



Supporting Information

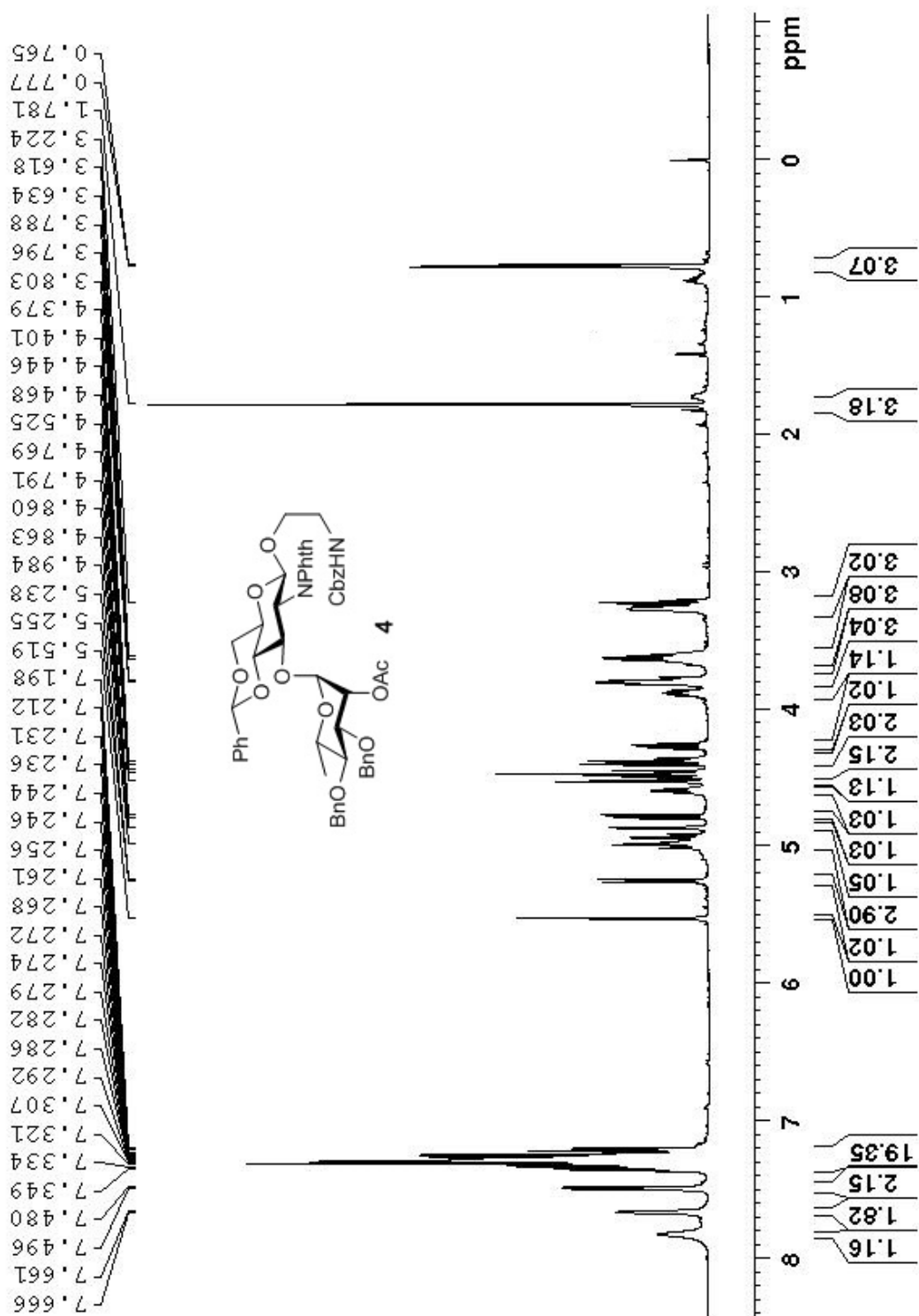
for

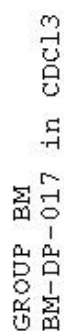
Chemical synthesis of the pentasaccharide repeating unit of the O-specific polysaccharide from *Escherichia coli* O132 in the form of its 2-aminoethyl glycoside

Debasish Pal and Balaram Mukhopadhyay

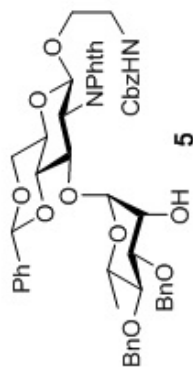
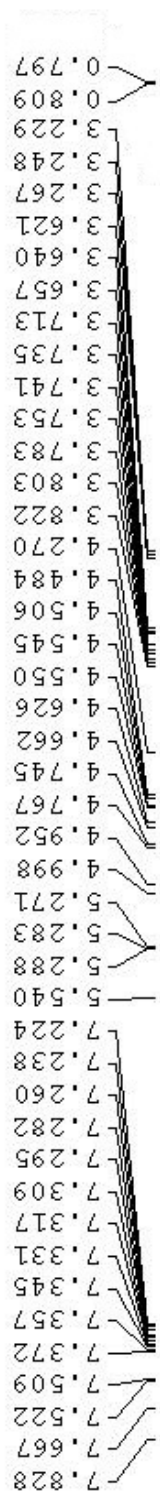
Beilstein J. Org. Chem. **2019**, *15*, 2563–2568. doi:10.3762/bjoc.15.249

Copies of the ^1H and ^{13}C NMR spectra of all new compounds





GROUP BM
BM-DP-068B in CDCl3



Current Data Parameters
NAME DI ACCEPTOR
EXPNO 20
PROCNO 1

F2 - Acquisition Parameters
Date_ 20180730
Time 11.45
INSTRUM Bruker default av500
PROBHD 5 mm PABBO BB/
PULPROG zg30
ID 66560
SOLVENT CDCl3
NS 16
DS 2
SWH 10000.000 Hz
FIDRES 0.150240 Hz
AQ 3.3280001 sec
RG 36
DW 50.000 usec
DE 6.50 usec
TE 298.2 K
D1 1.00000000 sec
ID0 1

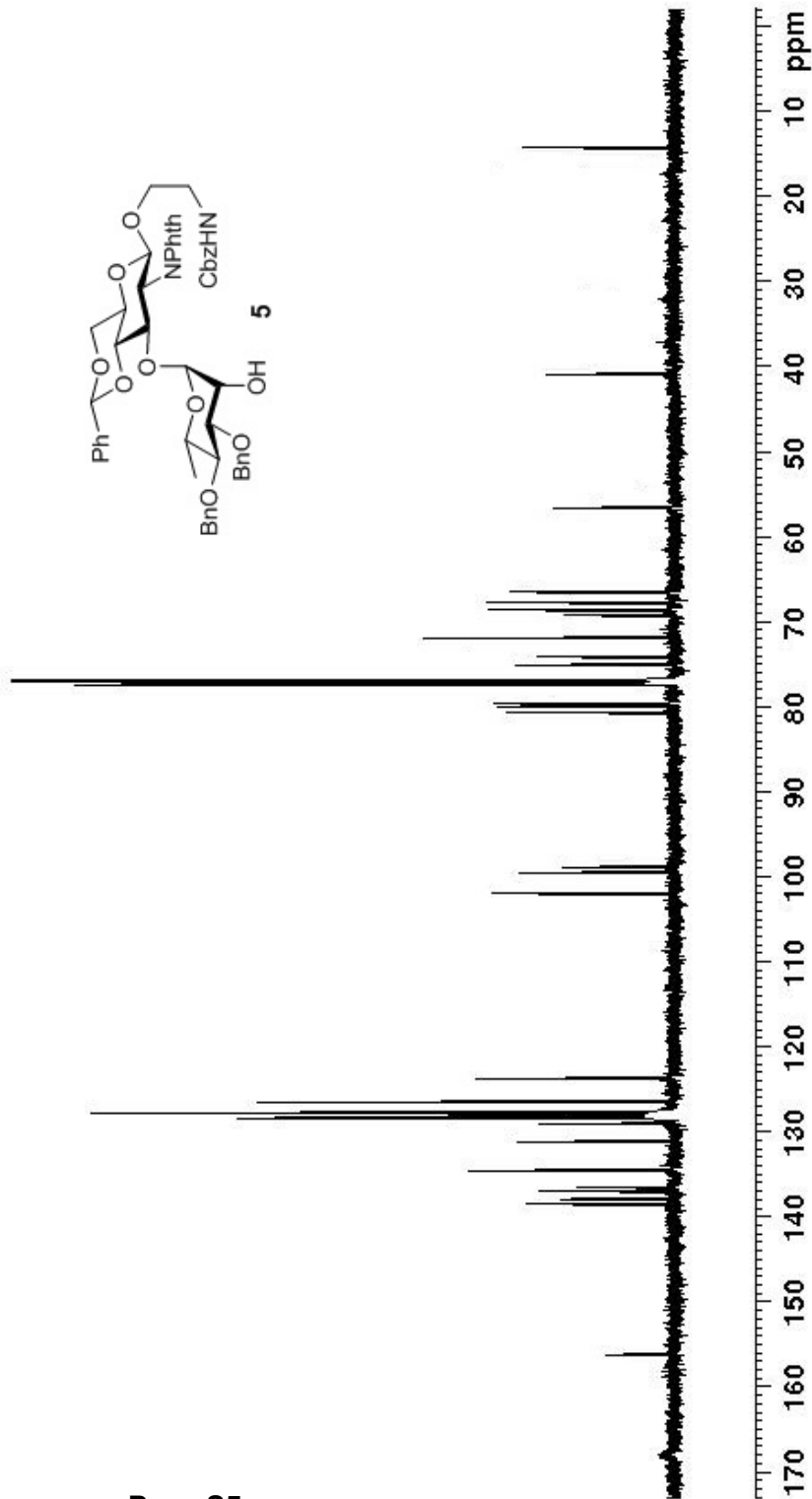
----- CHANNEL f1 -----
SF01 500.3430898 MHz
NUC1 1H
P1 17.50 usec
PLW1 10.00000000 W

