

## **Supporting Information for:**

# **Revealing the Pharmacophore of Ipomoeassin F through Molecular Editing**

Guanghai Zong,<sup>†</sup> Hazim Aljewari,<sup>†</sup> Zhijian Hu,<sup>†</sup> and Wei Q. Shi<sup>\*†</sup>

<sup>†</sup>Department of Chemistry and Biochemistry, University of Arkansas, Fayetteville, AR 72701 (USA)

E-mail: weishi@uark.edu

Homepage: <https://comp.uark.edu/~weishi/index.html>

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ZGH-*Ipom*-2-39-A-140422 1H in CDCL<sub>3</sub>

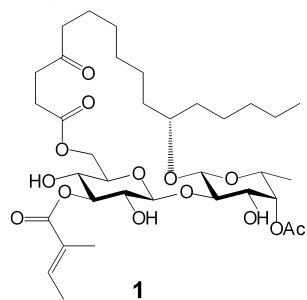
ZGH-Ipom-2-39-A-140422 13C in CDCl3

— 210.078

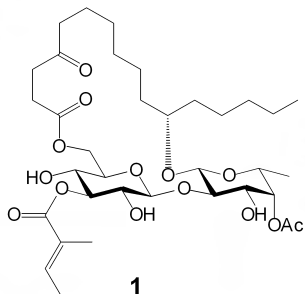
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— 171.736  
— 169.735

— 139.490

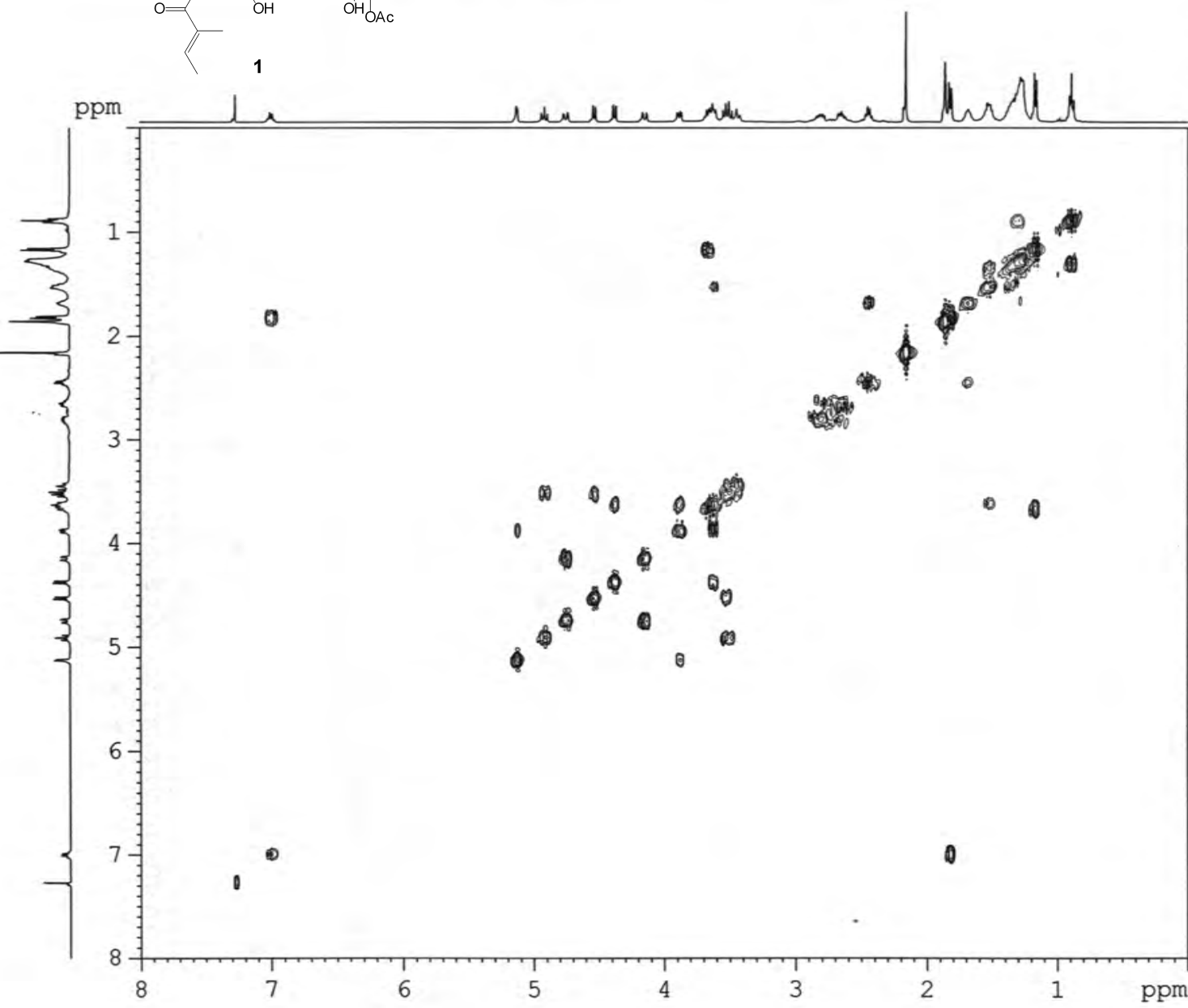
— 127.886

— 105.919  
— 100.293  
82.931  
79.490  
77.852  
77.314  
77.200  
76.997  
76.680  
75.175  
74.046  
72.666  
72.407  
68.729  
67.701  
62.903  
42.069  
37.248  
34.316  
33.167  
31.866  
29.520  
28.782  
28.363  
24.809  
24.454  
24.439  
22.631  
20.896  
16.311  
14.536  
14.075  
12.064

210 200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 ppm



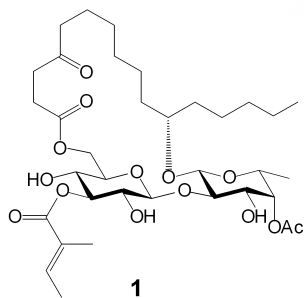
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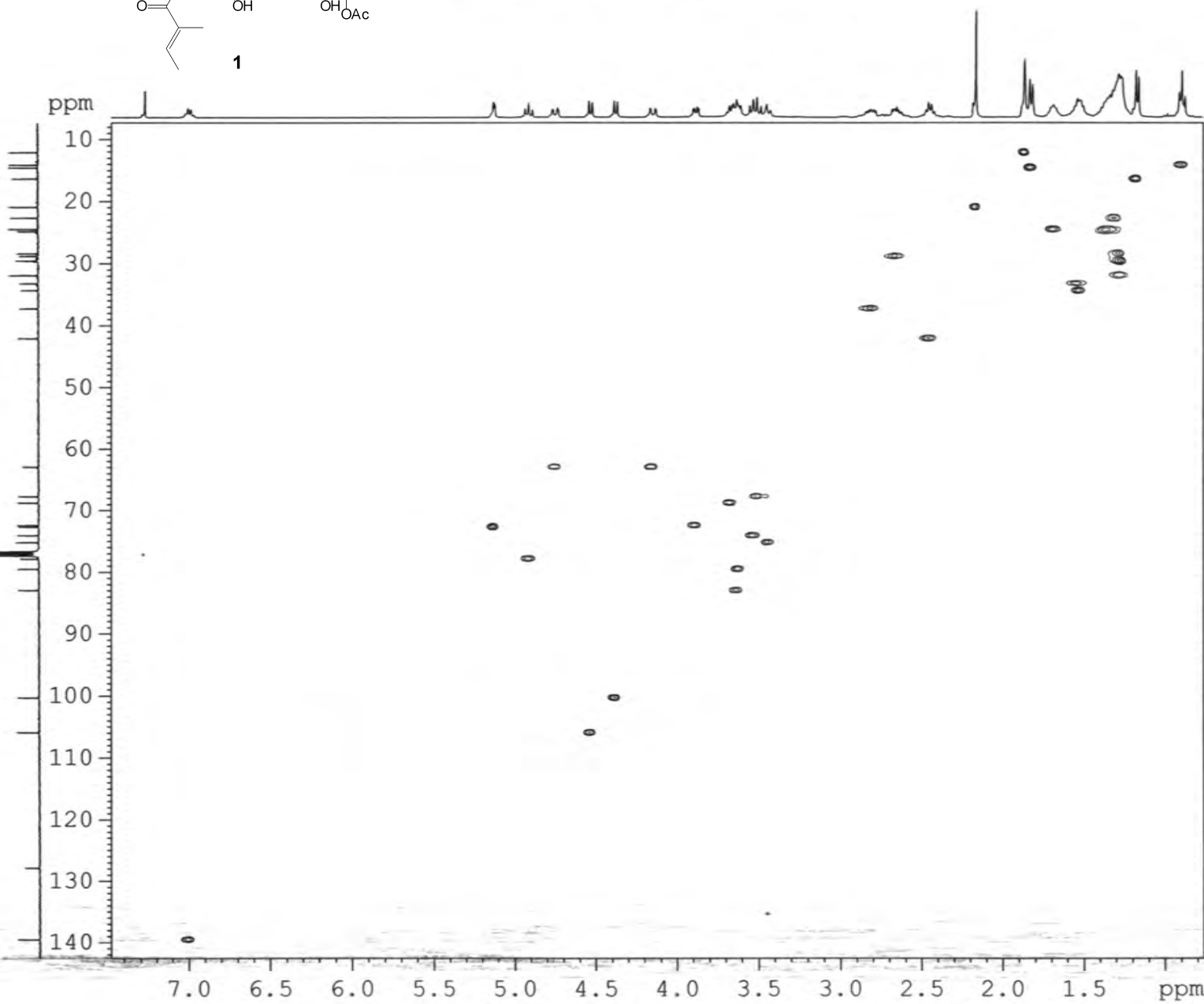
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 PROCNO 1  
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 Time\_ 6.53  
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 PULPROG cosygppqf  
 TD 2048  
 SOLVENT CDCl3  
 NS 4  
 DS 8  
 SWH 5341.880 Hz  
 FIDRES 2.608340 Hz  
 AQ 0.1917428 sec  
 RG 144  
 DW 93.600 usec  
 DE 6.50 usec  
 TE 293.5 K  
 D0 0.00000300 sec  
 D1 1.48689198 sec  
 D13 0.00000400 sec  
 D16 0.00020000 sec  
 IN0 0.00018720 sec

===== CHANNEL f1 =====  
 NUC1 1H  
 P0 10.00 usec  
 P1 10.00 usec  
 PL1 -3.50 dB  
 PL1W 31.17620277 W  
 SFO1 400.1324057 MHz

===== GRADIENT CHANNEL =====  
 GPNAM1 SINE.100  
 GPZ1 10.00 %  
 P16 1000.00 usec  
 ND0 1  
 TD 128  
 SFO1 400.1324 MHz  
 FIDRES 41.733440 Hz  
 SW 13.350 ppm  
 FmMODE QF  
 SI 1024  
 SF 400.1300040 MHz  
 WDW SINE  
 SSB 0  
 LB 0.00 Hz  
 GB 0  
 PC 1.00  
 SI 1024  
 MC2 QF  
 SF 400.1300033 MHz  
 WDW SINE  
 SSB 0  
 LB 0.00 Hz  
 GB 0



## ZGH-Ipom-2-39-A-140422 HSQC



NAME ZGH-Ipom-2-39-A-140422  
 EXPNO 4  
 PROCNO 1  
 Date 20140501  
 Time 7.08  
 INSTRUM spect  
 PROBHD 5 mm PABBO BB-  
 PULPROG hsqcetgps1  
 TD 1024  
 SOLVENT CDC13  
 NS 8  
 DS 16  
 SWH 5341.880 Hz  
 FIDRES 5.216680 Hz  
 AQ 0.0958964 sec  
 RG 2050  
 DW 93.600 usec  
 DE 6.50 usec  
 TE 292.9 K  
 CNST2 145.0000000  
 D0 0.00000300 sec  
 D1 1.50000000 sec  
 D4 0.00172414 sec  
 D11 0.03000000 sec  
 D13 0.00000400 sec  
 D16 0.00020000 sec  
 D24 0.00110000 sec  
 INO 0.00003000 sec  
 ZGPTNS

===== CHANNEL f1 =====  
 NUC1 1H  
 P1 10.00 usec  
 P2 20.00 usec  
 P28 1000.00 usec  
 PL1 -3.50 dB  
 PL1W 31.17620277 W  
 SFO1 400.1324057 MHz

===== CHANNEL f2 =====  
 CPDPRG2 garp  
 NUC2 13C  
 P3 10.00 usec  
 P4 20.00 usec  
 PCPD2 75.00 usec  
 PL2 -2.10 dB  
 PL12 15.40 dB  
 PL2W 58.37759399 W  
 PL12W 1.03811681 W  
 SFO2 100.6202727 MHz

===== GRADIENT CHANNEL =====  
 GPNAM1 SINE.100  
 GPNAM2 SINE.100  
 GPZ1 80.00 %  
 GPZ2 20.10 %  
 P16 1000.00 usec  
 NDO 2  
 TD 256  
 SFO1 100.6203 MHz  
 FIDRES 65.104164 Hz  
 SW 165.639 ppm  
 FMODE Echo-Antiecho  
 SI 1024  
 SF 400.1300000 MHz  
 WDW QSINE  
 SSB 2  
 LB 0.00 Hz  
 GB 0  
 PC 1.00  
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 MC2 echo-antiecho  
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 WDW QSINE  
 SSB 2  
 LB 0.00 Hz  
 GB 0

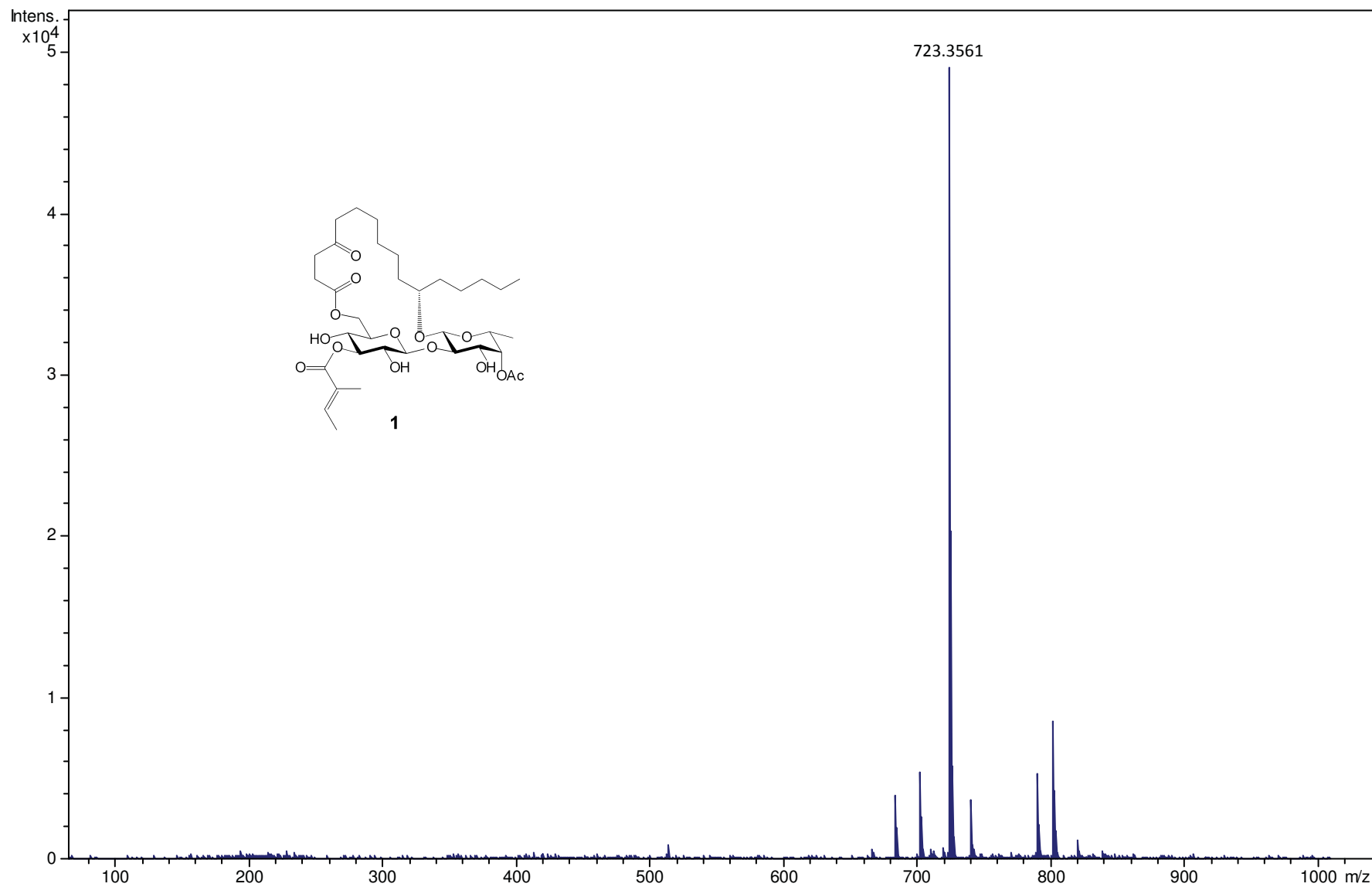


## Arkansas Statewide Mass Spectrometry Facility

## ESI Mass Spectrum

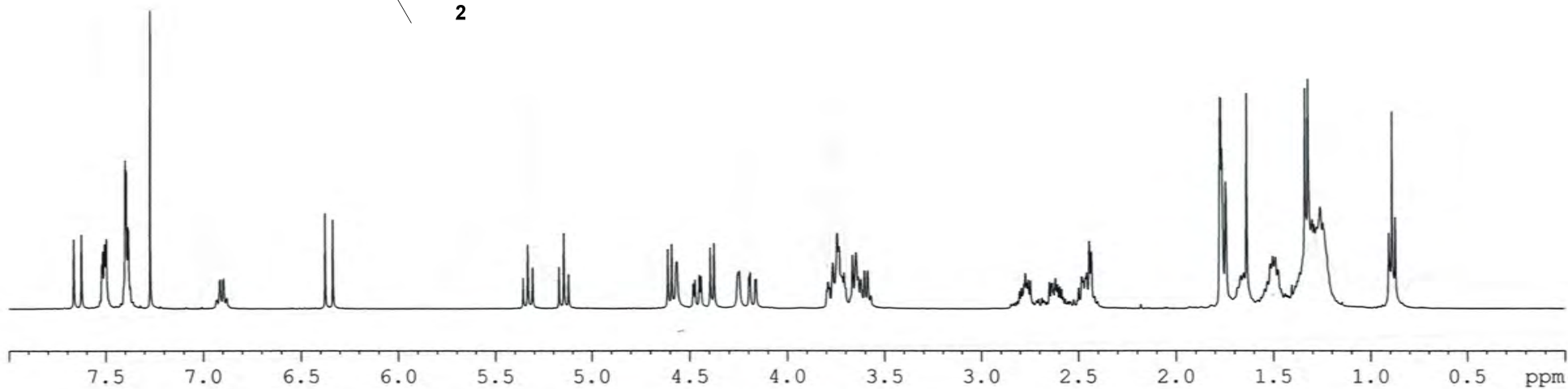
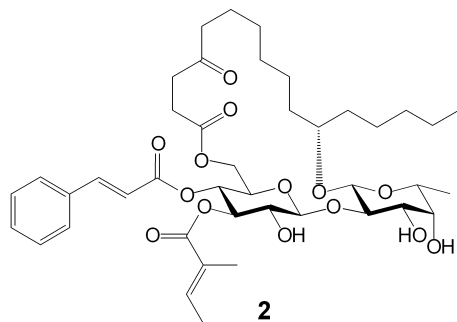
Sample Name: ZIF-2  
Sample id#: 982238  
Instrument: ultrTOF-Q

12/11/2014



ZGH-*Ipom*-2-61-A-140819 (3) 1H in CDCL<sub>3</sub>

7.664  
7.624  
7.520  
7.515  
7.505  
7.496  
7.398  
7.393  
7.385  
7.381  
7.270  
6.374  
6.334  
5.331  
5.307  
5.168  
5.144  
5.121  
4.610  
4.590  
4.564  
4.450  
4.441  
4.394  
4.375  
4.254  
4.247  
4.196  
4.191  
3.765  
3.742  
3.733  
3.716  
3.708  
3.664  
3.646  
3.635  
3.603  
3.586  
2.772  
2.483  
2.457  
2.443  
2.433  
1.773  
1.770  
1.763  
1.745  
1.743  
1.667  
1.652  
1.636  
1.515  
1.502  
1.488  
1.477  
1.363  
1.337  
1.321  
1.300  
1.290  
1.278  
1.275  
1.259  
1.244  
0.906  
0.889  
0.872



1.006

2.004

3.020

0.986

0.982

1.000

0.998

0.943

1.004

0.991

1.042

0.931

1.048

3.975

3.107

1.974

2.099

2.938

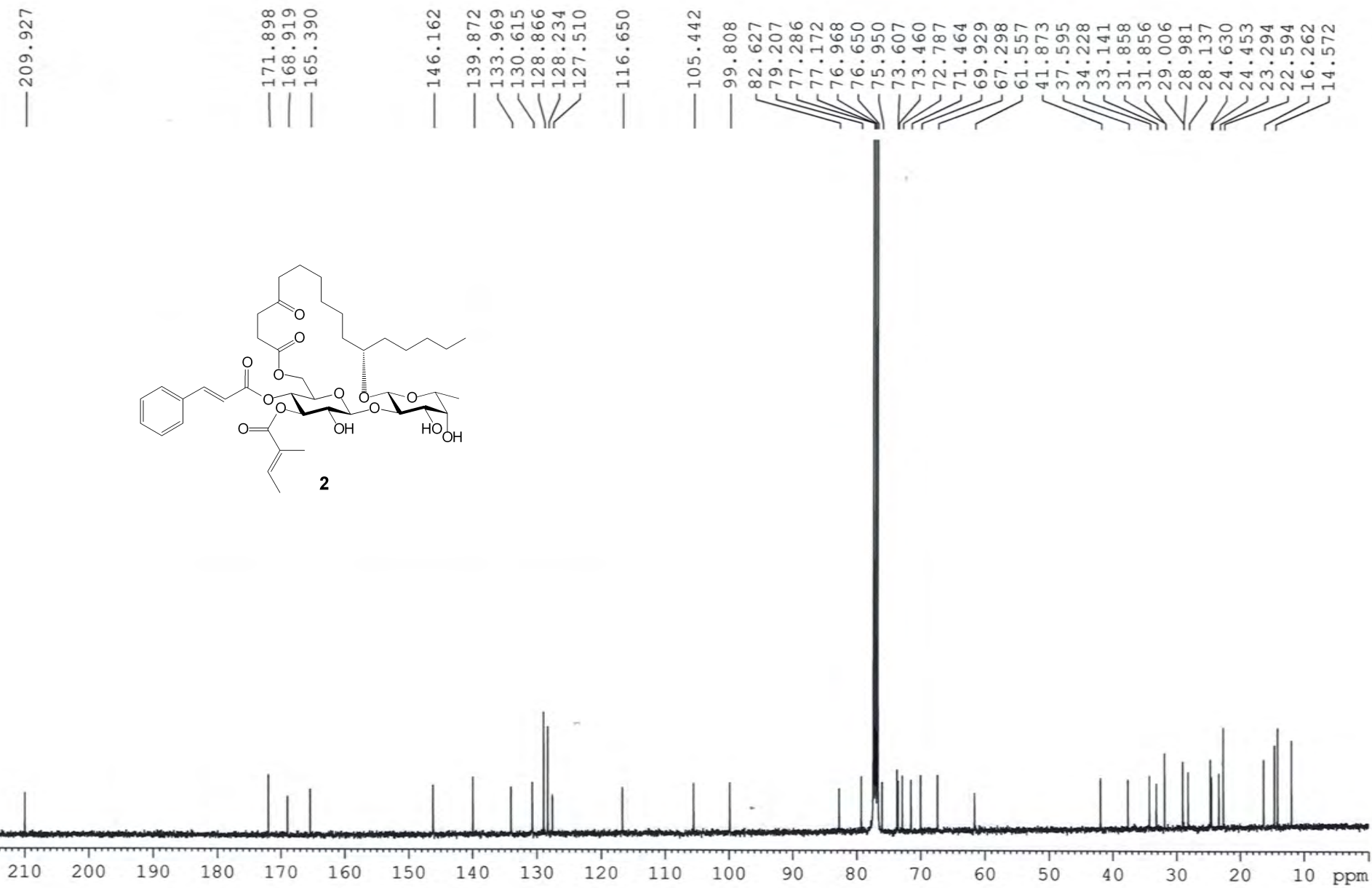
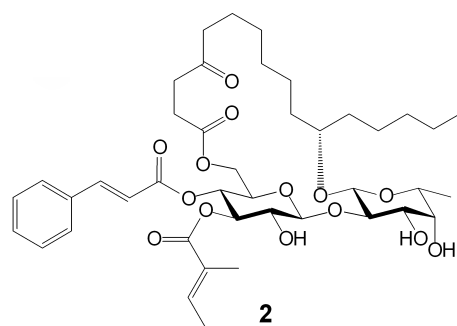
5.915

1.842

3.995

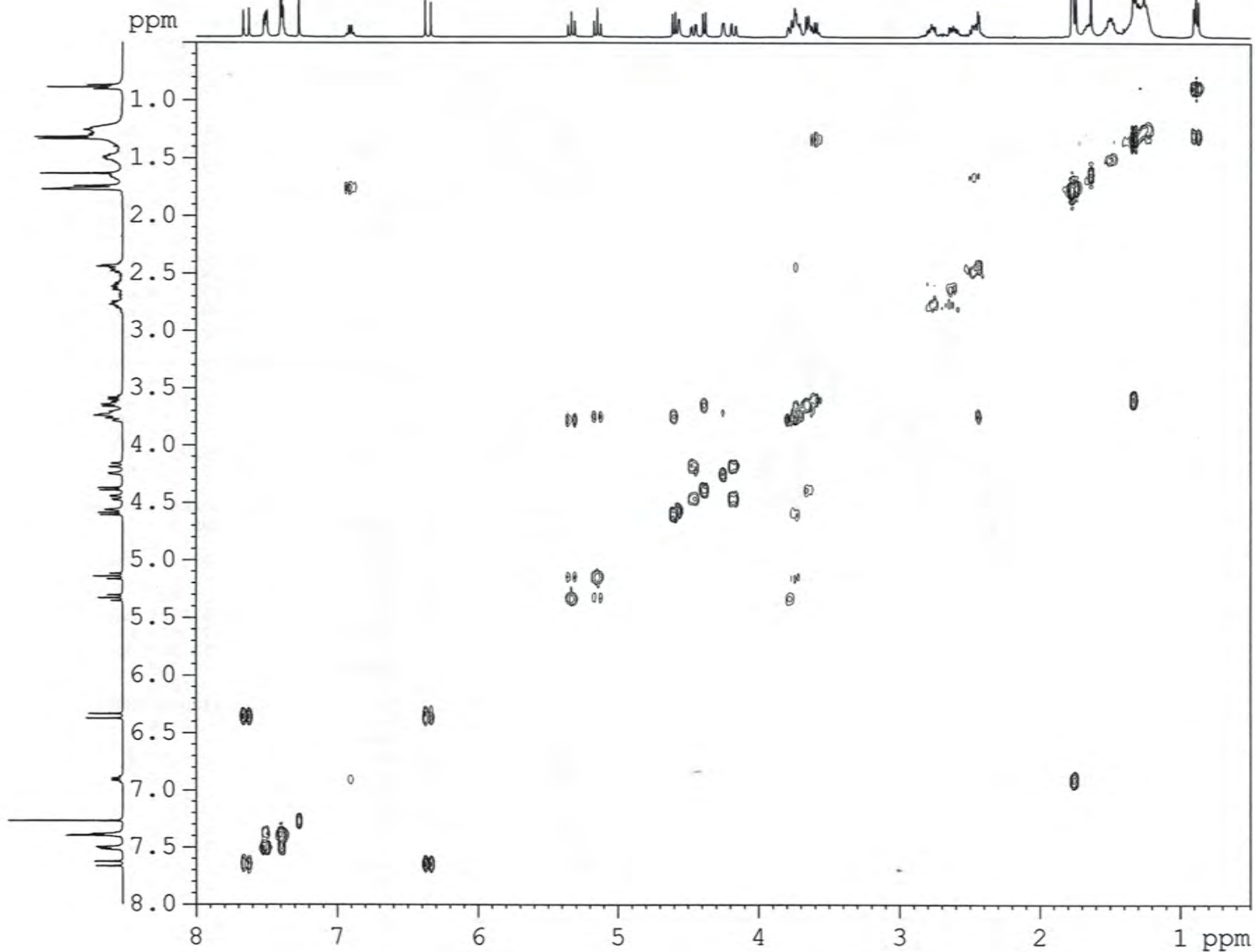
16.166

3.207

ZGH-*Ipom*-2-61-A-140819 (3)  $^{13}\text{C}$  in  $\text{CDCl}_3$ 

## ZGH-Ipom-2-61-A-140819 (3) COSY

2



NAME ZGH-Ipom-2-61-A-140819 (3)  
 EXPNO 2  
 PROCNO 1  
 Date\_ 20140823  
 Time 1.11  
 INSTRUM spect  
 PROBHD 5 mm PABBO BB-  
 PULPROG cosygppqf  
 TD 2048  
 SOLVENT CDC13  
 NS 4  
 DS 8  
 SWH 5341.880 Hz  
 FIDRES 2.608340 Hz  
 AQ 0.1917428 sec  
 RG 256  
 DW 93.600 usec  
 DE 6.50 usec  
 TE 292.3 K  
 D0 0.00000300 sec  
 D1 1.48689198 sec  
 D13 0.00000400 sec  
 D16 0.00020000 sec  
 IN0 0.00018720 sec

===== CHANNEL f1 =====  
 NUC1 1H  
 P0 10.00 usec  
 P1 10.00 usec  
 PL1 -3.50 dB  
 PL1W 31.17620277 W  
 SFO1 400.1324057 MHz

===== GRADIENT CHANNEL =====  
 GPNAM1 SINE.100  
 GPZ1 10.00 %  
 P16 1000.00 usec  
 NDO 1  
 TD 128  
 SFO1 400.1324 MHz  
 FIDRES 41.733440 Hz  
 SW 13.350 ppm  
 FnMODE QF  
 SI 1024  
 SF 400.1300040 MHz  
 WDW SINE  
 SSB 0  
 LB 0.00 Hz  
 GB 0  
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 SI 1024  
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 LB 0.00 Hz  
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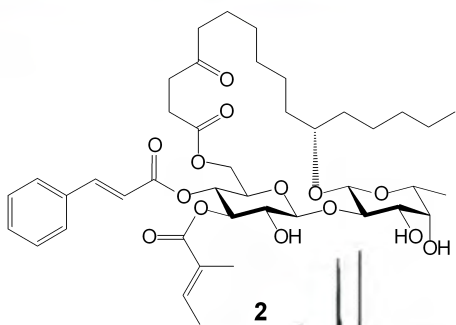
ZGH-*Ipom*-2-61-A-140819 (3) HSQC

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 Time\_ 10.43  
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 PULPROG hsqcetgps1  
 TD 1024  
 SOLVENT CDCl3  
 NS 8  
 DS 16  
 SWH 5341.880 Hz  
 FIDRES 5.216680 Hz  
 AQ 0.0958964 sec  
 RG 2050  
 DW 93.600 usec  
 DE 6.50 usec  
 TE 293.3 K  
 CNST2 145.0000000  
 D0 0.00000300 sec  
 D1 1.50000000 sec  
 D4 0.00172414 sec  
 D11 0.03000000 sec  
 D13 0.00000400 sec  
 D16 0.00020000 sec  
 D24 0.00110000 sec  
 IN0 0.00003000 sec  
 ZGOPTNS

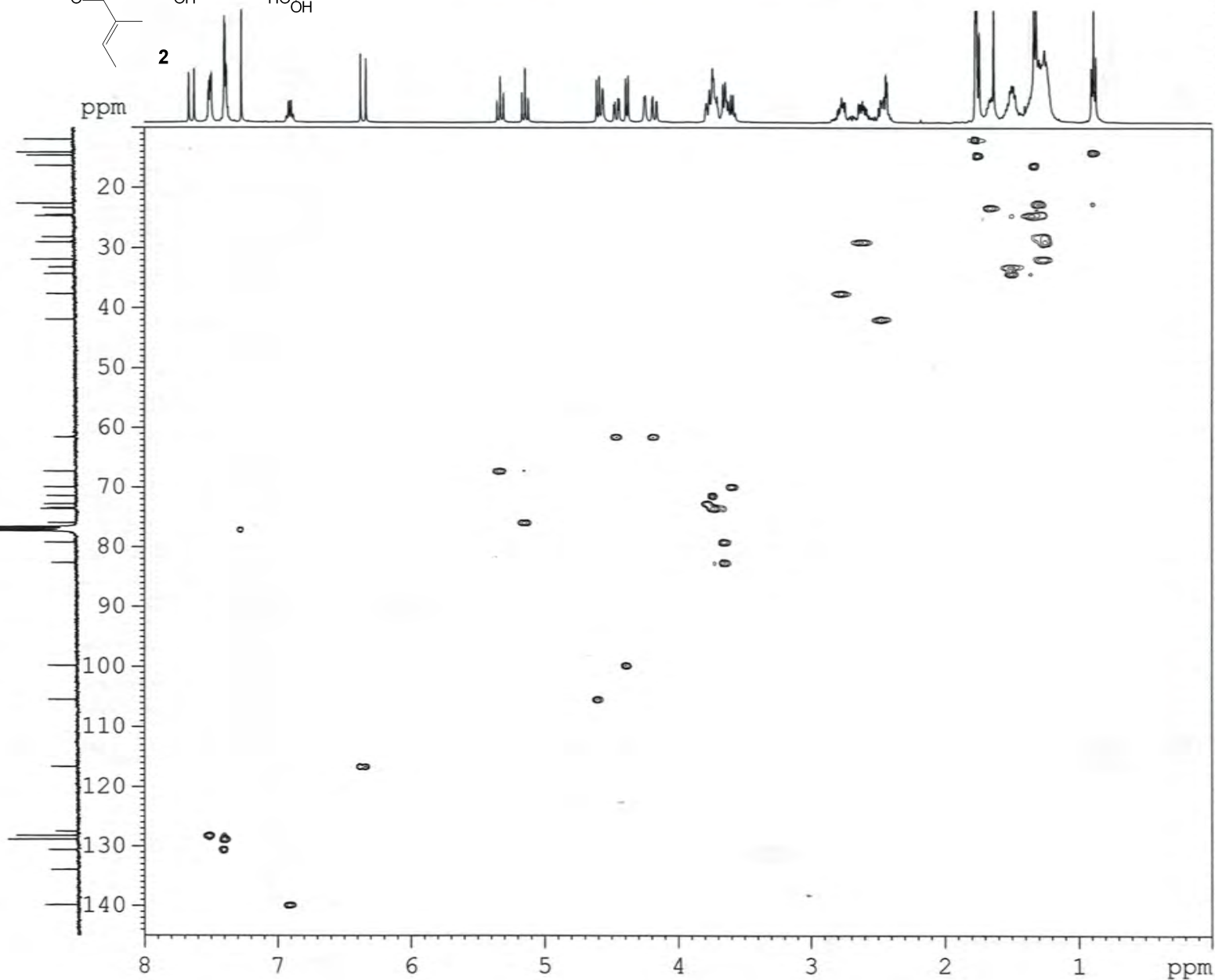
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 P1 10.00 usec  
 P2 20.00 usec  
 P28 1000.00 usec  
 PL1 -3.50 dB  
 PL1W 31.17620277 W  
 SFO1 400.1324057 MHz

===== CHANNEL f2 =====  
 CPDPRG2 garp  
 NUC2 13C  
 P3 10.00 usec  
 P4 20.00 usec  
 PCPD2 75.00 usec  
 PL2 -2.10 dB  
 PL12 15.40 dB  
 PL2W 58.37759399 W  
 PL12W 1.03811681 W  
 SFO2 100.6202727 MHz

===== GRADIENT CHANNEL =====  
 GPNAM1 SINE.100  
 GPNAM2 SINE.100  
 GPZ1 80.00 %  
 GPZ2 20.10 %  
 P16 1000.00 usec  
 NDO 2  
 TD 256  
 SFO1 100.6203 MHz  
 FIDRES 65.104164 Hz  
 SW 165.639 ppm  
 FnMODE Echo-Antiecho  
 SI 1024  
 SF 400.130000 MHz  
 WDW QSINE  
 SSB 2  
 LB 0.00 Hz  
 GB 0  
 PC 1.00  
 SI 1024  
 MC2 echo-antiecho  
 SF 100.6127690 MHz  
 WDW QSINE  
 SSB 2  
 LB 0.00 Hz  
 GB 0



ppm

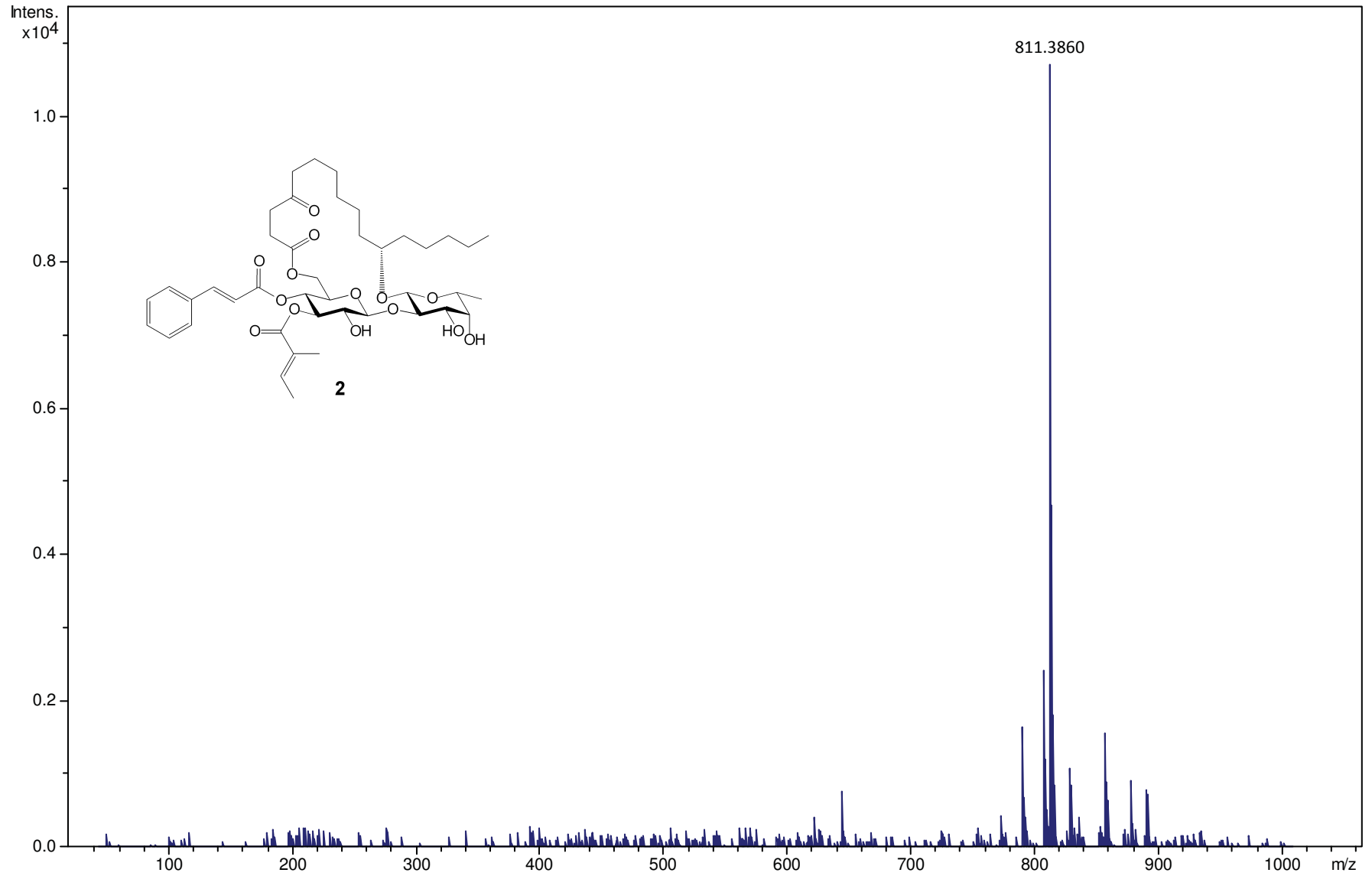


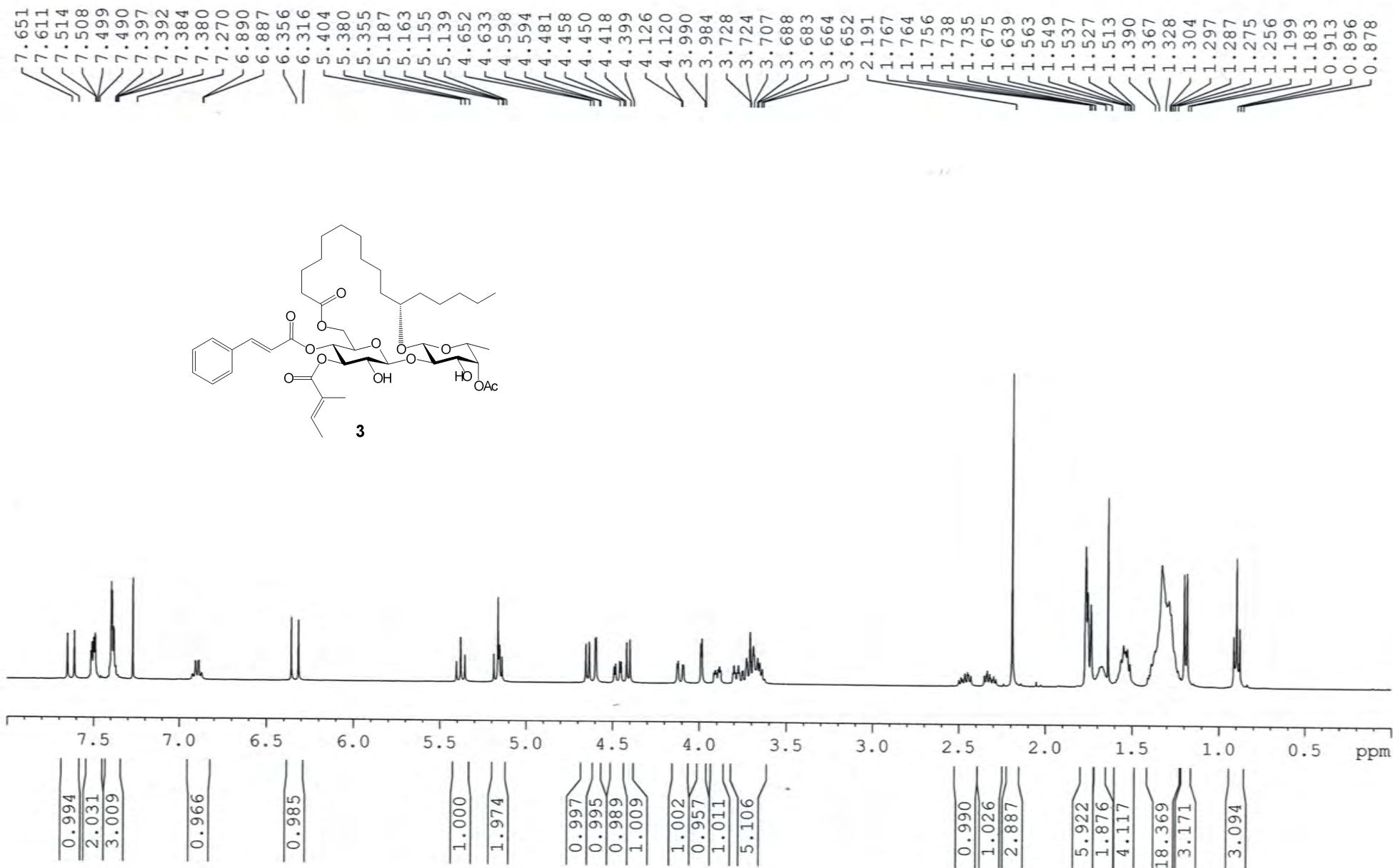
## Arkansas Statewide Mass Spectrometry Facility

## ESI Mass Spectrum

Sample Name: ZIF-6  
Sample id#: 982241  
Instrument: ultrOTOF-Q

12/11/2014



ZGH-*Ipom*-2-83-A-140810 1H in CDCL<sub>3</sub>

## ZGH-Ipom-2-83-A-140810 13C in CDCl3

173.732  
171.703  
168.861  
165.256

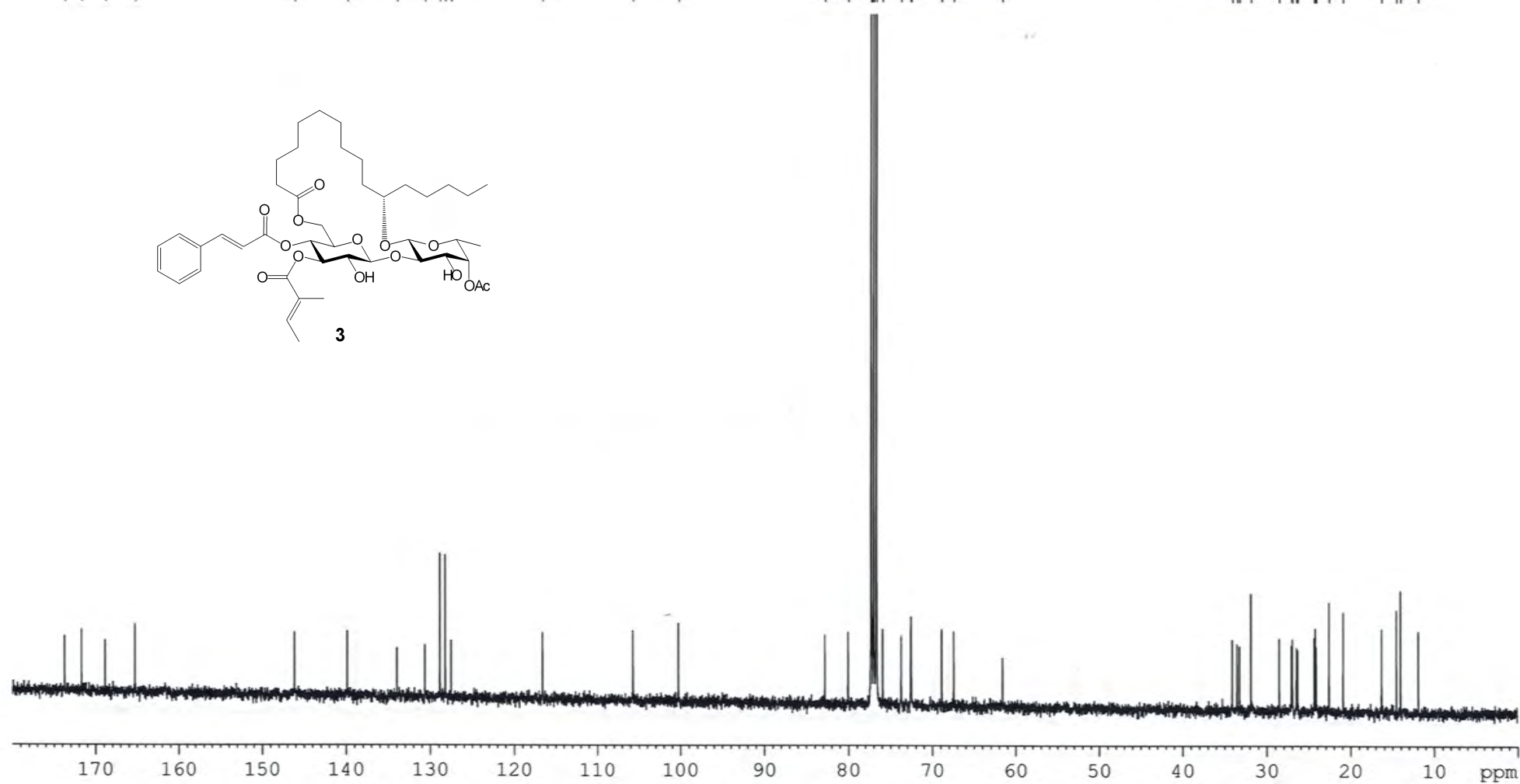
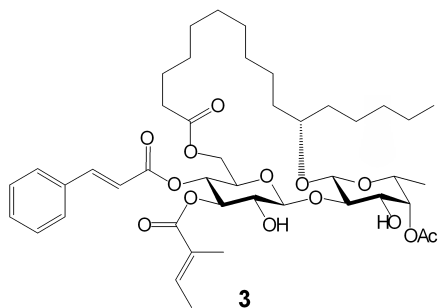
146.137  
139.839  
133.939  
130.612  
128.862  
128.218  
127.504

116.587

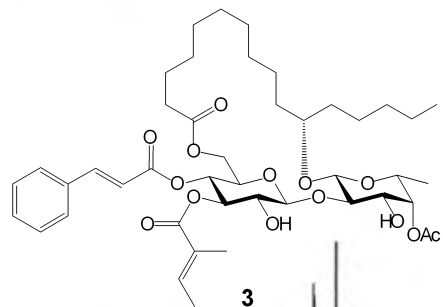
105.724  
100.250

82.783  
80.042  
77.287  
77.173  
76.970  
76.653  
75.917  
73.704  
72.572  
72.531  
72.513  
68.858  
67.411  
61.603

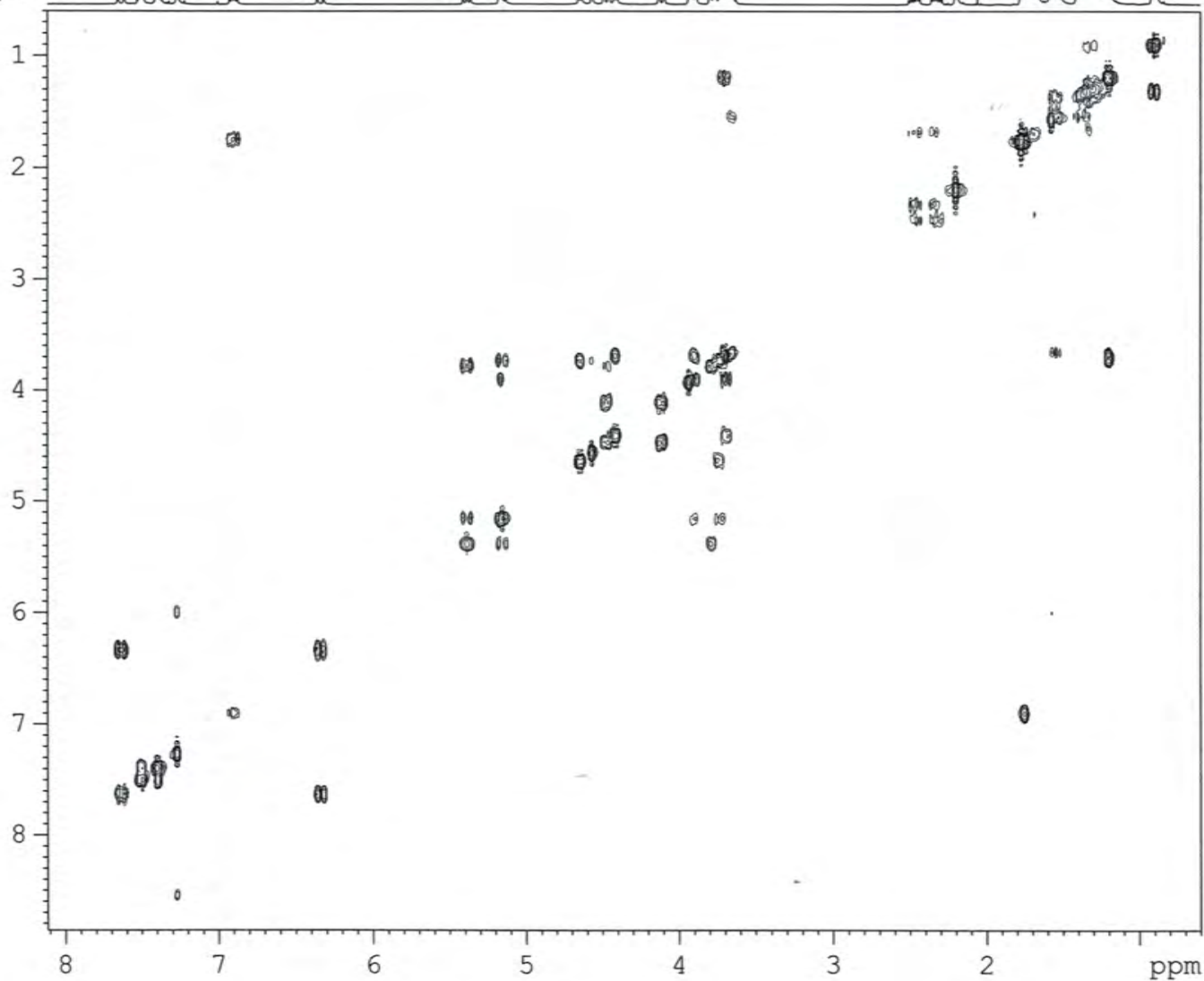
34.073  
33.511  
33.236  
31.892  
28.549  
27.103  
26.996  
26.520  
26.381  
24.387  
24.268  
24.162  
22.619  
20.922  
16.329  
14.563  
14.073  
11.931





ZGH-*Ipom*-2-83-A-140810 COSY

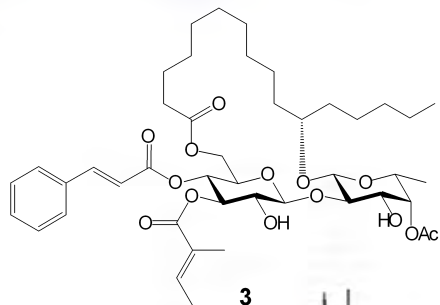
ppm



NAME ZGH-*Ipom*-2-83-A-140810  
 EXPNO 2  
 PROCNO 1  
 Date\_ 20140811  
 Time\_ 17.42  
 INSTRUM spect  
 PROBHD 5 mm PABBO BB-  
 PULPROG cosygpgf  
 TD 2048  
 SOLVENT CDCl3  
 NS 4  
 DS 8  
 SWH 5341.880 Hz  
 FIDRES 2.608340 Hz  
 AQ 0.1917428 sec  
 RG 645  
 DW 93.600 usec  
 DE 6.50 usec  
 TE 292.6 K  
 D0 0.00000300 sec  
 D1 1.48689198 sec  
 D13 0.00000400 sec  
 D16 0.00020000 sec  
 IN0 0.00018720 sec

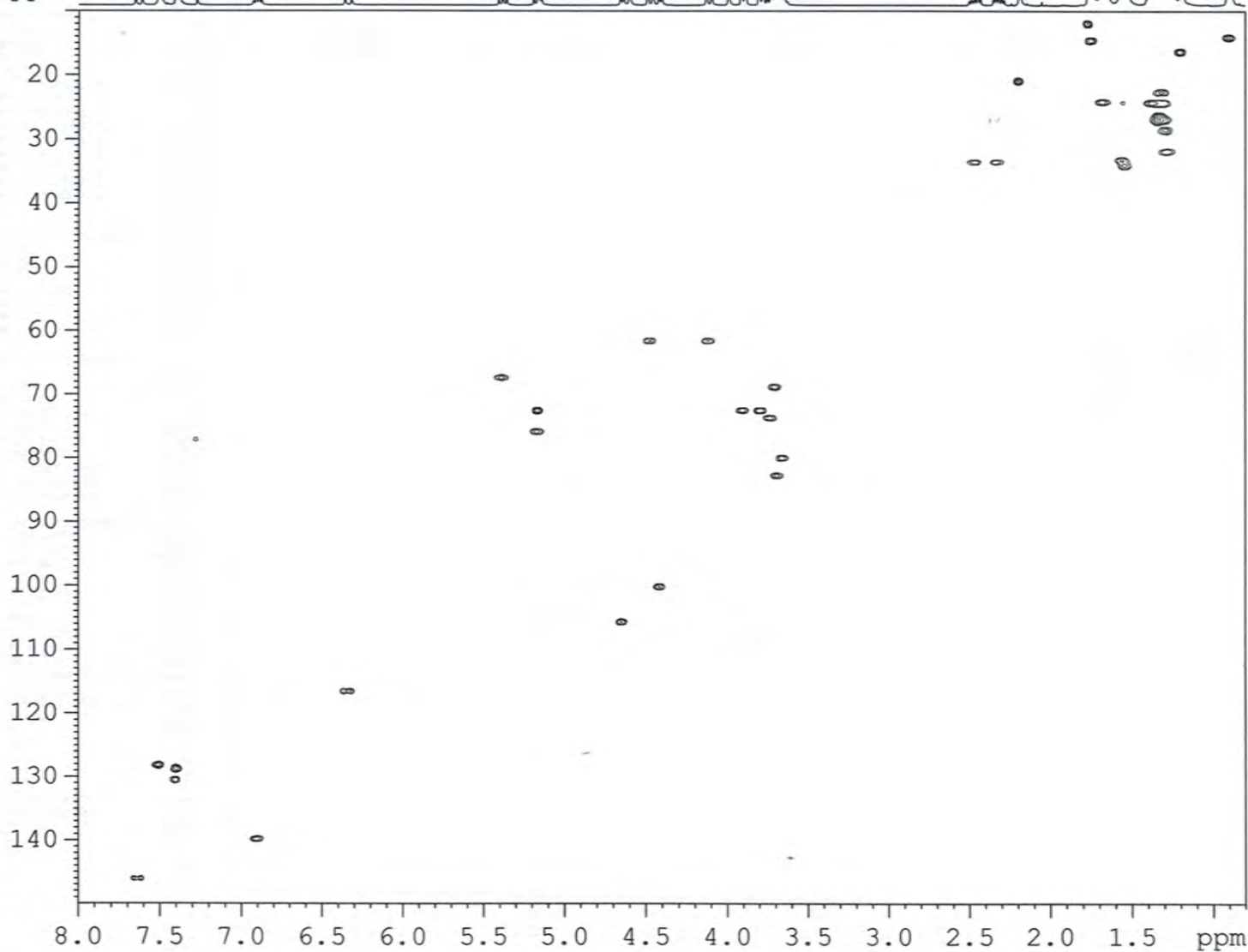
===== CHANNEL f1 =====  
 NUC1 1H  
 P0 10.00 usec  
 P1 10.00 usec  
 PL1 -3.50 dB  
 PL1W 31.17620277 W  
 SFO1 400.1324057 MHz

===== GRADIENT CHANNEL =====  
 GPNAM1 SINE.100  
 GPZ1 10.00 %  
 P16 1000.00 usec  
 ND0 1  
 TD 128  
 SFO1 400.1324 MHz  
 FIDRES 41.733440 Hz  
 SW 13.350 ppm  
 FnMODE QF  
 SI 1024  
 SF 400.1300040 MHz  
 WDW SINE  
 SSB 0  
 LB 0.00 Hz  
 GB 0  
 PC 1.00  
 SI 1024  
 MC2 QF  
 SF 400.1300033 MHz  
 WDW SINE  
 SSB 0  
 LB 0.00 Hz  
 GB 0



## ZGH-Ipom-2-83-A-140810 HSQC

ppm



```

NAME      ZGH-Ipom-2-83-A-140810
EXPNO    4
PROCNO   1
Date_    20140811
Time     19.56
INSTRUM  spect
PROBHD   5 mm PABBO BB-
PULPROG  hsqcetgpsi
TD       1024
SOLVENT  CDCl3
NS       8
DS       16
SWH      5341.880 Hz
FIDRES   5.216680 Hz
AQ       0.0958964 sec
RG       2050
DW       93.600 usec
DE       6.50 usec
TE       293.1 K
CNST2    145.0000000
D0       0.000003000 sec
D1       1.500000000 sec
D4       0.00172414 sec
D11      0.030000000 sec
D13      0.000004000 sec
D16      0.000200000 sec
D24      0.001100000 sec
INO      0.000030000 sec
ZGPTNS

```

```

===== CHANNEL f1 =====
NUC1     1H
P1       10.00 usec
P2       20.00 usec
P28      1000.00 usec
PL1      -3.50 dB
PL1W     31.17620277 W
SFO1     400.1324057 MHz

```

```

===== CHANNEL f2 =====
CPDPRG2  garp
NUC2     13C
P3       10.00 usec
P4       20.00 usec
PCPD2    75.00 usec
PL2      -2.10 dB
PL12     15.40 dB
PL2W     58.37759399 W
PL12W    1.03811681 W
SFO2     100.6202727 MHz

```

```

===== GRADIENT CHANNEL =====
GPNAM1   SINE.100
GPNAM2   SINE.100
GPZ1     80.00 %
GPZ2     20.10 %
P16      1000.00 usec
ND0      2
TD        256
SFO1     100.6203 MHz
FIDRES   65.104164 Hz
SW       165.639 ppm
FnMODE   Echo-Antiecho
SI       1024
SF       400.1300000 MHz
WDW      QSINE
SSB      2
LB       0.00 Hz
GB       0
PC       1.00
SI       1024
MC2      echo-antiecho
SF       100.6127690 MHz
WDW      QSINE
SSB      2
LB       0.00 Hz
GB       0

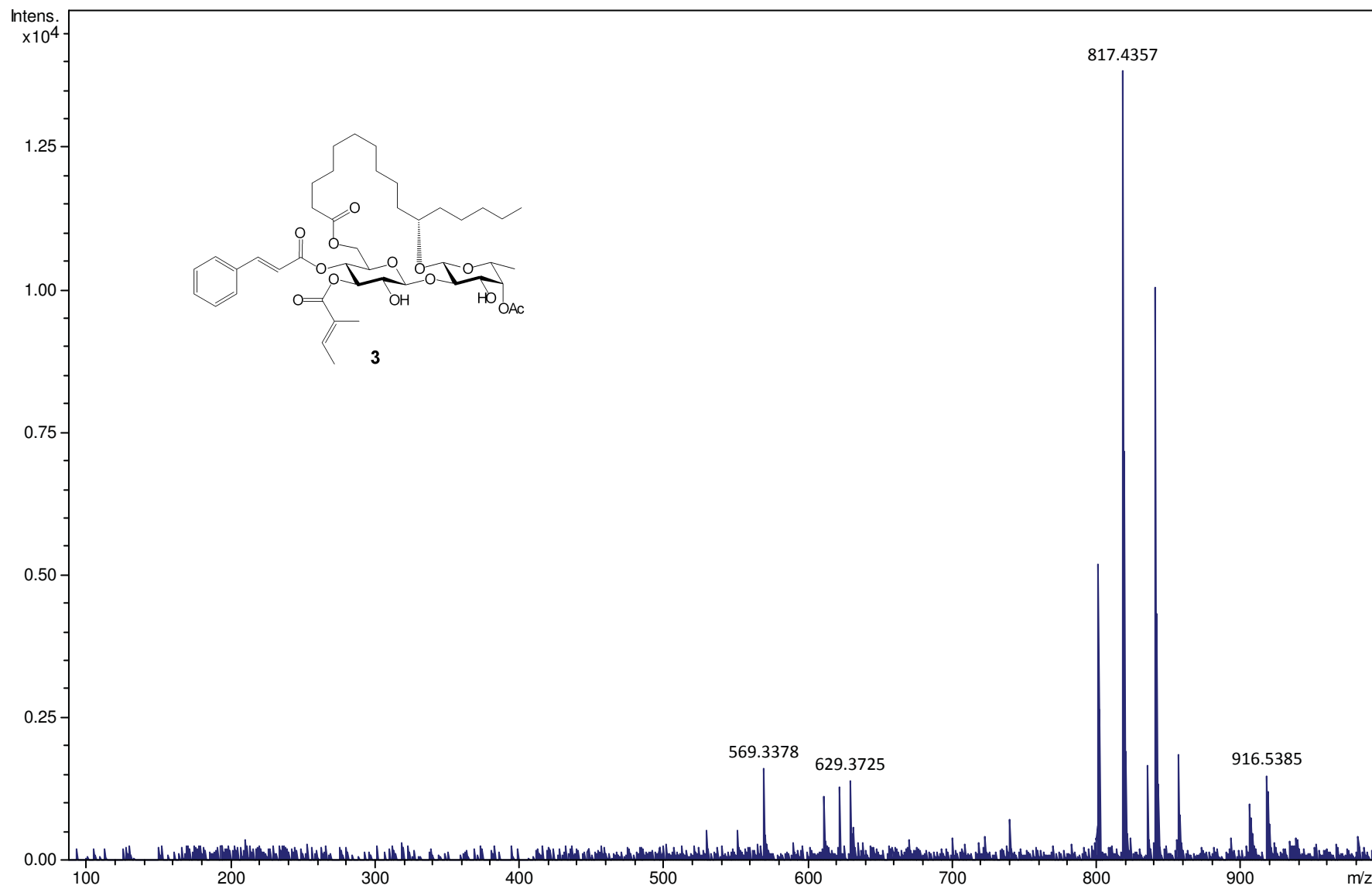
```

## Arkansas Statewide Mass Spectrometry Facility

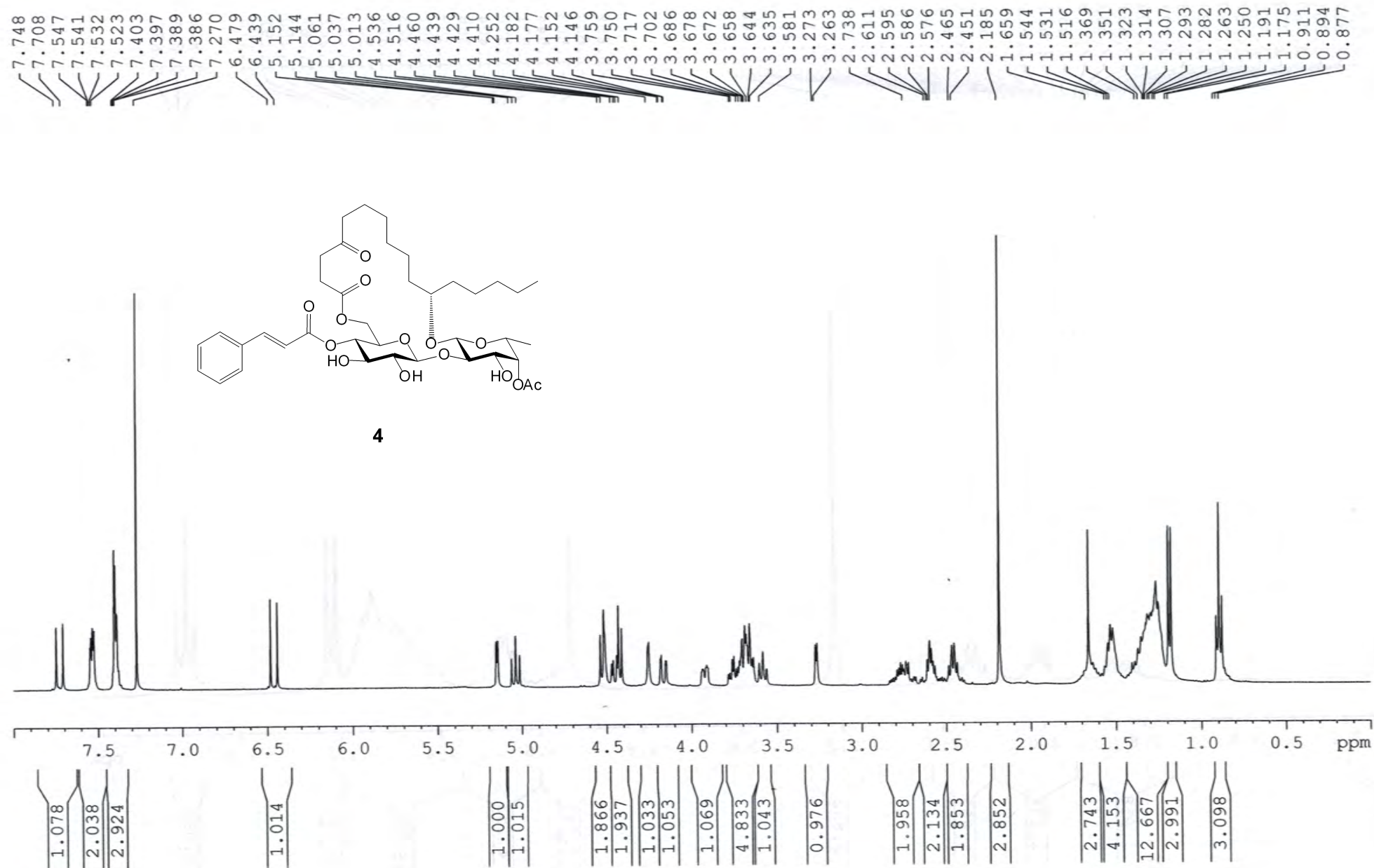
## ESI Mass Spectrum

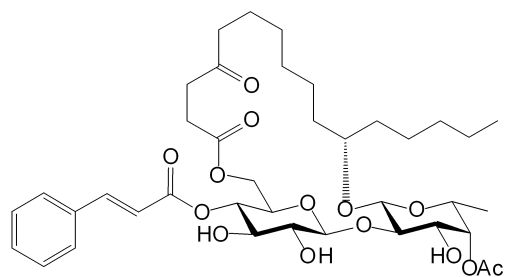
Sample Name: ZIF-8  
Sample id#: 982243  
Instrument: ultrOTOF-Q

12/11/2014

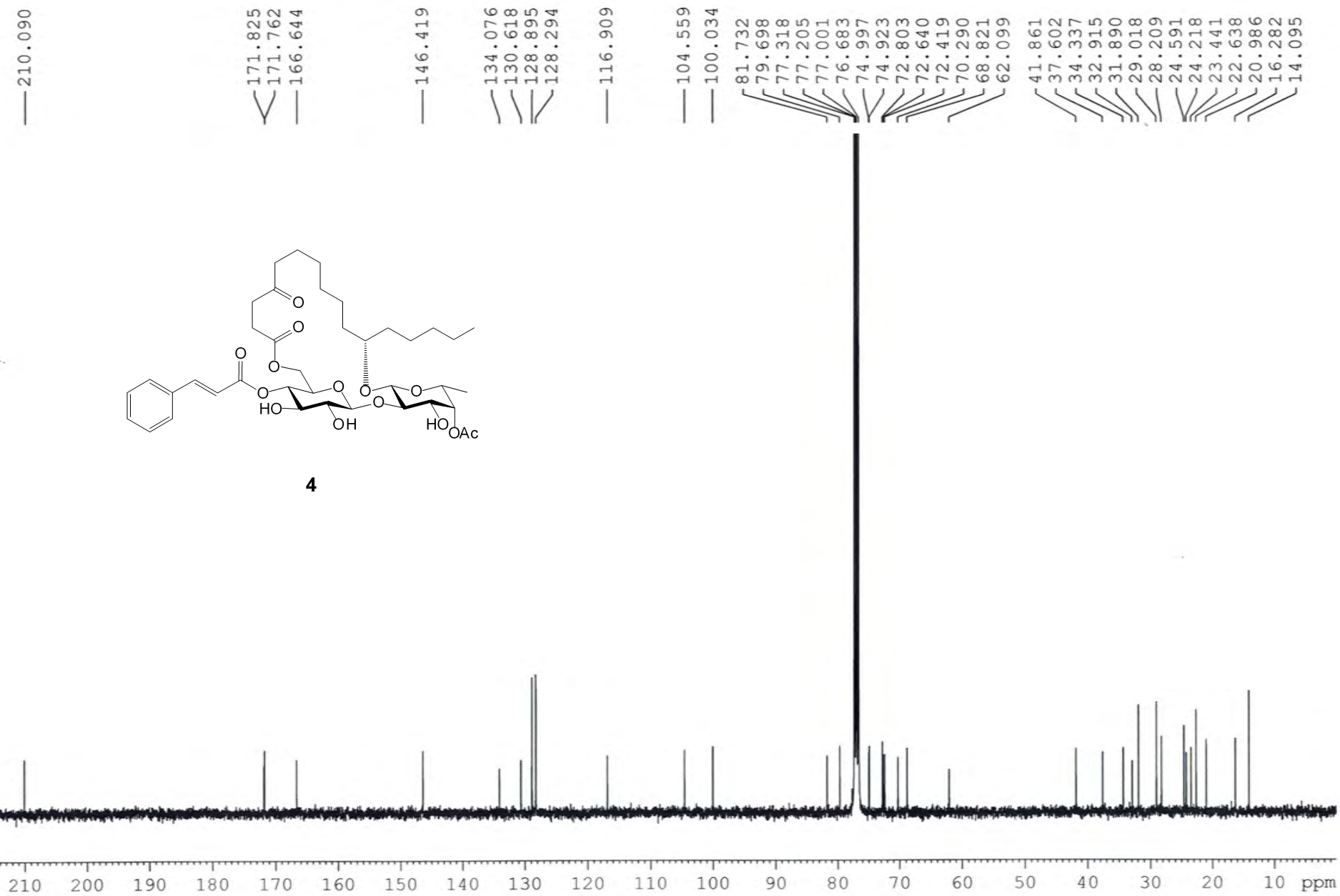


## ZGH-Ipom-2-130-A-141118 1H in CDCl3

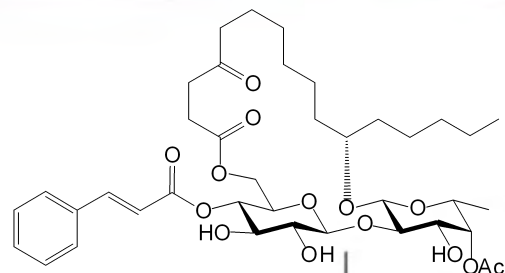


ZGH-*Ipom-2-130-A-141118* 13C in CDCl<sub>3</sub>

4



## ZGH-Ipom-2-130-A-141118 COSY



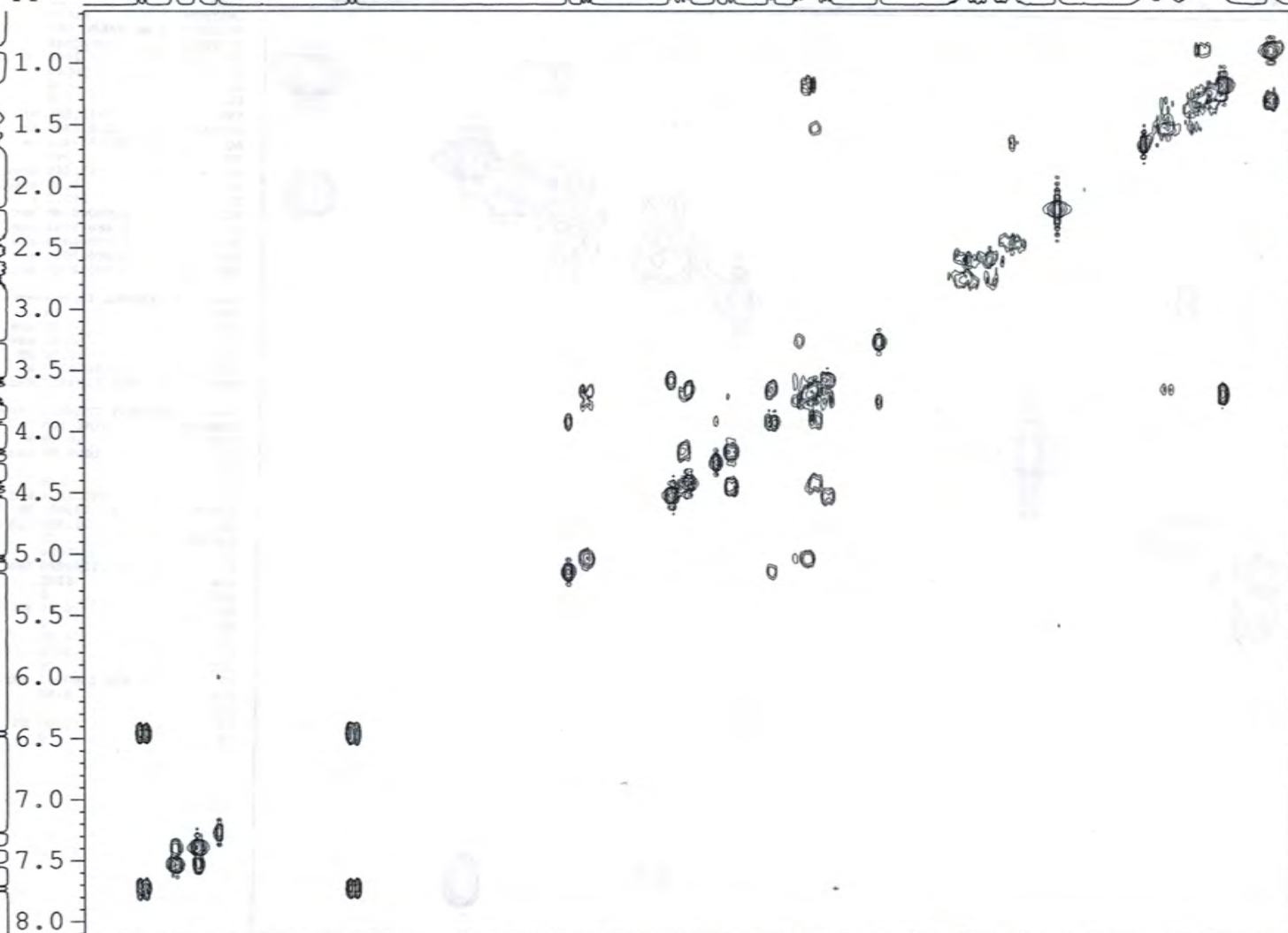
NAME ZGH-Ipom-2-130-A-141118  
 EXPNO 12  
 PROCNO 1  
 Date\_ 20141119  
 Time\_ 22.10  
 INSTRUM spect  
 PROBHD 5 mm PABBO BB-  
 PULPROG cosygpqf  
 TD 2048  
 SOLVENT CDCl3  
 NS 8  
 DS 8  
 SWH 5341.880 Hz  
 FIDRES 2.608340 Hz  
 AQ 0.1917428 sec  
 RG 362  
 DW 93.600 usec  
 DE 6.50 usec  
 TE 292.2 K  
 D0 0.0000300 sec  
 D1 1.48689198 sec  
 D13 0.0000400 sec  
 D16 0.00020000 sec  
 INO 0.00018720 sec

==== CHANNEL f1 =====  
 NUC1 1H  
 P0 10.00 usec  
 P1 10.00 usec  
 PL1 -3.50 dB  
 PL1W 31.17620277 W  
 SFO1 400.1324057 MHz

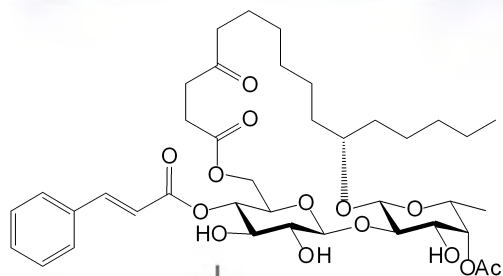
==== GRADIENT CHANNEL =====  
 GPNAM1 SINE.100  
 GFZ1 10.00 %  
 P16 1000.00 usec  
 NDO 1  
 TD 128  
 SFO1 400.1324 MHz  
 FIDRES 41.733440 Hz  
 SW 13.350 ppm  
 FhMODE QF  
 SI 1024  
 SF 400.1300040 MHz  
 WDW SINE  
 SSB 0  
 LB 0.00 Hz  
 GB 0  
 PC 1.00  
 SI 1024  
 MC2 QF  
 SF 400.1300033 MHz  
 WDW SINE  
 SSB 0  
 LB 0.00 Hz  
 GB 0

ppm

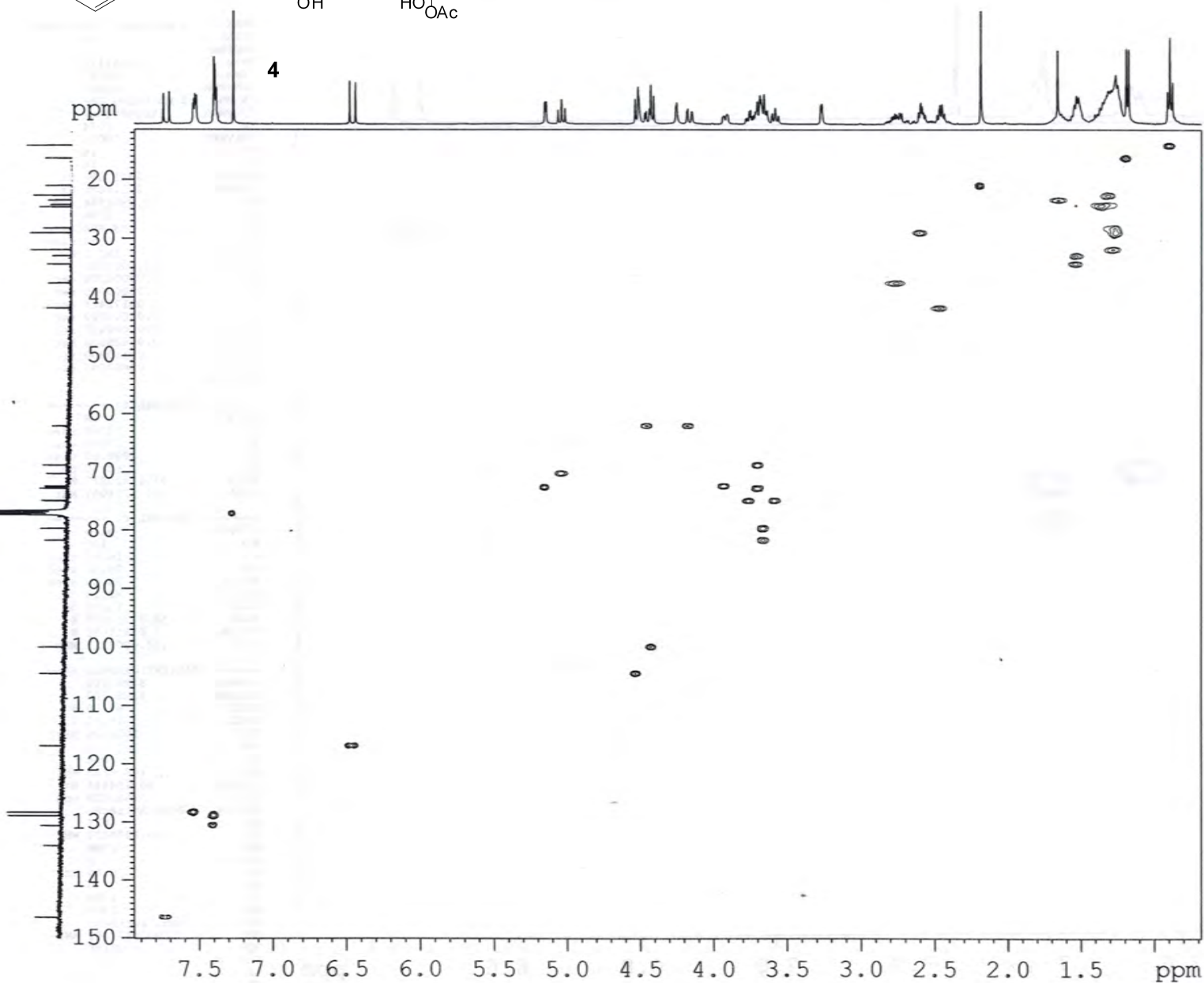
4



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 ppm



ZGH-Ipom-2-130-A-141118 HSQC



```

NAME      ZGH-Ipom-2-130-A-141118
EXPNO     14
PROCNO    1
Date_     20141120
Time      22.27
INSTRUM   spect
PROBHD    5 mm PABBO BB-
PULPROG   hsqcetgpsi
TD         1024
SOLVENT   CDC13
NS         16
DS         16
SWH        5341.880 Hz
FIDRES     5.216680 Hz
AQ         0.0958964 sec
RG         2050
DW         93.600 usec
DE         6.50 usec
TE         292.1 K
CNST2     145.000000
D0         0.00000300 sec
D1         1.50000000 sec
D4         0.00172414 sec
D11        0.03000000 sec
D13        0.00000400 sec
D16        0.00020000 sec
D24        0.00110000 sec
INO        0.00003000 sec
ZGOPTNS

