

Supporting Information
For
Synthesis of α -Tribromomethylamines via Mg-Mediated Addition of Bromoform to Imines

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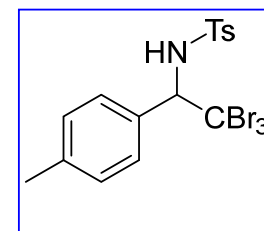
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FIDRES    0.125483 Hz
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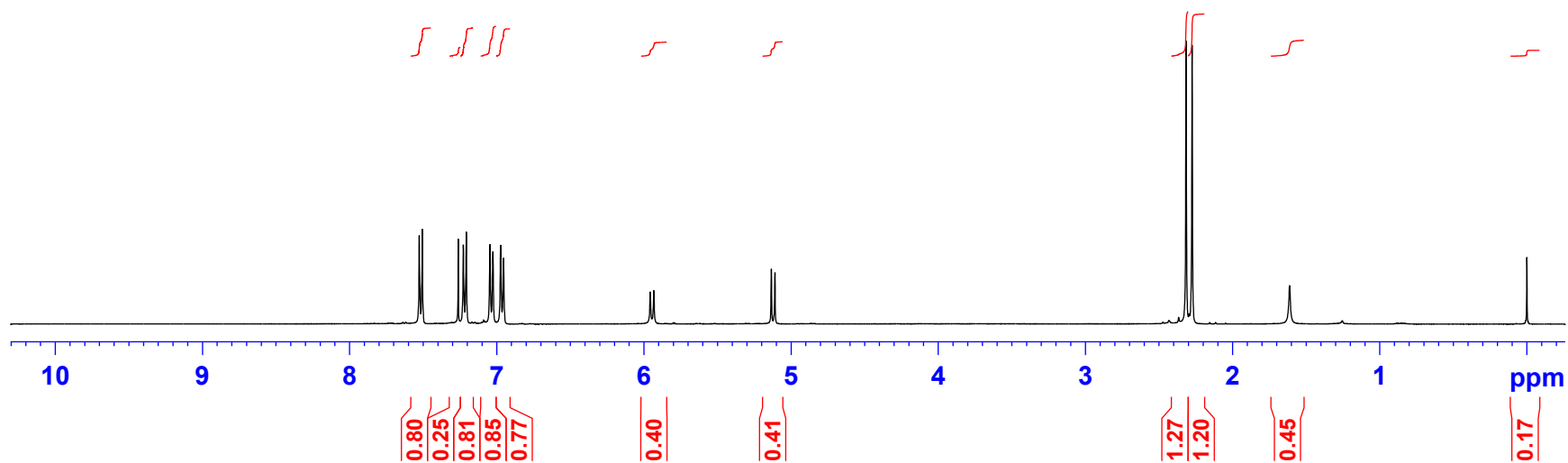
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SF01      400.1324710 MHz
SI        32768
SF        400.1300088 MHz
WDW       EM
SSB       0
LB        0.30 Hz
GB        0
PC        1.00

```



6a

Fig S1. ¹H NMR Spectrum of 6a

NAME INN-gopi-IM-Br3-4-13C
 EXPNO 28
 PROCNO 1
 Date_ 20110521
 Time 20.09
 INSTRUM spect
 PROBHD 5 mm PABBO BB-
 PULPROG zgpg30
 TD 65536
 SOLVENT CDC13
 NS 164
 DS 4
 SWH 24038.461 Hz
 FIDRES 0.366798 Hz
 AQ 1.3631988 sec
 RG 2050
 DW 20.800 usec
 DE 6.50 usec
 TE 295.8 K
 D1 1.00000000 sec
 D11 0.03000000 sec
 TD0 1

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 PL1 -2.00 dB
 PL1W 56.53121948 W
 SF01 100.6228298 MHz

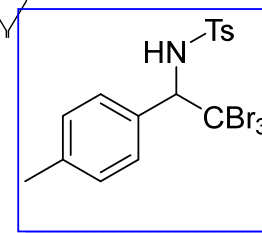
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 PL12 14.50 dB
 PL13 14.50 dB
 PL2W 10.56200695 W
 PL12W 0.29767781 W
 PL13W 0.29767781 W
 SF02 400.1316005 MHz
 SI 32768
 SF 100.6127526 MHz
 WDW EM
 SSB 0
 LB 1.00 Hz
 GB 0
 PC 1.40

143.58
 139.15
 136.73
 131.56
 129.64
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 128.64
 127.37

77.52
 77.20
 76.88
 73.11

48.13

21.61
 21.33



6a

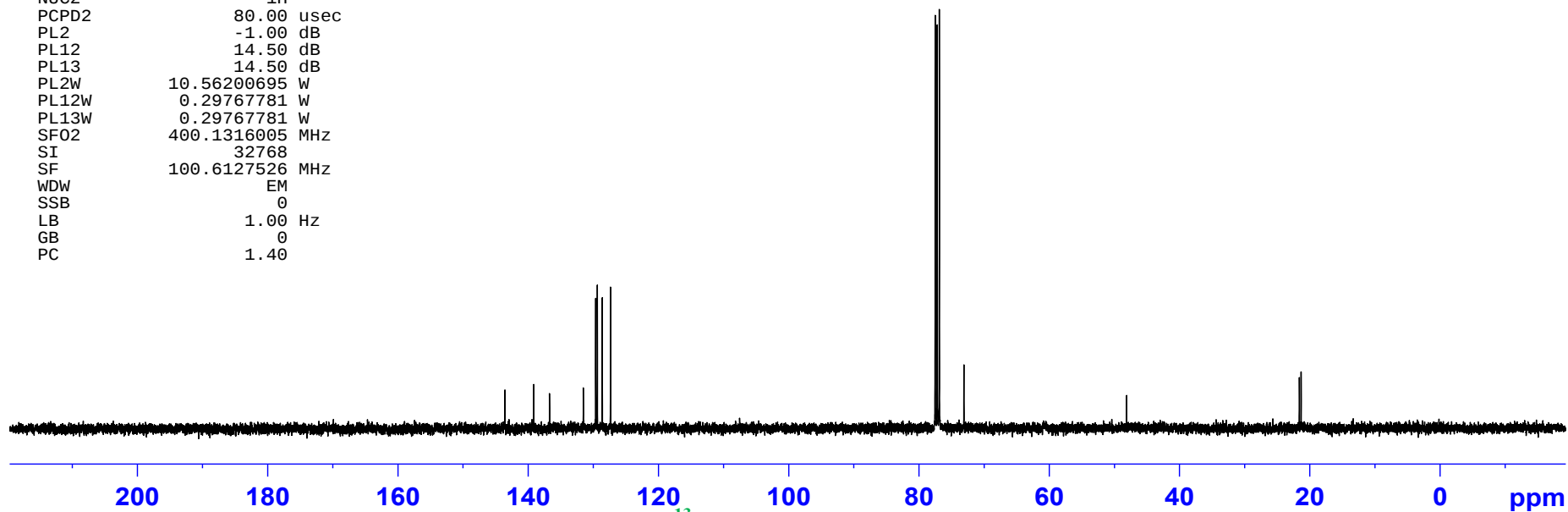
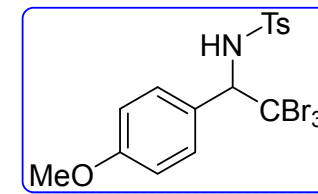
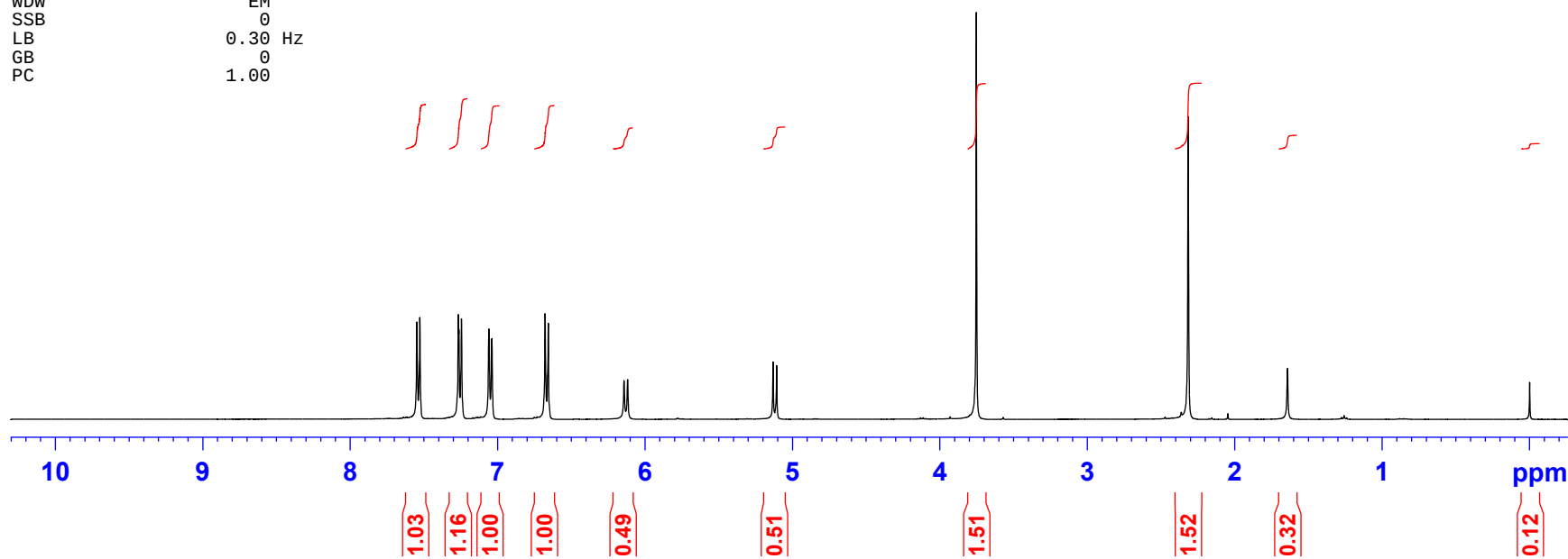
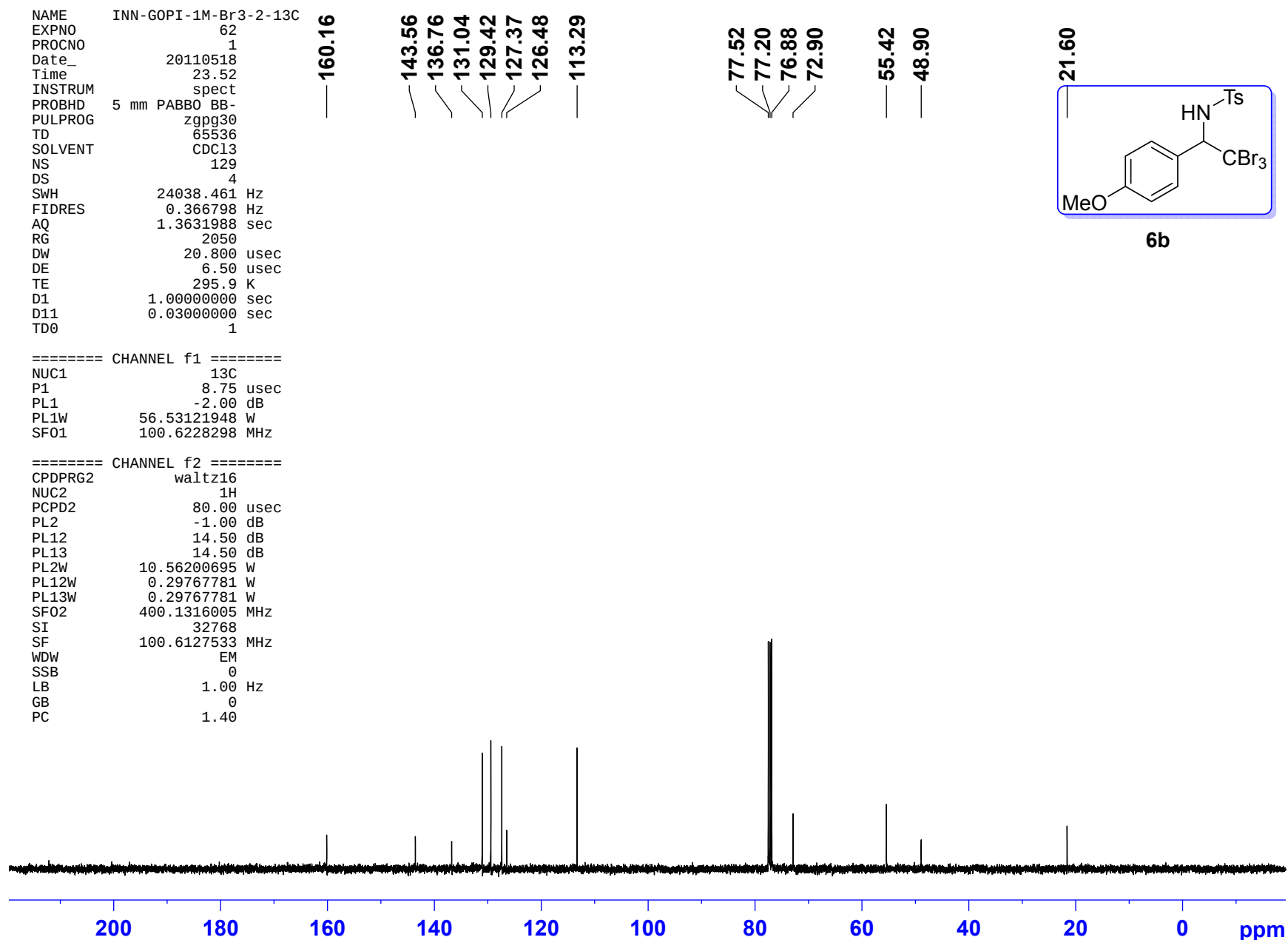


Fig S2. ¹³C NMR Spectrum of 6a

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EXPNO 61
PROCNO 1
Date_ 20110518
Time 23.50
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 73
DS 0
SWH 8223.685 Hz
FIDRES 0.125483 Hz
AQ 3.9846387 sec
RG 32
DW 60.800 usec
DE 6.50 usec
TE 295.7 K
D1 1.00000000 sec
TD0 1

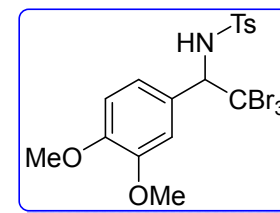
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PL1 -1.00 dB
PL1W 10.56200695 W
SF01 400.1324710 MHz
SI 32768
SF 400.1300085 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00

**6b****Fig S3. ¹H NMR Spectrum of 6b**

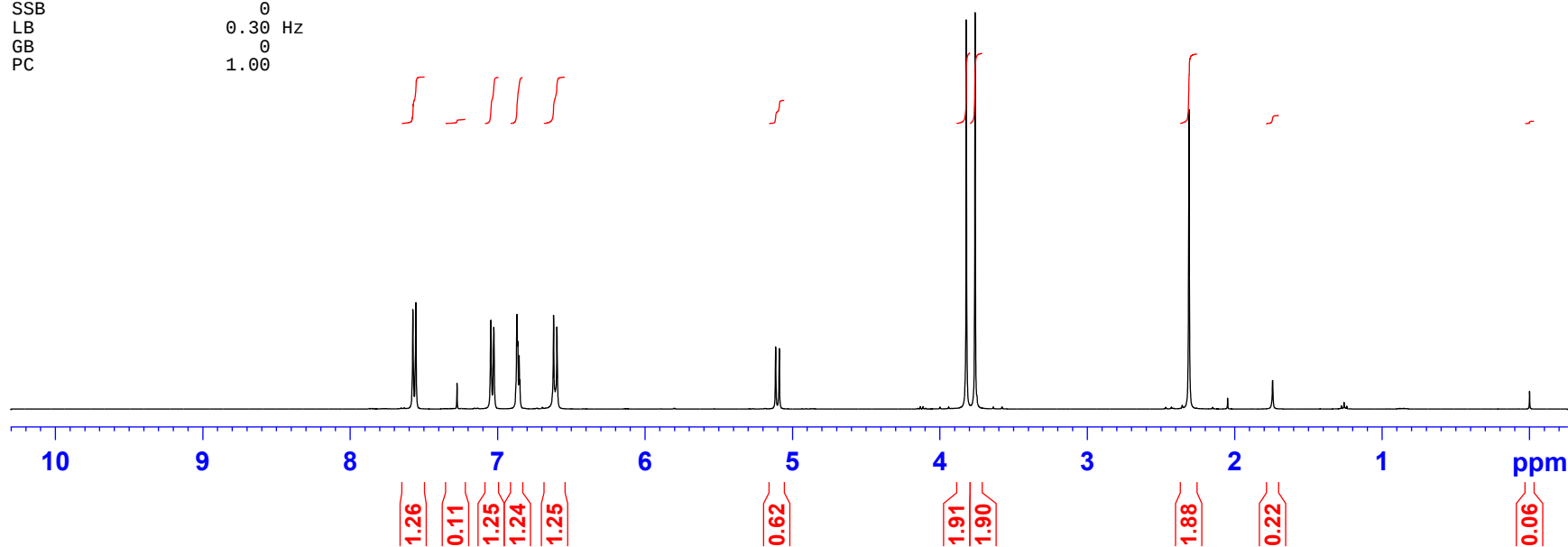
Fig S4. ¹³C NMR Spectrum of 6b

NAME INN-gopi-IM-Br3-6-1H
 EXPNO 13
 PROCNO 1
 Date_ 20110529
 Time 14.58
 INSTRUM spect
 PROBHD 5 mm PABBO BB-
 PULPROG zg30
 TD 65536
 SOLVENT CDCl3
 NS 46
 DS 0
 SWH 8223.685 Hz
 FIDRES 0.125483 Hz
 AQ 3.9846387 sec
 RG 71.8
 DW 60.800 usec
 DE 6.50 usec
 TE 300.0 K
 D1 1.00000000 sec
 TD0 1

===== CHANNEL f1 =====
 NUC1 1H
 P1 13.50 usec
 PL1 -1.00 dB
 PL1W 10.56200695 W
 SF01 400.1324710 MHz
 SI 32768
 SF 400.1300032 MHz
 WDW EM
 SSB 0
 LB 0.30 Hz
 GB 0
 PC 1.00



6c

Fig S5. ¹H NMR Spectrum of 6c

NAME INN-gopi-IM-Br3-6-13C
 EXPNO 14
 PROCNO 1
 Date_ 20110529
 Time 15.03
 INSTRUM spect
 PROBHD 5 mm PABBO BB-
 PULPROG zgpg30
 TD 65536
 SOLVENT CDCl3
 NS 86
 DS 4
 SWH 24038.461 Hz
 FIDRES 0.366798 Hz
 AQ 1.3631988 sec
 RG 32
 DW 20.800 usec
 DE 6.50 usec
 TE 300.0 K
 D1 1.00000000 sec
 D11 0.03000000 sec
 TD0 1

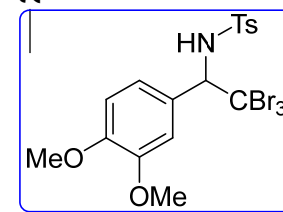
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 NUC1 13C
 P1 8.75 usec
 PL1 -2.00 dB
 PL1W 56.53121948 W
 SF01 100.6228298 MHz

===== CHANNEL f2 =====
 CPDPRG2 waltz16
 NUC2 1H
 PCPD2 80.00 usec
 PL2 -1.00 dB
 PL12 14.50 dB
 PL13 14.50 dB
 PL2W 10.56200695 W
 PL12W 0.29767781 W
 PL13W 0.29767781 W
 SF02 400.1316005 MHz
 SI 32768
 SF 100.6127564 MHz
 WDW EM
 SSB 0
 LB 1.00 Hz
 GB 0
 PC 1.40

149.57
 148.22
 143.62
 136.60
 129.29
 127.37
 126.67
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 110.08

77.52
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 55.99
 55.97
 48.68

21.54



6c

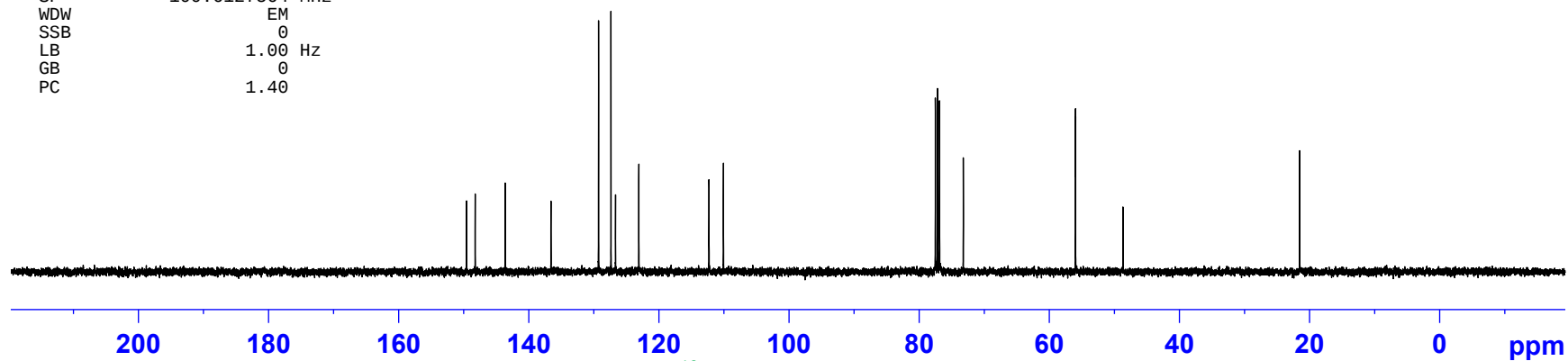


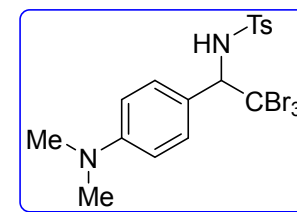
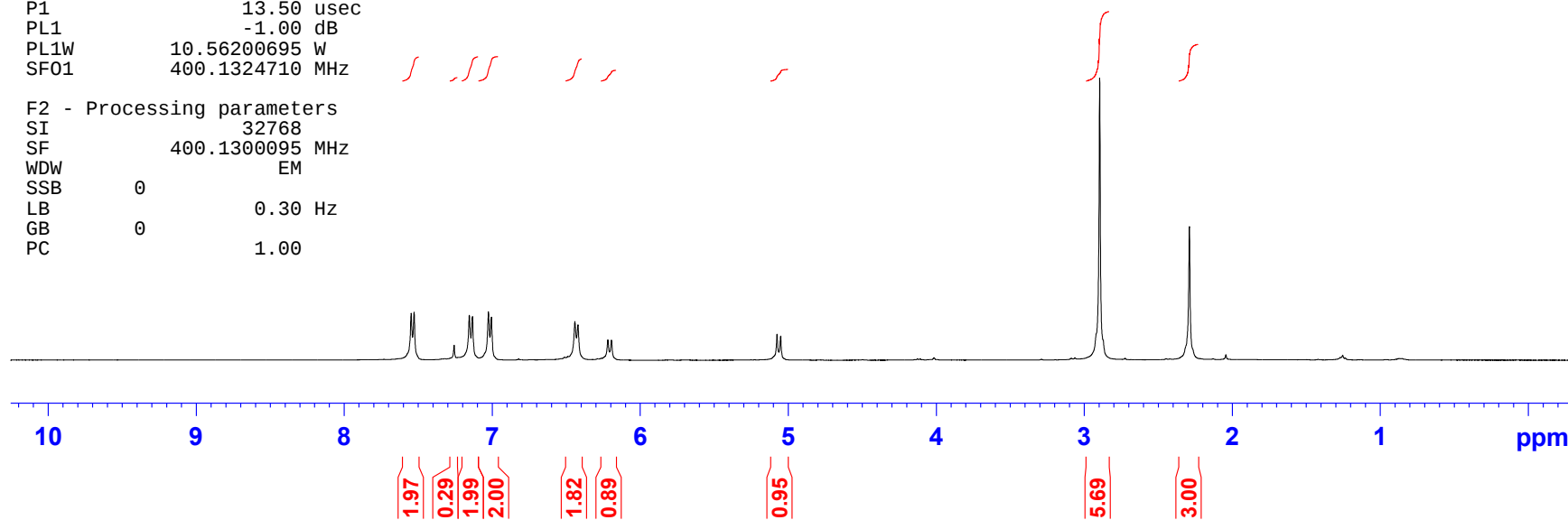
Fig S6. ¹³C NMR Spectrum of 6c

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EXPNO 1
PROCNO 1

F2 - Acquisition Parameters
Date_ 20130516
Time 9.07
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 15
DS 0
SWH 8223.685 Hz
FIDRES 0.125483 Hz
AQ 3.9845889 sec
RG 32
DW 60.800 usec
DE 6.50 usec
TE 294.5 K
D1 1.00000000 sec
TD0 1

===== CHANNEL f1 =====
NUC1 1H
P1 13.50 usec
PL1 -1.00 dB
PL1W 10.56200695 W
SF01 400.1324710 MHz

F2 - Processing parameters
SI 32768
SF 400.1300095 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00

**6d****Fig S7. ¹H NMR Spectrum of 6d**

Current Data Parameters
 NAME INN-gopi-IM-Br3-9-13C
 EXPNO 2
 PROCNO 1

F2 - Acquisition Parameters

Date_ 20130516
 Time 9.10
 INSTRUM spect
 PROBHD 5 mm PABBO BB-
 PULPROG zgpg30
 TD 65536
 SOLVENT CDCl3
 NS 200
 DS 4
 SWH 24038.461 Hz
 FIDRES 0.366798 Hz
 AQ 1.3631488 sec
 RG 2050
 DW 20.800 usec
 DE 6.50 usec
 TE 295.1 K
 D1 1.00000000 sec
 D11 0.03000000 sec
 TD0 1

===== CHANNEL f1 =====
 NUC1 13C
 P1 8.75 usec
 PL1 -2.00 dB
