

Supporting Information

Medium-sized Heterocycle Synthesis by the Use of Synergistic Effects of Ni-NHC and γ -Coordination in Cycloisomerization.

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NMR Spectra of the New Cycloisomerization Products in Scheme 1

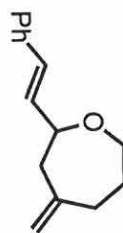
NMR Spectra of **7q** in Scheme 1 S2-7

NMR Spectra of **7r** in Scheme 1 S8-13

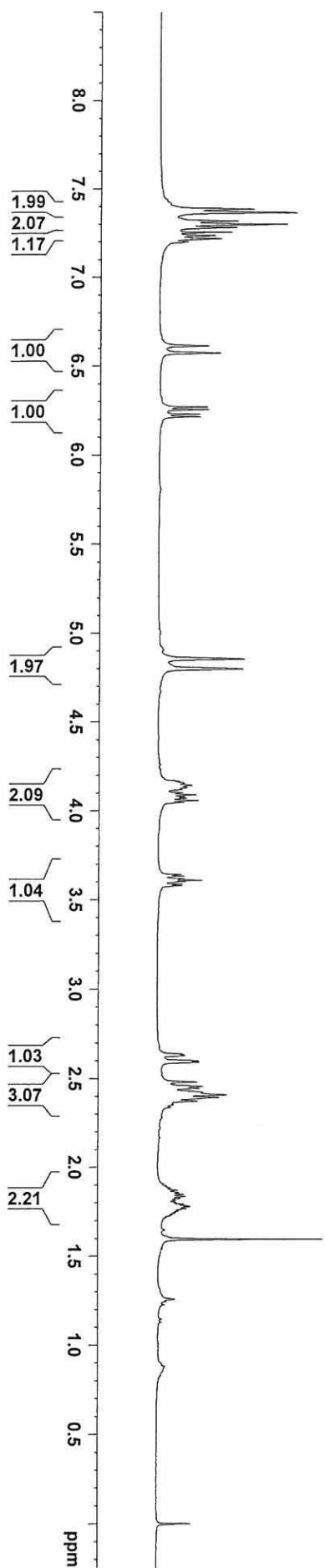
NMR Spectra of **7s** in Scheme 1 S14-19

NAME 15_135 cin t55-56
 EXTNO 1
 PROCNO 1
 Date 20120316
 Time 21.17
 INSTRUM spect
 PROBD 5 mm PABBI 1H/
 PULPROG zg30
 TD 65536
 SOLVENT CDCl3
 NS 3
 DS 0
 SWH 8223.685 Hz
 FIDRES 0.125483 Hz
 AQ 3.9846387 sec
 RG 45.2
 DW 60.800 usec
 DE 6.50 usec
 TE 295.1 K
 D1 2.00000000 sec
 TDO 1

===== CHANNEL f1 =====
 NUC1 1H
 P1 7.10 usec
 PL1 -2.00 dB
 PL1W 13.1734718 W
 SFO1 400.1324710 MHz
 SI 32768
 SF 400.1300124 MHz
 WDW EM
 SSB 0
 LB 0.30 Hz
 GB 0
 PC 1.00



Scheme 1, 7q

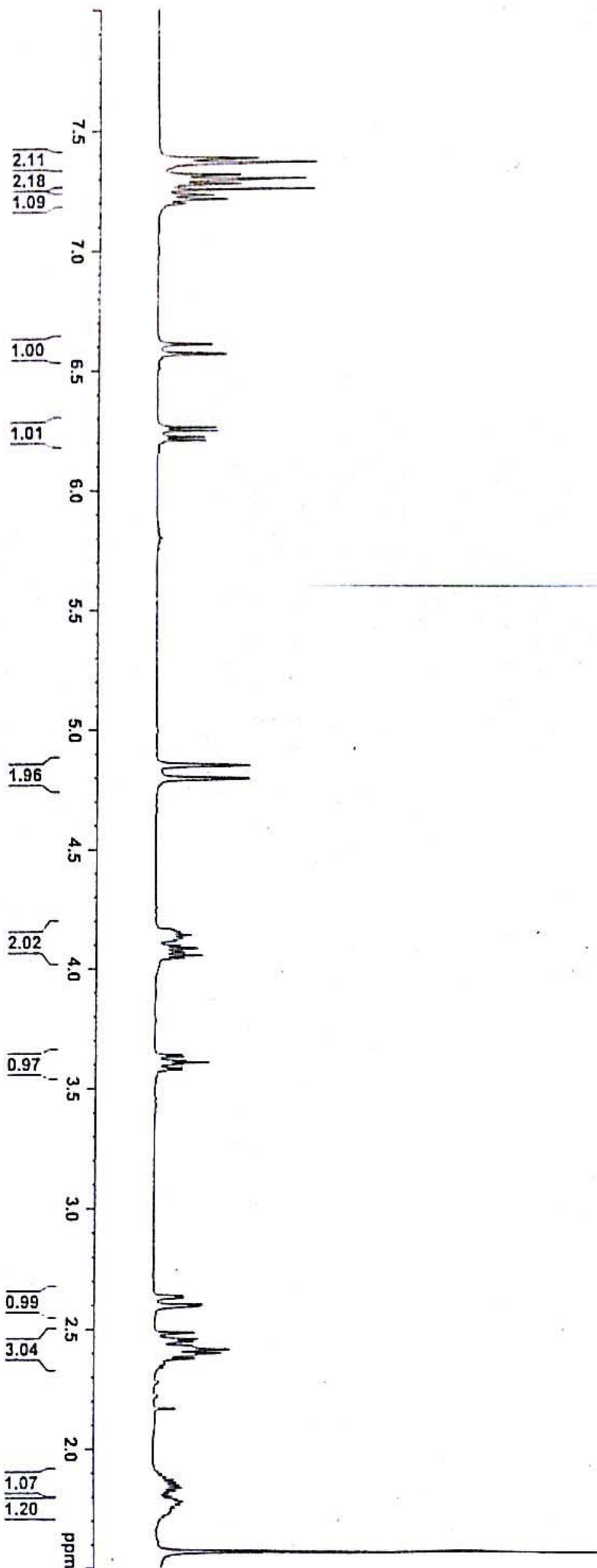


NAME 15_135 c1m t55-56
 EXPNO 111
 PROCNO 1
 Date_ 20120319
 Time_ 10.35
 INSTRUM spect
 PROBRD 5 mm PABBI 1H/
 PULPROG zg30
 TD 65536
 SOLVENT CDCl3
 NS 4
 DS 0
 SWH 8223.685 Hz
 FIDRES 0.125481 Hz
 AQ 3.9846387 sec
 RG 128
 TW 60.800 usec
 DE 6.50 usec
 TE 299.5 K
 D1 2.00000000 sec
 TDO 1

----- CHANNEL f1 -----
 NUC1 1H
 P1 7.10 usec
 PL1 -2.00 dB
 PL1W 13.17734716 W
 SFO1 400.1324710 MHz
 SI 32768
 SF 400.1300124 MHz
 WDW EM
 SCA 0
 LB 0.30 Hz
 GB 0
 PC 1.00



Scheme 1, 7q





NAME 15_135 c1m 155-56
EXPNO 2
PROCNO 1
Date_ 20120316
Time 21.20
INSTRUM spect
PULPROG 5 mm PASP1 1H/
TD 409630
FIDRES 65536
SOLVENT CDCl3
NS 54
DS 4
SWH 24038.461 Hz
FIDRES 0.366796 Hz
AQ 1.3831988 sec
RG 203
IM 20.800 usec
TE 295.3 K
D1 2.00000000 sec
D11 0.03000000 sec
TD0 1

----- CHANNEL f1 -----
NUC1 13C
P1 14.50 usec
PL1 -4.00 dB
PL1W 90.22689819 W
SFO1 100.6282296 MHz

----- CHANNEL f2 -----
CPDPRG2 waltz16
NUC2 1H
PCPD2 50.00 usec
PL2 -2.00 dB
PL2W 20.08 dB
EL2 22.00 dB
PL3W 13.17731718 W
PL12W 0.06200268 W
PL13W 0.05245991 W
SFO2 400.1316005 MHz
SI 32768
SF 100.6127574 MHz
WIM EX
LB 0
GB 1.00 Hz
PC 0
PC 1.40

147.58
137.08
130.90
129.63
128.63
127.58
126.57

113.00

Scheme 1, 7q



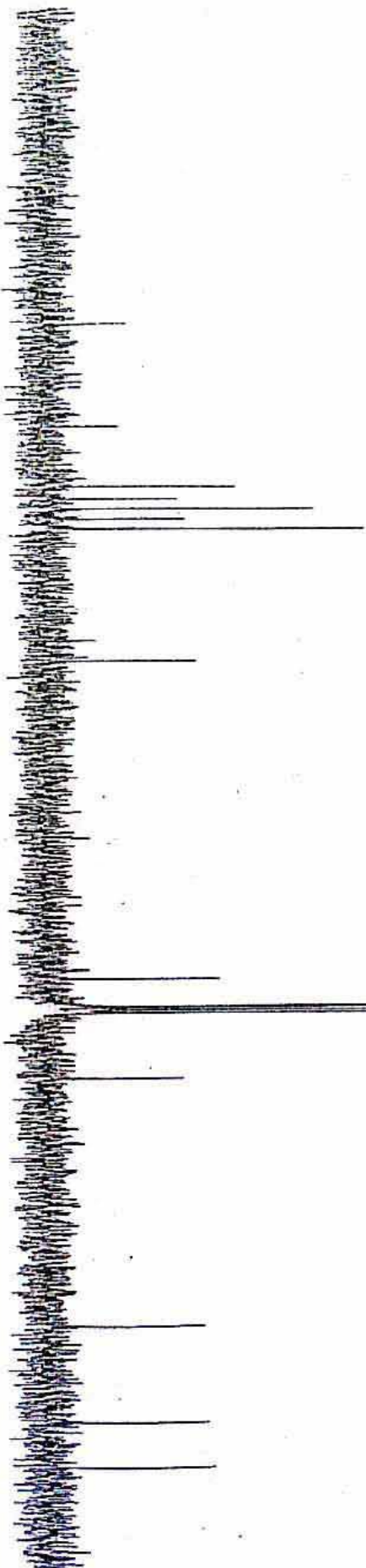
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77.47
77.16
76.84
70.11

