

SUPPLEMENTARY MATERIALS

Anthraquinone derivatives and other aromatic compounds from marine fungus *Asteromyces cruciatus* KMM 4696 and their effects against *Staphylococcus aureus*

Content

Figure S1. UV spectrum of 1	5
Figure S2. CD spectrum of 1	5
Figure S3. UV spectrum of 2	6
Figure S4. CD spectrum of 2	6
Figure S5. UV spectrum of 3	7
Figure S6. CD spectrum of 3	7
Figure S7. ¹ H NMR spectrum (500 MHz, acetone-d ₆) of 1	8
Figure S8. ¹³ C NMR spectrum (125.75 MHz, acetone-d ₆) of 1	9
Figure S9. COSY-45 spectrum (500 MHz, acetone-d ₆) of 1	10
Figure S10. HSQC spectrum (500 MHz, acetone-d ₆) of 1	11
Figure S11. HMBC spectrum (500 MHz, acetone-d ₆) of 1	12
Figure S12. ROESY spectrum (700 MHz, acetone-d ₆) of 1	13
Figure S13. ¹ H NMR spectrum (500 MHz, acetone-d ₆) of 2	14
Figure S14. ¹³ C NMR spectrum (125.75 MHz, acetone-d ₆) of 2	15
Figure S15. DEPT-135 spectrum (125.75 MHz, acetone-d ₆) of 2	16
Figure S16. COSY-45 spectrum (700 MHz, acetone-d ₆) of 2	17
Figure S17. HSQC spectrum (700 MHz, acetone-d ₆) of 2	18
Figure S18. HMBC spectrum (700 MHz, acetone-d ₆) of 2	19
Figure S19. ROESY spectrum (700 MHz, acetone-d ₆) of 2	20
Figure S20. ¹ H NMR spectrum (700 MHz, acetone-d ₆) of 3	21
Figure S21. ¹³ C NMR spectrum (75.48 MHz, acetone-d ₆) of 3	22
Figure S22. COSY-45 spectrum (700 MHz, acetone-d ₆) of 3	23
Figure S23. HSQC spectrum (700 MHz, acetone-d ₆) of 3	24
Figure S24. HMBC spectrum (700 MHz, acetone-d ₆) of 3	25
Figure S25. ROESY spectrum (700 MHz, acetone-d ₆) of 3	27
Figure S26. ¹ H spectrum (500 MHz, acetone-d ₆) of 4	28
Figure S27. ¹³ C spectrum (125.77 MHz, acetone-d ₆) of 4	29
Figure S28. DEPT-135 NMR spectrum (125.77 MHz, acetone-d ₆) of 4	30
Figure S29. COSY-45 spectrum (500 MHz, acetone-d ₆) of 4	31
Figure S30. HSQC spectrum (500 MHz, acetone-d ₆) of 4	32
Figure S31. HMBC spectrum (500 MHz, acetone-d ₆) of 4	33
Figure S32. ROESY spectrum (500 MHz, acetone-d ₆) of 4	34
Figure S33. ¹ H NMR spectrum (500 MHz, CDCl ₃) of 5	35
Figure S34. ¹³ C NMR spectrum (125.77 MHz, CDCl ₃) of 5	36
Figure S35. DEPT-135 spectrum (125.77 MHz, CDCl ₃) of 5	37
Figure S36. ¹ H NMR spectrum (700 MHz, acetone-d ₆) of 6	38
Figure S37. ¹³ C NMR spectrum (125.77 MHz, acetone-d ₆) of 6	39
Figure S38. DEPT-135 spectrum (125.77 MHz, acetone-d ₆) of 6	40

Figure S39. COSY-45 spectrum (700 MHz, acetone-d ₆) of 6	41
Figure S40. HSQC spectrum (700 MHz, acetone-d ₆) of 6	42
Figure S41. HMBC spectrum (700 MHz, acetone-d ₆) of 6	43
Figure S42. ROESY spectrum (500 MHz, acetone-d ₆) of 6	44
Figure S43. ¹ H NMR spectrum (700 MHz, acetone-d ₆) of 7	45
Figure S44. ¹³ C NMR spectrum (176.04 MHz, acetone-d ₆) of 7	46
Figure S45. DEPT-135 spectrum (176.04 MHz, acetone-d ₆) of 7	47
Figure S46. COSY-45 spectrum (700 MHz, acetone-d ₆) of 7	48
Figure S47. HSQC spectrum (700 MHz, acetone-d ₆) of 7	49
Figure S48. HMBC spectrum (700 MHz, acetone-d ₆) of 7	50
Figure S49. ROESY spectrum (700 MHz, acetone-d ₆) of 7	51
Figure S50. ¹ H NMR spectrum (700 MHz, acetone-d ₆) of 8	52
Figure S51. ¹³ C NMR spectrum (176.04 MHz, acetone-d ₆) of 8	53
Figure S52. DEPT-135 spectrum (176.04 MHz, acetone-d ₆) of 8	54
Figure S53. COSY-45 spectrum (700 MHz, acetone-d ₆) of 8	55
Figure S54. HSQC spectrum (700 MHz, acetone-d ₆) of 8	56
Figure S55. HMBC spectrum (700 MHz, acetone-d ₆) of 8	57
Figure S56. ROESY spectrum (700 MHz, acetone-d ₆) of 8	58
Figure S57. ¹ H NMR spectrum (500 MHz, acetone-d ₆) of 9	59
Figure S58. ¹³ C NMR spectrum (125.77 MHz, acetone-d ₆) of 9	60
Figure S59. DEPT-135 spectrum (125.77 MHz, acetone-d ₆) of 9	61
Figure S60. COSY-45 spectrum (500 MHz, acetone-d ₆) of 9	62
Figure S61. HSQC spectrum (500 MHz, acetone-d ₆) of 9	63
Figure S62. HMBC spectrum (500 MHz, acetone-d ₆) of 9	64
Figure S63. ROESY spectrum (500 MHz, acetone-d ₆) of 9	65
Figure S64. ¹ H NMR spectrum (500 MHz, acetone-d ₆) of 10	66
Figure S65. ¹³ C NMR spectrum (125.77 MHz, acetone-d ₆) of 10	67
Figure S66. DEPT-135 spectrum (125.77 MHz, acetone-d ₆) of 10	68
Figure S67. COSY-45 spectrum (500 MHz, acetone-d ₆) of 10	69
Figure S68. HSQC spectrum (500 MHz, acetone-d ₆) of 10	70
Figure S69. HMBC spectrum (500 MHz, acetone-d ₆) of 10	71
Figure S70. ROESY spectrum (500 MHz, acetone-d ₆) of 10	72
Figure S71. ¹ H NMR spectrum (700 MHz, acetone-d ₆) of 11	73
Figure S72. ¹³ C NMR spectrum (176.04 MHz, acetone-d ₆) of 11	74
Figure S73. DEPT-135 NMR spectrum (176.04 MHz, acetone-d ₆) of 11	75
Figure S74. COSY-45 spectrum (700 MHz, acetone-d ₆) of 11	76
Figure S75. HSQC spectrum (700 MHz, acetone-d ₆) of 11	77
Figure S76. HMBC spectrum (700 MHz, acetone-d ₆) of 11	78
Figure S77. ROESY spectrum (700 MHz, acetone-d ₆) of 11	79

Figure S78. ^1H NMR spectrum (500 MHz, acetone- d_6) of 12	80
Figure S79. ^{13}C NMR spectrum (125.77 MHz, acetone- d_6) of 12	81
Figure S80. COSY-45 spectrum (500 MHz, acetone- d_6) of 12	82
Figure S81. HSQC spectrum (500 MHz, acetone- d_6) of 12	83
Figure S82. HMBC spectrum (700 MHz, acetone- d_6) of 12	84
Figure S83. ROESY spectrum (700 MHz, acetone- d_6) of 12	85
Figure S84. ^1H NMR spectrum (700 MHz, CDCl_3) of 13	86
Figure S85. ^{13}C NMR spectrum (176.04 MHz, CDCl_3) of 13	87
Figure S86. DEPT-135 NMR spectrum (176.04 MHz, CDCl_3) of 13	88
Figure S87. COSY-45 spectrum (700 MHz, CDCl_3) of 13	89
Figure S88. HSQC spectrum (700 MHz, CDCl_3) of 13	90
Figure S89. HMBC spectrum (700 MHz, CDCl_3) of 13	91
Figure S90. ROESY spectrum (700 MHz, CDCl_3) of 13	92
Figure S91. (+) ESI MS of 1	93
Figure S92. (-) ESI MS of 1	93
Figure S93. (+) ESI MS of 2	94
Figure S94. (-) ESI MS of 2	94
Figure S95. (+) ESI MS of 3	95
Figure S96. (-) ESI MS of 3	95
Figure S97. (+) ESI MS of 6	96
Figure S98. (+) ESI MS of 7	97
Figure S99. (+) ESI MS of 8	98
Figure S100. (-) ESI MS of 9	99
Figure S101. (-) ESI MS of 10	100
Figure S102. (-) ESI MS of 11	101
Figure S103. (+) ESI MS of 12	101
Figure S104. (+) ESI MS of 13	102

Figure S1. UV spectrum of **1**

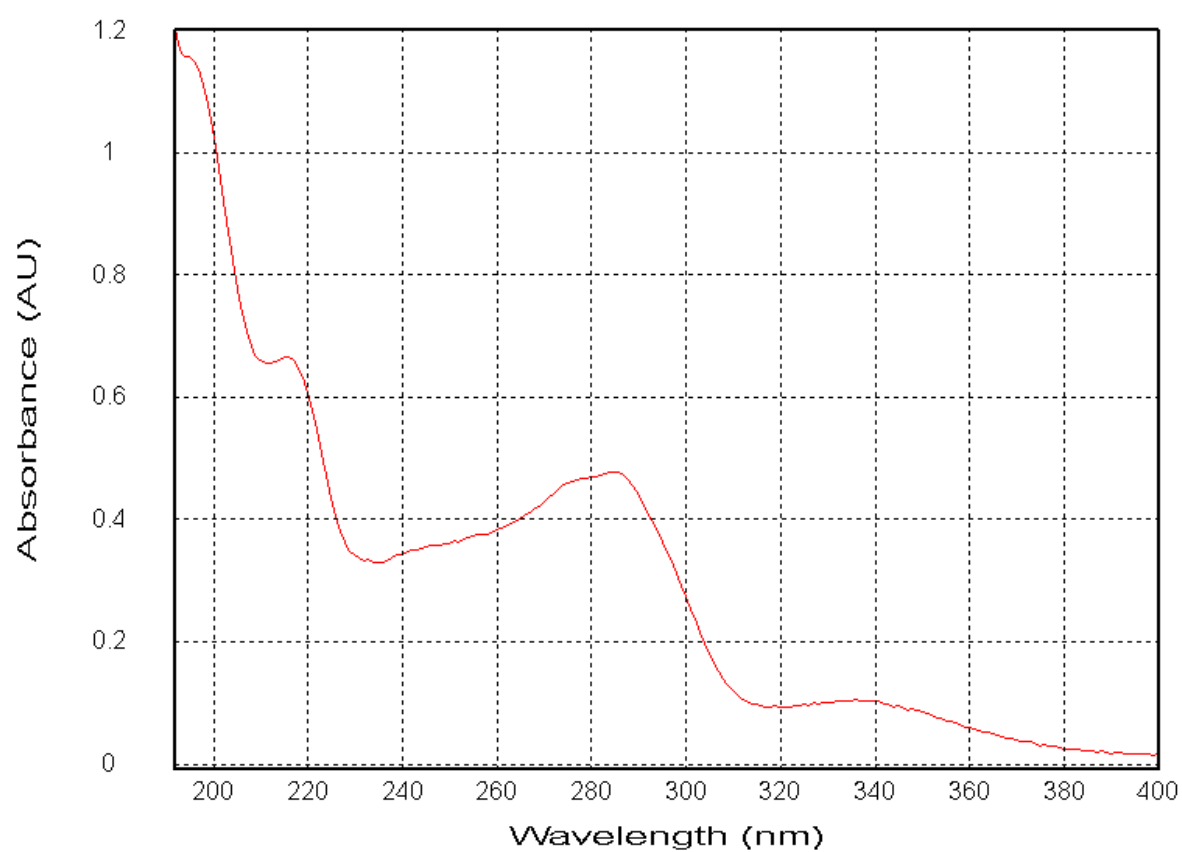


Figure S2. CD spectrum of **1**

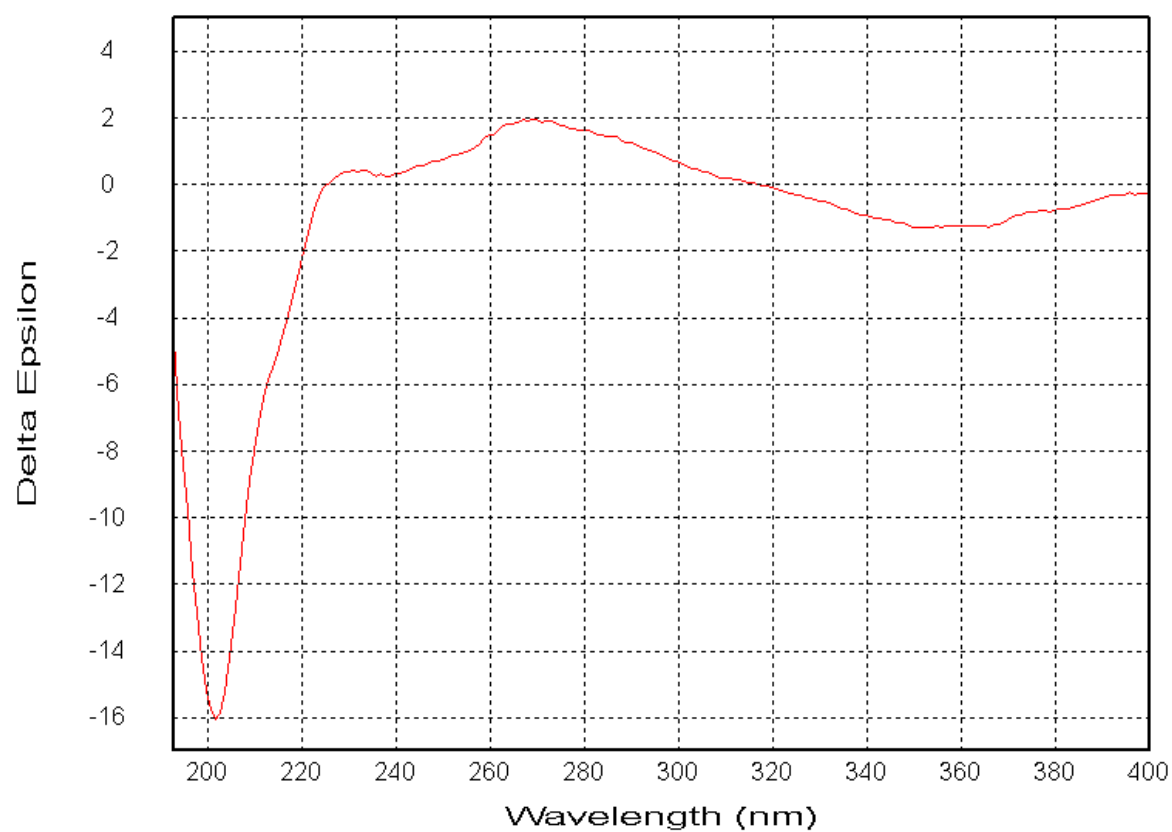


Figure S3. UV spectrum of **2**

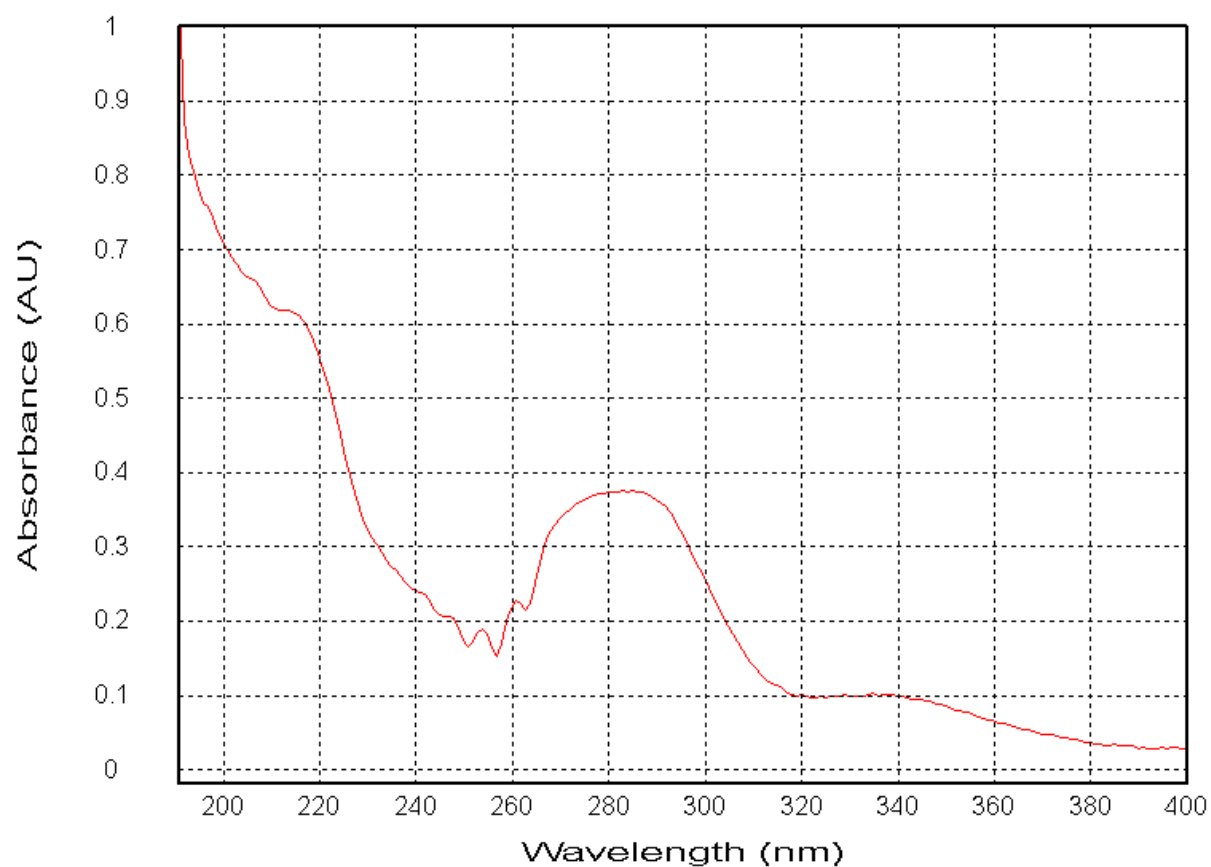


Figure S4. CD spectrum of **2**

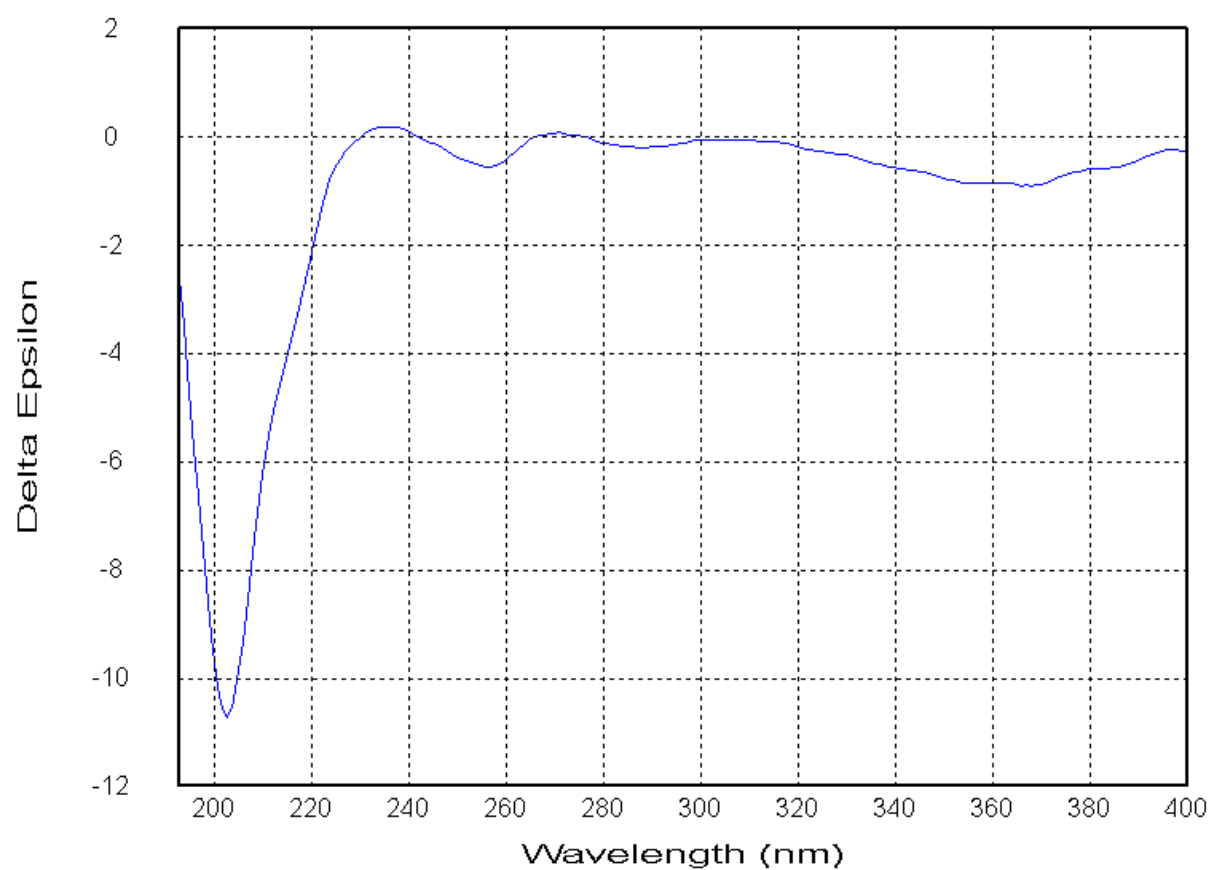


Figure S5. UV spectrum of **3**

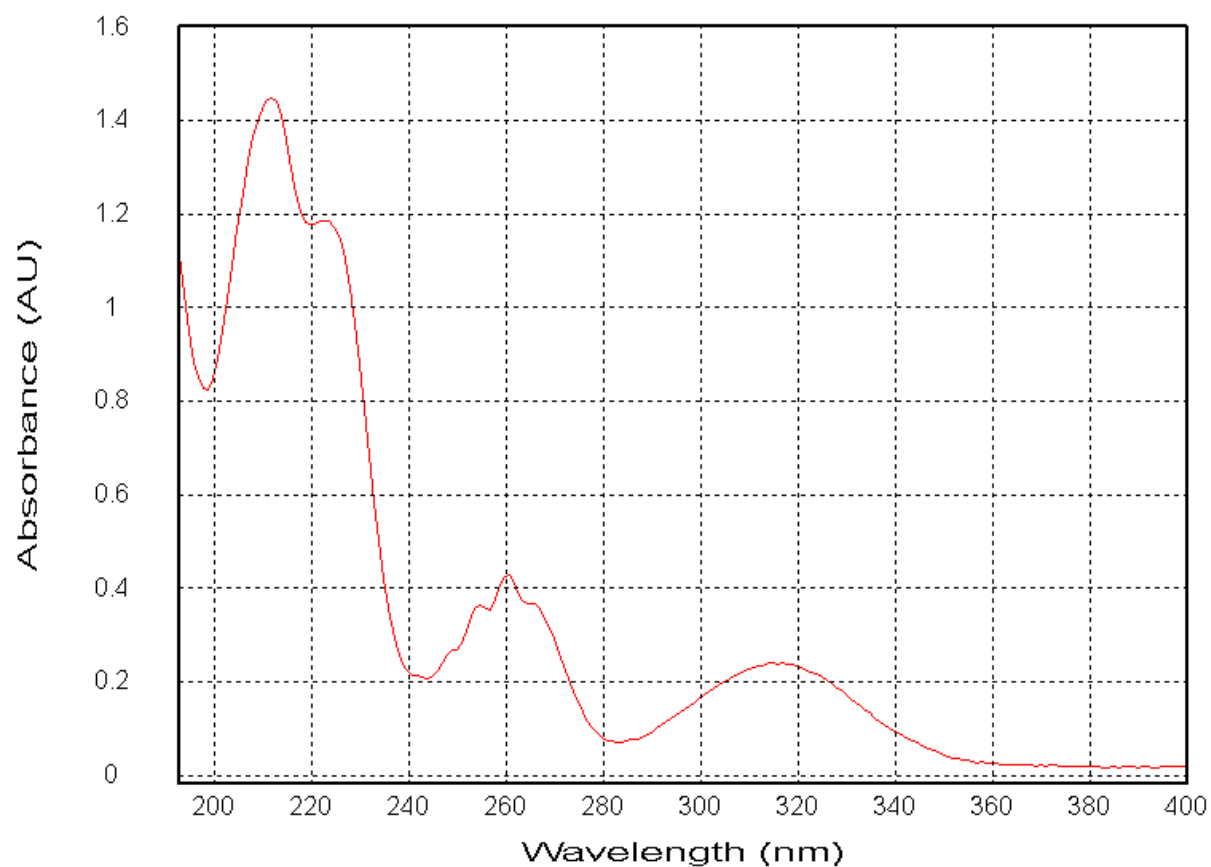


Figure S6. CD spectrum of **3**

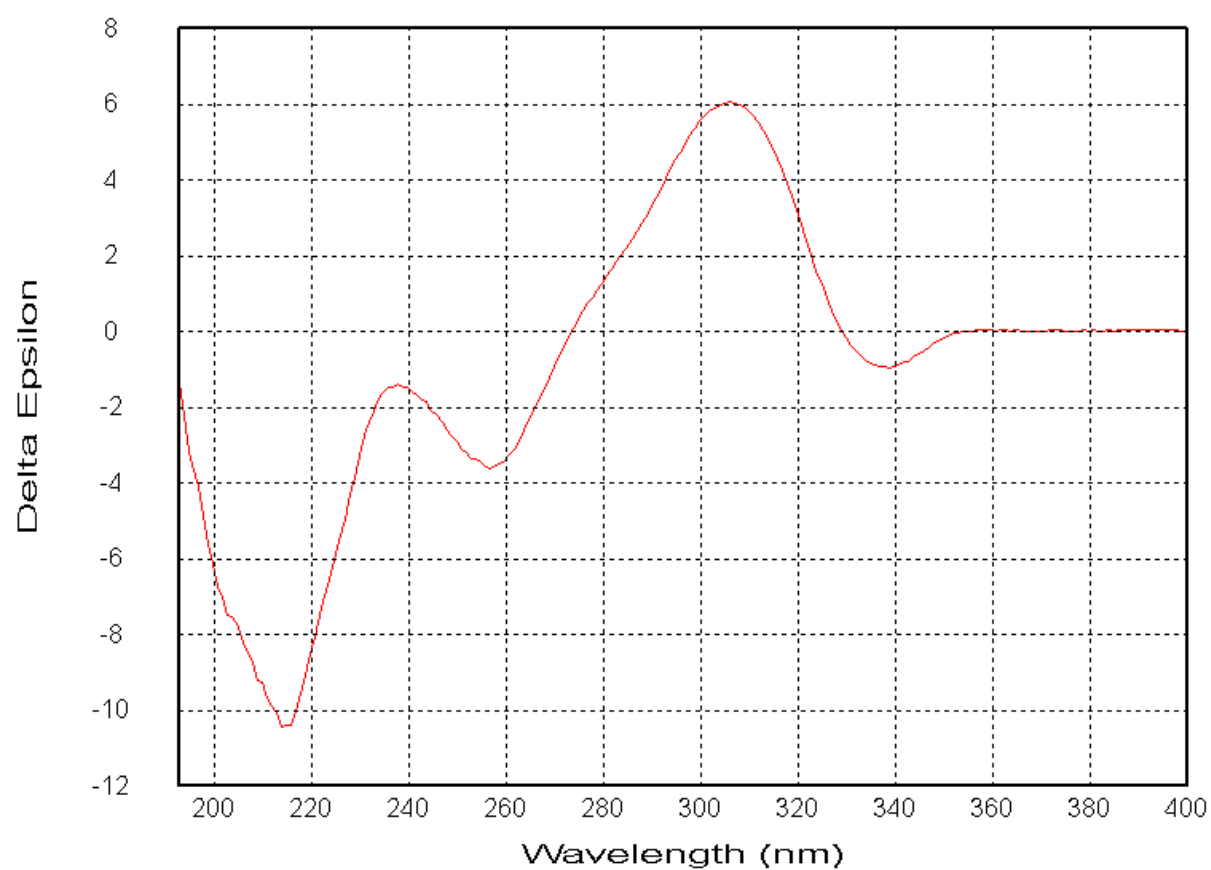


Figure S7. ^1H NMR spectrum (500 MHz, acetone- d_6) of **1**

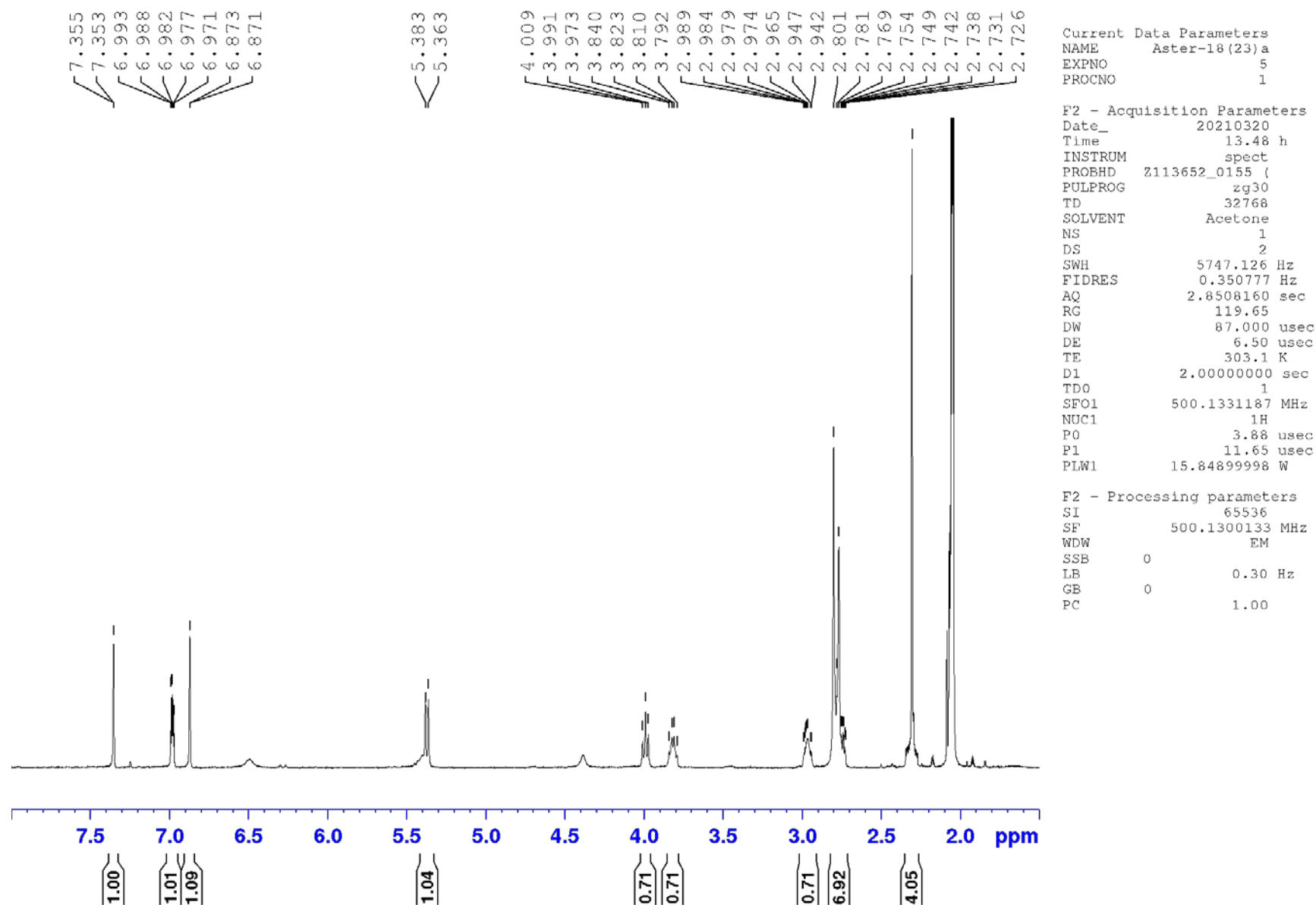
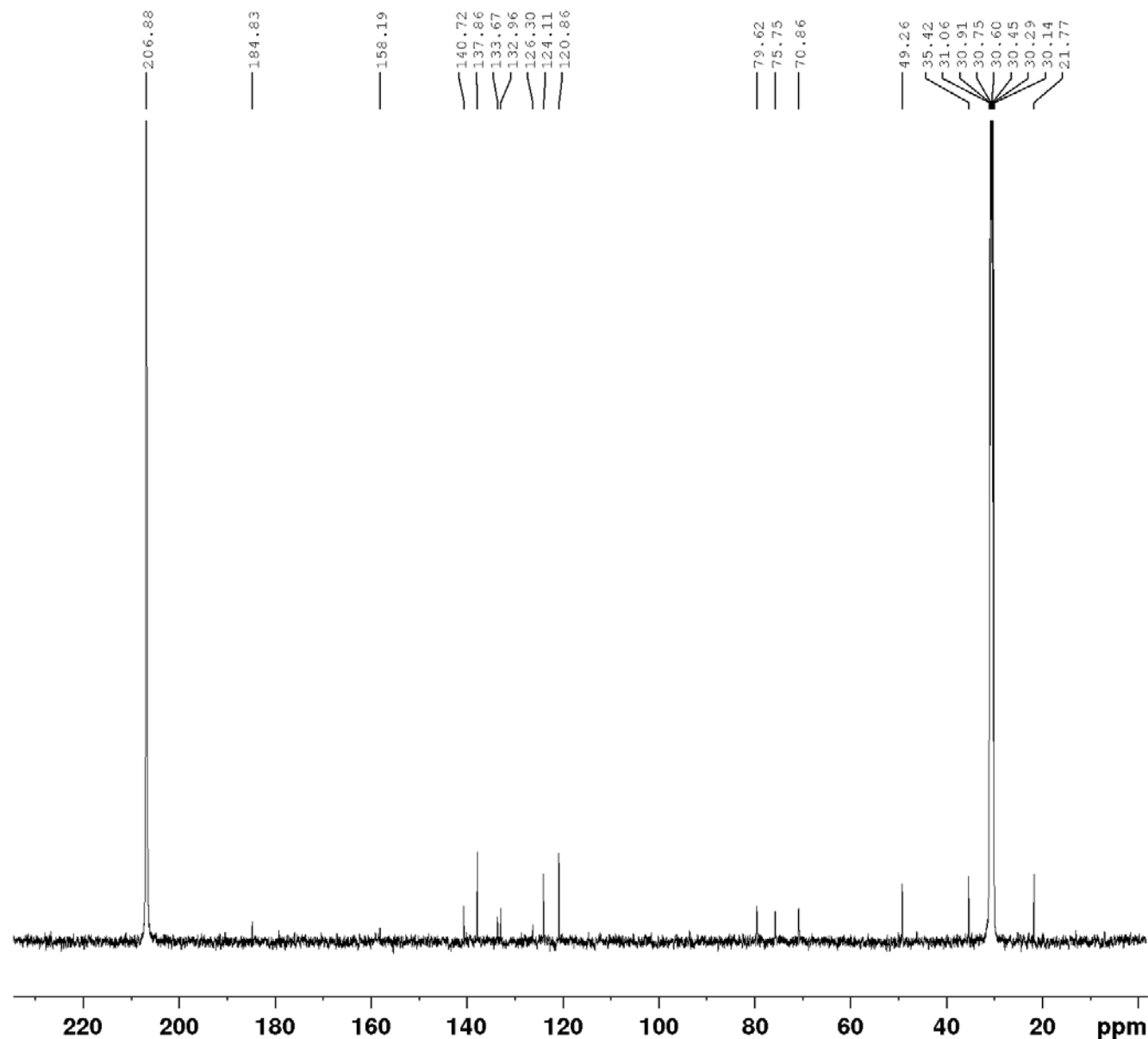


Figure S8. ^{13}C NMR spectrum (125.75 MHz, acetone- d_6) of **1**



Current Data Parameters
NAME Aster-18 (23)a
EXPNO 11
PROCNO 1

F2 - Acquisition Parameters
Date_ 20210320
Time 13.46 h
INSTRUM spect
PROBHD Z113652_0155 (
PULPROG zgpg30
TD 32768
SOLVENT Acetone
NS 1291
DS 4
SWH 29761.904 Hz
FIDRES 1.816522 Hz
AQ 0.5505024 sec
RG 196.84
DW 16.800 usec
DE 6.50 usec
TE 303.1 K
D1 1.50000000 sec
D11 0.03000000 sec
TD0 128
SFO1 125.7722511 MHz
NUC1 13C
P0 4.03 usec
P1 12.10 usec
PLW1 79.43299866 W
SFO2 500.1320005 MHz
NUC2 1H
CPDPRG[2] waltz16
PCPD2 80.00 usec
PLW2 15.84899998 W
PLW12 0.33610001 W
PLW13 0.16906001 W

F2 - Processing parameters
SI 65536
SF 125.7575780 MHz
WDW EM
SSB 0
LB 5.00 Hz
GB 0
PC 1.30

Figure S9. COSY-45 spectrum (500 MHz, acetone-d₆) of **1**

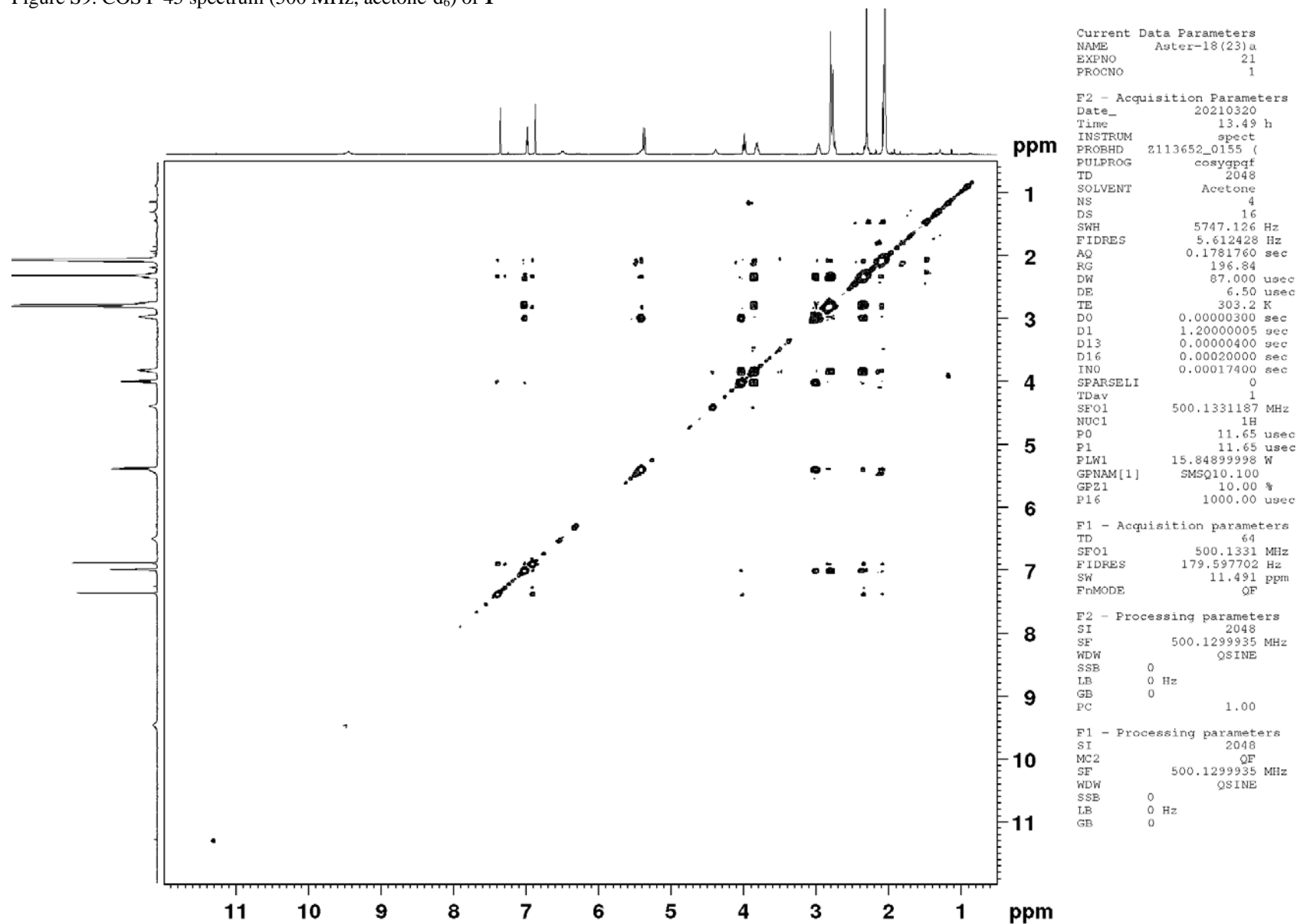


Figure S10. HSQC spectrum (500 MHz, acetone-d₆) of **1**

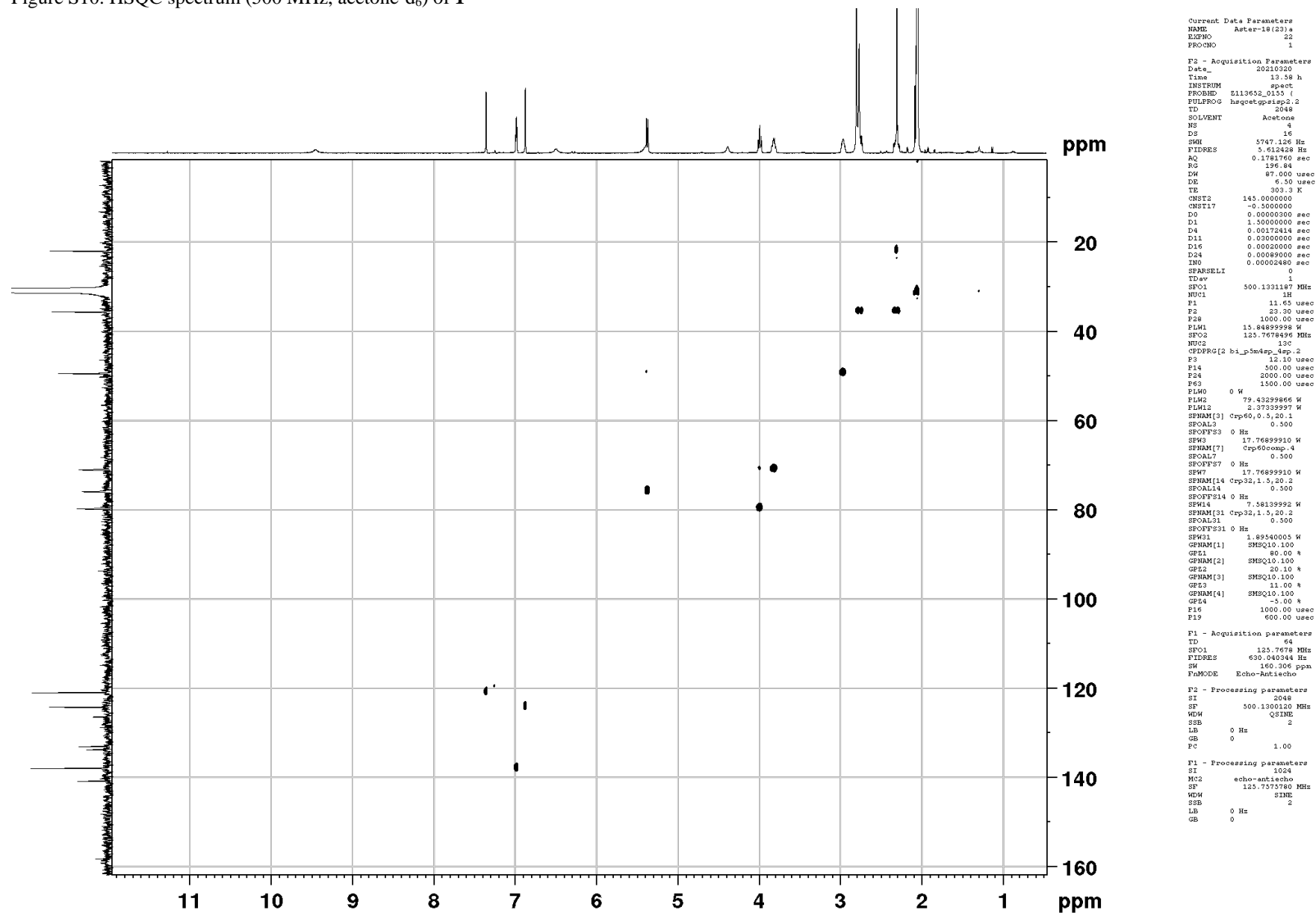


Figure S11. HMBC spectrum (500 MHz, acetone-d₆) of **1**

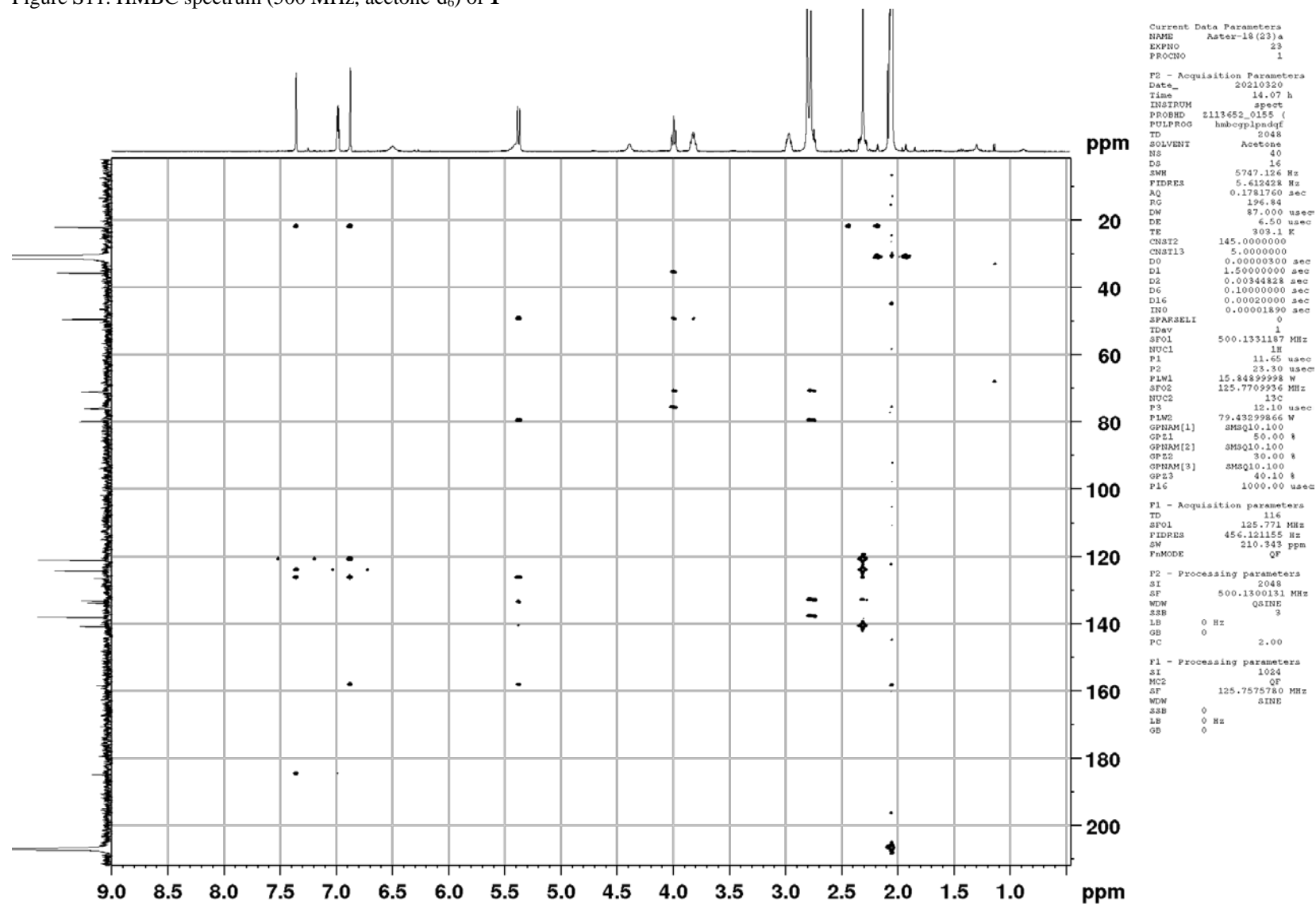


Figure S12. ROESY spectrum (700 MHz, acetone-d₆) of **1**

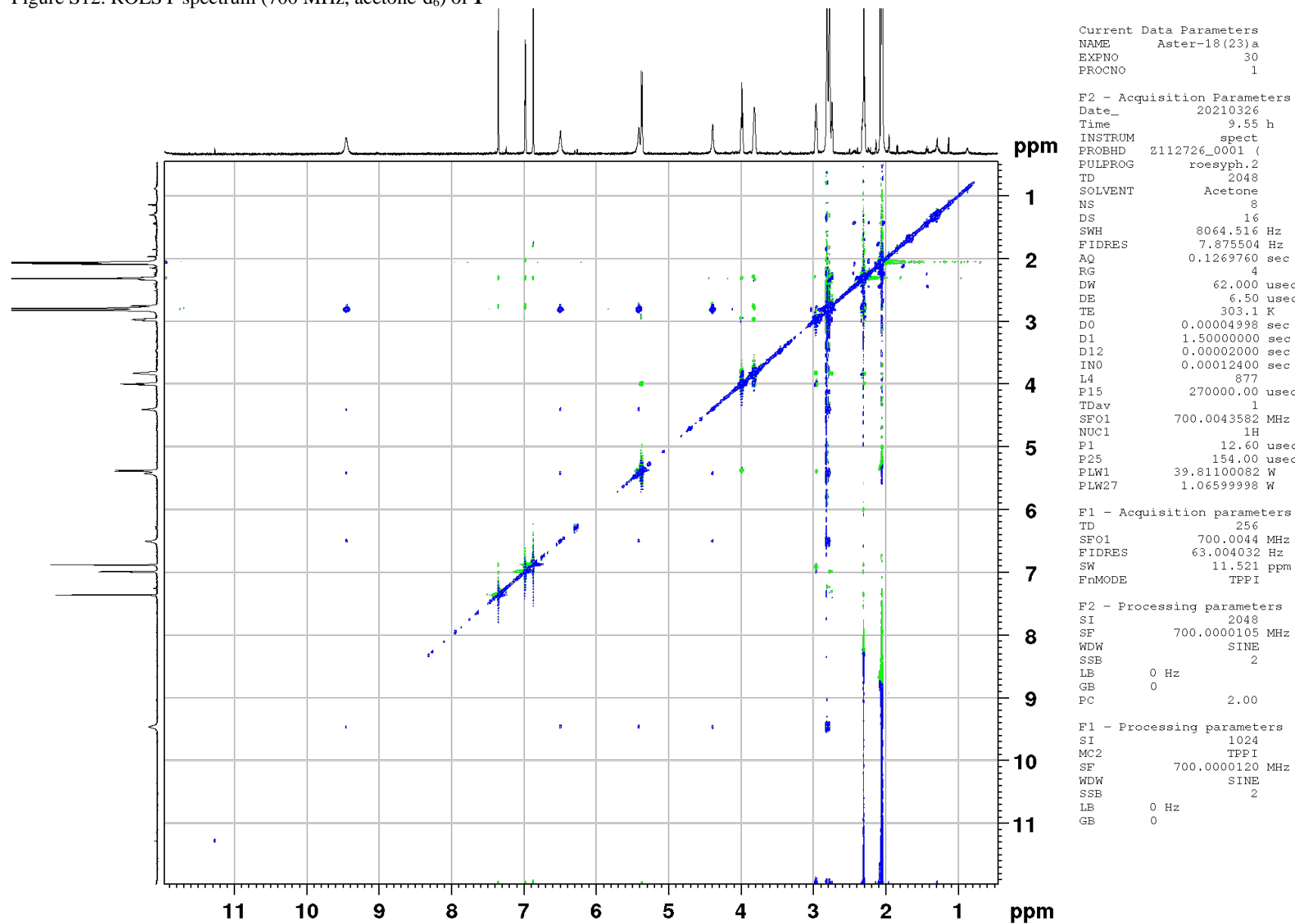
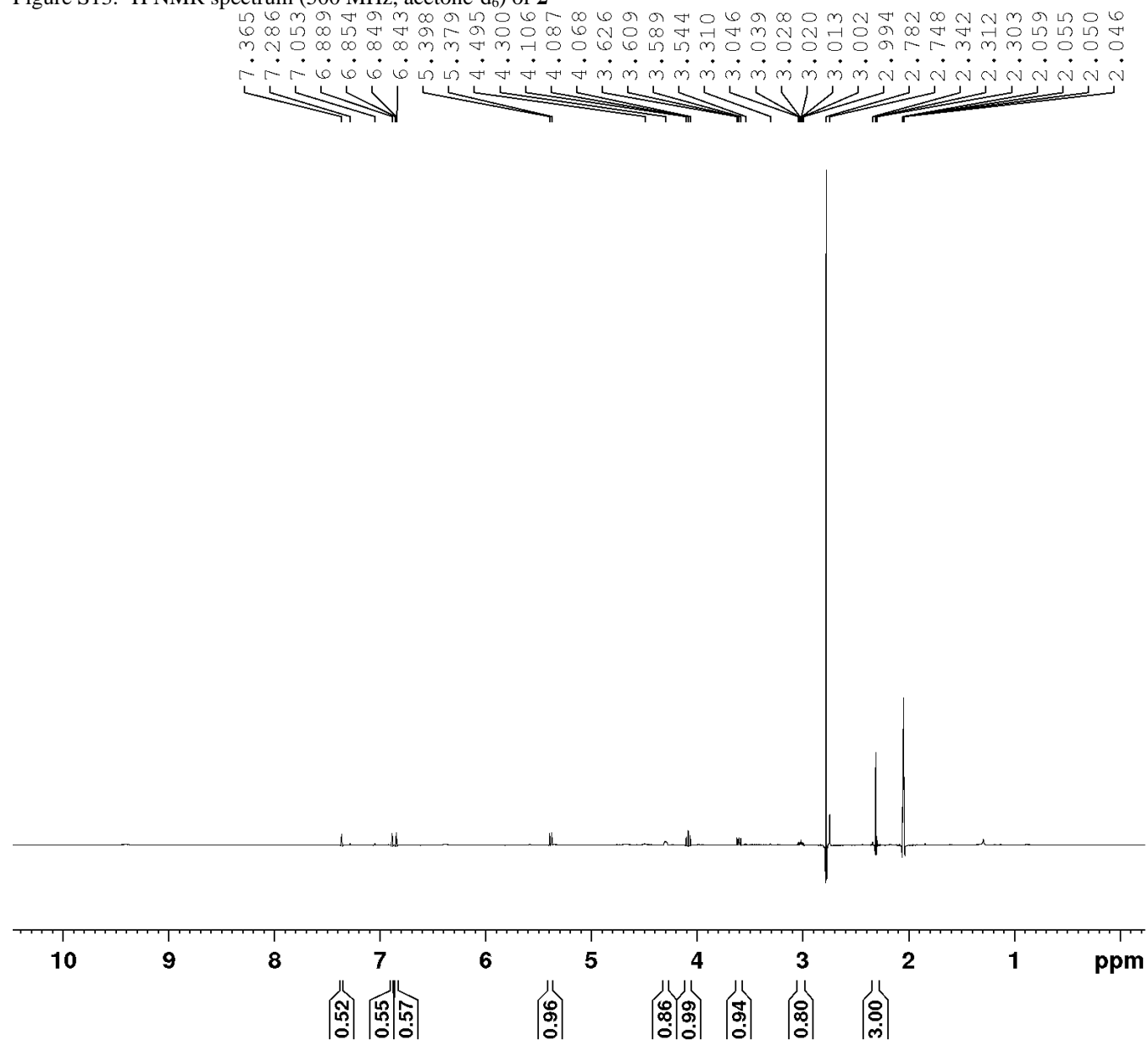


