

Using Fluorogenic Probes for the Investigation of Selective Biomass Degradation by Fungi

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Supporting Information

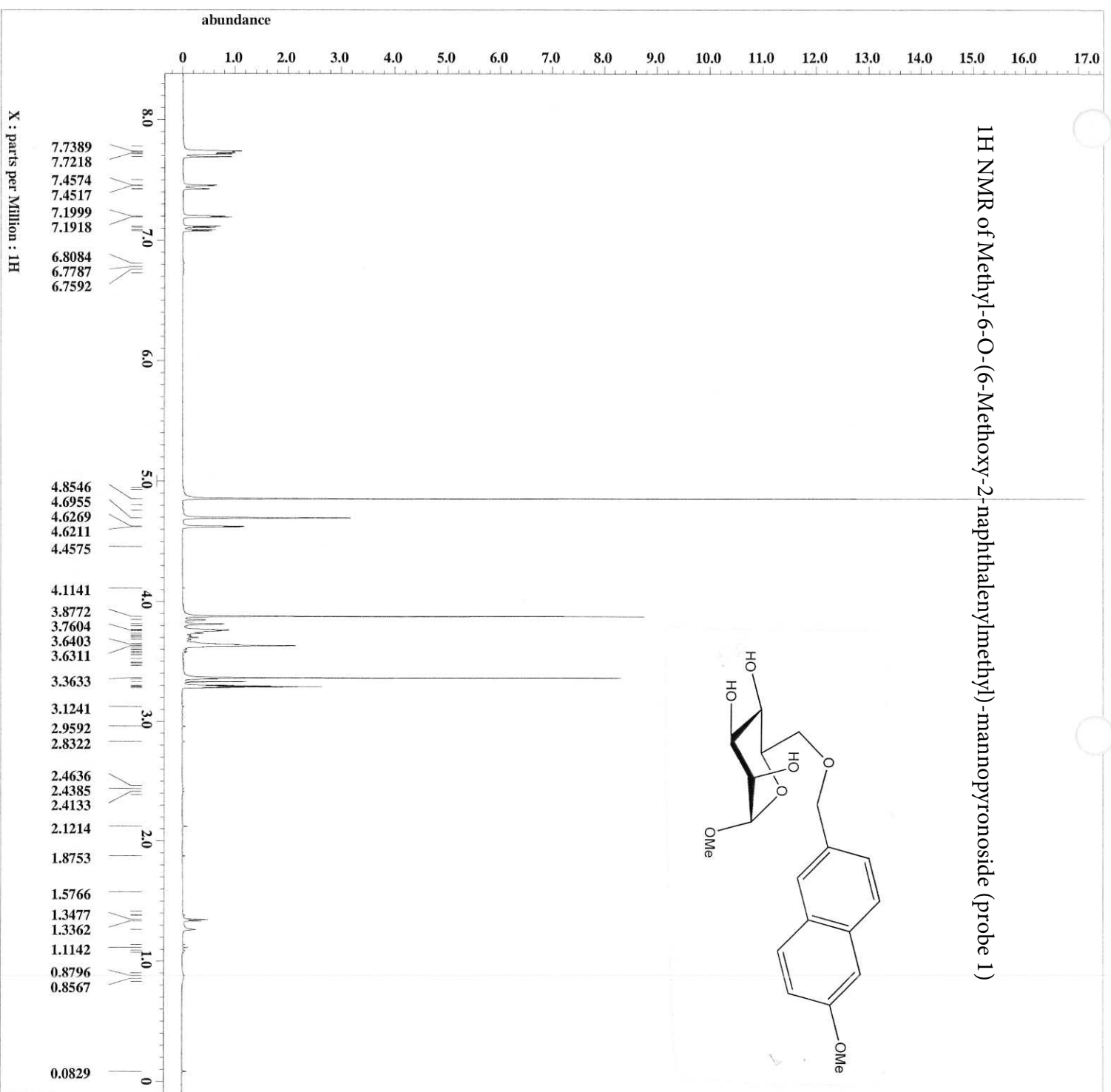
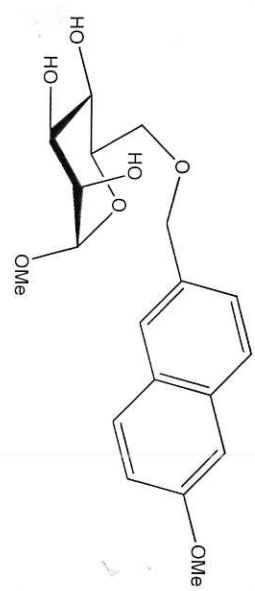
- I. ¹H NMR and ¹³C NMR of the Synthesized Compounds (S2-S29)
- II. Incubation of 4MU with Aromatic Compounds (S30)

I. ¹H NMR, ¹³C NMR and Related Spectra for the Synthesized Compounds

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Entry	Compound Name	Page
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1H NMR of Methyl-6-O-(6-Methoxy-2-naphthalenylmethyl)-mannopyranoside (probe 1)



X : parts per Million : 1H

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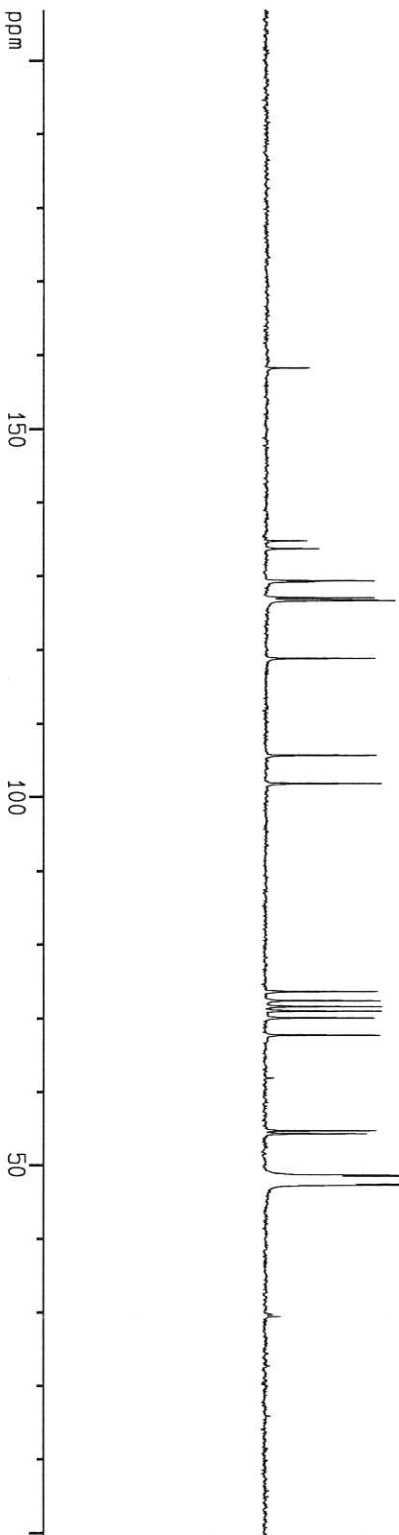
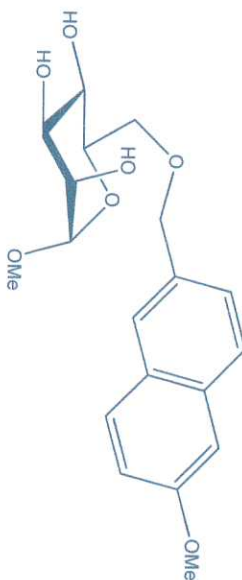
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ppm

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- 134.757
- 133.710
- 129.324
- 129.160
- 127.051
- 126.700
- 126.632
- 118.844
- 105.680
- 101.814
- 73.660
- 72.405
- 71.648
- 71.0
- 70.086
- 67.759
- 54.723
- 54.289
- 48.638
- 48.426
- 48.213
- 48.001
- 47.787
- 47.574
- 47.362
- 29.455

¹³C NMR of Methyl-6-O-(6-Methoxy-2-naphthalenylmethyl)-mannopyranoside (probe 1)



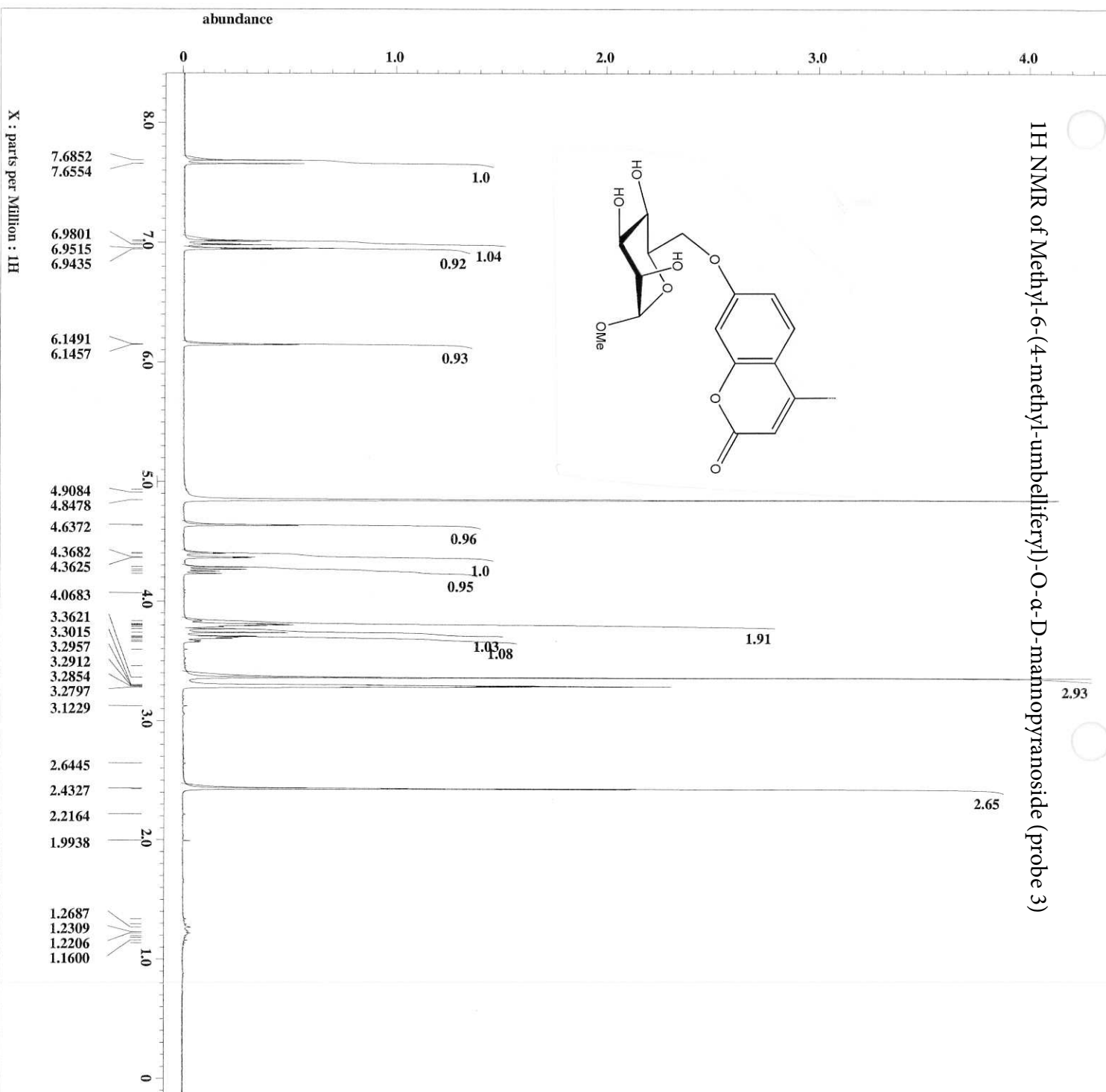
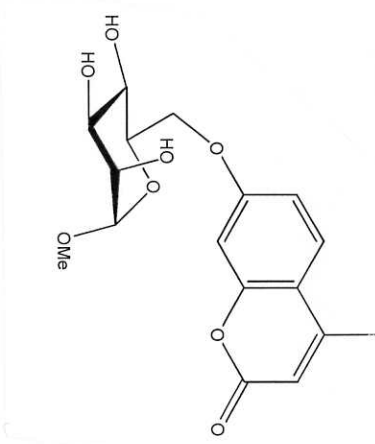
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 F2p -0.276 ppm
 F2 -27.78 Hz
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1H NMR of Methyl-6-(4-methyl-umbelliferyl)-O- α -D-mannopyranoside (probe 3)



X : parts per Million : 1H



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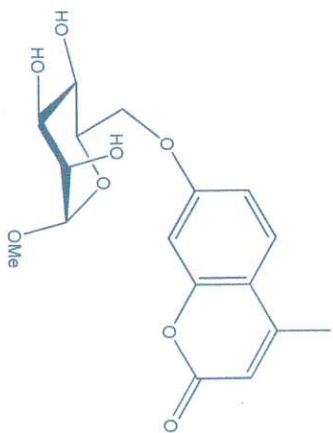
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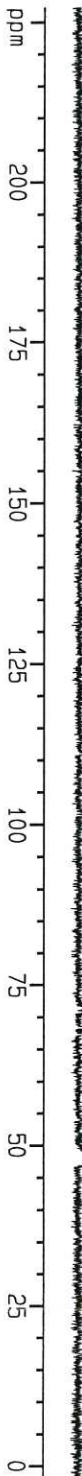
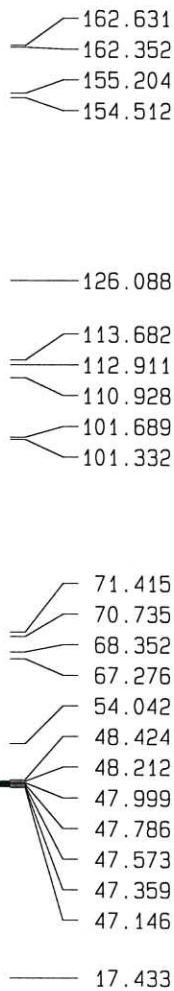
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Scans = 1
Total_scans = 8

