

## Electronic Supplementary Information

Solution-phase-peptide synthesis *via* the Group-Assisted Purification (GAP) chemistry without using chromatography and recrystallization<sup>†</sup>

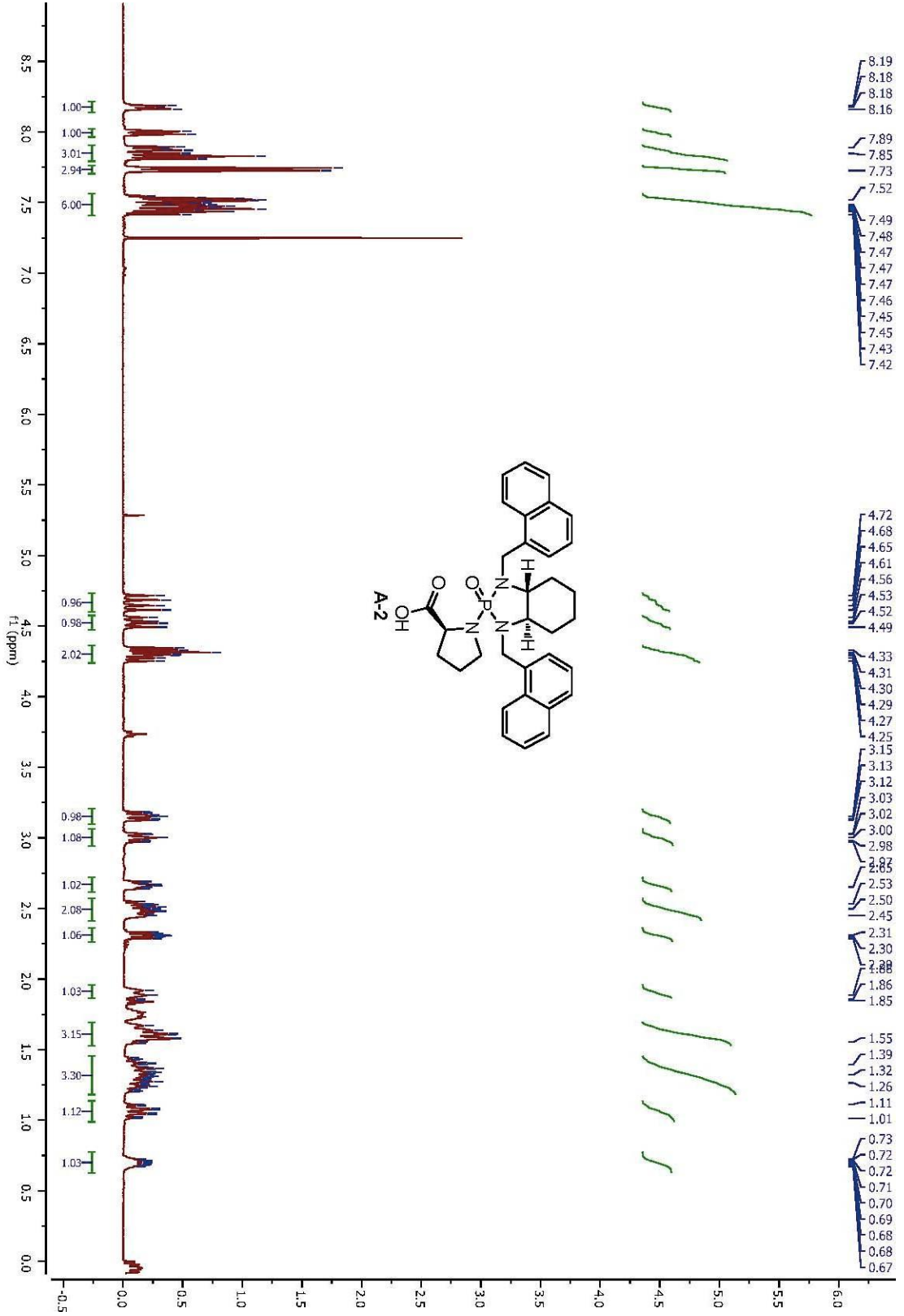
Jianbin Wu,<sup>a,b</sup> Guanghui An,<sup>a,b</sup> Siqi Lin,<sup>b</sup> Jianbo Xie,<sup>b</sup> Wei Zhou,<sup>a,b</sup> Hao Sun,<sup>a</sup> Yi Pan<sup>a</sup>  
& Guigen Li<sup>a,b,\*</sup>

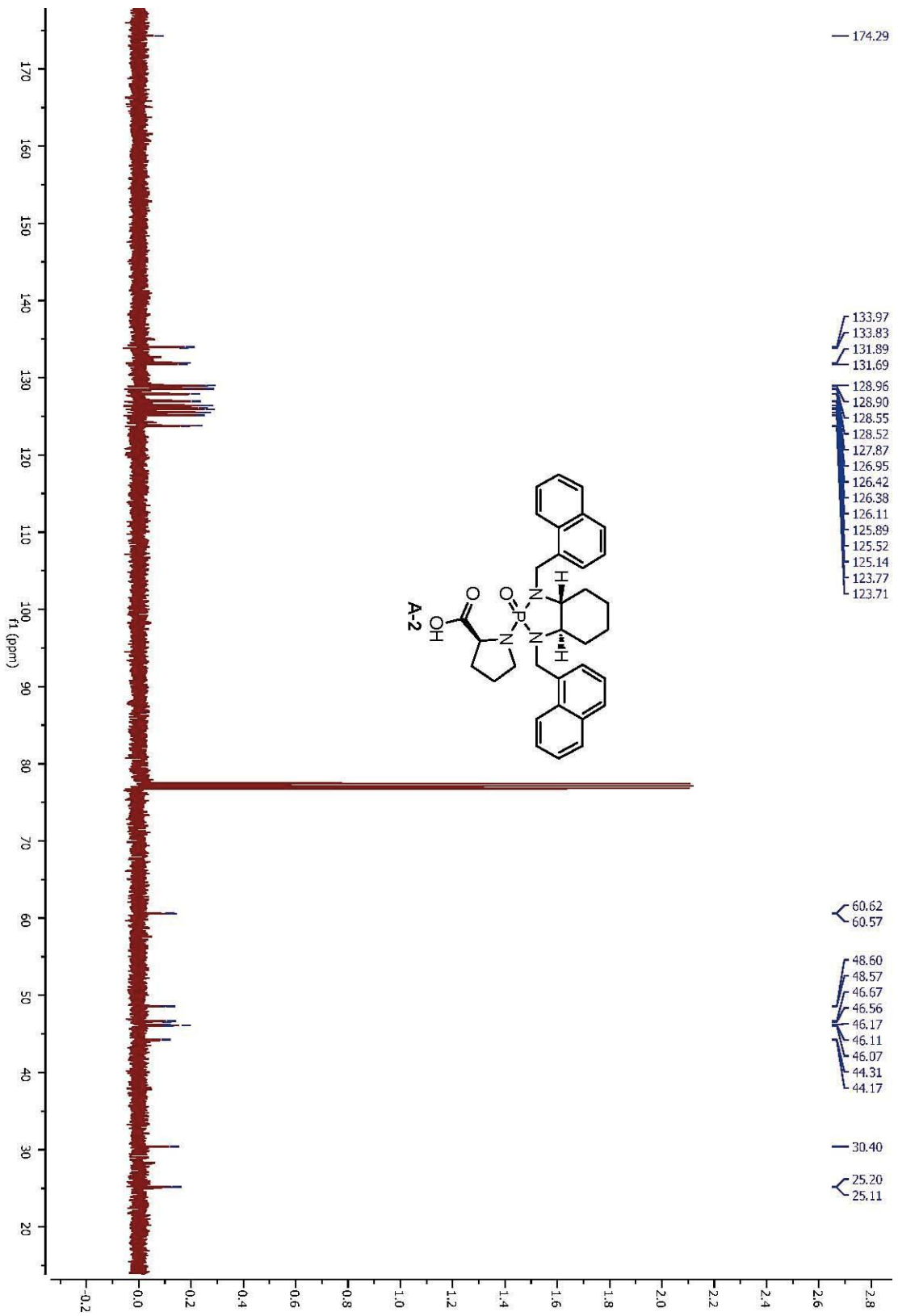
<sup>a</sup>Institute of Chemistry & BioMedical Sciences, Nanjing University, Nanjing 210093, P. R. China;

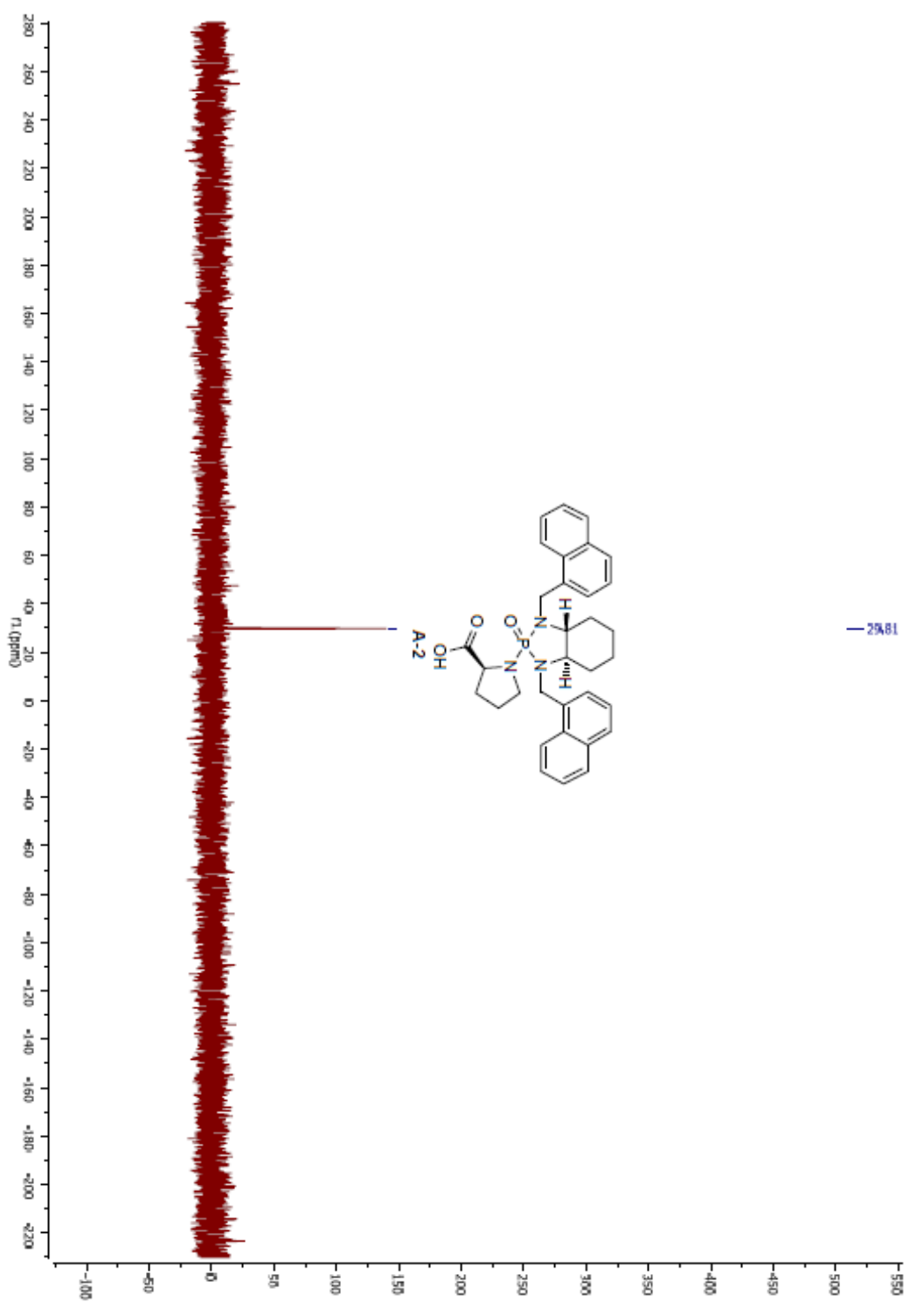
<sup>b</sup>Department of Chemistry and Biochemistry, Texas Tech University, Lubbock, TX 79409-1061, USA.

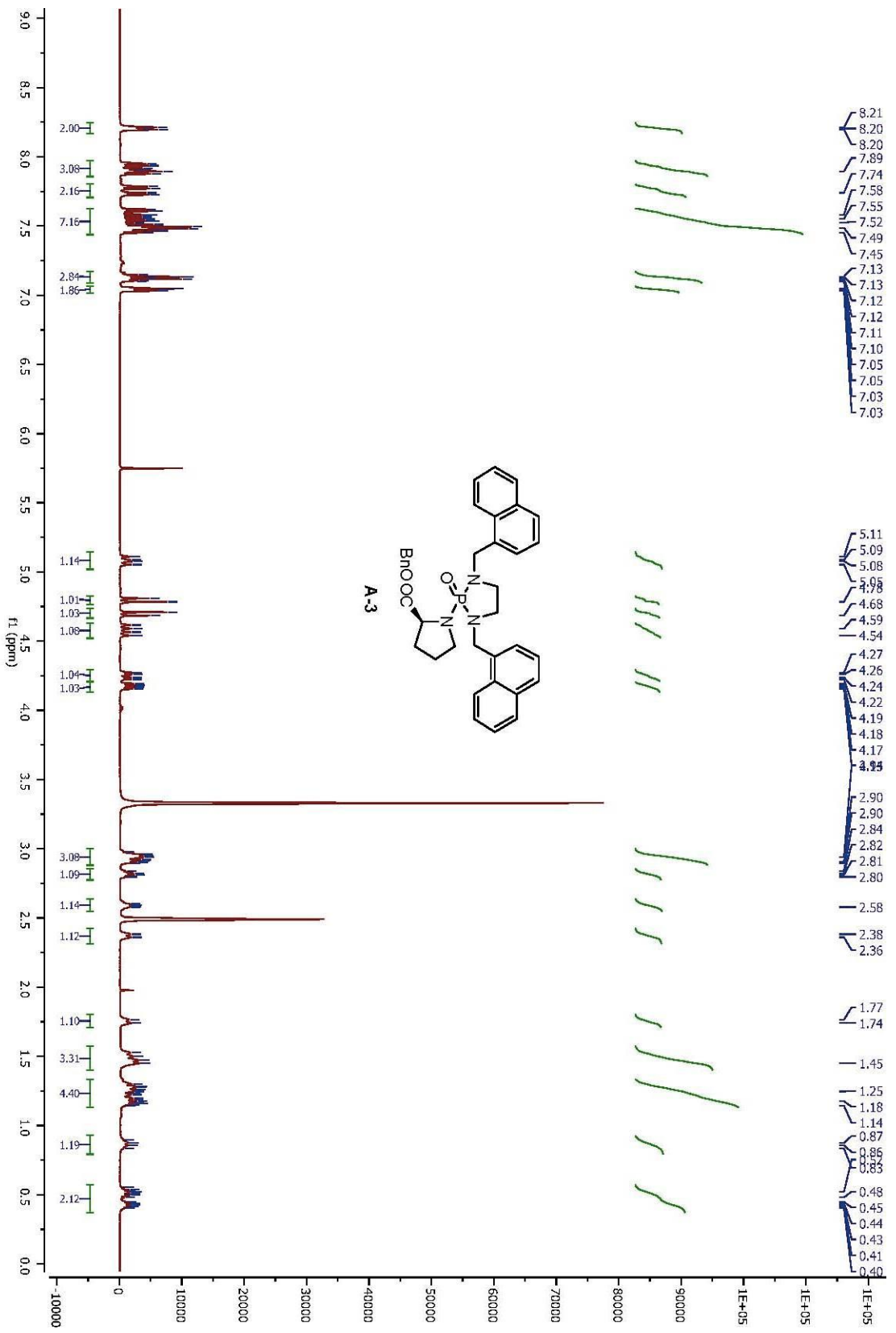
*Corresponding should be addressed to G.L. (guigenli@nju.edu.cn; guigen.li@ttu.edu).*

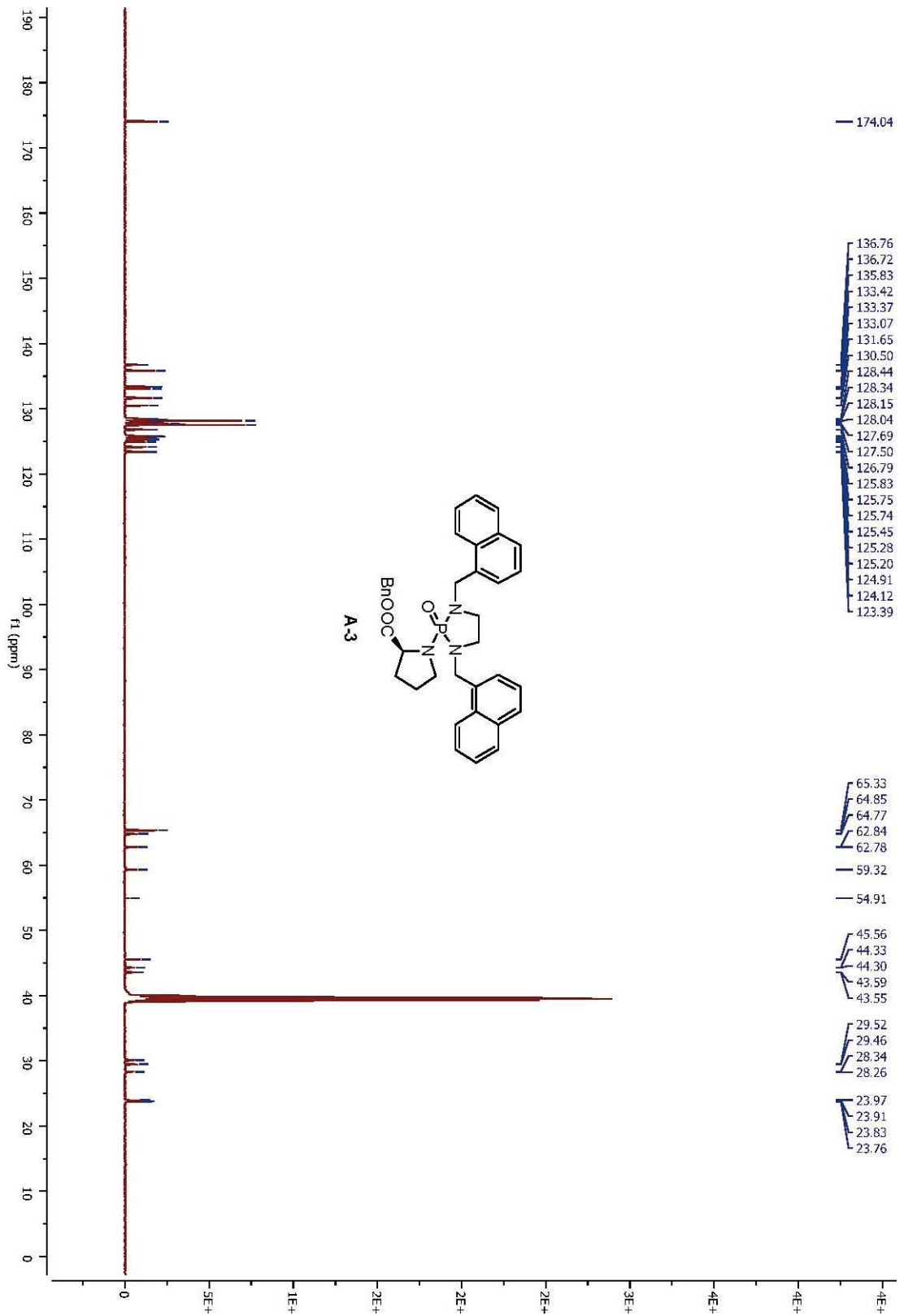
<sup>1</sup>H NMR, <sup>13</sup>C NMR and <sup>31</sup>P NMR spectra of products **A2-A5**, **I-1a**, **I-2**, **I-2a-I-2j**, **I-3a** and **1**.  
Mass spectra of products **I-1a**, **I-2**, **I-2a-I-2j**, **I-3a** and **1**.



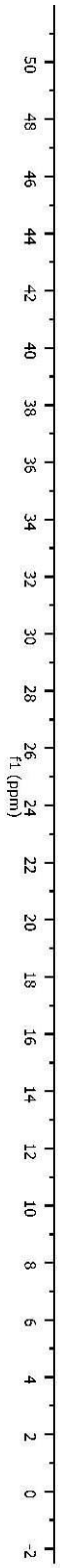
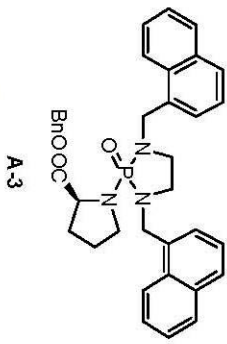


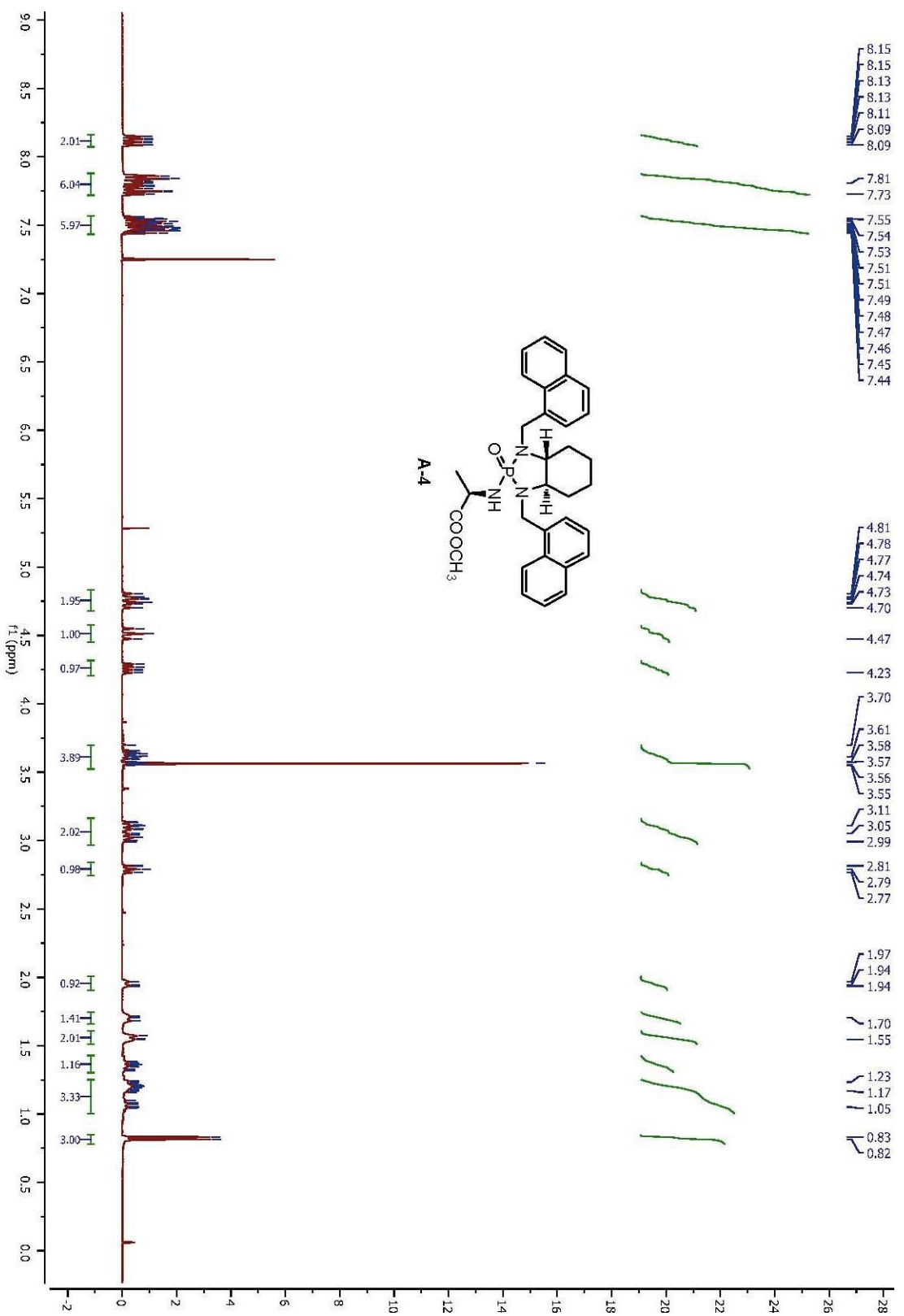




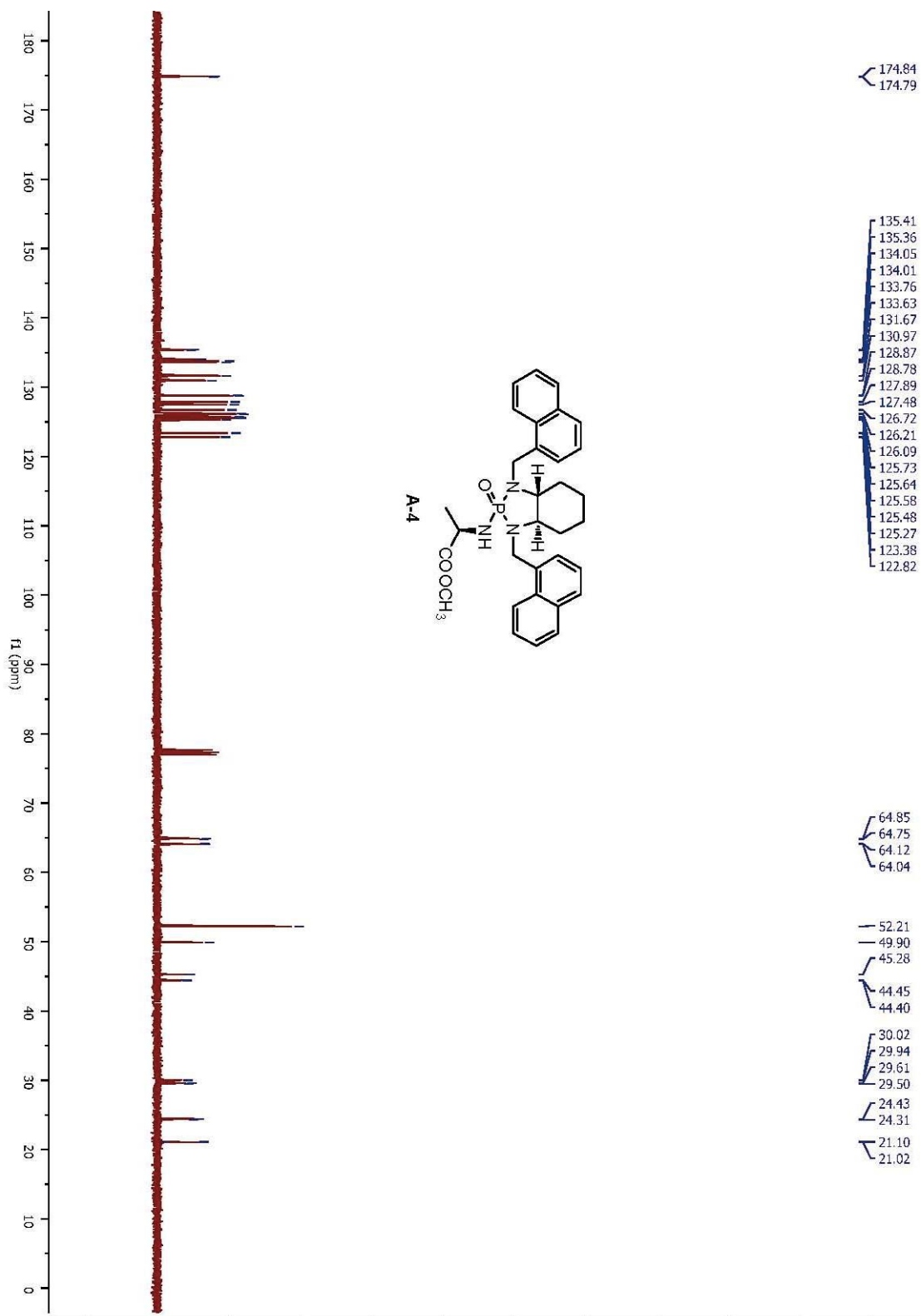


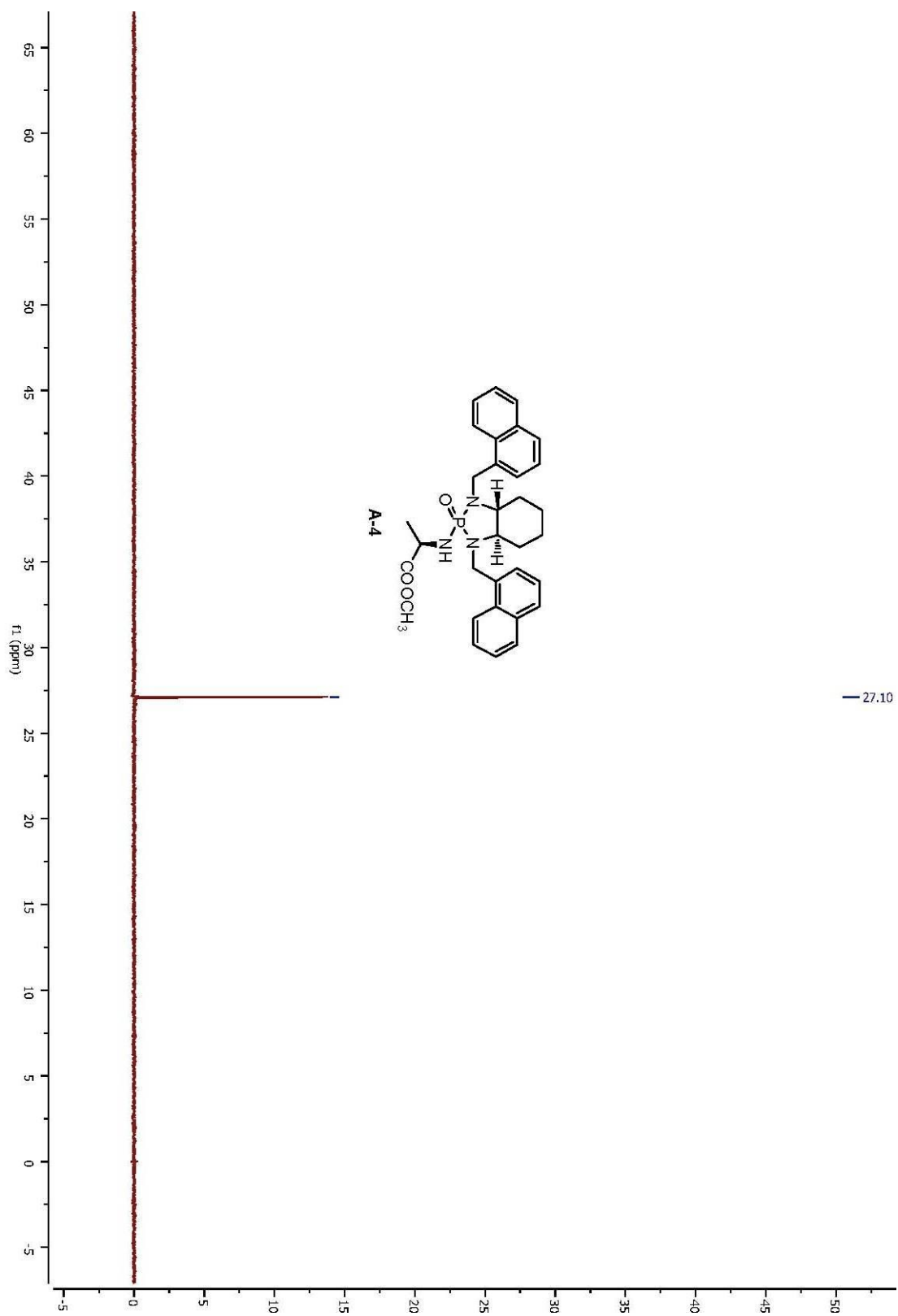
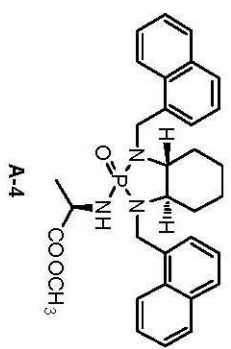
— 26.92