Figure S13. ¹H NMR spectrum (500 MHz, acetone-d₆) of **2**



Current Data Parameters
NAME Aster-53-4
EXPNO 30
PROCNO 1

F2 - Acquisition Parameters
Date_ 20210913
Time 17.02 h
INSTRUM spect
PROBHD Z113652_0155 (
PULPROG zg
TD 32768
SOLVENT Acetone
NS 1
DS 2
SWH 8012.820 Hz
FIDRES 0.489064 Hz
AQ 2.0447233 sec
RG 91.04
DW 62.400 usec
DE 6.50 usec
TE 303.2 K
D1 1.00000000 sec
TD0 1
SFO1 500.1339010 MHz
NUC1 1H
P1 12.00 usec
PLW1 15.84899998 W

F2 - Processing parameters
SI 65536
SF 500.1300133 MHz
WDW GM
SSB 0
LB -2.50 Hz
GB 0.1
PC 3.00

Figure S14. ^{13}C NMR spectrum (125.75 MHz, acetone- d_6) of 2

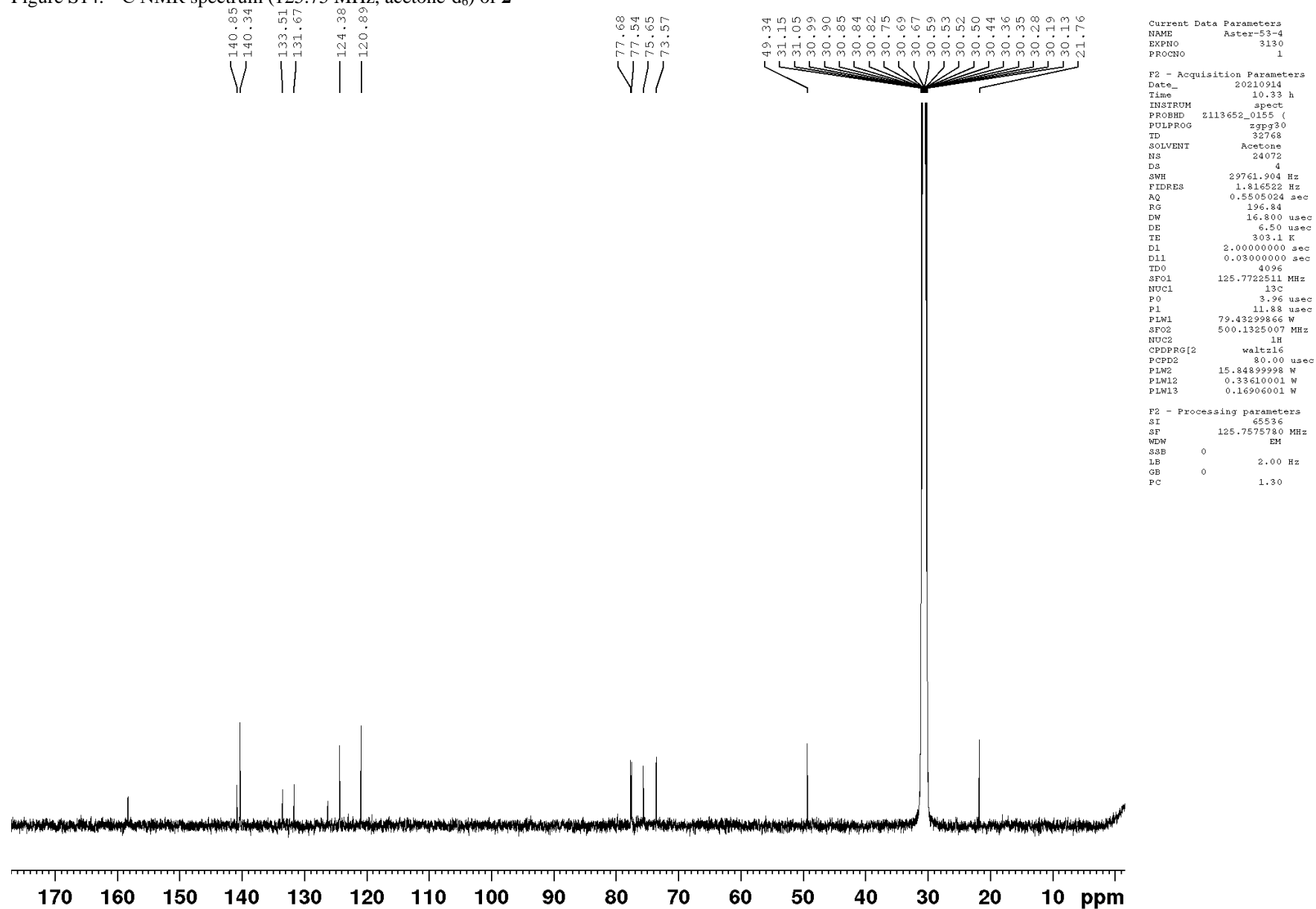


Figure S15. DEPT-135 spectrum (125.75 MHz, acetone-d₆) of **2**

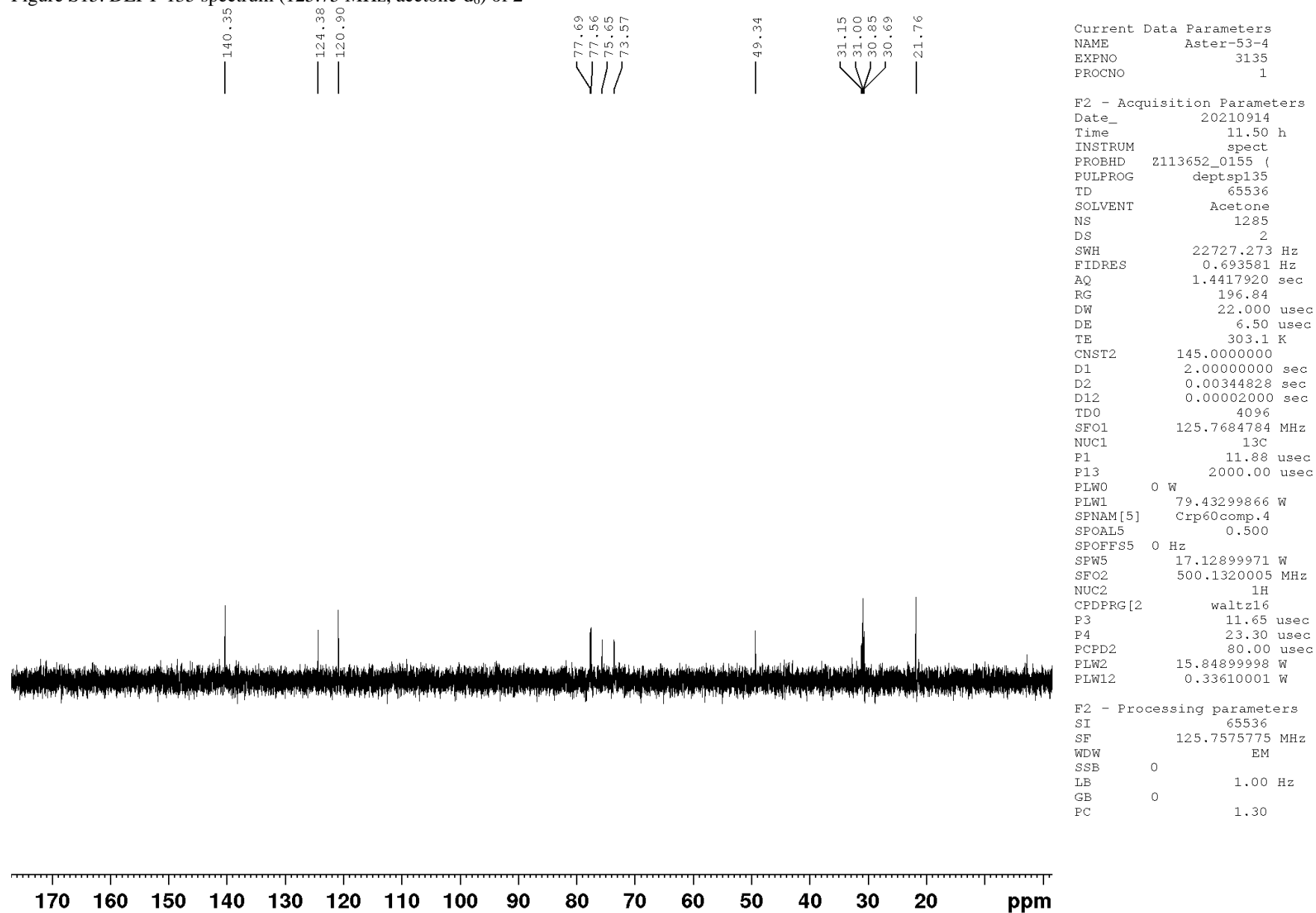
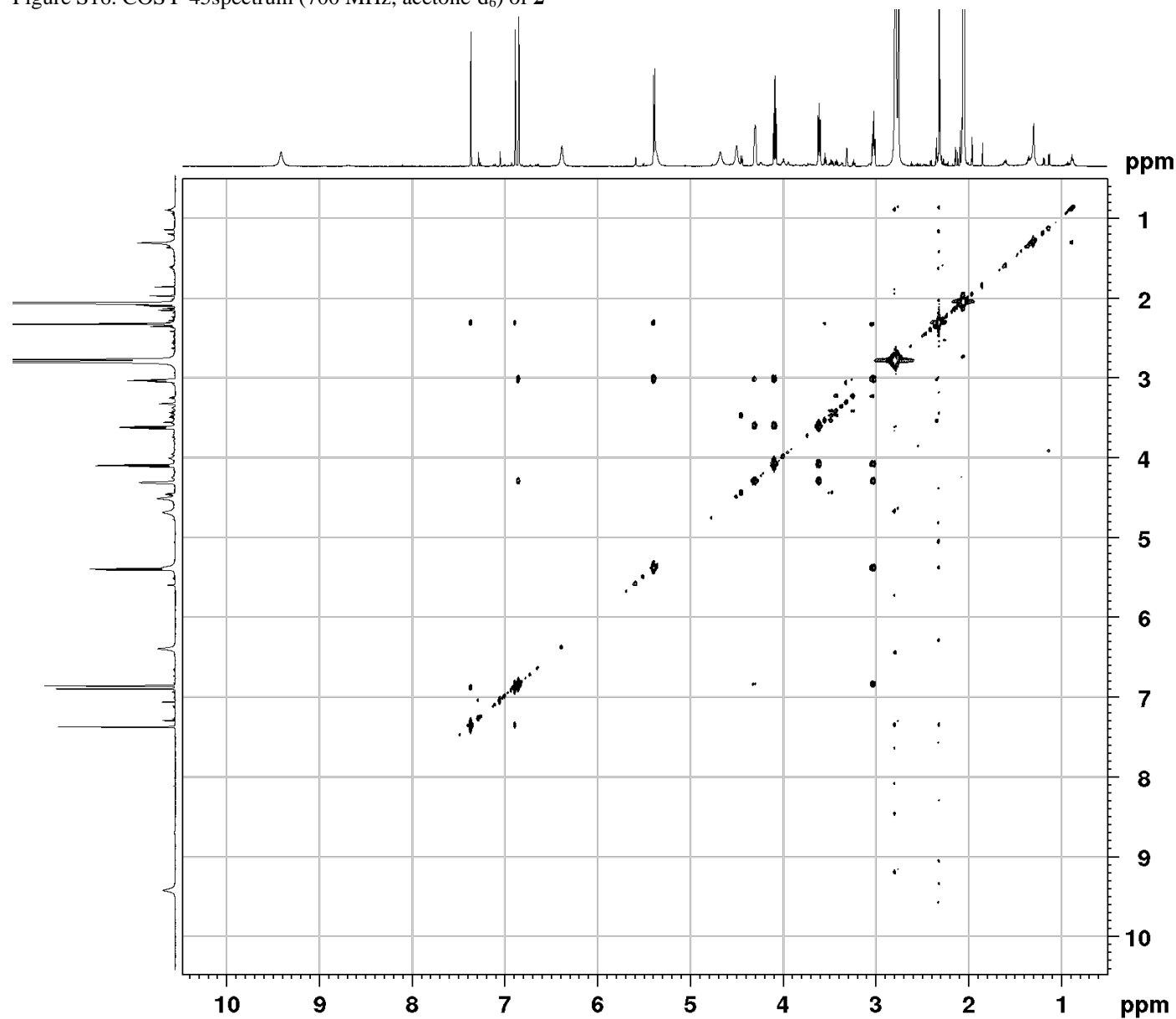


Figure S16. COSY-45spectrum (700 MHz, acetone-d₆) of **2**



```

Current Data Parameters
NAME      Aster-53-4
EXPNO     455
PROCNO    1

F2 - Acquisition Parameters
Date_     20210918
Time      14.30 h
INSTRUM   spect
PROBHD    Z180728_0001 (
PULPROG   cosygpgpf
TD        4096
SOLVENT   Acetone
NS        16
DS        8
SWH       7692.308 Hz
FIDRES    3.756010 Hz
AQ        0.2662400 sec
RG        191.01
DW        65.000 usec
DE        6.50 usec
TE        303.1 K
D0        0.00000300 sec
D1        2.00000000 sec
D13       0.00000400 sec
D16       0.00020000 sec
IN0       0.00013000 sec
SPARSELI   0
TDAV      1
SF01      700.0035000 MHz
NUC1      1H
P0        8.00 usec
P1        8.00 usec
PLW1      18.54100037 W
GPNAM[1]  SINE.100
GPZ1      10.00 %
P16       1000.00 usec

F1 - Acquisition parameters
TD        128
SF01      700.0035 MHz
FIDRES    120.192307 Hz
SW        10.989 ppm
FnMODE    QF

F2 - Processing parameters
SI        2048
SF        700.0000133 MHz
WDW       SINE
SSB       0
LB        0 Hz
GB        0
PC        1.00

F1 - Processing parameters
SI        2048
MC2       QF
SF        700.0000123 MHz
WDW       SINE
SSB       0
LB        0 Hz
GB        0

```

Figure S17. HSQC spectrum (700 MHz, acetone-d₆) of **2**

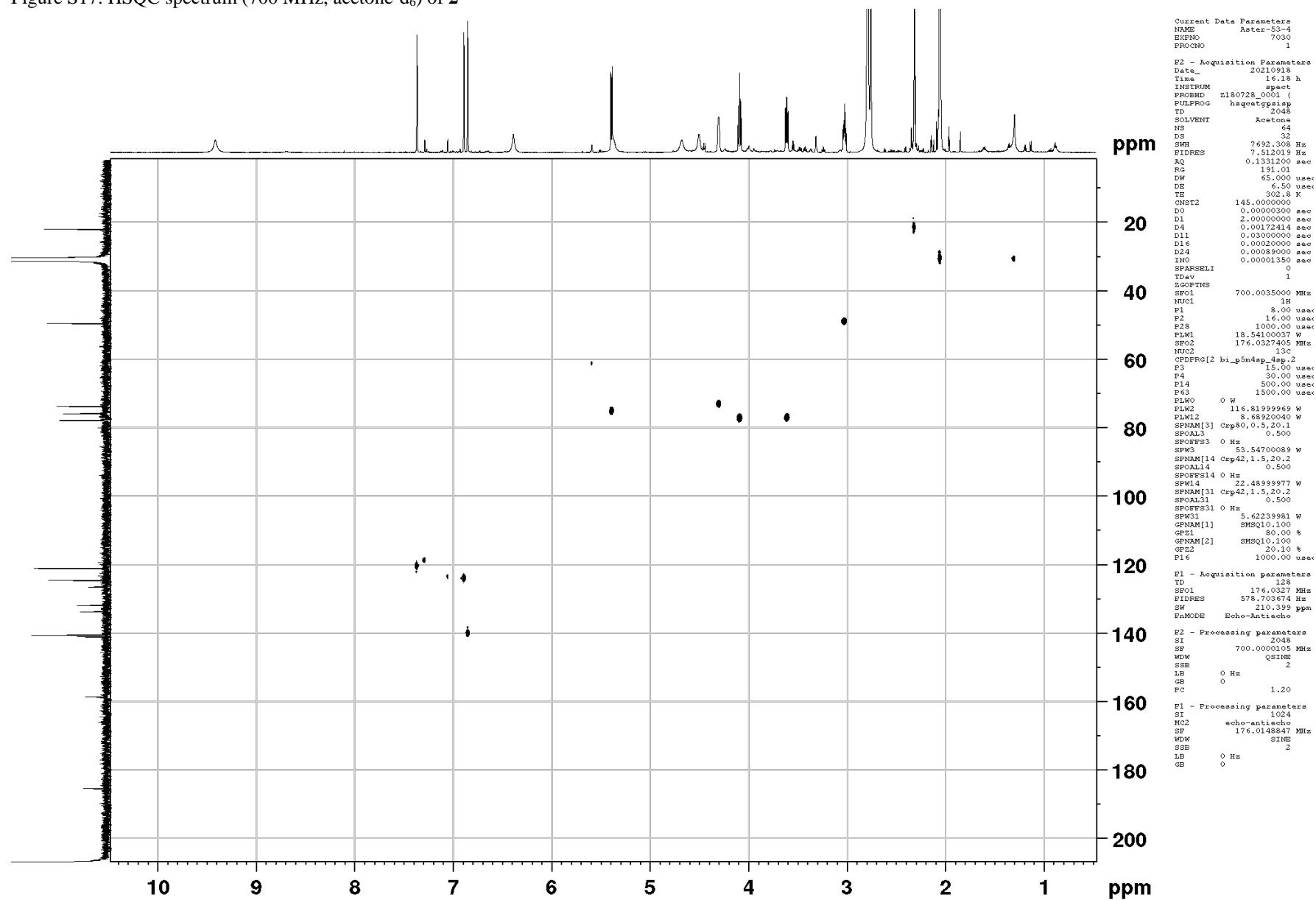


Figure S18. HMBC spectrum (700 MHz, acetone-d₆) of **2**

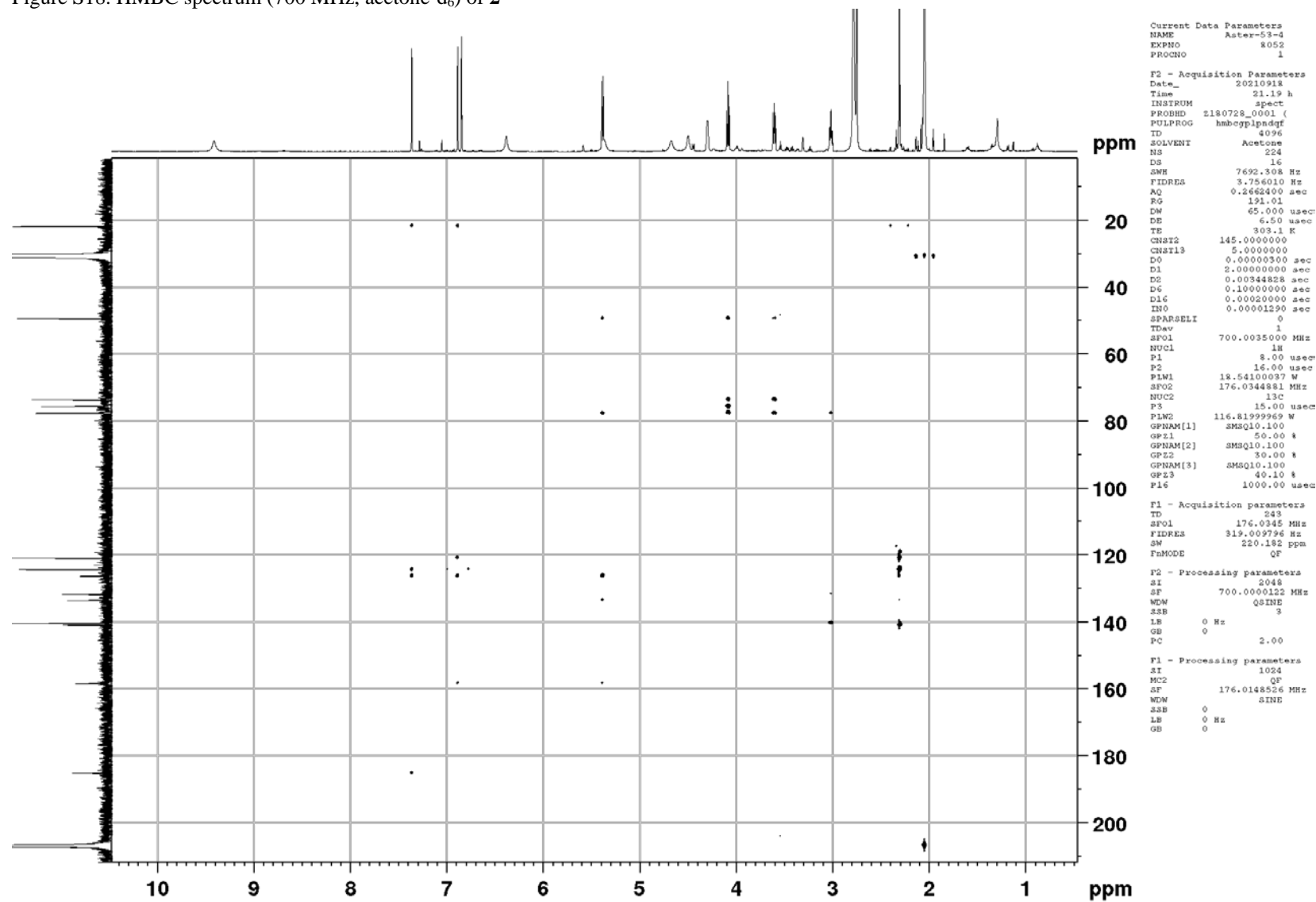


Figure S19. ROESY spectrum (700 MHz, acetone-d₆) of **2**

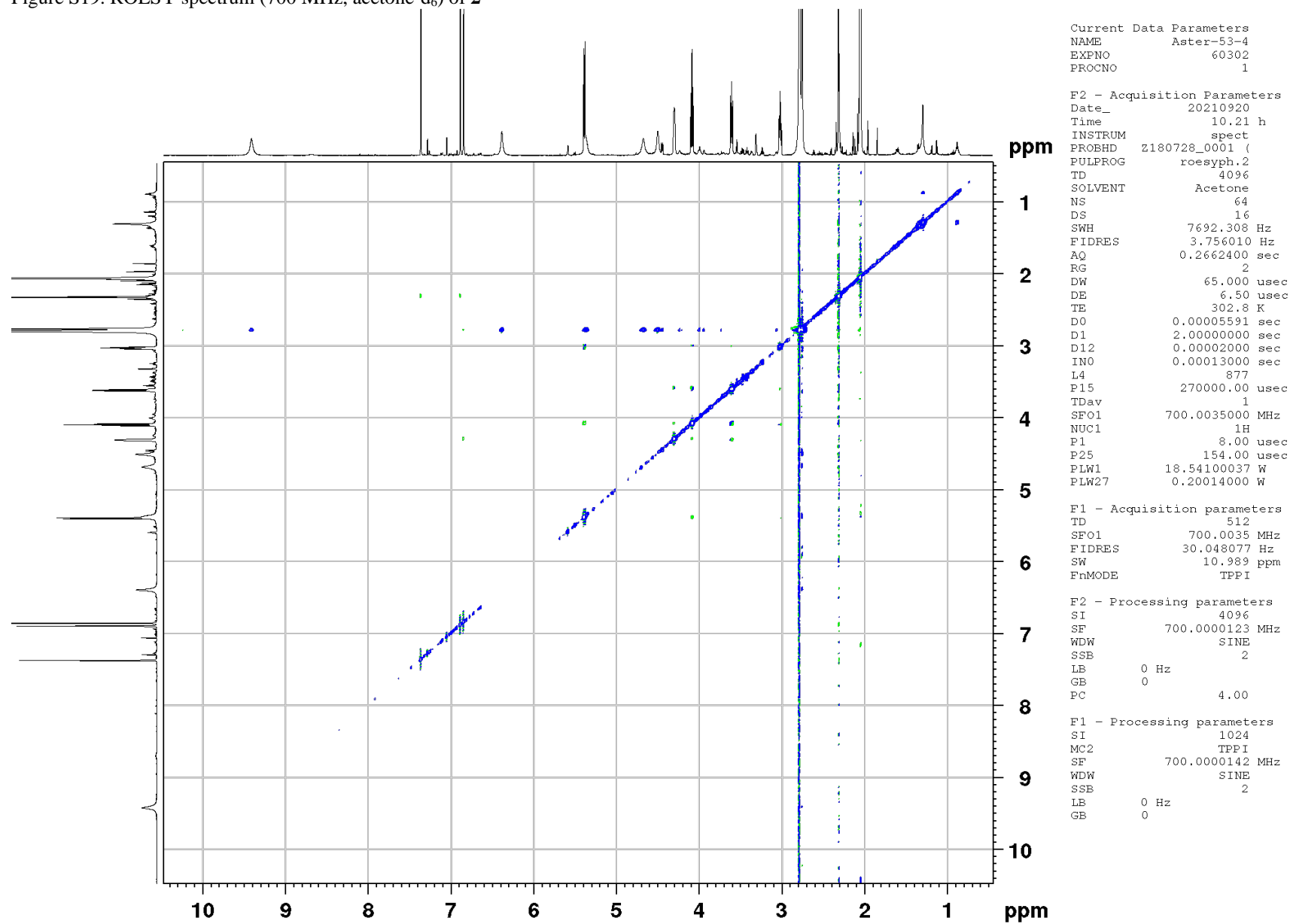
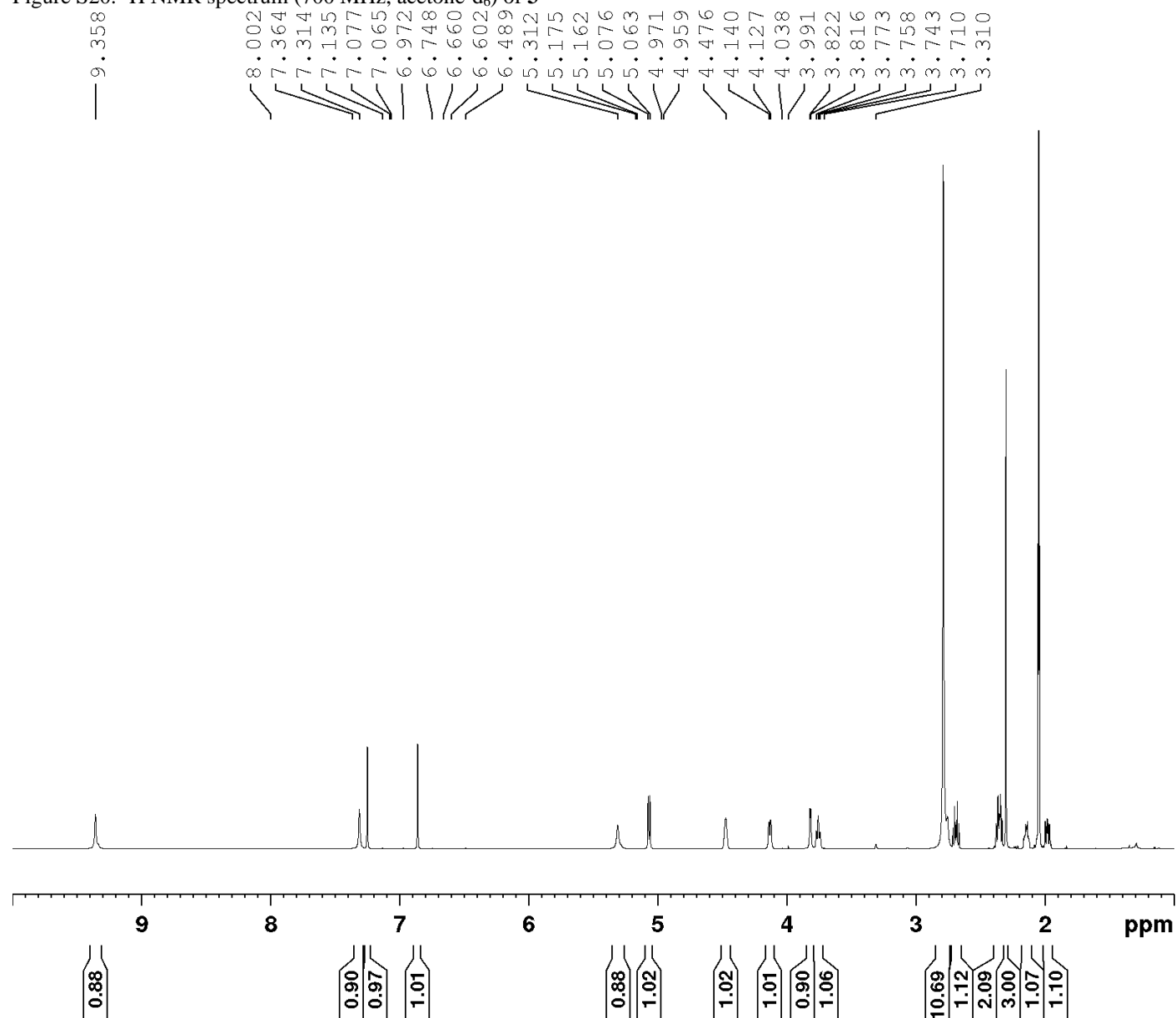


Figure S20. ^1H NMR spectrum (700 MHz, acetone- d_6) of **3**



Current Data Parameters
NAME Aster-45a
EXPNO 32
PROCNO 1

F2 - Acquisition Parameters
Date_ 20210924
Time 12.15 h
INSTRUM spect
PROBHD Z180728_0001 (
PULPROG zg30
TD 32768
SOLVENT Acetone
NS 120
DS 4
SWH 8417.509 Hz
FIDRES 0.513764 Hz
AQ 1.9464192 sec
RG 165.68
DW 59.400 usec
DE 6.50 usec
TE 302.9 K
D1 2.00000000 sec
TD0 1
SF01 700.0035000 MHz
NUC1 1H
P0 2.67 usec
P1 8.00 usec
PLW1 18.54100037 W

F2 - Processing parameters
SI 32768
SF 700.0000119 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 4.00

Figure S21. ^{13}C NMR spectrum (75.48 MHz, acetone- d_6) of **3**

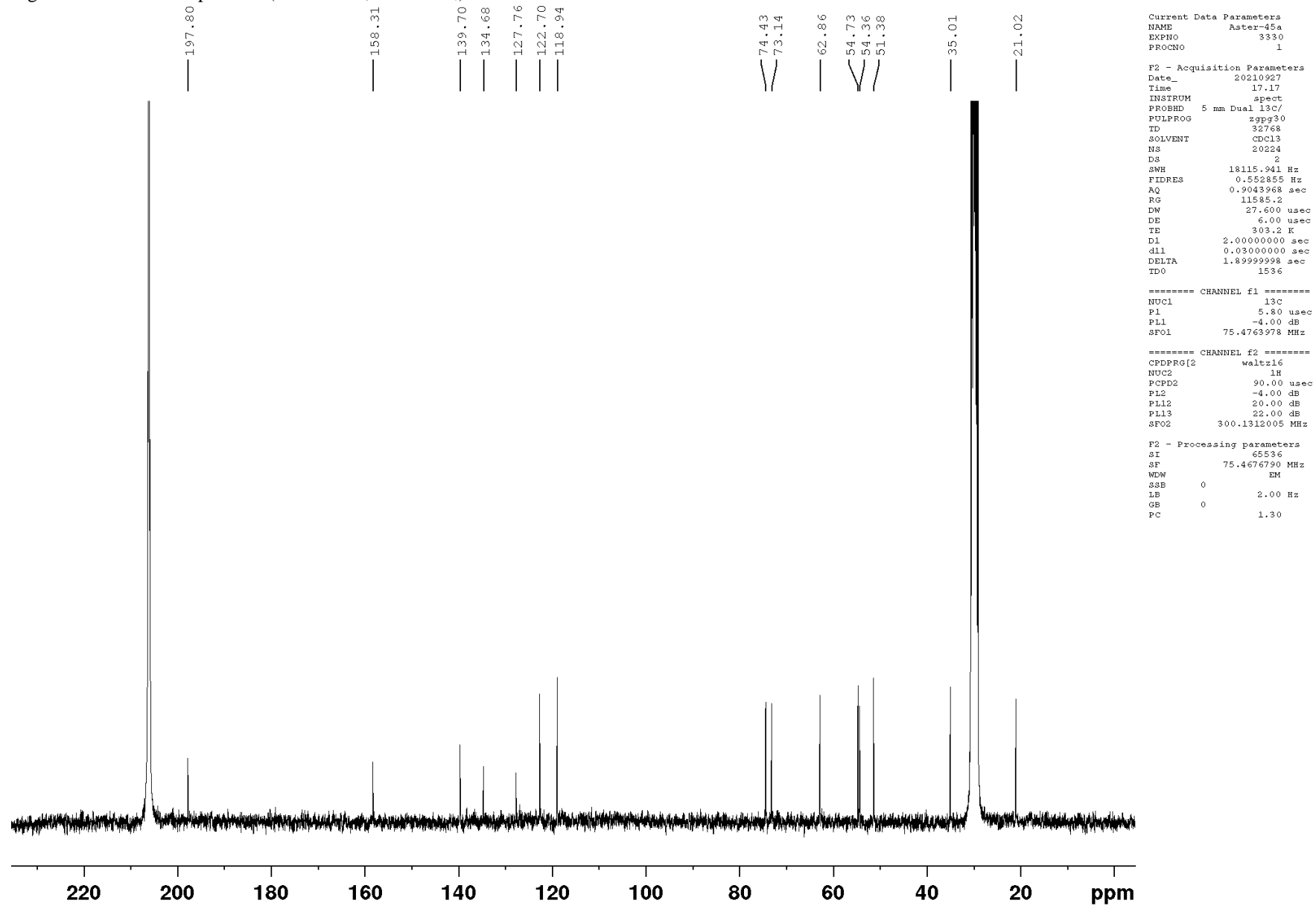


Figure S22. COSY-45 spectrum (700 MHz, acetone-d₆) of **3**

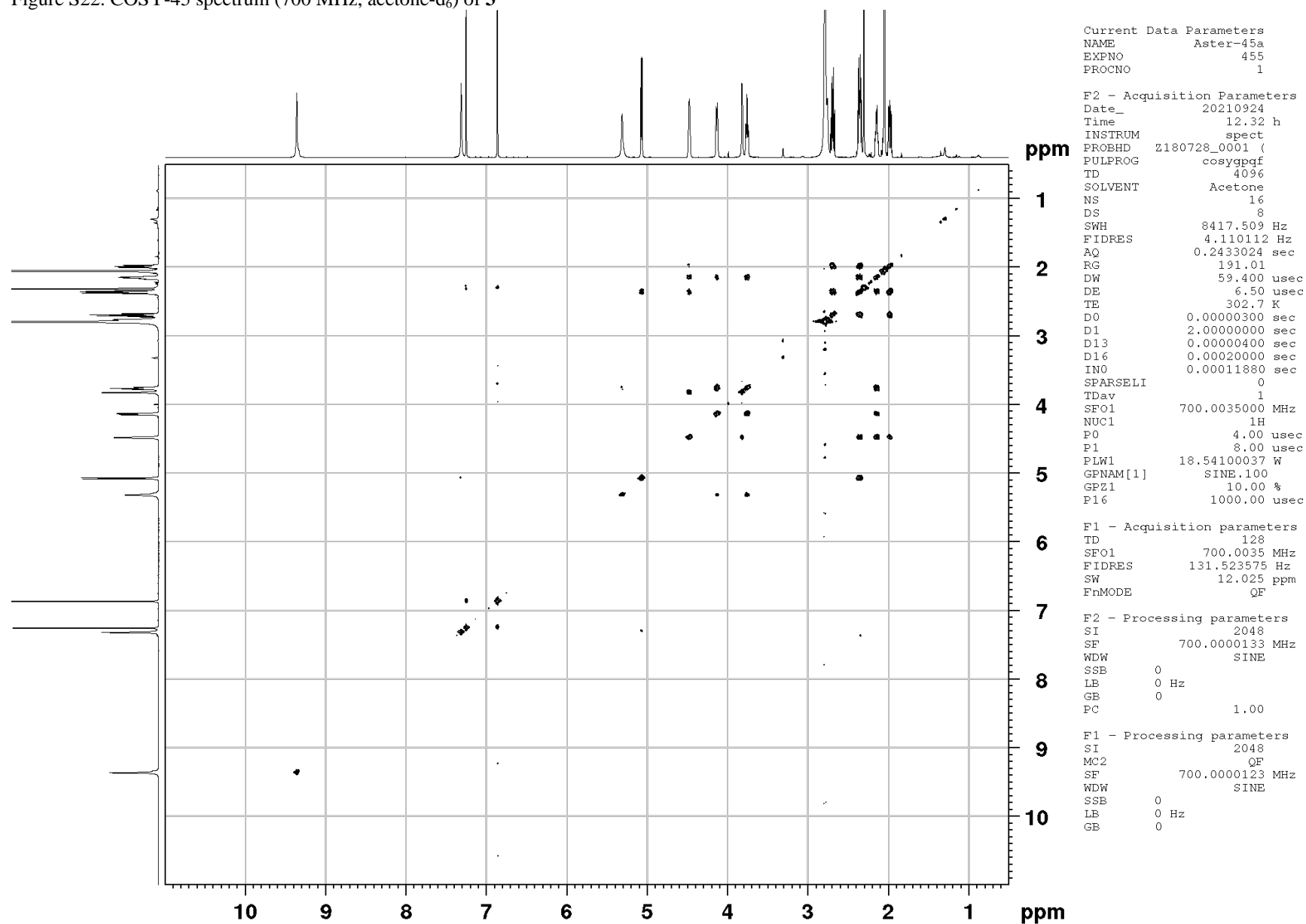


Figure S23. HSQC spectrum (700 MHz, acetone-d₆) of **3**

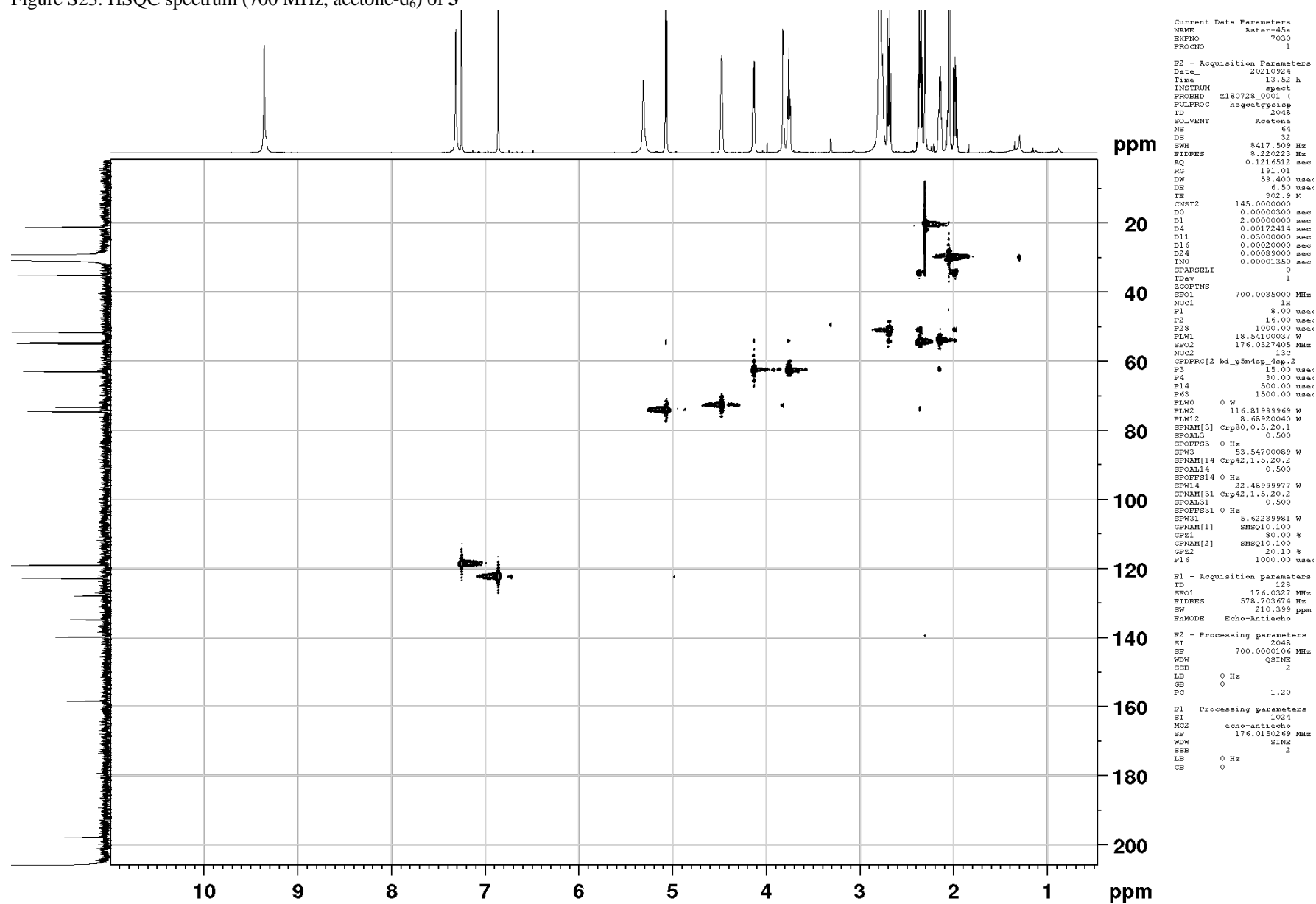
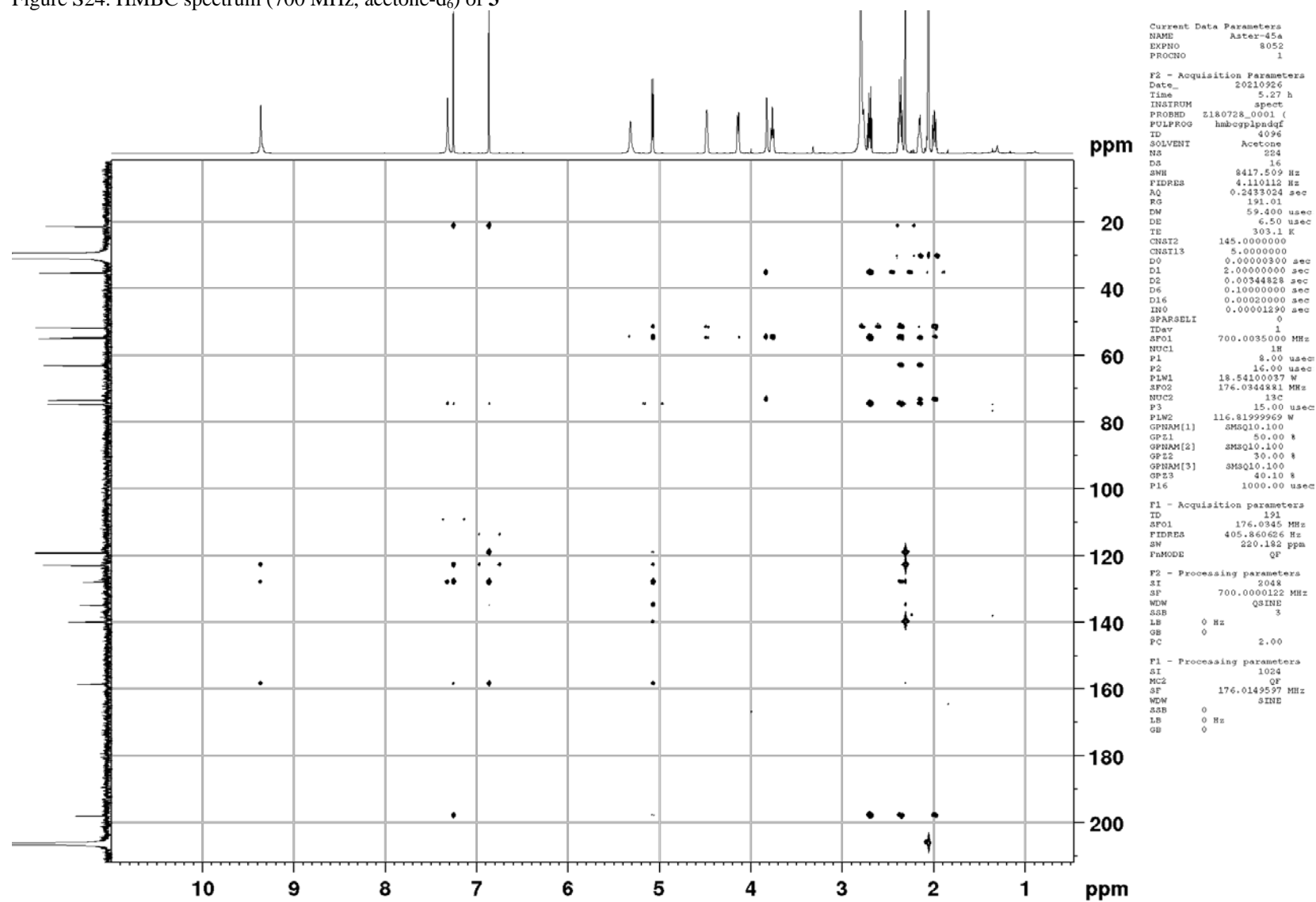


Figure S24. HMBC spectrum (700 MHz, acetone-d₆) of **3**



Current Data Parameters
NAME Aster-45a
EXPNO 8052
PROCNO 1

F2 - Acquisition Parameters
Date_ 20210926
Time 5:27 h
INSTRUM spect
PROBHD Z190728_0001 (

PULPROG hmcgppipndgfi
ID 4096
SOLVENT Acetone
NS 224
DS 16
SMH 8417.509 Hz
FIDRES 4.110112 Hz
AQ 0.2433024 sec
RG 191.01
DM 59.400 usec
DE 6.50 usec
TE 303.1 K
CNS12 145.0000000
CNS13 5.0000000
D0 0.00000300 sec
D1 2.00000000 sec
D2 0.00344828 sec
D4 0.10000000 sec
D16 0.00020000 sec
INO 0.00001290 sec
SPARSELI 0
TDav 1
SF01 700.0035000 MHz
NUC1 1H
P1 8.00 usec
P2 16.00 usec
PLW1 18.54100037 W
SF02 176.0344881 MHz
NUC2 13C
P3 15.00 usec
PLW2 116.81999969 W
GPNAM[1] SMSQ10.100
GP11 50.00 %
GPNAM[2] SMSQ10.100
GP12 30.00 %
GPNAM[3] SMSQ10.100
GP13 40.10 %
PL6 1000.00 usec

F1 - Acquisition parameters
TD 191
SF01 176.0345 MHz
FIDRES 405.860626 Hz
SW 220.182 ppm
F0MODE QF

F2 - Processing parameters
SI 2048
SF 700.0000122 MHz
WDW Q3INE
SSB 3
LB 0 Hz
GB 0
PC 2.00

F1 - Processing parameters
SI 1024
MC2 QF
SF 176.0149597 MHz
WDW SINE
SSB 0
LB 0 Hz
GB 0

