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Intramolecular functional group differentiation as a strategy for synthesis of bridged bicyclic β-amino acids

Andriy V. Tymtsunik,[a,b] Serhii O. Kokhan,[a,b] Yevhen M. Ivon [a,b] Igor V. Komarov,[a,b]

Oleksandr O. Grygorenko[a,*]

[a]*National Taras Shevchenko University of Kyiv, Volodymyrska Street 64, Kyiv 01601, Ukraine*

[b]*Enamine Ltd., Alexandra Matrosova Street, 23, Kyiv 01103, Ukraine*

[*]Corresponding author. E-mail: gregor@univ.kiev.ua.

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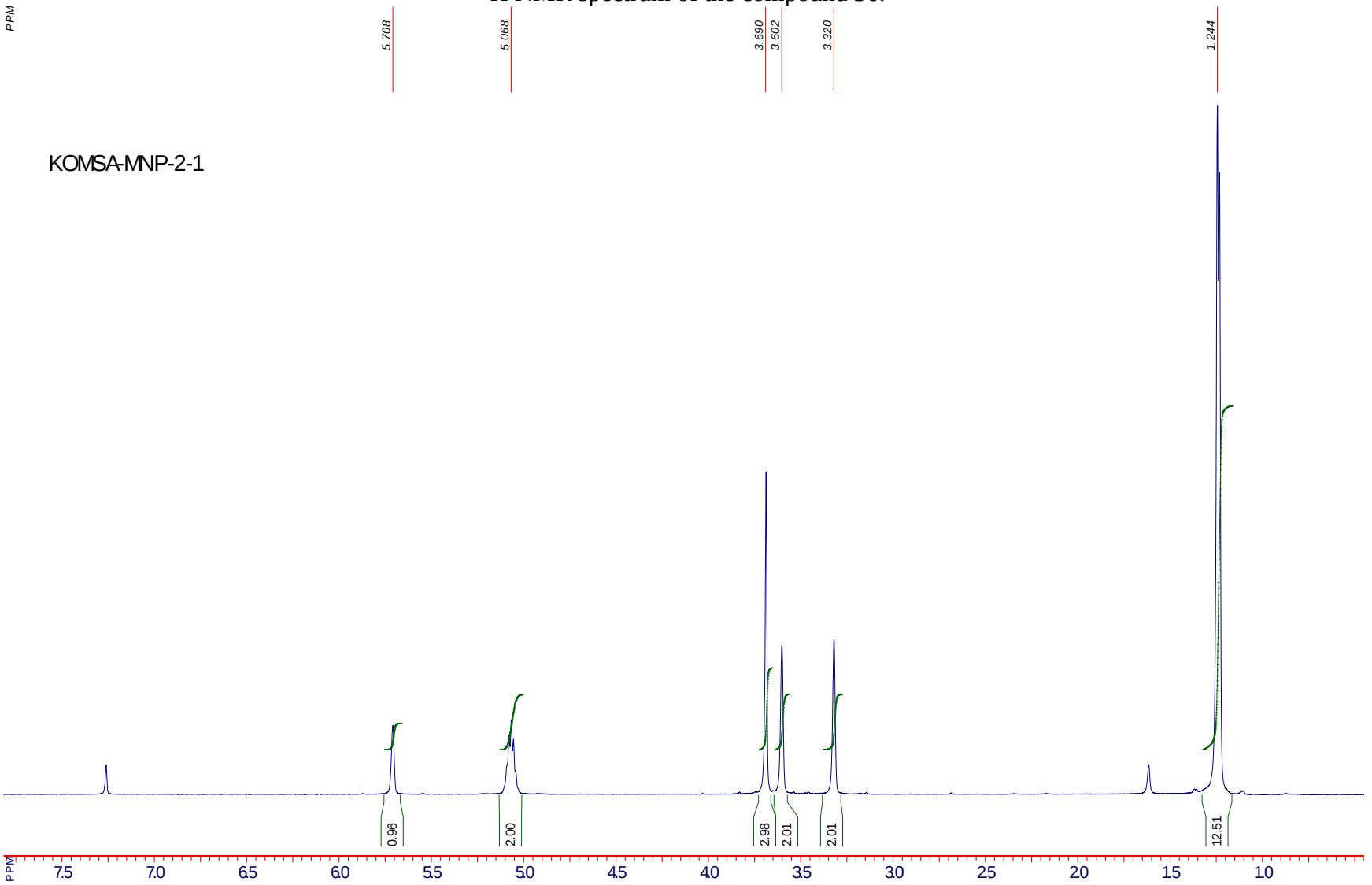
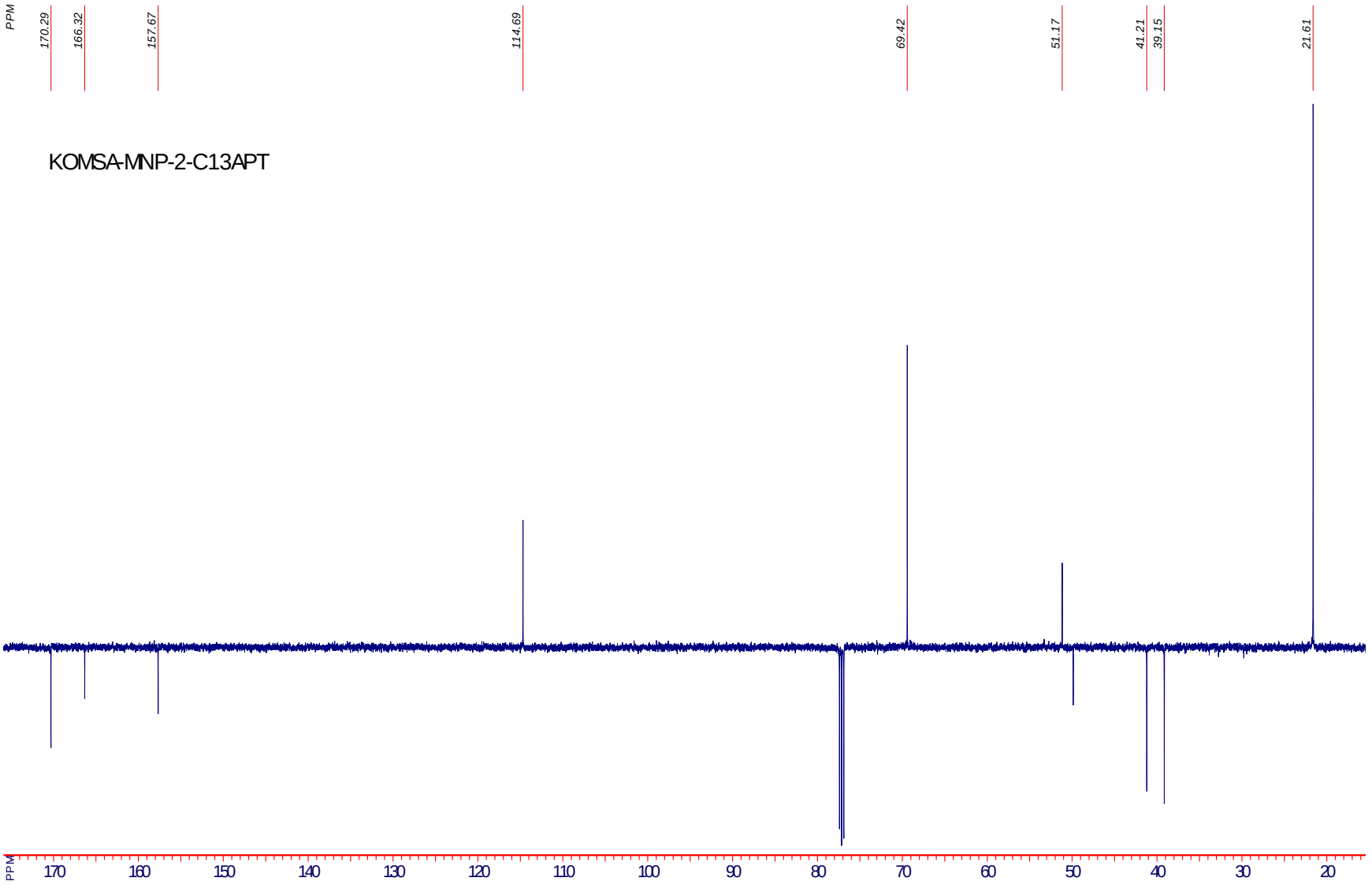
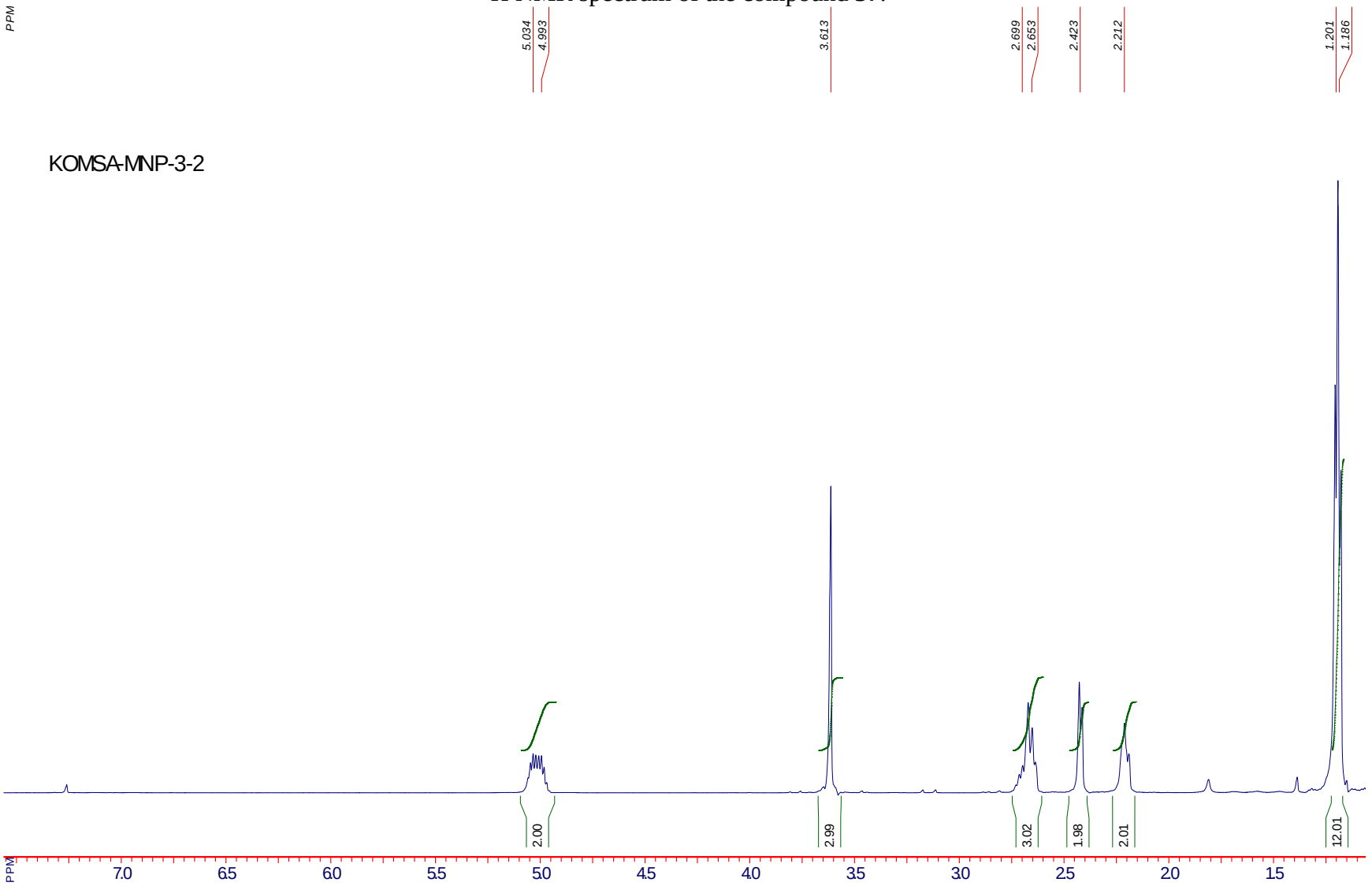
^{1}H NMR spectrum of the compound **36**.



^{13}C NMR spectrum of the compound **36**.



^{1}H NMR spectrum of the compound **37**.



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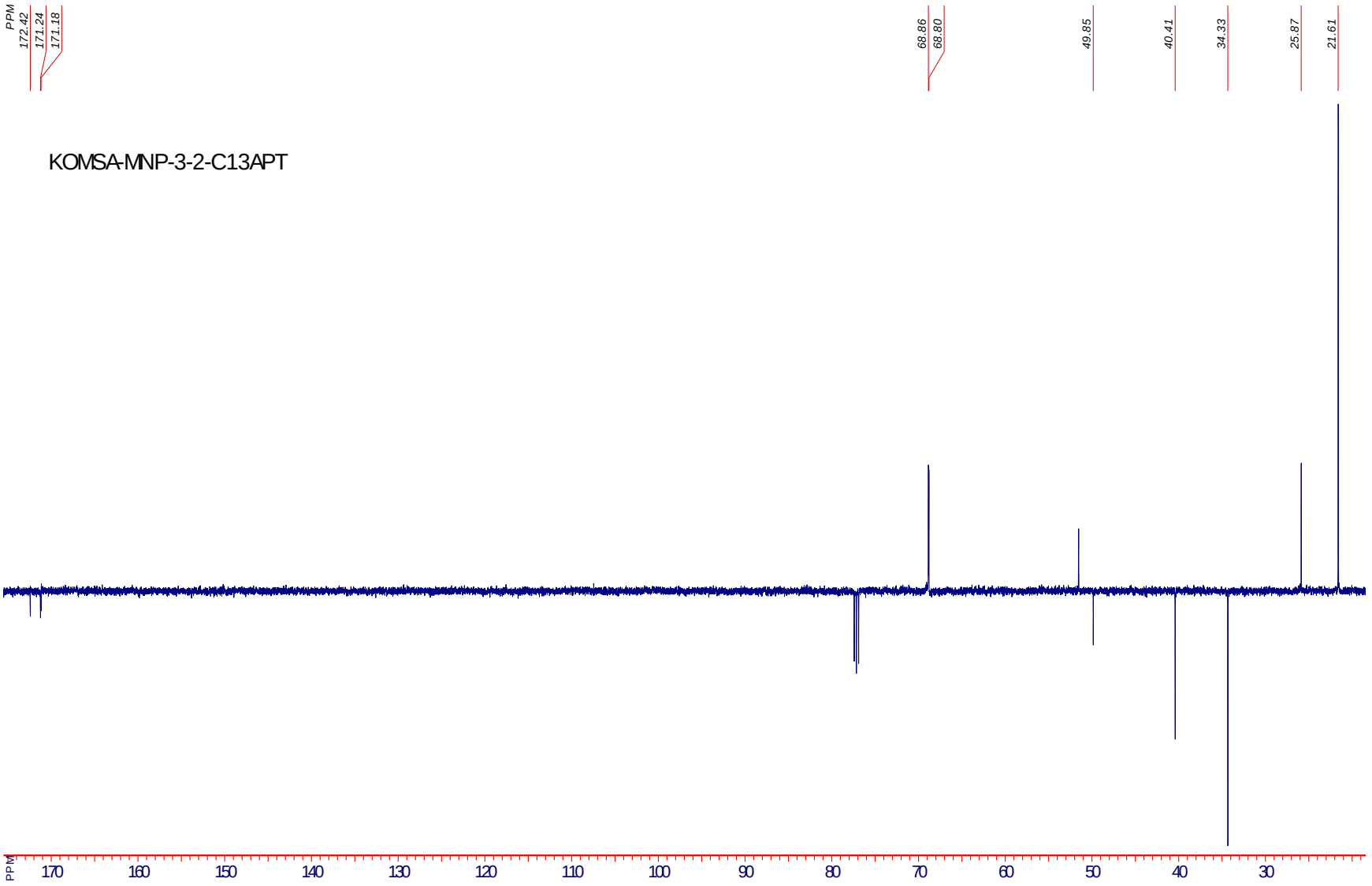
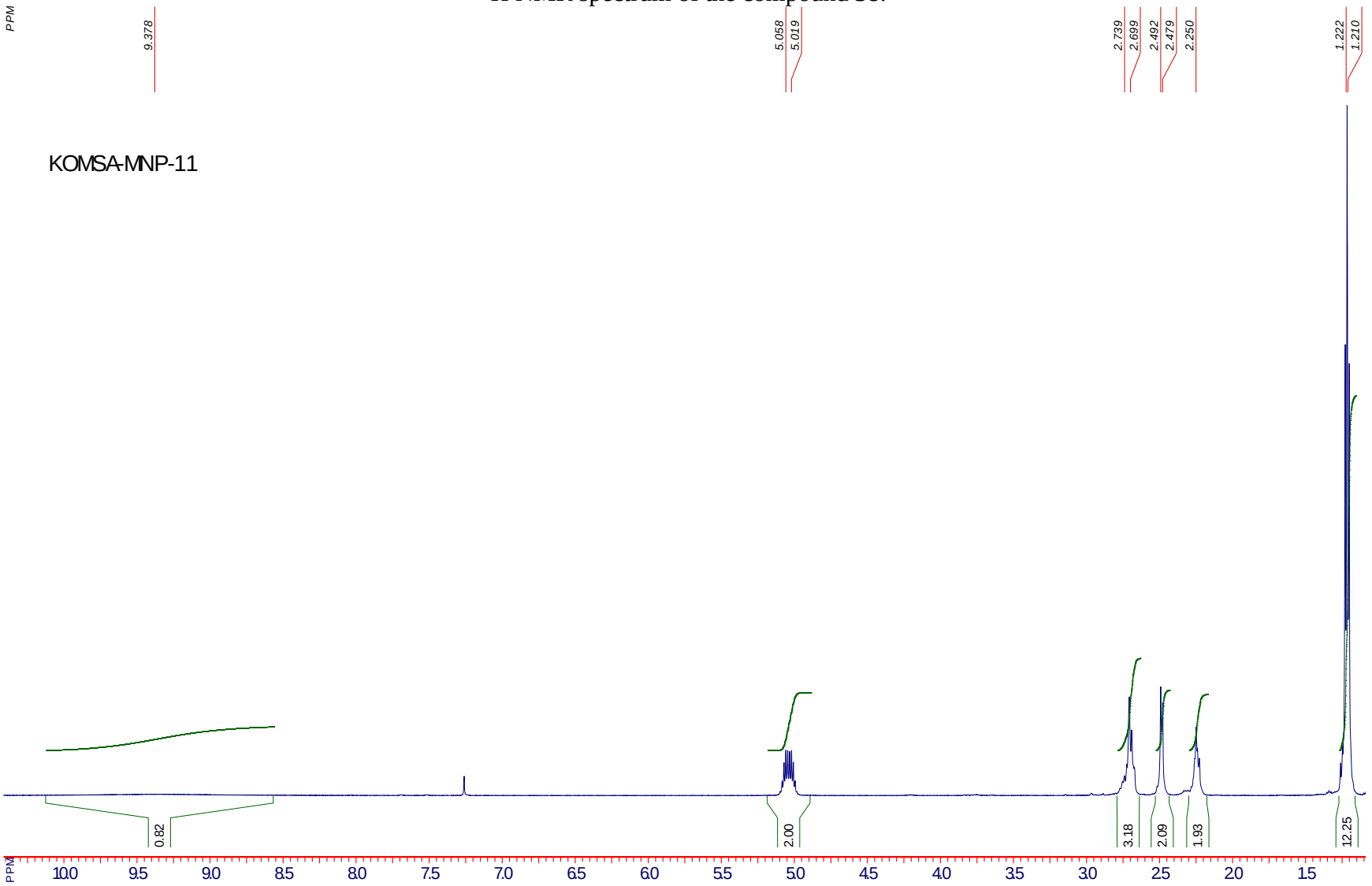


^{1}H NMR spectrum of the compound **38**.



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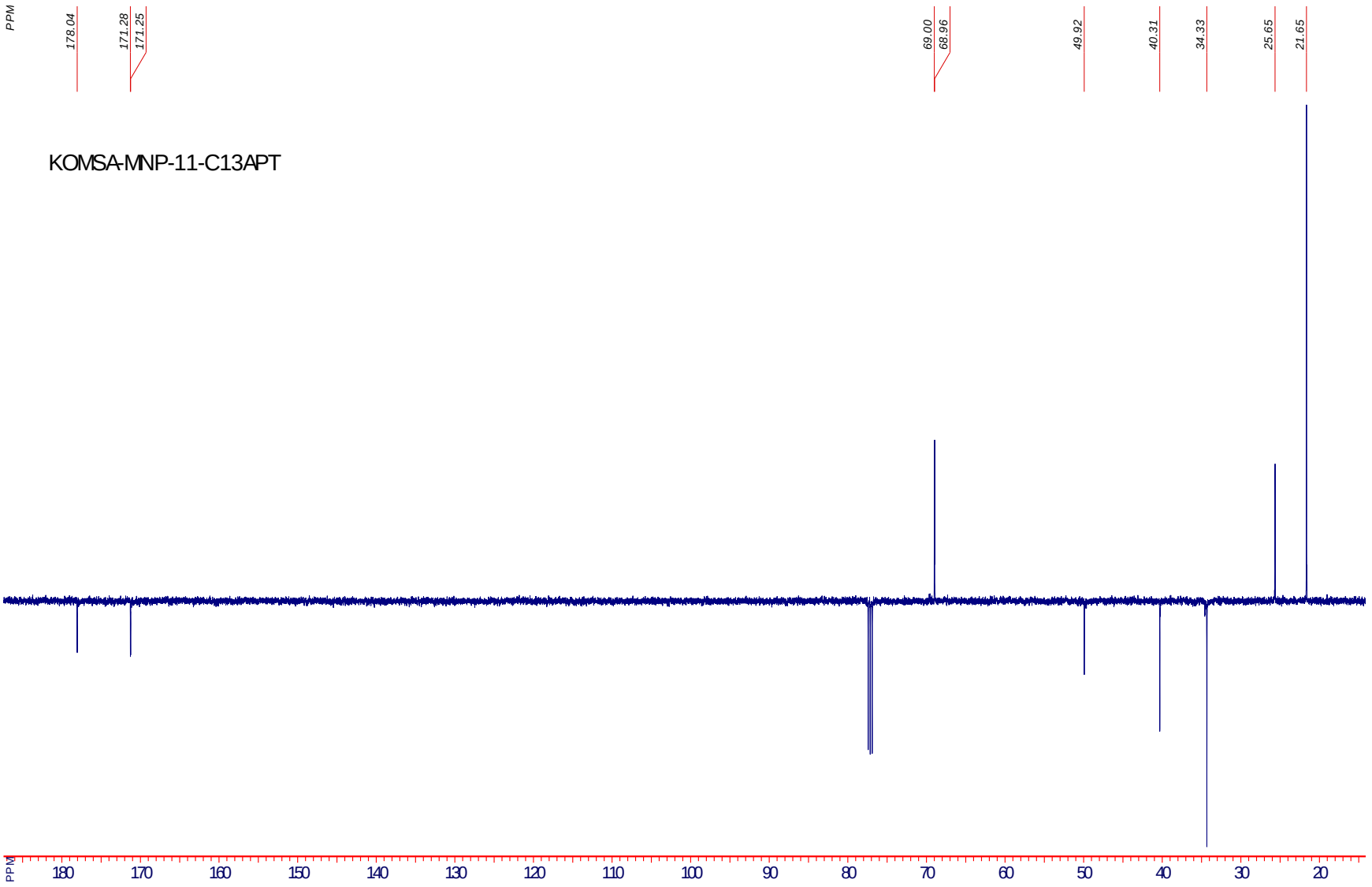

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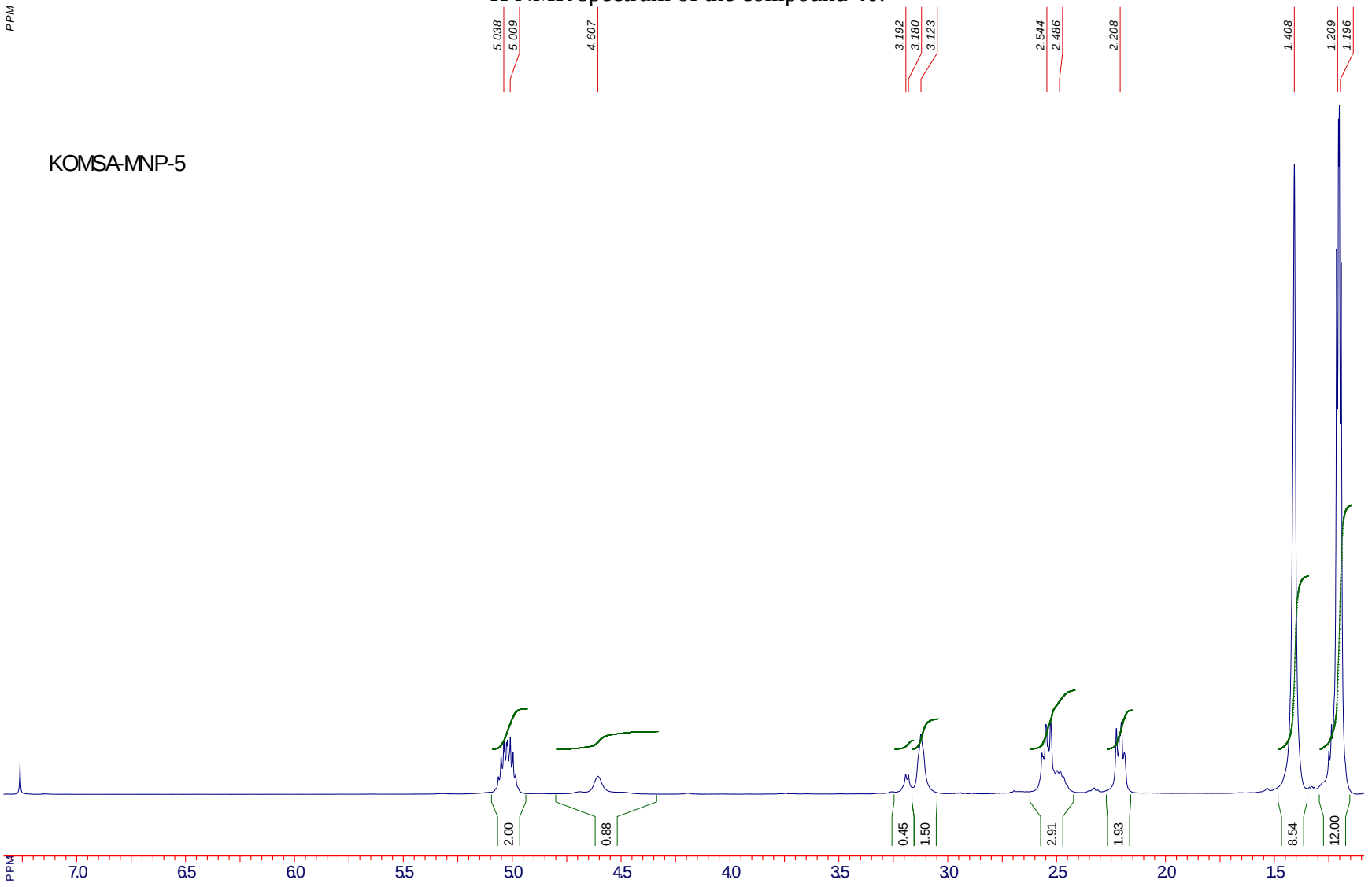

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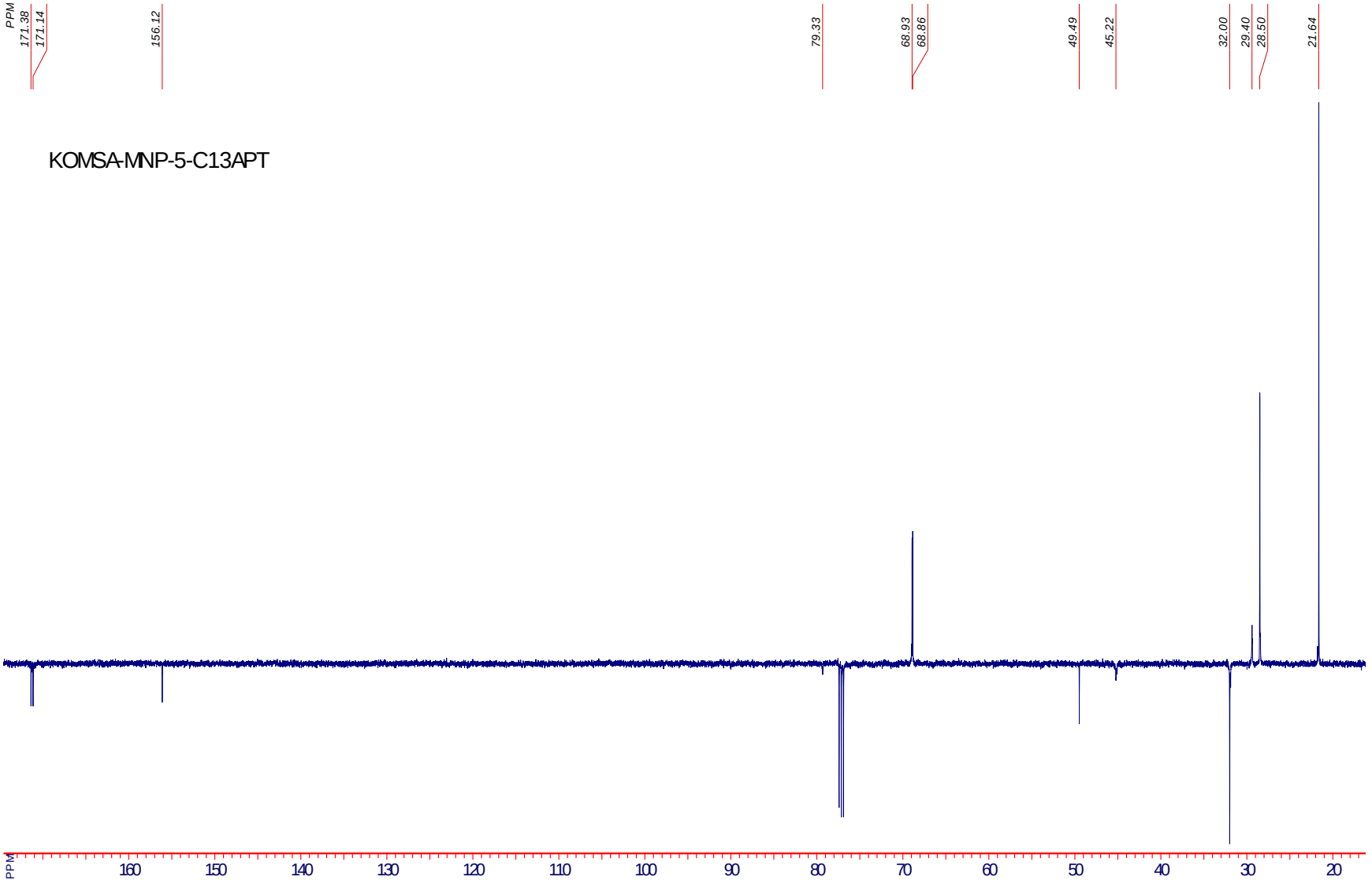