 PL1W 56.53121948 W
 SF01 100.6228298 MHz

===== CHANNEL f2 =====
 CPDPRG[2] waltz16
 NUC2 1H
 PCPD2 80.00 usec
 PL2 -1.00 dB
 PL12 14.50 dB
 PL13 14.50 dB
 PL2W 10.56200695 W
 PL12W 0.29767781 W
 PL13W 0.29767781 W
 SF02 400.1316005 MHz

F2 - Processing parameters
 SI 32768
 SF 100.6127575 MHz
 WDW EM
 SSB 0
 LB 1.00 Hz
 GB 0
 PC 1.40

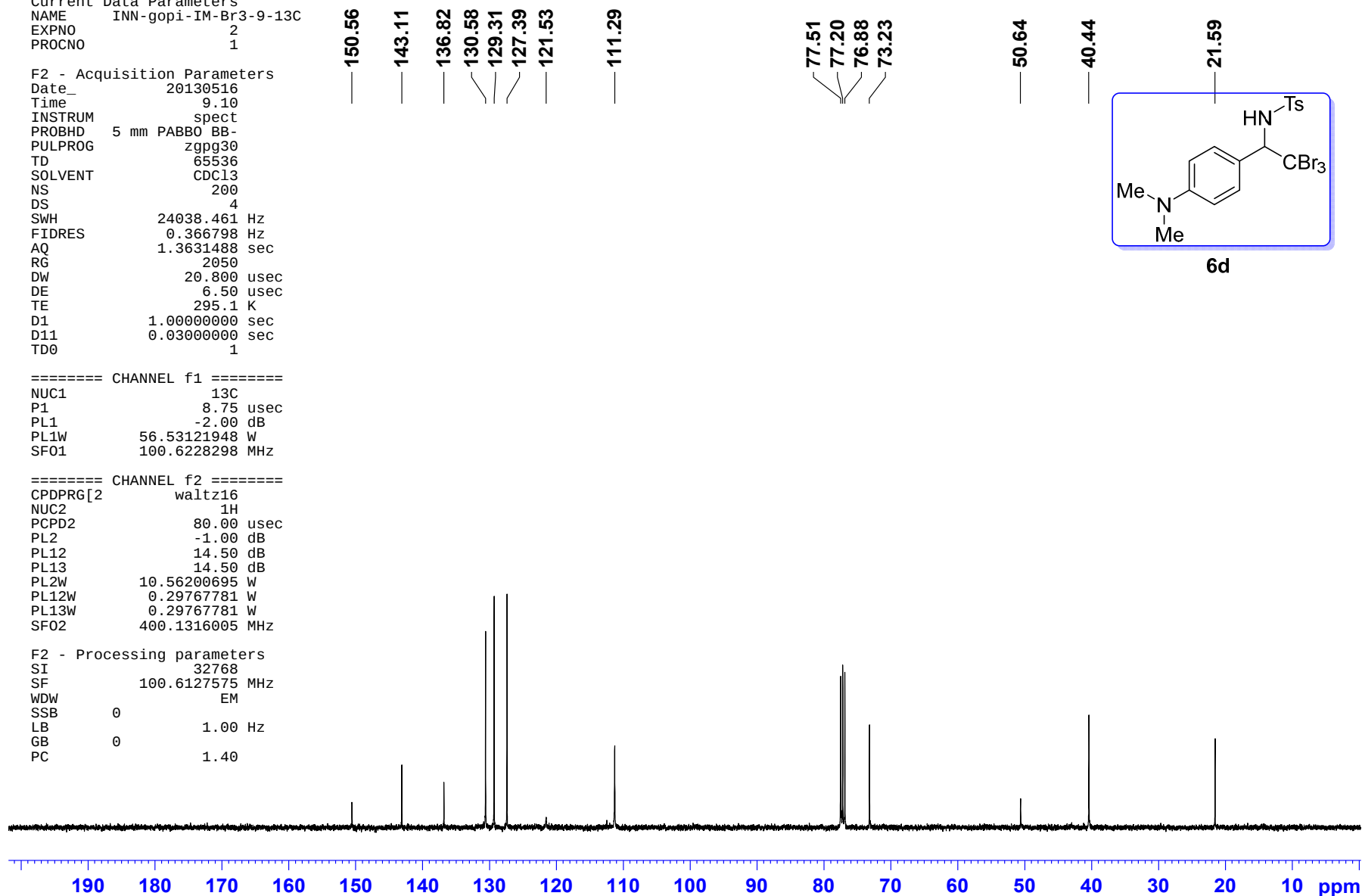
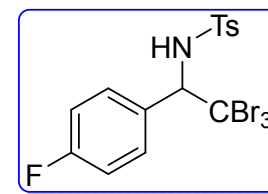
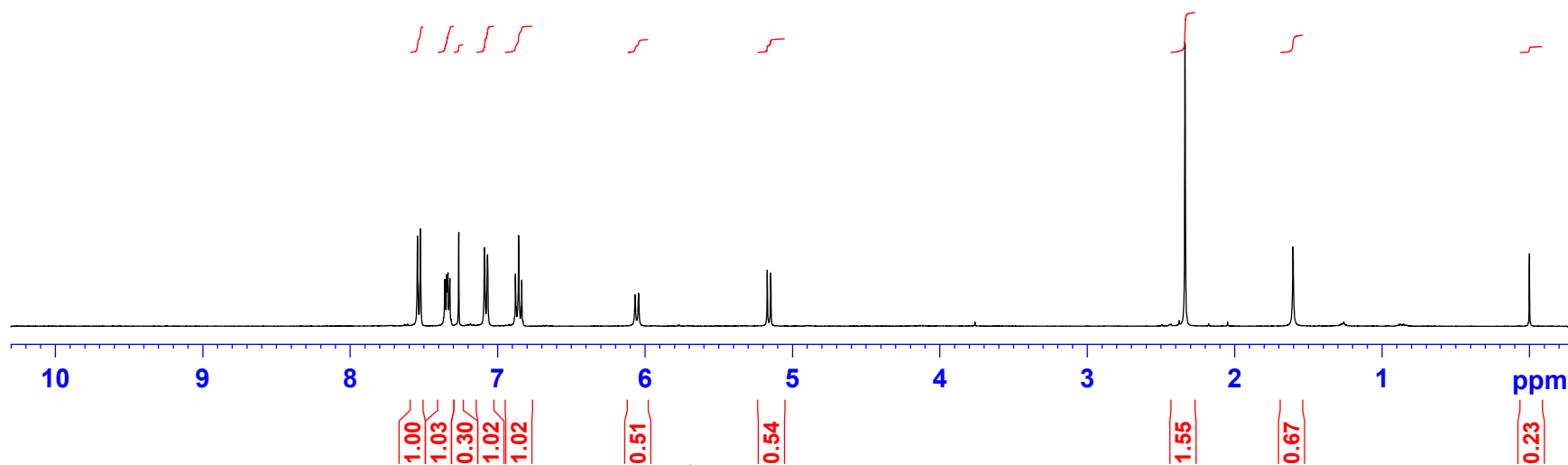


Fig S8. ¹³C NMR Spectrum of 6d

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EXPNO 69
PROCNO 1
Date_ 20110528
Time 22.25
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PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 16
DS 0
SWH 8223.685 Hz
FIDRES 0.125483 Hz
AQ 3.9846387 sec
RG 144
DW 60.800 usec
DE 6.50 usec
TE 300.0 K
D1 1.00000000 sec
TD0 1

===== CHANNEL f1 =====
NUC1 1H
P1 13.50 usec
PL1 -1.00 dB
PL1W 10.56200695 W
SF01 400.1324710 MHz
SI 32768
SF 400.1300081 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00

**6e****Fig S9. ¹H NMR Spectrum of 6e**

Current Data Parameters
 NAME inn-gopi-im-br3-5a13
 EXPNO 4
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20131020
 Time 10.14
 INSTRUM spect
 PROBHD 5 mm PABBO BB/
 PULPROG zgpg30
 TD 65536
 SOLVENT CDCl3
 NS 269
 DS 4
 SWH 29761.904 Hz
 FIDRES 0.454131 Hz
 AQ 1.1010048 sec
 RG 197.27
 DW 16.800 usec
 DE 6.50 usec
 TE 294.6 K
 D1 1.00000000 sec
 D11 0.03000000 sec
 TD0 1

===== CHANNEL f1 =====
 SF01 125.7703637 MHz
 NUC1 13C
 P1 8.90 usec
 PLW1 103.00000000 W

===== CHANNEL f2 =====
 SF02 500.1320005 MHz
 NUC2 1H
 CPDPRG[2] waltz16
 PCPD2 80.00 usec
 PLW2 13.00000000 W
 PLW12 0.34327999 W
 PLW13 0.21969999 W

F2 - Processing parameters
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 SF 125.7577697 MHz
 WDW EM
 SSB 0
 LB 1.00 Hz
 GB 0
 PC 1.40

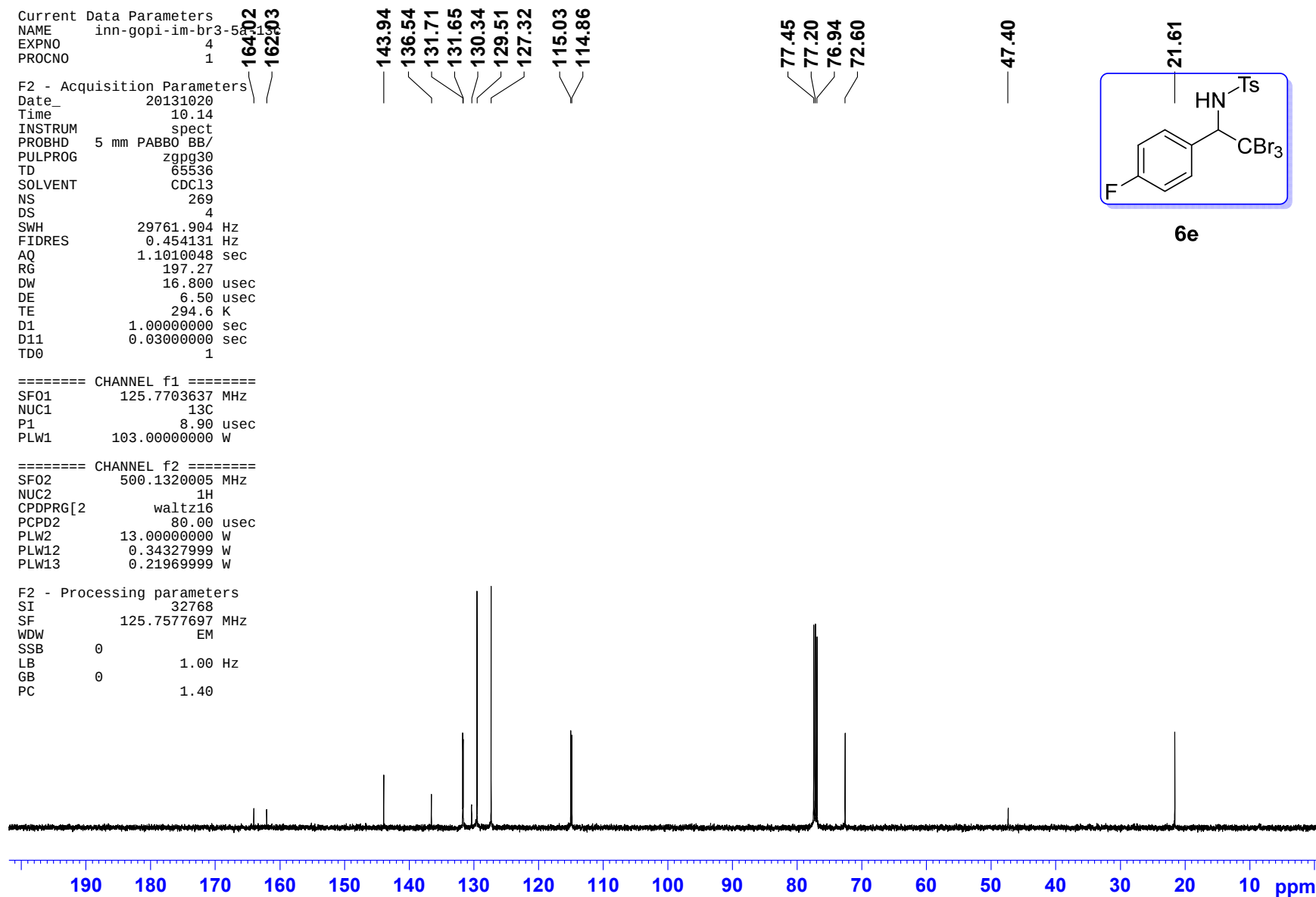
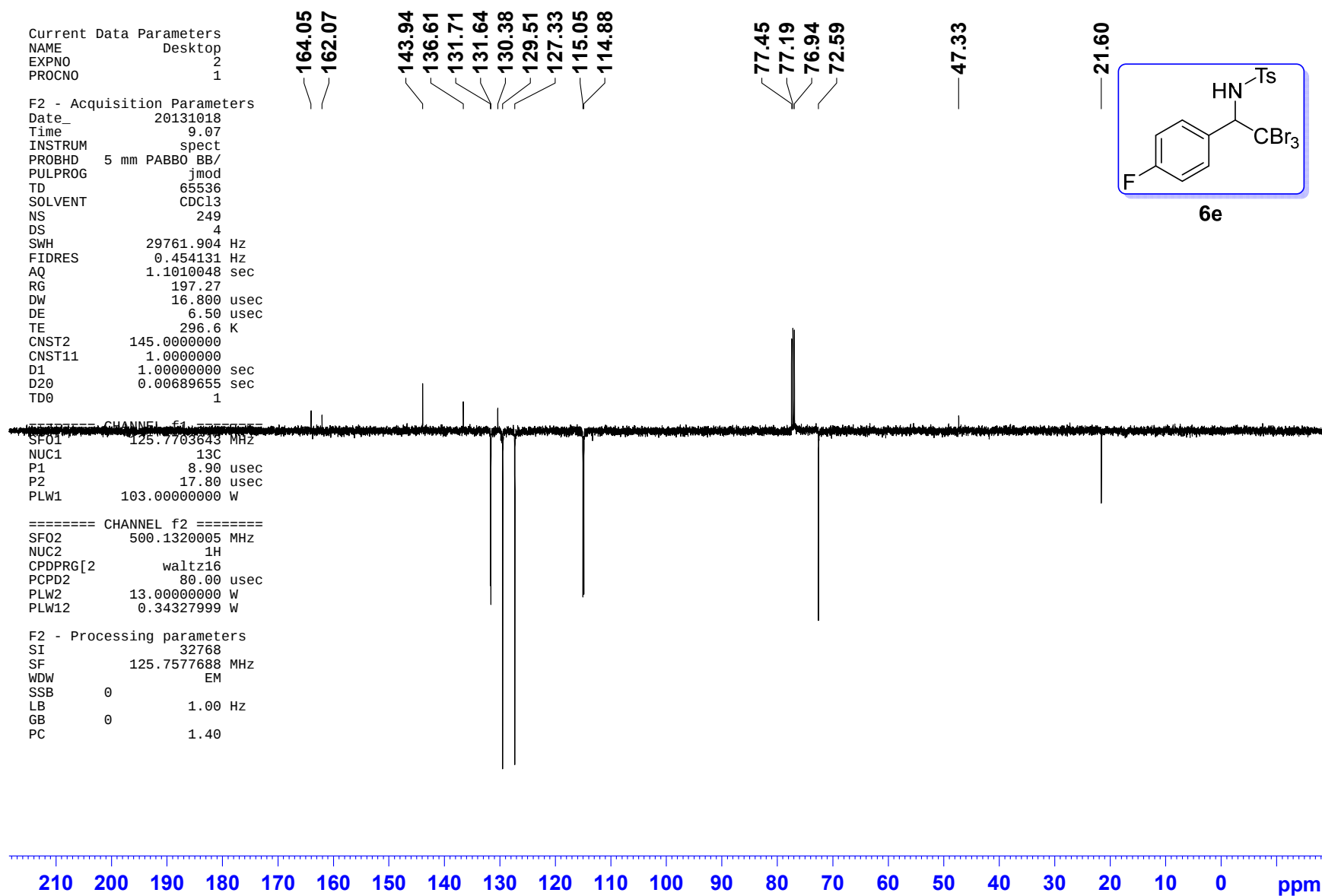


Fig S10. ¹³C NMR Spectrum of 6e

Fig S11. ¹³C-APT NMR Spectrum of 6e

Current Data Parameters
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EXPNO 4
PROCNO 1

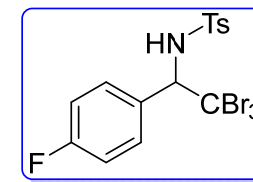
F2 - Acquisition Parameters
Date_ 20131201
Time 8.17
INSTRUM spect
PROBHD 5 mm PABBO BB/
PULPROG zgfglqn
TD 131072
SOLVENT CDCl3
NS 16
DS 4
SWH 113636.367 Hz
FIDRES 0.866977 Hz
AQ 0.5767668 sec
RG 119.07
DW 4.400 usec
DE 6.50 usec
TE 294.0 K
D1 1.00000000 sec
TD0 1

===== CHANNEL f1 =====
SF01 470.5453180 MHz
NUC1 19F
P1 13.50 usec
PLW1 40.00000000 W

F2 - Processing parameters
SI 65536
SF 470.5923770 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00

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-111.87
-111.87
-111.88
-111.89
-111.90
-111.91

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-111.867
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-111.895
-111.902
-111.913



6e

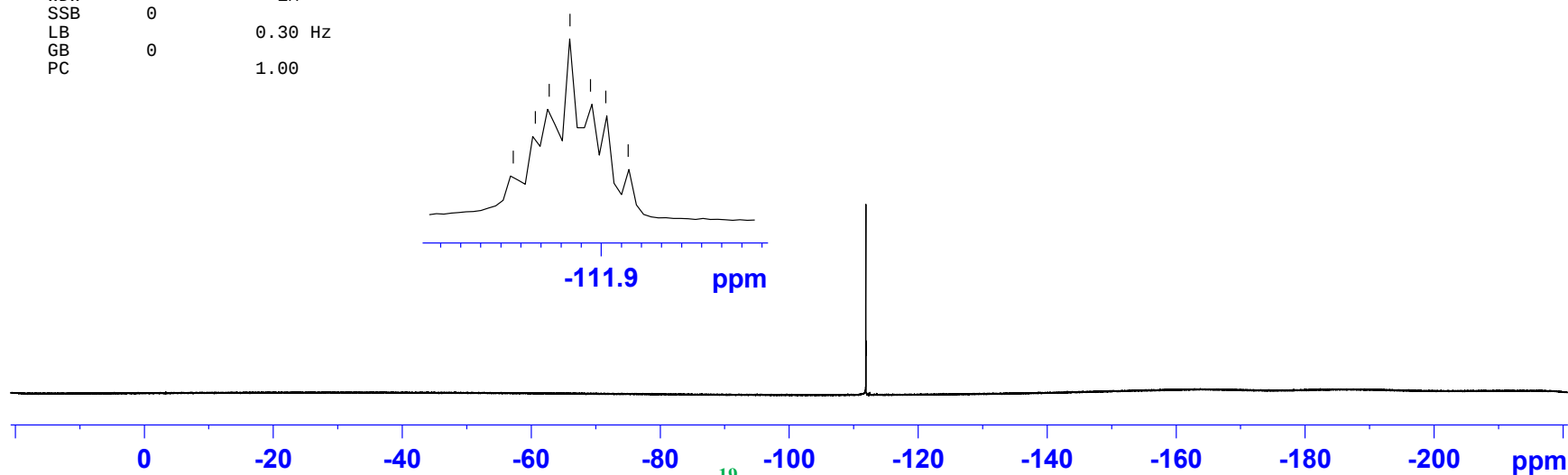
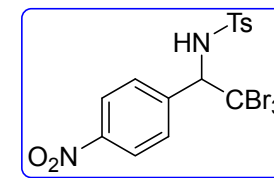
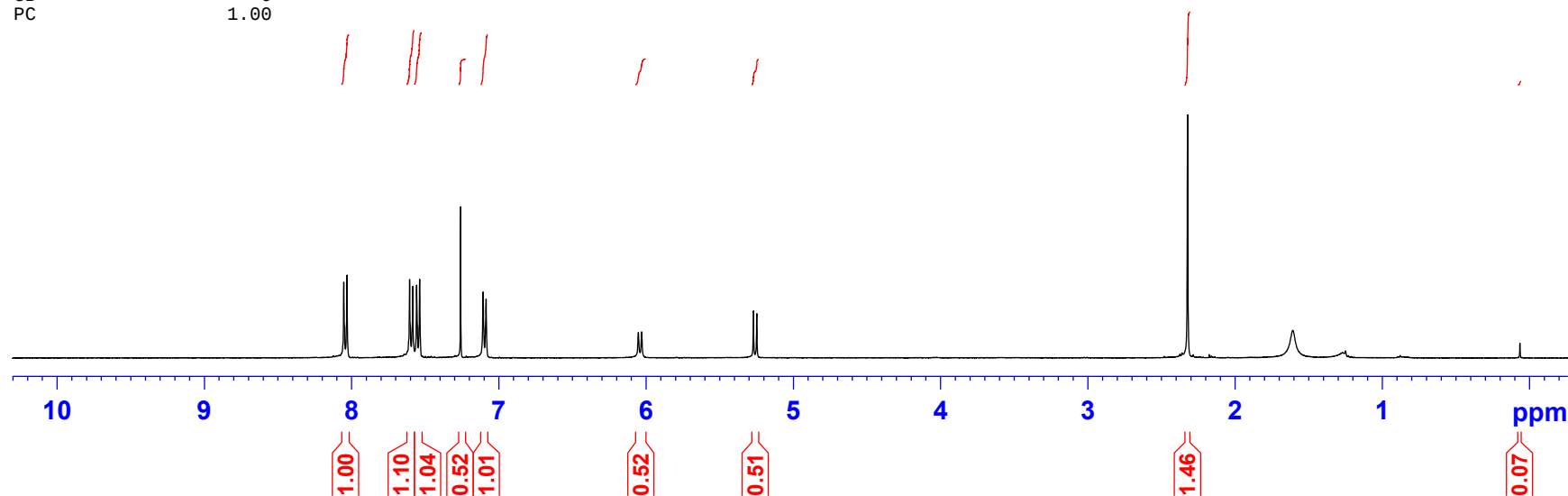
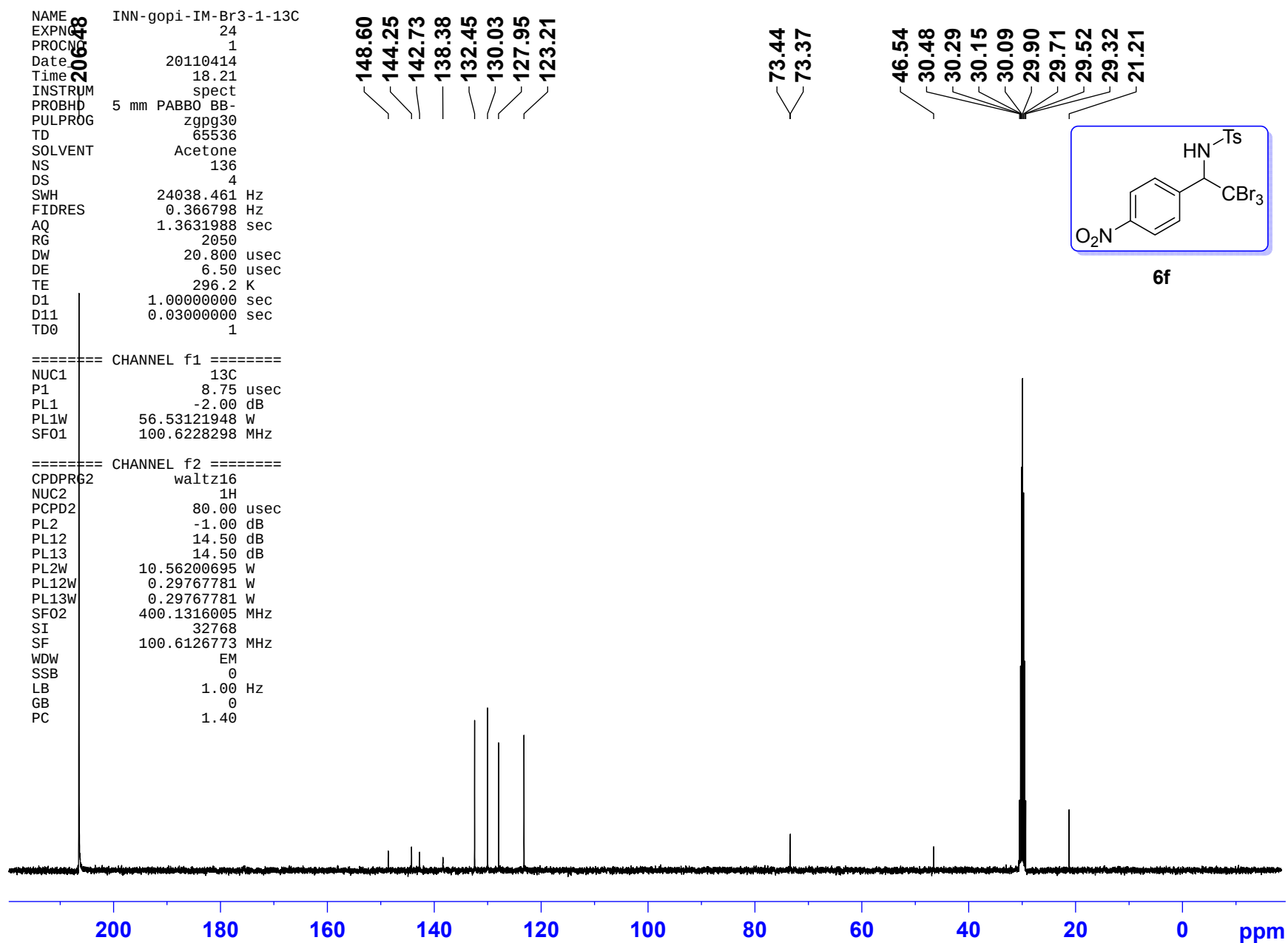


Fig S12. ¹⁹F NMR Spectrum of 6e

NAME INN-Gopi-IM-Br3-1-1H
EXPNO 3
PROCNO 1
Date_ 20130111
Time 2.03
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 16
DS 0
SWH 8223.685 Hz
FIDRES 0.125483 Hz
AQ 3.9846387 sec
RG 181
DW 60.800 usec
DE 6.50 usec
TE 293.2 K
D1 1.00000000 sec
TD0 1

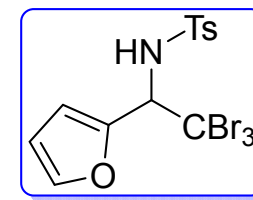
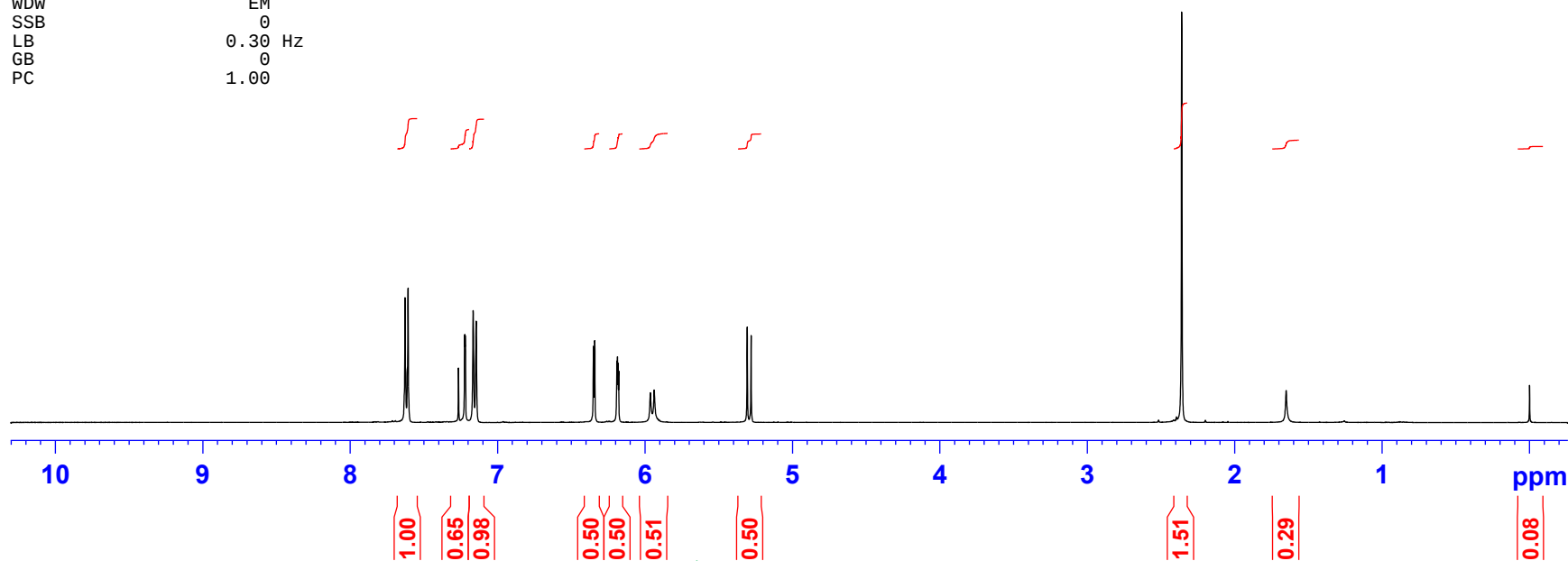
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SI 32768
SF 400.1300095 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00

**6f****Fig S13. ¹H NMR Spectrum of 6f**

Fig S14. ¹³C NMR Spectrum of 6f

NAME INN-gopi-IM-Br3-7-1H
EXPNO 15
PROCNO 1
Date_ 20110529
Time 15.10
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 38
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 300.0 K
D1 1.00000000 sec
TD0 1

===== CHANNEL f1 =====
NUC1 1H
P1 13.50 usec
PL1 -1.00 dB
PL1W 10.56200695 W
SF01 400.1324710 MHz
SI 32768
SF 400.1300075 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00

**6g****Fig S15. ¹H NMR Spectrum of 6g**

NAME INN-gopi-IM-Br3-7-13C
 EXPNO 16
 PROCNO 1
 Date_ 20110529
 Time 15.15
 INSTRUM spect
 PROBHD 5 mm PABBO BB-
 PULPROG zgpg30
 TD 65536
 SOLVENT CDCl3
 NS 83
 DS 4
 SWH 24038.461 Hz
 FIDRES 0.366798 Hz
 AQ 1.3631988 sec
 RG 32
 DW 20.800 usec
 DE 6.50 usec
 TE 300.0 K
 D1 1.00000000 sec
 D11 0.03000000 sec
 TD0 1

===== CHANNEL f1 =====
 NUC1 13C
 P1 8.75 usec
 PL1 -2.00 dB
 PL1W 56.53121948 W
 SF01 100.6228298 MHz

===== CHANNEL f2 =====
 CPDPRG2 waltz16
 NUC2 1H
 PCPD2 80.00 usec
 PL2 -1.00 dB
 PL12 14.50 dB
 PL13 14.50 dB
 PL2W 10.56200695 W
 PL12W 0.29767781 W
 PL13W 0.29767781 W
 SF02 400.1316005 MHz
 SI 32768
 SF 100.6127532 MHz
 WDW EM
 SSB 0
 LB 1.00 Hz
 GB 0
 PC 1.40

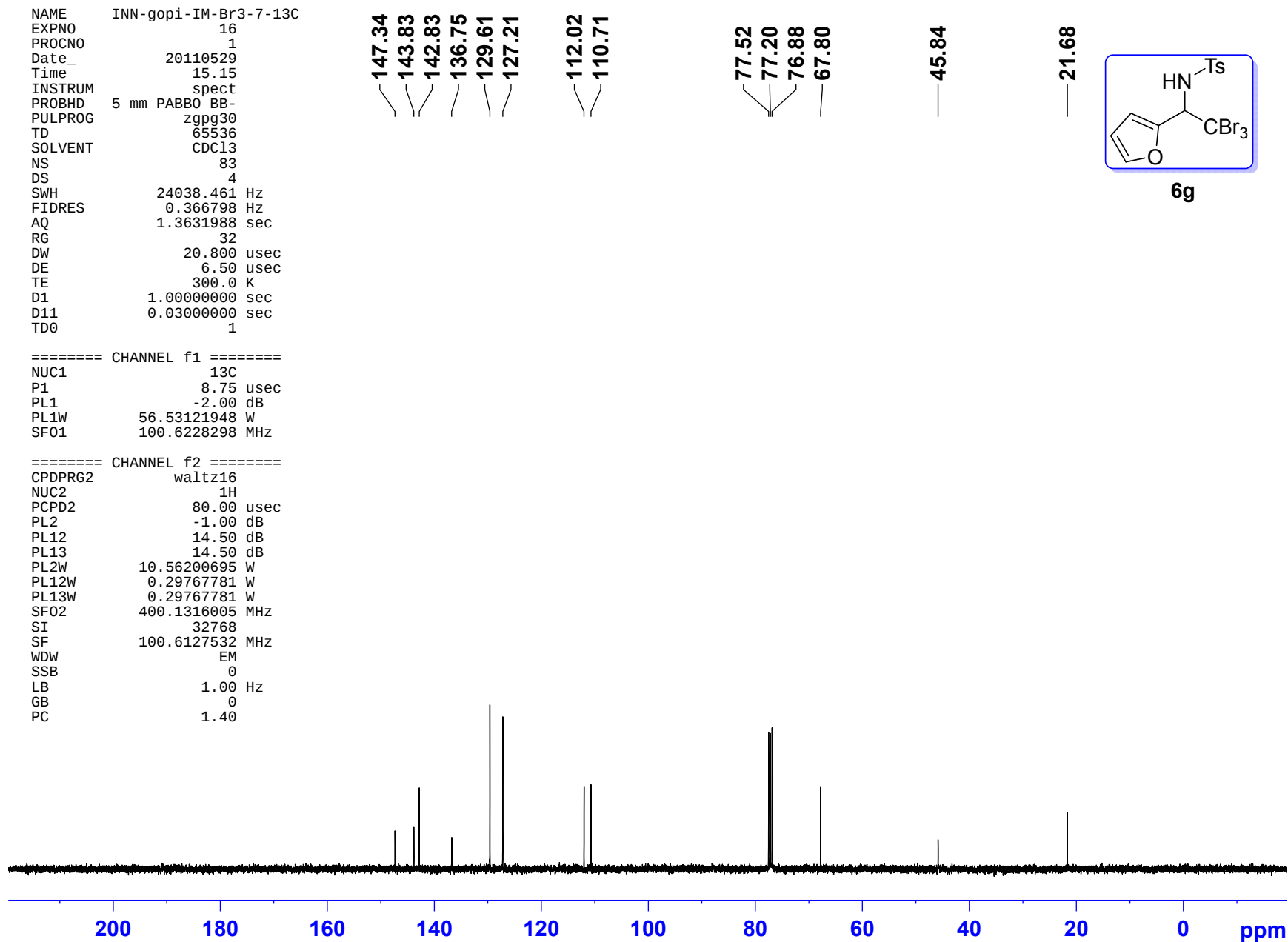
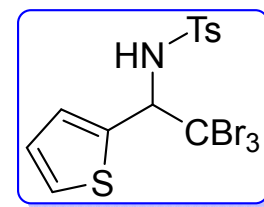
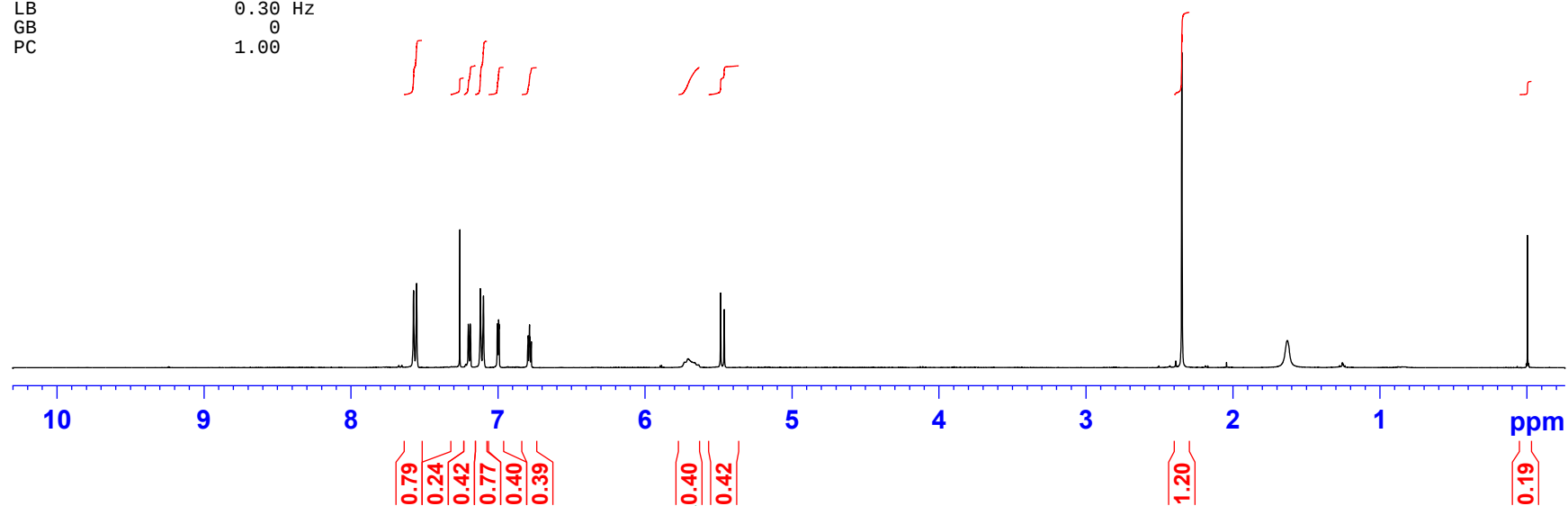


Fig S16. ¹³C NMR Spectrum of 6g

NAME INN-gopi-IM-thio-1H
EXPNO 30
PROCNO 1
Date_ 20110703
Time 16.44
