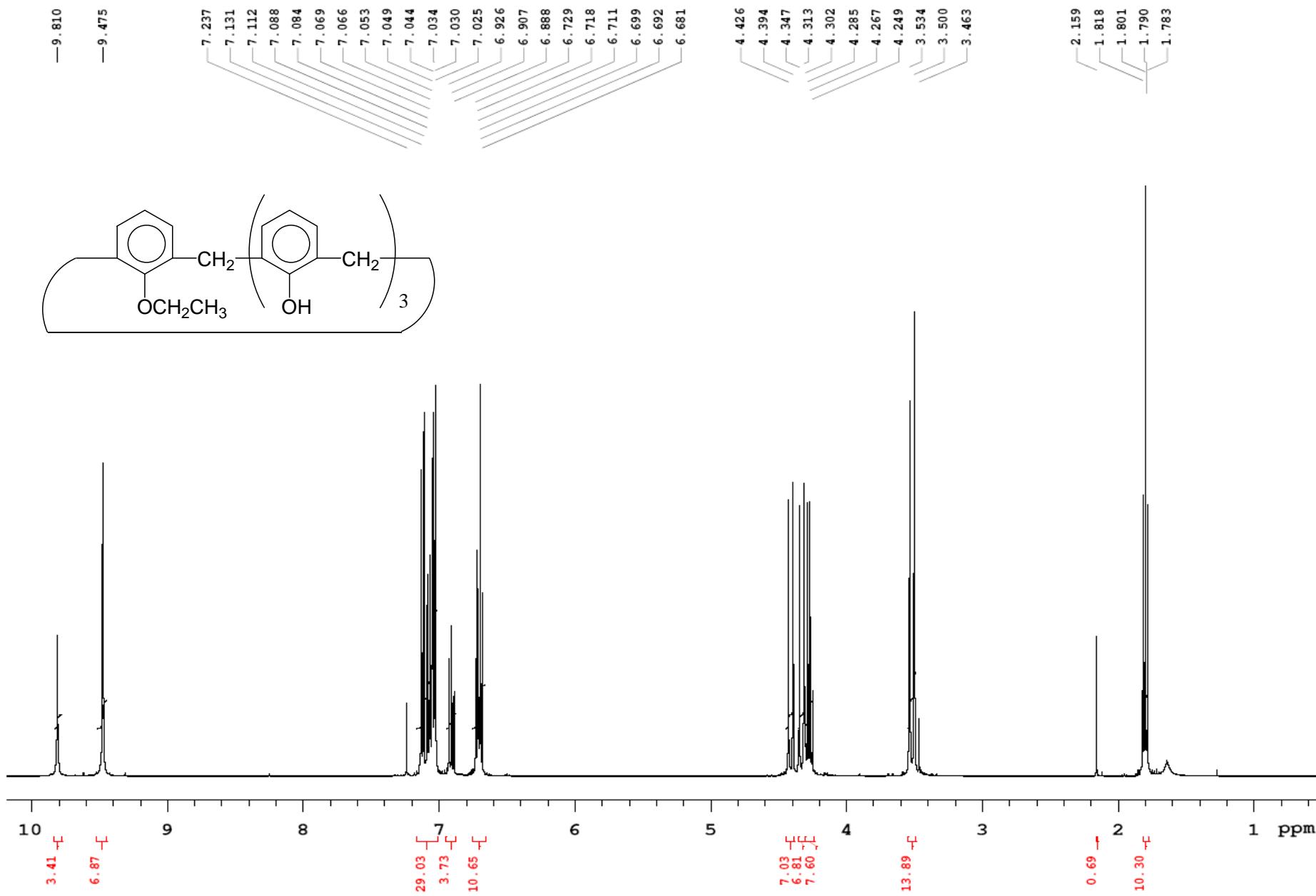
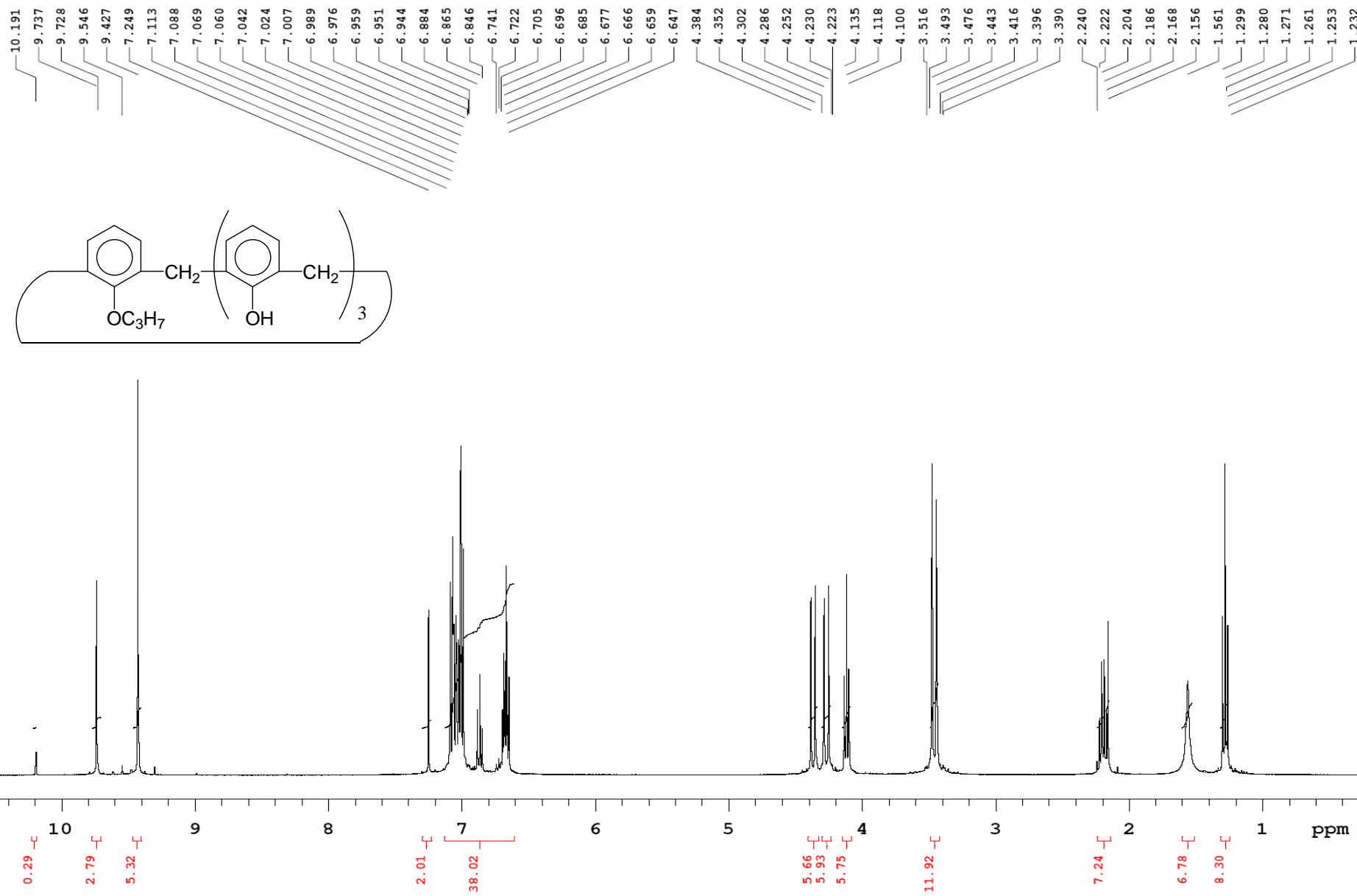


¹H-NMR (CDCl_3) spectrum of 25,26,27,28-Terahydroxycalix[4]arene (**6**)

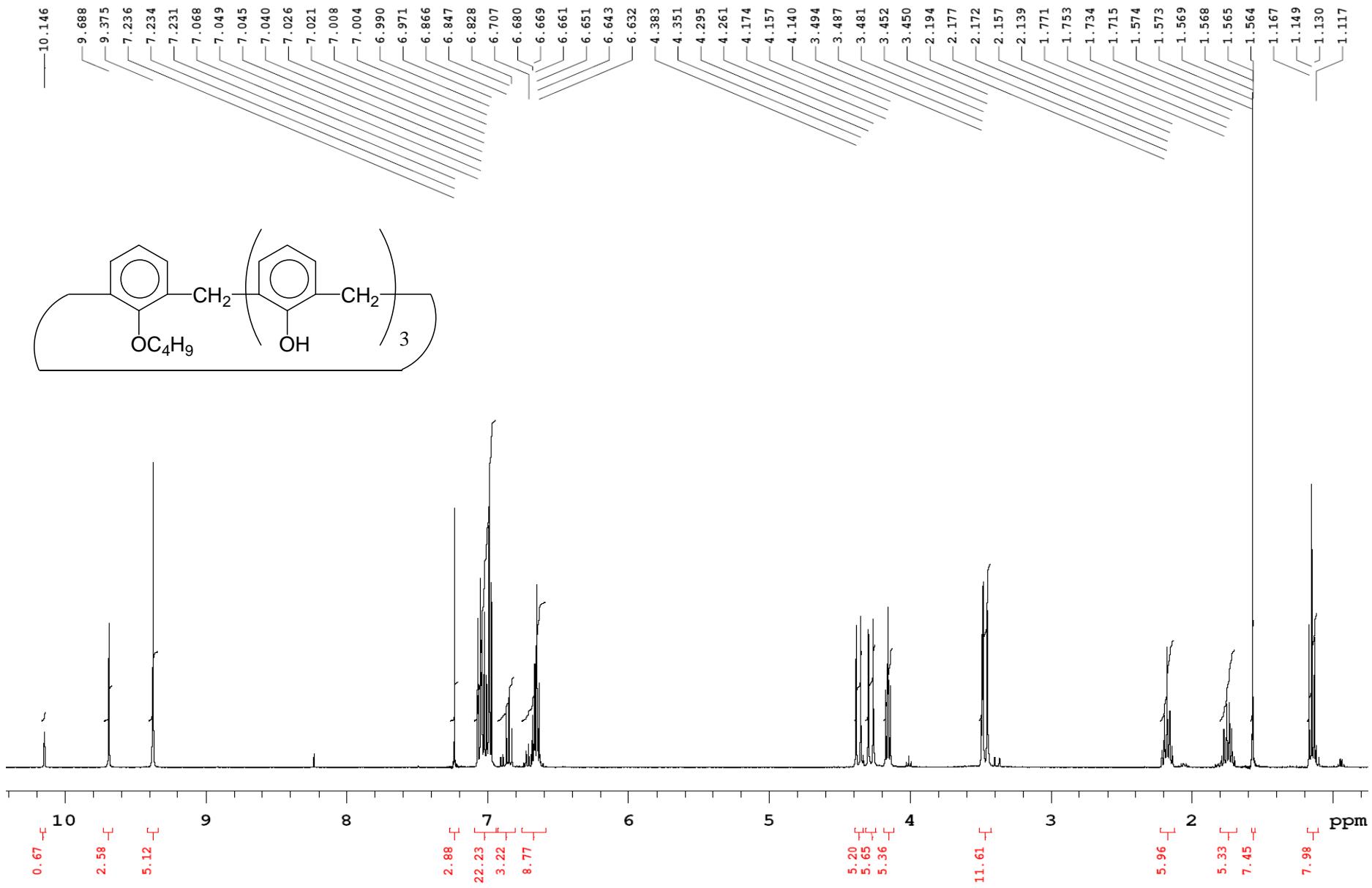
ϵ_6

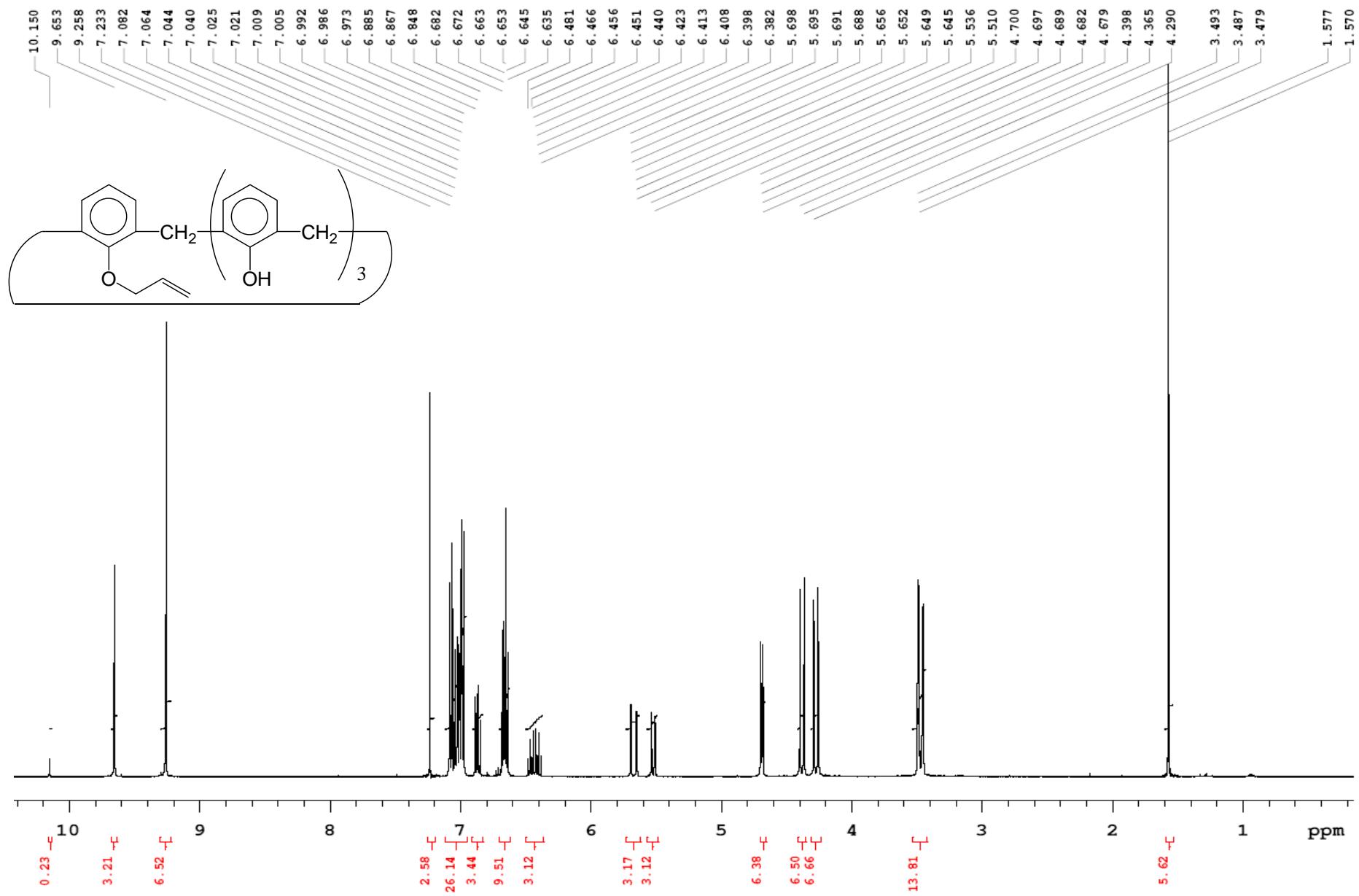


^1H -NMR (CDCl_3) spectrum of 25-Ethoxy-26,27,28-trihydroxycalix[4]arene (29)



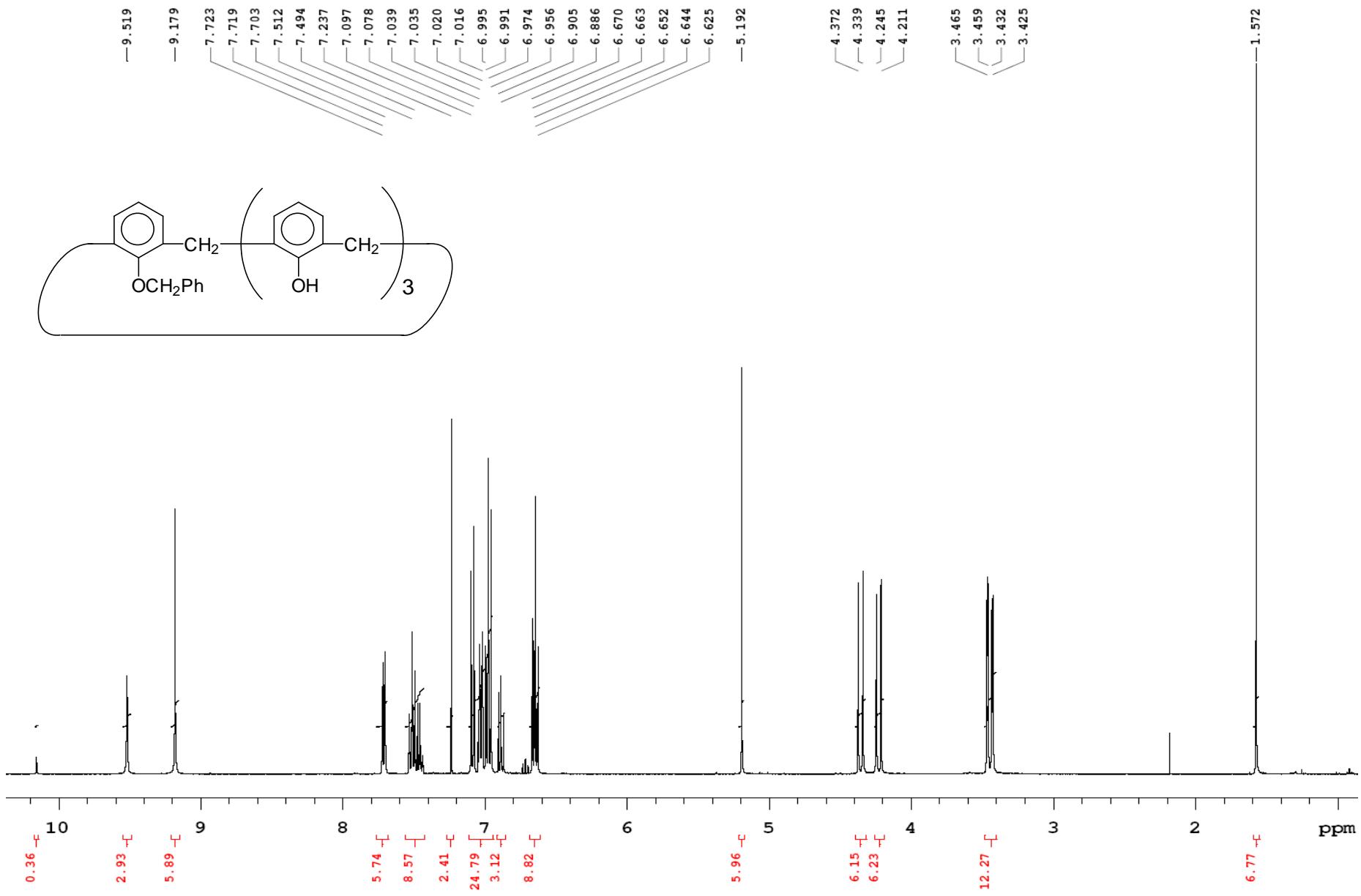
¹H-NMR (CDCl₃) spectrum of 25-Propoxy-26,27,28-trihydroxycalix[4]arene (**30**)



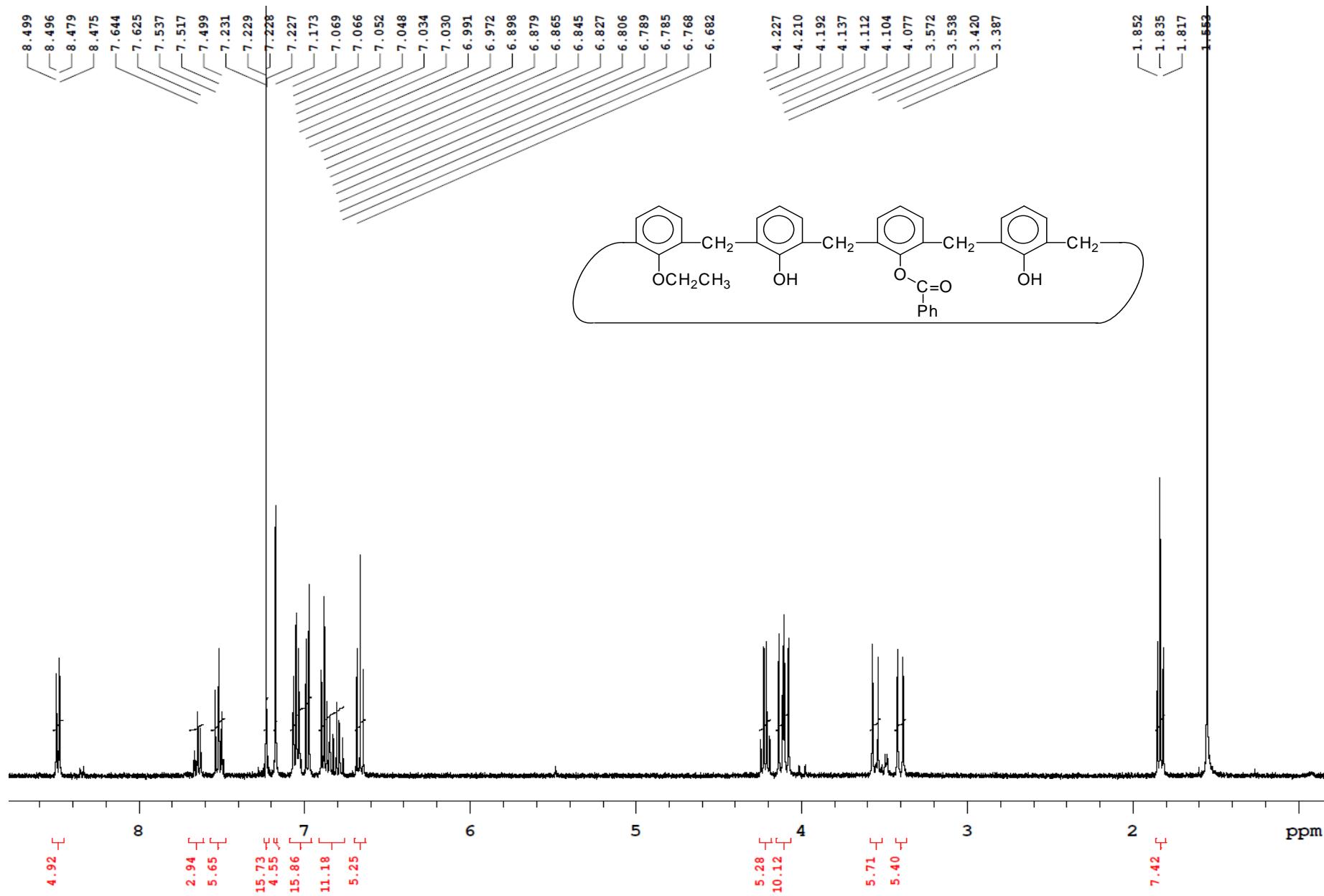


¹H-NMR (CDCl₃) spectrum of 25-Allyloxy-26,27,28-trihydroxycalix[4]arene (**32**)

L6



¹H-NMR (CDCl_3) spectrum of 25-Benzyl-26,27,28-trihydroxycalix[4]arene (33)



^1H -NMR (CDCl_3) spectrum of 25-Ethoxy-27-benzoyloxy-26,28-dihydroxycalix[4]arene (**34**)

Sample: kevin_0312_ethyl_bn
Sample ID: s_kevin_0312_ethyl_bn_02
File: /home/vnmr2/vnmrsys/data/kevin_0312_ethyl_bn_03.fid

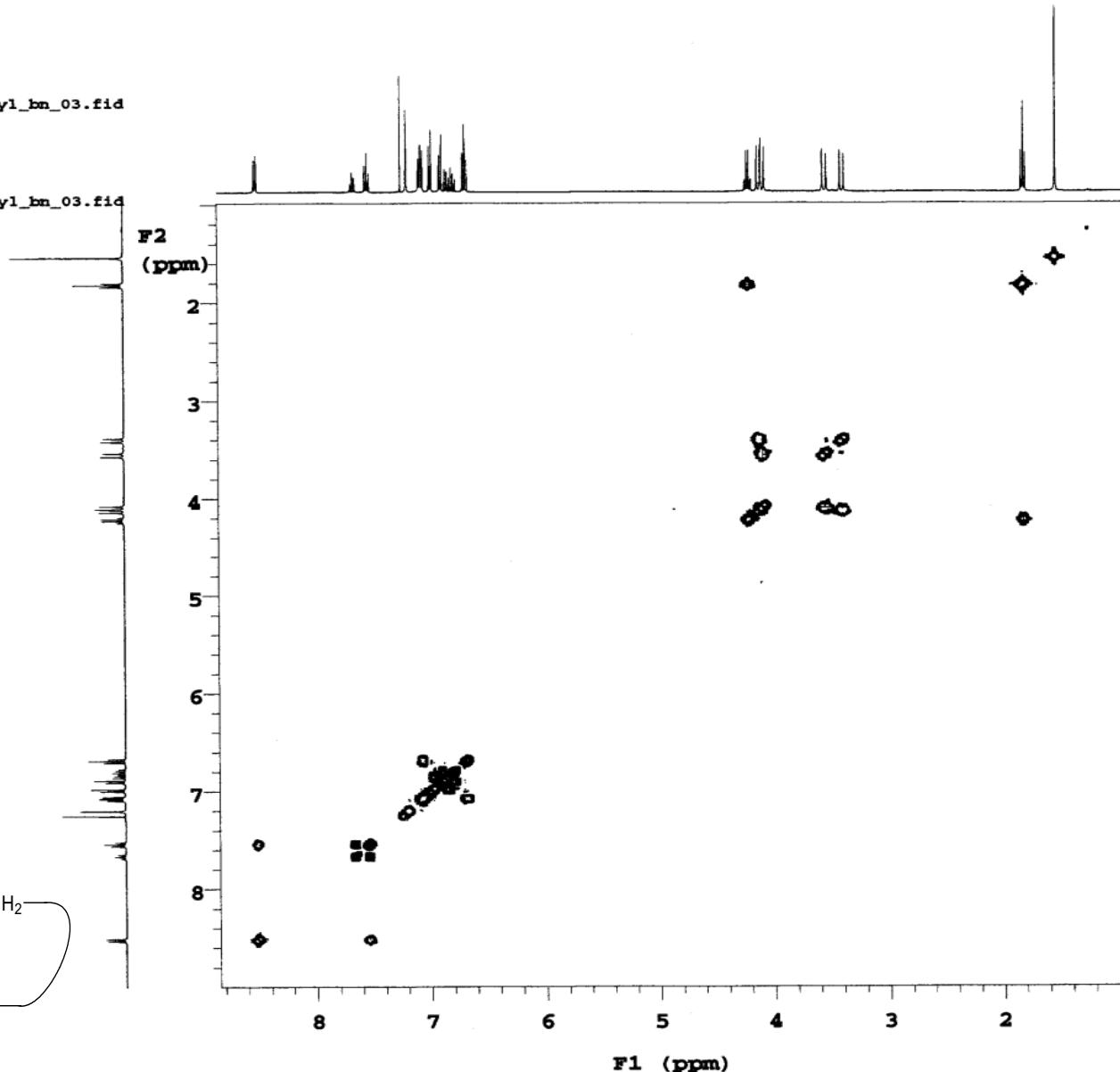
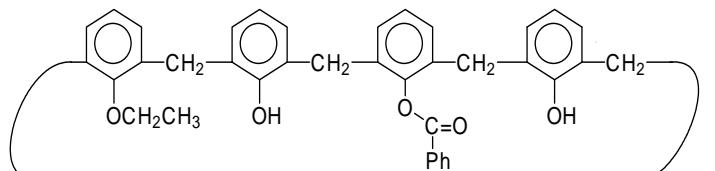
Pulse Sequence: gCOSY