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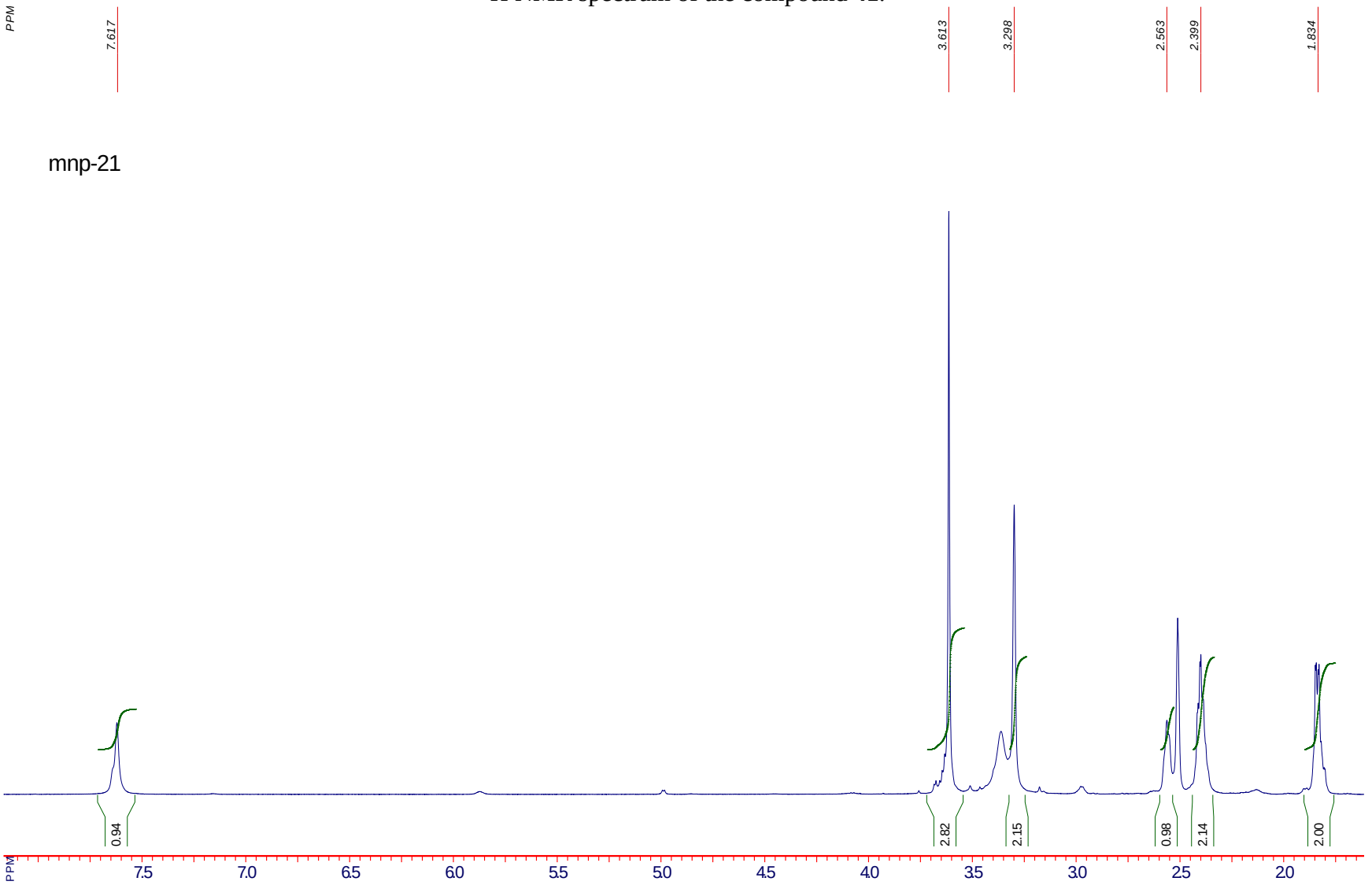

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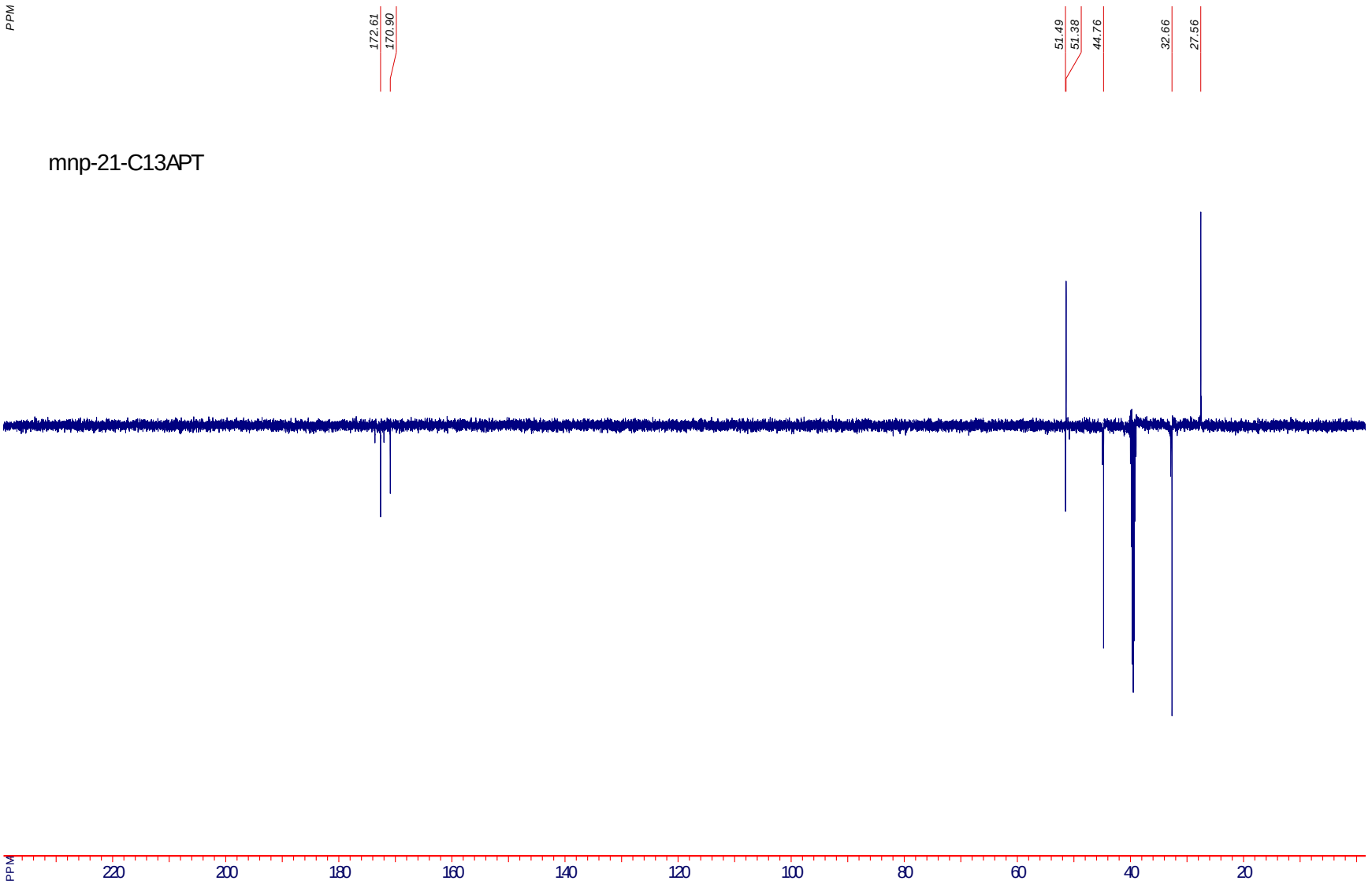

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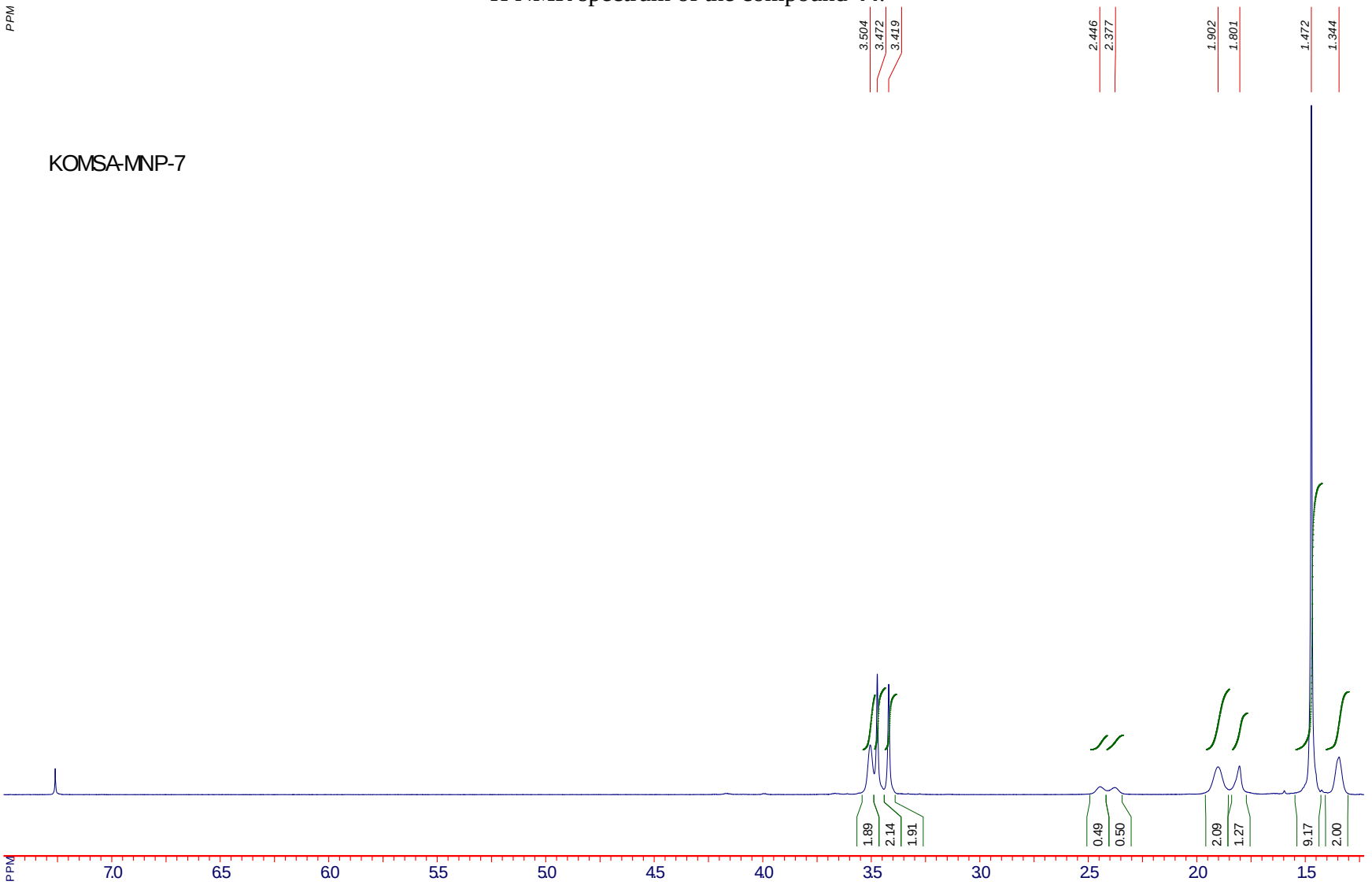

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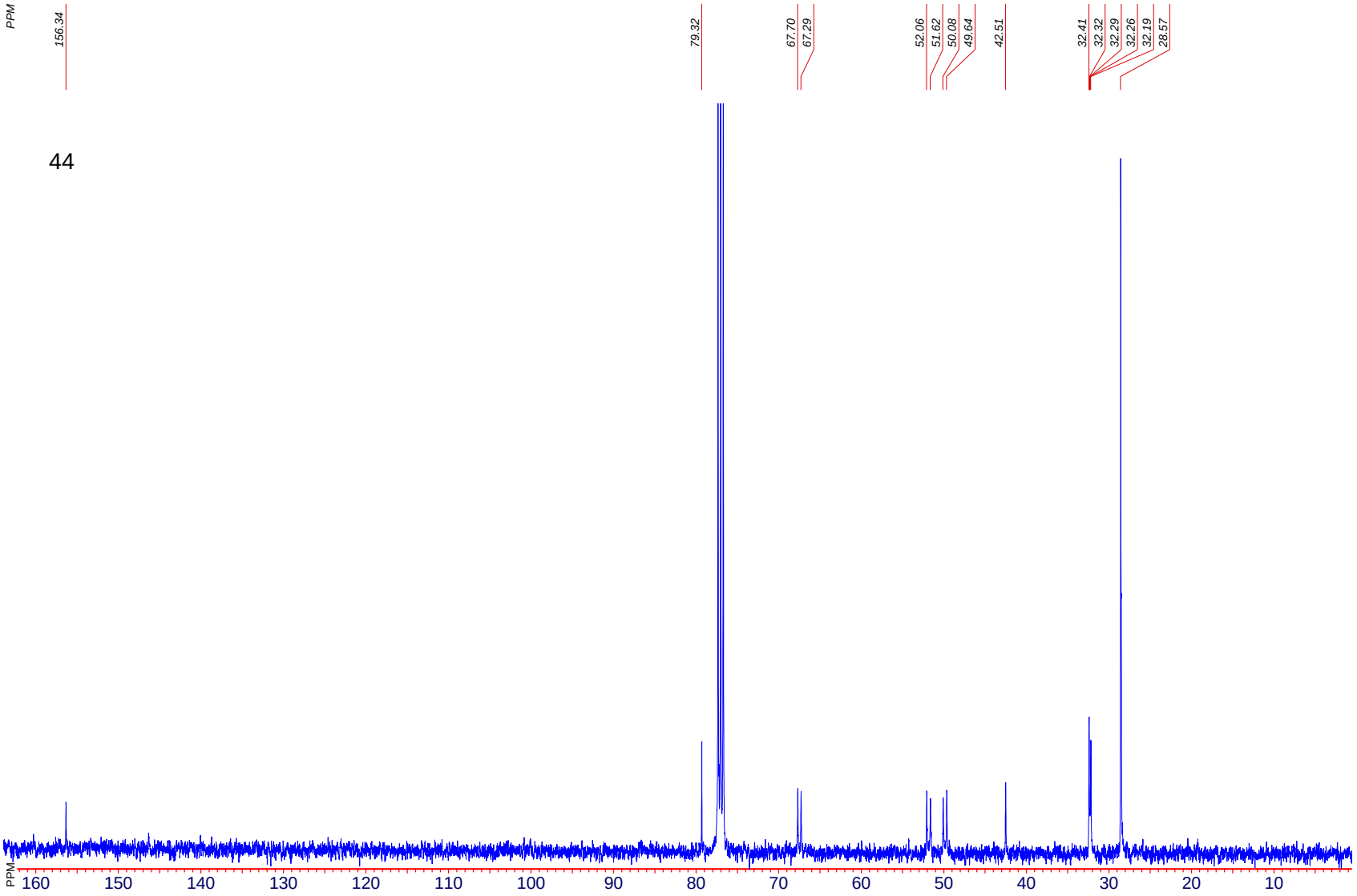

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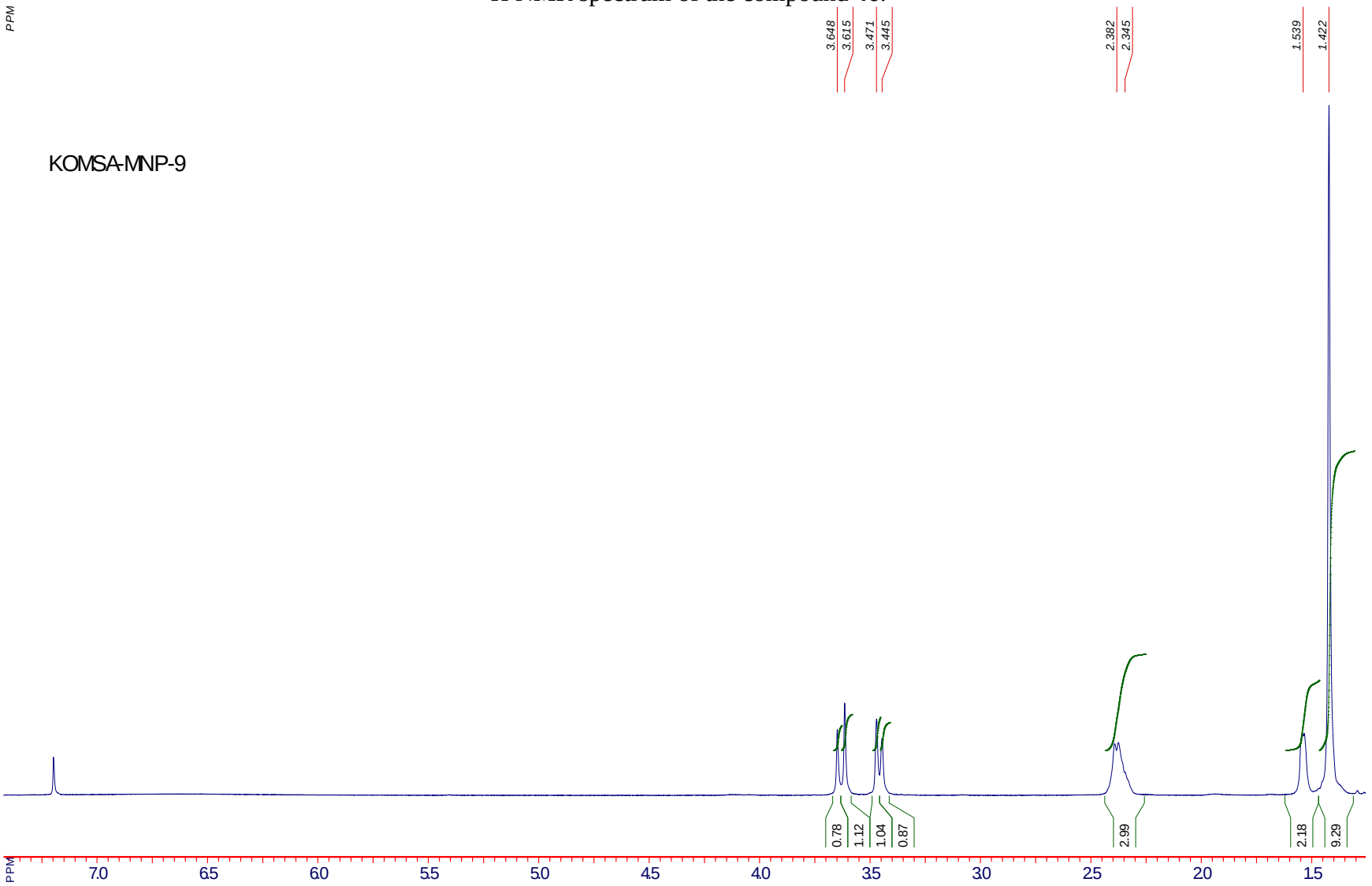

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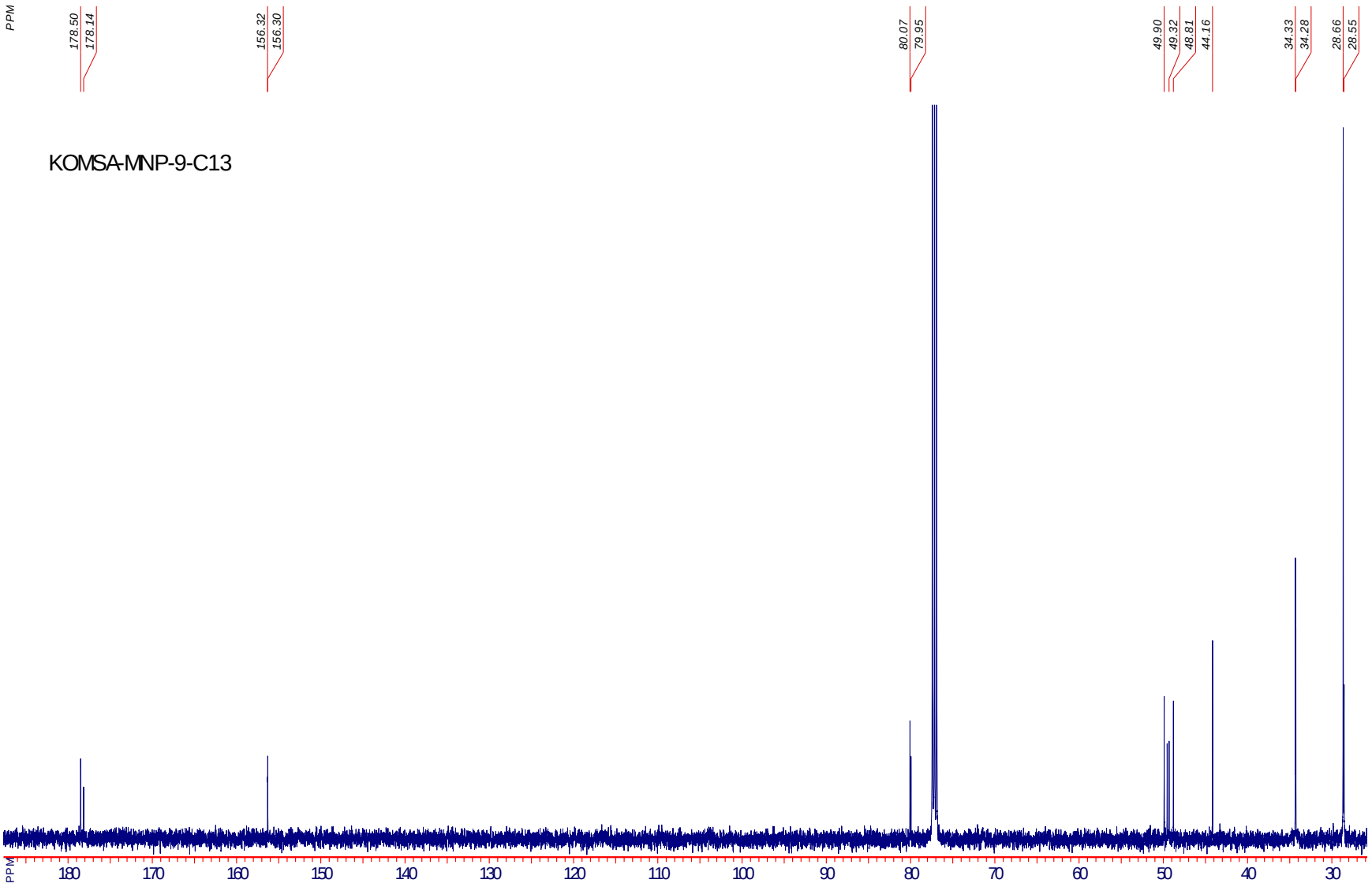

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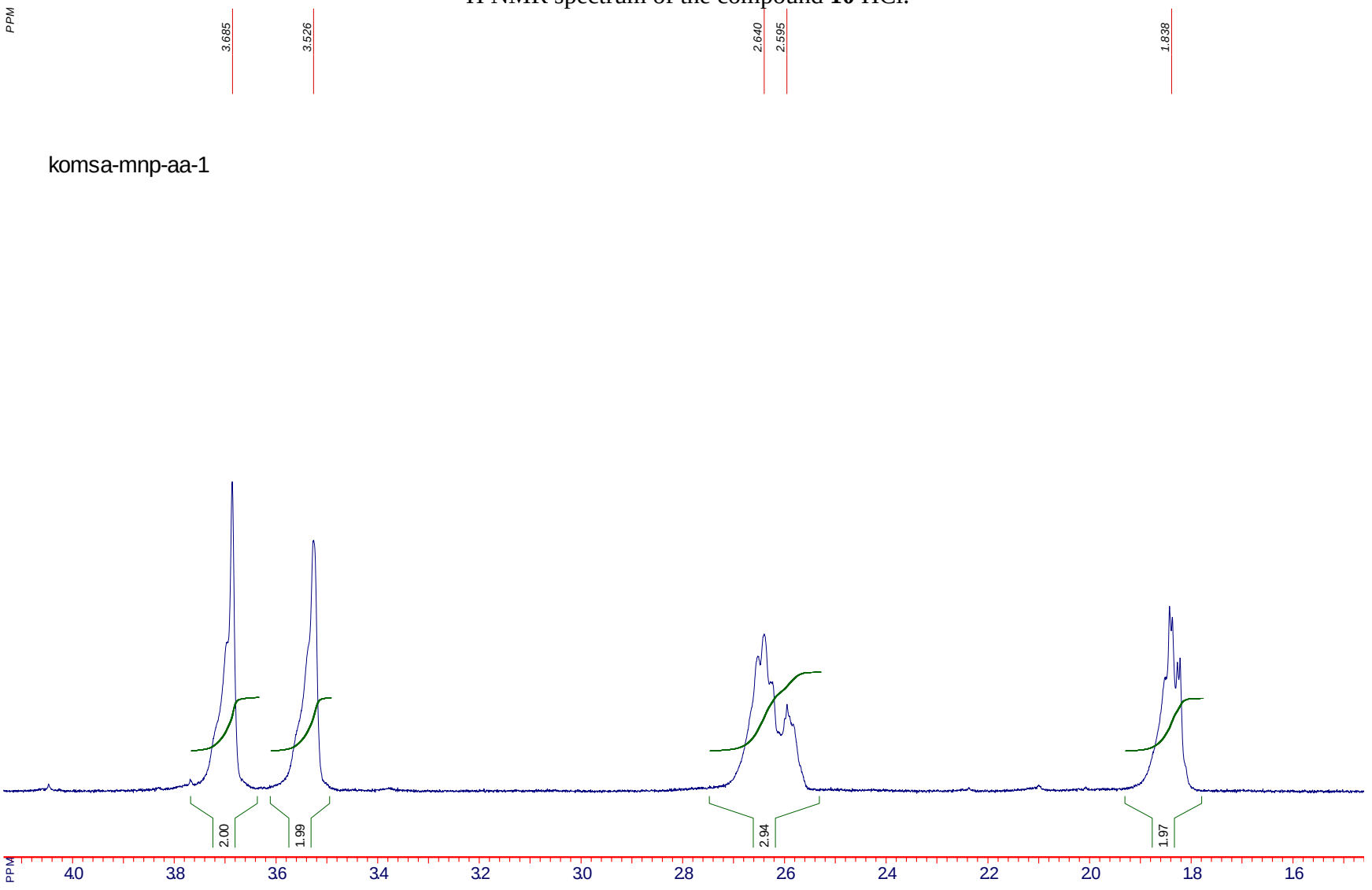

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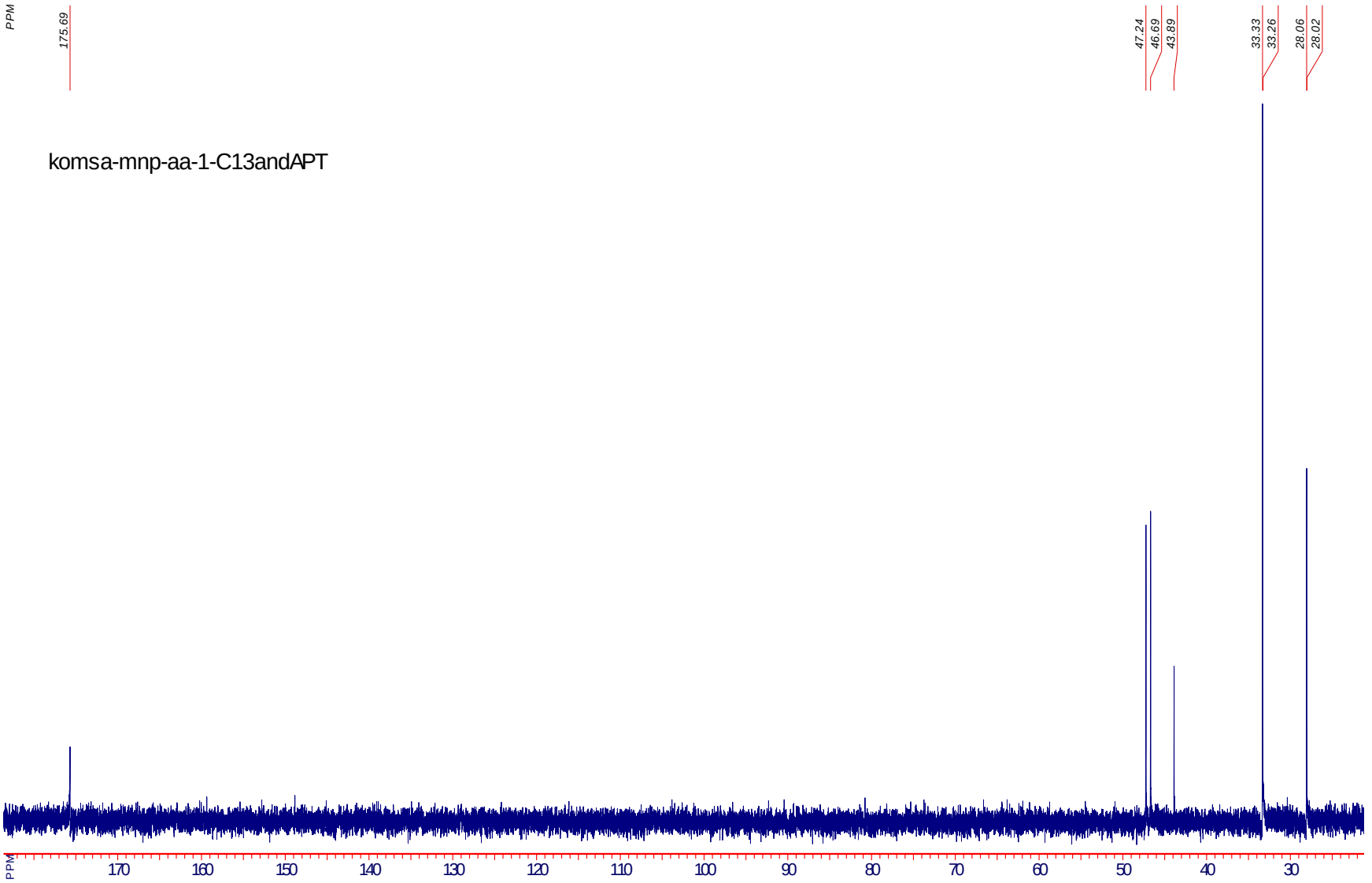

