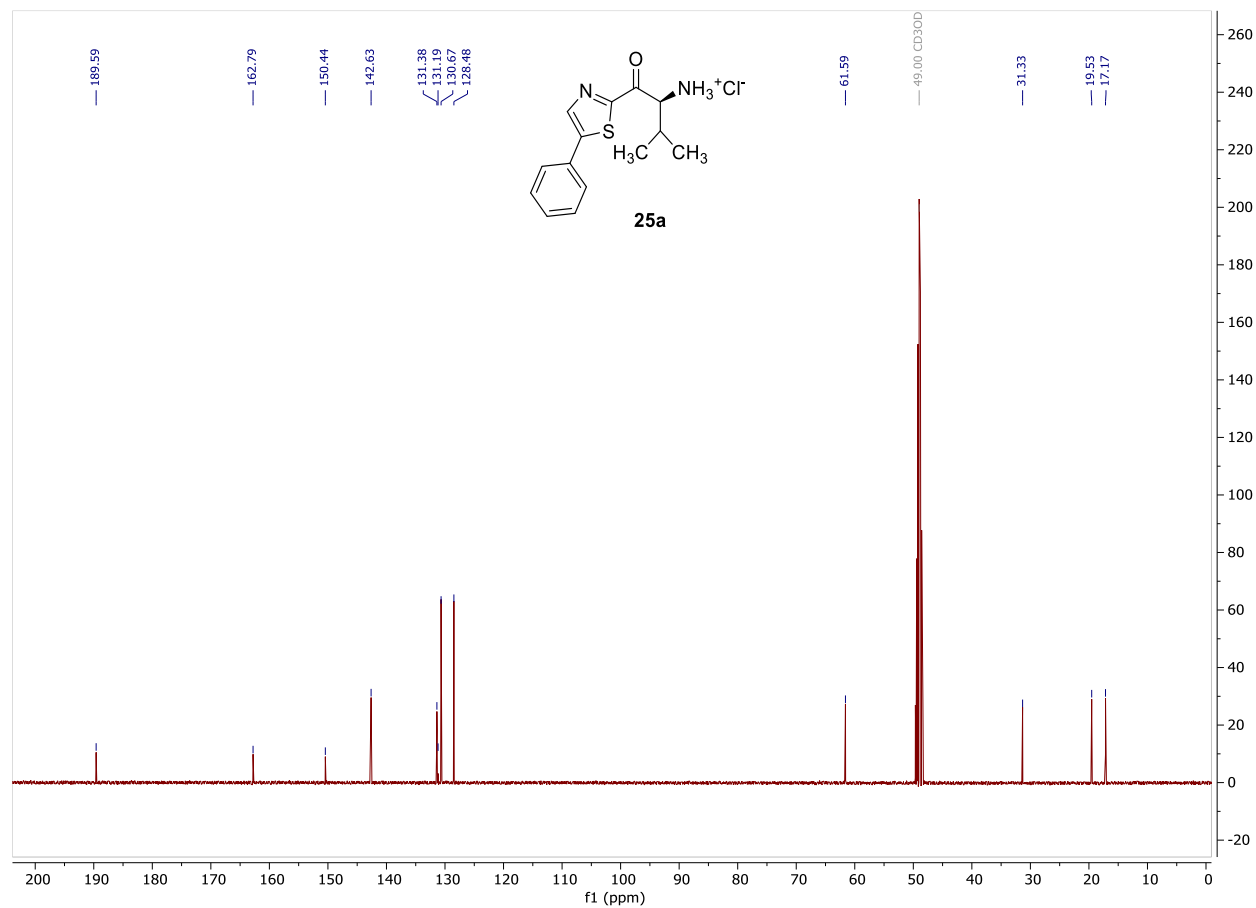
Compound **11** ( $^{13}\text{C}$  NMR, 101 MHz):



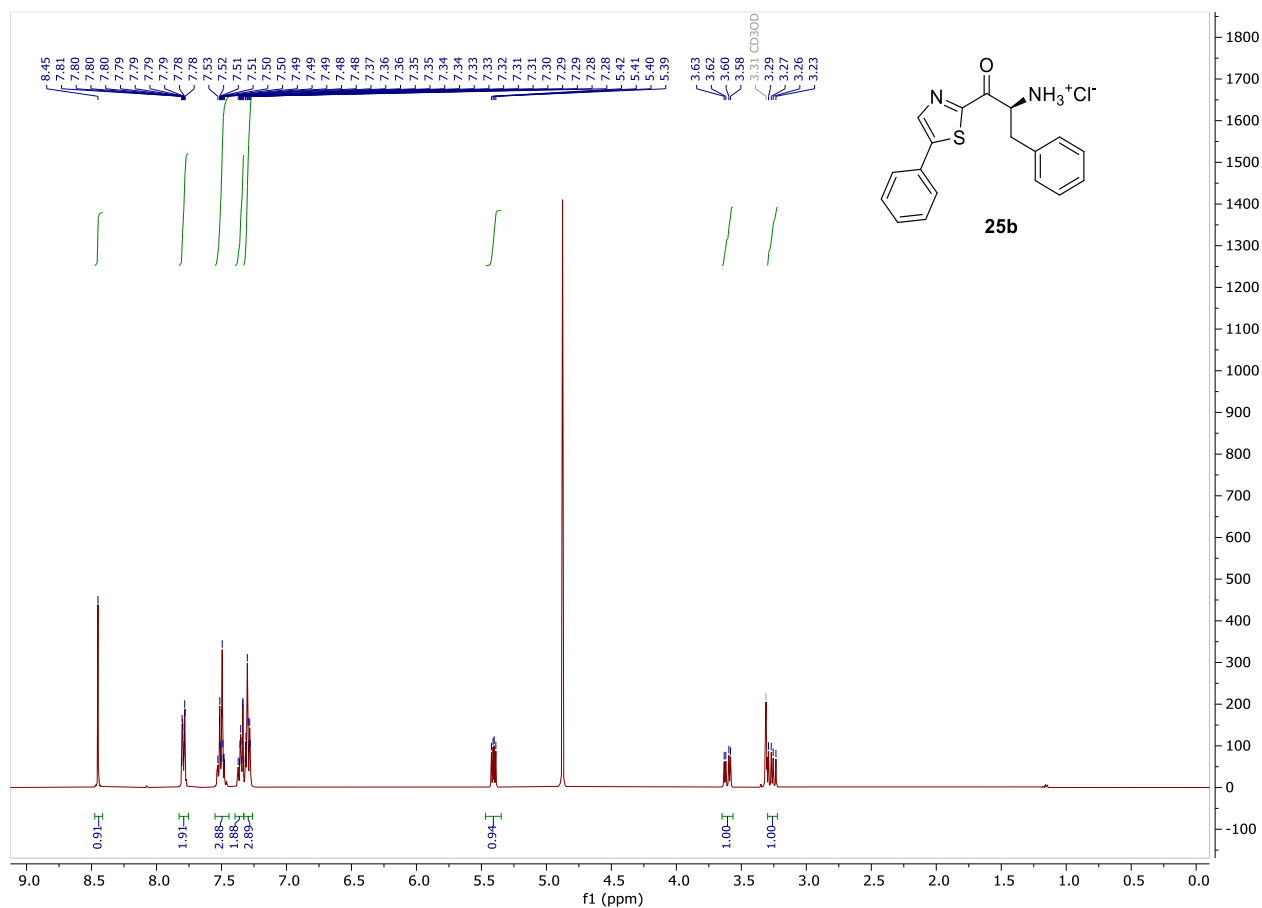
Compound **25a** ( $^1\text{H}$  NMR, 400 MHz):



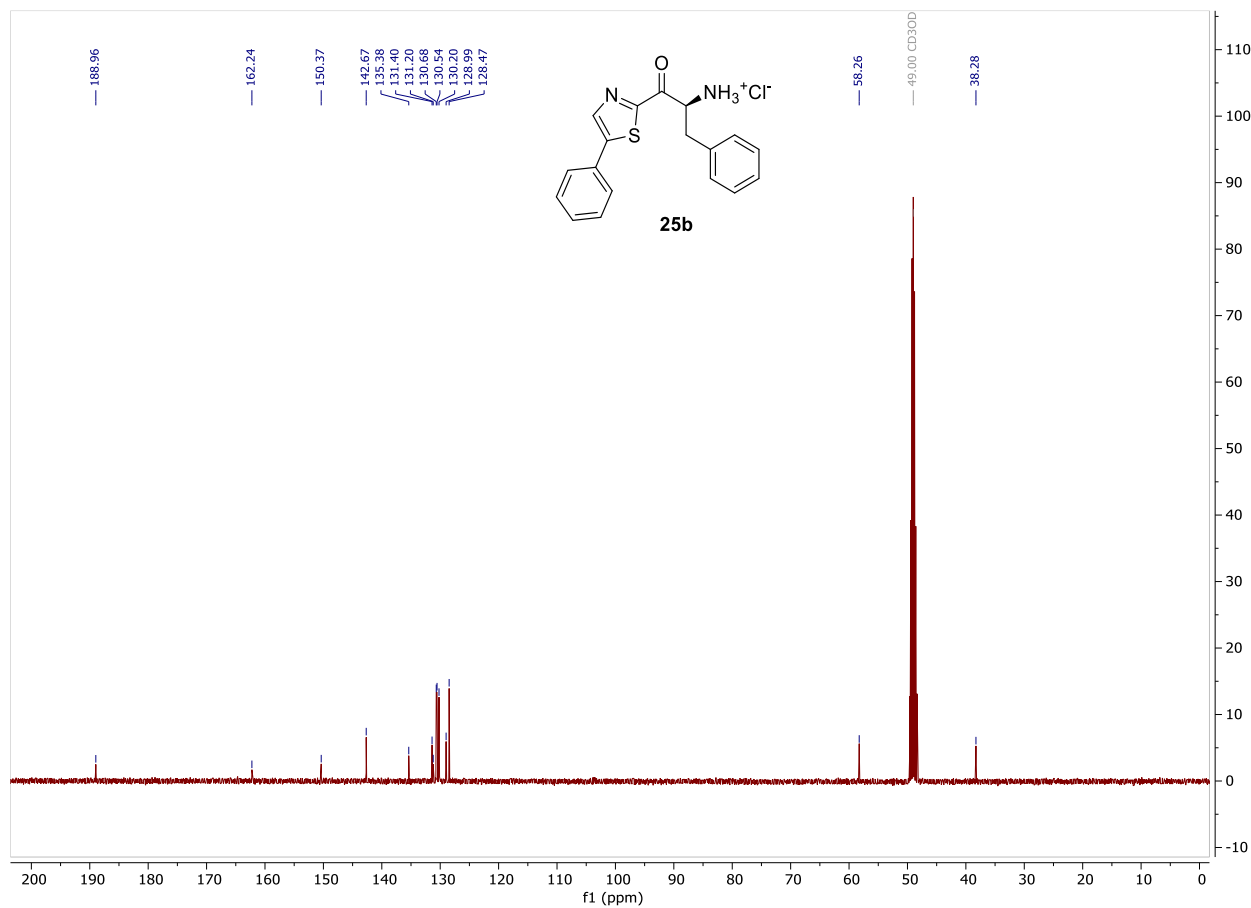
Compound **25a** ( $^{13}\text{C}$  NMR, 101 MHz):



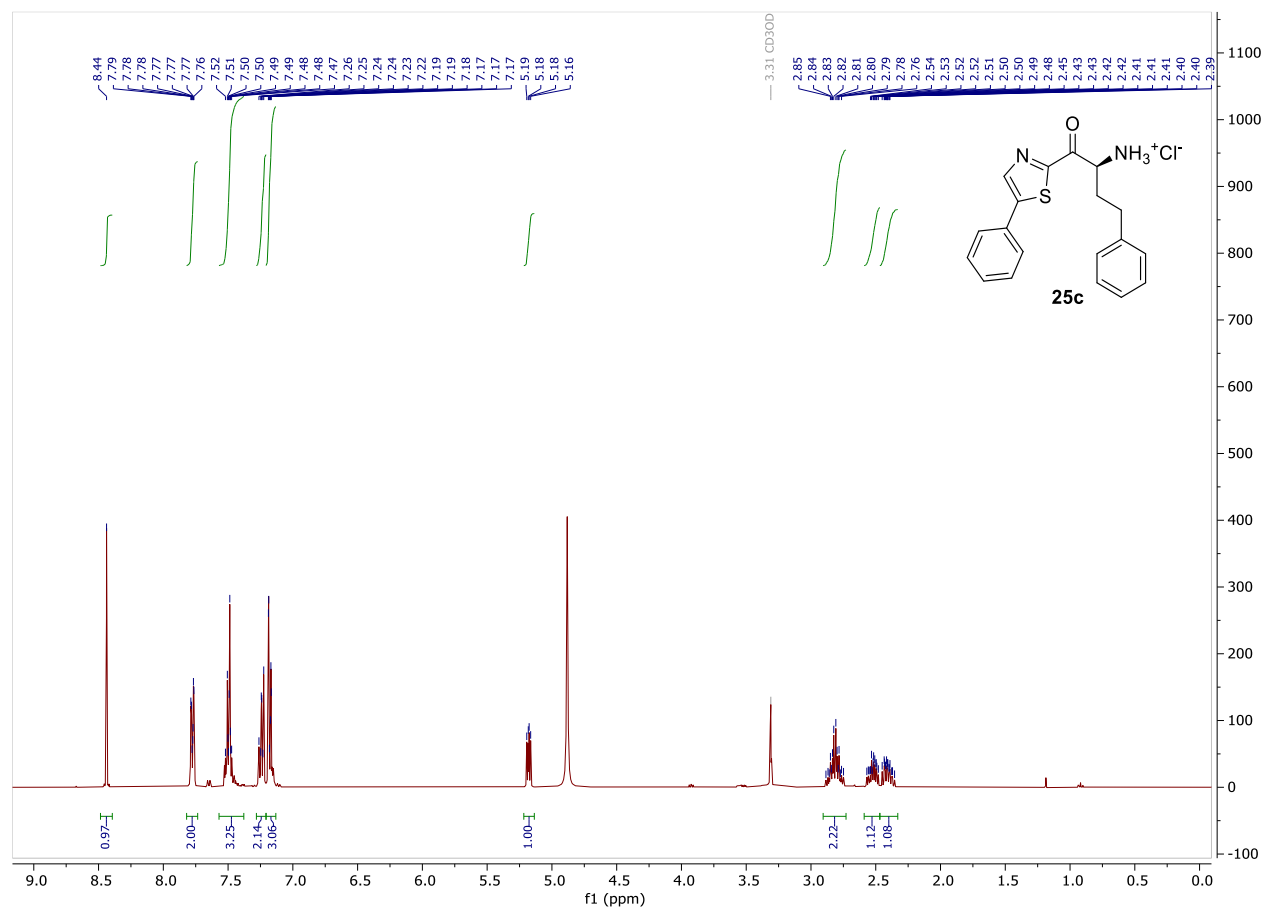
Compound **25b** ( $^1\text{H}$  NMR, 400 MHz):



