

Synthesis of Fused-Ring and Attached-Ring Bis-Tetrahydrofurans via Pd-Catalyzed Carboetherification

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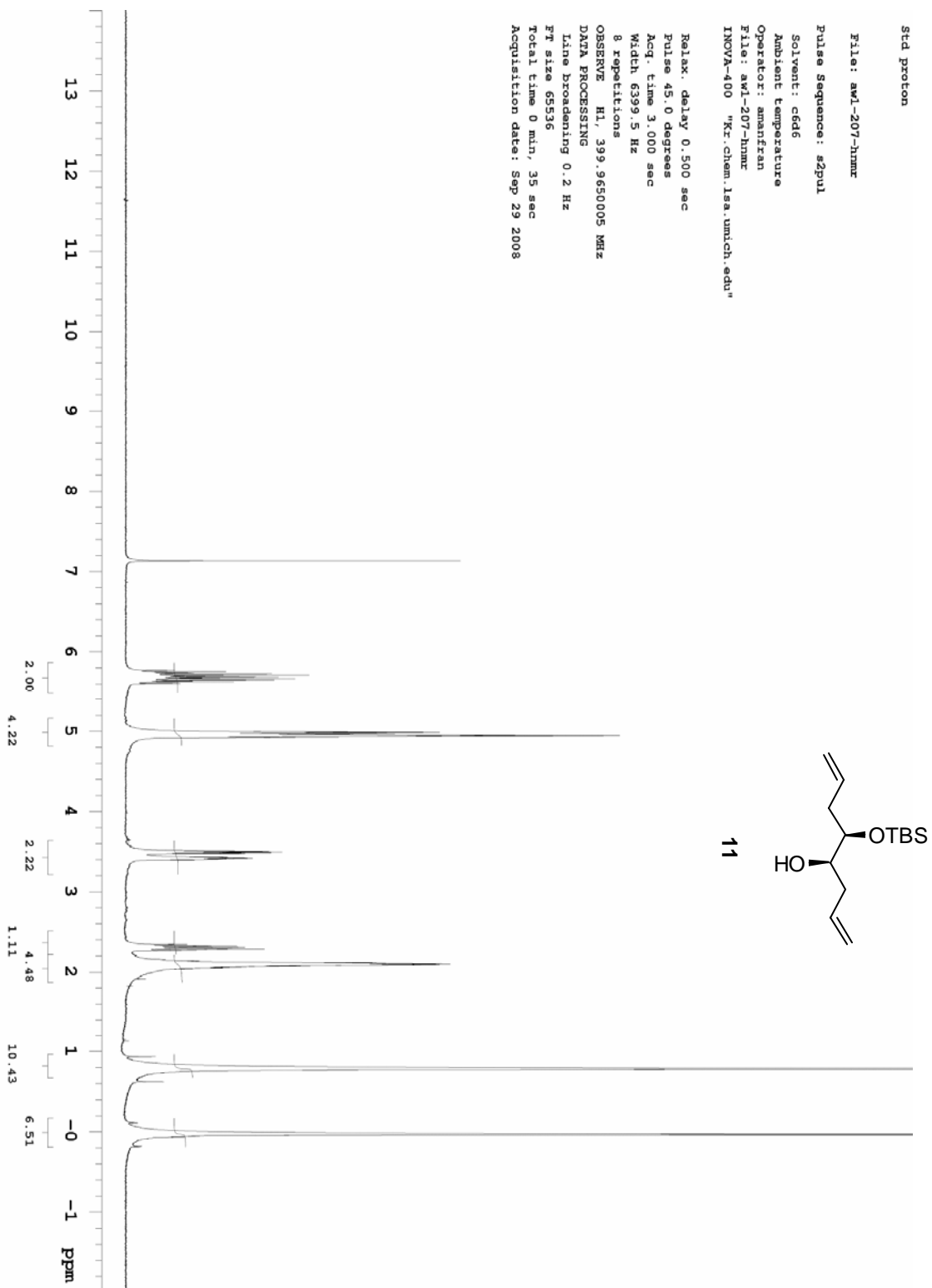
Supporting Information (continued).

¹H and ¹³C NMR spectra for new compounds in Tables 1–2, eq 4, and Scheme 2.

Std proton

File: aw1-207-hnmr
Pulse Sequence: s2pul
Solvent: c6d6
Ambient temperature
Operator: amanfan
File: aw1-207-hnmr
INOVA-400 "Kr.chem.lsa.umich.edu"

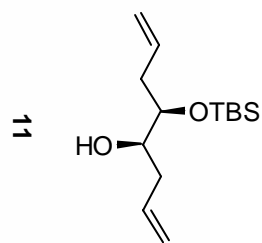
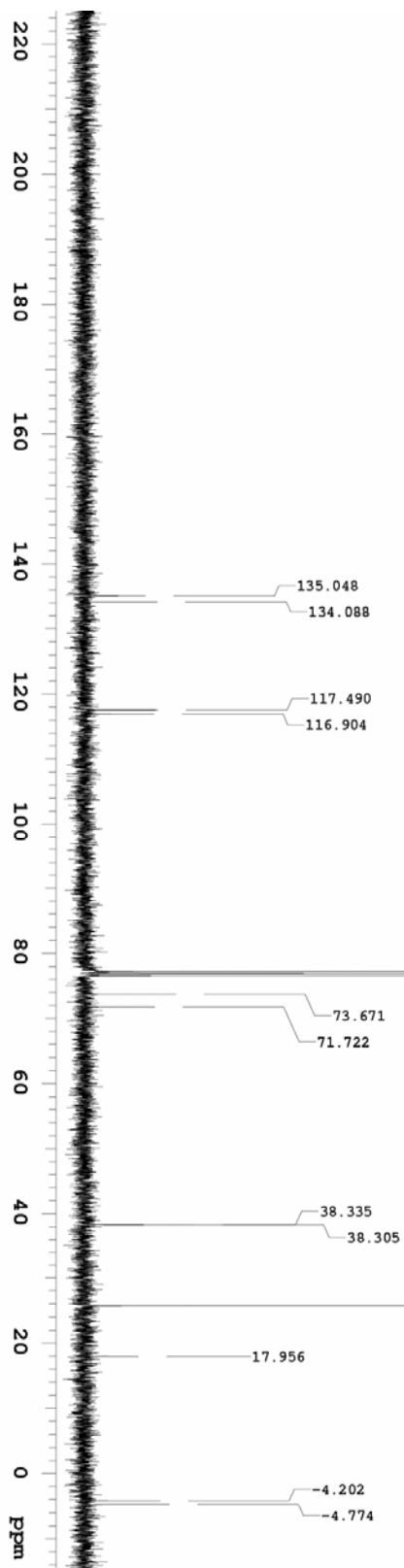
Relax. delay 0.500 sec
Pulse 45.0 degrees
Acq. time 3.000 sec
Width 6399.5 Hz
8 repetitions
OBSERVE H1, 399.9650005 MHz
DATA PROCESSING
Line broadening 0.2 Hz
F1 size 65536
Total time 0 min, 35 sec
Acquisition date: Sep 29 2008



Std Carbon

File: aw1-207-cnmr
 Pulse Sequence: szpul
 Solvent: ccd6
 Ambient temperature
 Operator: amnifran
 File: aw1-207-cnmr
 INOVA-400 "Kr.chem.1sa.umich.edu"

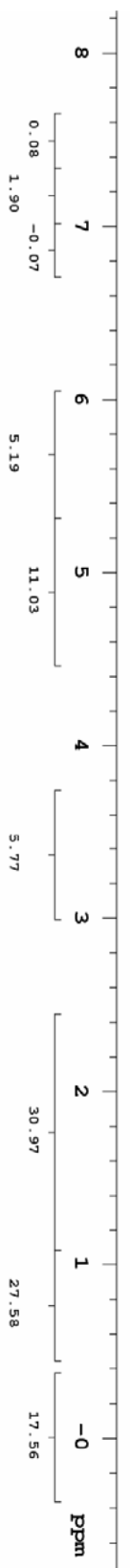
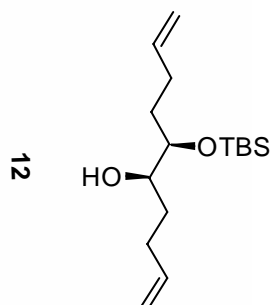
Relax. delay 0.100 sec
 Pulse 30.0 degrees
 Acq. time 1.300 sec
 Width 24140.0 Hz
 304 repetitions
 OBSERVE C13, 100.5712794 MHz
 DECOUPLE H1, 399.9670004 MHz
 Power 39 dB
 continuously on
 WALTZ-16 modulated
 DATA PROCESSING
 Line broadening 0.8 Hz
 FT size 65536
 Total time 7 min, 8 sec
 Acquisition date: Sep 29 2008



STANDARD PROTON PARAMETERS

File: aw1-166

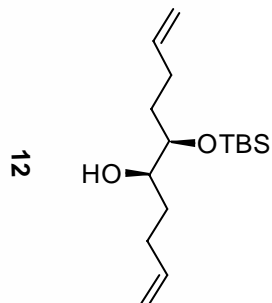
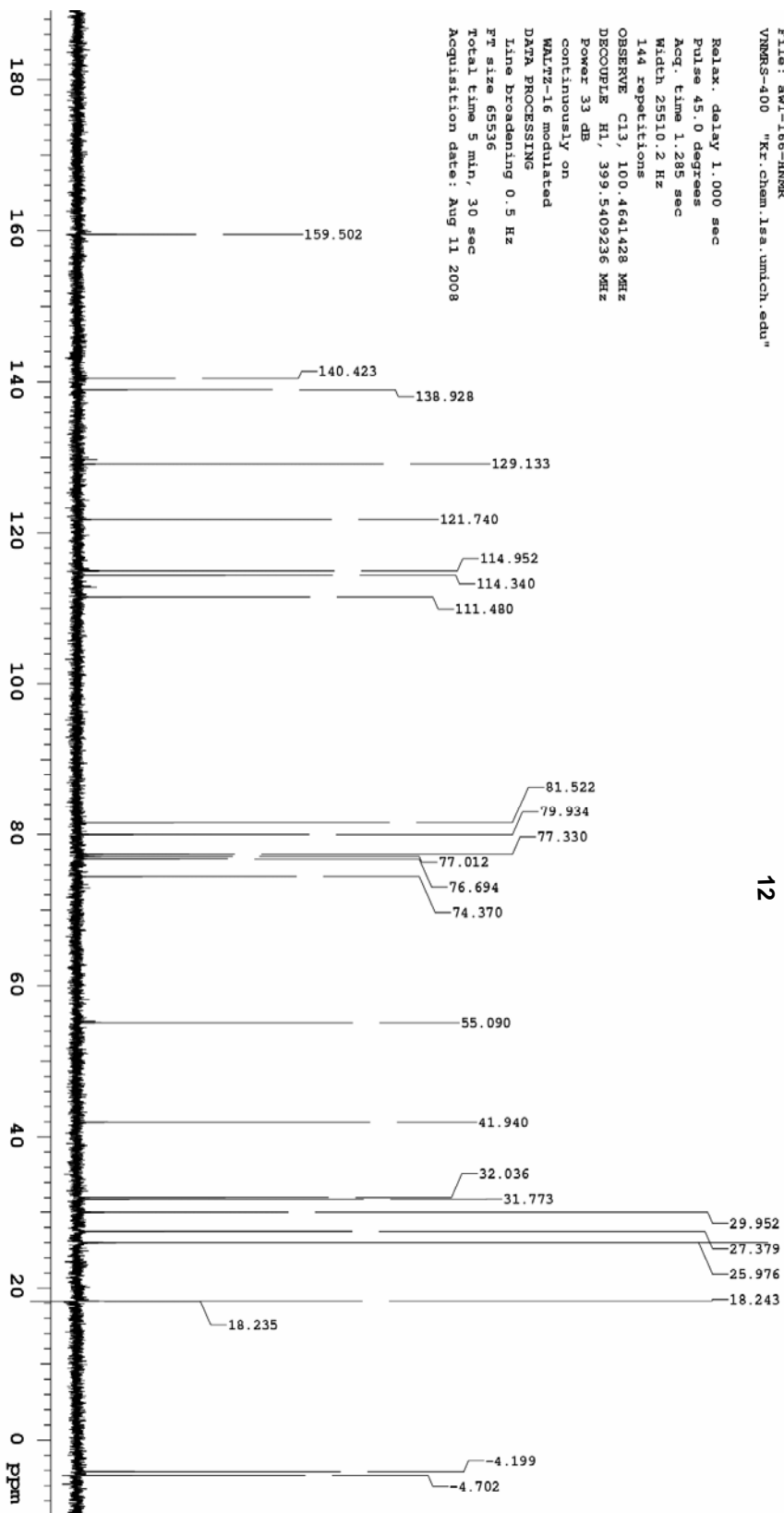
Pulse Sequence: szpul

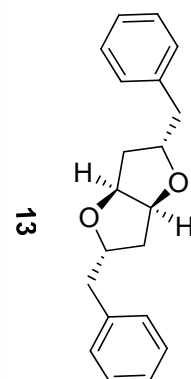


STANDARD PROTON PARAMETERS

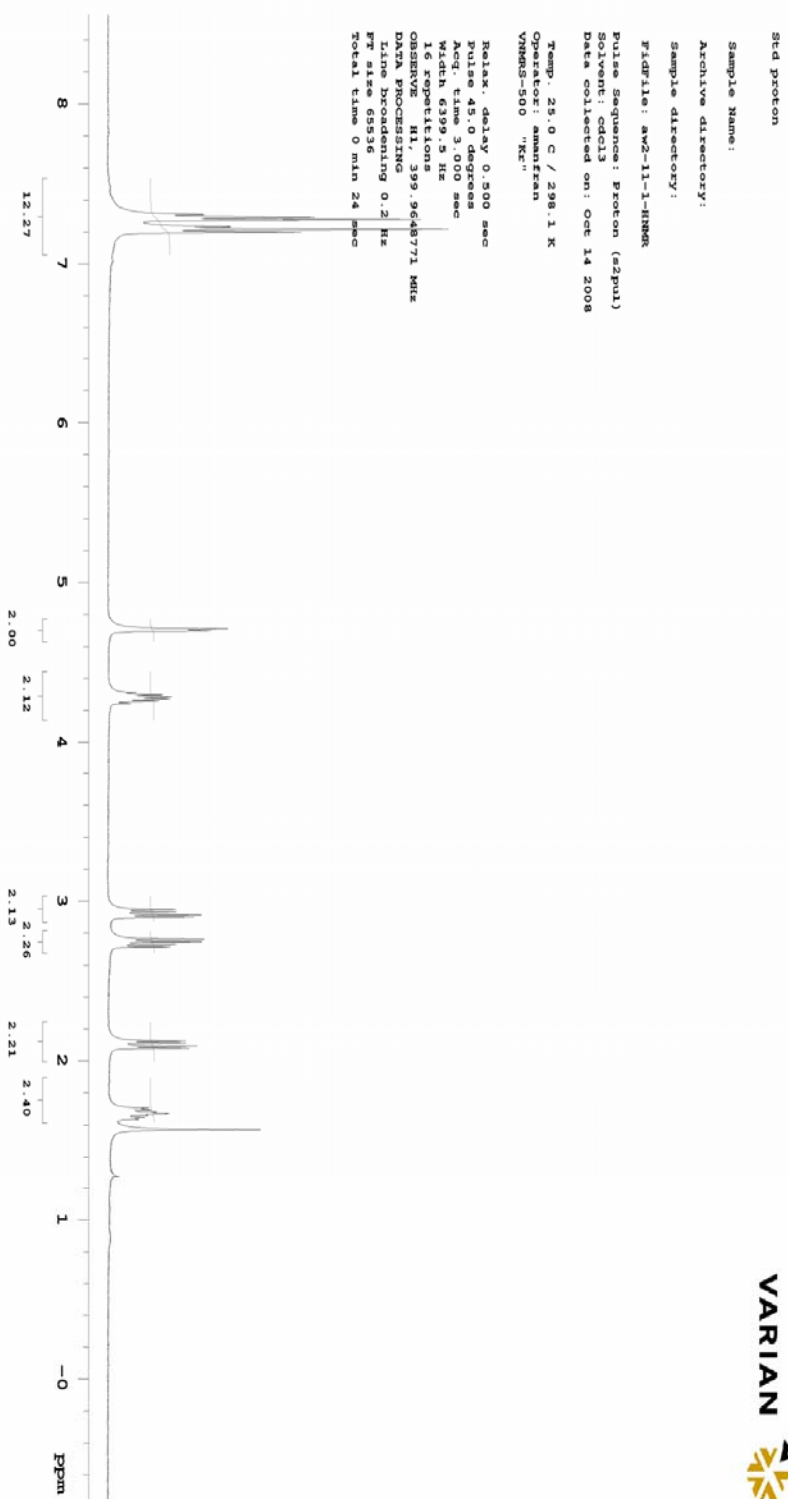
File: aw1-166-HMR
 Pulse Sequence: szpul
 Solvent: cdcl3
 Temp: 22.0 C / 295.1 K
 Operator: amantran
 File: aw1-166-HMR
 VNMR-400 "K.chem.lsa.umich.edu"

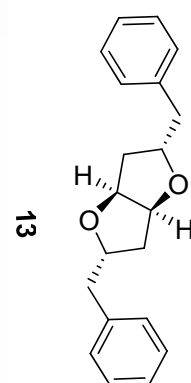
Relax. delay 1.000 sec
 Pulse 45.0 degrees
 Acq. time 1.285 sec
 Width 25510.2 Hz
 144 repetitions
 OBSERVE C13, 100.4641428 MHz
 DECOUPLE H1, 399.5409236 MHz
 Power 33 dB
 continuously on
 WALTZ-16 modulated
 DATA PROCESSING
 Line Broadening 0.5 Hz
 F2 size 65536
 Total time 5 min, 30 sec
 Acquisition date: Aug 11 2008





VARIAN 





Std Carbon

VARIAN 

Sample Name:

Archive directory:

Sample directory:

Filefile: aw2-11-1-CNMR

Pulse Sequence: Carbon (s2pul)

Solvent: cdcl3

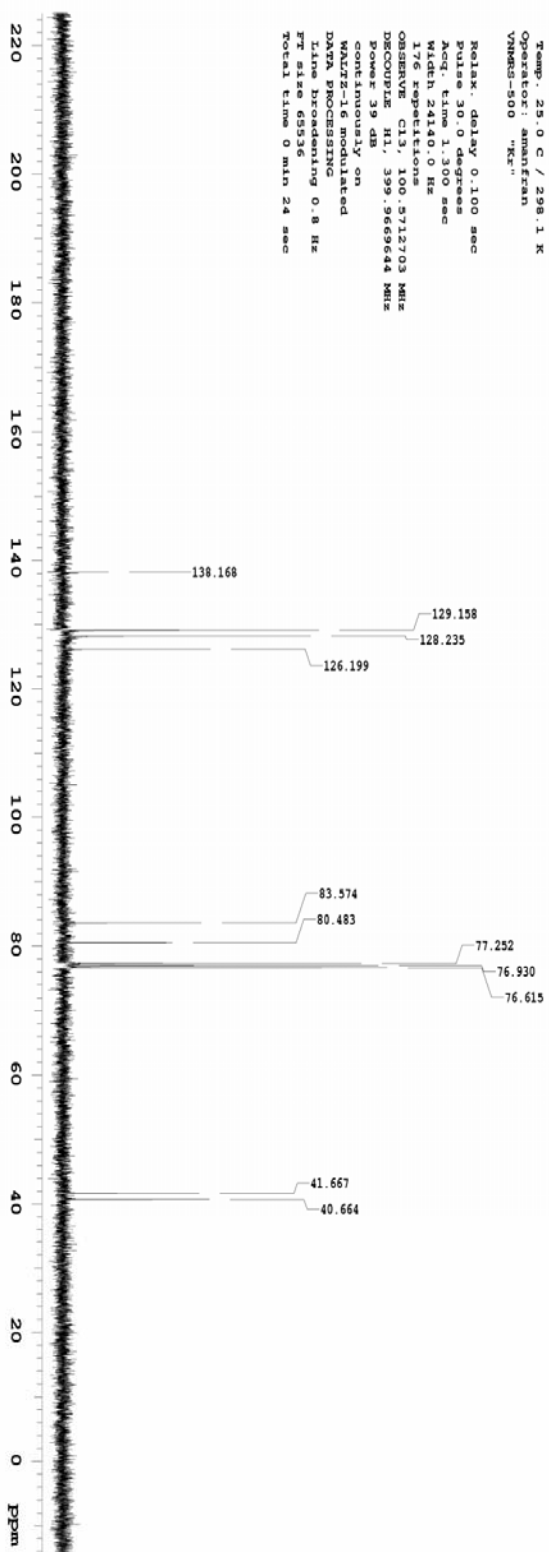
Data collected on: Oct 14 2008

Temp: 25.0 C / 298.1 K

Operator: rmanfren

VMRS-500 "KX"

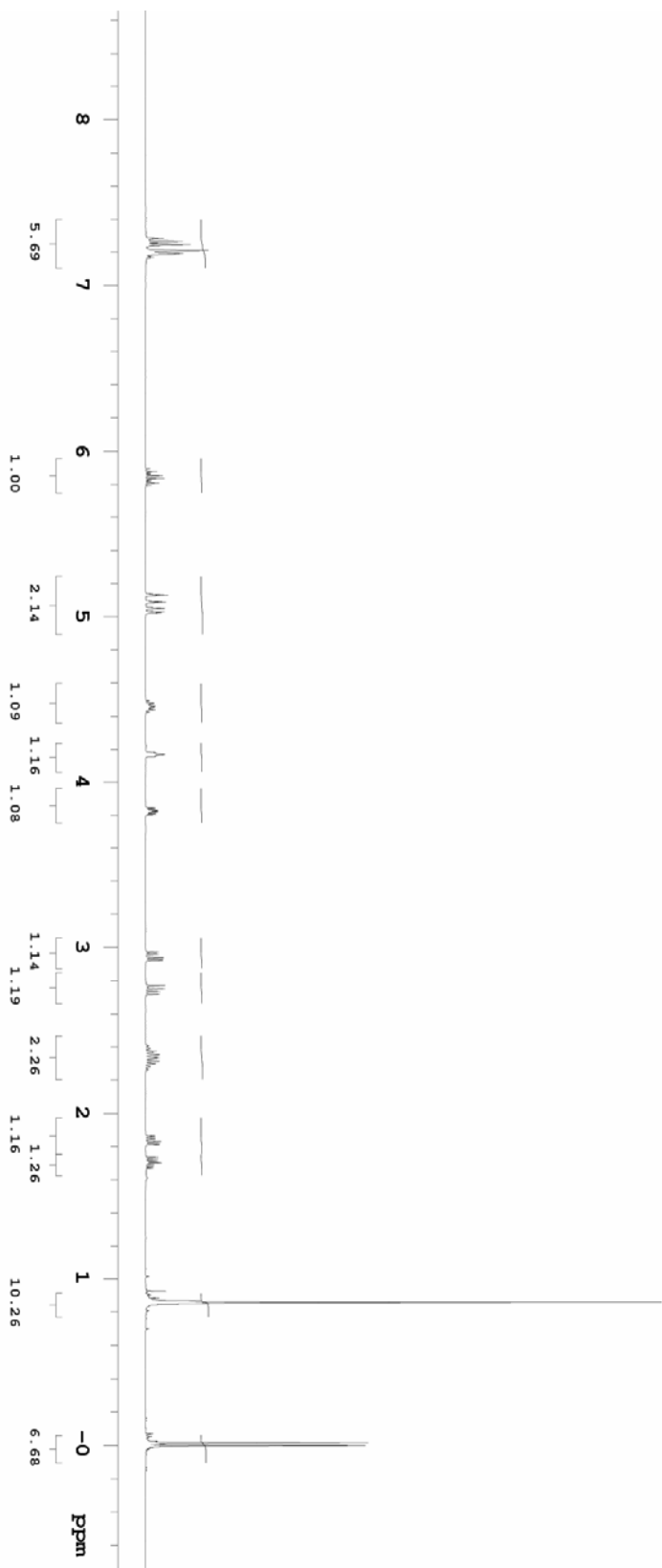
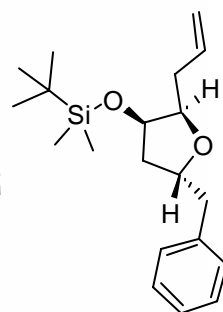
Relax: delay 0.100 sec
 Acq: 30
 Acq time 1.300 sec
 Width 24140.0 Hz
 176 repetitions
 OBSERVE C13, 100.5712703 MHz
 DECOUPLE H1, 399.969644 MHz
 power 39 dB
 continuously on
 WALTZ-16 modulated
 DATA PROCESSING
 Line broadening 0.8 Hz
 Zero filling 2
 Total time 0 min 24 sec



STANDARD 1H OBSERVE - profile

File: aw2-1-1-1

Pulse Sequence: szpu1



Std Carbon

File: aw1-107CNMR

Pulse Sequence: s2pul

Solvent: cdcl3

Ambient temperature

Operator: amanfran

File: aw1-107CNMR

INOVA-400 "Kr.chem.lsa.umich.edu"

Relax. delay 0.100 sec

Pulse 30.0 degrees

Acq. time 1.300 sec

Width 24140.0 Hz

432 repetitions

OBSERVE C13, 100.5712703 MHz

DECOUPLE H1, 399.9669644 MHz

Power 39 dB

continuously on

WALTZ-16 modulated

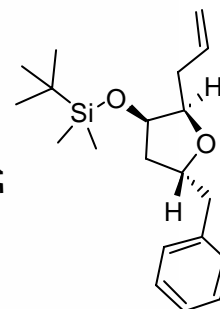
DATA PROCESSING

line broadening 0.8 Hz

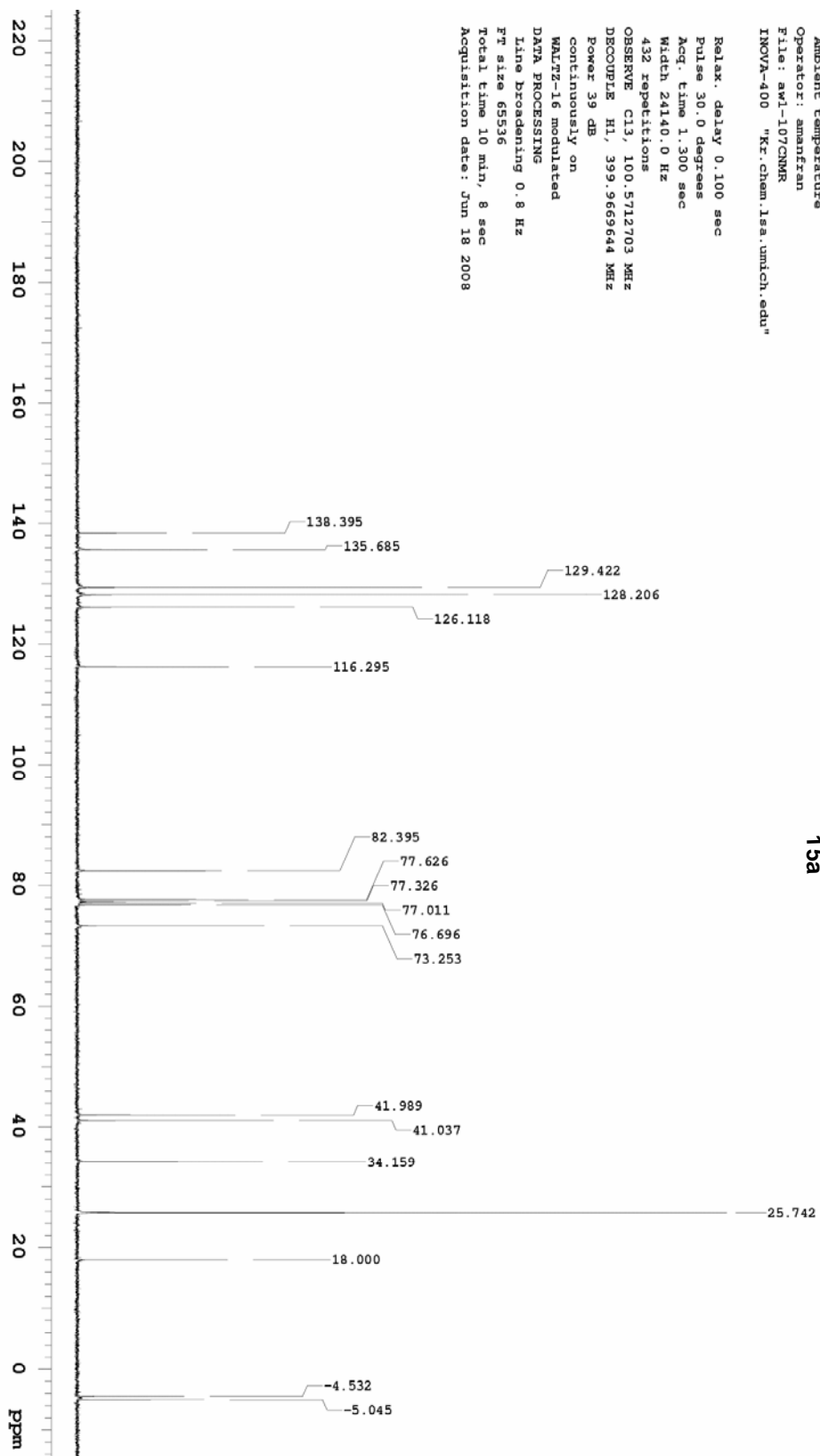
FT size 65536

Total time 10 min, 8 sec

Acquisition date: Jun 18 2008



15a



STANDARD PROTON PARAMETERS

File: awl-205-1-1

Pulse Sequence: szpul

Solvent: cdcl3

Ambient temperature

Operator: amanfran

File: awl-205-1-1

VNMR5-401 "Kr.chem.1sa.umich.edu"

Relax. delay 1.000 sec

Pulse 45.0 degrees

Acq. time 2.556 sec

Width 6410.3 Hz

8 repetitions

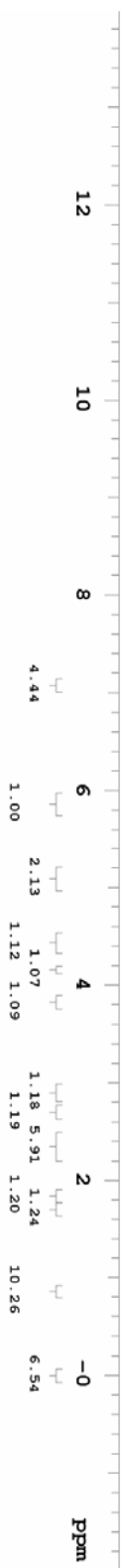
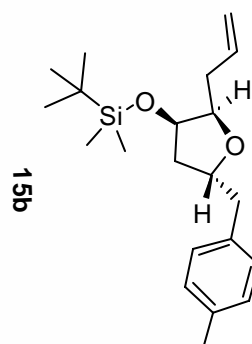
OBSERVE H1, 400.5297680 MHz

DATA PROCESSING

FT size 32768

Total time 0 min, 35 sec

Acquisition date: Oct 3 2008



Std Carbon

File: aw1-119CNMR

Pulse Sequence: s2pul

Solvent: cdcl3

Ambient temperature

Operator: amanfran

File: aw1-119CNMR

INOVA-400 "K.chem.lsa.umich.edu"

Relax. delay 0.100 sec

Pulse 30.0 degrees

Acq. time 1.300 sec

Width 24140.0 Hz

336 repetitions

OBSERVE C13, 100.5712703 MHz

DECOUPLE H1, 399.9669644 MHz

Power 39 dB

continuously on

WALTZ-16 modulated

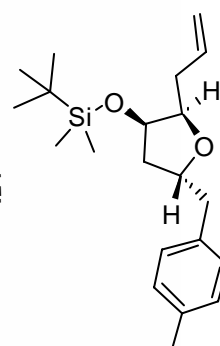
DATA PROCESSING

line broadening 0.8 Hz

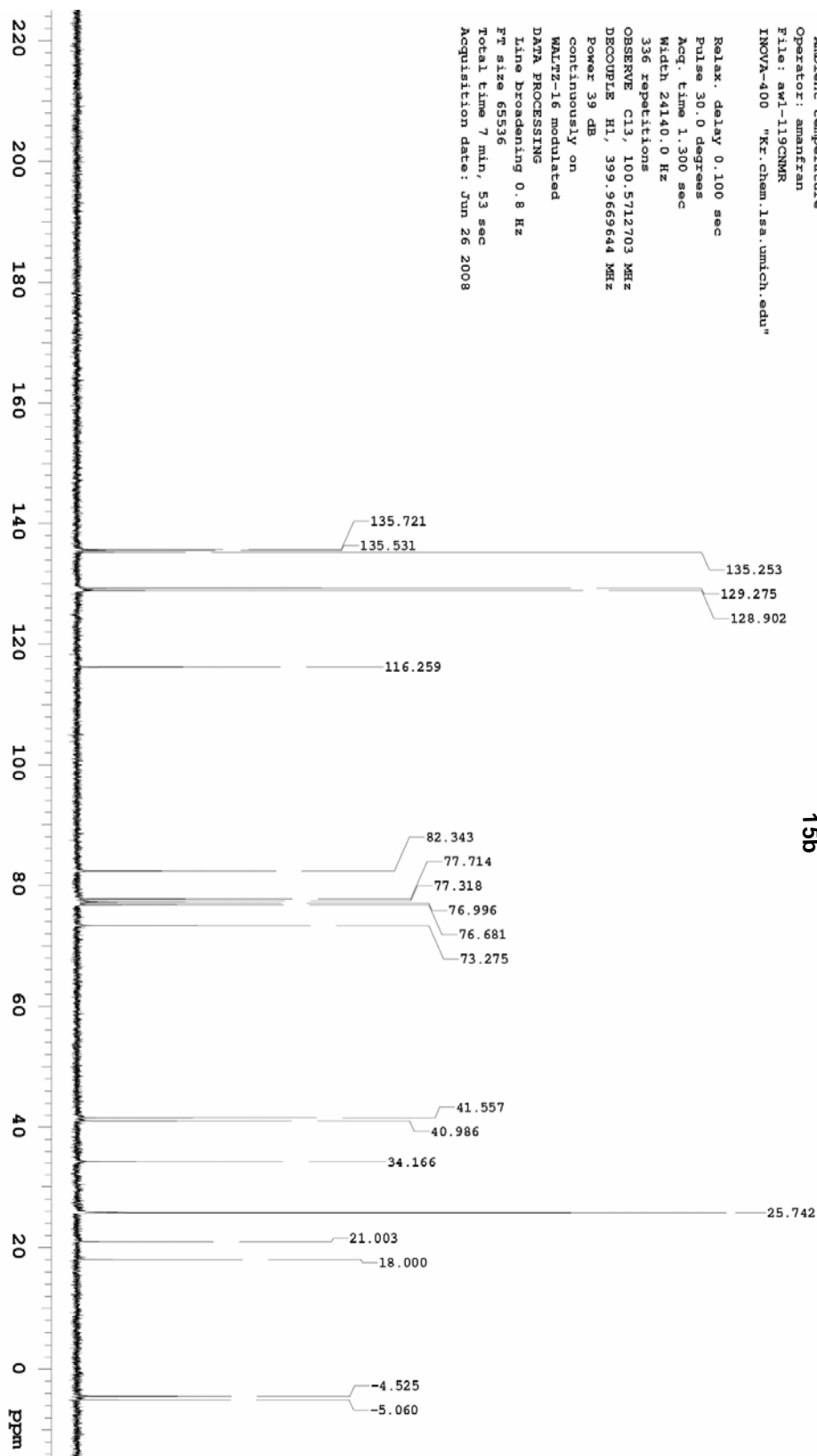
FT size 65536

Total time 7 min, 53 sec

Acquisition date: Jun 26 2008



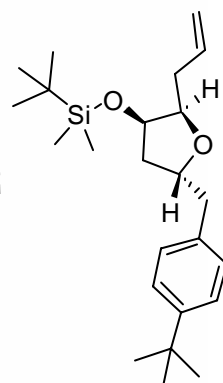
15b



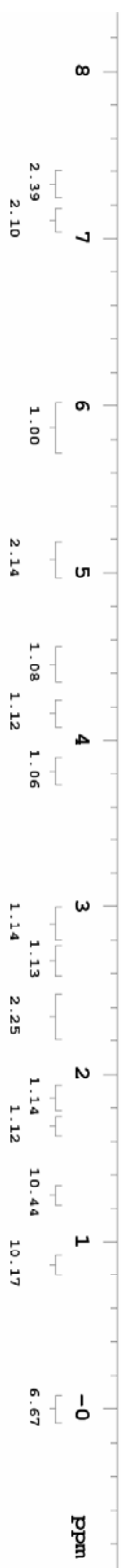
STANDARD PROTON PARAMETERS

File: aw2-8-1-HMR

Pulse Sequence: szpul



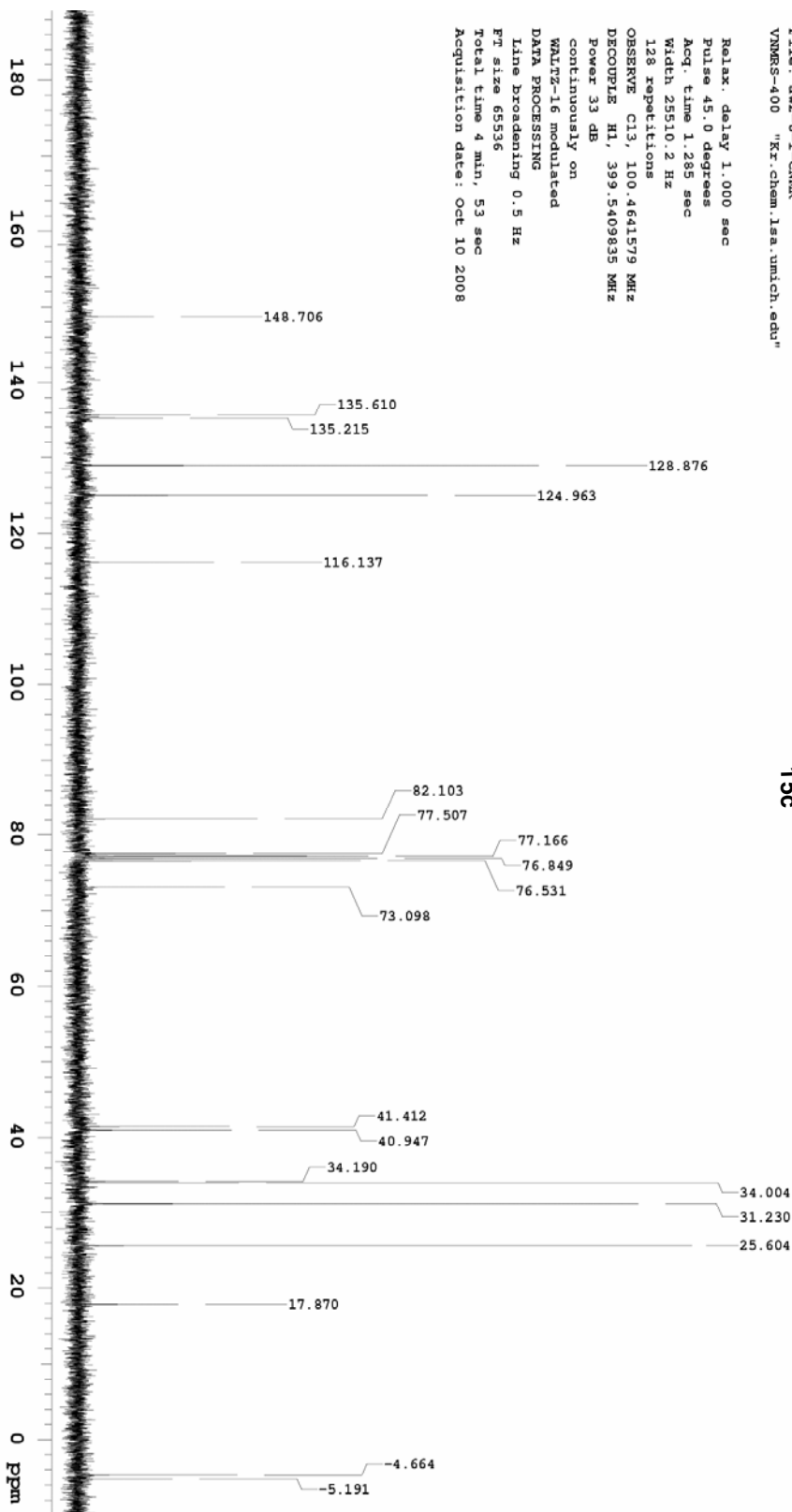
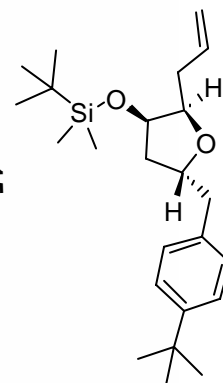
15c