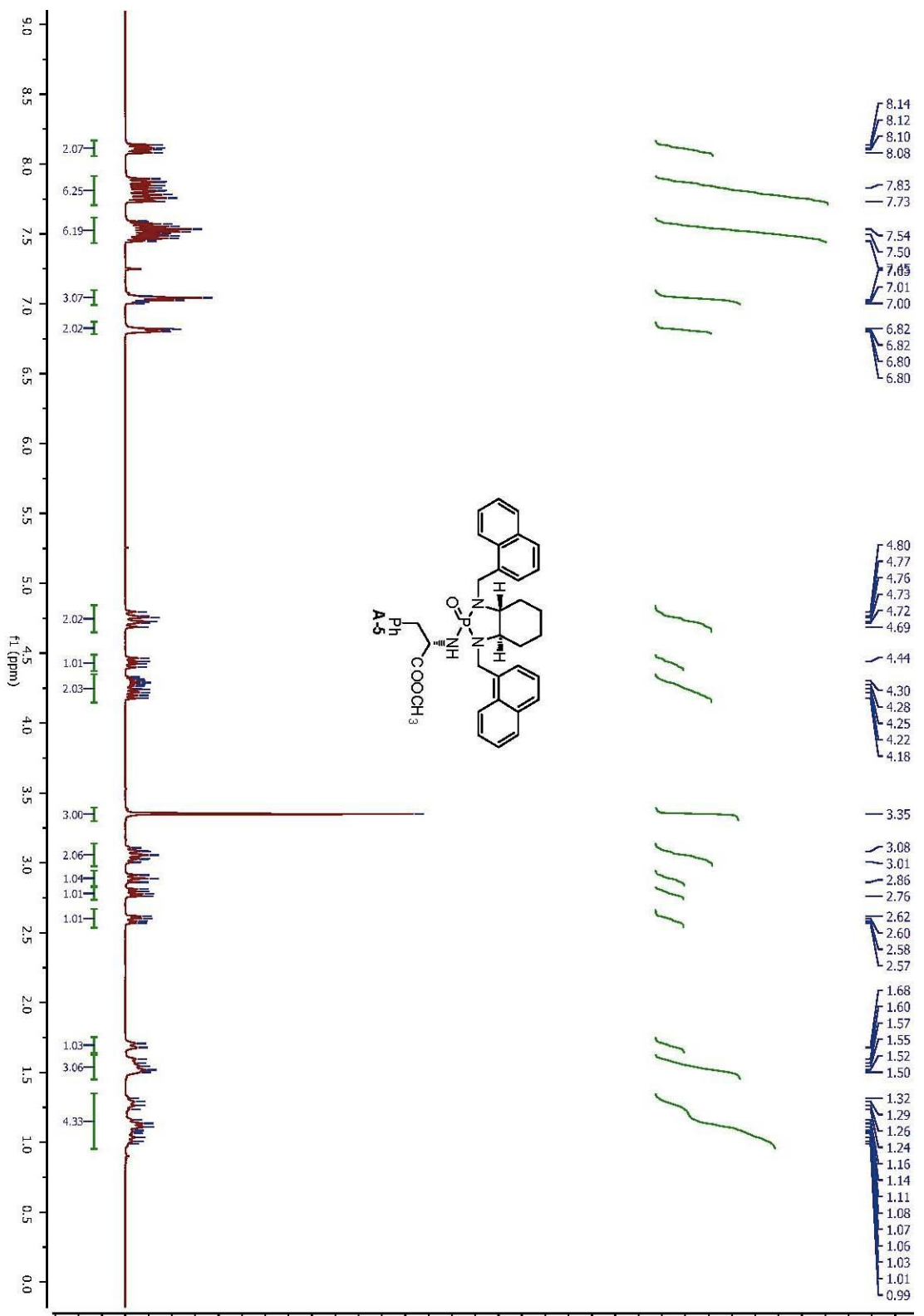


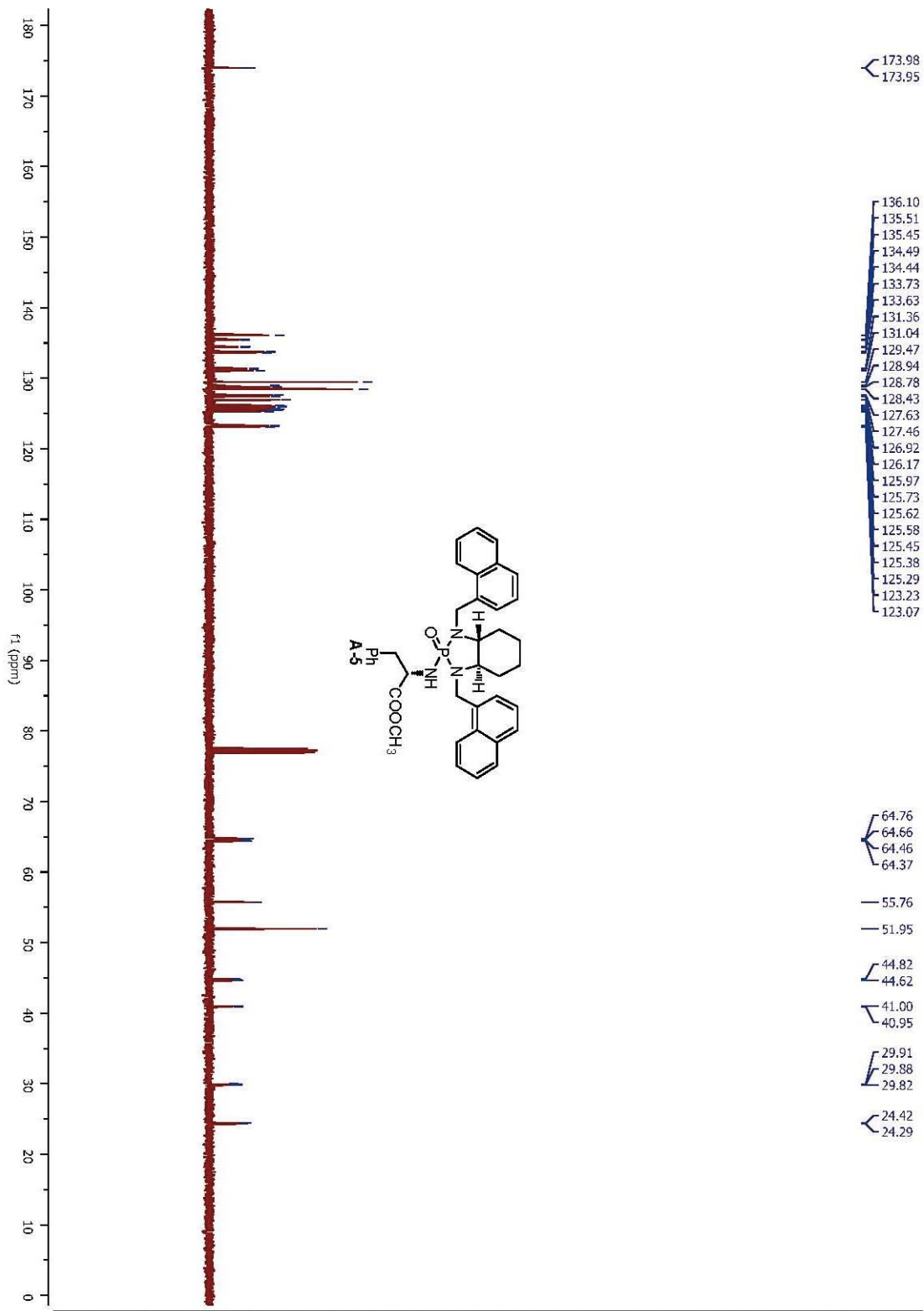


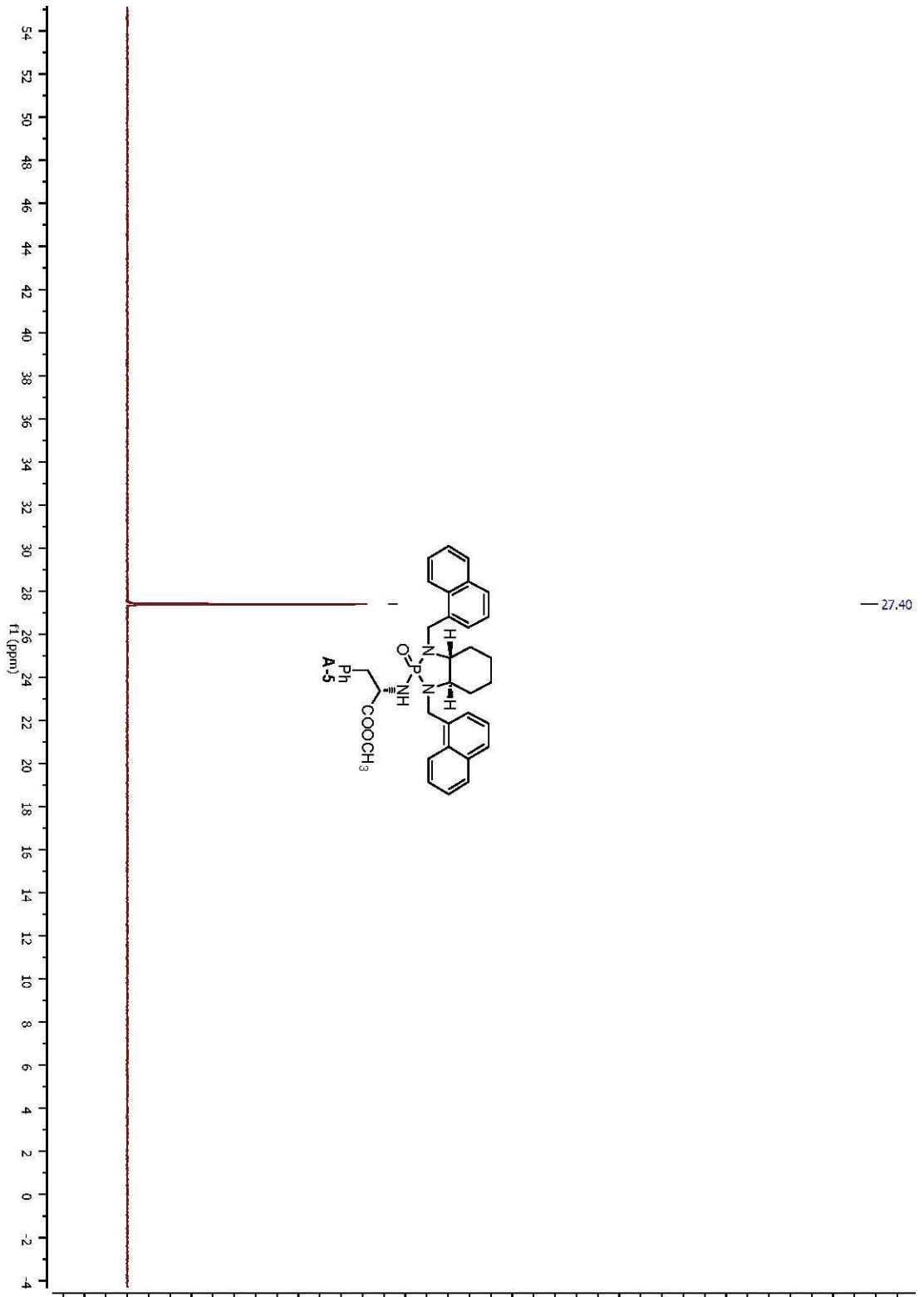




— 27.10





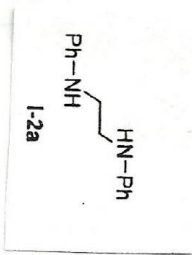


— 27.40

abundance

0 1.0 2.0 3.0 4.0 5.0 6.0 7.0 8.0 9.0 10.0 11.0 12.0 13.0 14.0 15.0 16.0 17.0 18.0 19.0

WJ004-84 CDCl3



X : parts per Million : 1H

7.2102  
7.1884  
7.1701  
6.7531  
6.7348  
6.6546  
6.6363



3.83

2.0

4.03

3.8356

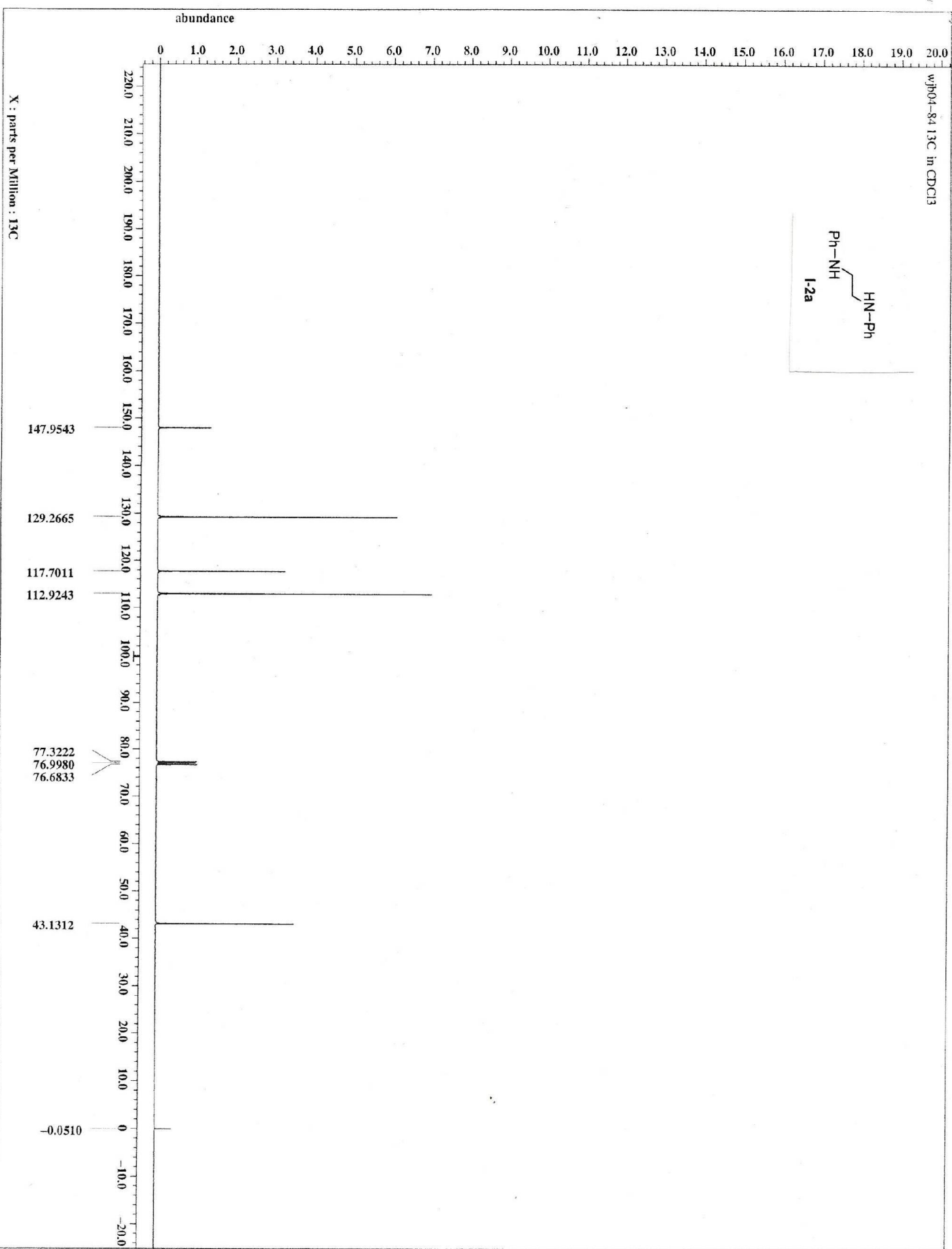
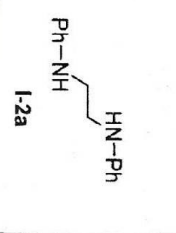
1.63

3.3839

4

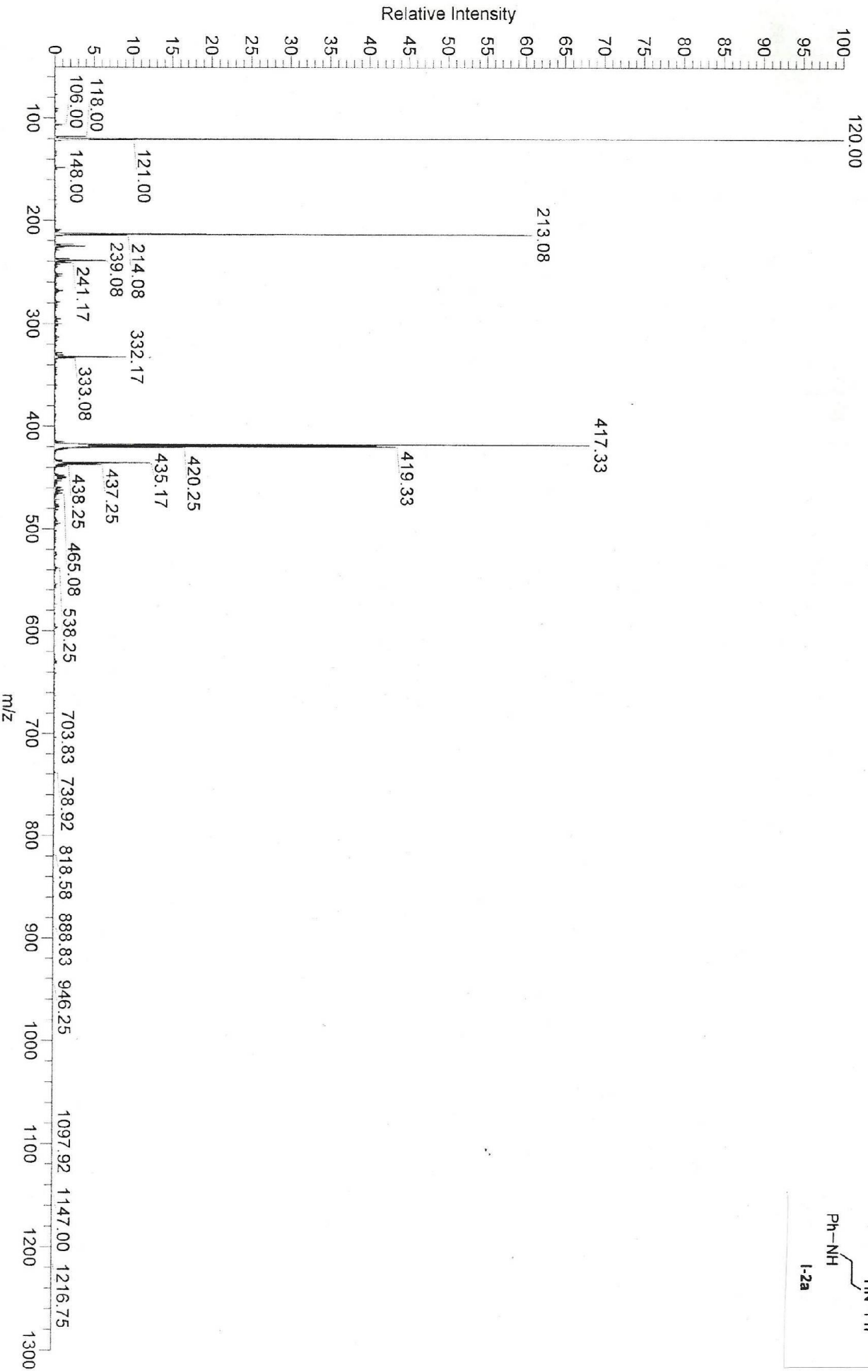
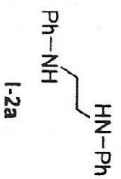
0.0096  
0.0016  
-0.0064

-1.0

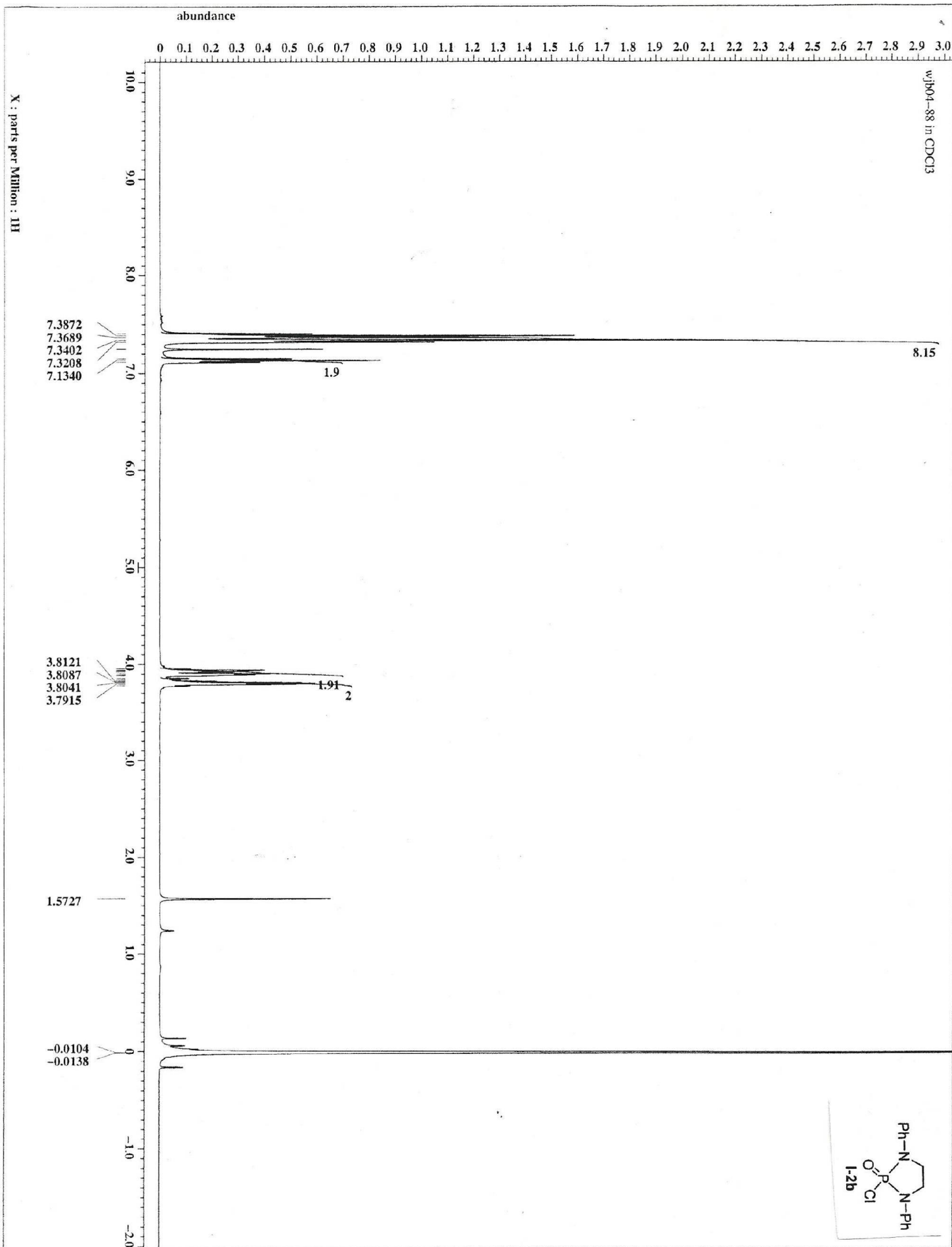


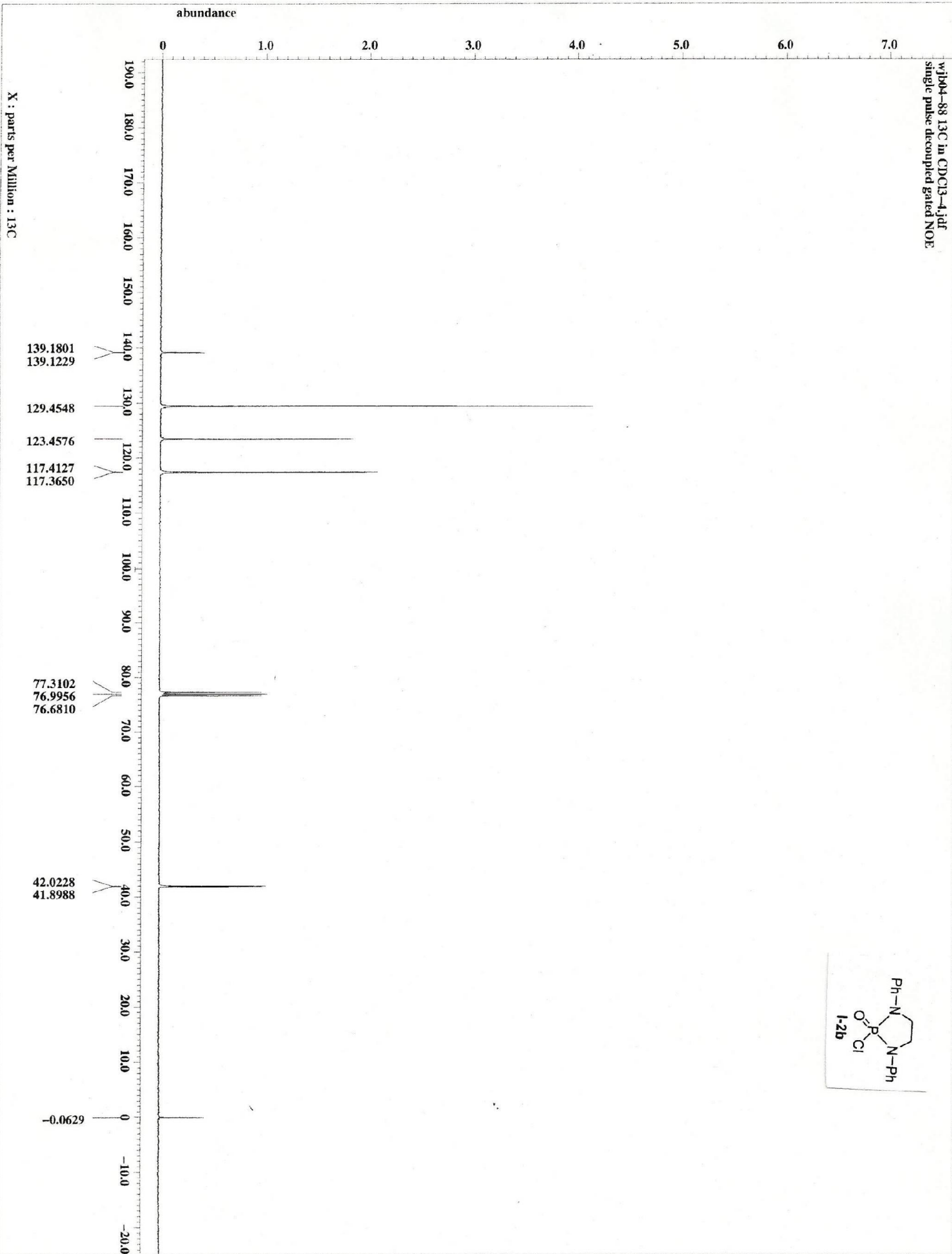
#276 RT: 1.011 AV: 10 IT: 4.481 ST: 0.20 uS: 1 NL: 1.14E4  
F: ITMS + p ESI Full ms [50.00-1300.00]

