

Appendix 1

*Spectra Relevant to Chapter 2:
Direct Application of Enantioselective (3 + 2) Formal Cycloaddition:
Concise Enantioselective Total Synthesis of (–)-Lansai B*

WHX-2-65-F1_INDY_CDCL3

Sample Name:

WHX-2-65-F1_INDY_CDCL3
Data Collected on:
indy.caltech.edu-inova500
Archive directory:
/home/hwang/vnmrsys/data
Sample directory:
WHX-2-65-F1_INDY_CDCL3
FidFile: PROTON01

Pulse Sequence: PROTON (s2pul)
Solvent: cdcl3
Data collected on: Jun 7 2011

Temp. 25.0 C / 298.1 K

Sample #19, Operator: hwang

Relax. delay 2.000 sec

Pulse 45.0 degrees

Acq. time 2.500 sec

Width 8000.0 Hz

16 repetitions

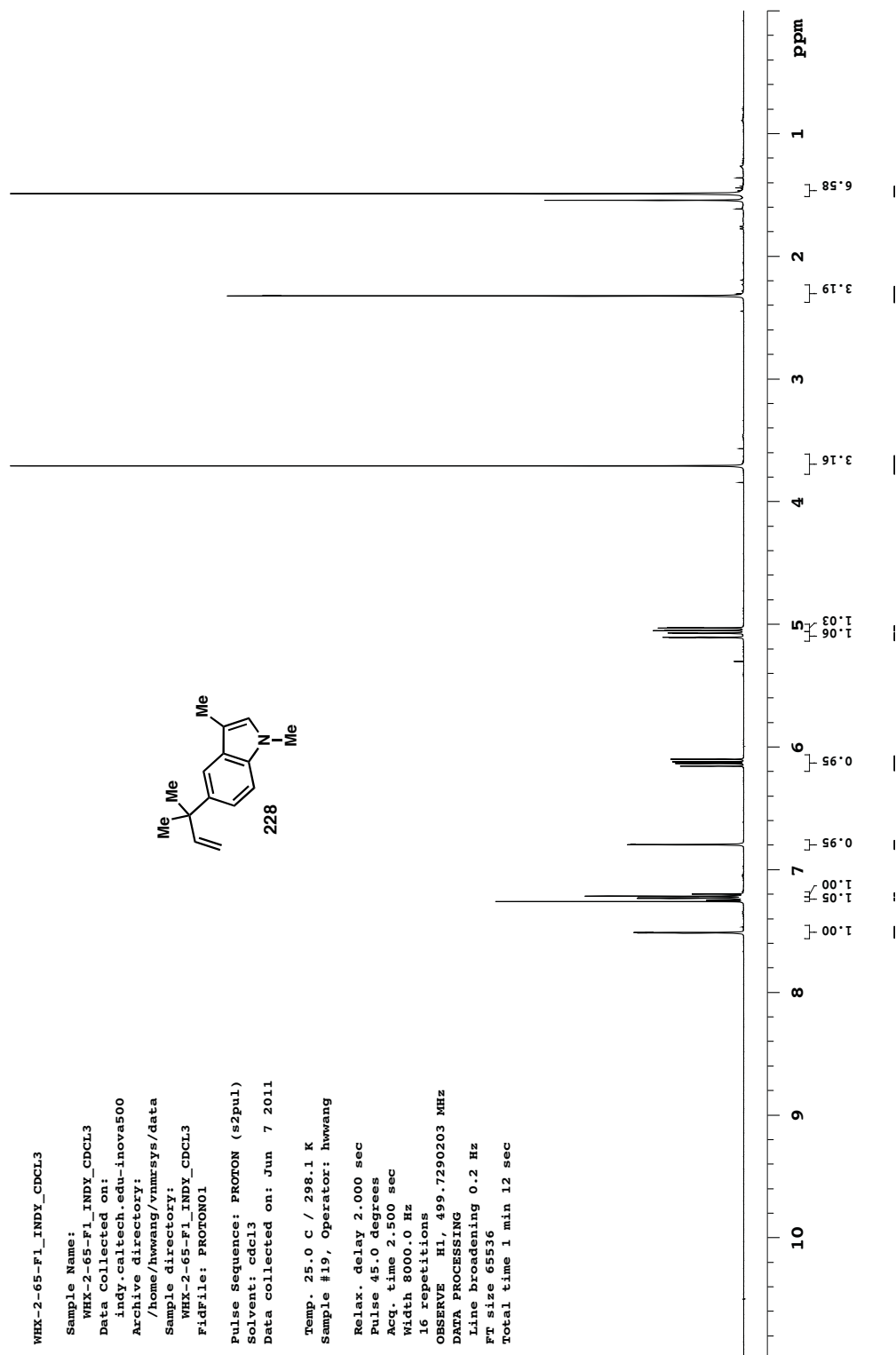
OBSERVE H1, 499.7290203 MHz

DATA PROCESSING

Line broadening 0.2 Hz

FT size 65536

Total time 1 min 12 sec



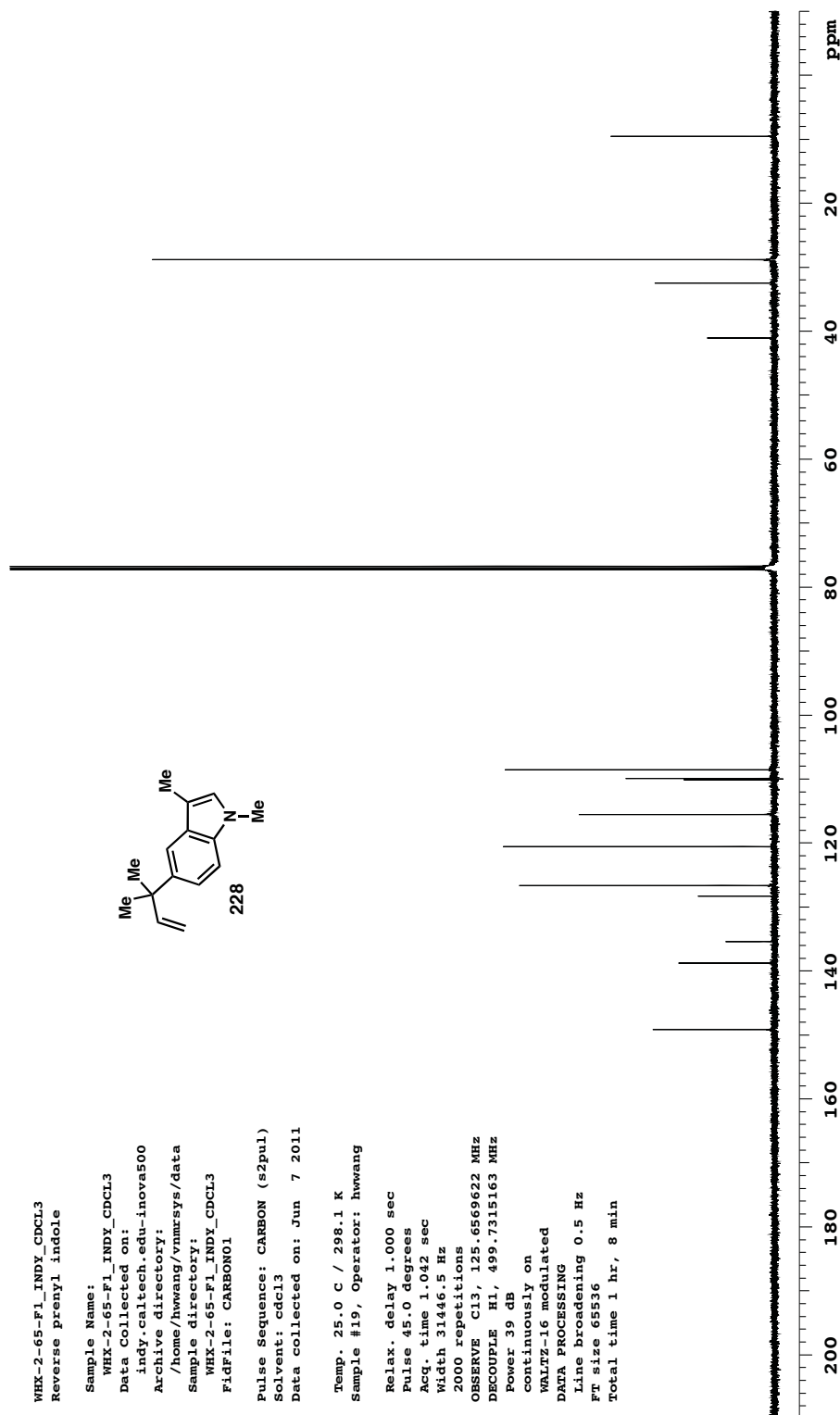
WHX-2-65-F1_INDY_CDCL3
Reverse prenyl indole

Sample Name:
WHX-2-65-F1_INDY_CDCL3
Data Collected on:
indy.caltech.edu-inova500
Archive directory:
/home/hwang/vnmrsys/data
Sample directory:
WHX-2-65-F1_INDY_CDCL3
FidFile: CARBON01

Pulse Sequence: CARBON (s2pul)
Solvent: cdcl3
Data collected on: Jun 7 2011

Temp. 25.0 C / 298.1 K
Sample #19, Operator: hwwang

Relax. delay 1.000 sec
Pulse 45.0 degrees
Acq. time 1.042 sec
Width 31446.5 Hz
2000 repetitions
OBSERVE C13, 125.659622 MHz
DECOUPLE H1, 499.7315163 MHz
Power 39 dB
continuously on
WALTZ-16 modulated
DATA PROCESSING
Line broadening 0.5 Hz
FT size 65536
Total time 1 hr, 8 min



WHX-2-67-F2-HPLC_Major-Rep_INDY_CDCL3

Sample Name:

WHX-2-67-F2-HPLC_Major-Rep_INDY_CDCL3
Data Collected on:
indy.caltech.edu-inova500
Archive directory:
/home/hwang/vnmrsys/data
Sample directory:
WHX-2-67-F2-HPLC_Major-Rep_INDY_CDCL3
FidFile: PROTON01