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X_acq_time = 2.90717696[ls]
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¹³C NMR of Methyl-6-(4-methyl-umbelliferyl)-O- α -D-mannopyranoside (probe 3)



ppm



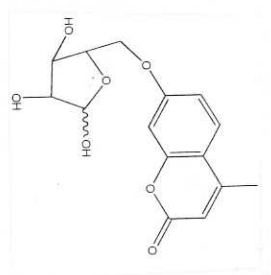
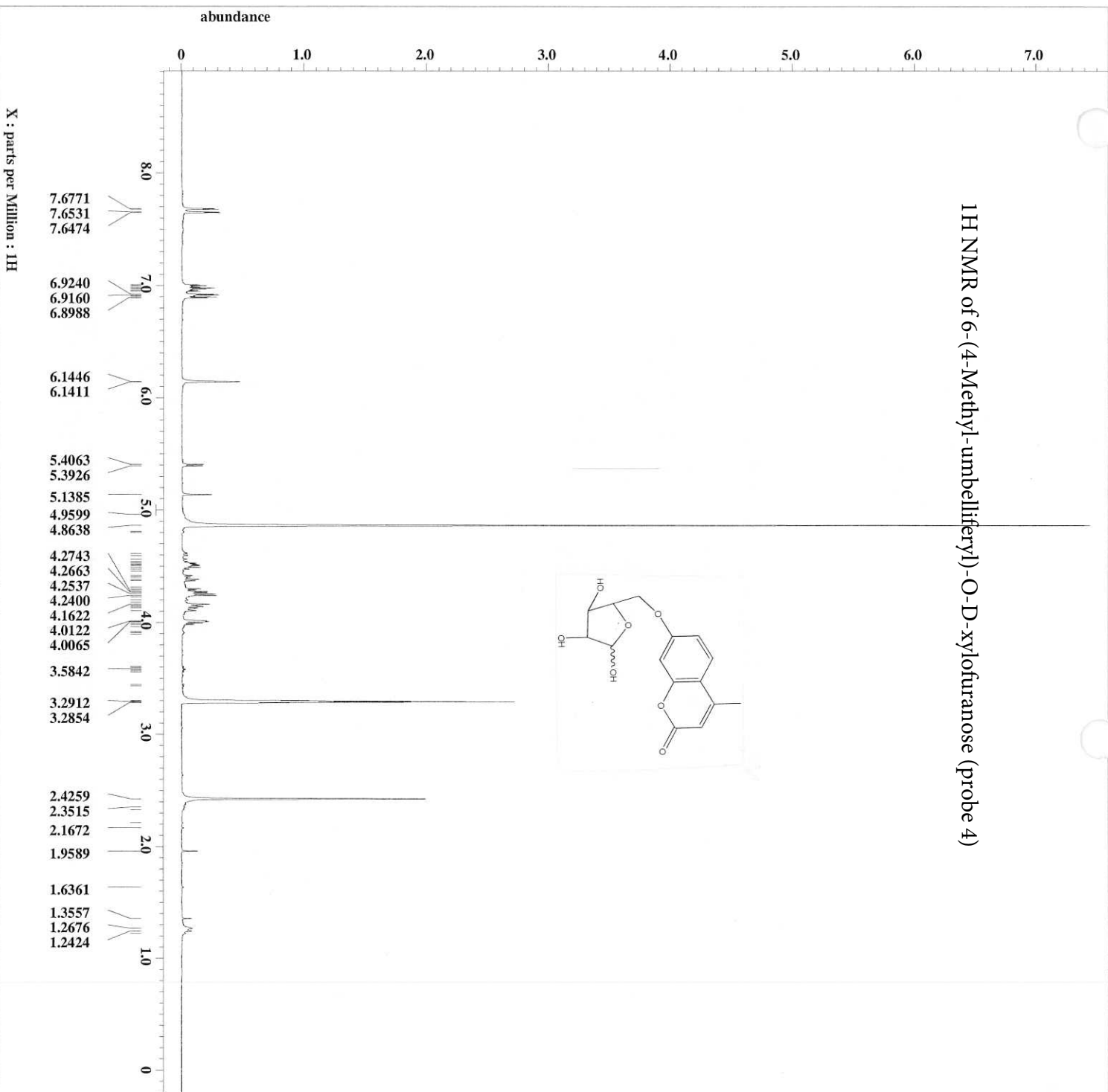
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 TE 300.0 K
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 DL5 20.00 dB
 CPDPRG6 waltz16
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 SFO1 100.6231179 MHz
 NUCLEUS ¹³C
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F2 - Processing parameters
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1H NMR of 6-(4-Methyl-umbelliferyl)-O-D-xylofuranose (probe 4)



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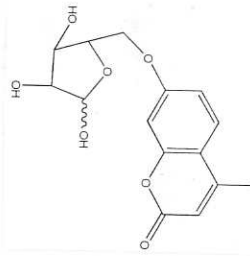
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ppm

13C NMR of 6-(4-Methyl-umbelliferyl)-O-D-xylofuranose (probe 4)



- 162.561
- 162.350
- 155.183
- 154.513
- 126.094
- 113.703
- 112.775
- 110.938
- 103.267
- 101.268
- 96.842
- 81.097
- 80.204
- 77.007
- 76.893
- 75.956
- 75.822
- 68.640
- 67.915
- 48.431
- 48.218
- 48.005
- 47.793
- 47.580
- 47.368
- 47.155
- 17.445

ppm

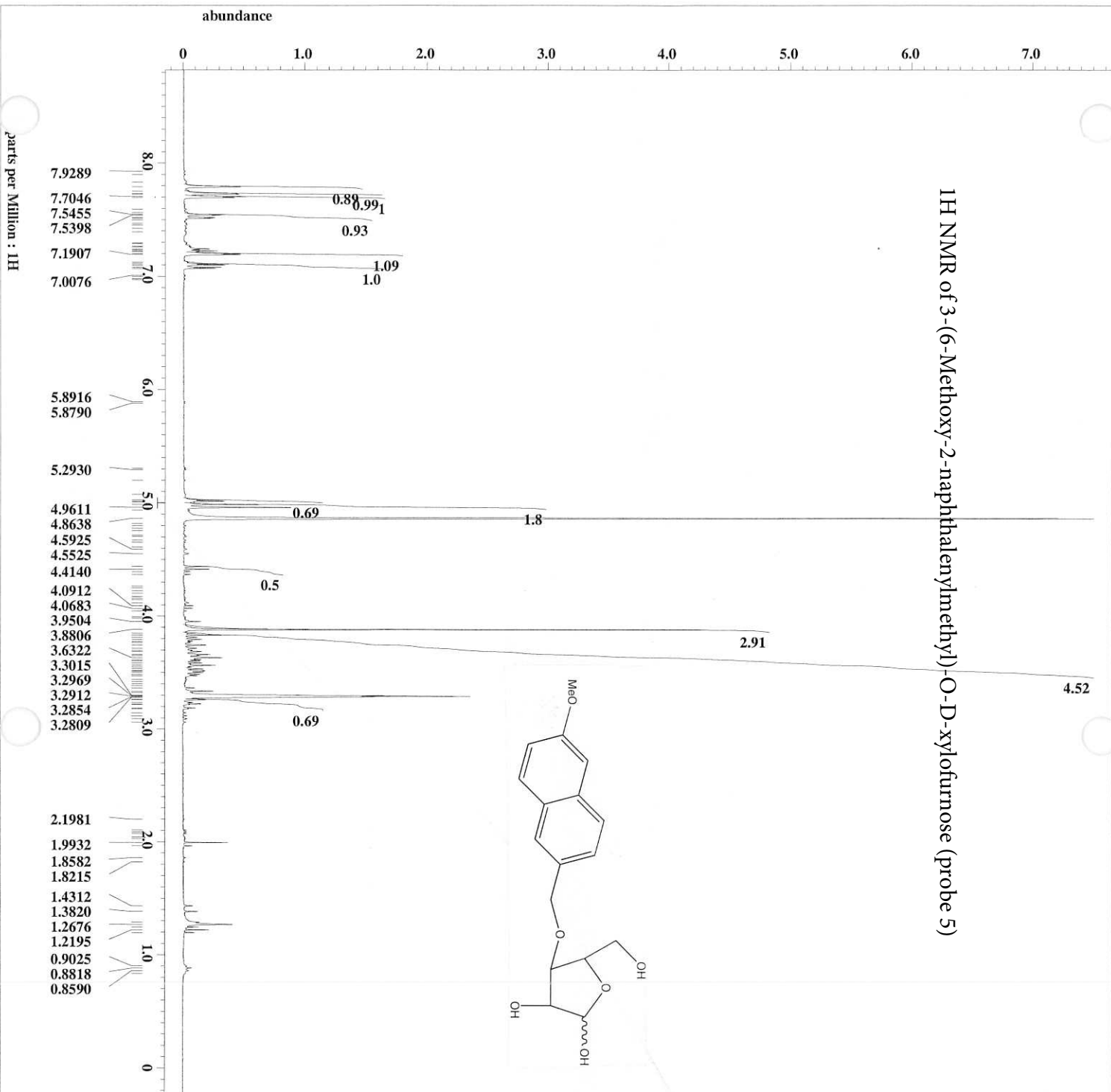
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 DLS 20.00 dB
 CPOPRG waltz16
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 NUCLEUS 13C
 D11 0.03000000 sec

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1H NMR of 3-(6-Methoxy-2-naphthalenylmethyl)-O-D-xylofuranose (probe 5)



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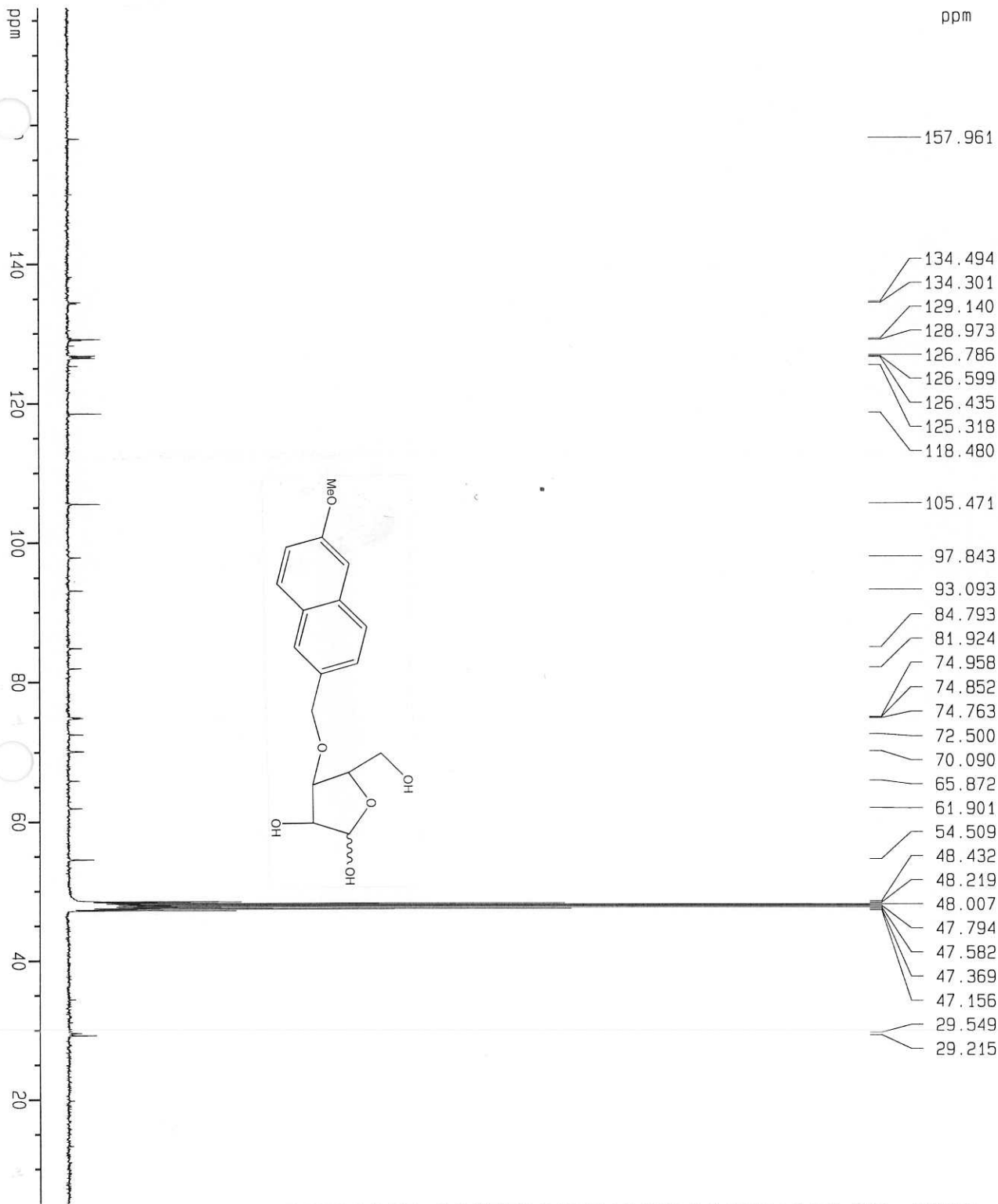
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¹³C NMR of 3-(6-Methoxy-2-naphthalenylmethyl)-O-D-xylofuranose (probe 5)



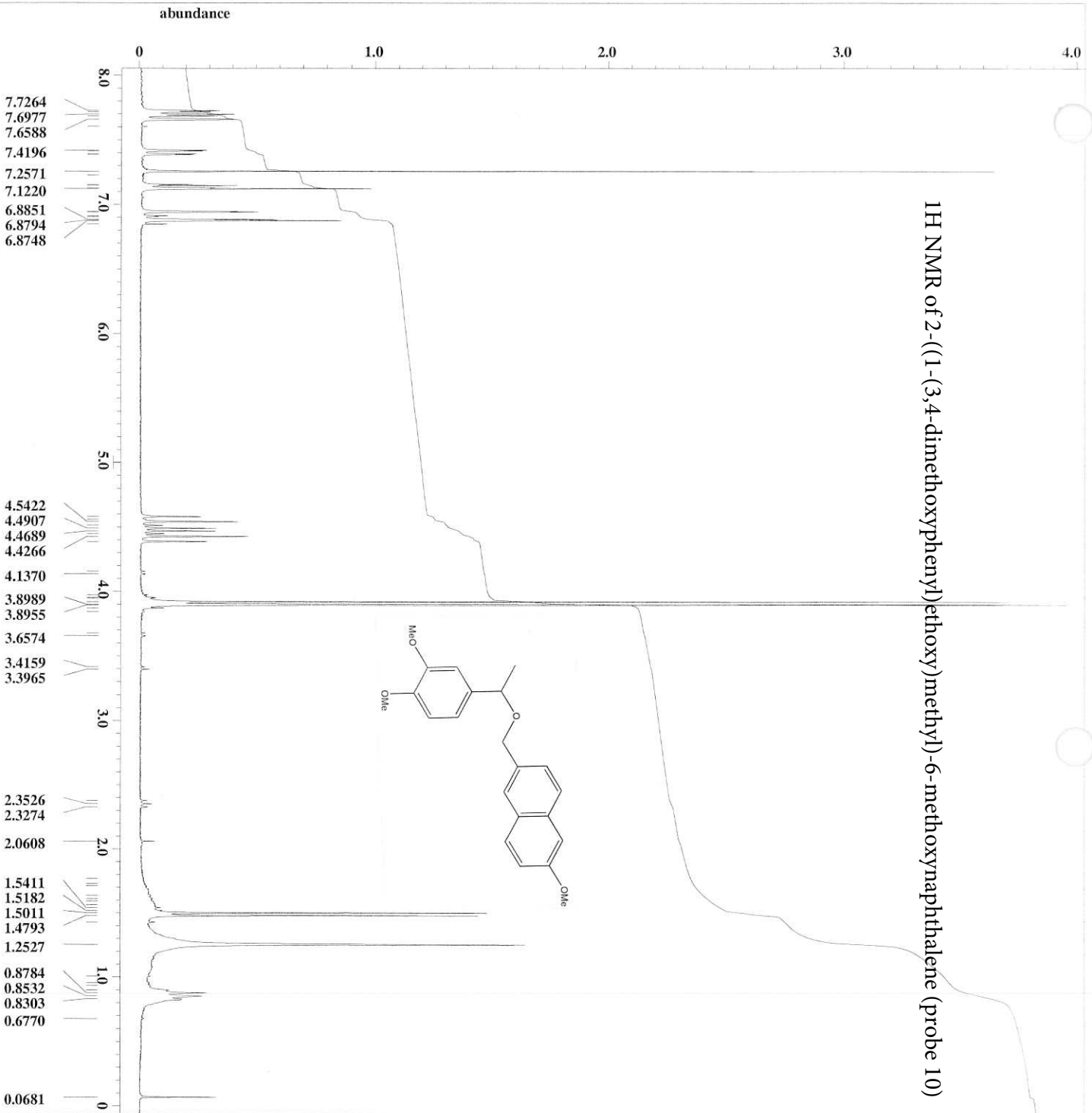
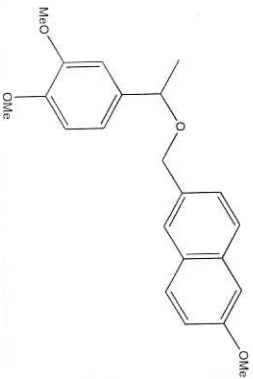
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 FIDRES 0.762939 Hz
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 DE 27.14 usec
 TE 300.0 K
 D12 0.00002000 sec
 DLS 20.00 dB
 CPDPRG waitz16
 P31 100.00 usec
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 P1 6.75 usec
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 SF01 100.6231179 MHz
 NUCLEUS 13C
 D11 0.03000000 sec