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDC13
NS 31
DS 0
SWH 8223.685 Hz
FIDRES 0.125483 Hz
AQ 3.9846387 sec
RG 32
DW 60.800 usec
DE 6.50 usec
TE 295.6 K
D1 1.00000000 sec
TD0 1

===== CHANNEL f1 =====
NUC1 1H
P1 13.50 usec
PL1 -1.00 dB
PL1W 10.56200695 W
SF01 400.1324710 MHz
SI 32768
SF 400.1300095 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00

**6h****Fig S17. ¹H NMR Spectrum of 6h**

Current Data Parameters
 NAME INN-GOPI-IM-BR3-THI01-1H
 EXPNO 5
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20131128
 Time 3.03
 INSTRUM spect
 PROBHD 5 mm SEI 1H/D-
 PULPROG zgpg30
 TD 65536
 SOLVENT CDCl3
 NS 300
 DS 4
 SWH 24038.461 Hz
 FIDRES 0.366798 Hz
 AQ 1.3631988 sec
 RG 2050
 DW 20.800 usec
 DE 6.50 usec
 TE 296.6 K
 D1 1.00000000 sec
 D11 0.03000000 sec
 TD0 1

===== CHANNEL f1 =====
 NUC1 13C
 P1 13.00 usec
 PL1 -3.00 dB
 PL1W 71.16858673 W
 SF01 100.6228298 MHz

===== CHANNEL f2 =====
 CPDPRG2 waltz16
 NUC2 1H
 PCPD2 80.00 usec
 PL2 -3.00 dB
 PL12 18.48 dB
 PL13 19.00 dB
 PL2W 16.73965454 W
 PL12W 0.11905469 W
 PL13W 0.10562007 W
 SF02 400.1316005 MHz

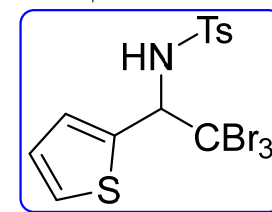
F2 - Processing parameters
 SI 32768
 SF 100.6127541 MHz
 WDW EM
 SSB 0
 LB 1.00 Hz
 GB 0
 PC 1.40

143.76
 137.20
 136.82
 130.33
 129.52
 127.26
 127.14
 126.06

77.52
 77.20
 76.88
 70.04

47.67

21.68



6h

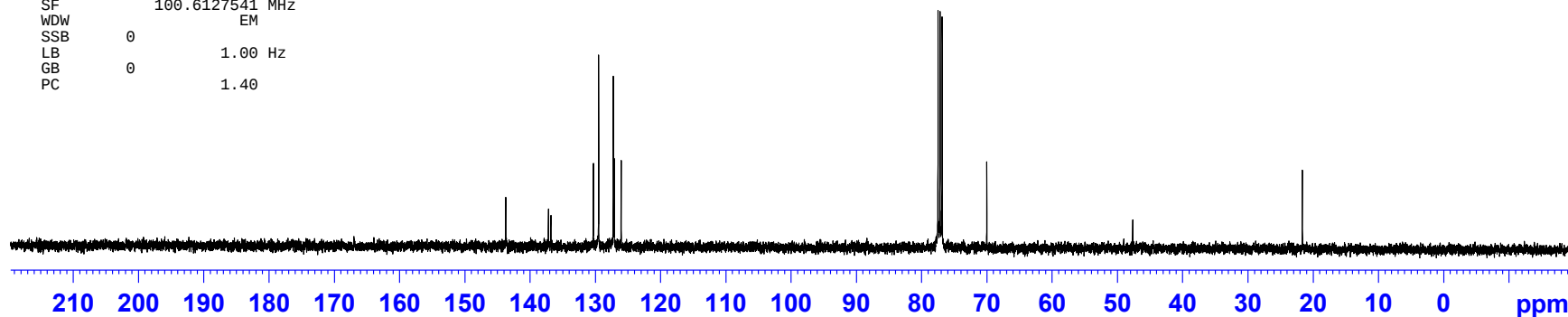


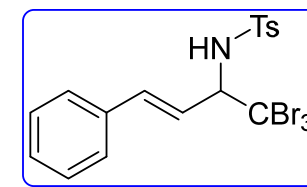
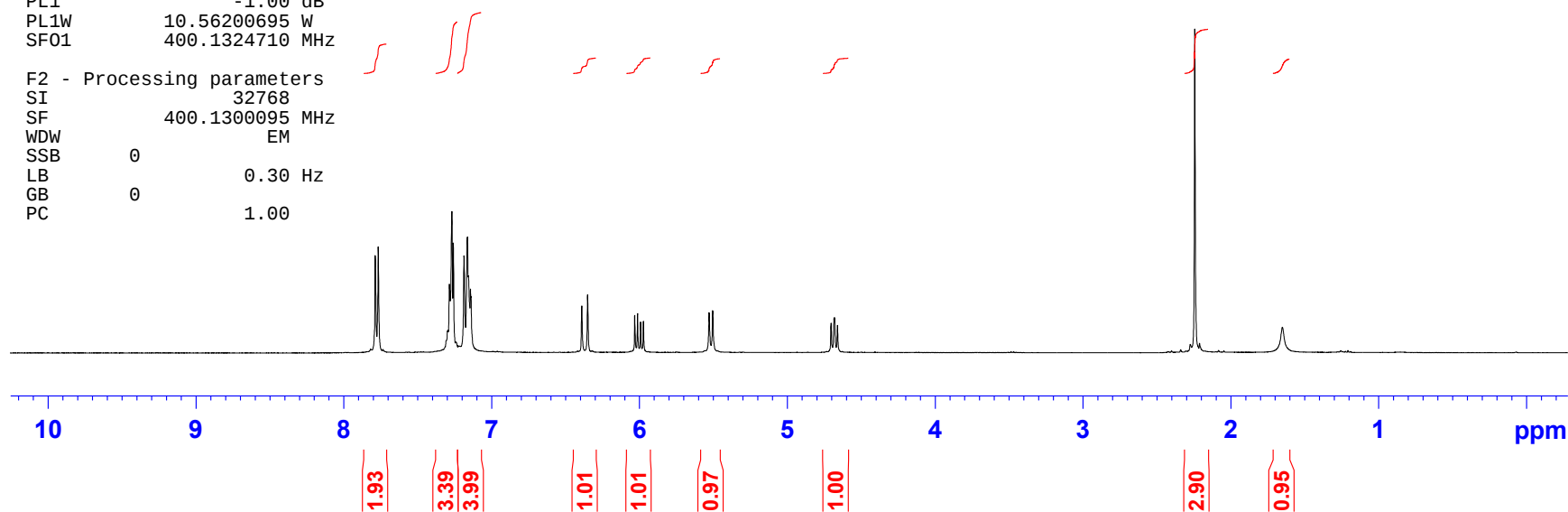
Fig S18. ¹³C NMR Spectrum of 6h

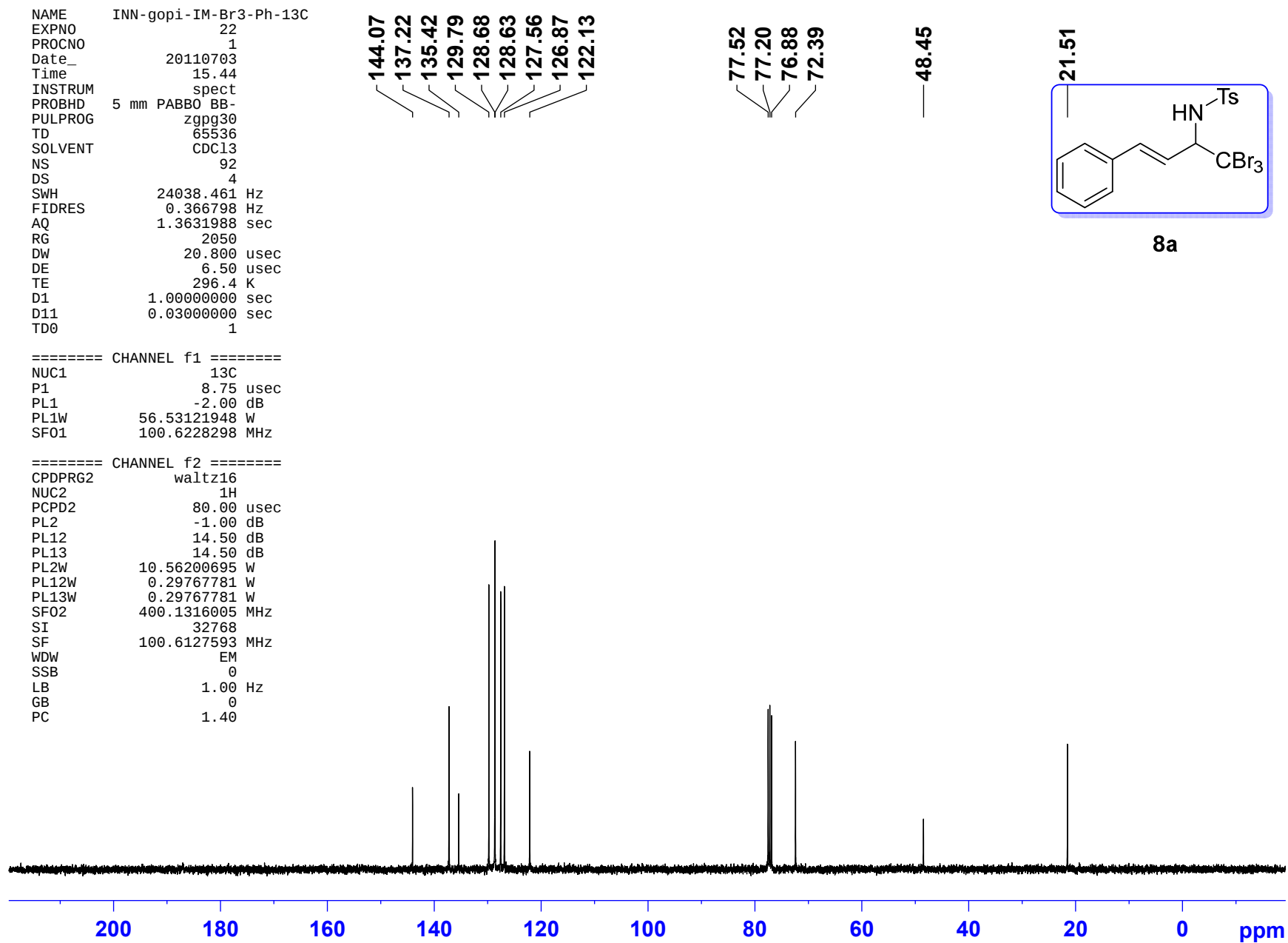
Current Data Parameters
NAME INN-gopi-IM-Br3-Ph-1H
EXPNO 4
PROCNO 1

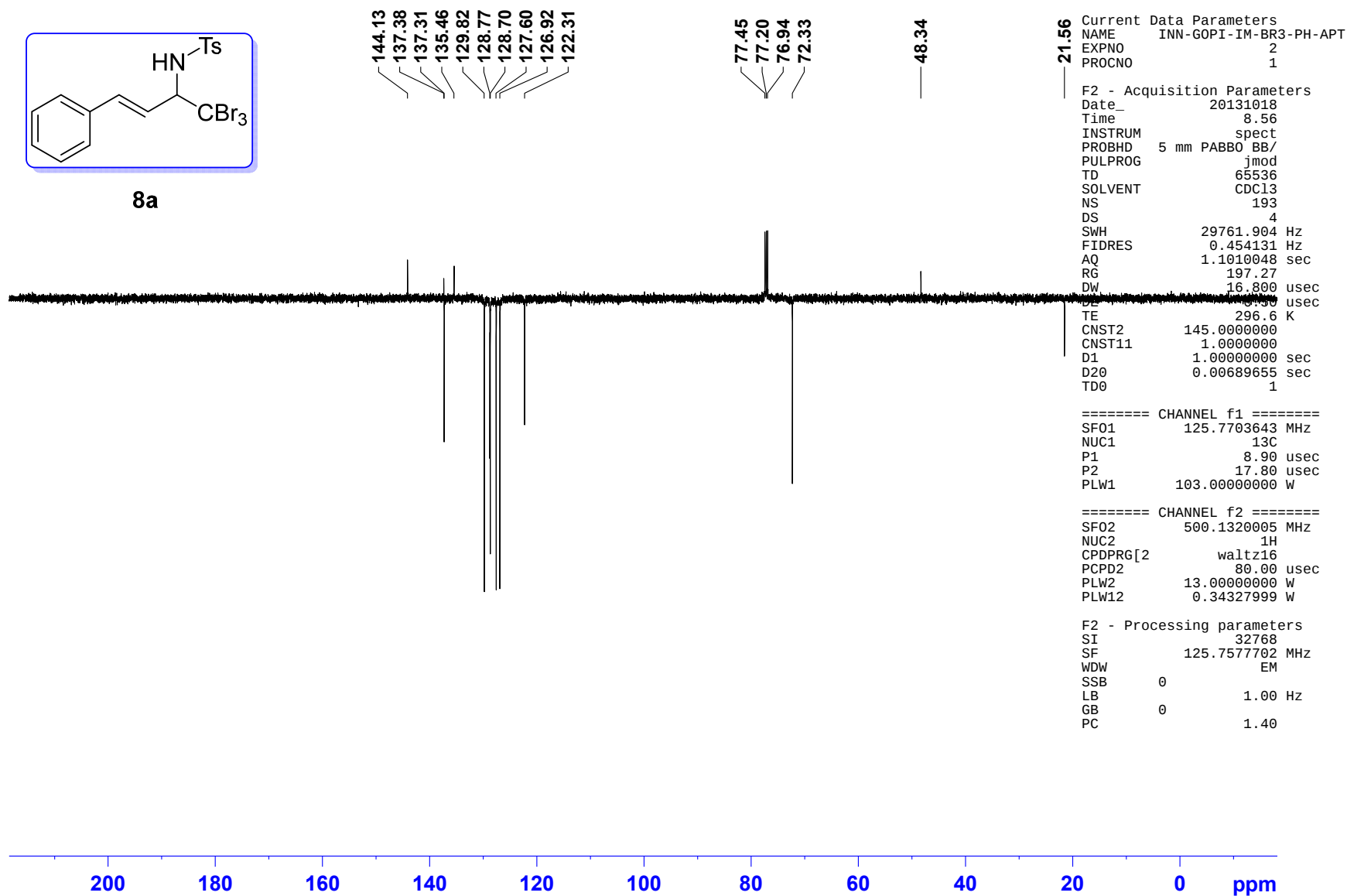
F2 - Acquisition Parameters
Date_ 20130518
Time 8.42
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 8
DS 0
SWH 8223.685 Hz
FIDRES 0.125483 Hz
AQ 3.9845889 sec
RG 128
DW 60.800 usec
DE 6.50 usec
TE 293.4 K
D1 1.0000000 sec
TD0 1

===== CHANNEL f1 =====
NUC1 1H
P1 13.50 usec
PL1 -1.00 dB
PL1W 10.56200695 W
SF01 400.1324710 MHz

F2 - Processing parameters
SI 32768
SF 400.1300095 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00

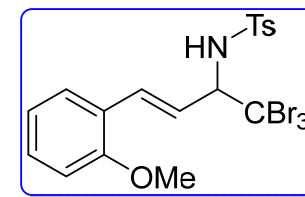
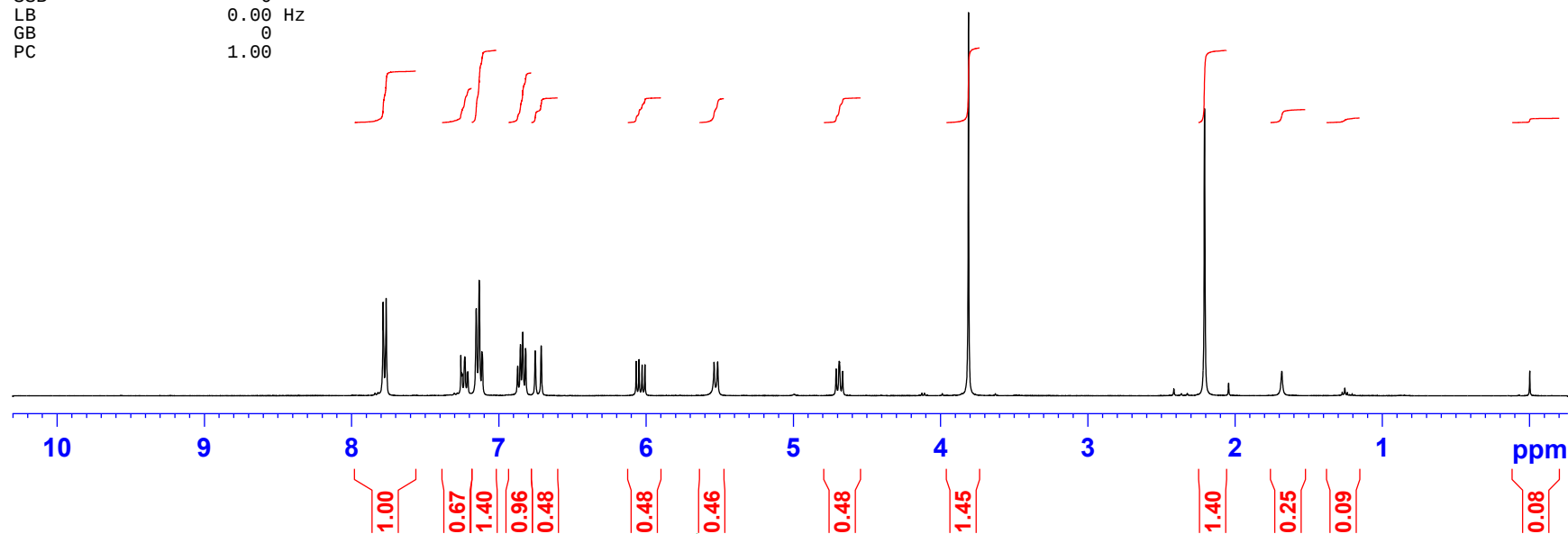
**8a****Fig S19. ¹H NMR Spectrum of 8a**

Fig S20. ¹³C NMR Spectrum of 8a

Fig S21. ¹³C-APT NMR Spectrum of 8a

NAME INN-GOPI-1H-C-OMe-1H
EXPNO 36
PROCNO 2
Date_ 20110701
Time 22.34
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 35
DS 0
SWH 8223.685 Hz
FIDRES 0.125483 Hz
AQ 3.9846387 sec
RG 90.5
DW 60.800 usec
DE 6.50 usec
TE 295.5 K
D1 1.00000000 sec
TD0 1

===== CHANNEL f1 =====
NUC1 1H
P1 13.50 usec
PL1 -1.00 dB
PL1W 10.56200695 W
SF01 400.1324710 MHz
SI 32768
SF 400.1300104 MHz
WDW EM
SSB 0
LB 0.00 Hz
GB 0
PC 1.00

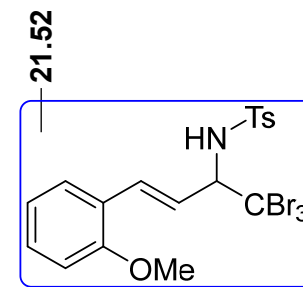
**8b****Fig S22. ¹H NMR Spectrum of 8b**

NAME INN-gopi-IM-C-OMe-13C
 EXPNO 29
 PROCNO 1
 Date_ 20110703
 Time 16.38
 INSTRUM spect
 PROBHD 5 mm PABBO BB-
 PULPROG zgpg30
 TD 65536
 SOLVENT CDCl3
 NS 119
 DS 4
 SWH 24038.461 Hz
 FIDRES 0.366798 Hz
 AQ 1.3631988 sec
 RG 2050
 DW 20.800 usec
 DE 6.50 usec
 TE 296.4 K
 D1 1.00000000 sec
 D11 0.03000000 sec
 TD0 1

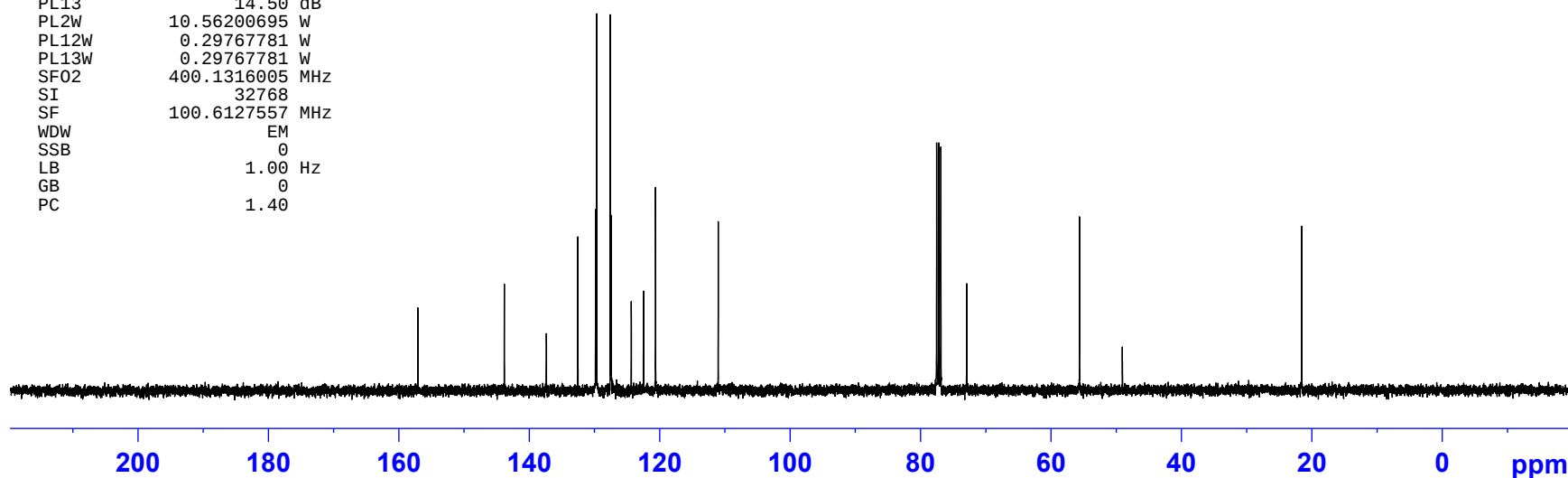
===== CHANNEL f1 =====
 NUC1 13C
 P1 8.75 usec
 PL1 -2.00 dB
 PL1W 56.53121948 W
 SF01 100.6228298 MHz

===== CHANNEL f2 =====
 CPDPRG2 waltz16
 NUC2 1H
 PCPD2 80.00 usec
 PL2 -1.00 dB
 PL12 14.50 dB
 PL13 14.50 dB
 PL2W 10.56200695 W
 PL12W 0.29767781 W
 PL13W 0.29767781 W
 SF02 400.1316005 MHz
 SI 32768
 SF 100.6127557 MHz
 WDW EM
 SSB 0
 LB 1.00 Hz
 GB 0
 PC 1.40

157.10
 143.83
 137.38
 132.55
 129.84
 129.67
 127.56
 127.45
 124.36
 122.47
 120.62
 111.03
 77.52
 77.20
 76.88
 72.93
 55.62
 49.05



8b

Fig S23. ¹³C NMR Spectrum of 8b

Current Data Parameters
NAME INN-GOPI-1M-Br3-17-1H
EXPNO 1
PROCNO 1

F2 - Acquisition Parameters

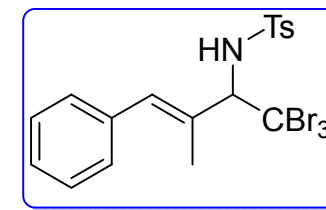
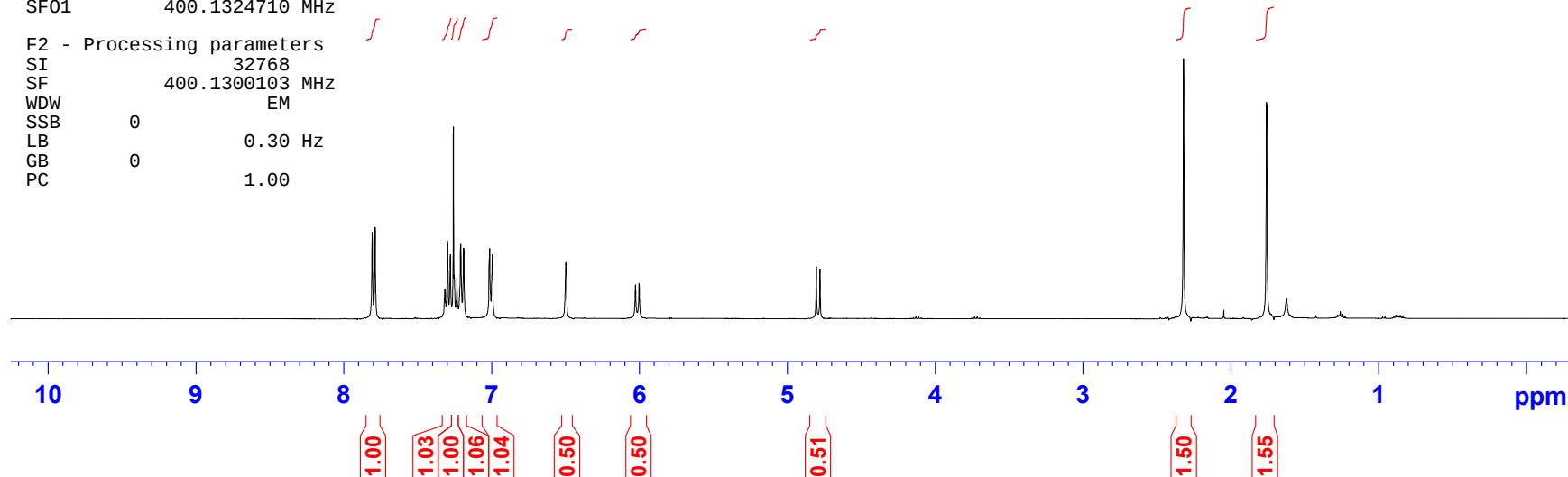
Date_ 20130910
Time 10.44
INSTRUM spect
PROBHD 5 mm SEI 1H/D-
PULPROG zg30
TD 48074
SOLVENT CDCl3
NS 22
DS 0
SWH 9615.385 Hz
FIDRES 0.200012 Hz
AQ 2.4998479 sec
RG 32
DW 52.000 usec
DE 6.50 usec
TE 294.2 K
D1 1.00000000 sec
TD0 1

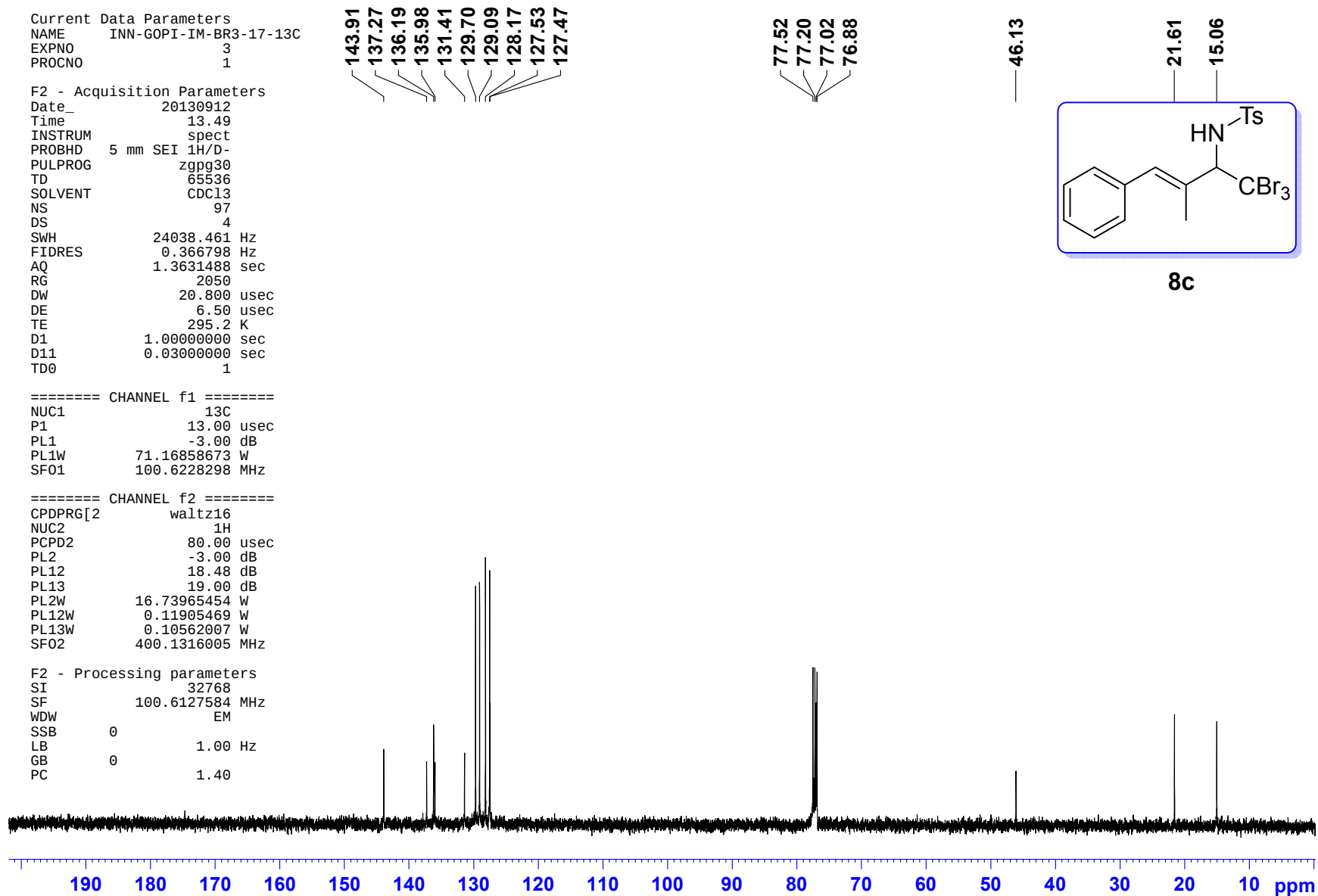
===== CHANNEL f1 =====

NUC1 1H
P1 6.75 usec
PL1 -3.00 dB
PL1W 16.73965454 W
SF01 400.1324710 MHz

F2 - Processing parameters

SI 32768
SF 400.1300103 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00

**8c****Fig S24. ¹H NMR Spectrum of 8c**

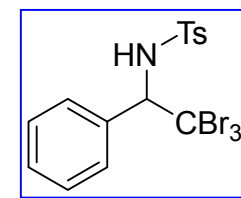
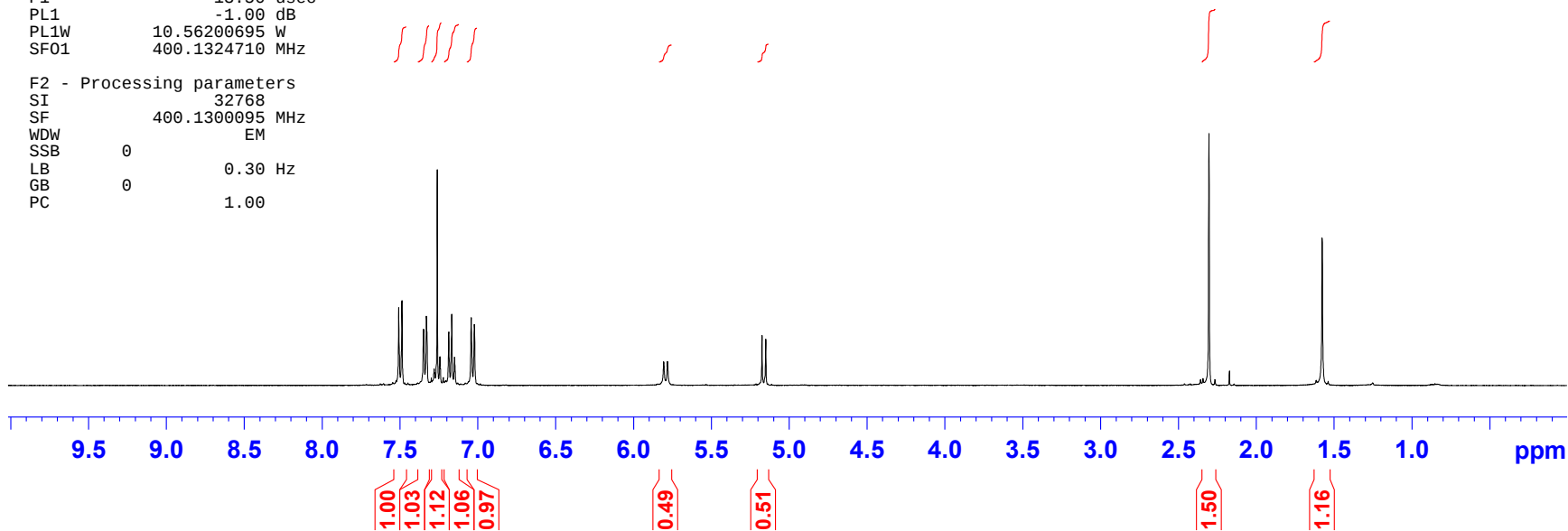


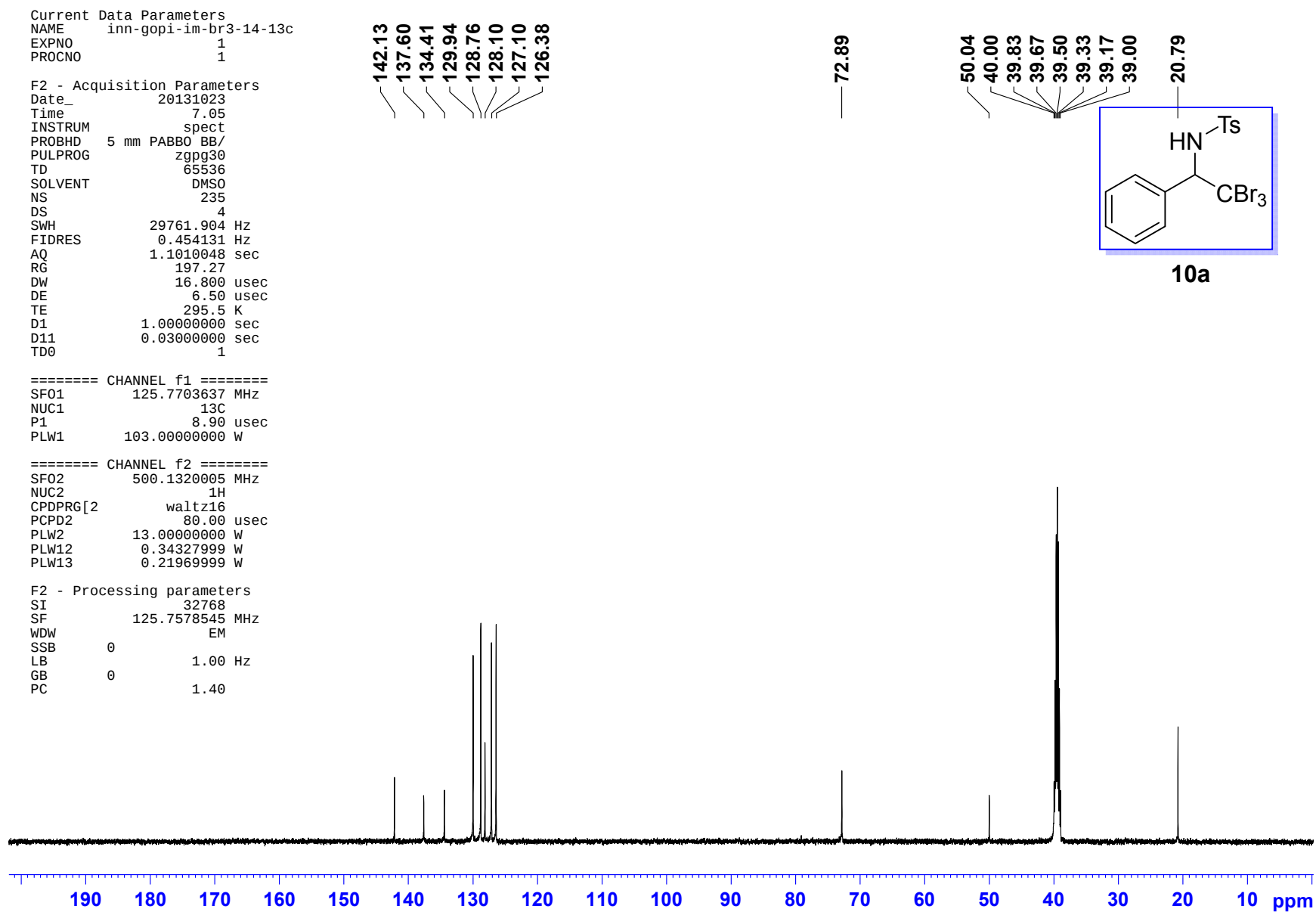
Current Data Parameters
NAME INN-GOPI-BR3-IM-14-1H
EXPNO 3
PROCNO 1

F2 - Acquisition Parameters
Date_ 20130507
Time 22.23
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 10
DS 0
SWH 8223.685 Hz
FIDRES 0.125483 Hz
AQ 3.9845889 sec
RG 32
DW 60.800 usec
DE 6.50 usec
TE 294.3 K
D1 1.00000000 sec
TD0 1

===== CHANNEL f1 =====
NUC1 1H
P1 13.50 usec
PL1 -1.00 dB
PL1W 10.56200695 W
SF01 400.1324710 MHz

F2 - Processing parameters