```

```

===== CHANNEL f1 =====
NUC1      1H
P1        10.00 usec
P2        20.00 usec
P28       1000.00 usec
PL1       -3.50 dB
PL1W      31.17620277 W
SFO1      400.1324057 MHz

```

```

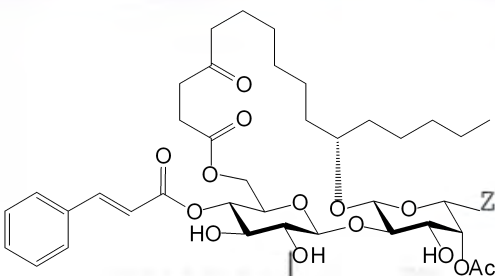
===== CHANNEL f2 =====
CPDPRG2   garp
NUC2      13C
P3        10.00 usec
P4        20.00 usec
PCPD2     75.00 usec
PL2       -2.10 dB
PL12      15.40 dB
PL2W      58.37759399 W
PL12W     1.03811681 W
SFO2      100.6202727 MHz

```

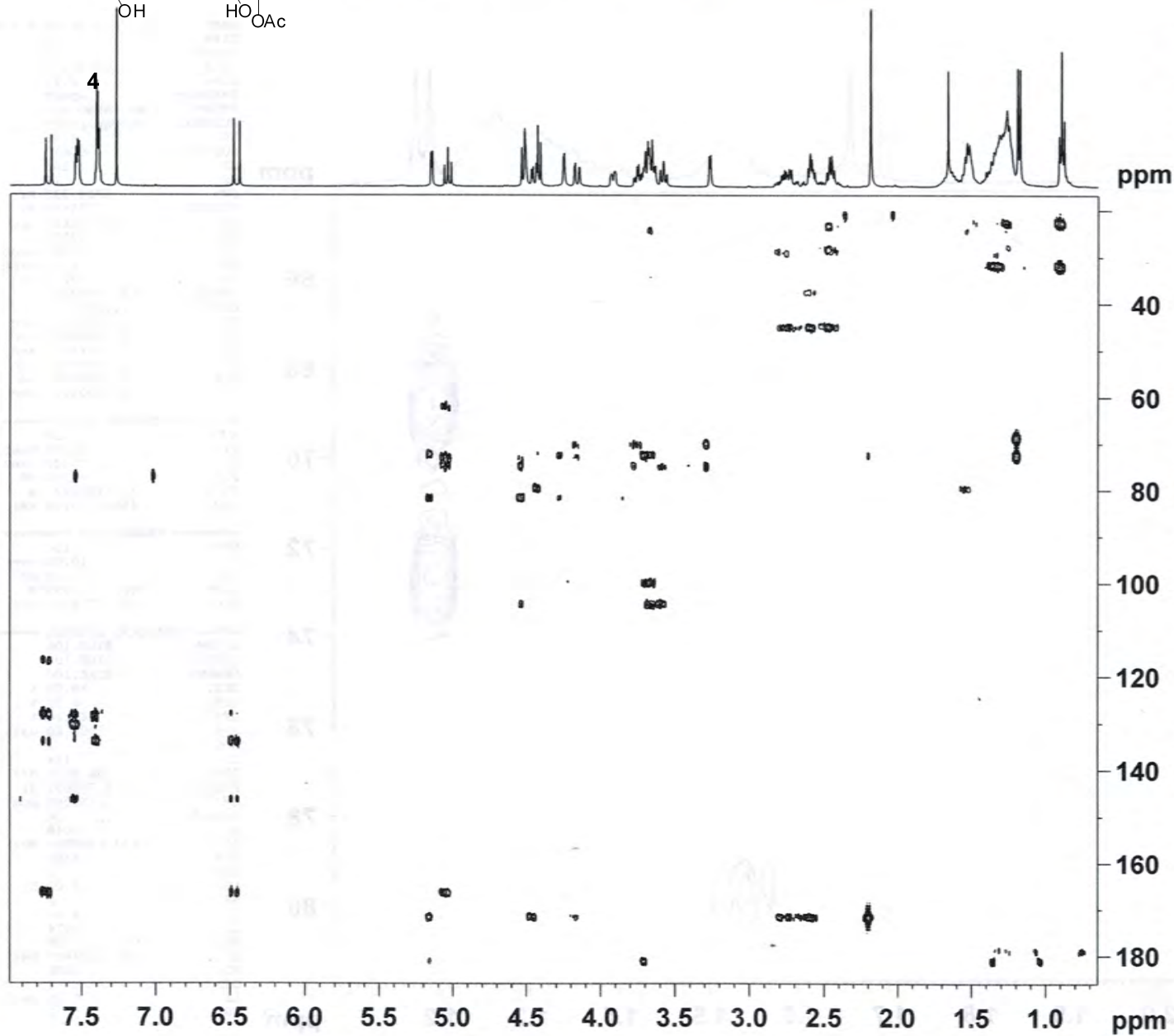
```

===== GRADIENT CHANNEL =====
GPNAM1    SINE.100
GPNAM2    SINE.100
GPZ1      80.00 %
GPZ2      20.10 %
P16       1000.00 usec
ND0       2
TD         256
SFO1      100.6203 MHz
FIDRES    65.104164 Hz
SW        165.639 ppm
FnMODE    Echo-Antiecho
SI        1024
SF        400.1300000 MHz
WDW       QSINE
SSB       2
LB         0.00 Hz
GB         0
PC         1.00
SI        1024
MC2       echo-antiecho
SF        100.6127690 MHz
WDW       QSINE
SSB       2
LB         0.00 Hz
GB         0

```



ZGH-Ipom-2-130-A-141118 HMBC in CDCL3



```

NAME      ZGH-Ipom-2-130-A-141118
EXPNO     15
PROCNO    1
Date_     20141121
Time      0.21
INSTRUM   spect
PROBHD    5 mm PABBO BB-
PULPROG   hmbcgp1pndgf
TD        4096
SOLVENT   CDC13
NS        100
DS        16
SWH       5208.333 Hz
FIDRES    1.271566 Hz
AQ        0.3932660 sec
RG        2050
DW        96.000 usec
DE        6.50 usec
TE        292.2 K
CNST2     145.0000000
CNST13    10.0000000
D0        0.00000300 sec
D1        1.50000000 sec
D2        0.00344828 sec
D6        0.05000000 sec
D16       0.00020000 sec
INO       0.00003010 sec

```

```

===== CHANNEL f1 =====
NUC1      1H
P1        10.00 usec
P2        20.00 usec
PL1       -3.50 dB
PL1W      31.17620277 W
SFO1      400.1325208 MHz

```

```

===== CHANNEL f2 =====
NUC2      13C
P3        10.00 usec
P2        -2.10 dB
PL2W      58.37759399 W
SFO2      100.6228138 MHz

```

```

===== GRADIENT CHANNEL =====
GPNAM1    SINE.100
GPNAM2    SINE.100
GPNAM3    SINE.100
GPZ1      50.00 %
GPZ2      30.00 %
GPZ3      40.10 %
P16       1000.00 usec
ND0       2
TD        128
SFO1      100.6228 MHz
FIDRES    129.709091 Hz
SW        165.000 ppm
FnMODE    QF
SI        2048
SF        400.1300000 MHz
WDW       SINE
SSB       0
LB        0.00 Hz
GB        0
PC        4.00
SI        1024
MC2       QF
SF        100.6127690 MHz
WDW       SINE
SSB       0
LB        0.00 Hz
GB        0

```

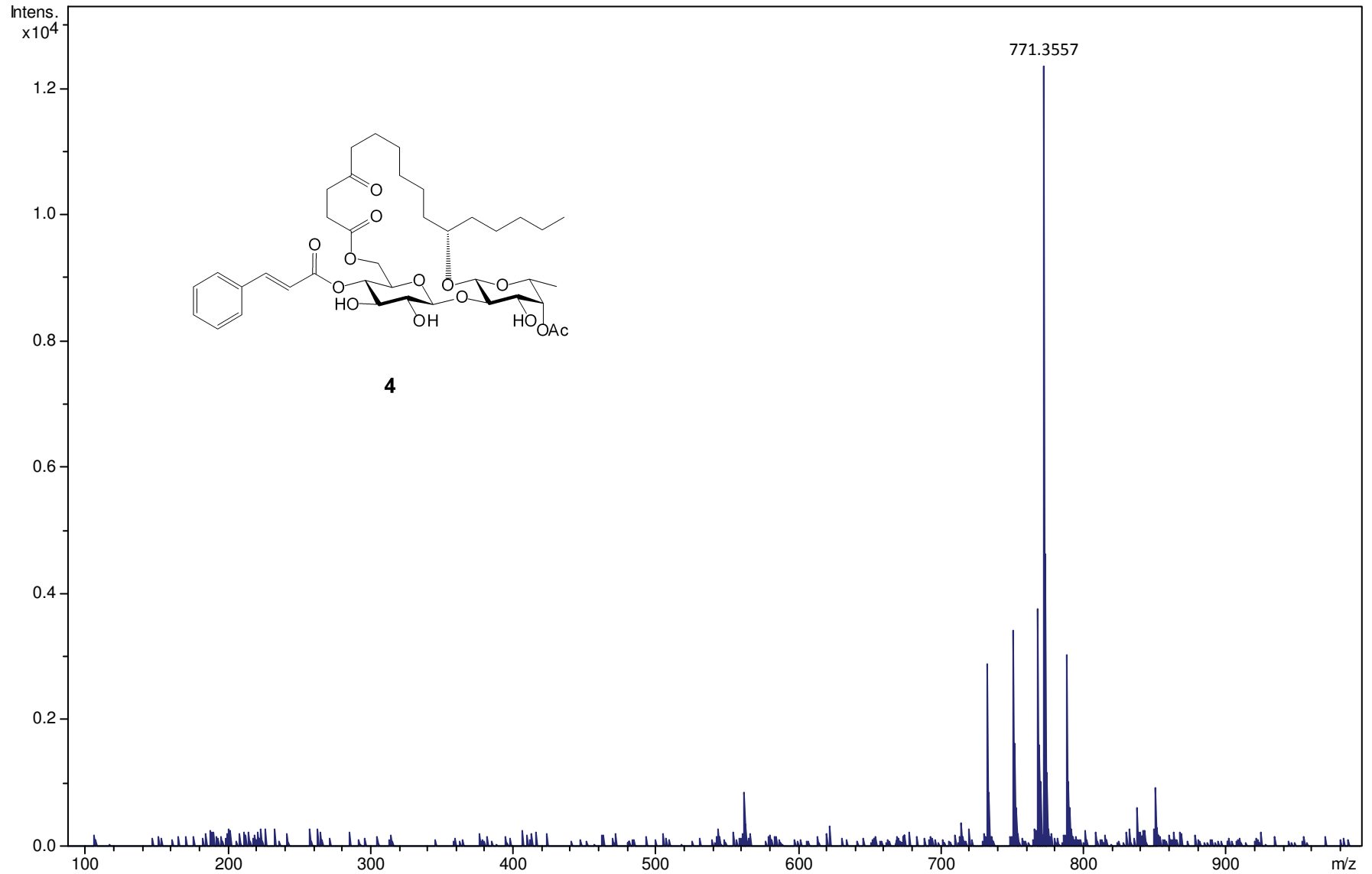


## Arkansas Statewide Mass Spectrometry Facility

## ESI Mass Spectrum

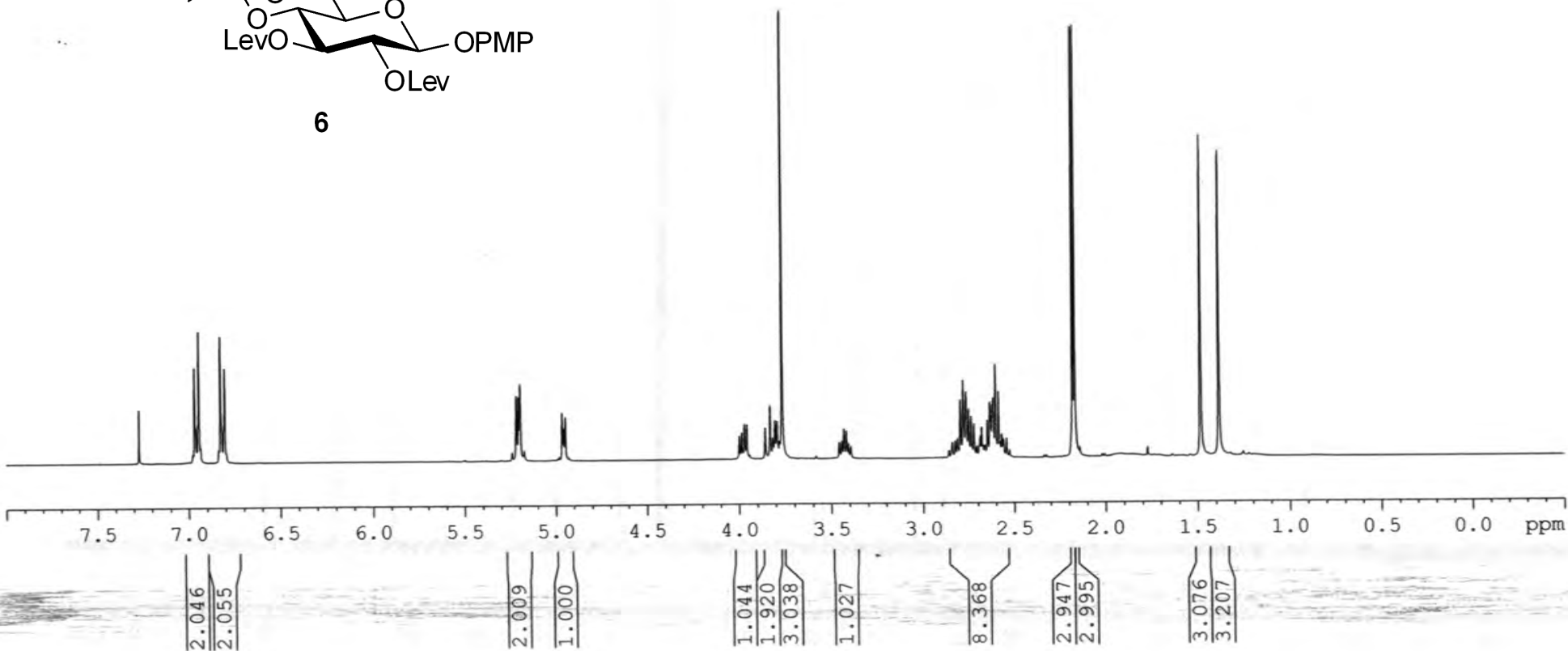
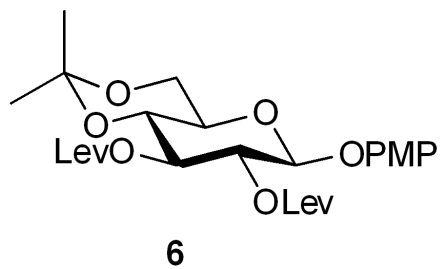
Sample Name: ZIF-16  
Sample id#: 982247  
Instrument: ultrTOF-Q

12/11/2014



ZGH-*Ipom*-2-62-A-140622 1H in CDCl<sub>3</sub>

7.270  
6.967  
6.962  
6.949  
6.944  
6.825  
6.821  
6.808  
6.803  
5.214  
5.203  
5.194  
4.962  
4.954  
4.944  
3.997  
3.984  
3.970  
3.956  
3.856  
3.830  
3.816  
3.804  
3.792  
3.780  
3.765  
3.764  
3.454  
3.441  
3.430  
3.417  
3.405  
3.392  
2.839  
2.823  
2.812  
2.795  
2.779  
2.763  
2.749  
2.735  
2.720  
2.704  
2.691  
2.685  
2.677  
2.671  
2.662  
2.658  
2.645  
2.632  
2.628  
2.620  
2.615  
2.601  
2.584  
2.576  
2.568  
2.558  
2.541  
2.177  
2.165  
2.139  
1.483  
1.384



ZGH-*Ipom*-2-62-A-140622 13C in CDCl<sub>3</sub>

206.378  
206.257

171.910  
171.439

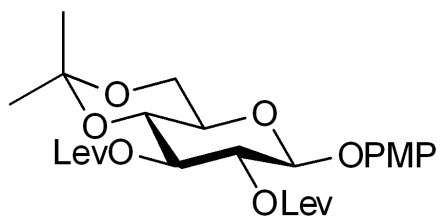
155.709  
150.985

118.743  
114.516

100.990  
99.803

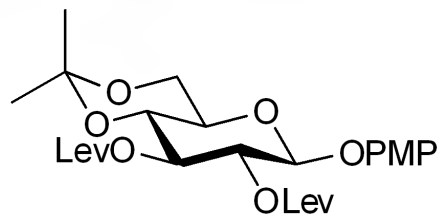
77.323  
77.005  
76.687  
71.996  
71.935  
71.081  
67.481  
61.922  
55.580

37.752  
37.693  
29.757  
29.730  
28.844  
27.890  
27.757  
18.836



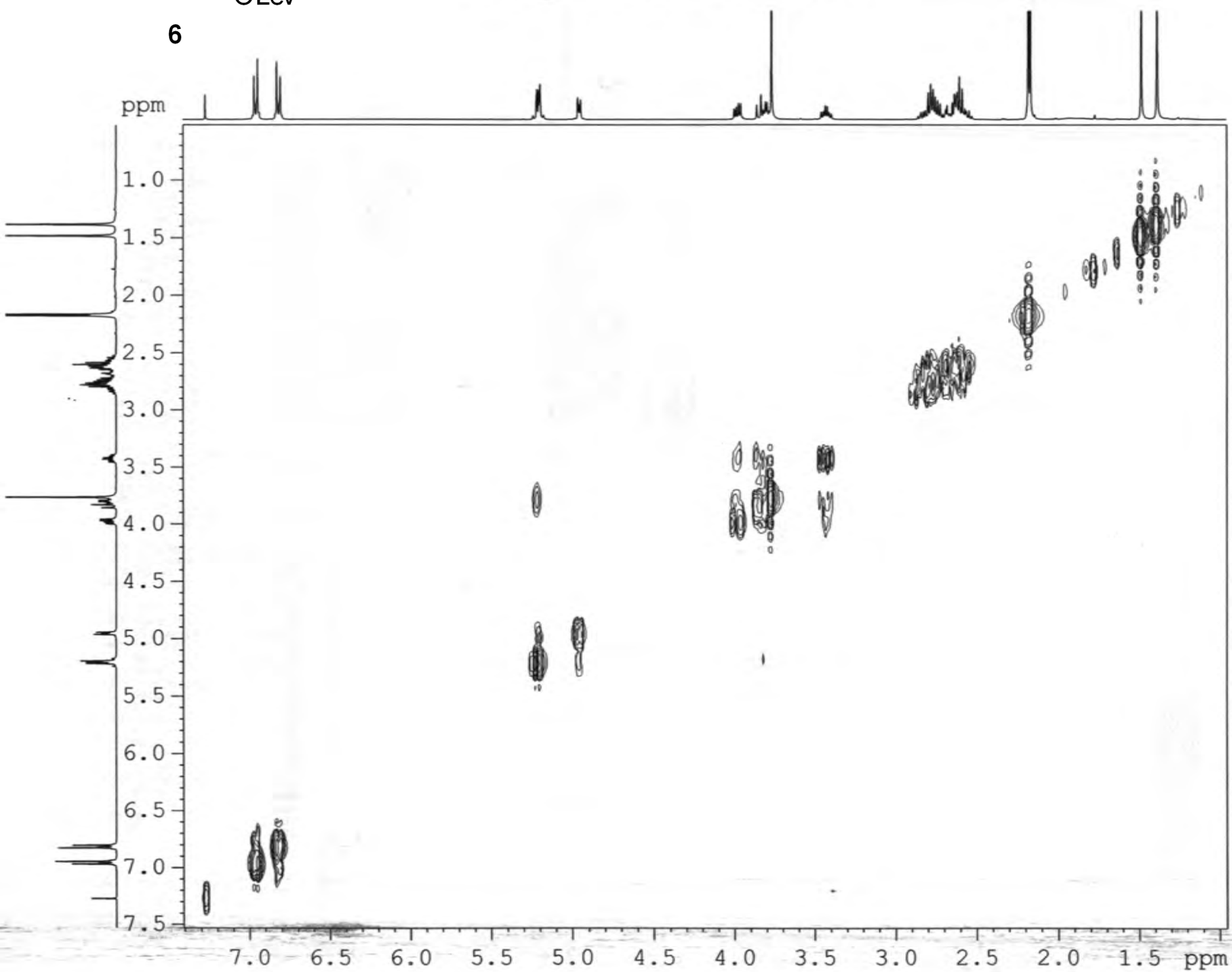
6

210 200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 ppm



6

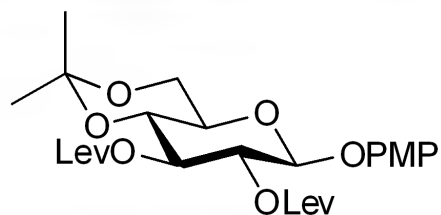
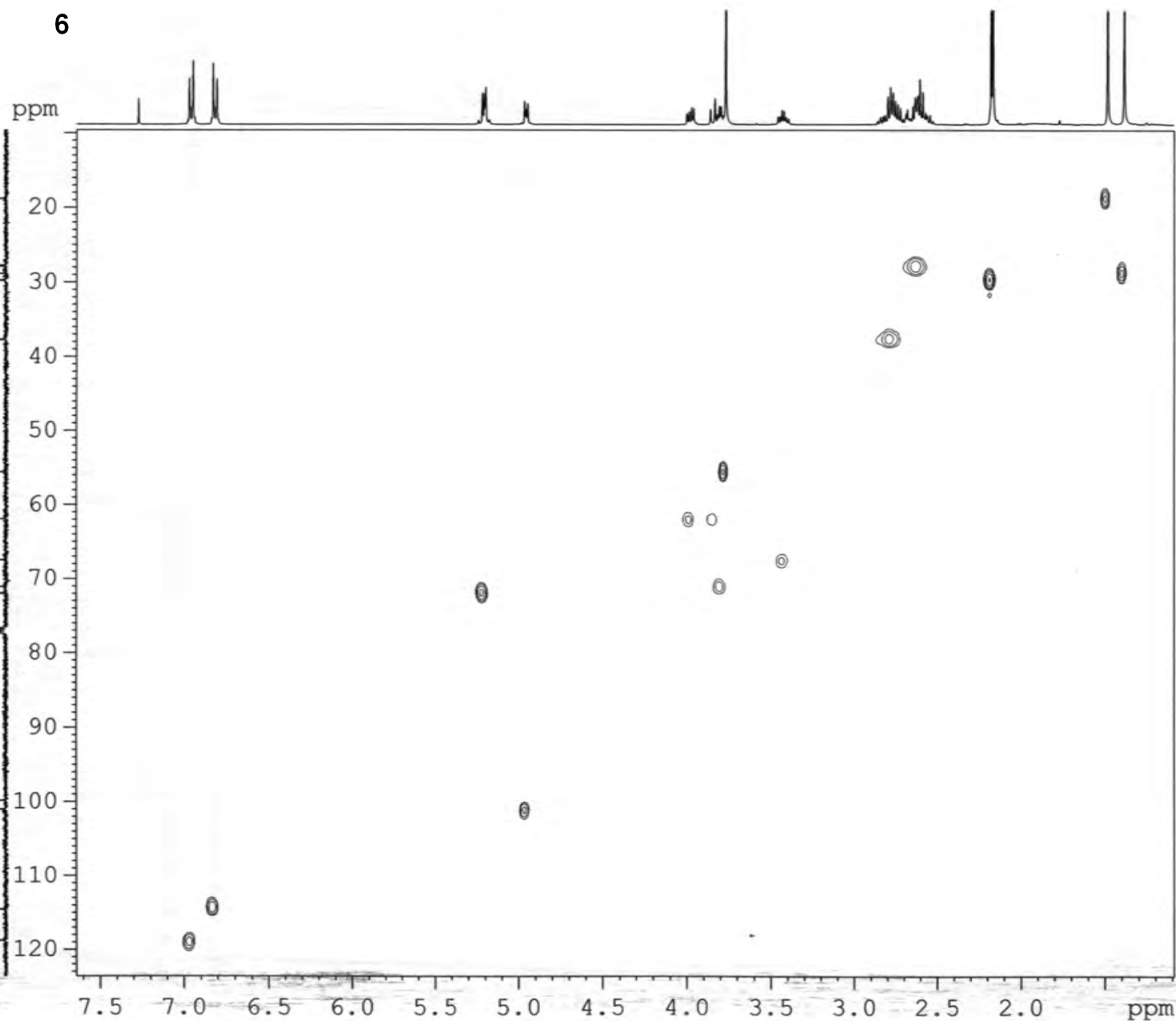
ZGH-Ipom-2-62-A-140622 COSY



NAME ZGH-Ipom-2-62-A-140622  
 EXPNO 3  
 PROCNO 1  
 Date\_ 20150318  
 Time 19.25  
 INSTRUM spect  
 PROBHD 5 mm PABBO BB-  
 PULPROG cosygpgf  
 TD 2048  
 SOLVENT CDCl3  
 NS 4  
 DS 8  
 SWH 5341.880 Hz  
 FIDRES 2.608340 Hz  
 AQ 0.1917428 sec  
 RG 256  
 DW 93.600 usec  
 DE 6.50 usec  
 TE 291.9 K  
 D0 0.00000300 sec  
 D1 1.48689198 sec  
 D13 0.00000400 sec  
 D16 0.00020000 sec  
 IN0 0.00018720 sec

===== CHANNEL f1 =====  
 NUC1 1H  
 P0 10.00 usec  
 P1 10.00 usec  
 PL1 -3.50 dB  
 PL1W 31.17620277 W  
 SFO1 400.1324057 MHz

===== GRADIENT CHANNEL =====  
 GPNAM1 SINE.100  
 GPZ1 10.00 %  
 P16 1000.00 usec  
 ND0 1  
 TD 59  
 SFO1 400.1324 MHz  
 FIDRES 90.540344 Hz  
 SW 13.350 ppm  
 FMODE QF  
 SI 1024  
 SF 400.1300040 MHz  
 WDW SINE  
 SSB 0  
 LB 0.00 Hz  
 GB 0  
 PC 1.00  
 SI 1024  
 MC2 QF  
 SF 400.1300033 MHz  
 WDW SINE  
 SSB 0  
 LB 0.00 Hz  
 GB 0

ZGH-*Ipom*-2-62-A-140622 HSQC

```

NAME      ZGH-Ipom-2-62-A-140622
EXPNO     4
PROCNO    1
Date_     20150318
Time      19.34
INSTRUM   spect
PROBHD    5 mm PABBO BB-
PULPROG   hsqcetgps1
TD         1024
SOLVENT   CDC13
NS         2
DS         16
SWH       5341.880 Hz
FIDRES    5.216680 Hz
AQ         0.0958964 sec
RG         2050
DW         93.600 usec
DE         6.50 usec
TE         292.0 K
CNST2     145.0000000
D0         0.00000300 sec
D1         1.50000000 sec
D4         0.00172414 sec
D11        0.03000000 sec
D13        0.00000400 sec
D16        0.00020000 sec
D24        0.00110000 sec
INO        0.00003000 sec
ZGPTNS

```

```

===== CHANNEL f1 =====
NUC1      1H
P1        10.00 usec
P2        20.00 usec
P28       1000.00 usec
PL1       -3.50 dB
PL1W      31.17620277 W
SFO1      400.1324057 MHz

```

```

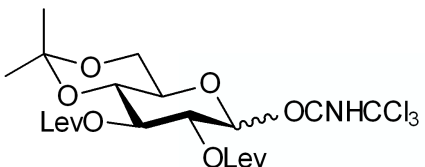
===== CHANNEL f2 =====
CPDPRG2   garp
NUC2      13C
P3        10.00 usec
P4        20.00 usec
PCPD2     75.00 usec
PL2       -2.10 dB
PL12      15.40 dB
PL2W      58.37759399 W
PL12W     1.03811681 W
SFO2      100.6202727 MHz

```

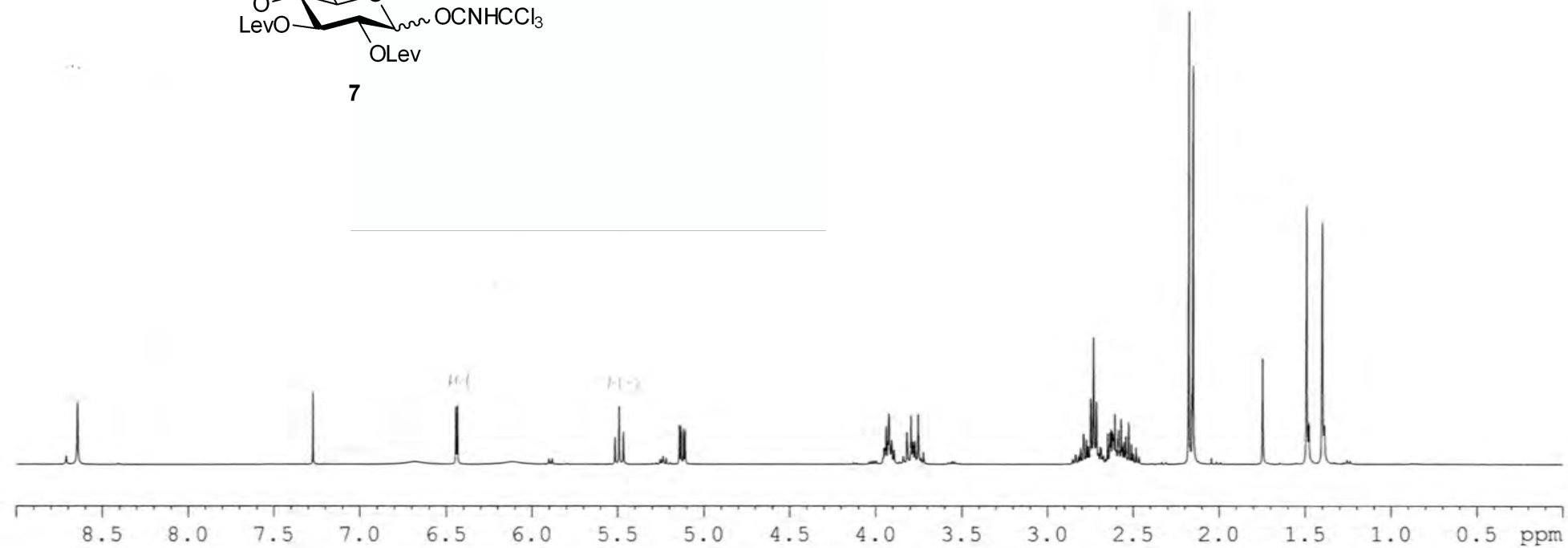
```

===== GRADIENT CHANNEL =====
GPNAM1    SINE.100
GPNAM2    SINE.100
GPZ1      80.00 %
GPZ2      20.10 %
P16       1000.00 usec
ND0       2
TD         97
SFO1      100.6203 MHz
FIDRES    171.821304 Hz
SW         165.639 ppm
FnMODE    Echo-Antiecho
SI         1024
SF         400.1300000 MHz
WDW        QSINE
SSB        2
LB         0.00 Hz
GB         0
PC         1.00
SI         1024
MC2       echo-antiecho
SF         100.6127690 MHz
WDW        QSINE
SSB        2
LB         0.00 Hz
GB         0

```

ZGH-*Ipom*-2-64-A-140623 1H in CDCl<sub>3</sub>8.709  
8.6447.270  
6.445  
6.435  
5.515  
5.491  
5.467  
5.238  
5.143  
5.133  
5.118  
5.108  
3.952  
3.945  
3.939  
3.929  
3.922  
3.906  
3.893  
3.818  
3.794  
3.781  
3.770  
3.752  
2.806  
2.790  
2.772  
2.762  
2.746  
2.730  
2.714  
2.692  
2.687  
2.650  
2.636  
2.631  
2.622  
2.617  
2.615  
2.606  
2.600  
2.590  
2.586  
2.579  
2.570  
2.563  
2.554  
2.542  
2.526  
2.509  
2.482  
2.175

7

0.131  
0.948

0.959

1.000

0.991

2.040

2.302

9.327

3.268

3.420

1.034

3.441

3.450

ZGH-Ipom-2-64-A-140623 13C in CDCl3

206.374  
206.222171.816  
171.737

160.959

99.982

93.612

90.709

77.312

76.995

76.677

71.323

70.301

69.159

66.081

61.935

37.775

37.563

29.764

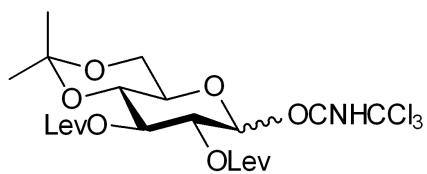
29.686

28.783

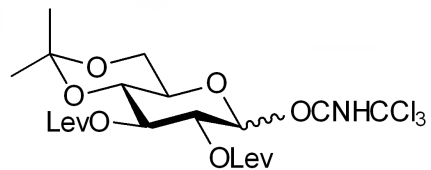
27.851

27.578

18.888



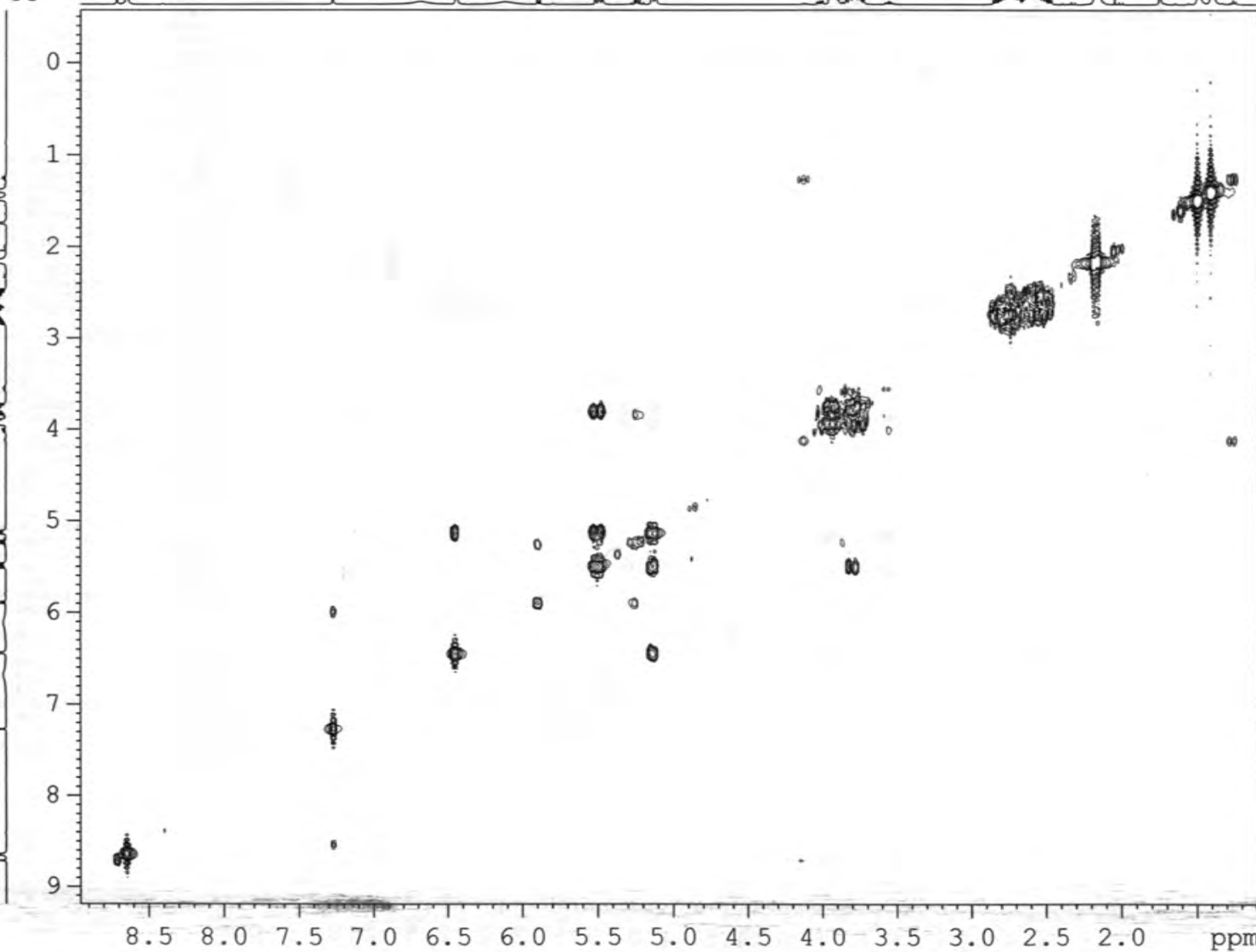
210 200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 ppm



7

ZGH-Ipom-2-64-A-140623 COSY

ppm

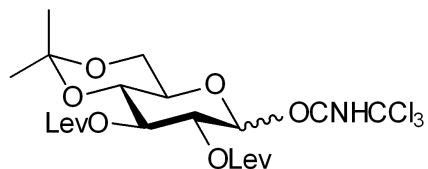


NAME ZGH-Ipom-2-64-A-140623  
 EXPNO 5  
 PROCNO 1  
 Date\_ 20150318  
 Time 19.53  
 INSTRUM spect  
 PROBHD 5 mm PABBO BB-  
 PULPROG cosygpgf  
 TD 2048  
 SOLVENT CDCl<sub>3</sub>  
 NS 4  
 DS 8  
 SWH 5341.880 Hz  
 FIDRES 2.608340 Hz  
 AQ 0.1917428 sec  
 RG 456  
 DW 93.600 usec  
 DE 6.50 usec  
 TE 291.9 K  
 DO 0.00000300 sec  
 D1 1.48689198 sec  
 D13 0.00000400 sec  
 D16 0.00020000 sec  
 INO 0.00018720 sec

----- CHANNEL f1 -----  
 NUC1 1H  
 PO 10.00 usec  
 P1 10.00 usec  
 PL1 -3.50 dB  
 PL1W 31.17620277 W  
 SFO1 400.1324057 MHz

----- GRADIENT CHANNEL -----  
 GPNAM1 SINE.100  
 GPZ1 10.00 %  
 P16 1000.00 usec  
 NDO 1  
 TD 128  
 SFO1 400.1324 MHz  
 FIDRES 41.733440 Hz  
 SW 13.350 ppm  
 FhMODE QF  
 SI 1024  
 SF 400.1300040 MHz  
 WDW SINE  
 SSB 0  
 LB 0.00 Hz  
 GB 0  
 PC 1.00  
 SI 1024  
 MC2 QF  
 SF 400.1300033 MHz  
 WDW SINE  
 SSB 0  
 LB 0.00 Hz  
 GB 0

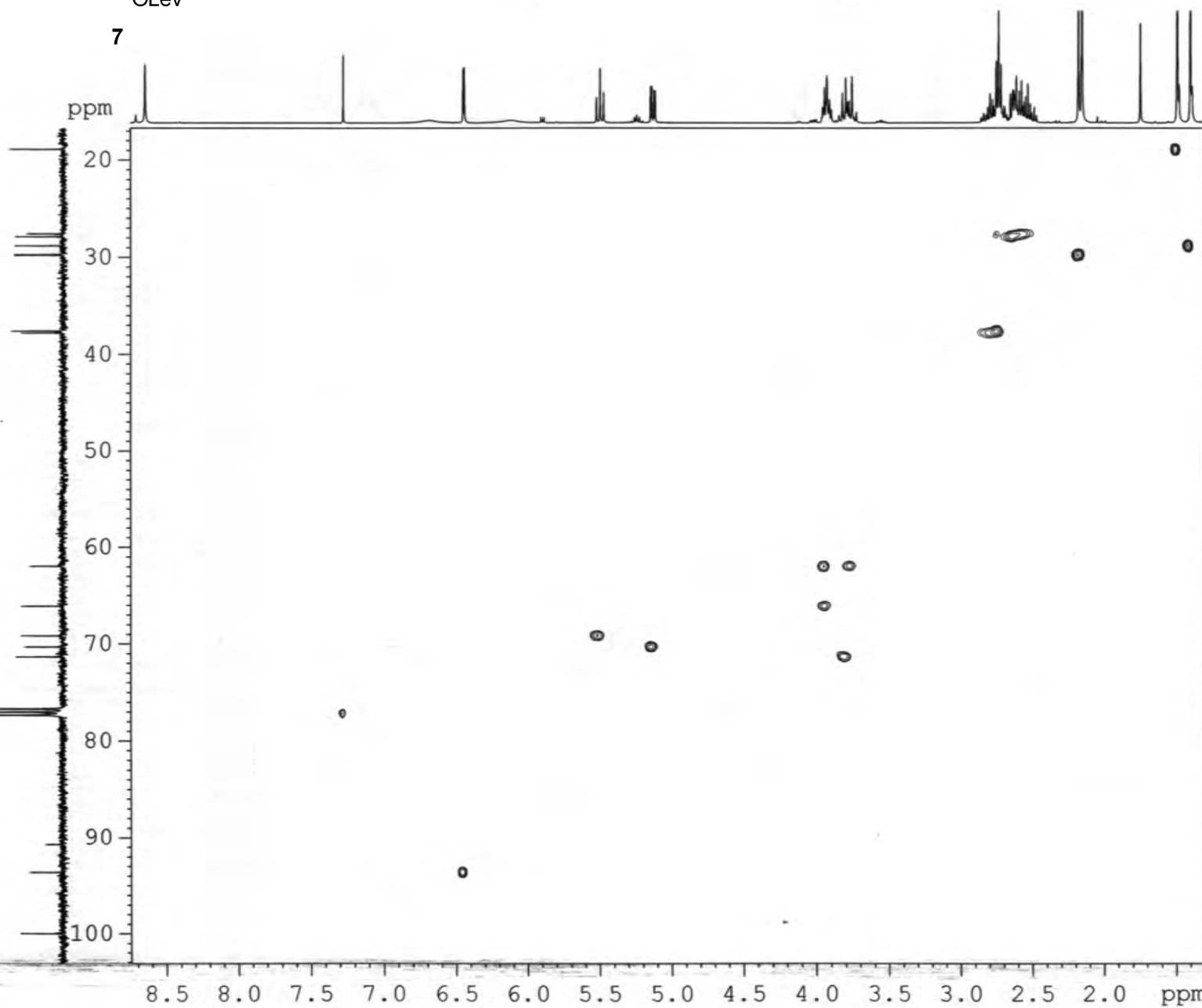




## ZGH-Ipom-2-64-A-140623 HSQC

7

ppm



NAME ZGH-Ipom-2-64-A-140623  
 EXPNO 6  
 PROCNO 1  
 Date\_ 20150318  
 Time 20.08  
 INSTRUM spect  
 PROBHD 5 mm PABBO BB-  
 PULPROG hsqcetgpsi  
 TD 1024  
 SOLVENT CDCl<sub>3</sub>  
 NS 4  
 DS 16  
 SWH 5341.880 Hz  
 FIDRES 5.216680 Hz  
 AQ 0.0958964 sec  
 RG 2050  
 DW 93.600 usec  
 DE 6.50 usec  
 TE 292.0 K  
 CNST2 145.0000000  
 D0 0.00000300 sec  
 D1 1.50000000 sec  
 D4 0.00172414 sec  
 D11 0.03000000 sec  
 D13 0.00000400 sec  
 D16 0.00020000 sec  
 D24 0.00110000 sec  
 IN0 0.00003000 sec  
 ZGOPTNS

===== CHANNEL f1 =====  
 NUC1 1H  
 P1 10.00 usec  
 P2 20.00 usec  
 P28 1000.00 usec  
 PL1 -3.50 dB  
 PL1W 31.17620277 W  
 SFO1 400.1324057 MHz

===== CHANNEL f2 =====  
 CPDPRG2 garp  
 NUC2 13C  
 P3 10.00 usec  
 P4 20.00 usec  
 PCPD2 75.00 usec  
 PL2 -2.10 dB  
 PL12 15.40 dB  
 PL2W 58.37759399 W  
 PL12W 1.03811681 W  
 SFO2 100.6202727 MHz

===== GRADIENT CHANNEL =====  
 GPNAM1 SINE.100  
 GPNAM2 SINE.100  
 GPZ1 80.00 %  
 GPZ2 20.10 %  
 P16 1000.00 usec  
 ND0 2  
 TD 256  
 SFO1 100.6203 MHz  
 FIDRES 65.104164 Hz  
 SW 165.639 ppm  
 FMODE Echo-Antiecho  
 SI 1024  
 SF 400.1300000 MHz  
 WDW QSINE  
 SSB 2  
 LB 0.00 Hz  
 GB 0  
 PC 1.00  
 SI 1024  
 MC2 echo-antiecho  
 SF 100.6127630 MHz  
 WDW QSINE  
 SSB 2  
 LB 0.00 Hz  
 GB 0

## ZGH-Ipom-2-65-A-140625 1H in CDCL3



ZGH-*Ipom*-2-65-A-140625 13C in CDCl<sub>3</sub>206.360  
206.243171.945  
171.218

135.231

116.461

101.035

99.641

99.478

79.060

77.305

77.191

76.987

76.670

75.847

75.433

73.763

72.623

72.512

71.308

69.581

67.335

62.092

38.253

37.710

37.615

34.264

31.805

29.778

29.755

28.862

27.870

27.786

25.922

24.525

22.567

18.824

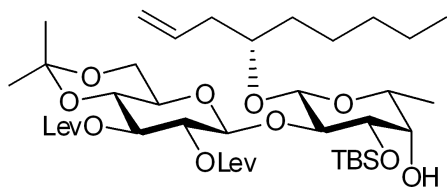
18.012

16.330

14.056

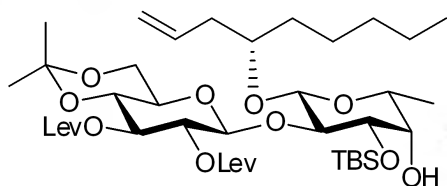
-4.257

-4.636



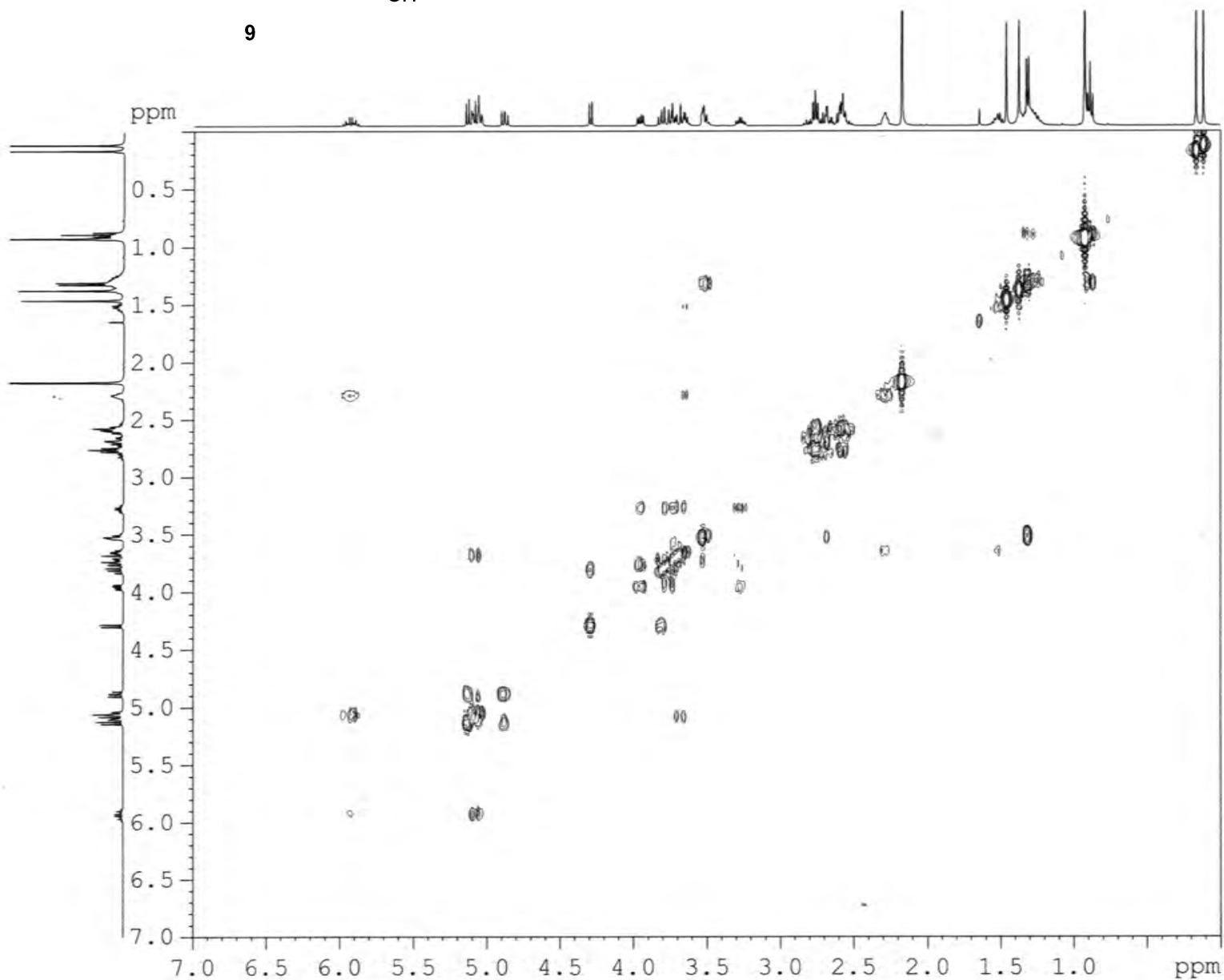
9

210 200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 ppm



ZGH-Ipom-2-65-A-140625 COSY

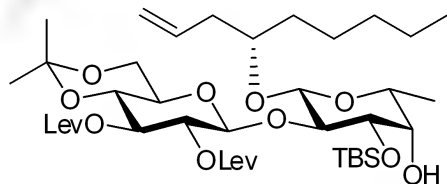
9



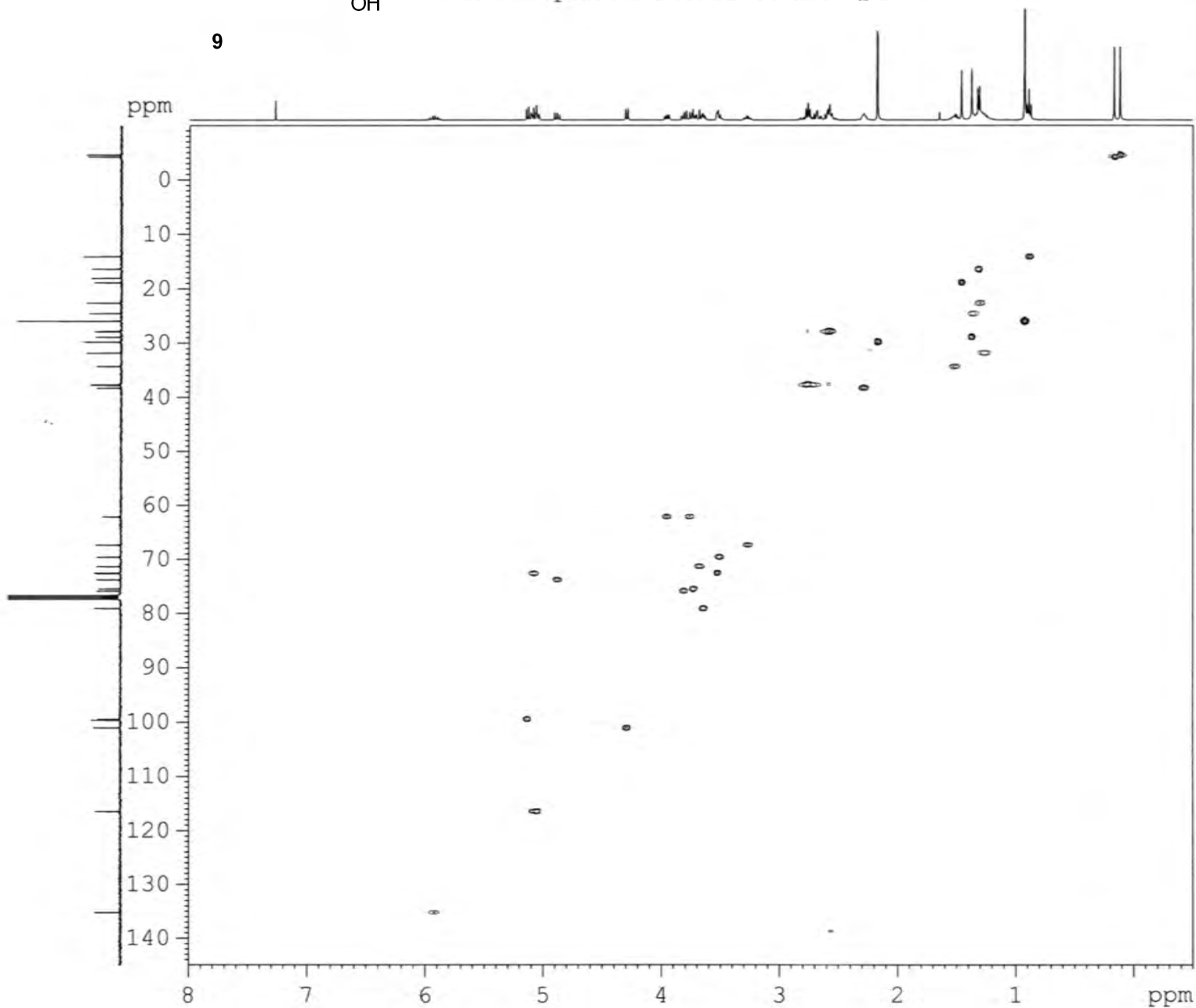
NAME ZGH-Ipom-2-65-A-140625  
 EXPNO 2  
 PROCNO 1  
 Date\_ 20140626  
 Time 19.21  
 INSTRUM spect  
 PROBHD 5 mm PABBO BB-  
 PULPROG cosygpgf  
 TD 2048  
 SOLVENT CDC13  
 NS 4  
 DS 8  
 SWH 5341.880 Hz  
 FIDRES 2.608340 Hz  
 AQ 0.1917428 sec  
 RG 128  
 DW 93.600 usec  
 DE 6.50 usec  
 TE 292.2 K  
 D0 0.00000300 sec  
 D1 1.48689198 sec  
 D13 0.00000400 sec  
 D16 0.00020000 sec  
 INO 0.00018720 sec

==== CHANNEL f1 =====  
 NUC1 1H  
 P0 10.00 usec  
 P1 10.00 usec  
 PL1 -3.50 dB  
 PL1W 31.17620277 W  
 SFO1 400.1324057 MHz

==== GRADIENT CHANNEL =====  
 GPNAM1 SINE.100  
 GPZ1 10.00 %  
 P16 1000.00 usec  
 NDO 1  
 TD 128  
 SFO1 400.1324 MHz  
 FIDRES 41.733440 Hz  
 SW 13.350 ppm  
 FnMODE QF  
 SI 1024  
 SF 400.1300040 MHz  
 WDW SINE  
 SSB 0  
 LB 0.00 Hz  
 GB 0  
 PC 1.00  
 SI 1024  
 MC2 QF  
 SF 400.1300033 MHz  
 WDW SINE  
 SSB 0  
 LB 0.00 Hz  
 GB 0



9

ZGH-*Ipom*-2-65-A-140625 HSQC

NAME ZGH-*Ipom*-2-65-A-140625  
 EXPNO 4  
 PROCNO 1  
 Date\_ 20140626  
 Time\_ 20.16  
 INSTRUM spect  
 PROBHD 5 mm PABBO BB-  
 PULPROG hsqcetgpsl  
 TD 1024  
 SOLVENT CDCl3  
 NS 6  
 DS 16  
 SWH 5341.880 Hz  
 FIDRES 5.216680 Hz  
 AQ 0.0958964 sec  
 RG 2050  
 DW 93.600 usec  
 DE 6.50 usec  
 TE 293.2 K  
 CNST2 145.0000000  
 D0 0.0000300 sec  
 D1 1.5000000 sec  
 D4 0.00172414 sec  
 D11 0.03000000 sec  
 D13 0.00000400 sec  
 D16 0.00020000 sec  
 D24 0.00110000 sec  
 IN0 0.00003000 sec  
 ZGPTNS

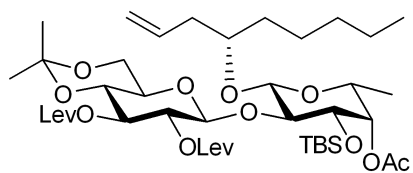
===== CHANNEL f1 =====  
 NUC1 1H  
 P1 10.00 usec  
 P2 20.00 usec  
 P28 1000.00 usec  
 PL1 -3.50 dB  
 PL1W 31.17620277 W  
 SFO1 400.1324057 MHz

===== CHANNEL f2 =====  
 CPDPRG2 garp  
 NUC2 13C  
 P3 10.00 usec  
 P4 20.00 usec  
 PCPD2 75.00 usec  
 PL2 -2.10 dB  
 PL12 15.40 dB  
 PL2W 58.37759399 W  
 PL12W 1.03811681 W  
 SFO2 100.6202727 MHz

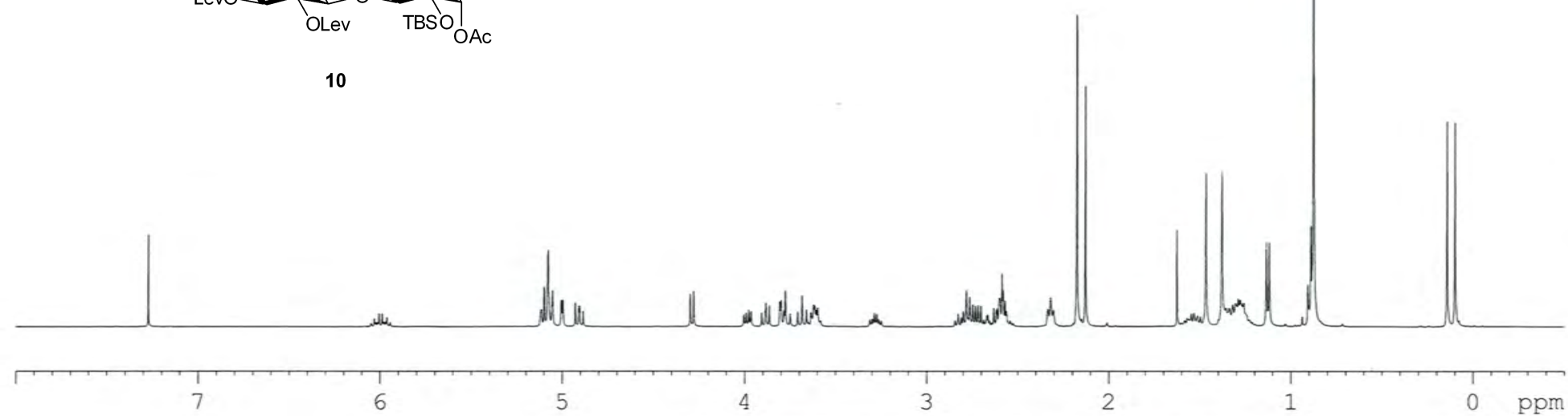
===== GRADIENT CHANNEL =====  
 GPNAM1 SINE.100  
 GPNAM2 SINE.100  
 GPZ1 80.00  
 GPZ2 20.10  
 P16 1000.00 usec  
 NDO 2  
 TD 256  
 SFO1 100.6203 MHz  
 FIDRES 65.104164 Hz  
 SW 165.639 ppm  
 FnmODE Echo-Antiecho  
 SI 1024  
 SF 400.1300000 MHz  
 WDW QSINE  
 SSB 2  
 LB 0.00 Hz  
 GB 0  
 PC 1.00  
 SI 1024  
 MC2 echo-antiecho  
 SF 100.6127690 MHz  
 WDW QSINE  
 SSB 2  
 LB 0.00 Hz  
 GB 0

ZGH-*Ipom*-2-66-A-140626 1H in CDCl<sub>3</sub>

5.097  
5.075  
5.051  
5.002  
4.994  
4.925  
4.906  
4.902  
4.297  
4.278  
3.882  
3.863  
3.806  
3.798  
3.775  
3.683  
3.620  
3.615  
3.597  
2.780  
2.762  
2.744  
2.729  
2.715  
2.699  
2.630  
2.612  
2.599  
2.595  
2.584  
2.578  
2.568  
2.332  
2.318  
2.174  
2.173  
2.127  
1.624  
1.466  
1.379  
1.356  
1.339  
1.319  
1.304  
1.296  
1.289  
1.278  
1.271  
1.258  
1.133  
1.117  
0.905  
0.888  
0.875  
0.140  
0.097



10



0.974

4.029

1.078

1.029

1.000

1.005

1.042

2.002

1.043

2.015

1.004

8.248

1.914

5.955

3.005

1.070

2.072

3.104

10.040

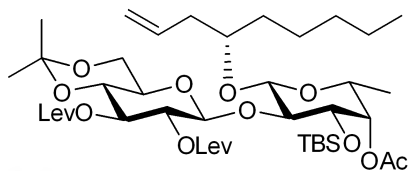
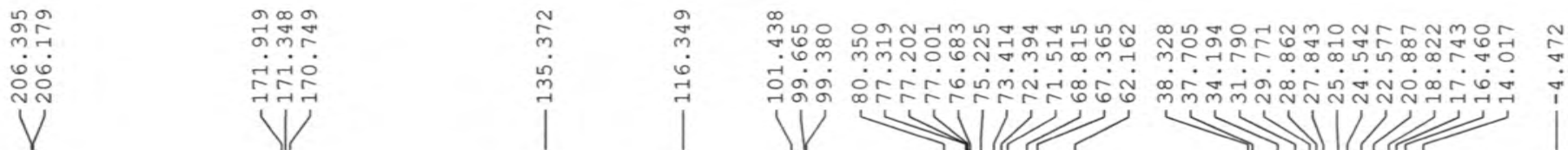
3.014

12.309

2.941

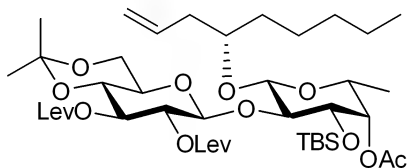
3.038

ppm

ZGH-*Ipom*-2-66-A-140626 13C in CDCl<sub>3</sub>

10

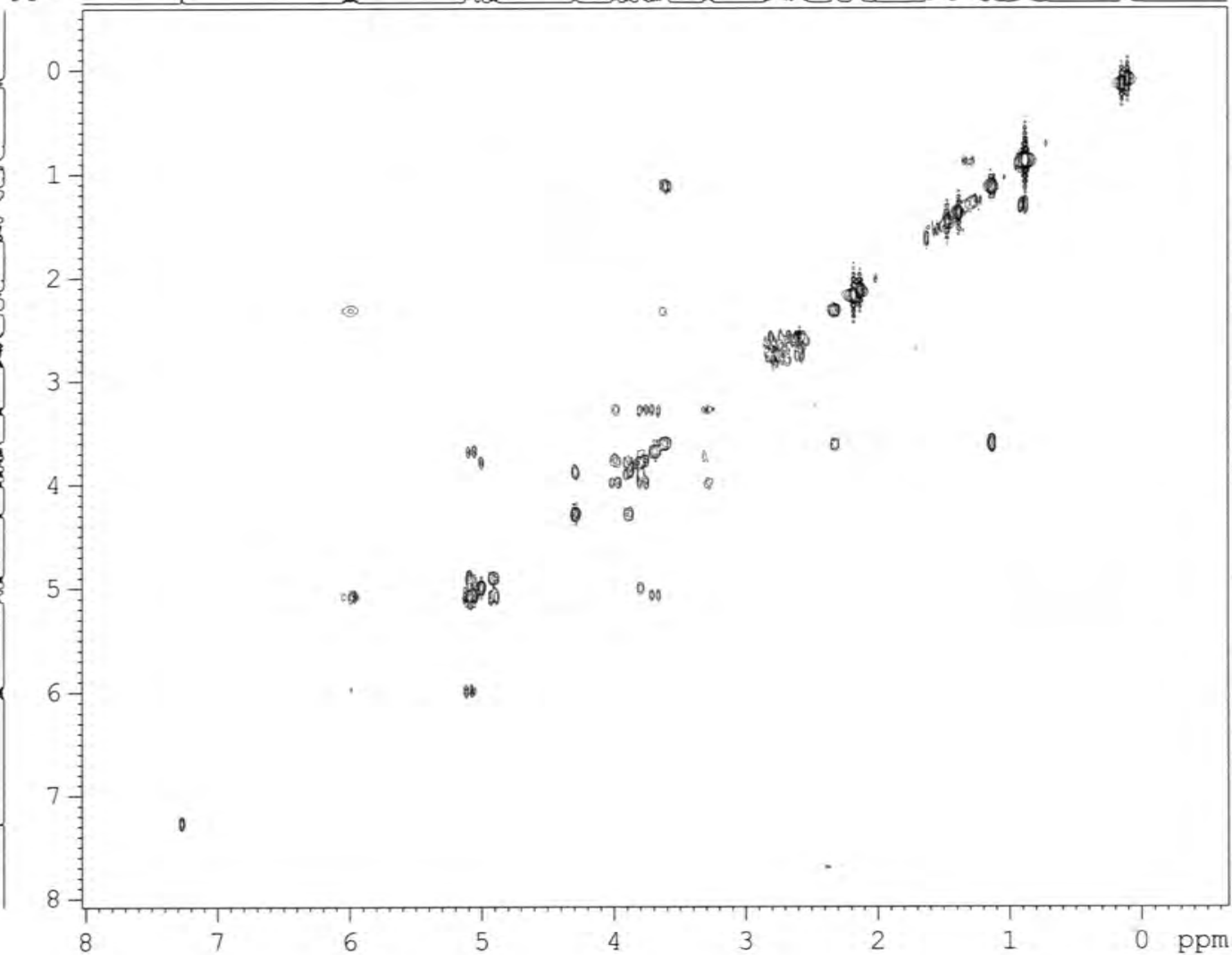
210 200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 ppm



## ZGH-Ipom-2-66-A-140626 COSY

10

ppm



```

NAME      ZGH-Ipom-2-66-A-140626
EXPNO     2
PROCNO    1
Date_     20140627
Time      22.27
INSTRUM   spect
PROBHD    5 mm PABBO BB-
PULPROG   cosygpgf
TD        2048
SOLVENT   CDC13
NS         4
DS         8
SWH       5341.880 Hz
FIDRES    2.608340 Hz
AQ        0.1917428 sec
RG         128
DW        93.600 usec
DE        6.50 usec
TE        292.1 K
D0        0.00000300 sec
D1        1.48689198 sec
D13       0.00000400 sec
D16       0.00020000 sec
INO       0.00018720 sec
  
```

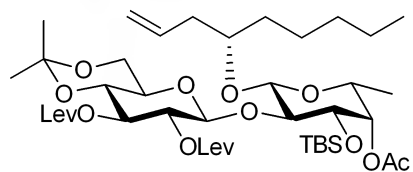
```

===== CHANNEL f1 =====
NUC1      1H
P0        10.00 usec
P1        10.00 usec
PL1       -3.50 dB
PL1W      31.17620277 W
SFO1      400.1324057 MHz
  
```

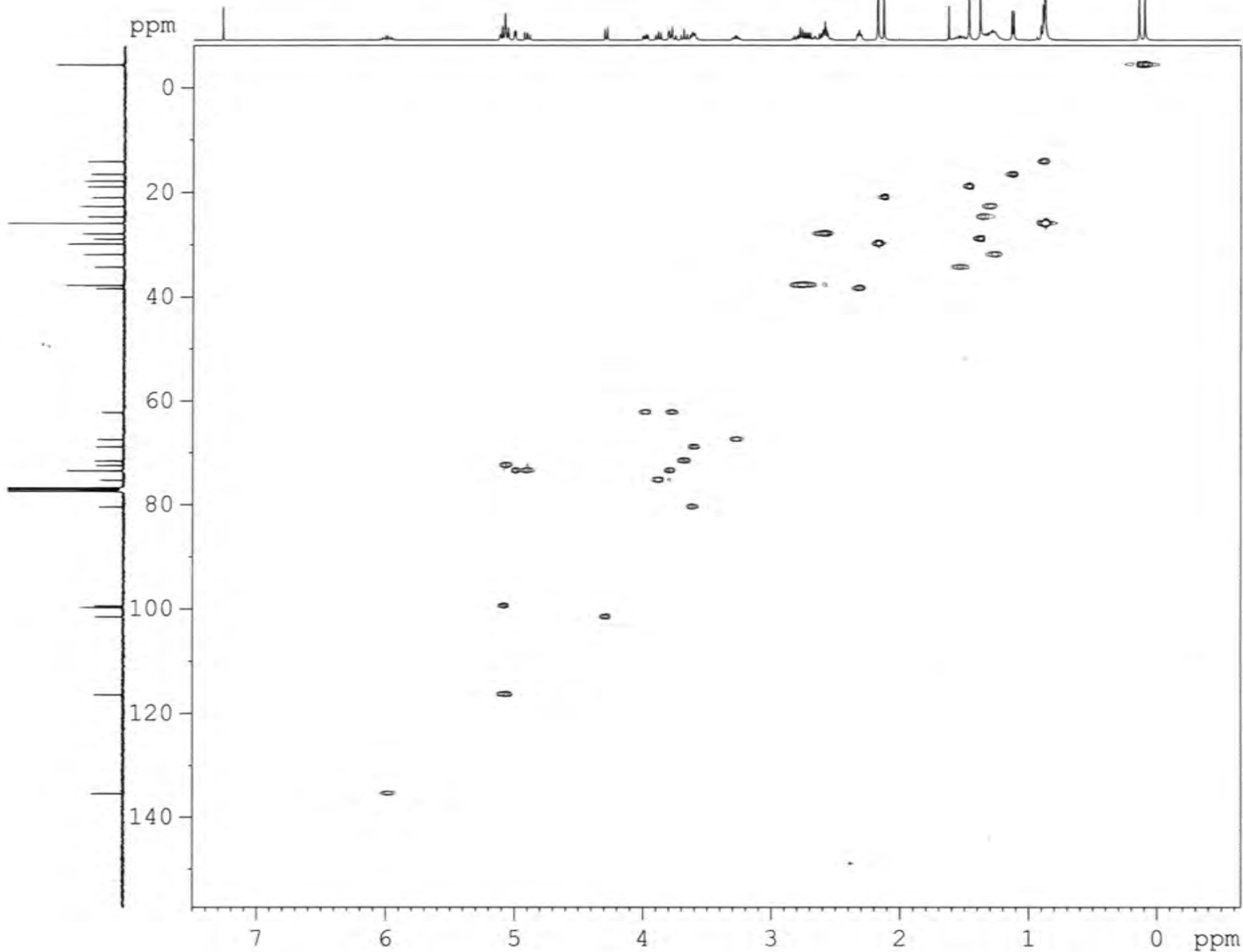
```

===== GRADIENT CHANNEL =====
GPNAM1    SINE.100
GP21      10.00 %
P16       1000.00 usec
NDO       1
TD        128
SFO1      400.1324 MHz
FIDRES    41.733440 Hz
SW        13.350 ppm
FnMODE    QF
SI        1024
SF        400.1300040 MHz
WDW       SINE
SSB       0
LB        0.00 Hz
GB        0
PC        1.00
SI        1024
MC2       QF
SF        400.1300033 MHz
WDW       SINE
SSB       0
LB        0.00 Hz
GB        0
  
```



ZGH-*Ipom*-2-66-A-140626 HSQC

10



```

NAME      ZGH-Ipom-2-66-A-140626
EXPNO     4
PROCNO    1
Date_     20140627
Time      23.24
INSTRUM   spect
PROBHD    5 mm PABBO BB-
PULPROG   hsqcetgpsi
TD         1024
SOLVENT   CDCl3
NS         6
DS         16
SWH       5341.880 Hz
FIDRES    5.216680 Hz
AQ         0.0958964 sec
RG         2050
DW         93.600 usec
DE         6.50 usec
TE         292.9 K
CNST2     145.0000000
D0         0.0000300 sec
D1         1.5000000 sec
D4         0.00172414 sec
D11        0.03000000 sec
D13        0.00000400 sec
D16        0.00020000 sec
D24        0.00110000 sec
INO        0.00003000 sec
ZGOPTNS

```

```

***** CHANNEL f1 *****
NUC1      1H
P1        10.00 usec
P2        20.00 usec
P28       1000.00 usec
PL1       -3.50 dB
PL1W      31.17620277 W
SFO1      400.1324057 MHz

```

```

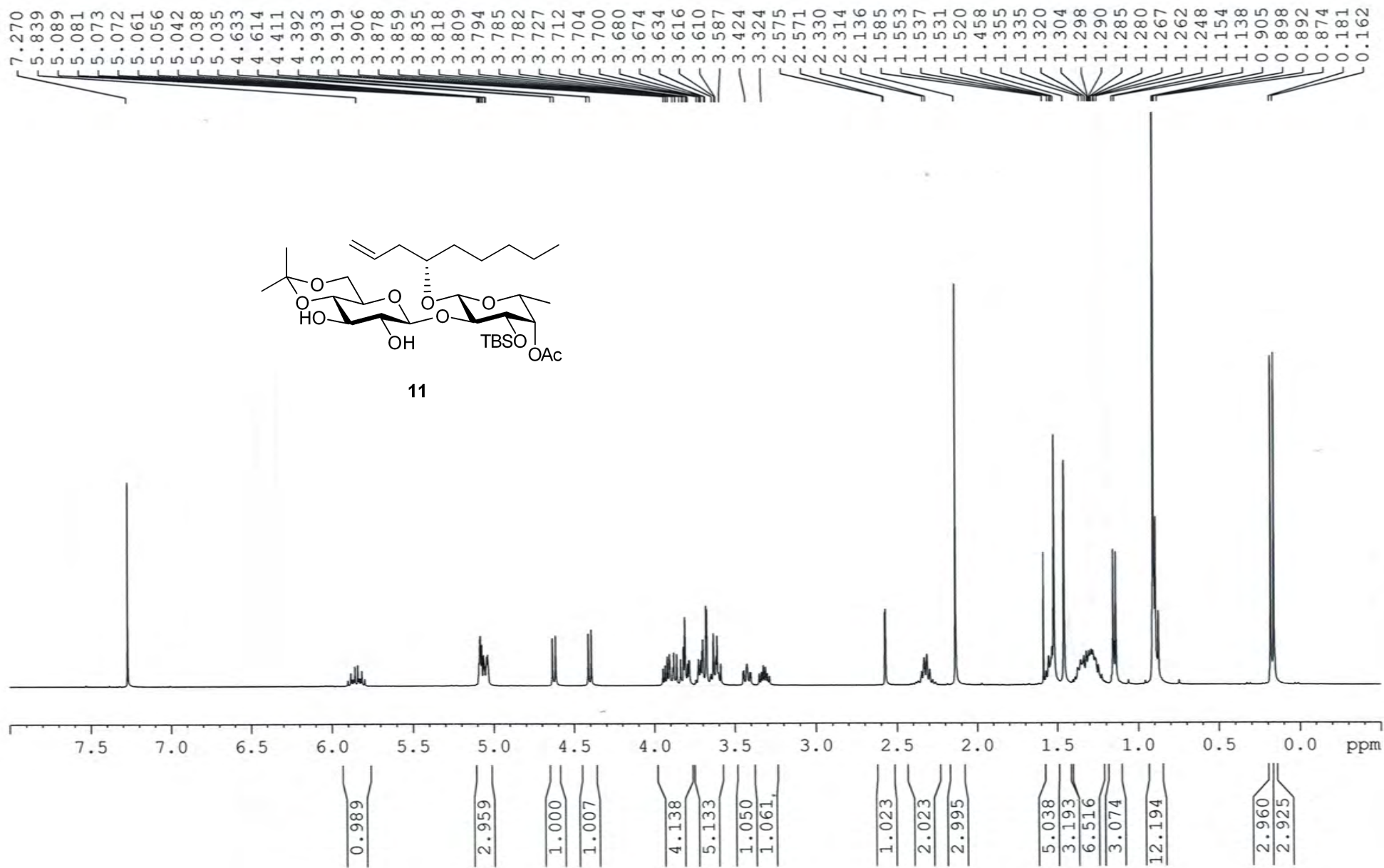
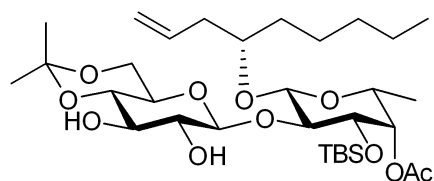
***** CHANNEL f2 *****
CRDPRG2   garp
NUC2      13C
P3        10.00 usec
P4        20.00 usec
PCPD2     75.00 usec
PL2       -2.10 dB
PL12      15.40 dB
PL2W      58.37759399 W
PL12W     1.03811681 W
SFO2      100.6202727 MHz

```

```

***** GRADIENT CHANNEL *****
GPNAM1    SINE.100
GPNAM2    SINE.100
GPZ1      80.00
GPZ2      20.10
P16       1000.00 usec
ND0       2
TD         256
SFO1      100.6203 MHz
FIDRES    65.104164 Hz
SW        165.639 ppm
FnMODE    Echo-Antiecho
SI         1024
SF        400.1300000 MHz
WDW       QSINE
SSB       2
LB         0.00 Hz
GB         0
PC         1.00
SI         1024
MC2       echo-antiecho
SF        100.6127690 MHz
WDW       QSINE
SSB       2
LB         0.00 Hz
GB         0

```

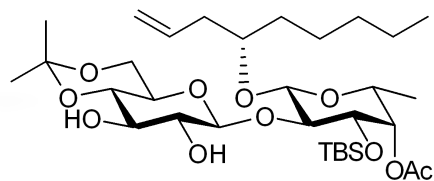
ZGH-*Ipom*-2-102-A-140922 1H in CDCl<sub>3</sub>

ZGH-*Ipom*-2-102-A-140922 13C

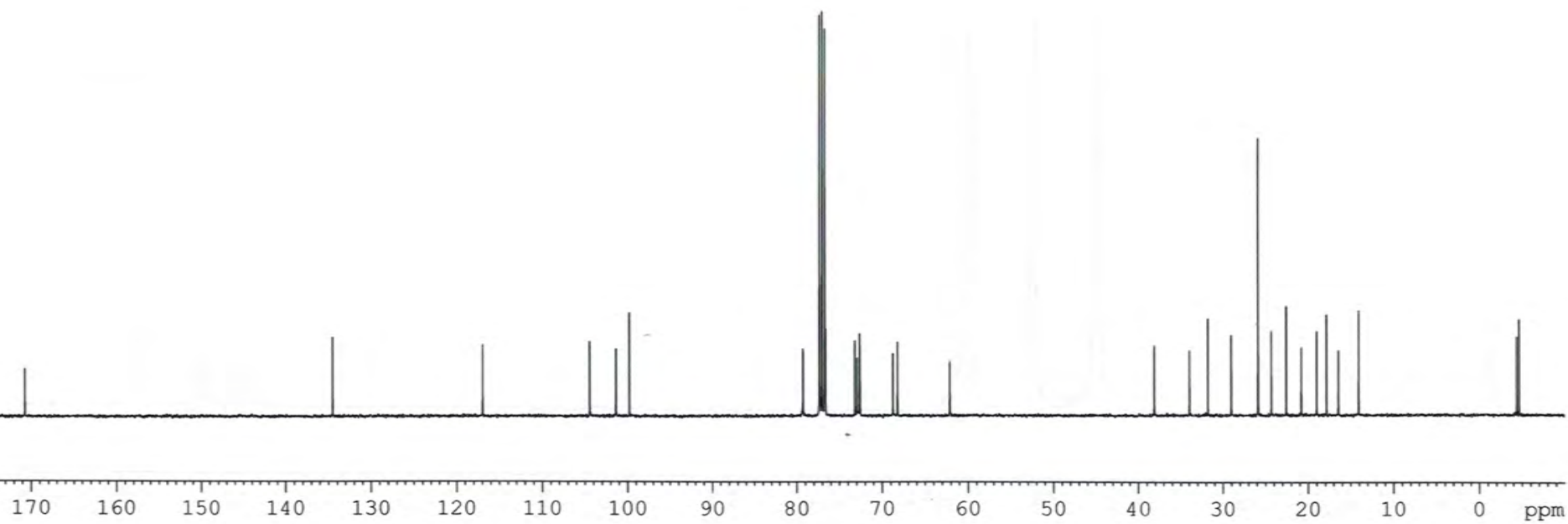
— 170.670

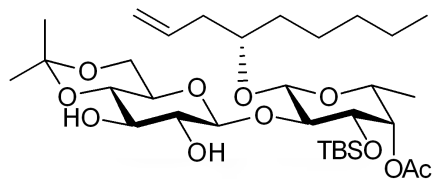
— 134.502

— 116.933

— 104.421  
— 101.339  
— 99.75979.261  
79.230  
77.312  
77.197  
76.994  
76.676  
76.606  
73.159  
72.896  
72.607  
72.575  
68.719  
68.196  
62.07638.087  
33.936  
31.746  
28.979  
25.833  
24.283  
22.543  
20.789  
18.974  
17.803  
16.411  
14.011-4.413  
-4.687

