

## SUPPLEMENTARY INFORMATION (PART 2)

### Asymmetric synthesis of carbocycles: use of intramolecular conjugate displacement

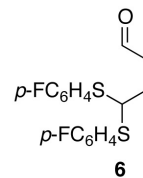
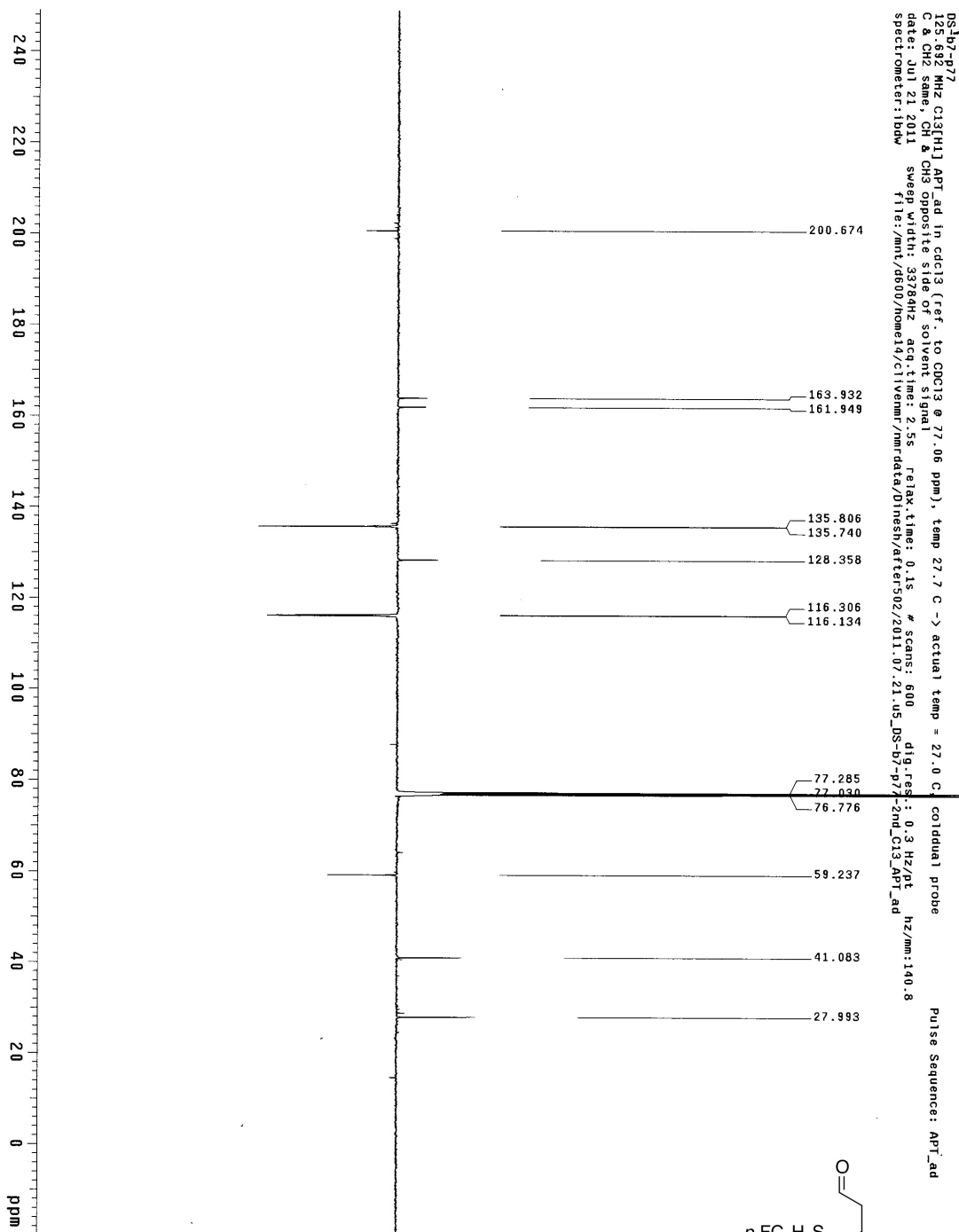
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*derrick.clive@ualberta.ca*

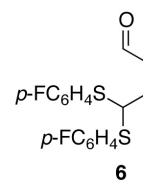
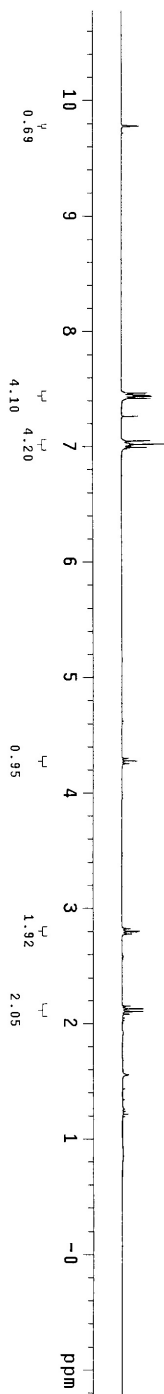
NMR spectra of compound <b>6</b>	S100
NMR spectra of compound <b>6.3</b>	S102
NMR spectra of compound <b>6.4</b>	S104
NMR spectra of compound <b>6b</b>	S106
NMR spectra of compound <b>6b'</b>	S108
NMR spectra of compound <b>6c</b>	S110
NMR spectra of compound <b>6c'</b>	S112
NMR spectra of compound <b>6d</b>	S114
NMR spectra of compound <b>7a</b>	S116
NMR spectra of compound <b>7b</b>	S118
NMR spectra of compound <b>7c</b>	S120
NMR spectra of compound <b>7d'</b>	S122
NMR spectra of compound <b>7e'</b>	S124
NMR spectra of compound <b>7f</b>	S126
NMR spectra of compound <b>8</b>	S128
NMR spectra of compound <b>8a</b>	S130
NMR spectra of compound <b>8b</b>	S132
NMR spectra of compound <b>8c</b>	S134
NMR spectra of compound <b>8d</b>	S136
NMR spectra of compound <b>9</b>	S138
NMR spectra of compound <b>9.1</b>	S140
NMR spectra of compound <b>9.2</b>	S142

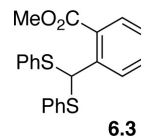
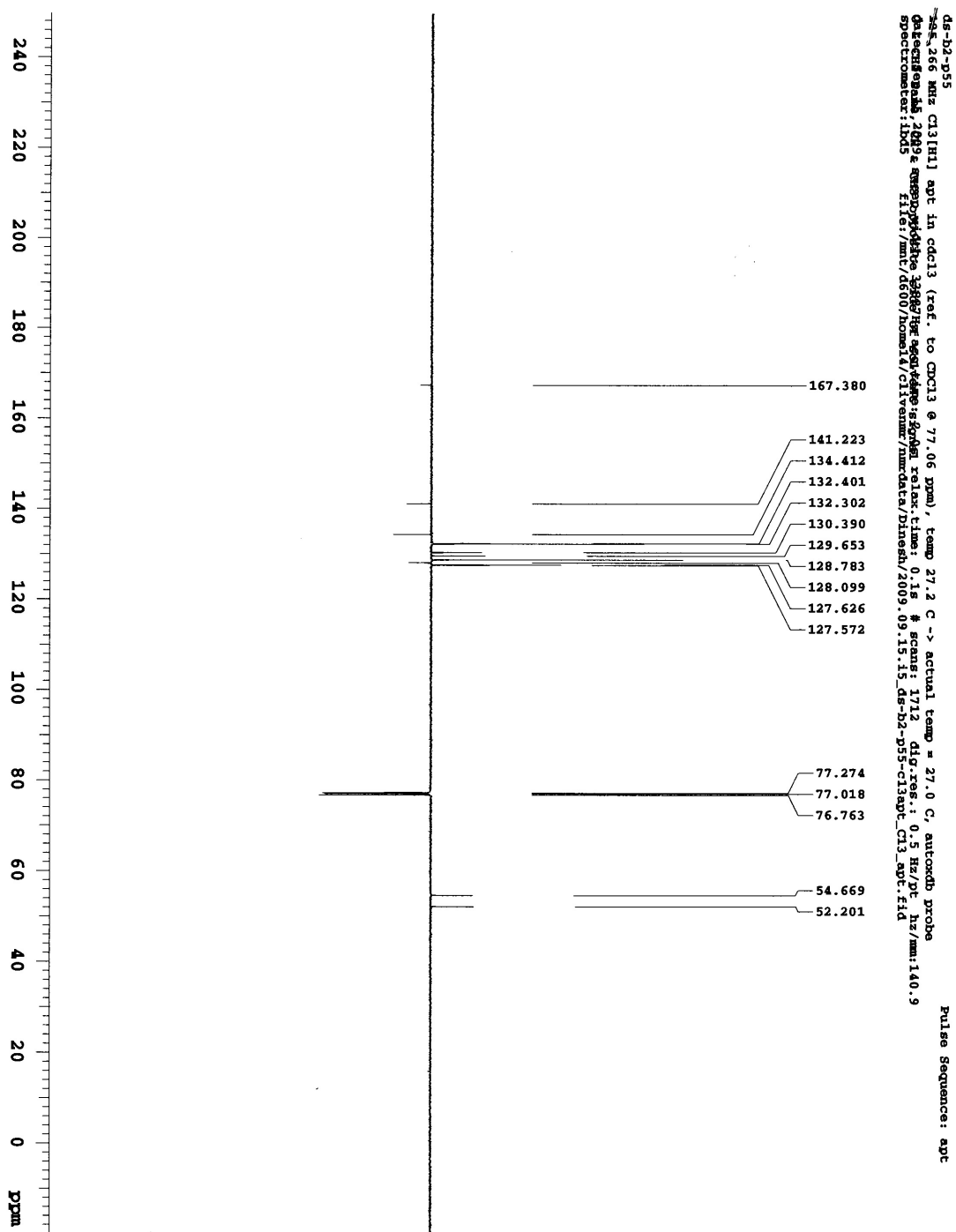
NMR spectra of compound <b>9.3</b>	S144
NMR spectra of compound <b>9.4</b>	S146
NMR spectra of compound <b>9.5</b>	S148
NMR spectra of compound <b>9.6</b>	S150
NMR spectra of compound <b>9a</b>	S152
NMR spectra of compound <b>9b</b>	S154
NMR spectra of compound <b>9c</b>	S156
NMR spectra of compound <b>9e</b>	S158
NMR spectra of compound <b>9f</b>	S160



299.971 MHz H1 1D in cdcl3 (ref. to CDCl3 @ 7.26 ppm), temp 27.0 C -> actual temp = 27.0 C, 1d300 probe

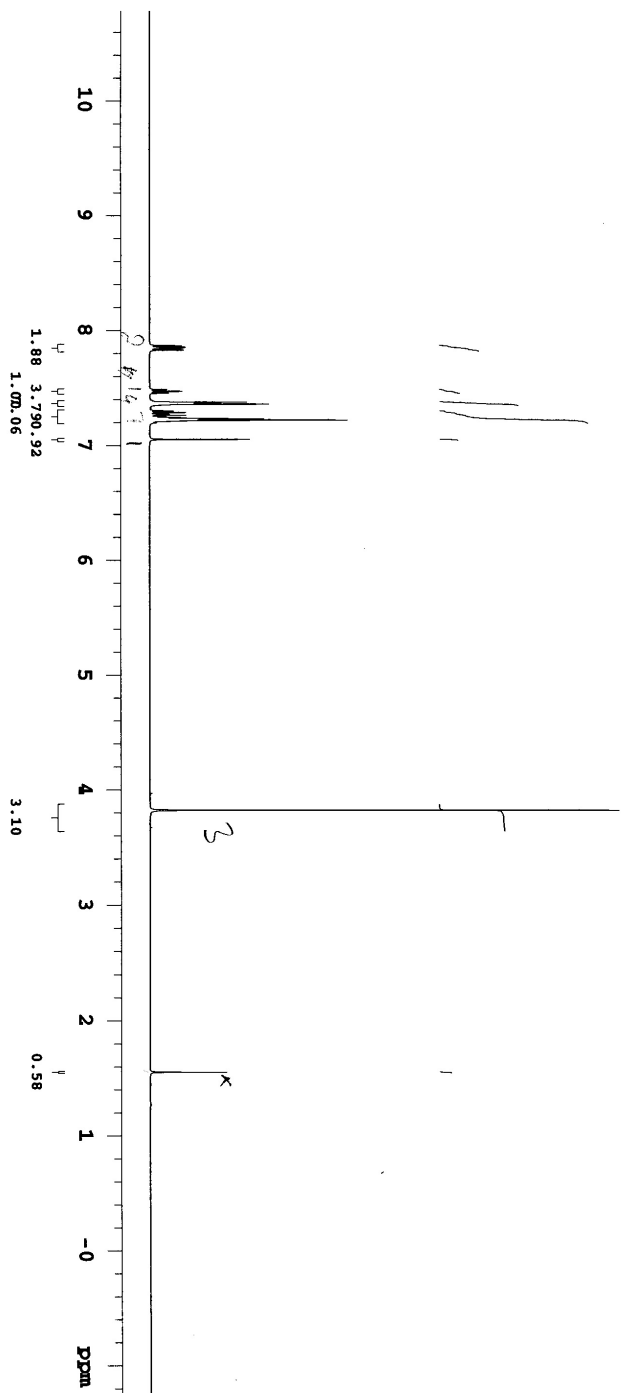
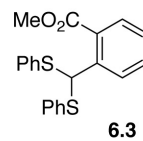
Pulse Sequence: s2pu1

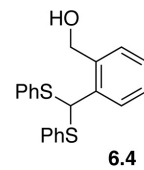
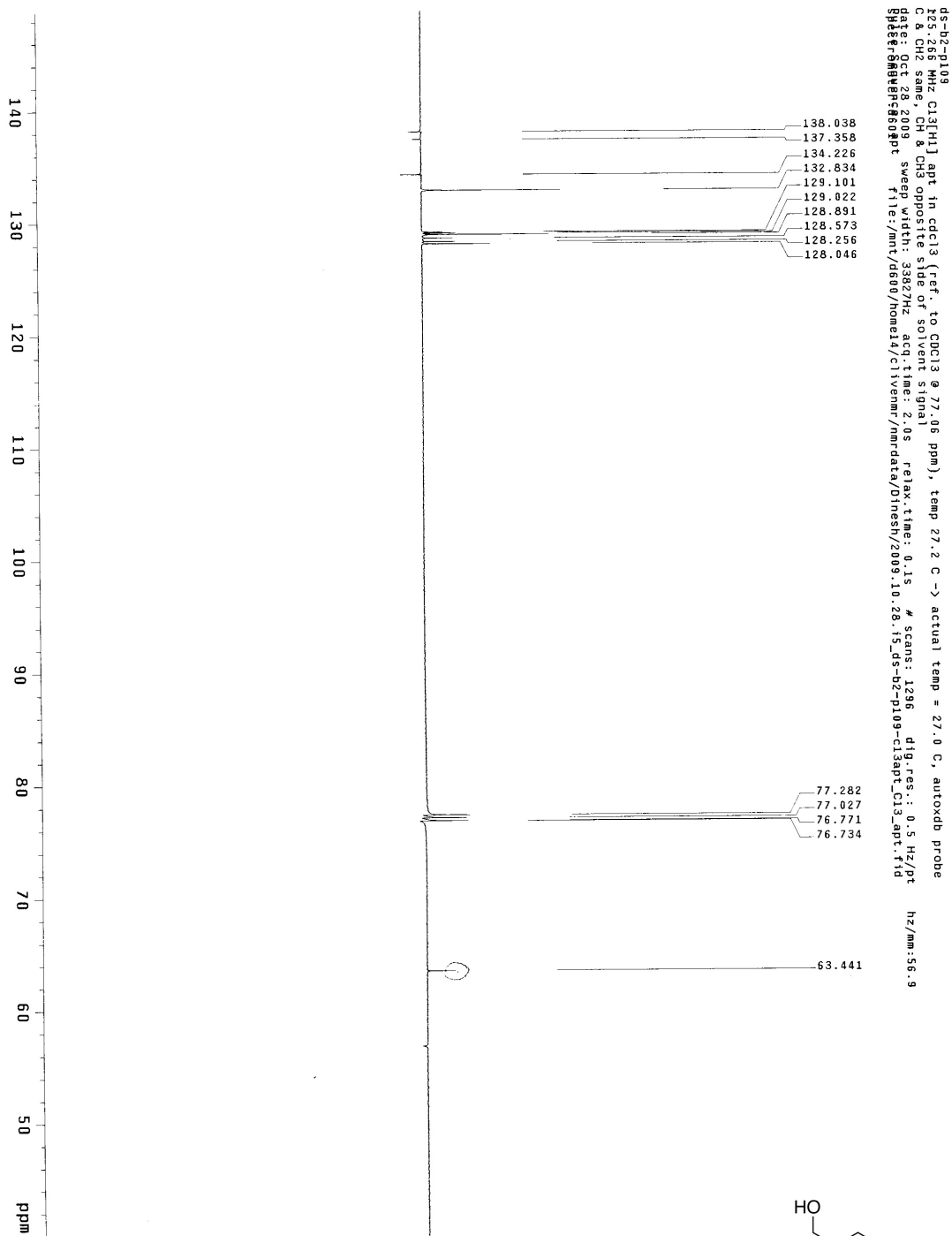




ds-h2-p55-500  
454.122 MHz H1 ID in cdCl3 (ref. to CDCl3 @ 7.26 ppm), temp 27.2 C -> actual temp = 27.0 C, autoxrdh probe

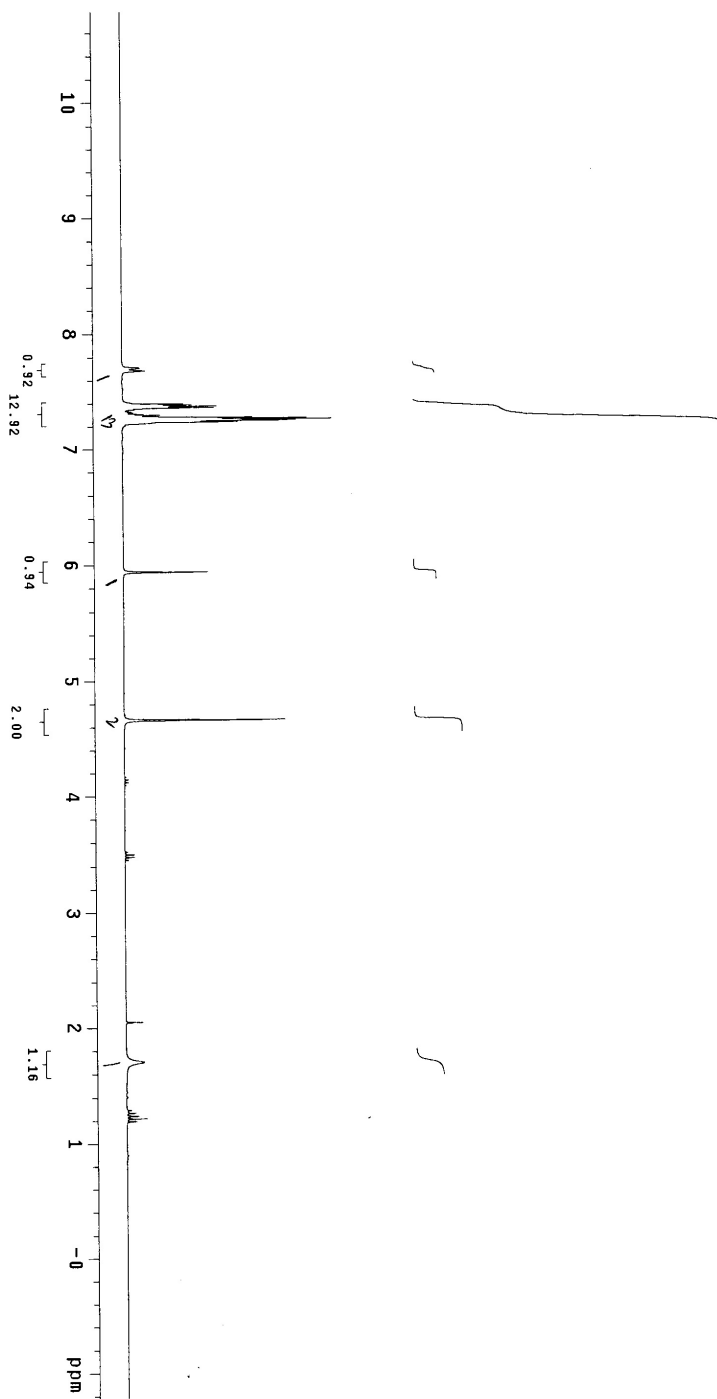
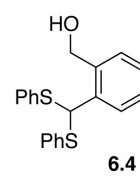
Pulse Sequence: s2pnl



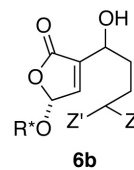
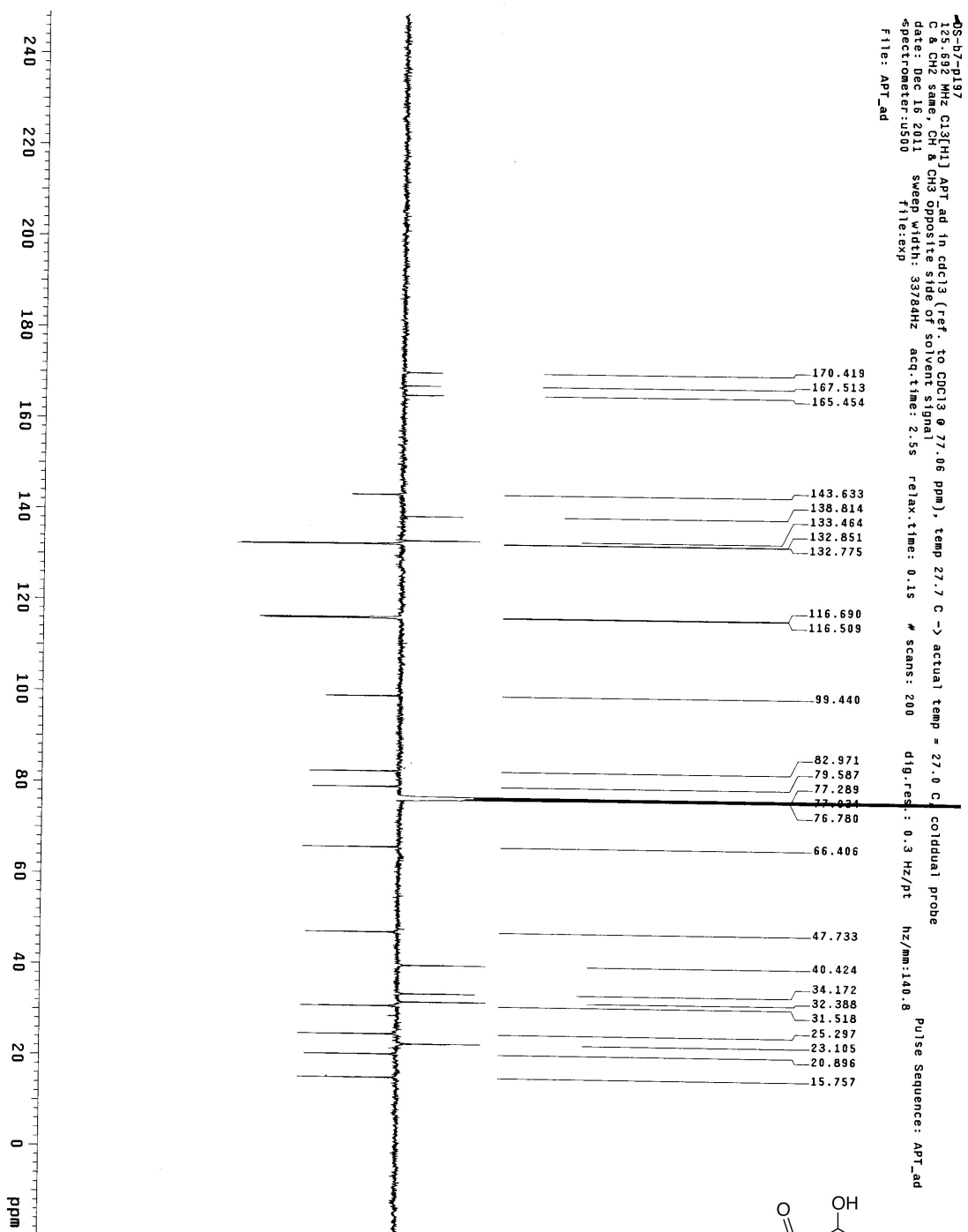


ds-b2-p109  
299.971 MHz H1 1D 1h cdc13 (ref. to CDCl3 @ 7.26 ppm), temp 27.5 C -> actual temp = 27.0 C, 1d300 probe