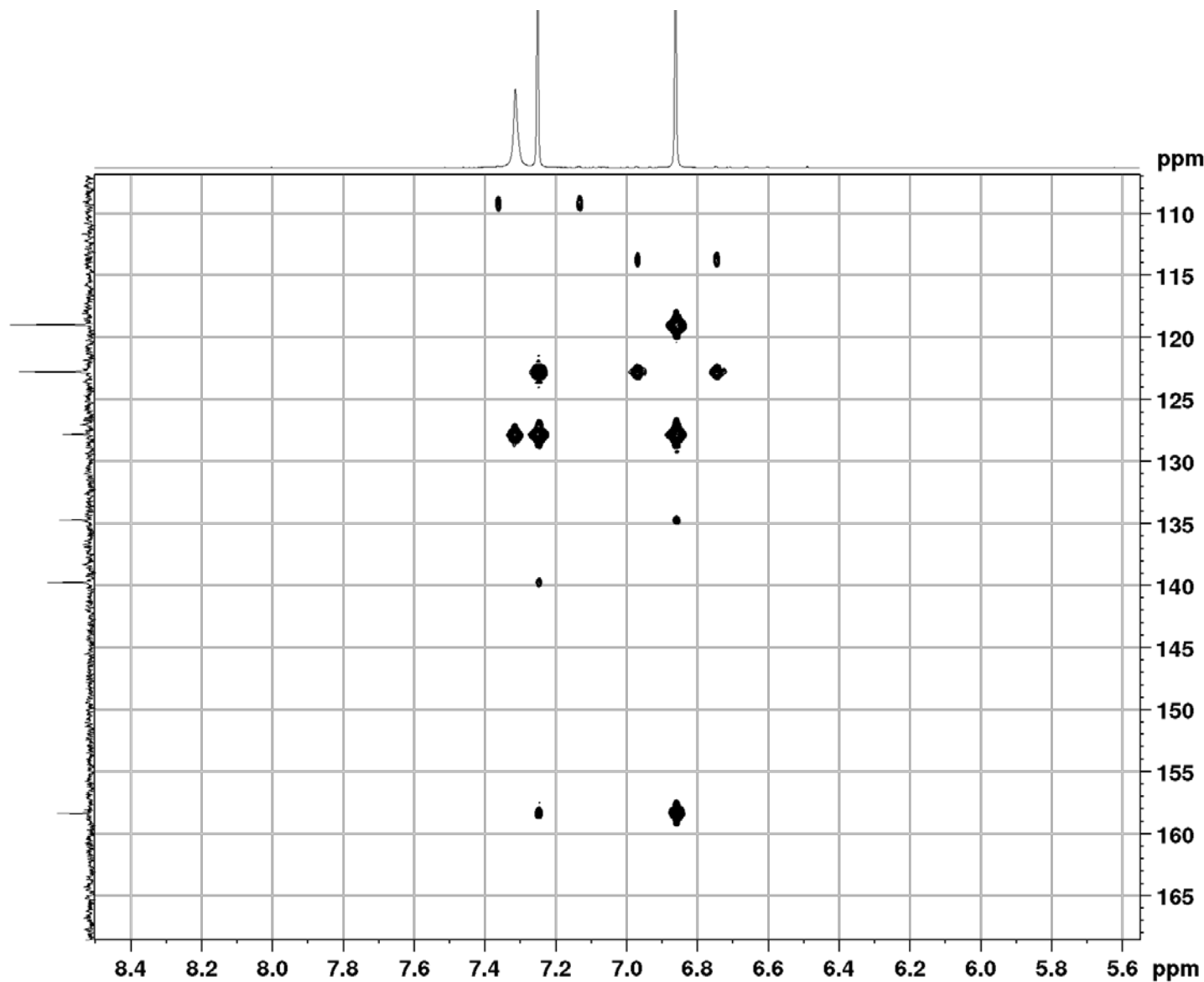


Figure S25. ROESY spectrum (700 MHz, acetone-d₆) of **3**

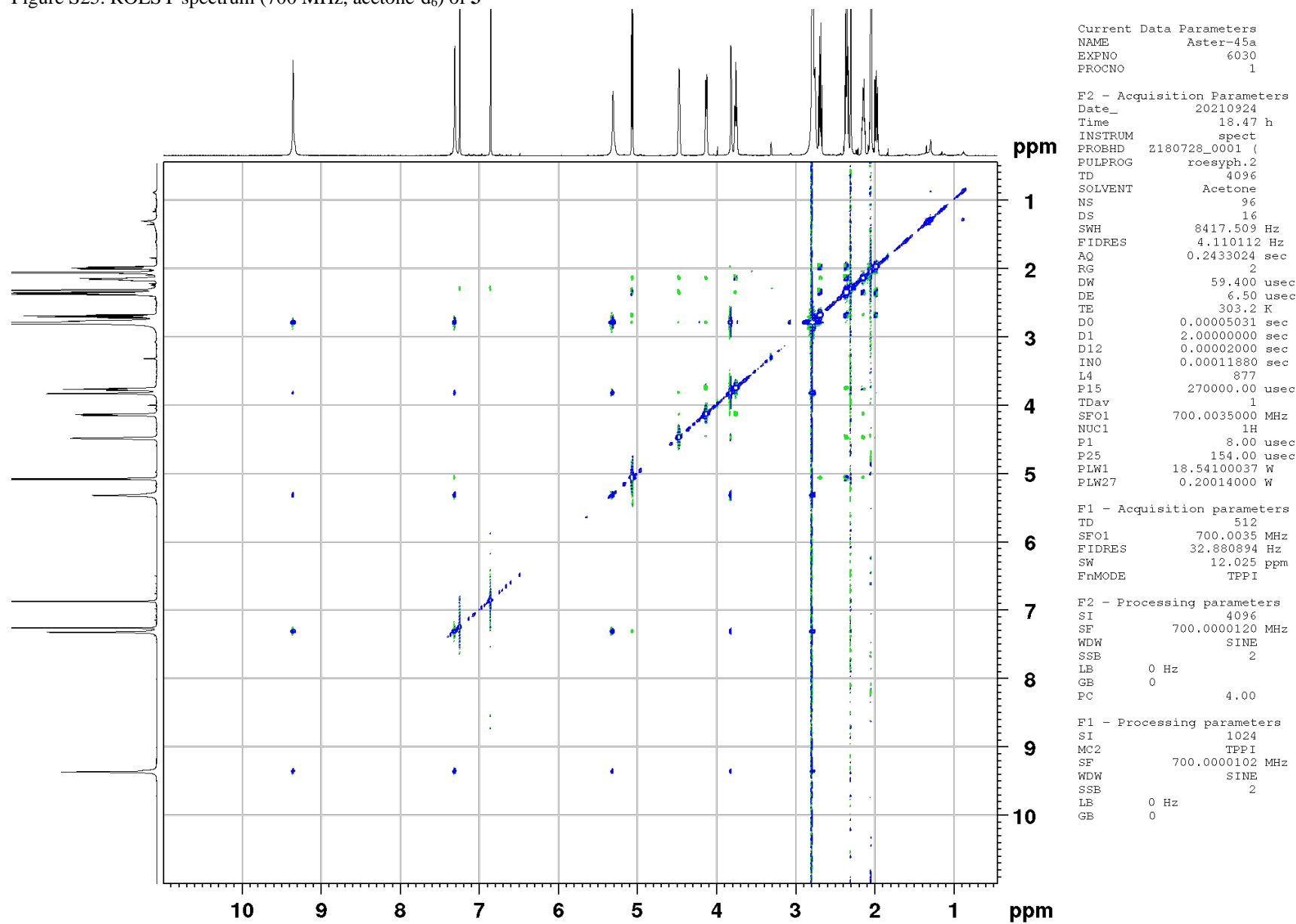
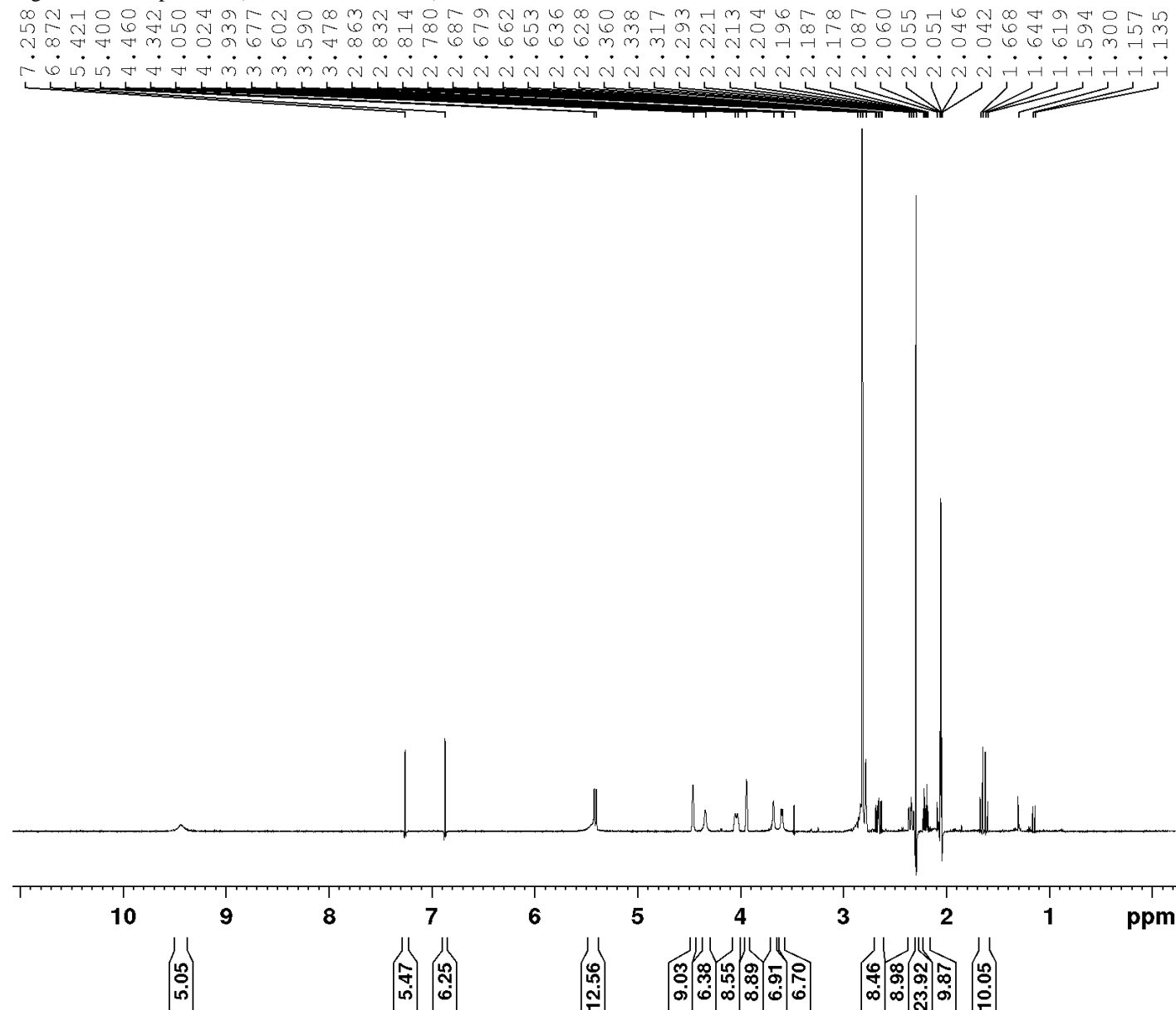


Figure S26. ¹H spectrum (500 MHz, acetone-d₆) of **4**

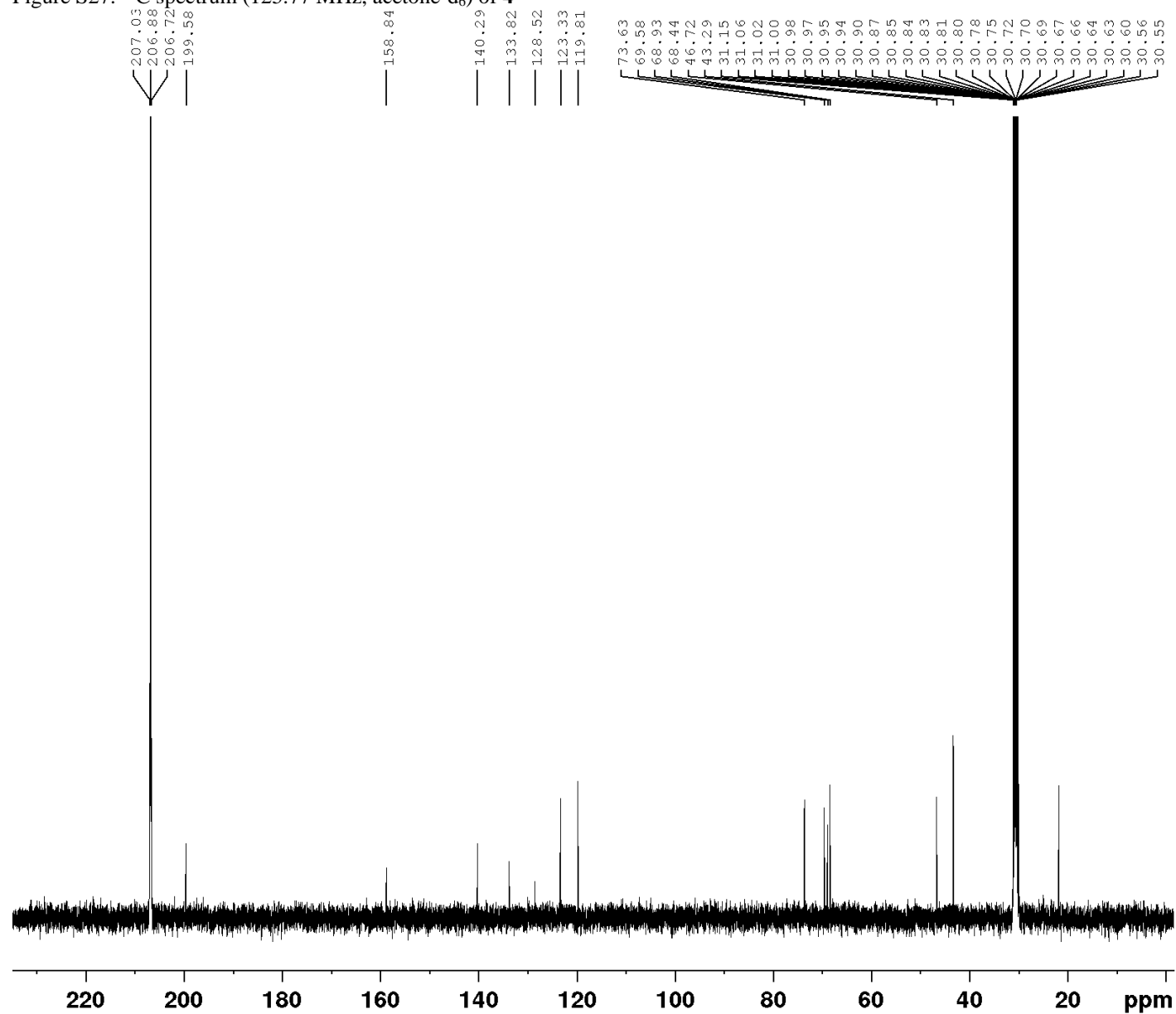


Current Data Parameters
NAME Aster-53-1
EXPNO 40
PROCNO 1

F2 - Acquisition Parameters
Date_ 20210914
Time 12.04 h
INSTRUM spect
PROBHD Z113652_0155 (
PULPROG zg
TD 32768
SOLVENT Acetone
NS 1
DS 2
SWH 5656.108 Hz
FIDRES 0.345221 Hz
AQ 2.8966911 sec
RG 91.04
DW 88.400 usec
DE 6.50 usec
TE 303.2 K
D1 1.00000000 sec
TD0 1
SFO1 500.1327246 MHz
NUC1 1H
P1 12.00 usec
PLW1 15.84899998 W

F2 - Processing parameters
SI 65536
SF 500.1300133 MHz
WDW GM
SSB 0
LB -2.50 Hz
GB 0.1
PC 3.00

Figure S27. ^{13}C spectrum (125.77 MHz, acetone- d_6) of **4**



Current Data Parameters
 NAME Aster-53-1
 EXPNO 3130
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20210909
 Time 10.49 h
 INSTRUM spect
 PROBHD Z113652_0155 (
 PULPROG zgpg30
 TD 32768
 SOLVENT Acetone
 NS 1094
 DS 4
 SWH 29761.904 Hz
 FIDRES 1.816522 Hz
 AQ 0.5505024 sec
 RG 196.84
 DW 16.800 usec
 DE 6.50 usec
 TE 303.1 K
 D1 2.00000000 sec
 D11 0.03000000 sec
 TD0 4096
 SFO1 125.7722511 MHz
 NUC1 ^{13}C
 P0 3.96 usec
 P1 11.88 usec
 PLW1 79.43299866 W
 SFO2 500.1325007 MHz
 NUC2 ^1H
 CPDPRG[2] waltz16
 PCPD2 80.00 usec
 PLW2 15.84899998 W
 PLW12 0.33610001 W
 PLW13 0.16906001 W

F2 - Processing parameters
 SI 65536
 SF 125.7575780 MHz
 WDW EM
 SSB 0
 LB 1.00 Hz
 GB 0
 PC 1.40

Figure S28. DEPT-135 NMR spectrum (125.77 MHz, acetone-d₆) of **4**

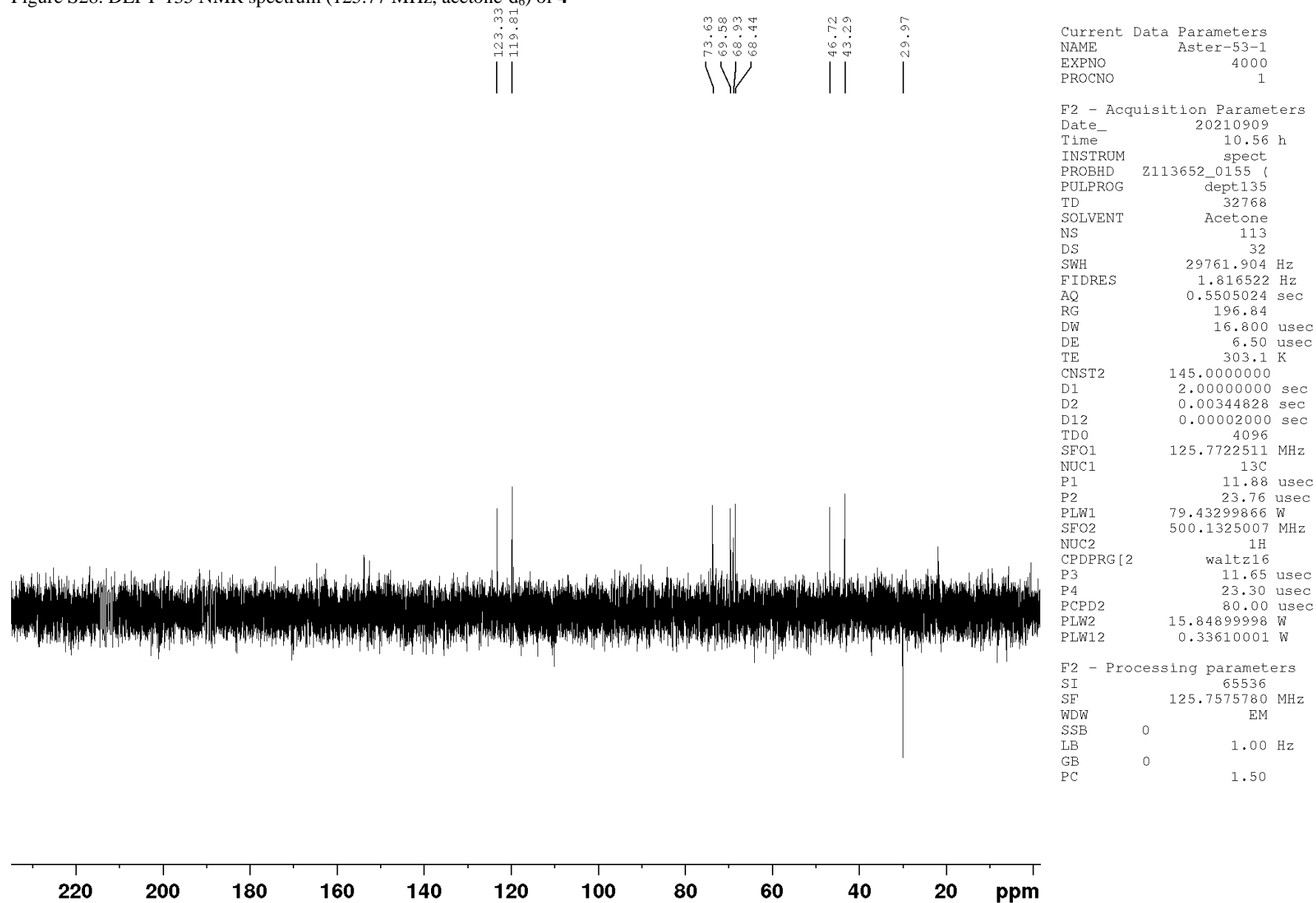


Figure S29. COSY-45 spectrum (500 MHz, acetone-d₆) of **4**

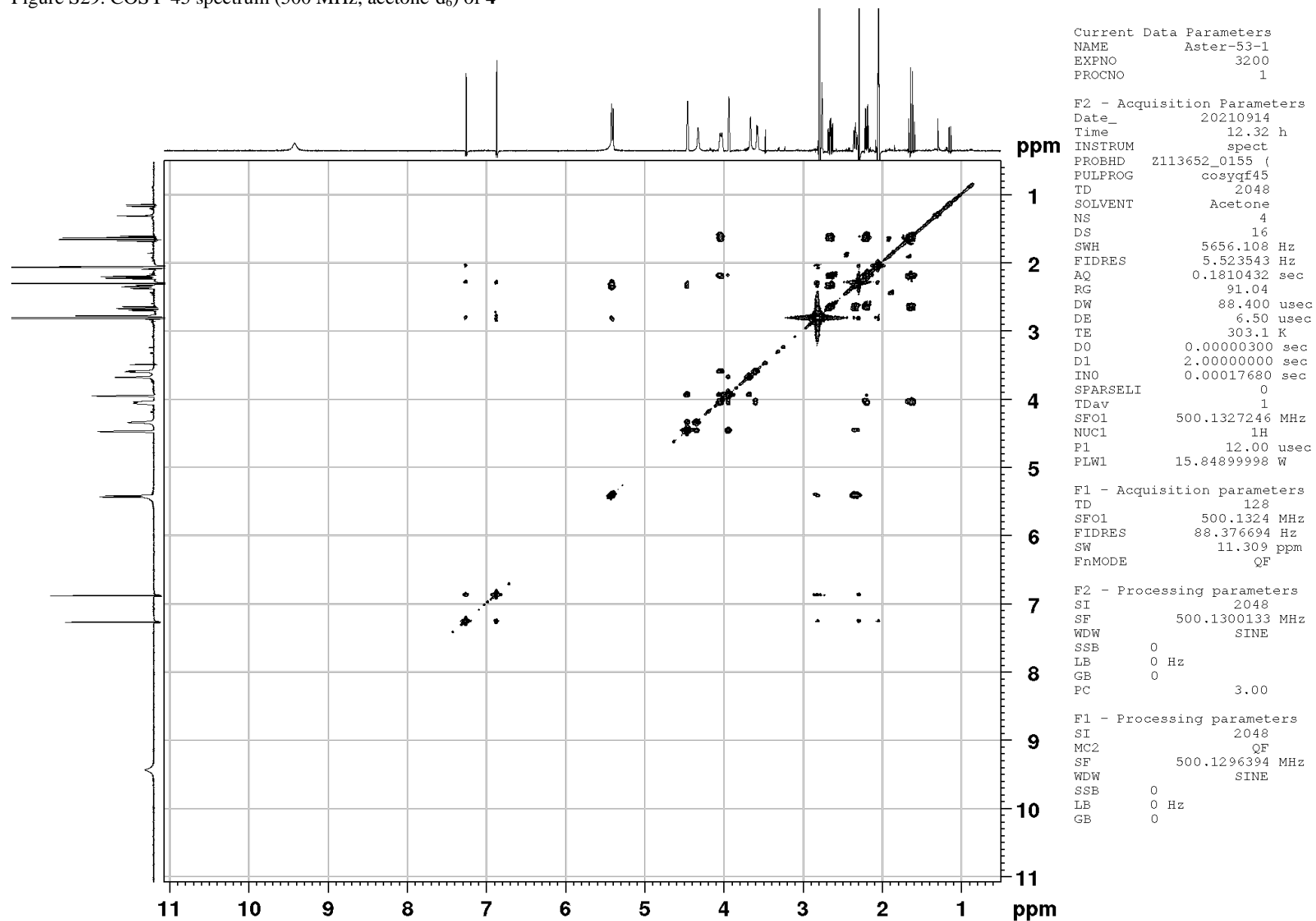


Figure S30. HSQC spectrum (500 MHz, acetone-d₆) of **4**

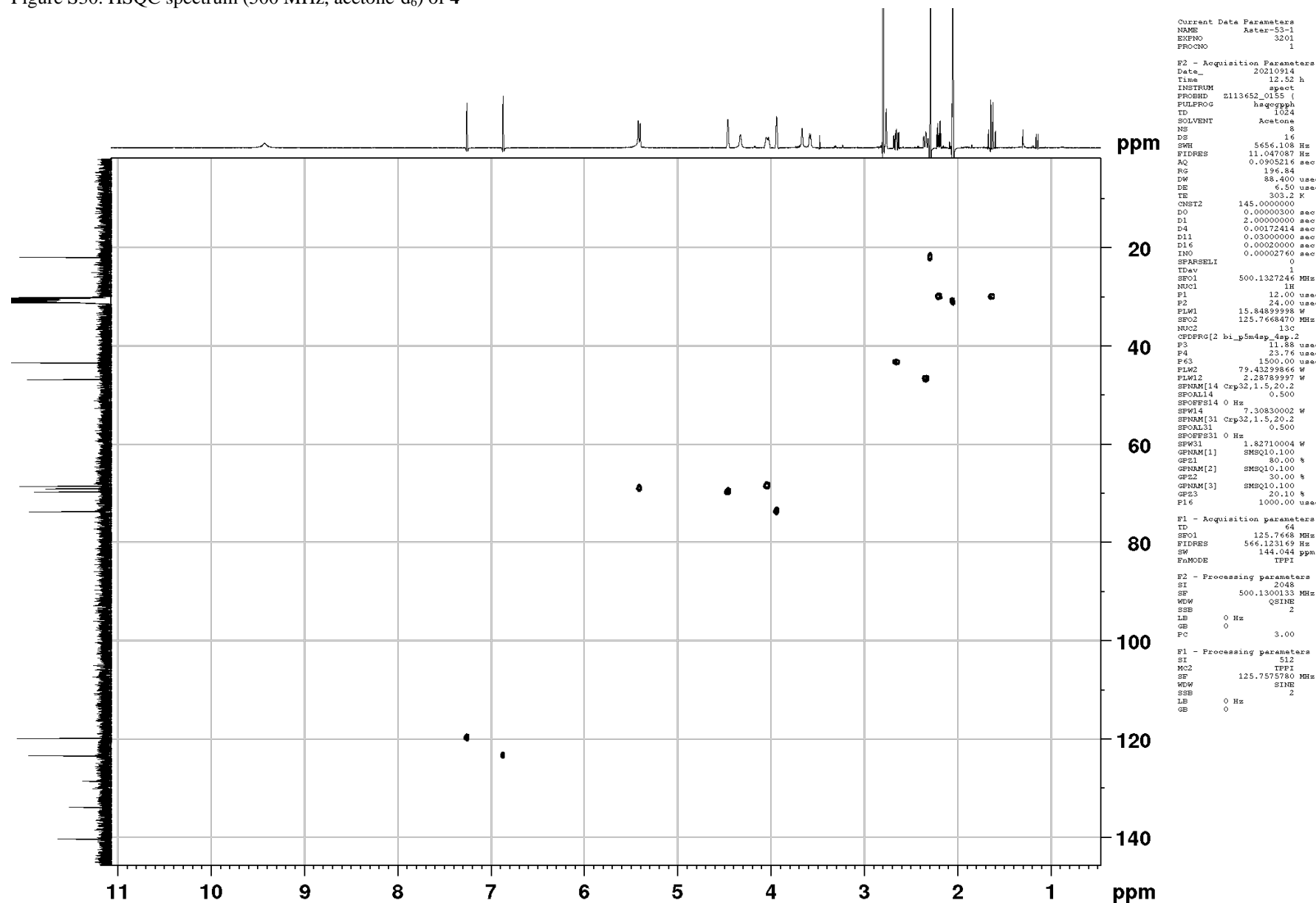


Figure S31. HMBC spectrum (500 MHz, acetone-d₆) of **4**

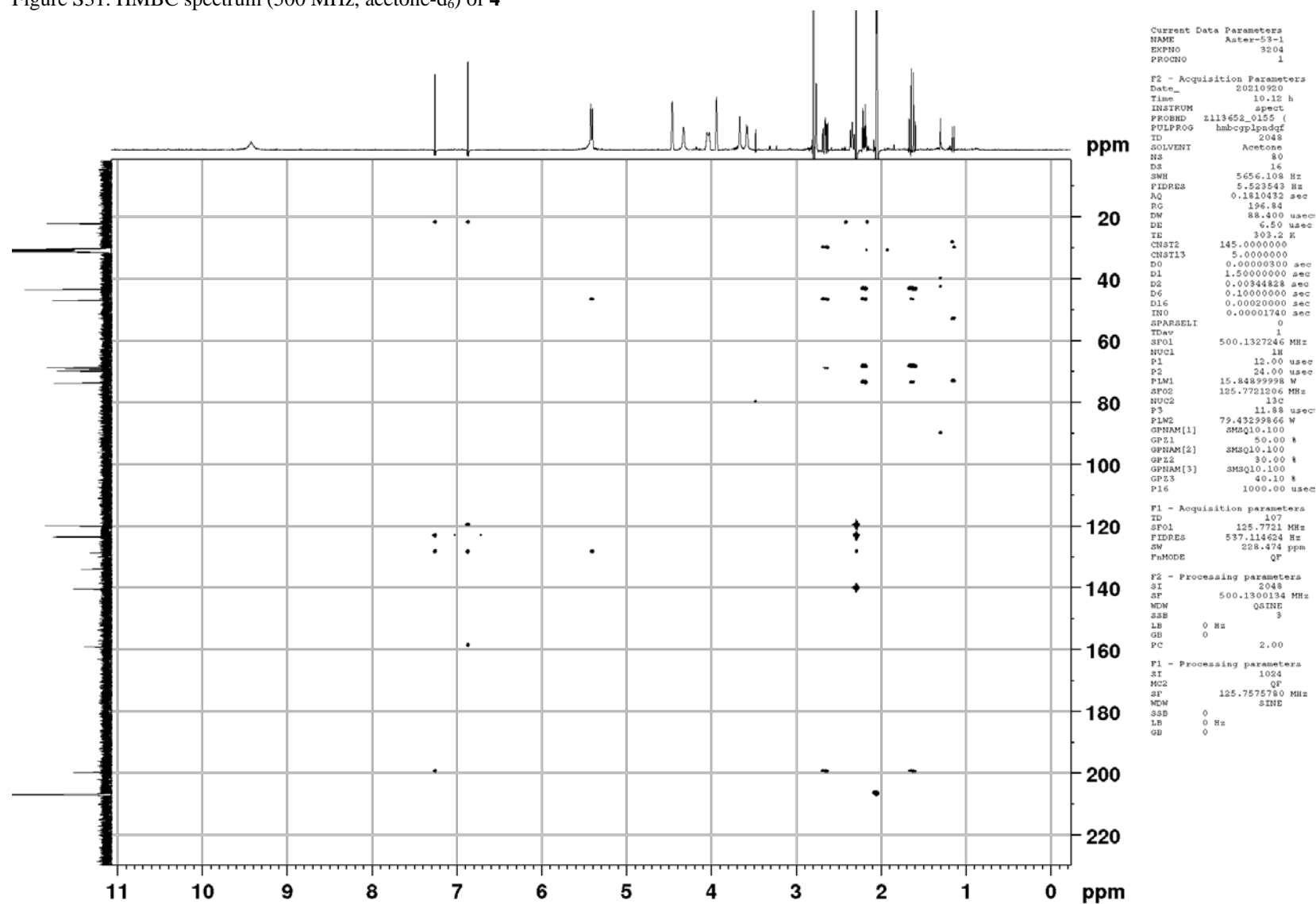


Figure S32. ROESY spectrum (500 MHz, acetone-d₆) of **4**

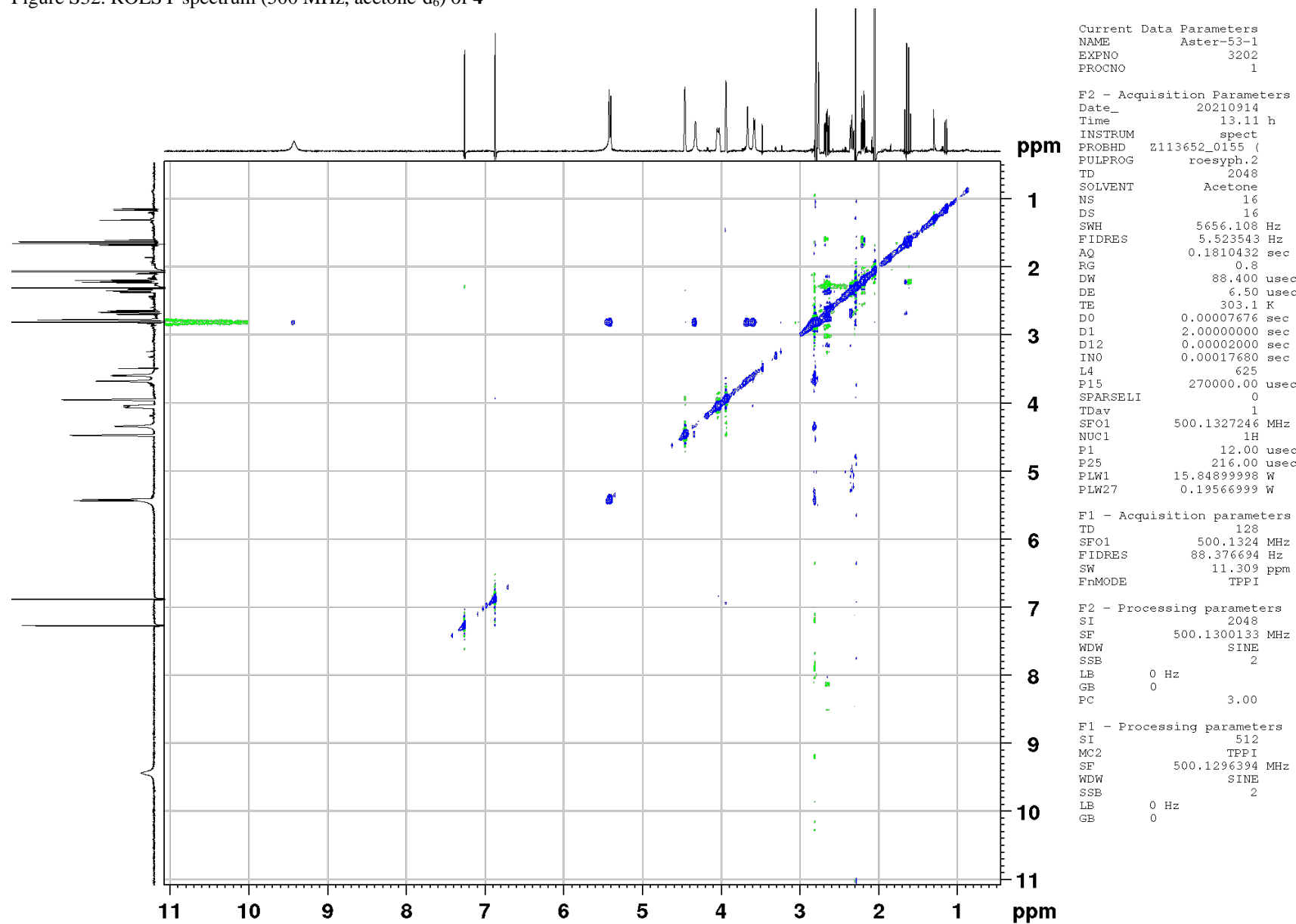


Figure S33. ^1H NMR spectrum (500 MHz, CDCl_3) of **5**

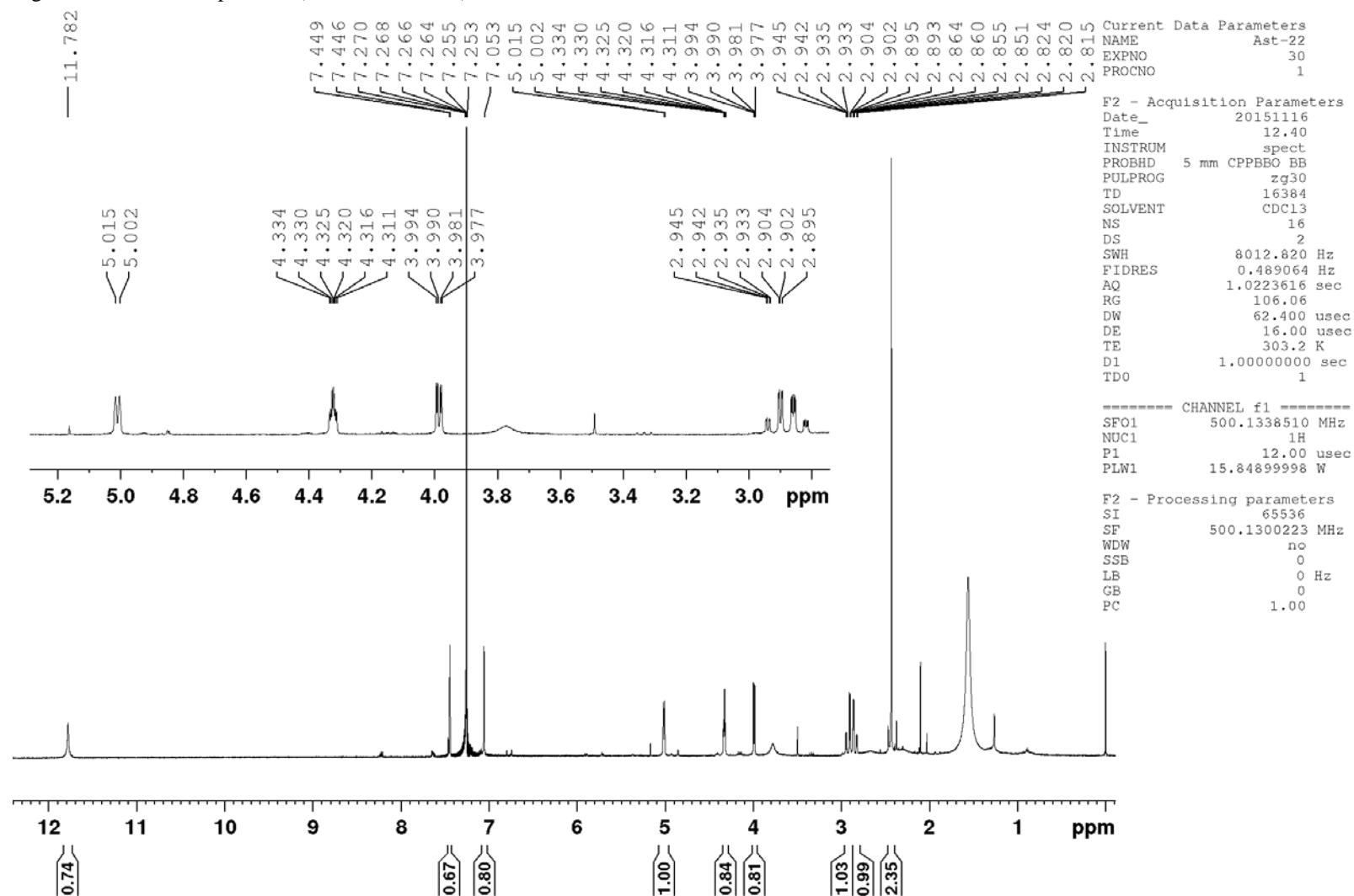
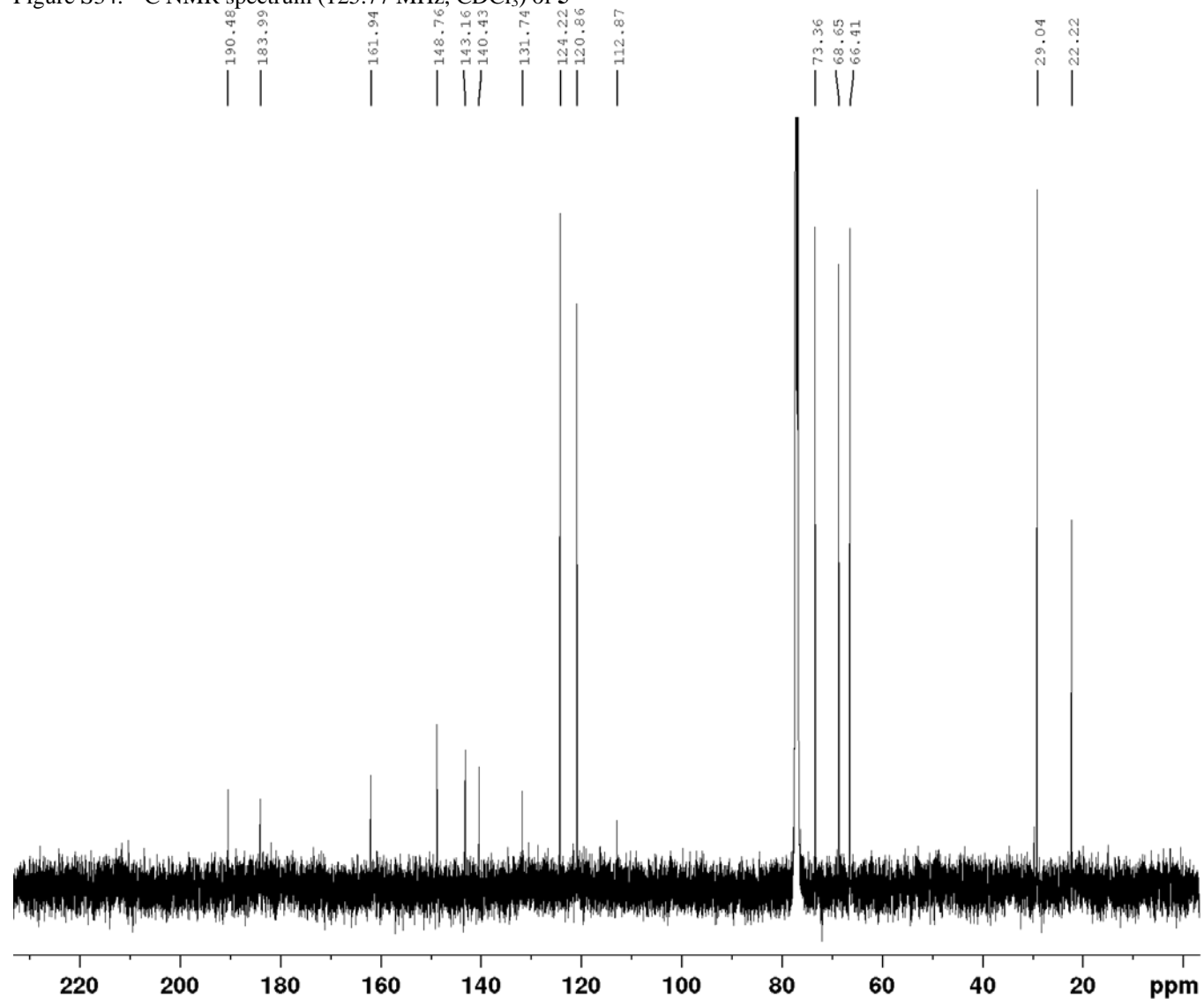


Figure S34. ^{13}C NMR spectrum (125.77 MHz, CDCl_3) of **5**



```

Current Data Parameters
NAME           Ast-22
EXPNO          3530
PROCNO         1

F2 - Acquisition Parameters
Date_          20151116
Time           12.43
INSTRUM        spect
PROBHD         5 mm CPPBBO BB
PULPROG        zgpg
TD             65536
SOLVENT        CDCl3
NS             2947
DS             2
SWH            29761.904 Hz
FIDRES         0.454131 Hz
AQ            1.1010048 sec
RG            196.84
DW            16.800 usec
DE            32.00 usec
TE            303.2 K
D1            2.00000000 sec
D11           0.03000000 sec
TD0           4096

===== CHANNEL f1 =====
SFO1          125.7722511 MHz
NUC1           13C
P1            10.00 usec
PLW1          74.13099670 W

===== CHANNEL f2 =====
SFO2          500.1325007 MHz
NUC2           1H
CPDPRG[2]     waltz16
PCPD2         78.40 usec
PLW2          15.84899998 W
PLW12         0.31623000 W
PLW13         0.15849000 W

F2 - Processing parameters
SI            65536
SF           125.7577920 MHz
WDW           EM
SSB           0
LB            1.00 Hz
GB            0
PC            1.40
    
```

Figure S35. DEPT-135 spectrum (125.77 MHz, CDCl₃) of **5**

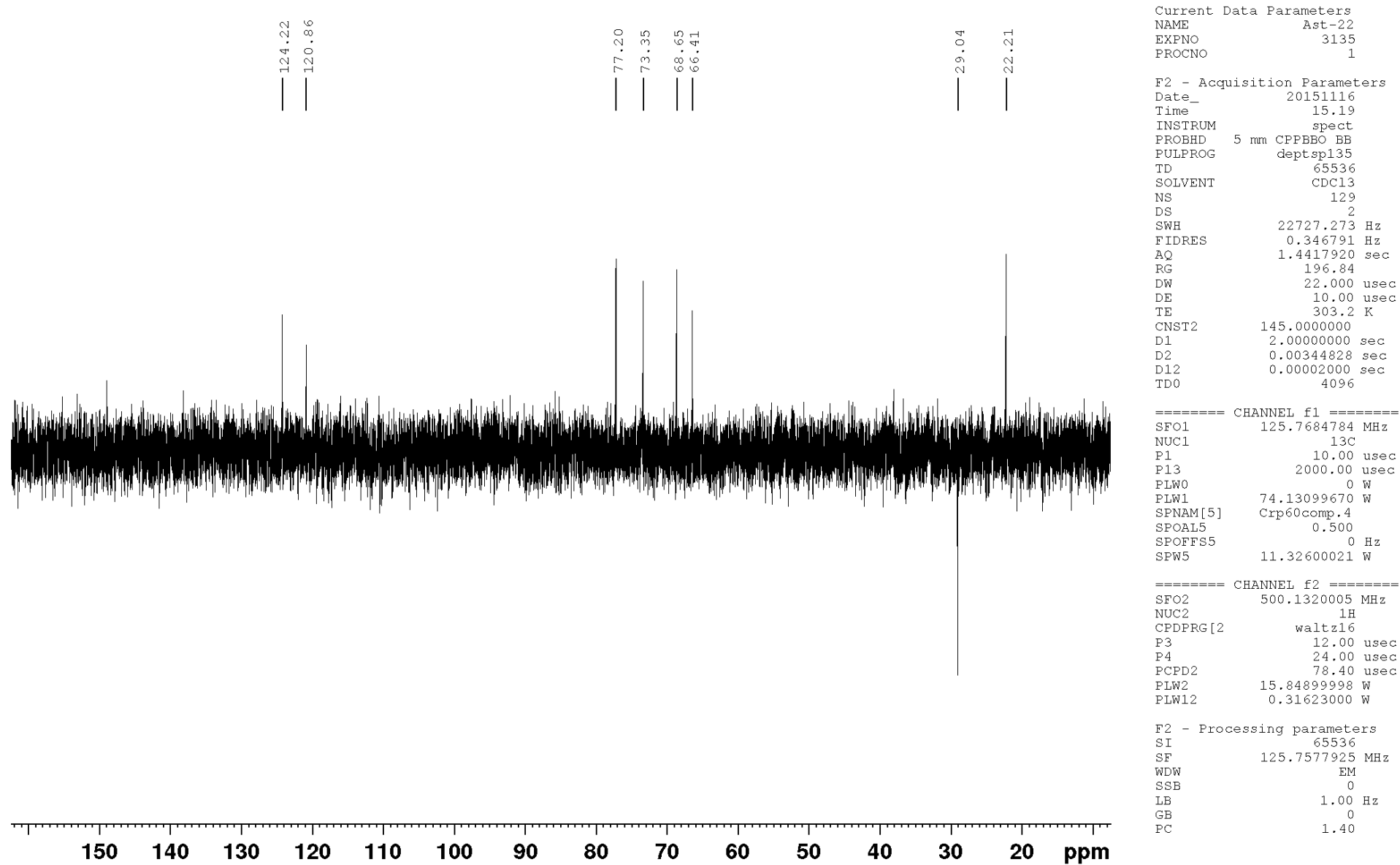
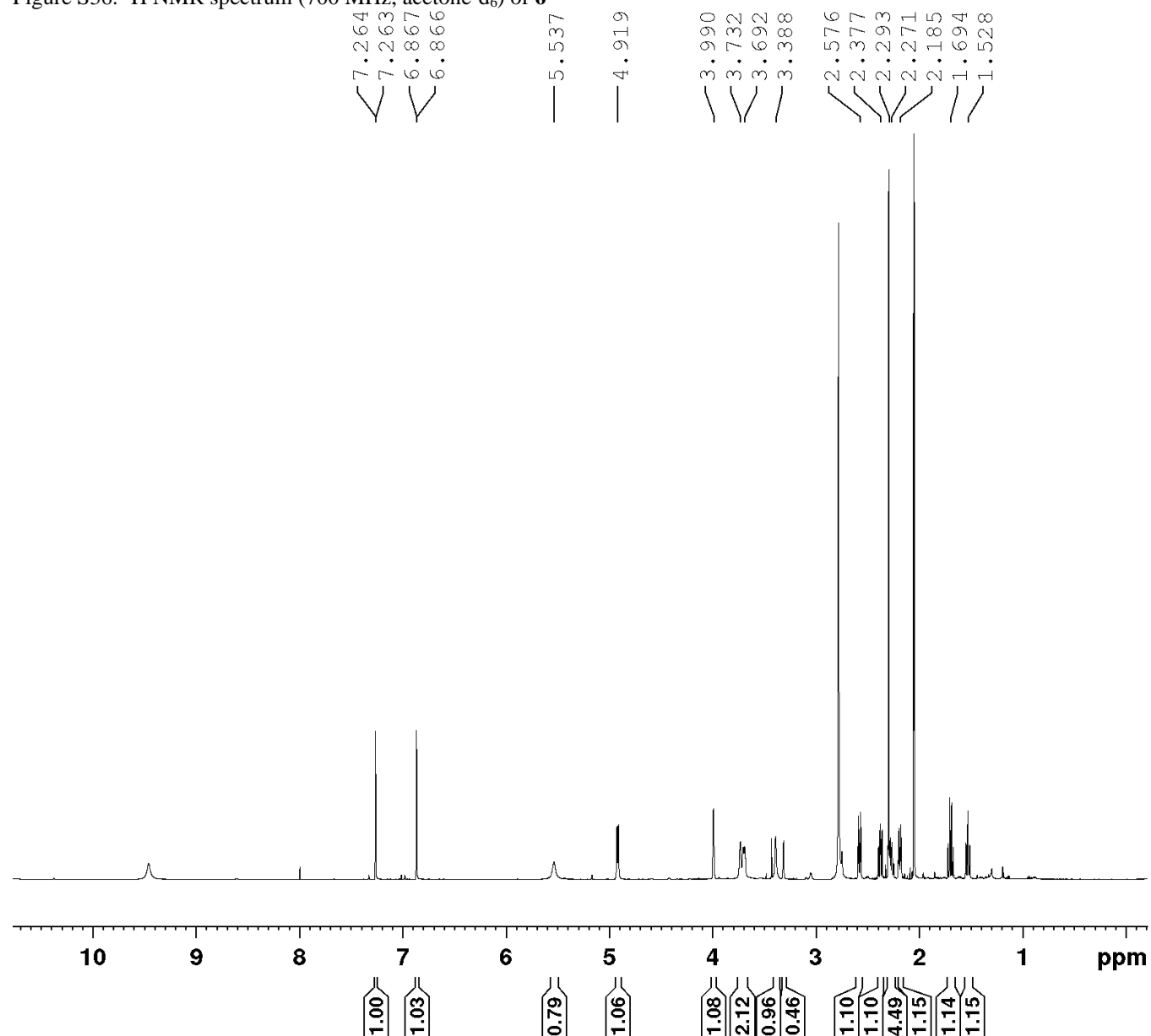


Figure S36. ¹H NMR spectrum (700 MHz, acetone-d₆) of **6**

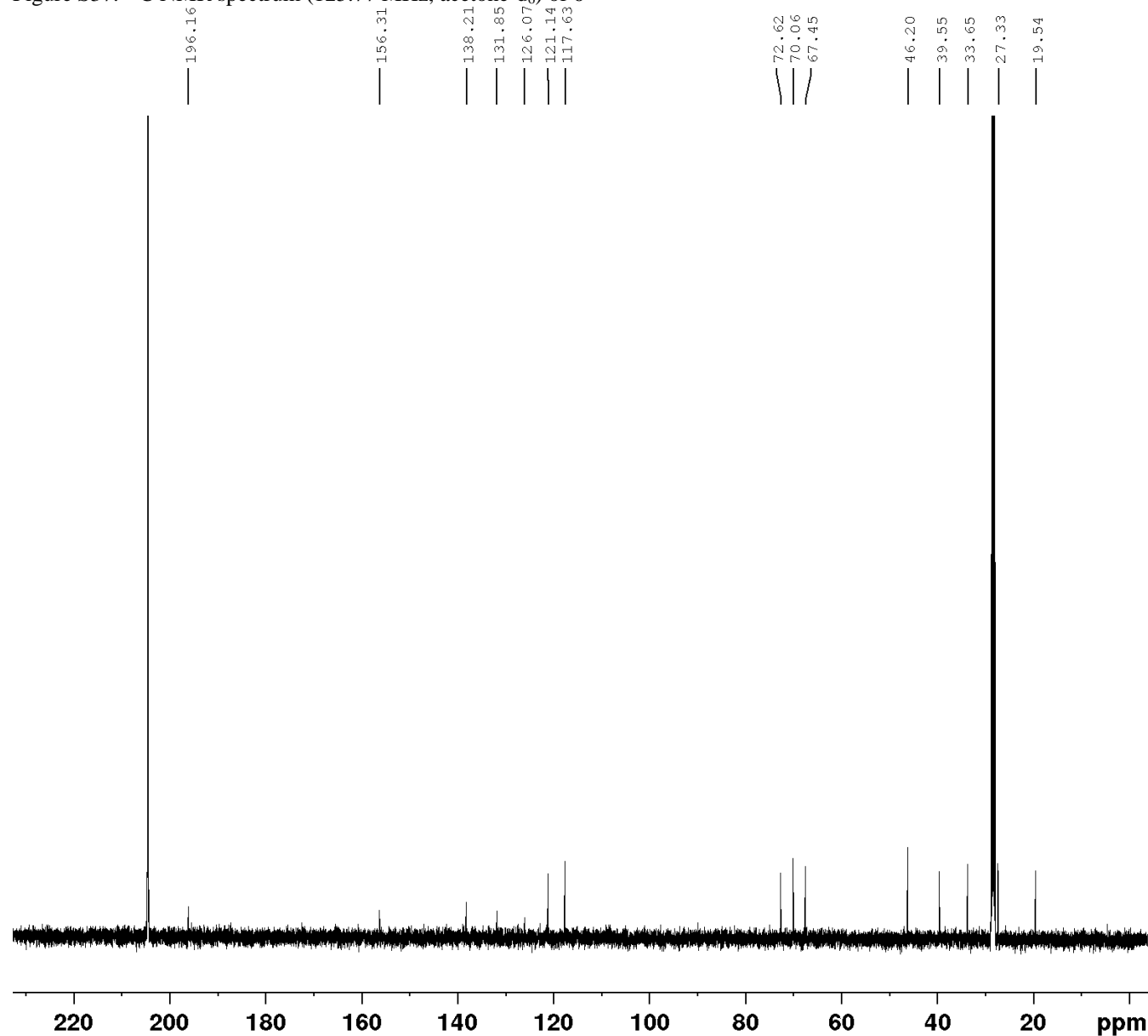


Current Data Parameters
NAME Aster-44a
EXPNO 33
PROCNO 1

F2 - Acquisition Parameters
Date_ 20210813
Time 17.23 h
INSTRUM spect
PROBHD Z180728_0001 (
PULPROG zg30
TD 65536
SOLVENT Acetone
NS 34
DS 4
SWH 7692.308 Hz
FIDRES 0.234751 Hz
AQ 4.2598400 sec
RG 165.68
DW 65.000 usec
DE 6.50 usec
TE 306.0 K
D1 0 sec
TD0 1
SFO1 700.0037100 MHz
NUC1 1H
P0 2.67 usec
P1 8.00 usec
PLW1 18.54100037 W

F2 - Processing parameters
SI 65536
SF 700.0000120 MHz
WDW EM
SSB 0
LB 0.10 Hz
GB 0
PC 4.00