11





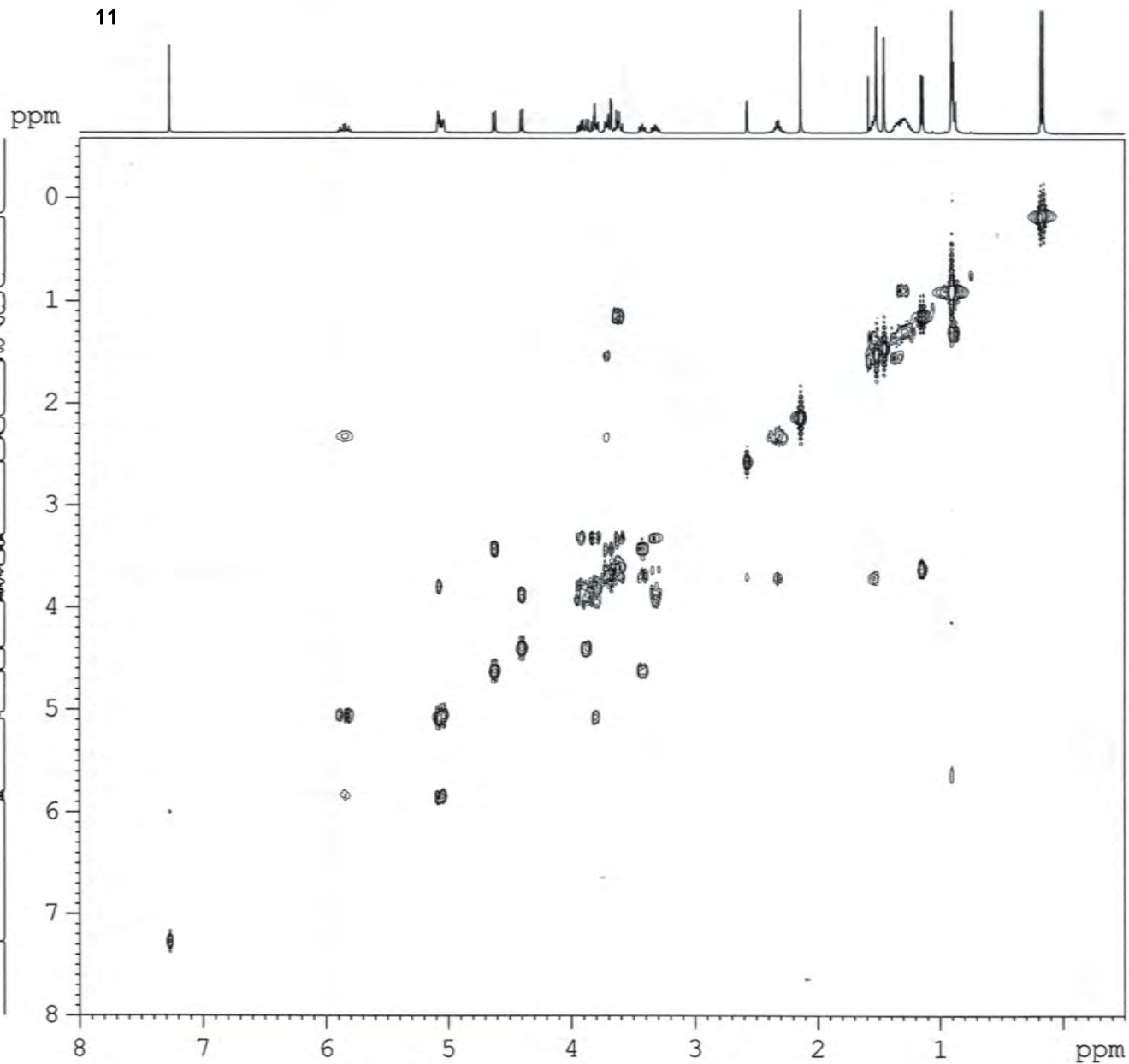
11

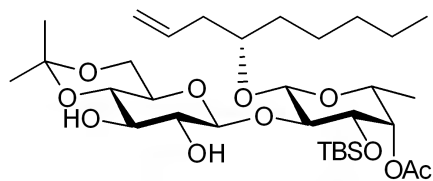
## ZGH-Ipom-2-102-A-140922 COSY

NAME ZGH-Ipom-2-102-A-140922  
 EXPNO 2  
 PROCNO 1  
 Date\_ 20140922  
 Time\_ 20.30  
 INSTRUM spect  
 PROBHD 5 mm PABBO BB-  
 PULPROG cosygpgf  
 TD 2048  
 SOLVENT CDC13  
 NS 4  
 DS 8  
 SWH 5341.880 Hz  
 FIDRES 2.608340 Hz  
 AQ 0.1917428 sec  
 RG 203  
 DW 93.600 usec  
 DE 6.50 usec  
 TE 292.2 K  
 D0 0.00000300 sec  
 D1 1.48689198 sec  
 D13 0.00000400 sec  
 D16 0.00020000 sec  
 INO 0.00018720 sec

===== CHANNEL f1 =====  
 NUC1 1H  
 P0 10.00 usec  
 P1 10.00 usec  
 PL1 -3.50 dB  
 PL1W 31.17620277 W  
 SFO1 400.1324057 MHz

===== GRADIENT CHANNEL =====  
 GPNAM1 SINE.100  
 GPZ1 10.00 %  
 P16 1000.00 usec  
 ND0 1  
 TD 128  
 SFO1 400.1324 MHz  
 FIDRES 41.733440 Hz  
 SW 13.350 ppm  
 FnMODE QF  
 SI 1024  
 SF 400.1300040 MHz  
 WDW SINE  
 SSB 0  
 LB 0.00 Hz  
 GB 0  
 PC 1.00  
 SI 1024  
 MC2 QF  
 SF 400.1300033 MHz  
 WDW SINE  
 SSB 0  
 LB 0.00 Hz  
 GB 0





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ZGH-*Ipom*-2-102-A-140922 HSQC

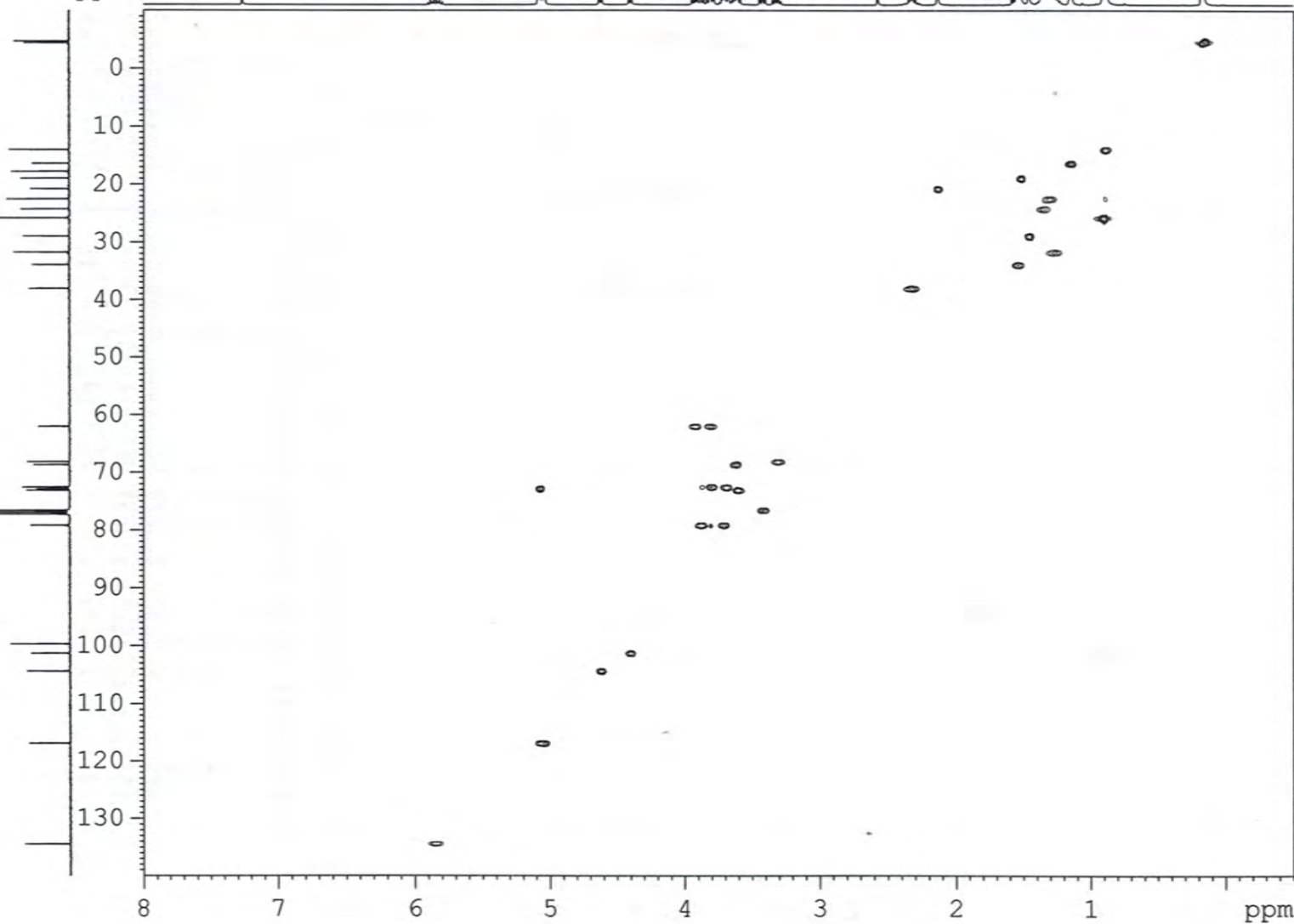
NAME ZGH-*Ipom*-2-102-A-140922  
 EXPNO 4  
 PROCNO 1  
 Date\_ 20140922  
 Time\_ 21.49  
 INSTRUM spect  
 PROBHD 5 mm PABBO BB-  
 PULPROG hsqcetgpsi  
 TD 1024  
 SOLVENT CDCl3  
 NS 4  
 DS 16  
 SWH 5341.880 Hz  
 FIDRES 5.216680 Hz  
 AQ 0.0958964 sec  
 RG 2050  
 DW 93.600 usec  
 DE 6.50 usec  
 TE 292.9 K  
 CNST2 145.0000000  
 D0 0.00000300 sec  
 D1 1.50000000 sec  
 D4 0.00172414 sec  
 D11 0.03000000 sec  
 D13 0.00000400 sec  
 D16 0.00020000 sec  
 D24 0.00110000 sec  
 IN0 0.00003000 sec  
 ZGOPTNS

===== CHANNEL f1 =====  
 NUC1 1H  
 P1 10.00 usec  
 P2 20.00 usec  
 P28 1000.00 usec  
 PL1 -3.50 dB  
 PL1W 31.17620277 W  
 SFO1 400.1324057 MHz

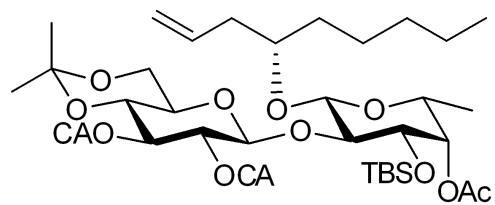
===== CHANNEL f2 =====  
 CPDPRG2 garp  
 NUC2 13C  
 P3 10.00 usec  
 P4 20.00 usec  
 PCPD2 75.00 usec  
 PL2 -2.10 dB  
 PL12 15.40 dB  
 PL2W 58.37759399 W  
 PL12W 1.03811681 W  
 SFO2 100.6202727 MHz

===== GRADIENT CHANNEL =====  
 GPNAM1 SINE.100  
 GPNAM2 SINE.100  
 GPZ1 80.00 %  
 GPZ2 20.10 %  
 P16 1000.00 usec  
 ND0 2  
 TD 256  
 SFO1 100.6203 MHz  
 FIDRES 65.104164 Hz  
 SW 165.639 ppm  
 FnMODE Echo-Antiecho  
 SI 1024  
 SF 400.1300000 MHz  
 WDW QSINE  
 SSB 2  
 LB 0.00 Hz  
 GB 0  
 PC 1.00  
 SI 1024  
 MC2 echo-antiecho  
 SF 100.6127690 MHz  
 WDW QSINE  
 SSB 2  
 LB 0.00 Hz  
 GB 0

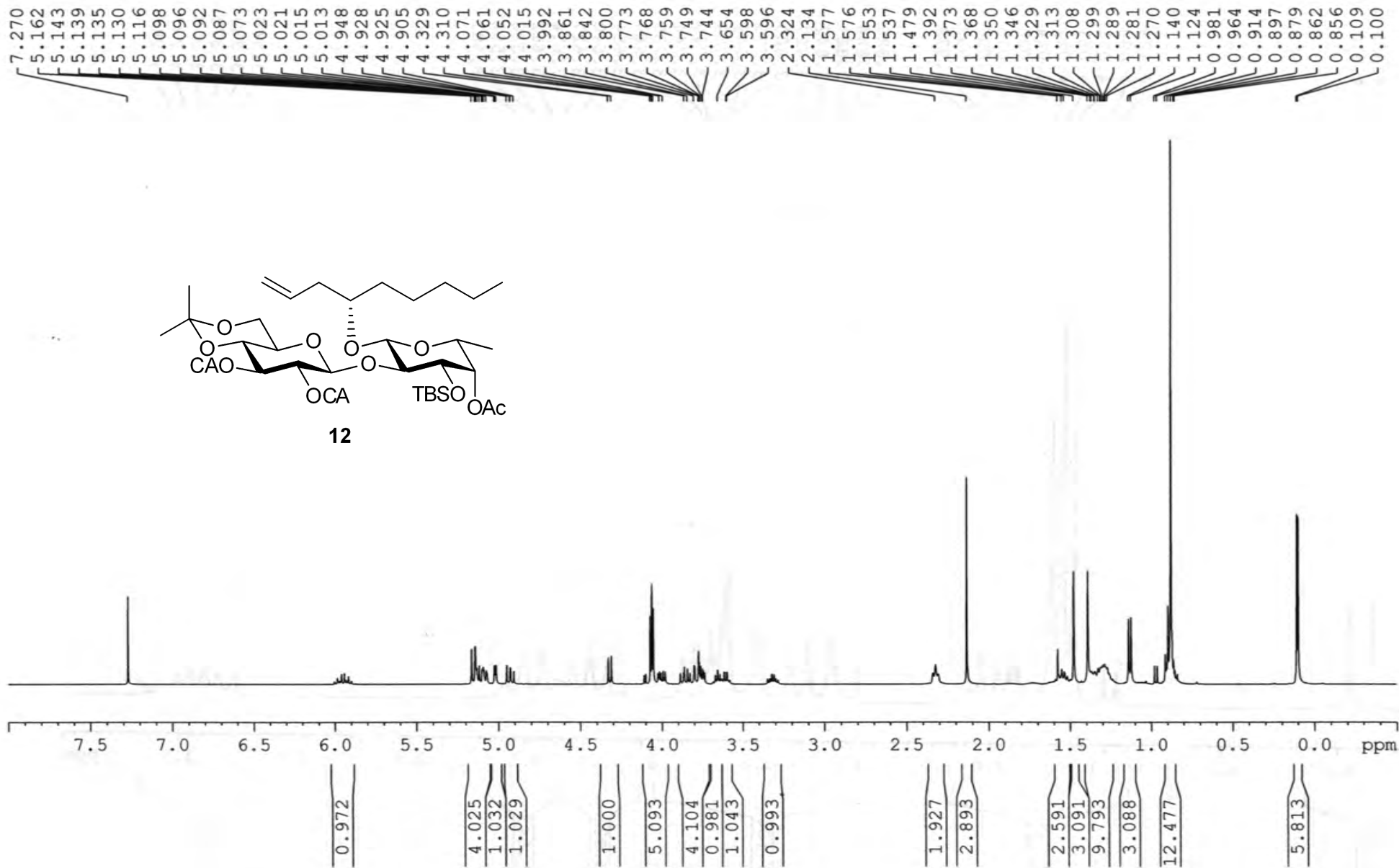
ppm



ppm

ZGH-*Ipom*-2-116-A-141026 1H in CDCL<sub>3</sub>

12



ZGH-*Ipom-2-116-A-141026*  $^{13}\text{C}$  in  $\text{CDCl}_3$ 

170.556  
166.902  
166.180

134.982

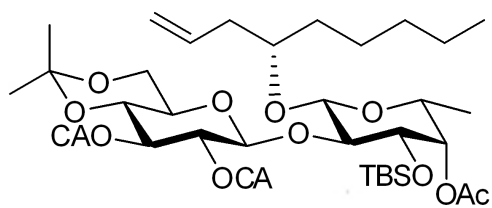
116.685

101.287  
99.870  
99.245

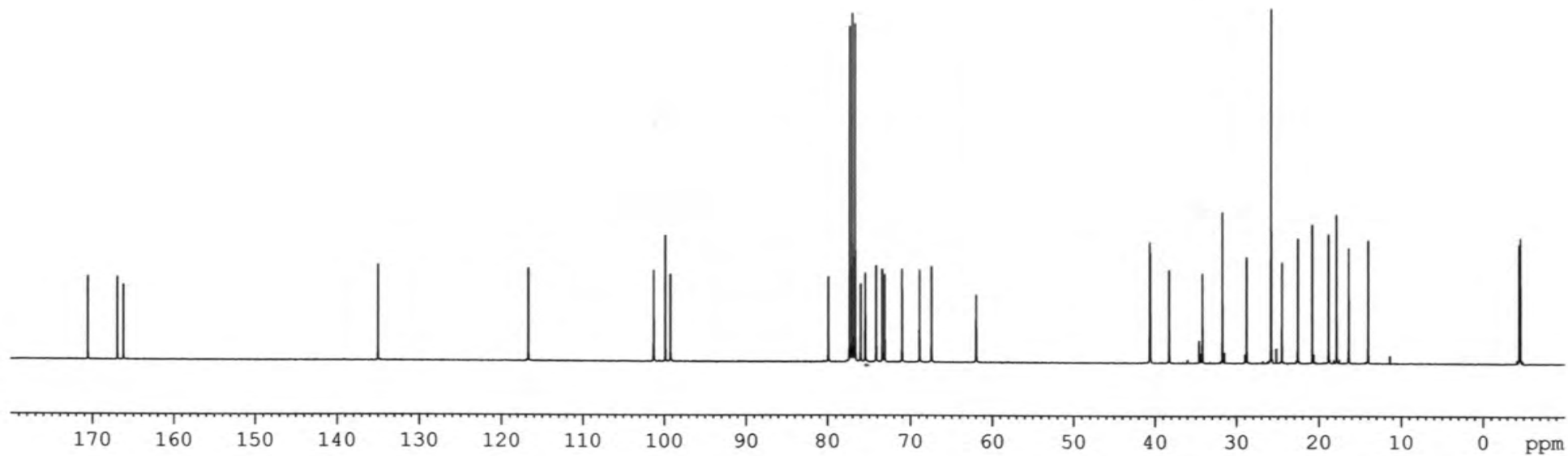
79.917  
77.337  
77.019  
76.700  
76.021  
75.461  
74.140  
73.418  
73.117  
71.003  
68.886  
67.447  
61.963

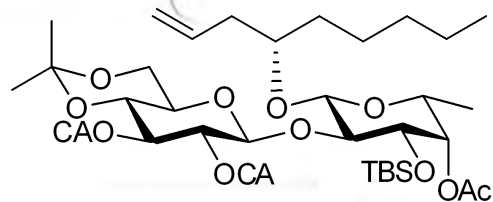
40.613  
40.545  
38.258  
34.589  
34.189  
31.746  
28.775  
25.837  
24.511  
22.555  
20.802  
18.829  
17.855  
16.364  
14.007

-4.447  
-4.602



12





12

ZGH-*Ipom*-2-116-A-141026 COSY

```

NAME      ZGH-Ipom-2-116-A-141026
EXPNO     2
PROCNO    1
Date_     20141027
Time      22.54
INSTRUM   spect
PROBHD    5 mm PABBO BB-
PULPROG   cosygpqf
TD         2048
SOLVENT   CDCl3
NS         4
DS         8
SWH        5341.880 Hz
FIDRES     2.608340 Hz
AQ         0.1917428 sec
RG         144
DW         93.600 usec
DE         6.50 usec
TE         292.0 K
DO         0.00000300 sec
D1         1.48689198 sec
D13        0.00000400 sec
D16        0.00020000 sec
IN0        0.00018720 sec

```

```

===== CHANNEL f1 =====
NUC1      1H
P0         10.00 usec
P1         10.00 usec
PL1        -3.50 dB
PL1W       31.17620277 W
SFO1       400.1324057 MHz

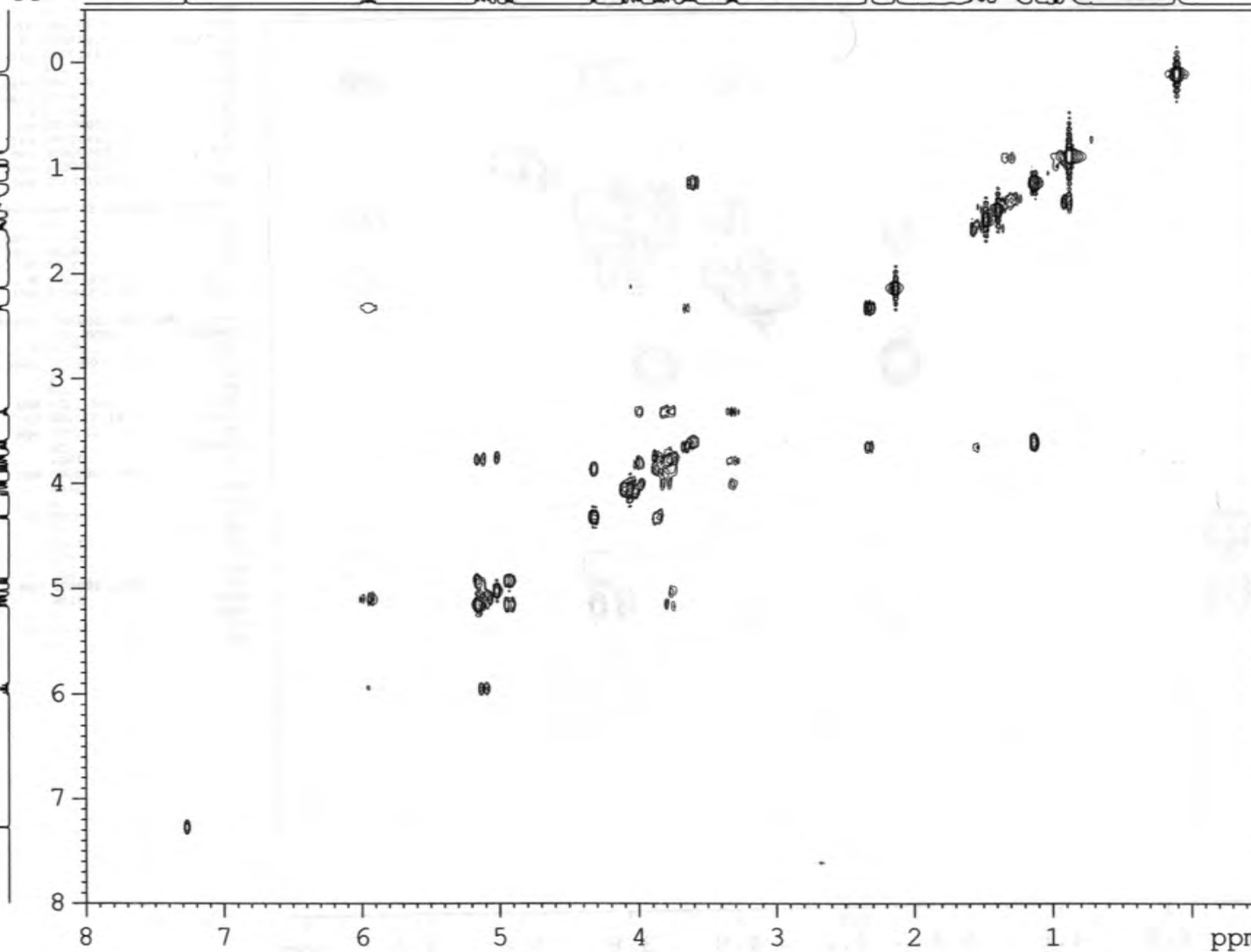
```

```

===== GRADIENT CHANNEL =====
GPNAM1    SINE.100
GPZ1       10.00 %
P16        1000.00 usec
ND0         1
TD          128
SFO1       400.1324 MHz
FIDRES     41.733440 Hz
SW          13.350 ppm
FrMODE     QF
SI          1024
SF          400.1300040 MHz
WDB         SINE
SSB         0
LB          0.00 Hz
GB          0
PC          1.00
SI          1024
MC2         QF
SF          400.1300033 MHz
WDB         SINE
SSB         0
LB          0.00 Hz
GB          0

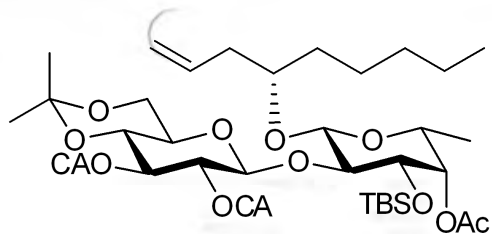
```

ppm



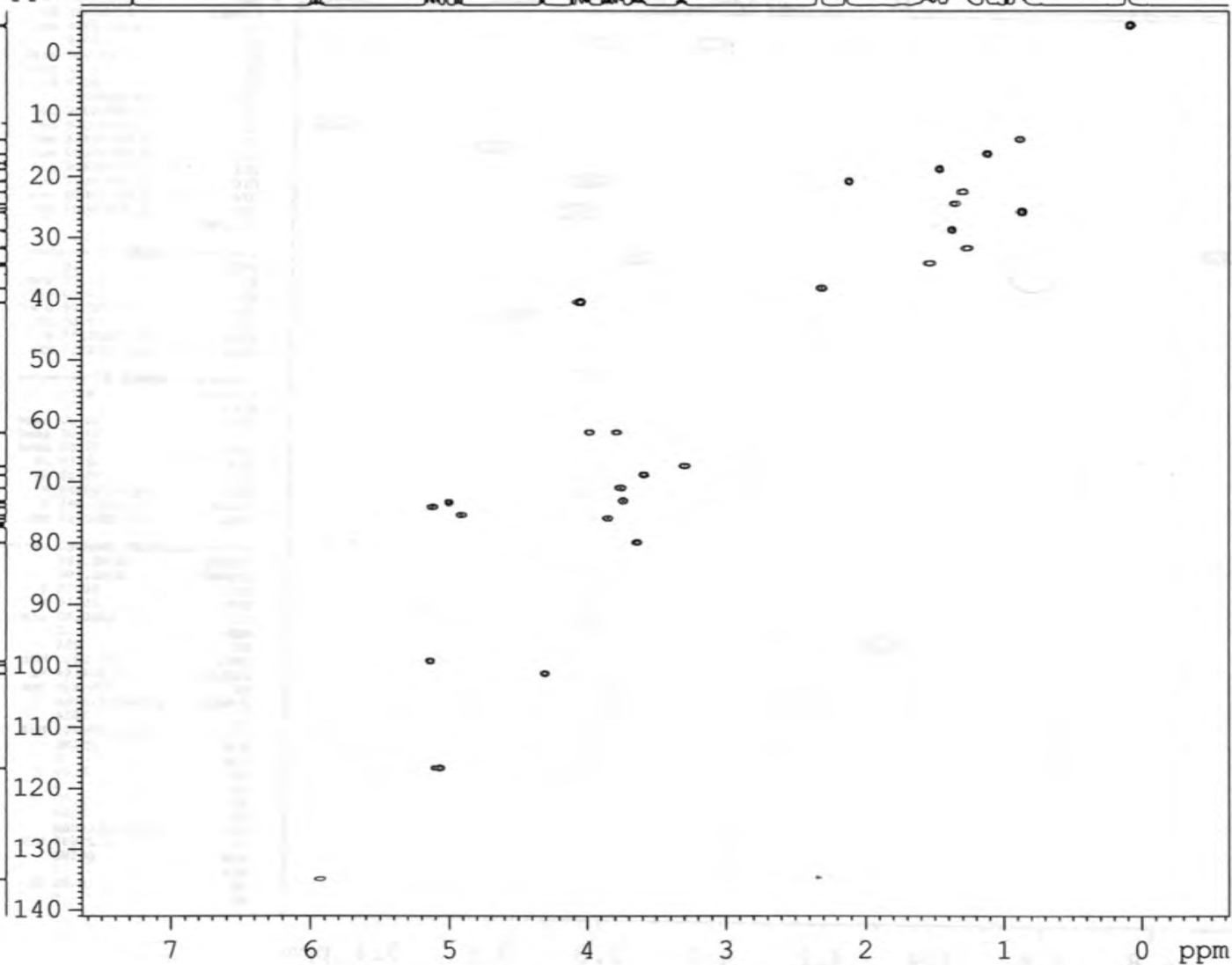
ppm



ZGH-*Ipom-2-116-A-141026* HSQC

12

ppm



```

NAME      ZGH-Ipom-2-116-A-141026
EXPNO     4
PROCNO    1
Date_     20141028
Time      4.55
INSTRUM   spect
PROBHD    5 mm PABBO BB-
FULPROG   hsqcetgps1
TD         1024
SOLVENT   CDCl3
NS         16
DS         16
SWH        5341.880 Hz
FIDRES     5.216680 Hz
AQ         0.0958964 sec
RG         2050
DW         93.600 usec
DE         6.50 usec
TE         292.9 K
CNST2     145.0000000
D0         0.00000300 sec
D1         1.50000000 sec
D4         0.00172414 sec
D11        0.03000000 sec
D13        0.00000400 sec
D16        0.00020000 sec
D24        0.00110000 sec
INO        0.00003000 sec
ZGPTNS

```

```

===== CHANNEL f1 =====
NUC1      1H
P1         10.00 usec
P2         20.00 usec
P28        1000.00 usec
PL1        -3.50 dB
PL1W      31.17620277 W
SFO1      400.1324057 MHz

```

```

===== CHANNEL f2 =====
CPDPRG2   garp
NUC2      13C
P3         10.00 usec
P4         20.00 usec
PCPD2     75.00 usec
PL2        -2.10 dB
PL12       15.40 dB
PL2W      58.37759399 W
PL12W     1.03811681 W
SFO2      100.6202727 MHz

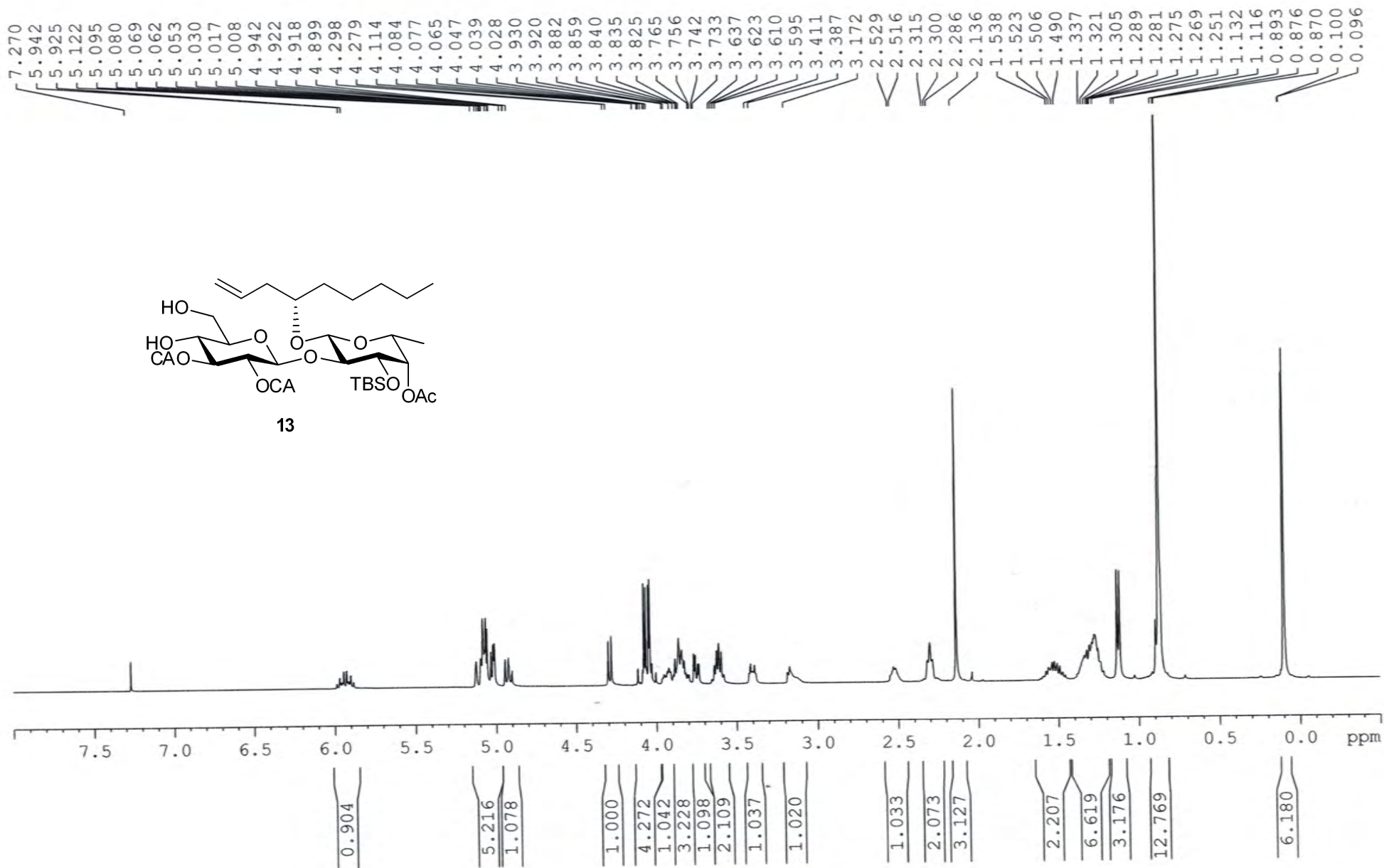
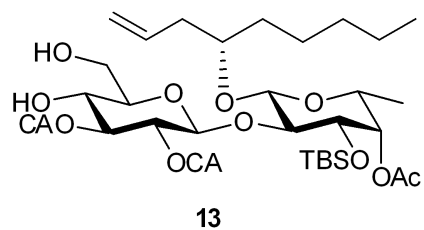
```

```

===== GRADIENT CHANNEL =====
GPNAM1    SINE.100
GPNAM2    SINE.100
GPZ1      80.00 %
GPZ2      20.10 %
P16       1000.00 usec
ND0       2
TD         256
SFO1      100.6203 MHz
FIDRES     65.104164 Hz
SW         165.639 ppm
FnMODE    Echo-Antiecho
SI         1024
SF         400.1300000 MHz
WDW        QSINE
SSB        2
LB         0.00 Hz
GB         0
PC         1.00
SI         1024
MC2       echo-antiecho
SF         100.6127690 MHz
WDW        QSINE
SSB        2
LB         0.00 Hz
GB         0

```

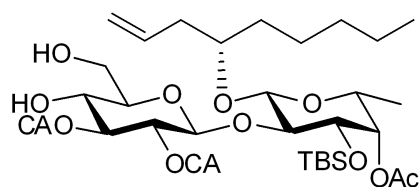
ZGH-Ipom-2-117-A-141028 (2) 1H in CDCL3



ZGH-*Ipom*-2-117-A-141028 (2)  $^{13}\text{C}$  in  $\text{CDCl}_3$ — 170.726  
— 167.548  
— 166.174

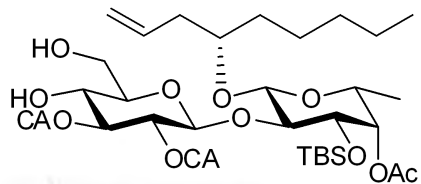
— 134.829

— 116.970

— 101.299  
— 98.40080.586  
77.316  
77.200  
76.998  
76.680  
75.148  
75.017  
74.031  
73.397  
73.250  
68.953  
68.604  
61.46740.604  
40.580  
38.308  
34.300  
31.701  
25.738  
24.680  
22.548  
20.889  
17.724  
16.389  
14.007— 4.419  
— 4.624

13

170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 ppm



13

ZGH-Ipom-2-117-A-141028 (2) COSY

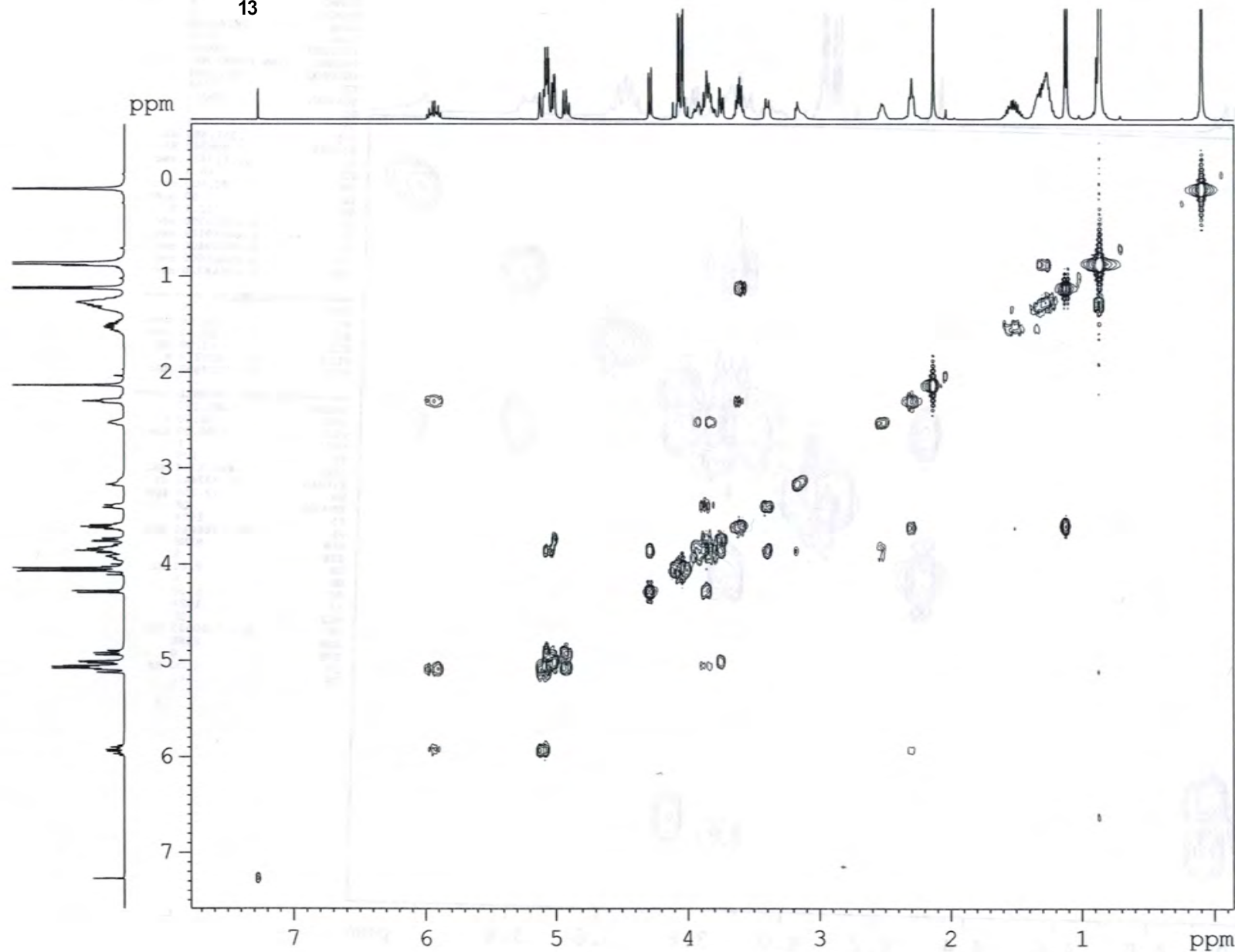
NAME ZGH-Ipom-2-117-A-141028 (2)  
 EXPNO 2  
 PROCNO 1  
 Date\_ 20141029  
 Time 1.08  
 INSTRUM spect  
 FROBHD 5 mm PABBO BB-  
 PULPROG cosygpgf  
 TD 2048  
 SOLVENT CDC13  
 NS 4  
 DS 8  
 SWH 5341.880 Hz  
 FIDRES 2.608340 Hz  
 AQ 0.1917428 sec  
 RG 40.3  
 DW 93.600 usec  
 DE 6.50 usec  
 TE 292.1 K  
 D0 0.00000300 sec  
 D1 1.48689198 sec  
 D13 0.00000400 sec  
 D16 0.00020000 sec  
 IN0 0.00018720 sec

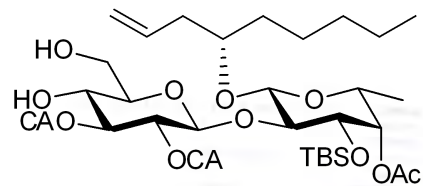
===== CHANNEL f1 =====  
 NUC1 1H  
 P0 10.00 usec  
 P1 10.00 usec  
 PL1 -3.50 dB  
 PL1W 31.17620277 W  
 SFO1 400.1324057 MHz

===== GRADIENT CHANNEL =====  
 GPNAM1 SINE.100  
 GPZ1 10.00 %  
 P16 1000.00 usec  
 NDO 1  
 TD 128  
 SFO1 400.1324 MHz  
 FIDRES 41.733440 Hz  
 SW 13.350 ppm  
 FmMODE QF  
 SI 1024  
 SF 400.1300040 MHz  
 WDW SINE  
 SSB 0  
 LB 0.00 Hz  
 GB 0  
 PC 1.00  
 SI 1024  
 MC2 QF  
 SF 400.1300033 MHz  
 WDW SINE  
 SSB 0  
 LB 0.00 Hz  
 GB 0

ppm

ppm





13

ZGH-*Ipom*-2-117-A-141028 (2) HSQC

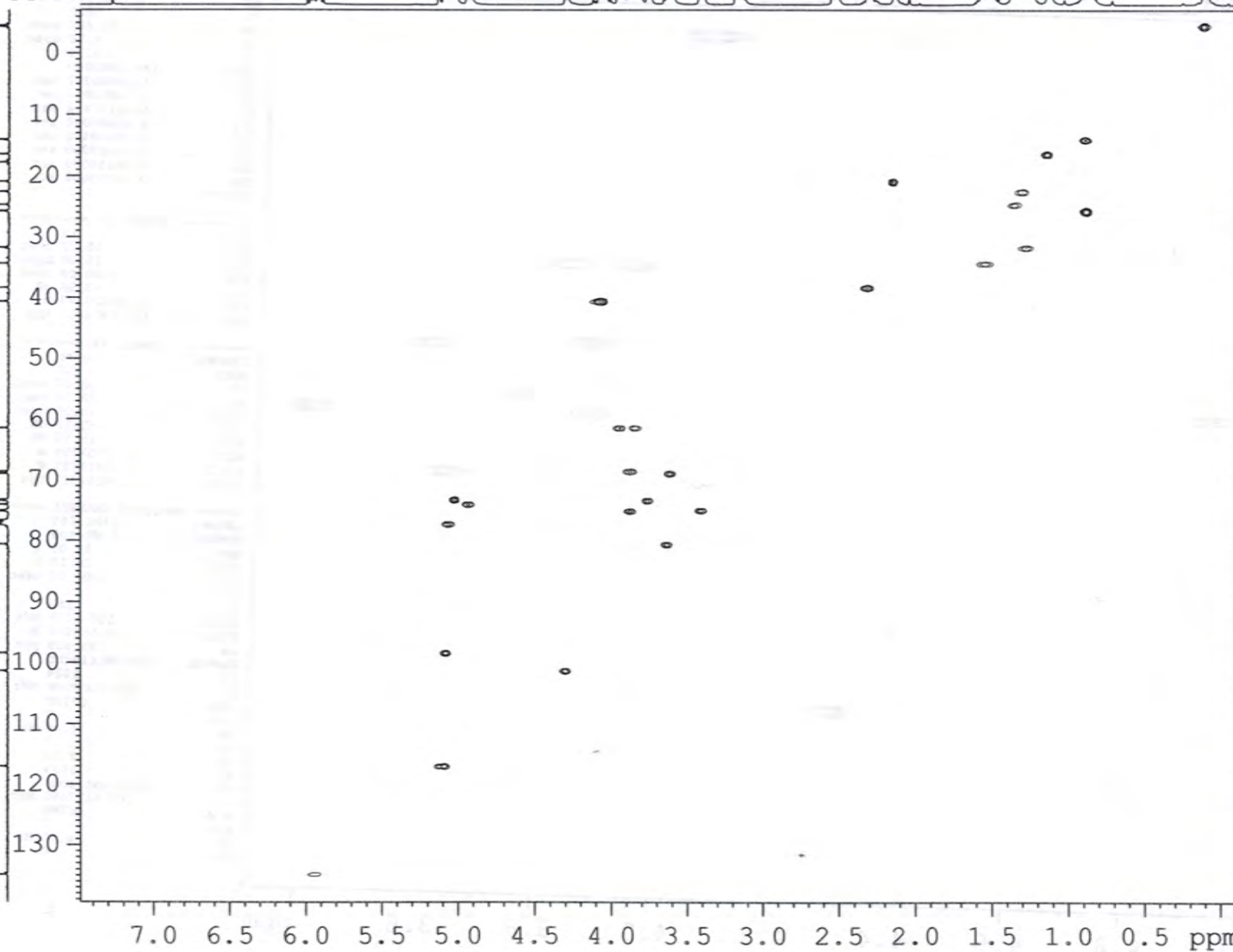
NAME ZGH-*Ipom*-2-117-A-141028 (2)  
 EXPNO 4  
 PROCNO 1  
 Date 20141029  
 Time 6.58  
 INSTRUM spect  
 PROBHD 5 mm PABBO BB-  
 PULPROG hsqcetgpsi  
 TD 1024  
 SOLVENT CDC13  
 NS 8  
 DS 16  
 SWH 5341.880 Hz  
 FIDRES 5.216680 Hz  
 AQ 0.0958964 sec  
 RG 2050  
 DW 93.600 usec  
 DE 6.50 usec  
 TE 292.9 K  
 CNST2 145.0000000  
 D0 0.0000300 sec  
 D1 1.5000000 sec  
 D4 0.00172414 sec  
 D11 0.03000000 sec  
 D13 0.00000400 sec  
 D16 0.00020000 sec  
 D24 0.00110000 sec  
 IN0 0.00003000 sec  
 ZGPTNS

----- CHANNEL f1 -----  
 NUC1 1H  
 P1 10.00 usec  
 P2 20.00 usec  
 E28 1000.00 usec  
 PL1 -3.50 dB  
 PL1W 31.17620277 W  
 SFO1 400.1324057 MHz

----- CHANNEL f2 -----  
 CPDPRG2 garp  
 NUC2 13C  
 P3 10.00 usec  
 P4 20.00 usec  
 FCPD2 75.00 usec  
 PL2 -2.10 dB  
 PL12 15.40 dB  
 PL12W 58.37759399 W  
 PL12W 1.03811681 W  
 SFO2 100.6202727 MHz

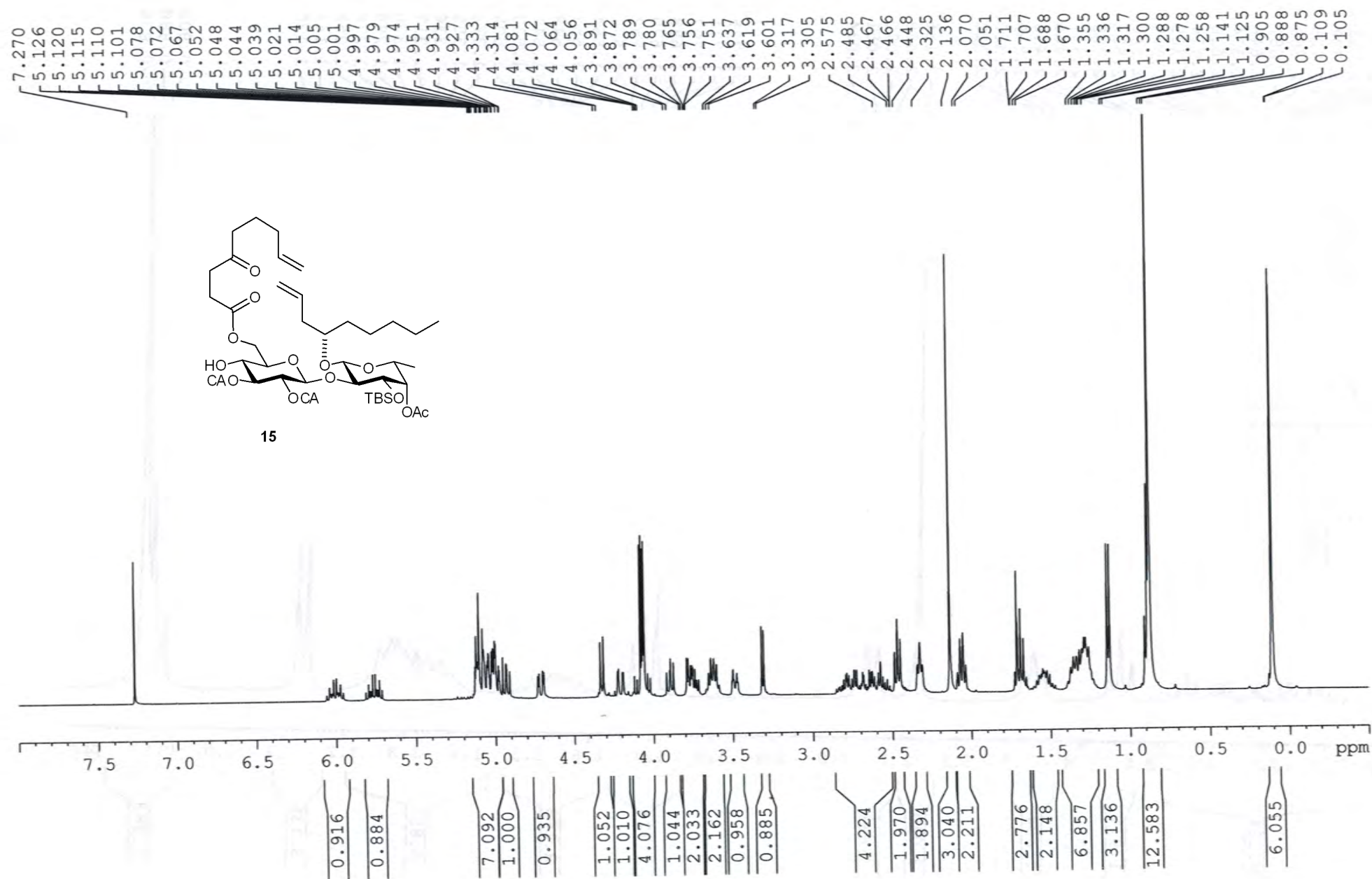
----- GRADIENT CHANNEL -----  
 GPNAM1 SINE.100  
 GPNAM2 SINE.100  
 GPZ1 80.00 %  
 GPZ2 20.10 %  
 P16 1000.00 usec  
 NDO 2  
 TD 256  
 SFO1 100.6203 MHz  
 FIDRES 65.104164 Hz  
 SW 165.639 ppm  
 FnmODE Echo-Antiecho  
 SI 1024  
 SF 400.1300000 MHz  
 WDW QSINE  
 SSB 2  
 LB 0.00 Hz  
 GB 0  
 PC 1.00  
 SI 1024  
 MC2 echo-antiecho  
 SF 100.6127690 MHz  
 WDW QSINE  
 SSB 2  
 LB 0.00 Hz  
 GB 0

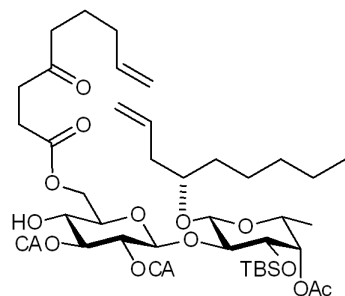
ppm



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 0.5 ppm

## ZGH-Ipom-2-118-B-141029 1H in CDCL3



ZGH-*Ipom-2-118-B-141029* 13C in CDCl<sub>3</sub>

15

— 209.316

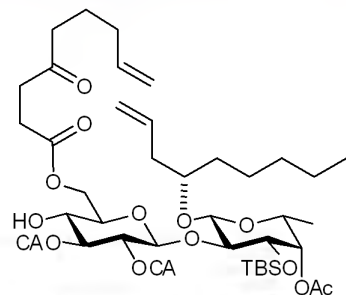
— 173.880  
 — 170.651  
 — 167.339  
 — 166.159

— 137.759  
 — 135.310

— 116.693  
 — 115.395

— 101.427  
 — 98.821  
 — 80.453  
 — 77.318  
 — 77.202  
 — 77.000  
 — 76.683  
 — 76.466  
 — 75.714  
 — 74.458  
 — 74.238  
 — 73.451  
 — 73.324  
 — 68.957  
 — 68.016  
 — 62.592  
 — 41.705  
 — 40.637  
 — 38.423  
 — 37.204  
 — 34.268  
 — 32.953  
 — 31.832  
 — 27.796  
 — 25.857  
 — 24.575  
 — 22.674  
 — 22.587  
 — 20.887  
 — 17.848  
 — 16.467  
 — 14.047  
 — 4.448  
 — 4.494

210 200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 ppm

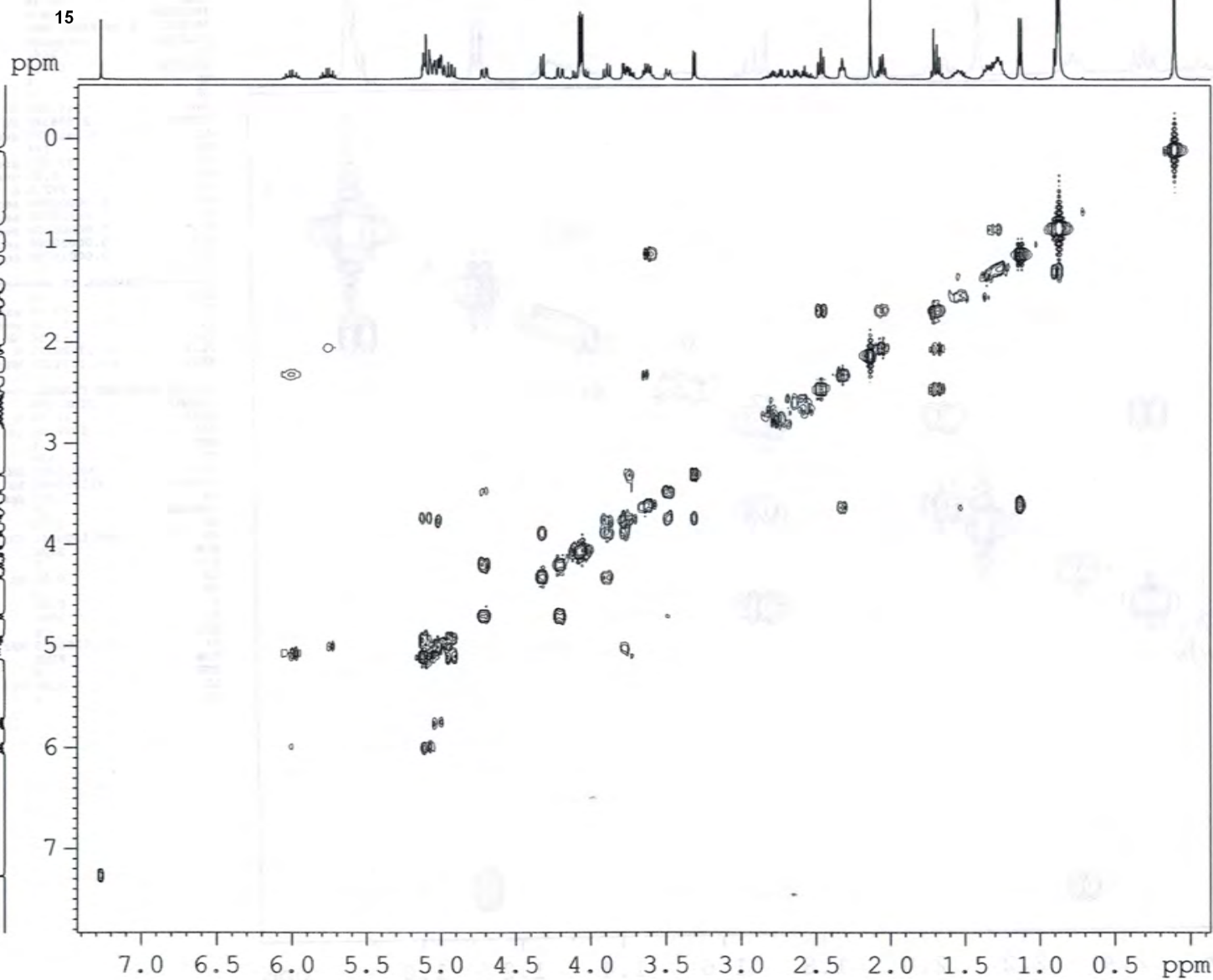


ZGH-Ipom-2-118-B-141029 COSY

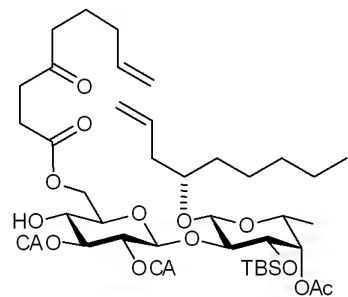
NAME ZGH-Ipom-2-118-B-141029  
 EXPNO 2  
 PROCNO 1  
 Date 20141031  
 Time 16.48  
 INSTRUM spect  
 PROBHD 5 mm PABBO BB-  
 PULPROG cosygpgf  
 TD 2048  
 SOLVENT CDCl3  
 NS 4  
 DS 8  
 SWH 5341.880 Hz  
 FIDRES 2.608340 Hz  
 AQ 0.1917428 sec  
 RG 144  
 DW 93.600 usec  
 DE 6.50 usec  
 TE 292.5 K  
 D0 0.00000300 sec  
 D1 1.48689198 sec  
 D13 0.00000400 sec  
 D16 0.00020000 sec  
 IN0 0.00018720 sec

===== CHANNEL f1 =====  
 NUC1 1H  
 P0 10.00 usec  
 P1 10.00 usec  
 PL1 -3.50 dB  
 PL1W 31.17620277 W  
 SFO1 400.1324057 MHz

===== GRADIENT CHANNEL =====  
 GPNAM1 SINE.100  
 GPZ1 10.00 %  
 P16 1000.00 usec  
 NDO 1  
 TD 128  
 SFO1 400.1324 MHz  
 FIDRES 41.733440 Hz  
 SW 13.350 ppm  
 FrMODE QF  
 SI 1024  
 SF 400.1300040 MHz  
 WDW SINE  
 SSB 0  
 LB 0.00 Hz  
 GB 0  
 PC 1.00  
 SI 1024  
 MC2 QF  
 SF 400.1300033 MHz  
 WDW SINE  
 SSB 0  
 LB 0.00 Hz  
 GB 0







## ZGH-Ipom-2-118-B-141029 HSQC

NAME ZGH-Ipom-2-118-B-141029  
 EXPNO 4  
 PROCNO 1  
 Date 20141031  
 Time 18.04  
 INSTRUM spect  
 PROBHD 5 mm PABBO BB-  
 PULPROG hsqcetgpsi  
 TD 1024  
 SOLVENT CDCl3  
 NS 4  
 DS 16  
 SWH 5341.880 Hz  
 FIDRES 5.216680 Hz  
 AQ 0.0958964 sec  
 RG 2050  
 DW 93.600 usec  
 DE 6.50 usec  
 TE 293.2 K  
 CNST2 145.000000  
 D0 0.0000300 sec  
 D1 1.5000000 sec  
 D4 0.00172414 sec  
 D11 0.03000000 sec  
 D13 0.00000400 sec  
 D16 0.00020000 sec  
 D24 0.00110000 sec  
 IN0 0.00003000 sec  
 ZGPTNS

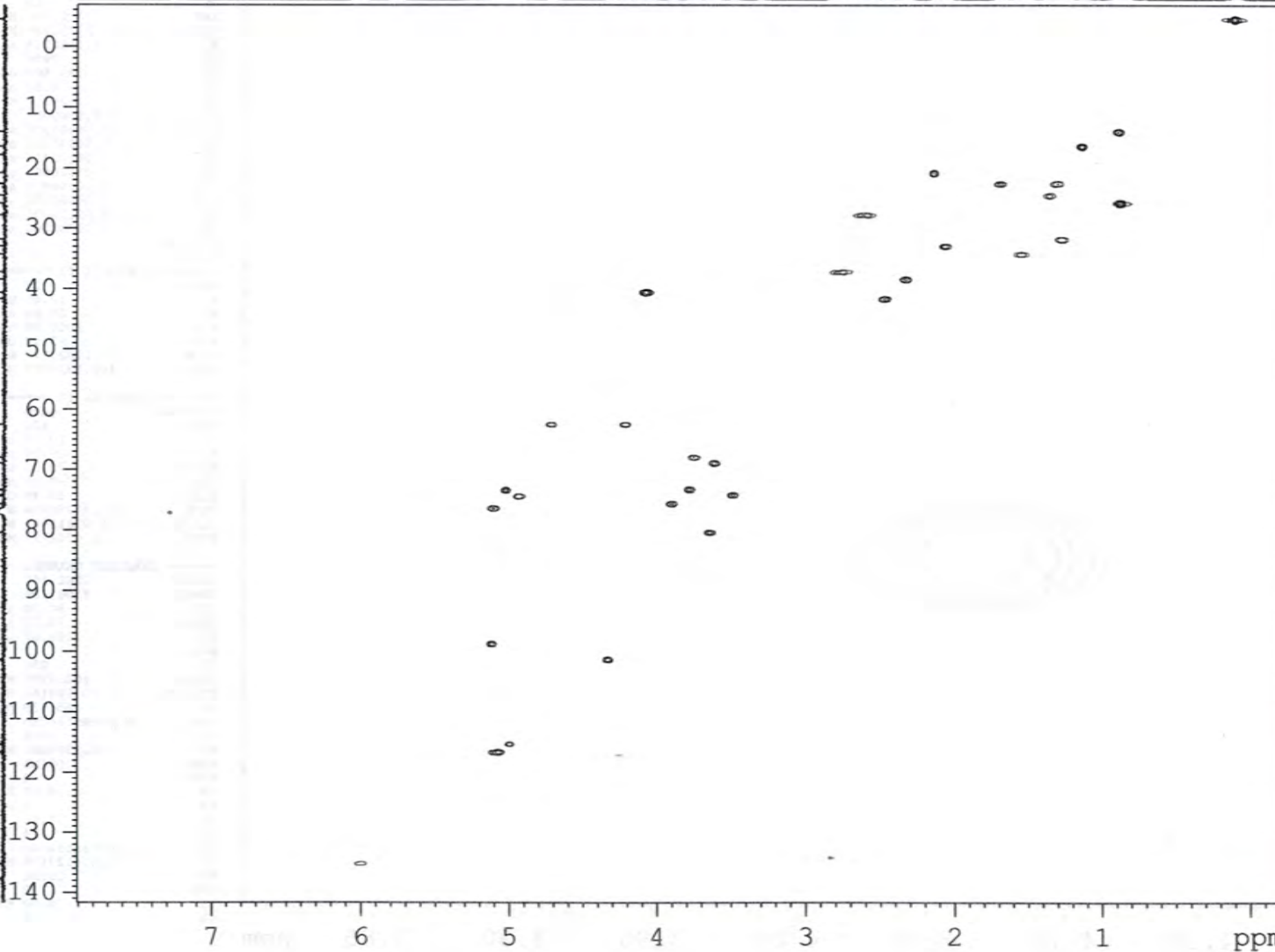
===== CHANNEL f1 =====  
 NUC1 1H  
 P1 10.00 usec  
 P2 20.00 usec  
 P28 1000.00 usec  
 PL1 -3.50 dB  
 PL1W 31.17620277 W  
 SFO1 400.1324057 MHz

===== CHANNEL f2 =====  
 CPDPRG2 garp  
 NUC2 13C  
 P3 10.00 usec  
 P4 20.00 usec  
 PCPD2 75.00 usec  
 PL2 -2.10 dB  
 PL12 15.40 dB  
 PL2W 58.37759399 W  
 PL12W 1.03811681 W  
 SFO2 100.6202727 MHz

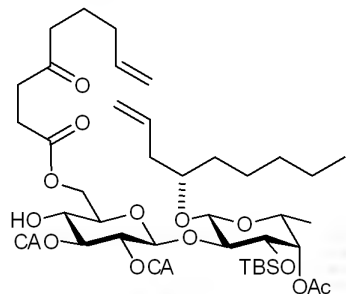
===== GRADIENT CHANNEL =====  
 GPNAM1 SINE.100  
 GPNAM2 SINE.100  
 GPZ1 80.00 %  
 GPZ2 20.10 %  
 P16 1000.00 usec  
 ND0 2  
 TD 256  
 SFO1 100.6203 MHz  
 FIDRES 65.104164 Hz  
 SW 165.639 ppm  
 FMODE Echo-Antiecho  
 SI 1024  
 SF 400.1300000 MHz  
 WDW QSINE  
 SSB 2  
 LB 0.00 Hz  
 GB 0  
 FC 1.00  
 SI 1024  
 MC2 echo-antiecho  
 SF 100.6127690 MHz  
 WDW QSINE  
 SSB 2  
 LB 0.00 Hz  
 GB 0

15

ppm

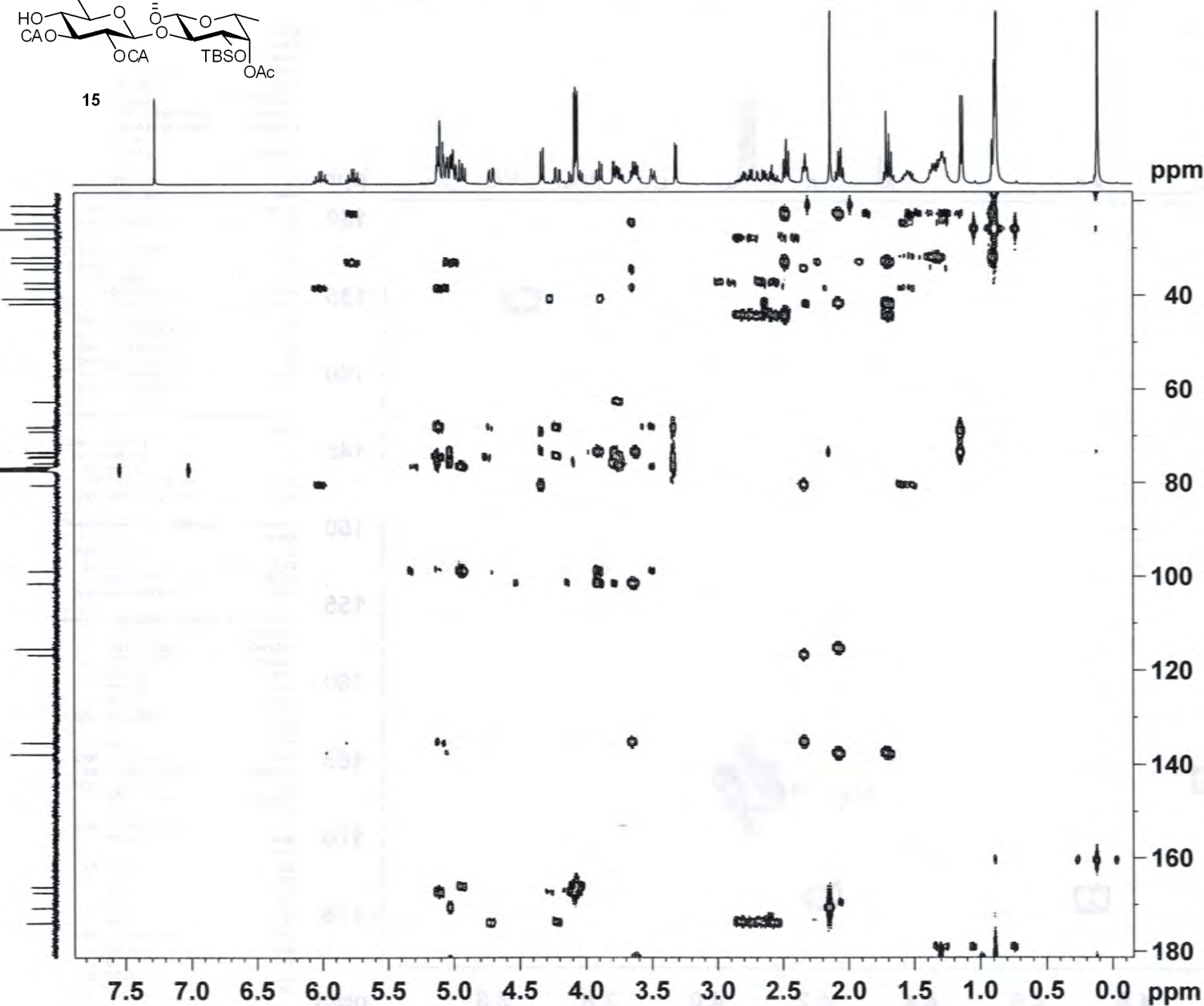


ppm



15

ZGH-IPom-2-118-B-141029 HMBC in CDCl3

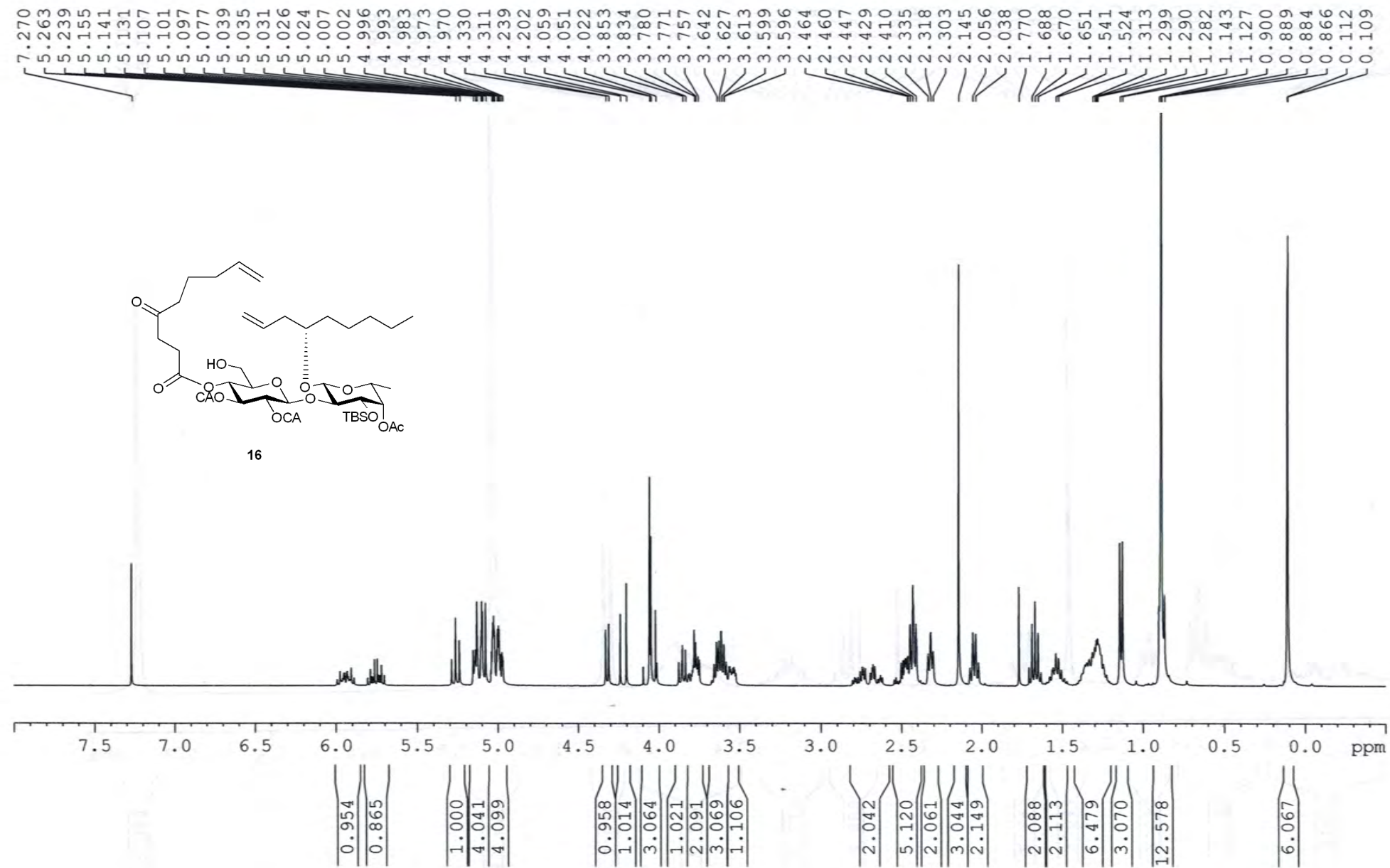
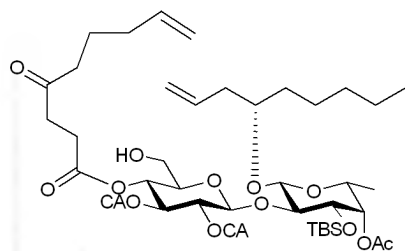


NAME ZGH-IPom-2-118-B-141029  
 EXPNO 5  
 PROCNO 1  
 Date\_ 20141031  
 Time 22.07  
 INSTRUM spect  
 PROBHD 5 mm PABBO BB-  
 PULPROG hmbcgp1pndqf  
 TD 4096  
 SOLVENT CDCl3  
 NS 160  
 DS 16  
 SWH 5208.333 Hz  
 FIDRES 1.271566 Hz  
 AQ 0.3932660 sec  
 RG 2050  
 DW 96.000 usec  
 DE 6.50 usec  
 TE 292.1 K  
 CNST2 145.0000000  
 CNST13 10.0000000  
 D0 0.00000300 sec  
 D1 1.50000000 sec  
 D2 0.00344828 sec  
 D6 0.05000000 sec  
 D16 0.00020000 sec  
 IN0 0.00003010 sec

===== CHANNEL f1 =====  
 NUC1 1H  
 P1 10.00 usec  
 P2 20.00 usec  
 PL1 -3.50 dB  
 PL1W 31.17620277 W  
 SFO1 400.1325208 MHz

===== CHANNEL f2 =====  
 NUC2 13C  
 P3 10.00 usec  
 PL2 -2.10 dB  
 PL2W 58.37759399 W  
 SFO2 100.6228138 MHz

===== GRADIENT CHANNEL =====  
 GPNAM1 SINE.100  
 GPNAM2 SINE.100  
 GPNAM3 SINE.100  
 GPZ1 50.00 %  
 GPZ2 30.00 %  
 GPZ3 40.10 %  
 P16 1000.00 usec  
 ND0 2  
 TD 128  
 SFO1 100.6228 MHz  
 FIDRES 129.709091 Hz  
 SW 165.000 ppm  
 FMODE QF  
 SI 2048  
 SF 400.1300000 MHz  
 WDW SINE  
 SSB 0  
 LB 0.00 Hz  
 GB 0  
 PC 4.00  
 SI 1024  
 MC2 QF  
 SF 100.6127690 MHz  
 WDW SINE  
 SSB 0  
 LB 0.00 Hz  
 GB 0

ZGH-*Ipom*-2-118-A-141029 (2) 1H in CDCl<sub>3</sub>

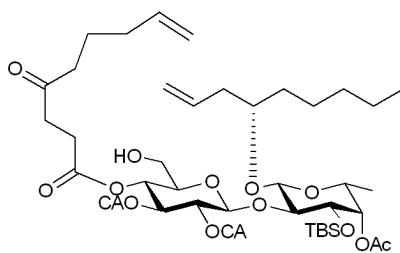
ZGH-*Ipom*-2-118-A-141029 (2)  $^{13}\text{C}$  in  $\text{CDCl}_3$ 

— 208.625

 171.847  
 170.674  
 167.290  
 166.004

 137.761  
 134.777

 117.100  
 115.363

 101.065  
 98.612  
 80.172  
 77.318  
 77.204  
 77.000  
 76.682  
 75.799  
 74.223  
 73.990  
 73.850  
 73.287  
 68.898  
 68.442  
 61.263  
 41.533  
 40.695  
 40.585  
 38.318  
 36.909  
 34.312  
 32.959  
 31.751  
 27.693  
 25.806  
 24.686  
 22.653  
 22.579  
 20.930  
 17.803  
 16.446  
 14.044  
 -4.396  
 -4.546


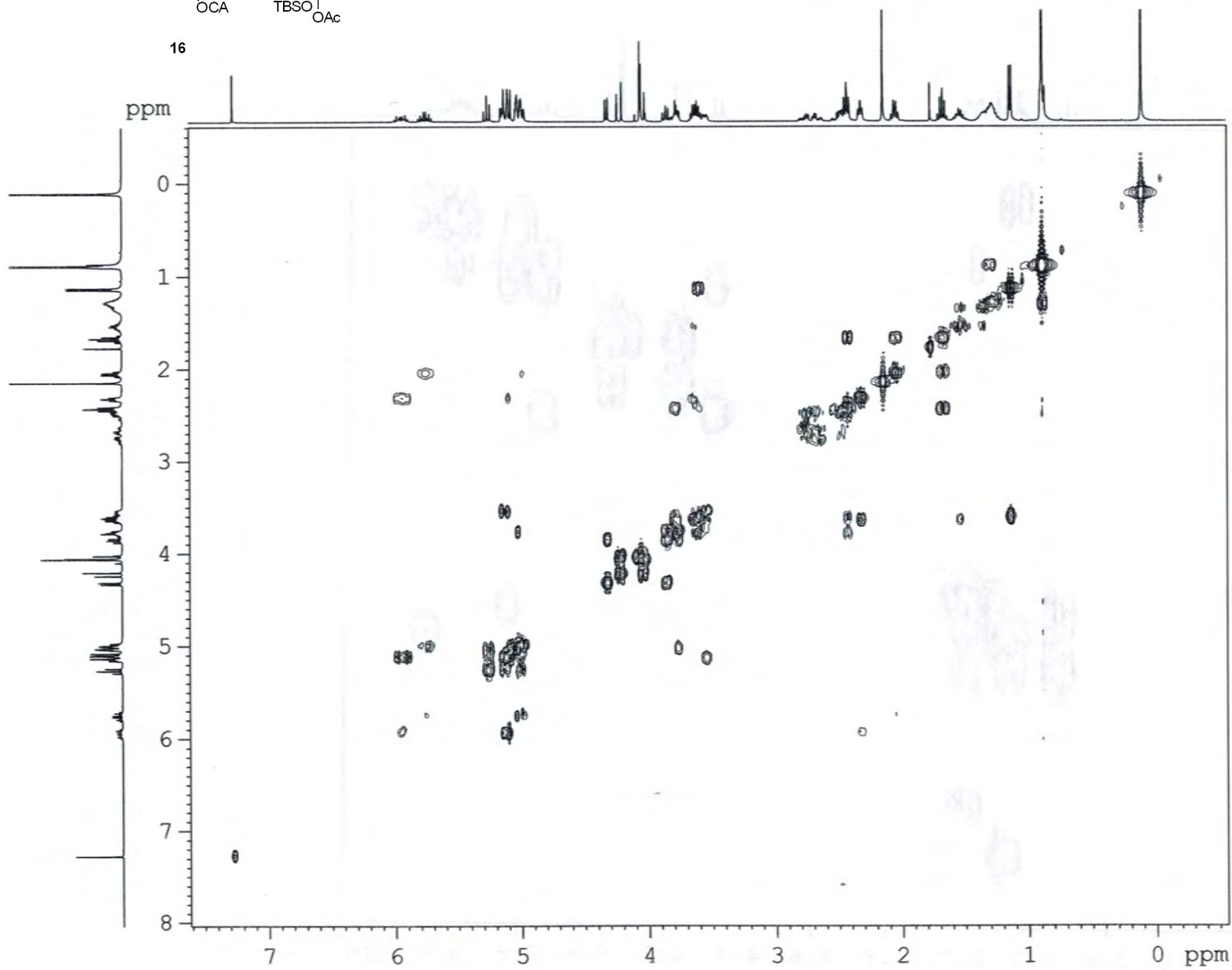
16

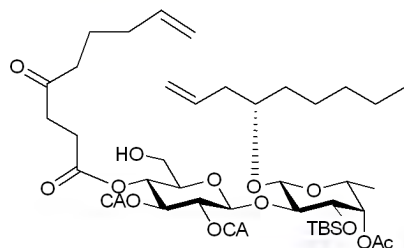
210 200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 ppm