SAMPLE: kevin_0312_ethyl_bn
File: /home/vnmr2/vnmrsys/data/kevin_0312_ethyl_bn_03.fid
Date: Mar 18 2009
Solvent: cdc13
Temp. 25.0 C / 298.1 K
Operator: vnmr2
File: kevin_0312_ethyl_bn_03
VNMRS-400 "400MR"

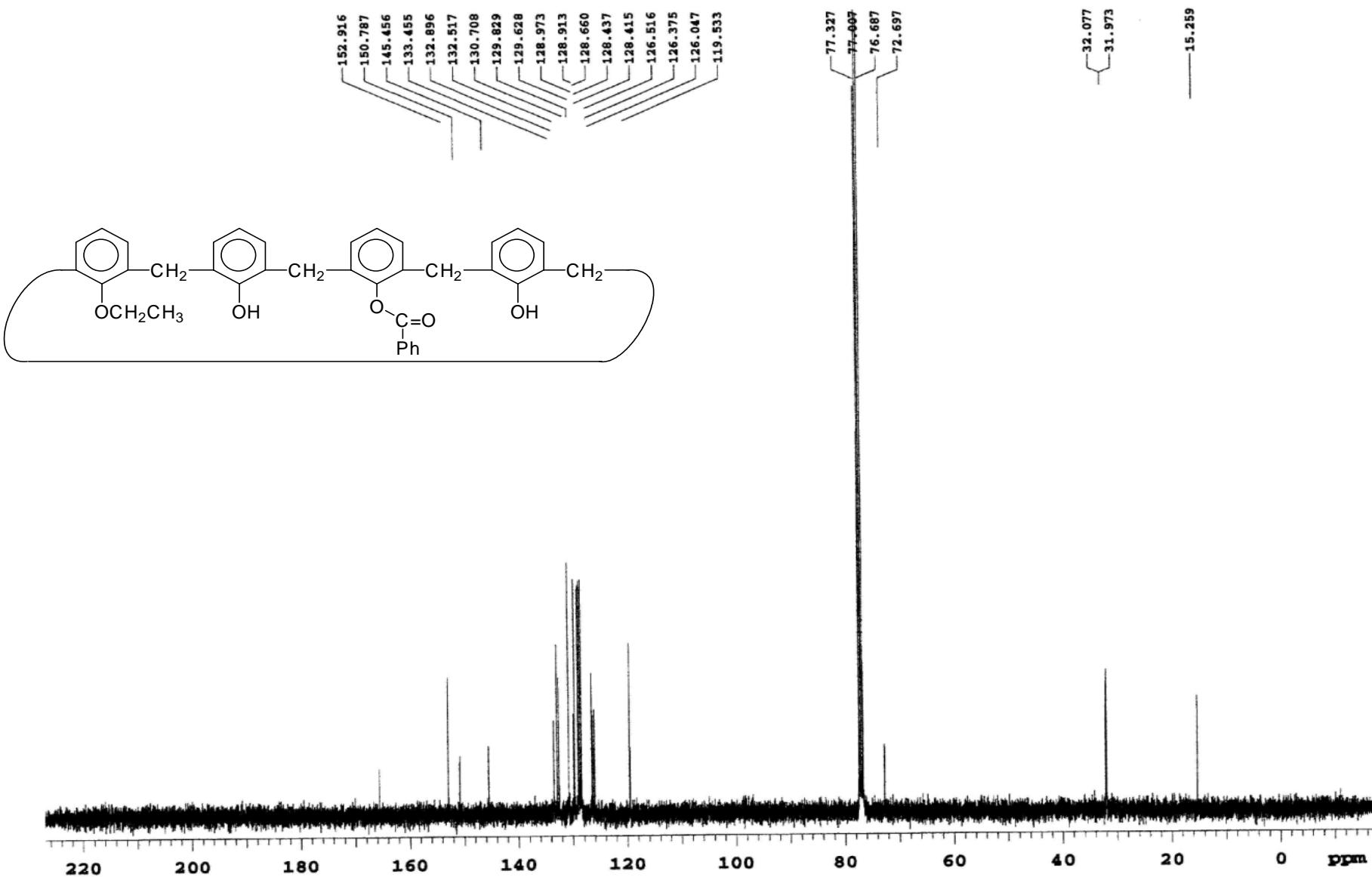
PULSE SEQUENCE: Gcosy
Relax. delay 1.000 sec
Acq. time 0.139 sec
Width 3676.5 Hz
2D Width 3676.5 Hz
Single scan
128 increments
Total time 2 min, 49 s
OBSERVE H1, 399.5553486 MHz

DATA PROCESSING
Sine bell 0.070 sec
F1 DATA PROCESSING
Sine bell 0.070 sec
FT size 2048 x 2048

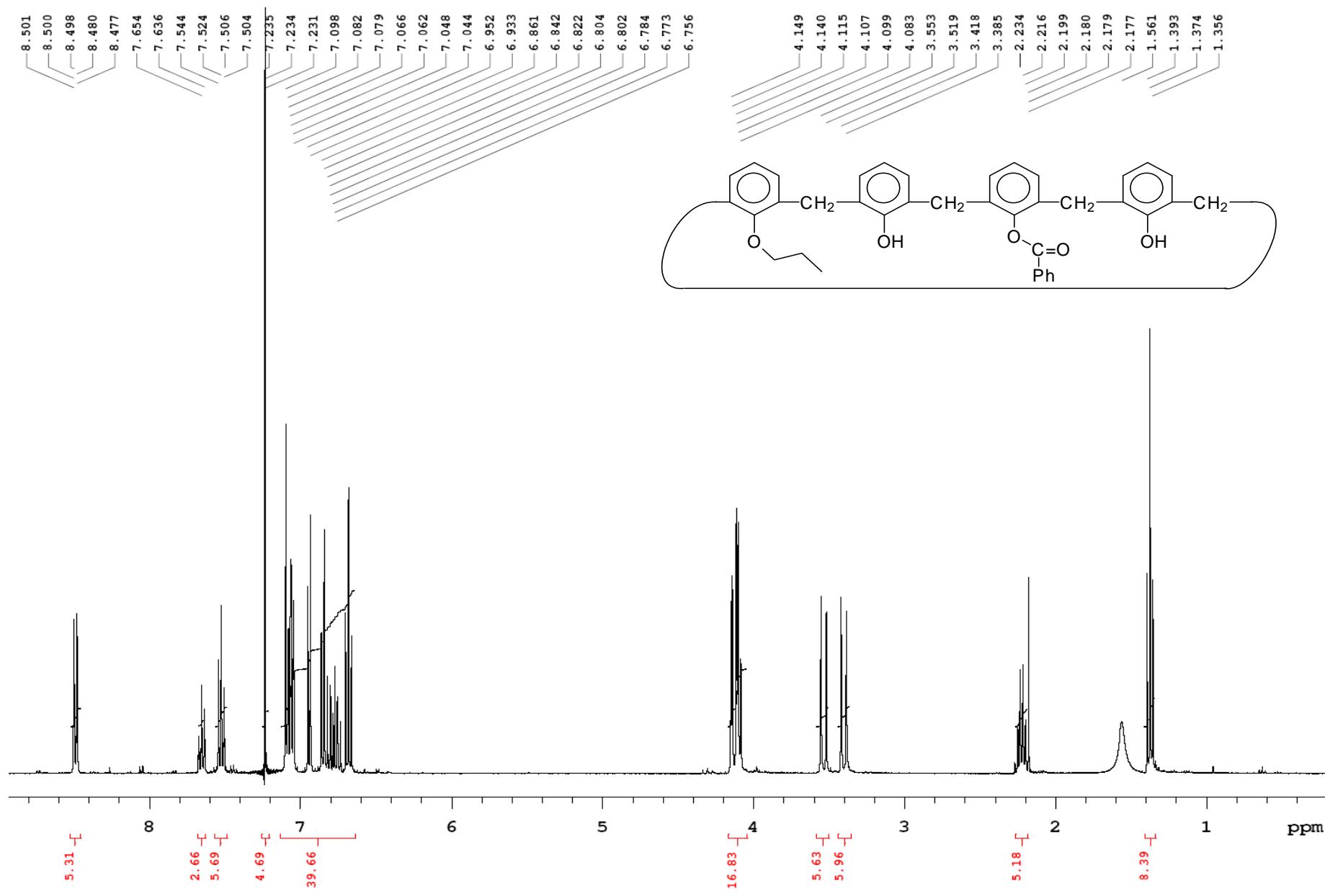
66



COSY (CDCl_3) spectrum of 25-Ethoxy-27-benzoyloxy-26,28-dihydroxycalix[4]arene (34)



¹³C-NMR (CDCl₃) spectrum of 25-Ethoxy-27-benzoyloxy-26,28-dihydroxycalix[4]arene (**34**)



¹H-NMR (CDCl_3) spectrum of 25-Propoxy-27-benzoyloxy-26,28-dihydroxycalix[4]arene (35)

Sample: kevin_0316_propyl_bn
Sample ID: s_kevin_0316_propyl_bn_01
File: /home/vnmr2/vnmr2sys/data/kevin_0316_propyl_bn_02.fid

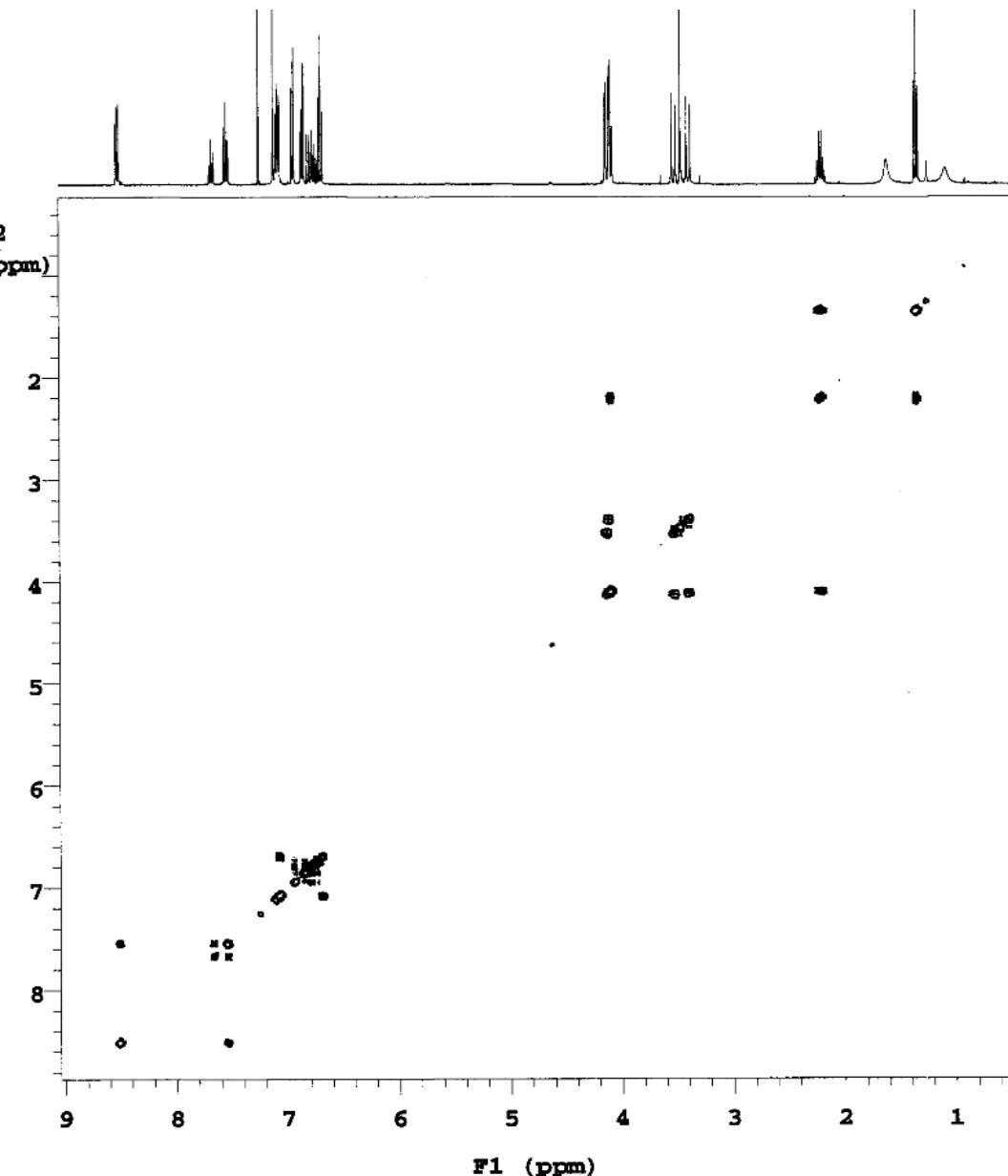
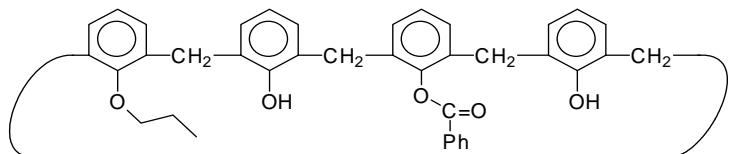
Pulse Sequence: gCOSY

SAMPLE: kevin_0316_propyl_bn
File: /home/vnmr2/vnmr2sys/data/kevin_0316_propyl_bn_02.fid
Date: Mar 18 2009
Solvent: cdcl3
Temp. 25.0 C / 298.1 K
Operator: vnmr2
File: kevin_0316_propyl_bn_02
VNMR-400 "400MR"

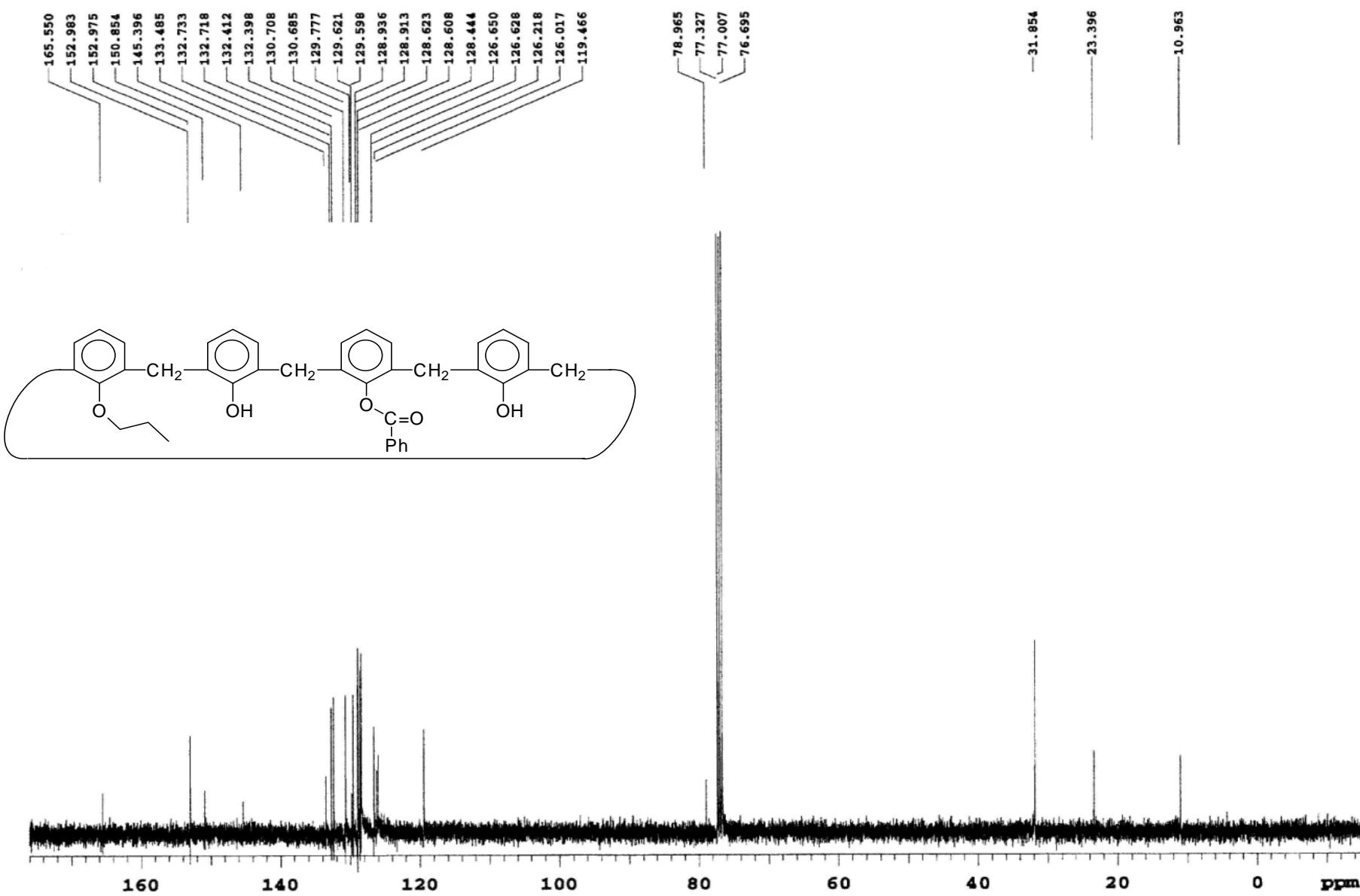
PULSE SEQUENCE: Gcosy
Relax. delay 1.000 sec
Acq. time 0.246 sec
Width 4166.7 Hz
2D Width 4166.7 Hz
Single scan
128 increments
Total time 3 min, 4 s

OBSERVE H1, 399.5553486 MHz

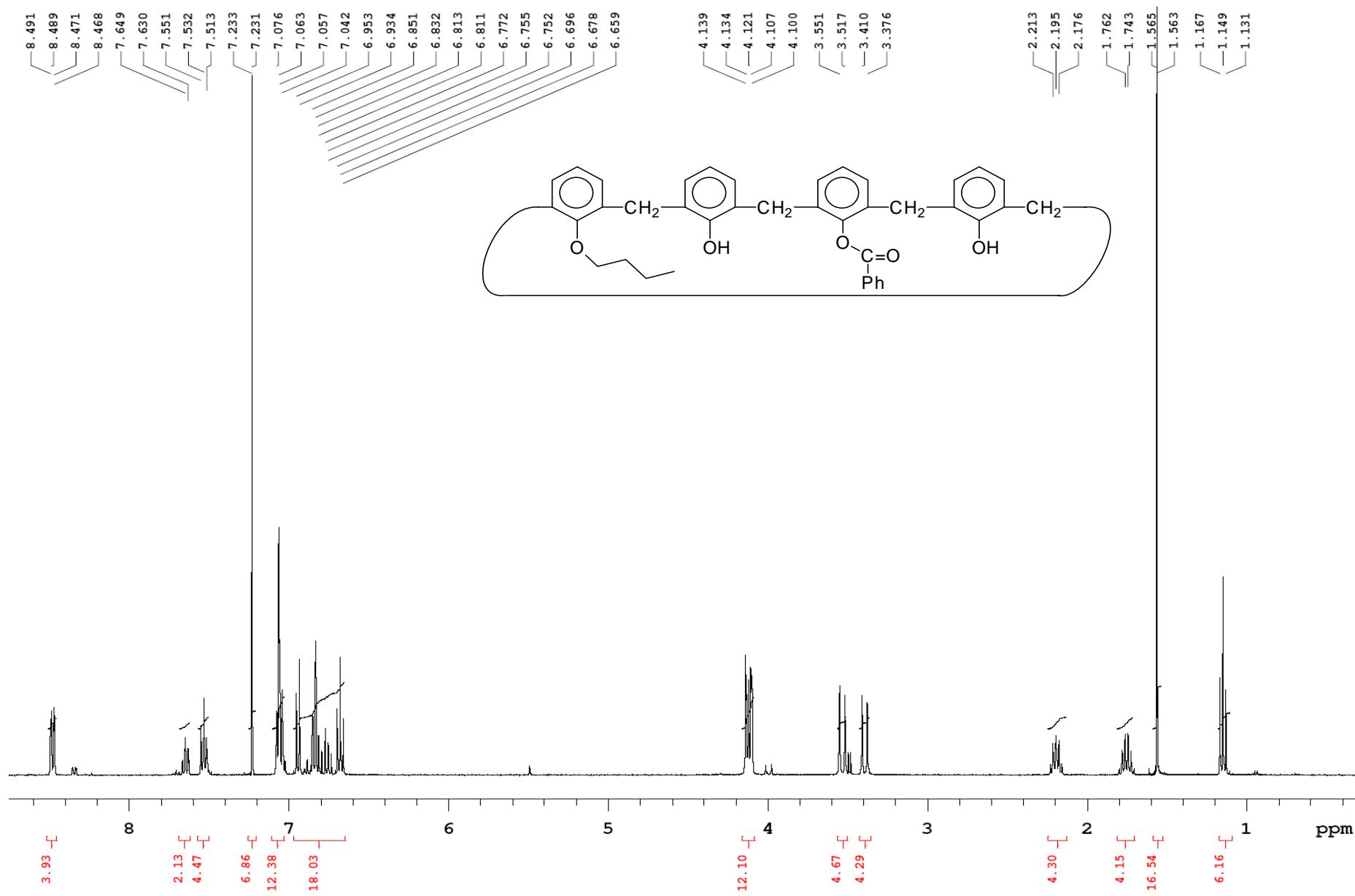
DATA PROCESSING
Sine bell 0.123 sec
F1 DATA PROCESSING
Sine bell 0.061 sec
FT size 2048 x 2048



COSY (CDCl₃) spectrum of 25-Propoxy-27-benzoyloxy-26,28-dihydroxycalix[4]arene (35)



^{13}C -NMR (CDCl_3) spectrum of 25-Propoxy-27-benzoyloxy-26,28-dihydroxycalix[4]arene (35)



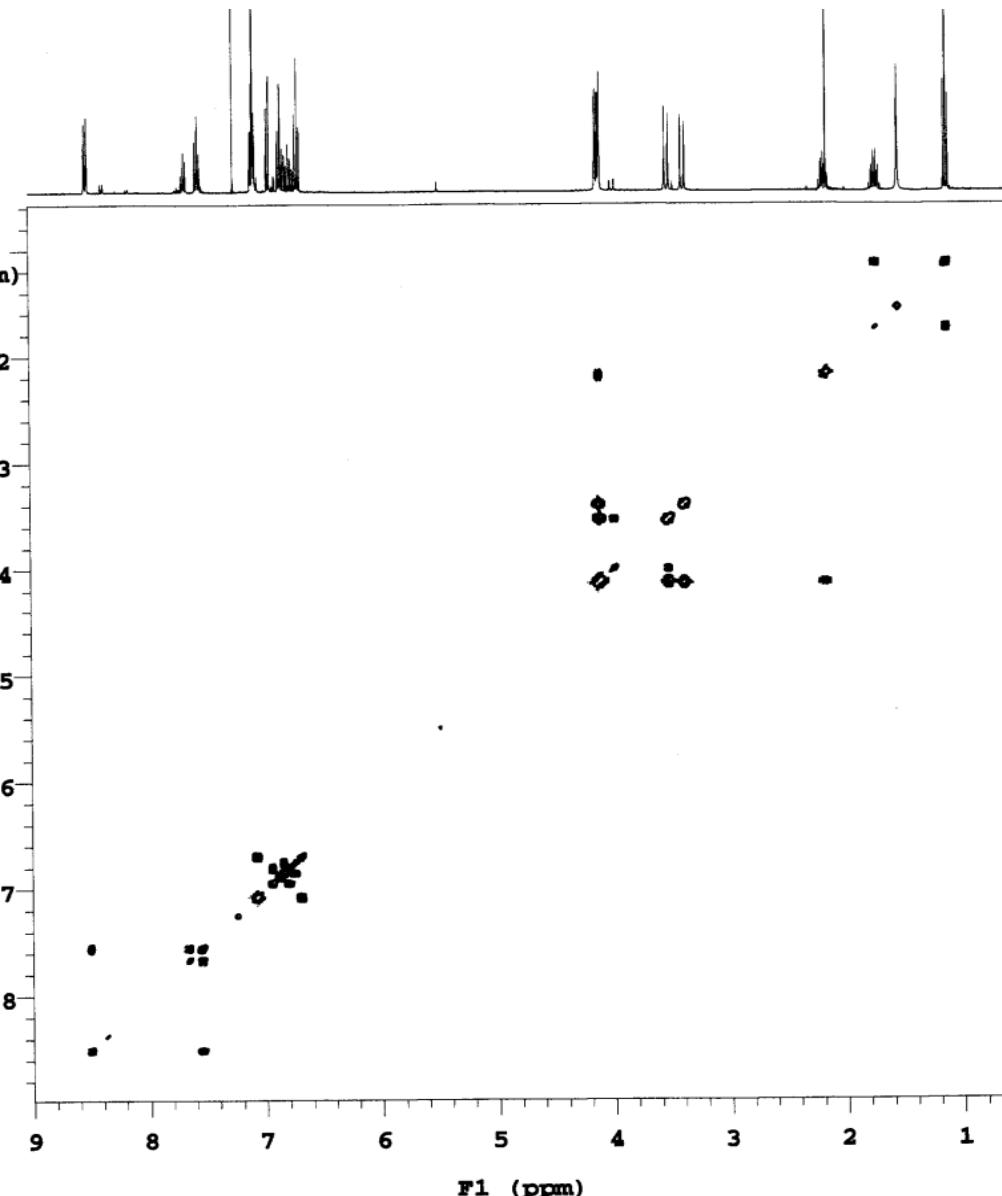
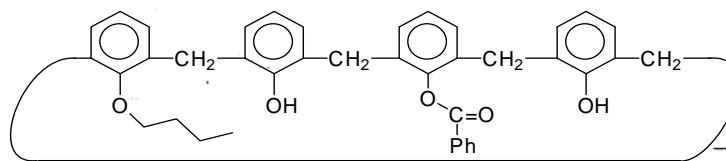
Sample: han butyl bn4/6
Sample ID: s_han_butyl_bn4/6_01
File: /home/vnmr2/vnmr2sys/data/han_butyl_bn4/6_02.fid