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1H NMR of 2-((1-(3,4-dimethoxyphenyl)ethoxy)methyl)-6-methoxynaphthalene (probe 10)



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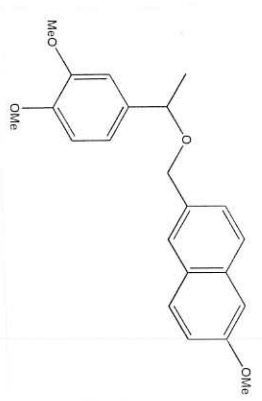
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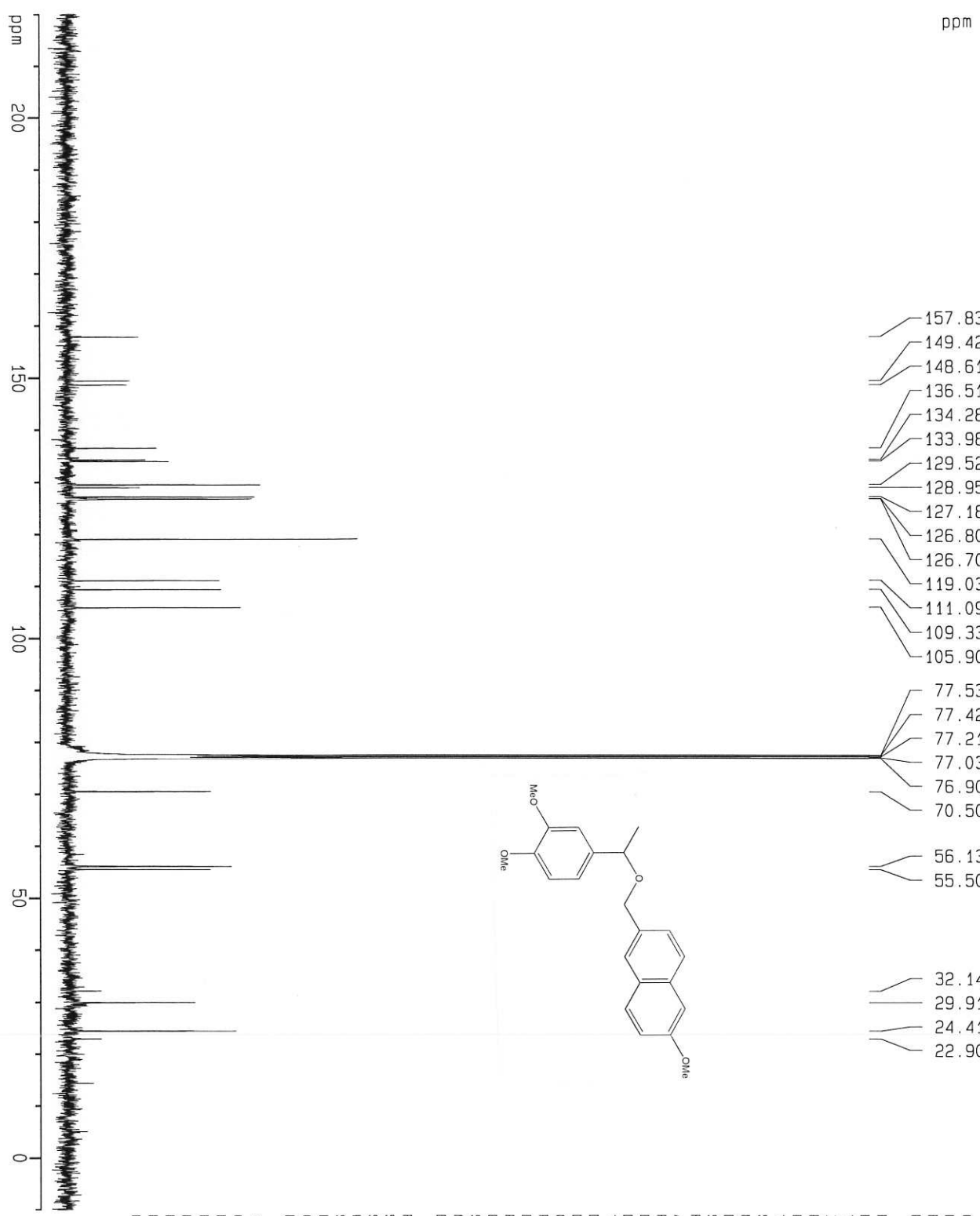
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X : parts per Million : 1H

¹³C NMR of 2-((1-(3,4-dimethoxyphenyl)ethoxy)methyl)-6-methoxynaphthalene (probe 10)



- 157.835
- 149.421
- 148.616
- 136.515
- 134.285
- 133.980
- 129.521
- 128.959
- 127.186
- 126.804
- 126.703
- 119.037
- 111.090
- 109.338
- 105.904
- 77.536
- 77.427
- 77.219
- 77.037
- 76.901
- 70.506
- 56.131
- 55.500
- 32.141
- 29.914
- 24.417
- 22.907



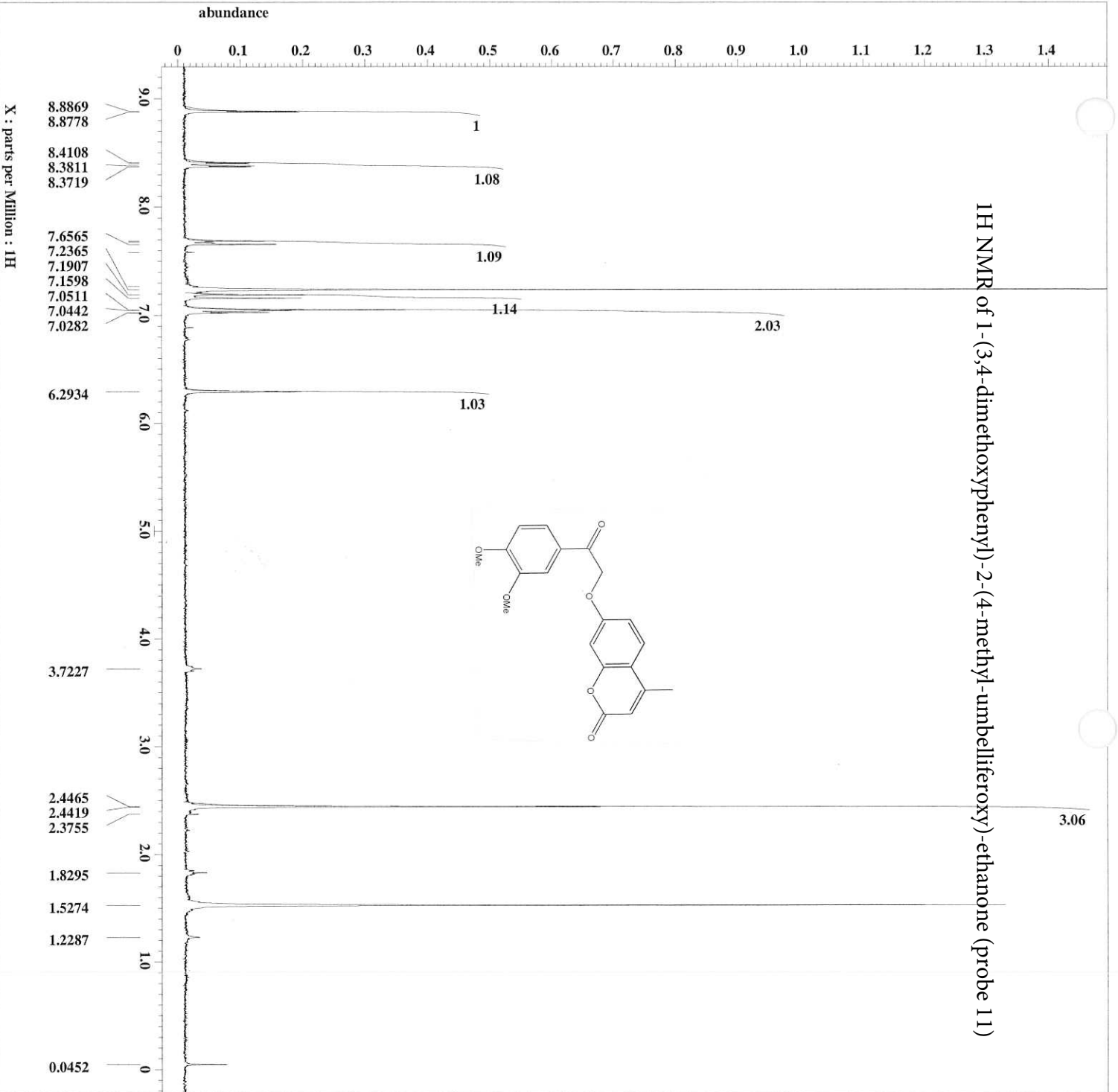
Current Data Parameters
 NAME 02-III-113B
 EXPNO 9
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 500000
 Time 17.22
 INSTRUM arx400
 PROBHD 5 mm Multinuc1
 PULPROG zgpg30
 TD 32768
 SOLVENT CDCl3
 NS 15007
 DS 2
 SMH 25000.000 Hz
 FIDRES 0.762939 Hz
 AQ 0.6554100 sec
 RG 45500
 DW 20.000 usec
 DE 27.14 usec
 TE 300.0 K
 D12 0.00002000 sec
 DL5 20.00 dB
 CPDPRG waltz16
 P31 100.00 usec
 D1 0.40000001 sec
 P1 6.75 usec
 DE 27.14 usec
 SFO1 100.6231179 MHz
 NUCLEUS 13C
 D11 0.030000000 sec

F2 - Processing parameters
 SI 16384
 SF 100.6127490 MHz
 MDW EK
 SSB 0
 LB 2.00 Hz
 GB 0
 PC 1.40

1D NMR plot parameters
 CX 20.00 cm
 F1P 220.000 ppm
 F1 22134.80 Hz
 F2P -10.000 ppm
 F2 -1006.13 Hz
 PPMCM 11.50000 ppm/cm
 HZCM 1157.04653 Hz/cm

1H NMR of 1-(3,4-dimethoxyphenyl)-2-(4-methyl-umbelliferoyl)-ethanone (probe 11)



```

Filename = 102512QZ-IRI-206sing1
Author = qzhang
Experiment = single_pulse.ex2
Sample_id = 102512QZ-IRI-206sing1
Solvent = CHLOROFORM-D
Creation_time = 26-OCT-2012 15:05:24
Revision_time = 26-OCT-2012 14:59:48
Current_time = 26-OCT-2012 15:00:02

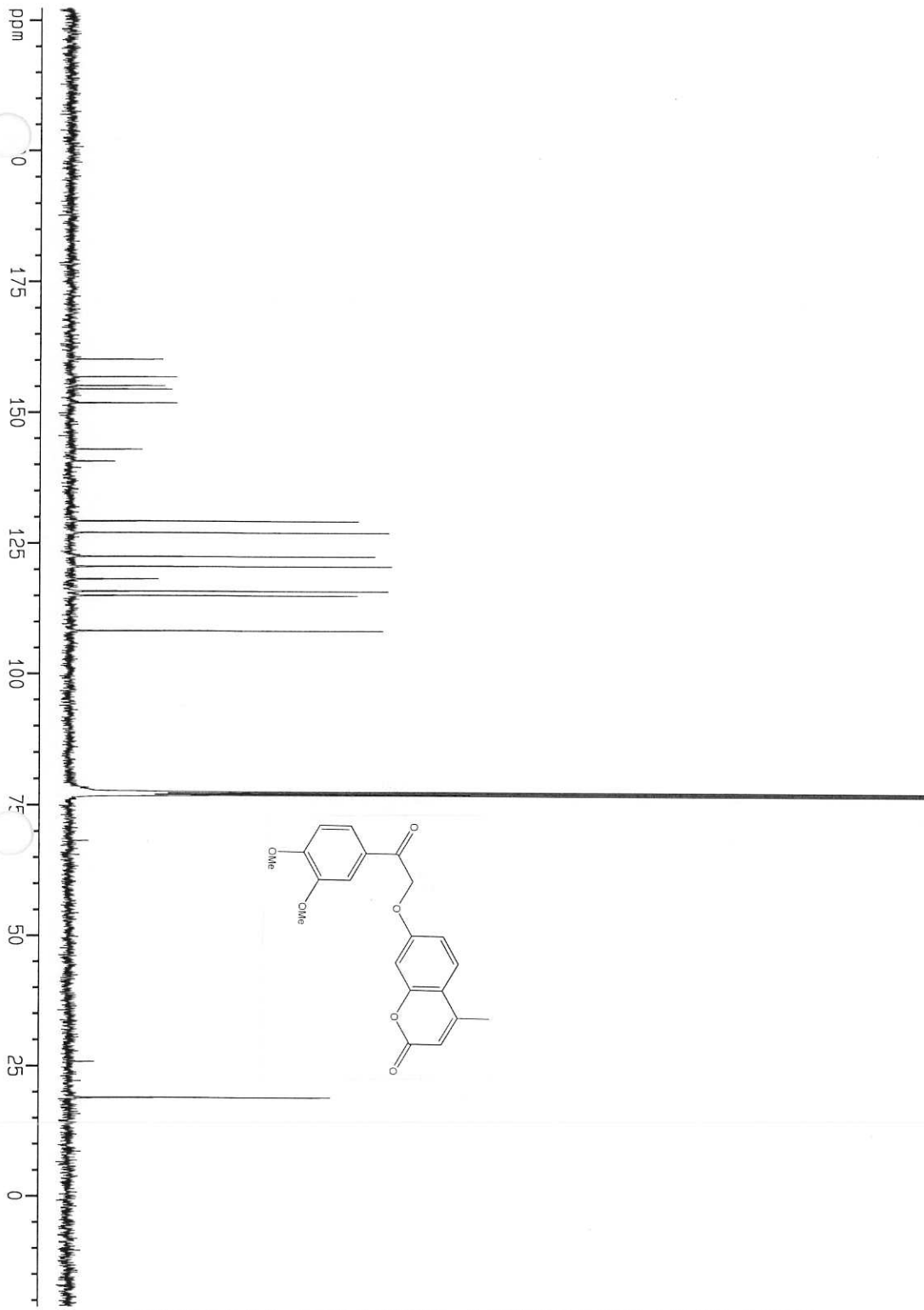
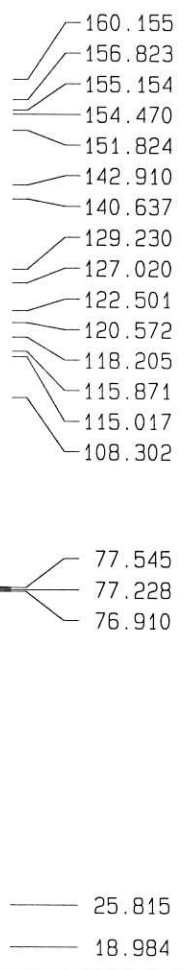
Comment = single_pulse
Data_format = 1D COMPLEX
Dim_size = 13107
Dim_title = 1H
Dim_units = [ppm]
Dimensions = X
Site = ECX 300
Spectrometer = ECX-300

Field_strength = 7.0586013[T] (300[MHz]
X_acq_duration = 2.90717696[ls]
X_domain = 1H
X_freq = 300.52965592[MHz]
X_offset = 5[ppm]
X_points = 16384
X_prescans = 1
X_resolution = 0.34397631[Hz]
X_sweep = 5.63570784[Hz]
Irr_domain = 1H
Irr_freq = 300.52965592[MHz]
Irr_offset = 5[ppm]
Tri_domain = 1H
Tri_freq = 300.52965592[MHz]
Tri_offset = 5[ppm]
Clipped = FALSE
Mod_return = 1
Scans = 8
Total_scans = 8

X_90_width = 13.43[us]
X_acq_time = 2.90717696[ls]
X_angle = 45[deg]
X_atn = 3[dB]
X_pulse = 6.715[us]
Irr_mode = Off
Tri_mode = Off
Dante_presat = FALSE
Initial_wait = 1[ls]
Recvr_gain = 50
Relaxation_delay = 5[ls]
Repetition_time = 7.90717696[ls]
Temp_get = 22.7[dc]
  