Figure S37. ^{13}C NMR spectrum (125.77 MHz, acetone- d_6) of **6**

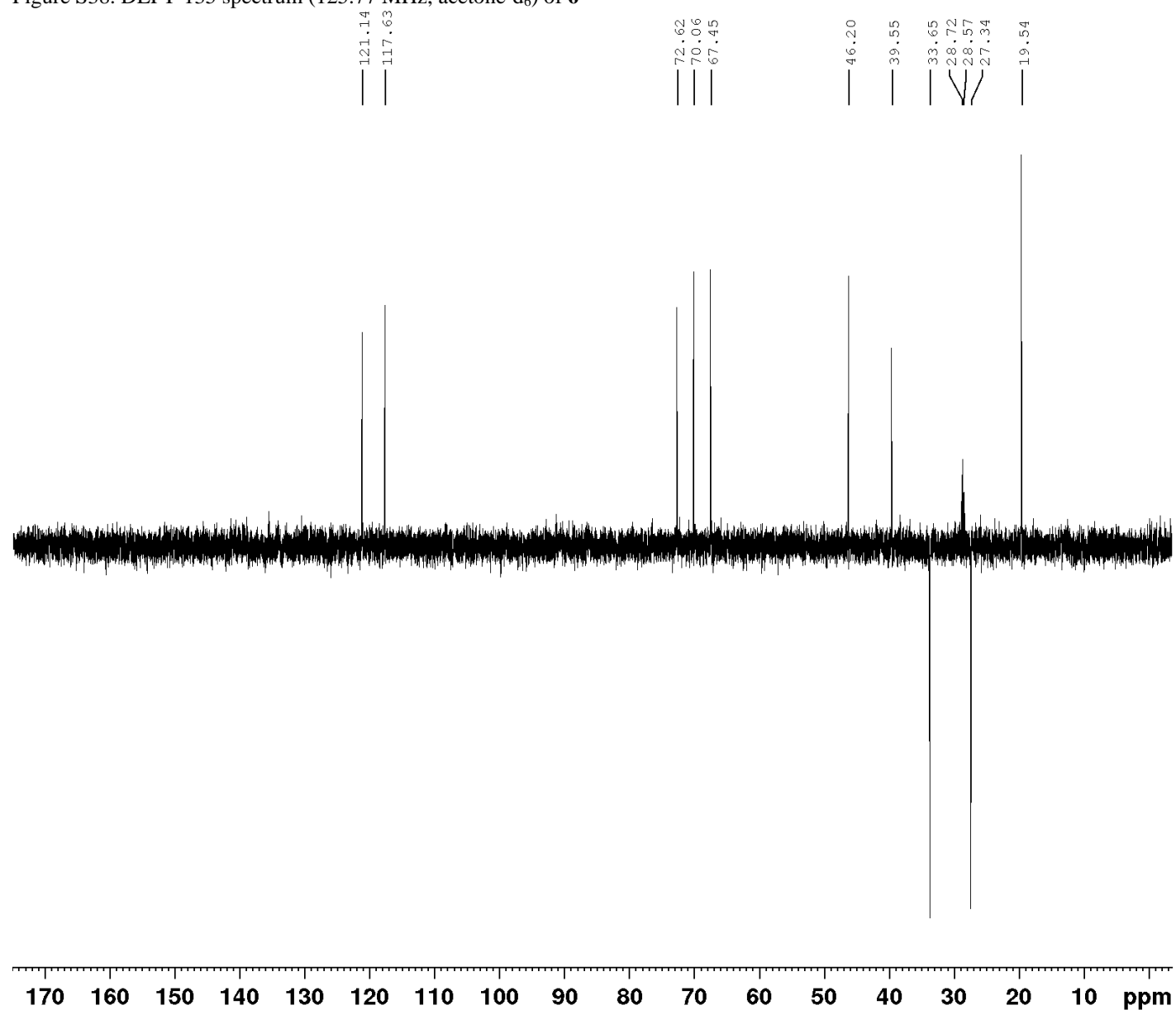


Current Data Parameters
NAME Aster-44a
EXPNO 3535
PROCNO 1

F2 - Acquisition Parameters
Date_ 20210817
Time 15.53 h
INSTRUM spect
PROBHD Z113652_0155 (
PULPROG zgpg30
TD 32768
SOLVENT Acetone
NS 256
DS 2
SWH 29761.904 Hz
FIDRES 1.816522 Hz
AQ 0.5505024 sec
RG 196.84
DW 16.800 usec
DE 6.50 usec
TE 308.2 K
D1 2.00000000 sec
D11 0.03000000 sec
TD0 512
SFO1 125.7722511 MHz
NUC1 ^{13}C
P0 3.96 usec
P1 11.88 usec
PLW1 79.43299866 W
SFO2 500.1325007 MHz
NUC2 ^1H
CPDPRG[2] waltz16
PCPD2 80.00 usec
PLW2 15.84899998 W
PLW12 0.33610001 W
PLW13 0.16906001 W

F2 - Processing parameters
SI 65536
SF 125.7578616 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.50

Figure S38. DEPT-135 spectrum (125.77 MHz, acetone-d₆) of **6**



Current Data Parameters
NAME Aster-44a
EXPNO 3135
PROCNO 1

F2 - Acquisition Parameters
Date_ 20210817
Time 15.41 h
INSTRUM spect
PROBHD Z113652_0155 (
PULPROG deptsp135
TD 65536
SOLVENT Acetone
NS 234
DS 2
SWH 22727.273 Hz
FIDRES 0.693581 Hz
AQ 1.4417920 sec
RG 196.84
DW 22.000 usec
DE 6.50 usec
TE 308.1 K
CNST2 145.0000000
D1 2.00000000 sec
D2 0.00344828 sec
D12 0.00002000 sec
TD0 64
SFO1 125.7684784 MHz
NUC1 13C
P1 11.88 usec
P13 2000.00 usec
PLW0 0 W
PLW1 79.43299866 W
SPNAM[5] Crp60comp.4
SPOAL5 0.500
SPOFFS5 0 Hz
SPW5 17.12899971 W
SFO2 500.1320005 MHz
NUC2 1H
CPDPRG[2] waltz16
P3 12.00 usec
P4 24.00 usec
PCPD2 80.00 usec
PLW2 15.84899998 W
PLW12 0.33610001 W

F2 - Processing parameters
SI 65536
SF 125.7578616 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 2.00

Figure S39. COSY-45 spectrum (700 MHz, acetone-d₆) of **6**

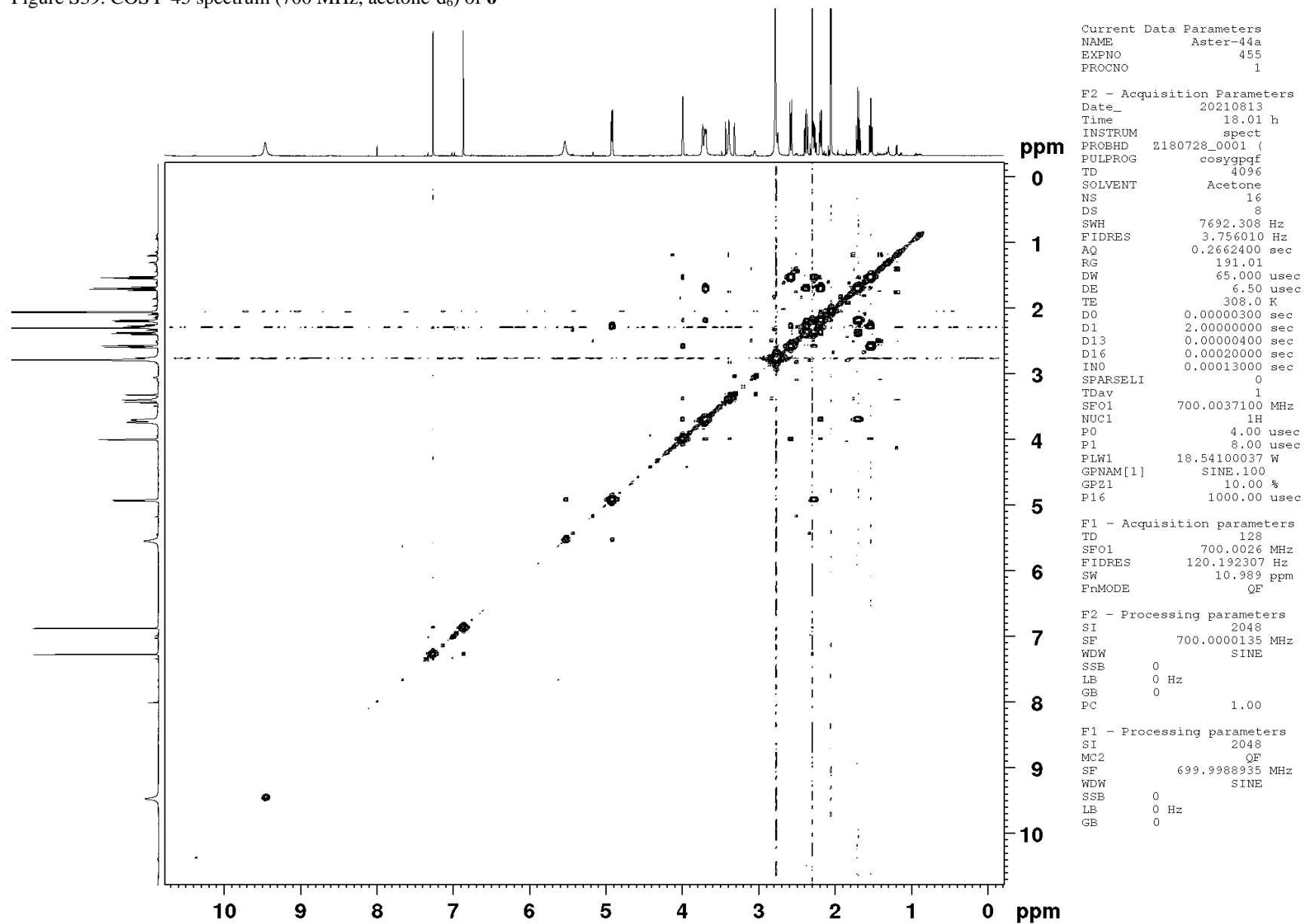


Figure S40. HSQC spectrum (700 MHz, acetone-d₆) of **6**

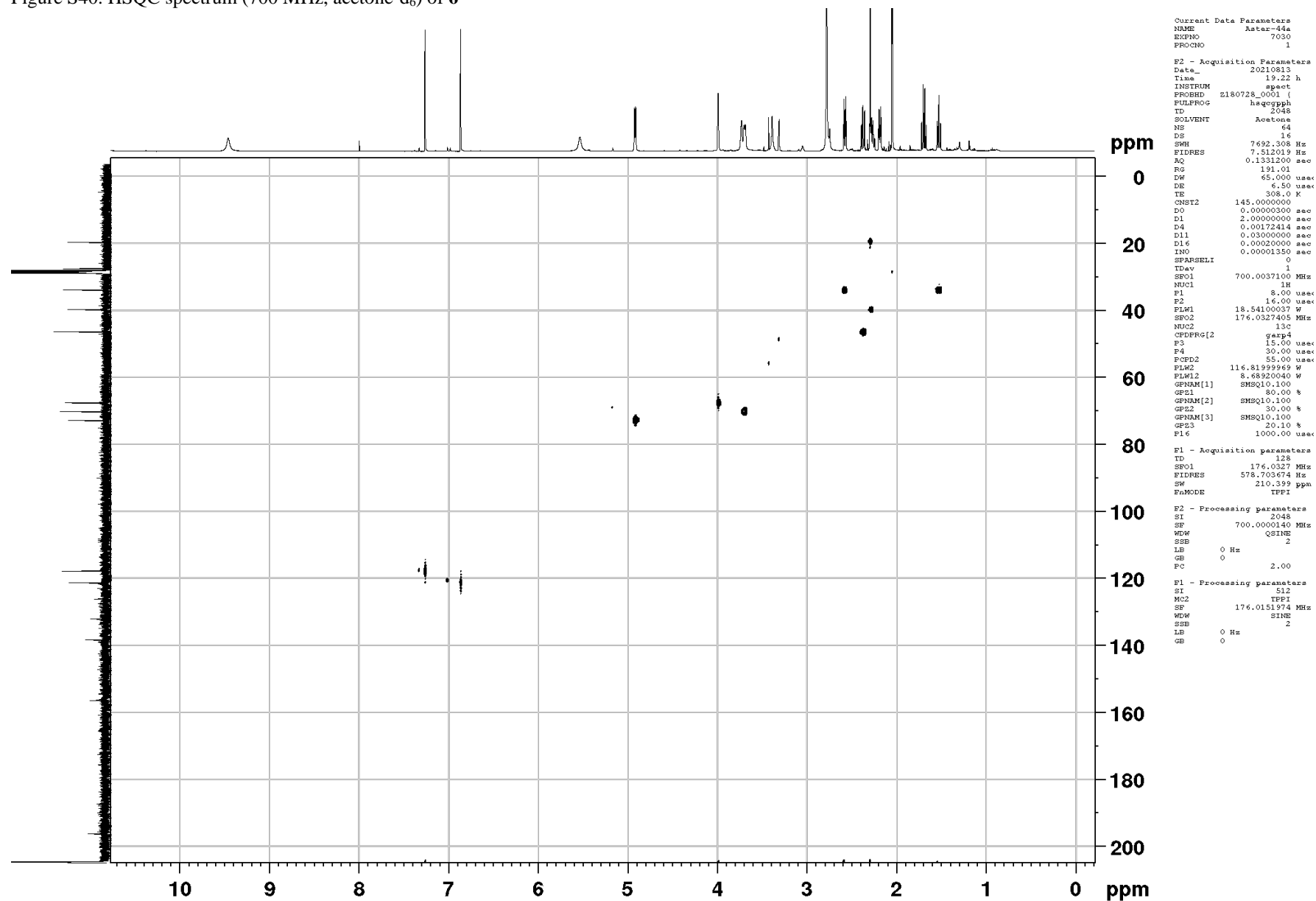


Figure S41. HMBC spectrum (700 MHz, acetone-d₆) of **6**

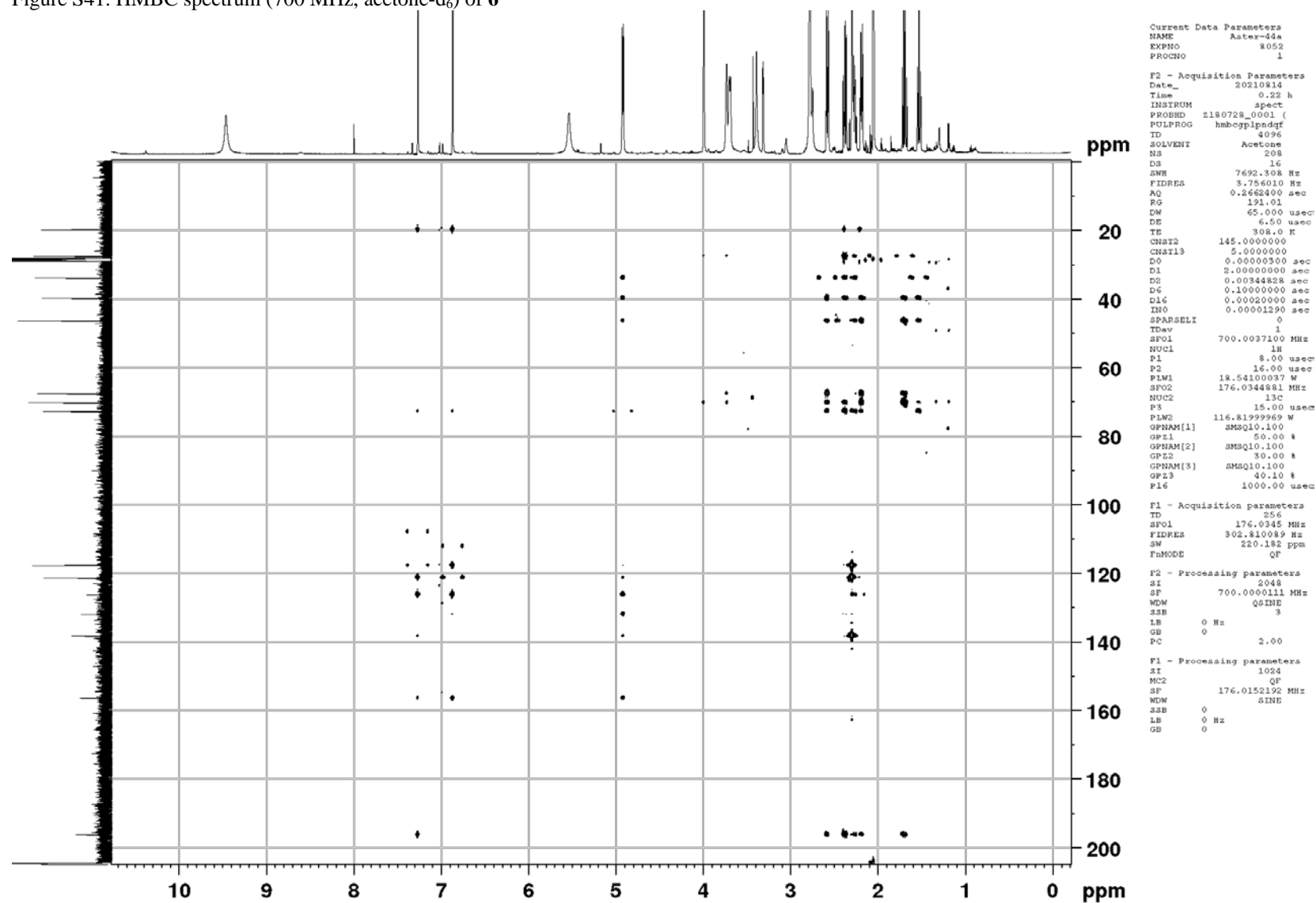
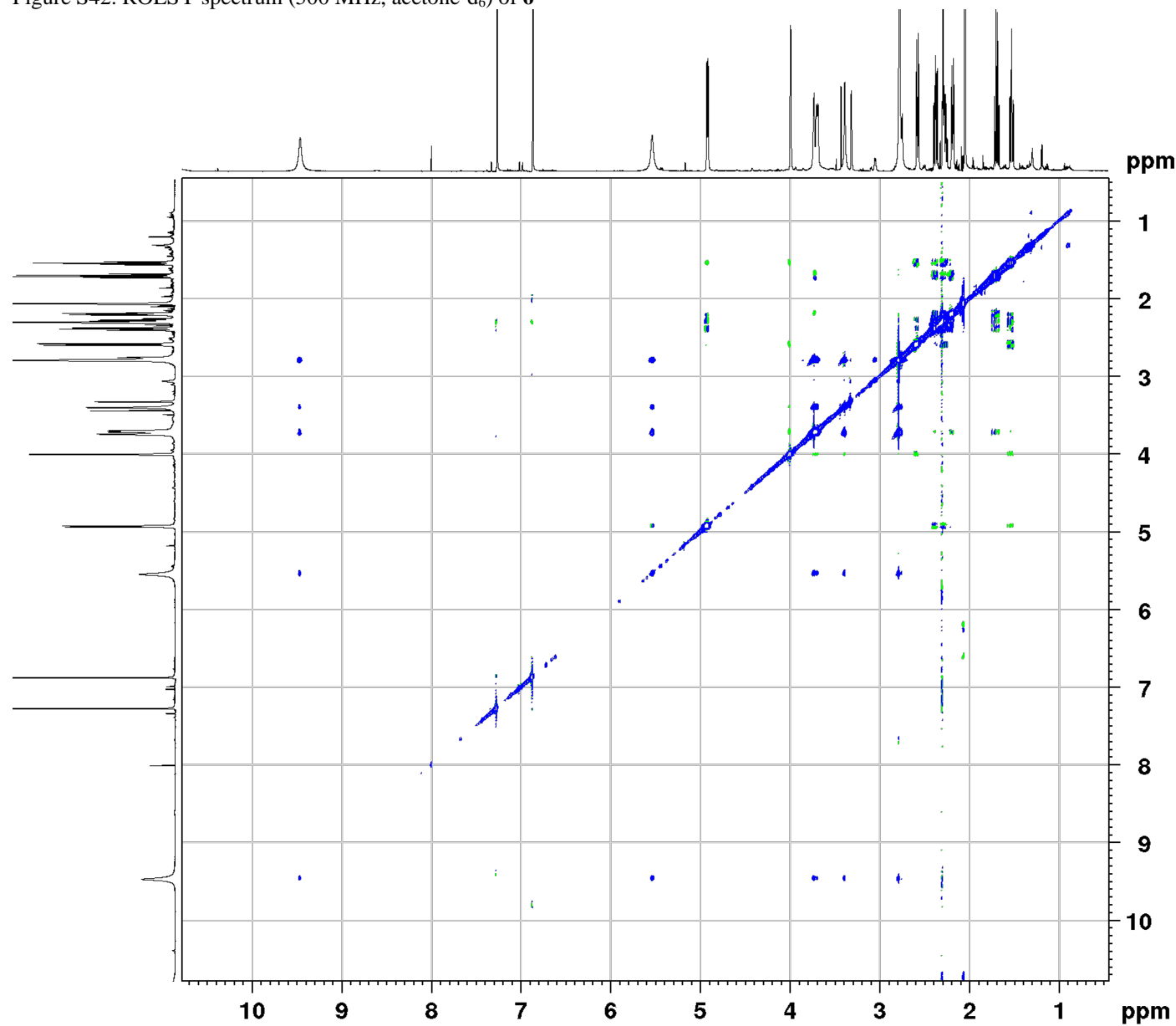


Figure S42. ROESY spectrum (500 MHz, acetone-d₆) of **6**



```

Current Data Parameters
NAME          Aster-44a
EXPNO         6130
PROCNO        1

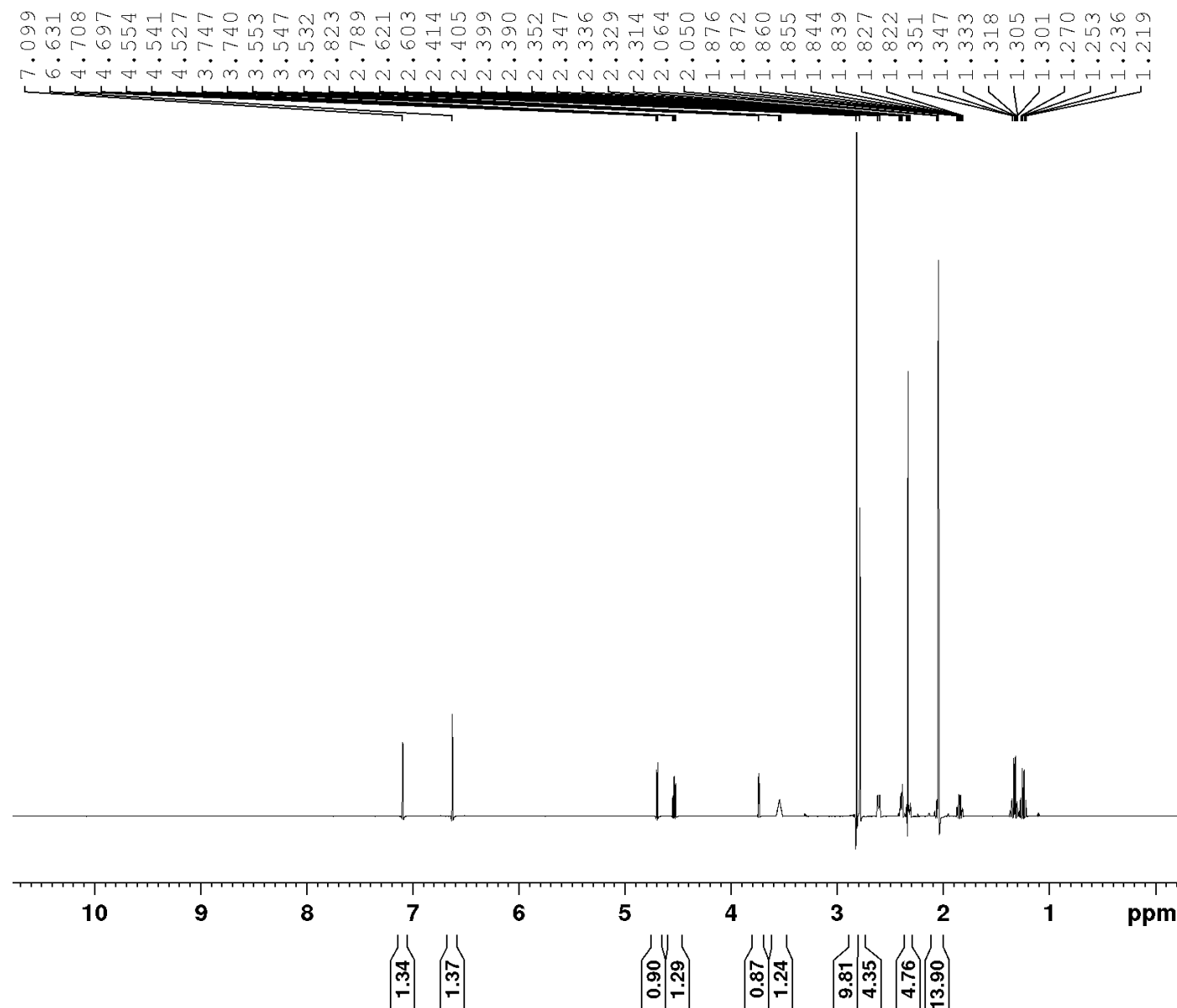
F2 - Acquisition Parameters
Date_         20210817
Time          20.46 h
INSTRUM       spect
PROBHD        Z113652_0155 (
PULPROG       roesyph.2
TD            4096
SOLVENT       Acetone
NS            40
DS            16
SWH           5498.534 Hz
FIDRES        2.684831 Hz
AQ            0.3724629 sec
RG            4.19
DW            90.933 usec
DE            6.50 usec
TE            308.2 K
D0            0.00007926 sec
D1            2.00000000 sec
D12           0.00002000 sec
IN0           0.00018180 sec
L4            625
P15           270000.00 usec
TDav          1
SF01          500.1326507 MHz
NUC1           1H
P1            12.00 usec
P25           216.00 usec
PLW1          15.84899998 W
PLW27         0.19566999 W

F1 - Acquisition parameters
TD            512
SF01          500.1327 MHz
FIDRES        21.486525 Hz
SW            10.998 ppm
FnMODE        TPPI

F2 - Processing parameters
SI            2048
SF            500.1300083 MHz
WDW           SINE
SSB           2
LB            0 Hz
GB            0
PC            2.00

F1 - Processing parameters
SI            512
MC2           TPPI
SF            500.1300095 MHz
WDW           SINE
SSB           2
LB            0 Hz
GB            0
  
```

Figure S43. ¹H NMR spectrum (700 MHz, acetone-d₆) of 7

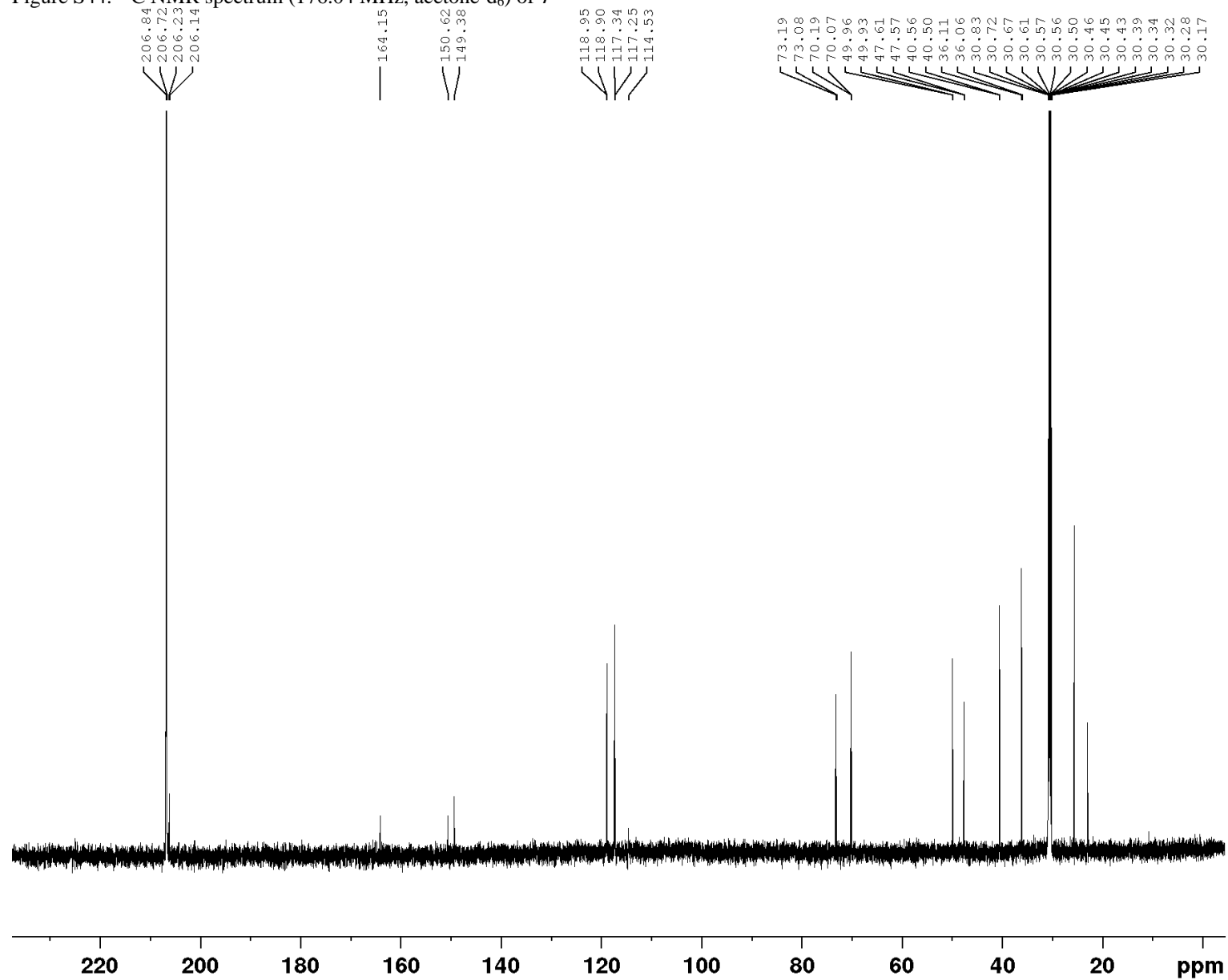


Current Data Parameters
NAME Aster-41a
EXPNO 1
PROCNO 1

F2 - Acquisition Parameters
Date_ 20210501
Time 10.58 h
INSTRUM spect
PROBHD Z112726_0001 (
PULPROG zg
TD 32768
SOLVENT Acetone
NS 1
DS 0
SWH 11160.714 Hz
FIDRES 0.681196 Hz
AQ 1.4680064 sec
RG 181
DW 44.800 usec
DE 6.50 usec
TE 303.0 K
D1 0 sec
TD0 1
SFO1 700.0053900 MHz
NUC1 1H
P1 12.60 usec
PLW1 39.81100082 W

F2 - Processing parameters
SI 32768
SF 700.0000117 MHz
WDW GM
SSB 0
LB -2.50 Hz
GB 0.08
PC 4.00

Figure S44. ^{13}C NMR spectrum (176.04 MHz, acetone- d_6) of **7**



```

Current Data Parameters
NAME          Aster-41a
EXPNO         11
PROCNO        1

F2 - Acquisition Parameters
Date_         20210501
Time          11.33 h
INSTRUM       spect
PROBHD        z112726_0001 (
PULPROG       zgpg
TD            32768
SOLVENT       Acetone
NS            677
DS            2
SWH           42613.637 Hz
FIDRES        2.600930 Hz
AQ            0.3844779 sec
RG            203
DW            11.733 usec
DE            6.50 usec
TE            303.5 K
D1            2.00000000 sec
D11           0.03000000 sec
TD0           128
SFO1          176.0353807 MHz
NUC1          13C
P1            10.50 usec
PLW1          35.48099899 W
SFO2          700.0035000 MHz
NUC2          1H
CPDPRG[2]    waltz16
PCPD2         70.00 usec
PLW2          39.81100082 W
PLW12         1.43719995 W
PLW13         0.83929998 W

F2 - Processing parameters
SI            65536
SF            176.0148619 MHz
WDW           EM
SSB           0
LB            1.50 Hz
GB            0
PC            1.30
    
```

Figure S45. DEPT-135 spectrum (176.04 MHz, acetone-d₆) of **7**

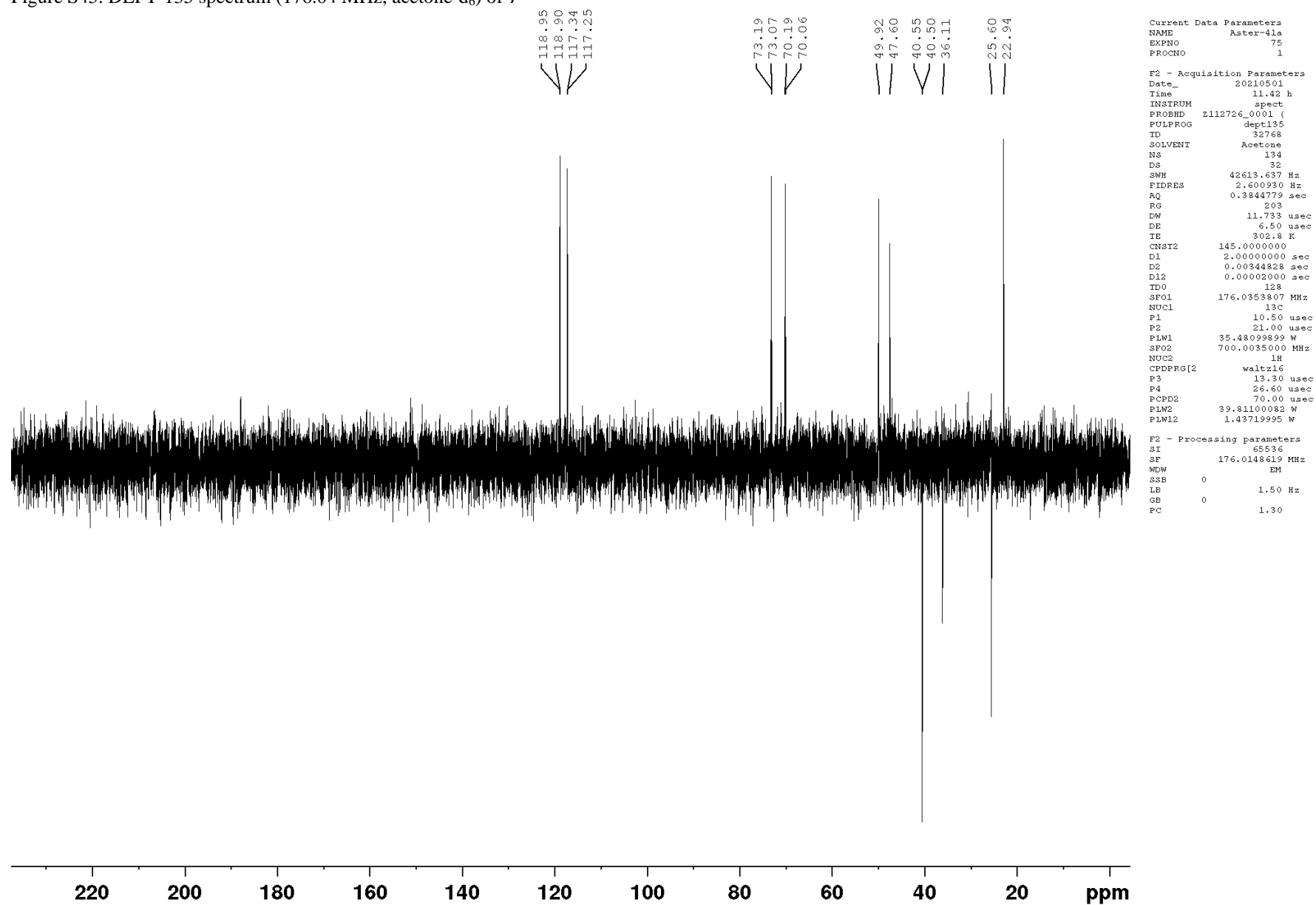


Figure S46. COSY-45 spectrum (700 MHz, acetone-d₆) of **7**

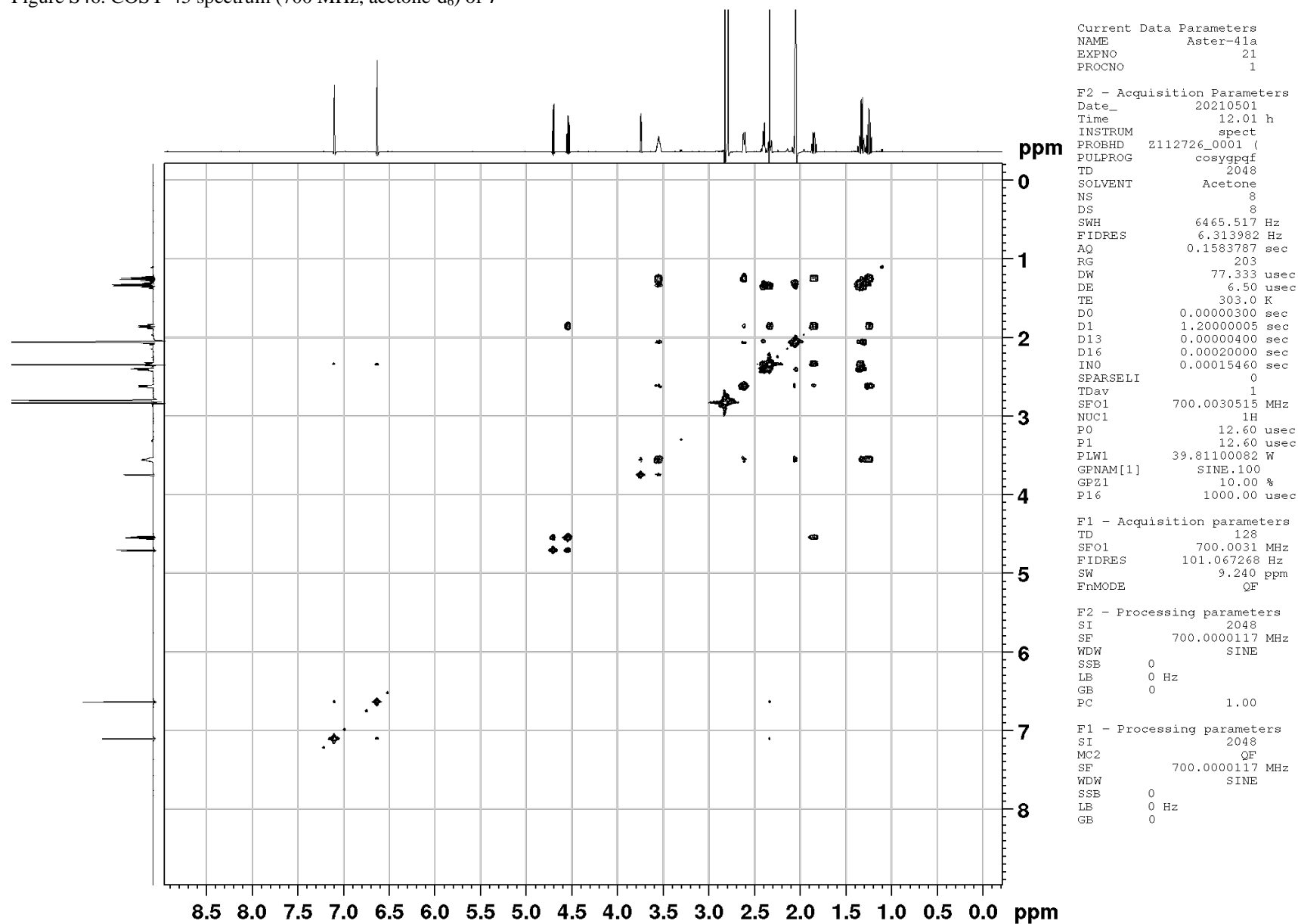


Figure S47. HSQC spectrum (700 MHz, acetone-d₆) of **7**

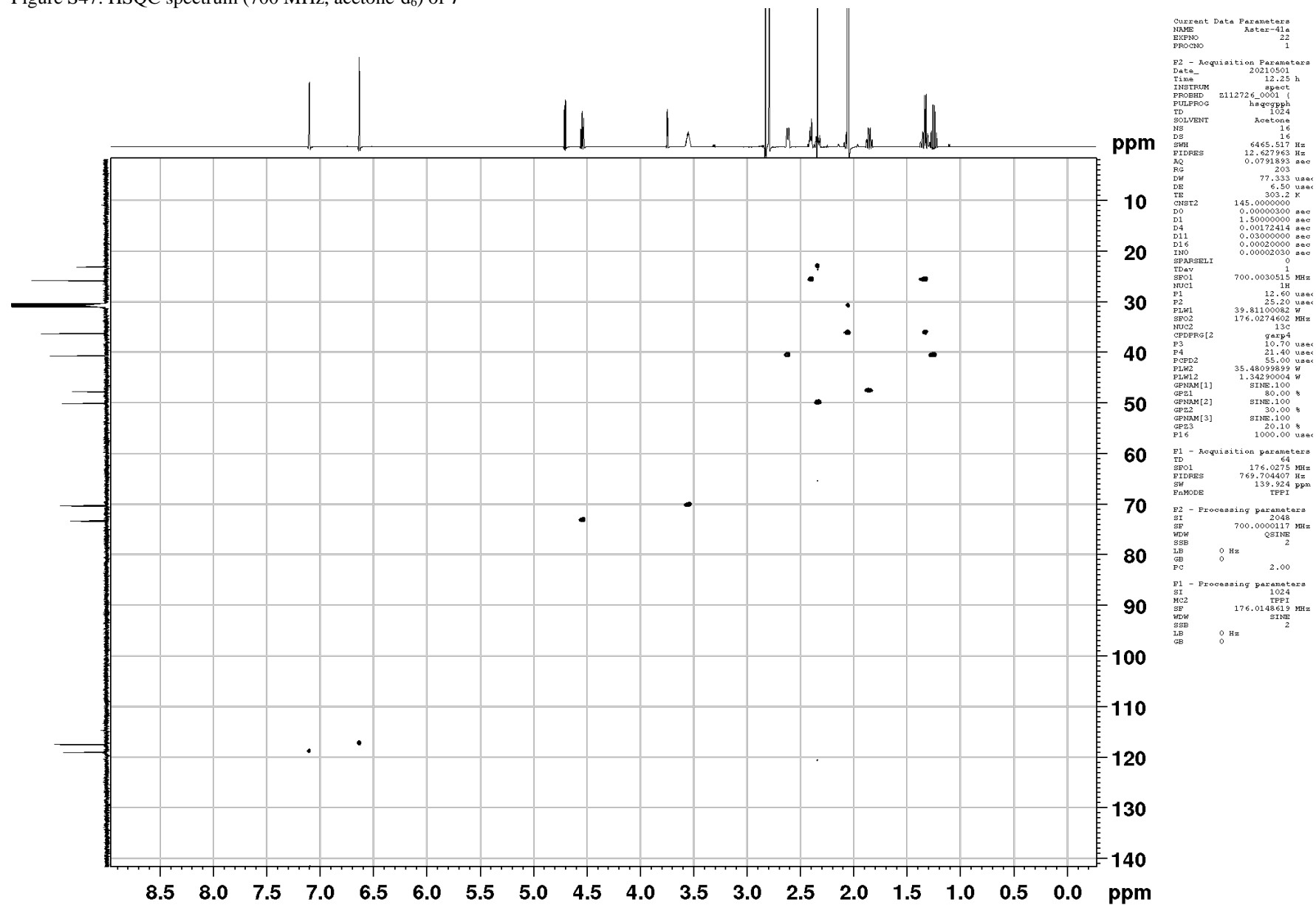


Figure S48. HMBC spectrum (700 MHz, acetone-d₆) of **7**

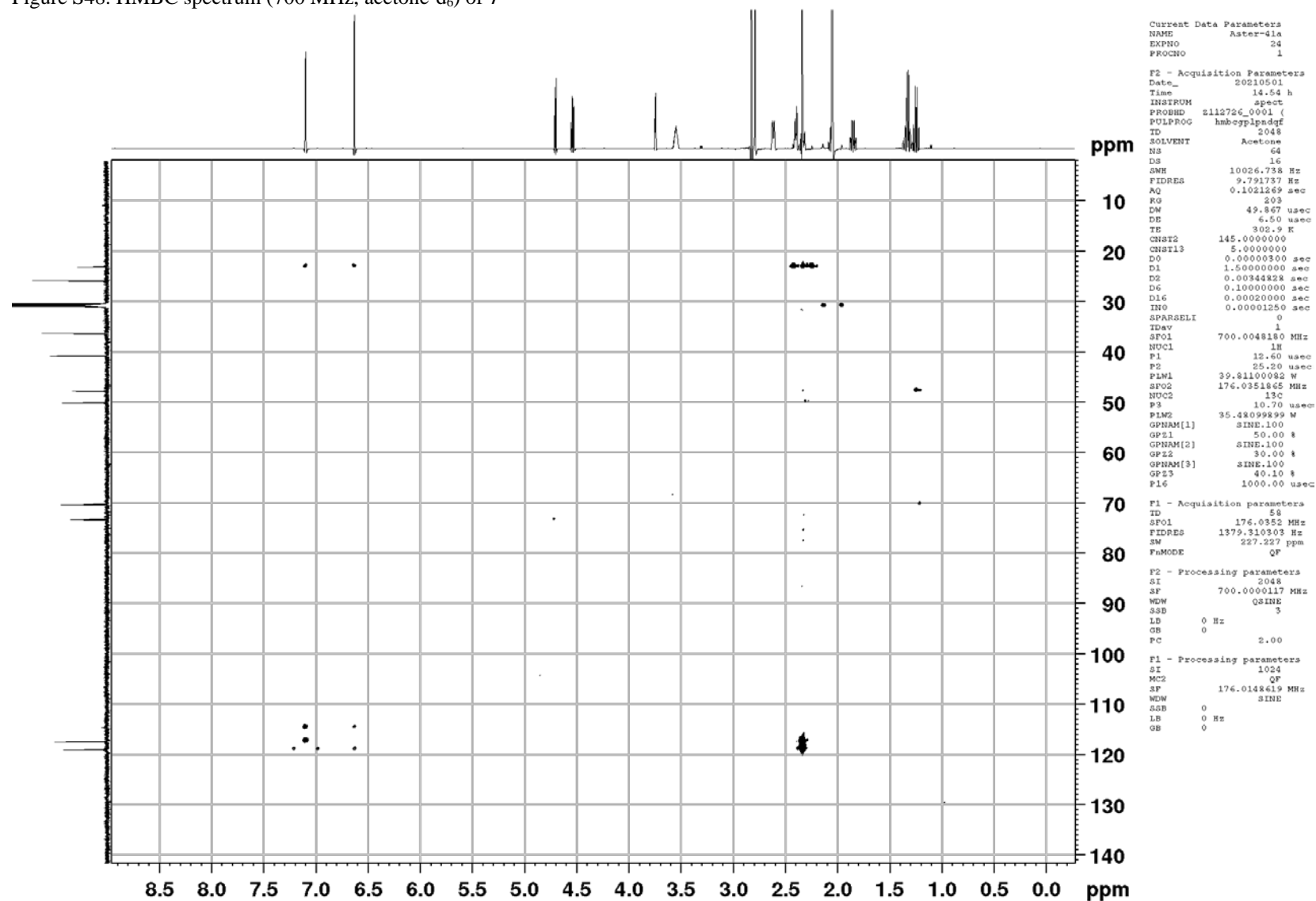
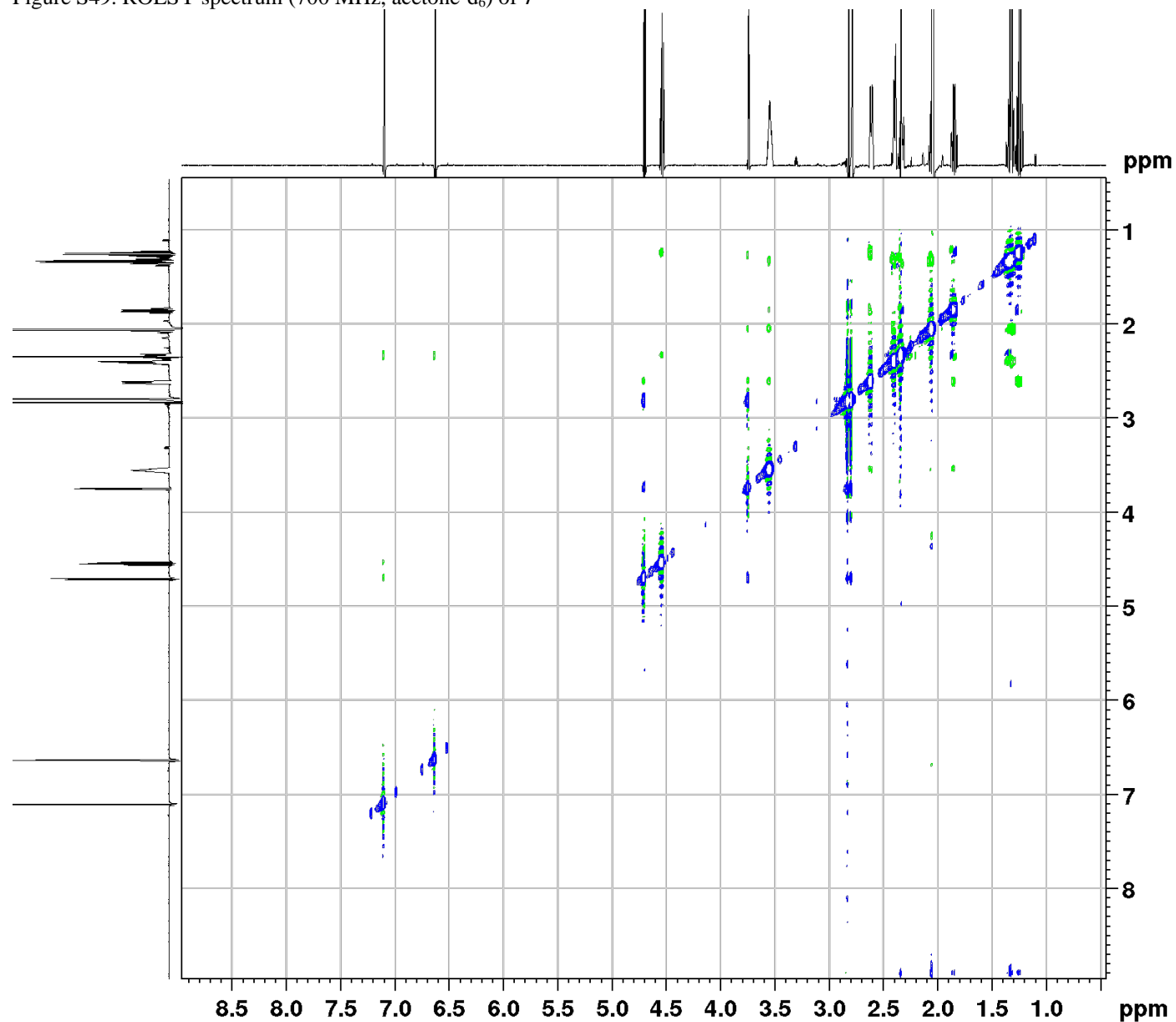


Figure S49. ROESY spectrum (700 MHz, acetone-d₆) of 7



```

Current Data Parameters
NAME      Aster-41a
EXPNO     23
PROCNO    1

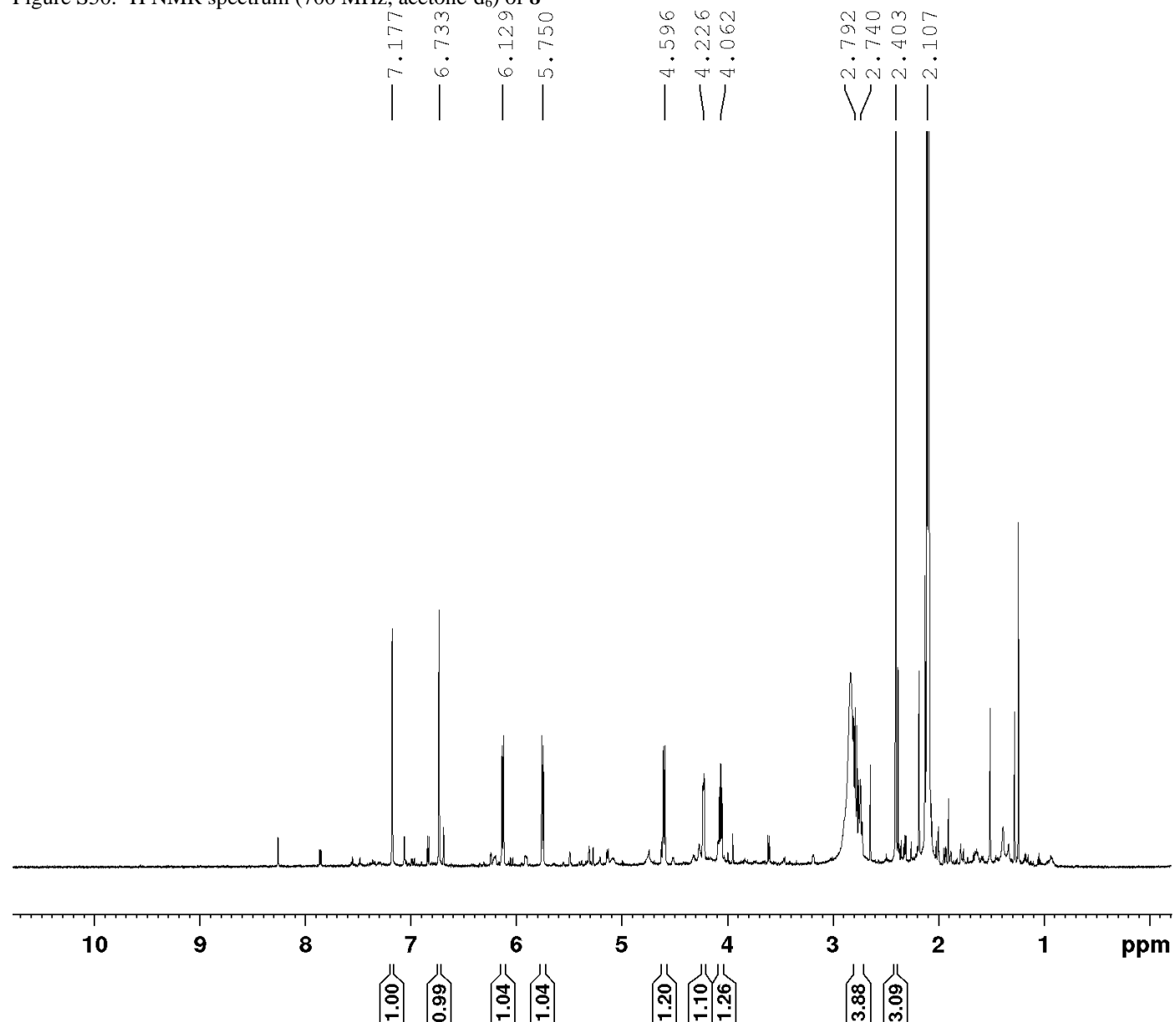
F2 - Acquisition Parameters
Date_     20210501
Time      12.53 h
INSTRUM    spect
PROBHD     Z112726_0001 (
PULPROG    roesyph.2
TD         2048
SOLVENT     Acetone
NS         16
DS         16
SWH         6465.517 Hz
FIDRES      6.313982 Hz
AQ         0.1583787 sec
RG         2
DW         77.333 usec
DE         6.50 usec
TE         303.0 K
D0         0.00006528 sec
D1         2.00000000 sec
D12        0.00002000 sec
IN0        0.00015460 sec
L4         877
P15        270000.00 usec
TDav       1
SF01       700.0030515 MHz
NUC1       1H
P1         12.60 usec
P25        154.00 usec
PLW1       39.81100082 W
PLW27      1.06599998 W

F1 - Acquisition parameters
TD         183
SF01       700.0033 MHz
FIDRES     70.691864 Hz
SW         9.240 ppm
FnMODE     TPPI

F2 - Processing parameters
SI         2048
SF         700.0000074 MHz
WDW        SINE
SSB        2
LB         0 Hz
GB         0
PC         4.00

F1 - Processing parameters
SI         512
MC2        TPPI
SF         700.0002528 MHz
WDW        SINE
SSB        2
LB         0 Hz
GB         0
    
```