Pulse Sequence: szpul1



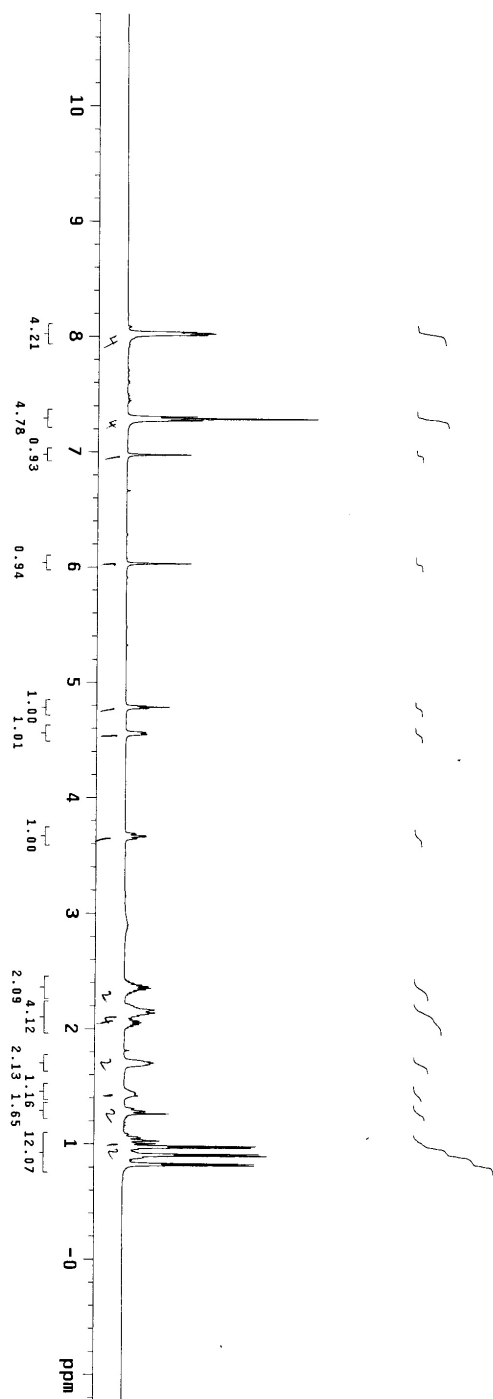
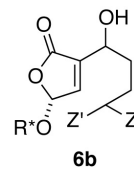


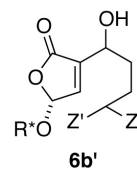
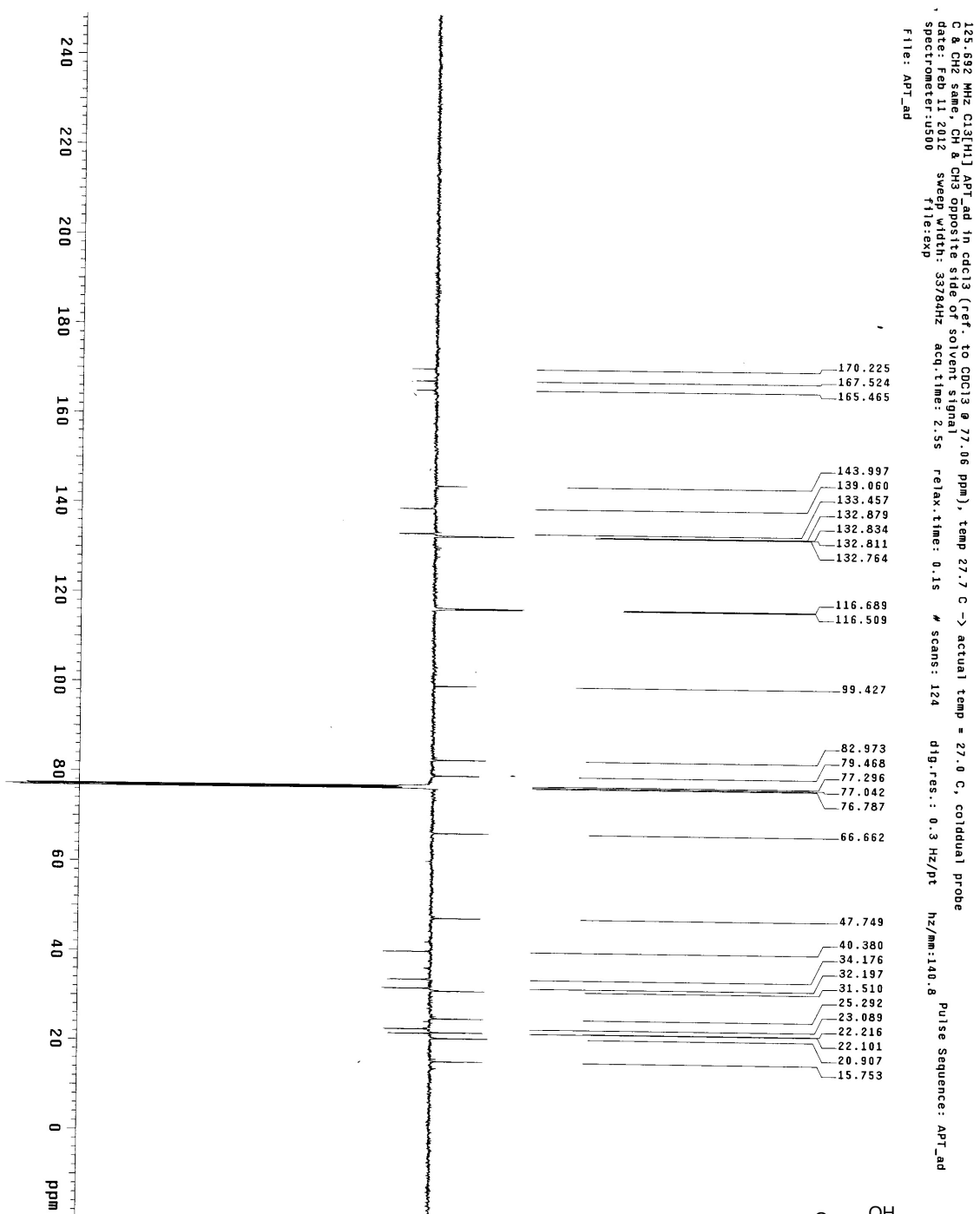


05-b7-p197

499.815 MHz H1 1D in cdcl3 (ref. to CDCl3 @ 7.26 ppm), temp 27.7 C -> actual temp = 27.0 C, continual probe

Pulse Sequence: s2pu1

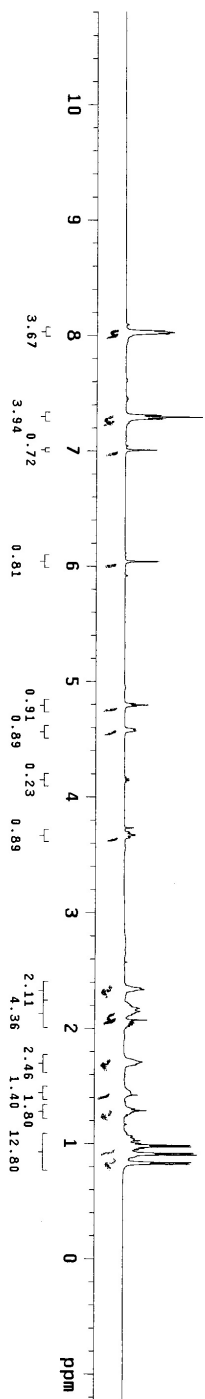
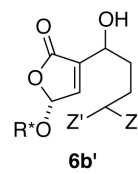


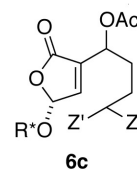
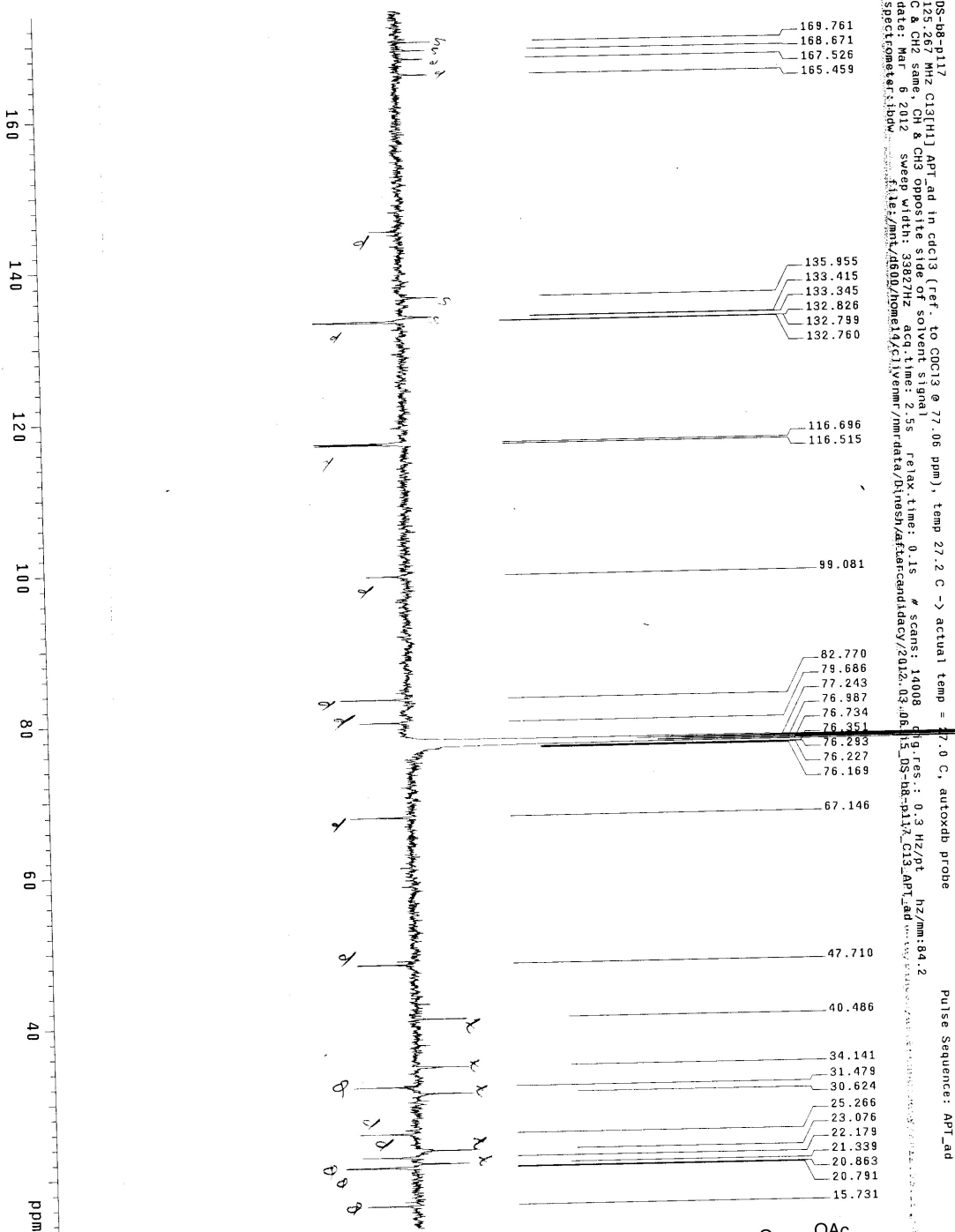


05-b8-p57-fr21-24 (4.5: p.c.f.a.v  
499.815 MHz H1 D0 in cdcl3 (ref. to CDCl3 @ 7.26 ppm), temp 27.7 C -> actual temp = 27.0 C, coldual probe

File: PROTON

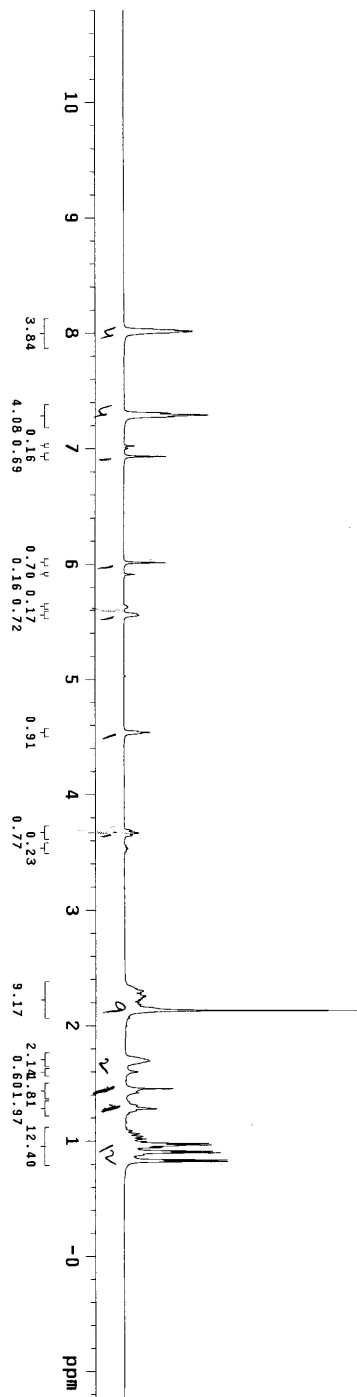
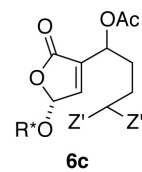
Pulse Sequence: szpu1

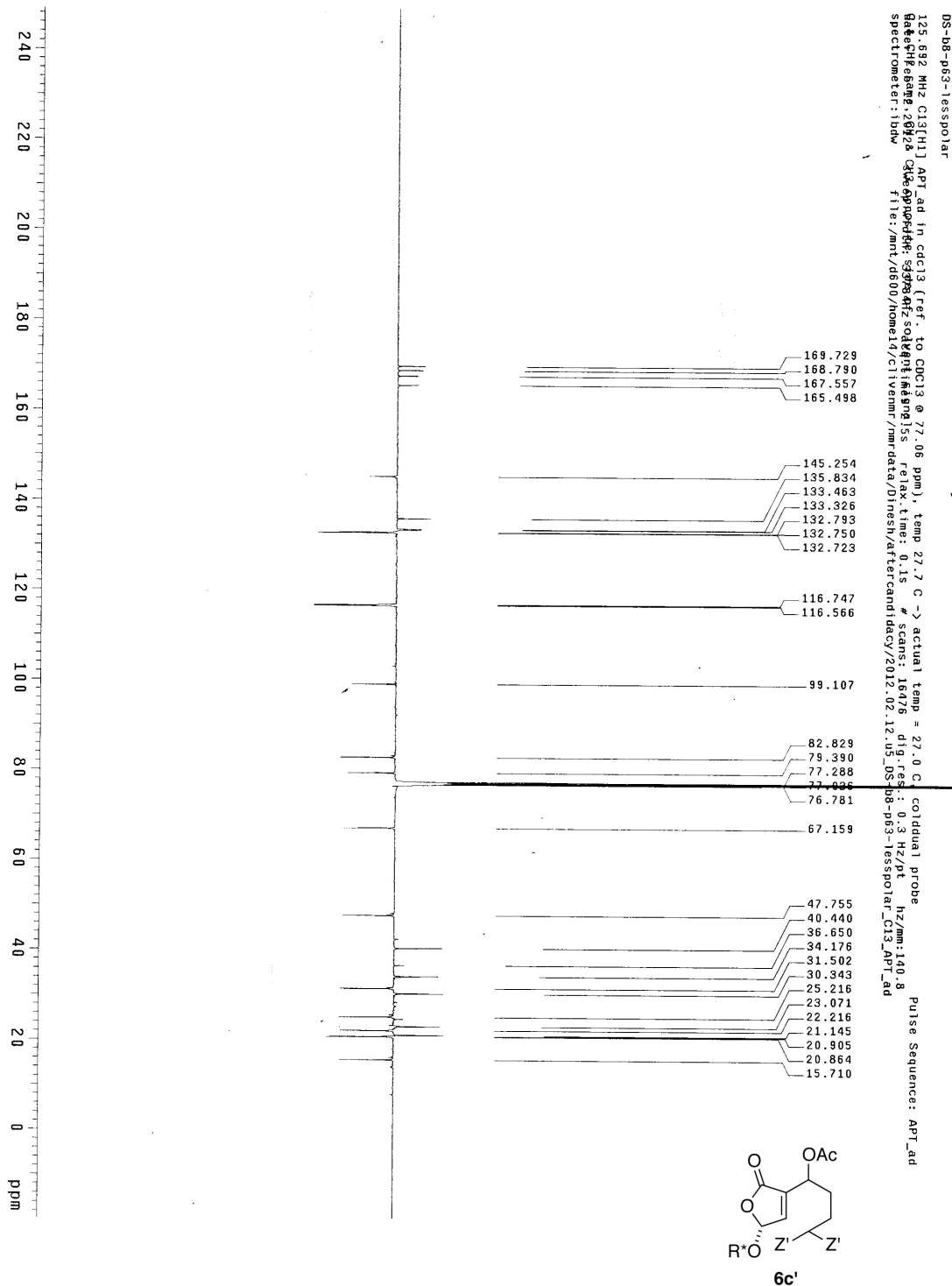




05-b8-p017  
499.815 MHz H1 D0 in cdcl3 (ref. to CDCl3 @ 7.26 ppm), temp 27.7 C -> actual temp = 27.0 C, coil dual probe

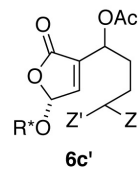
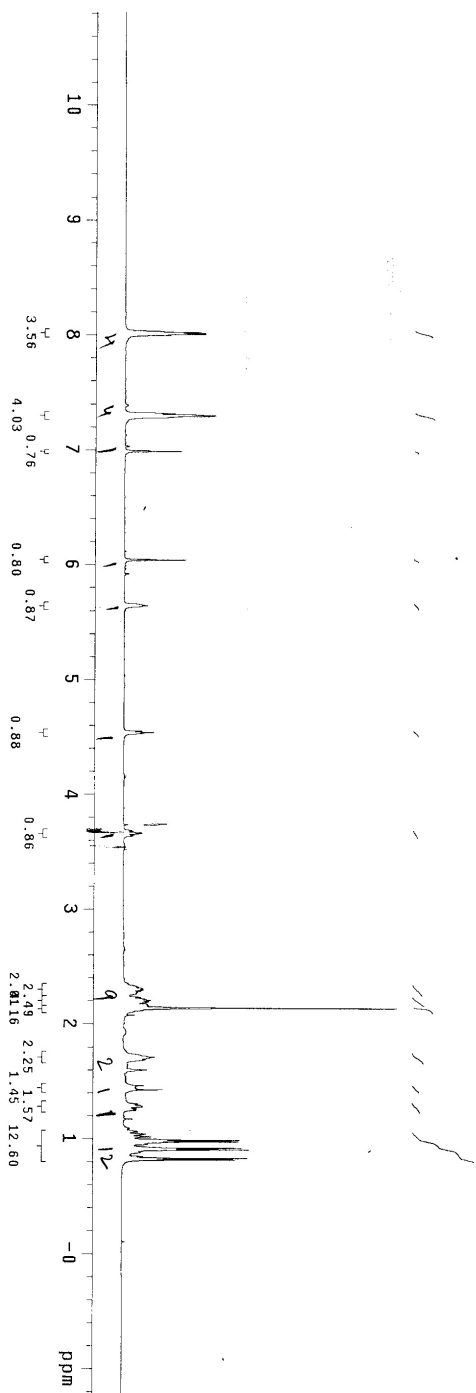
Pulse Sequence: s2pu1



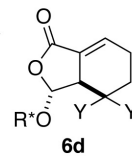
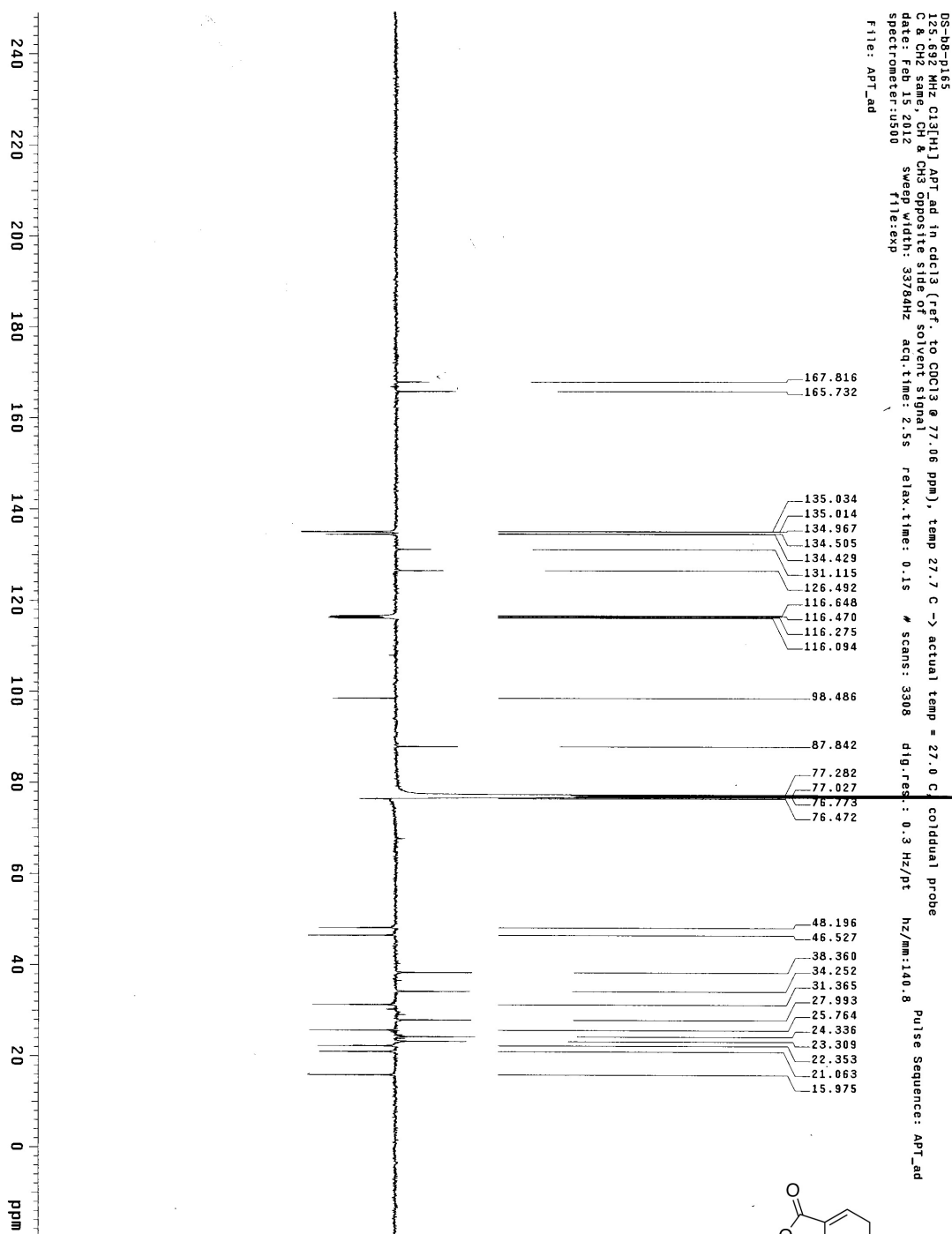


08-08-052  
439.815 MHz H1 1D in cdcl3 (ref. to CDCl3 @ 7.26 ppm), temp 27.7 C -> actual temp = 27.0 C, coil dual probe