```

Standard ¹³C
Experiment

¹³C NMR of 1-(3,4-dimethoxyphenyl)-2-(4-methyl-umbelliferoyl)-ethanone (probe 11)



Current Data Parameters
 NAME Q2-III-20611
 EXPNO 9
 PROCNO 1

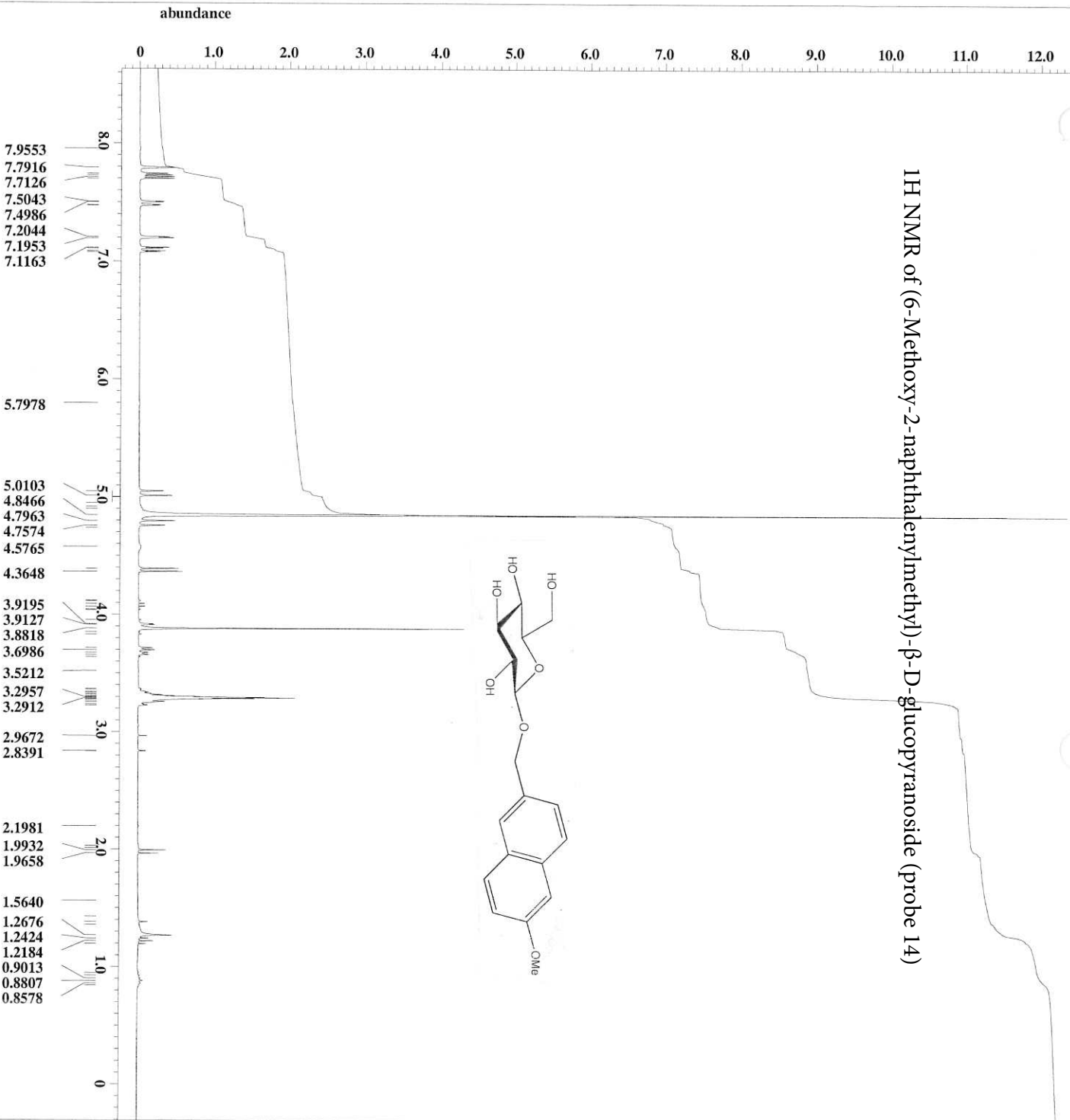
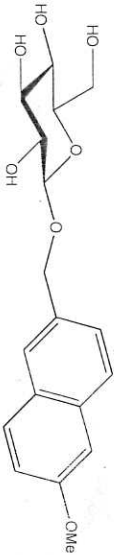
F2 - Acquisition Parameters
 Date_ 500000
 Time 11.12
 INSTRUM arrx400
 PROBNM 5 mm Multinuc1
 PULPROG zgpgc30
 TD 32768
 SOLVENT DMS
 NS 15239
 DS 2
 SWH 25000.000 Hz
 FIDRES 0.762939 Hz
 AQ 0.6554100 sec

RG 49500
 DW 20.000 usec
 DE 27.14 usec
 TE 300.0 K
 D12 0.00002000 sec
 DL5 20.00 dB
 CPDPRG walz16
 P31 100.00 usec
 D1 0.40000001 sec
 P1 6.75 usec
 DE 27.14 usec
 SFO1 100.6231479 MHz
 NUCLEUS 13C
 D11 0.030000000 sec

F2 - Processing parameters
 SI 16384
 SF 100.6127490 MHz
 MDW EM
 SSB 0
 LB 2.00 Hz
 GB 0
 PC 1.40

1D NMR plot parameters
 CX 20.00 cm
 F1P 227.296 ppm
 F1 22868.89 Hz
 F2P -21.181 ppm
 F2 -2131.11 Hz
 PPKCM 12.42387 ppm/cm
 HZCM 1250.00012 Hz/cm

1H NMR of (6-Methoxy-2-naphthalenylmethyl)-β-D-glucopyranoside (probe 14)



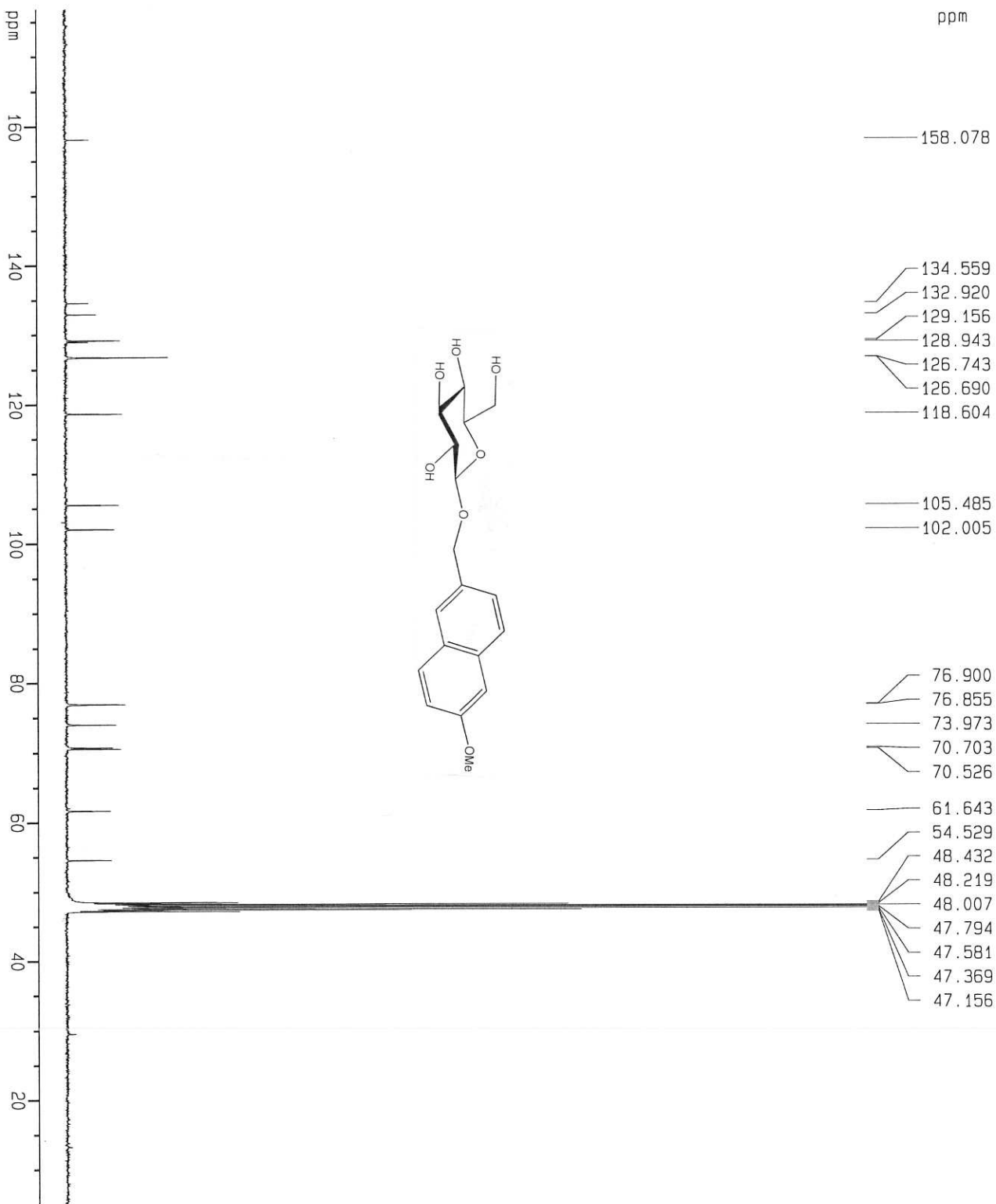
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Filename = 051413QZ-IV-112single
Author = qzhang
Experiment = single_pulse.ex2
Sample id = 051413QZ-IV-112single
Solvent = METHANOL-D3
Creation time = 14-MAY-2013 09:36:26
Revision time = 14-MAY-2013 10:12:02
Current time = 14-MAY-2013 10:12:06

Comment = single_pulse
Data format = 1D COMPLEX
Dim size = 13107
Dim title = 1H
Dim units = [ppm]
Dimensions = X
Site = ECX 300
Spectrometer = ECX-300