ZGH-*Ipom-2-118-A-141029* (2) COSY-9711-5-m-07-03

16

ppm





## ZGH-Ipom-2-118-A-141029 (2) HSQC

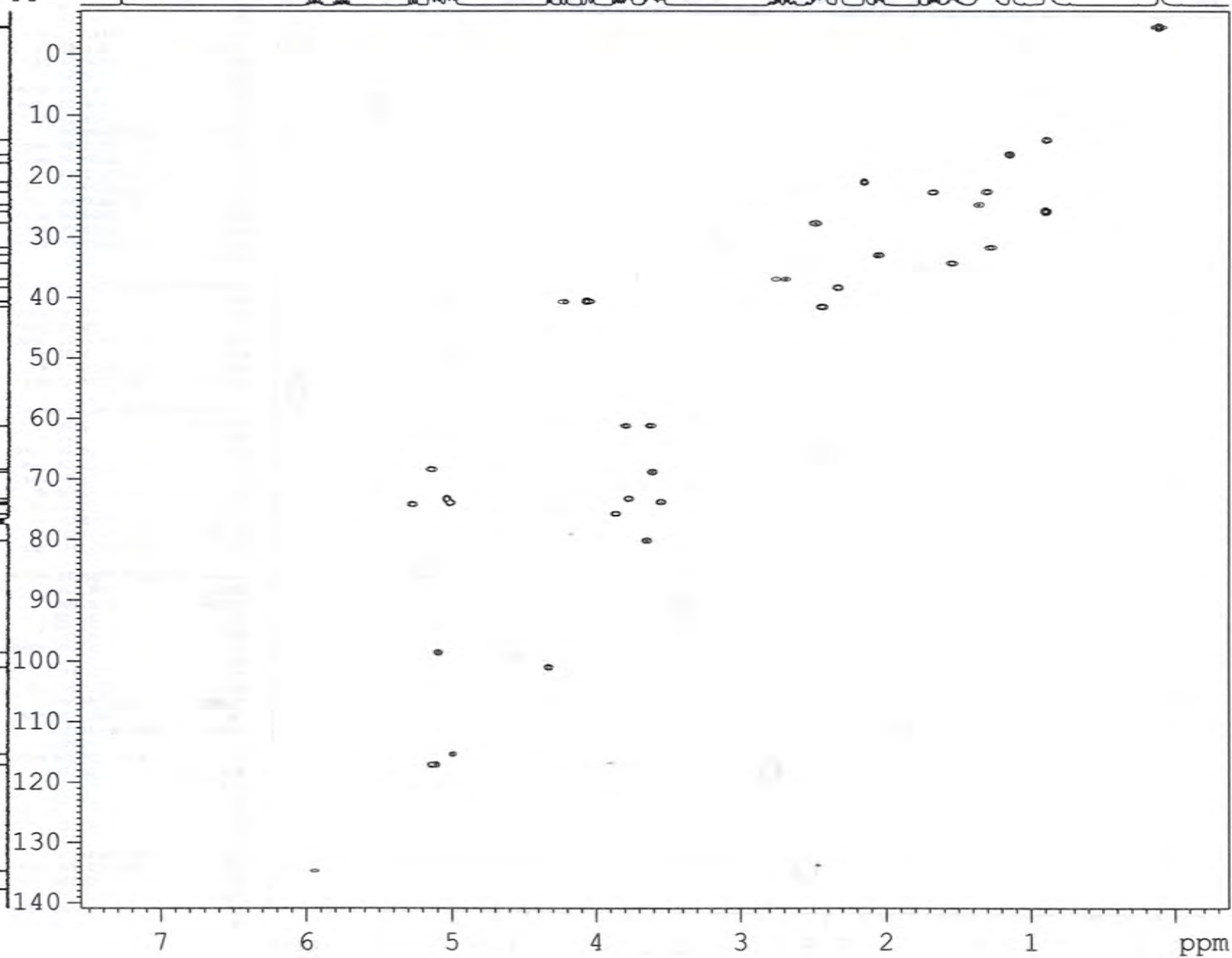
NAME ZGH-Ipom-2-118-A-141029 (2)  
 EXPNO 4  
 PROCNO 1  
 Date\_ 20141104  
 Time\_ 1.05  
 INSTRUM spect  
 PROBHD 5 mm FABBO BB-  
 PULPROG hsqcetgpsi  
 TD 1024  
 SOLVENT CDCl3  
 NS 8  
 DS 16  
 SWH 5341.880 Hz  
 FIDRES 5.216680 Hz  
 AQ 0.0958964 sec  
 RG 2050  
 DW 93.600 usec  
 DE 6.50 usec  
 TE 292.9 K  
 CNST2 145.0000000  
 DO 0.0000300 sec  
 D1 1.5000000 sec  
 D4 0.00172414 sec  
 D11 0.03000000 sec  
 D13 0.00000400 sec  
 D16 0.00020000 sec  
 D24 0.00110000 sec  
 IN0 0.00003000 sec  
 ZGPTNS

===== CHANNEL f1 =====  
 NUC1 1H  
 P1 10.00 usec  
 P2 20.00 usec  
 P28 1000.00 usec  
 PL1 -3.50 dB  
 PL1W 31.17620277 W  
 SFO1 400.1324057 MHz

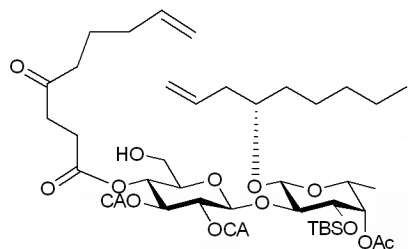
===== CHANNEL f2 =====  
 CPDPRG2 garp  
 NUC2 13C  
 P3 10.00 usec  
 P4 20.00 usec  
 PCPD2 75.00 usec  
 PL2 -2.10 dB  
 PL12 15.40 dB  
 PL2W 58.37759399 W  
 PL12W 1.03811681 W  
 SFO2 100.6202727 MHz

===== GRADIENT CHANNEL =====  
 GPNAM1 SINE.100  
 GPNAM2 SINE.100  
 GPZ1 80.00 %  
 GPZ2 20.10 %  
 F16 1000.00 usec  
 ND0 2  
 TD 256  
 SFO1 100.6203 MHz  
 FIDRES 65.104164 Hz  
 SW 165.639 ppm  
 FvMODE Echo-Antiecho  
 SI 1024  
 SF 400.1300000 MHz  
 WDW QSINE  
 SSB 2  
 LB 0.00 Hz  
 GB 0  
 PC 1.00  
 SI 1024  
 MC2 echo-antiecho  
 SF 100.6127690 MHz  
 WDW QSINE  
 SSB 2  
 LB 0.00 Hz  
 GB 0

ppm



ppm



HMBC

ZGH-Ipom-2-118-A-141029 (2) in CDCl<sub>3</sub>

NAME ZGH-Ipom-2-118-A-141029 (2)  
 EXPNO 5  
 PROCNO 1  
 Date\_ 20141104  
 Time\_ 2.04  
 INSTRUM spect  
 PROBHD 5 mm PABBO BB-  
 PULPROG hmbcgp1pndqf  
 TD 4096  
 SOLVENT CDCl3  
 NS 90  
 DS 16  
 SWH 5208.333 Hz  
 FIDRES 1.271566 Hz  
 AQ 0.3932660 sec  
 RG 2050  
 DW 96.000 usec  
 DE 6.50 usec  
 TE 292.7 K  
 CNST2 145.000000  
 CNST13 10.000000  
 D0 0.00000300 sec  
 D1 1.50000000 sec  
 D2 0.00344828 sec  
 D6 0.05000000 sec  
 D16 0.00020000 sec  
 IN0 0.00003010 sec

===== CHANNEL f1 =====  
 NUC1 1H  
 P1 10.00 usec  
 P2 20.00 usec  
 PL1 -3.50 dB  
 PL1W 31.17620277 W  
 SFO1 400.1325208 MHz

===== CHANNEL f2 =====  
 NUC2 13C  
 P3 10.00 usec  
 PL2 -2.10 dB  
 PL2W 58.37759399 W  
 SFO2 100.6228138 MHz

===== GRADIENT CHANNEL =====  
 GPNAM1 SINE.100  
 GPNAM2 SINE.100  
 GPNAM3 SINE.100  
 GPZ1 50.00 %  
 GPZ2 30.00 %  
 GPZ3 40.10 %  
 P16 1000.00 usec  
 ND0 2  
 TD 128  
 SFO1 100.6228 MHz  
 FIDRES 129.709091 Hz  
 SW 165.000 ppm  
 FnMODE QF  
 SI 2048  
 SF 400.1300000 MHz  
 WDW SINE  
 SSB 0  
 LB 0.00 Hz  
 GB 0  
 PC 4.00  
 SI 1024  
 MC2 QF  
 SF 100.6127690 MHz  
 WDW SINE  
 SSB 0  
 LB 0.00 Hz  
 GB 0

ppm

40

60

80

100

120

140

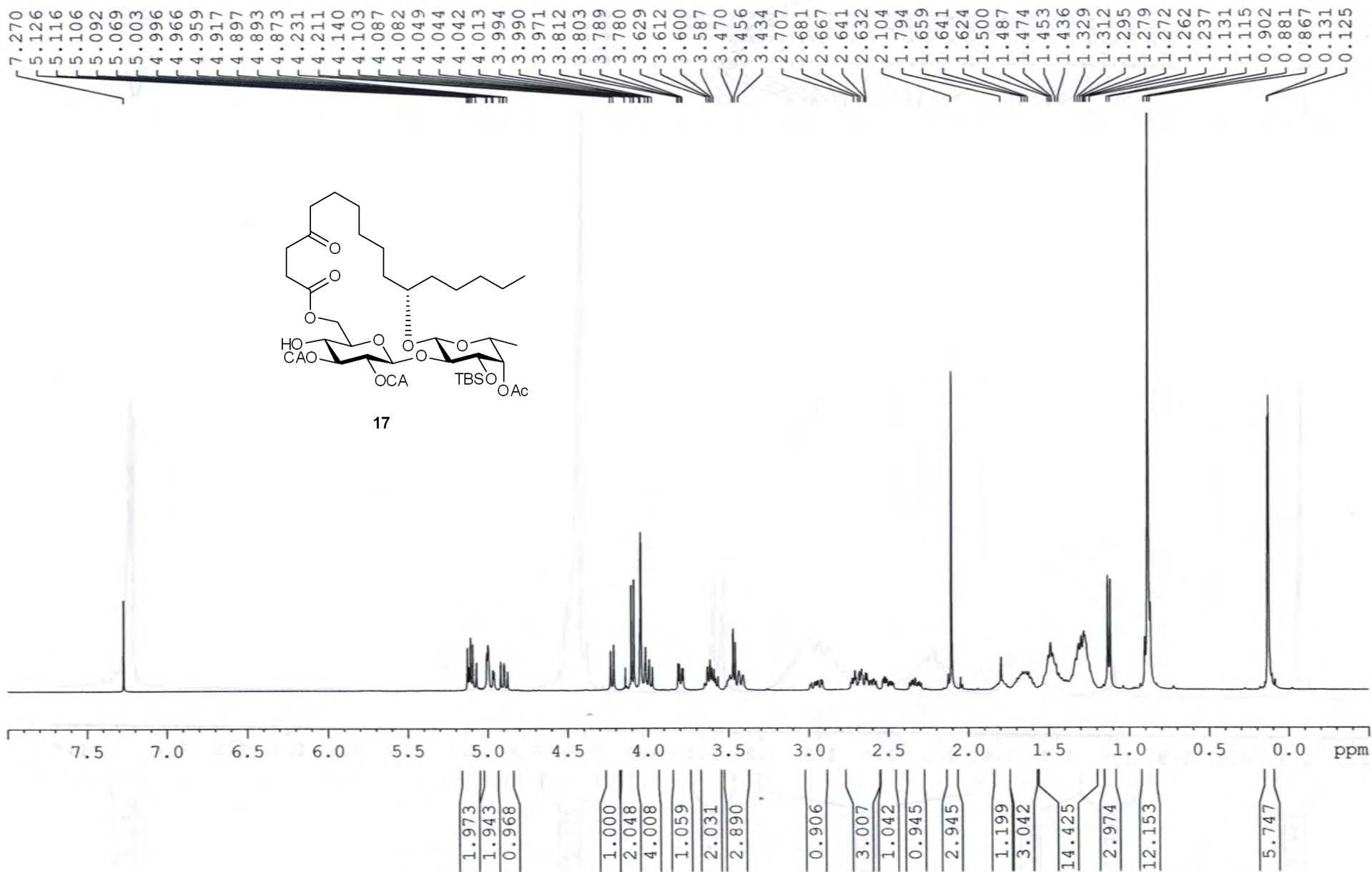
160

180

ppm

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 0.5 0.0

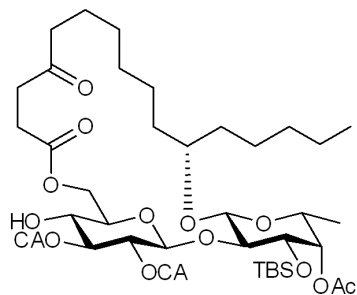
16

ZGH-*Ipom*-2-126-A-141112 1H in CDCl<sub>3</sub>



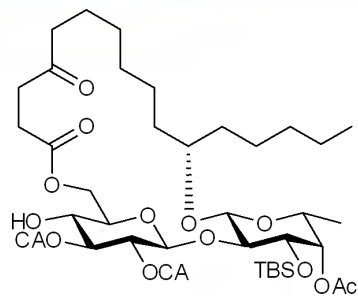
ZGH-*Ipom*-2-126-A-141112 13C in CDCl<sub>3</sub>

— 211.797

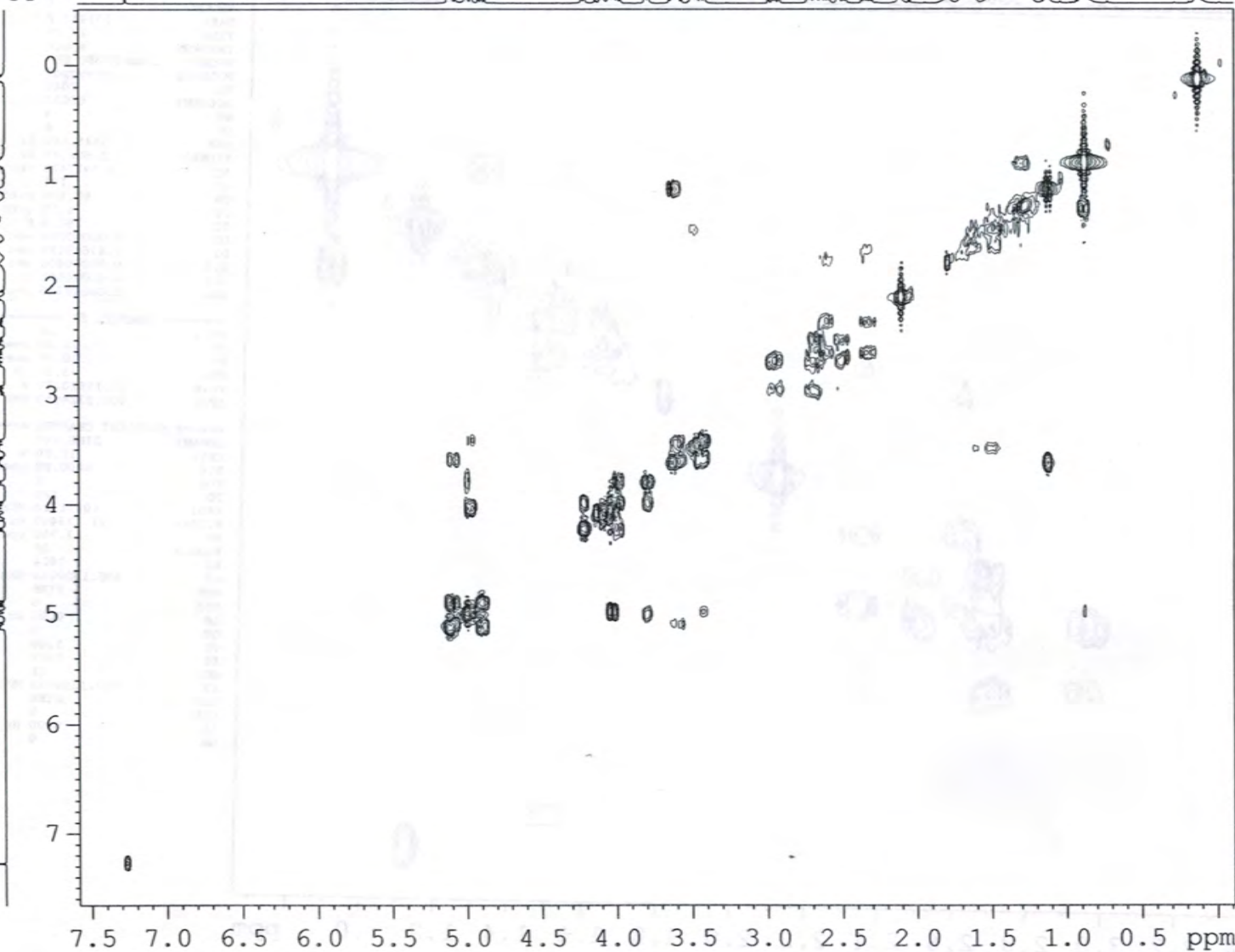
172.588  
170.659  
167.074  
166.245102.118  
98.751  
82.825  
77.311  
77.196  
76.993  
76.676  
76.316  
74.396  
74.242  
74.069  
74.036  
73.450  
68.883  
67.569  
62.521  
42.539  
40.719  
40.669  
37.156  
34.922  
34.062  
31.994  
29.264  
29.013  
28.968  
25.800  
24.875  
24.712  
24.243  
22.592  
20.866  
17.665  
16.552  
14.037

17

210 200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 ppm



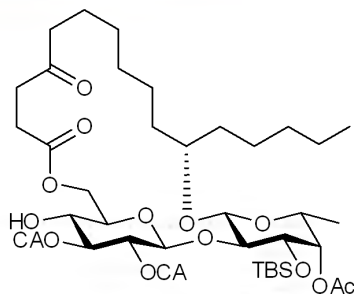
ZGH-Ipom-2-126-A-141112 COSY

17  
ppm

NAME ZGH-Ipom-2-126-A-141112  
 EXPNO 2  
 PROCNO 1  
 Date\_ 20141112  
 Time\_ 17.28  
 INSTRUM spect  
 PROBHD 5 mm PABBO BB-  
 PULPROG cosygpcqf  
 TD 2048  
 SOLVENT CDCl3  
 NS 4  
 DS 8  
 SWH 5341.880 Hz  
 FIDRES 2.608340 Hz  
 AQ 0.1917428 sec  
 RG 101  
 DW 93.600 usec  
 DE 6.50 usec  
 TE 292.3 K  
 DO 0.0000300 sec  
 D1 1.48689198 sec  
 D13 0.0000400 sec  
 D16 0.00020000 sec  
 INO 0.00018720 sec

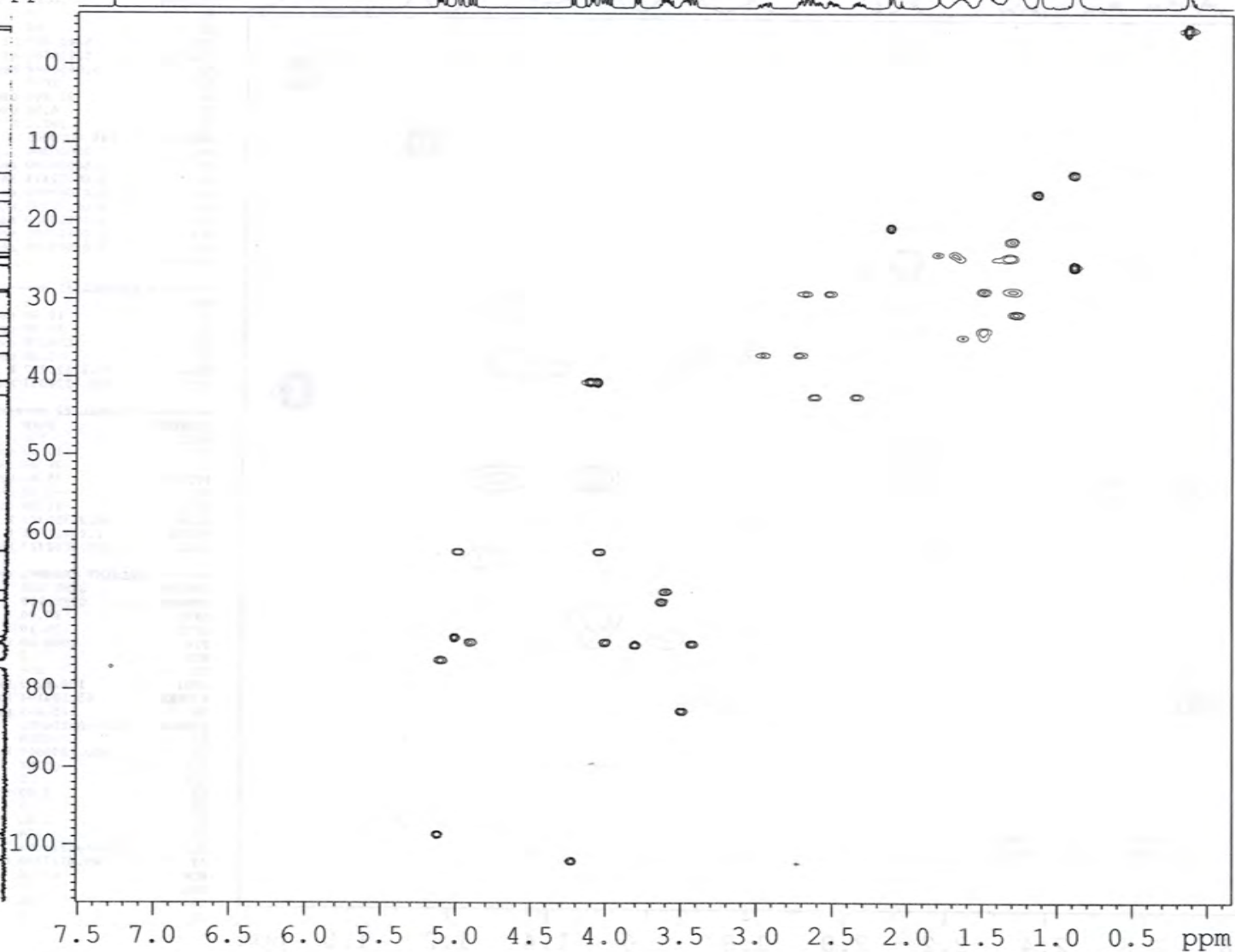
----- CHANNEL f1 -----  
 NUC1 1H  
 P0 10.00 usec  
 P1 10.00 usec  
 PL1 -3.50 dB  
 PL1W 31.17620277 W  
 SFO1 400.1324057 MHz

----- GRADIENT CHANNEL -----  
 GPNAM1 SINE.100  
 GPZ1 10.00 s  
 P16 1000.00 usec  
 NDO 1  
 TD 128  
 SFO1 400.1324 MHz  
 FIDRES 41.733440 Hz  
 SW 13.350 ppm  
 FhMODE QF  
 SI 1024  
 SF 400.1300040 MHz  
 WDW SINE  
 SSB 0  
 LB 0.00 Hz  
 GB 0  
 PC 1.00  
 SI 1024  
 MC2 QF  
 SF 400.1300033 MHz  
 WDW SINE  
 SSB 0  
 LB 0.00 Hz  
 GB 0



## ZGH-Ipom-2-126-A-141112 HSQC

ppm 17



```

NAME      ZGH-Ipom-2-126-A-141112
EXPNO     4
PROCNO    1
Date_     20141113
Time      1.01
INSTRUM   spect
PROBHD    5 mm PABBO BB-
PULPROG   hsqcetgps1
TD         1024
SOLVENT   CDCl3
NS         8
DS         16
SWH        5341.880 Hz
FIDRES     5.216680 Hz
AQ         0.0958964 sec
RG         2050
DW         93.600 usec
DE         6.50 usec
TE         293.1 K
CNST2     145.0000000
D0         0.000003000 sec
D1         1.500000000 sec
D4         0.00172414 sec
D11        0.030000000 sec
D13        0.000004000 sec
D16        0.000200000 sec
D24        0.001100000 sec
IN0        0.000030000 sec
ZGOPTNS

```

```

===== CHANNEL f1 =====
NUC1      1H
P1        10.00 usec
P2        20.00 usec
P28       1000.00 usec
PL1       -3.50 dB
PL1W      31.17620277 W
SFO1      400.1324057 MHz

```

```

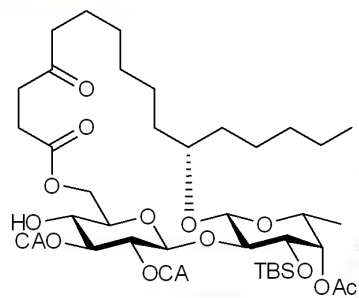
===== CHANNEL f2 =====
CPDPRG2   garp
NUC2      13C
P3        10.00 usec
P4        20.00 usec
PCPD2     75.00 usec
PL2       -2.10 dB
PL12      15.40 dB
PL2W      58.37759399 W
PL12W     1.03811681 W
SFO2      100.6202727 MHz

```

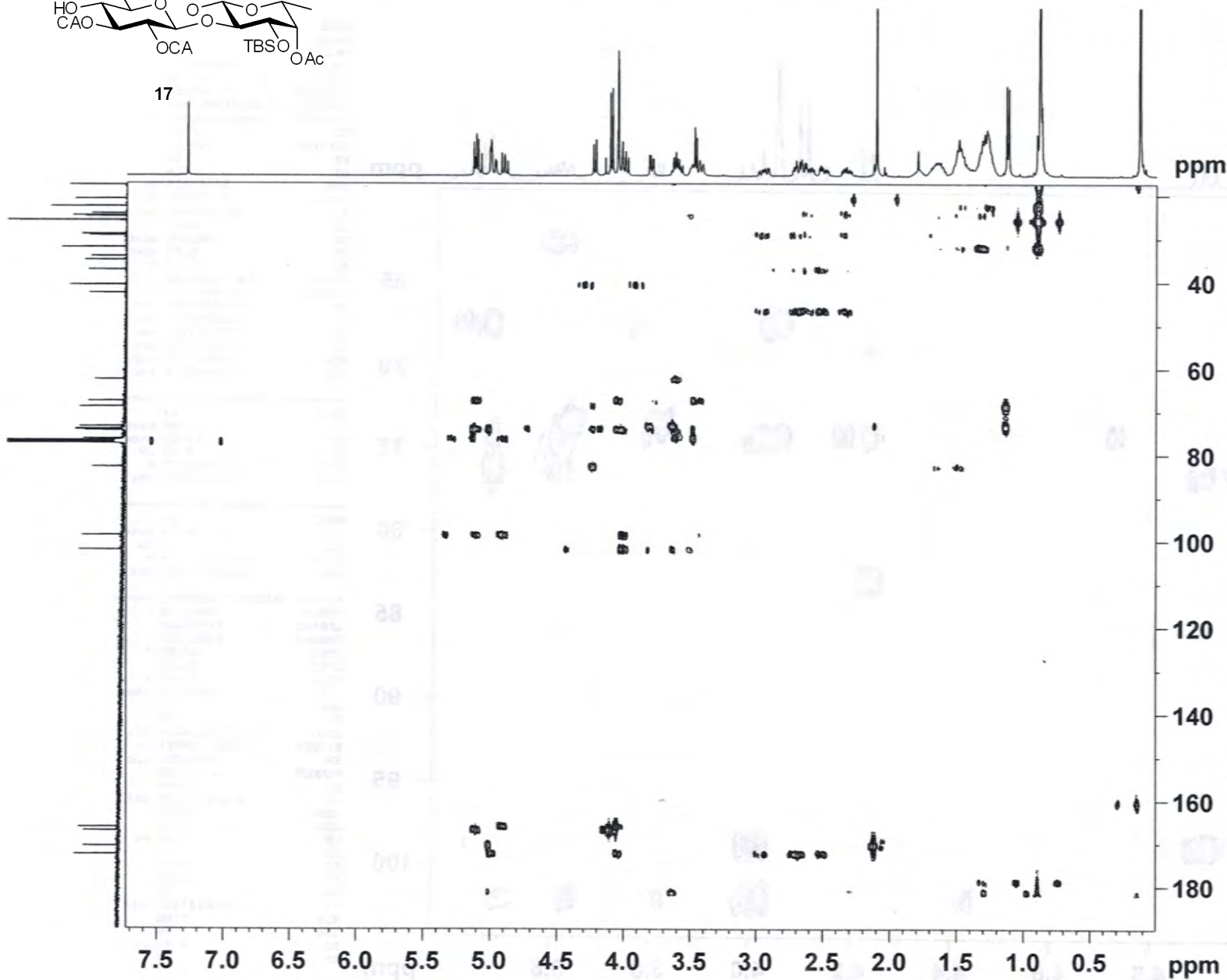
```

===== GRADIENT CHANNEL =====
GPNAM1    SINE.100
GPNAM2    SINE.100
GPZ1      80.00 %
GPZ2      20.10 %
P16       1000.00 usec
ND0       2
TD        256
SFO1      100.6203 MHz
FIDRES    65.104164 Hz
SW        165.639 ppm
FnMODE    Echo-Antiecho
SI        1024
SF        400.1300000 MHz
WDW       QSINE
SSB       2
LB        0.00 Hz
GB        0
PC        1.00
SI        1024
MC2       echo-antiecho
SF        100.6127690 MHz
WDW       QSINE
SSB       2
LB        0.00 Hz
GB        0

```



ZGH-Ipom-2-126-A-141112 HMBC in CDCL3

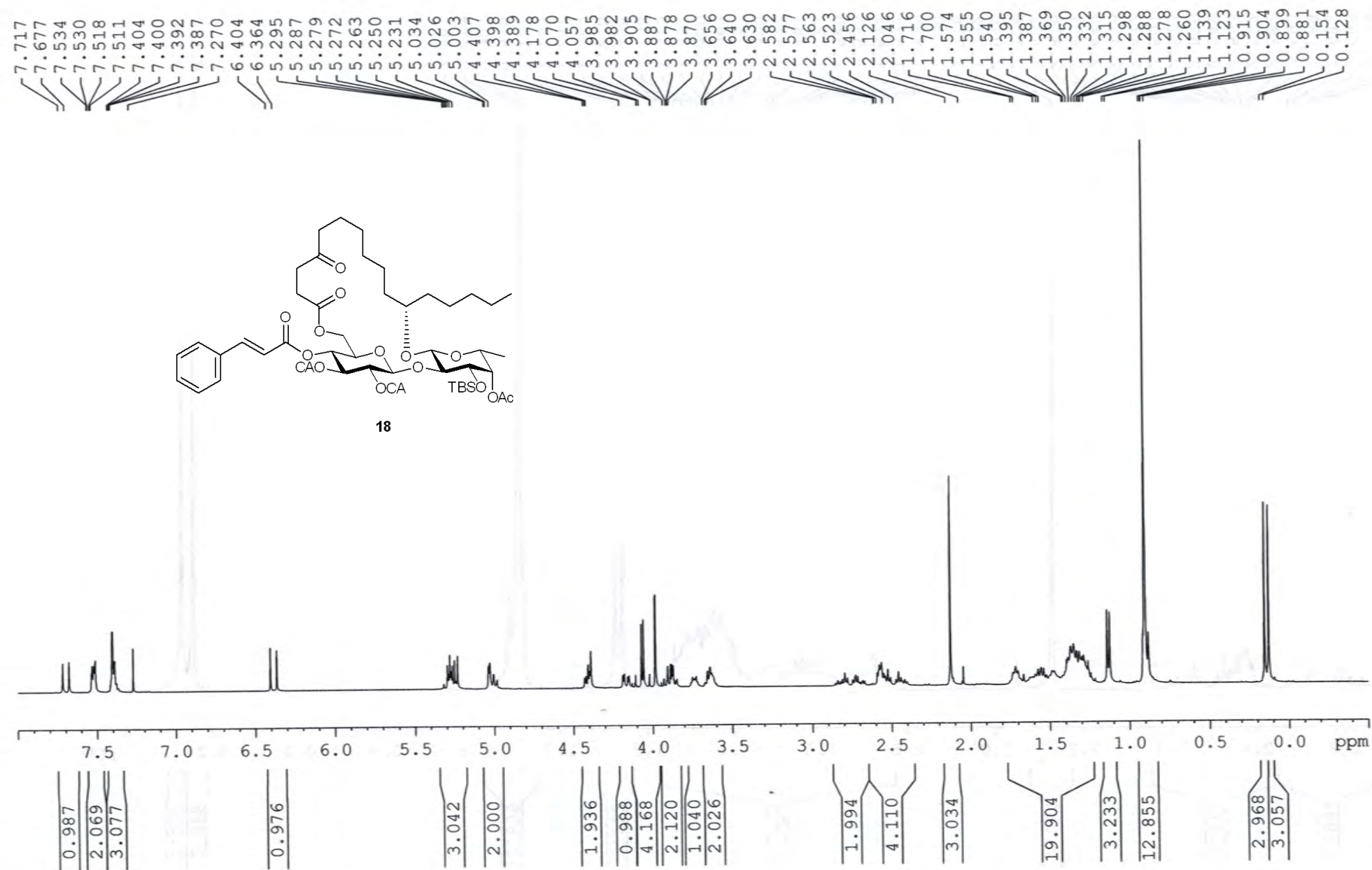


NAME ZGH-Ipom-2-126-A-141112  
 EXPNO 5  
 PROCNO 1  
 Date\_ 20141113  
 Time\_ 1.58  
 INSTRUM spect  
 PROBHD 5 mm PABBO BB-  
 PULPROG hmbcgp1pndgf  
 TD 4096  
 SOLVENT CDCl3  
 NS 64  
 DS 16  
 SWH 5208.333 Hz  
 FIDRES 1.271566 Hz  
 AQ 0.3932660 sec  
 RG 2050  
 DW 96.000 usec  
 DE 6.50 usec  
 TE 292.6 K  
 CNST2 145.0000000  
 CNST13 10.0000000  
 D0 0.00000300 sec  
 D1 1.50000000 sec  
 D2 0.00344828 sec  
 D6 0.05000000 sec  
 D16 0.00020000 sec  
 IN0 0.00003010 sec

===== CHANNEL f1 =====  
 NUC1 1H  
 P1 10.00 usec  
 P2 20.00 usec  
 PL1 -3.50 dB  
 PL1W 31.17620277 W  
 SFO1 400.1325208 MHz

===== CHANNEL f2 =====  
 NUC2 13C  
 P3 10.00 usec  
 PL2 -2.10 dB  
 PL2W 58.37759399 W  
 SFO2 100.6228138 MHz

===== GRADIENT CHANNEL =====  
 GPNAM1 SINE.100  
 GPNAM2 SINE.100  
 GPNAM3 SINE.100  
 GPZ1 50.00 %  
 GPZ2 30.00 %  
 GPZ3 40.10 %  
 P16 1000.00 usec  
 ND0 2  
 TD 128  
 SFO1 100.6228 MHz  
 FIDRES 129.709091 Hz  
 SW 165.000 ppm  
 FnMODE QF  
 SI 2048  
 SF 400.1300000 MHz  
 WDW SINE  
 SSB 0  
 LB 0.00 Hz  
 GB 0  
 PC 4.00  
 SI 1024  
 MC2 QF  
 SF 100.6127690 MHz  
 WDW SINE  
 SSB 0  
 LB 0.00 Hz  
 GB 0

ZGH-*Ipom*-2-127-A-141114 1H in CDCl<sub>3</sub>

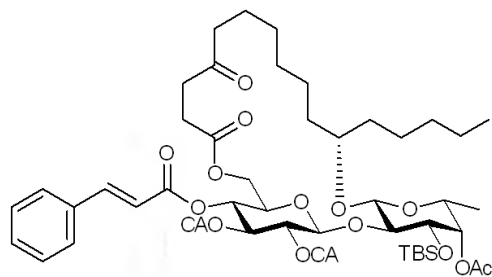
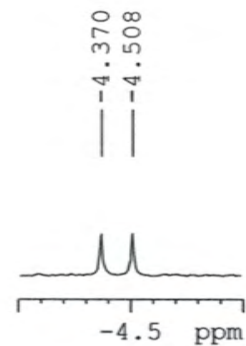
ZGH-*Ipom*-2-127-A-141114 <sup>13</sup>C in CDCl<sub>3</sub>

— 209.674

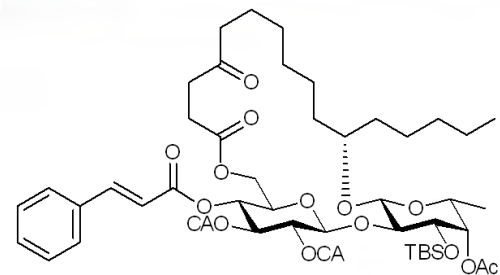
171.666  
170.632  
167.020  
165.987  
165.272

— 146.916

133.812  
130.820  
128.924  
128.339  
116.099  
100.698  
98.672  
80.603  
77.320  
77.206  
76.685  
76.181  
74.751  
74.266  
73.624  
73.466  
71.644  
68.946  
68.563  
62.394  
60.356  
49.130  
41.818  
40.522  
40.403  
37.092  
36.591  
35.241  
34.330  
33.924  
32.830  
31.950  
29.193  
28.700  
28.485  
27.921  
25.926  
24.912  
24.647  
24.510  
24.393  
23.595  
23.315  
22.612  
22.202

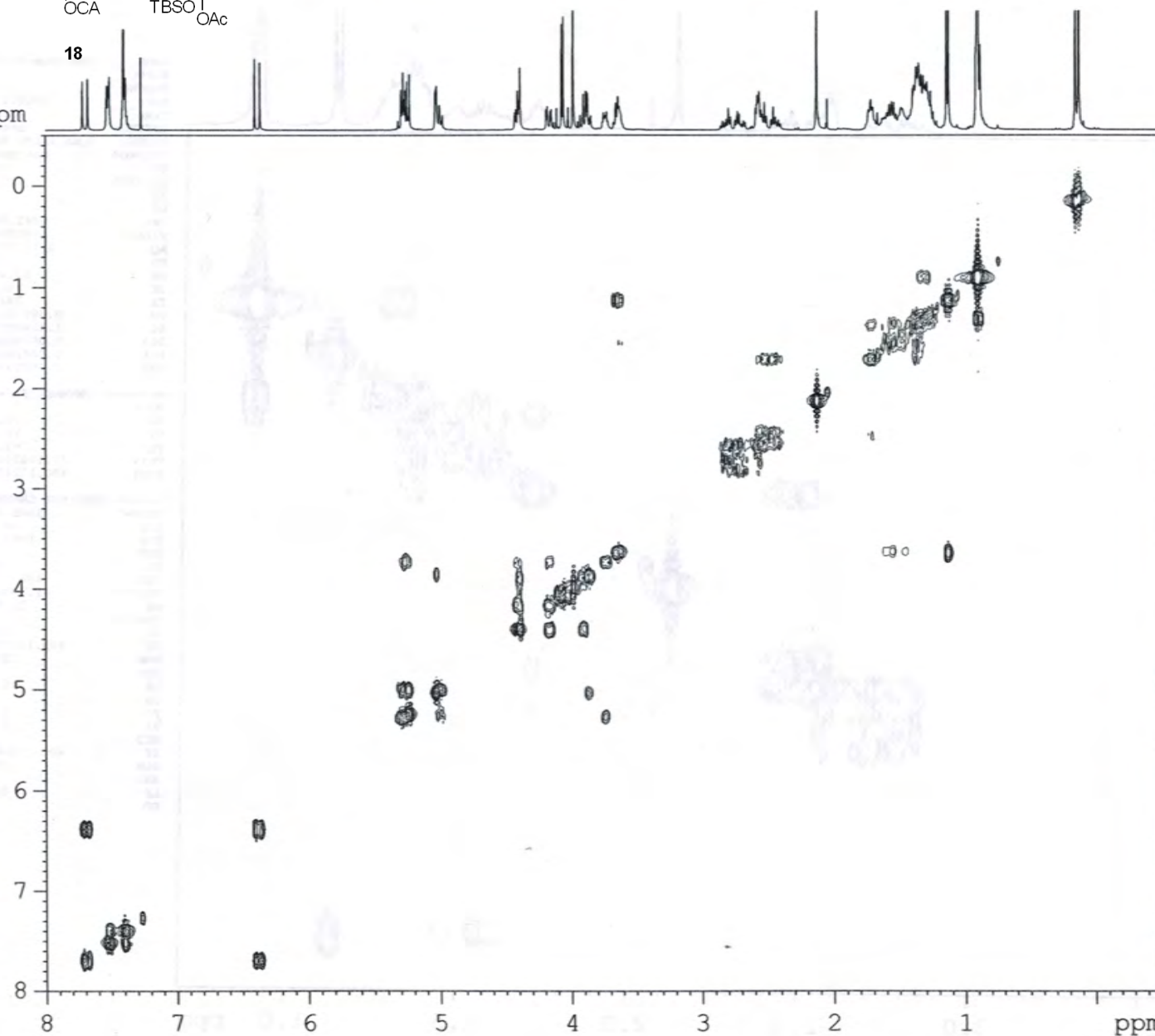
**18**

210 200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 ppm

ZGH-*Ipom*-2-127-A-141114 COSY

18

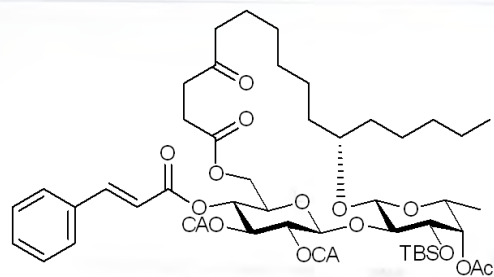
ppm



NAME ZGH-*Ipom*-2-127-A-141114  
 EXPNO 2  
 PROCNO 1  
 Date\_ 20141114  
 Time\_ 22.54  
 INSTRUM spect  
 PROBHD 5 mm PABBO BB-  
 PULPROG cosygpgf  
 TD 2048  
 SOLVENT CDCl3  
 NS 8  
 DS 8  
 SWH 5341.880 Hz  
 FIDRES 2.608340 Hz  
 AQ 0.1917428 sec  
 RG 101  
 DW 93.600 usec  
 DE 6.50 usec  
 TE 292.4 K  
 D0 0.00000300 sec  
 D1 1.48689198 sec  
 D13 0.00000400 sec  
 D16 0.00020000 sec  
 IN0 0.00018720 sec

===== CHANNEL f1 =====  
 NUC1 1H  
 P0 10.00 usec  
 P1 10.00 usec  
 PL1 -3.50 dB  
 PL1W 31.17620277 W  
 SF01 400.1324057 MHz

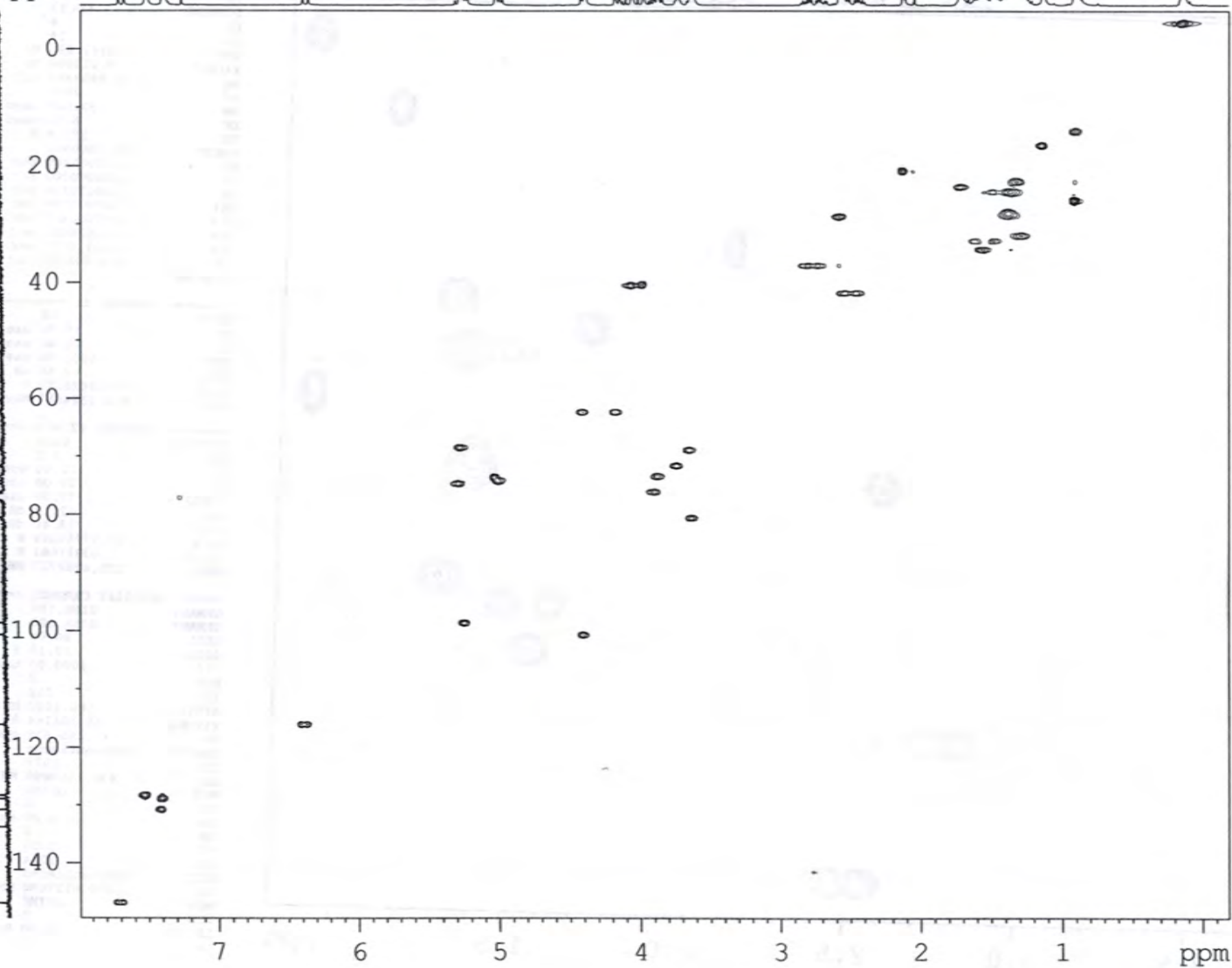
===== GRADIENT CHANNEL =====  
 GPNAM1 SINE.100  
 GPZ1 10.00 %  
 P16 1000.00 usec  
 ND0 1  
 TD 128  
 SF01 400.1324 MHz  
 FIDRES 41.733440 Hz  
 SW 13.350 ppm  
 FhMODE QF  
 SI 1024  
 SF 400.1300040 MHz  
 WDW SINE  
 SSB 0  
 LB 0.00 Hz  
 GB 0  
 PC 1.00  
 SI 1024  
 MC2 QF  
 SF 400.1300033 MHz  
 WDW SINE  
 SSB 0  
 LB 0.00 Hz  
 GB 0



18

ZGH-Ipom-2-127-A-141114 HSQC

ppm



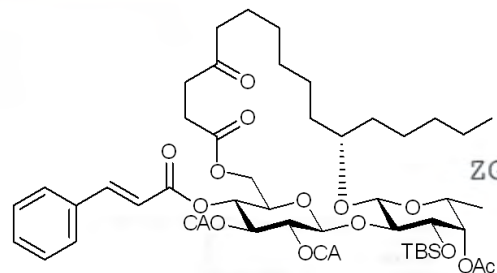
NAME ZGH-Ipom-2-127-A-141114  
 EXPNO 4  
 PROCNO 1  
 Date\_ 20141115  
 Time\_ 3.07  
 INSTRUM spect  
 PROBHD 5 mm PABBO BB-  
 PULPROG hsqcetgpsi  
 TD 1024  
 SOLVENT CDCl3  
 NS 8  
 DS 16  
 SWH 5341.880 Hz  
 FIDRES 5.216680 Hz  
 AQ 0.0958964 sec  
 RG 2050  
 DW 93.600 usec  
 DE 6.50 usec  
 TE 293.4 K  
 CNST2 145.0000000  
 D0 0.00000300 sec  
 D1 1.50000000 sec  
 D4 0.00172414 sec  
 D11 0.03000000 sec  
 D13 0.00000400 sec  
 D16 0.00020000 sec  
 D24 0.00110000 sec  
 IN0 0.00003000 sec  
 ZGPTNS

===== CHANNEL f1 =====  
 NUC1  $^1\text{H}$   
 P1 10.00 usec  
 P2 20.00 usec  
 P28 1000.00 usec  
 PL1 -3.50 dB  
 PL1W 31.17620277 W  
 SFO1 400.1324057 MHz

===== CHANNEL f2 =====  
 CPDPRG2 garp  
 NUC2  $^{13}\text{C}$   
 P3 10.00 usec  
 P4 20.00 usec  
 PCPD2 75.00 usec  
 PL2 -2.10 dB  
 PL12 15.40 dB  
 PL2W 58.37759399 W  
 PL12W 1.03811681 W  
 SFO2 100.6202727 MHz

===== GRADIENT CHANNEL =====  
 GPNAM1 SINE.100  
 GPNAM2 SINE.100  
 GP21 80.00 %  
 GP22 20.10 %  
 P16 1000.00 usec  
 ND0 2  
 TD 256  
 SFO1 100.6203 MHz  
 FIDRES 65.104164 Hz  
 SW 165.639 ppm  
 FnMODE Echo-Antiecho  
 SI 1024  
 SF 400.1300000 MHz  
 WDW QSINE  
 SSB 2  
 LB 0.00 Hz  
 GB 0  
 PC 1.00  
 SI 1024  
 MC2 echo-antiecho  
 SF 100.6127690 MHz  
 WDW QSINE  
 SSB 2  
 LB 0.00 Hz  
 GB 0





18

ZGH-Ipom-2-127-A-141114 HMBC in CDCL3

NAME ZGH-Ipom-2-127-A-141114  
 EXPNO 5  
 PROCNO 1  
 Date 20141115  
 Time 4.05  
 INSTRUM spect  
 PROBHD 5 mm PABBO BB-  
 PULPROG hmbcgp1pndqf  
 TD 4096  
 SOLVENT CDCl3  
 NS 65  
 DS 16  
 SWH 5208.333 Hz  
 FIDRES 1.271566 Hz  
 AQ 0.3932660 sec  
 RG 2050  
 DW 96.000 usec  
 DE 6.50 usec  
 TE 293.0 K  
 CNST2 145.0000000  
 CNST13 10.0000000  
 D0 0.00000300 sec  
 D1 1.50000000 sec  
 D2 0.00344828 sec  
 D6 0.05000000 sec  
 D16 0.00020000 sec  
 IN0 0.00003010 sec

----- CHANNEL f1 -----  
 NUC1 1H  
 P1 10.00 usec  
 P2 20.00 usec  
 PL1 -3.50 dB  
 PL1W 31.17620277 W  
 SFO1 400.1325208 MHz

----- CHANNEL f2 -----  
 NUC2 13C  
 P3 10.00 usec  
 PL2 -2.10 dB  
 PL2W 58.37759399 W  
 SFO2 100.6228138 MHz

----- GRADIENT CHANNEL -----  
 GPNAM1 SINE.100  
 GPNAM2 SINE.100  
 GPNAM3 SINE.100  
 GPZ1 50.00 %  
 GPZ2 30.00 %  
 GPZ3 40.10 %  
 P16 1000.00 usec  
 ND0 2  
 TD 128  
 SFO1 100.6228 MHz  
 FIDRES 129.709091 Hz  
 SW 165.000 ppm  
 FnMODE QF  
 SI 2048  
 SF 400.1300000 MHz  
 WDW SINE  
 SSB 0  
 LB 0.00 Hz  
 GB 0  
 PC 4.00  
 SI 1024  
 MC2 QF  
 SF 100.6127690 MHz  
 WDW SINE  
 SSB 0  
 LB 0.00 Hz  
 GB 0

ppm

20

40

80

100

120

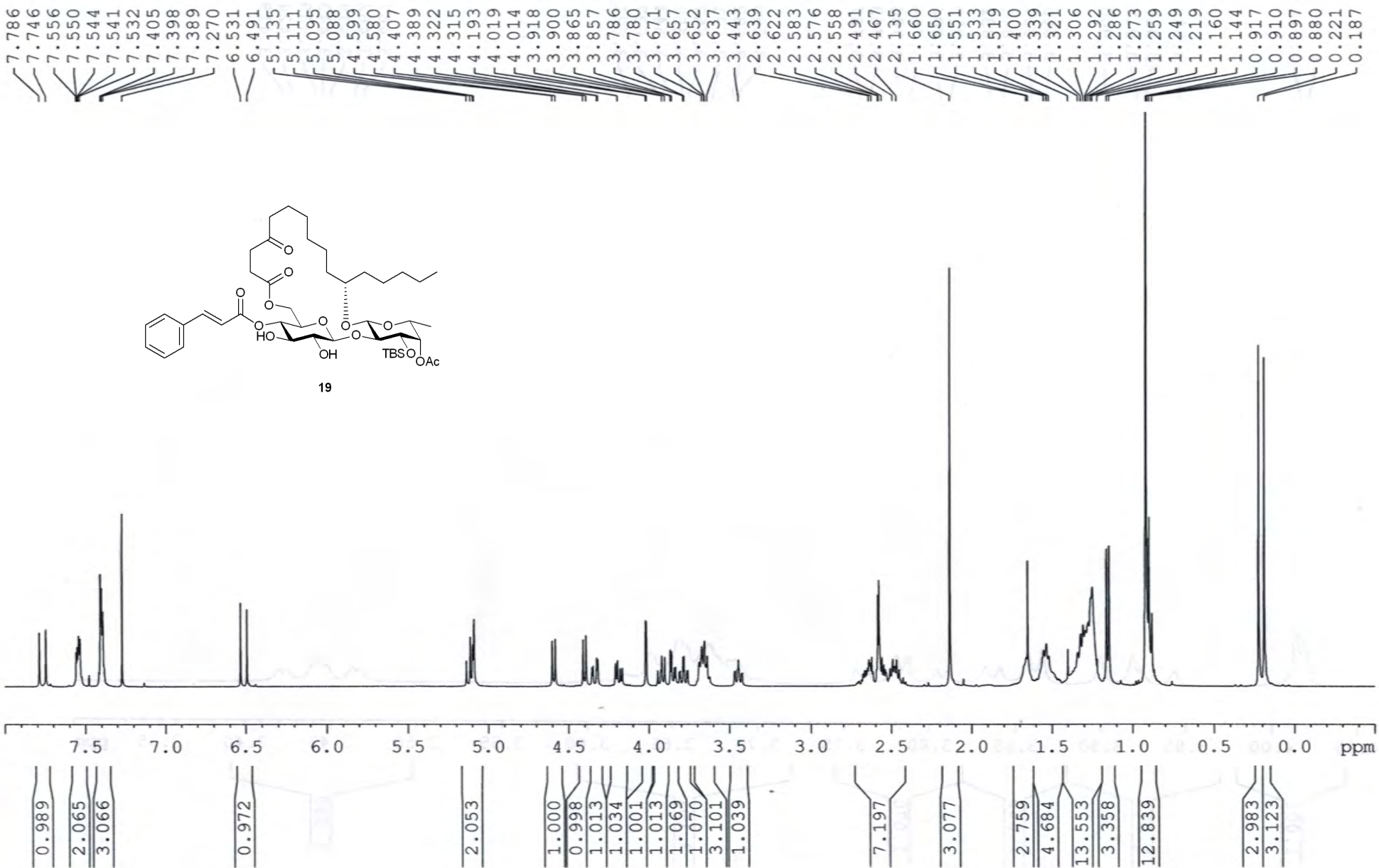
140

160

180

ppm

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 0.5

ZGH-*Ipom*-2-128-A-141116 1H in CDCl<sub>3</sub>

ZGH-*Ipom*-2-128-A-141116 13C in CDCl<sub>3</sub>

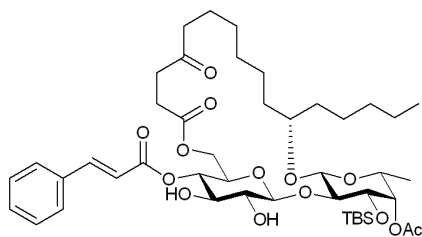
— 210.212

171.588  
170.688  
166.187

— 146.073

134.147  
130.527  
128.908  
128.185

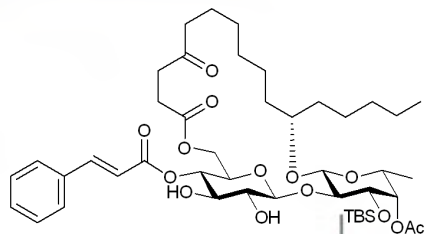
— 117.156

104.013  
101.23180.272  
78.913  
77.309  
77.195  
76.991  
76.674  
76.044  
73.467  
73.063  
72.758  
72.152  
71.532  
68.803  
63.29842.006  
37.297  
34.105  
33.268  
31.944  
29.452  
29.076  
28.43725.884  
25.088  
24.349  
23.602  
22.628  
20.820  
17.892  
16.483  
14.070  
-4.329  
-4.664

19

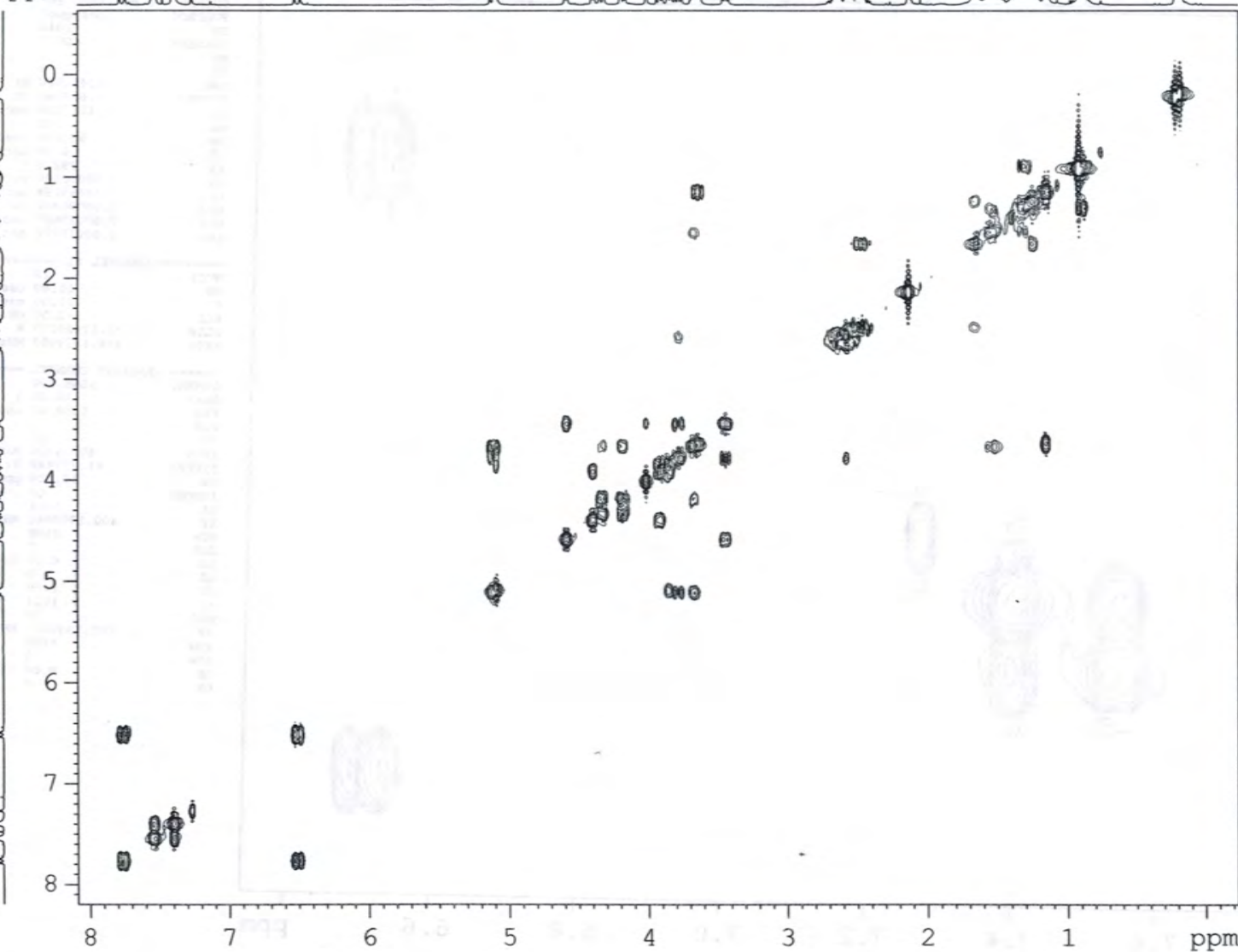
210 200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 ppm

## ZGH-Ipom-2-128-A-141116 COSY



19

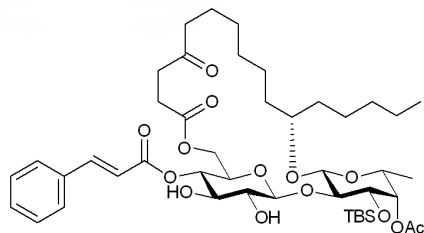
ppm



NAME ZGH-Ipom-2-128-A-141116  
 EXPNO 12  
 PROCNO 1  
 Date\_ 20141117  
 Time 22.33  
 INSTRUM spect  
 PROBHD 5 mm PABBO BB-  
 PULPROG cosygpgf  
 TD 2048  
 SOLVENT CDC13  
 NS 8  
 DS 8  
 SWH 5341.880 Hz  
 FIDRES 2.608340 Hz  
 AQ 0.1917428 sec  
 RG 101  
 DW 93.600 usec  
 DE 6.50 usec  
 TE 292.0 K  
 D0 0.00000300 sec  
 D1 1.48689198 sec  
 D13 0.00000400 sec  
 D16 0.00020000 sec  
 IN0 0.00018720 sec

===== CHANNEL f1 =====  
 NUC1 1H  
 P0 10.00 usec  
 P1 10.00 usec  
 PL1 -3.50 dB  
 PL1W 31.17620277 W  
 SF01 400.1324057 MHz

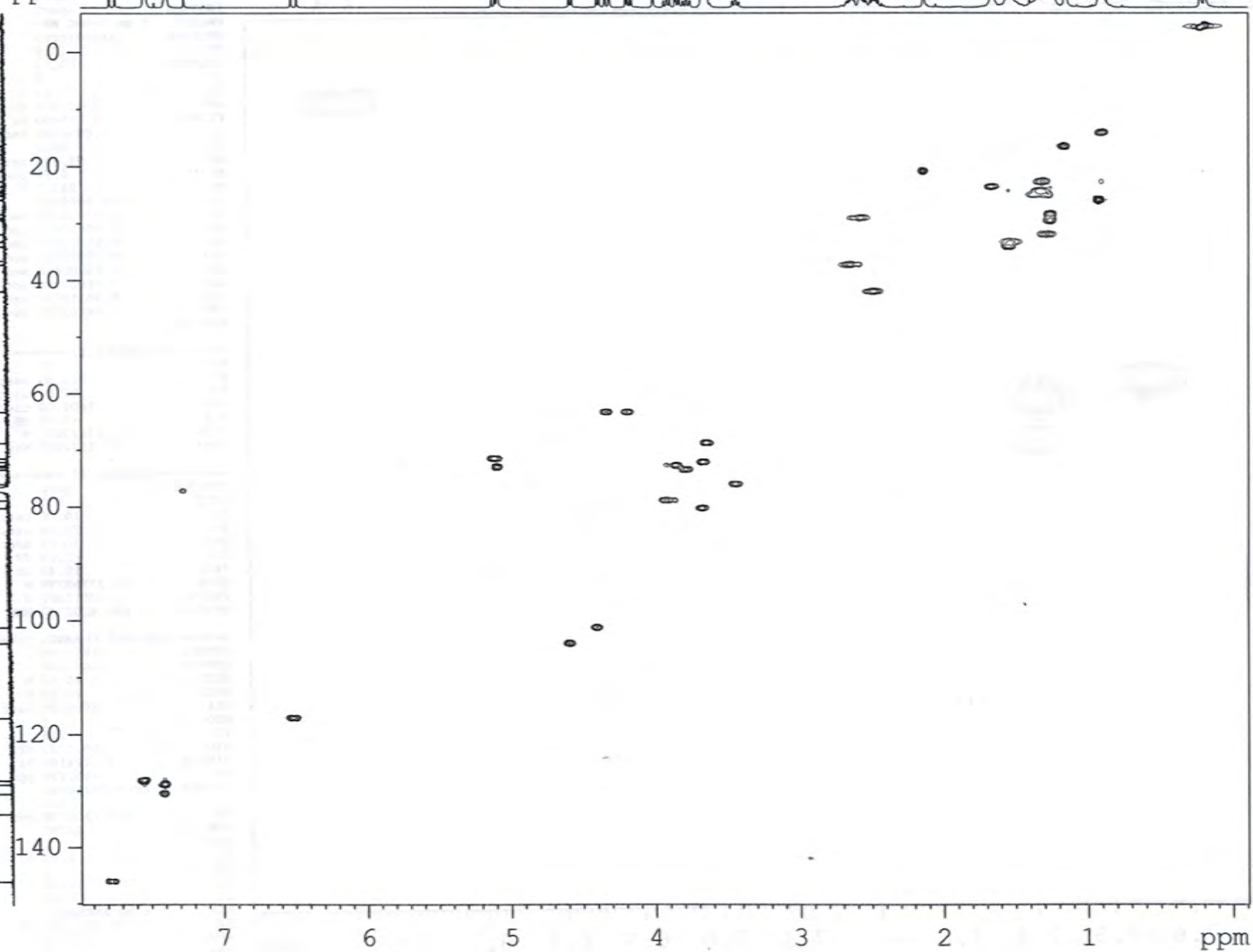
===== GRADIENT CHANNEL =====  
 GPNAM1 SINE.100  
 GP21 10.00 %  
 P16 1000.00 usec  
 ND0 1  
 TD 128  
 SF01 400.1324 MHz  
 FIDRES 41.733440 Hz  
 SW 13.350 ppm  
 FhMODE QF  
 SI 1024  
 SF 400.1300040 MHz  
 WDW SINE  
 SSB 0  
 LB 0.00 Hz  
 GB 0  
 PC 1.00  
 SI 1024  
 MC2 QF  
 SF 400.1300033 MHz  
 WDW SINE  
 SSB 0  
 LB 0.00 Hz  
 GB 0



19

ZGH-*Ipom*-2-128-A-141116 HSQC

ppm

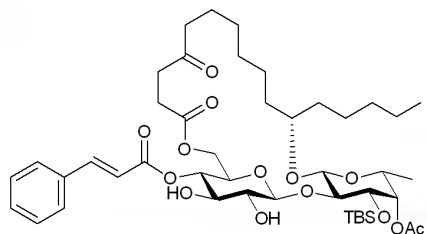


NAME ZGH-*Ipom*-2-128-A-141116  
 EXPNO 14  
 PROCNO 1  
 Date 20141118  
 Time 2.45  
 INSTRUM spect  
 PROBHD 5 mm PABBO BB-  
 PULPROG hsqcetgpsi  
 TD 1024  
 SOLVENT CDCl3  
 NS 8  
 DS 16  
 SWH 5341.880 Hz  
 FIDRES 5.216680 Hz  
 AQ 0.0958964 sec  
 RG 2050  
 DW 93.600 usec  
 DE 6.50 usec  
 TE 293.1 K  
 CNST2 145.000000  
 DO 0.0000300 sec  
 D1 1.5000000 sec  
 D4 0.00172414 sec  
 D11 0.0300000 sec  
 D13 0.00000400 sec  
 D16 0.00020000 sec  
 D24 0.00110000 sec  
 IN0 0.00003000 sec  
 ZGPTNS

===== CHANNEL f1 =====  
 NUC1 1H  
 P1 10.00 usec  
 P2 20.00 usec  
 P28 1000.00 usec  
 PL1 -3.50 dB  
 PL1W 31.17620277 W  
 SFO1 400.1324057 MHz

===== CHANNEL f2 =====  
 CPDPRG2 garp  
 NUC2 13C  
 P3 10.00 usec  
 P4 20.00 usec  
 PCPD2 75.00 usec  
 PL2 -2.10 dB  
 PL12 15.40 dB  
 PL2W 58.37759399 W  
 PL12W 1.03811681 W  
 SFO2 100.6202727 MHz

===== GRADIENT CHANNEL =====  
 GPNAM1 SINE.100  
 GPNAM2 SINE.100  
 GPZ1 80.00 Å  
 GPZ2 20.10 Å  
 P16 1000.00 usec  
 ND0 2  
 TD 256  
 SFO1 100.6203 MHz  
 FIDRES 65.104164 Hz  
 SW 165.639 ppm  
 FMODE Echo-Antiecho  
 SI 1024  
 SF 400.1300000 MHz  
 WDW QSINE  
 SSB 2  
 LB 0.00 Hz  
 GB 0  
 PC 1.00  
 SI 1024  
 MC2 echo-antiecho  
 SF 100.6127690 MHz  
 WDW QSINE  
 SSB 2  
 LB 0.00 Hz  
 GB 0



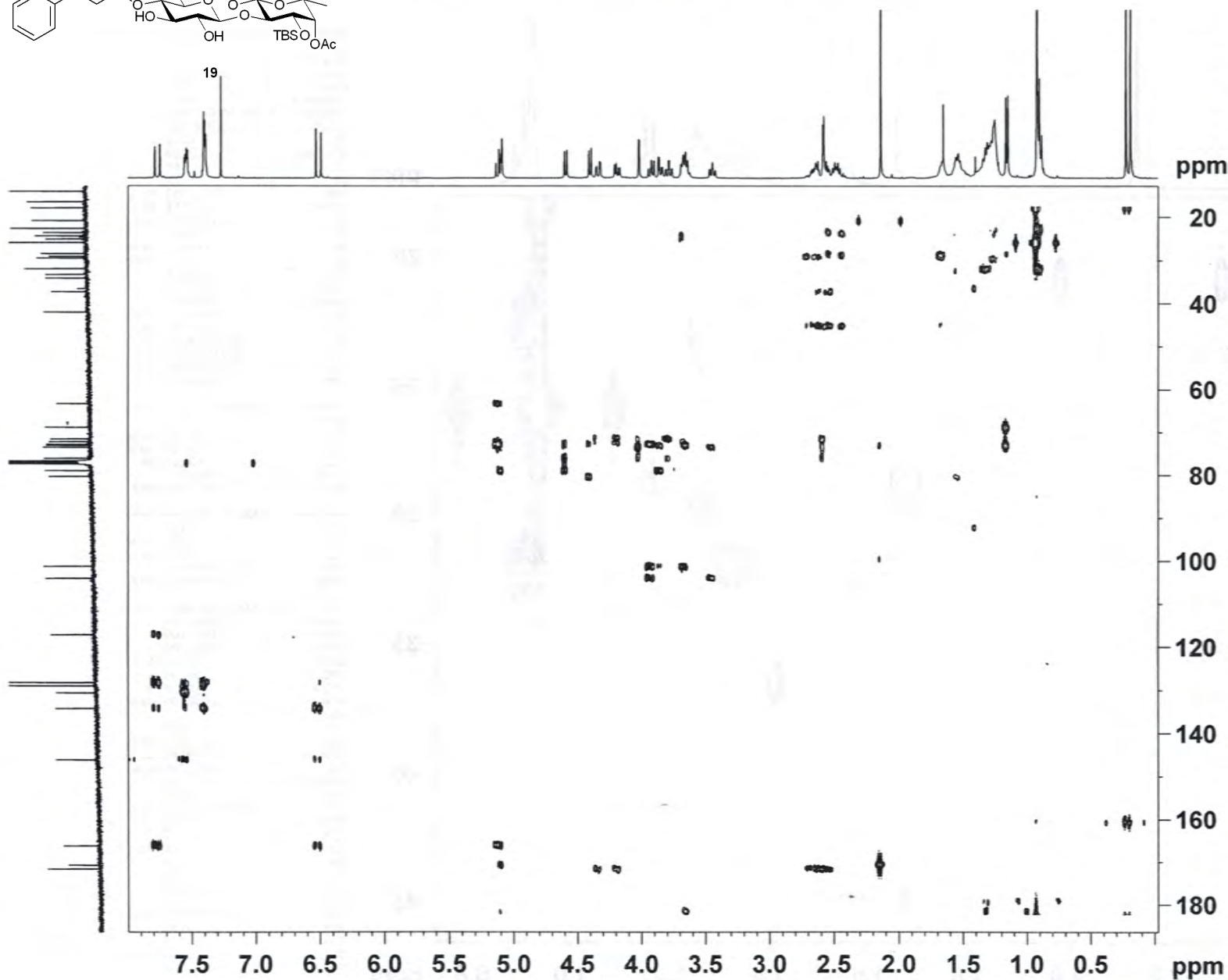
ZGH-Ipom-2-128-A-141116 HMBC in CDCL3

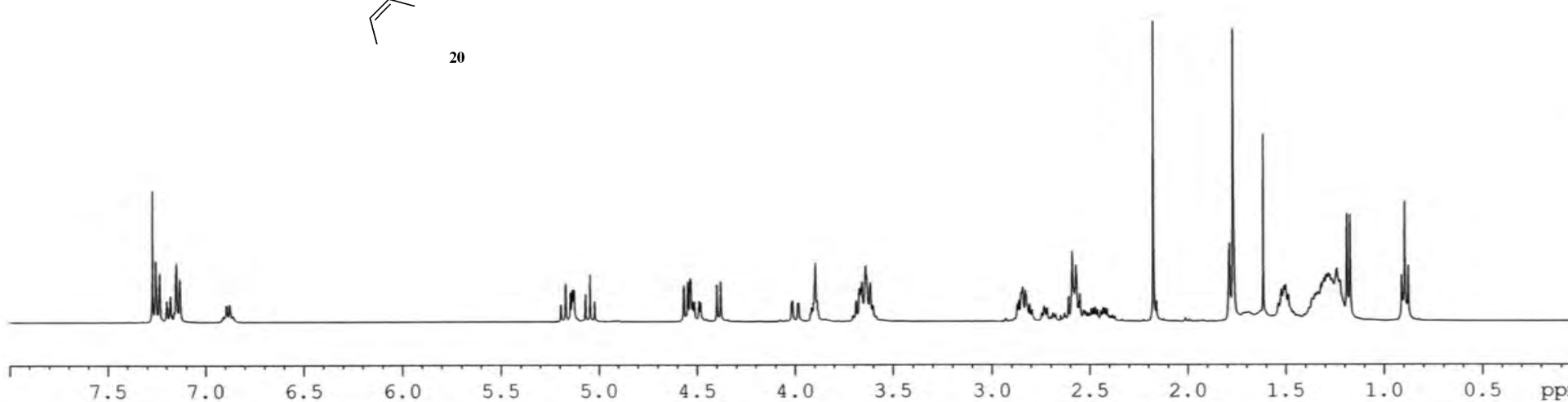
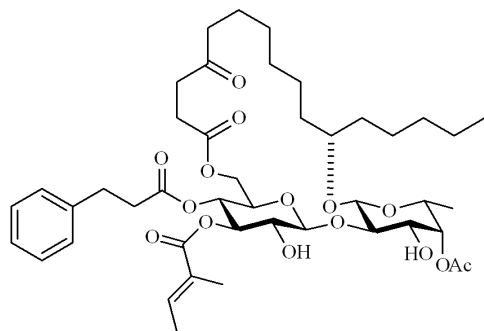
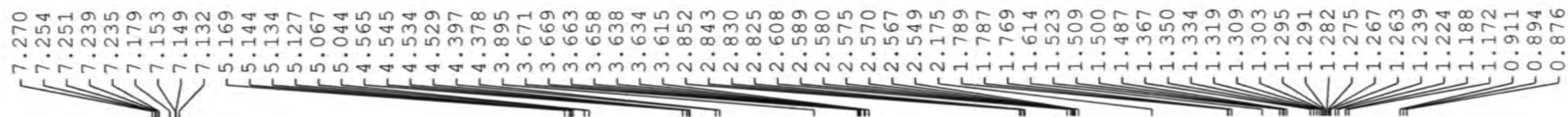
NAME ZGH-Ipom-2-128-A-141116  
 EXPNO 15  
 PROCNO 1  
 Date\_ 20141118  
 Time\_ 3.43  
 INSTRUM spect  
 PROBHD 5 mm PABBO BB-  
 PULPROG hmbcgp1pndqf  
 TD 4096  
 SOLVENT CDCL3  
 NS 65  
 DS 16  
 SWH 5208.333 Hz  
 FIDRES 1.271566 Hz  
 AQ 0.3932660 sec  
 RG 2050  
 DW 96.000 usec  
 DE 6.50 usec  
 TE 292.6 K  
 CNST2 145.0000000  
 CNST13 10.0000000  
 D0 0.00000300 sec  
 D1 1.50000000 sec  
 D2 0.00344828 sec  
 D6 0.05000000 sec  
 D16 0.00020000 sec  
 INO 0.00003010 sec

===== CHANNEL f1 =====  
 NUC1 1H  
 P1 10.00 usec  
 P2 20.00 usec  
 PL1 -3.50 dB  
 PL1W 31.17620277 W  
 SFO1 400.1325208 MHz

===== CHANNEL f2 =====  
 NUC2 13C  
 P3 10.00 usec  
 PL2 -2.10 dB  
 PL2W 58.37759399 W  
 SFO2 100.6228138 MHz

===== GRADIENT CHANNEL =====  
 GPNAM1 SINE.100  
 GPNAM2 SINE.100  
 GPNAM3 SINE.100  
 GPZ1 50.00 %  
 GPZ2 30.00 %  
 GPZ3 40.10 %  
 P16 1000.00 usec  
 ND0 2  
 TD 128  
 SFO1 100.6228 MHz  
 FIDRES 129.709091 Hz  
 SW 165.000 ppm  
 FnMODE QF  
 SI 2048  
 SF 400.1300000 MHz  
 WDW SINE  
 SSB 0  
 LB 0.00 Hz  
 GB 0  
 PC 4.00  
 SI 1024  
 MC2 QF  
 SF 100.6127690 MHz  
 WDW SINE  
 SSB 0  
 LB 0.00 Hz  
 GB 0



ZGH-*Ipom*-2-48-A-140811 1H in CDCl<sub>3</sub>

1.746  
2.826  
0.981

2.039  
1.046

2.961  
1.000

0.970  
2.028

5.137

3.058  
1.083

6.326

2.878

6.019  
1.839

4.162

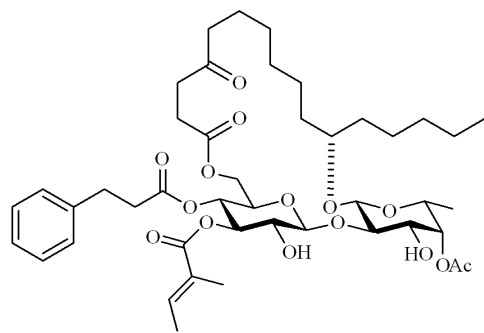
12.808

3.143

3.209

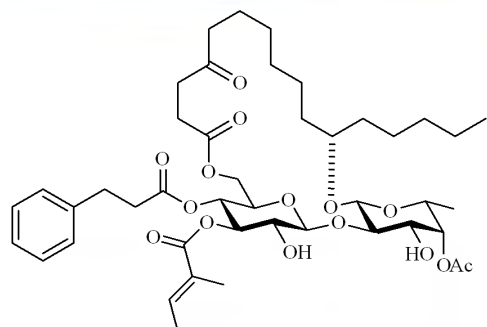
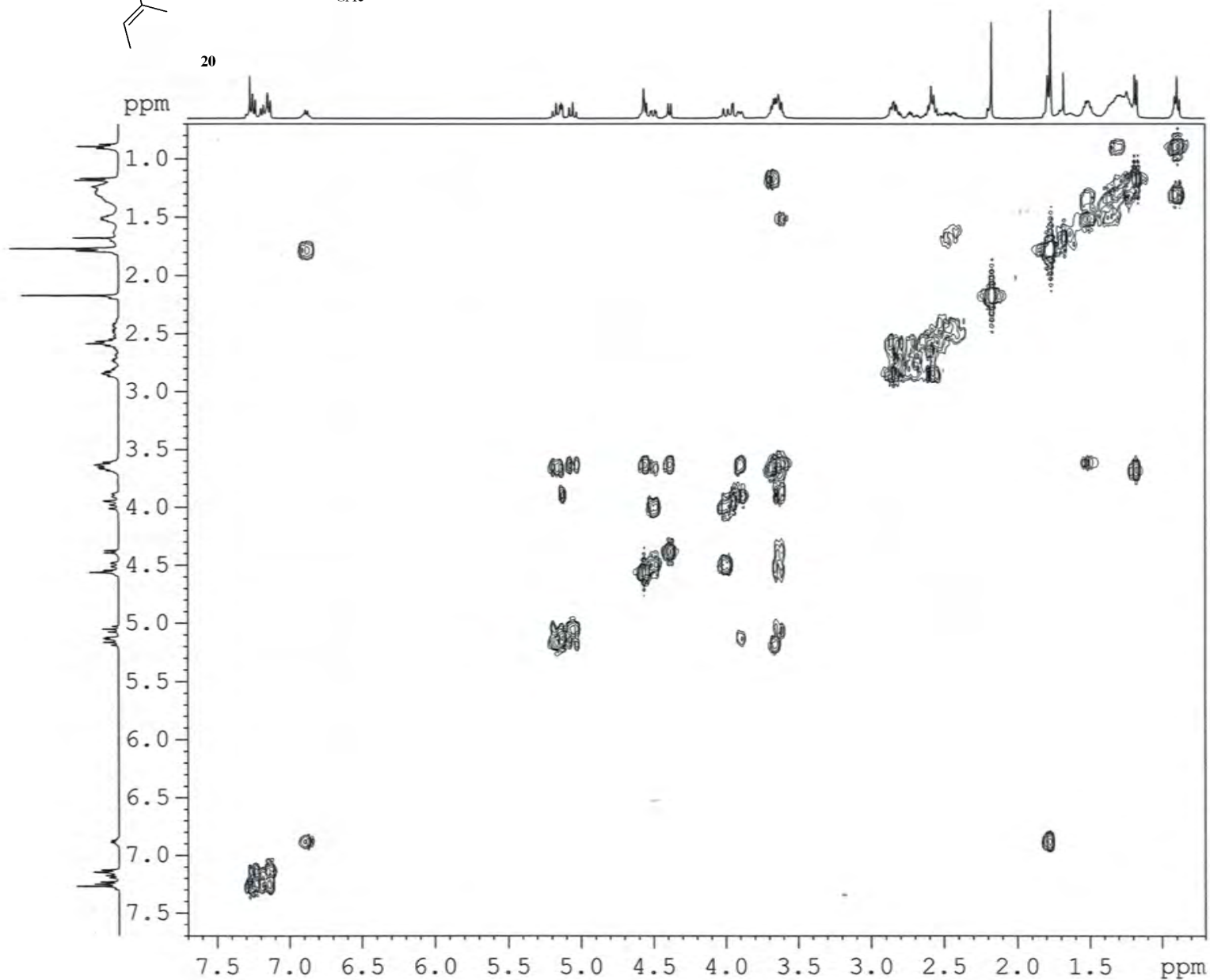
ZGH-*Ipom*-2-48-A-140811 <sup>13</sup>C in CDCl<sub>3</sub>

— 210.001

171.832  
171.657  
171.522  
168.641140.065  
139.811  
128.452  
128.075  
127.539  
126.242105.920  
100.146  
83.117  
79.622  
77.320  
77.206  
77.002  
76.685  
75.823  
74.009  
72.726  
72.634  
72.502  
68.763  
66.997  
61.215  
41.842  
37.605  
35.289  
34.397  
33.143  
31.882  
30.478  
29.211  
28.962  
28.340  
24.794  
24.505  
23.631  
22.643  
20.914  
16.314  
14.621  
14.094  
11.960