Pulse Sequence: szpu1

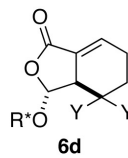
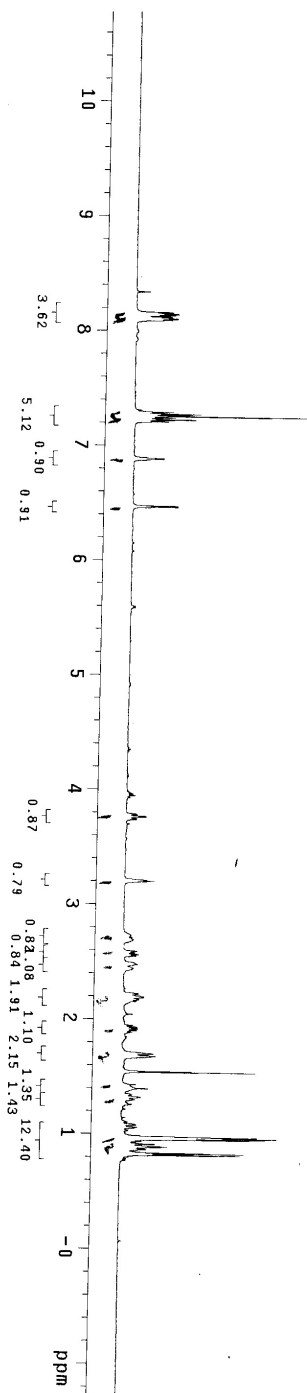


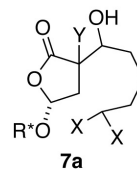
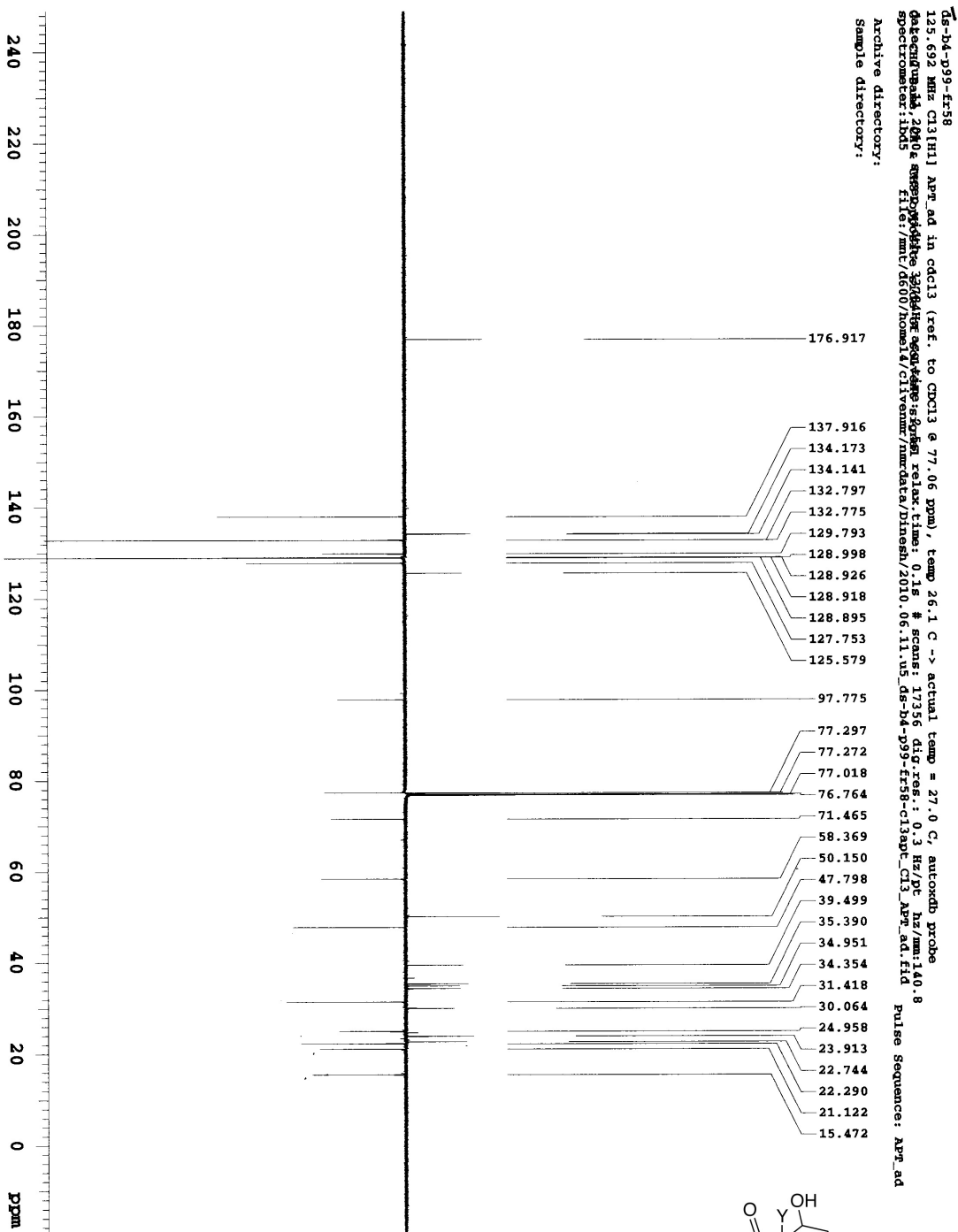




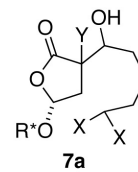
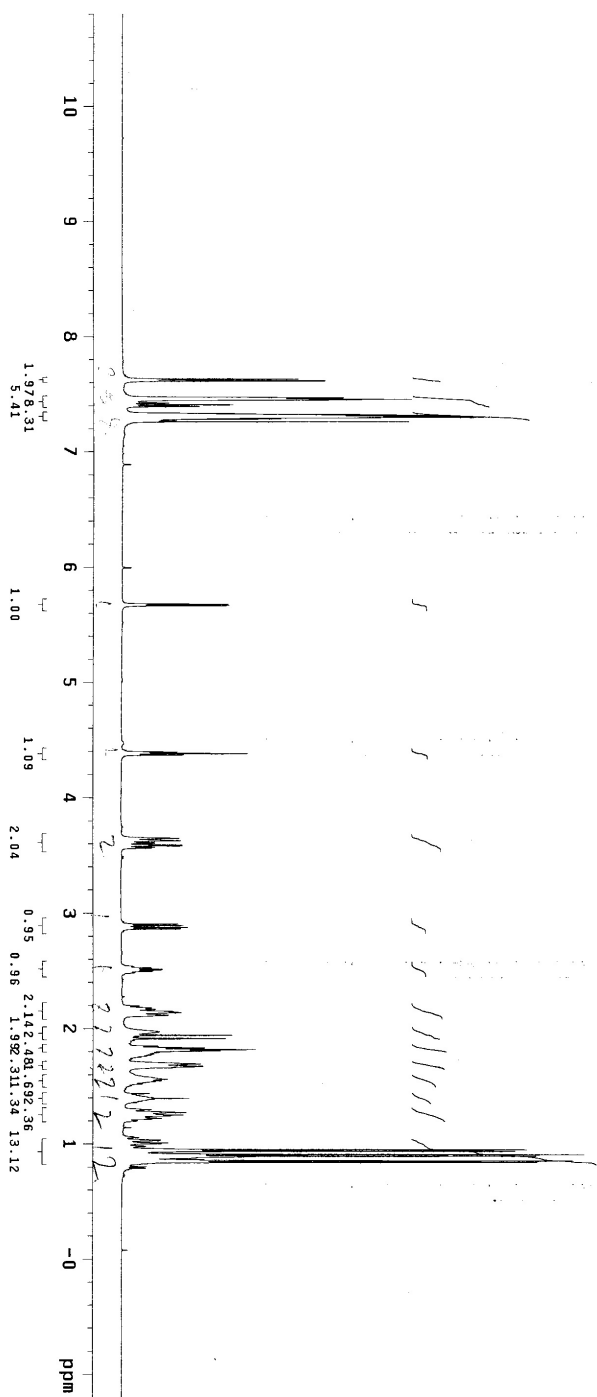
DS-08-p65  
498.122 MHz H1 1D in cdcl3 (ref. to CDCl3 @ 7.26 ppm), temp 27.2 C -> actual temp = 27.0 C, autoxzb probe

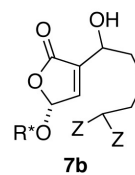
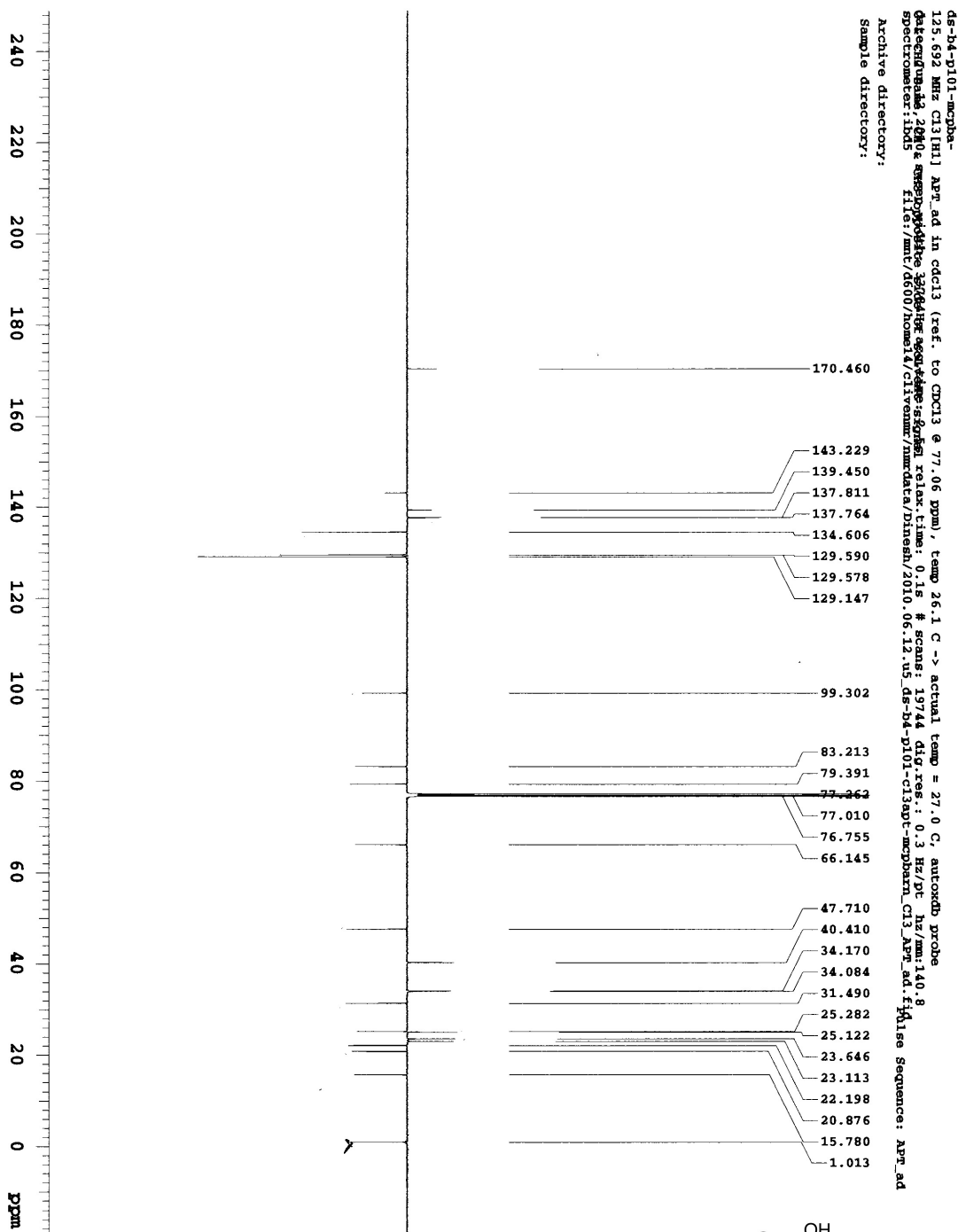
Pulse Sequence: s2pu1



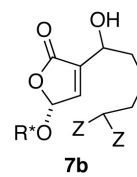
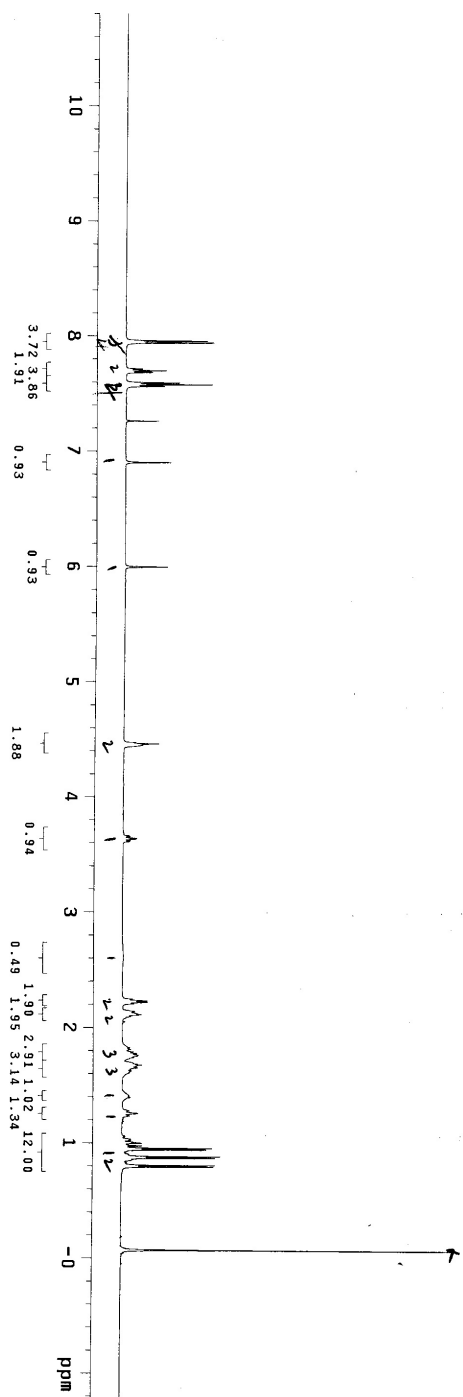


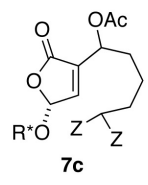
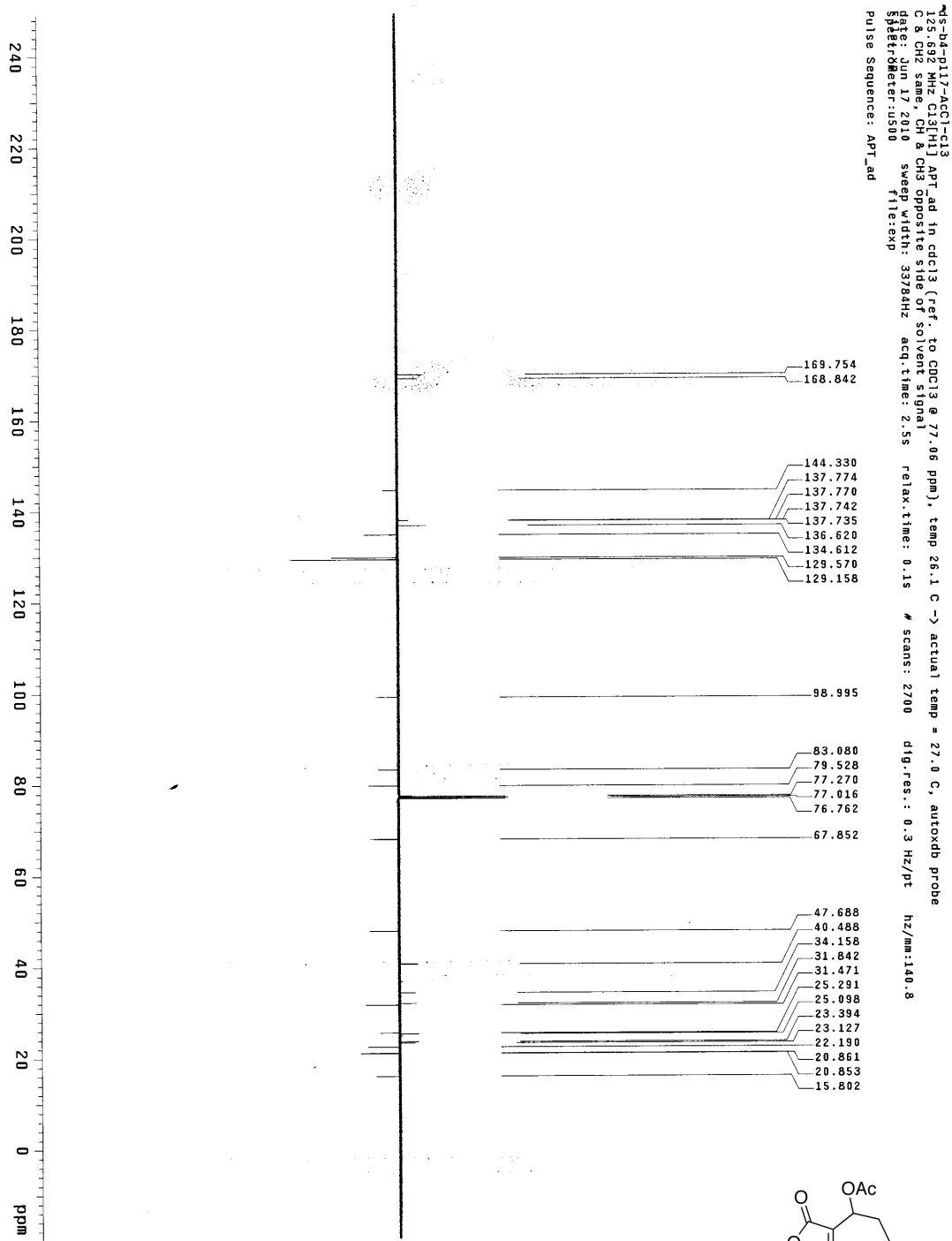
ds-b4-p99-f158-60  
499.815 MHz H1 1D 1n cdcl3 (ref. to CDCl3 @ 7.26 ppm), temp 26.1 C -> actual temp = 27.0 C, autoxzb probe  
File: xp  
Pulse Sequence: szpul1





ds-b4-p101-H1  
499.815 MHz H1 1D in cdcl3 (ref. to CDCl3 @ 7.26 ppm), temp 26.1 C -> actual temp = 27.0 C, autograd probe  
File: xp  
Pulse Sequence: s2pu1

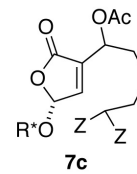
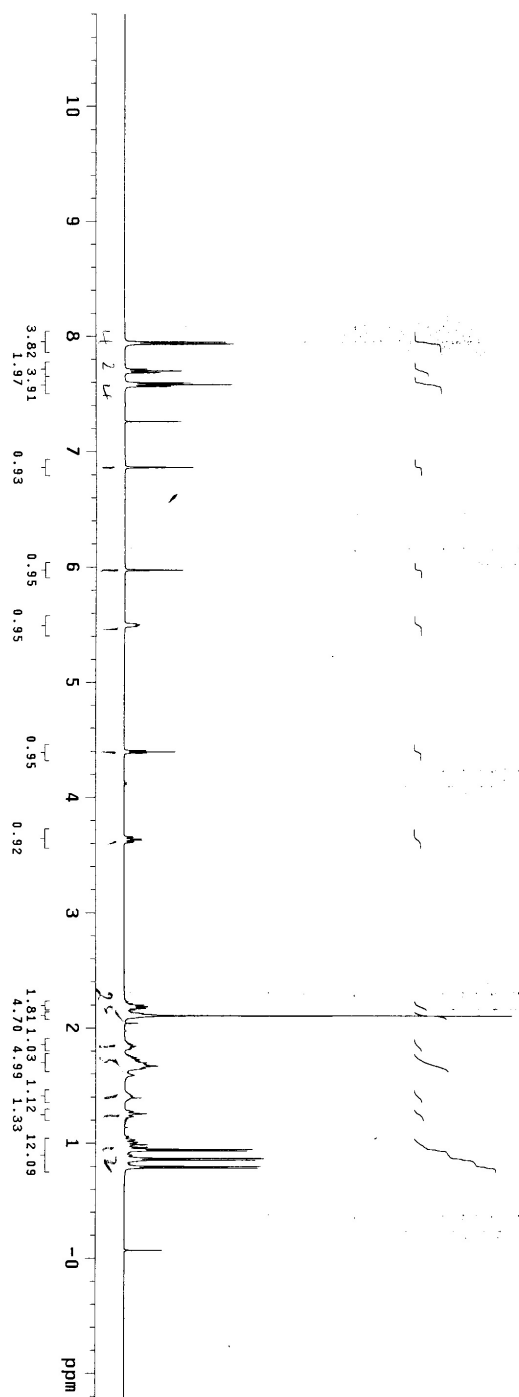




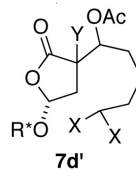
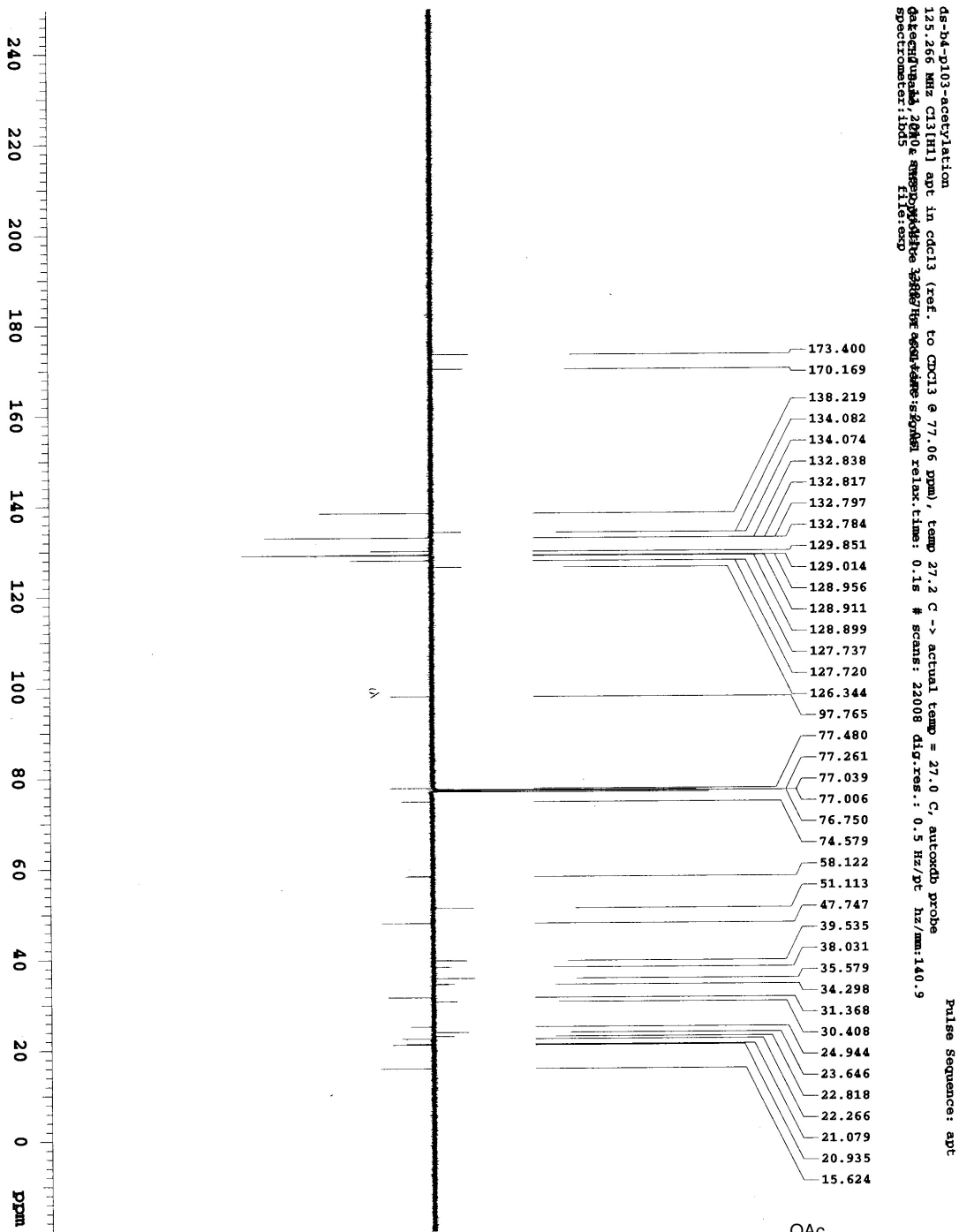
<sup>13</sup>C NMR (CDCl<sub>3</sub>) δ: 169.754, 168.842, 144.330, 137.774, 137.770, 137.742, 137.735, 136.620, 134.612, 129.570, 129.158, 98.995, 83.080, 79.528, 77.270, 77.016, 76.762, 67.852, 47.688, 40.488, 34.158, 31.842, 31.471, 25.291, 25.098, 23.394, 23.127, 22.190, 20.861, 20.853, 15.802.