Field_strength = 7.0586013[T] (300[MHz]
X_acq_duration = 2.90717696[ls]
X_domain = 1H
X_freq = 300.52965592[MHz]
X_offset = 5[ppm]
X_points = 16384
X_prescans = 1
X_resolution = 0.34397631[Hz]
X_sweep = 5.63570784[kHz]
Irr_domain = 1H
Irr_freq = 300.52965592[MHz]
Irr_offset = 5[ppm]
Irr_domain = 1H
Tri_freq = 300.52965592[MHz]
Tri_offset = 5[ppm]
Clipped = FALSE
Mod_return = 1
Scans = 8
Notal_scans = 8
X_90_width = 13.43[us]
X_acq_time = 2.90717696[ls]
X_angle = 45[deg]
X_atn = 3[dB]
X_pulse = 6.715[us]
Irr_mode = Off
Irr_mode = Off
Daute_presat = FALSE
Initial_wait = 1[ls]
Recvr_gain = 44
Relaxation_delay = 5[ls]
Repetition_time = 7.90717696[ls]
Temp_get = 23.8[degC]
  
```


¹³C NMR of (6-Methoxy-2-naphthalenylmethyl)-β-D-glucopyranoside (probe 14)



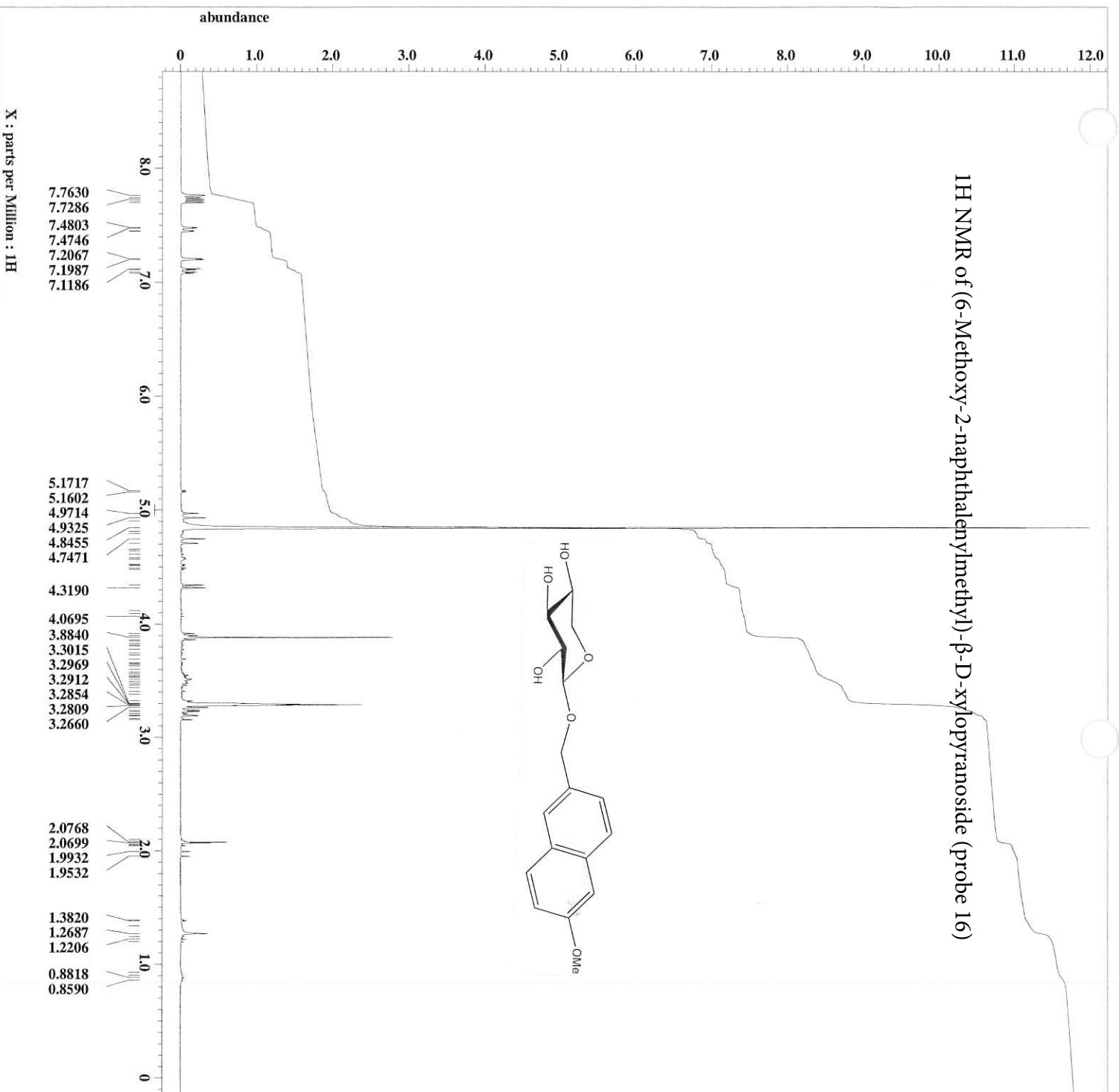
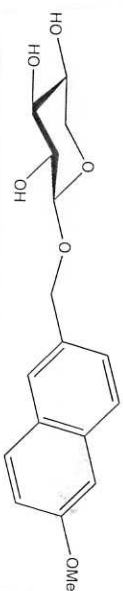
Current Data Parameters
 NAME QZ-IV-112
 EXPNO 9
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 500000
 Time 10.58
 INSTRUM arx400
 PROBHD 5 mm Multinuc1
 PULPROG zgpg30
 TD 32768
 SOLVENT MeOH
 NS 10487
 DS 2
 SMH 25000.000 Hz
 FIDRES 0.762939 Hz
 AG 0.6554100 sec
 RG 45500
 DW 20.000 usec
 DE 27.14 usec
 TE 300.0 K
 D12 0.00002000 sec
 DL5 20.00 dB
 CPDPRG8 waltz16
 P31 100.00 usec
 D1 0.40000001 sec
 P1 6.75 usec
 DE 27.14 usec
 SF01 100.6231179 MHz
 NUCLEUS 13C
 D11 0.03000000 sec

F2 - Processing parameters
 SI 16384
 SF 100.6127490 MHz
 MDW EM
 SSB 0
 LB 2.00 Hz
 GB 0
 PC 1.40

1D NMR plot parameters
 CX 20.00 cm
 F1P 176.793 ppm
 F1 17787.59 Hz
 F2P 5.081 ppm
 F2 511.17 Hz
 PPMCM 8.58560 ppm/cm
 HZCM 863.82104 Hz/cm

1H NMR of (6-Methoxy-2-naphthalenylmethyl)-β-D-xylopyranoside (probe 16)



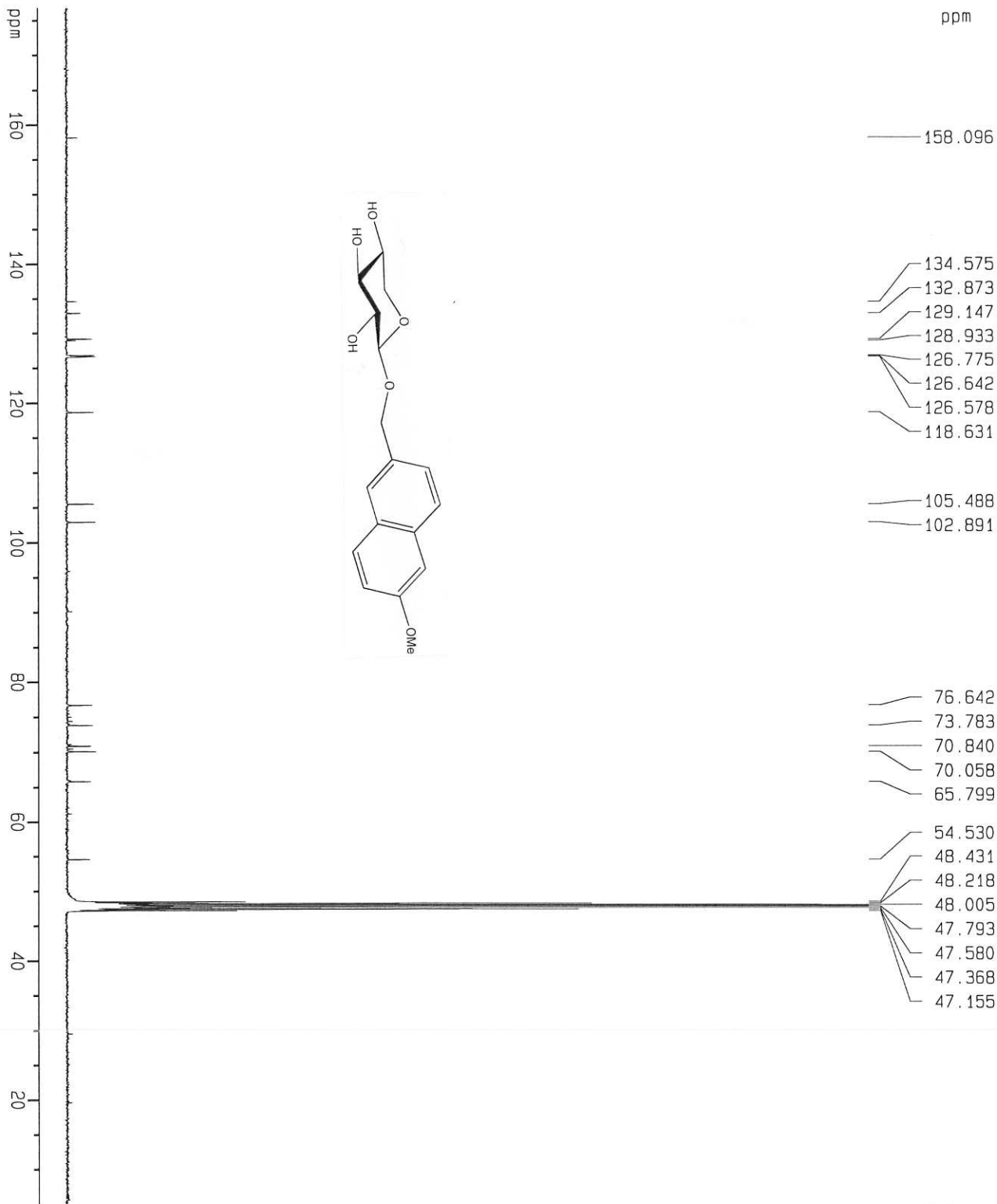
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Filename = 050813QZ-TV-1051V51ng
Author = qzhang
Experiment = single_pulse.ex2
Sample_id = 050813QZ-TV-1051V51ng
Solvent = MECHANOL-D3
Creation_time = 8-MAY-2013 14:08:33
Revision_time = 8-MAY-2013 14:44:12
Current_time = 8-MAY-2013 14:44:16

Comment = single_pulse
Data_format = 1D COMPLEX
Dim_size = 13107
Dim_title = 1H
Dim_units = [ppm]
Dimensions = X
Site = ECK 300
Spectrometer = ECK-300

Field_strength = 7.0586013 [T] (300 [MHz]
X_acq_duration = 2.90717696 [s]
X_domain = 1H
X_freq = 300.52965592 [MHz]
X_offset = 5 [ppm]
X_points = 16384
X_prescans = 1
X_resolution = 0.34397631 [Hz]
X_sweep = 5.63570784 [kHz]
Irr_domain = 1H
Irr_freq = 300.52965592 [MHz]
Irr_offset = 5 [ppm]
Irr_domain = 1H
Irr_freq = 300.52965592 [MHz]
Irr_offset = 5 [ppm]
Mod_return = FALSE
Mod_return = 1
Total_scans = 8
X_90_width = 13.43 [us]
X_acq_time = 2.90717696 [s]
X_angle = 45 [deg]
X_atn = 3 [dB]
X_pulse = 6.715 [us]
Irr_mode = Off
Irr_mode = Off
Daute_presat = FALSE
Initial_wait = 1 [s]
Recvr_gain = 46
Relaxation_delay = 5 [s]
Repetition_time = 7.90717696 [s]
Temp_get = 23.8 [dC]
  
```

¹³C NMR of (6-Methoxy-2-naphthalenylmethyl)-β-D-xylopyranoside (probe 16)



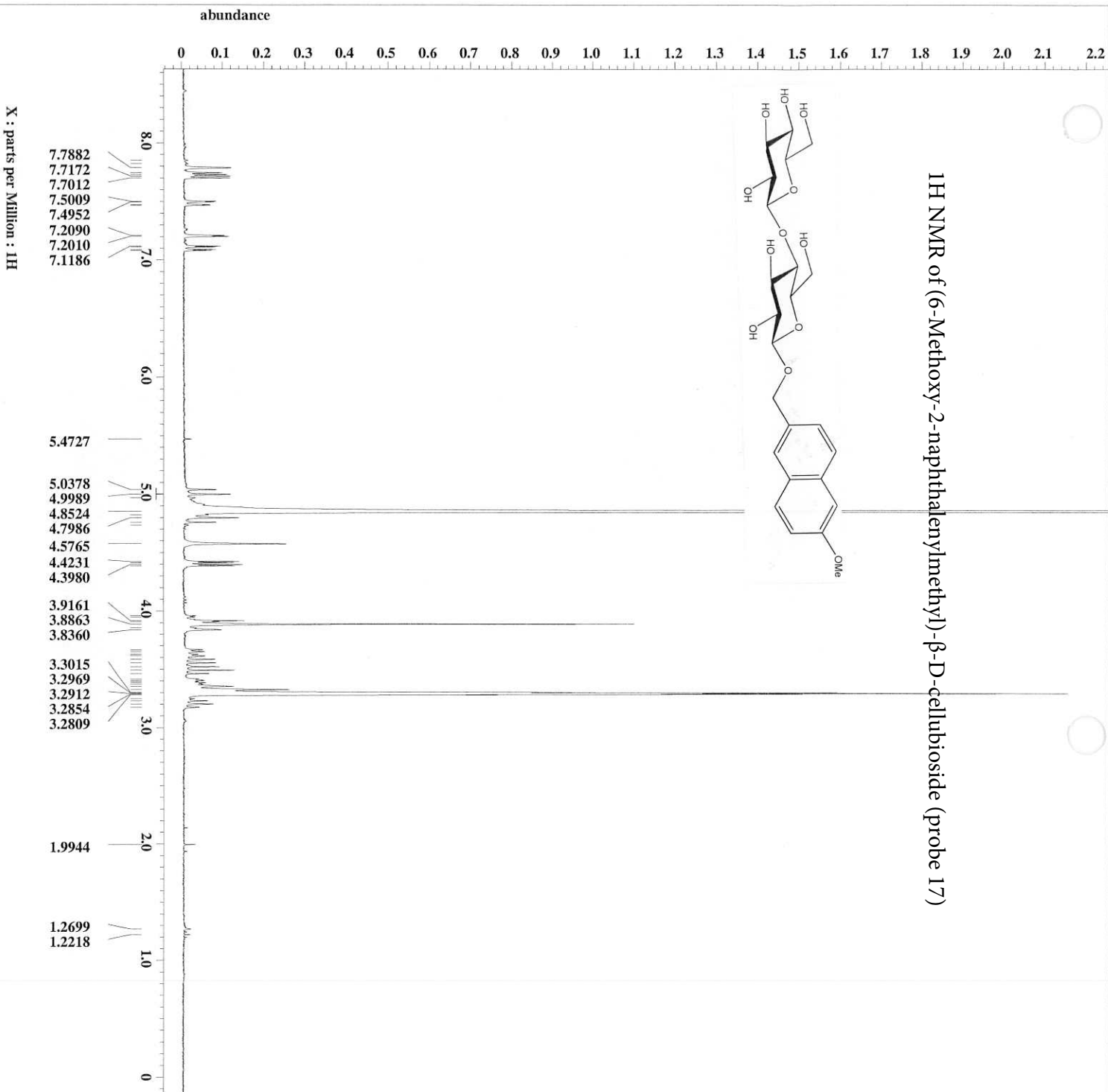
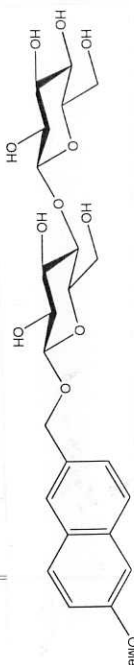
Current Data Parameters
 NAME QZ-IV-1051V
 EXPNO 9
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 500000
 Time 10.29
 INSTRUM srx400
 PROBHD 5 mm Multinuc1
 PULPROG zgpg30
 TD 32758
 SOLVENT MeOH
 NS 12330
 DS 2
 SMH 25000.000 Hz
 FIDRES 0.762939 Hz
 AQ 0.6554100 sec
 RG 45500
 DW 20.000 usec
 DE 27.14 usec
 TE 300.0 K
 D12 0.00002000 sec
 DLS 20.00 dB
 CPDPRG waltz16
 P31 100.00 usec
 D1 0.40000001 sec
 P1 6.75 usec
 DE 27.14 usec
 SF01 100.6231179 MHz
 NUCLEUS ¹³C
 D11 0.03000000 sec

F2 - Processing parameters
 SI 16384
 SF 100.6127490 MHz
 MDW EM
 SSB 0
 LB 2.00 Hz
 GB 0
 PC 1.40

1D NMR plot parameters
 CX 20.00 cm
 F1P 176.793 ppm
 F1 17787.59 Hz
 F2P 5.081 ppm
 F2 511.17 Hz
 PPMCM B:58560 ppp/cm
 HZCM B63.82104 Hz/cm

1H NMR of (6-Methoxy-2-naphthalenylmethyl)-β-D-cellobioside (probe 17)



```

Filename = 052413QZ-1V-119single
Author = qzhang
Experiment = single_pulse.ex2
Sample_id = 052413QZ-1V-119single
Solvent = METHANOL-D3
Creation_time = 24-MAY-2013 10:37:34
Revision_time = 24-MAY-2013 11:11:13
Current_time = 24-MAY-2013 11:11:28

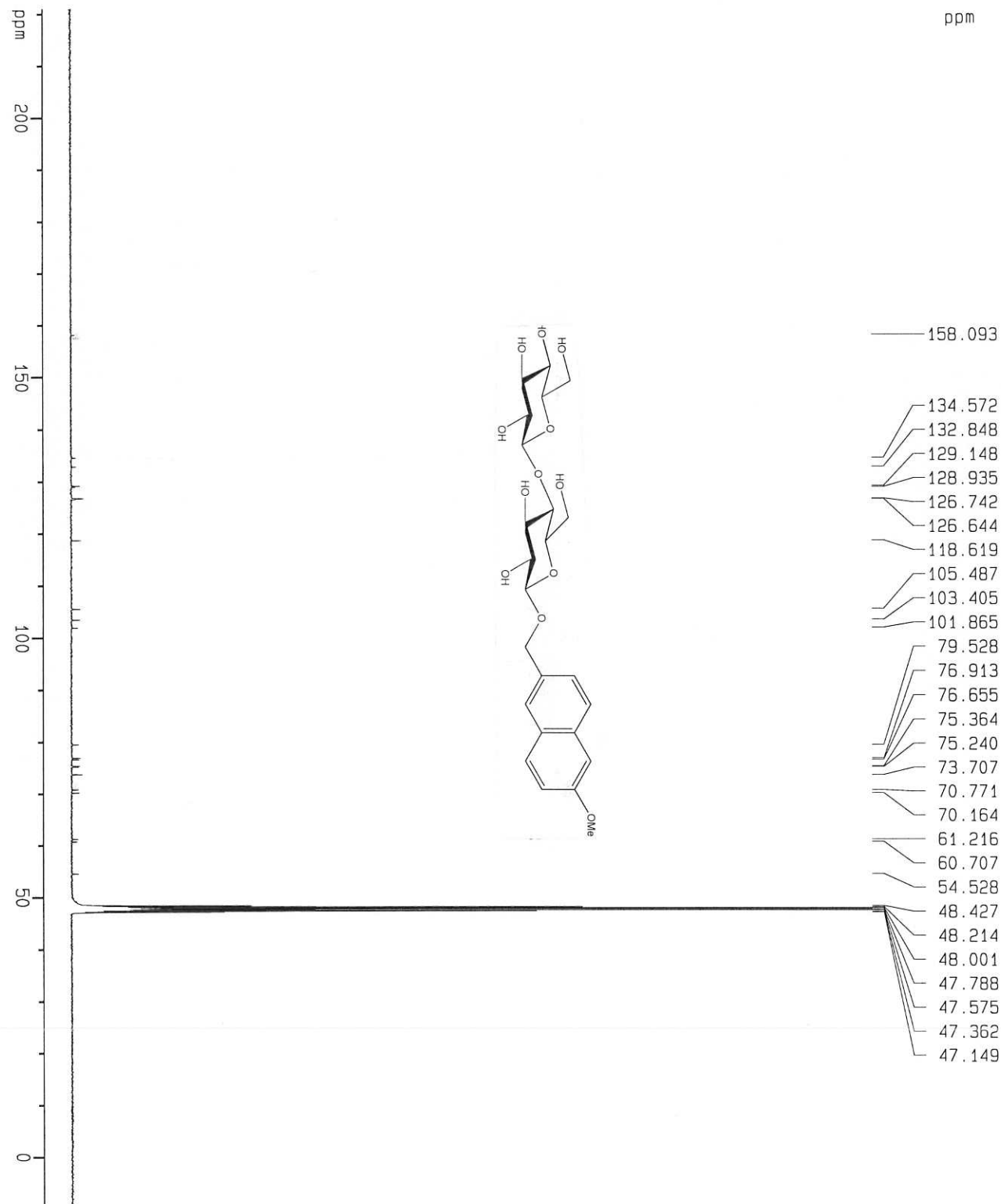
Comment = single_pulse
Data_format = 1D COMPLEX
Dim_size = 13107
Dim_title = 1H
Dim_units = [ppm]
Dimensions = X 300
Site = ECKX-300
Spectrometer = ECKX-300

Field_strength = 7.0586013[Hz] (300[MHz]
X_acq_duration = 2.90717696[ls]
X_domain = 1H
X_freq = 300.52965592[MHz]
X_offset = 51[ppm]
X_points = 16384
X_prescans = 1
X_resolution = 0.34397631[Hz]
X_sweep = 5.63570784[kHz]
Irr_domain = 1H
Irr_freq = 300.52965592[MHz]
Irr_offset = 51[ppm]
Irr_domain = 1H
Tri_freq = 300.52965592[MHz]
Tri_offset = 51[ppm]
Clipped = FALSE
Mod_return = 1
Scans = 8
Total_scans = 8

X_90_width = 13.43[us]
X_acq_time = 2.90717696[ls]
X_angle = 451[deg]
X_atn = 31[db]
X_pulse = 6.715[us]
Irr_mode = OFF
Tri_mode = OFF
Dante_preset = FALSE
Trnitial_wait = 1[ls]
Recvr_gain = 46
Relaxation_delay = 5[ls]
Repetition_time = 7.90717696[ls]
Temp_get = 23.3[degC]
  