STANDARD PROTON PARAMETERS

File: aw2-8-1-CNMR
 Pulse Sequence: szpul
 Solvent: toluene
 Ambient temperature
 Operator: amanfran
 File: aw2-8-1-CNMR
 VNMR5-400 "Kr.chem.1sa.umich.edu"

Relax. delay 1.000 sec
 Pulse 45.0 degrees
 Acq. time 1.285 sec
 Width 25510.2 Hz
 128 repetitions
 OBSERVE C13, 100.4641579 MHz
 DECOUPLE H1, 399.5409835 MHz
 Power 33 dB
 continuously on
 WALTZ-16 modulated
 DATA PROCESSING
 Line broadening 0.5 Hz
 FT size 65536
 Total time 4 min, 53 sec
 Acquisition date: Oct 10 2008



Std proton

File: gc05y

Pulse Sequence: gc05y

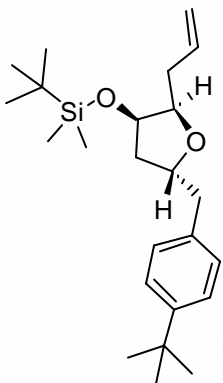
Solvent: c6d6

Temp: 25.0 C / 298.1 K

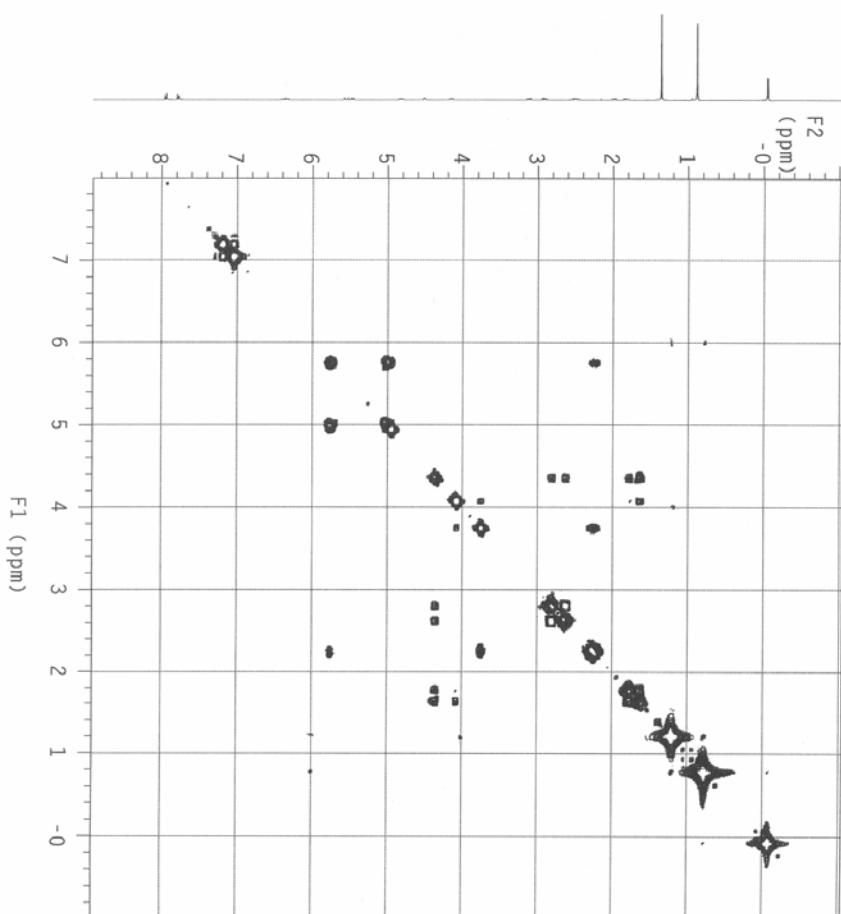
Operator: amanfran

INOVA-400 "Zr.Chem.LSA.IWhitCh.Edu"

Relax. delay 1.301 sec
 Acq. time 0.160 sec
 Width 6399.5 Hz
 2D Width 6399.5 Hz
 Single scan
 128 increments
 OBSERVE H1, 399.9650005 MHz
 DATA PROCESSING
 Sine bell 0.080 sec
 F1 DATA PROCESSING
 Sine bell 0.040 sec
 FT size 2048 x 2048
 Total time 3 min., 33 sec
 Acquisition date: Oct 10 2008



15c



STANDARD PROTON PARAMETERS

File: awl-40-nosey

Pulse Sequence: NOESY

Solvent: cdcl3

Ambient temperature

Operator: amanfran

File: awl-40-nosey

VNMR5-400 "Kr.chem.1sa.umich.edu"

Relax. delay 1.000 sec

Acq. time 0.150 sec

Width 3612.7 Hz

2D Width 3612.7 Hz

8 repetitions

2 x 256 increments

OBSERVE H1, 399.5389365 MHz

DATA PROCESSING

Gauss apodization 0.069 sec

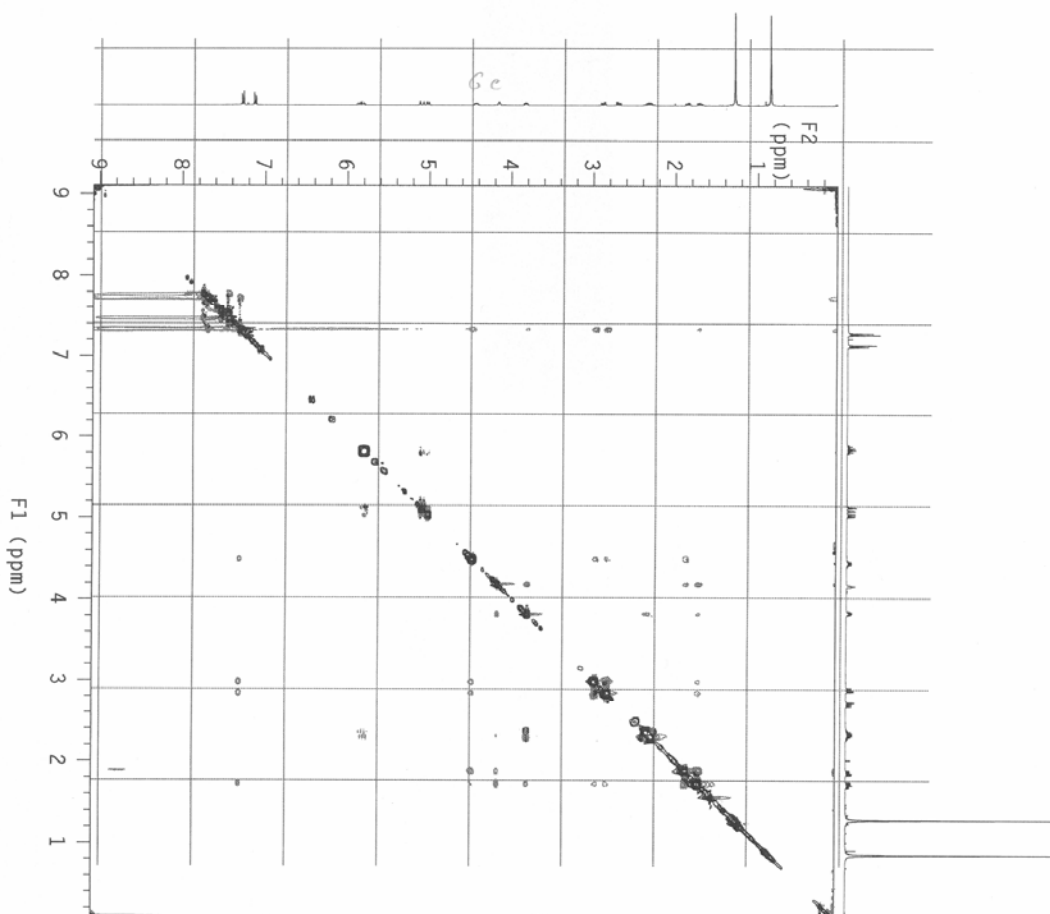
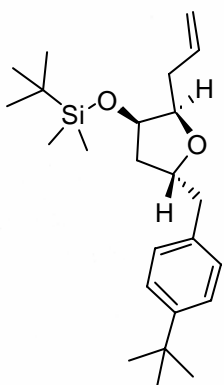
F1 DATA PROCESSING

Gauss apodization 0.065 sec

FT size 2048 x 2048

Total time 1 hr, 22 min, 44 sec

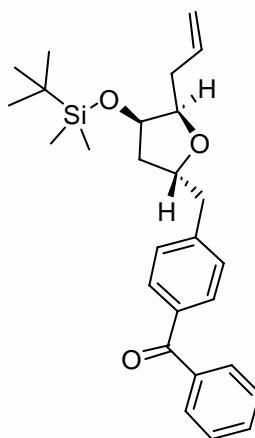
Acquisition date: Aug 17 2008



STANDARD PROTON PARAMETERS

File: aw1-181
 Pulse Sequence: s2pul
 Solvent: cdcl3
 Ambient temperature
 Operator: amantran
 File: aw1-181
 VNMR-400 "Kr.chem.1sa.umich.edu"

Relax. delay 1.000 sec
 Pulse 45.0 degrees
 Acq. time 2.556 sec
 Width 6410.3 Hz
 8 repetitions
 OBSERVE H1, 399.5389333 MHz
 DATA PROCESSING
 F1 size 32768
 Total time 0 min, 35 sec
 Acquisition date: Aug 27 2008



15d



STANDARD PROTON PARAMETERS

File: aw2-8-1-CNMR

Pulse Sequence: szpul

Solvent: toluene

Ambient temperature

Operator: amanfran

File: aw2-8-1-CNMR

VNMR-400 "K.chem.lsa.umich.edu"

Relax. delay 1.000 sec

Pulse 45.0 degrees

Acq. time 1.285 sec

Width 25510.2 Hz

128 repetitions

OBSERVE C13, 100.4641579 MHz

DECOUPLE H1, 399.5409835 MHz

Power 33 dB

continuously on

WALTZ-16 modulated

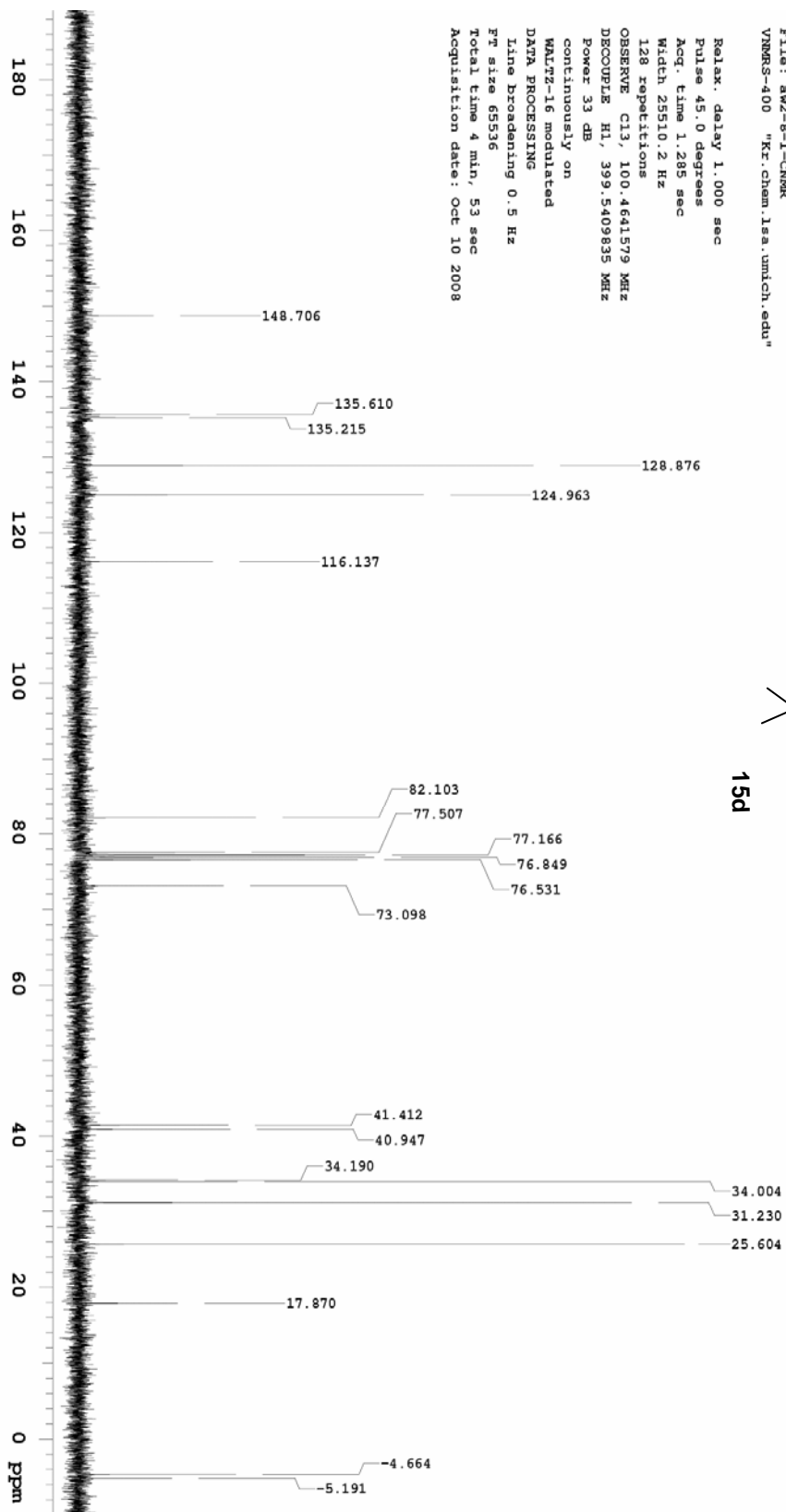
DATA PROCESSING

Line Broadening 0.5 Hz

F2 size 65536

Total time 4 min, 53 sec

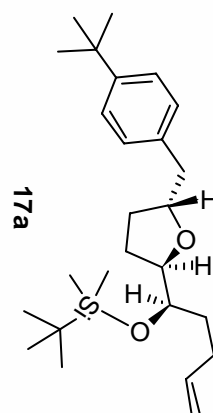
Acquisition date: Oct 10 2008



Std proton

File: aw1-171
 Pulse Sequence: szpul
 Solvent: cdcl3
 Ambient temperature
 Operator: amanfran
 File: aw1-171
 INOVA-400 "Kr.chem.lsa.umich.edu"

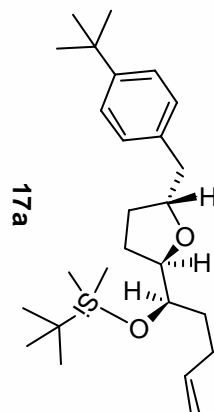
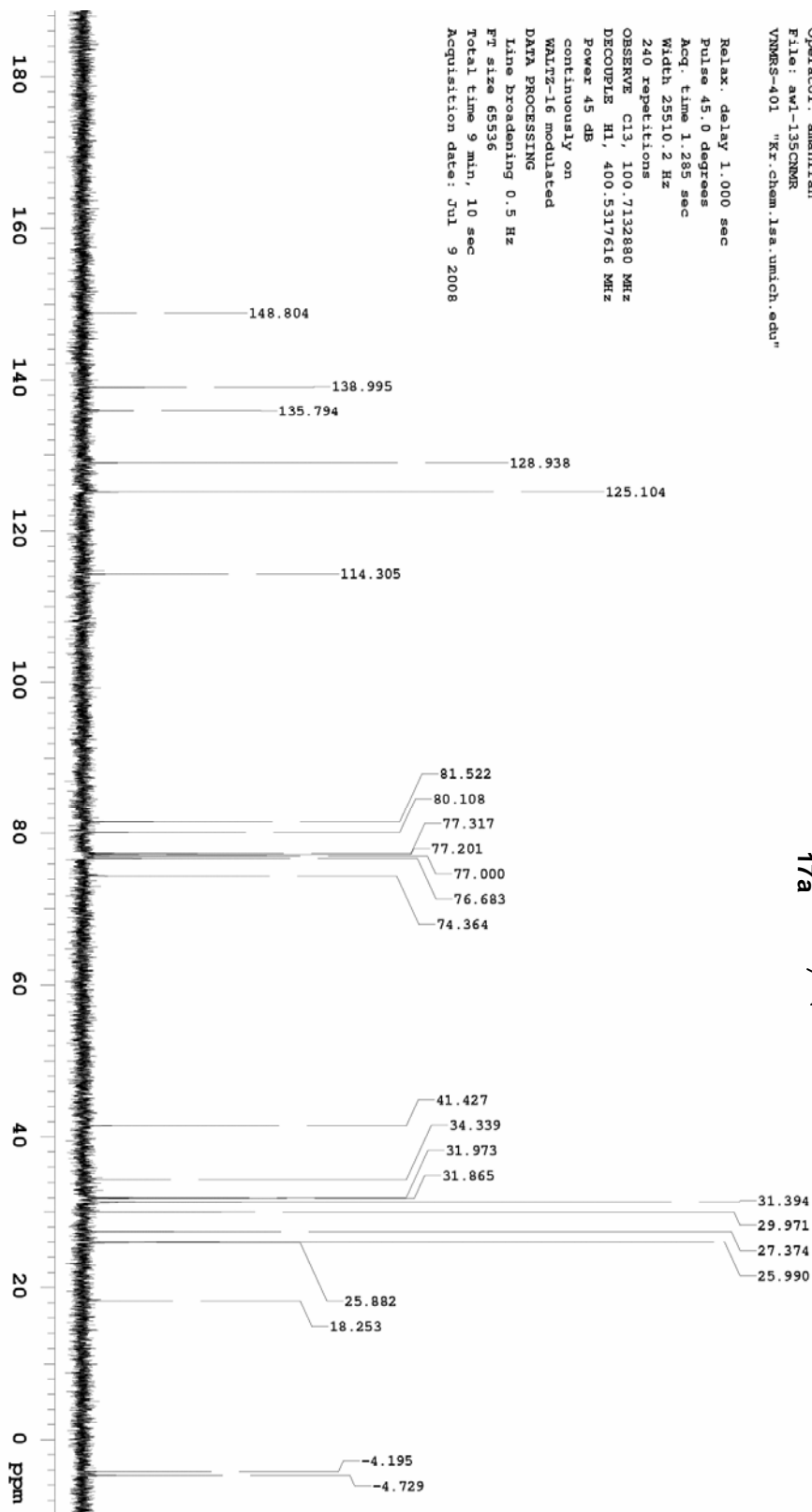
Relax. delay 0.500 sec
 Pulse 45.0 degrees
 Acq. time 3.000 sec
 Width 6399.5 Hz
 16 repetitions
 OBSERVE H1, 399.9649645 MHz
 DATA PROCESSING
 Line broadening 0.2 Hz
 FT size 65536
 Total time 1 min, 3 sec
 Acquisition date: Aug 15 2008



STANDARD 1H OBSERVE

File: aw1-135CNMR
 Pulse Sequence: s2pul
 Solvent: CDCl3
 Temp: 10.0 C / 283.1 K
 Operator: amanfran
 File: aw1-135CNMR
 VNMR3-401 "Kr.Chem.1sa.umich.edu"

Relax. delay 1.000 sec
 Pulse 45.0 degrees
 Acq. time 1.285 sec
 Width 25510.2 Hz
 240 repetitions
 OBSERVE C13, 100.7132880 MHz
 DECOUPLE H1, 400.5317616 MHz
 Power 45 dB
 continuously on
 WALTZ-16 modulated
 DATA PROCESSING
 Line broadening 0.5 Hz
 FT size 65536
 Total time 9 min, 10 sec
 Acquisition date: Jul 9 2008



Std proton

File: aw1-168-HNMR

Pulse Sequence: s2pu1

Solvent: cdcl3

Ambient temperature

Operator: amanfran

File: aw1-168-HNMR

INOVA-400 "Kr.chem.1sa.umich.edu"

Relax. delay 0.500 sec

Pulse 45.0 degrees

Acq. time 3.000 sec

Width 6399.5 Hz

16 repetitions

OBSERVE H1, 399.9649645 MHz

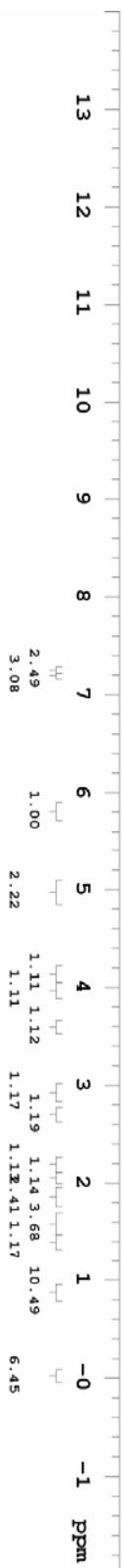
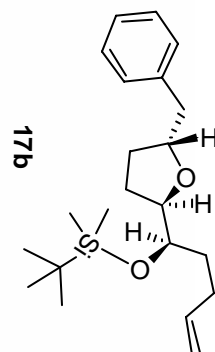
DATA PROCESSING

Line broadening 0.2 Hz

FT size 65536

Total time 1 min, 3 sec

Acquisition date: Aug 12 2008



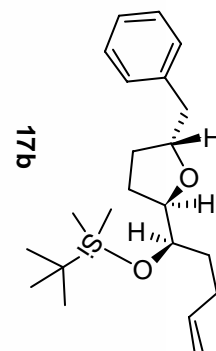
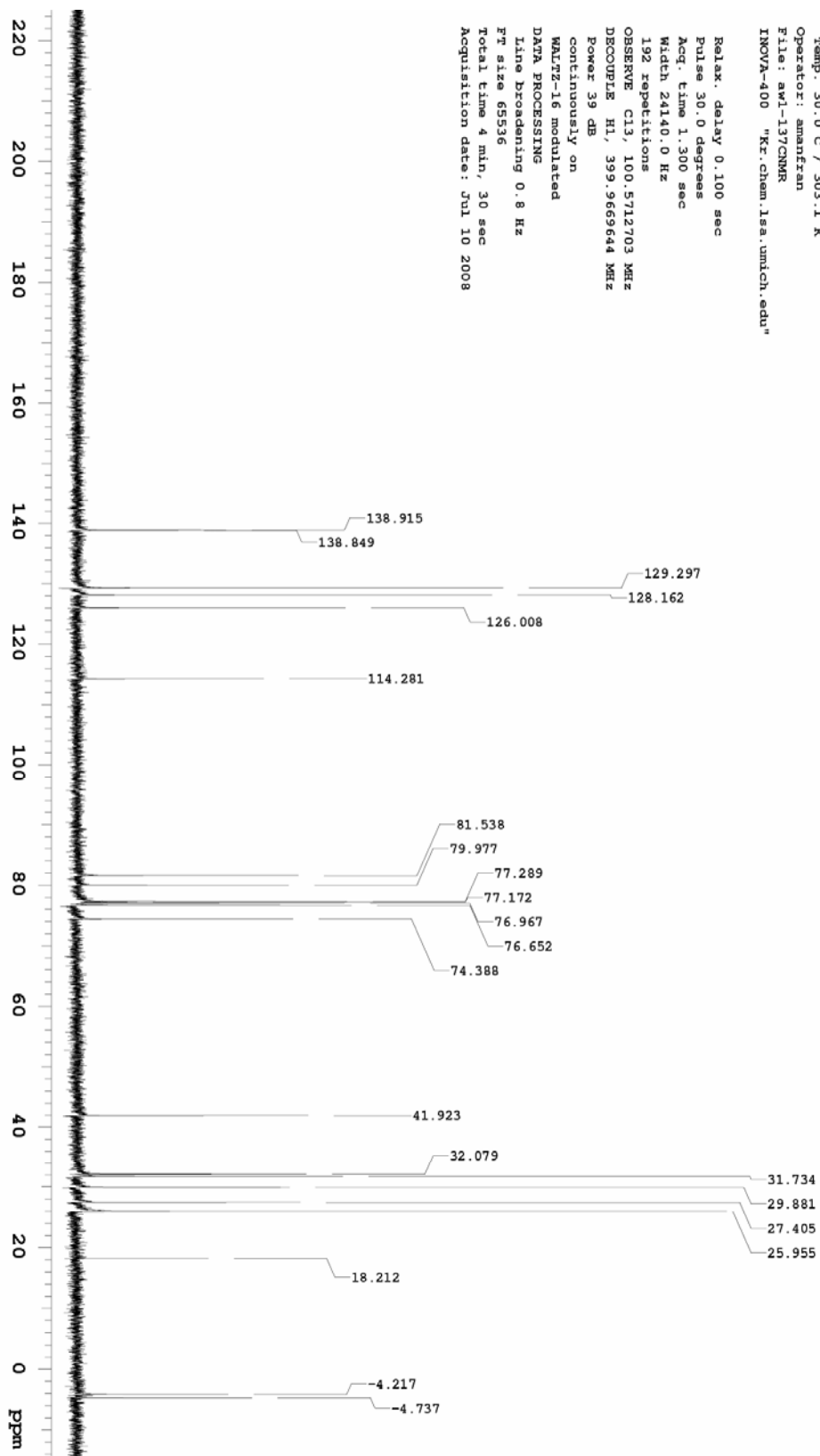
Std Carbon

File: aw1-137CNMR

Pulse Sequence: s2pul

Solvent: cdcl3
 Temp: 30.0 C / 303.1 K
 Operator: amanfran
 File: aw1-137CNMR
 INOVA-400 "Kz.chem.lsa.umich.edu"

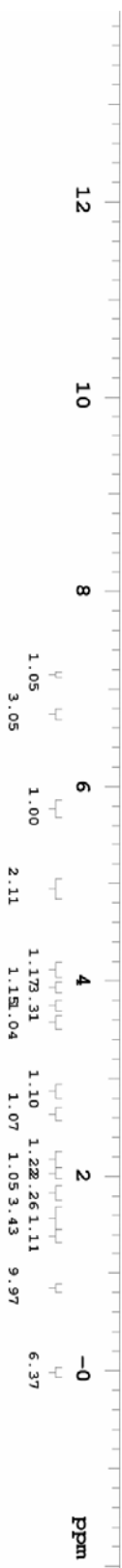
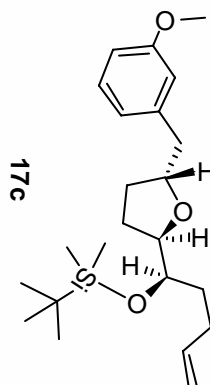
Relax. delay 0.100 sec
 Pulse 30.0 degrees
 Acq. time 1.300 sec
 Width 24140.0 Hz
 192 repetitions
 OBSERVE C13, 100.5712703 MHz
 DECOUPLE H1, 399.9669644 MHz
 Power 39 dB
 continuously on
 WALTZ-16 modulated
 DATA PROCESSING
 Line broadening 0.8 Hz
 FT size 65536
 Total time 4 min, 30 sec
 Acquisition date: Jul 10 2008



STANDARD PROTON PARAMETERS

File: aw1-167-HNMR
 Pulse Sequence: szpul
 Solvent: cdcl3
 Ambient temperature
 Operator: amanfran
 File: aw1-167-HNMR
 VNMR5-401 "Kr.chem.1sa.umich.edu"

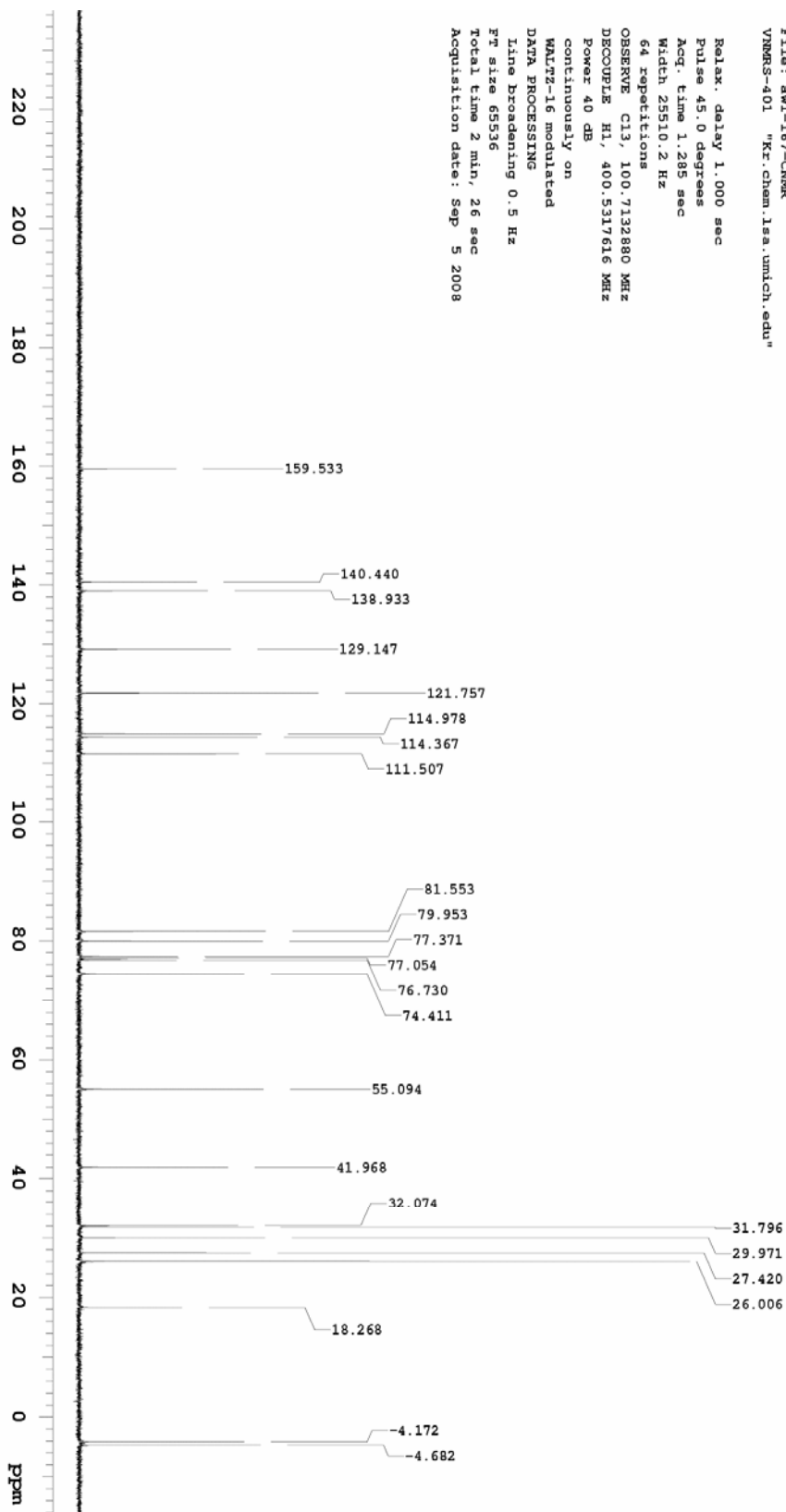
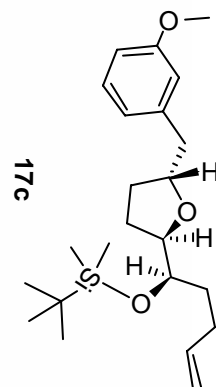
Relax. delay 1.000 sec
 Pulse 45.0 degrees
 Acq. time 2.556 sec
 Width 6410.3 Hz
 8 repetitions
 OBSERVE H1, 400.5297790 MHz
 DATA PROCESSING
 FT size 32768
 Total time 0 min, 35 sec
 Acquisition date: Sep 5 2008



STANDARD PROTON PARAMETERS

File: sw1-167-CNMR
 Pulse Sequence: szpul
 Solvent: cdcl3
 Ambient Temperature
 Operator: amanfran
 File: sw1-167-CNMR
 VNMR5-401 "K.chem.1sa.umich.edu"

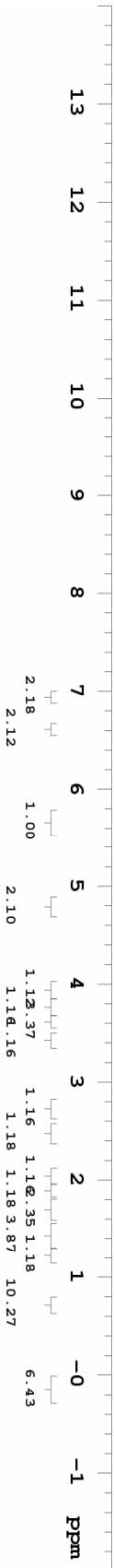
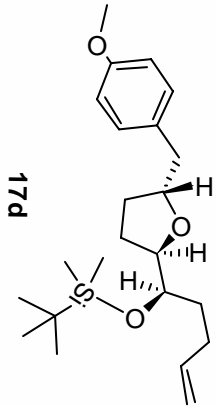
Relax. delay 1.000 sec
 Pulse 45.0 degrees
 Acq. time 1.285 sec
 Width 25510.2 Hz
 64 repetitions
 OBSERVE C13, 100.7132880 MHz
 DECOUPLE H1, 400.5317616 MHz
 Power 40 dB
 continuously on
 WALTZ-16 modulated
 DATA PROCESSING
 Line Broadening 0.5 Hz
 F2 size 65536
 Total time 2 min, 26 sec
 Acquisition date: Sep 5 2008



Std proton

File: aw1-195-HNMR
Pulse Sequence: s2pul
Solvent: cdcl3
Temp: 25.0 C / 298.1 K
Operator: amanfran
File: aw1-195-HNMR
INOVA-400 "Kr.chem.lsa.umich.edu"

Relax. delay 0.500 sec
Pulse 45.0 degrees
Acq. time 3.000 sec
Width 6399.5 Hz
16 repetitions
OBSERVE H1, 399.9649645 MHz
DATA PROCESSING
Line broadening 0.2 Hz
FT size 65536
Total time 0 min, 10 sec
Acquisition date: Sep 17 2008



Std Carbon

File: aw1-195-CNMR

Pulse Sequence: s2pul

Solvent: cdcl3

Ambient temperature

Operator: amanfran

File: aw1-195-CNMR

INOVA-400 "Kr.chem.lsa.umich.edu"

Relax. delay 0.100 sec

Pulse 30.0 degrees

Acq. time 1.300 sec

Width 24140.0 Hz

112 repetitions

OBSERVE C13, 100.5712703 MHz

DECOUPLE H1, 399.9669644 MHz

Power 39 dB

continuously on

WALTZ-16 modulated

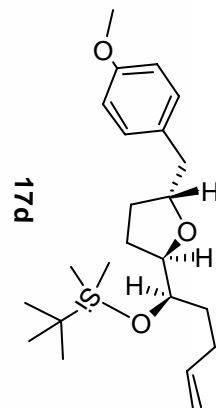
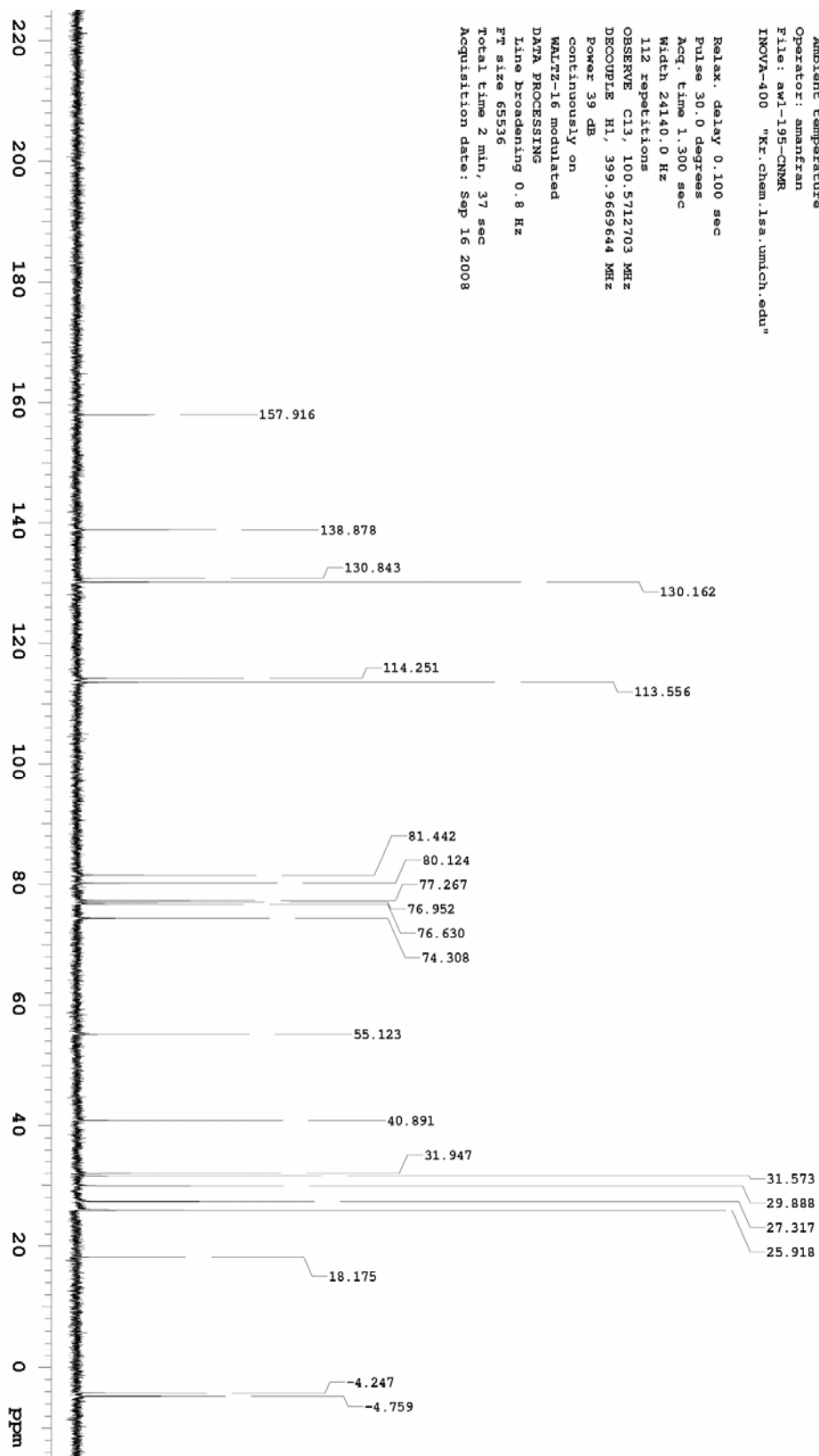
DATA PROCESSING