Figure S50. ¹H NMR spectrum (700 MHz, acetone-d₆) of **8**

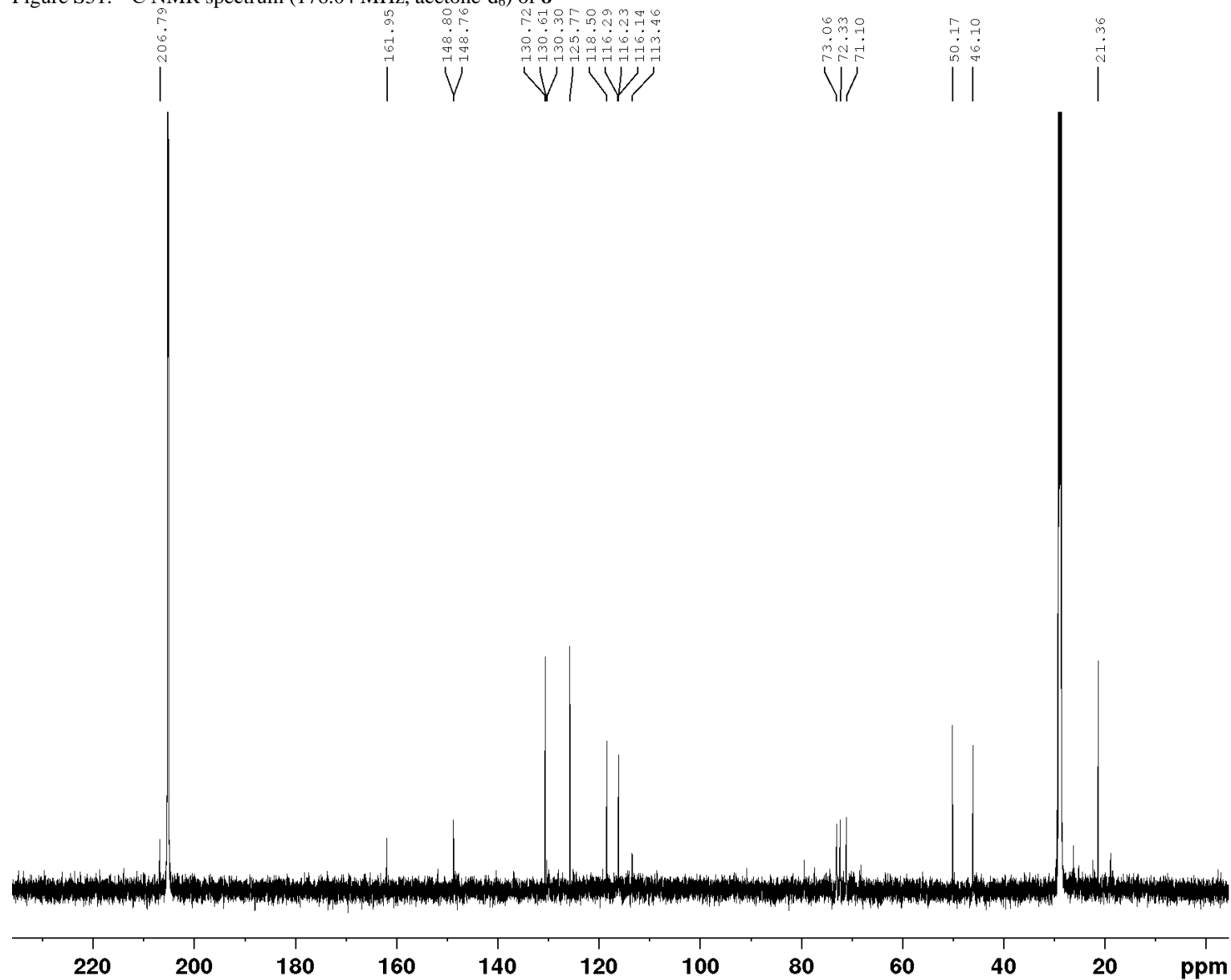


Current Data Parameters
 NAME Aster-3
 EXPNO 1
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20210211
 Time 16.27 h
 INSTRUM spect
 PROBHD Z112726_0001 (
 PULPROG zg30
 TD 32768
 SOLVENT Acetone
 NS 8
 DS 2
 SWH 11160.714 Hz
 FIDRES 0.681196 Hz
 AQ 1.4680064 sec
 RG 203
 DW 44.800 usec
 DE 6.50 usec
 TE 303.1 K
 D1 2.00000000 sec
 TD0 1
 SFO1 700.0053900 MHz
 NUC1 1H
 P0 4.20 usec
 P1 12.60 usec
 PLW1 39.81100082 W

F2 - Processing parameters
 SI 32768
 SF 699.9999836 MHz
 WDW EM
 SSB 0
 LB 0.30 Hz
 GB 0
 PC 1.00

Figure S51. ^{13}C NMR spectrum (176.04 MHz, acetone- d_6) of **8**

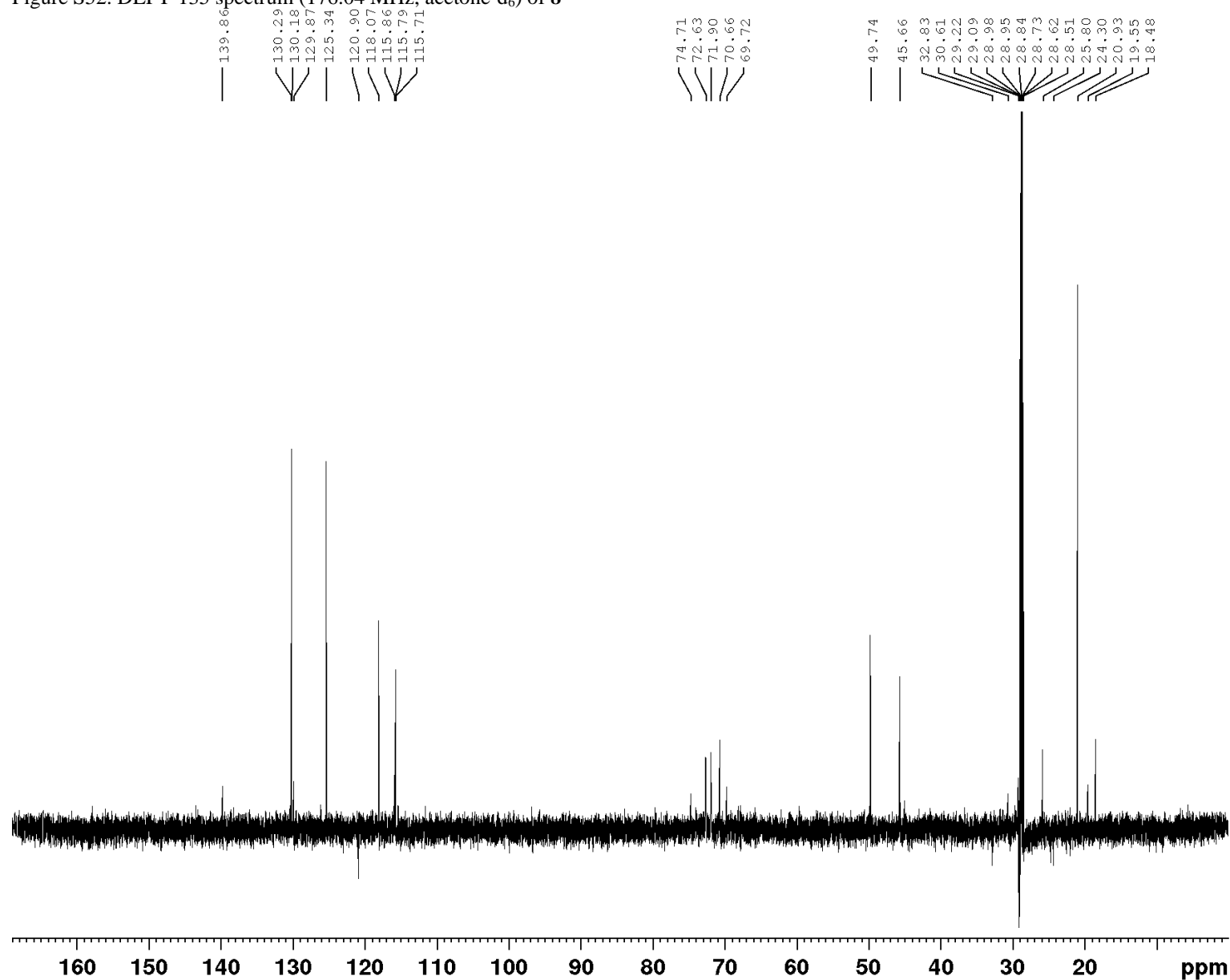


Current Data Parameters
NAME Aster-3
EXPNO 25
PROCNO 1

F2 - Acquisition Parameters
Date_ 20210212
Time 4.35 h
INSTRUM spect
PROBHD z112726_0001 (
PULPROG zgpg30
TD 32768
SOLVENT Acetone
NS 5120
DS 2
SWH 42613.637 Hz
FIDRES 2.600930 Hz
AQ 0.3844779 sec
RG 203
DW 11.733 usec
DE 6.50 usec
TE 303.5 K
D1 1.50000000 sec
D11 0.03000000 sec
TD0 64
SFO1 176.0353807 MHz
NUC1 13C
P0 3.50 usec
P1 10.50 usec
PLW1 35.48099899 W
SFO2 700.0035000 MHz
NUC2 1H
CPDPRG2 waltz16
PCPD2 70.00 usec
PLW2 39.81100082 W
PLW12 1.43719995 W
PLW13 0.83929998 W

F2 - Processing parameters
SI 65536
SF 176.0151411 MHz
WDW EM
SSB 0
LB 1.50 Hz
GB 0
PC 1.40

Figure S52. DEPT-135 spectrum (176.04 MHz, acetone-d₆) of 8



Current Data Parameters
NAME Aster-3
EXPNO 26
PROCNO 1

F2 - Acquisition Parameters
Date_ 20210212
Time 9.04 h
INSTRUM spect
PROBHD Z112726_0001 (
PULPROG deptap135
TD 65536
SOLVENT Acetone
NS 5120
DS 2
SWH 29761.904 Hz
FIDRES 0.908261 Hz
AQ 1.1010048 sec
RG 203
DW 16.800 usec
DE 6.50 usec
TE 302.8 K
CNST2 145.0000000
D1 2.00000000 sec
D2 0.00344828 sec
D12 0.00002000 sec
TD0 64
SFO1 176.0301003 MHz
NUC1 13C
P1 10.50 usec
P13 2000.00 usec
PLW0 0 W
PLW1 35.48099899 W
SPNAM[5] Crp80comp.4
SFOALS 0.500
SPOFFS5 0 Hz
SPW5 7.96899986 W
SFO2 700.0028000 MHz
NUC2 1H
CPDPRG[2] waltz16
P3 13.30 usec
P4 26.60 usec
PCPD2 70.00 usec
PLW2 39.81100082 W
PLW12 1.43719995 W

F2 - Processing parameters
SI 65536
SF 176.0152175 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40

Figure S53. COSY-45 spectrum (700 MHz, acetone-d₆) of **8**

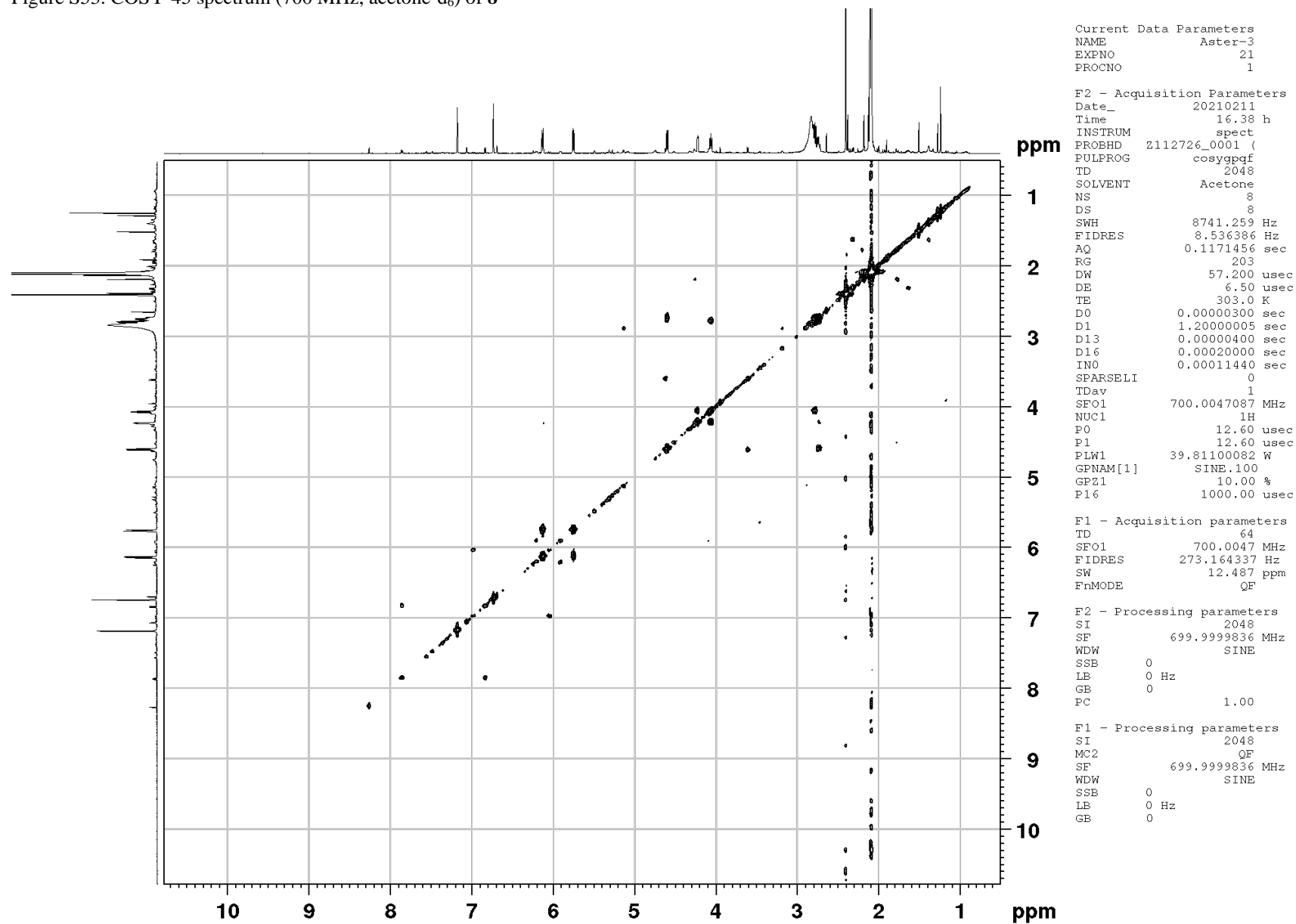


Figure S54. HSQC spectrum (700 MHz, acetone-d₆) of **8**

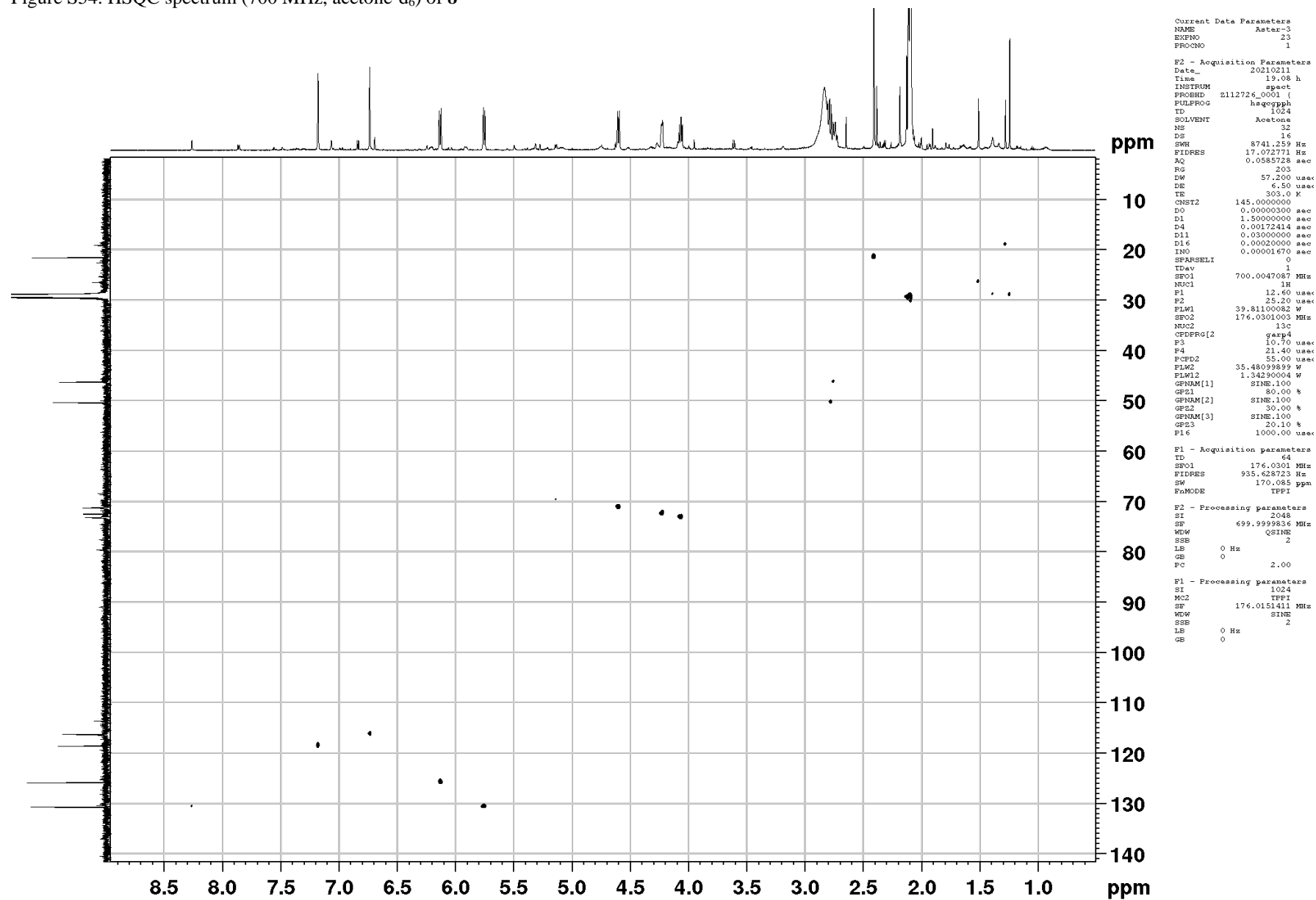


Figure S55. HMBC spectrum (700 MHz, acetone-d₆) of **8**

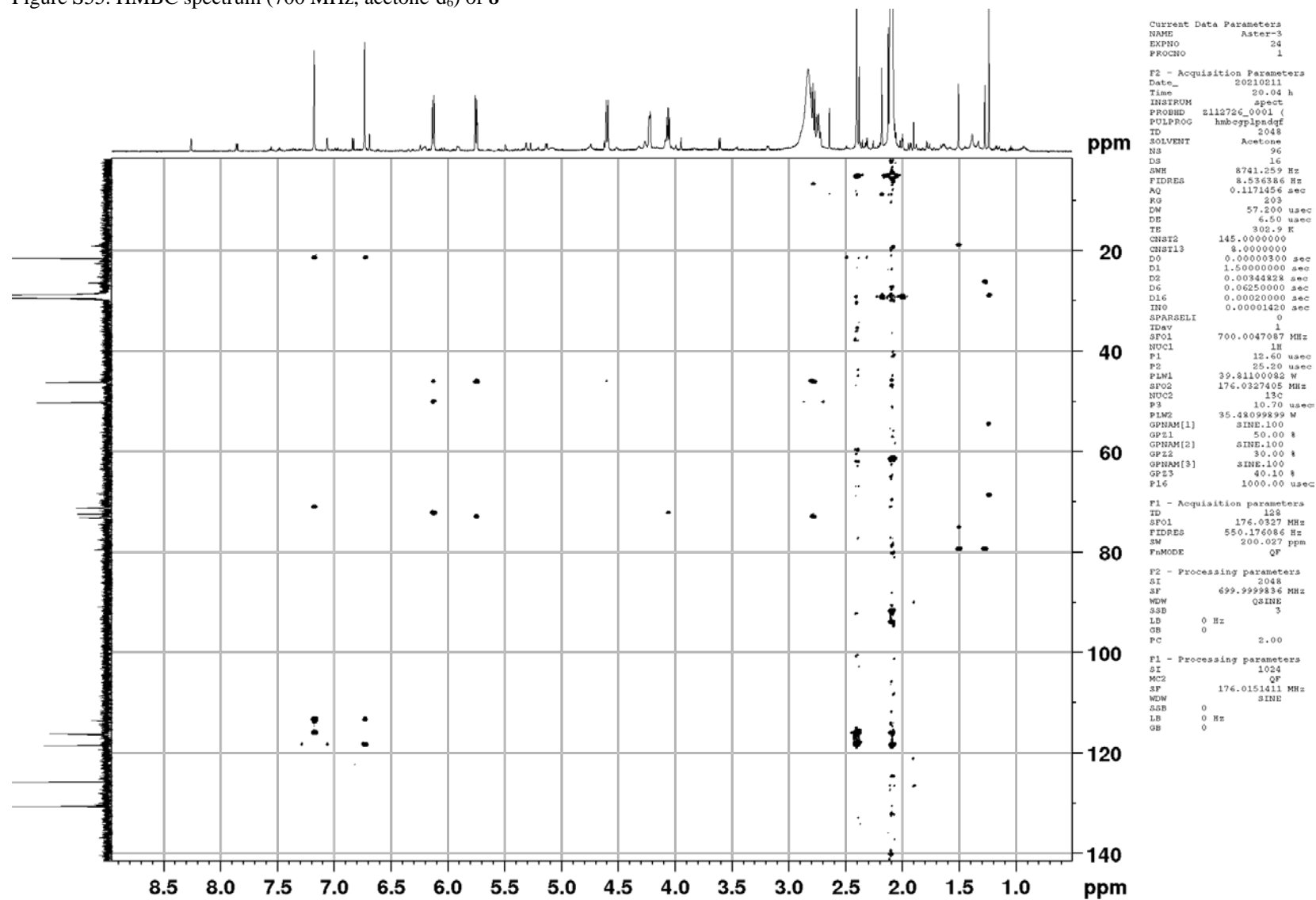


Figure S56. ROESY spectrum (700 MHz, acetone-d₆) of **8**

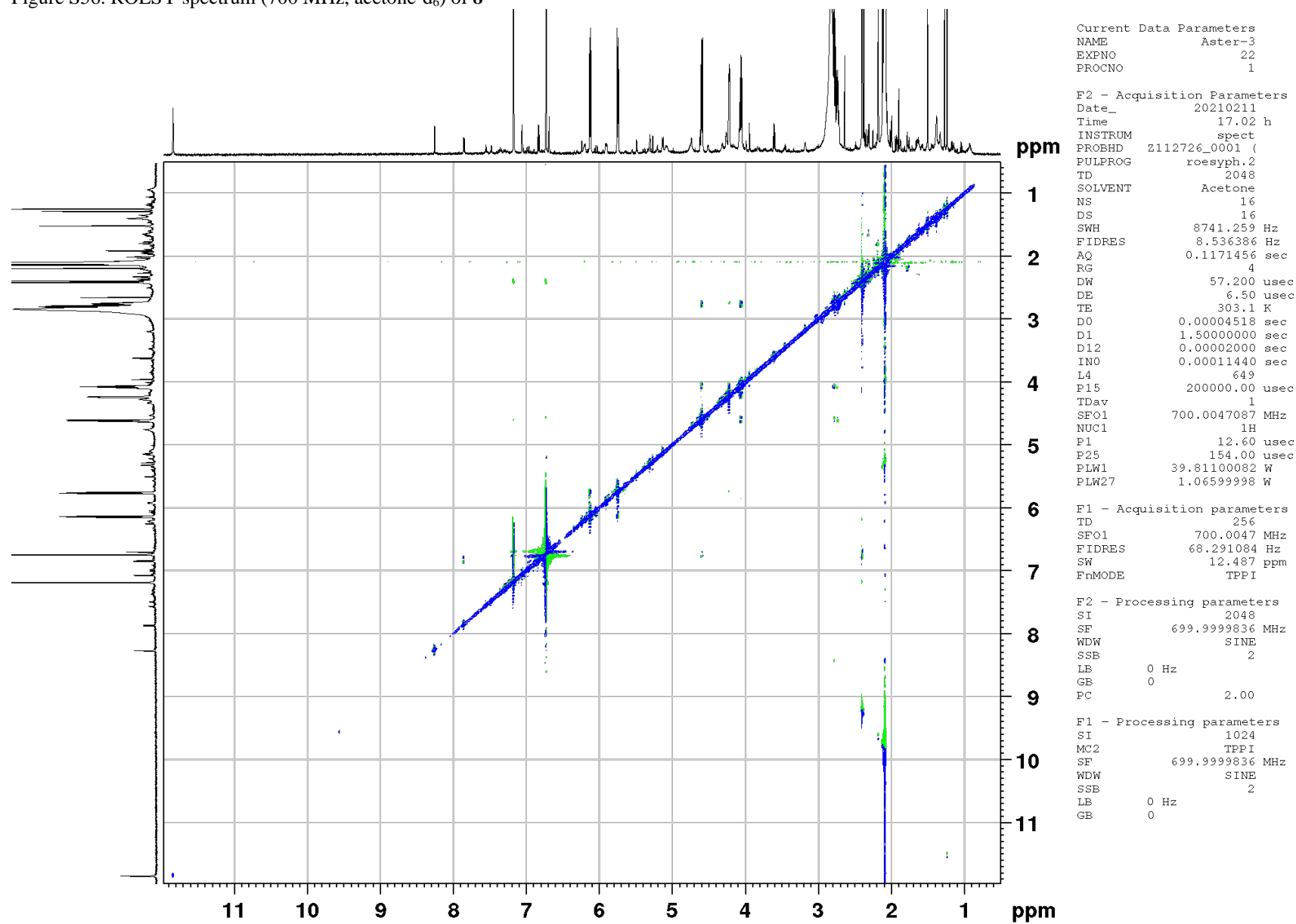
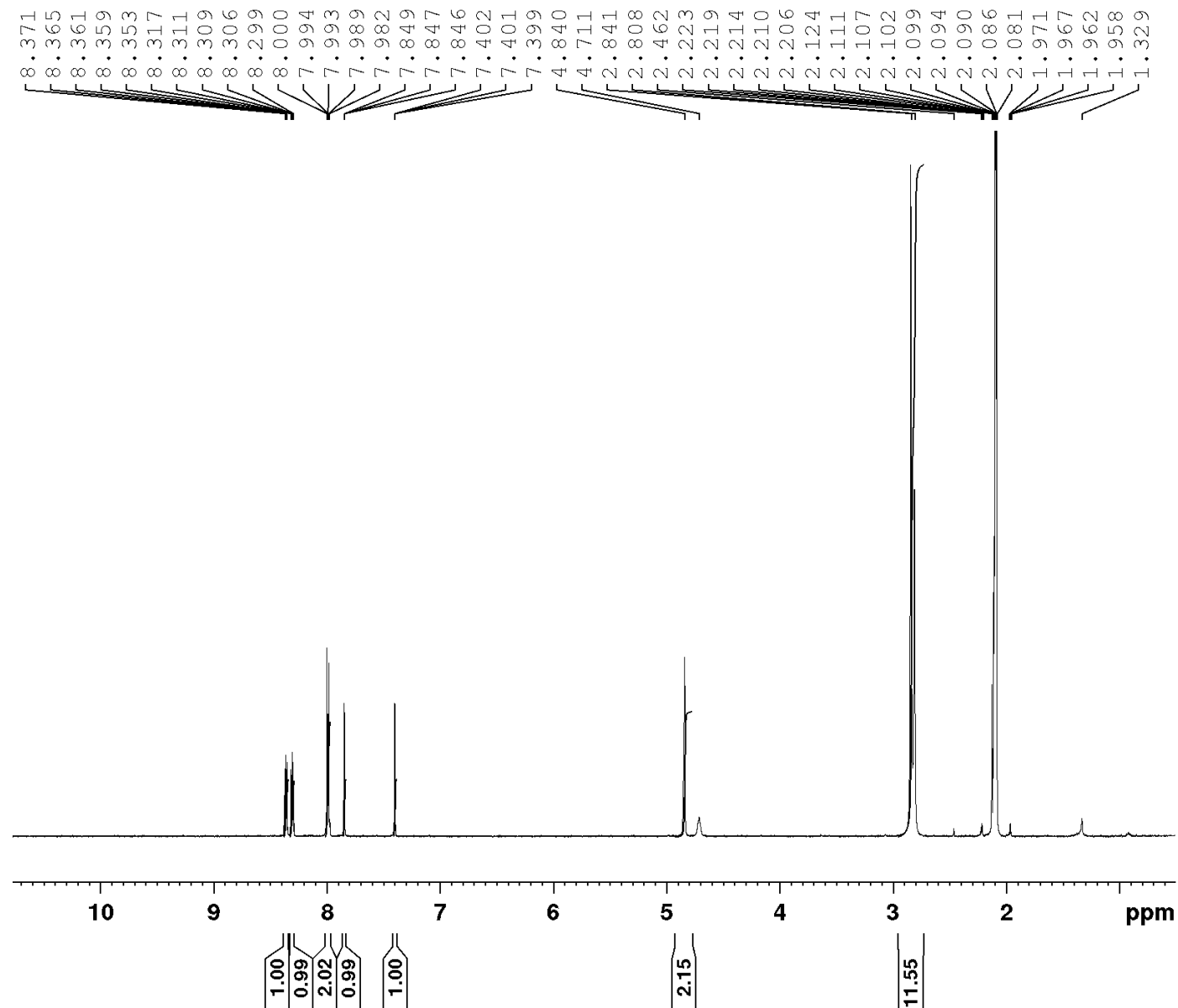


Figure S57. ¹H NMR spectrum (500 MHz, acetone-d₆) of **9**



Current Data Parameters

NAME	Aster-12
EXPNO	5
PROCNO	1

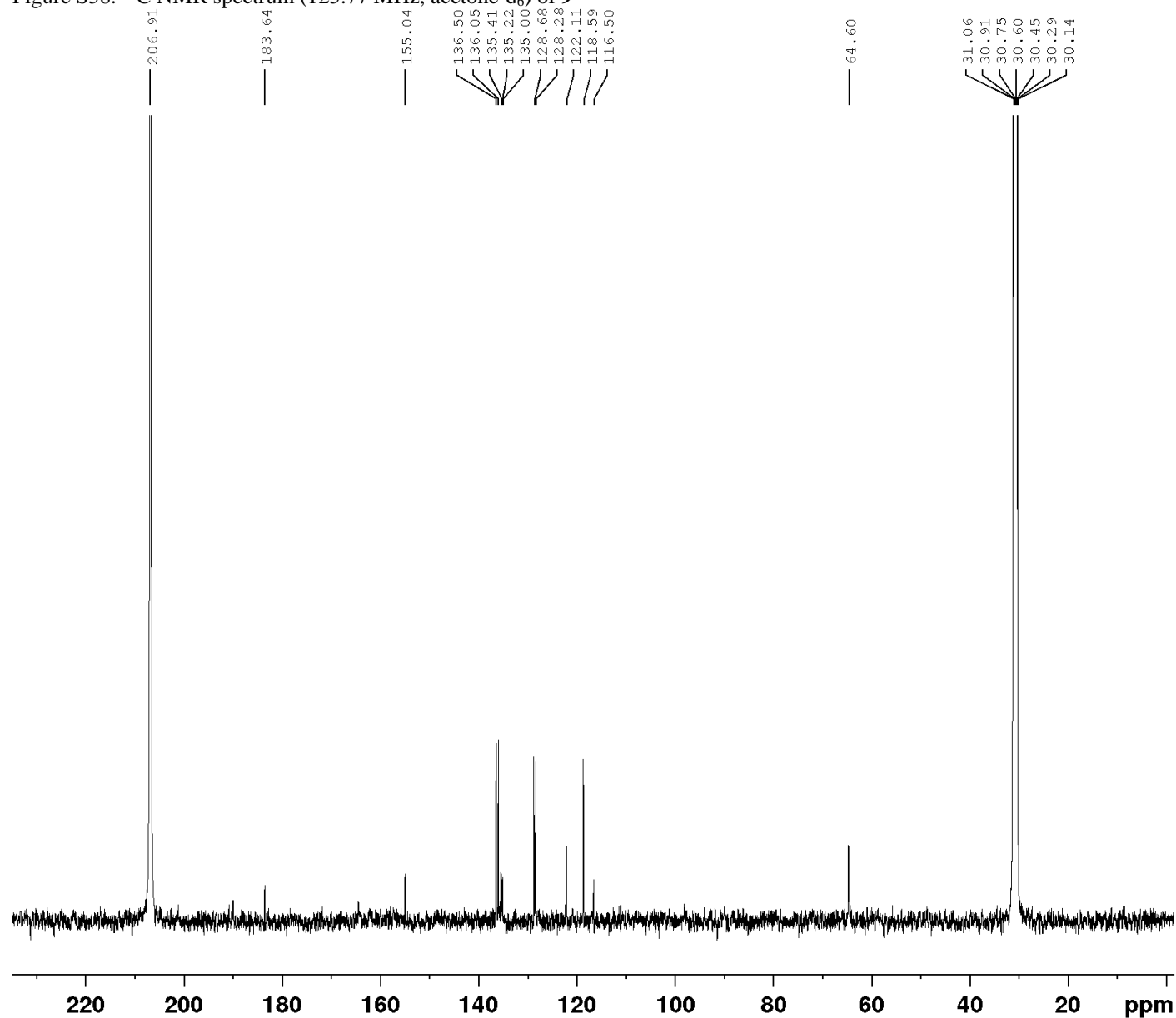
F2 - Acquisition Parameters

Date_	20210218
Time	15.12 h
INSTRUM	spect
PROBHD	Z113652_0155 (
PULPROG	zg30
TD	32768
SOLVENT	Acetone
NS	1
DS	2
SWH	6493.506 Hz
FIDRES	0.396332 Hz
AQ	2.5231359 sec
RG	119.65
DW	77.000 usec
DE	6.50 usec
TE	303.2 K
D1	2.00000000 sec
TD0	1
SFO1	500.1334933 MHz
NUC1	1H
P0	3.88 usec
P1	11.65 usec
PLW1	15.84899998 W

F2 - Processing parameters

SI	65536
SF	500.1299935 MHz
WDW	EM
SSB	0
LB	0.30 Hz
GB	0
PC	1.00

Figure S58. ^{13}C NMR spectrum (125.77 MHz, acetone- d_6) of **9**

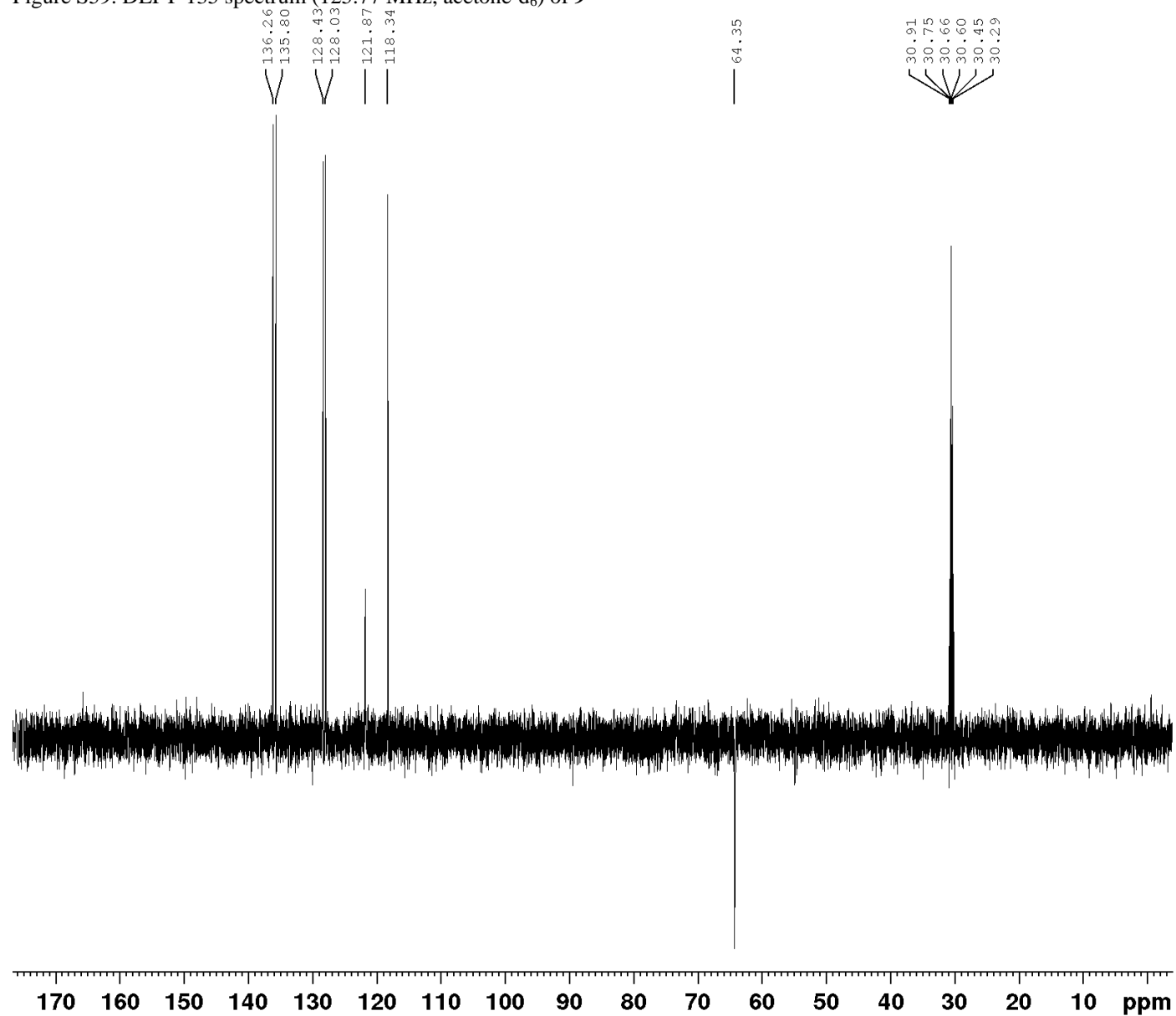


Current Data Parameters
NAME Aster-12
EXPNO 25
PROCNO 1

F2 - Acquisition Parameters
Date_ 20210219
Time 7.35 h
INSTRUM spect
PROBHD Z113652_0155 (
PULPROG zgpg30
TD 32768
SOLVENT Acetone
NS 2560
DS 4
SWH 29761.904 Hz
FIDRES 1.816522 Hz
AQ 0.5505024 sec
RG 196.84
DW 16.800 usec
DE 6.50 usec
TE 303.1 K
D1 1.50000000 sec
D11 0.03000000 sec
TD0 32
SFO1 125.7722511 MHz
NUC1 ^{13}C
P0 4.03 usec
P1 12.10 usec
PLW1 79.43299866 W
SFO2 500.1320005 MHz
NUC2 ^1H
CPDPRG[2] waltz16
PCPD2 80.00 usec
PLW2 15.84899998 W
PLW12 0.33610001 W
PLW13 0.16906001 W

F2 - Processing parameters
SI 65536
SF 125.757577 MHz
WDW EM
SSB 0
LB 5.00 Hz
GB 0
PC 1.30

Figure S59. DEPT-135 spectrum (125.77 MHz, acetone-d₆) of **9**



Current Data Parameters
NAME Aster-12
EXPNO 26
PROCNO 1

F2 - Acquisition Parameters
Date_ 20210219
Time 10.01 h
INSTRUM spect
PROBHD Z113652_0155 (
PULPROG deptspl35
TD 32768
SOLVENT Acetone
NS 3880
DS 2
SWH 22727.273 Hz
FIDRES 1.387163 Hz
AQ 0.7208960 sec
RG 196.84
DW 22.000 usec
DE 6.50 usec
TE 303.2 K
CNST2 145.0000000
D1 1.50000000 sec
D2 0.00344828 sec
D12 0.00002000 sec
TD0 4096
SFO1 125.7684784 MHz
NUC1 13C
P1 12.10 usec
P13 2000.00 usec
PLW0 0 W
PLW1 79.43299866 W
SPNAM[5] Crp60comp.4
SFOAL5 0.500
SPOFFS5 0 Hz
SPW5 17.76899910 W
SFO2 500.1320005 MHz
NUC2 1H
CPDPRG[2] waltz16
P3 11.65 usec
P4 23.30 usec
PCPD2 80.00 usec
PLW2 15.84899998 W
PLW12 0.33610001 W

F2 - Processing parameters
SI 65536
SF 125.7576090 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40