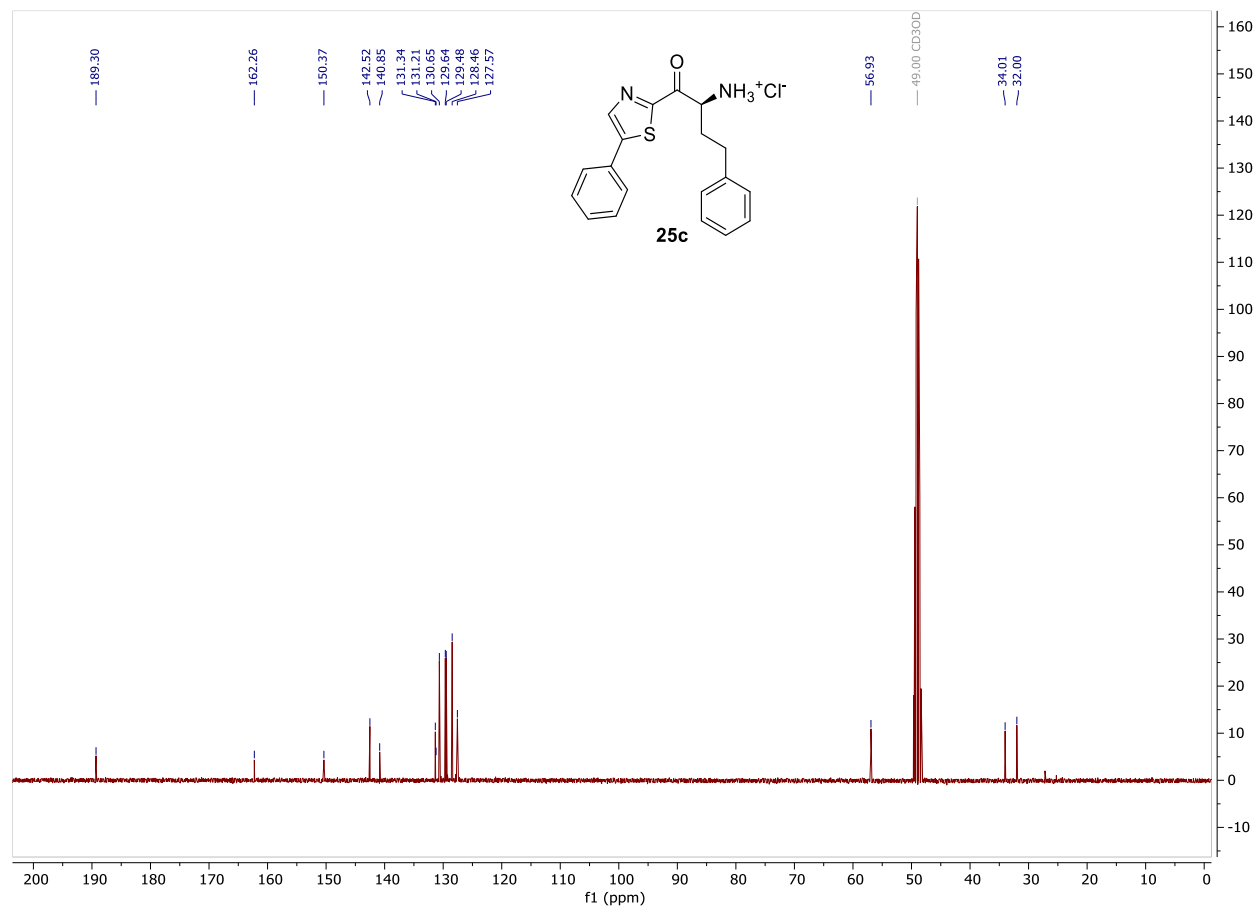
Compound **25b** ( $^{13}\text{C}$  NMR, 101 MHz):



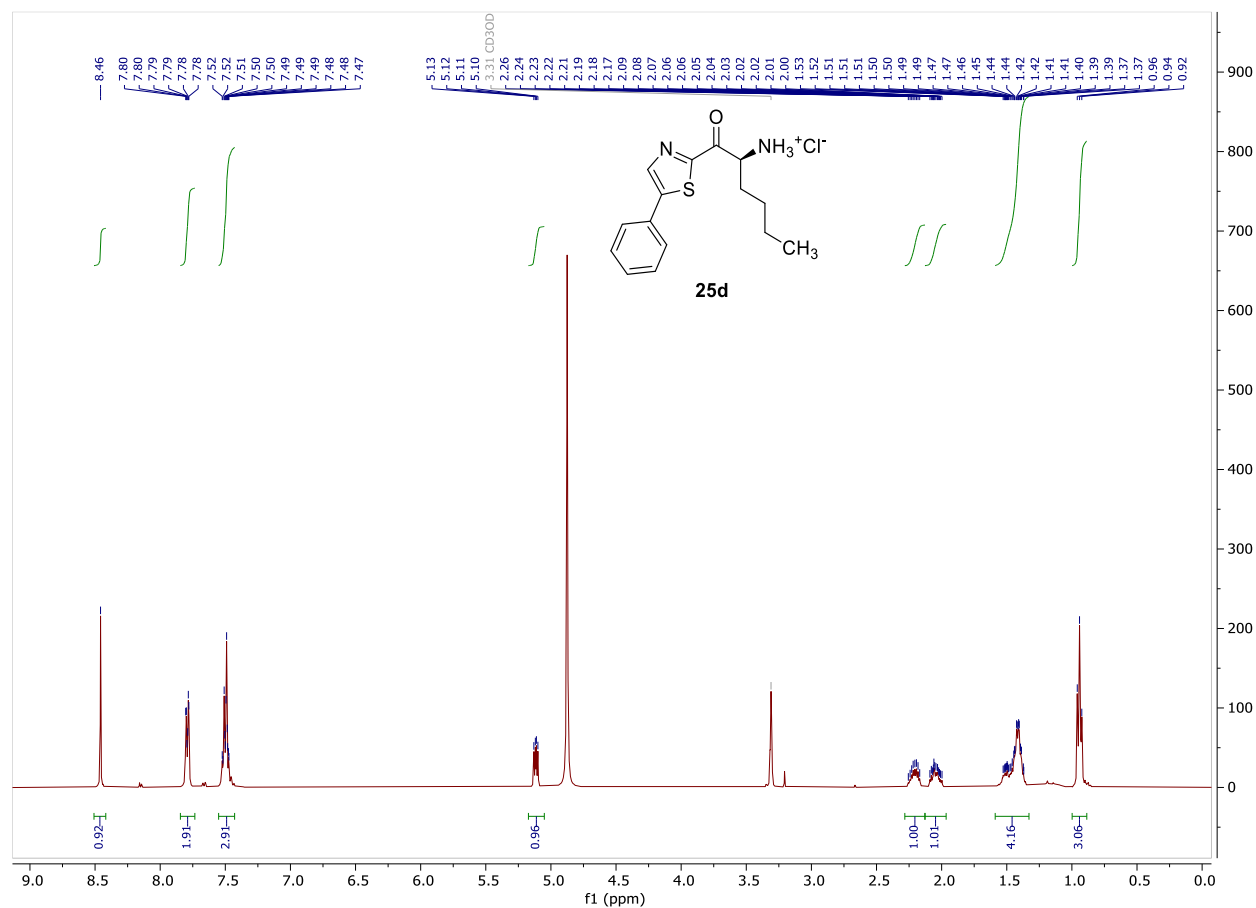
Compound **25c** ( $^1\text{H}$  NMR, 400 MHz):



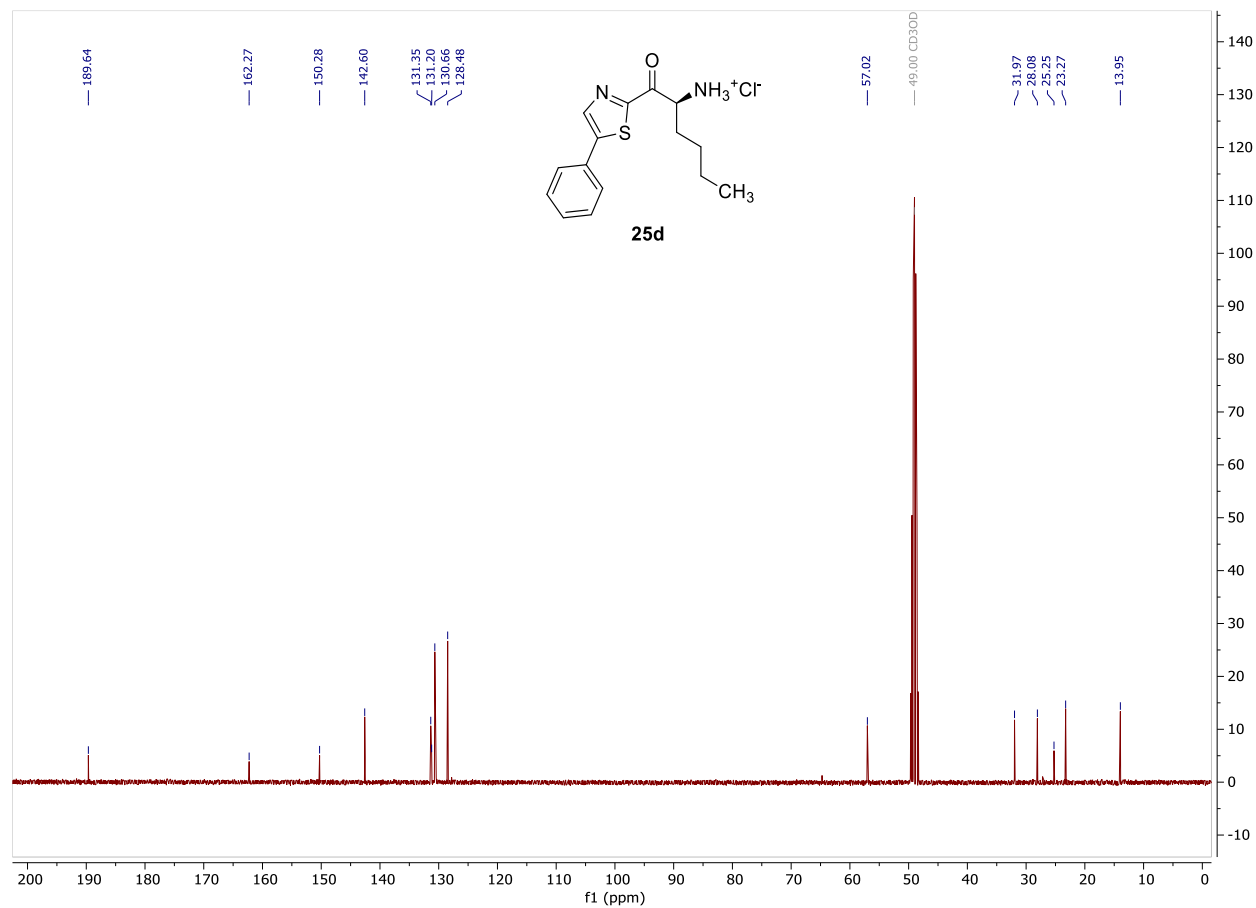
Compound **25c** ( $^{13}\text{C}$  NMR, 101 MHz):



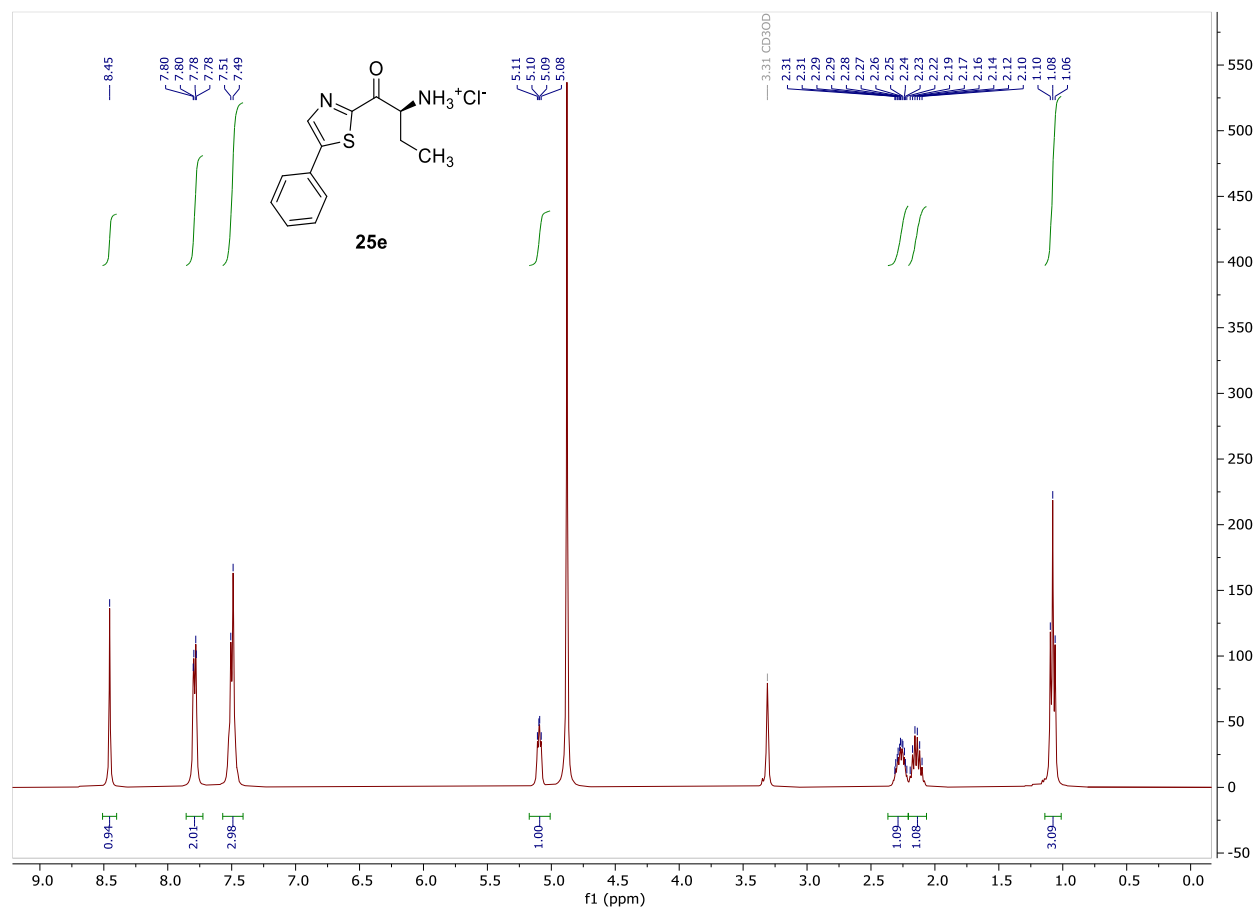
Compound **25d** ( $^1\text{H}$  NMR, 400 MHz):