44.72

34.89

30.31

175 170 165 160 155 150 145 140 135 130 125 120 115 110 105 100 95 90 85 80 75 70 65 60 55 50 45 40 35 30 ppm





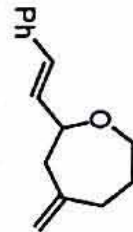
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EXPNO 1
PROCNO 1
Date_ 20120316
Time 21:24
INSTRUM spect
PROBHD 5 mm PABBI 1H/
PULPROG zgpg30
TE 300.2
SOLVENT CDCl3
NS 15
DS 2
SWH 24039.411 Hz
FIDRES 0.366198 Hz
AQ 1.3631956 sec
RG 263
FW 20.800 usec
TE 295.2 K
CHST2 145.0000000
C1 2.00000000 sec
C2 0.00344838 sec
D12 0.00002000 sec
TD0 1

===== CHANNEL f1 =====
NUC1 13C
P1 14.50 usec
P2 29.00 usec
PL1 -4.00 dB
PL1W 90.22609819 W
SFO1 100.6228298 MHz

===== CHANNEL f2 =====
CPDPRG2 waltz16
NUC2 1H
P3 7.10 usec
P4 14.20 usec
PCPD2 50.00 usec
PL3 -2.00 dB
PL12 0.00 dB
PL1W 13.41734715 W

130.89
129.62
128.63
127.58
126.56

113.00



Scheme 1, 7q

80.30

70.11

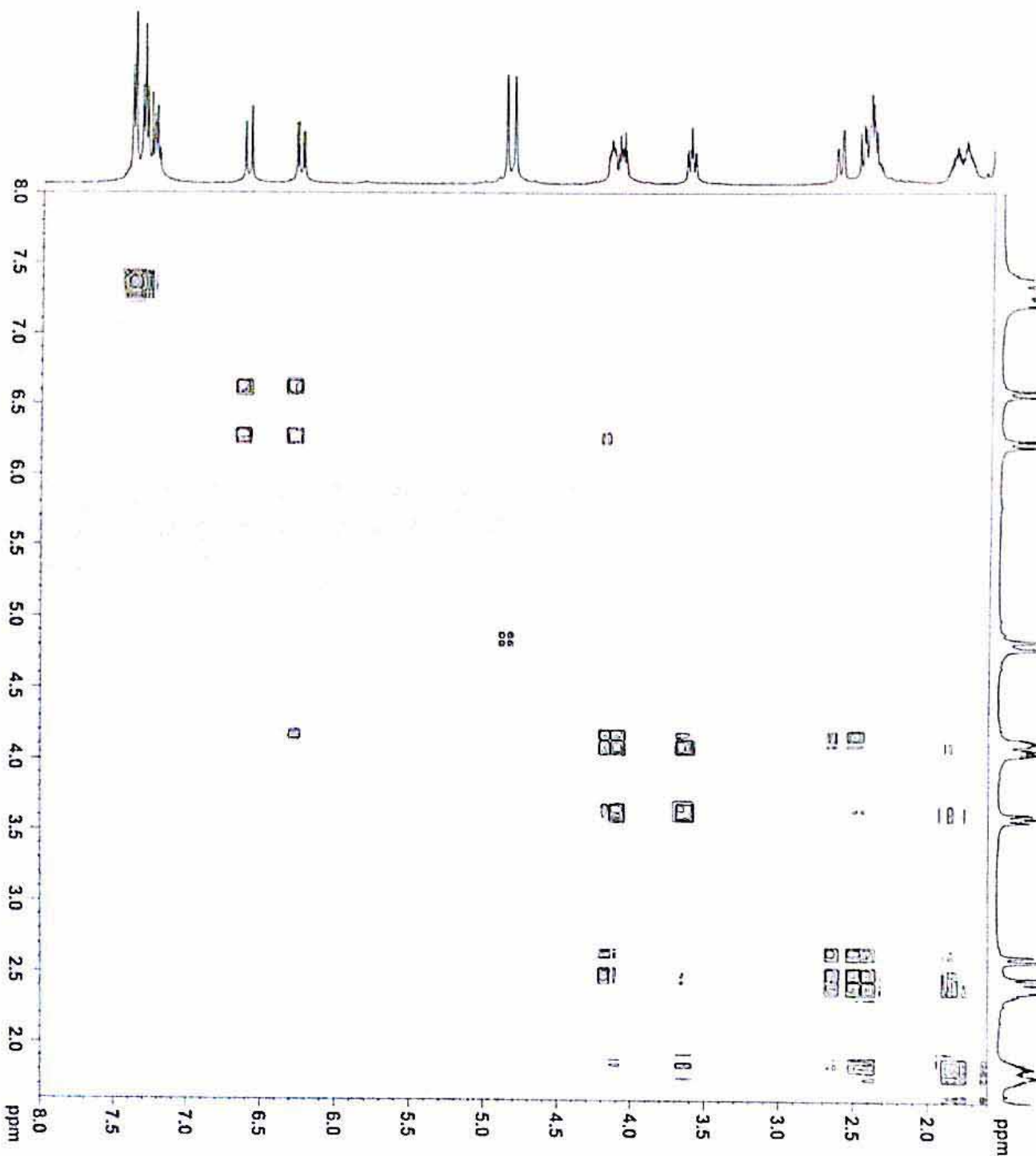
44.71

34.88

30.31



175 170 165 160 155 150 145 140 135 130 125 120 115 110 105 100 95 90 85 80 75 70 65 60 55 50 45 40 35 30 ppm



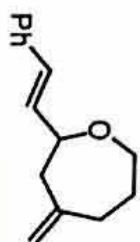
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NAME          15_135 cinn t55-56
EXPNO         1
PROCNO        1
Date_         20120316
Time          21.26
INSTRUM       spect
PROBHD        5 mm PABBI 1H/
PULPROG       zgpg30
TD            2048
SOLVENT       CDCl3
NS            4
DS            8
SWH           5341.880 Hz
FIDRES        2.608340 Hz
AQ            0.1917428 sec
RG            203
DE            6.50 usec
DM            295.1 K
TE            295.1 K
D0            0.00000300 sec
D1            2.00000000 sec
D13           0.00000400 sec
D16           0.00020000 sec
IN0           0.00018720 sec

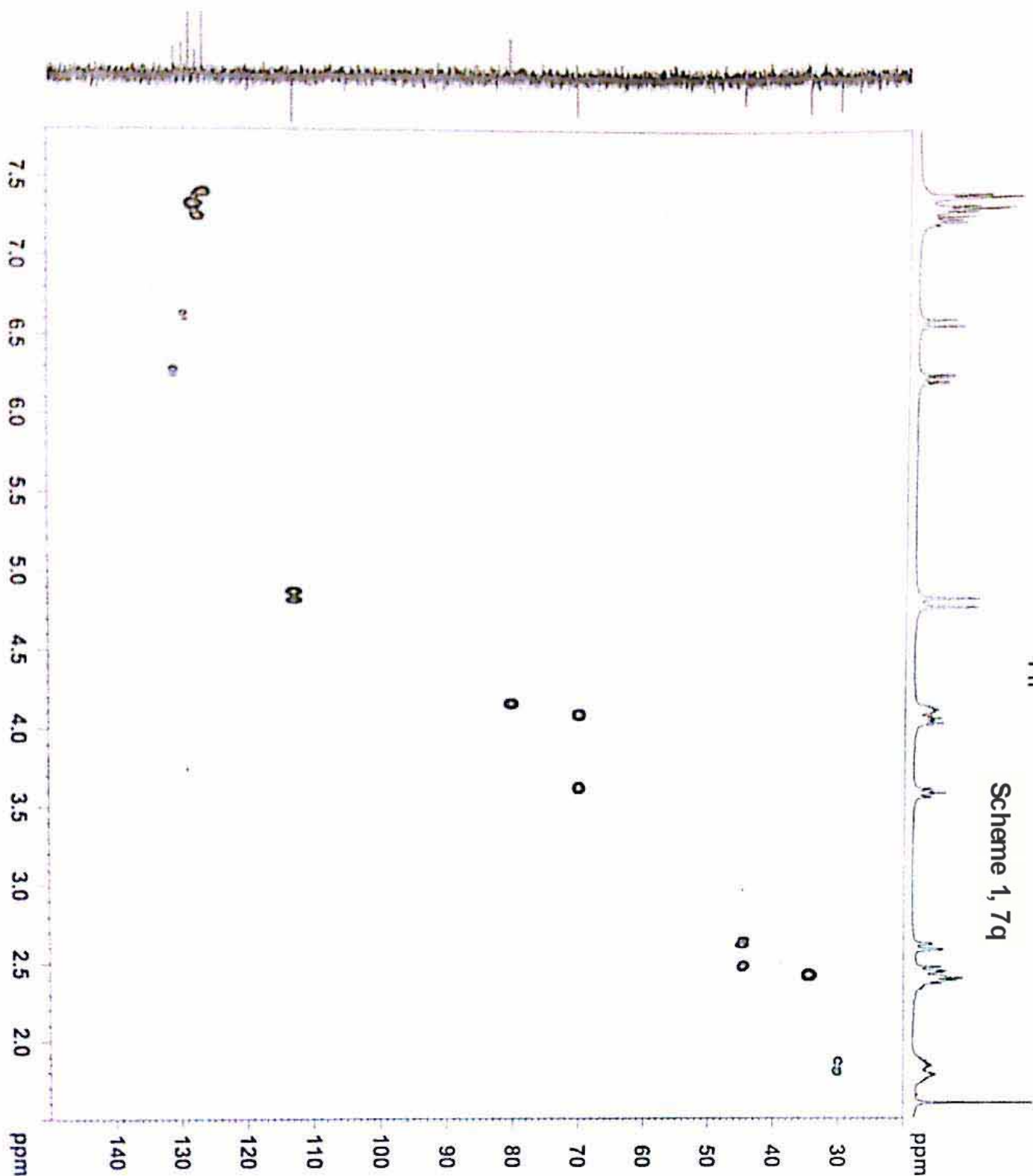
===== CHANNEL f1 =====
NUC1           1H
P1             7.10 usec
PL1           -2.00 dB
P11M          13.17734718 W
SFO1          400.1324957 MHz