125.682 MHz CDCl<sub>3</sub> [1H] APT<sub>ad</sub> in cdcl3 (ref. to CDCl<sub>3</sub> @ 77.06 ppm), temp 26.1 C -> actual temp = 27.0 C, autotxdb probe  
C & CH2 same, CH & CH3 opposite side of solvent signal  
date: Jun 17 2010 sweep width: 33784Hz acq.time: 2.5s # scans: 2700 dig.res.: 0.3 Hz/pt hz/mm:140.8  
Spectrometer: us00 F1:exp  
Pulse Sequence: APT<sub>ad</sub>

DS-B4-p~~1~~-AcCl-H1  
499.815 MHz H1 D0 in cdcl3 (ref. to CDCl3 @ 7.26 ppm), temp 26.1 C -> actual temp = 27.0 C, autoxdb probe  
F1f1: xp  
Pulse Sequence: s2pu1

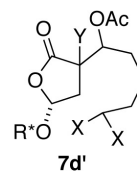
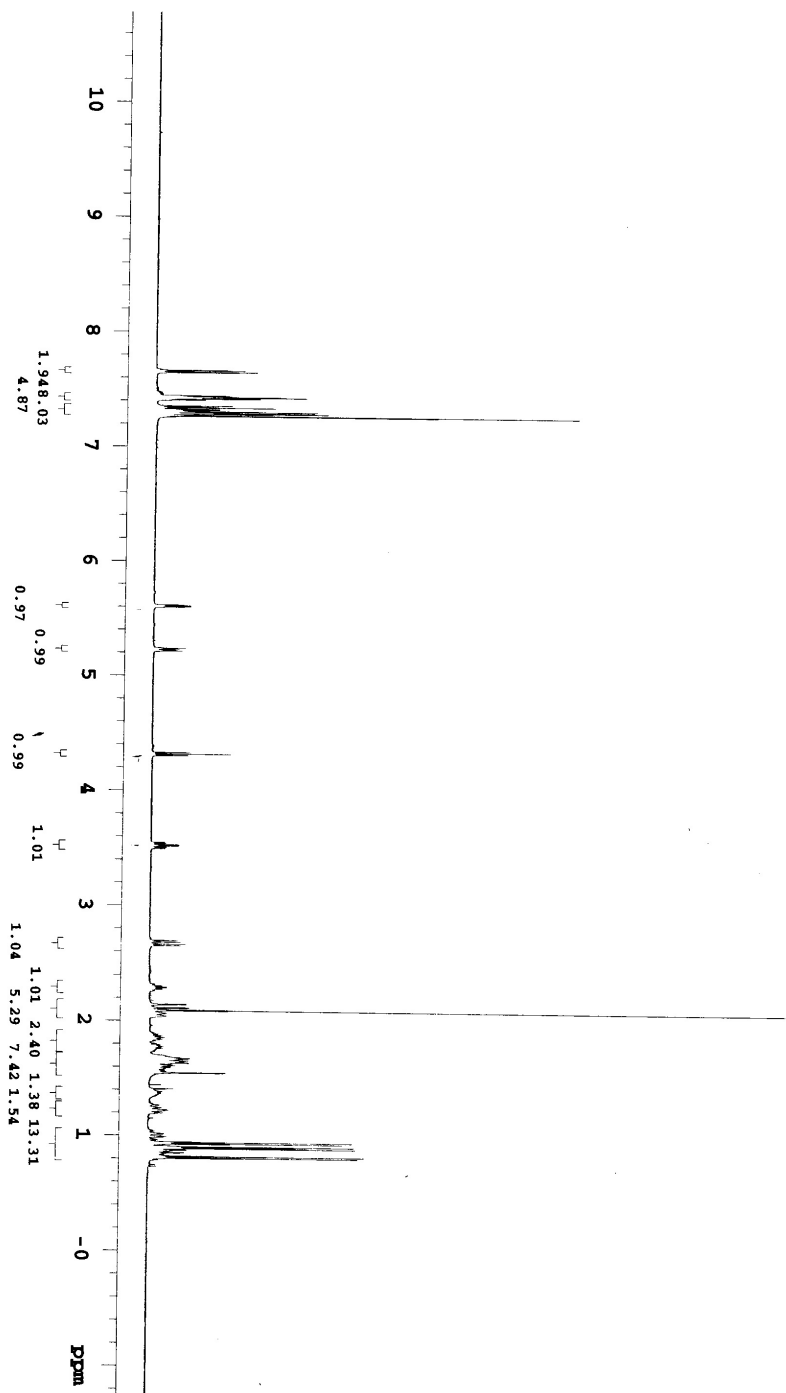


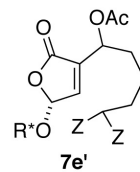
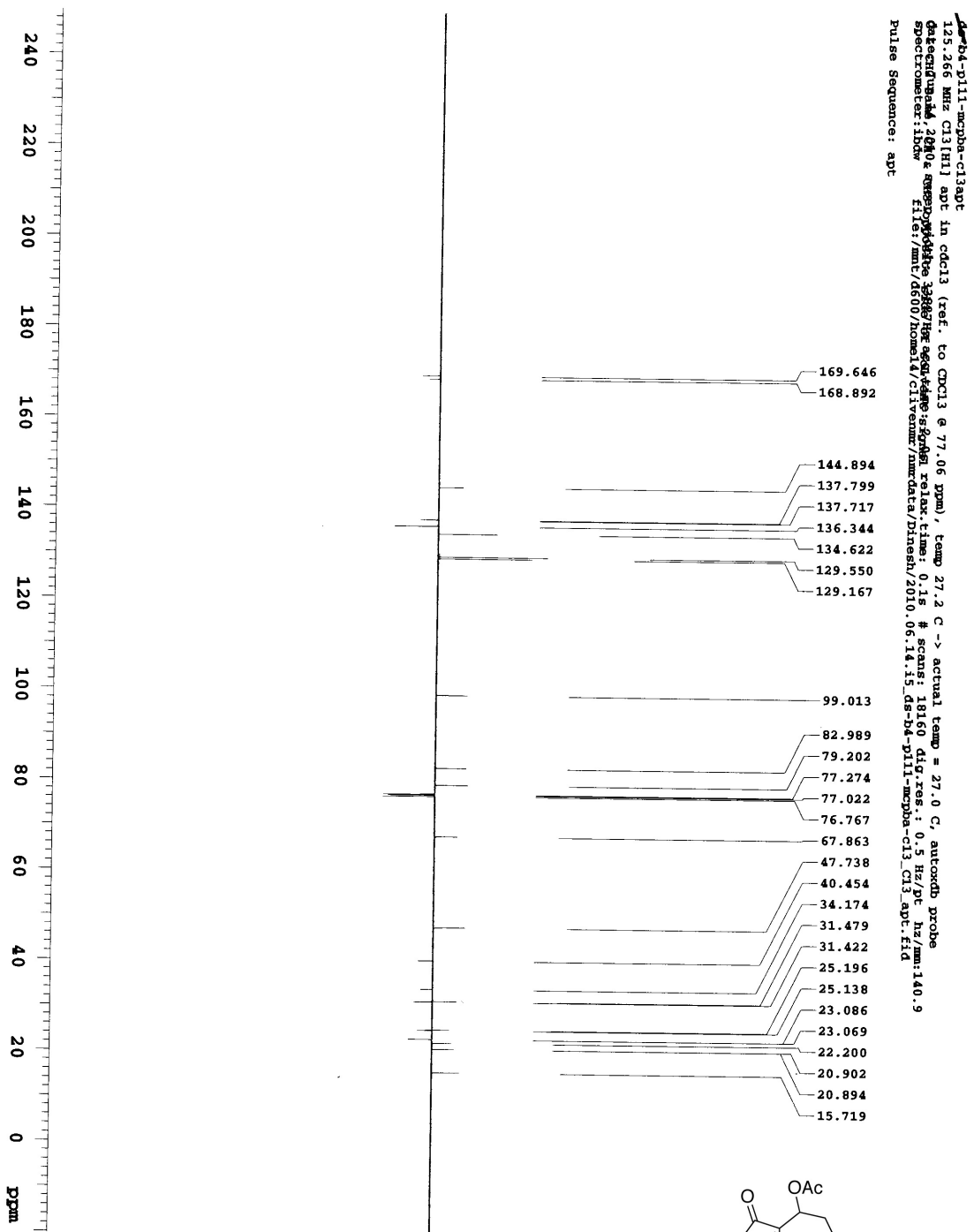




ds-b4-p103-acetylation-H1  
498.122 MHz H1 1D in cdcl3 (ref. to CDCl3 @ 7.26 ppm), temp 27.2 C -> actual temp = 27.0 C, autoxtdb probe

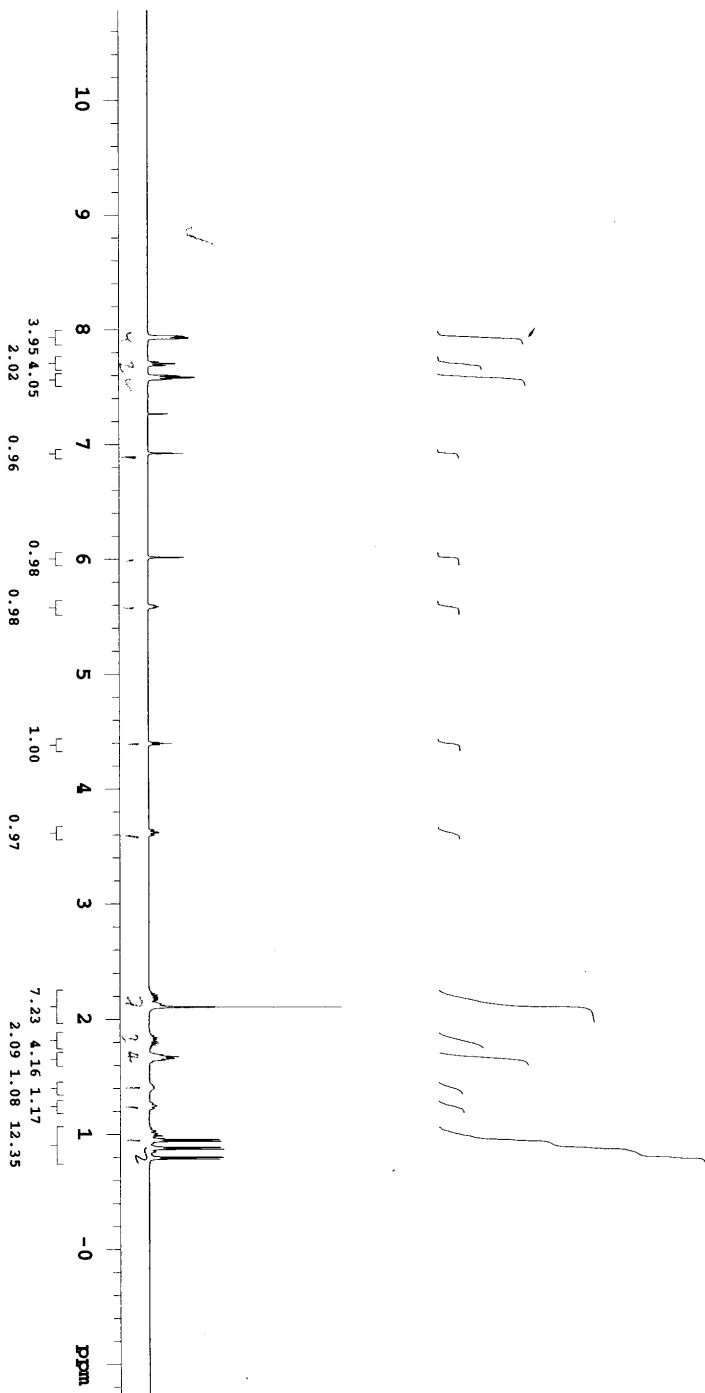
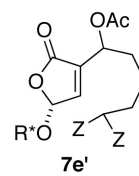
Pulse Sequence: s2pul1

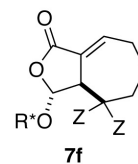
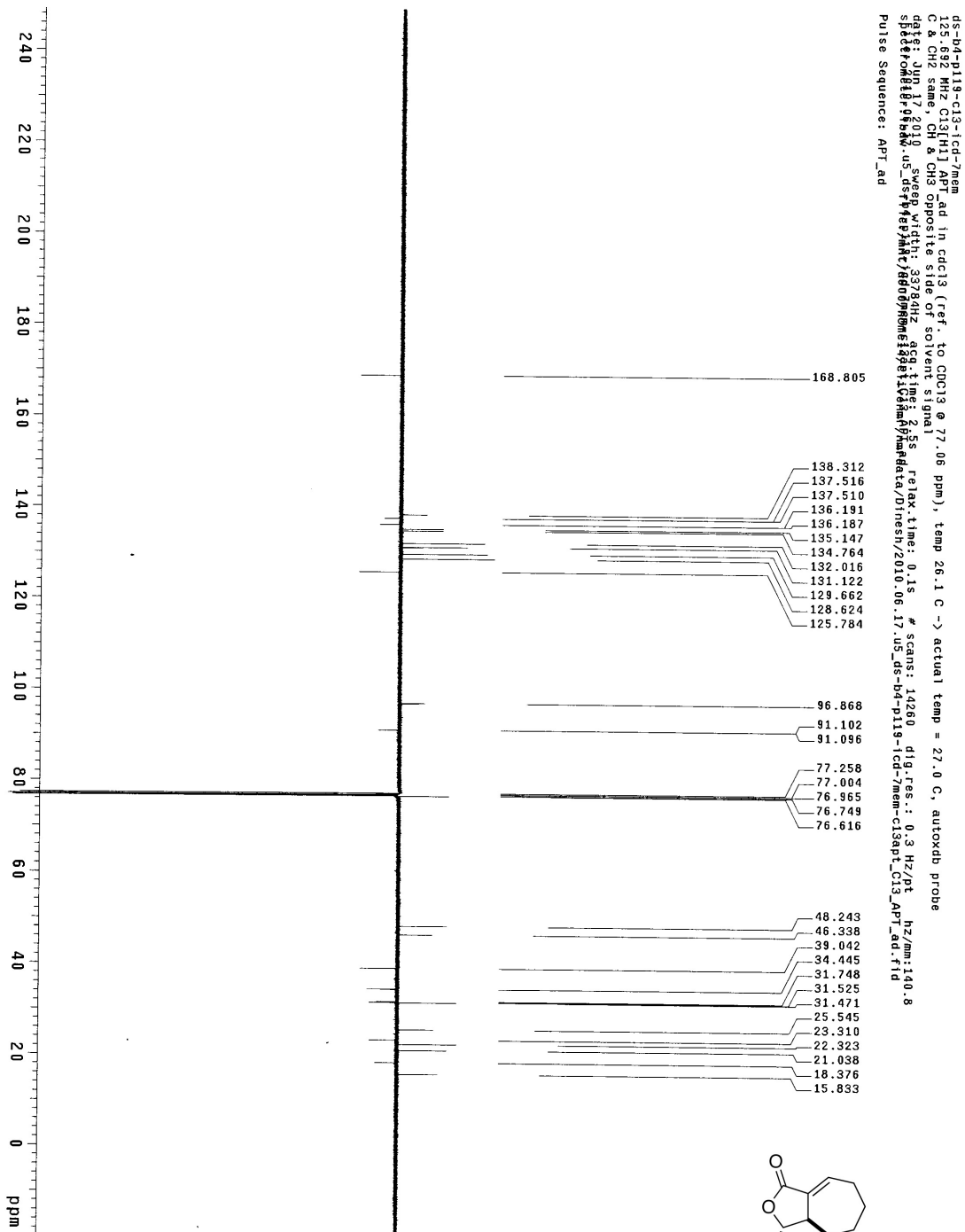




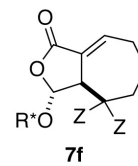
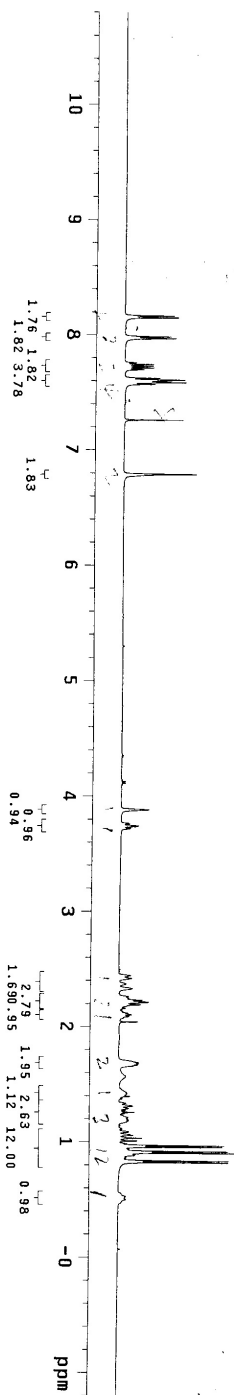
ds-b4-d111-mcpba-2  
498.122 MHz H1 1D in cdcl3 (ref. to CDCl3 @ 7.26 ppm), temp 27.2 C -> actual temp = 27.0 C, autoxtdb probe

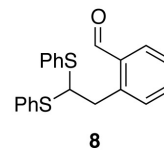
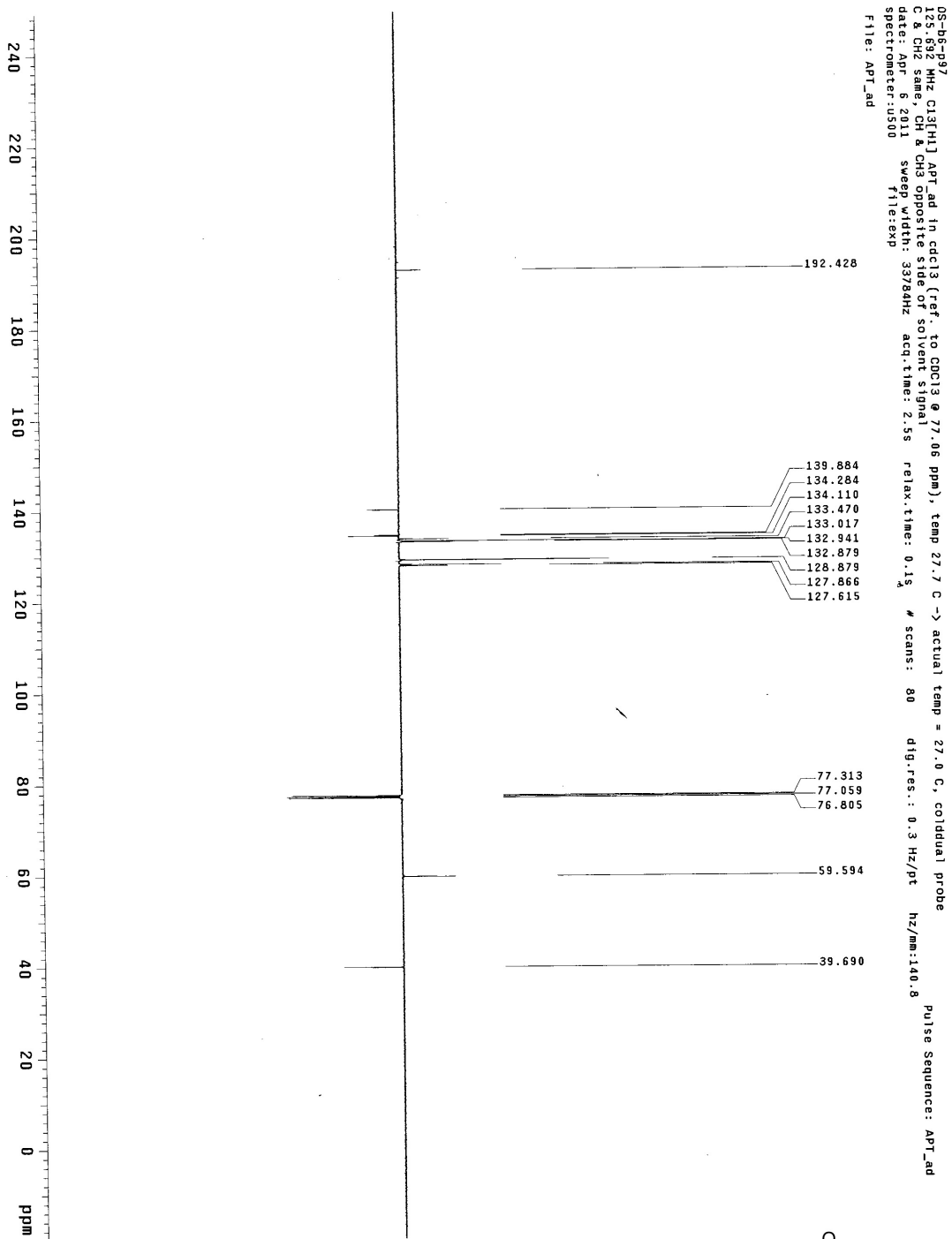
Pulse Sequence: s2pu1





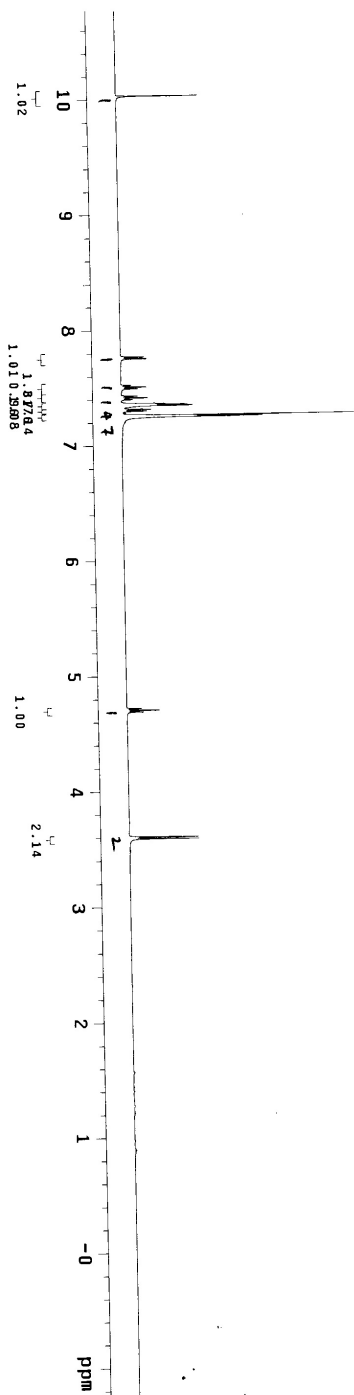
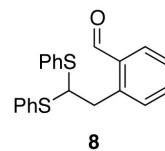
ds-b4-p13-ICD7-H1  
499.815 MHz H1 D0 in cdcl3 (ref. to CDCl3 @ 7.26 ppm), temp 26.1 C -> actual temp = 27.0 C, autoxtdb probe  
File: xp  
Pulse Sequence: szpu1