VJB 04-84

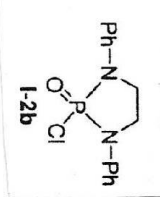




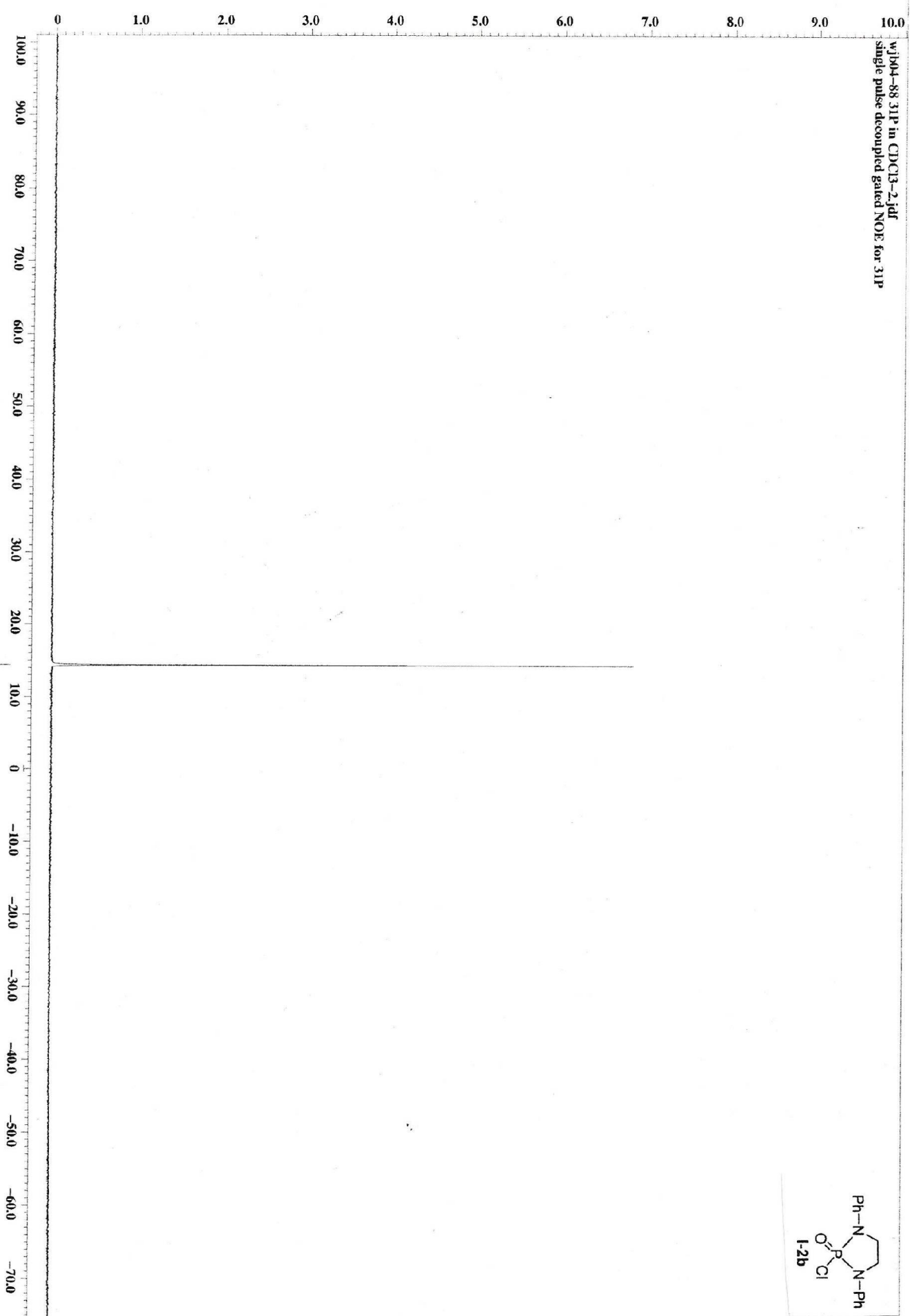




wjmd-88 31P in CDCl3-2.jdt  
single pulse decoupled gated NOE for 31P

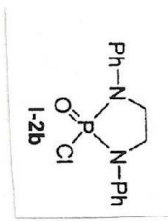
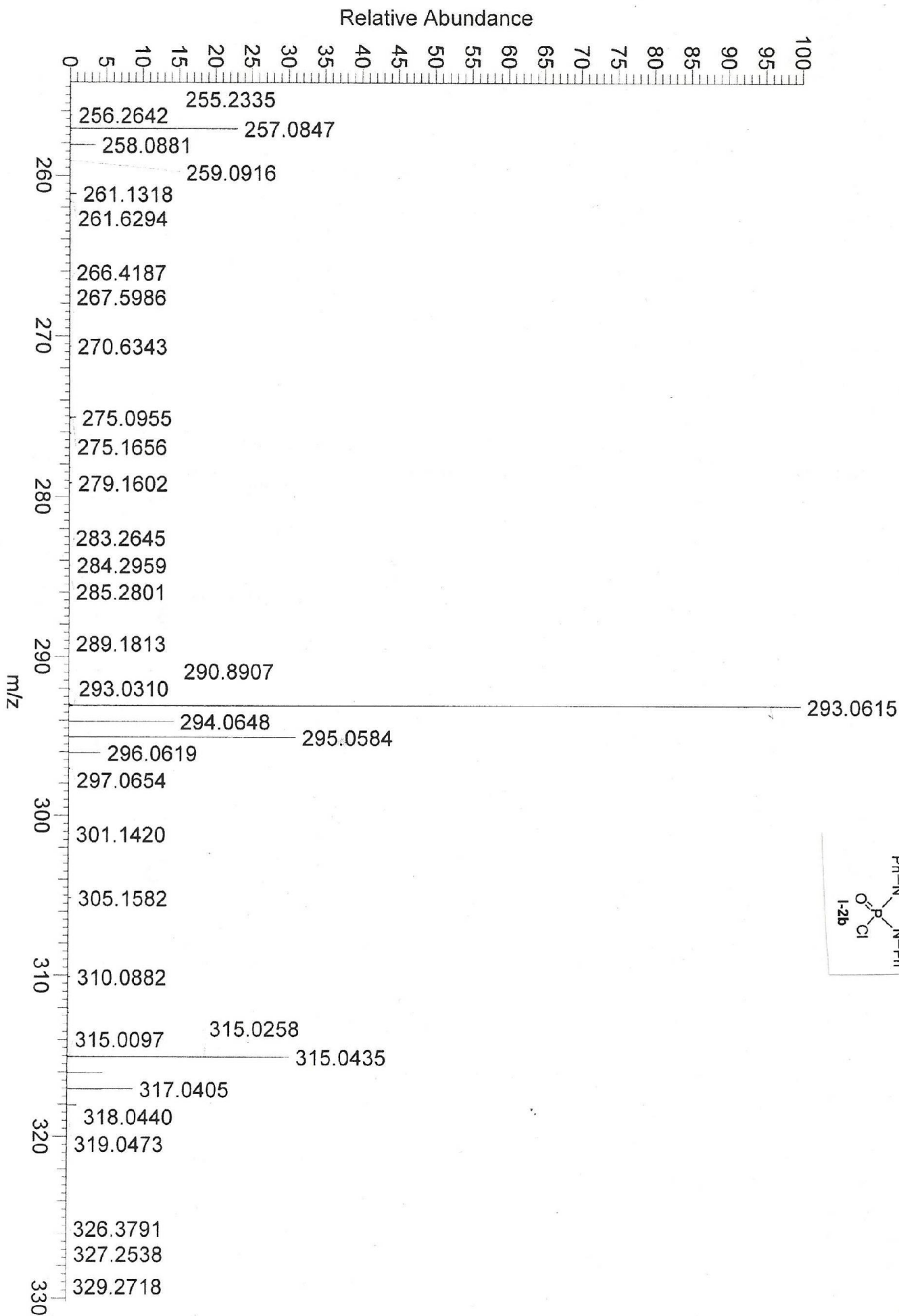


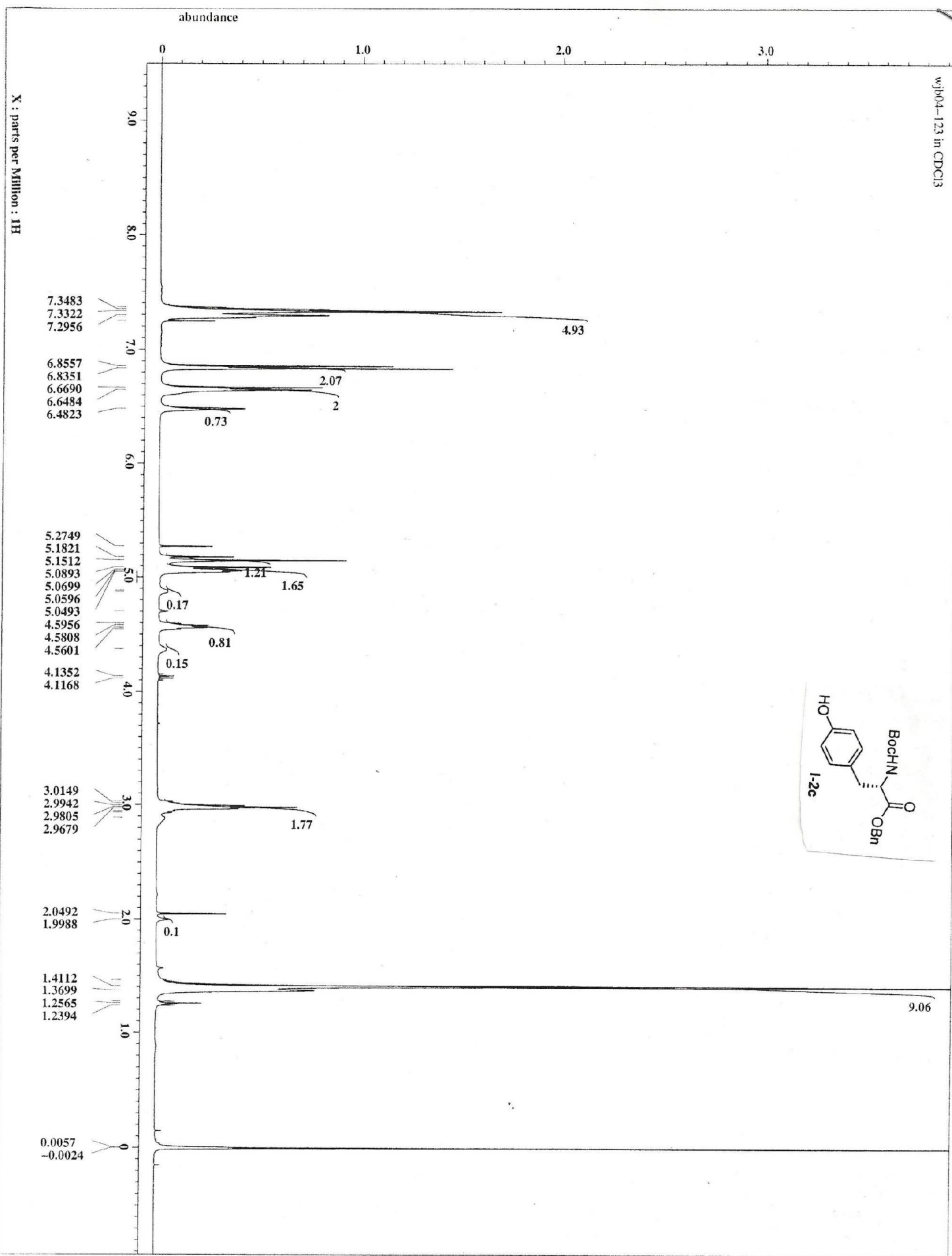
abundance



X : parts per Million : 31P

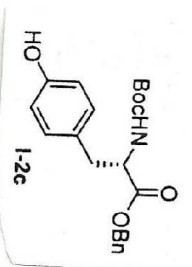
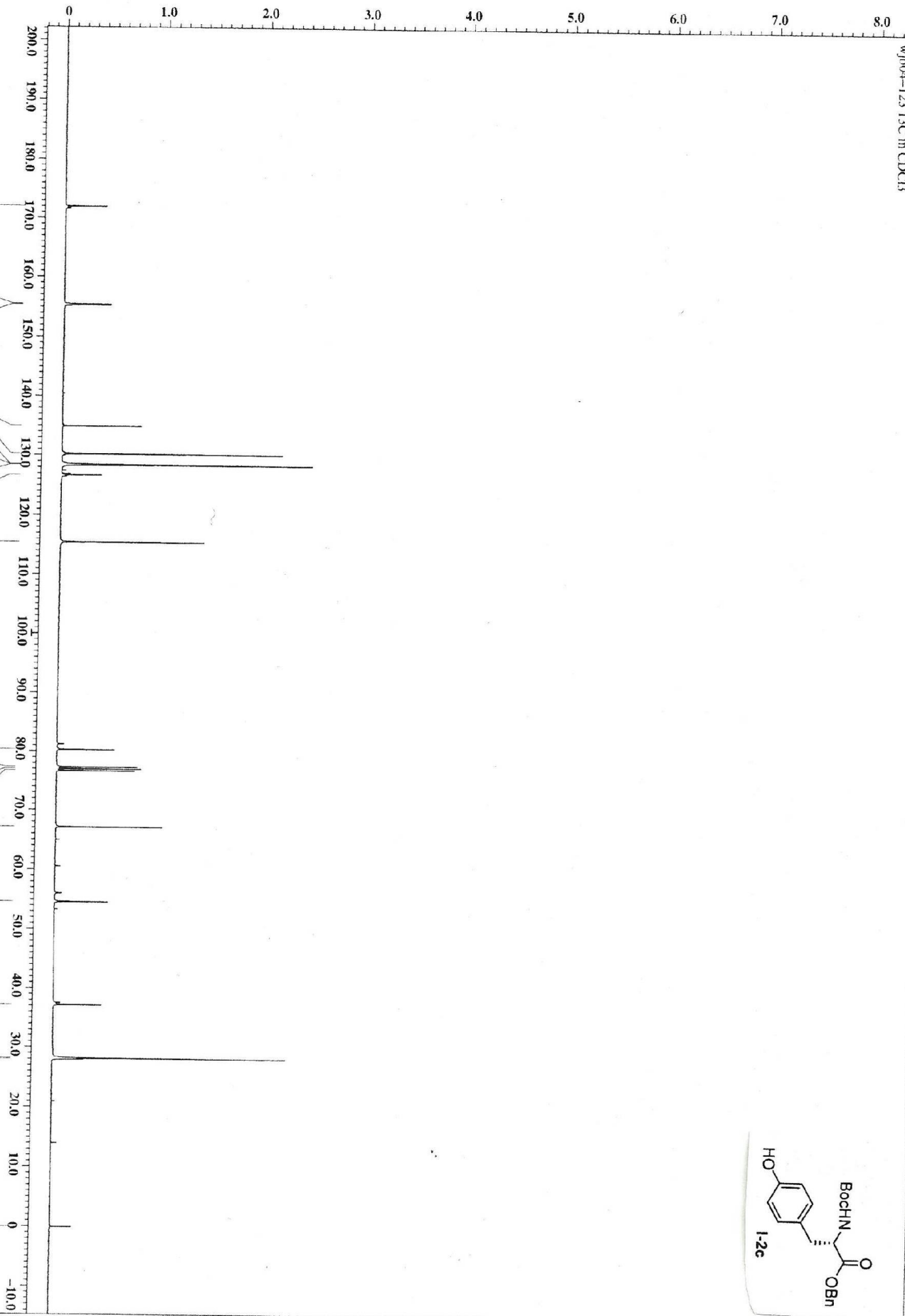
W04-88\_12042012\_01 #328 RT: 2.59 AV: 1 NL: 4.86E6  
 T: FTMS + p ESI Full ms [150.00-2000.00]





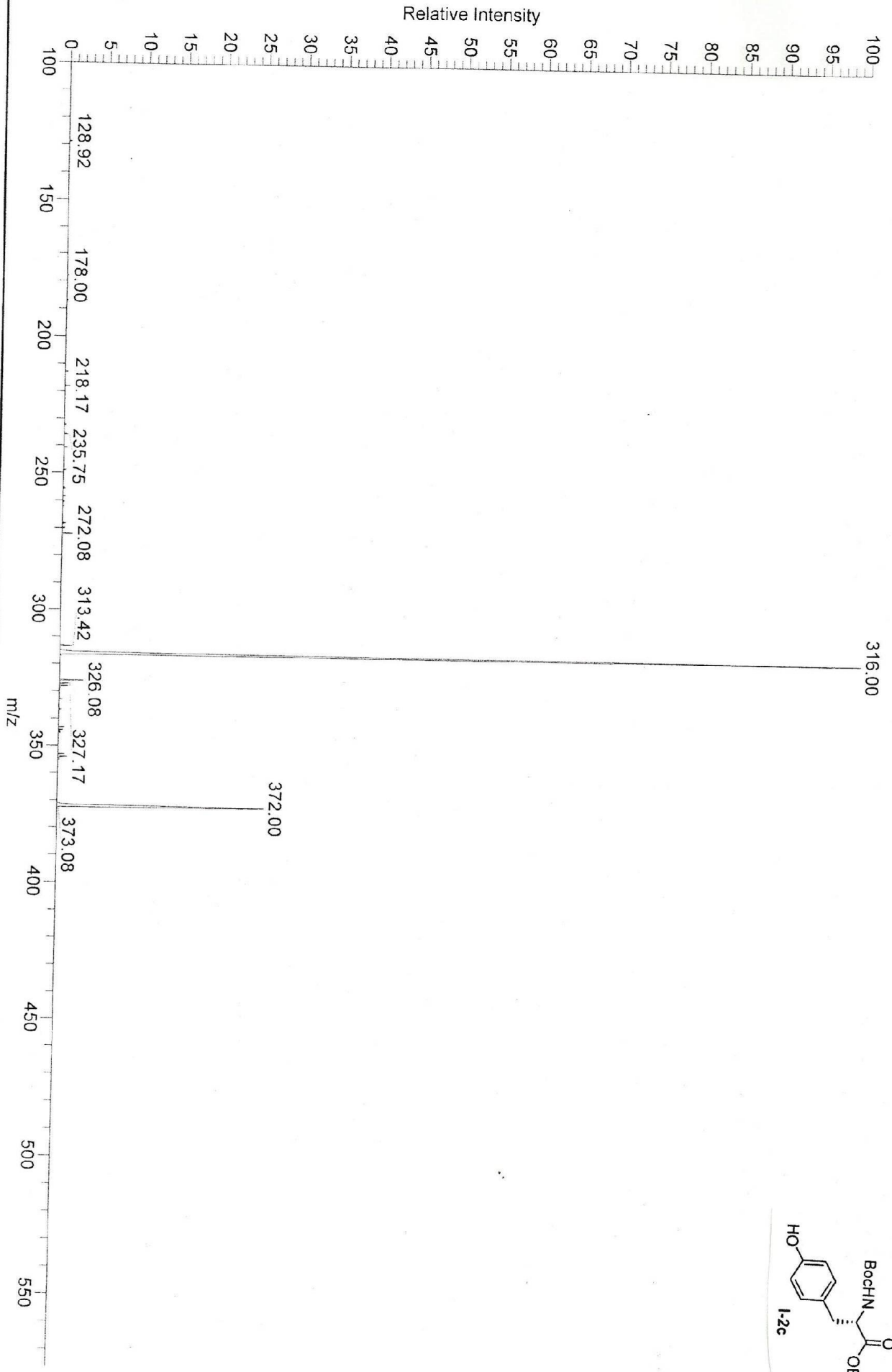
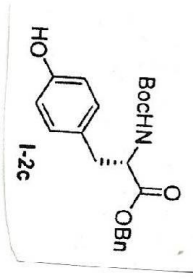
abundance

X : parts per Million : 13C

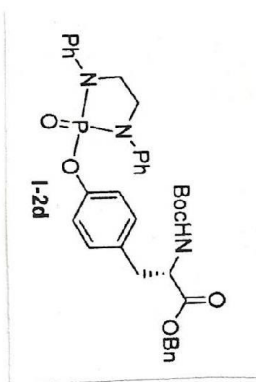
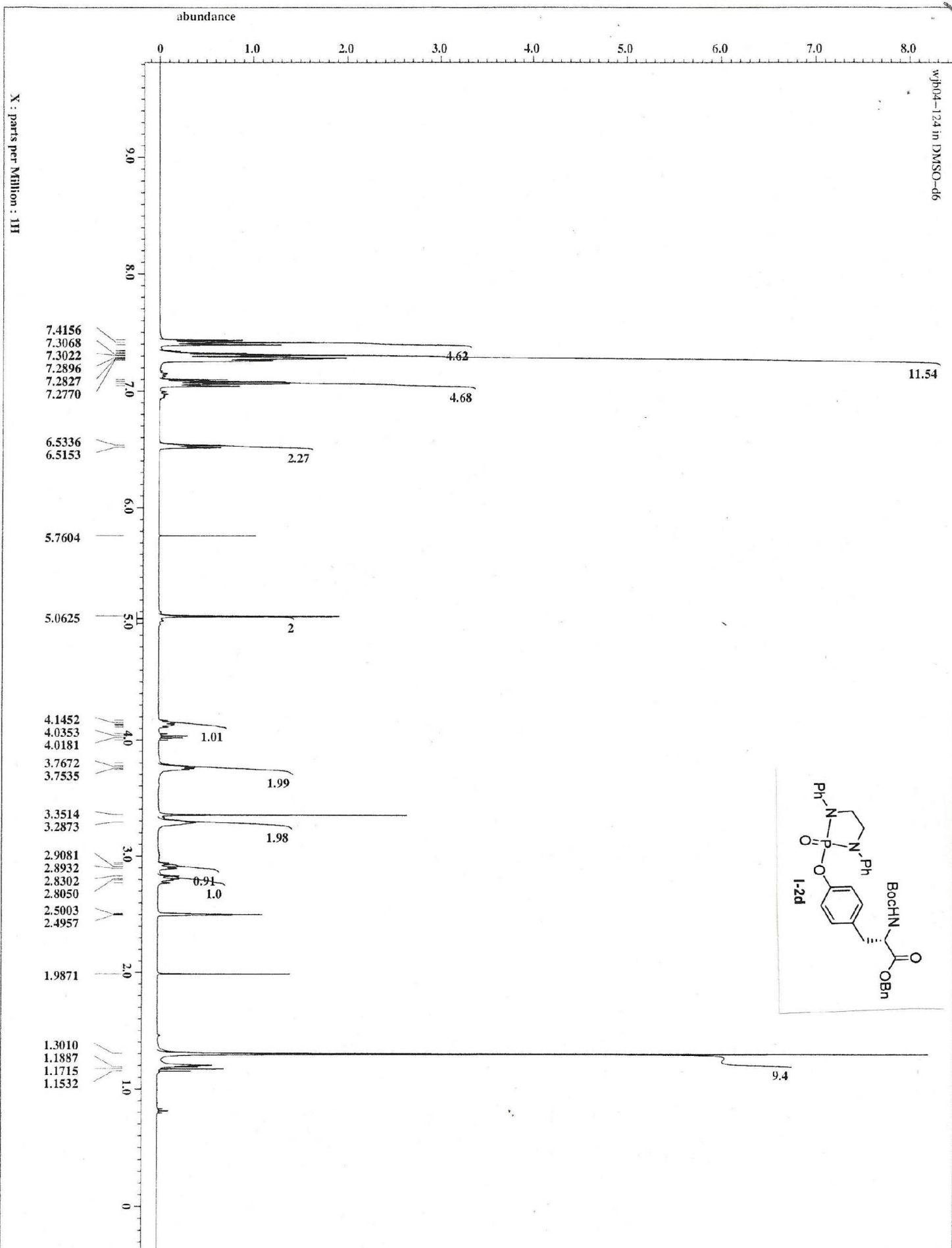


#115 RT: 0.959 AV: 3 IT: 100.000 ST: 1.40 US: 4 NL: 6.15E1  
F: ITMS + p ESI Full ms2 372.00@cid20.00 [100.00-1300.00]

