

## Supplementary Information

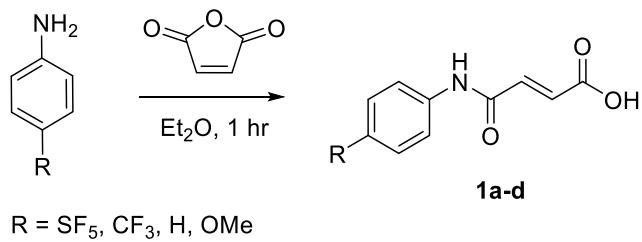
# Evaluation of Substituted N-Aryl Maleimide and Acrylamides for Bioconjugation

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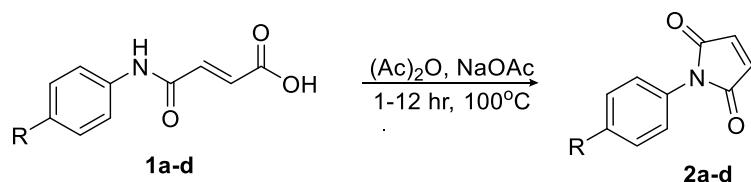
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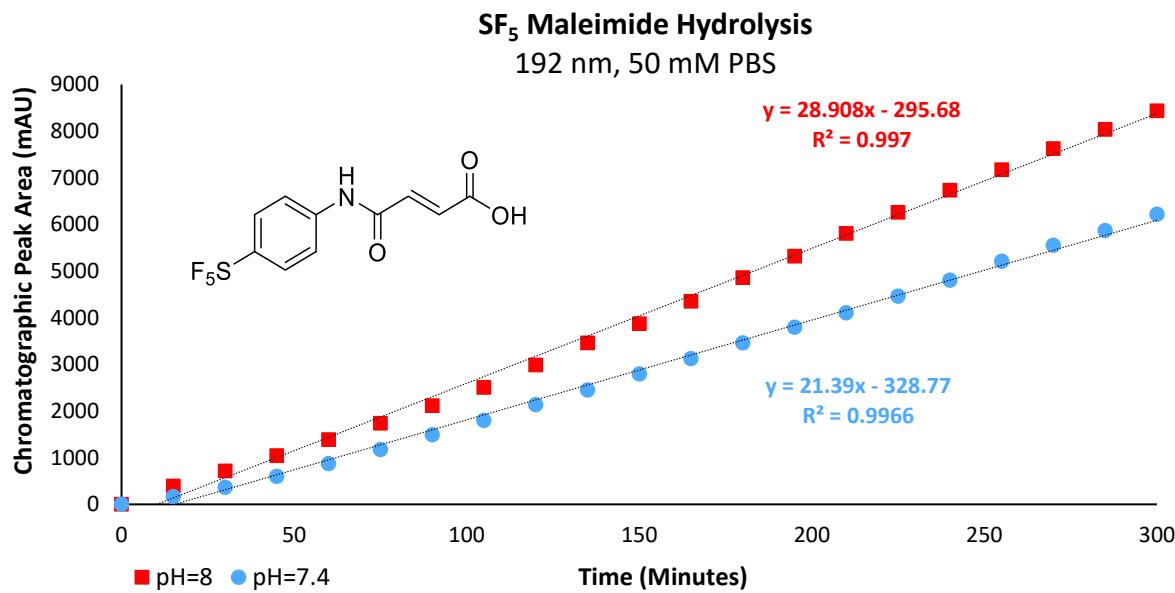
**Table S1:** Yields obtained of *N*-aryl maleamic acids.

Compound	R	Yield (%)
<b>1a</b>	SF <sub>5</sub>	93
<b>1b</b>	CF <sub>3</sub>	92
<b>1c</b>	H	87
<b>1d</b>	OMe	95

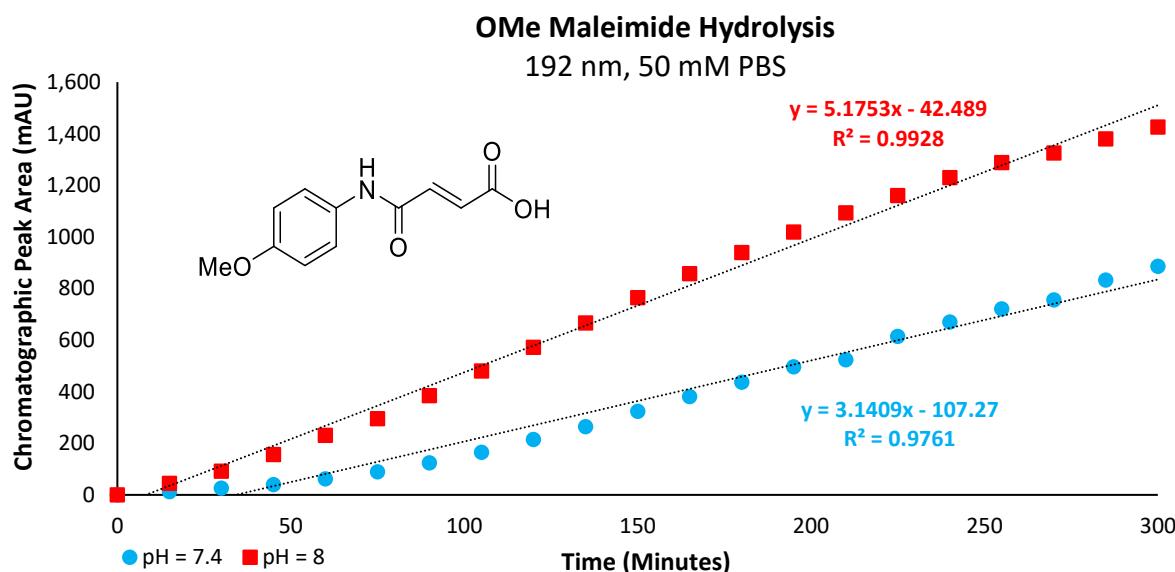


**Table S2:** Cyclisation of *N*-aryl maleamic acid derivatives into corresponding *N*-aryl maleimides using acetic anhydride, sodium acetate, 100°C 1-12 hr.

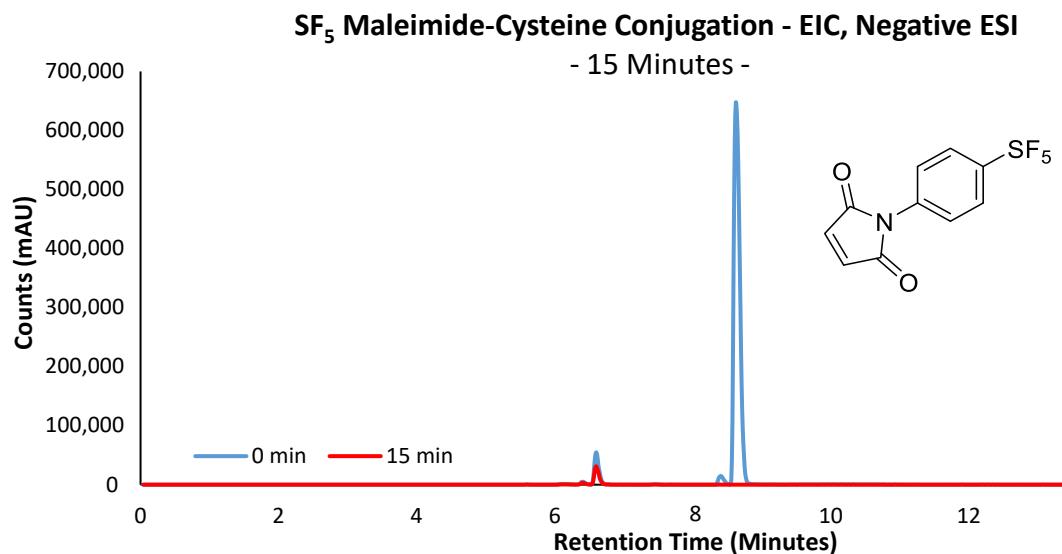
Compound	R	Yield (%)
<b>2a</b>	SF <sub>5</sub>	84
<b>2b</b>	CF <sub>3</sub>	88
<b>2c</b>	H	79
<b>2d</b>	OMe	93



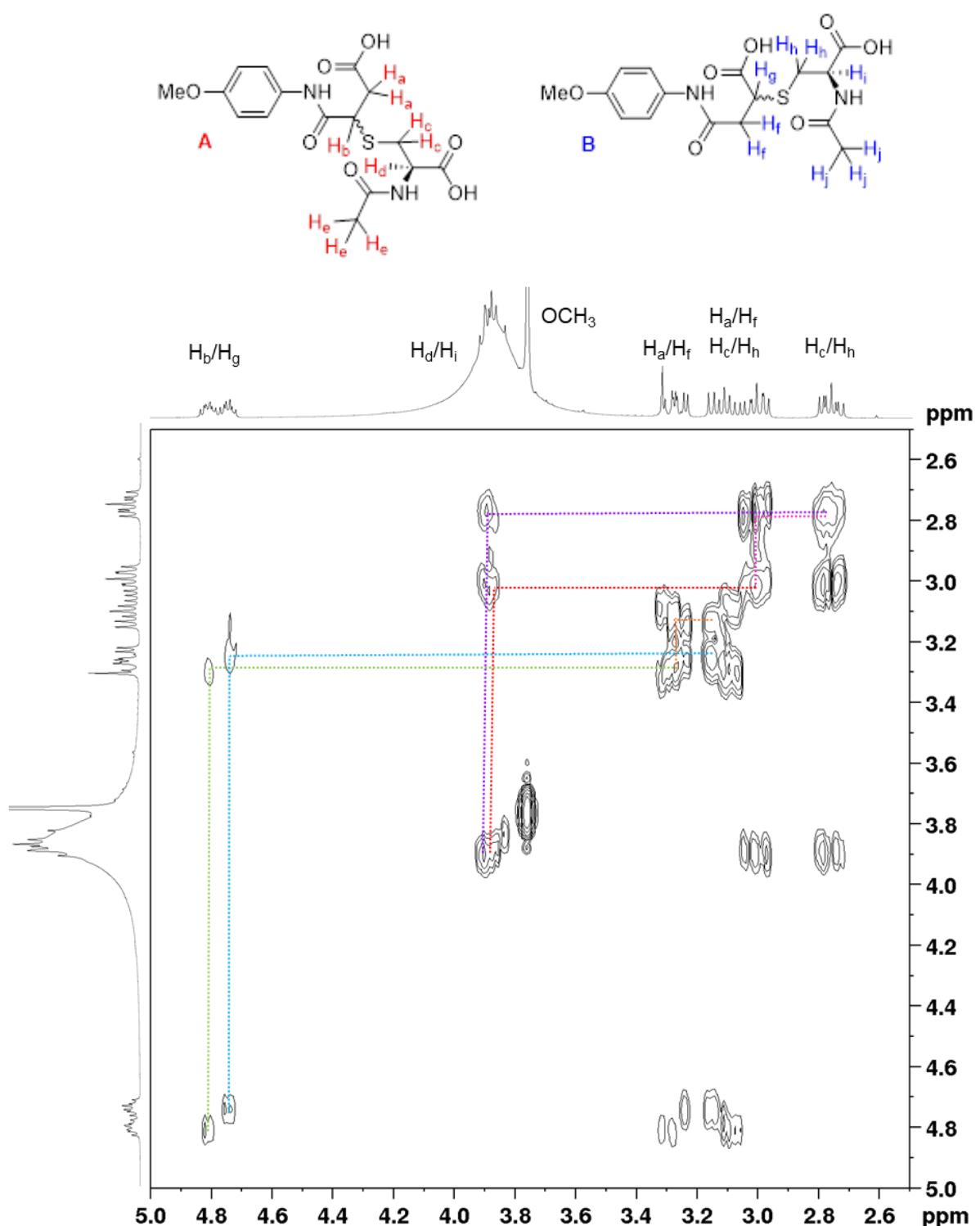
**Figure S1:** Graph plotting chromatographic peak area of the peak corresponding to the -SF<sub>5</sub> maleamic acid (**1a**) over time.



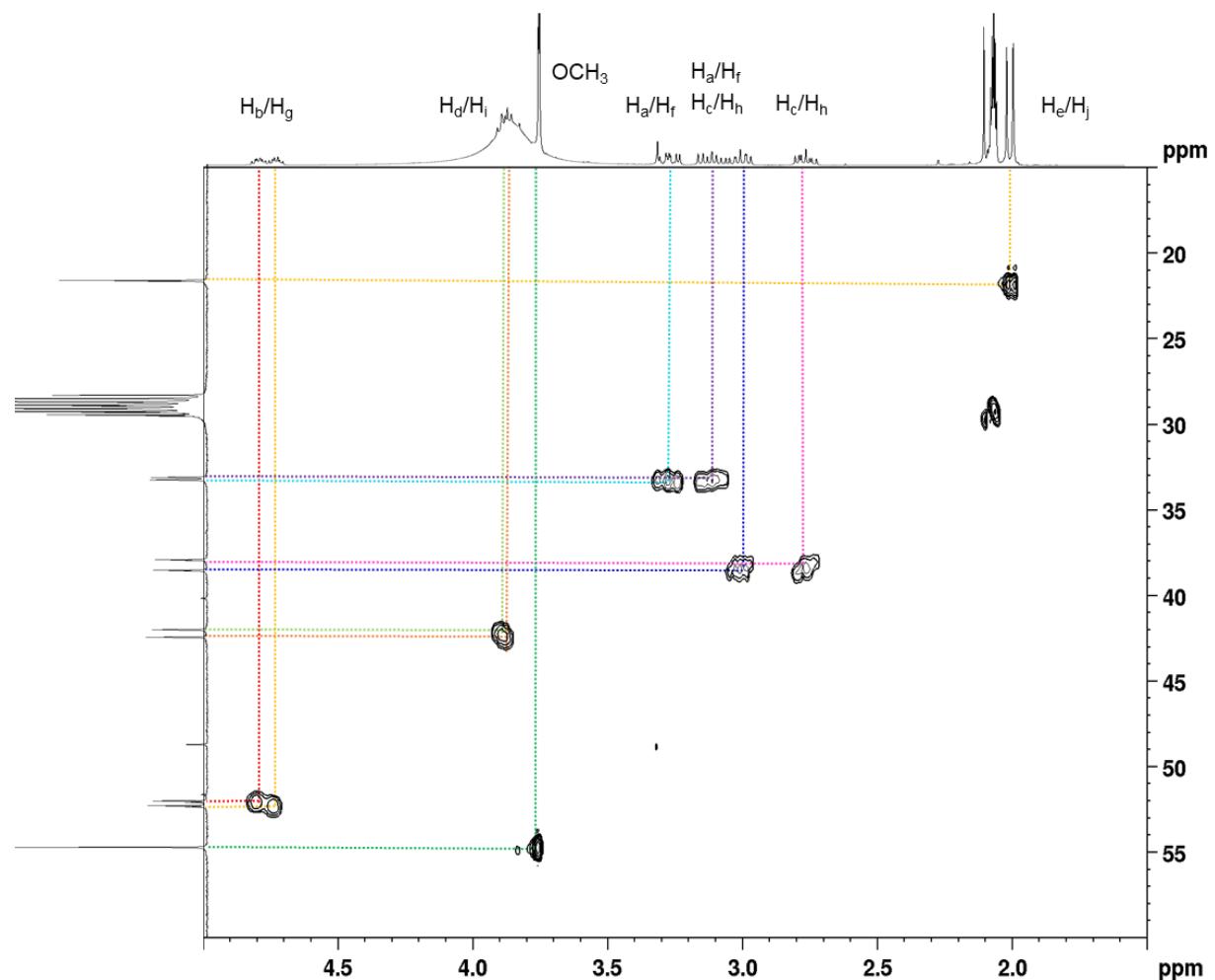
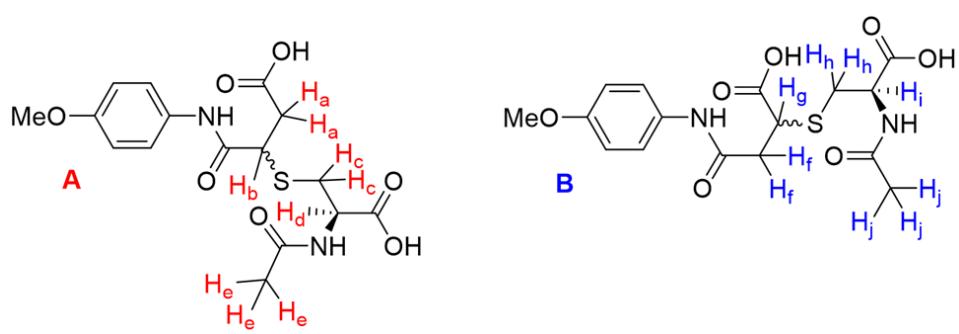
**Figure S2:** Graph plotting chromatographic peak area of the peak corresponding to the -OMe maleamic acid (**1d**) over time.



**Figure S3:** Extracted ion chromatogram showing the disappearance of the signal corresponding to -SF<sub>5</sub> maleimide within 15 minutes from the initial injection.



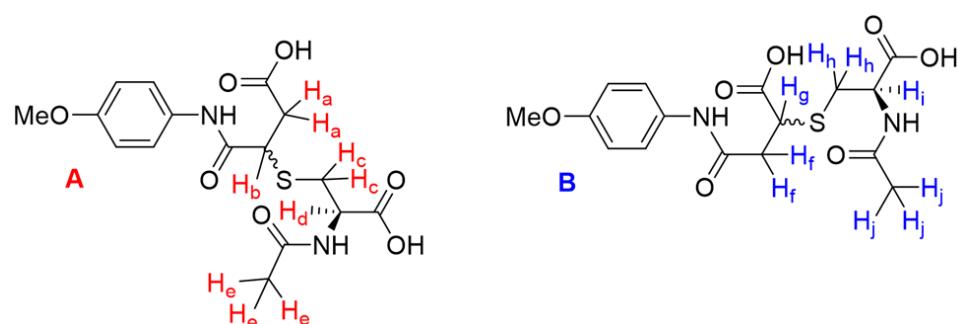
**Figure S4:**  $^1\text{H}$ -NMR COSY of the -OMe regioisomeric mixture (**4d**).

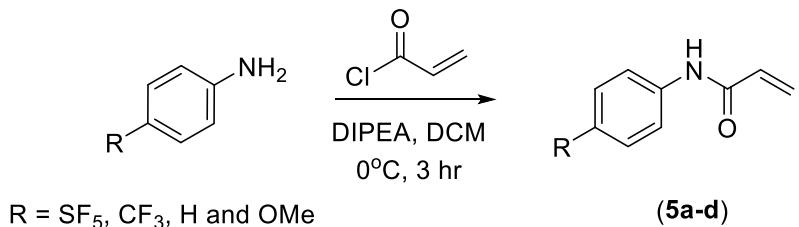


**Figure S5:** 2D HSQC of the -OMe regioisomeric mixture (**4d**).

**Table S3:**  $^1\text{H}$  and  $^{13}\text{C}$  chemical shift allocations of -OMe thio-succinamic acid regio-isomers (4d).

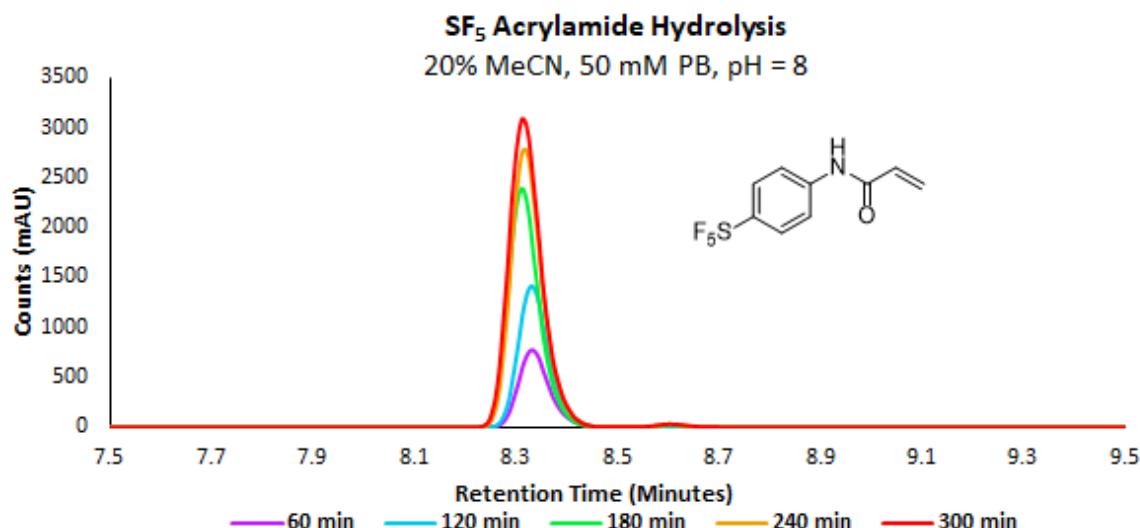
Chemical environment	$^1\text{H}$ Chemical Shift	$^{13}\text{C}$ Chemical Shift
$\text{H}_b$ or $\text{H}_g$	4.80	52.1
$\text{H}_g$ or $\text{H}_b$	4.74	52.4
$\text{H}_d$ & $\text{H}_i$	3.89	42.4
$\text{OCH}_3$	3.76	54.8
$\text{H}_a$ or $\text{H}_f$	3.27	33.3
$\text{H}_f$ or $\text{H}_a$	3.12	33.3
$\text{H}_c$ or $\text{H}_h$	3.01	38.6
$\text{H}_h$ or $\text{H}_c$	2.76	38.6
$\text{H}_e$ or $\text{H}_j$	2.01	22.2
$\text{H}_j$ or $\text{H}_e$	1.99	22.2





**Table S4:** Yields obtained of the *N*-phenyl acrylamide derivatives (5a-d).

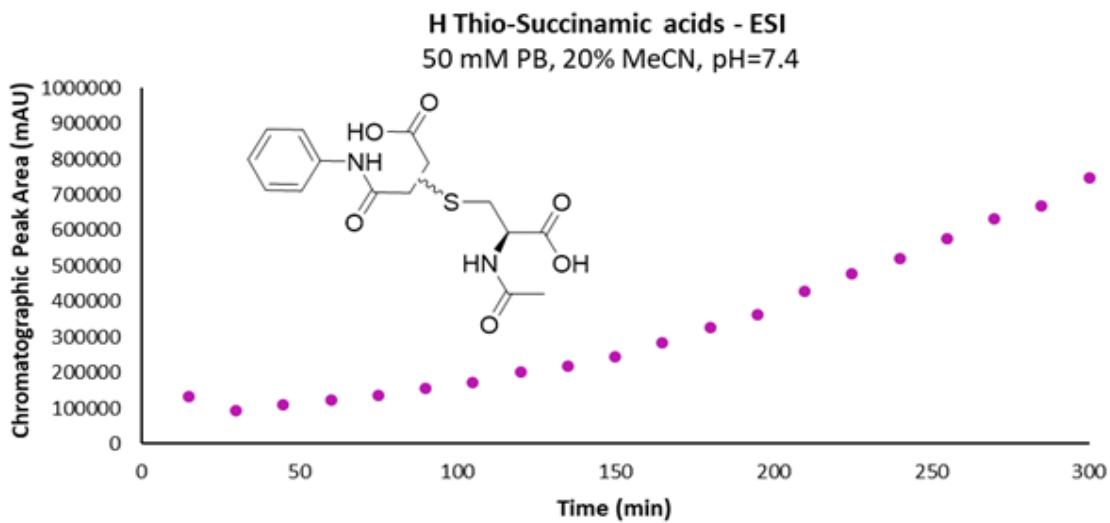
Compound	R	Yield (%)
5a	SF <sub>5</sub>	69
5b	CF <sub>3</sub>	73
5c	H	86
5d	OMe	81



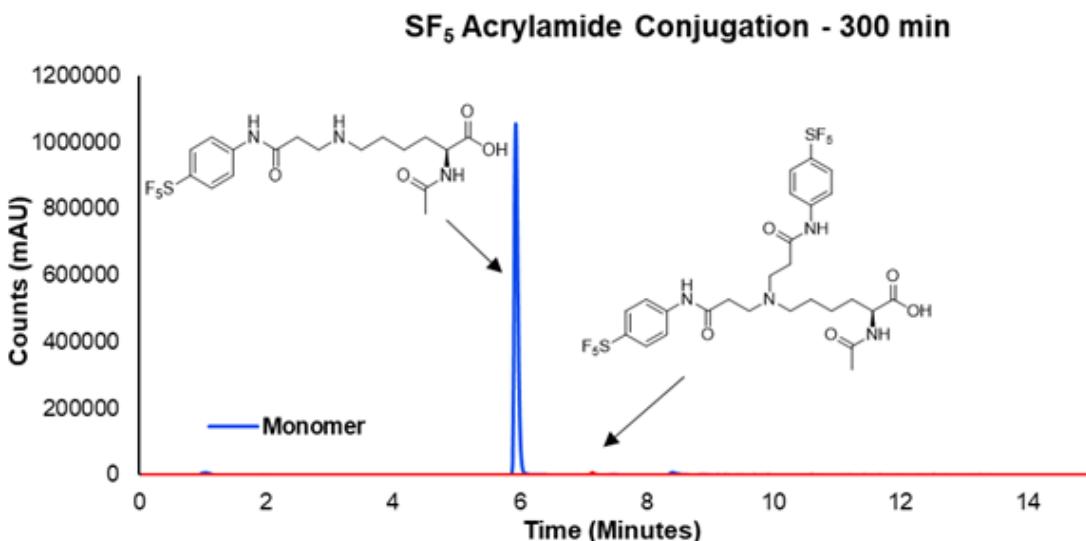
**Figure S6:** Stacked UV chromatogram showing the unprecedented increase of -SF<sub>5</sub> acrylamide concentration during the decomposition study over the course of 300 minutes.

**Table S5:** Solvent systems prepared in an attempt to solubilise the -SF<sub>5</sub> acrylamide prosthetic group.

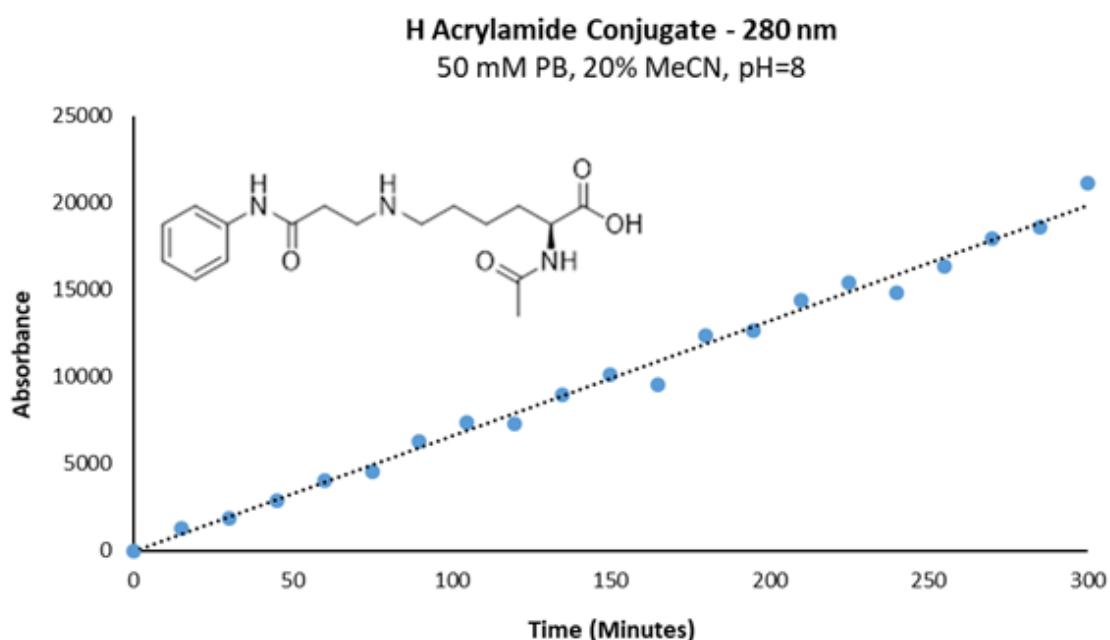
Total volume (mL)	-SF <sub>5</sub> Acrylamide (mmol)	Co-solvent (% tot. vol.)	Completely Soluble? (Yes/No)
1	0.1	MeCN (20%)	No
1	0.025	MeCN (20%)	No
1	0.025	MeOH (20%)	No
1	0.025	MeOH (40%)	No
1	0.025	DMSO (20%)	No
1	0.025	DMSO (40%)	No
1	0.025	DMF (40%)	No
1	0.025	TFE (40%)	No



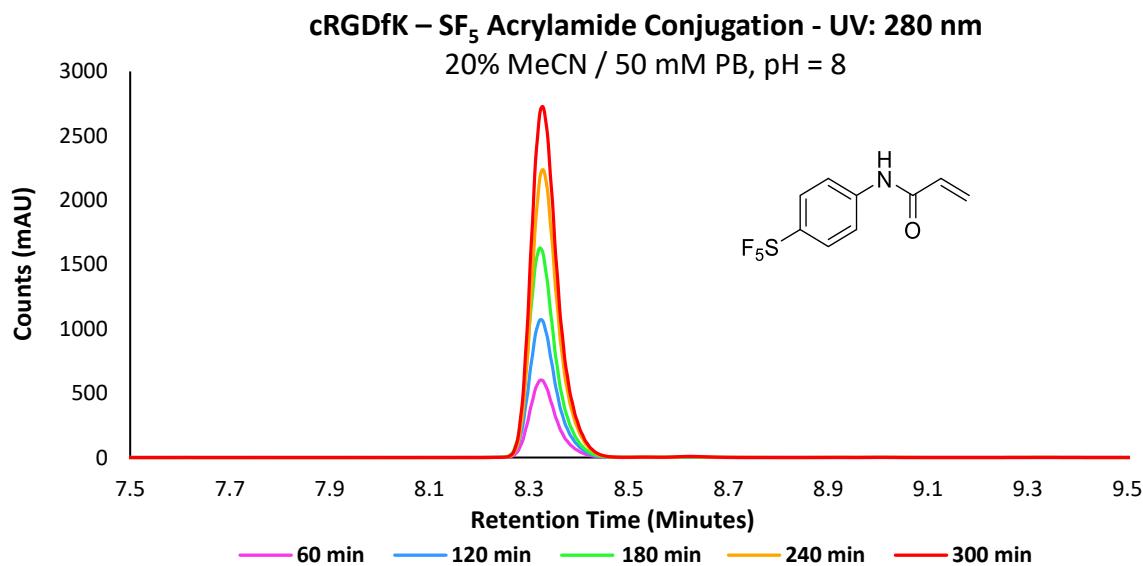
**Figure S7:** Graph depicting the increase in EIC chromatographic peak area of the H thio-succinamic acid regio-isomers over 300 minutes



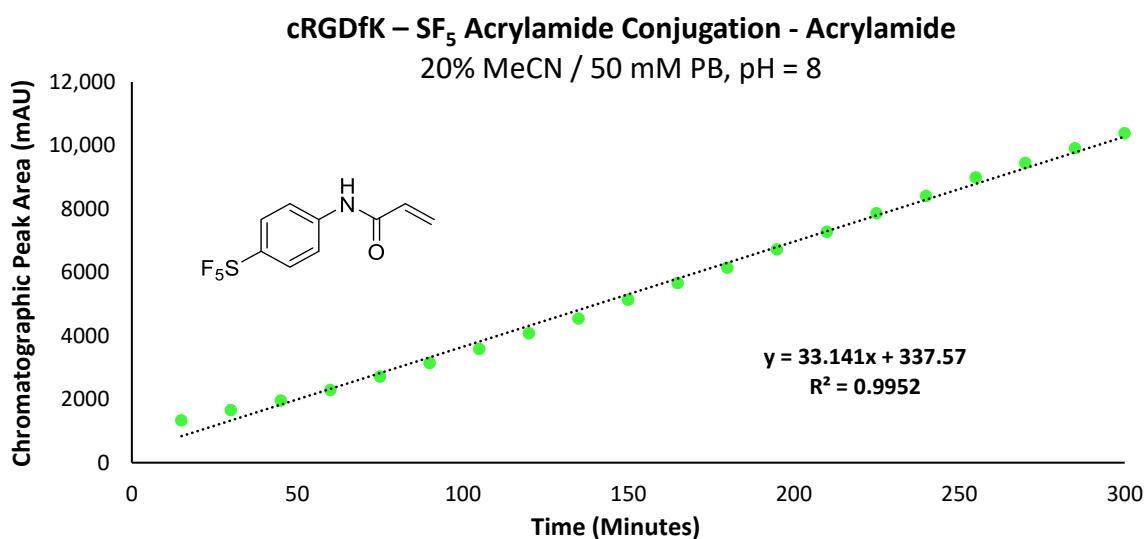
**Figure S8:** Stacked chromatogram of the crude reaction mixture for the -SF<sub>5</sub> acrylamide-lysine conjugation, comparing the concentration of conjugate monomer and dimer byproduct.



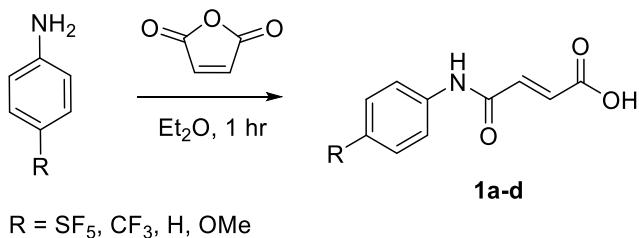
**Figure S9:** Graph depicting the increase in chromatographic peak area corresponding to the H Acrylamide conjugate over 300 minutes.



**Figure S10:** Stacked UV chromatograms showing the apparent increase in acrylamide concentration for the cRGDfK peptide conjugation.

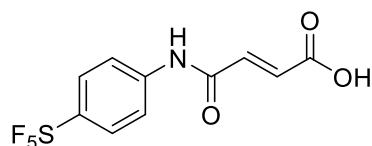


**Figure S11:** Graph depicting the increase in chromatographic peak area corresponding to the - SF<sub>5</sub> acrylamide reactant over time in the cRGDfK peptide conjugation.



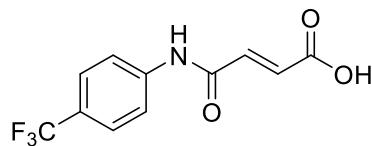
General procedure for the synthesis of (**1a-d**) adapted from the work of De Vivo *et al.* [19]: To a stirred solution of maleic anhydride (196 mg; 2 mmol) in ether (5 mL) was added a solution of 4-(pentafluorosulfanyl) aniline (440 mg; 2 mmol) in ether (3 mL) dropwise. The reaction was allowed to proceed for 1 hr, at which point the evolved precipitate was collected by vacuum filtration and washed with Et<sub>2</sub>O (2x5 mL) to afford the pure product.

**4-[4-(pentafluoro- $\lambda^6$ -sulfanyl)phenyl]-4-oxo-2-butenoic acid (**1a**)**



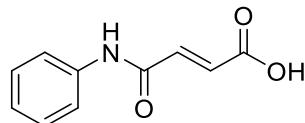
Compound **1a** was obtained as a white solid (1.167 g, 3.72 mmol, 98%). Melting point: 178°C (decomposes). **HRMS (EI)** Calcd for C<sub>10</sub>H<sub>9</sub>F<sub>5</sub>NO<sub>3</sub>S [M-H]<sup>-</sup> 316.0066, [M-H]<sup>-</sup> Found 316.0039; **IR (KBr)**: 3080 (w, br), 1706 (s), 1629 (w), 1589 (m), 1401 (m), 1326 (w), 1266 (w), 1221 (w), 1144 (m), 1117 (m), 975 (w), 813 (s, br) cm<sup>-1</sup>; **<sup>1</sup>H-NMR (d<sub>6</sub>-DMSO)**: δ 7.86 (d, J = 9.36 Hz, 2H), 7.81 (d, J = 9.2 Hz, 2H), 6.49 (d, J = 12 Hz, 1H), 6.33 (d, J = 12 Hz, 1H); **<sup>13</sup>C-NMR (d<sub>6</sub>-DMSO)**: δ 166.88, 163.90, 147.31 (quin, J = 16 Hz), 142.00, 137.21, 131.68, 130.15, 126.85 (quin, J = 4 Hz), 119.03; **<sup>19</sup>F-NMR (d<sub>6</sub>-DMSO)**: δ 88.54 (m, 1F), 64.80 (d, J = 160 Hz, 4F).

**4-[4-(trifluoromethyl)phenyl]-4-oxo-2-butenoic acid (**1b**)**



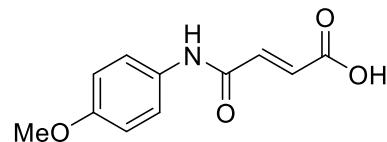
Compound **1b** was obtained as a white solid (953 mg, 3.68 mmol, 92%). Melting point: 183°C (decomposes). **HRMS (EI)** Calcd for C<sub>11</sub>H<sub>9</sub>F<sub>3</sub>NO<sub>3</sub> [M+H]<sup>+</sup> 260.0534, [M+H]<sup>+</sup> Found 260.0534; **IR (KBr)**: 3070 (w, br), 2268 (w), 2127 (w), 1890 (w), 1715 (s), 1632 (m), 1583 (s), 1536 (s), 1486 (m), 1486 (m), 1407 (m), 1315 (s), 1269 (m), 1165 (m), 1115 (s), 1069 (m), 1016 (m), 973 (m), 850 (s), 837 (s), 668 (m), 610 (m), 586 (m) cm<sup>-1</sup>; **<sup>1</sup>H-NMR (d<sub>6</sub>-DMSO)**: δ 7.82 (d, J = 8.4 Hz, 2H), 7.79 (d, J = 8.4 Hz, 2H), 6.49 (d, J = 12 Hz, 1H), 6.32 (d, J = 12 Hz, 1H); **<sup>13</sup>C-NMR (d<sub>6</sub>-DMSO)**: δ 166.97, 163.88, 142.34, 131.78, 130.18, 126.16 (q, J = 5 Hz), 123.57, 119.37; **<sup>19</sup>F-NMR (d<sub>6</sub>-DMSO)**: δ -60.41 (s, 3F).

*4-phenyl-4-oxo-2-butenoic acid (1c)*



Compound **1c** was obtained as a tan-white solid (687 mg, 3.59 mmol, 87%). Melting point: 191°C (Lit. 193-194°C [27]). **HRMS (EI)** Calcd for C<sub>10</sub>H<sub>10</sub>NO<sub>3</sub> [M+H]<sup>+</sup> 192.0660, [M+H]<sup>+</sup> Found 192.0659; **IR (KBr)**: 3070 (m, br), 2239 (w, br), 2072 (w), 1877 (w), 1694 (m), 1618 (m), 1532 (s), 1489 (s), 1449 (s), 1417 (m), 1329 (m), 1265 (m), 1226 (w), 1189 (w), 995 (m), 969 (s), 908 (w), 843 (s), 769 (s), 653 (m), 606 (s), 535 (s) cm<sup>-1</sup>; **<sup>1</sup>H-NMR (d<sub>6</sub>-DMSO)**: δ 7.61 (d, J = 7.5 Hz, 2H), 7.32 (t, J = 7.36, 14.76, 2H), 7.088 (t, J = 7.36, 14.88, 1H), 6.47 (d, J = 12 Hz, 1H), 6.30 (d, J = 12 Hz, 1H); **<sup>13</sup>C-NMR (d<sub>6</sub>-DMSO)**: δ 166.91, 163.28, 138.58, 131.75, 130.47, 128.86, 123.92, 119.58.

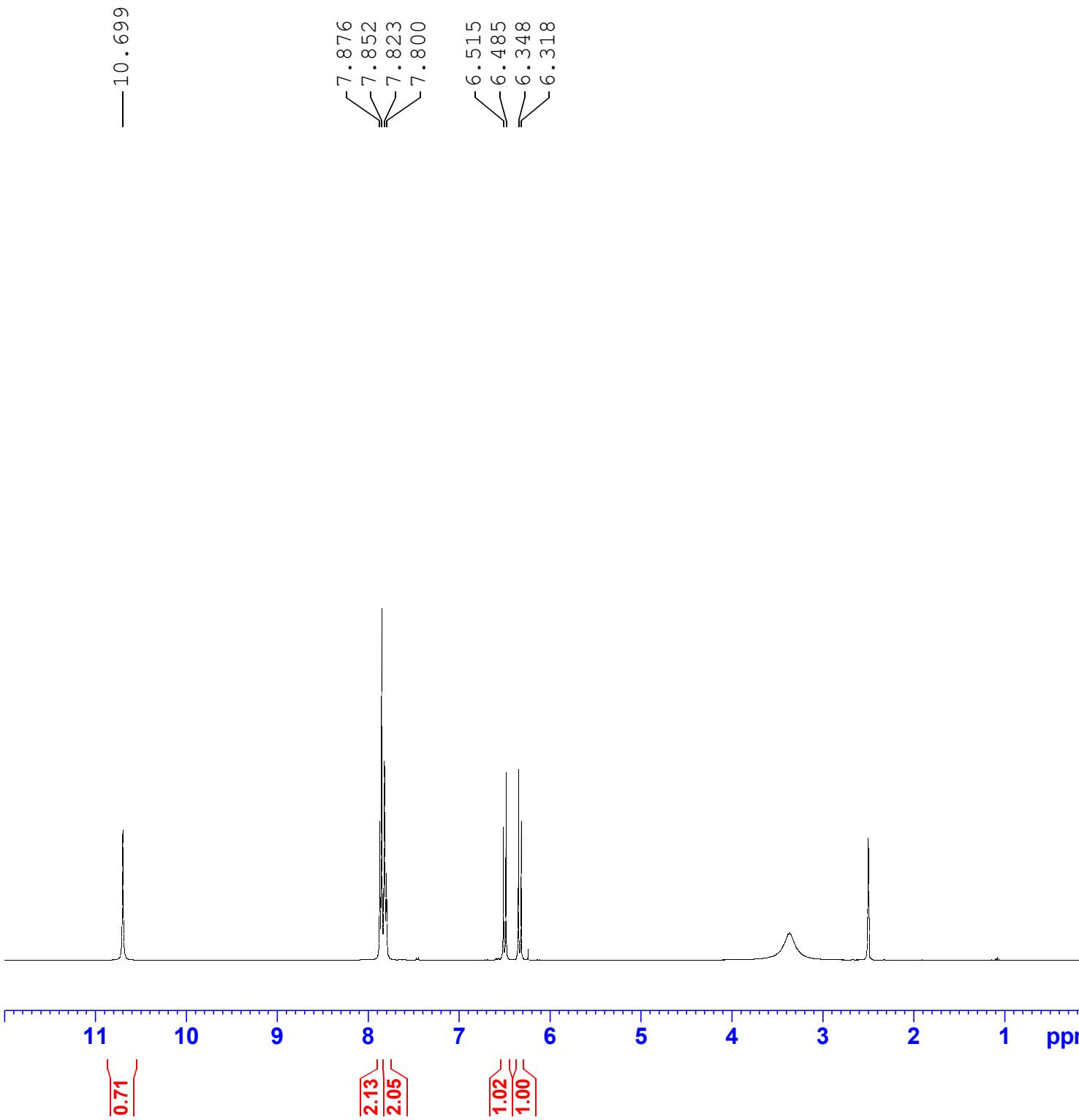
*4-[4-(methoxy)phenyl]-4-oxo-2-butenoic acid (1d)*



Compound **1d** was obtained as a green-yellow solid (836 mg, 3.78 mmol, 95%). Melting point: 177°C (Lit. 175-178°C [29]). **HRMS (EI)** Calcd for C<sub>11</sub>H<sub>11</sub>NO<sub>4</sub> [M+H]<sup>+</sup> 222.1766, [M+H]<sup>+</sup> Found 222.1763; **IR (KBr)**: 3067 (w, br), 1695 (m), 1618 (w), 1534 (m), 1504 (s), 1462 (m), 1404 (m), 1307 (w), 1324 (m), 1278 (m), 1176 (m), 1030 (s), 975 (m), 854 (s), 826 (s), 801 (s), 758 (m), 645 (m), 621 (m), 520 (s) cm<sup>-1</sup>; **<sup>1</sup>H-NMR (d<sub>6</sub>-DMSO)**: δ 7.54 (d, J = 9 Hz, 2H), 6.91 (d, J = 9 Hz, 2H), 6.46 (d, J = 12 Hz, 1H), 6.30 (J = 12 Hz, 1H), 3.73 (s, 3H); **<sup>13</sup>C-NMR (d<sub>6</sub>-DMSO)**: δ 166.66, 162.85, 155.84, 131.65, 131.43, 130.93, 121.21, 113.99, 55.21.

## References

19. De Vivo M, Masetti M, Bottegoni G, Cavalli A (2016) Role of Molecular Dynamics and Related Methods in Drug Discovery. *J Med Chem* 59:4035–4061. <https://doi.org/10.1021/acs.jmedchem.5b01684>
27. Sánchez A, Pedroso E, Grandas A (2010) Esterification of maleamic acids without double bond isomerization. *European J Org Chem* 2010:2600–2606. <https://doi.org/10.1002/ejoc.200901365>
29. Kumar PP, Rama Devi B, Dubey PK, Mohiuddin SMG (2011) PEG-600 mediated simple, efficient and eco-friendly synthesis of N-substituted imides and chemo selective C = C reduction. *Green Chem Lett Rev* 4:341–348. <https://doi.org/10.1002/gcl.201100013>

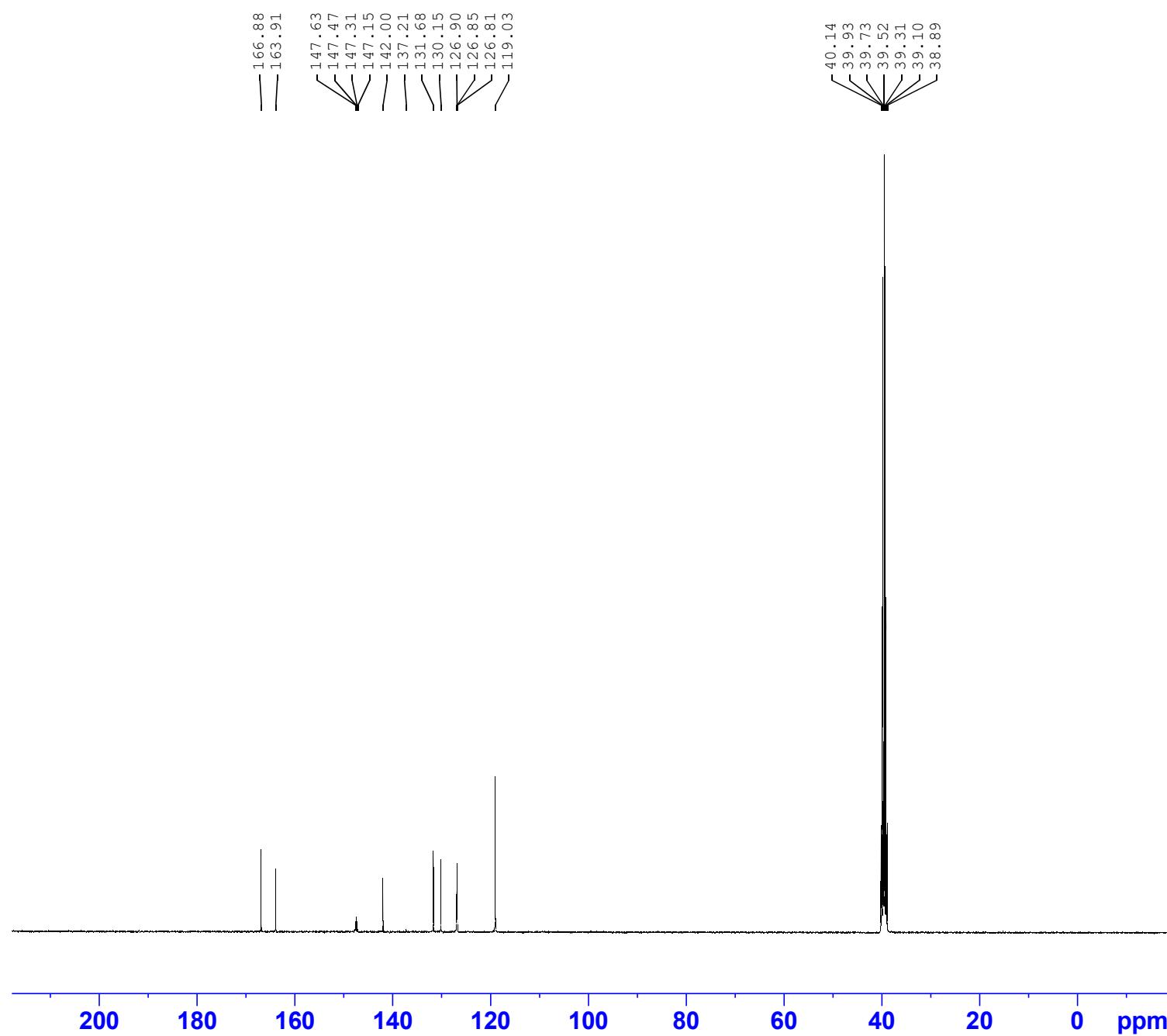


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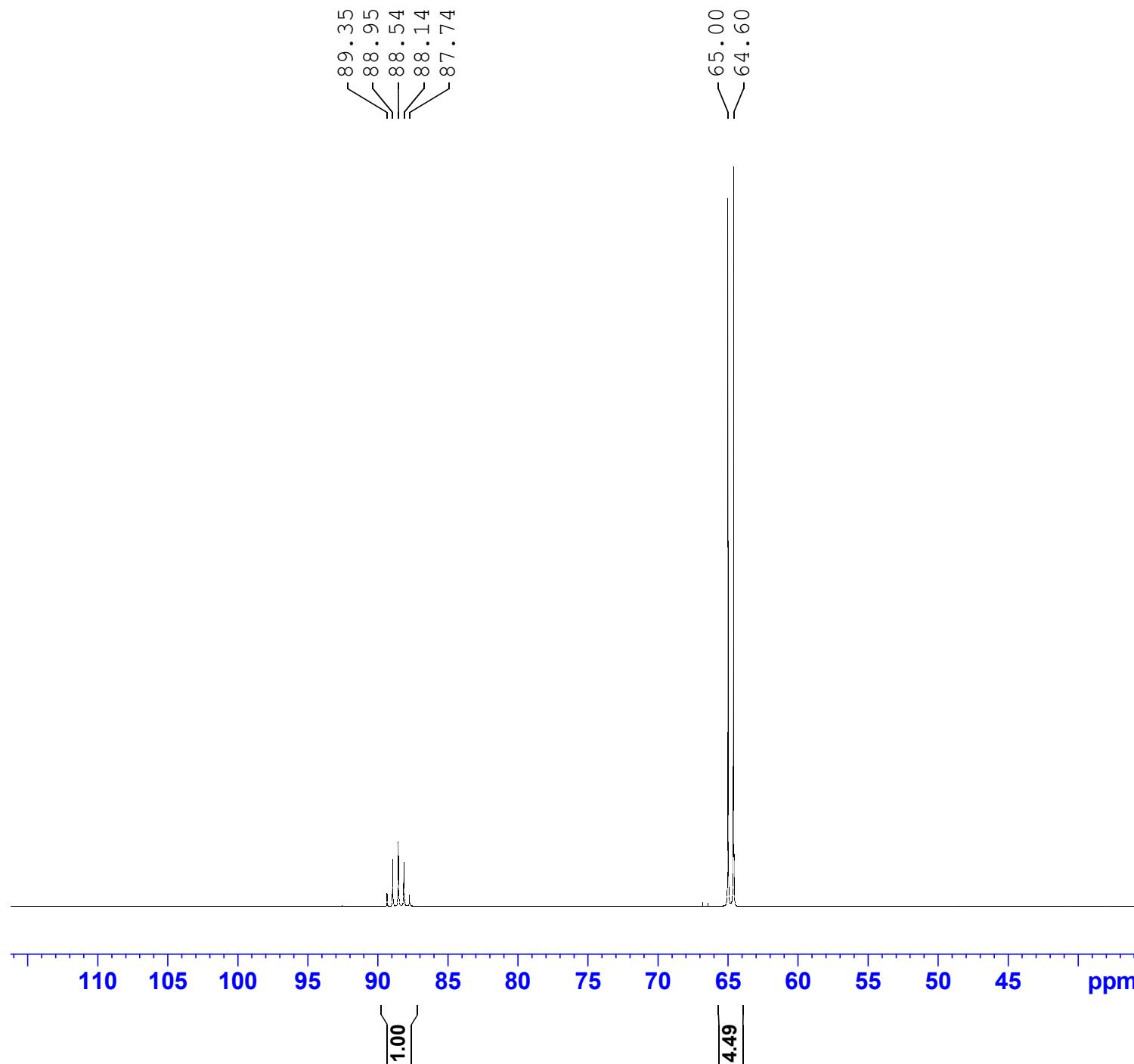
SF5 Maleamic acid (**1a**)