210 200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 ppm



ZGH-*Ipom*-2-48-A-140811 COSY

```

NAME      ZGH-Ipom-2-48-A-140811
EXPNO     2
PROCNO    1
Date_     20140812
Time      22.34
INSTRUM   spect
PROBHD    5 mm PABBO BB-
PULPROG   cosygppf
TD         2048
SOLVENT   CDCl3
NS         8
DS         8
SWH        5341.880 Hz
FIDRES     2.608340 Hz
AQ         0.1917428 sec
RG         181
DW         93.600 usec
DE         6.50 usec
TE         292.5 K
D0         0.00000300 sec
D1         1.48689198 sec
D13        0.00000400 sec
D16        0.00020000 sec
IN0        0.00018720 sec

```

```

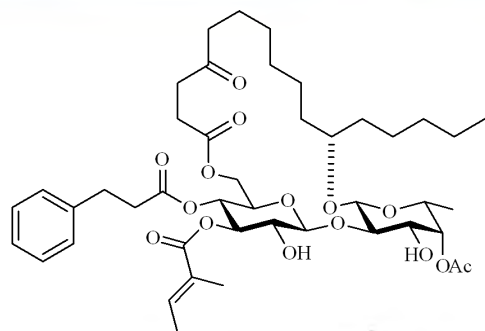
===== CHANNEL f1 =====
NUC1      1H
P0        10.00 usec
P1        10.00 usec
PL1       -3.50 dB
PL1W      31.17620277 W
SFO1      400.1324057 MHz

```

```

===== GRADIENT CHANNEL =====
GPNAM1    SINE.100
GPZ1      10.00 %
P16       1000.00 usec
ND0        1
TD         128
SFO1      400.1324 MHz
FIDRES     41.733440 Hz
SW         13.350 ppm
FnMODE     QF
SI         1024
SF         400.1300040 MHz
WDW        SINE
SSB         0
LB         0.00 Hz
GB          0
PC         1.00
SI         1024
MC2        QF
SF         400.1300033 MHz
WDW        SINE
SSB         0
LB         0.00 Hz
GB          0

```



## ZGH-Ipom-2-48-A-140811 HSQC

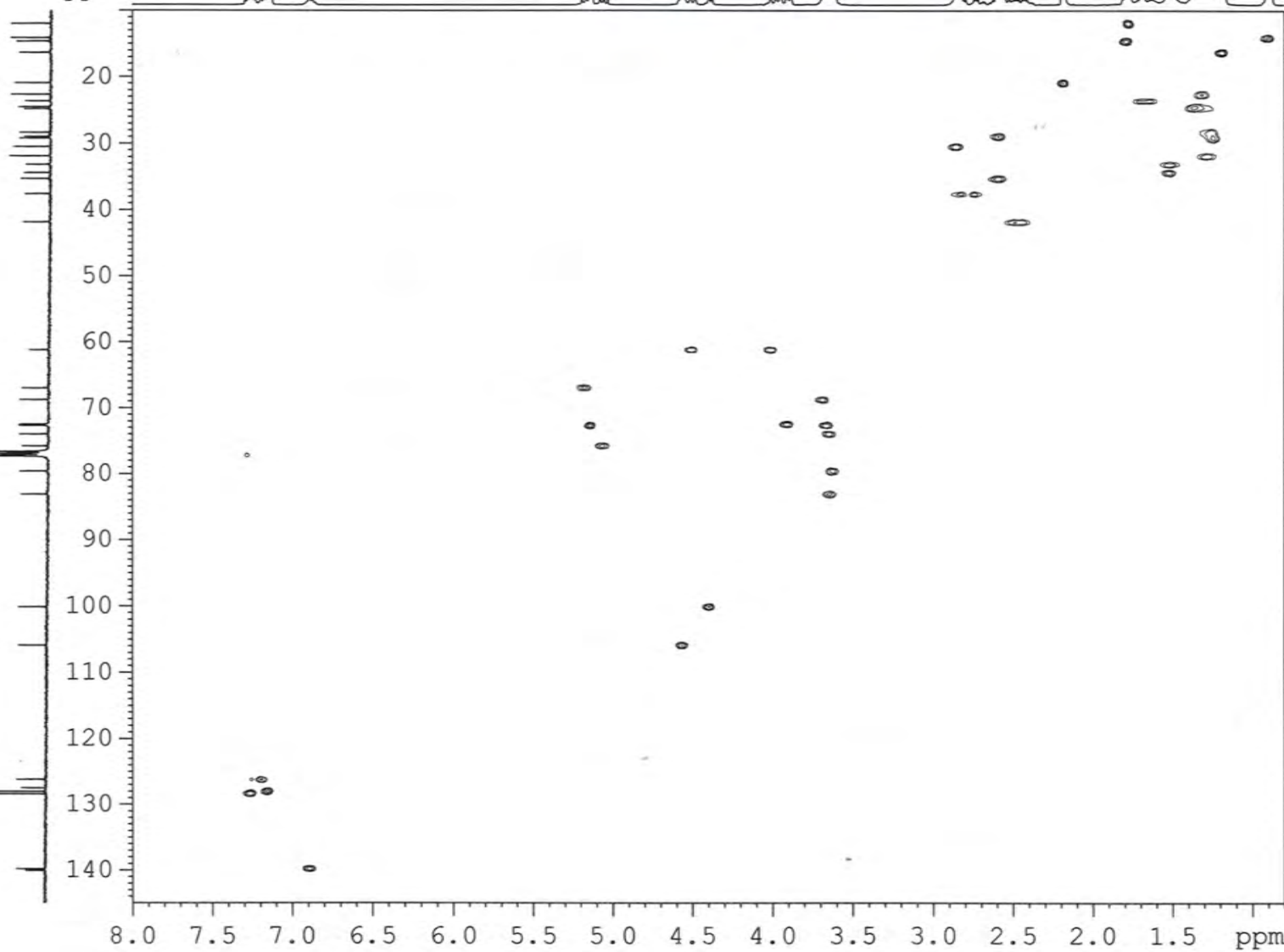
NAME ZGH-Ipom-2-48-A-140811  
 EXPNO 4  
 PROCNO 1  
 Date\_ 20140813  
 Time\_ 6.29  
 INSTRUM spect  
 PROBHD 5 mm PABBO BB-  
 PULPROG hsqcetgpsl  
 TD 1024  
 SOLVENT CDCl3  
 NS 8  
 DS 16  
 SWH 5341.880 Hz  
 FIDRES 5.216680 Hz  
 AQ 0.0958964 sec  
 RG 2050  
 DW 93.600 usec  
 DE 6.50 usec  
 TE 293.3 K  
 CNST2 145.0000000  
 D0 0.00000300 sec  
 D1 1.50000000 sec  
 D4 0.00172414 sec  
 D11 0.03000000 sec  
 D13 0.00000400 sec  
 D16 0.00020000 sec  
 D24 0.00110000 sec  
 IN0 0.00003000 sec  
 ZGOPTNS

===== CHANNEL f1 =====  
 NUC1 1H  
 P1 10.00 usec  
 P2 20.00 usec  
 P28 1000.00 usec  
 PL1 -3.50 dB  
 PL1W 31.17620277 W  
 SFO1 400.1324057 MHz

===== CHANNEL f2 =====  
 CPDPRG2 garp  
 NUC2 13C  
 P3 10.00 usec  
 P4 20.00 usec  
 PCPD2 75.00 usec  
 PL2 -2.10 dB  
 PL12 15.40 dB  
 PL2W 58.37759399 W  
 PL12W 1.03811681 W  
 SFO2 100.6202727 MHz

===== GRADIENT CHANNEL =====  
 GPNAM1 SINE.100  
 GPNAM2 SINE.100  
 GPZ1 80.00 %  
 GPZ2 20.10 %  
 P16 1000.00 usec  
 ND0 2  
 TD 256  
 SFO1 100.6203 MHz  
 FIDRES 65.104164 Hz  
 SW 165.639 ppm  
 FmMODE Echo-Antiecho  
 SI 1024  
 SF 400.1300000 MHz  
 WDW QSINE  
 SSB 2  
 LB 0.00 Hz  
 GB 0  
 PC 1.00  
 SI 1024  
 MC2 echo-antiecho  
 SF 100.6127690 MHz  
 WDW QSINE  
 SSB 2  
 LB 0.00 Hz  
 GB 0

ppm 20

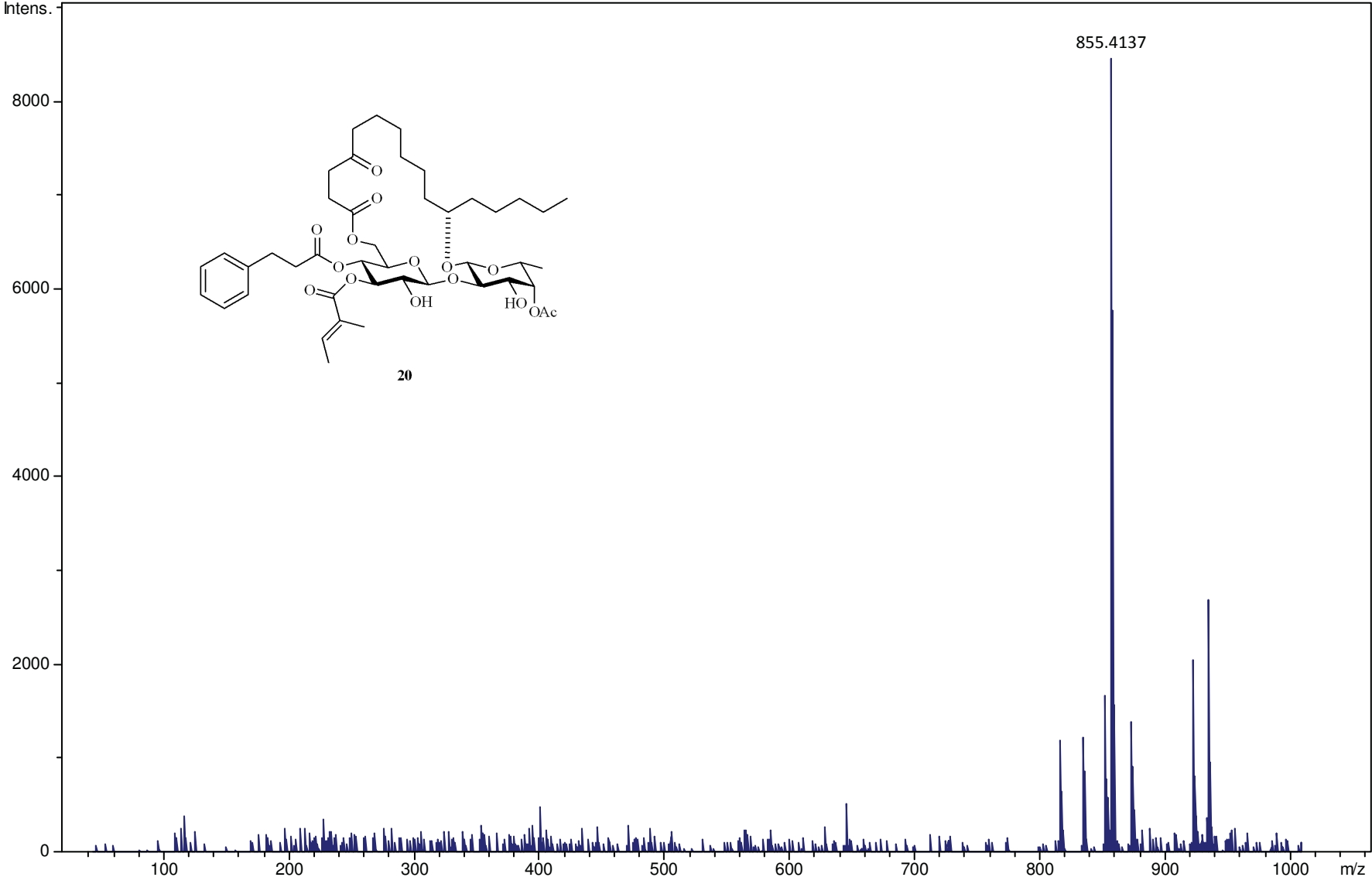


# Arkansas Statewide Mass Spectrometry Facility

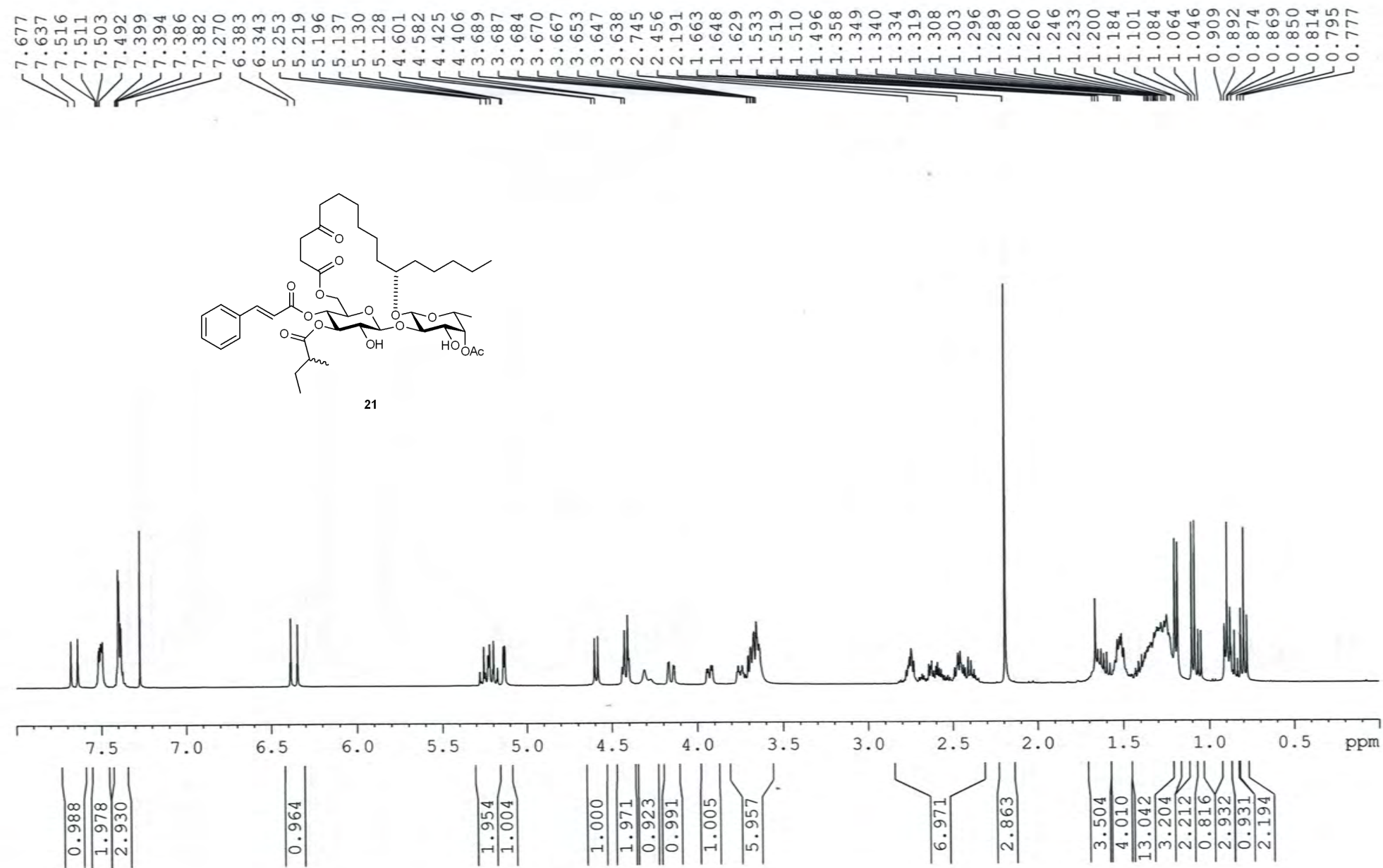
## ESI Mass Spectrum

Sample Name: ZIF-5  
Sample id#: 982240  
Instrument: ultrOTOF-Q

12/11/2014



## ZGH-Ipom-2-94-A-140910 1H in CDCL3



ZGH-*Ipom*-2-94-A-140910 <sup>13</sup>C in CDCl<sub>3</sub>

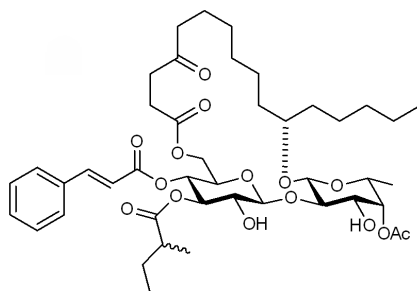
— 209.971

— 177.046  
— 171.979  
— 171.728  
— 165.422  
— 165.386

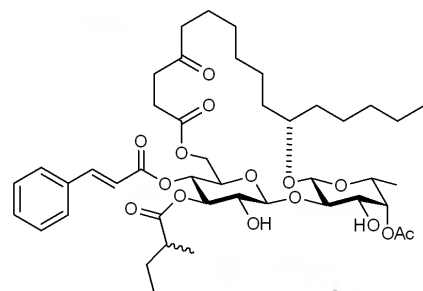
— 146.292

— 133.950  
— 130.616  
— 128.868  
— 128.213

— 116.654

— 105.418  
— 100.007  
— 82.144  
— 79.534  
— 77.290  
— 77.176  
— 76.973  
— 76.656  
— 74.501  
— 73.598  
— 73.502  
— 72.796  
— 72.652  
— 72.453  
— 68.760  
— 67.681  
— 67.590  
— 61.791  
— 41.829  
— 41.143  
— 37.562  
— 34.247  
— 32.900  
— 31.867  
— 29.052  
— 29.019  
— 28.245  
— 26.490  
— 24.491  
— 23.351  
— 22.610  
— 20.915  
— 16.589  
— 16.360

210 200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 ppm



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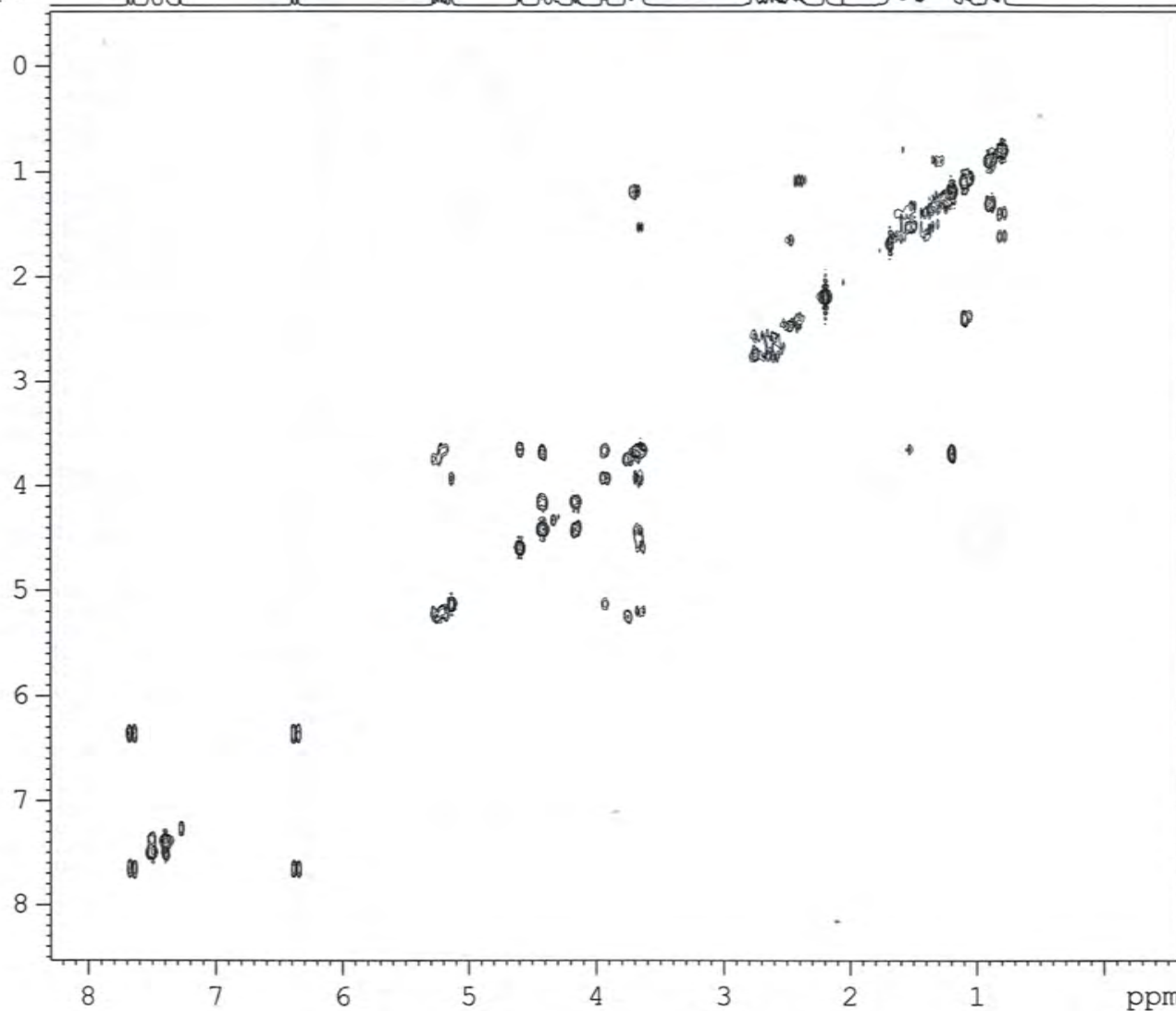
ZGH-*Ipom*-2-94-A-140910 COSY

NAME ZGH-*Ipom*-2-94-A-140910  
 EXPNO 2  
 PROCNO 1  
 Date\_ 20140912  
 Time\_ 0.33  
 INSTRUM spect  
 PROBHD 5 mm PABBO BB-  
 PULPROG cosygppqf  
 TD 2048  
 SOLVENT CDC13  
 NS 4  
 DS 8  
 SWH 5341.880 Hz  
 FIDRES 2.608340 Hz  
 AQ 0.1917428 sec  
 RG 203  
 DW 93.600 usec  
 DE 6.50 usec  
 TE 292.3 K  
 D0 0.00000300 sec  
 D1 1.48689198 sec  
 D13 0.00000400 sec  
 D16 0.00020000 sec  
 IN0 0.00018720 sec

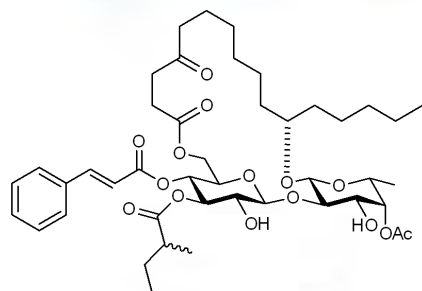
===== CHANNEL f1 =====  
 NUC1 1H  
 P0 10.00 usec  
 P1 10.00 usec  
 PL1 -3.50 dB  
 PL1W 31.17620277 W  
 SFO1 400.1324057 MHz

===== GRADIENT CHANNEL =====  
 GPNAM1 SINE.100  
 GPZ1 10.00 %  
 P16 1000.00 usec  
 ND0 1  
 TD 128  
 SFO1 400.1324 MHz  
 FIDRES 41.733440 Hz  
 SW 13.350 ppm  
 FnMODE QF  
 SI 1024  
 SF 400.1300040 MHz  
 WDW SINE  
 SSB 0  
 LB 0.00 Hz  
 GB 0  
 PC 1.00  
 SI 1024  
 MC2 QF  
 SF 400.1300033 MHz  
 WDW SINE  
 SSB 0  
 LB 0.00 Hz  
 GB 0

ppm

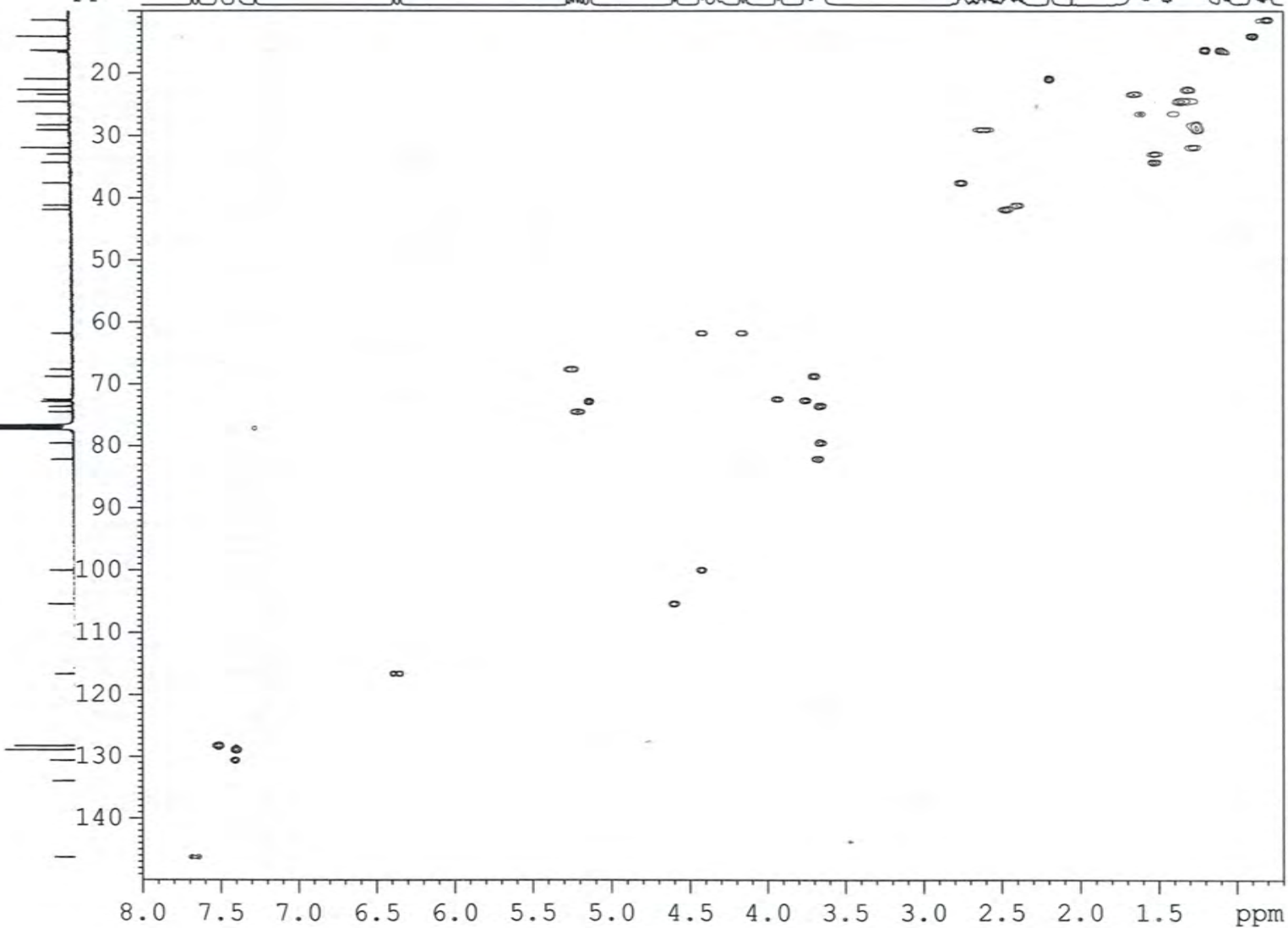


ppm

ZGH-*Ipom*-2-94-A-140910 HSQC

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ppm



NAME ZGH-*Ipom*-2-94-A-140910  
 EXPNO 4  
 PROCNO 1  
 Date 20140912  
 Time 8.14  
 INSTRUM spect  
 PROBHD 5 mm PABBO BB-  
 PULPROG hsqcetgpsi  
 TD 1024  
 SOLVENT CDCl3  
 NS 8  
 DS 16  
 SWH 5341.880 Hz  
 FIDRES 5.216680 Hz  
 AQ 0.0958964 sec  
 RG 2050  
 DW 93.600 usec  
 DE 6.50 usec  
 TE 293.2 K  
 CNST2 145.0000000  
 D0 0.0000300 sec  
 D1 1.5000000 sec  
 D4 0.00172414 sec  
 D11 0.03000000 sec  
 D13 0.00000400 sec  
 D16 0.00020000 sec  
 D24 0.00110000 sec  
 IN0 0.00003000 sec  
 ZGPTNS

===== CHANNEL f1 =====  
 NUC1 1H  
 P1 10.00 usec  
 P2 20.00 usec  
 P28 1000.00 usec  
 PL1 -3.50 dB  
 PL1W 31.17620277 W  
 SFO1 400.1324057 MHz

===== CHANNEL f2 =====  
 CPDPRG2 garp  
 NUC2 13C  
 P3 10.00 usec  
 P4 20.00 usec  
 PCPD2 75.00 usec  
 PL2 -2.10 dB  
 PL12 15.40 dB  
 PL2W 58.37759399 W  
 PL12W 1.03811681 W  
 SFO2 100.6202727 MHz

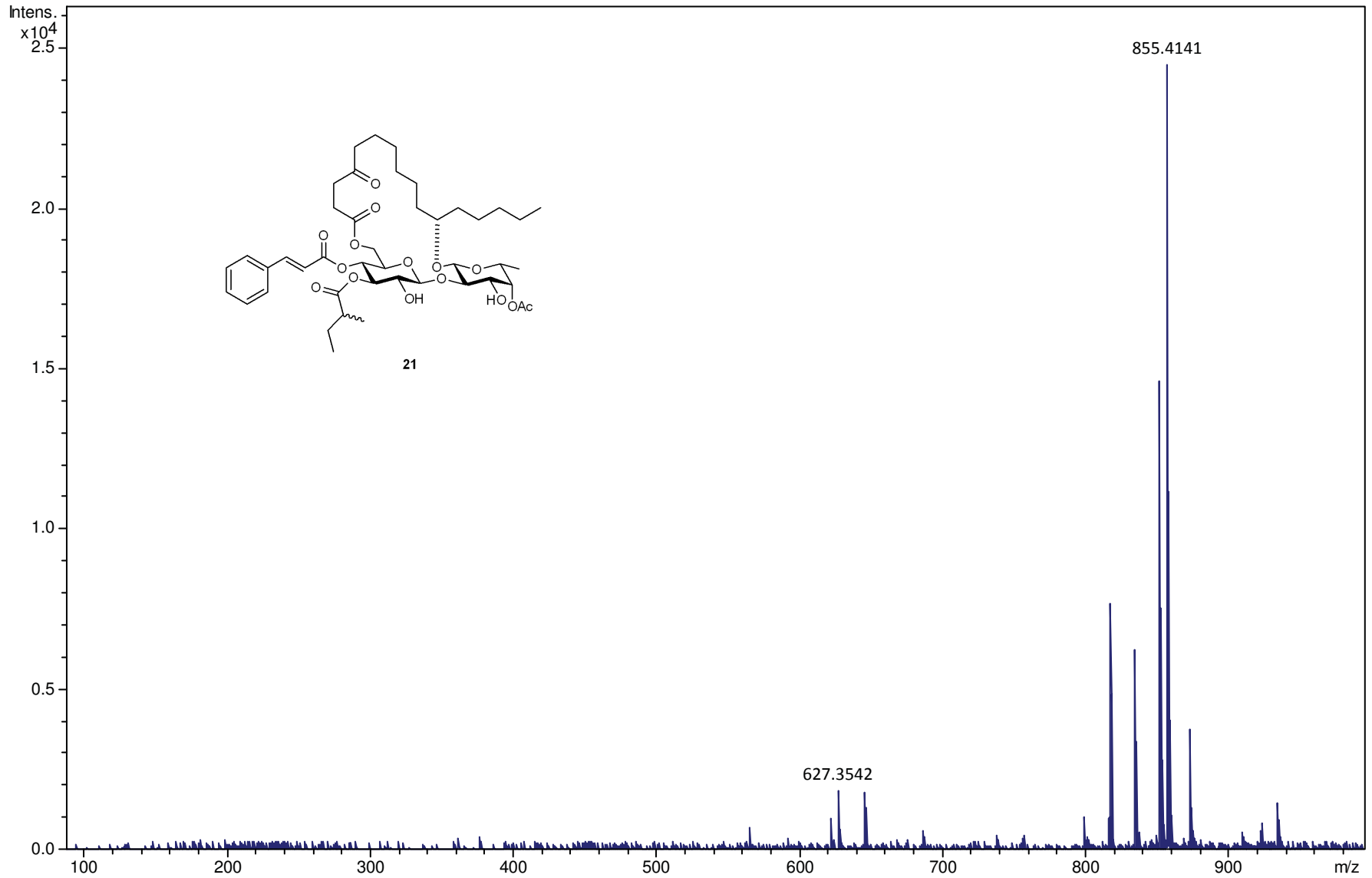
===== GRADIENT CHANNEL =====  
 GPNAM1 SINE.100  
 GPNAM2 SINE.100  
 GPZ1 80.00 %  
 GPZ2 20.10 %  
 P16 1000.00 usec  
 NDO 2  
 TD 256  
 SFO1 100.6203 MHz  
 FIDRES 65.104164 Hz  
 SW 165.639 ppm  
 FnMODE Echo-Antiecho  
 SI 1024  
 SF 400.1300000 MHz  
 WDW QSINE  
 SSB 2  
 LB 0.00 Hz  
 GB 0  
 PC 1.00  
 SI 1024  
 MC2 echo-antiecho  
 SF 100.6127690 MHz  
 WDW QSINE  
 SSB 2  
 LB 0.00 Hz  
 GB 0

## Arkansas Statewide Mass Spectrometry Facility

## ESI Mass Spectrum

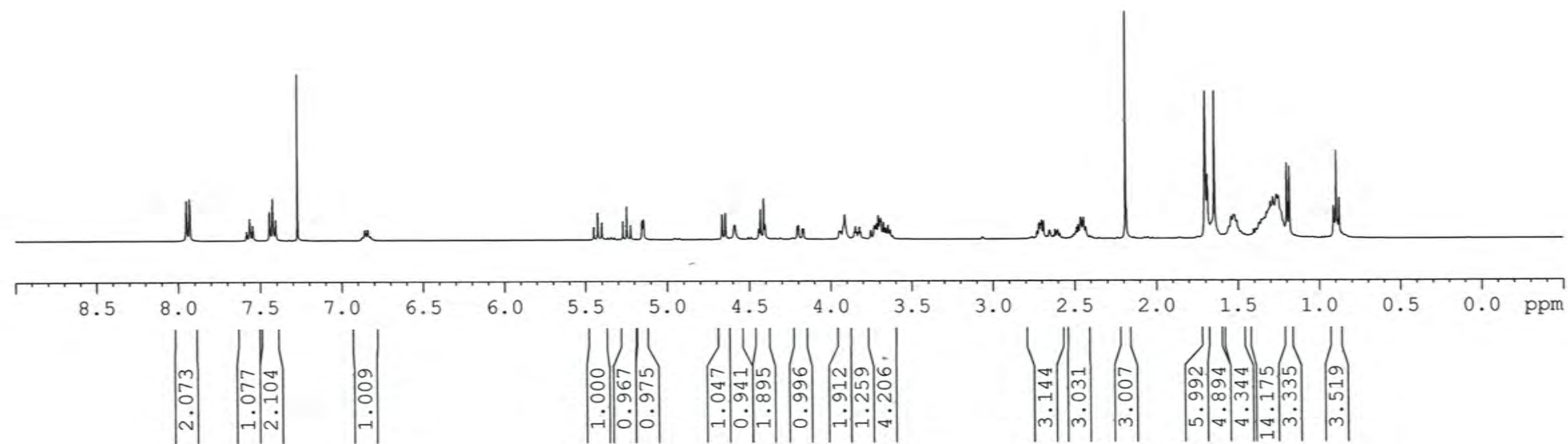
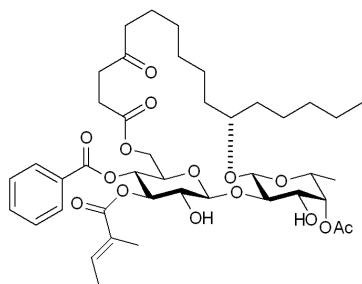
Sample Name: ZIF-11  
Sample id#: 982245  
Instrument: ultrOTOF-Q

12/11/2014

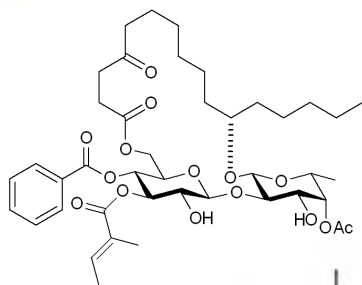




ZGH-Ipom-2-47-A-140510a2 1H in CDCl3



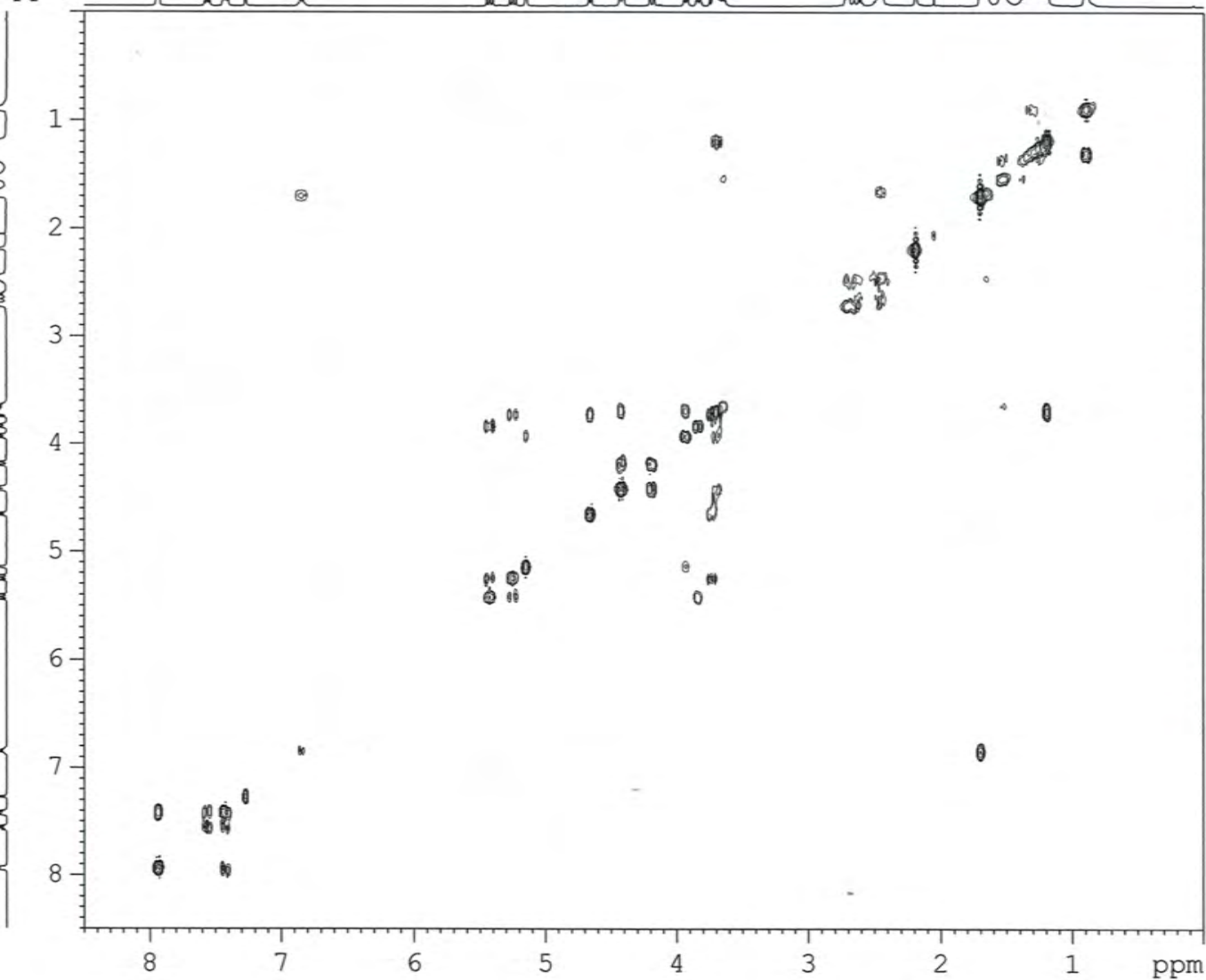




ZGH-Ipom-2-47-A-140510a check again COSY

ppm

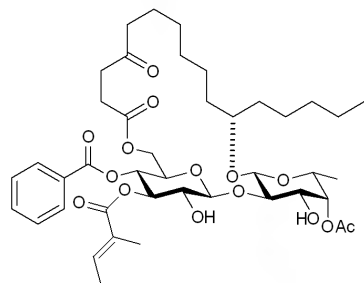
22



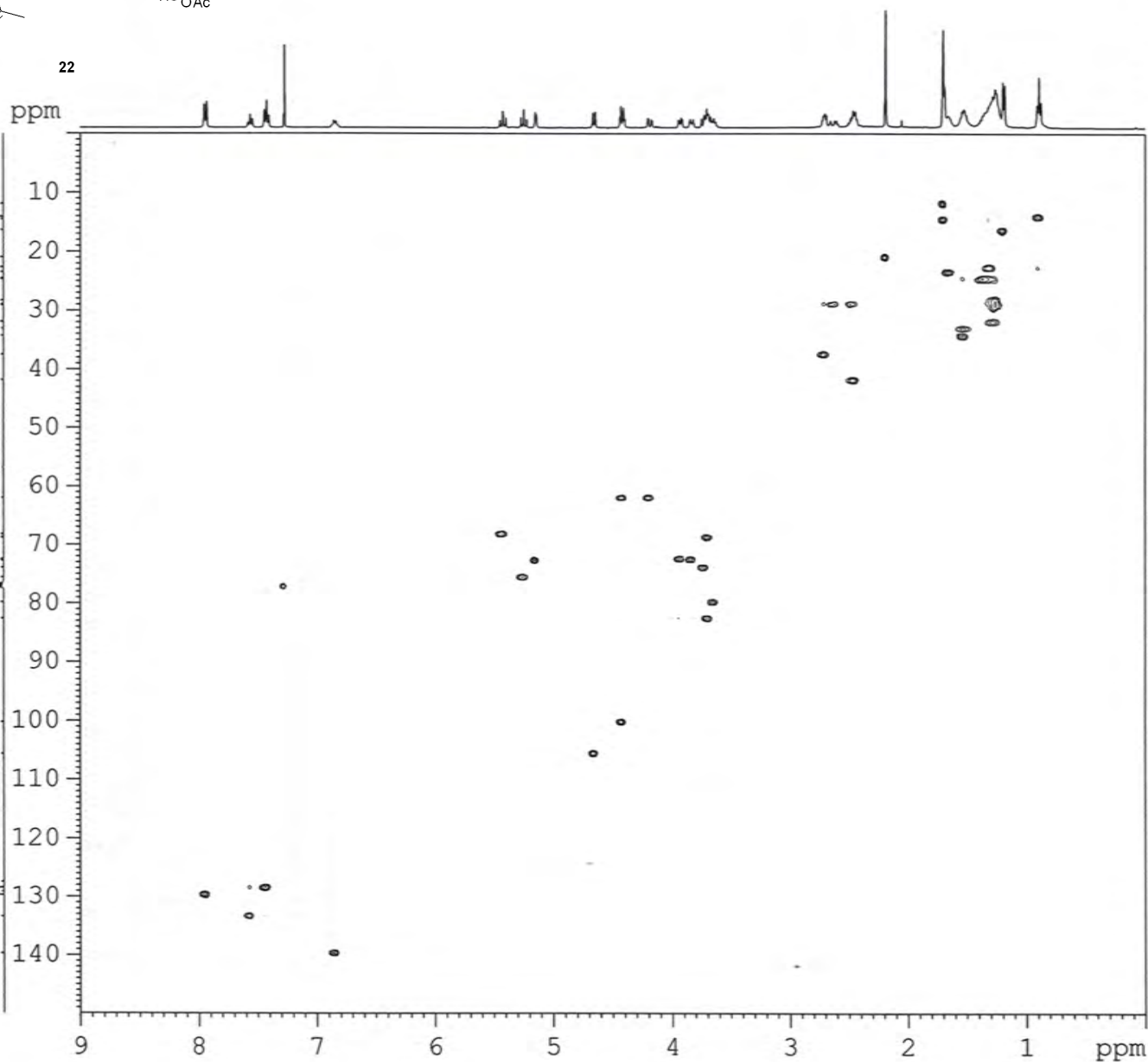
NAME ZGH-Ipom-2-47-A-140510a check again  
 EXPNO 2  
 PROCNO 1  
 Date\_ 20140520  
 Time\_ 23.03  
 INSTRUM spect  
 PROBHD 5 mm PABBO BB-  
 PULPROG cosygpgf  
 TD 2048  
 SOLVENT CDC13  
 NS 2  
 DS 8  
 SWH 5341.880 Hz  
 FIDRES 2.608340 Hz  
 AQ 0.1917428 sec  
 RG 203  
 DW 93.600 usec  
 DE 6.50 usec  
 TE 292.6 K  
 D0 0.00000300 sec  
 D1 1.48689198 sec  
 D13 0.00000400 sec  
 D16 0.00020000 sec  
 INO 0.00018720 sec

===== CHANNEL f1 =====  
 NUC1 1H  
 P0 10.00 usec  
 P1 10.00 usec  
 PL1 -3.50 dB  
 PL1W 31.17620277 W  
 SF01 400.1324057 MHz

===== GRADIENT CHANNEL =====  
 GPNAM1 SINE.100  
 GPZ1 10.00 %  
 P16 1000.00 usec  
 NDO 1  
 TD 128  
 SF01 400.1324 MHz  
 FIDRES 41.733440 Hz  
 SW 13.350 ppm  
 FvMODE QF  
 SI 1024  
 SF 400.1300040 MHz  
 WDW SINE  
 SSB 0  
 LB 0.00 Hz  
 GB 0  
 PC 1.00  
 SI 1024  
 MC2 QF  
 SF 400.1300033 MHz  
 WDW SINE  
 SSB 0  
 LB 0.00 Hz  
 GB 0



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ZGH-*Ipom*-2-47-A-140510a check again HSQC

```

NAME      ZGH-Ipom-2-47-A-140510a check again
EXPNO     4
PROCNO    1
Date_     20140521
Time      7.32
INSTRUM   spect
PROBHD    5 mm PABBO BB-
PULPROG   hsqcetgpsi
TD         1024
SOLVENT   CDC13
NS         6
DS         16
SWH        5341.880 Hz
FIDRES     5.216680 Hz
AQ         0.0958964 sec
RG         2050
DW         93.600 usec
DE         6.50 usec
TE         293.2 K
CNST2     145.0000000
D0         0.00000300 sec
D1         1.50000000 sec
D4         0.00172414 sec
D11        0.03000000 sec
D13        0.00000400 sec
D16        0.00020000 sec
D24        0.00110000 sec
INO        0.00003000 sec
ZGOPTNS

```

```

===== CHANNEL f1 =====
NUC1       1H
P1         10.00 usec
P2         20.00 usec
P28        1000.00 usec
PL1        -3.50 dB
PL1W       31.17620277 W
SFO1       400.1324057 MHz

```

```

===== CHANNEL f2 =====
CPDPRG2    garp
NUC2       13C
P3         10.00 usec
P4         20.00 usec
PCPD2      75.00 usec
PL2        -2.10 dB
PL12       15.40 dB
PL2W       58.37759399 W
PL12W      1.03811681 W
SFO2       100.6202727 MHz

```

```

===== GRADIENT CHANNEL =====
GPNAM1     SINE.100
GPNAM2     SINE.100
GPZ1       80.00 %
GPZ2       20.10 %
P16        1000.00 usec
ND0        2
TD         256
SFO1       100.6203 MHz
FIDRES     65.104164 Hz
SW         165.639 ppm
FnMODE     Echo-Antiecho
SI         1024
SF         400.130000 MHz
WDW        QSINE
SSB        2
LB         0.00 Hz
GB         0
PC         1.00
SI         1024
MC2        echo-antiecho
SF         100.6127690 MHz
WDW        QSINE
SSB        2
LB         0.00 Hz
GB         0

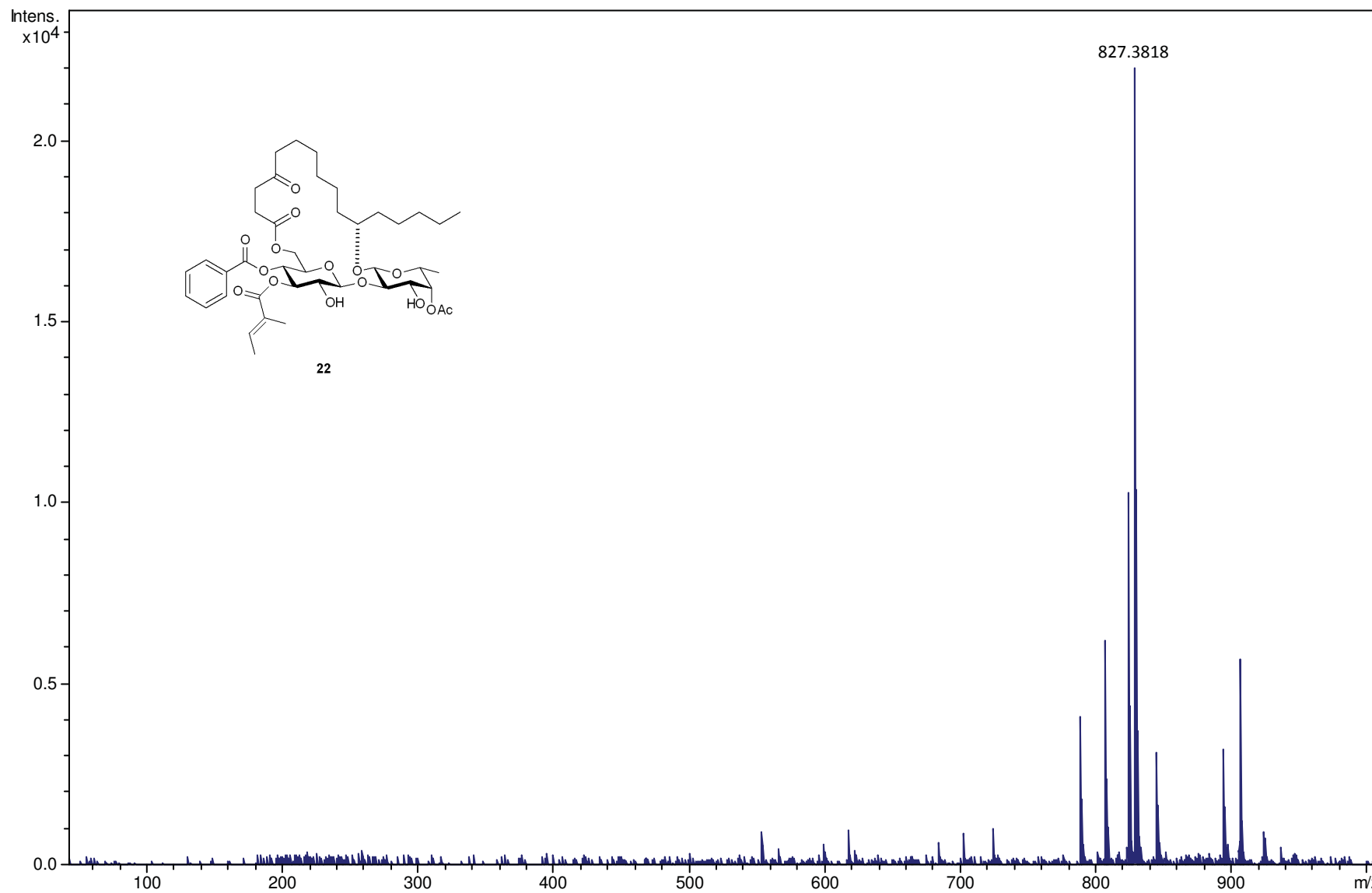
```

## Arkansas Statewide Mass Spectrometry Facility

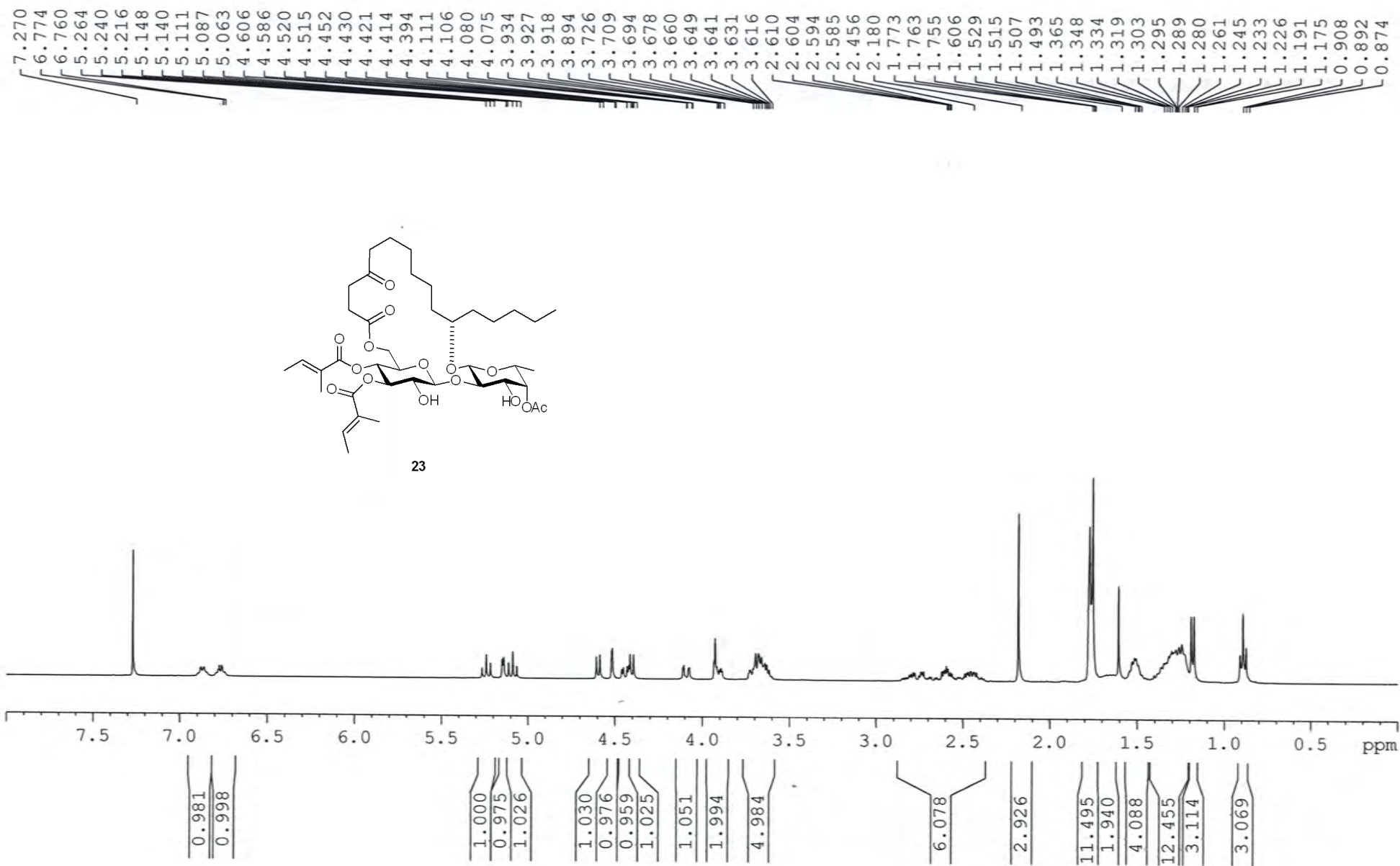
## ESI Mass Spectrum

Sample Name: ZIF-4  
Sample id#: 982239  
Instrument: ultrTOF-Q

12/11/2014

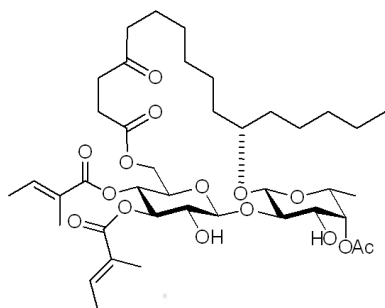


## ZGH-Ipom-2-72-A-140714 1H in CDCL3



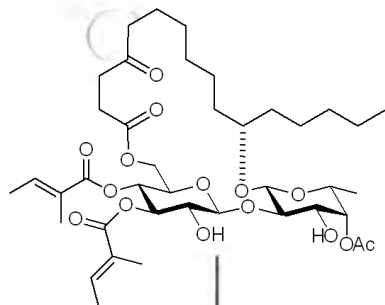
ZGH-*Ipom*-2-72-A-140714 <sup>13</sup>C in CDC13

— 210.005

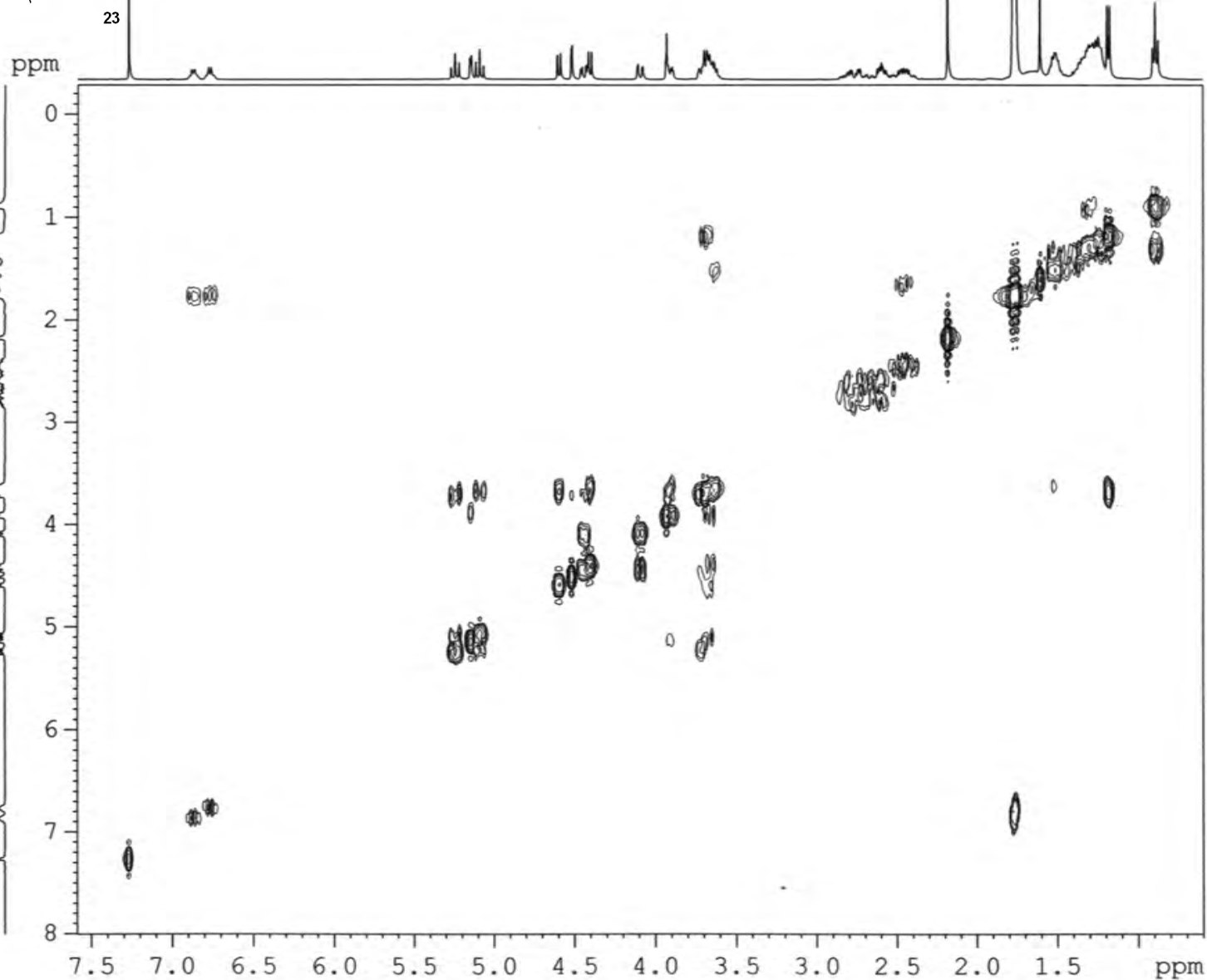
171.740  
171.671  
168.761  
166.465139.594  
138.597127.675  
127.549105.635  
100.126  
82.690  
79.673  
77.296  
77.183  
76.978  
76.661  
75.888  
73.825  
72.686  
72.652  
72.415  
68.791  
67.218  
61.658  
41.790  
37.595  
34.338  
33.041  
31.859  
29.064  
28.983  
28.246  
24.571  
24.491  
23.448  
22.605  
20.899  
16.291  
14.530  
14.425  
14.056  
11.999  
11.911

23

210 200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 ppm



## ZGH-Ipom-2-72-A-140714 COSY

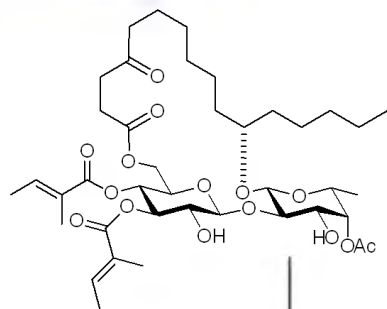


NAME ZGH-Ipom-2-72-A-140714  
 EXPNO 2  
 PROCNO 1  
 Date\_ 20140715  
 Time\_ 16.58  
 INSTRUM spect  
 PROBHD 5 mm PABBO BB-  
 PULPROG cosygppqf  
 TD 2048  
 SOLVENT CDC13  
 NS 4  
 DS 8  
 SWH 5341.880 Hz  
 FIDRES 2.608340 Hz  
 AQ 0.1917428 sec  
 RG 362  
 DW 93.600 usec  
 DE 6.50 usec  
 TE 292.6 K  
 D0 0.0000300 sec  
 D1 1.48689198 sec  
 D13 0.0000400 sec  
 D16 0.0002000 sec  
 IN0 0.00018720 sec

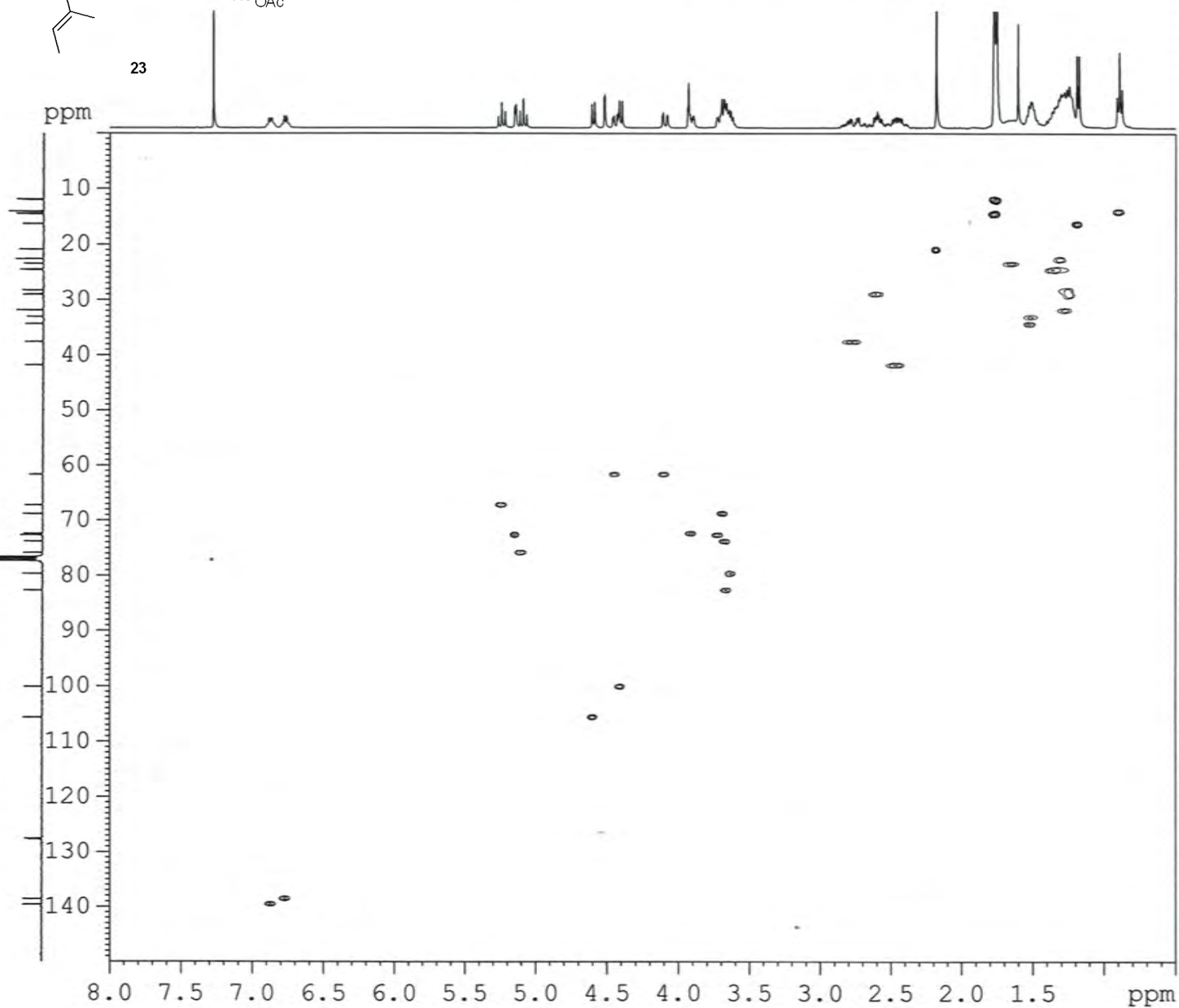
----- CHANNEL f1 -----  
 NUC1 1H  
 P0 10.00 usec  
 P1 10.00 usec  
 PL1 -3.50 dB  
 PL1W 31.17620277 W  
 SFO1 400.1324057 MHz

----- GRADIENT CHANNEL -----  
 GPNAM1 SINE.100  
 GF21 10.00 s  
 P16 1000.00 usec  
 NDO 1  
 TD 78  
 SFO1 400.1324 MHz  
 FIDRES 68.485649 Hz  
 SW 13.350 ppm  
 FhMODE QF  
 SI 1024  
 SF 400.1300040 MHz  
 WDW SINE  
 SSB 0  
 LB 0.00 Hz  
 GB 0  
 PC 1.00  
 SI 1024  
 MC2 QF  
 SF 400.1300033 MHz  
 WDW SINE  
 SSB 0  
 LB 0.00 Hz  
 GB 0





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ZGH-*Ipom*-2-72-A-140714 HSQC

```

NAME      ZGH-Ipom-2-72-A-140714
EXPNO     4
PROCNO    1
Date_     20140716
Time      6.52
INSTRUM   spect
PROBHD    5 mm PABBO BB-
PULPROG   hsqcetgpsi
TD         1024
SOLVENT   CDC13
NS         8
DS         16
SWH        5341.880 Hz
FIDRES     5.216680 Hz
AQ         0.0958964 sec
RG         2050
DW         93.600 usec
DE         6.50 usec
TE         293.3 K
CNST2     145.0000000
D0         0.00000300 sec
D1         1.50000000 sec
D4         0.00172414 sec
D11        0.03000000 sec
D13        0.00000400 sec
D16        0.00020000 sec
D24        0.00110000 sec
INO        0.00003000 sec
ZGPTNS

```

```

===== CHANNEL f1 =====
NUC1      1H
P1        10.00 usec
P2        20.00 usec
P28       1000.00 usec
PL1       -3.50 dB
PL1W      31.17620277 W
SF01      400.1324057 MHz

```

```

===== CHANNEL f2 =====
CPDPRG2   garp
NUC2      13C
P3        10.00 usec
P4        20.00 usec
PCPD2     75.00 usec
PL2       -2.10 dB
PL12      15.40 dB
PL2W      58.37759399 W
PL12W     1.03811681 W
SF02      100.6202727 MHz

```

```

===== GRADIENT CHANNEL =====
GPNAM1    SINE.100
GPNAM2    SINE.100
GPZ1      80.00 %
GPZ2      20.10 %
P16       1000.00 usec
ND0       2
TD         256
SF01      100.6203 MHz
FIDRES    65.104164 Hz
SW         165.639 ppm
FMODE     Echo-Antiecho
SI         1024
SF         400.1300000 MHz
WDW        QSINE
SSB        2
LB         0.00 Hz
GB         0
PC         1.00
SI         1024
MC2       echo-antiecho
SF         100.6127690 MHz
WDW        QSINE
SSB        2
LB         0.00 Hz
GB         0

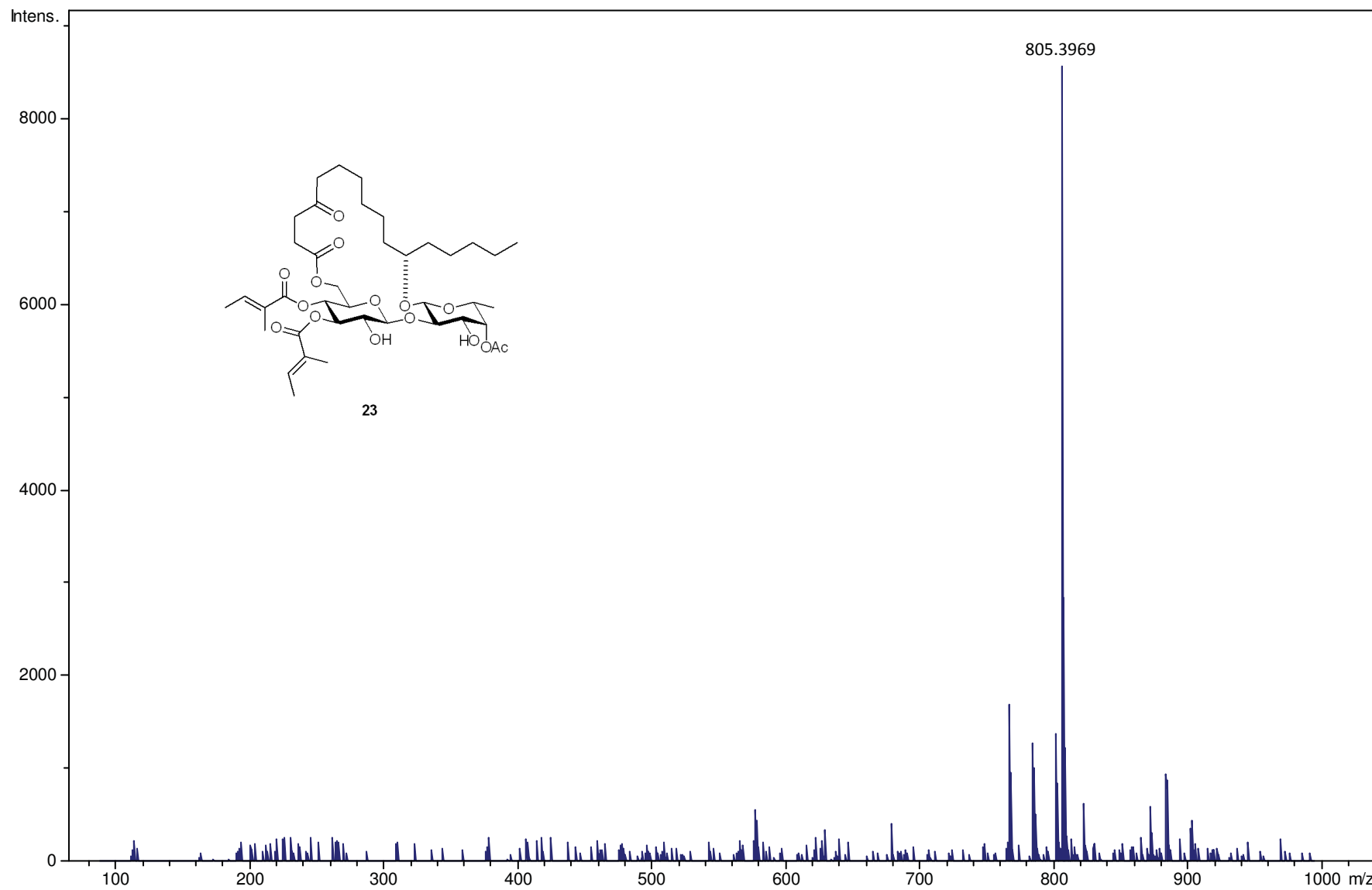
```

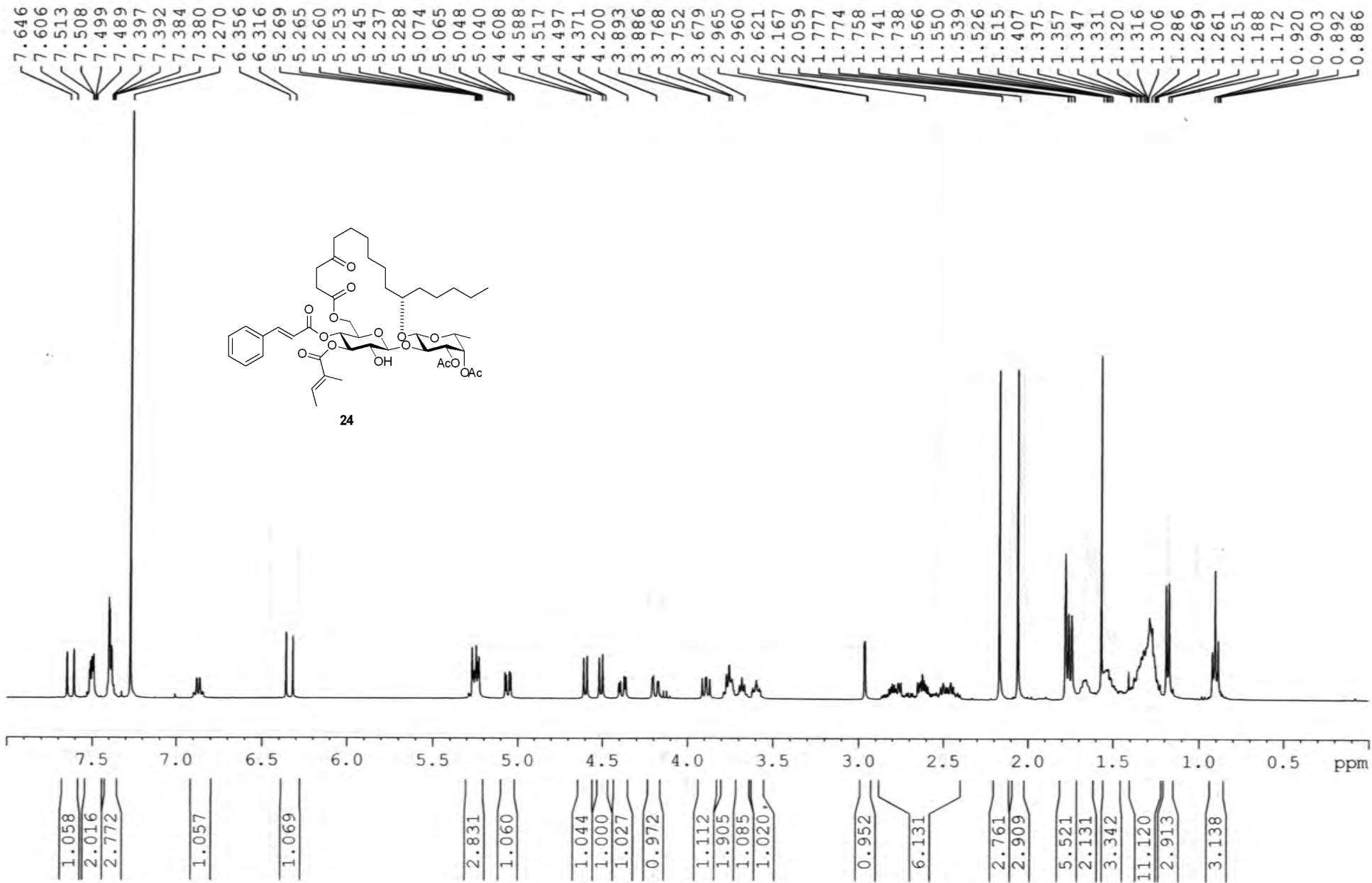
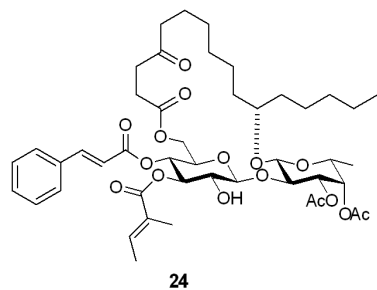
## Arkansas Statewide Mass Spectrometry Facility

## ESI Mass Spectrum

Sample Name: ZIF-7  
Sample id#: 982242  
Instrument: ultrOTOF-Q

12/11/2014



ZGH-*Ipom*-3-25-150914-A(2) 1H in CDCl<sub>3</sub> ( ) ✓

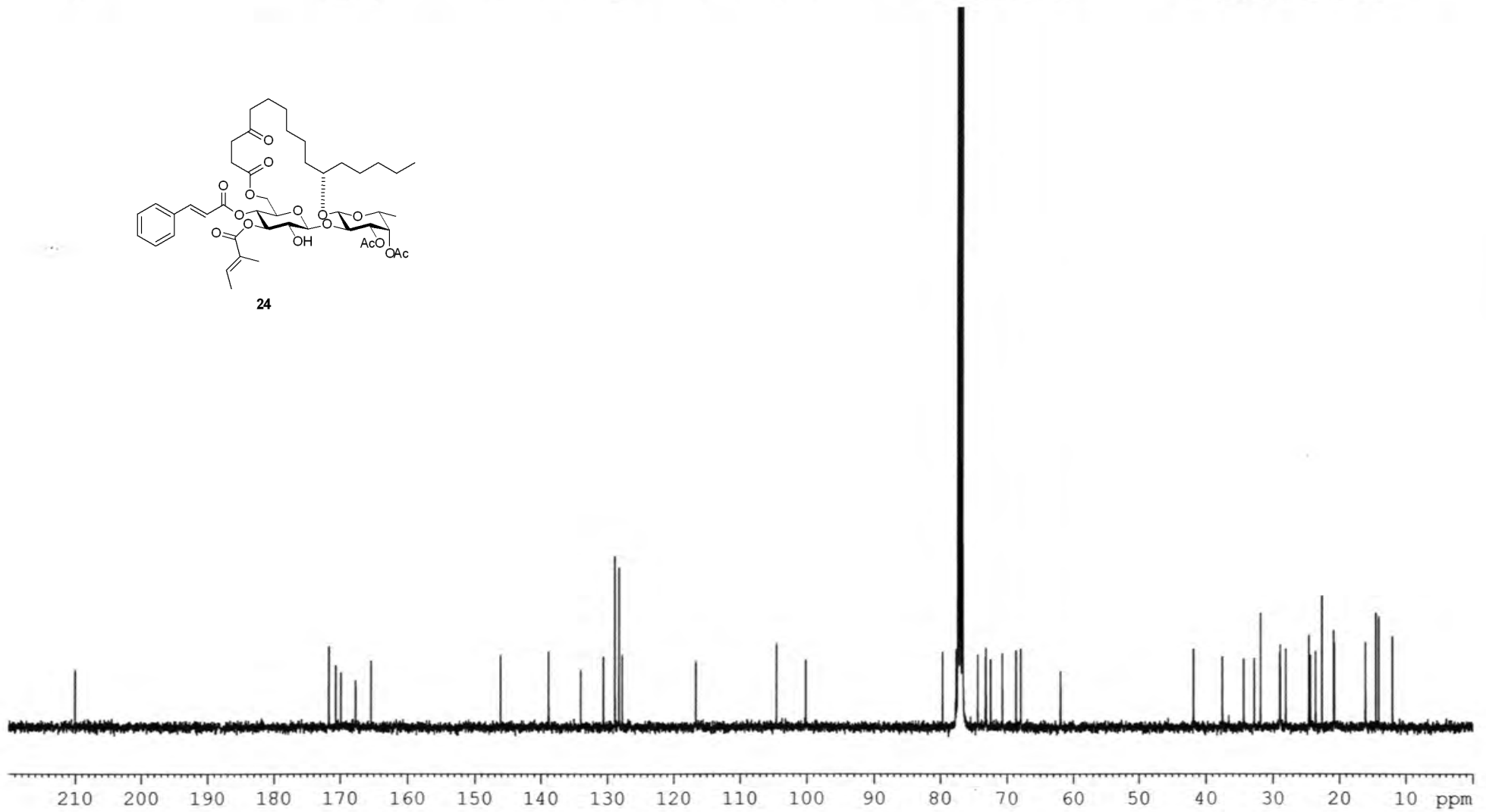
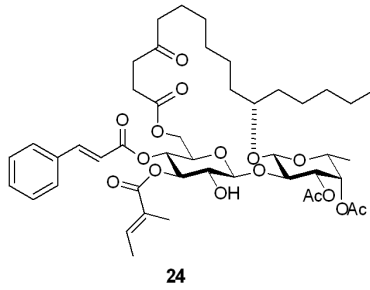
ZGH-*Ipom*-3-25-150914-A(2) <sup>13</sup>C in CDCl<sub>3</sub> ✓

— 210.049

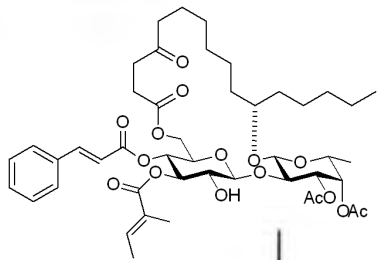
171.735  
170.719  
169.949  
167.760  
165.453

— 146.123  
— 138.854  
— 134.011  
— 130.607  
— 128.881  
— 128.257  
— 127.780  
— 116.675