===== GRADIENT CHANNEL =====
GENAM1        SINE.100
GENAM2        SINE.100
GENAM3        SINE.100
GPZ1          16.00 %
GPZ2          12.00 %
GPZ3          40.00 %
P16           1000.00 usec
MD0           1
TD            17
SFO1          400.1324 MHz
FIDRES        314.228241 Hz
SW            13.350 ppm
FMODE         OF
SI            1024
SF            400.1300000 MHz
MAG           0
SSB           0
LB            0.00 Hz
GB            0
FC            1.00
SI            1024
MC2           OF
SF            400.1300000 MHz
WDW           SINE
SSB           0
LB            0.00 Hz
GB            0

```

Scheme 1, 7q



BRUKER

S7

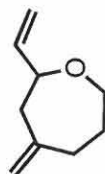
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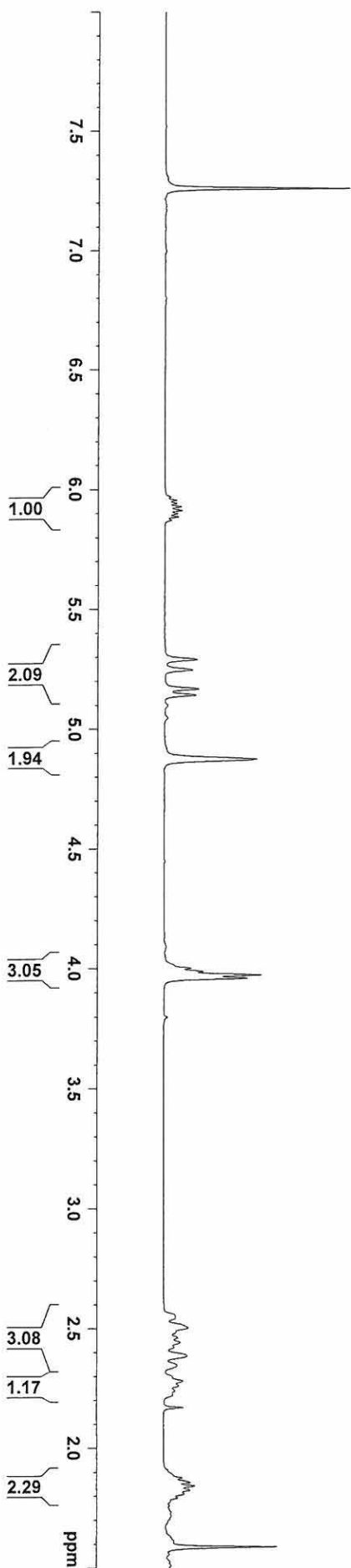
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EXPNO     1
PROCNO    1
Date_     20120418
Time      16.53
INSTRUM   spect
PROBHD    5 mm PABBO BB-
PULPROG   zg30
TD         65536
SOLVENT   CDCl3
NS         6
DS         0
SWH        223.685 Hz
FIDRES     0.125483 Hz
AQ         3.9846387 sec
RG         45.2
DE         60.800 usec
TE         299.2 K
D1         2.00000000 sec
TDO        1

===== CHANNEL f1 =====
NUC1       1H
P1         14.00 usec
PL1        -1.00 dB
PL1W       13.56617069 W
SFO1       400.1924713 MHz
SI         32768
SF         400.1900145 MHz
WDW        EM
SSB        0
LB         0.30 Hz
GB         0
PC         1.00

```

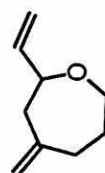


Scheme 1, 7r

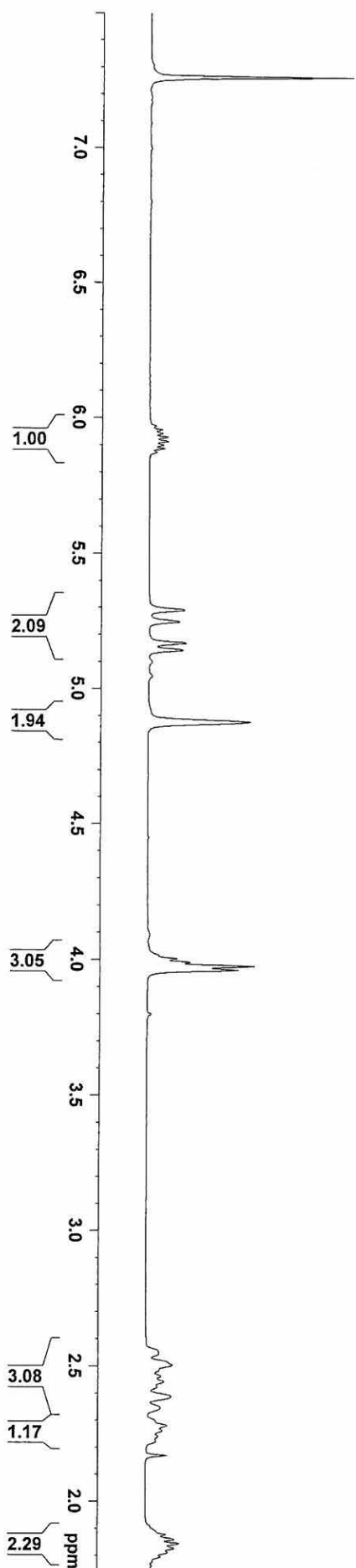


NAME 15_150 t39-41
 EXPNO 1
 PROCNO 1
 Date_ 20120418
 Time 16.53
 INSTRUM spect
 PROBD 5 mm PABBO BB-
 PULPROG zg30
 TD 65536
 SOLVENT CDCl3
 NS 6
 DS 0
 SWH 8223.685 Hz
 FIDRES 0.125483 Hz
 AQ 3.9846377 sec
 RG 45.2
 DW 60.800 usec
 DE 6.50 usec
 TE 299.2 K
 D1 2.00000000 sec
 TD0 1

===== CHANNEL f1 =====
 NUCL1 1H
 P1 14.00 usec
 PL1 -1.00 dB
 PL1W 13.56617069 W
 SFO1 400.1924713 MHz
 SI 32768
 SF 400.1900145 MHz
 WF 0
 WDW EM
 SSB 0
 LB 0.30 Hz
 GB 0
 PC 1.00



Scheme 1, 7r





NAME 15-120-139-41
 EXCHG 1
 FREQ 20120418
 TIME 17:01
 INSTRUM spect
 PROBRD 5 mm SPMQ 80-
 PULPROG zgpg30
 TO 65.36
 SOLVENT CDCl3
 NS 41
 DS 4
 SWH 24078.411 Hz
 FIDRES 0.161789 Hz
 AQ 1.581889 sec
 RG 181
 IN 20.490 dB
 DE 6.50 dB
 TE 299.2 K
 Z1 2.0000000 sec
 D11 0.1300000 sec
 TCO 1

----- CHANNEL f1 -----
 NUCL1 13C
 P1 9.90 usec
 PL1 -2.00 dB
 PL12 55.3364699 Hz
 SFO1 100.628183 MHz

----- CHANNEL f2 -----
 C1FREQ2 100.628183 MHz
 P2 99.00 usec
 PL2 -2.00 dB
 PL17 15.18 dB
 PL18 18.67 dB
 PL19 13.5617289 MHz
 PL20 0.32846396 MHz
 PL21 0.1400684 MHz
 SFO2 400.1418018 MHz
 ST 32.745
 SF 100.628183 MHz
 NTM 10
 DS 4
 SS 0
 LE 1.00 Hz
 CM 0
 PC 1.40