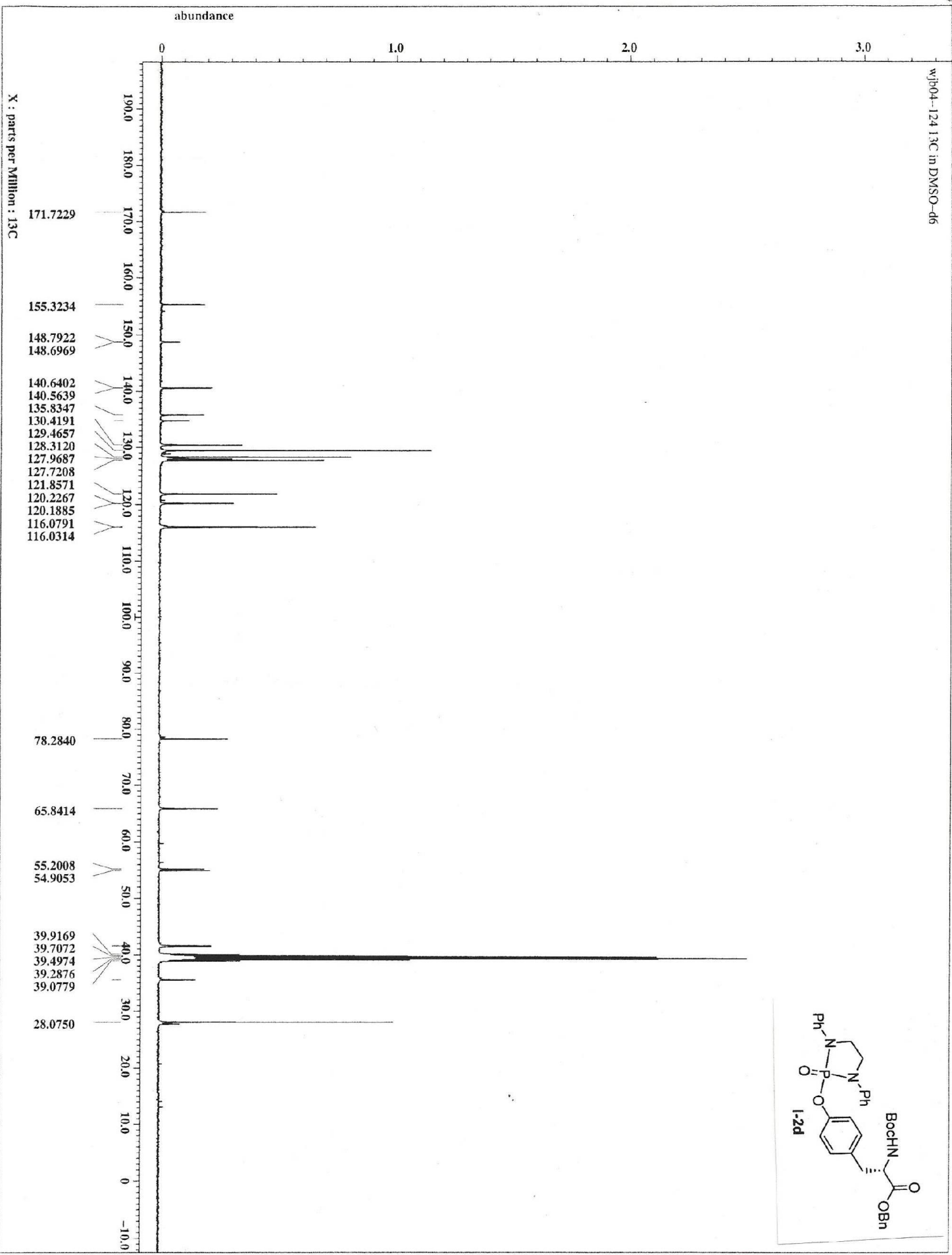
wjB 04 - 123



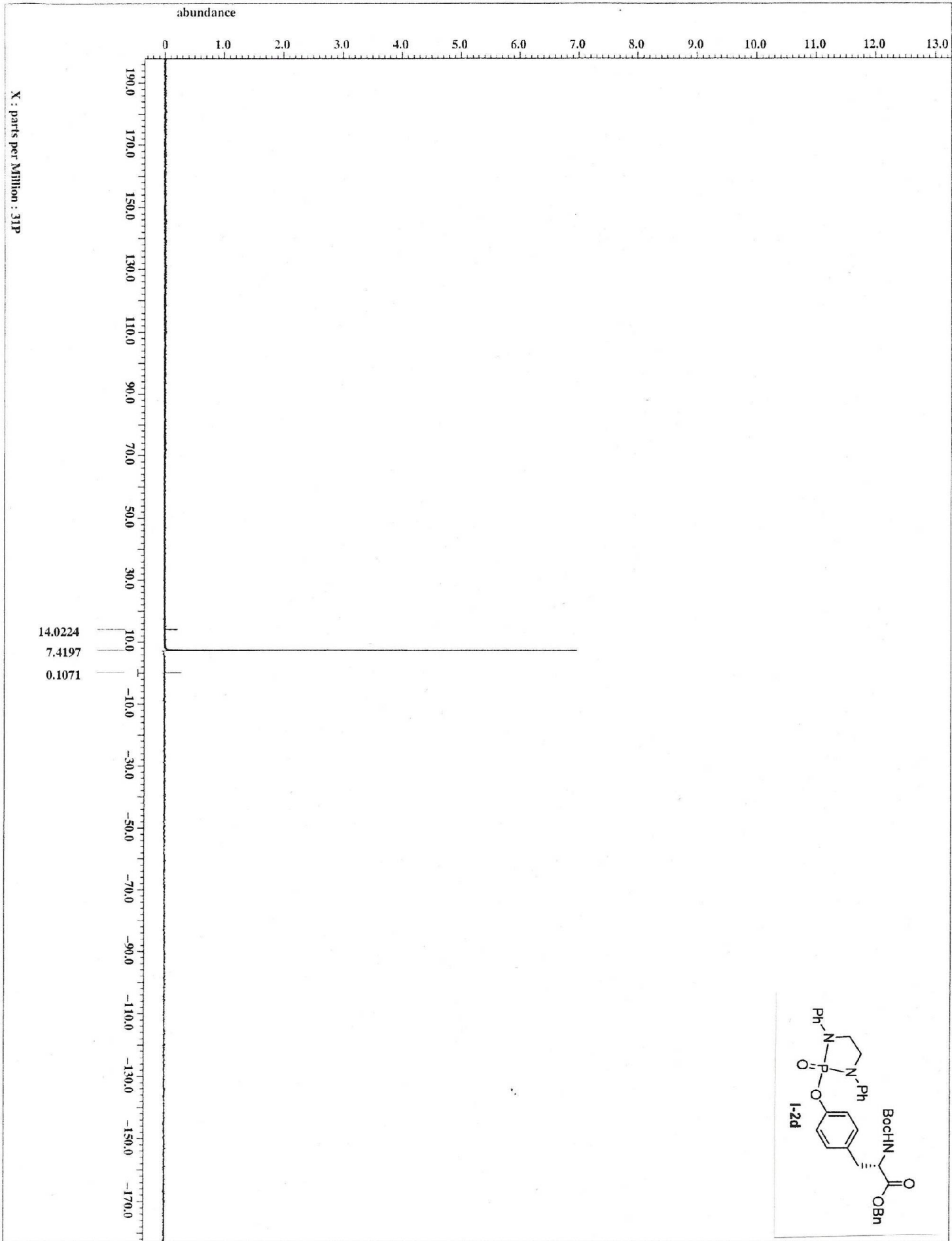
LTO Tune rev. LCO Fleet 2.6.0 SP3



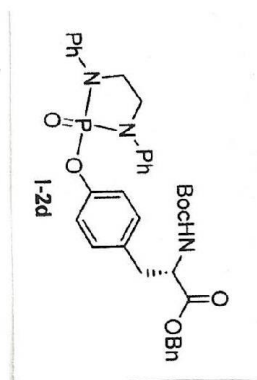
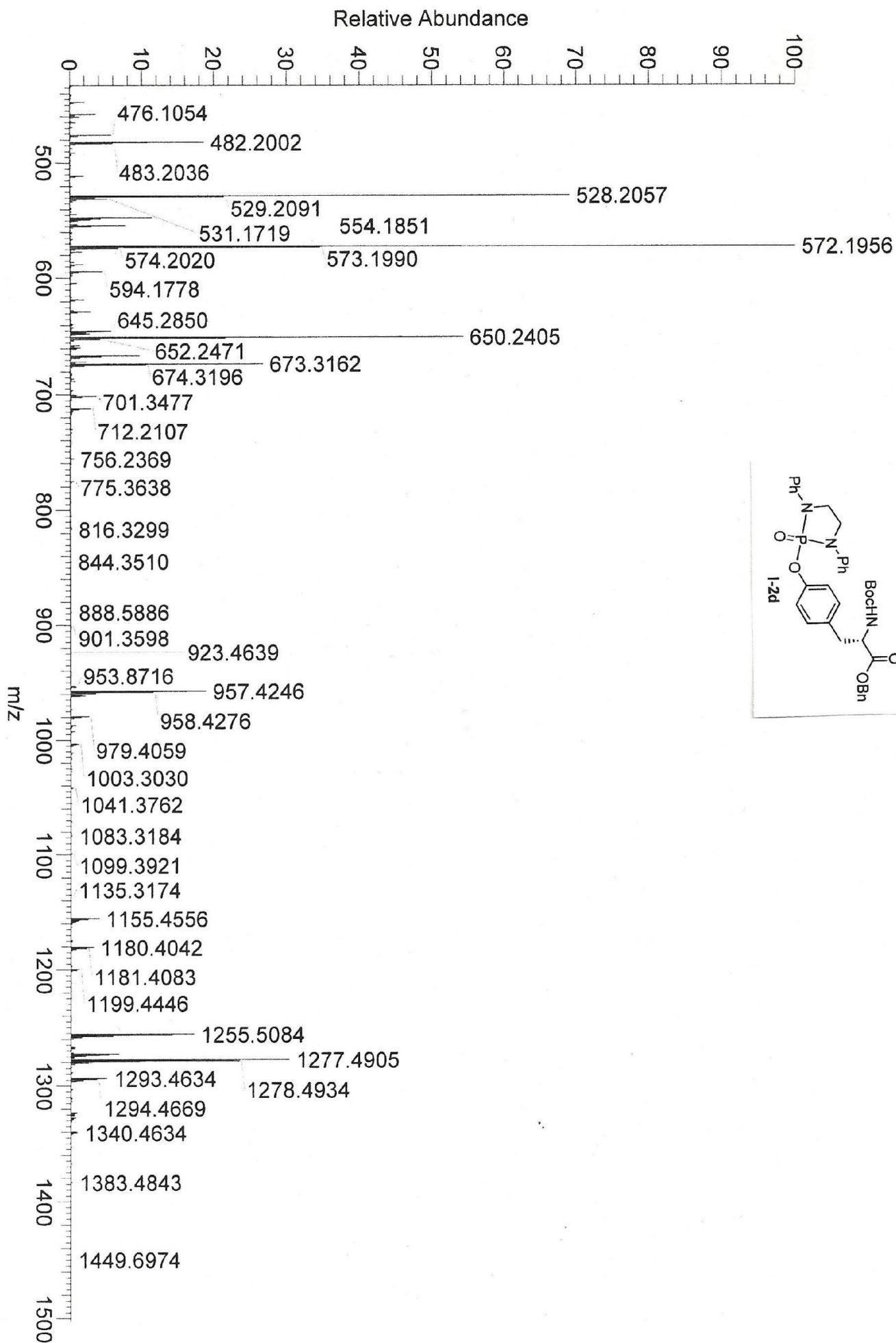


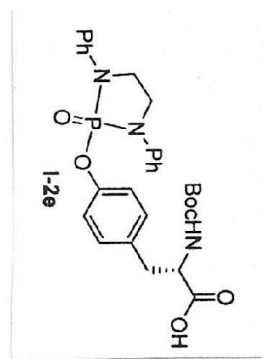
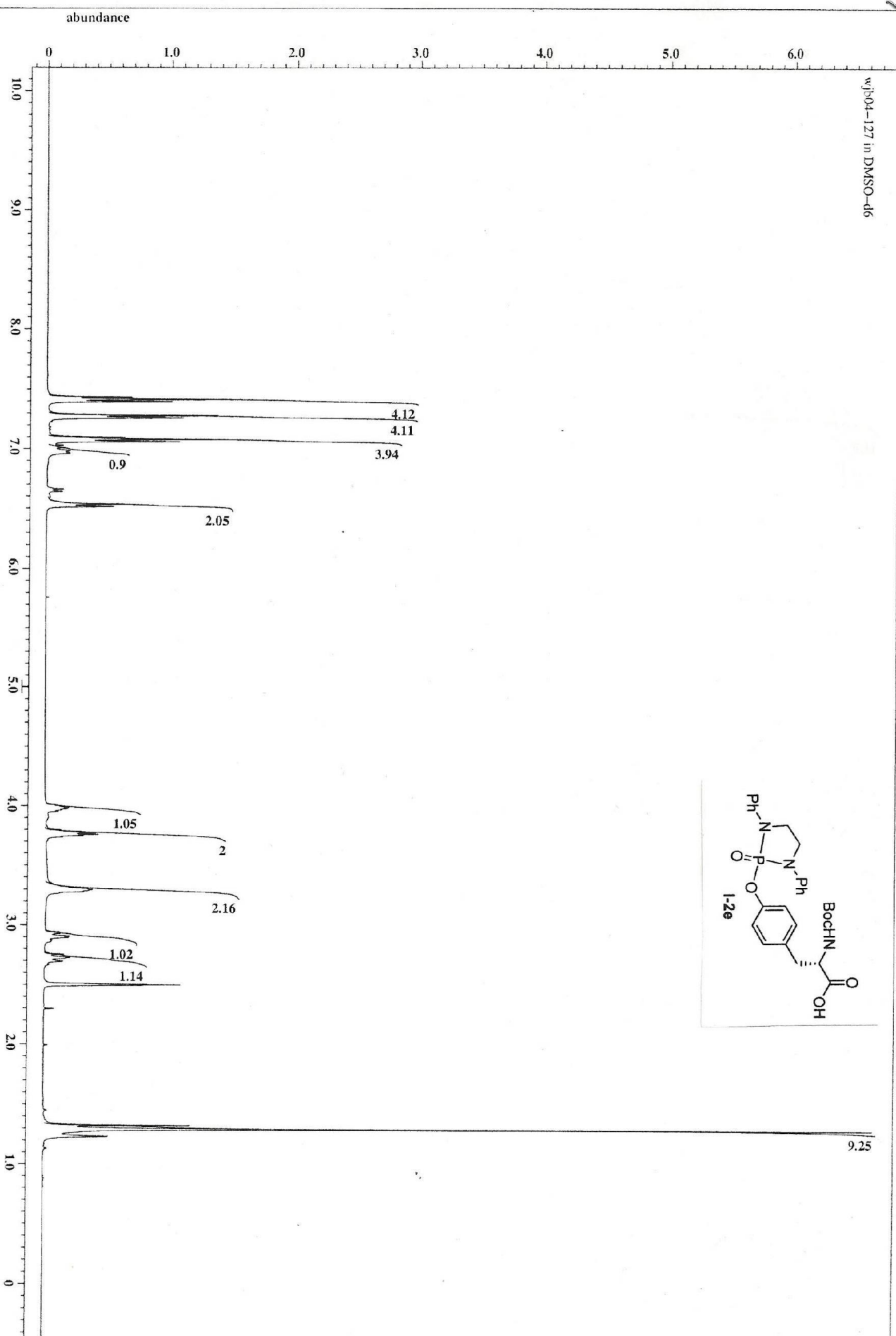


wj604-124 31P in DMSO-d<sub>6</sub>

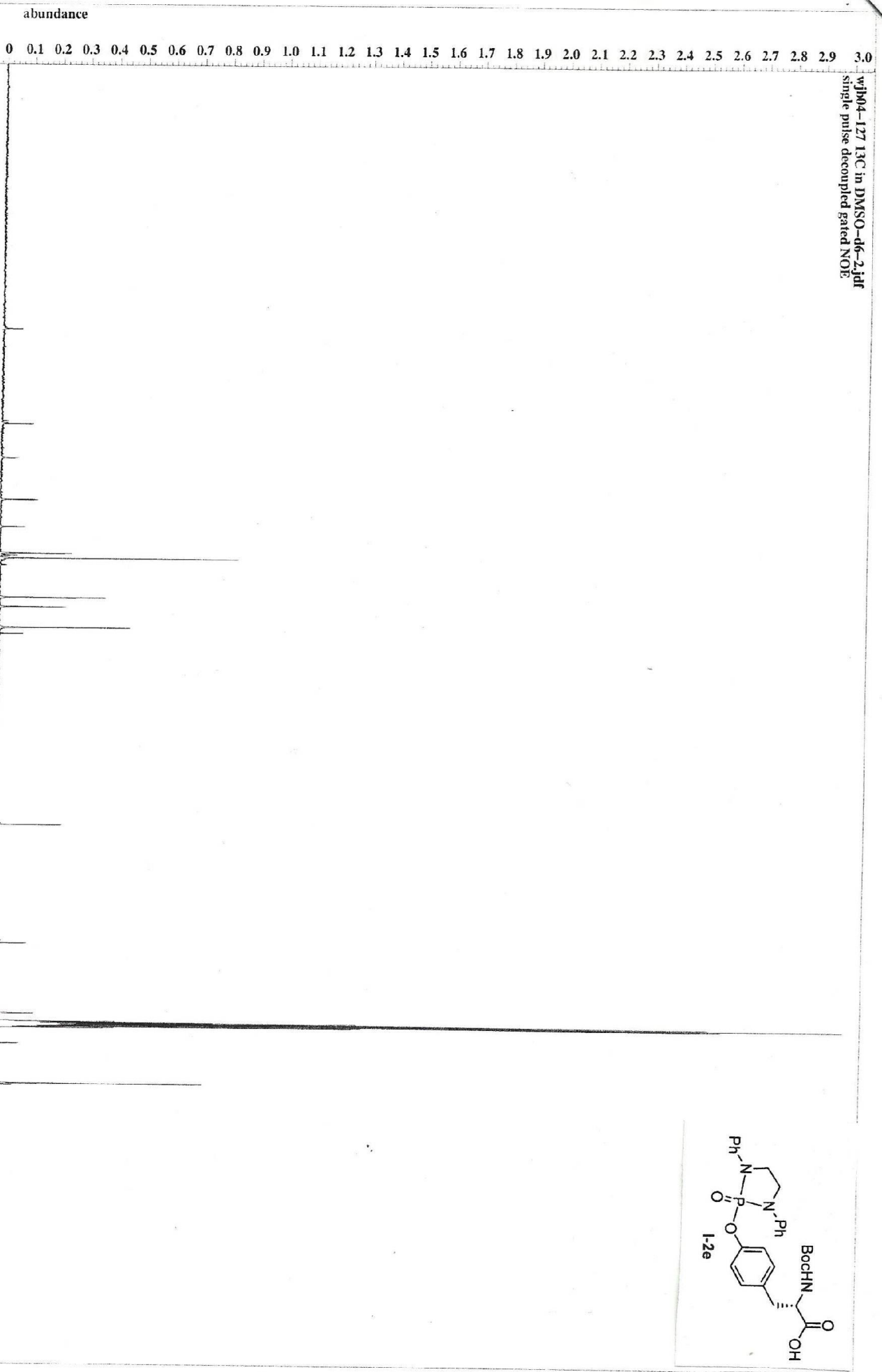


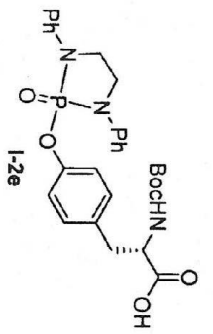
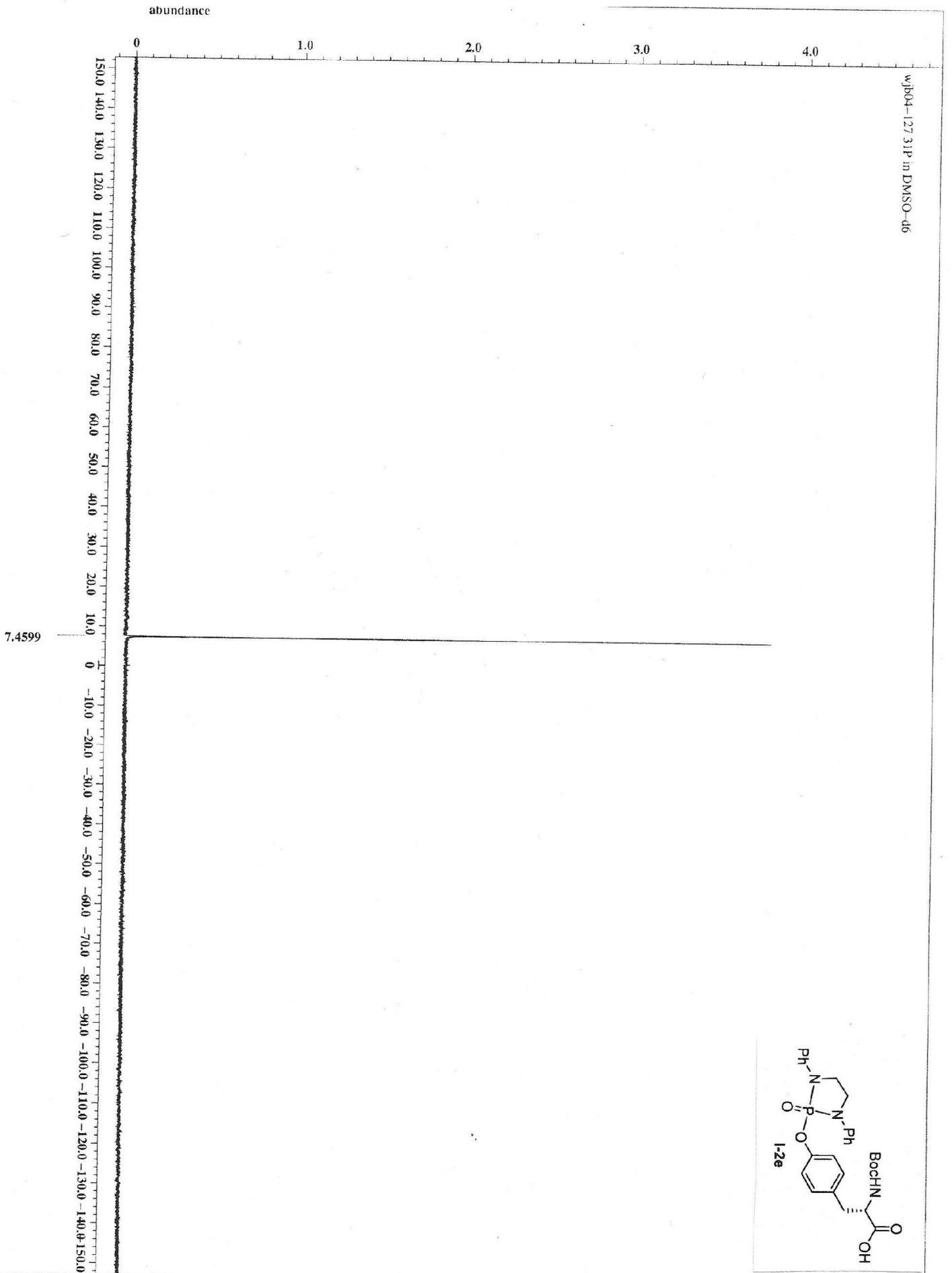
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 T: FTMS + p ESI Full ms [150.00-2000.00]



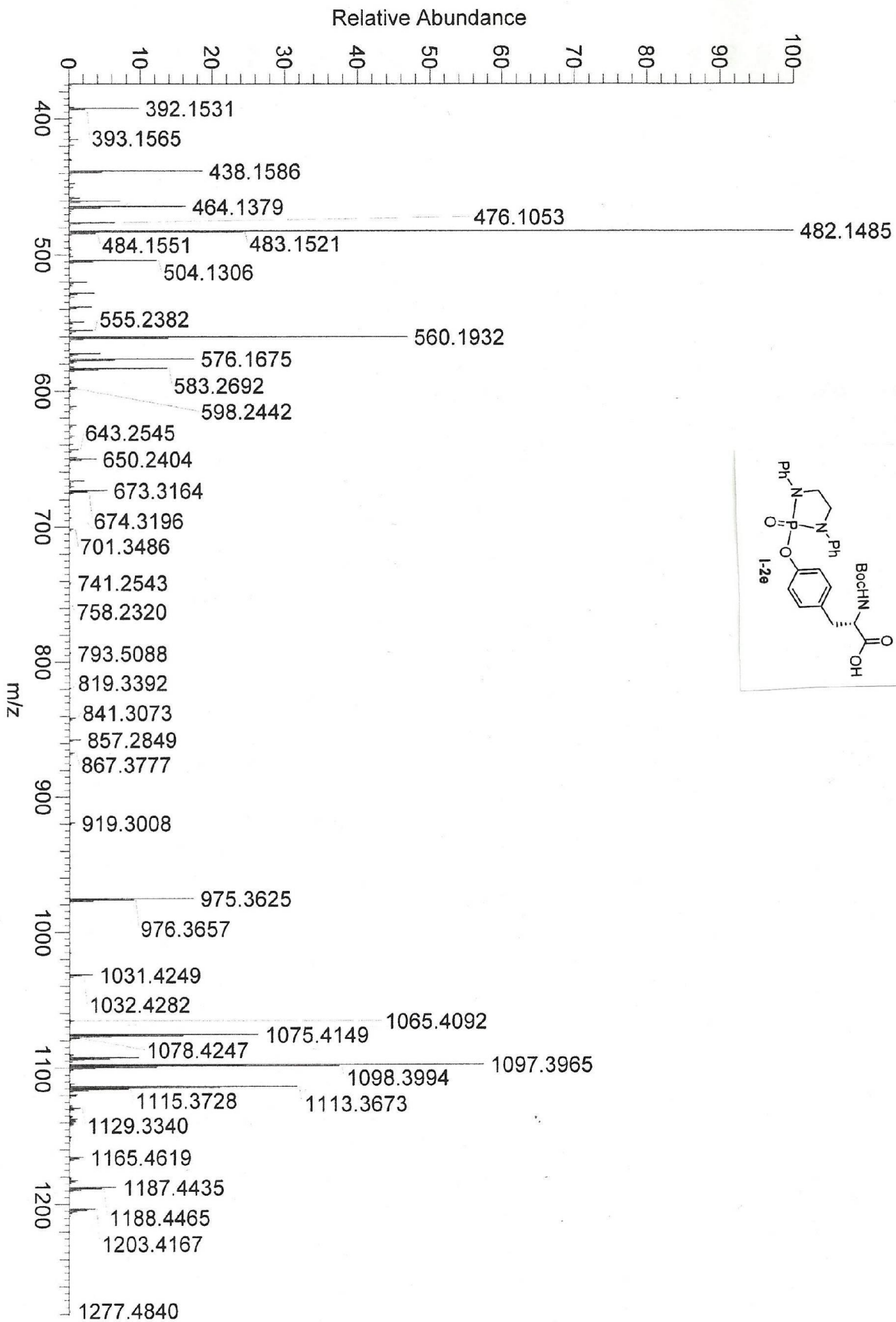


X : parts per Million : 1H

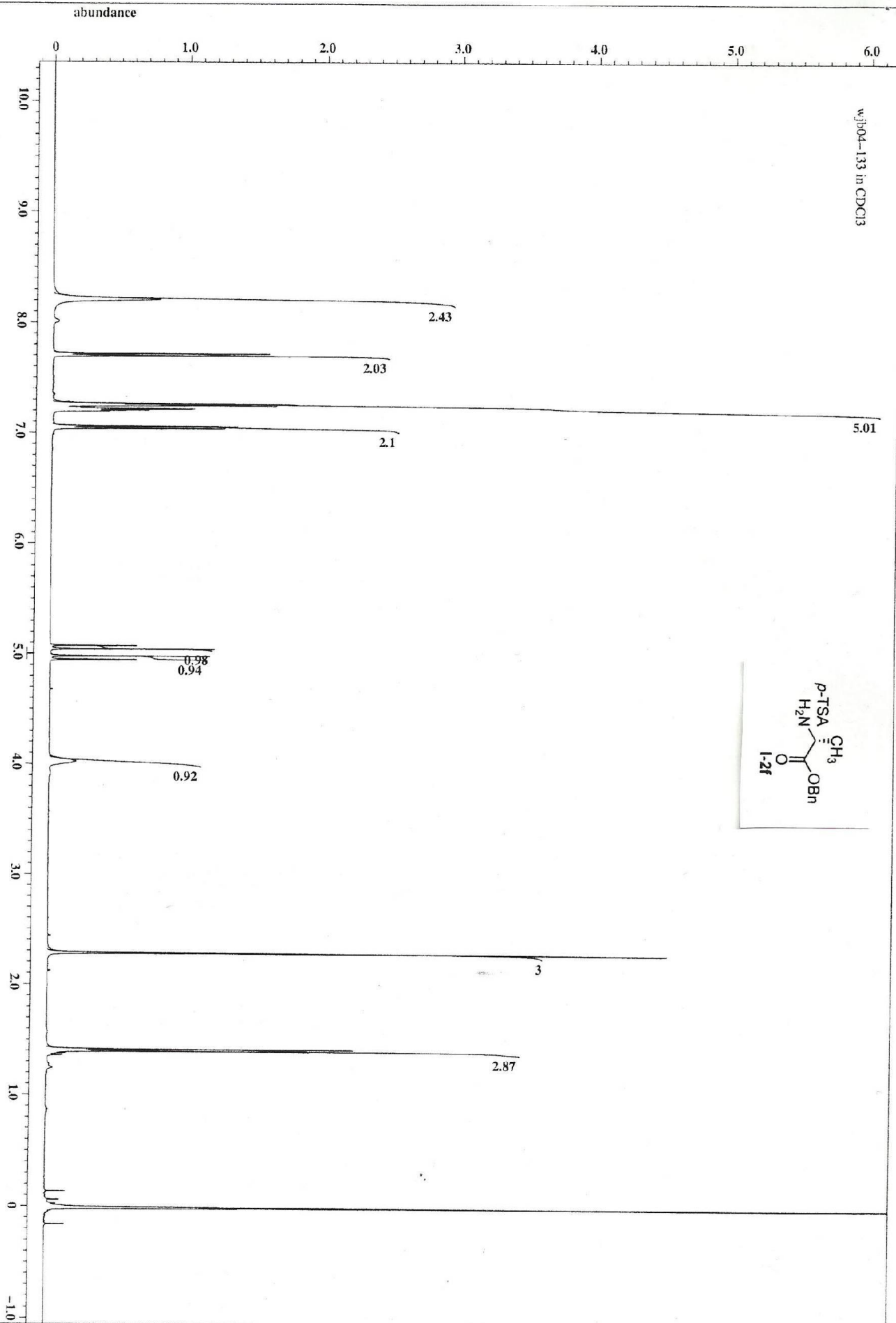




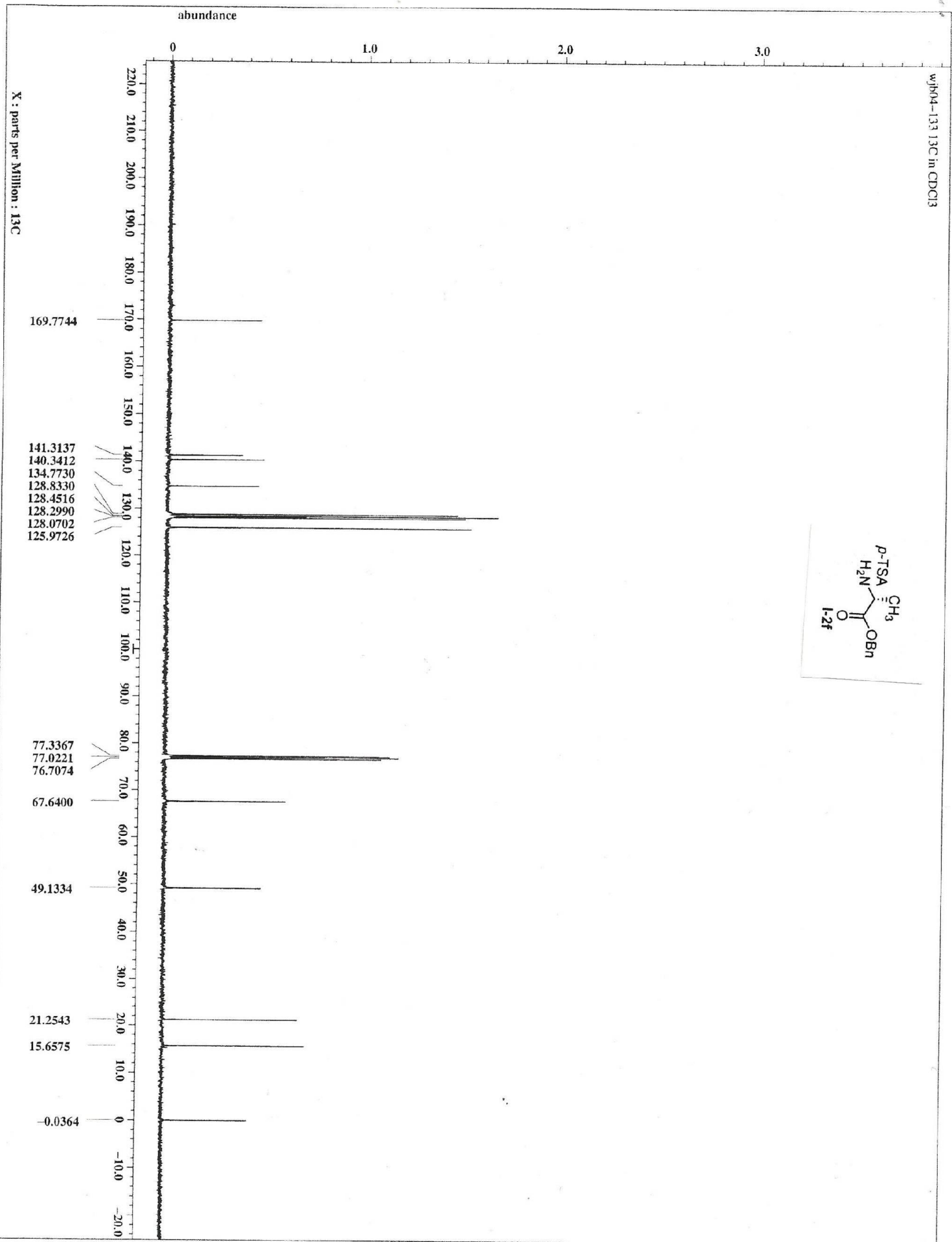
W04-127\_12042012\_01 #1 RT: 0.00 AV: 1 NL: 1.14E6  
T: FTMS + p ESI Full ms [150.00-2000.00]