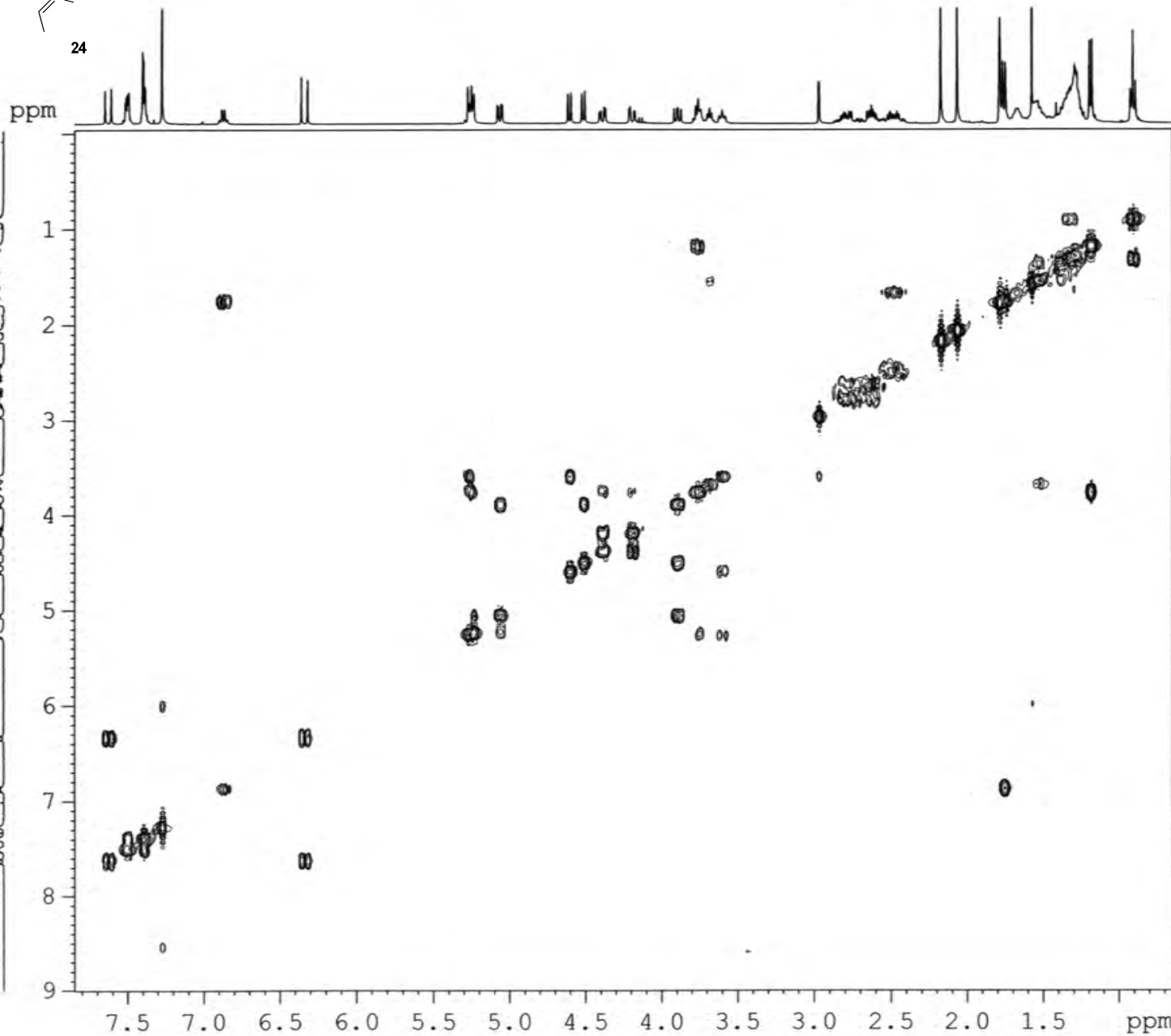
— 104.515  
— 100.159  
79.670  
77.621  
77.318  
77.205  
77.000  
76.683  
74.372  
73.232  
73.155  
72.446  
70.702  
68.651  
67.953  
61.931  
41.852  
37.536  
34.386  
32.828  
31.891  
28.987  
28.916  
28.085  
24.616  
24.397  
23.585  
22.643  
20.879  
20.770  
16.089  
14.501



210 200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 ppm



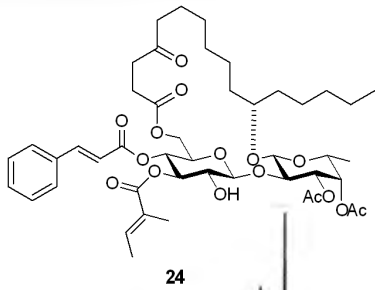
24

ZGH-*Ipom*-3-25-150914-A(2) COSY(1)

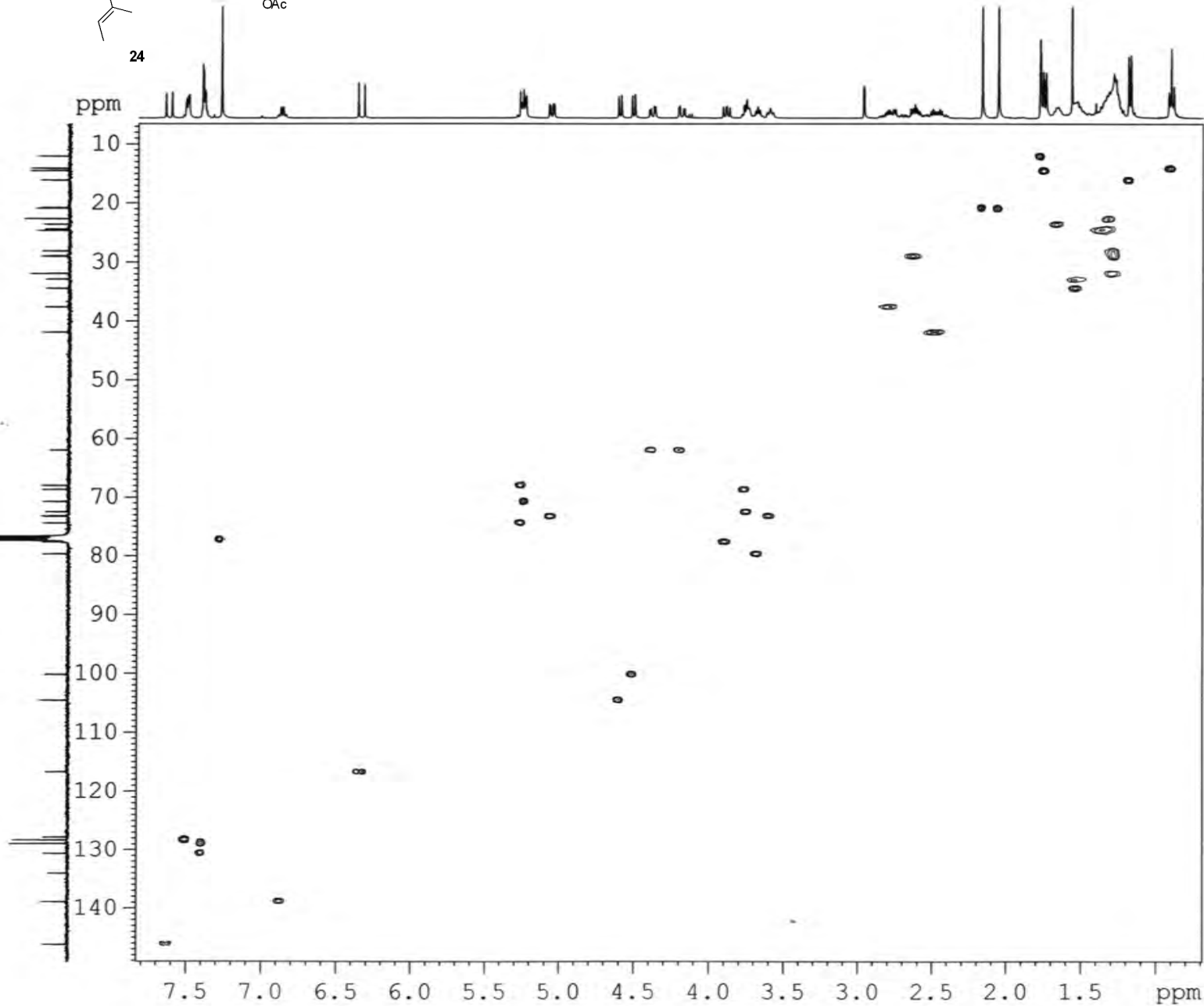
NAME ZGH-*Ipom*-3-25-150914-A(2)  
 EXPNO 2  
 PROCNO 1  
 Date\_ 20150917  
 Time\_ 23.12  
 INSTRUM spect  
 PROBHD 5 mm PABBO BB-  
 PULPROG cosygpqf  
 TD 2048  
 SOLVENT CDC13  
 NS 16  
 DS 8  
 SWH 5341.880 Hz  
 FIDRES 2.608340 Hz  
 AQ 0.1917428 sec  
 RG 724  
 DW 93.600 usec  
 DE 6.50 usec  
 TE 292.4 K  
 DO 0.00000300 sec  
 D1 1.48689198 sec  
 D13 0.00000400 sec  
 D16 0.00020000 sec  
 IN0 0.00018720 sec

----- CHANNEL f1 -----  
 NUC1 1H  
 P0 10.00 usec  
 P1 10.00 usec  
 PL1 -3.50 dB  
 PL1W 31.17620277 W  
 SFO1 400.1324057 MHz

----- GRADIENT CHANNEL -----  
 GPNAM1 SINE.100  
 GPZ1 10.00 %  
 P16 1000.00 usec  
 NDO 1  
 TD 128  
 SFO1 400.1324 MHz  
 FIDRES 41.733440 Hz  
 SW 13.350 ppm  
 FhMODE QF  
 SF 1024  
 SF 400.1300040 MHz  
 WDW SINE  
 SSB 0  
 LB 0.00 Hz  
 GB 0  
 PC 1.00  
 SI 1024  
 MC2 QF  
 SF 400.1300033 MHz  
 WDW SINE  
 SSB 0  
 LB 0.00 Hz  
 GB 0



## ZGH-Ipom-3-25-150914-A(2) HSQC ✓



```

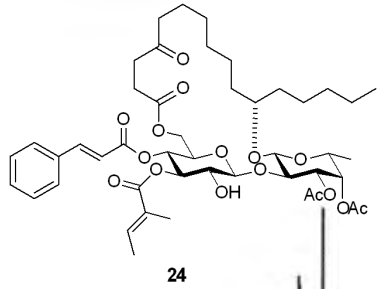
NAME      ZGH-Ipom-3-25-150914-A(2)
EXPNO     3
PROCNO    1
Date_     20150918
Time      0.10
INSTRUM   spect
PROBHD    5 mm PABBO BB-
PULPROG   hsqcetpsi
TD         1024
SOLVENT   CDCl3
NS         16
DS         16
SWH        5341.880 Hz
FIDRES     5.216680 Hz
AQ         0.0958964 sec
RG         2050
DW         93.600 usec
DE         6.50 usec
TE         292.4 K
CNST2     145.0000000
D0         0.00000300 sec
D1         1.50000000 sec
D4         0.00172414 sec
D11        0.03000000 sec
D13        0.00000400 sec
D16        0.00020000 sec
D24        0.00110000 sec
IN0        0.00003000 sec
ZGPTNS

----- CHANNEL f1 -----
NUC1       1H
P1         10.00 usec
P2         20.00 usec
P28        1000.00 usec
PL1        -3.50 dB
PL1W       31.17620277 W
SFO1       400.1324057 MHz

----- CHANNEL f2 -----
CPDPRG2   garp
NUC2       13C
P3         10.00 usec
P4         20.00 usec
PCPD2     75.00 usec
PL2        -2.10 dB
PL12       15.40 dB
PL2W       58.37759399 W
PL12W      1.03811681 W
SFO2       100.6202727 MHz

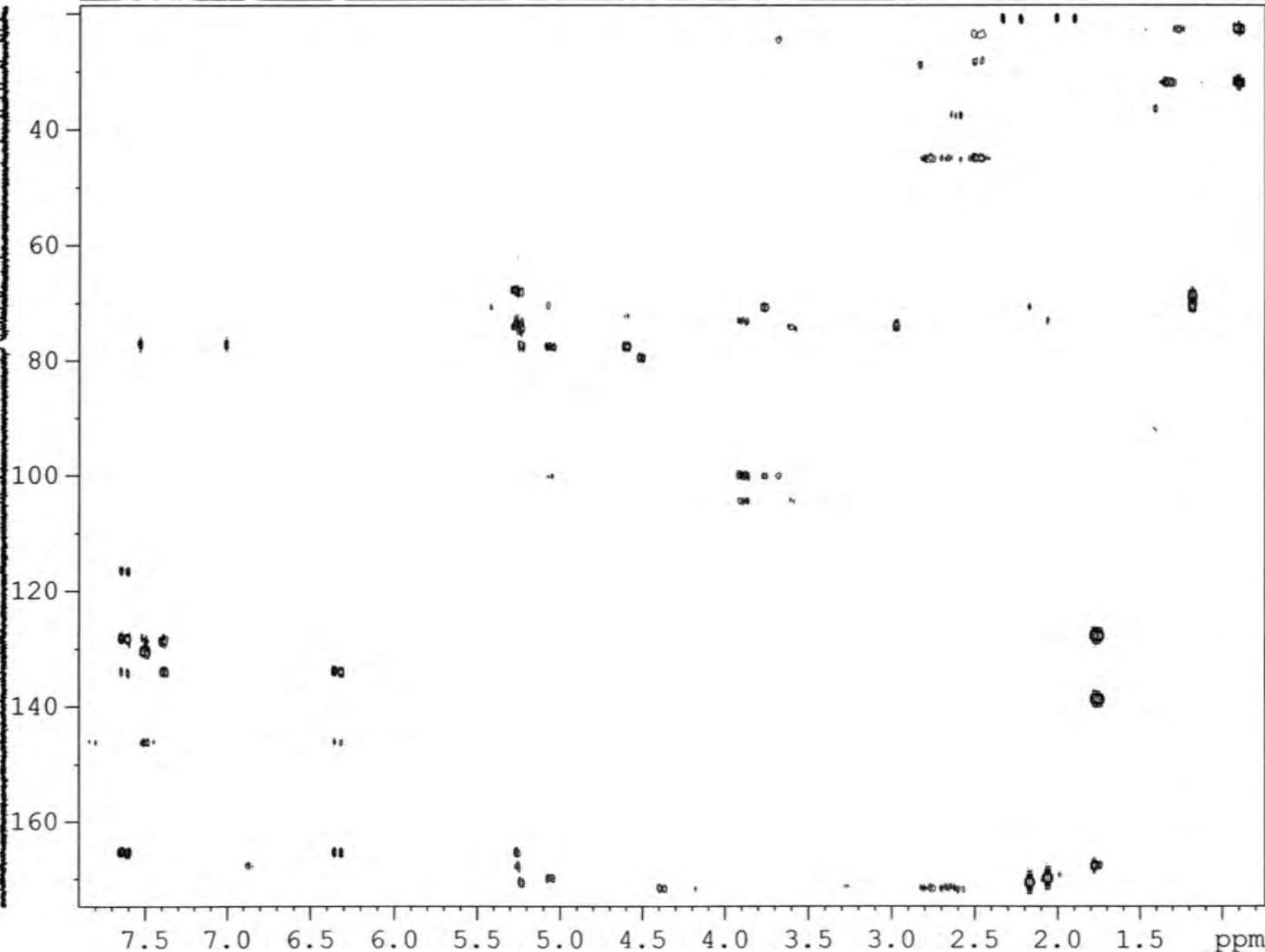
----- GRADIENT CHANNEL -----
GPNAM1    SINE.100
GPNAM2    SINE.100
GP21      80.00 %
GP22      20.10 %
P16       1000.00 usec
NDO        2
TD         256
SFO1       100.6203 MHz
FIDRES     65.104164 Hz
SW         165.639 ppm
FnMODE     Echo-Antiecho
SI         1024
SF         400.130000 MHz
WDW        QSINE
SSB         2
LB         0.00 Hz
GB         0
PC         1.00
SI         1024
MC2        echo-antiecho
SF         100.6127690 MHz
WDW        QSINE
SSB         2
LB         0.00 Hz
GB         0

```



ZGH-Ipom-3-25-150914-A(2) in CDCL<sub>3</sub>

ppm

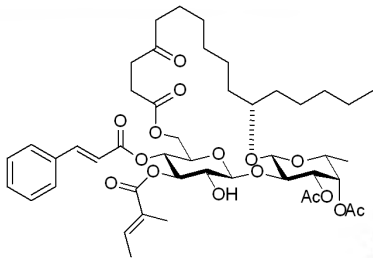


NAME ZGH-Ipom-3-25-150914-A(2)  
 EXPNO 14  
 PROCNO 1  
 Date\_ 20150919  
 Time 9.42  
 INSTRUM spect  
 PROBHD 5 mm PABBO BB-  
 PULPROG hmbcgp1pndqf  
 TD 4096  
 SOLVENT CDCL3  
 NS 120  
 DS 16  
 SWH 5208.333 Hz  
 FIDRES 1.271566 Hz  
 AQ 0.3932660 sec  
 RG 2050  
 DW 96.000 usec  
 DE 6.50 usec  
 TE 292.4 K  
 CNST2 145.0000000  
 CNST13 10.0000000  
 D0 0.00000300 sec  
 D1 1.50000000 sec  
 D2 0.00344828 sec  
 D6 0.05000000 sec  
 D16 0.00020000 sec  
 IN0 0.00003010 sec

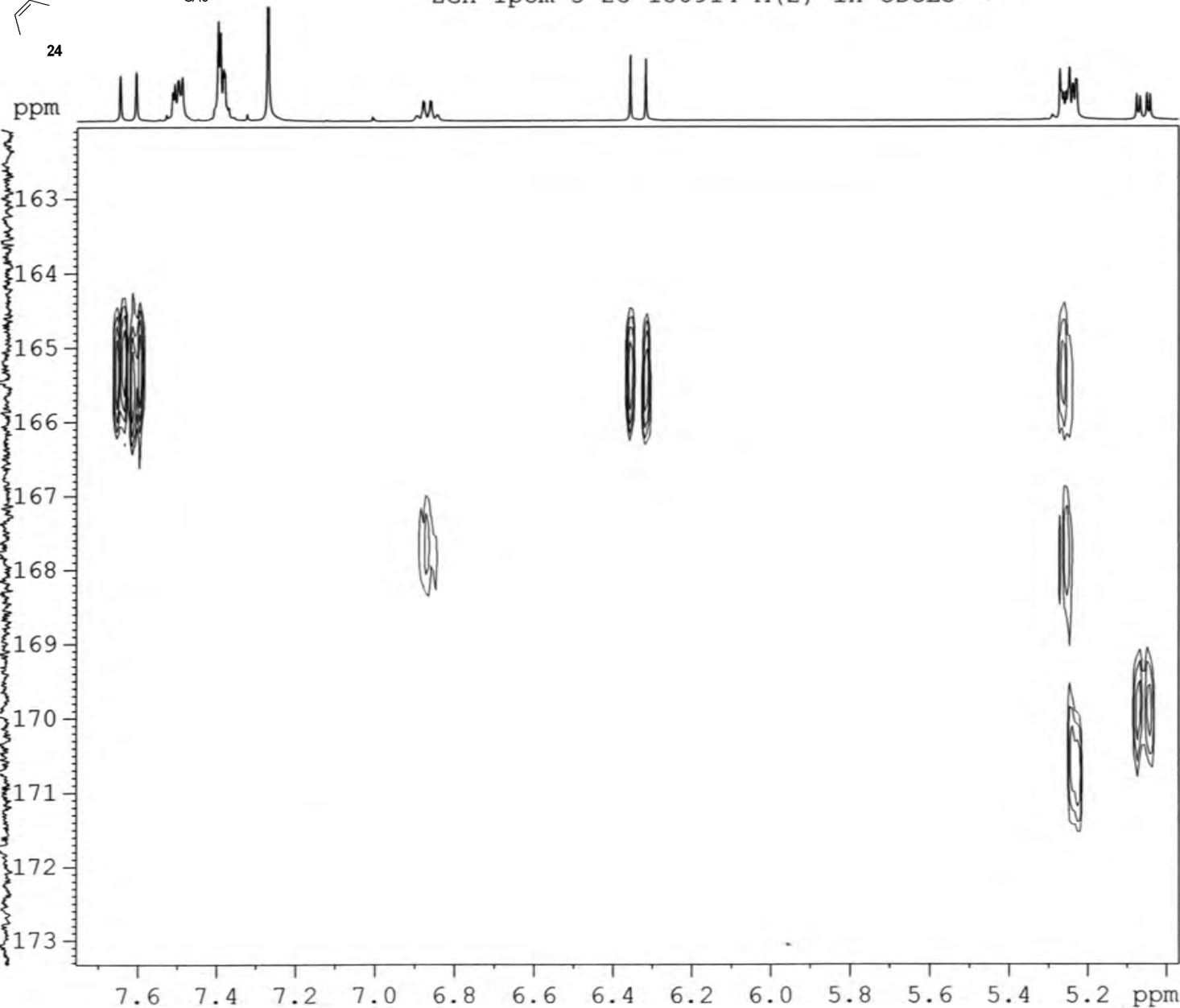
----- CHANNEL f1 -----  
 NUC1 1H  
 P1 10.00 usec  
 P2 20.00 usec  
 PL1 -3.50 dB  
 PL1W 31.17620277 W  
 SFO1 400.1325208 MHz

----- CHANNEL f2 -----  
 NUC2 13C  
 P3 10.00 usec  
 PL2 -2.10 dB  
 PL2W 58.37759399 W  
 SFO2 100.6228138 MHz

----- GRADIENT CHANNEL -----  
 GPNAM1 SINE.100  
 GPNAM2 SINE.100  
 GPNAM3 SINE.100  
 GPZ1 50.00 %  
 GPZ2 30.00 %  
 GPZ3 40.10 %  
 P16 1000.00 usec  
 NDO 2  
 TD 128  
 SFO1 100.6228 MHz  
 FIDRES 129.709091 Hz  
 SW 165.000 ppm  
 FnMODE QF  
 SI 2048  
 SF 400.1300043 MHz  
 WDW SINE  
 SSB 0  
 LB 0.00 Hz  
 GB 0  
 PC 4.00  
 SI 1024  
 MC2 QF  
 SF 100.6127690 MHz  
 WDW SINE  
 SSB 0  
 LB 0.00 Hz  
 GB 0



ZGH-*Ipom*-3-25-150914-A(2) in CDCL<sub>3</sub> ✓



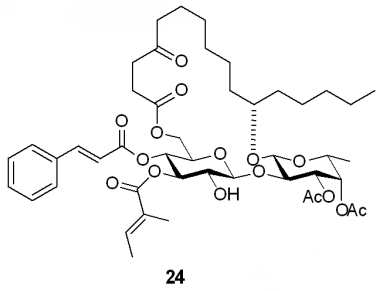
NAME ZGH-*Ipom*-3-25-150914-A(2)  
 EXPNO 14  
 PROCNO 1  
 Date 20150919  
 Time 9.42  
 INSTRUM spect  
 PROBHD 5 mm PABBO BB-  
 PULPROG hmbcgp1pndqf  
 TD 4096  
 SOLVENT CDCL3  
 NS 120  
 DS 16  
 SWH 5208.333 Hz  
 FIDRES 1.271566 Hz  
 AQ 0.3932660 sec  
 RG 2050  
 DW 96.000 usec  
 DE 6.50 usec  
 TE 292.4 K  
 CNST2 145.0000000  
 CNST13 10.0000000  
 D0 0.00000300 sec  
 D1 1.50000000 sec  
 D2 0.00344828 sec  
 D6 0.05000000 sec  
 D16 0.00020000 sec  
 IN0 0.00003010 sec

----- CHANNEL f1 -----  
 NUC1 1H  
 P1 10.00 usec  
 P2 20.00 usec  
 PL1 -3.50 dB  
 PL1W 31.17620277 W  
 SFO1 400.1325208 MHz

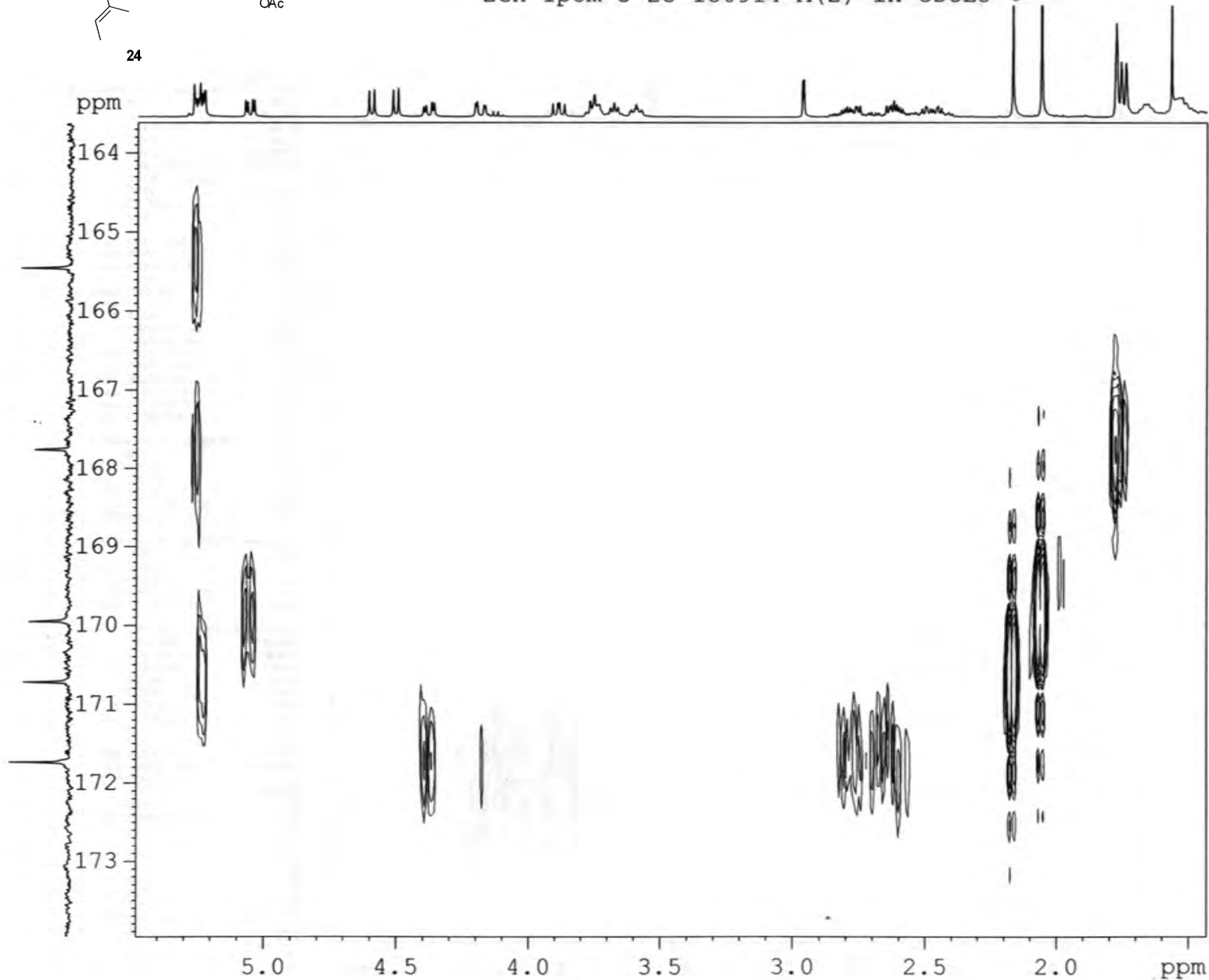
----- CHANNEL f2 -----  
 NUC2 13C  
 P3 10.00 usec  
 PL2 -2.10 dB  
 PL2W 58.37759399 W  
 SFO2 100.6228138 MHz

----- GRADIENT CHANNEL -----  
 GPNAM1 SINE.100  
 GPNAM2 SINE.100  
 GPNAM3 SINE.100  
 GPZ1 50.00 %  
 GPZ2 30.00 %  
 GPZ3 40.10 %  
 P16 1000.00 usec  
 ND0 2  
 TD 128  
 SFO1 100.6228 MHz  
 FIDRES 129.709091 Hz  
 SW 165.000 ppm  
 FmMODE QF  
 SI 2048  
 SF 400.1300043 MHz  
 WDW SINE  
 SSB 0  
 LB 0.00 Hz  
 GB 0  
 PC 4.00  
 SI 1024  
 MC2 QF  
 SF 100.6127690 MHz  
 WDW SINE  
 SSB 0  
 LB 0.00 Hz  
 GB 0





ZGH-*Ipom*-3-25-150914-A(2) in CDCL<sub>3</sub>



NAME ZGH-*Ipom*-3-25-150914-A(2)  
 EXPNO 14  
 PROCNO 1  
 Date\_ 20150919  
 Time\_ 9.42  
 INSTRUM spect  
 PROBHD 5 mm PABBO BB-  
 PULPROG hmbcgp1pndgf  
 TD 4096  
 SOLVENT CDCL3  
 NS 120  
 DS 16  
 SWH 5208.333 Hz  
 FIDRES 1.271566 Hz  
 AQ 0.3932660 sec  
 RG 2050  
 DW 96.000 usec  
 DE 6.50 usec  
 TE 292.4 K  
 CNST2 145.0000000  
 CNST13 10.0000000  
 D0 0.00000300 sec  
 D1 1.50000000 sec  
 D2 0.00344828 sec  
 D6 0.05000000 sec  
 D16 0.00020000 sec  
 IN0 0.00003010 sec

----- CHANNEL f1 -----  
 NUC1 1H  
 P1 10.00 usec  
 P2 20.00 usec  
 PL1 -3.50 dB  
 PL1W 31.17620277 W  
 SFO1 400.1325208 MHz

----- CHANNEL f2 -----  
 NUC2 13C  
 P3 10.00 usec  
 PL2 -2.10 dB  
 PL2W 58.37759399 W  
 SFO2 100.6228138 MHz

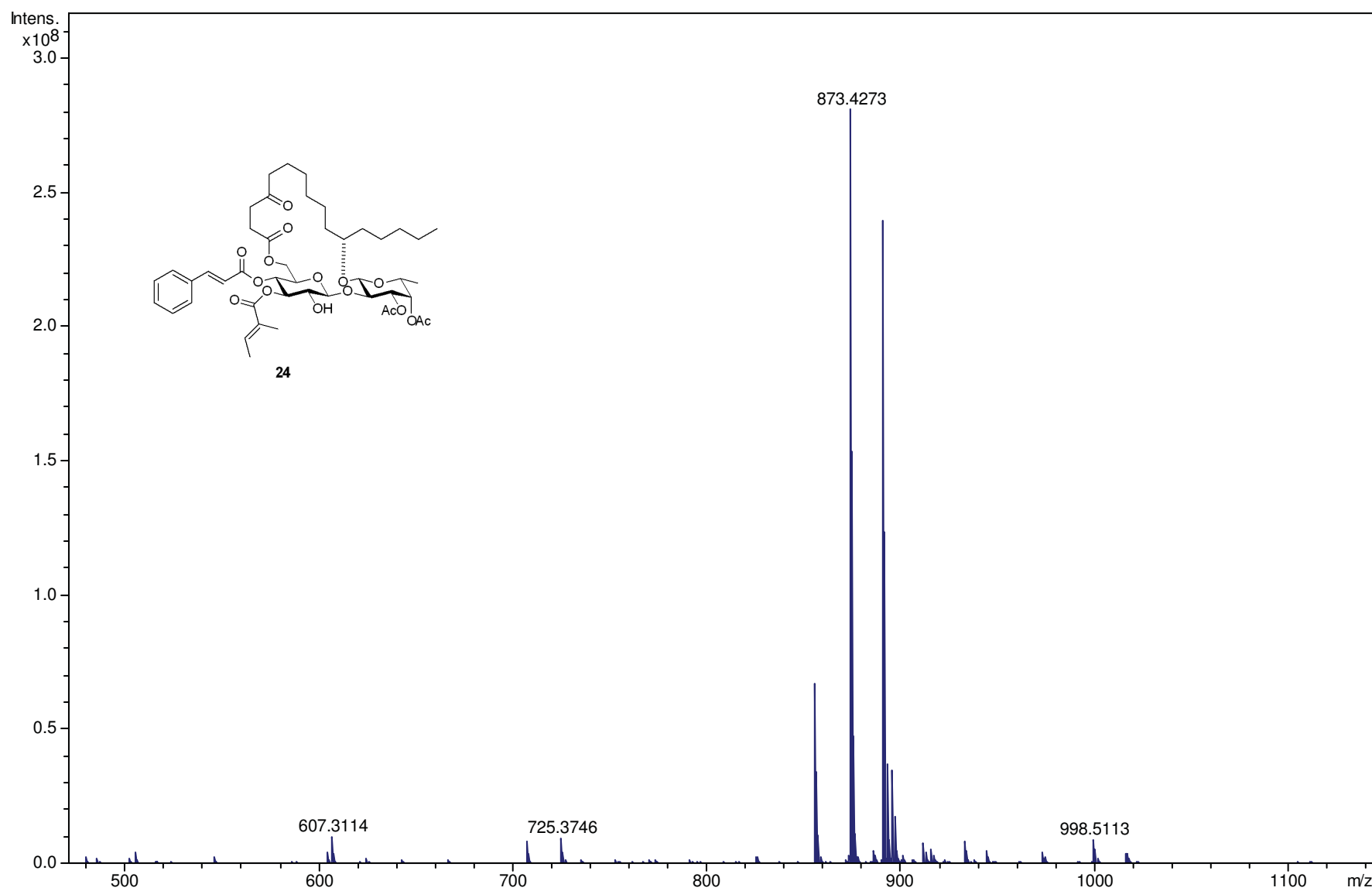
----- GRADIENT CHANNEL -----  
 GPNAM1 SINE.100  
 GPNAM2 SINE.100  
 GPNAM3 SINE.100  
 GPZ1 50.00 %  
 GPZ2 30.00 %  
 GPZ3 40.10 %  
 P16 1000.00 usec  
 ND0 2  
 TD 128  
 SFO1 100.6228 MHz  
 FIDRES 129.709091 Hz  
 SW 165.000 ppm  
 FhMODE QF  
 SI 2048  
 SF 400.1300043 MHz  
 WDW SINE  
 SSB 0  
 LB 0.00 Hz  
 GB 0  
 PC 4.00  
 SI 1024  
 MC2 QF  
 SF 100.6127690 MHz  
 WDW SINE  
 SSB 0  
 LB 0.00 Hz  
 GB 0

## Arkansas Statewide Mass Spectrometry Facility

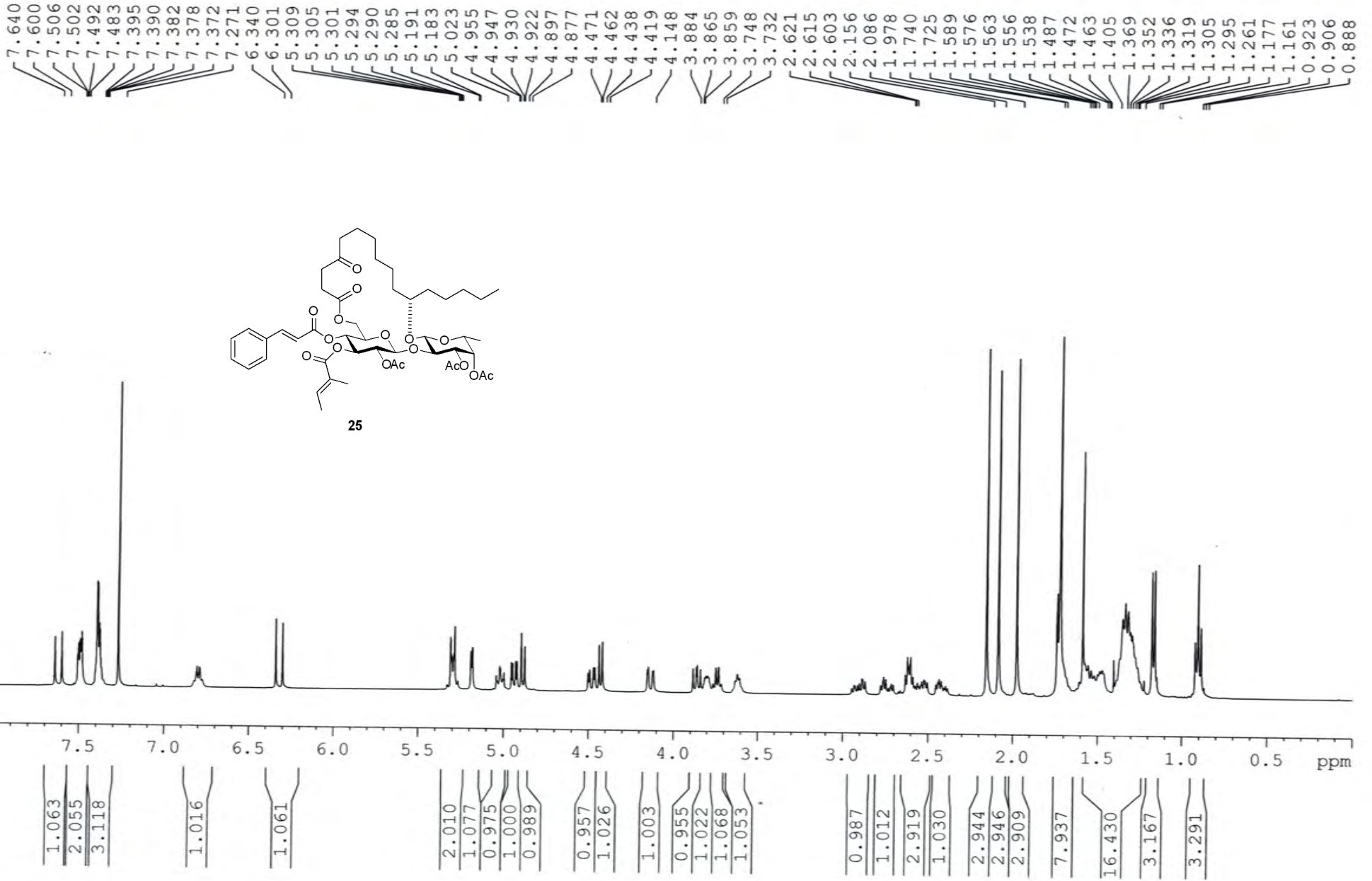
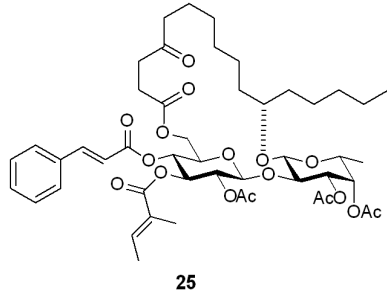
## ESI-FTMS Mass Spectrum

Sample Name: ZIF-31  
Sample id#: 175  
Instrument: Bruker ApexII-FTMS

10/5/2015



## ZGH-Ipom-3-25-150914-B(2) 1H in CDCL3



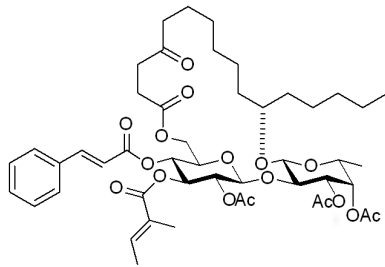
ZGH-*Ipom-3-25-150914-B(2)* 13C in CDCl<sub>3</sub>

— 210.049

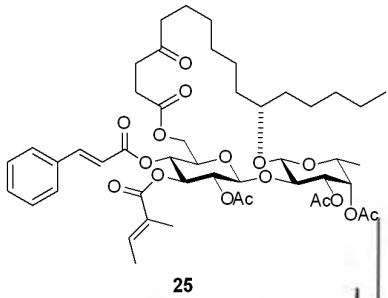
171.621  
170.610  
170.184  
169.461  
167.175  
165.206

— 146.213  
— 139.151  
— 133.984  
— 130.640  
— 128.888  
— 128.254  
— 127.430  
— 116.536

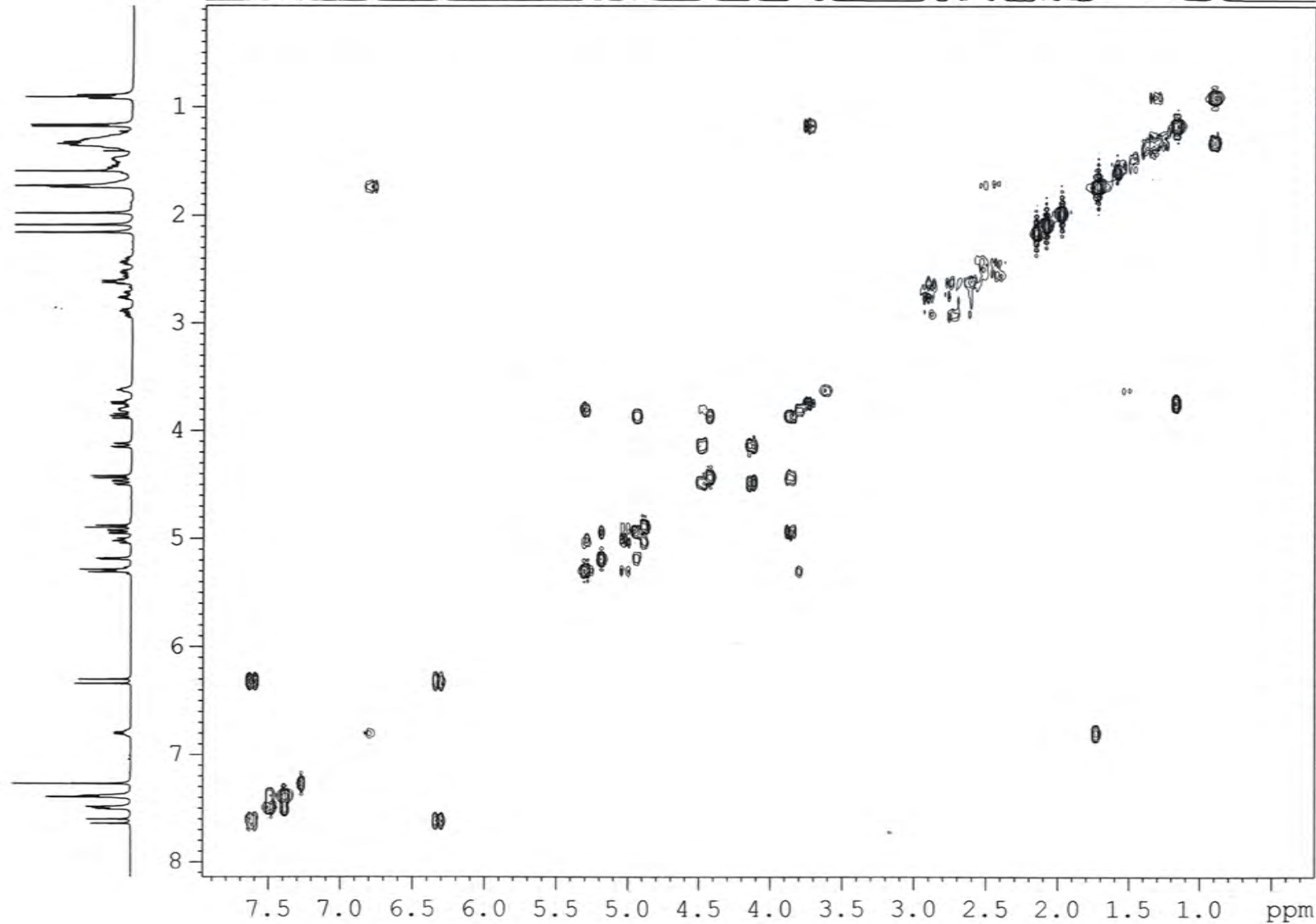
101.059  
100.972  
81.046  
77.317  
77.203  
77.000  
76.682  
75.965  
73.723  
72.974  
72.305  
71.986  
70.761  
68.582  
68.104  
62.102  
41.834  
37.527  
34.458  
33.242  
31.959  
28.905  
28.793  
28.057  
24.625  
24.178  
23.860  
22.644  
20.848  
20.742  
20.524  
16.122  
14.534  
14.088



210 200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 ppm

ZGH-*Ipom*-3-25-150914-B(2) COSY

ppm



```

NAME      ZGH-Ipom-3-25-150914-B(2)
EXPNO     2
PROCNO    1
Date_     20150919
Time      23.02
INSTRUM   spect
PROBHD    5 mm PABBO BB-
PULPROG   cosygpgf
TD        2048
SOLVENT   CDCl3
NS        8
DS        8
SWH       5341.880 Hz
FIDRES    2.608340 Hz
AQ        0.1917428 sec
RG        456
DW        93.600 usec
DE        6.50 usec
TE        292.3 K
D0        0.00000300 sec
D1        1.48689198 sec
D13       0.00000400 sec
D16       0.00020000 sec
IN0       0.00018720 sec
  
```

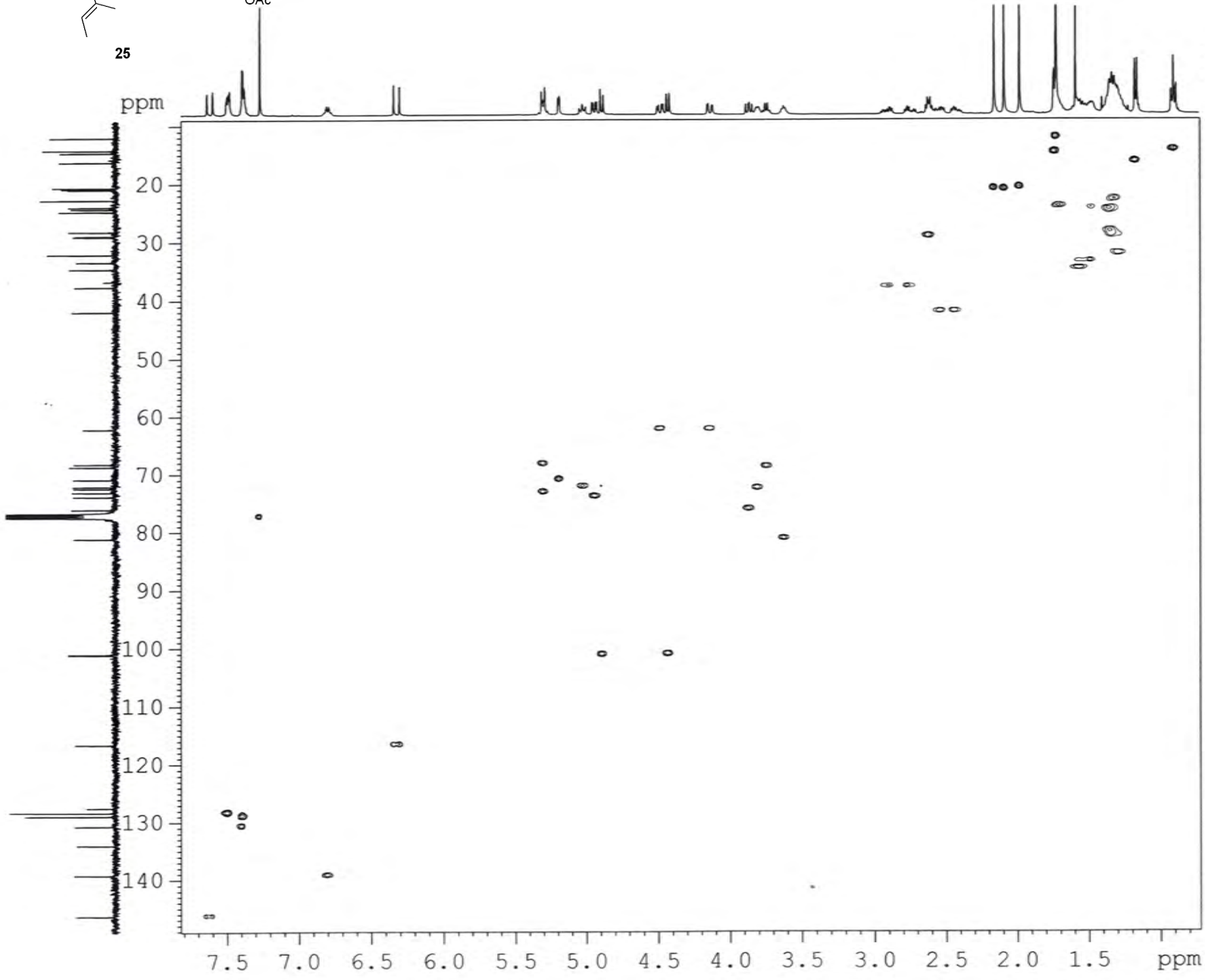
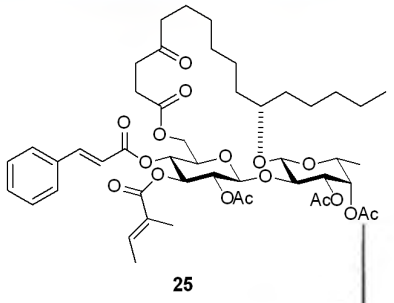
```

===== CHANNEL f1 =====
NUC1      1H
P0        10.00 usec
P1        10.00 usec
PL1       -3.50 dB
PL1W      31.17620277 W
SFO1      400.1324057 MHz
  
```

```

===== GRADIENT CHANNEL =====
GPNAM1    SINE.100
GPZ1      10.00 %
P16       1000.00 usec
ND0       1
TD        128
SFO1      400.1324 MHz
FIDRES    41.733440 Hz
SW        13.350 ppm
FnMODE    QF
SI        1024
SF        400.1300040 MHz
WDW       SINE
SSB       0
LB        0.00 Hz
GB        0
PC        1.00
SI        1024
MC2       QF
SF        400.1300033 MHz
WDW       SINE
SSB       0
LB        0.00 Hz
GB        0
  
```

ZGH-Ipom-3-25-150914-B(2) HSQC



```

NAME      ZGH-Ipom-3-25-150914-B(2)
EXPNO     3
PROCNO    1
Date_     20150919
Time      23.32
INSTRUM   spect
PROBHD    5 mm PABBO BB-
PULPROG   hsqcetgps1
TD         1024
SOLVENT   CDCl3
NS         16
DS         16
SWH        5341.880 Hz
FIDRES     5.216680 Hz
AQ         0.0958964 sec
RG         2050
DW         93.600 usec
DE         6.50 usec
TE         292.5 K
CNST2     145.0000000
D0         0.00000300 sec
D1         1.50000000 sec
D4         0.00172414 sec
D11        0.03000000 sec
D13        0.00000400 sec
D16        0.00020000 sec
D24        0.00110000 sec
IN0        0.00003000 sec
ZGOPTNS

===== CHANNEL f1 =====
NUC1       1H
P1         10.00 usec
P2         20.00 usec
P28        1000.00 usec
PL1        -3.50 dB
PL1W       31.17620277 W
SFO1       400.1324057 MHz

===== CHANNEL f2 =====
CPDPRG2    garp
NUC2       13C
P3         10.00 usec
P4         20.00 usec
PCPD2      75.00 usec
PL2        -2.10 dB
PL12       15.40 dB
PL2W       58.37759399 W
PL12W      1.03811681 W
SFO2       100.6202727 MHz

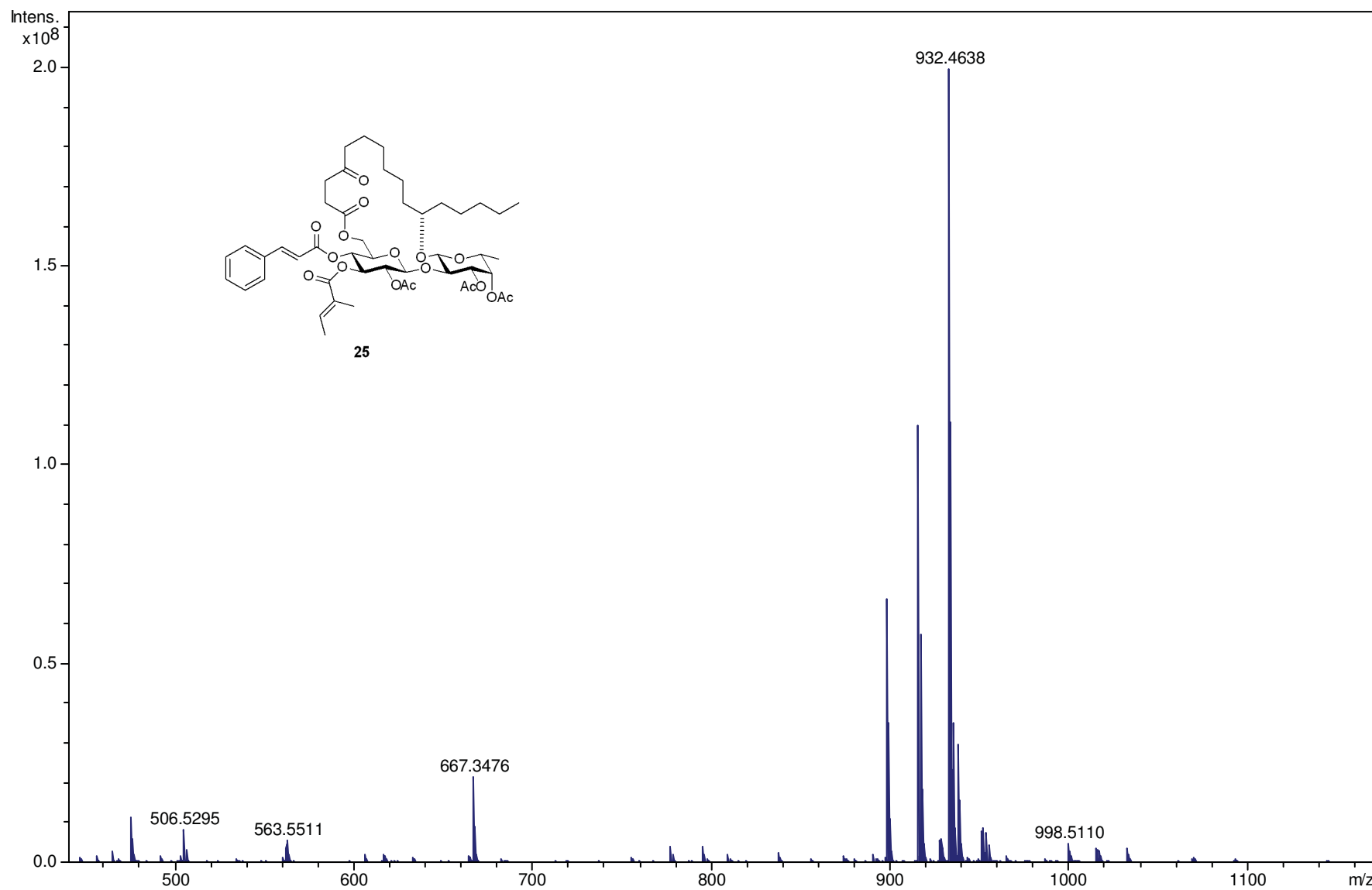
===== GRADIENT CHANNEL =====
GPNAM1     SINE.100
GPNAM2     SINE.100
GPZ1       80.00 %
GPZ2       20.10 %
P16        1000.00 usec
ND0         2
TD          256
SFO1       100.6203 MHz
FIDRES     65.104164 Hz
SW         165.639 ppm
FnMODE     Echo-Antiecho
SI         1024
SF         400.1300000 MHz
WDW        QSINE
SSB         2
LB          0.00 Hz
GB          0
PC          1.00
SI         1024
MC2        echo-antiecho
SF         100.6127690 MHz
WDW        QSINE
SSB         2
LB          0.00 Hz
GB          0
    
```

## Arkansas Statewide Mass Spectrometry Facility

## ESI-FTMS Mass Spectrum

Sample Name: ZIF-32  
Sample id#: 176  
Instrument: Bruker ApexII-FTMS

10/5/2015







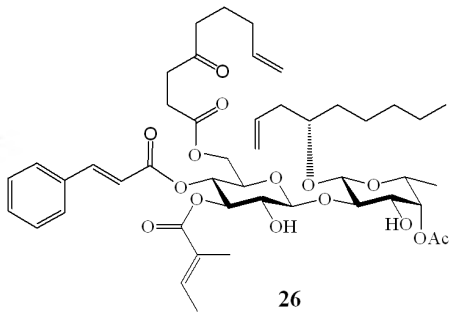
ZGH-*Ipom*-2-42-A-140427  $^{13}\text{C}$  in  $\text{CDCl}_3$ 

— 208.524

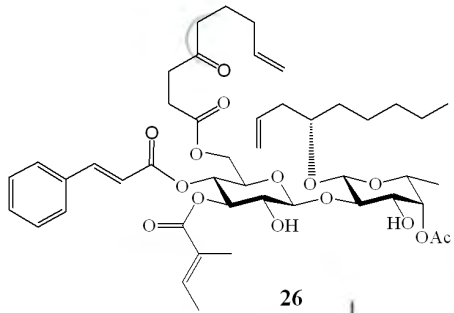
172.460  
171.314  
167.996  
165.429

146.421  
139.085  
137.907  
134.288  
133.920  
130.650  
128.868  
128.245  
127.661  
117.467  
116.449  
115.162

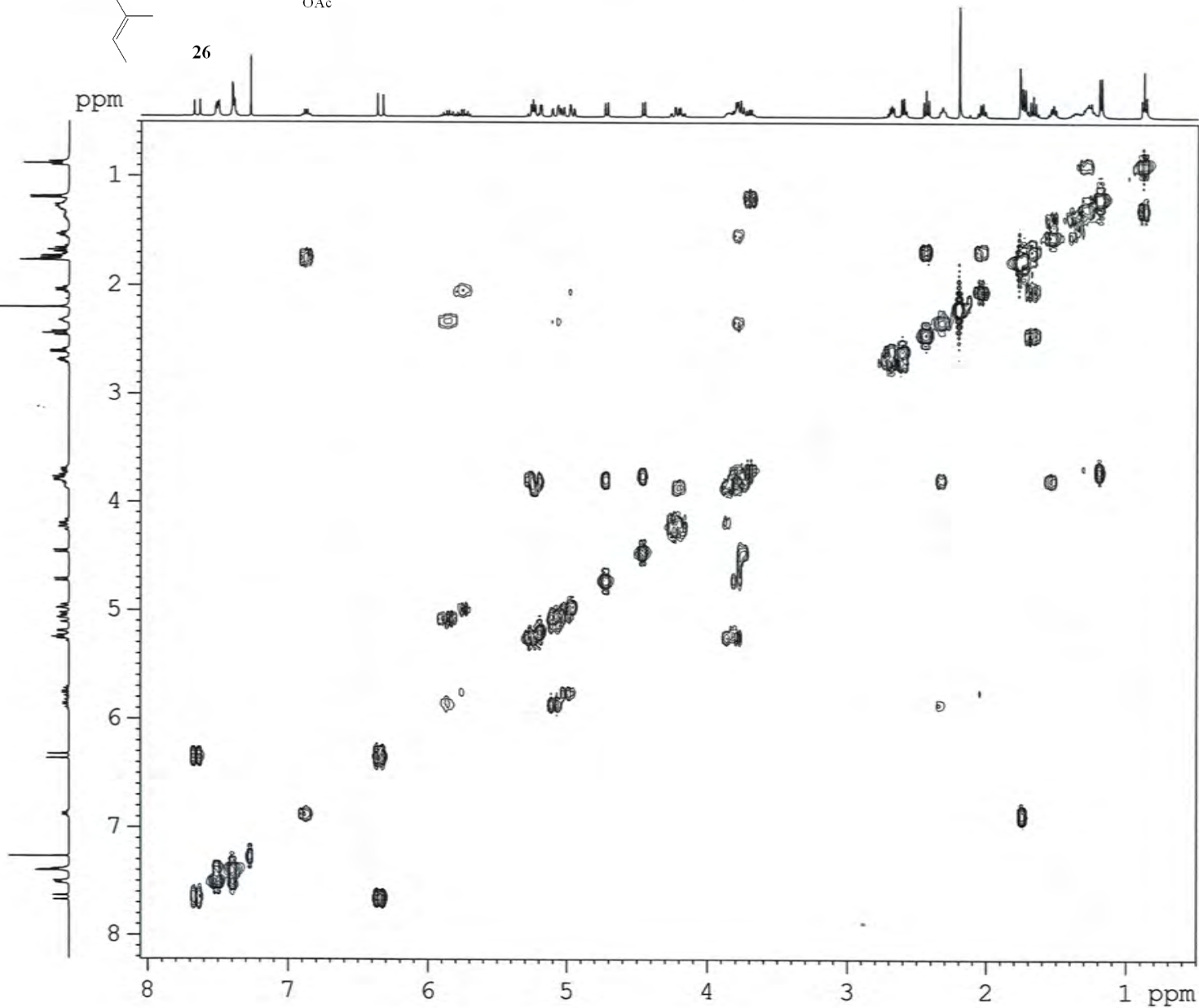
103.040  
99.648  
78.616  
78.407  
77.321  
77.206  
77.003  
76.686  
74.395  
72.561  
72.155  
71.787  
71.401  
69.136  
68.093  
62.383  
41.742  
37.986  
36.942  
34.169  
32.985  
31.667  
27.692  
24.610  
22.661  
22.508  
20.904  
16.218  
14.460  
14.023  
11.961



210 200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 ppm



## ZGH-Ipom-2-42-A-140427 COSY



```

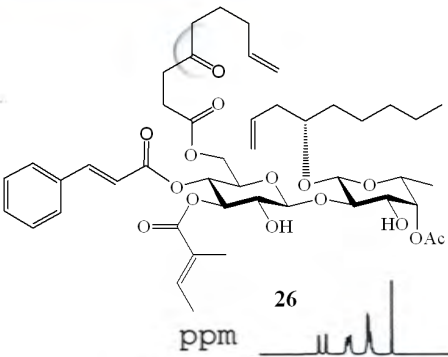
NAME      ZGH-Ipom-2-42-A-140427
EXPNO     2
PROCNO    1
Date_     20140430
Time      21.49
INSTRUM   spect
PROBHD    5 mm PABBO BB-
PULPROG   cosygpgf
TD         2048
SOLVENT   CDCl3
NS         4
DS         8
SWH       5341.880 Hz
FIDRES    2.608340 Hz
AQ         0.1917428 sec
RG         203
DW         93.600 usec
DE         6.50 usec
TE         292.5 K
D0         0.00000300 sec
D1         1.48689198 sec
D13        0.00000400 sec
D16        0.00020000 sec
IN0        0.00018720 sec
  
```

```

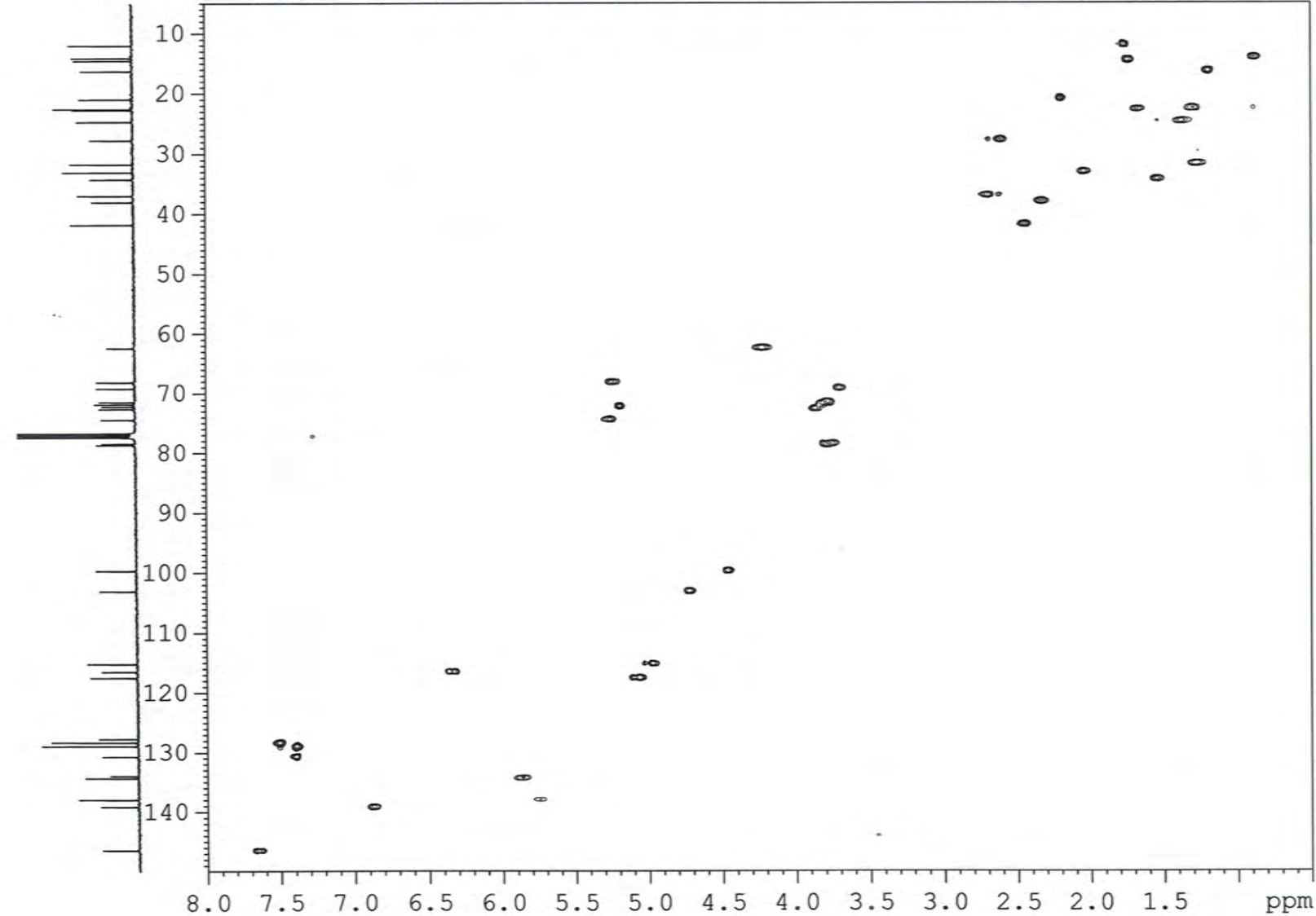
===== CHANNEL f1 =====
NUC1      1H
P0        10.00 usec
P1        10.00 usec
PL1       -3.50 dB
PL1W      31.17620277 W
SFO1      400.1324057 MHz
  
```

```

===== GRADIENT CHANNEL =====
GPNAM1    SINE.100
GPZ1      10.00 %
P16       1000.00 usec
ND0        1
TD         128
SFO1      400.1324 MHz
FIDRES    41.733440 Hz
SW         13.350 ppm
FnMODE    QF
SI         1024
SF         400.1300040 MHz
WDW        SINE
SSB        0
LB         0.00 Hz
GB         0
PC         1.00
SI         1024
MC2       QF
SF         400.1300033 MHz
WDW        SINE
SSB        0
LB         0.00 Hz
GB         0
  
```

ZGH-*Ipom-2-42-A-140427* HSQC

ppm



```

NAME      ZGH-Ipom-2-42-A-140427
EXPNO     4
PROCNO    1
Date_     20140501
Time      0.17
INSTRUM   spect
PROBHD    5 mm PABBO BB-
PULPROG   hsqcetgpsi
TD         1024
SOLVENT   CDCl3
NS         6
DS         16
SWH        5341.880 Hz
FIDRES     5.216680 Hz
AQ         0.0958964 sec
RG         2050
DW         93.600 usec
DE         6.50 usec
TE         293.1 K
CNST2     145.0000000
D0         0.00000300 sec
D1         1.50000000 sec
D4         0.00172414 sec
D11        0.03000000 sec
D13        0.00000400 sec
D16        0.00020000 sec
D24        0.00110000 sec
IN0        0.00003000 sec
ZGPTNS

```

```

===== CHANNEL f1 =====
NUC1      1H
P1         10.00 usec
P2         20.00 usec
P28        1000.00 usec
PL1        -3.50 dB
PL1W       31.17620277 W
SFO1       400.1324057 MHz

```

```

===== CHANNEL f2 =====
CPDPRG2   garp
NUC2      13C
P3         10.00 usec
P4         20.00 usec
PCPD2     75.00 usec
PL2        -2.10 dB
PL12       15.40 dB
PL2W       58.37759399 W
PL12W      1.03811681 W
SFO2       100.6202727 MHz

```

```

===== GRADIENT CHANNEL =====
GPNAM1    SINE.100
GPNAM2    SINE.100
GPZ1      80.00 %
GPZ2      20.10 %
P16       1000.00 usec
ND0        2
TD         256
SFO1       100.6203 MHz
FIDRES     65.104164 Hz
SW         165.639 ppm
FnMODE     Echo-Antiecho
SI         1024
SF         400.1300000 MHz
WDW        QSINE
SSB        2
LB         0.00 Hz
GB         0
PC         1.00
SI         1024
MC2        echo-antiecho
SF         100.6127690 MHz
WDW        QSINE
SSB        2
LB         0.00 Hz
GB         0

```

## Arkansas Statewide Mass Spectrometry Facility

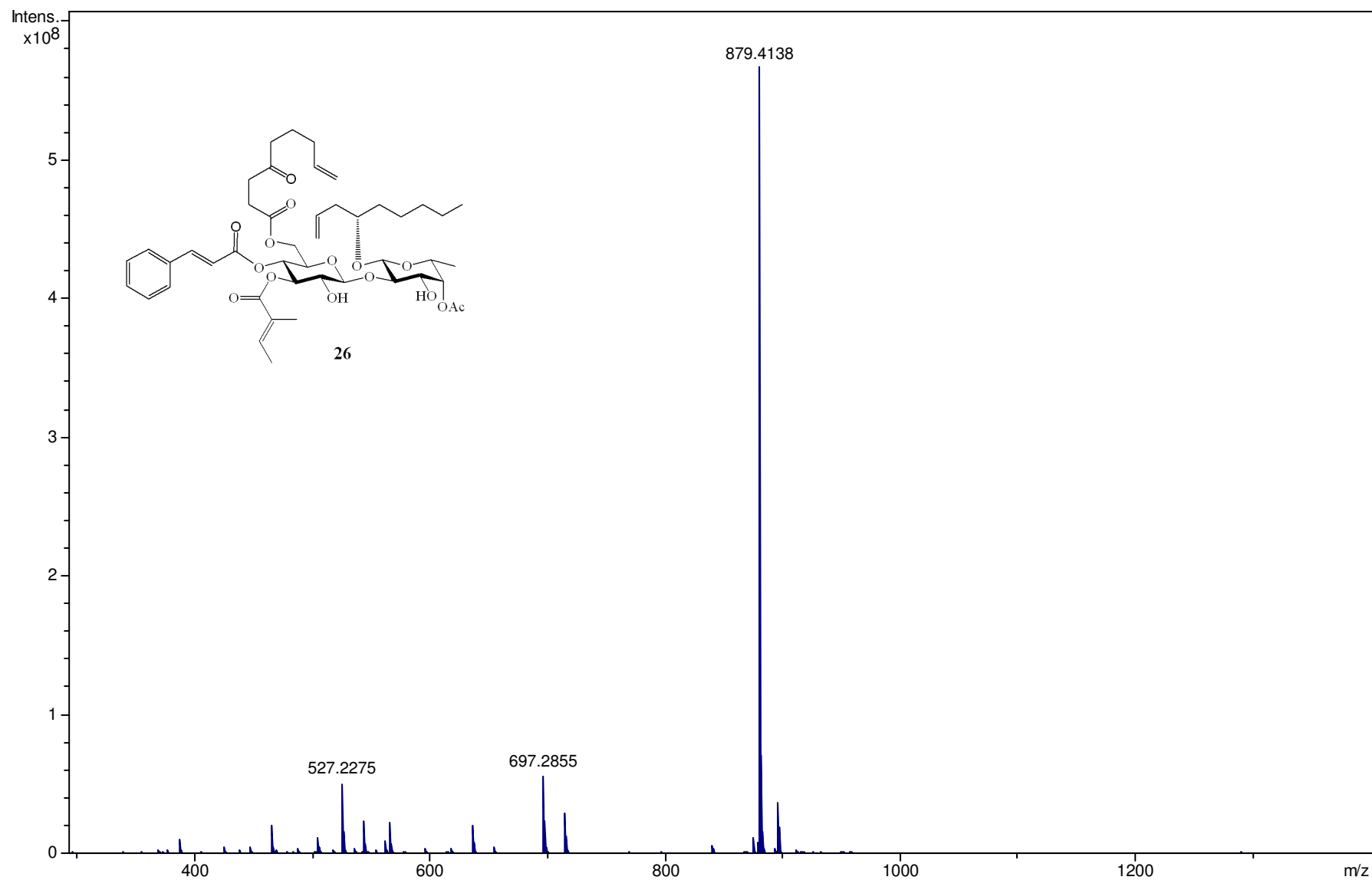
## ESI-FTMS Mass Spectrum

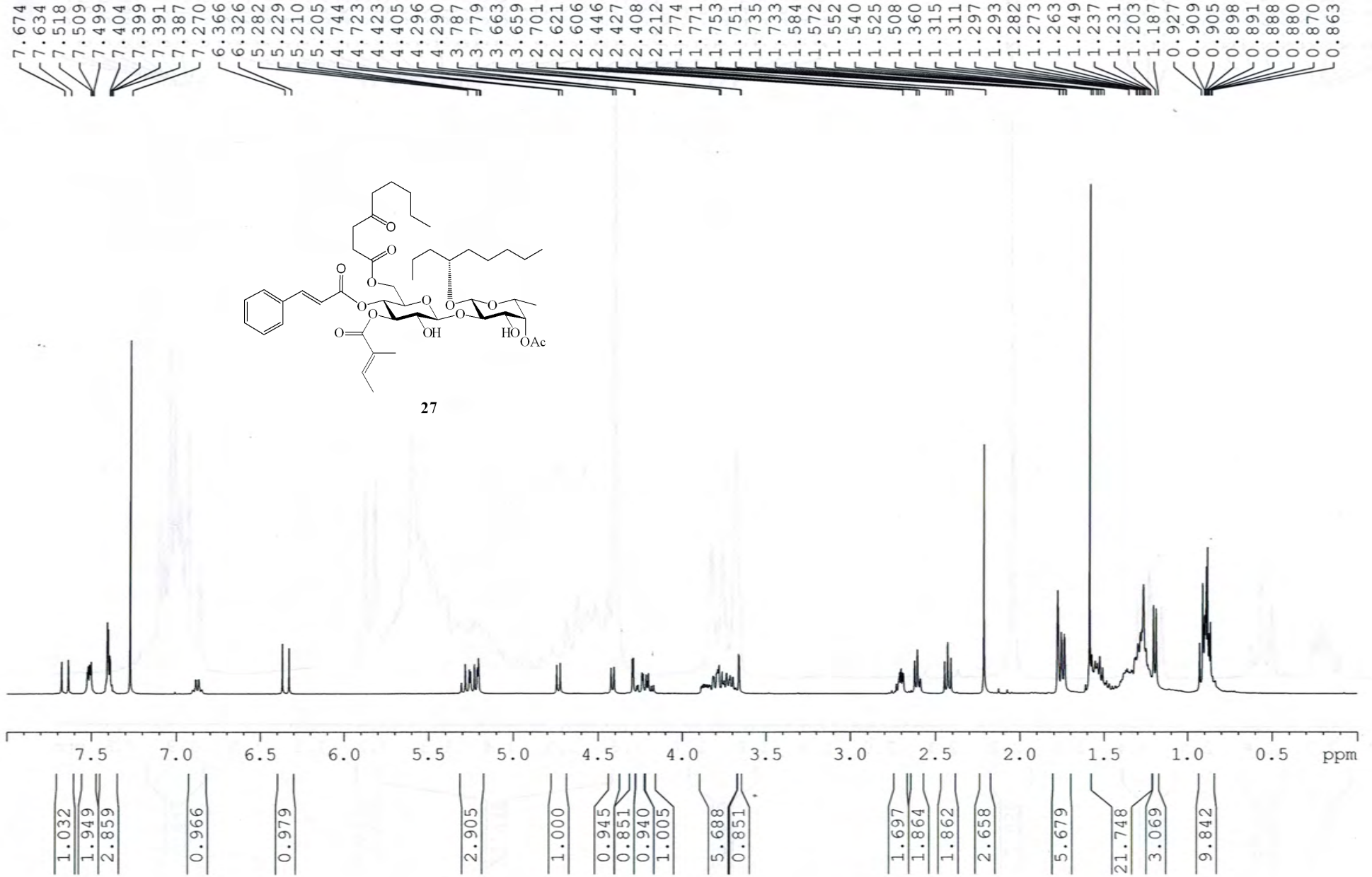
Sample Name: ZIF-3

Sample id#: 237

11/2/2015

Instrument: Bruker ApexII-FTMS



ZGH-*Ipom*-3-10-A-150803 1H in CDCl<sub>3</sub>

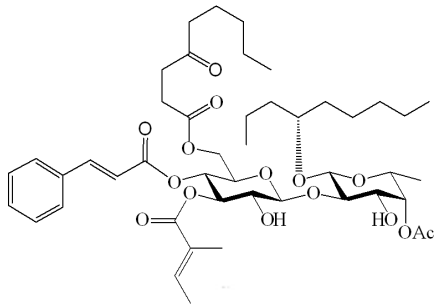
ZGH-*Ipom*-3-10-A-150803 13C in CDCl<sub>3</sub>

— 208.917

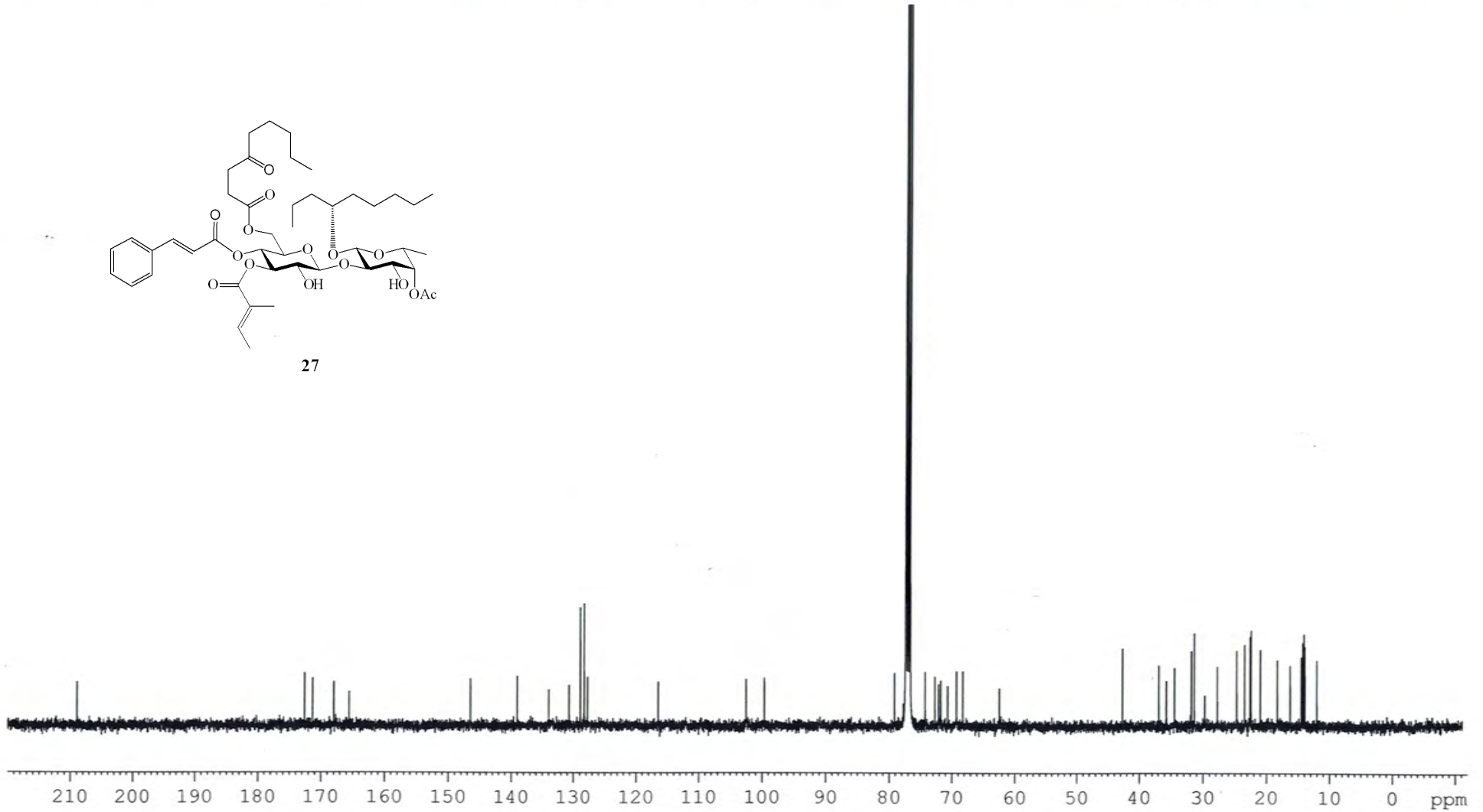
 172.540  
 171.295  
 167.939  
 165.503