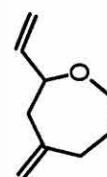
149.99

135.39

116.72

106.56

Scheme 1, 7r



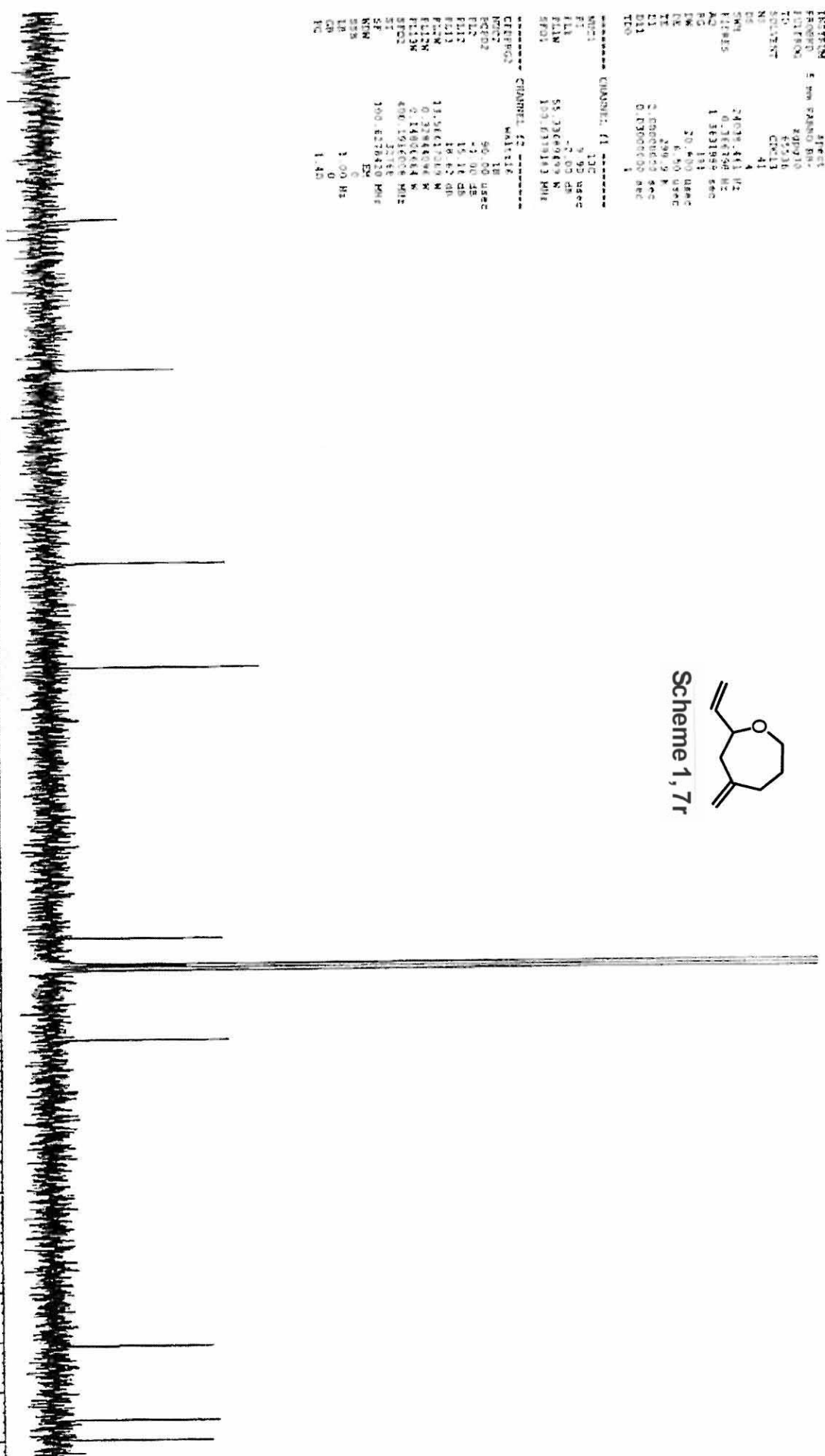
79.99
 77.48
 77.16
 76.84

69.96

39.58

32.15
 30.16

165 160 155 150 145 140 135 130 125 120 115 110 105 100 95 90 85 80 75 70 65 60 55 50 45 40 35 ppm





NAME 15-110-039-01
 EXTEND 30
 PROTON 1
 DATE 20170418
 TIME 16:48
 INSTRUM spect
 P2PROB 5 mm F400 BBO
 F2PROB 5 mm F400 BBO
 F2P1PRG zgpg30
 SOLVENT CDCl3
 NS 2
 DS 4
 SWH 24000.461 Hz
 FIDRES 0.746644 Hz
 AQ 1.161144 sec
 RG 327.68
 ZF 250.132 MHz
 F2 250.132 MHz
 F2P2 250.132 MHz
 F2P3 250.132 MHz
 F2P4 250.132 MHz
 F2P5 250.132 MHz
 F2P6 250.132 MHz
 F2P7 250.132 MHz
 F2P8 250.132 MHz
 F2P9 250.132 MHz
 F2P10 250.132 MHz
 F2P11 250.132 MHz
 F2P12 250.132 MHz
 F2P13 250.132 MHz
 F2P14 250.132 MHz
 F2P15 250.132 MHz
 F2P16 250.132 MHz
 F2P17 250.132 MHz
 F2P18 250.132 MHz
 F2P19 250.132 MHz
 F2P20 250.132 MHz
 F2P21 250.132 MHz
 F2P22 250.132 MHz
 F2P23 250.132 MHz
 F2P24 250.132 MHz
 F2P25 250.132 MHz
 F2P26 250.132 MHz
 F2P27 250.132 MHz
 F2P28 250.132 MHz
 F2P29 250.132 MHz
 F2P30 250.132 MHz
 F2P31 250.132 MHz
 F2P32 250.132 MHz
 F2P33 250.132 MHz
 F2P34 250.132 MHz
 F2P35 250.132 MHz
 F2P36 250.132 MHz
 F2P37 250.132 MHz
 F2P38 250.132 MHz
 F2P39 250.132 MHz
 F2P40 250.132 MHz
 F2P41 250.132 MHz
 F2P42 250.132 MHz
 F2P43 250.132 MHz
 F2P44 250.132 MHz
 F2P45 250.132 MHz
 F2P46 250.132 MHz
 F2P47 250.132 MHz
 F2P48 250.132 MHz
 F2P49 250.132 MHz
 F2P50 250.132 MHz
 F2P51 250.132 MHz
 F2P52 250.132 MHz
 F2P53 250.132 MHz
 F2P54 250.132 MHz
 F2P55 250.132 MHz
 F2P56 250.132 MHz
 F2P57 250.132 MHz
 F2P58 250.132 MHz
 F2P59 250.132 MHz
 F2P60 250.132 MHz
 F2P61 250.132 MHz
 F2P62 250.132 MHz
 F2P63 250.132 MHz
 F2P64 250.132 MHz
 F2P65 250.132 MHz
 F2P66 250.132 MHz
 F2P67 250.132 MHz
 F2P68 250.132 MHz
 F2P69 250.132 MHz
 F2P70 250.132 MHz
 F2P71 250.132 MHz
 F2P72 250.132 MHz
 F2P73 250.132 MHz
 F2P74 250.132 MHz
 F2P75 250.132 MHz
 F2P76 250.132 MHz
 F2P77 250.132 MHz
 F2P78 250.132 MHz
 F2P79 250.132 MHz
 F2P80 250.132 MHz
 F2P81 250.132 MHz
 F2P82 250.132 MHz
 F2P83 250.132 MHz
 F2P84 250.132 MHz
 F2P85 250.132 MHz
 F2P86 250.132 MHz
 F2P87 250.132 MHz
 F2P88 250.132 MHz
 F2P89 250.132 MHz
 F2P90 250.132 MHz
 F2P91 250.132 MHz
 F2P92 250.132 MHz
 F2P93 250.132 MHz
 F2P94 250.132 MHz
 F2P95 250.132 MHz
 F2P96 250.132 MHz
 F2P97 250.132 MHz
 F2P98 250.132 MHz
 F2P99 250.132 MHz
 F2P100 250.132 MHz