X : parts per Million : 1H

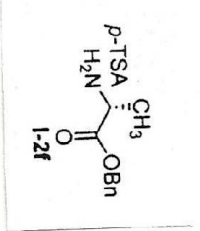
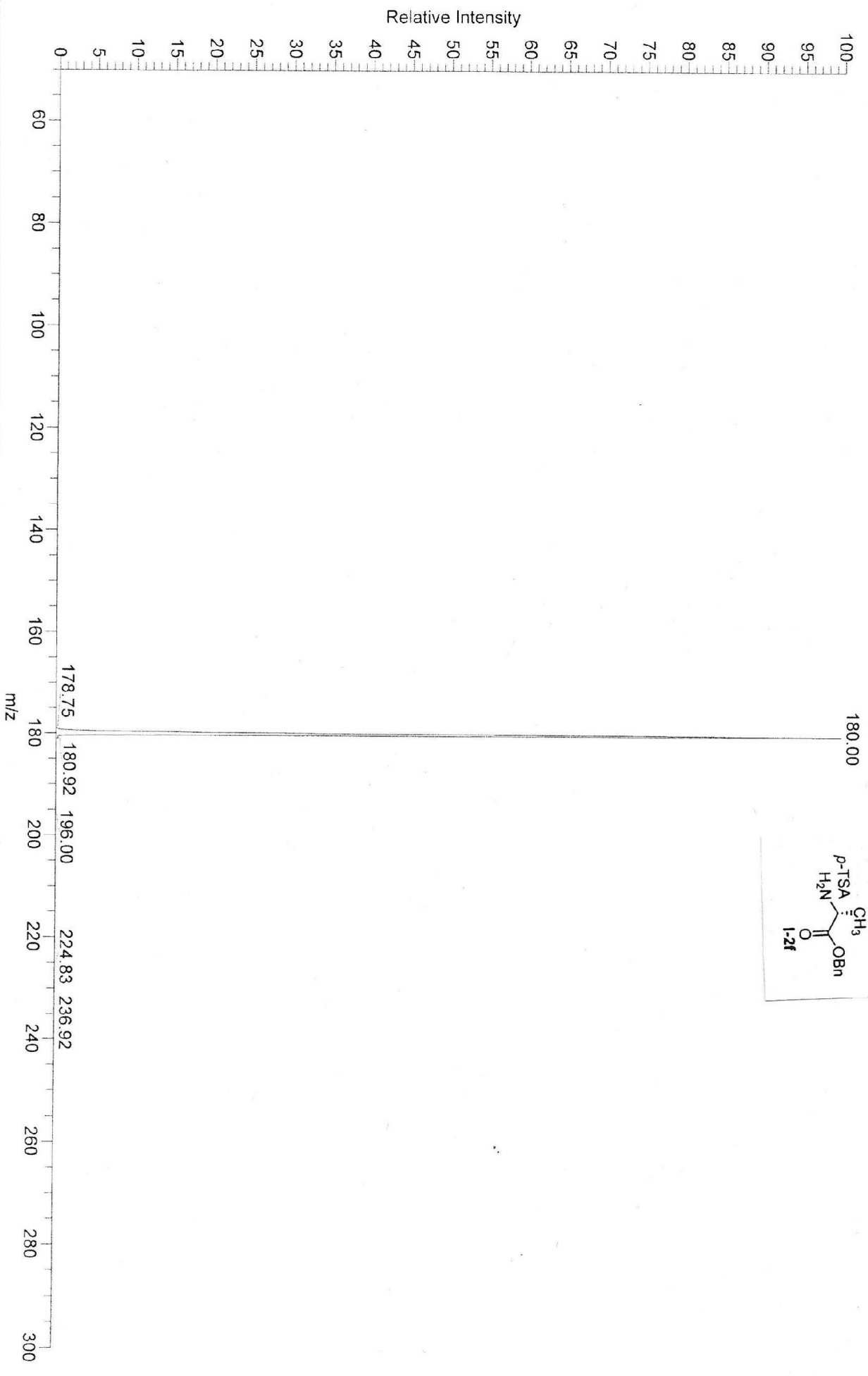


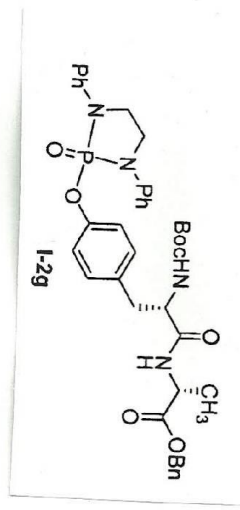




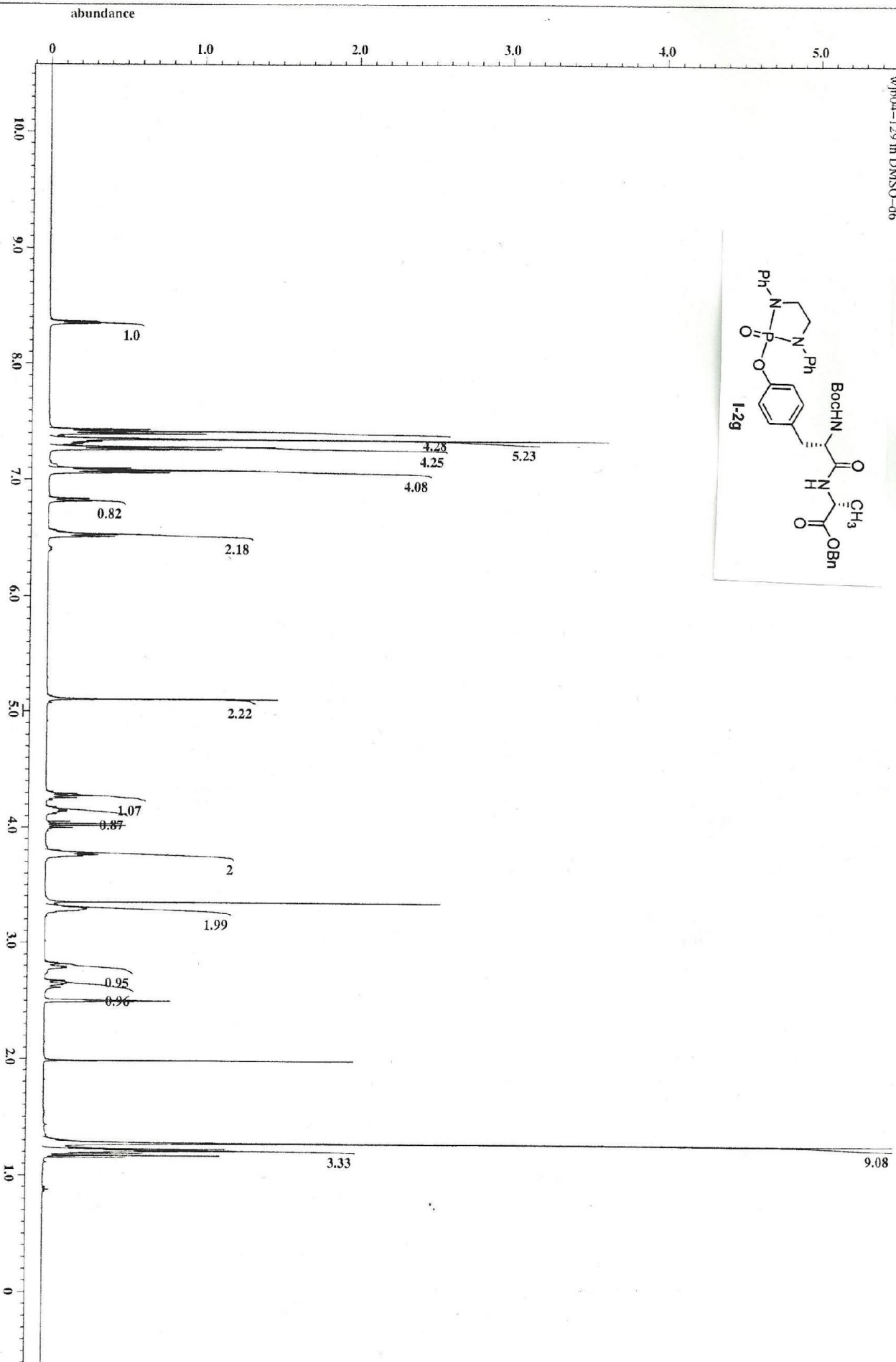
#373 RT: 2.714 AV: 9 IT: 82.943 ST: 1.02 US: 4 NL: 3.33E3  
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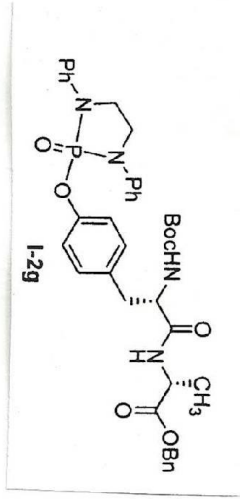
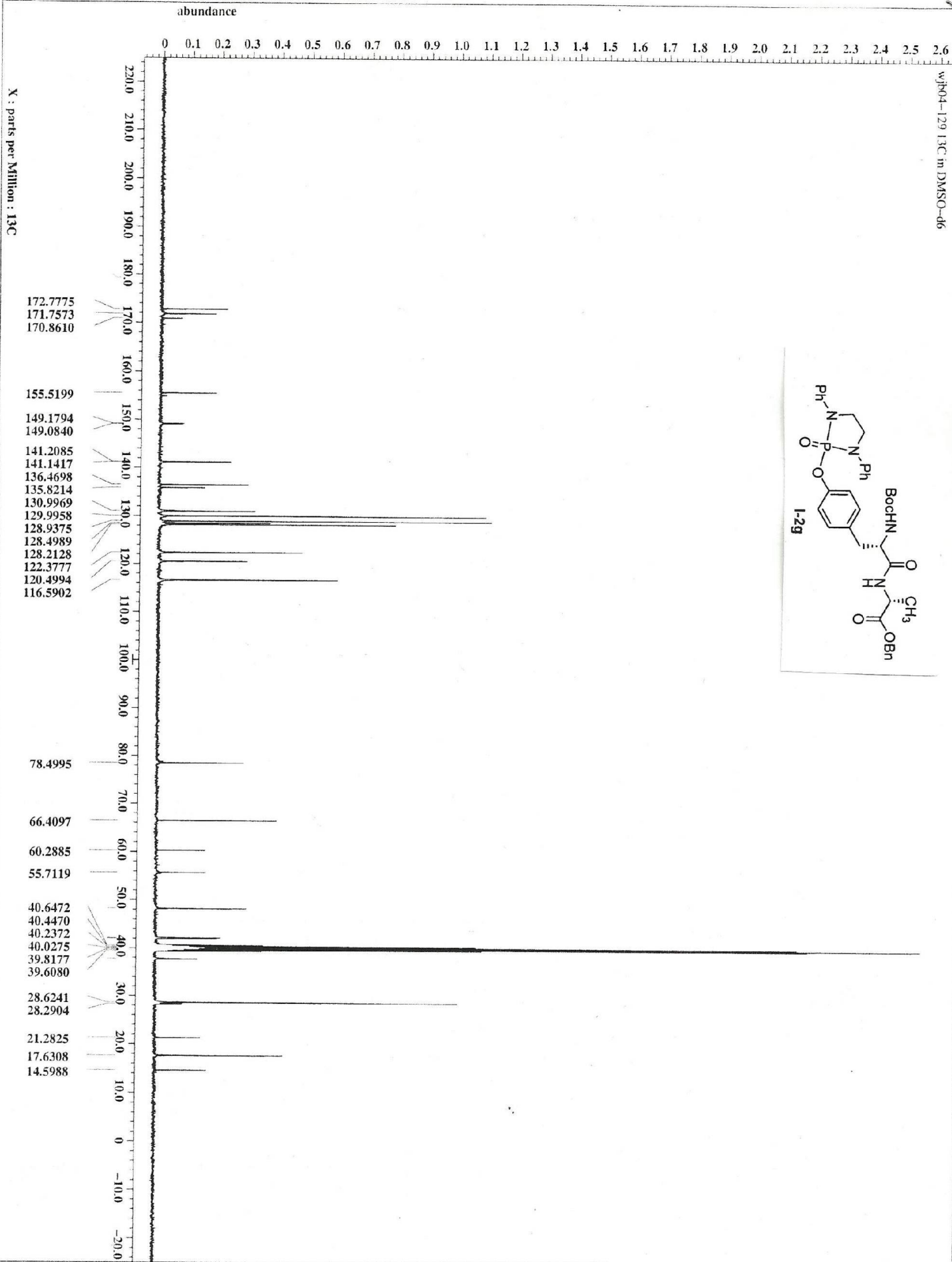
WJBO4-133





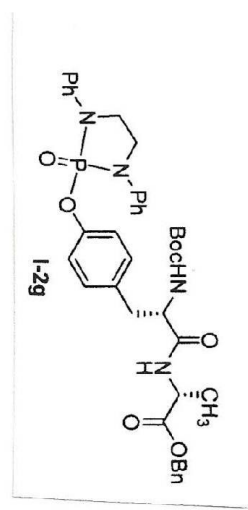
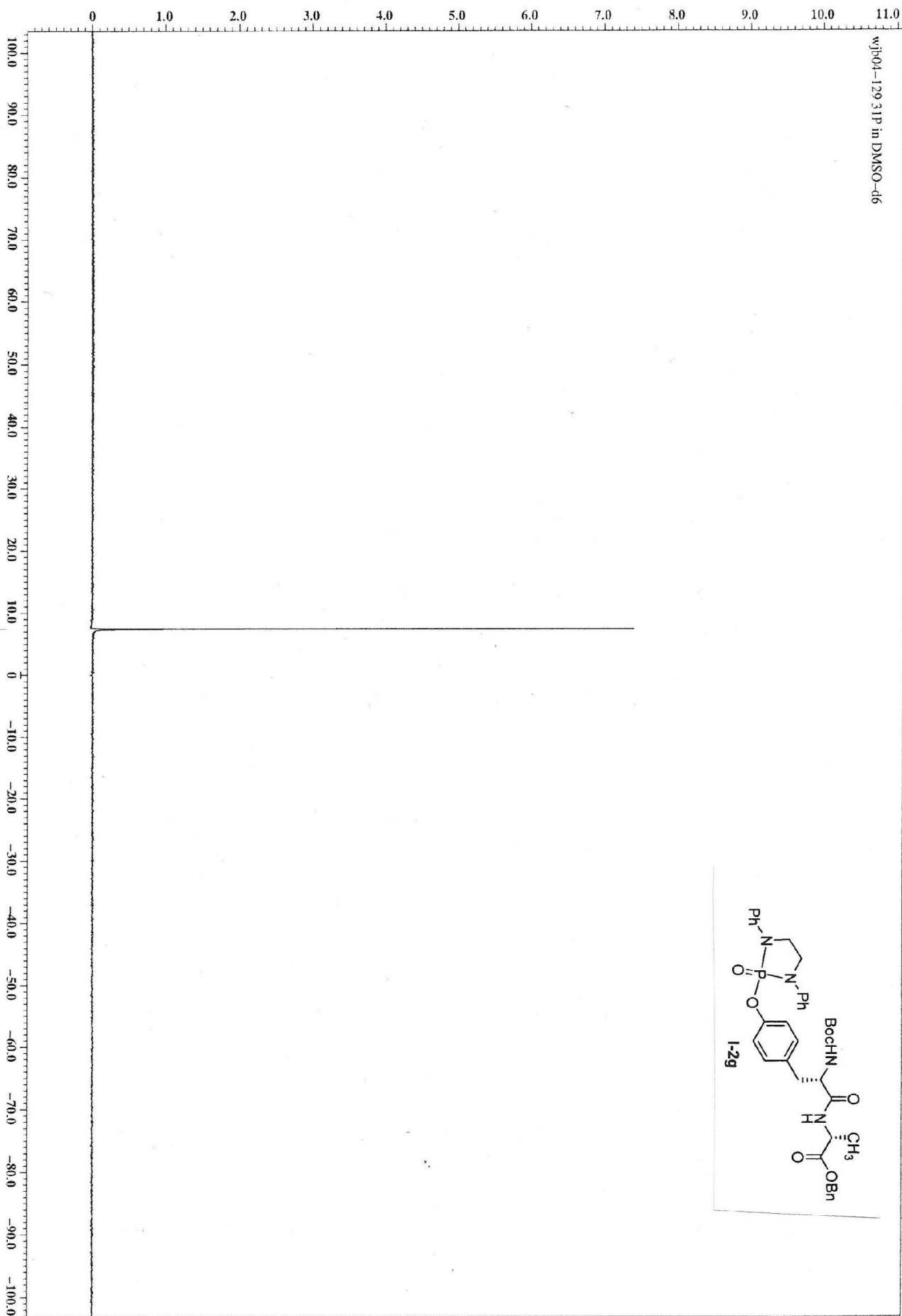
X : parts per Million : 1H





wj004-129 31P in DMSO-d6

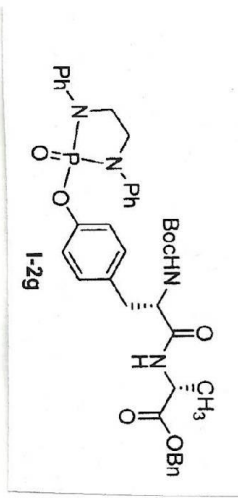
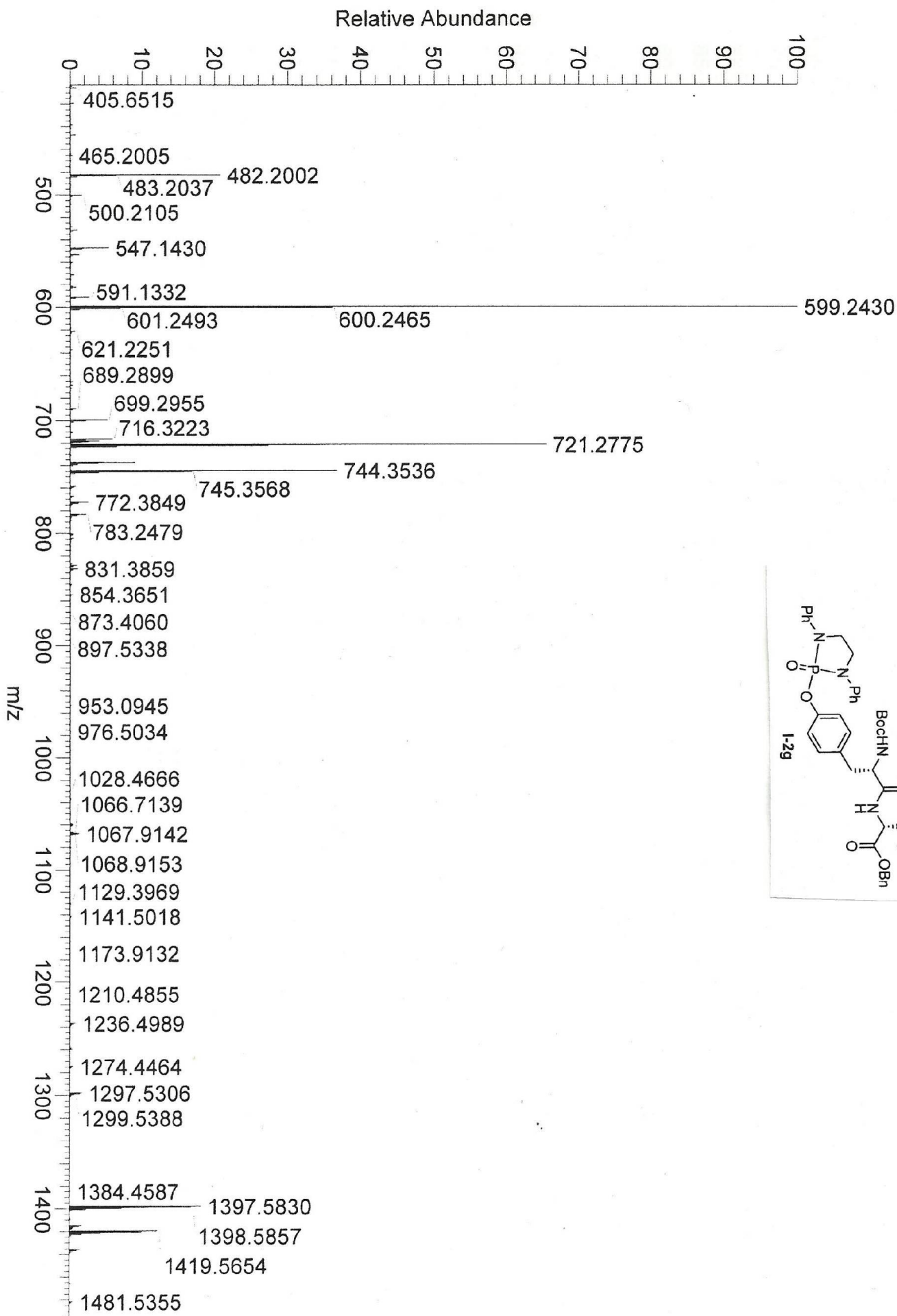
abundance



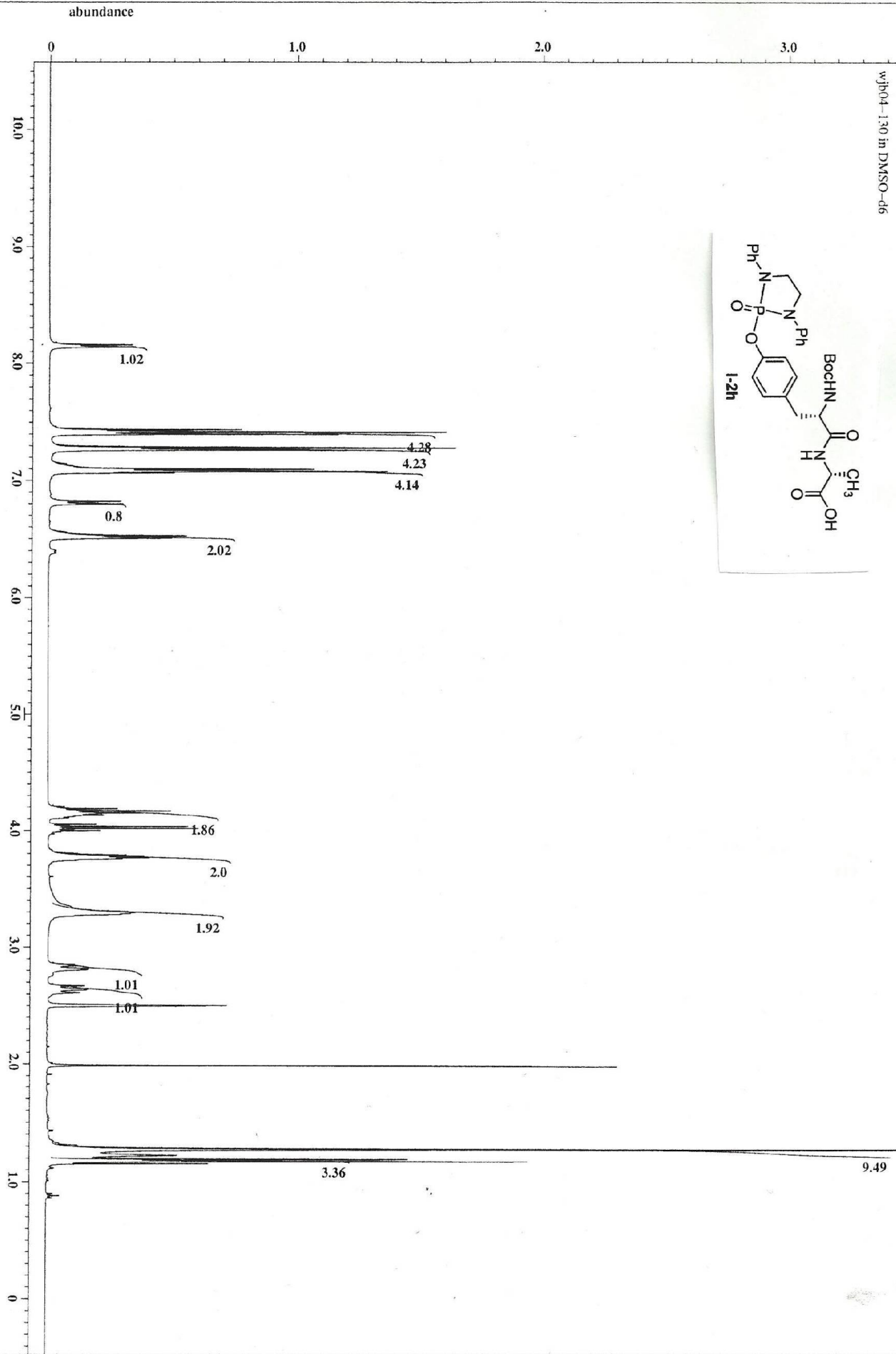
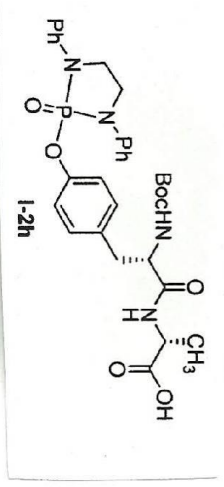
X : parts per Million : 31P