Pulse Sequence: gCOSY

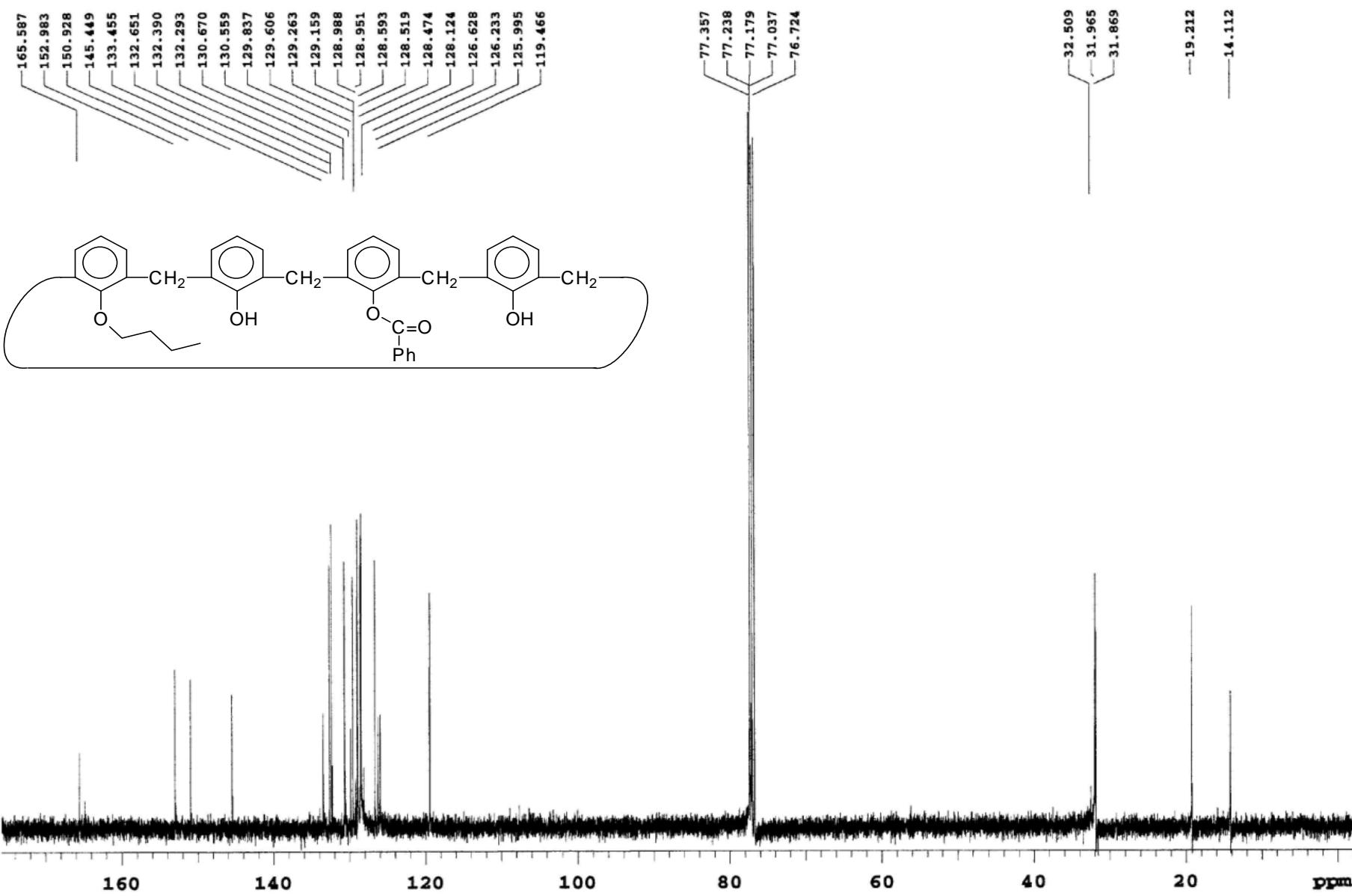
SAMPLE: han butyl bn4/6
File: /home/vnmr2/vnmr2sys/data/han_butyl_bn4/6_02.fid
Date: Apr 6 2009
Solvent: cdc13
Temp. 25.0 C / 298.1 K
Operator: vnmr2
File: 6_02
VNMR-400 "400MR"

PULSE SEQUENCE: Gcosy
Relax. delay 1.000 sec
Acq. time 0.126 sec
Width 4058.4 Hz
2D Width 4058.4 Hz
Single scan
256 increments
Total time 5 min, 19 s
OBSERVE H1, 399.5553486 MHz

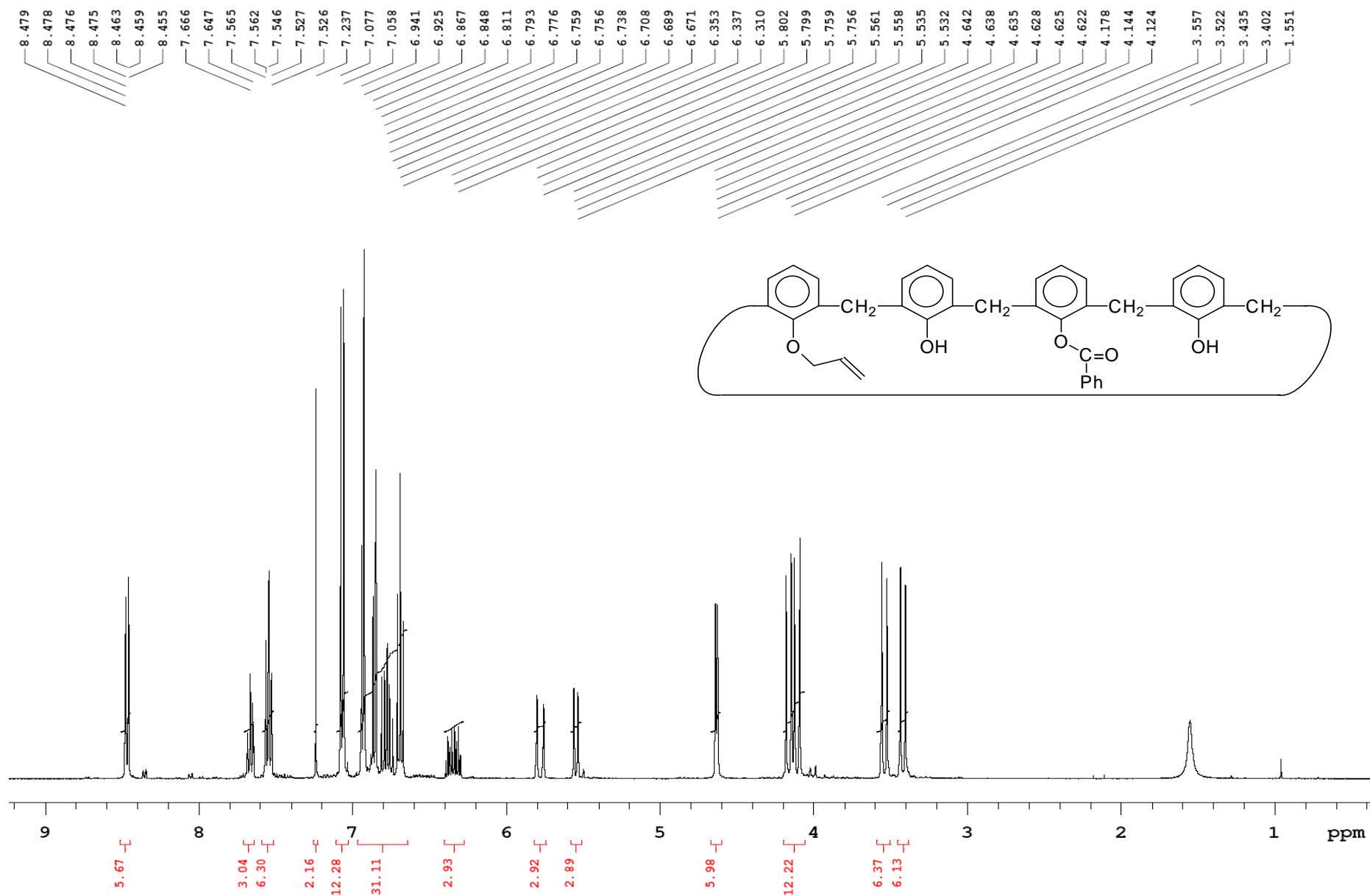
DATA PROCESSING
Sine bell 0.063 sec
F1 DATA PROCESSING
Sine bell 0.126 sec
FT size 4096 x 4096



COSY (CDCl_3) spectrum of 25-Butoxy-27-benzoyloxy-26,28-dihydroxycalix[4]arene (36)



^{13}C -NMR (CDCl_3) spectrum of 25-Butoxy-27-benzoyloxy-26,28-dihydroxycalix[4]arene (36)



Sample: han butyl bn4/6
Sample ID: s_han_butyl_bn4/6_02
File: /home/vnmr2/vnmr2sys/data/han_butyl_bn4/6_04.fid

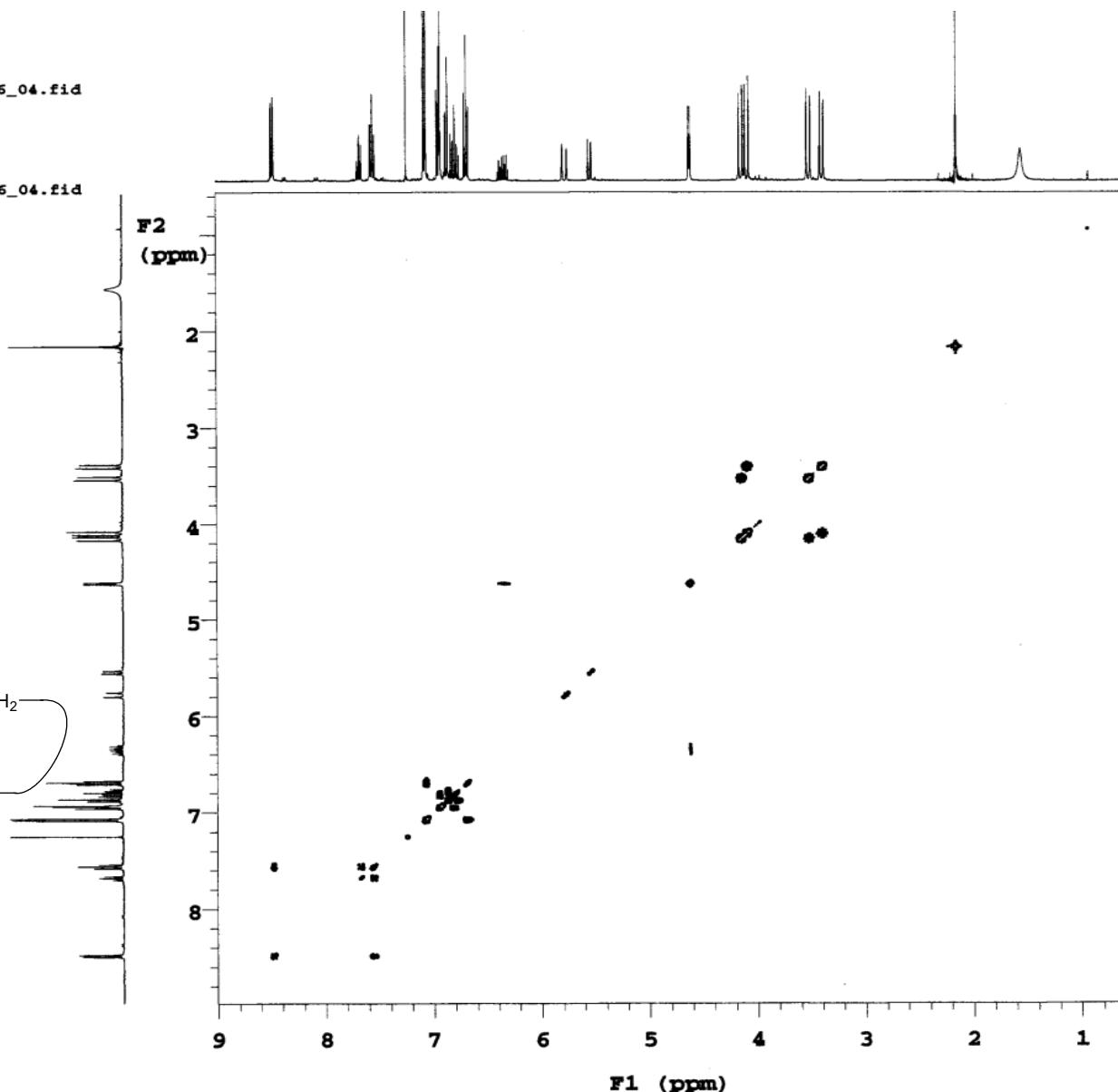
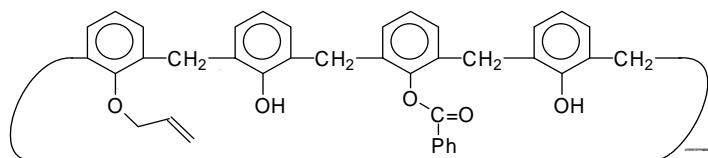
Pulse Sequence: gCOSY

SAMPLE: han butyl bn4/6
File: /home/vnmr2/vnmr2sys/data/han_butyl_bn4/6_04.fid
Date: Apr 6 2009
Solvent: cdcl3
Temp. 25.0 C / 298.1 K
Operator: vnmr2
File: 6_04
VNMR-400 "400MR"

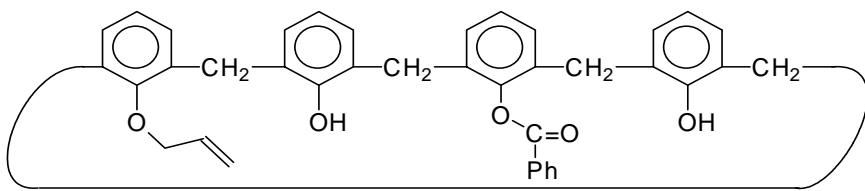
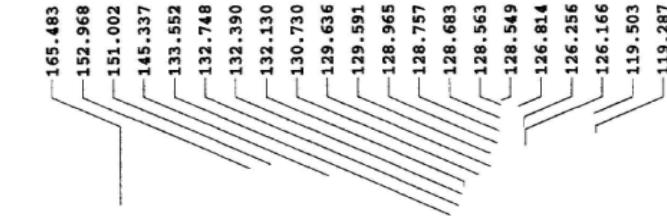
PULSE SEQUENCE: Gcosy
Relax. delay 1.000 sec
Acq. time 0.134 sec
Width 3811.0 Hz
2D Width 3811.0 Hz
Single scan
256 increments
Total time 5 min, 22 s

OBSERVE H1, 399.5553486 MHz

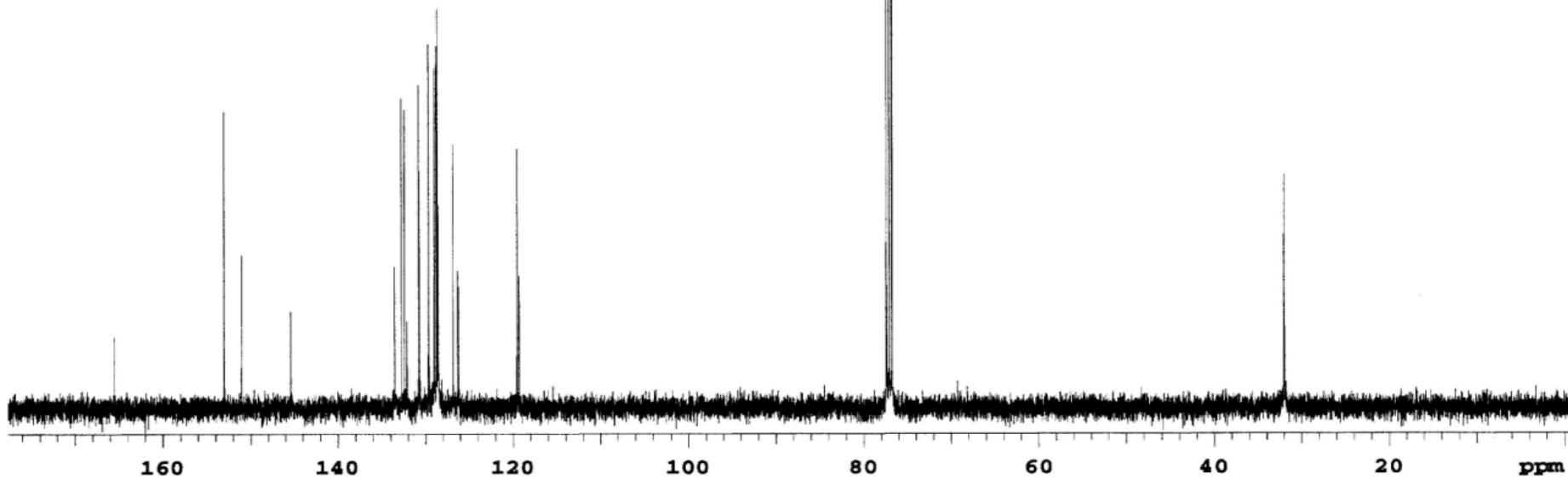
DATA PROCESSING
Sine bell 0.067 sec
F1 DATA PROCESSING
Sine bell 0.134 sec
FT size 4096 x 4096



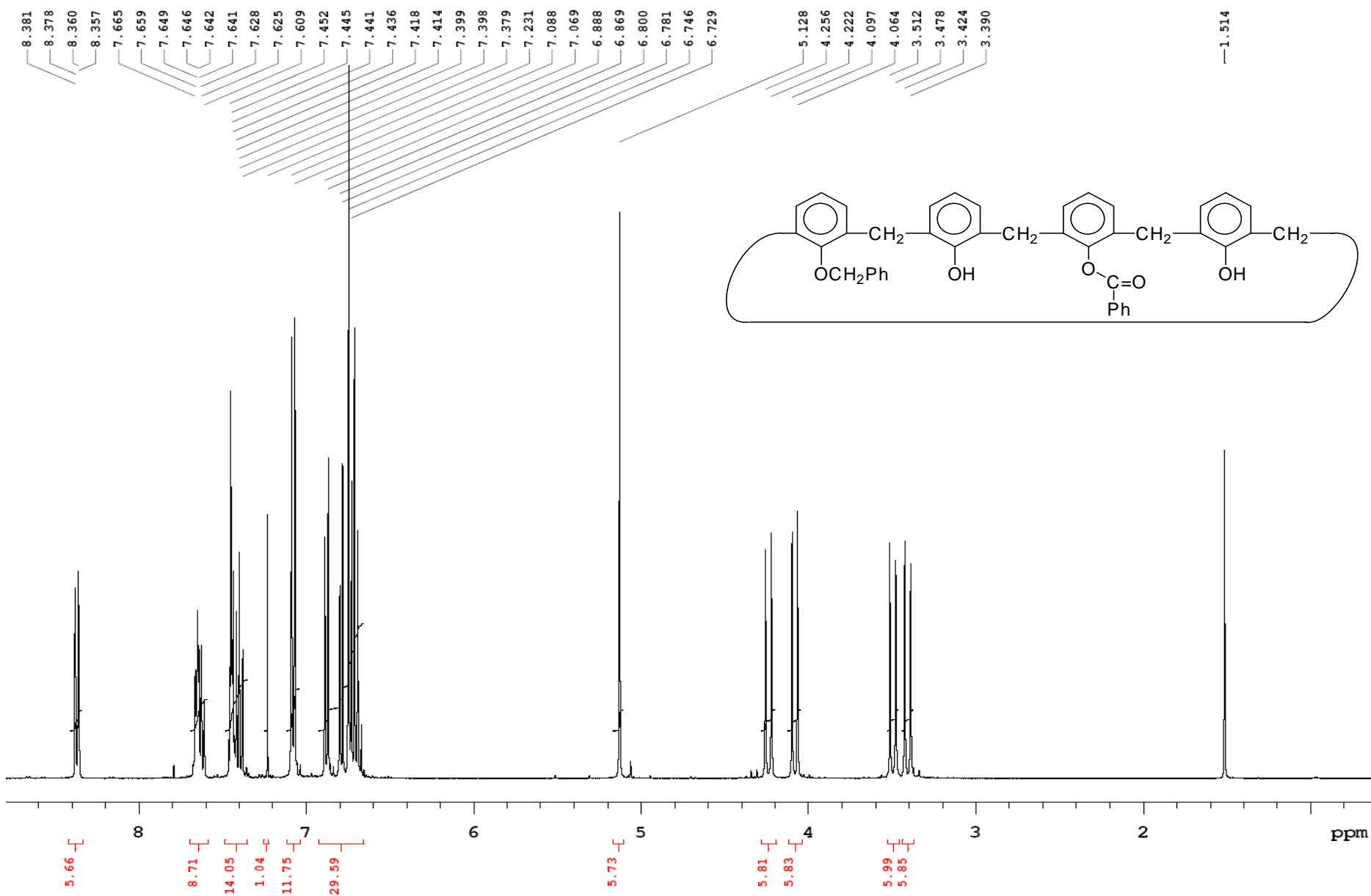
COSY (CDCl₃) spectrum of 25-Allyloxy-27-benzoyloxy-26,28-dihydroxycalix[4]arene (37)



60I



^{13}C -NMR (CDCl_3) spectrum of 25-Allyloxy-27-benzoyloxy-26,28-dihydroxycalix[4]arene (37)



¹H-NMR (CDCl_3) spectrum of 25-Benzylxy-27-benzoyloxy-26,28-dihydroxycalix[4]arene (38)

Sample: han_0318_benzyl_bn-0312
Sample ID: s_han_0318_benzyl_bn-0312_02
File: /home/vnmr2/vnmr2sys/data/han_0318_benzyl_bn-0312_03.fid

Pulse Sequence: gCOSY

SAMPLE: han_0318_benzyl_bn-0312

File: /home/vnmr2/vnmr2sys/data/han_0318_benzyl_bn-0312_03.fid

Date: Mar 18 2009

Solvent: cdcl3

Temp. 25.0 C / 298.1 K

Operator: vnmr2

File: han_0318_benzyl_bn-0312_03

VNMRS-400 "400MR"

PULSE SEQUENCE: Gcosy

Relax. delay 1.000 sec

Acq. time 0.148 sec

Width 3453.0 Hz

2D Width 3453.0 Hz

Single scan

128 increments

Total time 2 min, 50 s

OBSERVE H1, 399.5553486 MHz

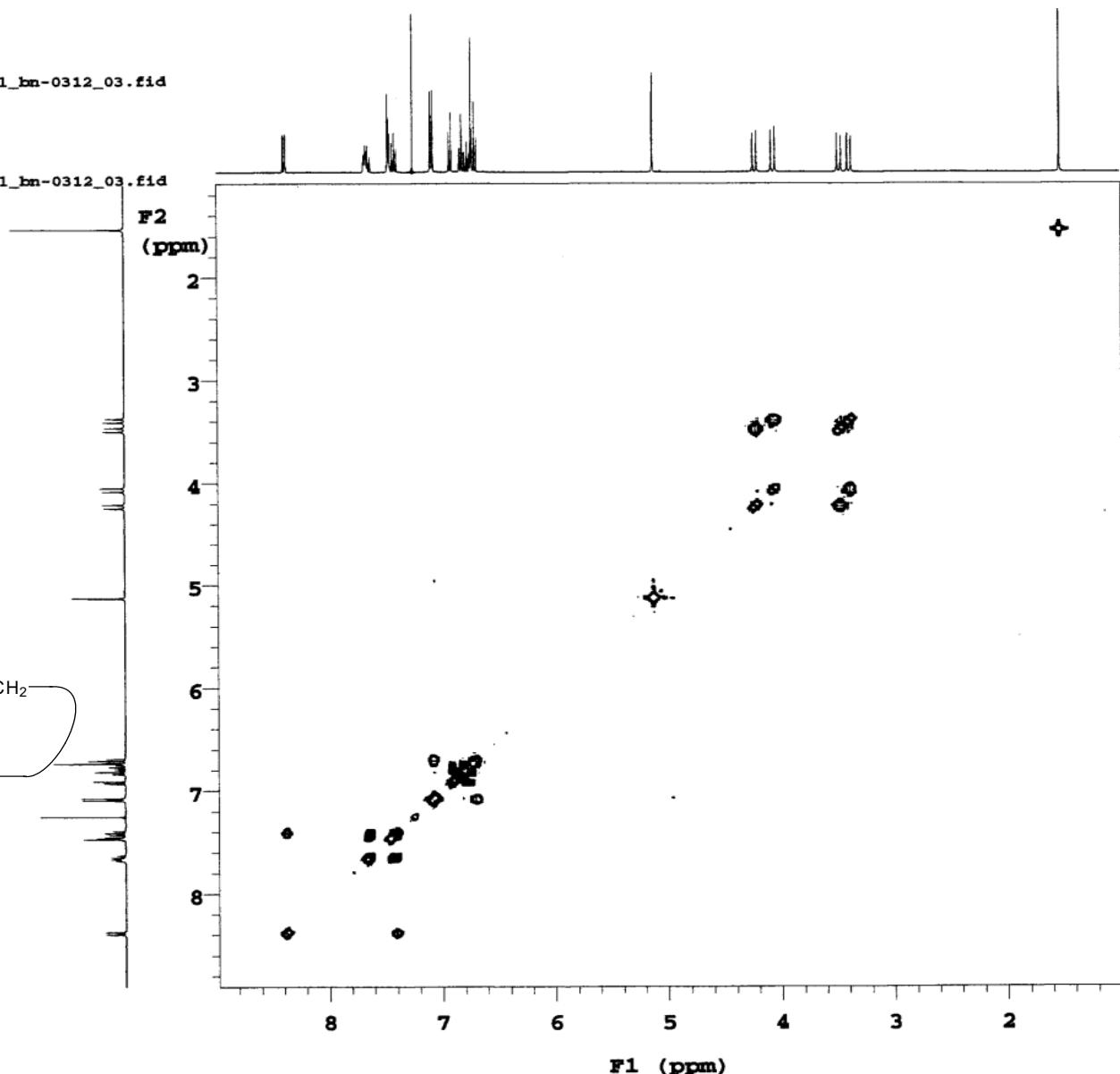
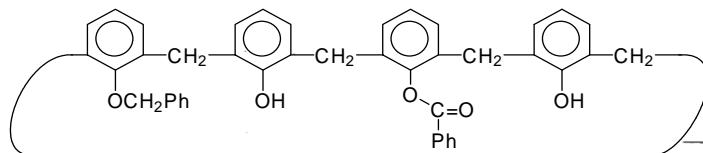
DATA PROCESSING