CHANNEL F1
 NUCL1 13C
 P1 9.00 usec
 P2 19.00 usec
 F1 125.760 MHz
 F2 125.760 MHz
 F2P1 125.760 MHz
 F2P2 125.760 MHz
 F2P3 125.760 MHz
 F2P4 125.760 MHz
 F2P5 125.760 MHz
 F2P6 125.760 MHz
 F2P7 125.760 MHz
 F2P8 125.760 MHz
 F2P9 125.760 MHz
 F2P10 125.760 MHz
 F2P11 125.760 MHz
 F2P12 125.760 MHz
 F2P13 125.760 MHz
 F2P14 125.760 MHz
 F2P15 125.760 MHz
 F2P16 125.760 MHz
 F2P17 125.760 MHz
 F2P18 125.760 MHz
 F2P19 125.760 MHz
 F2P20 125.760 MHz
 F2P21 125.760 MHz
 F2P22 125.760 MHz
 F2P23 125.760 MHz
 F2P24 125.760 MHz
 F2P25 125.760 MHz
 F2P26 125.760 MHz
 F2P27 125.760 MHz
 F2P28 125.760 MHz
 F2P29 125.760 MHz
 F2P30 125.760 MHz
 F2P31 125.760 MHz
 F2P32 125.760 MHz
 F2P33 125.760 MHz
 F2P34 125.760 MHz
 F2P35 125.760 MHz
 F2P36 125.760 MHz
 F2P37 125.760 MHz
 F2P38 125.760 MHz
 F2P39 125.760 MHz
 F2P40 125.760 MHz
 F2P41 125.760 MHz
 F2P42 125.760 MHz
 F2P43 125.760 MHz
 F2P44 125.760 MHz
 F2P45 125.760 MHz
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 F2P73 125.760 MHz
 F2P74 125.760 MHz
 F2P75 125.760 MHz
 F2P76 125.760 MHz
 F2P77 125.760 MHz
 F2P78 125.760 MHz
 F2P79 125.760 MHz
 F2P80 125.760 MHz
 F2P81 125.760 MHz
 F2P82 125.760 MHz
 F2P83 125.760 MHz
 F2P84 125.760 MHz
 F2P85 125.760 MHz
 F2P86 125.760 MHz
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 F2P89 125.760 MHz
 F2P90 125.760 MHz
 F2P91 125.760 MHz
 F2P92 125.760 MHz
 F2P93 125.760 MHz
 F2P94 125.760 MHz
 F2P95 125.760 MHz
 F2P96 125.760 MHz
 F2P97 125.760 MHz
 F2P98 125.760 MHz
 F2P99 125.760 MHz
 F2P100 125.760 MHz

NAME 15-110-039-01

EXTEND 30

PROTON 1

DATE 20170418

TIME 16:48

INSTRUM spect

P2PROB 5 mm F400 BBO

F2PROB 5 mm F400 BBO

F2P1PRG zgpg30

SOLVENT CDCl3

NS 2

DS 4

SWH 24000.461 Hz

FIDRES 0.746644 Hz

AQ 1.161144 sec

RG 327.68

ZF 250.132 MHz

F2 250.132 MHz

F2P2 250.132 MHz

F2P3 250.132 MHz

F2P4 250.132 MHz

F2P5 250.132 MHz

F2P6 250.132 MHz

F2P7 250.132 MHz

F2P8 250.132 MHz

F2P9 250.132 MHz

F2P10 250.132 MHz

F2P11 250.132 MHz

F2P12 250.132 MHz

F2P13 250.132 MHz

F2P14 250.132 MHz

F2P15 250.132 MHz

F2P16 250.132 MHz

F2P17 250.132 MHz

F2P18 250.132 MHz

F2P19 250.132 MHz

F2P20 250.132 MHz

F2P21 250.132 MHz

F2P22 250.132 MHz

F2P23 250.132 MHz

F2P24 250.132 MHz

F2P25 250.132 MHz

F2P26 250.132 MHz

F2P27 250.132 MHz

F2P28 250.132 MHz

F2P29 250.132 MHz

F2P30 250.132 MHz

F2P31 250.132 MHz

F2P32 250.132 MHz

135.39

116.73

106.56

79.99

69.96

39.58

32.16

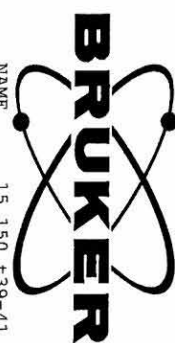
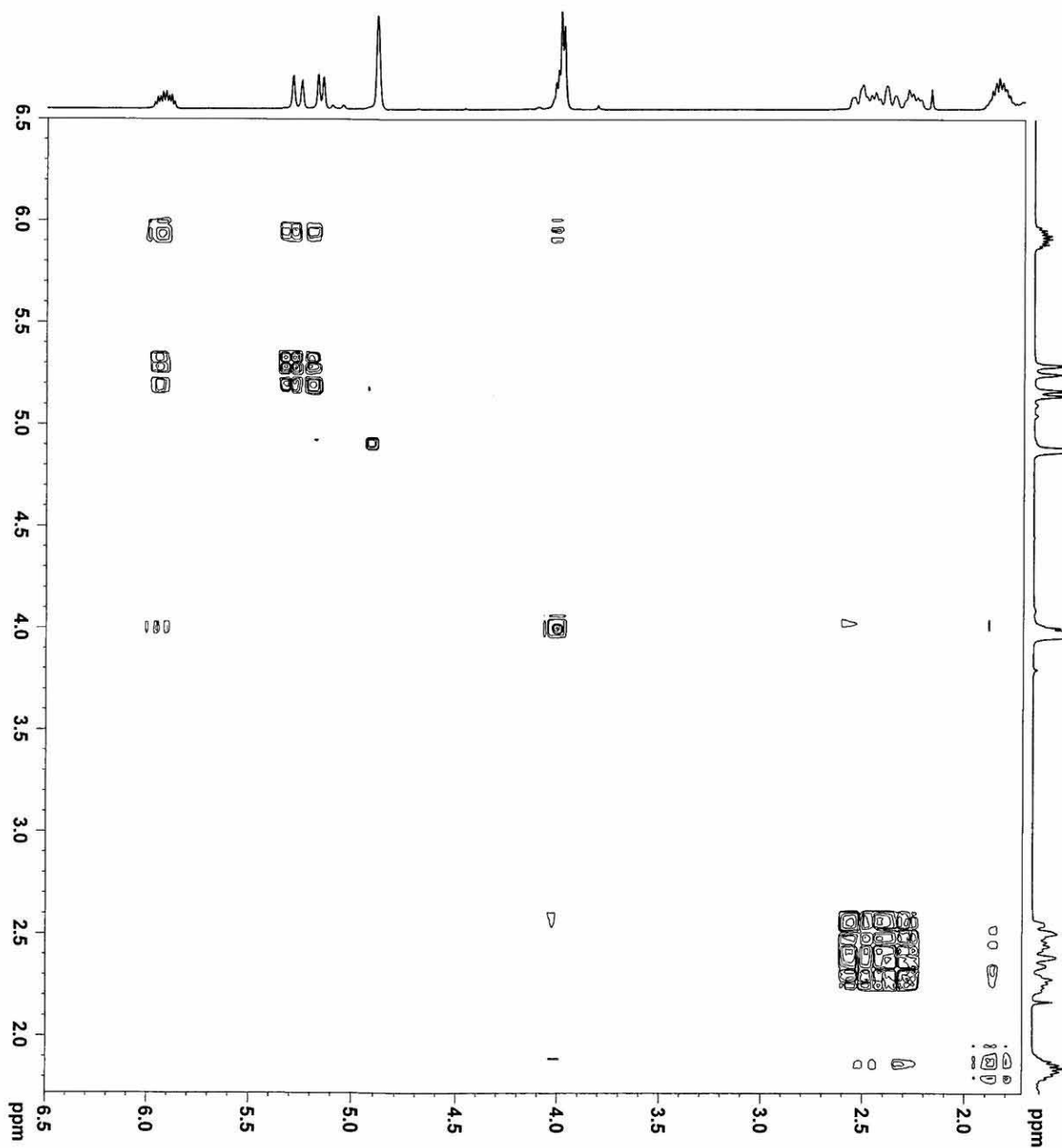
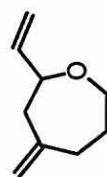
30.16



Scheme 1, 7r

155 150 145 140 135 130 125 120 115 110 105 100 95 90 85 80 75 70 65 60 55 50 45 40 35 ppm

Scheme 1, 7r



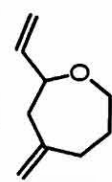
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NAME 15_150 t39-41
EXPNO 4
PROCNO 1
Date_ 20120418
Time 17.05
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG cosympuqr
TD 2048
SOLVENT CDCl3
NS 4
DS 8
SWH 5341.880 Hz
FIDRES 2.608340 Hz
AQ 0.1917428 sec
RG 2050
DE 93.600 usec
TE 299.5 K
D0 0.00000300 sec
D1 2.00000000 sec
D13 0.00000400 sec
D16 0.00020000 sec
IN0 0.00018715 sec