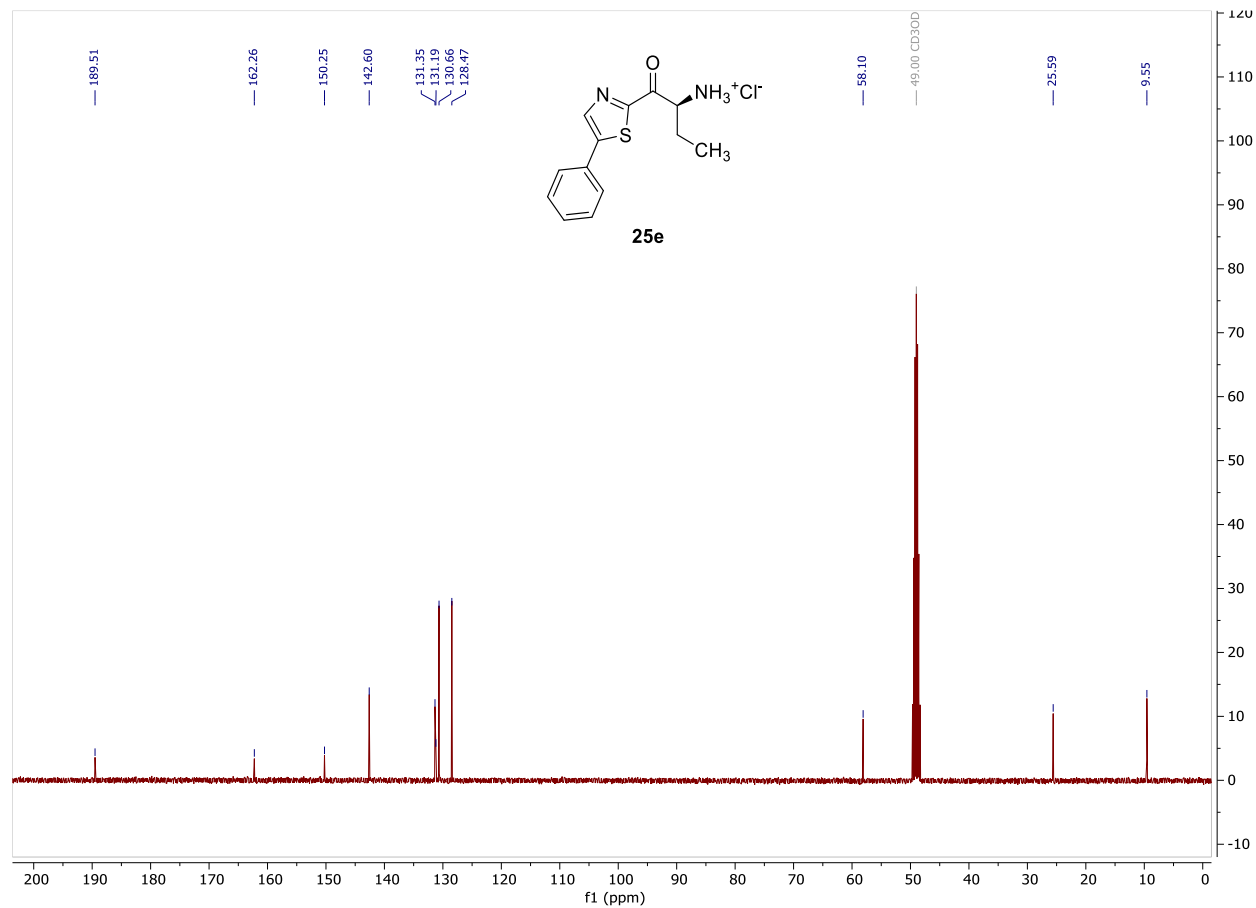
Compound **25d** ( $^{13}\text{C}$  NMR, 101 MHz):



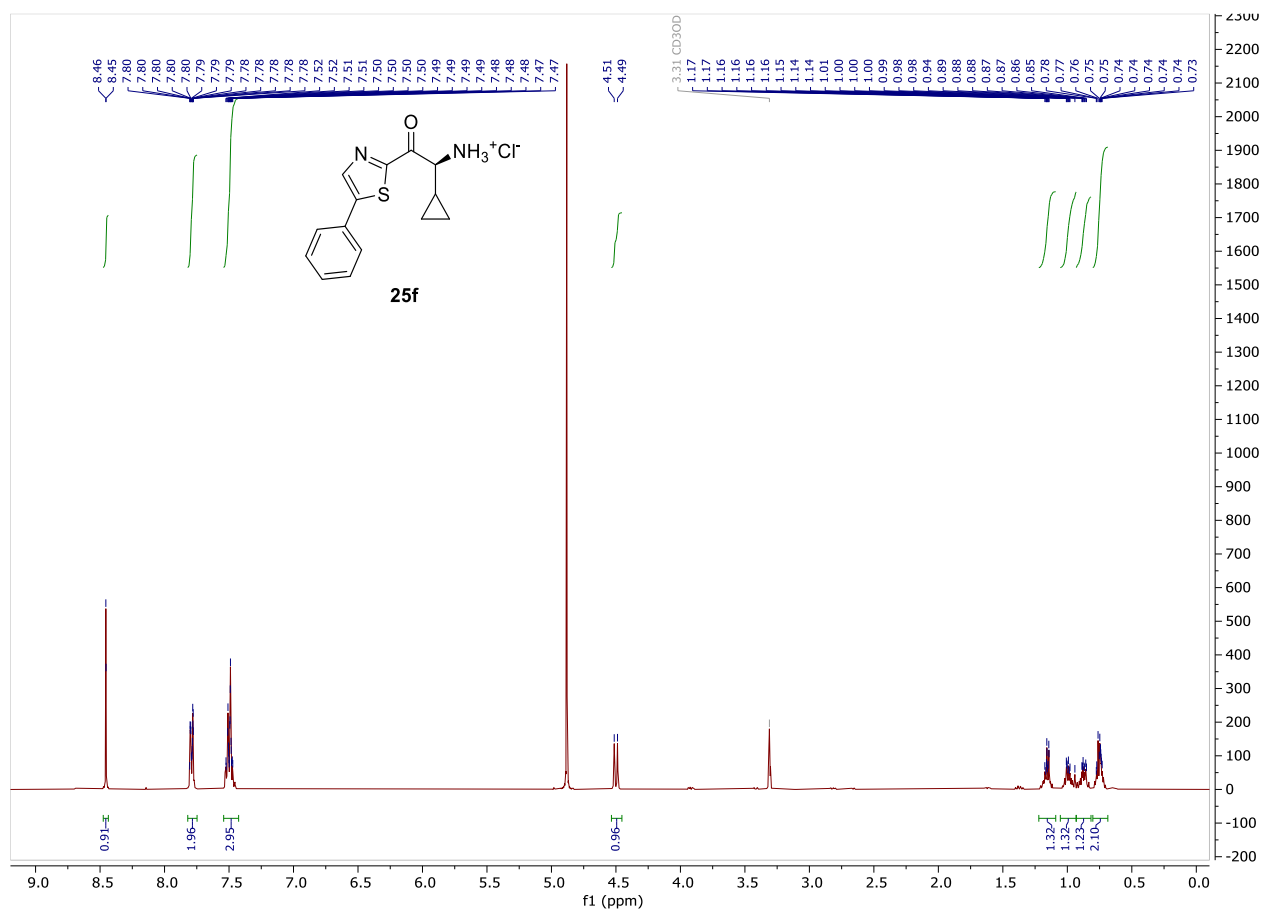
Compound **25e** ( $^1\text{H}$  NMR, 400 MHz):



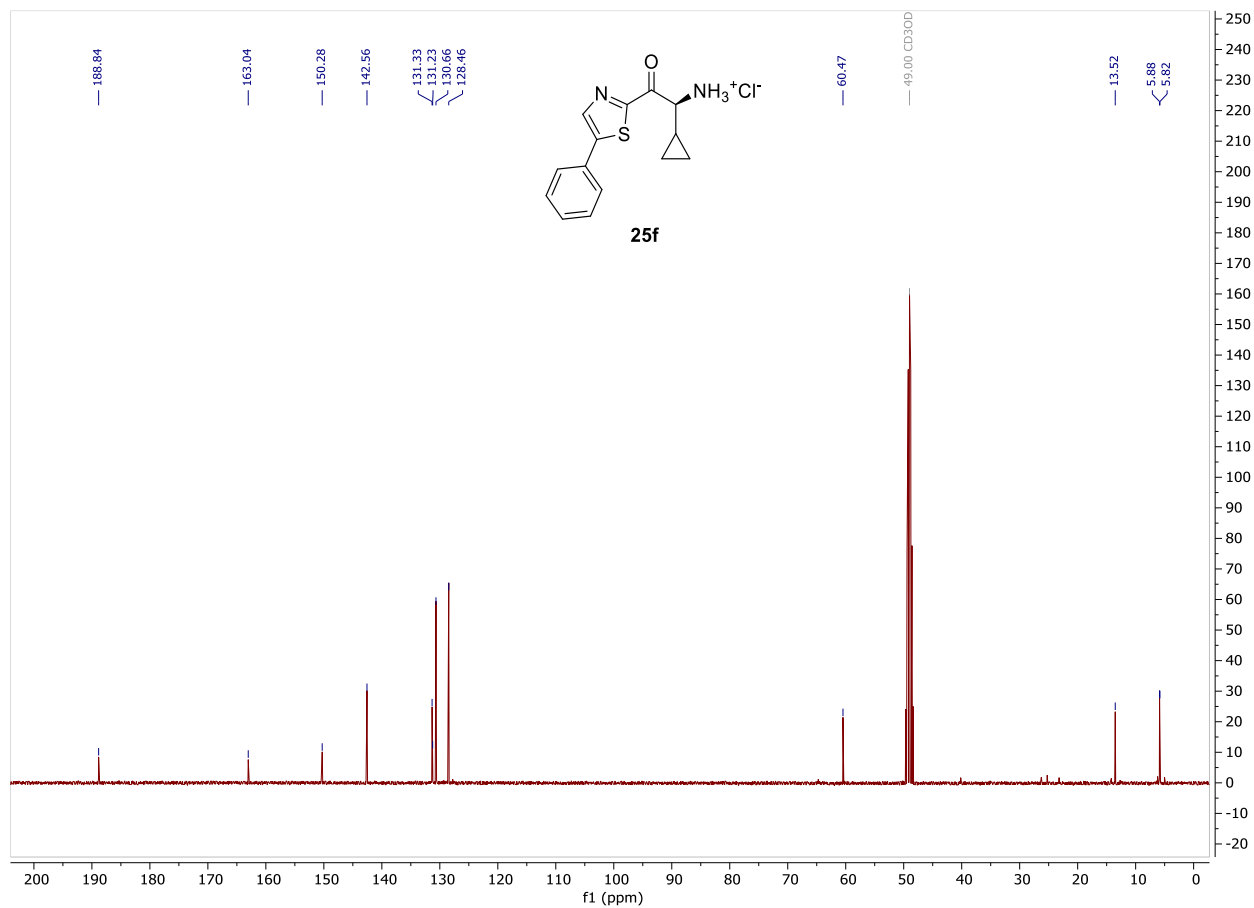
Compound **25e** ( $^{13}\text{C}$  NMR, 101 MHz):



Compound **25f** ( $^1\text{H}$  NMR, 400 MHz):

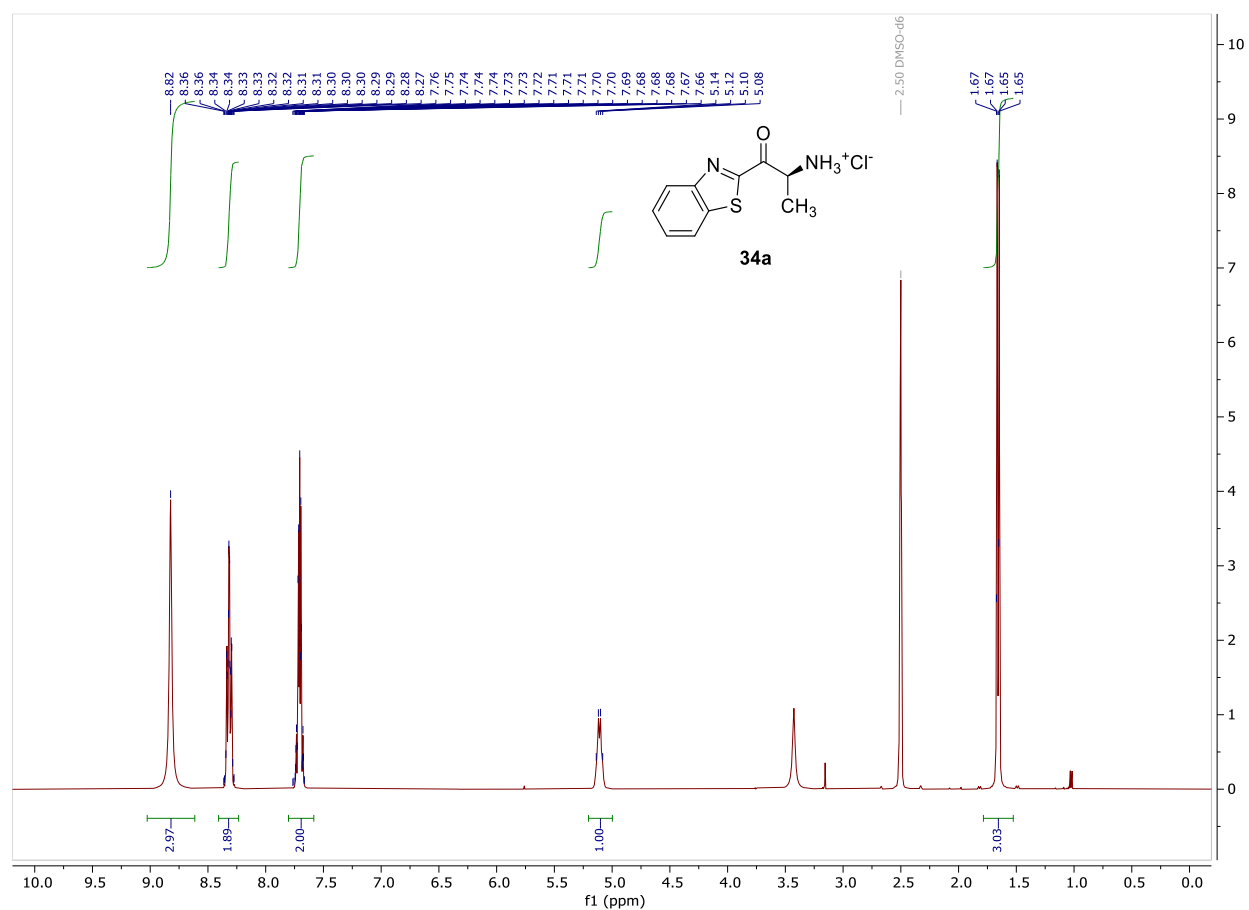


Compound **25f** ( $^{13}\text{C}$  NMR, 101 MHz):