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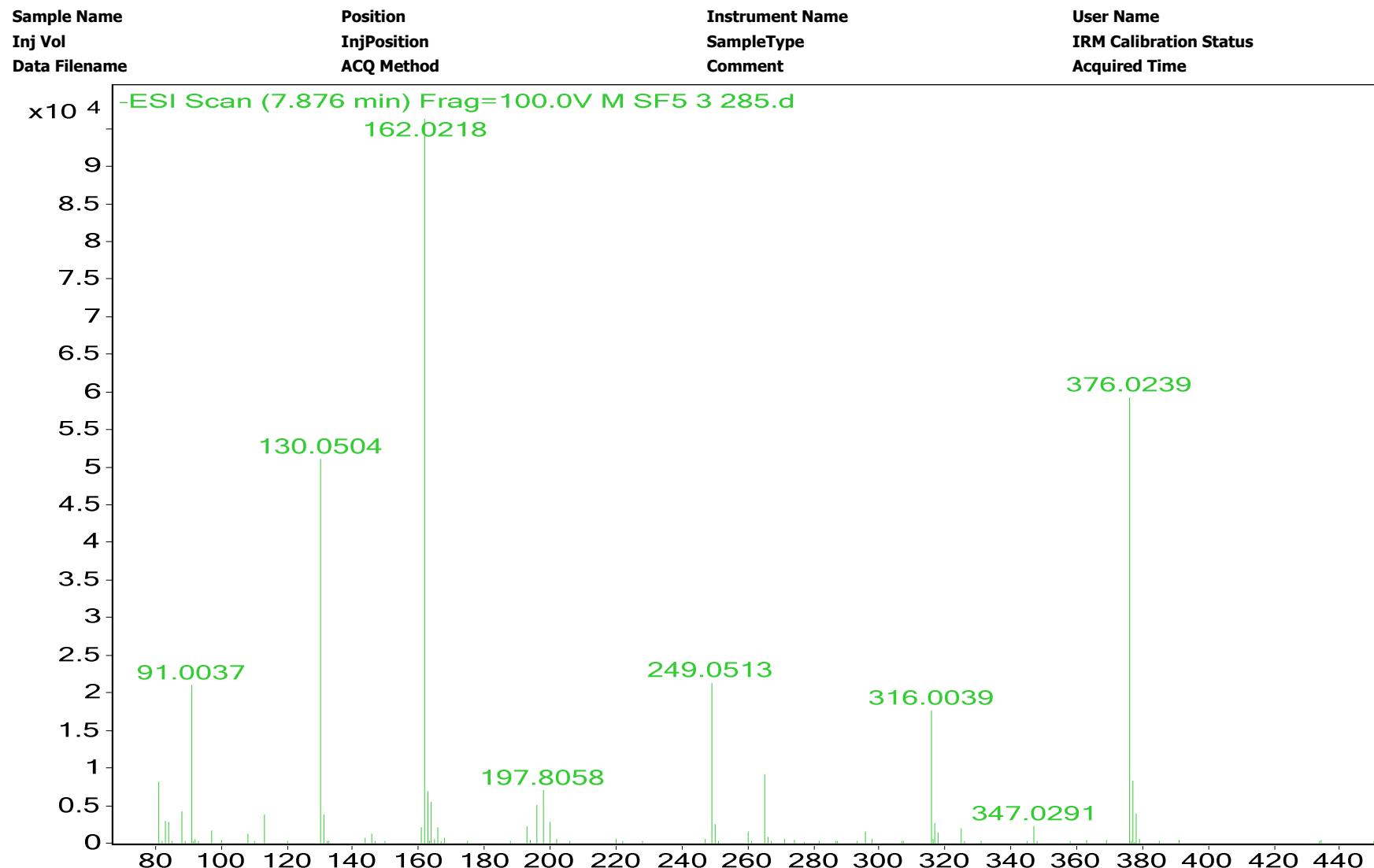
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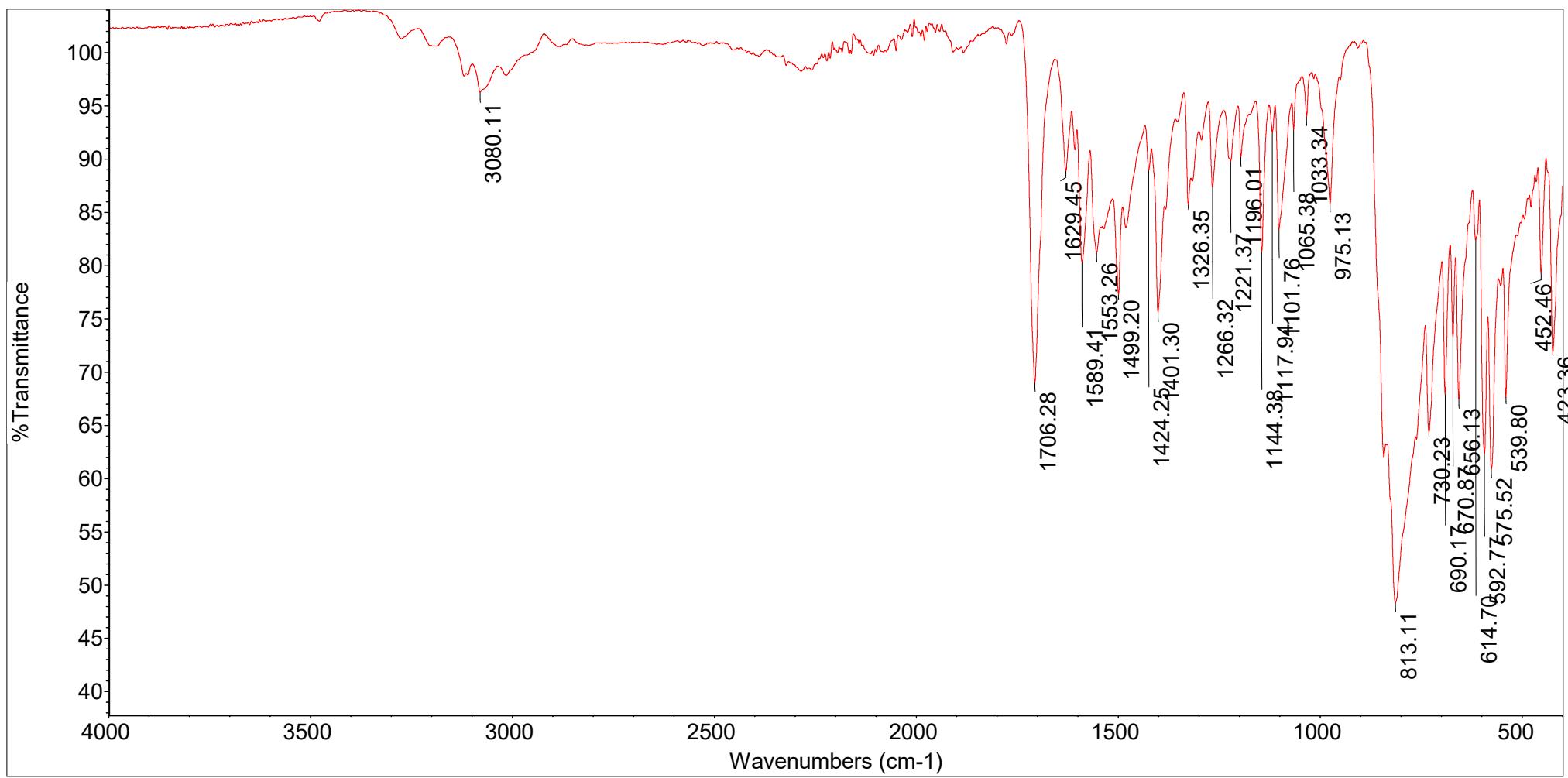
SF5 Maleamic acid (**1a**)

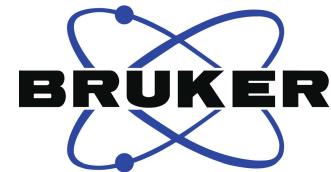
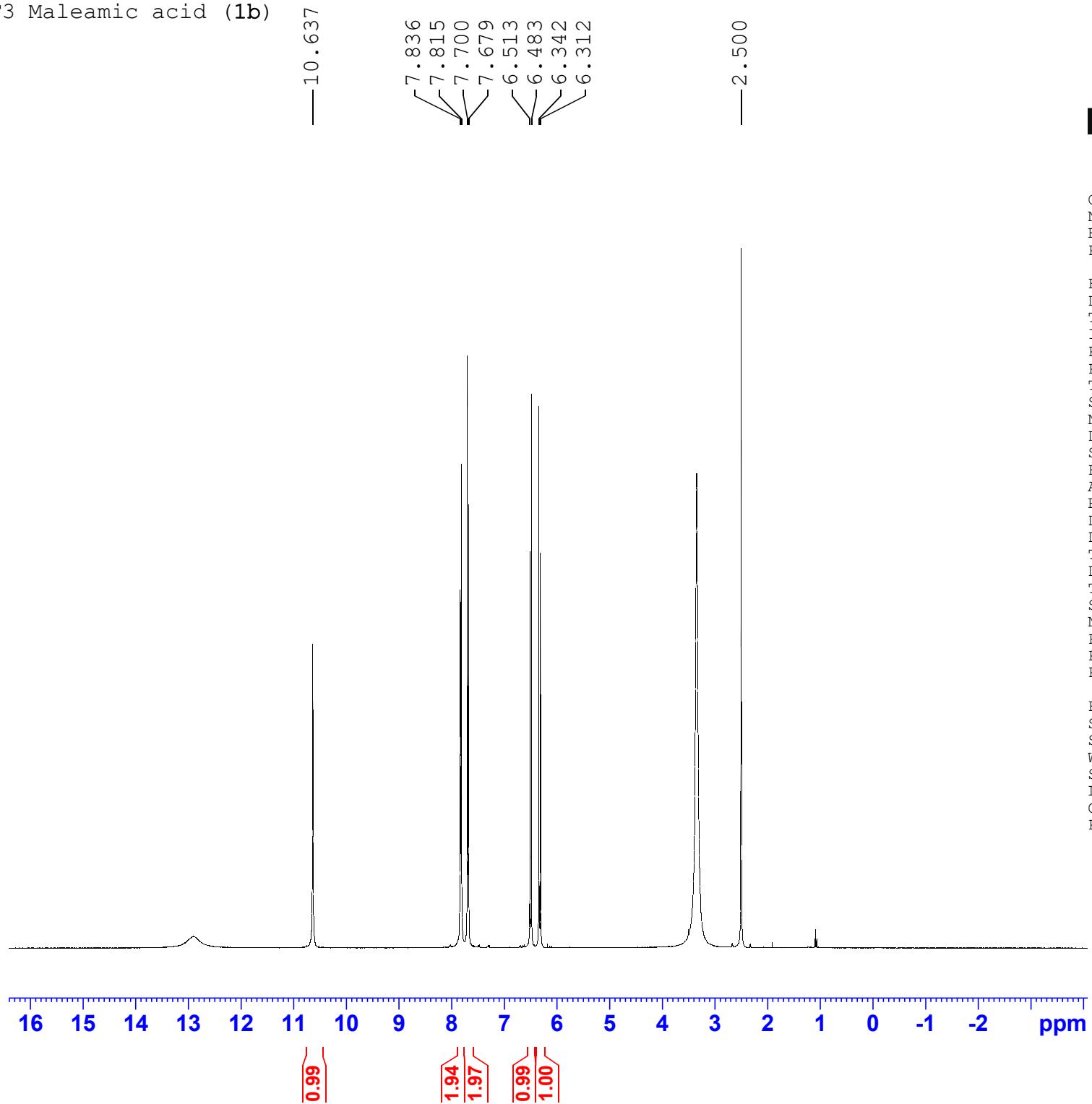
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SF5 Maleamic acid (**1a**)

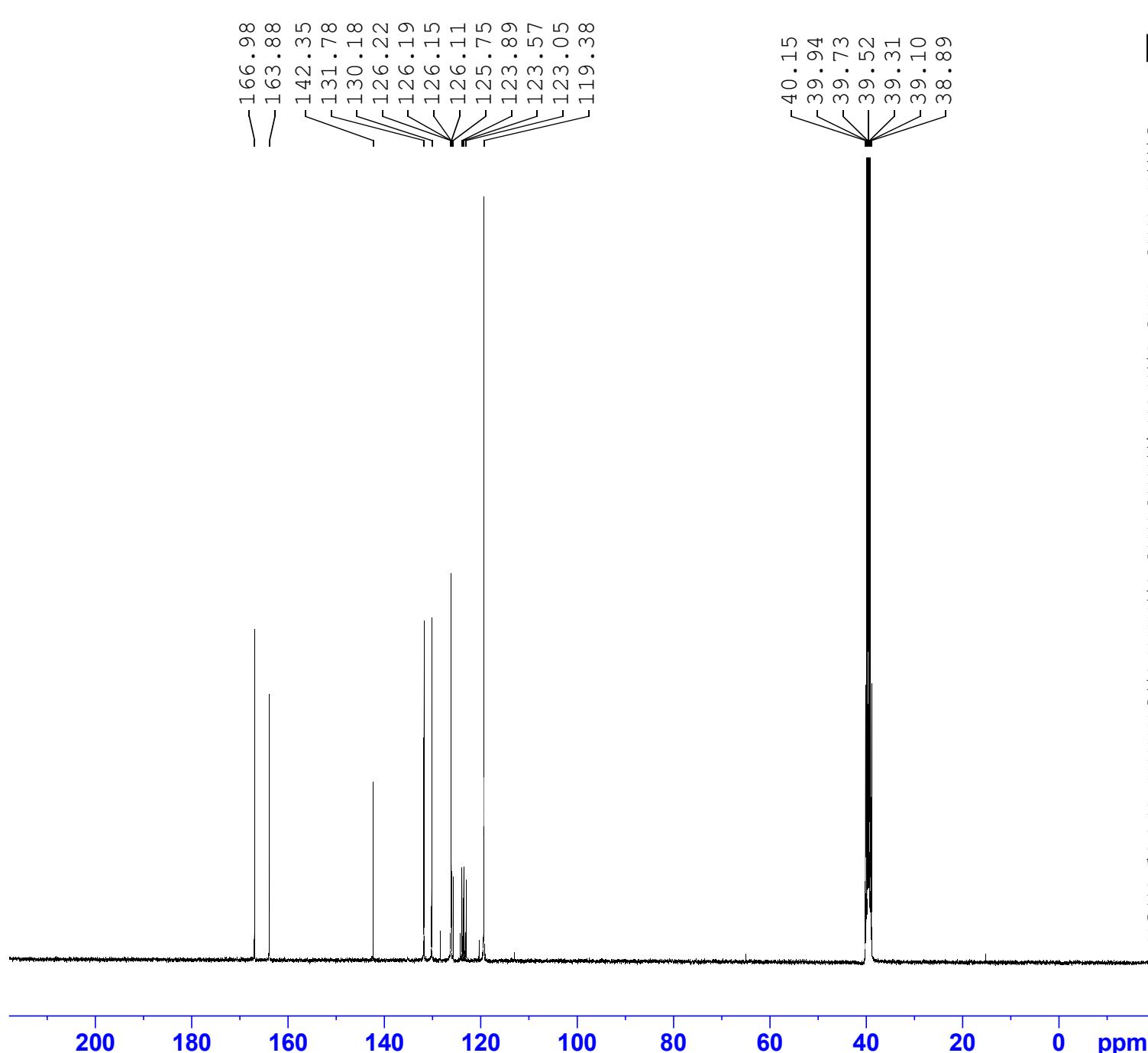
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CF<sub>3</sub> Maleamic acid (**1b**)

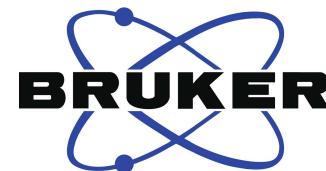


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 DW 21.000 usec  
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 D11 0.03000000 sec  
 TD0 1  
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 NUC1 <sup>13</sup>C  
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 P1 10.00 usec  
 PLW1 58.38199997 W  
 SFO2 400.1516006 MHz  
 NUC2 <sup>1</sup>H  
 CPDPRG[2] waltz65  
 PCPD2 90.00 usec  
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 PLW13 0.12192000 W

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 WDW EM  
 SSB 0  
 LB 1.00 Hz  
 GB 0  
 PC 1.40

-60.41



Current Data Parameters  
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EXPNO 26  
PROCNO 1

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Time 5.58 h  
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PROBHD Z175272\_0008 (   
PULPROG zg  
TD 131072  
SOLVENT DMSO  
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DS 4  
SWH 147058.828 Hz  
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RG 101  
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DE 6.50 usec  
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Sample Name CF3 Maleamic acid (1b)

Inj Vol

Data Filename

Position

InjPosition

ACQ Method

Instrument Name

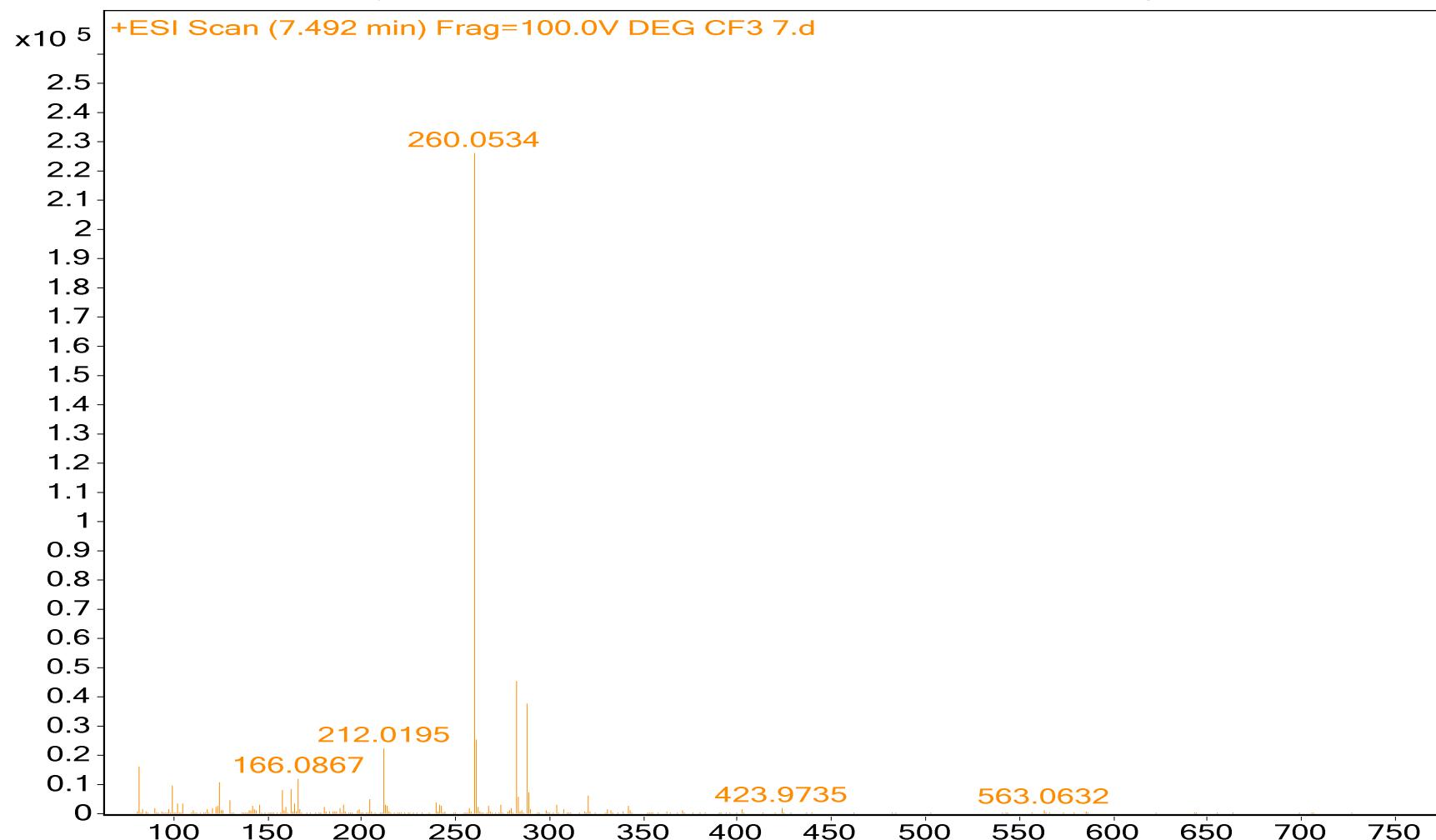
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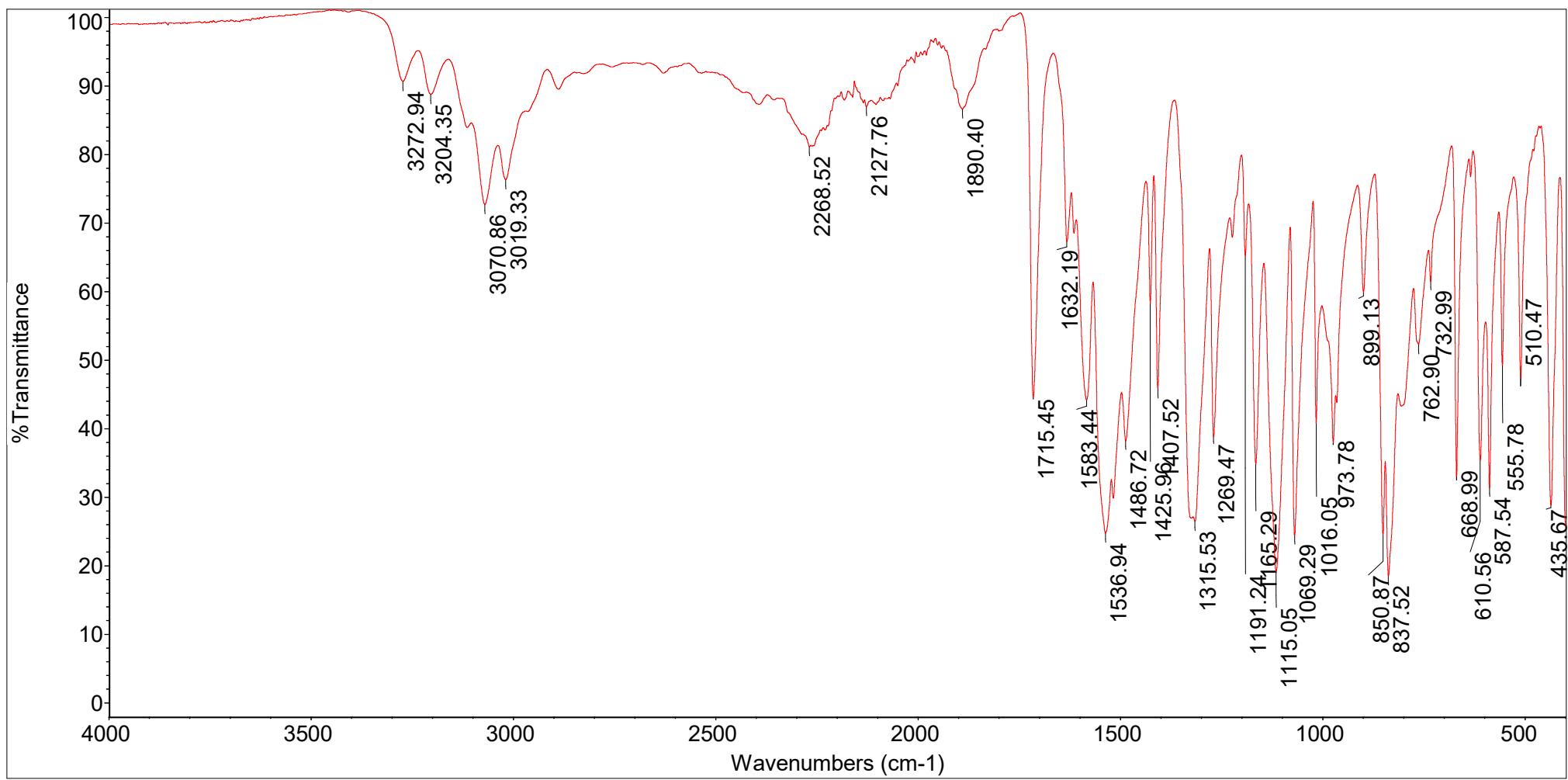
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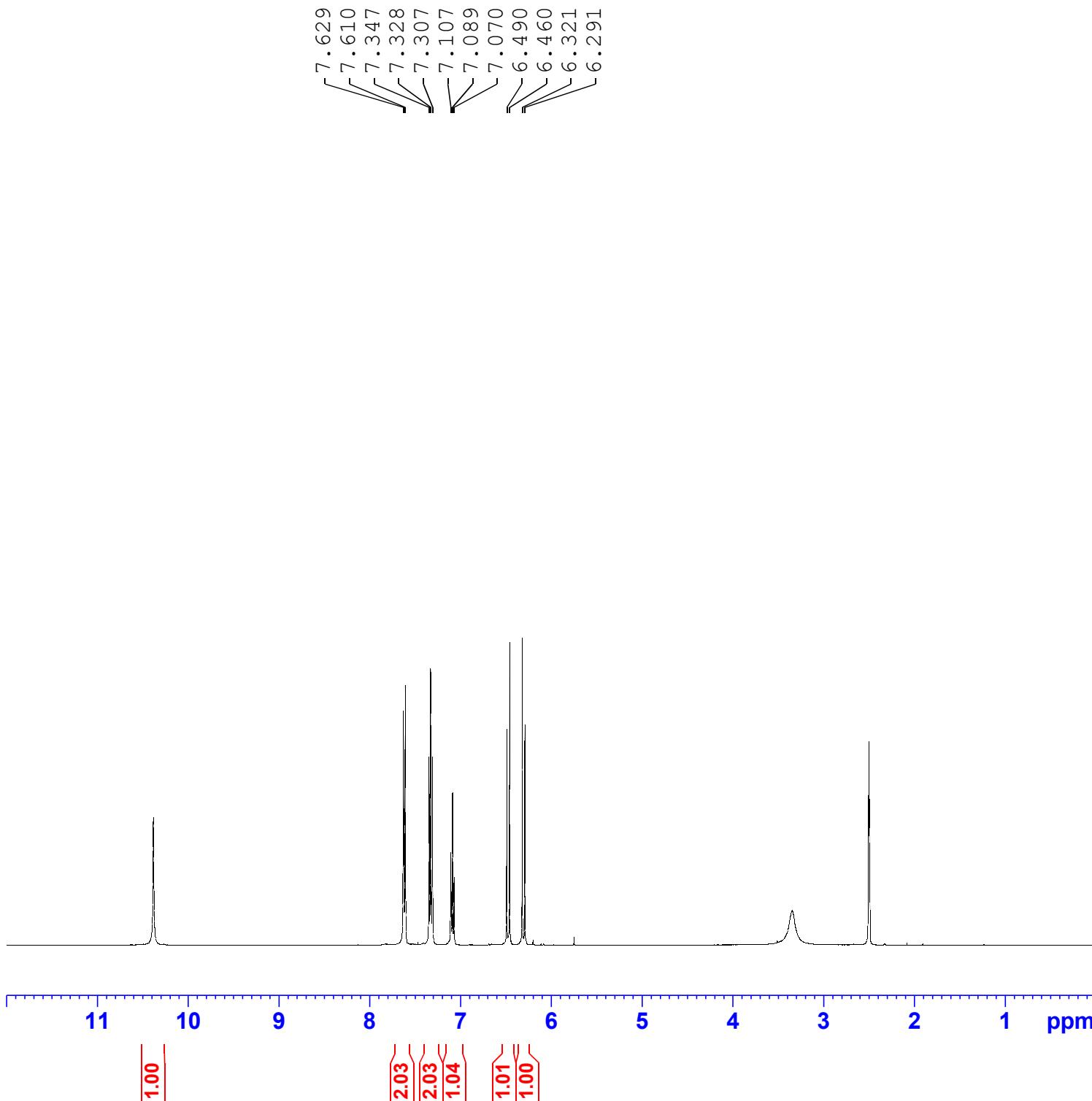
User Name

IRM Calibration Status

Acquired Time



CF<sub>3</sub> Maleamic acid (**1b**)

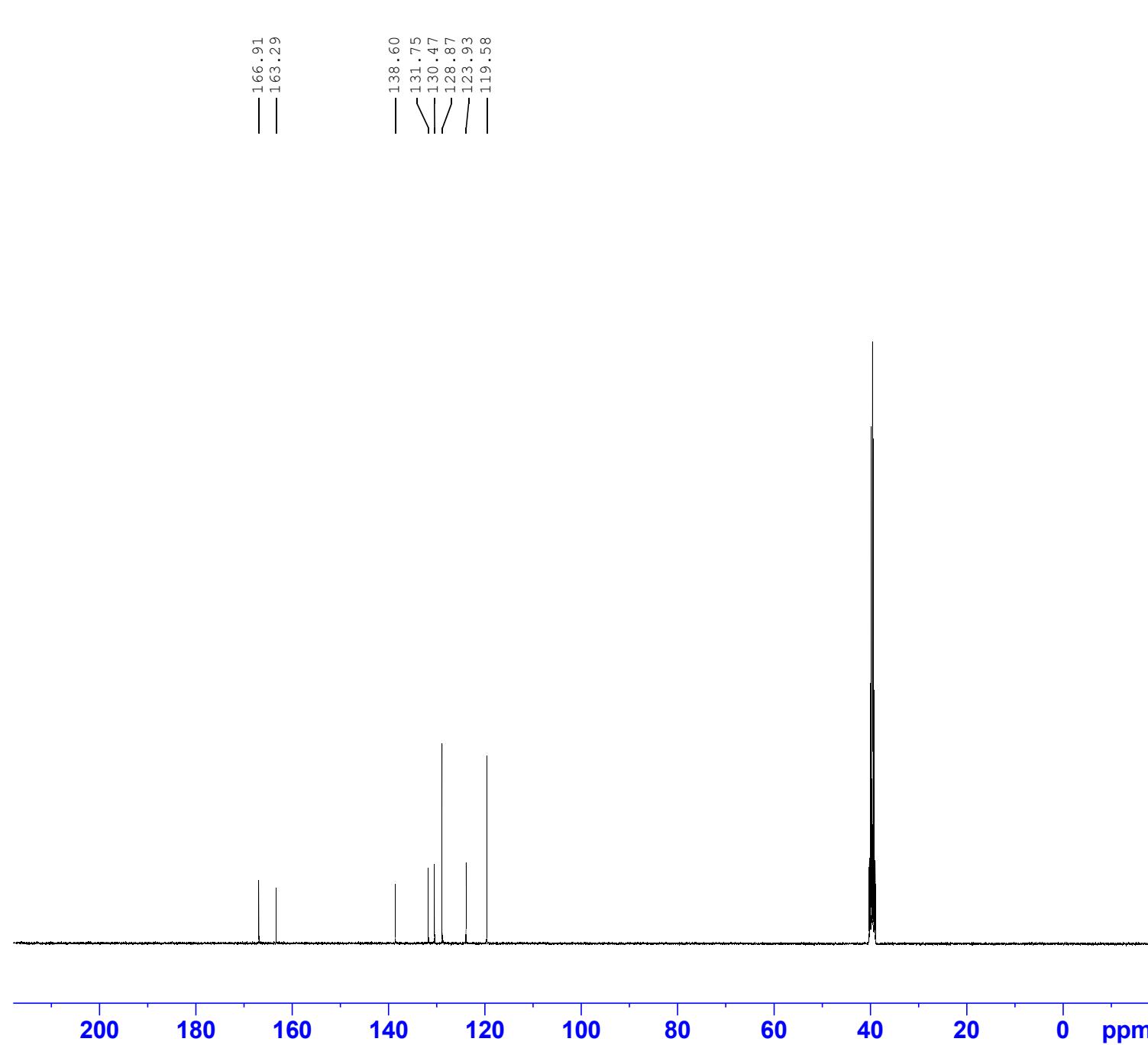


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 TD 131072  
 SOLVENT DMSO  
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 FIDRES 0.125072 Hz  
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 RG 101  
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 DE 13.89 usec  
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 P1 8.00 usec  
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F2 - Processing parameters  
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H Maleamic acid (**1c**)



Current Data Parameters  
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EXPNO 10  
PROCNO 1

F2 - Acquisition Parameters  
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PULPROG zgpg30  
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RG 101  
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TE 298.0 K  
D1 2.00000000 sec  
D11 0.03000000 sec  
TD0 1  
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NUC1 <sup>13</sup>C  
P0 2.67 usec  
P1 8.00 usec  
PLW1 93.00000000 W  
SFO2 400.1516006 MHz  
NUC2 <sup>1</sup>H  
CPDPRG[2] waltz65  
PCPD2 90.00 usec  
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Sample Name H maleamic acid (1c)

Inj Vol

Data Filename

Position

InjPosition

ACQ Method

Instrument Name

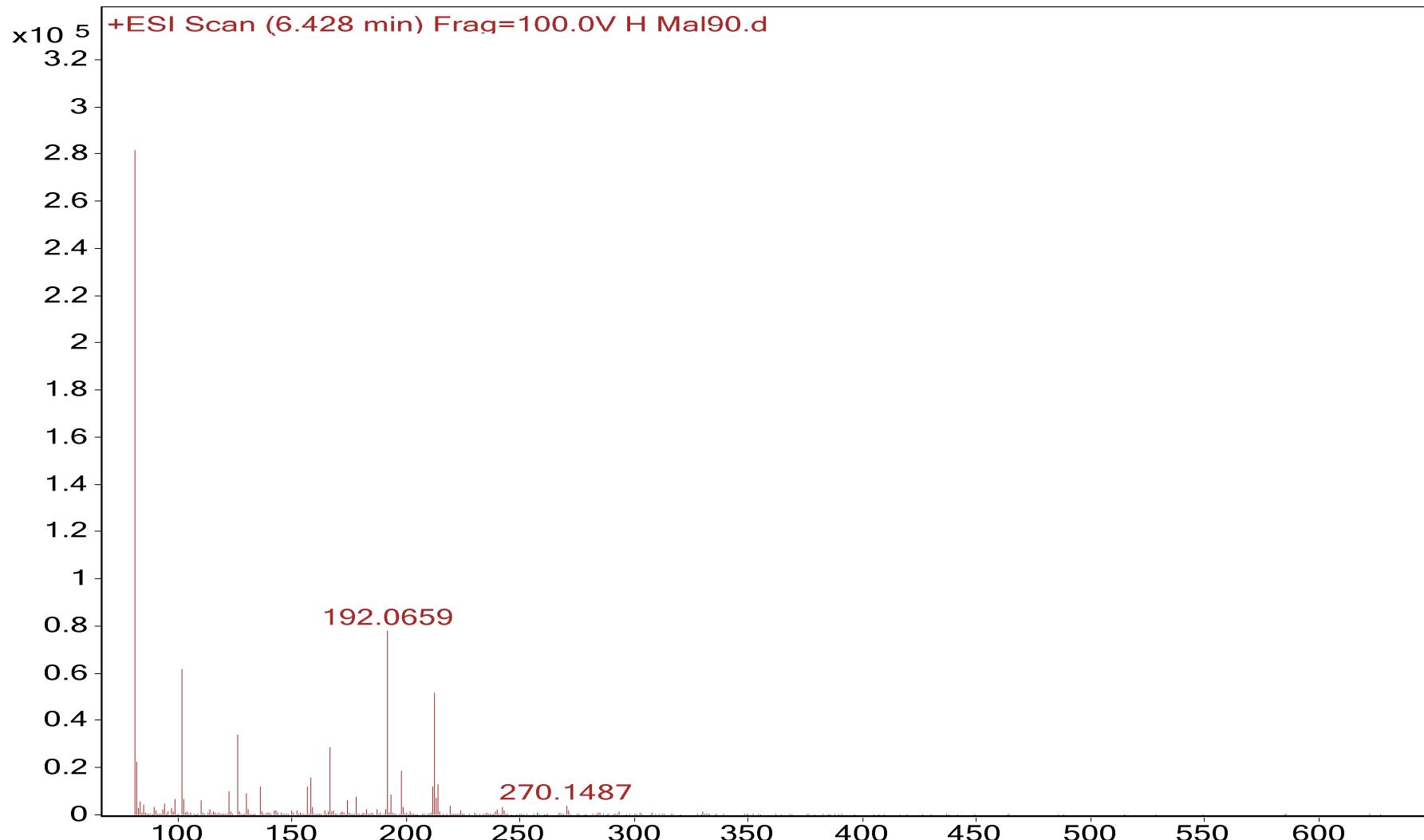
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Comment

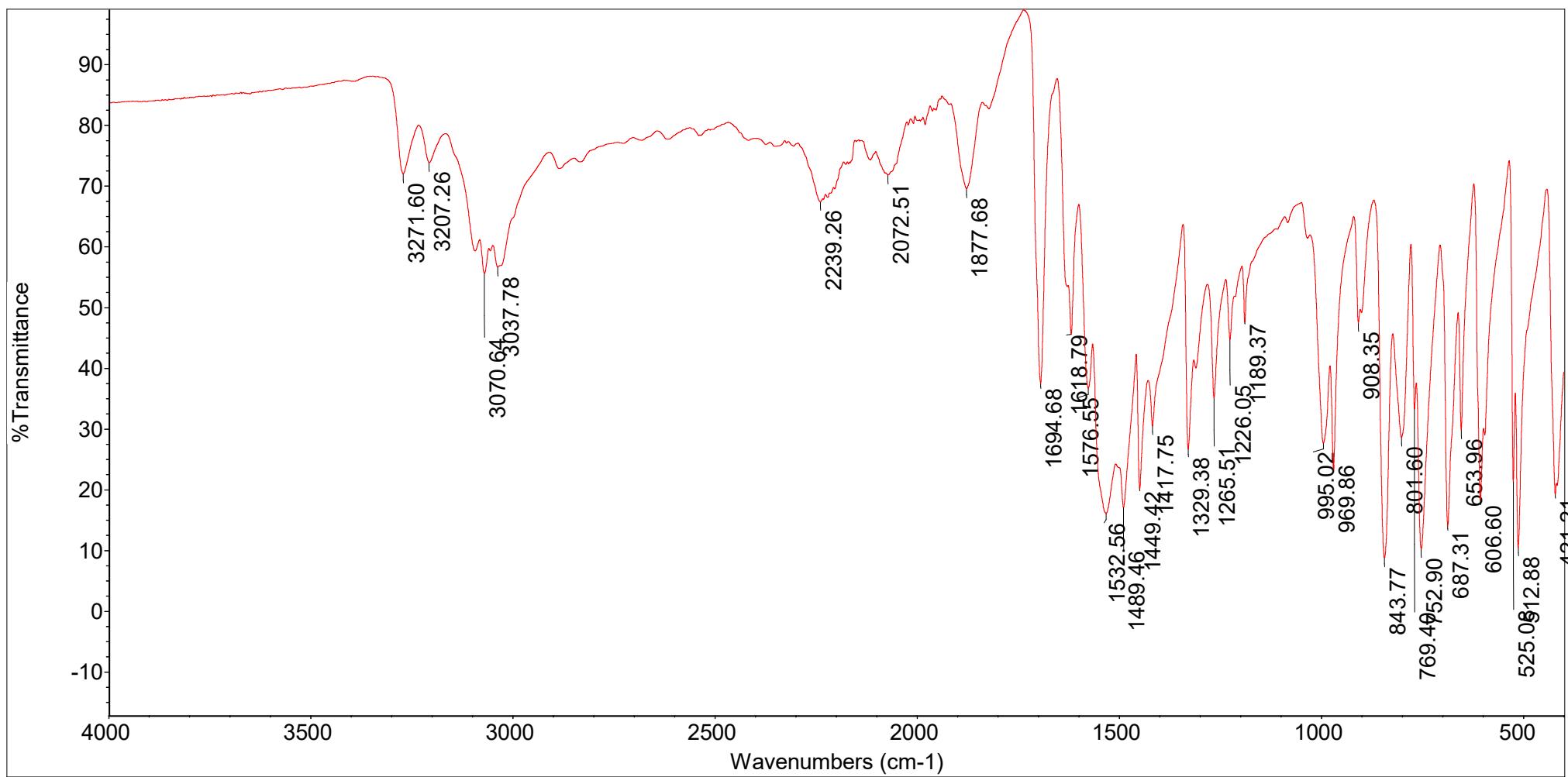
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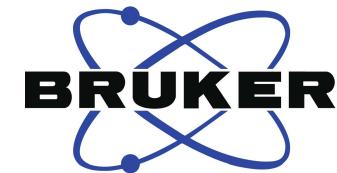
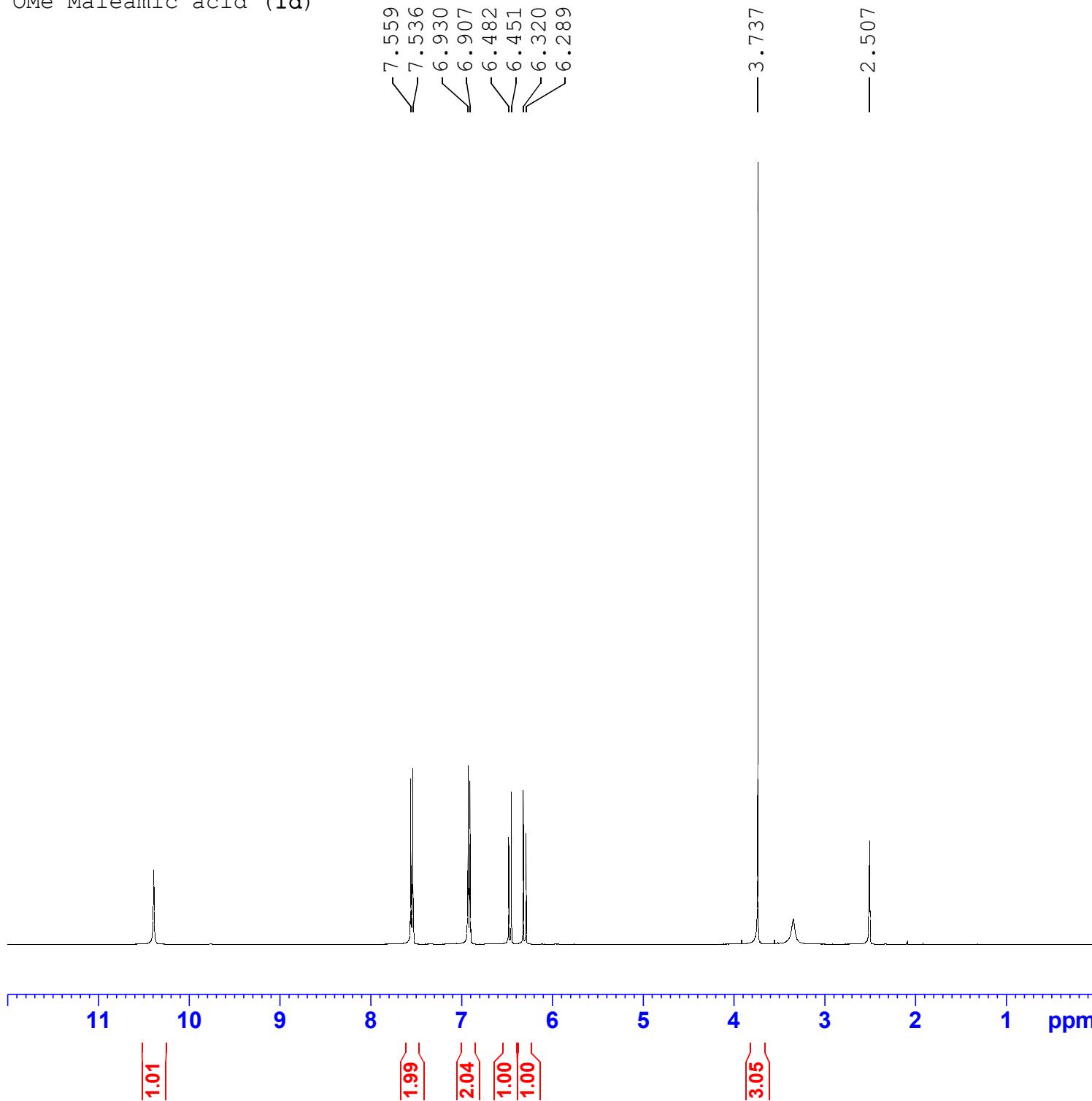
IRM Calibration Status

Acquired Time



### H Maleamic acid (**1c**)

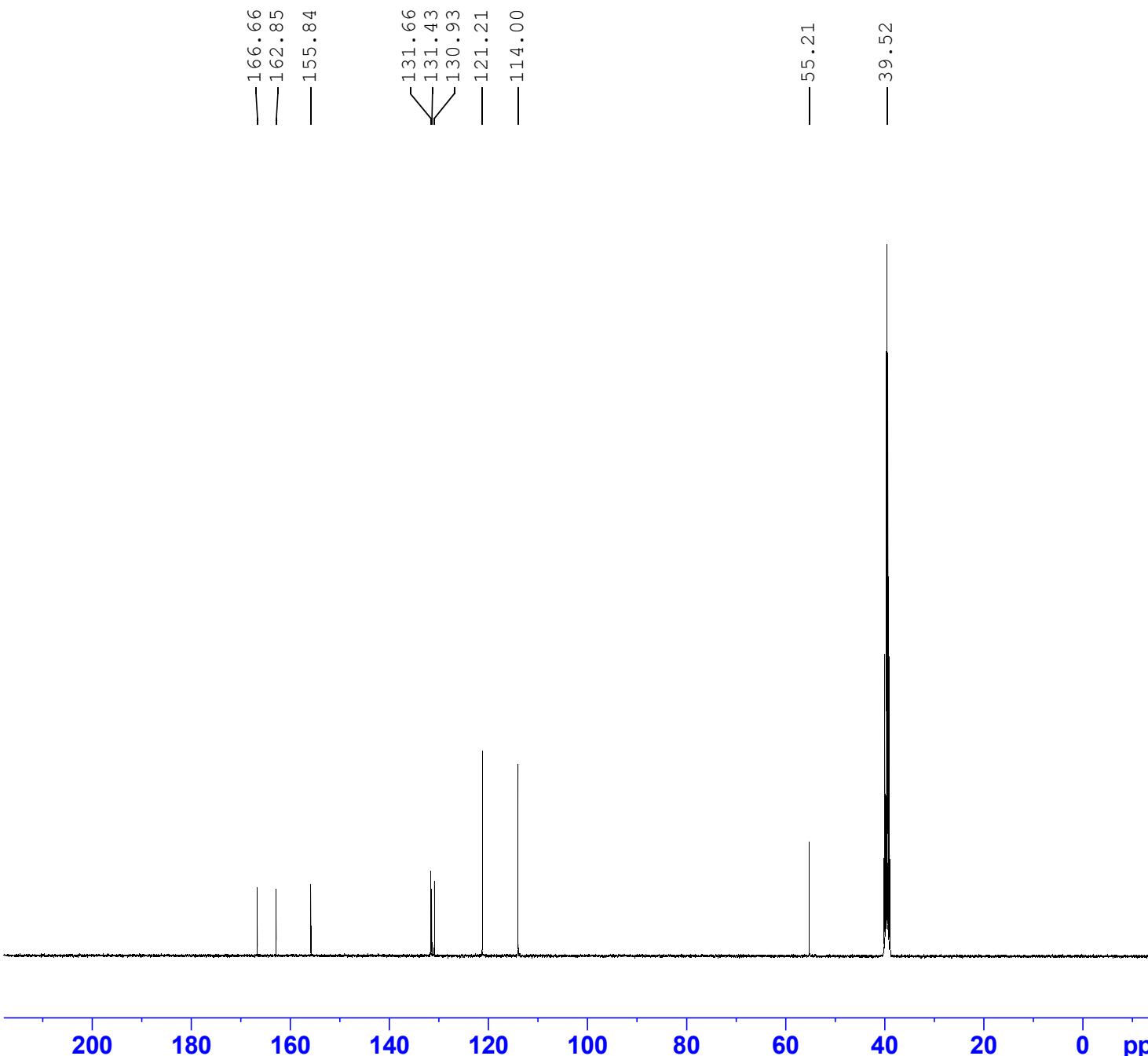




Current Data Parameters  
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 PROCNO 1

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 PROBHD Z163739\_0206 (zg30  
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 TD 131072  
 SOLVENT DMSO  
 NS 16  
 DS 2  
 SWH 8196.722 Hz  
 FIDRES 0.125072 Hz  
 AQ 7.9953918 sec  
 RG 101  
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 TE 298.0 K  
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 SFO1 400.1524709 MHz  
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 PLW1 25.00000000 W

F2 - Processing parameters  
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 GB 0  
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OMe Maleamic acid (**1d**)

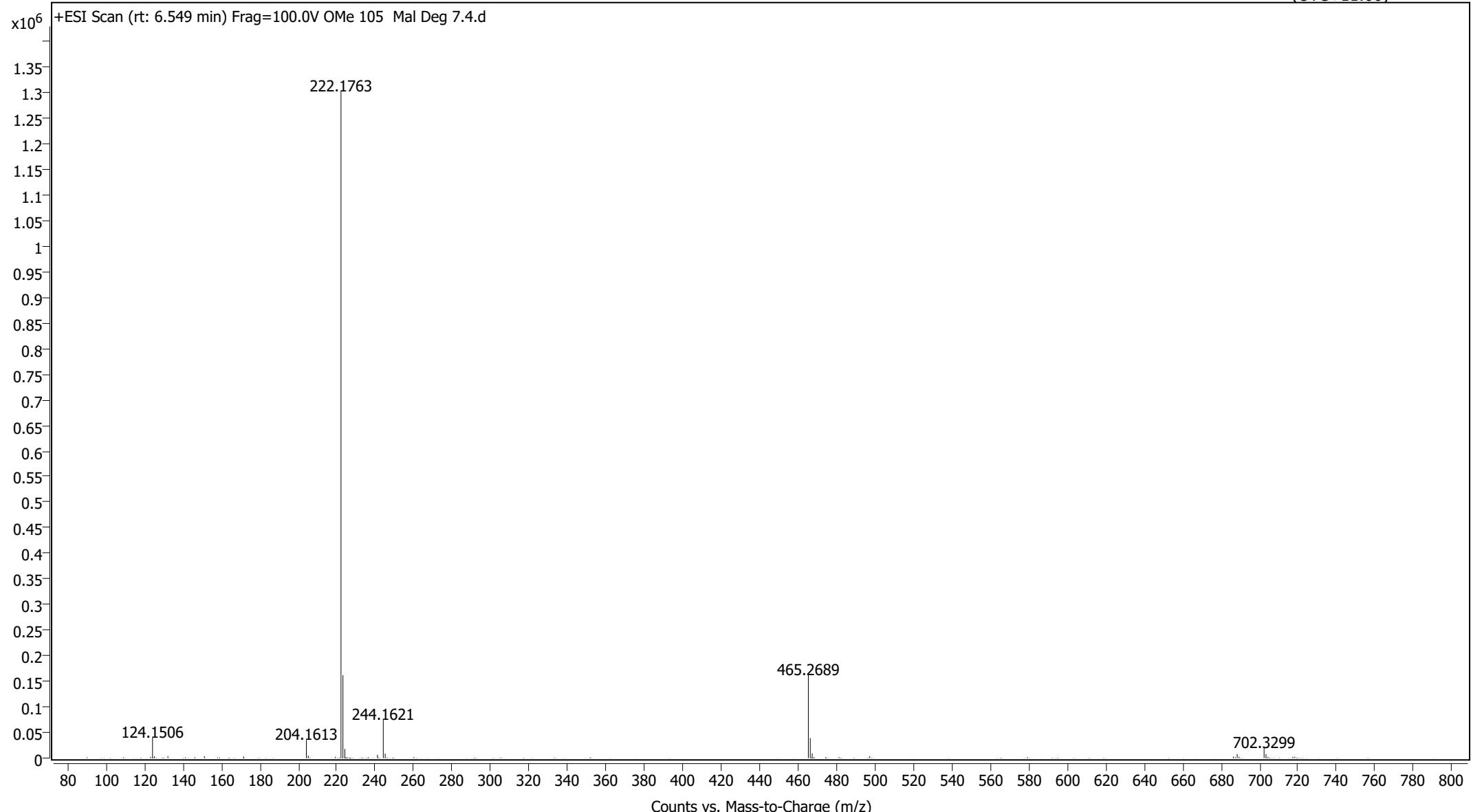
Current Data Parameters  
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 EXPNO 11  
 PROCNO 1

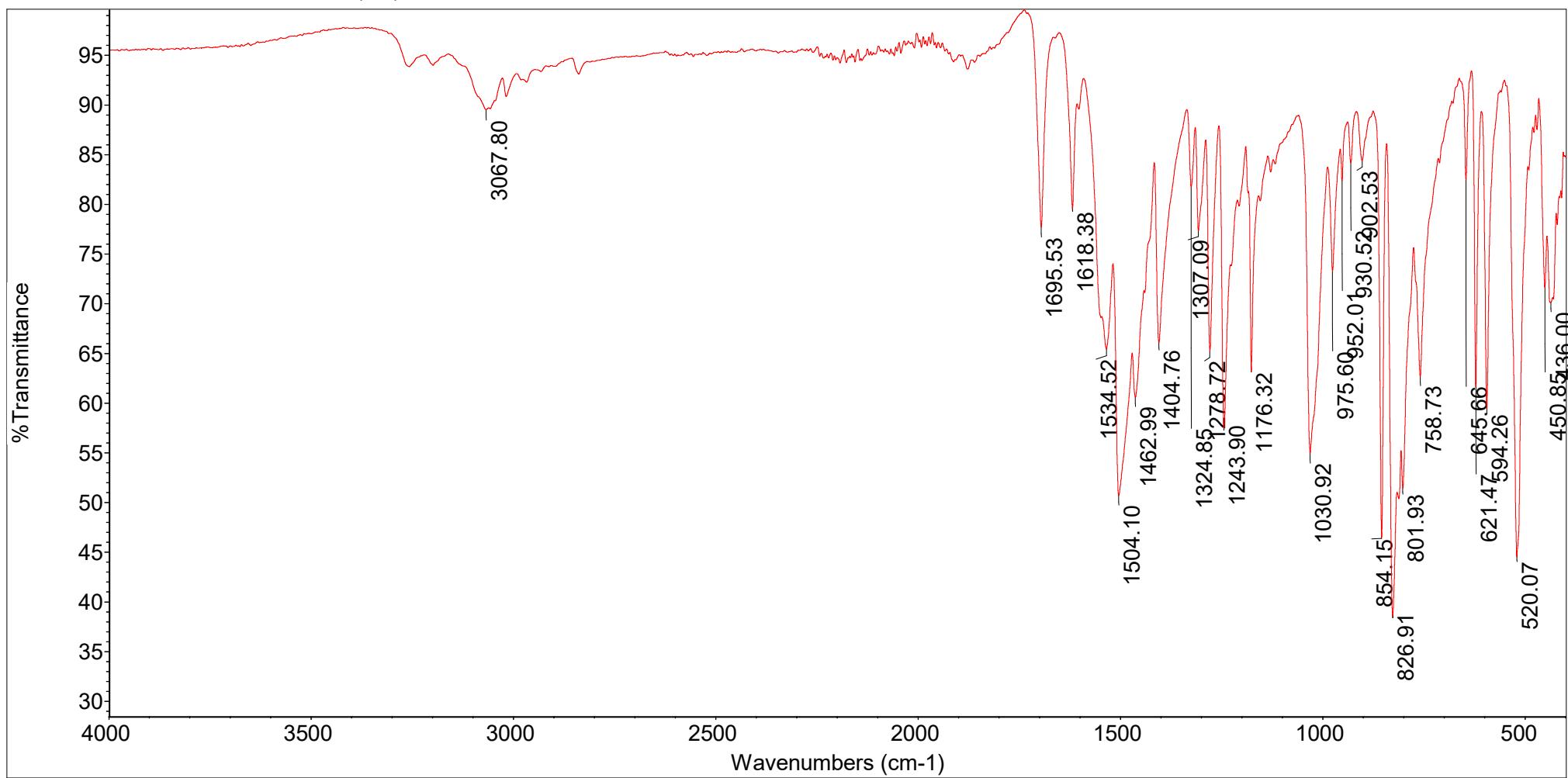
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 PULPROG 65536  
 SOLVENT DMSO  
 NS 1024  
 DS 4  
 SWH 23809.523 Hz  
 FIDRES 0.726609 Hz  
 AQ 1.3762560 sec  
 RG 101  
 DW 21.000 usec  
 DE 6.50 usec  
 TE 298.0 K  
 D1 2.00000000 sec  
 D11 0.03000000 sec  
 TD0 1  
 SFO1 100.6278593 MHz  
 NUC1 <sup>13</sup>C  
 P0 2.67 usec  
 P1 8.00 usec  
 PLW1 93.00000000 W  
 SFO2 400.1516006 MHz  
 NUC2 1H  
 CPDPRG [2] waltz65  
 PCPD2 90.00 usec  
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 PLW13 0.09935700 W

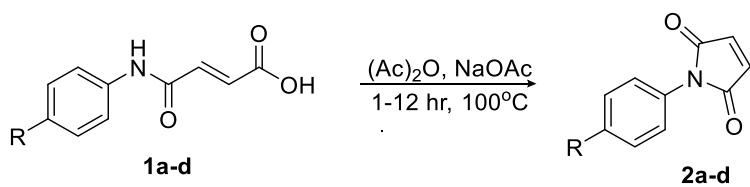
F2 - Processing parameters  
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 GB 0  
 PC 1.40

Name	OMe Maleic acid (1d)	OMe	Rack	Pos.	10		Instrument	Instrument 1	Operator
Inj. Vol. (ul)		Plate	Pos.	OMe	105	Mal	IRM Status	Success	
Data File		Method (Acq)				Deg	Comment		Acq. Time (Local)

Pos Method (rev).m

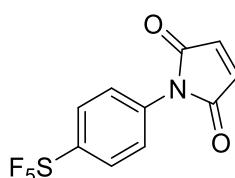


OMe Maleamic acid (**1d**)



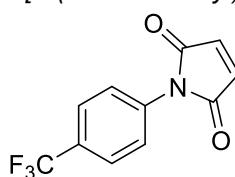
General procedure for the synthesis of (**2a-d**) adapted from the work of Sauers *et al.* [20]: 4-[4-(pentafluoro- $\lambda^6$ -sulfanyl)phenyl]-4-oxo-2-butenoic acid (634 mg, 2 mmol) was dissolved in acetic anhydride (5 mL), and sodium acetate (100 mg) was added to the reaction mixture. The reaction mixture was heated to 100°C for 1-12 hr, at which point it was concentrated *in-vacuo*, and the resulting residue was dissolved in Et<sub>2</sub>O, dried over sodium carbonate and eluted from a plug of silica gel with Et<sub>2</sub>O to afford the pure product.