F2 - Processing parameters
SI 131072
SF 500.3400125 MHz
WDW EM
SSB 0
LB 0.60 Hz
GB 0
PC 1.00

GROUP BM
BM-DP-068B in CDCl3



156.10
138.43
137.80
136.85
136.39
134.42
131.07
128.99
128.41
128.39
128.19
128.07
128.01
127.92
127.75
127.65
127.50
126.35
123.69
101.88
99.42
98.78
80.59
79.79
79.51
77.25
76.99
76.74
74.96
73.94
71.76
69.09
68.52
68.47
67.61
66.50
66.38
56.53
40.70
17.15



Current Data Parameters
NAME DI ACCEPTOR
EXNO 21
PROCNO 1

F2 - Acquisition Parameters
Date_ 20180730
Time 11.50
INSIRUM Bruker_default_av500
PROBHD 5 mm PABBO BB/
PULPROG zgpg30
ID 65536
SOLVENT CDCl3
NS 181
DS 4
SWH 43859.648 Hz
FIDRES 0.669245 Hz
AQ 0.7471104 sec
RG 203
DM 11.400 usec
DE 6.50 usec
TE 298.5 K
D1 2.00000000 sec
D11 0.03000000 sec
TD0 1

----- CHANNEL f1 -----
SFO1 125.8294646 MHz
NUC1 13C
P1 11.50 usec
PLW1 66.00000000 W

----- CHANNEL f2 -----
SFO2 500.3420014 MHz
NUC2 1H
PCPD2 80.00 usec
PLW2 10.00000000 W
PLW12 0.47852001 W
PLW13 0.24068999 W

F2 - Processing parameters
SI 32768
SF 125.8106086 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40





GROUP BM
BM-DP-063 in CDC13

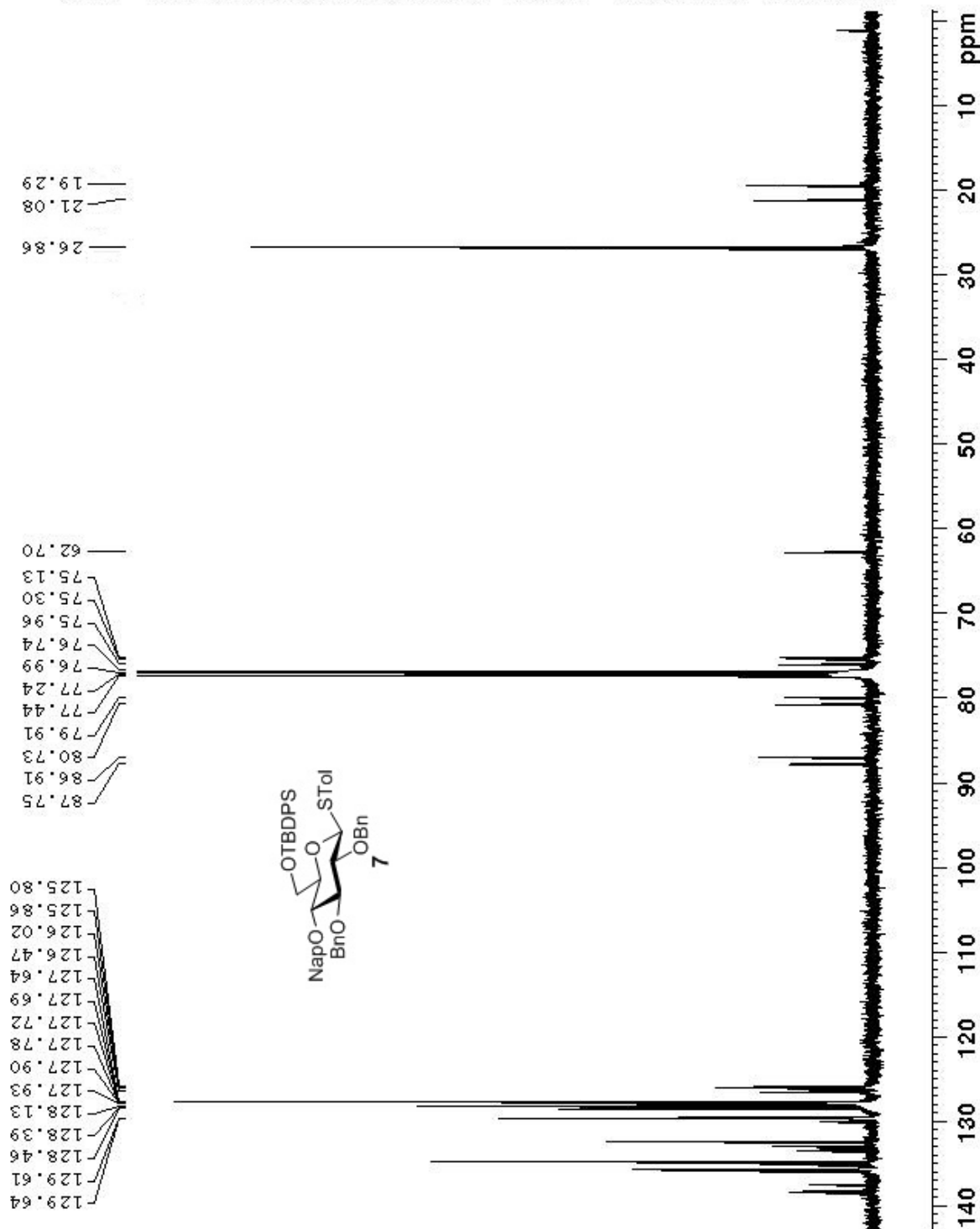
Current Data Parameters	
NAME	BM-DF-063
EXPNO	72
PROCNO	1

HF2 - Acquisition Parameters	
Date_	20180723
Time	12.48
INSIRUM	Brucker_default_av50
PROBHD	5 mm PABBO BB/-
PULPROG	zgpg30
ID	65536
SOLVENT	CDCl3
NS	308
DS	4
SWH	43859.648 Hz
FIDRES	0.663245 Hz
AQ	0.7471104 sec
RG	203
DW	11.400 usec
DE	6.50 usec
TE	298.3 K
D1	2.00000000 sec
D11	0.03000000 sec
ID0	1