7.4331

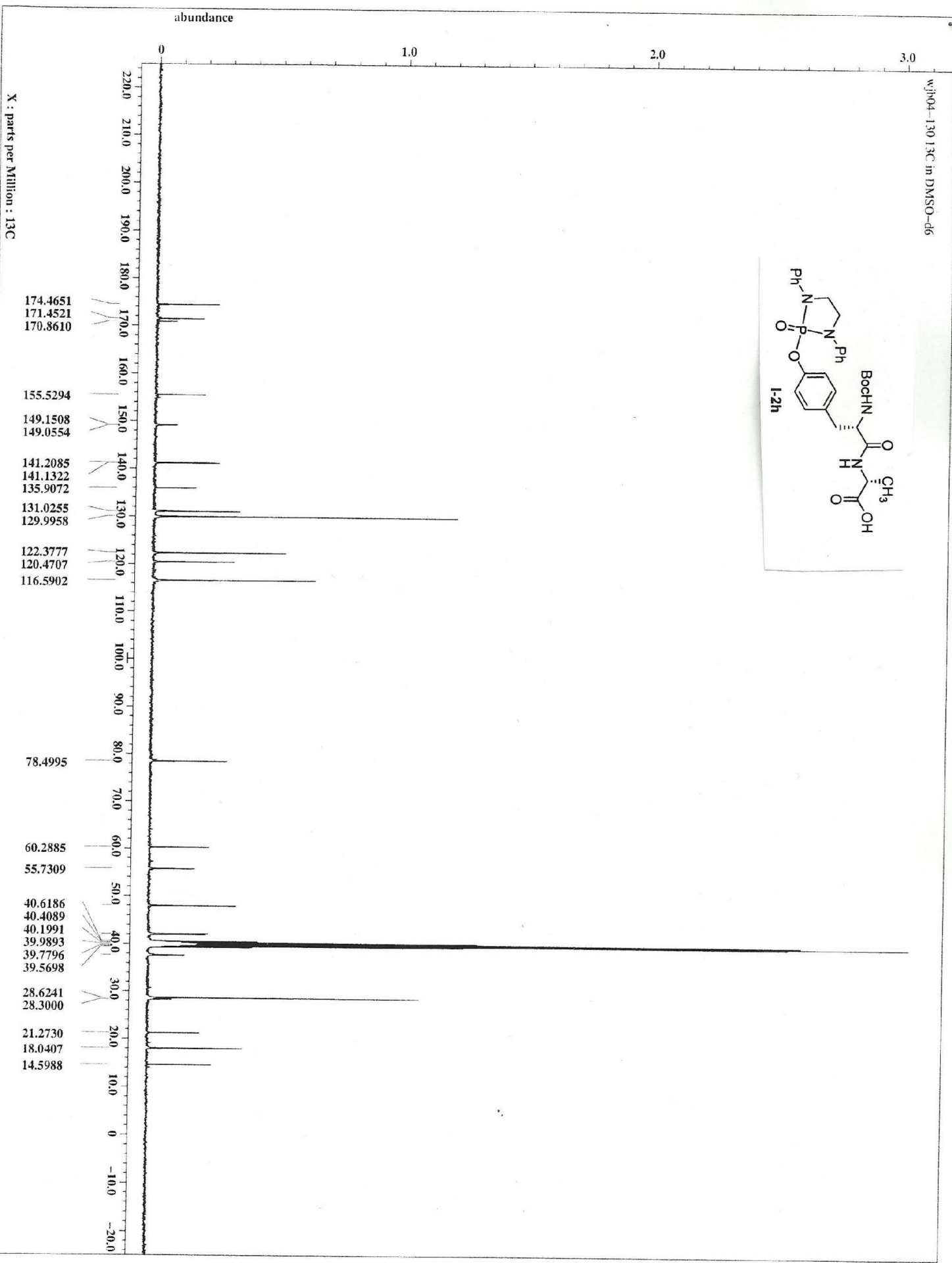
W04-129\_12042012\_01 #128 RT: 1.46 AV: 1 NL: 2.73E6  
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wjh04-1.30 in DMSO-d6

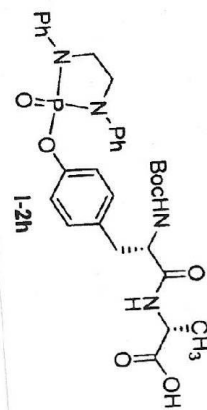


X : parts per Million : 1H





wj04-130 31P in DMSO-d6



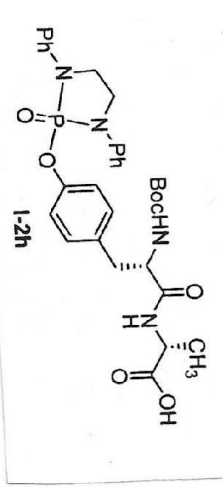
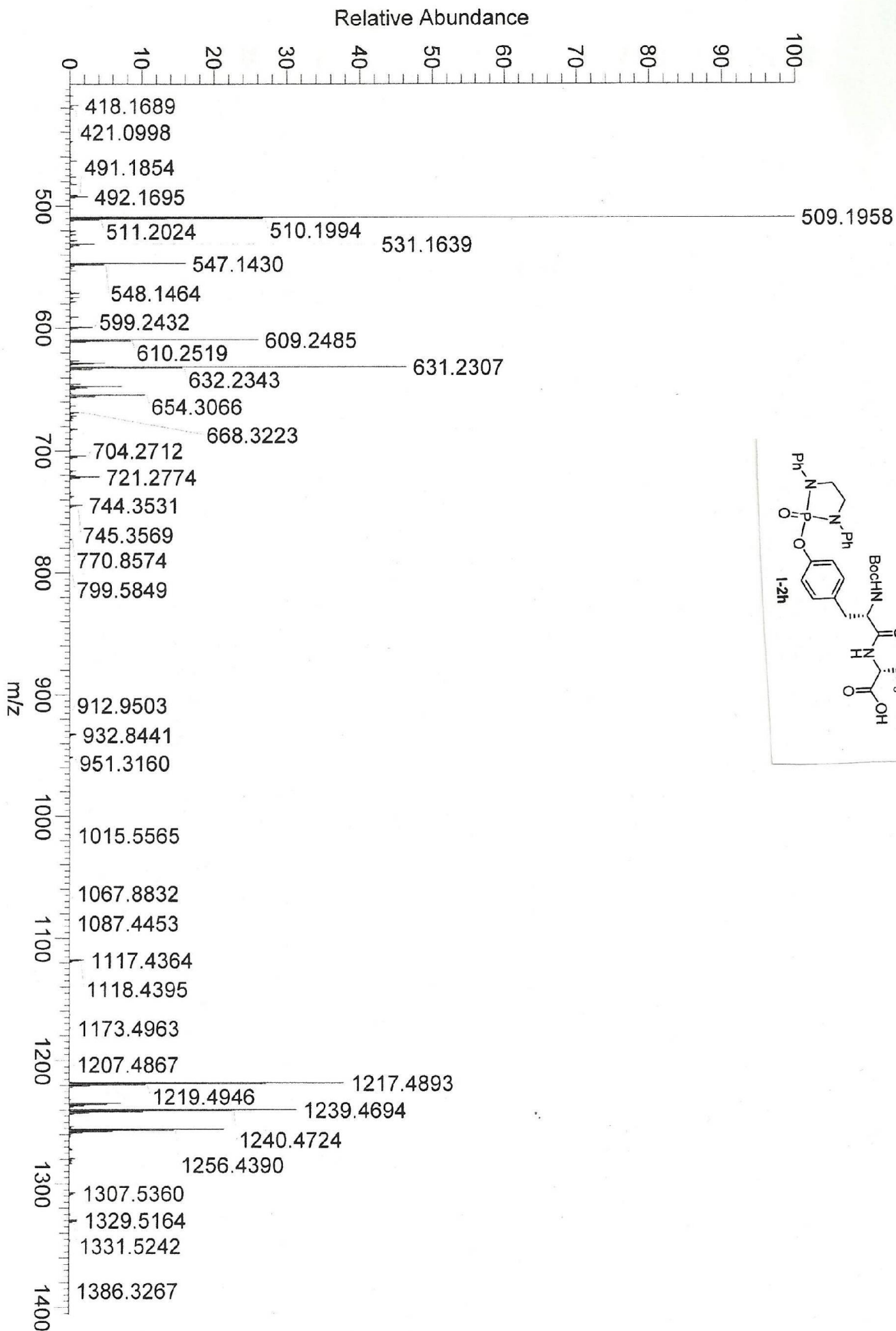
abundance

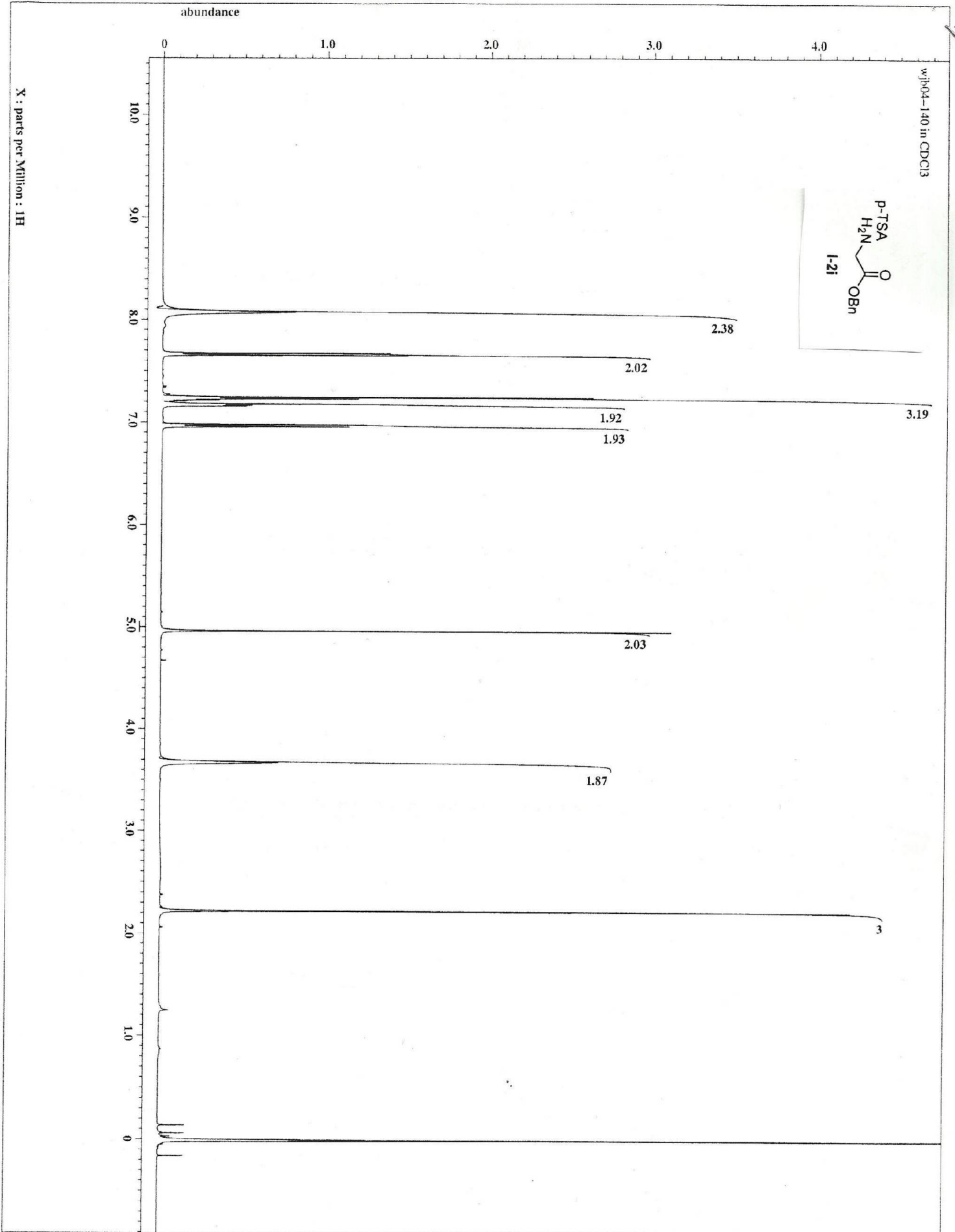


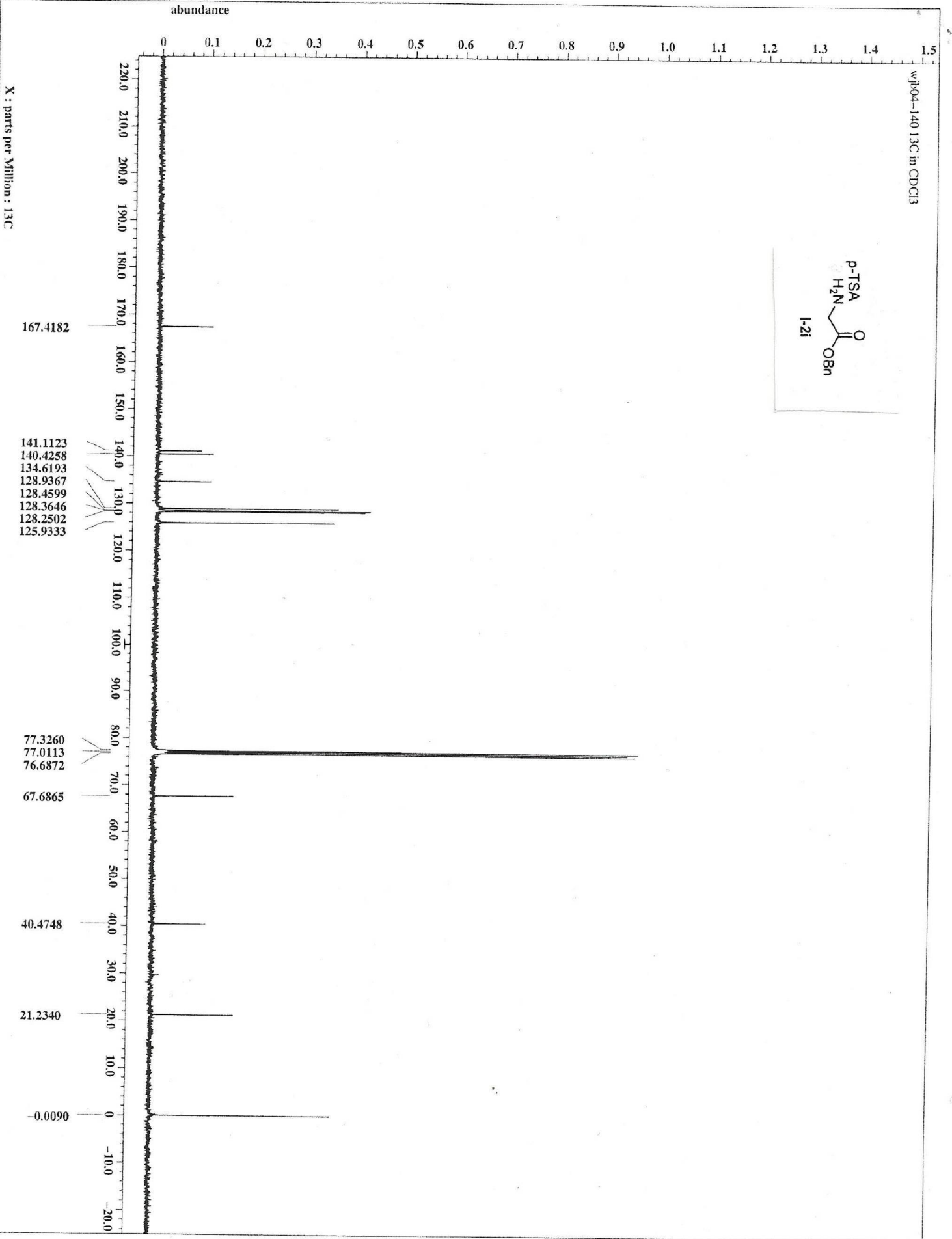
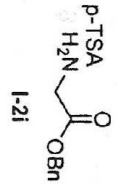
X : parts per Million : 31P

7.4465

W04-130\_12042012\_01 #155 RT: 1.65 AV: 1 NL: 1.58E6  
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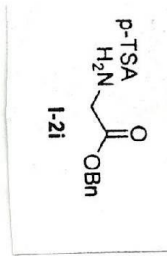
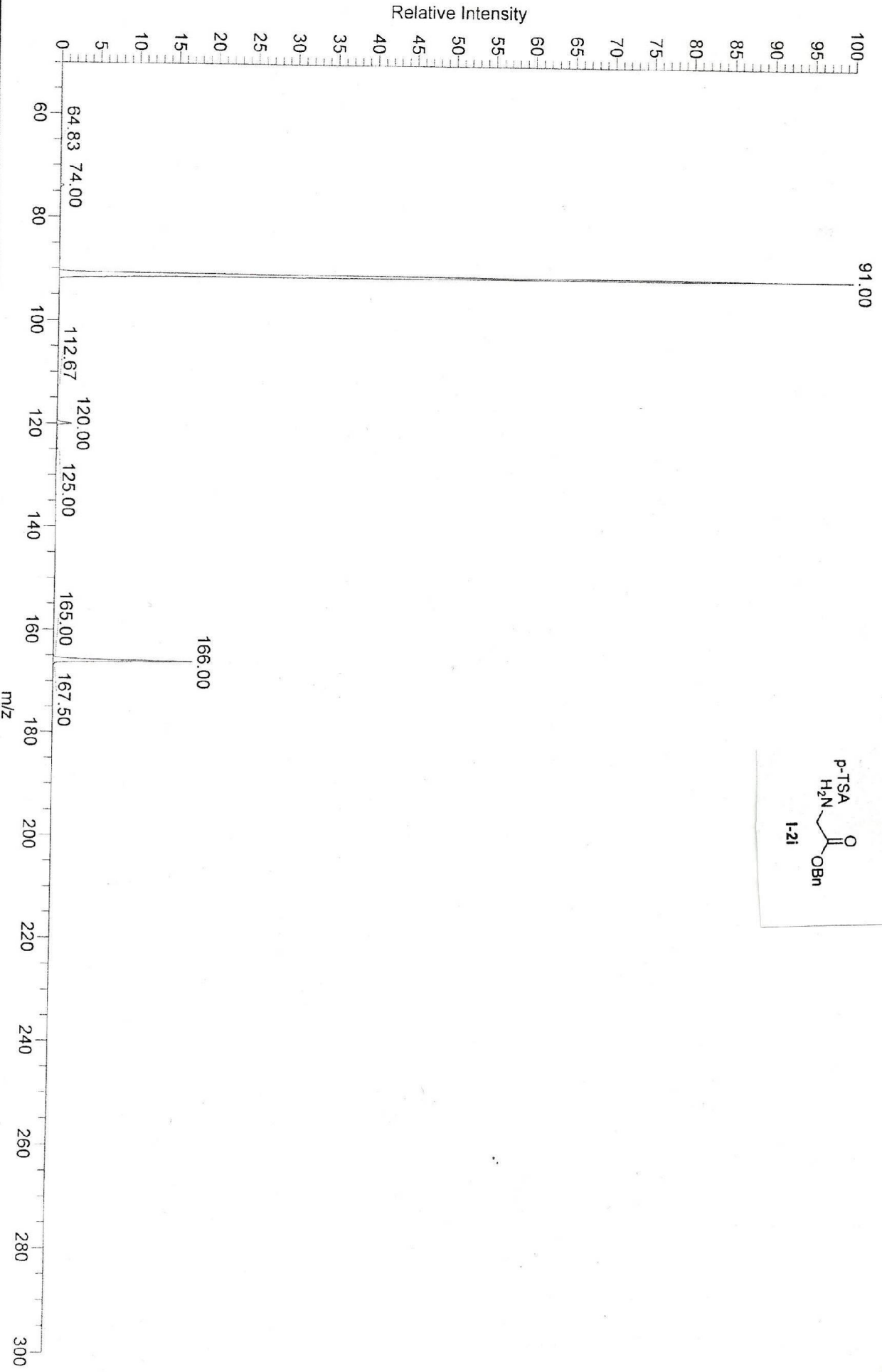


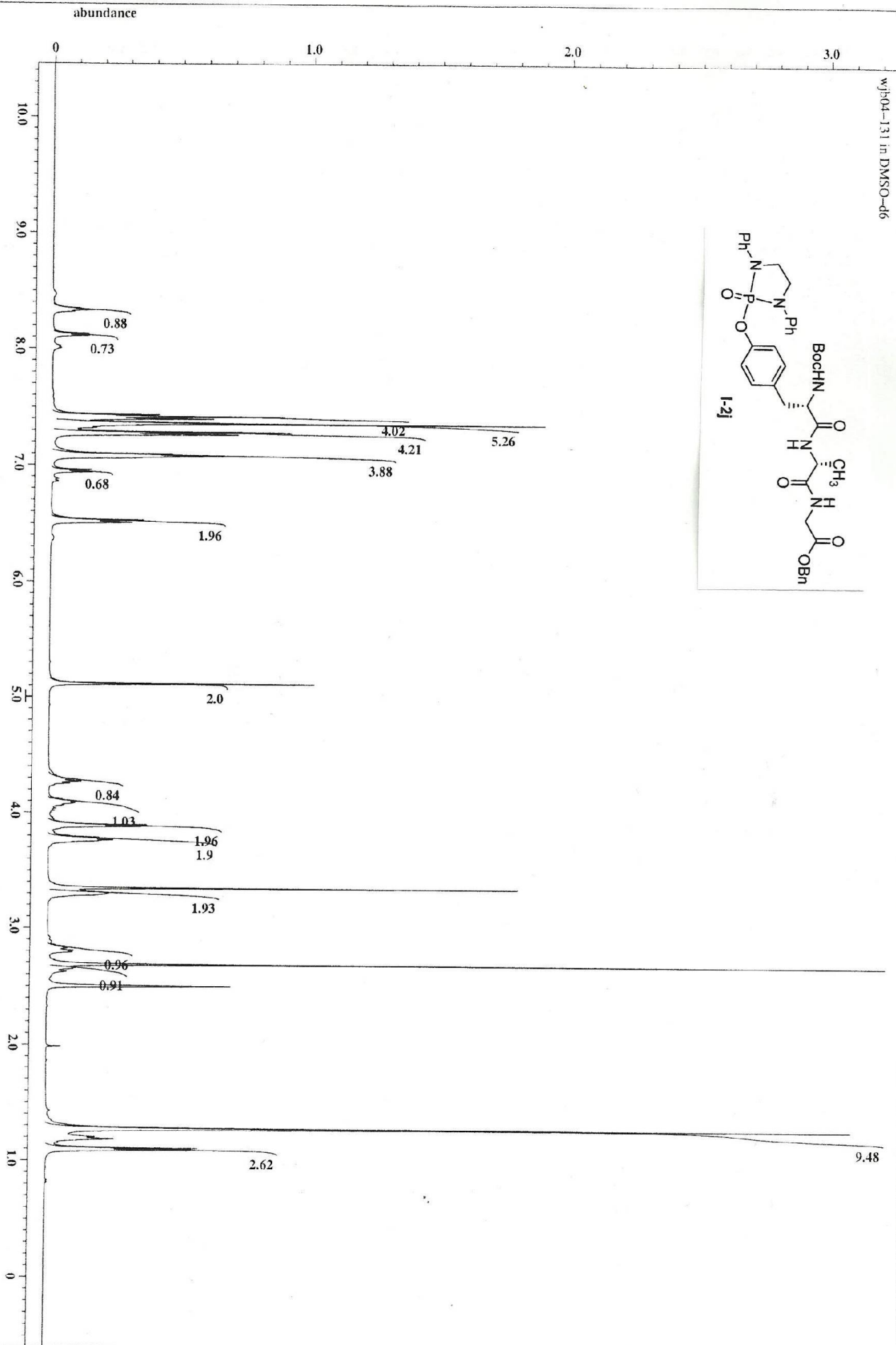
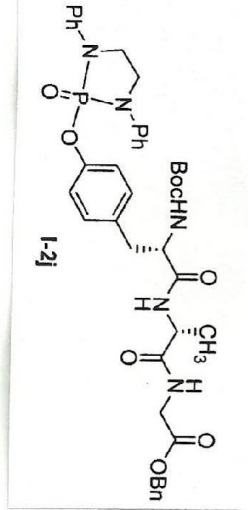




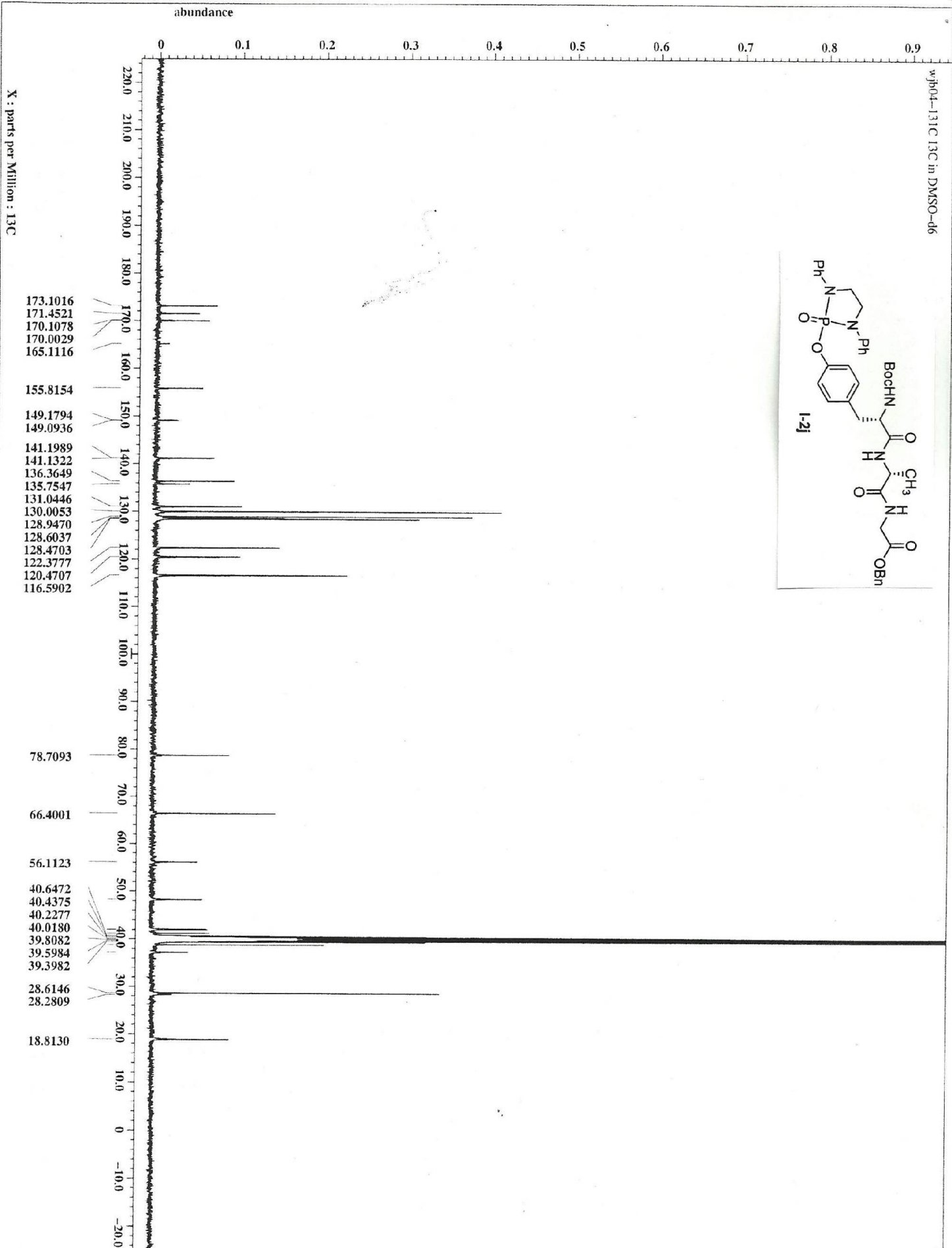
#1007 RT: 4.155 AV: 6 IT: 100.000 ST: 1.09 US: 4 NL: 6.64E2  
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WJ8-04-140



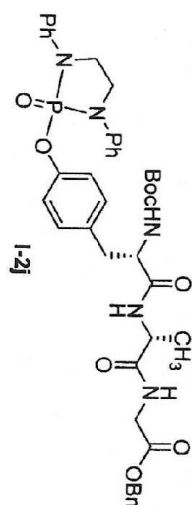


X : parts per Million : 1H

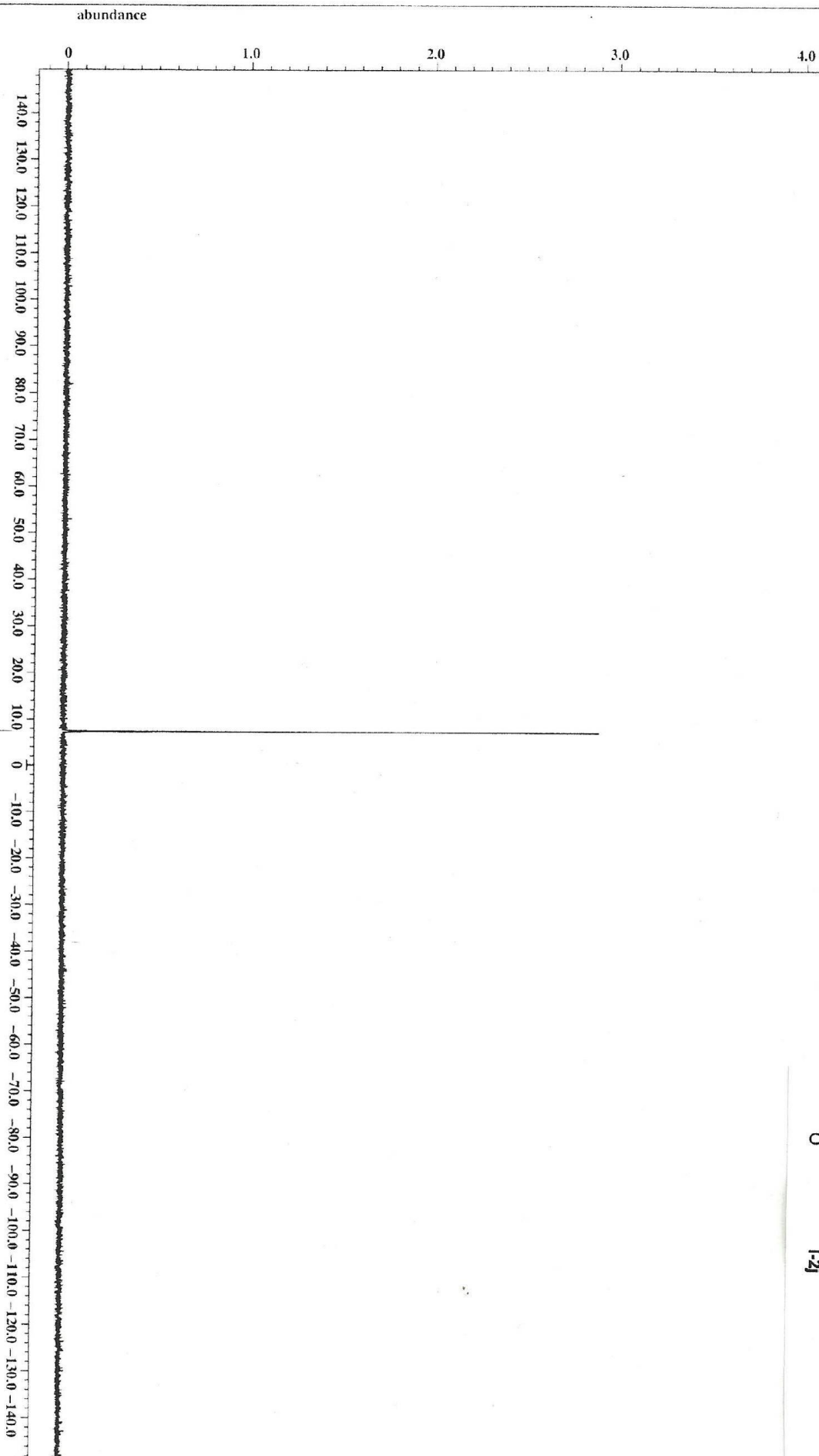


- 173.1016
- 171.4521
- 170.1078
- 170.0029
- 165.1116
- 155.8154
- 149.1794
- 149.0936
- 141.1989
- 141.1322
- 136.3649
- 135.7547
- 131.0446
- 130.0053
- 128.9470
- 128.6037
- 128.4703
- 122.3777
- 120.4707
- 116.5902