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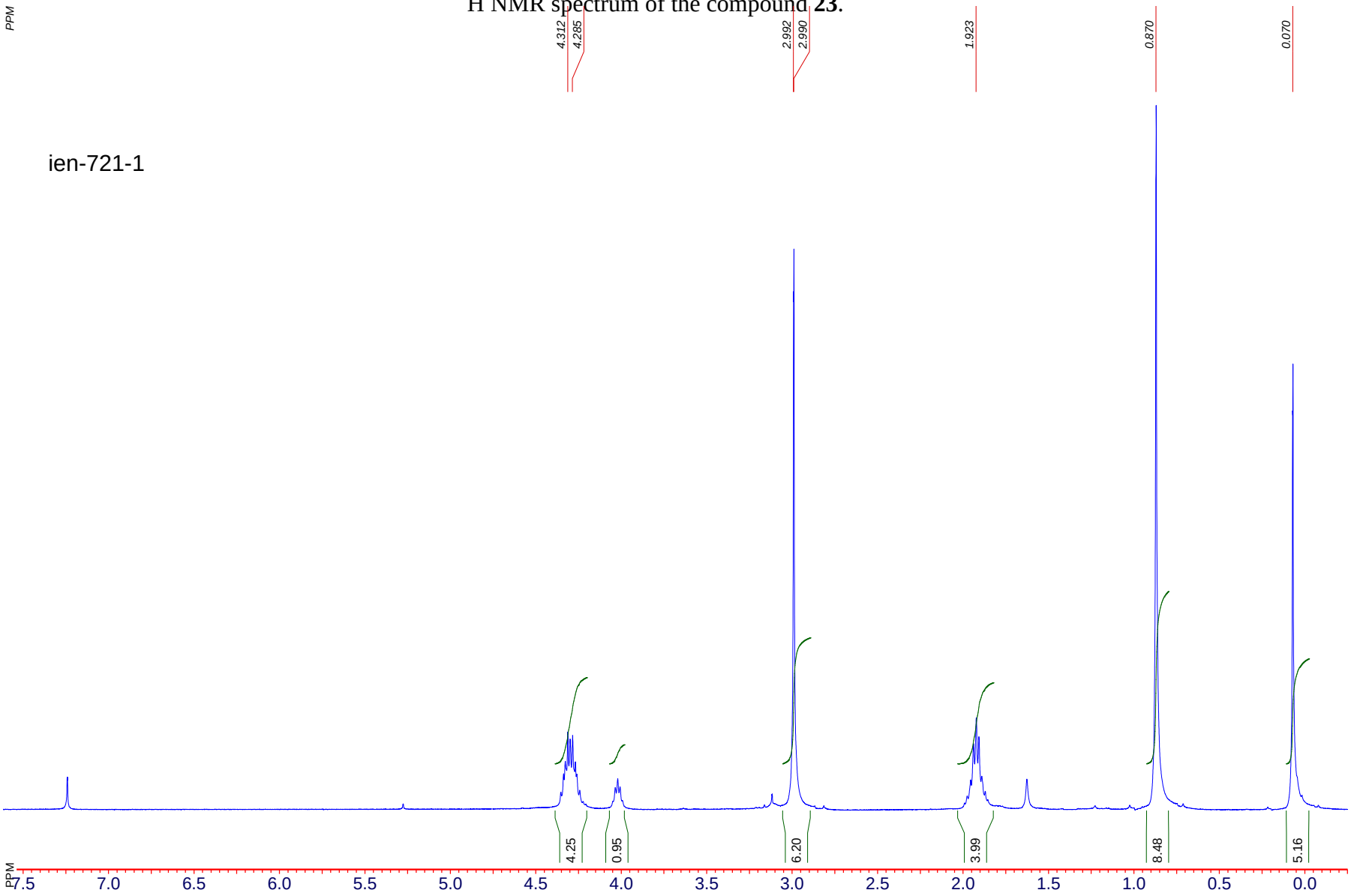

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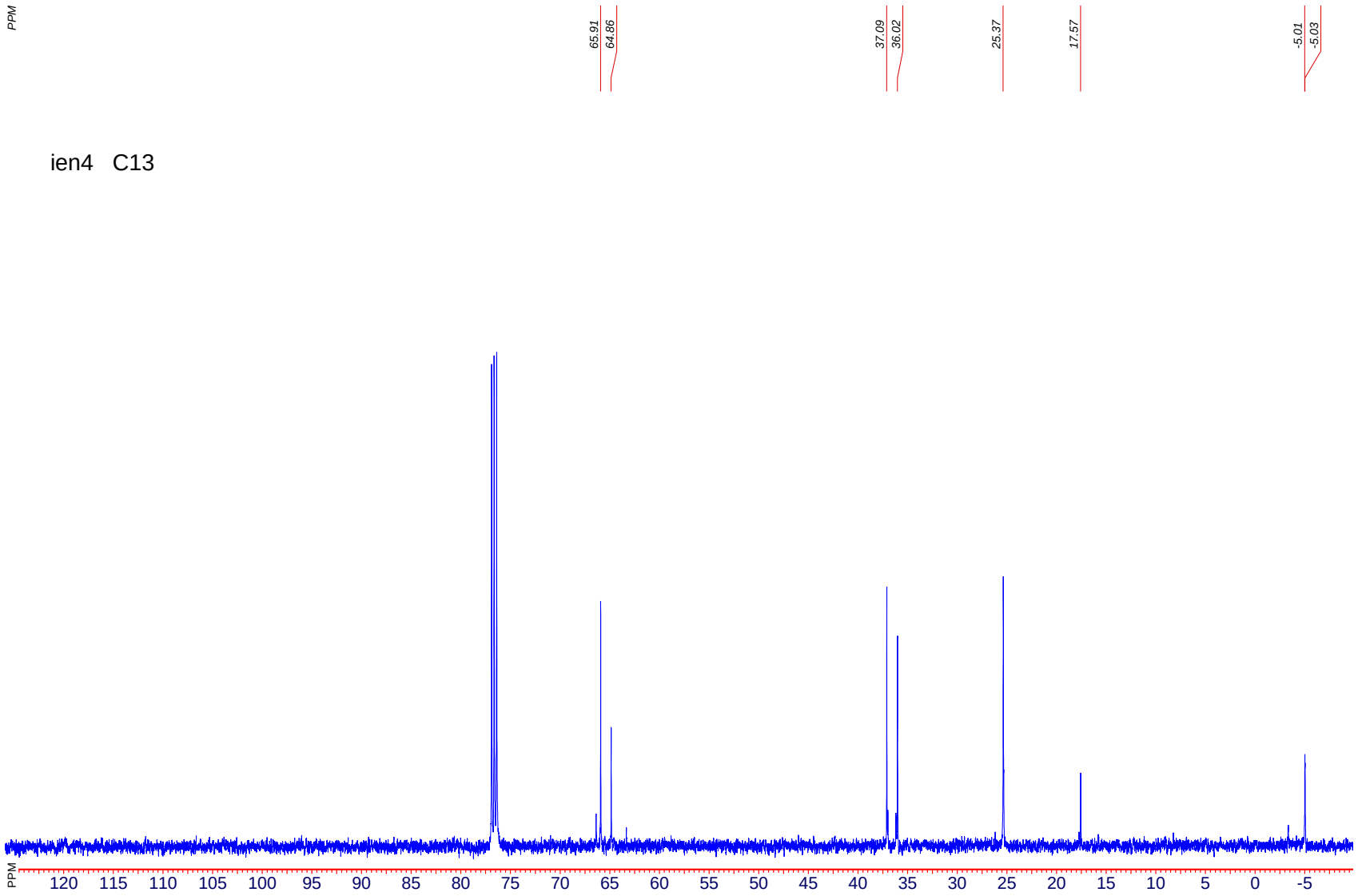

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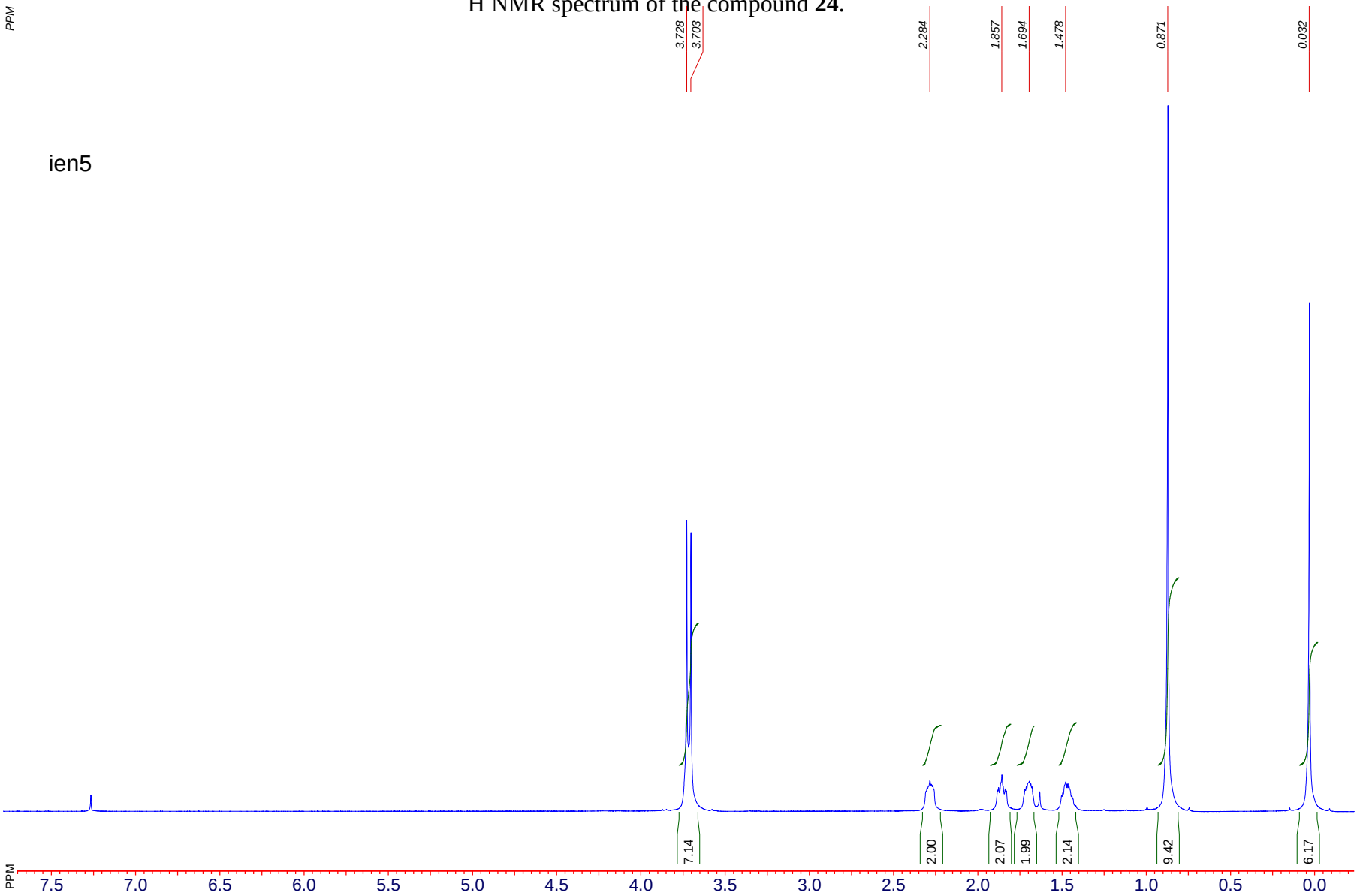

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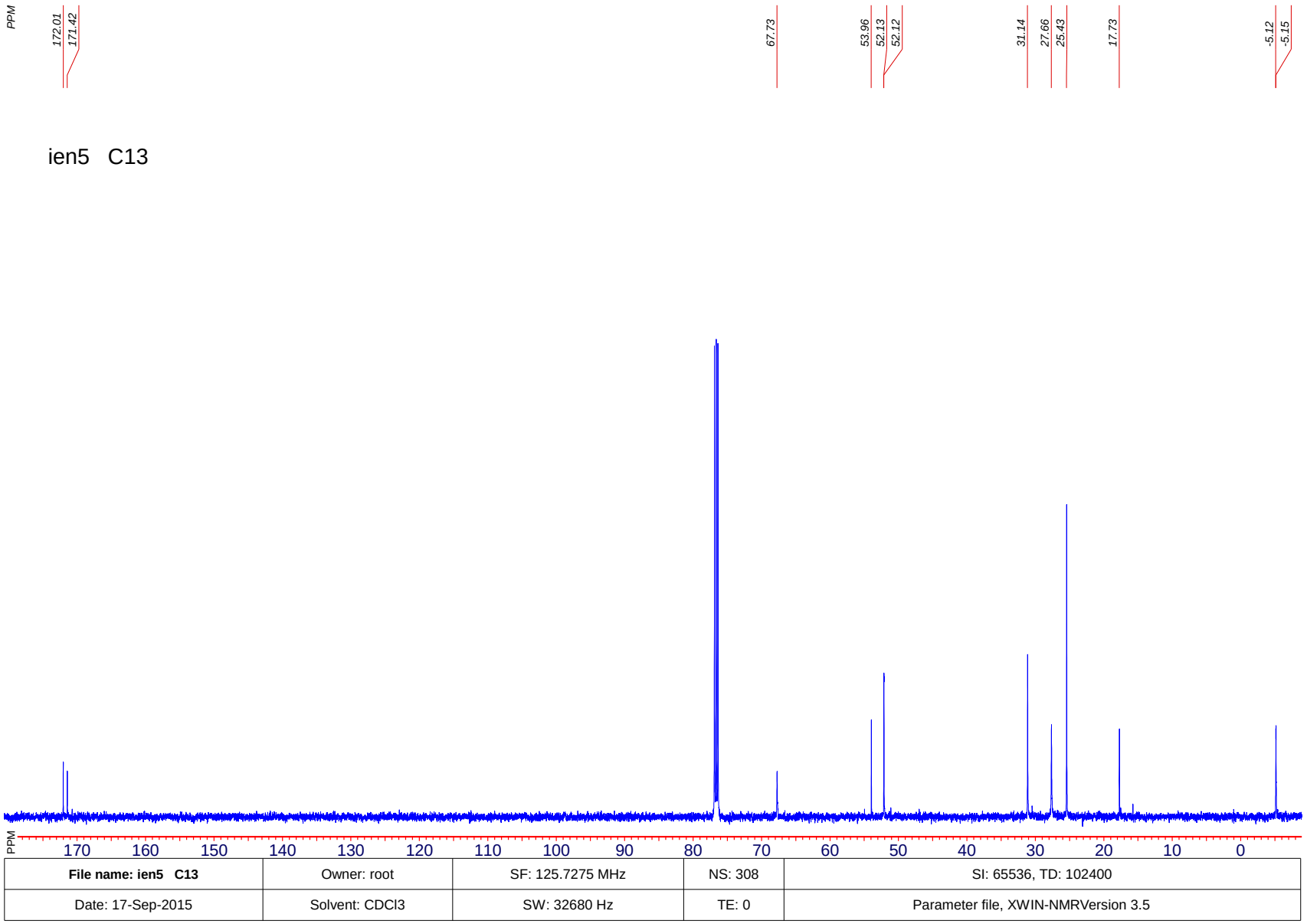

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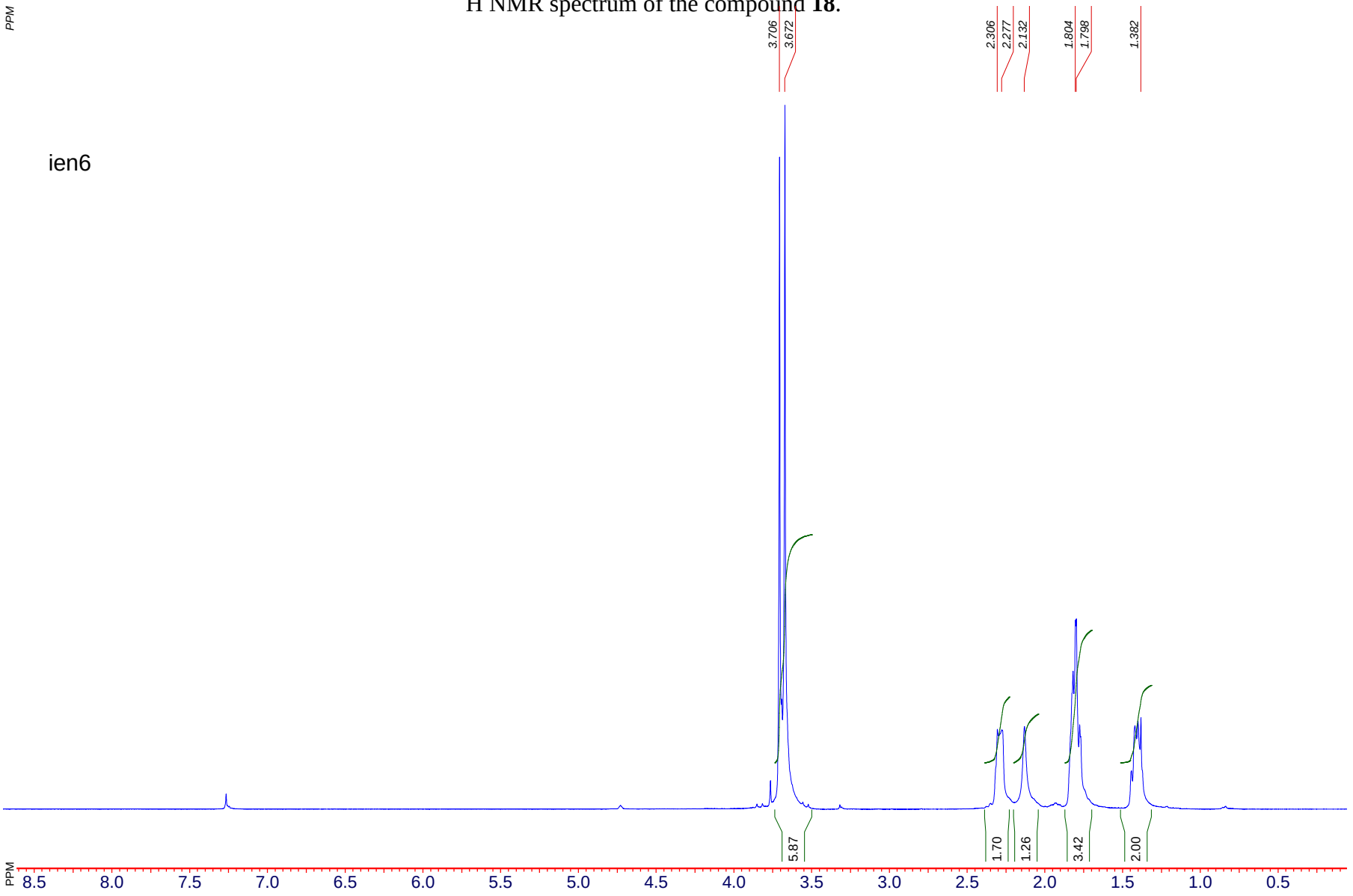

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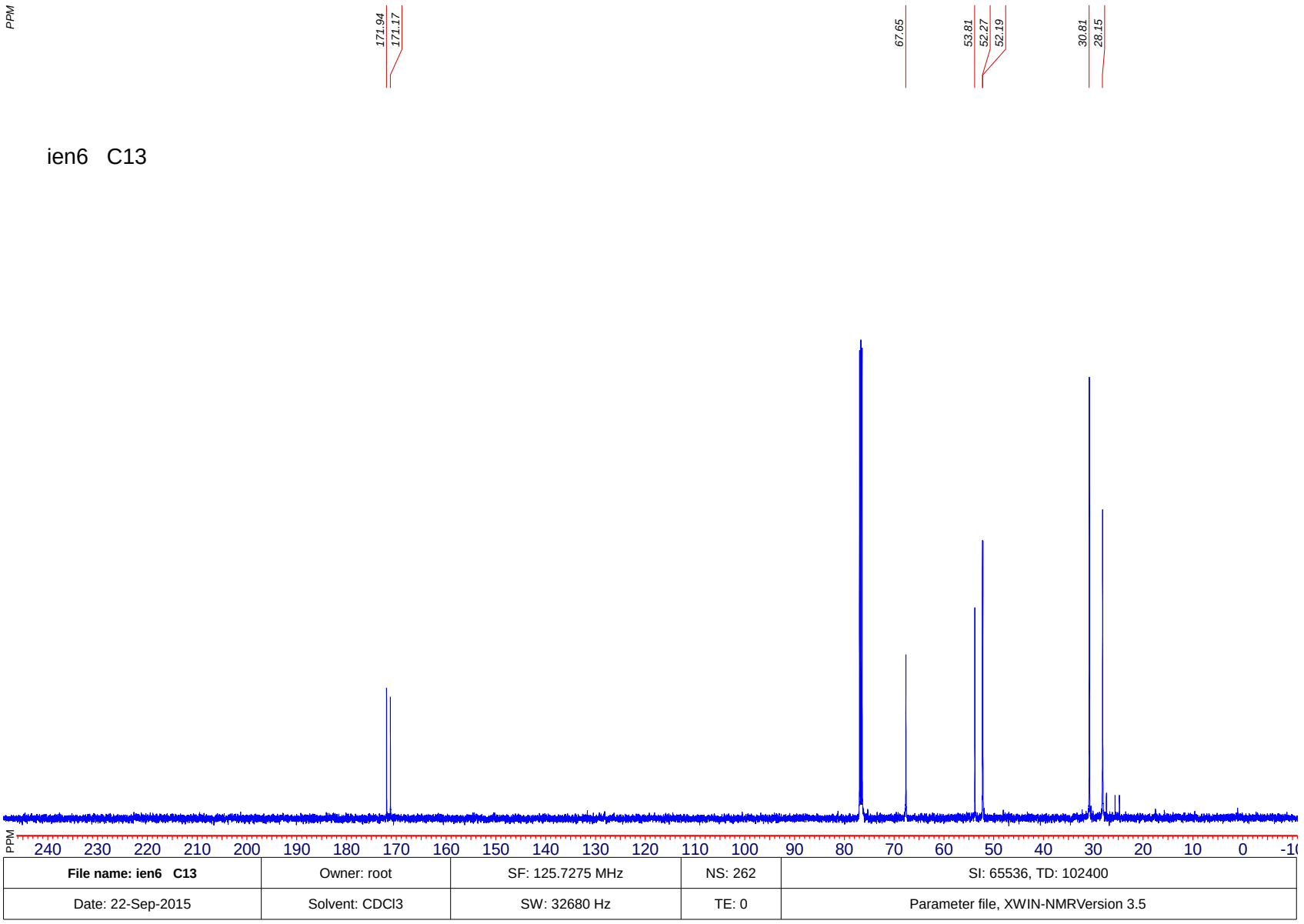

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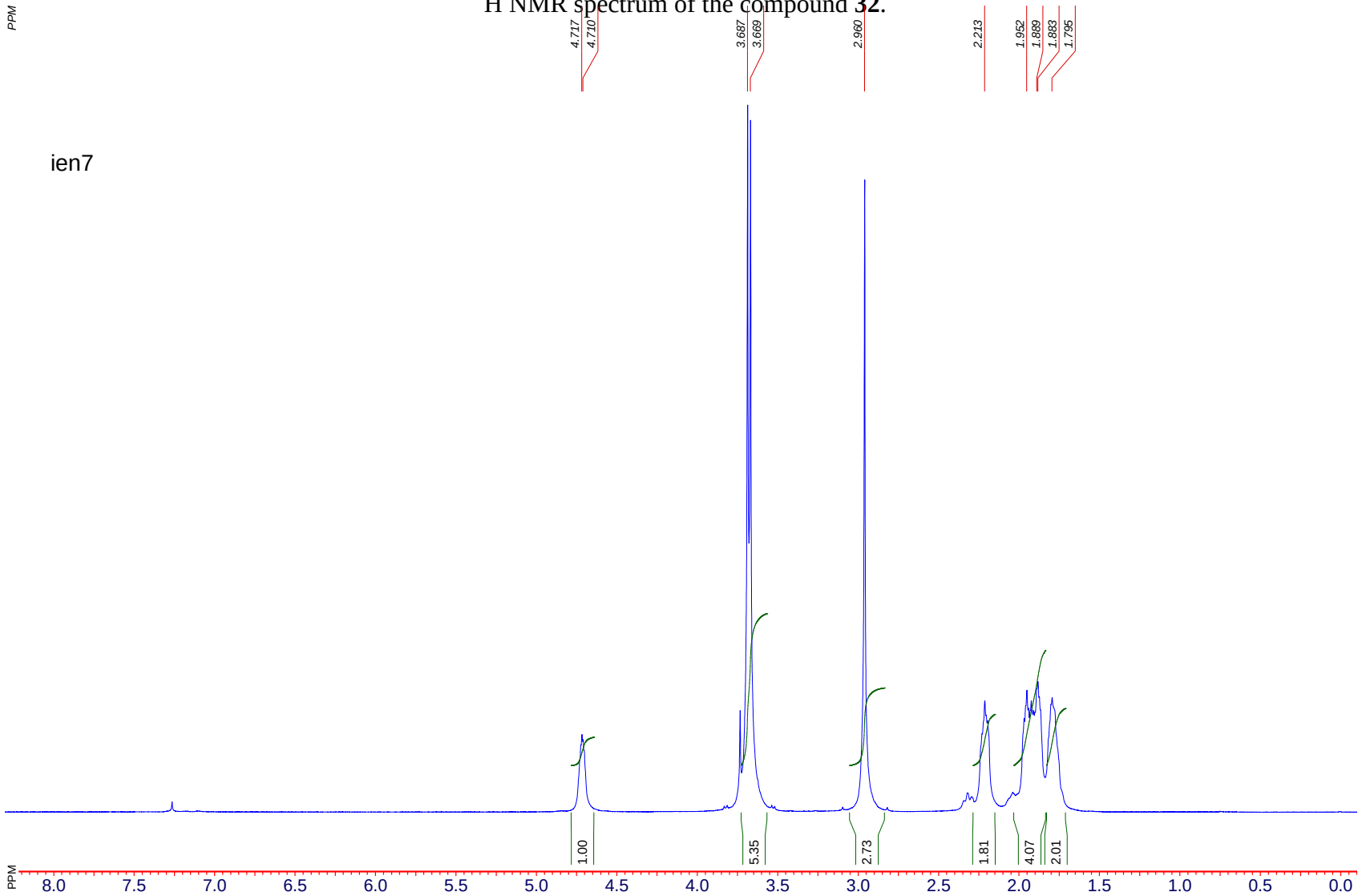

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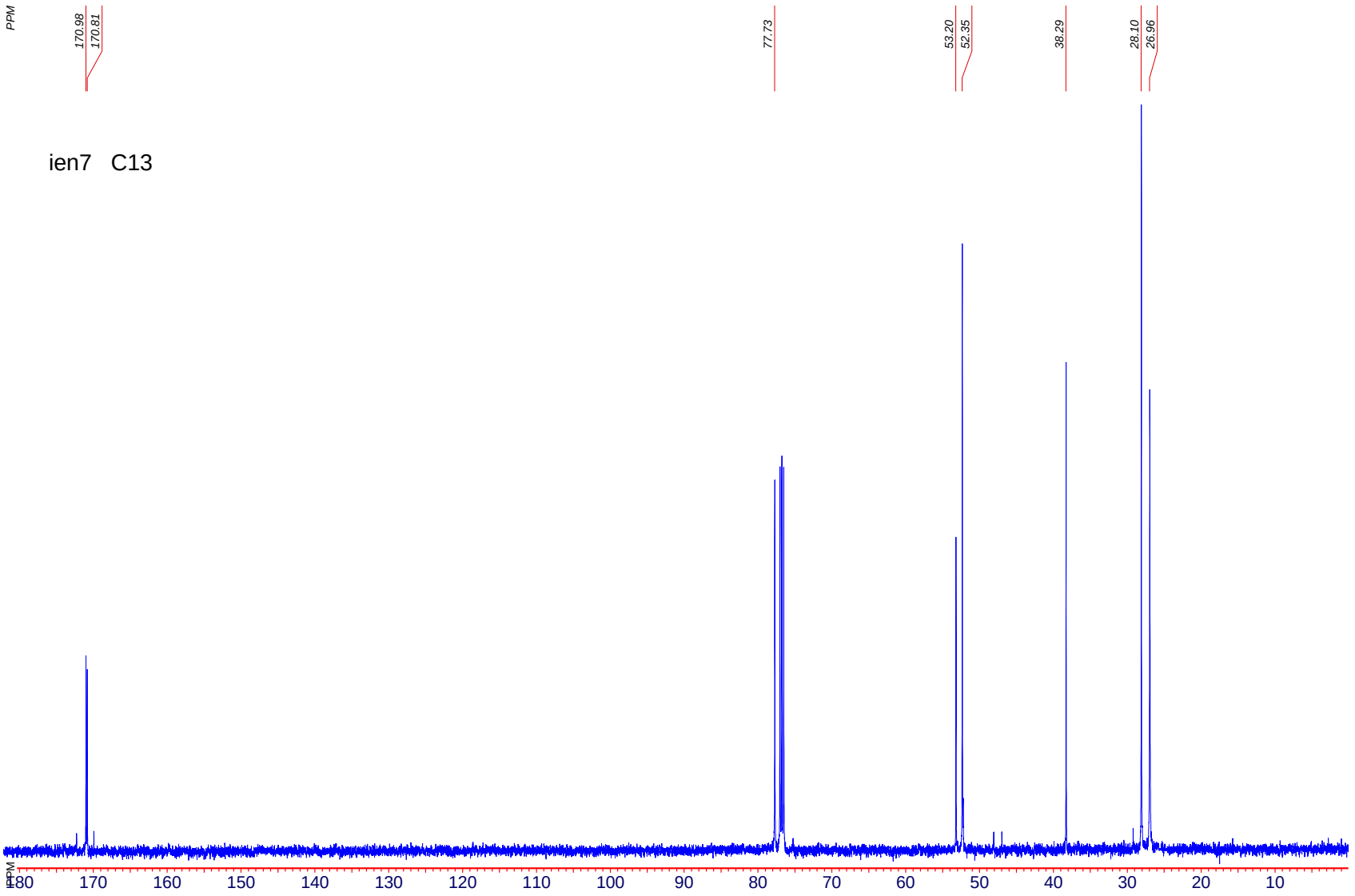