SI 32768
SF 400.1300095 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00

**10a****Fig S26. ¹H NMR Spectrum of 10a**

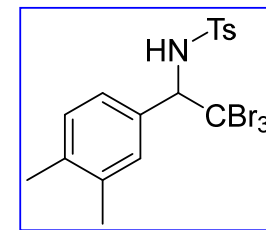
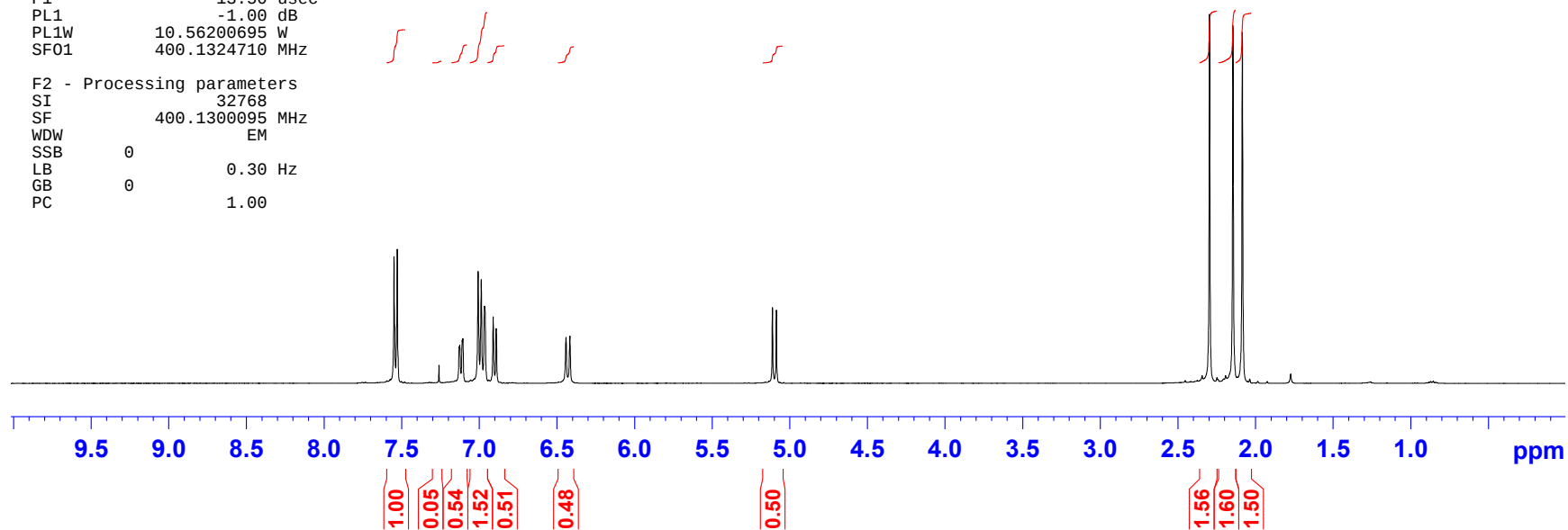
Fig S27. ¹³C NMR Spectrum of 10a

Current Data Parameters
NAME inn-gopi-br3-im-16-1h
EXPNO 1
PROCNO 1

F2 - Acquisition Parameters
Date_ 20130502
Time 21.42
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 6
DS 0
SWH 8223.685 Hz
FIDRES 0.125483 Hz
AQ 3.9845889 sec
RG 32
DW 60.800 usec
DE 6.50 usec
TE 294.0 K
D1 1.00000000 sec
TD0 1

===== CHANNEL f1 =====
NUC1 1H
P1 13.50 usec
PL1 -1.00 dB
PL1W 10.56200695 W
SF01 400.1324710 MHz

F2 - Processing parameters
SI 32768
SF 400.1300095 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00

**10b****Fig S28. ¹H NMR Spectrum of 10b**

Current Data Parameters
 NAME inn-gopi-br3-im-16-13C
 EXPNO 2
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20130502
 Time 21.48
 INSTRUM spect
 PROBHD 5 mm PABBO BB-
 PULPROG zgpg30
 TD 65536
 SOLVENT CDCl3
 NS 31
 DS 4
 SWH 24038.461 Hz
 FIDRES 0.366798 Hz
 AQ 1.3631488 sec
 RG 2050
 DW 20.800 usec
 DE 6.50 usec
 TE 294.1 K
 D1 1.00000000 sec
 d11 0.03000000 sec
 DELTA 0.89999998 sec
 TD0 1
 SF01 100.6228298 MHz
 NUC1 13C
 P1 8.75 usec
 PLW1 -1.00000000 W
 SF02 400.1316005 MHz
 NUC2 1H
 CPDPRG[2] waltz16
 PCPD2 80.00 usec
 PLW2 -1.00000000 W
 PLW12 -1.00000000 W
 PLW13 -1.00000000 W

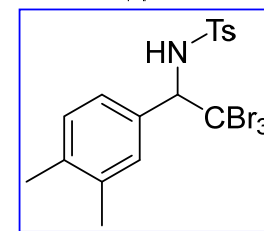
F2 - Processing parameters
 SI 32768
 SF 100.6127603 MHz
 WDW EM
 SSB 0
 LB 1.00 Hz
 GB 0
 PC 1.40

143.28
137.47
136.60
135.92
131.65
130.97
129.11
127.34
127.17

77.52
77.20
76.88
73.28

48.25

21.54
19.74
19.60



10b

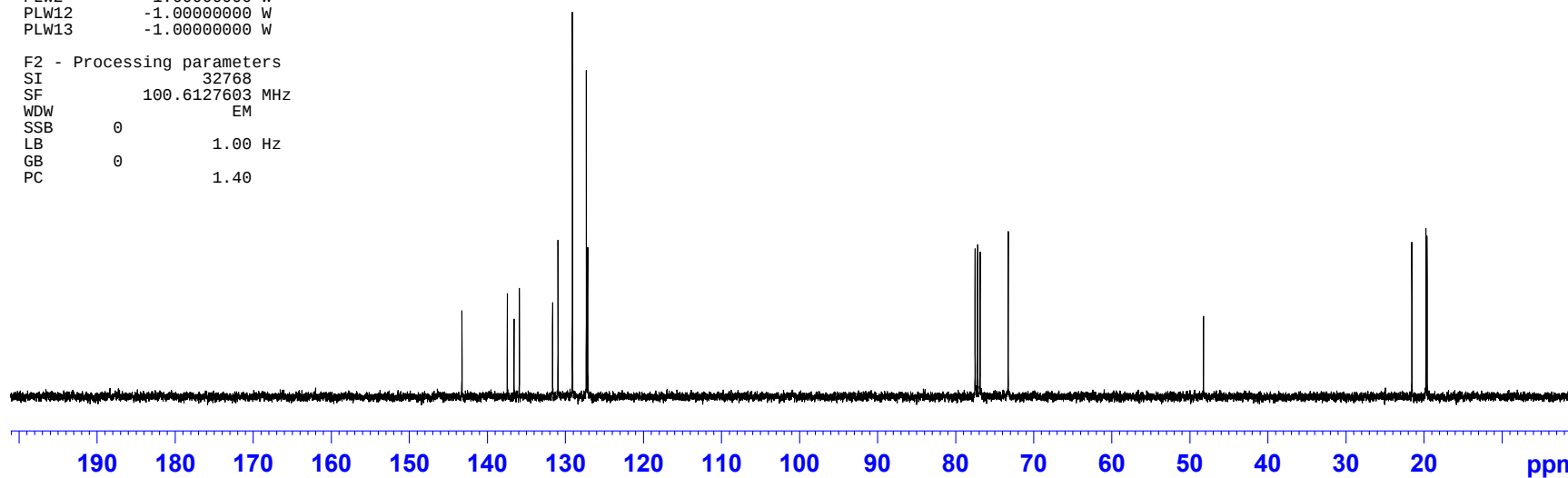
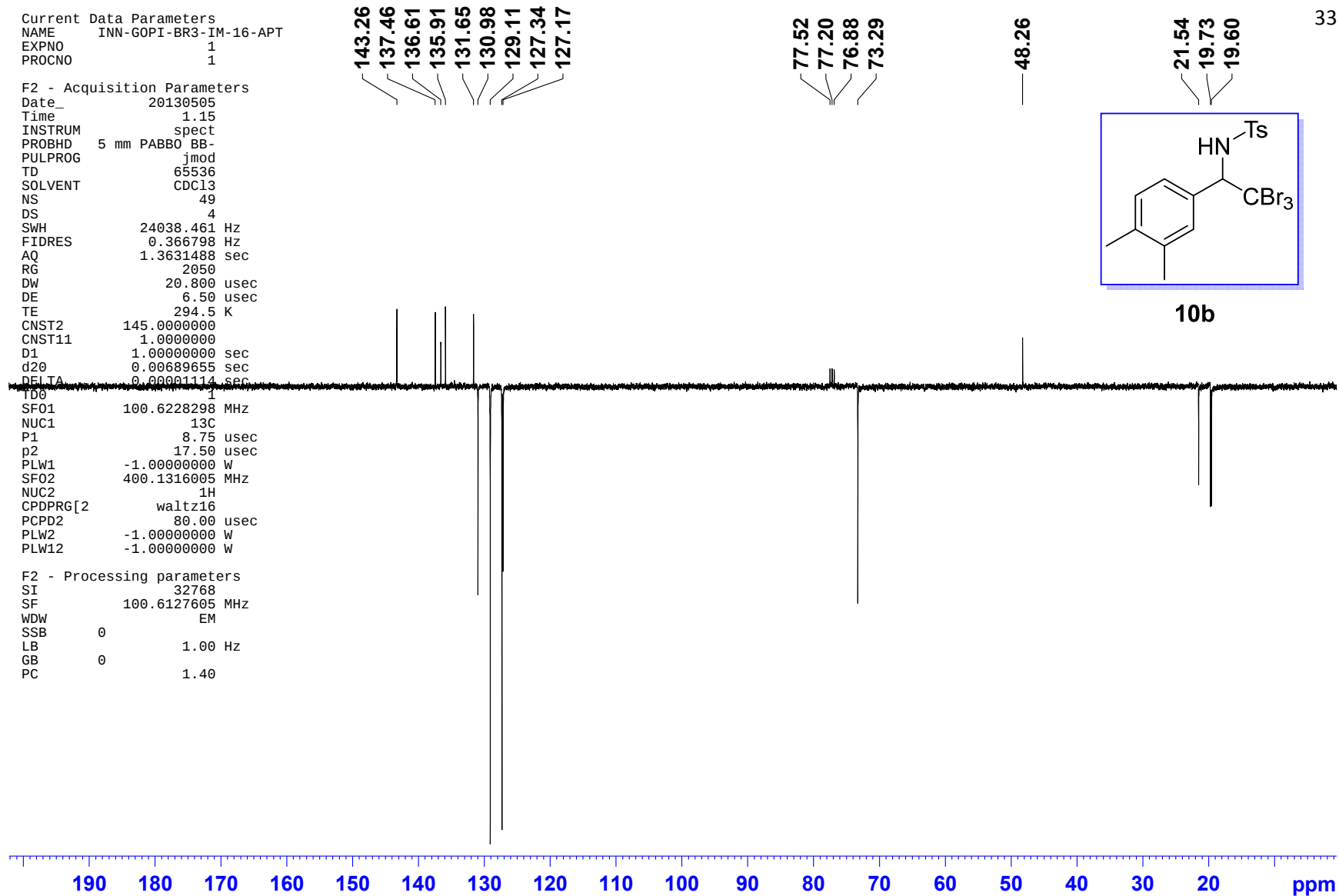


Fig S29. ¹³C NMR Spectrum of 10b

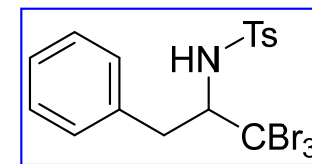
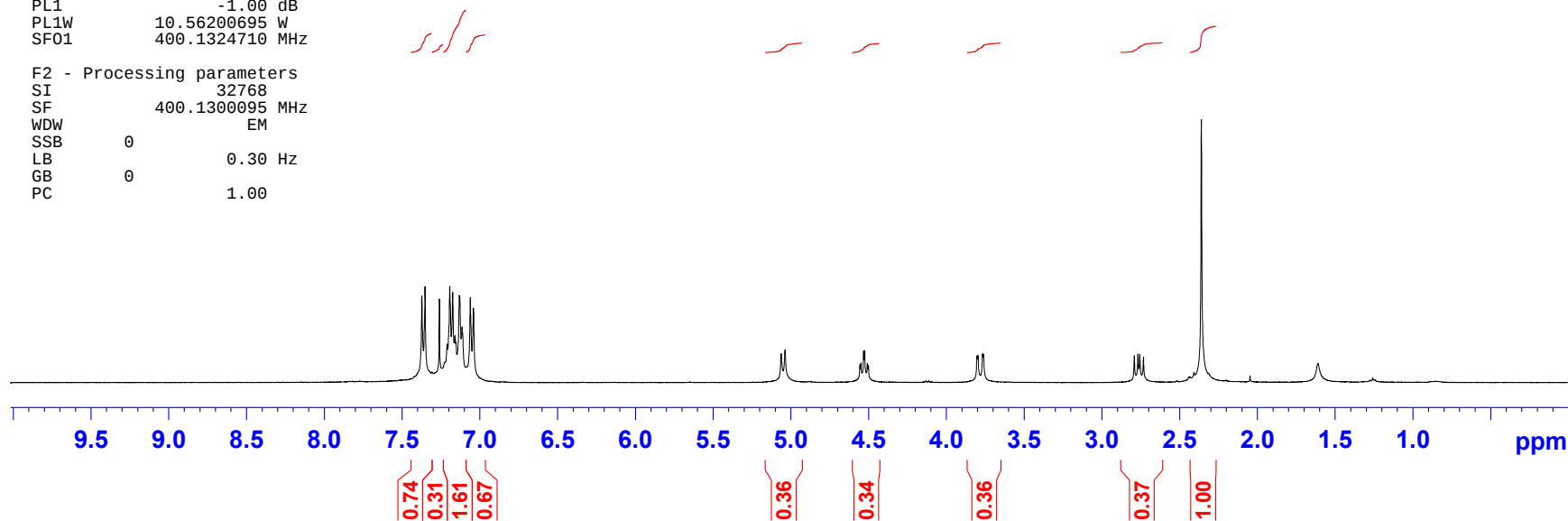
Fig S30. ¹³C-APT NMR Spectrum of 10b

Current Data Parameters
NAME INN-GOPI-BR3-IM-15-1H
EXPNO 3
PROCNO 1

F2 - Acquisition Parameters
Date_ 20130502
Time 22.51
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 11
DS 0
SWH 8223.685 Hz
FIDRES 0.125483 Hz
AQ 3.9845889 sec
RG 32
DW 60.800 usec
DE 6.50 usec
TE 293.7 K
D1 1.00000000 sec
TD0 1

===== CHANNEL f1 =====
NUC1 1H
P1 13.50 usec
PL1 -1.00 dB
PL1W 10.56200695 W
SF01 400.1324710 MHz

F2 - Processing parameters
SI 32768
SF 400.1300095 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00

**10c****Fig S31. ¹H NMR Spectrum of 10c**

Current Data Parameters
NAME INN-GOPI-BR3-IM-15-13c
EXPNO 1
PROCNO 1

F2 - Acquisition Parameters
Date_ 20130505
Time 1.01
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zgpg30
TD 65536
SOLVENT CDCl3
NS 78
DS 4
SWH 24038.461 Hz
FIDRES 0.366798 Hz
AQ 1.3631488 sec
RG 2050
DW 20.800 usec
DE 6.50 usec
TE 294.6 K
D1 1.00000000 sec
d11 0.03000000 sec
DELTA 0.89999998 sec
TD0 1
SF01 100.6228298 MHz
NUC1 13C
P1 8.75 usec
PLW1 -1.00000000 W
SF02 400.1316005 MHz
NUC2 1H
CPDPRG[2] waltz16
PCPD2 80.00 usec
PLW2 -1.00000000 W
PLW12 -1.00000000 W
PLW13 -1.00000000 W

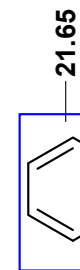
F2 - Processing parameters
SI 32768
SF 100.6127559 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40

143.01
138.53
135.72
129.72
129.52
128.80
127.09
126.79

77.52
77.20
76.88
72.77

50.66

40.63



10c

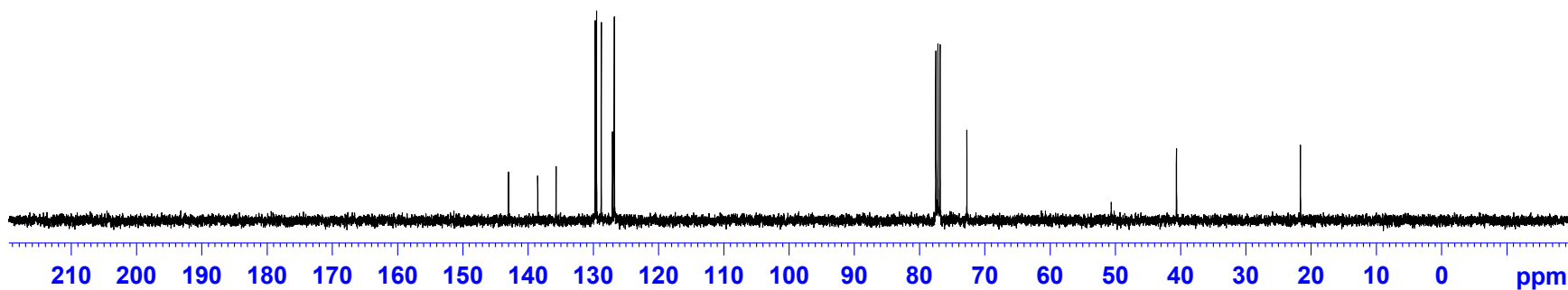
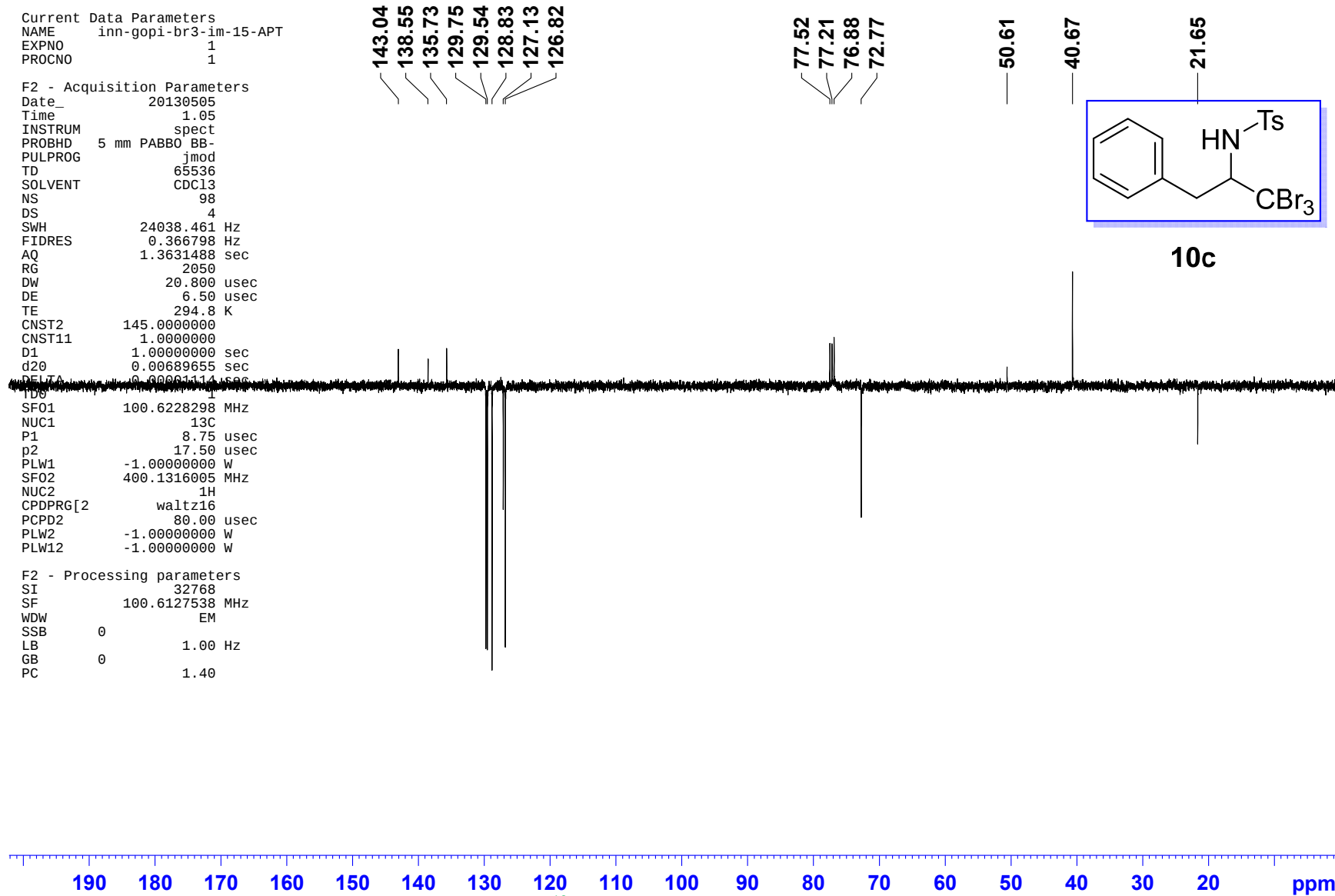


Fig S32. ¹³C NMR Spectrum of 10c

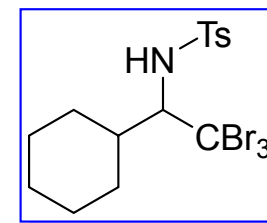
Fig S33. ¹³C-APT NMR Spectrum of 10c

Current Data Parameters
 NAME INN-GOPI-BR3-IM-11-1H
 EXPNO 4
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20130425
 Time 21.48
 INSTRUM spect
 PROBHD 5 mm PABBO BB-
 PULPROG zg30
 TD 65536
 SOLVENT CDCl3
 NS 16
 DS 0
 SWH 8223.685 Hz
 FIDRES 0.125483 Hz
 AQ 3.9845889 sec
 RG 32
 DW 60.800 usec
 DE 6.50 usec
 TE 294.2 K
 D1 1.00000000 sec
 TD0 1

===== CHANNEL f1 =====
 NUC1 1H
 P1 13.50 usec
 PL1 -1.00 dB
 PL1W 10.56200695 W
 SF01 400.1324710 MHz

F2 - Processing parameters
 SI 32768
 SF 400.1300095 MHz
 WDW EM
 SSB 0
 LB 0.30 Hz
 GB 0
 PC 1.00



10d

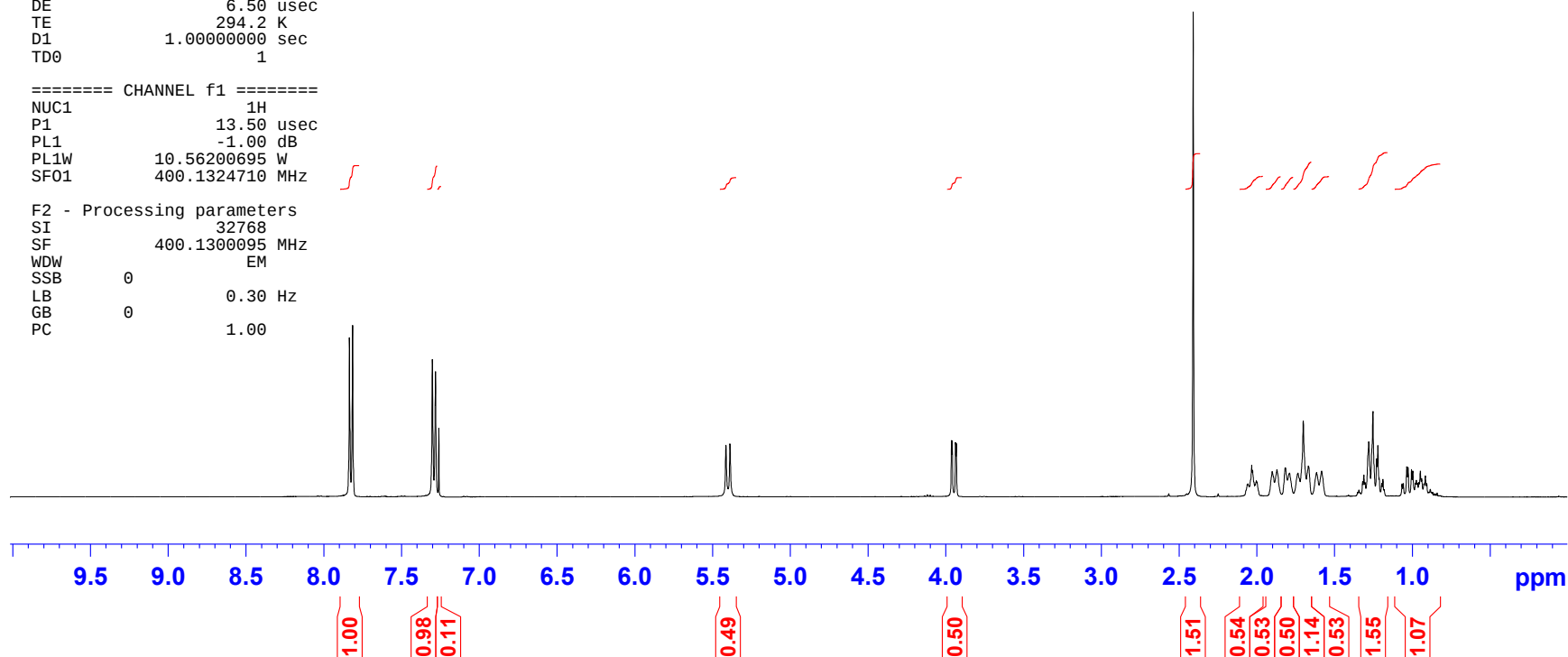


Fig S34. ¹H NMR Spectrum of 10d

Current Data Parameters
 NAME INN-GOPI-BR3-IM-11-13C
 EXPNO 5
 PROCNO 1

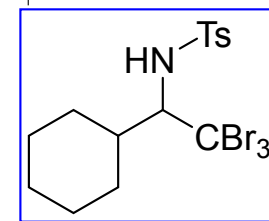
F2 - Acquisition Parameters
 Date_ 20130425
 Time 21.50
 INSTRUM spect
 PROBHD 5 mm PABBO BB-
 PULPROG zgpg30
 TD 65536
 SOLVENT CDCl3
 NS 70
 DS 4
 SWH 24038.461 Hz
 FIDRES 0.366798 Hz
 AQ 1.3631488 sec
 RG 2050
 DW 20.800 usec
 DE 6.50 usec
 TE 294.2 K
 D1 1.00000000 sec
 d11 0.03000000 sec
 DELTA 0.89999998 sec
 TD0 1
 SF01 100.6228298 MHz
 NUC1 13C
 P1 8.75 usec
 PLW1 -1.00000000 W
 SF02 400.1316005 MHz
 NUC2 1H
 CPDPRG[2] waltz16
 PCPD2 80.00 usec
 PLW2 -1.00000000 W
 PLW12 -1.00000000 W
 PLW13 -1.00000000 W

F2 - Processing parameters
 SI 32768
 SF 100.6127562 MHz
 WDW EM
 SSB 0
 LB 1.00 Hz
 GB 0
 PC 1.40

143.79
 138.27
 129.60
 127.61

77.52
 77.20
 76.88
 74.37

50.63
 41.43
 34.01
 29.54