Pulse Sequence: PROTON (s2pul)
Solvent: cdcl3
Data collected on: Jun 15 2011

Temp. 25.0 C / 298.1 K

Sample #19, Operator: hwang

Relax. delay 5.000 sec

Pulse 45.0 degrees

Acq. time 2.500 sec

Width 8000.0 Hz

16 repetitions

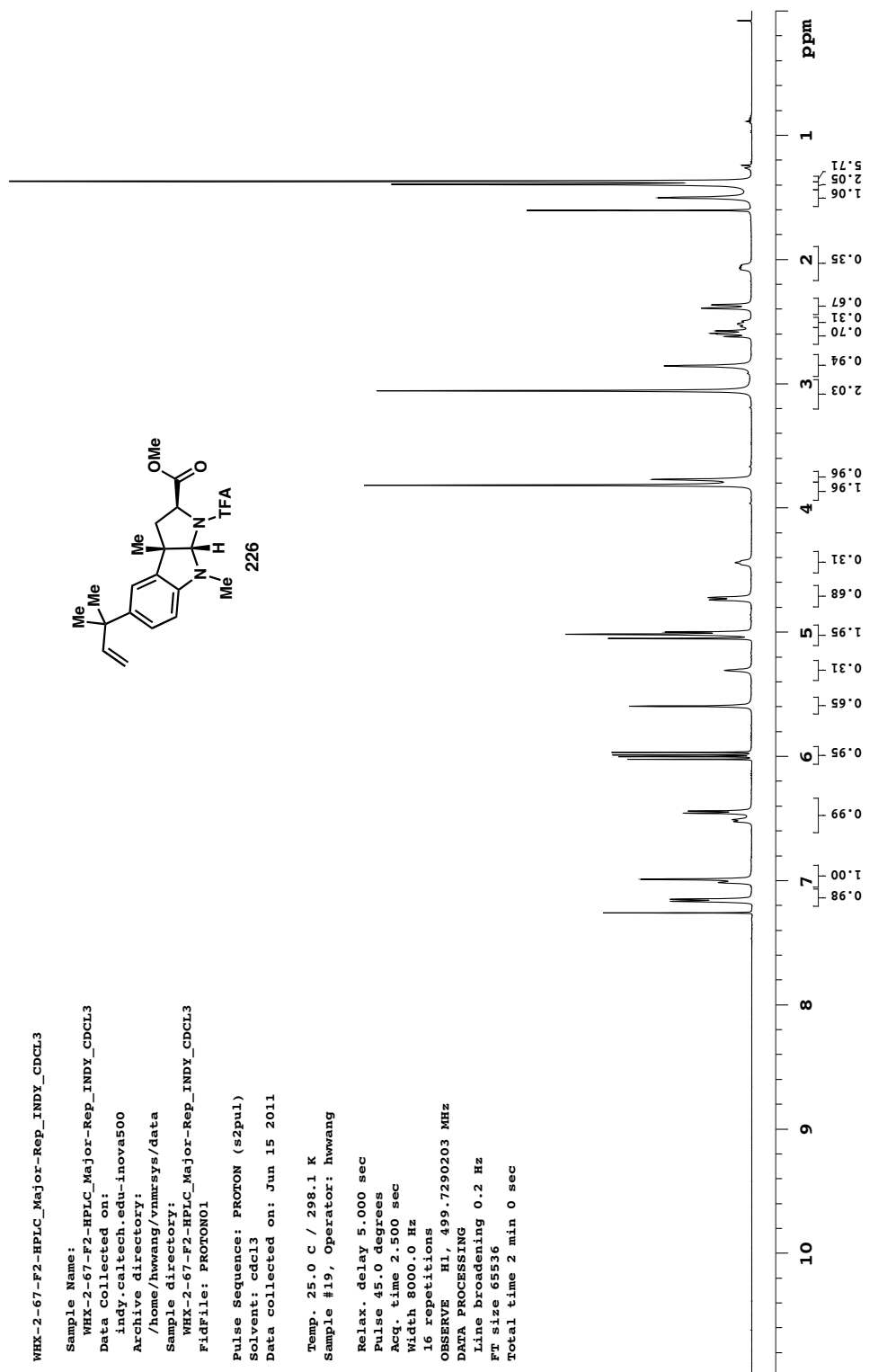
OBSERVE H1, 499.7290203 MHz

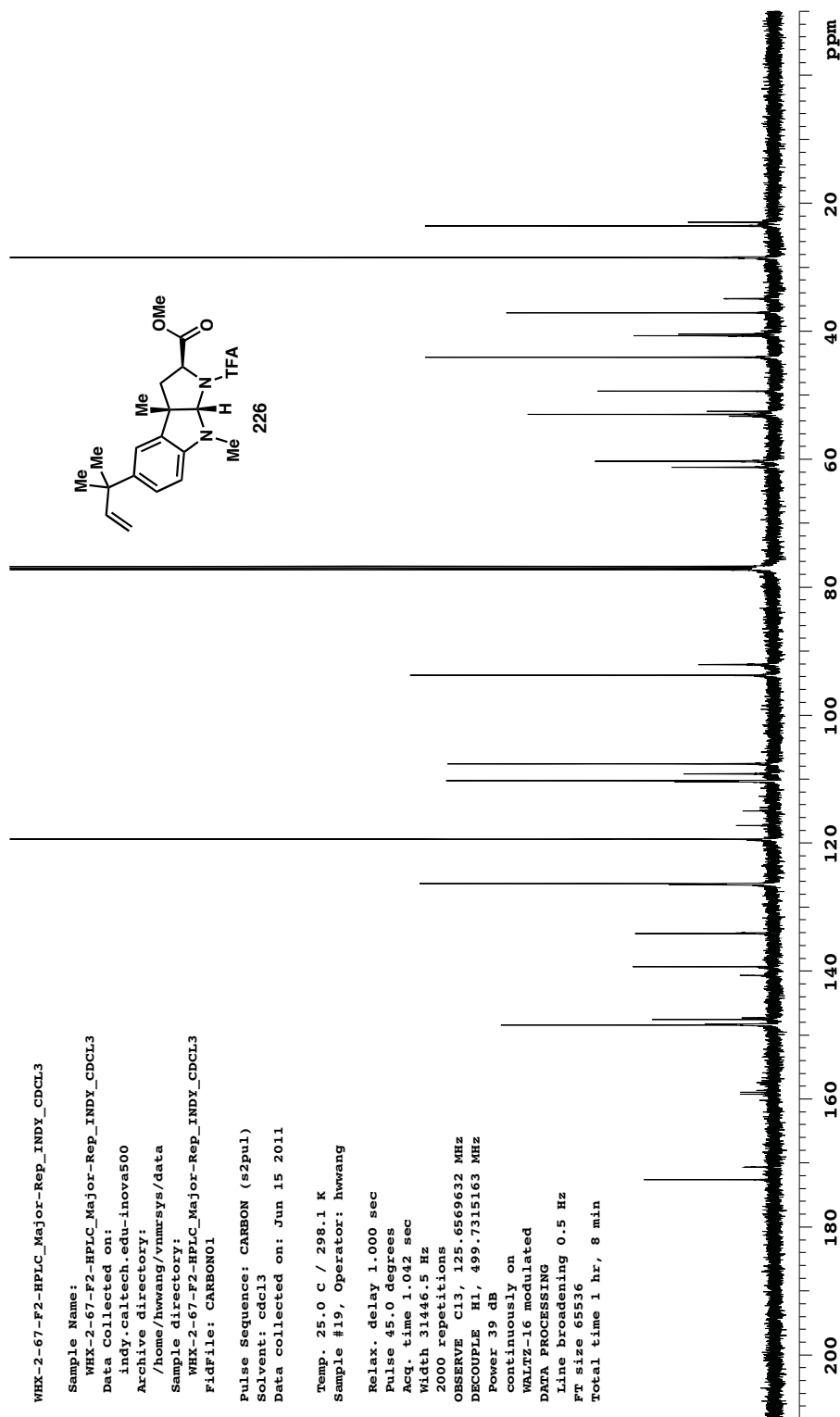
DATA PROCESSING

Line broadening 0.2 Hz

FT size 65536

Total time 2 min 0 sec





WHX-2-71-F1-P1_INDY_CDCL3

Sample Name:

WHX-2-71-F1-P1_INDY_CDCL3
Data Collected on:
indy.caltech.edu-inova500
Archive directory:
/home/hwang/vnmrsys/data
Sample directory:
WHX-2-71-F1-P1_INDY_CDCL3
FidFile: PROTON01

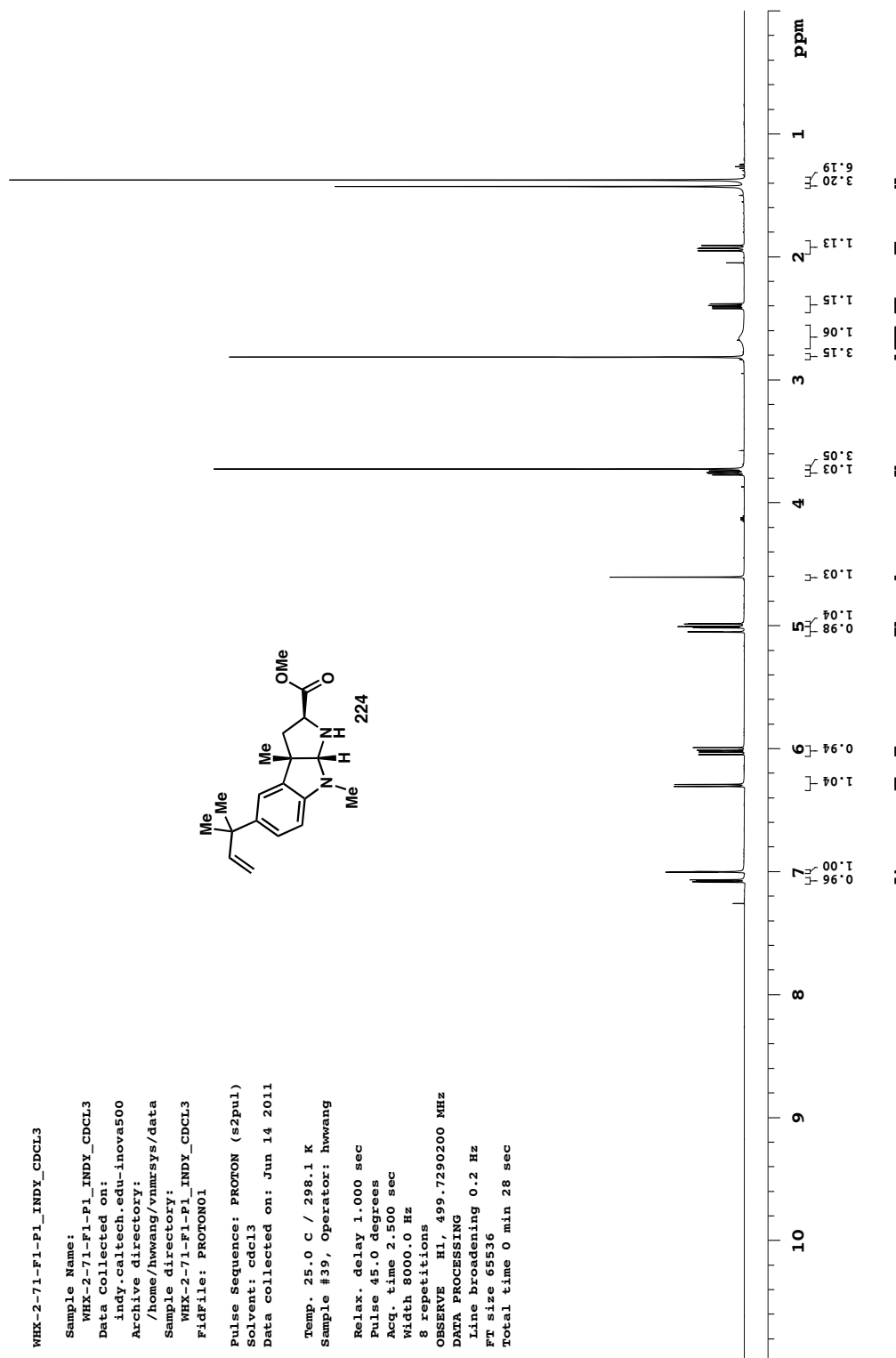
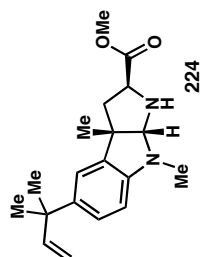
Pulse Sequence: PROTON (s2pul)
Solvent: cdcl3
Data collected on: Jun 14 2011