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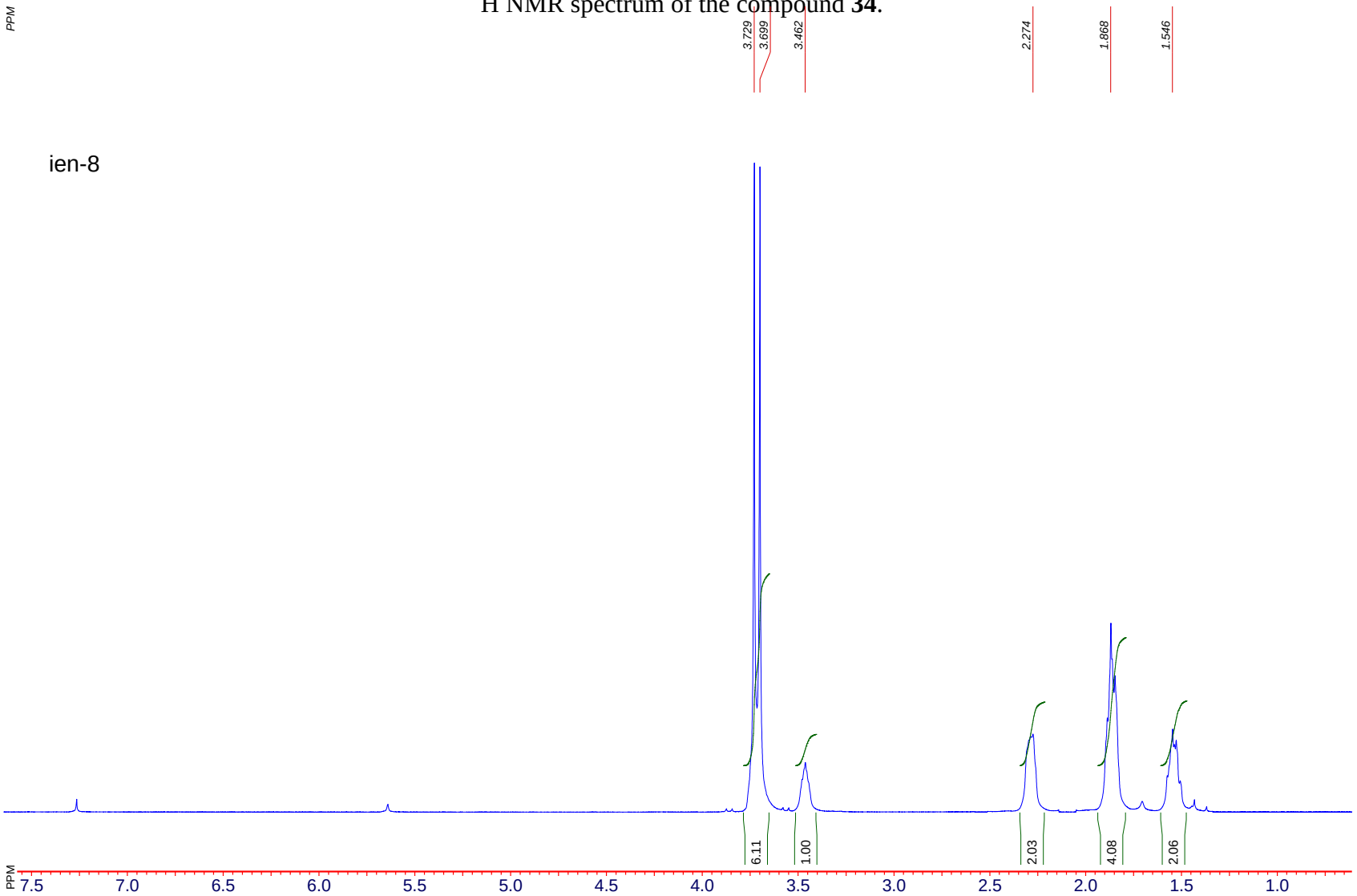

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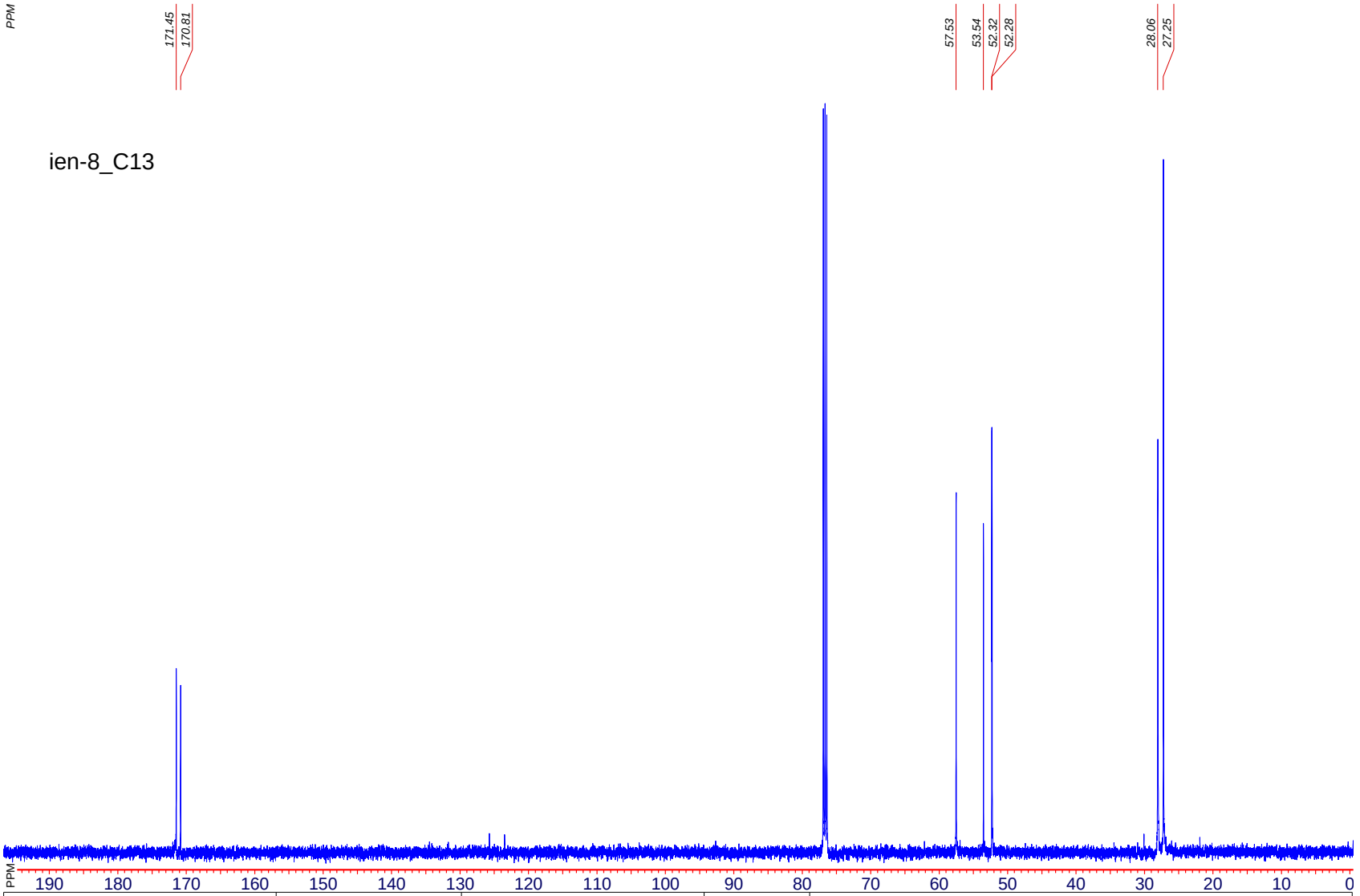

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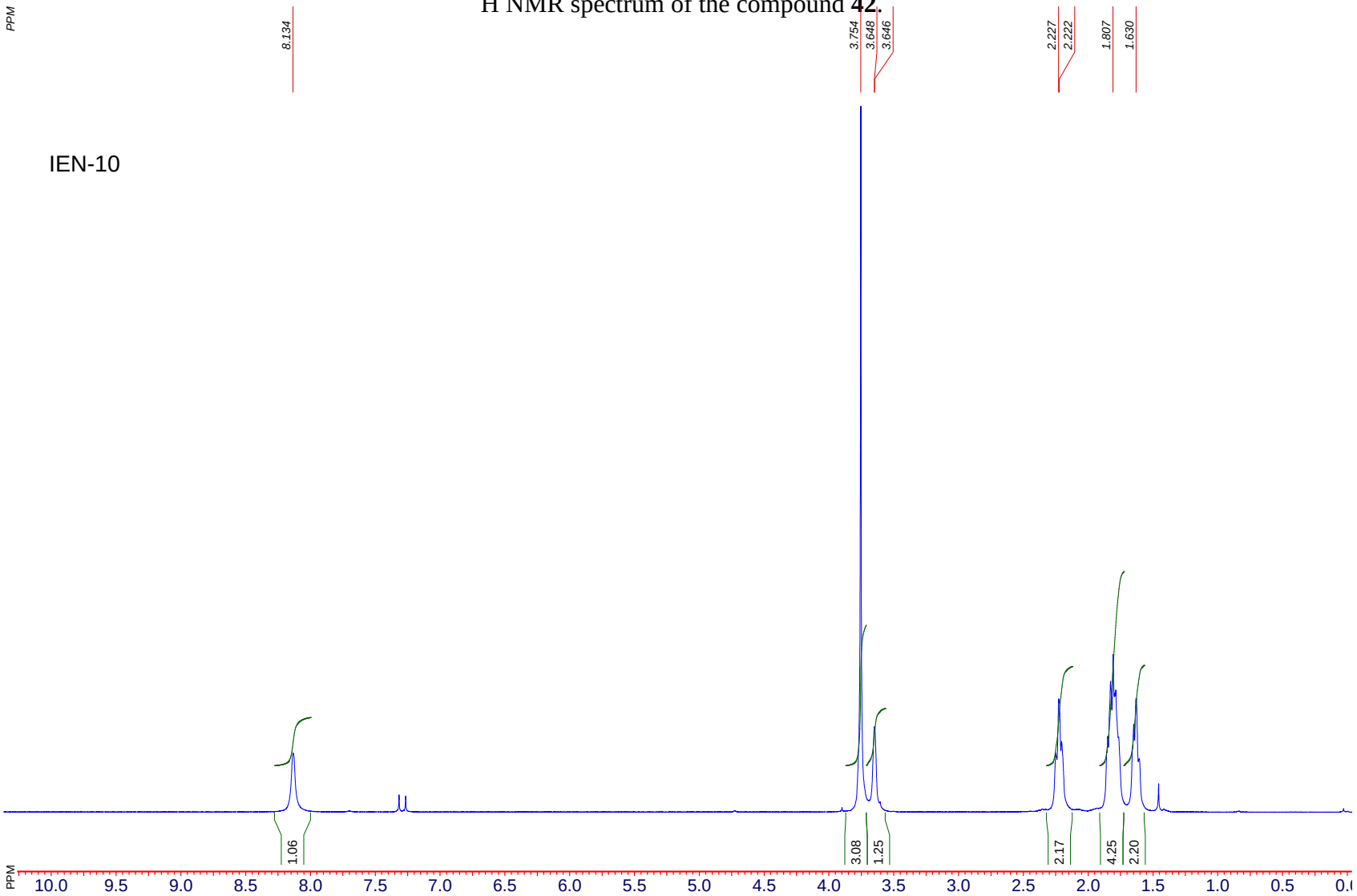

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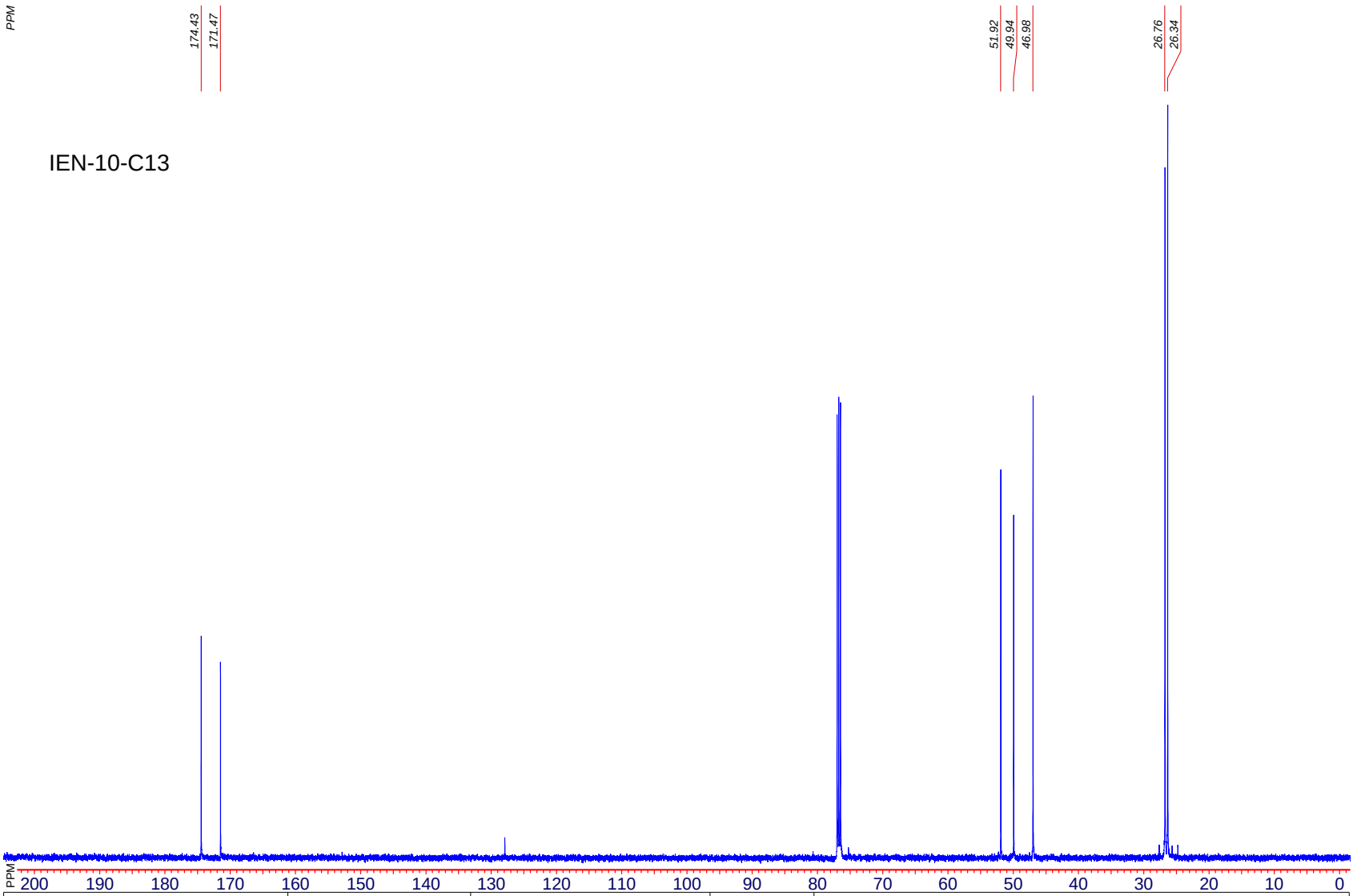

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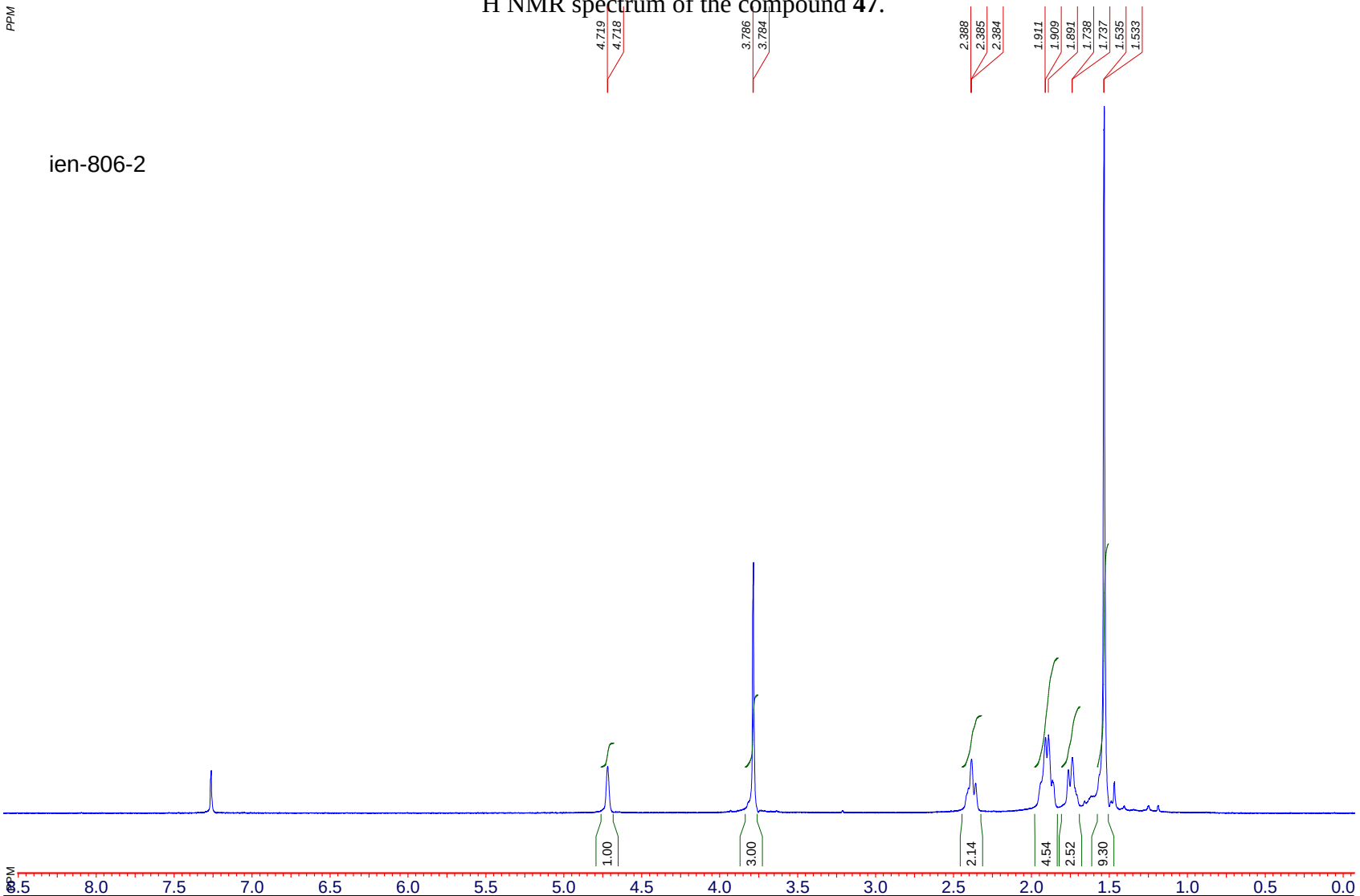
^{1}H NMR spectrum of the compound **47**.



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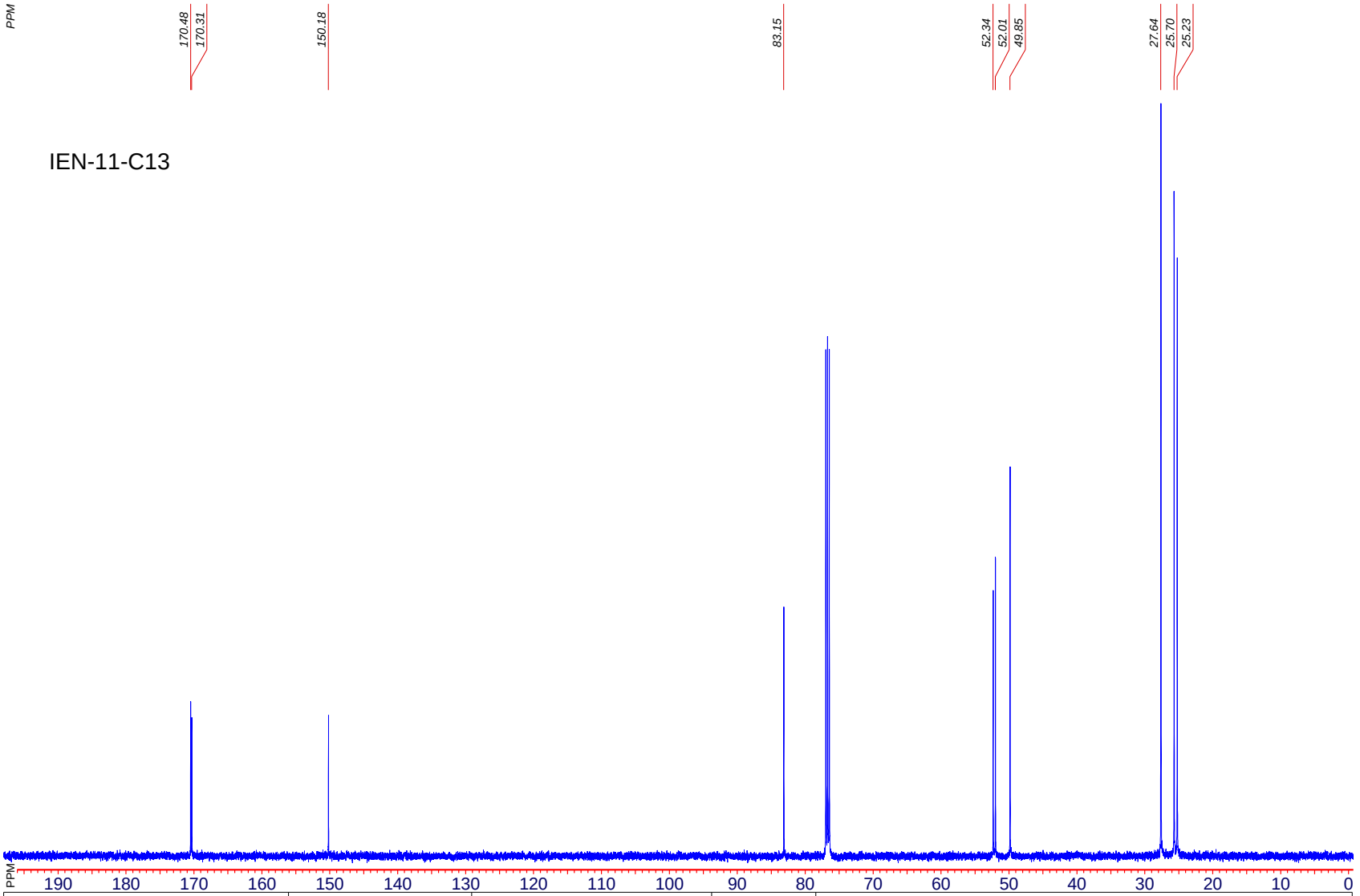
^{13}C NMR spectrum of the compound **47**.



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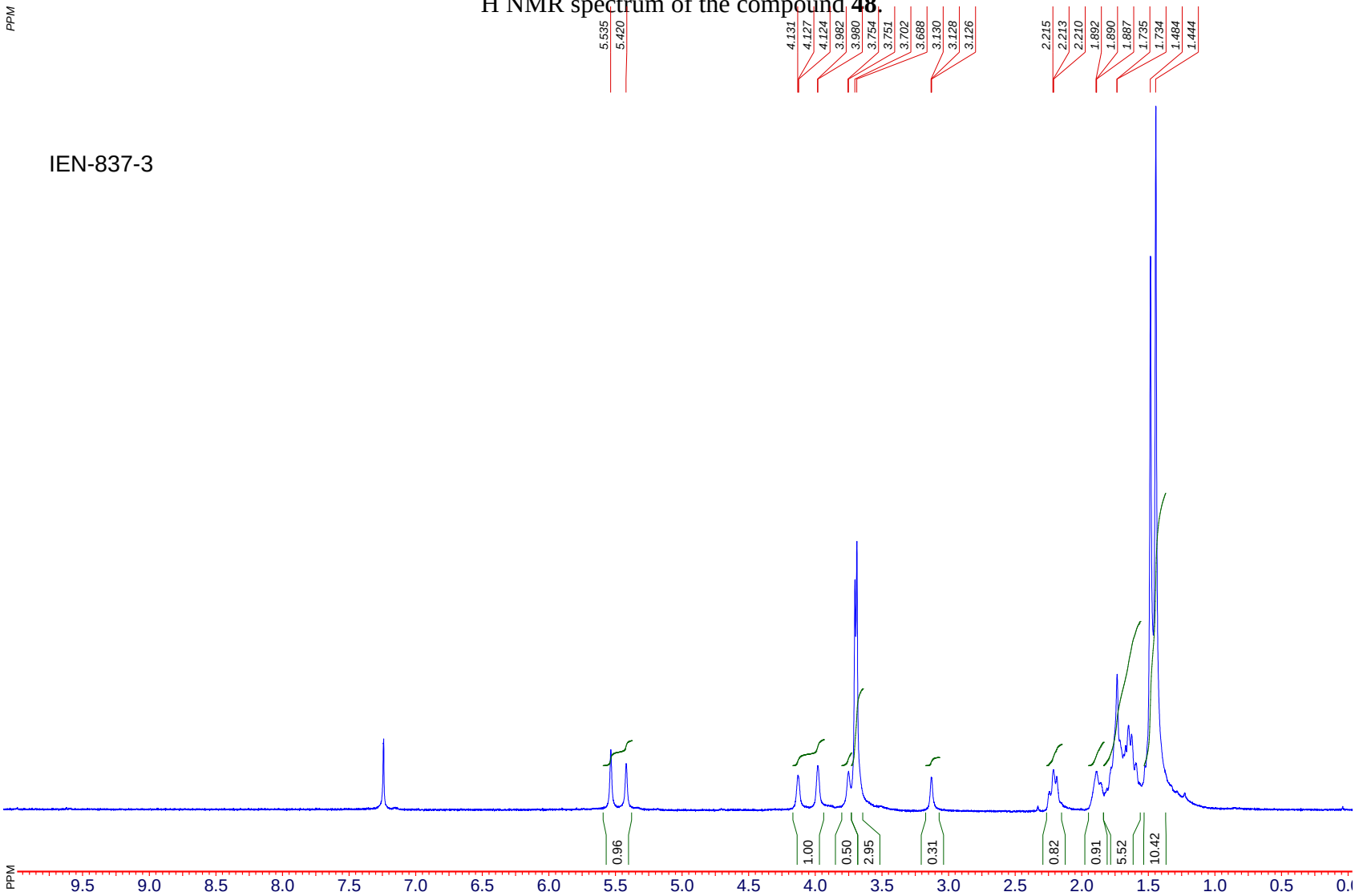
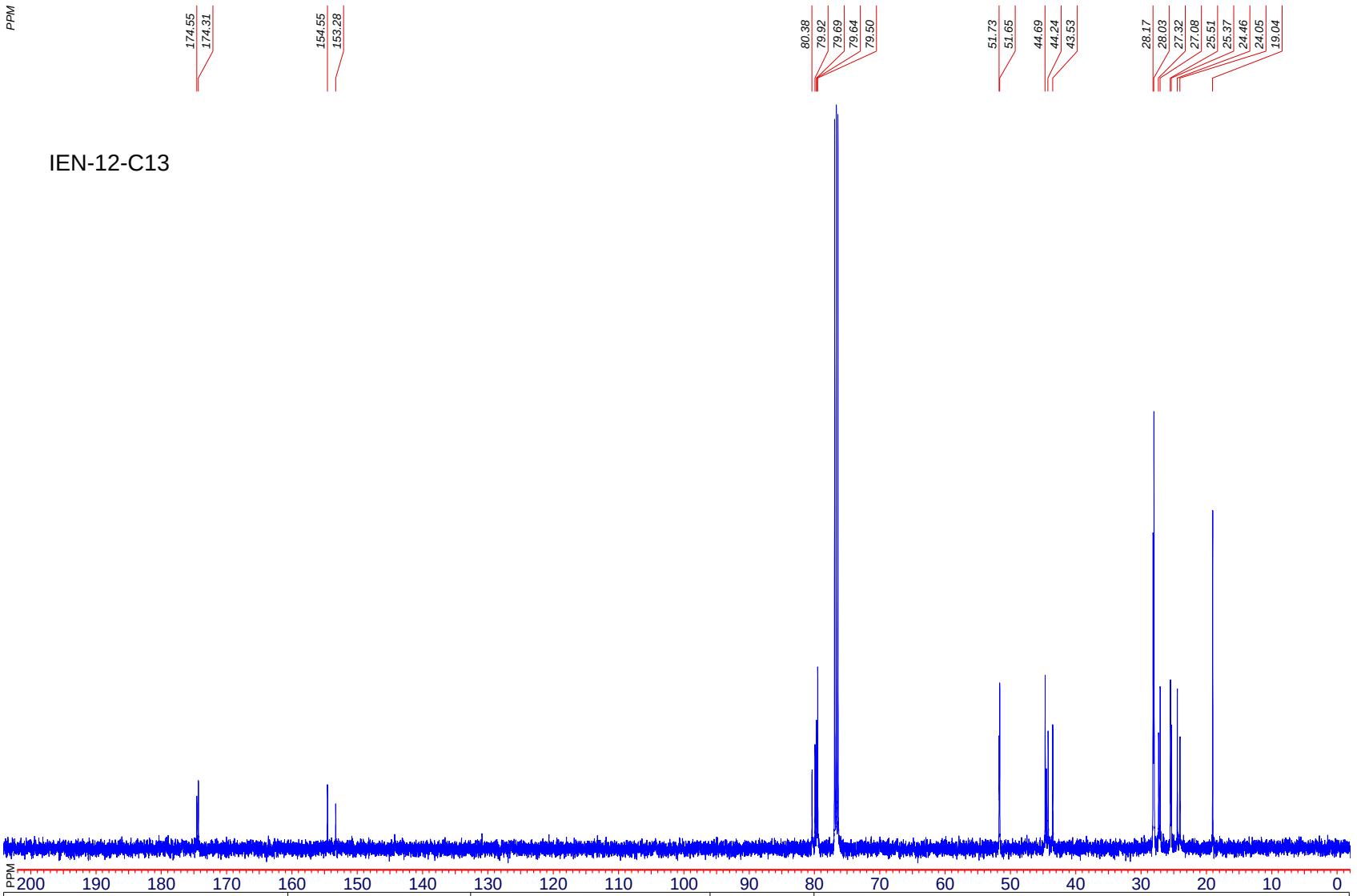
^{1}H NMR spectrum of the compound **48**.