 26.74
 26.17
 25.86
 21.73



10d

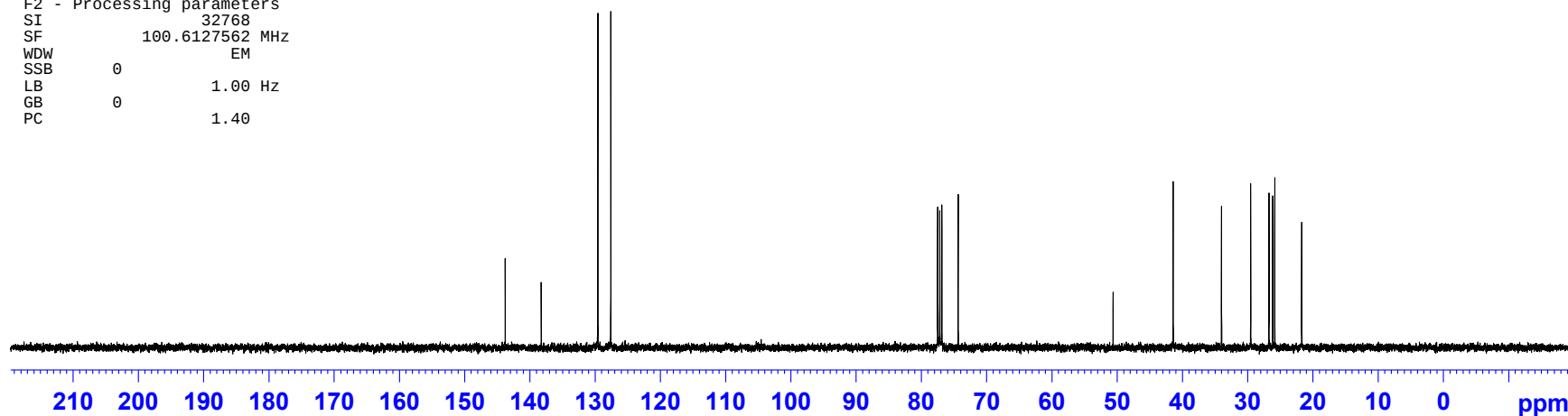
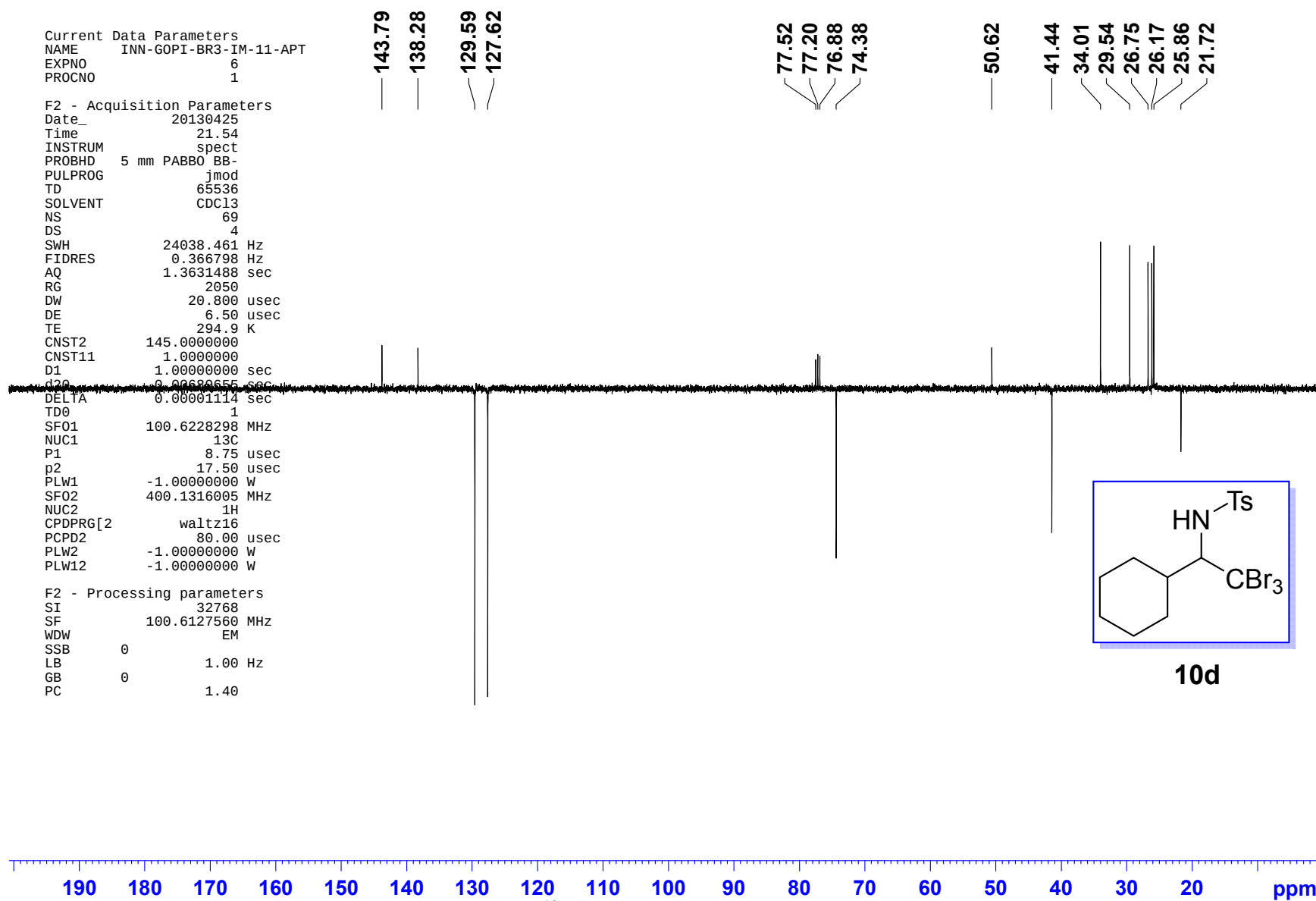


Fig S35. ¹³C NMR Spectrum of 10d

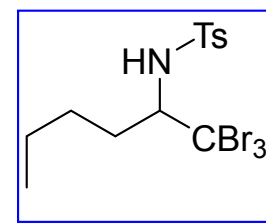
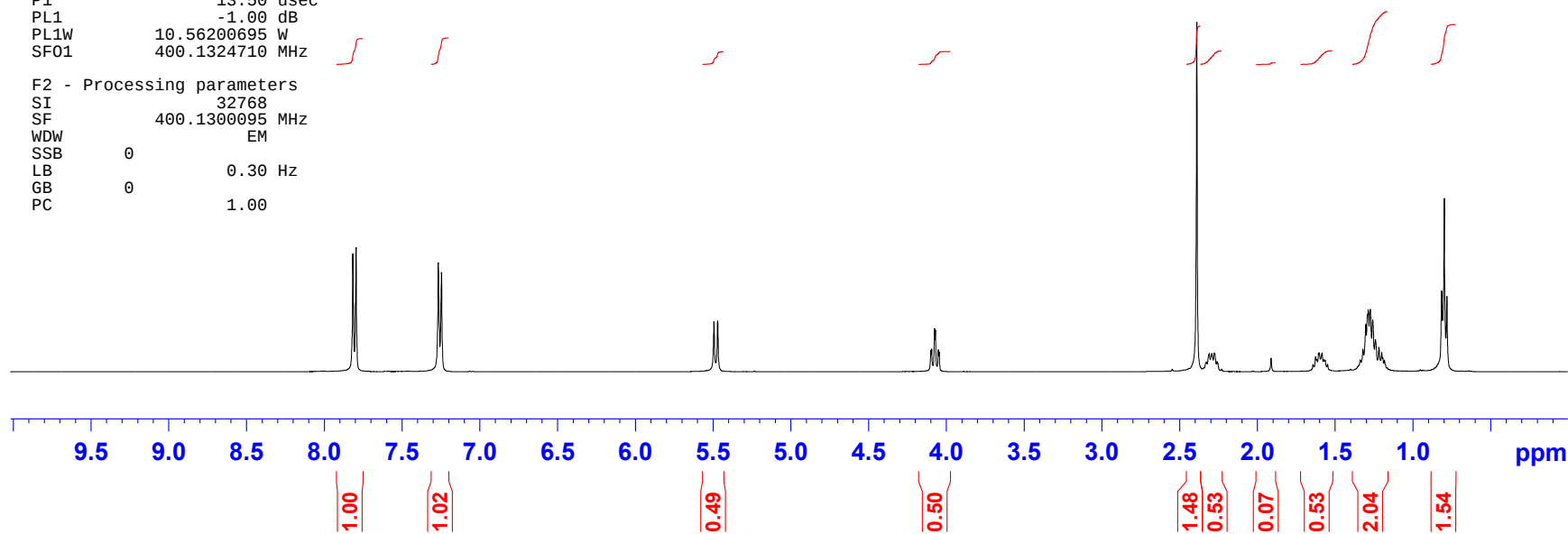
Fig S36. ¹³C-APT NMR Spectrum of 10d

Current Data Parameters
NAME INN-GOPI-BR3-IM-12-1H
EXPNO 2
PROCNO 1

F2 - Acquisition Parameters
Date_ 20130425
Time 21.38
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 11
DS 0
SWH 8223.685 Hz
FIDRES 0.125483 Hz
AQ 3.9845889 sec
RG 32
DW 60.800 usec
DE 6.50 usec
TE 294.2 K
D1 1.00000000 sec
TD0 1

===== CHANNEL f1 =====
NUC1 1H
P1 13.50 usec
PL1 -1.00 dB
PL1W 10.56200695 W
SF01 400.1324710 MHz

F2 - Processing parameters
SI 32768
SF 400.1300095 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00

**10e****Fig S37. ¹H NMR Spectrum of 10e**

Current Data Parameters
 NAME INN-GOPI-BR3-IM-12-13C
 EXPNO 2
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20130425
 Time 21.40
 INSTRUM spect
 PROBHD 5 mm PABBO BB-
 PULPROG zgpg30
 TD 65536
 SOLVENT CDCl3
 NS 66
 DS 4
 SWH 24038.461 Hz
 FIDRES 0.366798 Hz
 AQ 1.3631488 sec
 RG 2050
 DW 20.800 usec
 DE 6.50 usec
 TE 294.6 K
 D1 1.00000000 sec
 d11 0.03000000 sec
 DELTA 0.89999998 sec
 TD0 1
 SF01 100.6228298 MHz
 NUC1 13C
 P1 8.75 usec
 PLW1 -1.00000000 W
 SF02 400.1316005 MHz
 NUC2 1H
 CPDPRG[2] waltz16
 PCPD2 80.00 usec
 PLW2 -1.00000000 W
 PLW12 -1.00000000 W
 PLW13 -1.00000000 W

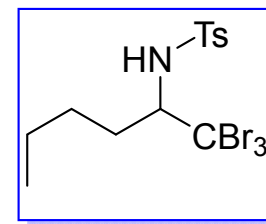
F2 - Processing parameters
 SI 32768
 SF 100.6127607 MHz
 WDW EM
 SSB 0
 LB 1.00 Hz
 GB 0
 PC 1.40

143.58
 138.77
 129.50
 127.28

77.52
 77.20
 76.88
 71.14

51.41

34.18
 28.26
 22.35
 21.66
 13.90



10e

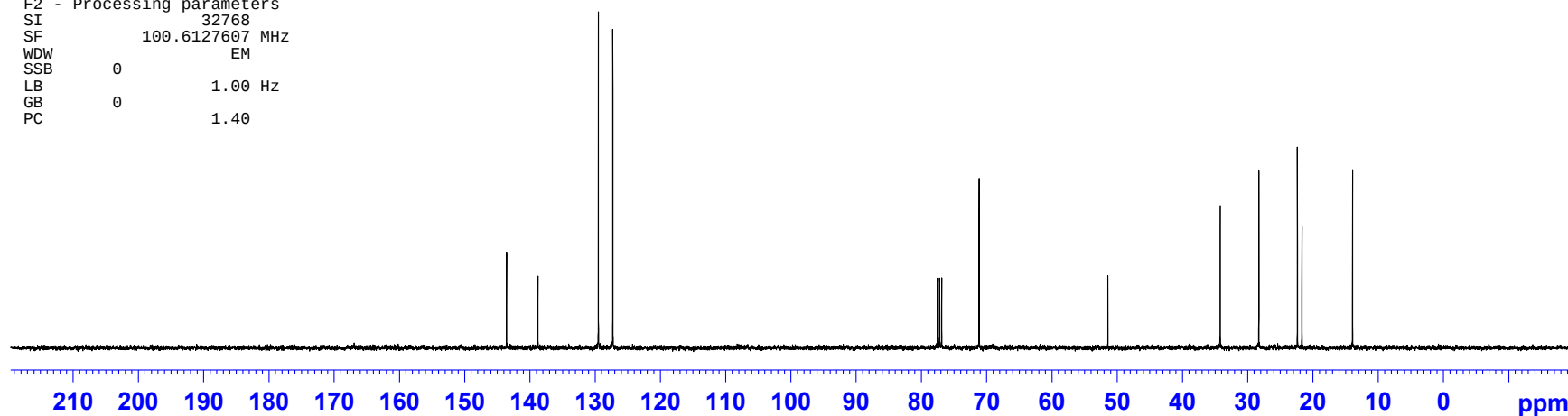


Fig S38. ¹³C NMR Spectrum of 10e

Current Data Parameters
NAME INN-GOPI-BR3-IM-12-APT
EXPNO 3
PROCNO 1

F2 - Acquisition Parameters

Date_ 20130425
Time 21.43
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG jmod
TD 65536
SOLVENT CDCl3
NS 46
DS 4
SWH 24038.461 Hz
FIDRES 0.366798 Hz
AQ 1.3631488 sec
RG 2050
DW 20.800 usec
DE 6.50 usec
TE 294.9 K
CNST2 145.0000000
CNST11 1.0000000
D1 1.00000000 sec
d20 0.00689655 sec
DELTA 0.00001114 sec

TD0 1
SF01 100.6228298 MHz
NUC1 13C
P1 8.75 usec
p2 17.50 usec
PLW1 -1.00000000 W
SF02 400.1316005 MHz
NUC2 1H
CPDPRG[2] waltz16
PCPD2 80.00 usec
PLW2 -1.00000000 W
PLW12 -1.00000000 W

F2 - Processing parameters
SI 32768
SF 100.6127690 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40

143.49
138.69
129.42
127.20

77.43
77.11
76.79
71.06

51.31

34.11
28.18
22.26
21.57
13.81

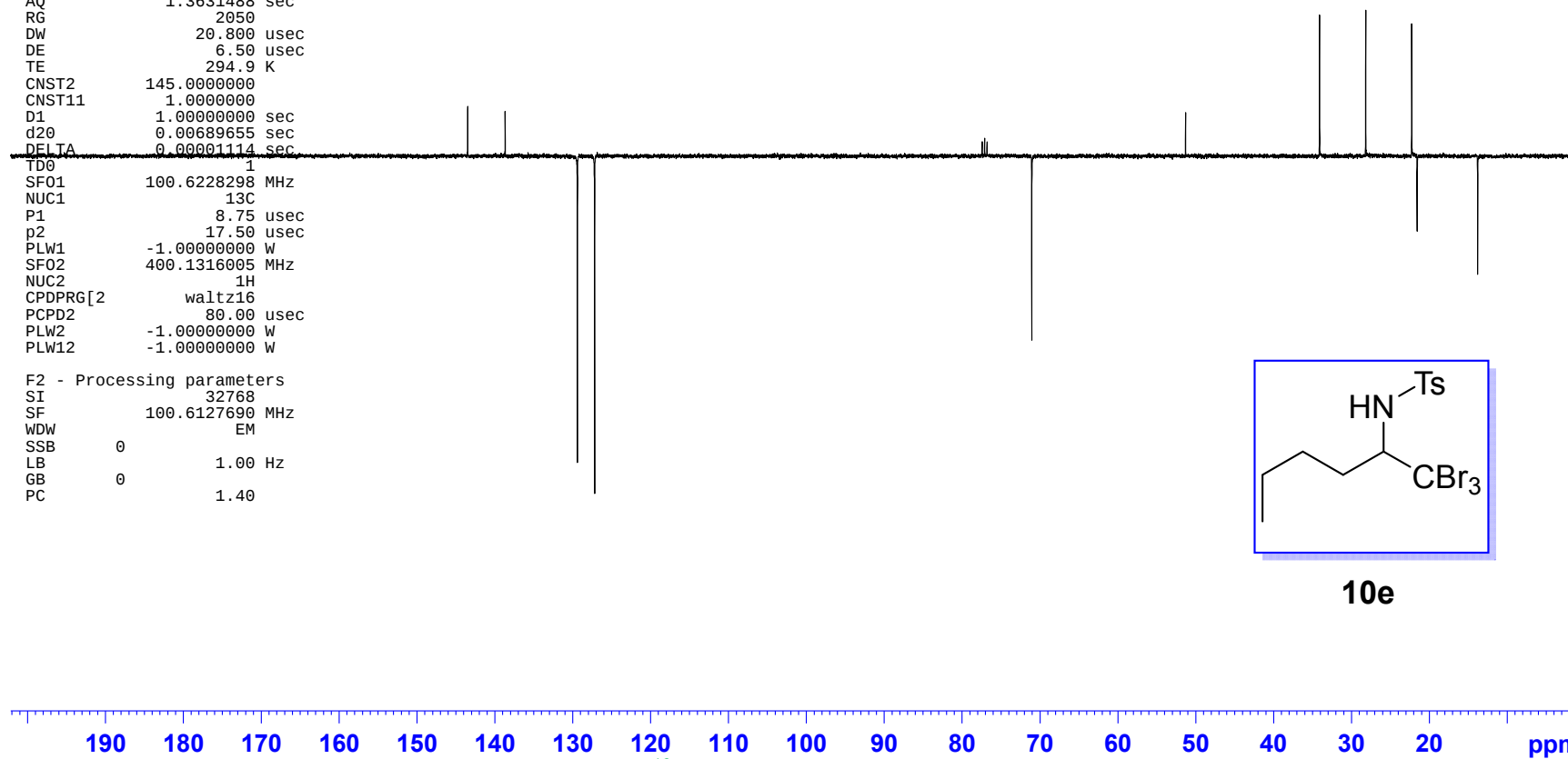
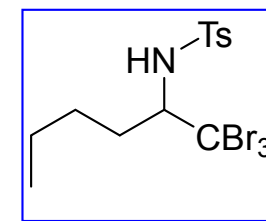


Fig S39. ¹³C-APT NMR Spectrum of 10e



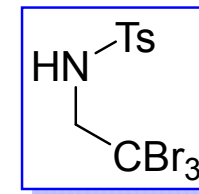
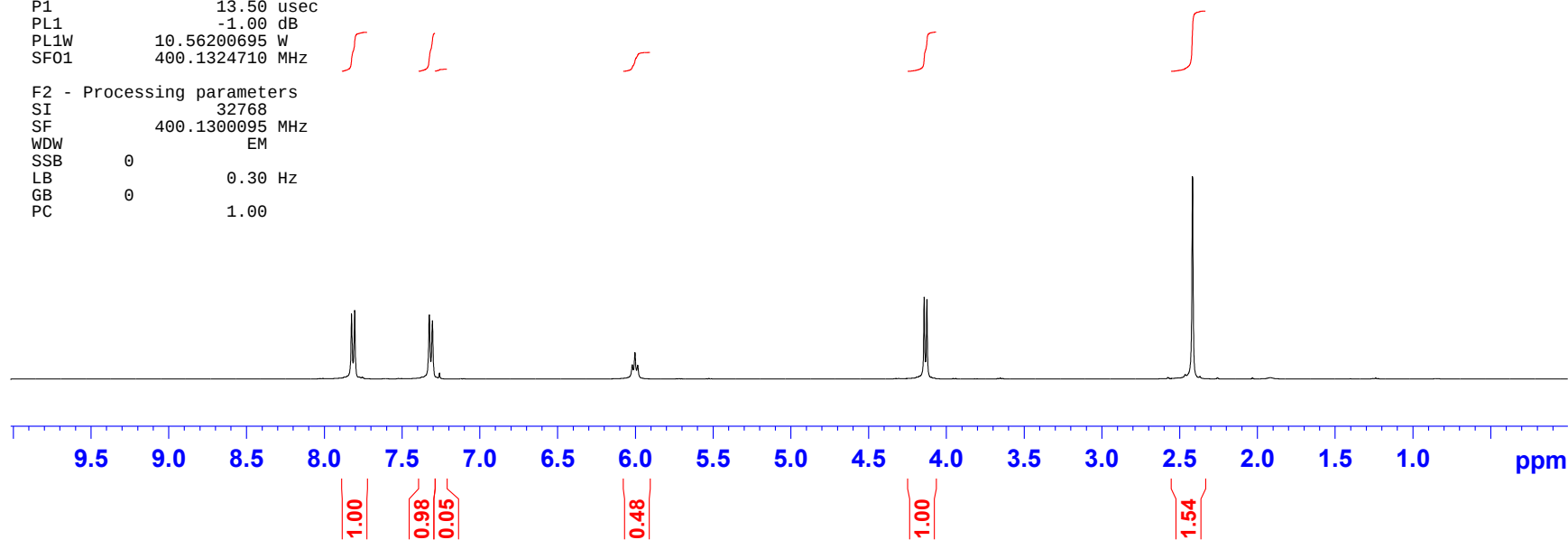
10e

Current Data Parameters
NAME inn-gopi-br3-im-13-1h
EXPNO 3
PROCNO 1

F2 - Acquisition Parameters
Date_ 20130428
Time 18.07
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 7
DS 0
SWH 8223.685 Hz
FIDRES 0.125483 Hz
AQ 3.9845889 sec
RG 32
DW 60.800 usec
DE 6.50 usec
TE 293.0 K
D1 1.00000000 sec
TD0 1

===== CHANNEL f1 =====
NUC1 1H
P1 13.50 usec
PL1 -1.00 dB
PL1W 10.56200695 W
SF01 400.1324710 MHz

F2 - Processing parameters
SI 32768
SF 400.1300095 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00

**10f****Fig S40. ¹H NMR Spectrum of 10f**

Current Data Parameters
 NAME inn-gopi-br3-im-13-13c
 EXPNO 3
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20130428
 Time 18.08
 INSTRUM spect
 PROBHD 5 mm PABBO BB-
 PULPROG zgpg30
 TD 65536
 SOLVENT CDCl3
 NS 49
 DS 4
 SWH 24038.461 Hz
 FIDRES 0.366798 Hz
 AQ 1.3631488 sec
 RG 2050
 DW 20.800 usec
 DE 6.50 usec
 TE 293.2 K
 D1 1.00000000 sec
 d11 0.03000000 sec
 DELTA 0.89999998 sec
 TD0 1
 SF01 100.6228298 MHz
 NUC1 13C
 P1 8.75 usec
 PLW1 -1.00000000 W
 SF02 400.1316005 MHz
 NUC2 1H
 CPDPRG[2] waltz16
 PCPD2 80.00 usec
 PLW2 -1.00000000 W
 PLW12 -1.00000000 W
 PLW13 -1.00000000 W

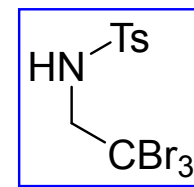
F2 - Processing parameters
 SI 32768
 SF 100.6127615 MHz
 WDW EM
 SSB 0
 LB 1.00 Hz
 GB 0
 PC 1.40

144.19
 137.28
 130.00
 127.21

77.52
 77.20
 76.88
 64.25

40.15

21.73



10f

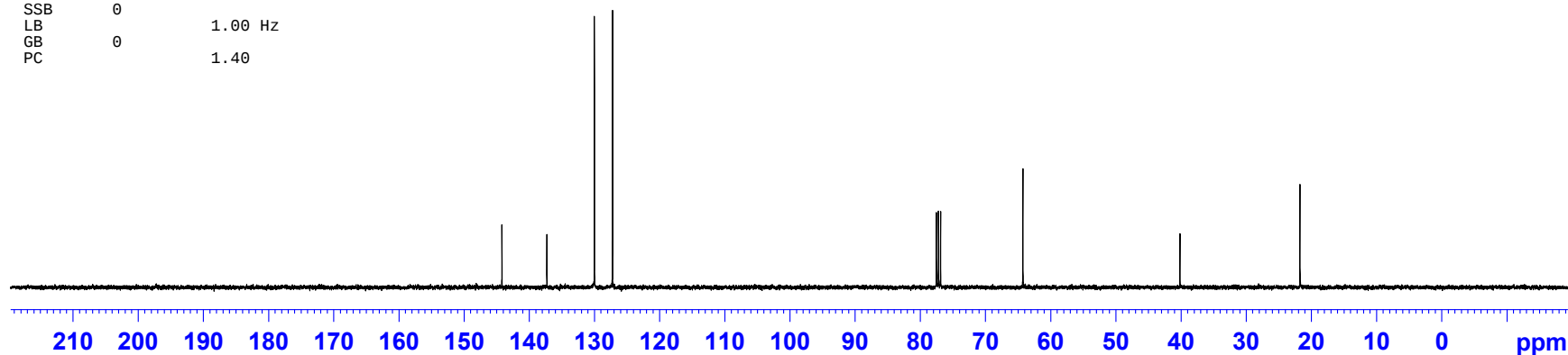
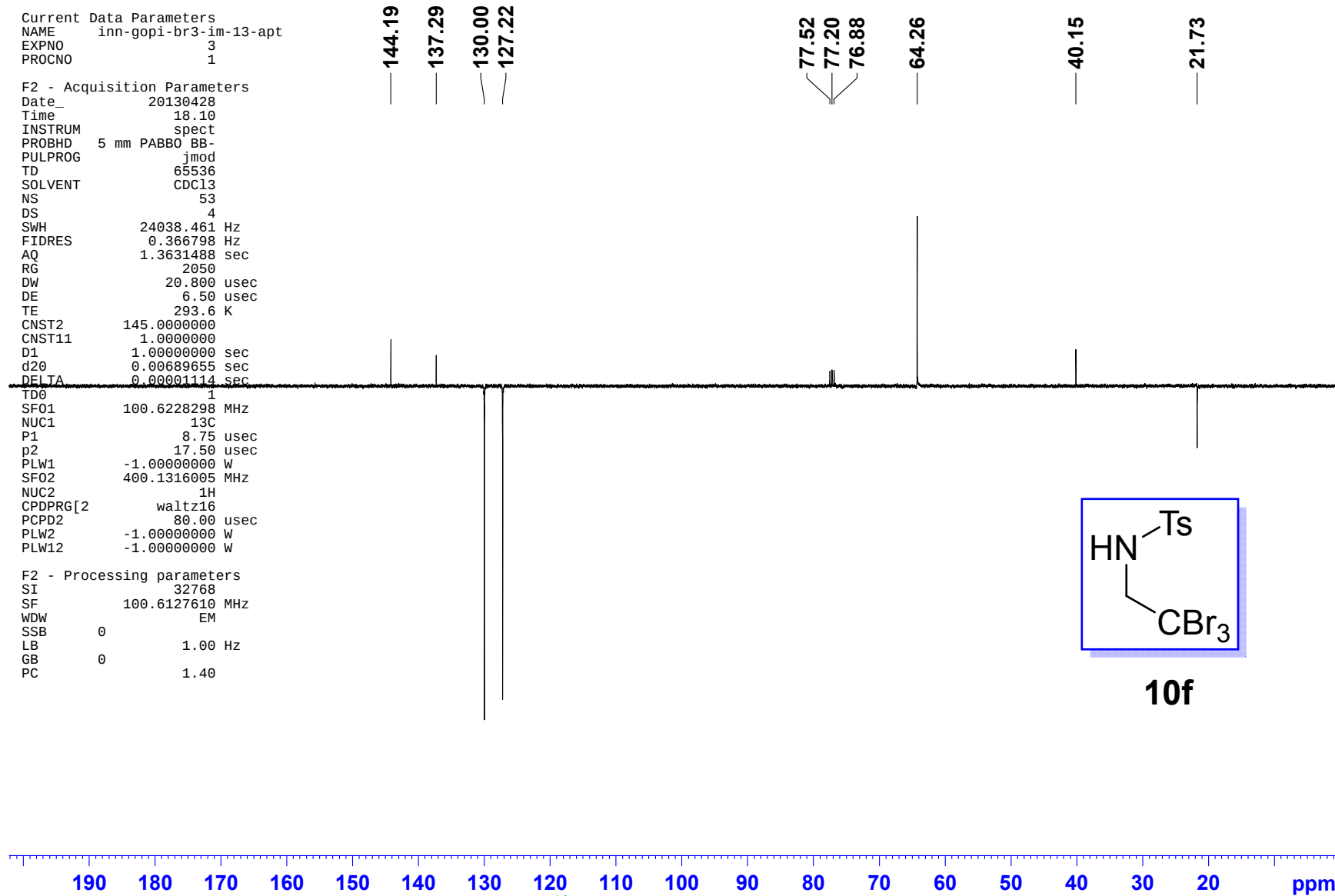
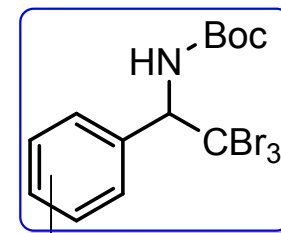
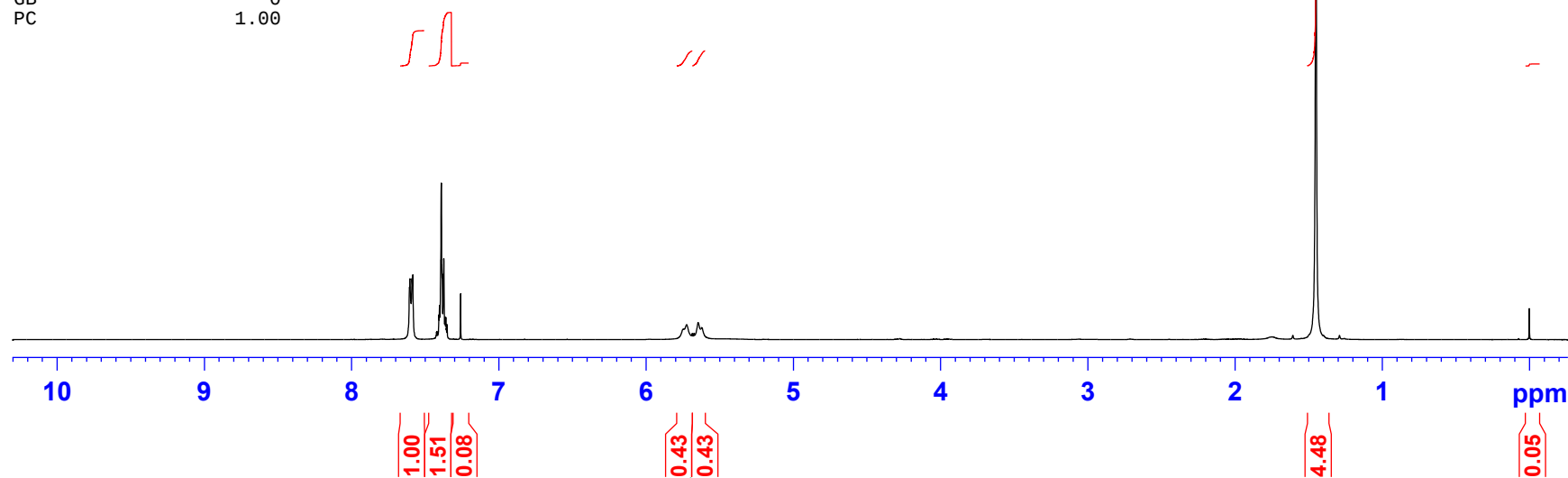


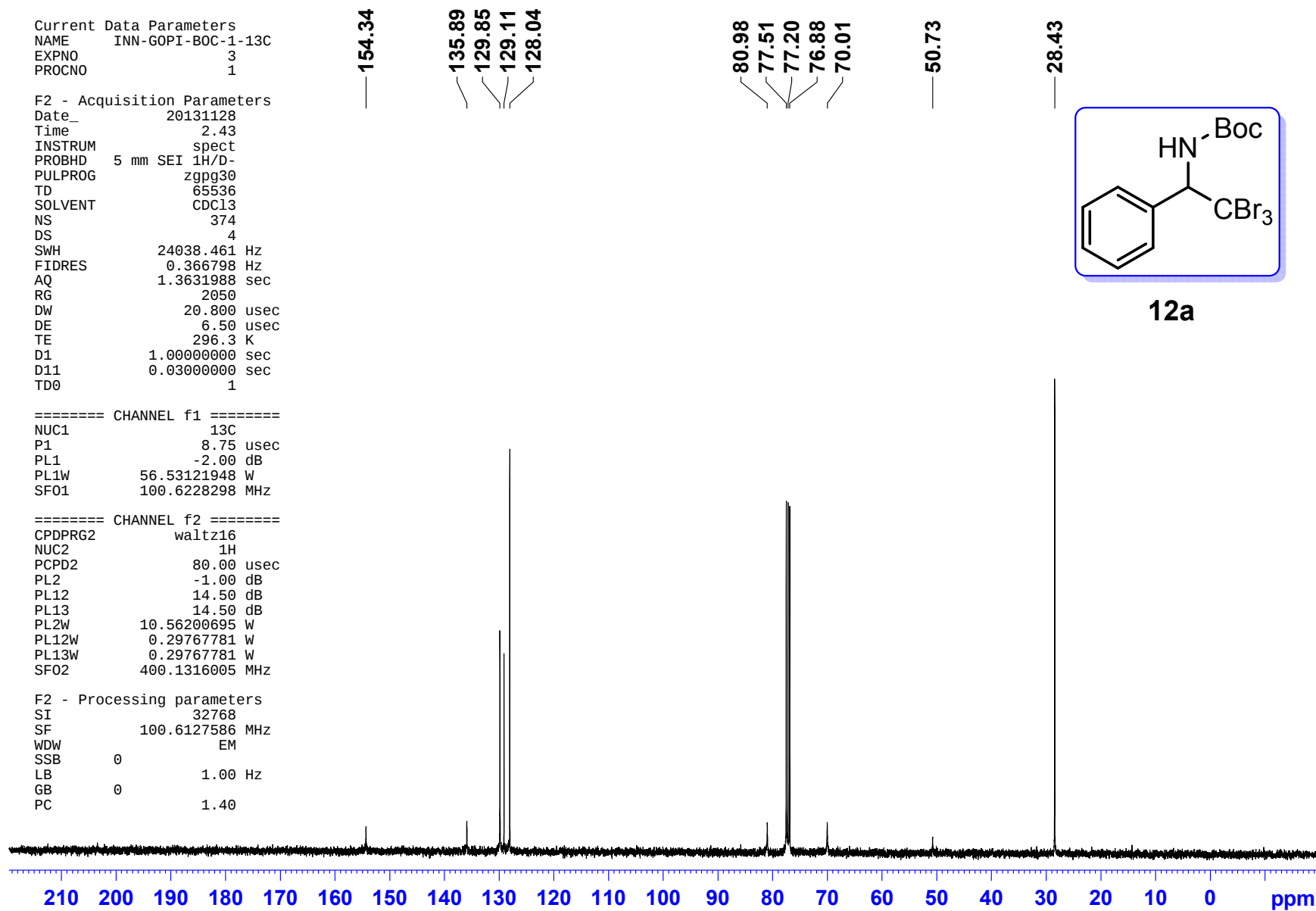
Fig S41. ^{13}C NMR Spectrum of 10f

Fig S42. ¹³C-APT NMR Spectrum of 10f

NAME INN-GOPI-BOC-1-1H
EXPNO 15
PROCNO 1
Date_ 20111001
Time 17.11
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 54
DS 0
SWH 8223.685 Hz
FIDRES 0.125483 Hz
AQ 3.9846387 sec
RG 32
DW 60.800 usec
DE 6.50 usec
TE 294.5 K
D1 1.00000000 sec
TD0 1

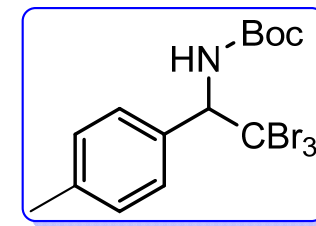
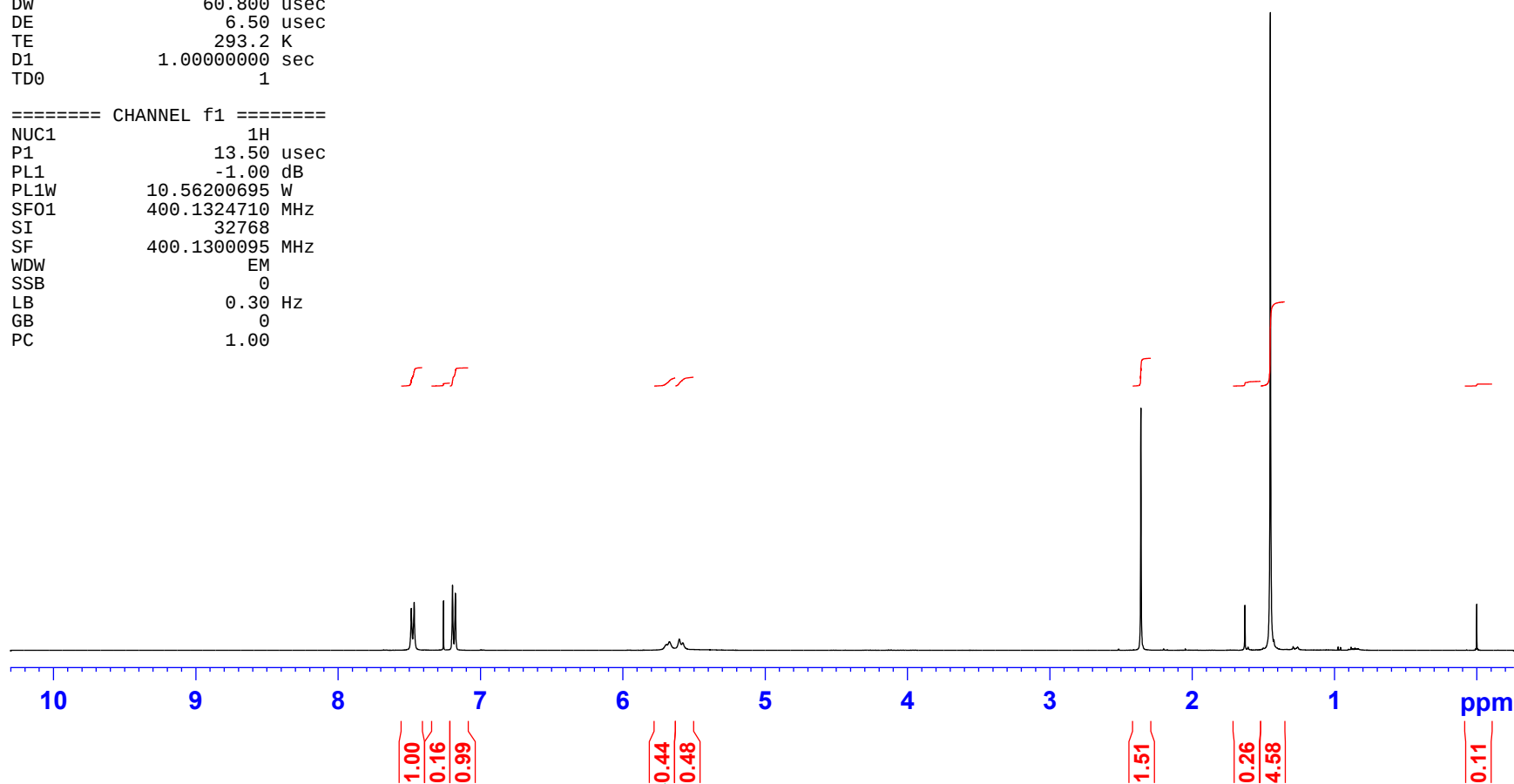
===== CHANNEL f1 =====
NUC1 1H
P1 13.50 usec
PL1 -1.00 dB
PL1W 10.56200695 W
SF01 400.1324710 MHz
SI 32768
SF 400.1300095 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00