**4-[4-(pentafluoro- $\lambda^6$ -sulfanyl)phenyl]pyrrole-2,5-dione (**2a**)**



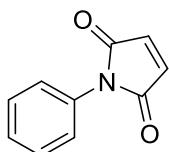
Compound **2a** was obtained as a white solid (502 mg, 1.68 mmol, 84%). Melting point: 126°C. **HRMS (EI)** Calcd for C<sub>10</sub>H<sub>7</sub>F<sub>5</sub>NO<sub>2</sub>S [M+H]<sup>+</sup> 300.0117, [M+H]<sup>+</sup> Found 300.0115; **IR (KBr)**: 1705 (s), 1592 (w), 1498 (m), 1397 (m), 1380 (m), 1219 (w), 1144 (s), 1091 (w), 825 (s, br) cm<sup>-1</sup>; **<sup>1</sup>H-NMR (CDCl<sub>3</sub>)**: δ 7.86 (d, J = 9 Hz, 2H), 7.55 (d, J = 9 Hz, 2H), 6.90 (s, 2H); **<sup>13</sup>C-NMR (CDCl<sub>3</sub>)**: δ 168.85, 152.42 (quin, J = 18 Hz), 134.49, 134.26, 127.14 (quin, J = 5 Hz), 126.53, 125.46; **<sup>19</sup>F-NMR (CDCl<sub>3</sub>)**: δ 83.62 (m, 1F), 63.00 (d, J = 160 Hz, 4F).

**4-[4-(trifluoromethyl)phenyl]pyrrole-2,5-dione (**2b**)**



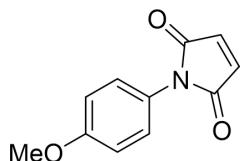
Compound **2b** was obtained as a white solid (424 mg, 1.76 mmol, 88%). Melting point: 130°C. **HRMS (EI)** Calcd for C<sub>11</sub>H<sub>7</sub>F<sub>3</sub>NO<sub>2</sub> [M+H]<sup>+</sup> 242.0428, [M+H]<sup>+</sup> Found 2412.0402; **IR (KBr)**: 1719 (s), 1702 (s), 1614 (w), 1525 (w), 1411 (m), 1330 (m), 1314 (m), 1155 (s), 1125 (m), 1069 (s), 1057 (m), 1037 (w) 1020 (m) cm<sup>-1</sup>; **<sup>1</sup>H-NMR (CDCl<sub>3</sub>)**: δ 7.73 (d, J = 8.4 Hz, 2H), 7.54 (d, J = 8.3 Hz, 2H), 6.88 (s, 2H); **<sup>13</sup>C-NMR (CDCl<sub>3</sub>)**: δ 169.01, 134.54, 129.95, 126.34 (q, J = 5 Hz), 125.86, 125.22, 122.52; **<sup>19</sup>F-NMR (CDCl<sub>3</sub>)**: δ -62.64 (s, 3F).

*4-(phenyl)pyrrole-2,5-dione (2c)*



Compound **2c** was obtained as a light-yellow solid (273 mg, 1.58 mmol, 79%). Melting point 88°C (Lit. 89-90°C [28]). **HRMS (EI)** Calcd for C<sub>10</sub>H<sub>8</sub>NO<sub>2</sub> [M+H]<sup>+</sup> 174.0555, [M+H]<sup>+</sup> Found 174.0552; **IR (KBr):** 1704 (s), 1595 (w), 1507 (m), 1487 (w), 1371 (m), 1310 (w), 1206 (w), 1143 (m), 1070 (m), 1029 (w), 948 (w), 830 (s), 754 (m), 639 (s) cm<sup>-1</sup>; **<sup>1</sup>H-NMR (CDCl<sub>3</sub>):** δ 7.47 (t, J = 7.4, 15.24 Hz, 2H), 7.38-7.33 (m, 3H), 6.84 (s, 2H); **<sup>13</sup>C-NMR (CDCl<sub>3</sub>):** δ 169.64, 134.32, 131.33, 129.27, 128.09, 126.20.

*4-[4-(methoxy)phenyl]pyrrole-2,5-dione (2d)*



Compound **2d** was obtained as a fluorescent yellow solid (381 mg, 1.86 mmol, 93%). Melting point 154°C (Lit. 154-156°C [29]). **HRMS (EI)** Calcd for C<sub>11</sub>H<sub>10</sub>NO<sub>3</sub> [M+H]<sup>+</sup> 204.0660, [M+H]<sup>+</sup> Found 204.0660; **IR (KBr):** 1703 (s), 1607 (w), 1586 (w), 1509 (s), 1467 (w), 1397 (m), 1300 (w), 1246 (m), 1106 (w), 1026 (s), 952 (w), 819 (s), 798 (m), 719 (w), 685 (s) cm<sup>-1</sup>; **<sup>1</sup>H-NMR (CDCl<sub>3</sub>):** δ 7.22 (d, J = 8.8 Hz, 2H), 6.97 (d, J = 8.8 Hz, 2H), 6.82 (s, 2H); **<sup>13</sup>C-NMR (CDCl<sub>3</sub>):** δ 169.96, 159.30, 134.27, 127.72, 123.89, 114.63, 55.63.

## References

20. Sauers CK (1969) The Dehydration of N-Arylmaleamic Acids with Acetic Anhydride. *J Org Chem* 34:2275–2279. <https://doi.org/10.1021/jo01260a008>
28. Fletcher TL, Pan HL (1961) Derivatives of Fluorene. XIV. N-(Ring)-Fluorenylmaleimides. *J Org Chem* 26:2037–2043. [https://doi.org/10.1021/JO01065A087/ASSET/JO01065A087.FP.PNG\\_V03](https://doi.org/10.1021/JO01065A087/ASSET/JO01065A087.FP.PNG_V03)
29. Kumar PP, Rama Devi B, Dubey PK, Mohiuddin SMG (2011) PEG-600 mediated simple, efficient and eco-friendly synthesis of N-substituted imides and chemo selective C = C reduction. *Green Chem Lett Rev* 4:341–348. <https://doi.org/10.1080/17518253.2011.571720>

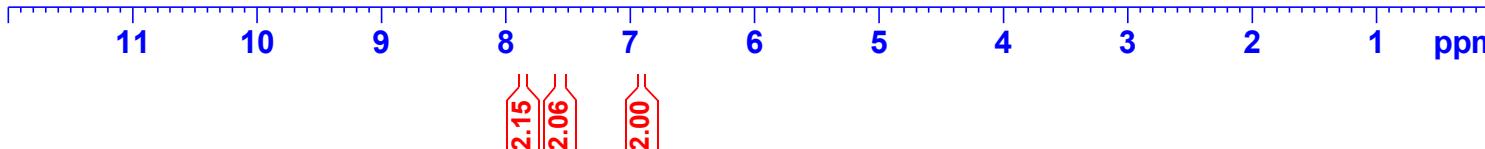
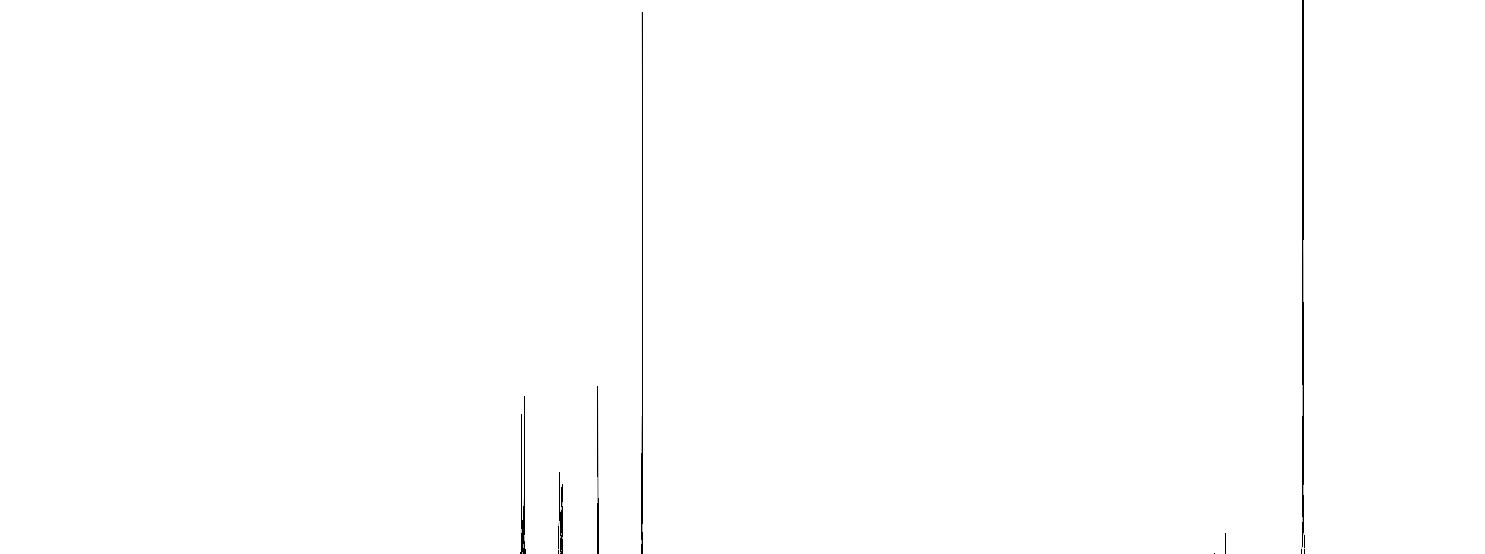
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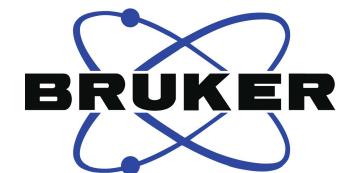
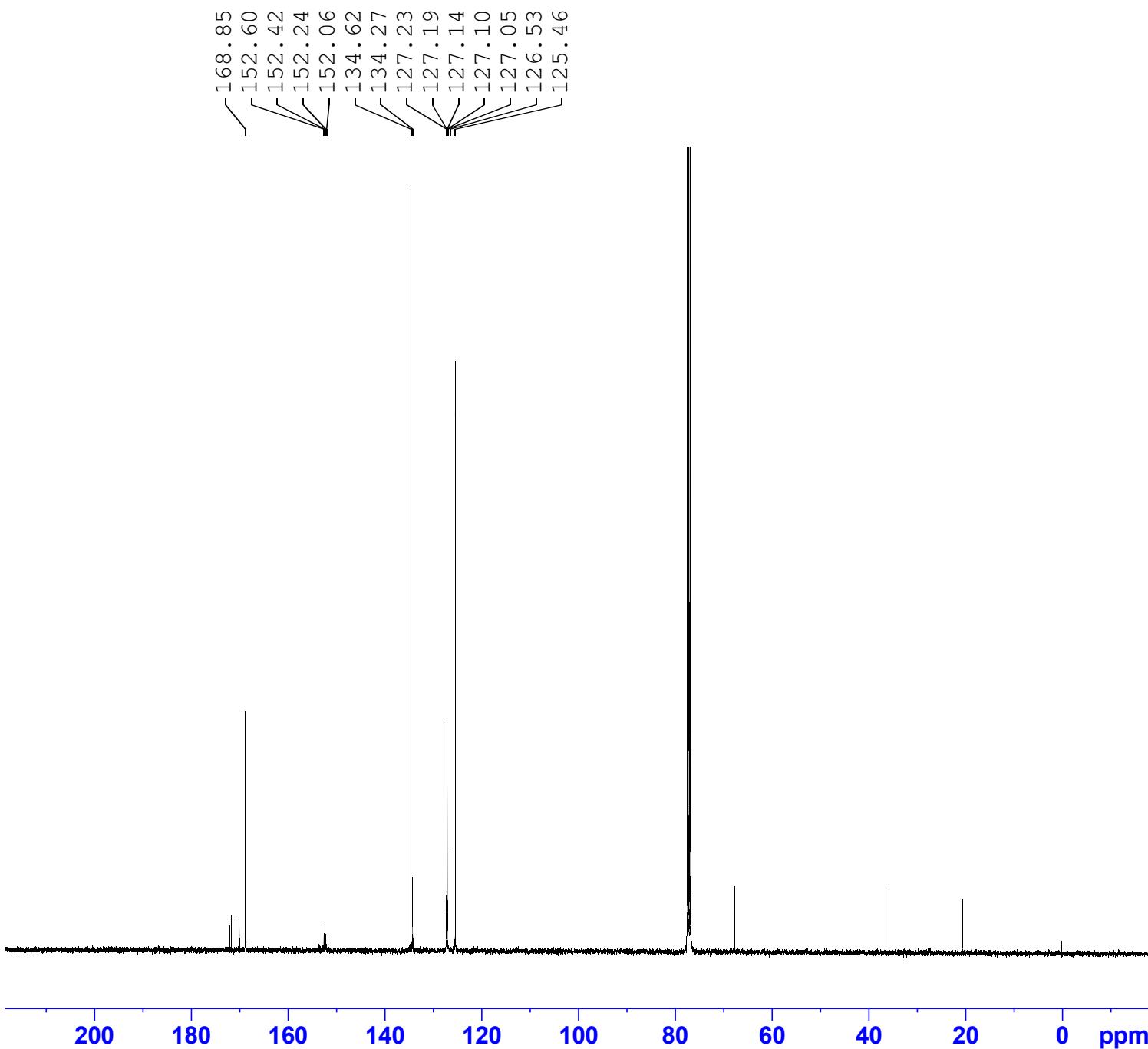
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 SWH 0.125072 Hz  
 AQ 7.9953918 sec  
 RG 101  
 DW 61.000 usec  
 DE 13.54 usec  
 TE 298.0 K  
 D1 1.0000000 sec  
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 NUC1 1H  
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 P1 10.00 usec  
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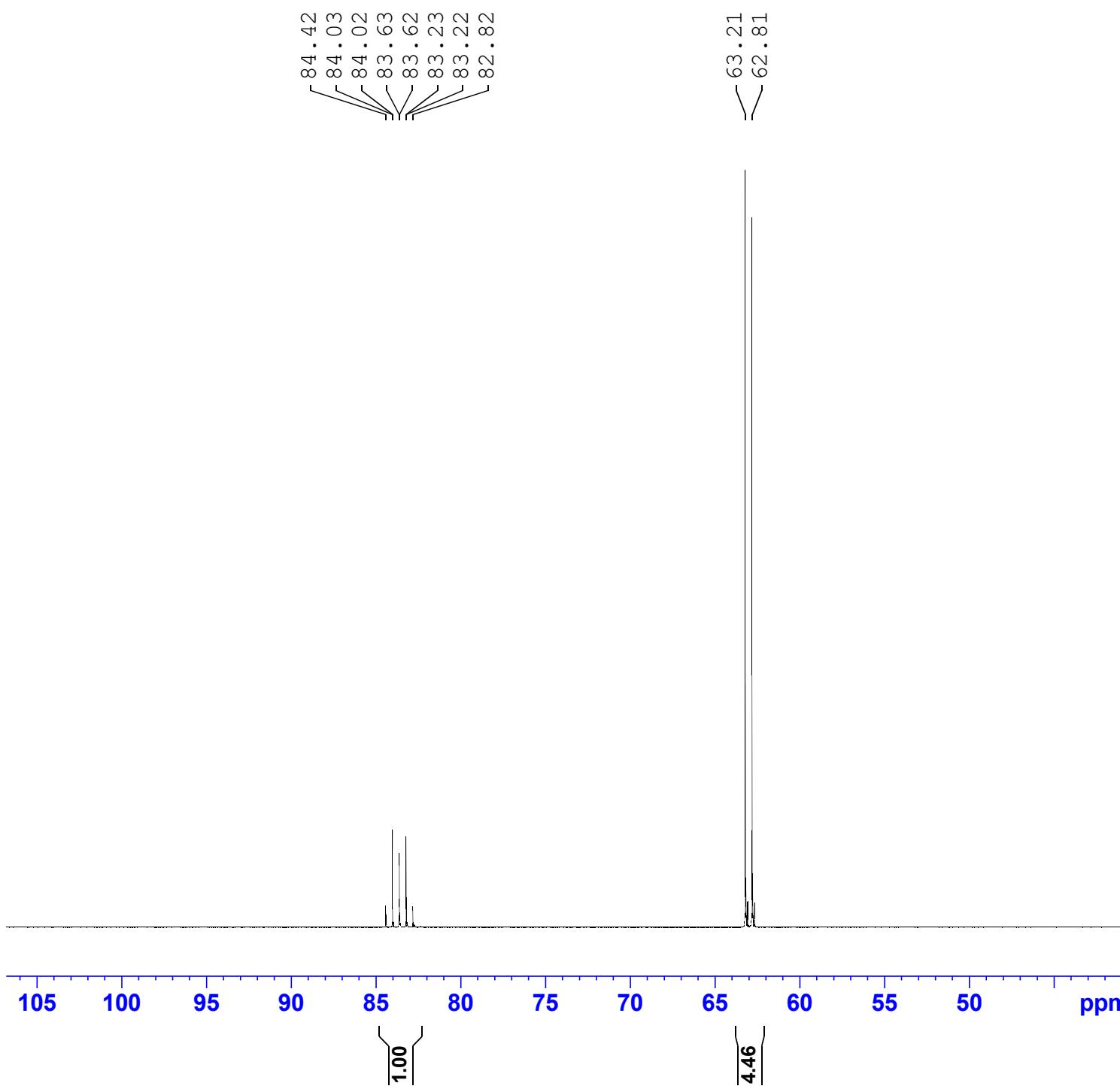
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 SOLVENT CDC13  
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 FIDRES 0.726609 Hz  
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 RG 101  
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 DE 6.50 usec  
 TE 298.0 K  
 D1 2.00000000 sec  
 D11 0.03000000 sec  
 TD0 1  
 SFO1 100.6278593 MHz  
 NUC1 13C  
 P0 3.33 usec  
 P1 10.00 usec  
 PLW1 58.38199997 W  
 SFO2 400.1516006 MHz  
 NUC2 1H  
 CPDPRG[2] waltz65  
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Current Data Parameters  
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 PROCNO 1

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 Time 20.29 h  
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 PULPROG zg  
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 DS 4  
 SWH 147058.828 Hz  
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Sample Name SF5 Maleamic acid (2a)

Inj Vol

Data Filename

Position

InjPosition

ACQ Method

Instrument Name

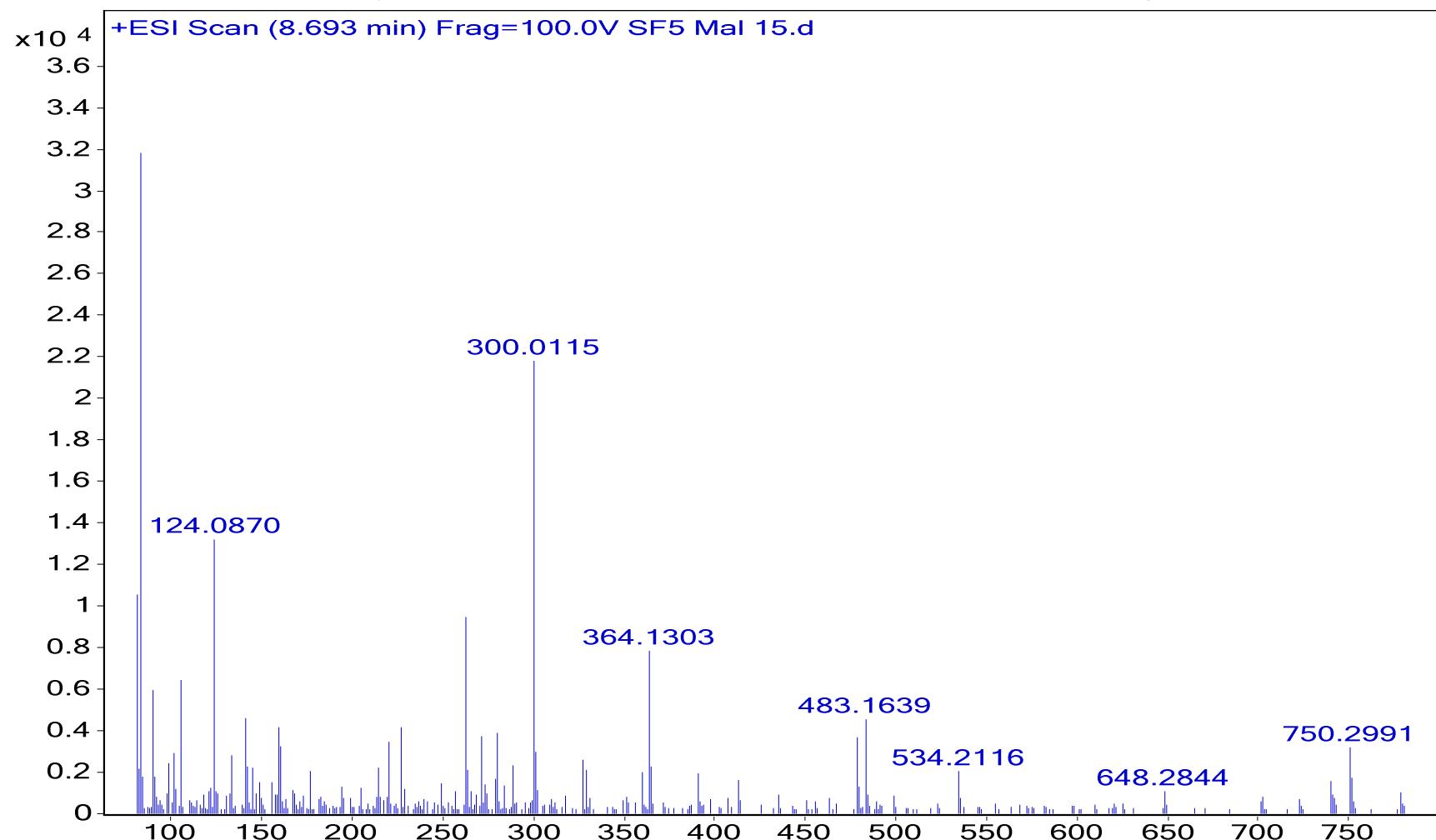
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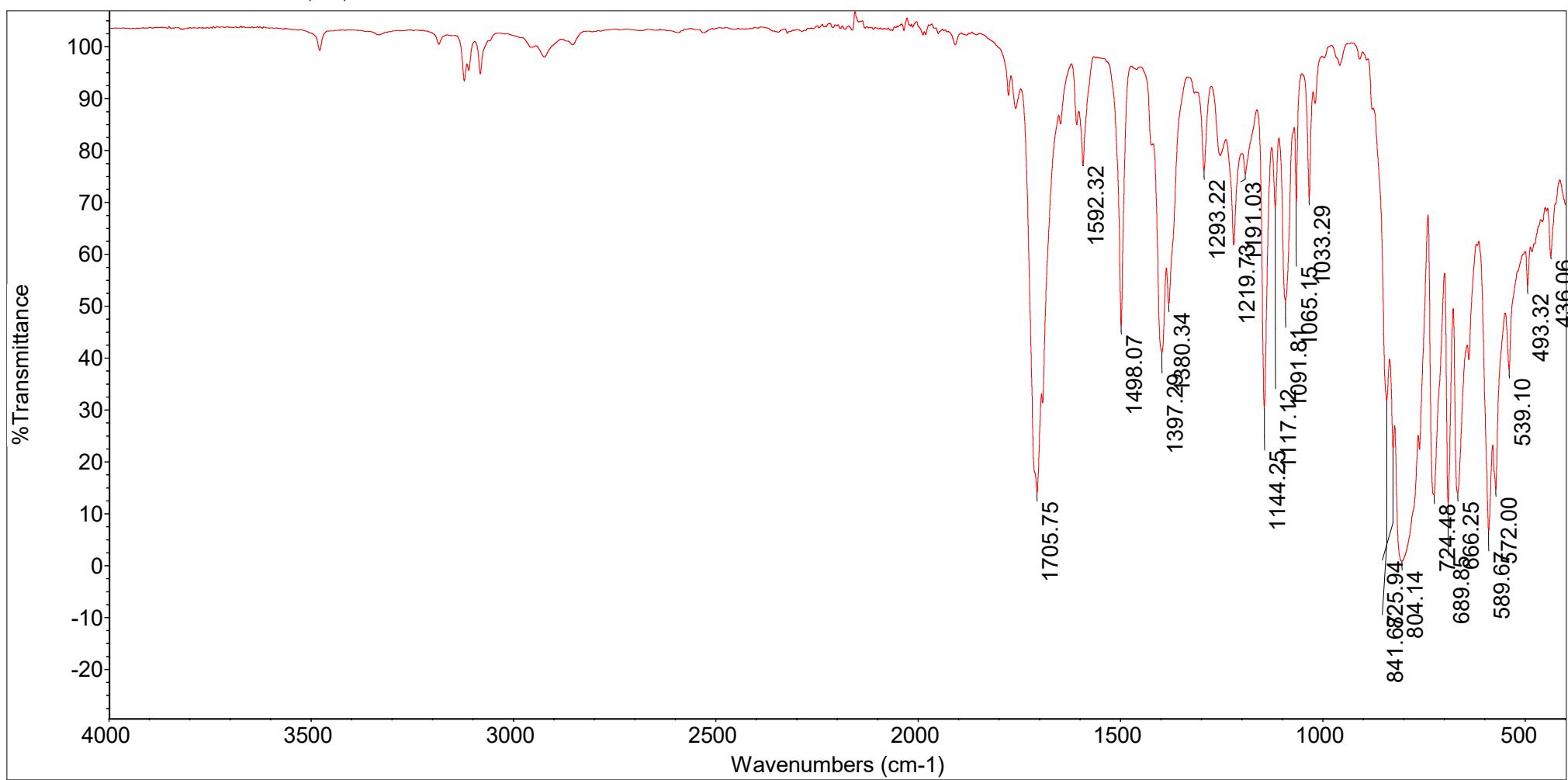
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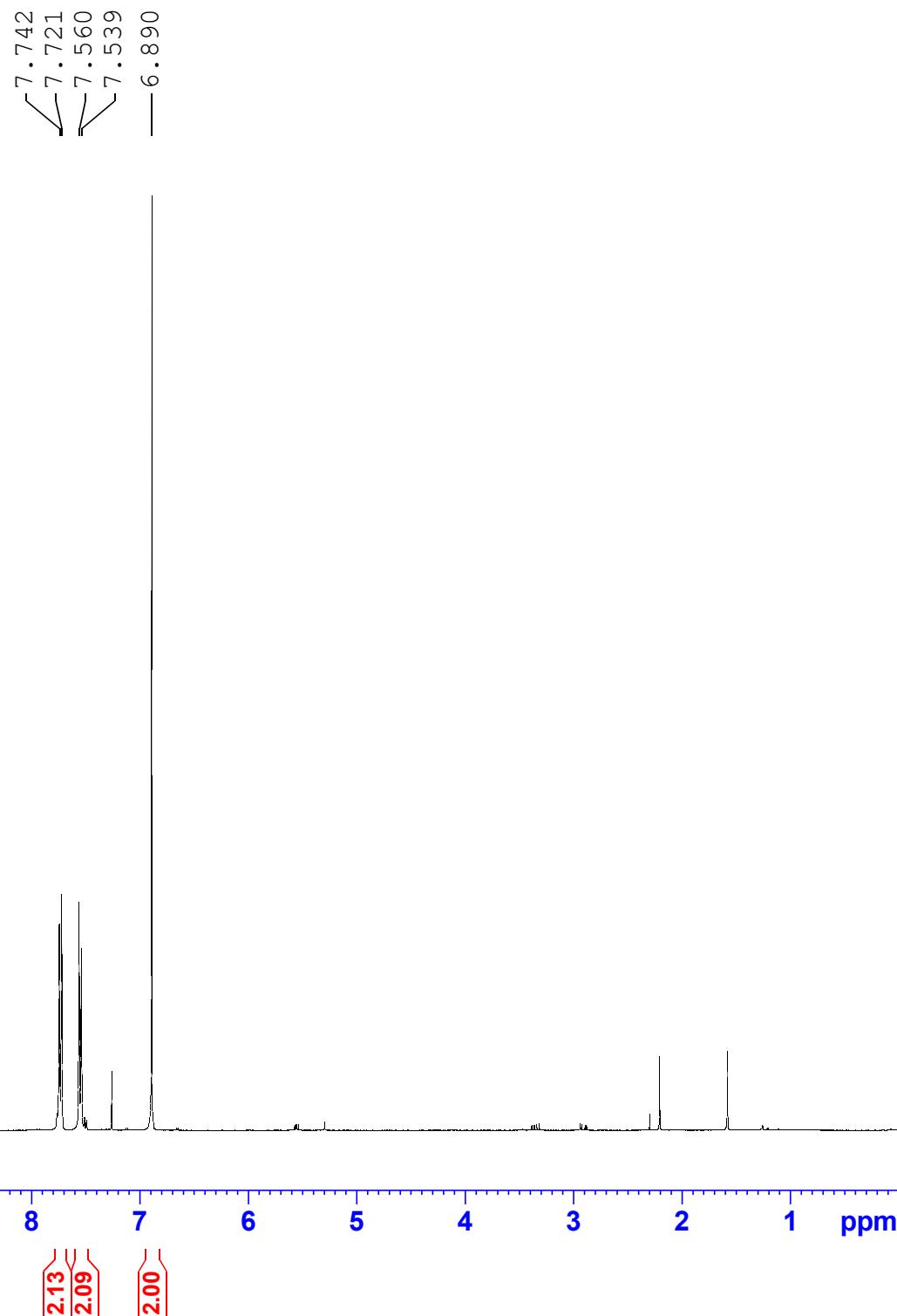
User Name

IRM Calibration Status

Acquired Time



SF5 Maleimide (**2a**)

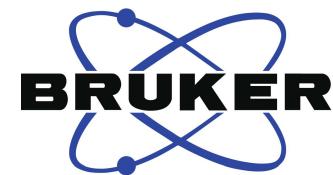
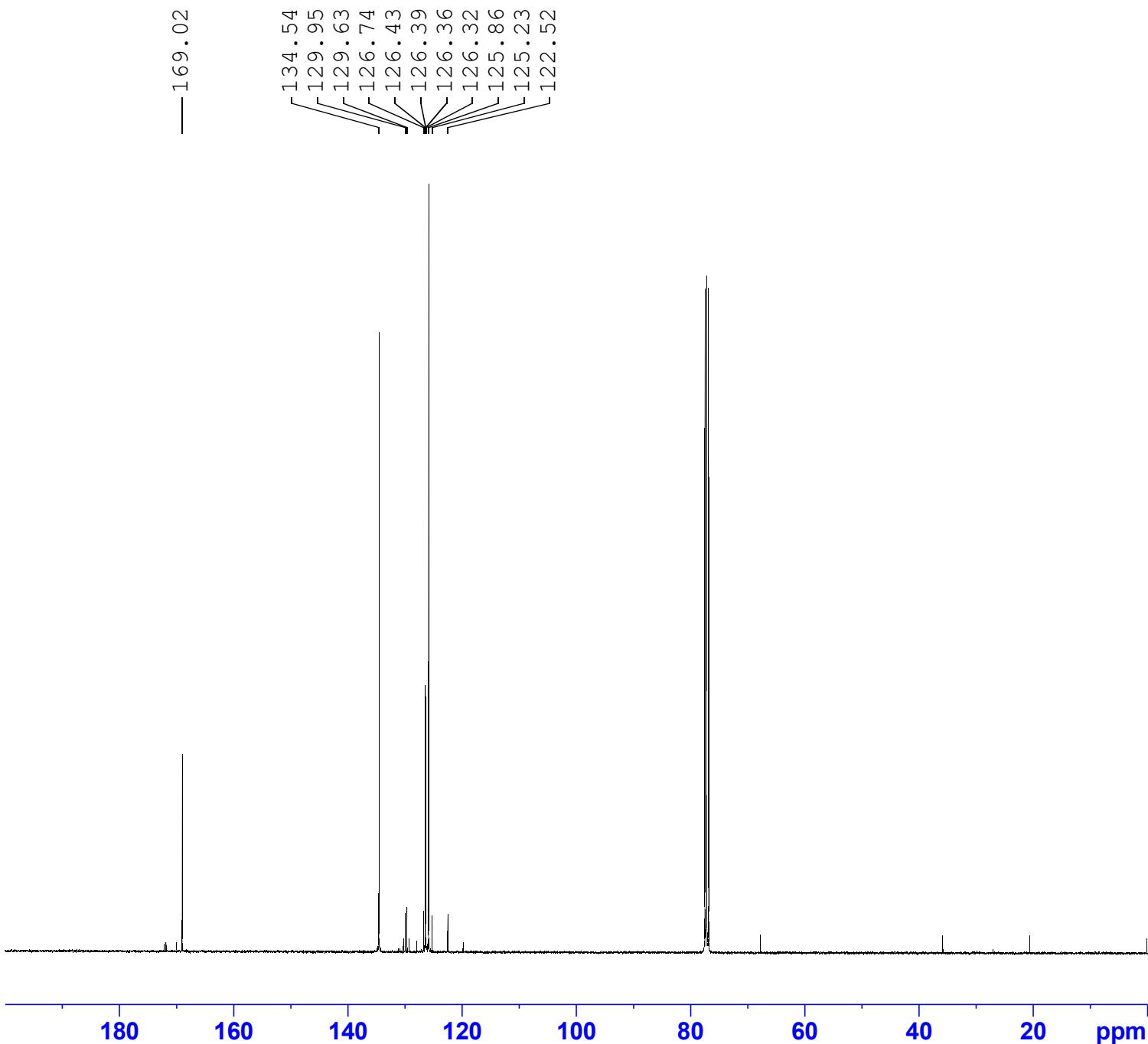
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 NS 32  
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F2 - Processing parameters  
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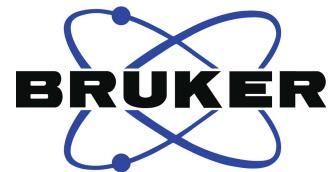


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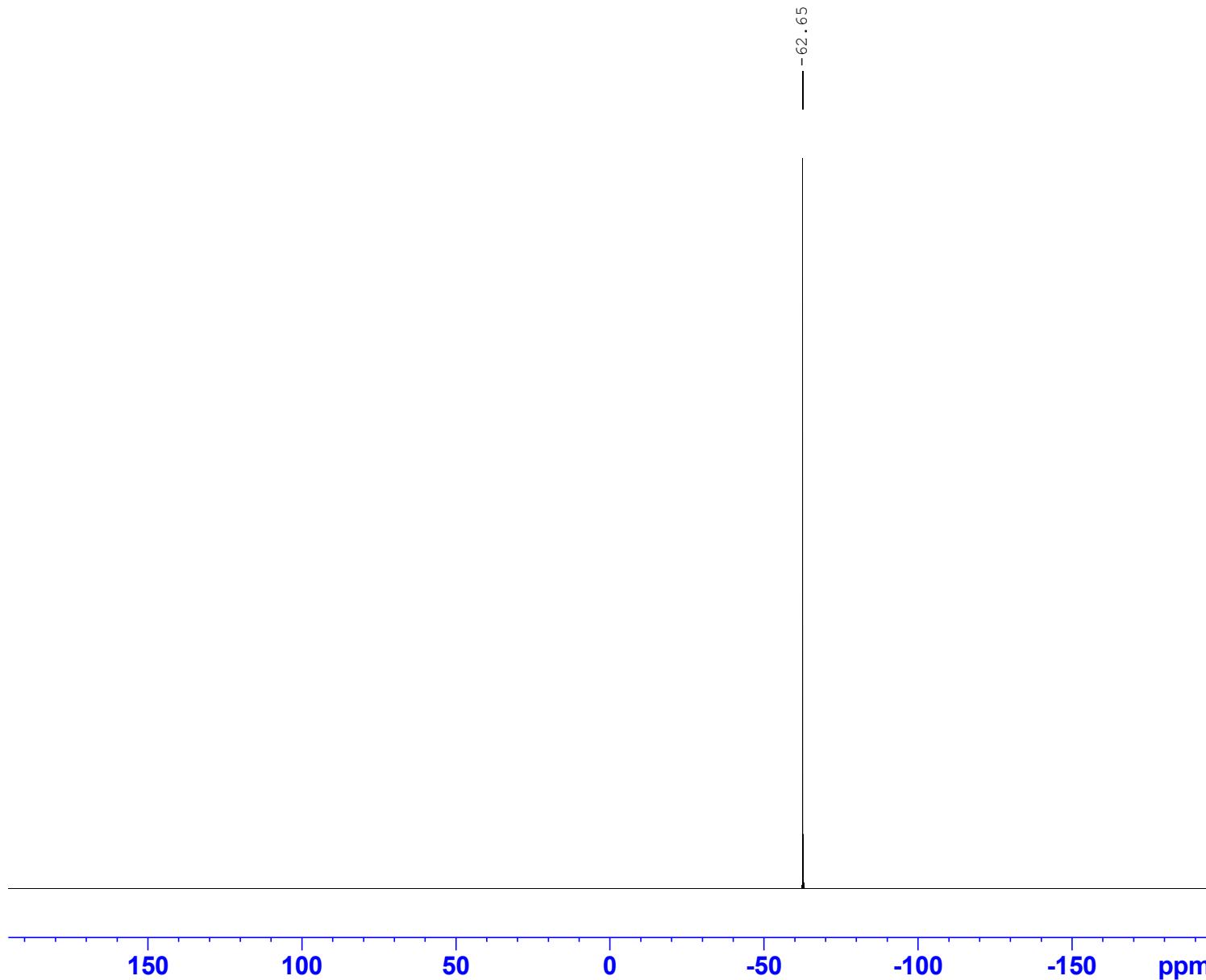
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CF<sub>3</sub> Maleimide (**2b**)



-62.65



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EXPNO 13  
PROCNO 1

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DW 3.400 usec  
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Sample Name CF3 Maleamic acid (2b)

Inj Vol

Data Filename

Position

InjPosition

ACQ Method

Instrument Name

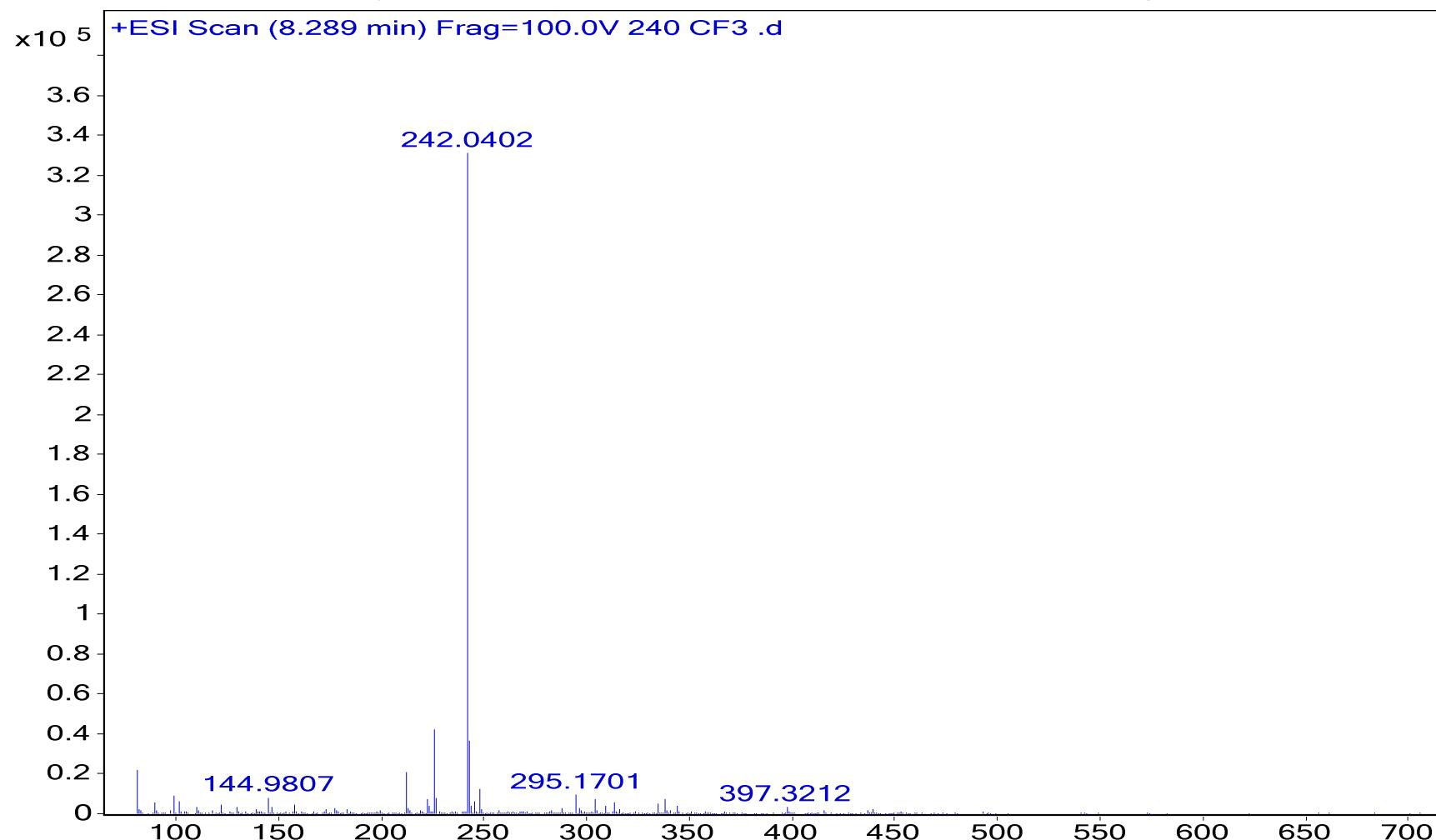
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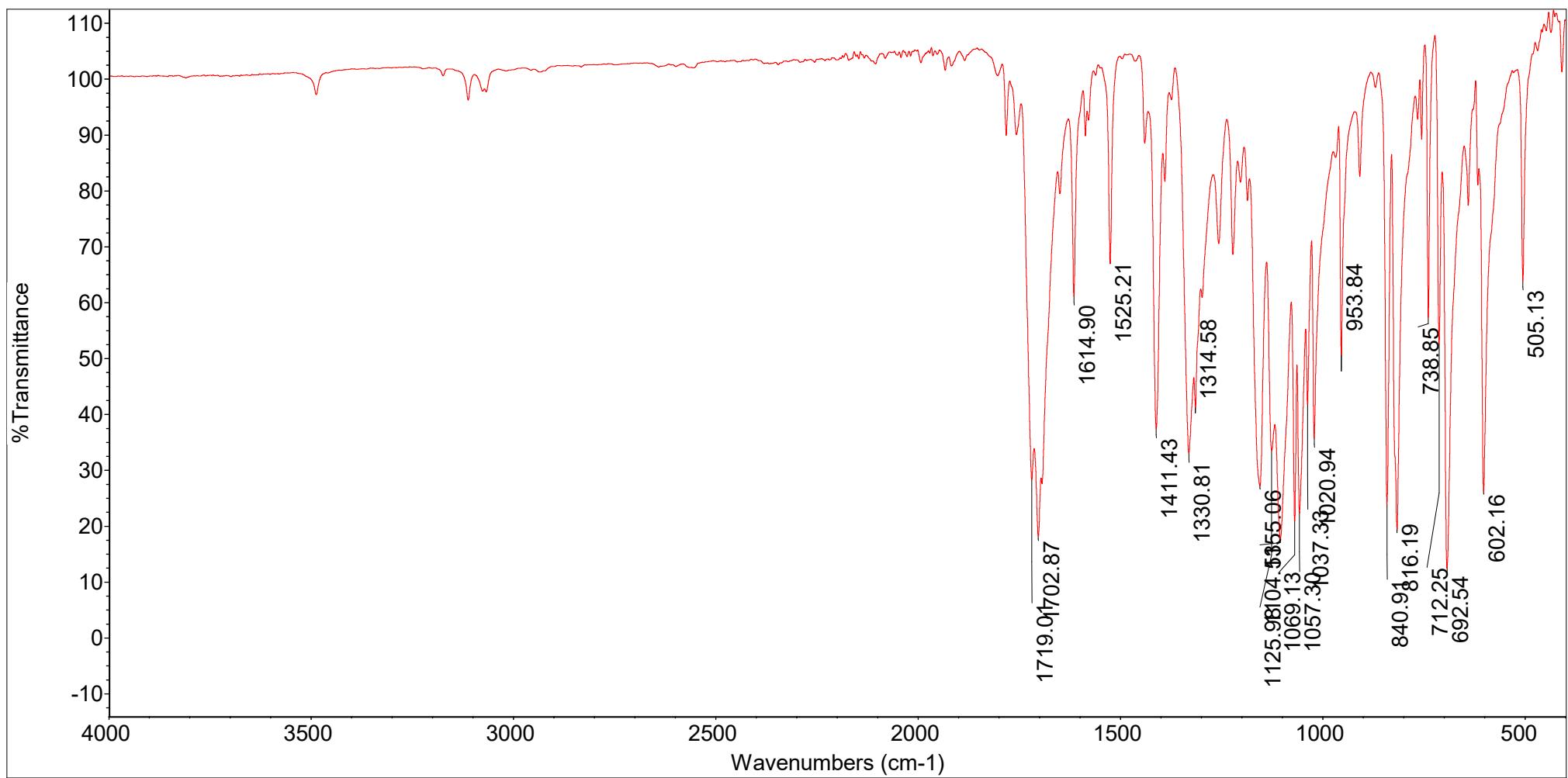
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User Name

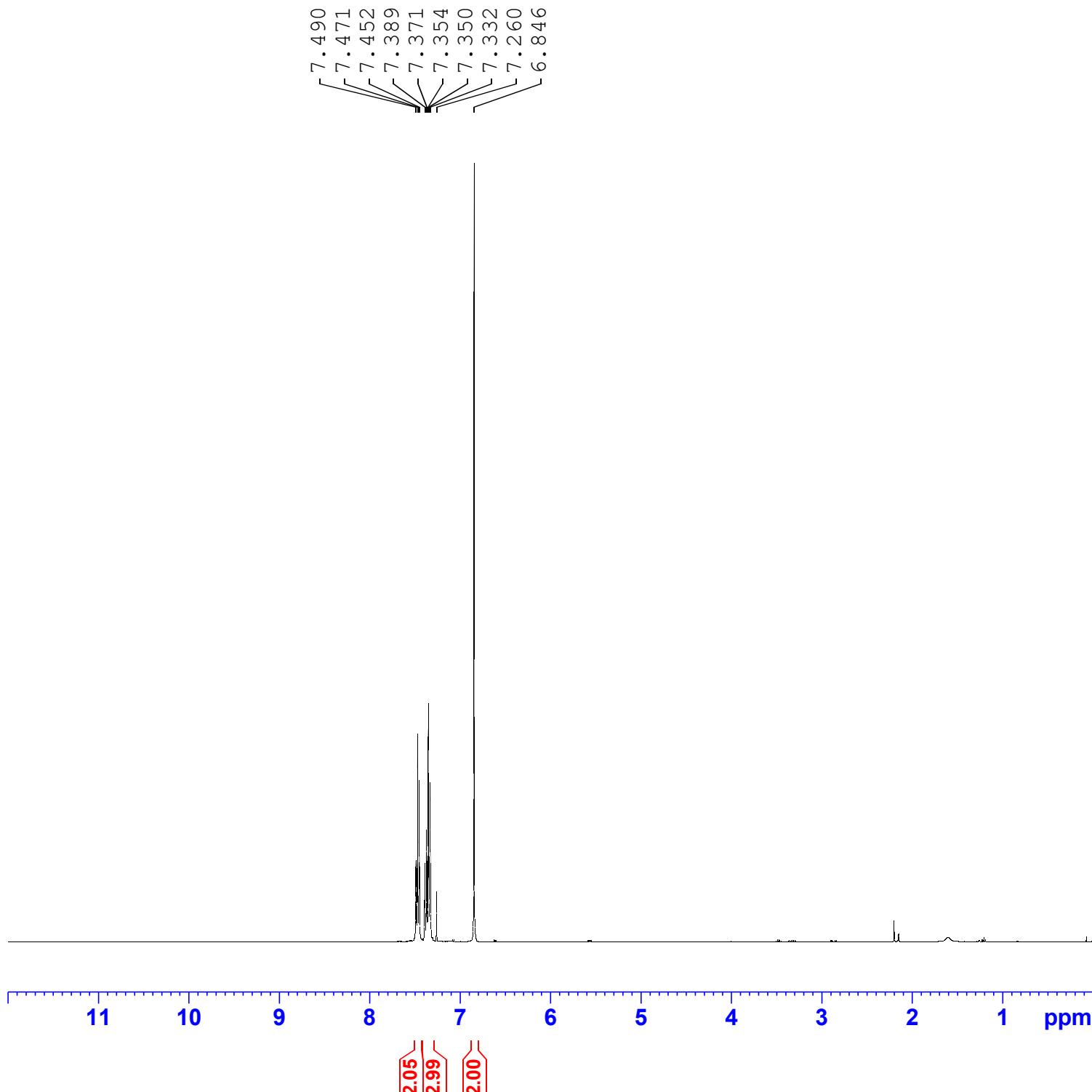
IRM Calibration Status

Acquired Time



CF<sub>3</sub> Maleimide (**2b**)

H Maleimide (**2c**)