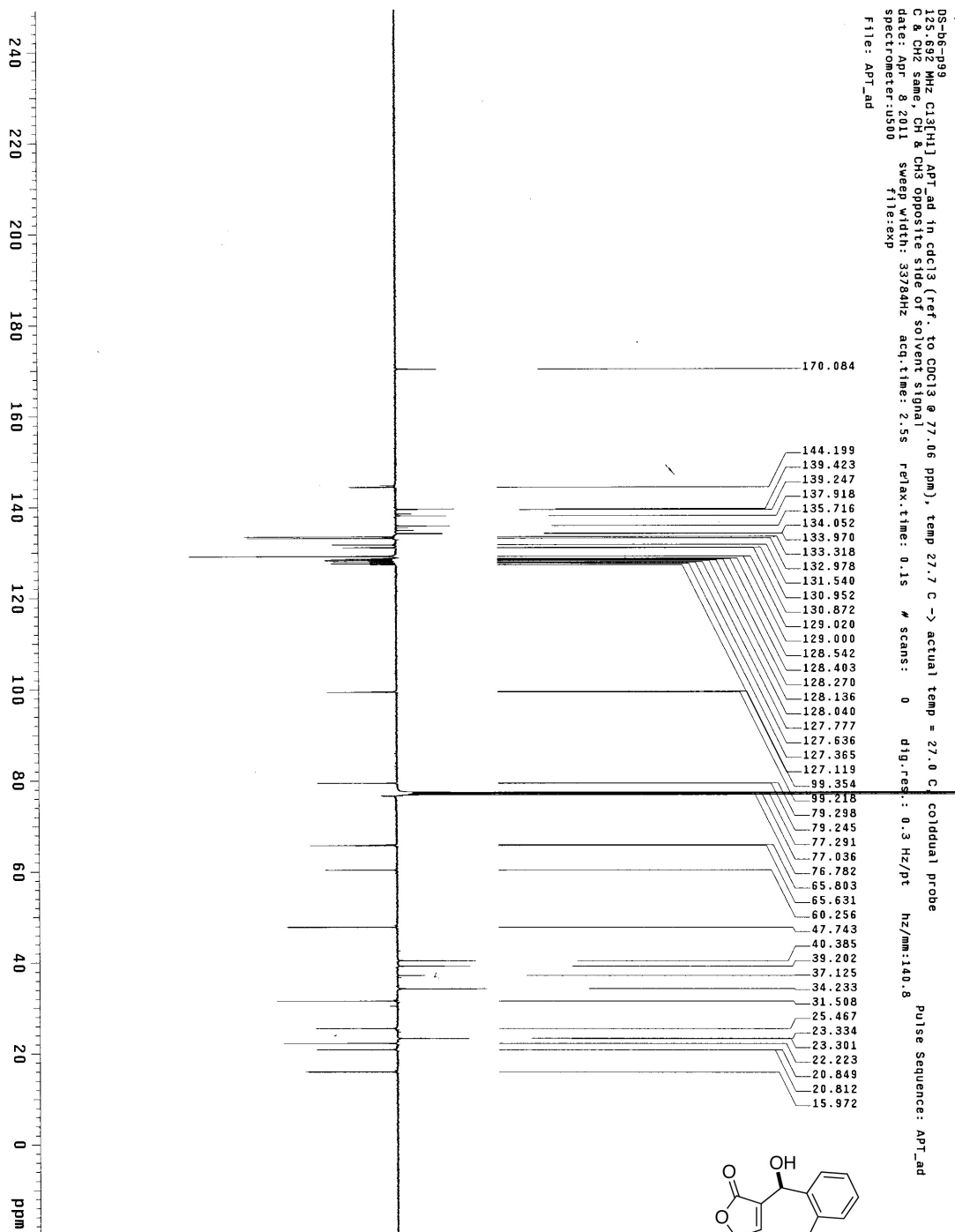


DS-b6-p97  
499.815 MHz H1 1D in cdcl3 (ref. to CDCl3 @ 7.26 ppm), temp 27.7 C -> actual temp = 27.0 C, coldstart probe

Pulse Sequence: szpu1



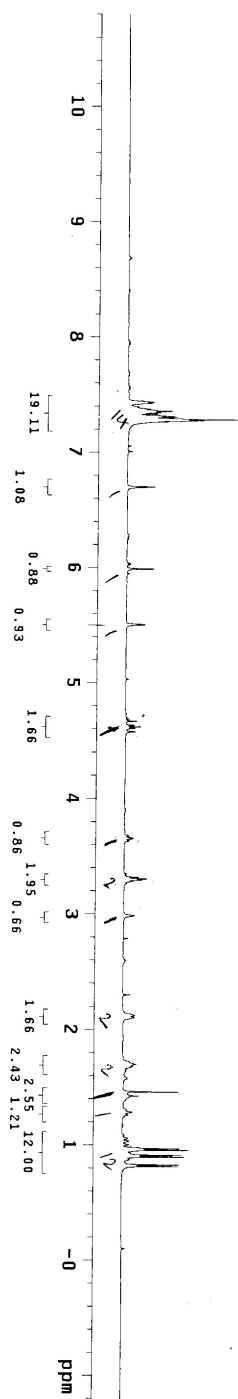
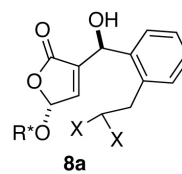


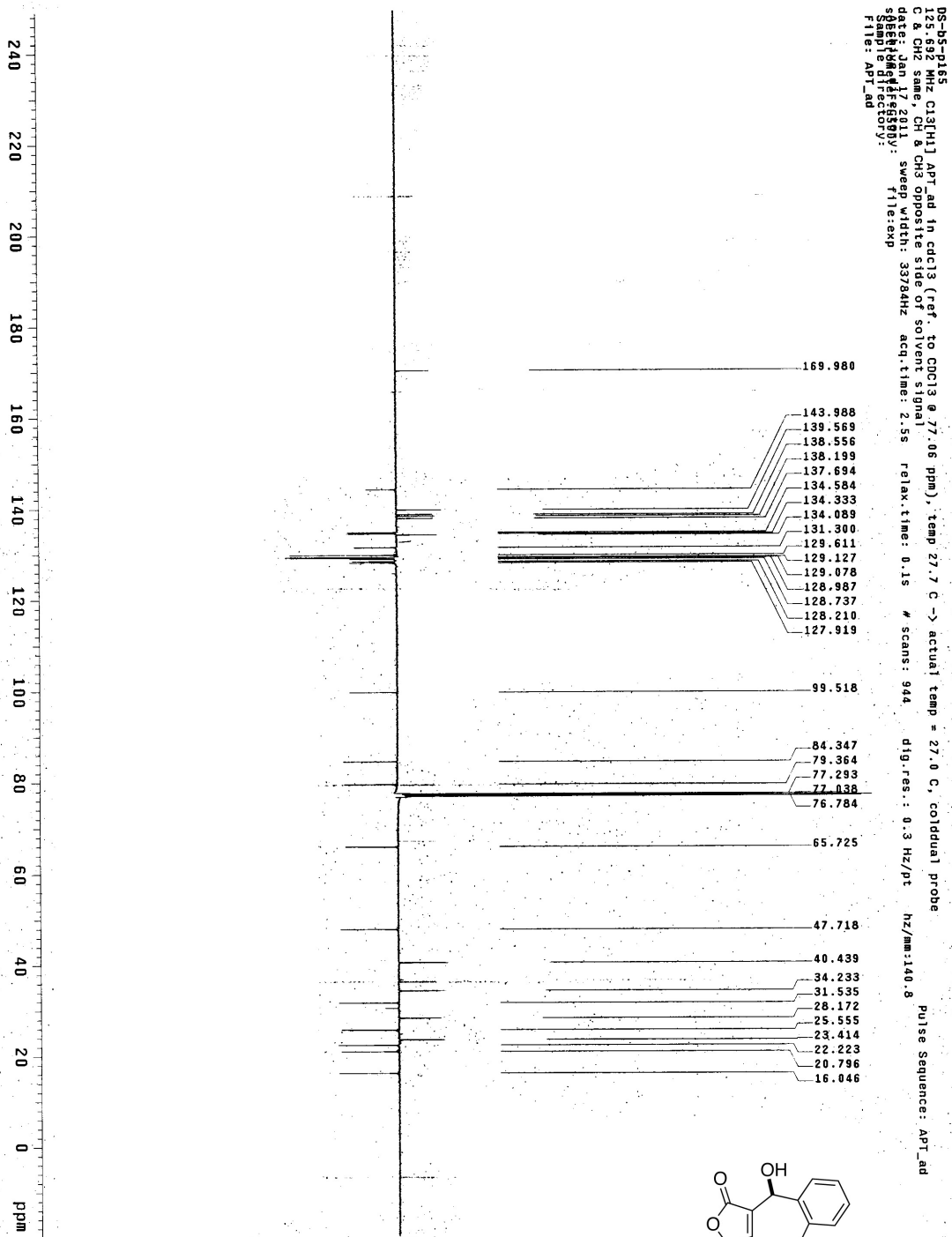


05-b6-a9  
125.692 MHz C13[H1] APT\_ad in cdcl3 (ref. to CDCl3 @ 77.06 ppm), temp 27.7 C -> actual temp = 27.0 C colddual probe  
C & CH2 same, CH & CH3 Opposite side of solvent signal  
date: Apr 8 2011 sweep width: 33784Hz acq.time: 2.5s relax.time: 0.1s # scans: 0 dtg.res.: 0.3 Hz/pt hz/mm:140.8  
spectrometer:u500 file:exp  
file: APT\_ad  
Pulse Sequence: APT\_ad

DS-06-P39-H1  
499.813 MHz H1 1D 1h cdcl3 (ref. to CDCl3 @ 7.26 ppm), temp 27.7 C -> actual temp = 27.0 C, coldual probe

Pulse Sequence: szpu1

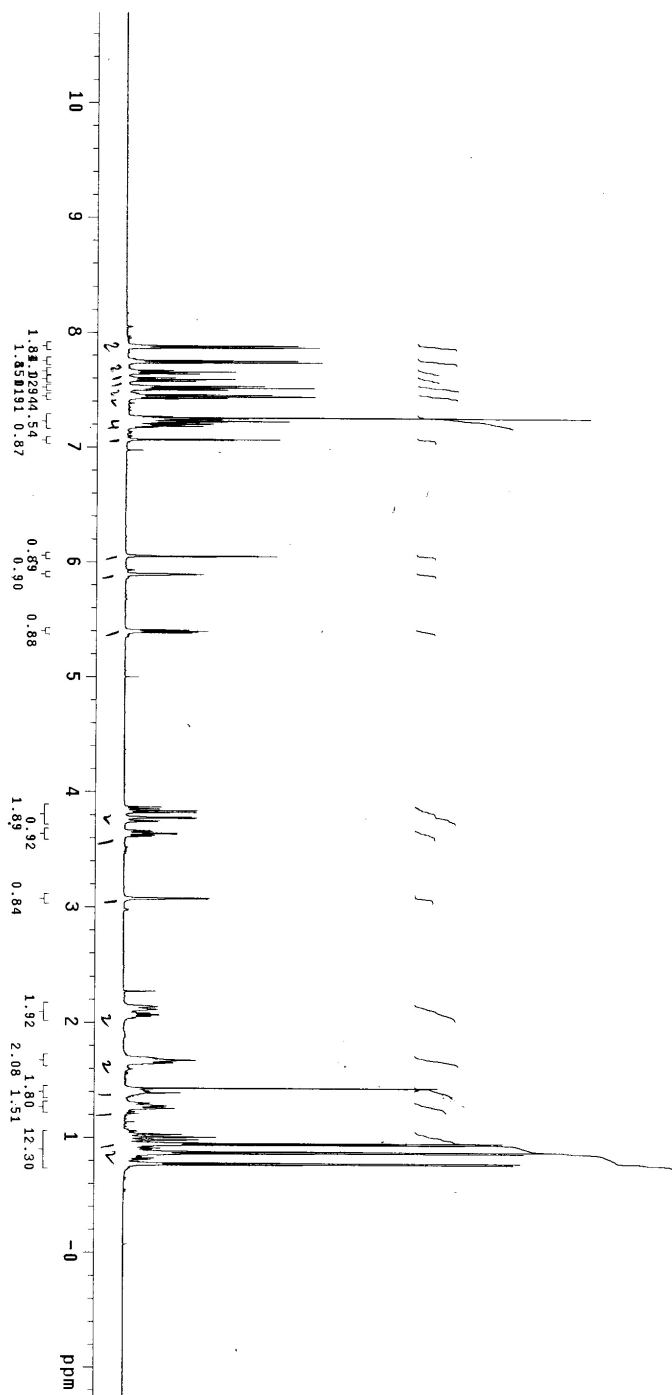
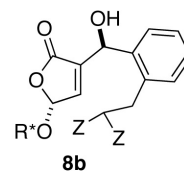


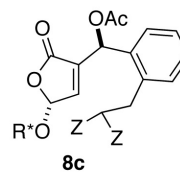
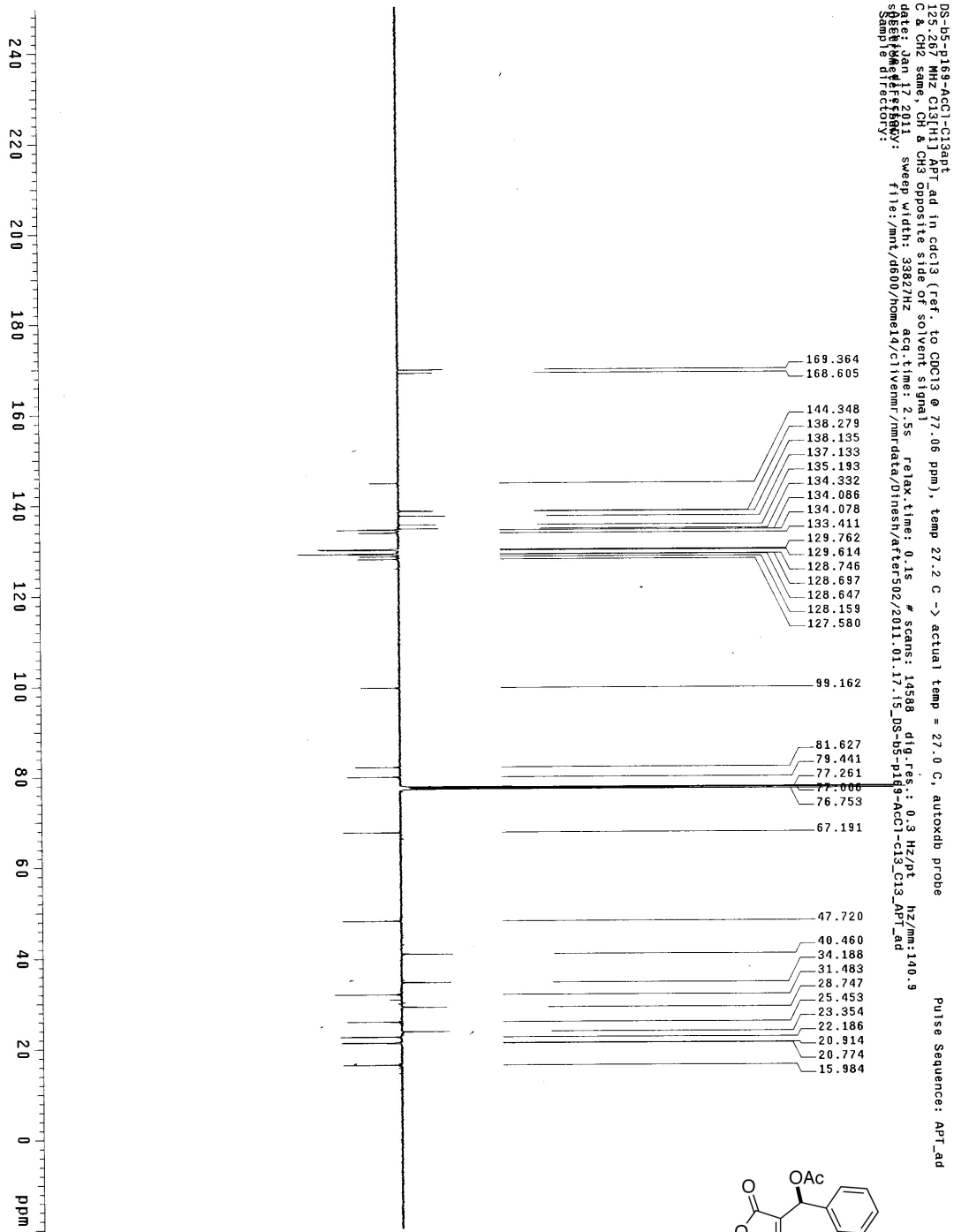


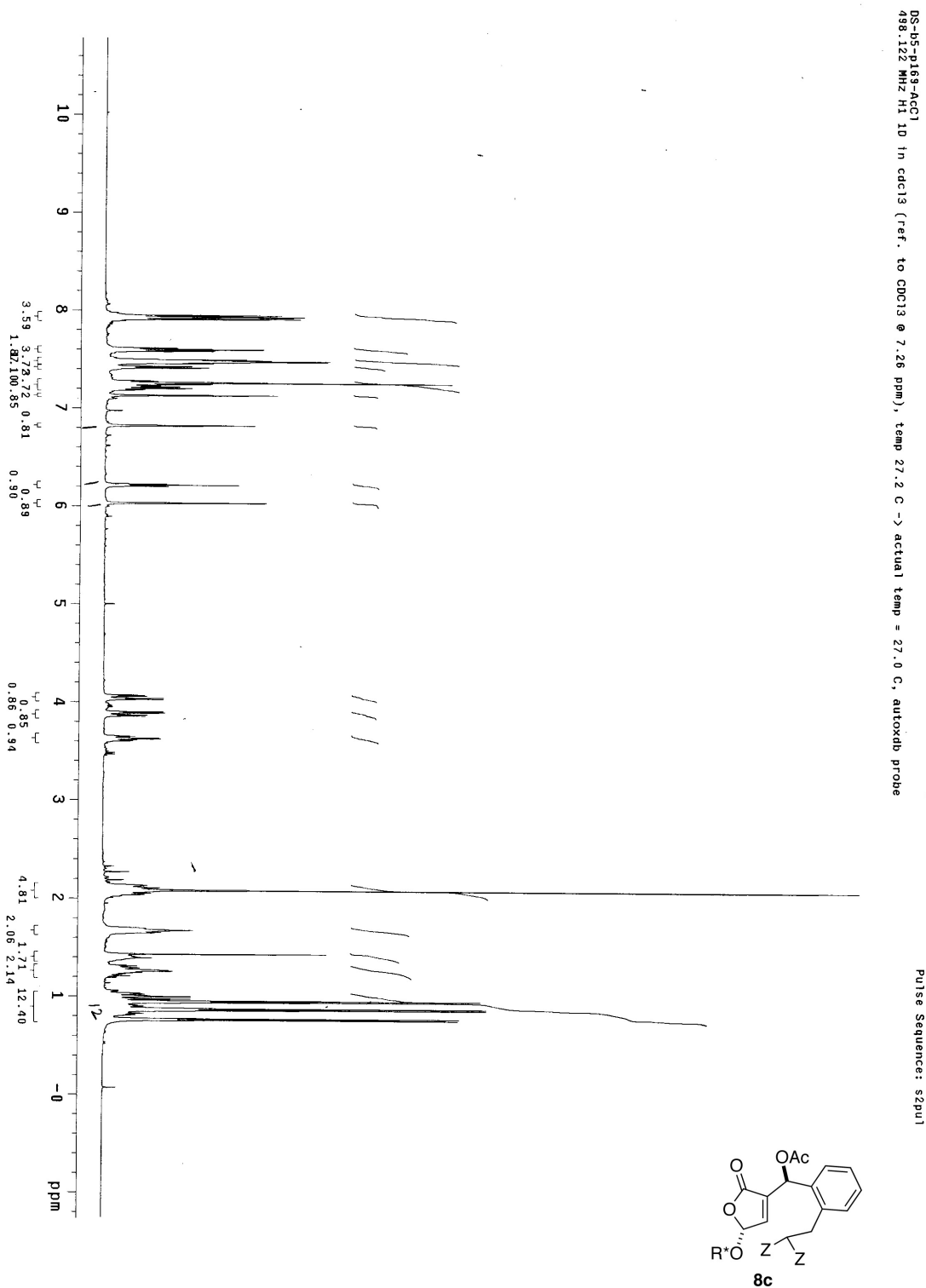
DS-DS-P165  
12: 692 MHz, C13[H41] APT.ad in cdcl3 (ref. to CDCl3 @ 27.06 ppm), temp 27.7 C -> actual temp = 27.0 C, cold dual probe  
ds: 692 MHz, CH3 opposite side of solvent signal  
ds: 692 MHz, CH3 opposite side of solvent signal  
ds: 692 MHz, CH3 opposite side of solvent signal  
ds: 692 MHz, CH3 opposite side of solvent signal  
ds: 692 MHz, CH3 opposite side of solvent signal  
Sample directory: file:exp  
File: APT.ad  
Pulse Sequence: APT.ad  
# scans: 944  
dig.res.: 0.3 Hz/pt  
hz/mm: 140.8  
acq.time: 2.55  
relax.time: 0.1s  
sweep width: 33784Hz  
file:exp

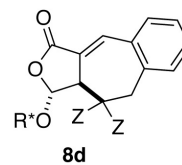
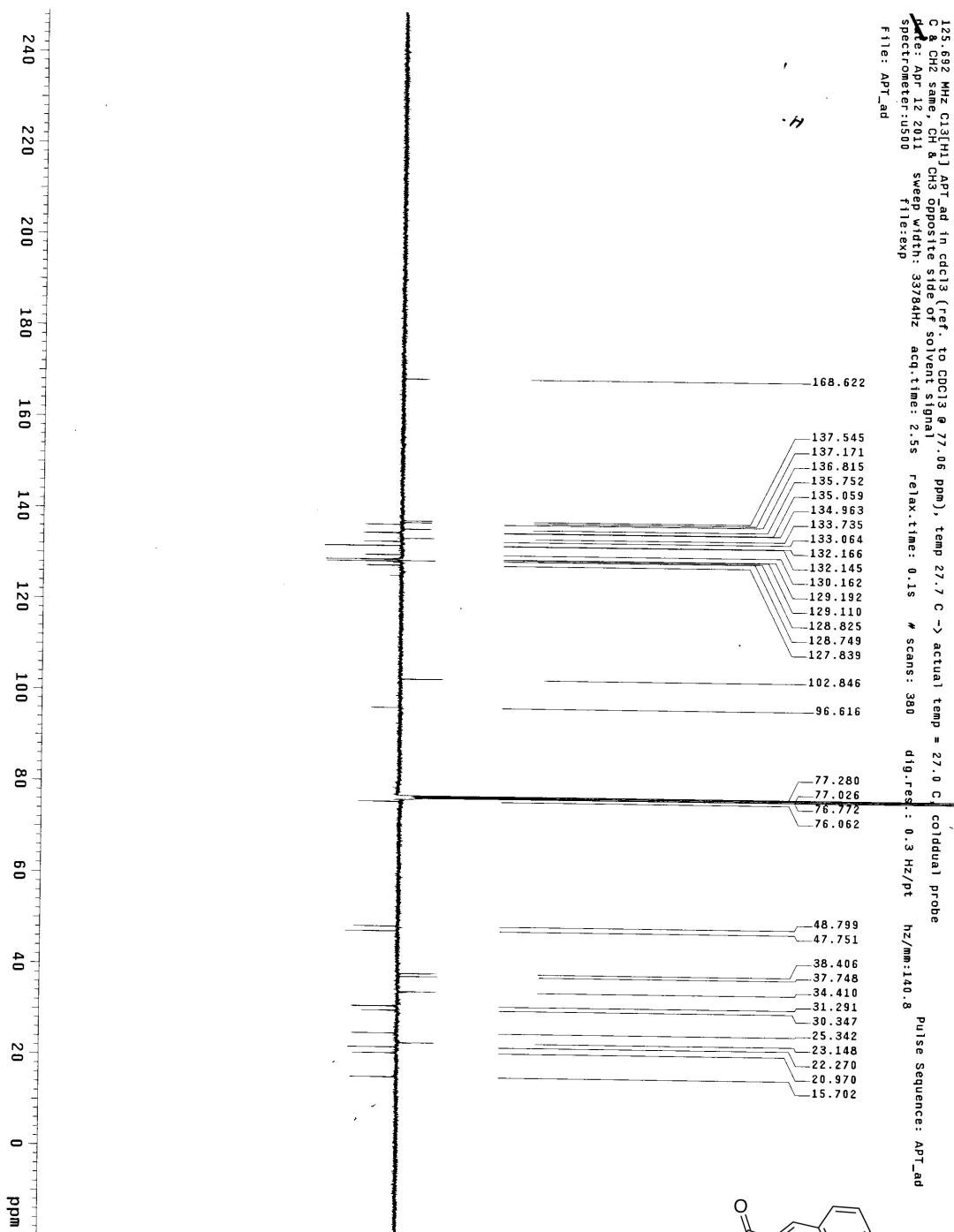
DS-b5-pl65  
498.122 MHz H1 1D in cdc13 (ref. to CDCl3 @ 7.26 ppm), temp 27.2 C -> actual temp = 27.0 C, autoxchd probe