Line broadening 0.8 Hz

FT size 65536

Total time 2 min, 37 sec

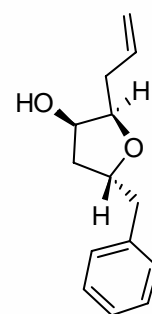
Acquisition date: Sep 16 2008



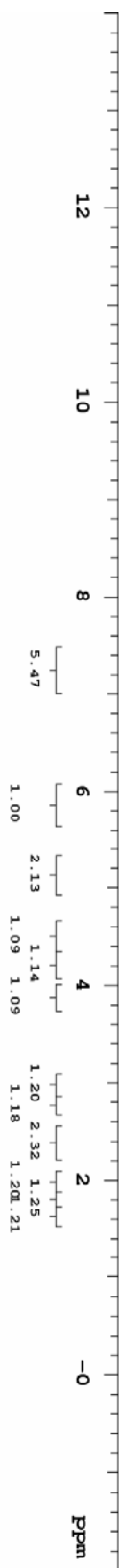
STANDARD PROTON PARAMETERS

File: aw2-2-2-HMR

Pulse Sequence: szpul



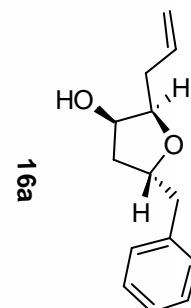
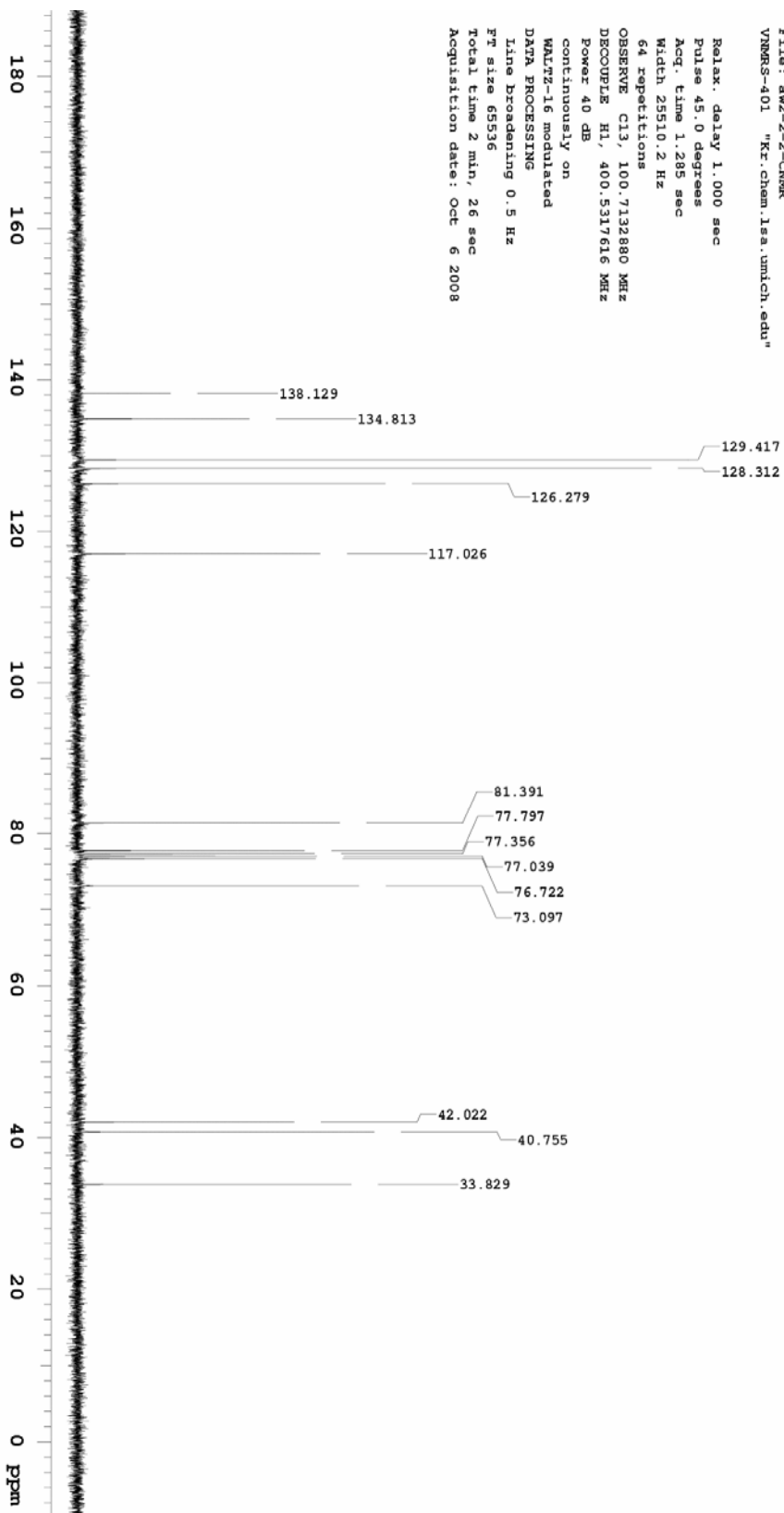
16a



STANDARD PROTON PARAMETERS

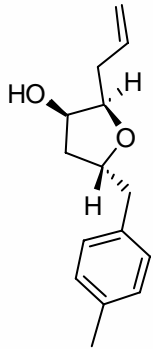
File: sw2-2-2-CNMR
 Pulse Sequence: szpul
 Solvent: cdcl3
 Temp: 25.0 C / 298.1 K
 Operator: amantran
 File: sw2-2-2-CNMR
 VNMR-401 "K.chem.lsa.umich.edu"

Relax. delay 1.000 sec
 Pulse 45.0 degrees
 Acq. time 1.285 sec
 Width 25510.2 Hz
 64 repetitions
 OBSERVE C13, 100.7132880 MHz
 DECOUPLE H1, 400.5317616 MHz
 Power 40 dB
 continuously on
 WALTZ-16 modulated
 DATA PROCESSING
 Line Broadening 0.5 Hz
 F2 size 65536
 Total time 2 min, 26 sec
 Acquisition date: Oct 6 2008

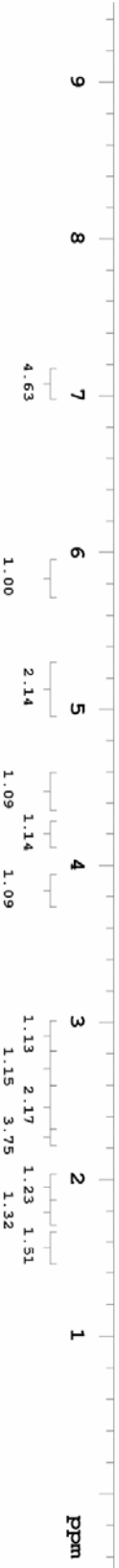


STANDARD PROTON PARAMETERS

File: aw2-5-2
 Pulse Sequence: s2pul
 Solvent: cdcl3
 Temp: 25.0 C / 298.1 K
 Operator: amantran
 File: aw2-5-2
 VNMR-400 "Kr.chem.lsa.umich.edu"
 Relax. delay 1.000 sec
 Pulse 45.0 degrees
 Acq. time 2.556 sec
 Width 6410.3 Hz
 8 repetitions
 OBSERVE H1, 399.5389259 MHz
 DATA PROCESSING
 FT size 32768
 Total time 0 min, 35 sec
 Acquisition date: Oct 6 2008



16b



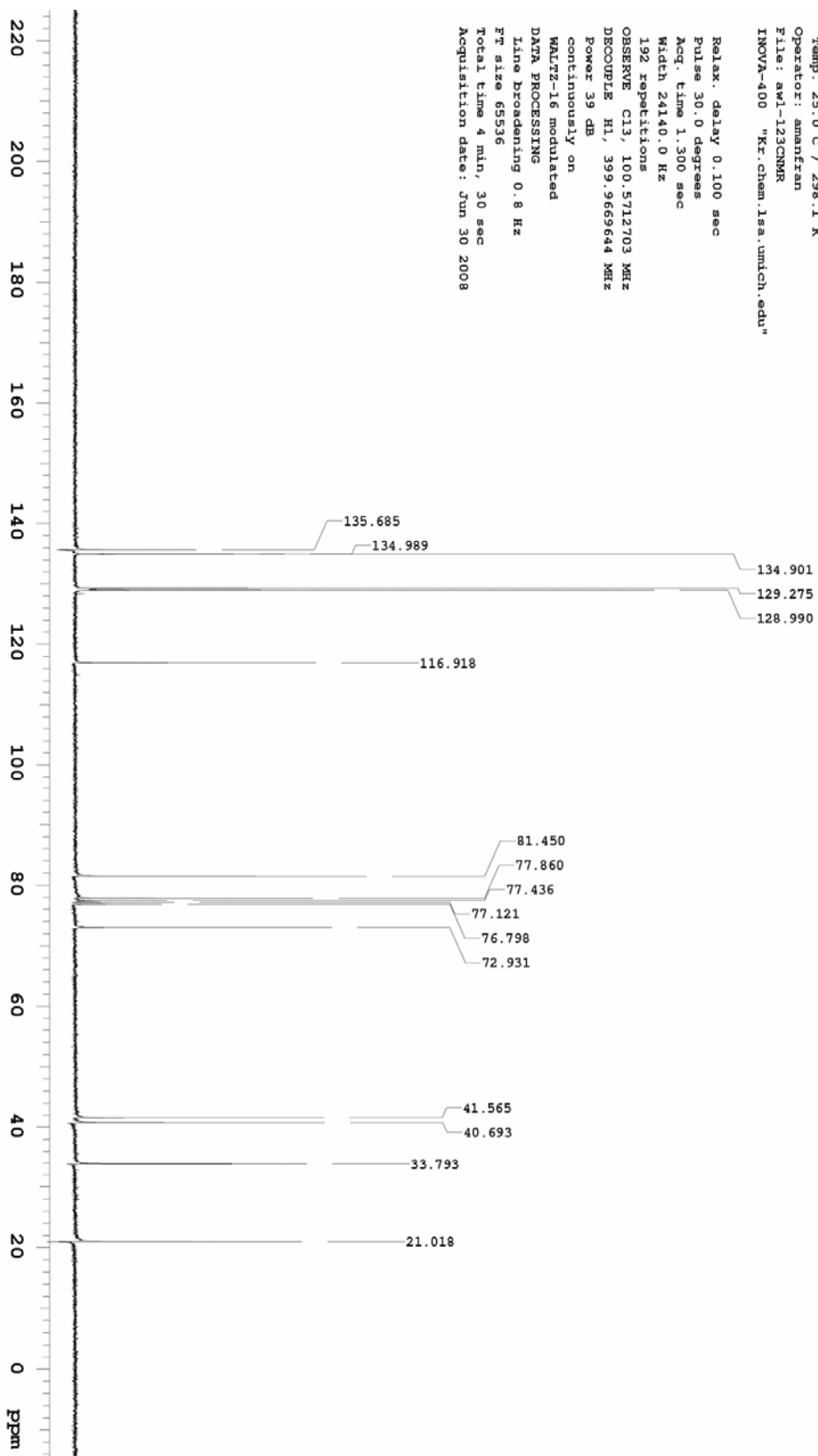
Std Carbon

File: aw1-123CNMR

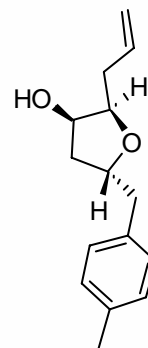
Pulse Sequence: s2pul

Solvent: cdcl3
 Temp: 25.0 C / 298.1 K
 Operator: amanfran
 File: aw1-123CNMR
 INOVA-400 "K.chem.lsa.umich.edu"

Relax. delay 0.100 sec
 Pulse 30.0 degrees
 Acq. time 1.300 sec
 Width 24140.0 Hz
 192 repetitions
 OBSERVE C13, 100.5712703 MHz
 DECOUPLE H1, 399.9669644 MHz
 Power 39 dB
 continuously on
 WALTZ-16 modulated
 DATA PROCESSING
 Line broadening 0.8 Hz
 FT size 65536
 Total time 4 min, 30 sec
 Acquisition date: Jun 30 2008



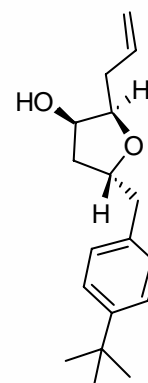
16b



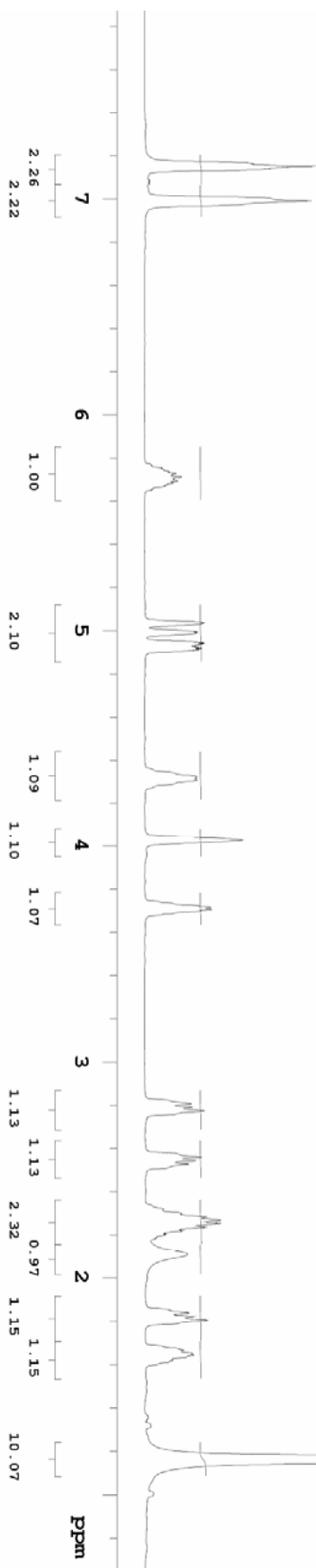
STANDARD PROTON PARAMETERS

File: aw1-157
 Pulse Sequence: szpul
 Solvent: cdcl3
 Temp: 25.0 C / 298.1 K
 Operator: amanfran
 File: aw1-157
 VNMR-400 "K.chem.lsa.umich.edu"

Relax. delay 1.000 sec
 Pulse 45.0 degrees
 Acq. time 2.556 sec
 Width 6410.3 Hz
 8 repetitions
 OBSERVE H1, 399.5389259 MHz
 DATA PROCESSING
 FT size 32768
 Total time 0 min, 35 sec
 Acquisition date: Jul 24 2008



16c





STANDARD PROTON PARAMETERS

Sample Name:

Data Collected on:
Co.Chem., LSA,UMich.Edu-vnmrs400
Archive directory:

Sample directory:

Fidfile: mw1-157-qosy

Pulse Sequence: gpcsy

Solvent: cdcl3
Data collected on: Aug 1 2008

Operator: amanfran

Relax. delay 1.000 sec

Acq. time 0.150 sec

Width 3188.8 Hz

2D Width 3188.8 Hz

2 repetitions

200 increments

OBSERVE H1, 400.5297589 MHz

DATA PROCESSING

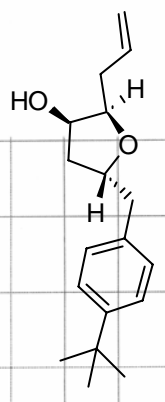
Sq. sine bell 0.075-sec

F1 DATA PROCESSING

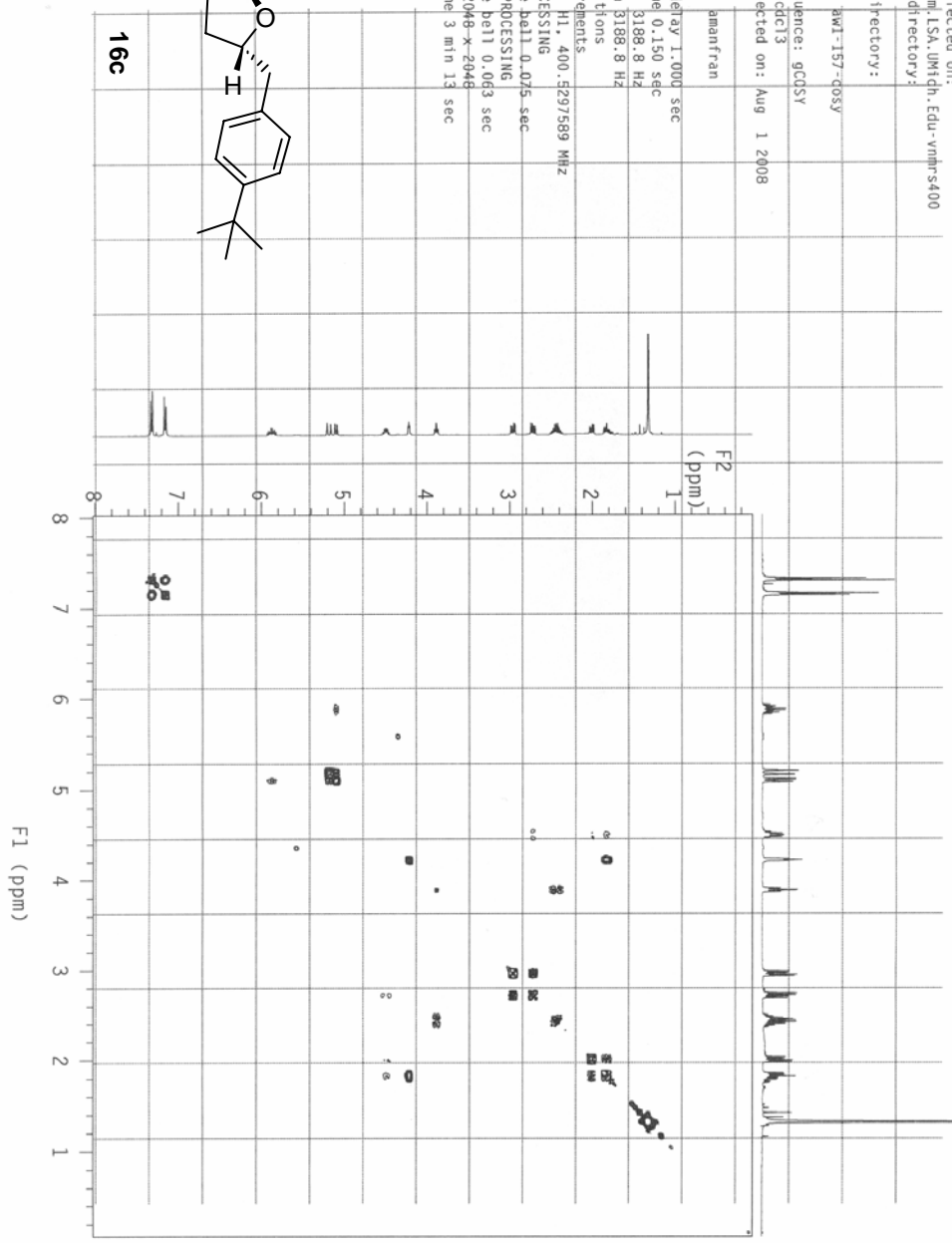
Sq. sine bell 0.083 sec

FT size 2048 x 2048

Total time 3 min 13 sec



16c



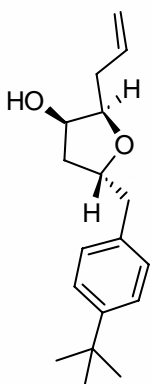
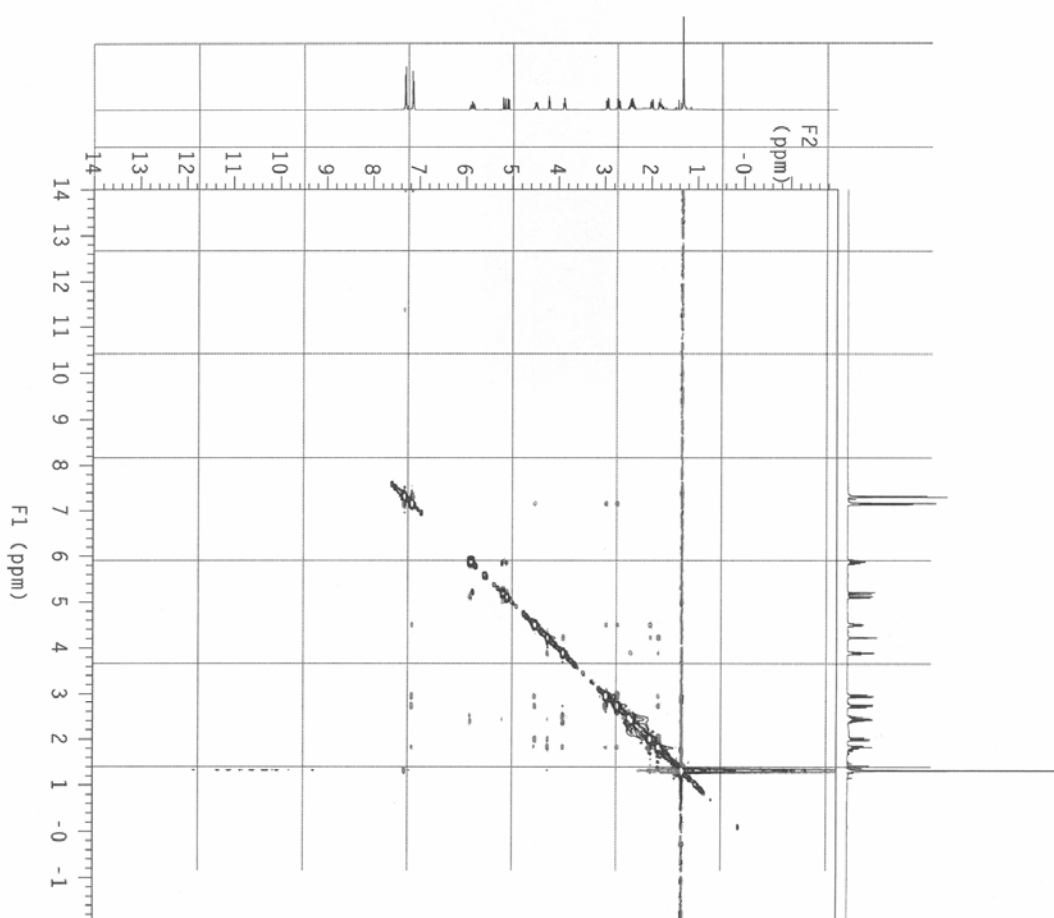
STANDARD PROTON PARAMETERS

File: aw1-157-noesy

Pulse Sequence: NOESY

Solvent: cdcl3
Ambient temperature
Operator: amanfran
File: aw1-157-noesy
VNMRS-401 "Kr.chem.1sa.umich.edu"

Relax. delay 1.000 sec
Acq. time 0.150 sec
Width 6410.3 Hz
20 Width 6410.3 Hz
4 repetitions
2 x 128 increments
OBSERVE H1, 400.5297589 MHz
DATA PROCESSING
Gauss apodization 0.059 sec
F1 DATA PROCESSING
Gauss apodization 0.018 sec
FT size 2048 x 2048
Total time 20 min, 43 sec
Acquisition date: Aug 1 2008

**16c**

STANDARD PROTON PARAMETERS

File: aw1-157CNMR

Pulse Sequence: s2pul

Solvent: cdcl3

Temp: 25.0 C / 298.1 K

Operator: amantran

File: aw1-157CNMR

VNMRB-400 "K:chem.lsa.umich.edu"

Relax. delay 1.000 sec

Pulse 45.0 degrees

Acq. time 1.285 sec

Width 25510.2 Hz

80 repetitions

OBSERVE C13, 100.4641428 MHz

DECOUPLE H1, 399.5409236 MHz

Power 33 dB

continuously on

WALTZ-16 modulated

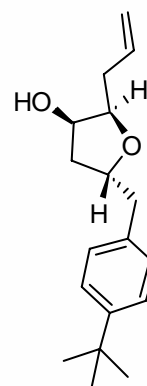
DATA PROCESSING

Line broadening 0.5 Hz

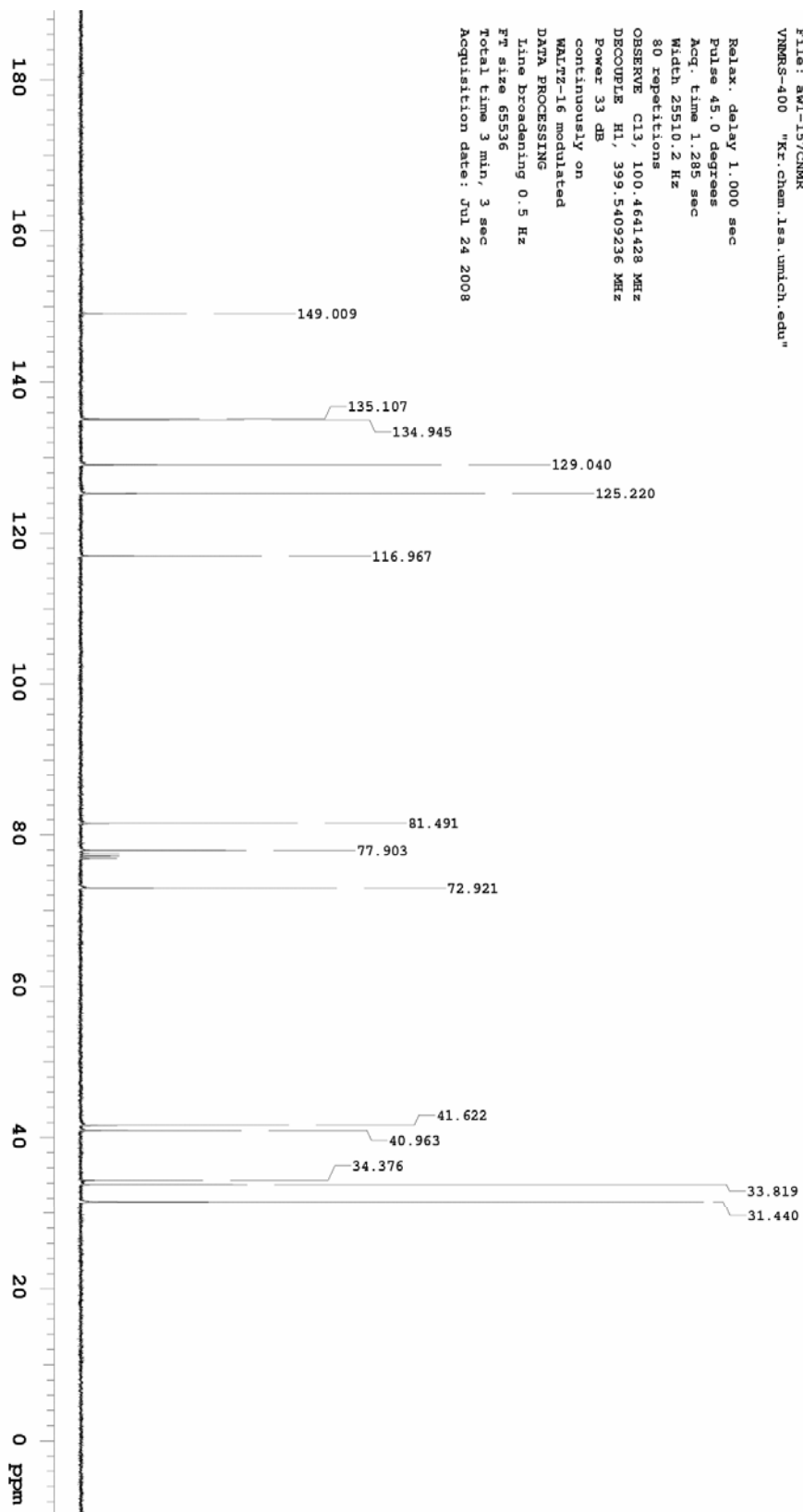
FT size 65536

Total time 3 min, 3 sec

Acquisition date: Jul 24 2008



16c



STANDARD PROTON PARAMETERS

File: aw2-2-1-HNMR

Pulse Sequence: szpul

Solvent: cdcl3

Ambient temperature

Operator: amanfran

File: aw2-2-1-HNMR

VNMR5-401 "Kr.Chem.1sa.umich.edu"

Relax. delay 1.000 sec

Pulse 45.0 degrees

Acq. time 2.556 sec

Width 6410.3 Hz

8 repetitions

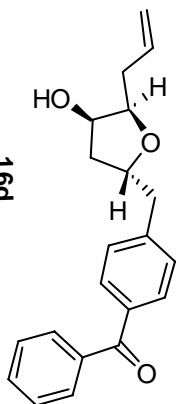
OBSERVE H1, 400.5297589 MHz

DATA PROCESSING

FT size 32768

Total time 0 min, 35 sec

Acquisition date: Oct 6 2008



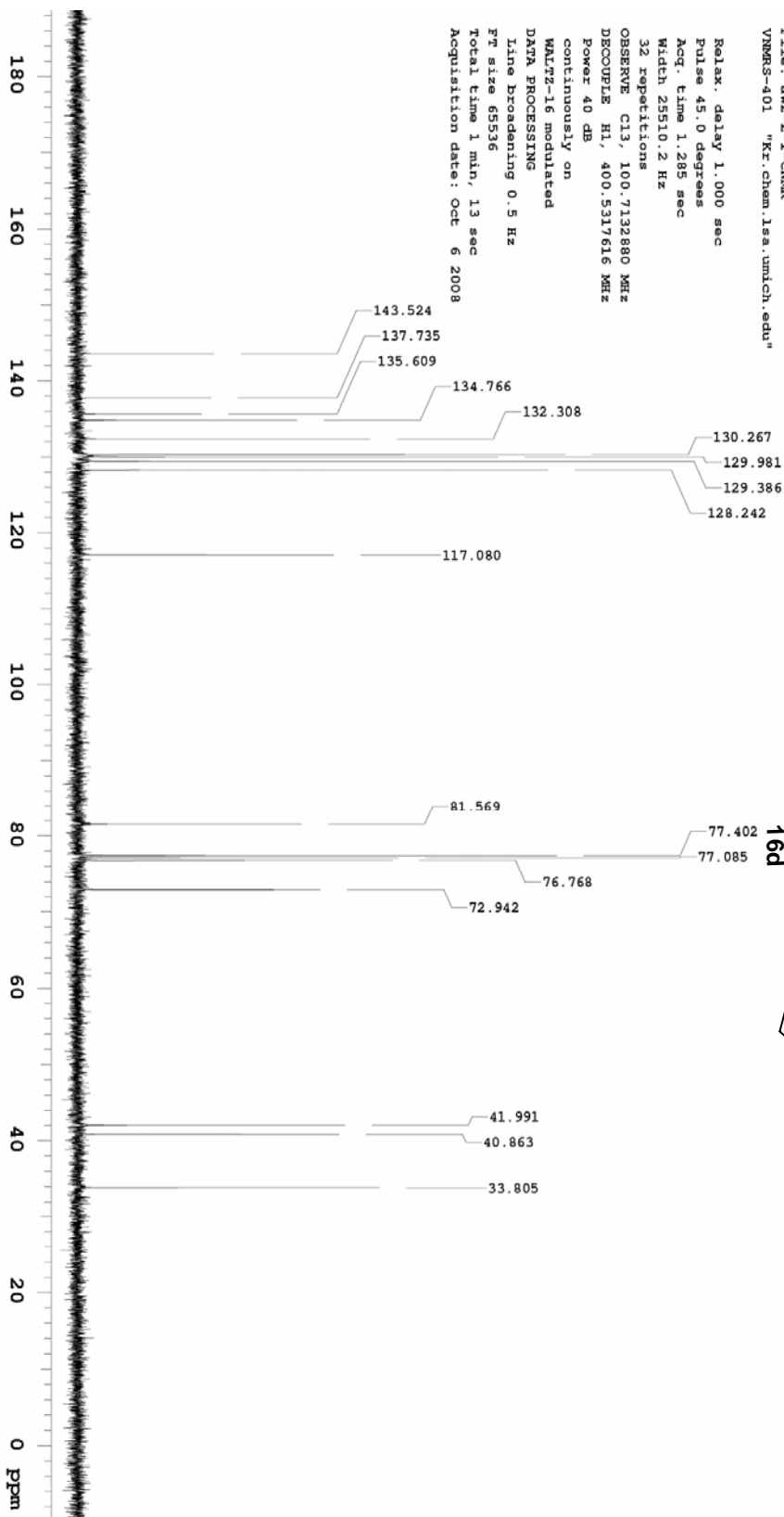
16d



STANDARD PROTON PARAMETERS

File: sw2-2-1-CNMR
 Pulse Sequence: szpul
 Solvent: cdcl3
 Ambient Temperature
 Operator: amanfran
 File: sw2-2-1-CNMR
 VNMR-401 "K.chem.lsa.umich.edu"

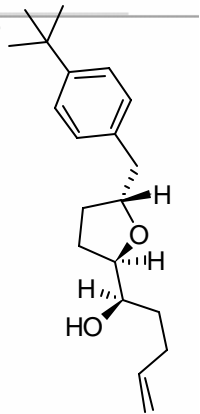
Relax. delay 1.000 sec
 Pulse 45.0 degrees
 Acq. time 1.285 sec
 Width 25510.2 Hz
 32 repetitions
 OBSERVE C13, 100.7132880 MHz
 DECOUPLE H1, 400.5317616 MHz
 Power 40 dB
 continuously on
 WALTZ-16 modulated
 DATA PROCESSING
 Line Broadening 0.5 Hz
 F2 size 65536
 Total time 1 min, 13 sec
 Acquisition date: Oct 6 2008



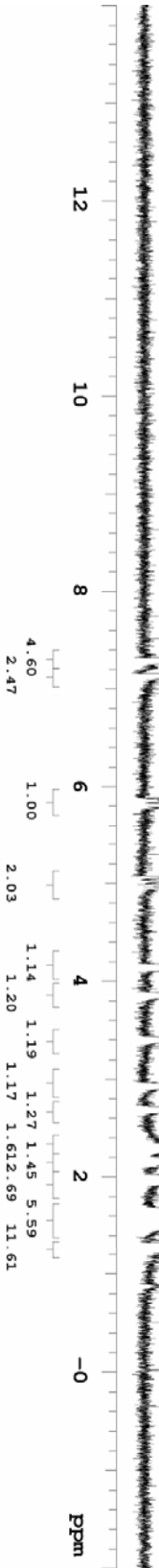
STANDARD PROTON PARAMETERS

File: sw1-138
 Pulse Sequence: s2pul
 Solvent: CDCl3
 Ambient temperature
 Operator: amantran
 File: sw1-138
 VNMR5-401 "Kr.chem.1sa.umich.edu"

Relax. delay 1.000 sec
 Pulse 45.0 degrees
 Acq. time 2.556 sec
 Width 6410.3 Hz
 8 repetitions
 OBSERVE H1, 400.5297589 MHz
 DATA PROCESSING
 F1 size 32768
 Total time 0 min, 35 sec
 Acquisition date: Jul 10 2008



18a



Std Carbon

File: aw1-138CNMR

Pulse Sequence: s2pul

Solvent: cdcl3

Ambient temperature

Operator: amanfran

File: aw1-138CNMR

INOVA-400 "Kr.chem.lsa.umich.edu"

Relax. delay 0.100 sec

Pulse 30.0 degrees

Acq. time 1.300 sec

Width 24140.0 Hz

368 repetitions

OBSERVE C13, 100.5712703 MHz

DECOUPLE H1, 399.9669644 MHz

Power 39 dB

continuously on

WALTZ-16 modulated

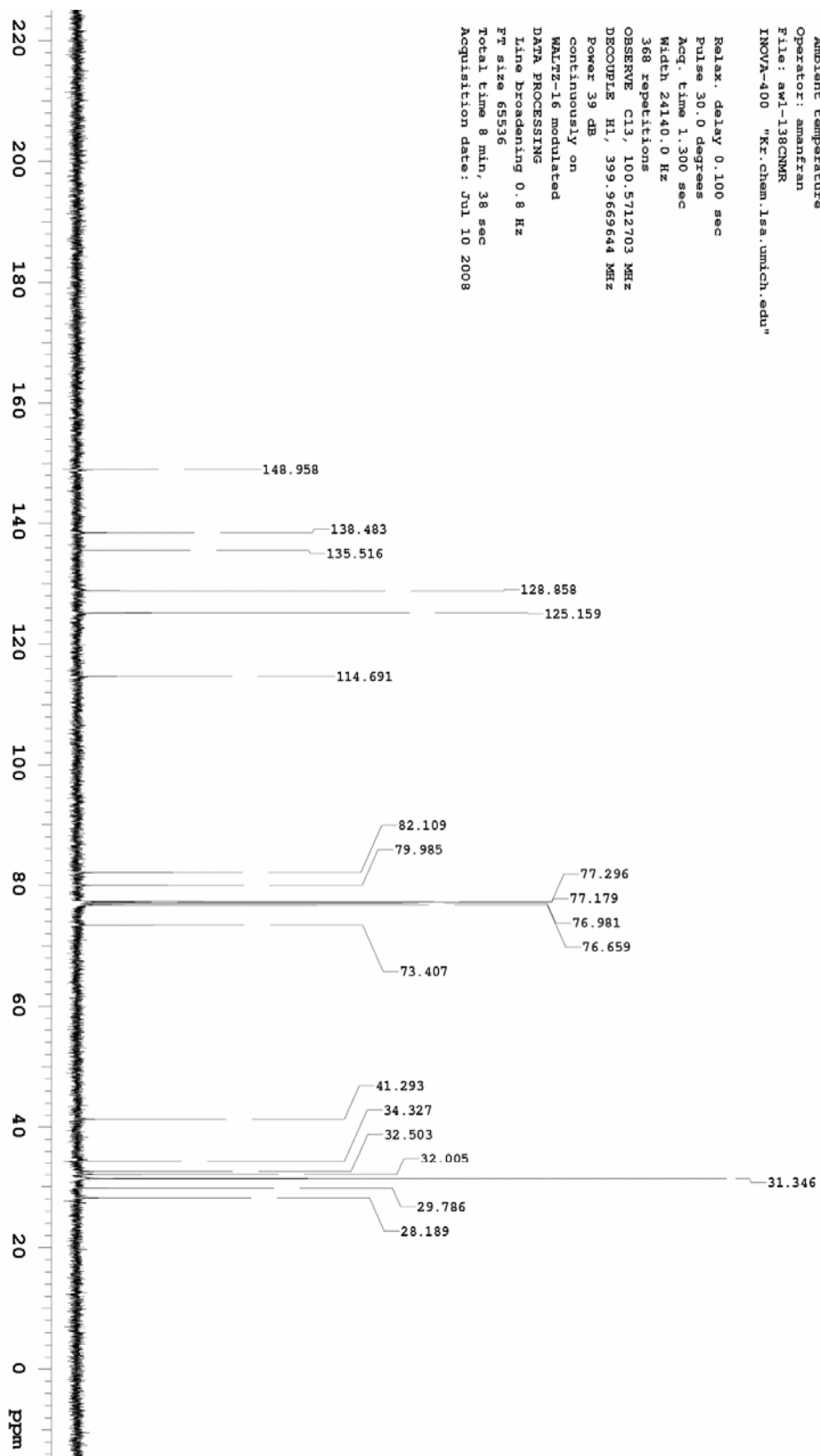
DATA PROCESSING

Line broadening 0.8 Hz

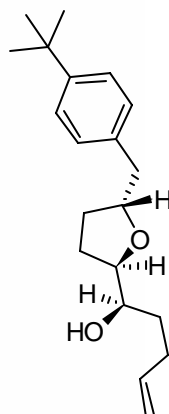
FT size 65536

Total time 8 min, 38 sec

Acquisition date: Jul 10 2008



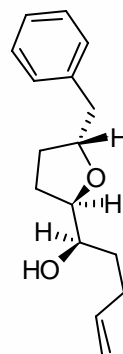
18a



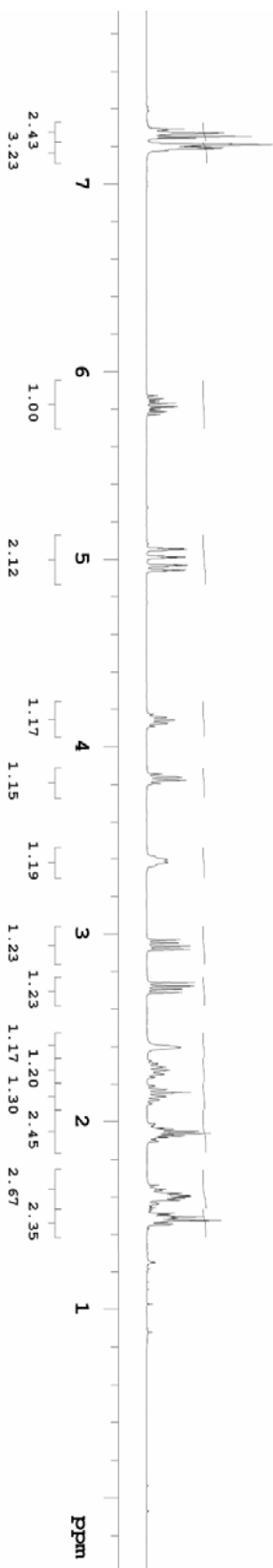
STANDARD PROTON PARAMETERS

File: aw1-140HMR-coil2
 Pulse Sequence: s2pul
 Solvent: cdcl3
 Temp: 22.0 C / 295.1 K
 Operator: amantran
 File: aw1-140HMR-coil2
 YNMR5-400 "Kr.chem.lsa.umich.edu"

Relax. delay 1.000 sec
 Pulse 45.0 degrees
 Acq. time 2.556 sec
 Width 6410.3 Hz
 8 repetitions
 OBSERVE H1, 399.5389259 MHz
 DATA PROCESSING
 FT size 32768
 Total time 0 min, 35 sec
 Acquisition date: Jul 14 2008