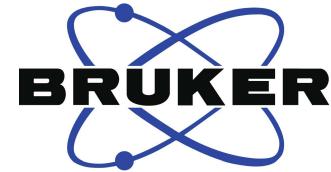
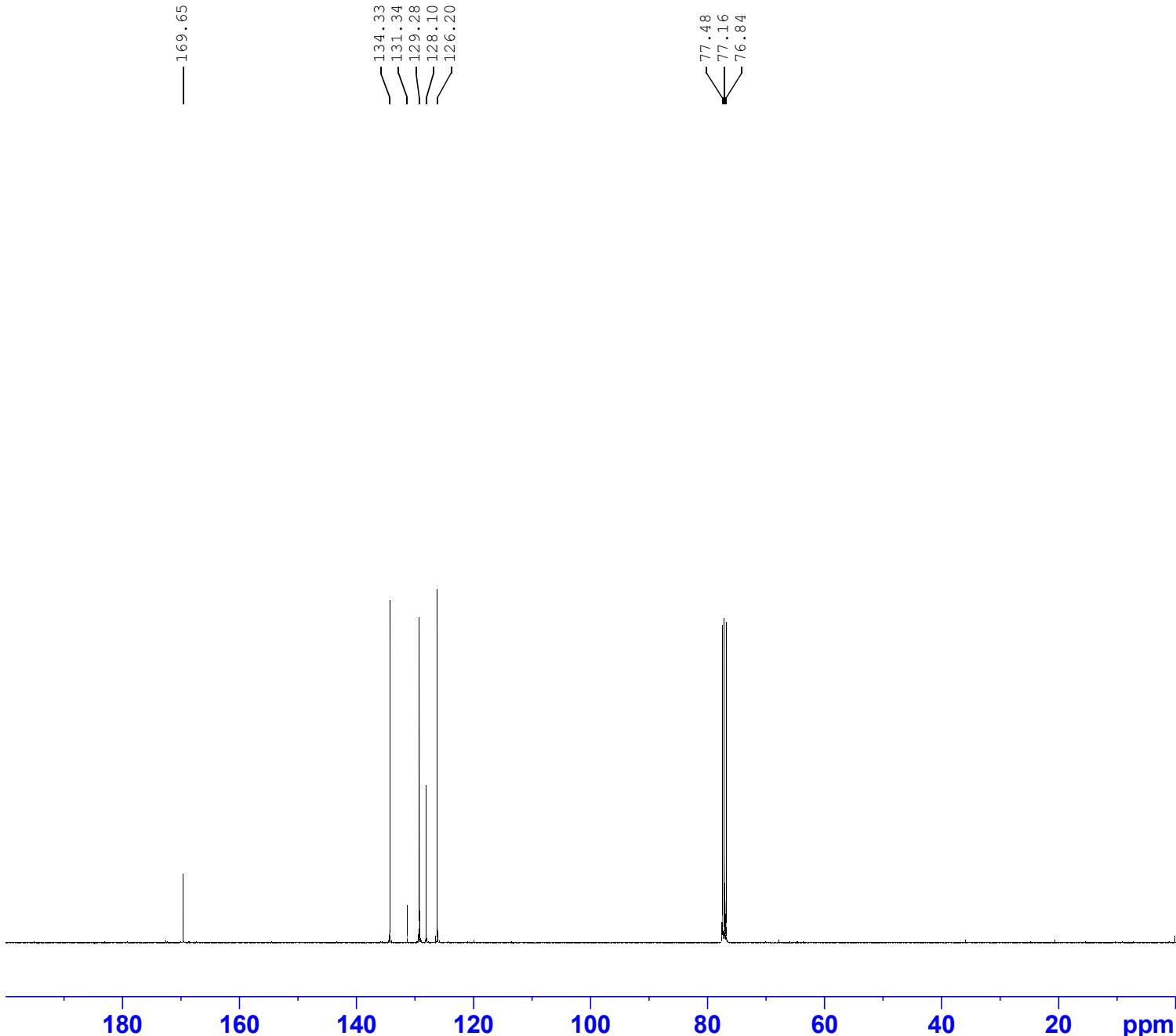


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F2 - Processing parameters  
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H Maleimide (**2c**)



Current Data Parameters  
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 PROCNO 1

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 P1 10.00 usec  
 PLW1 58.38199997 W  
 SFO2 400.1516006 MHz  
 NUC2 1H  
 CPDPRG[2] waltz65  
 PCPD2 90.00 usec  
 PLW2 19.63299942 W  
 PLW12 0.24237999 W  
 PLW13 0.12192000 W

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Sample Name H Maleimide (2c)

Inj Vol

Data Filename

Position

InjPosition

ACQ Method

Instrument Name

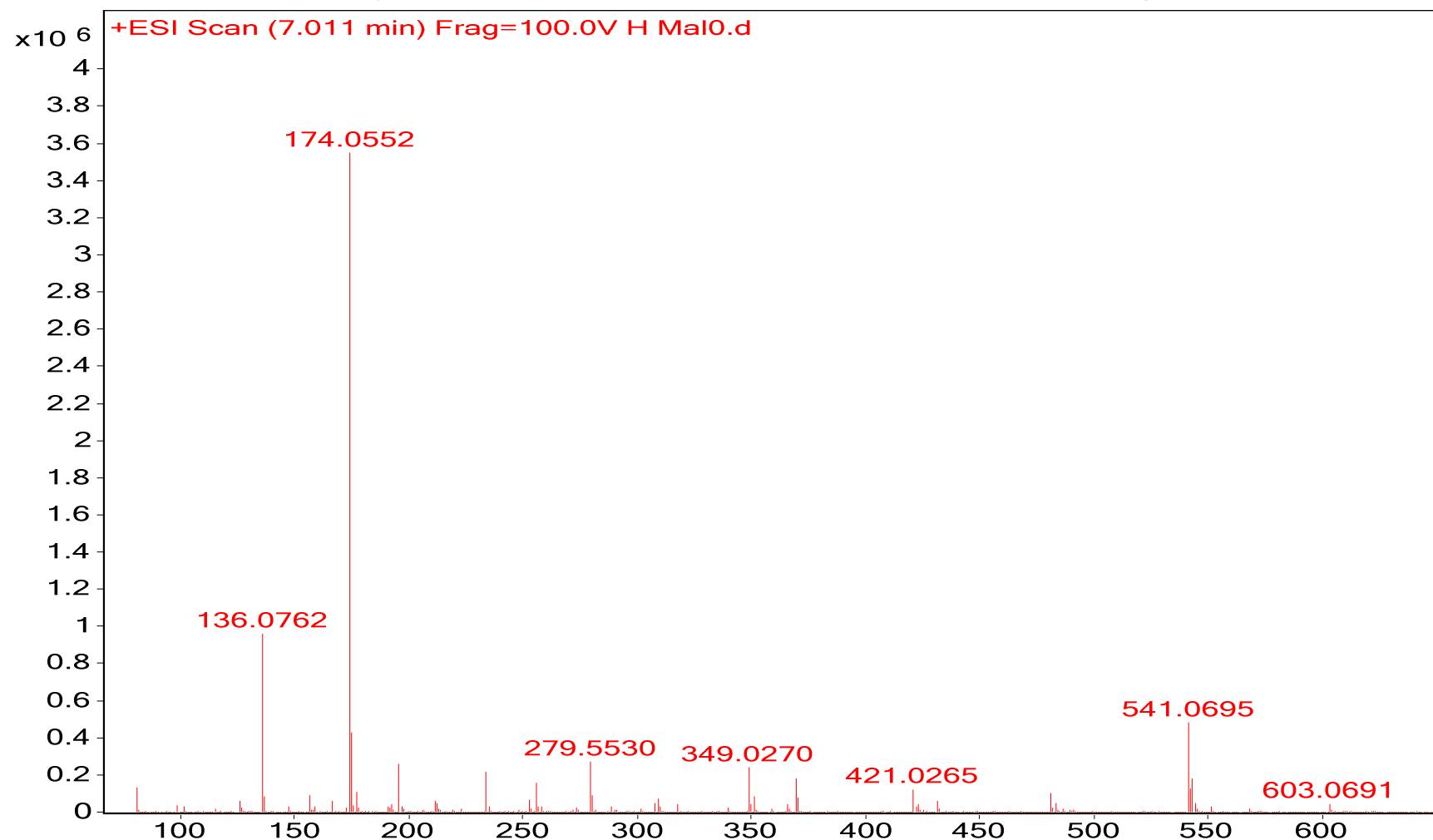
SampleType

Comment

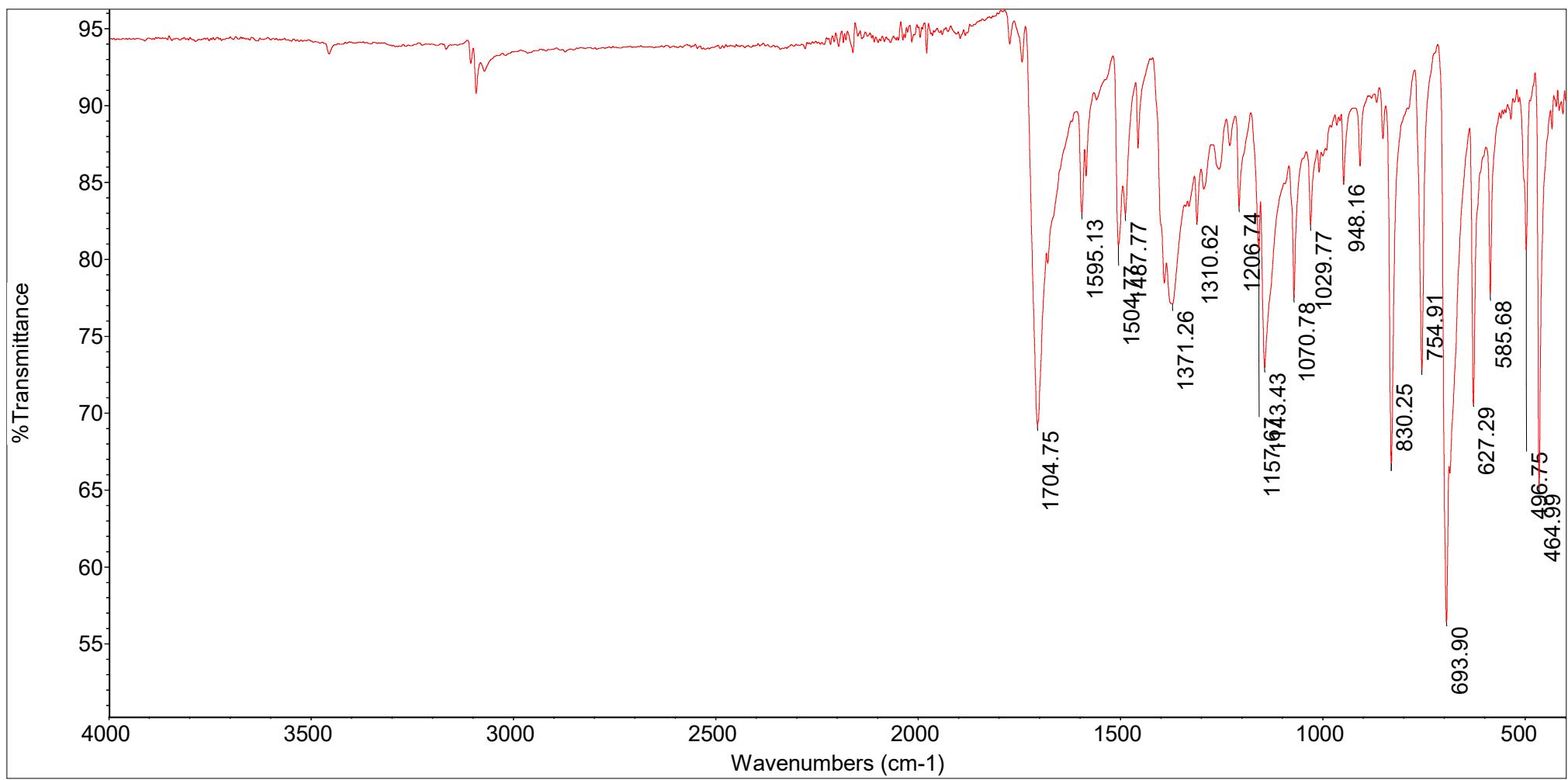
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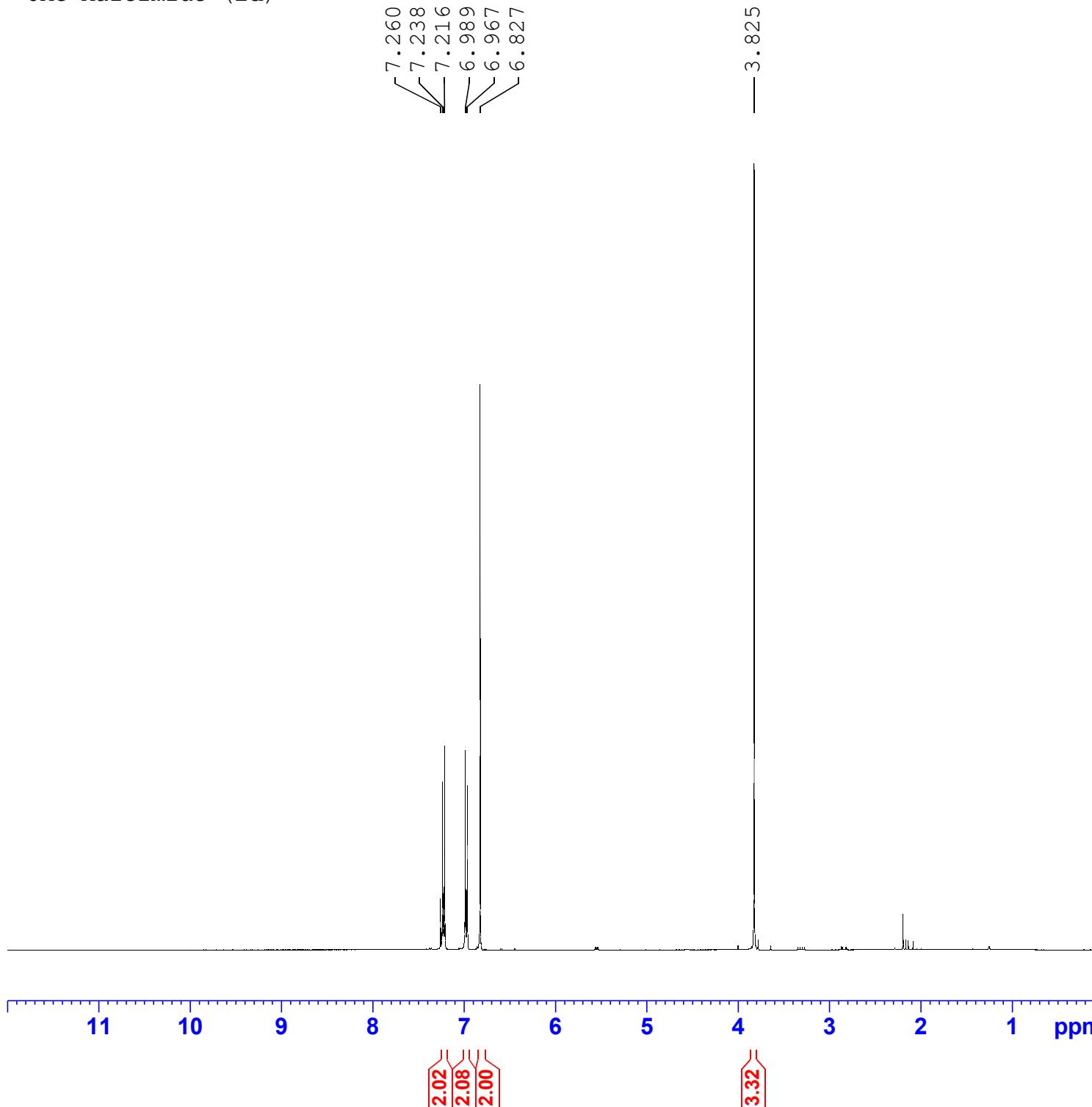
IRM Calibration Status

Acquired Time



H maleimide (**2c**)



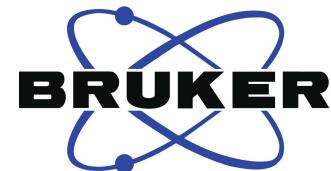
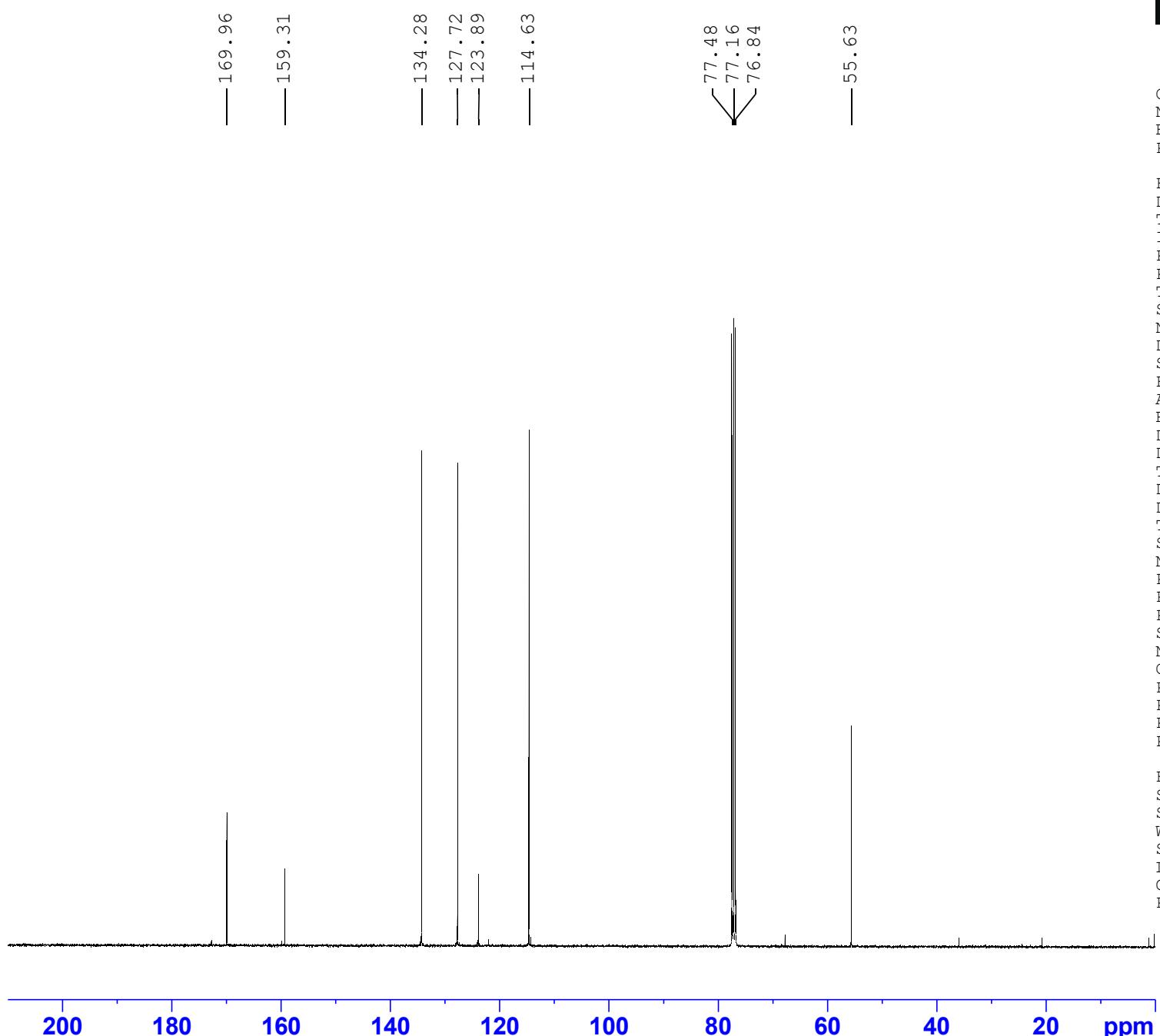
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 AQ 7.9953918 sec  
 RG 101  
 DW 61.000 usec  
 DE 13.54 usec  
 TE 298.0 K  
 D1 1.00000000 sec  
 TD0 1  
 SFO1 400.1524709 MHz  
 NUC1 1H  
 P0 3.33 usec  
 P1 10.00 usec  
 PLW1 19.63299942 W

F2 - Processing parameters  
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## OMe Maleimide (2d)

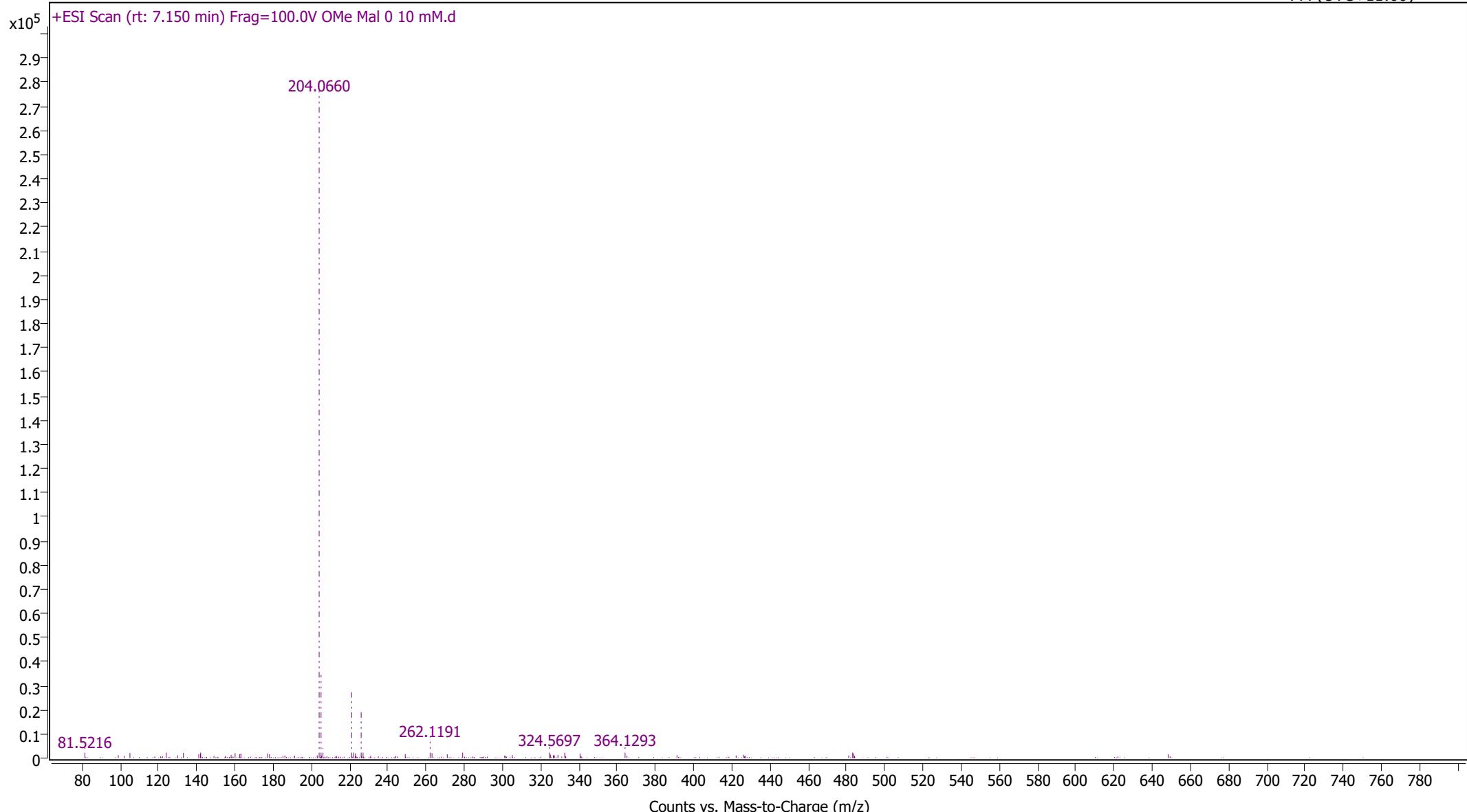


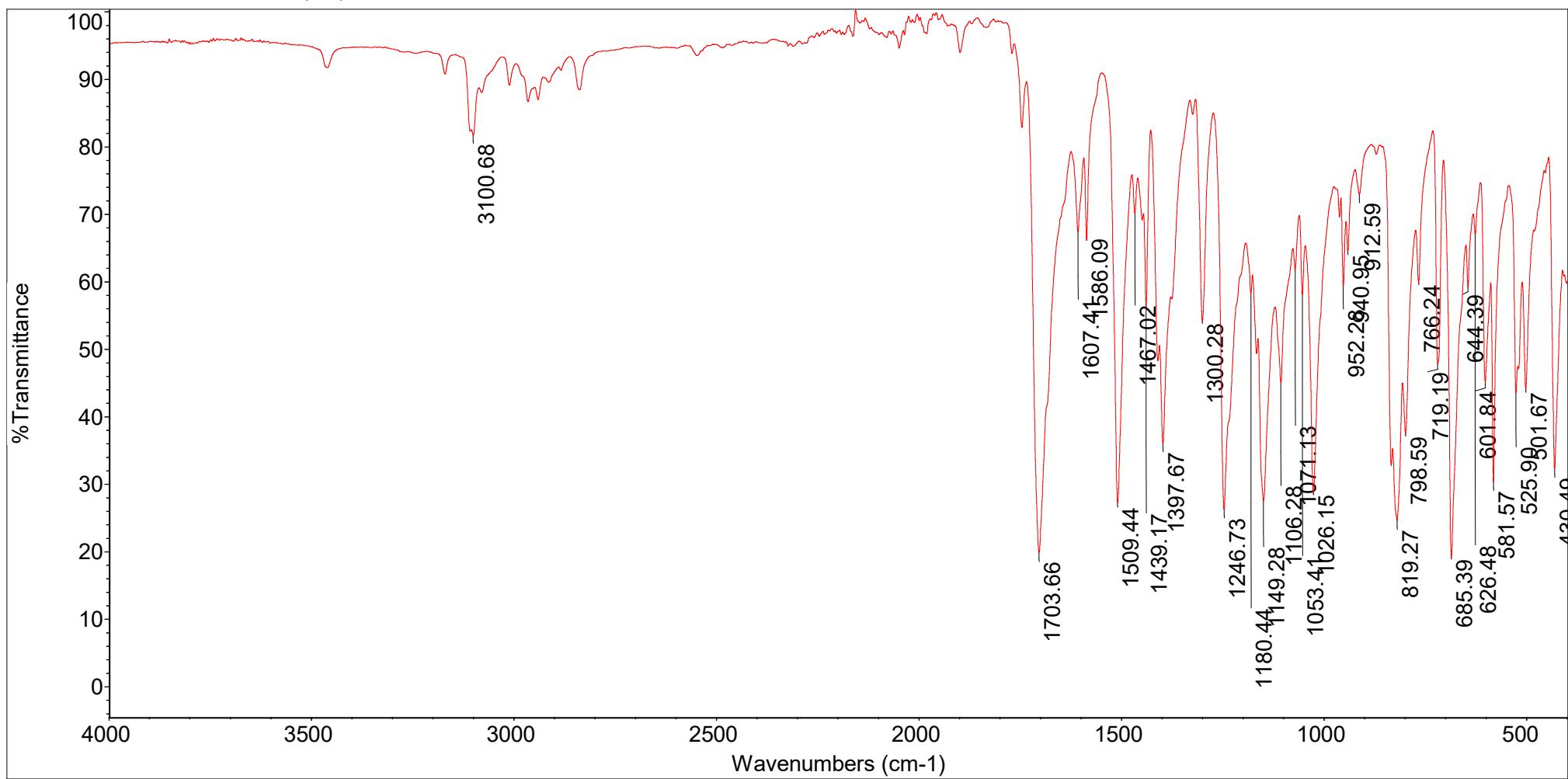
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 PROCNO 1

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 SOLVENT CDCl3  
 NS 3200  
 DS 4  
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 FIDRES 0.516700 Hz  
 AQ 1.9353600 sec  
 RG 101  
 DW 21.000 usec  
 DE 6.50 usec  
 TE 298.0 K  
 D1 2.00000000 sec  
 D11 0.03000000 sec  
 TDO 1  
 SFO1 100.6278593 MHz  
 NUC1 13C  
 P0 3.33 usec  
 P1 10.00 usec  
 PLW1 58.38199997 W  
 SFO2 400.1516006 MHz  
 NUC2 1H  
 CPDPRG[2] waltz65  
 PCPD2 90.00 usec  
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 PLW12 0.24237999 W  
 PLW13 0.12192000 W

F2 - Processing parameters  
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 GB 0  
 PC 1.40

Name	OMe Maleimide (2d)	Transfer	Rack Pos.		Instrument	Instrument 1	Operator
Inj. Vol. (μl)		10	Plate Pos.		IRM Status	Success	
Data File		OMe Mal 0 10 mM.d	Method (Acq)	Degredation Method.m	Comment		Acq. Time (Local) 2022-08-08 12:38:29 PM (UTC+11:00)

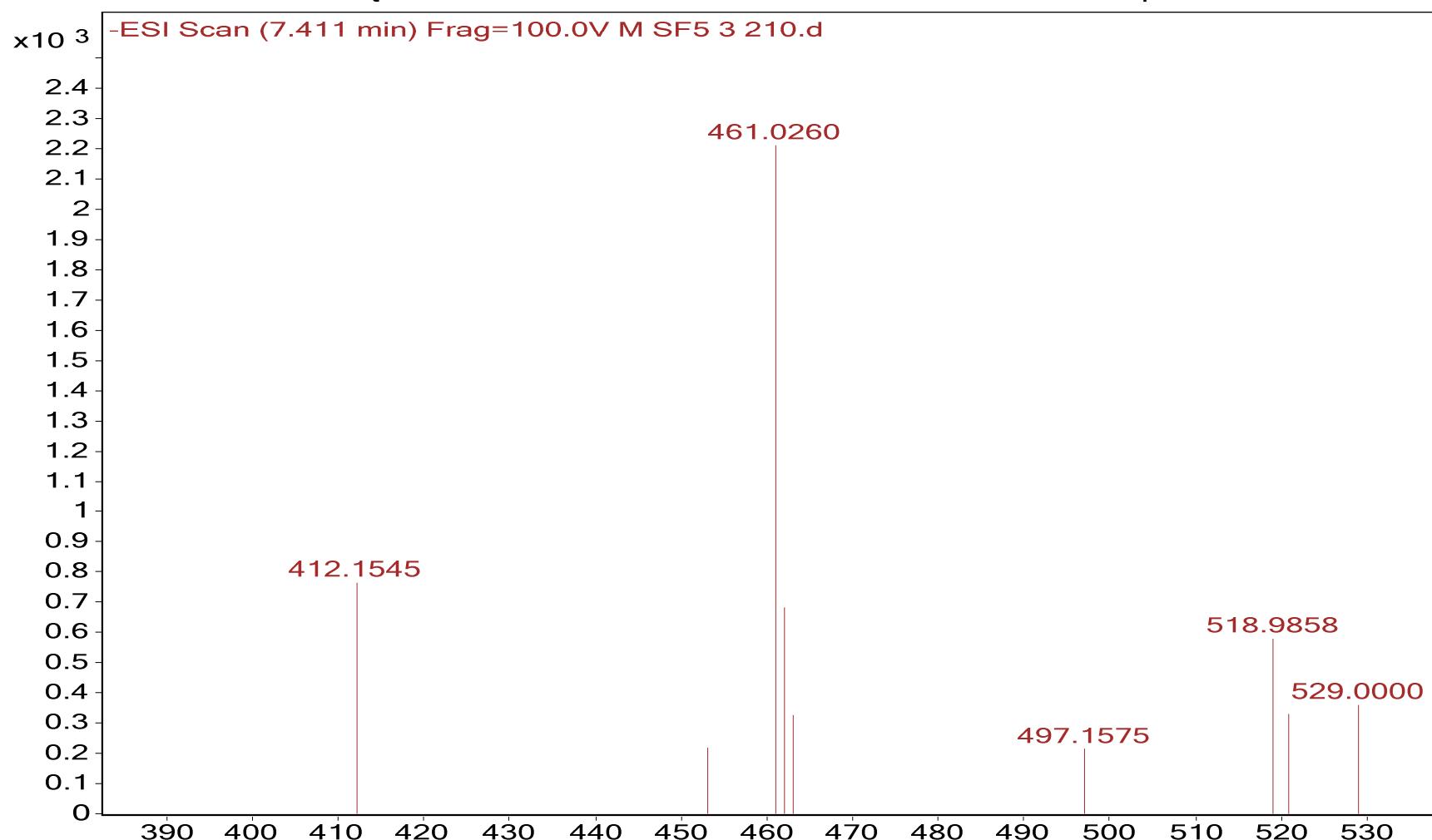


OMe Maleimide (**2d**)

Sample Name SF5 Thio-succinimide (3a) Position  
Inj Vol InjPosition  
Data Filename ACQ Method

Instrument Name  
SampleType  
Comment

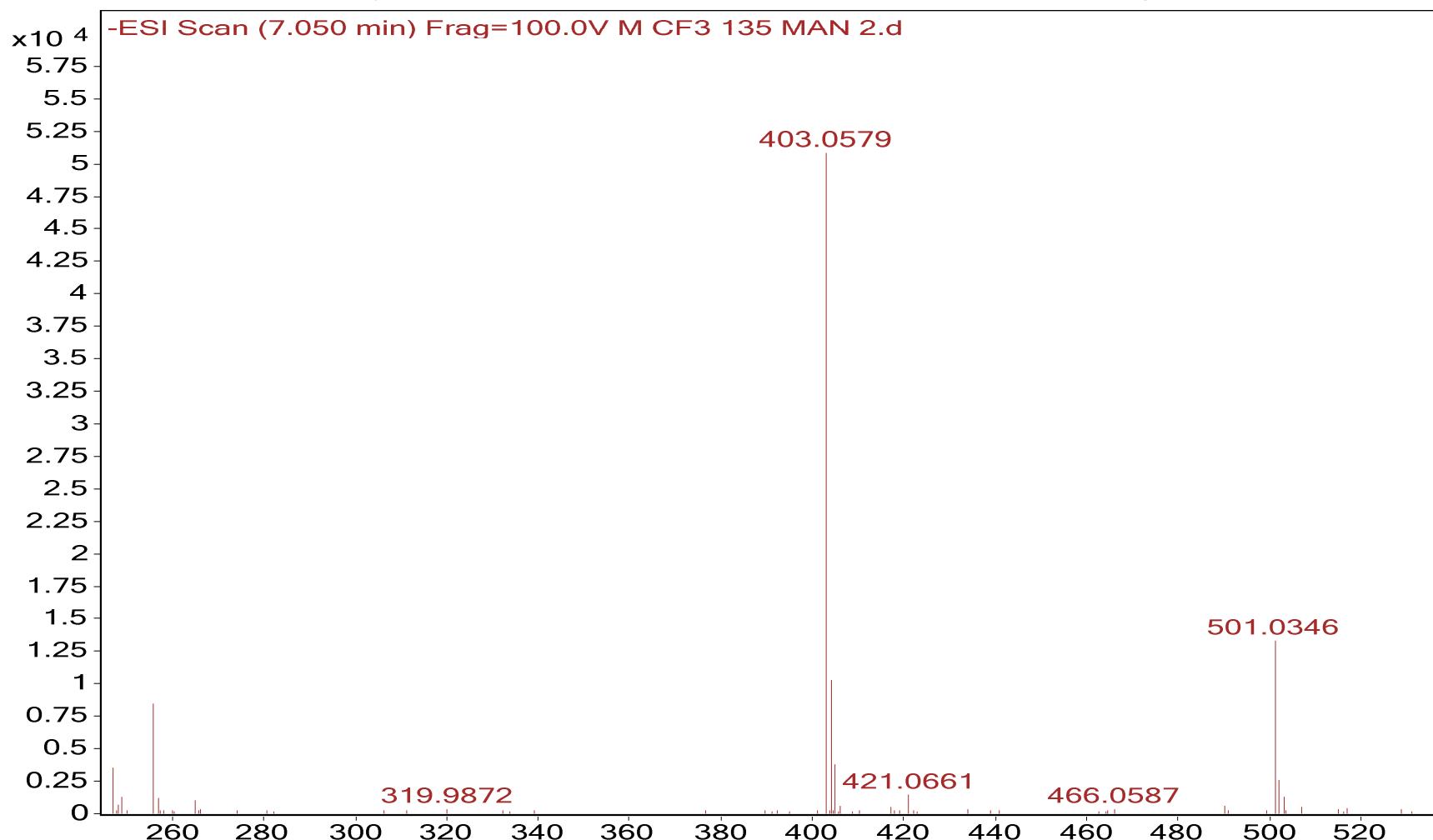
User Name  
IRM Calibration Status  
Acquired Time



Sample Name: CF3 Thio-succinimide (3b) Position  
Inj Vol InjPosition  
Data Filename ACQ Method

Instrument Name  
SampleType  
Comment

User Name  
IRM Calibration Status  
Acquired Time



Sample Name: H Thio-succinimide (3c)

Inj Vol

Data Filename

Position

InjPosition

ACQ Method

Instrument Name

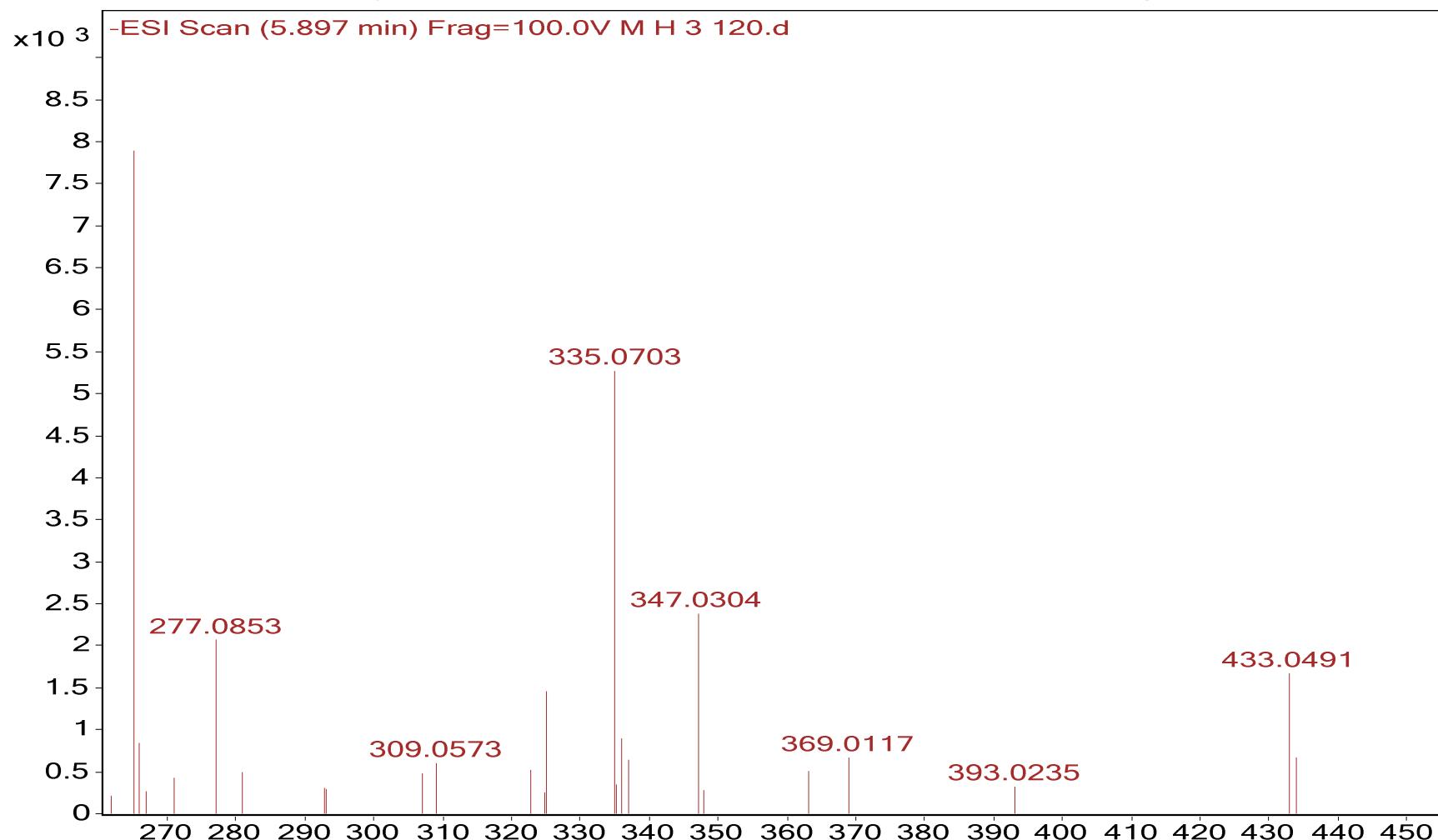
SampleType

Comment

User Name

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Acquired Time

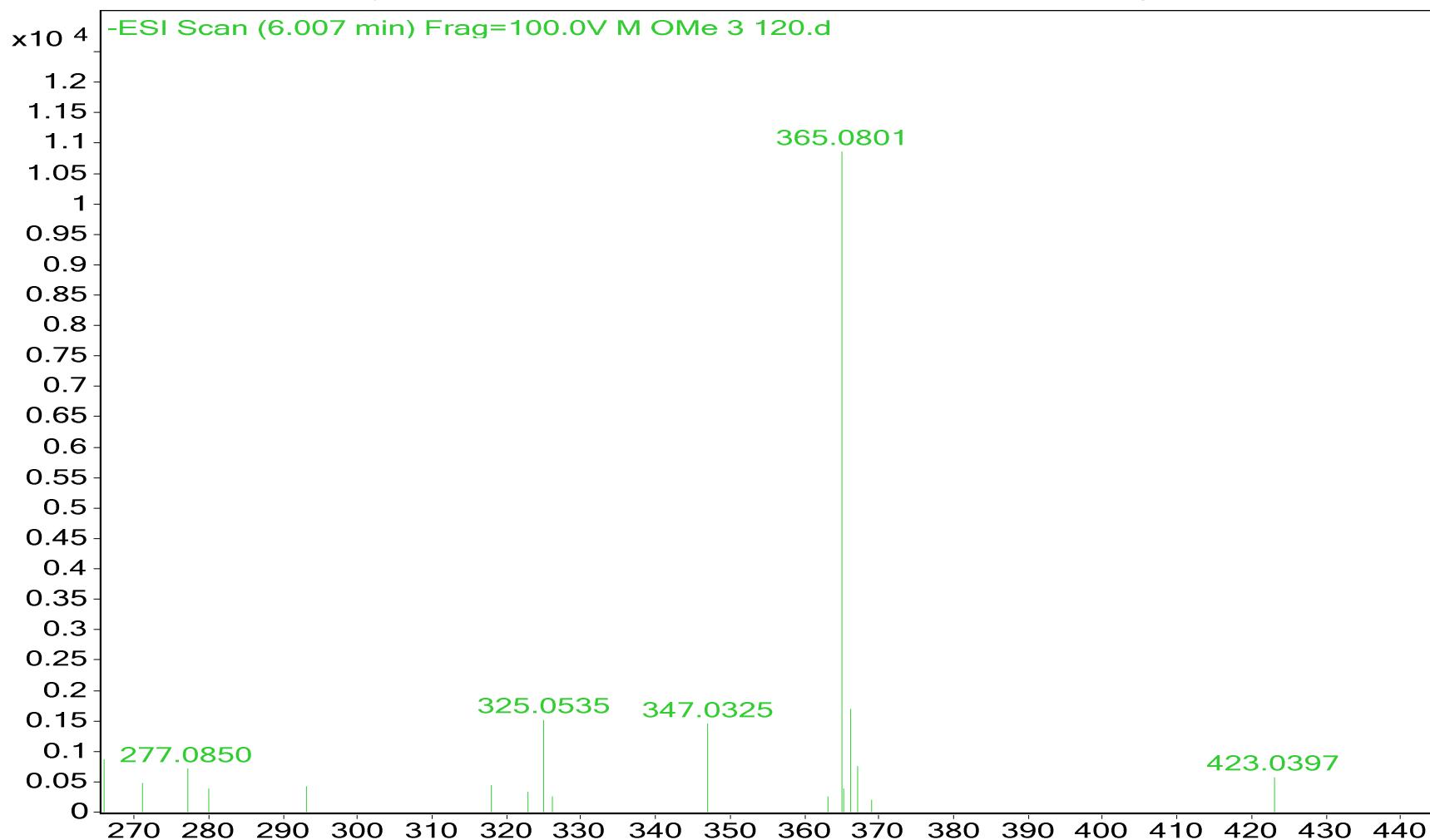


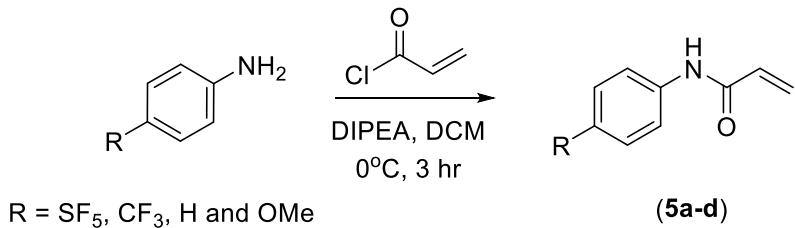
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Inj Vol  
Data Filename

InjPosition  
ACQ Method

Instrument Name  
SampleType  
Comment

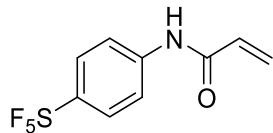
User Name  
IRM Calibration Status  
Acquired Time





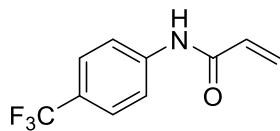
General procedure for the synthesis of **(5a-d)** adapted from the work of Watt *et al.* [25]: A solution of prop-2-enoyl chloride (523  $\mu\text{L}$ , 3 mmol, 1.5 equiv) and DIPEA (523  $\mu\text{L}$ , 3 mmol) in DCM (10 mL) was cooled over an ice bath to  $0^\circ\text{C}$ . A solution of aniline (2 mmol) in DCM (10 mL) was then added dropwise. The reaction was allowed to proceed for 3 hr. After confirmation by TLC the reaction mixture was then quenched with water (20 mL). The aqueous layer was extracted with DCM ( $2 \times 20$  mL), the combined organics washed with 1 M HCl (20 mL), saturated  $\text{NaHCO}_3$  (20 mL), brine (20 mL), dried over  $\text{MgSO}_4$  and evaporated to dryness to afford the final product.

*N-[4-(pentafluorosulfanyl)phenyl]-2-propenamide (**5a**)*



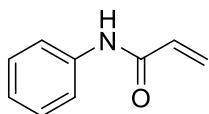
Compound **5a** was obtained as a white solid (377 mg, 1.38 mmol, 69%). Melting point:  $111^\circ\text{C}$ . **HRMS (EI)** Calcd for  $\text{C}_9\text{H}_7\text{F}_5\text{NOS}$  [ $\text{M}-\text{H}$ ]<sup>-</sup> 272.0168, [ $\text{M}-\text{H}$ ]<sup>-</sup> Found 272.0166; **IR (KBr)**: 2922 (w), 1670 (m), 1637 (w), 1513 (m), 1406 (m), 1320 (w), 1193 (m), 1102 (w), 970 (w), 810 (s, br)  $\text{cm}^{-1}$ ;  **$^1\text{H-NMR}$  ( $\text{CDCl}_3$ )**:  $\delta$  7.73-7.70 (m, 4H), 6.47 (dd,  $J = 1, 16.8$  Hz, 1H), 6.27 (dd,  $J = 10.2, 16.8$  Hz, 1H), 5.83 (dd,  $J = 1, 8$  Hz, 1H);  **$^{13}\text{C-NMR}$  ( $\text{CDCl}_3$ )**:  $\delta$  163.91, 149.53 (quin,  $J = 18$  Hz), 140.53, 130.65, 129.28, 127.20 (quin,  $J = 4$  Hz), 119.35;  **$^{19}\text{F-NMR}$  ( $\text{CDCl}_3$ )**:  $\delta$  84.96 (m, 1F), 63.41 (d,  $J = 150$  Hz, 4F).

*N-[4-(trifluoromethyl)phenyl]-2-propenamide (**5b**)*



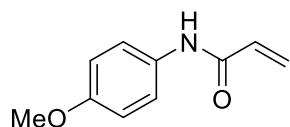
Compound **5b** was obtained as a white solid (314 mg, 1.46 mmol, 73%). Melting point:  $126^\circ\text{C}$ . **HRMS (EI)** Calcd for  $\text{C}_{10}\text{H}_7\text{F}_3\text{NO}$  [ $\text{M}-\text{H}$ ]<sup>-</sup> 214.0479, [ $\text{M}-\text{H}$ ]<sup>-</sup> Found 214.0478; **IR (KBr)**: 2980 (w, br), 1668 (m), 1606 (s), 1544 (m), 1415 (m), 1320 (s), 1255 (m), 1202 (m), 1066 (m), 838 (s)  $\text{cm}^{-1}$ ;  **$^1\text{H-NMR}$  ( $\text{CDCl}_3$ )**:  $\delta$  7.71 (d,  $J = 8.4$ , 2H), 7.59 (d,  $J = 8.6$ , 2H), 6.47 (d,  $J = 16.8$  Hz, 1H), 6.26 (dd,  $J = 10.2, 16.8$  Hz, 1H), 5.83 (d,  $J = 10.2$ , 1H);  **$^{13}\text{C-NMR}$  ( $\text{CDCl}_3$ )**:  $\delta$  163.83, 140.91, 130.81, 128.97, 126.16 (q,  $J = 5$  Hz), 125.51, 122.81, 119.58;  **$^{19}\text{F-NMR}$  ( $\text{CDCl}_3$ )**:  $\delta$  -62.13 (s, 3F).

*N*-phenyl-2-propenamide (**5c**)



Compound **5c** was obtained as a bright yellow solid (253 mg, 1.72 mmol, 86%). Melting point: 102°C (Lit. 104-106°C [30]). **HRMS (EI)** Calcd for C<sub>9</sub>H<sub>8</sub>NO [M-H]<sup>-</sup> 146.0605, [M-H]<sup>-</sup> Found 146.0606; **IR (KBr)**: 3142 (w), 3094 (w), 1664 (s), 1635 (s), 1603 (s), 1548 (s), 1494 (s), 1441 (s), 1406 (s), 1330 (m), 1251 (m), 1200 (w), 939 (w), 750 (s), 686 (s) cm<sup>-1</sup>; **<sup>1</sup>H-NMR (CDCl<sub>3</sub>)**: δ 7.58 (d, J = 7.8 Hz, 2H), 7.32 (t, J = 7.8 Hz, 2H), 7.12 (t, J = 7.4 Hz, 1H), 6.42 (d, J = 16.8, 1H), 6.27 (dd, J = 10.2, 16.8 Hz, 1H), 5.74 (d, J = 10.2 Hz, 1H); **<sup>13</sup>C-NMR (CDCl<sub>3</sub>)**: δ 163.76, 137.88, 131.34, 129.15, 127.88, 124.65, 120.15.

*N*-[4-(methoxy)phenyl]-2-propenamide (**5d**)

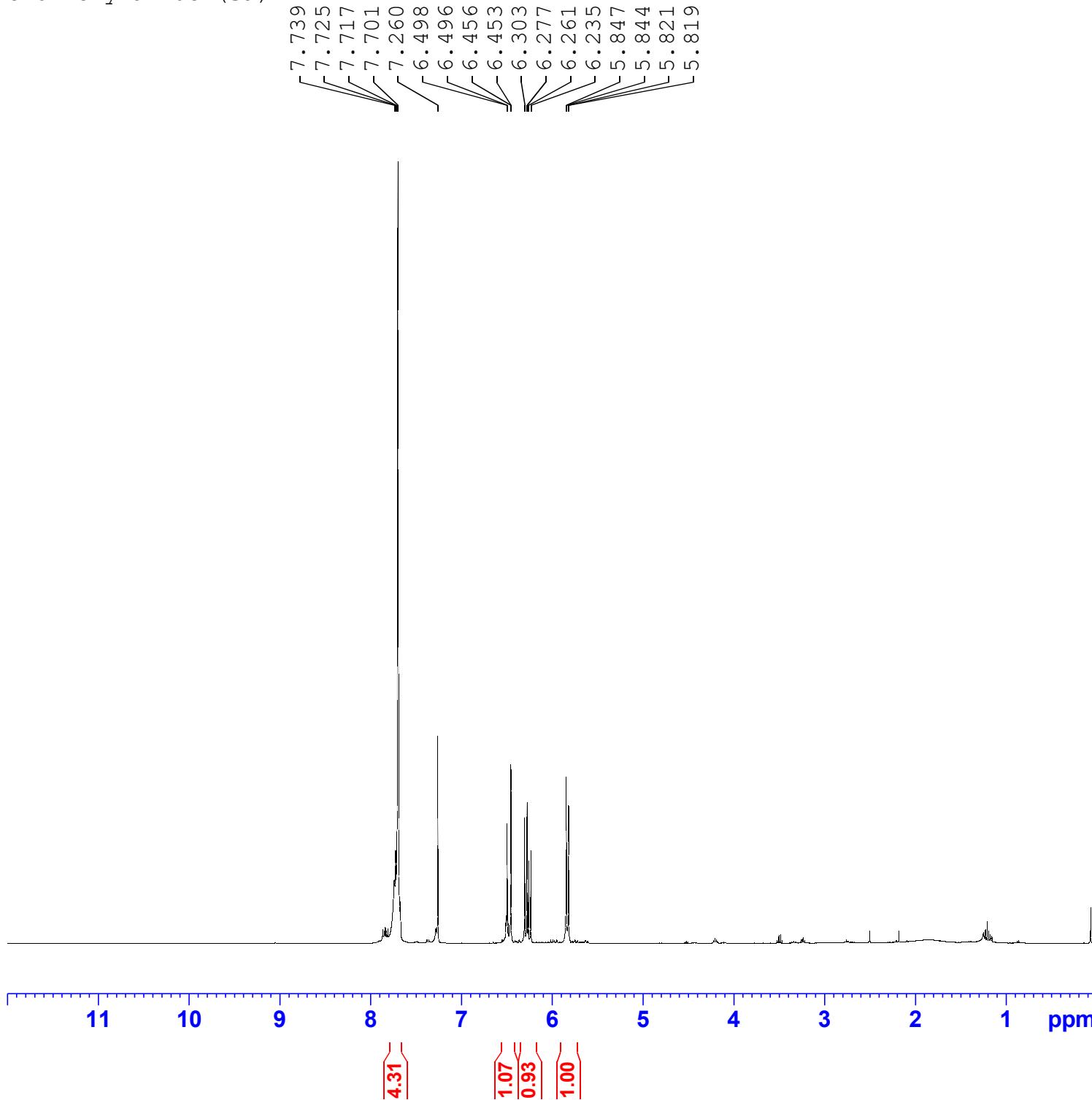


Compound **5d** was obtained as a bright yellow solid (286 mg, 1.62 mmol, 81%). Melting point 95°C (Lit. 97-98°C [30]), **HRMS (EI)** Calcd for C<sub>10</sub>H<sub>10</sub>NO<sub>2</sub> [M-H]<sup>-</sup> 176.0711, [M-H]<sup>-</sup> Found 176.0709; **IR (KBr)**: 3296 (w), 3007 (w), 1659 (s), 1612 (m), 1538 (m), 1508 (s), 1455 (w), 1412 (m), 1302 (w), 1239 (s), 1171 (m), 1149 (w), 1030 (m), 938 (m), 705 (m, br) cm<sup>-1</sup>; **<sup>1</sup>H-NMR (CDCl<sub>3</sub>)**: δ 7.48 (d, J = 8.8 Hz, 2H), 7.86 (d, J = 9 Hz, 2H), 6.41 (dd, J = 0.88, 16.8 Hz, 1H), 6.22 (dd, J = 10.2, 16.8 Hz, 1H), 5.73 (dd, J = 0.8, 10.2 Hz, 1H), 3.79 (s, 3H); **<sup>13</sup>C-NMR (CDCl<sub>3</sub>)**: δ 163.63, 156.70, 131.33, 130.98, 127.50, 121.97, 114.30, 55.60.