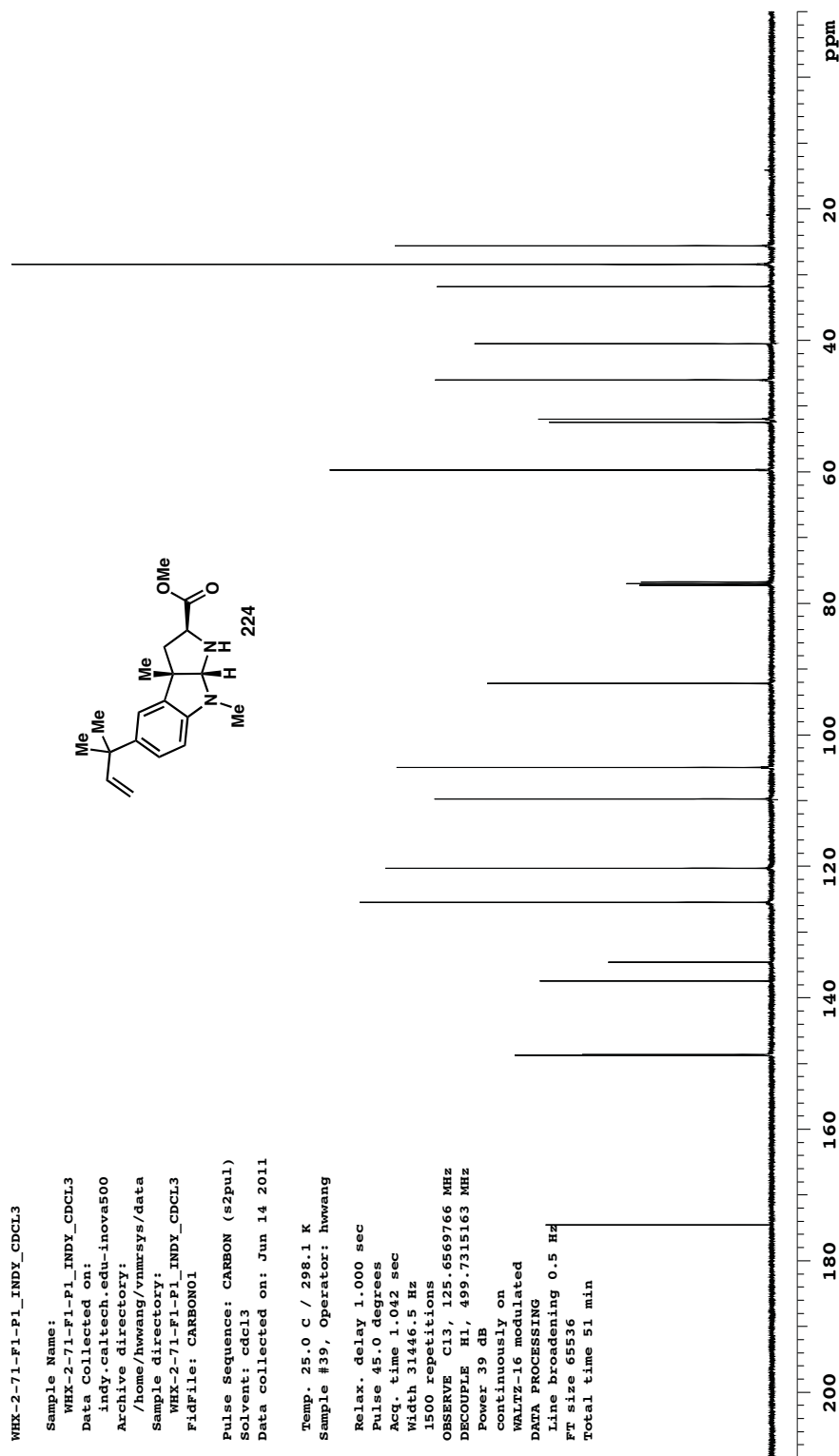
Temp. 25.0 C / 298.1 K

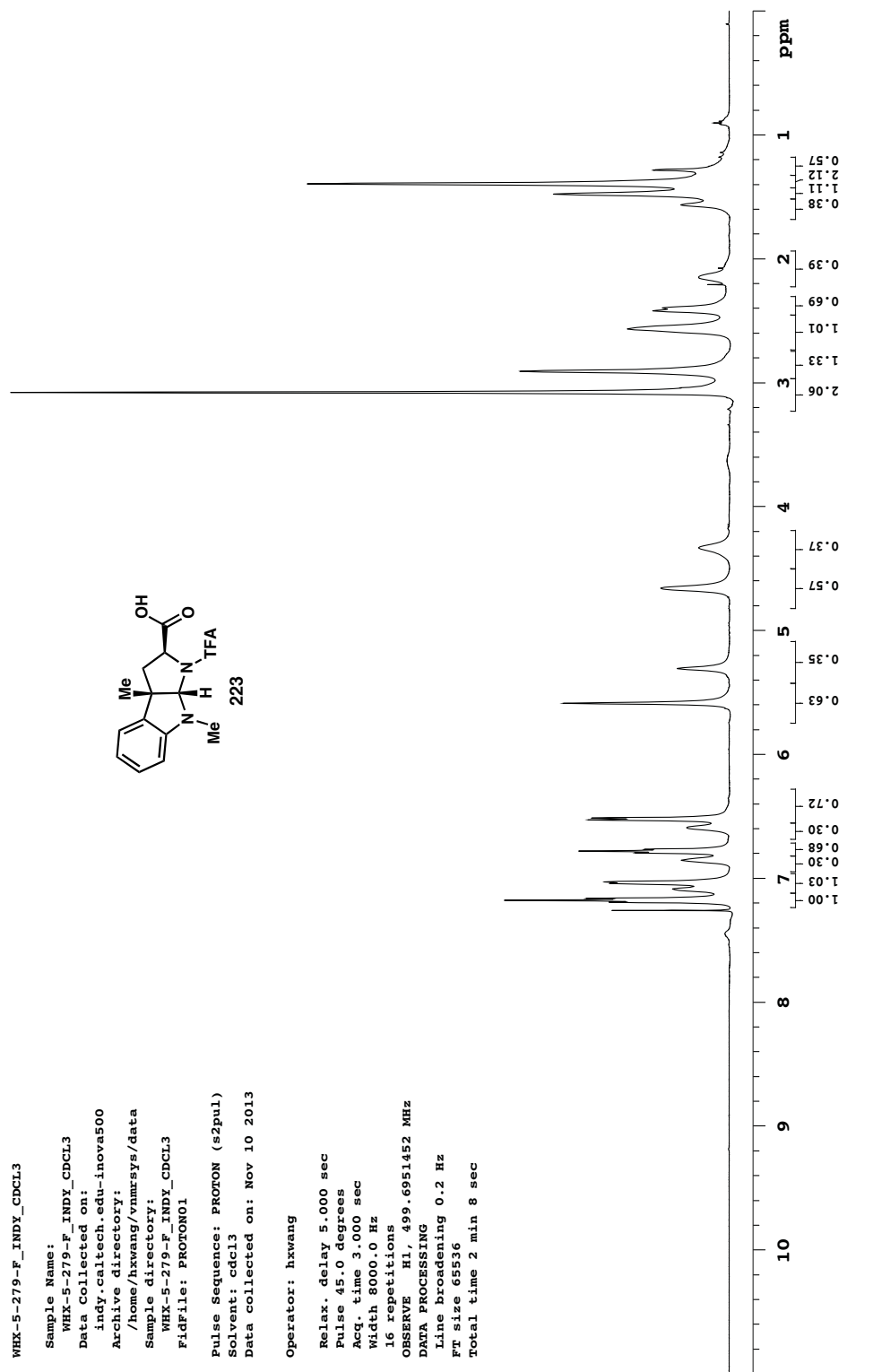
Sample #39, Operator: hwang

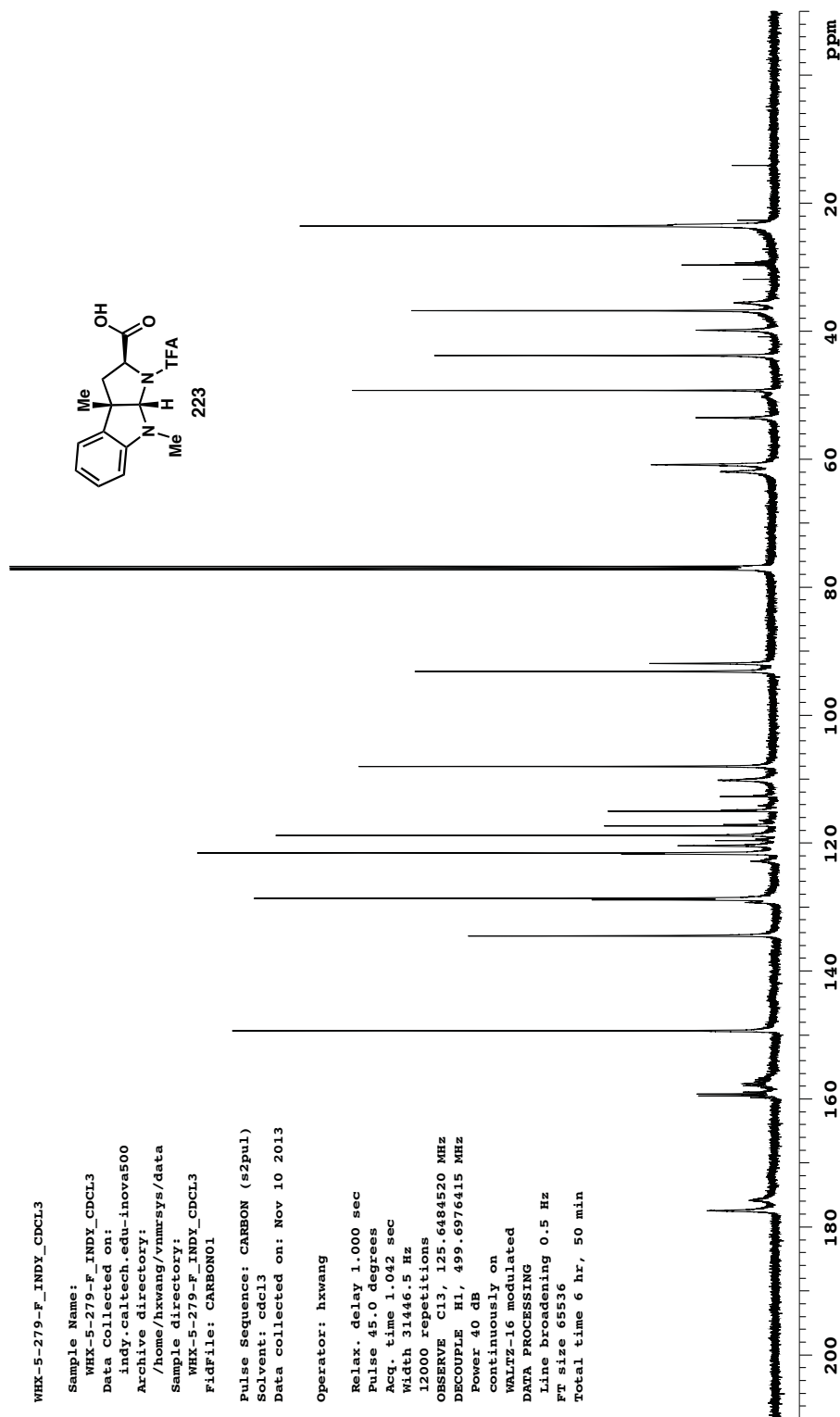
Relax. delay 1.000 sec
Pulse 45.0 degrees
Acq. time 2.500 sec
Width 8000.0 Hz
8 repetitions

OBSERVE H1, 499.7290200 MHz
DATA PROCESSING
Line broadening 0.2 Hz
FT size 65536
Total time 0 min 28 sec









WHX-2-47-F1_INDY_CDCL3

Sample Name:

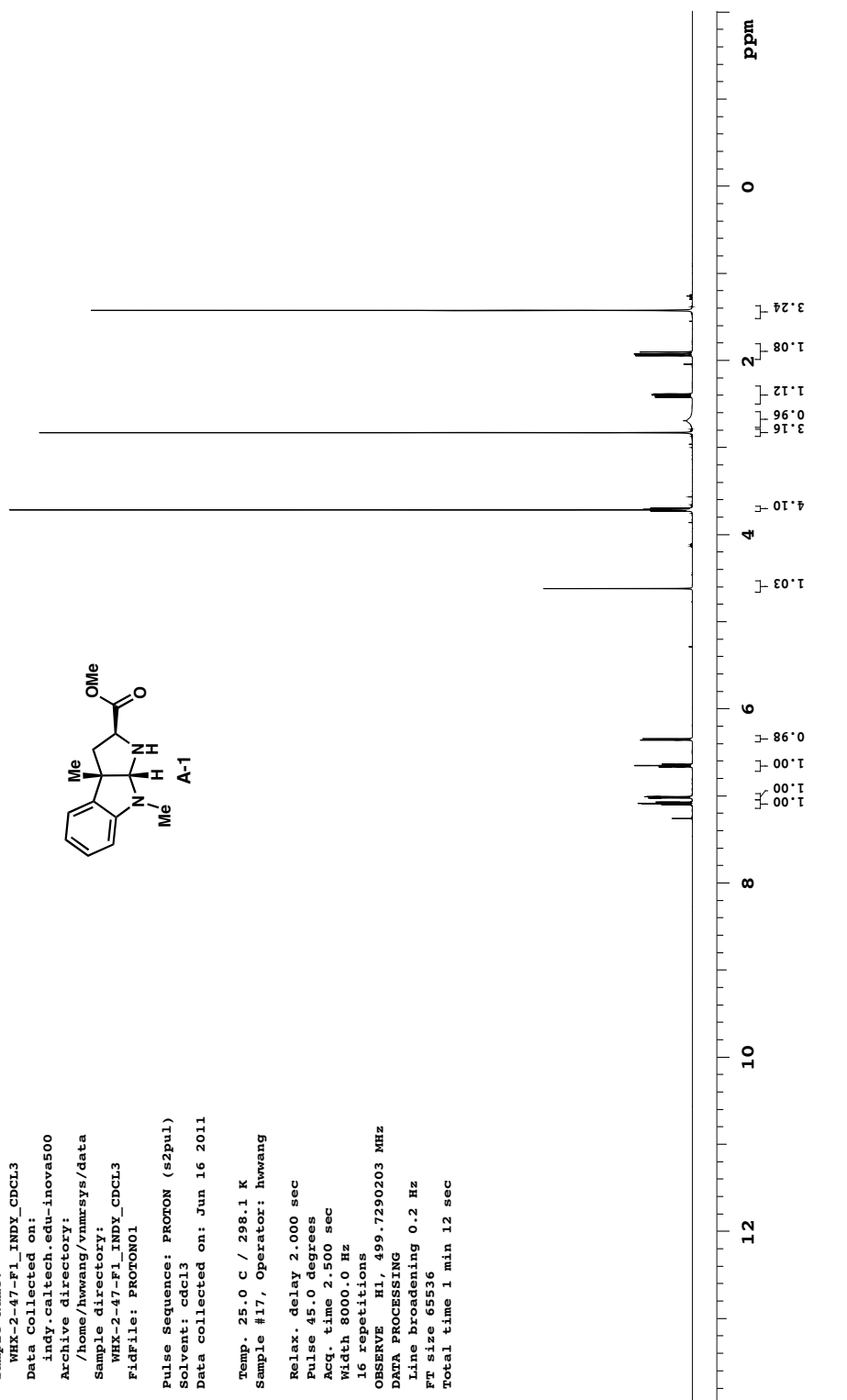
WHX-2-47-F1_INDY_CDCL3
Data Collected on:
indy.caltech.edu-inova500
Archive directory:
/home/hwang/vnmrsys/data
Sample directory:
WHX-2-47-F1_INDY_CDCL3
FidFile: PROTON01