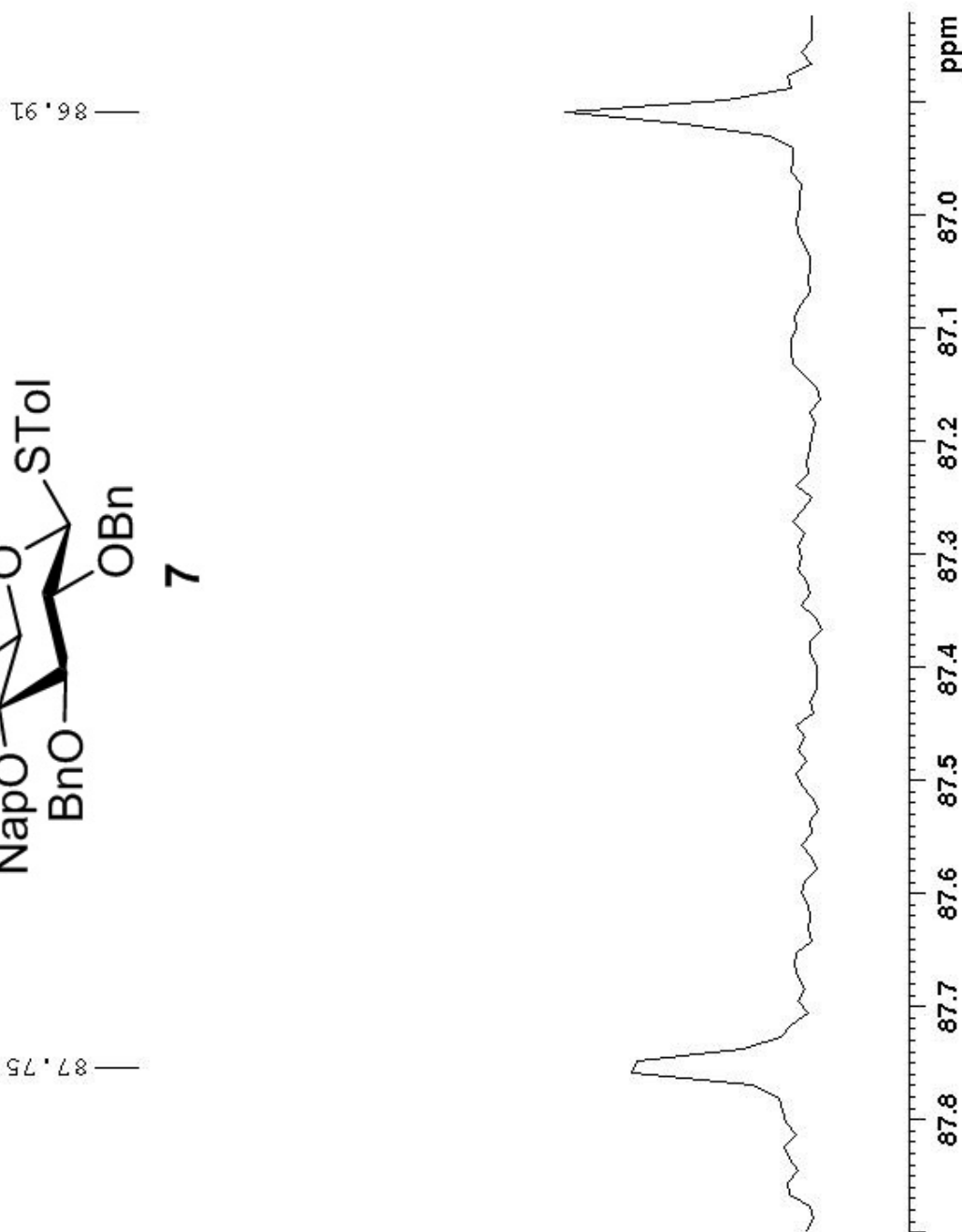
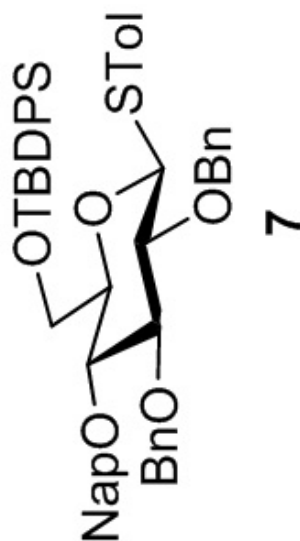
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----- CHANNEL f1 -----
SF01      125.8294646 MHz
NUC1      13C
P1        11.50 usec
PLW1      66.00000000 W
```