## References

25. Watt SKI, Charlebois JG, Rowley CN, Keillor JW (2022) A mechanistic study of thiol addition to N-phenylacrylamide. *Org Biomol Chem* 20:8898–8906. <https://doi.org/10.1039/d2ob01369j>
30. Eriksson J, Åberg O, Långström B (2007) Synthesis of [<sup>11</sup>C]/[<sup>13</sup>C]acrylamides by palladium-mediated carbonylation. *European J Org Chem* 2007:455–461. <https://doi.org/10.1002/ejoc.200600700>

## SF5 Acrylamide (5a)

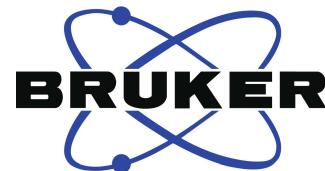
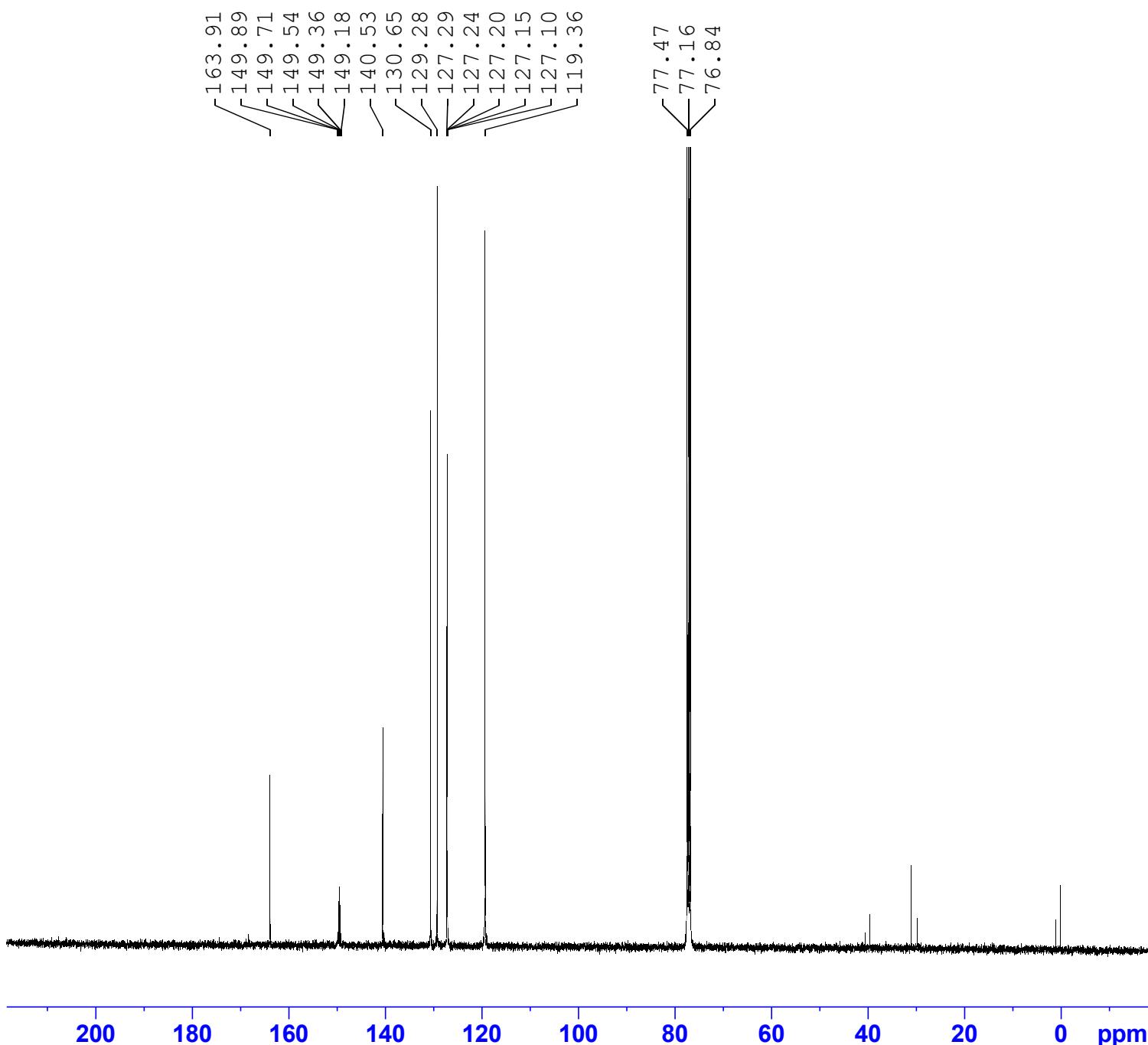


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 NS 32  
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 FIDRES 0.125072 Hz  
 AQ 7.9953918 sec  
 RG 101  
 DW 61.000 usec  
 DE 13.54 usec  
 TE 298.0 K  
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 SFO1 400.1524709 MHz  
 NUC1 1H  
 P0 3.33 usec  
 P1 10.00 usec  
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F2 - Processing parameters  
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SF5 acrylamide (5a)

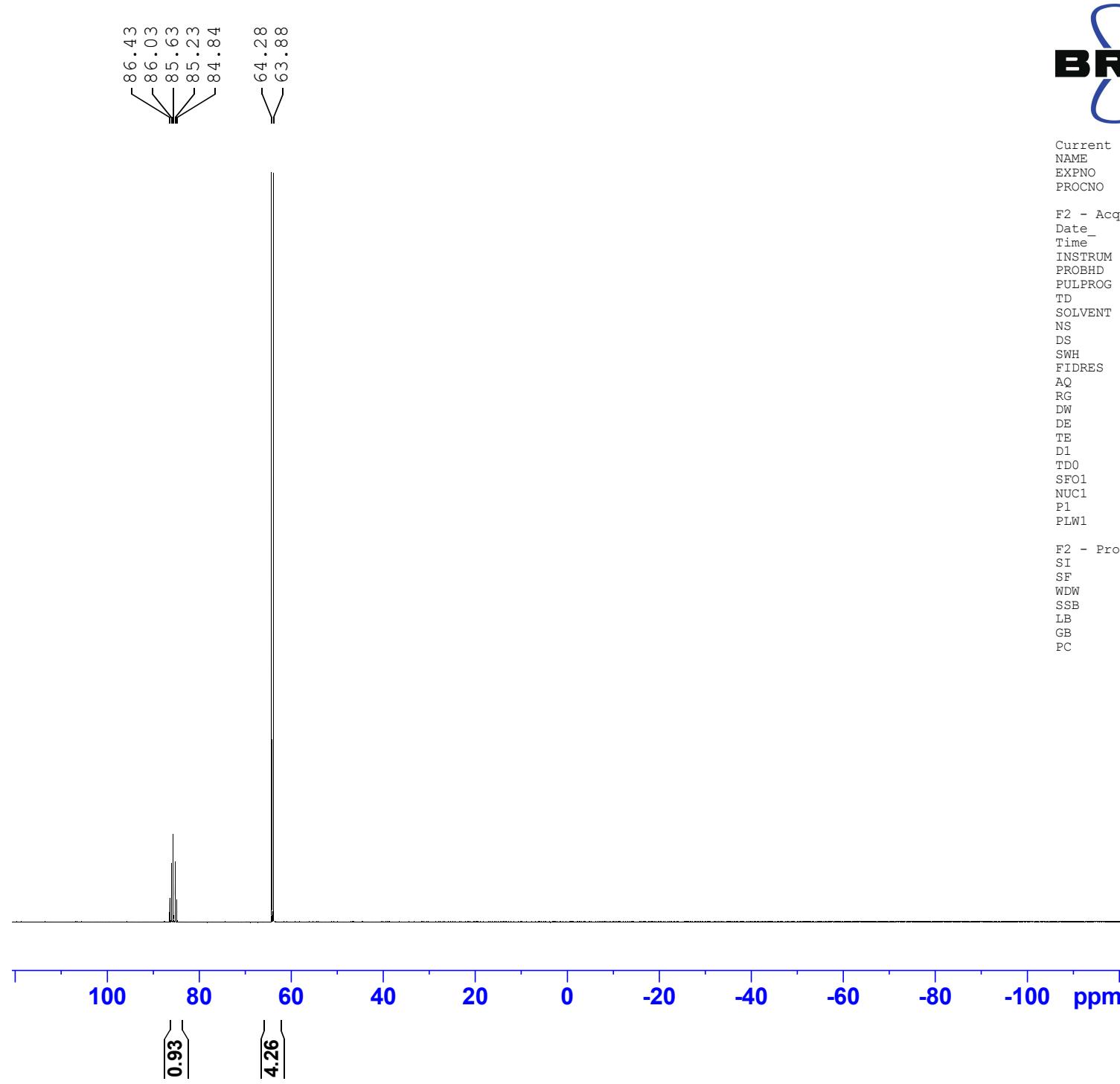


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 P0 3.33 usec  
 P1 10.00 usec  
 PLW1 58.38199997 W  
 SFO2 400.1516006 MHz  
 NUC2 1H  
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 PLW12 0.24237999 W  
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SF5 acrylamide (**5a**)



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 Inj. Vol. (uL)  
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 Plate Pos.

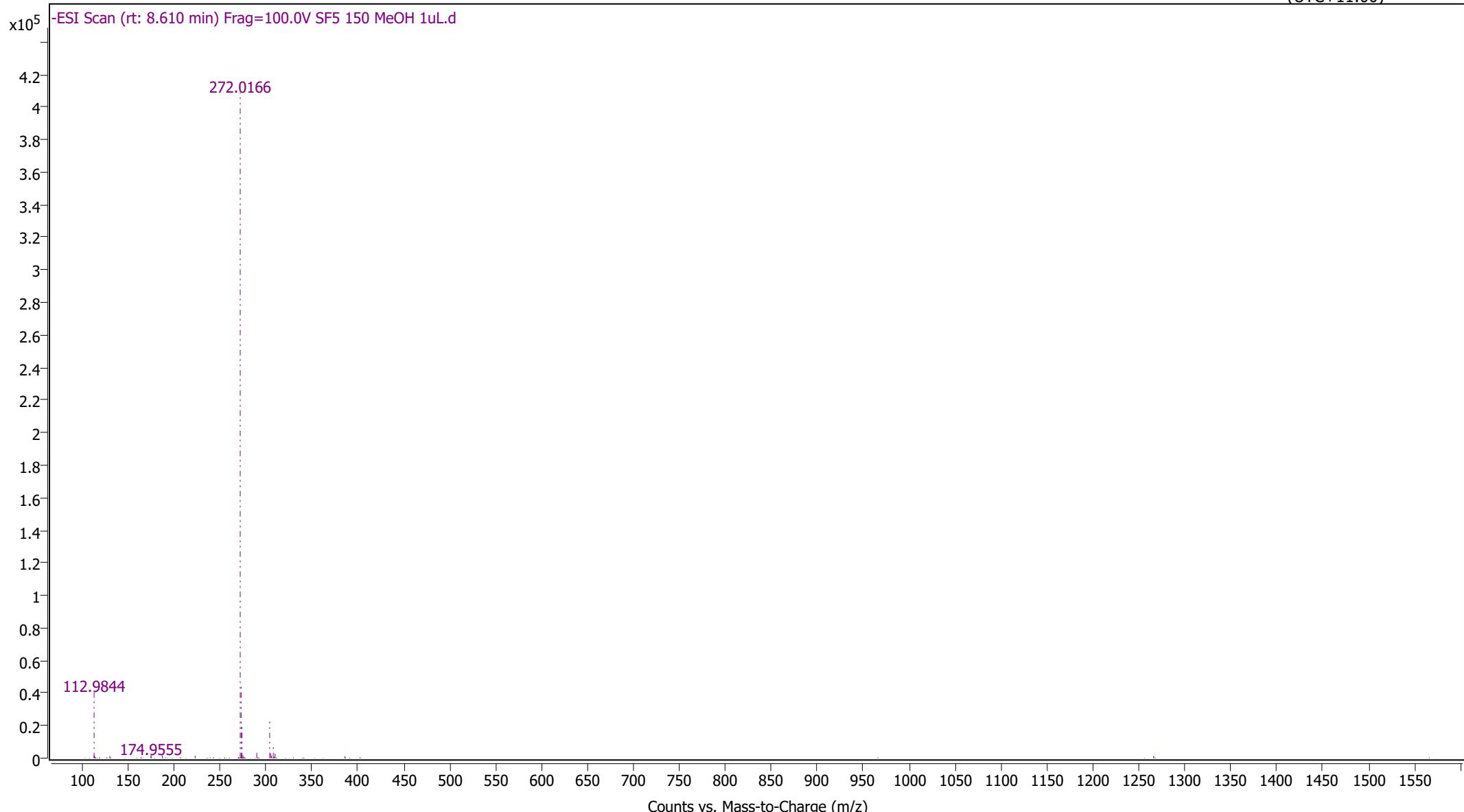
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Instrument  
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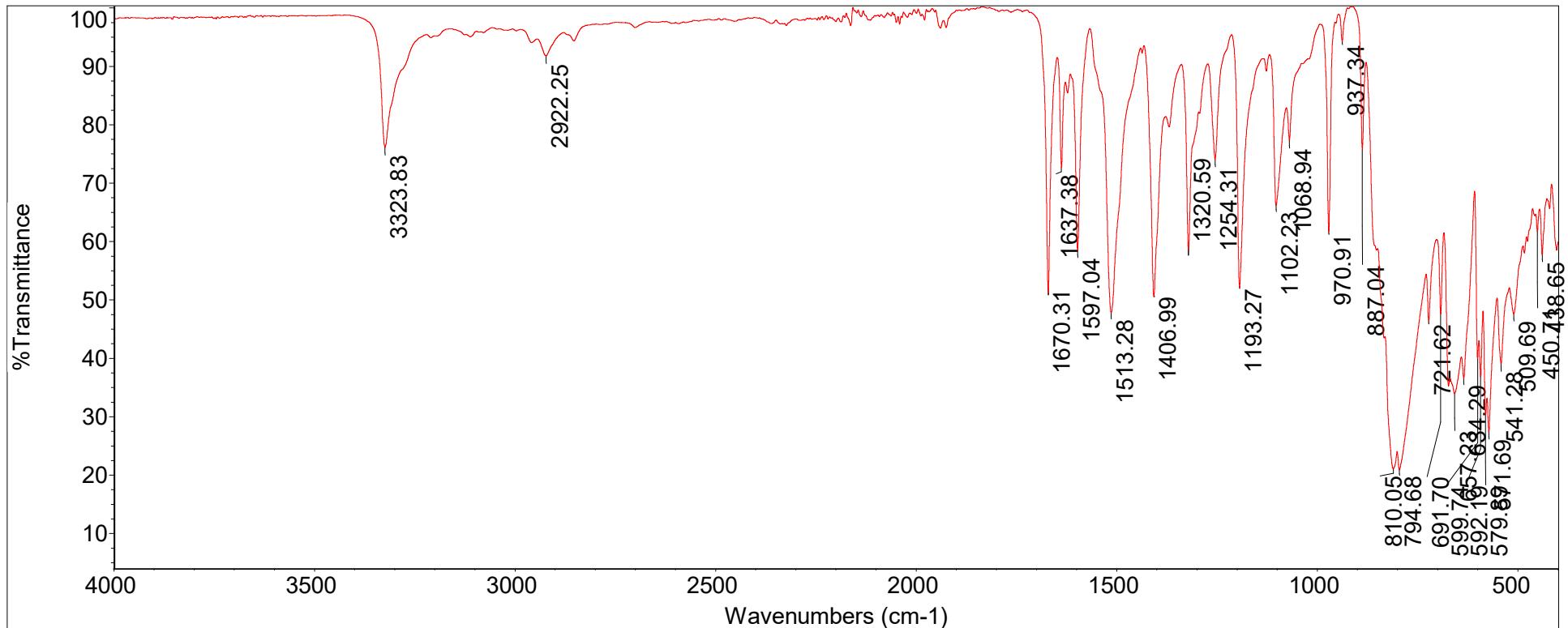
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Operator  
 Acq. Time (Local)

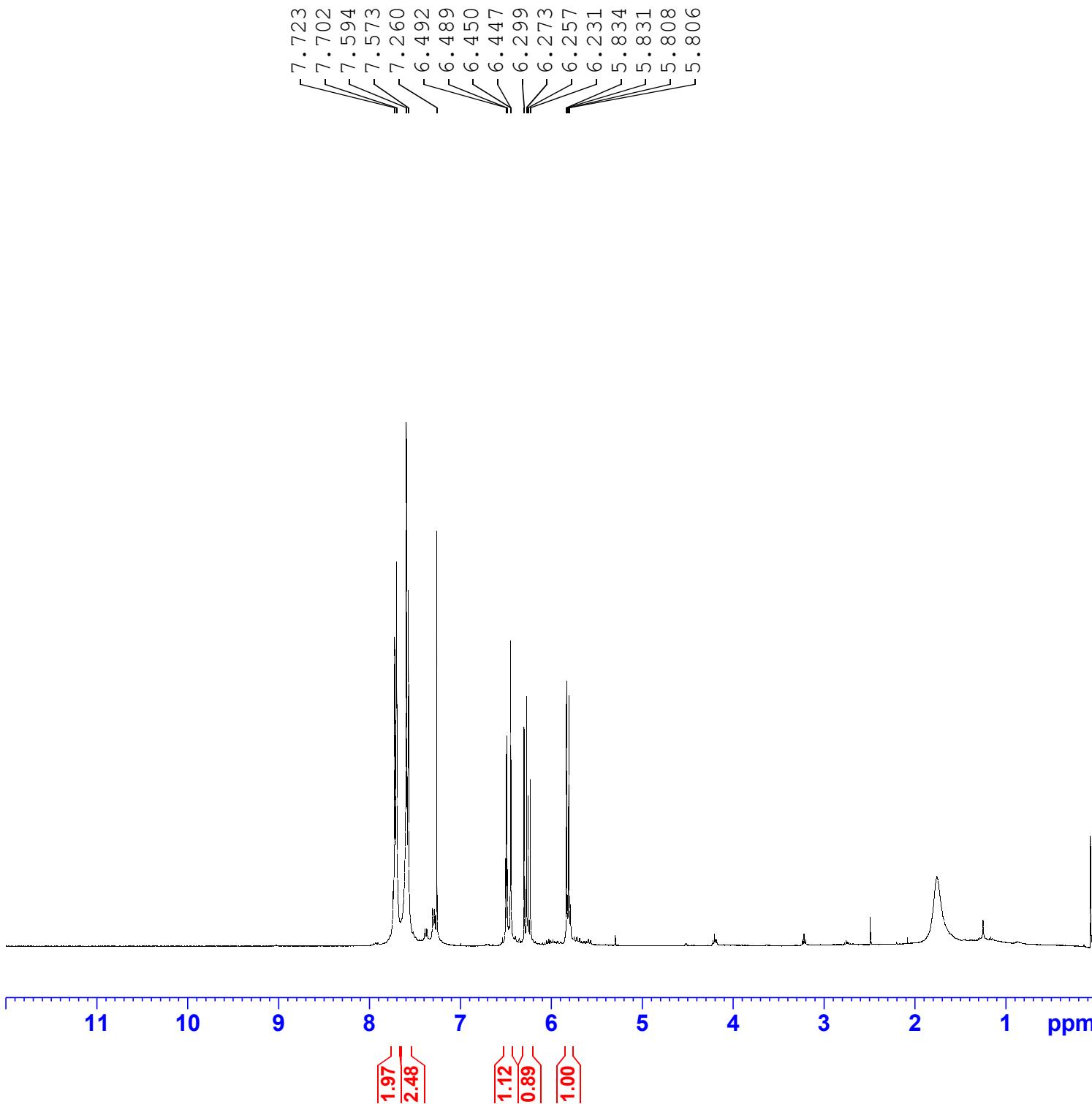
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SF5 Acrylamide (**5a**)



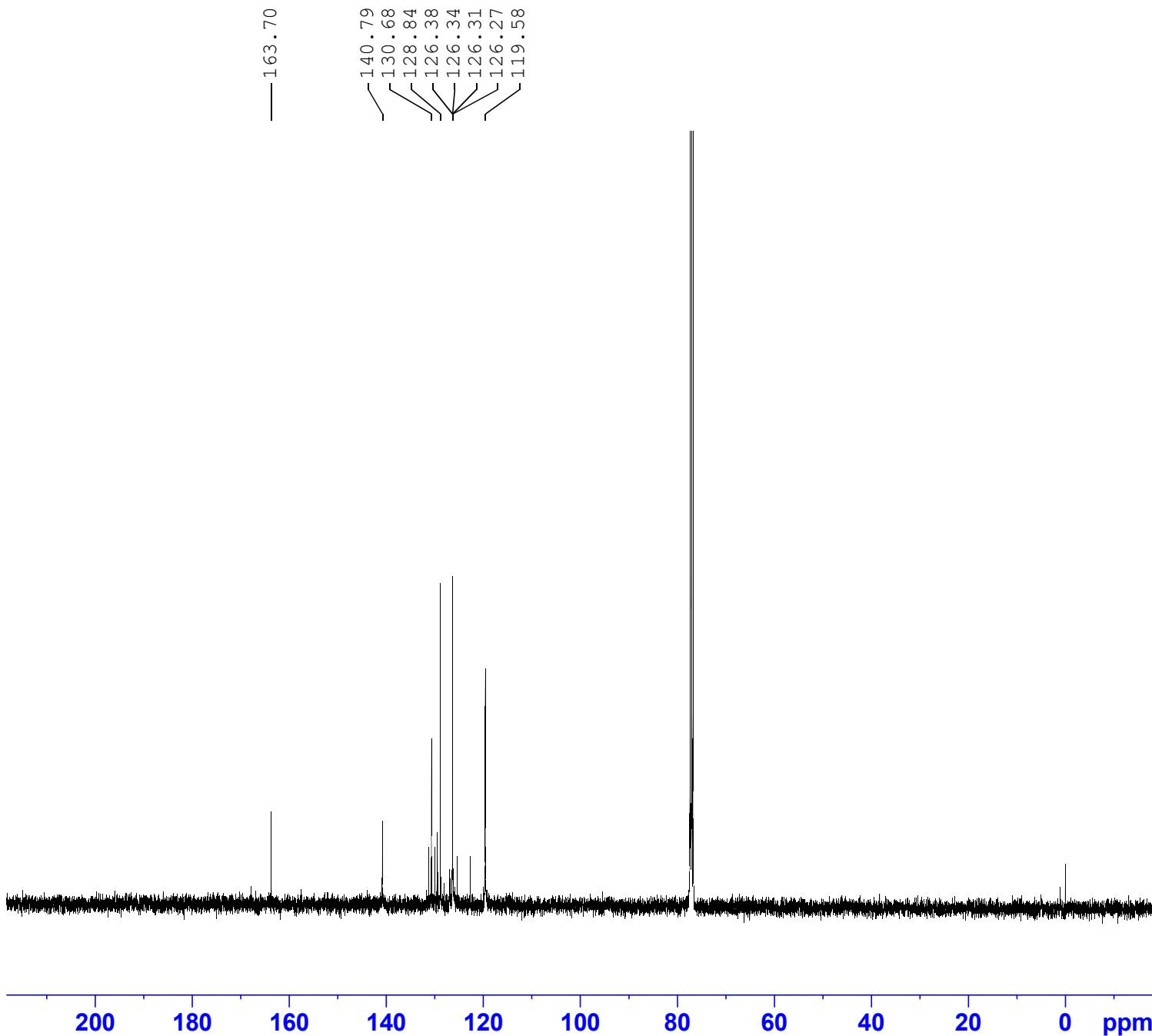
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 PC 1.00

CF<sub>3</sub> acrylamide (5b)

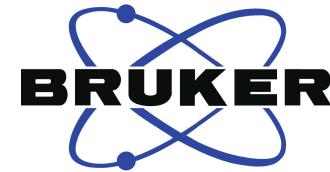
Current Data Parameters  
 NAME CF3 Acrylamide 13C - good  
 EXPNO 8  
 PROCNO 1

F2 - Acquisition Parameters  
 Date 20210323  
 Time 20.54 h  
 INSTRUM AVNEO  
 PROBHD Z163739\_0206 (zgpg30  
 PULPROG zgpg30  
 TD 65536  
 SOLVENT CDC13  
 NS 1024  
 DS 4  
 SWH 23809.523 Hz  
 FIDRES 0.726609 Hz  
 AQ 1.3762560 sec  
 RG 101  
 DW 21.000 usec  
 DE 6.50 usec  
 TE 298.0 K  
 D1 2.0000000 sec  
 D11 0.03000000 sec  
 TD0 1  
 SFO1 100.6278593 MHz  
 NUC1 13C  
 P0 2.67 usec  
 P1 8.00 usec  
 PLW1 93.0000000 W  
 SFO2 400.1516006 MHz  
 NUC2 1H  
 CPDPRG[2] waltz65  
 PCPD2 90.00 usec  
 PLW2 25.0000000 W  
 PLW12 0.19753000 W  
 PLW13 0.09935700 W

F2 - Processing parameters  
 SI 32768  
 SF 100.6177975 MHz  
 WDW EM  
 SSB 0  
 LB 1.00 Hz  
 GB 0  
 PC 1.40

CF<sub>3</sub> Acrylamide (**5b**)

— -62.13

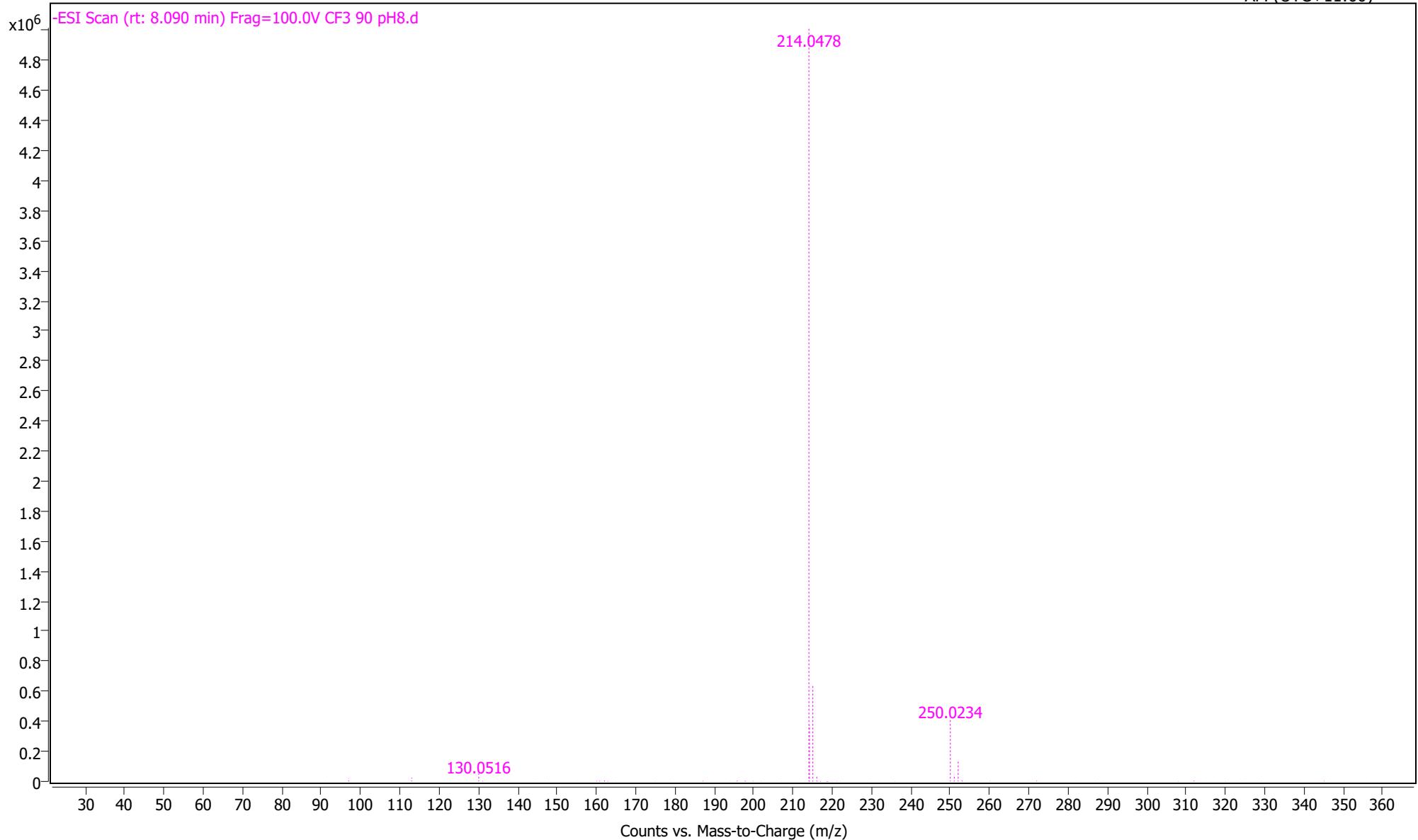


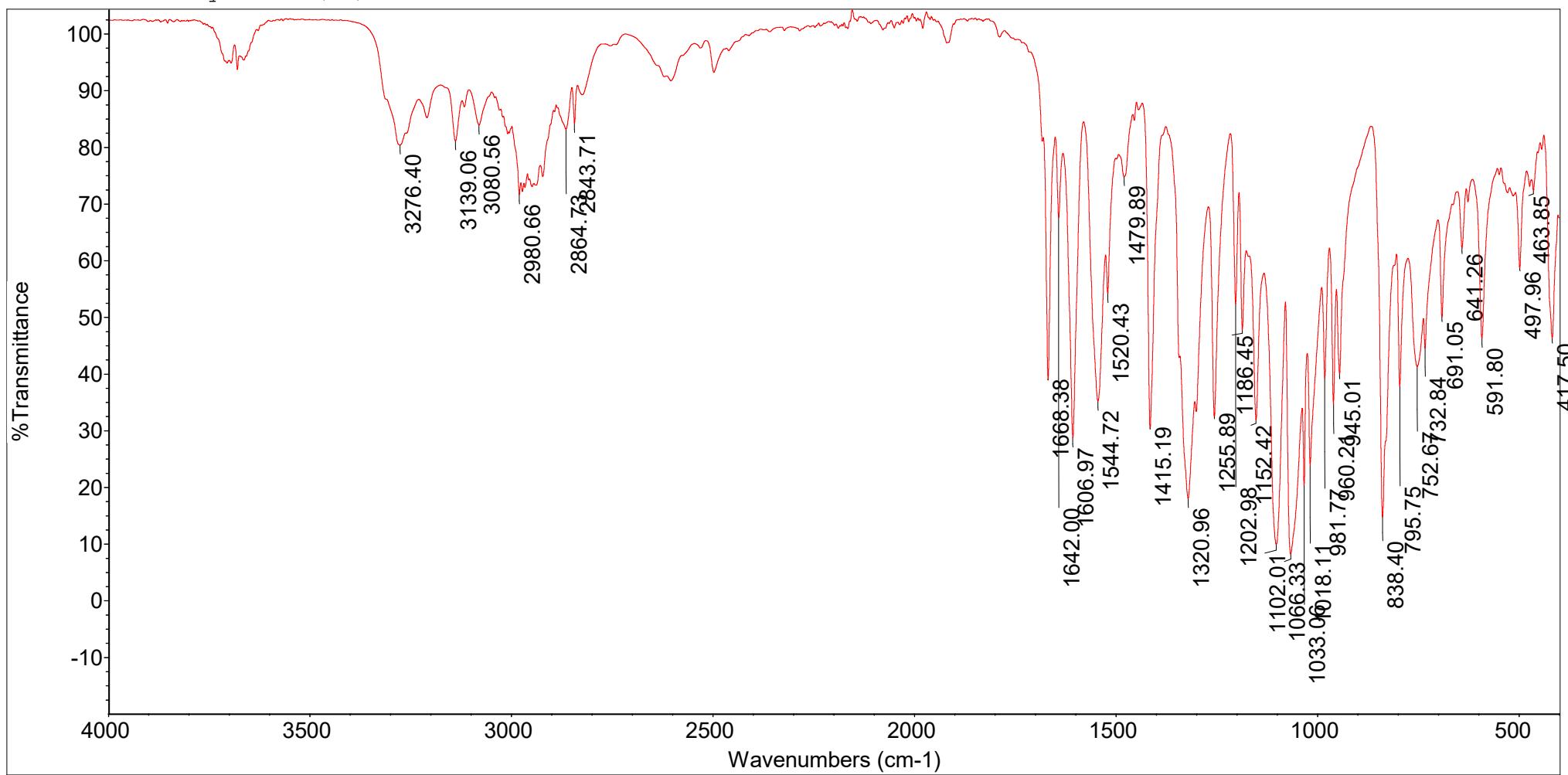
Current Data Parameters  
NAME CF<sub>3</sub> Acrylamide 19F  
EXPNO 9  
PROCNO 1

F2 - Acquisition Parameters  
Date 20220726  
Time 10.54 h  
INSTRUM AVNEO  
PROBHD Z175272\_0008 (   
PULPROG zg  
TD 131072  
SOLVENT CDCl<sub>3</sub>  
NS 128  
DS 4  
SWH 147058.828 Hz  
FIDRES 2.243940 Hz  
AQ 0.4456448 sec  
RG 101  
DW 3.400 usec  
DE 6.50 usec  
TE 298.0 K  
D1 1.00000000 sec  
TD0 1  
SFO1 376.5171850 MHz  
NUC1 <sup>19</sup>F  
P1 12.00 usec  
PLW1 45.00000000 W

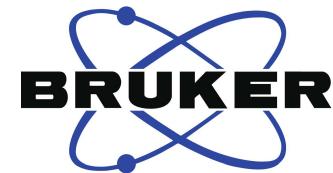
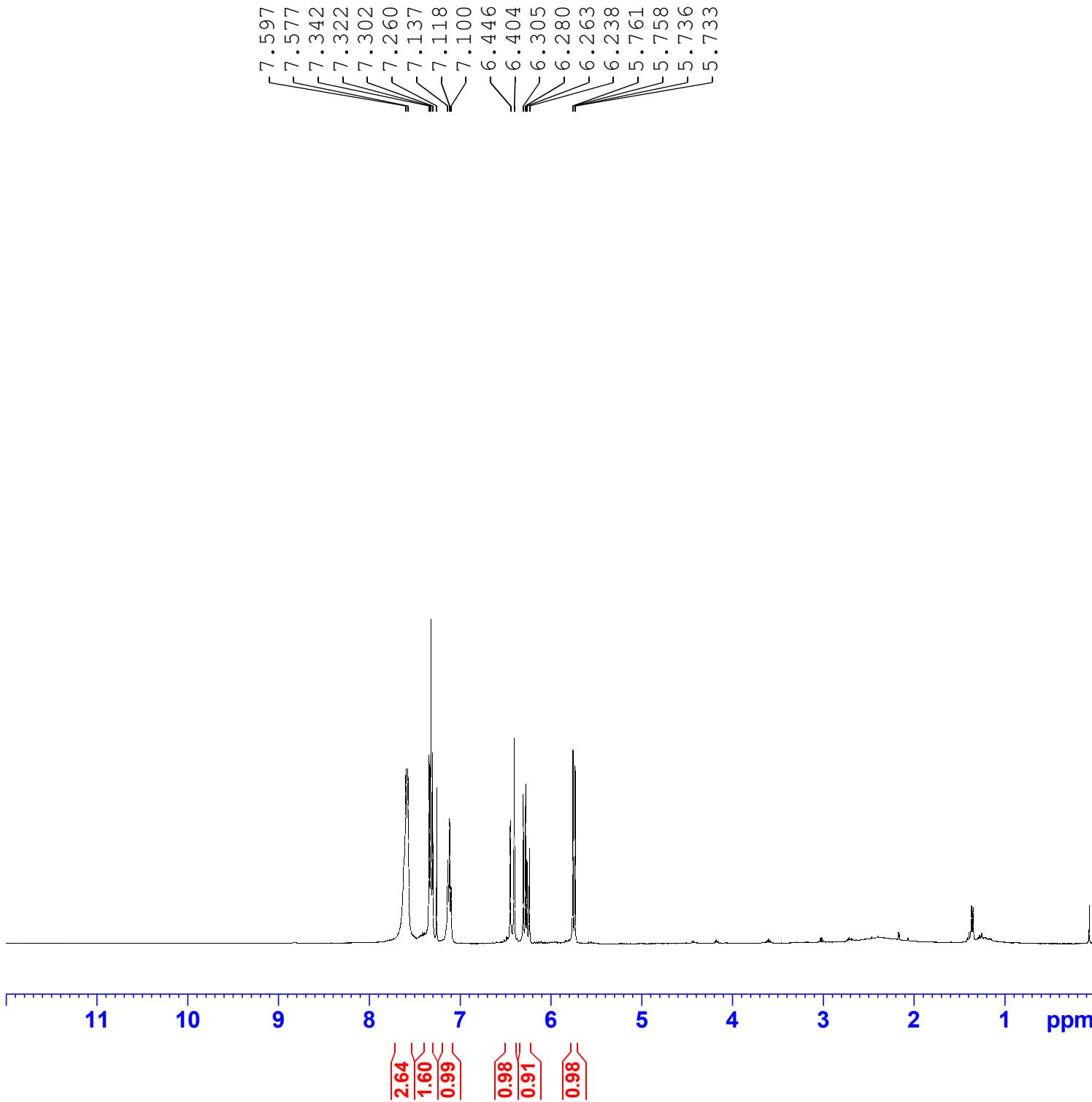
F2 - Processing parameters  
SI 65536  
SF 376.5171850 MHz  
WDW EM  
SSB 0  
LB 0.30 Hz  
GB 0  
PC 1.00

Name	CF3 Acrylamide (5b)	Rack Pos.		Instrument	Instrument 1	Operator
Inj. Vol. (ul)	10	Plate Pos.		IRM Status	Success	
Data File	CF3 90 pH8.d	Method (Acq)	Neg Method (rev).m	Comment		Acq. Time (Local)
						2022-10-11 1:50:20
						AM (UTC+11:00)



CF<sub>3</sub> Acrylamide (**5b**)

H acrylamide (5c)

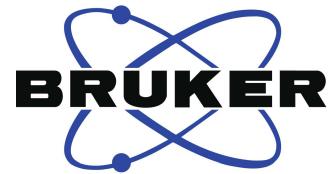
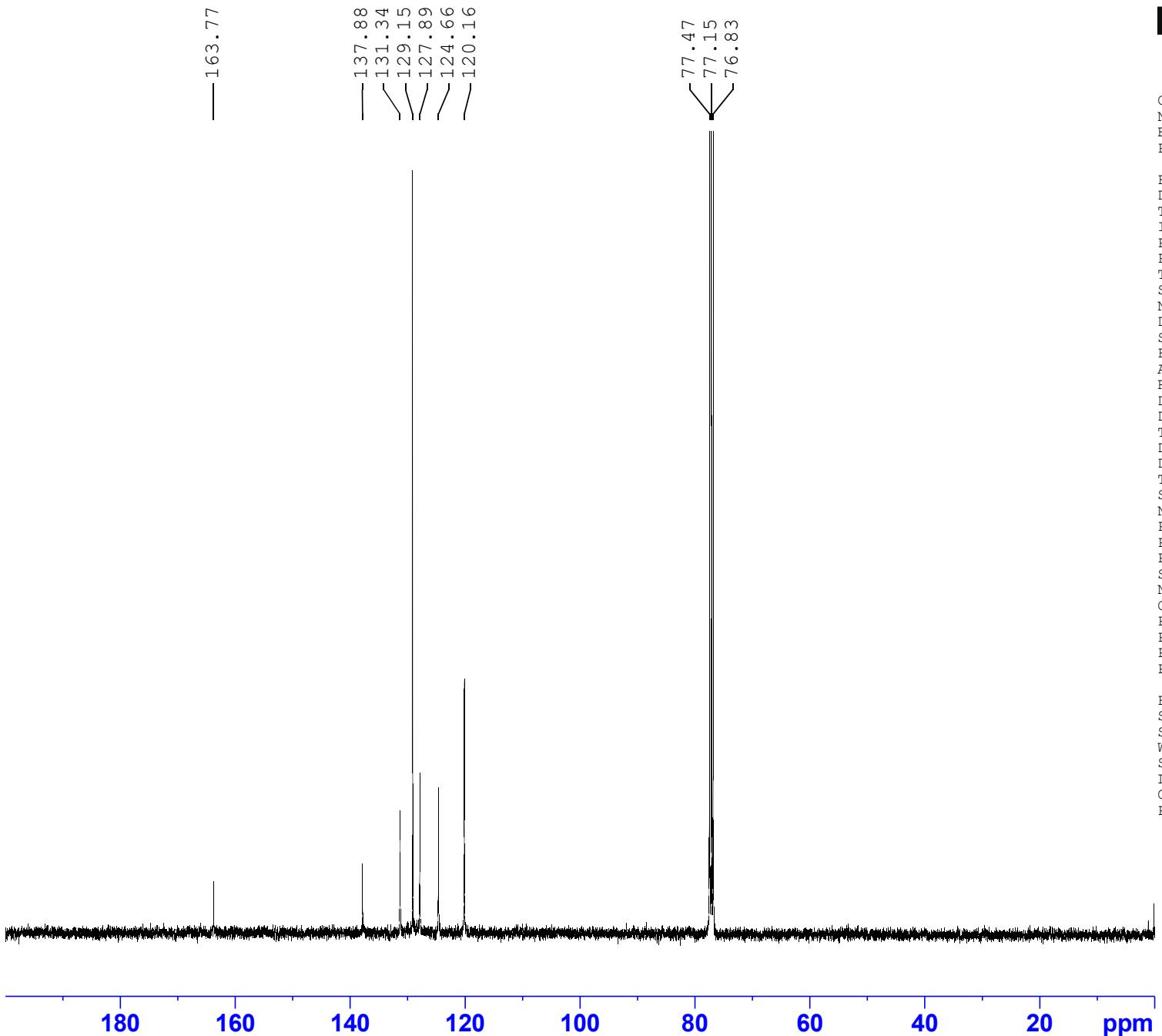


Current Data Parameters  
 NAME H Acrylamide 1H- Clean  
 EXPNO 5  
 PROCNO 1

F2 - Acquisition Parameters  
 Date 20210323  
 Time 16.44 h  
 INSTRUM AVNEO  
 PROBHD Z163739\_0206 (zg30  
 PULPROG zg30  
 TD 131072  
 SOLVENT CDCl3  
 NS 16  
 DS 2  
 SWH 8196.722 Hz  
 FIDRES 0.125072 Hz  
 AQ 7.9953918 sec  
 RG 101  
 DW 61.000 usec  
 DE 13.89 usec  
 TE 298.0 K  
 D1 1.0000000 sec  
 TDO 1  
 SFO1 400.1524709 MHz  
 NUC1 1H  
 P0 2.67 usec  
 P1 8.00 usec  
 PLW1 25.0000000 W

F2 - Processing parameters  
 SI 65536  
 SF 400.1500096 MHz  
 WDW EM  
 SSB 0  
 LB 0.30 Hz  
 GB 0  
 PC 1.00

H acrylamide (5c)

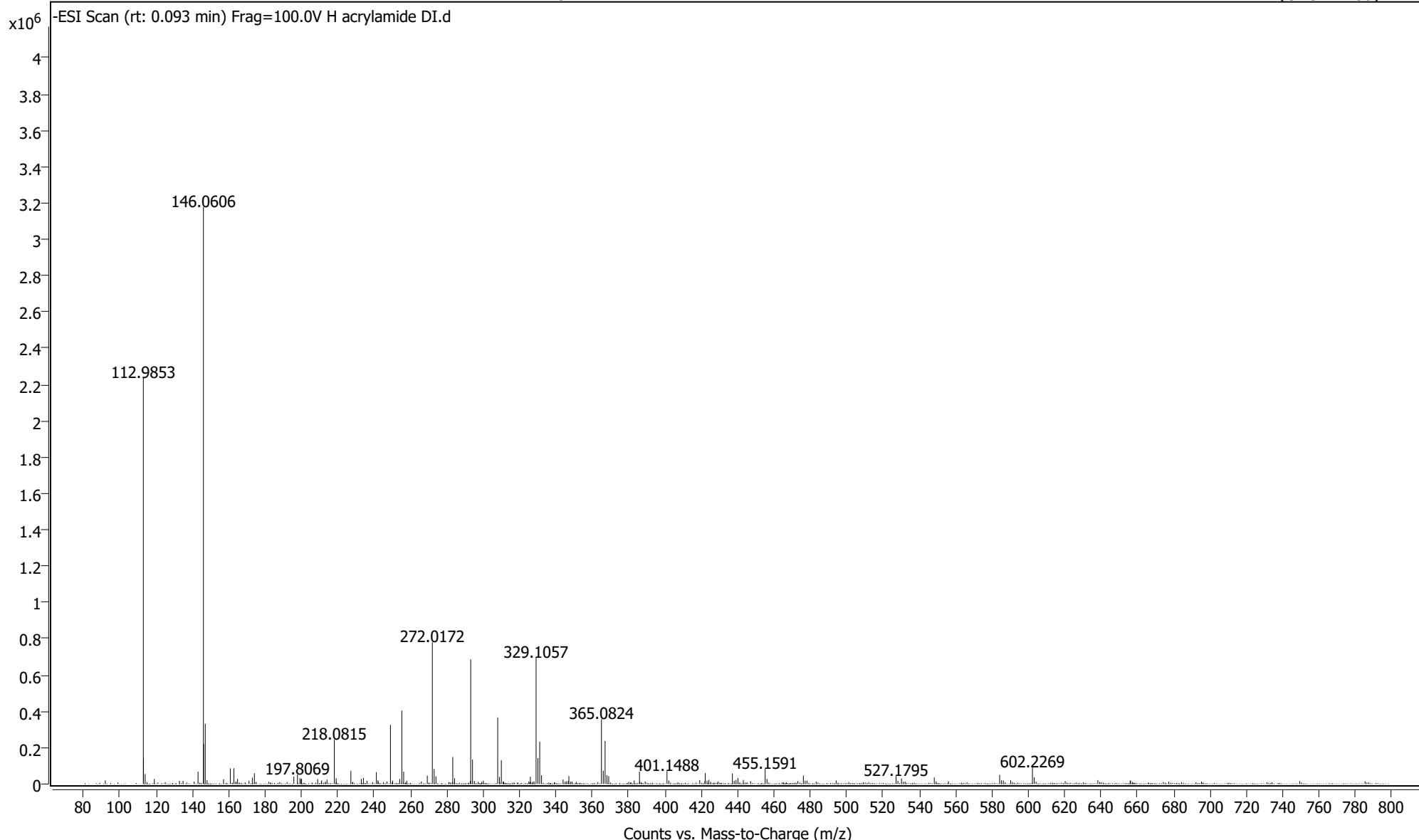


Current Data Parameters  
NAME H Acrylamide 13C - good  
EXPNO 7  
PROCNO 1

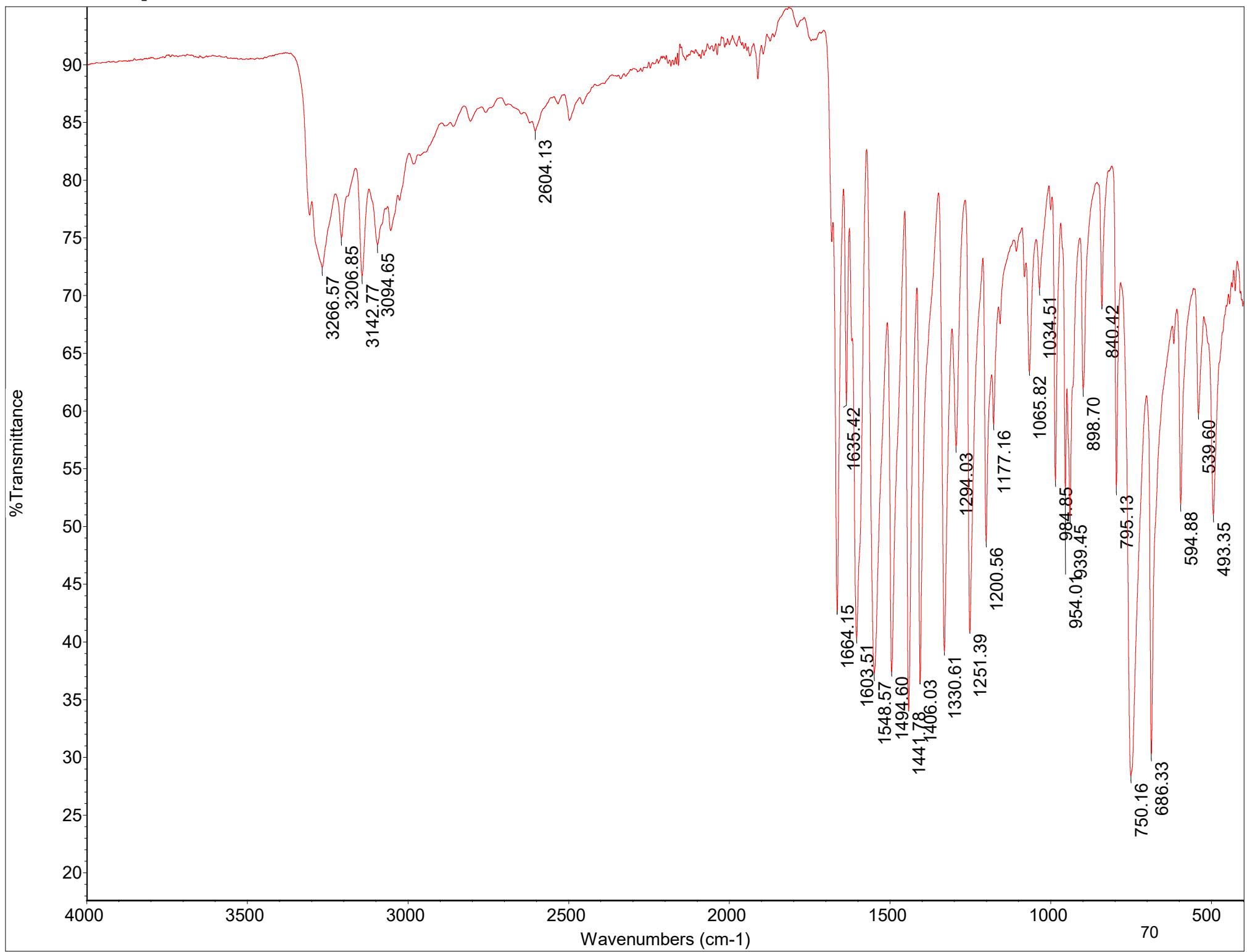
F2 - Acquisition Parameters  
Date 20210323  
Time 19.47 h  
INSTRUM AVNEO  
PROBHD Z163739\_0206 (zgpg30  
PULPROG 65536  
TD 1024  
SOLVENT CDC13  
NS 4  
DS 23809.523 Hz  
SWH 0.726609 Hz  
AQ 1.3762560 sec  
RG 101  
DW 21.000 usec  
DE 6.50 usec  
TE 298.0 K  
D1 2.0000000 sec  
D11 0.0300000 sec  
TD0 1  
SFO1 100.6278593 MHz  
NUC1 <sup>13</sup>C  
P0 2.67 usec  
P1 8.00 usec  
PLW1 93.0000000 W  
SFO2 400.1516006 MHz  
NUC2 <sup>1</sup>H  
CPDPRG[2] waltz65  
PCPD2 90.00 usec  
PLW2 25.0000000 W  
PLW12 0.19753000 W  
PLW13 0.09935700 W

F2 - Processing parameters  
SI 32768  
SF 100.6177867 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0  
PC 1.40