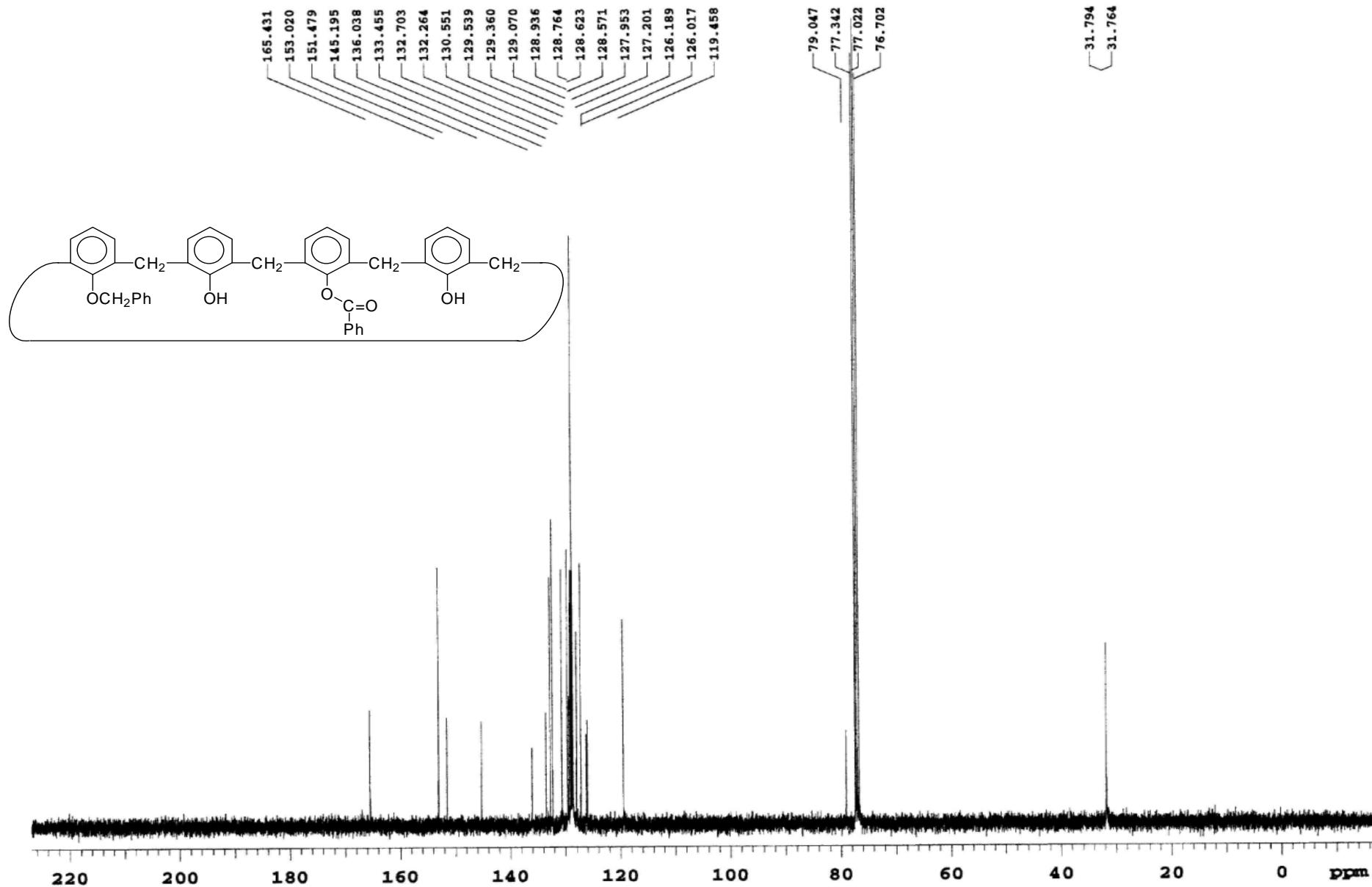
Sine bell 0.074 sec

F1 DATA PROCESSING

Sine bell 0.074 sec

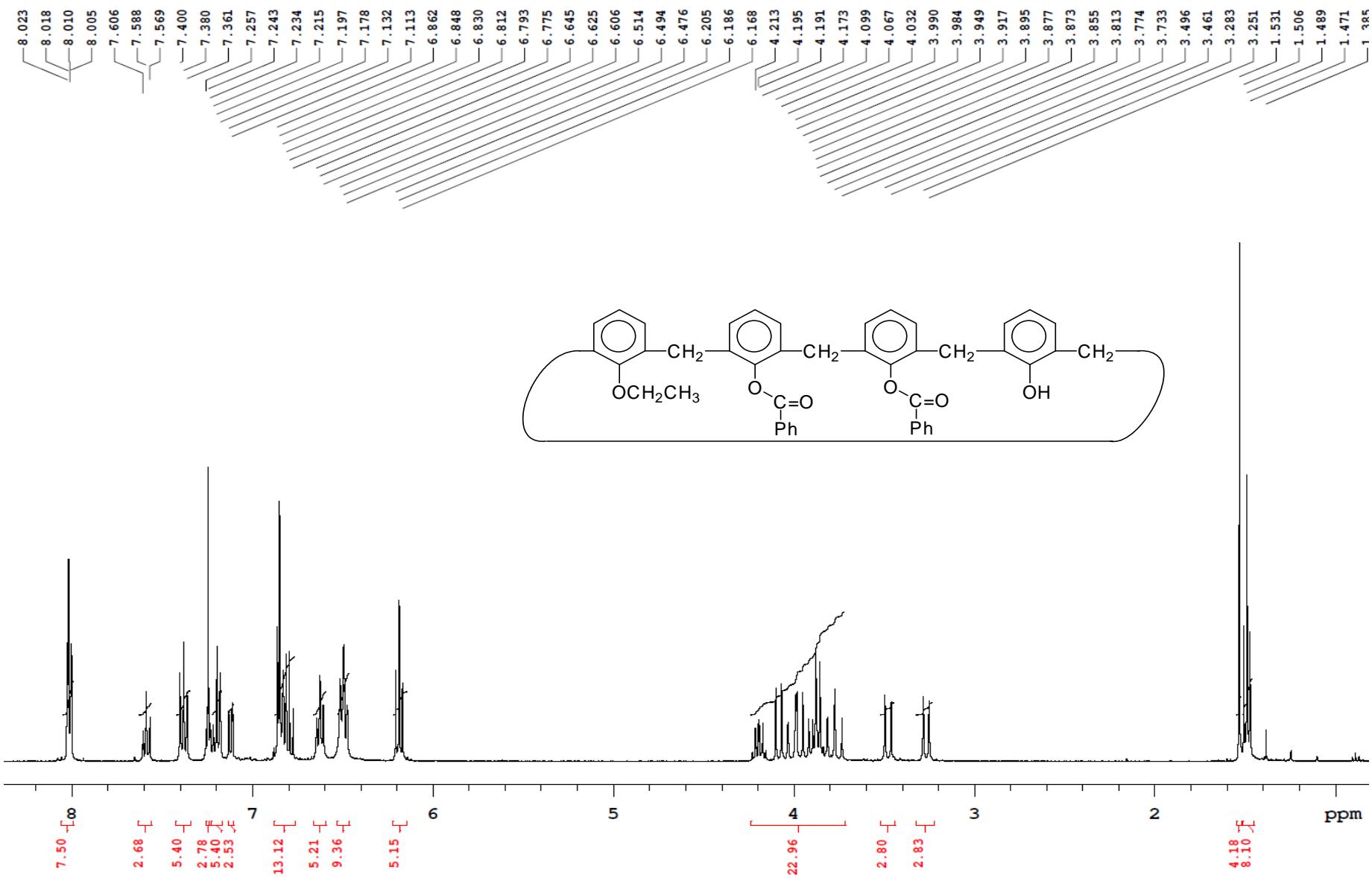
FT size 2048 x 2048





^{13}C -NMR (CDCl_3) spectrum of 25-Benzyl-27-benzoyloxy-26,28-dihydroxycalix[4]arene
(38)

II



¹H-NMR (CDCl₃) spectrum of 25,26-Dibenzoyloxy-27-ethoxy-28-dihydroxycalix[4]arene (39)

Sample: kura 7/17 ethyldibm
 Sample ID: s_kura_7/17_ethyldibm_01
 File: /home/vnmr2/vnmr2sys/data/kura_7/17_ethyldibm_02.fid

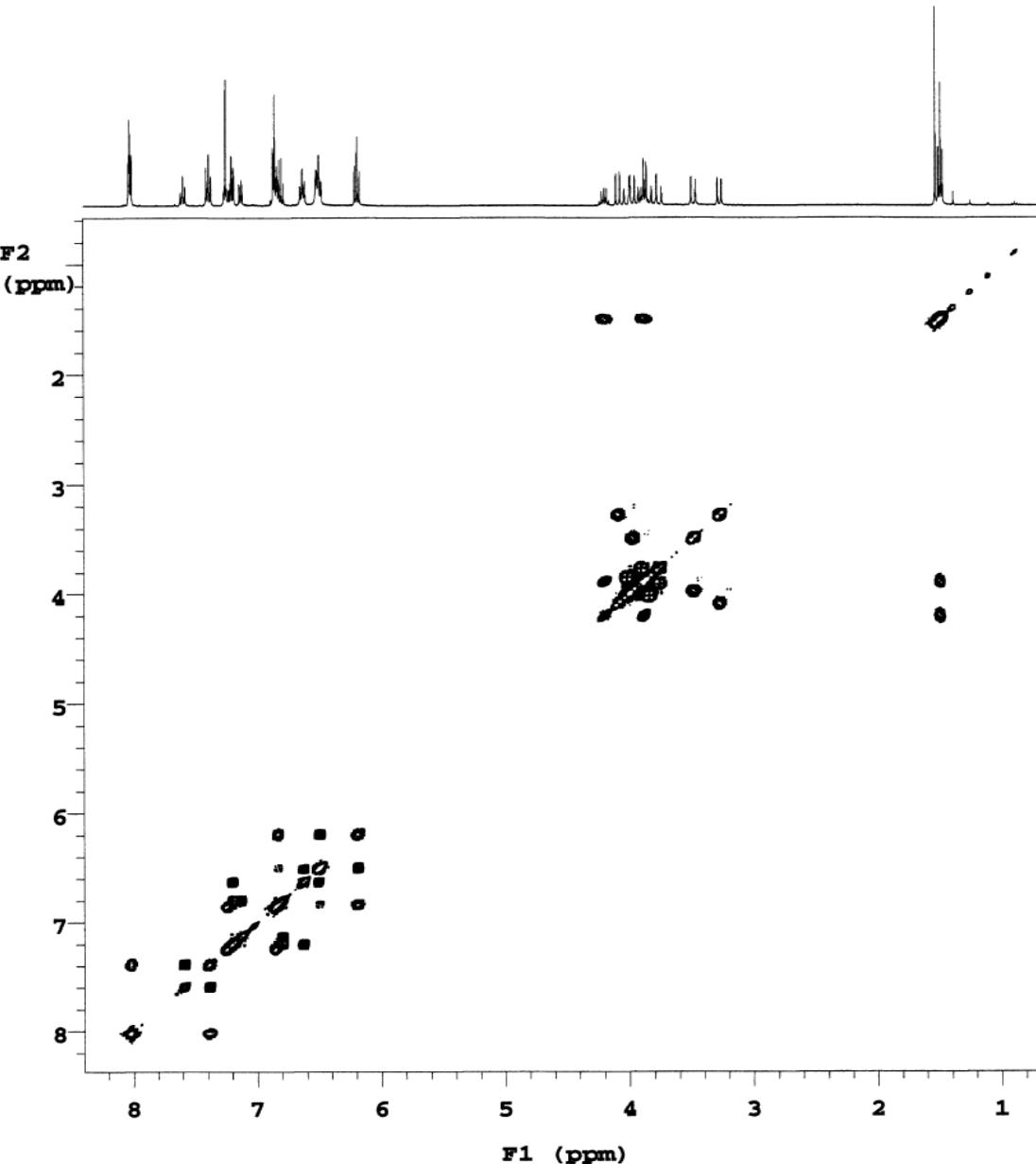
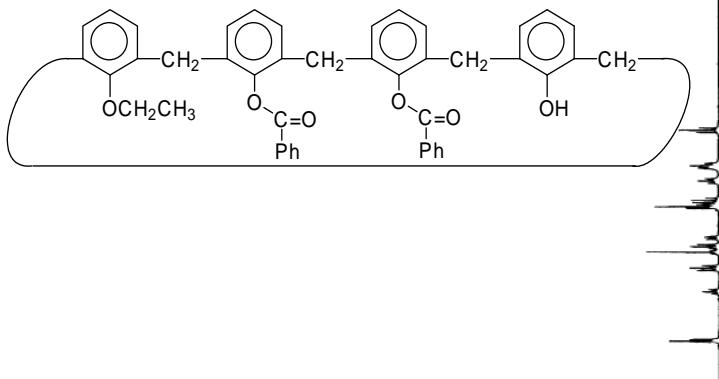
 Pulse Sequence: gCOSY

 SAMPLE: kura 7/17 ethyldibm
 File: /home/vnmr2/vnmr2sys/data/kura_7/17_ethyldibm_02.fid
 Date: Jul 17 2009
 Solvent: cdc13
 Temp. 25.0 C / 298.1 K
 Operator: vnmr2
 File: 17_ethyldibm_02
 VNMRS-400 "400MR"

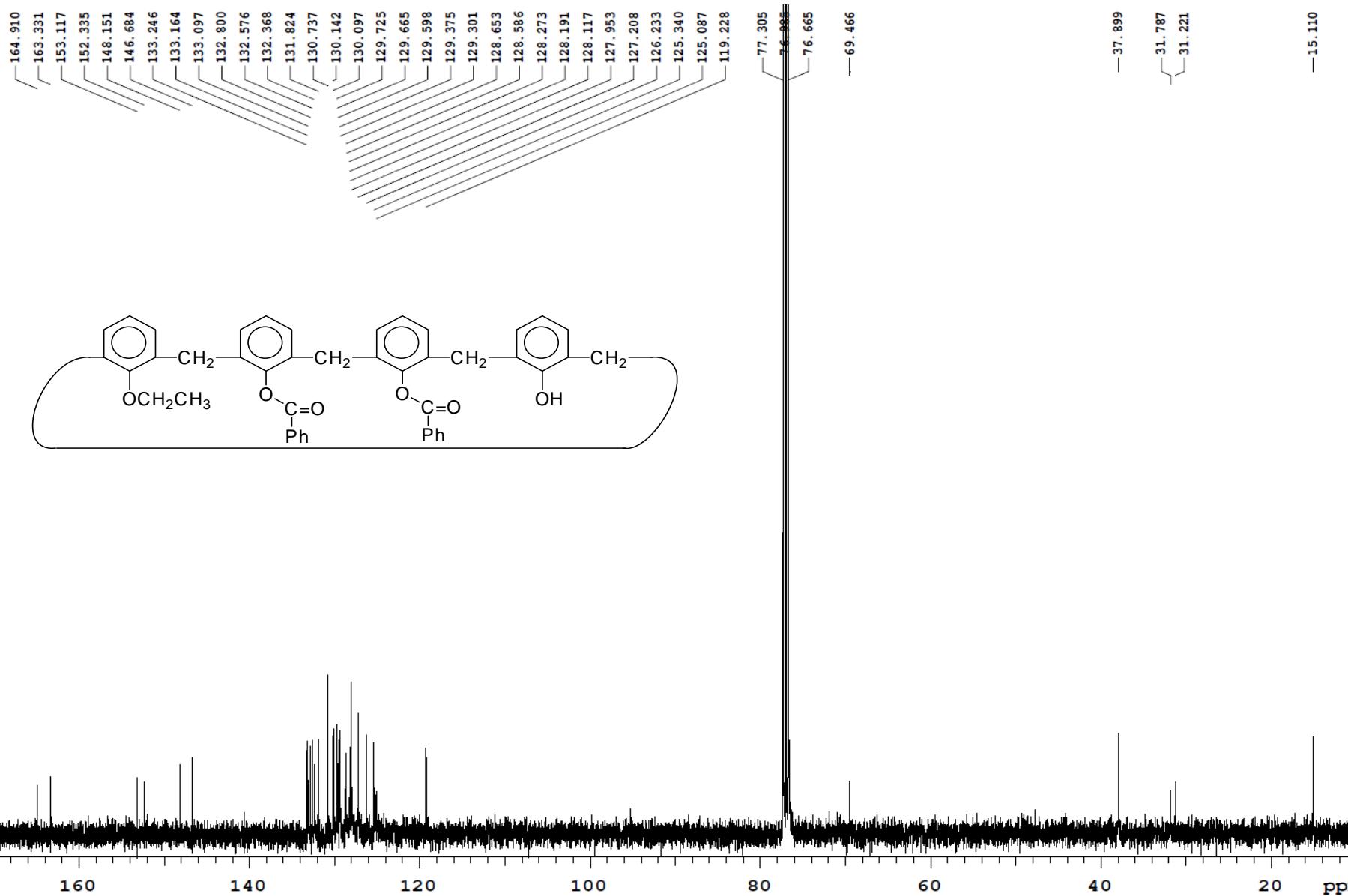
 PULSE SEQUENCE: Gcosy
 Relax. delay 1.000 sec
 Acq. time 0.143 sec
 Width 3592.0 Hz
 2D Width 3592.0 Hz
 Single scan
 200 increments
 Total time 4 min, 16 s

 OBSERVE H1, 399.5553486 MHz

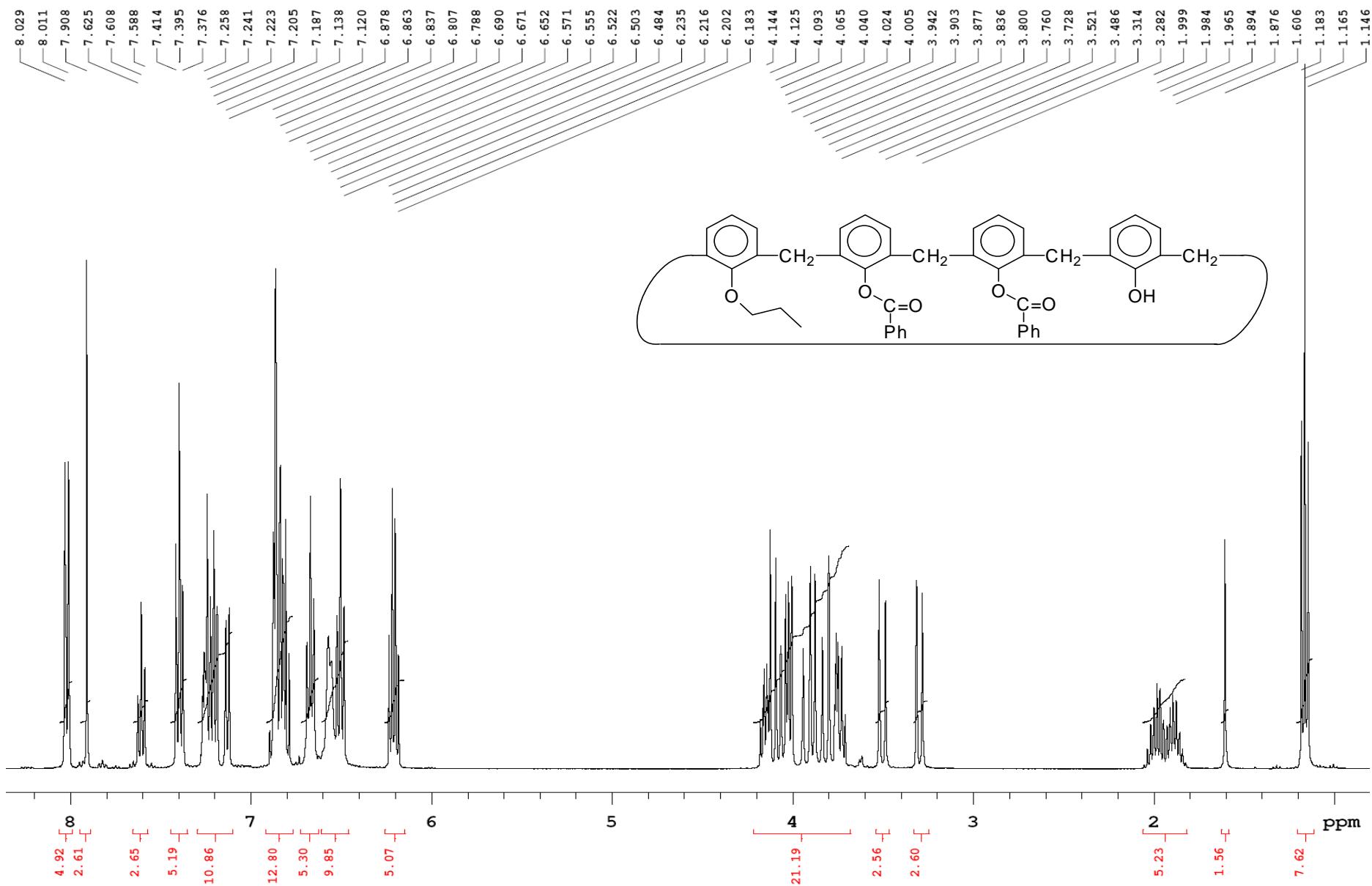
 DATA PROCESSING
 Sine bell 0.071 sec
 F1 DATA PROCESSING
 Sine bell 0.111 sec
 FT size 4096 x 4096



COSY(CDCl_3) spectrum of 25,26-Dibenzoyloxy-27-ethoxy-28-dihydroxycalix[4]arene (39)



^{13}C -NMR (CDCl_3) spectrum of 25,26-Dibenzoyloxy-27-ethoxy-28-dihydroxycalix[4]arene (**39**)



^1H -NMR (CDCl_3) spectrum of 25,26-Dibenzoyloxy-27-propoxy-28-dihydroxycalix[4]arene
(40)

Sample: kevin kura 0617 propyl dibn
Sample ID: s_kevin_kura_0617_propyl_dibn_01
File: /home/vnmr2/vnmr2sys/data/kevin_kura_0617_propyl_dibn_02.fid

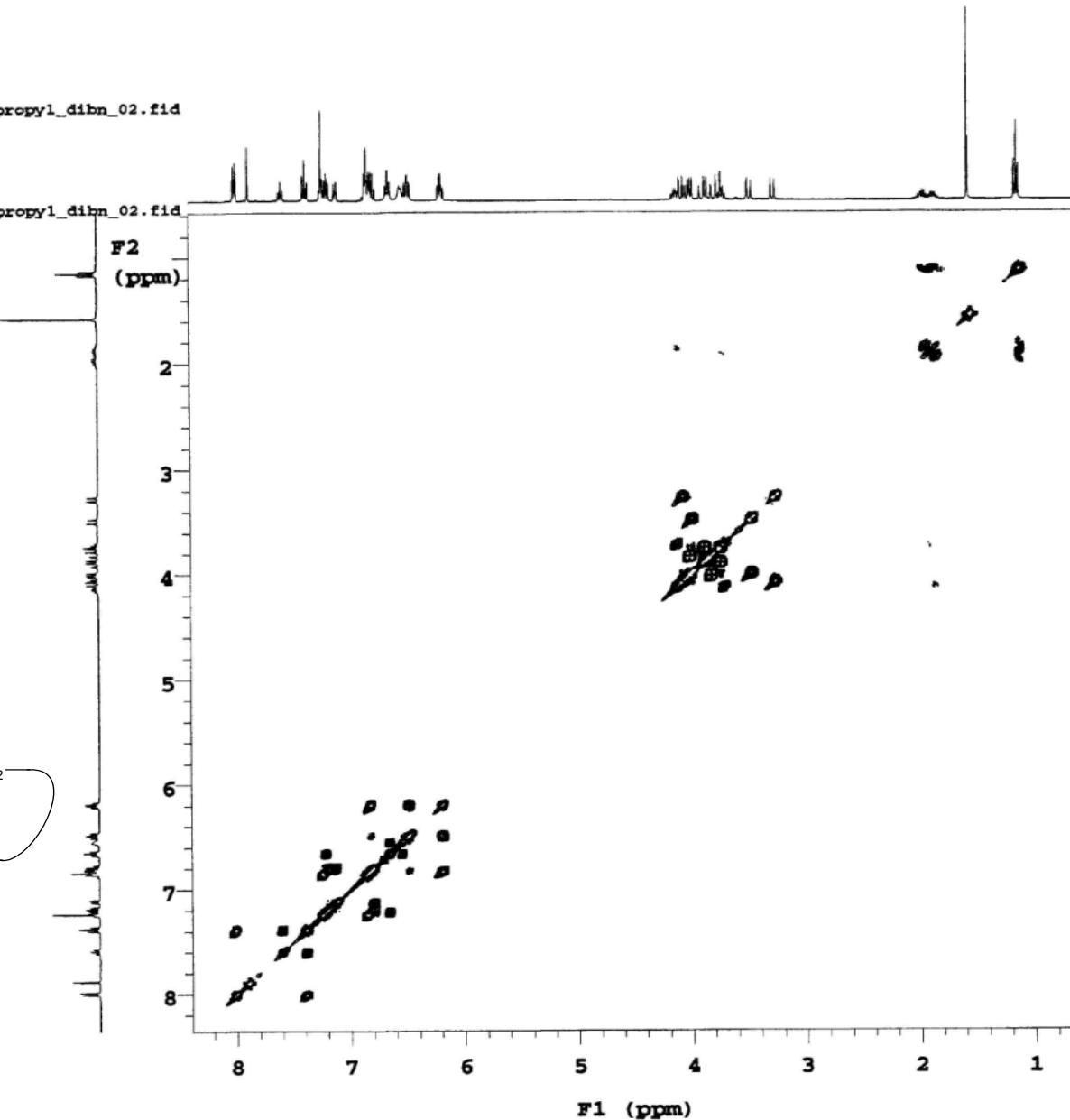
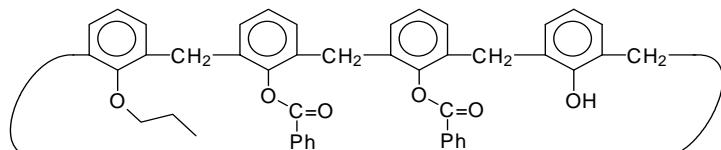
Pulse Sequence: gCOSY

SAMPLE: kevin kura 0617 propyl dibn
File: /home/vnmr2/vnmr2sys/data/kevin_kura_0617_propyl_dibn_02.fid
Date: Jun 17 2009
Solvent: cdcl₃
Temp. 25.0 C / 298.1 K
Operator: vnmr2
File: kevin_kura_0617_propyl_dibn_02
VNMRS-400 "400MR"