```
----- CHANNEL f2 -----
SF02      500.3420014 MHZ
NUC2      1H
CPDPRG[2]  waltz16
PCPD2      80.00 usec
PW2        10.00000000 W
P1W12      0.47852001 W
P1W13      0.24063999 W
```

EF2 - Processing parameters	
SI	32768
SF	125.8106021 MHz
WDW	EM
SSE	0
LB	1.00 Hz
GB	0
PC	1.40



GROUP BM
BM-DP-063 in CDCl3



Current Data Parameters
NAME BM-DP-063
EXPNO 72
PROCNO 1

F2 - Acquisition Parameters
Date_ 20180723
Time 12.48
INSTRUM Bruker_default_av50
PROBHD 5 mm PABBO BB/
PULPROG zgpg30
TD 65536
SOLVENT CDCl3
NS 308
DS 4
SWH 42859.648 Hz
FIDRES 0.669245 Hz
AQ 0.7471104 sec
RG 203
DM 11.400 usec
DE 6.50 usec
TE 298.2 K
D1 2.00000000 sec
D11 0.03000000 sec
TD0 1

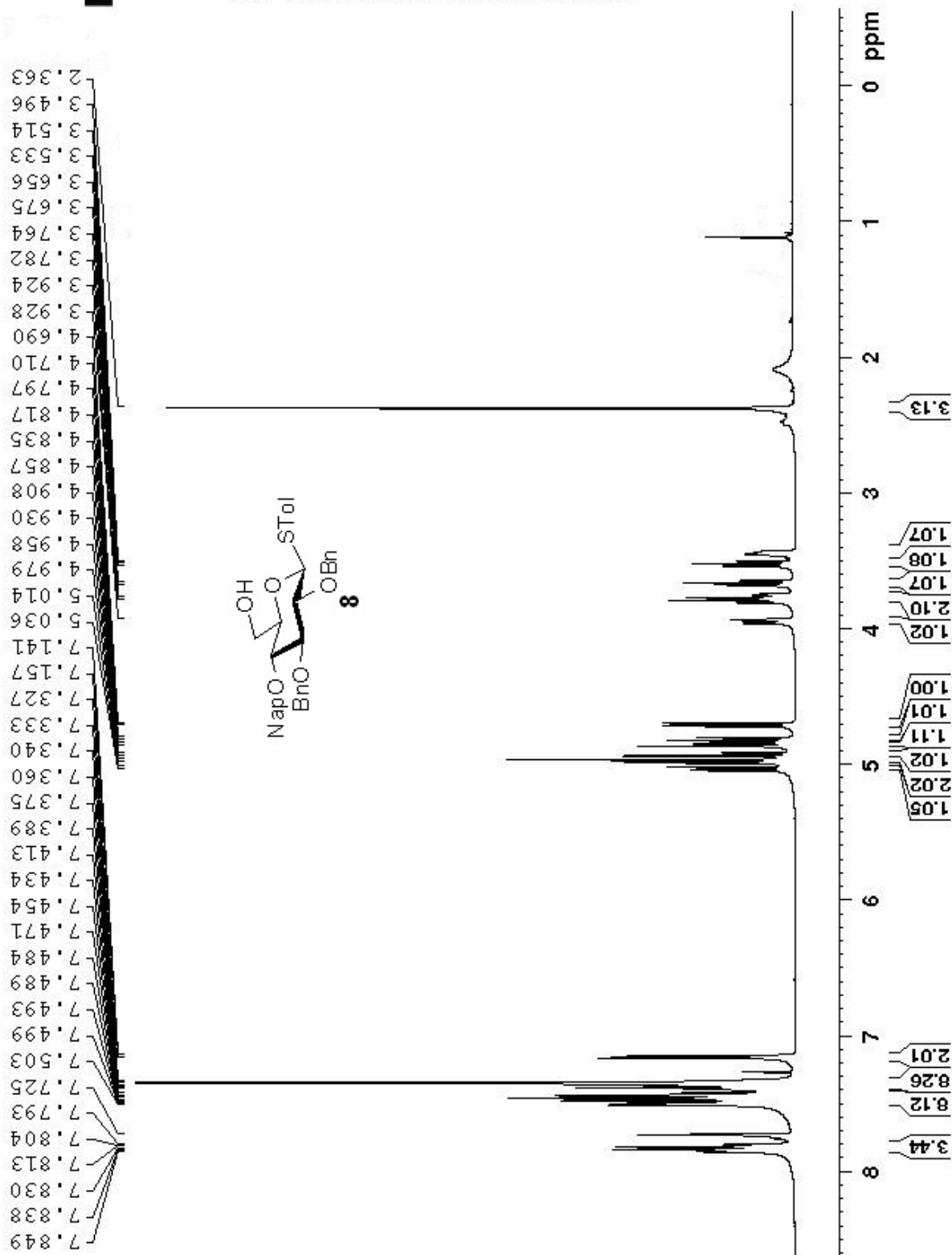
----- CHANNEL f1 -----
SFO1 125.8294646 MHz
NUC1 13C
P1 11.50 usec
PLW1 66.00000000 W

----- CHANNEL f2 -----
SFO2 500.3420014 MHz
NUC2 1H
P2 19.00 usec
PLW2 10.00000000 W
PLW12 0.47852001 W
PLW13 0.24086999 W

F2 - Processing Parameters
SI 32768
SF 125.8106021 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40

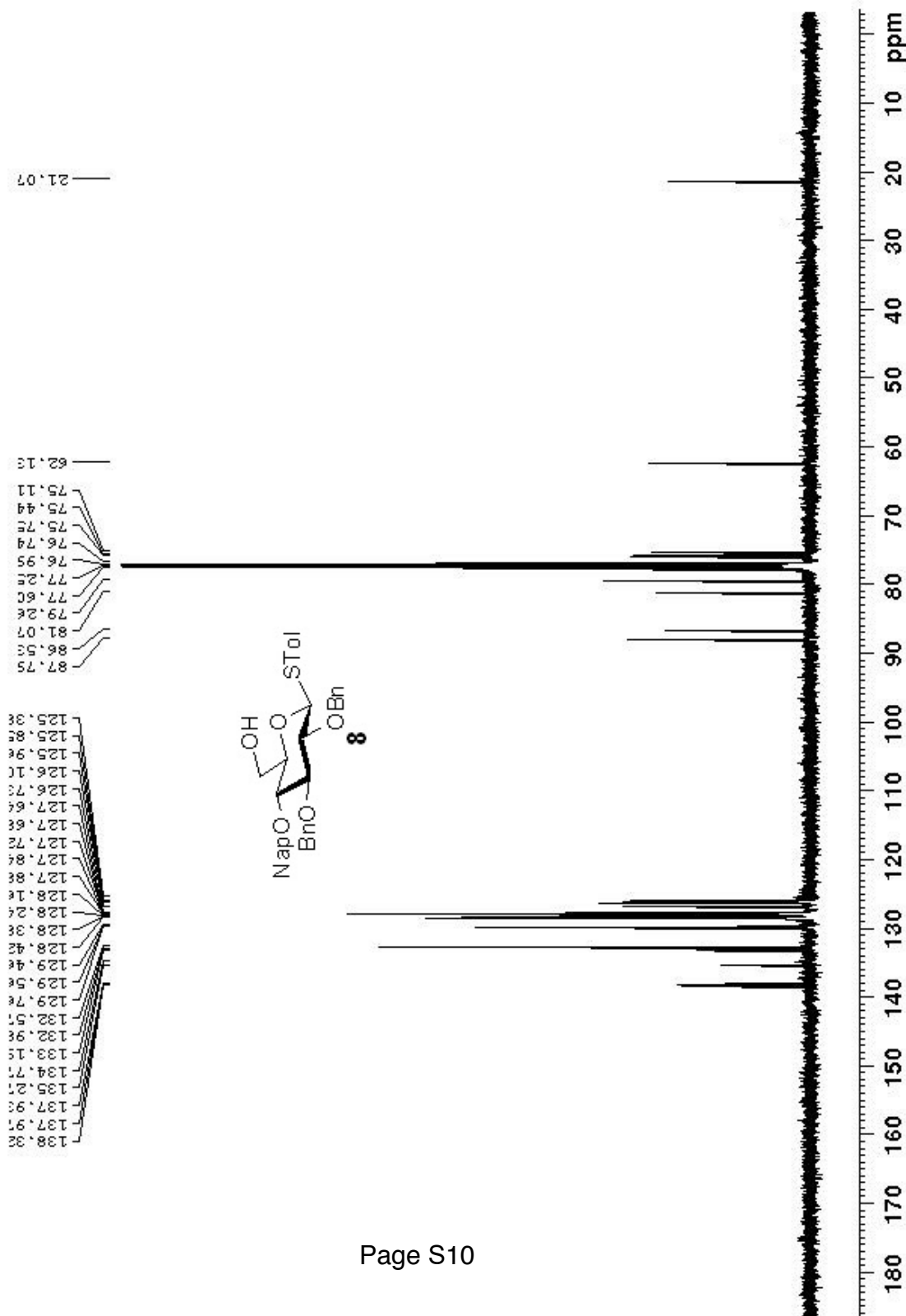


GROUP BM
BM-DP-064 in CDCl3



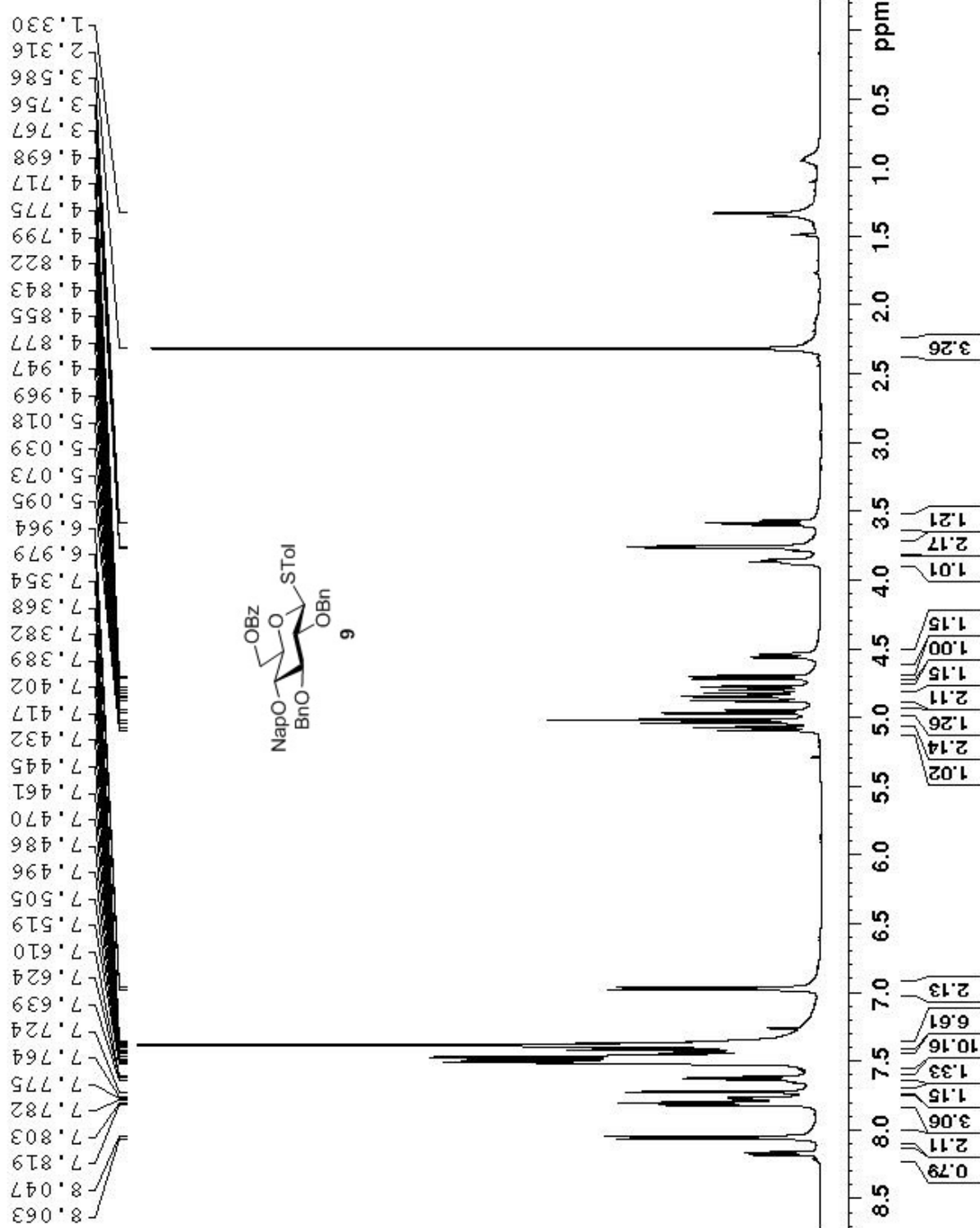
Current Data Parameters
NAME BM-DP-064
EXPNO 90
PROCNO 1
F2 - Acquisition Parameters
Date_ 20160722
Time 11.20
INSTRUM spect
PROBHD 5 mm BBO-1H
PULPROG zgpg30
TD 65536
SOLVENT CDCl3
NS 16
DS 2
SWH 10000.000 Hz
FIDRES 0.110240 Hz
AQ 3.3240001 sec
RG 90.5
DM 50.000 sec
DE 0.001 sec
TE 300.2 K
D1 1.00000000 sec
TDO 1
===== CHANNEL f1 =====
NUC1 1H
P1 1A
PC1 17.50 sec
NUC2 1H
P2 10.00000000 N
PC2 17.50 sec
===== CHANNEL f2 =====
F2 - Processing parameters
SI 32768
SF 500.1360121 MHz
WDW EM
SSB 0
GB 0
PC 0.60 Hz
SC 1.00

GROUP BM
BM-DP-064 in CDCl3



Current Data Parameters
NAME BM-DP-064
EXPNO 42
PROCNO 1
F2 - Acquisition Parameters
Date_ 20140723
Time 11.39
INSTRUM spect
PROBHD 5 mm BBO BO
PULPROG zgpg30
TD 65536
SOLVENT CDCl3
NS 202
DS 2
SWH 42453.646 Hz
FIDRES 0.66285 Hz
AQ 0.787108 sec
RG 302
SQ 11.400 usec
CW 2.000 usec
CR 2.000 usec
GB 284.7 K
D1 2.00000000 sec
D11 0.02000000 sec
TD0 1
===== CHANNEL f1 =====
NUC1 125.062966 MHz
NUC2 13C
P1 11.50 usec
PL1 0.00000000 M
===== CHANNEL f2 =====
NUC2 500.1345014 MHz
NUC2 1H
P2 12.00 usec
PL2 0.00000000 M
===== CHANNEL f3 =====
NUC3 10.00000000 MHz
NUC3 13C
P3 0.8742001 M
PL3 0.2806833 M
F2 - Processing parameters
SI 32768
SF 125.010016 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40