^{13}C NMR spectrum of the compound **48**.



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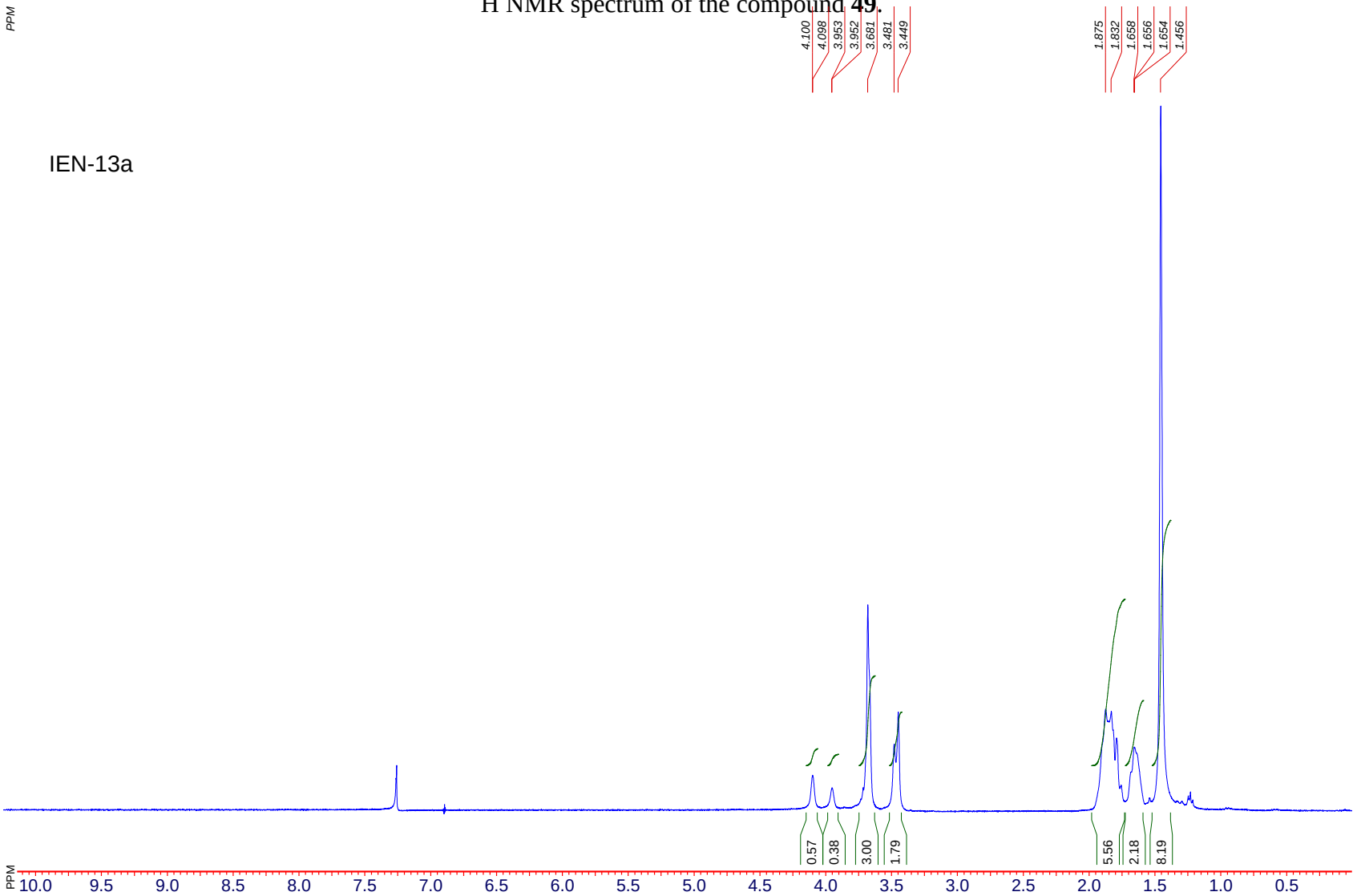

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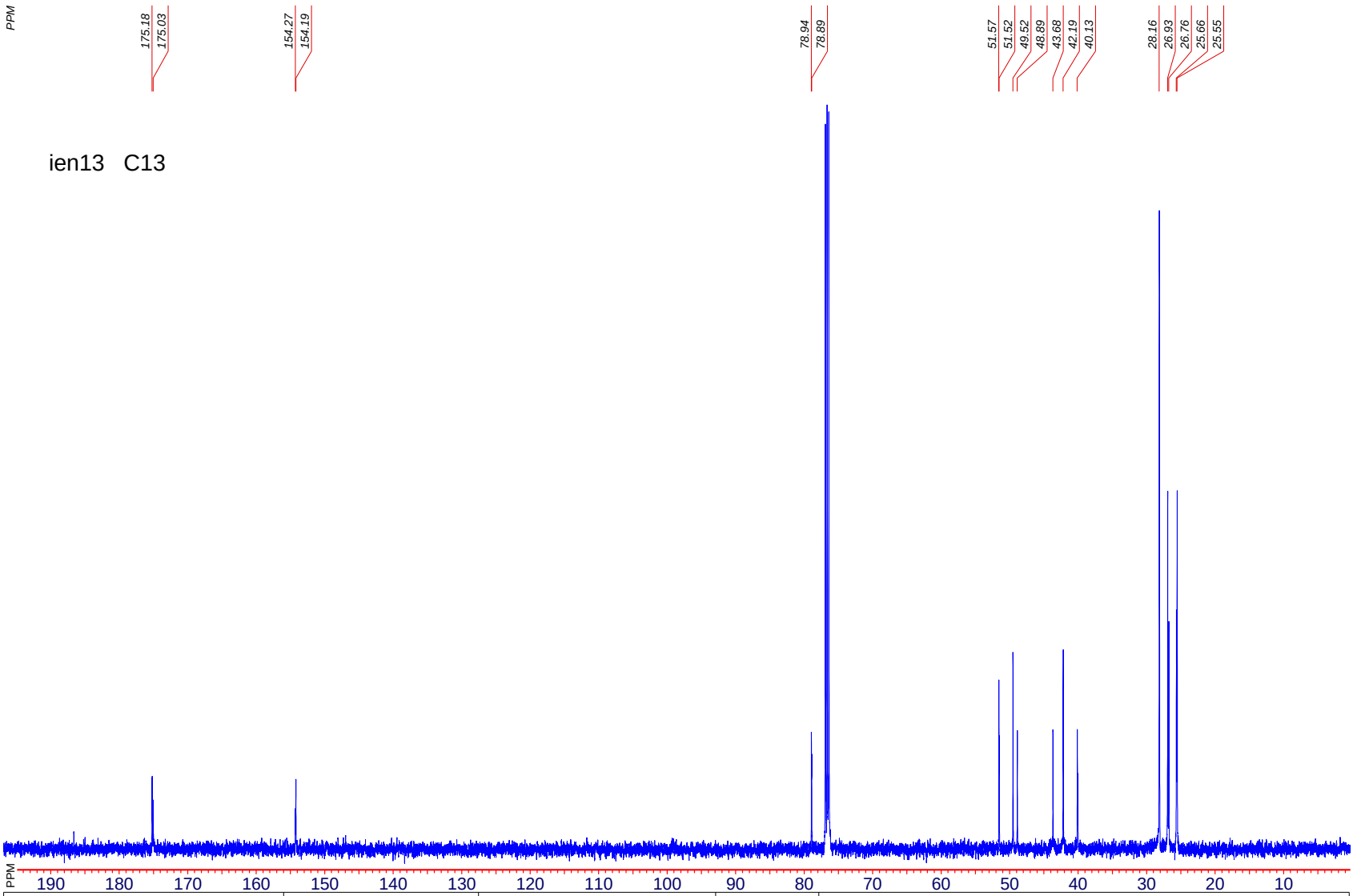

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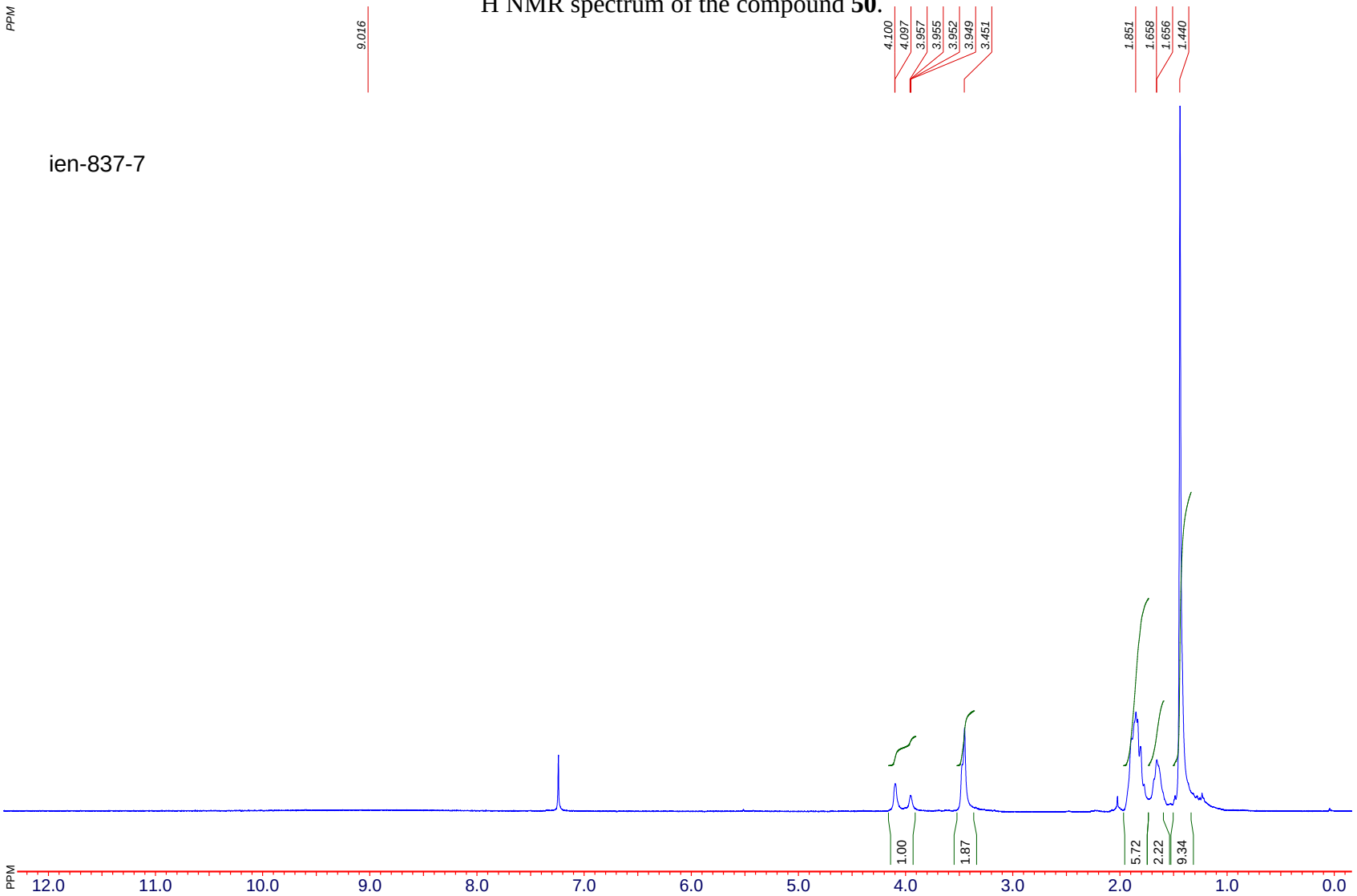
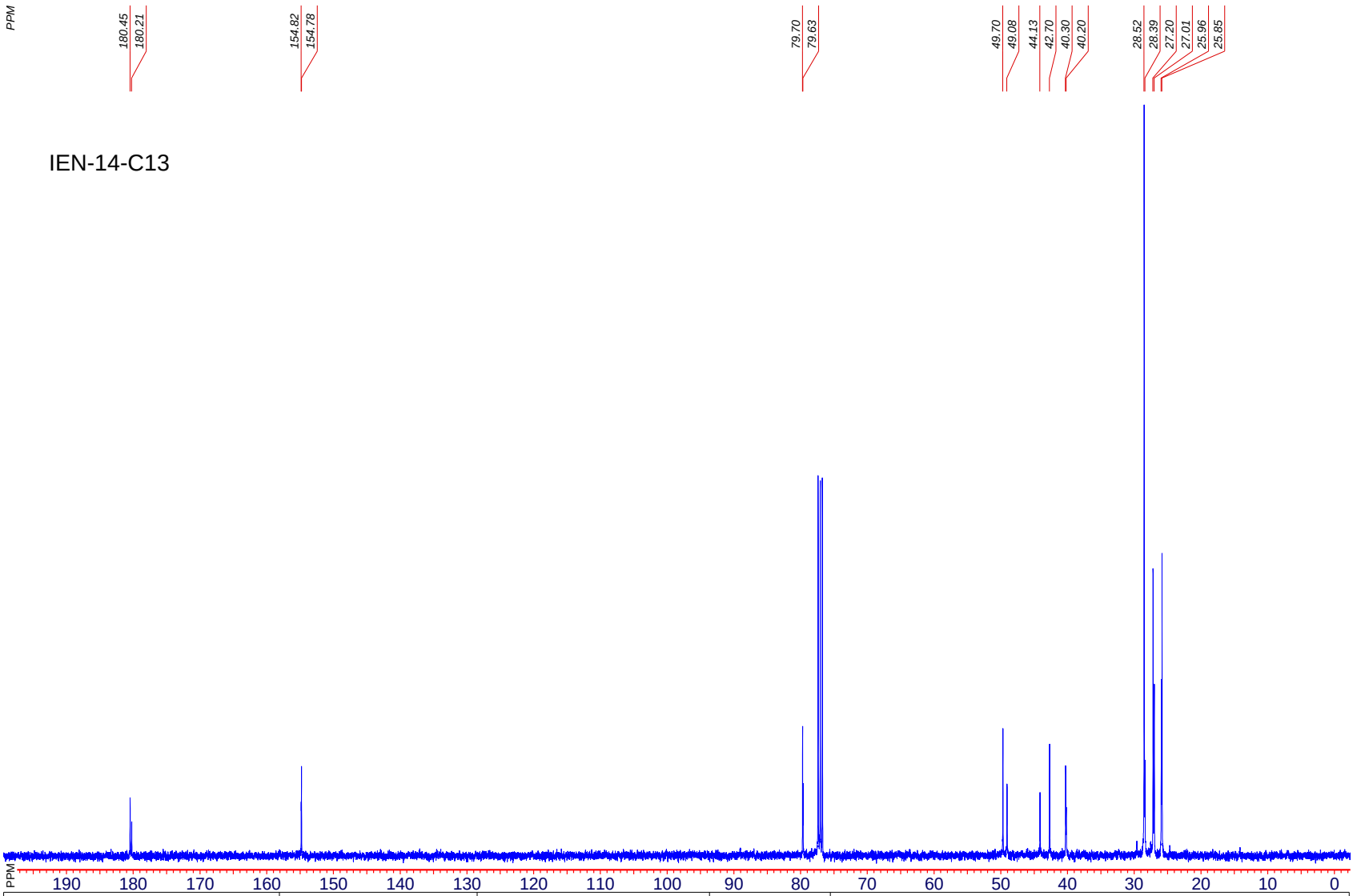
^{1}H NMR spectrum of the compound **50**.



^{13}C NMR spectrum of the compound **50**.



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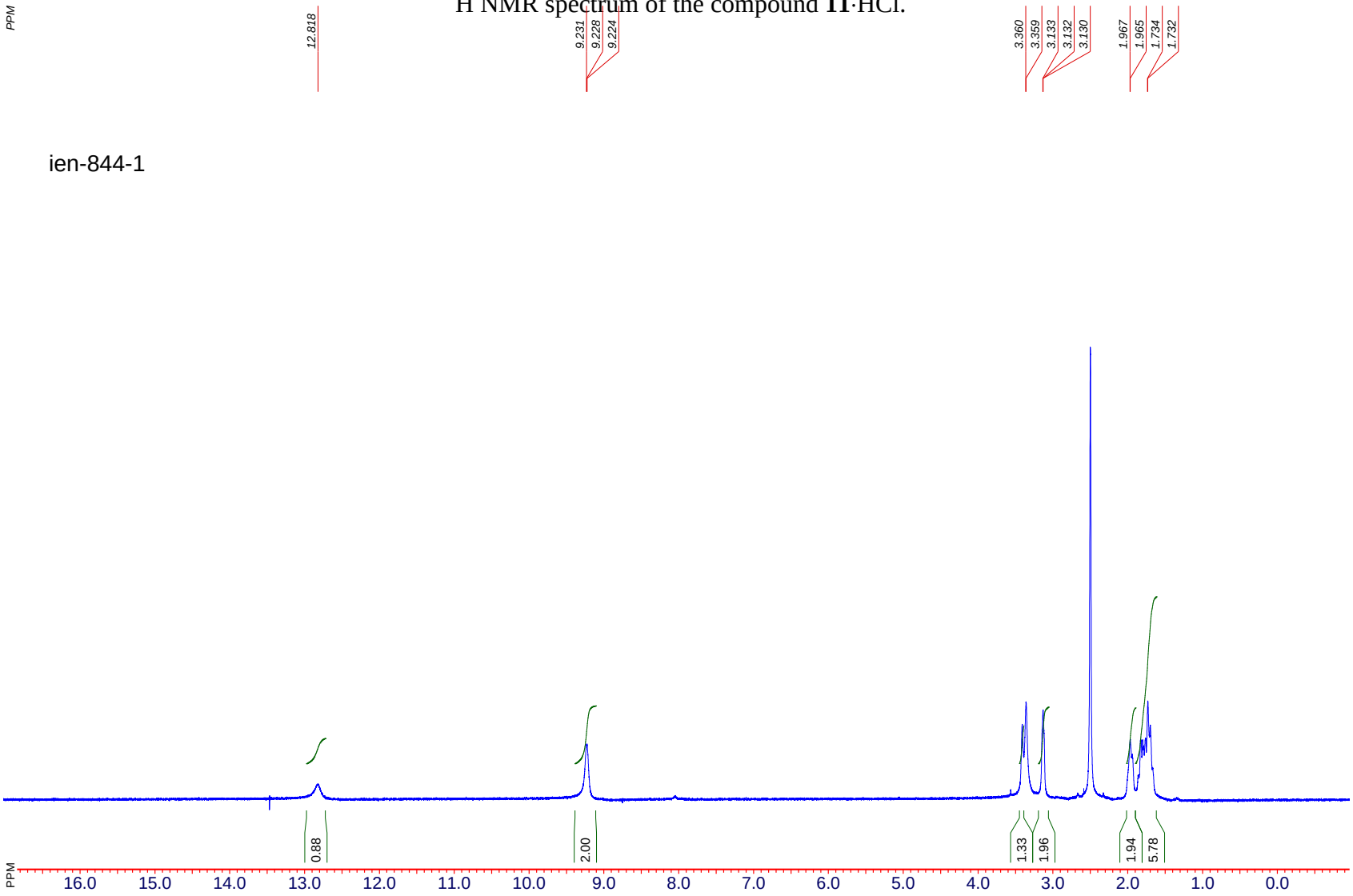
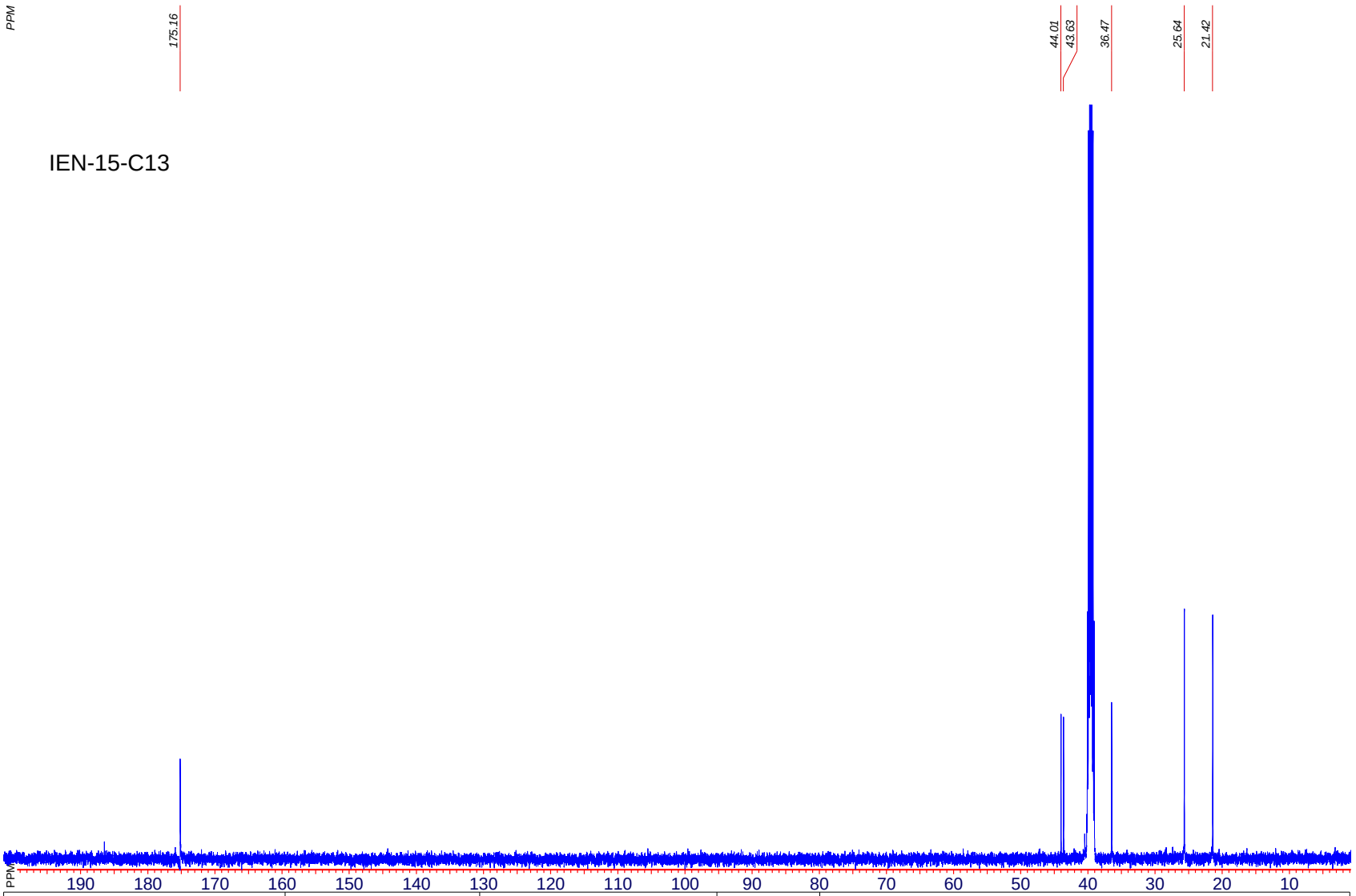
^{1}H NMR spectrum of the compound **11**·HCl.



^{13}C NMR spectrum of the compound **11**·HCl.



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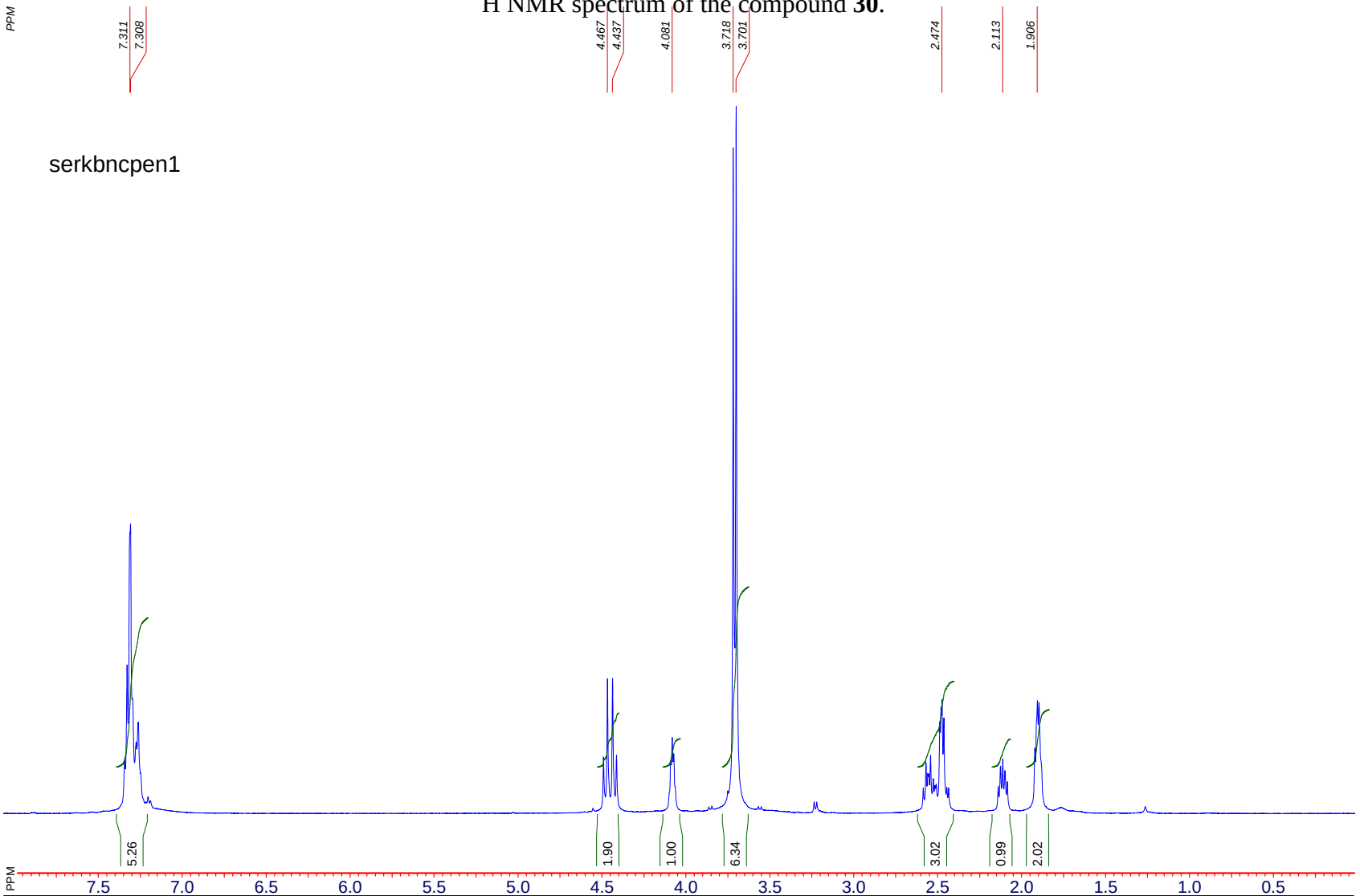
^{1}H NMR spectrum of the compound **30**.



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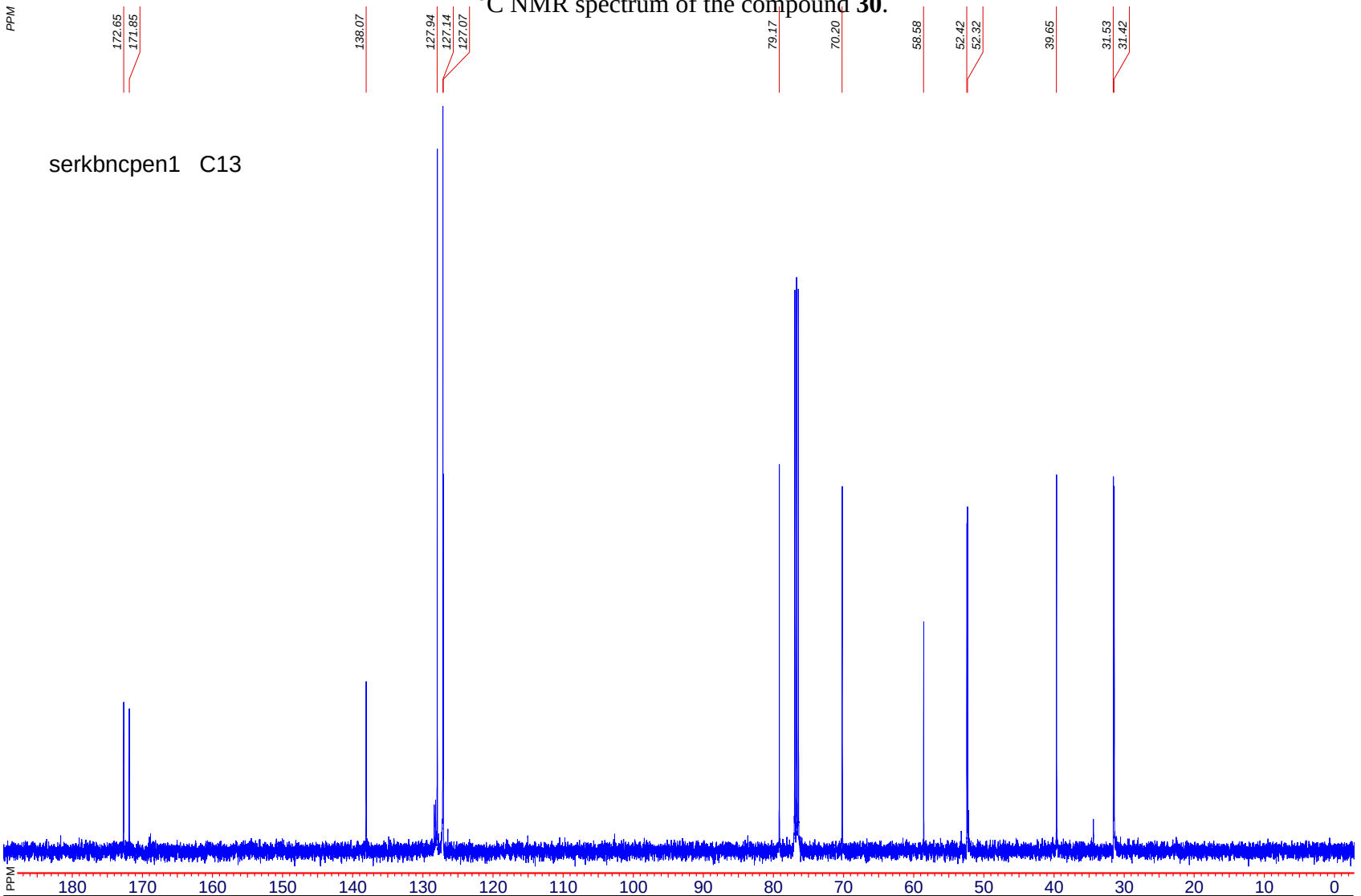
^{13}C NMR spectrum of the compound **30**.