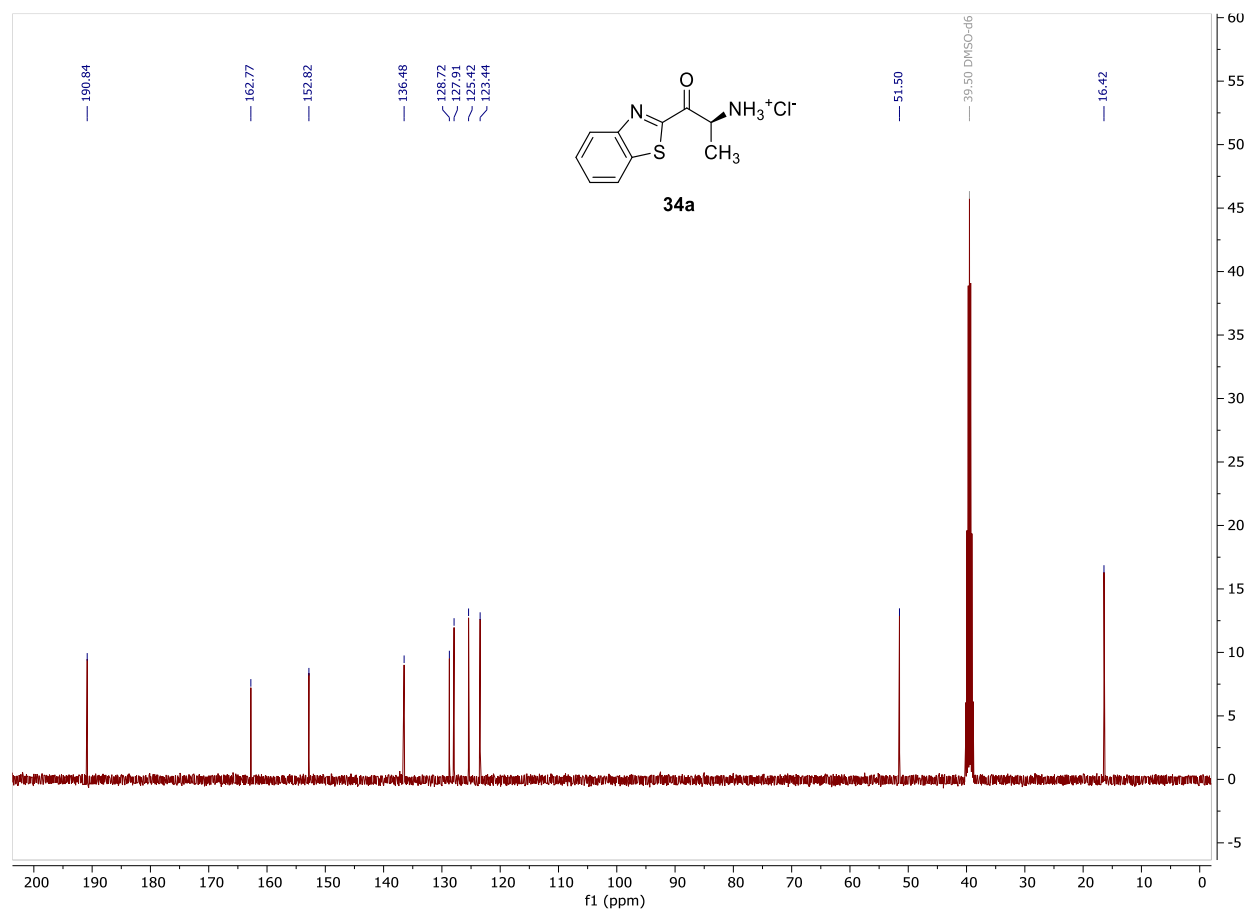




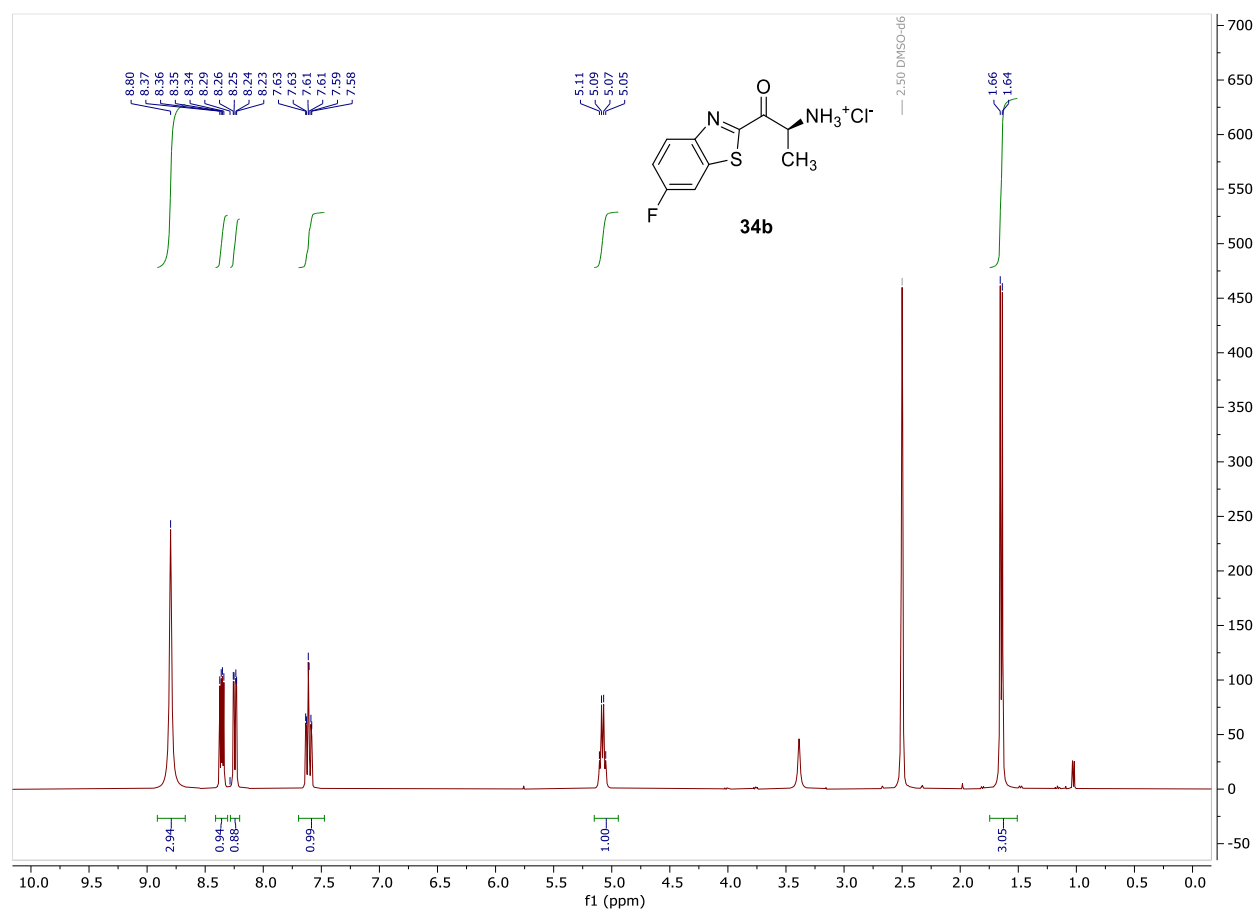
Compound **34a** ( $^1\text{H}$  NMR, 400 MHz):



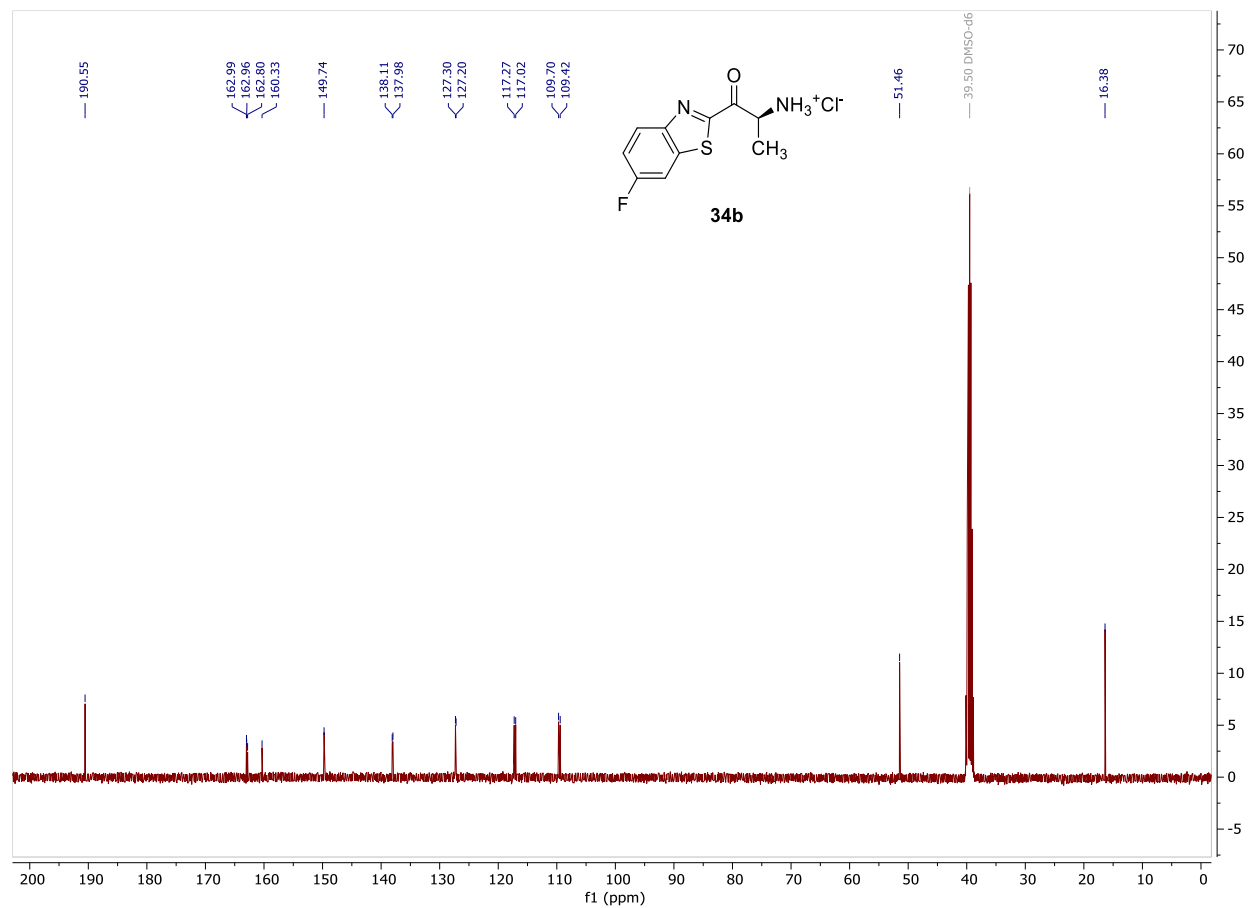
Compound **34a** ( $^{13}\text{C}$  NMR, 101 MHz):



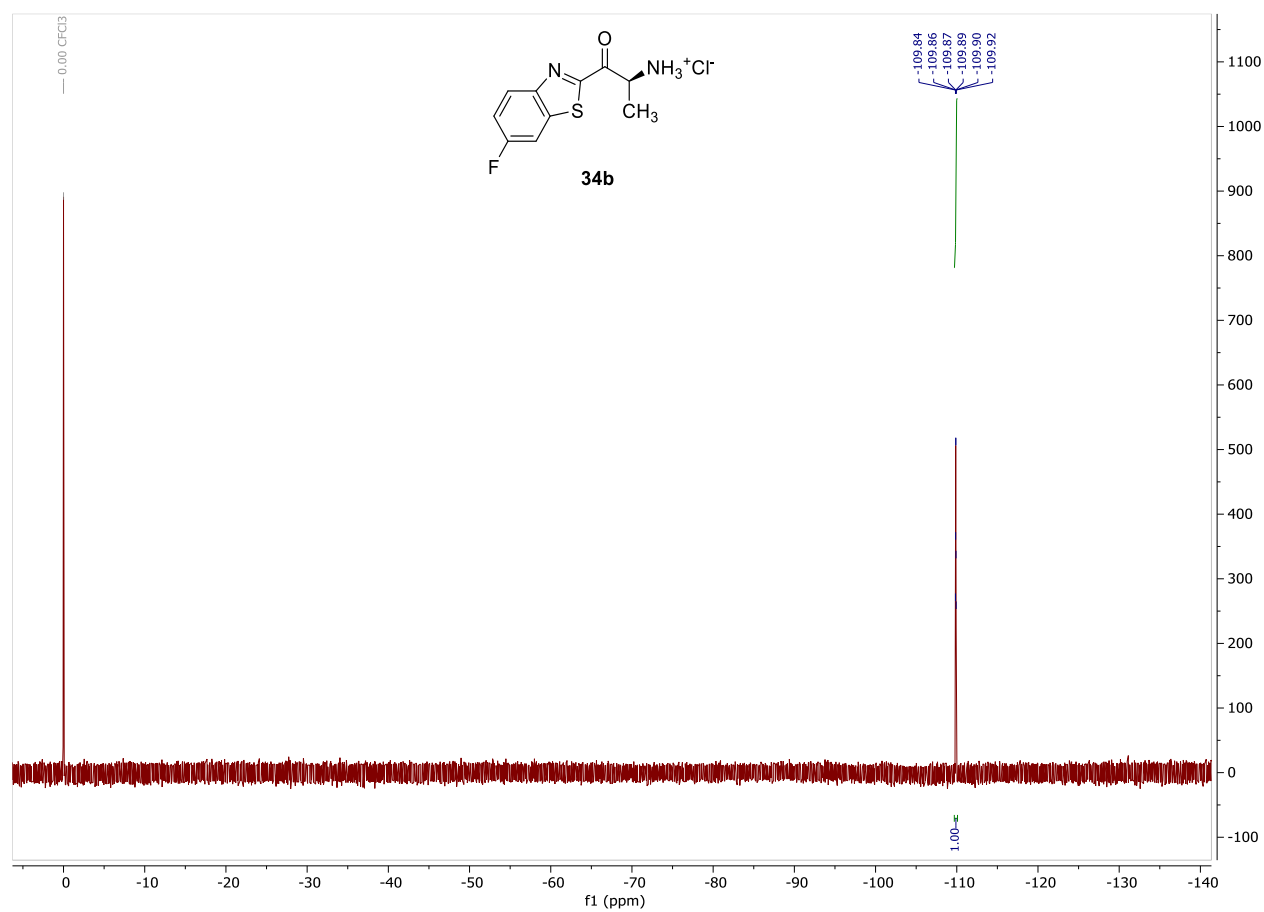
Compound **34b** ( $^1\text{H}$  NMR, 400 MHz):