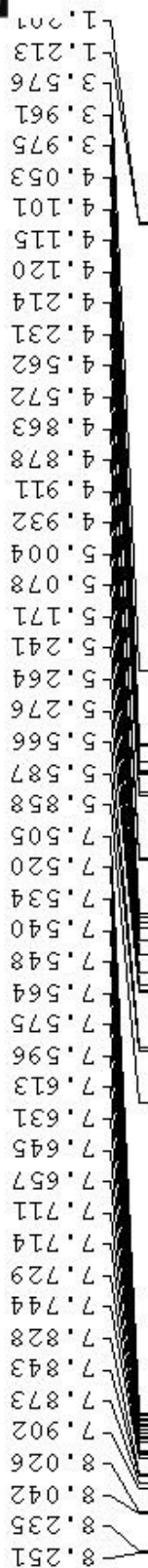
GROUP BM
BM-DP-065 in CDCl3



NAME: BM-DP-065
EXPNO: 1
PROCNO: 1
F2 - Acquisition parameters
Date_ 20100701
Time 11.34
INSTRUM spect
PROBHD 5 mm BBO
PULPROG zgpg30
TD 65536
SOLVENT CDCl3
DE 100
TE 300.2
FIDRES 0.10000000 Hz
AQ 0.110880 Hz
RG 512
DQ 0.00000000 Hz
DE 10.00000000 Hz
TE 300.2 K
F2 - Processing parameters
SI 32768
SF 300.1360000 MHz
WDW EM
SSB 0
GB 0
PC 1.00



GROUP BM
BM-DP-069 in CDCl3



Current Data Parameters
NAME TRI WAF-PROTECTED
EXPNO 70
PROCNO 1

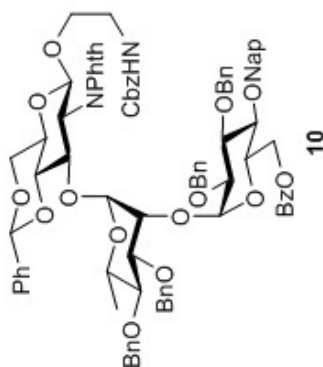
F2 - Acquisition Parameters
Date_ 20180801
Time 12.03
INSTRUM spect-aezuli-av500
PROBHD 5 mm PABBO BB/

PULPROG zg30
TD 65560
FIDRES 0.3280001 Hz
AQ 0.13
RG 40.3
DQ 50.000 usec
DE 6.50 usec
TE 298.2 K
D1 1.00000000 sec
TD0 1

SOLVENT CDCl3
NS 32
DS 2
SWH 10000.000 Hz
FIDRES 0.150240 Hz
AQ 3.3280001 sec
RG 40.3
DQ 50.000 usec
DE 6.50 usec
TE 298.2 K
D1 1.00000000 sec
TD0 1

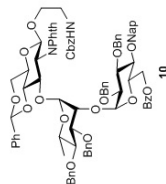
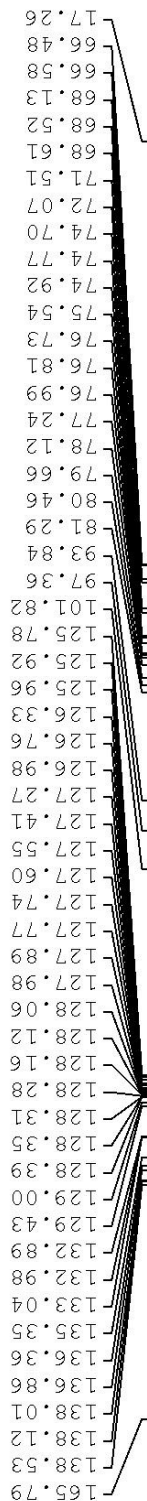
===== CHANNEL f1 =====
SFO1 500.345078 MHz
NUC1 1H
P1 17.50 usec
PL1 10.00000000 W

F2 - Processing parameters
SI 131072
SF 500.345078 MHz
WDW EM
SSB 0
LB 0.60 Hz
GB 0
PC 1.00





GROUP BM
BM-DP-069 in CDCl3



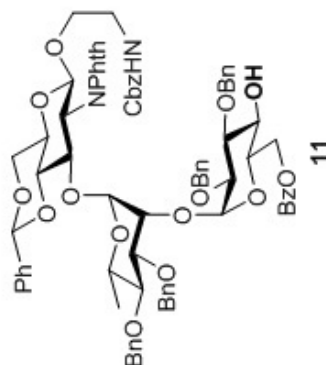
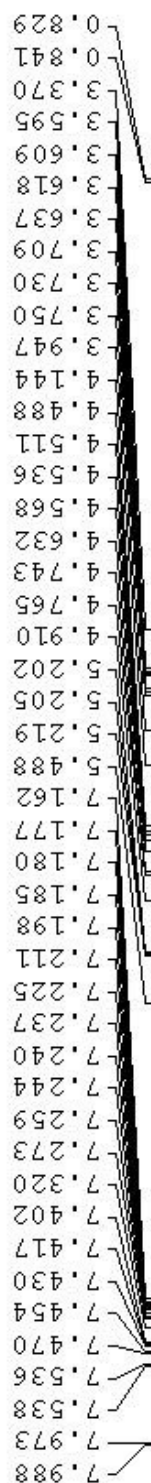
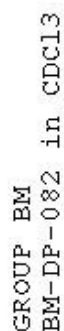
Current Data Parameters
NAME TRI NAP-PROTECTED
EXPNO 71
PROCNO 1

F2 - Acquisition Parameters
Date_ 20180801
Time 12.09
INSTRUM Bruker_default_av500
PROBHD 5 mm PABBO BB/-
PULPROG zgpg30
TD 65336
SOLVENT CDCl3
NS 199
DS 4
SWH 43859.648 Hz
FIDRES 0.669245 Hz
AQ 0.7471104 sec
RG 203
DW 11.400 usec
DE 6.50 usec
TE 299.2 K
D1 2.00000000 sec
D11 0.03000000 sec
TD0 1

===== CHANNEL f1 =====
SFO1 125.8294646 MHz
NUC1 13C
P1 11.50 usec
PLW1 66.00000000 W

===== CHANNEL f2 =====
SFO2 500.3420014 MHz
NUC2 1H
P2 11.50 usec
PLW2 66.00000000 W
PCPD2 80.00 usec
PLW2 10.00000000 W
PLW12 0.47852001 W
PLW13 0.24068999 W

F2 - Processing parameters
SI 32768
SF 125.8106095 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40



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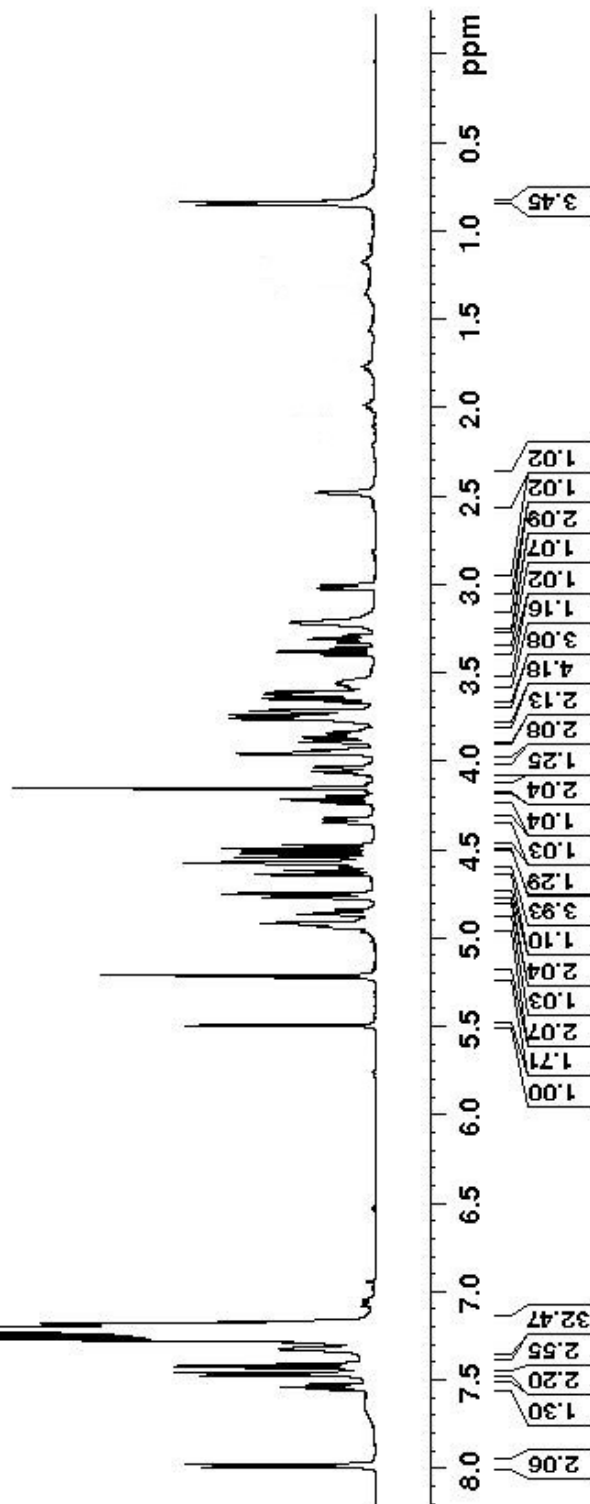
Current Data Parameters
NAME      TRI ACCEPTOR
EXTNO     10
PROCNO    1

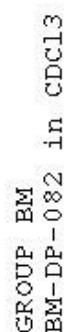
F2 - Acquisition Parameters
Date_     20181001
Time       11.11
INSTRUM   BrukerDefault_Av500