Pulse Sequence: s2pu1



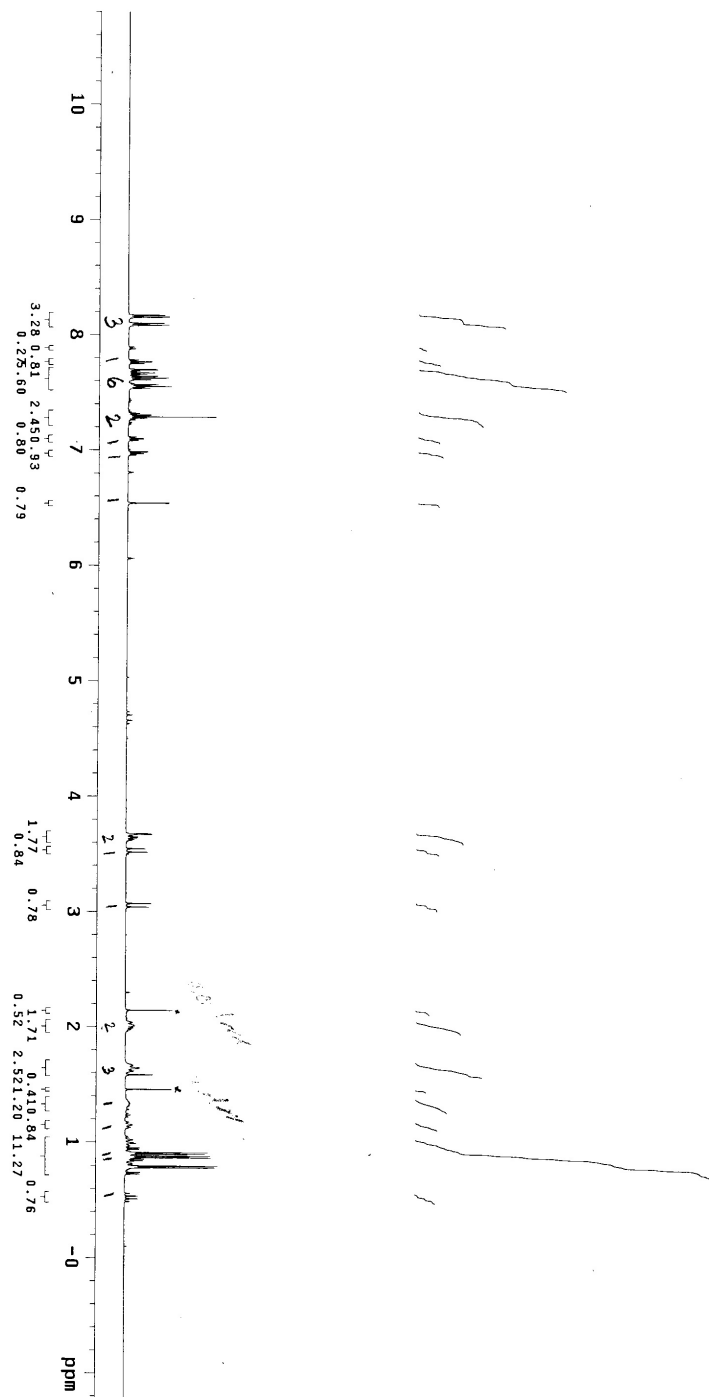
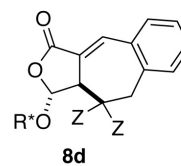




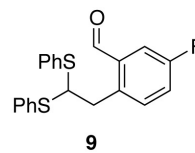
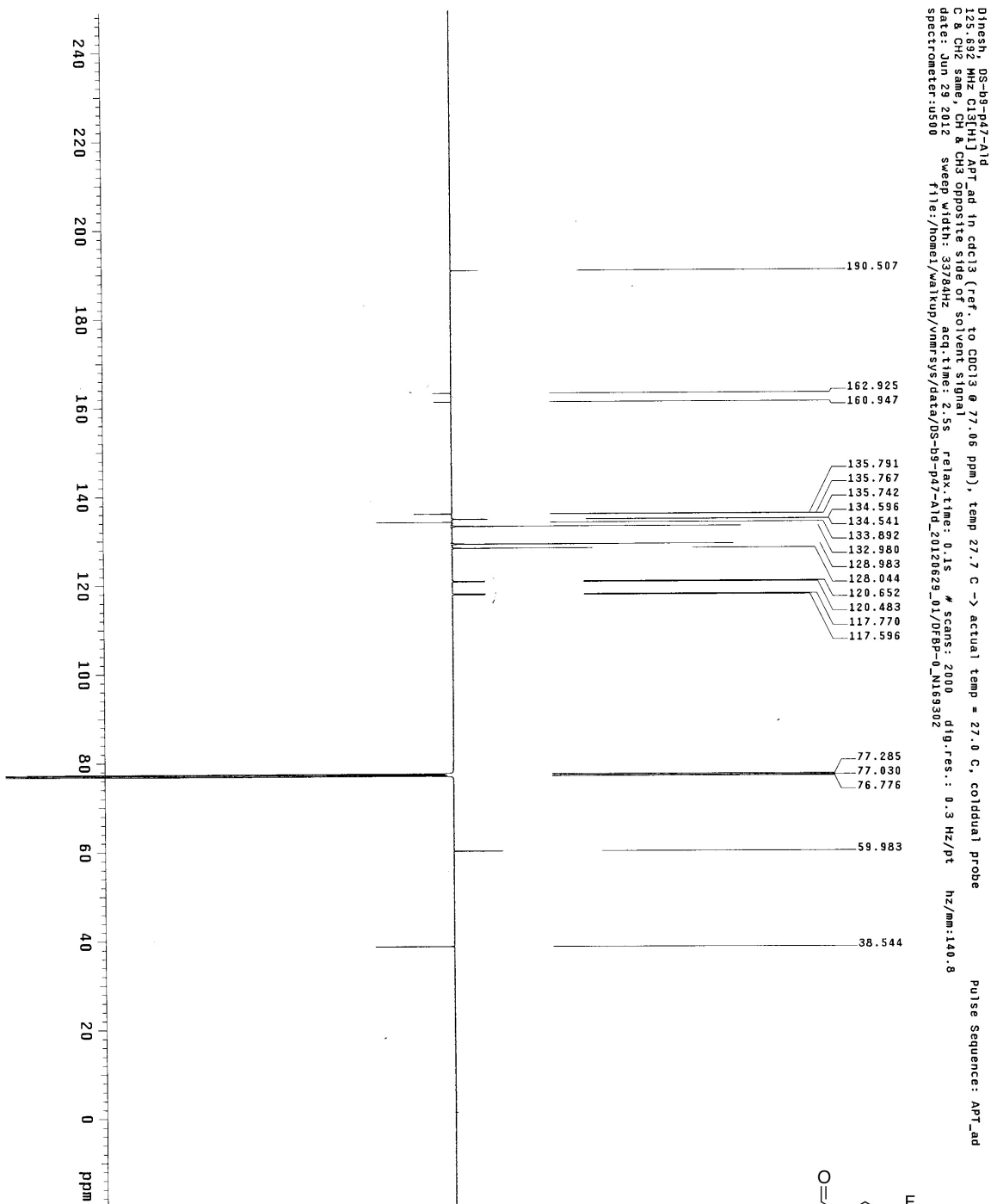


05-B6-PL117  
499.815 MHz H1 10 in cdcl3 (ref. to CDCl3 @ 7.26 ppm), temp 27.7 C -> actual temp = 27.0 C, coldual probe

Pulse Sequence: szpu1

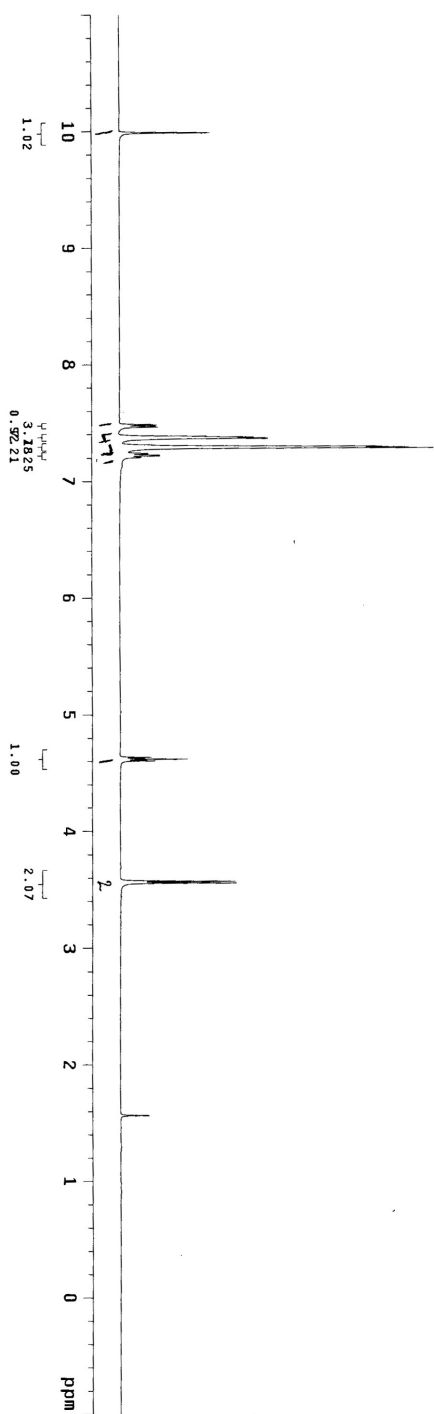
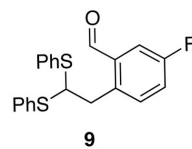


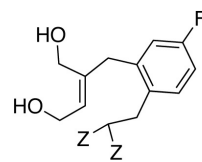
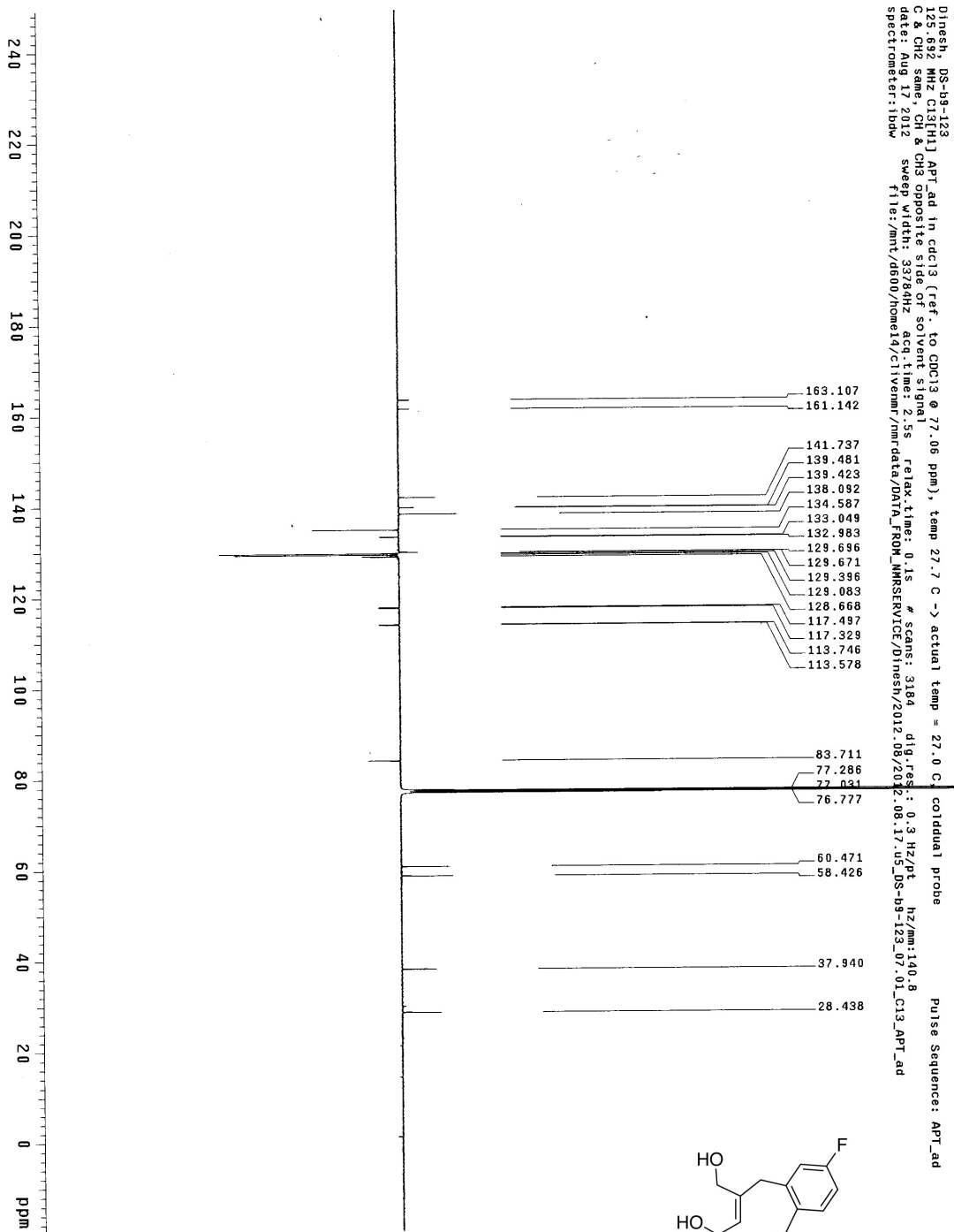




D1hseph\_DS-b9-p47-A1d  
499.815 MHz H1 PRESAT in cdcl3 (ref. to CDCl3 @ 7.26 ppm), temp 27.7 C -> actual temp = 27.0 C, continual probe

Pulse Sequence: PRESAT





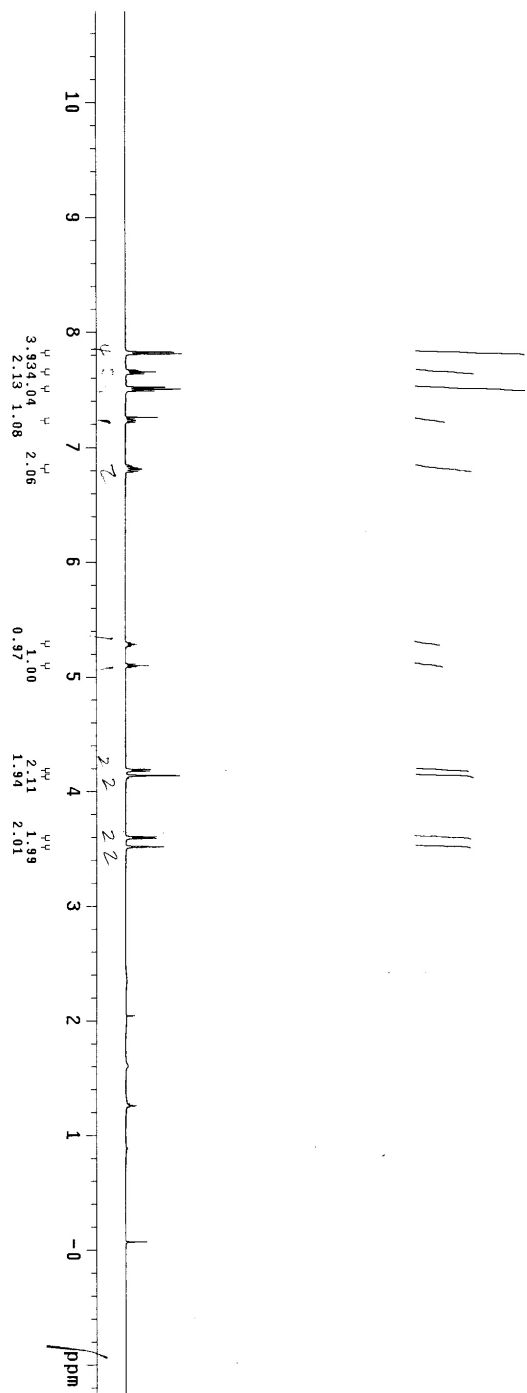
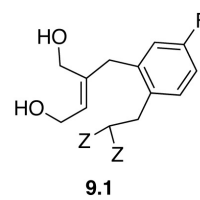
9.1

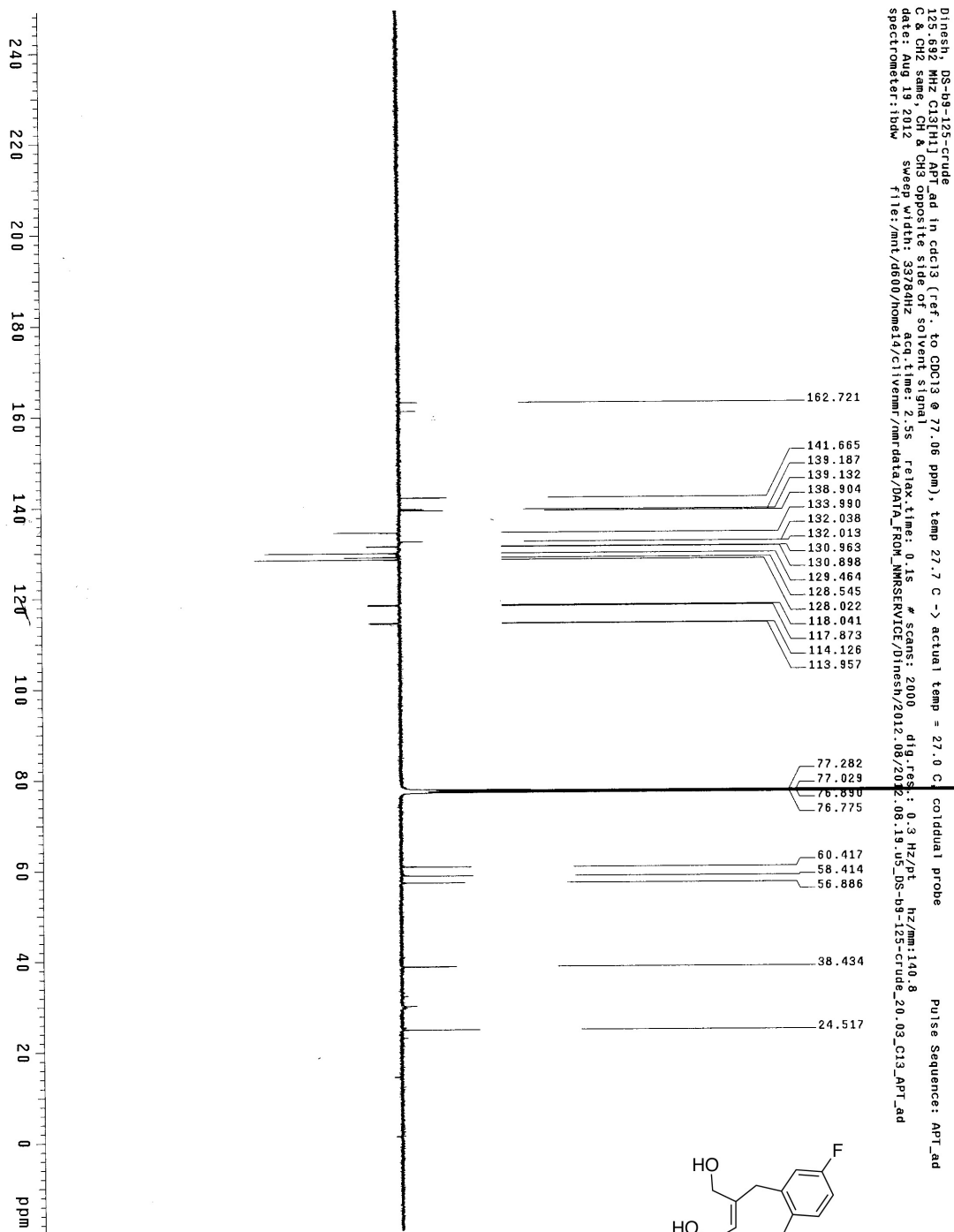
Dinesh, DS-09-123  
123.692, MHz [CDCl<sub>3</sub>] APT\_ad in cdcl3 (ref. to CDCl<sub>3</sub> @ 77.06 ppm), temp 27.7 C -> actual temp = 27.0 C, colddual probe  
C & HZ temp 2012, 8 CHS opposite side of solvent signal, relax time: 0.1s, # scans: 3184, dig.res.: 0.3 Hz/pt, hz/mm: 140.8  
date: aug 2012, sweep width: 33784Hz acq. time: 2.5s, file:/mnt/ds00/home14/ctivemf/nmrdata/DATA\_FROM\_NMRSERVICE/Dinesh/2012\_08/2012\_08\_17\_us\_DS-09-123\_07\_01\_C13\_APT\_ad  
spectrometer: ibpa

Pulse Sequence: APT\_ad

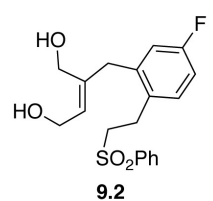
DS-09-123  
490.118 MHz H1 1D in cdcl3 (ref. to CDCl3 @ 7.26 ppm), temp 27.2 C -> actual temp = 27.0 C, autoexdp probe

Pulse Sequence: szpu1



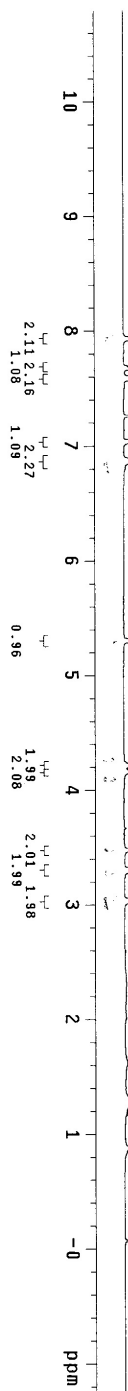
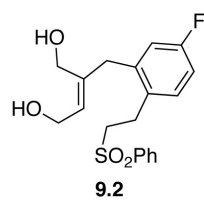


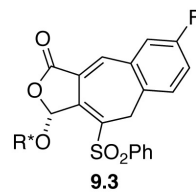
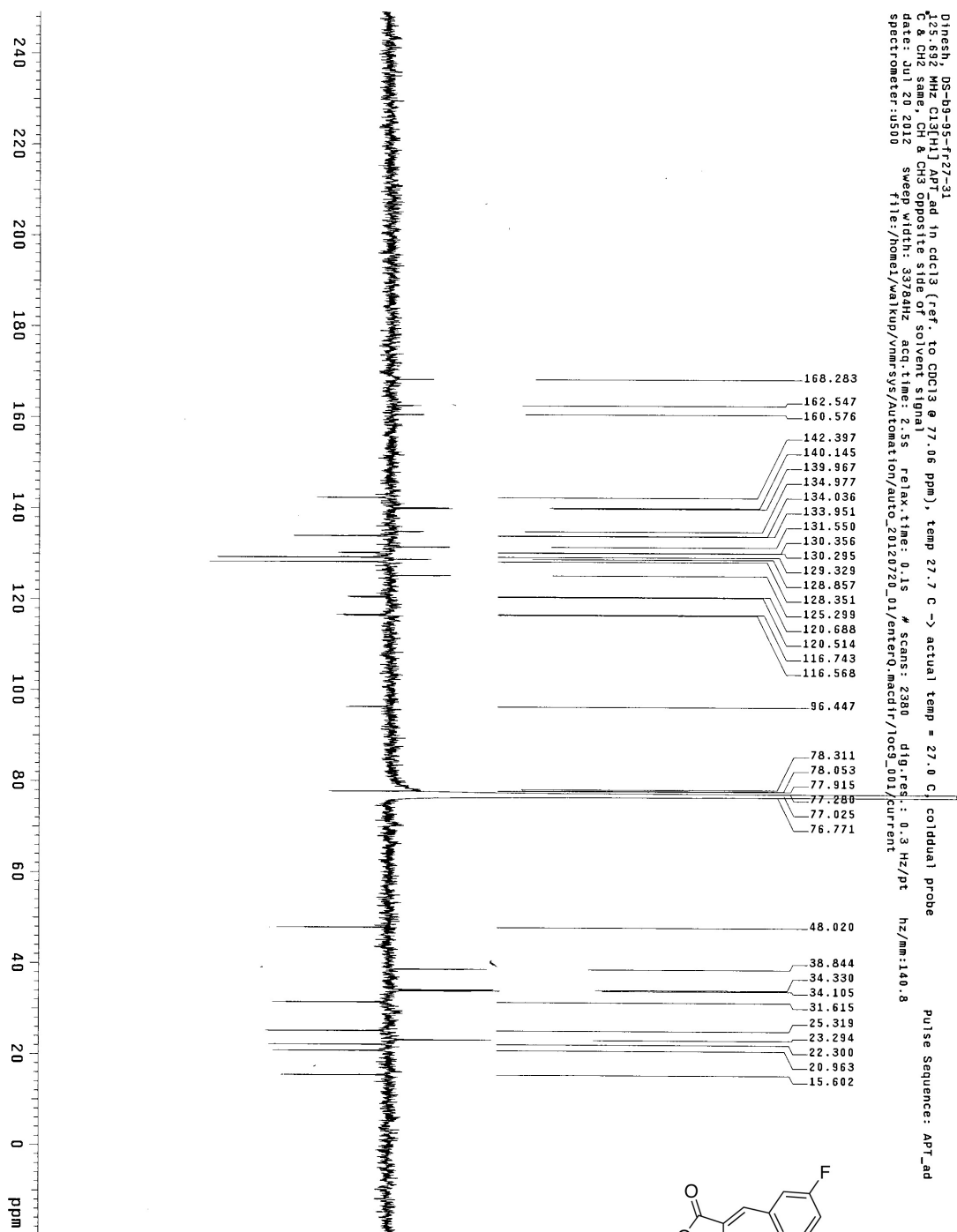
Dinesh\_DS-b9-125-crude  
125.692 MHz C13[1H] APT\_ad in cdcl3 (ref. to CDCl3 @ 77.06 ppm), temp 27.7 C -> actual temp = 27.0 C, coil dual probe  
C & CH2 same, CH & CH3 opposite side of solvent signal relax time: 0.1s # scans: 2000 dia.res: 0.3 Hz/pt hz/mm:140.8  
date: Aug 19 2012 sweep width: 33764Hz acq.time: 2.5s file:/mnt/d500/home14/ctiverni/mntdata/DNA\_FRON\_LMHSRVICE/Dinesh/2012\_08/20/2012\_08\_19\_08\_DS-b9-125-crude\_20.03\_C13\_APT\_ad  
spectrometer:ibdw  
Pulse Sequence: APT\_ad