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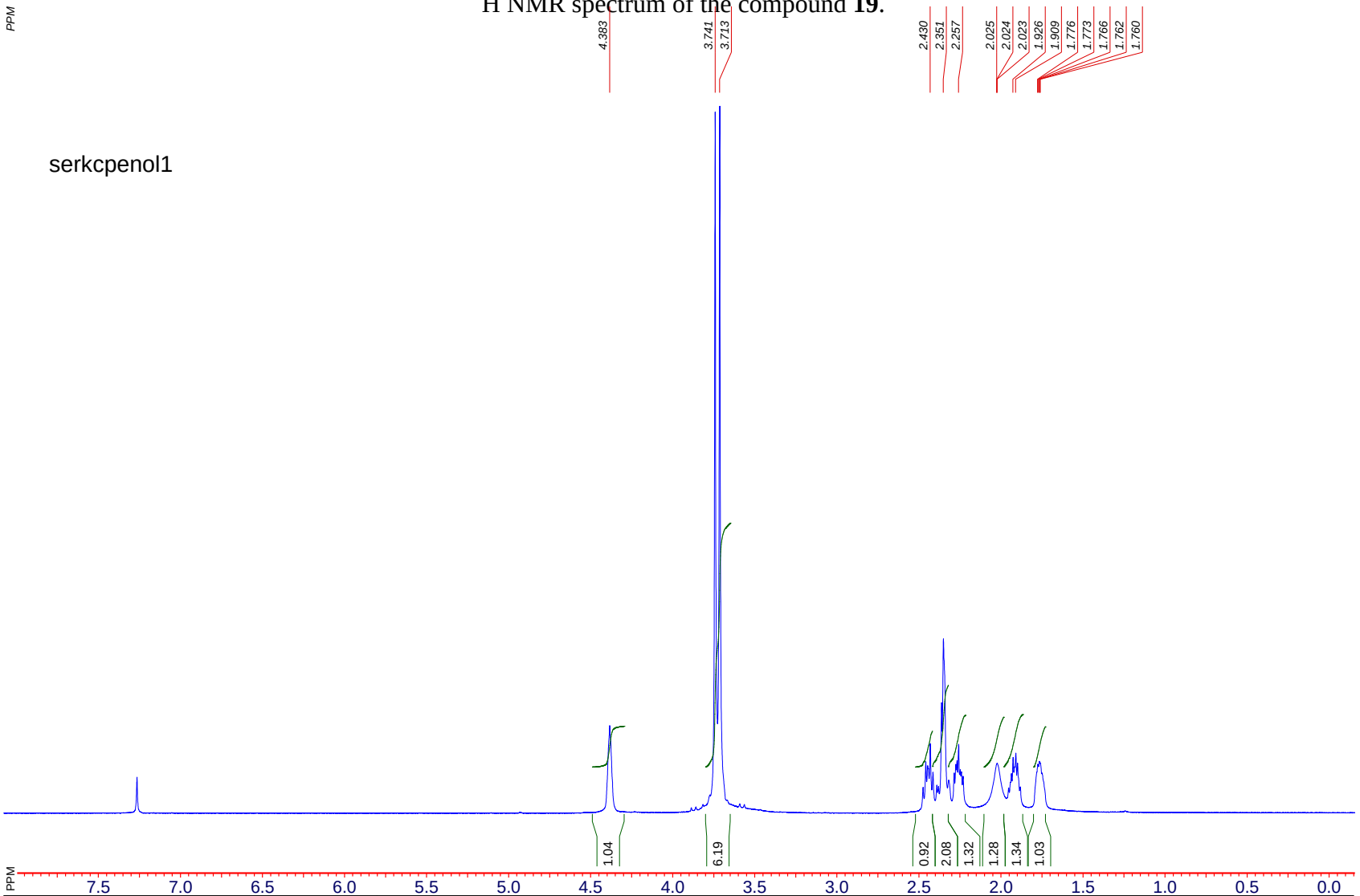
^{1}H NMR spectrum of the compound **19**.



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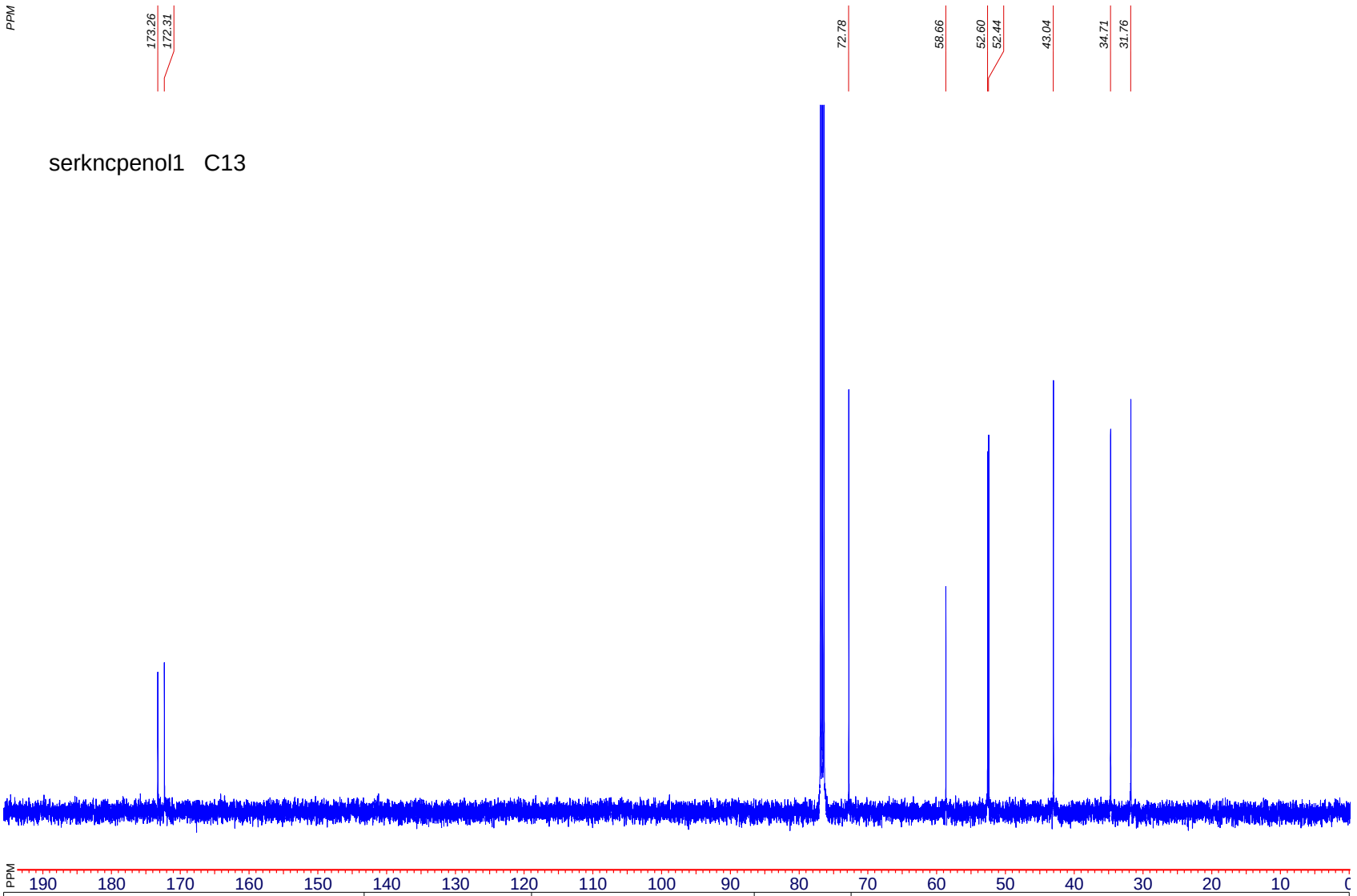
^{13}C NMR spectrum of the compound **19**.



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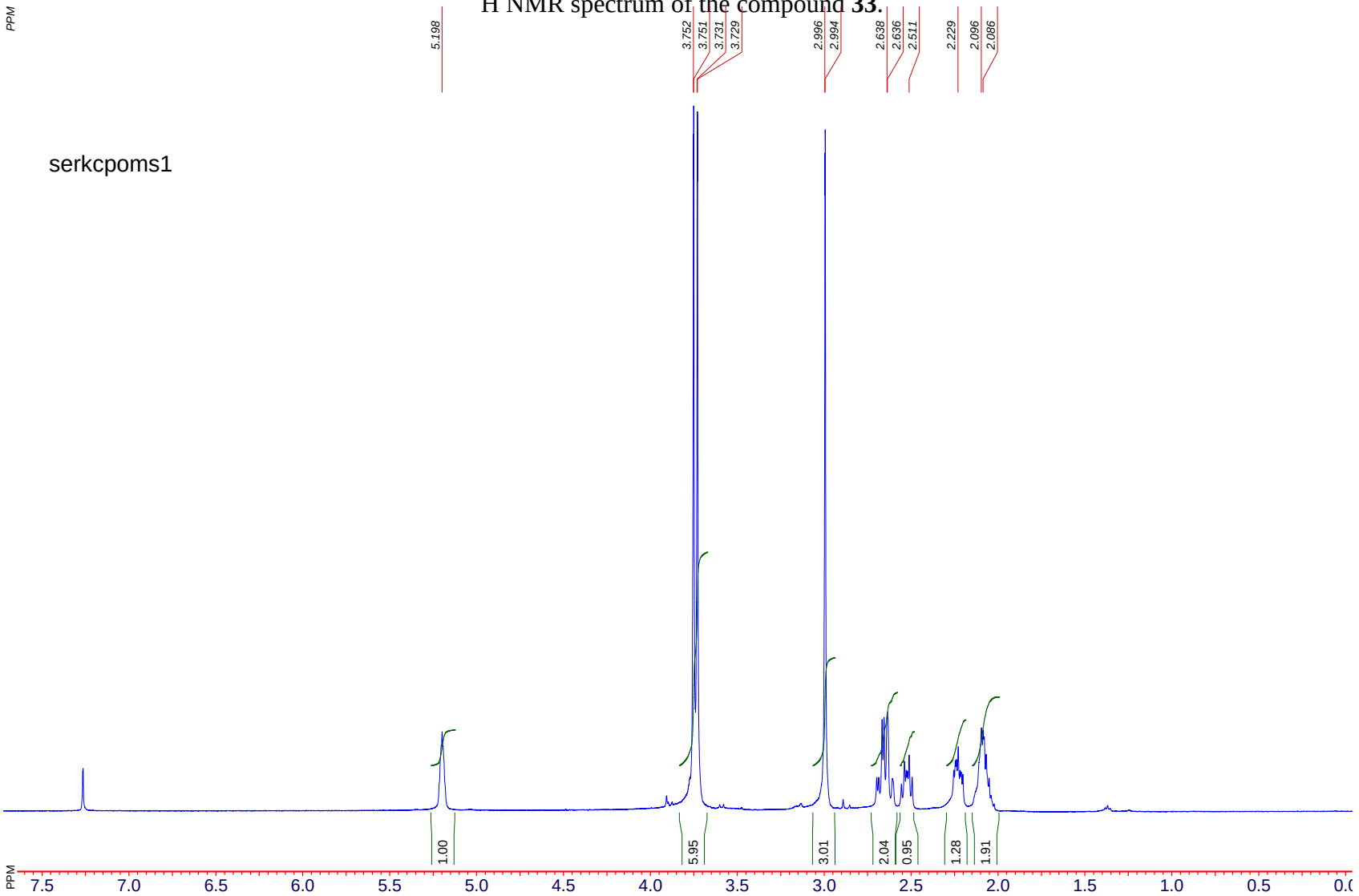
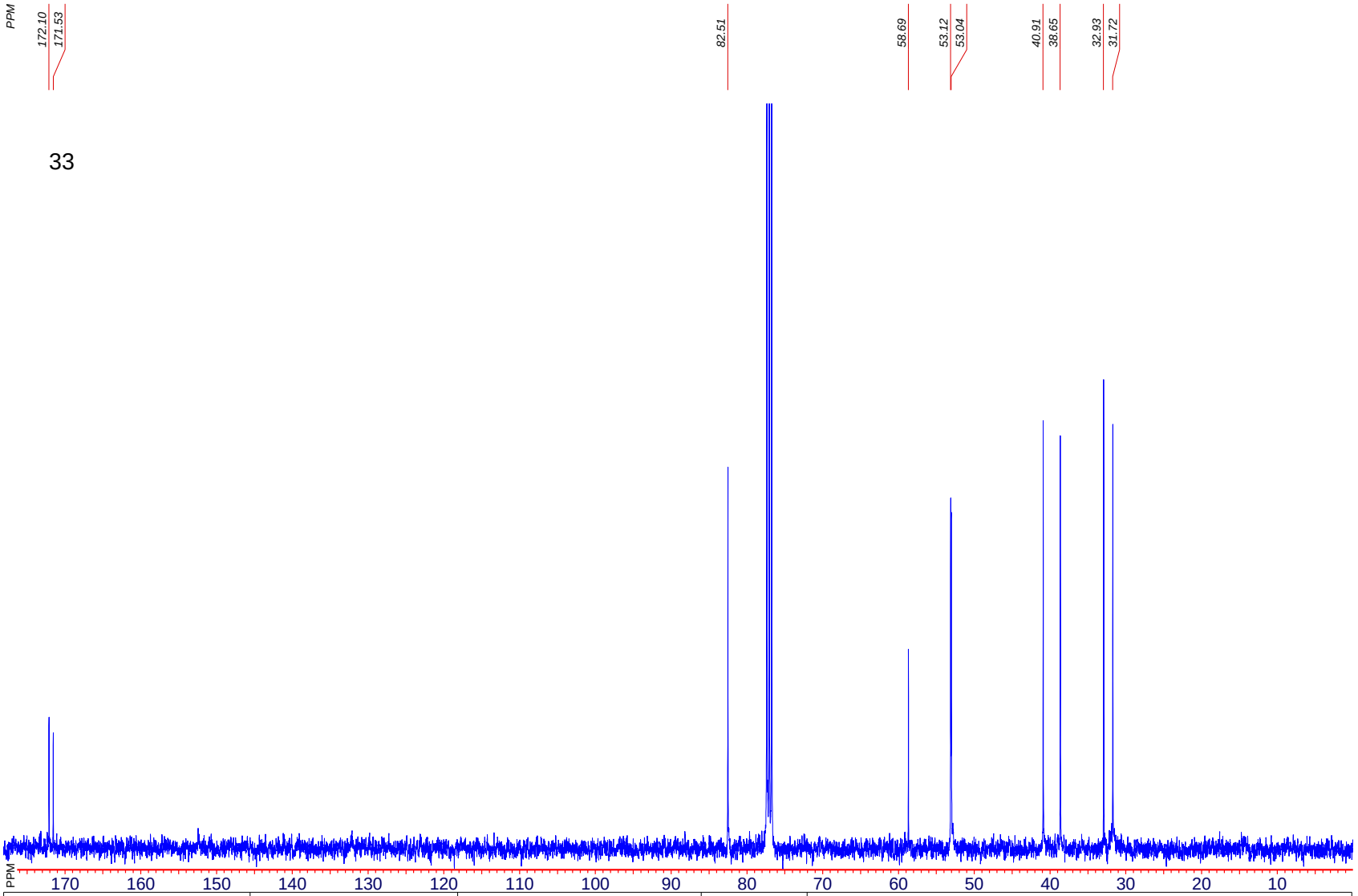
^{1}H NMR spectrum of the compound **33**.



^{13}C NMR spectrum of the compound **33**.



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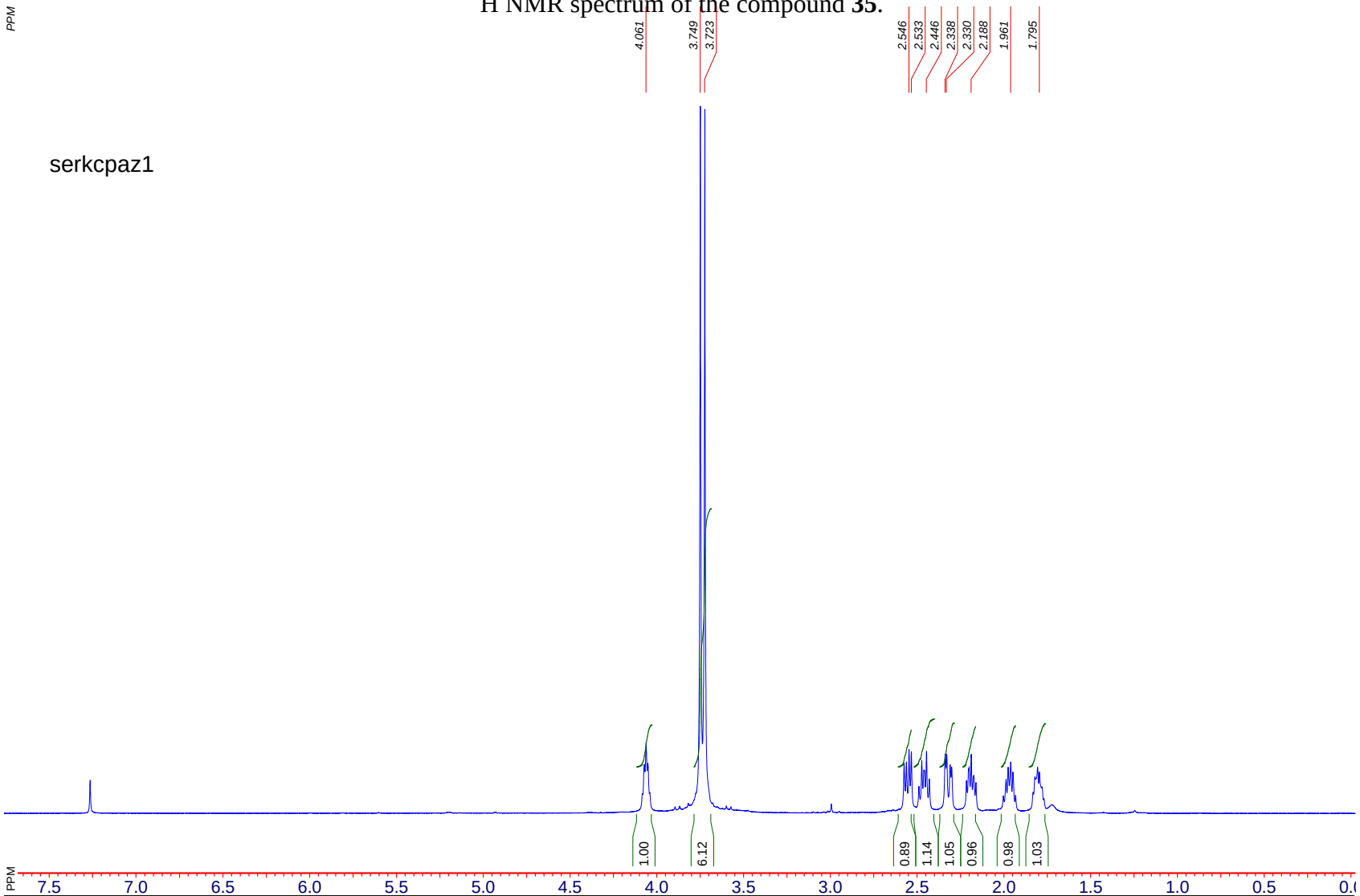
^{1}H NMR spectrum of the compound **35**.



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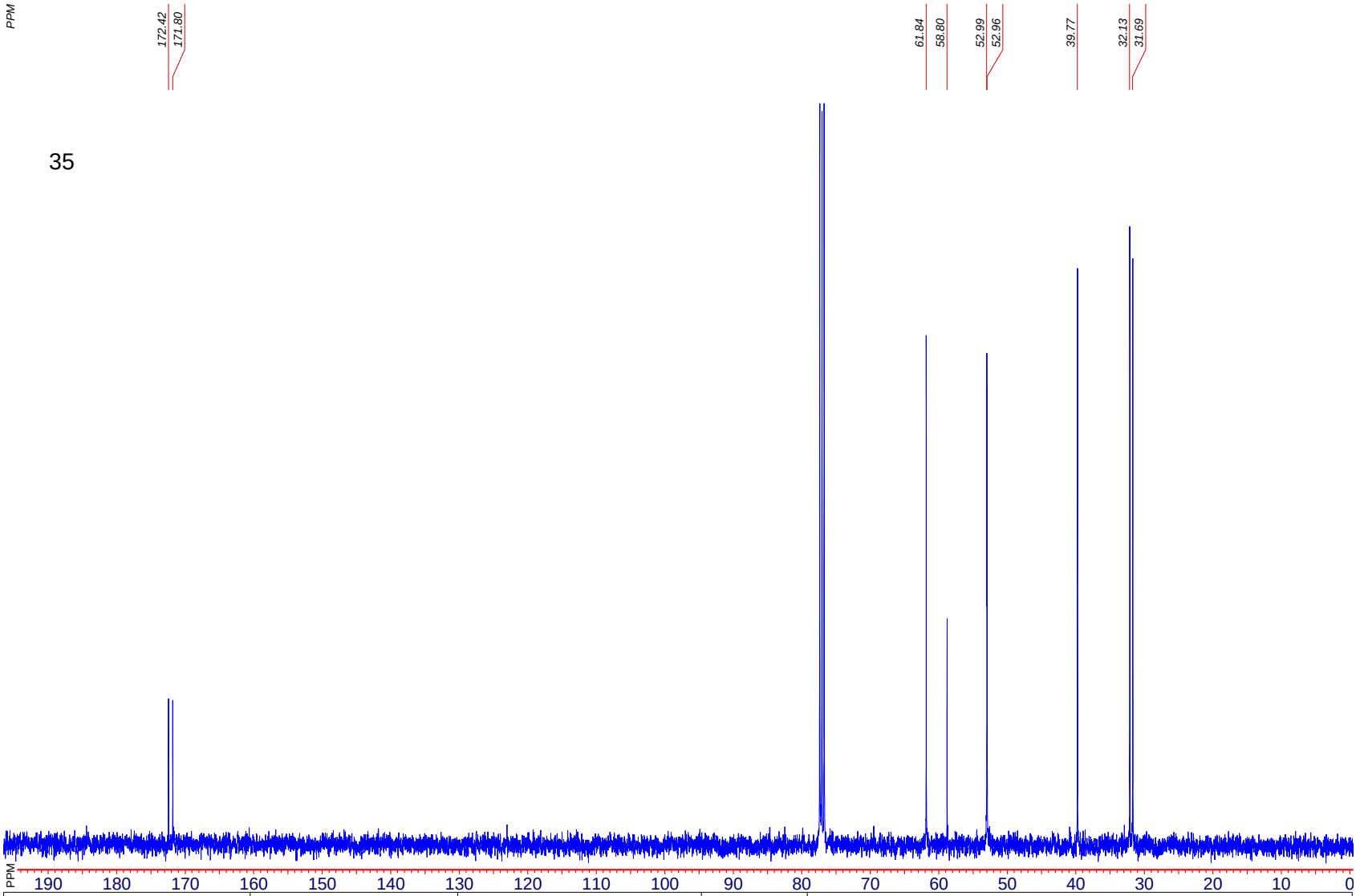
^{13}C NMR spectrum of the compound **35**.



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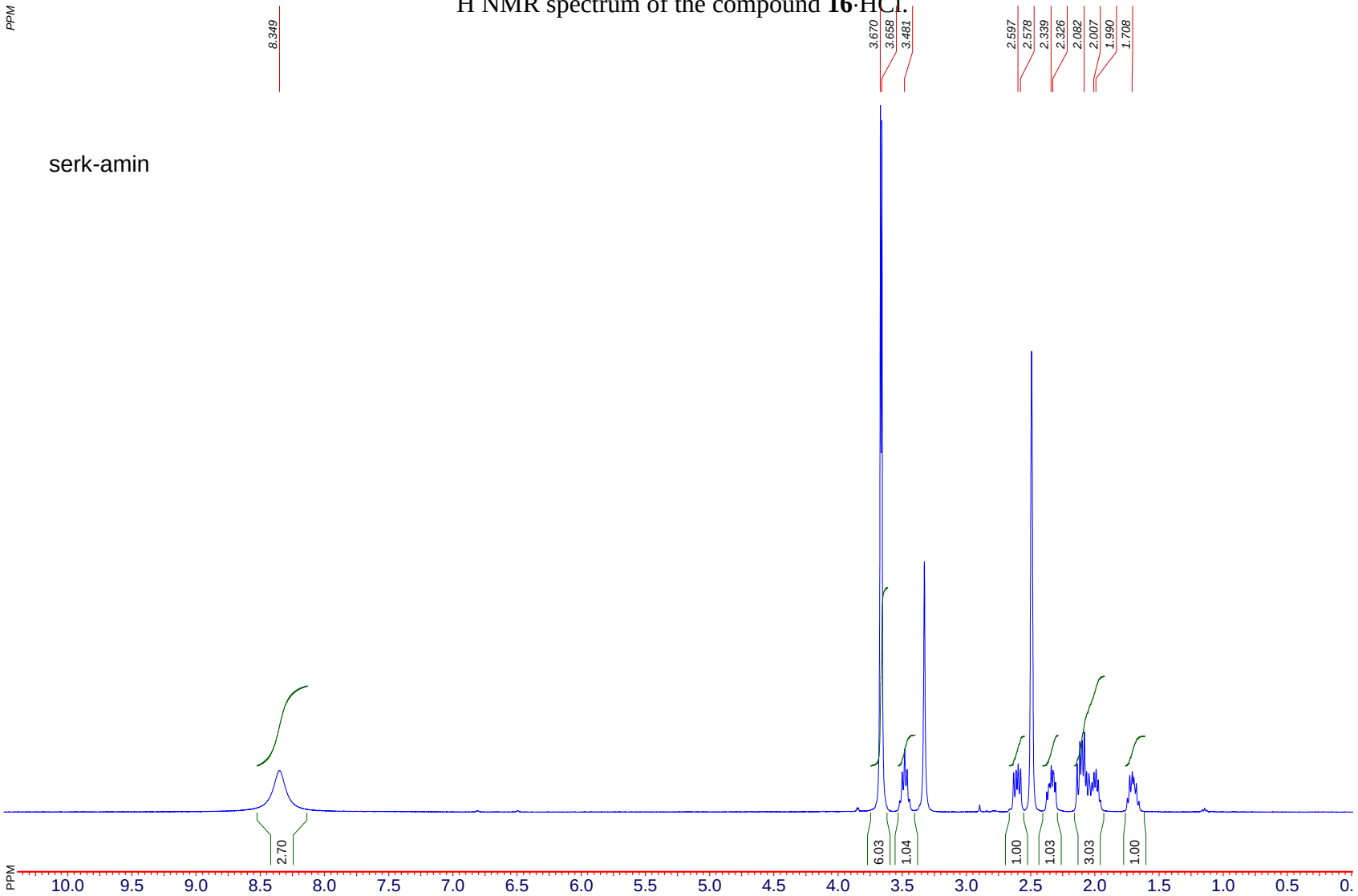
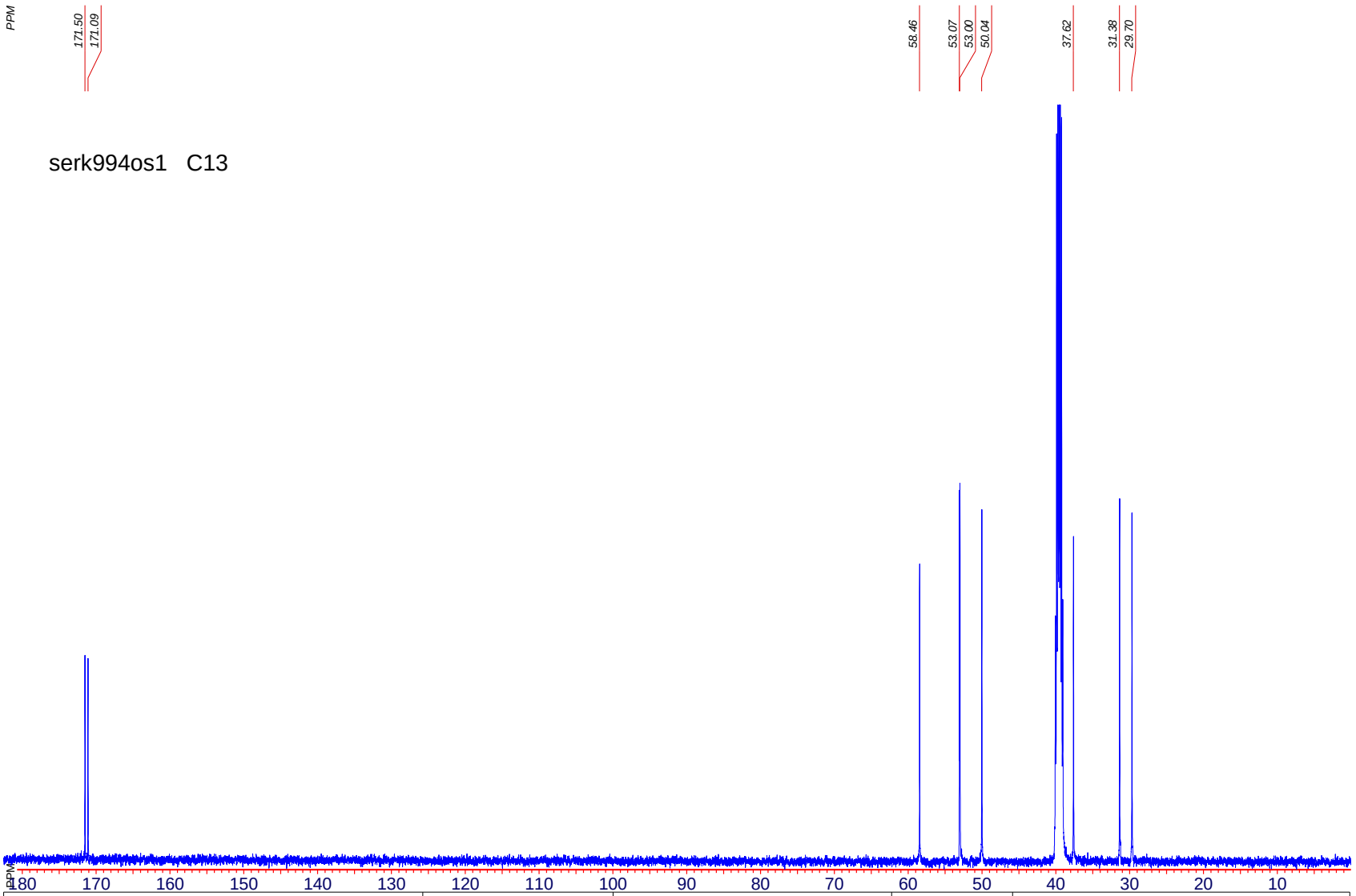
Date: 11-Feb-2016	Solvent: CDCl3	SW: 24038 Hz	TE: 300	Parameter file, XWIN-NMRVersion 3.5