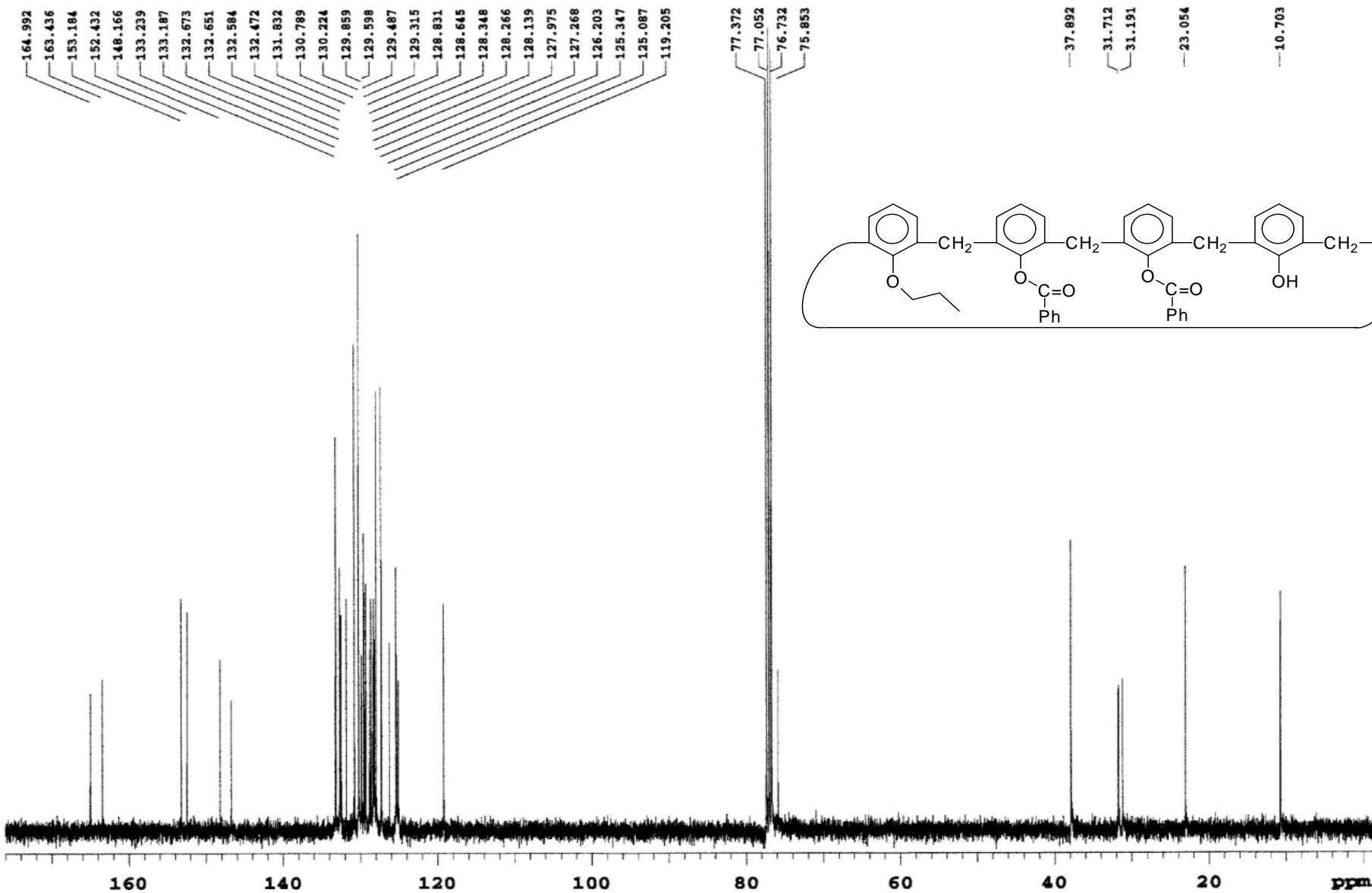
PULSE SEQUENCE: Gcosy
Relax. delay 1.000 sec
Acq. time 0.147 sec
Width 3472.2 Hz
2D Width 3472.2 Hz
Single scan
200 increments
Total time 4 min, 17 s

OBSERVE H1, 399.5553486 MHz

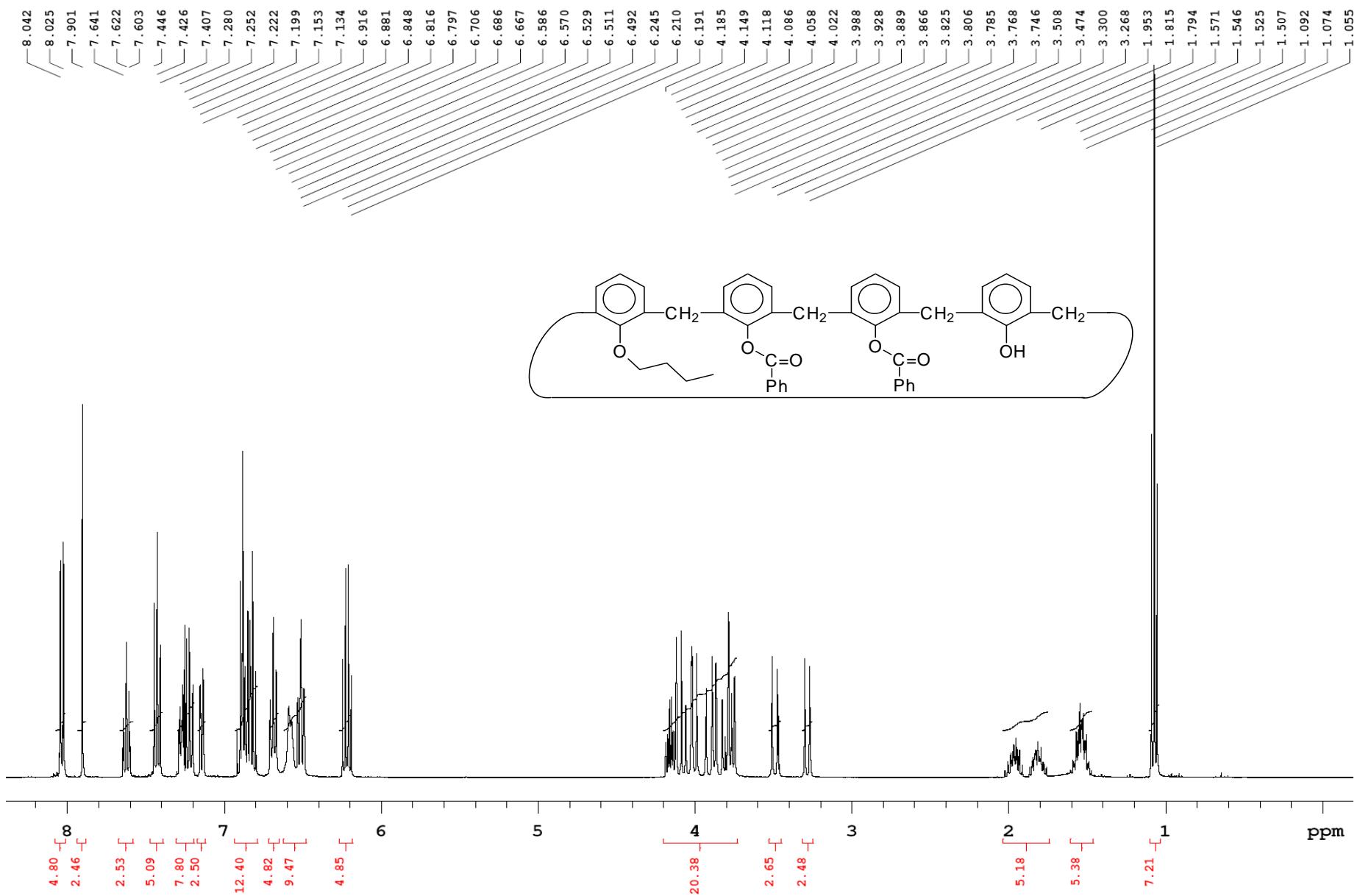
DATA PROCESSING
Sine bell 0.074 sec
F1 DATA PROCESSING
Sine bell 0.115 sec
FT size 4096 x 4096



COSY(CDCl₃) spectrum of 25,26-Dibenzoyloxy-27-propoxy-28-dihydroxycalix[4]arene (40)



¹³C-NMR (CDCl_3) spectrum of 25,26-Dibenzoyloxy-27-propoxy-28-dihydroxycalix[4]arene (**40**)



¹H-NMR (CDCl_3) spectrum of 25,26-Dibenzoyloxy-27-butoxy-28-dihydroxycalix[4]arene (**41**)

Sample: kura 6/22 butyl dibn2
 Sample ID: s_kura_6/22_butyl_dibn2_01
 File: /home/vnmr2/vnmr2sys/data/kura_6/22_butyl_dibn2_02.fid

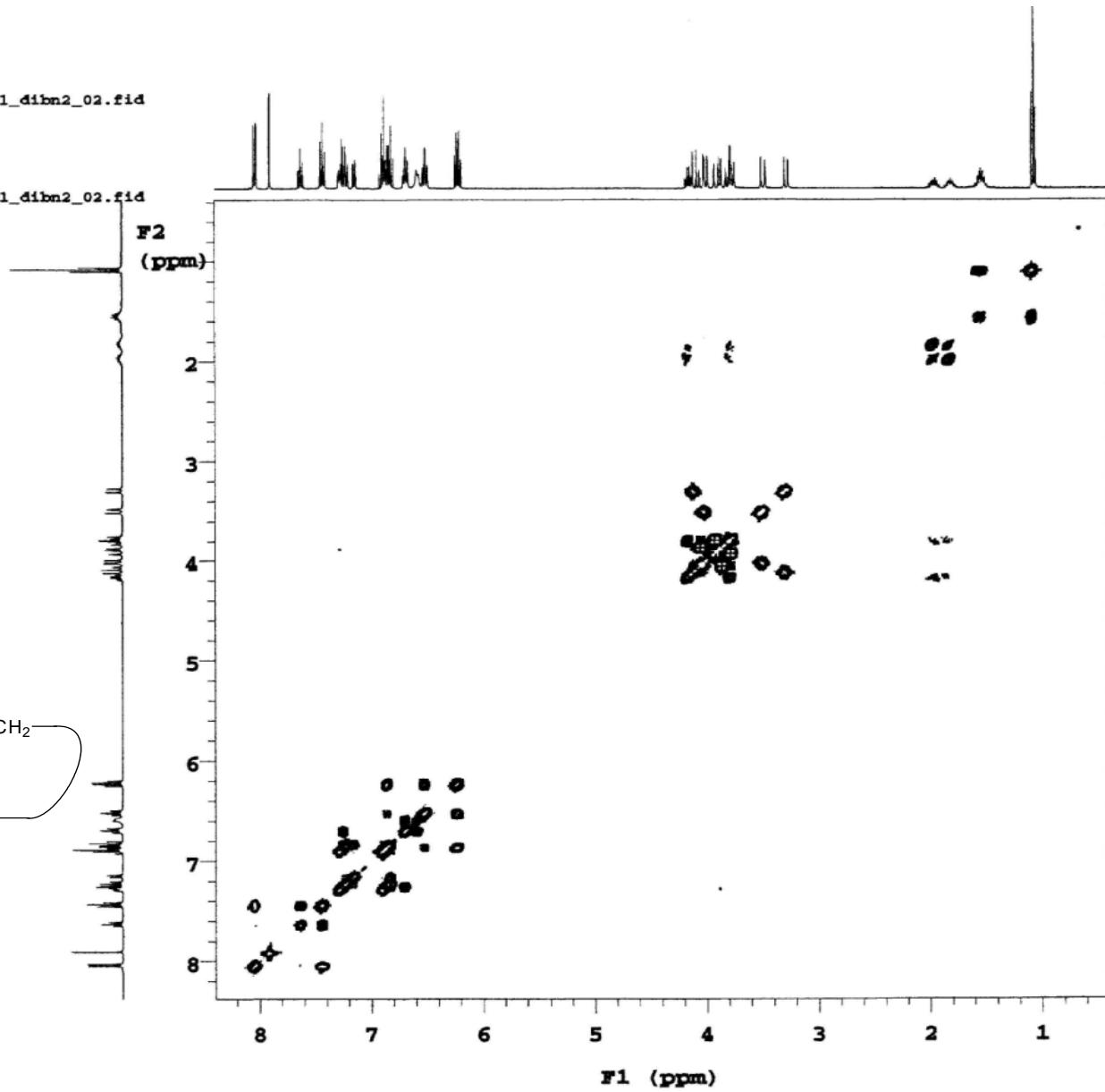
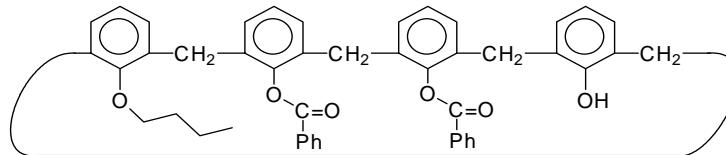
 Pulse Sequence: gCOSY

 SAMPLE: kura 6/22 butyl dibn2
 File: /home/vnmr2/vnmr2sys/data/kura_6/22_butyl_dibn2_02.fid
 Date: Jun 22 2009
 Solvent: cdc13
 Temp. 25.0 C / 298.1 K
 Operator: vnmr2
 File: 22_butyl_dibn2_02
 VNMRS-400 "400MR"

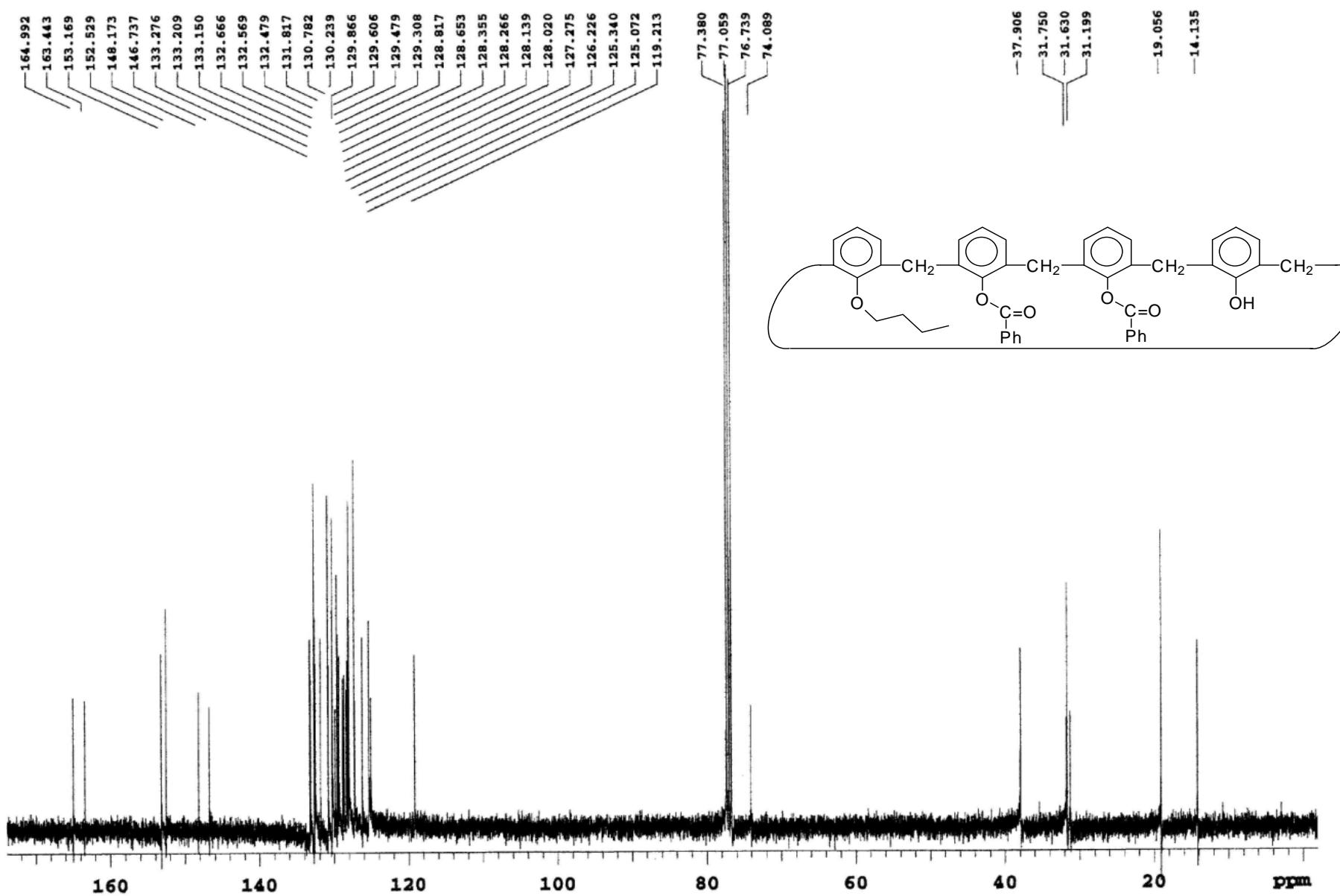
 PULSE SEQUENCE: Gcosy
 Relax. delay 1.000 sec
 Acq. time 0.136 sec
 Width 3765.1 Hz
 2D Width 3765.1 Hz
 Single scan
 200 increments
 Total time 4 min, 14 s

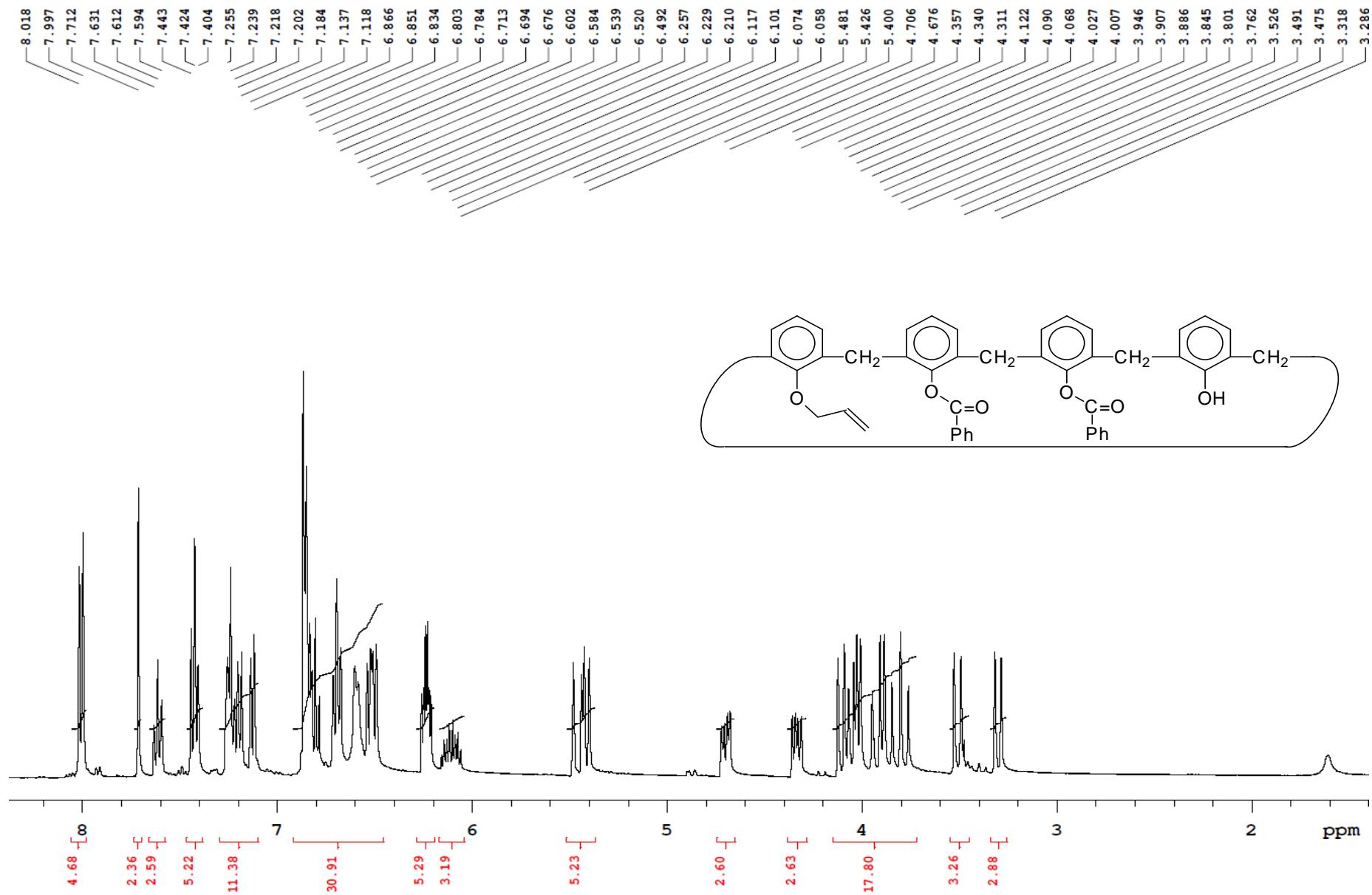
 OBSERVE H1, 399.5553486 MHz

 DATA PROCESSING
 Sine bell 0.068 sec
 F1 DATA PROCESSING
 Sine bell 0.106 sec
 FT size 4096 x 4096



COSY(CDCl₃) spectrum of 25,26-Dibenzoyloxy-27-butoxy-28-dihydroxy calix[4]arene (**41**)





¹H-NMR (CDCl₃) spectrum of 25,26-Dibenzoyloxy-27-allyloxy-28-dihydroxycalix[4]arene (**42**)

Sample: kura 6/26 allyl dibn2
Sample ID: s_kura_6/26_allyl_dibn2_01
File: /home/vnmr2/vnmrsys/data/kura_6/26_allyl_dibn2_02.fid

Pulse Sequence: gCOSY

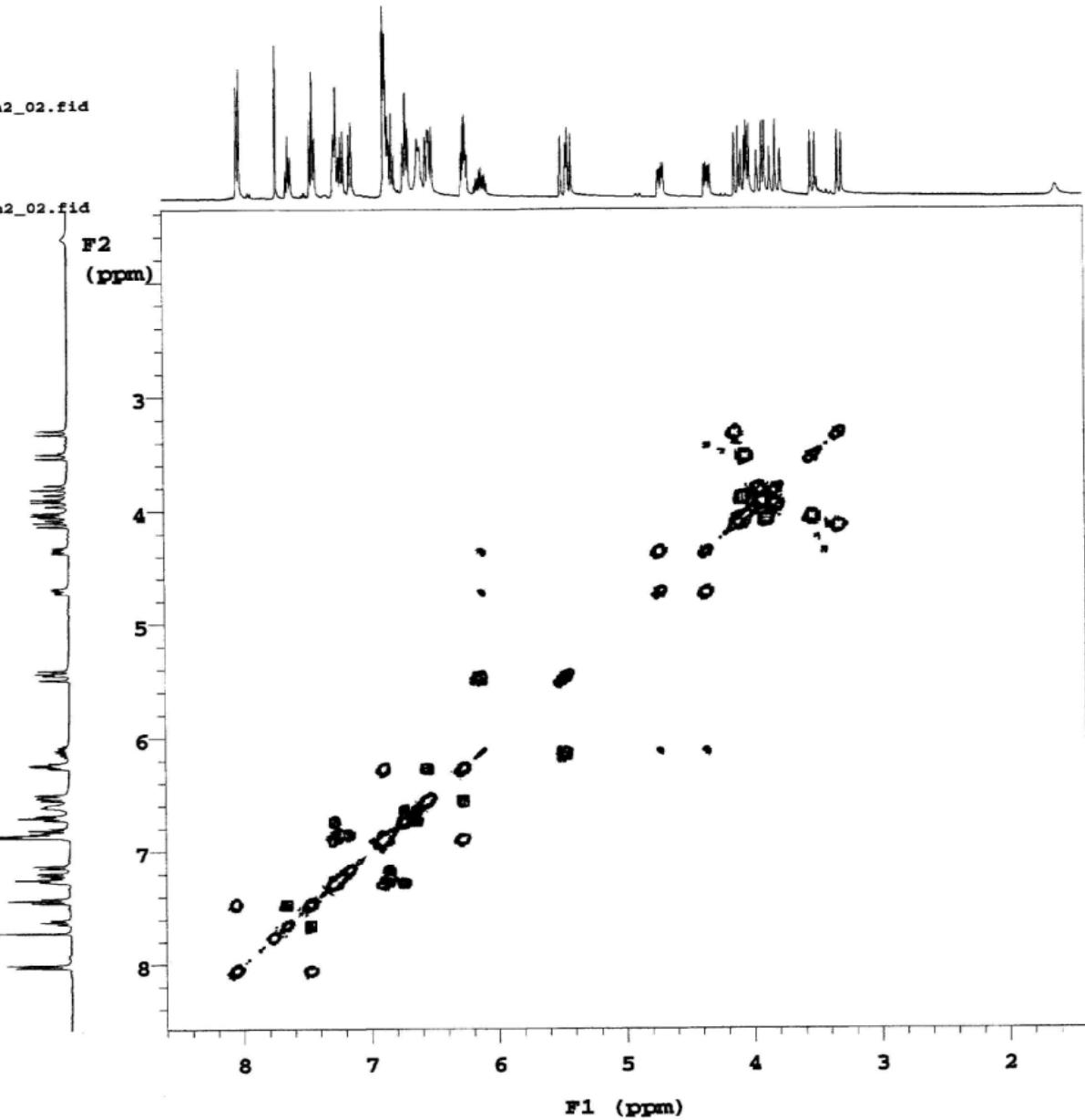
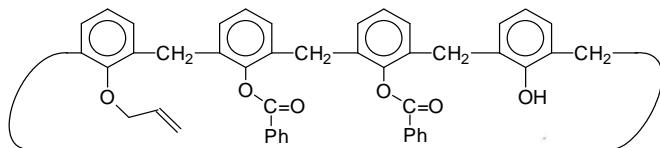
SAMPLE: kura 6/26 allyl dibn2
File: /home/vnmr2/vnmrsys/data/kura_6/26_allyl_dibn2_02.fid

Date: Jun 26 2009
Solvent: cdc13
Temp. 25.0 C / 298.1 K
Operator: vnmr2
File: 26_allyl_dibn2_02
VNMR8-400 "400MR"

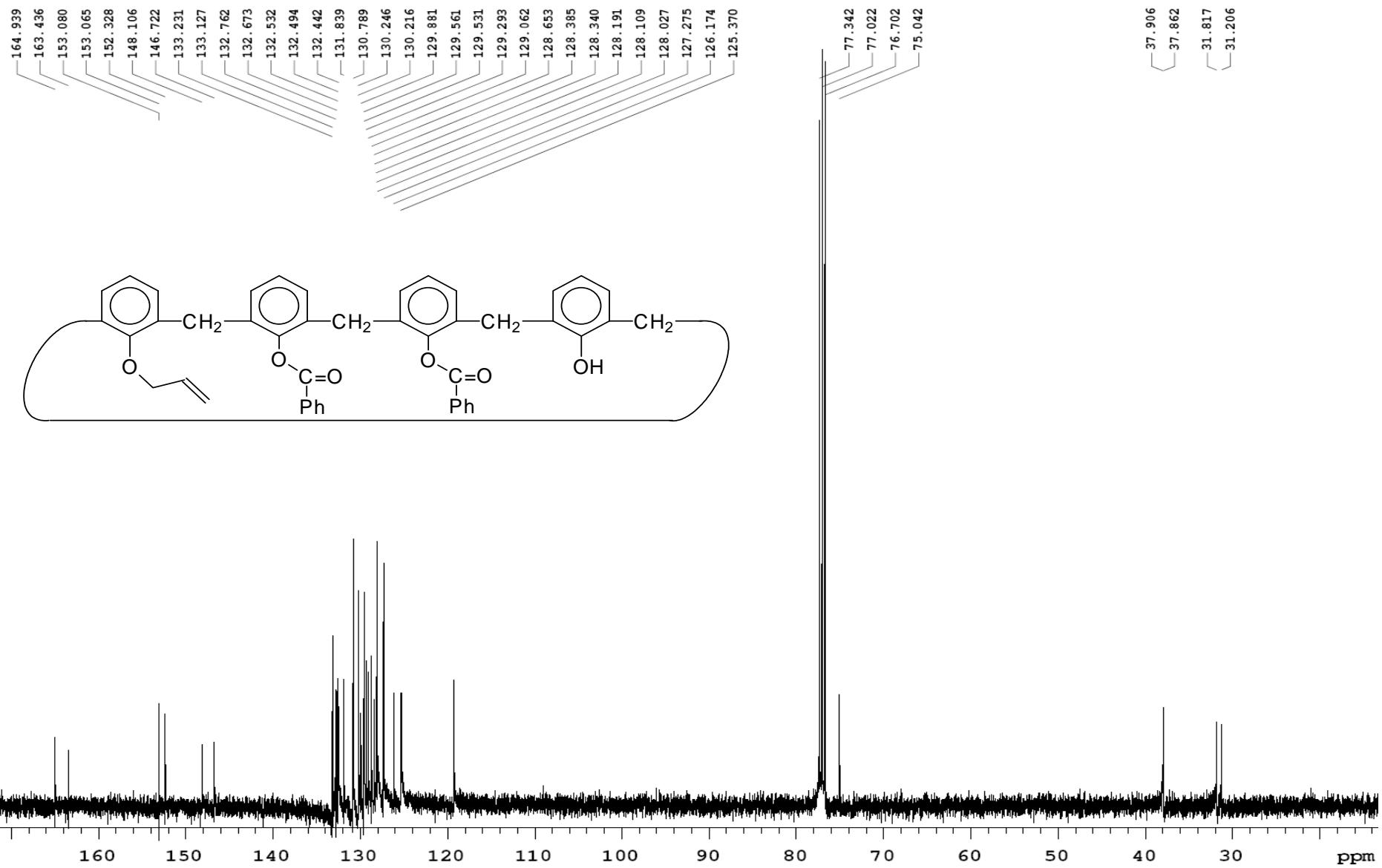
PULSE SEQUENCE: Gcosy
Relax. delay 1.000 sec
Acq. time 0.142 sec
Width 3612.7 Hz
2D Width 3612.7 Hz
Single scan
128 increments
Total time 2 min, 49 s