```

Standard JC
Experiment

13C NMR of (6-Methoxy-2-naphthalenyl)methyl)-β-D-cellubioside (probe 17)



Current Data Parameters

NAME QZ-IV-119

EXPNO 9

PROCNO 1

F2 - Acquisition Parameters

Date_ 500000

Time 11.37

INSTRUM brx400

PROBHD 5 mm Multinuc1

PULPROG zgpg30

TD 32768

SOLVENT MeOH

NS 39540

DS 2

SMH 25000.000 Hz

FTIDRES 0.762939 Hz

AQ 0.6554100 sec

RG 45500

DW 20.000 usec

DE 27.14 usec

TE 300.0 K

D12 0.00002000 sec

DL5 20.00 dB

CPDPRG waltz16

P31 100.00 usec

D1 0.40000001 sec

P1 6.75 usec

DE 27.14 usec

SFO1 100.6231179 MHz

NUCLEUS 13C

D11 0.03000000 sec

F2 - Processing parameters

SF 15384

SF 100.6127490 MHz

MDM EK

SSB 0

LB 2.00 Hz

GB 0

PC 1.40

1D NMR plot parameters

CX 20.00 cm

F1P 221.028 ppm

F1 22238.22 Hz

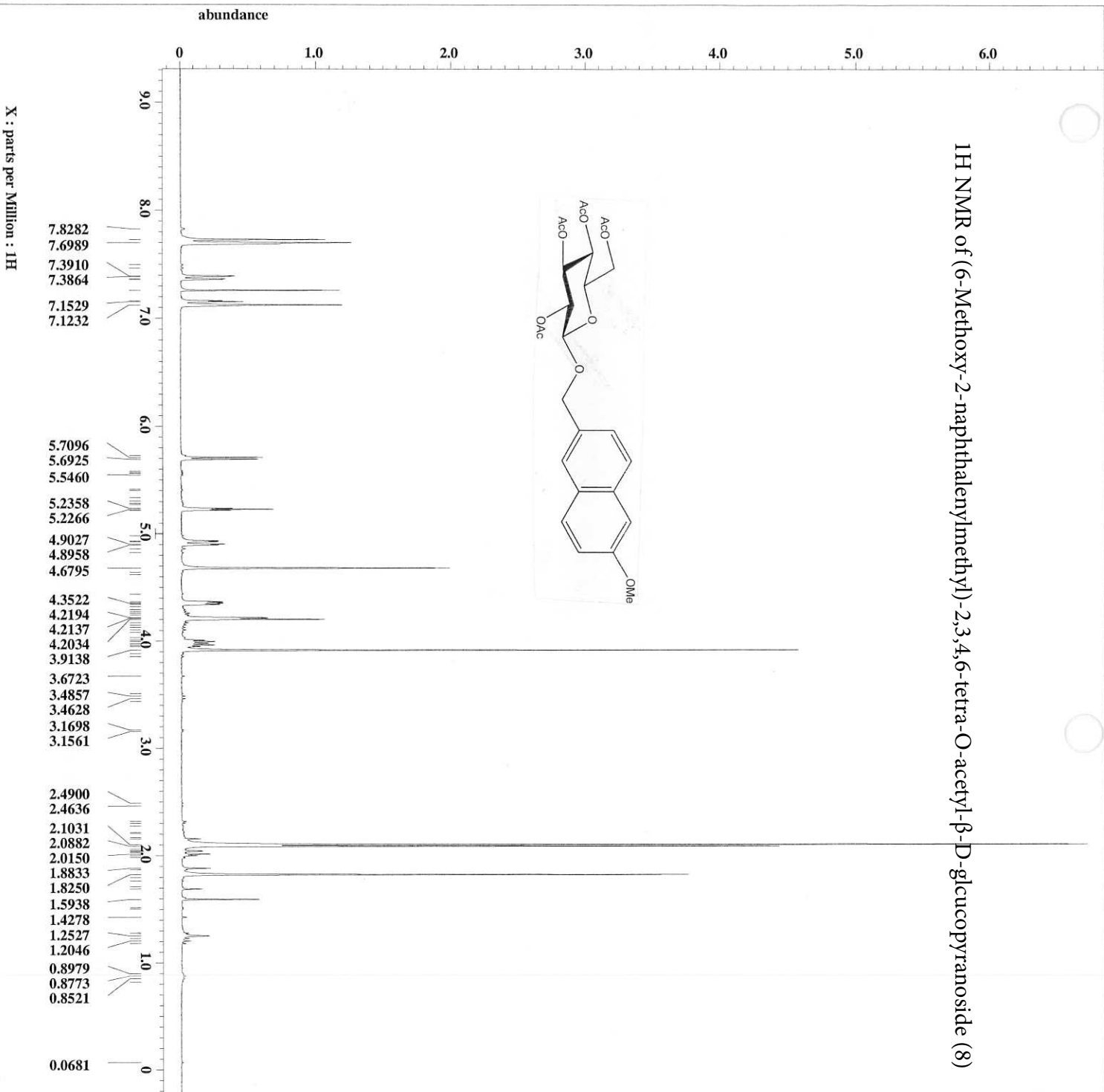
F2P -8.895 ppm

F2 -894.98 Hz

PPMCM 11.49516 ppm/cm

HZCM 1156.65991 Hz/cm

1H NMR of (6-Methoxy-2-naphthalenylmethyl)-2,3,4,6-tetra-O-acetyl-β-D-glucopyranoside (8)



```

Filename = 030713QZ-IV-50single-
Author = qzang
Experiment = single_pulse.ex2
Sample_id = 030713QZ-IV-50single-
Solvent = CHLOROFORM-D
Creation_time = 7-MAR-2013 09:47:48
Revision_time = 7-MAR-2013 10:12:07
Current_time = 7-MAR-2013 10:12:47

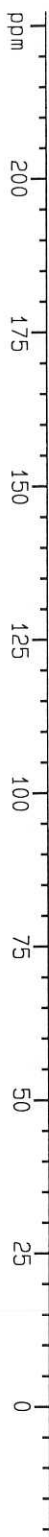
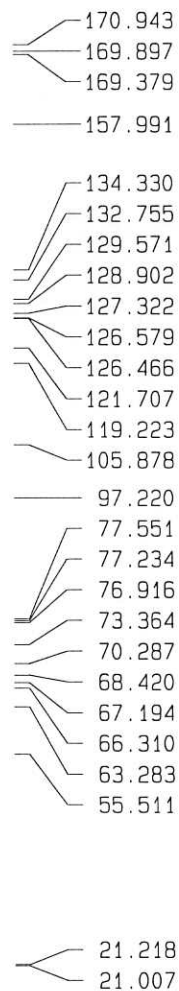
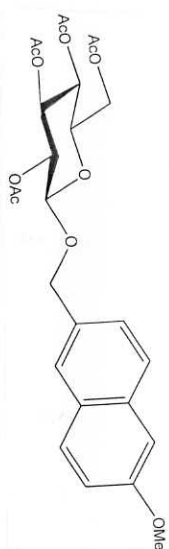
Comment = single_pulse
Data_format = 1D COMPLEX
Dim_size = 13107
Dim_title = 1H
Dim_units = [ppm]
Dimensions = X
Site = ECX 300
Spectrometer = ECX-300

Field_strength = 7.0586013[T] (300[MHz]
X_acq_duration = 2.90717696[fs]
X_domain = 1H
X_freq = 300.52965592[MHz]
X_offset = 5[ppm]
X_points = 16384
X_prescans = 1
X_resolution = 0.34397631[Hz]
X_sweep = 5.63570784[kHz]
Irr_domain = 1H
Irr_freq = 300.52965592[MHz]
Irr_offset = 5[ppm]
Irr_domain = 1H
Tri_freq = 300.52965592[MHz]
Tri_offset = 5[ppm]
Clipped = FALSE
Mod_return = 1
Scans = 8
Total_scans = 8

X_90_width = 13.43[us]
X_acq_time = 2.90717696[fs]
X_angle = 45[deg]
X_atn = 3[dB]
X_pulse = 6.715[us]
Irr_mode = Off
Tri_mode = Off
Dante_preset = FALSE
Initial_wait = 1[fs]
Recv_gain = 44
Relaxation_delay = 5[fs]
Repetition_time = 7.90717696[fs]
Temp_get = 22.2[dc]

```

13C NMR of (6-Methoxy-2-naphthalenylmethyl)-2,3,4,6-tetra-O-acetyl-β-D-glucopyranoside (8)



```

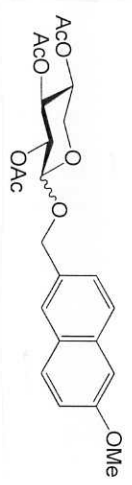
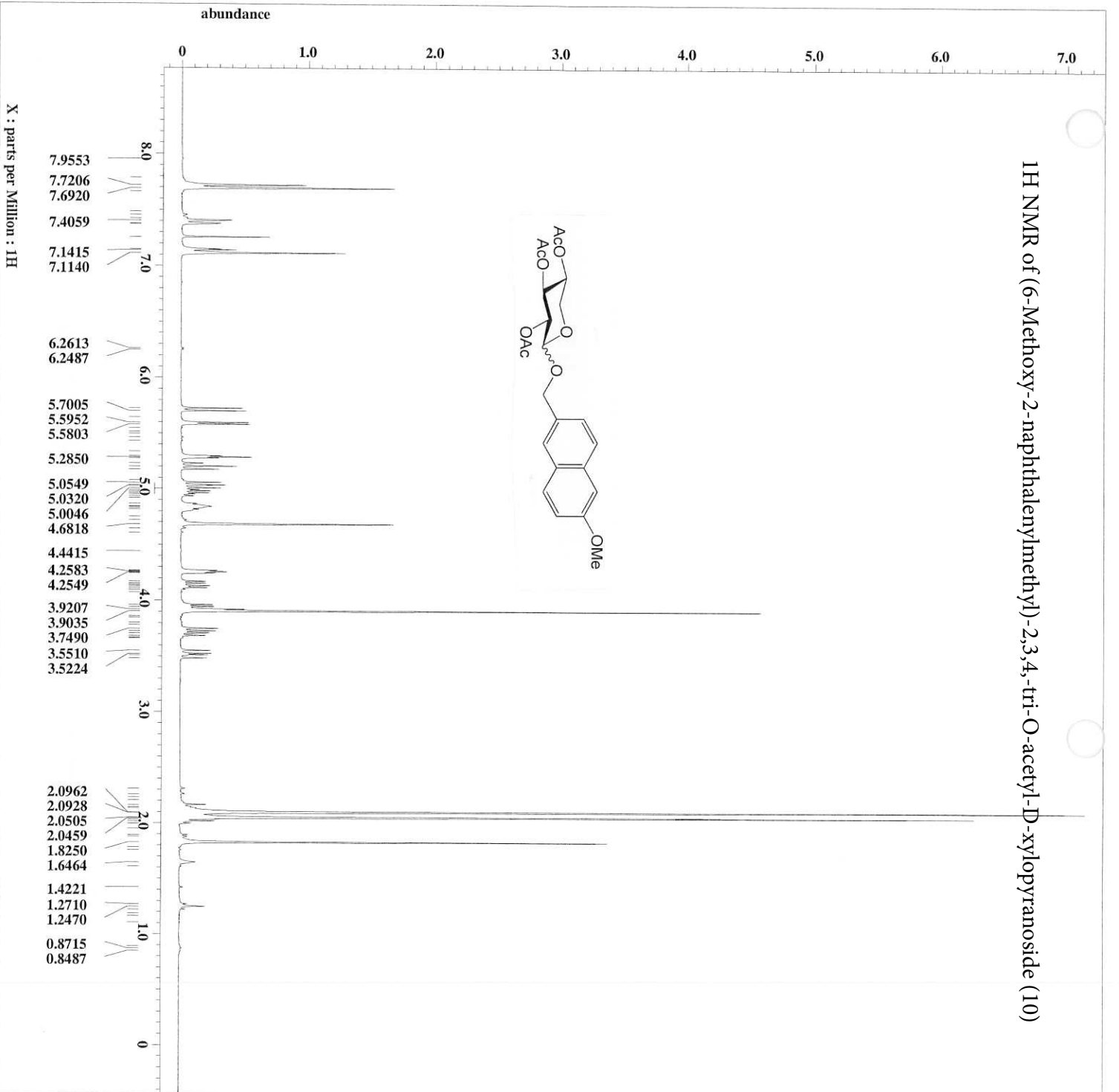
Current Data Parameters
NAME      QZ-IV-50
EXPNO    9
PROCNO   1

F2 - Acquisition Parameters
Date_    500000
Time     11.17
INSTRUM  brx400
PROBHD   5 mm Multinuc1
PULPROG  zgpgc30
TD        32768
SOLVENT  CDCl3
NS        2148
DS        2
SWH       25000.000 Hz
FIDRES    0.762939 Hz
AQ         0.6554100 sec
RG         45500
DM         20.000 usec
DE         27.14 usec
TE         300.0 K
D12        0.00002000 sec
DL5        20.00 dB
CPDPRG6   waltz16
P31        100.00 usec
D1         0.40000001 sec
P1         6.75 usec
DE         27.14 usec
SFO1      100.6231179 MHz
NUCLEUS   13C
D11        0.03000000 sec

F2 - Processing parameters
S1         15384
SF         100.6127490 MHz
WDW        EM
SSB        0
LB         2.00 Hz
GB         0
PC         1.40

1D NMR Plot parameters
CX         20.00 cm
F1P        227.296 ppm
F1         22868.89 Hz
F2P        -21.181 ppm
F2         -2131.11 Hz
PPMCM      12.42387 DDM/cm
HZCM       1250.00012 Hz/cm
    
```