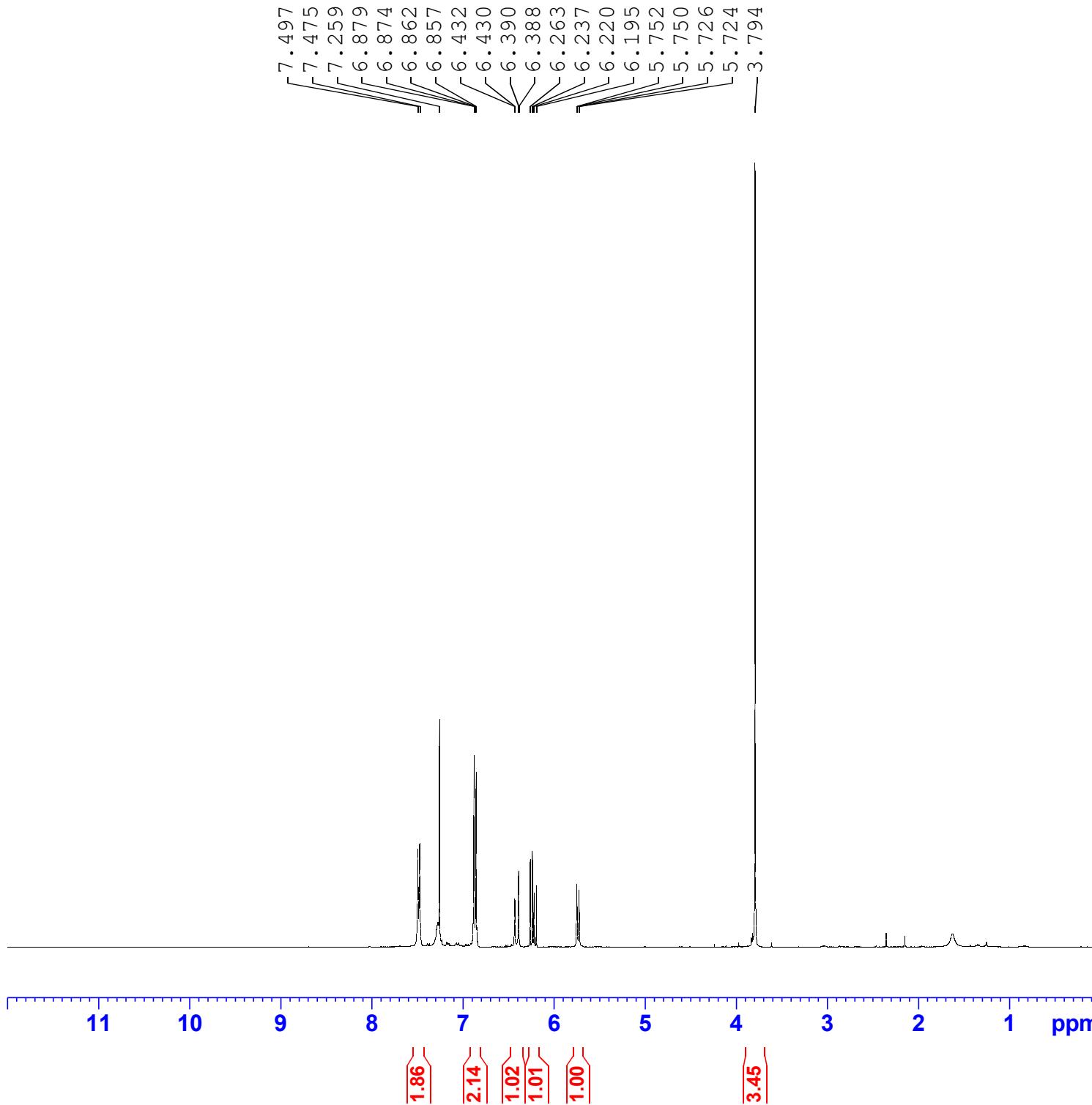
Name	H Acrylamide (5c)	Rack Pos.		Instrument	Instrument 1	Operator
Inj. Vol. (ul)	5	Plate Pos.		IRM Status	Some ions missed	
Data File	H acrylamide DI.d	Method (Acq)	Hugh Method direct inj	Comment		Acq. Time (Local)      2023-01-04 12:42:14 PM (UTC+11:00)



H acrylamide (**5c**)



## OMe Acrylamide (5d)

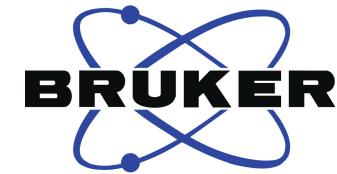
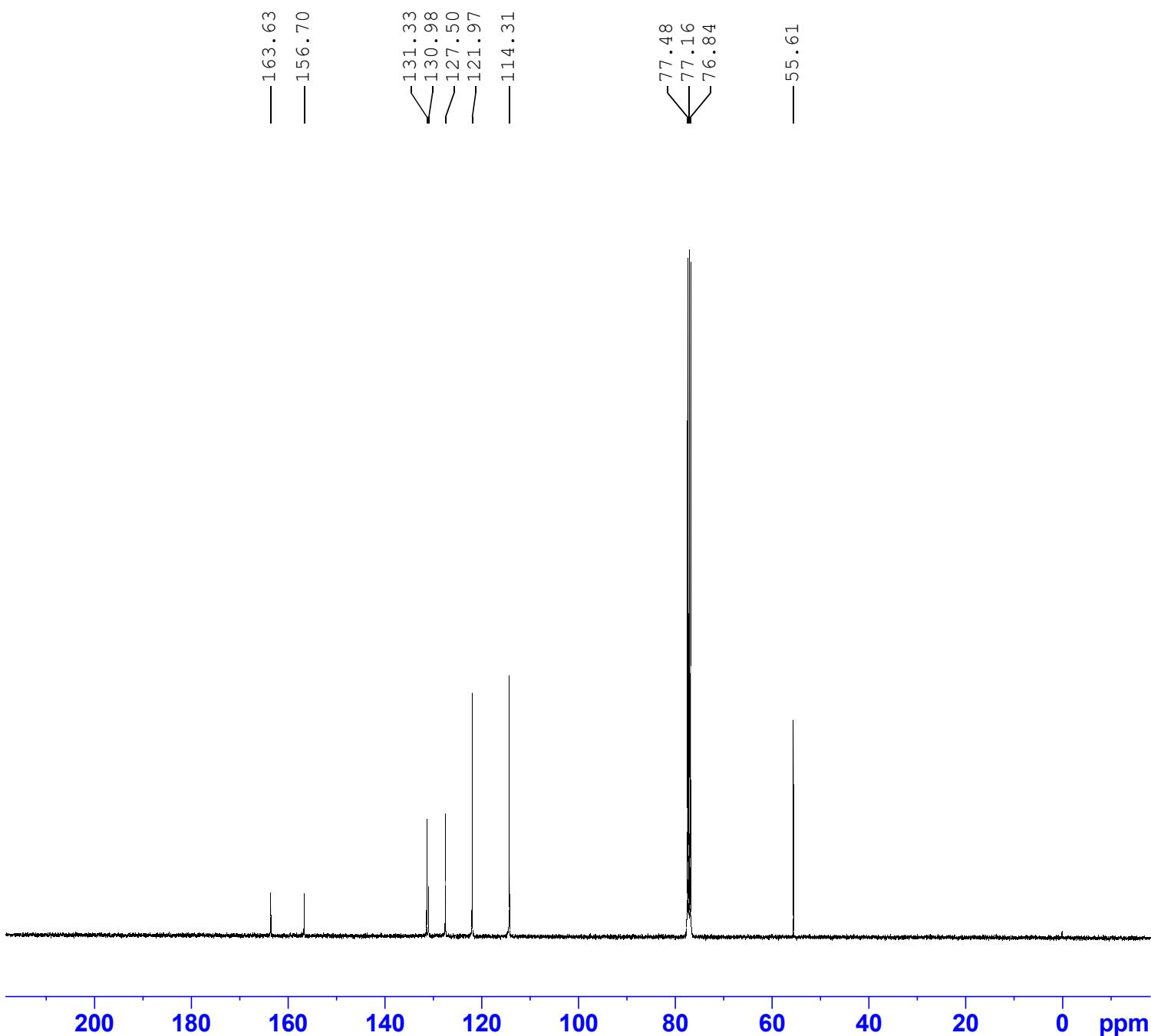


Current Data Parameters  
 NAME ome acrylamide 1H  
 EXPNO 1  
 PROCNO 1

F2 - Acquisition Parameters  
 Date 20220728  
 Time 18.13 h  
 INSTRUM AVNEO  
 PROBHD Z175272\_0008 ( zg30  
 PULPROG zg30  
 TD 131072  
 SOLVENT CDCl3  
 NS 32  
 DS 2  
 SWH 8196.722 Hz  
 FIDRES 0.125072 Hz  
 AQ 7.9953918 sec  
 RG 101  
 DW 61.000 usec  
 DE 13.54 usec  
 TE 298.0 K  
 D1 1.00000000 sec  
 TD0 1  
 SFO1 400.1524709 MHz  
 NUC1 1H  
 P0 3.33 usec  
 P1 10.00 usec  
 PLW1 19.63299942 W

F2 - Processing parameters  
 SI 65536  
 SF 400.1500105 MHz  
 WDW EM  
 SSB 0  
 LB 0.30 Hz  
 GB 0  
 PC 1.00

## OMe Acrylamide (5d)

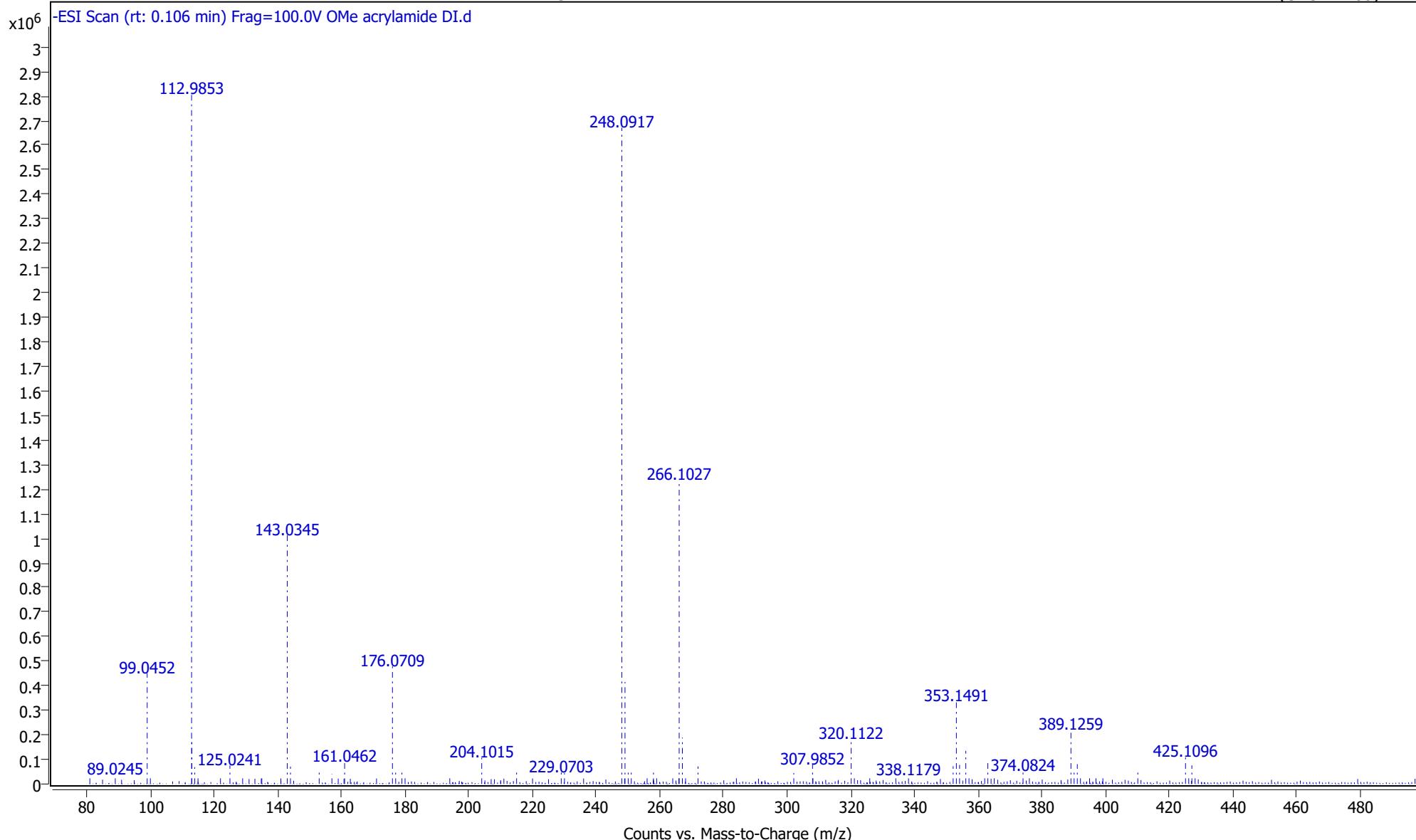


Current Data Parameters  
 NAME OMe Acrylamide 13C  
 EXPNO 4  
 PROCNO 1

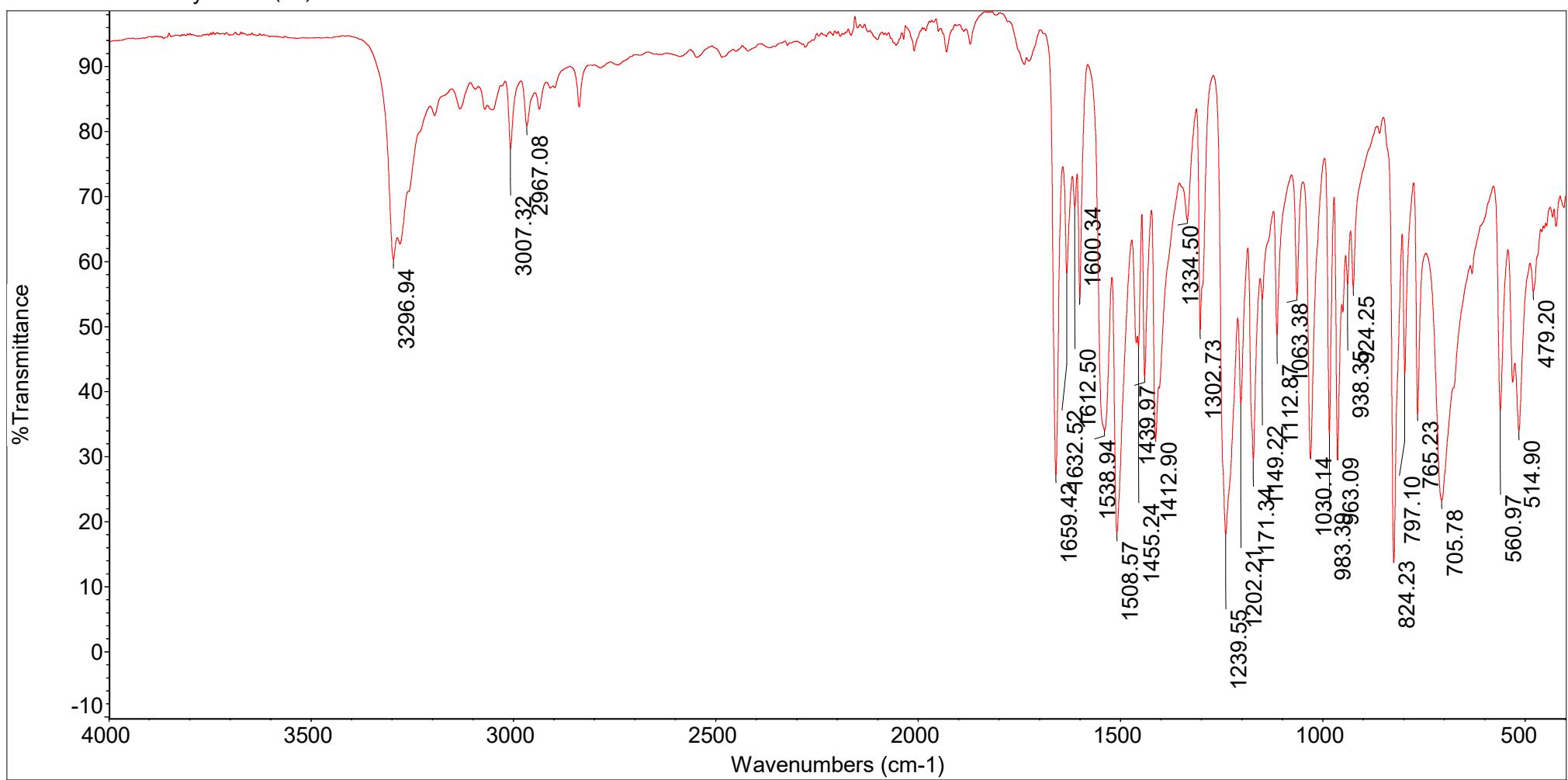
F2 - Acquisition Parameters  
 Date 20230105  
 Time 2.21 h  
 INSTRUM AVNEO  
 PROBHD Z175272\_0008 (zgpg30  
 PULPROG 65536  
 SOLVENT CDCl<sub>3</sub>  
 NS 3800  
 DS 4  
 SWH 23809.523 Hz  
 FIDRES 0.726609 Hz  
 AQ 1.3762560 sec  
 RG 101  
 DW 21.000 usec  
 DE 6.50 usec  
 TE 298.0 K  
 D1 2.00000000 sec  
 D11 0.03000000 sec  
 TD0 1  
 SFO1 100.6278593 MHz  
 NUC1 <sup>13</sup>C  
 P0 3.33 usec  
 P1 10.00 usec  
 PLW1 58.38199997 W  
 SFO2 400.1516006 MHz  
 NUC2 1H  
 CPDPRG [2] waltz65  
 PCPD2 90.00 usec  
 PLW2 19.63299942 W  
 PLW12 0.24237999 W  
 PLW13 0.12192000 W

F2 - Processing parameters  
 SI 32768  
 SF 100.6177849 MHz  
 WDW EM  
 SSB 0  
 LB 1.00 Hz  
 GB 0  
 PC 1.40

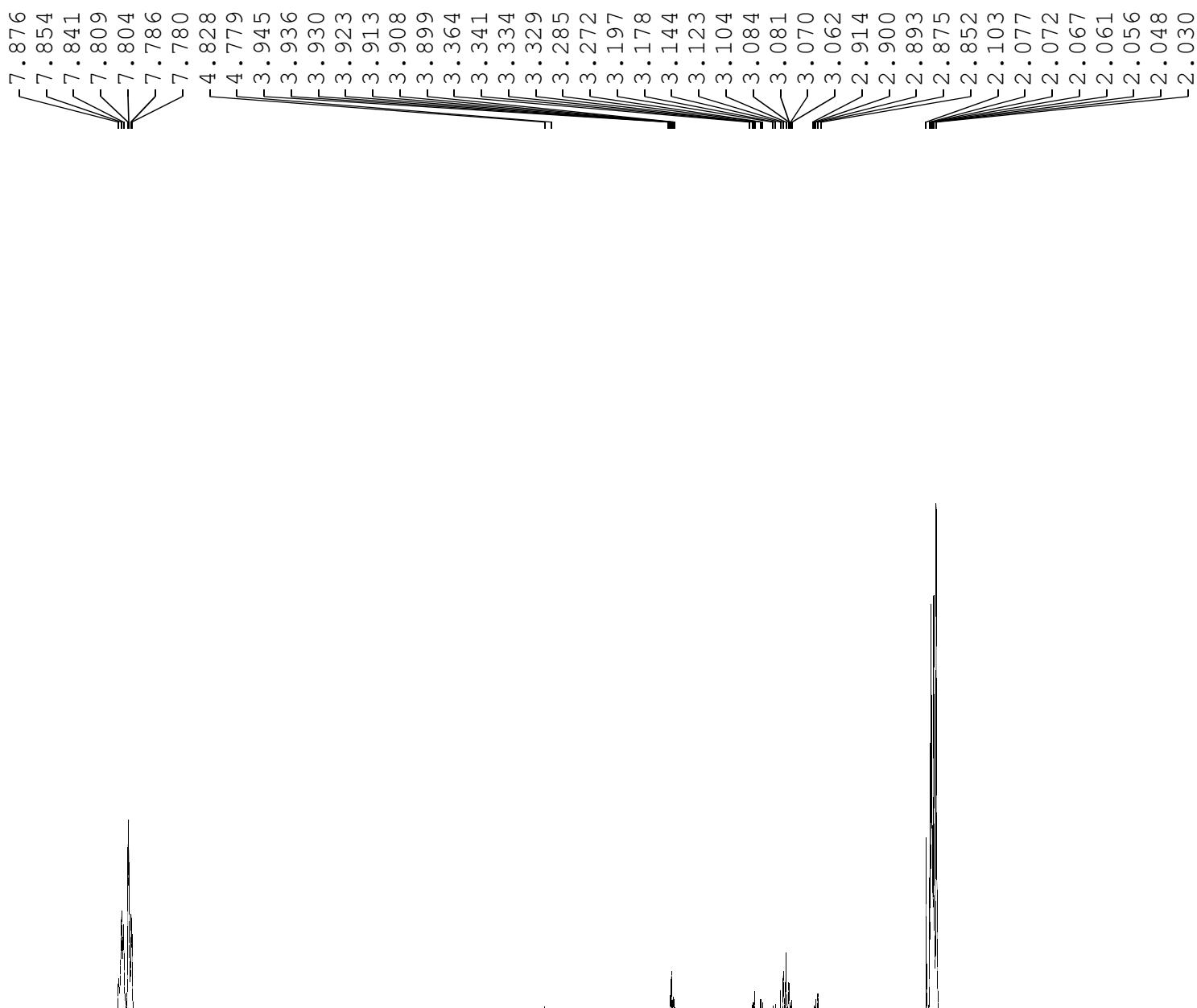
Name	OMe Acrylamide (5d)	Rack Pos.		Instrument	Instrument 1	Operator
Inj. Vol. (ul)	5	Plate Pos.		IRM Status	Some ions missed	
Data File	OMe acrylamide DI.d	Method (Acq)	Hugh Method direct inj	Comment	Acq. Time (Local)	2023-01-04 2:13:09 PM (UTC+11:00)



OMe Acrylamide (**5d**)



## SF5 Cys Conjugate (4a)



Current Data Parameters  
 NAME SF5 Cys Conj Pure - 1H  
 EXPNO 1  
 PROCNO 1

F2 - Acquisition Parameters  
 Date 20230213  
 Time 12.02 h  
 INSTRUM AVNEO  
 PROBHD Z175272\_0008 (zg30  
 PULPROG zg30  
 TD 131072  
 SOLVENT Acetone  
 NS 32  
 DS 2  
 SWH 8196.722 Hz  
 FIDRES 0.125072 Hz  
 AQ 7.9953918 sec  
 RG 101  
 DW 61.000 usec  
 DE 13.54 usec  
 TE 298.0 K  
 D1 1.0000000 sec  
 TDO 1  
 SFO1 400.1624710 MHz  
 NUC1 1H  
 P0 3.33 usec  
 P1 10.00 usec  
 PLW1 19.63299942 W

F2 - Processing parameters  
 SI 65536  
 SF 400.1600000 MHz  
 WDW EM  
 SSB 0  
 LB 0.30 Hz  
 GB 0  
 PC 1.00

8.5 8.0 7.5 7.0 6.5 6.0 5.5 5.0 4.5 4.0 3.5 3.0 2.5 2.0 1.5 1.0 ppm

4.00

1.03

0.83

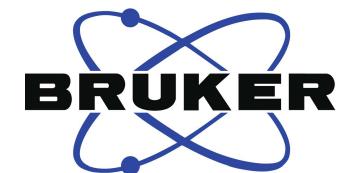
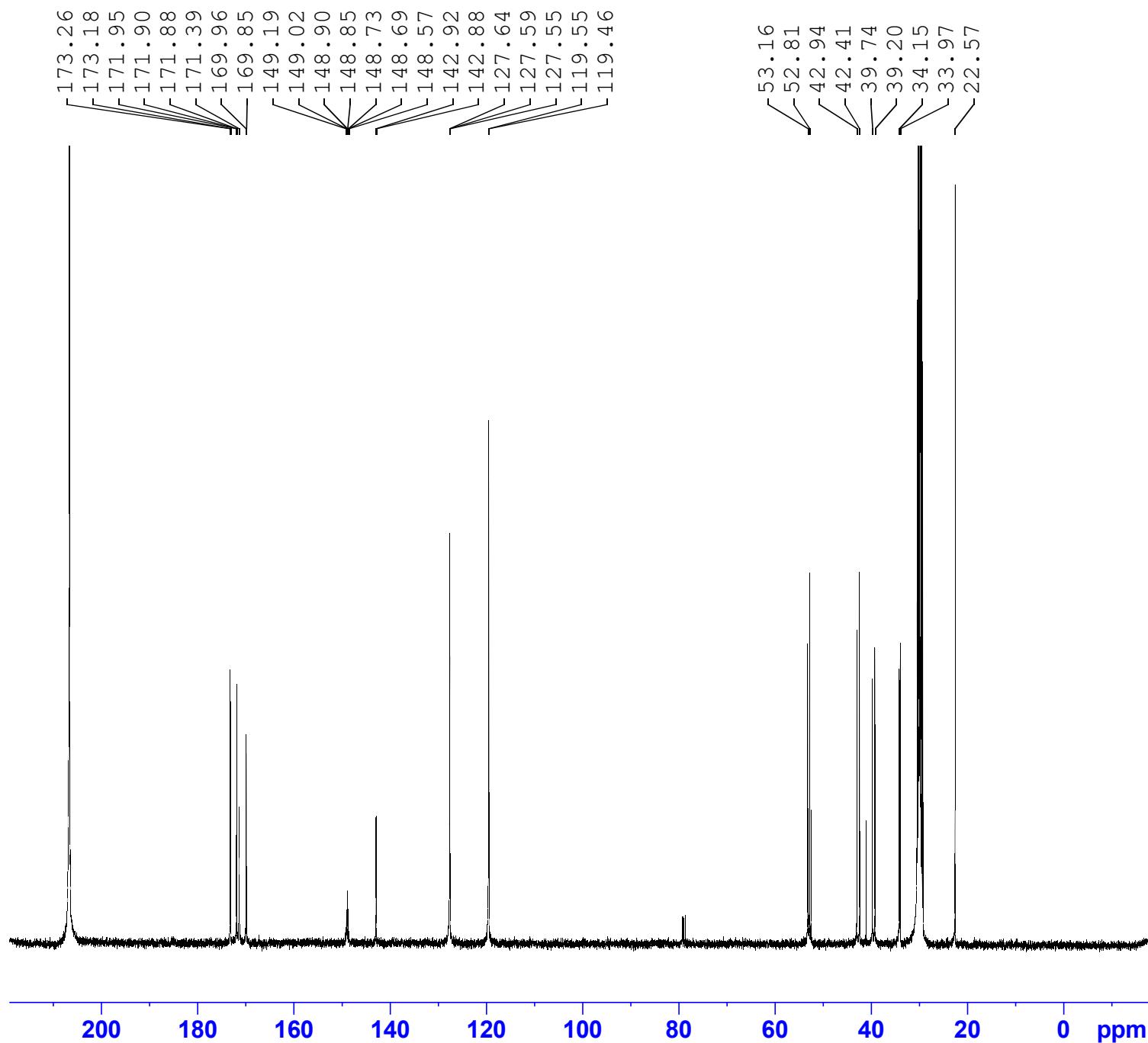
1.00

1.80

0.81

ppm

SF5 Cys Conjugate (4a)

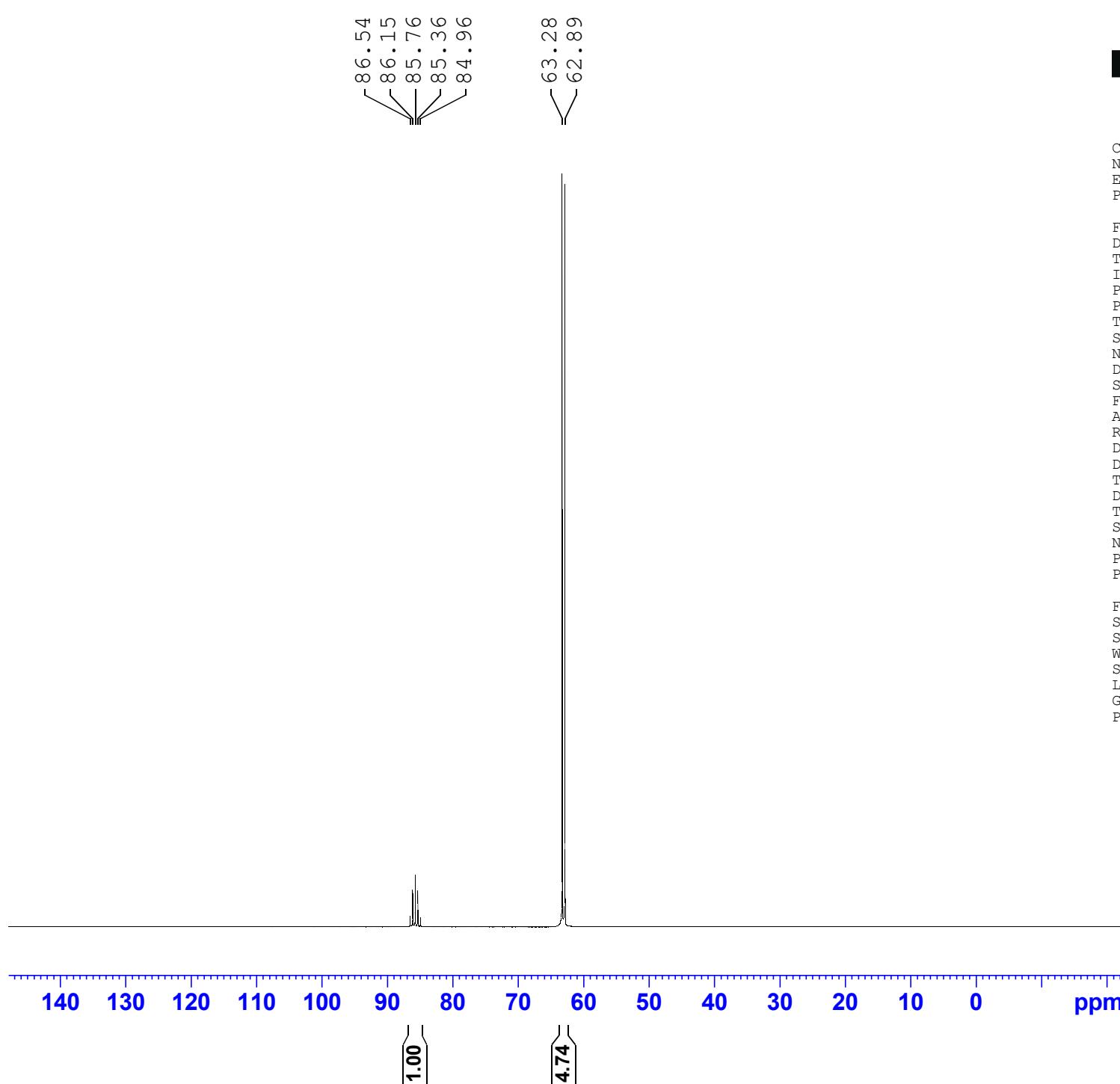


Current Data Parameters  
 NAME SF5 cys conj. pure - 13C  
 EXPNO 14  
 PROCNO 1

F2 - Acquisition Parameters  
 Date 20230214  
 Time 10.21 h  
 INSTRUM AVNEO  
 PROBHD Z175272\_0008 (zgpg30  
 PULPROG 65536  
 TD 3600  
 SOLVENT Acetone  
 NS 4  
 DS 23809.523 Hz  
 SWH 0.726609 Hz  
 FIDRES 1.3762560 sec  
 AQ 101  
 RG 21.000 usec  
 DW 6.50 usec  
 DE 298.0 K  
 TE 2.0000000 sec  
 D1 0.0300000 sec  
 D11 1  
 TDO 100.6303741 MHz  
 SFO1 13C  
 NUC1 3.33 usec  
 P0 10.00 usec  
 PLW1 58.38199997 W  
 SFO2 400.1616006 MHz  
 NUC2 1H  
 CPDPRG[2] waltz65  
 PCPD2 90.00 usec  
 PLW2 19.63299942 W  
 PLW12 0.24237999 W  
 PLW13 0.12192000 W

F2 - Processing parameters  
 SI 32768  
 SF 100.6202299 MHz  
 WDW EM  
 SSB 0  
 LB 1.00 Hz  
 GB 0  
 PC 1.40

## SF5 Cys Conj (4a)



Current Data Parameters  
 NAME SF5 Cys Conj. pure 19F  
 EXPNO 5  
 PROCNO 1

F2 - Acquisition Parameters  
 Date 20230213  
 Time 12.31 h  
 INSTRUM AVNEO  
 PROBHD Z175272\_0008 (zg)  
 PULPROG zg  
 TD 131072  
 SOLVENT Acetone  
 NS 128  
 DS 4  
 SWH 147058.828 Hz  
 FIDRES 2.243940 Hz  
 AQ 0.4456448 sec  
 RG 101  
 DW 3.400 usec  
 DE 6.50 usec  
 TE 298.0 K  
 D1 1.0000000 sec  
 TDO 1  
 SFO1 376.5265944 MHz  
 NUC1 <sup>19</sup>F  
 P1 12.00 usec  
 PLW1 45.0000000 W

F2 - Processing parameters  
 SI 65536  
 SF 376.5265944 MHz  
 WDW EM  
 SSB 0  
 LB 0.30 Hz  
 GB 0  
 PC 1.00

Sample Name SF5 Cys Conj (4a)

Inj Vol

Data Filename

Position

InjPosition

ACQ Method

Instrument Name

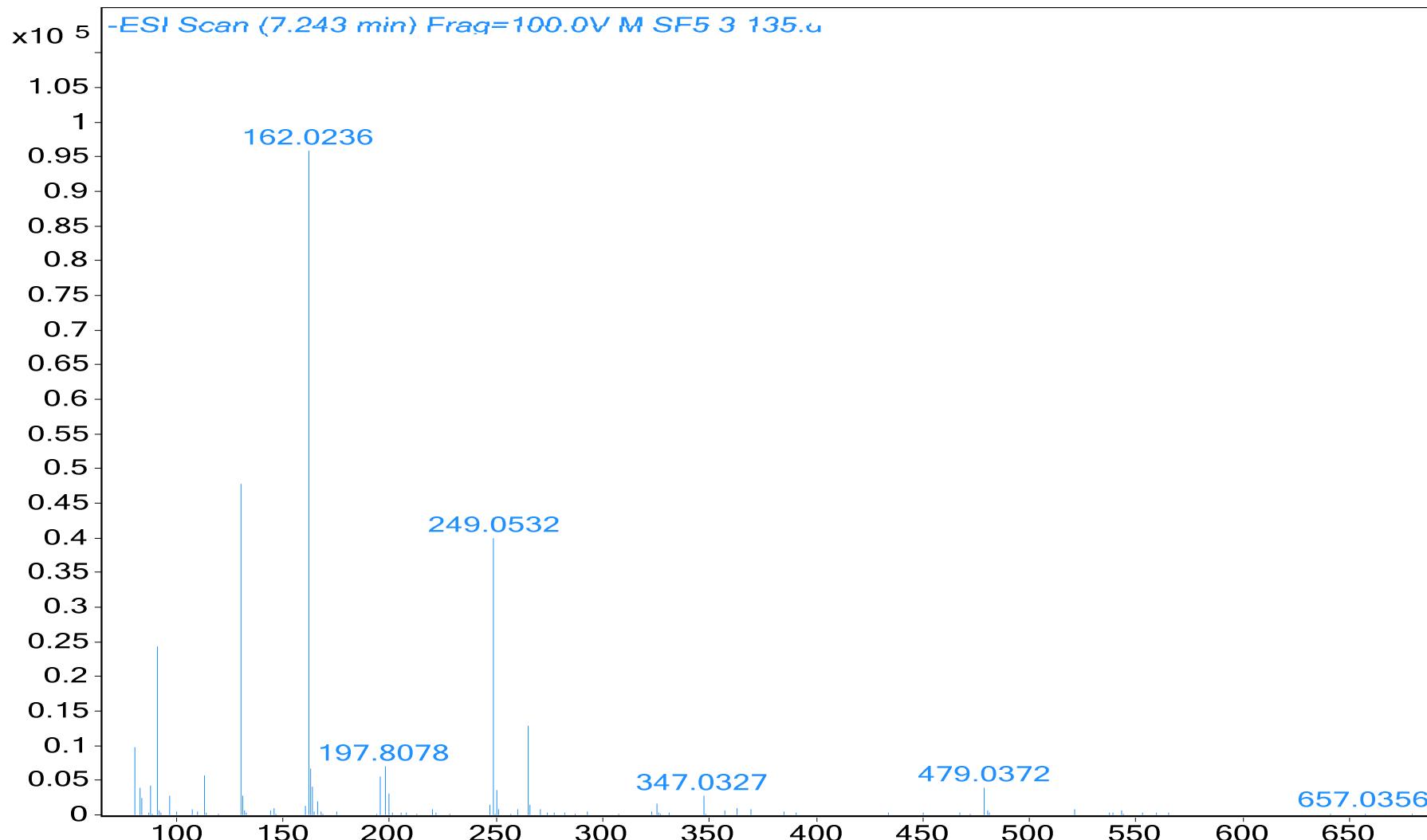
SampleType

Comment

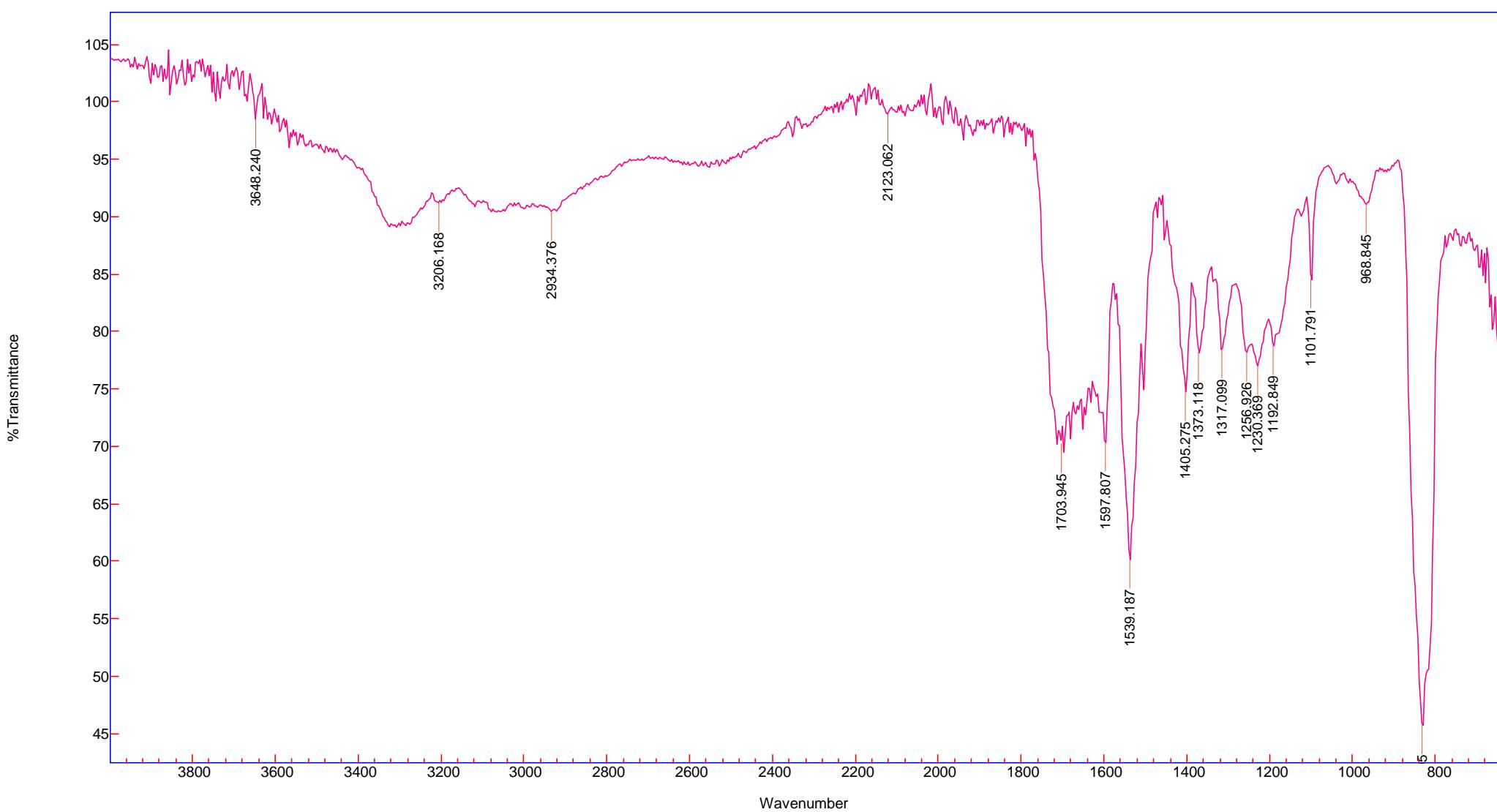
User Name

IRM Calibration Status

Acquired Time

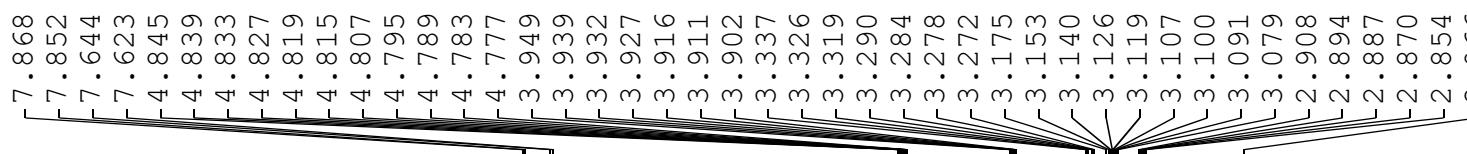


SF5 Cys Conj (4a)



Name
SF5 Cys Conj

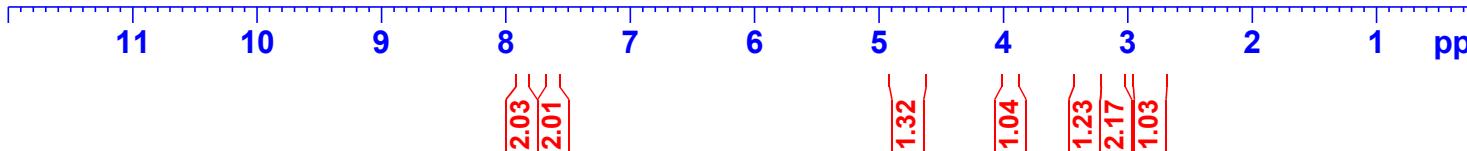
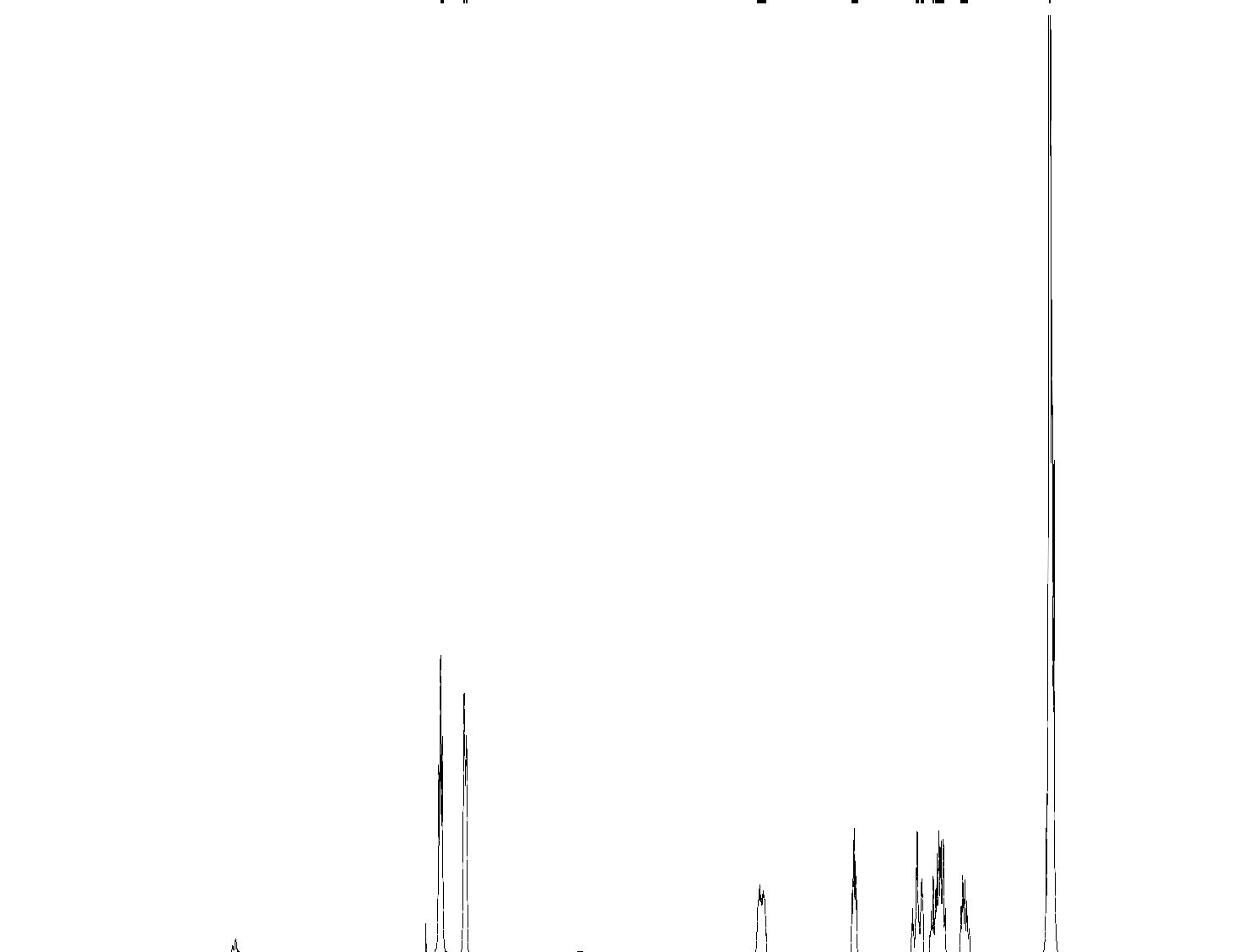
## CF3 Cys Conjugate (4b)



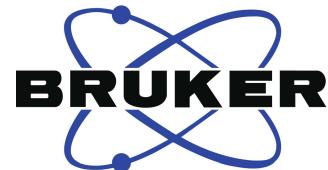
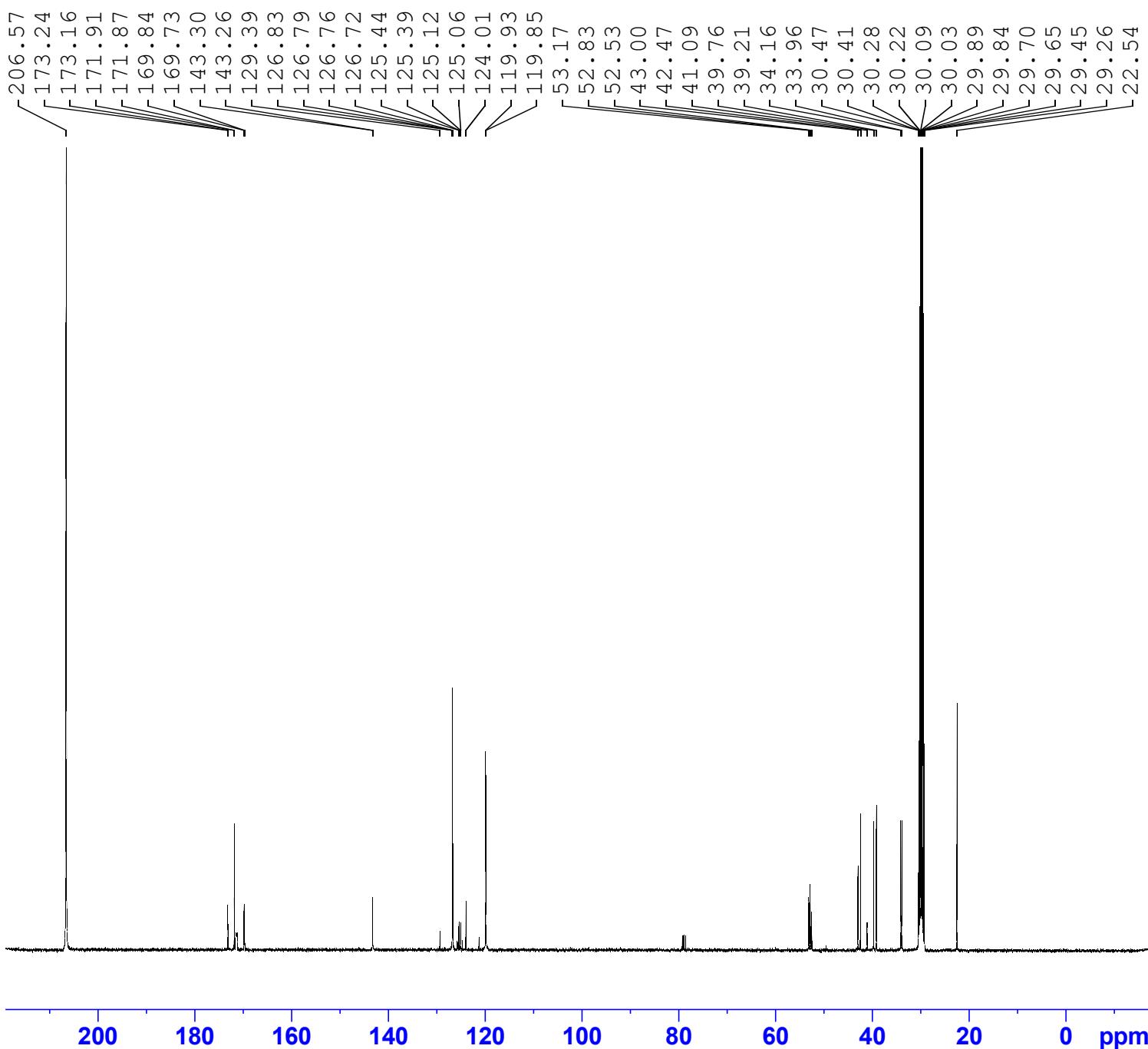
Current Data Parameters  
 NAME CF3 Cys Conj. Pure - 1H  
 EXPNO 3  
 PROCNO 1

F2 - Acquisition Parameters  
 Date 20230213  
 Time 12.41 h  
 INSTRUM AVNEO  
 PROBHD Z175272\_0008 (zg30  
 PULPROG zg30  
 TD 131072  
 SOLVENT Acetone  
 NS 32  
 DS 2  
 SWH 8196.722 Hz  
 FIDRES 0.125072 Hz  
 AQ 7.9953918 sec  
 RG 101  
 DW 61.000 usec  
 DE 13.54 usec  
 TE 298.0 K  
 D1 1.0000000 sec  
 TDO 1  
 SFO1 400.1624710 MHz  
 NUC1 1H  
 P0 3.33 usec  
 P1 10.00 usec  
 PLW1 19.63299942 W

F2 - Processing parameters  
 SI 65536  
 SF 400.1600000 MHz  
 WDW EM  
 SSB 0  
 LB 0.30 Hz  
 GB 0  
 PC 1.00



CF3 Cys Conjugate (4b)

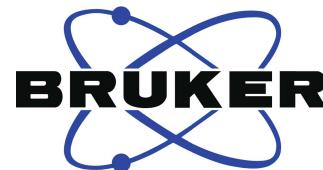


Current Data Parameters  
 NAME CF3 Maleimide Conj Pure 13C  
 EXPNO 9  
 PROCNO 1

F2 - Acquisition Parameters  
 Date\_ 20230214  
 Time\_ 3.15 h  
 INSTRUM AVNEO  
 PROBHD Z175272\_0008 (zgpg30  
 PULPROG 65536  
 TD 3600  
 SOLVENT Acetone  
 NS 4  
 DS 23809.523 Hz  
 SWH 0.726609 Hz  
 FIDRES 1.3762560 sec  
 AQ 101  
 RG 21.000 usec  
 DW 6.50 usec  
 DE 298.0 K  
 T1 2.0000000 sec  
 D11 0.0300000 sec  
 TDO 1  
 SFO1 100.6303741 MHz  
 NUC1 13C  
 P0 3.33 usec  
 P1 10.00 usec  
 PLW1 58.38199997 W  
 SFO2 400.1616006 MHz  
 NUC2 1H  
 CPDPRG[2] waltz65  
 PCPD2 90.00 usec  
 PLW2 19.63299942 W  
 PLW12 0.24237999 W  
 PLW13 0.12192000 W

F2 - Processing parameters  
 SI 32768  
 SF 100.6202287 MHz  
 WDW EM  
 SSB 0  
 LB 1.00 Hz  
 GB 0  
 PC 1.40