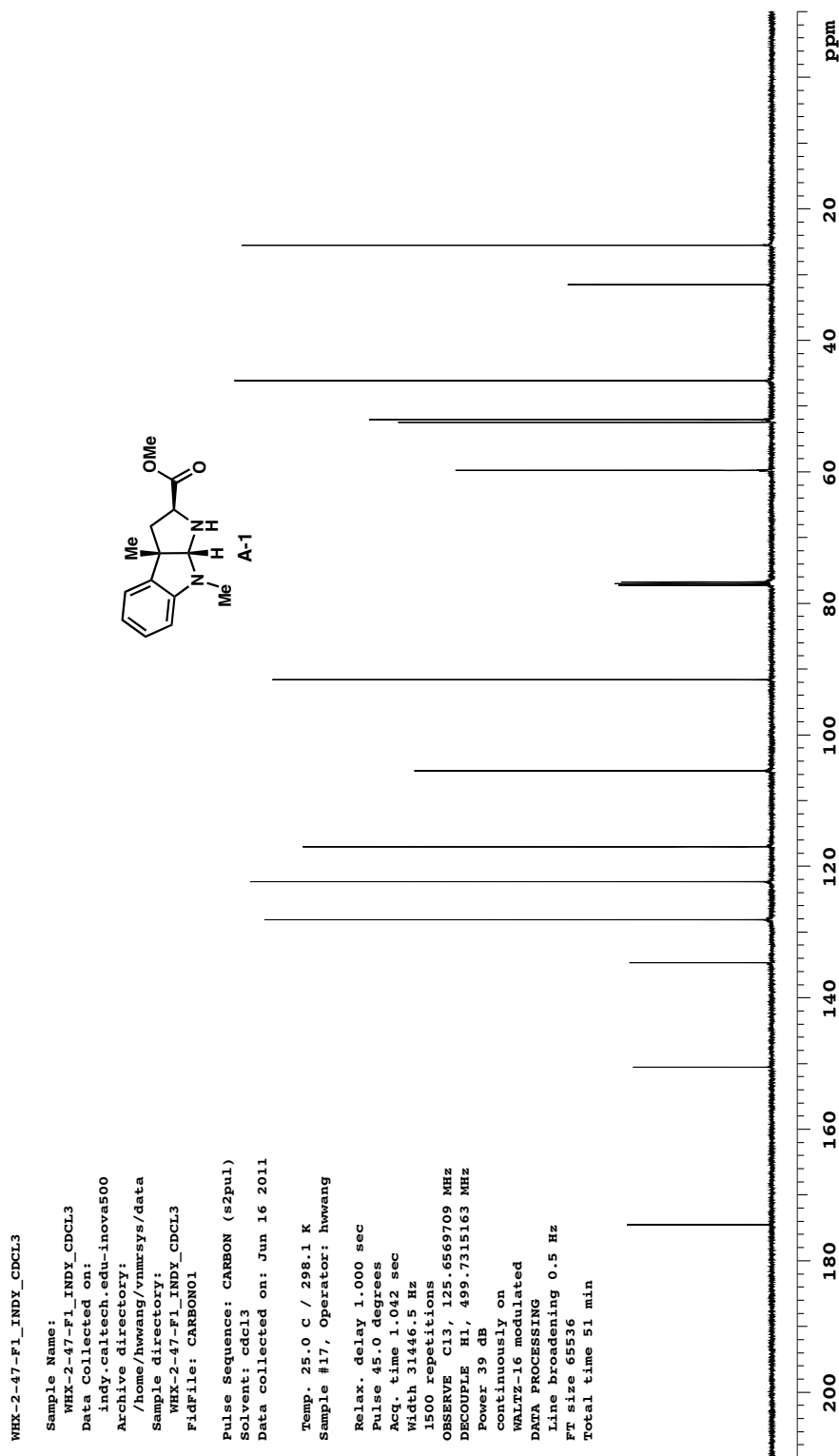
Pulse Sequence: PROTON (s2pul)
Solvent: cdcl3
Data collected on: Jun 16 2011

Temp. 25.0 C / 298.1 K
Sample #17, Operator: hwang

Relax. delay 2.000 sec
Pulse 45.0 degrees
Acq. time 2.500 sec
Width 8000.0 Hz
16 repetitions

OBSERVE H1, 499.7290203 MHz
DATA PROCESSING
Line broadening 0.2 Hz
FT size 65536
Total time 1 min 12 sec





WHX-2-51-F_INDY_MeOD

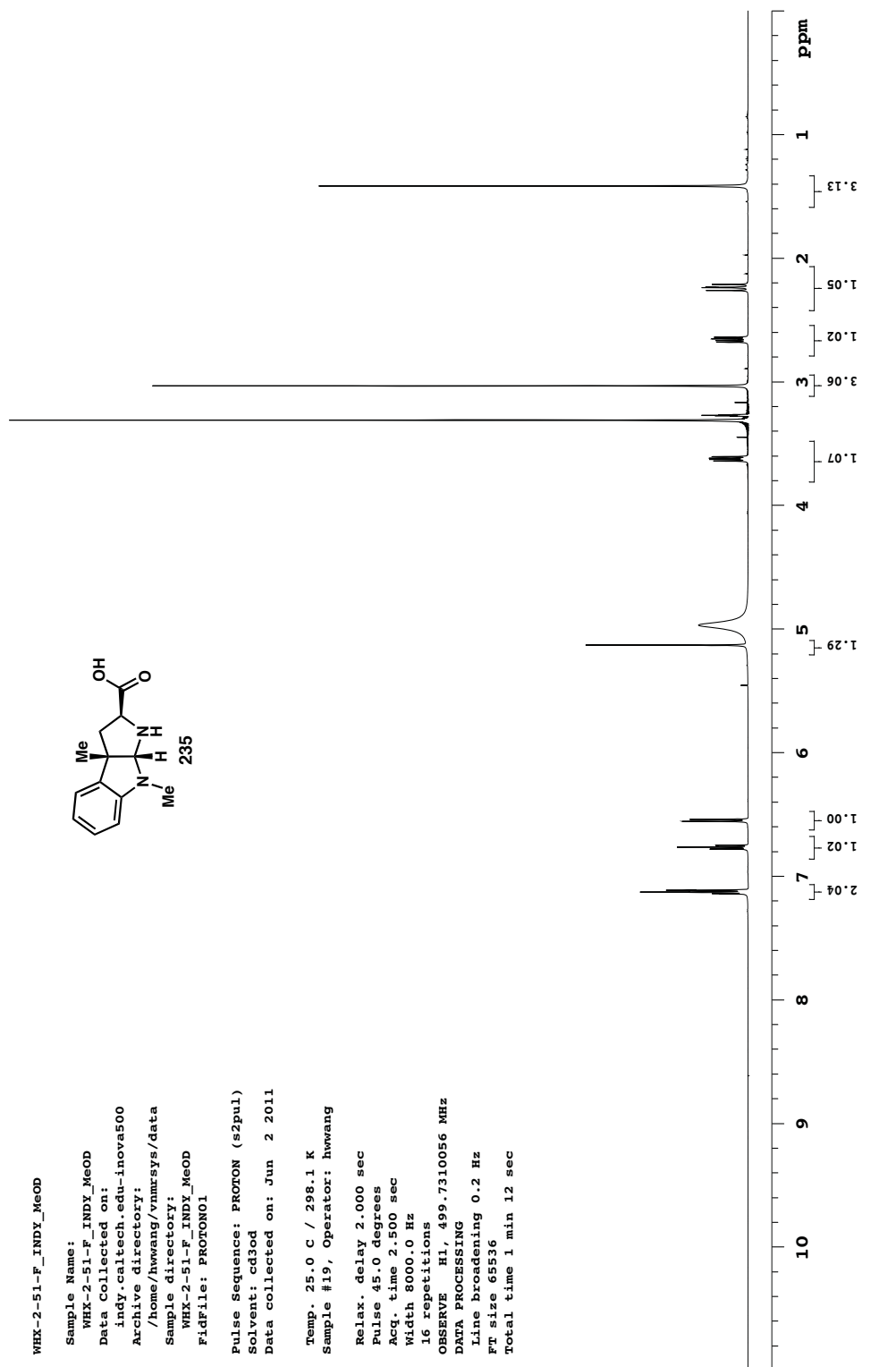
Sample Name:
 WHX-2-51-F_INDY_MeOD
 Data Collected on:
 indy.caltech.edu-inova500
 Archive directory:
 /home/hwang/vnmrSYS/data
 Sample directory:
 WHX-2-51-F_INDY_MeOD
 FidFile: PROTON01