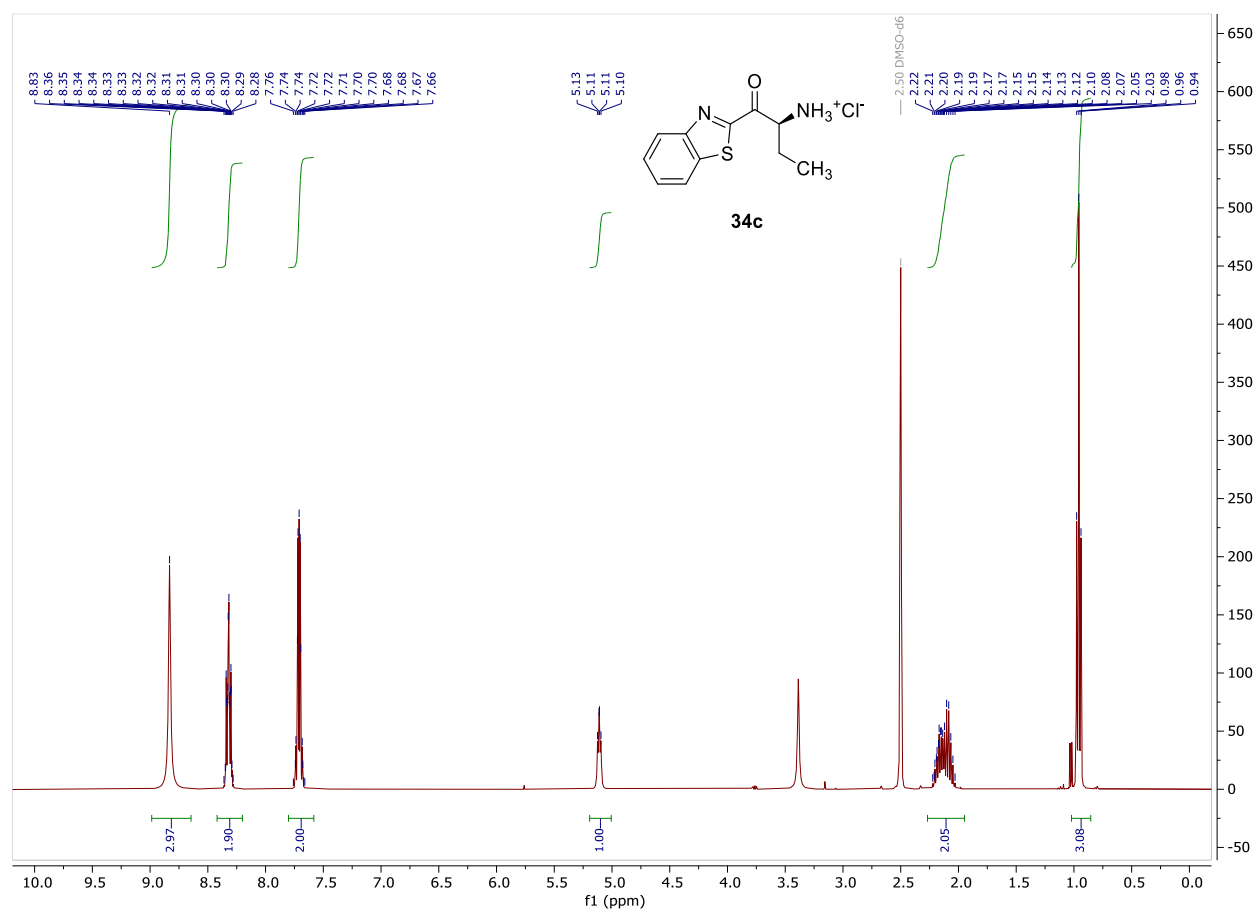
Compound **34b** ( $^{13}\text{C}$  NMR, 101 MHz):



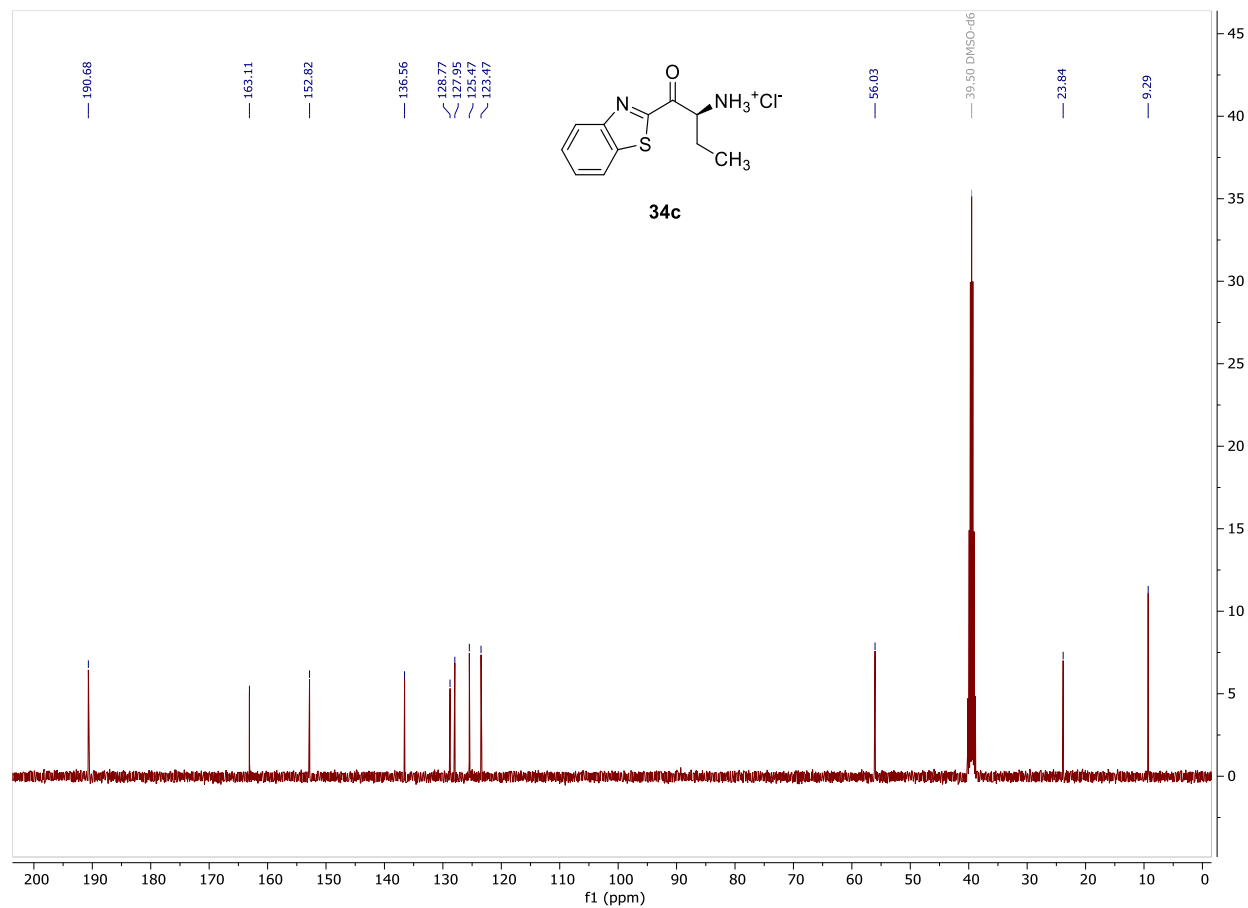
Compound **34b** ( $^{19}\text{F}$  NMR, 282 MHz):



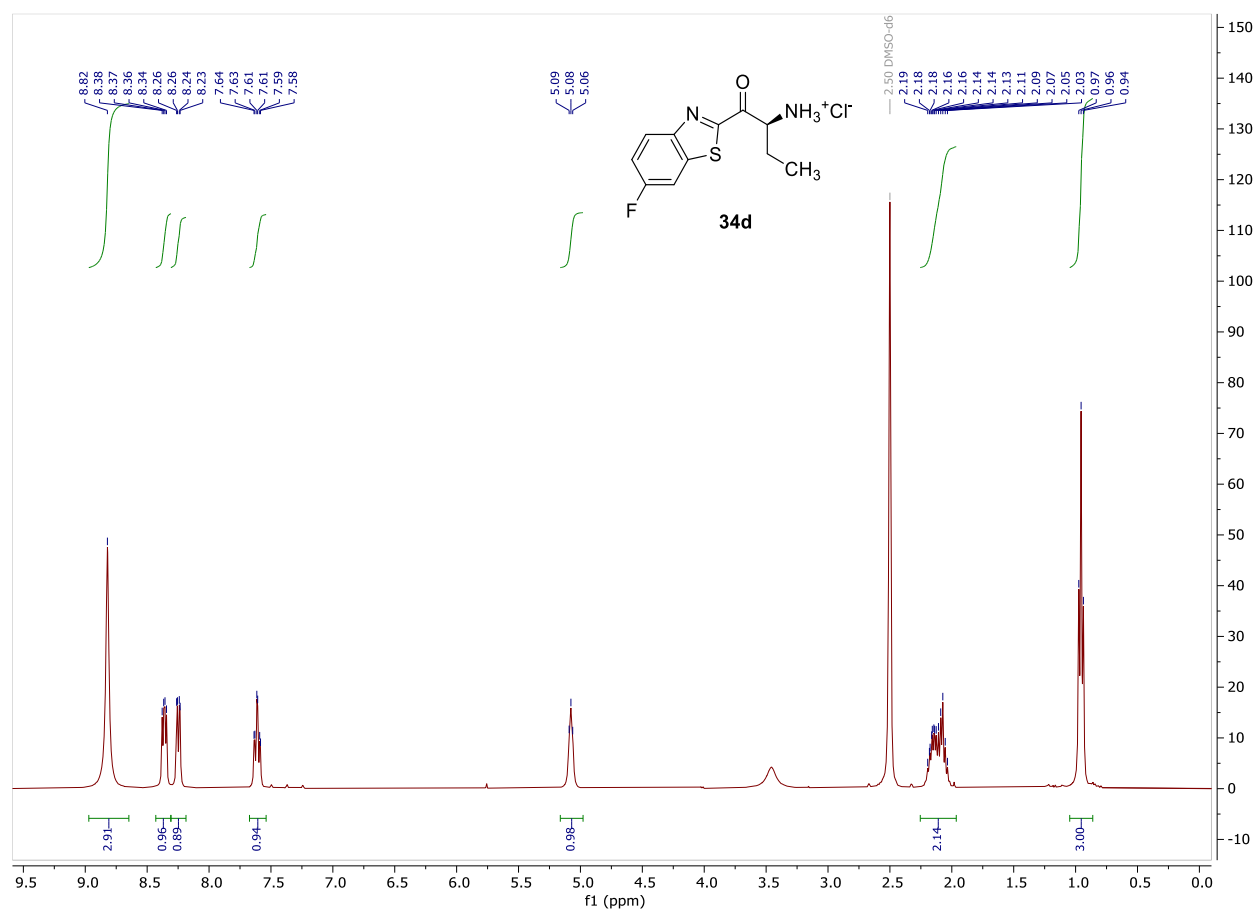
Compound **34c** ( $^1\text{H}$  NMR, 400 MHz):



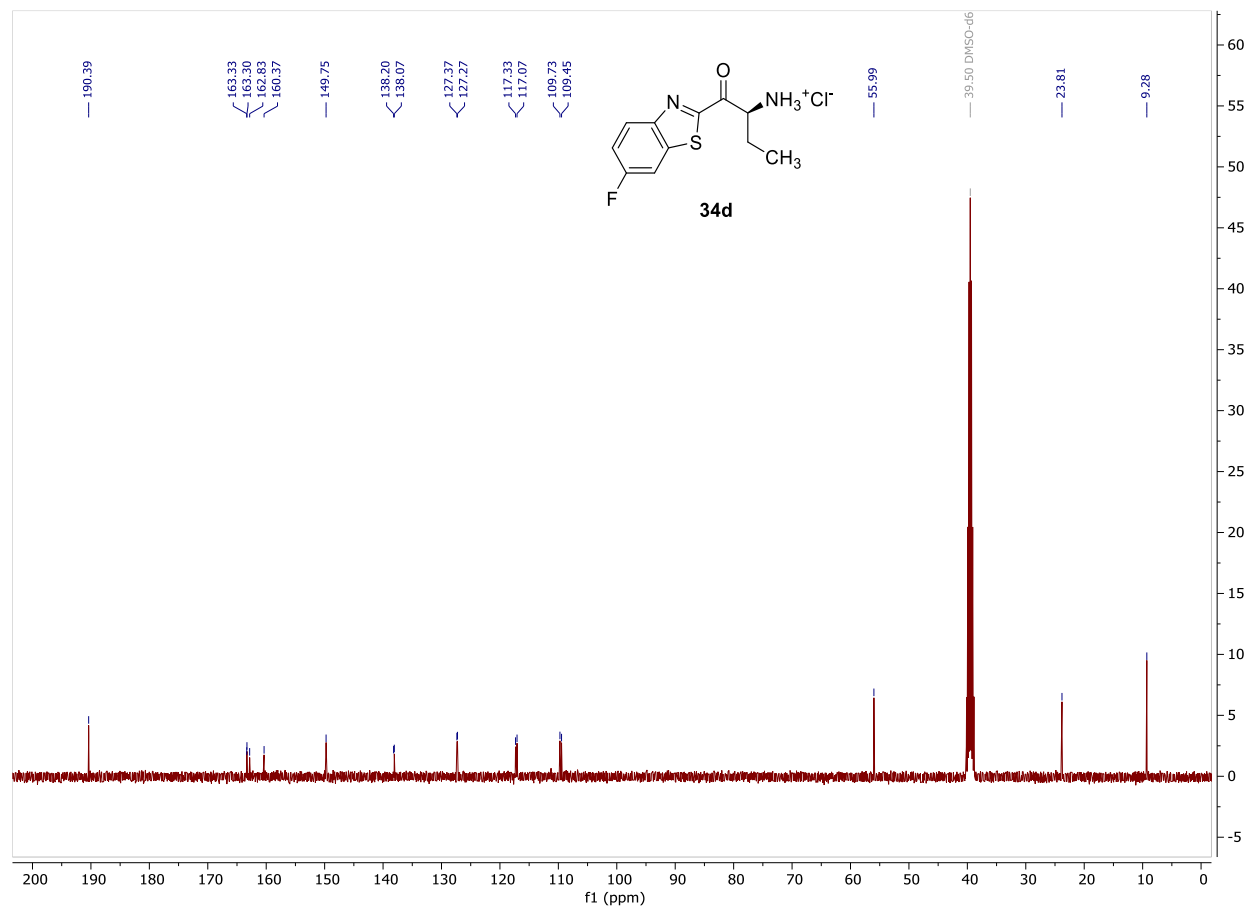
Compound **34c** ( $^{13}\text{C}$  NMR, 101 MHz):