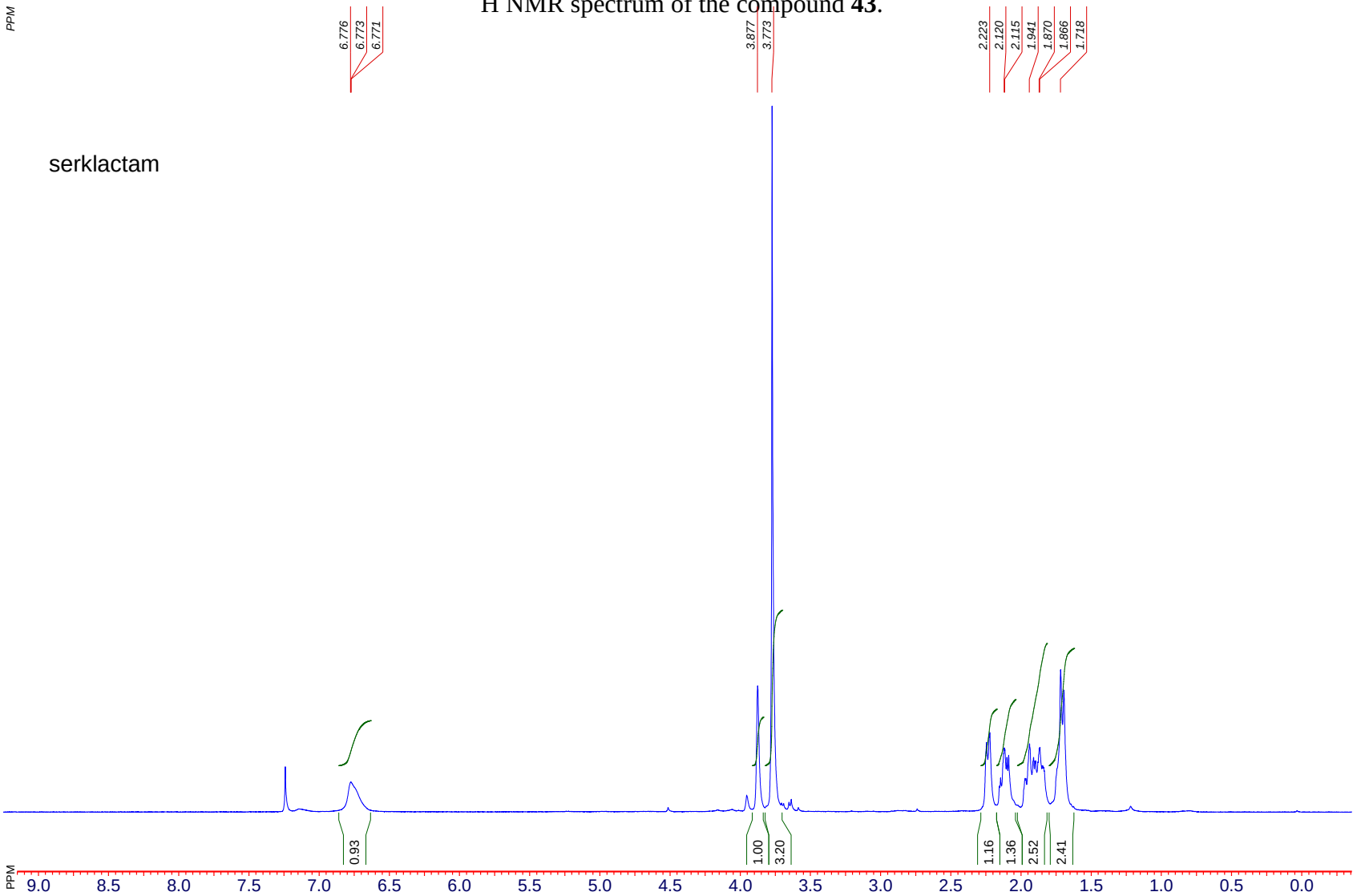
^{1}H NMR spectrum of the compound **16**·HCl.



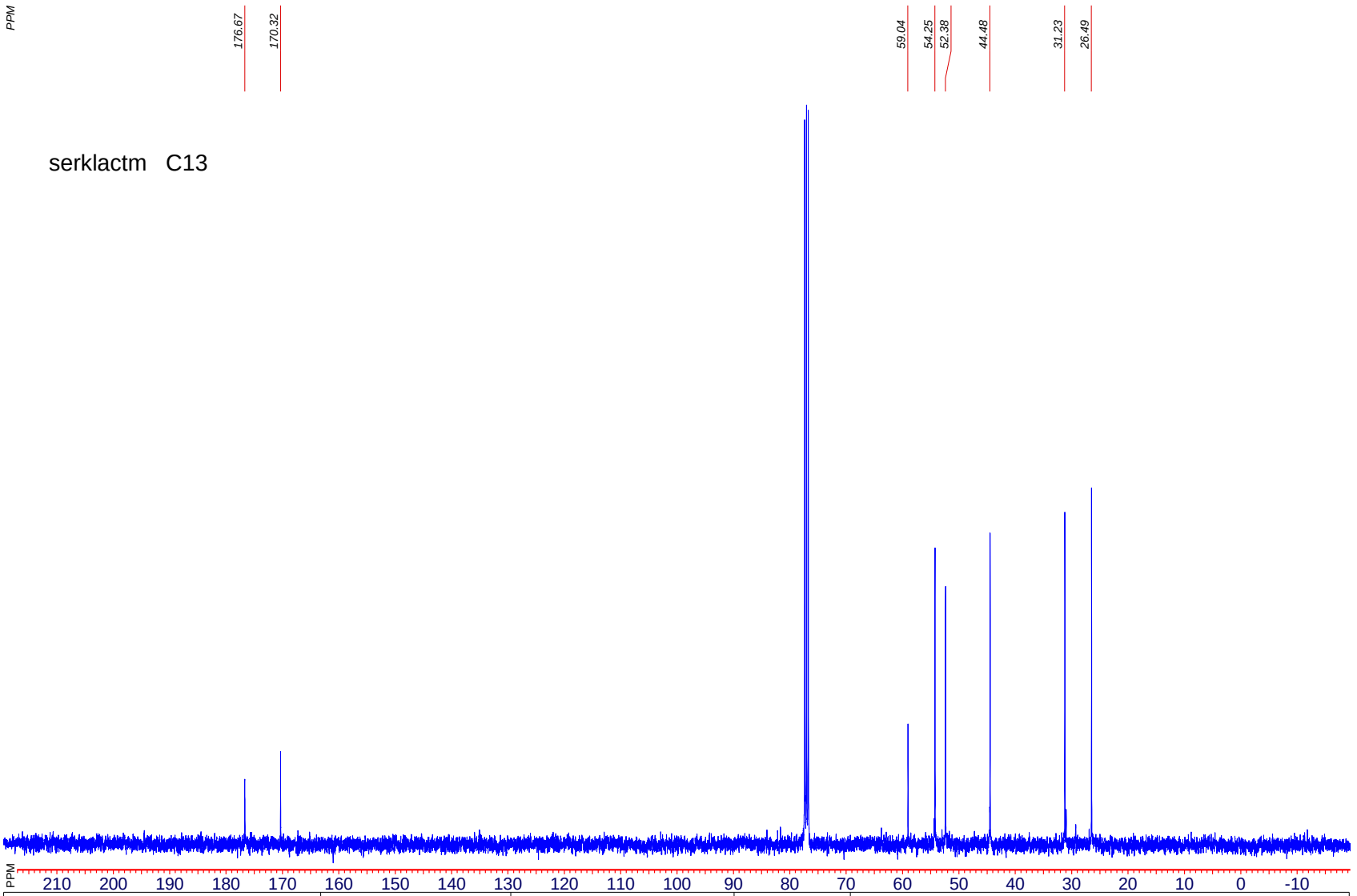
^{13}C NMR spectrum of the compound **16**·HCl.



^{1}H NMR spectrum of the compound **43**.

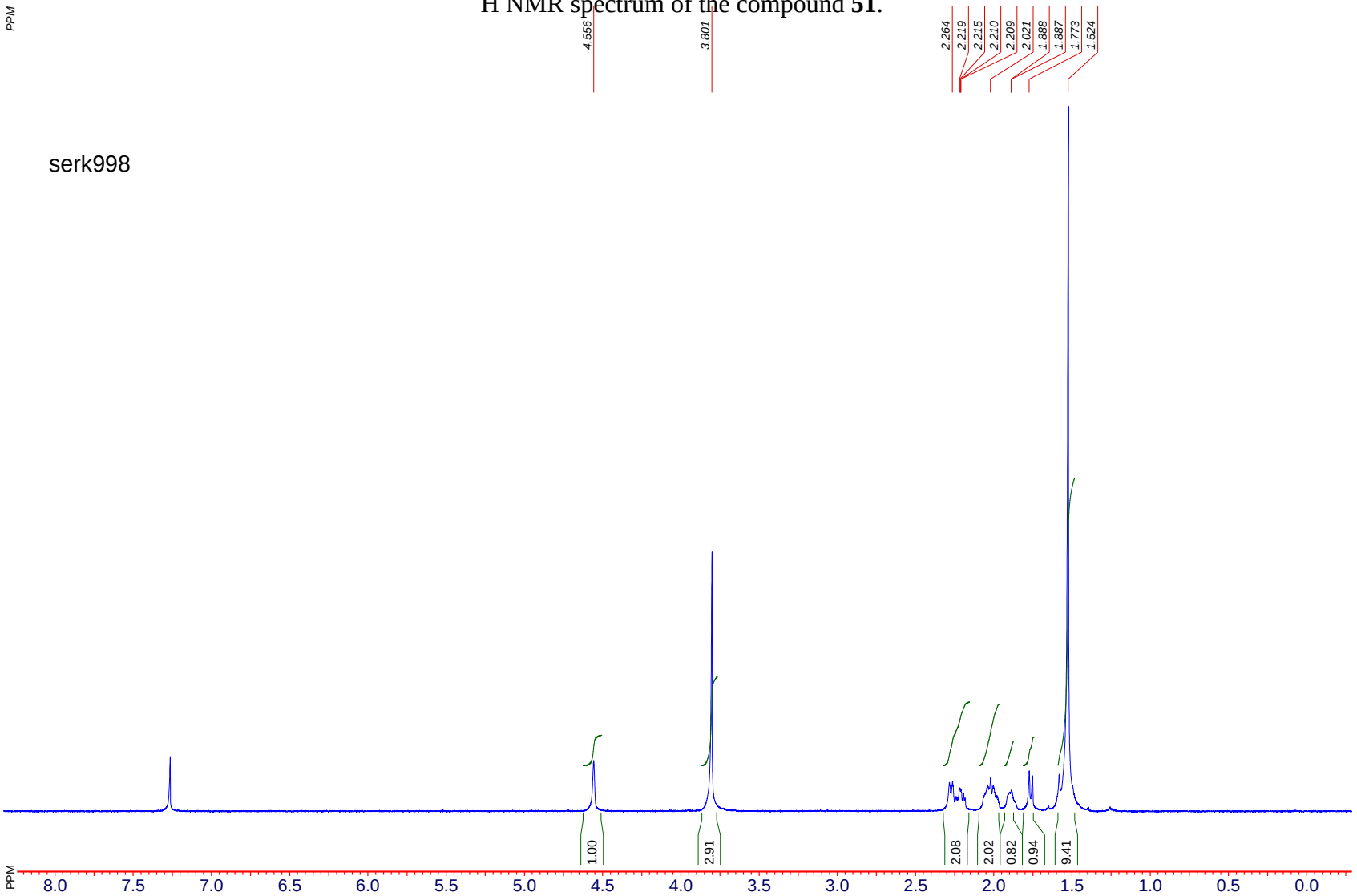


^{13}C NMR spectrum of the compound **43**.

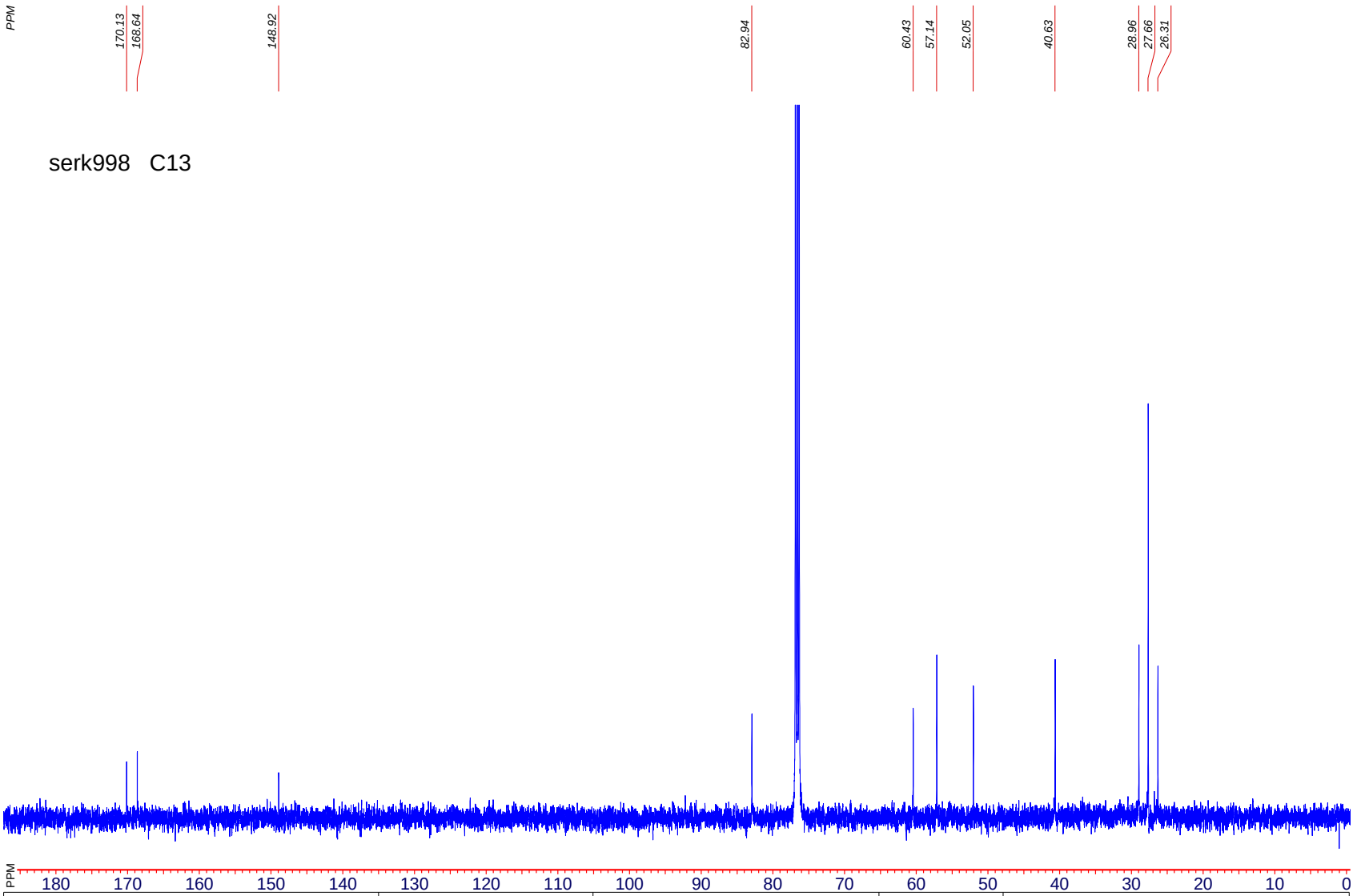


File name: serklactm C13	Owner: USER 1	SF: 100.6228 MHz	NS: 608	SI: 32768, TD: 65536
Date: 07-Sep-2015	Solvent: CDCl3	SW: 24038 Hz	TE: 299,5	Parameter file, XWIN-NMRVersion 3.5

^{1}H NMR spectrum of the compound **51**.

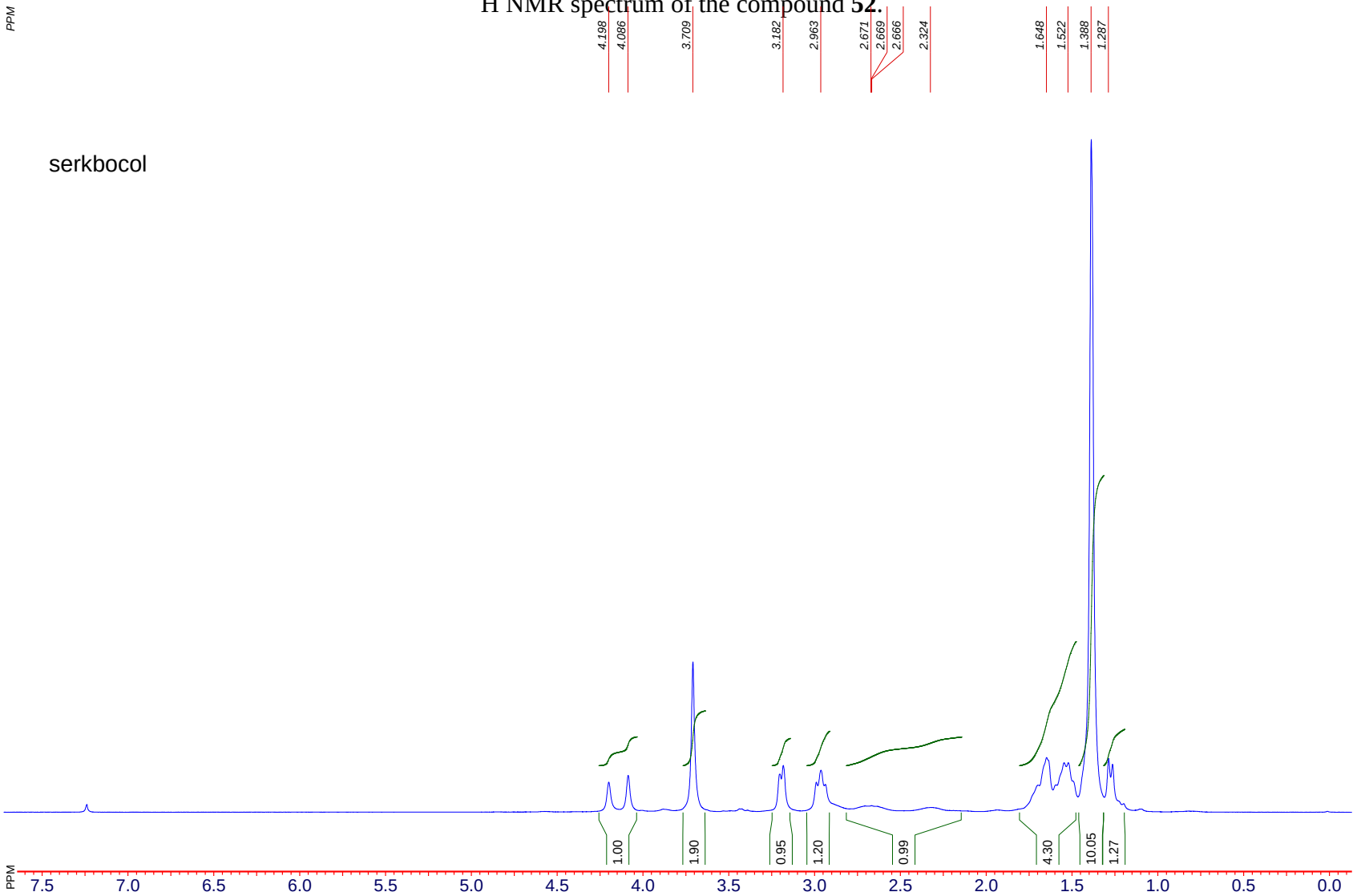


^{13}C NMR spectrum of the compound **51**.

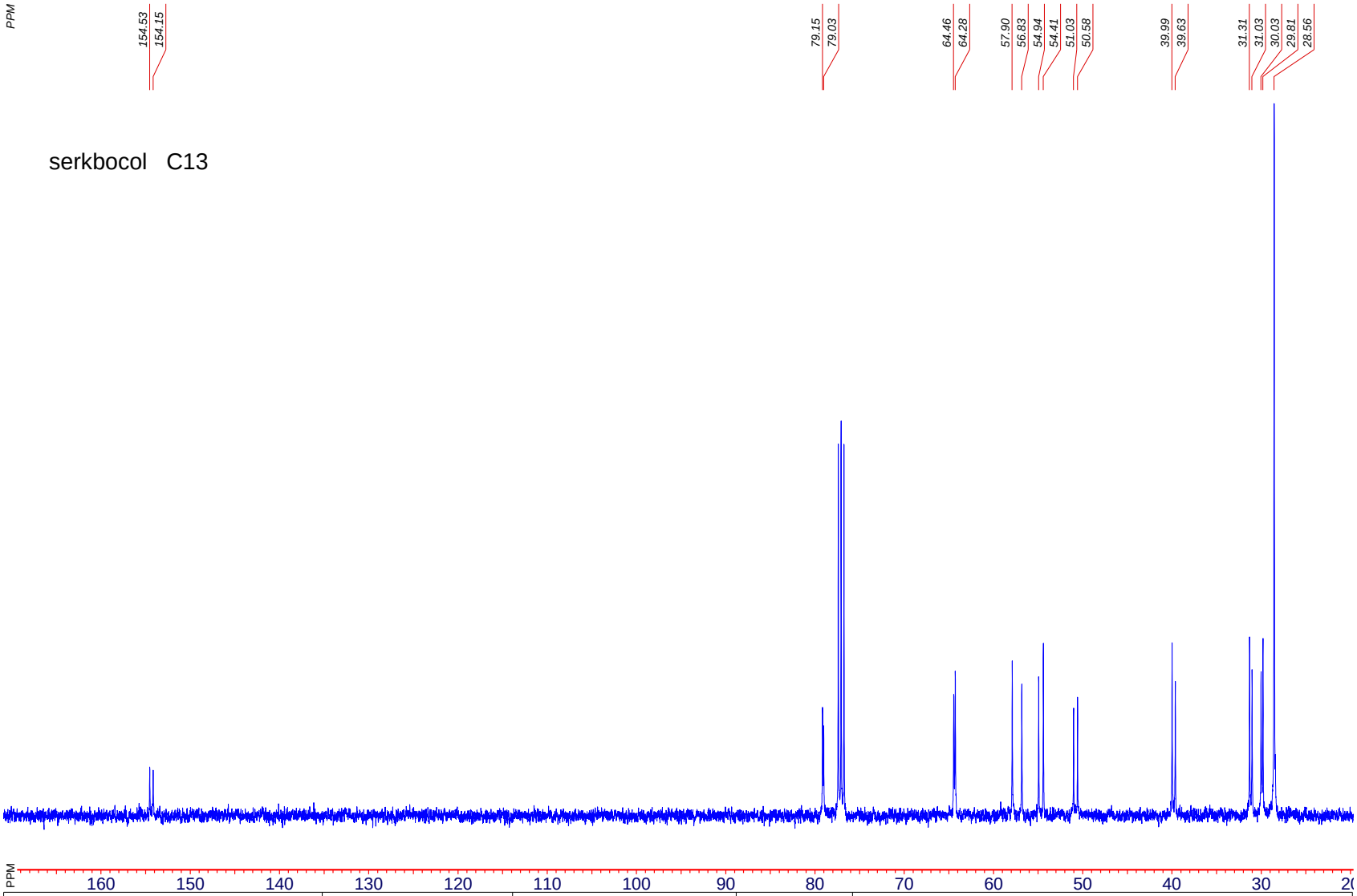


File name: serk998 C13	Owner:	SF: 125.7275 MHz	NS: 919	SI: 65536, TD: 102400
Date: 15-May-2015	Solvent: cdcl3	SW: 32680 Hz	TE: 0	

^{1}H NMR spectrum of the compound **52**.

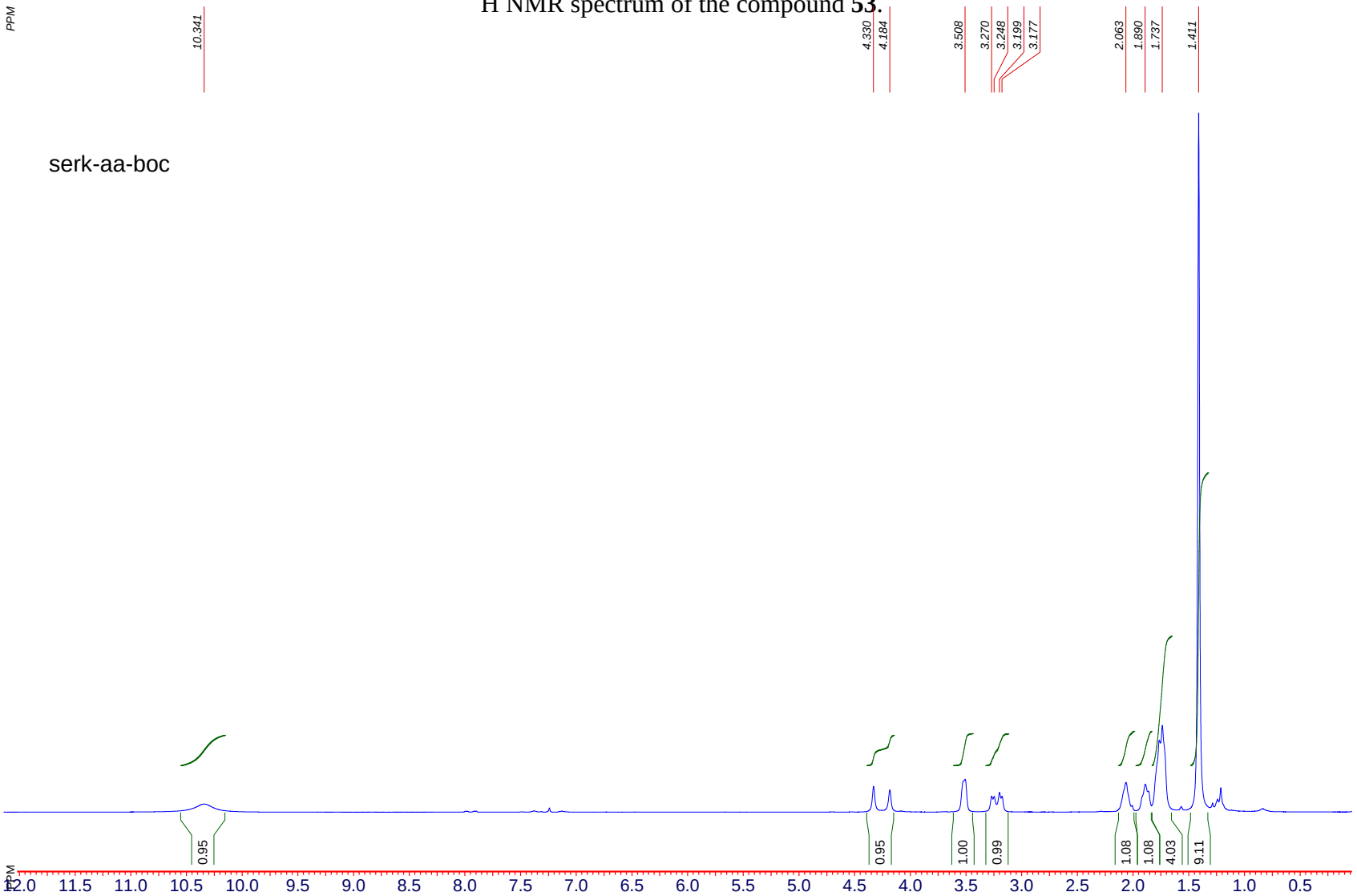


^{13}C NMR spectrum of the compound **52**.