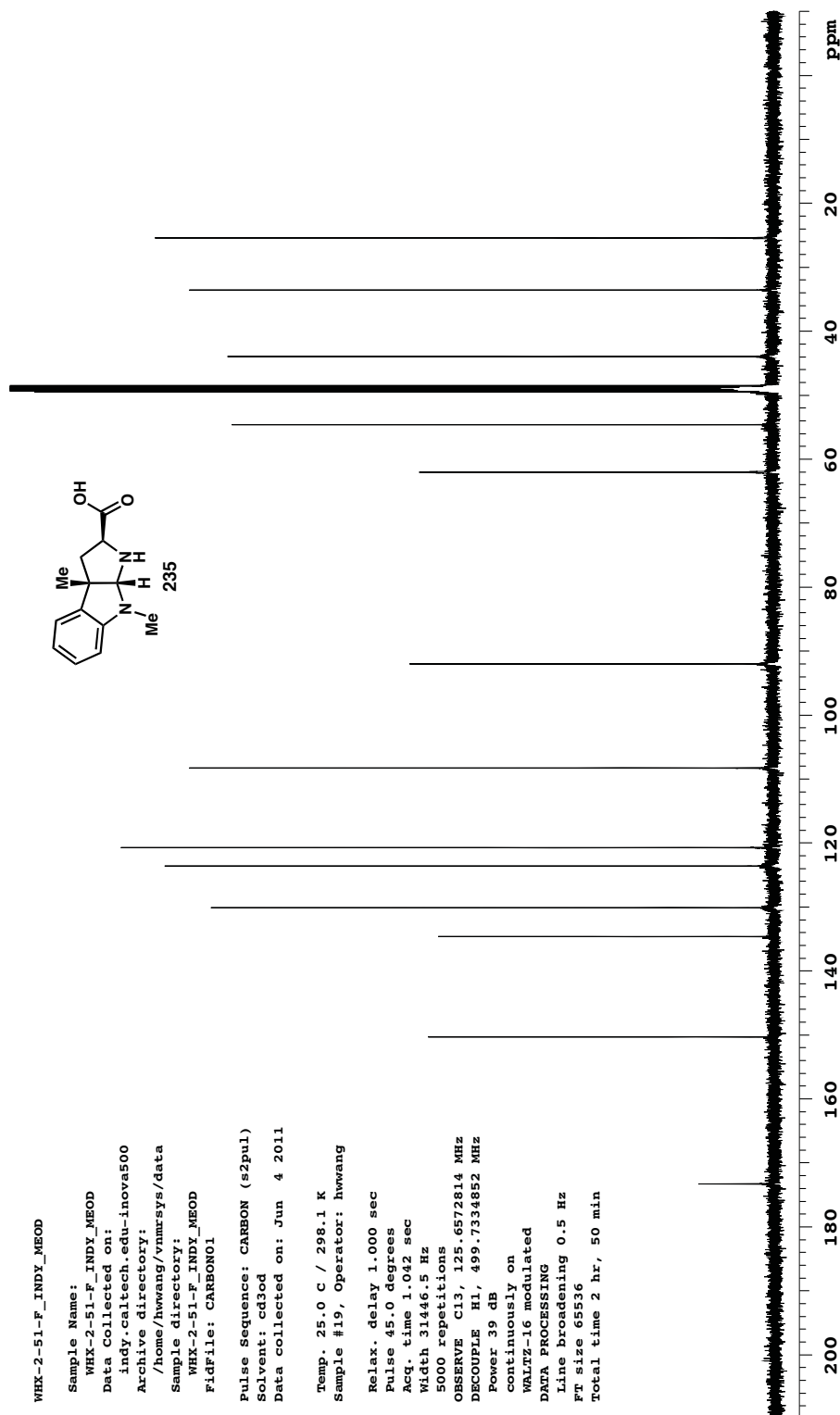
Pulse Sequence: PROTON (s2pul)
 Solvent: cd3od
 Data collected on: Jun 2 2011

Temp. 25.0 C / 298.1 K
 Sample #19, Operator: hwang

Relax. delay 2.000 sec
 Pulse 45.0 degrees
 Acq. time 2.500 sec
 Width 8000.0 Hz
 16 repetitions

OBSERVE H1, 499.7310056 MHz
 DATA PROCESSING
 Line broadening 0.2 Hz
 FT size 65536
 Total time 1 min 12 sec





WHX-2-85-Celite_CD2CL2

Sample Name:

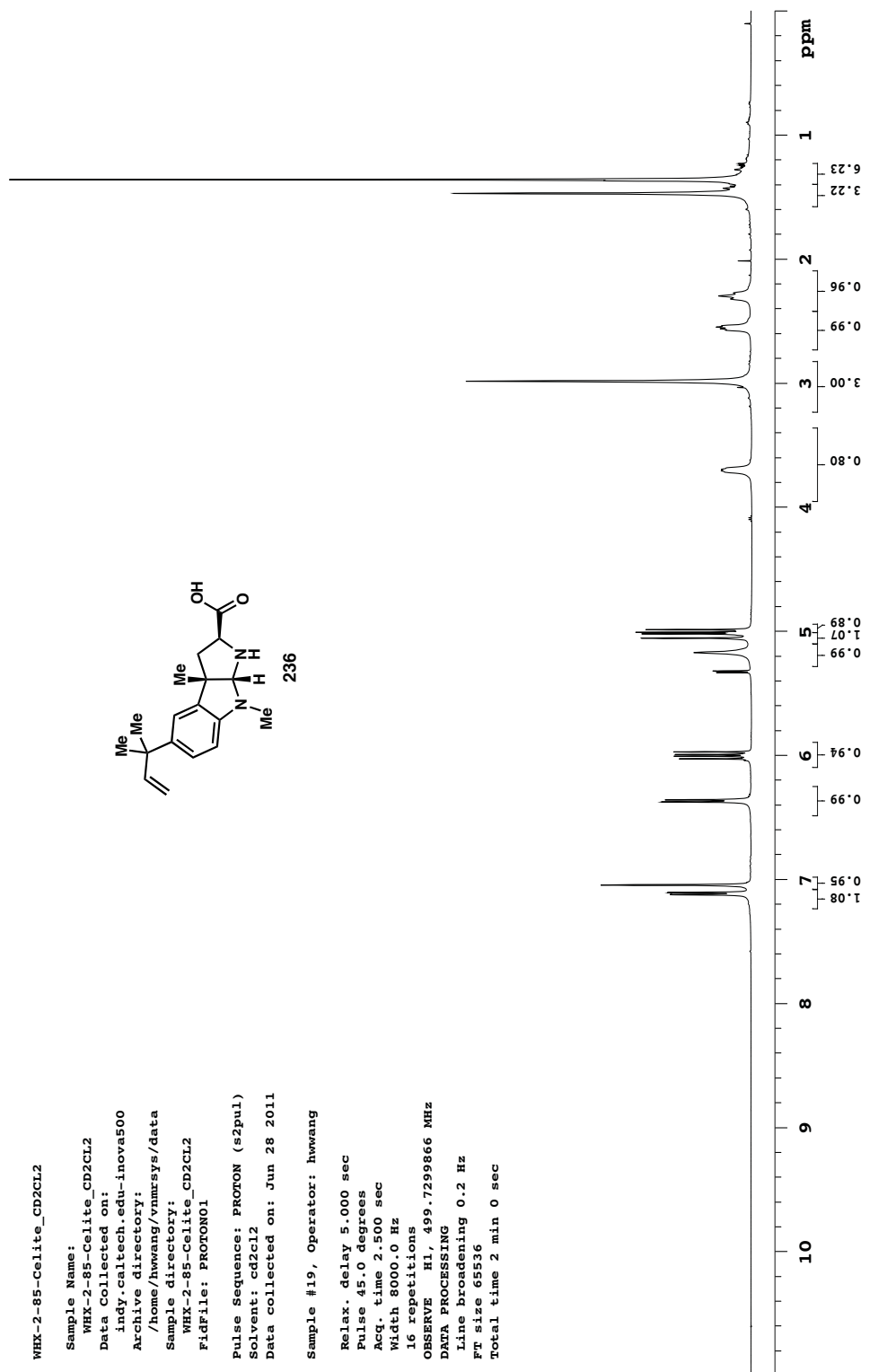
WHX-2-85-Celite_CD2CL2
Data Collected on:
indy.caltech.edu-inova500
Archive directory:
/home/hwang/vnmrsys/data
Sample directory:
WHX-2-85-Celite_CD2CL2
FidFile: PROTON01

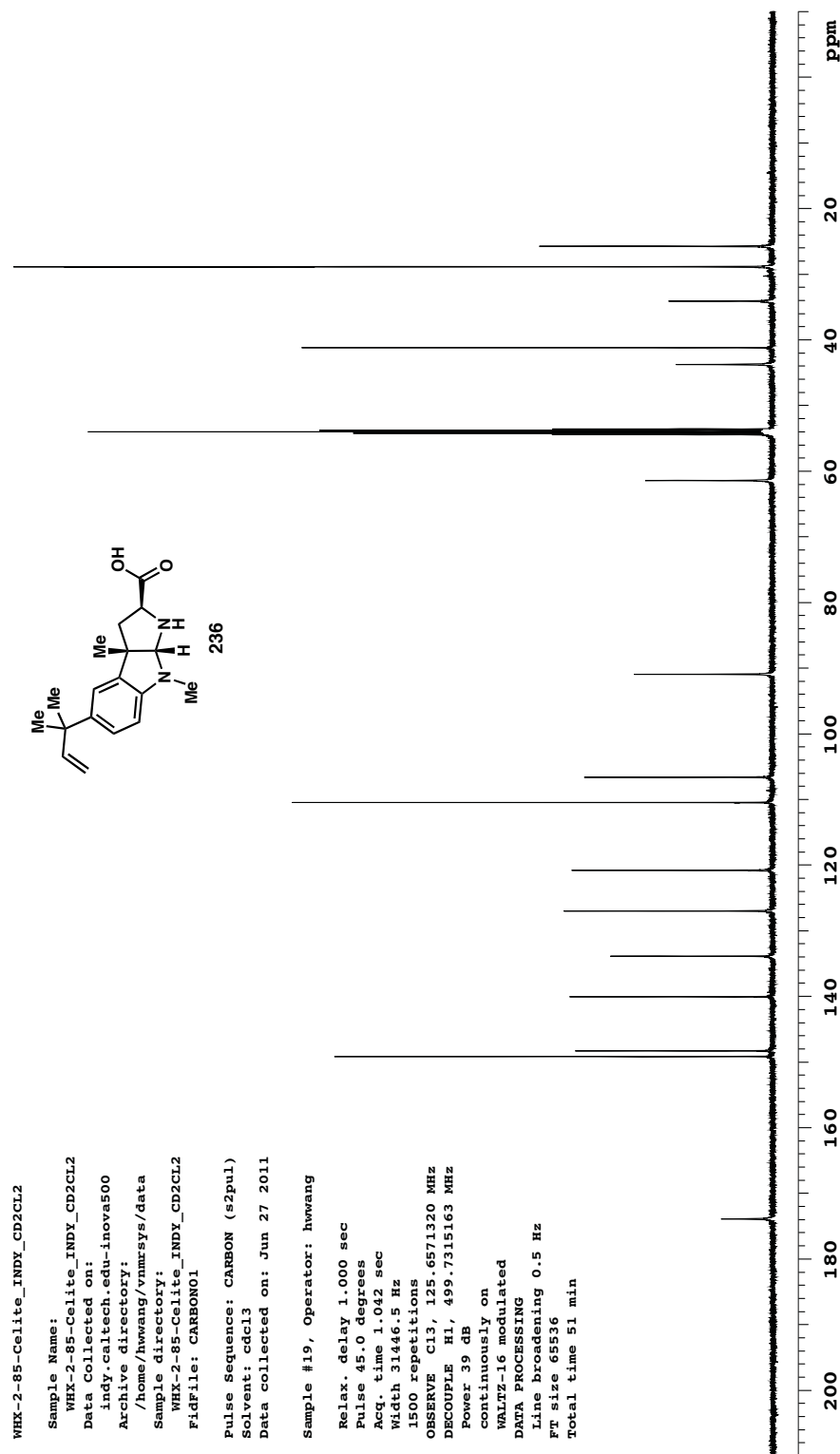
Pulse Sequence: PROTON (s2pul)
Solvent: cd2cl2
Data collected on: Jun 28 2011