-62.39



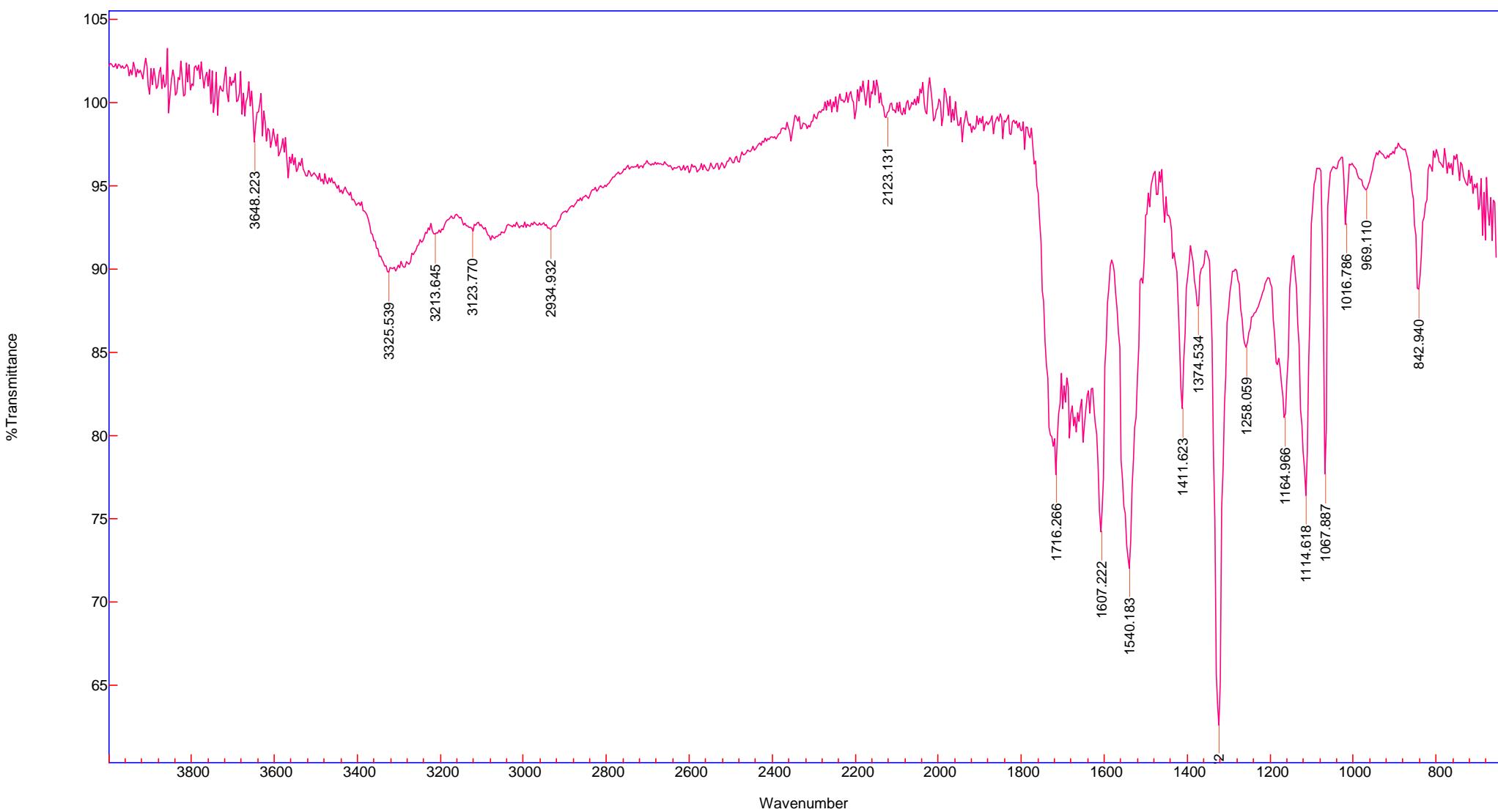
Current Data Parameters  
NAME CF<sub>3</sub> Mal Conj. pure - 19F  
EXPNO 4  
PROCNO 1

F2 - Acquisition Parameters  
Date 20230213  
Time 12.47 h  
INSTRUM AVNEO  
PROBHD Z175272\_0008 (zg  
PULPROG zg  
TD 131072  
SOLVENT Acetone  
NS 128  
DS 4  
SWH 147058.828 Hz  
FIDRES 2.243940 Hz  
AQ 0.4456448 sec  
RG 101  
DW 3.400 usec  
DE 6.50 usec  
TE 298.0 K  
D1 1.00000000 sec  
TD0 1  
SFO1 376.5265944 MHz  
NUC1 19F  
P1 12.00 usec  
PLW1 45.00000000 W

F2 - Processing parameters  
SI 65536  
SF 376.5265944 MHz  
WDW EM  
SSB 0  
LB 0.30 Hz  
GB 0  
PC 1.00



## CF3 Cys Conj (4b)



Name
CF3 Cys Conj —

Sample Name CF3 Cys Conj (4b)

Inj Vol

Data Filename

Position

InjPosition

ACQ Method

Instrument Name

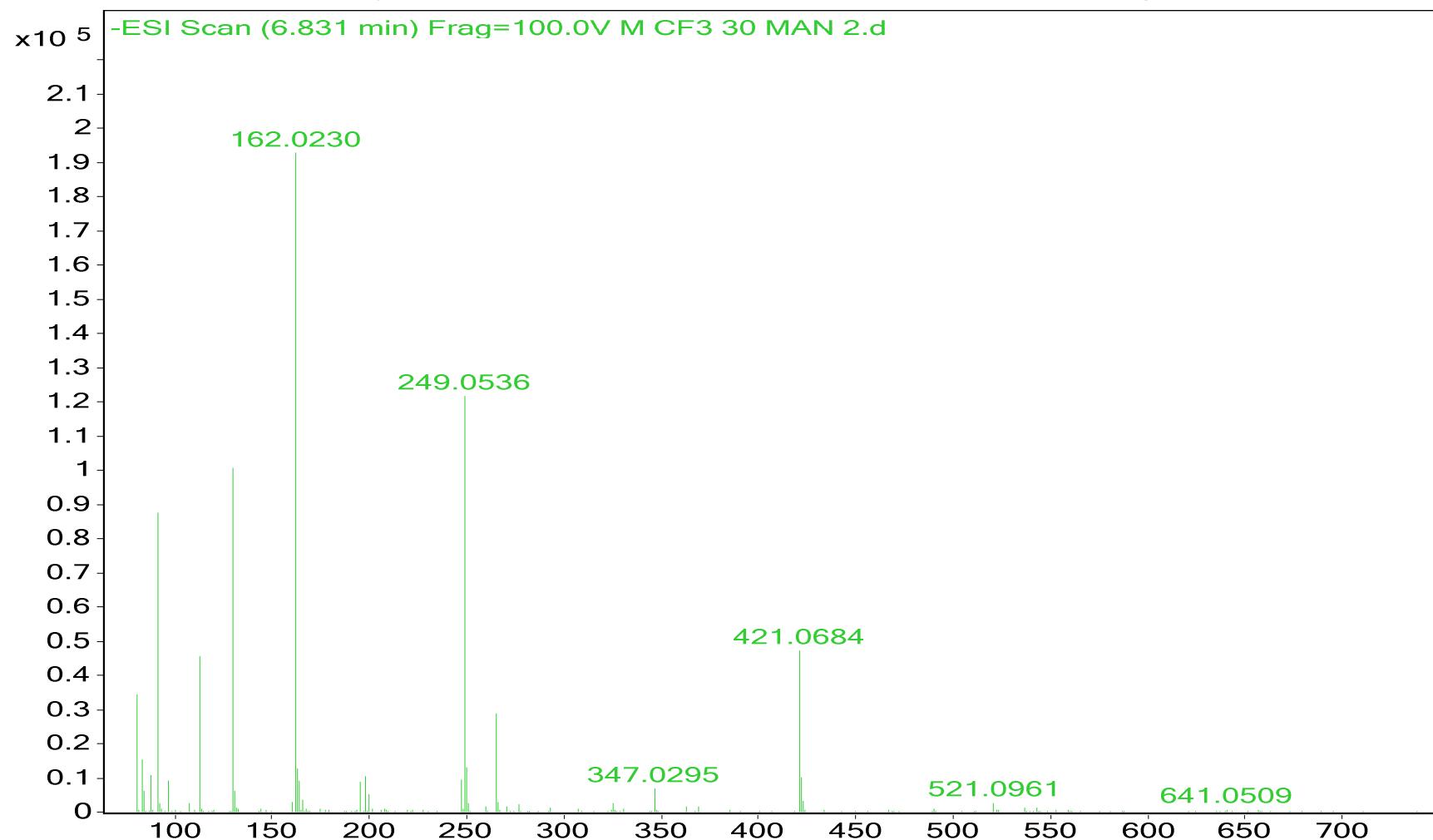
SampleType

Comment

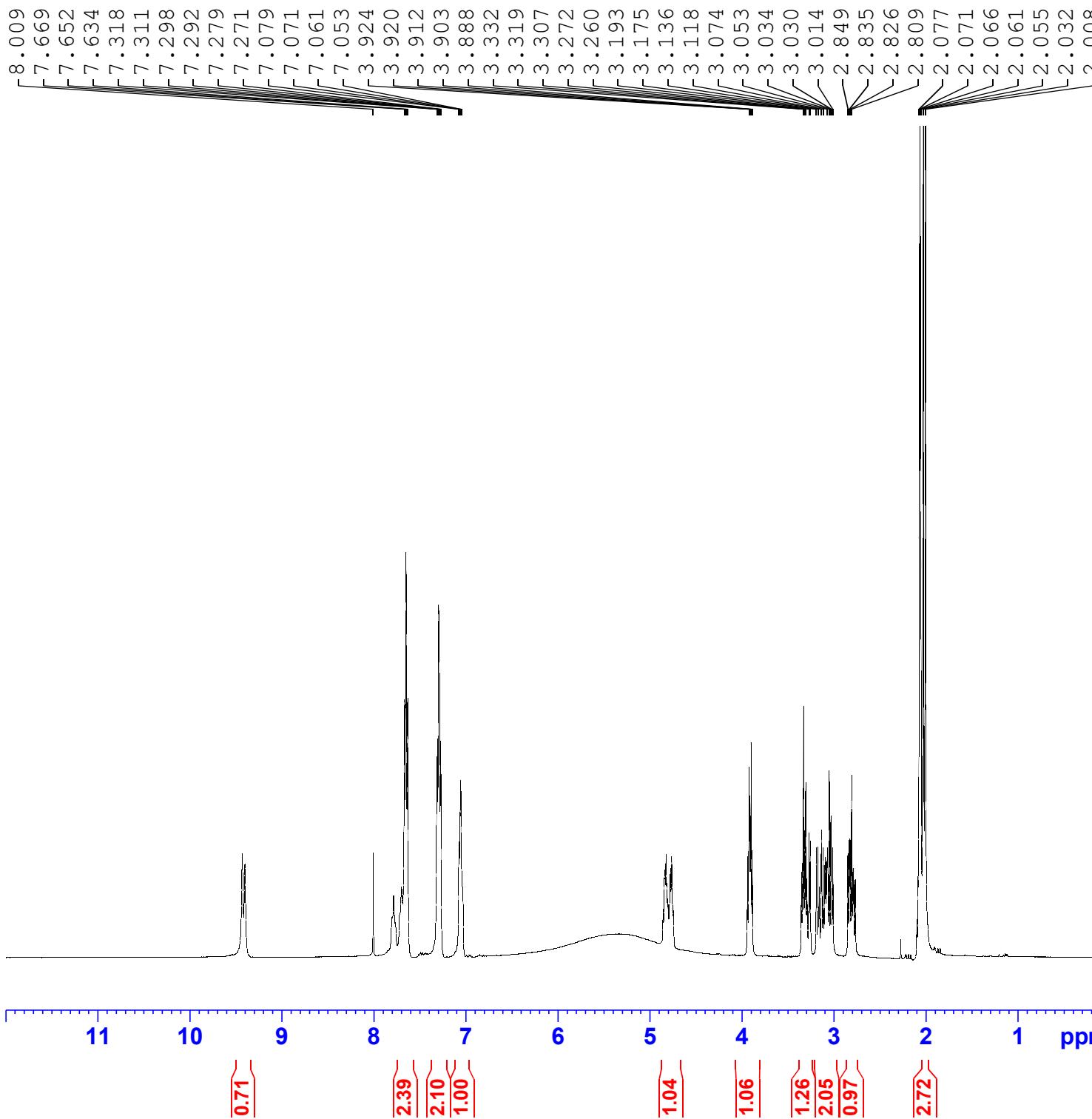
User Name

IRM Calibration Status

Acquired Time



H Cys Conjugate (**4c**)

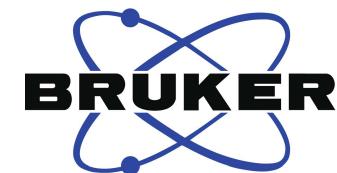
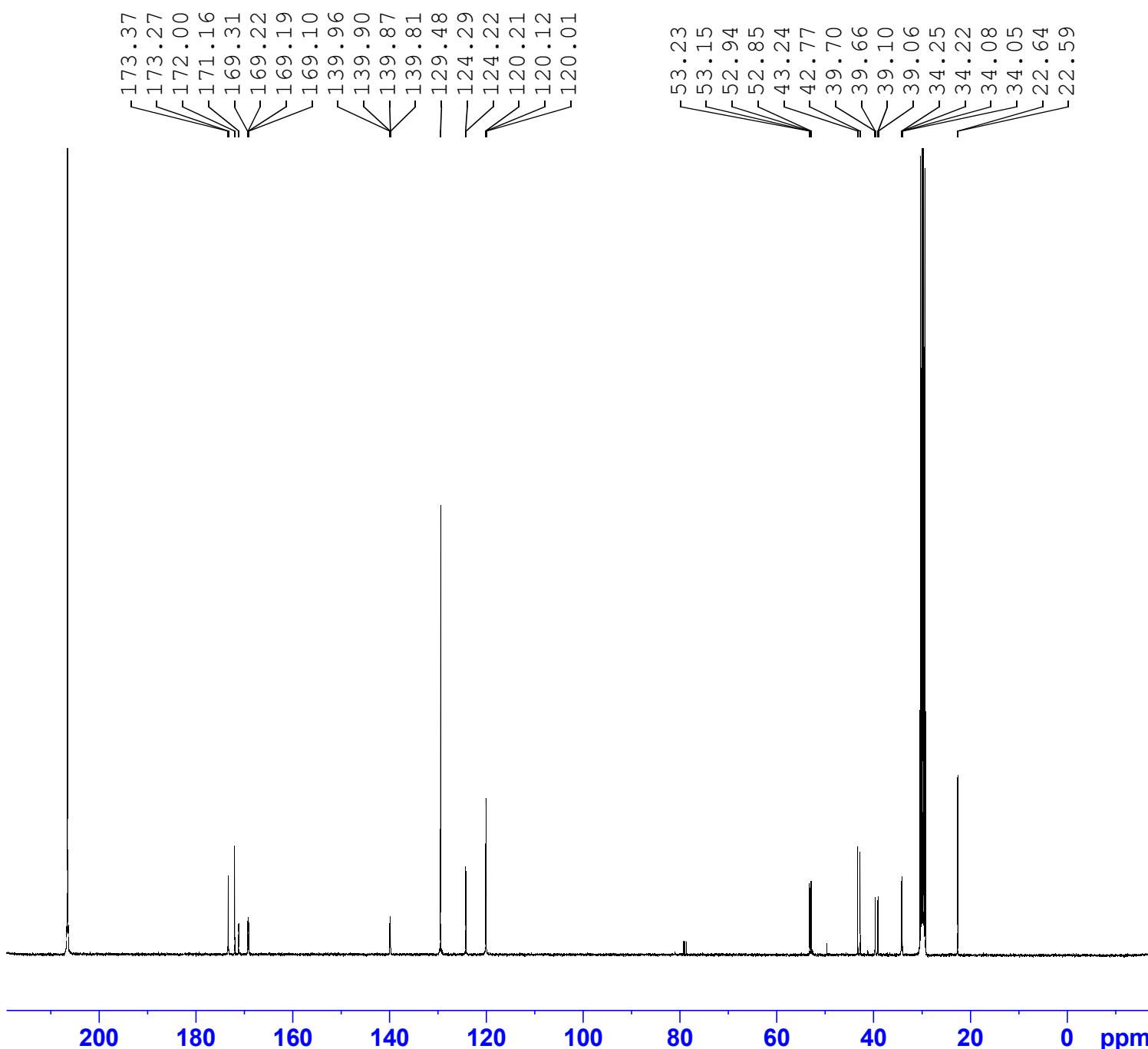


Current Data Parameters  
 NAME H Cys Conj. Pure - 1H  
 EXPNO 6  
 PROCNO 1

F2 - Acquisition Parameters  
 Date 20230213  
 Time 13.47 h  
 INSTRUM AVNEO  
 PROBHD Z175272\_0008 (zg30  
 PULPROG zg30  
 TD 131072  
 SOLVENT Acetone  
 NS 32  
 DS 2  
 SWH 8196.722 Hz  
 FIDRES 0.125072 Hz  
 AQ 7.9953918 sec  
 RG 101  
 DW 61.000 usec  
 DE 13.54 usec  
 TE 298.0 K  
 D1 1.0000000 sec  
 TDO 1  
 SFO1 400.1624710 MHz  
 NUC1 1H  
 P0 3.33 usec  
 P1 10.00 usec  
 PLW1 19.63299942 W

F2 - Processing parameters  
 SI 65536  
 SF 400.1600000 MHz  
 WDW EM  
 SSB 0  
 LB 0.30 Hz  
 GB 0  
 PC 1.00

H Cys Conjugate (**4c**)



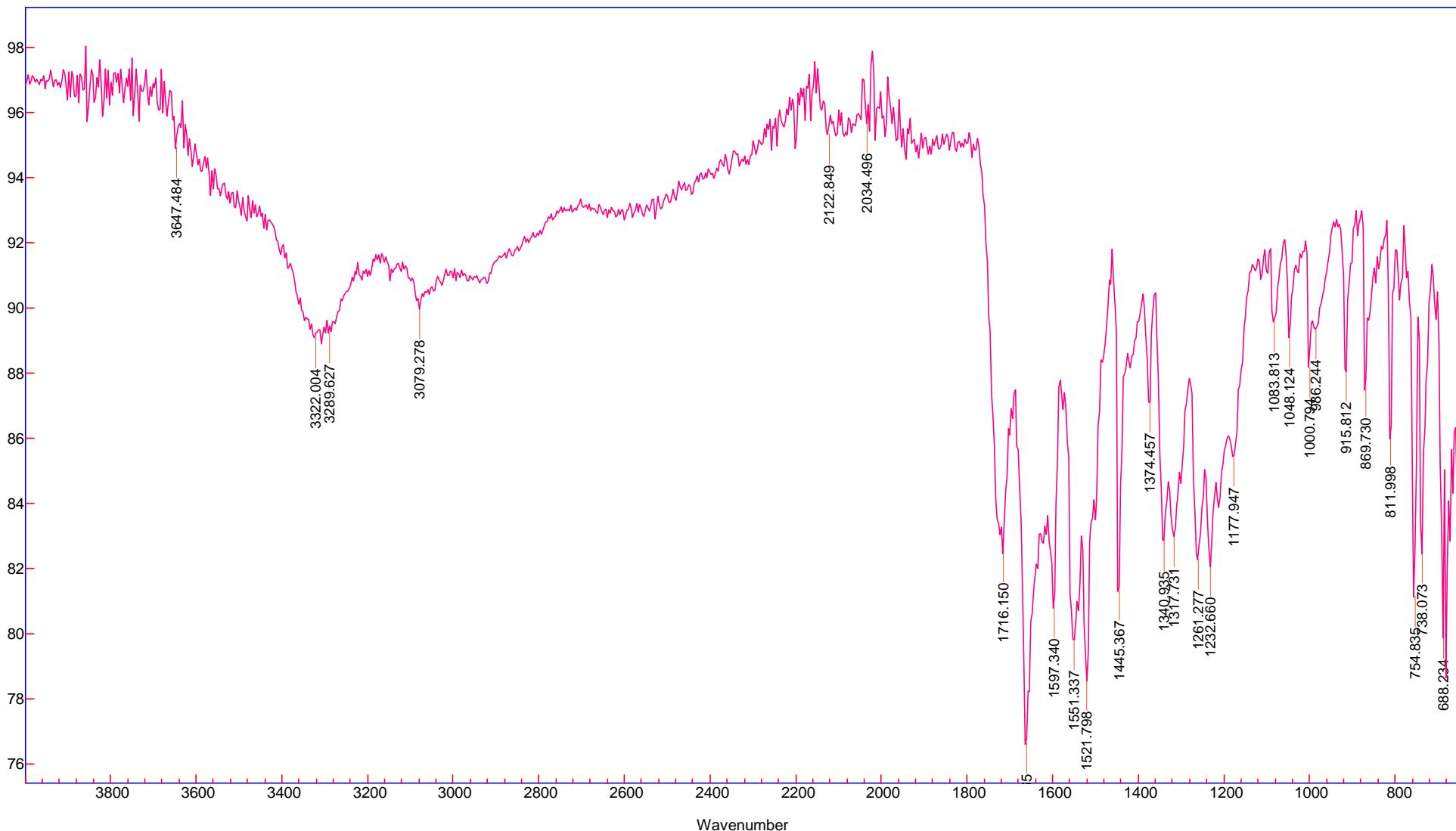
Current Data Parameters  
 NAME H Cys Conj. Pure 13C  
 EXPNO 7  
 PROCNO 1

F2 - Acquisition Parameters  
 Date 20230214  
 Time 6.47 h  
 INSTRUM AVNEO  
 PROBHD Z175272\_0008 (br)  
 PULPROG zgpg30  
 TD 65536  
 SOLVENT Acetone  
 NS 3600  
 DS 4  
 SWH 23809.523 Hz  
 FIDRES 0.726609 Hz  
 AQ 1.3762560 sec  
 RG 101  
 DW 21.000 usec  
 DE 6.50 usec  
 TE 298.0 K  
 D1 2.00000000 sec  
 D11 0.03000000 sec  
 TDO 1  
 SFO1 100.6303741 MHz  
 NUC1 13C  
 P0 3.33 usec  
 P1 10.00 usec  
 PLW1 58.38199997 W  
 SFO2 400.1616006 MHz  
 NUC2 1H  
 CPDPRG[2] waltz65  
 PCPD2 90.00 usec  
 PLW2 19.63299942 W  
 PLW12 0.24237999 W  
 PLW13 0.12192000 W

F2 - Processing parameters  
 SI 32768  
 SF 100.6202303 MHz  
 WDW EM  
 SSB 0  
 LB 1.00 Hz  
 GB 0  
 PC 1.40

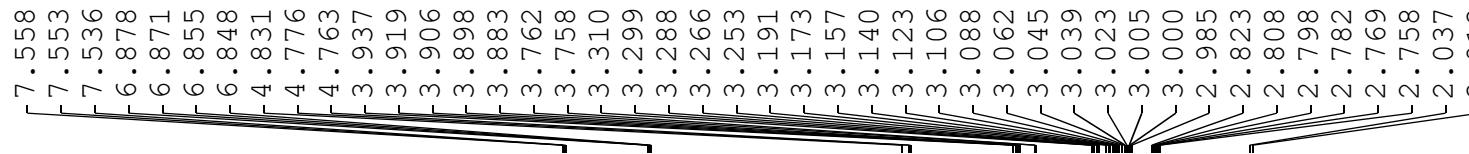
H Cys Conj (4c)

% Transmittance



Name
H Cys Conj

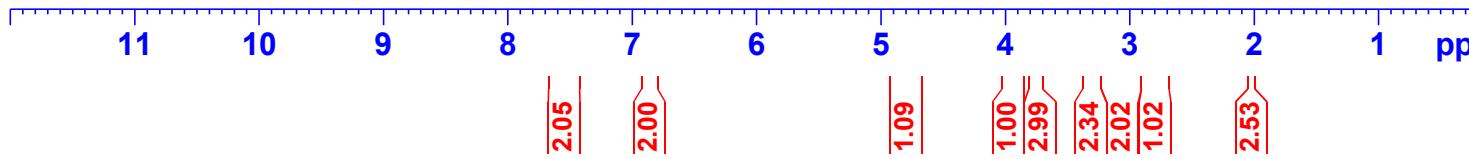
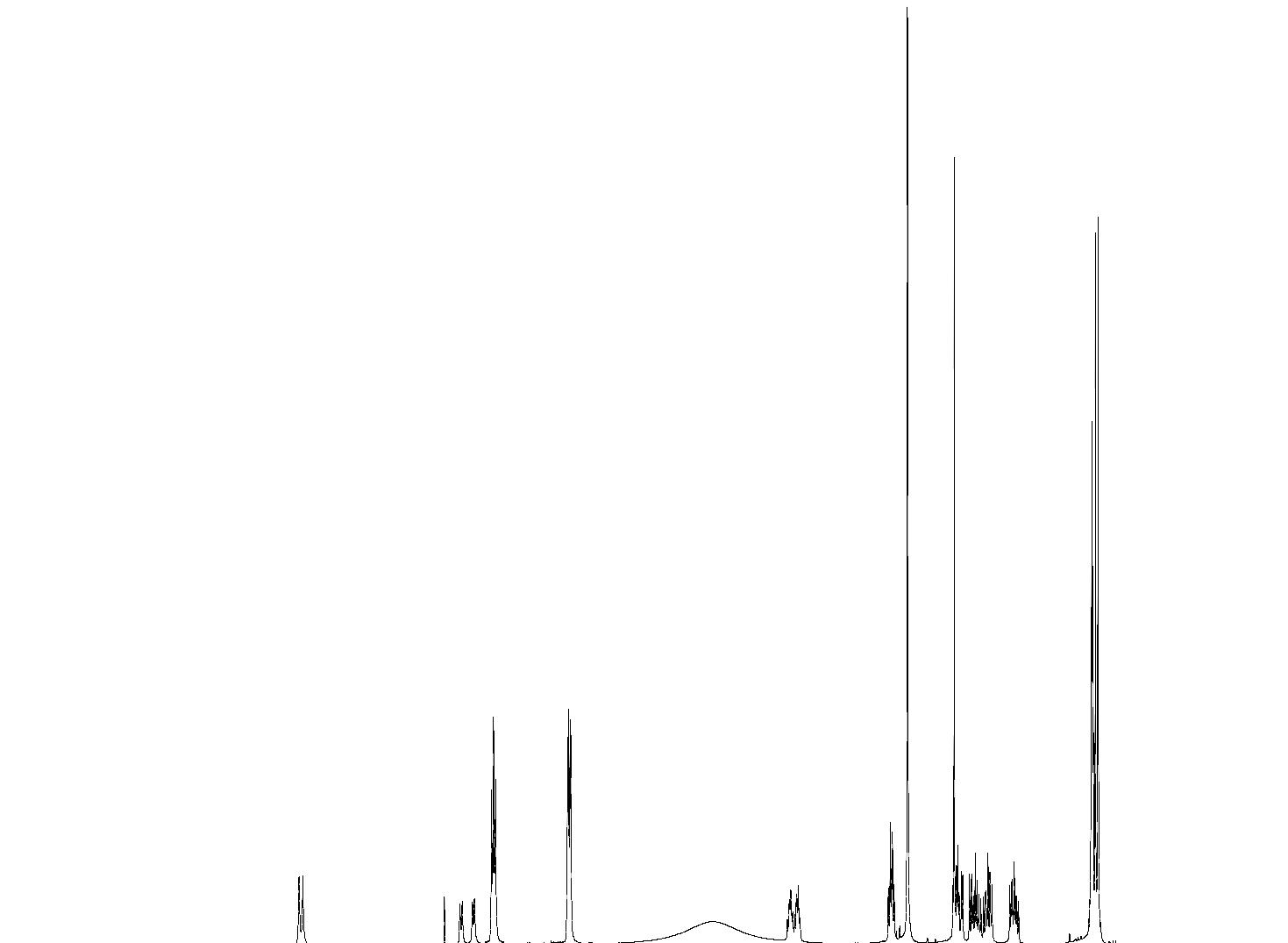
OMe Cys Conjugate (4d)



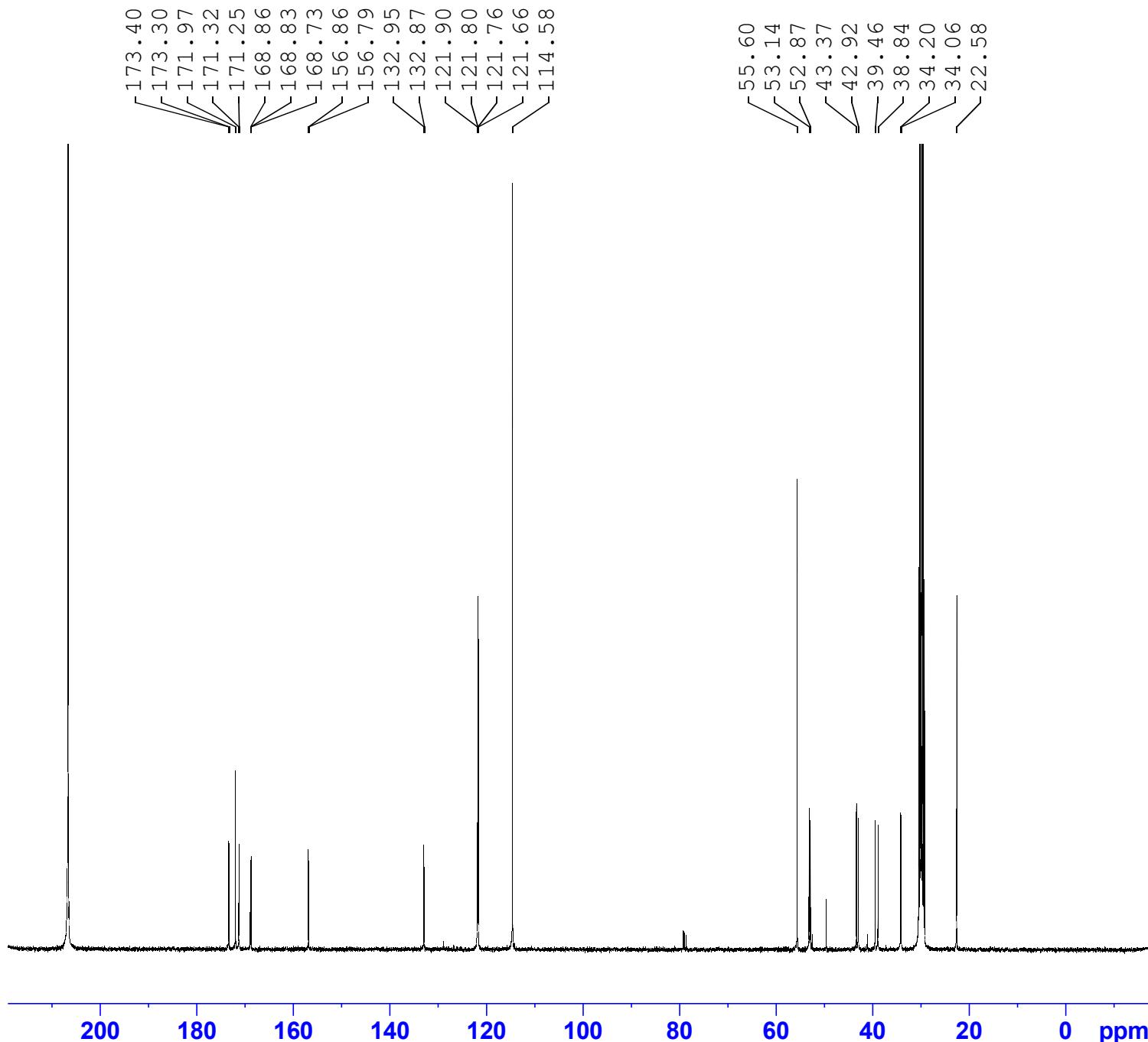
Current Data Parameters  
 NAME OMe Mal Conj. pure - 1H  
 EXPNO 2  
 PROCNO 1

F2 - Acquisition Parameters  
 Date 20230213  
 Time 12.12 h  
 INSTRUM AVNEO  
 PROBHD Z175272\_0008 (zg30  
 PULPROG zg30  
 TD 131072  
 SOLVENT Acetone  
 NS 32  
 DS 2  
 SWH 8196.722 Hz  
 FIDRES 0.125072 Hz  
 AQ 7.9953918 sec  
 RG 90.5  
 DW 61.000 usec  
 DE 13.54 usec  
 TE 298.0 K  
 D1 1.0000000 sec  
 TDO 1  
 SFO1 400.1624710 MHz  
 NUC1 1H  
 P0 3.33 usec  
 P1 10.00 usec  
 PLW1 19.63299942 W

F2 - Processing parameters  
 SI 65536  
 SF 400.1600000 MHz  
 WDW EM  
 SSB 0  
 LB 0.30 Hz  
 GB 0  
 PC 1.00



OMe Cys Conjugate (4d)



Current Data Parameters  
 NAME OMe Cys Conj pure 13C  
 EXPNO 8  
 PROCNO 1

F2 - Acquisition Parameters  
 Date 20230213  
 Time 22.34 h  
 INSTRUM AVNEO  
 PROBHD Z175272\_0008 (zgpg30  
 PULPROG 65536  
 TD Acetone  
 SOLVENT 3600  
 NS 4  
 DS 23809.523 Hz  
 SWH 0.726609 Hz  
 FIDRES 1.3762560 sec  
 AQ 101  
 RG 21.000 usec  
 DE 6.50 usec  
 TE 298.0 K  
 D1 2.0000000 sec  
 D11 0.03000000 sec  
 TD0 1  
 SFO1 100.6303741 MHz  
 NUC1 13C  
 P0 3.33 usec  
 P1 10.00 usec  
 PLW1 58.38199997 W  
 SFO2 400.1616006 MHz  
 NUC2 1H  
 CPDPRG[2] waltz65  
 PCPD2 90.00 usec  
 PLW2 19.63299942 W  
 PLW12 0.24237999 W  
 PLW13 0.12192000 W

F2 - Processing parameters  
 SI 32768  
 SF 100.6202307 MHz  
 WDW EM  
 SSB 0  
 LB 1.00 Hz  
 GB 0  
 PC 1.40

Sample Name OMe Cys Conj (4d)

Inj Vol

Data Filename

Position

InjPosition

ACQ Method

Instrument Name

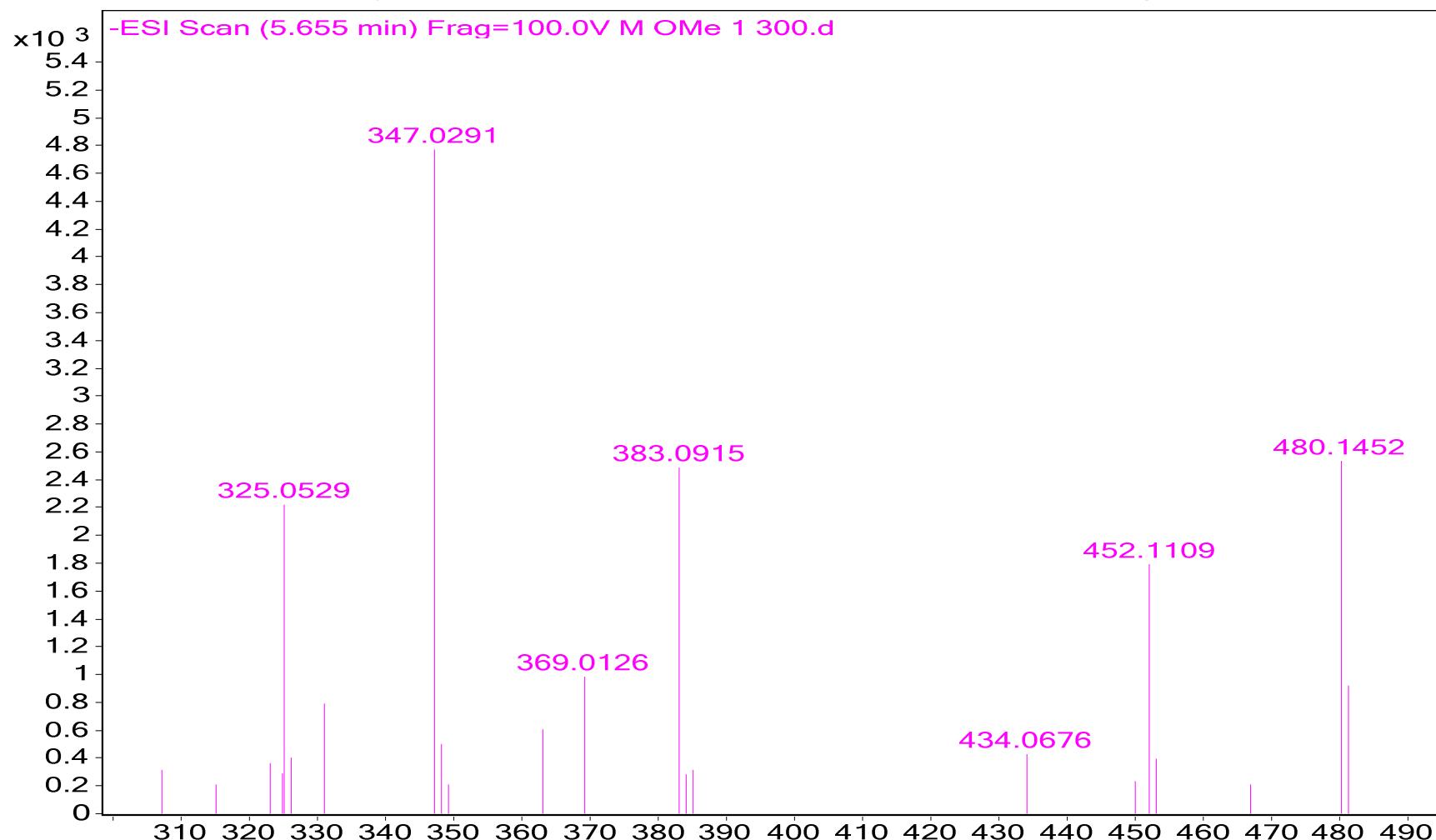
SampleType

Comment

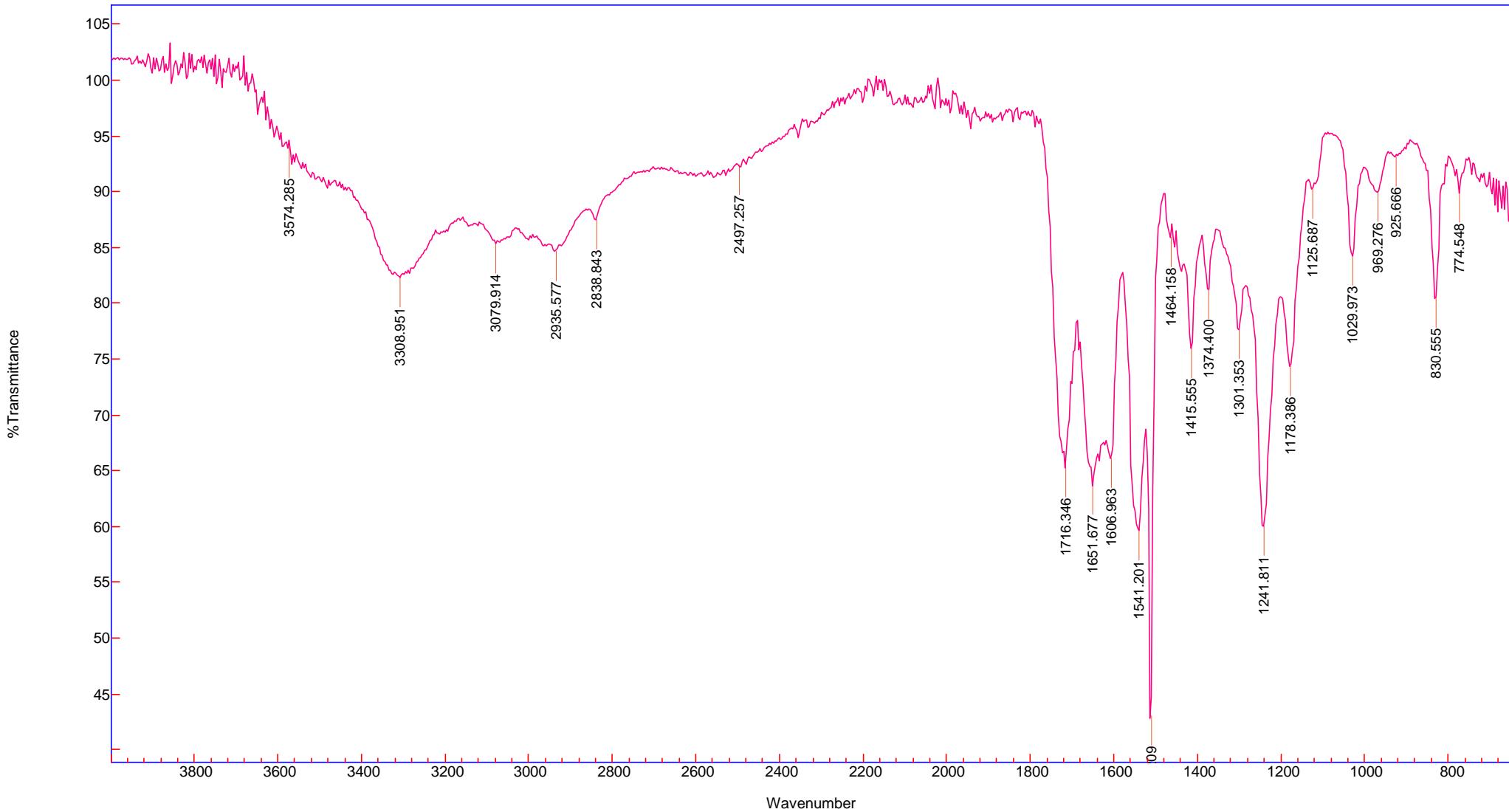
User Name

IRM Calibration Status

Acquired Time

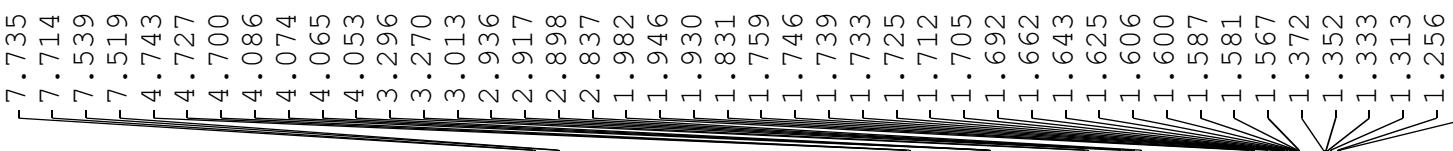


OMe Cys Conj (4d)



Name
OMe Cys Conj

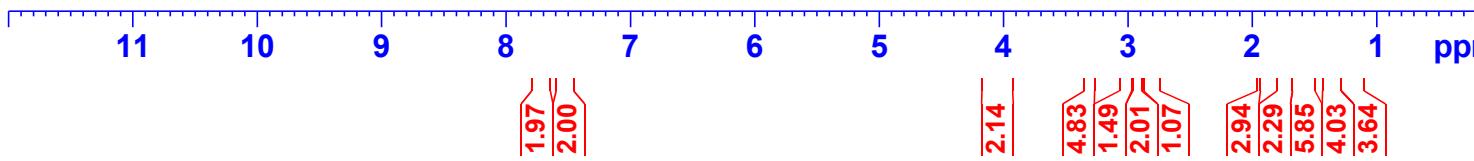
SF5 Acrylamide Conjugate (6a)



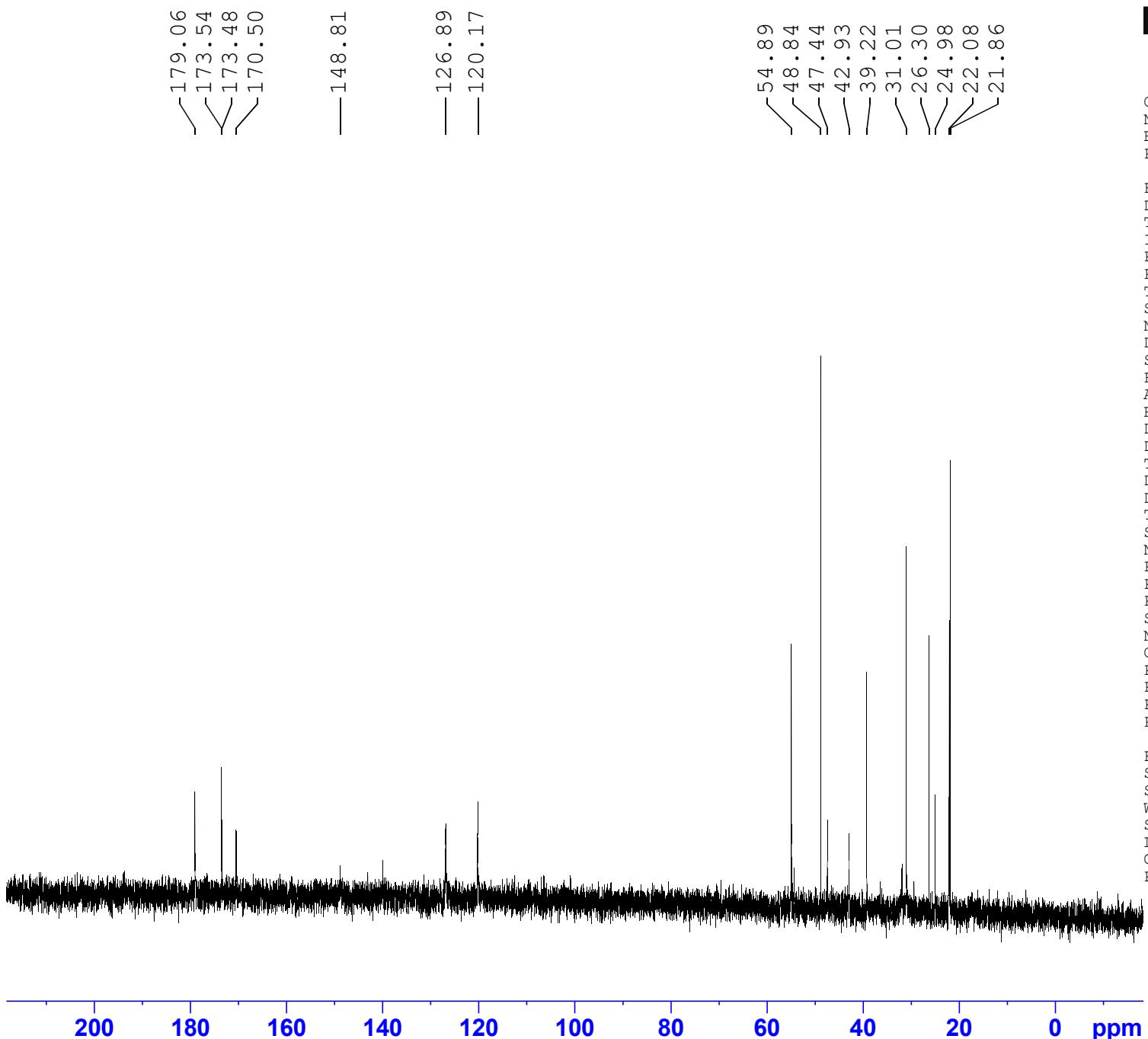
Current Data Parameters  
NAME SF5 Acrylamide Conj - 1H final  
EXPNO 8  
PROCNO 1

F2 - Acquisition Parameters  
Date\_ 20230120  
Time 13.12 h  
INSTRUM AVNEO  
PROBHD Z175272\_0008 (   
PULPROG zg30  
TD 131072  
SOLVENT D2O  
NS 32  
DS 2  
SWH 8196.722 Hz  
FIDRES 0.125072 Hz  
AQ 7.9953918 sec  
RG 101  
DW 61.000 usec  
DE 13.54 usec  
TE 298.0 K  
D1 1.0000000 sec  
TDO 1  
SF01 400.1524709 MHz  
NUC1 1H  
P0 3.33 usec  
P1 10.00 usec  
PLW1 19.63299942 W

F2 - Processing parameters  
SI 65536  
SF 400.1500000 MHz  
WDW EM  
SSB 0  
LB 0.30 Hz  
GB 0  
PC 1.00



SF5 Acrylamide Conjugate (6a)

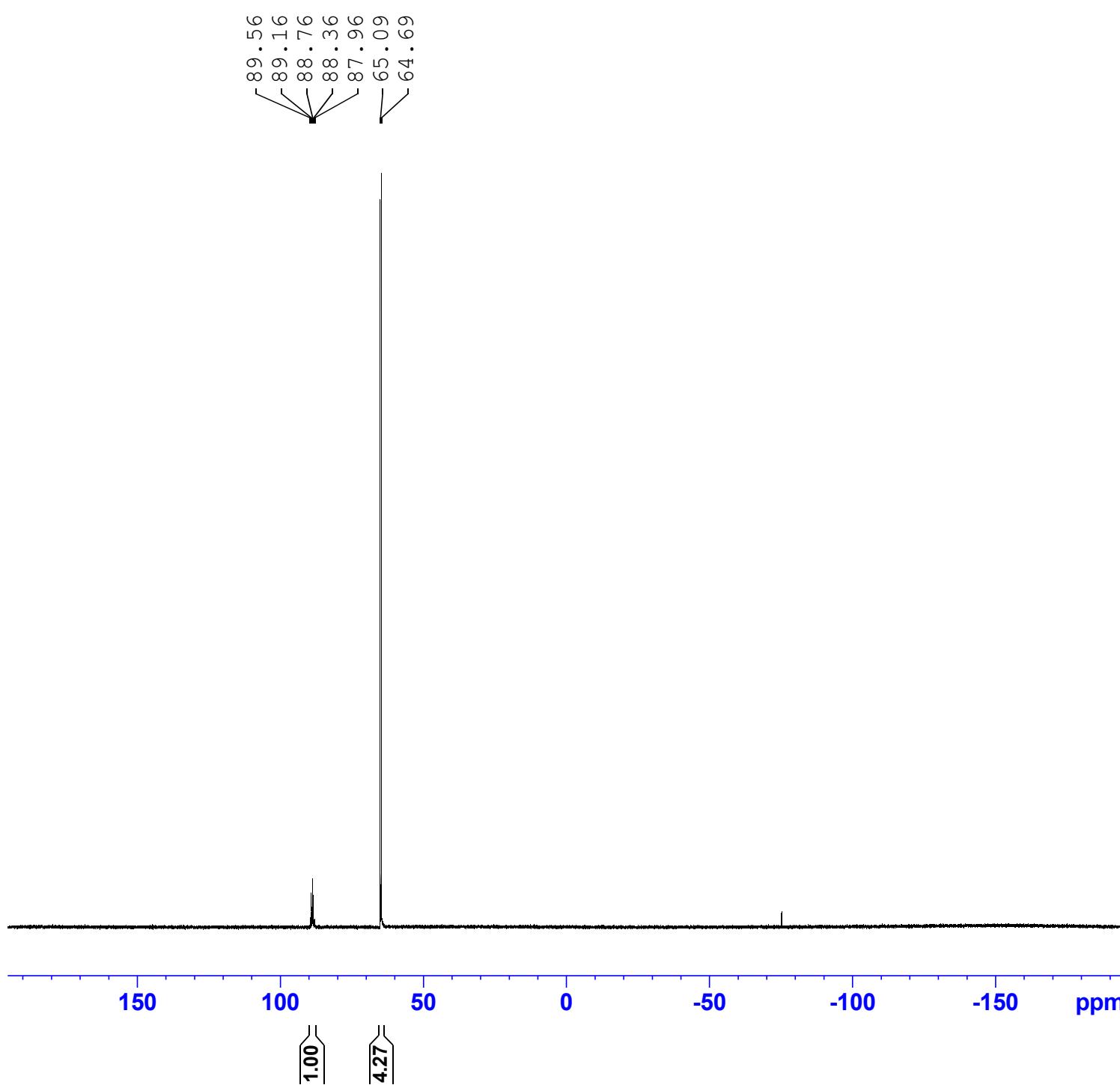


Current Data Parameters  
 NAME SF5 Acryl Conj - 13C  
 EXPNO 3  
 PROCNO 1

F2 - Acquisition Parameters  
 Date 20230121  
 Time 2.04 h  
 INSTRUM AVNEO  
 PROBHD Z175272\_0008 (zgpg30  
 PULPROG 65536  
 TD 3600  
 SOLVENT D2O  
 NS 4  
 DS SWH 23809.523 Hz  
 FIDRES 0.726609 Hz  
 AQ 1.3762560 sec  
 RG 101  
 DW 21.000 usec  
 DE 6.50 usec  
 TE 298.0 K  
 D1 2.00000000 sec  
 D11 0.03000000 sec  
 TDO 1  
 SFO1 100.6278593 MHz  
 NUC1 13C  
 P0 3.33 usec  
 P1 10.00 usec  
 PLW1 58.38199997 W  
 SFO2 400.1516006 MHz  
 NUC2 1H  
 CPDPRG[2] waltz65  
 PCPD2 90.00 usec  
 PLW2 19.63299942 W  
 PLW12 0.24237999 W  
 PLW13 0.12192000 W

F2 - Processing parameters  
 SI 32768  
 SF 100.6177975 MHz  
 WDW EM  
 SSB 0  
 LB 1.00 Hz  
 GB 0  
 PC 1.40

SF5 Acrylamide Conj (6a)

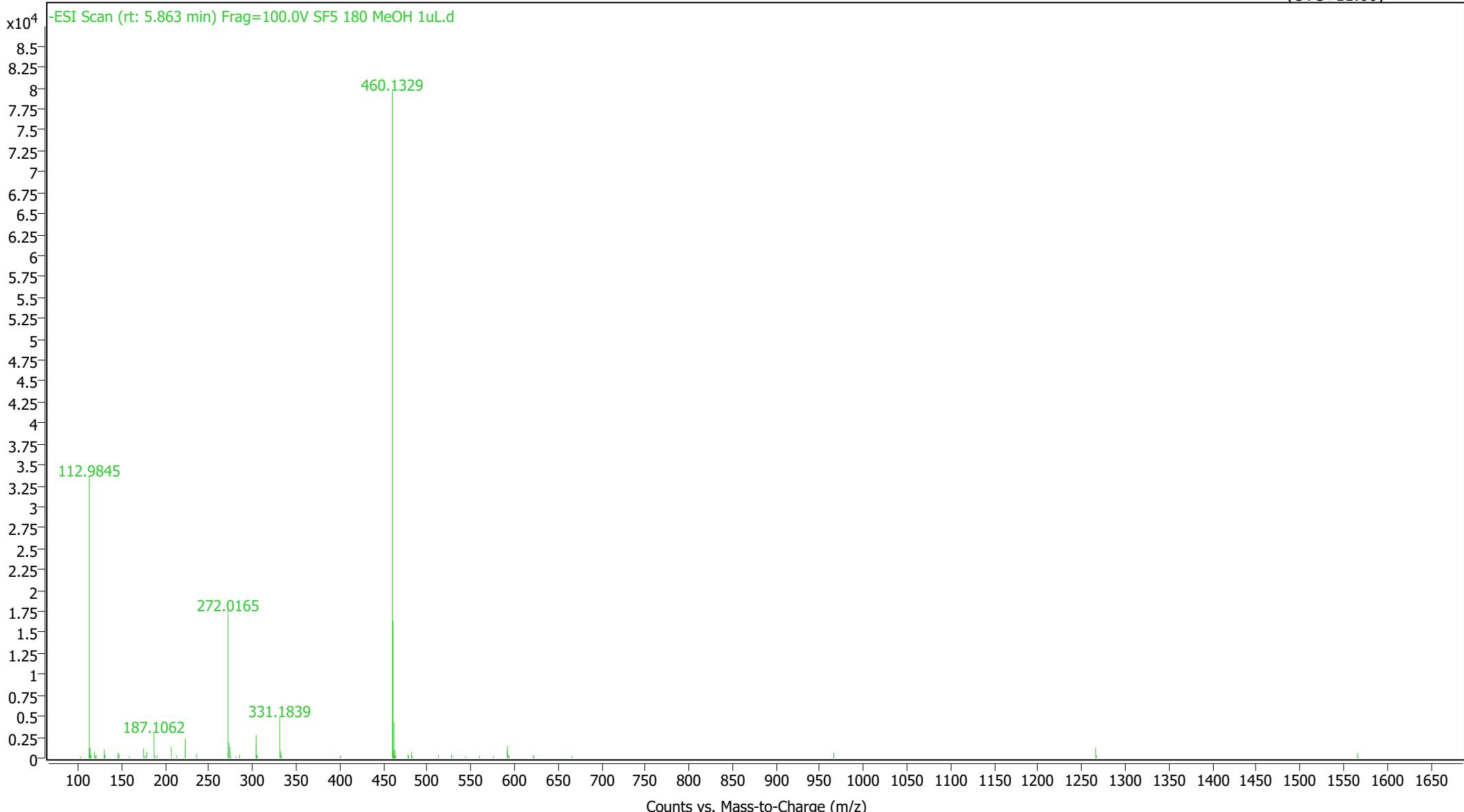


Current Data Parameters  
NAME SF5 Acrylamide Conj - 19F Good  
EXPNO 14  
PROCNO 1