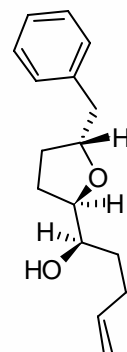
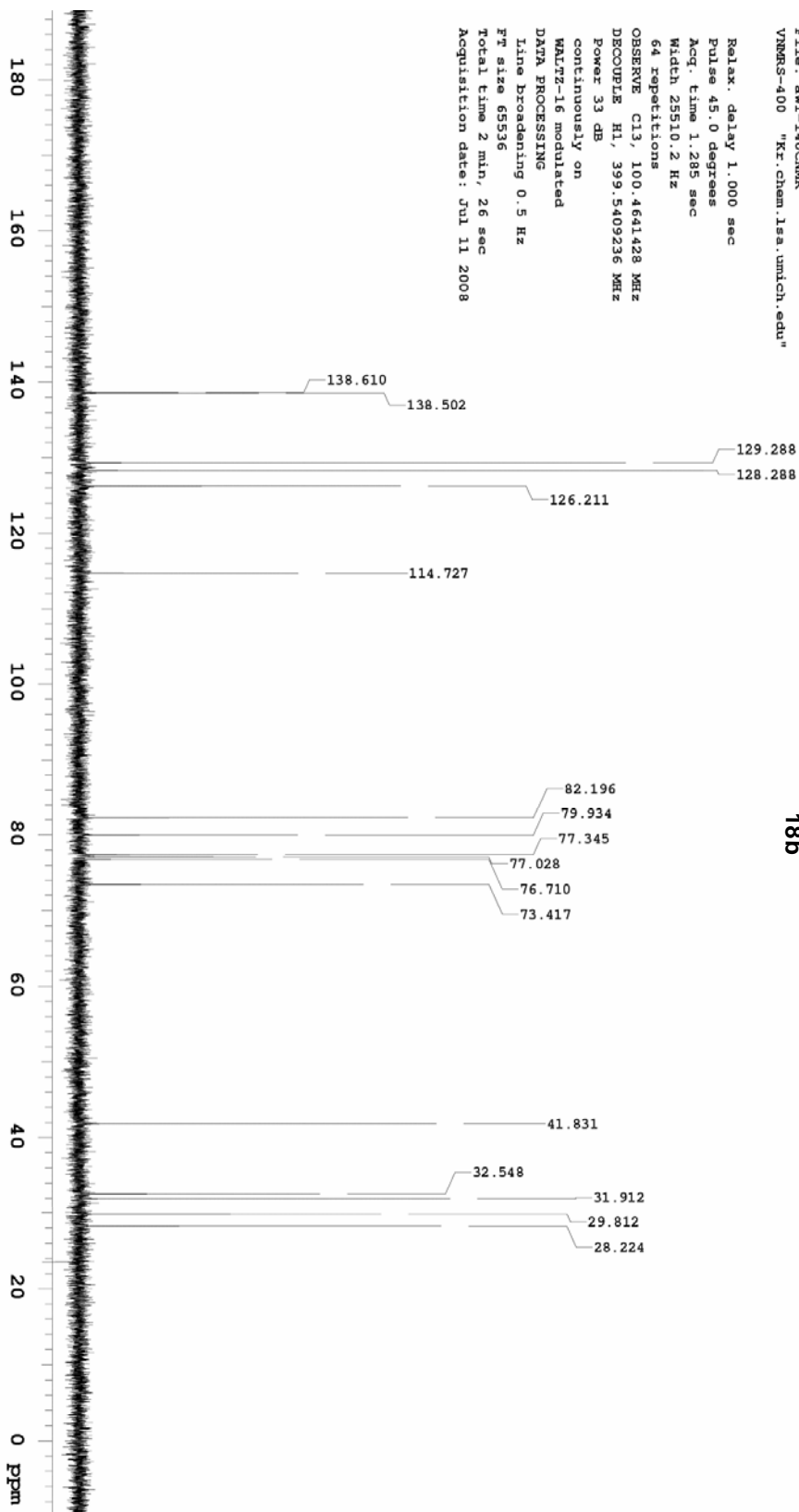
18b



STANDARD PROTON PARAMETERS

File: aw1-140CNMR
 Pulse Sequence: s2pul
 Solvent: cdcl3
 Temp: 22.0 C / 295.1 K
 Operator: amantran
 File: aw1-140CNMR
 YNMR5-400 "Kr.chem.lsa.umich.edu"

Relax. delay 1.000 sec
 Pulse 45.0 degrees
 Acq. time 1.285 sec
 Width 25510.2 Hz
 64 repetitions
 OBSERVE C13, 100.4641428 MHz
 DECOUPLE H1, 399.5409236 MHz
 Power 33 dB
 continuously on
 WALTZ-16 modulated
 DATA PROCESSING
 Line Broadening 0.5 Hz
 FT size 65536
 Total time 2 min, 26 sec
 Acquisition date: Jul 11 2008

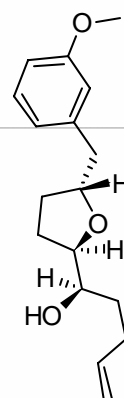


18b

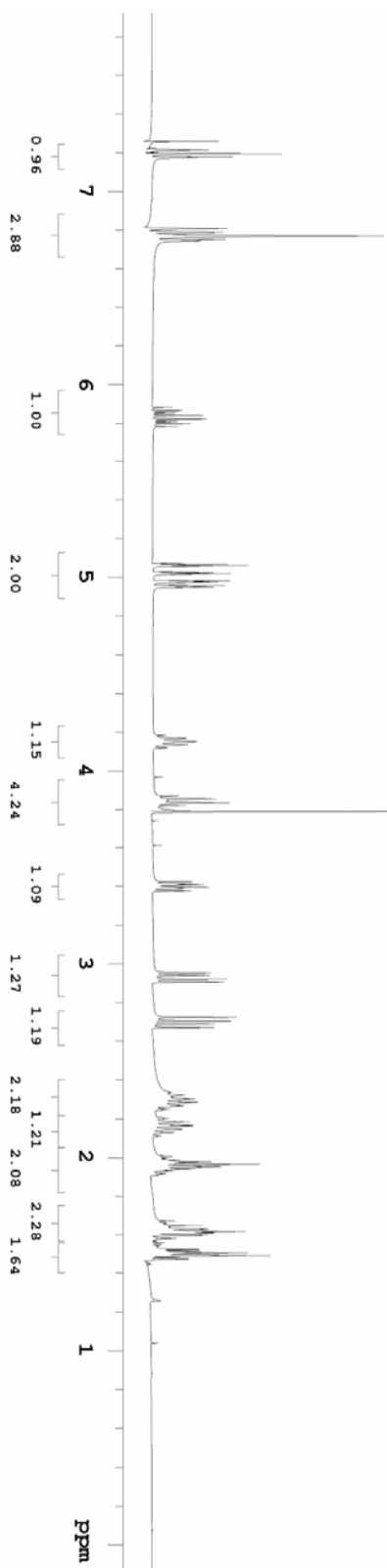
STANDARD PROTON PARAMETERS

File: aw1-190-HMR
 Pulse Sequence: szpul
 Solvent: cdcl3
 Temp: 10.0 C / 283.1 K
 Operator: amanfran
 File: aw1-190-HMR
 VNMR-401 "Kr.Chem.1sa.umich.edu"

Relax. delay 1.000 sec
 Pulse 45.0 degrees
 Acq. time 2.556 sec
 Width 6410.3 Hz
 32 repetitions
 OBSERVE H1, 400.5297589 MHz
 DATA PROCESSING
 FT size 32768
 Total time 2 min, 1 sec
 Acquisition date: Sep 9 2008



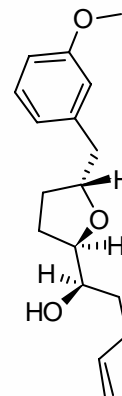
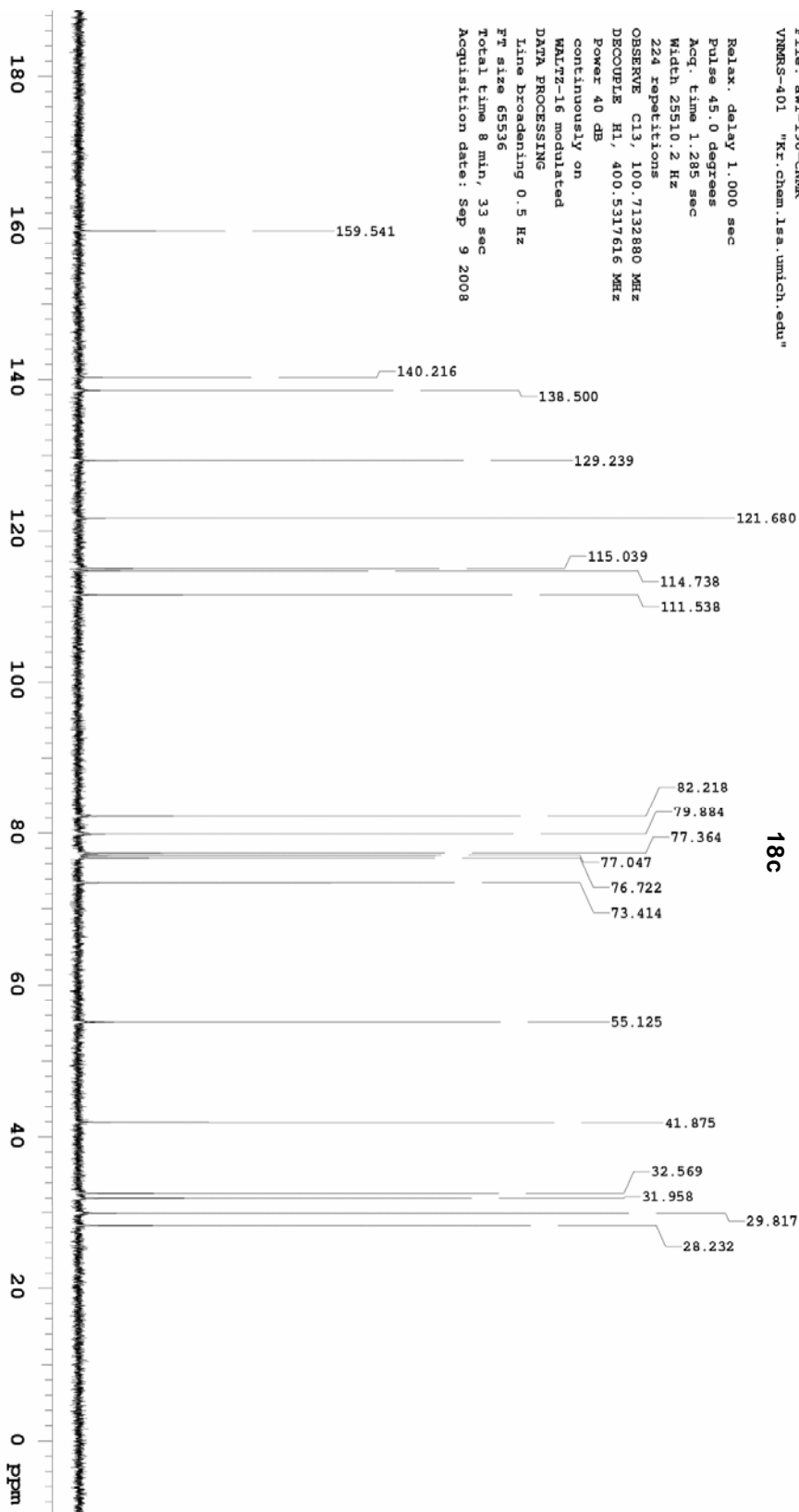
18c



STANDARD PROTON PARAMETERS

File: aw1-190-CNMR
 Pulse Sequence: s2pul
 Solvent: cdcl3
 Temp: 10.0 C / 283.1 K
 Operator: amantran
 File: aw1-190-CNMR
 YNMR5-401 "Kr.chem.lsa.umich.edu"

Relax. delay 1.000 sec
 Pulse 45.0 degrees
 Acq. time 1.285 sec
 Width 25510.2 Hz
 224 repetitions
 OBSERVE C13, 100.7132880 MHz
 DECOUPLE H1, 400.5317616 MHz
 Power 40 dB
 continuously on
 WALTZ-16 modulated
 DATA PROCESSING
 Line broadening 0.5 Hz
 FT size 65536
 Total time 8 min, 33 sec
 Acquisition date: Sep 9 2008



STANDARD 1H OBSERVE - profile

File: aw1-199-HNMR

Pulse Sequence: s2pul

Solvent: cdcl3

Ambient temperature

Operator: amantran

File: aw1-199-HNMR

VNMR-400 "Kr.chem.lsa.umich.edu"

Relax. delay 1.000 sec

Pulse 45.0 degrees

Acq. time 2.556 sec

Width 6410.3 Hz

8 repetitions

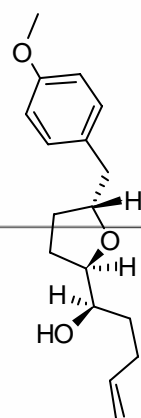
OBSERVE H1, 399.5389259 MHz

DATA PROCESSING

Ft size 32768

Total time 0 min, 35 sec

Acquisition date: Sep 18 2008



18d



Std Carbon

File: aw1-199-CNMR

Pulse Sequence: s2pul

Solvent: cdcl3

Temp: 25.0 C / 298.1 K

Operator: amanfran

File: aw1-199-CNMR

INOVA-400 "Kr.chem.lsa.umich.edu"

Relax. delay 0.100 sec

Pulse 30.0 degrees

Acq. time 1.300 sec

Width 24140.0 Hz

144 repetitions

OBSERVE C13, 100.5712703 MHz

DECOUPLE H1, 399.9669644 MHz

Power 39 dB

continuously on

WALTZ-16 modulated

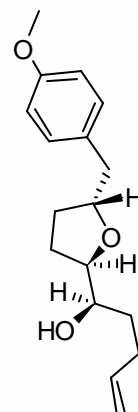
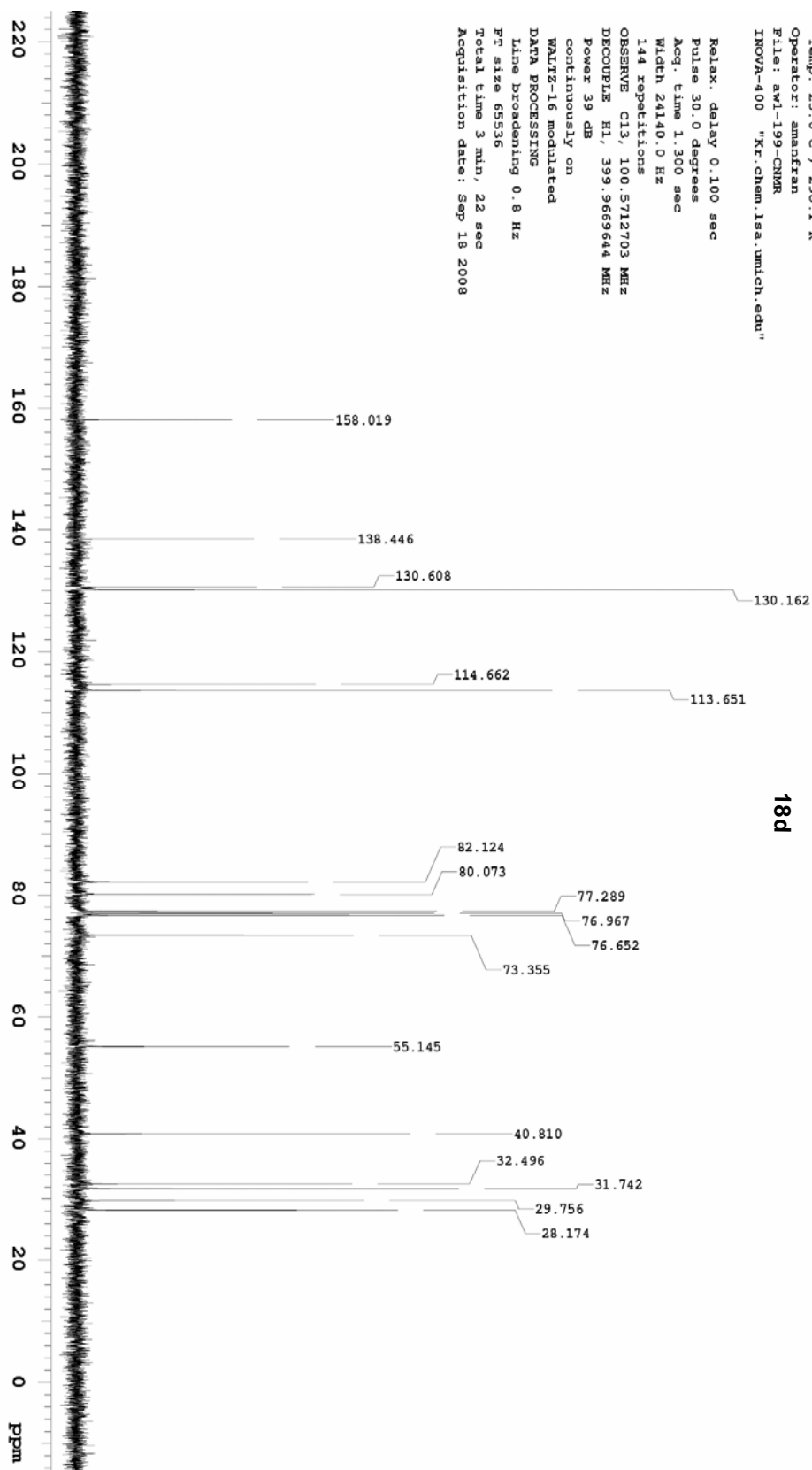
DATA PROCESSING

Line broadening 0.8 Hz

FT size 65536

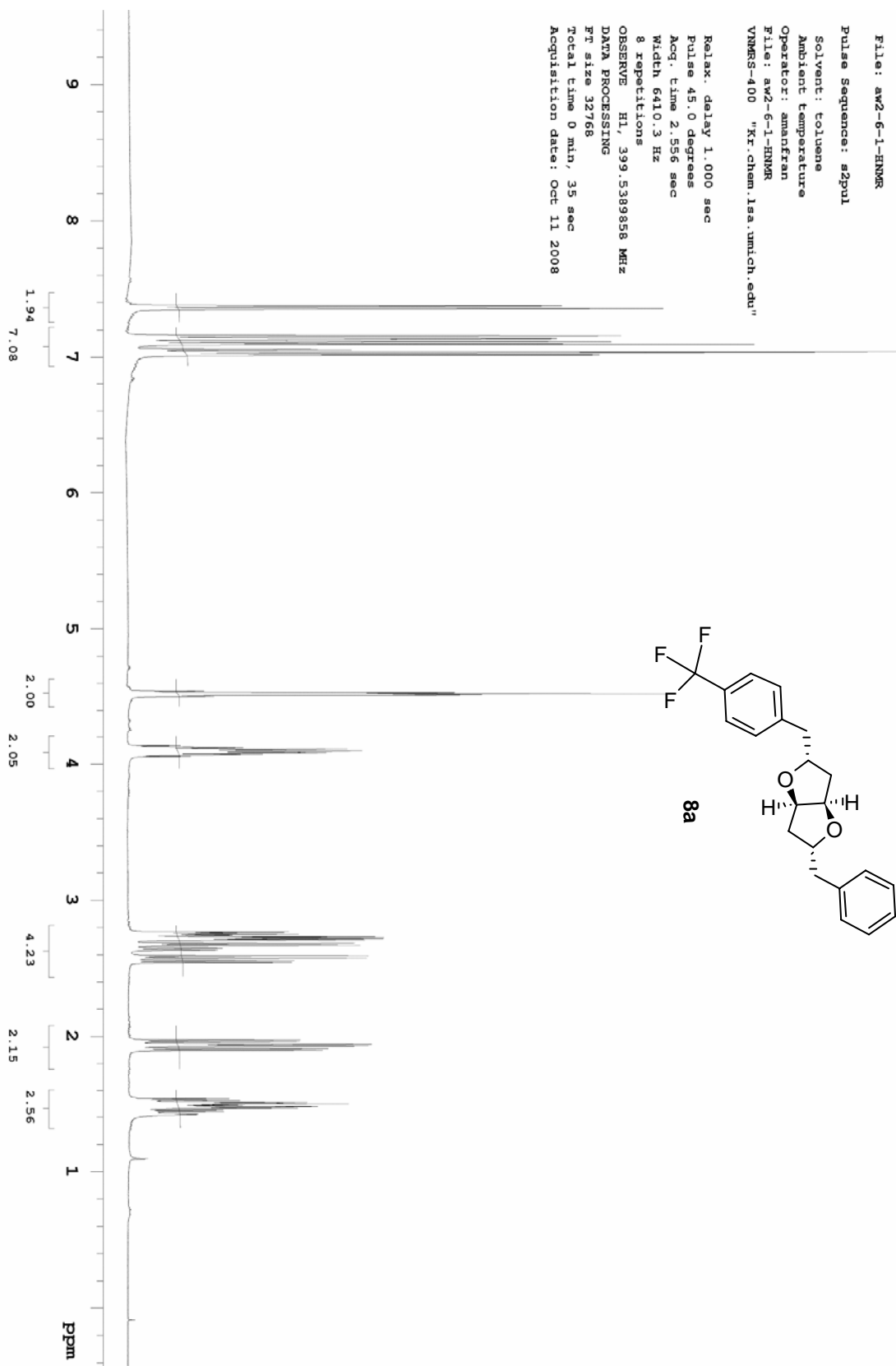
Total time 3 min, 22 sec

Acquisition date: Sep 18 2008



STANDARD PROTON PARAMETERS

File: aw2-6-1-HMR
Pulse Sequence: s2pul
Solvent: toluene
Ambient temperature
Operator: amanfran
File: aw2-6-1-HMR
VNMR5-400 "Kr.chem.lsa.umich.edu"
Relax. delay 1.000 sec
Pulse 45.0 degrees
Acq. time 2.556 sec
Width 6410.3 Hz
8 repetitions
OBSERVE H1, 399.5389858 MHz
DATA PROCESSING
FT size 32768
Focal time 0 min, 35 sec
Acquisition date: Oct 11 2008



STANDARD PROTON PARAMETERS

File: aw2-6-1-CNMR

Pulse Sequence: s2pul

Solvent: toluene

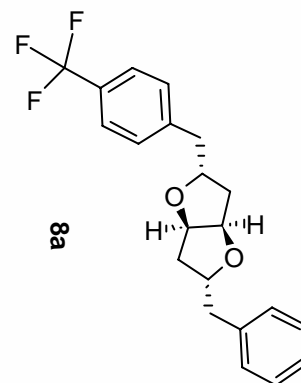
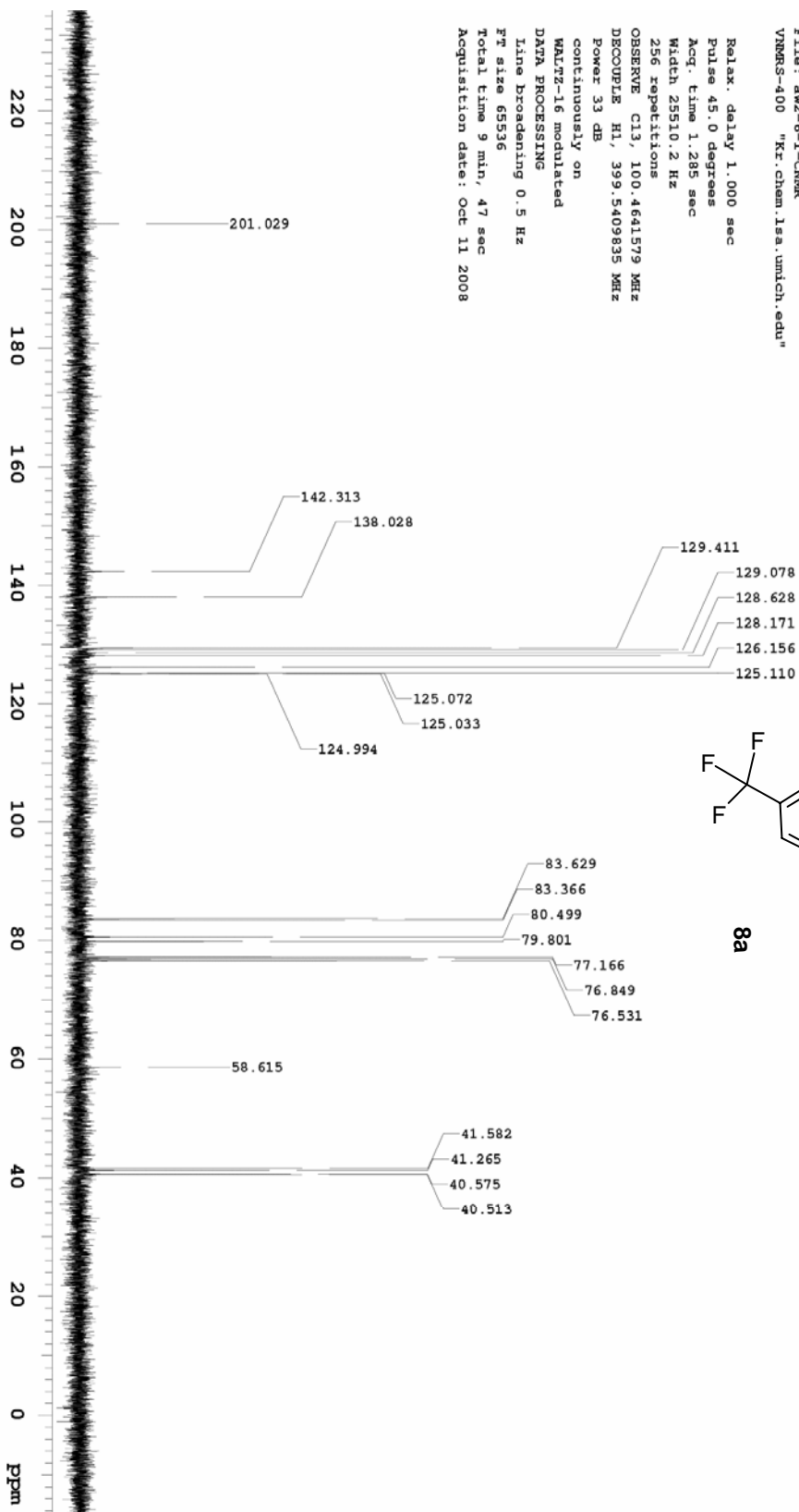
Ambient temperature

Operator: amantran

File: aw2-6-1-CNMR

VNMR-400 "Kr.chem.lsa.umich.edu"

Relax. delay 1.000 sec
 Pulse 45.0 degrees
 Acq. time 1.285 sec
 Width 25510.2 Hz
 256 repetitions
 OBSERVE C13, 100.4641579 MHz
 DECOUPLE H1, 399.5409835 MHz
 Power 33 dB
 continuously on
 WALTZ-16 modulated
 DATA PROCESSING
 Line broadening 0.5 Hz
 FT size 65536
 Total time 9 min, 47 sec
 Acquisition date: Oct 11 2008



STANDARD PROTON PARAMETERS

File: aw2-6-2-HNMR

Pulse Sequence: s2pul

Solvent: toluene

Ambient temperature

Operator: amantran

File: aw2-6-2-HNMR

VNMR-400 "Kr.chem.lsa.umich.edu"

Relax. delay 1.000 sec

Pulse 45.0 degrees

Acq. time 2.556 sec

Width 6410.3 Hz

8 repetitions

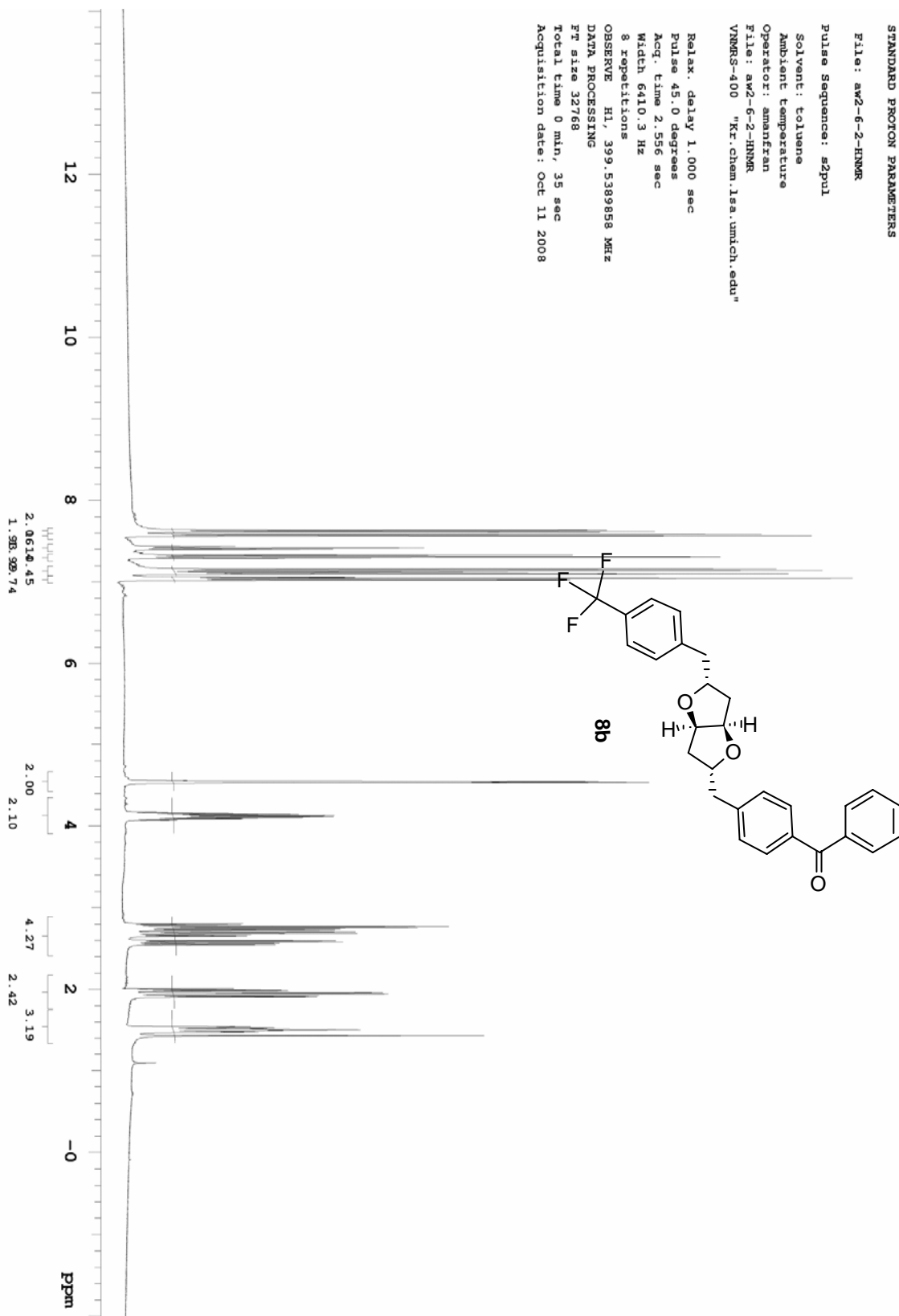
OBSERVE H1, 399.5389858 MHz

DATA PROCESSING

Ft size 32768

Total time 0 min, 35 sec

Acquisition date: Oct 11 2008



Std Carbon

File: aw2-6-2-CNMR

Pulse Sequence: s2pul

Solvent: cdcl3

Temp: 25.0 C / 298.1 K

Operator: amanfran

File: aw2-6-2-CNMR
INOVA-400 "Kr.chem.lsa.umich.edu"

Relax. delay 0.100 sec

Pulse 30.0 degrees

Acq. time 1.300 sec

Width 24140.0 Hz

80 repetitions

OBSERVE C13, 100.5712703 MHz

DECOUPLE H1, 399.9669644 MHz

Power 39 dB

continuously on

WALTZ-16 modulated

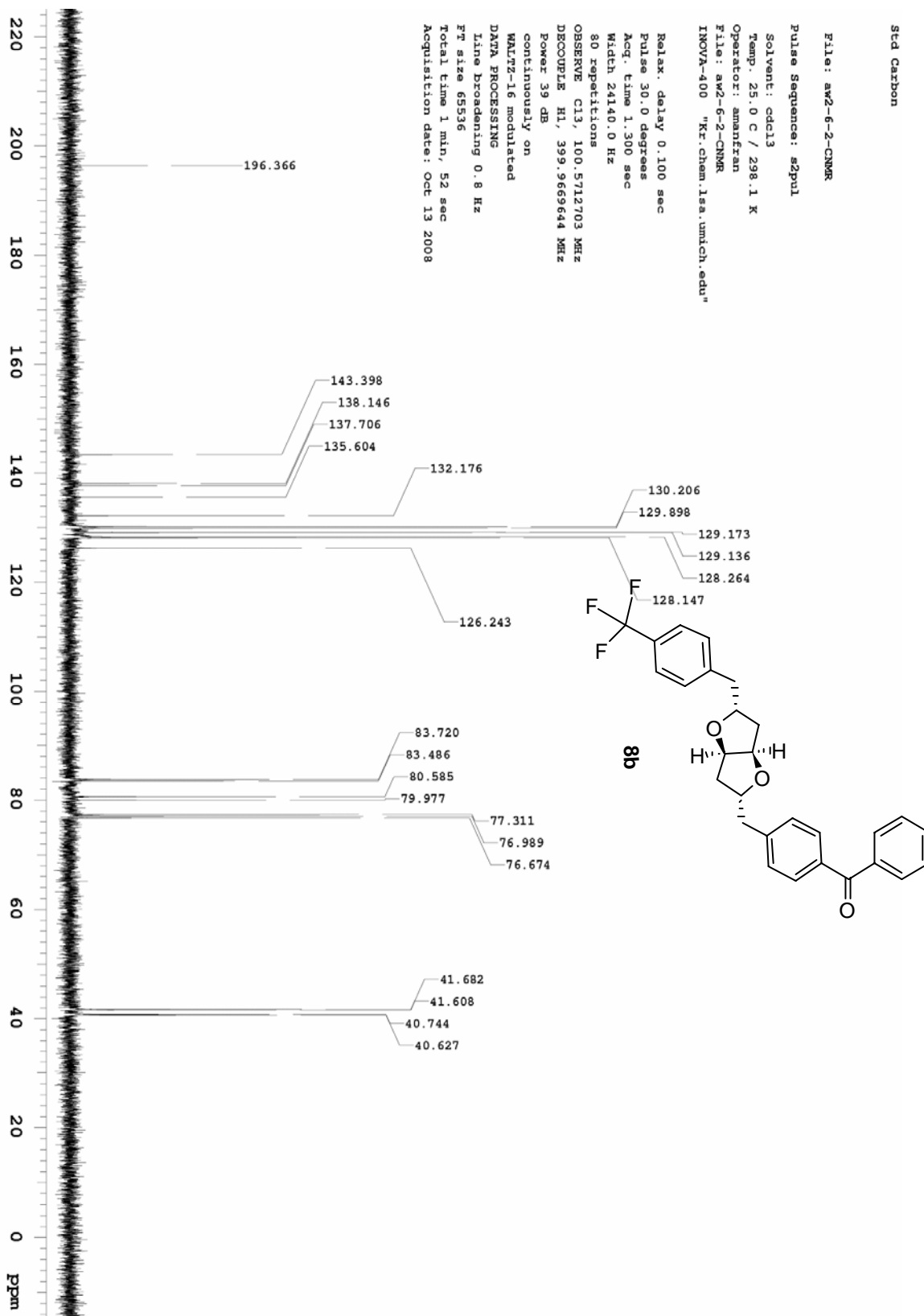
DATA PROCESSING

Line broadening 0.8 Hz

F2 size 65536

Total time 1 min, 52 sec

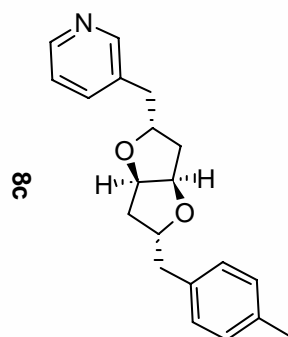
Acquisition date: Oct 13 2008



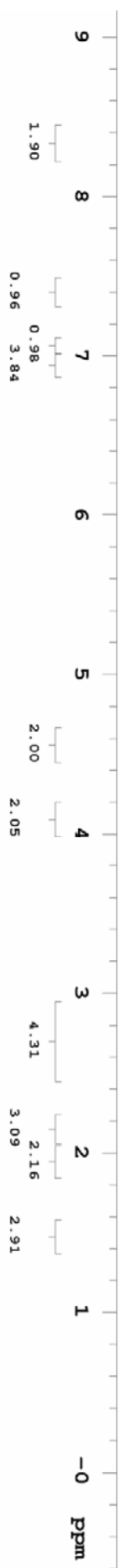
Std proton

File: aw2-7-1-HNMR

Pulse Sequence: szpu1



8c



Std Carbon

File: aw2-7-1-CNMR

Pulse Sequence: szpul

Solvent: c6d6

Temp: 25.0 C / 298.1 K

Operator: amanfran

File: aw2-7-1-CNMR

INOVA-400 "Kr.chem.1sa.umich.edu"

Relax. delay 0.100 sec

Pulse 30.0 degrees

Acq. time 1.300 sec

Width 24140.0 Hz

192 repetitions

OBSERVE C13, 100.5712794 MHz

DECOUPLE H1, 399.9670004 MHz

Power 39 dB

continuously on

WALTZ-16 modulated

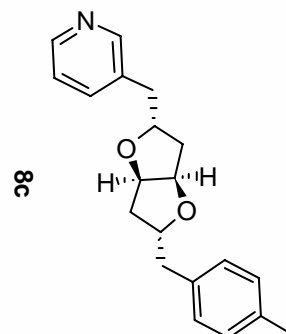
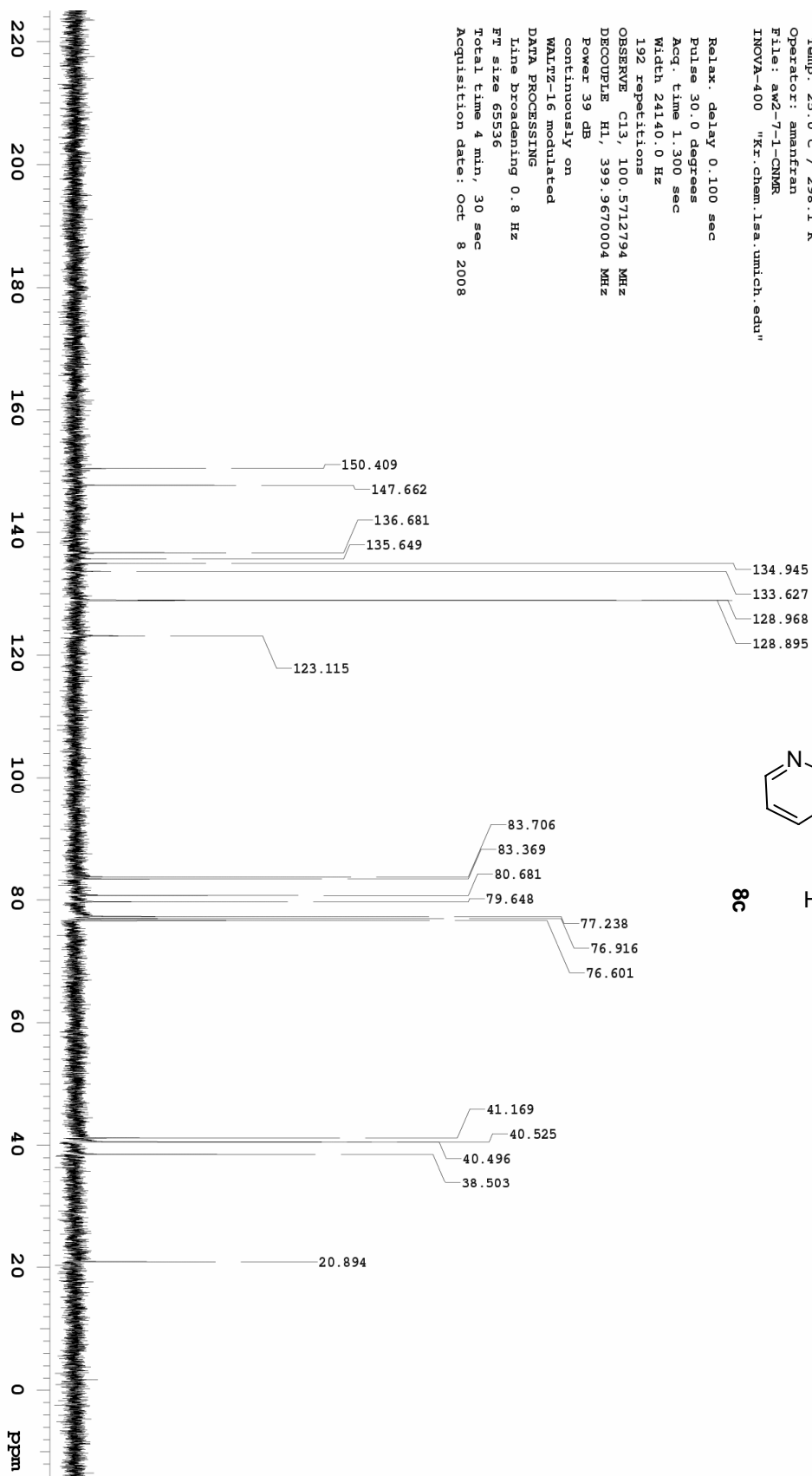
DATA PROCESSING