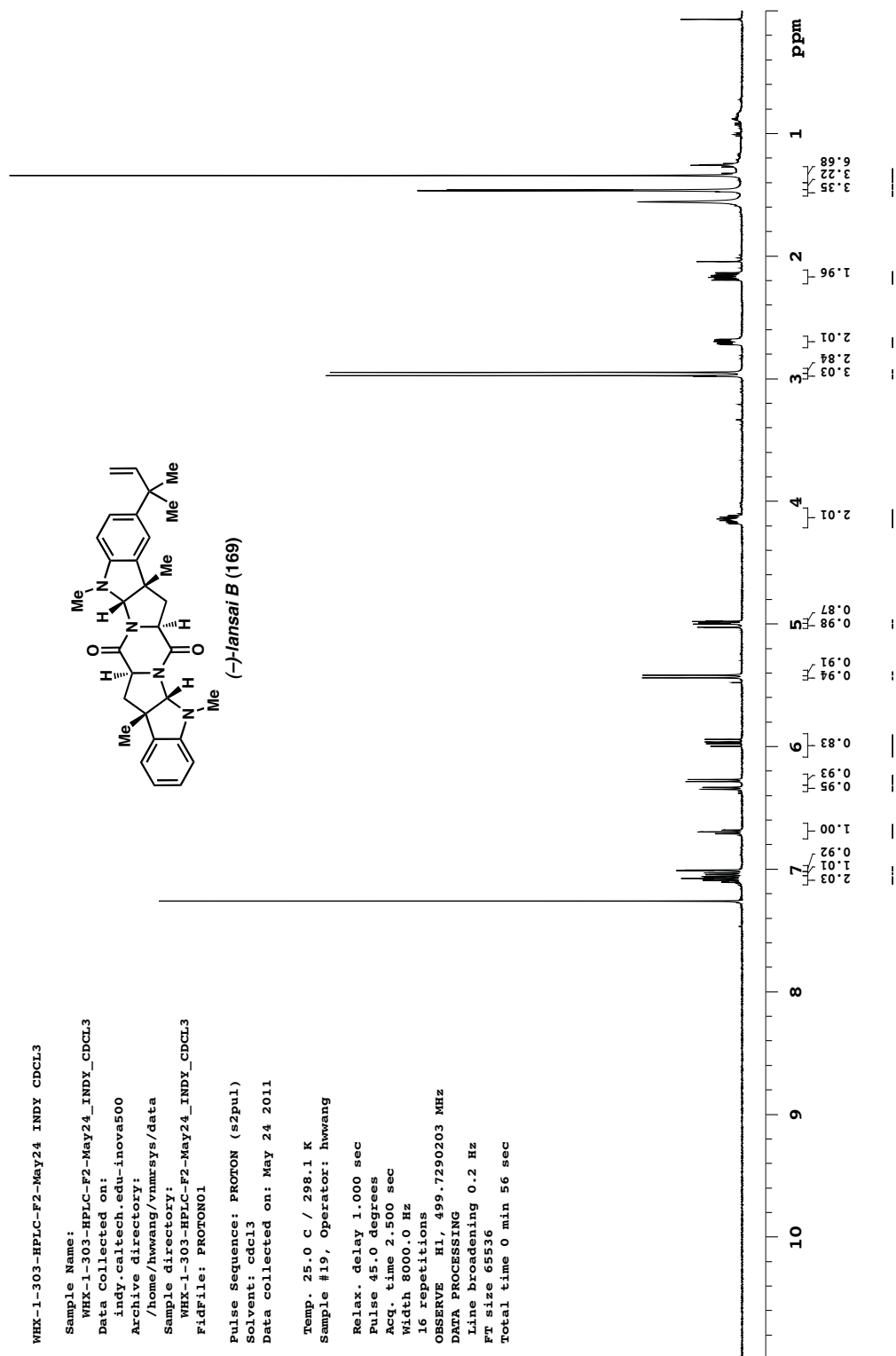
Sample #19, Operator: hwang

Relax. delay 5.000 sec
Pulse 45.0 degrees
Acq. time 2.500 sec
Width 8000.0 Hz
16 repetitions

OBSERVE H1, 499.7299866 MHz
DATA PROCESSING
Line broadening 0.2 Hz
FT size 65536
Total time 2 min 0 sec







WHX-1-303-HPLC-F2_INDY_CDCL3

Sample Name:

WHX-1-303-HPLC-F2_INDY_CDCL3
Data Collected on:
indy.caltech.edu-inova500
Archive directory:
/home/hwang/vnmrsys/data

Sample directory:
WHX-1-303-HPLC-F2_INDY_CDCL3
FidFile: CARBONO1

Pulse Sequence: CARBON (s2pul)
Solvent: cdcl3
Data collected on: May 20 2011

Temp. 25.0 C / 298.1 K

Sample #19, Operator: hwang

Relax. delay 1.000 sec

Pulse 45.0 degrees

Acq. time 1.042 sec

Width 31446.5 Hz

5000 repetitions

OBSERVE C13, 125.6569603 MHz

DECOUPLE H1, 499.7315163 MHz

Power 39 dB

continuously on

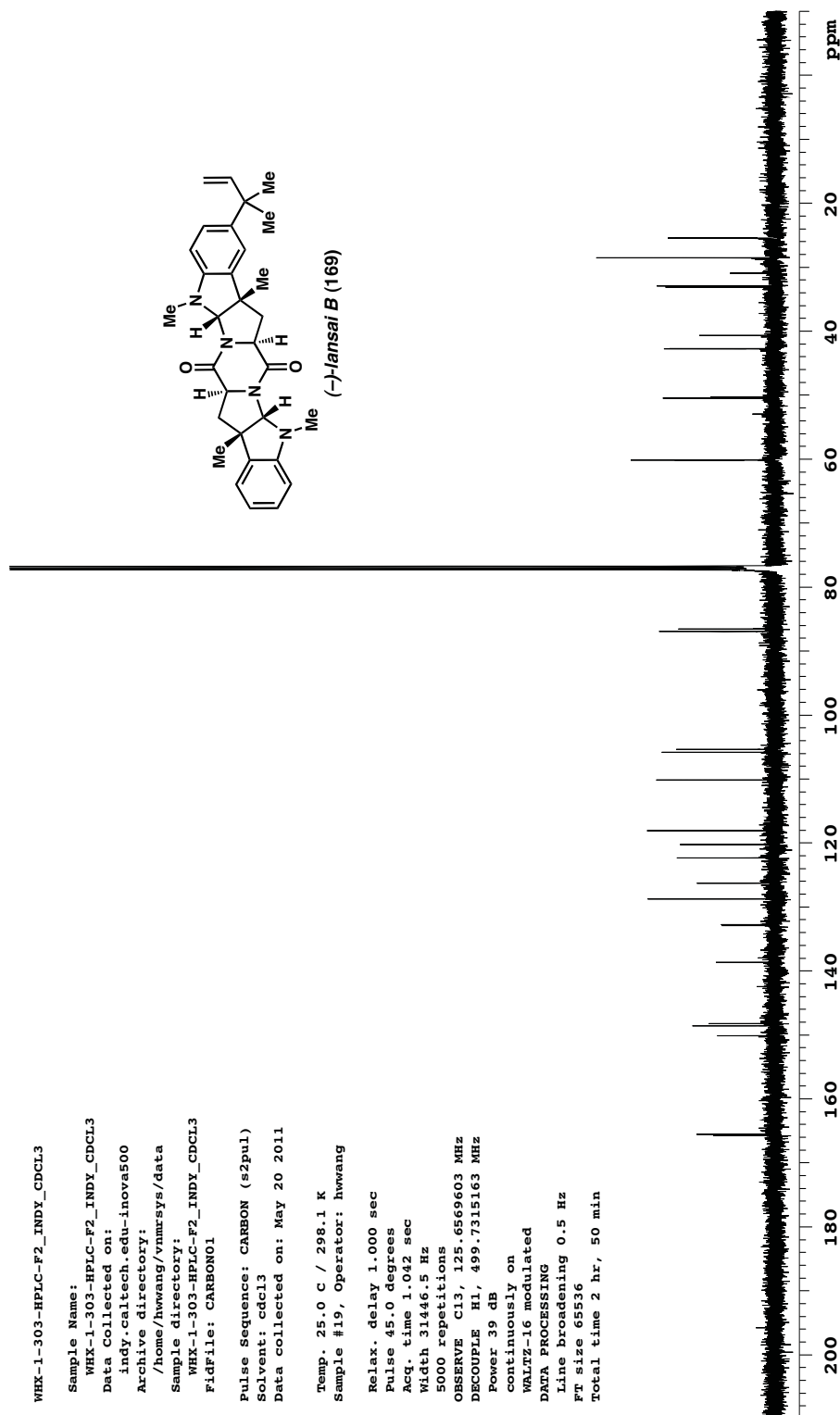
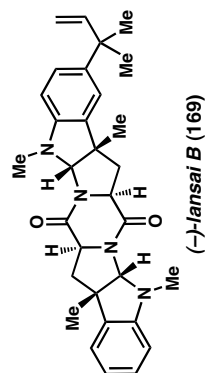
MALTZ-16 modulated

DATA PROCESSING

Line broadening 0.5 Hz

FT size 65536

Total time 2 hr, 50 min



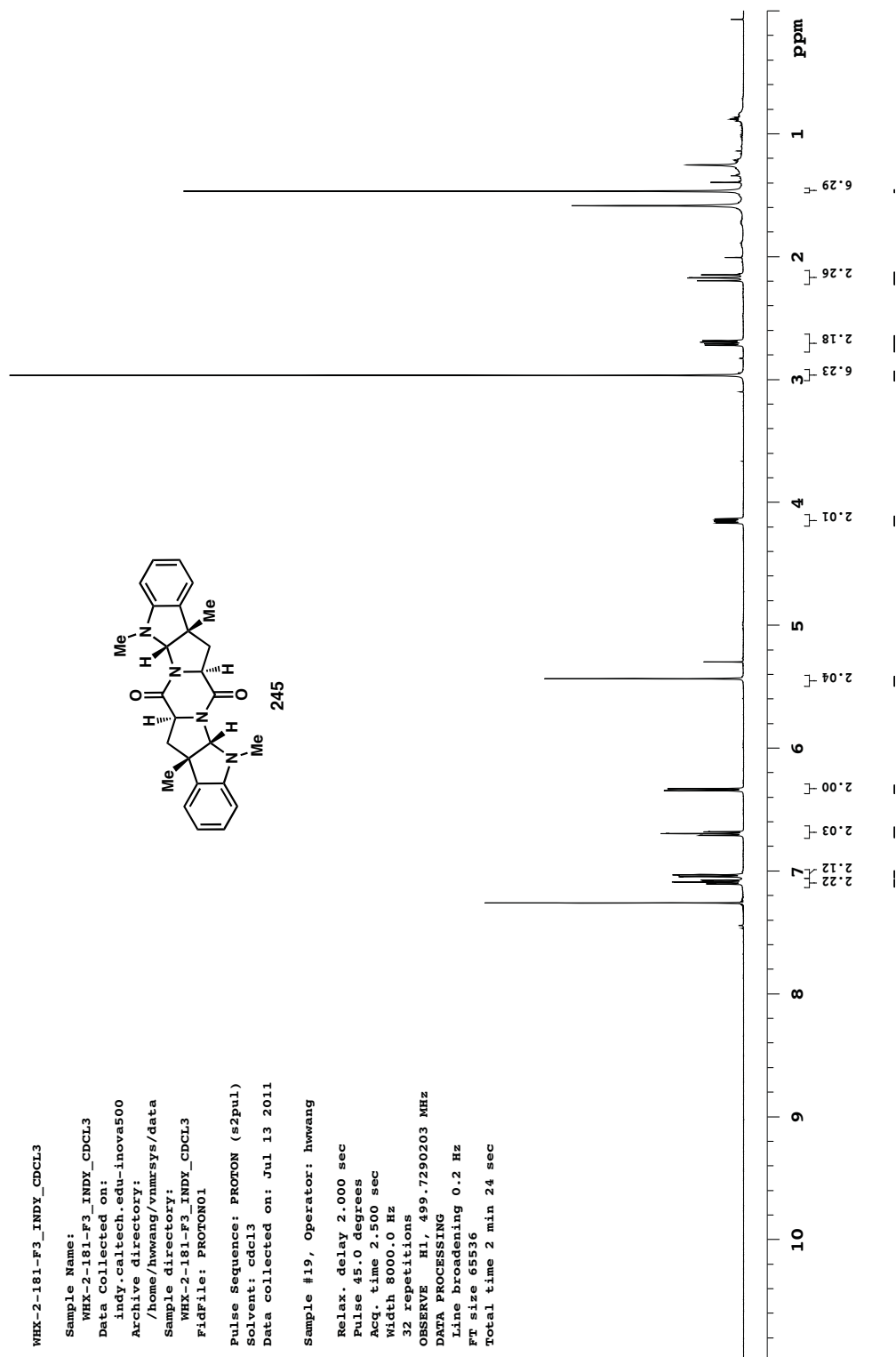
WHX-2-181-F3_INDY_CDCL3

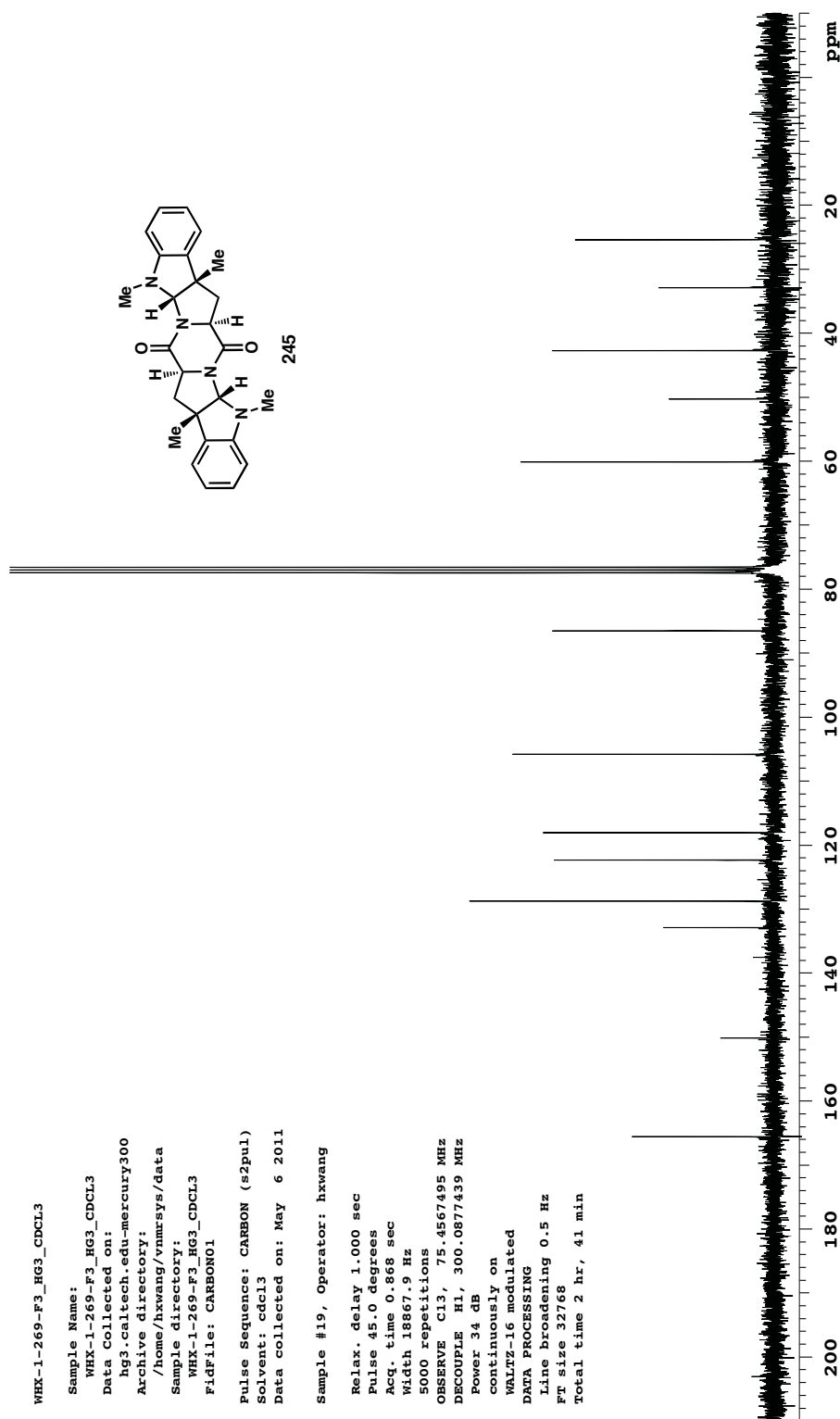
Sample Name:
WHX-2-181-F3_INDY_CDCL3
Data Collected on:
indy.caltech.edu-inova500
Archive directory:
/home/hwang/vnmrsys/data
Sample directory:
WHX-2-181-F3_INDY_CDCL3
FidFile: PROTON01