1H NMR of (6-Methoxy-2-naphthalenylmethyl)-2,3,4-tri-O-acetyl-D-xylopyranoside (10)



```

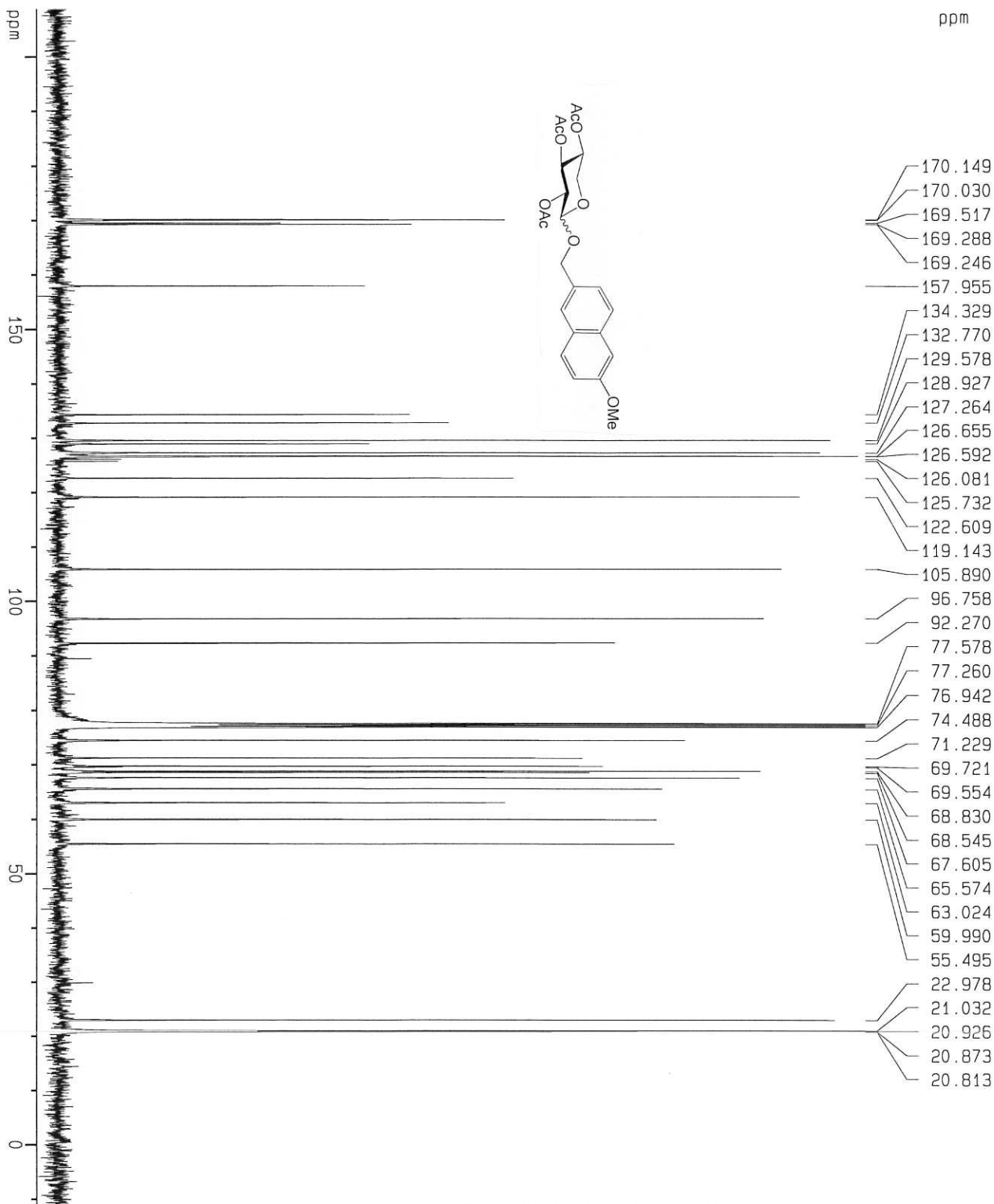
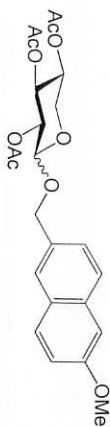
Filename = 0530130Z-IV-116single
Author = qzhang
Experiment = single_pulse.ex2
Sample_id = 0530130Z-IV-116single
Solvent = CHLOROFORM-D
Creation_time = 30-MAY-2013 14:36:47
Revision_time = 30-MAY-2013 20:35:50
Current_time = 30-MAY-2013 20:35:58

Comment = single pulse
Data_format = 1D COMPLEX
Dim_size = 13107
Dim_title = 1H
Dim_units = [ppm]
Dimensions = X
Site = ECKX-300
Spectrometer = ECKX-300

Field_strength = 7.0586013 [T] (300 [MHz]
X_acq_duration = 2.90717696 [s]
X_domain = 1H
X_freq = 300.52965592 [MHz]
X_offset = 5 [ppm]
X_points = 16384
X_prescans = 1
X_resolution = 0.34397631 [Hz]
X_sweep = 5.63570784 [kHz]
Irr_domain = 1H
Irr_freq = 300.52965592 [MHz]
Irr_offset = 5 [ppm]
Irr_domain = 1H
Tri_freq = 300.52965592 [MHz]
Tri_offset = 5 [ppm]
Clipped = FALSE
Mod_return = 1
Scans = 8
Total_scans = 8
X_90_width = 13.43 [us]
X_acq_time = 2.90717696 [s]
X_angle = 45 [deg]
X_atn = 3 [dB]
X_pulse = 6.715 [us]
Irr_mode = Off
Tri_mode = Off
Dante_presat = FALSE
Initial_wait = 1 [s]
Recvr_gain = 40
Relaxation_delay = 7.90717696 [s]
Repetition_time = 23.5 [dcl]
Temp_get =
    
```



¹³C NMR of (6-Methoxy-2-naphthalenylmethyl)-2,3,4-tri-O-acetyl-D-xylopyranoside (10)



170.149
170.030
169.517
169.288
169.246
157.955
134.329
132.770
129.578
128.927
127.264
126.655
126.592
126.081
125.732
122.609
119.143
105.890
96.758
92.270
77.578
77.260
76.942
74.488
71.229
69.721
69.554
68.830
68.545
67.605
65.574
63.024
59.990
55.495
22.978
21.032
20.926
20.873
20.813

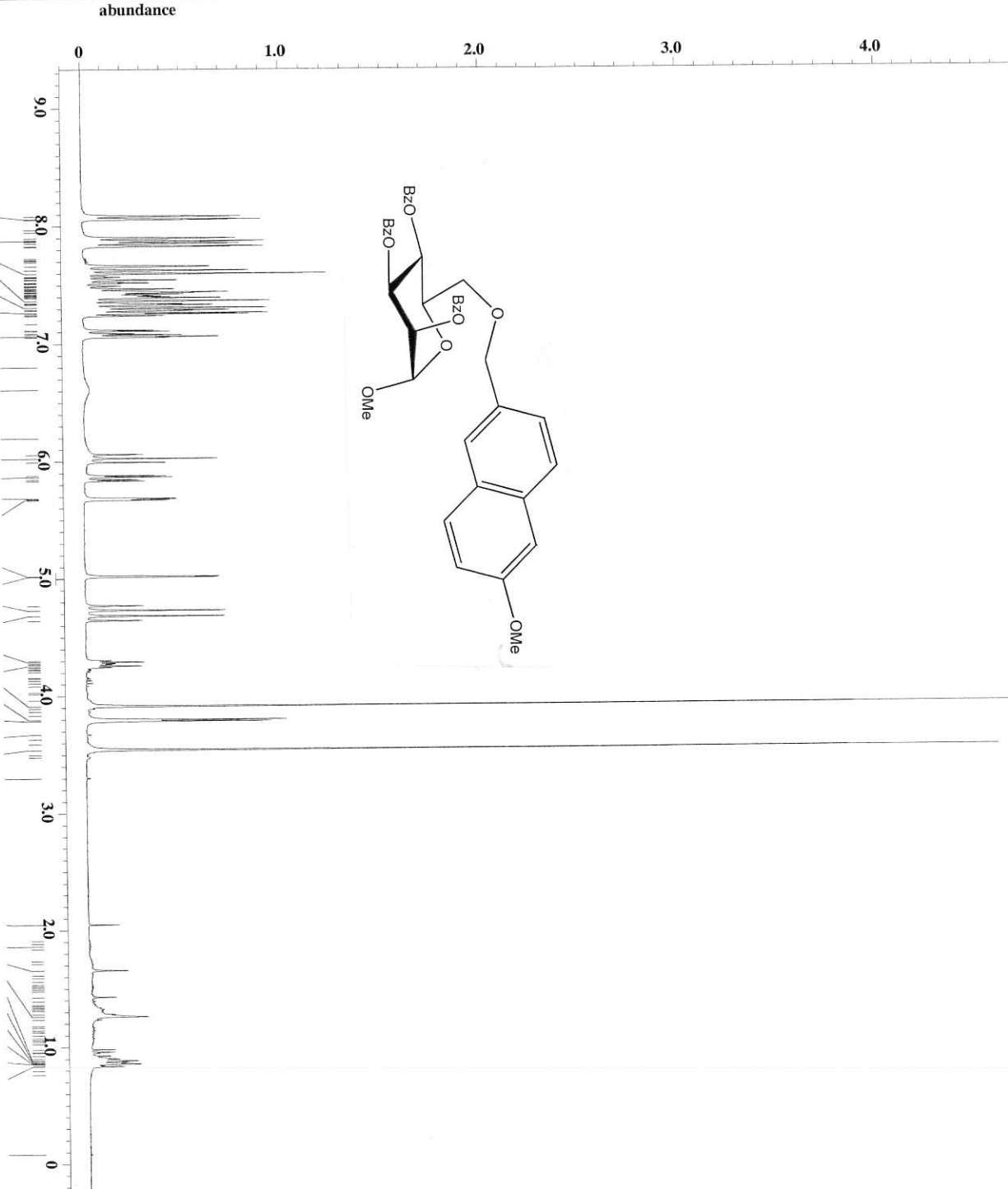
Current Data Parameters
 NAME QZ-IV-116
 EXPNO 9
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 500000
 Time 15.33
 INSTRUM arx400
 PROBHD 5 mm Multinuc1
 PULPROG zgpg30
 TD 32768
 SOLVENT CDCl3
 NS 11415
 DS 2
 SMH 25000.000 Hz
 FIDRES 0.762939 Hz
 AQ 0.6554100 sec
 RG 45500
 DW 20.000 usec
 DE 27.14 usec
 TE 300.0 K
 D12 0.00002000 sec
 DLS 20.00 dB
 CPOPRG waltz16
 P31 100.00 usec
 D1 0.40000001 sec
 P1 6.75 usec
 DE 27.14 usec
 SF01 100.6231179 MHz
 NUCLEUS 13C
 D11 0.03000000 sec

F2 - Processing parameters
 SI 16384
 SF 100.6127490 MHz
 MDW EM
 SSB 0
 LB 2.00 Hz
 GB 0
 PC 1.40

1D NMR plot parameters
 CX 20.00 cm
 F1P 208.747 ppm
 F1 21002.59 Hz
 F2P -10.992 ppm
 F2 -1105.93 Hz
 PPKCM 10.98694 ppm/cm
 HZCM 1105.42627 Hz/cm

1H NMR of Methyl-2,3,4-Tri-benzoyl-O-6-(6-Methoxy-2-naphthalenylmethyl)- α -D-mannopyranoside (13)



X : parts per Million : 1H

- 8.0617
- 7.8763
- 7.5982
- 7.3681
- 7.3097
- 7.2651
- 7.0659
- 6.8038
- 6.6127
- 6.1984
- 6.0267
- 5.8687
- 5.6879
- 5.6822
- 5.0229
- 5.0172
- 4.7322
- 4.6841
- 4.2915
- 4.2583
- 3.9138
- 3.7993
- 3.7868
- 3.6723
- 3.5430
- 3.3015
- 2.0459
- 1.8627
- 1.6567
- 1.2607
- 0.8853
- 0.8773
- 0.8670
- 0.8590
- 0.8555
- 0.8349
- 0.0818

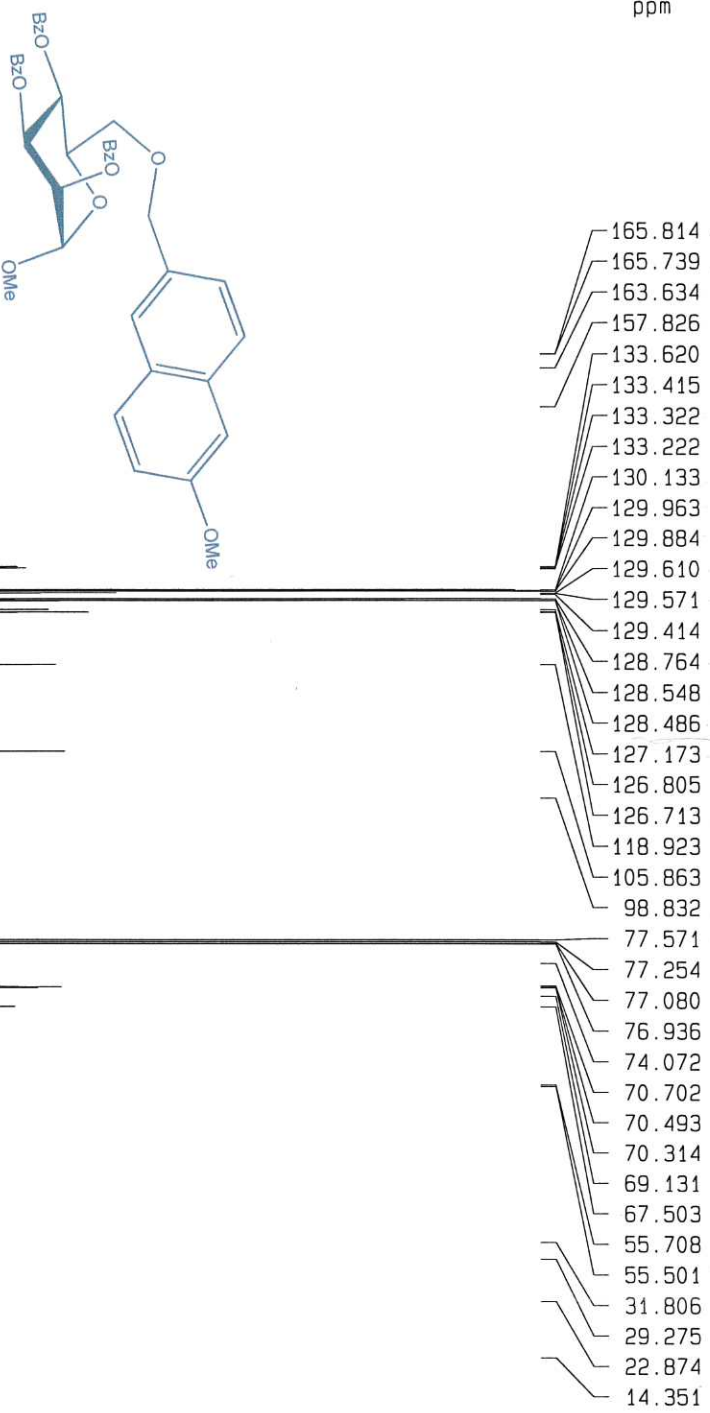
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Author = grzhang
Experiment = single_pulse_ext2
Sample_id = 0406120Z-III-57single
Solvent = CHLOROFORM-D
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Revision_time = 6-APR-2012 10:40:27
Current_time = 6-APR-2012 10:40:37