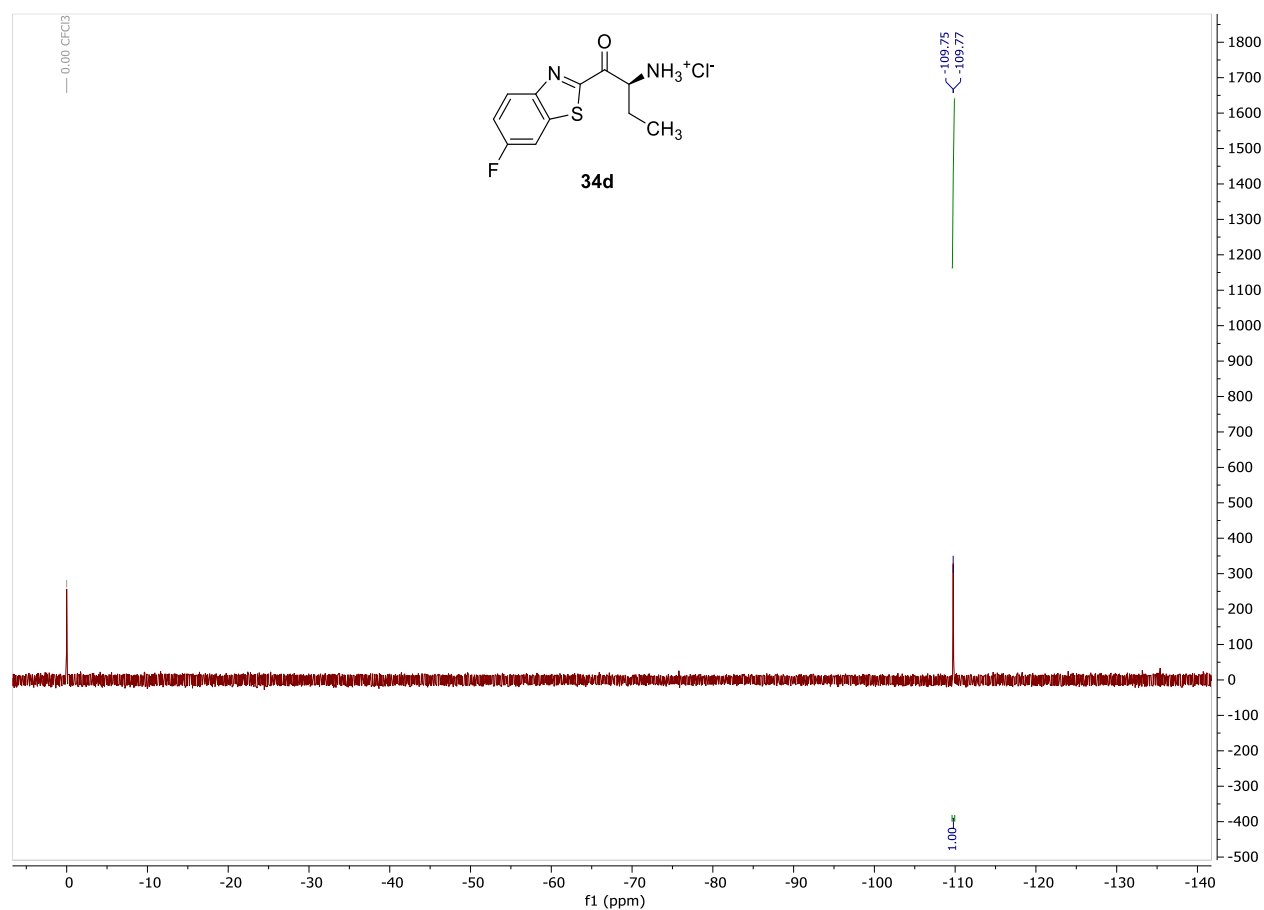
Compound **34d** ( $^1\text{H}$  NMR, 400 MHz):



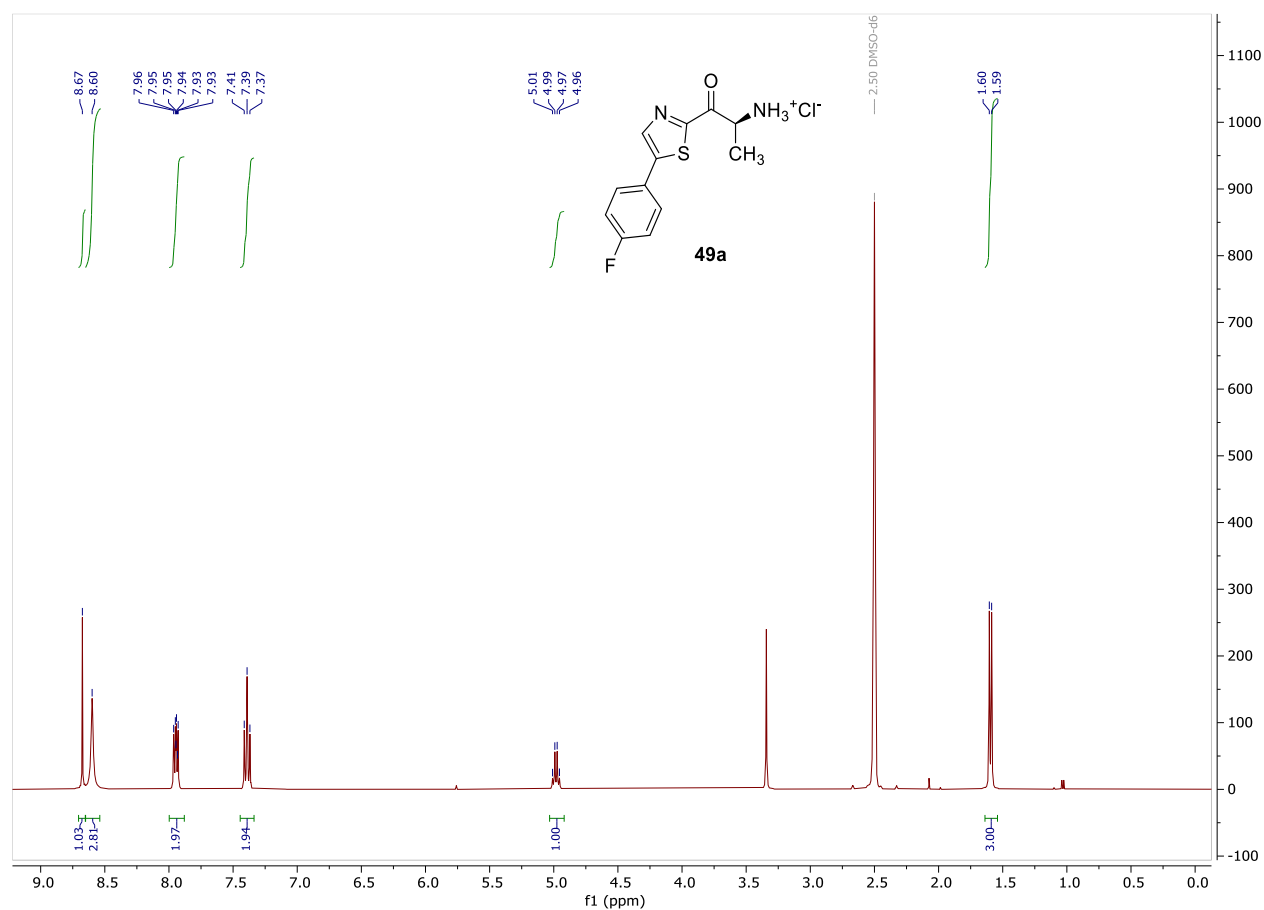
Compound **34d** ( $^{13}\text{C}$  NMR, 101 MHz):



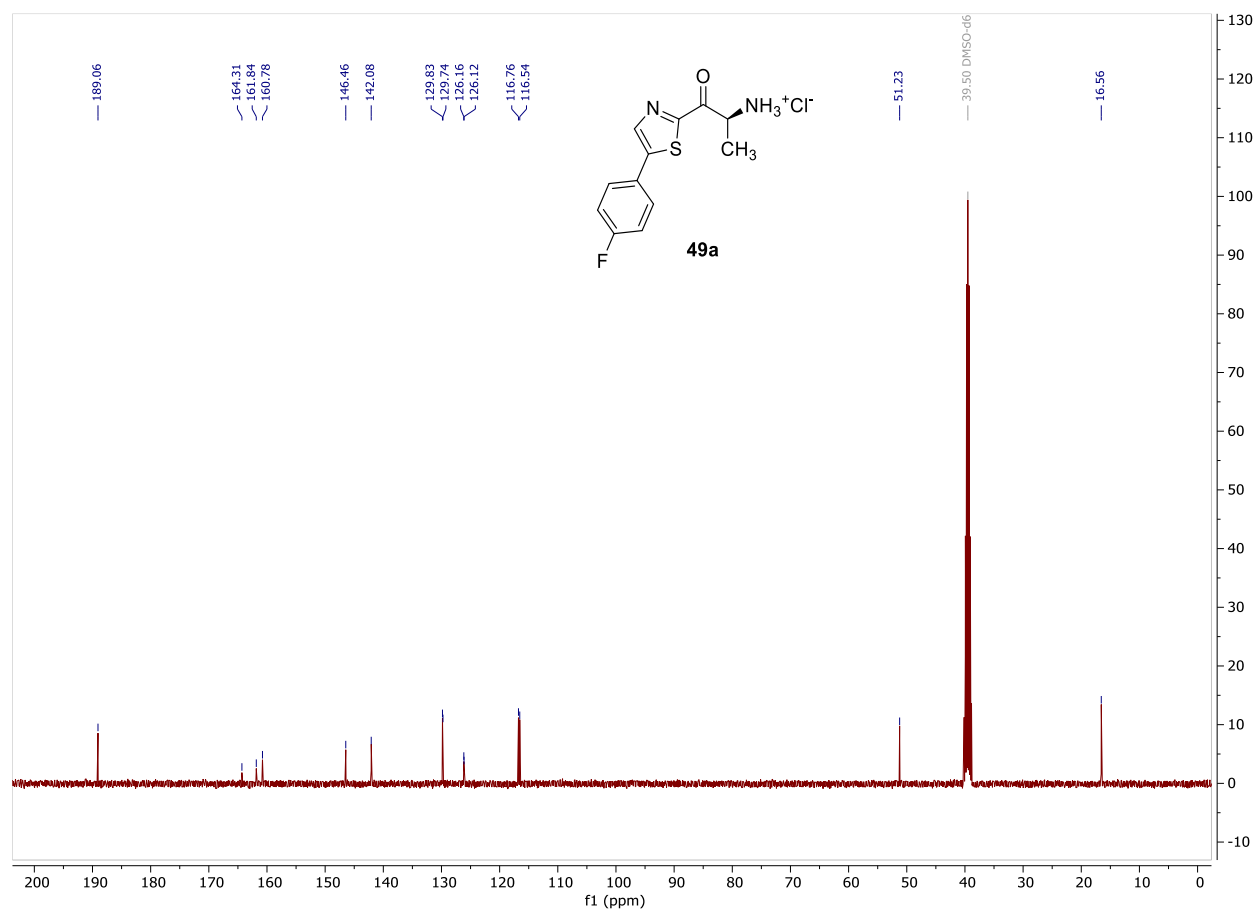
Compound **34d** ( $^{19}\text{F}$  NMR, 282 MHz):



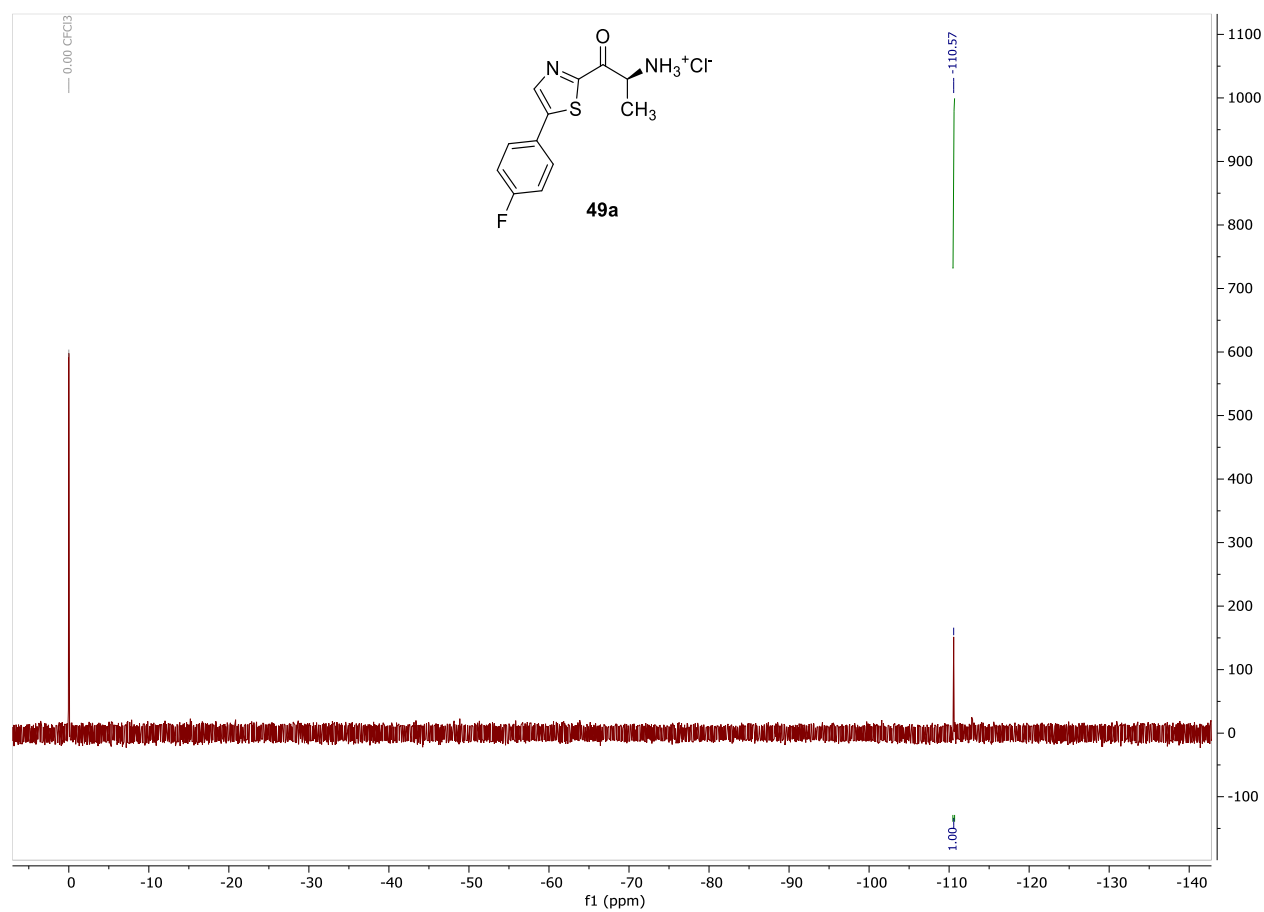
Compound **49a** ( $^1\text{H}$  NMR, 400 MHz):



Compound **49a** ( $^{13}\text{C}$  NMR, 101 MHz):