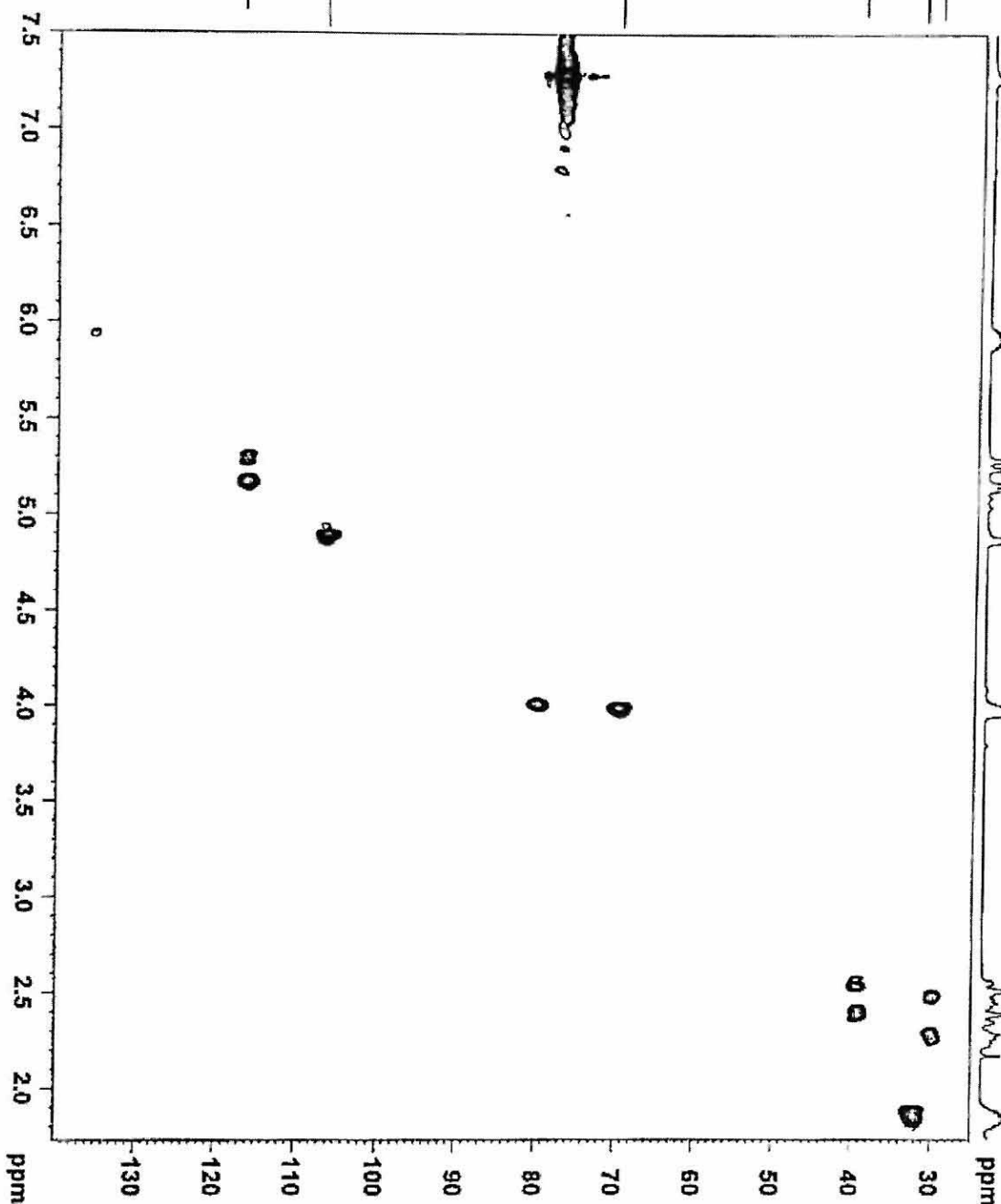
===== CHANNEL f1 =====
NUC1 1H
P1 14.00 usec
PL1 -1.00 dB
PL1W 13.56617069 W
SFO1 400.1924060 MHz

===== GRADIENT CHANNEL =====
GPNAM1 SINE.100
GPNAM2 SINE.100
GPNAM3 SINE.100
GPZ1 16.00 %
GPZ2 12.00 %
GPZ3 40.00 %
P16 1000.00 usec
ND0 1
TD 49
SFO1 400.1924 MHz
FIDRES 109.034317 Hz
SW 13.350 ppm
FMODE OF
SI 1024
SF 400.1900000 MHz
WDW SINE
SSB 0
LB 0.00 Hz
GB 0
PC 1.00
SI 1024
MC2 QF
SF 400.1900000 MHz
WDW SINE
SSB 0
LB 0.00 Hz
GB 0

```



Scheme 1, 7r



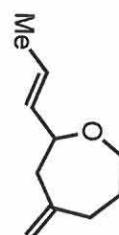
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NAME 15_150_137-11
EXPNO 55
PROCNO 1
Date_ 20120419
Time 12.43
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zgpg30
TD 131072
SOLVENT CDCl3
NO 2
DS 4
F2 5341.860 Hz
F1 5.216680 Hz
AQ 0.0958964 sec
RG 2040
RW 93.600 usec
DE 4.50 usec
TE 299.2 K
CST2 145.0000200 sec
D9 0.0000030 sec
D1 1.5000000 sec
D4 0.0172414 sec
D11 0.0100000 sec
D13 0.0000040 sec
D16 0.0002000 sec
D19 0.0003000 sec
ZD0FTNS
===== CHANNEL f1 =====
NUC1 13C
P1 14.00 usec
P2 28.00 usec
F20 0.00 usec
FL1 1.00 dB
ELW 13.5661069 MHz
STO1 400.1504050 MHz
===== CHANNEL f2 =====
CPDPRG2 zgpg
NUC2 13C
P1 9.39 usec
P2 18.78 usec
F2 19.80 usec
F20 0.00 usec
FL2 1.00 dB
FL3 1.00 dB
PL1 55.3168949 MHz
PL12 0.8123483 MHz
PL12W 100.6133609 MHz
===== GRADIENT CHANNEL =====
GPM1 SINE 100
GPM2 SINE 100
GPR1 20.00 A
GPR2 20.00 A
P16 1000.00 usec
ND0 2
TD 2
STO1 100.6133609 MHz
FIRMS 151.174643 Hz
W 165.839 pW
PUMPER Echo-Multicore
SF 400.1500000 MHz
SF 100.6133609 MHz
GB 0.00 Hz
PC 1.40
SI 1024
MC2 *echo-antico
SF 100.6133609 MHz
GB 0.00 Hz
GB 0.00 Hz

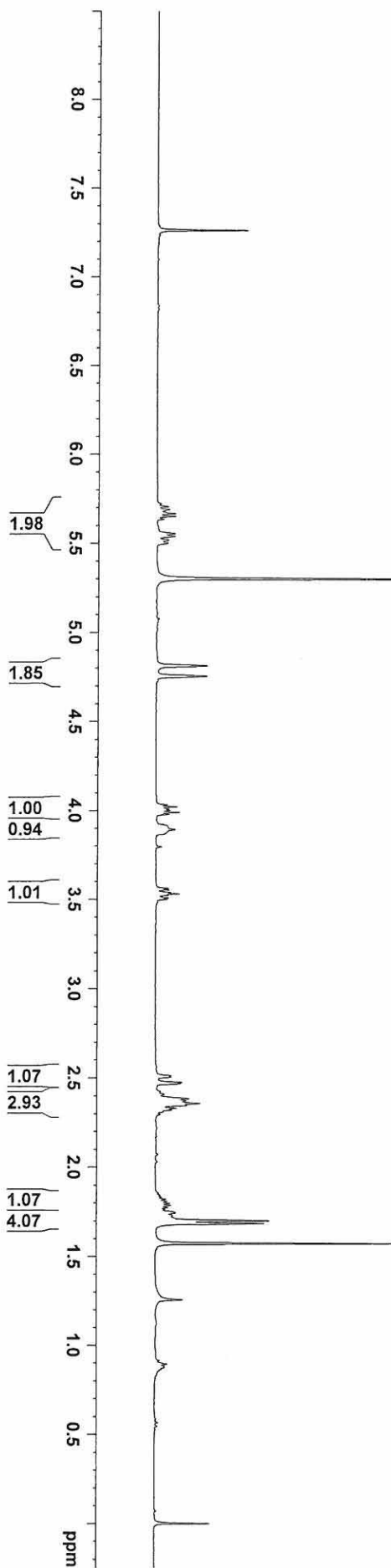
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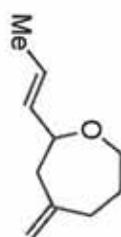
NAME 15_166 t39-40
 EXENO 1
 PROCNO 1
 Date 20120509
 Time 19.56
 INSTRUM spect
 PROBD 5 mm PABBO BB-
 PULPROG zg30
 TD 65536
 SOLVENT CDCl3
 NS 5
 DS 0
 SWH 8223.685 Hz
 FIDRES 0.125483 Hz
 AQ 3.9846387 sec
 RG 128
 DW 60.800 usec
 DE 6.50 usec
 TE 297.8 K
 D1 2.00000000 sec
 TDO 1

===== CHANNEL f1 =====
 NUCl 1H
 P1 14.00 usec
 PL1 -1.00 dB
 PL1W 13.56617069 W
 SFO1 400.1924713 MHz
 SI 32768
 SF 400.1900134 MHz
 WDW EM
 SSB 0
 LB 0.30 Hz
 GB 0
 PC 1.00

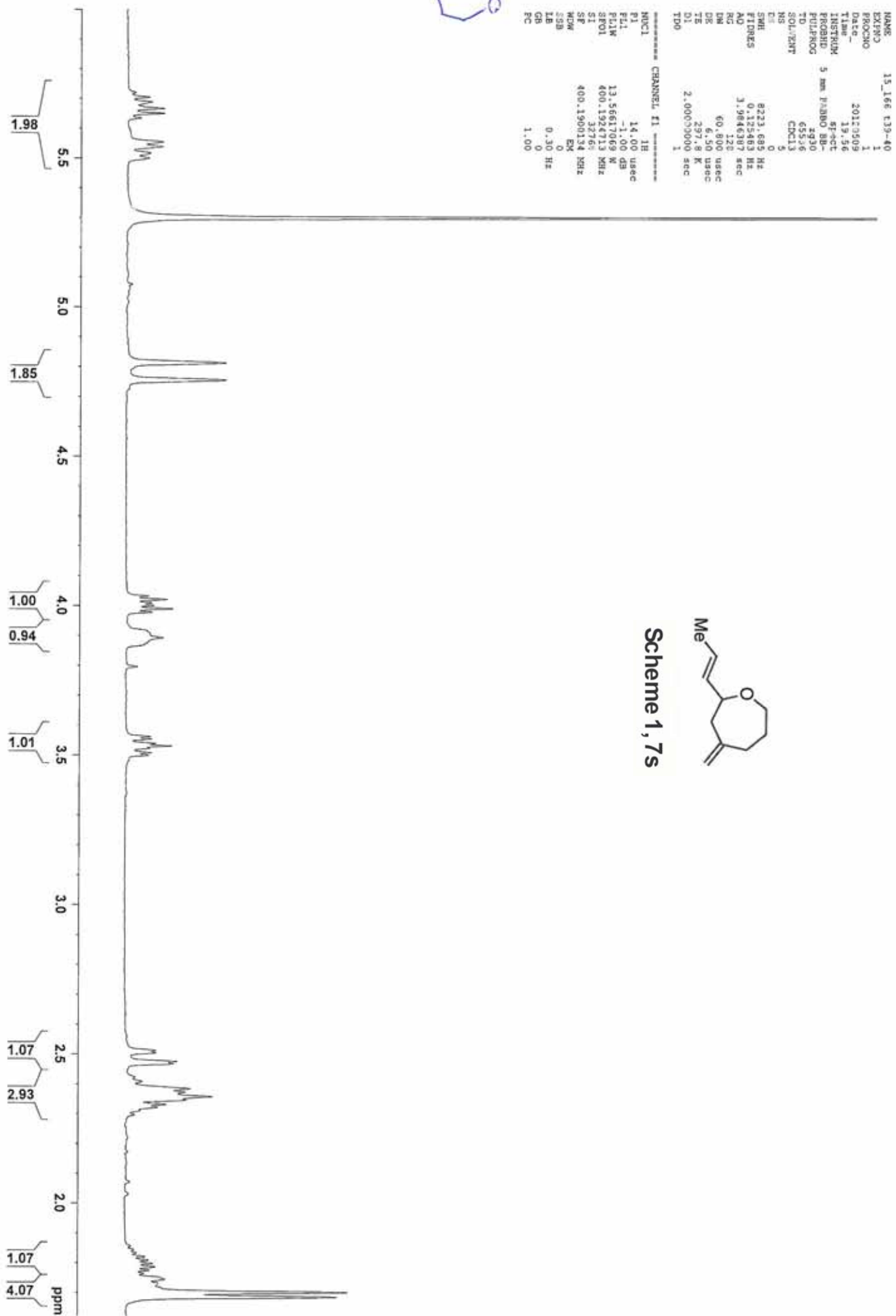


Scheme 1, 7s





Scheme 1, 7s





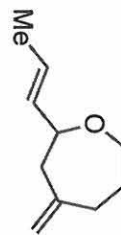
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NAME      15_166 t39-40
EXPNO     2
PROCNO    1
Date_     20120509
Time      20.06
INSTRUM   spect
PROBHD     5 mm PABBO BB-
PULPRG    zgpg30
TD         65536
SOLVENT    CDCl3
NS         91
DS         4
SWH        24038.461 Hz
FIDRES     0.366798 Hz
AQ         1.3631988 sec
RG         161
DM         20.800 usec
DE         6.50 usec
TE         298.4 K
D1         2.0000000 sec
D11        0.0300000 sec
TD0        1

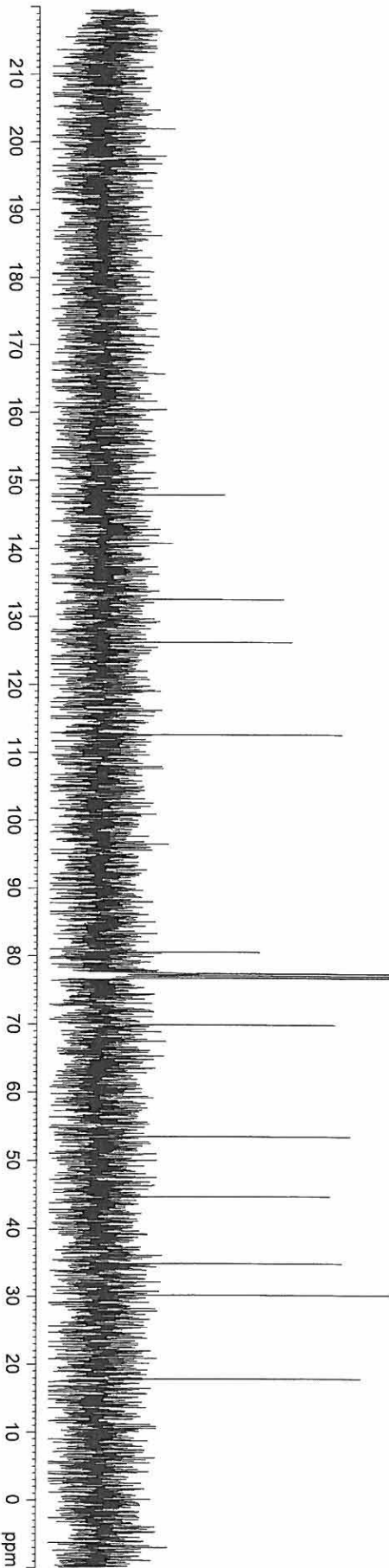
===== CHANNEL f1 =====
NUC1       13C
P1         9.90 usec
PL1        -2.00 dB
PL1W       55.33689499 W
SFO1       100.6379183 MHz

===== CHANNEL f2 =====
CPDPRG2    waltz16
NUC2       1H
PCPD2      90.00 usec
PL2        -1.00 dB
PL2W       15.16 dB
PL3        18.62 dB
PL3W       13.56617069 W
PL2W       0.32844096 W
PL3W       0.14806664 W
SFO2       400.1916008 MHz
SI         32768
SF         100.6278426 MHz
WDW        EM
SSB        0
LB         1.00 Hz
GB         0
FC         1.40
  