Line broadening 0.8 Hz

FT size 65536

Total time 4 min, 30 sec

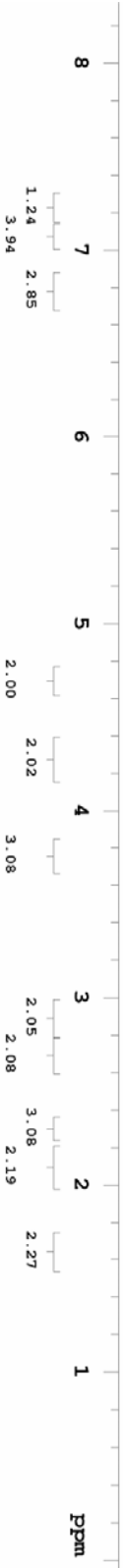
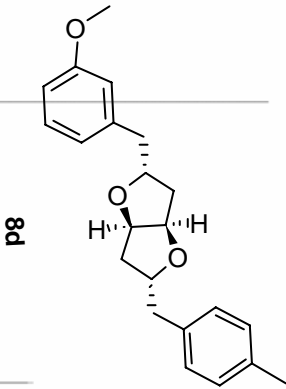
Acquisition date: Oct 8 2008



STANDARD PROTON PARAMETERS

File: aw1-162HNMR
 Pulse Sequence: sZpul
 Solvent: cdcl3
 Ambient temperature
 Operator: amanfran
 File: aw1-162HNMR
 VNMR5-400 "Kr.Chem.1sa.umich.edu"

Relax. delay 1.000 sec
 Pulse 45.0 degrees
 Acq. time 2.556 sec
 Width 6410.3 Hz
 8 repetitions
 OBSERVE H1, 399.5389259 MHz
 DATA PROCESSING
 FT size 32768
 Total time 0 min, 35 sec
 Acquisition date: Jul 31 2008



STANDARD PROTON PARAMETERS

File: aw1-162CNMR

Pulse Sequence: szpul

Solvent: cdcl3

Ambient temperature

Operator: amantran

File: aw1-162CNMR

VNMR-400 "Kr. Chem. Isa. umich. edu"

Relax. delay 1.000 sec

Pulse 45.0 degrees

Acq. time 1.285 sec

Width 25510.2 Hz

144 repetitions

OBSERVE C13, 100.4641428 MHz

DECOUPLE H1, 399.5409236 MHz

Power 33 dB

continuously on

WALTZ-16 modulated

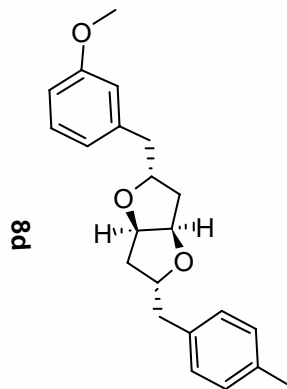
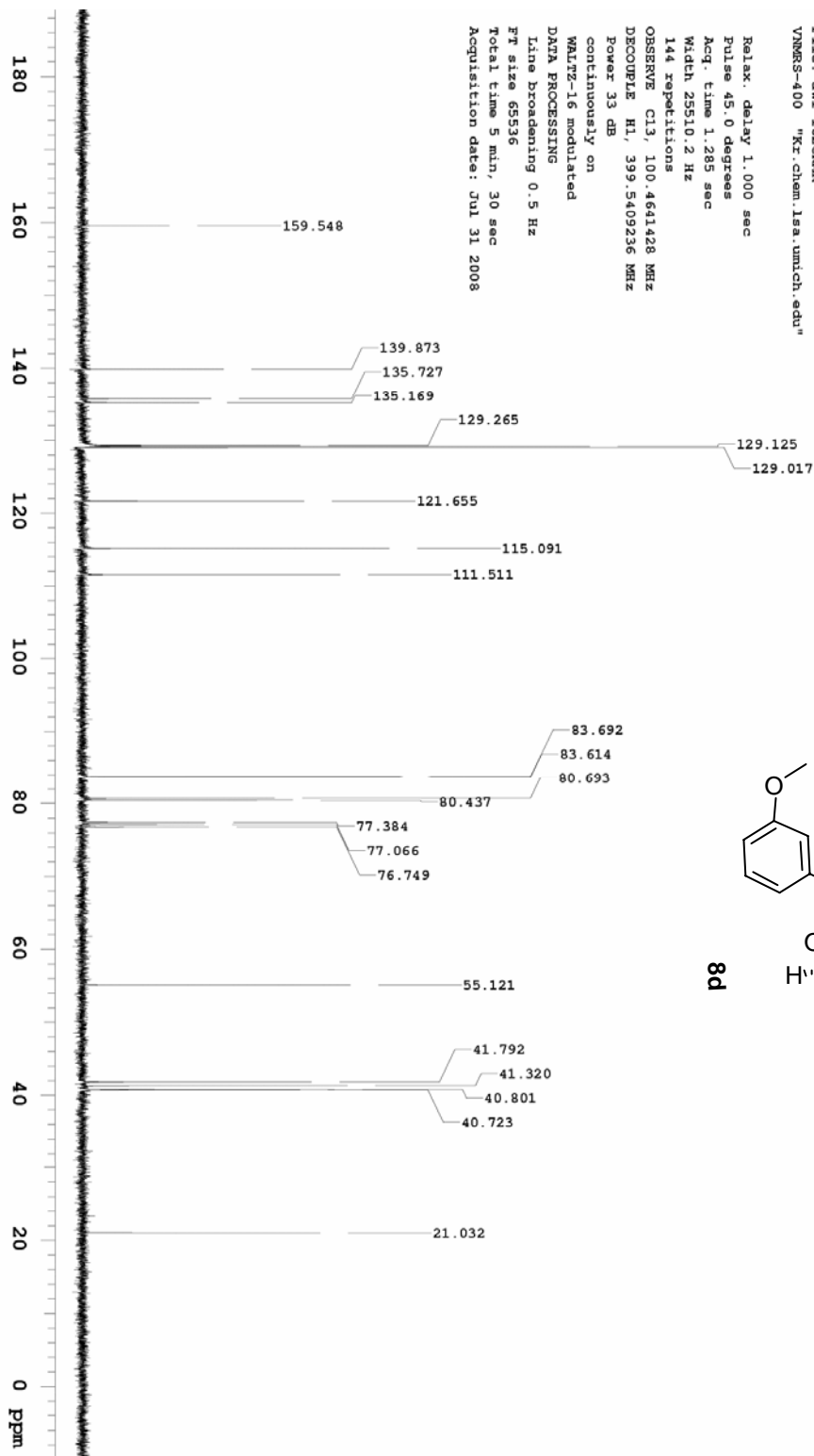
DATA PROCESSING

Line broadening 0.5 Hz

FT size 65536

Total time 5 min, 30 sec

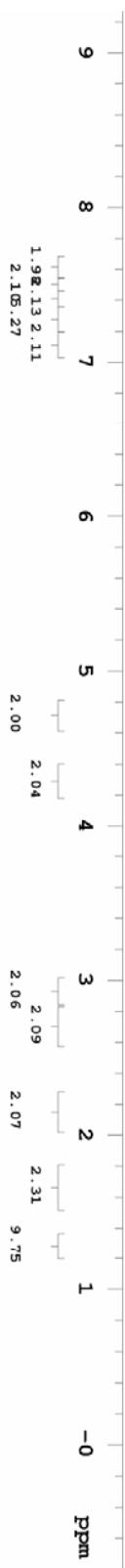
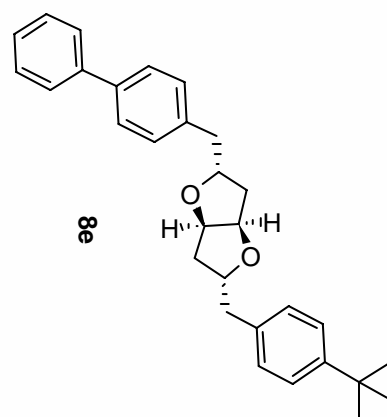
Acquisition date: Jul 31 2008



Std proton

File: aw1-158HNMR

Pulse Sequence: s2pu1



Std Carbon

File: aw1-158CNMR

Pulse Sequence: s2pu1

Solvent: cdcl3

Ambient temperature

Operator: amanfran

File: aw1-158CNMR

INNOVA-400 "Kr.chem.1sa.umich.edu"

Relax. delay 0.100 sec

Pulse 30.0 degrees

Acq. time 1.300 sec

Width 24140.0 Hz

224 repetitions

OBSERVE C13, 100.5712703 MHz

DECOUPLE H1, 399.9669644 MHz

Power 39 dB

continuously on

WALTZ-16 modulated

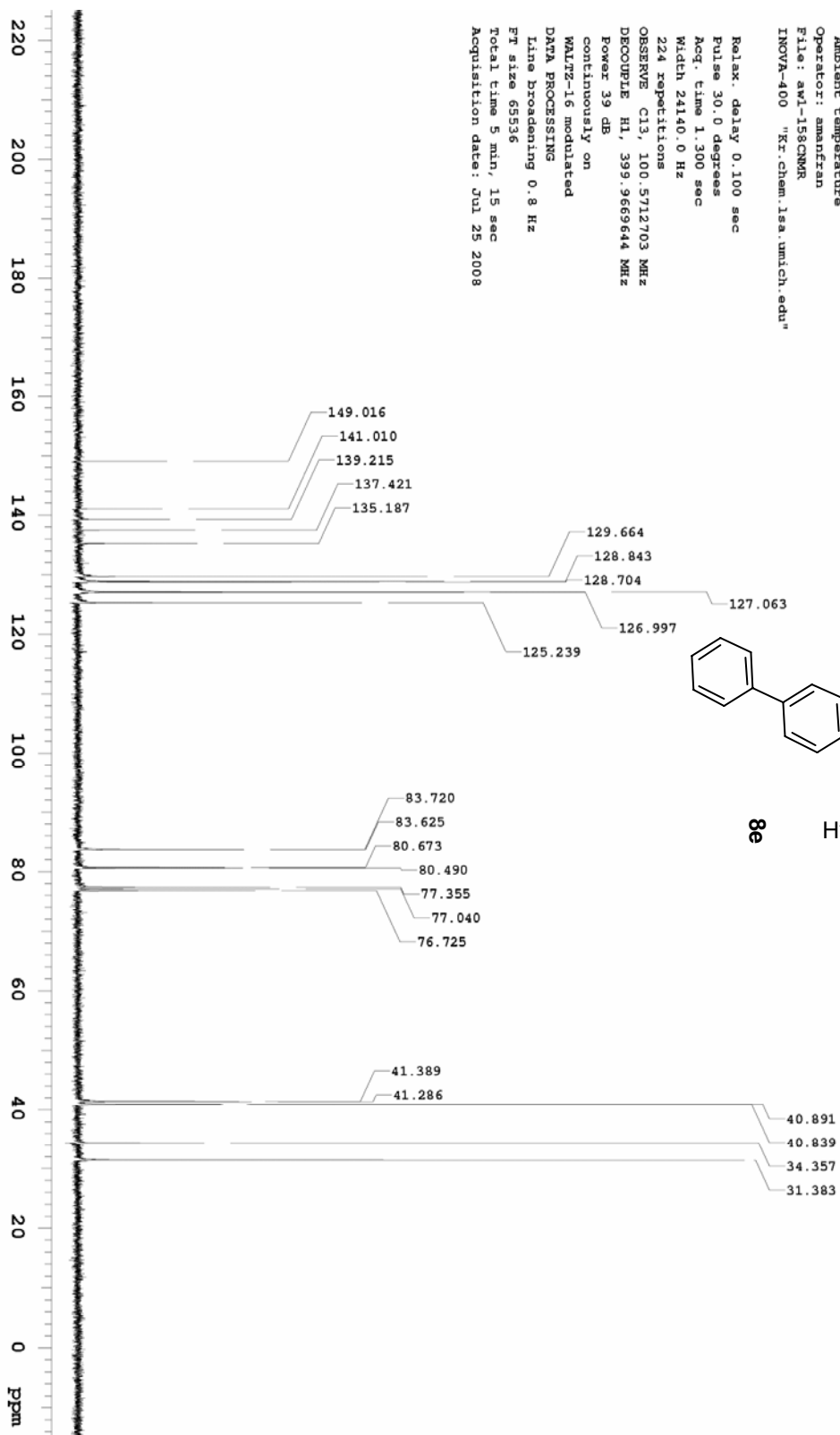
DATA PROCESSING

Line broadening 0.8 Hz

FT size 65536

Total time 5 min, 15 sec

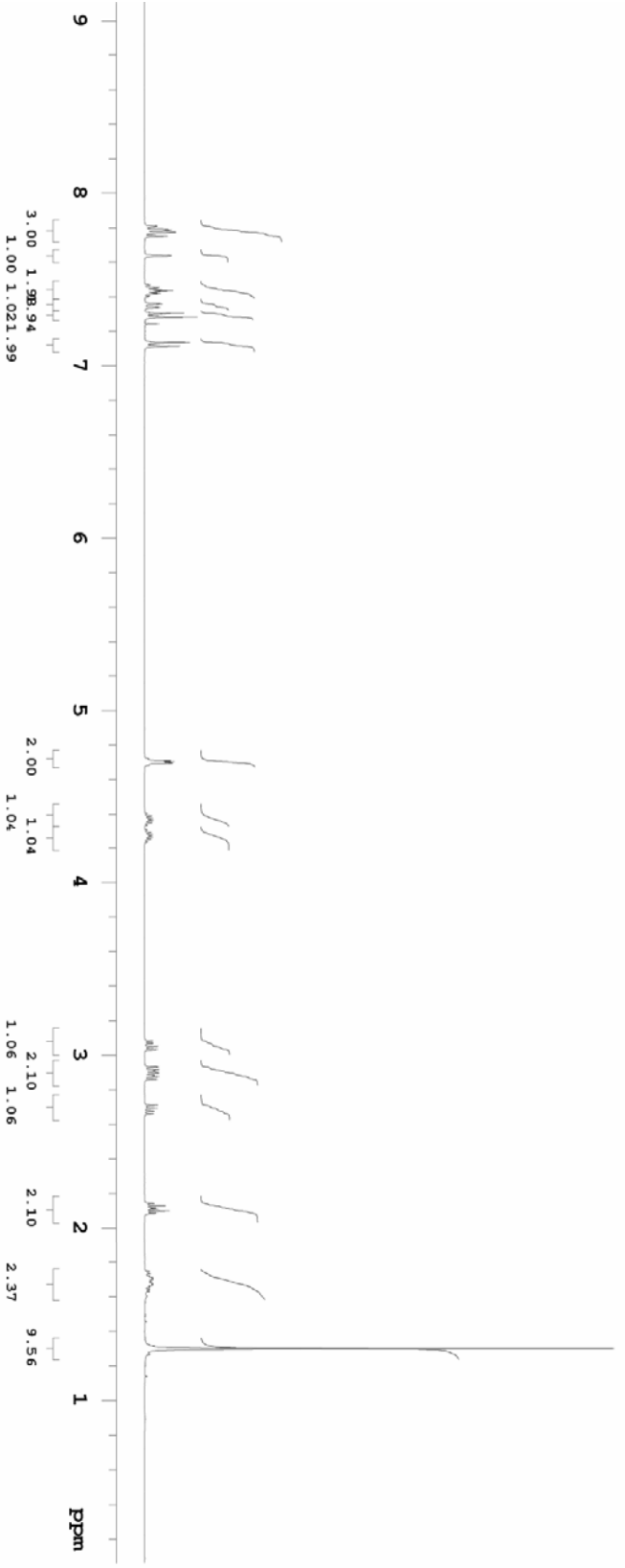
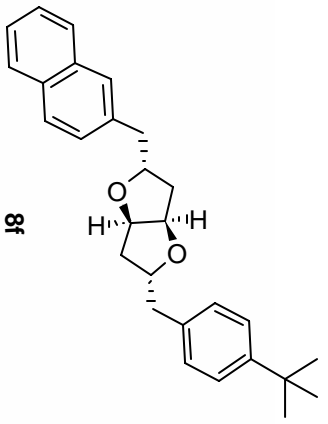
Acquisition date: Jul 25 2008



STANDARD PROTON PARAMETERS

File: sw1-161HNR

Pulse Sequence: s2pul



STANDARD PROTON PARAMETERS

File: aw1-161CNMR

Pulse Sequence: s2pul

Solvent: cdcl3

Ambient temperature

Operator: amantran

File: aw1-161CNMR

VNMR-400 "Kr.chem.lsa.umich.edu"

Relax. delay 1.000 sec

Pulse 45.0 degrees

Acq. time 1.285 sec

Width 25510.2 Hz

256 repetitions

OBSERVE C13, 100.4641428 MHz

DECOUPLE H1, 399.5409236 MHz

Power 33 dB

continuously on

WALTZ-16 modulated

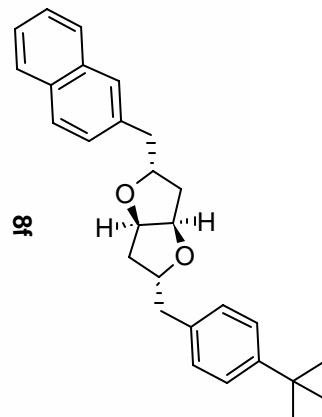
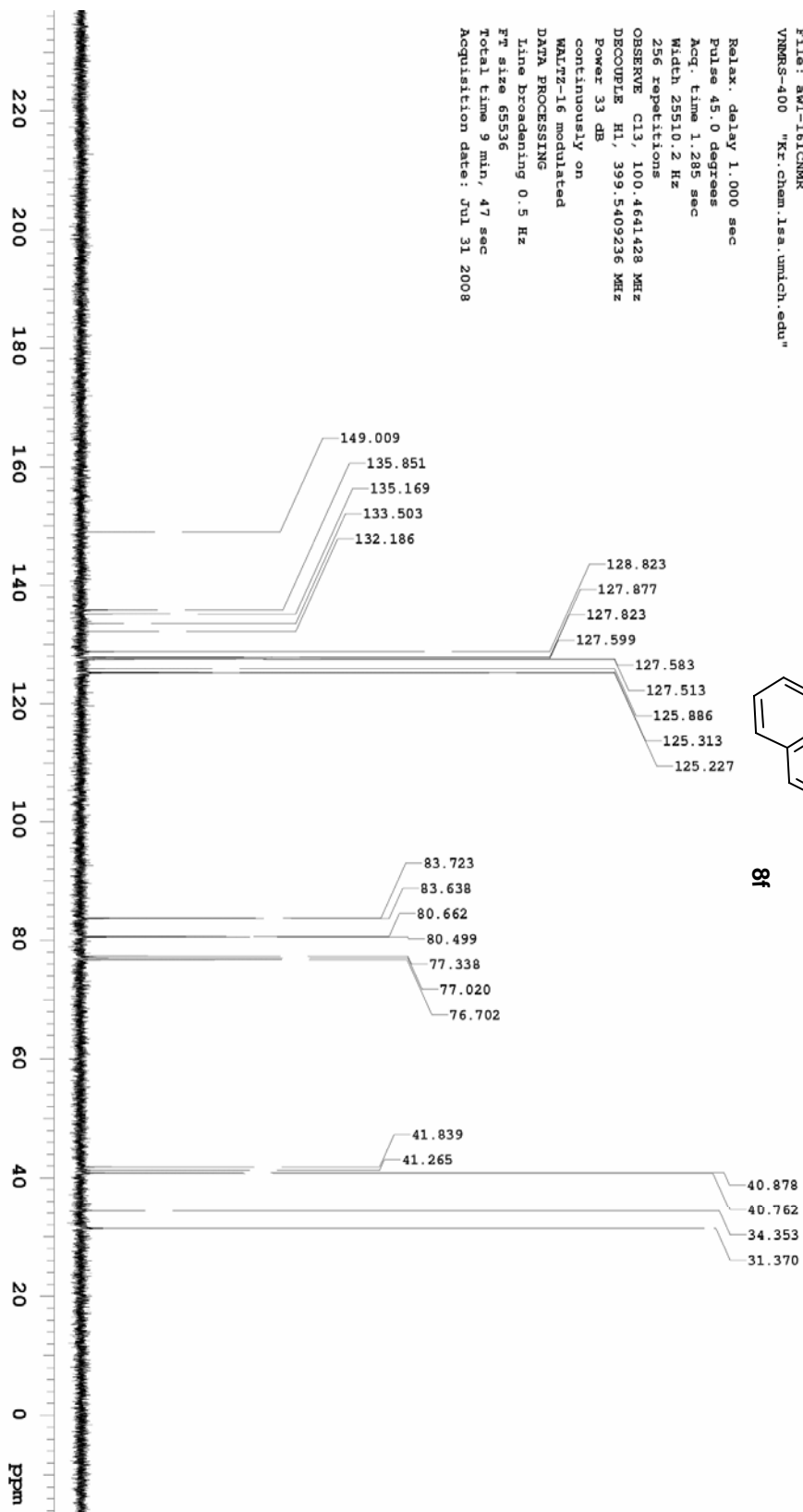
DATA PROCESSING

Line Broadening 0.5 Hz

FT size 65536

Total time 9 min, 47 sec

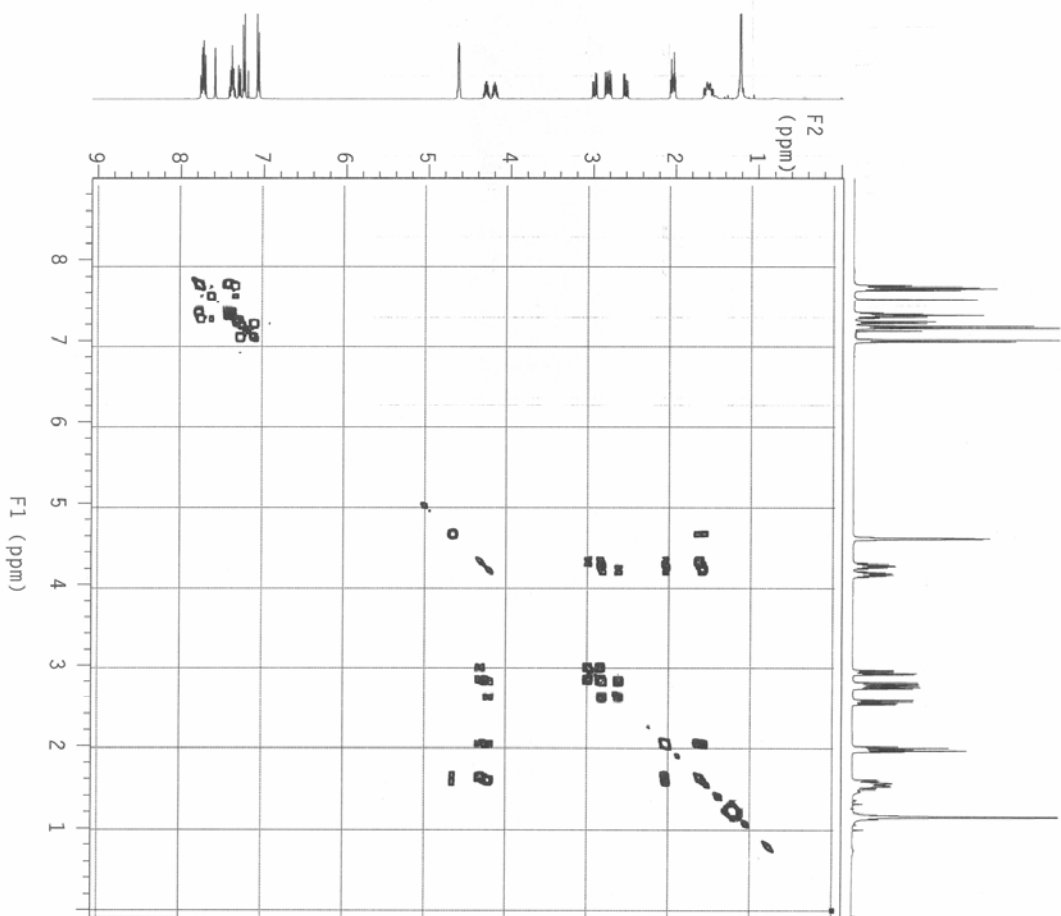
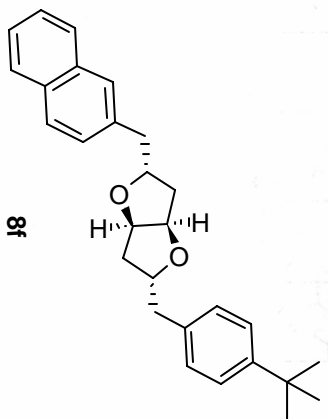
Acquisition date: Jul 31 2008



STANDARD PROTON PARAMETERS

File: aw1-161-cosy
 Pulse Sequence: gcosy
 Solvent: cdcl3
 Temp: 22.0 C / 295.1 K
 Operator: amanfran
 File: aw1-161-cosy
 VNMRS-400 "Kr-chem.1sa.umtch.edu"

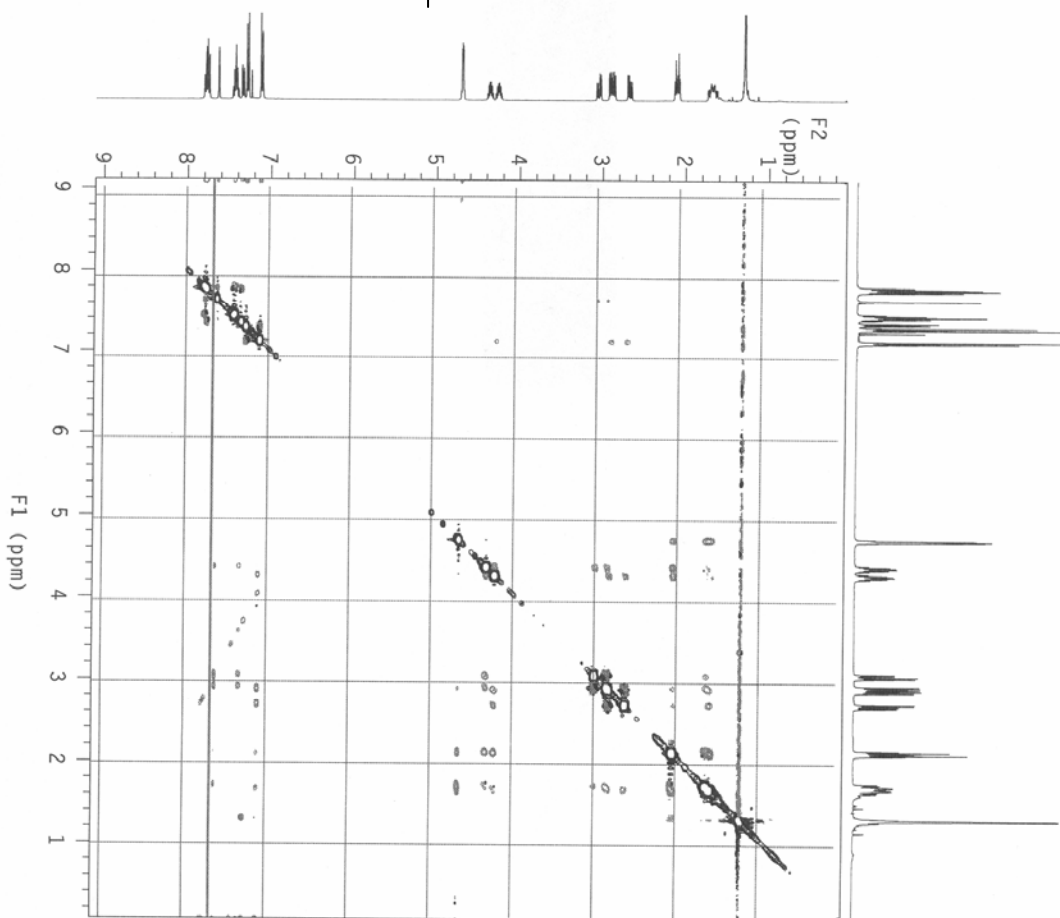
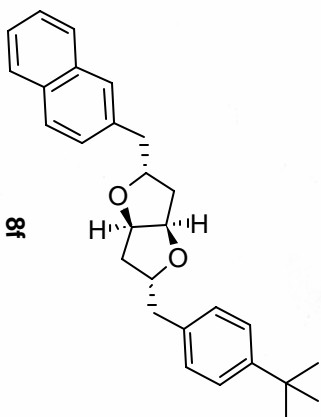
Relax. delay 1.000 sec
 Acq. time 0.150 sec
 Width 3633.7 Hz
 20 Width 3633.7 Hz
 2 repetitions
 128 increments
 OBSERVE H1, 399, 5389259 MHz
 DATA PROCESSING
 Sq. sine bell 0.075 sec
 F1 DATA PROCESSING
 Sq. sine bell 0.035 sec
 FT size 2048 x 2048
 Total time 5 min., 46 sec
 Acquisition date: Aug 12 2008



STANDARD PROTON PARAMETERS

File: awl-161-Noesy
Pulse Sequence: NOESY
Solvent: cdc13
Ambient temperature
Operator: amantran
File: awl-161-Noesy
VMRMS-400 "Kr.chem.1sa.umfch.edu"

Relax. delay 1.000 sec
Acq. time 0.190 sec
Width 3612.7 Hz
2D Width 3612.7 Hz
4 repetitions
2 x 128 increments
OBSERVE H1. 399.5389259 MHz
DATA PROCESSING
Gauss apodization 0.069 sec
F1 DATA PROCESSING
Gauss apodization 0.033 sec
FT size 2048 x 2048
Total time 20 min, 50 sec
Acquisition date: Jul 31 2008



STANDARD PROTON PARAMETERS

File: aw2-3-1-HNMR

Pulse Sequence: s2pul

Solvent: cdcl3

Temp: 22.0 C / 295.1 K

Operator: amantran

File: aw2-3-1-HNMR

VNMR-400 "Kr.chem.lsa.umich.edu"

Relax. delay 1.000 sec

Pulse 45.0 degrees

Acq. time 2.556 sec

Width 6410.3 Hz

8 repetitions

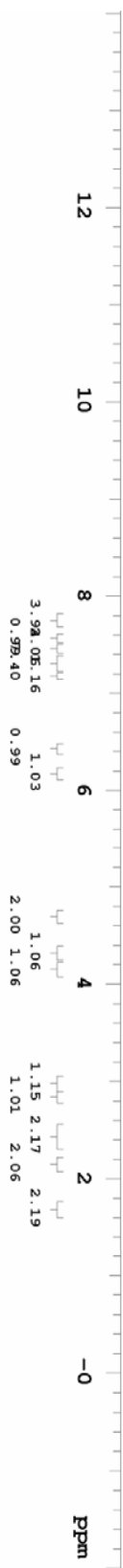
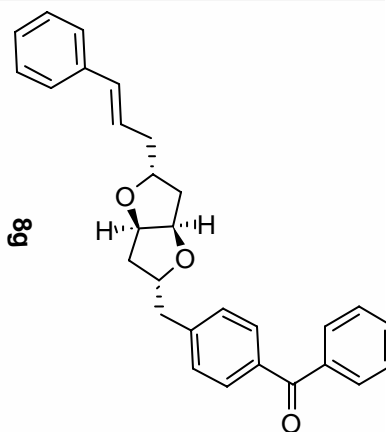
OBSERVE H1, 399.5389259 MHz

DATA PROCESSING

Ft size 32768

Total time 0 min, 35 sec

Acquisition date: Oct 7 2008



Std Carbon

File: aw2-3-1-CNMR

Pulse Sequence: s2pul

Solvent: c6d6

Temp: 25.0 C / 298.1 K

Operator: amanfran

File: aw2-3-1-CNMR
INOVA-400 "Kr.chem.lsa.umich.edu"

Relax. delay 0.100 sec

Pulse 30.0 degrees

Acq. time 1.300 sec

Width 24140.0 Hz

192 repetitions

OBSERVE C13, 100.5712794 MHz

DECOUPLE H1, 399.9670004 MHz

Power 39 dB

continuously on

MALTZ-16 modulated

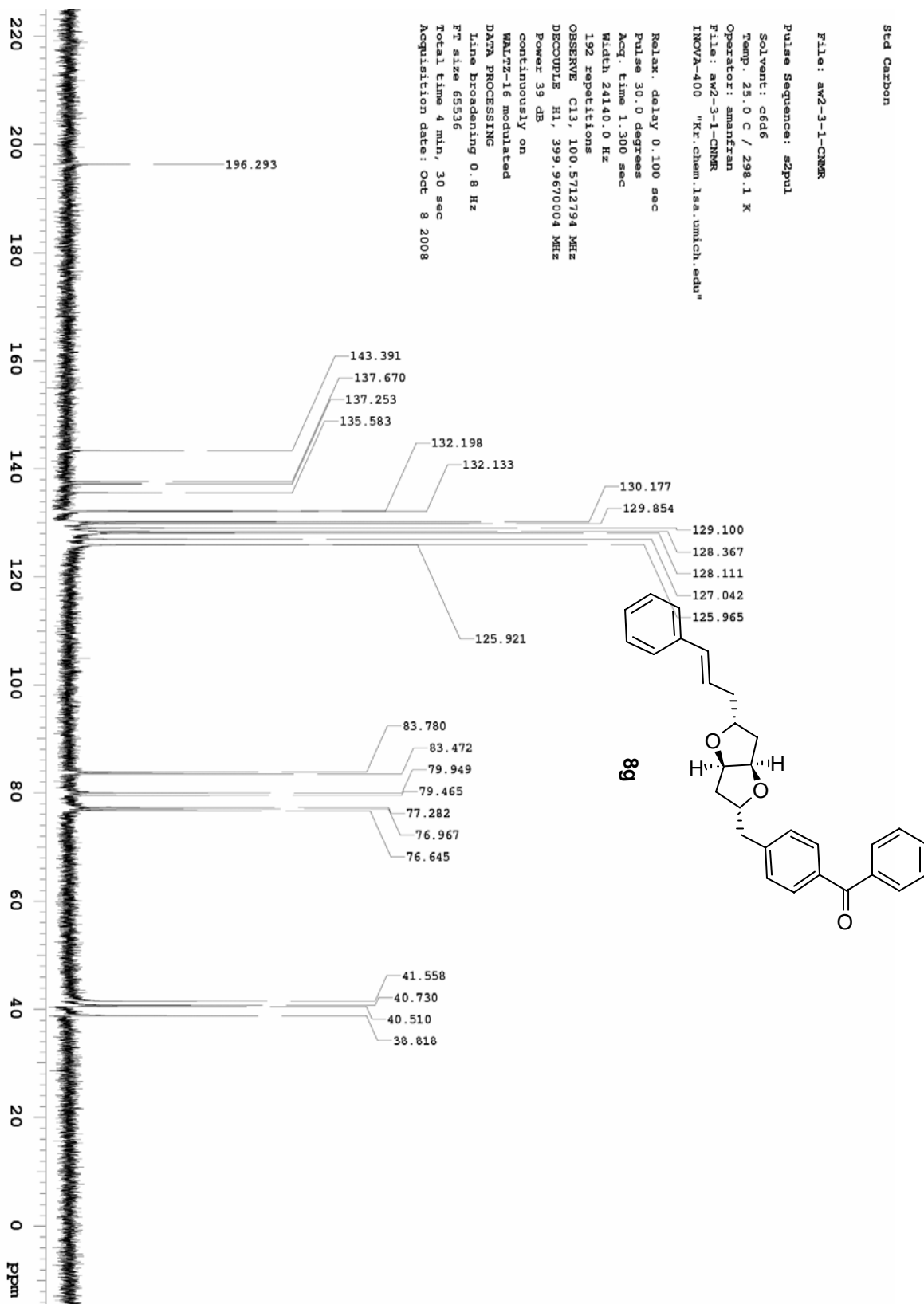
DATA PROCESSING

Line broadening 0.8 Hz

FT size 65536

Total time 4 min, 30 sec

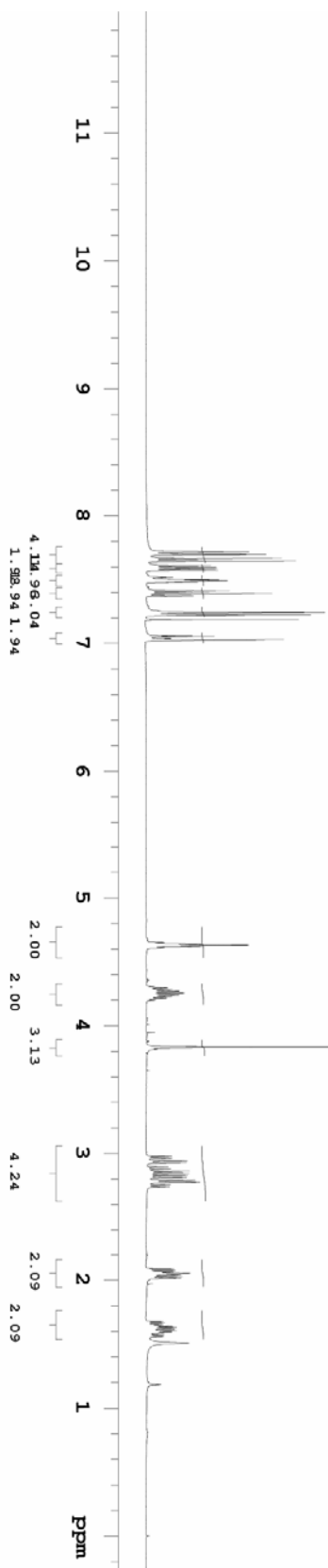
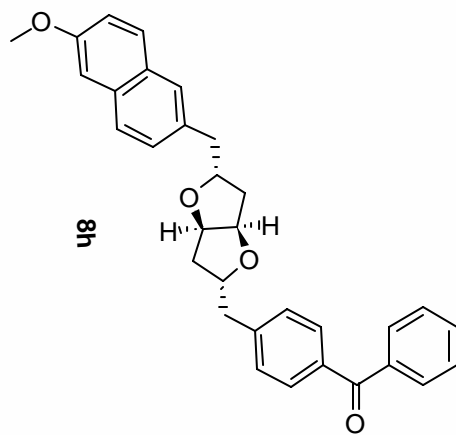
Acquisition date: Oct 8 2008



STANDARD PROTON PARAMETERS

File: aw2-7-2-FINMR

Pulse Sequence: s2pul



Std Carbon

File: aw2-7-2-CNMR

Pulse Sequence: s2pul

Solvent: c6d6

Ambient temperature

Operator: amanfran

File: aw2-7-2-CNMR
INOVA-400 "Kr.chem.lsa.umich.edu"

Relax. delay 0.100 sec

Pulse 30.0 degrees

Acq. time 1.300 sec

Width 24140.0 Hz

432 repetitions

OBSERVE C13, 100.5712794 MHz

DECOUPLE H1, 399.9670004 MHz

Power 39 dB

continuously on

MALTZ-16 modulated

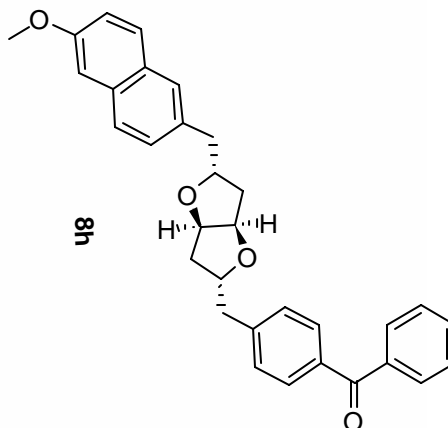
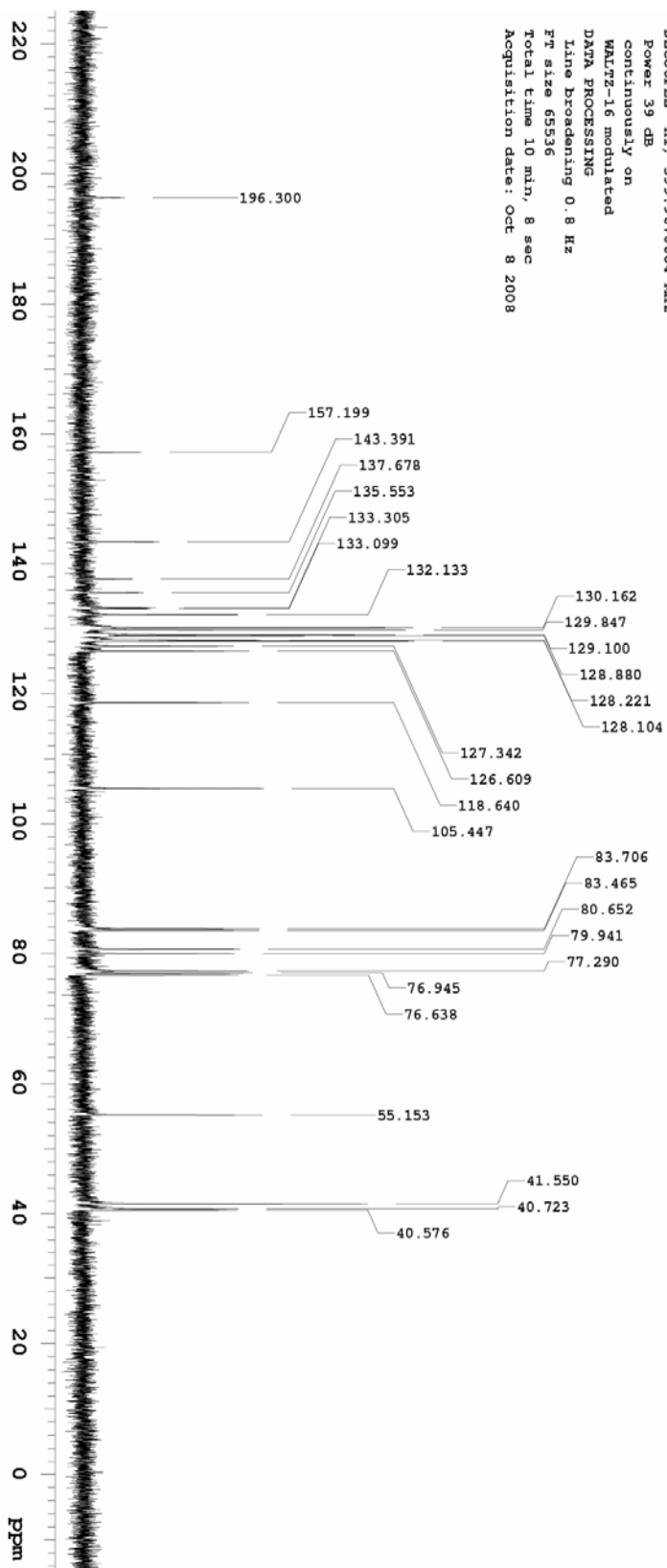
DATA PROCESSING