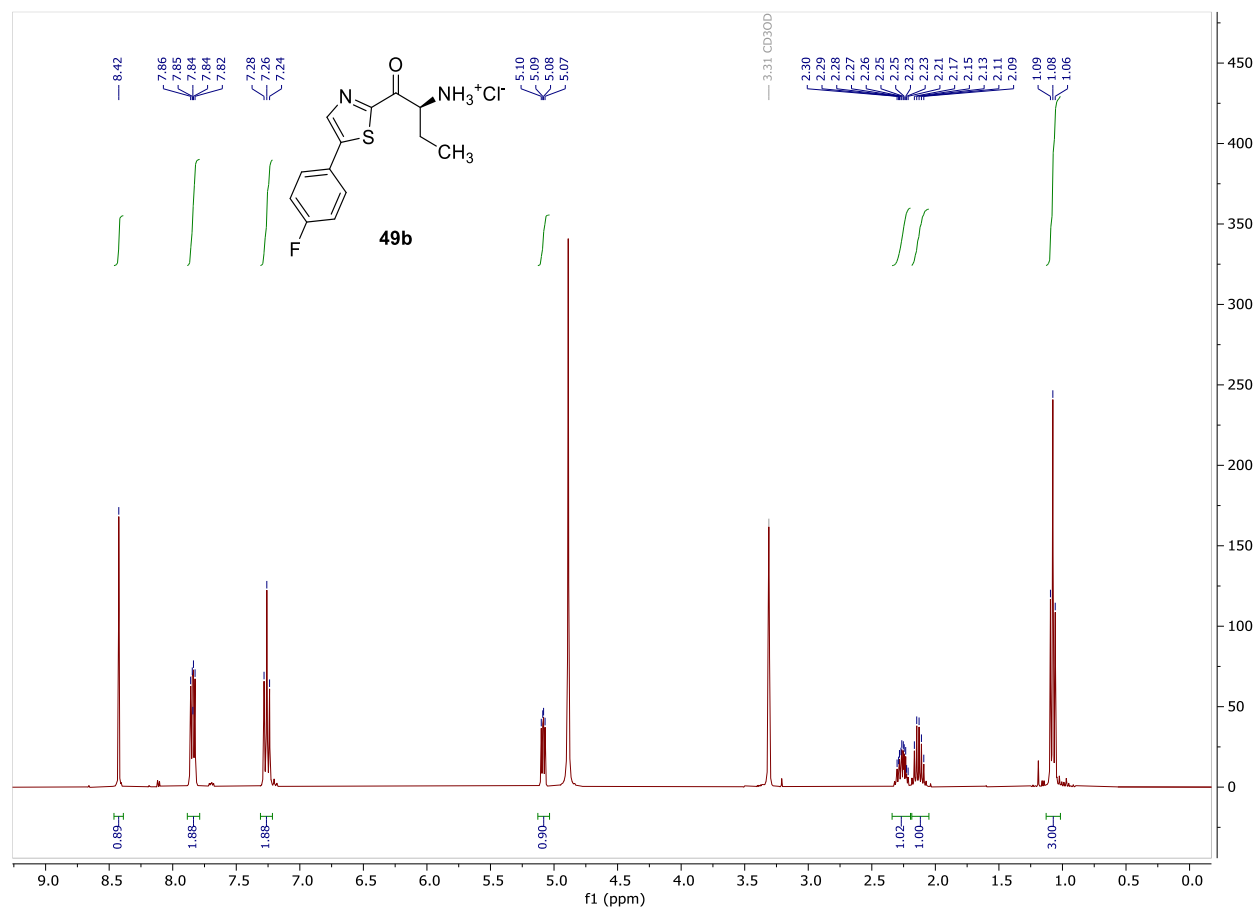


Compound **49a** ( $^{19}\text{F}$  NMR, 282 MHz):

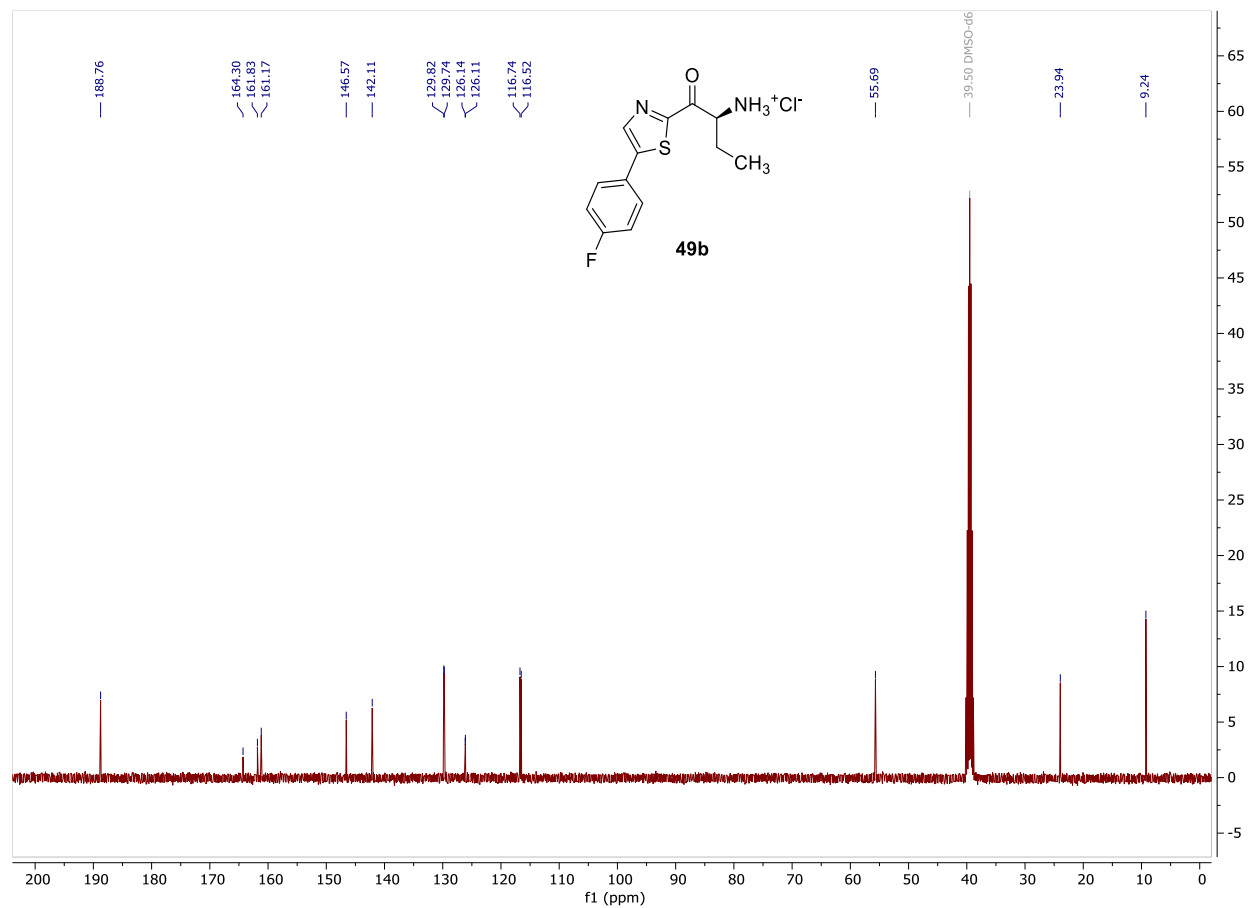




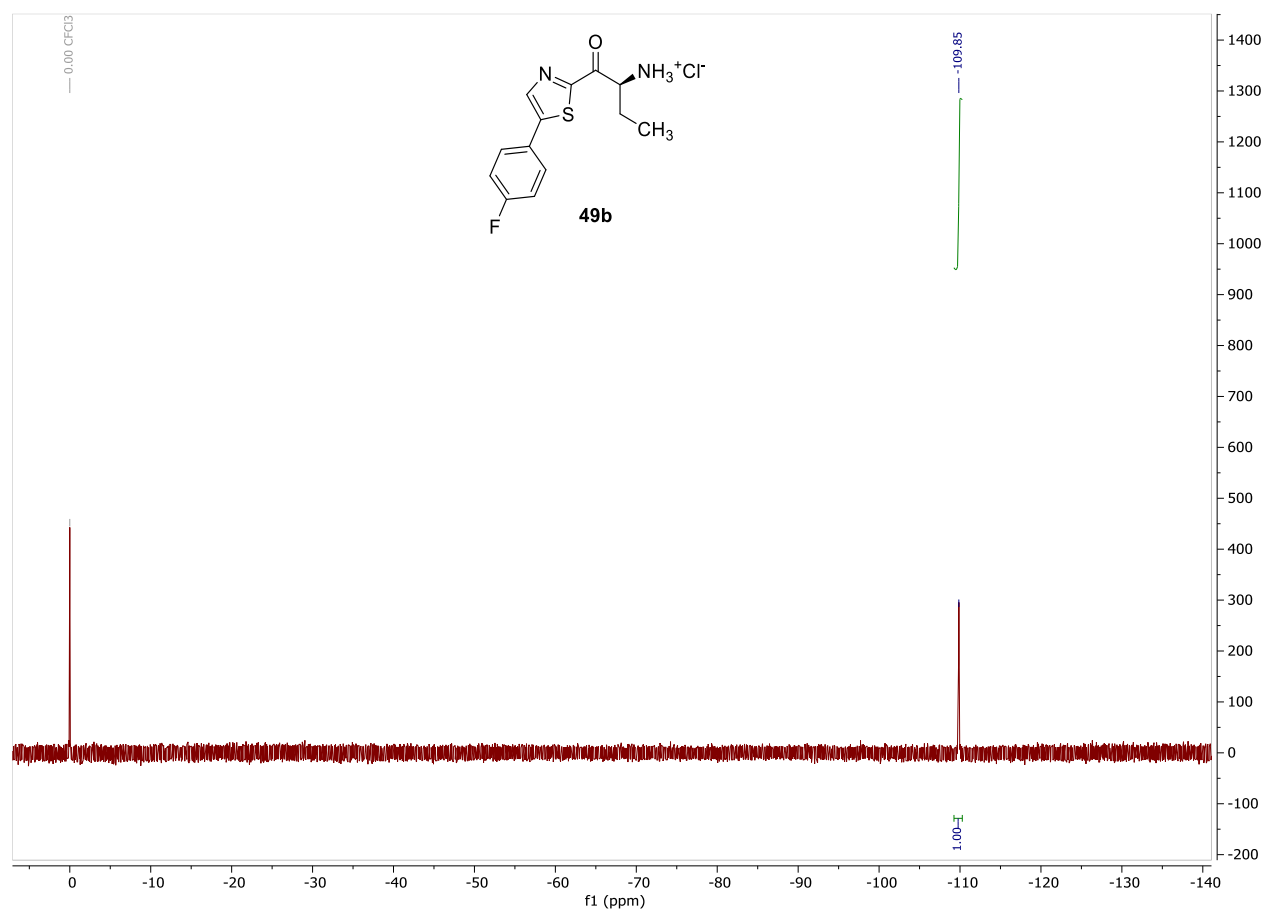
Compound **49b** ( $^1\text{H}$  NMR, 400 MHz):



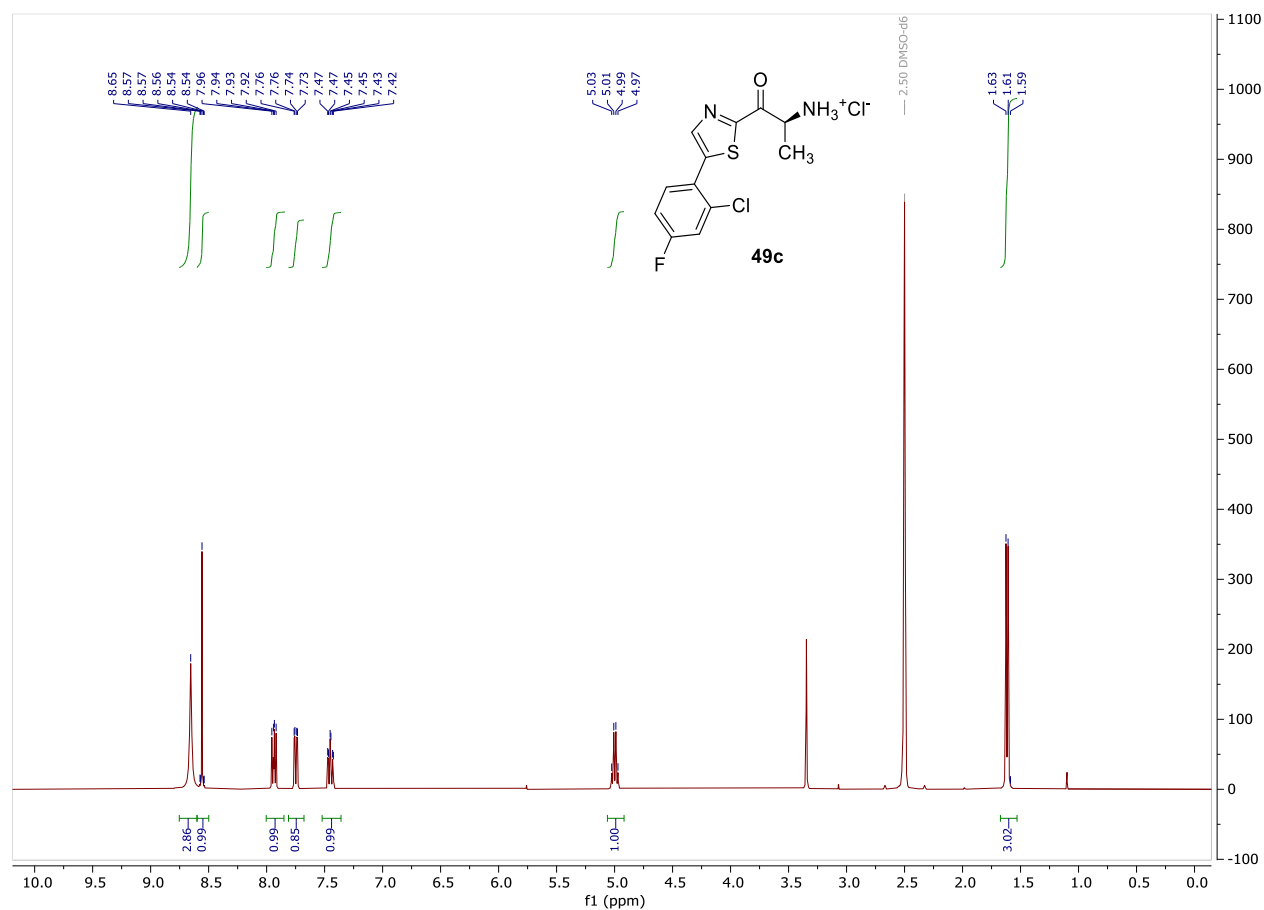
Compound **49b** ( $^{13}\text{C}$  NMR, 101 MHz):