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Dim_title = 1H
Dim_units = [ppm]
Dimensions = X
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Spectrometer = ECX-300

Field_strength = 7.0586013[T] (300 [MHz]
X_acq_duration = 2.90717696[ls]
X_domain = 1H
X_freq = 300.52965592[MHz]
X_offset = 5[ppm]
X_points = 16384
X_prescans = 1
X_resolution = 0.34397631[Hz]
X_sweep = 5.63570784[kHz]
Irr_domain = 1H
Irr_freq = 300.52965592[MHz]
Irr_offset = 5[ppm]
Irr_domain = 1H
Tri_domain = 300.52965592[MHz]
Tri_freq = 5[ppm]
Tri_offset = FALSE
Clipped = FALSE
Mod_return = 1
Scans = 1
Total_scans = 8
X_90_width = 13.43[us]
X_acq_time = 2.90717696[ls]
X_angle = 45[deg]
X_db = 3[db]
X_atn = 6.715[us]
X_pulse = Off
Irr_mode = Off
Dante_presat = FALSE
Initial_wait = 1[ls]
Recvr_gain = 40
Relaxation_delay = 5[ls]
Repetition_time = 7.90717696[ls]
Temp_get = 22.6[dc]
    
```

¹³C NMR of Methyl-2,3,4-Tri-benzoyl-O-6-(6-Methoxy-2-naphthalenylmethyl)- α -D-mannopyranoside (13)



- 165.814
- 165.739
- 163.634
- 157.826
- 133.620
- 133.415
- 133.322
- 133.222
- 130.133
- 129.963
- 129.884
- 129.610
- 129.571
- 129.414
- 128.764
- 128.548
- 128.486
- 127.173
- 126.805
- 126.713
- 118.923
- 105.863
- 98.832
- 77.571
- 77.254
- 77.080
- 76.936
- 74.072
- 70.702
- 70.493
- 70.314
- 69.131
- 67.503
- 55.708
- 55.501
- 31.806
- 29.275
- 22.874
- 14.351

ppm

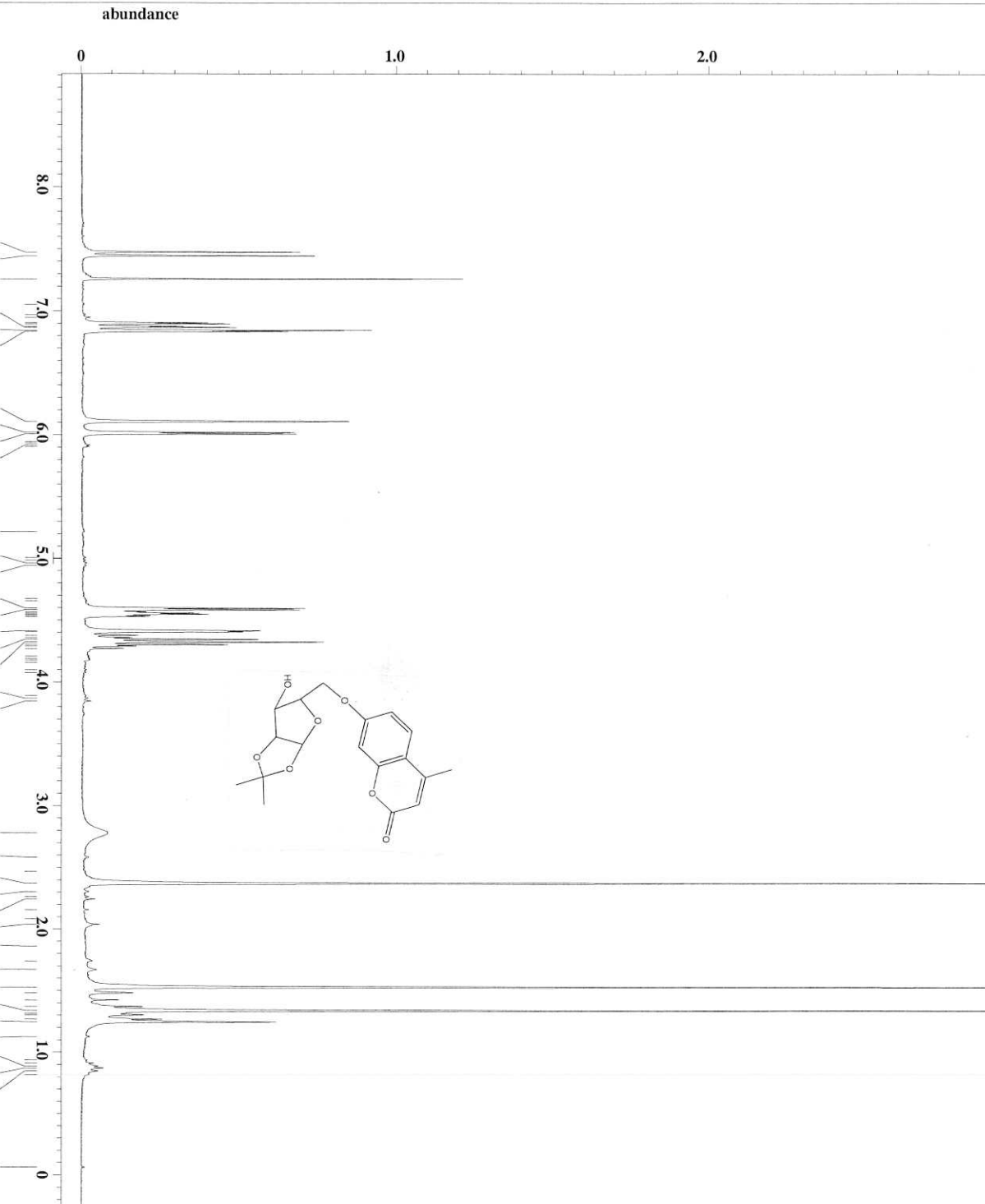
Current Data Parameters
 NAME QZ-111-57C13
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 PROCNO 1

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 INSTRUM arx400
 PROBHD 5 mm Multinuc1
 PULPROG zgpg30
 TD 32768
 SOLVENT CDCl3
 NS 16004
 DS 2
 SWH 25000.000 Hz
 FIDRES 0.762939 Hz
 AQ 0.6554100 sec
 RG 45500
 DW 20.000 usec
 DE 27.14 usec
 TE 300.0 K
 D12 0.00002000 sec
 DLS 20.00 dB
 CPPPRG waltz16
 P31 100.00 usec
 D1 0.40000001 sec
 P1 6.75 usec
 DE 27.14 usec
 SFO1 100.6231179 MHz
 NUCLEUS 13C
 D11 0.030000000 sec

F2 - Processing parameters
 SI 16384
 SF 100.6127490 MHz
 MDW EM
 SSB 0
 LB 2.00 Hz
 GB 0
 PC 1.40

1D NMR plot parameters
 CX 20.00 cm
 F1P 220.000 ppm
 F1 22134.80 Hz
 F2P -10.000 ppm
 F2 -1006.13 Hz
 PPMCM 11.50000 ppm/cm
 HZCM 1157.04663 Hz/cm

¹H NMR of 1,2-O-isopropylidene-6-(4-methyl-umbelliferyl)-O- α -D-xylofuranose (16)



parts per Million : 1H

- 7.4734
- 7.4437
- 7.2571
- 6.8656
- 6.8416
- 6.8336
- 6.1079
- 6.0187
- 6.0072
- 5.9168
- 5.2175
- 4.9634
- 4.9428
- 4.5960
- 4.5834
- 4.4140
- 4.3442
- 4.3236
- 3.8680
- 3.8440
- 2.7795
- 2.5838
- 2.3721
- 2.3034
- 2.2416
- 2.0367
- 1.8605
- 1.6716
- 1.5285
- 1.3385
- 1.2470
- 1.1256
- 0.8853
- 0.8704
- 0.8464
- 0.0612

```

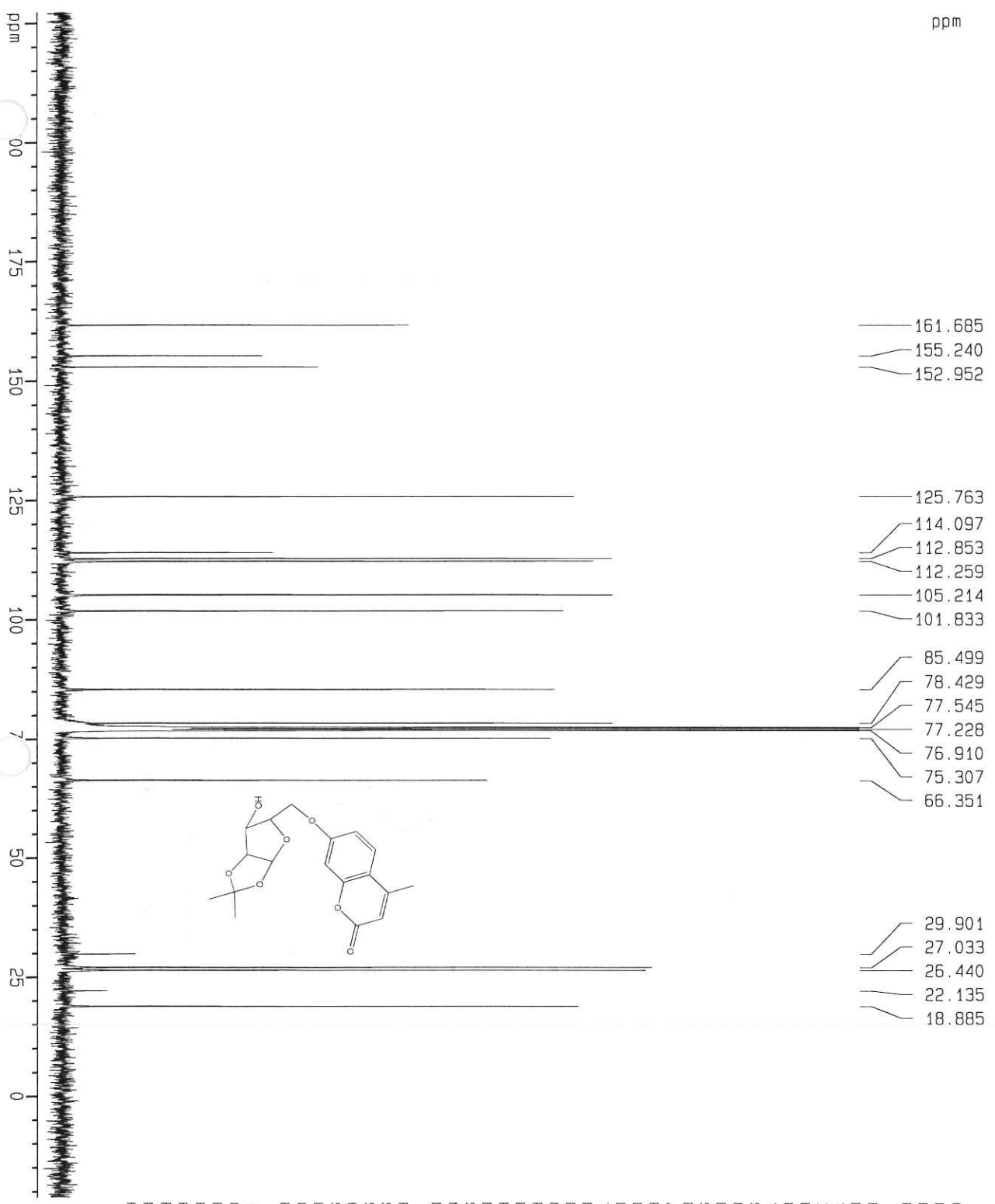
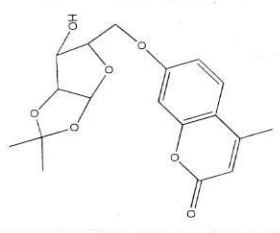
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Author = qzhang
Experiment = single_pulse.ex2
Sample_id = 12151202-IT1-236111.s1
Solvent = CHLOROFORM-D
Creation_time = 15-DEC-2012 10:25:43
Revision_time = 15-DEC-2012 10:21:03
Current_time = 15-DEC-2012 10:21:11

Comment = single_pulse
Data_format = 1D COMPLEX
Dim_size = 13107
Dim_title = 1H
Dim_units = [ppm]
Dimensions = X
Site = ECX 300
Spectrometer = ECX-300

Field_strength = 7.05860131[M] (300[MHz]
X_acq_duration = 2.90717696[fs]
X_domain = 1H
X_freq = 300.52965592[MHz]
X_offset = 5 [ppm]
X_points = 16384
X_prescans = 1
X_resolution = 0.34397631[Hz]
X_sweep = 5.63570784 [kHz]
Irr_domain = 1H
Irr_freq = 300.52965592 [MHz]
Irr_offset = 5 [ppm]
Irr_domain = 1H
Tri_freq = 300.52965592 [MHz]
Tri_offset = 5 [ppm]
Clipped = FALSE
Mod_return = 1
Scans = 8
Total_scans = 8

X_90_width = 13.43[us]
X_acq_time = 2.90717696[fs]
X_angle = 45[deg]
X_atn = 3[db]
X_pulse = 6.715[us]
Irr_mode = Off
Tri_mode = Off
Dante_presat = FALSE
Initial_wait = 1[fs]
Recvr_gain = 44
Relaxation_delay = 5[fs]
Repetition_time = 7.90717696[fs]
Temp_get = 23.3 [dC]
    
```

¹³C NMR of 1,2-O-isopropylidene-6-(4-methyl-umbelliferyl)-O-α-D-xylofuranose (16)



```

Current Data Parameters
NAME      GZ-111-236111
EXPNO     9
PROCNO    1

F2 - Acquisition Parameters
Date_     500000
Time      13.16
INSTRUM   arx400
PROBHD    5 mm Multinuc1
PULPROG   zgpg30
TD         32768
SOLVENT   CDCl3
NS         13877
DS         2
SMH        25000.000 Hz
FIDRES     0.762939 Hz
AQ         0.6554100 sec
RG         45500
DM         20.000 usec
DE         27.14 usec
TE         300.0 K
D12        0.0002000 sec
DL5        20.00 dB
CPDPRG6   waltz16
P31        100.00 usec
D1         0.40000001 sec
P1         6.75 usec
DE         27.14 usec
SF01       100.6231179 MHz
NUCLEUS    13C
D11        0.030000000 sec

F2 - Processing parameters
SI         16384
SF         100.6127490 MHz
MDW        EM
SSB        0
LB         2.00 Hz
GB         0
PC         1.40

1D NMR plot parameters
CX         20.00 cm
F1P        227.296 ppm
F1         22866.89 Hz
F2P        -21.181 ppm
F2         -2131.11 Hz
PPMCM      12.42387 ppm/cm
HZCM       1250.00012 Hz/cm
    
```

II. Incubation of 4MU with Aromatic Compounds

Three aromatic adducts from the possible degradation of class III probes were used for this investigation: 3,4-dimethoxyacetophenone (**A**), 3,4-dimethoxybenzyl alcohol (**B**) and 1-(3,4-dimethoxyphenyl)ethanol (**C**). The fluorescence measure showed no quenching of 4MU from these aromatic compounds. There was only a slight decrease in fluorescence when 4MU was mixed with 3,4-dimethoxyacetophenone and no changes on the other two combinations. The results confirm that no fluorescence quenching if the degradation of class III probes occurs .