**12a****Fig S43. ¹H NMR Spectrum of 12a**

Fig S44. ¹³C NMR Spectrum of 12a

NAME inn-gopi-boc 3-1h
EXPNO 1
PROCNO 1
Date_ 20111123
Time 1.51
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 28
DS 0
SWH 8223.685 Hz
FIDRES 0.125483 Hz
AQ 3.9846387 sec
RG 32
DW 60.800 usec
DE 6.50 usec
TE 293.2 K
D1 1.00000000 sec
TD0 1

===== CHANNEL f1 =====
NUC1 1H
P1 13.50 usec
PL1 -1.00 dB
PL1W 10.56200695 W
SF01 400.1324710 MHz
SI 32768
SF 400.1300095 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00

**12b****Fig S45. ¹H NMR Spectrum of 12b**

NAME inn-gopi-boc 3-13c
 EXPNO 1
 PROCNO 1
 Date_ 20111123
 Time 2.42
 INSTRUM spect
 PROBHD 5 mm PABBO BB-
 PULPROG zgpg30
 TD 65536
 SOLVENT CDCl3
 NS 69
 DS 4
 SWH 24038.461 Hz
 FIDRES 0.366798 Hz
 AQ 1.3631988 sec
 RG 2050
 DW 20.800 usec
 DE 6.50 usec
 TE 293.5 K
 D1 1.00000000 sec
 D11 0.03000000 sec
 TD0 1

===== CHANNEL f1 =====
 NUC1 13C
 P1 8.75 usec
 PL1 -2.00 dB
 PL1W 56.53121948 W
 SF01 100.6228298 MHz

===== CHANNEL f2 =====
 CPDPRG2 waltz16
 NUC2 1H
 PCPD2 80.00 usec
 PL2 -1.00 dB
 PL12 14.50 dB
 PL13 14.50 dB
 PL2W 10.56200695 W
 PL12W 0.29767781 W
 PL13W 0.29767781 W
 SF02 400.1316005 MHz
 SI 32768
 SF 100.6127579 MHz
 WDW EM
 SSB 0
 LB 1.00 Hz
 GB 0
 PC 1.40

154.34

139.09

132.92

129.72

128.76

80.89

77.52

77.20

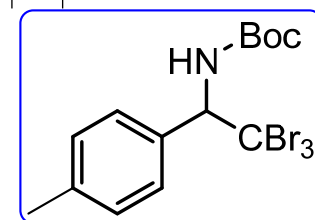
76.88

69.79

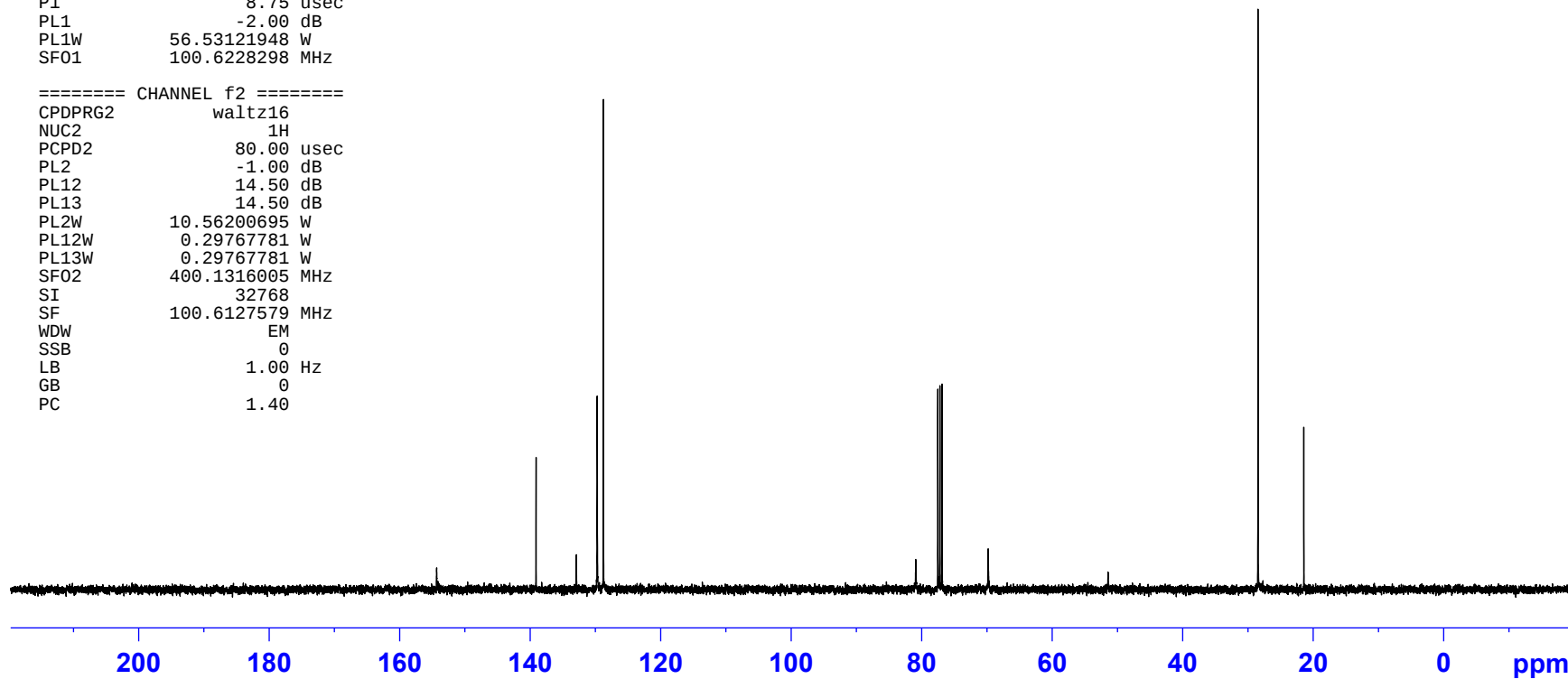
51.43

28.44

21.41

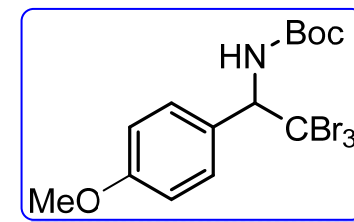
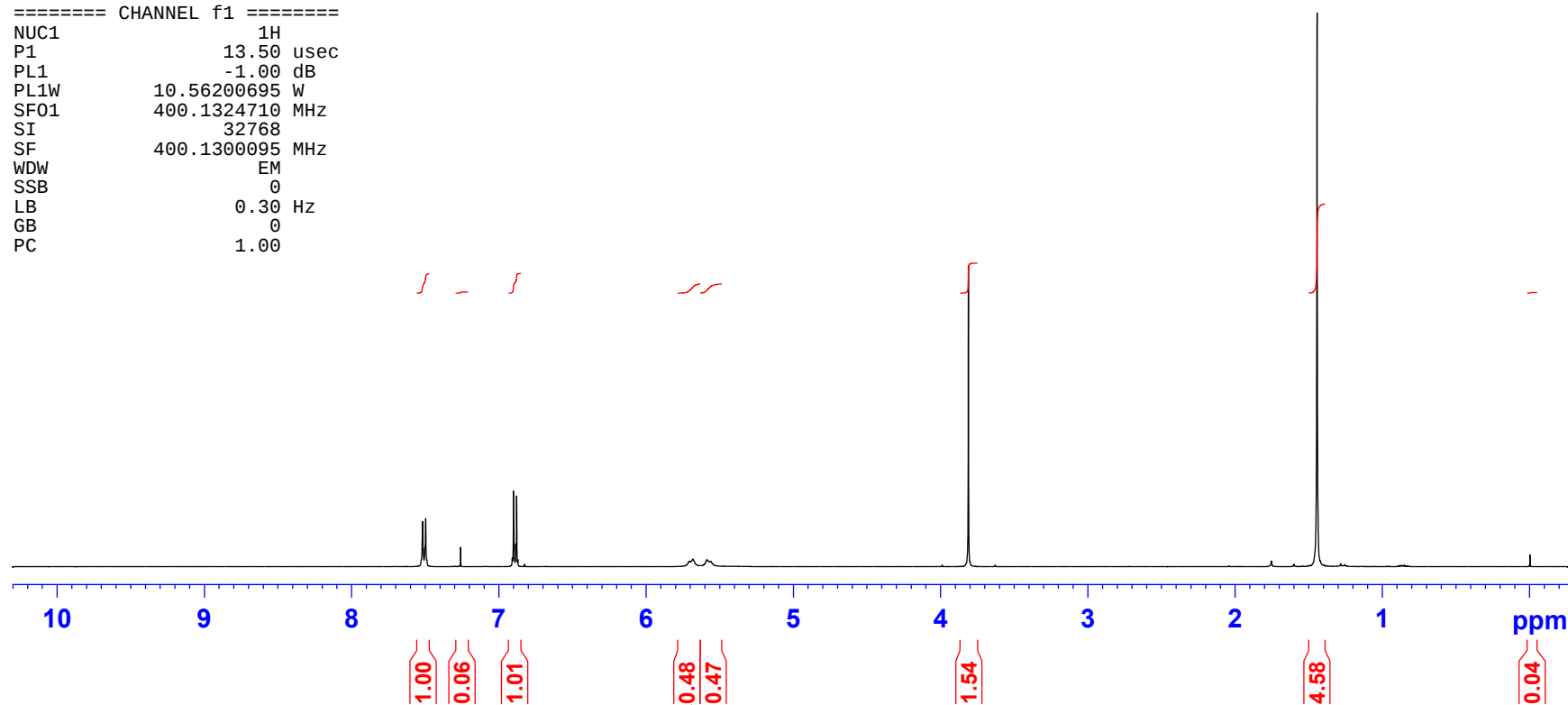


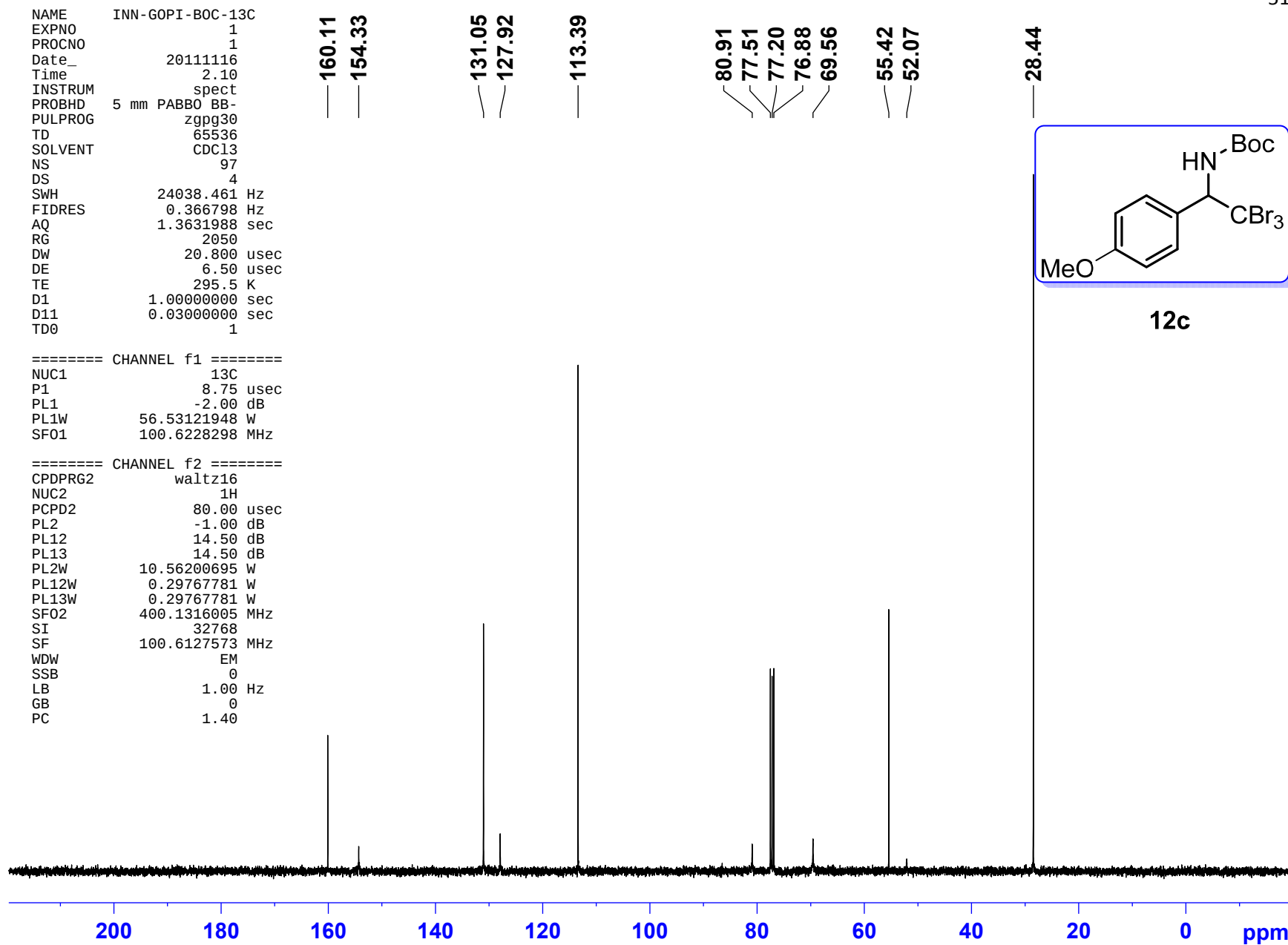
12b

Fig S46. ¹³C NMR Spectrum of 12b

NAME INN-GOPI-BOC-1H
EXPNO 1
PROCNO 1
Date_ 20111116
Time 2.06
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 12
DS 0
SWH 8223.685 Hz
FIDRES 0.125483 Hz
AQ 3.9846387 sec
RG 32
DW 60.800 usec
DE 6.50 usec
TE 294.7 K
D1 1.00000000 sec
TD0 1

===== CHANNEL f1 =====
NUC1 1H
P1 13.50 usec
PL1 -1.00 dB
PL1W 10.56200695 W
SF01 400.1324710 MHz
SI 32768
SF 400.1300095 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00

**12c****Fig S47. ¹H NMR Spectrum of 12c**

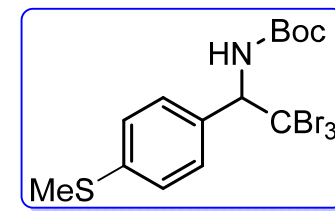
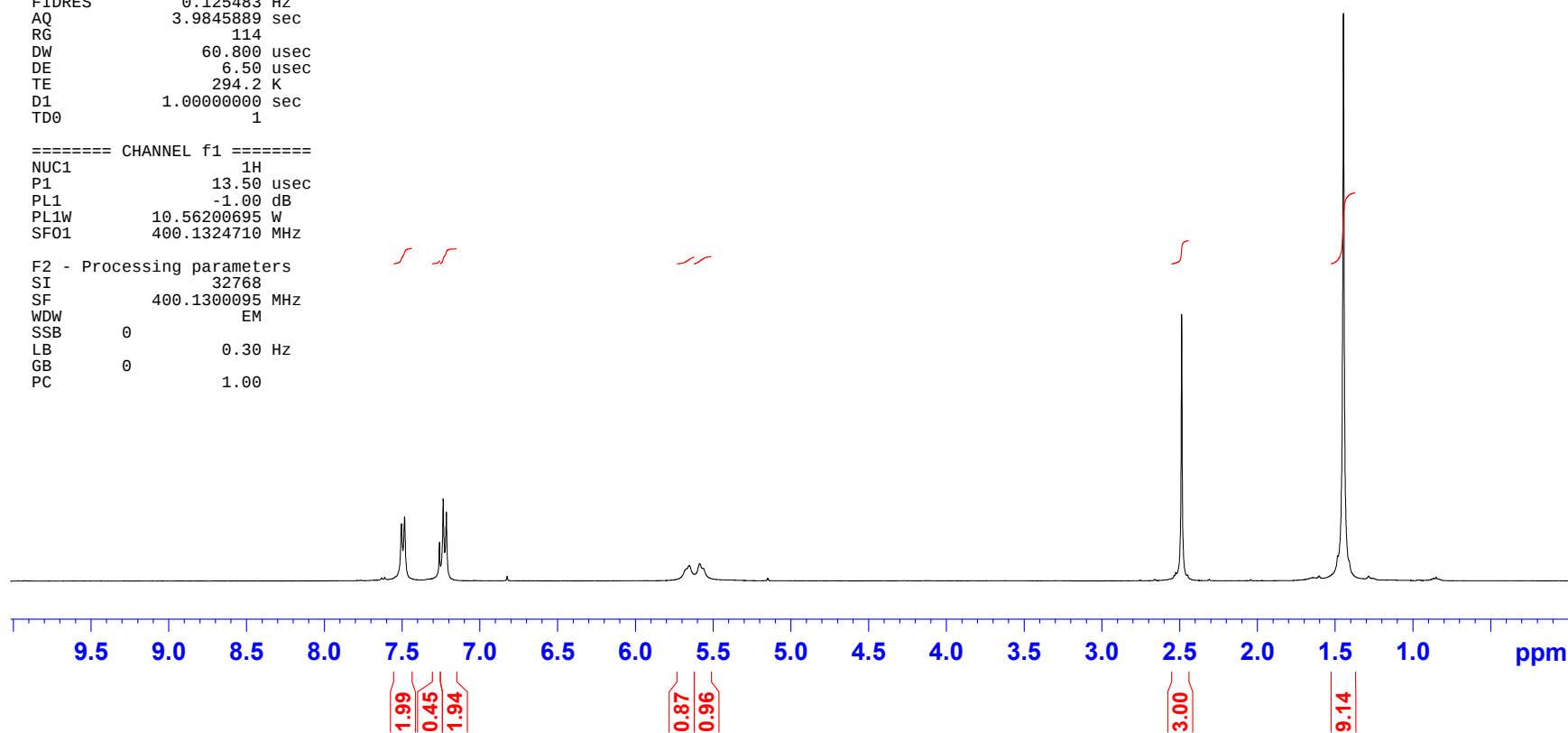
Fig S48. ¹³C NMR Spectrum of 12c

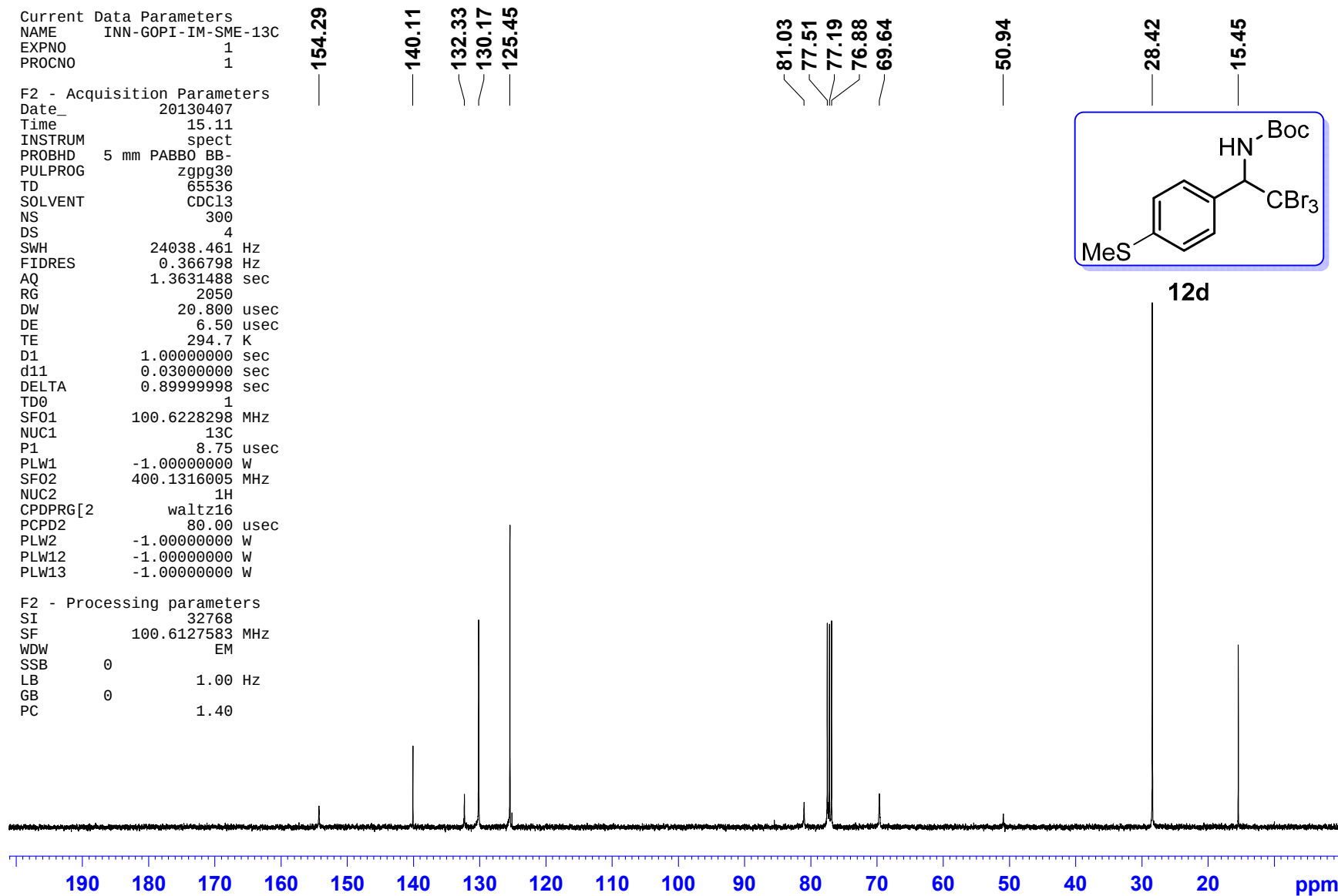
Current Data Parameters
NAME IIN-GOPI-IM-BR3-SME-1H
EXPNO 1
PROCNO 1

F2 - Acquisition Parameters
Date_ 20130404
Time 21.38
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 8
DS 0
SWH 8223.685 Hz
FIDRES 0.125483 Hz
AQ 3.9845889 sec
RG 114
DW 60.800 usec
DE 6.50 usec
TE 294.2 K
D1 1.0000000 sec
TD0 1

===== CHANNEL f1 =====
NUC1 1H
P1 13.50 usec
PL1 -1.00 dB
PL1W 10.56200695 W
SF01 400.1324710 MHz

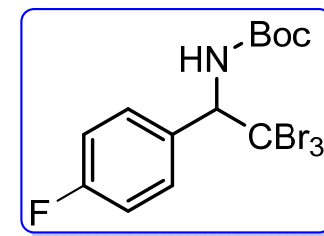
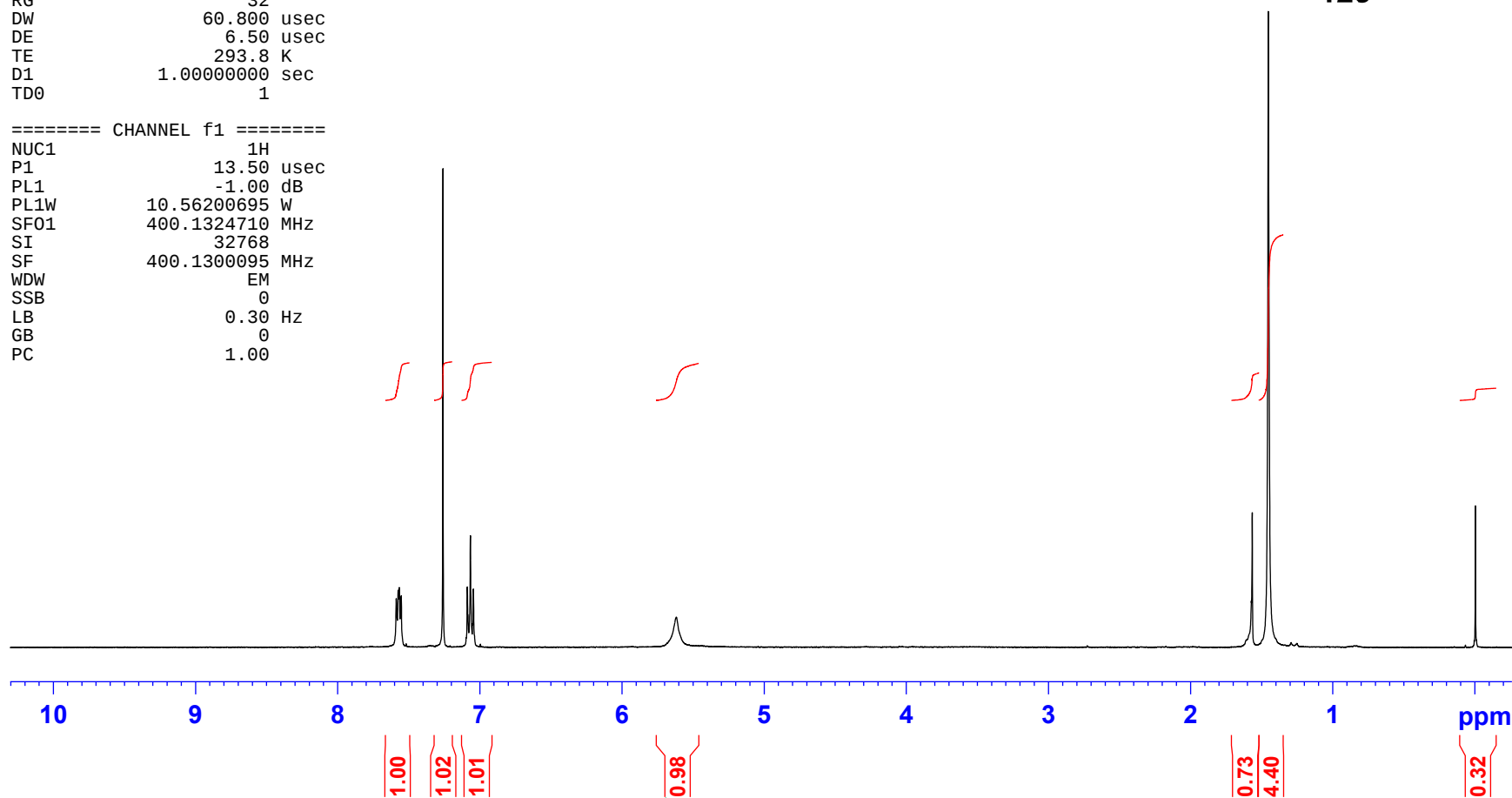
F2 - Processing parameters
SI 32768
SF 400.1300095 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00

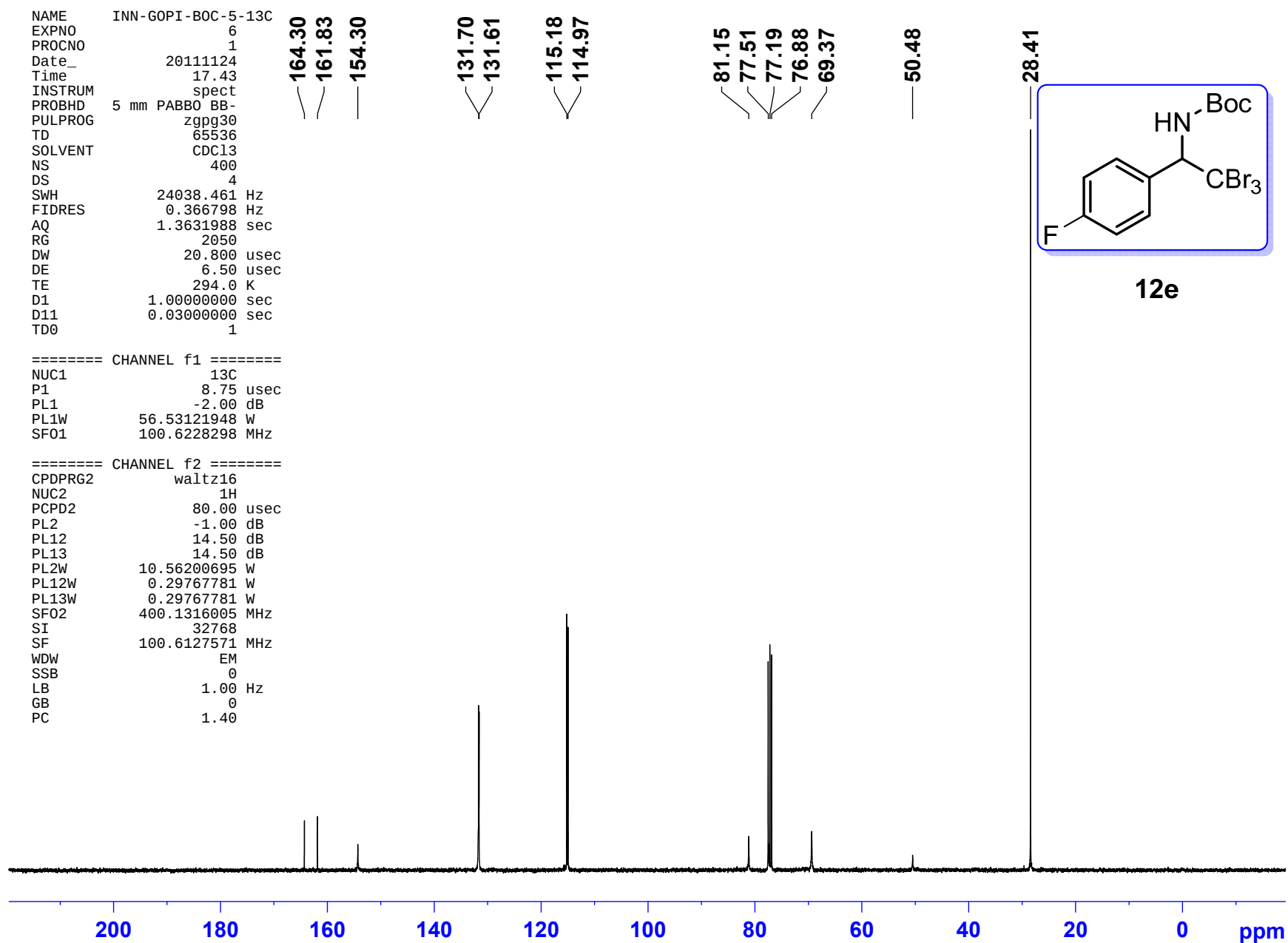
**12d****Fig S49. ¹H NMR Spectrum of 12d**

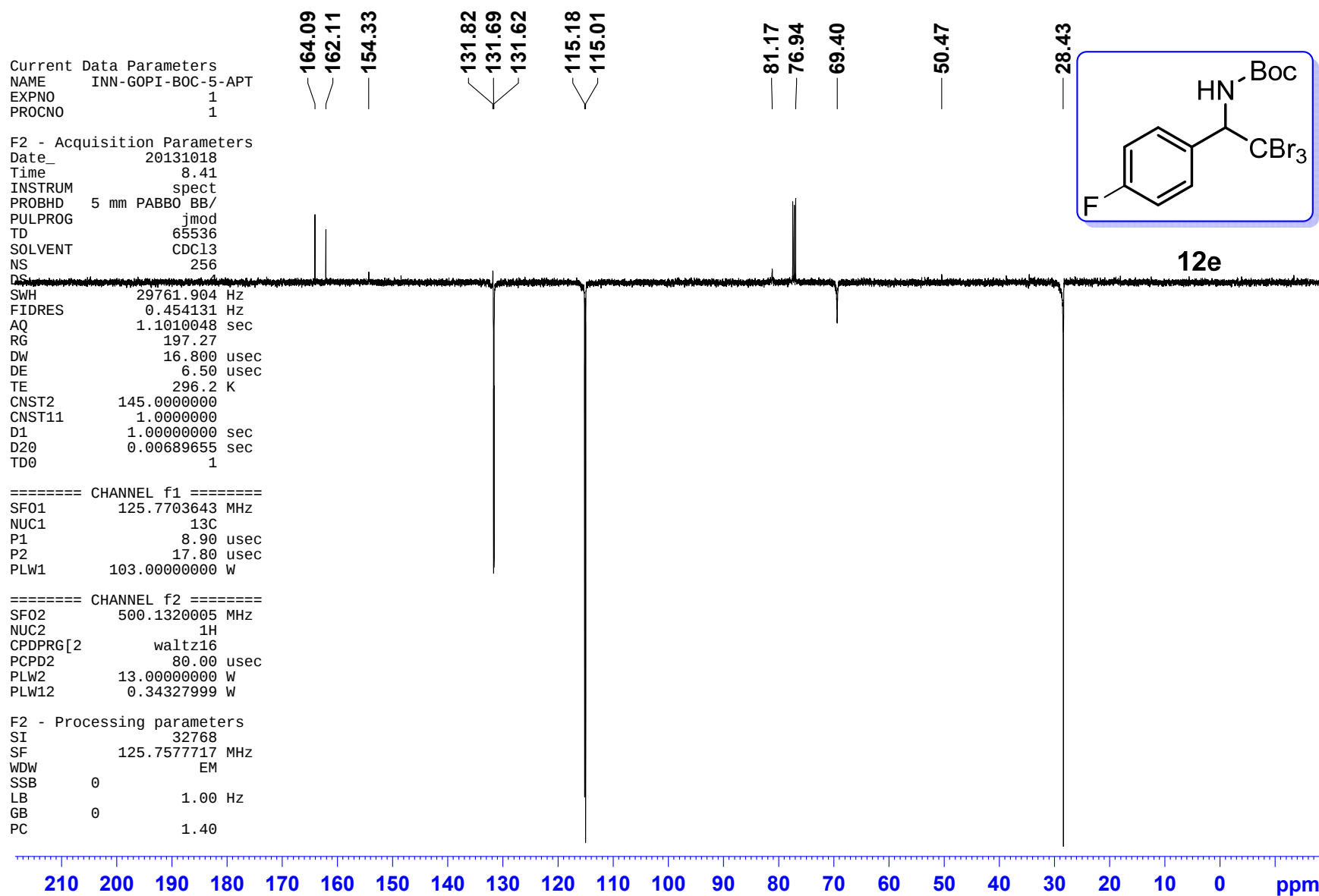
Fig S50. ¹³C NMR Spectrum of 12d

NAME INN-GOPI-BOC-5-1H
EXPNO 6
PROCNO 1
Date_ 20111124
Time 17.13
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 19
DS 0
SWH 8223.685 Hz
FIDRES 0.125483 Hz
AQ 3.9846387 sec
RG 32
DW 60.800 usec
DE 6.50 usec
TE 293.8 K
D1 1.00000000 sec
TD0 1

===== CHANNEL f1 =====
NUC1 1H
P1 13.50 usec
PL1 -1.00 dB
PL1W 10.56200695 W
SF01 400.1324710 MHz
SI 32768
SF 400.1300095 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00

**12e****Fig S51. ¹H NMR Spectrum of 12e**

Fig S52. ¹³C NMR Spectrum of 12e

Fig S53. ¹³C-APT NMR Spectrum of 12e

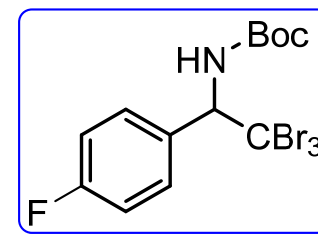
Current Data Parameters
NAME INN-GOPI-BOC-5-19F
EXPNO 4
PROCNO 1

F2 - Acquisition Parameters
Date_ 20131201
Time 8.27
INSTRUM spect
PROBHD 5 mm PABBO BB/
PULPROG zgfglqn
TD 131072
SOLVENT CDCl3
NS 16
DS 4
SWH 113636.367 Hz
FIDRES 0.866977 Hz
AQ 0.5767668 sec
RG 119.07
DW 4.400 usec
DE 6.50 usec
TE 294.0 K
D1 1.00000000 sec
TD0 1

===== CHANNEL f1 =====
SF01 470.5453180 MHz
NUC1 19F
P1 13.50 usec
PLW1 40.00000000 W

F2 - Processing parameters
SI 65536
SF 470.5923770 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00

— -112.17



12e

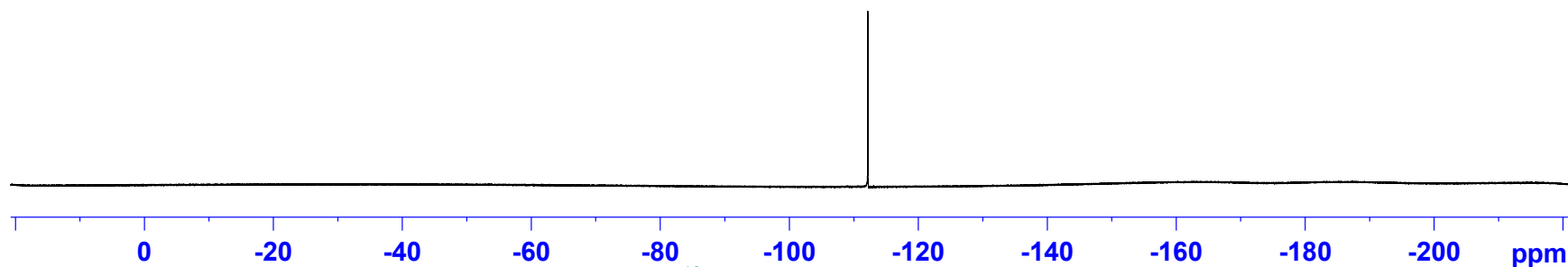
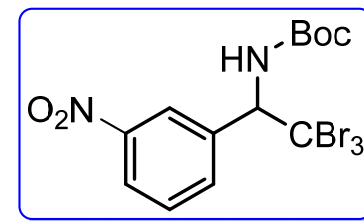


Fig S54. ¹⁹F NMR Spectrum of 12e

```

===== CHANNEL f1 =====
NUC1                      1H
P1                        13.50 usec
PL1                       -1.00 dB
PL1W                     10.56200695 W
SF01                     400.1324710 MHz
SI                        32768
SF                       400.1300095 MHz
WDW                       EM
SSB                        0
LB                        0.30 Hz
GB                        0
PC                        1.00

```



12f

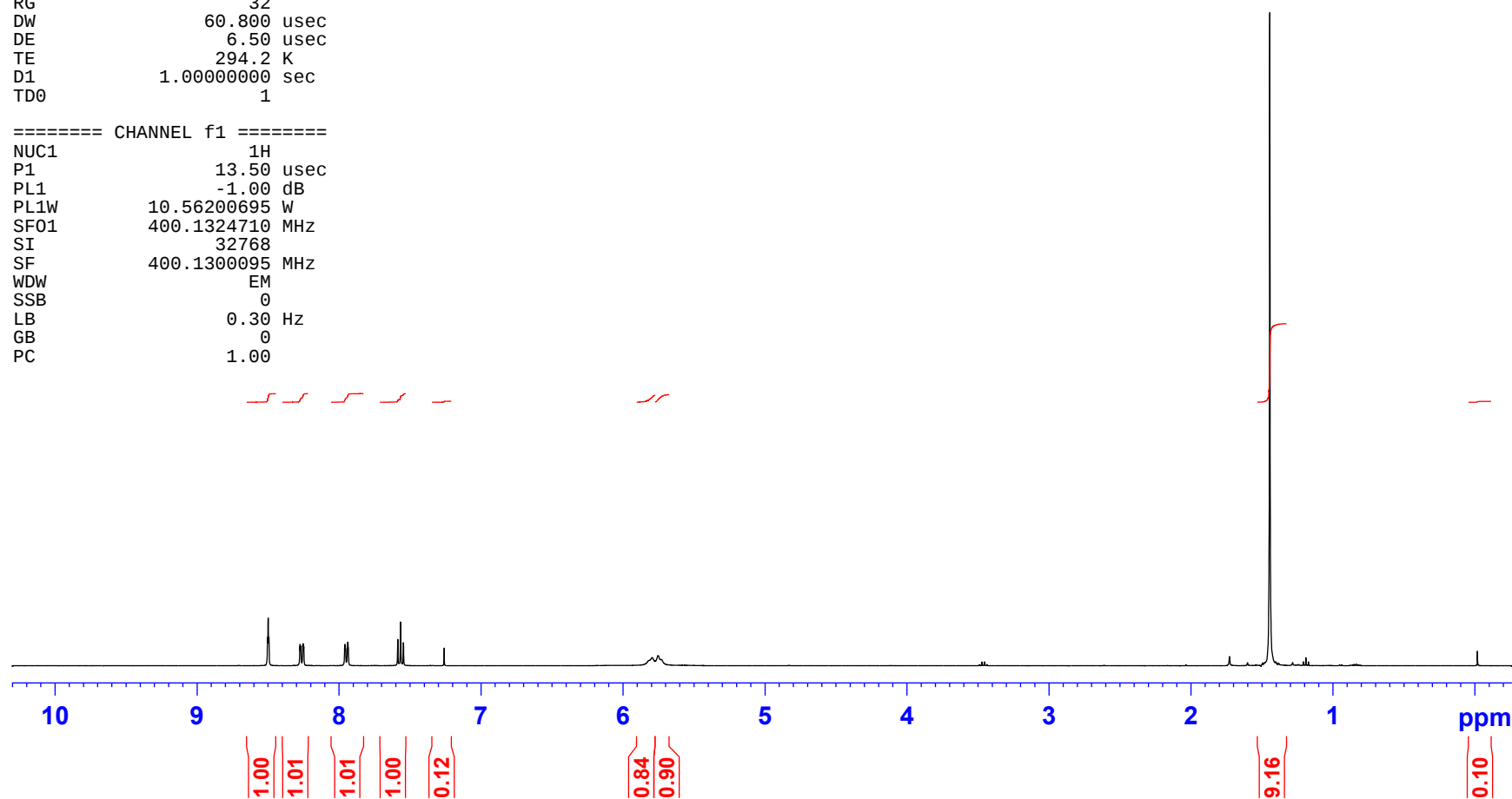
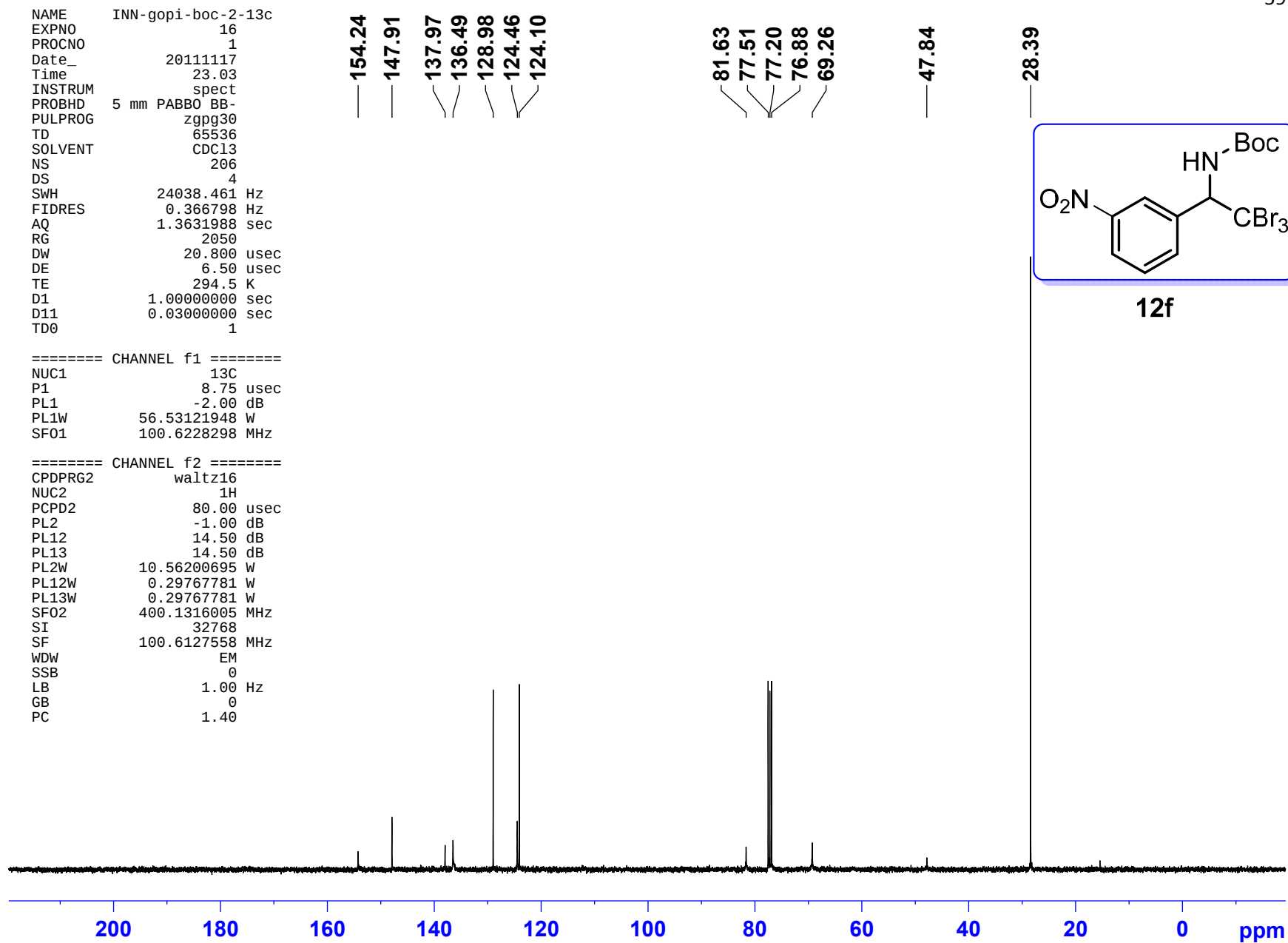
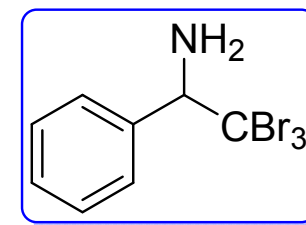
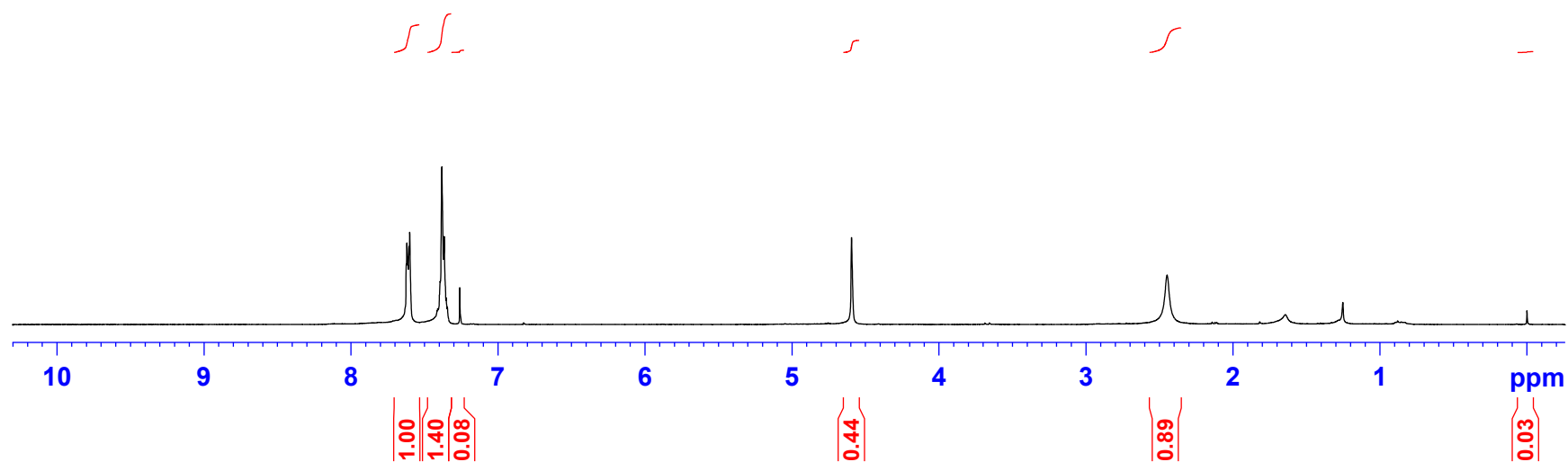


Fig S55. ^1H NMR Spectrum of 12f

Fig S56. ¹³C NMR Spectrum of 12f

NAME INN-GOPI-BOC-TFA-4-1H
EXPNO 2
PROCNO 1