DS-B9-125-CRUDE  
498.118 MHz H1 1D in cdcl3 (ref. to CDCl3 @ 7.26 ppm), temp 27.2 C -> actual temp = 27.0 C, autokxdx probe

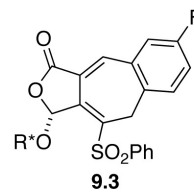
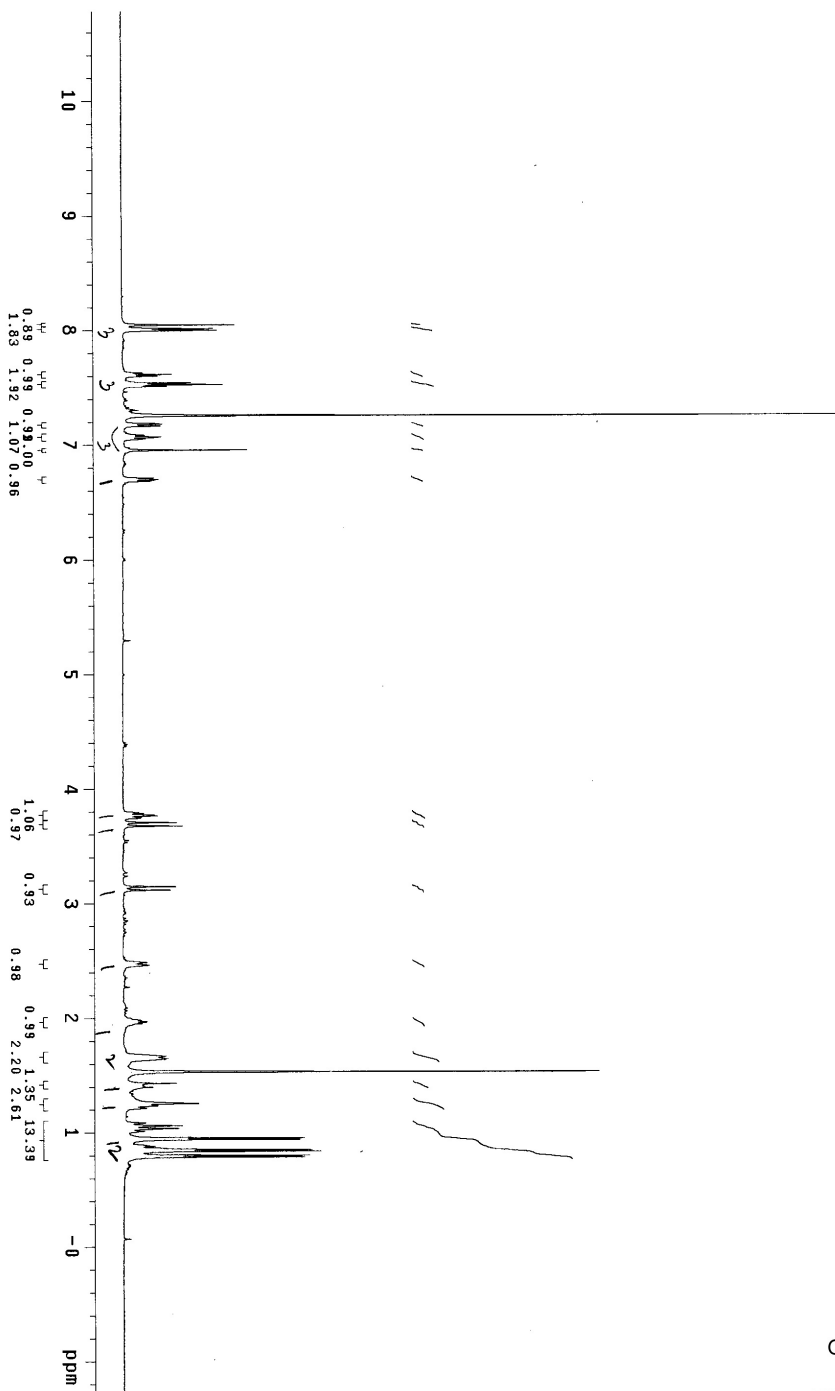
Pulse Sequence: szpu1



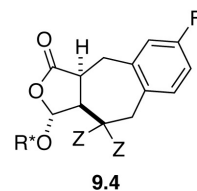
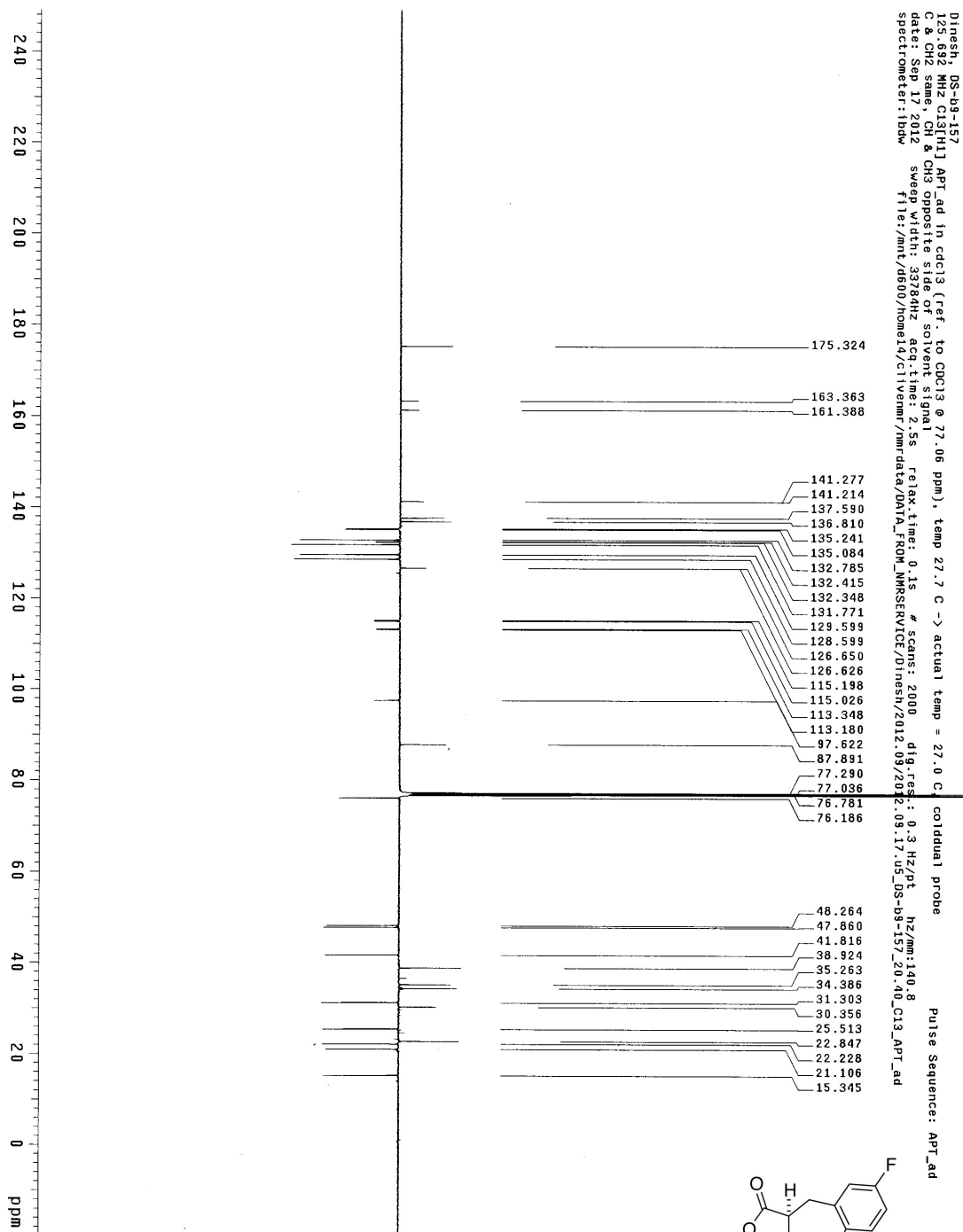


DS-b9-p985-f127-51 in cdcl3 (ref. to CDCl3 @ 7.26 ppm), temp 27.2 C -> actual temp = 27.0 C, autoxdp probe  
430.122 MHz N1 10

Pulse Sequence: szpu1

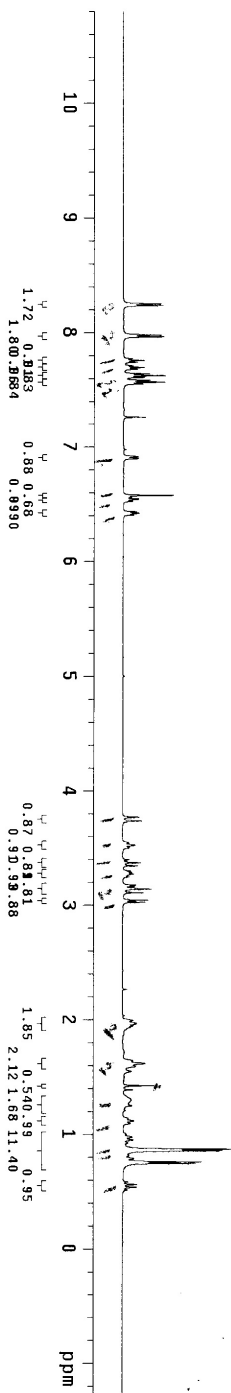
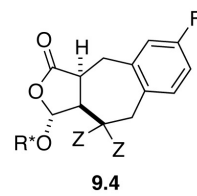


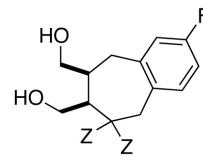
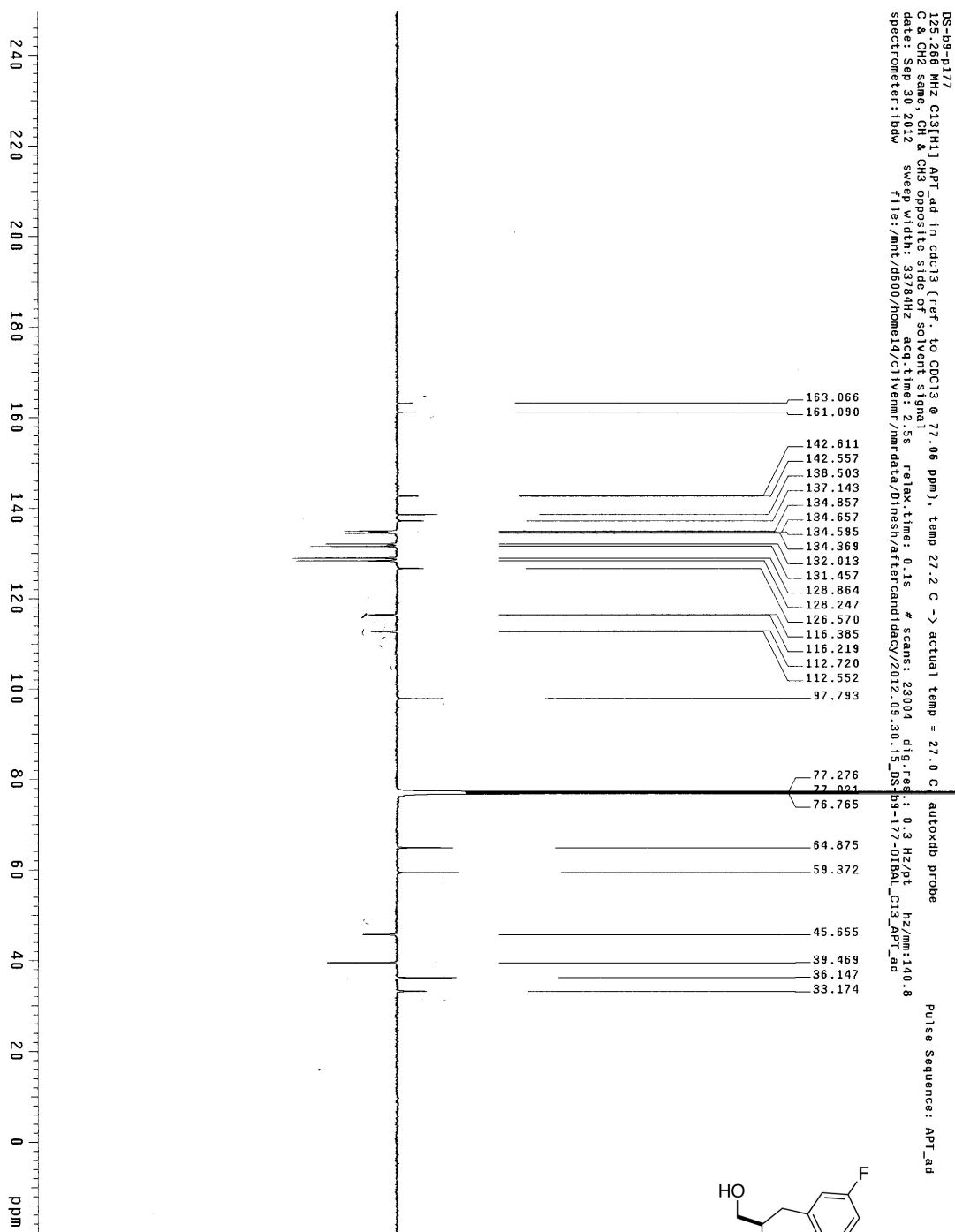




DS-89-157  
498.118 MHz H1 1D 1h cdc13 (ref. to CDCl3 @ 7.26 ppm), temp 27.2 C -> actual temp = 27.0 C, autoxhb probe  
File: PROTON

Pulse Sequence: szpu1



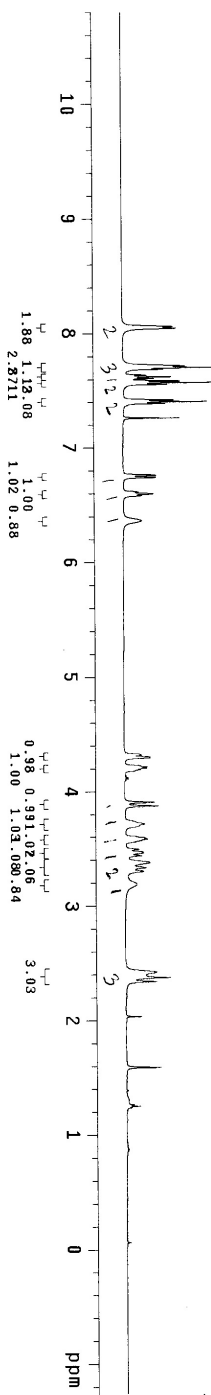
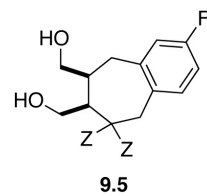


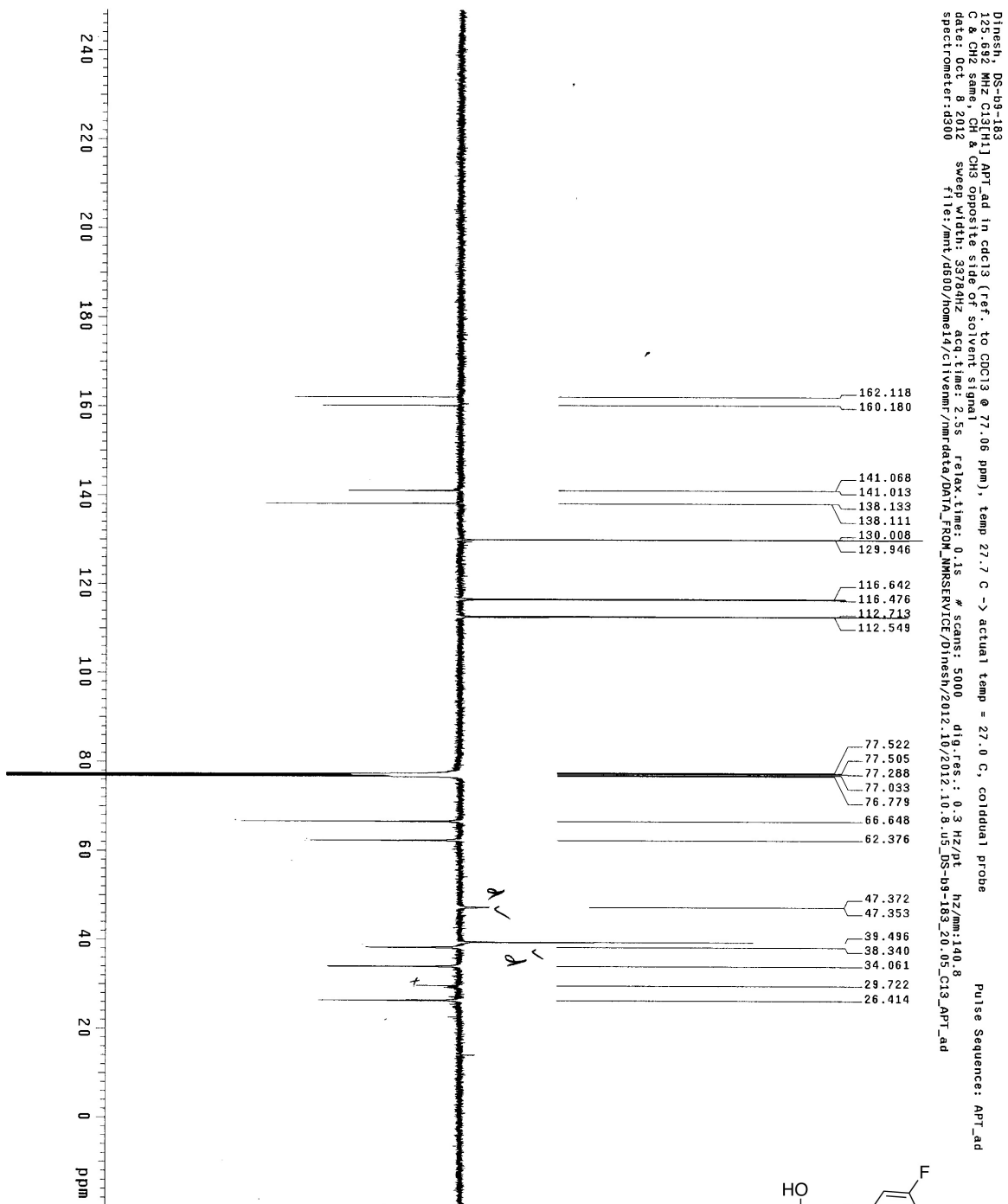
9.5

05-B9-177  
498.118 MHz H1 J0 In cdCl3 (ref. to CDCl3 @ 7.26 ppm), temp 27.2 C -> actual temp = 27.0 C, autograd probe

Pulse Sequence: szpu1

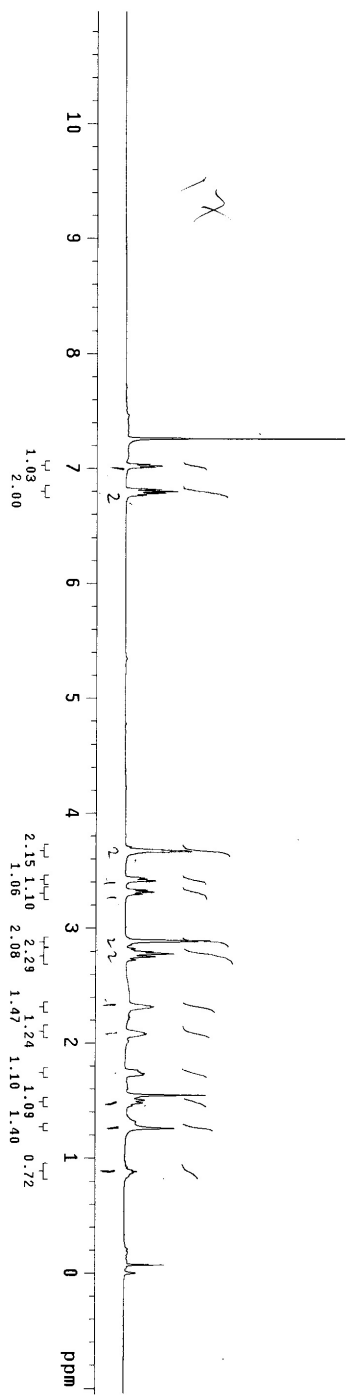
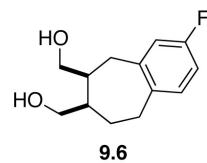
File: PROTON