PROBHD    5 mm PABBO BBP/
PULPROG   zg30
ID        66360
SOLVENT   CDCl3
NS         16
DS         2
SWH        10000.000 Hz
FIDRES     0.150240 Hz
AQ         3.8280001 sec
RG         50.8
DE         50.000000 sec
TE         6.50 sec
IE         2261.6 K
DL         1.00000000 sec
ID0        1

=====
CHANNEL F1
=====
SFO1      500.8430988 MHz
NUC1       13C
P1         17.50 sec
PL1        0
PL12       10.00000000 W

F2 - Processing parameters
SI         131072
SF         500.8400327 MHz
SSE        0
SSF        0
WDW         EM
GE         0
PC         1.00

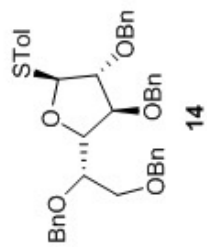
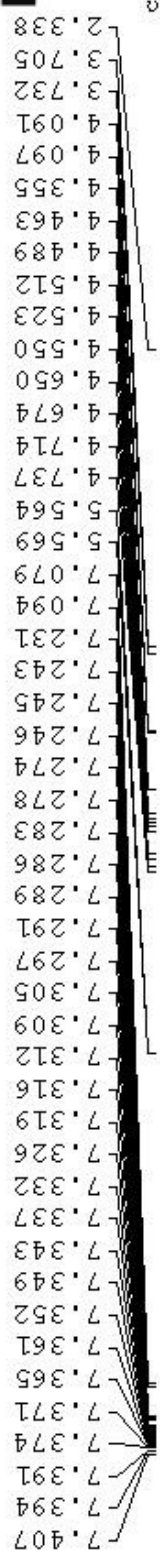
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GROUP BM
BM-DP-076 in CDCl3



Current Data Parameters
NAME BM-DP-076
EXPNO 230
PROCNO 1

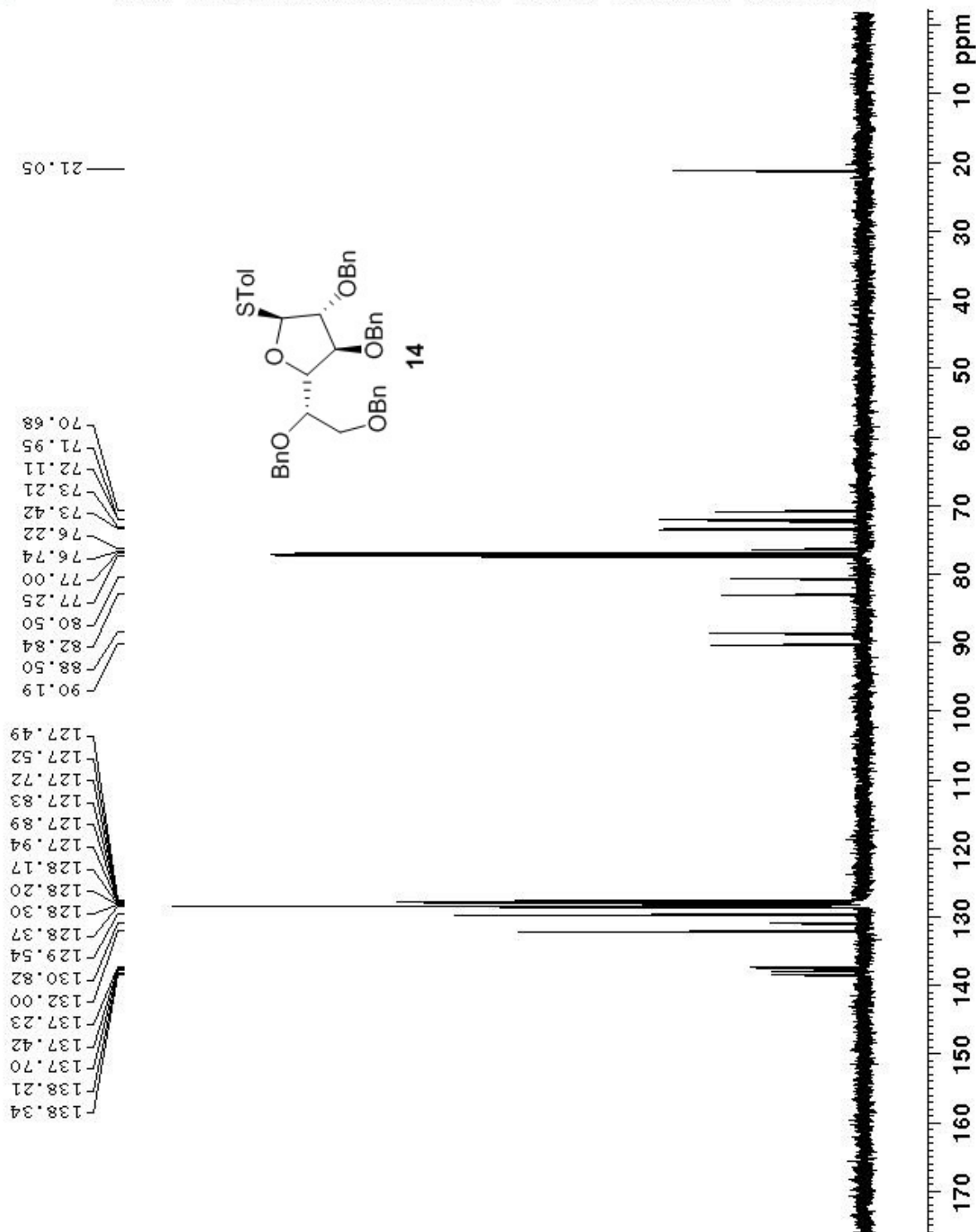
F2 - Acquisition Parameters
Date_ 20180927
Time 16.35
INSTRUM Bruker default av50
PROBHD 5 mm PABBO BB/
PULPROG zg30
ID e6560
SOLVENT CDCl3
NS 16
DS 2
SWH 10000.000 Hz
FIDRES 0.150240 Hz
AQ 3.3280001 sec
RG 45.2
DW 50.000 usec
DE 6.50 usec
TE 2237.4 K
D1 1.00000000 sec
TD0 1

----- CHANNEL f1 -----
SFO1 500.3430898 MHz
NUC1 1H
P1 17.50 usec
PLW1 10.00000000 W

F2 - Processing parameters
SI 131072
SF 500.3400186 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00



GROUP BM
BM-DP-076 in CDCl3



Current Data Parameters
NAME BM-DP-076
EXPNO 231
PROCNO 1

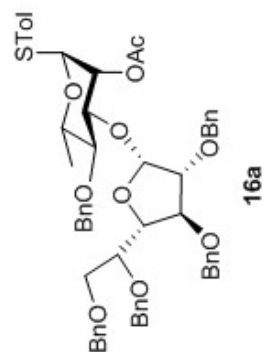
F2 - Acquisition Parameters
Date_ 20180927
Time 16.41
INSTRUM Bruker_default_ev50i
PROBHD 5 mm PABO BB/
PULPROG zgpg30
TD 65536
SOLVENT CDCl3
NS 51
DS 4
SWH 43859.648 Hz
FIDRES 0.669245 Hz
AQ 0.7471104 sec
RG 203
DM 11.400 usec
DE 6.50 usec
TE 2250.9 K
D1 2.00000000 sec
D11 0.03000000 sec
TD0 1

----- CHANNEL f1 -----
SFO1 125.8294646 MHz
NUC1 13C
P1 11.50 usec
PLW1 66.00000000 W

----- CHANNEL f2 -----
SFO2 500.2420014 MHz
NUC2 1H
PCPD2 waltz16
PCPD2 80.00 usec
PLW2 10.00000000 W
PLW12 0.47852001 W
PLW13 0.24088999 W

F2 - Processing Parameters
SI 32768
SF 125.8106059 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.10

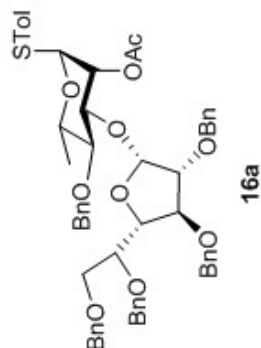
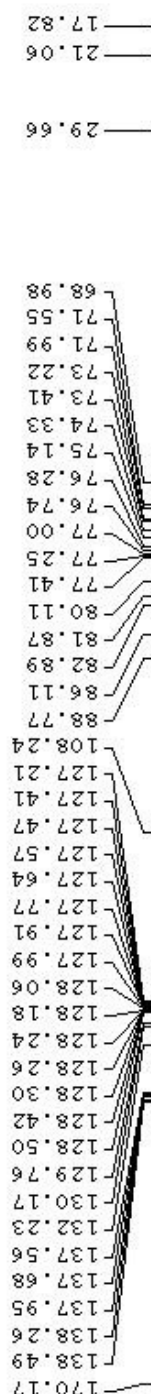
GROUP BM
BM-DP-077ALPHA in CDCl3



Current Data Parameters
NAME DI-DONOR ALPHA
EXPNO 240
PROCNO 1
F2 - Acquisition Parameters
Date_ 20180927
Time 17.02
INSTRUM Bruker.default_av500
PROBHD 5 mm PABBO BB/
PULPROG zgpg30
ID C6360
SOLVENT CDCl3
NS 16
DS 2