OBSERVE H1, 399.5553486 MHz

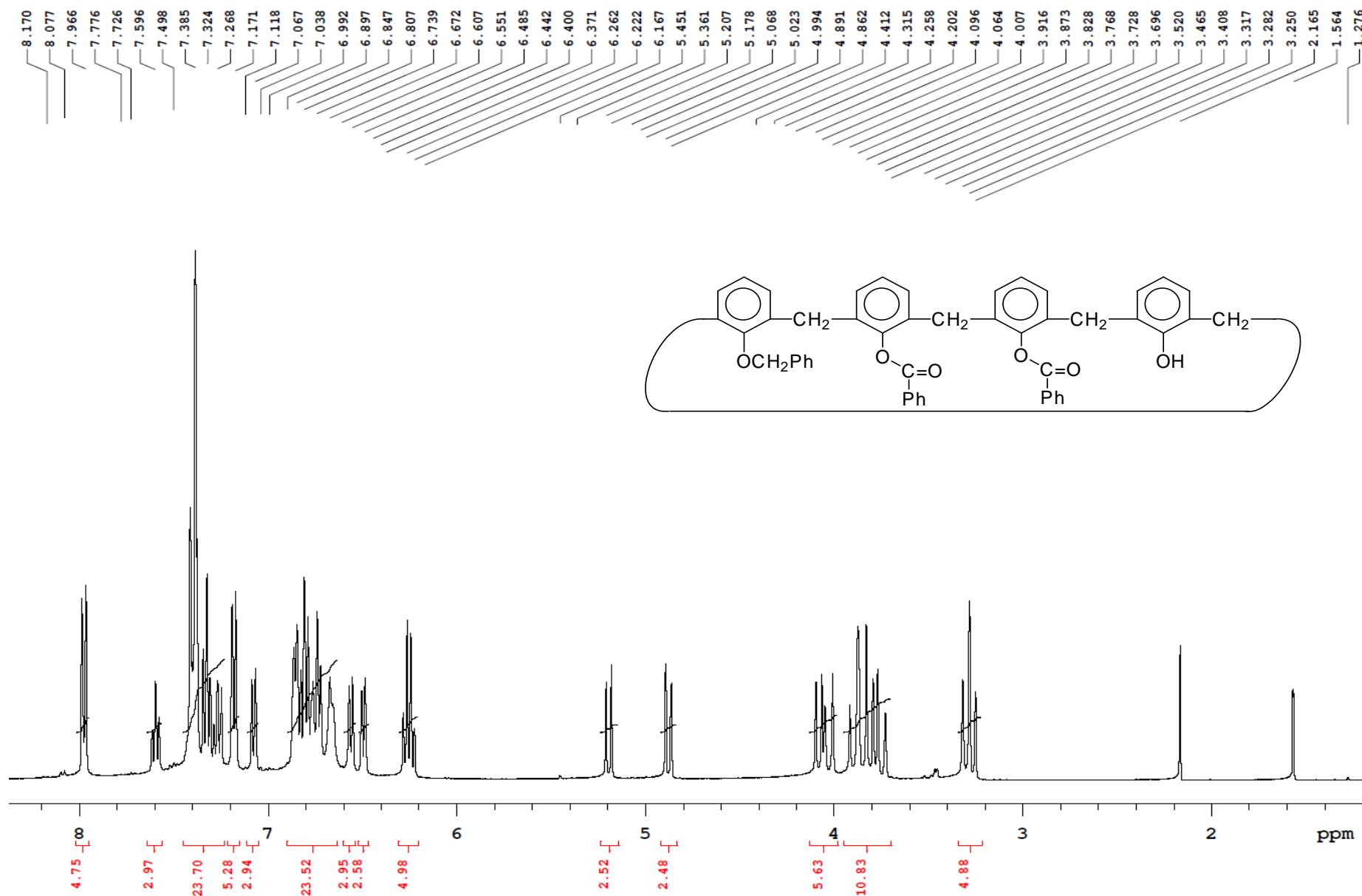
DATA PROCESSING
Sine bell 0.071 sec
F1 DATA PROCESSING
Sine bell 0.071 sec
FT size 2048 x 2048



COSY(CDCl_3) spectrum of 25,26-Dibenzoyloxy-27-allyloxy-28-dihydroxycalix[4]arene (**42**)



¹³C-NMR (CDCl_3) spectrum of 25,26-Dibenzoyloxy-27-allyloxy-28-dihydroxycalix[4]arene (**42**)



¹H-NMR (CDCl₃) spectrum of 25,26-Dibenzoyloxy-27-benzyloxy-28-dihydroxycalix[4]arene (**43**)

Sample: kura_7/17_benzyldibm
Sample ID: s_kura_7/17_benzyldibm_01
File: /home/vnmr2/vnmr2sys/data/kura_7/17_benzyldibm_02.fid

Pulse Sequence: gCOSY

SAMPLE: kura 7/17 benzyldibm

File: /home/vnmr2/vnmr2sys/data/kura_7/17_benzyldibm_02.fid

Date: Jul 17 2009

Solvent: cdc13

Temp. 25.0 C / 298.1 K

Operator: vnmr2

File: 17_benzyldibm_02

VNMRS-400 "400MR"

PULSE SEQUENCE: Gcosy

Relax. delay 1.000 sec

Acq. time 0.147 sec

Width 3472.2 Hz

2D Width 3472.2 Hz

Single scan

200 increments

Total time 4 min, 17 s

OBSERVE H1, 399.5553486 MHz

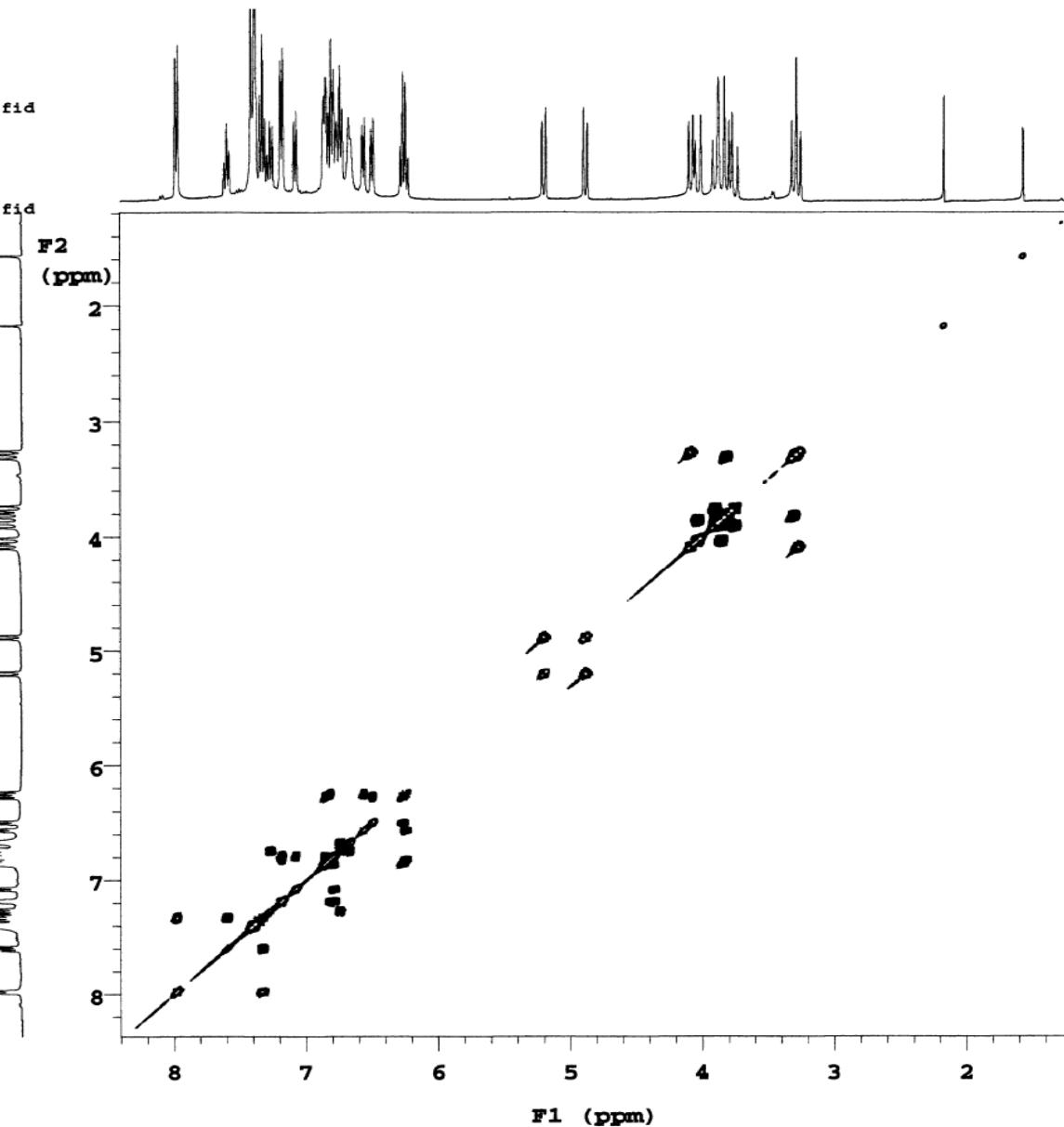
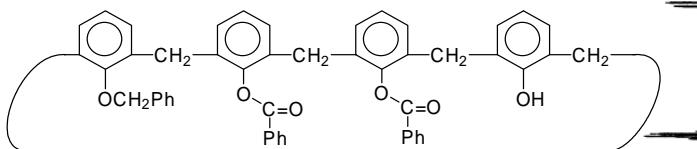
DATA PROCESSING

Sine bell 0.074 sec

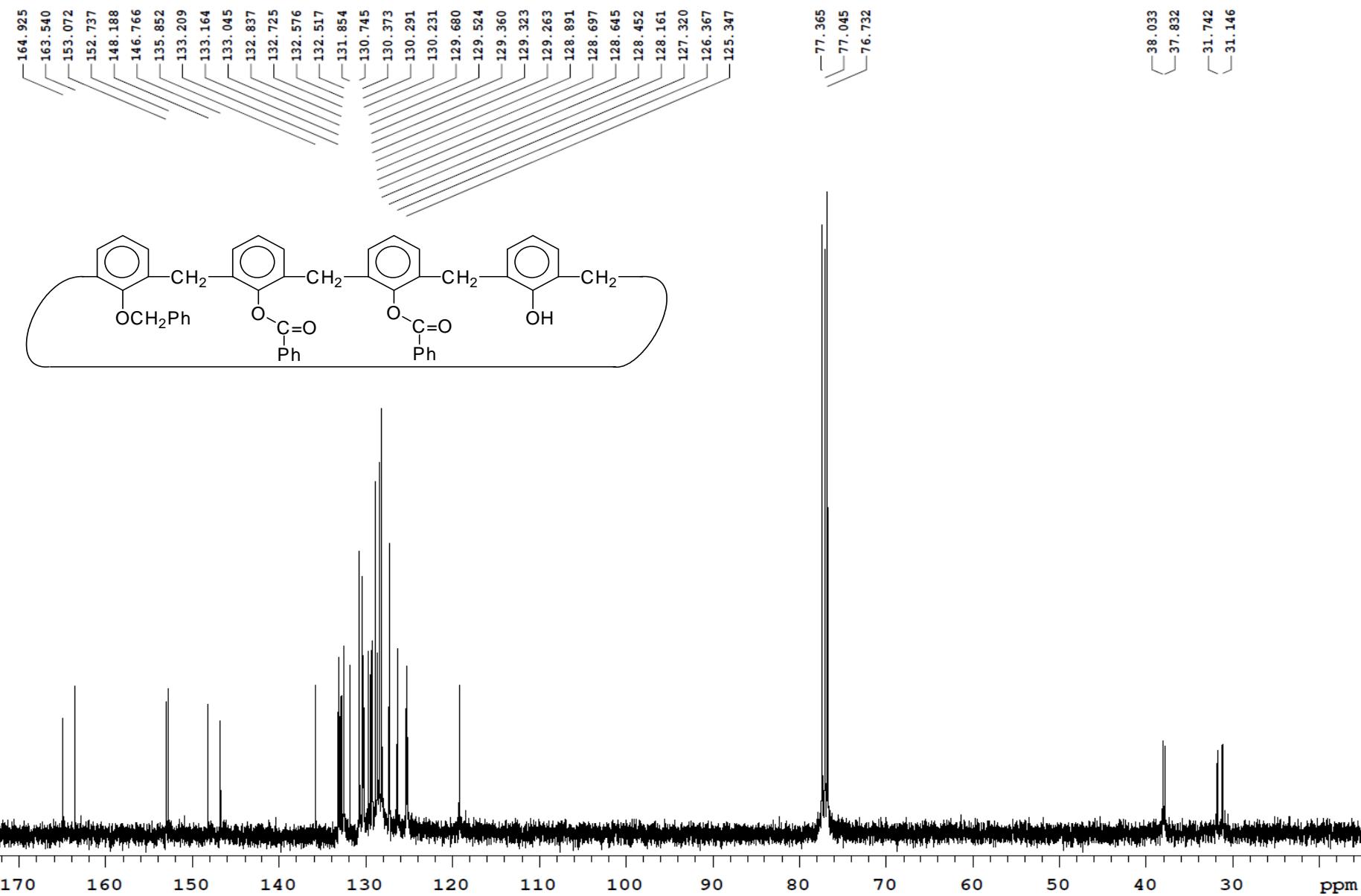
F1 DATA PROCESSING

Sine bell 0.115 sec

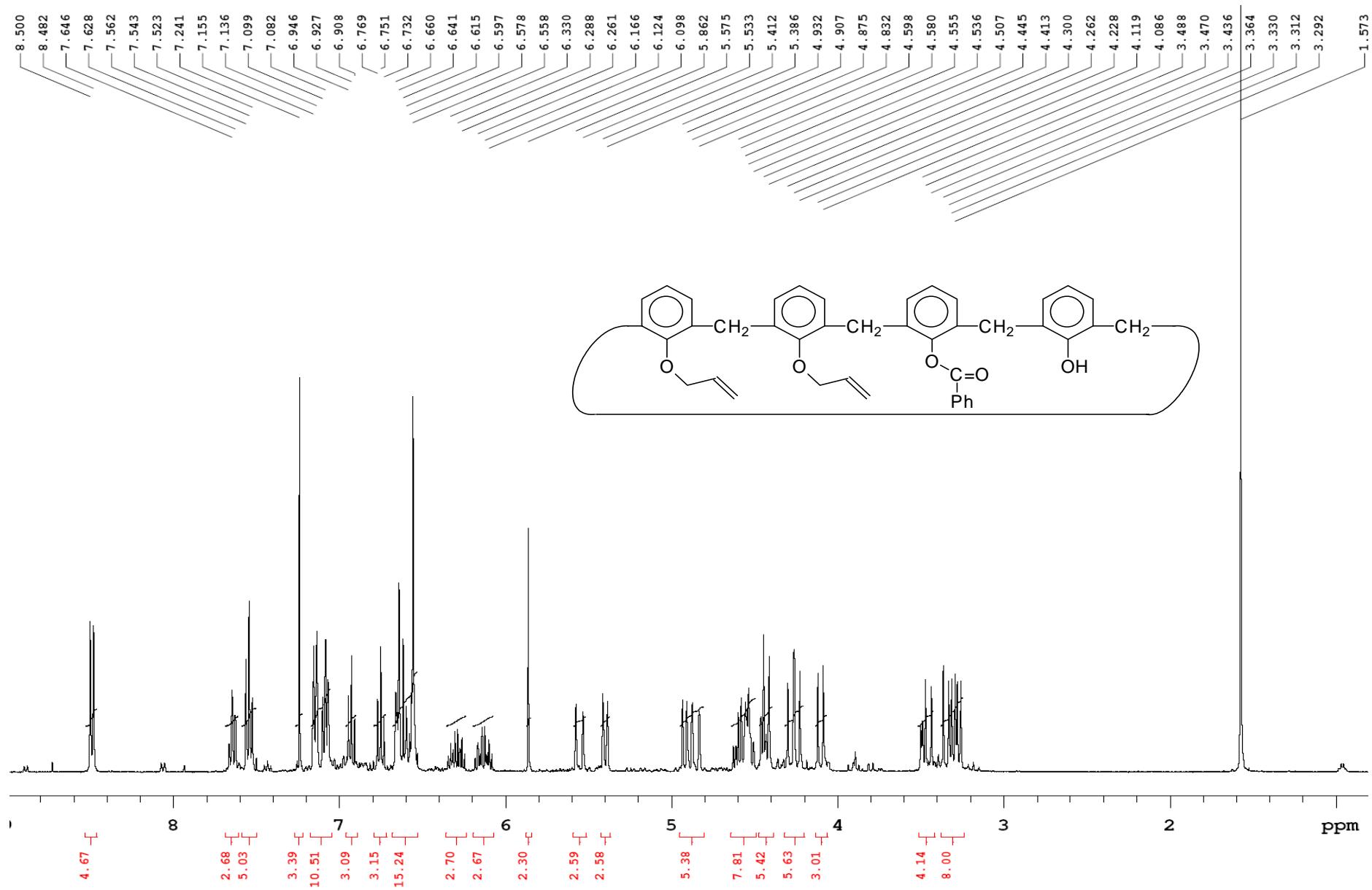
FT size 4096 x 4096



COSY(CDCl_3) spectrum of 25,26-Dibenzoyloxy-27-benzyloxy-28-dihydroxycalix[4]arene (43)

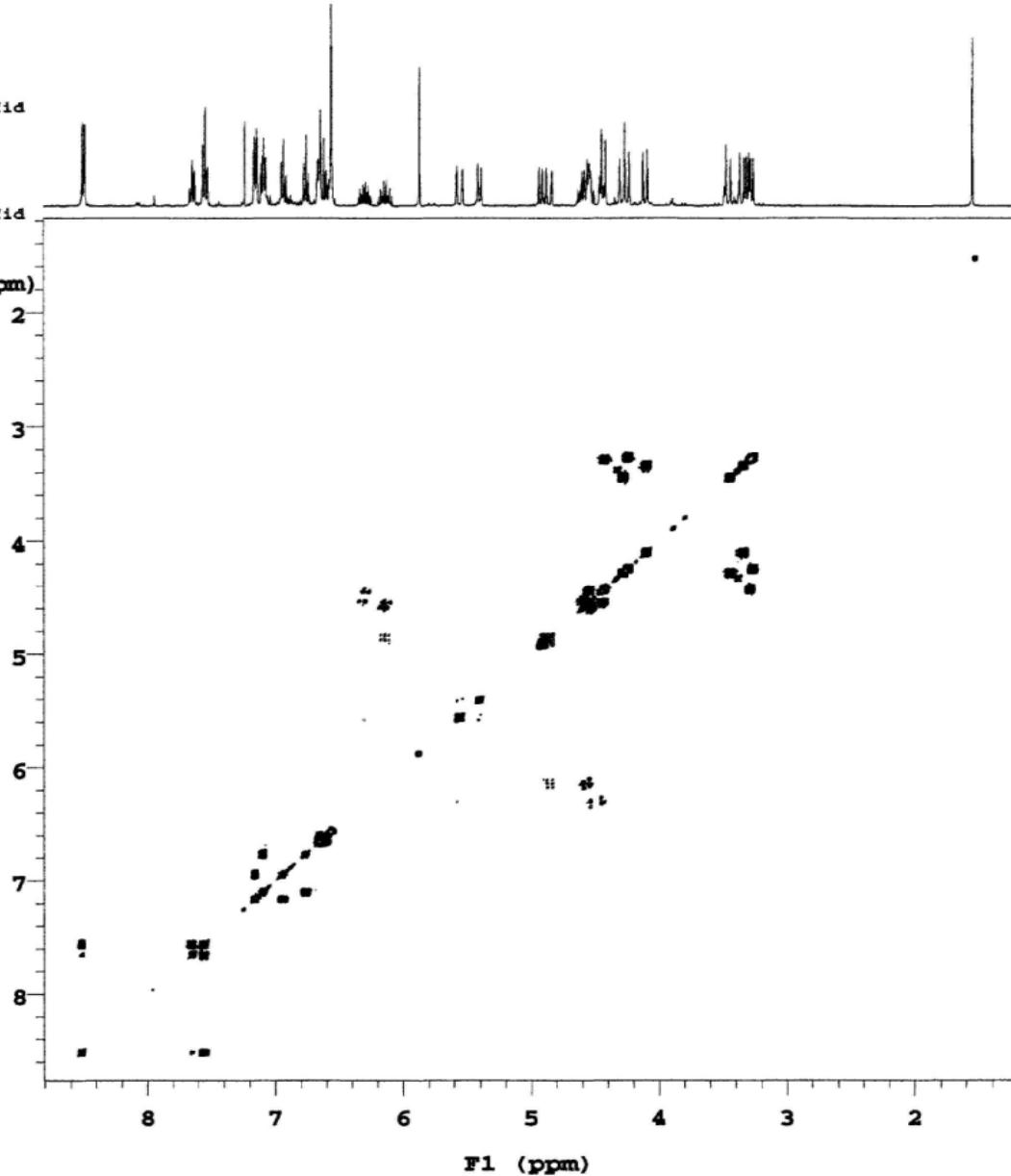
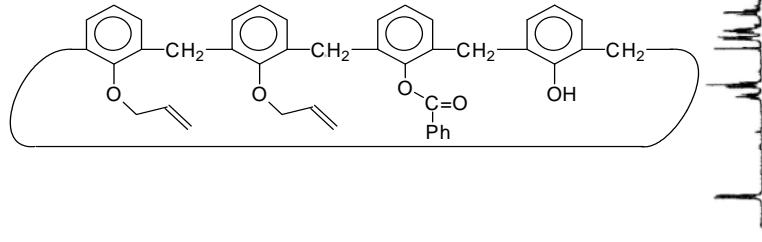


^{13}C -NMR (CDCl_3) spectrum of 25,26-Dibenzoyloxy-27-benzyloxy-28-dihydroxycalix[4]arene (43)

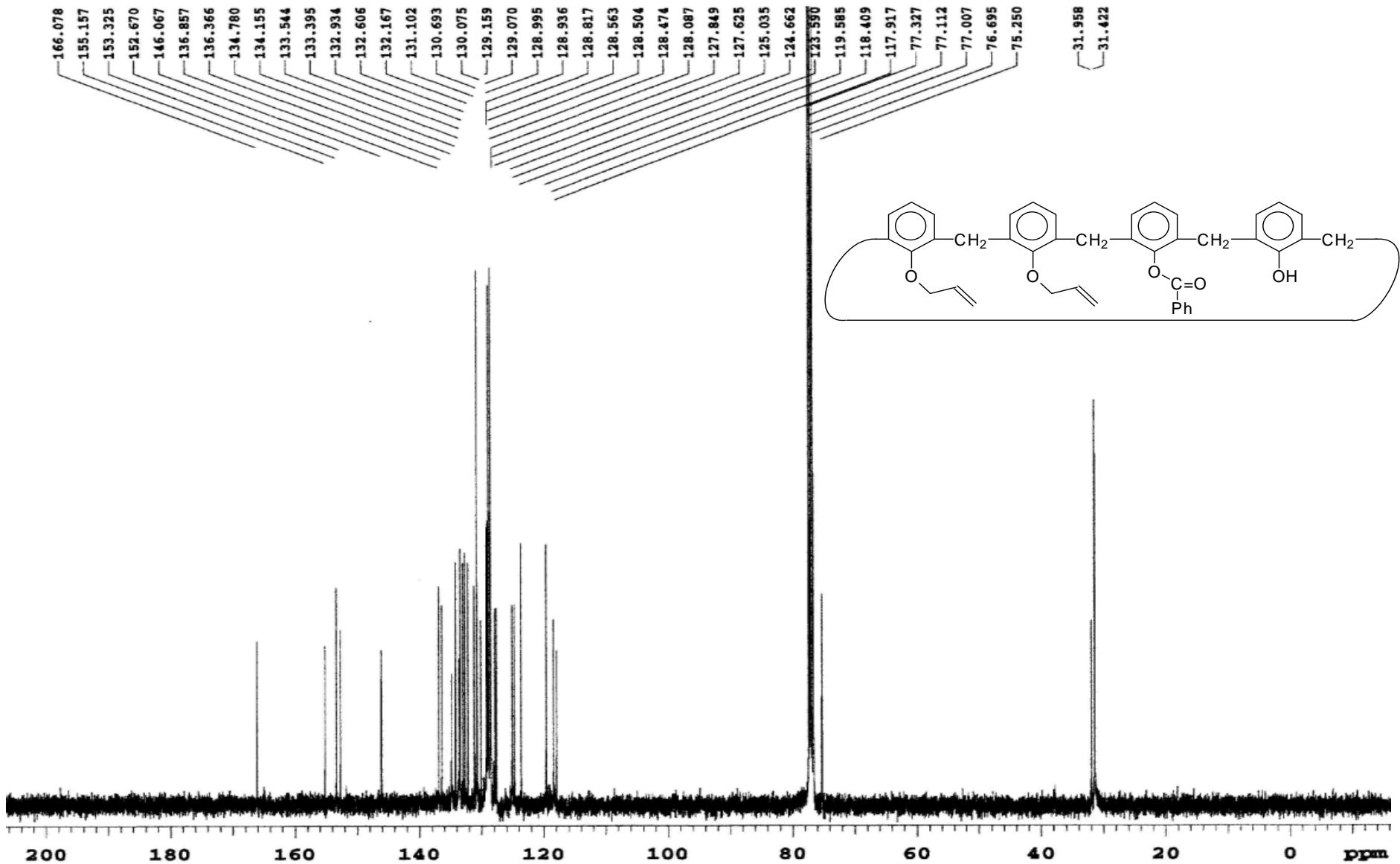


¹H-NMR (CDCl₃) spectrum of 25,26-Diallyloxy-27-benzoyloxy-28-dihydroxycalix[4]arene (**44**)