- 78.7093
- 66.4001
- 56.1123
- 40.6472
- 40.4375
- 40.2277
- 40.0180
- 39.8082
- 39.5984
- 39.3982
- 28.6146
- 28.2809
- 18.8130

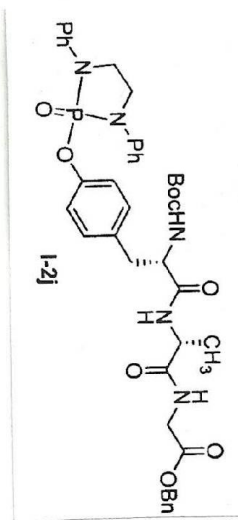
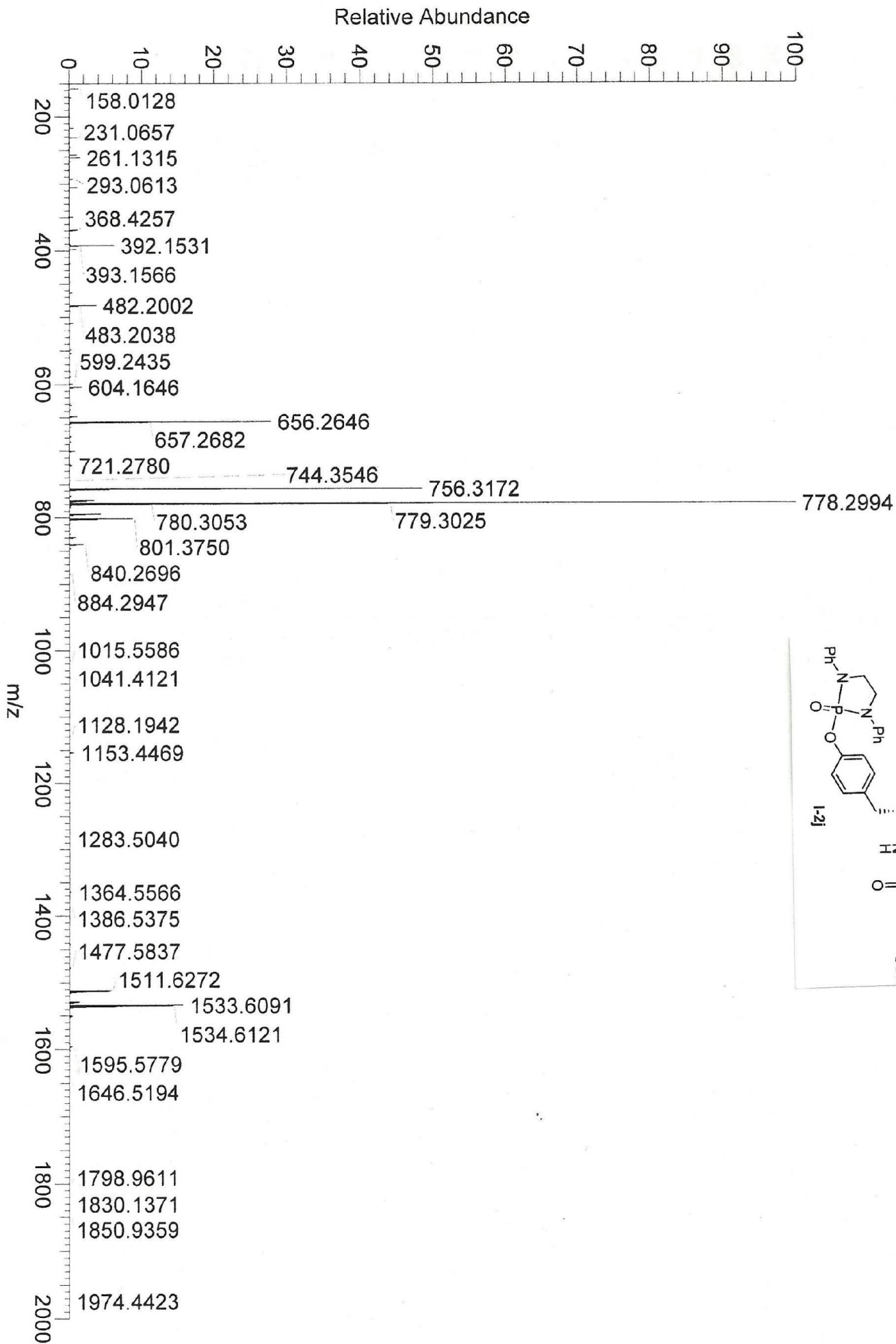


7.4331

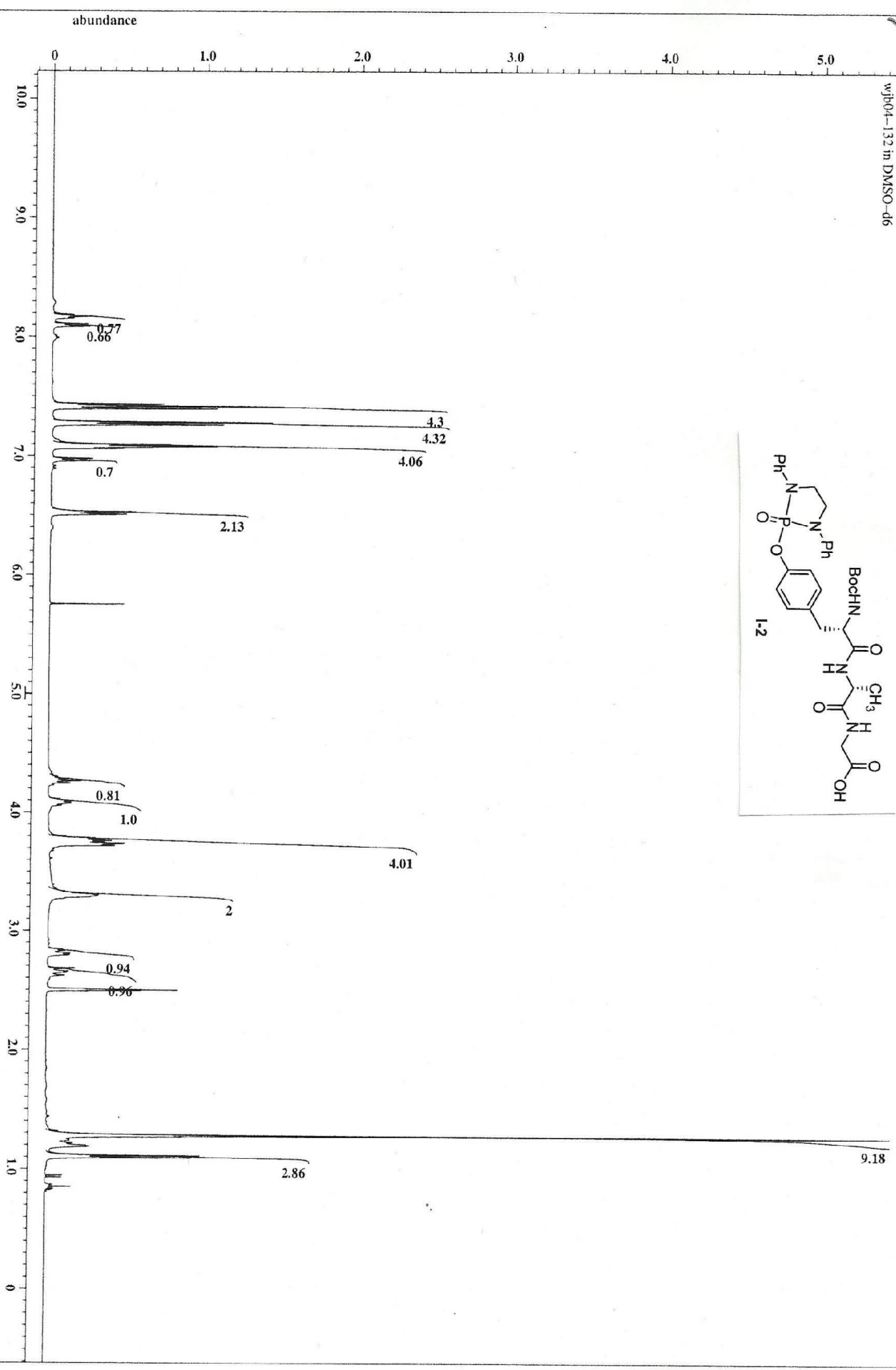
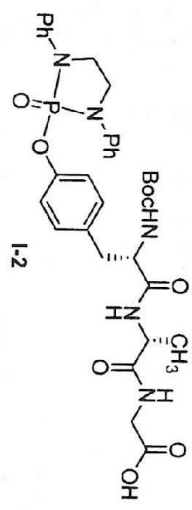




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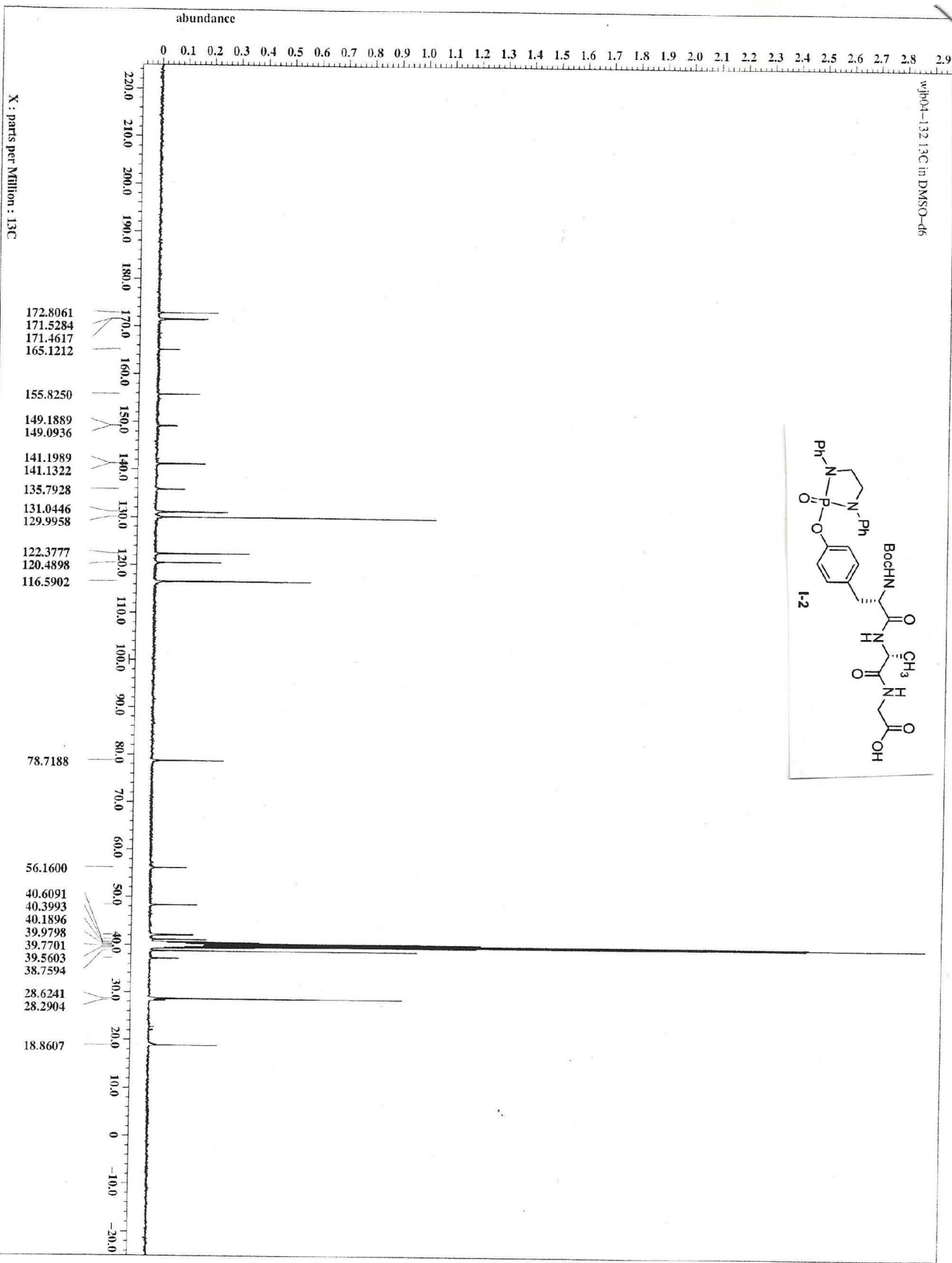


wjhs04-132 in DMSO-d6



X : parts per Million : 1H

wj004-132 13C in DMSO-d6



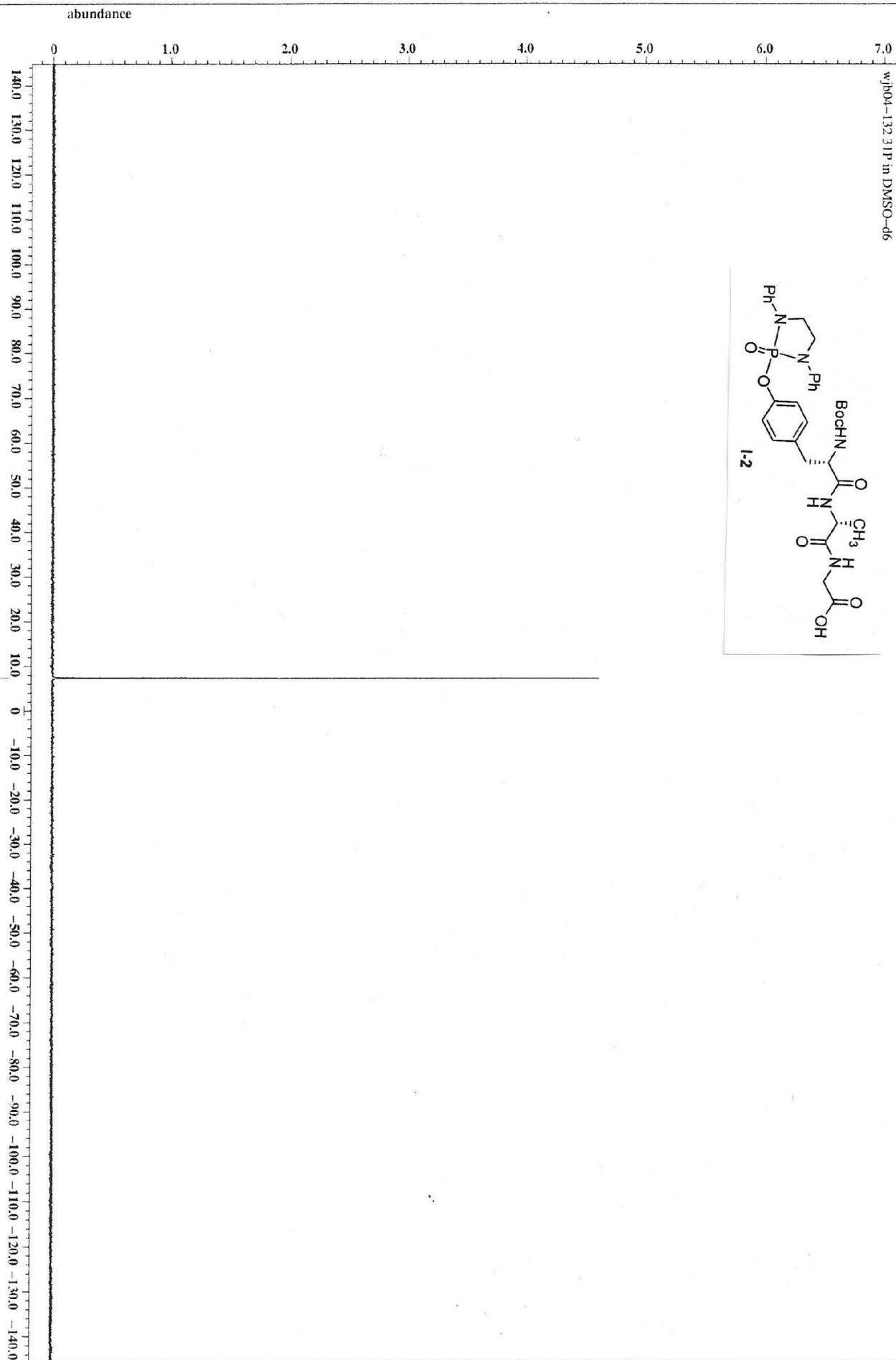
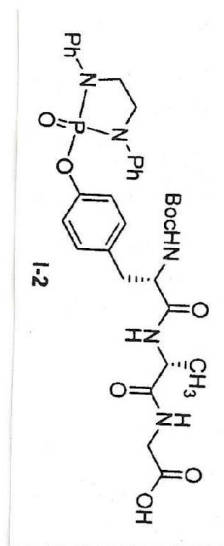
- 172.8061
- 171.5284
- 171.4617
- 165.1212
- 155.8250
- 149.1889
- 149.0936
- 141.1989
- 141.1322
- 135.7928
- 131.0446
- 129.9958
- 122.3777
- 120.4898
- 116.5902

78.7188

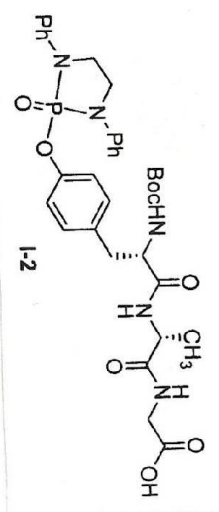
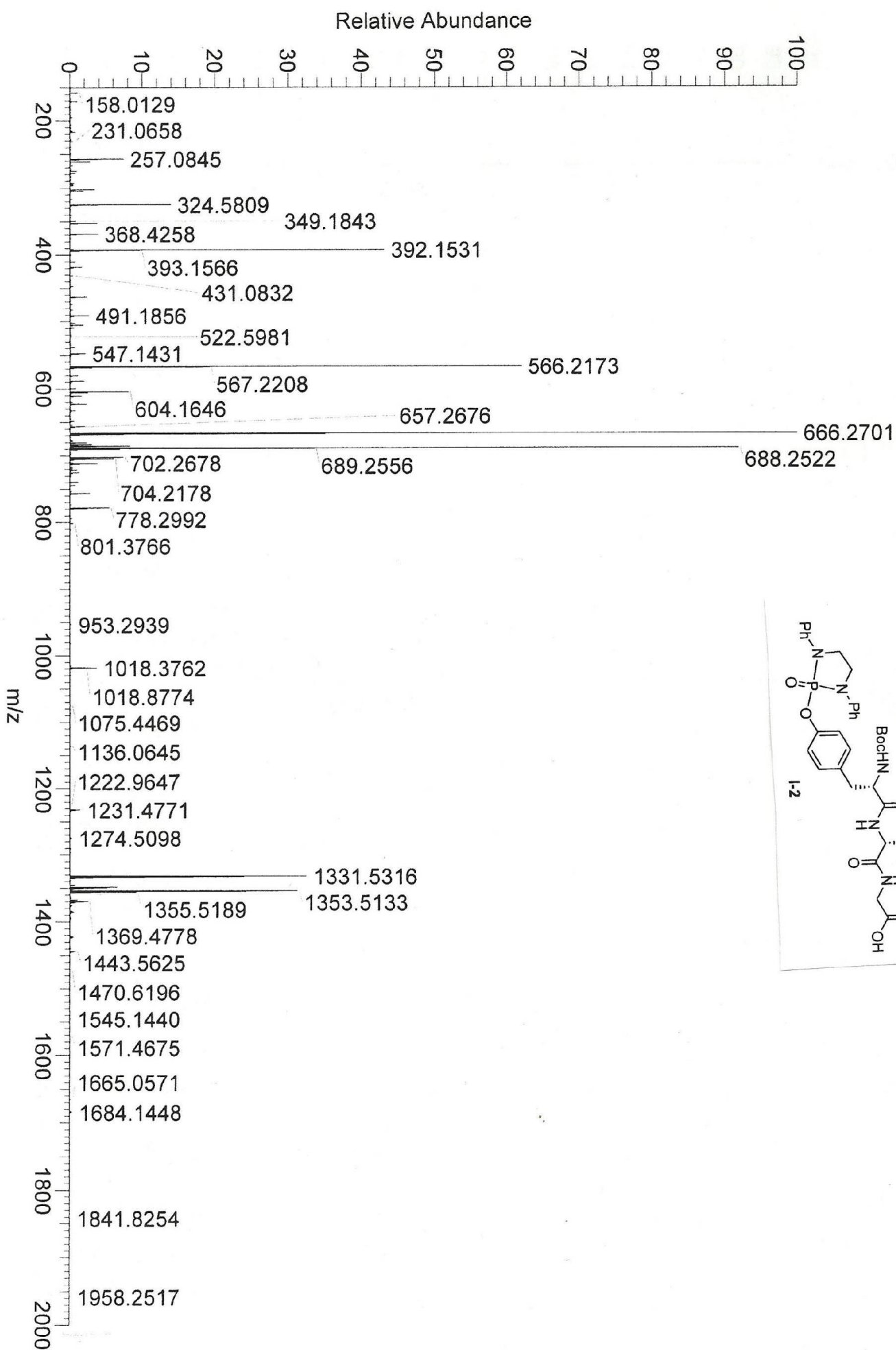
- 56.1600
- 40.6091
- 40.3993
- 40.1896
- 39.9798
- 39.7701
- 39.5603
- 38.7594

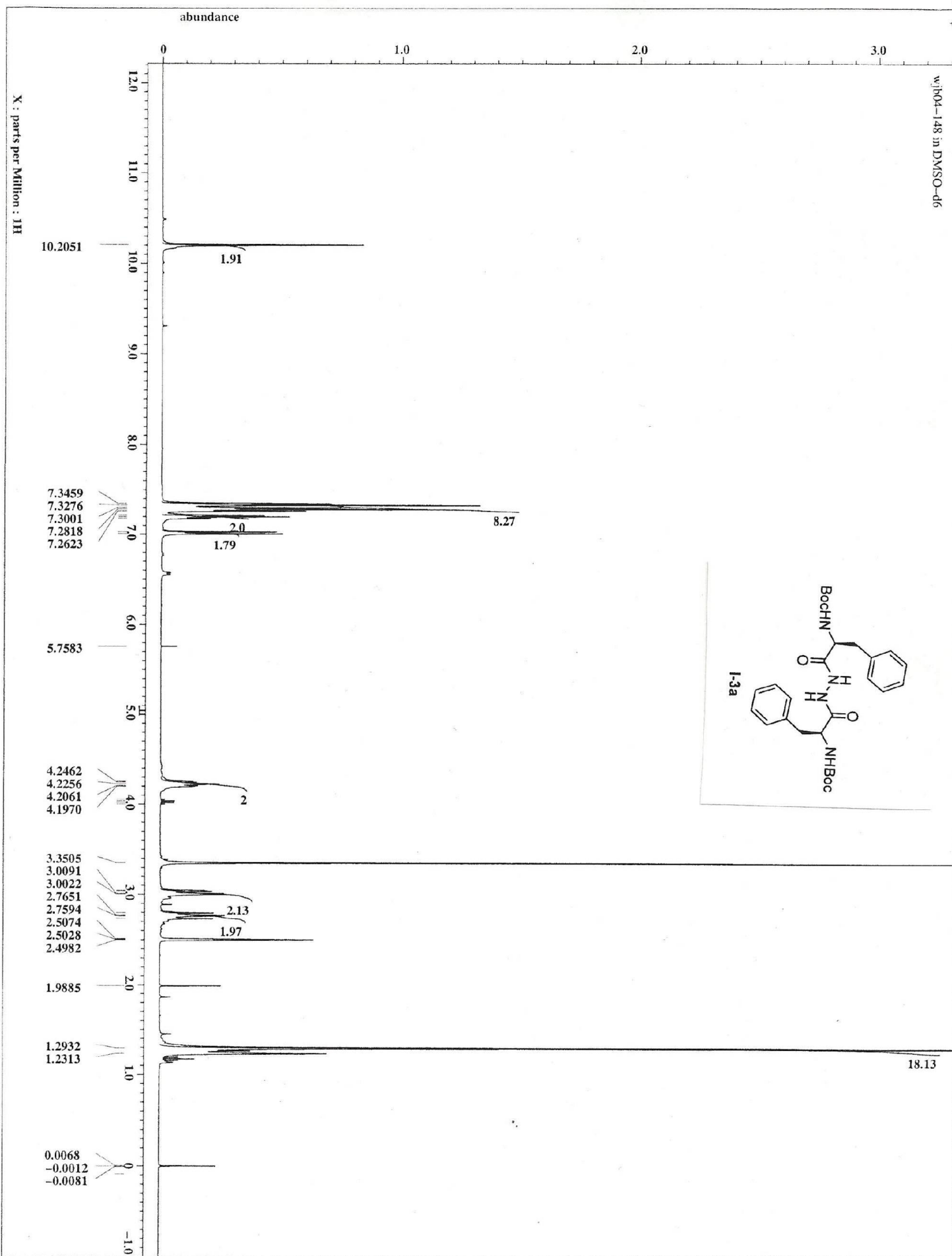
- 28.6241
- 28.2904

18.8607



W04-132\_12042012\_01#62 RT: 0.52 AV: 1 NL: 1.32E6  
 T: FTMS + p ESI Full ms [150.00-2000.00]