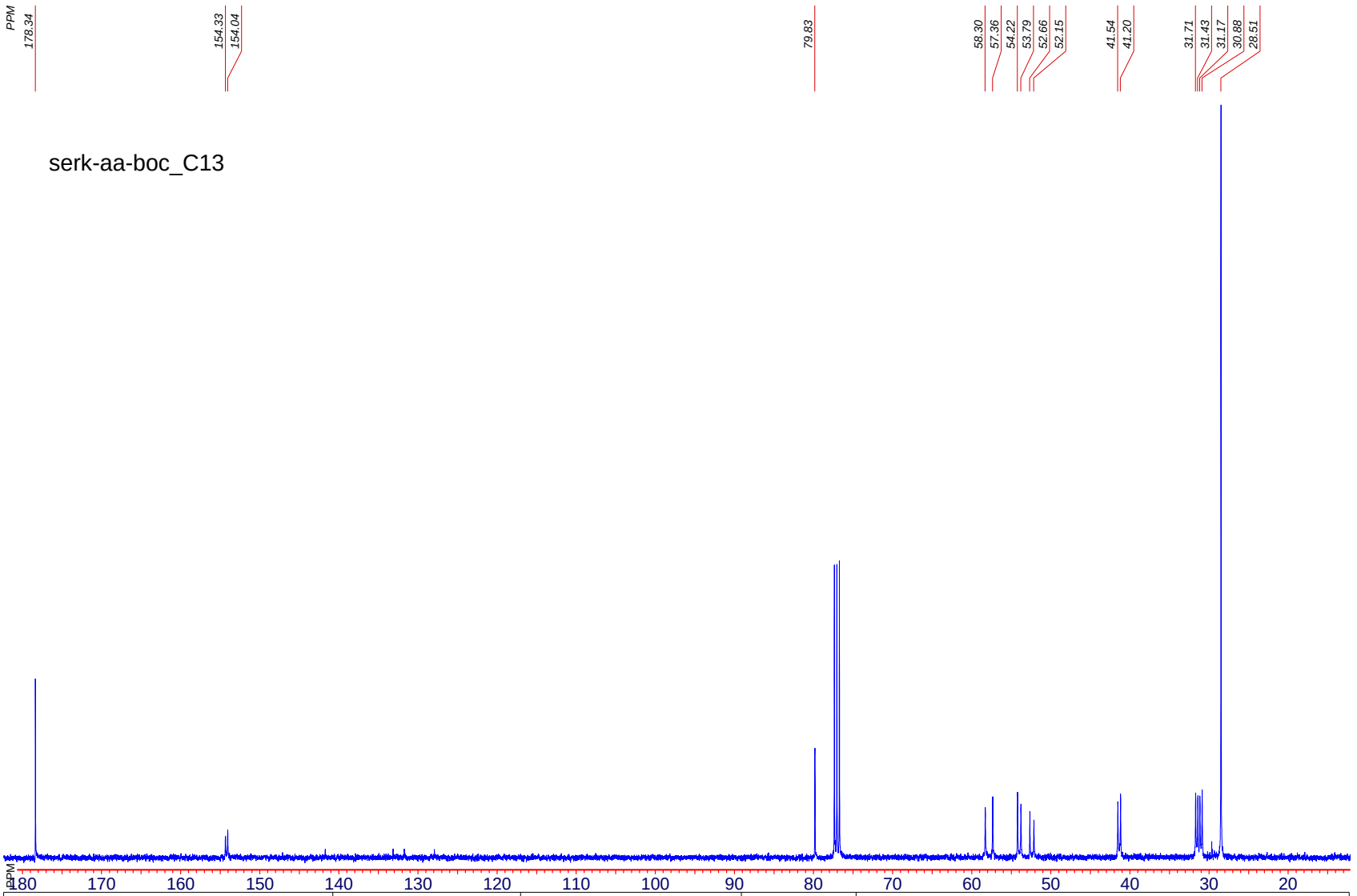


File name: serkbocol C13	Owner: USER 1	SF: 100.6228 MHz	NS: 311	SI: 32768, TD: 65536
Date: 07-Sep-2015	Solvent: CDCl3	SW: 24038 Hz	TE: 299,5	Parameter file, XWIN-NMRVersion 3.5

^{1}H NMR spectrum of the compound **53**.

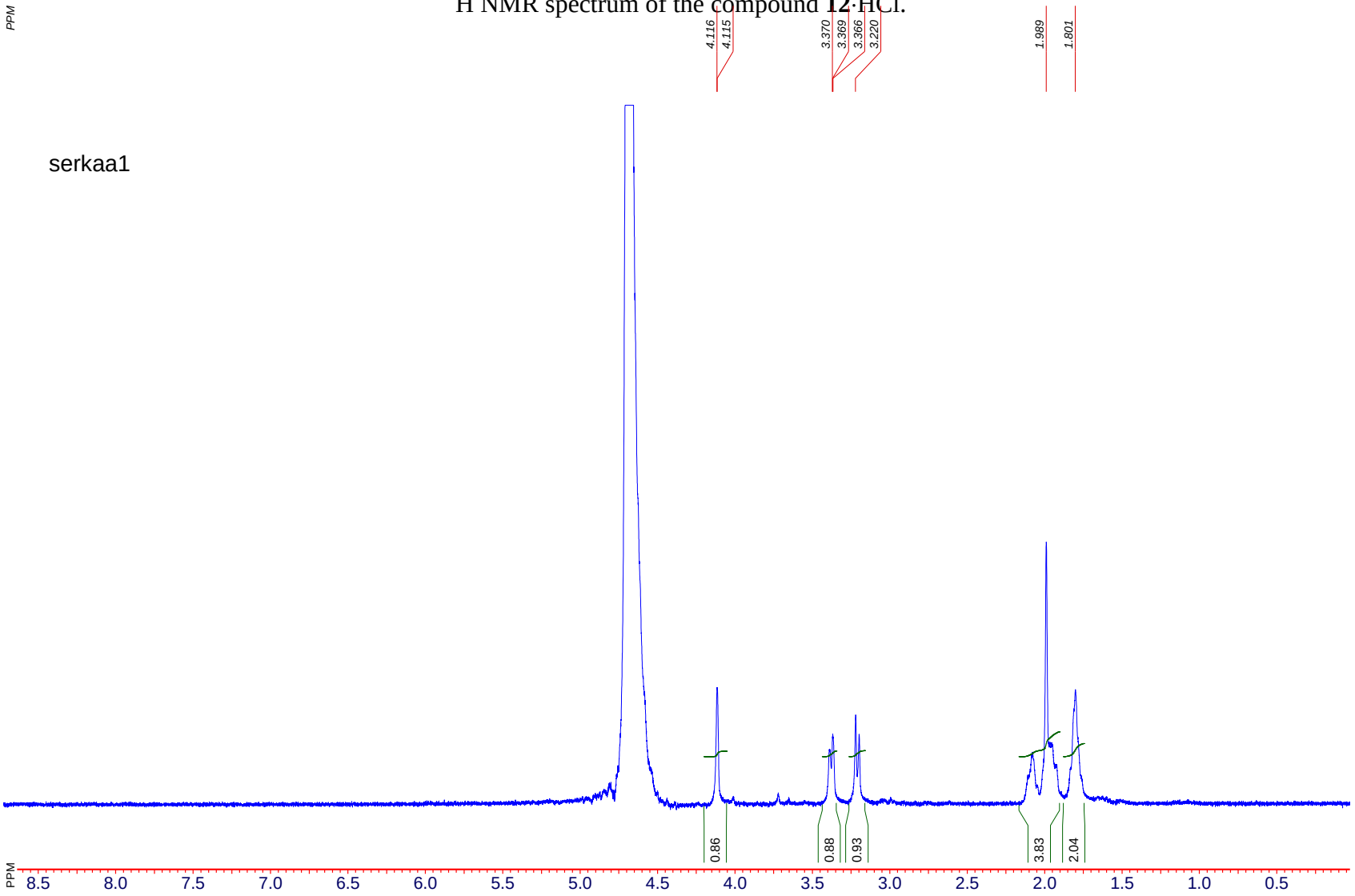


^{13}C NMR spectrum of the compound **53**.

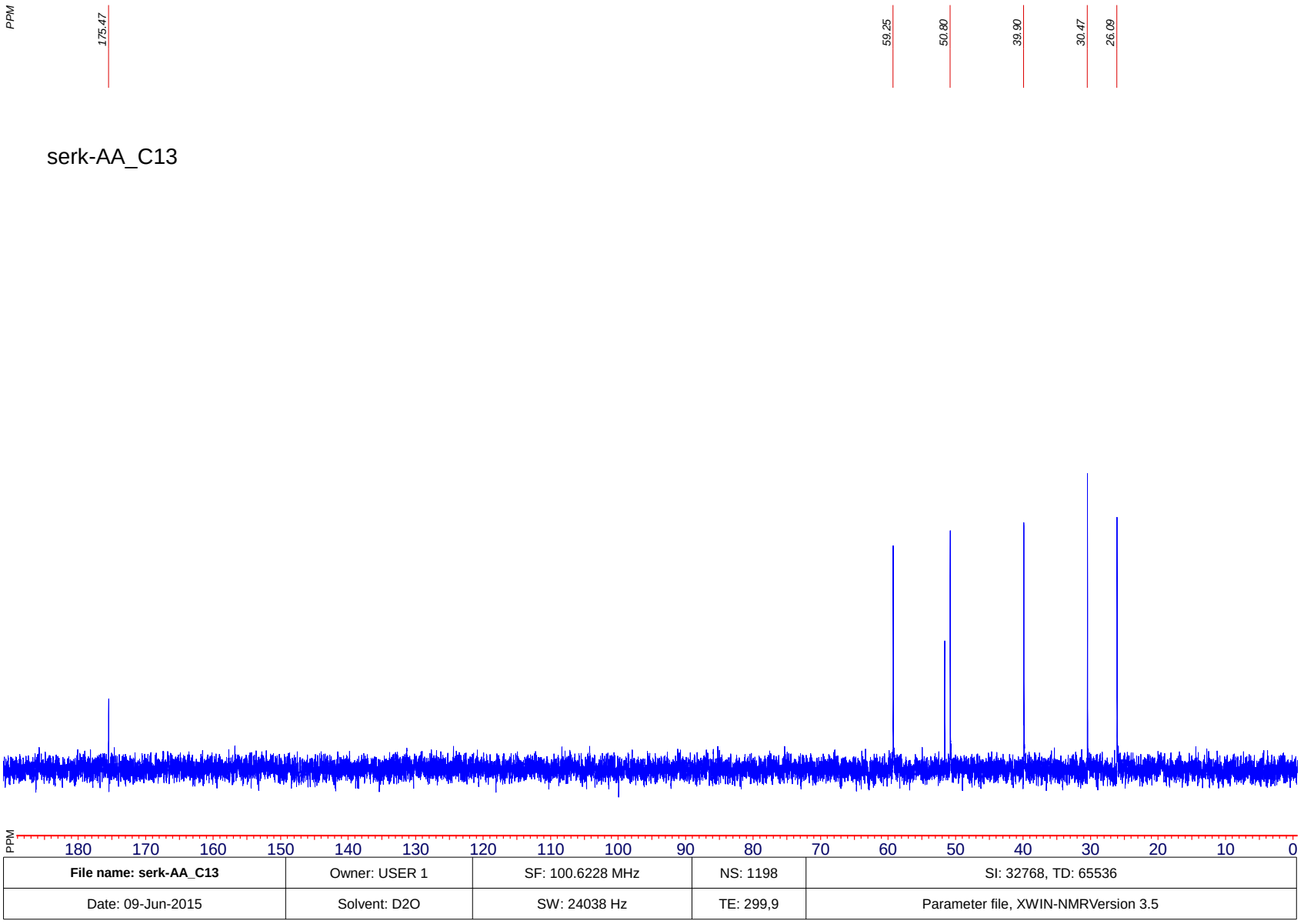


File name: serk-aa-boc_C13	Owner: USER 1	SF: 100.6228 MHz	NS: 911	SI: 32768, TD: 65536
Date: 25-Sep-2015	Solvent: CDCl3	SW: 24038 Hz	TE: 299,2	Parameter file, XWIN-NMRVersion 3.5

^{1}H NMR spectrum of the compound **12**·HCl.

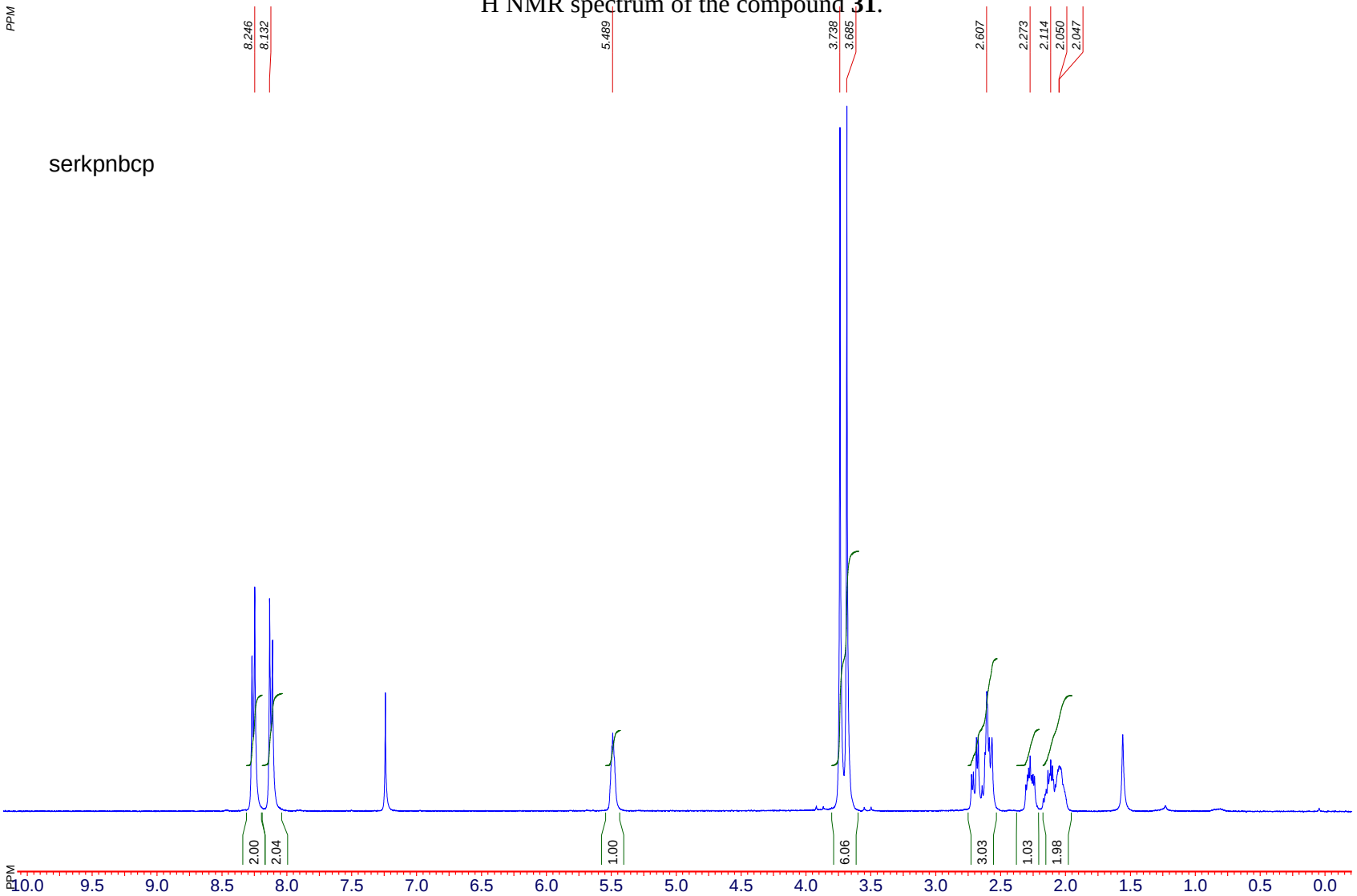


^{13}C NMR spectrum of the compound **12**·HCl.

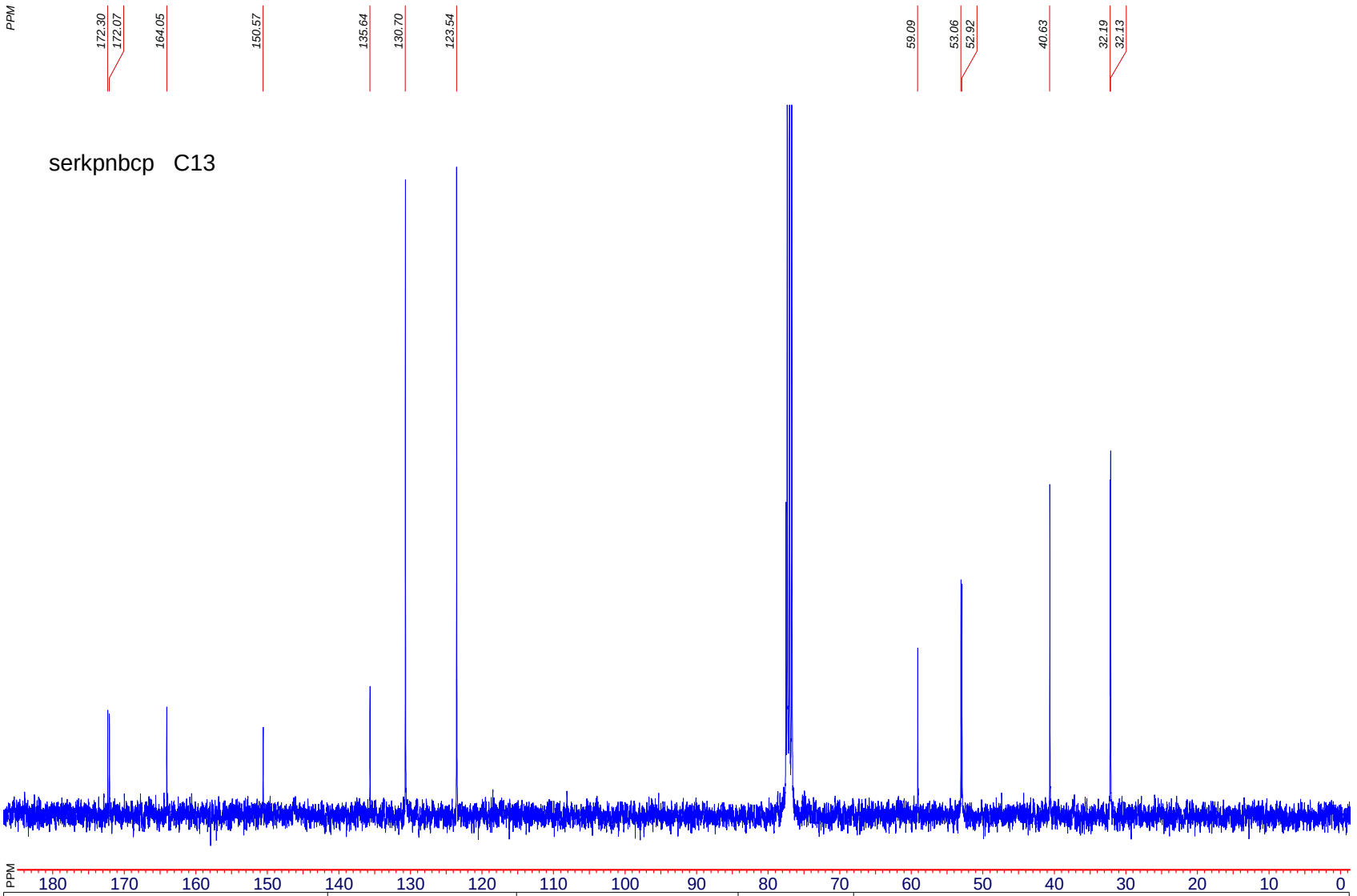


File name: serk-AA_C13	Owner: USER 1	SF: 100.6228 MHz	NS: 1198	SI: 32768, TD: 65536
Date: 09-Jun-2015	Solvent: D2O	SW: 24038 Hz	TE: 299,9	Parameter file, XWIN-NMRVersion 3.5

^{1}H NMR spectrum of the compound **31**.



^{13}C NMR spectrum of the compound **31**.

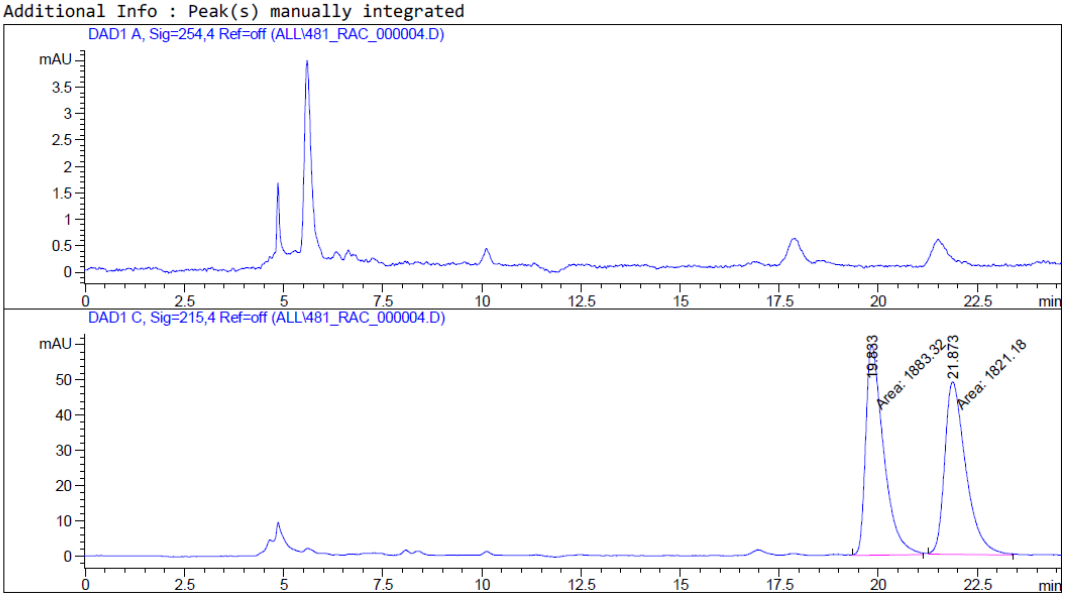


File name: serkpnbcp C13	Owner: USER 1	SF: 100.6228 MHz	NS: 1210	SI: 32768, TD: 65536
Date: 07-Sep-2015	Solvent: CDCl3	SW: 24038 Hz	TE: 299,5	Parameter file, XWIN-NMRVersion 3.5

Chiral stationary phase HPLC trace of racemic **52**

```
Acq. Operator   :
Acq. Instrument : Instrument 1                    Location : Vial 51
Injection Date  : 8/14/2015 11:19:22 AM
                                                  Inj Volume : 2.0 µl
Acq. Method     : C:\CHEM32\1\METHODS\HEXANE-IPA 90-10.M
Last changed    : 8/14/2015 11:44:02 AM
                  (modified after loading)
Analysis Method : C:\CHEM32\1\METHODS\HEXANE-IPA 90-10.M
Last changed    : 8/14/2015 1:00:41 PM
                  (modified after loading)
Sample Info     : IA, Hexane-IPA 97-3 0.7 ml/min
```

```
Additional Info : Peak(s) manually integrated
```




```
=====================================================================
                      Area Percent Report
=====================================================================

Sorted By             :      Signal
Multiplier:                   :      1.0000
Dilution:                     :      1.0000
Use Multiplier & Dilution Factor with ISTDs

 Signal 1: DAD1 A, Sig=254,4 Ref=off


 Signal 2: DAD1 C, Sig=215,4 Ref=off

 Peak RetTime Type  Width     Area      Height     Area
   #   [min]       [min]   [mAU*s]     [mAU]       %
 ----|-------|----|-------|----------|----------|--------|
    1  19.833 MM T  0.5243 1883.32080   59.87222  50.8387
    2  21.873 MM T  0.6189 1821.18469   49.04562  49.1613

 Totals :                  3704.50549  108.91784


=====================================================================
                      *** End of Report ***
```

Chiral stationary phase HPLC trace of (*R*,*R*)-**52**

```
Acq. Operator   :
Acq. Instrument : Instrument 1                    Location : Vial 52
Injection Date  : 8/14/2015 11:49:49 AM
                                                  Inj Volume : 2.0 µl
Acq. Method     : C:\CHEM32\1\METHODS\HEXANE-IPA 90-10.M
Last changed    : 8/14/2015 11:49:36 AM
                  (modified after loading)
Analysis Method : C:\CHEM32\1\METHODS\HEXANE-IPA 90-10.M
Last changed    : 8/14/2015 1:00:41 PM
                  (modified after loading)
Sample Info     : IA, Hexane-IPA 97-3 0.7 ml/min
```

```
Additional Info : Peak(s) manually integrated
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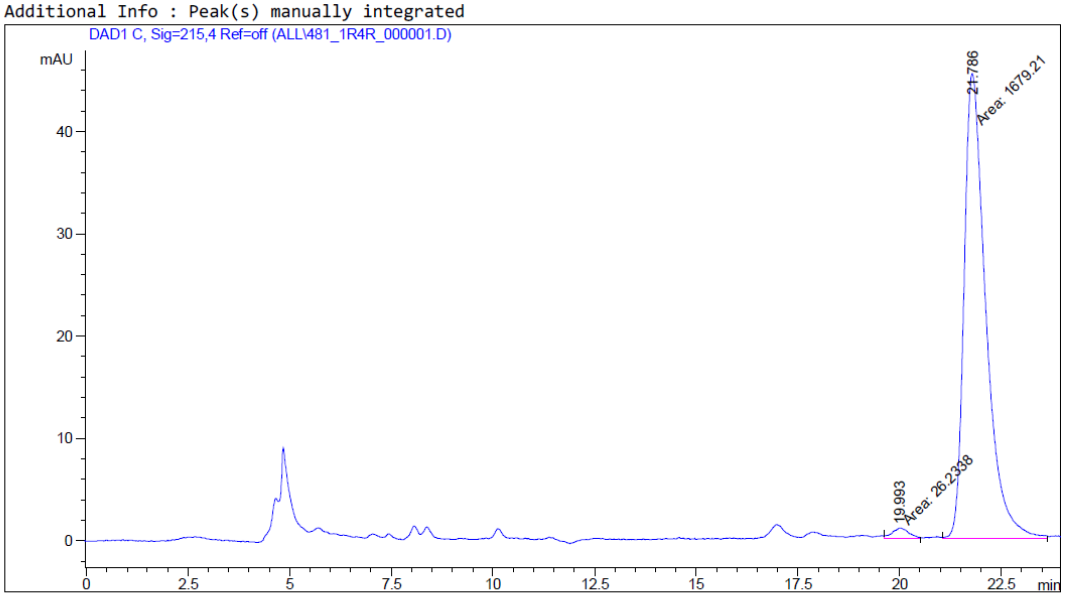


```
=====================================================================
                      Area Percent Report
=====================================================================

Sorted By             :      Signal
Multiplier:                   :      1.0000
Dilution:                     :      1.0000
Use Multiplier & Dilution Factor with ISTDs
Signal 1: DAD1 C, Sig=215,4 Ref=off

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1  19.993 MM T  0.4617   26.23381 9.46990e-1   1.5382
   2  21.786 MM T  0.7039 1679.20972   45.36599  98.4618

Totals :                  1705.44353   46.31298

=====================================================================
                      *** End of Report ***
```

Chiral stationary phase HPLC trace of (*S*,*S*)-**52**

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Acq. Operator   :
Acq. Instrument : Instrument 1                    Location : Vial 53
Injection Date  : 8/14/2015 12:34:19 PM
                                                  Inj Volume : 2.0 µl
Acq. Method     : C:\CHEM32\1\METHODS\HEXANE-IPA 90-10.M
Last changed    : 8/14/2015 12:14:03 PM
                  (modified after loading)
Analysis Method : C:\CHEM32\1\METHODS\HEXANE-IPA 90-10.M
Last changed    : 8/14/2015 11:49:17 AM
                  (modified after loading)
Sample Info     : IA, Hexane-IPA 97-3 0.7 ml/min
```

```
Additional Info : Peak(s) manually integrated
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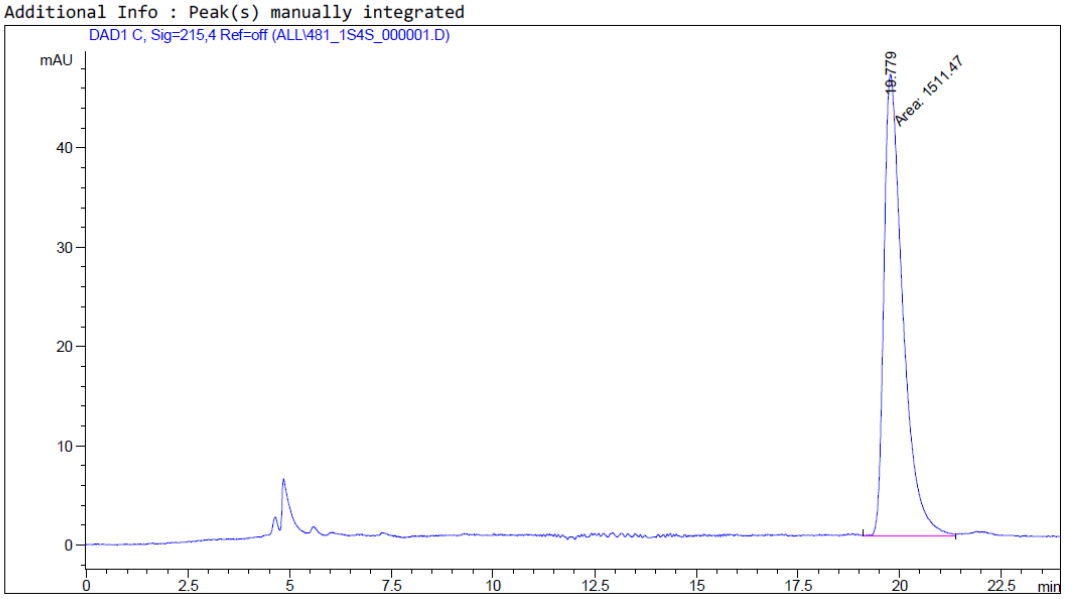


```
======================================================================
                        Area Percent Report
======================================================================

Sorted By             :      Signal
Multiplier:                   :      1.0000
Dilution:                     :      1.0000
Use Multiplier & Dilution Factor with ISTDs
Signal 1: DAD1 C, Sig=215,4 Ref=off

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [mAU*s]     [mAU]       %
----|-------|----|-------|----------|----------|--------|
   1  19.779 MM T  0.5413 1511.47327   46.53747 100.0000

Totals :                  1511.47327   46.53747

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                        *** End of Report ***
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