Sample: kevin_kura_0604_diallyl.bn
 Sample ID: s_kevin_kura_0604_diallyl.bn_02
 File: /home/vnmr2/vnmr2sys/data/kevin_kura_0604_diallyl.bn_03.fid
 Pulse Sequence: gCOSY
 SAMPLE: kevin_kura_0604_diallyl.bn
 File: /home/vnmr2/vnmr2sys/data/kevin_kura_0604_diallyl.bn_03.fid
 Date: Jun 4 2009
 Solvent: cdc13
 Temp. 25.0 C / 298.1 K
 Operator: vnmr2
 File: kevin_kura_0604_diallyl.bn_03
 VNMRS-400 "400MR"
 PULSE SEQUENCE: Gcosy
 Relax. delay 1.000 sec
 Acq. time 0.128 sec
 Width 4006.4 Hz
 2D Width 4006.4 Hz
 Single scan
 512 increments
 Total time 10 min, 37 s
 OBSERVE H1, 399.5553486 MHz
 DATA PROCESSING
 Sine bell 0.064 sec
 F1 DATA PROCESSING
 Sine bell 0.256 sec
 FT size 8192 x 8192



COSY(CDCl_3) spectrum of 25,26-Diallyloxy-27-benzoyloxy-28-dihydroxycalix[4]arene (44)



[Mass Spectrum]

Data : FAB-1307

Sample: 1a*(NBA)

Note : *

Inlet : Direct

Date : 24-Jun-98 09:57

Ion Mode : FAB+

Spectrum Type : Regular [MF-Linear]

RT : 0.84 min

Scan# : (5,7)

Temp : 13.1 deg.C

BP : m/z 105.0000

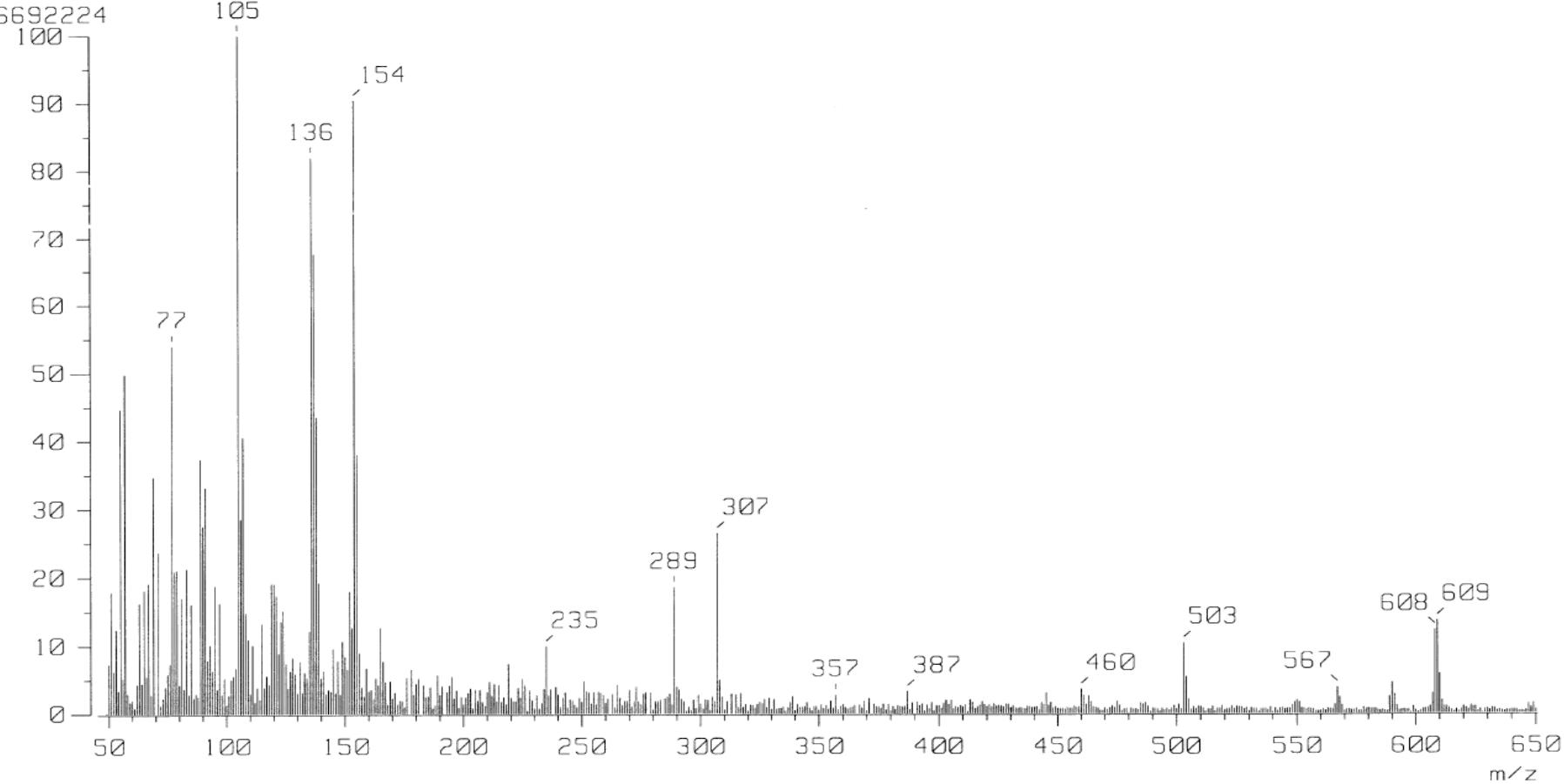
Int. : 1591.90

Output m/z range : 45.0000 to 650.9000

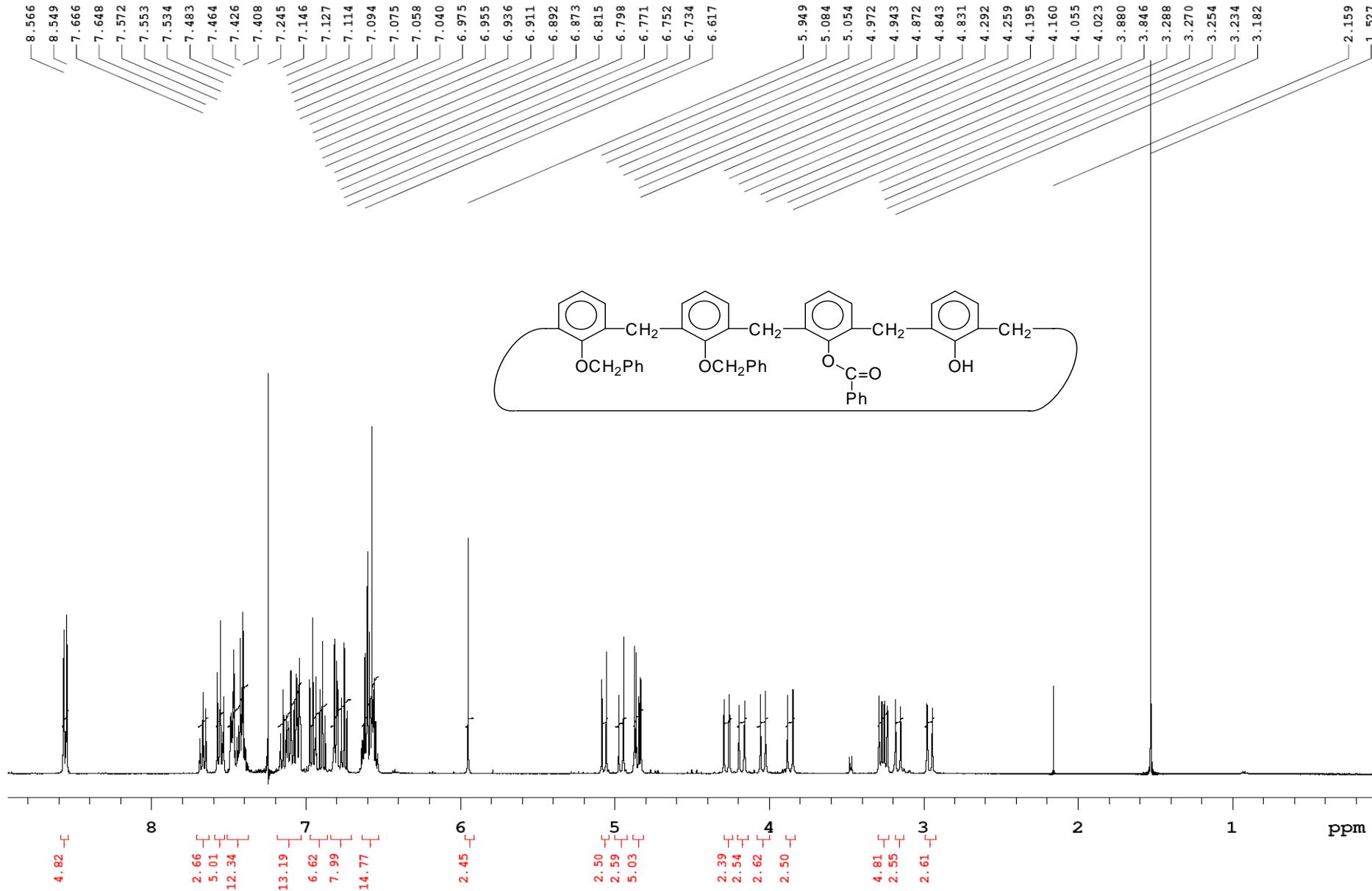
Cut Level : 0.00 %

16692224 105

131

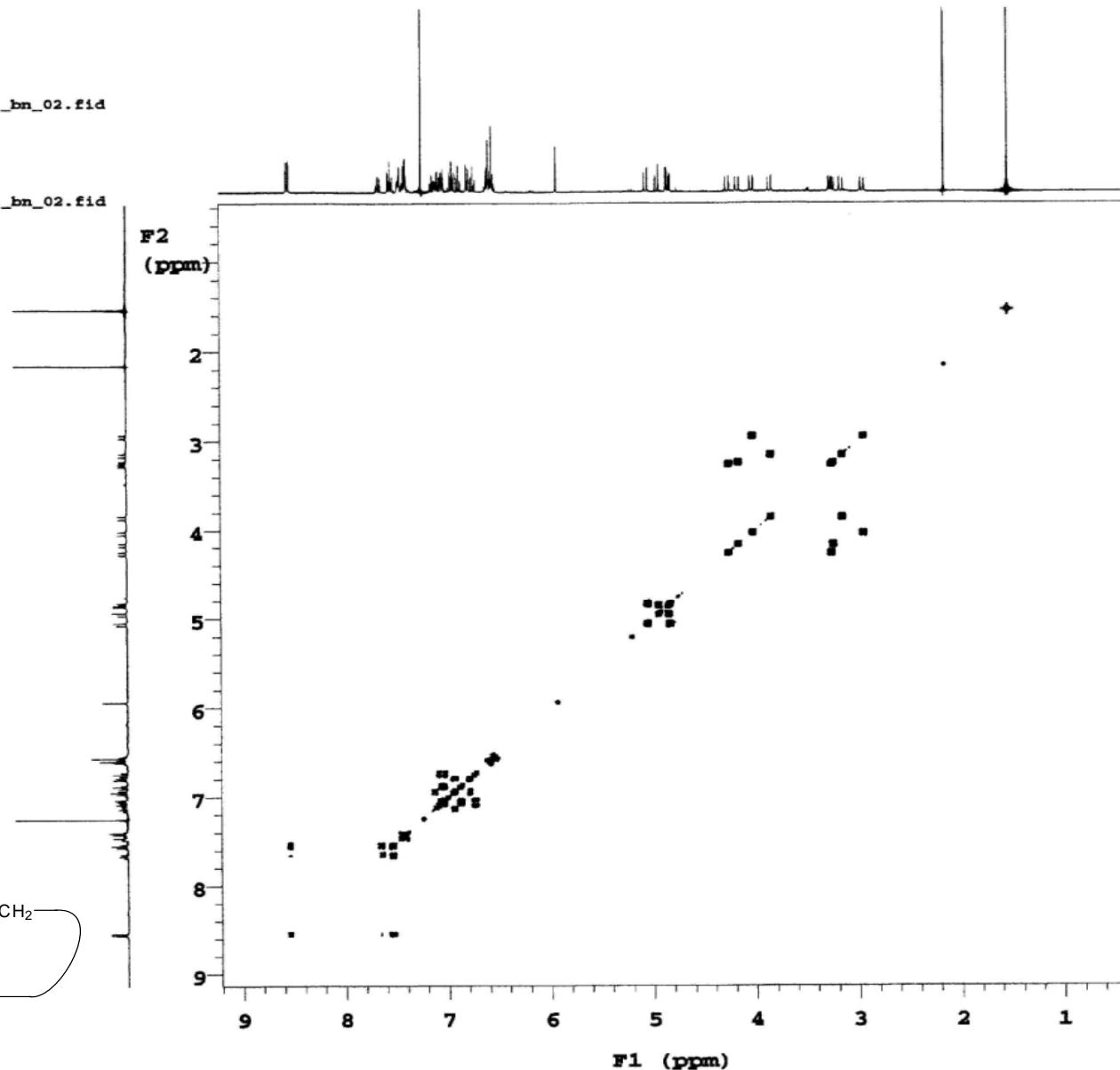
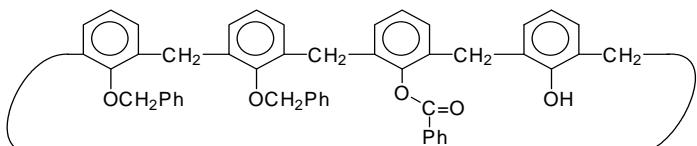


FAB-MS spectrum of 25,26-Diallyloxy-27-benzoyloxy-28-dihydroxycalix[4]arene (44)

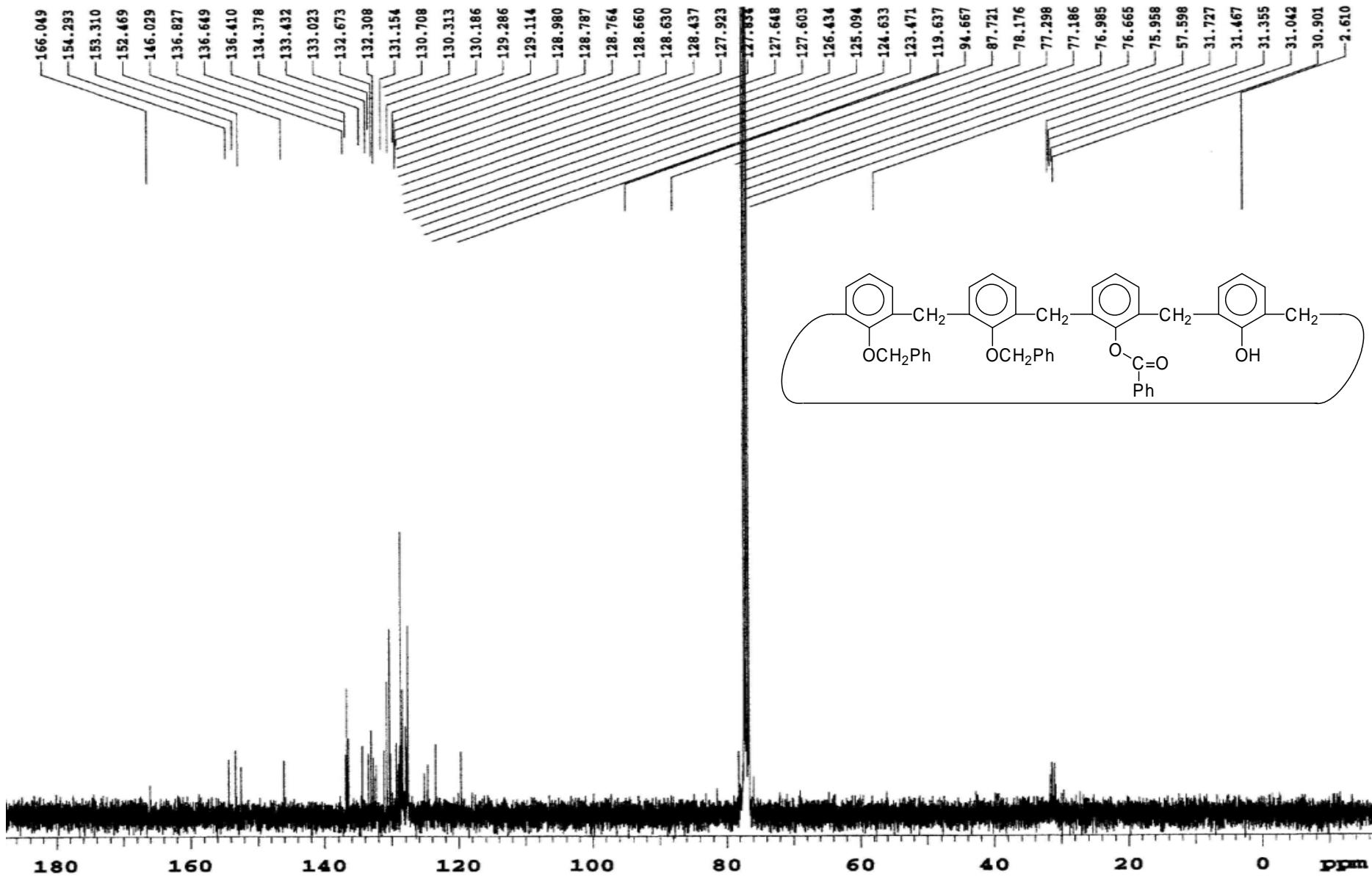


¹H-NMR (CDCl₃) spectrum of 25,26-Dibenzylxy-27-benzoyloxy-28-dihydroxycalix[4]arene
(45)

Sample: han_12dibenzyl_bn
 Sample ID: s_han_12dibenzyl_bn_01
 File: /home/vnmr2/vnmrsys/data/han_12dibenzyl_bn_02.fid
 Pulse Sequence: gCOSY
 SAMPLE: han_12dibenzyl_bn
 File: /home/vnmr2/vnmrsys/data/han_12dibenzyl_bn_02.fid
 Date: Jun 5 2009
 Solvent: cdc13
 Temp. 25.0 C / 298.1 K
 Operator: vnmr2
 File: han_12dibenzyl_bn_02
 VNMRS-400 "400MR"
 PULSE SEQUENCE: Gcosy
 Relax. delay 1.000 sec
 Acq. time 0.134 sec
 Width 3834.4 Hz
 2D Width 3834.4 Hz
 Single scan
 512 increments
 Total time 10 min, 42 s
 OBSERVE H1, 399.5553486 MHz
 DATA PROCESSING
 Sine bell 0.067 sec
 F1 DATA PROCESSING
 Sine bell 0.267 sec
 FT size 8192 x 8192



COSY(CDCl_3) spectrum of 25,26-Dibenzyloxy-27-benzoyloxy-28-dihydroxycalix[4]arene (45)



¹³C-NMR (CDCl_3) spectrum of 25,26-Dibenzyloxy-27-benzoyloxy-28-dihydroxycalix[4]arene
(45)

[Mass Spectrum]

Data : FAB-1314

Date : 24-Jun-98 16:27

Sample: 4a(NBA)

Note : *

Inlet : Direct

Ion Mode : FAB+

Spectrum Type : Regular [MF-Linear]

RT : 0.67 min Scan# : (4,6)

Temp : 13.0 deg.C

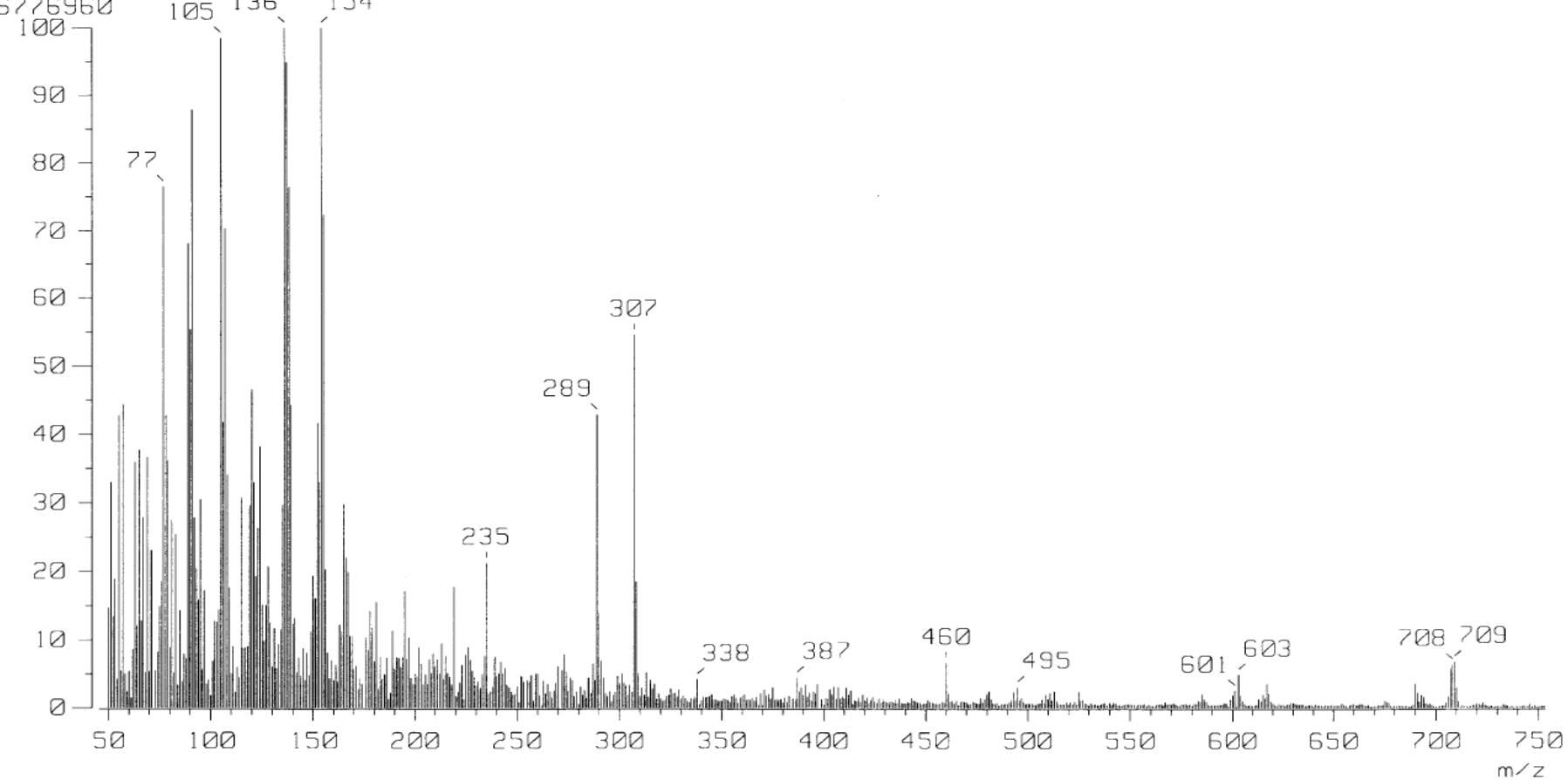
BP : m/z 136.0000 Int. : 1599.98

Output m/z range : 45.0000 to 753.7180

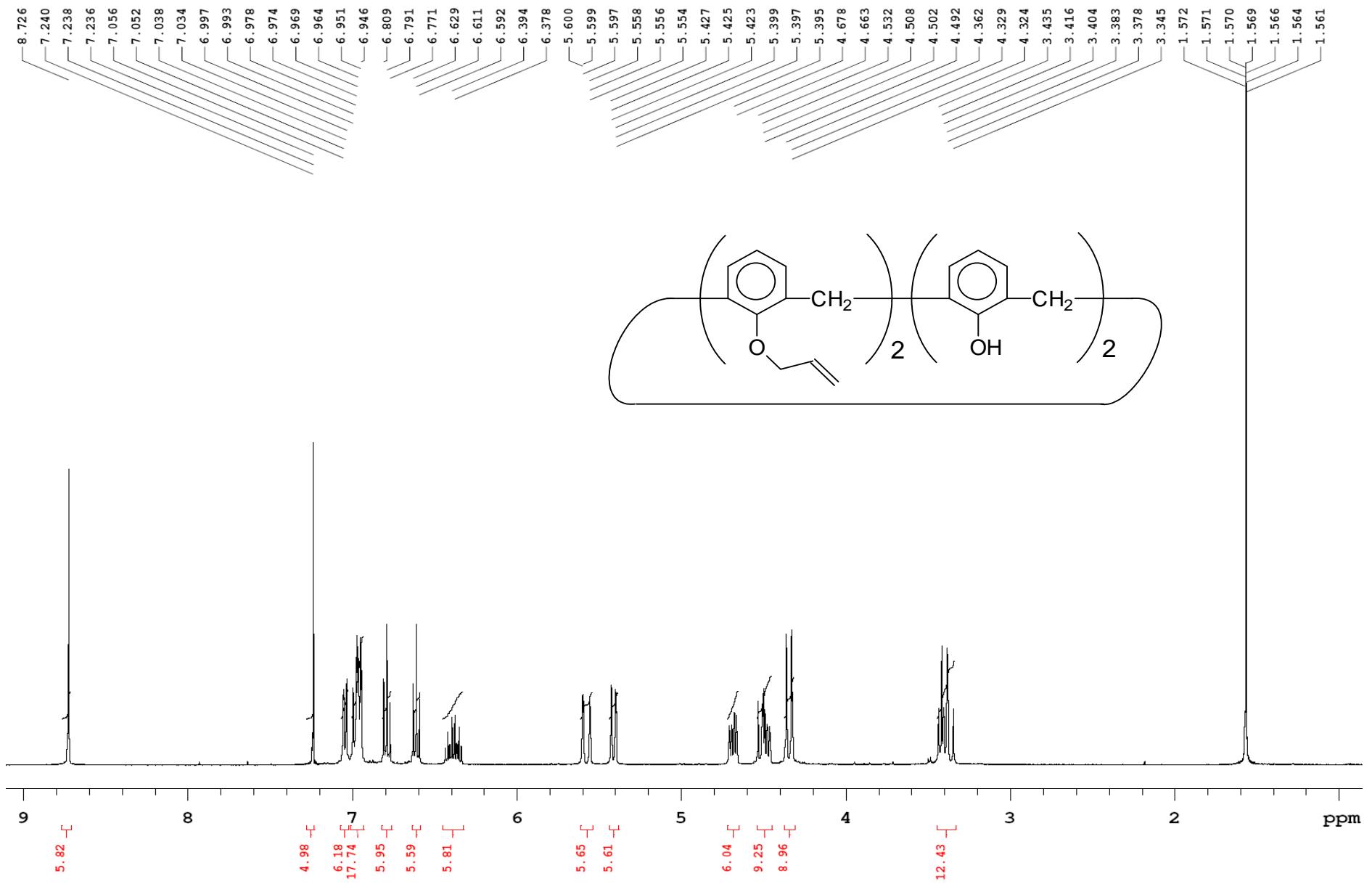
Cut Level : 0.00 %

16776960 105 136 154

135



FAB-MS spectrum of 25,26-Dibenzylxyloxy-27-benzoyloxy-28-dihydroxycalix[4]arene (**45**)