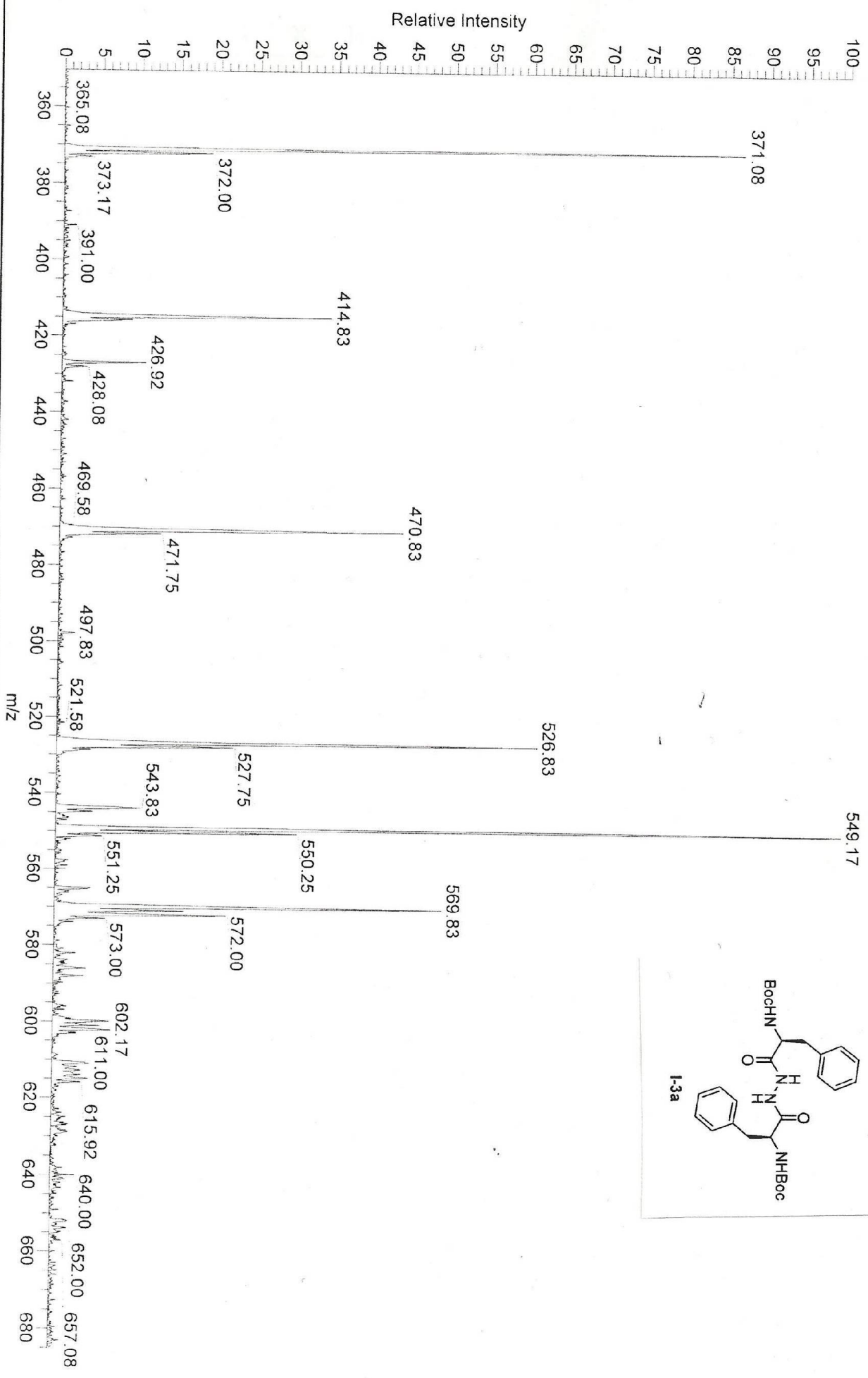
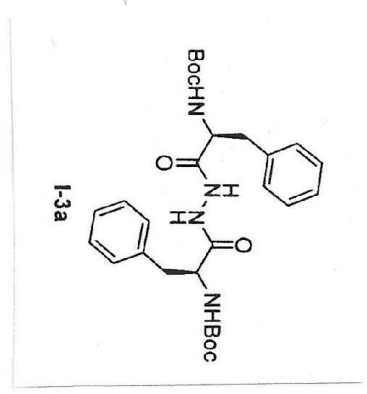






work-148

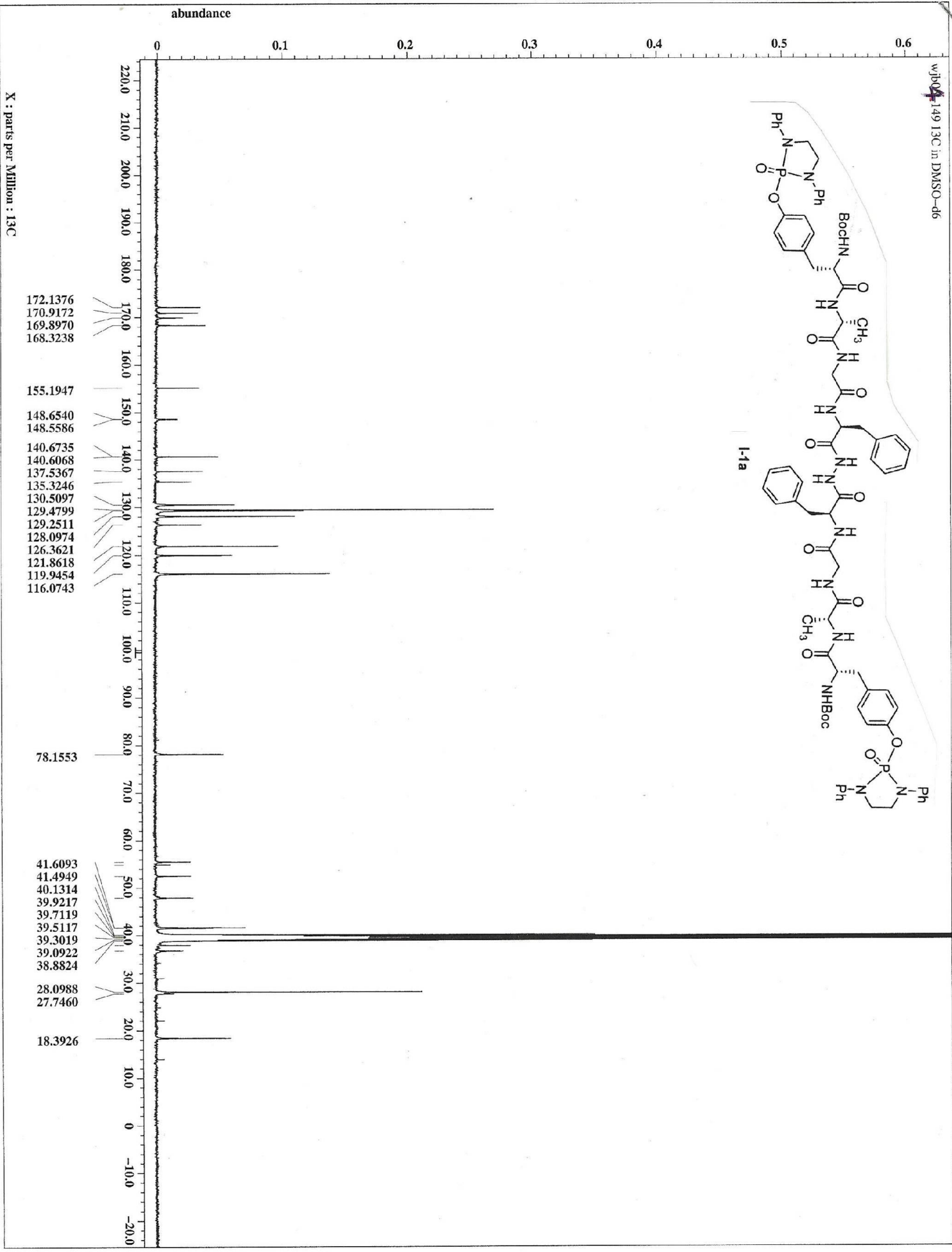
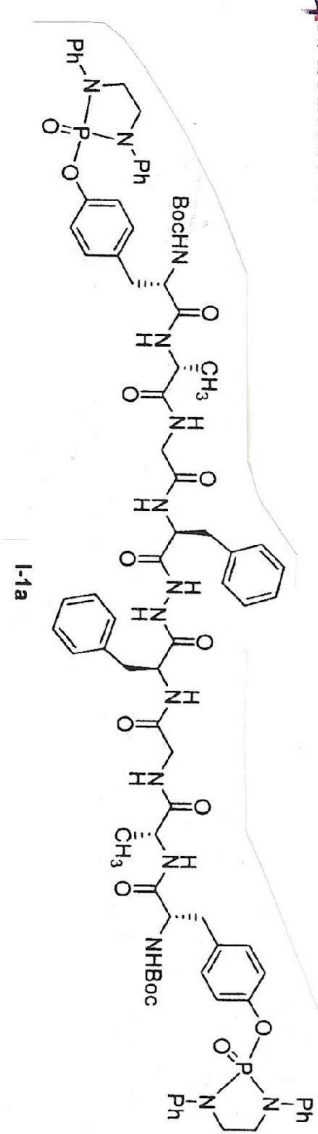
#161 RT: 0.585 AV: 10 IT: 10.000 ST: 0.20 US: 1 NL: 9.65E2  
F: ITMS + p ESI Full ms [85.00-1300.00]

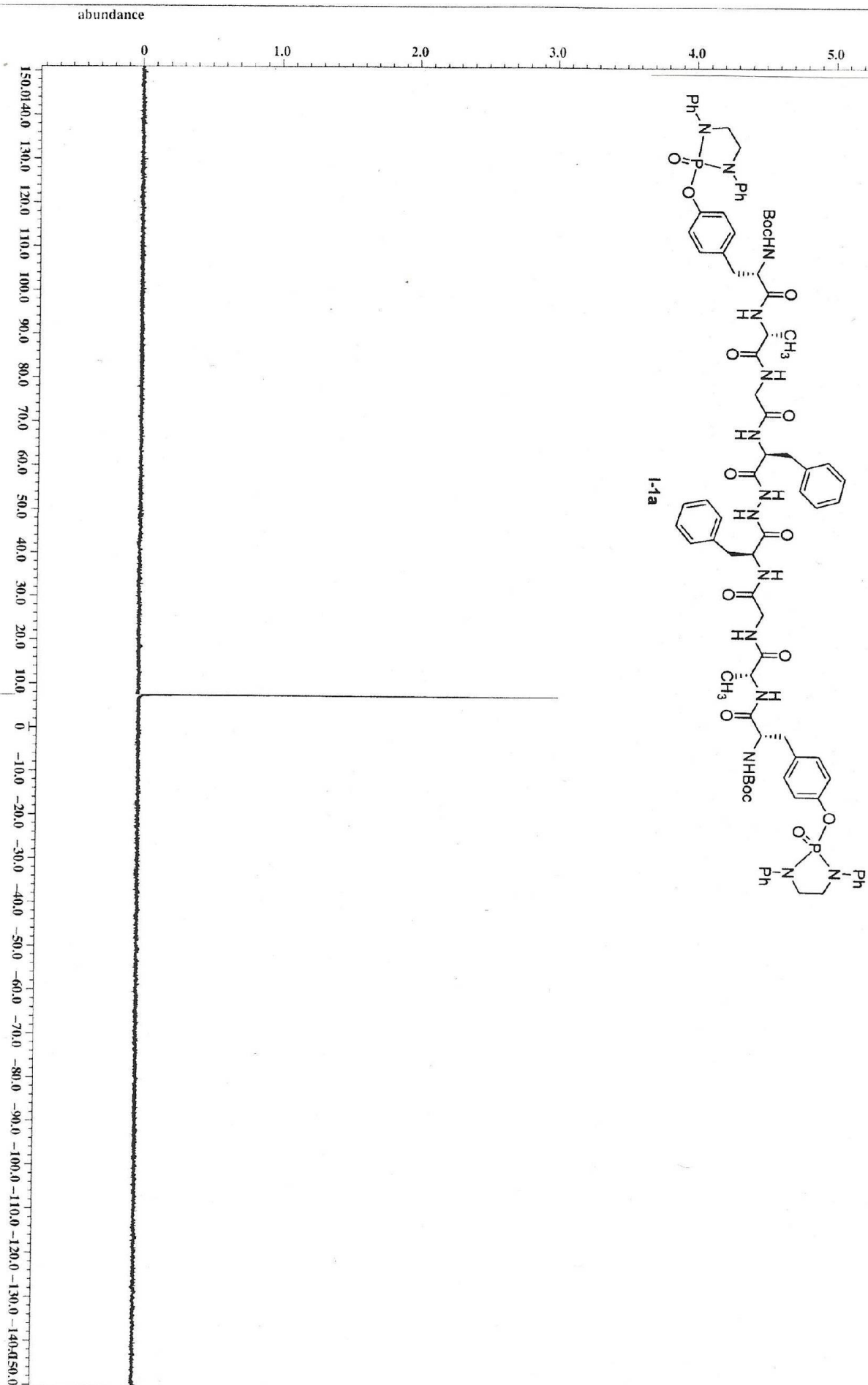


LTO Tune rev LCQ Fleet 2.6.0 SP3



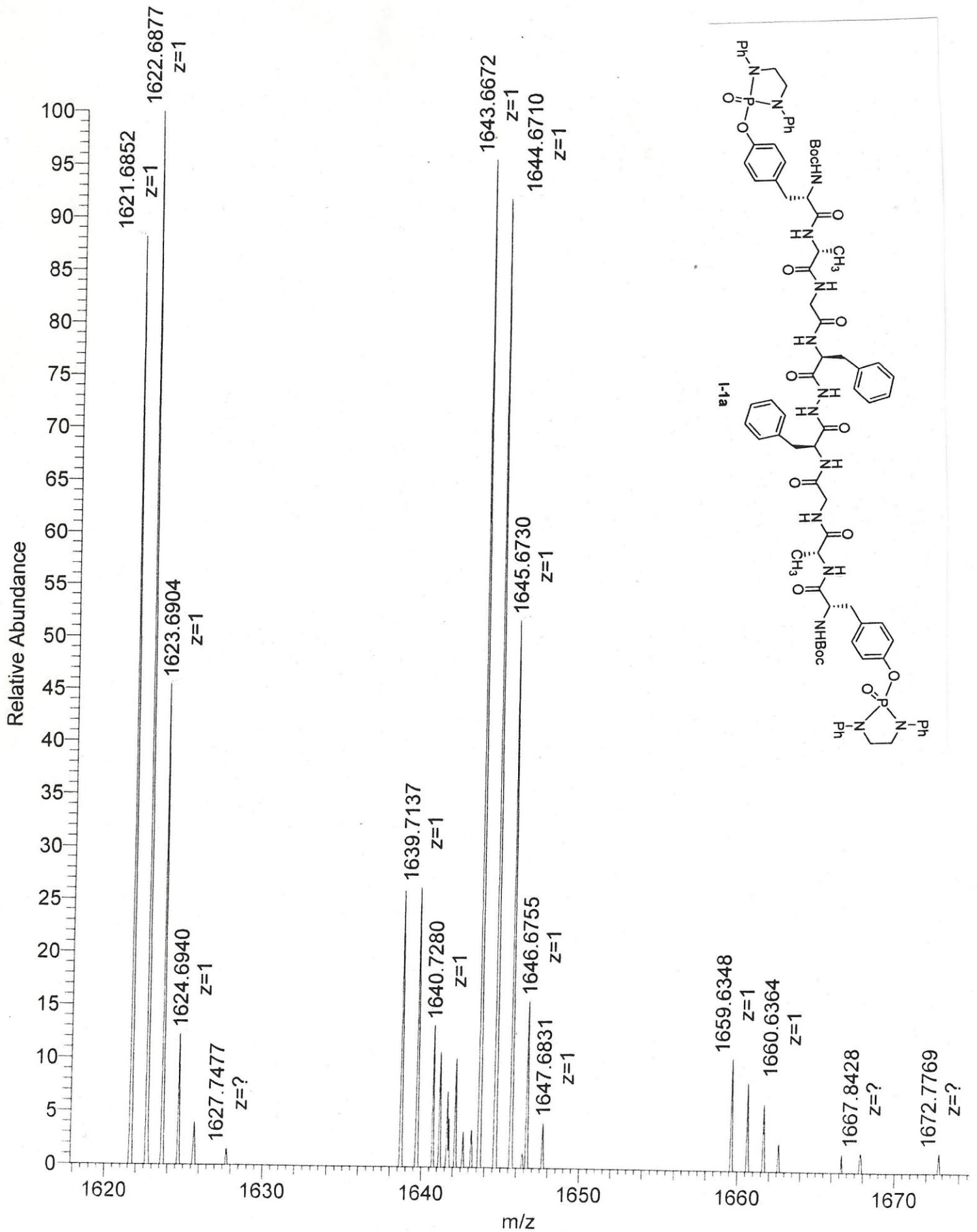


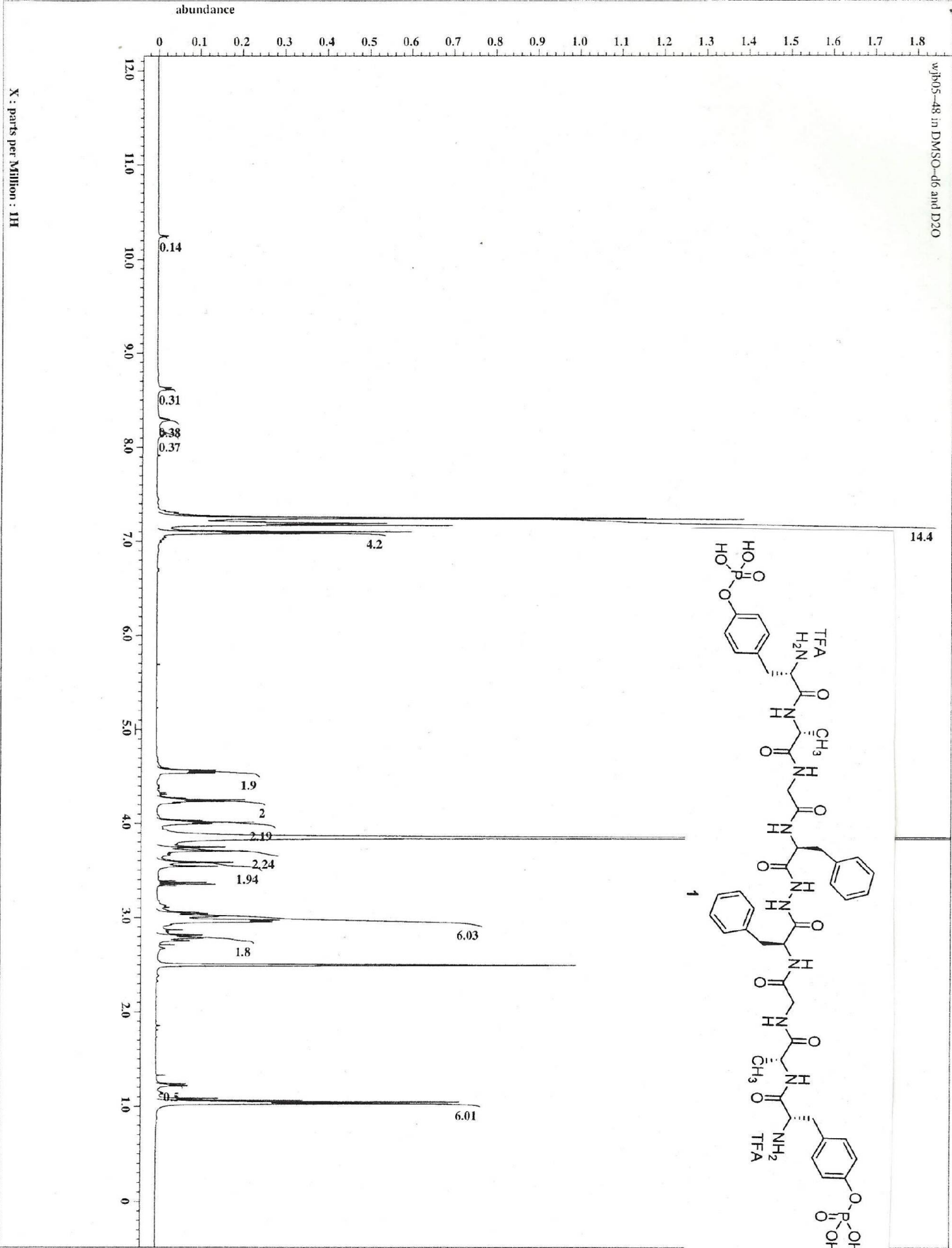




X : parts per Million : 31P

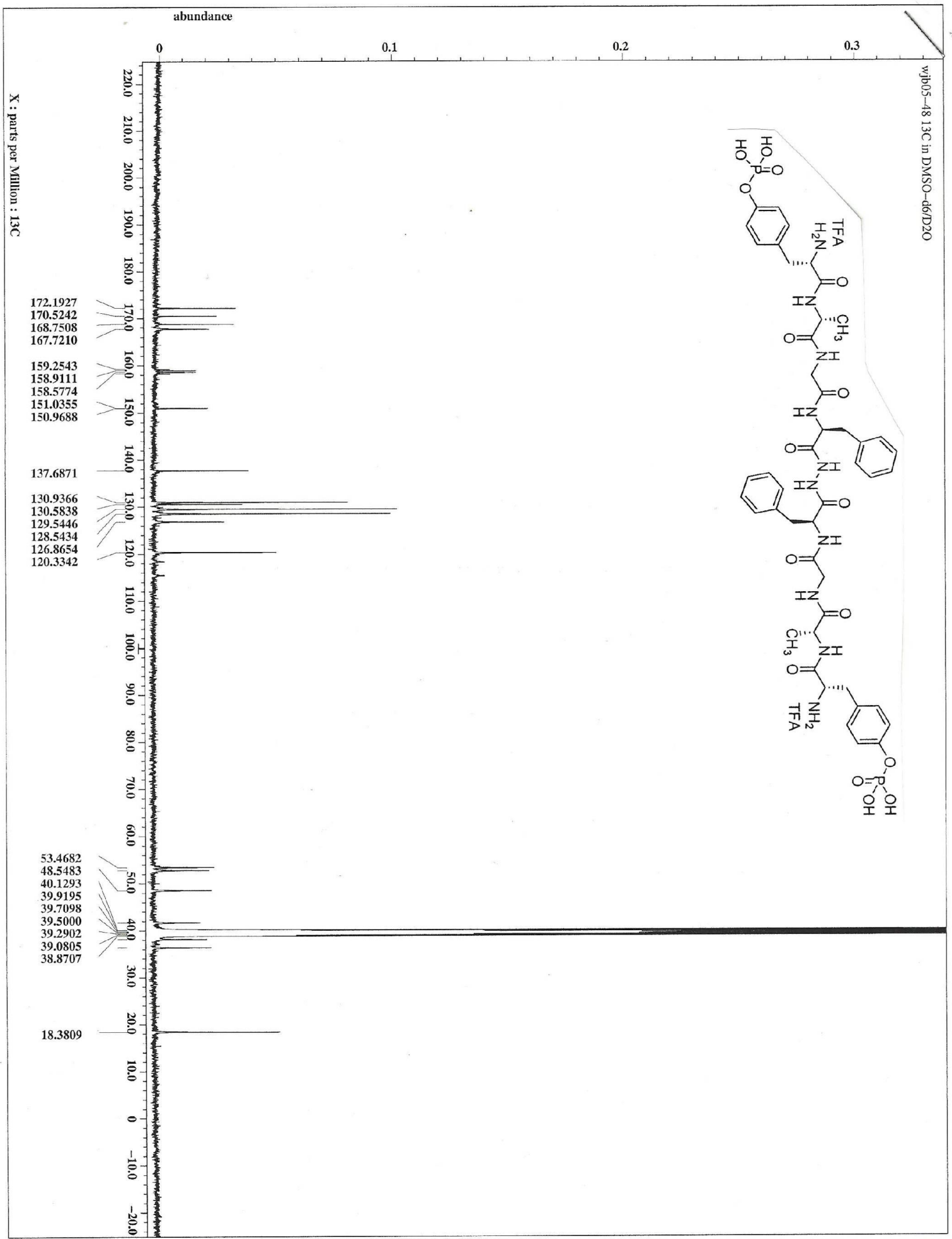
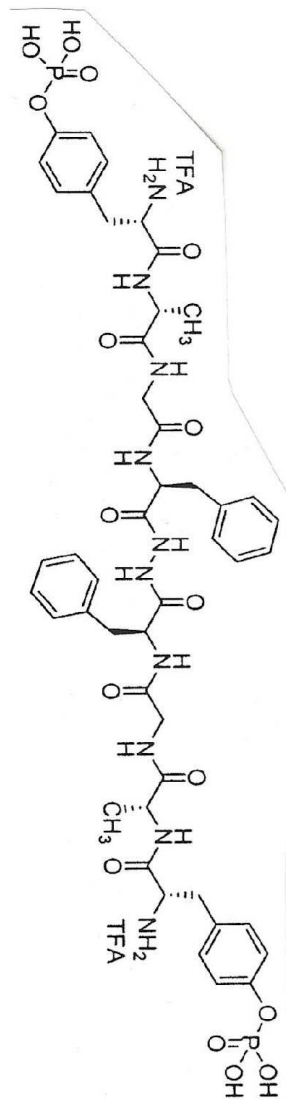
W04-149\_12042012\_01 #5 RT: 0.04 AV: 1 NL: 7.25E4  
 T: FTMS + p ESI Full ms [150.00-2000.00]



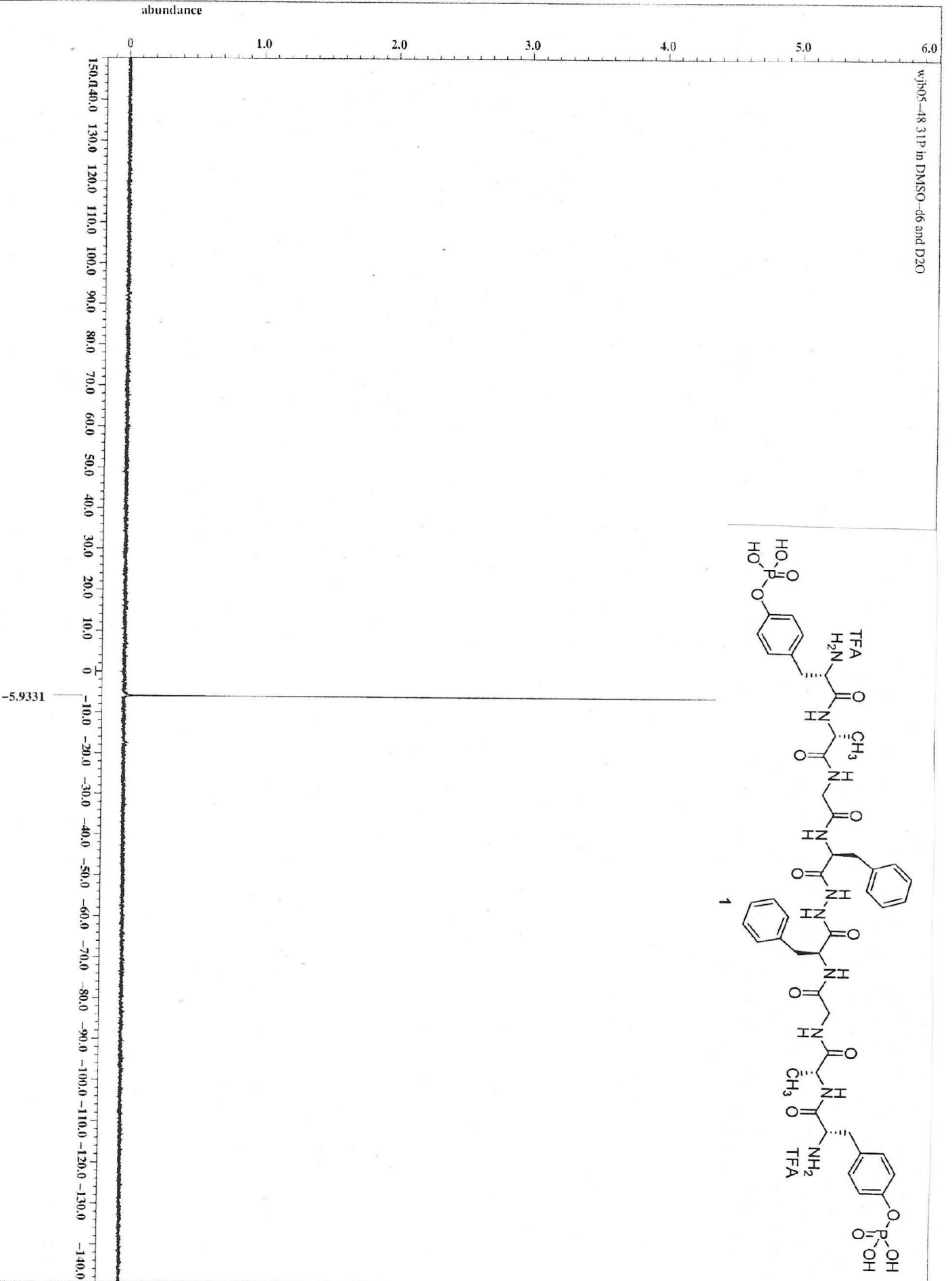
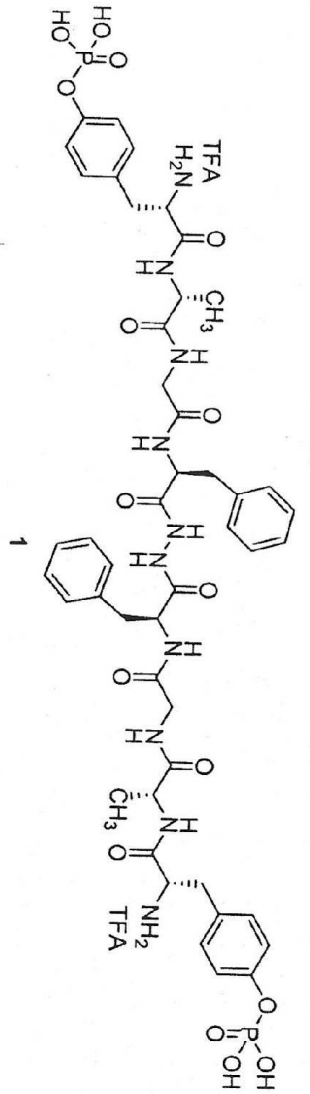


X : parts per Million : 1H

wjph05-48 in DMSO-d6 and D2O



X: parts per Million : 13C



X : parts per Million : 31P

WJB-05-48\_12042012\_01 #130 RT: 1.95 AV: 1 NL: 5.86E5  
 T: FTMS + p ESI Full ms [150.00-2000.00]