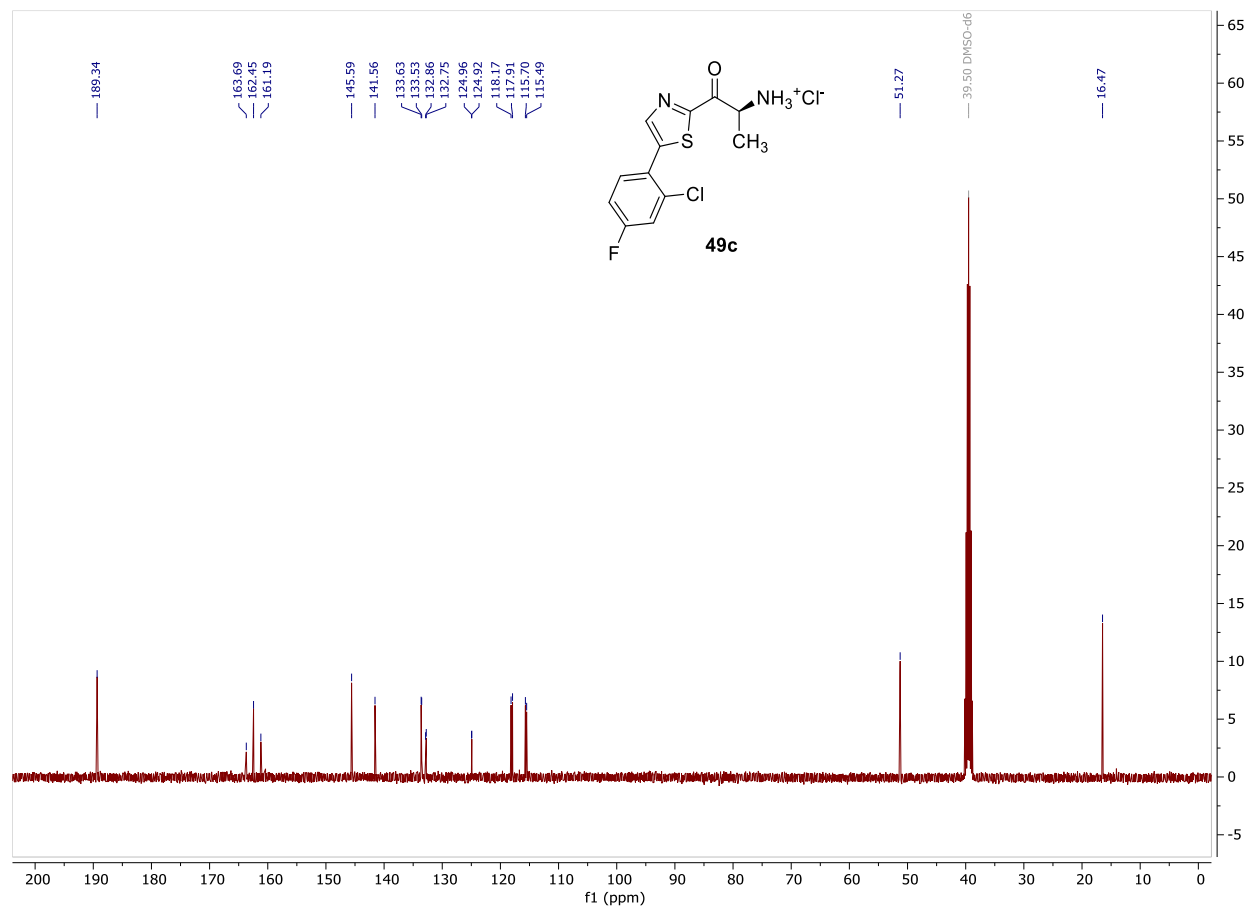
Compound **49b** ( $^{19}\text{F}$  NMR, 282 MHz):



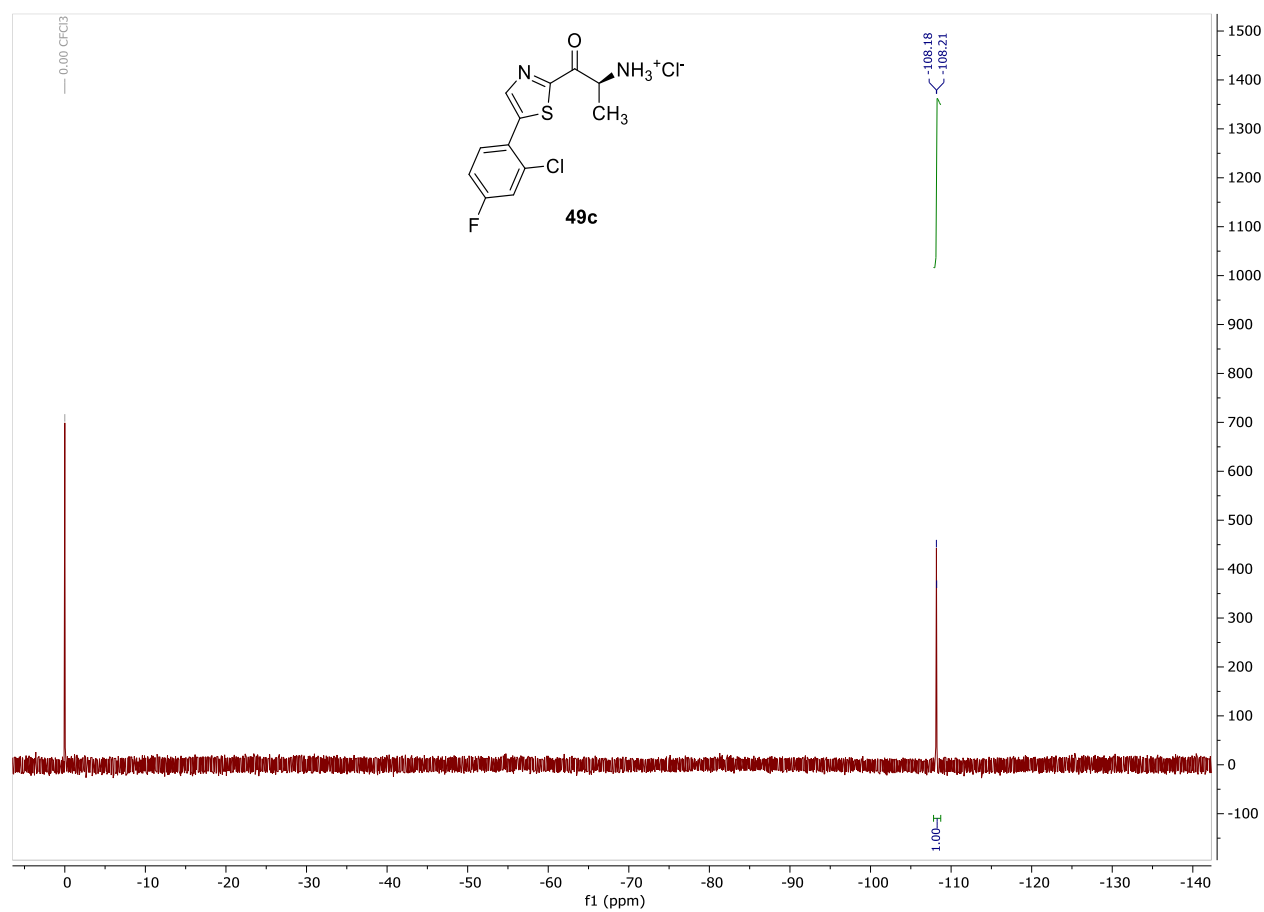
Compound **49c** ( $^1\text{H}$  NMR, 400 MHz):



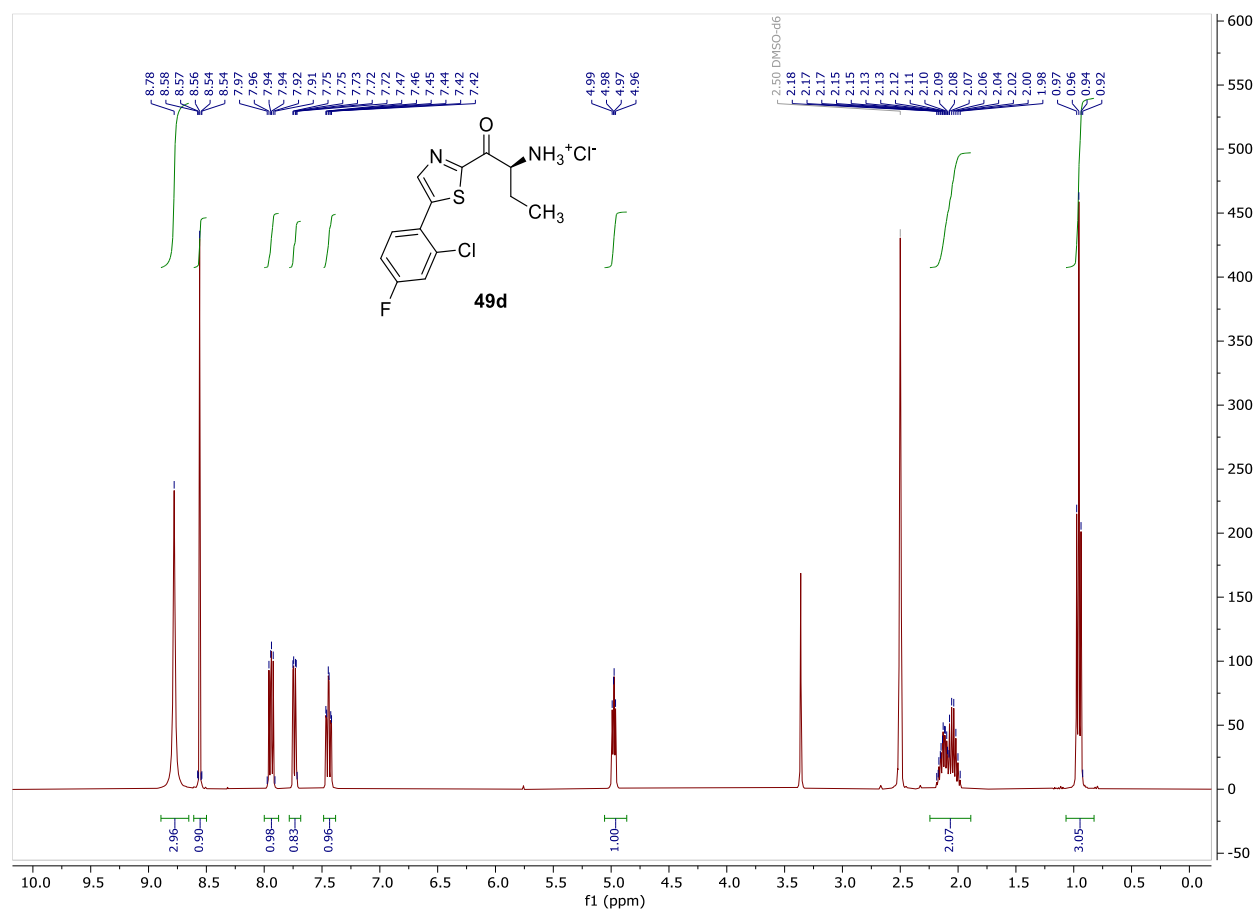
Compound **49c** ( $^{13}\text{C}$  NMR, 101 MHz):



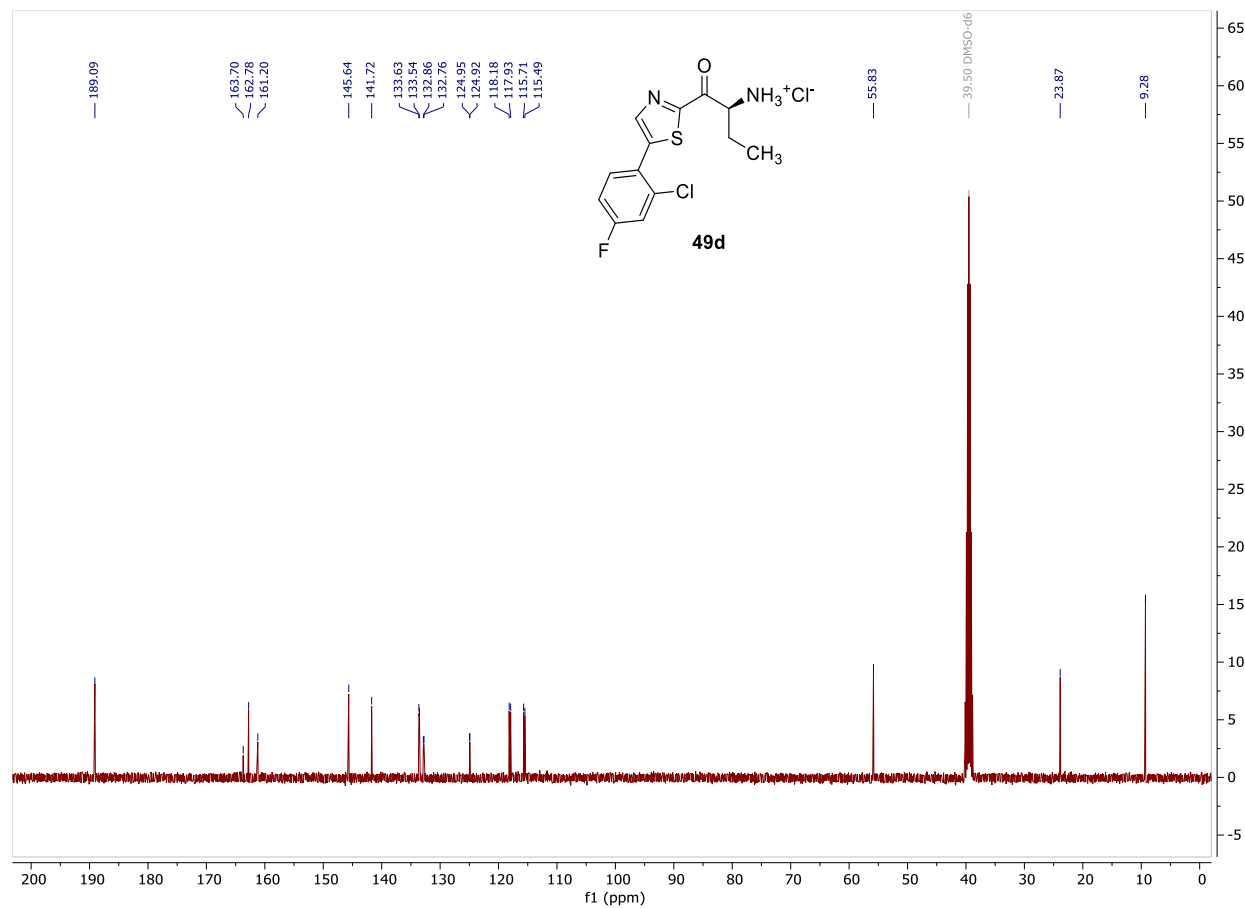
Compound **49c** ( $^{19}\text{F}$  NMR, 282 MHz):



Compound **49d** ( $^1\text{H}$  NMR, 400 MHz):



Compound **49d** ( $^{13}\text{C}$  NMR, 101 MHz):



Compound **49d** ( $^{19}\text{F}$  NMR, 282 MHz):