Line broadening 0.8 Hz

F2 size 65536

Total time 10 min, 8 sec

Acquisition date: Oct 8 2008



STANDARD 1H OBSERVE - profile

File: aw1-141-HNMR

Pulse Sequence: s2pul

Solvent: cdcl3

Temp: 22.0 C / 295.1 K

Operator: amantran

File: aw1-141-HNMR

VNMRB-400 "Kr.chem.lsa.umich.edu"

Relax. delay 1.000 sec

Pulse 45.0 degrees

Acq. time 2.556 sec

Width 6410.3 Hz

32 repetitions

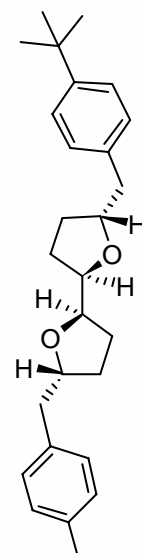
OBSERVE H1, 399.5389478 MHz

DATA PROCESSING

Ft size 32768

Total time 2 min, 1 sec

Acquisition date: Sep 8 2008



10a



STANDARD PROTON PARAMETERS

File: aw1-141CNMR

Pulse Sequence: szpul

Solvent: CDCl3

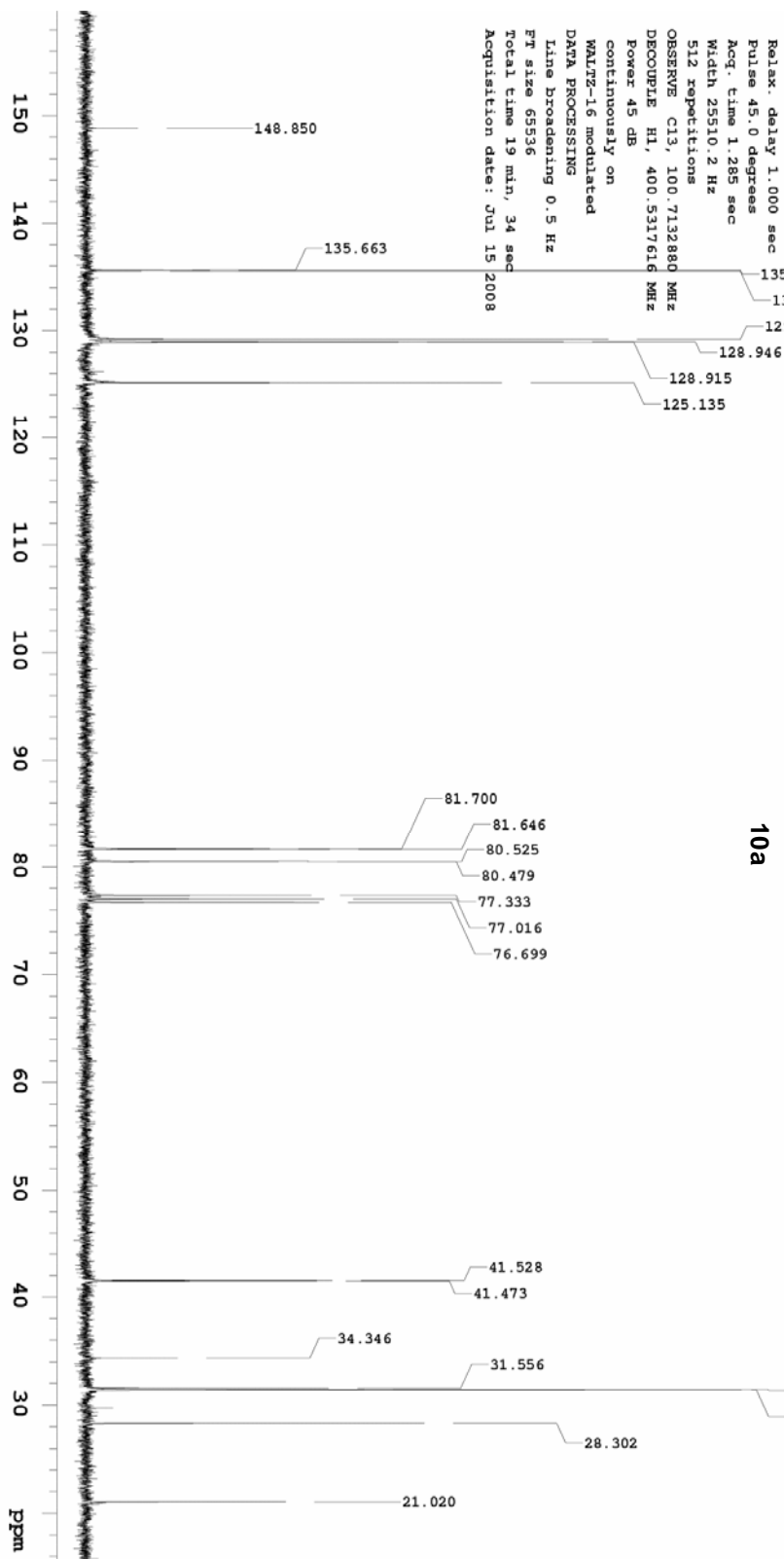
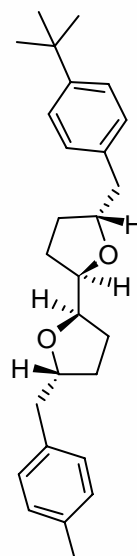
Ambient temperature

Operator: amanfran

File: aw1-141CNMR

VNMRB-401 "Kr.Chem.1sa.rp19.edu"

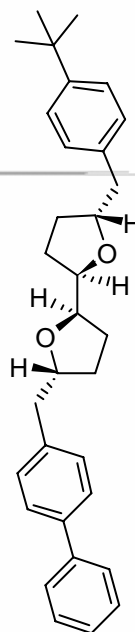
10a



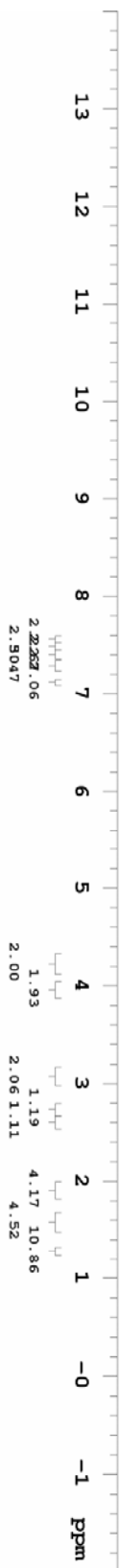
Std proton

File: aw1-147HNMR
 Pulse Sequence: s2pul
 Solvent: cdcl3
 Temp: 25.0 C / 298.1 K
 Operator: amanfran
 File: aw1-147HNMR
 INOVA-400 "Kr.chem.lsa.umich.edu"

Relax. delay 0.500 sec
 Pulse 45.0 degrees
 Acq. time 3.000 sec
 Width 6399.5 Hz
 16 repetitions
 OBSERVE H1, 399.9643645 MHz
 DATA PROCESSING
 Line broadening 0.2 Hz
 FT size 65536
 Total time 1 min, 3 sec
 Acquisition date: Jul 23 2008



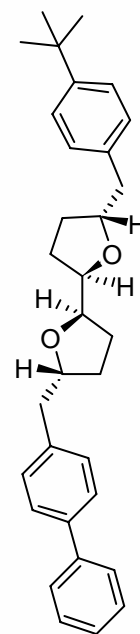
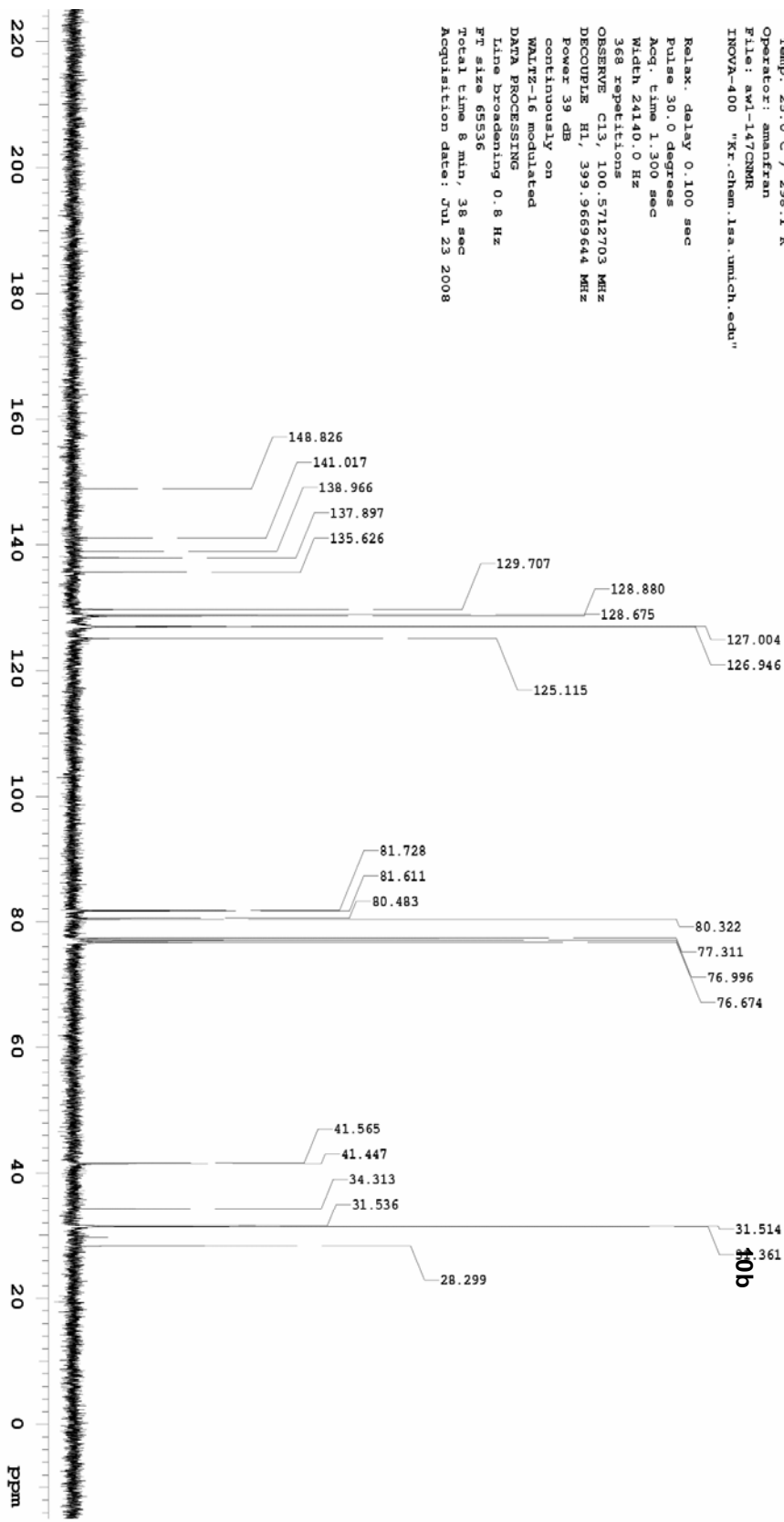
10b



Std Carbon

File: aw1-147CNMR
 Pulse Sequence: szpul
 Solvent: cdcl3
 Temp: 25.0 C / 298.1 K
 Operator: amanfran
 File: aw1-147CNMR
 INOVA-400 "Kf.chem.lsa.umich.edu"

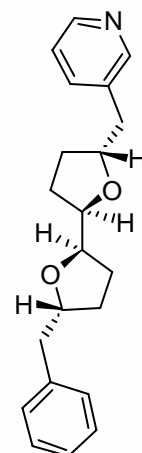
Relax. delay 0.100 sec
 Pulse 30.0 degrees
 Acq. time 1.300 sec
 Width 24140.0 Hz
 368 repetitions
 OBSERVE C13, 100.5712703 MHz
 DECOUPLE H1, 399.9669644 MHz
 Power 39 dB
 continuously on
 WALTZ-16 modulated
 DATA PROCESSING
 Line broadening 0.8 Hz
 FT size 65536
 Total time 8 min, 38 sec
 Acquisition date: Jul 23 2008



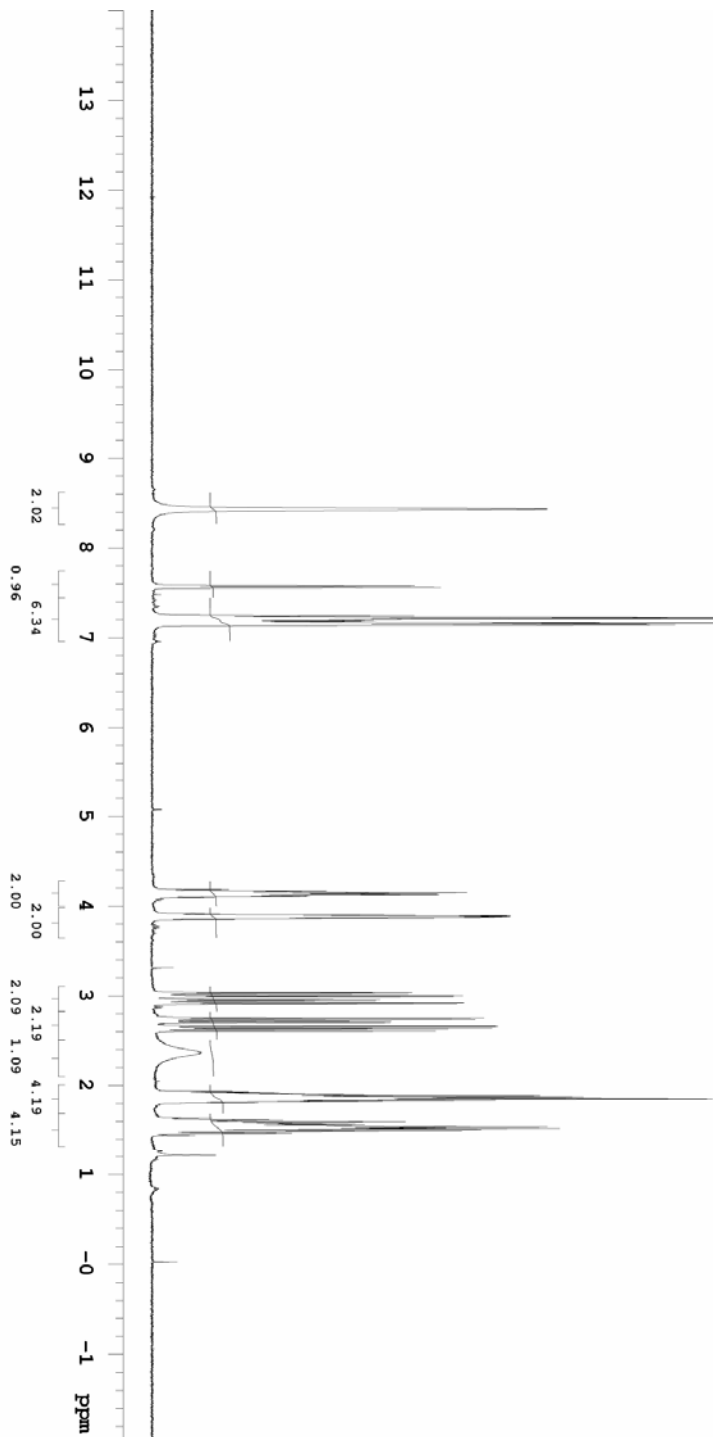
Std proton

File: aw1-175-pure

Pulse Sequence: szpul



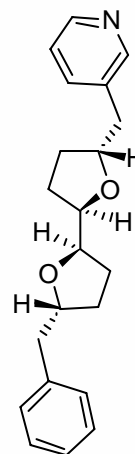
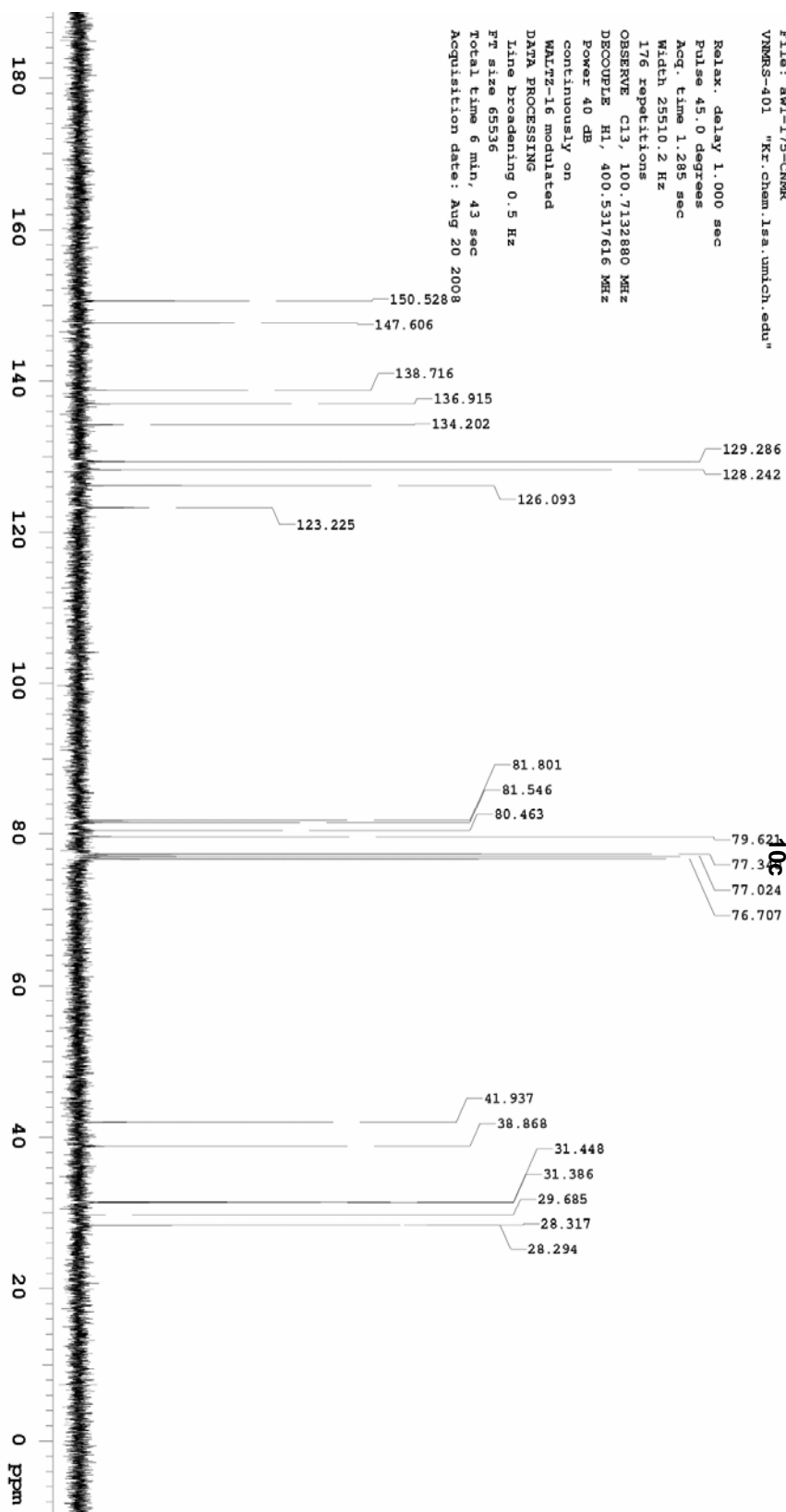
10c



STANDARD PROTON PARAMETERS

File: aw1-175-CNMR
 Pulse Sequence: szpul
 Solvent: cdcl3
 Temp: 25.0 C / 298.1 K
 Operator: amantran
 File: aw1-175-CNMR
 VNMR5-401 "K.chem.lsa.umich.edu"

Relax. delay 1.000 sec
 Pulse 45.0 degrees
 Acq. time 1.285 sec
 Width 25510.2 Hz
 176 repetitions
 OBSERVE C13, 100.7132880 MHz
 DECOUPLE H1, 400.5317616 MHz
 Power 40 dB
 continuously on
 WALTZ-16 modulated
 DATA PROCESSING
 Line Broadening 0.5 Hz
 F2 size 65536
 Total time 6 min, 43 sec
 Acquisition date: Aug 20 2008



Std proton

File: aw1-189-HNMR-prop

Pulse Sequence: s2pul

Temp: 24.0 C / 297.1 K

Operator: amanfran

File: aw1-189-HNMR-prop

INOVA-400 "Kr.Chem.1sa.umich.edu"

Relax. delay 0.500 sec

Pulse 45.0 degrees

Acq. time 3.000 sec

Width 6399.5 Hz

8 repetitions

OBSERVE H1, 399.9658604 MHz

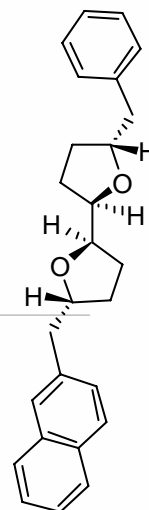
DATA PROCESSING

Line Broadening 0.2 Hz

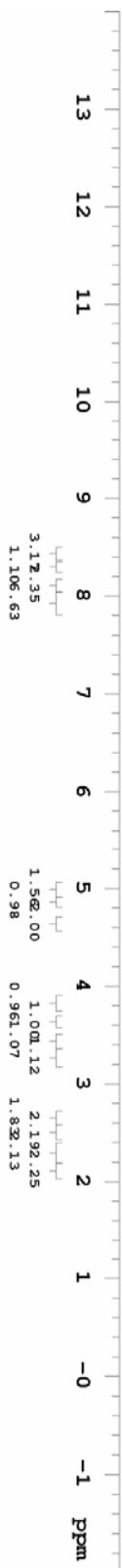
FT size 65536

Total time 0 min, 35 sec

Acquisition date: Jan 15 2009



10d



Std Carbon

File: aw1-189-CNMK

Pulse Sequence: szpul

Solvent: cdcl3

Ambient temperature

Operator: amanfran

File: aw1-189-CNMK

INOVA-400 "Kr.chem.1sa.umich.edu"

Relax. delay 0.100 sec

Pulse 30.0 degrees

Acq. time 1.300 sec

Width 24140.0 Hz

238 repetitions

OBSERVE C13, 100.5712703 MHz

DECOUPLE H1, 399.9669644 MHz

Power 39 dB

continuously on

WALTZ-16 modulated

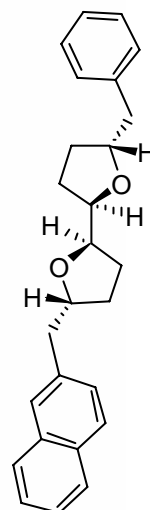
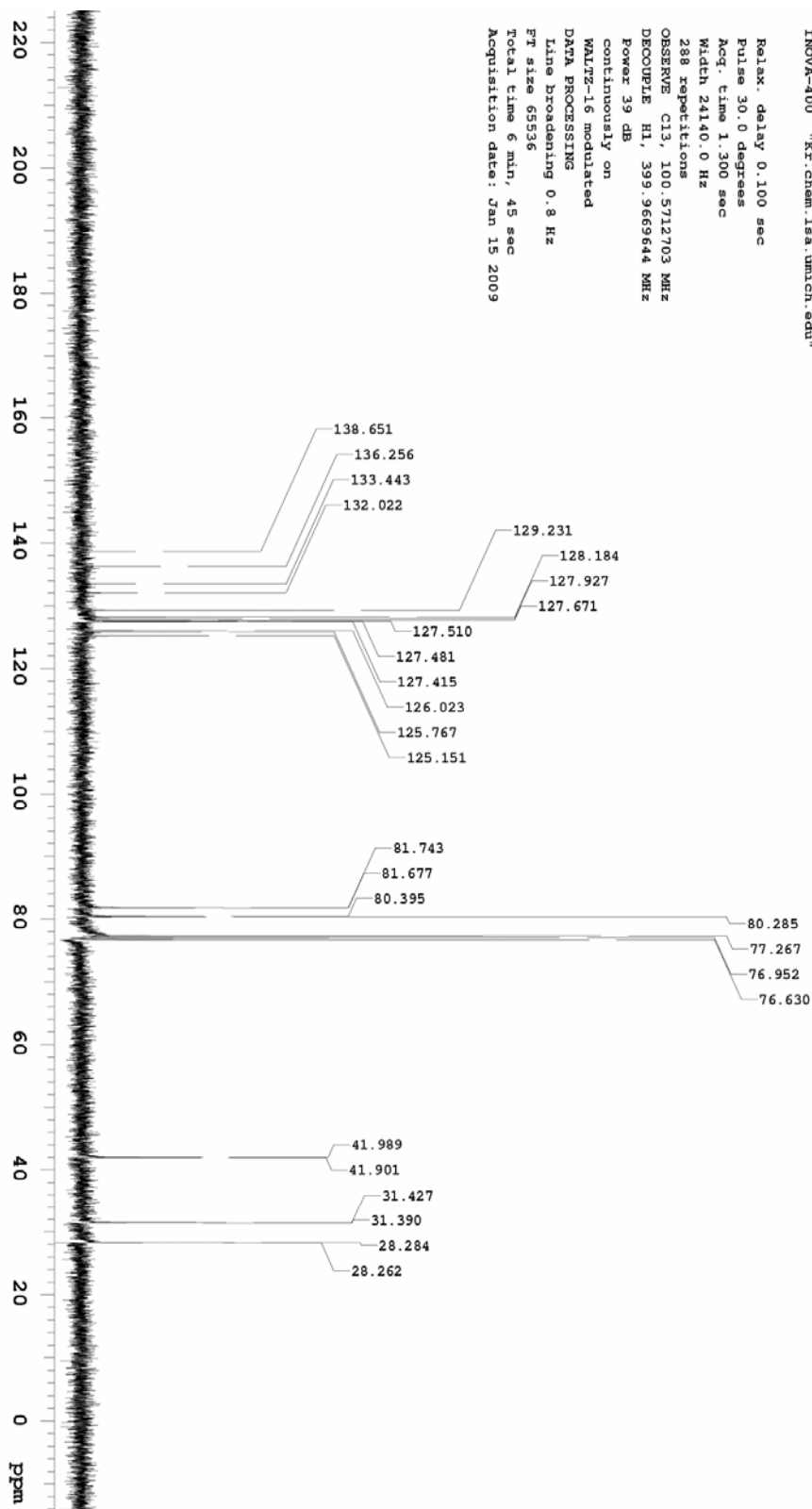
DATA PROCESSING

Line broadening 0.8 Hz

FT size 65536

Total time 6 min, 45 sec

Acquisition date: Jan 15 2009



STANDARD 1H OBSERVE - profile

File: aw1-194-HNMR

Pulse Sequence: s2pul

Solvent: cdcl3

Temp: 22.0 C / 295.1 K

Operator: amantran

File: aw1-194-HNMR

YNNRS-400 "K:chem.lsa.umich.edu"

Relax. delay 1.000 sec

Pulse 45.0 degrees

Acq. time 2.556 sec

Width 6410.3 Hz

8 repetitions

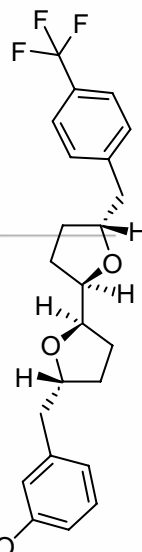
OBSERVE H1, 399.5389259 MHz

DATA PROCESSING

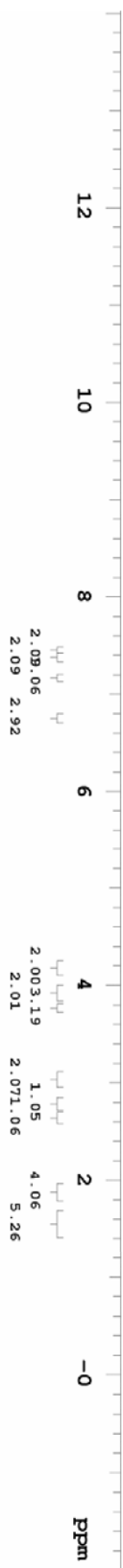
Ft size 32768

Total time 0 min, 35 sec

Acquisition date: Sep 13 2008

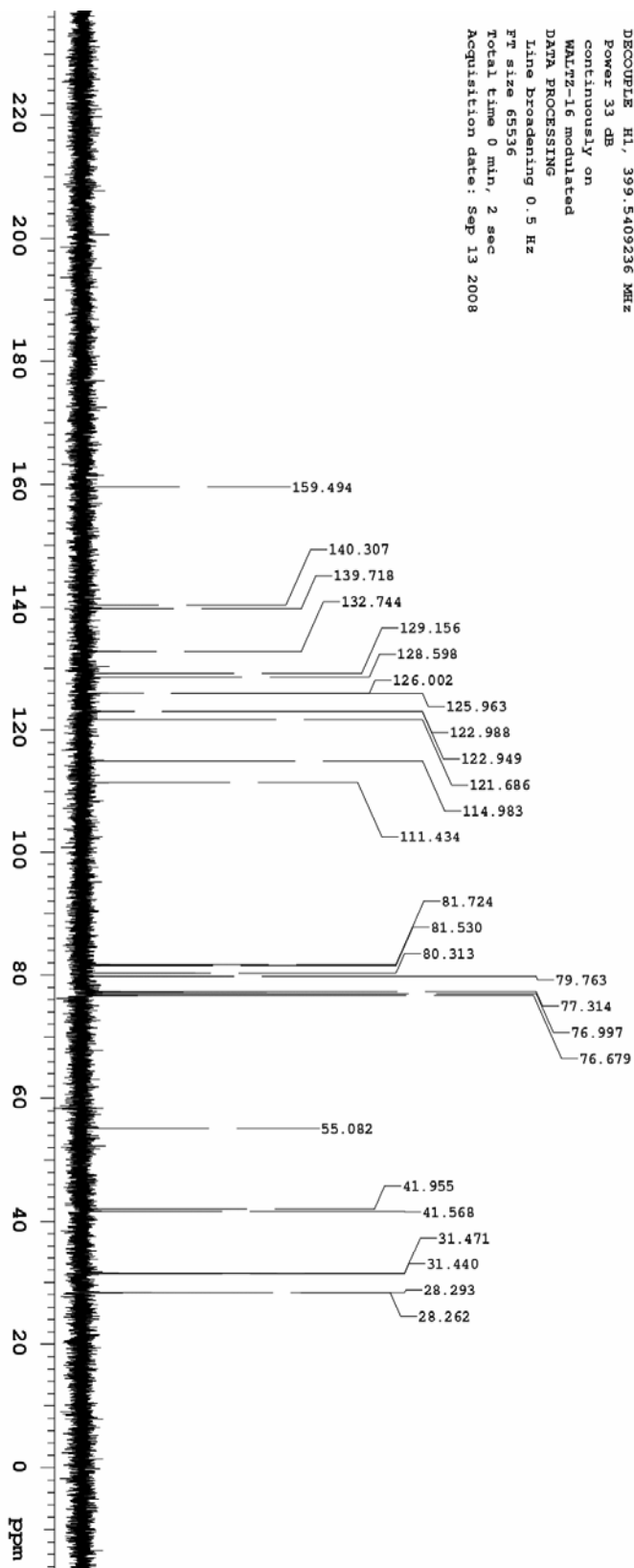
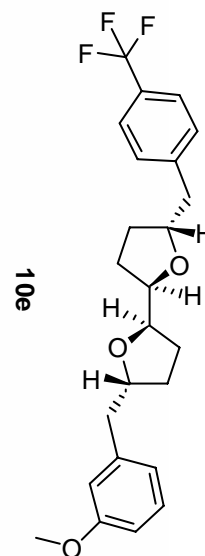


10e



STANDARD 1H OBSERVE - profile
 File: awl-194-CNMR
 Pulse Sequence: szpul
 Solvent: cdcl3
 Ambient Temperature
 Operator: amanfran
 File: awl-194-CNMR
 VNMR-400 "K.chem.lsa.umich.edu"

Relax. delay 1.000 sec
 Pulse 45.0 degrees
 Acq. time 1.285 sec
 Width 25510.2 Hz
 Single scan
 OBSERVE C13, 100.4641428 MHz
 DECOUPLE H1, 399.5409236 MHz
 Power 33 dB
 continuously on
 WALTZ-16 modulated
 DATA PROCESSING
 Line Broadening 0.5 Hz
 F2 size 65536
 Total time 0 min, 2 sec
 Acquisition date: Sep 13 2008



STANDARD PROTON PARAMETERS

File: aw1-198-HNMR

Pulse Sequence: szpul

Solvent: cdcl3

Ambient temperature

Operator: amanfran

File: aw1-198-HNMR

VNMR5-401 "Kr.chem.1sa.umich.edu"

Relax. delay 1.000 sec

Pulse 45.0 degrees

Acq. time 2.556 sec

Width 6410.3 Hz

8 repetitions

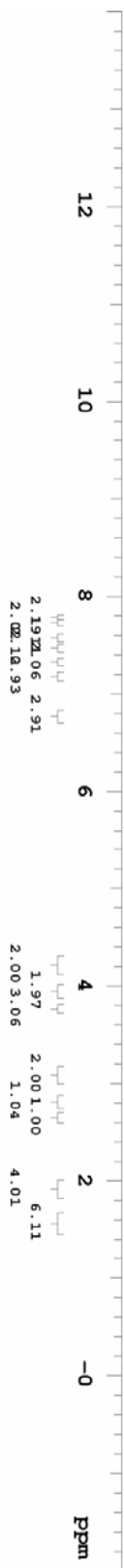
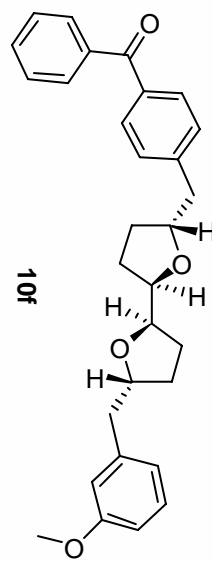
OBSERVE H1, 400.5297589 MHz

DATA PROCESSING

FT size 32768

Total time 0 min, 35 sec

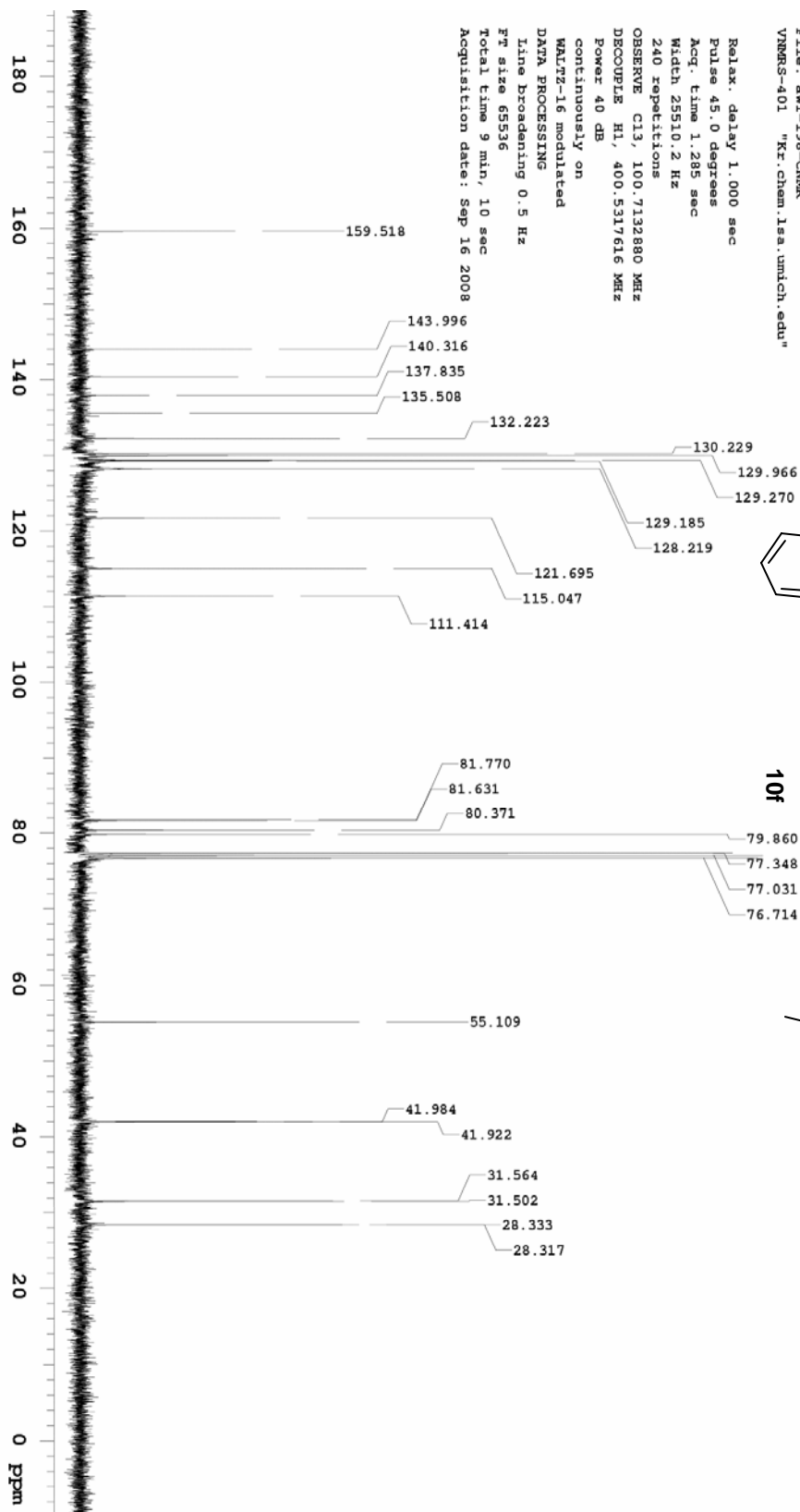
Acquisition date: Sep 17 2008



STANDARD PROTON PARAMETERS

File: aw1-198-CNMR
 Pulse Sequence: s2pul
 Solvent: cdcl3
 Temp: 10.0 C / 283.1 K
 Operator: amantran
 File: aw1-198-CNMR
 YNMRS-401 "K.chem.lsa.umich.edu"

Relax. delay 1.000 sec
 Pulse 45.0 degrees
 Acq. time 1.285 sec
 Width 25510.2 Hz
 240 repetitions
 OBSERVE C13, 100.7132880 MHz
 DECOUPLE H1, 400.5317616 MHz
 Power 40 dB
 continuously on
 WALTZ-16 modulated
 DATA PROCESSING
 Line Broadening 0.5 Hz
 FT size 65536
 Total time 9 min, 10 sec
 Acquisition date: Sep 16 2008



STANDARD PROTON PARAMETERS

File: aw1-200-HMR

Pulse Sequence: szpul

Solvent: cdcl3

Ambient temperature

Operator: amanfran

File: aw1-200-HMR

VNMR-401 "Kr.Chem.1sa.umich.edu"