Figure S60. COSY-45 spectrum (500 MHz, acetone-d₆) of **9**

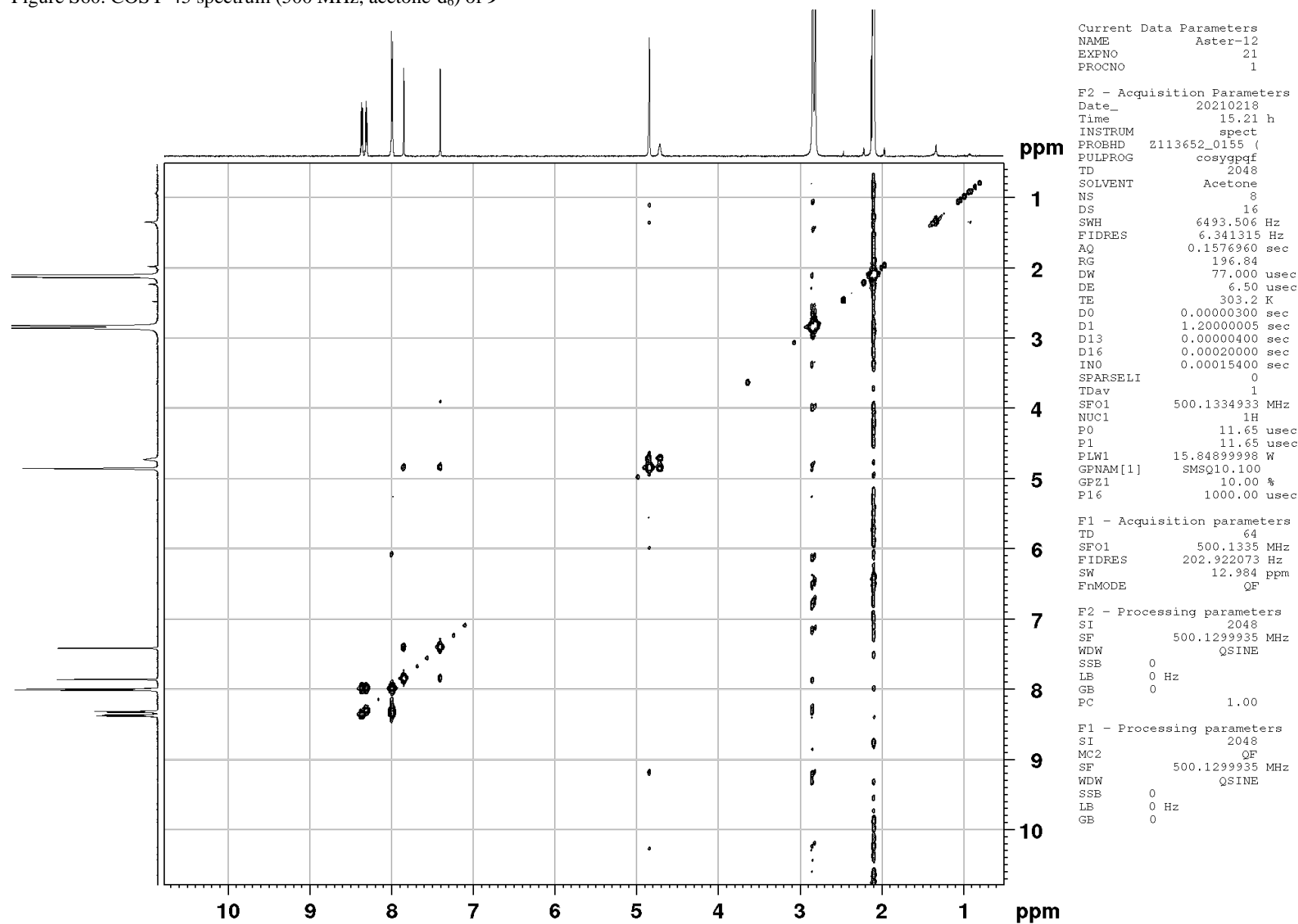


Figure S61. HSQC spectrum (500 MHz, acetone-d₆) of **9**

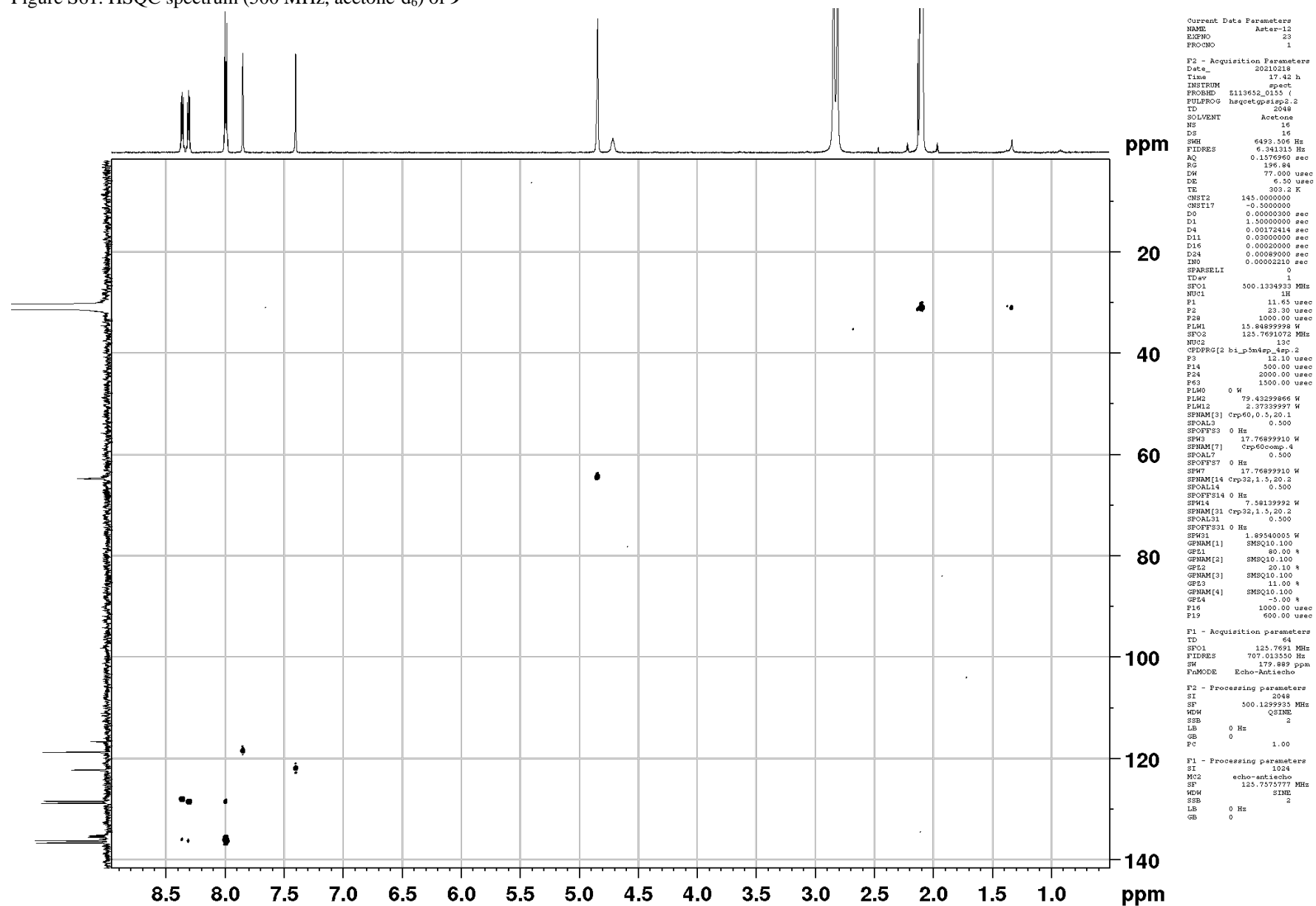


Figure S62. HMBC spectrum (500 MHz, acetone-d₆) of **9**

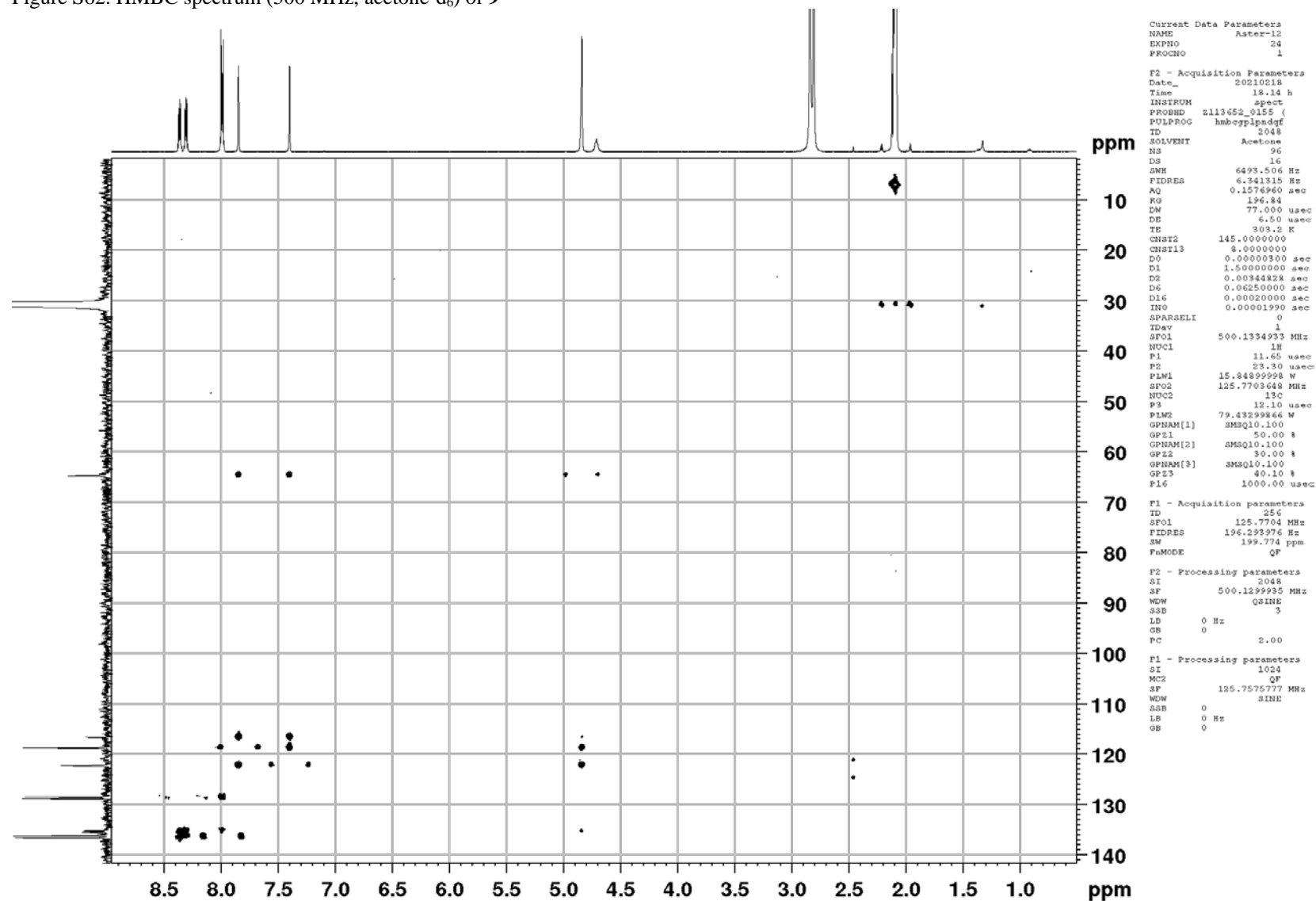


Figure S63. ROESY spectrum (500 MHz, acetone-d₆) of **9**

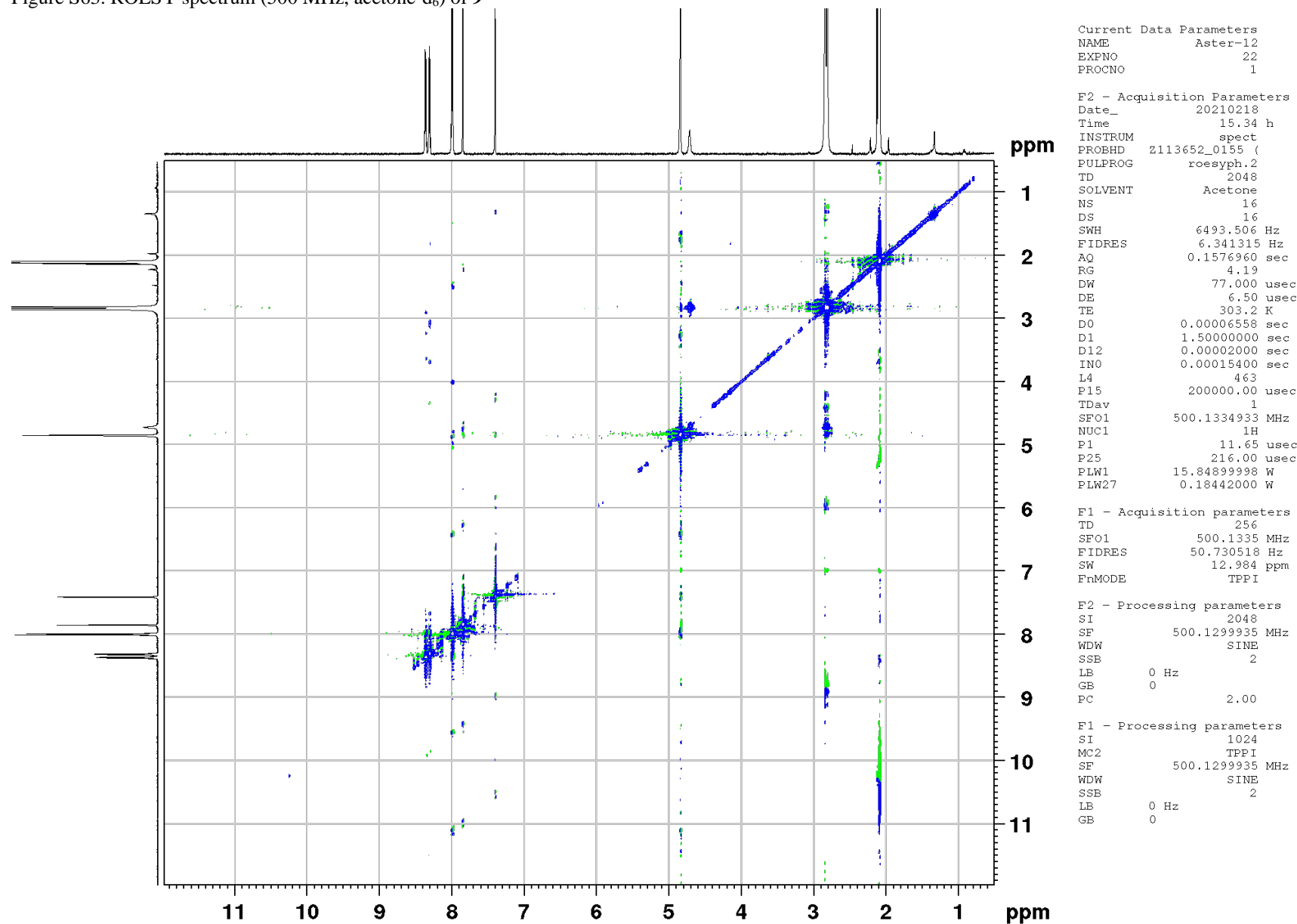
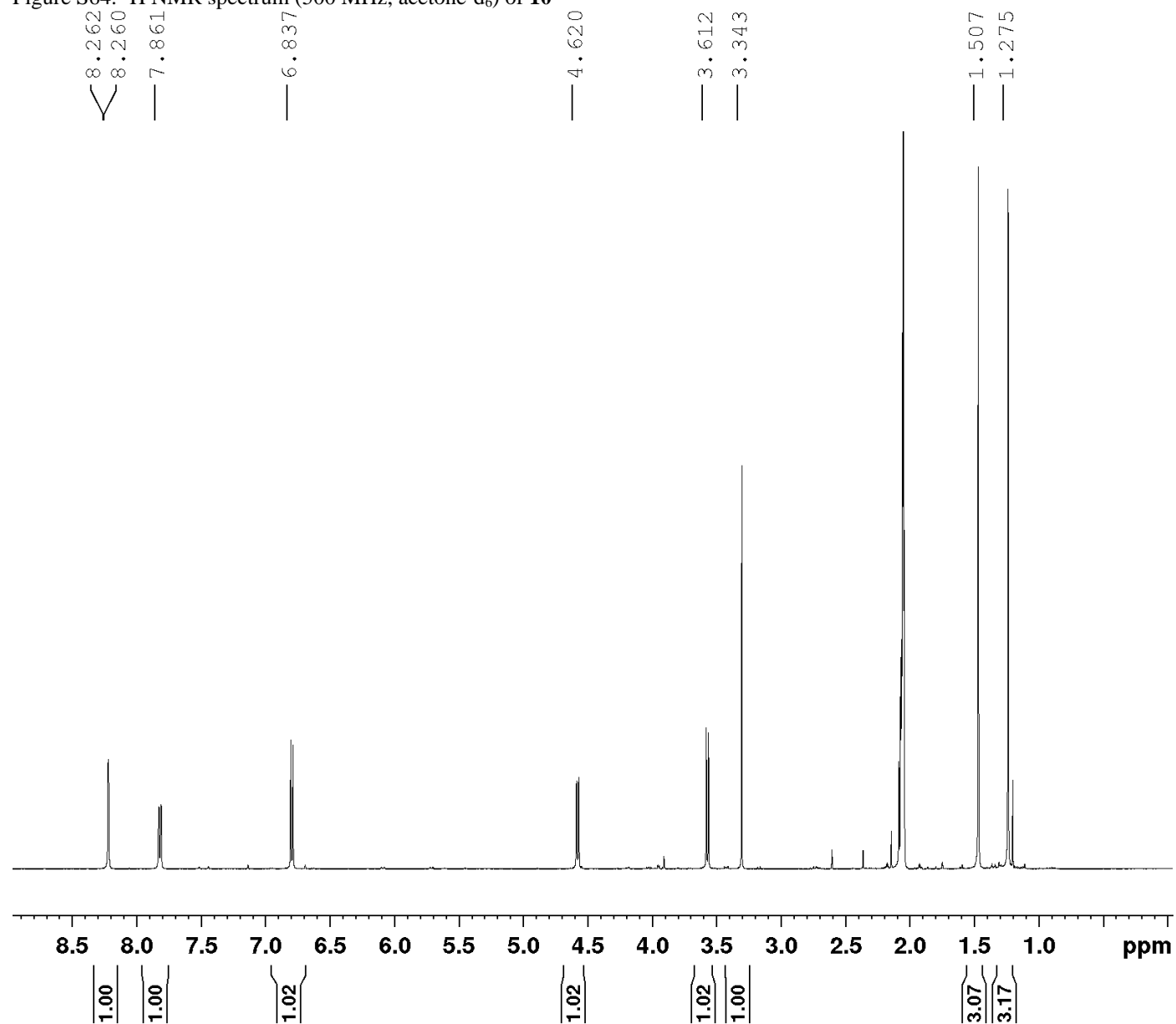


Figure S64. ¹H NMR spectrum (500 MHz, acetone-d₆) of **10**

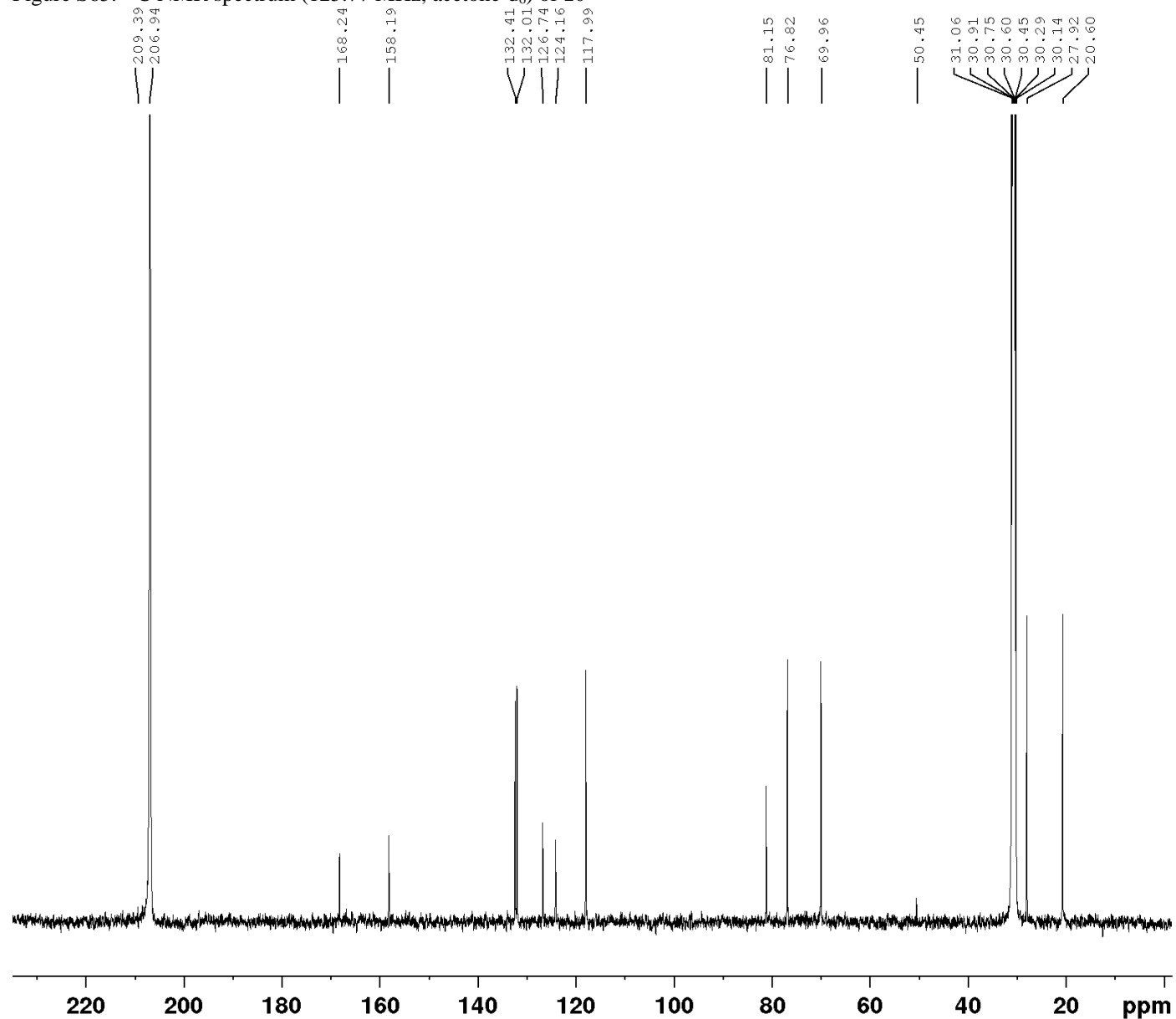


Current Data Parameters
 NAME Aster-4
 EXPNO 5
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20210129
 Time 12.57 h
 INSTRUM spect
 PROBHD Z113652_0155 (
 PULPROG zg30
 TD 32768
 SOLVENT Acetone
 NS 1
 DS 2
 SWH 4504.504 Hz
 FIDRES 0.274933 Hz
 AQ 3.6372480 sec
 RG 119.65
 DW 111.000 usec
 DE 6.50 usec
 TE 303.1 K
 D1 2.00000000 sec
 TD0 1
 SFO1 500.1322447 MHz
 NUC1 1H
 P0 3.88 usec
 P1 11.65 usec
 PLW1 15.84899998 W

F2 - Processing parameters
 SI 65536
 SF 500.1300134 MHz
 WDW EM
 SSB 0
 LB 0.30 Hz
 GB 0
 PC 1.00

Figure S65. ^{13}C NMR spectrum (125.77 MHz, acetone- d_6) of **10**

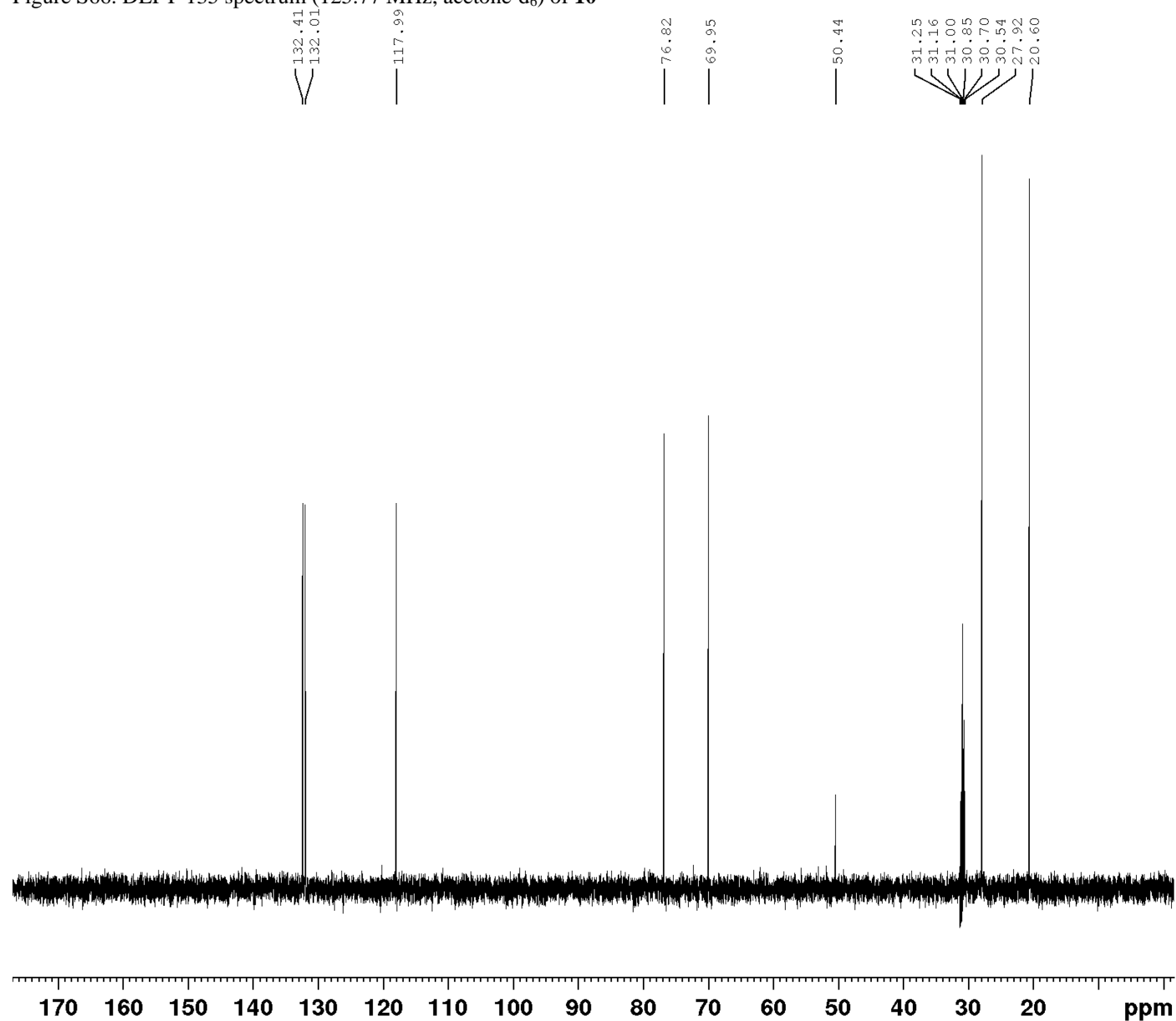


Current Data Parameters
 NAME Aster-4
 EXPNO 12
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20210128
 Time 15.05 h
 INSTRUM spect
 PROBHD Z113652_0155 (
 PULPROG zgpg30
 TD 32768
 SOLVENT Acetone
 NS 1650
 DS 4
 SWH 29761.904 Hz
 FIDRES 1.816522 Hz
 AQ 0.5505024 sec
 RG 196.84
 DW 16.800 usec
 DE 6.50 usec
 TE 303.1 K
 D1 1.50000000 sec
 D11 0.03000000 sec
 TD0 4096
 SFO1 125.7722511 MHz
 NUC1 ^{13}C
 P0 4.03 usec
 P1 12.10 usec
 PLW1 79.43299866 W
 SFO2 500.1320005 MHz
 NUC2 ^1H
 CPDPRG[2] waltz16
 PCPD2 80.00 usec
 PLW2 15.84899998 W
 PLW12 0.33610001 W
 PLW13 0.16906001 W

F2 - Processing parameters
 SI 65536
 SF 125.7575787 MHz
 WDW EM
 SSB 0
 LB 5.00 Hz
 GB 0
 PC 1.30

Figure S66. DEPT-135 spectrum (125.77 MHz, acetone-d₆) of **10**



```

Current Data Parameters
NAME          Aster-4
EXPNO         13
PROCNO        1

F2 - Acquisition Parameters
Date_         20210128
Time          15.22 h
INSTRUM       spect
PROBHD        Z113652_0155 (
PULPROG       deptsp135
TD            32768
SOLVENT       Acetone
NS            335
DS            2
SWH           22727.273 Hz
FIDRES        1.387163 Hz
AQ            0.7208960 sec
RG            196.84
DW            22.000 usec
DE            6.50 usec
TE            303.1 K
CNST2         145.0000000
D1            1.50000000 sec
D2            0.00344828 sec
D12           0.00002000 sec
TD0           4096
SFO1          125.7684784 MHz
NUC1          13C
P1            12.10 usec
P13           2000.00 usec
PLW0          0 W
PLW1          79.43299866 W
SPNAM[5]      Crp60comp.4
SFOAL5        0.500
SPOFFS5       0 Hz
SPW5          17.76899910 W
SFO2          500.1320005 MHz
NUC2          1H
CPDPRG[2]     waltz16
P3            11.65 usec
P4            23.30 usec
PCPD2         80.00 usec
PLW2          15.84899998 W
PLW12         0.33610001 W

F2 - Processing parameters
SI            65536
SF            125.7575786 MHz
WDW           EM
SSB           0
LB            1.00 Hz
GB            0
PC            1.40
    
```


Figure S68. HSQC spectrum (500 MHz, acetone-d₆) of **10**

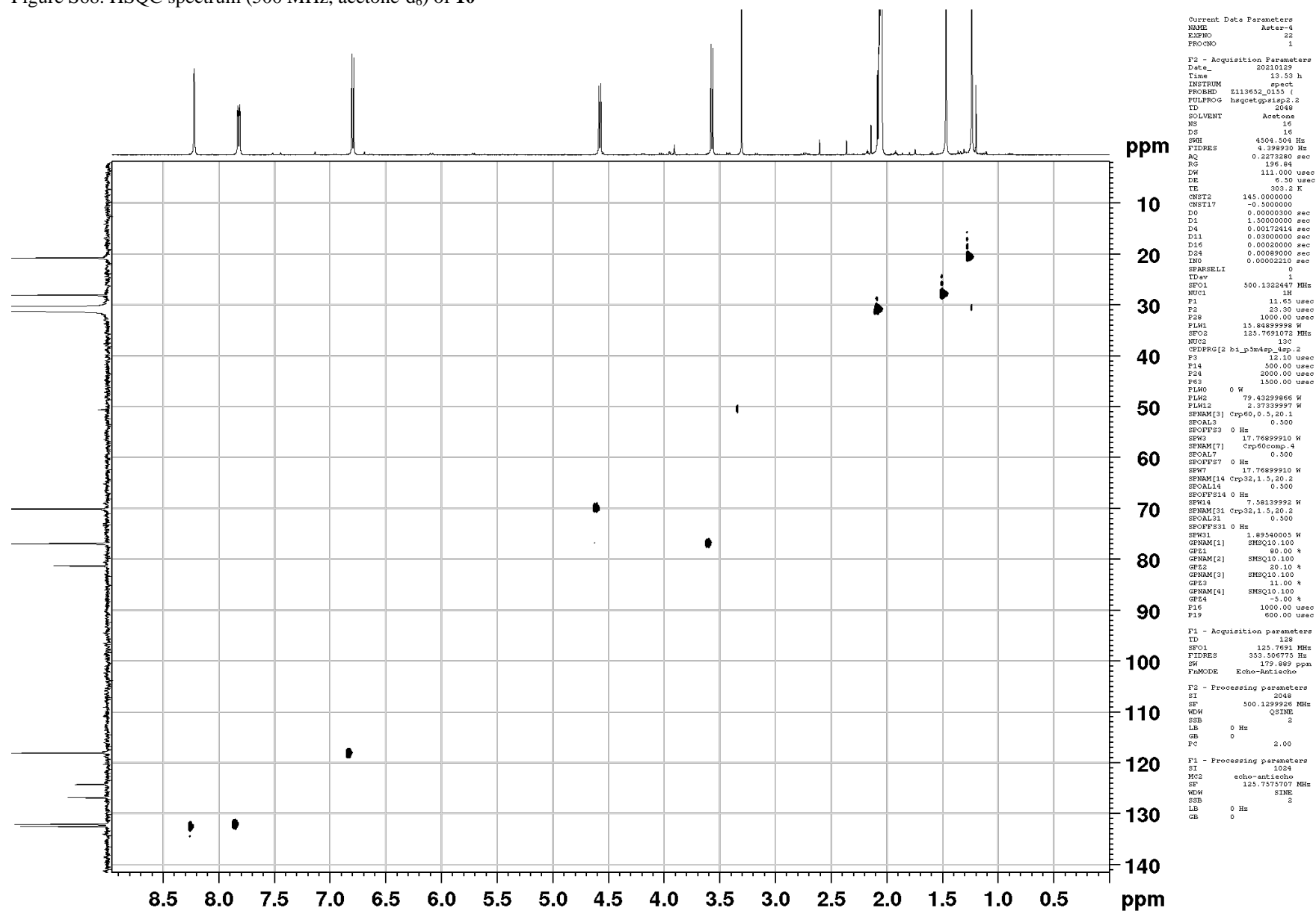


Figure S69. HMBC spectrum (500 MHz, acetone-d₆) of **10**

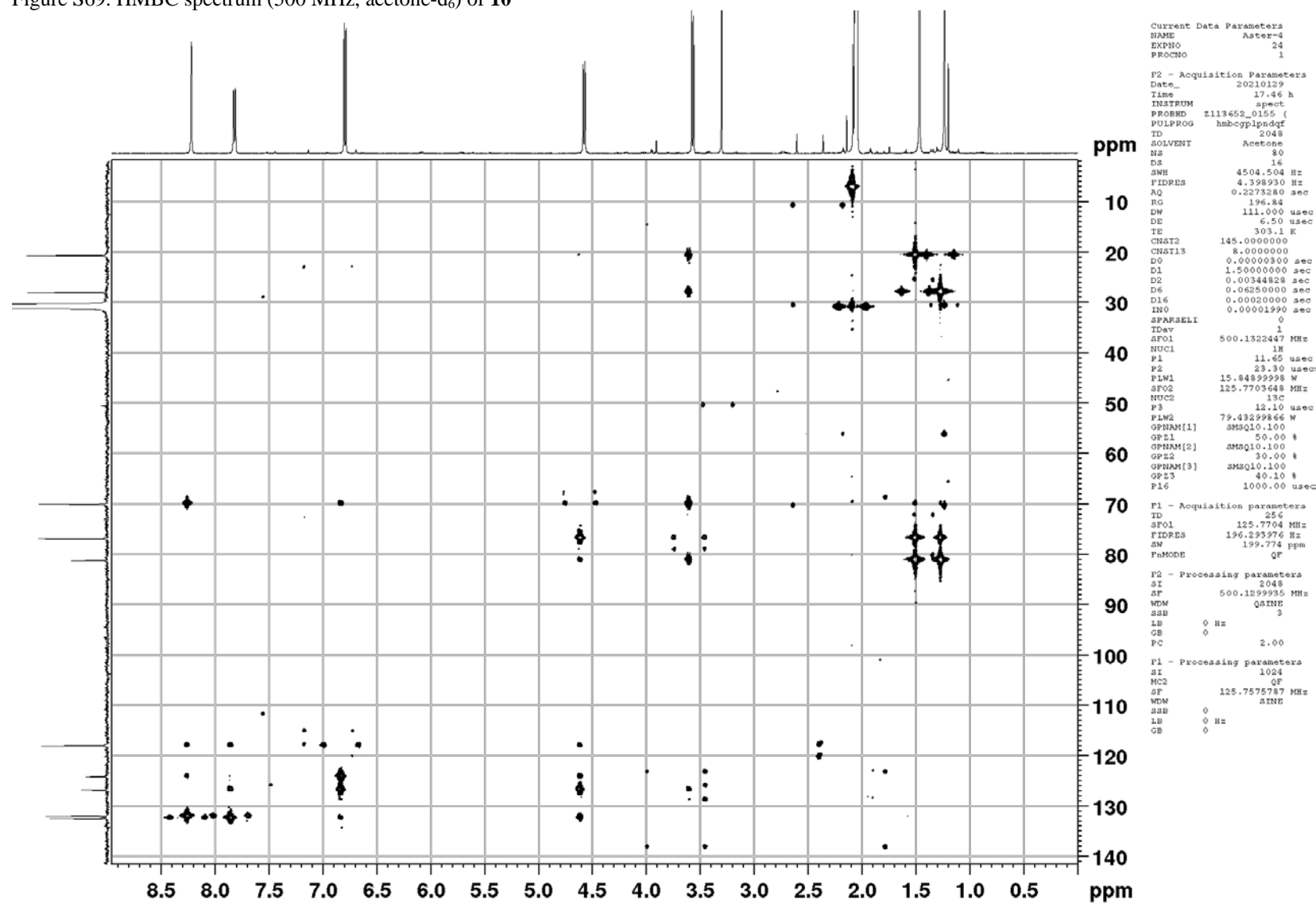


Figure S70. ROESY spectrum (500 MHz, acetone-d₆) of **10**

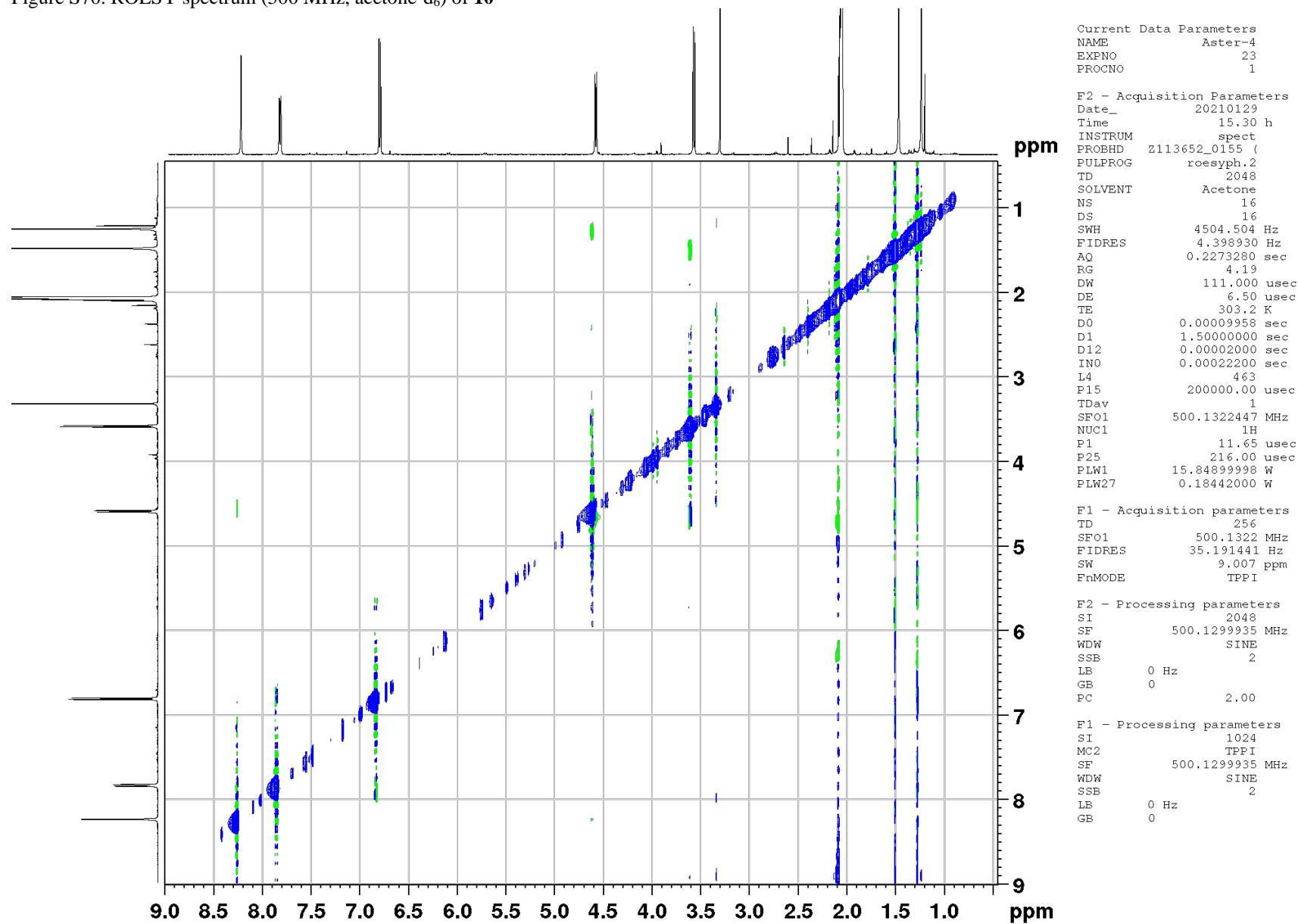
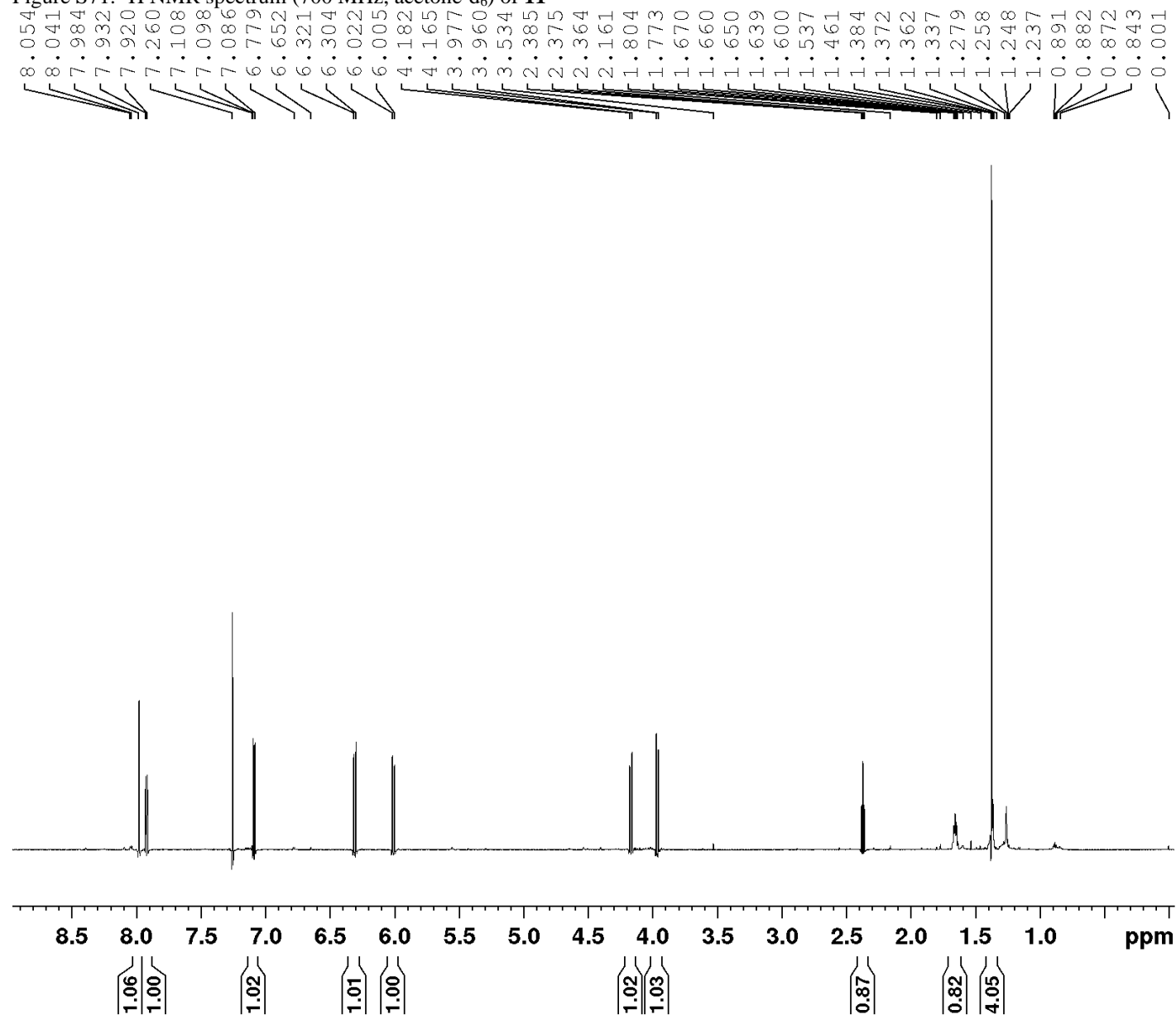


Figure S71. ¹H NMR spectrum (700 MHz, acetone-d₆) of **11**



```

Current Data Parameters
NAME          Aster-38
EXPNO         1
PROCNO        1

F2 - Acquisition Parameters
Date_         20210501
Time          16.49 h
INSTRUM       spect
PROBHD        Z112726_0001 (
PULPROG       zg
TD            32768
SOLVENT       CDC13
NS            1
DS            0
SWH           11160.714 Hz
FIDRES        0.681196 Hz
AQ            1.4680064 sec
RG            181
DW            44.800 usec
DE            6.50 usec
TE            303.0 K
D1            0 sec
TD0           1
SFO1          700.0053900 MHz
NUC1          1H
P1            12.60 usec
PLW1          39.81100082 W

F2 - Processing parameters
SI            32768
SF            700.0000165 MHz
WDW           GM
SSB           0
LB            -2.50 Hz
GB            0.08
PC            4.00
  
```

Figure S72. ^{13}C NMR spectrum (176.04 MHz, acetone- d_6) of **11**

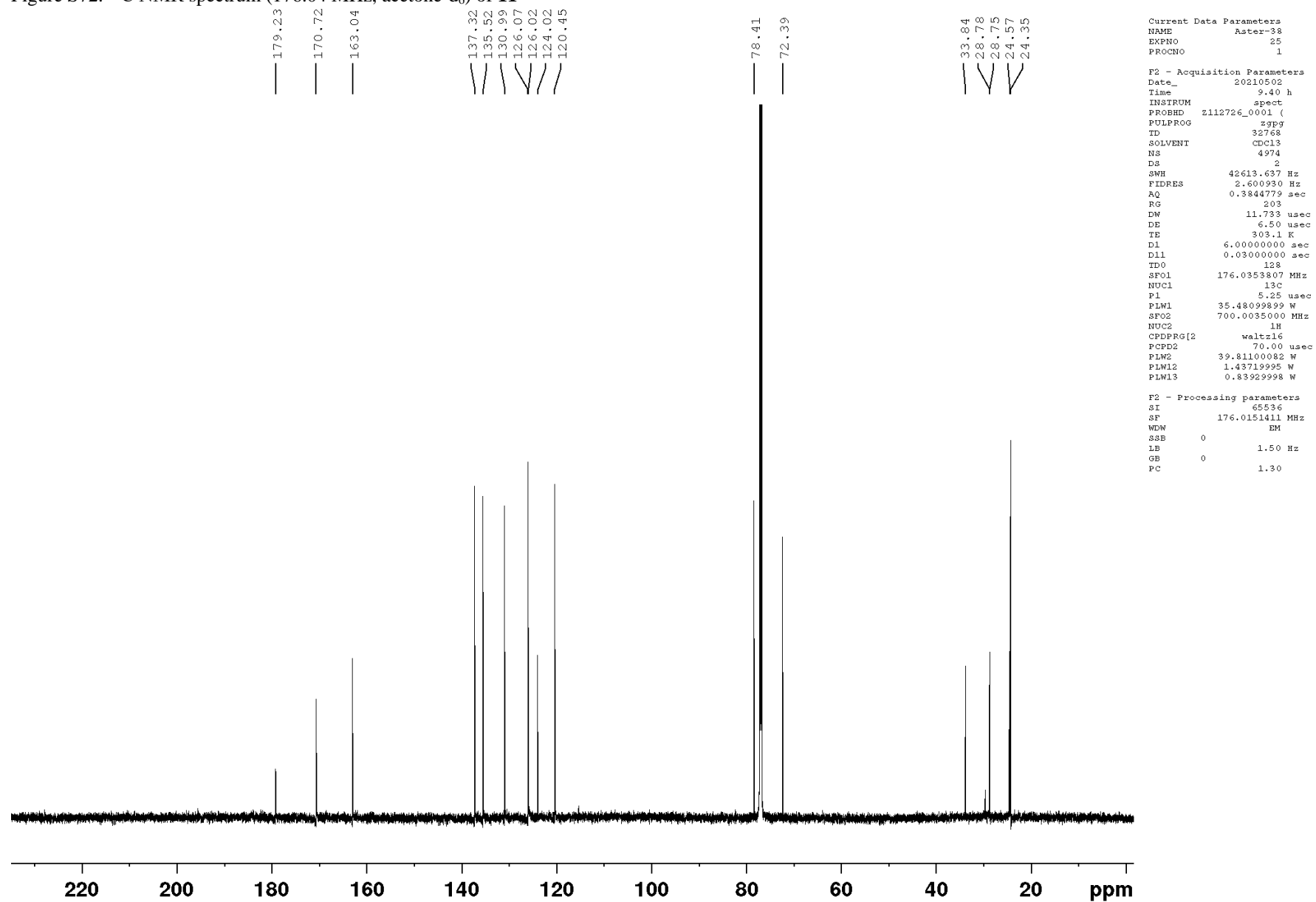
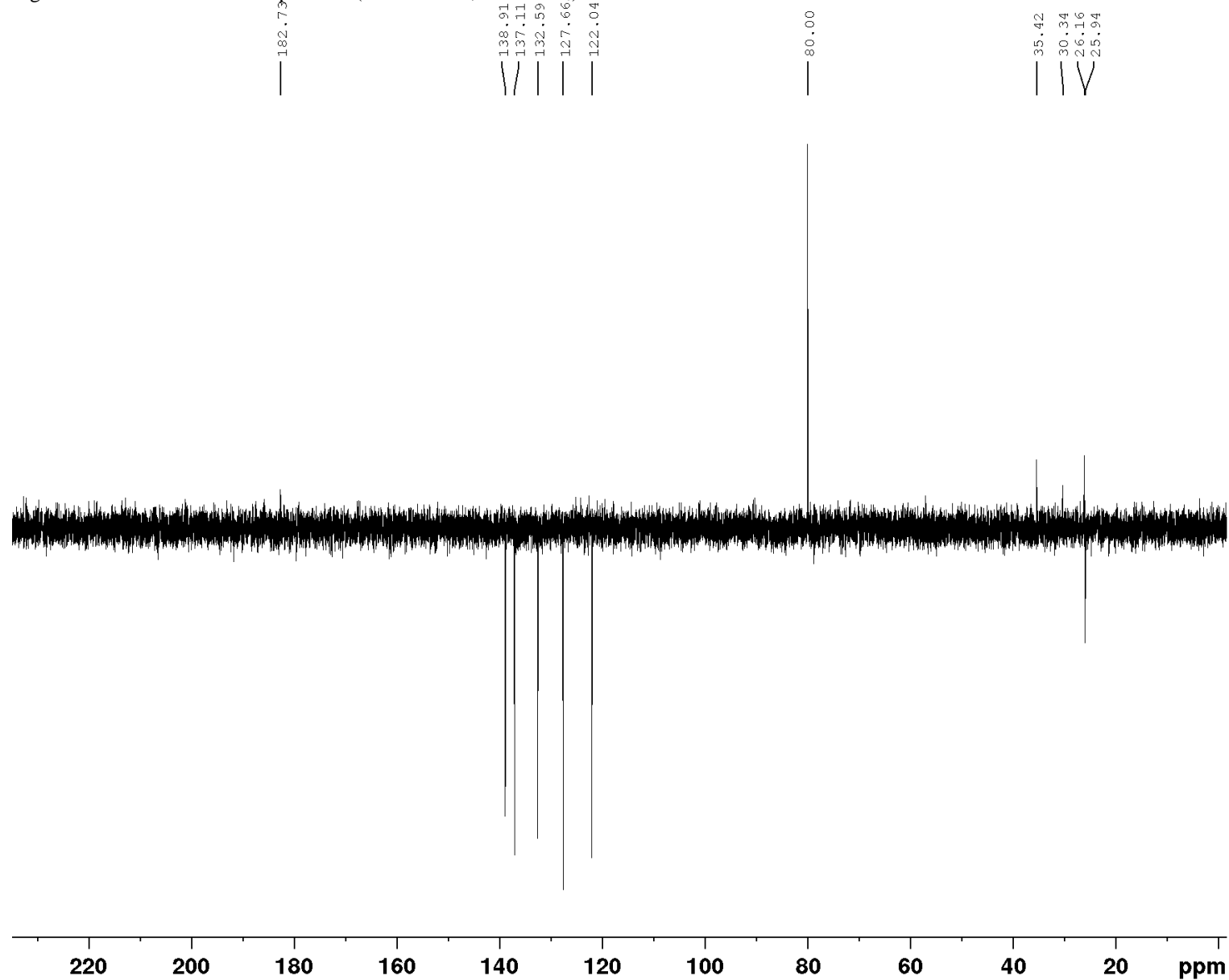


Figure S73. DEPT-135 NMR spectrum (176.04 MHz, acetone-d₆) of **11**



Current Data Parameters
NAME Aster-38
EXPNO 75
PROCNO 1

F2 - Acquisition Parameters
Date_ 20210501
Time 17.05 h
INSTRUM spect
PROBHD Z112726_0001 (
PULPROG dept135
TD 32768
SOLVENT CDCl3
NS 205
DS 32
SWH 42613.637 Hz
FIDRES 2.600930 Hz
AQ 0.3844779 sec
RG 203
DW 11.733 usec
DE 6.50 usec
TE 303.1 K
CNST2 145.0000000
D1 2.00000000 sec
D2 0.00344828 sec
D12 0.00002000 sec
TD0 128
SFO1 176.0353807 MHz
NUC1 13C
P1 10.50 usec
P2 21.00 usec
PLW1 35.48099899 W
SFO2 700.0035000 MHz
NUC2 1H
CPDPRG2 waltz16
P3 13.30 usec
P4 26.60 usec
PCPD2 70.00 usec
PLW2 39.81100082 W
PLW12 1.43719995 W

F2 - Processing parameters
SI 65536
SF 176.0148619 MHz
WDW EM
SSB 0
LB 1.50 Hz
GB 0
PC 1.30