```

147.94
 132.59
 126.27
 112.68
 80.62
 77.48
 77.16
 76.84
 69.95
 53.57
 44.75
 34.89
 30.25
 17.91



Scheme 1, 7s

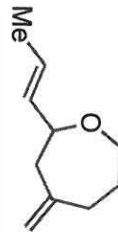




NAME 15_166 t39-40
EXENO 3
PROCNO 1
Date 20120509
Time 20.00
INSTRUM spect
PROBHD 5 mm LABBO BB-
PULPROJ depl135
TD 65536
SOLVENT CDCl3
NS 54
DS 4
SWH 24038.461 Hz
FIDRES 0.366798 Hz
AQ 1.3631988 sec
RG 2050
RG 20.800 usec
DE 6.50 usec
TE 299.1 K
CNST2 145.0000000
D1 2.00000000 sec
D2 0.00344828 sec
D12 0.00002000 sec
TD0 1

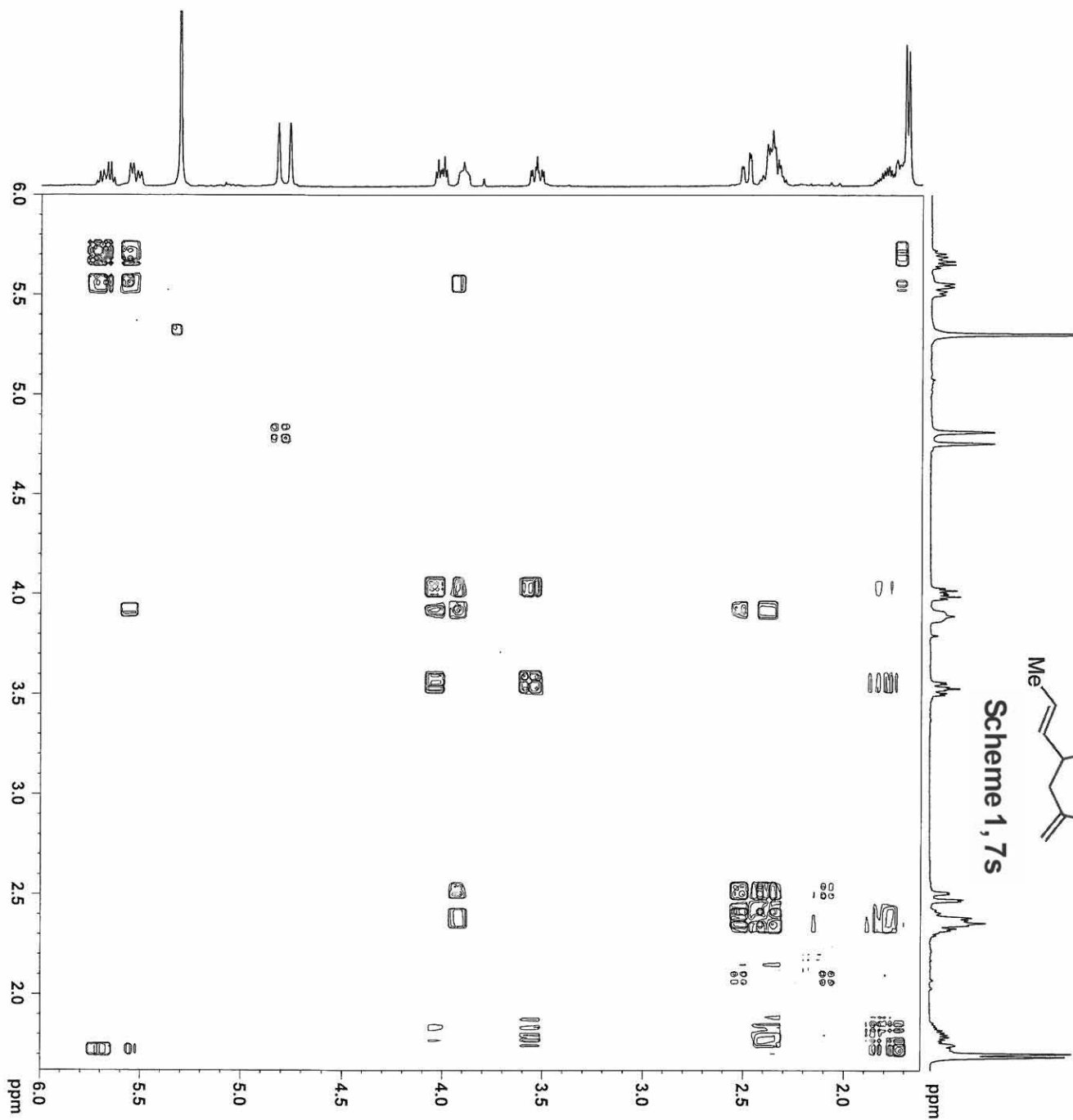
===== CHANNEL f1 =====
NUC1 13C
P1 91.90 usec
P2 19.80 usec
P3 12.00 dB
PCPRG2 waltz16
NUC2 1H
P3 14.00 usec
P4 28.00 usec
PCPD2 90.00 usec
P1 21.00 usec
P12 15.16 dB
P122 13.56617019 Hz
P122W 0.32844096 W
P122W 400.13916008 MHz
SEF2 400.1322768 MHz
SI 100.6278429 MHz
SFR 62.78429 MHz
WDM EX
SSB 0
LB 1.00 Hz
GB 0
PC 1.40