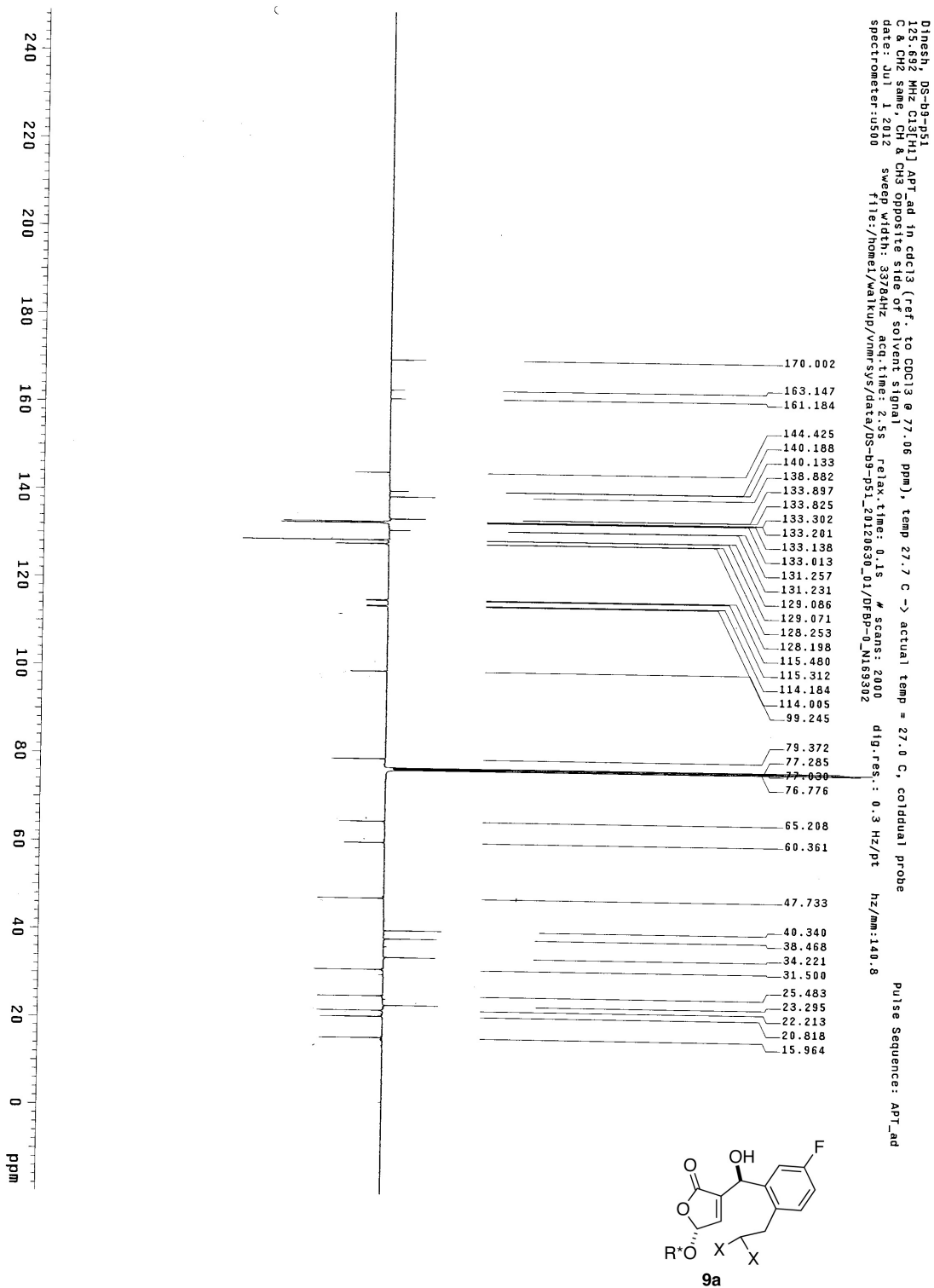




D1nesth\_08-09-181  
493.813 MHz H1 PRESAT in cdcl3 (ref. to CDCl3 @ 7.26 ppm), temp 27.7 C -> actual temp = 27.0 C, coldual probe

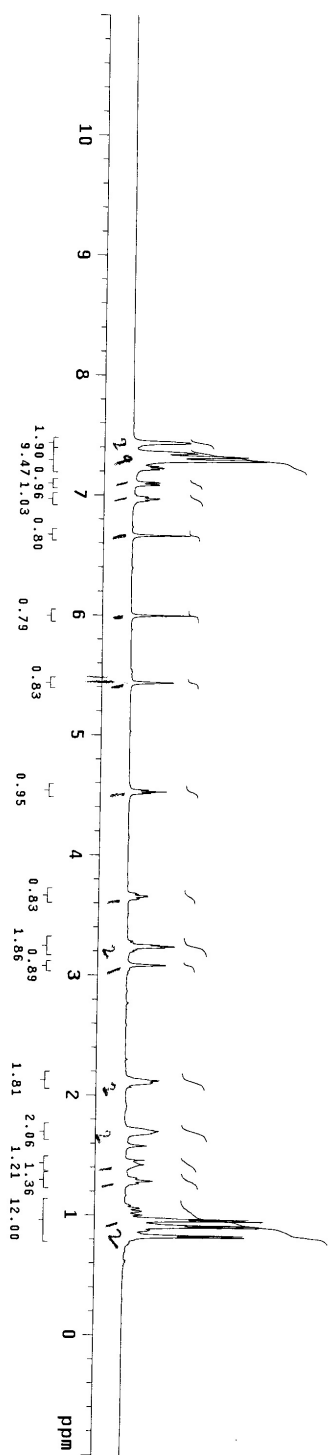
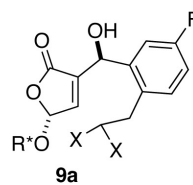
Pulse Sequence: PRESAT



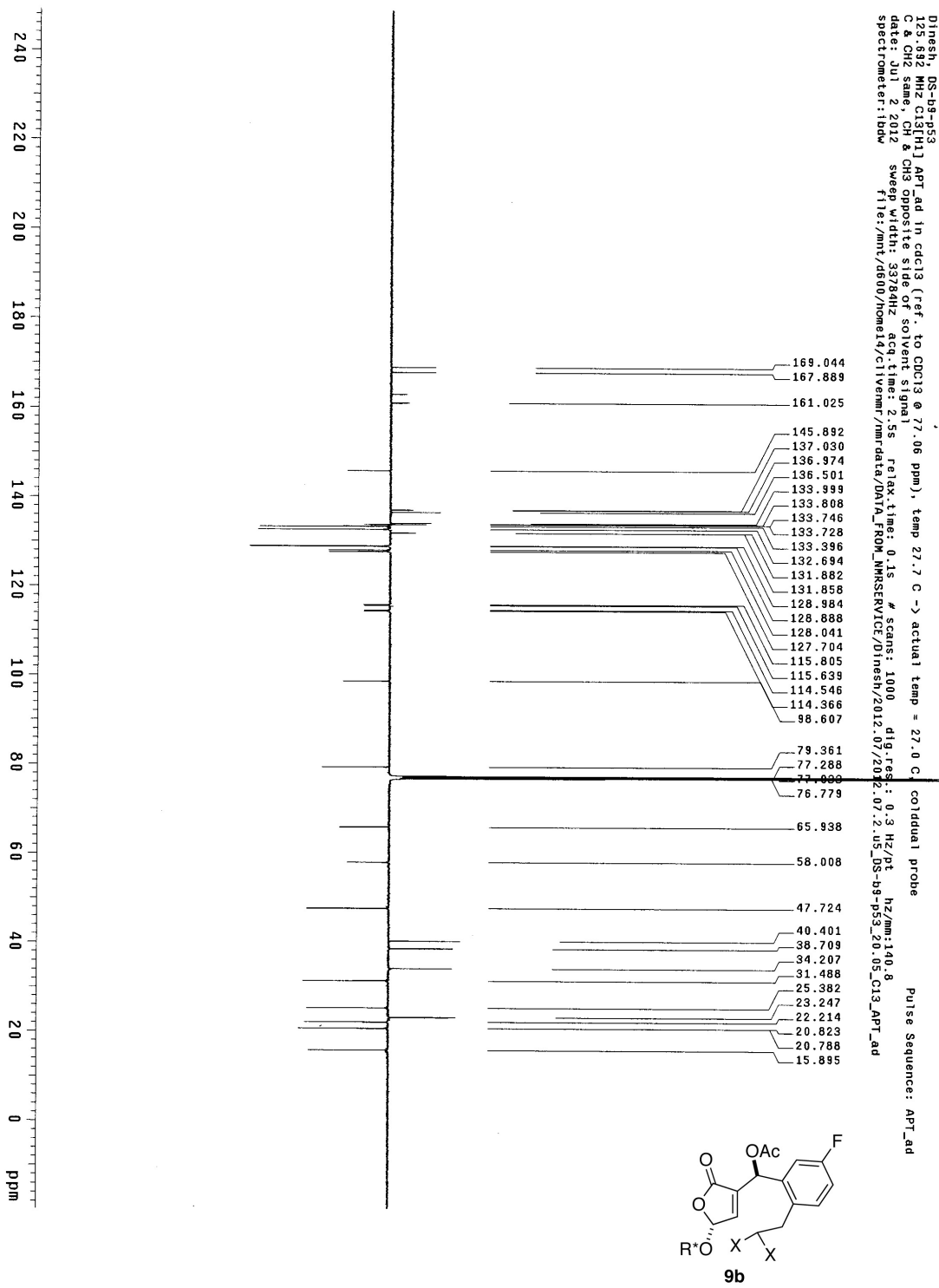


D1resh1 DS-b9-p51  
499.815 MHz H1 PRESAT in cdcl3 (ref. to CDCl3 @ 7.26 ppm), temp 27.7 C -> actual temp = 27.0 C, cold dual probe

Pulse Sequence: PRESAT

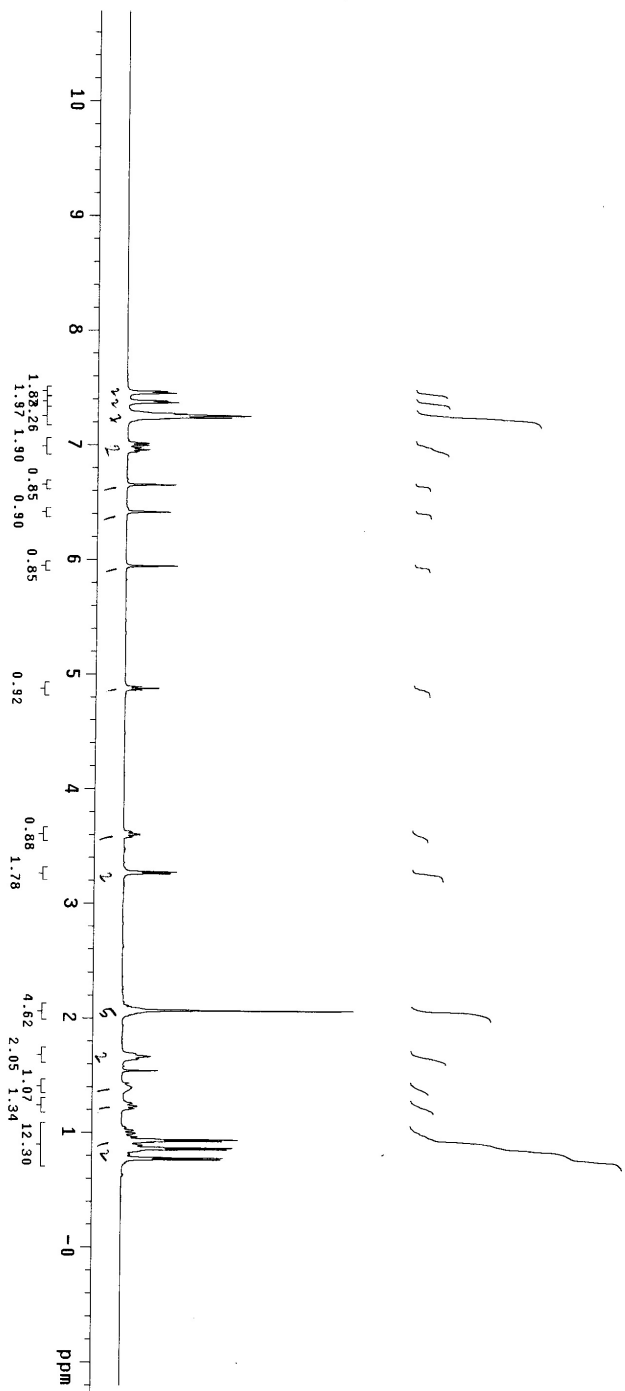
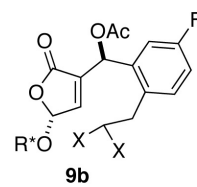


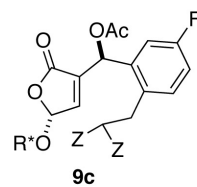
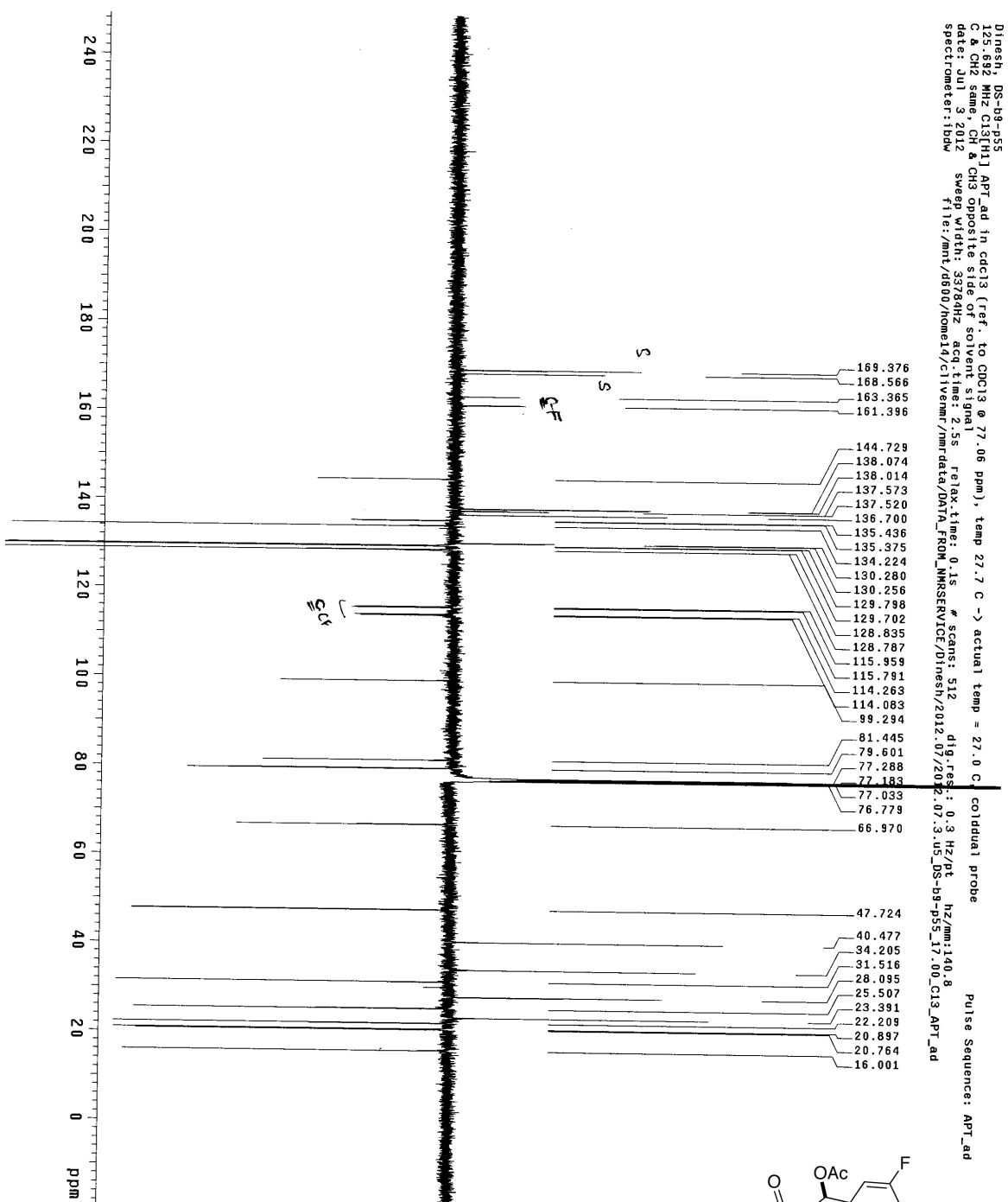




08-09-P53  
498.122 MHz H1 1D in cdcl3 (ref. to CDCl3 @ 7.26 ppm), temp 27.2 C -> actual temp = 27.0 C, autoxarb probe

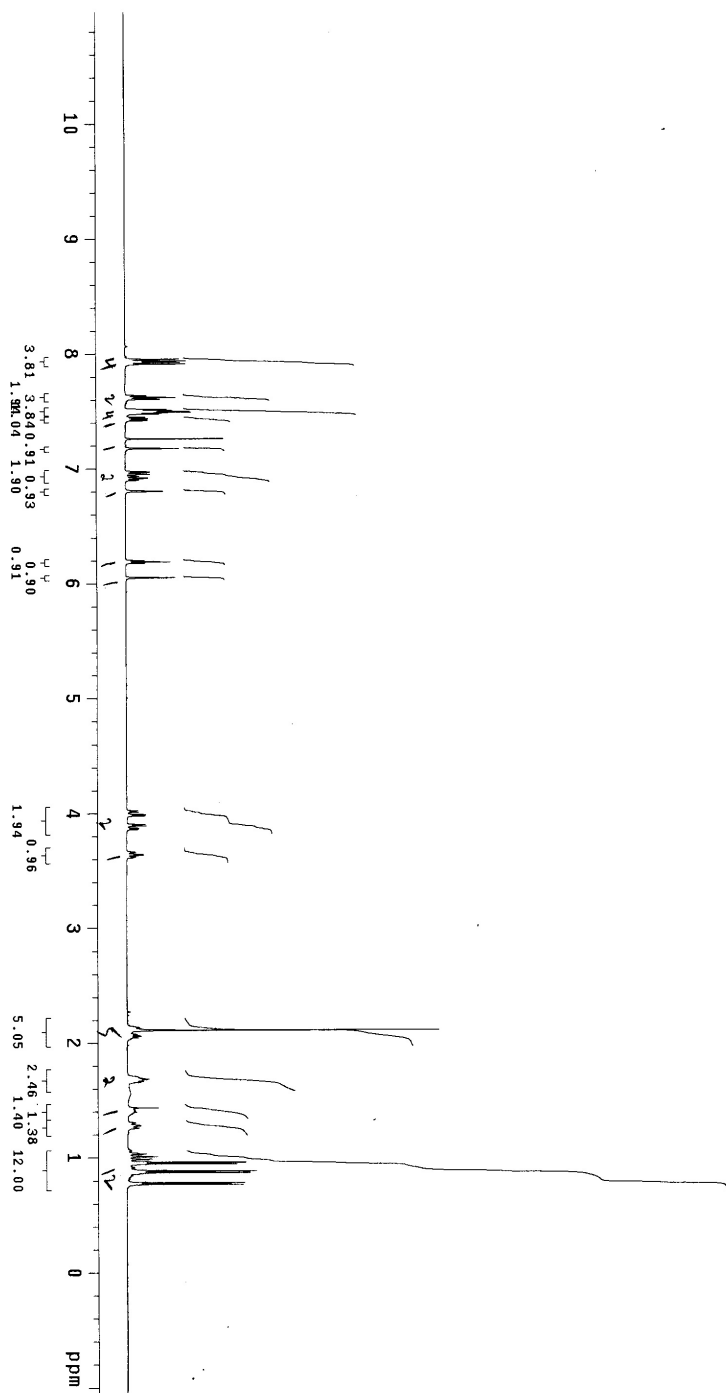
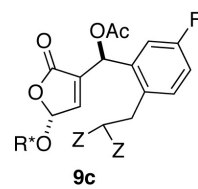
Pulse Sequence: szpu1





Dinesh, DS-h9-p55  
499.815 MHz H1 PRESAT in cdcl3 (ref. to CDCl3 @ 7.26 ppm), temp 27.7 C -> actual temp = 27.0 C, coldstart probe

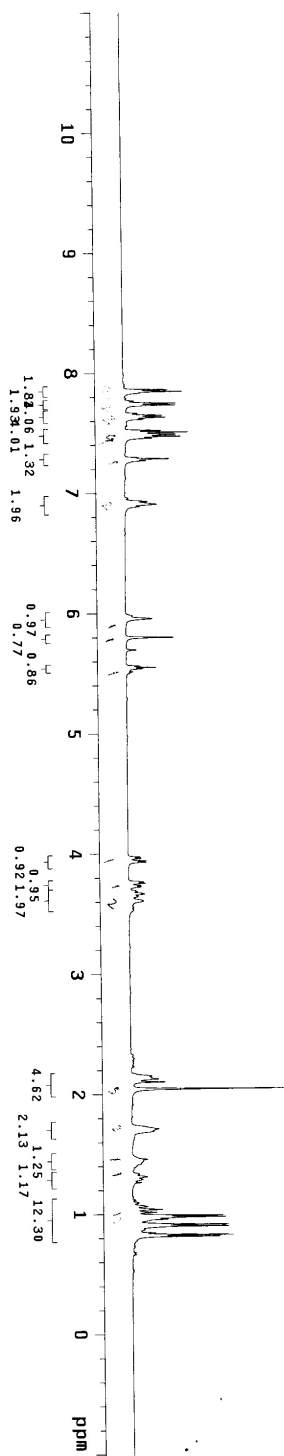
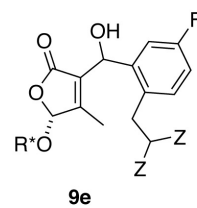
Pulse Sequence: PRESAT

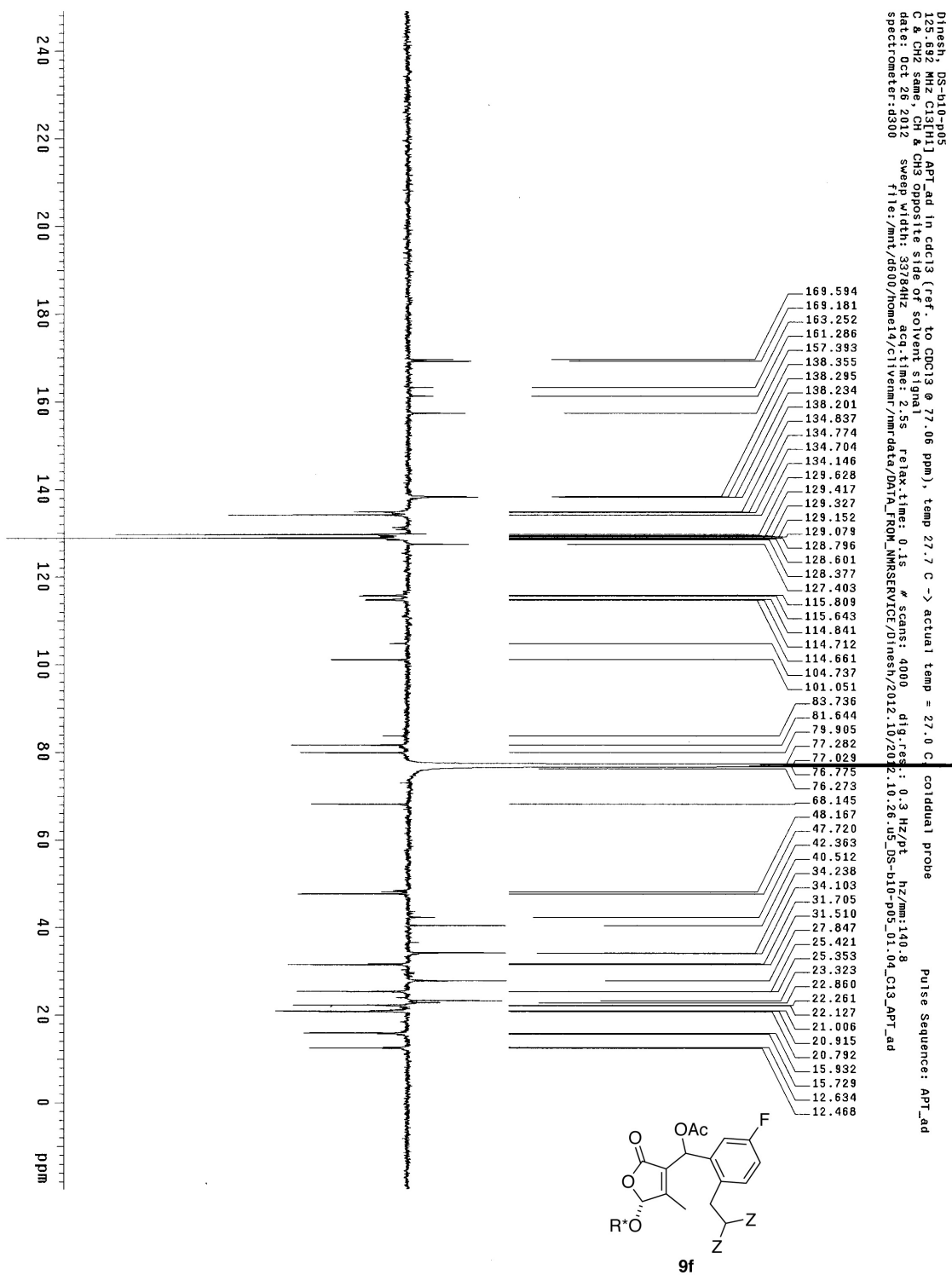




Dinesh, DS-b10-p03  
499.815 MHz H1 PRESAT in cdcl3 (ref. to CDCl3 @ 7.26 ppm), temp 27.7 C -> actual temp = 27.0 C, coldstart probe

Pulse Sequence: PRESAT





DS-D10-05  
498.118 MHz H1 1D in cdc13 (ref. to CDC13 @ 7.26 ppm), temp 27.2 C -> actual temp = 27.0 C, autokxd probe  
File: PROTON

Pulse Sequence: szpu1