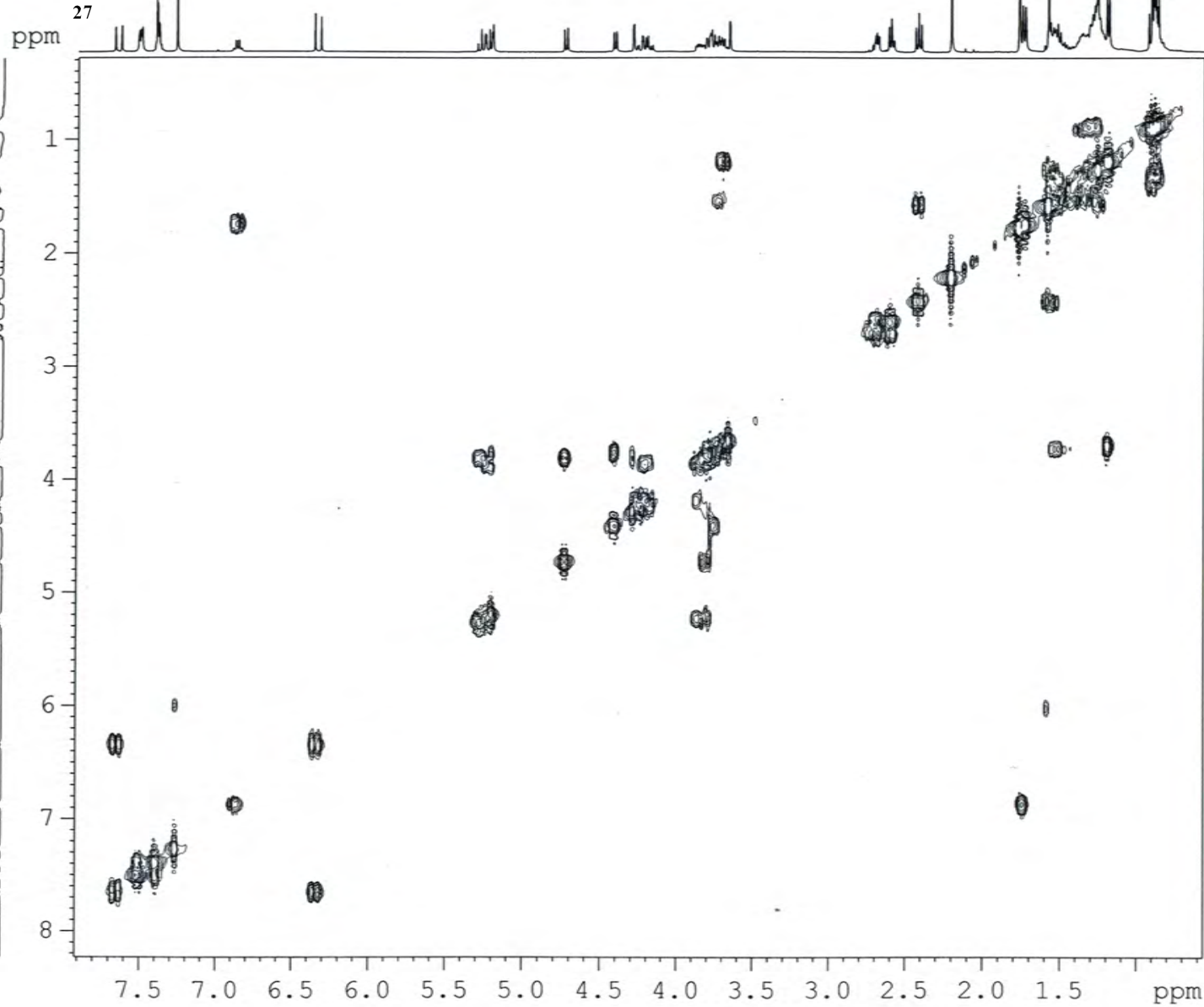
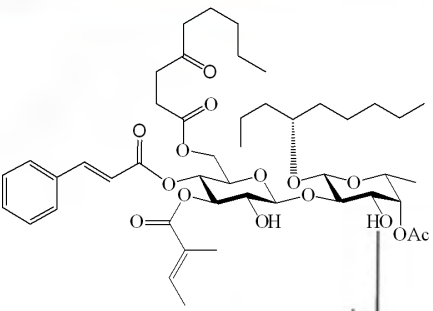
 — 146.537  
 139.049  
 133.982  
 130.697  
 128.907  
 128.289  
 127.747  
 — 116.474

 — 102.524  
 — 99.649

 79.119  
 77.724  
 77.203  
 74.243  
 72.701  
 72.111  
 71.757  
 70.642  
 69.228  
 68.220  
 62.408  
 42.679  
 36.884  
 35.693  
 34.406  
 31.795  
 31.348  
 29.694  
 27.721  
 24.678  
 23.429  
 22.567  
 22.420  
 20.956  
 18.276  
 16.250  
 14.485  
 14.260  
 14.079  
 13.905  
 12.004


27



ZGH-*Ipom*-3-10-A-150803 COSY

```

NAME      ZGH-Ipom-3-10-A-150803
EXPNO     6
PROCNO    1
Date_     20150804
Time      8.26
INSTRUM   spect
PROBHD    5 mm PABBO BB-
PULPROG   cosygpgqf
TD         2048
SOLVENT   CDCl3
NS         8
DS         8
SWH       5341.880 Hz
FIDRES    2.608340 Hz
AQ         0.1917428 sec
RG         512
DW         93.600 usec
DE         6.50 usec
TE         293.2 K
D0         0.00000300 sec
D1         1.48689198 sec
D13        0.00000400 sec
D16        0.00020000 sec
IN0        0.00018720 sec

```

```

===== CHANNEL f1 =====
NUC1      1H
P0        10.00 usec
P1        10.00 usec
PL1       -3.50 dB
PL1W      31.17620277 W
SFO1      400.1324057 MHz

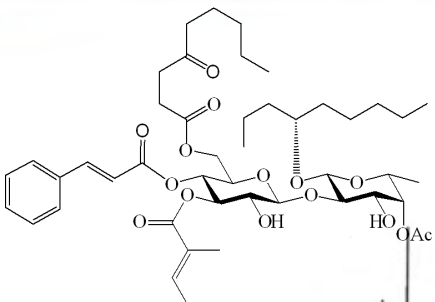
```

```

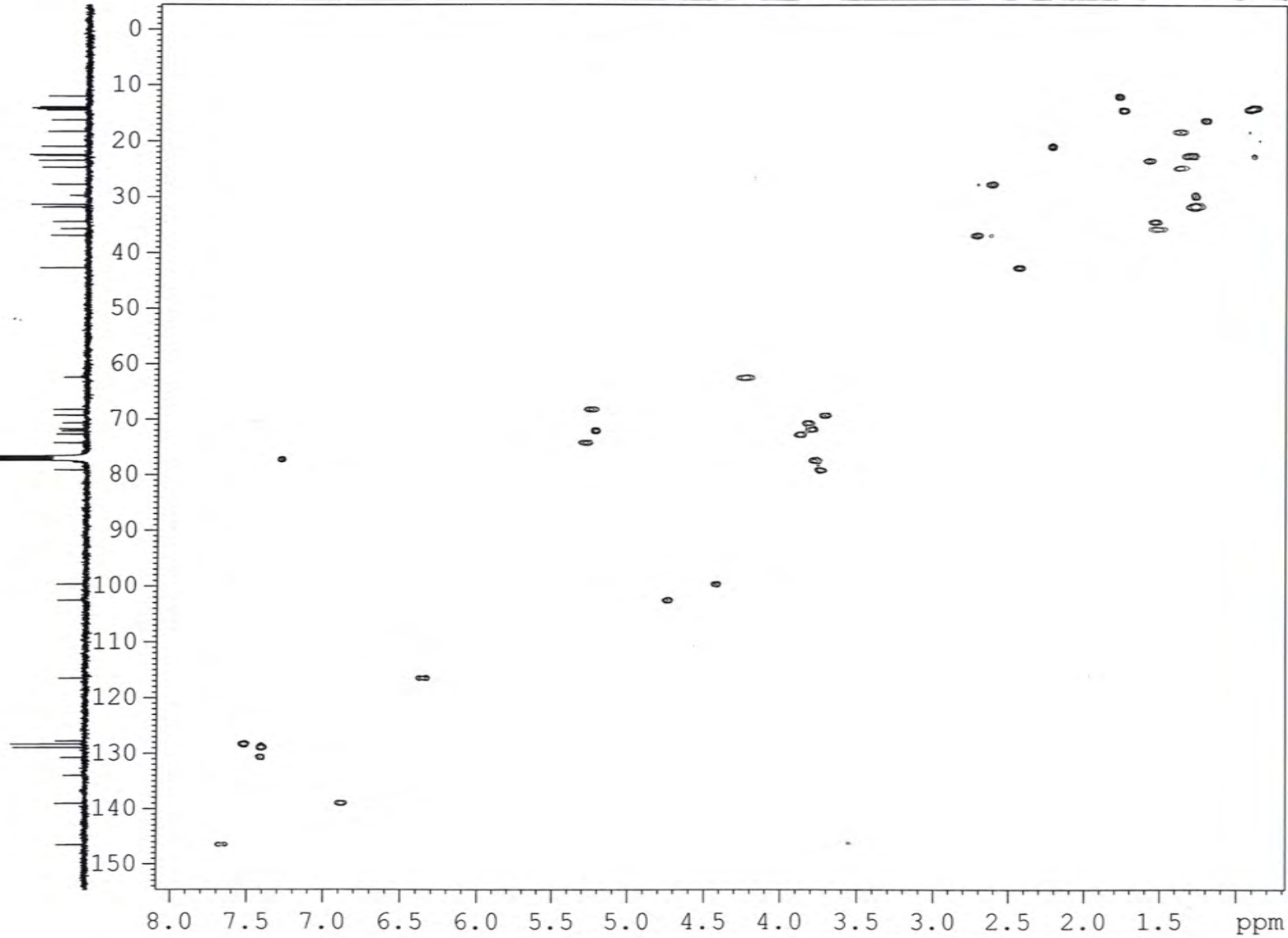
===== GRADIENT CHANNEL =====
GPNAM1    SINE.100
GPZ1      10.00 %
P16       1000.00 usec
ND0       1
TD         128
SFO1      400.1324 MHz
FIDRES    41.733440 Hz
SW        13.350 ppm
FnMODE    QF
SI         1024
SF        400.1300040 MHz
WDW       SINE
SSB       0
LB        0.00 Hz
GB        0
PC         1.00
SI         1024
MC2       QF
SF        400.1300033 MHz
WDW       SINE
SSB       0
LB        0.00 Hz
GB        0

```

## ZGH-Ipom-3-10-A-150803 HSQC



ppm 27



NAME ZGH-Ipom-3-10-A-150803  
 EXPNO 3  
 PROCNO 1  
 Date\_ 20150803  
 Time 2.32  
 INSTRUM spect  
 PROBHD 5 mm PABBO BB-  
 PULPROG hsqcetgpsi  
 TD 1024  
 SOLVENT CDCl3  
 NS 16  
 DS 16  
 SWH 5341.880 Hz  
 FIDRES 5.216680 Hz  
 AQ 0.0958964 sec  
 RG 2050  
 DW 93.600 usec  
 DE 6.50 usec  
 TE 292.9 K  
 CNST2 145.0000000  
 D0 0.00000300 sec  
 D1 1.50000000 sec  
 D4 0.00172414 sec  
 D11 0.03000000 sec  
 D13 0.00000400 sec  
 D16 0.00020000 sec  
 D24 0.00110000 sec  
 IN0 0.00003000 sec  
 ZGPTNS

----- CHANNEL f1 -----  
 NUC1 1H  
 P1 10.00 usec  
 P2 20.00 usec  
 F28 1000.00 usec  
 PL1 -3.50 dB  
 PL1W 31.17620277 W  
 SFO1 400.1324057 MHz

----- CHANNEL f2 -----  
 CPDPRG2 garp  
 NUC2 13C  
 P3 10.00 usec  
 P4 20.00 usec  
 PCPD2 75.00 usec  
 PL2 -2.10 dB  
 PL12 15.40 dB  
 PL2W 58.37759399 W  
 PL12W 1.03811681 W  
 SFO2 100.6202727 MHz

----- GRADIENT CHANNEL -----  
 GPNAM1 SINE.100  
 GPNAM2 SINE.100  
 GPZ1 80.00 %  
 GPZ2 20.10 %  
 P16 1000.00 usec  
 ND0 2  
 TD 256  
 SFO1 100.6203 MHz  
 FIDRES 65.104164 Hz  
 SW 165.639 ppm  
 FnMODE Echo-Antiecho  
 SI 1024  
 SF 400.1300000 MHz  
 WDW QSINE  
 SSB 2  
 LB 0.00 Hz  
 GB 0  
 PC 1.00  
 SI 1024  
 MC2 echo-antiecho  
 SF 100.6127690 MHz  
 WDW QSINE  
 SSB 2  
 LB 0.00 Hz  
 GB 0



## Arkansas Statewide Mass Spectrometry Facility

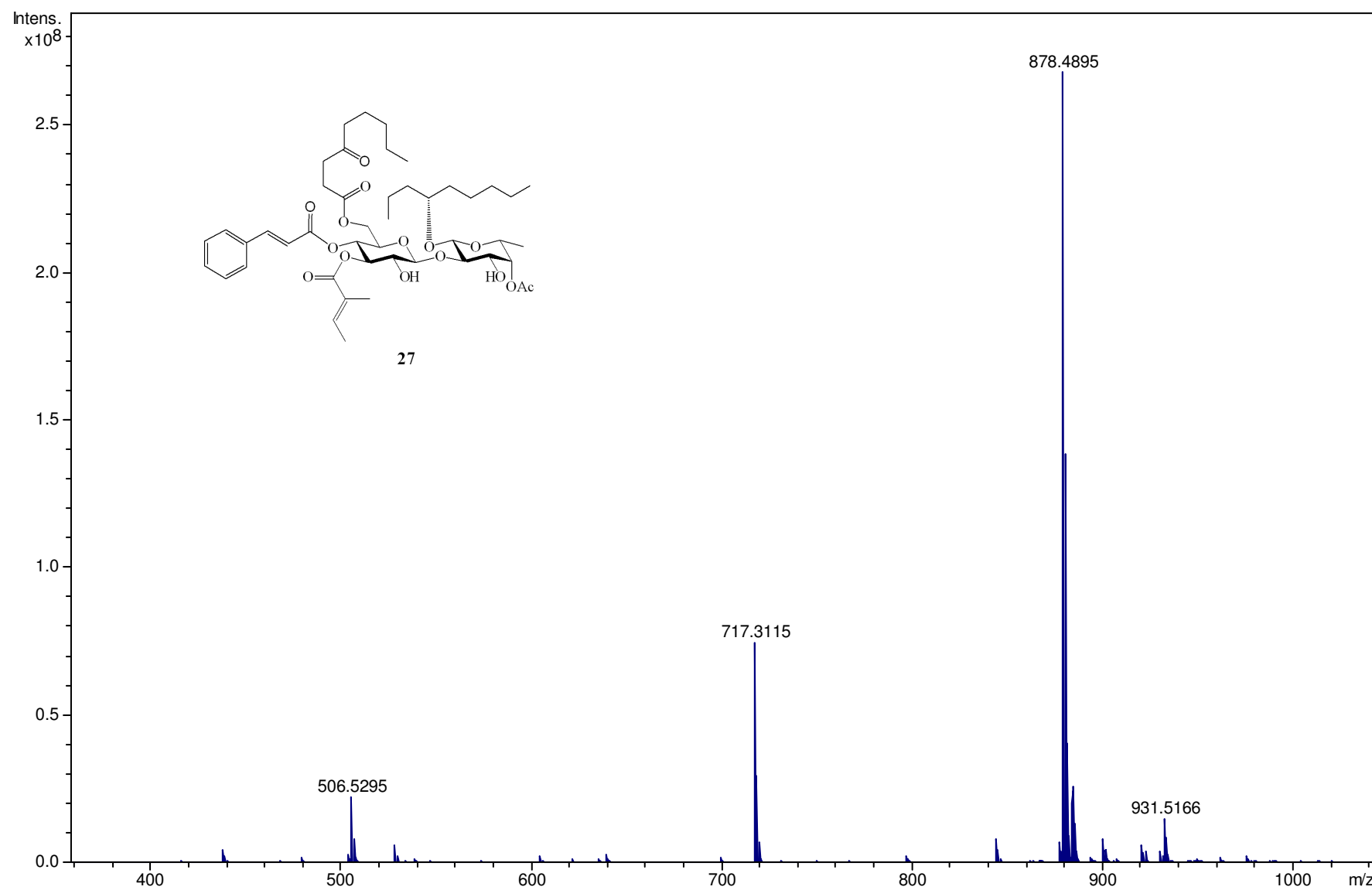
## ESI-FTMS Mass Spectrum

Sample Name: ZIF-29

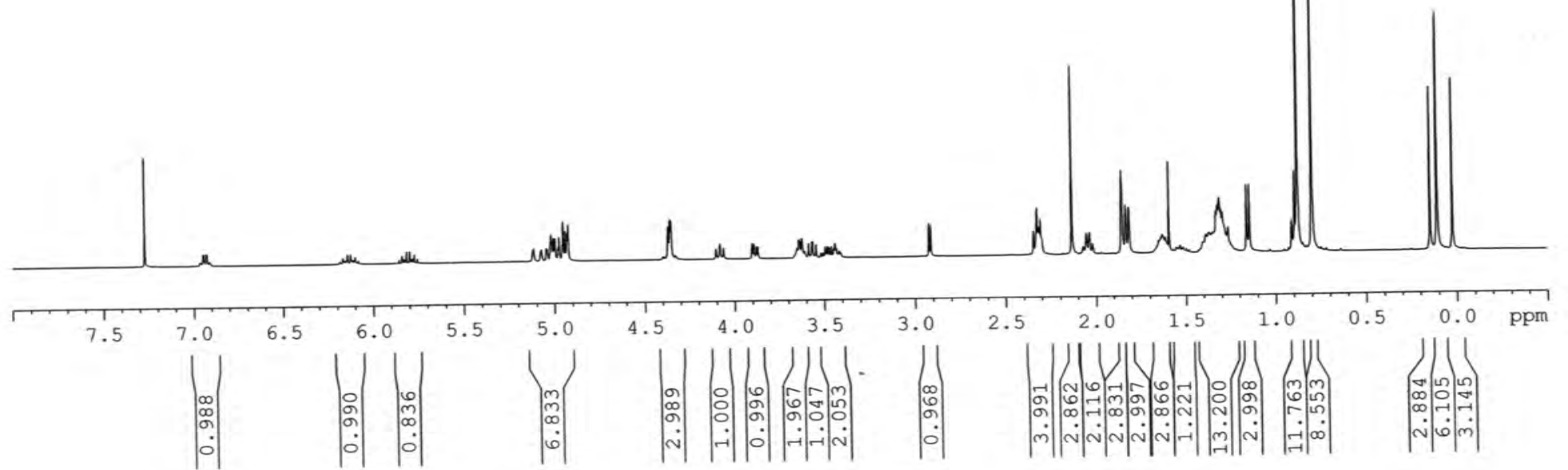
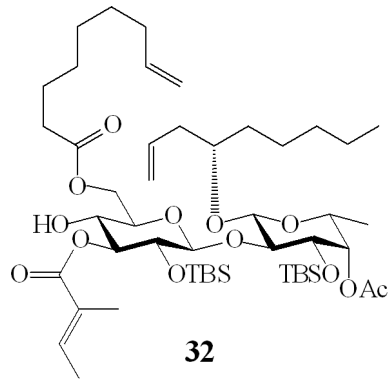
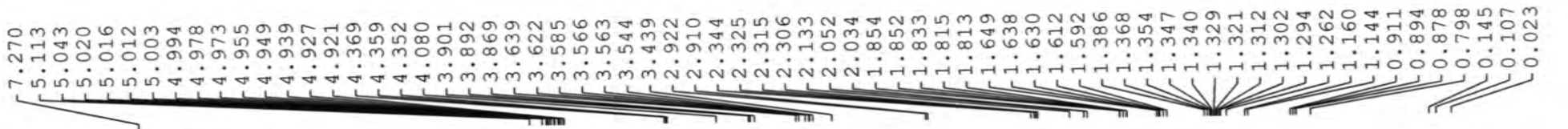
Sample id#: 173

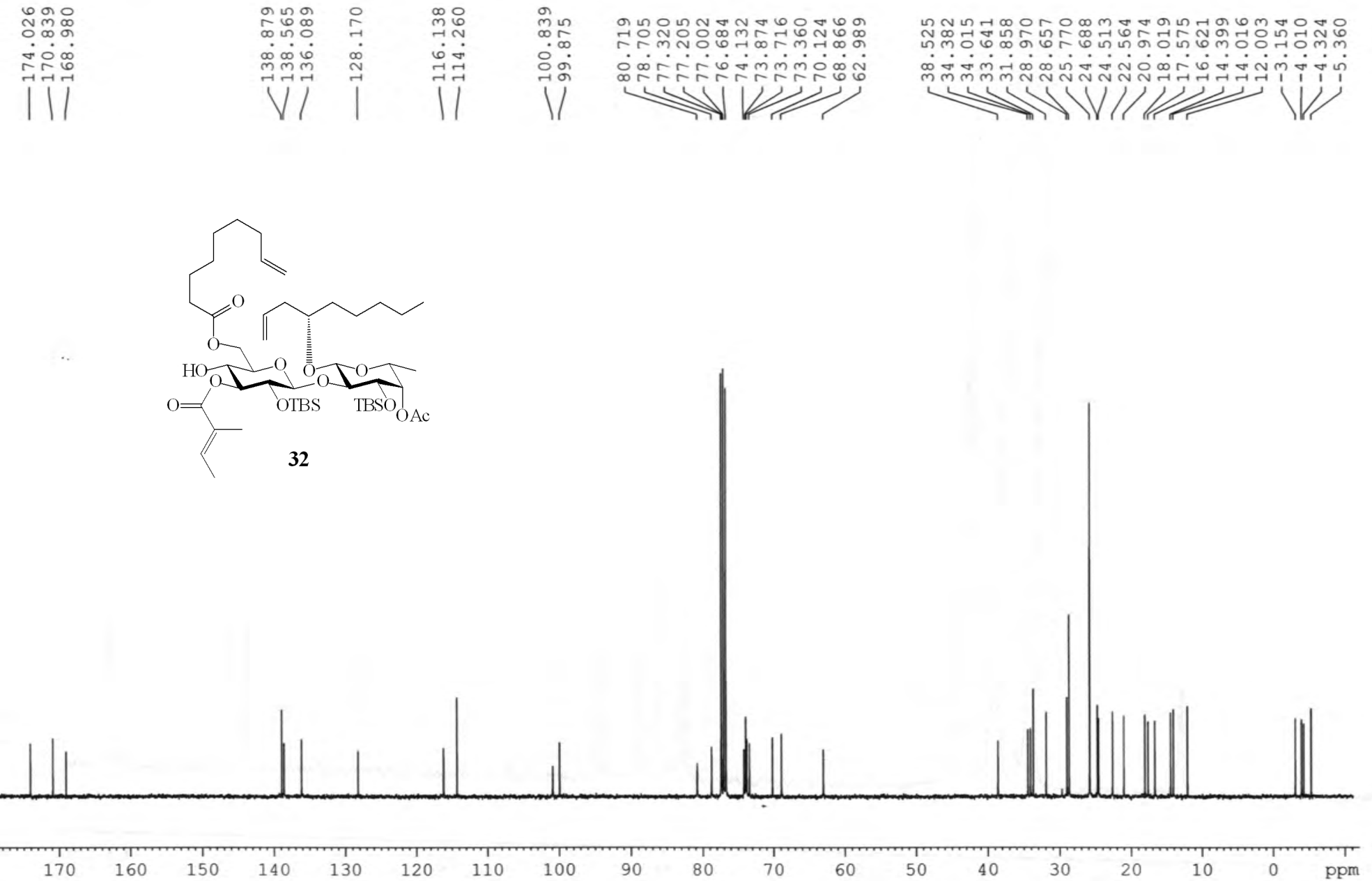
10/5/2015

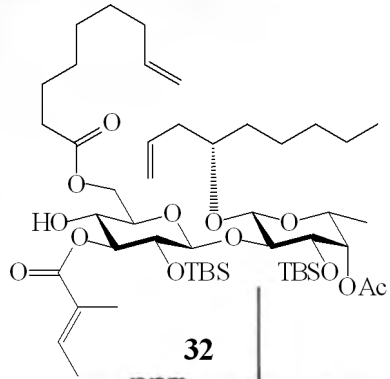
Instrument: Bruker ApexII-FTMS



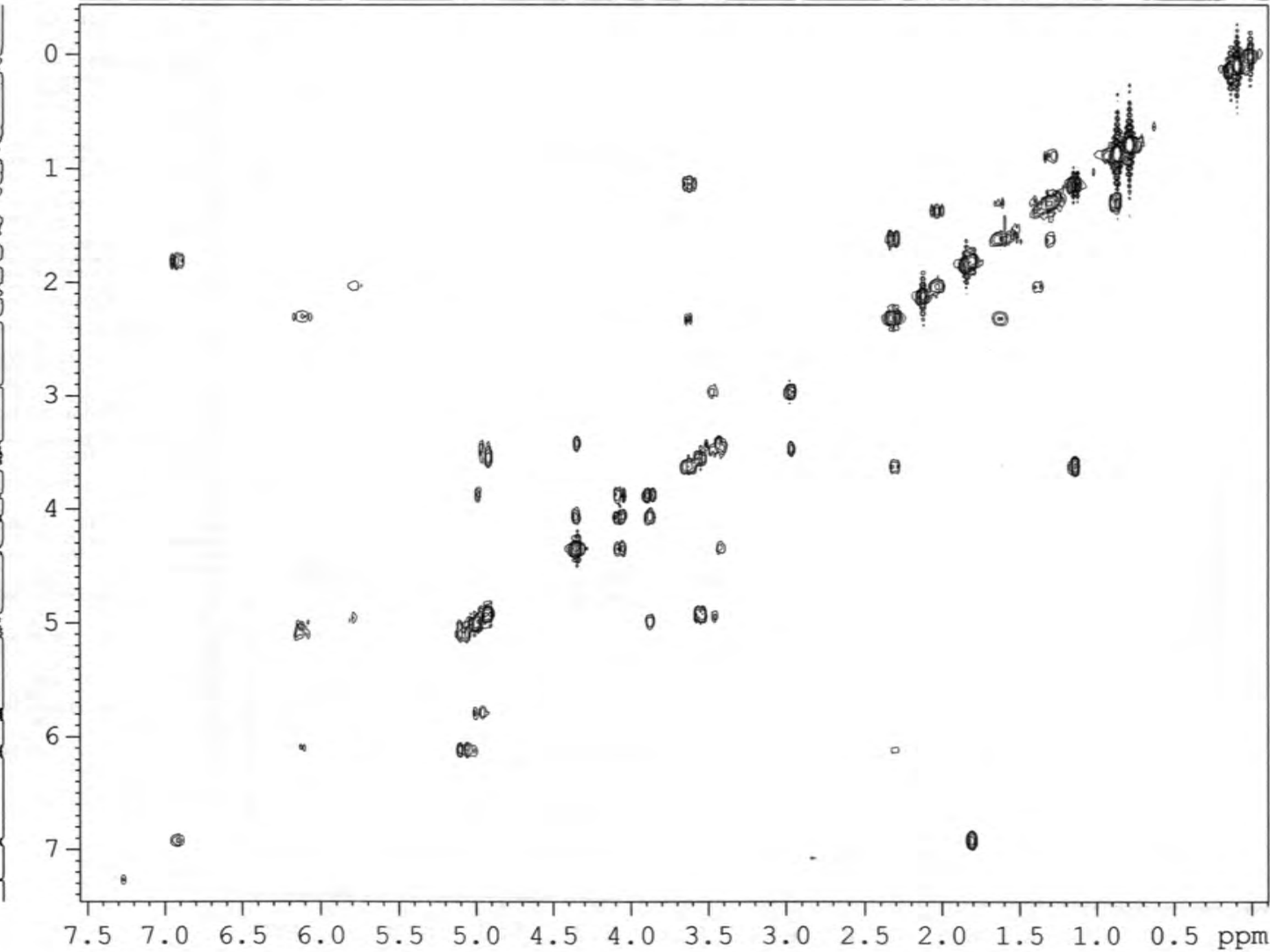
## ZGH-Ipom-2-73-A-140720 1H in CDCL3



ZGH-*Ipom*-2-73-A-140720 <sup>13</sup>C in CDCl<sub>3</sub>

ZGH-*Ipom*-2-73-A-140720 COSY

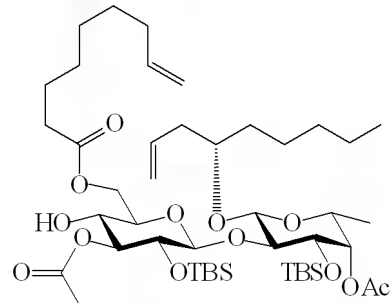
ppm



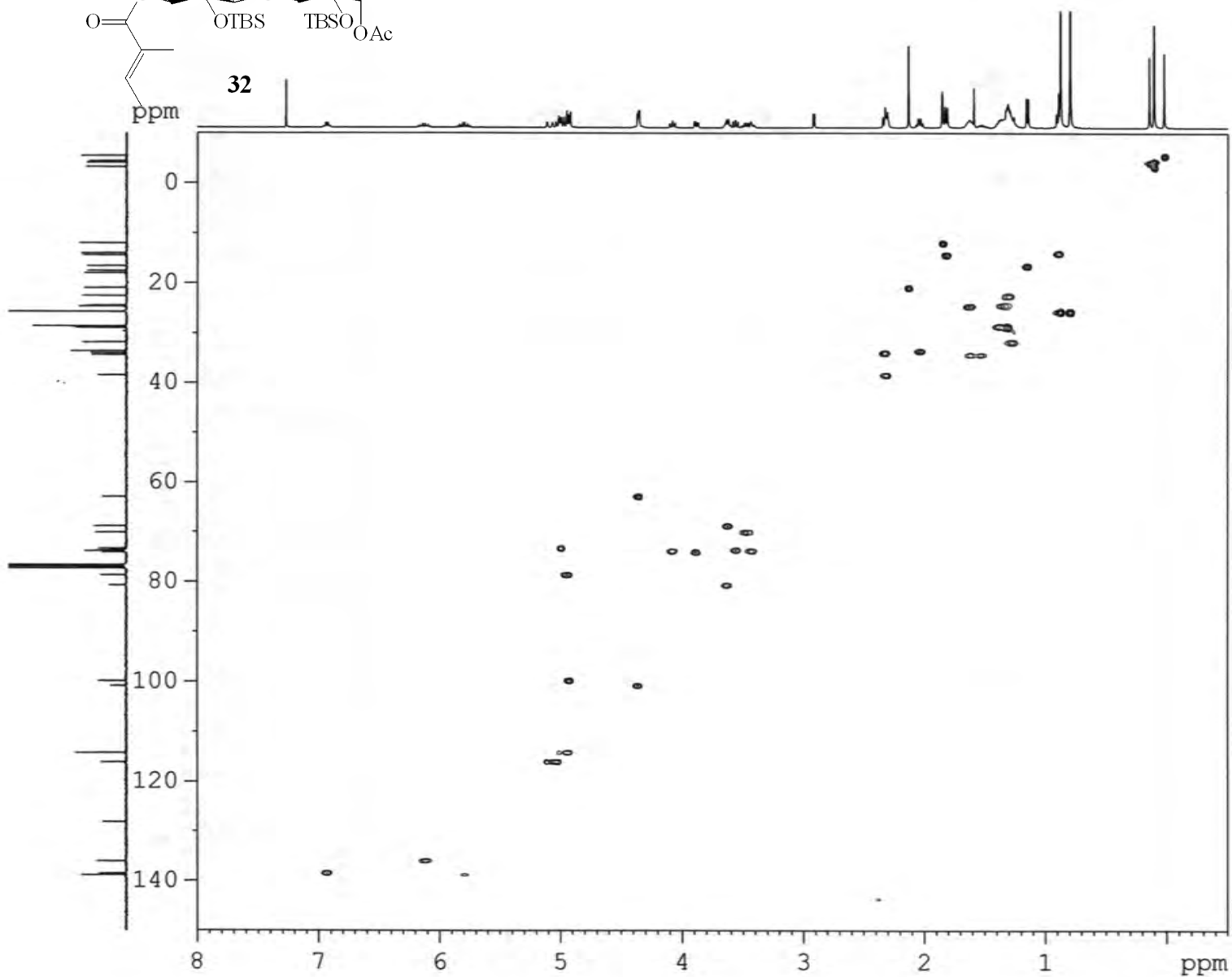
NAME ZGH-*Ipom*-2-73-A-140720  
 EXPNO 2  
 PROCNO 1  
 Date\_ 20140722  
 Time\_ 19.17  
 INSTRUM spect  
 PROBHD 5 mm PABBO BB-  
 PULPROG cosygpgf  
 TD 2048  
 SOLVENT CDCl3  
 NS 2  
 DS 8  
 SWH 5341.880 Hz  
 FIDRES 2.608340 Hz  
 AQ 0.1917428 sec  
 RG 40.3  
 DW 93.600 usec  
 DE 6.50 usec  
 TE 292.8 K  
 D0 0.00000300 sec  
 D1 1.48689198 sec  
 D13 0.00000400 sec  
 D16 0.00020000 sec  
 INO 0.00018720 sec

===== CHANNEL f1 =====  
 NUC1 1H  
 P0 10.00 usec  
 P1 10.00 usec  
 PL1 -3.50 dB  
 PL1W 31.17620277 W  
 SFO1 400.1324057 MHz

===== GRADIENT CHANNEL =====  
 GPNAM1 SINE.100  
 GPZ1 10.00 %  
 P16 1000.00 usec  
 NDO 1  
 TD 128  
 SFO1 400.1324 MHz  
 FIDRES 41.733440 Hz  
 SW 13.350 ppm  
 FvMODE QF  
 SI 1024  
 SF 400.1300040 MHz  
 WDW SINE  
 SSB 0  
 LB 0.00 Hz  
 GB 0  
 PC 1.00  
 SI 1024  
 MC2 QF  
 SF 400.1300033 MHz  
 WDW SINE  
 SSB 0  
 LB 0.00 Hz  
 GB 0



## ZGH-Ipom-2-73-A-140720 HSQC



```

NAME      ZGH-Ipom-2-73-A-140720
EXPNO    4
PROCNO   1
Date_    20140722
Time     18.49
INSTRUM  spect
PROBHD   5 mm PABBO BB-
PULPROG  hsqcetgps1
TD       1024
SOLVENT  CDCl3
NS       4
DS       16
SWH      5341.880 Hz
FIDRES   5.216680 Hz
AQ       0.0958964 sec
RG       2050
DW       93.600 usec
DE       6.50 usec
TE       292.8 K
CNST2    145.0000000
D0       0.0000300 sec
D1       1.5000000 sec
D4       0.00172414 sec
D11      0.03000000 sec
D13      0.00000400 sec
D16      0.00020000 sec
D24      0.00110000 sec
IN0      0.00003000 sec
ZGPTNS

```

```

===== CHANNEL f1 =====
NUC1     1H
P1       10.00 usec
P2       20.00 usec
P2s      1000.00 usec
PL1      -3.50 dB
PL1W     31.17620277 W
SFO1     400.1324057 MHz

```

```

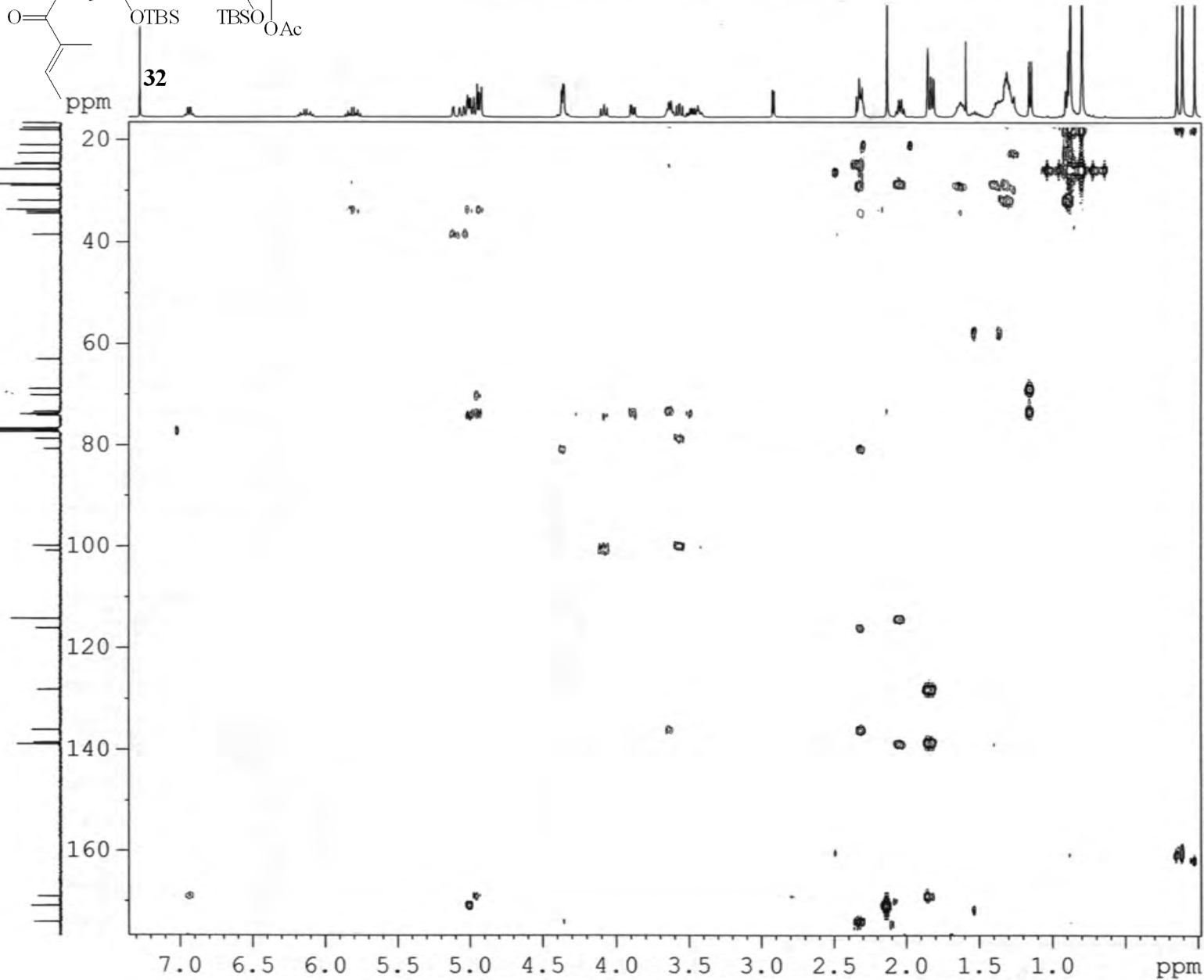
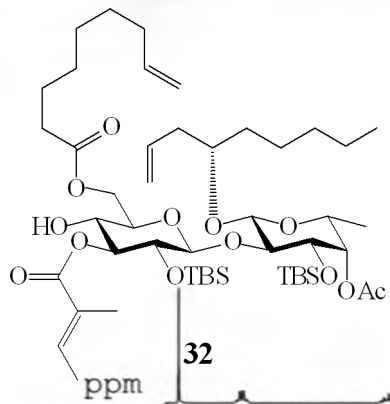
===== CHANNEL f2 =====
CPDPRG2  garp
NUC2     13C
P3       10.00 usec
P4       20.00 usec
PCPD2    75.00 usec
PL2      -2.10 dB
PL12     15.40 dB
PL2W     58.37759399 W
PL12W    1.03811681 W
SFO2     100.6202727 MHz

```

```

===== GRADIENT CHANNEL =====
GPNAM1   SINE.100
GPNAM2   SINE.100
GPZ1     80.00 %
GPZ2     20.10 %
P16      1000.00 usec
ND0      2
TD       233
SFO1     100.6203 MHz
FIDRES   71.530754 Hz
SW       165.639 ppm
FnMODE   Echo-Antiecho
SI       1024
SF       400.1300000 MHz
WDW      QSINE
SSB      2
LB       0.00 Hz
GB       0
PC       1.00
SI       1024
MC2      echo-antiecho
SF       100.6127690 MHz
WDW      QSINE
SSB      2
LB       0.00 Hz
GB       0

```

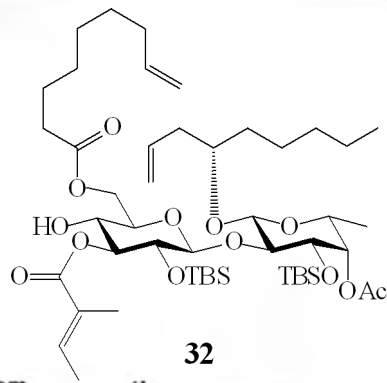
ZGH-*Ipom*-2-73-A-140720 HMBC in CDCl<sub>3</sub>

NAME ZGH-*Ipom*-2-73-A-140720  
 EXPNO 5  
 PROCNO 1  
 Date\_ 20150212  
 Time\_ 20.37  
 INSTRUM spect  
 PROBHD 5 mm PABBO BB-  
 PULPROG hmbcgp1pndqf  
 TD 4096  
 SOLVENT CDCl3  
 NS 20  
 DS 16  
 SWH 5208.333 Hz  
 FIDRES 1.271566 Hz  
 AQ 0.3932660 sec  
 RG 2050  
 DW 96.000 usec  
 DE 6.50 usec  
 TE 292.1 K  
 CNST2 145.0000000  
 CNST13 10.0000000  
 D0 0.00000300 sec  
 D1 1.50000000 sec  
 D2 0.00344828 sec  
 D6 0.05000000 sec  
 D16 0.00020000 sec  
 IN0 0.00003010 sec

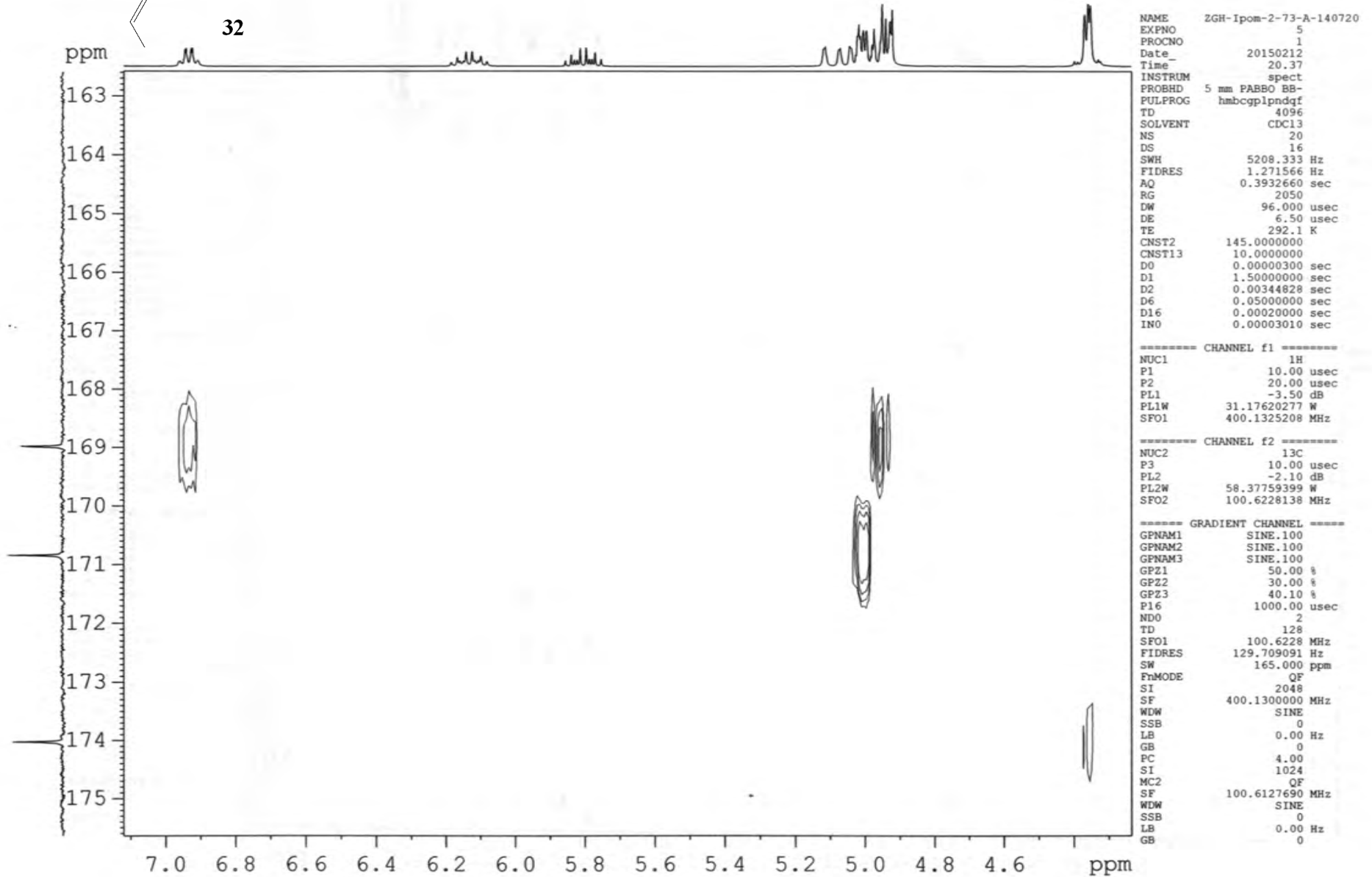
----- CHANNEL f1 -----  
 NUC1 1H  
 P1 10.00 usec  
 P2 20.00 usec  
 PL1 -3.50 dB  
 PL1W 31.17620277 W  
 SFO1 400.1325208 MHz

----- CHANNEL f2 -----  
 NUC2 13C  
 P3 10.00 usec  
 PL2 -2.10 dB  
 PL2W 58.37759399 W  
 SFO2 100.6228138 MHz

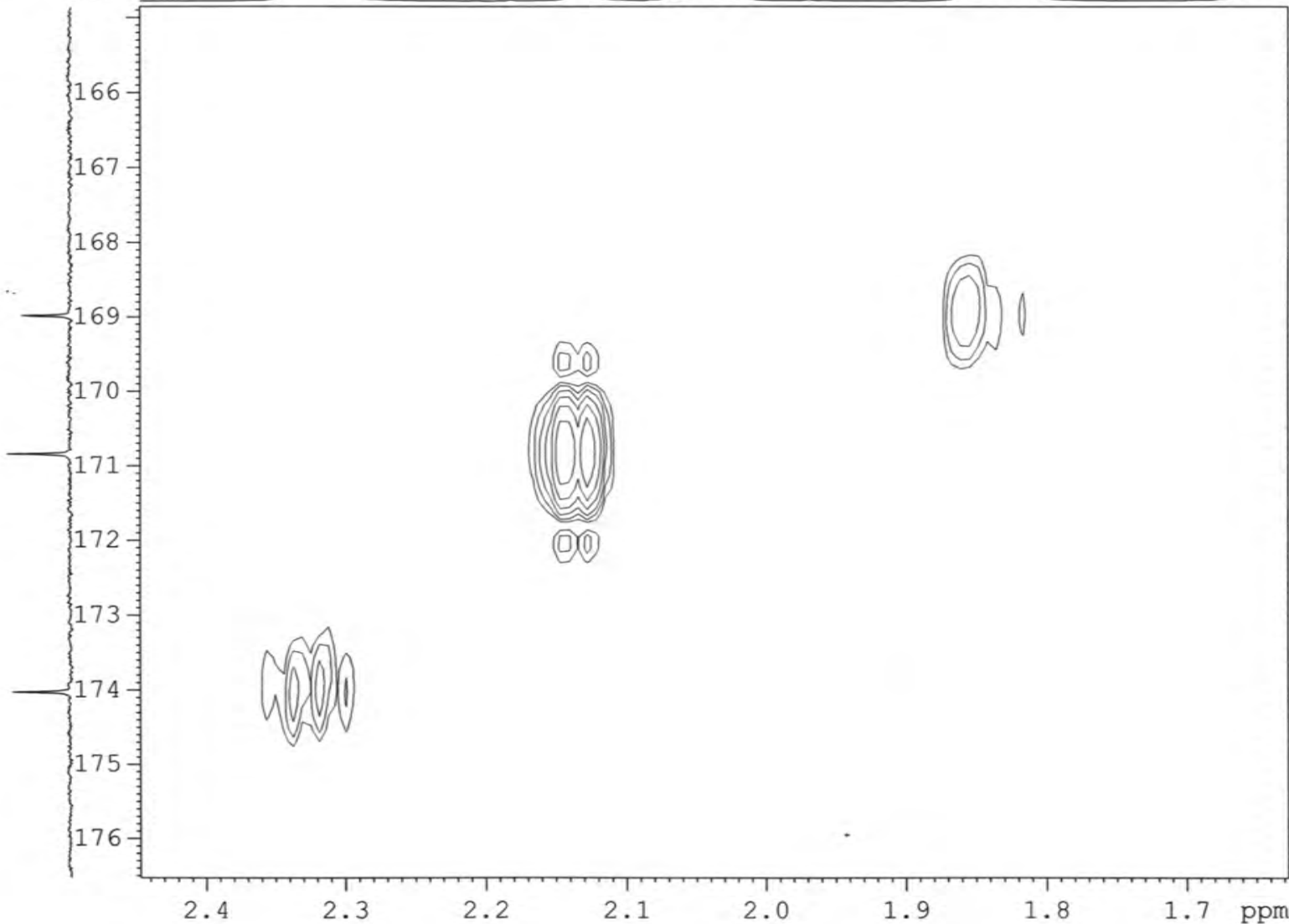
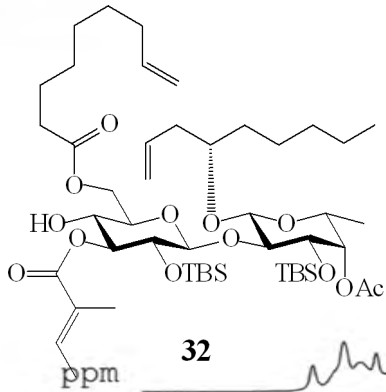
----- GRADIENT CHANNEL -----  
 GPNAM1 SINE.100  
 GPNAM2 SINE.100  
 GPNAM3 SINE.100  
 GPZ1 50.00 %  
 GPZ2 30.00 %  
 GPZ3 40.10 %  
 P16 1000.00 usec  
 ND0 2  
 TD 128  
 SFO1 100.6228 MHz  
 FIDRES 129.709091 Hz  
 SW 165.000 ppm  
 FhMODE QF  
 SI 2048  
 SF 400.1300000 MHz  
 WDW SINE  
 SSB 0  
 LB 0.00 Hz  
 GB 0  
 PC 4.00  
 SI 1024  
 MC2 QF  
 SF 100.6127690 MHz  
 WDW SINE  
 SSB 0  
 LB 0.00 Hz  
 GB 0



## ZGH-Ipom-2-73-A-140720 HMBC in CDCL3



ZGH-*Ipom*-2-73-A-140720 HMBC in CDCl<sub>3</sub>



```

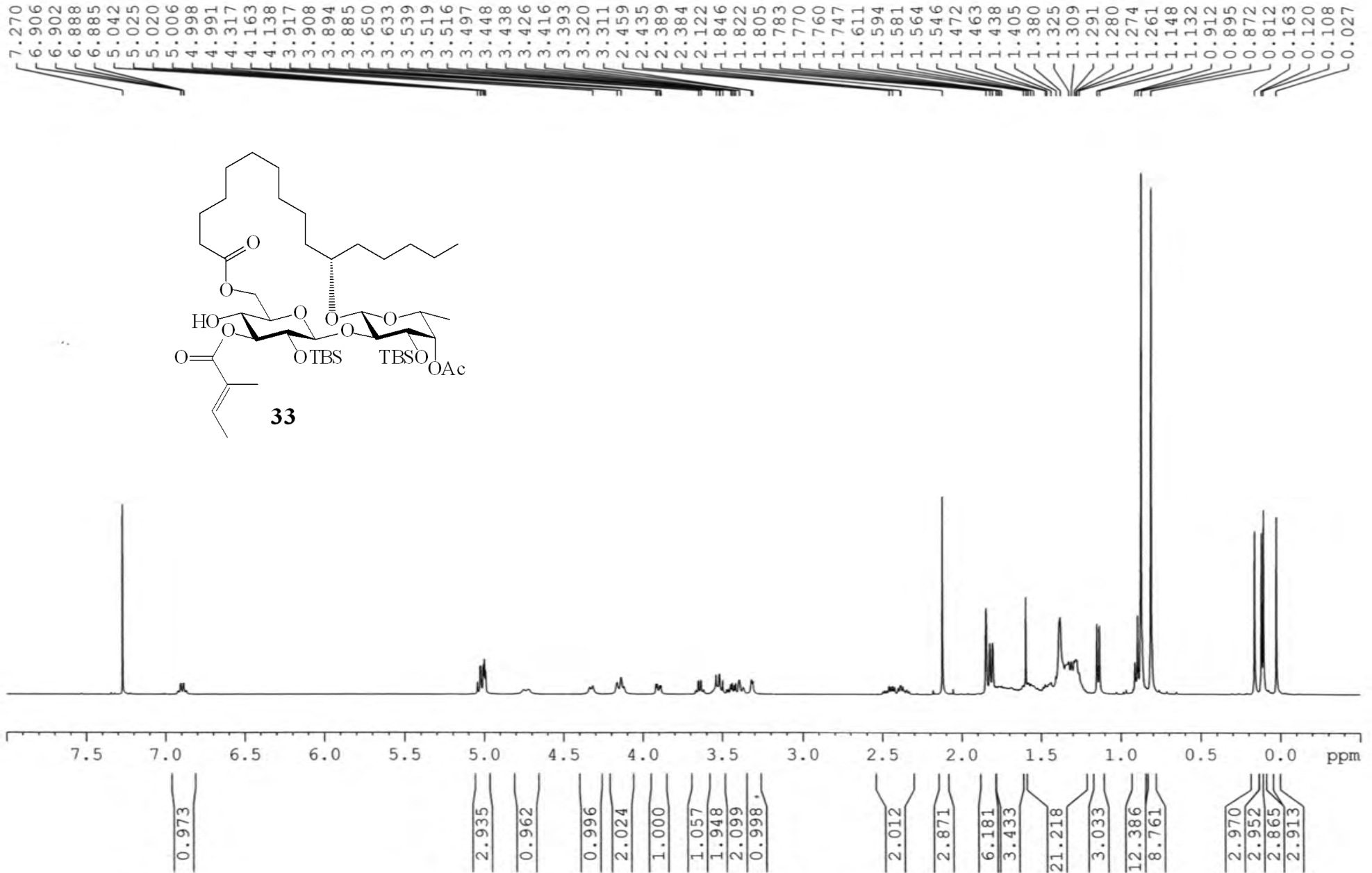
NAME      ZGH-Ipom-2-73-A-140720
EXPNO     5
PROCNO    1
Date_     20150212
Time      20.37
INSTRUM   spect
PROBHD    5 mm PABBO BB-
PULPROG   hmbcqp1pndqf
TD         4096
SOLVENT   CDCl3
NS         20
DS         16
SWH       5208.333 Hz
FIDRES    1.271566 Hz
AQ         0.3932660 sec
RG         2050
DW         96.000 usec
DE         6.50 usec
TE         292.1 K
CNST2     145.0000000
CNST13    10.0000000
D0         0.00000300 sec
D1         1.50000000 sec
D2         0.00344828 sec
D6         0.05000000 sec
D16        0.00020000 sec
IN0        0.00003010 sec

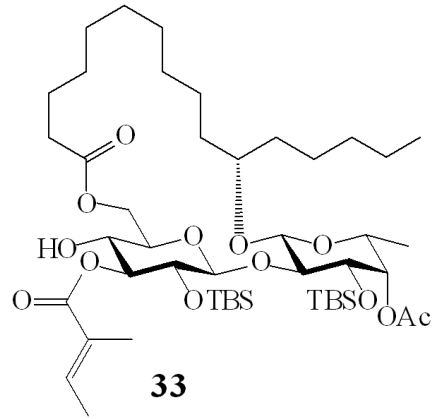
----- CHANNEL f1 -----
NUC1       1H
P1         10.00 usec
P2         20.00 usec
PL1        -3.50 dB
PL1W       31.17620277 W
SFO1       400.1325208 MHz

----- CHANNEL f2 -----
NUC2       13C
P3         10.00 usec
P2         -2.10 dB
PL2W       58.37759399 W
SFO2       100.6228138 MHz

----- GRADIENT CHANNEL -----
GPNAM1     SINE.100
GPNAM2     SINE.100
GPNAM3     SINE.100
GPZ1       50.00 %
GPZ2       30.00 %
GPZ3       40.10 %
P16        1000.00 usec
ND0         2
TD          128
SFO1       100.6228 MHz
FIDRES     129.709091 Hz
SW         165.000 ppm
FnMODE     QF
SI         2048
SF         400.1300000 MHz
WDW        SINE
SSB        0
LB         0.00 Hz
GB         0
PC         4.00
SI         1024
MC2        QF
SF         100.6127690 MHz
WDW        SINE
SSB        0
LB         0.00 Hz
GB         0
    
```



ZGH-*Ipom*-2-79-A-140727 1H in CDCL<sub>3</sub>

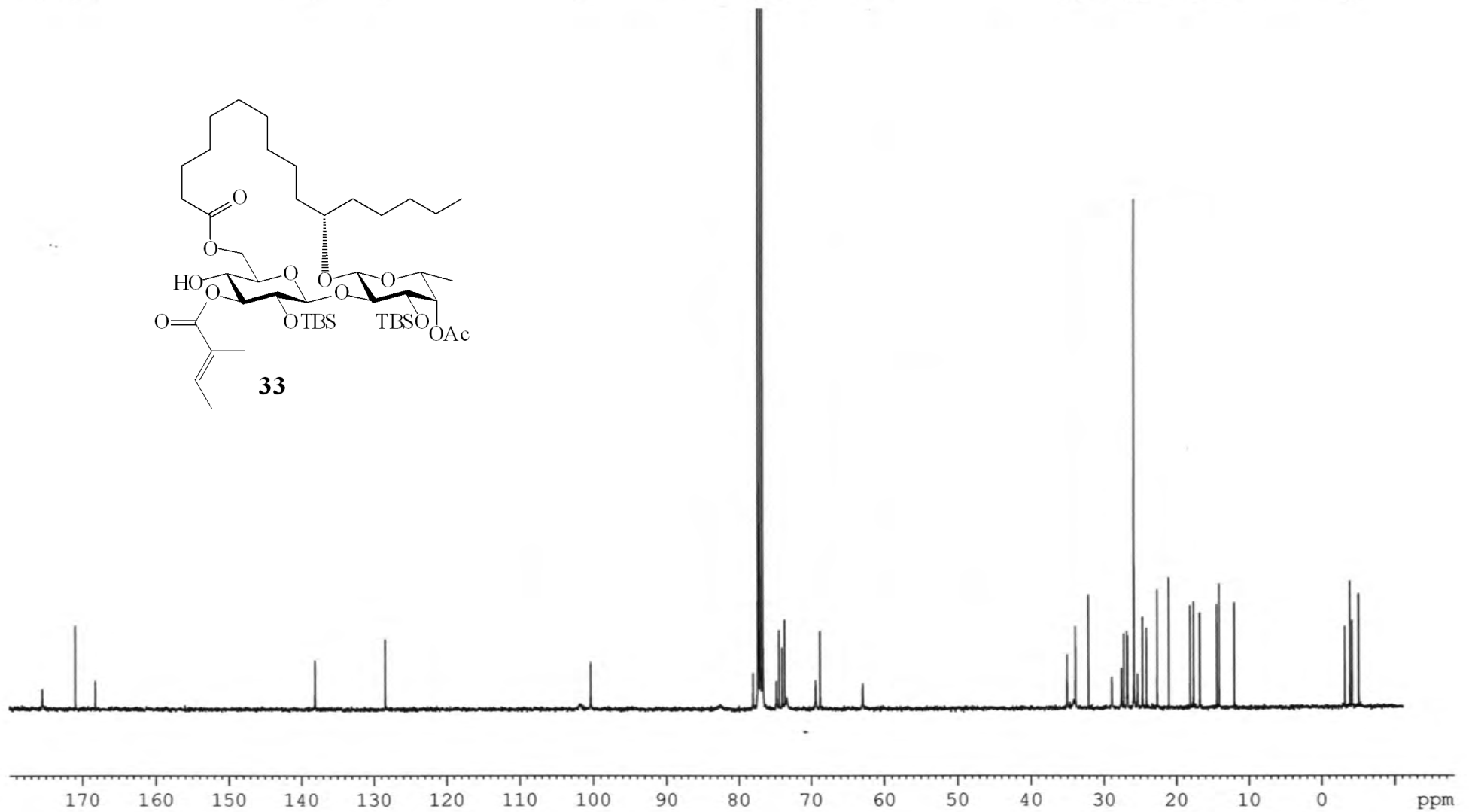
ZGH-*Ipom-2-79-A-140727* 13C in CDCl<sub>3</sub>

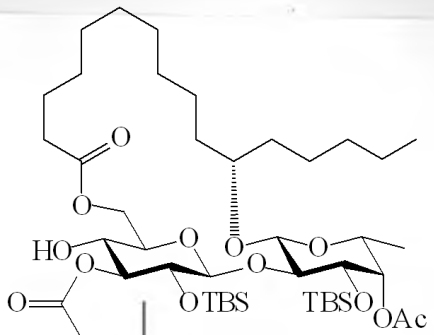
— 175.433  
 — 170.917  
 — 168.185

— 138.049  
 — 128.426

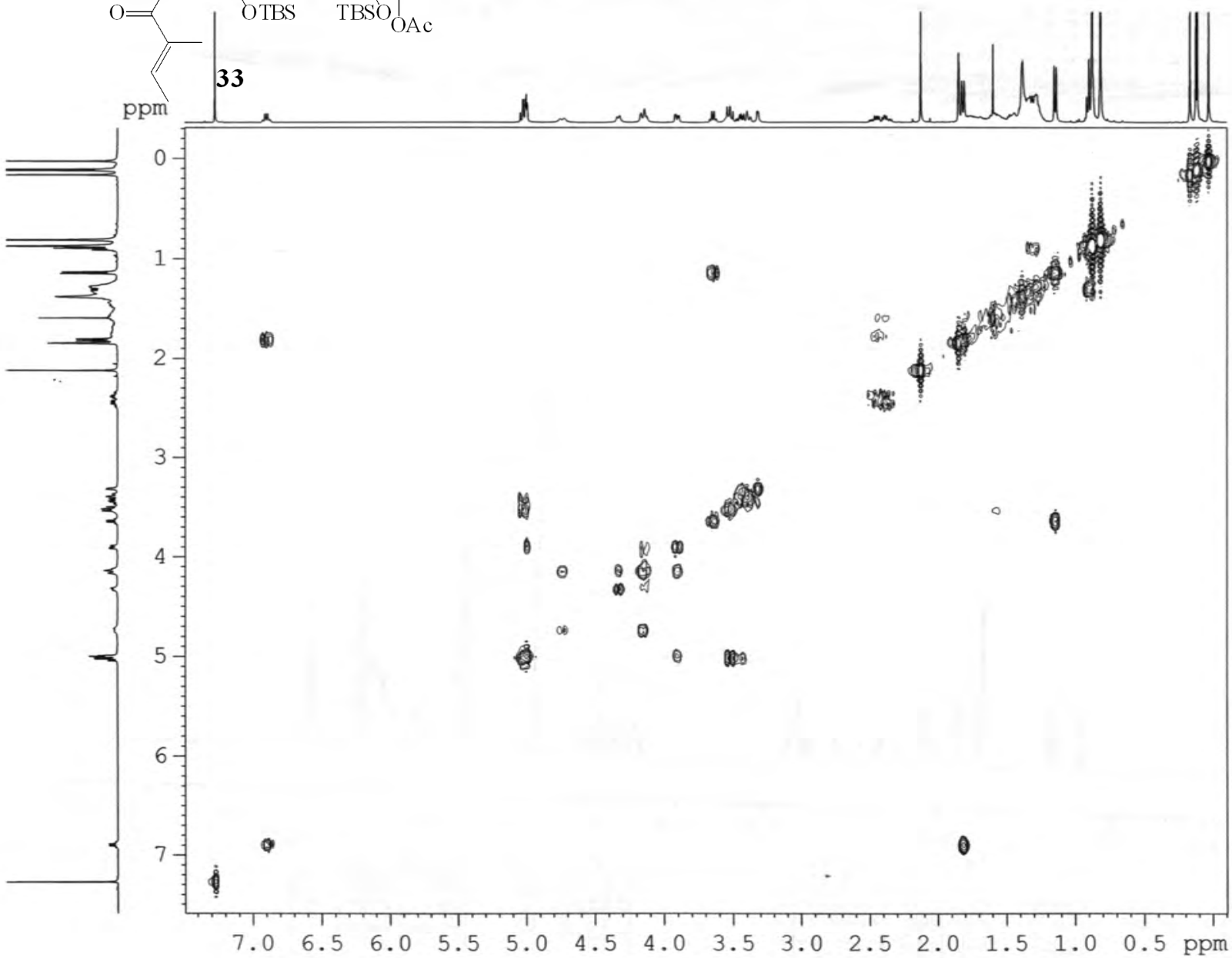
— 101.808  
 — 100.335

82.554  
 78.023  
 77.313  
 77.199  
 76.996  
 76.679  
 74.792  
 74.410  
 73.965  
 73.604  
 73.375  
 69.409  
 68.777  
 62.978  
 35.019  
 34.156  
 33.889  
 32.065  
 28.863  
 27.549  
 27.214  
 26.795  
 26.689  
 25.820  
 25.334  
 24.641  
 24.115  
 22.604  
 20.998  
 18.072  
 17.597  
 16.725  
 14.413  
 14.064  
 11.996  
 -3.197  
 -3.921  
 -4.183  
 -5.104





ZGH-Ipom-2-79-A-140727 COSY



```

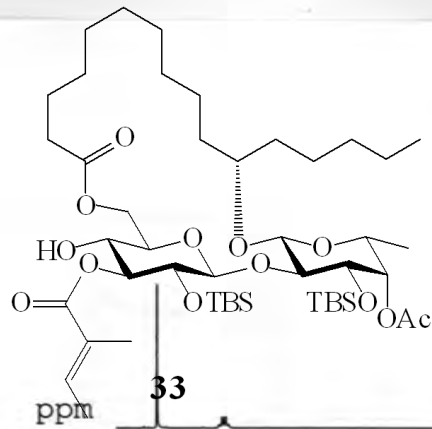
NAME      ZGH-Ipom-2-79-A-140727
EXPNO     2
PROCNO    1
Date_     20140729
Time      0.39
INSTRUM   spect
PROBHD    5 mm PABBO BB-
PULPROG   cosygppqf
TD         2048
SOLVENT   CDCl3
NS         4
DS         8
SWH        5341.880 Hz
FIDRES     2.608340 Hz
AQ         0.1917428 sec
RG         228
DW         93.600 usec
DE         6.50 usec
TE         292.1 K
D0         0.00000300 sec
D1         1.48689198 sec
D13        0.00000400 sec
D16        0.00020000 sec
IN0        0.00018720 sec
    
```

```

===== CHANNEL f1 =====
NUC1      1H
P0        10.00 usec
P1        10.00 usec
PL1       -3.50 dB
PL1W      31.17620277 W
SFO1      400.1324057 MHz
    
```

```

===== GRADIENT CHANNEL =====
GPNAM1    SINE.100
GP21      10.00 %
P16       1000.00 usec
ND0        1
TD         128
SFO1      400.1324 MHz
FIDRES    41.733440 Hz
SW         13.350 ppm
FrMODE     QF
SI         1024
SF         400.1300040 MHz
WDW        SINE
SSB        0
LB         0.00 Hz
GB         0
PC         1.00
SI         1024
MC2        QF
SF         400.1300033 MHz
WDW        SINE
SSB        0
LB         0.00 Hz
GB         0
    
```

ZGH-*Ipom*-2-79-A-140727 HSQC

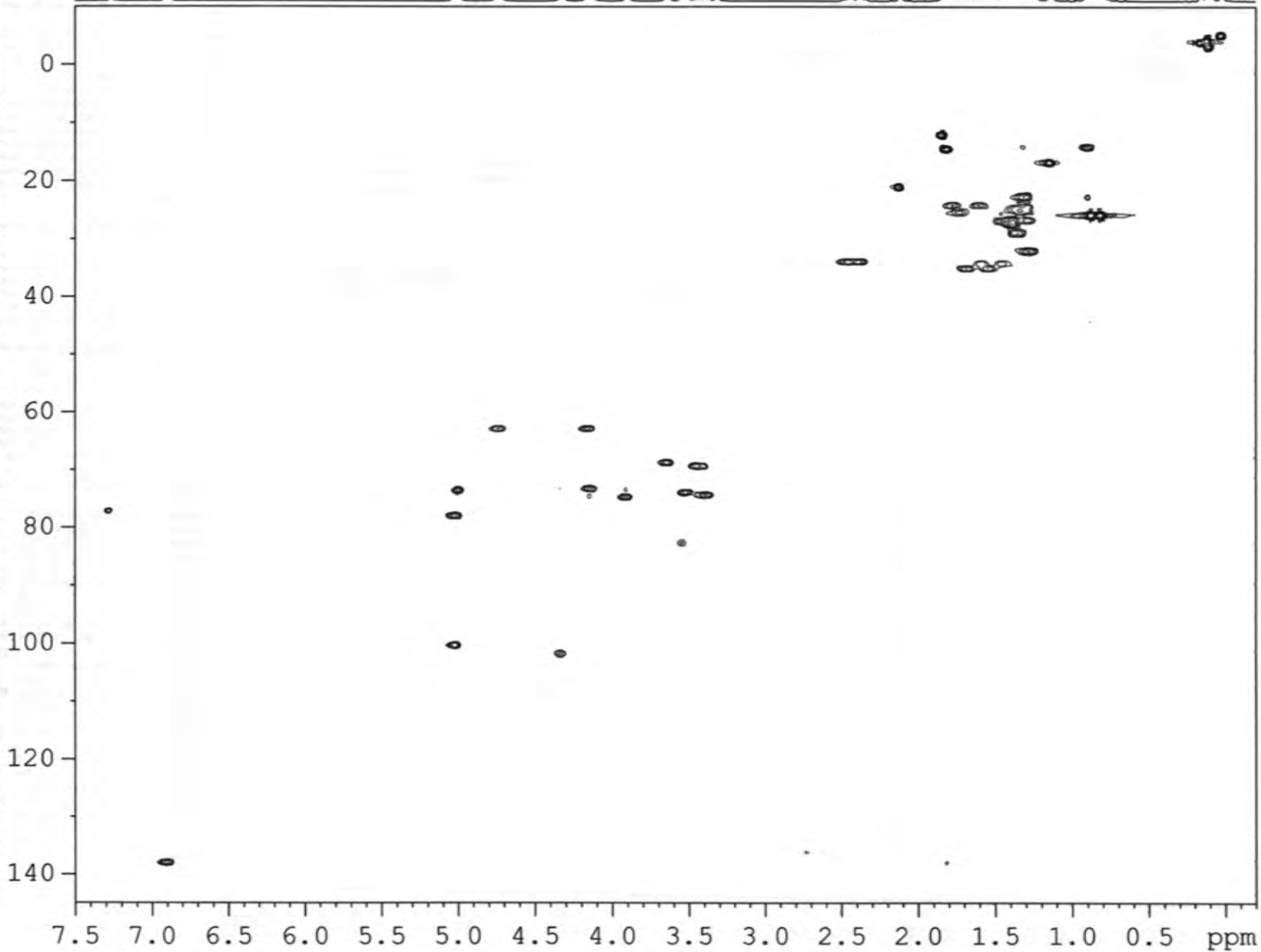
NAME ZGH-*Ipom*-2-79-A-140727  
 EXPNO 4  
 PROCNO 1  
 Date\_ 20140729  
 Time 7.32  
 INSTRUM spect  
 PROBHD 5 mm PABBO BB-  
 PULPROG hsqcetgpsi  
 TD 1024  
 SOLVENT CDCl3  
 NS 8  
 DS 16  
 SWH 5341.880 Hz  
 FIDRES 5.216680 Hz  
 AQ 0.0958964 sec  
 RG 2050  
 DW 93.600 usec  
 DE 6.50 usec  
 TE 293.3 K  
 CNST2 145.000000  
 D0 0.00000300 sec  
 D1 1.50000000 sec  
 D4 0.00172414 sec  
 D11 0.03000000 sec  
 D13 0.00000400 sec  
 D16 0.00020000 sec  
 D24 0.00110000 sec  
 IN0 0.00003000 sec  
 ZGPTNS

===== CHANNEL f1 =====  
 NUC1 1H  
 P1 10.00 usec  
 P2 20.00 usec  
 P28 1000.00 usec  
 PL1 -3.50 dB  
 PL1W 31.17620277 W  
 SFO1 400.1324057 MHz

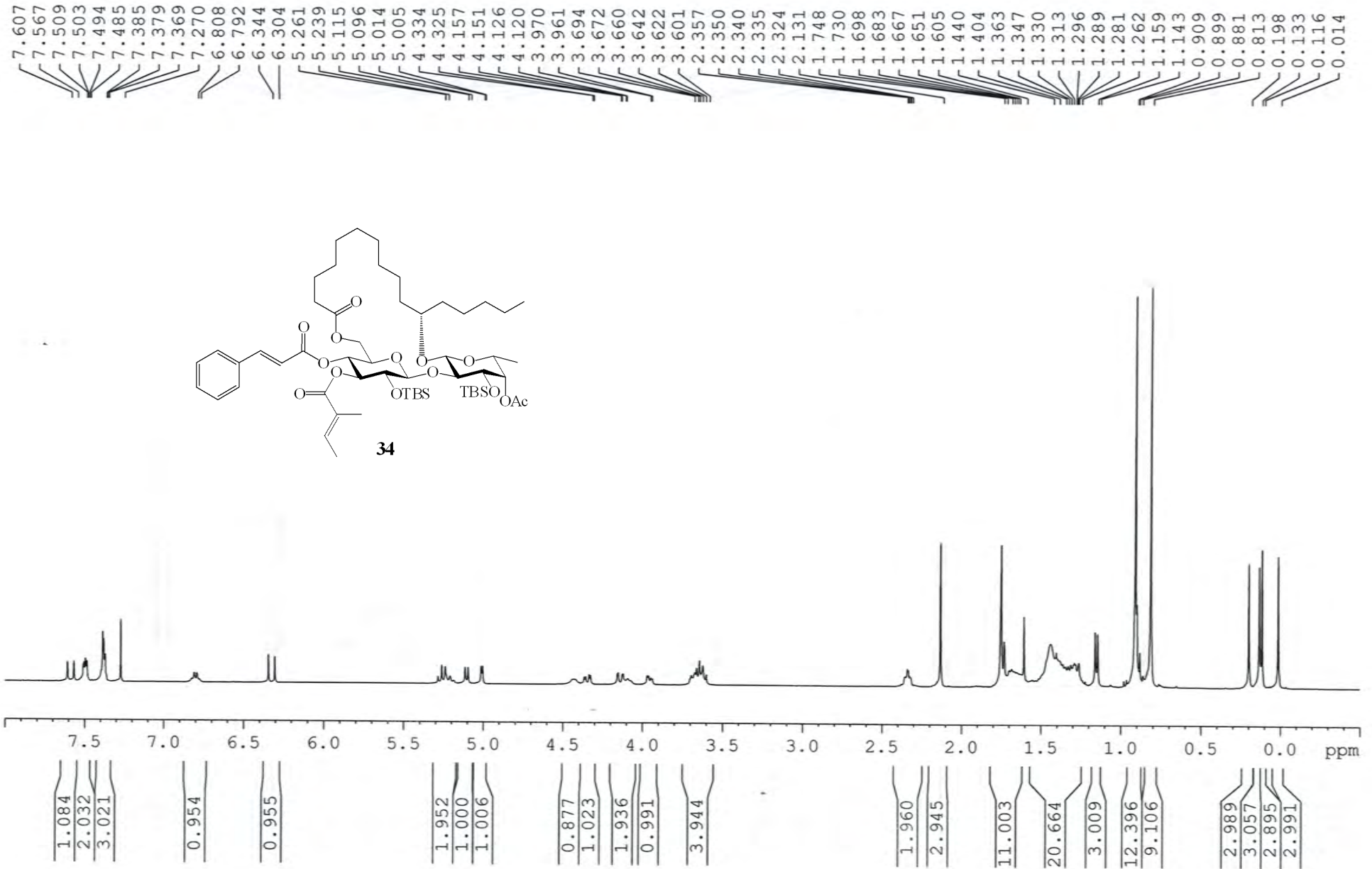
===== CHANNEL f2 =====  
 CPDPRG2 garp  
 NUC2 13C  
 P3 10.00 usec  
 P4 20.00 usec  
 PCPD2 75.00 usec  
 PL2 -2.10 dB  
 PL12 15.40 dB  
 PL2W 58.37759399 W  
 PL12W 1.03811681 W  
 SFO2 100.6202727 MHz

===== GRADIENT CHANNEL =====  
 GPNAM1 SINE.100  
 GPNAM2 SINE.100  
 GPZ1 80.00 %  
 GPZ2 20.10 %  
 P16 1000.00 usec  
 NDO 2  
 TD 256  
 SFO1 100.6203 MHz  
 FIDRES 65.104164 Hz  
 SW 165.639 ppm  
 FnmODE Echo-Antiecho  
 SI 1024  
 SF 400.1300000 MHz  
 WDW QSINE  
 SSB 2  
 LB 0.00 Hz  
 GB 0  
 PC 1.00  
 SI 1024  
 MC2 echo-antiecho  
 SF 100.6127690 MHz  
 WDW QSINE  
 SSB 2  
 LB 0.00 Hz  
 GB 0

33



## ZGH-Ipom-2-82-A-140801 1H in CDCL3



ZGH-*Ipom*-2-82-A-140801 <sup>13</sup>C in CDCl<sub>3</sub>

— 173.589  
 — 170.945  
 — 167.014  
 — 165.327

— 145.729

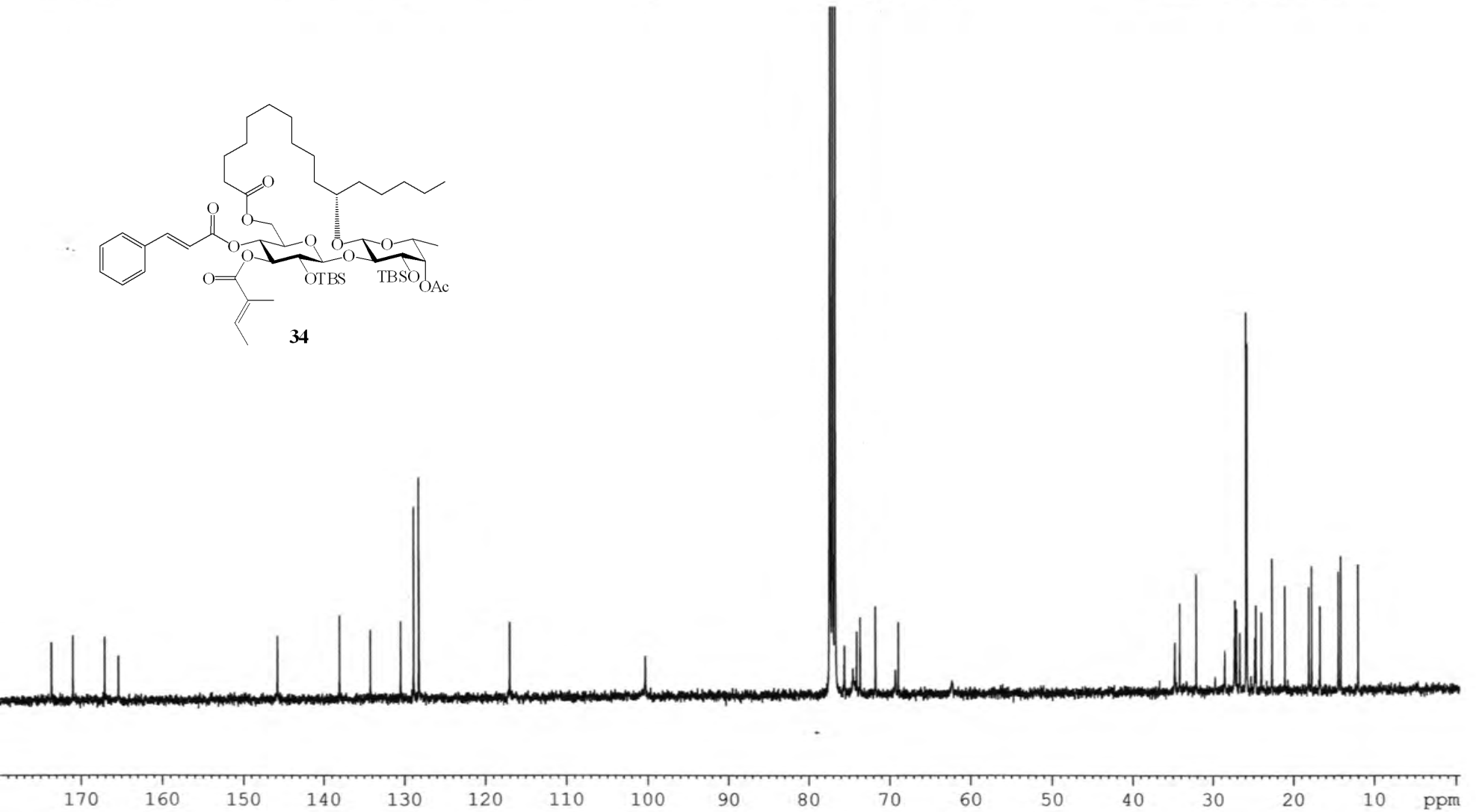
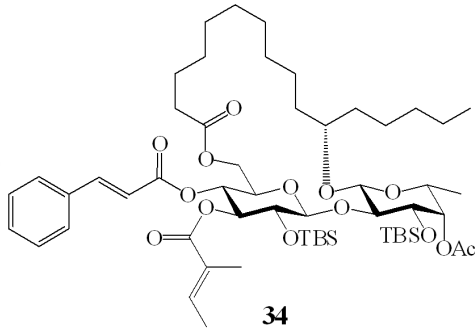
— 138.001  
 — 134.182  
 — 130.435  
 — 128.830  
 — 128.210