Date_ 20120430
Time 1.09
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 25
DS 0
SWH 8223.685 Hz
FIDRES 0.125483 Hz
AQ 3.9846387 sec
RG 114
DW 60.800 usec
DE 6.50 usec
TE 292.2 K
D1 1.00000000 sec
TD0 1

===== CHANNEL f1 =====
NUC1 1H
P1 13.50 usec
PL1 -1.00 dB
PL1W 10.56200695 W
SF01 400.1324710 MHz
SI 32768
SF 400.1300098 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00

**13a****Fig S57. ¹H NMR Spectrum of 13a**

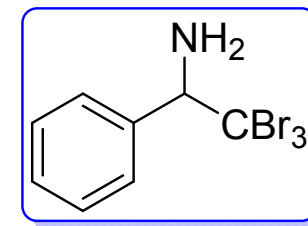
NAME INN-GOPI-BOC-TFA-4-13C
 EXPNO 3
 PROCNO 1
 Date_ 20120430
 Time 1.12
 INSTRUM spect
 PROBHD 5 mm PABBO BB-
 PULPROG zgpg30
 TD 65536
 SOLVENT CDC13
 NS 50
 DS 4
 SWH 24038.461 Hz
 FIDRES 0.366798 Hz
 AQ 1.3631988 sec
 RG 2050
 DW 20.800 usec
 DE 6.50 usec
 TE 292.3 K
 D1 2.00000000 sec
 D11 0.03000000 sec
 TD0 1

===== CHANNEL f1 =====
 NUC1 13C
 P1 8.75 usec
 PL1 -2.00 dB
 PL1W 56.53121948 W
 SF01 100.6228298 MHz

===== CHANNEL f2 =====
 CPDPRG2 waltz16
 NUC2 1H
 PCPD2 80.00 usec
 PL2 -1.00 dB
 PL12 14.50 dB
 PL13 14.50 dB
 PL2W 10.56200695 W
 PL12W 0.29767781 W
 PL13W 0.29767781 W
 SF02 400.1316005 MHz
 SI 32768
 SF 100.6127549 MHz
 WDW EM
 SSB 0
 LB 1.00 Hz
 GB 0
 PC 1.40

137.11
 129.63
 129.12
 128.03

77.52
 77.20
 76.88
 73.92
 59.66



13a

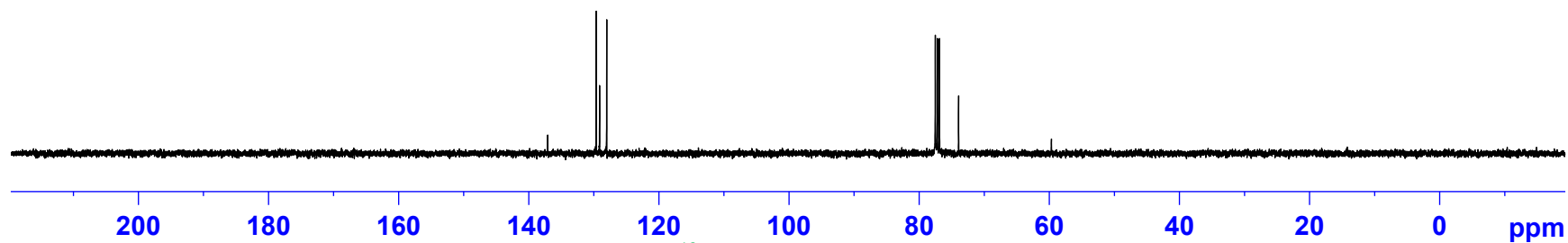
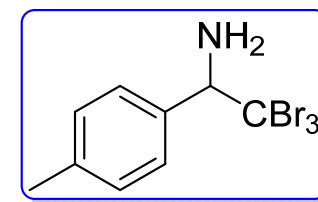
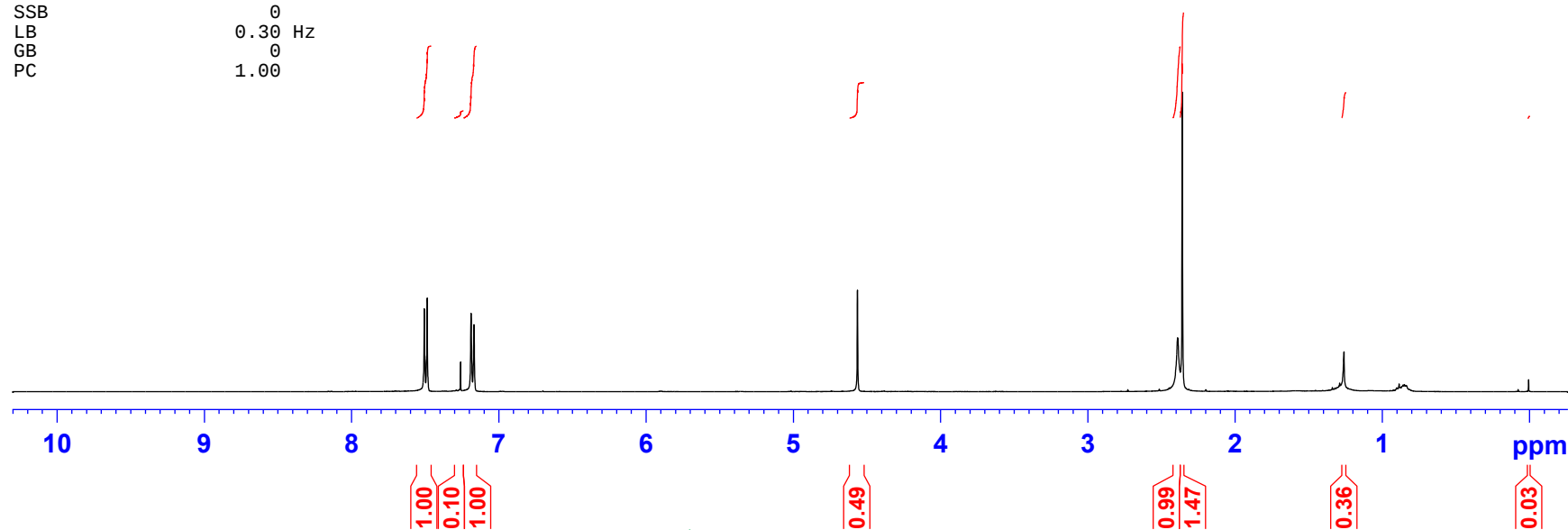


Fig S58. ¹³C NMR Spectrum of 13a

NAME INN-GOPI-BOC TFA-1H
EXPNO 4
PROCNO 1
Date_ 20120421
Time 15.35
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDC13
NS 11
DS 0
SWH 8223.685 Hz
FIDRES 0.125483 Hz
AQ 3.9846387 sec
RG 90.5
DW 60.800 usec
DE 6.50 usec
TE 294.1 K
D1 1.00000000 sec
TD0 1

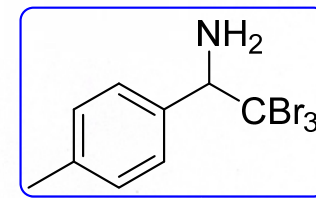
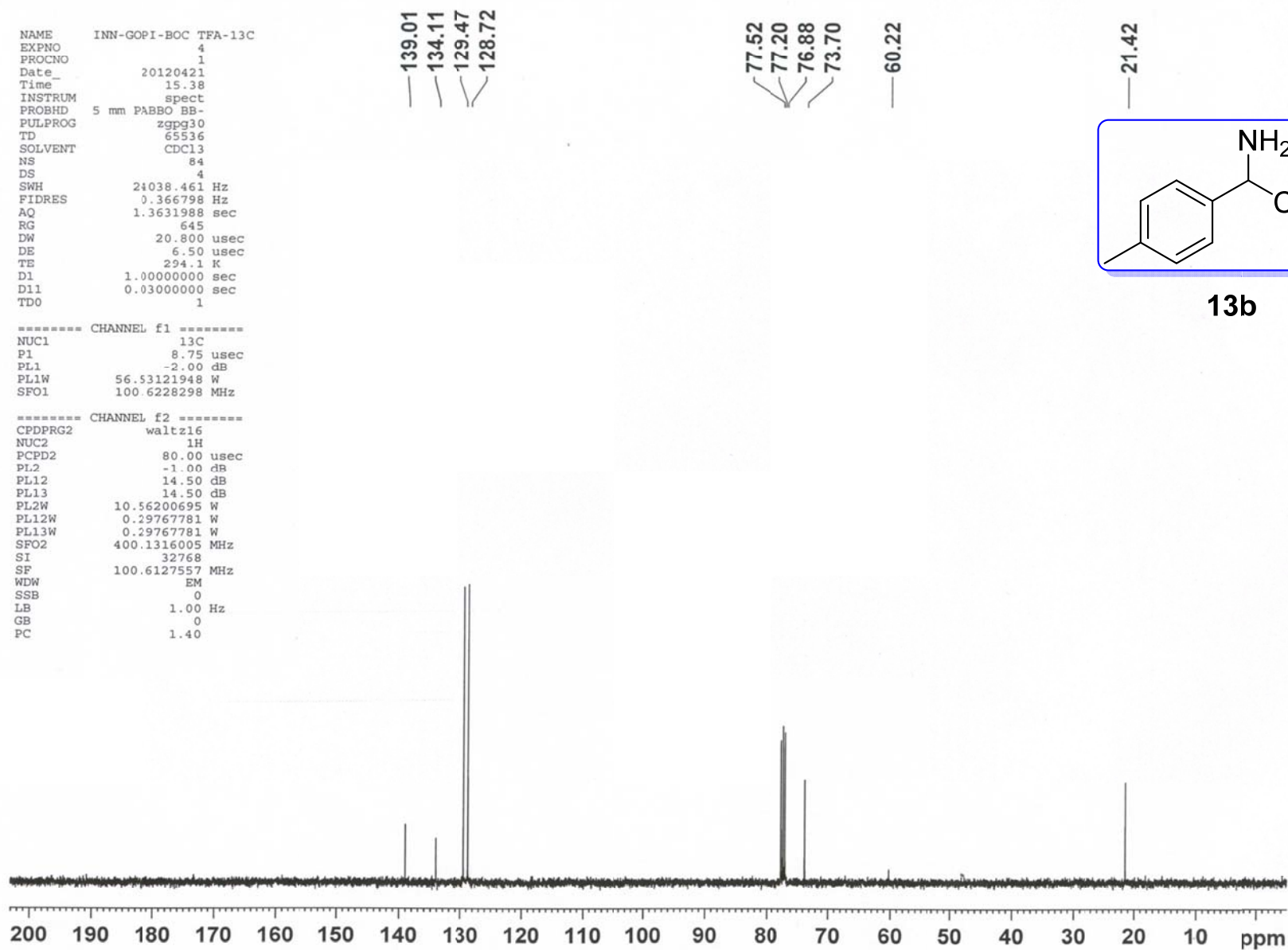
===== CHANNEL f1 =====
NUC1 1H
P1 13.50 usec
PL1 -1.00 dB
PL1W 10.56200695 W
SF01 400.1324710 MHz
SI 32768
SF 400.1300095 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00

**13b****Fig S59. ¹H NMR Spectrum of 13b**

NAME INN-GOPI-BOC TFA-13C
 EXPNO 4
 PROCNO 1
 Date_ 20120421
 Time 15.38
 INSTRUM spect
 PROBHD 5 mm PABBO BB-
 PULPROG zgpg30
 TD 65536
 SOLVENT CDCl3
 NS 84
 DS 4
 SWH 24038.461 Hz
 FIDRES 0.366798 Hz
 AQ 1.3631988 sec
 RG 645
 DW 20.800 usec
 DE 6.50 usec
 TE 294.1 K
 D1 1.00000000 sec
 D11 0.03000000 sec
 TD0 1

===== CHANNEL f1 =====
 NUC1 13C
 P1 8.75 usec
 PL1 -2.00 dB
 PL1W 56.53121948 W
 SFO1 100.6228298 MHz

===== CHANNEL f2 =====
 CPDPRG2 waltz16
 NUC2 1H
 PCPD2 80.00 usec
 PL2 -1.00 dB
 PL12 14.50 dB
 PL13 14.50 dB
 PL2W 10.56200695 W
 PL12W 0.29767781 W
 PL13W 0.29767781 W
 SFO2 400.1316005 MHz
 SI 32768
 SF 100.6127557 MHz
 WDW EM
 SSB 0
 LB 1.00 Hz
 GB 0
 PC 1.40

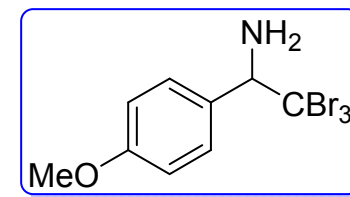
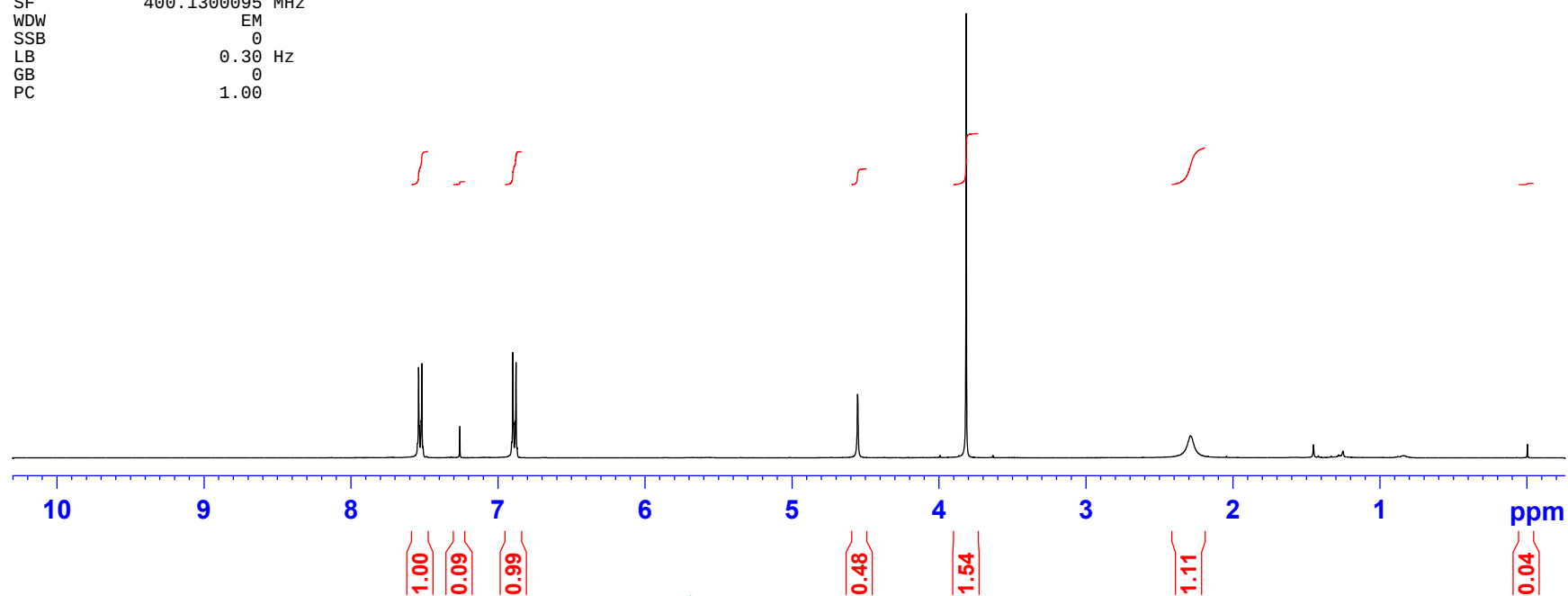


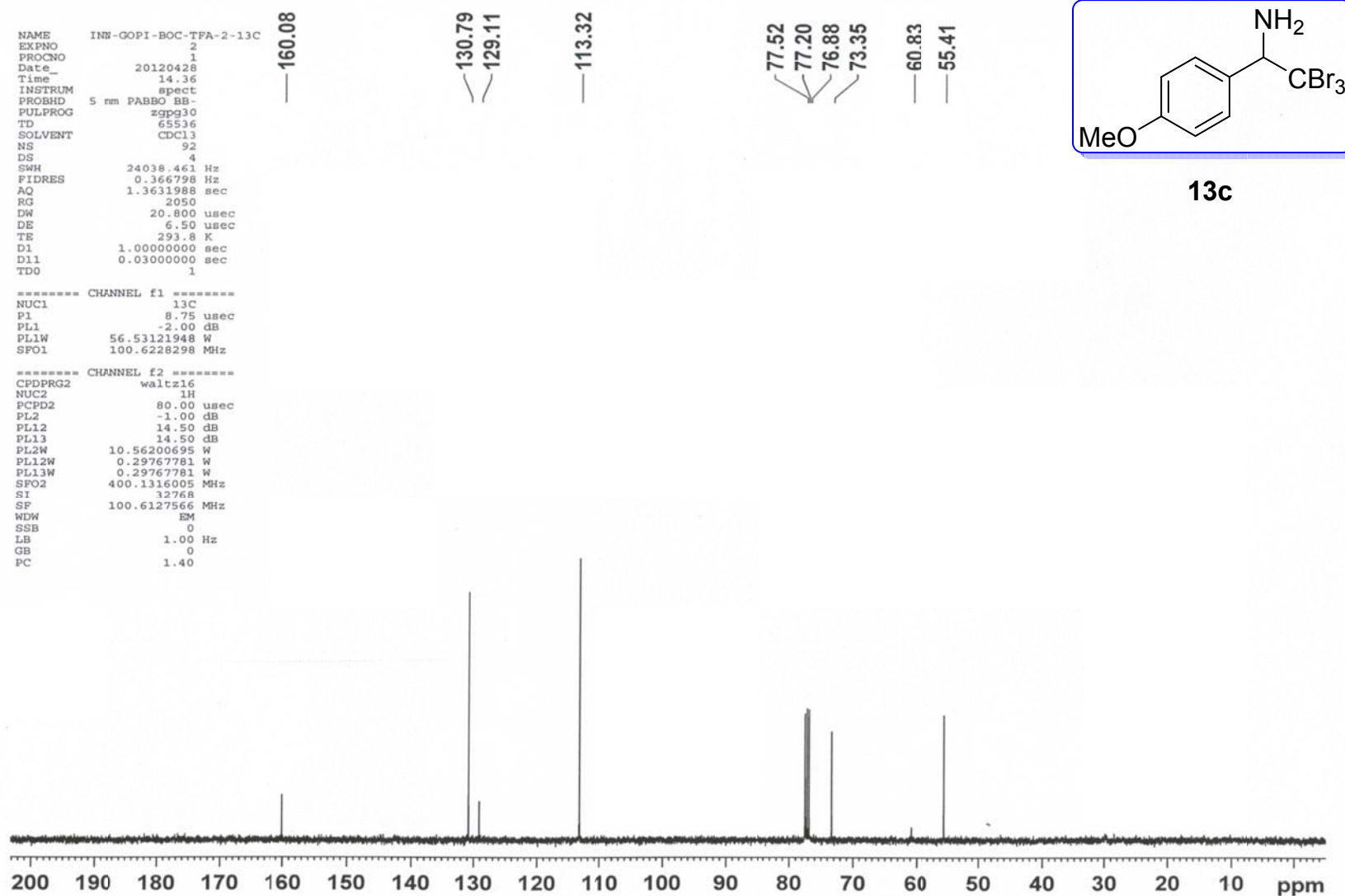
13b

Fig S60. ¹³C NMR Spectrum of 13b

NAME INN-GOPI-BOC-TFA-2-1H
EXPNO 1
PROCNO 1
Date_ 20120430
Time 1.57
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 16
DS 0
SWH 8223.685 Hz
FIDRES 0.125483 Hz
AQ 3.9846387 sec
RG 101
DW 60.800 usec
DE 6.50 usec
TE 292.5 K
D1 1.00000000 sec
TD0 1

===== CHANNEL f1 =====
NUC1 1H
P1 13.50 usec
PL1 -1.00 dB
PL1W 10.56200695 W
SF01 400.1324710 MHz
SI 32768
SF 400.1300095 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00

**13c****Fig S61. ¹H NMR Spectrum of 13c**

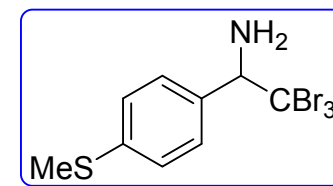
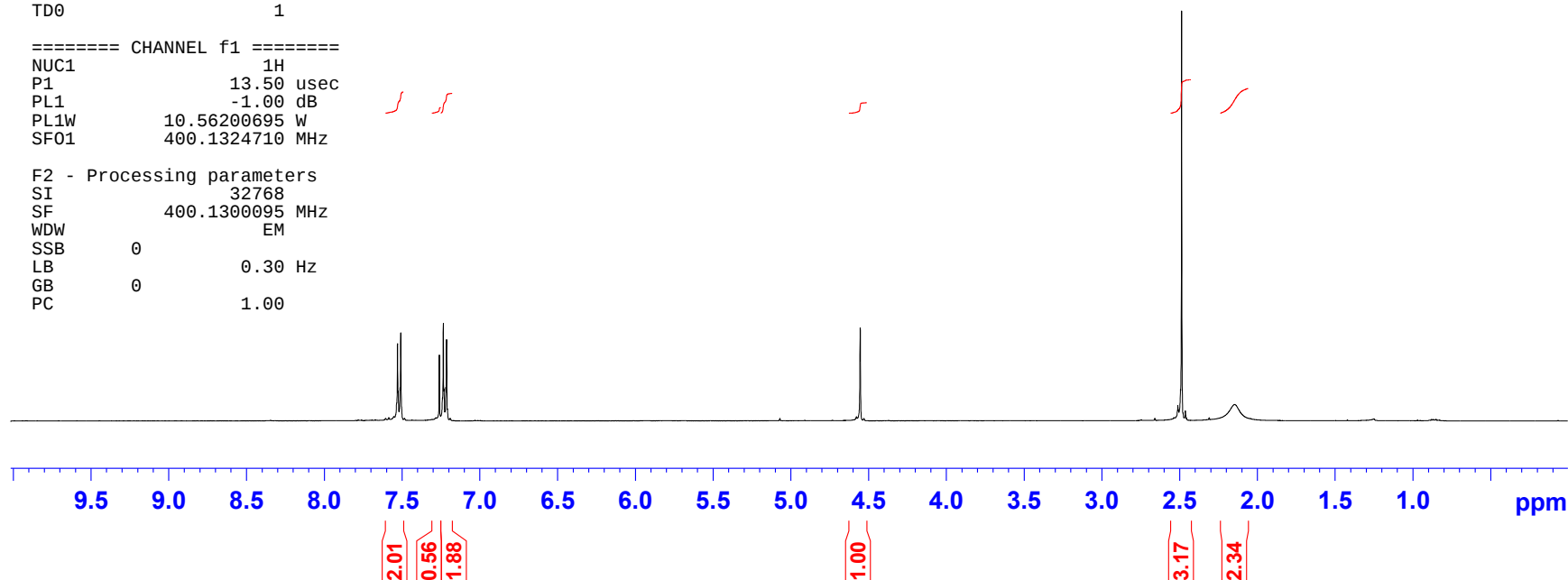
Fig S62. ¹³C NMR Spectrum of 13c

Current Data Parameters
NAME INN-GOPI-TFA-5-1H
EXPNO 4
PROCNO 1

F2 - Acquisition Parameters
Date_ 20130518
Time 21.21
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 10
DS 0
SWH 8223.685 Hz
FIDRES 0.125483 Hz
AQ 3.9845889 sec
RG 32
DW 60.800 usec
DE 6.50 usec
TE 293.4 K
D1 1.00000000 sec
TD0 1

===== CHANNEL f1 =====
NUC1 1H
P1 13.50 usec
PL1 -1.00 dB
PL1W 10.56200695 W
SF01 400.1324710 MHz

F2 - Processing parameters
SI 32768
SF 400.1300095 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00

**13d****Fig S63. ¹H NMR Spectrum of 13d**

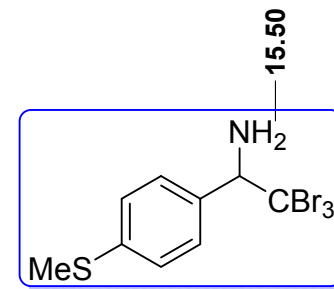
Current Data Parameters
NAME inn-gopi-TFA-5-13C
EXPNO 4
PROCNO 1

F2 - Acquisition Parameters
Date_ 20130516
Time 21.57
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zgpg30
TD 65536
SOLVENT CDCl3
NS 31
DS 4
SWH 24038.461 Hz
FIDRES 0.366798 Hz
AQ 1.3631488 sec
RG 2050
DW 20.800 usec
DE 6.50 usec
TE 294.6 K
D1 1.00000000 sec
d11 0.03000000 sec
DELTA 0.89999998 sec
TD0 1
SF01 100.6228298 MHz
NUC1 13C
P1 8.75 usec
PLW1 -1.00000000 W
SF02 400.1316005 MHz
NUC2 1H
CPDPRG[2] waltz16
PCPD2 80.00 usec
PLW2 -1.00000000 W
PLW12 -1.00000000 W
PLW13 -1.00000000 W

F2 - Processing parameters
SI 32768
SF 100.6127613 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40

139.84
133.49
129.94
125.44

77.52
77.20
76.88
73.37
59.77



13d

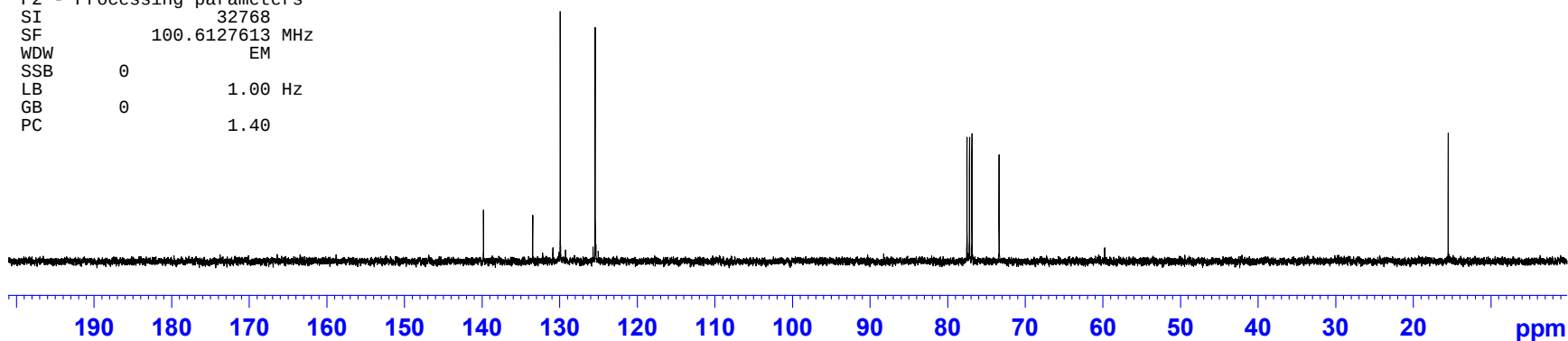
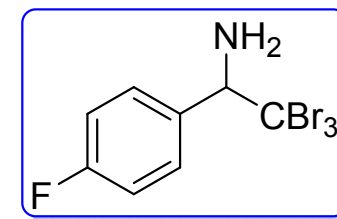
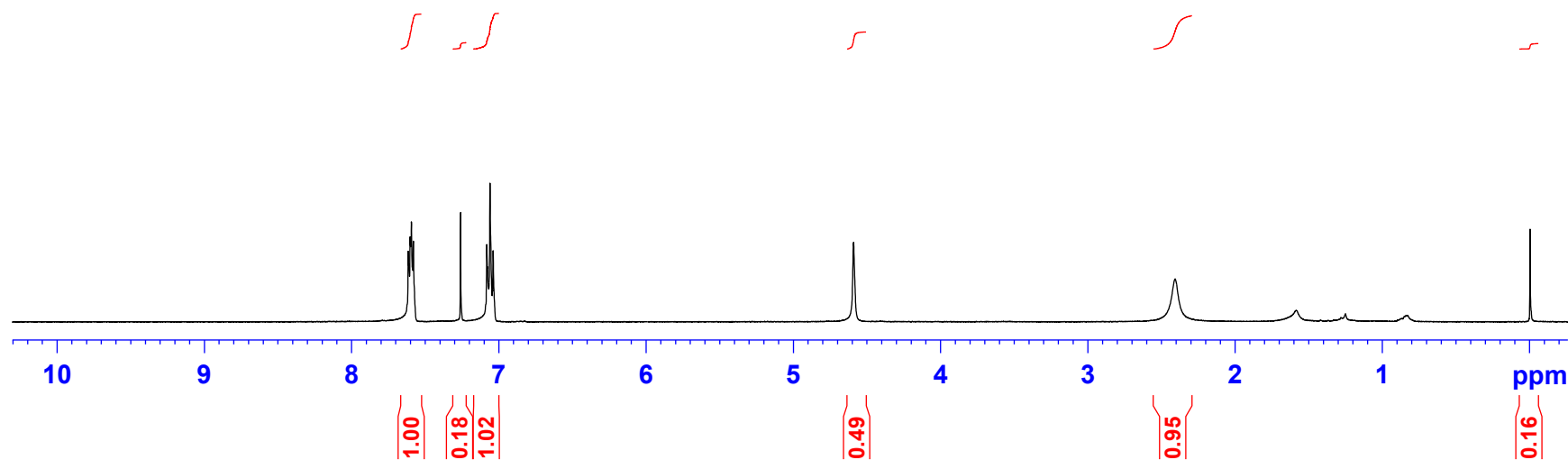


Fig S64. ¹³C NMR Spectrum of 13d

NAME INN-GOPI-BOC-TFA-3-1H
EXPNO 5
PROCNO 1