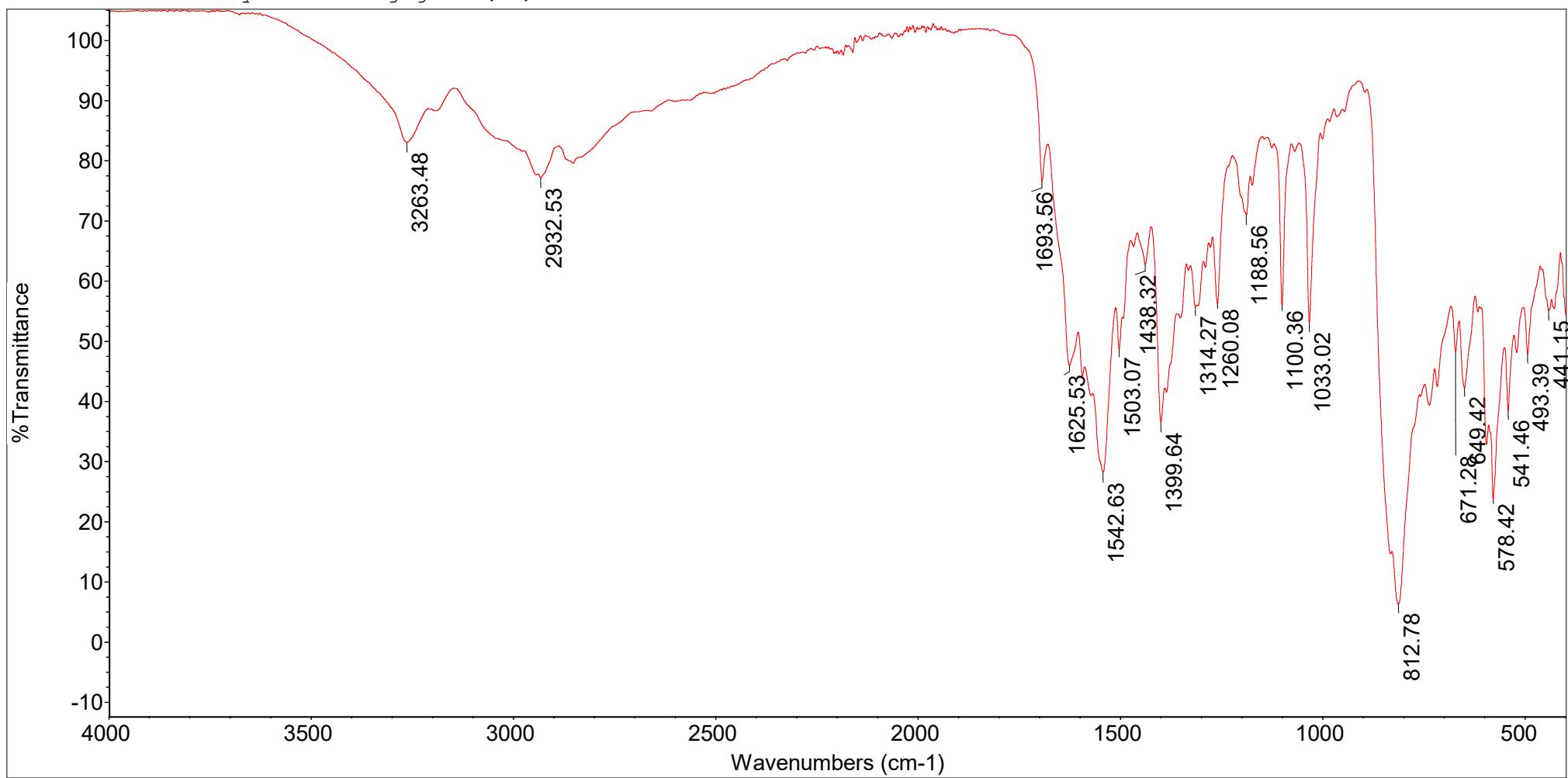
F2 - Acquisition Parameters  
Date\_ 20230124  
Time 10.44 h  
INSTRUM AVNEO  
PROBHD Z175272\_0008 (zg)  
PULPROG zg  
TD 131072  
SOLVENT DMSO  
NS 128  
DS 4  
SWH 147058.828 Hz  
FIDRES 2.243940 Hz  
AQ 0.4456448 sec  
RG 101  
DW 3.400 usec  
DE 6.50 usec  
TE 298.0 K  
D1 1.0000000 sec  
TDO 1  
SF01 376.5171850 MHz  
NUC1 <sup>19</sup>F  
P1 12.00 usec  
PLW1 45.0000000 W

F2 - Processing parameters  
SI 65536  
SF 376.5171850 MHz  
WDW EM  
SSB 0  
LB 0.30 Hz  
GB 0  
PC 1.00

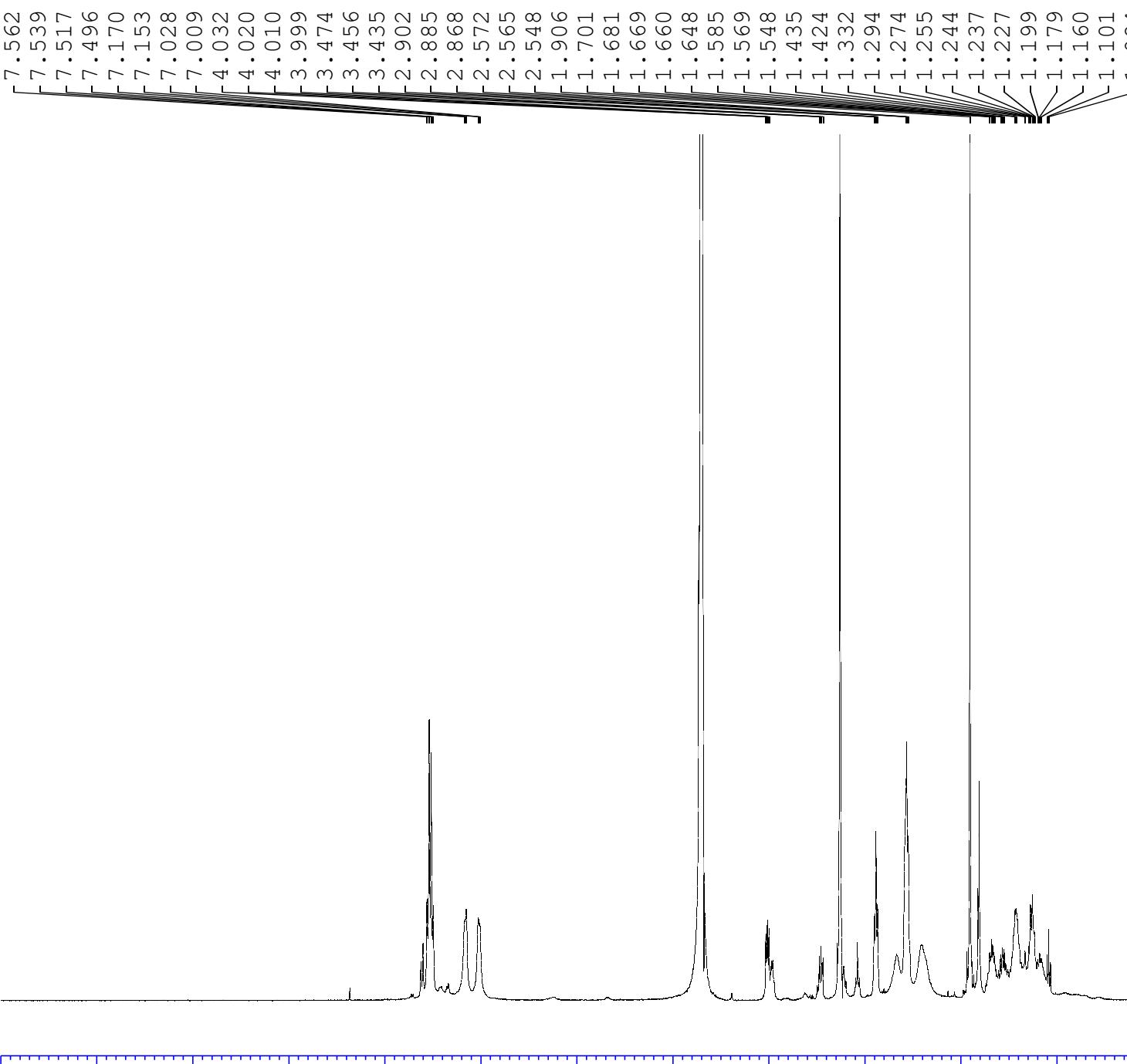
Name	SF5 Acrylamide Conj (6a)	Rack Pos.		Instrument	Instrument 1	Operator
Inj. Vol. (uL)	10	Plate Pos.		IRM Status	Success	
Data File	SF5 180 MeOH 1uL.d	Method (Acq)	Neg Method (rev).m	Comment		Acq. Time (Local)



SF5 Acrylamide Conjugate (6a)



## CF3 acryl conj. (6b)

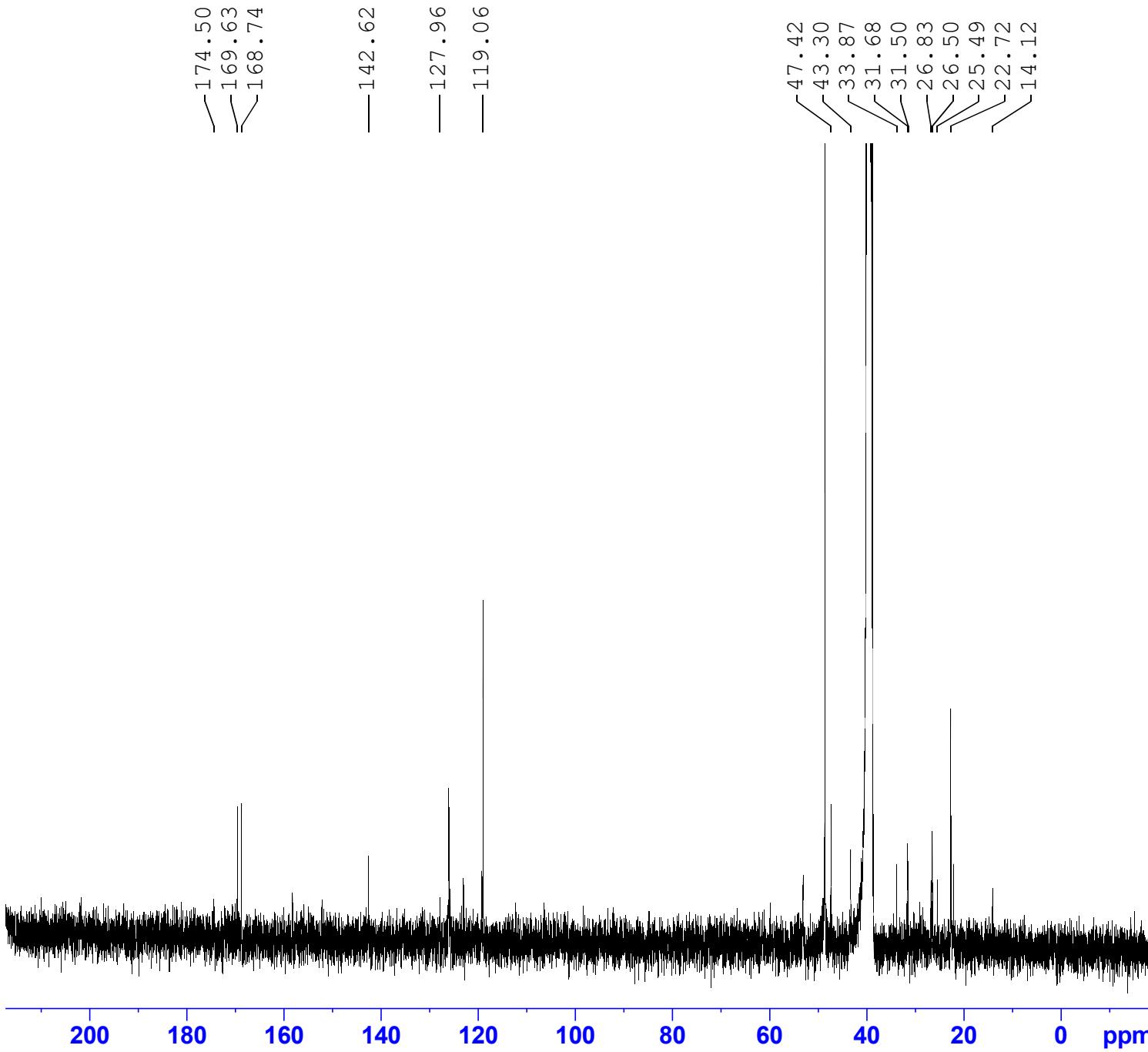


Current Data Parameters  
 NAME CF3 Acrylamide Conj 1H  
 EXPNO 2  
 PROCNO 1

F2 - Acquisition Parameters  
 Date 20230201  
 Time 10.58 h  
 INSTRUM AVNEO  
 PROBHD Z175272\_0008 (   
 PULPROG zg30  
 TD 131072  
 SOLVENT D2O  
 NS 32  
 DS 2  
 SWH 8196.722 Hz  
 FIDRES 0.125072 Hz  
 AQ 7.9953918 sec  
 RG 101  
 DW 61.000 usec  
 DE 13.54 usec  
 TE 298.0 K  
 D1 1.0000000 sec  
 TDO 1  
 SFO1 400.1524709 MHz  
 NUC1 1H  
 P0 3.33 usec  
 P1 10.00 usec  
 PLW1 19.63299942 W

F2 - Processing parameters  
 SI 65536  
 SF 400.1500000 MHz  
 WDW EM  
 SSB 0  
 LB 0.30 Hz  
 GB 0  
 PC 1.00

CF3 Acrylamide Conj (6b)



Current Data Parameters  
 NAME CF3 Acrylamide Conj 13C  
 EXPNO 17  
 PROCNO 1

F2 - Acquisition Parameters  
 Date 20230131  
 Time 2.31 h  
 INSTRUM AVNEO  
 PROBHD Z175272\_0008 (zgpg30  
 PULPROG 65536  
 TD DMSO-Ed  
 SOLVENT 4200  
 NS 4  
 DS SWH 23809.523 Hz  
 FIDRES 0.726609 Hz  
 AQ 1.3762560 sec  
 RG 101  
 DW 21.000 usec  
 DE 6.50 usec  
 TE 298.0 K  
 D1 2.0000000 sec  
 D11 0.0300000 sec  
 TDO 1  
 SFO1 100.6278593 MHz  
 NUC1 <sup>13</sup>C  
 P0 3.33 usec  
 P1 10.00 usec  
 PLW1 58.38199997 W  
 SFO2 400.1516006 MHz  
 NUC2 <sup>1</sup>H  
 CPDPRG[2] waltz65  
 PCPD2 90.00 usec  
 PLW2 19.63299942 W  
 PLW12 0.24237999 W  
 PLW13 0.12192000 W

F2 - Processing parameters  
 SI 32768  
 SF 100.6178914 MHz  
 WDW EM  
 SSB 0  
 LB 1.00 Hz  
 GB 0  
 PC 1.40

CF<sub>3</sub> Acrylamide Conj (6b)

-59.78

150 100 50 0 -50 -100 -150 ppm

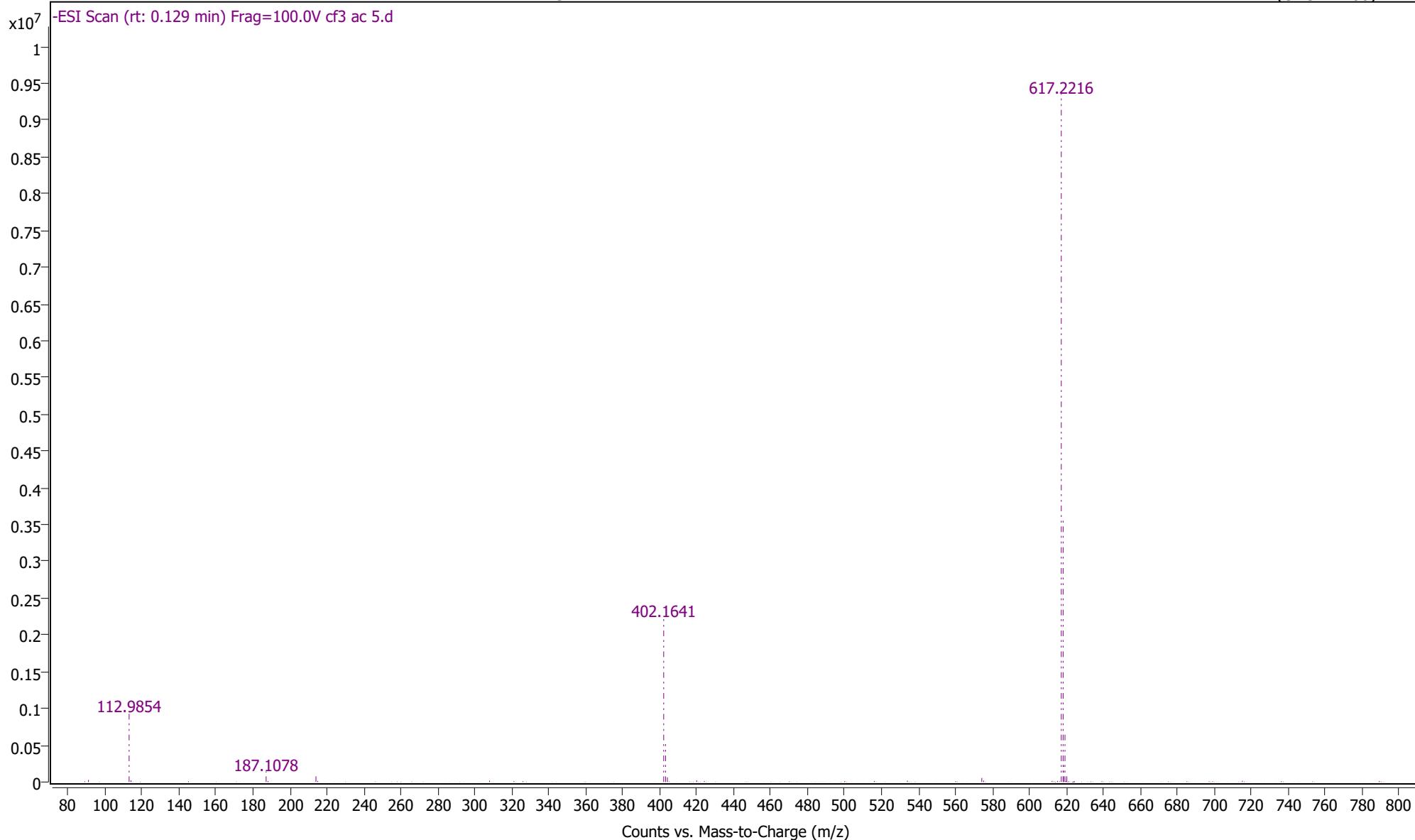


Current Data Parameters  
NAME CF<sub>3</sub> Acrylamide Conj 19f  
EXPNO 16  
PROCNO 1

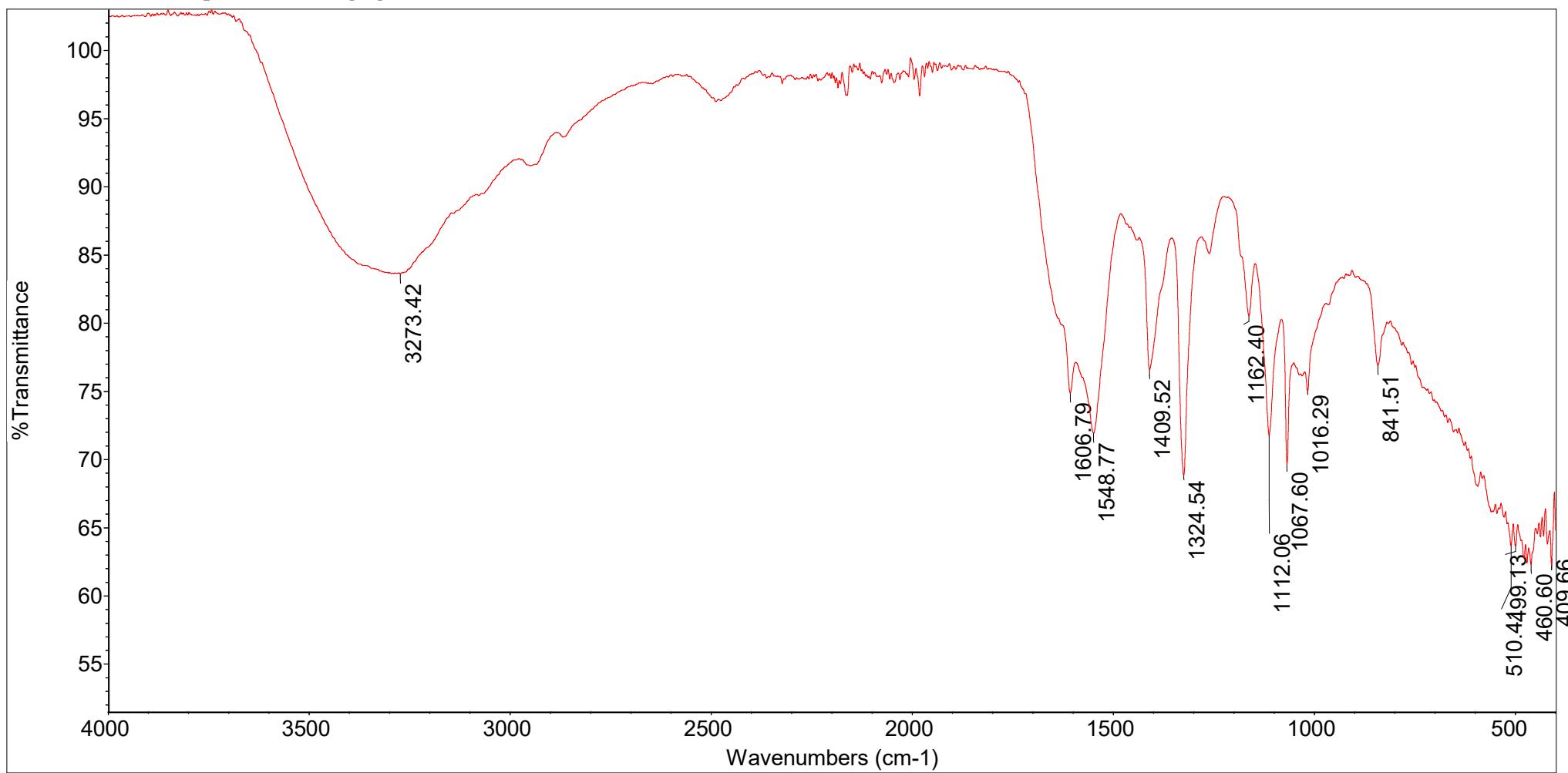
F2 - Acquisition Parameters  
Date 20230130  
Time 22.27 h  
INSTRUM AVNEO  
PROBHD Z175272\_0008 (zg  
PULPROG zg  
TD 131072  
SOLVENT DMSO-Ed  
NS 128  
DS 4  
SWH 147058.828 Hz  
FIDRES 2.243940 Hz  
AQ 0.4456448 sec  
RG 101  
DW 3.400 usec  
DE 6.50 usec  
TE 298.0 K  
D1 1.0000000 sec  
TDO 1  
SFO1 376.5171850 MHz  
NUC1 <sup>19</sup>F  
P1 12.00 usec  
PLW1 45.0000000 W

F2 - Processing parameters  
SI 65536  
SF 376.5171850 MHz  
WDW EM  
SSB 0  
LB 0.30 Hz  
GB 0  
PC 1.00

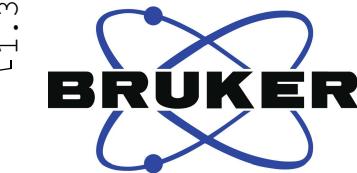
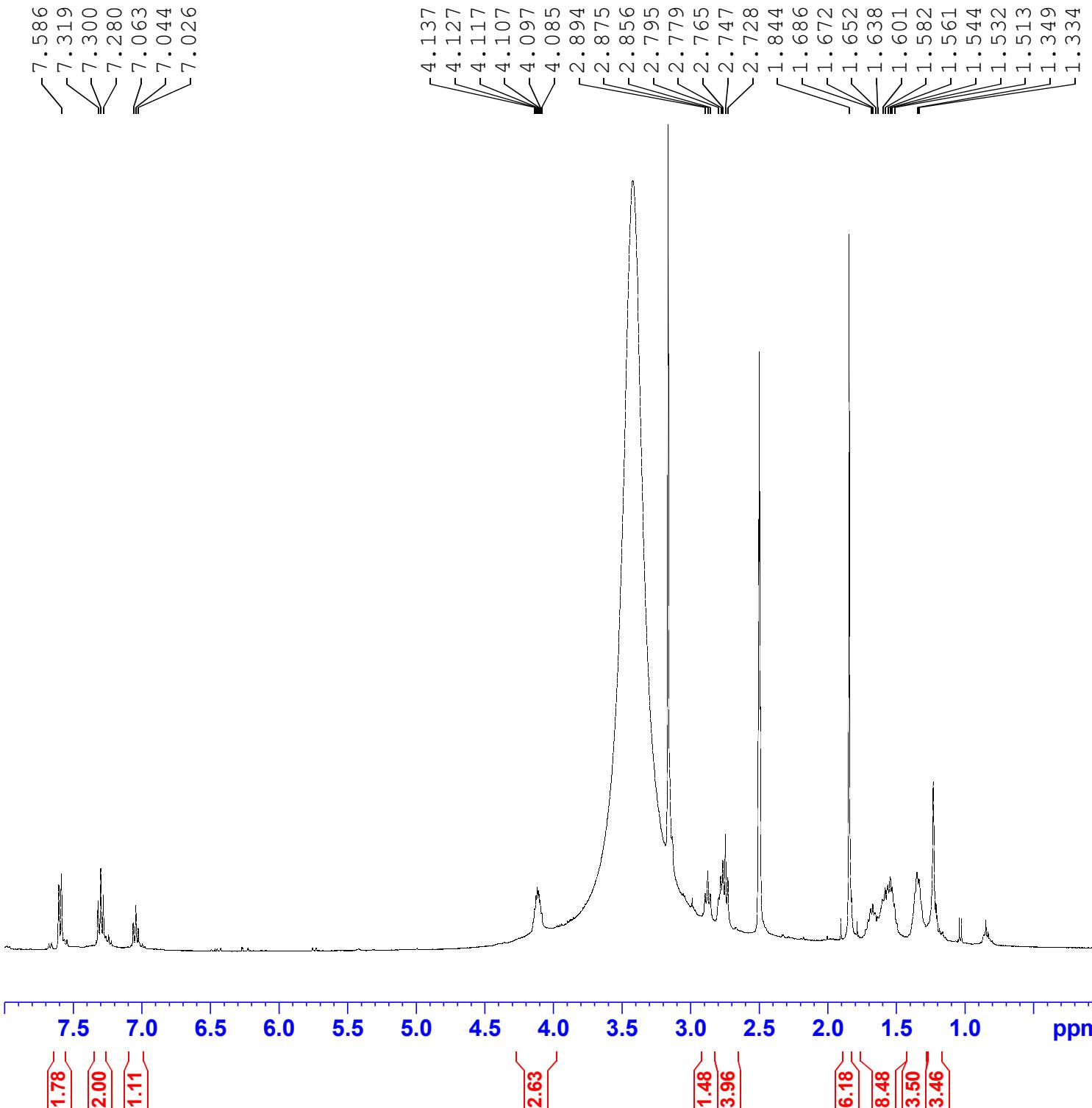
Name	CF3 Acrylamide conjugate (6b)	Rack Pos.		Instrument	Instrument 1	Operator
Inj. Vol. (ul)	5	Plate Pos.		IRM Status	Some ions missed	
Data File	cf3 ac 5.d	Method (Acq)	Hugh Method direct inj	Comment NEGATIVE.m		Acq. Time (Local)      2023-01-23 11:23:36 AM (UTC+11:00)



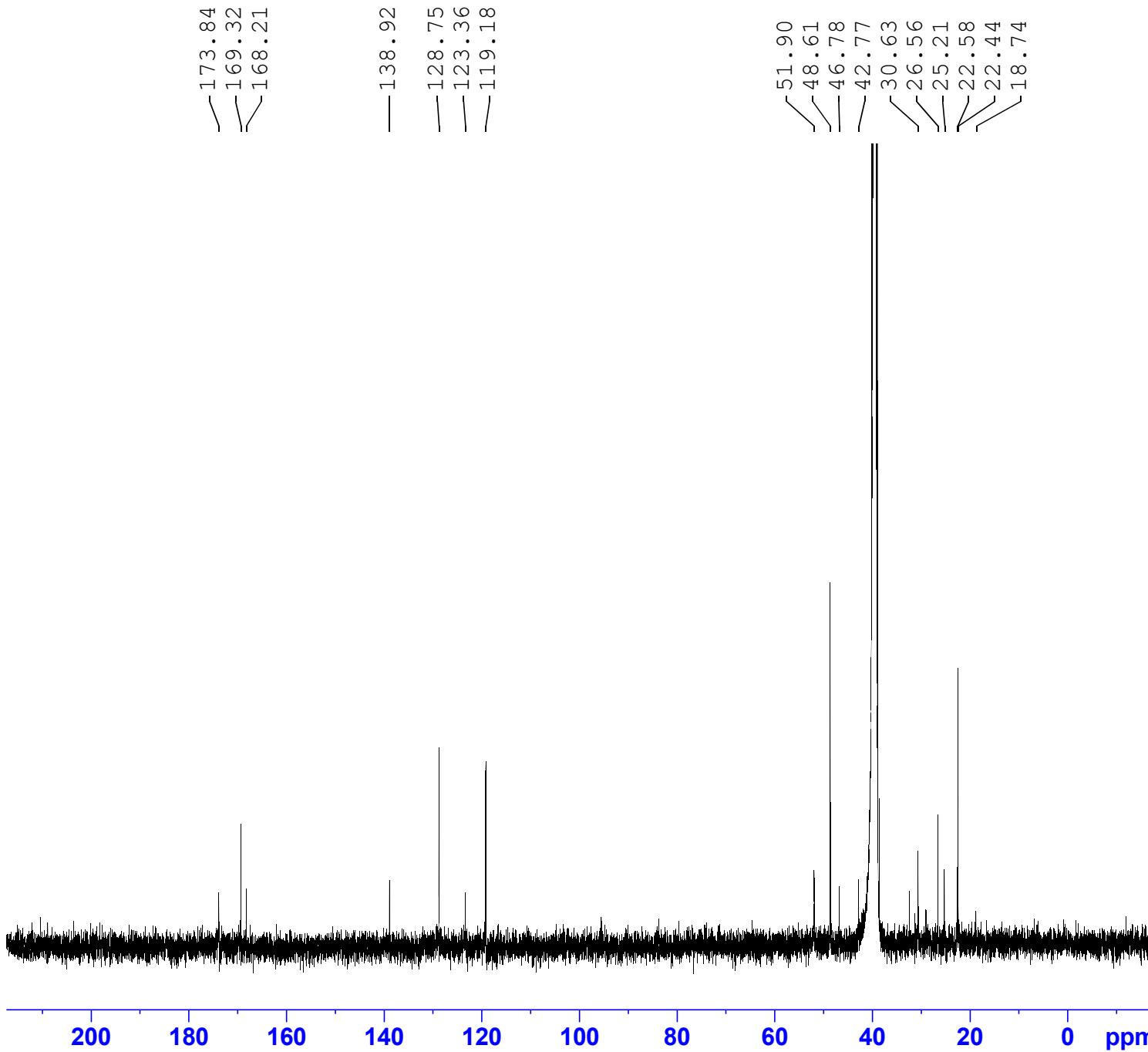
CF<sub>3</sub> Acrylamide Conjugate (**6b**)



## H Acrylamide Conj (6c)



H Acrylamide Conj (6c)

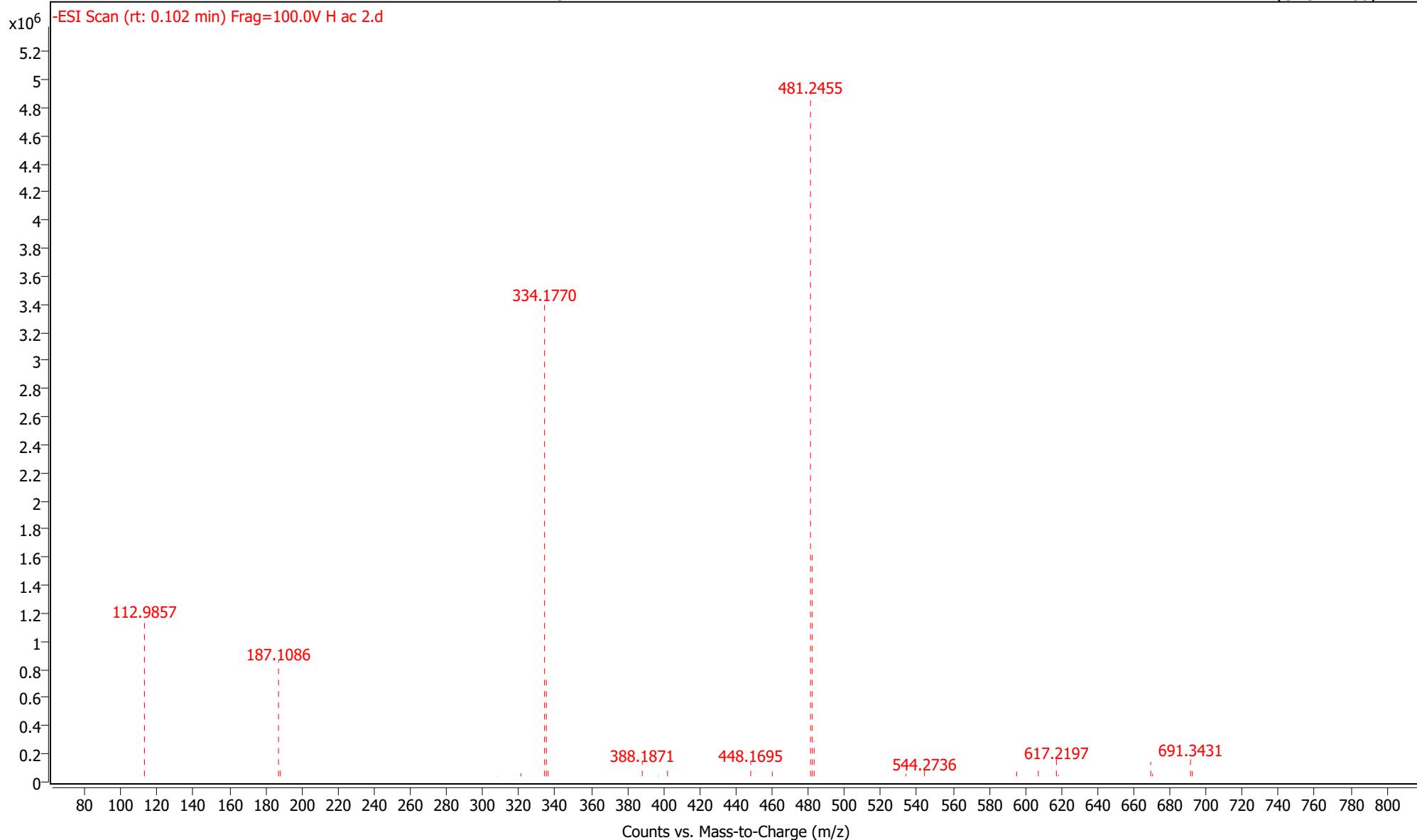


Current Data Parameters  
 NAME H Acrylamide Conj 13C  
 EXPNO 27  
 PROCNO 1

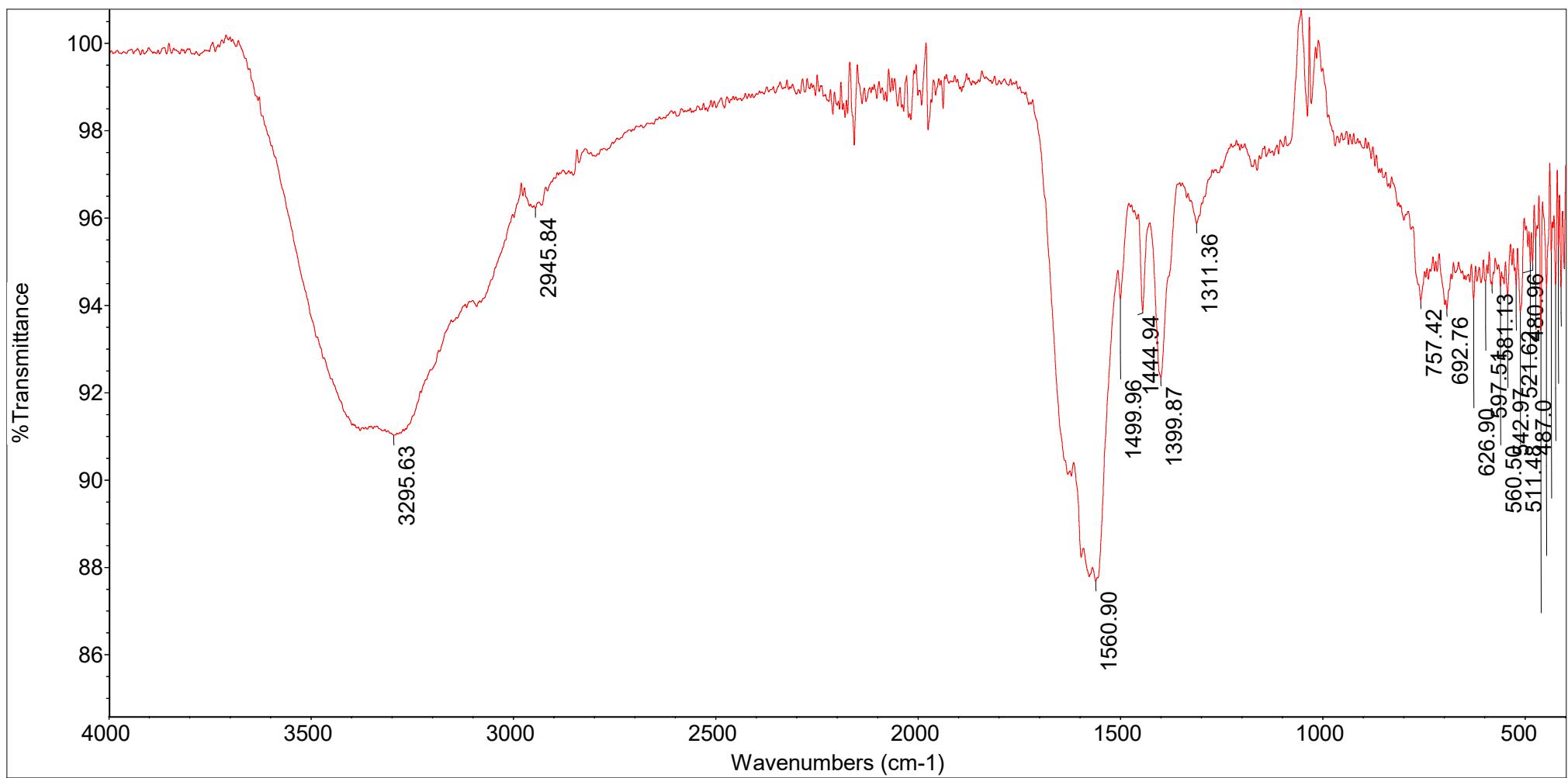
F2 - Acquisition Parameters  
 Date 20230131  
 Time 23.07 h  
 INSTRUM AVNEO  
 PROBHD Z175272\_0008 (zgpg30  
 PULPROG 65536  
 TD DMSO-Ed  
 NS 4200  
 DS 4  
 SWH 23809.523 Hz  
 FIDRES 0.726609 Hz  
 AQ 1.3762560 sec  
 RG 101  
 DW 21.000 usec  
 DE 6.50 usec  
 TE 298.0 K  
 D1 2.0000000 sec  
 D11 0.03000000 sec  
 TD0 1  
 SFO1 100.6278593 MHz  
 NUC1 13C  
 P0 3.33 usec  
 P1 10.00 usec  
 PLW1 58.38199997 W  
 SFO2 400.1516006 MHz  
 NUC2 1H  
 CPDPRG[2] waltz65  
 PCPD2 90.00 usec  
 PLW2 19.63299942 W  
 PLW12 0.24237999 W  
 PLW13 0.12192000 W

F2 - Processing parameters  
 SI 32768  
 SF 100.6178948 MHz  
 WDW EM  
 SSB 0  
 LB 1.00 Hz  
 GB 0  
 PC 1.40

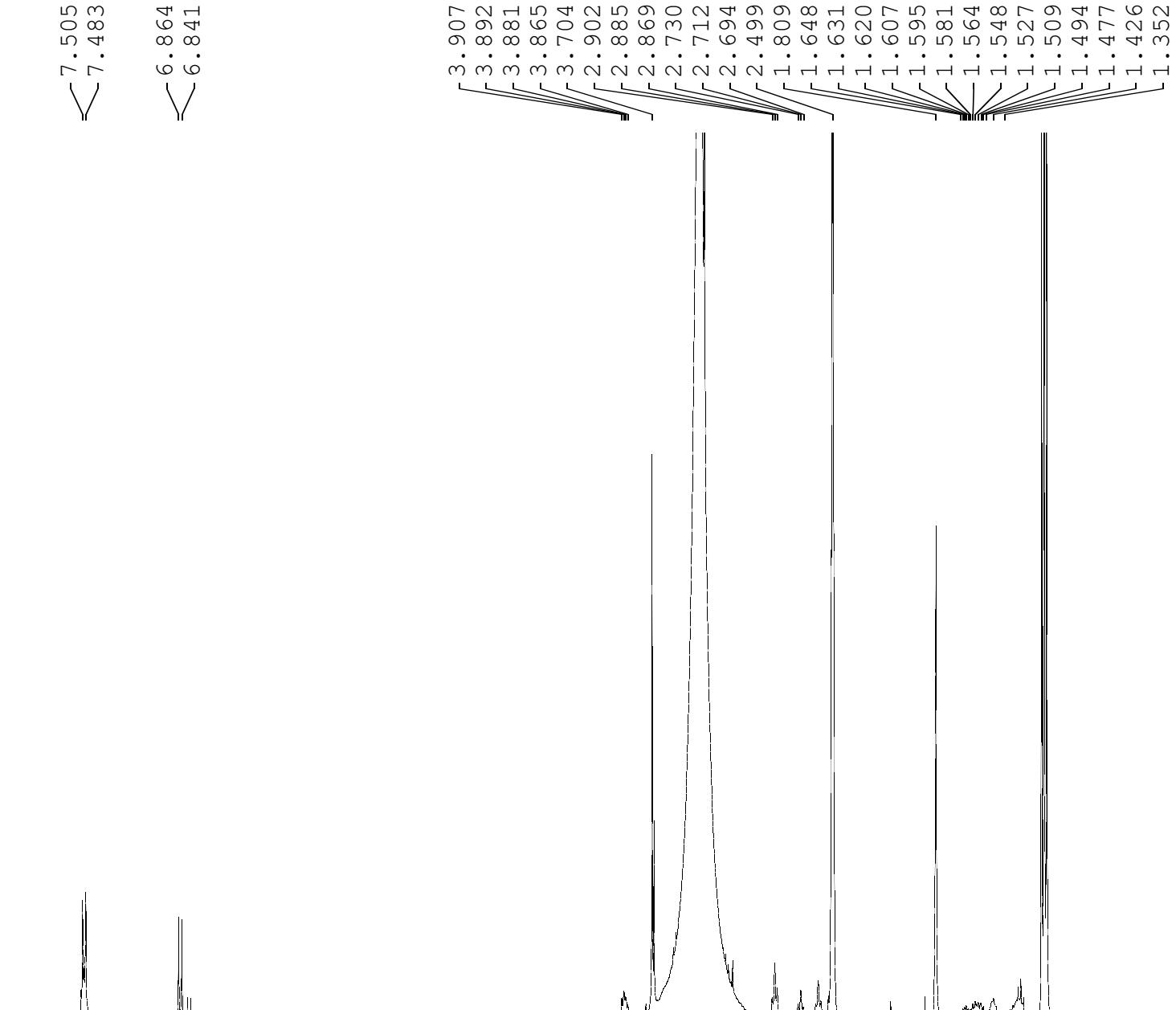
Name	H acrylamide Conjugate ( <b>6c</b> )	Rack Pos.		Instrument	Instrument 1	Operator
Inj. Vol. (ul)	5	Plate Pos.		IRM Status	Some ions missed	
Data File	H ac 2.d	Method (Acq)	Hugh Method direct inj	Comment		Acq. Time (Local)      2023-01-23 1:42:02 PM (UTC+11:00)



H acrylamide Conjugate (**6c**)



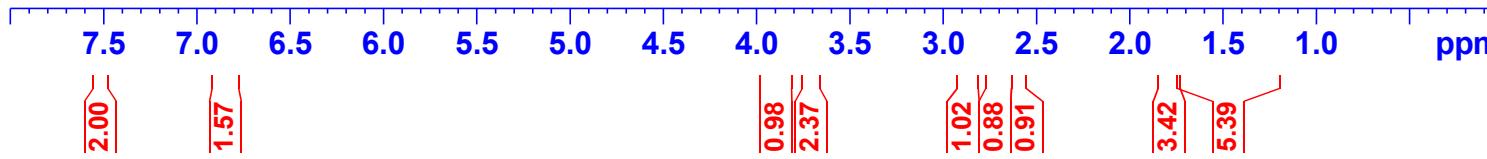
## OMe Acrylamide Conj (6d)



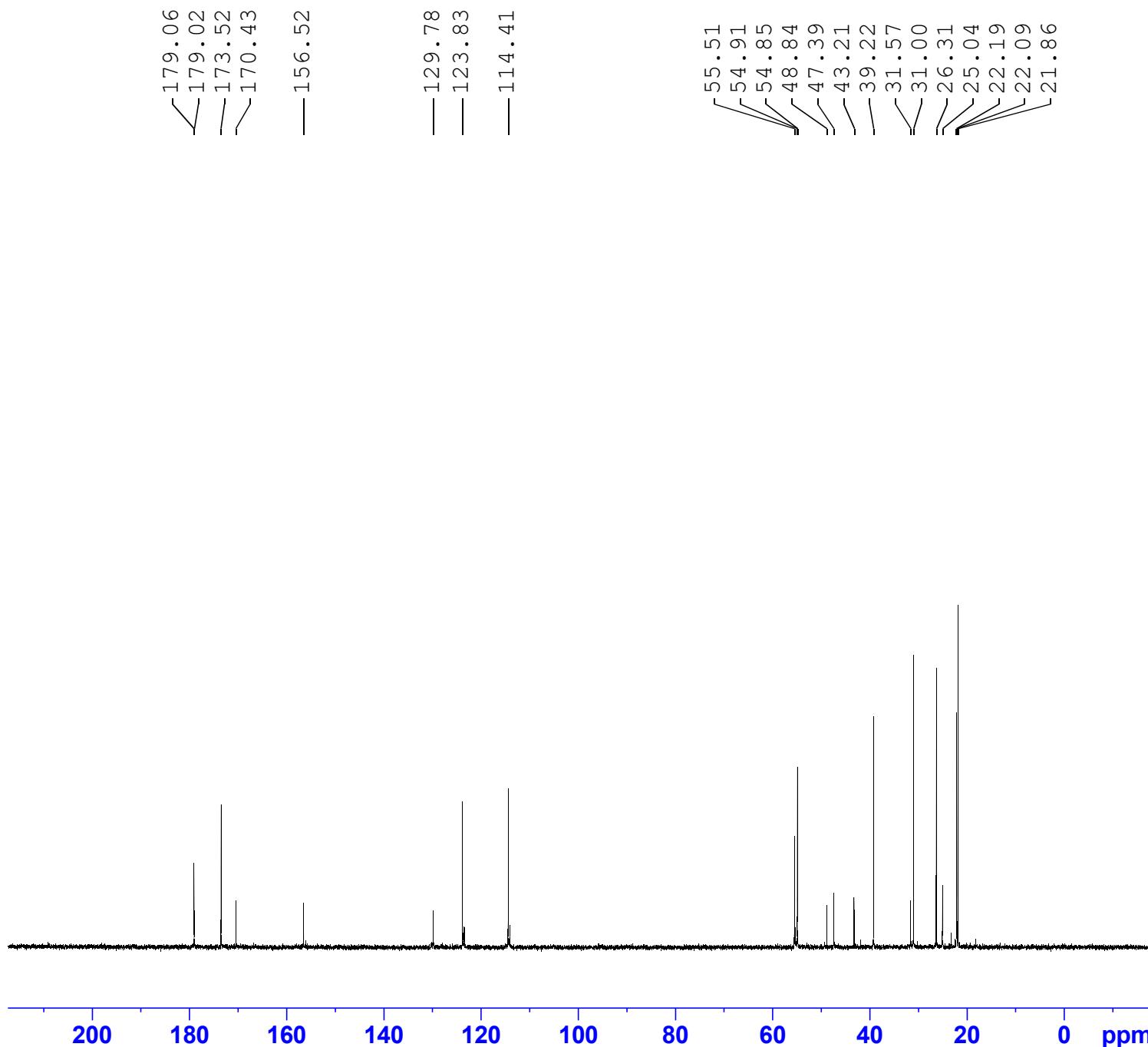
Current Data Parameters  
 NAME OMe Acrylamide Conj  
 EXPNO 11  
 PROCNO 1

F2 - Acquisition Parameters  
 Date 20230130  
 Time 17.02 h  
 INSTRUM AVNEO  
 PROBHD Z175272\_0008 (zg30  
 PULPROG zg30  
 TD 131072  
 SOLVENT DMSO-Ed  
 NS 64  
 DS 2  
 SWH 8196.722 Hz  
 FIDRES 0.125072 Hz  
 AQ 7.9953918 sec  
 RG 101  
 DW 61.000 usec  
 DE 13.54 usec  
 TE 298.0 K  
 D1 1.00000000 sec  
 TDO 1  
 SFO1 400.1524709 MHz  
 NUC1 1H  
 P0 3.33 usec  
 P1 10.00 usec  
 PLW1 19.63299942 W

F2 - Processing parameters  
 SI 65536  
 SF 400.1502105 MHz  
 WDW EM  
 SSB 0  
 LB 0.30 Hz  
 GB 0  
 PC 1.00



OMe Acrylamide Conj. (6d)



Current Data Parameters  
 NAME OMe Acrylamide conj 13c  
 EXPNO 14  
 PROCNO 1

F2 - Acquisition Parameters  
 Date 20230119  
 Time 3.56 h  
 INSTRUM AVNEO  
 PROBHD Z175272\_0008 (zgpg30  
 PULPROG 65536  
 TD D20  
 SOLVENT 3600  
 NS 4  
 DS 23809.523 Hz  
 FIDRES 0.726609 Hz  
 AQ 1.3762560 sec  
 RG 101  
 DW 21.000 usec  
 DE 6.50 usec  
 TE 298.0 K  
 D1 2.0000000 sec  
 D11 0.0300000 sec  
 TDO 1  
 SFO1 100.6278593 MHz  
 NUC1 13C  
 P0 3.33 usec  
 P1 10.00 usec  
 PLW1 58.38199997 W  
 SFO2 400.1516006 MHz  
 NUC2 1H  
 CPDPRG[2] waltz65  
 PCPD2 90.00 usec  
 PLW2 19.63299942 W  
 PLW12 0.24237999 W  
 PLW13 0.12192000 W

F2 - Processing parameters  
 SI 32768  
 SF 100.6177975 MHz  
 WDW EM  
 SSB 0  
 LB 1.00 Hz  
 GB 0  
 PC 1.40

Name OMe Acrylamide conj (6d)

Inj. Vol. (ul)

5

Rack Pos.

Plate Pos.

Method (Acq)

Instrument

IRM Status

Instrument 1

Some ions missed

Operator

Data File

OME ac 3.d

Hugh Method direct inj  
NEGATIVE.m

Comment

Acq. Time (Local)

2023-01-23 11:43:06  
AM (UTC+11:00)