132.58
126.27
112.68
80.62
69.95
53.57
44.75
34.89
30.25
17.91



Scheme 1, 7s

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



BRUKER

NAME _____

15 166 +39-40

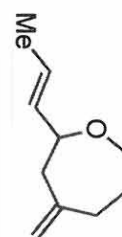
```

NAME          15_166 t39-40
EXPNO         4
PROCNO        1
Date_         20120509
Time_         20.10
INSTRUM       spect
PROBHD        5 mm PABBO BB-
PULPROG       cosygmrf
TD            248
SOLVENT       CDC13
NS            4
DS            4
SWH           5341.880 Hz
FIDRES       2.608340 Hz
AQ           0.1917428 sec
RG           2050
DW           93.600 usec
DE           6.50 usec
TE           298.1 K
DO           0.00000300 sec
D1           2.00000000 sec
D13          0.00000400 sec
D16          0.00020000 sec
IN0          0.00018715 sec

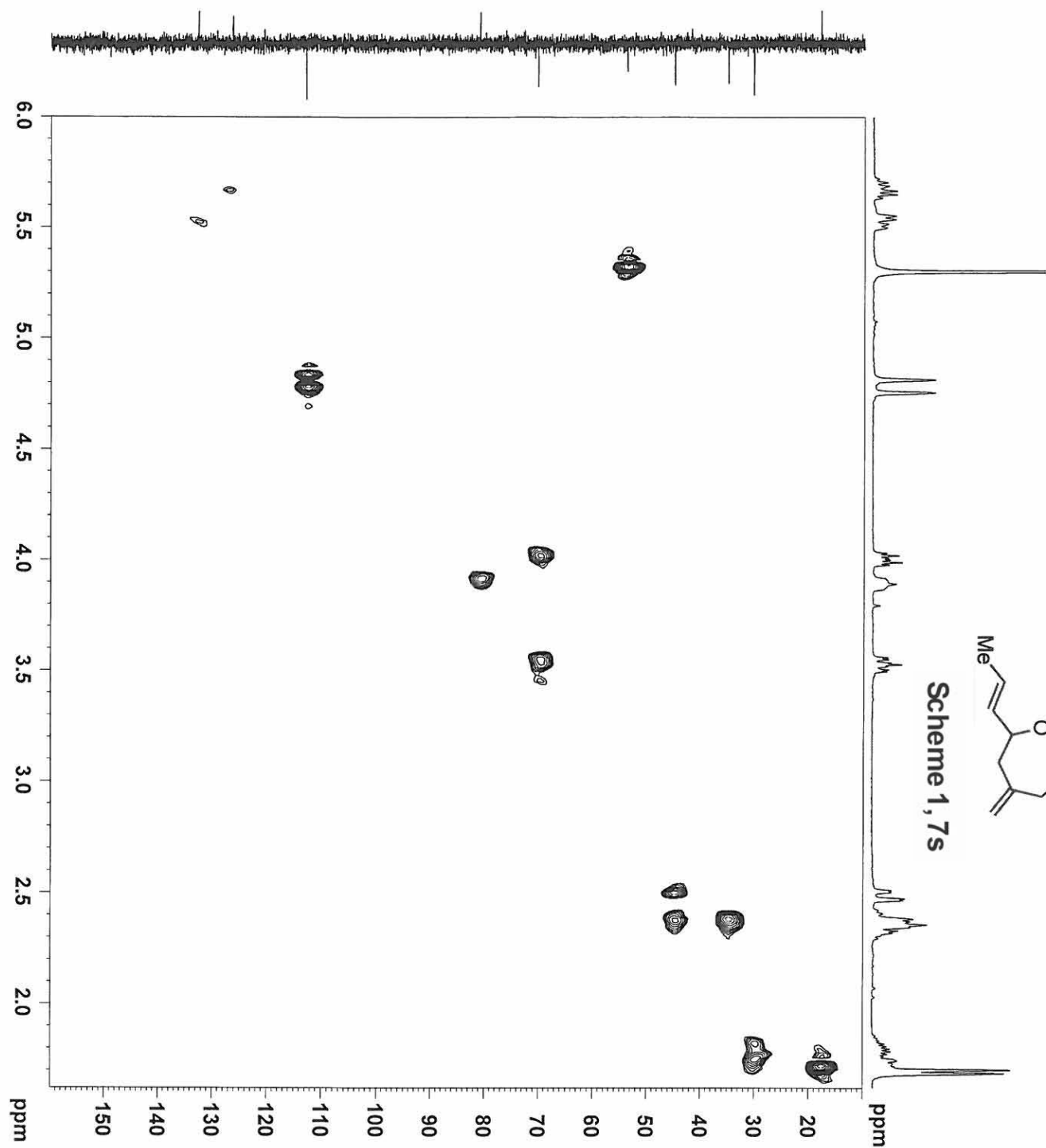
===== CHANNEL f1 =====
NUC1          1H
P1           14.00 usec
PL1          -1.00 dB
PL1W         13.56617069 W
SFO1         400.1924060 MHz

===== GRADIENT CHANNEL =====
GENAM1       SINE.100
GENAM2       SINE.100
GENAM3       SINE.100
GPZ1         16.00 %
GPZ2         12.00 %
GPZ3         40.00 %
P16          1000.00 usec
ND0          1
TD           47
SFO1         400.1924 MHz
FIDRES       113.674072 Hz
SW           13.350 ppm
FMODE        QF
SI           1024
WDW          SINE
SSB          0
LB           0.00 Hz
GB           0
PC           1.00
SI           1024
MC2          QF
SF           400.190000 MHz
WDW          SINE
SSB          0
LB           0.00 Hz
GB           0

```



Scheme 1, 7s



```

NAME 15_166 t33-40
EXPNO 1
PROCNO 1
Date_ 20120509
Time 20.21
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG hscatcp
TD 1024
SOLVENT CDCl3
NS 4
DS 2
F2 5341.880 Hz
FIDRES 5.21680 Hz
AQ 0.0958964 sec
RG 2050
DW 93.600 usec
DE 6.50 usec
TE 297.9 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
INO 0.00003000 sec
ZCOPTNS

===== CHANNEL f1 =====
NUC1 1H
P1 14.00 usec
P2 28.00 usec
P28 0.00 usec
PL1 -1.00 dB
PL1W 13.56617069 W
SFO1 400.1924060 MHz

===== CHANNEL f2 =====
CPDPRG2 garp
NUC2 13C
P3 9.30 usec
P4 19.80 usec
PCPD2 80.00 usec
PL2 -2.00 dB
PL12 16.15 dB
PL12W 55.33689499 W
PL12W 0.84725636 W
SFO2 100.6353709 MHz

===== GRADIENT CHANNEL =====
GPNAM1 SINE.100
GPNAM2 SINE.100
GPR1 80.00
GPR2 70.10
P16 1000.00 usec
NDO 2
TD 49
SFO1 100.6354 MHz
FIDRES 340.187042 Hz
SW 165.639 ppm
FMODE Echo-Antlecho
SI 1024
SF 400.1900000 MHz
WDW OSINE
SSB 2
LB 0.00 Hz
GB 0
PC 1.40
SI 1024
MC2 echo-antlecho
SF 100.6278500 MHz
WDW OSINE
SSB 2
LB 0.00 Hz
GB 0

```