Figure S74. COSY-45 spectrum (700 MHz, acetone-d₆) of **11**

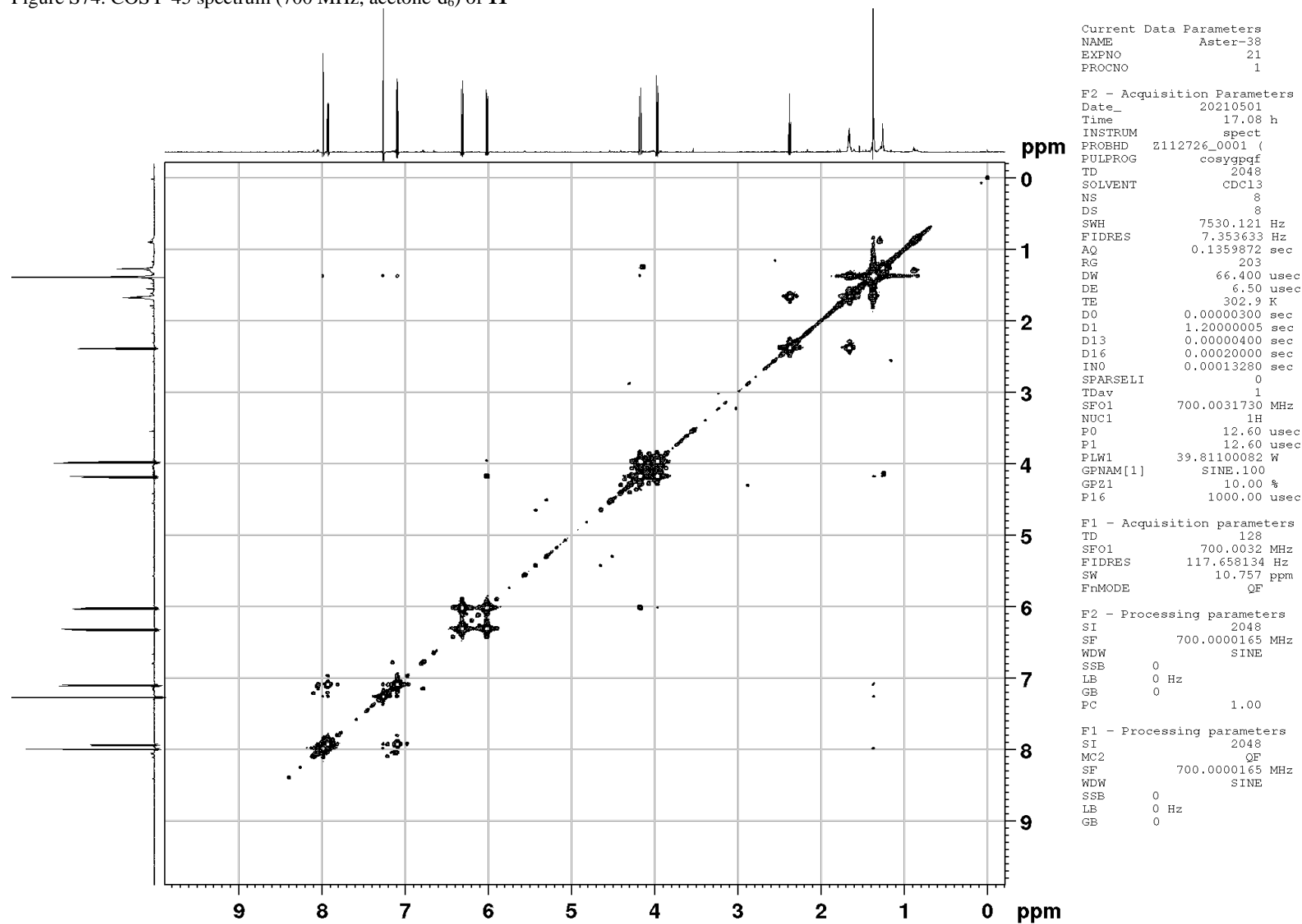


Figure S75. HSQC spectrum (700 MHz, acetone-d₆) of **11**

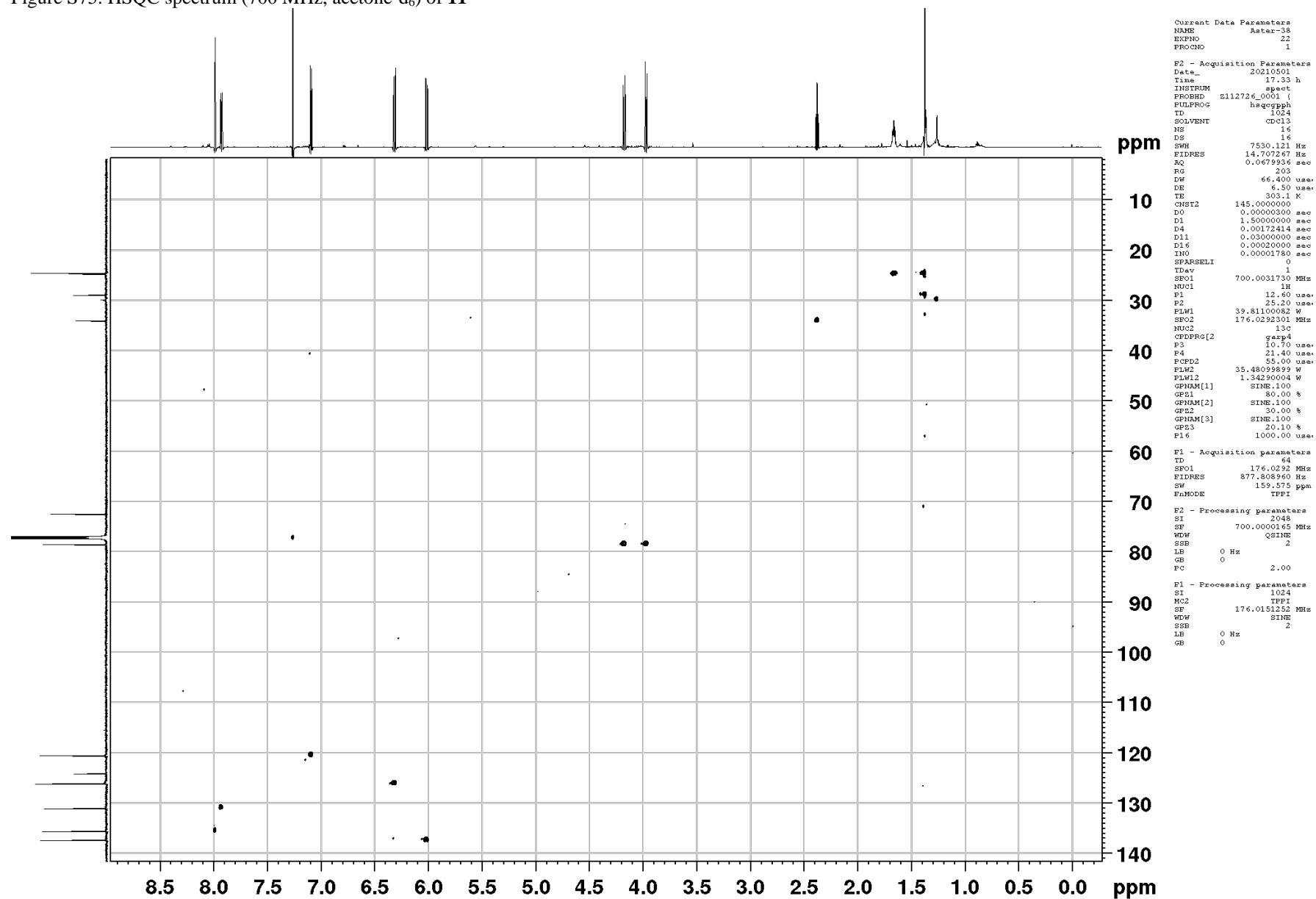


Figure S76. HMBC spectrum (700 MHz, acetone-d₆) of **11**

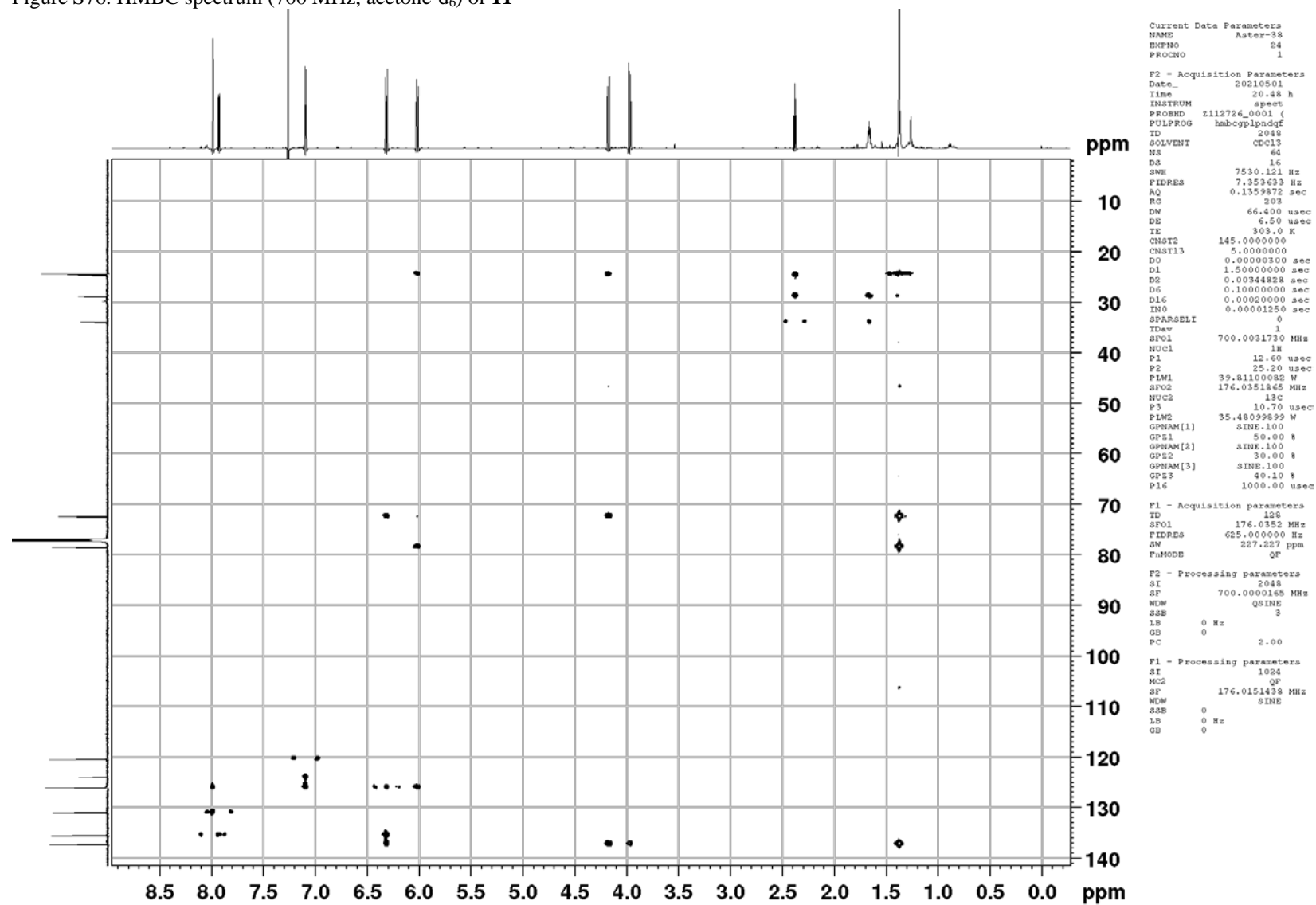


Figure S77. ROESY spectrum (700 MHz, acetone-d₆) of **11**

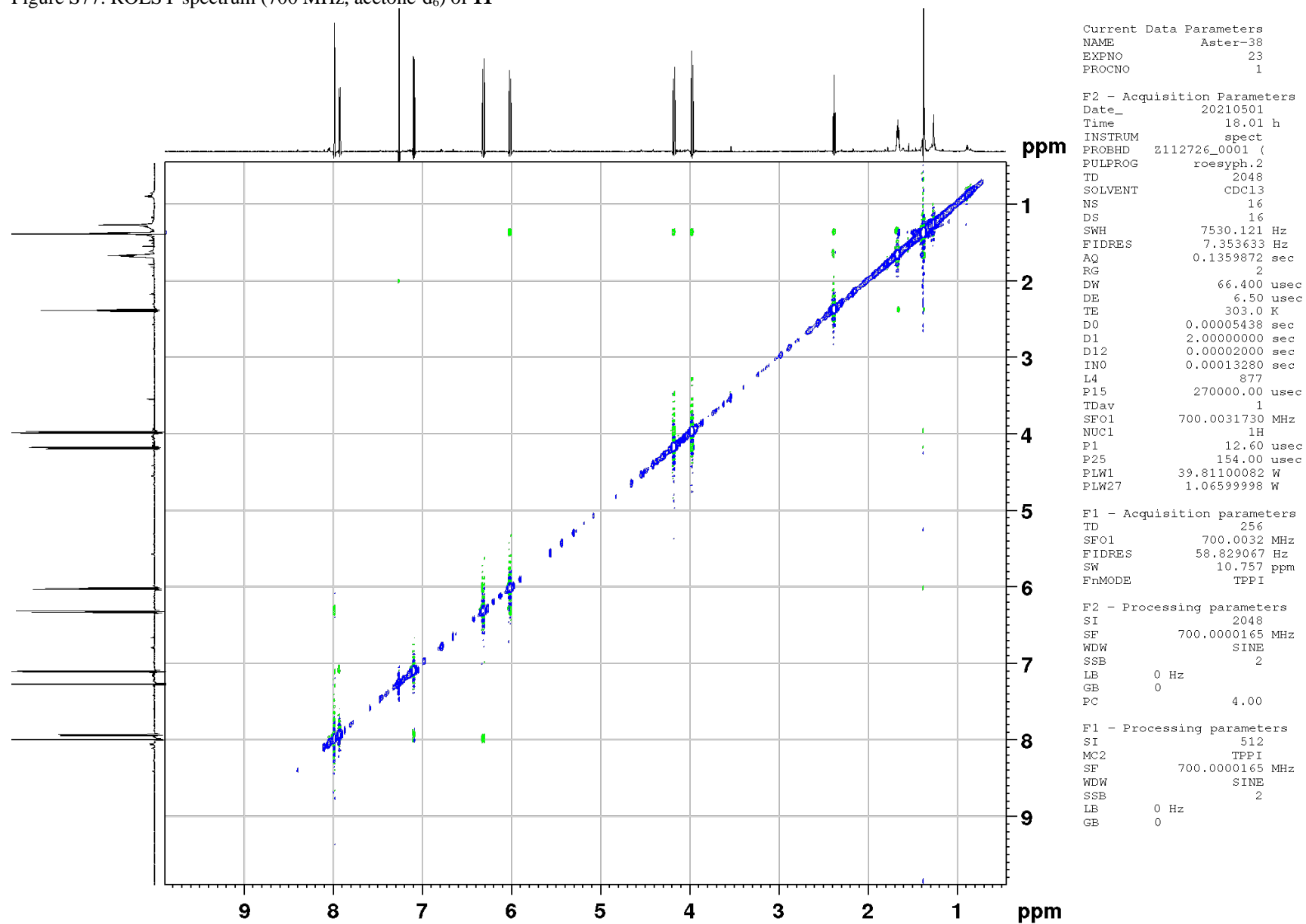
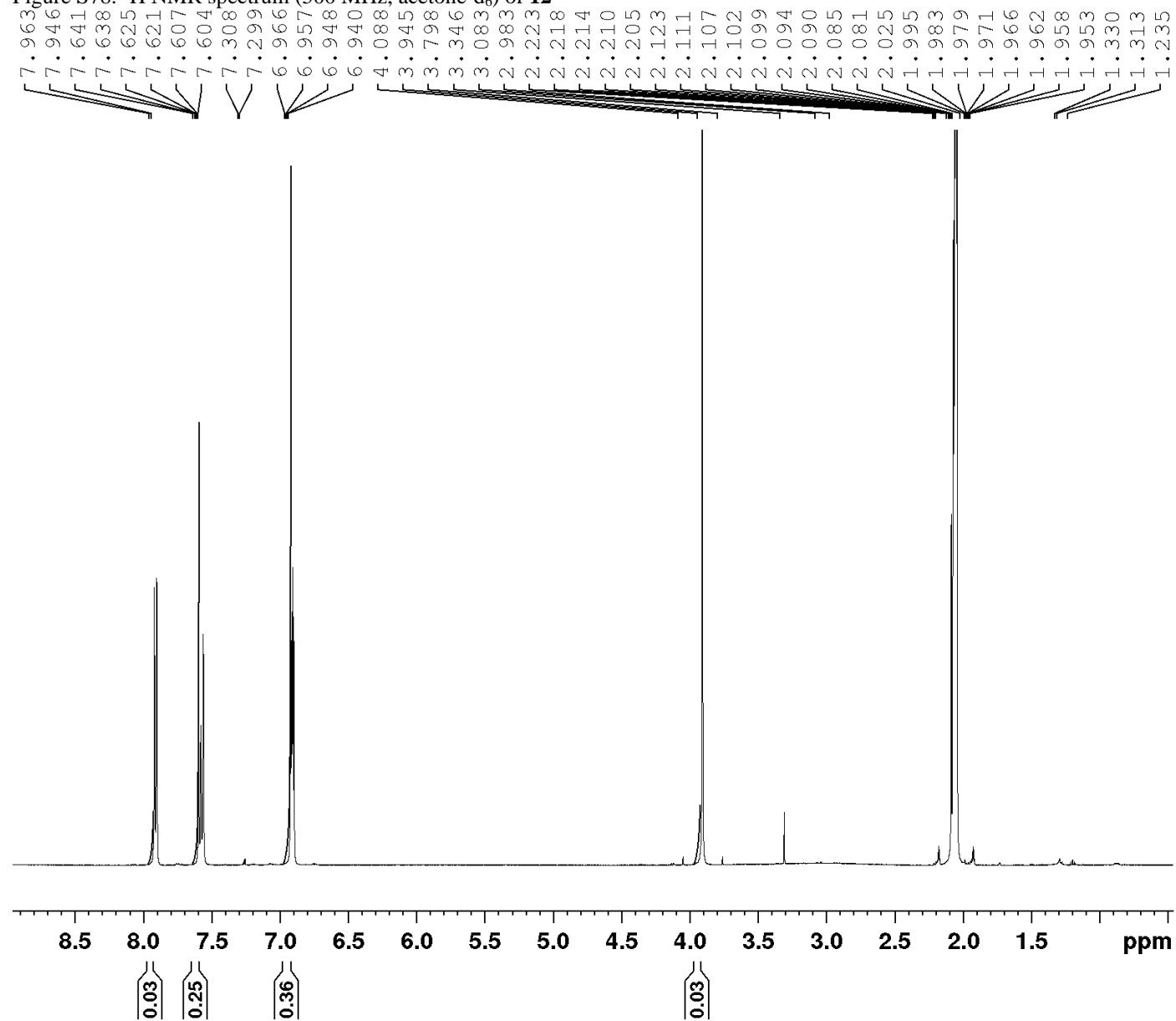


Figure S78. ¹H NMR spectrum (500 MHz, acetone-d₆) of **12**

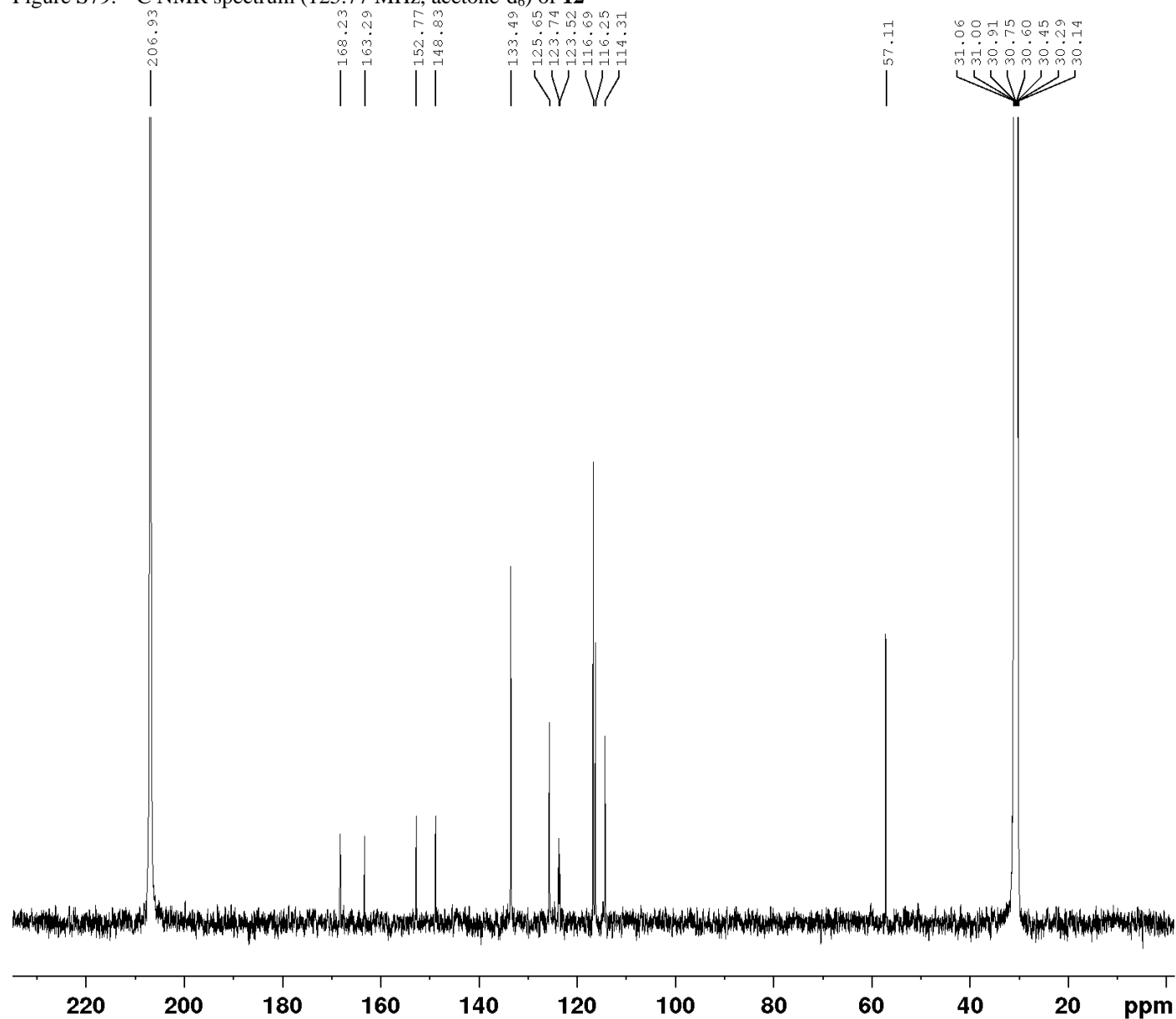


Current Data Parameters
NAME Aster-8a
EXPNO 5
PROCNO 1

F2 - Acquisition Parameters
Date_ 20210218
Time 12.50 h
INSTRUM spect
PROBHD Z113652_0155 (
PULPROG zg30
TD 32768
SOLVENT Acetone
NS 8
DS 2
SWH 4251.701 Hz
FIDRES 0.259503 Hz
AQ 3.8535168 sec
RG 119.65
DW 117.600 usec
DE 6.50 usec
TE 303.1 K
D1 2.00000000 sec
TD0 1
SFO1 500.1323695 MHz
NUC1 1H
P0 3.88 usec
P1 11.65 usec
PLW1 15.84899998 W

F2 - Processing parameters
SI 65536
SF 500.1300134 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00

Figure S79. ^{13}C NMR spectrum (125.77 MHz, acetone- d_6) of **12**



Current Data Parameters
NAME Aster-8a
EXPNO 11
PROCNO 1

F2 - Acquisition Parameters
Date_ 20210218
Time 14.23 h
INSTRUM spect
PROBHD Z113652_0155 (
PULPROG zgpg30
TD 32768
SOLVENT Acetone
NS 2283
DS 4
SWH 29761.904 Hz
FIDRES 1.816522 Hz
AQ 0.5505024 sec
RG 196.84
DW 16.800 usec
DE 6.50 usec
TE 303.1 K
D1 1.50000000 sec
D11 0.03000000 sec
TD0 32
SFO1 125.7722511 MHz
NUC1 ^{13}C
P0 4.03 usec
P1 12.10 usec
PLW1 79.43299866 W
SFO2 500.1320005 MHz
NUC2 ^1H
CPDPRG[2] waltz16
PCPD2 80.00 usec
PLW2 15.84899998 W
PLW12 0.33610001 W
PLW13 0.16906001 W

F2 - Processing parameters
SI 65536
SF 125.7575778 MHz
WDW EM
SSB 0
LB 5.00 Hz
GB 0
PC 1.30

Figure S80. COSY-45 spectrum (500 MHz, acetone-d₆) of **12**

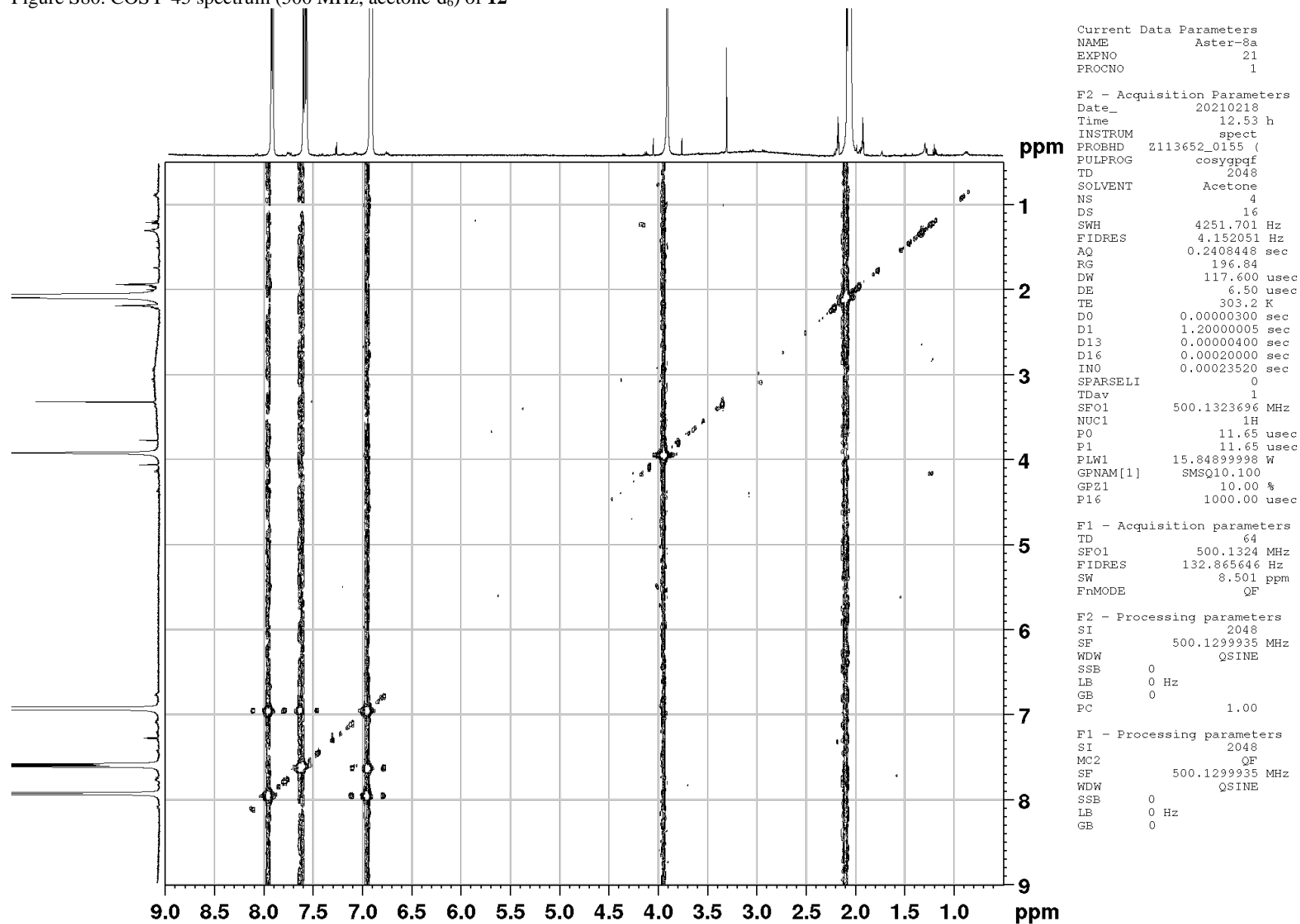


Figure S81. HSQC spectrum (500 MHz, acetone-d₆) of **12**

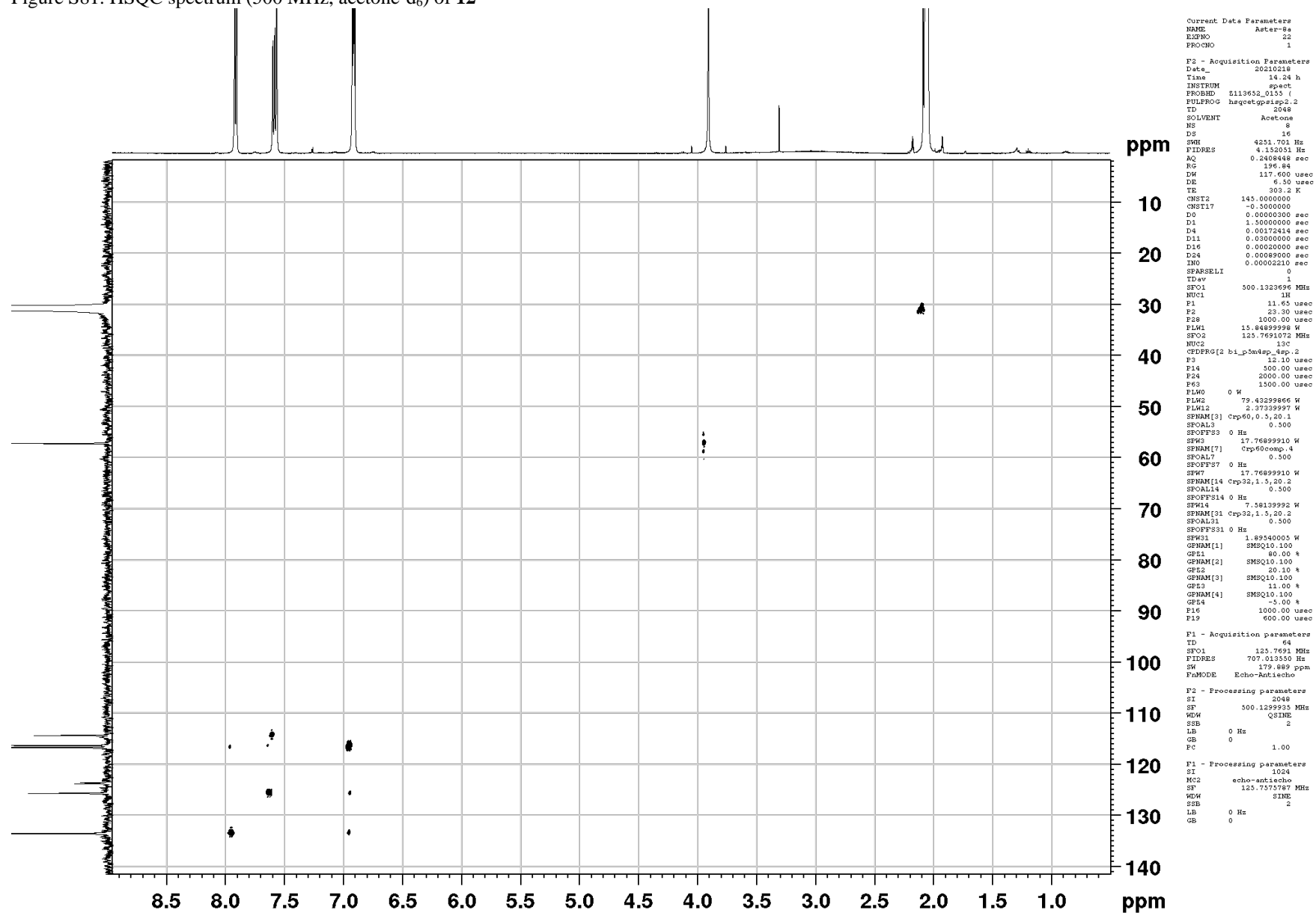


Figure S82. HMBC spectrum (700 MHz, acetone-d₆) of **12**

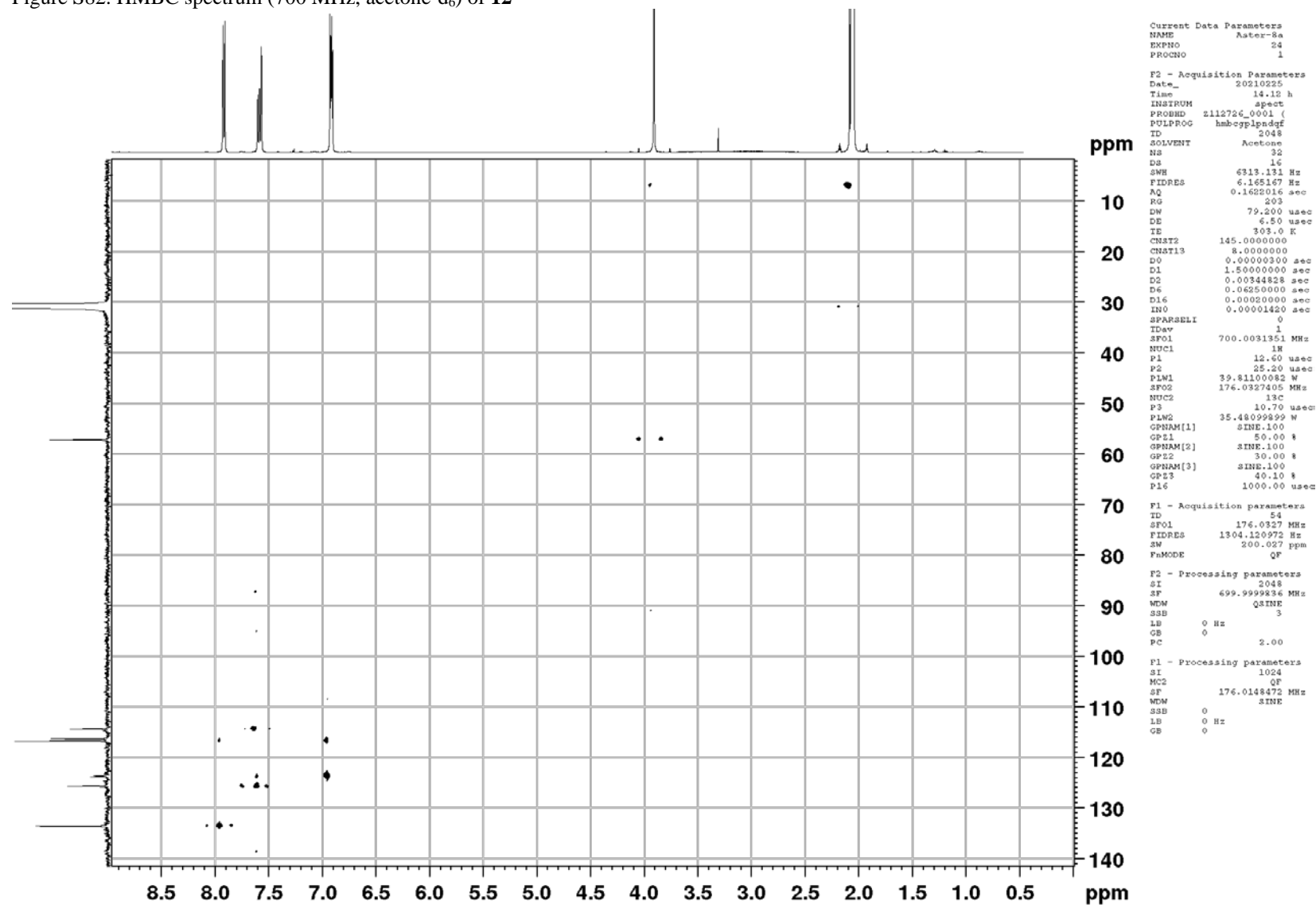


Figure S83. ROESY spectrum (700 MHz, acetone-d₆) of **12**

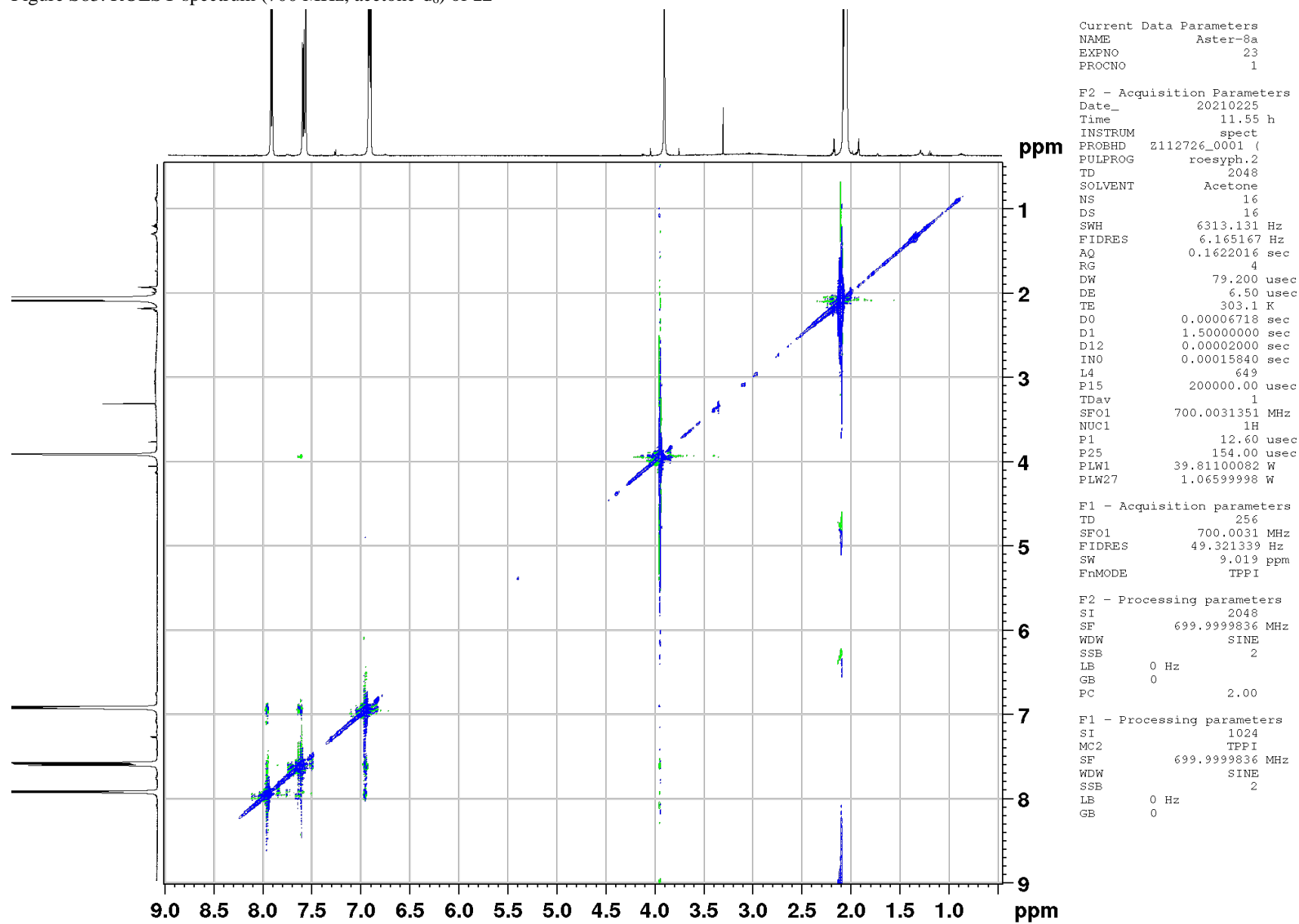
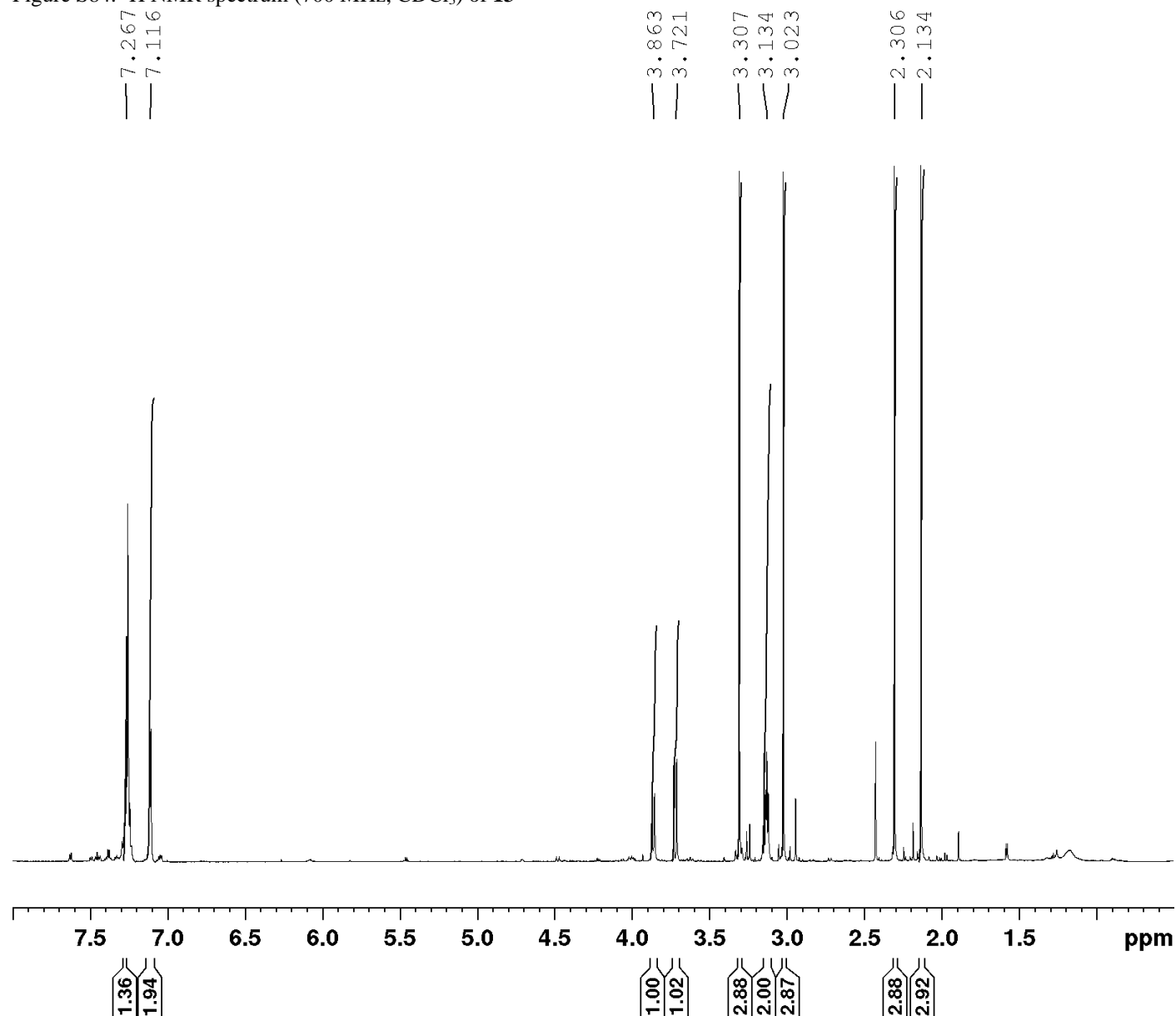


Figure S84. ^1H NMR spectrum (700 MHz, CDCl_3) of **13**

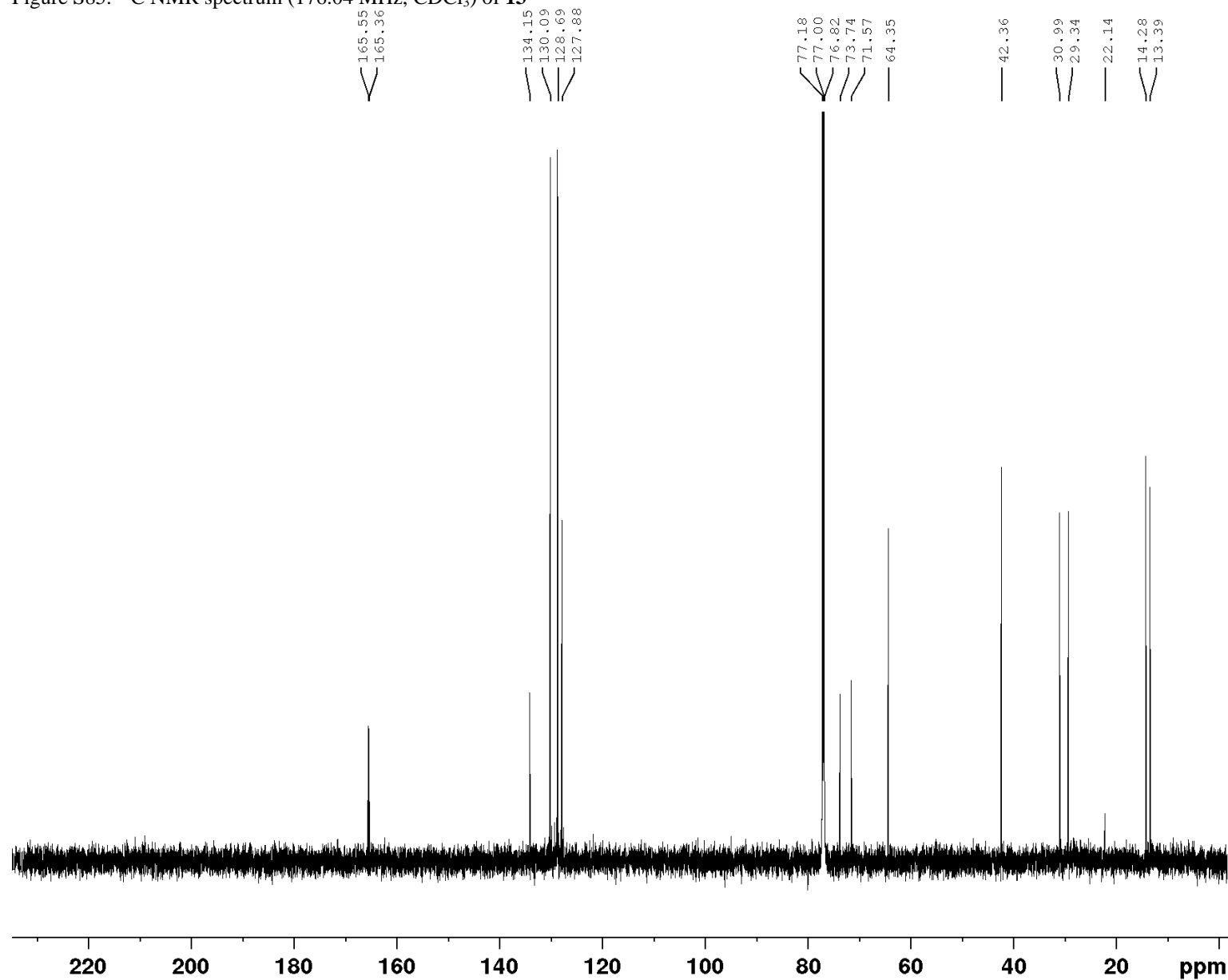


Current Data Parameters
NAME Aster-5
EXPNO 5
PROCNO 1

F2 - Acquisition Parameters
Date_ 20210201
Time 13.54 h
INSTRUM spect
PROBHD Z112726_0001 (
PULPROG zg30
TD 32768
SOLVENT CDCl_3
NS 8
DS 2
SWH 5252.101 Hz
FIDRES 0.320563 Hz
AQ 3.1195135 sec
RG 203
DW 95.200 usec
DE 6.50 usec
TE 302.6 K
D1 2.00000000 sec
TD0 1
SFO1 700.0029934 MHz
NUC1 ^1H
P0 4.20 usec
P1 12.60 usec
PLW1 39.81100082 W

F2 - Processing parameters
SI 32768
SF 700.0000161 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00

Figure S85. ^{13}C NMR spectrum (176.04 MHz, CDCl_3) of **13**



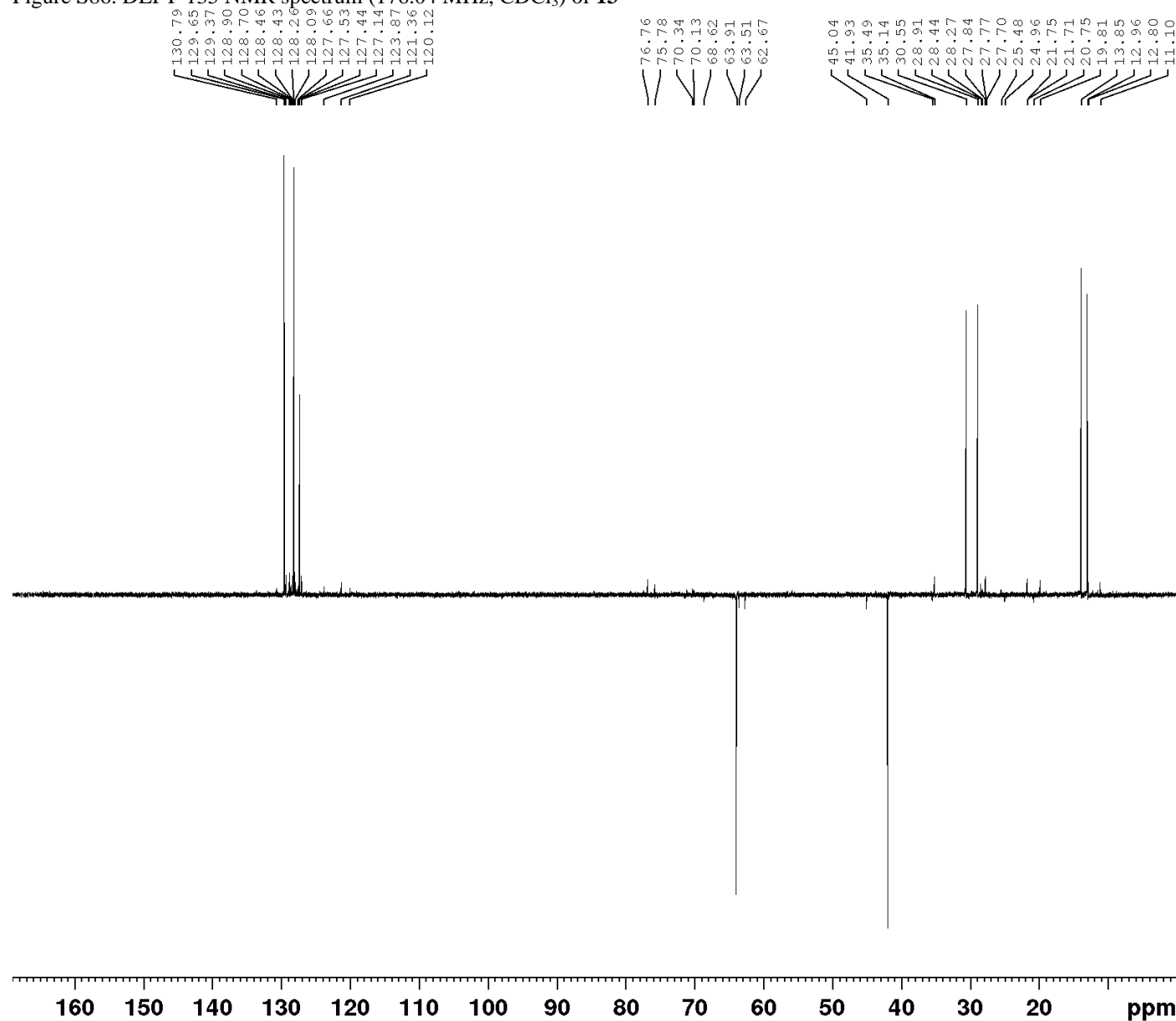
```

Current Data Parameters
NAME          Aster-5
EXPNO         11
PROCNO        1

F2 - Acquisition Parameters
Date_         20210201
Time          13.49 h
INSTRUM       spect
PROBHD        Z112726_0001 (
PULPROG       zgpg30
TD            32768
SOLVENT       CDCl3
NS            1142
DS            2
SWH           42613.637 Hz
FIDRES        2.600930 Hz
AQ            0.3844779 sec
RG            203
DW            11.733 usec
DE            6.50 usec
TE            303.4 K
D1            1.50000000 sec
D11           0.03000000 sec
TD0           4096
SFO1          176.0353807 MHz
NUC1          13C
P0            3.50 usec
P1            10.50 usec
PLW1          35.48099899 W
SFO2          700.0035000 MHz
NUC2          1H
CPDPRG[2]    waltz16
PCPD2         70.00 usec
PLM2          39.81100082 W
PLM12         1.43719995 W
PLM13         0.83929998 W

F2 - Processing parameters
SI            65536
SF            176.0151411 MHz
WDW           EM
SSB           0
LB            1.50 Hz
GB            0
PC            1.40
    
```

Figure S86. DEPT-135 NMR spectrum (176.04 MHz, CDCl₃) of **13**



Current Data Parameters
NAME Aster-5
EXPNO 25
PROCNO 1

F2 - Acquisition Parameters
Date_ 20210202
Time 9.40 h
INSTRUM spect
PROBHD z112726_0001 (
PULPROG deptsp135
TD 65536
SOLVENT CDCl3
NS 6029
DS 2
SWH 29761.904 Hz
FIDRES 0.908261 Hz
AQ 1.1010048 sec
RG 203
DW 16.800 usec
DE 6.50 usec
TE 303.2 K
CNST2 145.0000000
D1 2.00000000 sec
D2 0.00344828 sec
D12 0.00002000 sec
TDO 4096
SFO1 176.0301003 MHz
NUC1 13C
P1 10.50 usec
P13 2000.00 usec
PLW0 0 W
PLW1 35.48099899 W
SPNAM[5] Crp80comp.4
SFOAL5 0.500
SPOFFS5 0 Hz
SPW5 7.96899986 W
SFO2 700.0028000 MHz
NUC2 1H
CPDPRG[2] waltz16
P3 13.30 usec
P4 26.60 usec
PCPD2 70.00 usec
PLW2 39.81100082 W
PLW12 1.43719995 W

F2 - Processing parameters
SI 65536
SF 176.0152175 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40