Relax. delay 1.000 sec

Pulse 45.0 degrees

Acq. time 2.556 sec

Width 6410.3 Hz

8 repetitions

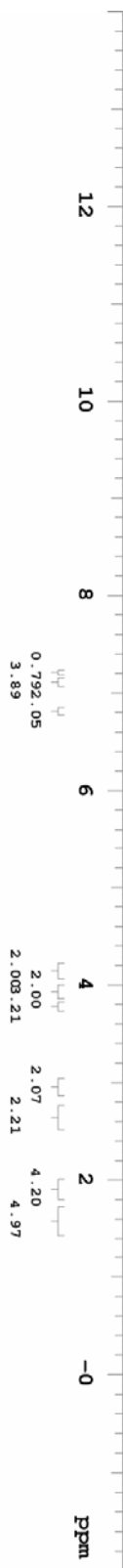
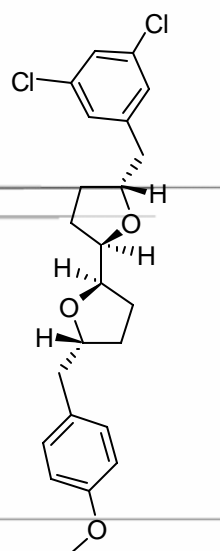
OBSERVE H1, 400.5297589 MHz

DATA PROCESSING

FT size 32768

Total time 0 min, 35 sec

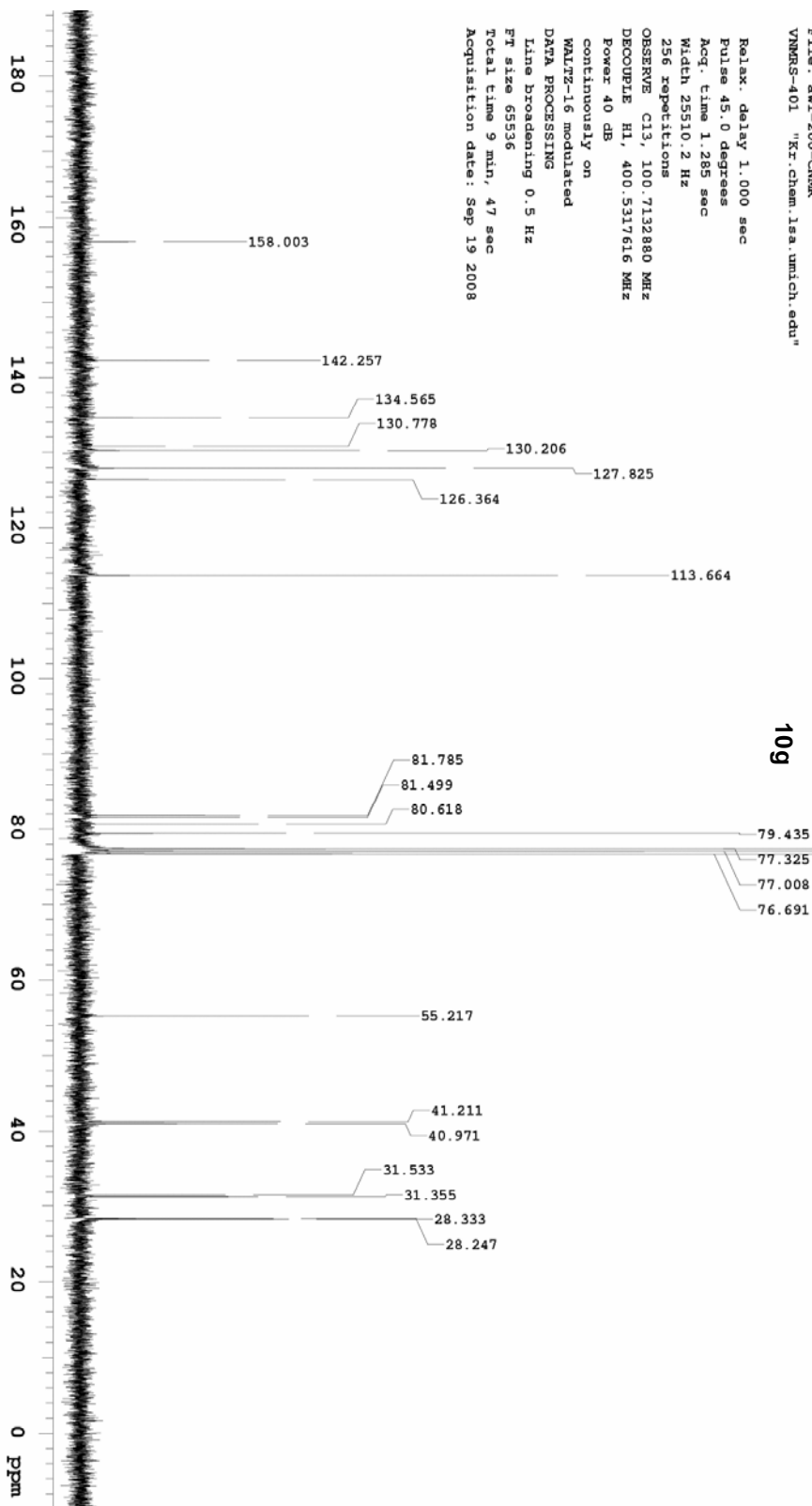
Acquisition date: Sep 19 2008



STANDARD PROTON PARAMETERS

File: aw1-200-CNMR
 Pulse Sequence: szpul
 Solvent: cdcl3
 Ambient temperature
 Operator: amanfran
 File: aw1-200-CNMR
 VNMRS-401 "Kr.Chem.1sa.umich.edu"

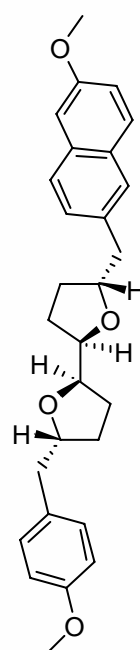
Relax. delay 1.000 sec
 Pulse 45.0 degrees
 Acq. time 1.285 sec
 Width 25510.2 Hz
 256 repetitions
 OBSERVE C13, 100.7132880 MHz
 DECOUPLE H1, 400.5317616 MHz
 Power 40 dB
 continuously on
 WALTZ-16 modulated
 DATA PROCESSING
 Line broadening 0.5 Hz
 FT size 65536
 Total time 9 min, 47 sec
 Acquisition date: Sep 19 2008



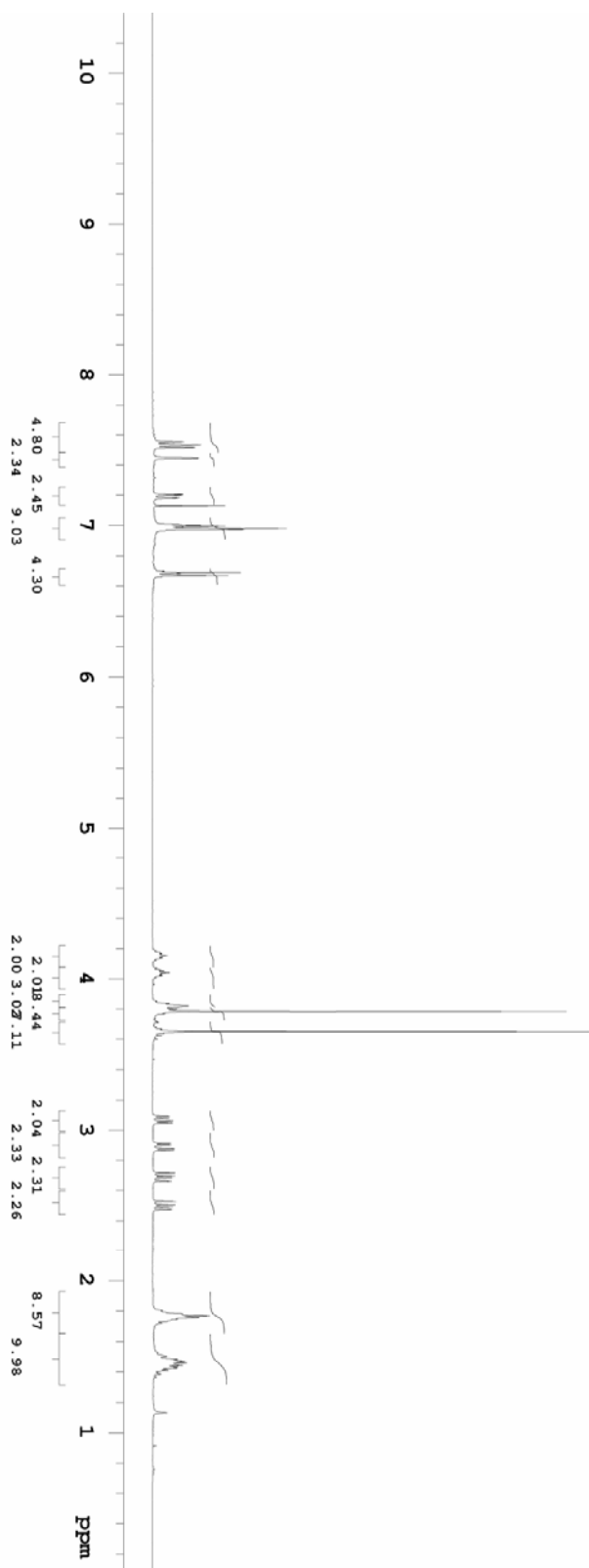
Std proton

File: aw1-206

Pulse Sequence: s2purl



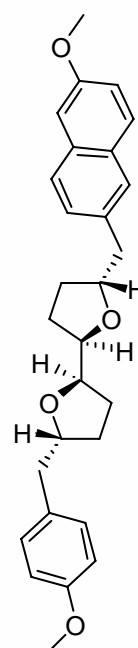
10h



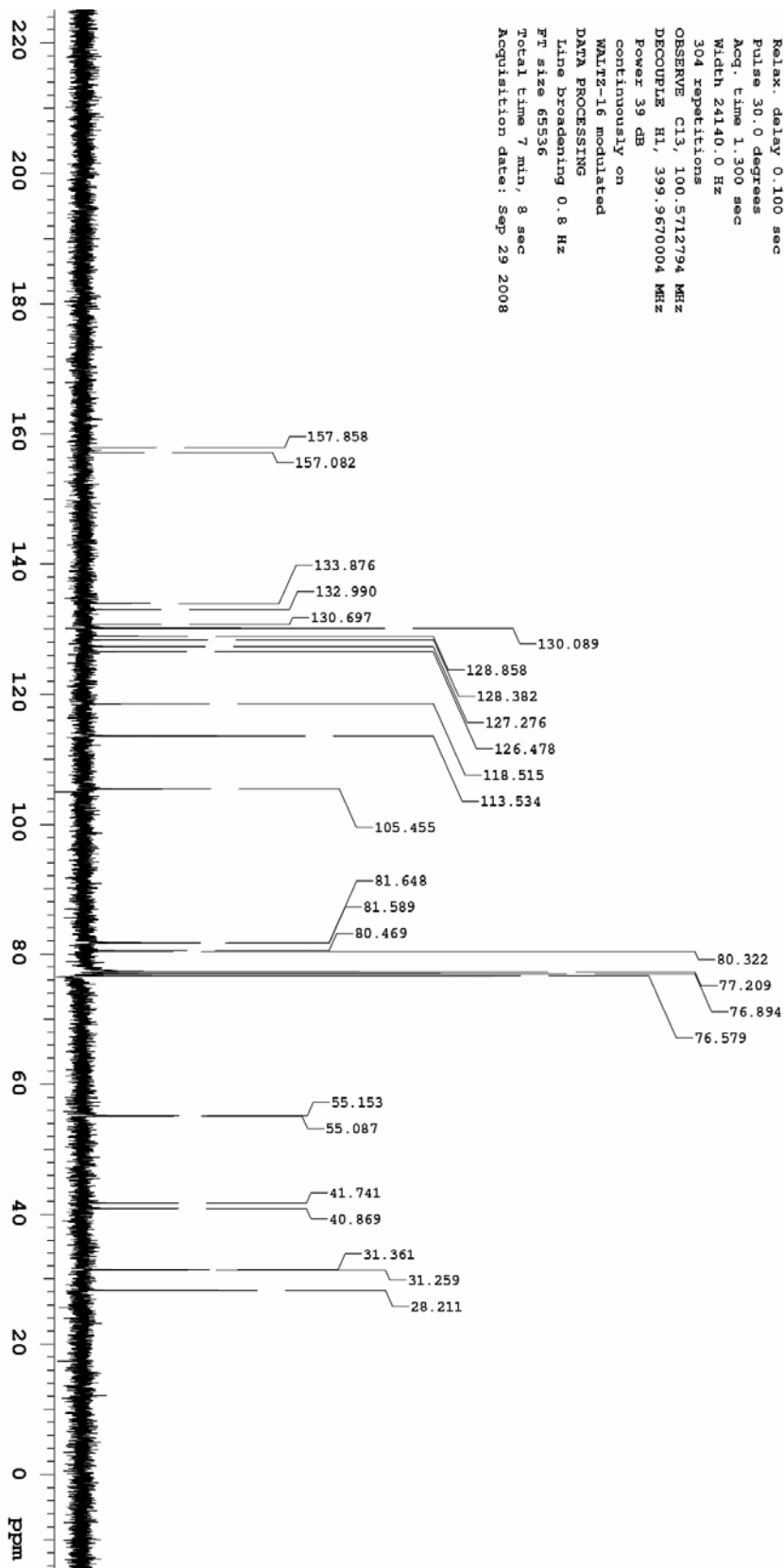
Std Carbon

File: awl-206-CNMR-1
 Pulse Sequence: s2pul
 Solvent: c6d6
 Ambient Temperature
 Operator: amanfran
 File: awl-206-CNMR-1
 INOVA-400 "Kr.chem.lsa.umich.edu"

Relax. delay 0.100 sec
 Pulse 30.0 degrees
 Acq. time 1.300 sec
 Width 24140.0 Hz
 304 repetitions
 OBSERVE C13, 100.5712794 MHz
 DECOUPLE H1, 399.9670004 MHz
 Power 39 dB
 continuously on
 WALTZ-16 modulated
 DATA PROCESSING
 Line broadening 0.8 Hz
 FT size 65536
 Total time 7 min, 8 sec
 Acquisition date: Sep 29 2008



10h



STANDARD PROTON PARAMETERS

File: aw2-36

Pulse Sequence: szpul

Solvent: cdcl3

Ambient temperature

Operator: amanfran

File: aw2-36

VNMR-400 "Kr.Chem.1sa.umich.edu"

Relax. delay 1.000 sec

Pulse 45.0 degrees

Acq. time 2.556 sec

Width 6410.3 Hz

8 repetitions

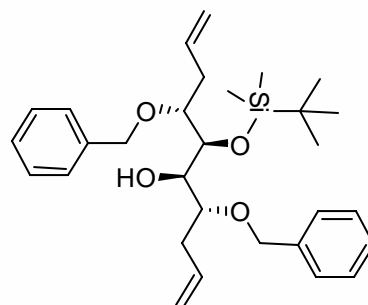
OBSERVE H1, 399.5389463 MHz

DATA PROCESSING

FT size 32768

Total time 0 min, 35 sec

Acquisition date: Dec 29 2008



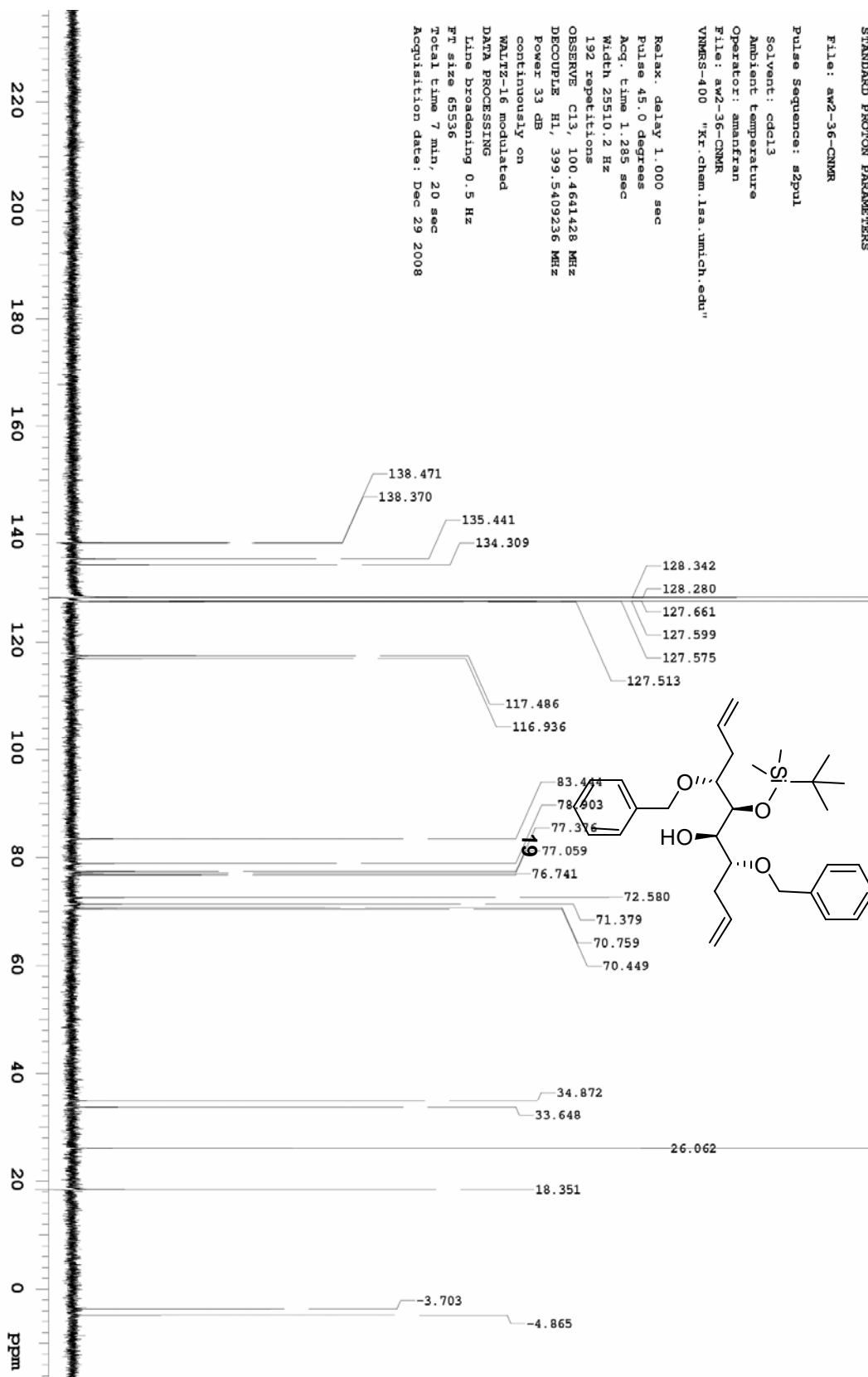
19



STANDARD PROTON PARAMETERS

File: aw2-36-CNMR
 Pulse Sequence: s2pul
 Solvent: cdcl3
 Ambient temperature
 Operator: amanfran
 File: aw2-36-CNMR
 VNMR5-400 "Xr:chem.lsa.umich.edu"

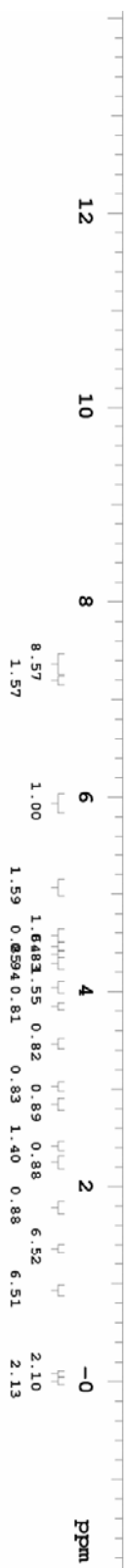
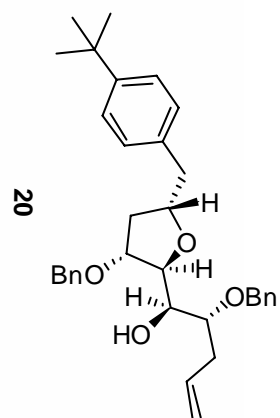
Relax. delay 1.000 sec
 Pulse 45.0 degrees
 Acq. time 1.285 sec
 Width 25510.2 Hz
 192 repetitions
 OBSERVE C13, 100.641428 MHz
 DECOUPLE H1, 399.5409236 MHz
 Power 33 dB
 continuously on
 WALTZ-16 modulated
 DATA PROCESSING
 Line broadening 0.5 Hz
 FT size 65536
 Total time 7 min, 20 sec
 Acquisition date: Dec 29 2008



STANDARD PROTON PARAMETERS

File: aw2-38-HNMR
 Pulse Sequence: szpul
 Solvent: cdcl3
 Ambient temperature
 Operator: amanfran
 File: aw2-38-HNMR
 VNMR5-400 "Kr.Chem.1sa.umich.edu"

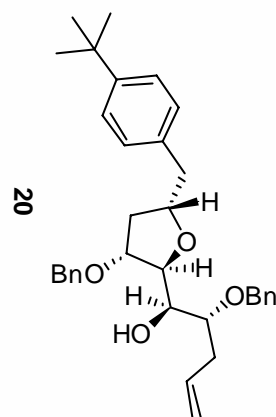
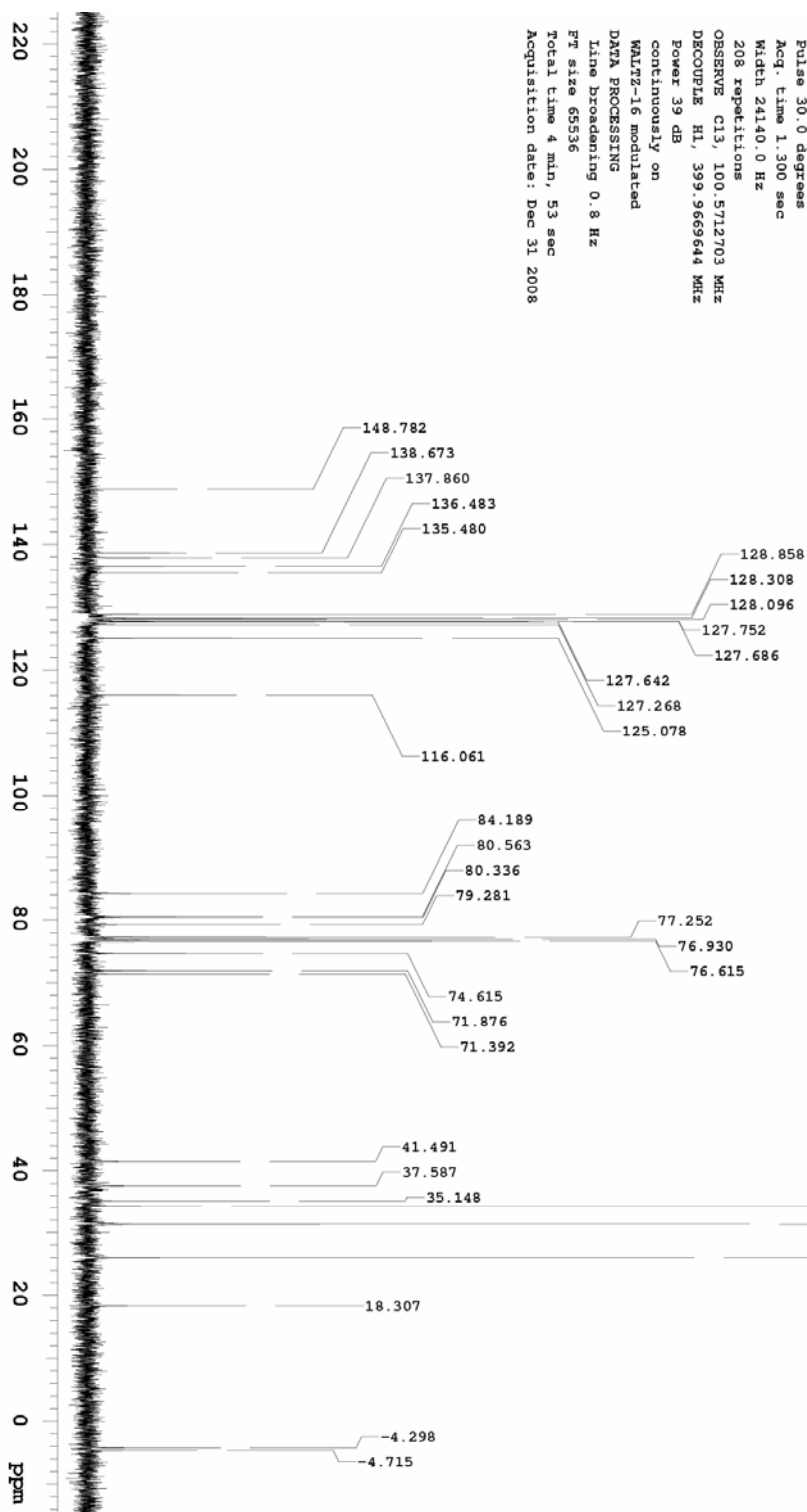
Relax. delay 1.000 sec
 Pulse 45.0 degrees
 Acq. time 2.556 sec
 Width 6410.3 Hz
 8 repetitions
 OBSERVE H1, 399.5389063 MHz
 DATA PROCESSING
 FT size 32768
 Total time 0 min, 35 sec
 Acquisition date: Dec 31 2008



Std. Carbon

File: aw2-38-CNMR
 Pulse Sequence: szpul
 Solvent: cdcl3
 Temp: 23.0 C / 296.1 K
 Operator: amanfran
 File: aw2-38-CNMR
 INOVA-400 "Kr.chem.1sa.umtch.edu"

Relax. delay 0.100 sec
 Pulse 30.0 degrees
 Acq. time 1.300 sec
 Width 24140.0 Hz
 208 repetitions
 OBSERVE C13, 100.5712703 MHz
 DECOUPLE H1, 399.9669644 MHz
 Power 39 dB
 continuously on
 WALTZ-16 modulated
 DATA PROCESSING
 Line broadening 0.8 Hz
 PR size 65536
 Total time 4 min, 53 sec
 Acquisition date: Dec 31 2008



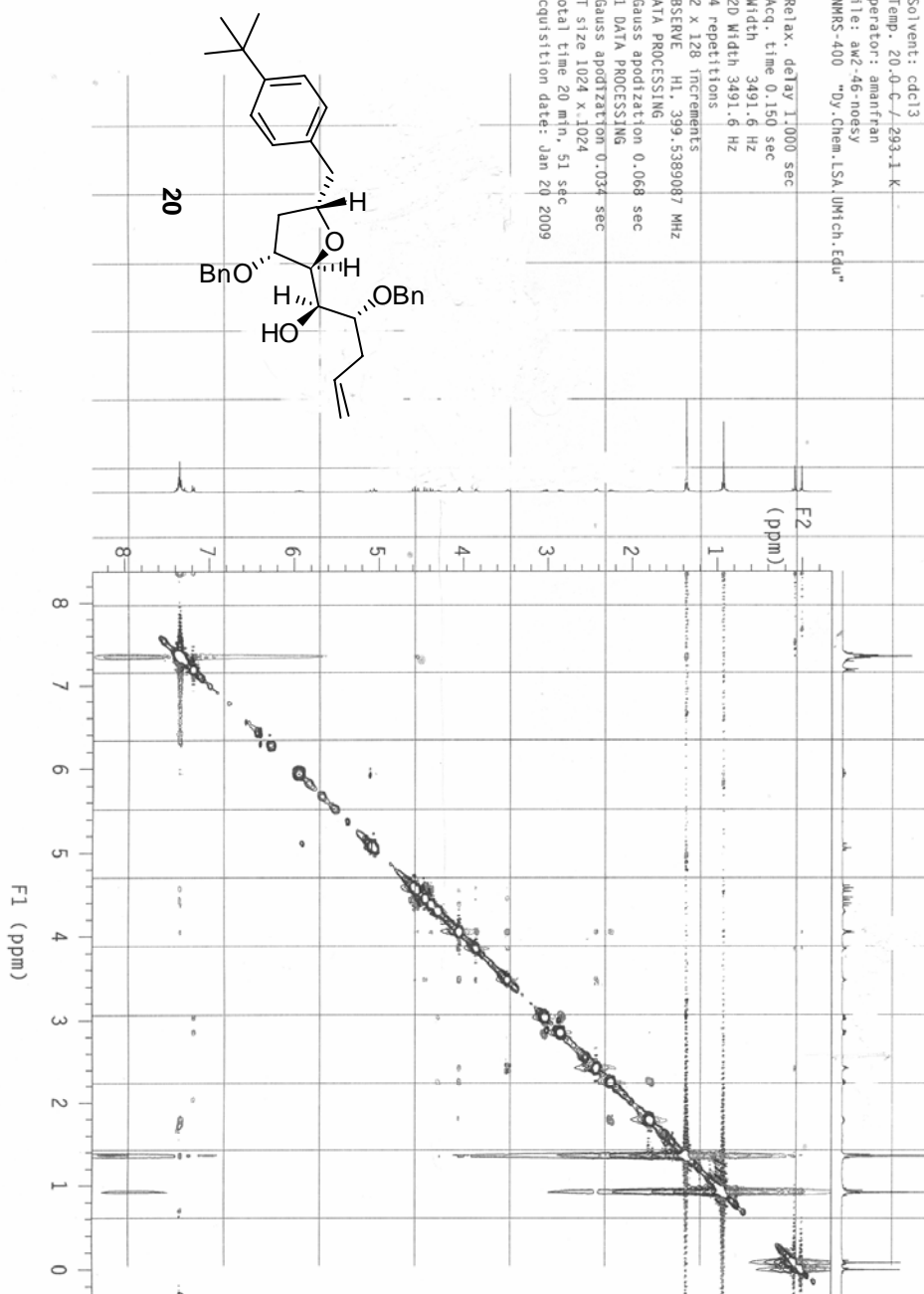
STANDARD 1H OBSERVE - profile

File: misc/gallium/amanfran/vnmr/sy/data/aw2-46-noesy.fid

Pulse Sequence: NOESY

Solvent: cdcl3
Temp: 20.0-C-/293.1-K
Operator: amanfran
File: aw2-46-noesy
VNMRS-400 "Dy.Chem.LSA,UMich.Edu"

Relax. delay 1.000 sec
Acq. time 0.150 sec
Width 3491.6 Hz
2D Width 3491.6 Hz
4 repetitions
2 x 128 increments
OBSERVE H1, 399.5389087 MHz
DATA PROCESSING
Gauss apodization 0.068 sec
FI DATA PROCESSING
Gauss apodization 0.034 sec
FT size 1024 x 1024
Total time 20 min, 51 sec
Acquisition date: Jan 20 2009



STANDARD 1H OBSERVE - profile

File: aw2-46-2-cosy

Pulse Sequence: gCOSY

Solvent: cdcl3

Temp. 20.0 C / 293.1 K

Operator: amanfran

File: aw2-46-2-cosy

VNMRS-400 "Kr.chem.1@sa.umich.edu"

Relax. delay 1.000 sec

Acq. time 0.150 sec

Width 3491.6 Hz

2D Width 3491.6 Hz

Single scan

128 increments

OBSERVE H1, 399.5389087 MHz

DATA PROCESSING

Sd. sine bell1 0.073 sec

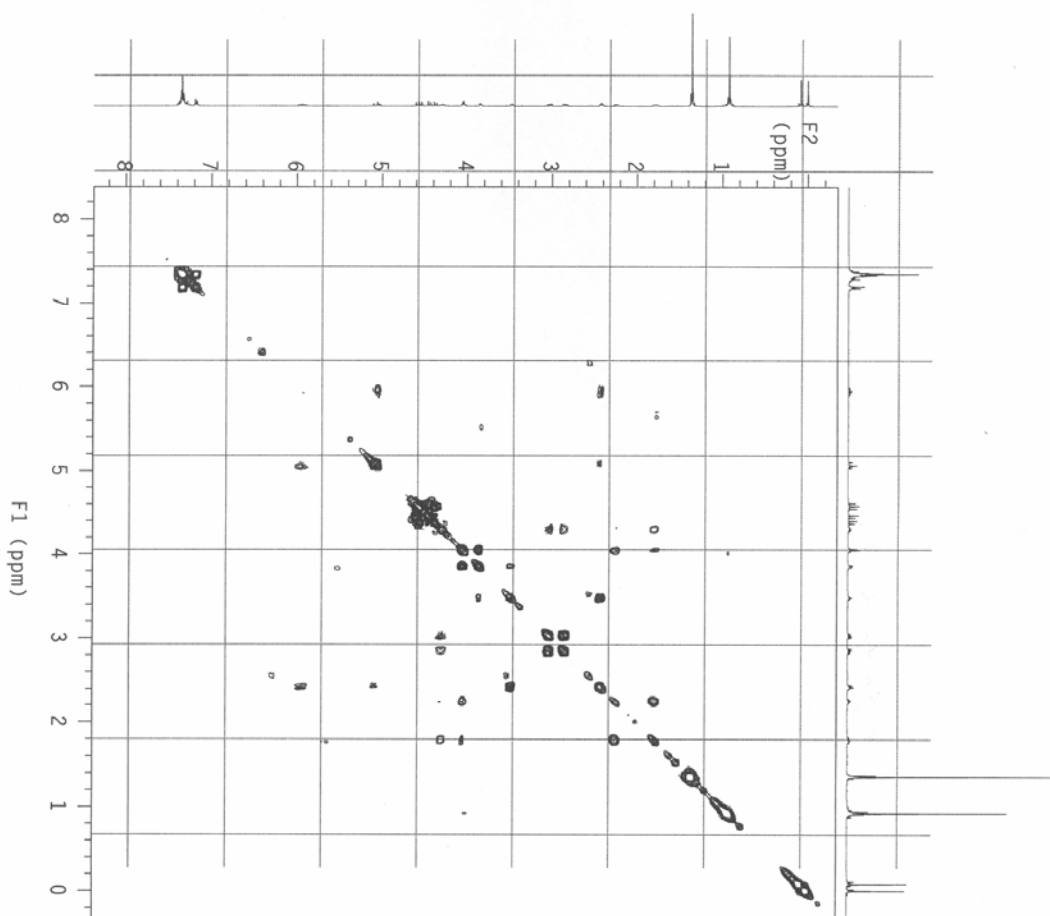
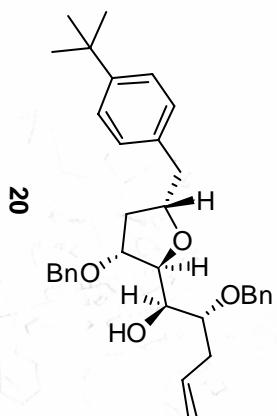
F1 DATA PROCESSING

Sd. sine bell1 0.037 sec

FT size 1024 x 1024

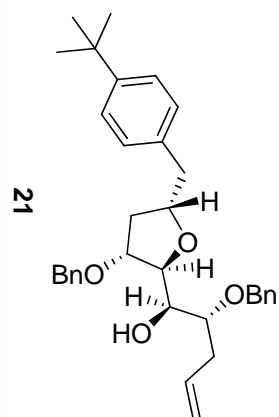
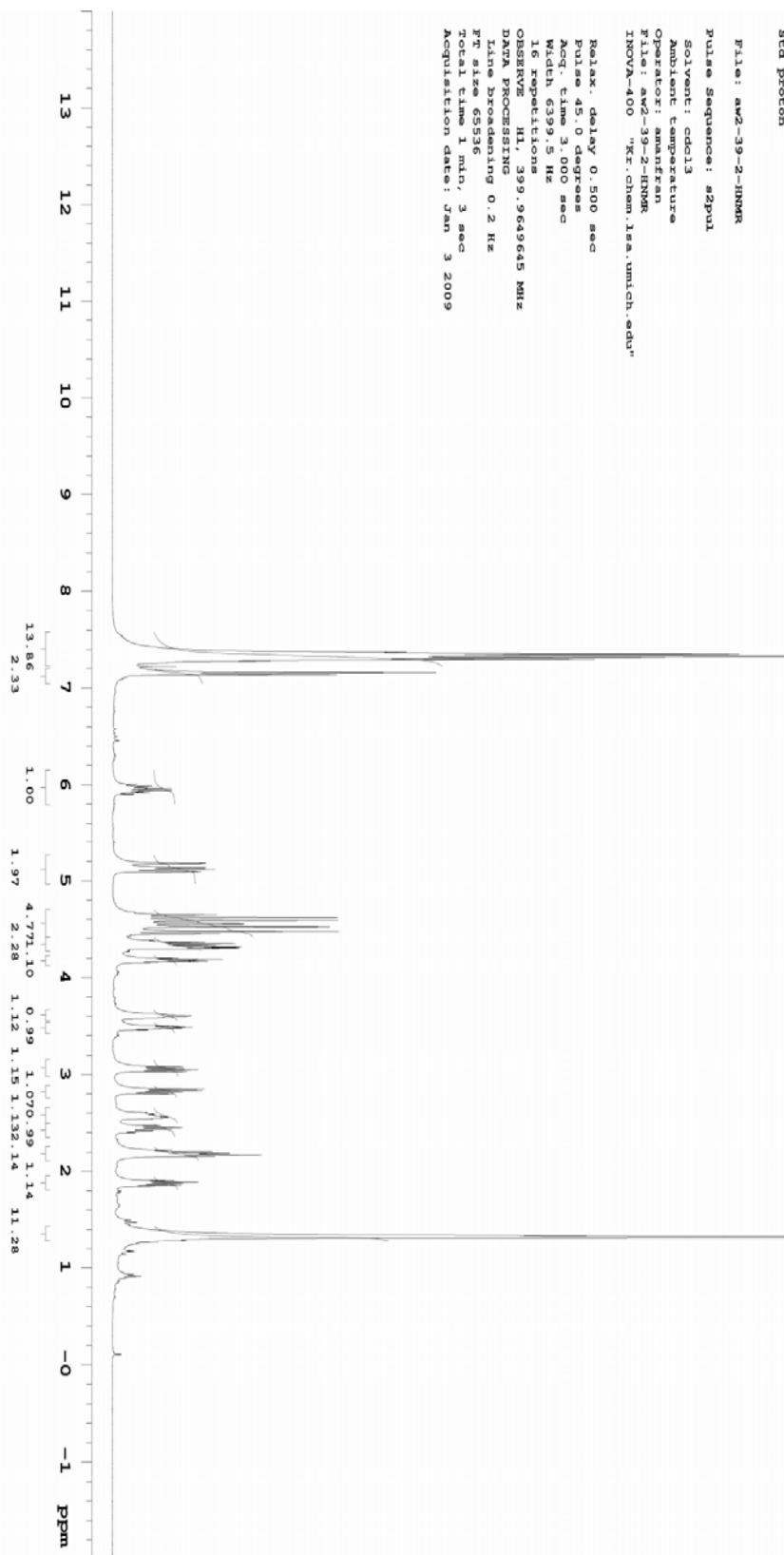
Total time 3 min., 12 sec