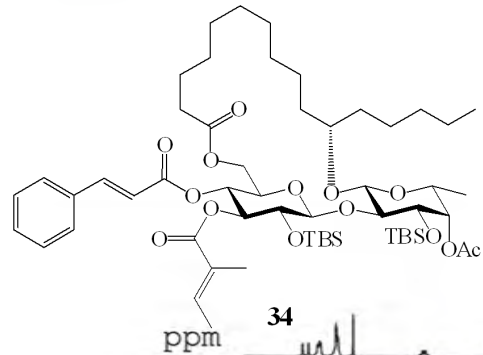
— 116.975

— 100.581  
 — 100.283

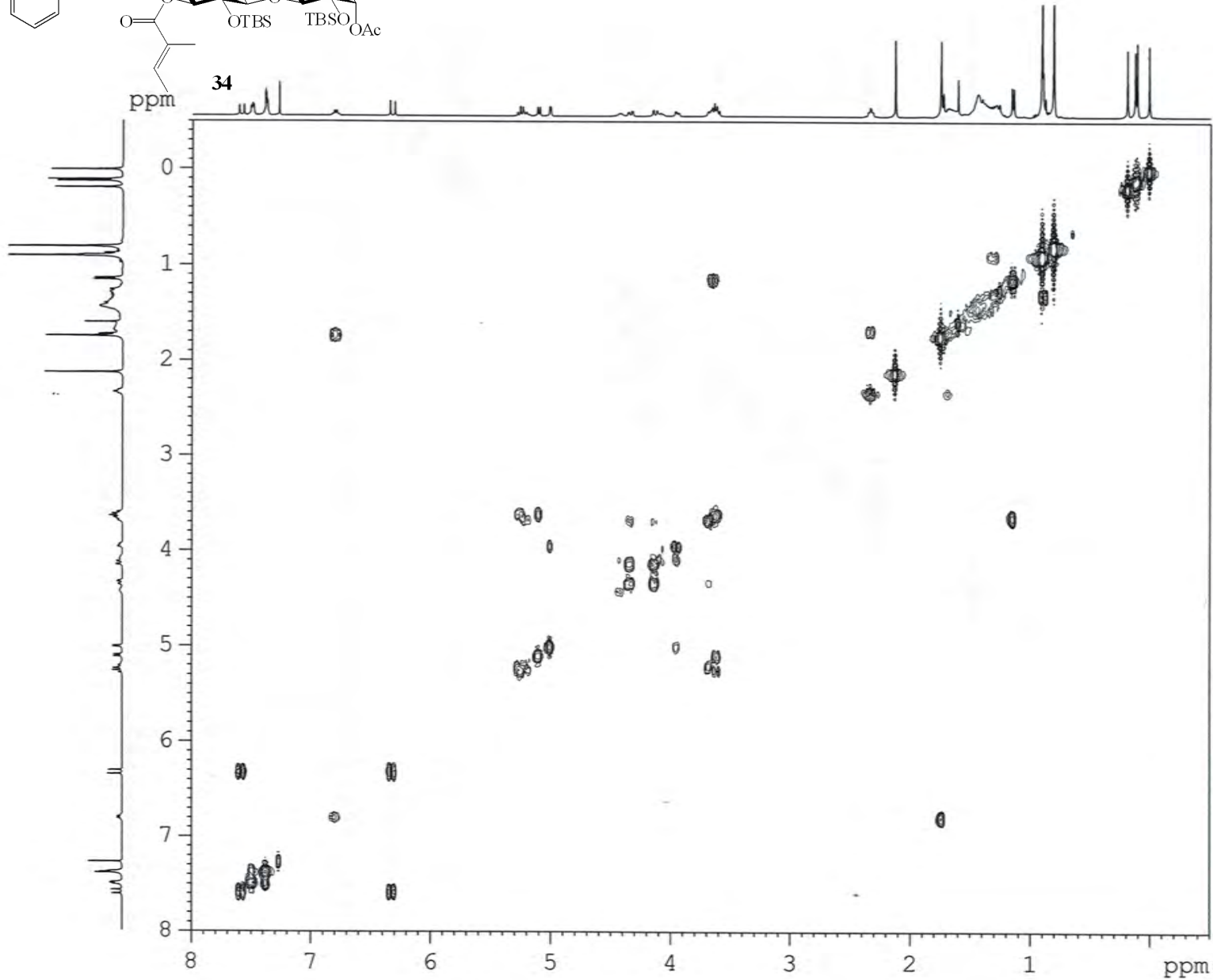
— 77.320  
 — 77.206  
 — 77.002  
 — 76.685  
 — 75.558  
 — 74.507  
 — 74.041  
 — 73.607  
 — 71.719  
 — 69.299  
 — 68.887  
 — 62.278

— 34.723  
 — 34.111  
 — 32.054  
 — 28.506  
 — 27.291  
 — 27.220  
 — 27.031  
 — 26.624  
 — 25.851  
 — 25.749  
 — 24.777  
 — 24.636  
 — 23.960  
 — 22.627  
 — 21.018  
 — 18.057  
 — 17.698  
 — 16.675  
 — 14.407





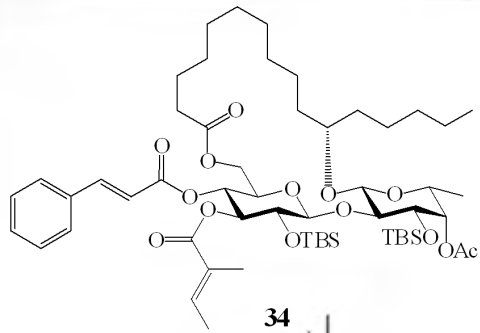
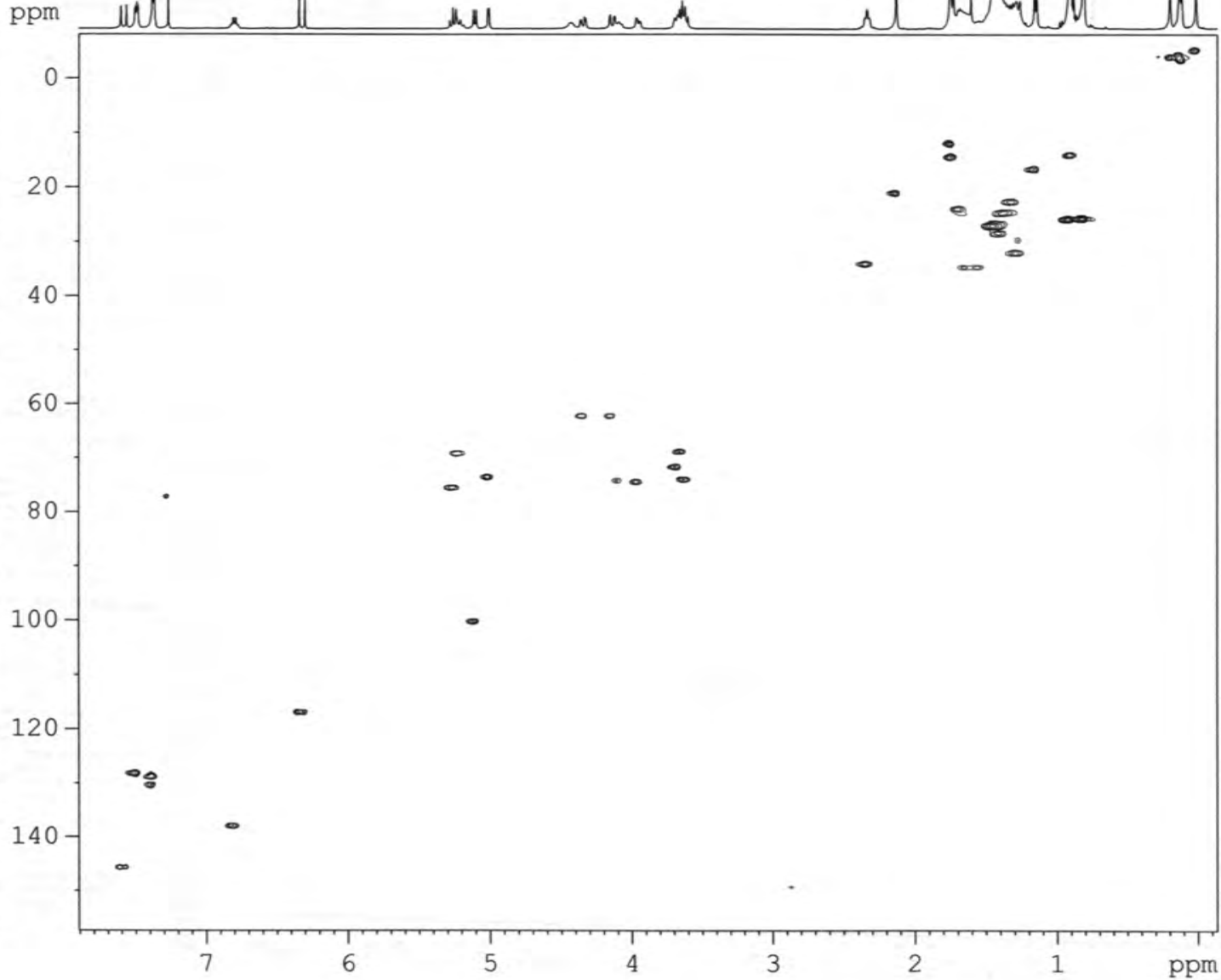
## ZGH-Ipom-2-82-A-140801 COSY



NAME ZGH-Ipom-2-82-A-140801  
 EXPNO 2  
 PROCNO 1  
 Date\_ 20140805  
 Time\_ 20.04  
 INSTRUM spect  
 PROBHD 5 mm PABBO BB-  
 PULPROG cosyppqf  
 TD 2048  
 SOLVENT CDC13  
 NS 4  
 DS 8  
 SWH 5341.880 Hz  
 FIDRES 2.608340 Hz  
 AQ 0.1917428 sec  
 RG 144  
 DW 93.600 usec  
 DE 6.50 usec  
 TE 292.2 K  
 D0 0.00000300 sec  
 D1 1.48689198 sec  
 D13 0.00000400 sec  
 D16 0.00020000 sec  
 INO 0.00018720 sec

===== CHANNEL f1 =====  
 NUC1 1H  
 P0 10.00 usec  
 P1 10.00 usec  
 PL1 -3.50 dB  
 PL1W 31.17620277 W  
 SF01 400.1324057 MHz

===== GRADIENT CHANNEL =====  
 GPNAM1 SINE.100  
 GPZ1 10.00 %  
 P16 1000.00 usec  
 ND0 1  
 TD 128  
 SF01 400.1324 MHz  
 FIDRES 41.733440 Hz  
 SW 13.350 ppm  
 FnmODE QF  
 SI 1024  
 SF 400.1300040 MHz  
 WDW SINE  
 SSB 0  
 LB 0.00 Hz  
 GB 0  
 PC 1.00  
 SI 1024  
 MC2 QF  
 SF 400.1300033 MHz  
 WDW SINE  
 SSB 0  
 LB 0.00 Hz  
 GB 0

ZGH-*Ipom*-2-82-A-140801 HSQC

```

NAME      ZGH-Ipom-2-82-A-140801
EXPNO     4
PROCNO    1
Date_     20140807
Time      6.24
INSTRUM   spect
PROBHD    5 mm PABBO BB-
PULPROG   hsqcetgpsi
TD         1024
SOLVENT   CDC13
NS         4
DS         16
SWH        5341.880 Hz
FIDRES     5.216680 Hz
AQ         0.0958964 sec
RG         2050
DW         93.600 usec
DE         6.50 usec
TE         293.4 K
CNST2     145.0000000
D0         0.00000300 sec
D1         1.50000000 sec
D4         0.00172414 sec
D11        0.03000000 sec
D13        0.00000400 sec
D16        0.00020000 sec
D24        0.00110000 sec
INO        0.00003000 sec
ZGPTNS

```

```

===== CHANNEL f1 =====
NUC1      1H
P1        10.00 usec
P2        20.00 usec
P28       1000.00 usec
PL1       -3.50 dB
PL1W      31.17620277 W
SFO1      400.1324057 MHz

```

```

===== CHANNEL f2 =====
CPDPRG2   garp
NUC2      13C
P3         10.00 usec
P4         20.00 usec
PCPD2     75.00 usec
PL2       -2.10 dB
PL12      15.40 dB
PL2W      58.37759399 W
PL12W     1.03811681 W
SFO2      100.6202727 MHz

```

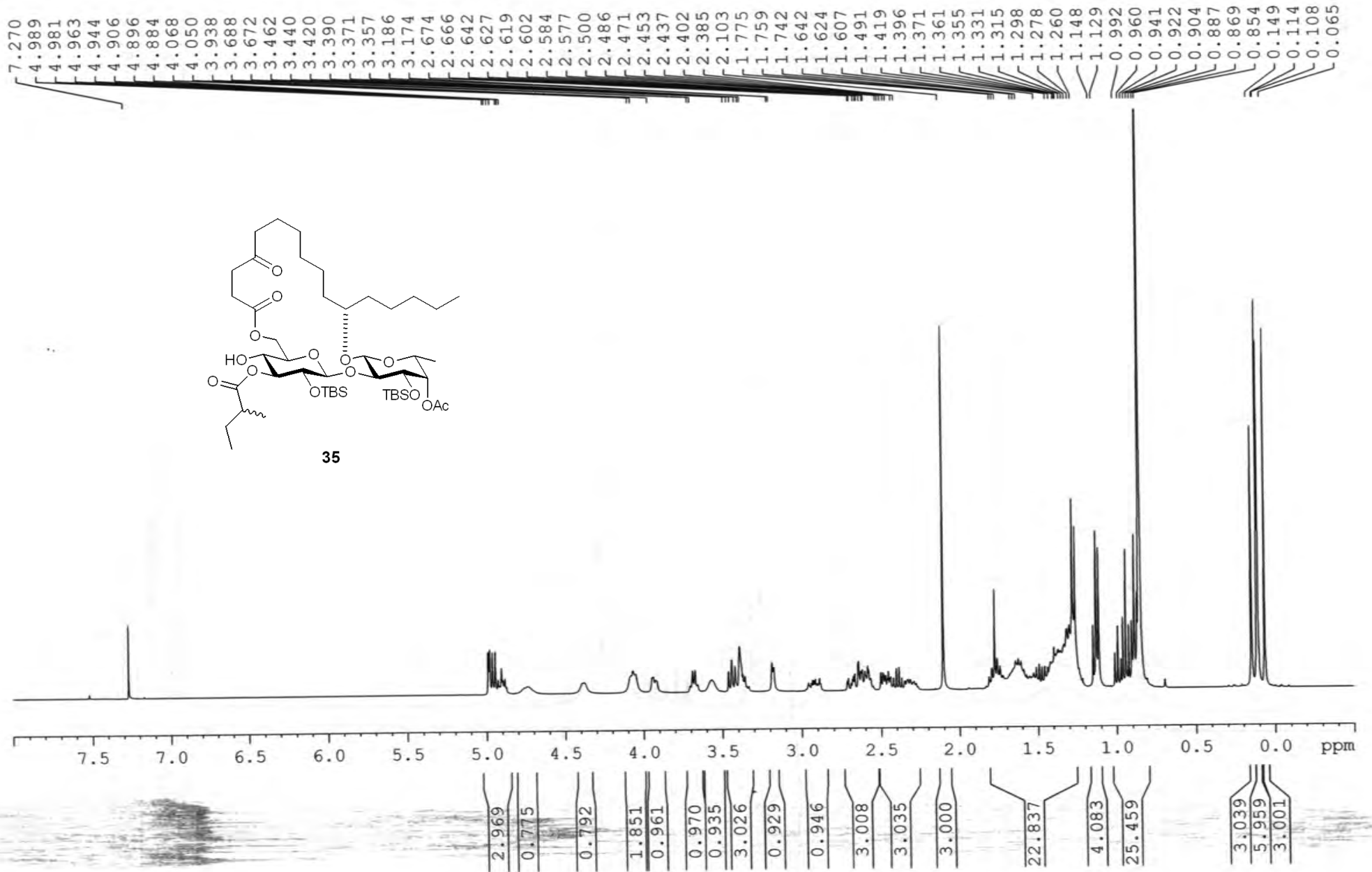
```

===== GRADIENT CHANNEL =====
GPNAM1    SINE.100
GPNAM2    SINE.100
GPZ1      80.00 %
GPZ2      20.10 %
P16       1000.00 usec
ND0        2
TD         256
SFO1      100.6203 MHz
FIDRES     65.104164 Hz
SW         165.639 ppm
FnMODE    Echo-Antiecho
SI         1024
SF         400.1300000 MHz
WDW        QSINE
SSB        2
LB         0.00 Hz
GB         0
PC         1.00
SI         1024
MC2       echo-antiecho
SF         100.6127690 MHz
WDW        QSINE
SSB        2
LB         0.00 Hz
GB         0

```



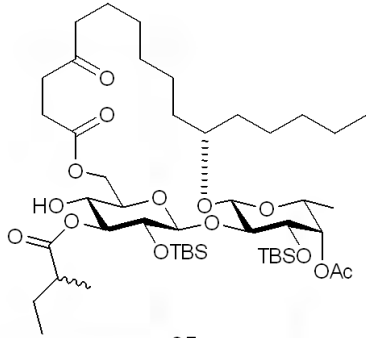
ZGH-Ipom-2-29-B-140430 1H in CDCL3



ZGH-Ipom-2-29-B-140430 13C in CDCl3

210.487  
210.309

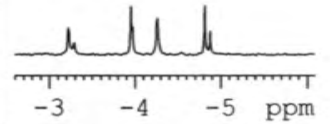
177.008  
172.380  
172.360  
170.916



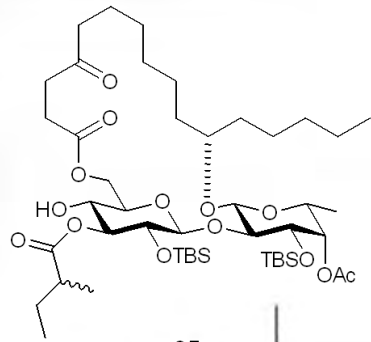
35

101.101  
100.250  
78.071  
77.942  
77.319  
77.206  
77.001  
76.684  
74.484  
73.882  
73.820  
73.674  
69.424  
68.719  
63.424  
42.025  
41.231  
40.715  
37.078  
34.876  
33.476  
32.028  
29.133  
28.683  
28.436  
27.280  
25.926  
25.884  
25.797  
25.323  
25.243  
24.506  
23.523  
22.609  
20.984  
18.118

3.226  
3.292  
3.957  
3.971  
4.265  
4.818  
4.878



210 200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 ppm

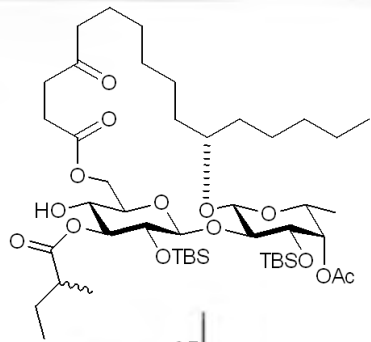
ZGH-*Ipom*-2-29-B-140430 COSY35  
ppm

NAME ZGH-*Ipom*-2-29-B-140430  
 EXPNO 3  
 PROCNO 1  
 Date\_ 20150319  
 Time\_ 5.22  
 INSTRUM spect  
 PROBHD 5 mm PABBO BB-  
 PULPROG cosygppqf  
 TD 2048  
 SOLVENT CDCl3  
 NS 8  
 DS 8  
 SWH 5341.880 Hz  
 FIDRES 2.608340 Hz  
 AQ 0.1917428 sec  
 RG 80.6  
 DW 93.600 usec  
 DE 6.50 usec  
 TE 293.0 K  
 D0 0.00000300 sec  
 D1 1.48689198 sec  
 D13 0.00000400 sec  
 D16 0.00020000 sec  
 INO 0.00018720 sec

----- CHANNEL f1 -----  
 NUC1 1H  
 P0 10.00 usec  
 P1 10.00 usec  
 PL1 -3.50 dB  
 PL1W 31.17620277 W  
 SFO1 400.1324057 MHz

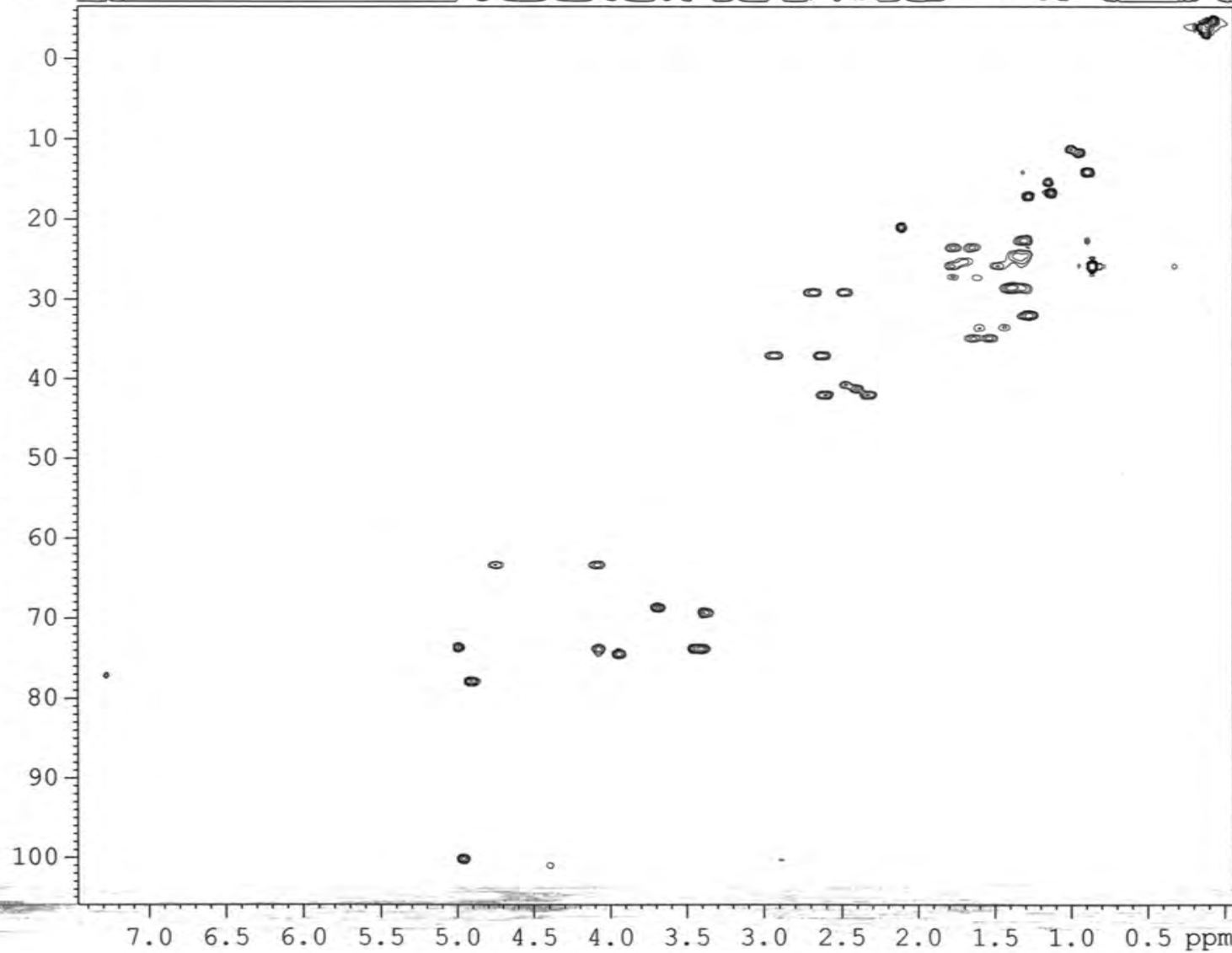
----- GRADIENT CHANNEL -----  
 GPNAMI SINE.100  
 GPZ1 10.00 %  
 P16 1000.00 usec  
 NDO 1  
 TD 128  
 SFO1 400.1324 MHz  
 FIDRES 41.733440 Hz  
 SW 13.350 ppm  
 FhMODE QF  
 SI 1024  
 SF 400.1300040 MHz  
 WDW SINE  
 SSB 0  
 LB 0.00 Hz  
 GB 0  
 FC 1.00  
 SI 1024  
 MC2 QF  
 SF 400.1300033 MHz  
 WDW SINE  
 SSB 0  
 LB 0.00 Hz  
 GB 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 0.5 ppm



## ZGH-Ipom-2-29-B-140430 HSQC

ppm 35

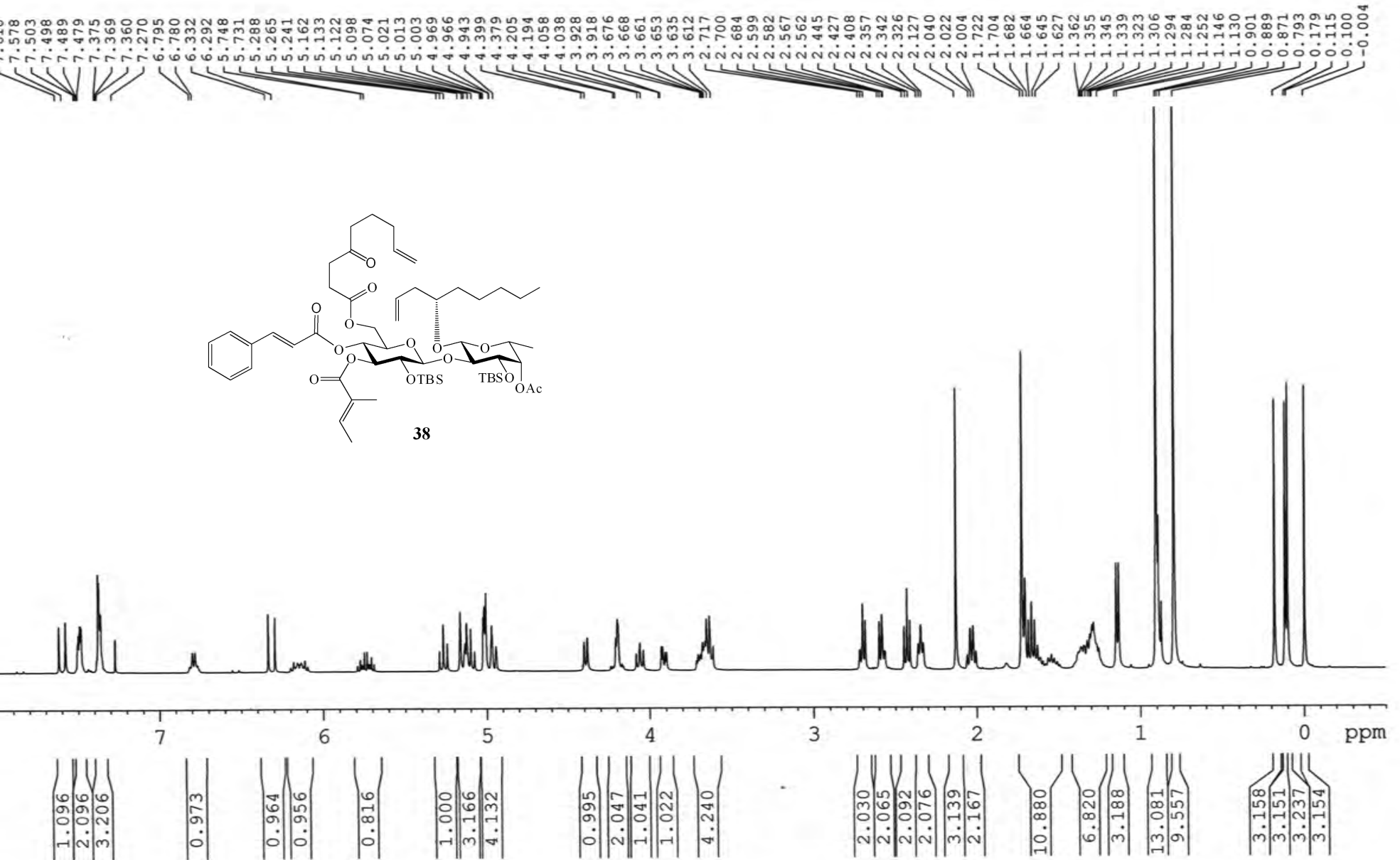
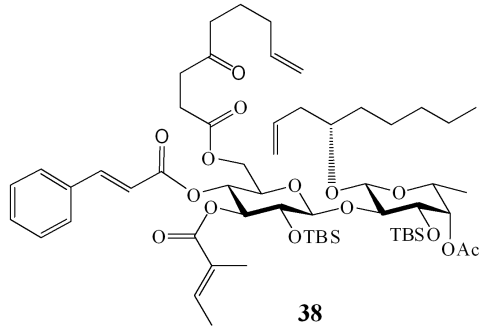
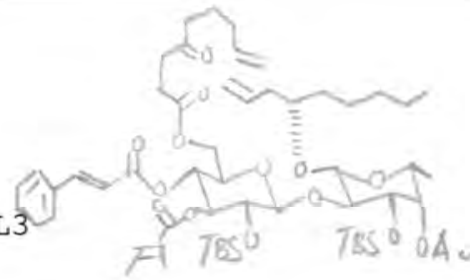


NAME ZGH-Ipom-2-29-B-140430  
 EXPNO 4  
 PROCNO 1  
 Date\_ 20150319  
 Time\_ 5.51  
 INSTRUM spect  
 PROBHD 5 mm PABBO BB-  
 PULPROG hsqcetgpsi  
 TD 1024  
 SOLVENT CDCl3  
 NS 8  
 DS 16  
 SWH 5341.880 Hz  
 FIDRES 5.216680 Hz  
 AQ 0.0958964 sec  
 RG 2050  
 DW 93.600 usec  
 DE 6.50 usec  
 TE 292.3 K  
 CNST2 145.0000000  
 D0 0.00000300 sec  
 D1 1.50000000 sec  
 D4 0.00172414 sec  
 D11 0.03000000 sec  
 D13 0.00000400 sec  
 D16 0.00020000 sec  
 D24 0.00110000 sec  
 INO 0.00003000 sec  
 ZGPTNS

===== CHANNEL f1 =====  
 NUC1 1H  
 P1 10.00 usec  
 P2 20.00 usec  
 P28 1000.00 usec  
 PL1 -3.50 dB  
 PL1W 31.17620277 W  
 SFO1 400.1324057 MHz

===== CHANNEL f2 =====  
 CPDPRG2 garp  
 NUC2 13C  
 P3 10.00 usec  
 P4 20.00 usec  
 PCPD2 75.00 usec  
 PL2 -2.10 dB  
 PL12 15.40 dB  
 PL2W 58.37759399 W  
 PL12W 1.03811681 W  
 SFO2 100.6202727 MHz

===== GRADIENT CHANNEL =====  
 GPNAM1 SINE.100  
 GPNAM2 SINE.100  
 GPZ1 80.00 %  
 GPZ2 20.10 %  
 P16 1000.00 usec  
 ND0 2  
 TD 256  
 SFO1 100.6203 MHz  
 FIDRES 65.104164 Hz  
 SW 165.639 ppm  
 FmMODE Echo-Antiecho  
 SI 1024  
 SF 400.1300000 MHz  
 WDW QSINE  
 SSB 2  
 LB 0.00 Hz  
 GB 0  
 PC 1.00  
 SI 1024  
 MC2 echo-antiecho  
 SF 100.6127690 MHz  
 WDW QSINE  
 SSB 2  
 LB 0.00 Hz  
 GB 0

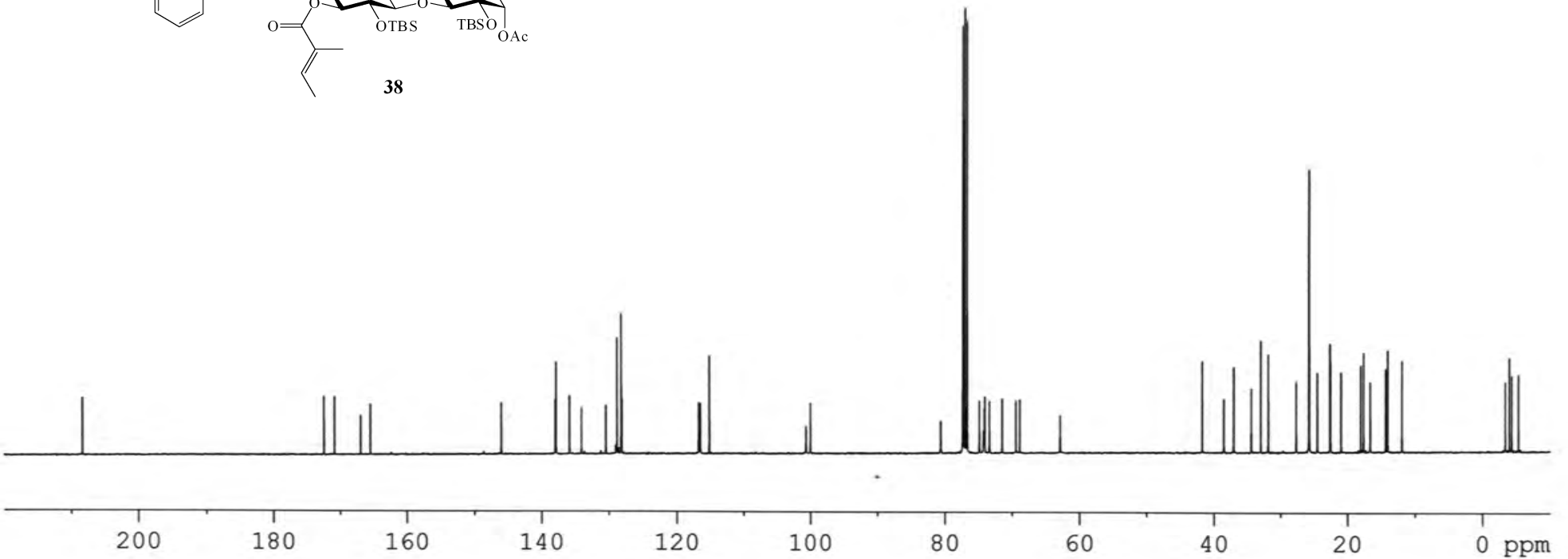
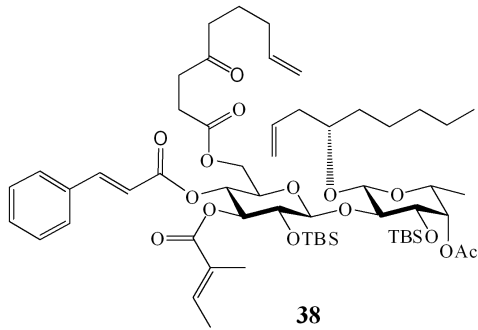
ZGH-*Ipom*-2-38-A-140422 1H in CDCl<sub>3</sub>

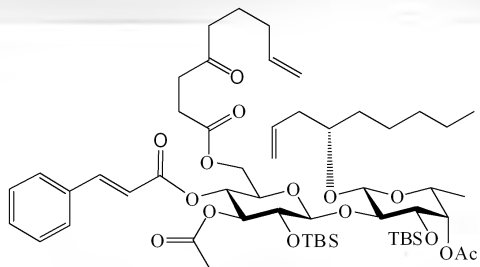
ZGH-*Ipom*-2-38-A-140422  $^{13}\text{C}$  in  $\text{CDCl}_3$ 

— 208.335

172.408  
170.849  
166.932  
165.488

146.008  
137.984  
137.863  
135.853  
134.091  
130.459  
129.023  
128.803  
128.525  
128.196  
128.110  
116.767  
116.492  
115.167  
100.690  
100.011  
80.612  
77.328  
77.211  
77.010  
76.692  
74.864  
74.250  
74.117  
74.056  
73.382  
71.496  
69.443  
68.852  
62.866  
41.732  
38.494  
37.019  
34.374  
32.977  
31.857  
27.687  
25.801  
25.741  
24.524  
22.646  
22.566  
20.975  
18.021  
17.621  
16.624  
14.340  
14.022  
11.927

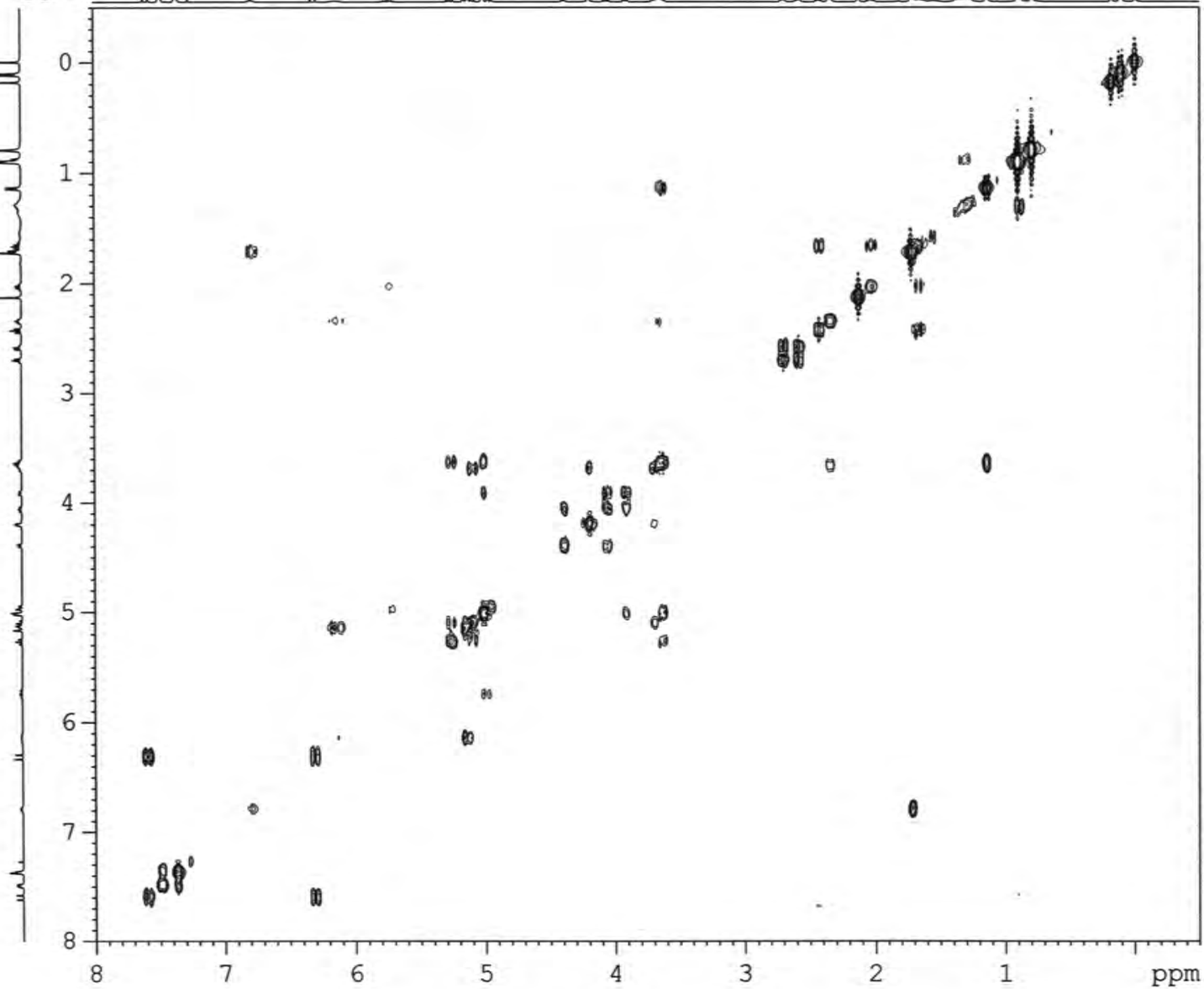




## ZGH-Ipom-2-38-A-140422 COSY

ppm

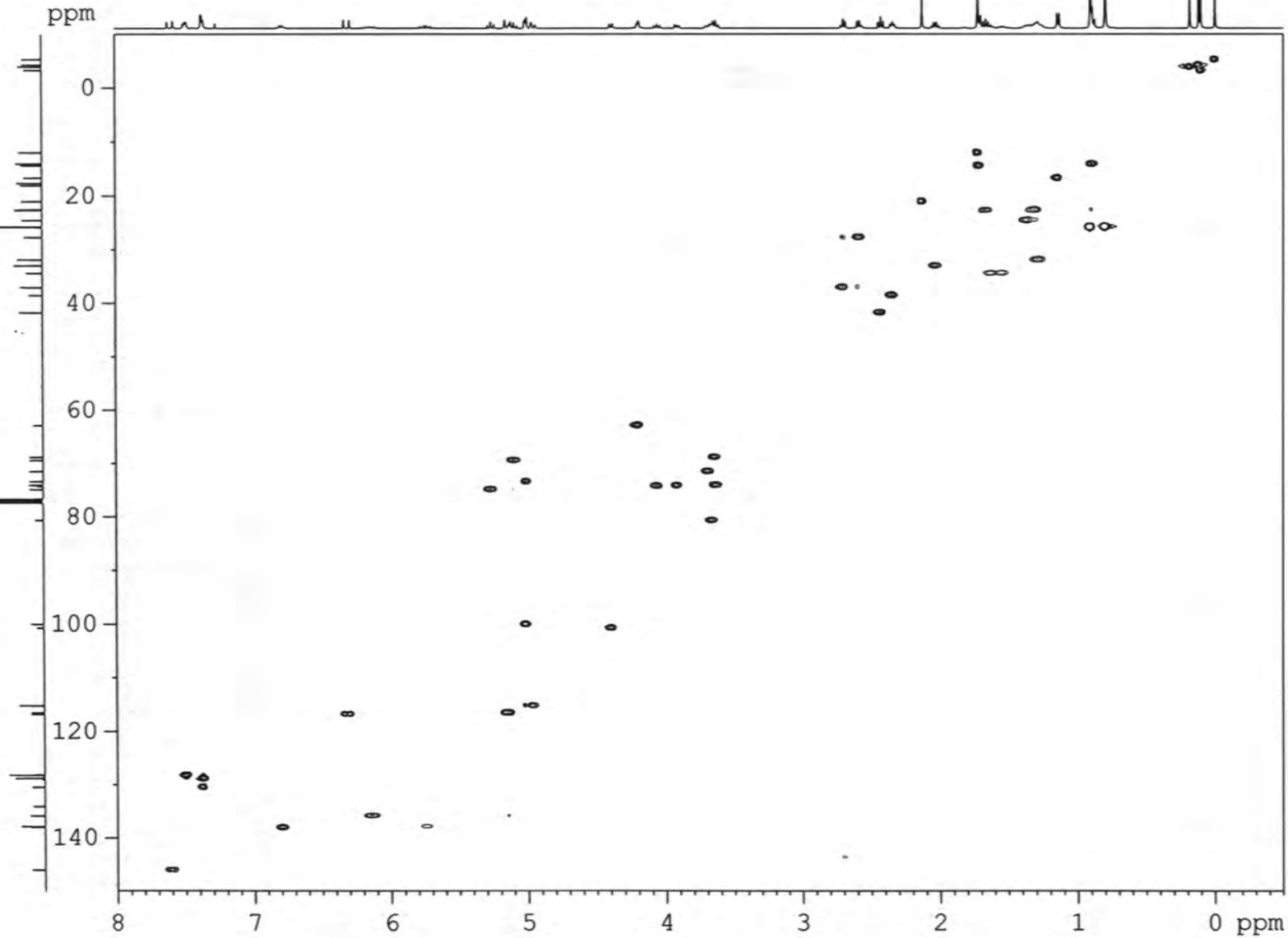
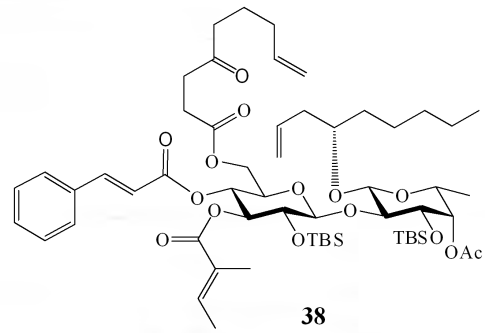
38



NAME ZGH-Ipom-2-38-A-140422  
 EXPNO 3  
 PROCNO 1  
 Date\_ 20140426  
 Time\_ 4.08  
 INSTRUM spect  
 PROBHD 5 mm PABBO BB-  
 PULPROG cosygppqf  
 TD 2048  
 SOLVENT CDCl3  
 NS 4  
 DS 8  
 SWH 5341.880 Hz  
 FIDRES 2.608340 Hz  
 AQ 0.1917428 sec  
 RG 32  
 DW 93.600 usec  
 DE 6.50 usec  
 TE 293.3 K  
 D0 0.00000300 sec  
 D1 1.48689198 sec  
 D13 0.00000400 sec  
 D16 0.00020000 sec  
 INO 0.00018720 sec

===== CHANNEL f1 =====  
 NUC1 1H  
 P0 10.00 usec  
 P1 10.00 usec  
 PL1 -3.50 dB  
 PL1W 31.17620277 W  
 SFO1 400.1324057 MHz

===== GRADIENT CHANNEL =====  
 GPNAM1 SINE.100  
 GPZ1 10.00 %  
 P16 1000.00 usec  
 ND0 1  
 TD 128  
 SFO1 400.1324 MHz  
 FIDRES 41.733440 Hz  
 SW 13.350 ppm  
 FnMODE QF  
 SI 1024  
 SF 400.1300040 MHz  
 WDW SINE  
 SSB 0  
 LB 0.00 Hz  
 GB 0  
 PC 1.00  
 SI 1024  
 MC2 QF  
 SF 400.1300033 MHz  
 WDW SINE  
 SSB 0  
 LB 0.00 Hz  
 GB 0

ZGH-*Ipom*-2-38-A-140422 HSQC

```

NAME      ZGH-Ipom-2-38-A-140422
EXPNO     4
PROCNO    1
Date_     20140426
Time      4.24
INSTRUM   spect
PROBHD    5 mm PABBO BB-
PULPROG   hsqcetgpsi
TD         1024
SOLVENT   CDCl3
NS         8
DS         16
SWH        5341.880 Hz
FIDRES     5.216680 Hz
AQ         0.0958964 sec
RG         2050
DW         93.600 usec
DE         6.50 usec
TE         292.7 K
CNST2     145.0000000
DO         0.00000300 sec
D1         1.50000000 sec
D4         0.00172414 sec
D11        0.03000000 sec
D13        0.00000400 sec
D16        0.00020000 sec
D24        0.00110000 sec
INO        0.00003000 sec
ZGOPTNS

```

```

===== CHANNEL f1 =====
NUC1       1H
P1         10.00 usec
P2         20.00 usec
P28        1000.00 usec
PL1        -3.50 dB
PL1W       31.17620277 W
SFO1       400.1324057 MHz

```

```

===== CHANNEL f2 =====
CPDPRG2    garp
NUC2       13C
P3         10.00 usec
P4         20.00 usec
PCPD2      75.00 usec
PL2        -2.10 dB
PL12       15.40 dB
PL2W       58.37759399 W
PL12W      1.03811681 W
SFO2       100.6202727 MHz

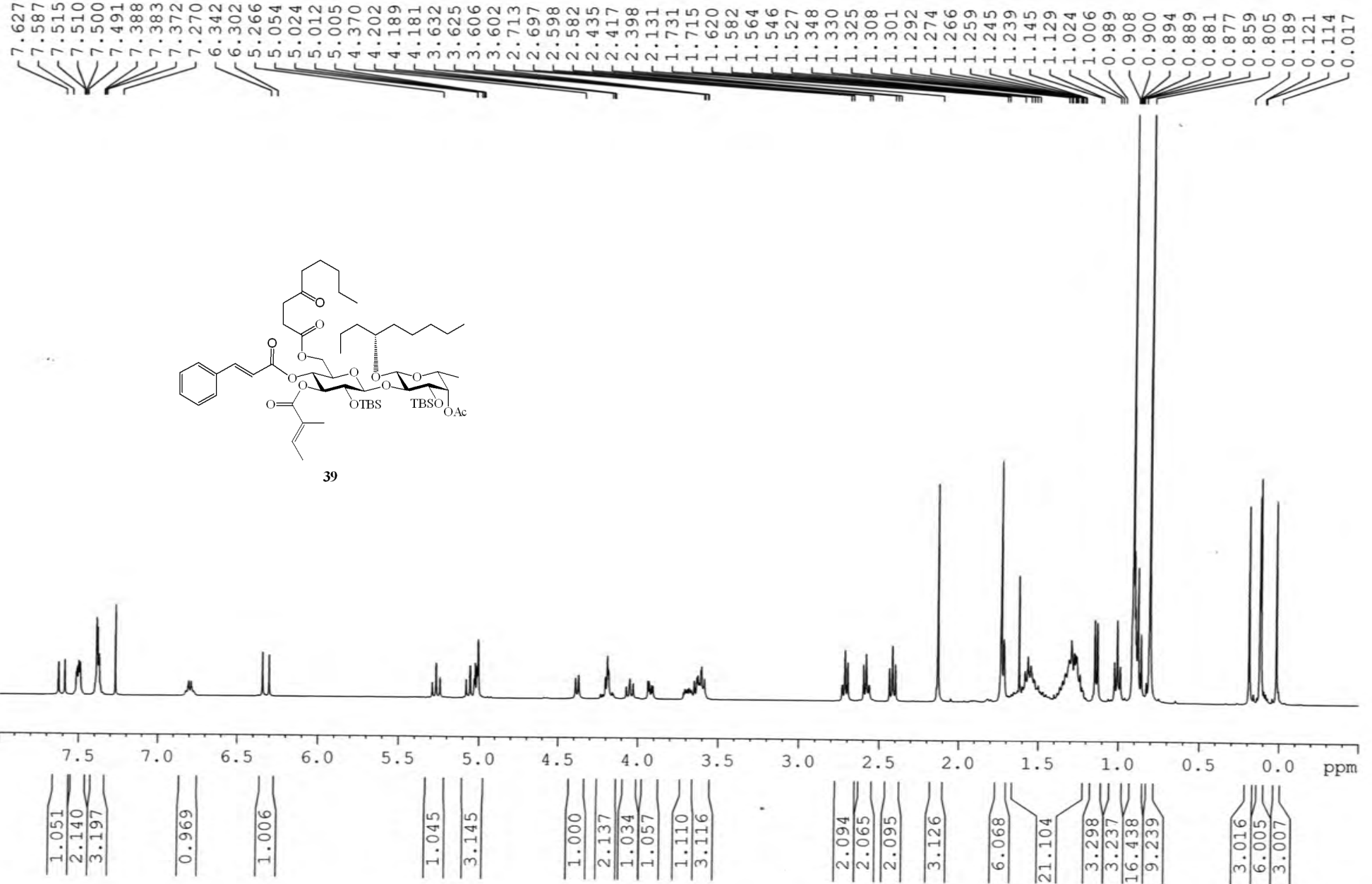
```

```

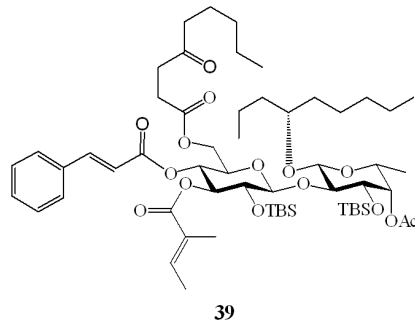
===== GRADIENT CHANNEL =====
GPNAM1     SINE.100
GPNAM2     SINE.100
GPZ1       80.00 %
GPZ2       20.10 %
P16        1000.00 usec
ND0        2
TD         256
SFO1       100.6203 MHz
FIDRES     65.104164 Hz
SW         165.639 ppm
FnMODE     Echo-Antiecho
SI         1024
SF         400.1300000 MHz
WDW        QSINE
SSB        2
LB         0.00 Hz
GB         0
PC         1.00
SI         1024
MC2        echo-antiecho
SF         100.6127690 MHz
WDW        QSINE
SSB        2
LB         0.00 Hz
GB         0

```



ZGH-*Ipom*-3-9-A-150730 1H in CDCl<sub>3</sub>

ZGH-Ipom-3-9-A-150730 13C in CDCl3



— 208.754

— 172.485  
 — 170.951  
 — 166.961  
 — 165.574

— 146.055  
 — 138.031  
 — 134.139  
 — 130.497  
 — 128.846  
 — 128.245  
 — 128.142  
 — 116.820

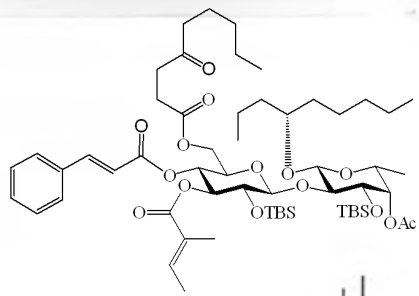
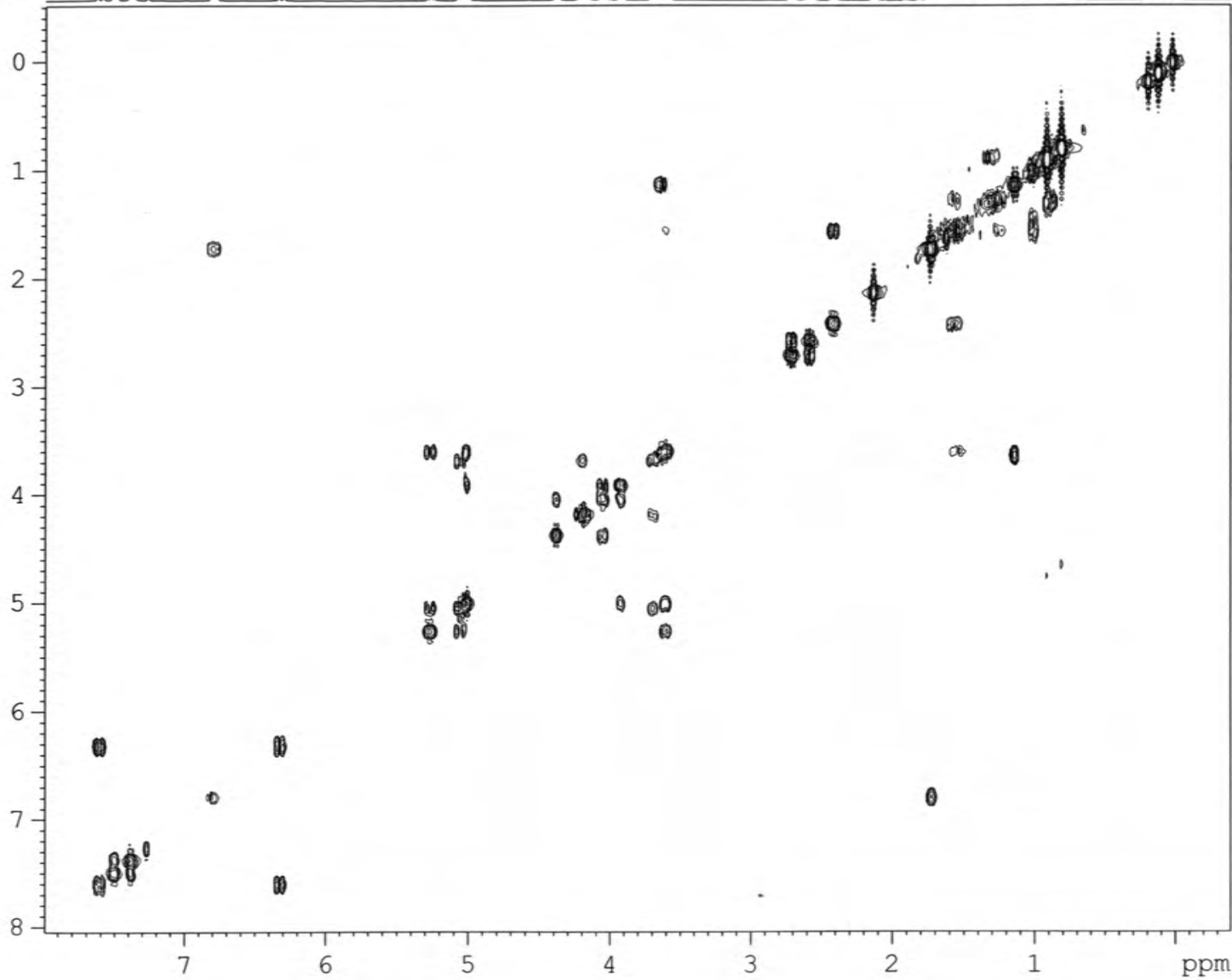
— 100.882  
 — 100.054  
 — 80.987  
 — 77.320  
 — 77.207  
 — 77.002  
 — 76.685  
 — 74.915  
 — 74.240  
 — 74.123  
 — 73.484  
 — 71.561  
 — 69.664  
 — 68.744  
 — 63.136

— 42.697  
 — 36.966  
 — 36.253  
 — 34.655  
 — 32.033  
 — 31.346  
 — 27.693  
 — 25.849  
 — 25.784  
 — 24.687  
 — 23.437  
 — 22.644  
 — 22.412  
 — 21.040  
 — 18.474  
 — 18.075  
 — 17.671  
 — 16.701  
 — 14.545  
 — 14.388  
 — 14.088

— 3.352  
 — 3.897  
 — 4.269  
 — 5.249

-3 -4 -5 ppm

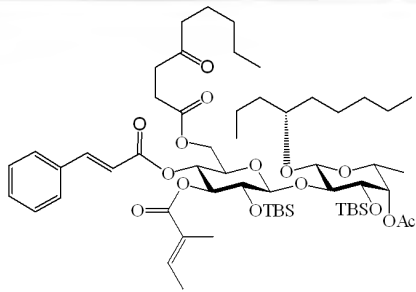
210 200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 ppm

ZGH-*Ipom*-3-9-A-150730 COSY39  
ppm

NAME ZGH-*Ipom*-3-9-A-150730  
 EXPNO 2  
 PROCNO 1  
 Date 20150731  
 Time 23.30  
 INSTRUM spect  
 PROBHD 5 mm PABBO BB-  
 PULPROG cosygpgf  
 TD 2048  
 SOLVENT CDCl3  
 NS 4  
 DS 8  
 SWH 5341.880 Hz  
 FIDRES 2.608340 Hz  
 AQ 0.1917428 sec  
 RG 128  
 DW 93.600 usec  
 DE 6.50 usec  
 TE 292.1 K  
 D0 0.00000300 sec  
 D1 1.48689198 sec  
 D13 0.00000400 sec  
 D16 0.00020000 sec  
 INO 0.00018720 sec

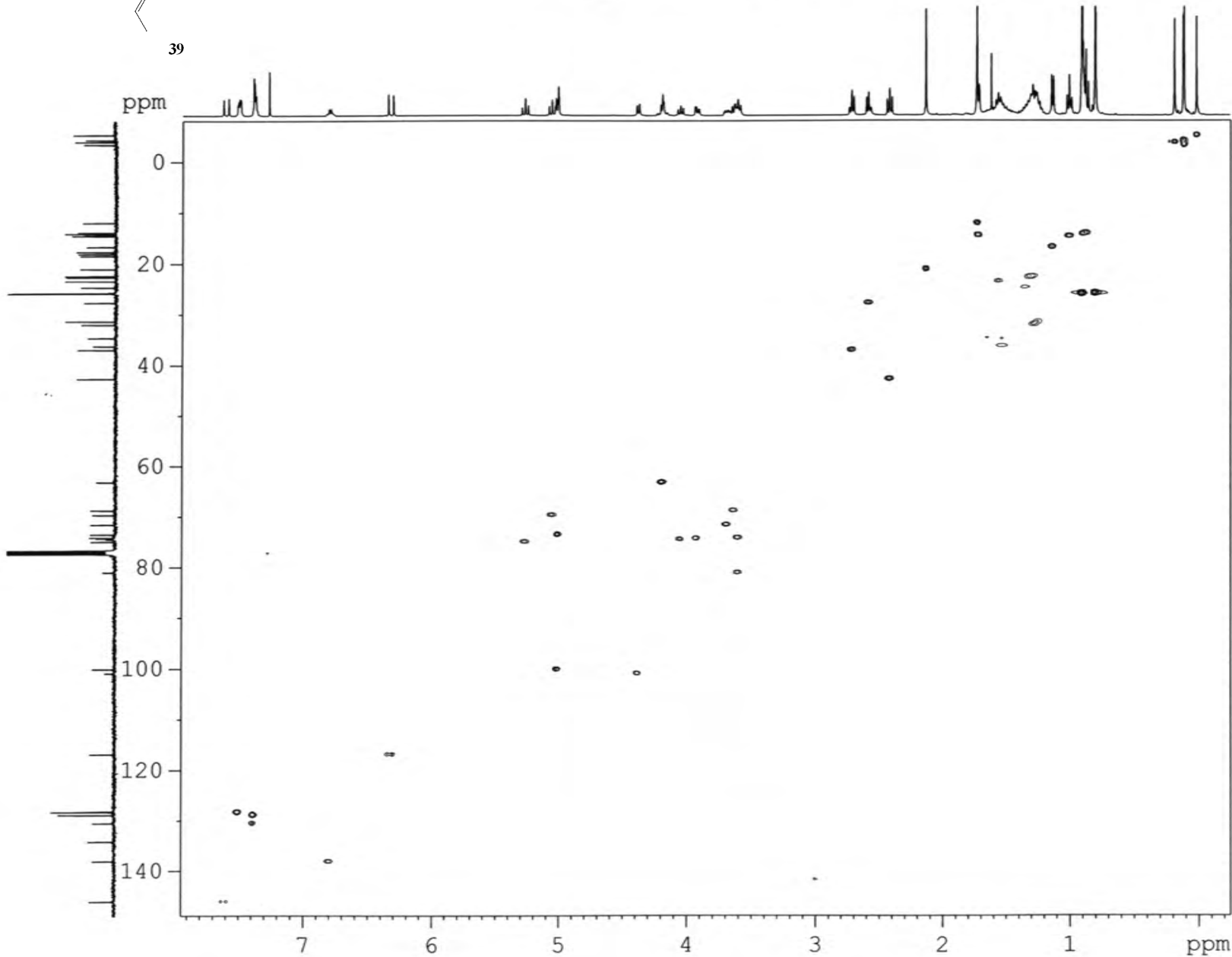
===== CHANNEL f1 =====  
 NUC1 1H  
 P0 10.00 usec  
 P1 10.00 usec  
 PL1 -3.50 dB  
 PL1W 31.17620277 W  
 SFO1 400.1324057 MHz

===== GRADIENT CHANNEL =====  
 GPNAM1 SINE.100  
 GP21 10.00 %  
 P16 1000.00 usec  
 NDO 1  
 TD 128  
 SFO1 400.1324 MHz  
 FIDRES 41.733440 Hz  
 SW 13.350 ppm  
 FhMODE QF  
 SI 1024  
 SF 400.1300040 MHz  
 WDW SINE  
 SSB 0  
 LB 0.00 Hz  
 GB 0  
 PC 1.00  
 SI 1024  
 MC2 QF  
 SF 400.1300033 MHz  
 WDW SINE  
 SSB 0  
 LB 0.00 Hz  
 GB 0



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## ZGH-Ipom-3-9-A-150730 HSQC



NAME ZGH-Ipom-3-9-A-150730  
 EXPNO 4  
 PROCNO 1  
 Date\_ 20150801  
 Time\_ 3.36  
 INSTRUM spect  
 PROBHD 5 mm PABBO BB-  
 PULPROG hsqcetpsi  
 TD 1024  
 SOLVENT CDCl3  
 NS 8  
 DS 16  
 SWH 5341.880 Hz  
 FIDRES 5.216680 Hz  
 AQ 0.0958964 sec  
 RG 2050  
 DW 93.600 usec  
 DE 6.50 usec  
 TE 293.4 K  
 CNST2 145.0000000  
 D0 0.00000300 sec  
 D1 1.50000000 sec  
 D4 0.00172414 sec  
 D11 0.03000000 sec  
 D13 0.00000400 sec  
 D16 0.00020000 sec  
 D24 0.00110000 sec  
 INO 0.00003000 sec  
 ZGPTNS

===== CHANNEL f1 =====  
 NUC1 1H  
 P1 10.00 usec  
 P2 20.00 usec  
 P28 1000.00 usec  
 PL1 -3.50 dB  
 PL1W 31.17620277 W  
 SFO1 400.1324057 MHz

===== CHANNEL f2 =====  
 CPDPRG2 garp  
 NUC2 13C  
 P3 10.00 usec  
 P4 20.00 usec  
 PCPD2 75.00 usec  
 PL2 -2.10 dB  
 PL12 15.40 dB  
 PL2W 58.37759399 W  
 PL12W 1.03811681 W  
 SFO2 100.6202727 MHz

===== GRADIENT CHANNEL =====  
 GPNAM1 SINE.100  
 GPNAM2 SINE.100  
 GPZ1 80.00 %  
 GPZ2 20.10 %  
 P16 1000.00 usec  
 ND0 2  
 TD 256  
 SFO1 100.6203 MHz  
 FIDRES 65.104164 Hz  
 SW 165.639 ppm  
 FnMODE Echo-Antiecho  
 SI 1024  
 SF 400.1300000 MHz  
 WDW QSINE  
 SSB 2  
 LB 0.00 Hz  
 GB 0  
 PC 1.00  
 SI 1024  
 MC2 echo-antiecho  
 SF 100.6127690 MHz  
 WDW QSINE  
 SSB 2  
 LB 0.00 Hz  
 GB 0

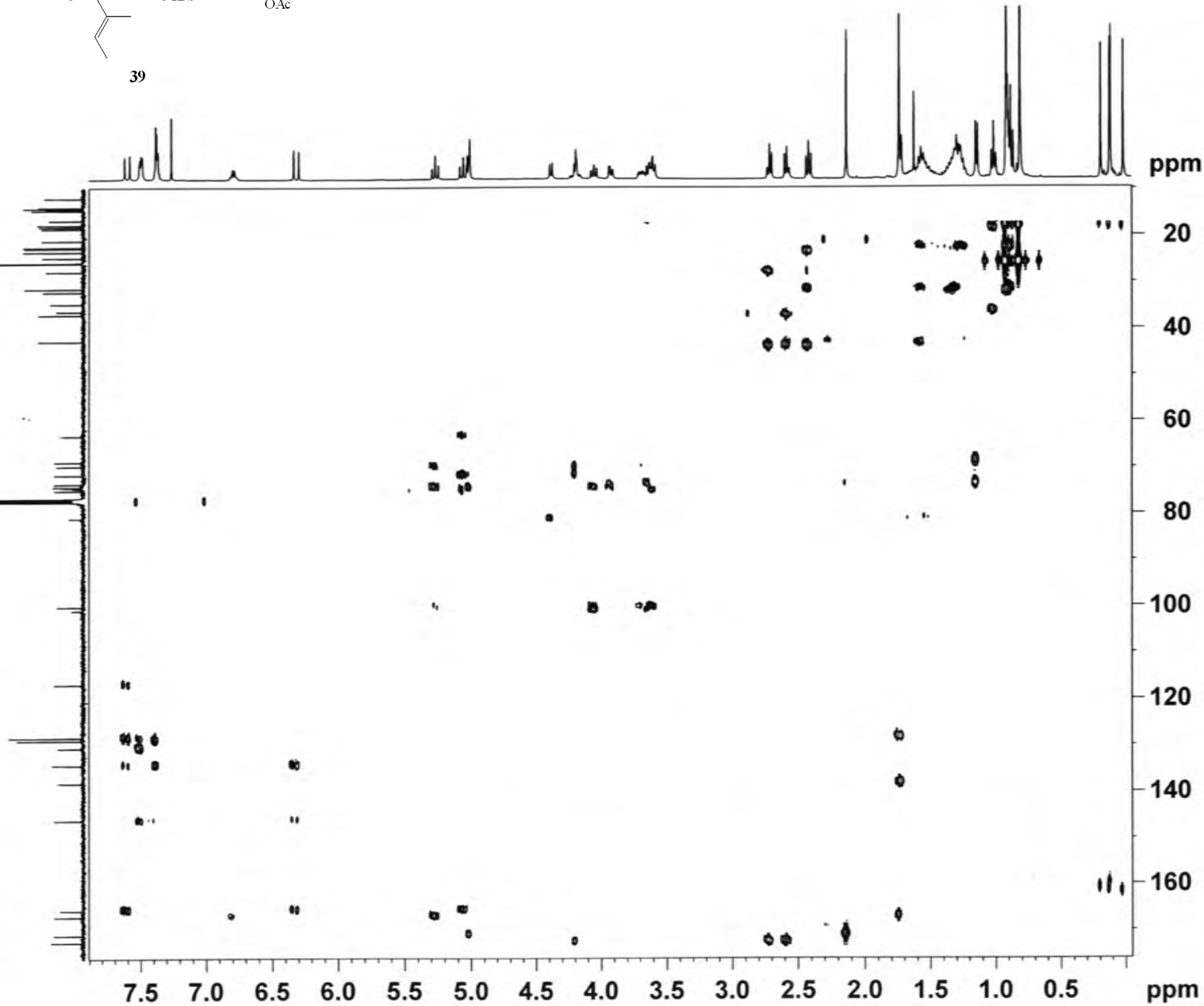
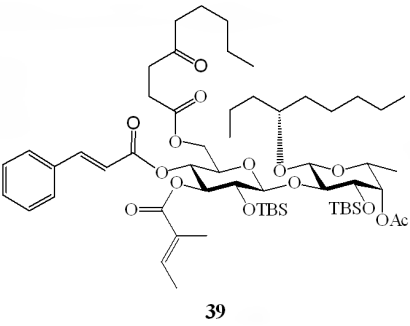
ZGH-*Ipom*-3-9-A-150730 HMBC in CDCl<sub>3</sub>

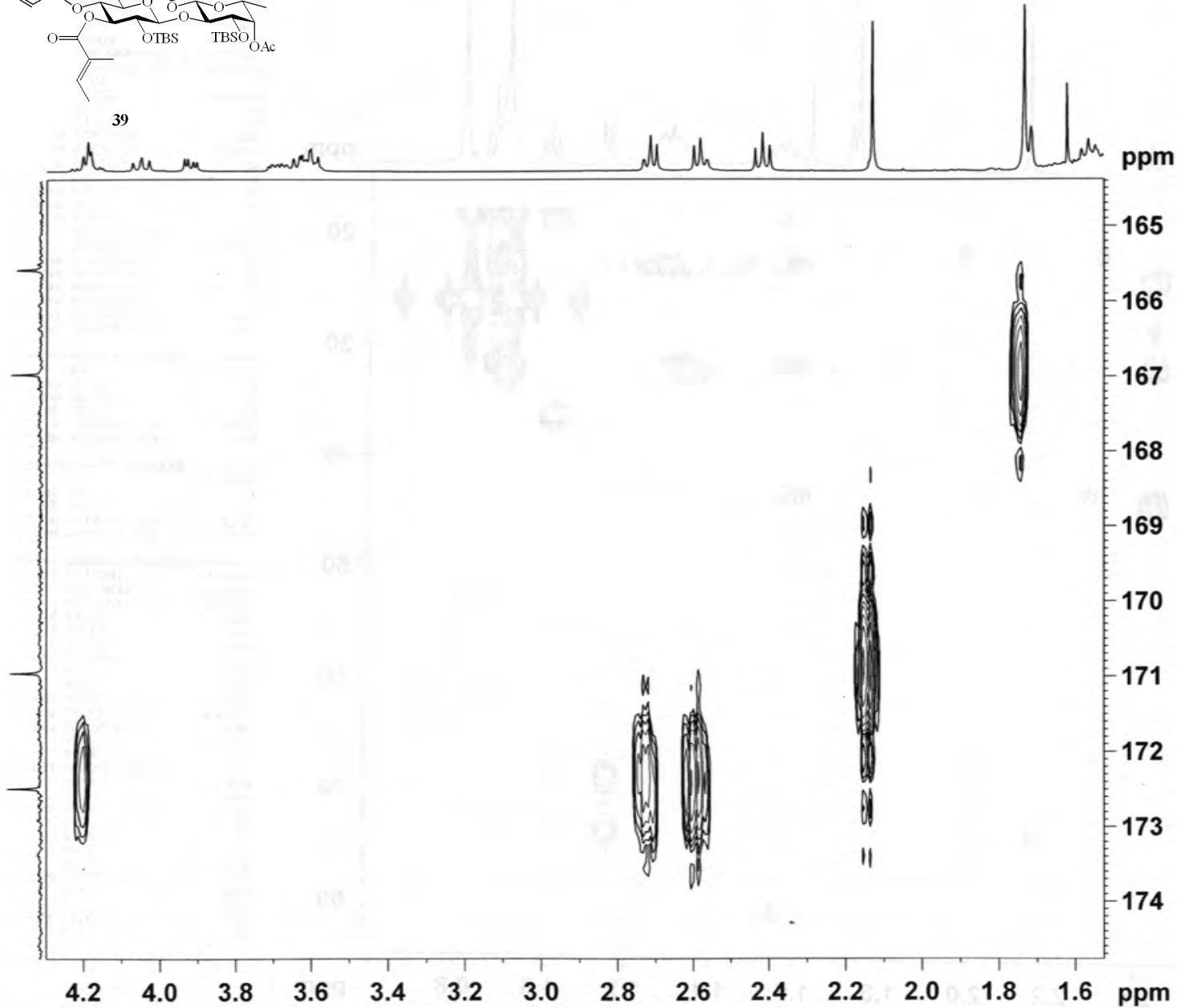
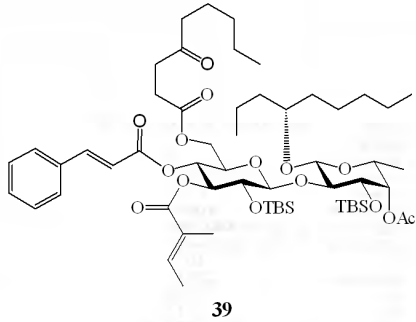
NAME ZGH-*Ipom*-3-9-A-150730  
 EXPNO 5  
 PROCNO 1  
 Date\_ 20150801  
 Time\_ 4.33  
 INSTRUM spect  
 PROBHD 5 mm PABBO BB-  
 PULPROG hmbcgp1pndqf  
 TD 4096  
 SOLVENT CDCl<sub>3</sub>  
 NS 50  
 DS 16  
 SWH 5208.333 Hz  
 FIDRES 1.271566 Hz  
 AQ 0.3932660 sec  
 RG 2050  
 DW 96.000 usec  
 DE 6.50 usec  
 TE 293.0 K  
 CNST2 145.0000000  
 CNST13 10.0000000  
 D0 0.00000300 sec  
 D1 1.50000000 sec  
 D2 0.00344828 sec  
 D6 0.05000000 sec  
 D16 0.00020000 sec  
 IN0 0.00003010 sec

----- CHANNEL f1 -----  
 NUC1 1H  
 P1 10.00 usec  
 P2 20.00 usec  
 PL1 -3.50 dB  
 PL1W 31.17620277 W  
 SFO1 400.1325208 MHz

----- CHANNEL f2 -----  
 NUC2 13C  
 P3 10.00 usec  
 PL2 -2.10 dB  
 PL2W 58.37759399 W  
 SFO2 100.6228138 MHz

----- GRADIENT CHANNEL -----  
 GPNAM1 SINE.100  
 GPNAM2 SINE.100  
 GPNAM3 SINE.100  
 GPZ1 50.00 %  
 GPZ2 30.00 %  
 GPZ3 40.10 %  
 P16 1000.00 usec  
 ND0 2  
 TD 128  
 SFO1 100.6228 MHz  
 FIDRES 129.709091 Hz  
 SW 165.000 ppm  
 FnMODE QF  
 SI 2048  
 SF 400.1300000 MHz  
 WDW SINE  
 SSB 0  
 LB 0.00 Hz  
 GB 0  
 PC 4.00  
 SI 1024  
 MC2 QF  
 SF 100.6127690 MHz  
 WDW SINE  
 SSB 0  
 LB 0.00 Hz  
 GB 0



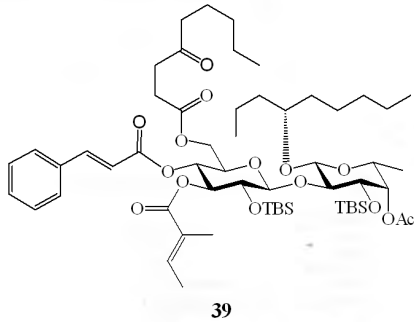
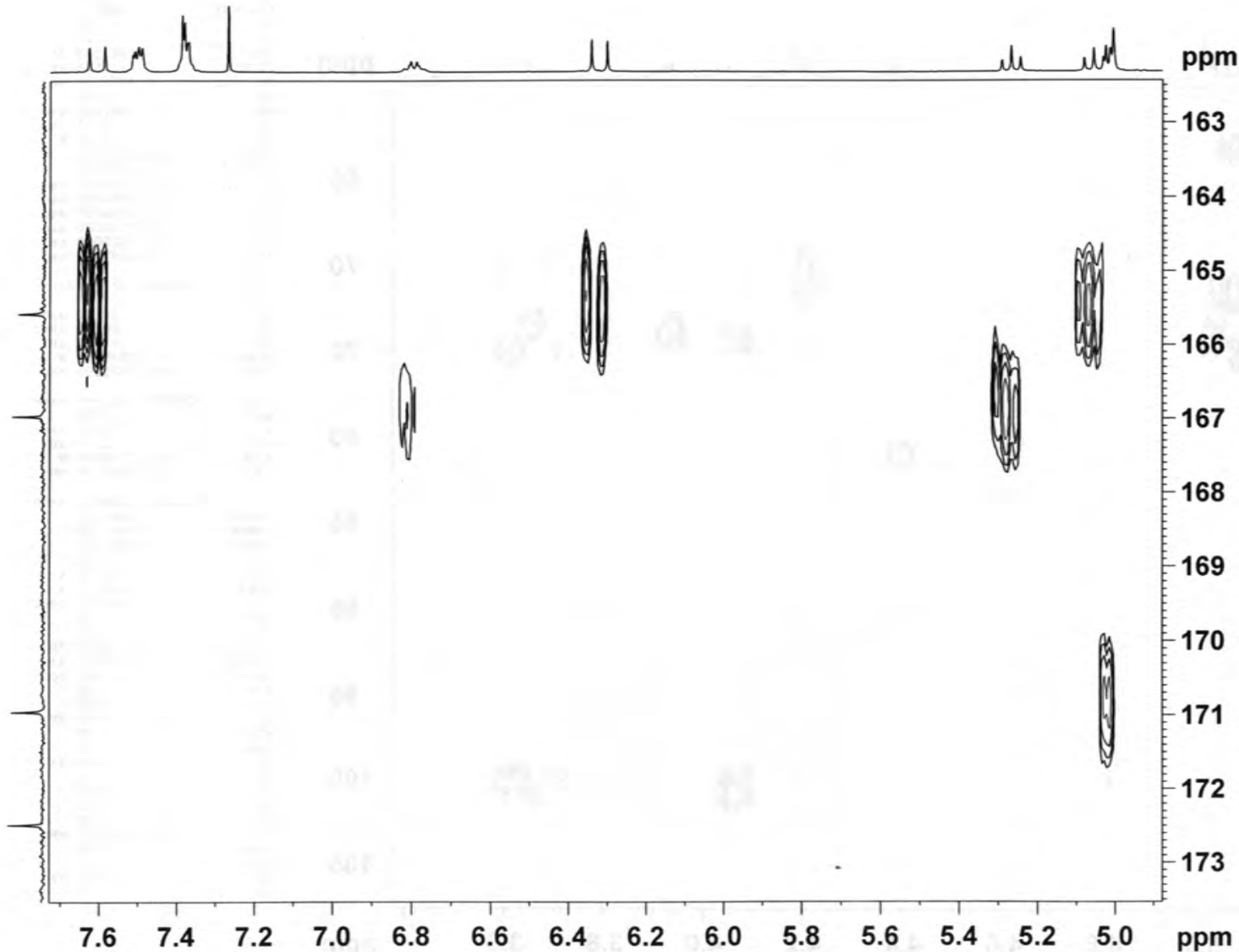
ZGH-*Ipom*-3-9-A-150730 HMBC in CDCl<sub>3</sub>

NAME ZGH-*Ipom*-3-9-A-150730  
 EXPNO 5  
 PROCNO 1  
 Date\_ 20150801  
 Time\_ 4.33  
 INSTRUM spect  
 PROBHD 5 mm PABBO BB-  
 PULPROG hmbcgp1pndqf  
 TD 4096  
 SOLVENT CDCl3  
 NS 50  
 DS 16  
 SWH 5208.333 Hz  
 FIDRES 1.271566 Hz  
 AQ 0.3932660 sec  
 RG 2050  
 DW 96.000 usec  
 DE 6.50 usec  
 TE 293.0 K  
 CNST2 145.0000000  
 CNST13 10.0000000  
 D0 0.00000300 sec  
 D1 1.50000000 sec  
 D2 0.00344828 sec  
 D6 0.05000000 sec  
 D16 0.00020000 sec  
 INO 0.00003010 sec

----- CHANNEL f1 -----  
 NUC1 1H  
 P1 10.00 usec  
 P2 20.00 usec  
 PL1 -3.50 dB  
 PL1W 31.17620277 W  
 SFO1 400.1325208 MHz

----- CHANNEL f2 -----  
 NUC2 13C  
 P3 10.00 usec  
 PL2 -2.10 dB  
 PL2W 58.37759399 W  
 SFO2 100.6228138 MHz

----- GRADIENT CHANNEL -----  
 GPNAM1 SINE.100  
 GPNAM2 SINE.100  
 GPNAM3 SINE.100  
 GPZ1 50.00 %  
 GPZ2 30.00 %  
 GPZ3 40.10 %  
 P16 1000.00 usec  
 NDO 2  
 TD 128  
 SFO1 100.6228 MHz  
 FIDRES 129.709091 Hz  
 SW 165.000 ppm  
 FmMODE QF  
 SI 2048  
 SF 400.1300000 MHz  
 WDW SINE  
 SSB 0  
 LB 0.00 Hz  
 GB 0  
 PC 4.00  
 SI 1024  
 MC2 QF  
 SF 100.6127690 MHz  
 WDW SINE  
 SSB 0  
 LB 0.00 Hz  
 GB 0

ZGH-*Ipom*-3-9-A-150730 HMBC in CDCL<sub>3</sub>

```

NAME      ZGH-Ipom-3-9-A-150730
EXPNO     5
PROCNO    1
Date_     20150801
Time      4.33
INSTRUM   spect
PROBHD    5 mm PABBO BB-
PULPROG   hmbcgp1pndqf
TD         4096
SOLVENT   CDC13
NS         50
DS         16
SWH        5208.333 Hz
FIDRES     1.271566 Hz
AQ         0.3932660 sec
RG         2050
DW         96.000 usec
DE         6.50 usec
TE         293.0 K
CNST2     145.0000000
CNST13    10.0000000
D0         0.00000300 sec
D1         1.50000000 sec
D2         0.00344828 sec
D6         0.05000000 sec
D16        0.00020000 sec
IN0        0.00003010 sec
  
```

```

----- CHANNEL f1 -----
NUC1       1H
P1         10.00 usec
P2         20.00 usec
PL1        -3.50 dB
PL1W       31.17620277 W
SFO1       400.1325208 MHz
  
```

```

----- CHANNEL f2 -----
NUC2       13C
P3         10.00 usec
P2         -2.10 dB
PL2W       58.37759399 W
SFO2       100.6228138 MHz
  
```

```

----- GRADIENT CHANNEL -----
GPNAM1     SINE.100
GPNAM2     SINE.100
GPNAM3     SINE.100
GPZ1       50.00 %
GPZ2       30.00 %
GPZ3       40.10 %
P16        1000.00 usec
ND0        2
TD         128
SFO1       100.6228 MHz
FIDRES     129.709091 Hz
SW         165.000 ppm
FnMODE     QF
SI         2048
SF         400.1300000 MHz
WDW        SINE
SSB        0
LB         0.00 Hz
GB         0
PC         4.00
SI         1024
MC2        QF
SF         100.6127690 MHz
WDW        SINE
SSB        0
LB         0.00 Hz
GB         0
  
```