SWH 10000.000 Hz
FIDRES 0.150240 Hz
AQ 5.3280001 sec
RG 80.6
DQ 50.000 usec
DE 6.20 usec
TE 2229.3 K
D1 1.00000000 sec
ID0 1
CHANNEL f1
SFOL 500.843098 MHz
NUC1 1H
P1 17.50 usec
PL1 10.00000000 W
F2 - Processing parameters
SI 131072
SF 500.8400277 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00



GROUP BM
BM-DP-077ALPHA in CDCl3



Current Data Parameters
NAME DI-DONOR ALPHA
EXPNO 241
PROCNO 1

F2 - Acquisition Parameters
Date_ 20180927
Time 17.05
INSTRUM Bruker default_av500
PROBHD 5 mm PABBO BB/
PULPROG zgpg30
ID 65536
SOLVENT CDCl3
NS 136
DS 4
SWH 43859.648 Hz
FIDRES 0.669245 Hz
AQ 0.7471104 sec
RG 203
DW 11.400 usec
DE 6.50 usec
IE 2260.0 K
D1 2.00000000 sec
D11 0.03000000 sec
TD0 1

CHANNEL f1
SFO1 125.8294646 MHz
NUC1 13C
P1 11.50 usec
PLW1 66.00000000 W

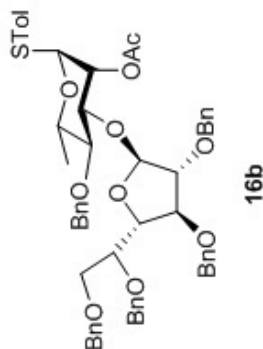
CHANNEL f2
SFO2 500.3420014 MHz
NUC2 1H
PCPD2 waltz16
PCPD2 80.00 usec
PLW2 10.00000000 W
PLW12 0.47852001 W
PLW13 0.24068999 W

F2 - Processing parameters
SI 32768
SF 125.8106004 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.10

GROUP BM
BM-DP-077BETA in CDCl3



7.400
7.387
7.376
7.373
7.361
7.348
7.307
7.304
7.301
7.292
7.276
7.268
7.264
7.252
7.250
7.236
7.232
7.227
7.224
7.221
7.216
7.211
7.210
7.206
7.200
7.197
7.193
7.191
7.179
7.175
7.080
5.290
5.287
4.681
4.652
4.647
4.458
4.435
4.301
4.289
2.292
1.910
1.261
1.248

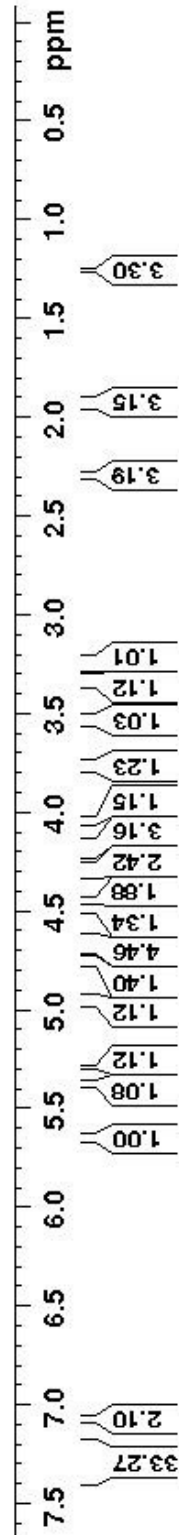


Current Data Parameters
NAME DI-DONOR BETA
EXPNO 250
PROCNO 1

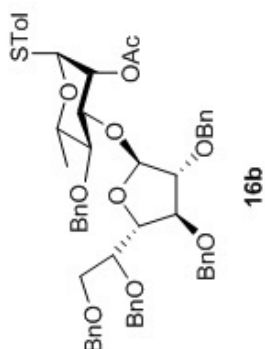
F2 - Acquisition Parameters
Date_ 20180927
Time 17.31
INSTRUM Bruker_default_av500
PROBHD 5 mm PABBO BB/
PULPROG zg30
ID 66560
SOLVENT CDCl3
NS 16
DS 2
SWH 10000.000 Hz
FIDRES 0.150240 Hz
AQ 3.3280001 sec
RG 80.6
DW 50.000 usec
DE 6.50 usec
TE 2238.3 K
D1 1.00000000 sec
TD0 1

----- CHANNEL f1 -----
SFO1 500.3430898 MHz
NUC1 1H
P1 17.50 usec
PLW1 10.00000000 W

F2 - Processing parameters
SI 131072
SF 500.3400277 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00



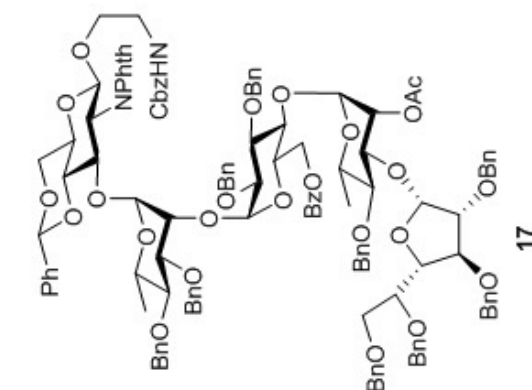
GROUP BM
BM-DP-077BETA in CDCl3



Current Data Parameters
NAME DI-DONOR BETA
EXPNO 251
PROCNO 1
F2 - Acquisition Parameters
Date_ 20180927
Time 17.35
INSTRUM spect
PROBHD 5 mm PABO BB/
PULPROG zgpg30
TD 65536
FIDRES 0.3536
SOLVENT CDCl3
NS 368
DS 4
SWH 43839.648 Hz
FIDRES 0.669245 Hz
AQ 0.7471104 sec
RG 203
DC 11.400 uV
DE 6.50 uV
TE 2277.6 K
D1 2.00000000 sec