Pulse Sequence: PROTON (s2pul)
Solvent: cdcl3
Data collected on: Jul 13 2011

Sample #19, Operator: hwang

Relax. delay 2.000 sec
Pulse 45.0 degrees
Acq. time 2.500 sec
Width 8000.0 Hz
32 repetitions
OBSERVE H1, 499.7290203 MHz
DATA PROCESSING
Line broadening 0.2 Hz
FT size 65536
Total time 2 min 24 sec





WHX-2-177-F2_INDY_CDCL3

Sample Name:

WHX-2-177-F2_INDY_CDCL3

Data Collected on:

indy.caltech.edu-inova500

Archive directory:

/home/hwang/vnmrsys/data

Sample directory:

WHX-2-177-F2_INDY_CDCL3

FidFile: PROTON02

Pulse Sequence: PROTON (s2pul)

Solvent: cdcl3

Data collected on: Jul 13 2011

Sample #19, Operator: hwang

Relax. delay 2.000 sec

Pulse 45.0 degrees

Acq. time 2.500 sec

Width 8000.0 Hz

32 repetitions

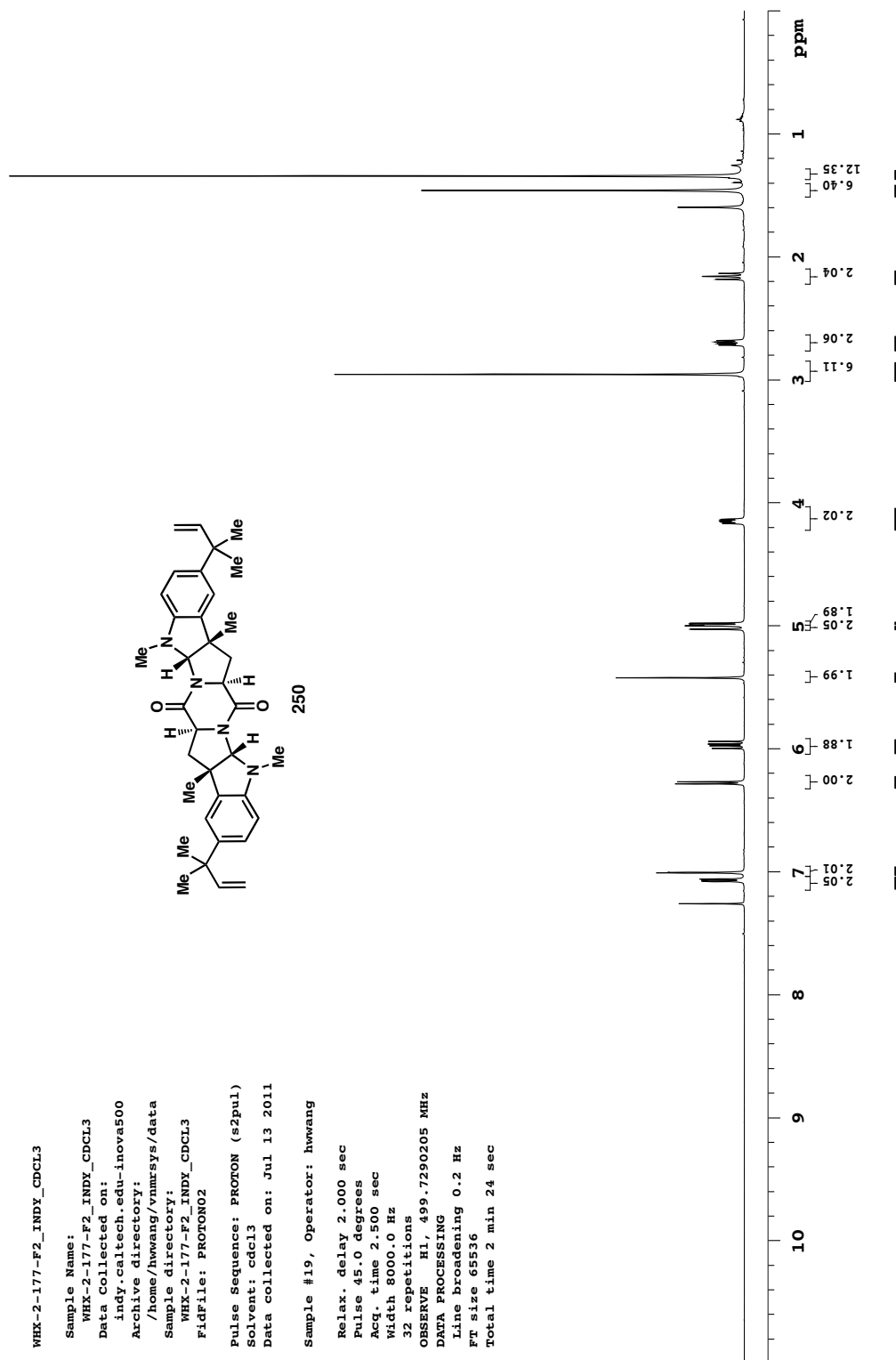
OBSERVE H1, 499.7290205 MHz

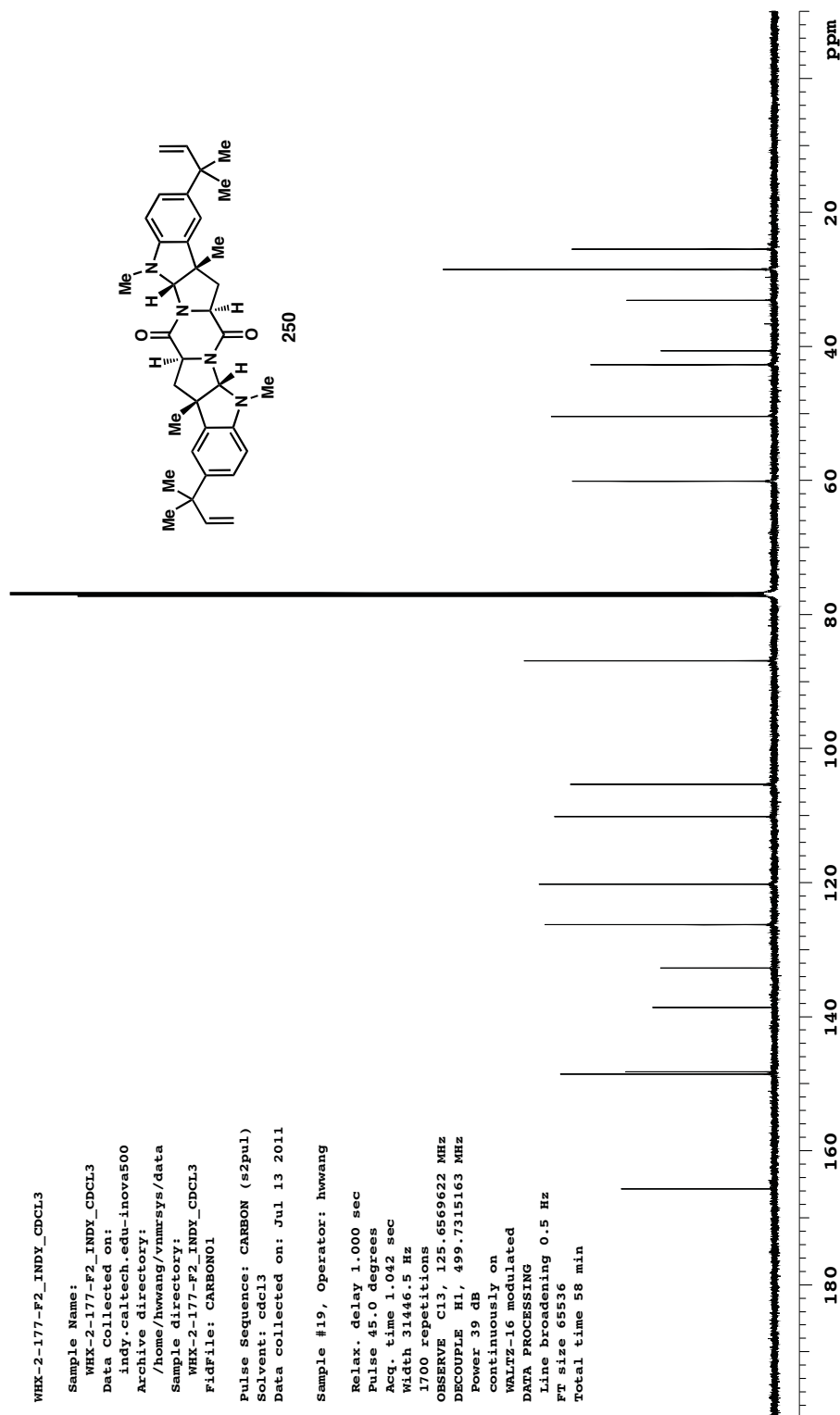
DATA PROCESSING

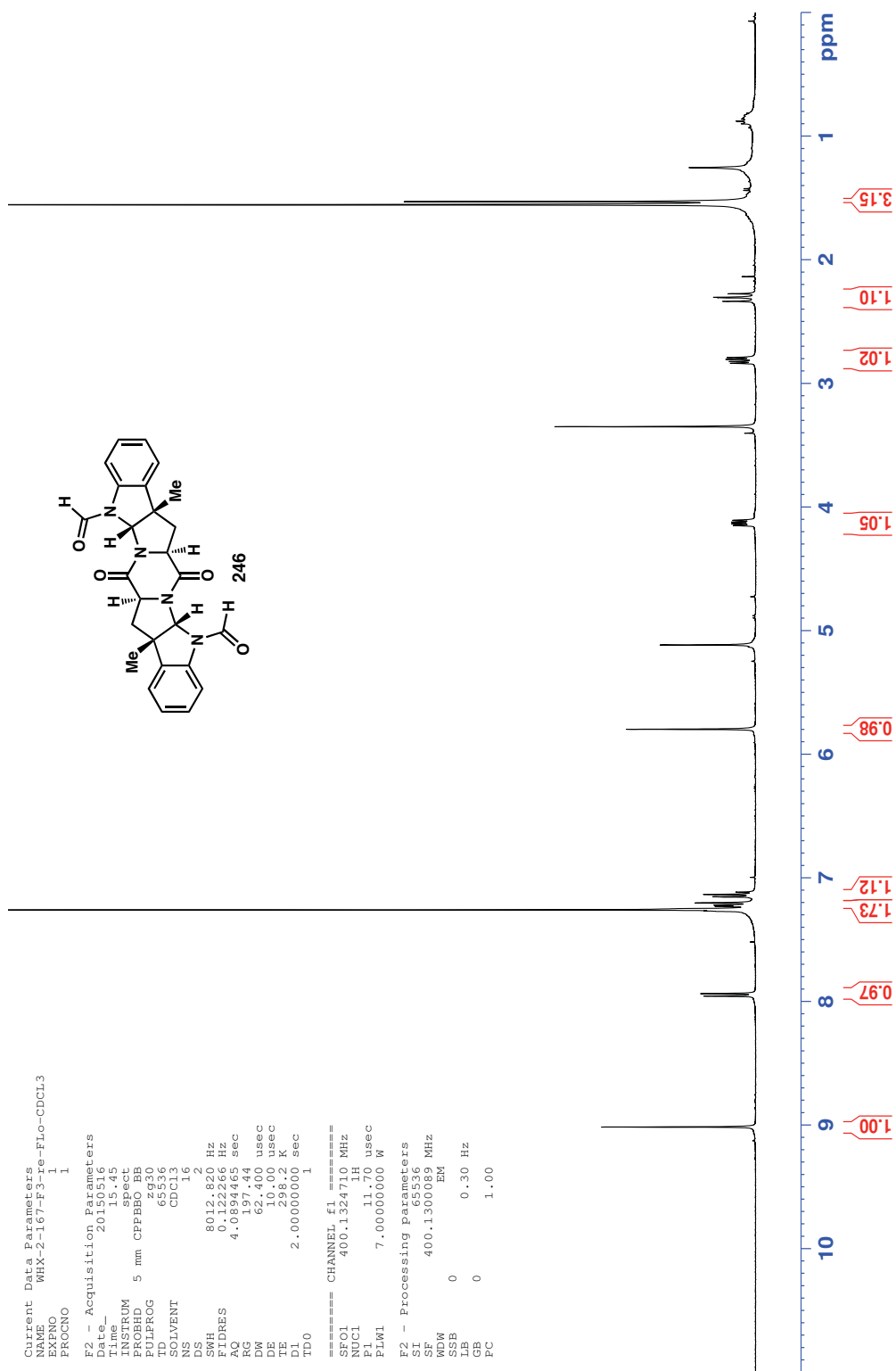
Line broadening 0.2 Hz

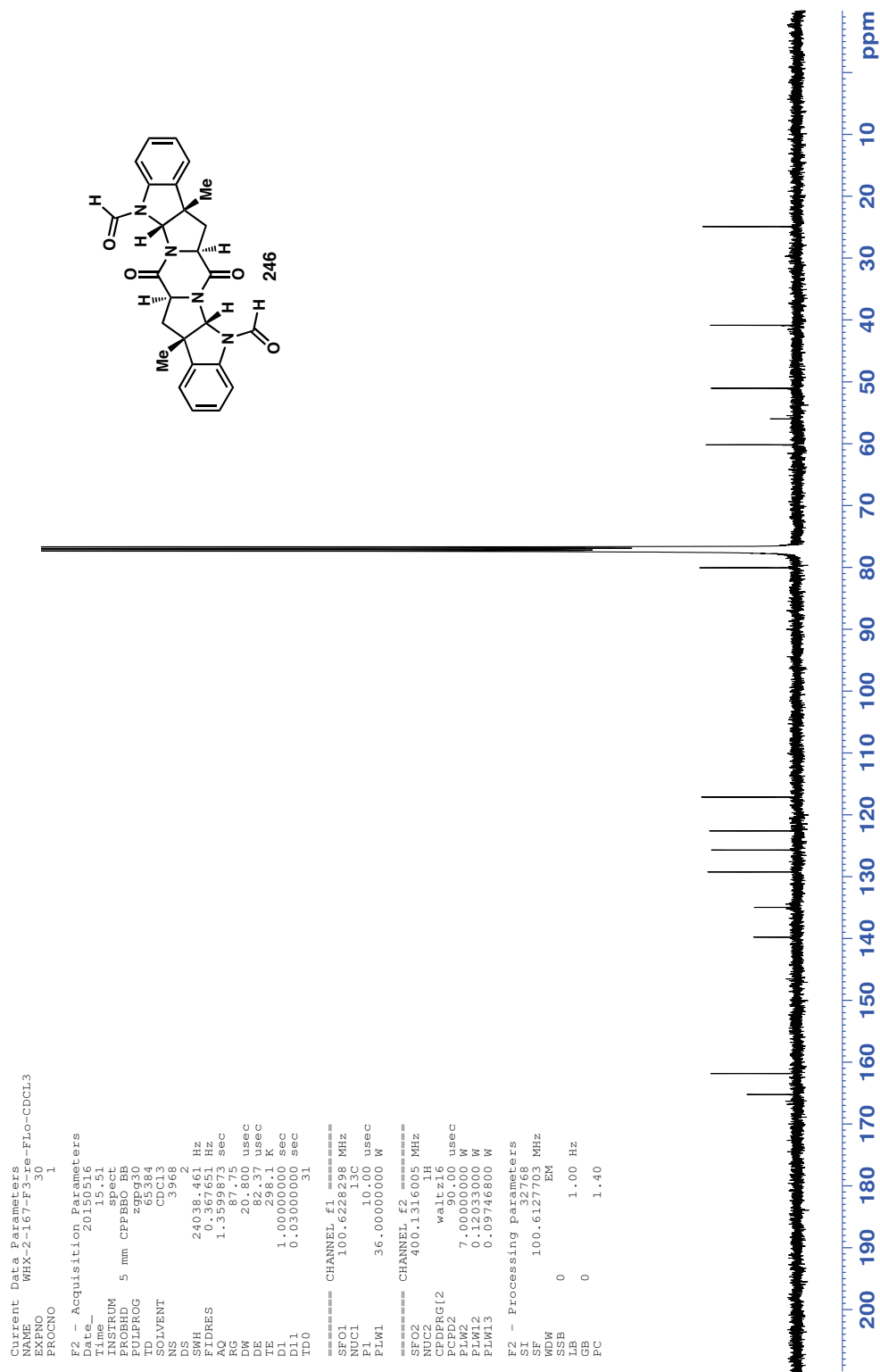
FT size 65536

Total time 2 min 24 sec









WHX-3-175-F_INDY_CDCL3

Sample Name:

WHX-3-175-F_INDY_CDCL3

Data Collected on:

indy.caltech.edu-inova500

Archive directory:

/home/hwang/vnmrsys/data

Sample directory:

WHX-3-175-F_INDY_CDCL3

FidFile: PROTON02

Pulse Sequence: PROTON (s2pul)

Solvent: cdcl3

Data collected on: Jan 31 2012

Sample #19, Operator: hwang

Relax. delay 5.000 sec

Pulse 45.0 degrees

Acq. time 2.500 sec

Width 8000.0 Hz

16 repetitions

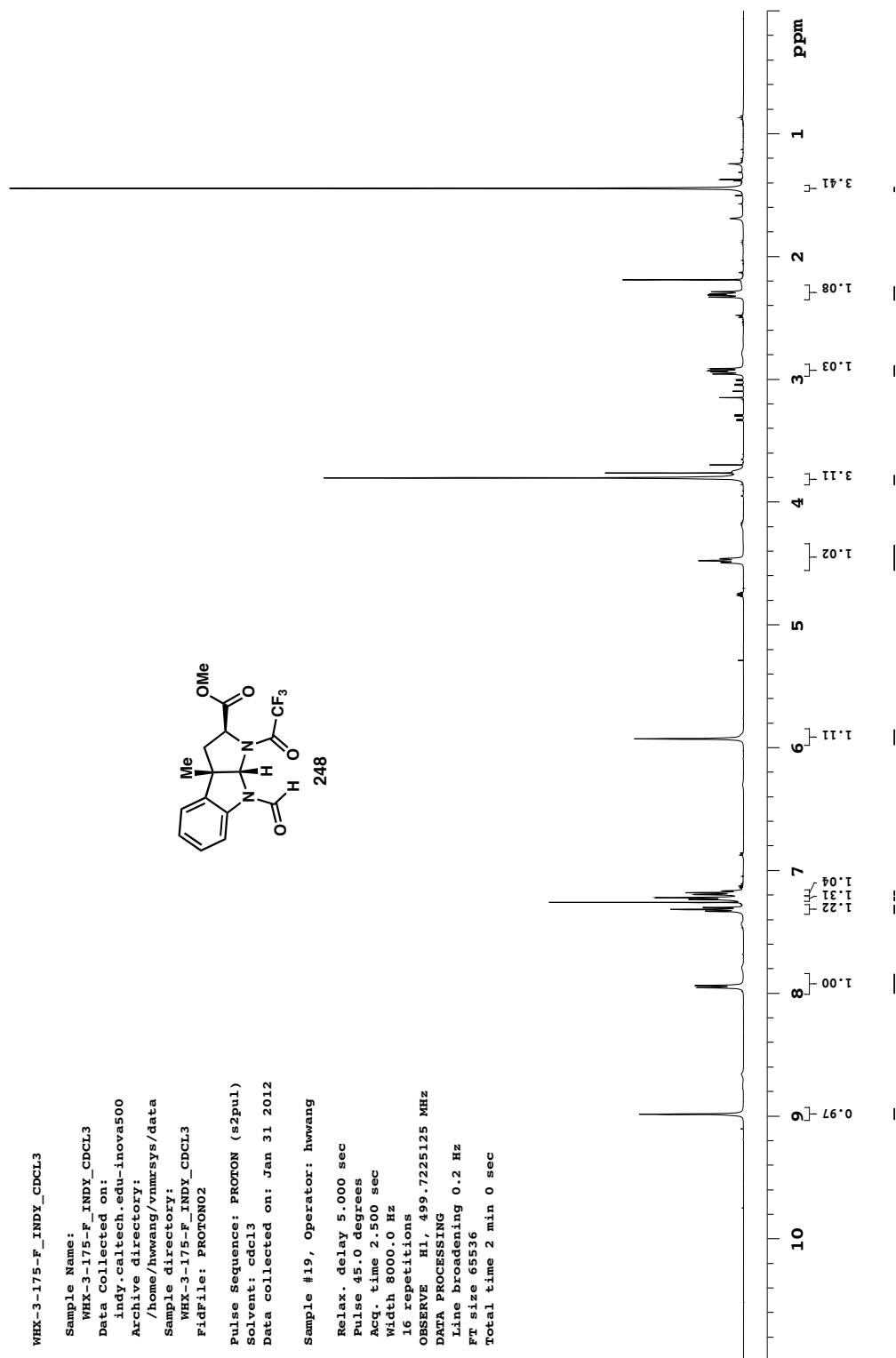
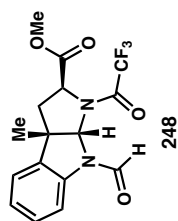
OBSERVE H1, 499.7225125 MHz