Acquisition date: Jan 20 2009



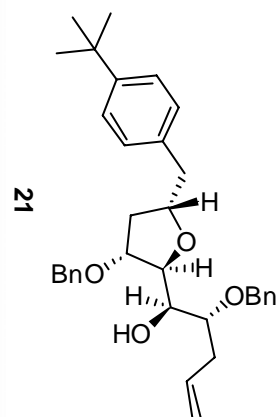
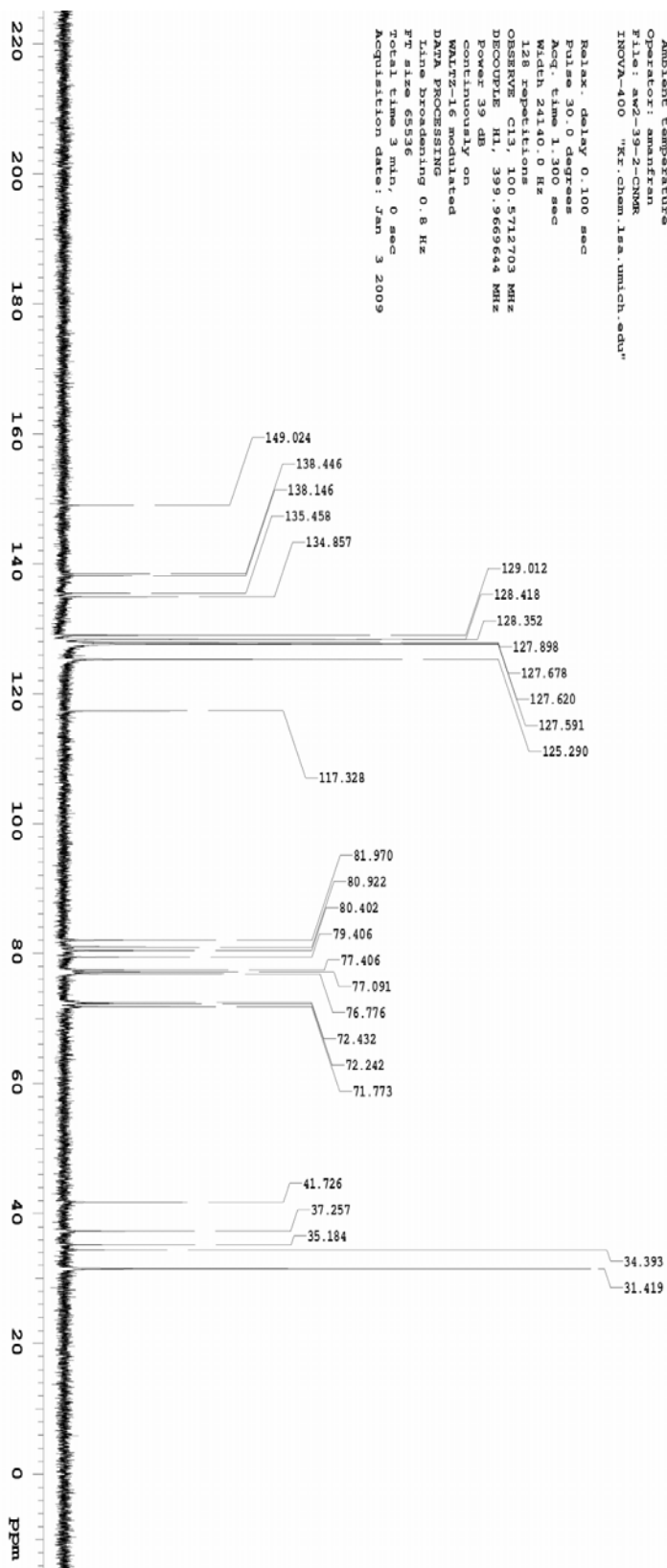
Std proton

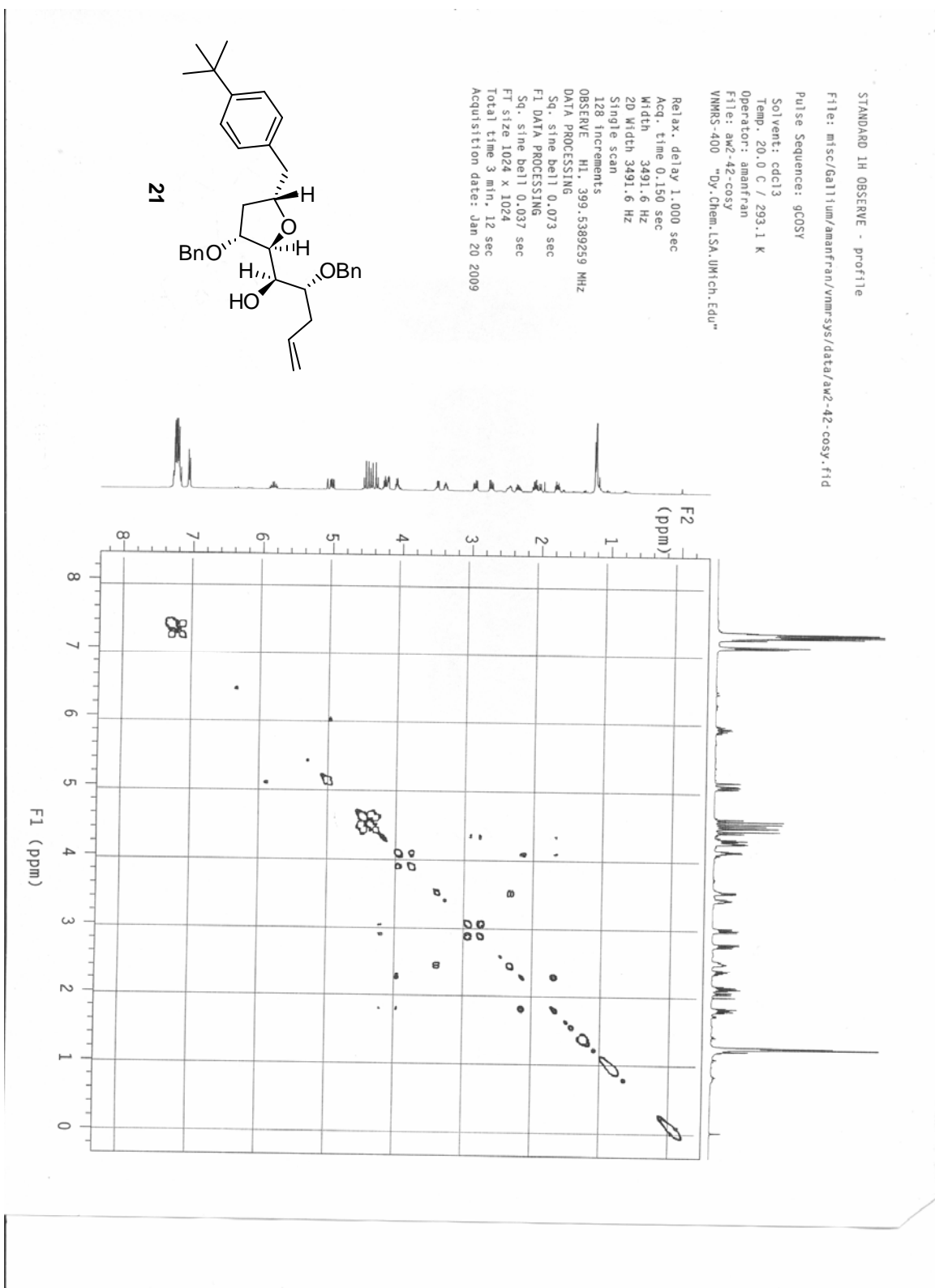
File: aw2-39-2-1HMR
 Pulse Sequence: s2pul
 Solvent: cdcl3
 Ambient Temperature
 Operator: amnfran
 File: aw2-39-2-1HMR
 INOVA-400 "K.chem.lsa.umich.edu"
 Relax. delay 0.500 sec
 Pulse 45.0 degrees
 Acq. time 3.000 sec
 Width 6399.5 Hz
 16 repetitions
 OBSERVE H1, 399.9649645 MHz
 DATA PROCESSING
 Line broadening 0.2 Hz
 FT size 65536
 Total time 1 min, 3 sec
 Acquisition date: Jan 3 2009



Std Carbon

File: aw2-39-2-CNMR
 Pulse Sequence: s2pul
 Solvent: cdcl3
 Ambient Temperature
 Operator: amnfrkn
 File: aw2-39-2-CNMR
 INOVA-400 "Kf.Chem.lsa.umich.edu"
 Relax. delay 0.100 sec
 Pulse 30.0 degrees
 Acq. time 1.300 sec
 Width 24140.0 Hz
 128 repetitions
 OBSERVE C13, 100.5712703 MHz
 DECOUPLE H1, 399.969644 MHz
 Power 39 dB
 continuously on
 WALTZ-16 modulated
 DATA PROCESSING
 Line broadening 0.8 Hz
 FT size 65536
 Total time 3 min, 0 sec
 Acquisition date: Jan 3 2009





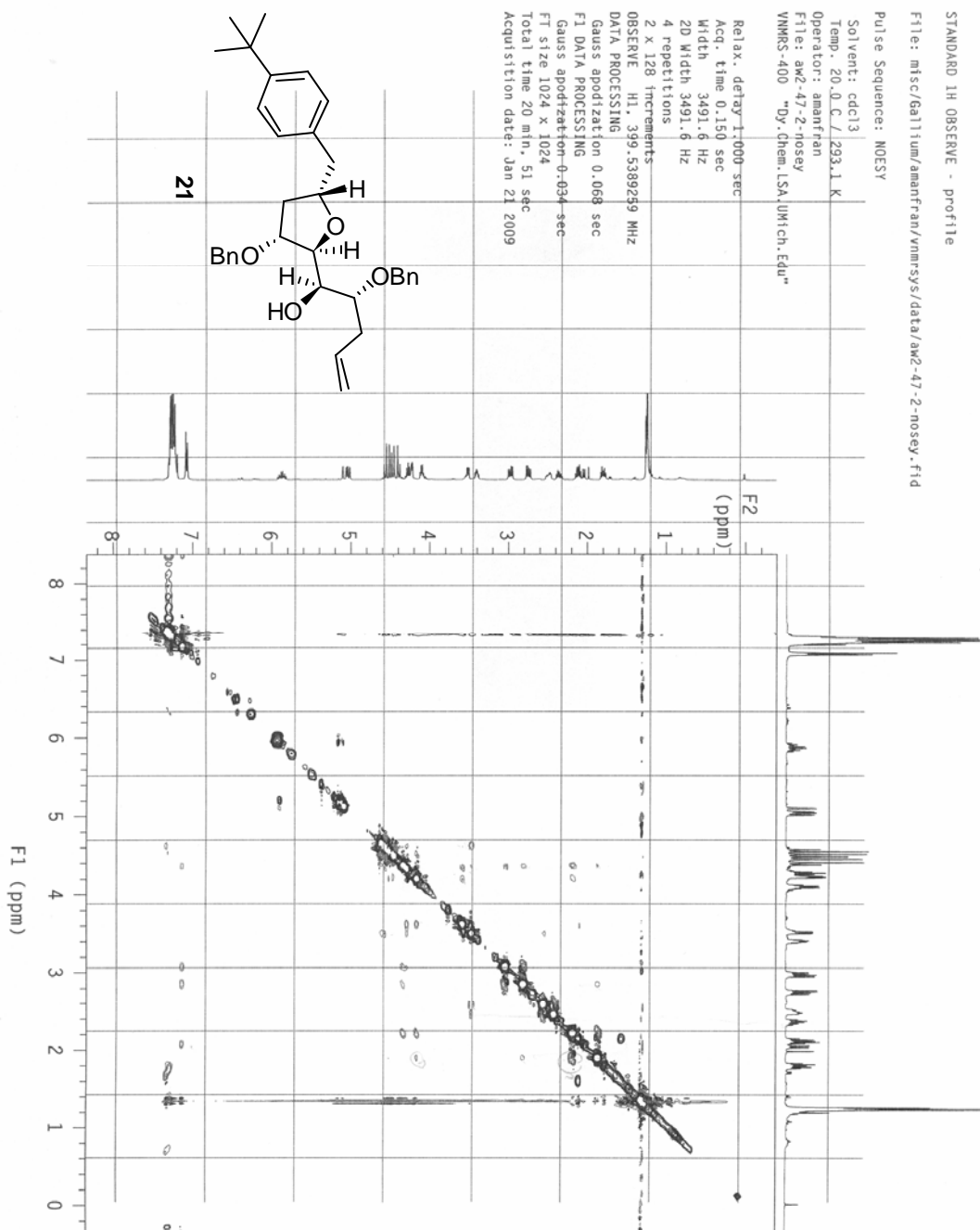
STANDARD 1H OBSERVE - profile

File: misc/ballium/amanfran/vnmrSYS/data/aw2-47-2-nosey.fid

Pulse Sequence: NOESY

Solvent: cdcl3
Temp: 20.0 C / 293.1 K
Operator: amanfran
File: aw2-47-2-nosey
VNMRS-400 "Dy.Chem.LSA.UMich.Edu"

Relax. delay: 1.000 sec
Acq. time 0.150 sec
Width 3491.6 Hz
2D Width 3491.6 Hz
4 repetitions
2 x 128 increments
OBSERVE H1, 399.5389259 MHz
DATA PROCESSING
Gauss apodization 0.068 sec
F1 DATA PROCESSING
Gauss apodization 0.034 sec
FT size 1024 x 1024
Total time 20 min, 51 sec
Acquisition date: Jan 21 2009



Std proton

File: misc/i400/amanfran/vmr/sys/data/aw2-42-propanol.tid

Pulse Sequence: s2pul

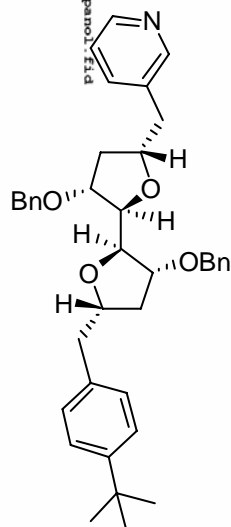
Temp. 25.0 C / 298.1 K

Operator: amanfran

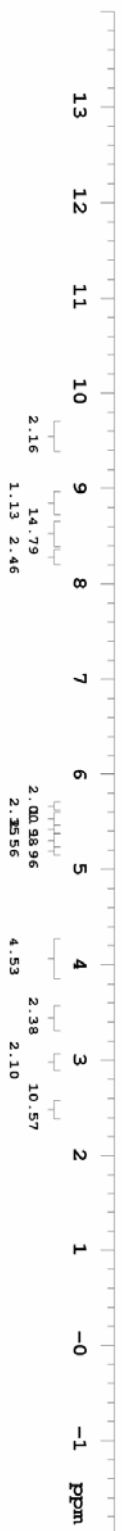
File: aw2-42-propanol

INOVA-400 "Dy. Chem. ISA, UMich. Edu"

22



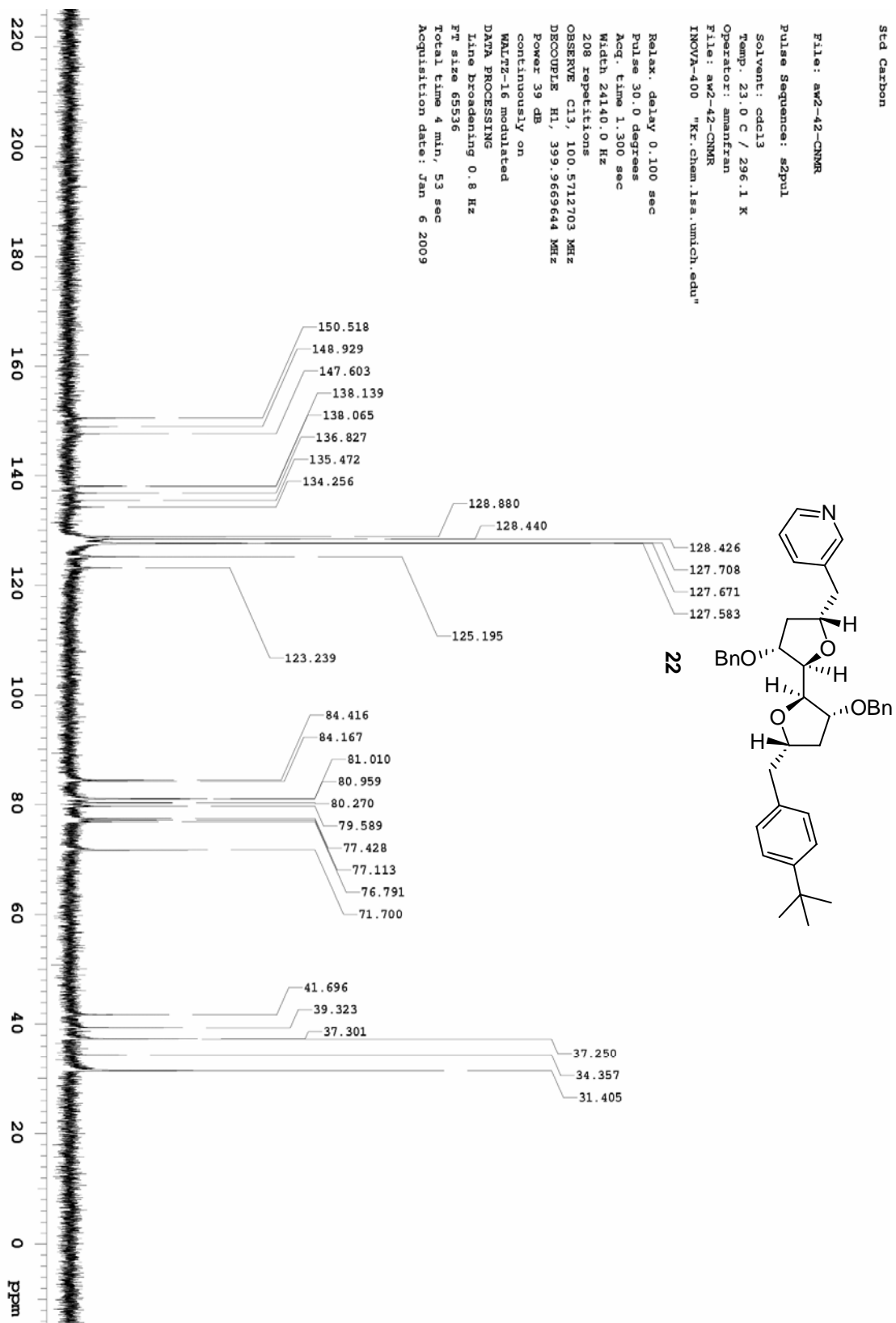
Relax. delay 0.500 sec
 pulse 45.0 degrees
 Acq. time 3.000 sec
 Width 6399.5 Hz
 16 repetitions
 OBSERVE H1, 399.9658604 MHz
 DATA PROCESSING
 Line broadening 0.2 Hz
 FT size 65536
 Total time 1 min, 3 sec
 Acquisition date: Jan 7 2009



Std Carbon

File: aw2-42-CNMNR
 Pulse Sequence: s2pul
 Solvent: cdcl3
 Temp: 23.0 C / 296.1 K
 Operator: amanfran
 File: aw2-42-CNMNR
 INOVA-400 "Kz.chem.lsa.umich.edu"

Relax. delay 0.100 sec
 Pulse 30.0 degrees
 Acq. time 1.300 sec
 Width 24140.0 Hz
 208 repetitions
 OBSERVE C13, 100.5712703 MHz
 DECOUPLE H1, 399.9669644 MHz
 Power 39 dB
 continuously on
 WALTZ-16 modulated
 DATA PROCESSING
 Line broadening 0.8 Hz
 FT size 65536
 Total time 4 min, 53 sec
 Acquisition date: Jan 6 2009



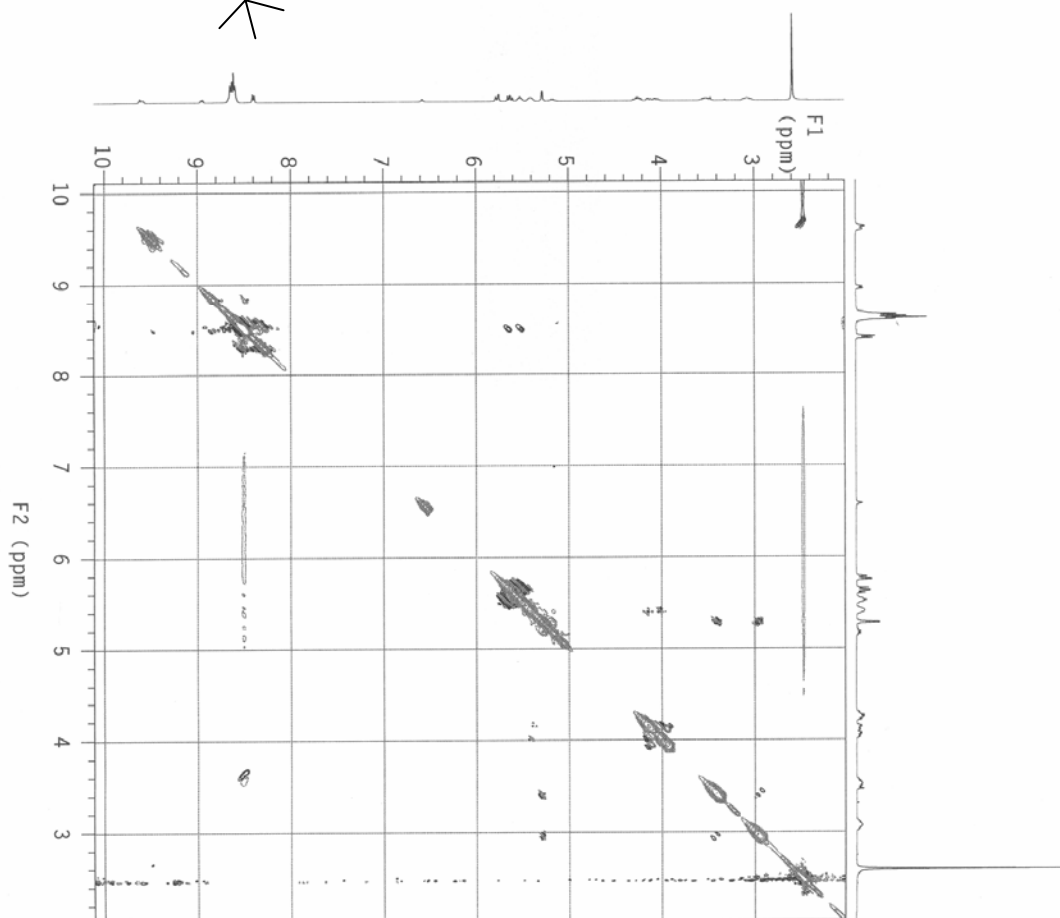
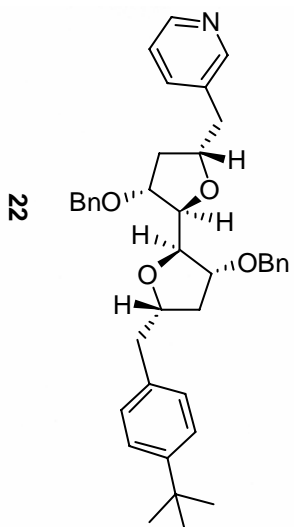
Std proton

File: aw2-42-prop-nosy

Pulse Sequence: NOESY

Solvent: toluene
 Ambient temperature
 Operator: amanfran
 File: aw2-42-prop-nosy
 INOVA-400 "Kr.chem,1sa.umich.edu"

Relax. delay 1.000 sec
 Mixing 0.300 sec
 Acq. time 0.158 sec
 Width 3234.3 Hz
 2D Width 3234.3 Hz
 4 repetitions
 2 x 128 increments
 OBSERVE H1, 399.9658025 MHz
 DATA PROCESSING
 Gauss apodization 0.073 sec
 F1 DATA PROCESSING
 Gauss apodization 0.073 sec
 FT size 2048 x 2048
 Total time 26 min, 18 sec
 Acquisition date: Jan 7 2009
 Solvent: (CF₃)₂CDCl₃



Std proton

File: aw2-40-prop-cosy

Pulse Sequence: COSY

Solvent: toluene

Ambient temperature

Operator: amanfran

File: aw2-40-prop-cosy

INOVA-400 "Kr.chem.lsa.umich.edu"

Relax. delay 1.301 sec

Acq. time 0.158 sec

Width 3234.3 Hz

2D Width 3234.3 Hz

2 repetitions

128 increments

OBSERVE H1, 399.9650245 MHz

DATA PROCESSING

Sine bell 0.079 sec

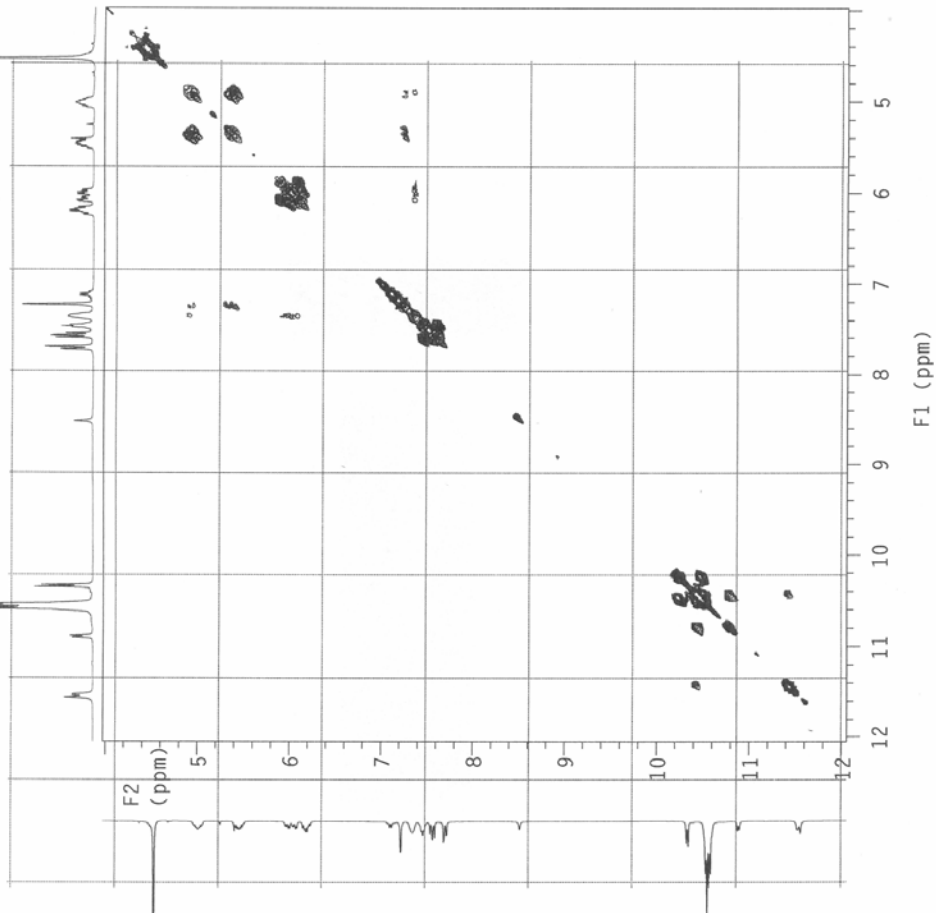
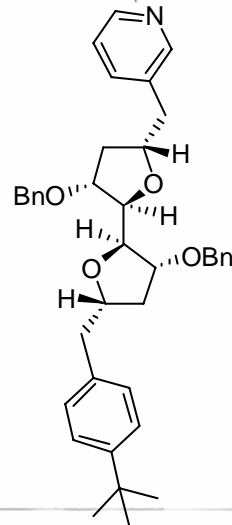
F1 DATA PROCESSING

Sine bell 0.079 sec

FT size 2048 x 2048

Total time 6 min, 44 sec

Acquisition date: Jan 7 2009

Solvent: (CF₃)₂CO**22**

Spd proton

Sample Name:

Data Collected on:
Zr.Chem.ISM.UMich.edu-inovara400
Archive directory:

Sample directory:

FIDFile: aw2-7-edc-hnmr

Pulse Sequence: PROTON (s2pul)

Solvent: cdcl3

Data collected on: Mar 11 2009

Temp. 25.0 C / 298.1 K

Operator: amantran

Relax. delay 1.000 sec

Pulse 45.0 degrees

Acq. time 2.560 sec

Width 6399.5 Hz

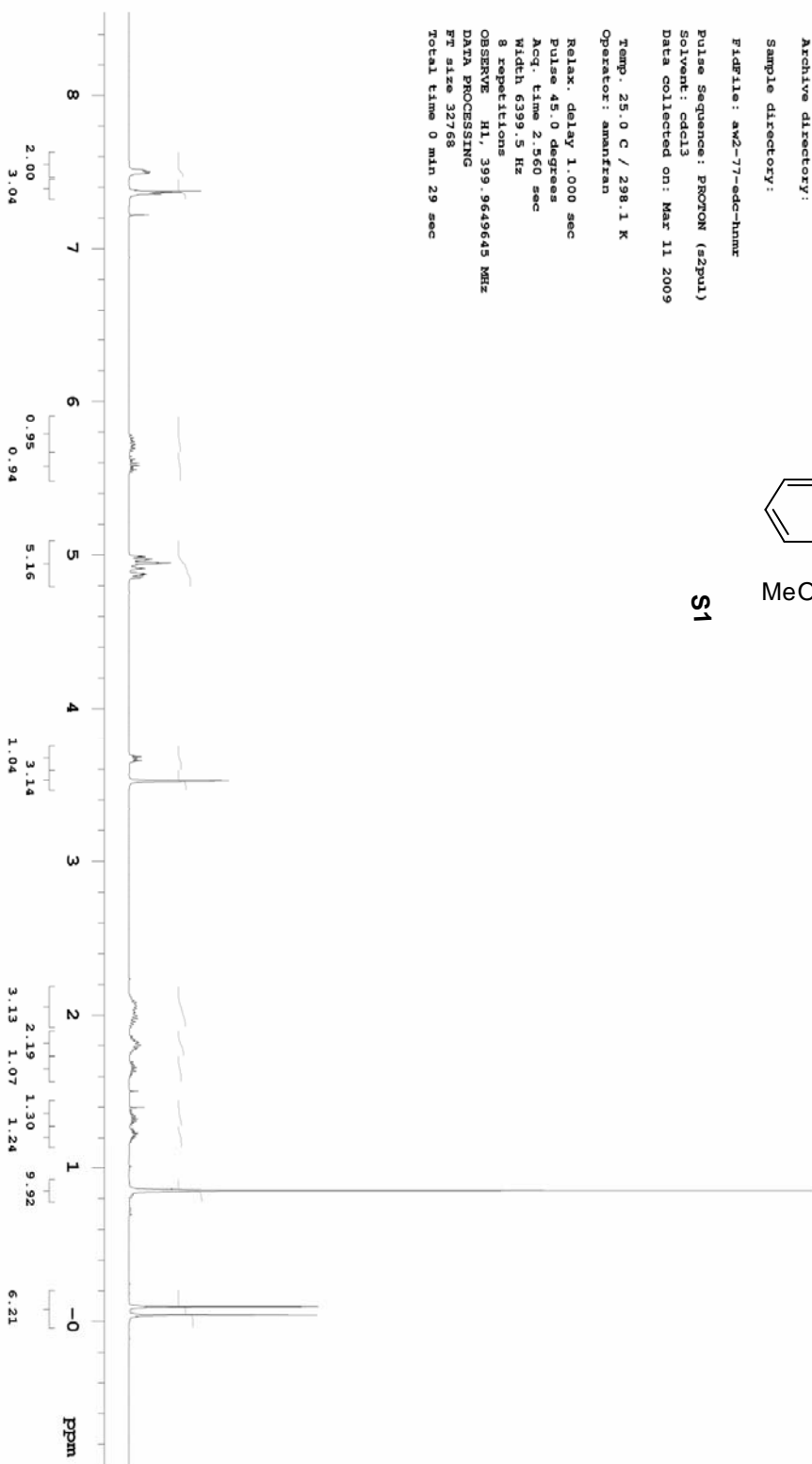
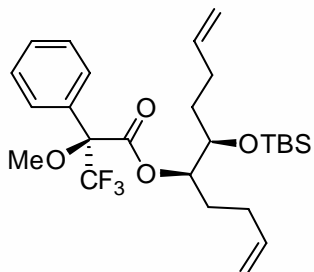
8 repetitions

OBSERVE M1, 399.9649645 MHz

DATA PROCESSING

FT size 32768

Total time 0 min 29 sec



STANDARD 1H OBSERVE - profile
 Selective band center: 4.29 (ppm); width: 35.1 (Hz)
 Selective band center: 4.05 (ppm); width: 33.3 (Hz)
 Selective band center: 3.85 (ppm); width: 18.5 (Hz)
 Selective band center: 3.48 (ppm); width: 27.7 (Hz)
 Selective band center: 4.26 (ppm); width: 37.1 (Hz)
 Selective band center: 4.01 (ppm); width: 27.0 (Hz)
 Selective band center: 3.81 (ppm); width: 20.3 (Hz)
 Selective band center: 3.44 (ppm); width: 25.3 (Hz)
 Selective band center: 2.38 (ppm); width: 25.3 (Hz)
 Selective band center: 2.21 (ppm); width: 32.1 (Hz)
 Selective band center: 1.75 (ppm); width: 45.6 (Hz)

Sample Name:

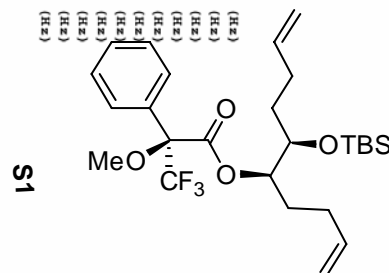
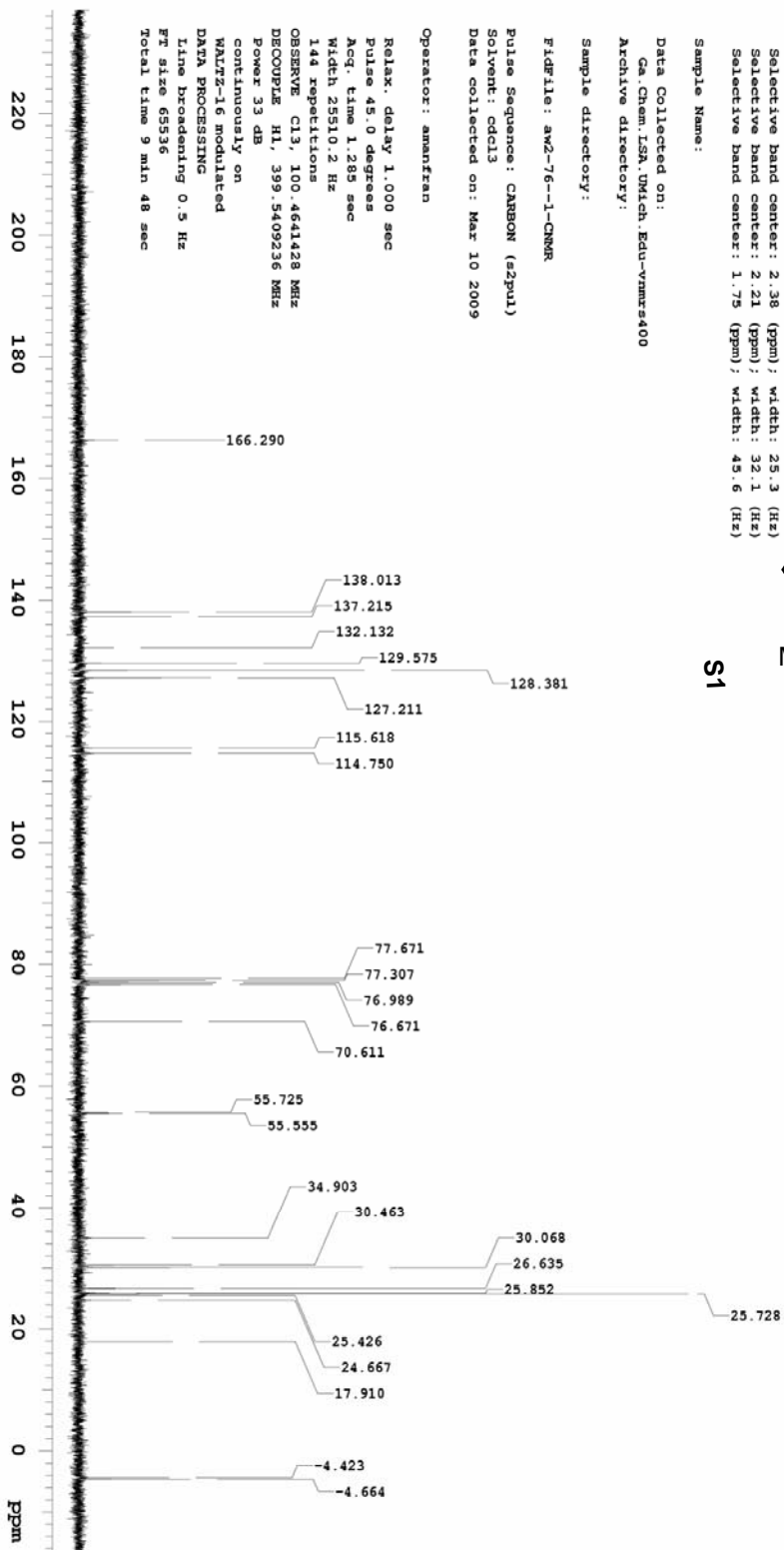
Data Collected on:
 Ca. Chem. ISA. DMICH. Edu-vmmr2400
 Archive directory:

Sample directory:

FIDFile: aw2-76--1-CMNR
 Pulse Sequence: CARBON (s2pul)
 Solvent: cdcl3
 Data collected on: Mar 10 2009

Operator: amanfran

Relax. delay: 1.000 sec
 Pulse: 45.0 degrees
 Acq. time: 1.285 sec
 Width: 25510.2 Hz
 144 repetitions
 OBSERVE: C13, 100.4641428 MHz
 DECOUPLE: H1, 399.5409236 MHz
 Power: 33 dB
 continuously on
 WALTZ-16 modulated
 DATA PROCESSING
 Line broadening: 0.5 Hz
 FT size: 65536
 Total time: 9 min 48 sec



STANDARD PROTON PARAMETERS

Sample Name:

Data Collected on:
Zr.Chem.ISA.UMich.edu-Inova400
Archive directory:

Sample directory:

FidFile: aw2-77-edc-F1-A

Pulse Sequence: FLUORINE (zpu1)

Solvent: cdcl3

Data collected on: Mar 11 2009

Temp. 25.0 C / 298.1 K

Operator: amanfran

Relax. delay 1.000 sec

Pulse 35.0 degrees

Acq. time 0.757 sec

Width 86580.1 Hz

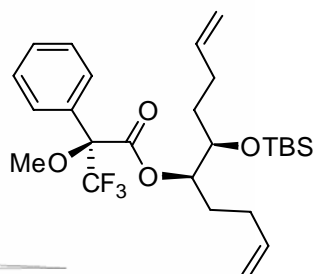
16 repetitions

OBSERVE F19, 376.3430777 MHz

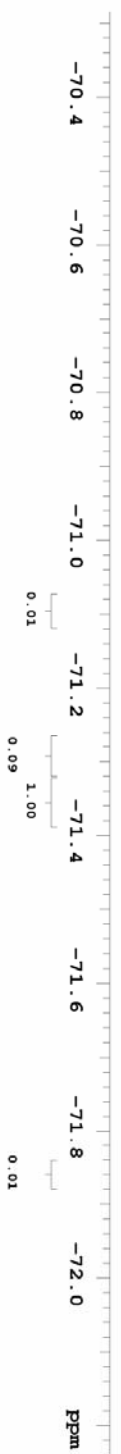
DATA PROCESSING

FT size 131072

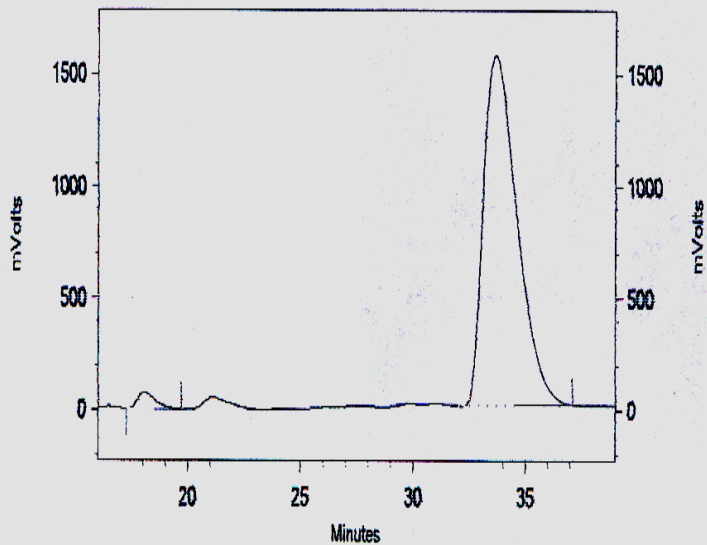
Total time 0 min 28 sec



S1



Data:

C:\CLASS-VP\Enterprise\Projects\Default\Data\Ward\Notebook2\aw2-79-dil2-od-li
pa-1ml.dat

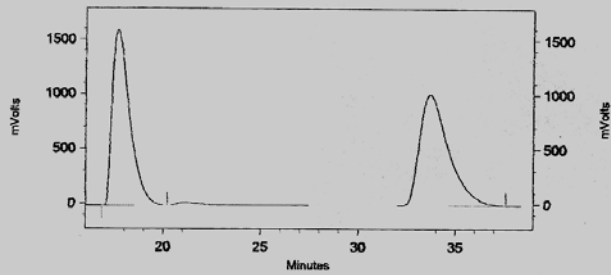
Detector 1 Ch1-231nm

Results

Retention Time	Area Percent	Area
18.050	2.481	4159448
33.658	97.519	163517691

Totals	100.000	167677139
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Data:
C:\CLASS-VP\Enterprise\Projects\Default\Data\Ward\Notebook2\aw1-206-dil-1-lip
a-lml.dat



Detector 1 Ch1-231nm
Results

Retention Time	Area Percent	Area
17.650	48.759	99684967
33.683	51.241	104760086
Totals	100.000	204445053