¹H-NMR (CDCl_3) spectrum of 25,26-Diallyloxy-27,28-dihydroxycalix[4]arene (**46**)

Sample: kura 6/25 diallyl dich
Sample ID: s_kura_6/25_diallyl_dich_01
File: /home/vnmr2/vnmr2sys/data/kura_6/25_diallyl_dich_02.fid

Pulse Sequence: gCOSY

SAMPLE: kura 6/25 diallyl dich
File: /home/vnmr2/vnmr2sys/data/kura_6/25_diallyl_dich_02.fid

Date: Jun 25 2009

Solvent: cdc13

Temp. 25.0 C / 298.1 K

Operator: vnmr2

File: 25_diallyl_dich_02

VNMRS-400 "400MR"

PULSE SEQUENCE: Gcosy

Relax. delay 1.000 sec

Acq. time 0.142 sec

Width 3612.7 Hz

2D Width 3612.7 Hz

Single scan

128 increments

Total time 2 min, 49 s

OBSERVE H1, 399.5553486 MHz

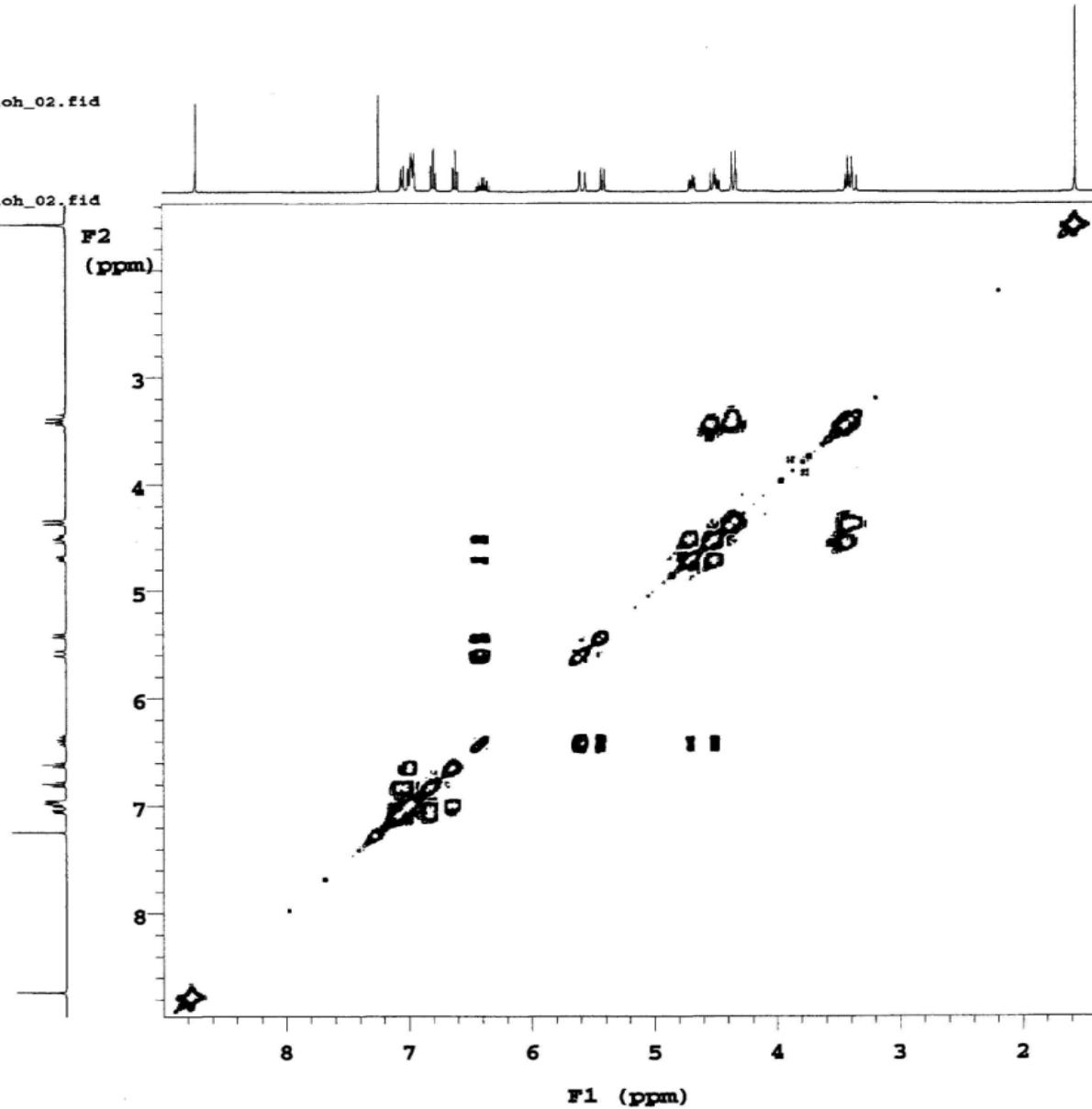
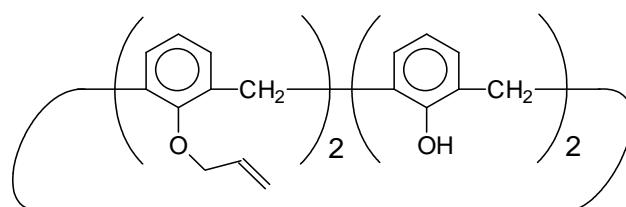
DATA PROCESSING

Sine bell 0.071 sec

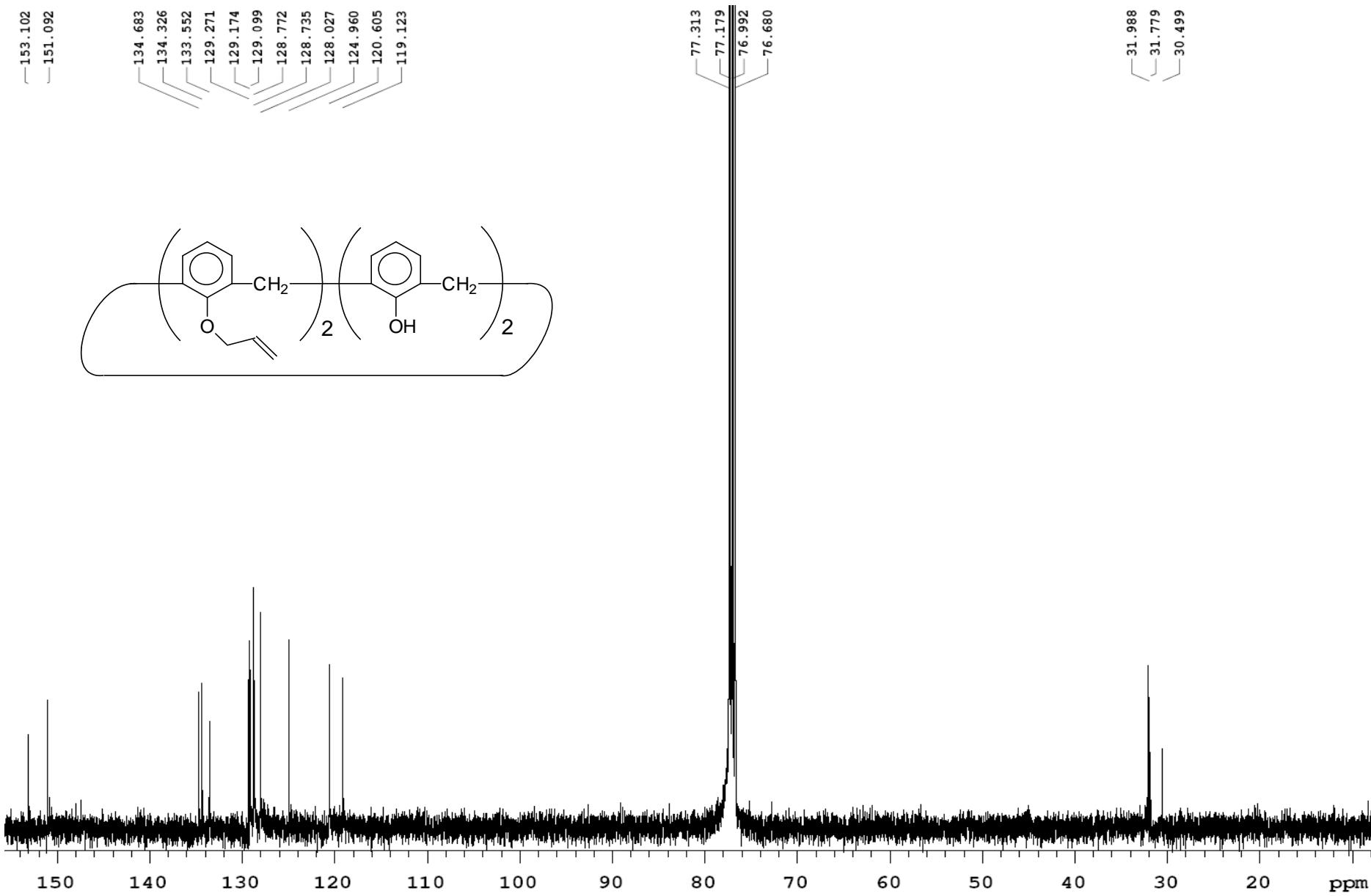
F1 DATA PROCESSING

Sine bell 0.071 sec

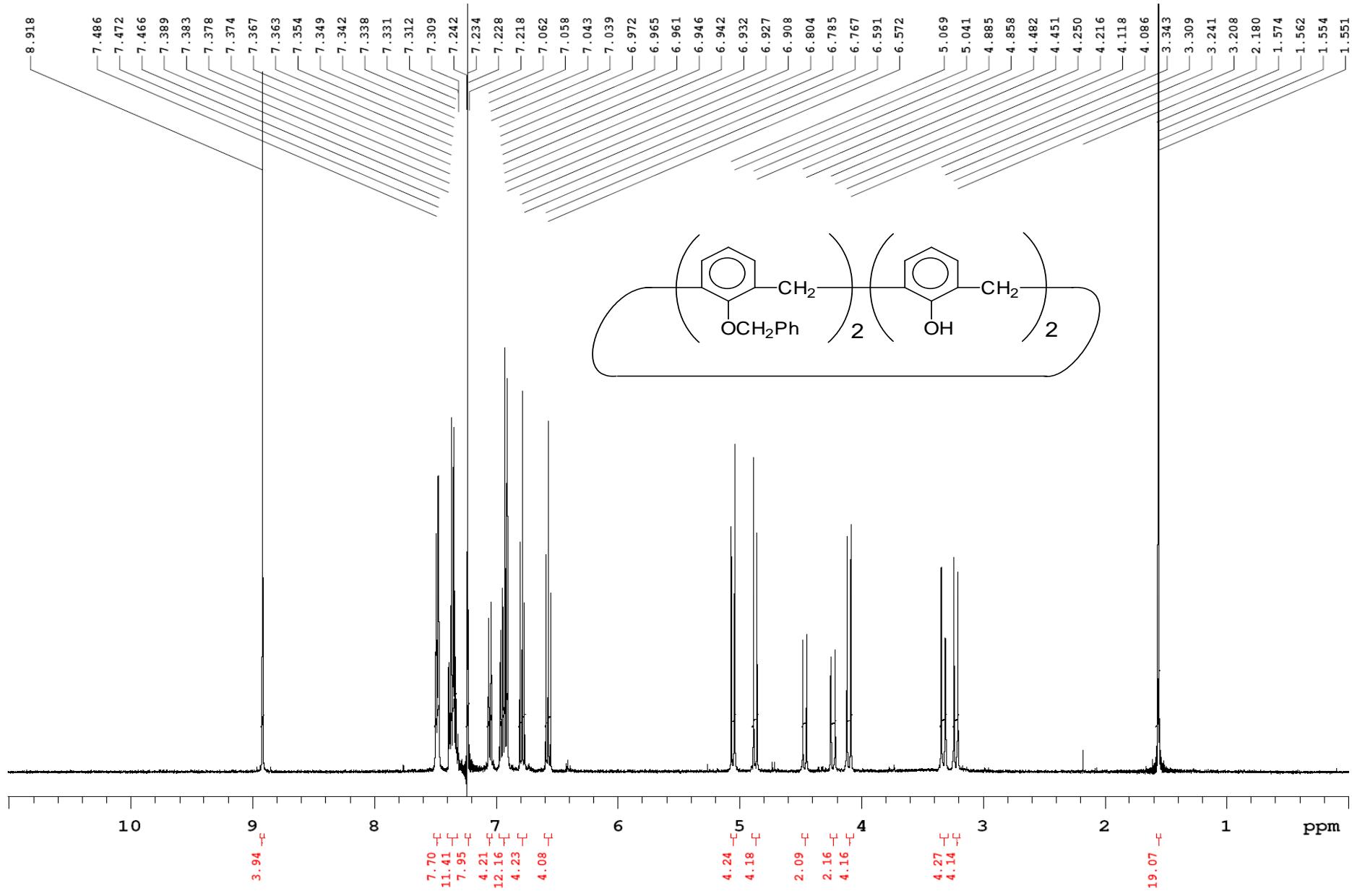
FT size 2048 x 2048



COSY(CDCl_3) spectrum of 25,26-Diallyloxy-27,28-dihydroxycalix[4]arene (**46**)

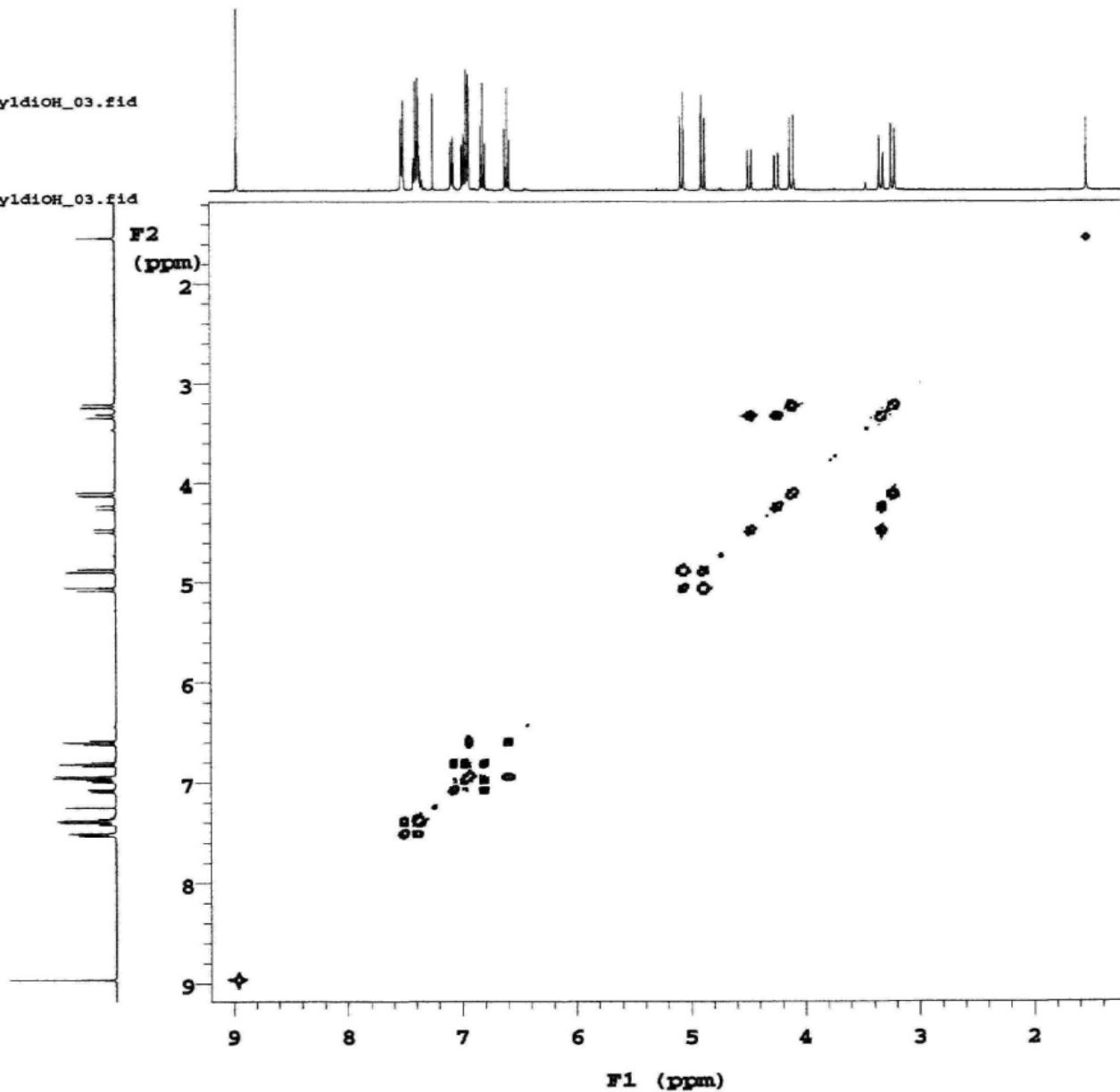
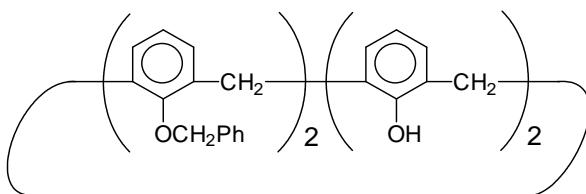


^{13}C -NMR (CDCl_3) spectrum of 25,26-Diallyloxy-27,28-dihydroxycalix[4]arene (46)

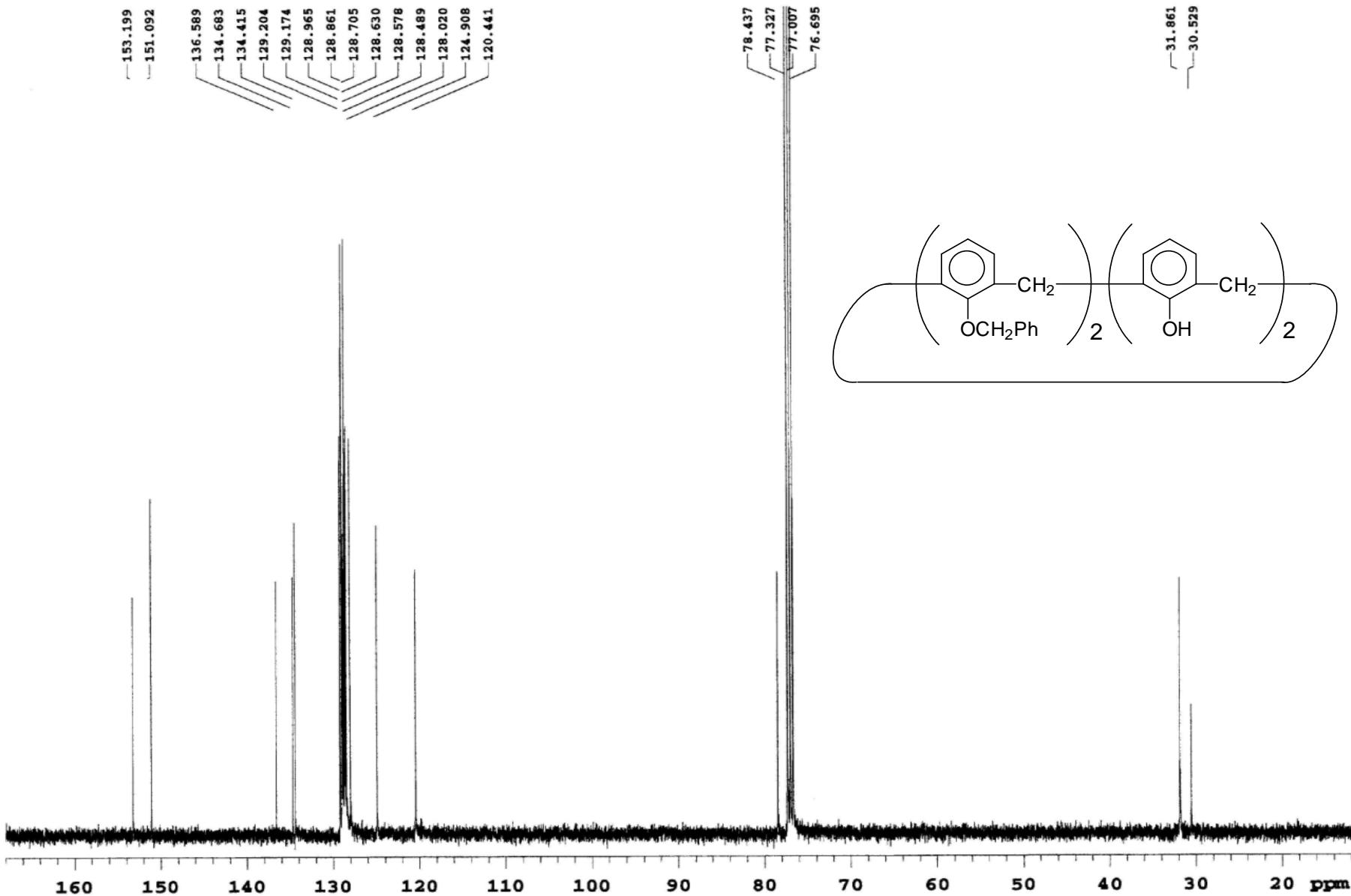


¹H-NMR (CDCl_3) spectrum of 25,26-Dibenzylxy-27,28-dihydroxycalix[4]arene (**47**)

Sample: han_0505_dibenzyldioH
 Sample ID: s_han_0505_dibenzyldioH_02
 File: /home/vnmr2/vnmrsys/data/han_0505_dibenzyldioH_03.fid
 Pulse Sequence: gCOSY
 SAMPLE: han_0505_dibenzyldioH
 File: /home/vnmr2/vnmrsys/data/han_0505_dibenzyldioH_03.fid
 Date: Jun 5 2009
 Solvent: cdcl3
 Temp. 25.0 C / 298.1 K
 Operator: vnmr2
 File: han_0505_dibenzyldioH_03
 VNMRS-400 "400MR"
 PULSE SEQUENCE: Gcosy
 Relax. delay 1.000 sec
 Acq. time 0.137 sec
 Width 3742.5 Hz
 2D Width 3742.5 Hz
 Single scan
 200 increments
 Total time 4 min, 15 s
 OBSERVE H1, 399.5553486 MHz
 DATA PROCESSING
 Sine bell 0.068 sec
 F1 DATA PROCESSING
 Sine bell 0.107 sec
 FT size 4096 x 4096



COSY(CDCl₃) spectrum of 25,26-Dibenzyloxy-27,28-dihydroxycalix[4]arene (47)



[Mass Spectrum]

Data : FAB-1305

Sample: 2*(NBA)

Note : *

Inlet : Direct

Date : 23-Jun-98 15:55

Ion Mode : FAB+

Spectrum Type : Regular [MF-Linear]

RT : 2.67 min

Scan# : (16,19)

Temp : 15.6 deg.C

BP : m/z 91.0000

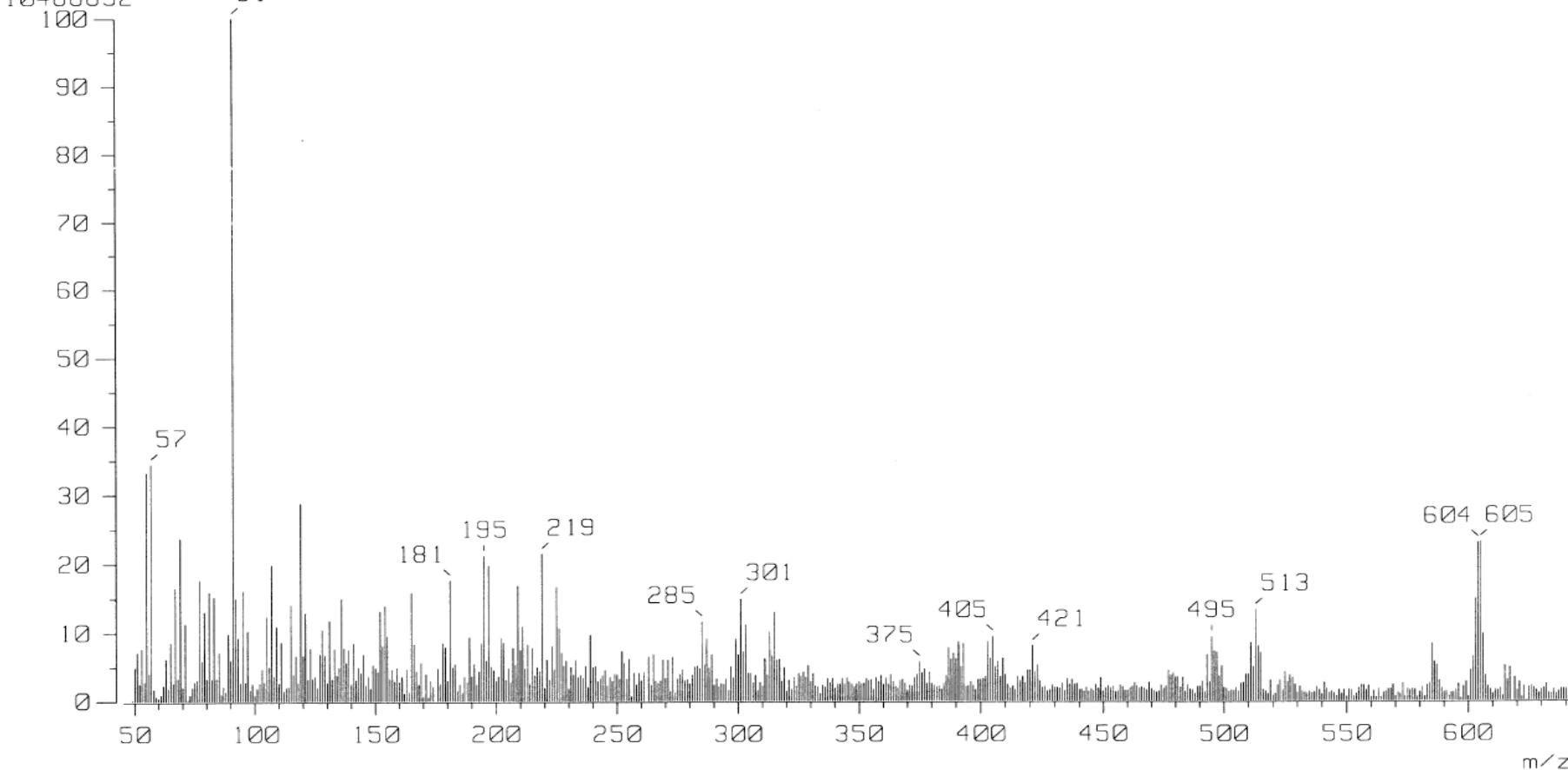
Int. : 1000.29

Output m/z range : 45.0000 to 641.8500

Cut Level : 0.00 %

10488832

91



FAB-MS spectrum of 25,26-Dibenzyloxy-27,28-dihydroxycalix[4]arene (47)