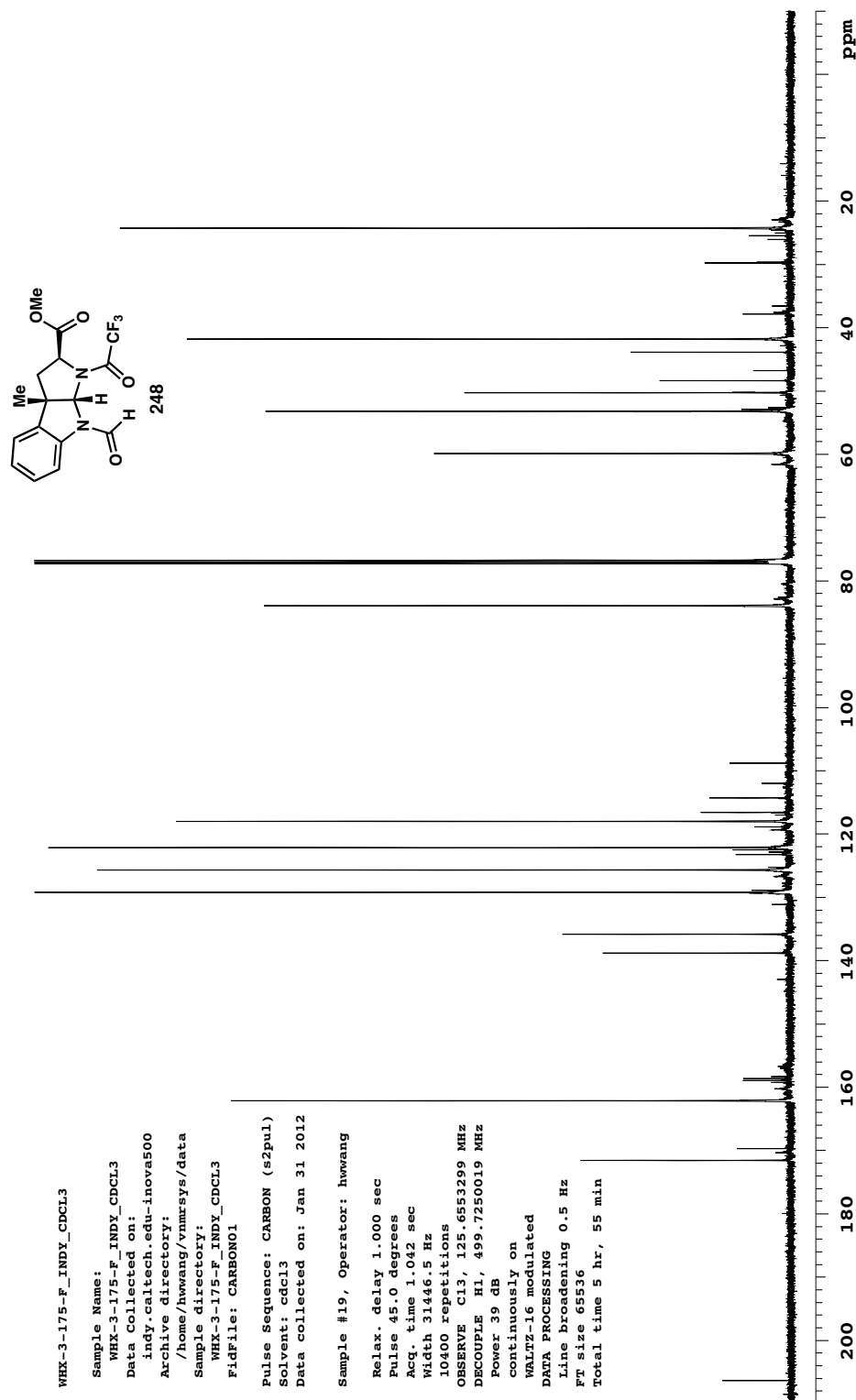
DATA PROCESSING

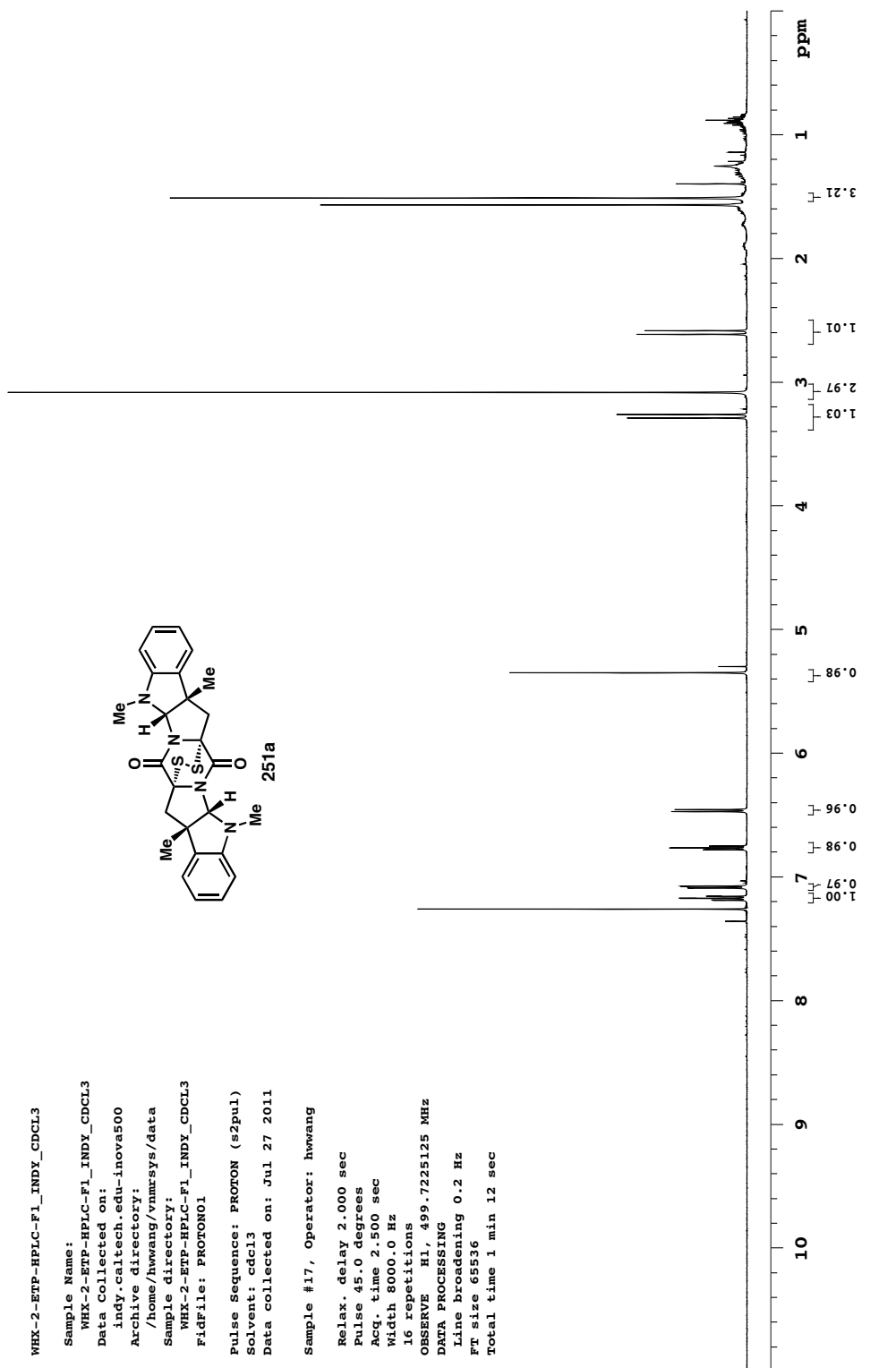
Line broadening 0.2 Hz

FT size 65536

Total time 2 min 0 sec







WHX-2-ETP-HPLC-F1_INDY_CDCL3

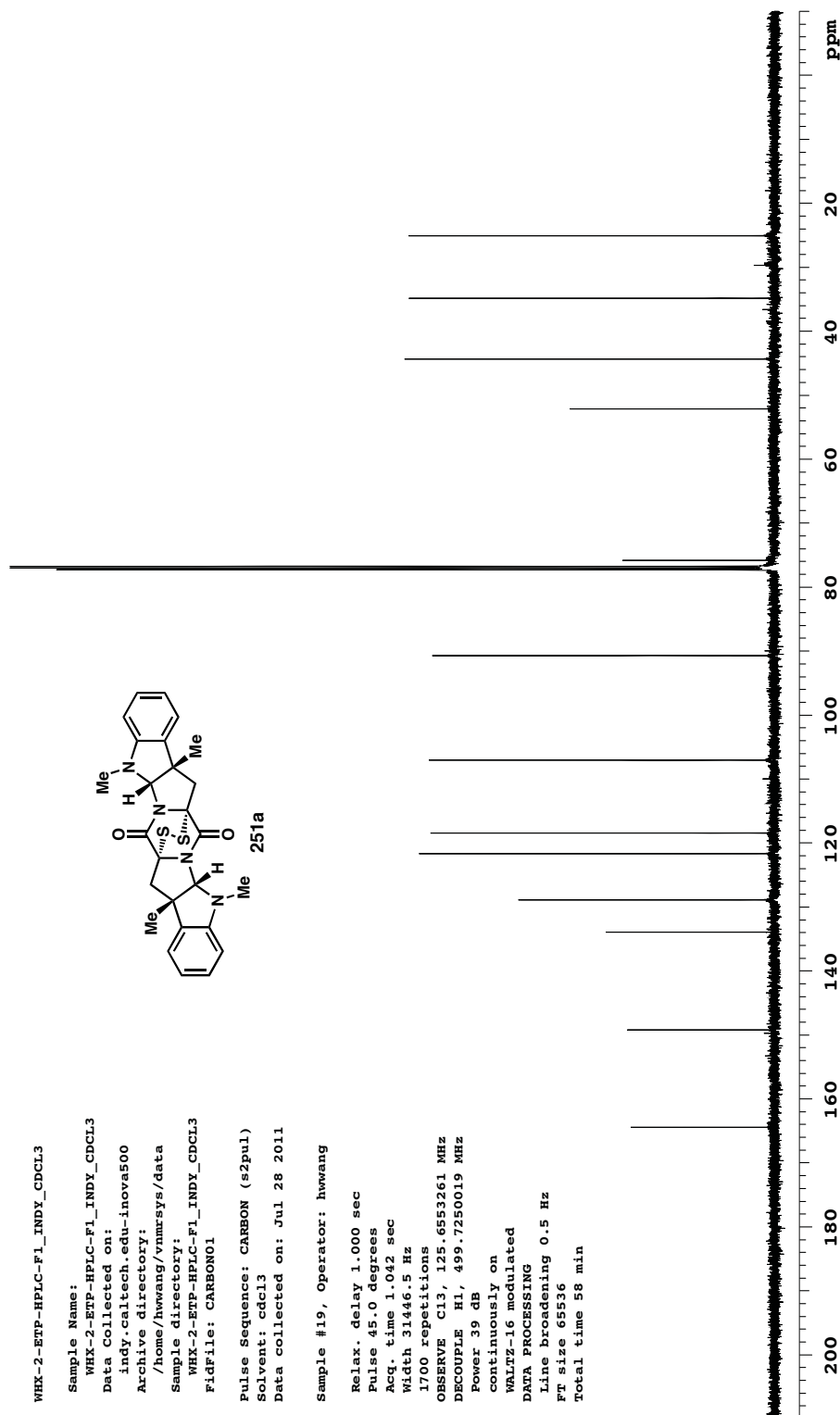
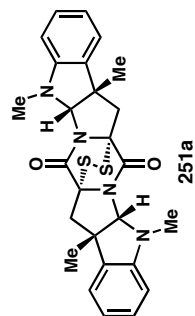
Sample Name:

WHX-2-ETP-HPLC-F1_INDY_CDCL3
Data Collected on:
indy.caltech.edu-inova500
Archive directory:
/home/hwang/vnmrsys/data
Sample directory:
WHX-2-ETP-HPLC-F1_INDY_CDCL3
FidFile: CARBON01

Pulse Sequence: CARBON (s2pul)
Solvent: cdcl3
Data collected on: Jul 28 2011

Sample #19, Operator: hwang

Relax. delay 1.000 sec
Pulse 45.0 degrees
Acq. time 1.042 sec
Width 31446.5 Hz
1700 repetitions
OBSERVE C13, 125.6553261 MHz
DECOUPLE H1, 499.7250019 MHz
Power 39 dB
continuously on
WALTZ-16 modulated
DATA PROCESSING
Line broadening 0.5 Hz
FT size 65536
Total time 58 min



WHX-2-ETP2-HPLC-F1_INDY_CDCL3

Sample Name:

WHX-2-ETP2-HPLC-F1_INDY_CDCL3
Data Collected on:
indy.caltech.edu-inova500
Archive directory:
/home/hwang/vnmrsys/data

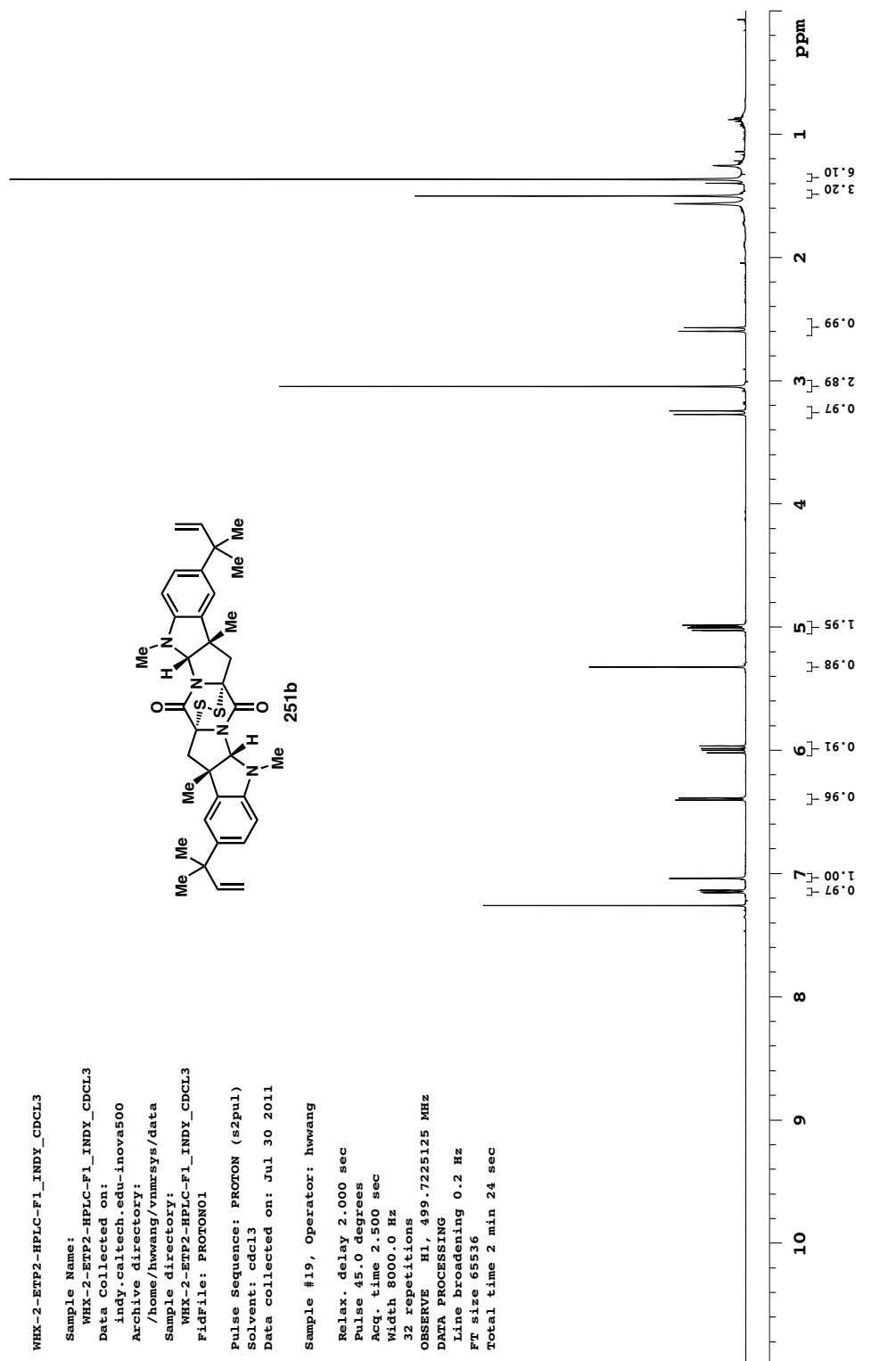
Sample directory:
WHX-2-ETP2-HPLC-F1_INDY_CDCL3
FidFile: PROTON01

Pulse Sequence: PROTON (s2pul)
Solvent: cdcl3
Data collected on: Jul 30 2011

Sample #19, Operator: hwang

Relax. delay 2.000 sec
Pulse 45.0 degrees
Acq. time 2.500 sec
Width 8000.0 Hz
32 repetitions

OBSERVE H1, 499.7225125 MHz
DATA PROCESSING
Line broadening 0.2 Hz
FT size 65536
Total time 2 min 24 sec



WHX-2-ETP2-HPLC-F1_INDY_CDCL3

Sample Name:

WHX-2-ETP2-HPLC-F1_INDY_CDCL3
Data Collected on:
indy.caltech.edu-inova500
Archive directory:
/home/hhwang/vnmrsys/data

Sample directory:
WHX-2-ETP2-HPLC-F1_INDY_CDCL3
FidFile: CARBON01

Pulse Sequence: CARBON (s2pul)
Solvent: cdcl3
Data collected on: Jul 30 2011

Sample #19, Operator: hhwang

Relax. delay 1.000 sec

Pulse 45.0 degrees

Acq. time 1.042 sec

Width 31446.5 Hz

5000 repetitions

OBSERVE C13, 125.6553251 MHz

DECOUPLE H1, 499.7250019 MHz

Power 39 dB

continuously on

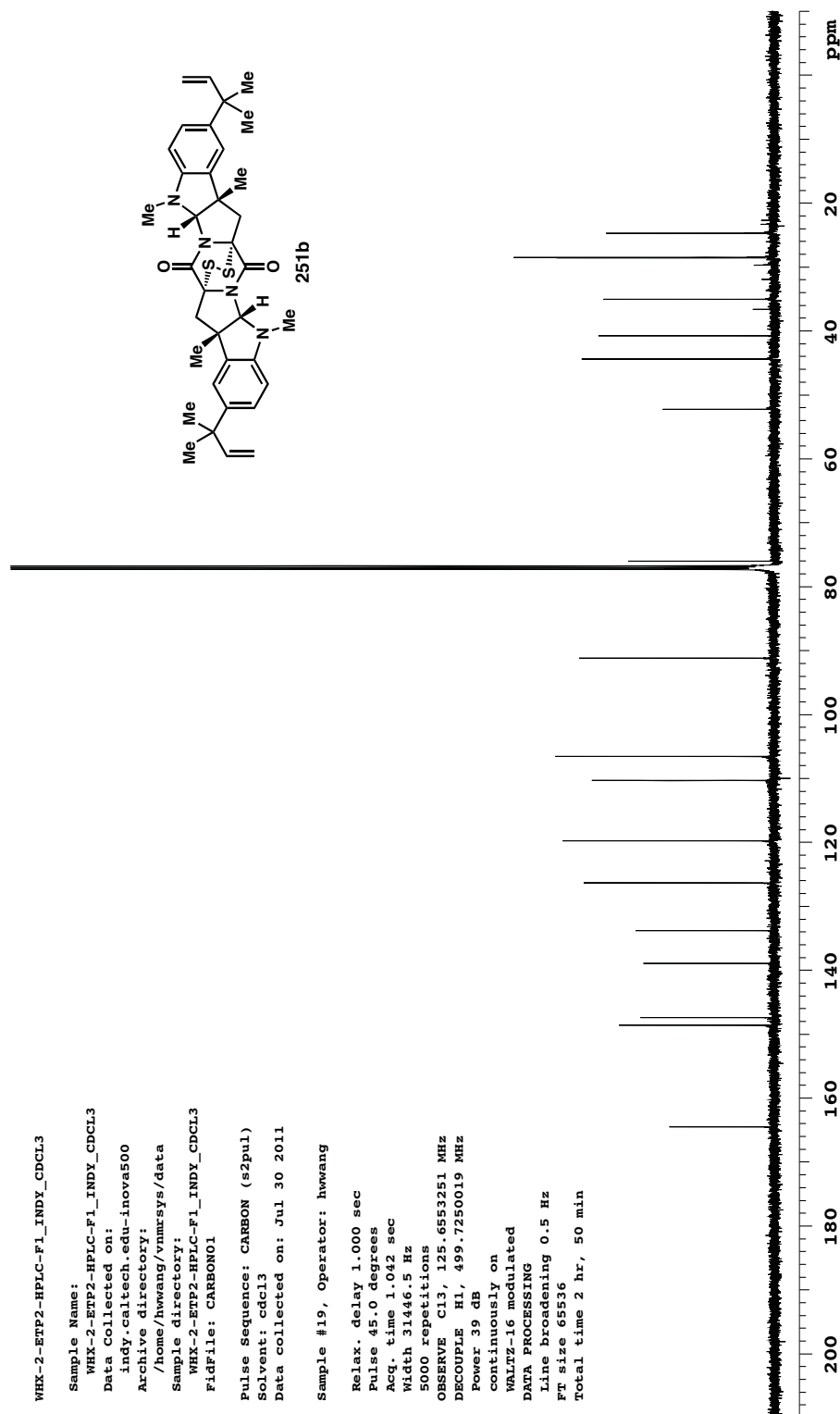
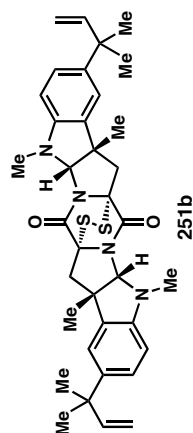
WALTZ-16 modulated

DATA PROCESSING

Line broadening 0.5 Hz

FT size 65536

Total time 2 hr, 50 min



WHX-2-ETP-LansaIB_INDY_CDCL3

Sample Name:

WHX-2-ETP-LansaIB_INDY_CDCL3
Data Collected on:
indy.caltech.edu-inova500
Archive directory:
/home/hwang/vnmrsys/data

Sample directory:
WHX-2-ETP-LansaIB_INDY_CDCL3
FidFile: PROTON01

Pulse Sequence: PROTON (s2pul)
Solvent: cdcl3
Data collected on: Aug 1 2011

Sample #19, Operator: hwang

Relax. delay 5.000 sec
Pulse 45.0 degrees
Acq. time 2.500 sec
Width 8000.0 Hz
16 repetitions

OBSERVE H1, 499.725132 MHz
DATA PROCESSING
Line broadening 0.2 Hz
FT size 65536
Total time 2 min 0 sec