Date_ 20120430
Time 3.19
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 8
DS 0
SWH 8223.685 Hz
FIDRES 0.125483 Hz
AQ 3.9846387 sec
RG 161
DW 60.800 usec
DE 6.50 usec
TE 292.8 K
D1 1.00000000 sec
TD0 1

===== CHANNEL f1 =====
NUC1 1H
P1 13.50 usec
PL1 -1.00 dB
PL1W 10.56200695 W
SF01 400.1324710 MHz
SI 32768
SF 400.1300095 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00

**13e****Fig S65. ¹H NMR Spectrum of 13e**

Current Data Parameters
 NAME INN-GOPI-TFA-8
 EXPNO 1
 PROCNO 1

F2 - Acquisition Parameters

Date_ 20131201
 Time 21.36
 INSTRUM spect
 PROBHD 5 mm PABBO BB/
 PULPROG zgpg30
 TD 65536
 SOLVENT CDCl3
 NS 75
 DS 4
 SWH 29761.904 Hz
 FIDRES 0.454131 Hz
 AQ 1.1010048 sec
 RG 197.27
 DW 16.800 usec
 DE 6.50 usec
 TE 294.4 K
 D1 1.00000000 sec
 D11 0.03000000 sec
 TDO 1

===== CHANNEL f1 =====

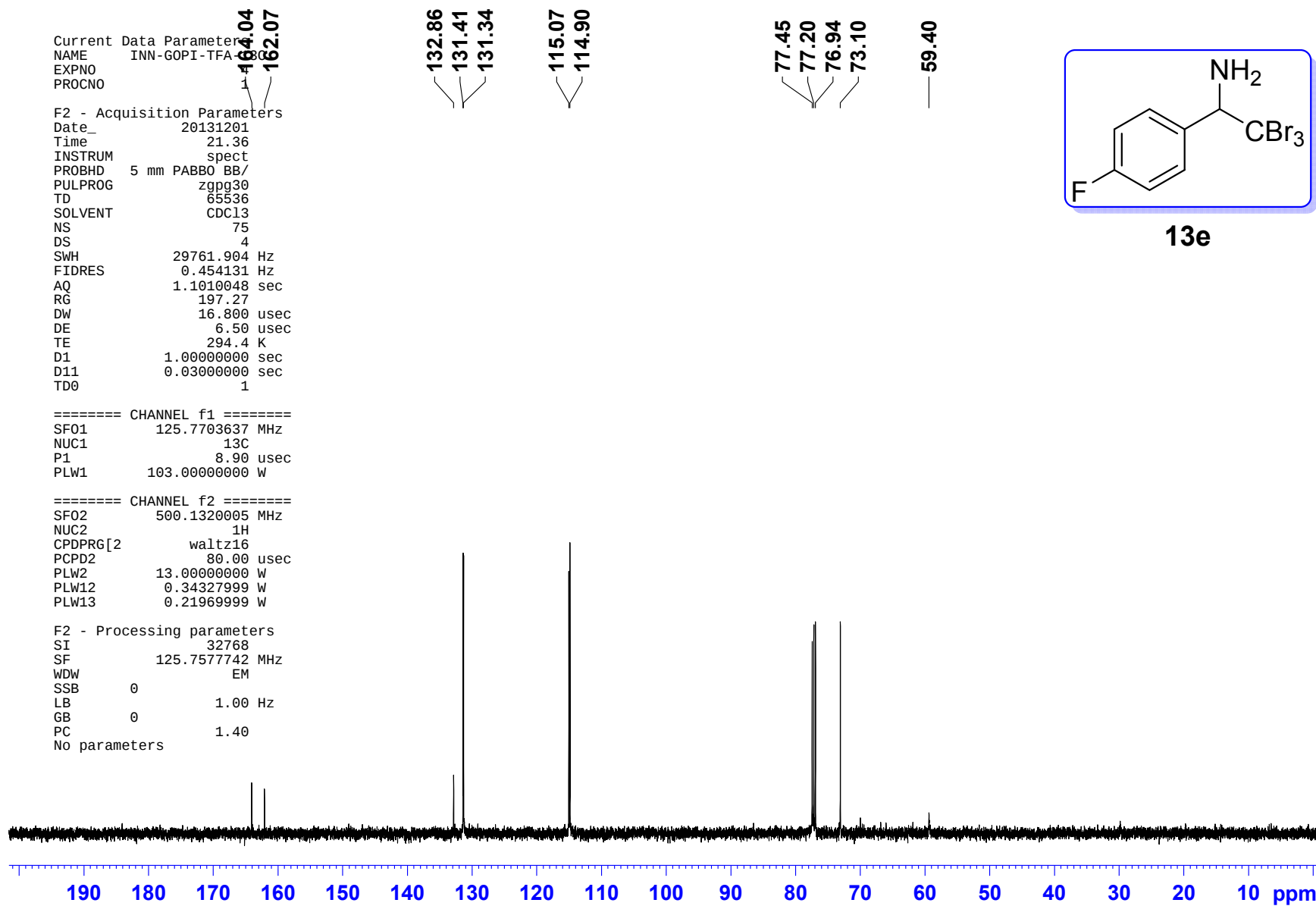
SF01 125.7703637 MHz
 NUC1 13C
 P1 8.90 usec
 PLW1 103.00000000 W

===== CHANNEL f2 =====

SF02 500.1320005 MHz
 NUC2 1H
 CPDPRG[2] waltz16
 PCPD2 80.00 usec
 PLW2 13.00000000 W
 PLW12 0.34327999 W
 PLW13 0.21969999 W

F2 - Processing parameters

SI 32768
 SF 125.7577742 MHz
 WDW EM
 SSB 0
 LB 1.00 Hz
 GB 0
 PC 1.40
 No parameters

Fig S66. ¹³C NMR Spectrum of 13e

Current Data Parameters
NAME INN-GOPI-TFA-19F
EXPNO 4
PROCNO 1

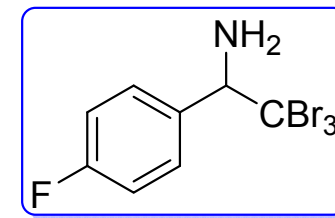
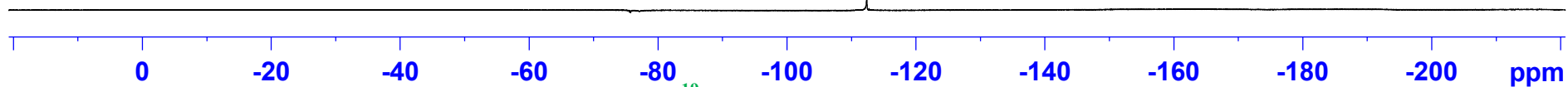
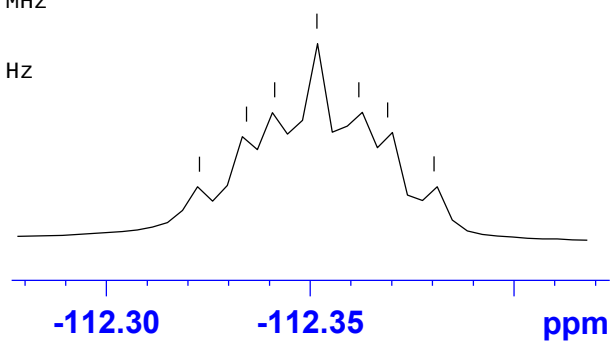
F2 - Acquisition Parameters
Date_ 20131201
Time 8.12
INSTRUM spect
PROBHD 5 mm PABBO BB/
PULPROG zgflqn
TD 131072
SOLVENT CDCl3
NS 16
DS 4
SWH 113636.367 Hz
FIDRES 0.866977 Hz
AQ 0.5767668 sec
RG 119.07
DW 4.400 usec
DE 6.50 usec
TE 294.0 K
D1 1.00000000 sec
TD0 1

===== CHANNEL f1 =====
SF01 470.5453180 MHz
NUC1 19F
P1 13.50 usec
PLW1 40.00000000 W

F2 - Processing parameters
SI 65536
SF 470.5923770 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00

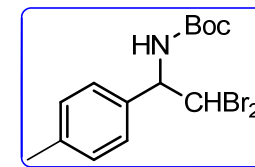
-112.32
-112.33
-112.34
-112.35
-112.36
-112.37
-112.38

-112.323
-112.335
-112.342
-112.352
-112.362
-112.370
-112.381

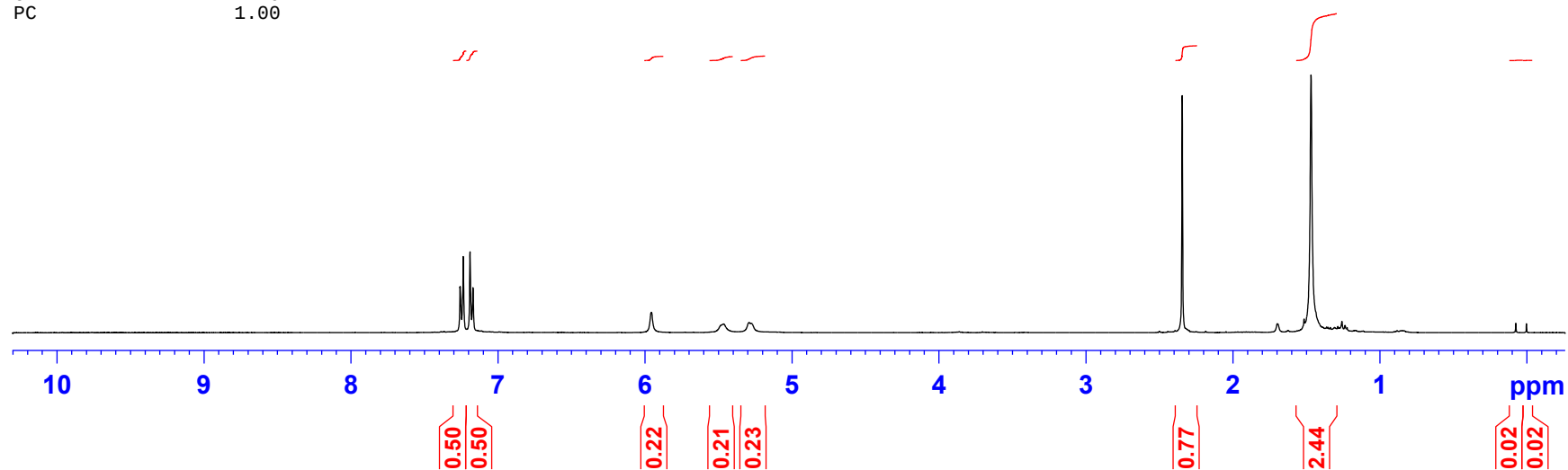
**13e****Fig S67. ¹⁹F NMR Spectrum of 13e**

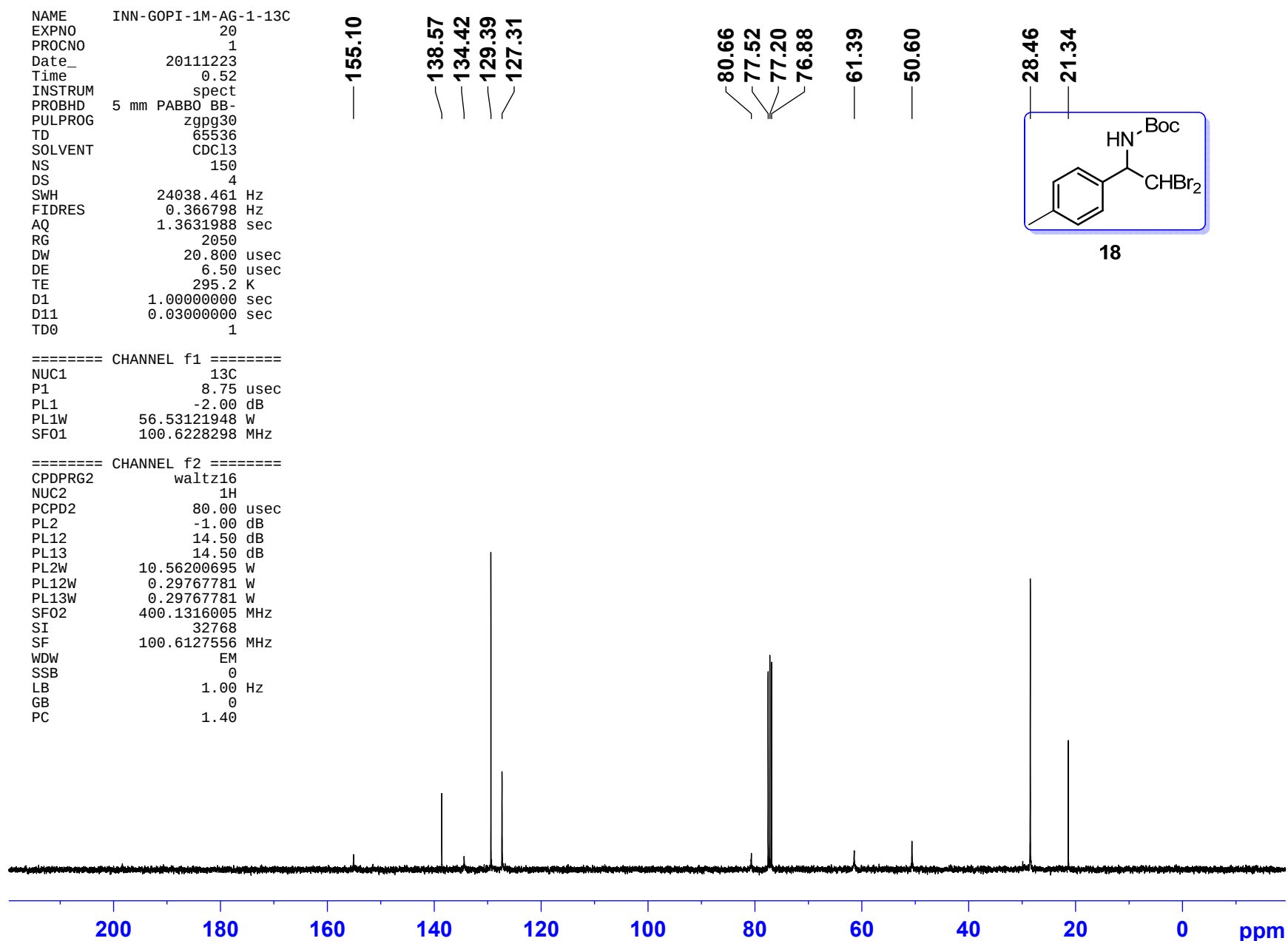
NAME inn-gopi-1m-hg-1-1h
EXPNO 1
PROCNO 1
Date_ 20111207
Time 2.50
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 19
DS 0
SWH 8223.685 Hz
FIDRES 0.125483 Hz
AQ 3.9846387 sec
RG 32
DW 60.800 usec
DE 6.50 usec
TE 294.0 K
D1 1.00000000 sec
TD0 1

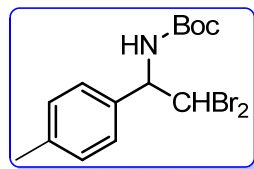
===== CHANNEL f1 =====
NUC1 1H
P1 13.50 usec
PL1 -1.00 dB
PL1W 10.56200695 W
SF01 400.1324710 MHz
SI 32768
SF 400.1300095 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00



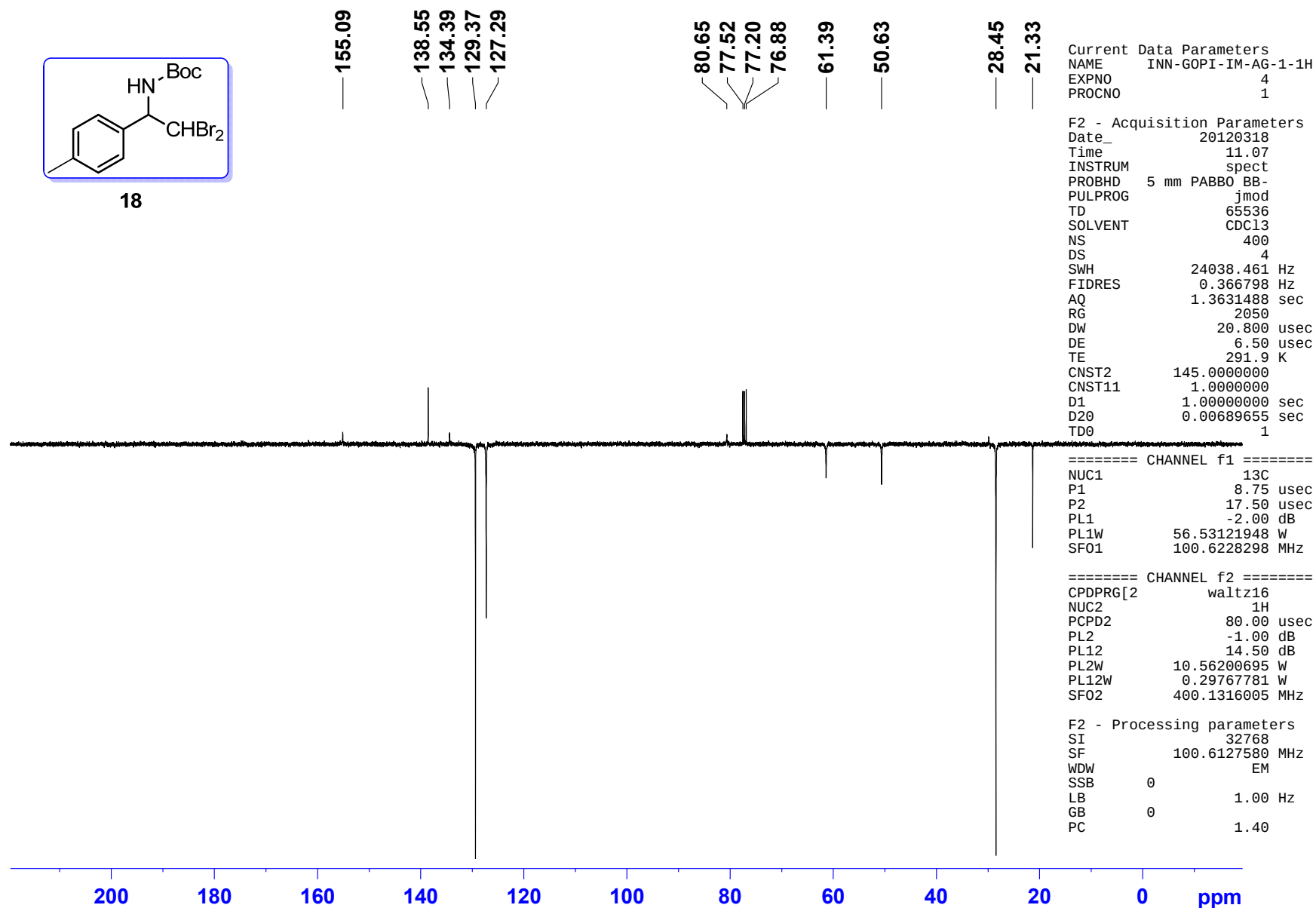
18

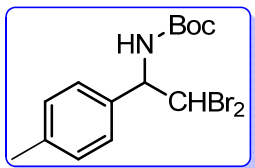
Fig S68. ¹H NMR Spectrum of 18

Fig S69. ¹³C NMR Spectrum of 18

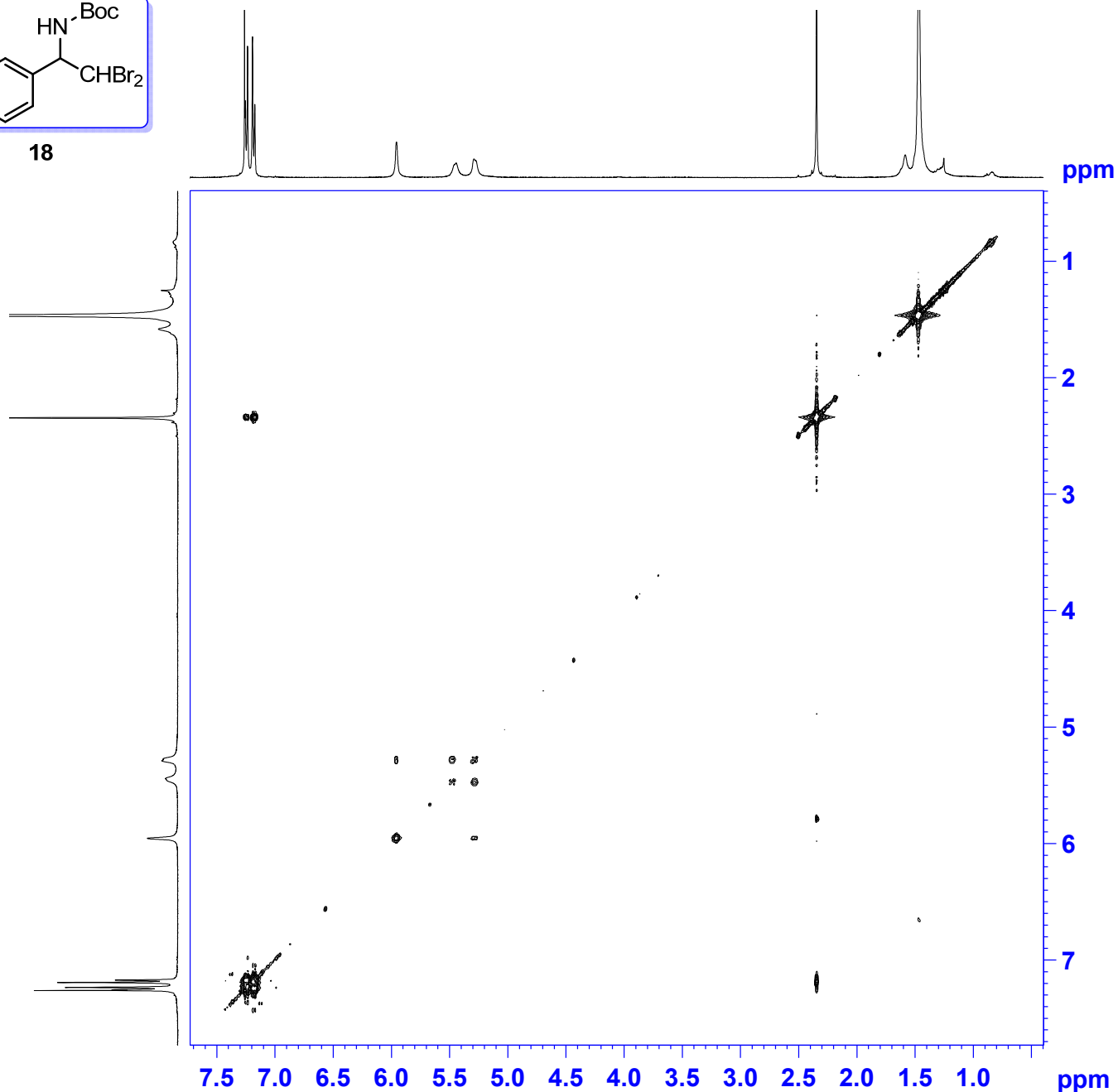


18

Fig S70. ^{13}C -APT NMR Spectrum of 18



18

Figure S71. ^1H - ^1H COSY NMR Spectrum of 18

Current Data Parameters
 NAME INN-GOPI-IM-AG-1-COSY
 EXPNO 4
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20111224
 Time 10.55
 INSTRUM spect
 PROBHD 5 mm PABBO BB-
 PULPROG cosygpgqf
 TD 2048
 SOLVENT CDCl3
 NS 16
 DS 16
 SWH 2934.272 Hz
 FIDRES 1.432750 Hz
 AQ 0.3489792 sec
 RG 128
 DW 170.400 usec
 DE 6.50 usec
 TE 295.1 K
 D0 0.00000300 sec
 D1 1.00000000 sec
 D13 0.00000400 sec
 D16 0.00020000 sec
 IN0 0.00034080 sec

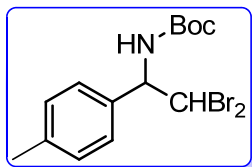
===== CHANNEL f1 =====
 NUC1 1H
 P0 13.50 usec
 P1 13.50 usec
 PL1 -1.00 dB
 PL1W 10.56200695 W
 SF01 400.1316350 MHz

===== GRADIENT CHANNEL =====
 GPNAM[1] SINE.100
 GPZ1 10.00 %
 P16 1000.00 usec

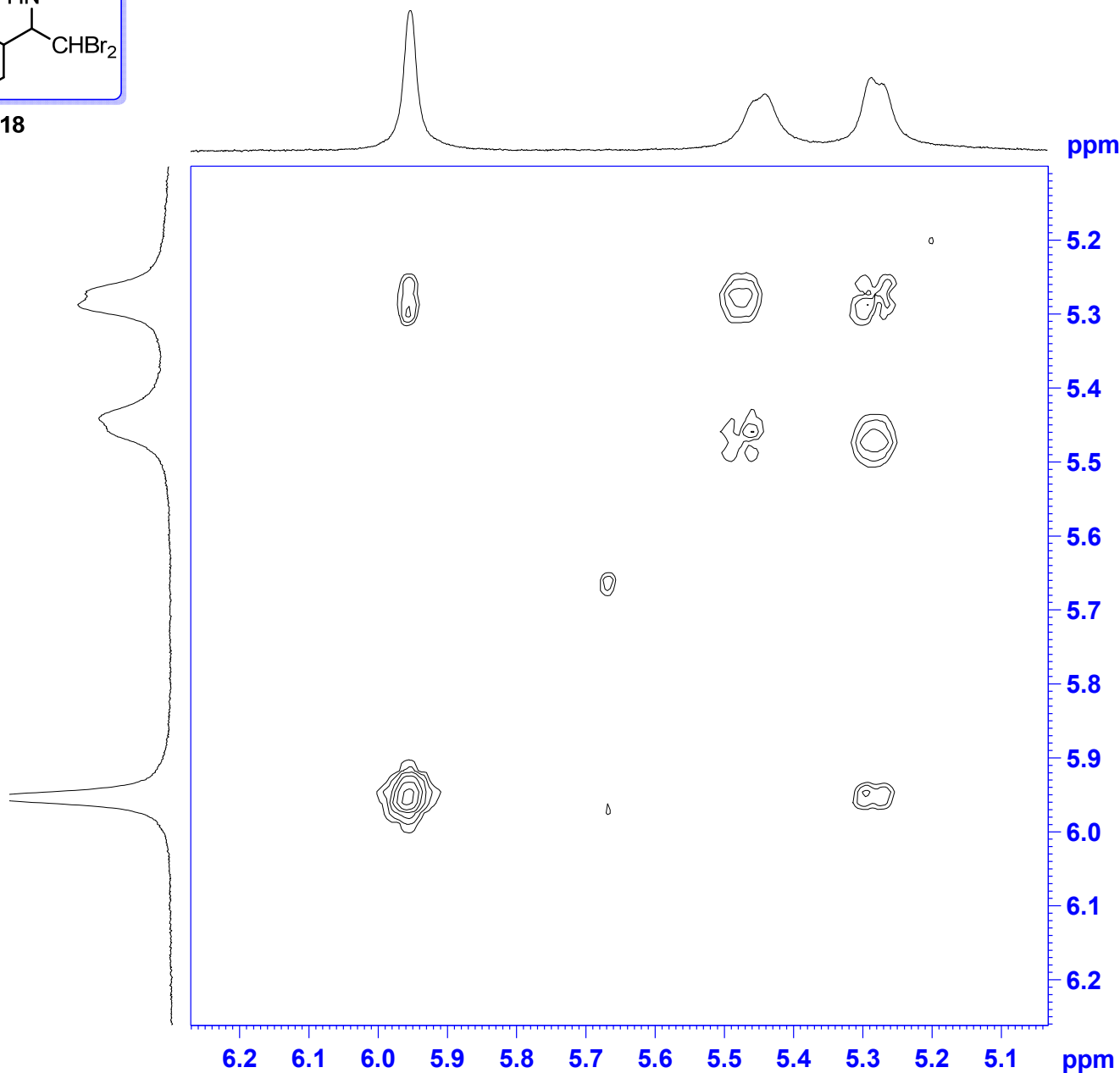
F1 - Acquisition parameters
 TD 264
 SF01 400.1316 MHz
 FIDRES 11.114717 Hz
 SW 7.333 ppm
 FnmODE QF

F2 - Processing parameters
 SI 2048
 SF 400.1300095 MHz
 WDW SINE
 SSB 0
 LB 0 Hz
 GB 0
 PC 1.40

F1 - Processing parameters
 SI 512
 MC2 QF
 SF 400.1300095 MHz
 WDW SINE
 SSB 0
 LB 0 Hz
 GB 0



18

Figure S72. ^1H - ^1H COSY NMR Expansion Spectrum of 18

Current Data Parameters
 NAME INN-GOPI-IM-AG-1-COSY
 EXPNO 4
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20111224
 Time 10.55
 INSTRUM spect
 PROBHD 5 mm PABBO BB-
 PULPROG cosygpgf
 TD 2048
 SOLVENT CDCl3
 NS 16
 DS 16
 SWH 2934.272 Hz
 FIDRES 1.432750 Hz
 AQ 0.3489792 sec
 RG 128
 DW 170.400 usec
 DE 6.50 usec
 TE 295.1 K
 D0 0.00000300 sec
 D1 1.00000000 sec
 D13 0.00000400 sec
 D16 0.00020000 sec
 IN0 0.00034080 sec

===== CHANNEL f1 =====
 NUC1 1H
 P0 13.50 usec
 P1 13.50 usec
 PL1 -1.00 dB
 PL1W 10.56200695 W
 SF01 400.1316350 MHz

===== GRADIENT CHANNEL =====
 GPNAM[1] SINE.100
 GPZ1 10.00 %
 P16 1000.00 usec

F1 - Acquisition parameters
 TD 264
 SF01 400.1316 MHz
 FIDRES 11.114717 Hz
 SW 7.333 ppm
 FnmODE QF

F2 - Processing parameters
 SI 2048
 SF 400.1300095 MHz
 WDW SINE
 SSB 0
 LB 0 Hz
 GB 0
 PC 1.40

F1 - Processing parameters
 SI 512
 MC2 QF
 SF 400.1300095 MHz
 WDW SINE
 SSB 0
 LB 0 Hz
 GB 0