Figure S87. COSY-45 spectrum (700 MHz, CDCl₃) of **13**

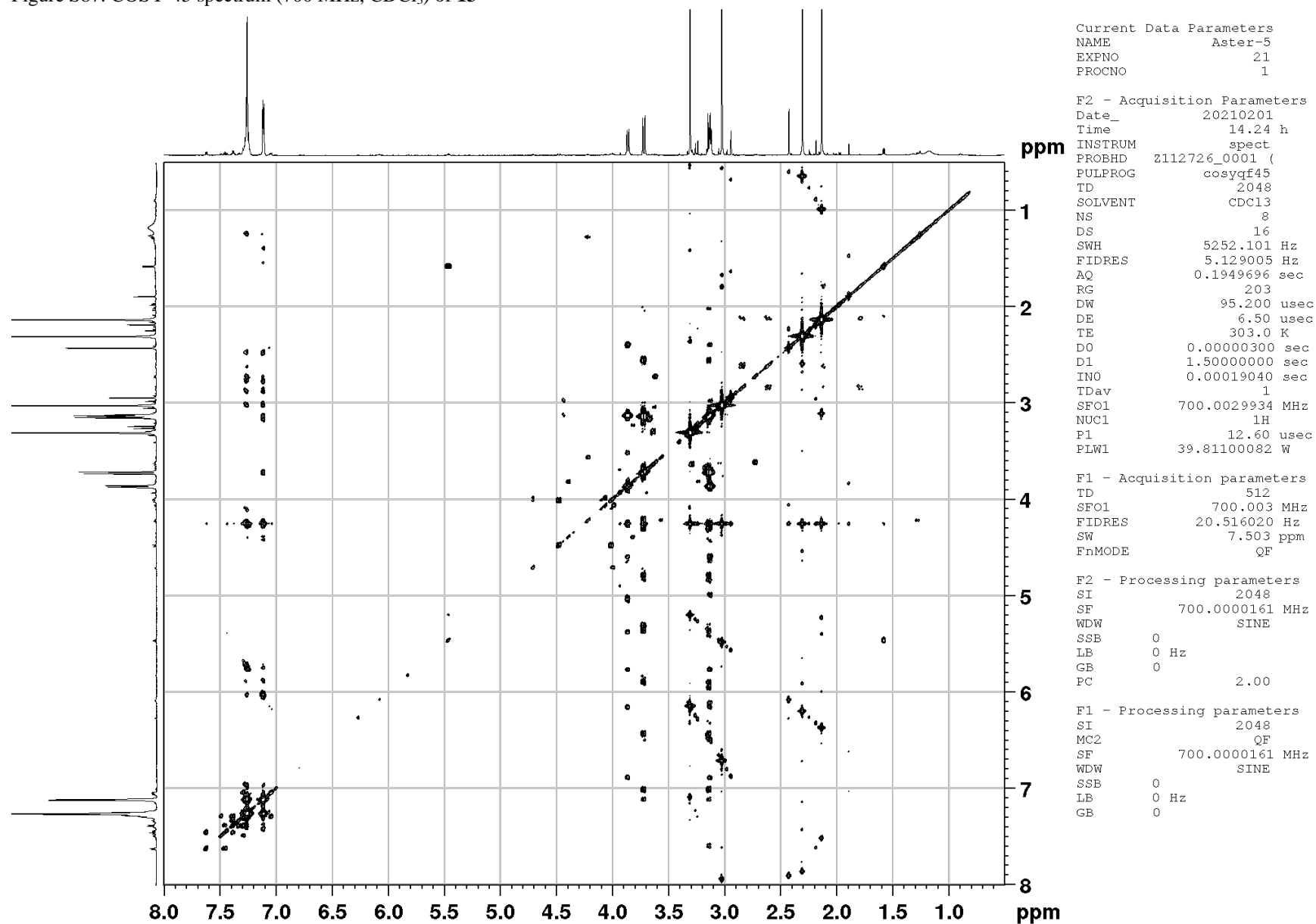


Figure S88. HSQC spectrum (700 MHz, CDCl₃) of **13**

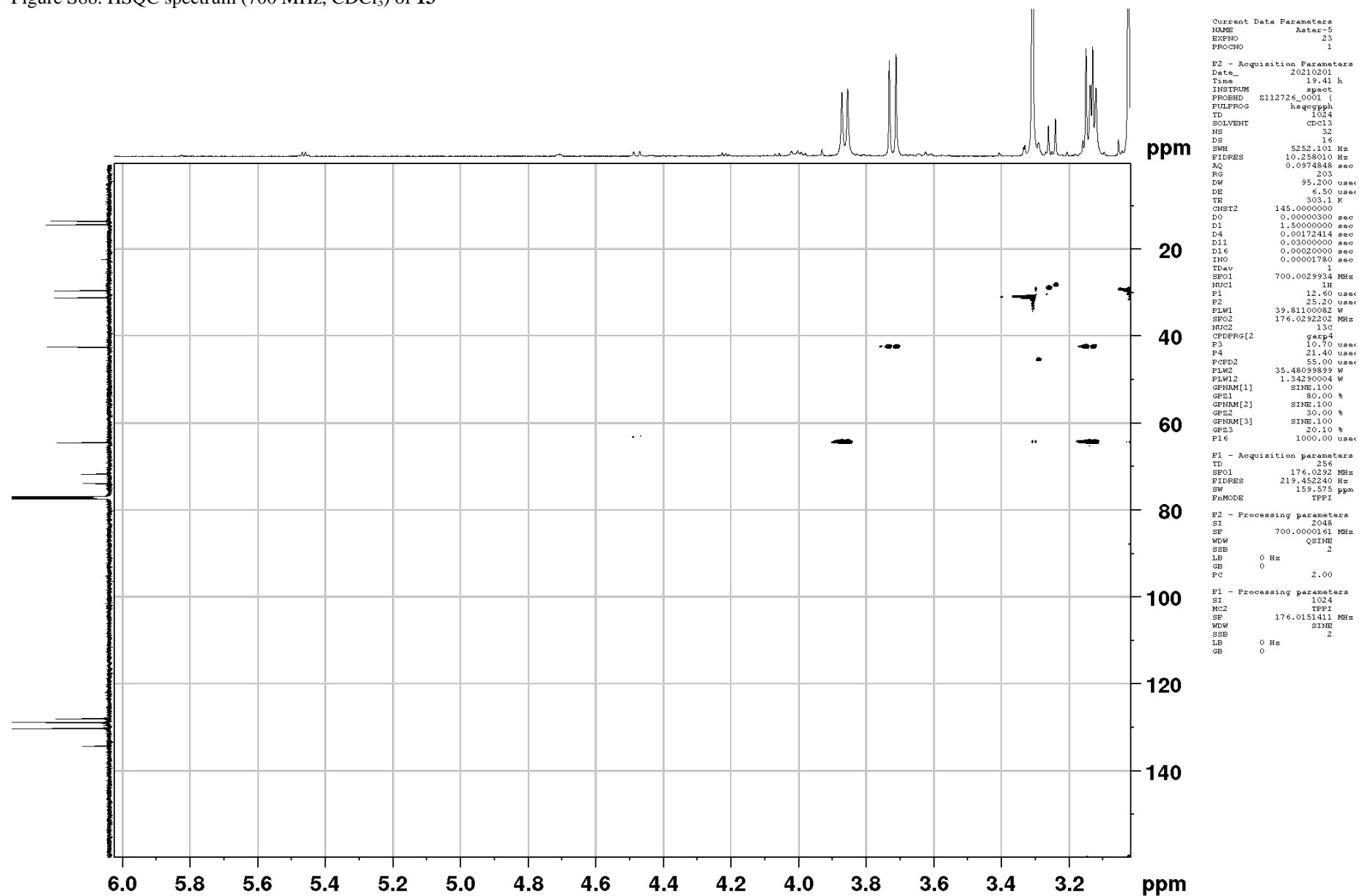


Figure S89. HMBC spectrum (700 MHz, CDCl₃) of **13**

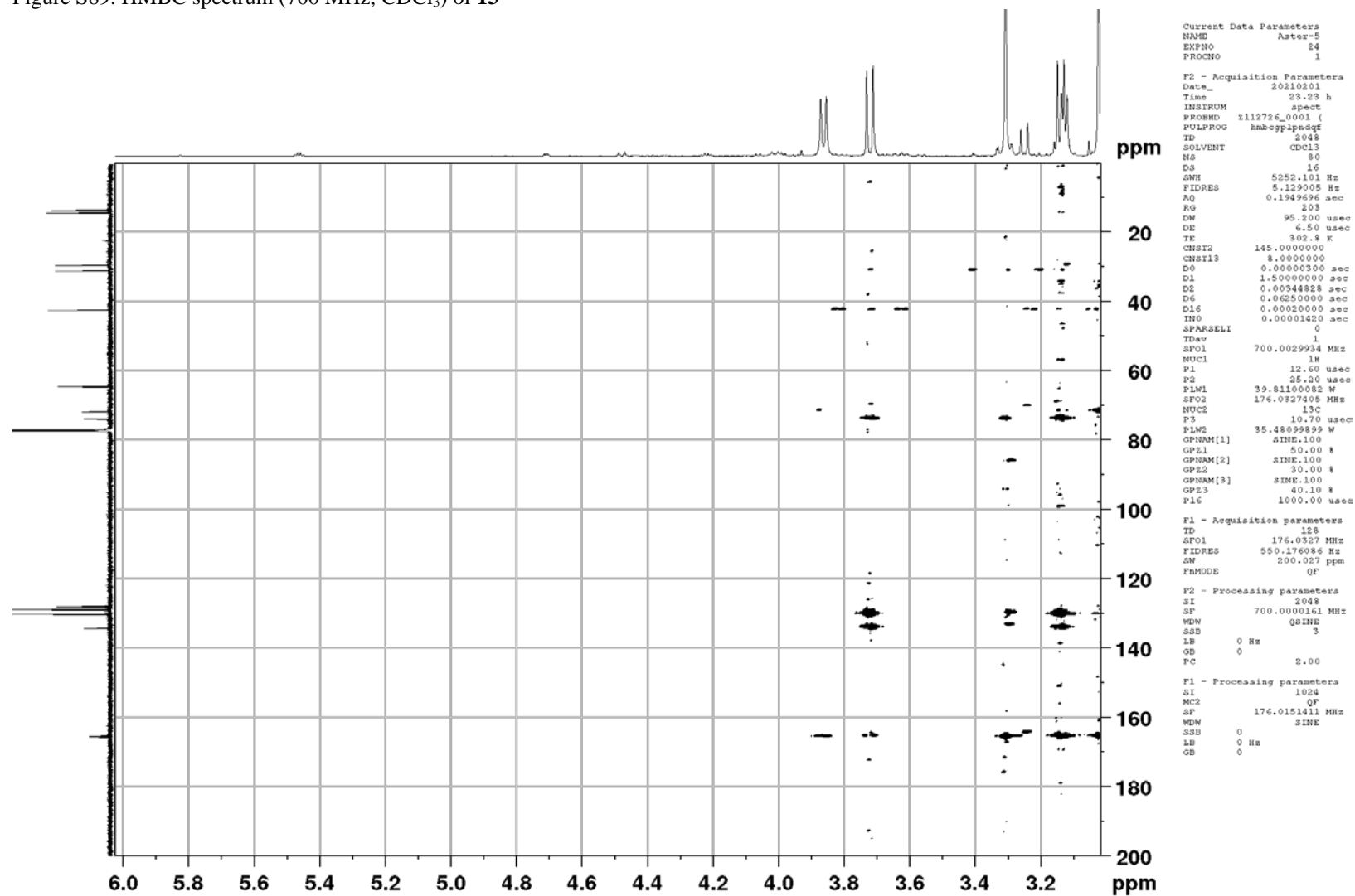


Figure S90. ROESY spectrum (700 MHz, CDCl₃) of **13**

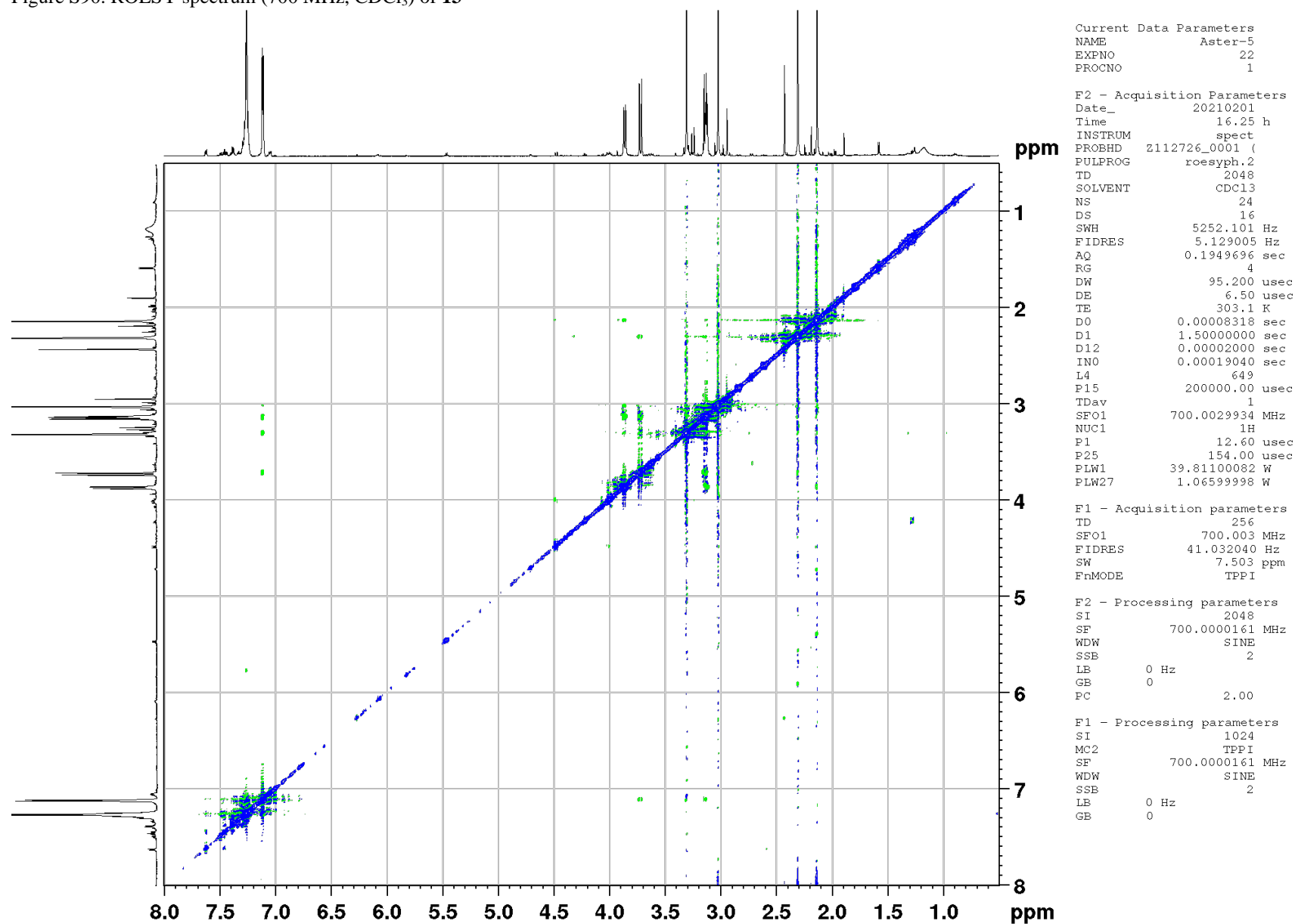


Figure S91. (+) ESI MS of **1**

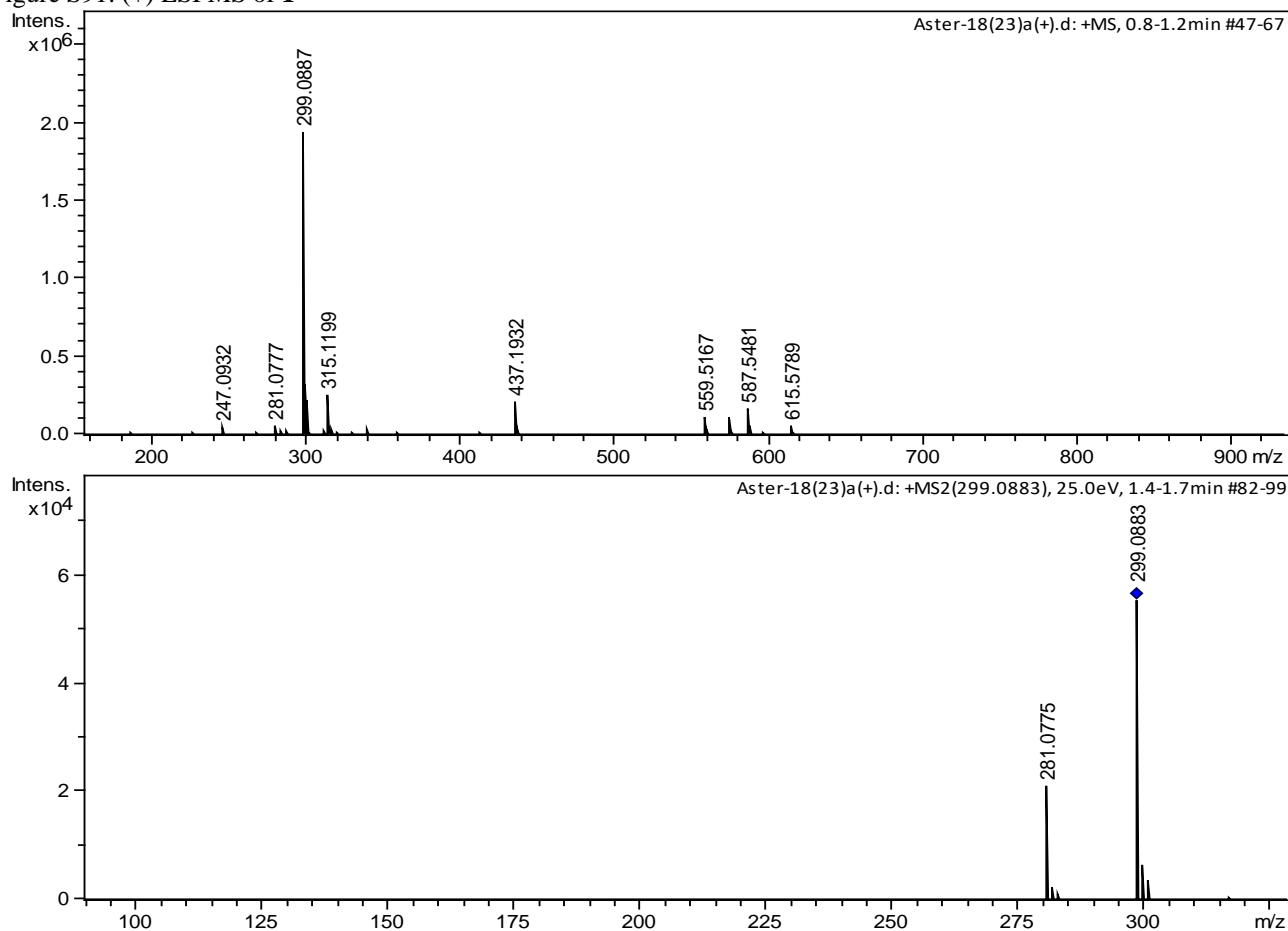


Figure S92. (-) ESI MS of **1**

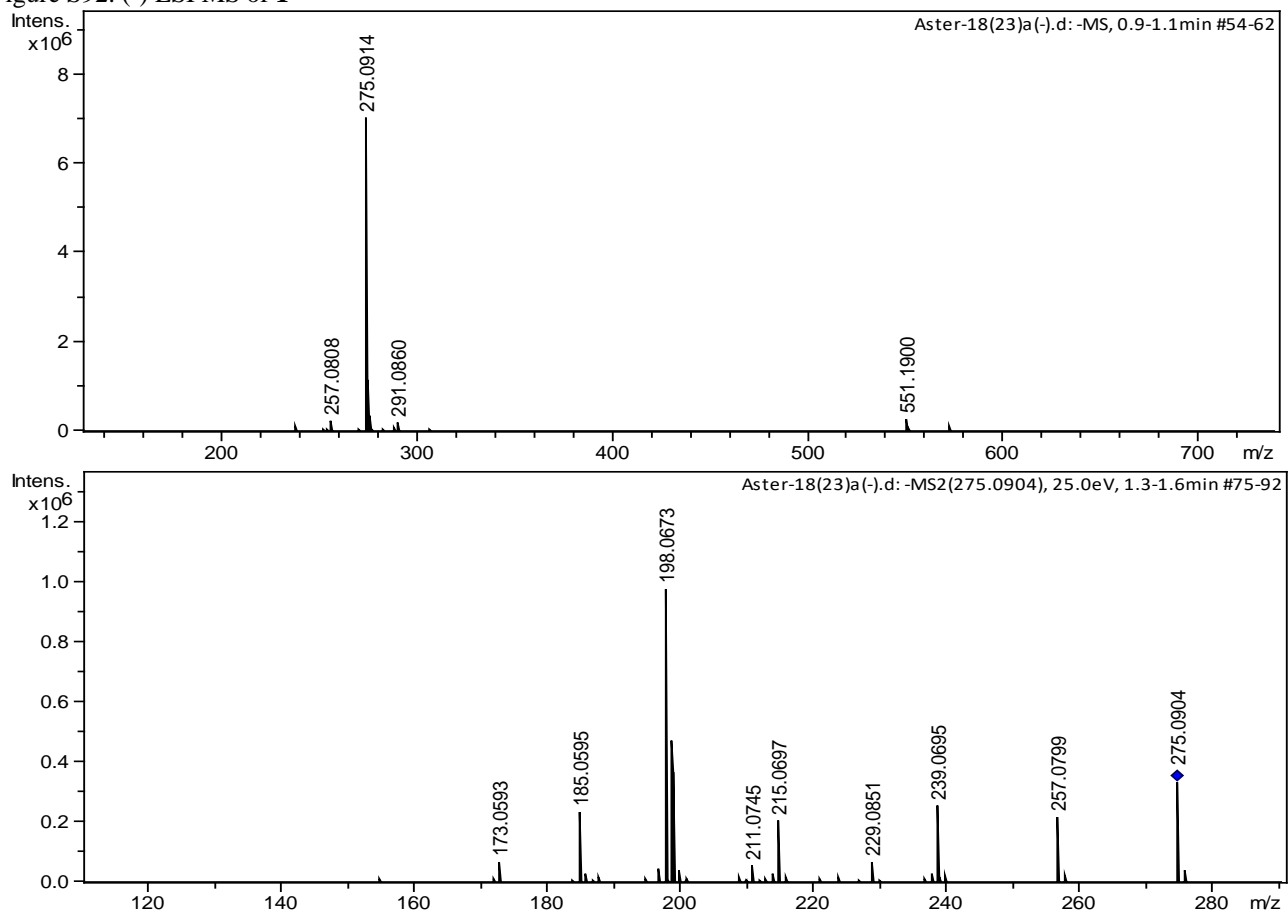


Figure S93. (+) ESI MS of **2**

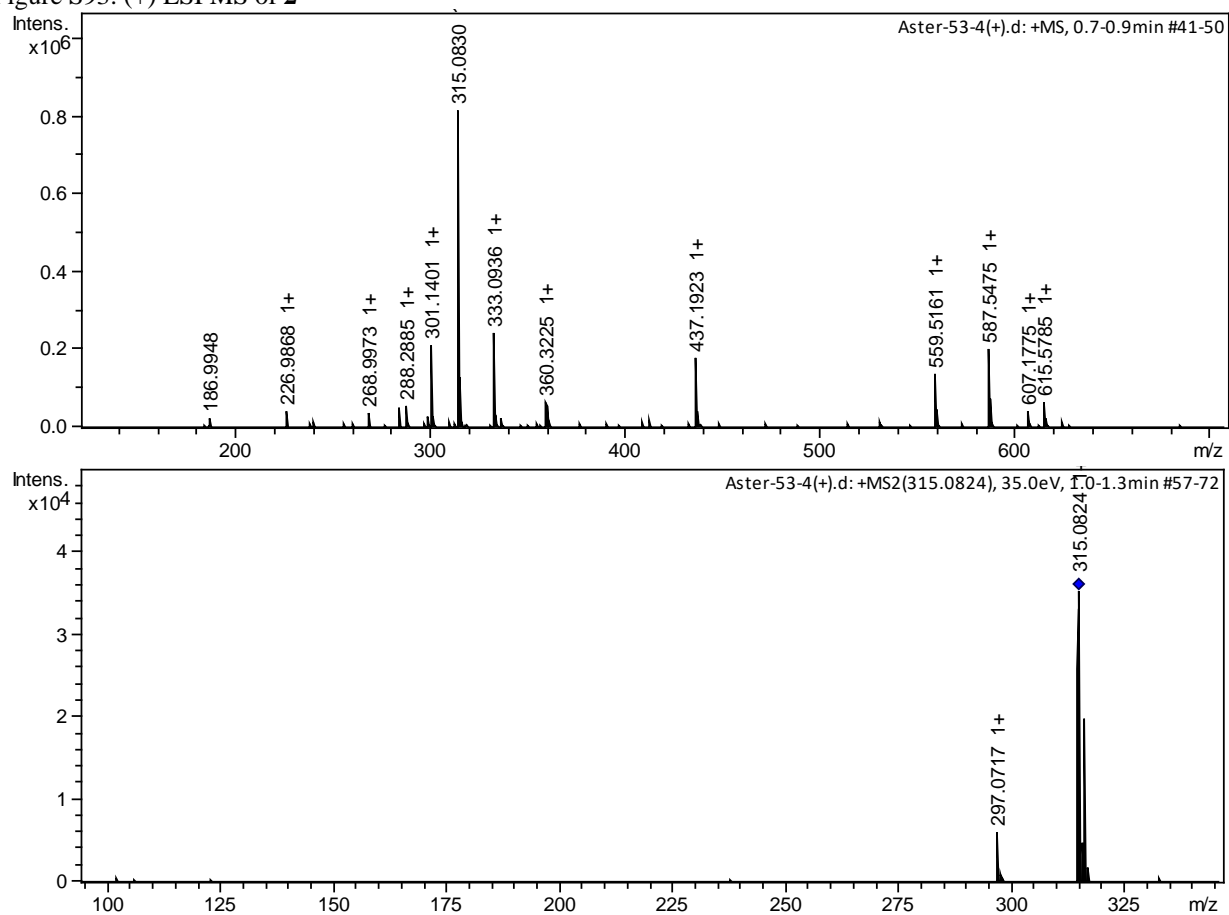


Figure S94. (-) ESI MS of **2**

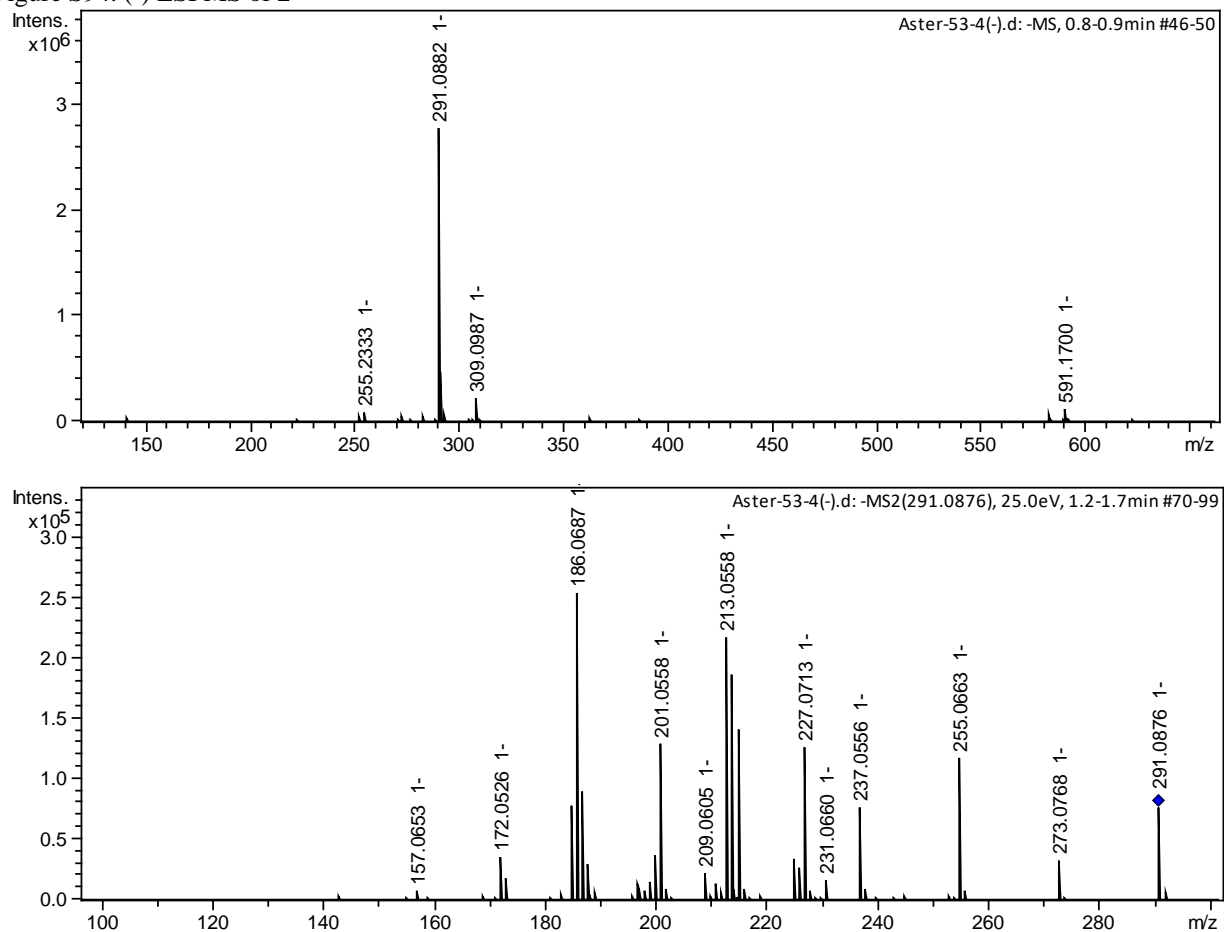


Figure S95. (+) ESI MS of **3**

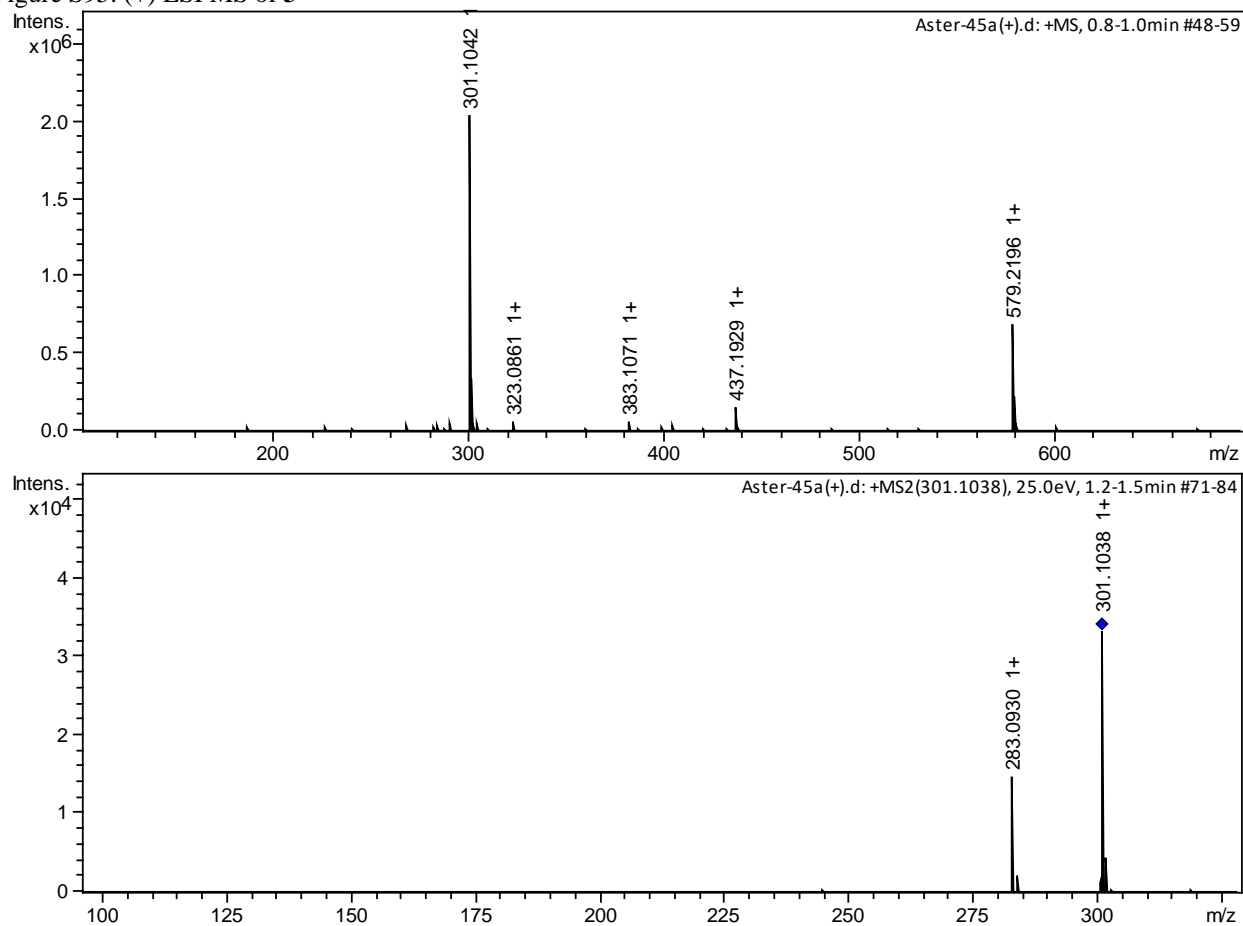


Figure S96. (-) ESI MS of **3**

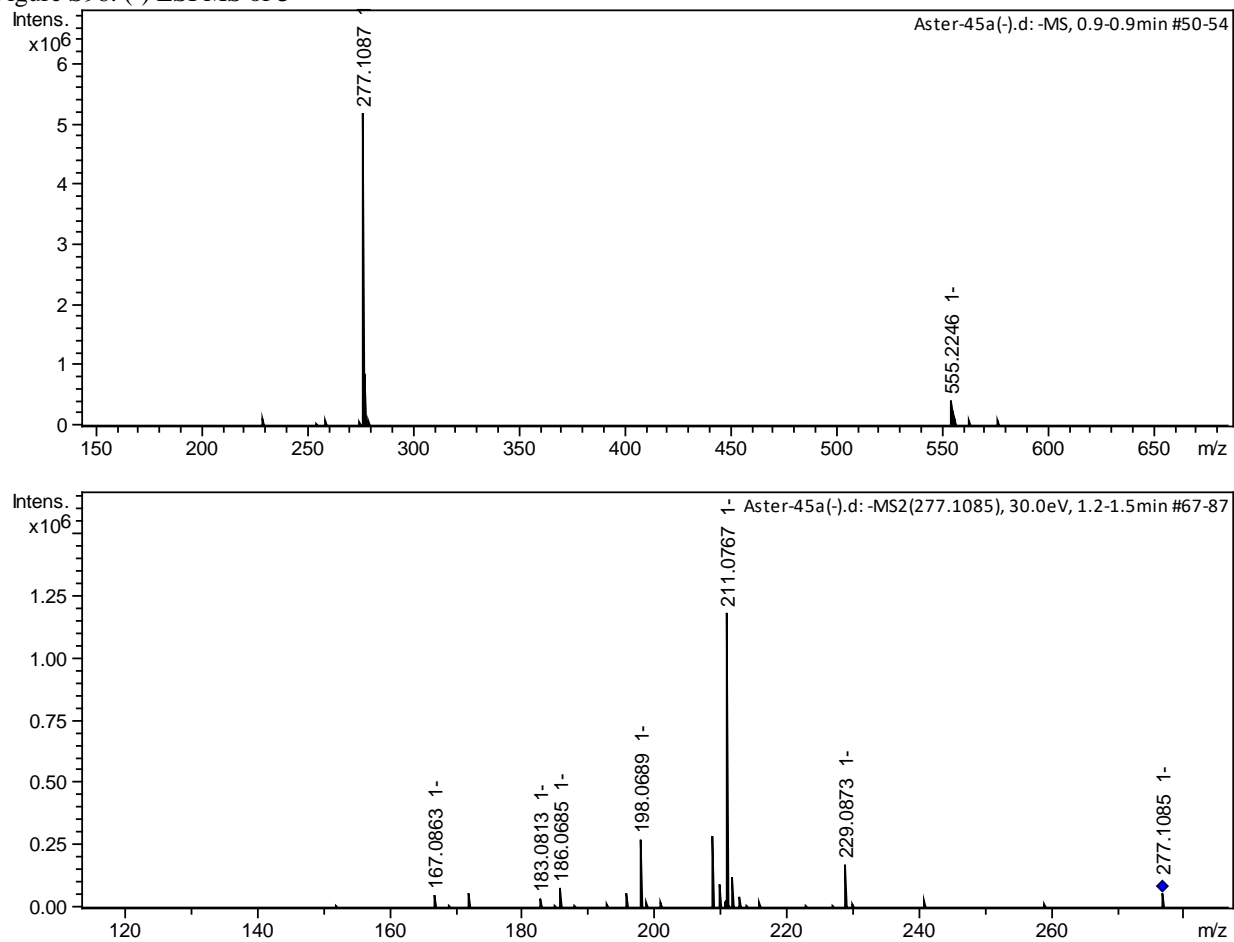


Figure S97. (+) ESI MS of **6**

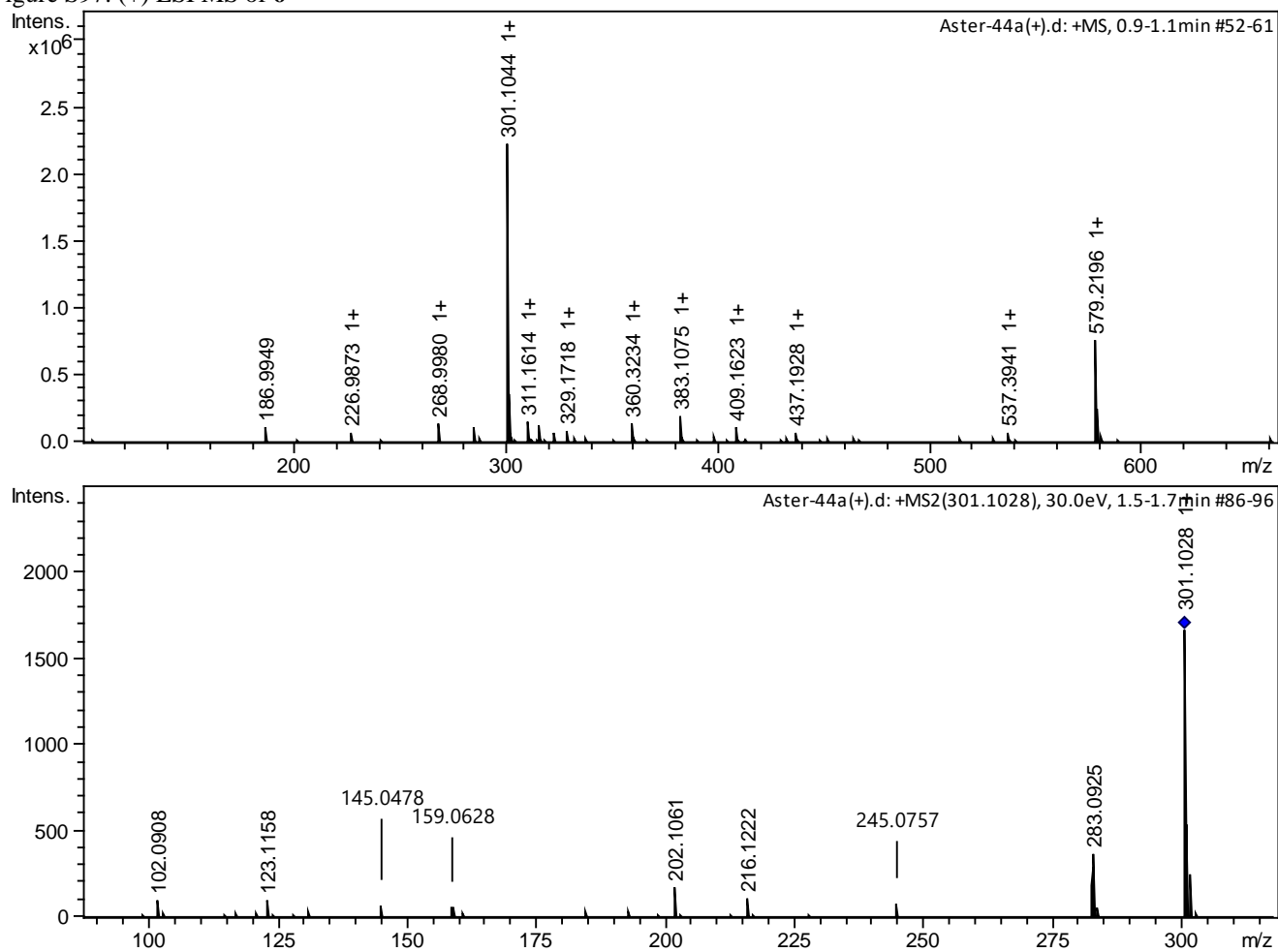


Figure S98. (+) ESI MS of 7

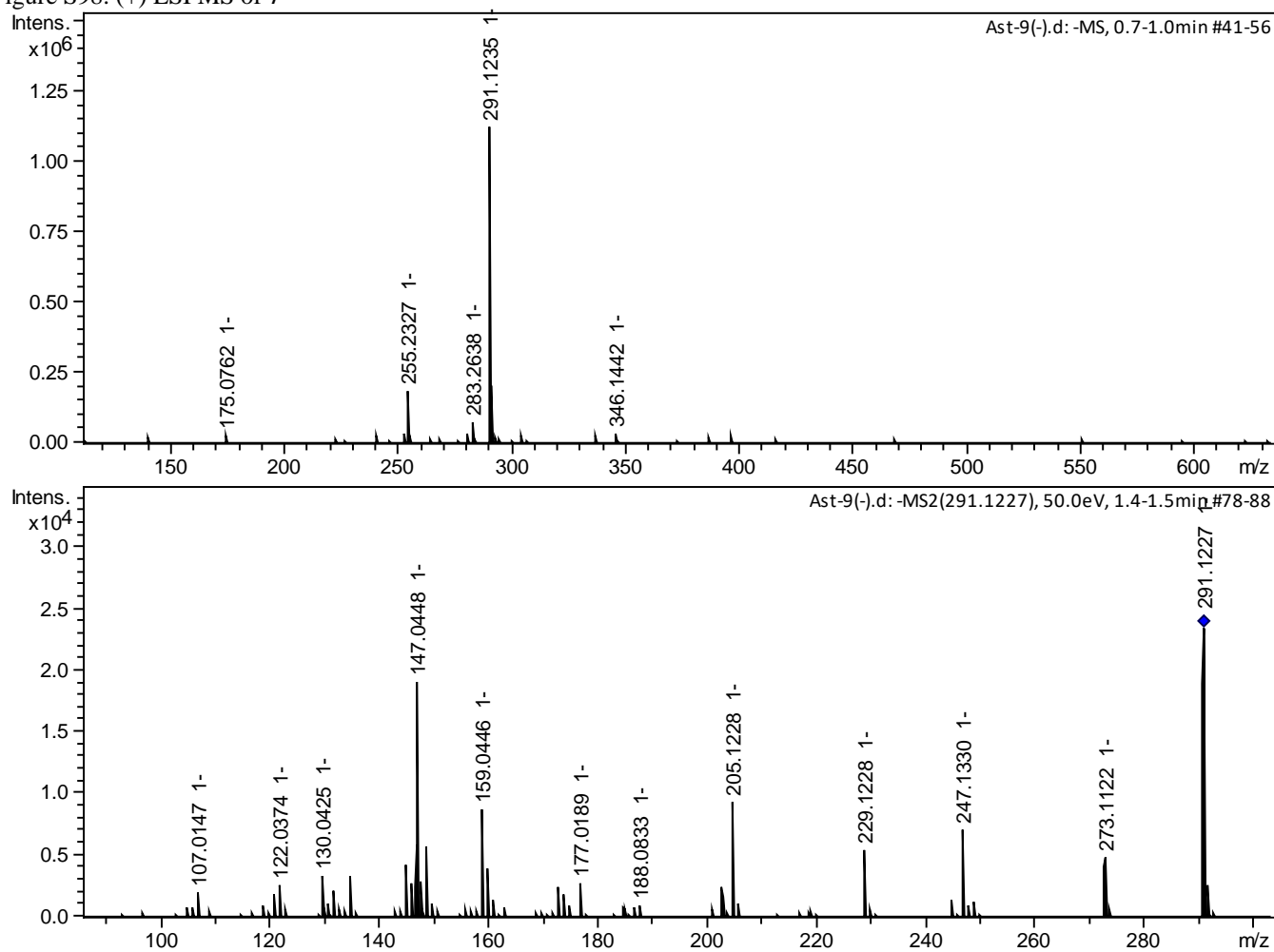


Figure S99. (+) ESI MS of **8**

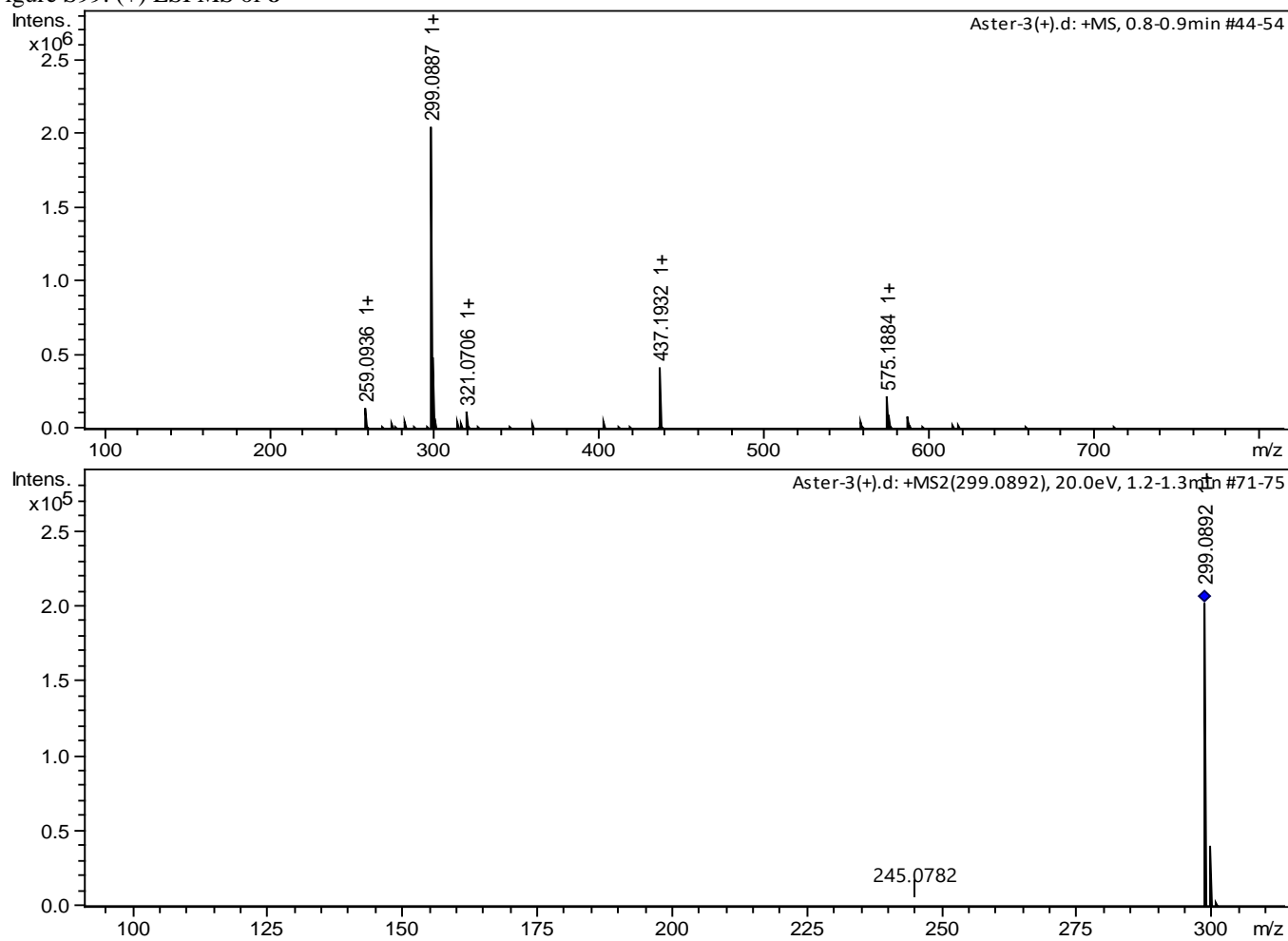


Figure S100. (-) ESI MS of **9**

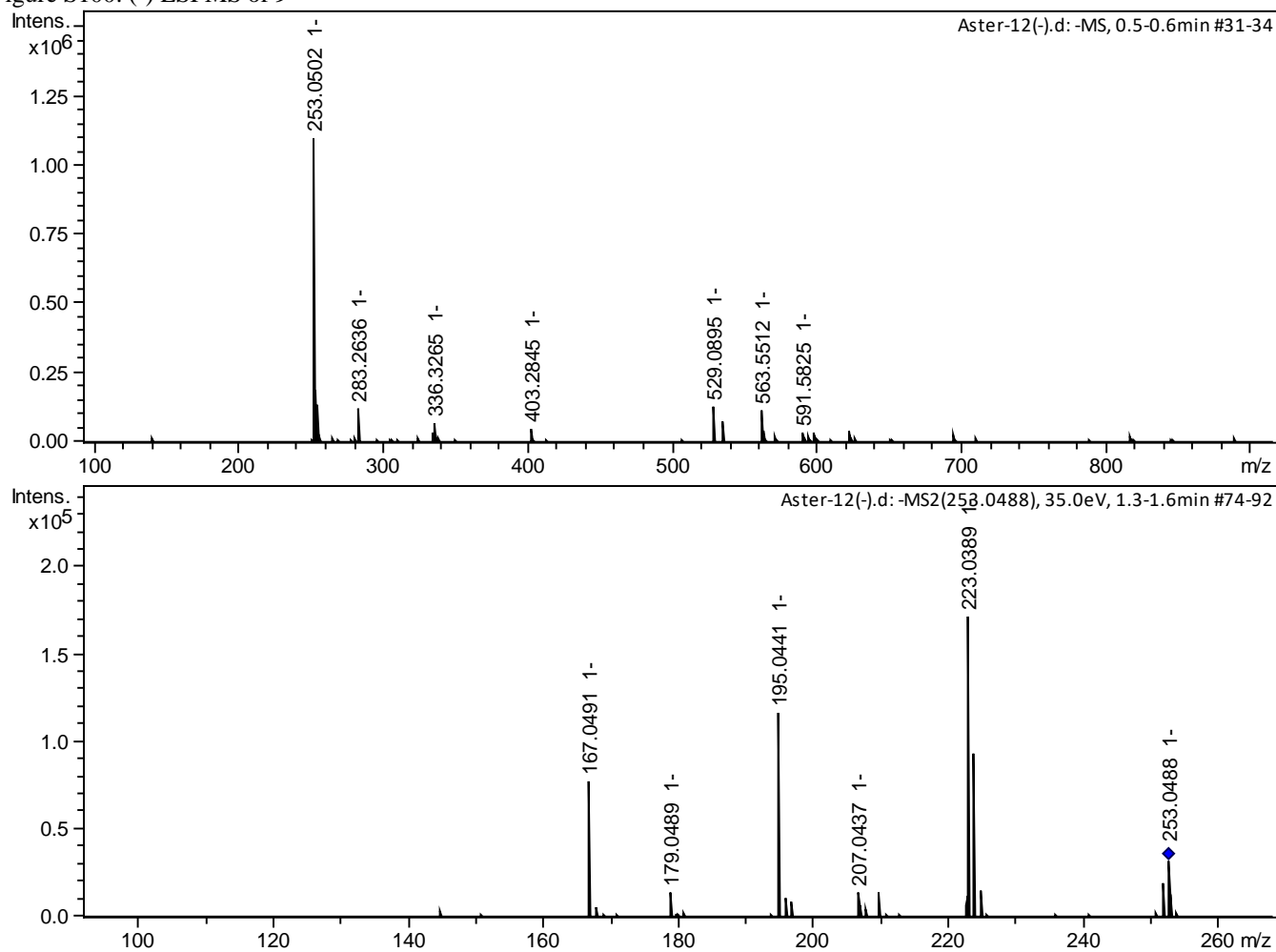


Figure S101. (-) ESI MS of **10**

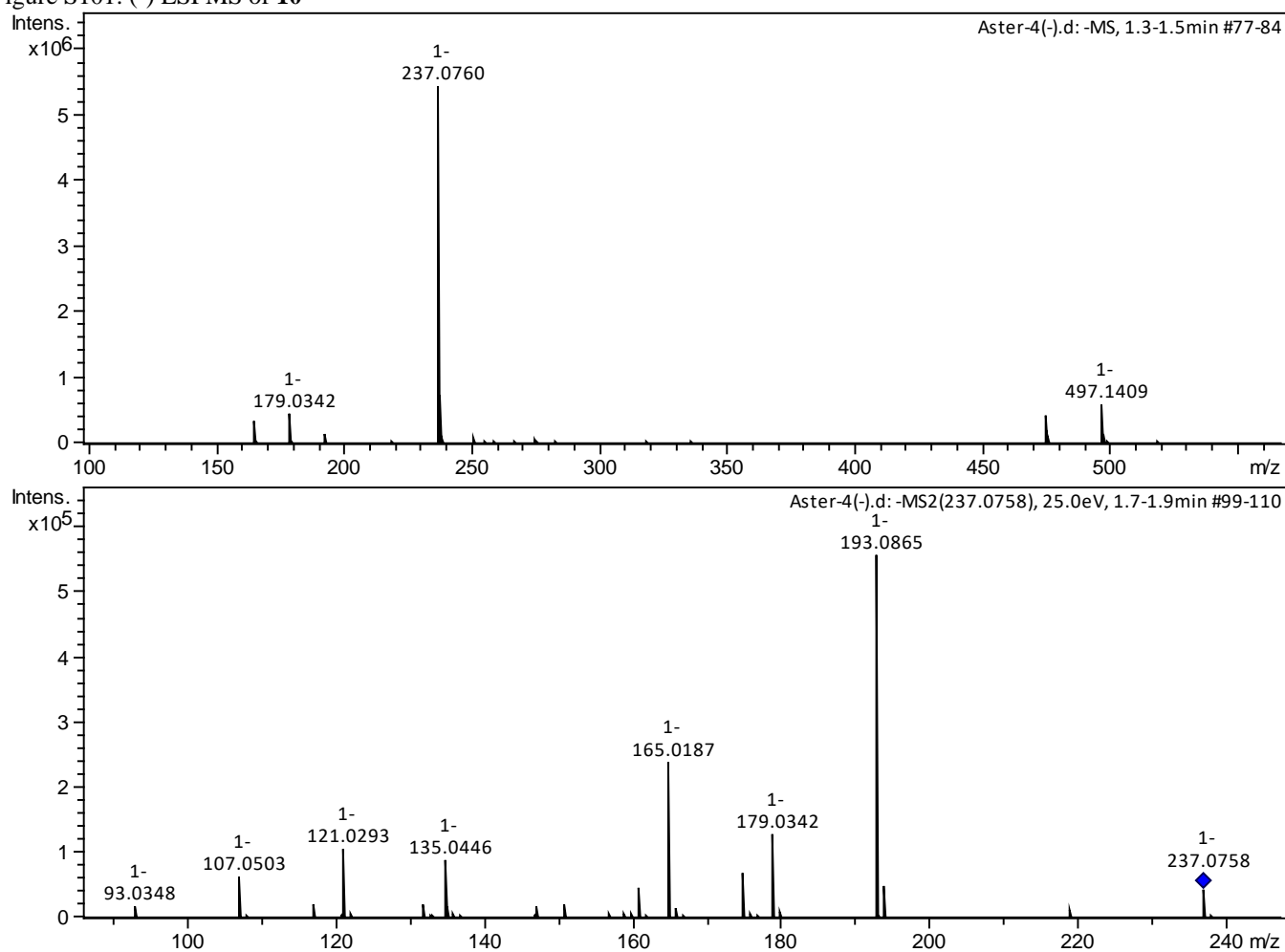


Figure S102. (-) ESI MS of **11**

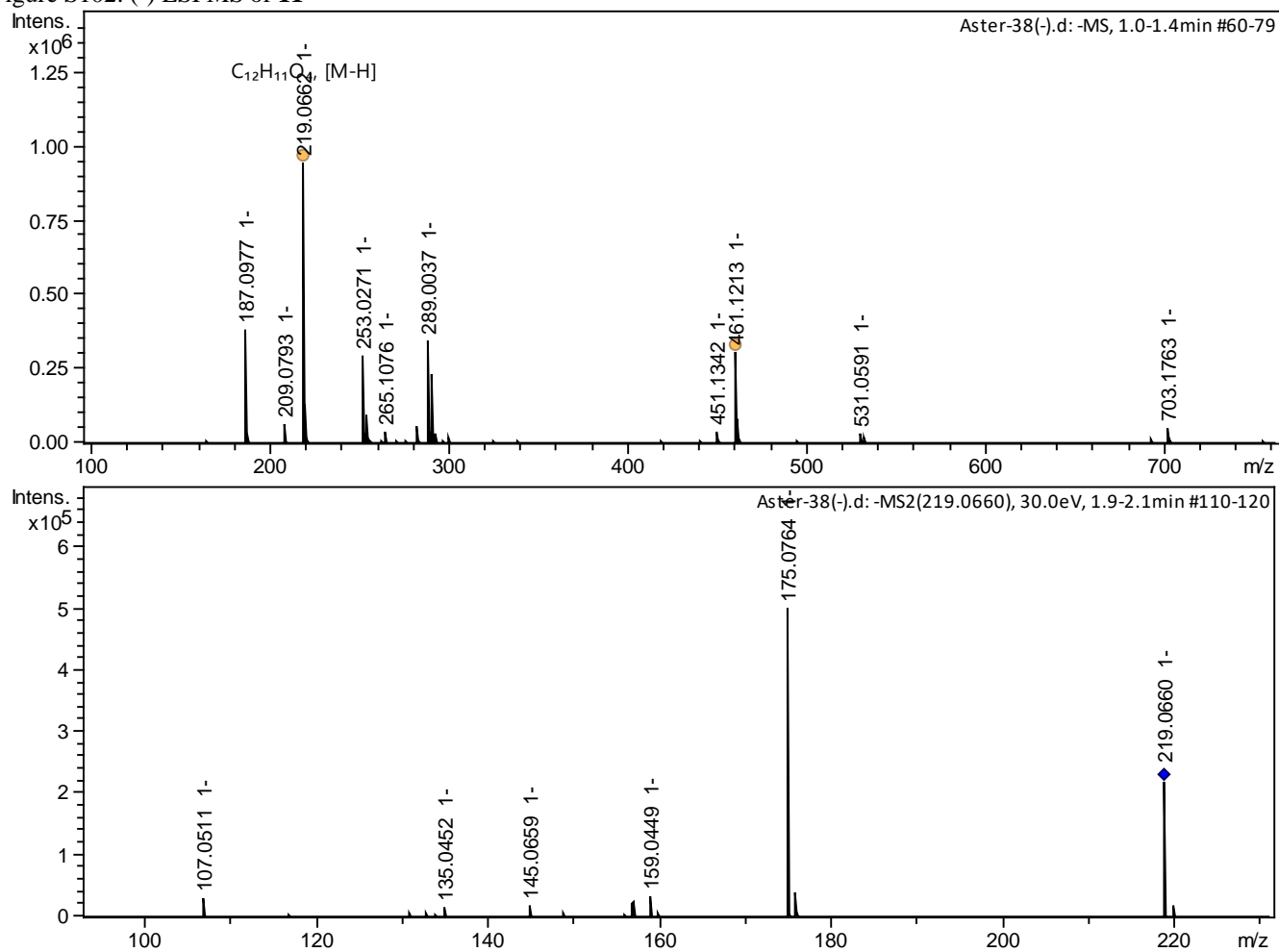


Figure S103. (+) ESI MS of **12**

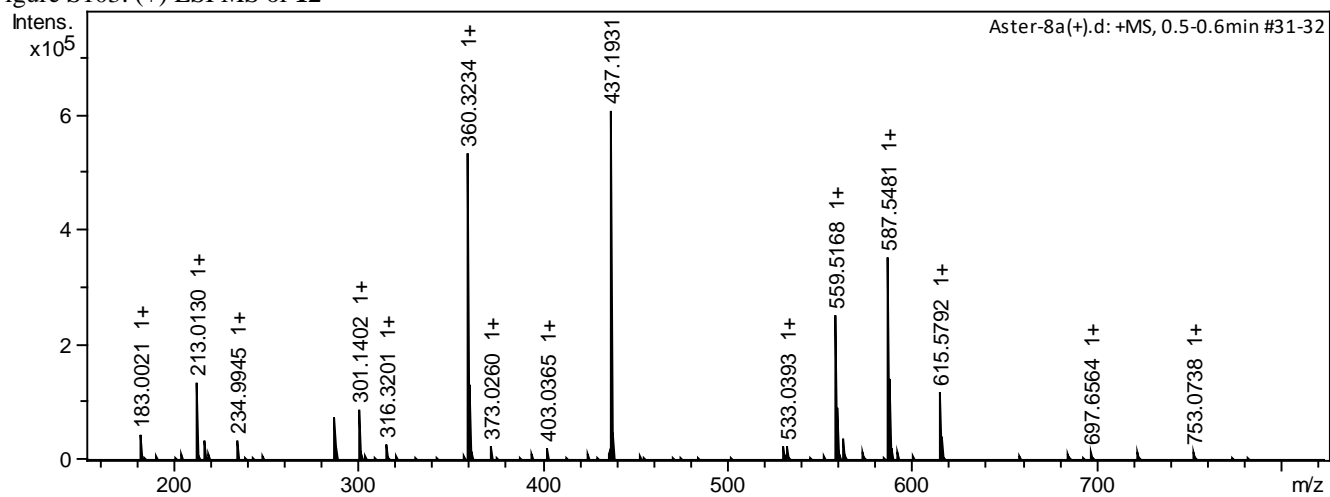


Figure S104. (+) ESI MS of **13**