D11 0.02000000 sec
TD0 1
----- CHANNEL f1 -----
STO1 125.829466 MHz
NUC1 13C
P1 11.50 uV
PLW1 66.00000000 W
----- CHANNEL f2 -----
STO2 500.3020010 MHz
NUC2 1H
P2 1.00 uV
PLW2 10.00000000 W
PLW12 0.4752001 W
PLW13 0.2406899 W
F2 - Processing parameters
SI 32768
SF 125.810577 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.10



GROUP BM
BM-DP-079PENTA in CDCl3



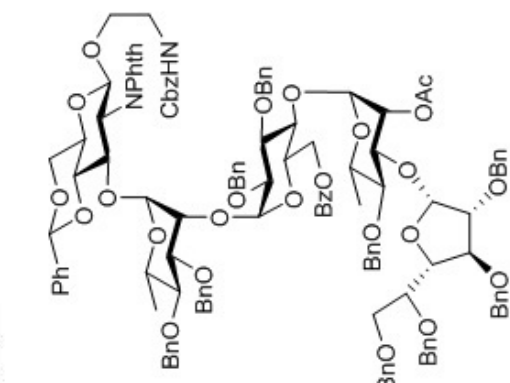
Current Data Parameters
NAME PENTA PROTECTED
EXPNO 290
PROCNO 1

F2 - Acquisition Parameters
Date_ 20180927
Time 18.43
INSTRUM Bruker default av50
PROBHD 5 mm PABBO BB/
PULPROG zg30
ID 66560
SOLVENT CDCl3
NS 16
DS 2
SWH 10000.000 Hz
FIDRES 0.150240 Hz
AQ 3.3280001 sec
RG 50.8
DW 50.000 usec
DE 6.50 usec
TE 2286.4 K
D1 1.00000000 sec
TD0 1

----- CHANNEL f1 -----
SF01 500.3430898 MHz
NUC1 1H
P1 17.50 usec
PLW1 10.00000000 W

F2 - Processing parameters
SI 131072
SF 500.3400632 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00

GROUP BM
BM-DP-079PENTA in CDCl3



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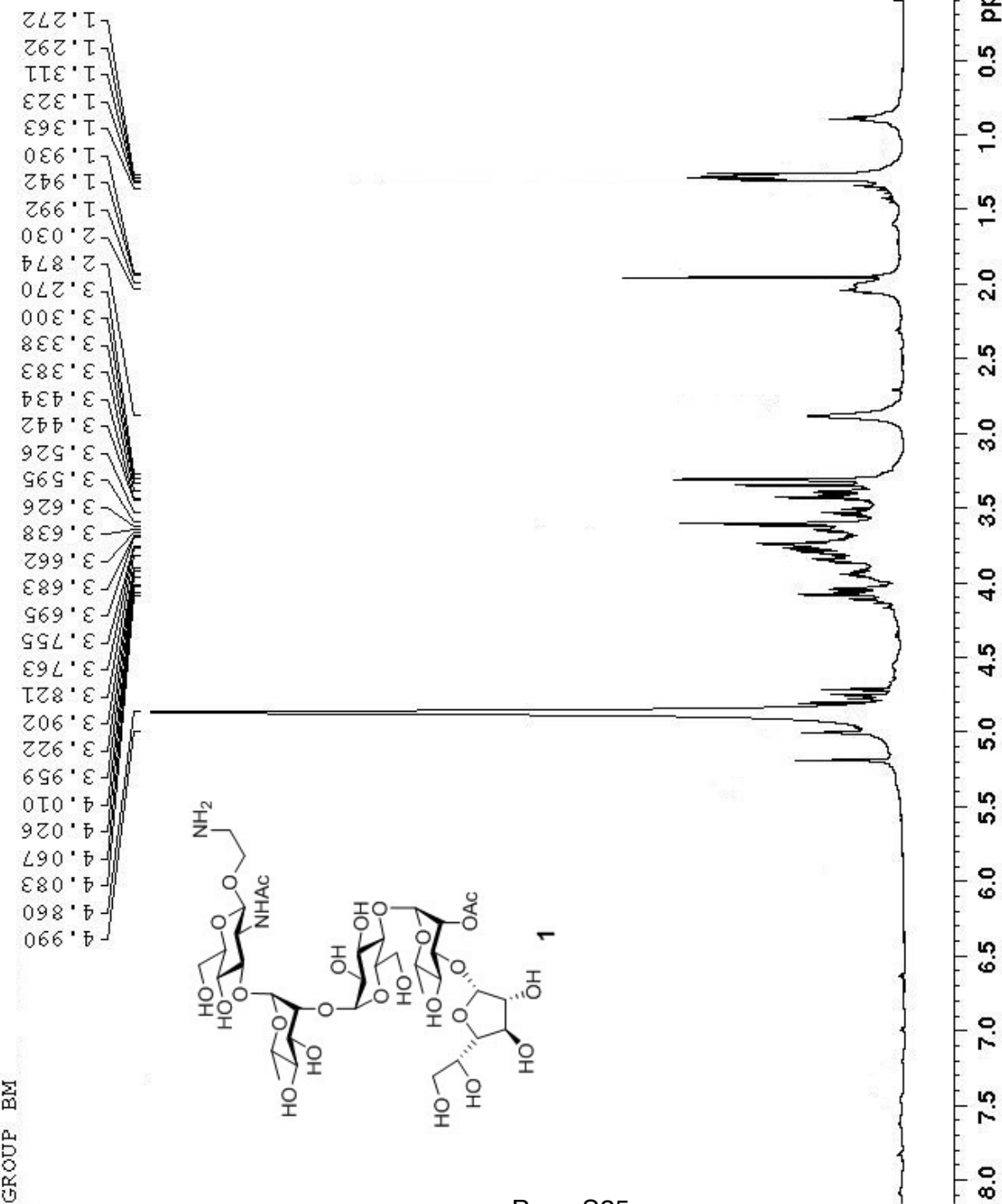
Current Data Parameters
NAME PENTA PROTECTED
EXPNO 273
PROCNO 1

F2 - Acquisition Parameters
Date_ 20180727
Time 19.10
INSTRUM spect
PROBHD 5 mm F400 BBO
PULPROG zgpg30
TD 65536
FIDRES 0.4752001 Hz
AQ 0.7971104 sec
RG 203
DQ 11.400 usec
DE 6.50 usec
TE 223.2 K
D1 2.00000000 sec
O11 0.03000000 sec
TD0 1

----- CHANNEL f1 -----
STO1 125.824646 MHz
NUC1 13C
P1 11.50 usec
PL1 66.00000000 W

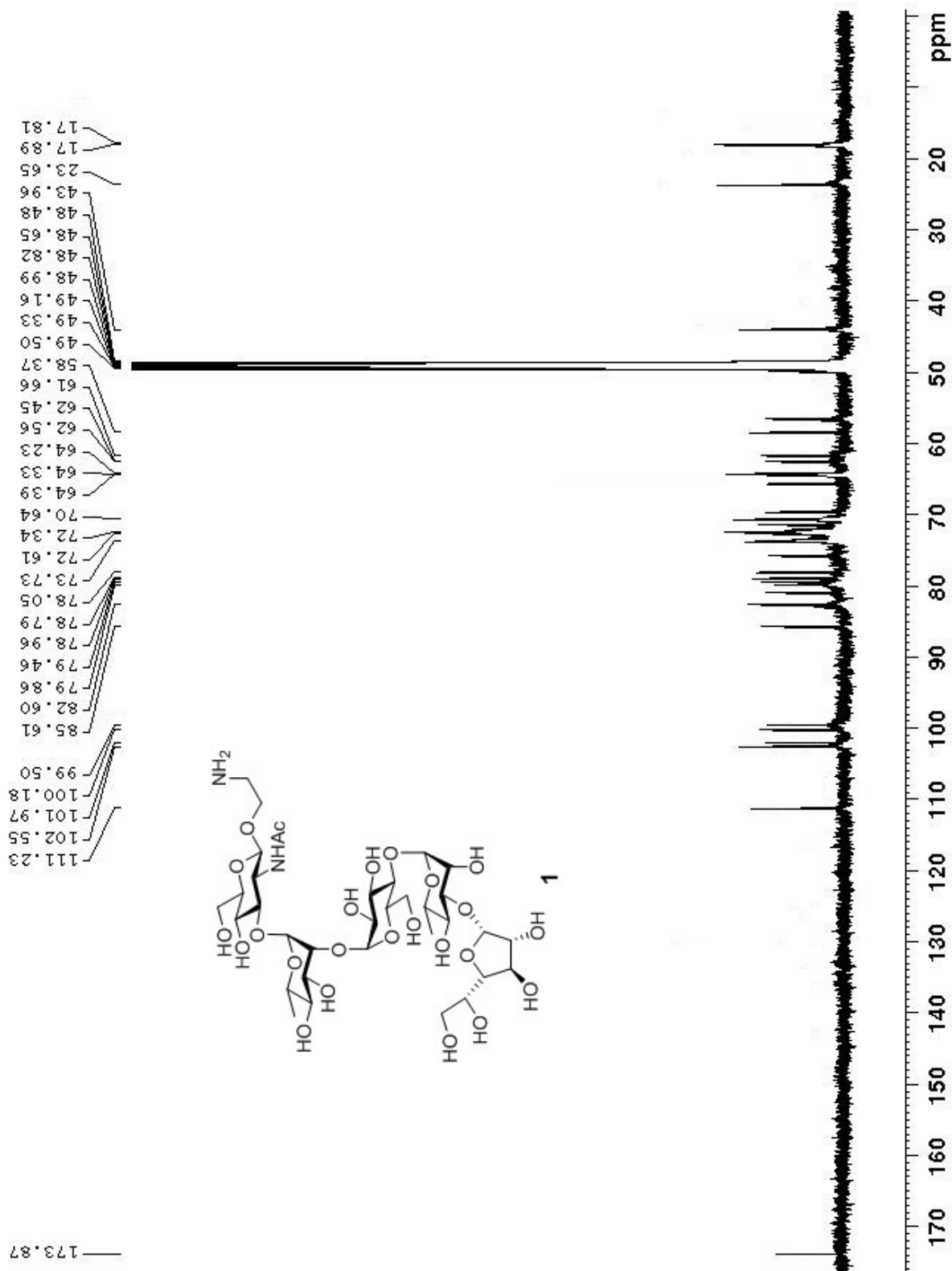
----- CHANNEL f2 -----
STO2 500.320014 MHz
NUC2 1H
P2 18.00 usec
PL2 10.00000000 W
PL12 0.4752001 W
PL13 0.4752001 W

F2 - Processing parameters
SI 32768
SF 125.810626 MHz
WDW 0
SSB 0
LB 1.00 Hz
GB 0
PC 1.10





GROUP BM
BM-DP-090 in CD3OD



Current Data Parameters
NAME BM-DP-090
EXPNO 170
PROCNO 1

F2 - Acquisition Parameters
Date_ 20181127
Time 16.49
INSTRUM spect
PROBHD 5 mm PABO BB/
PULPROG zgpg30
TD 65536
SOLVENT NaOD
NS 20000
DS 4
SWH 43859.648 Hz
FIDRES 0.668245 Hz
AQ 0.7471104 sec
RG 203
DQ 11.400 usec
DE 6.50 usec
TE 282.2 K
D1 2.00000000 sec
D11 0.03000000 sec
TD0 1

===== CHANNEL f1 =====
NUC1 125.8274000 MHz
P1 150
PL 11.50 usec
FLM1 66.00000000 W

===== CHANNEL f2 =====
NUC2 500.3020010 MHz
P2 1A
PL 1A
PCPD2 10.00000000 W
PLM2 0.47552001 W
PLM3 0.24068222 W

F2 - Processing parameters
SI 32768
ST 125.8100236 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40