

## Supporting Information for

# Identification, synthesis and characterization of process related desfluoro impurity of ezetimibe and HPLC method validations

Esen Bellur Atici<sup>a,\*</sup>, Bekir Karlığa<sup>a</sup>

<sup>a</sup>*Deva Holding A.Ş., Çerkezköy-2 Production Plant, Karaağaç Mh. Fatih Blv. No: 26 Address No: 2278035833 Kapaklı, Tekirdağ, Turkey*

\*Corresponding author. Tel: +90 282 7581771 (4413), Fax: +90 282 7581770

E-mail addresses: [ebellur@deva.com.tr](mailto:ebellur@deva.com.tr), [esenbellur@yahoo.com](mailto:esenbellur@yahoo.com)

### Table of contents

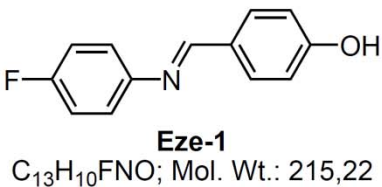
<sup>1</sup>H, <sup>13</sup>C and DEPT (or APT) NMR; MS and IR spectral data of:

Eze-1	2
Desfluoro Eze-1	6
Eze-4	11
Eze-5	15
Desfluoro Eze-5	19
Eze-6	24
Desfluoro Eze-6	29
Eze-7	34
Desfluoro Eze-7	39
Ezetimibe	44
Desfluoro Ezetimibe	51
Ezetimibe vs Desfluoro Ezetimibe	57
HPLC chromatograms of Eze-5-6-7+desfluoro Eze-5-6-7+spiked samples	58

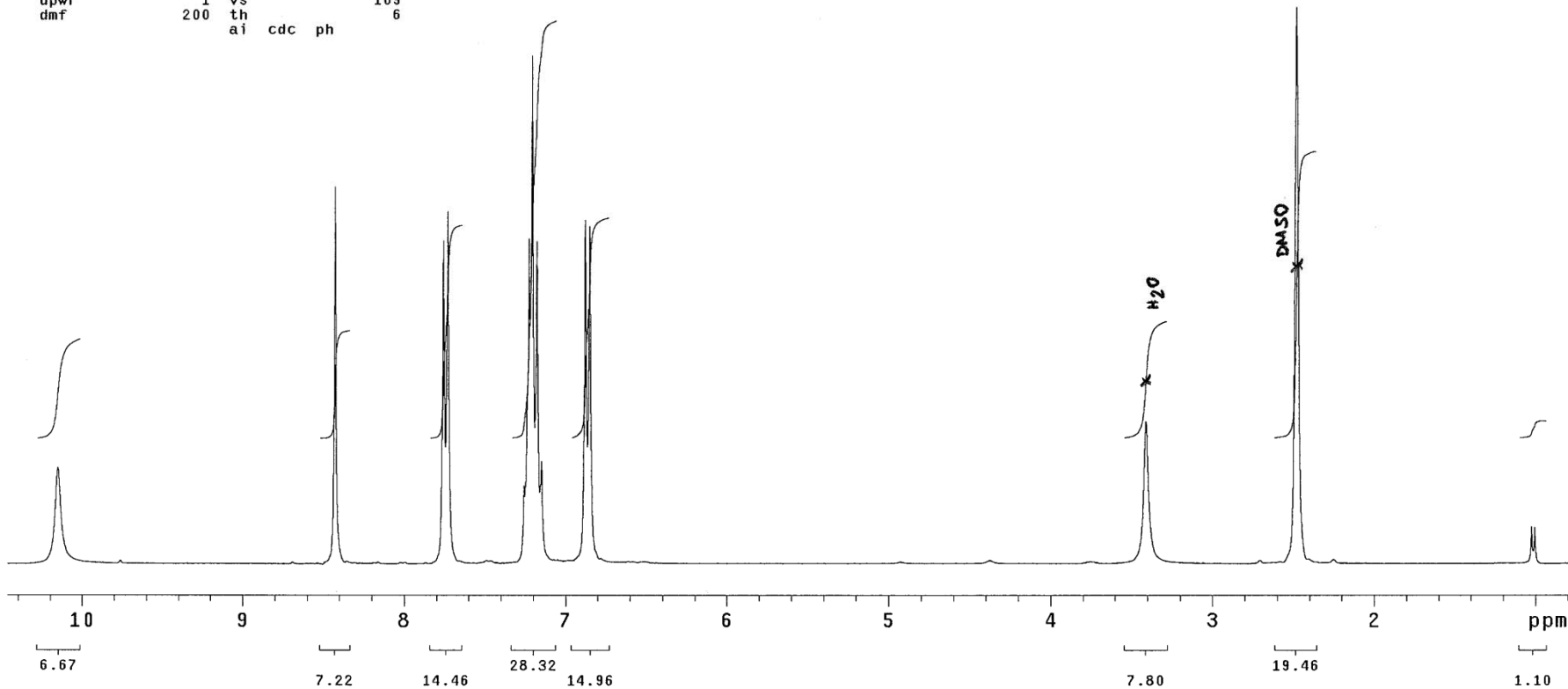
STANDARD 1H OBSERVE

exp1 s2pu1

SAMPLE SPECIAL  
date Jun 11 2007 temp not used  
solvent DMSO gain not used  
file exp spin 20  
ACQUISITION hst 0.008  
sw 4798.5 pw90 15.400  
at 1.998 alfa 20.000  
np 19174  
fb 2600 il n  
bs 16 in n  
d1 1.000 dp y  
nt 8 hs nn  
ct  
TRANSMITTER fn  
tn H1  
sfrq 299.927 sp 226.8  
tof 255.9 wp 2912.1  
tpwr 56 rfl 599.7  
pw 7.700 rfp 0  
DECOUPLER rp -167.9  
dn C13 lp -80.7  
dof 0  
dm nnn wc 250  
dmm c sc 0  
dpwr 1 vs 109  
dmf 200 th 6  
ai cdc ph



INDEX	FREQUENCY	PPM	HEI
1	3045.437	10.154	
2	2527.927	8.429	
3	2327.015	7.759	
4	2318.522	7.730	
5	2176.477	7.257	
6	2167.398	7.226	
7	2161.833	7.208	
8	2153.047	7.179	
9	2146.311	7.156	
10	2143.968	7.148	
11	2063.135	6.879	
12	2054.641	6.851	
13	1022.550	3.409	
14	743.733	2.480	
15	307.056	1.024	
16	300.905	1.003	



13C OBSERVE

exp1 s2pu1

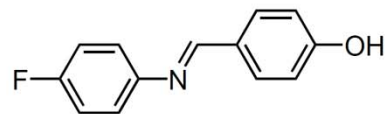
SAMPLE SPECIAL  
date Jun 11 2007 temp not used  
solvent DMSO gain not used  
file exp spin 20  
ACQUISITION hst 0.008  
sw 18867.9 pw90 18.875  
at 1.815 a1fa 20.000  
np 68492  
fb 10400 il n  
bs 64 in n  
d1 1.000 dp y  
nt 256 hs nn  
ct 128  
TRANSMITTER lb 1.00  
tn C13 fn not used  
sfrq 75.425  
tof 725.6 sp 2810.1  
tpwr 56 wp 9633.5  
pw 9.438 rfl 1138.2  
DECOUPLER rfp 0  
dn H1 rp 49.0  
dof 0 lp -243.7  
dm yyw  
dmm w wc 250  
dpwr 41 sc 0  
dmf 11400 vs 127  
ai no ph th 8

FLAGS

PROCESSING

DISPLAY

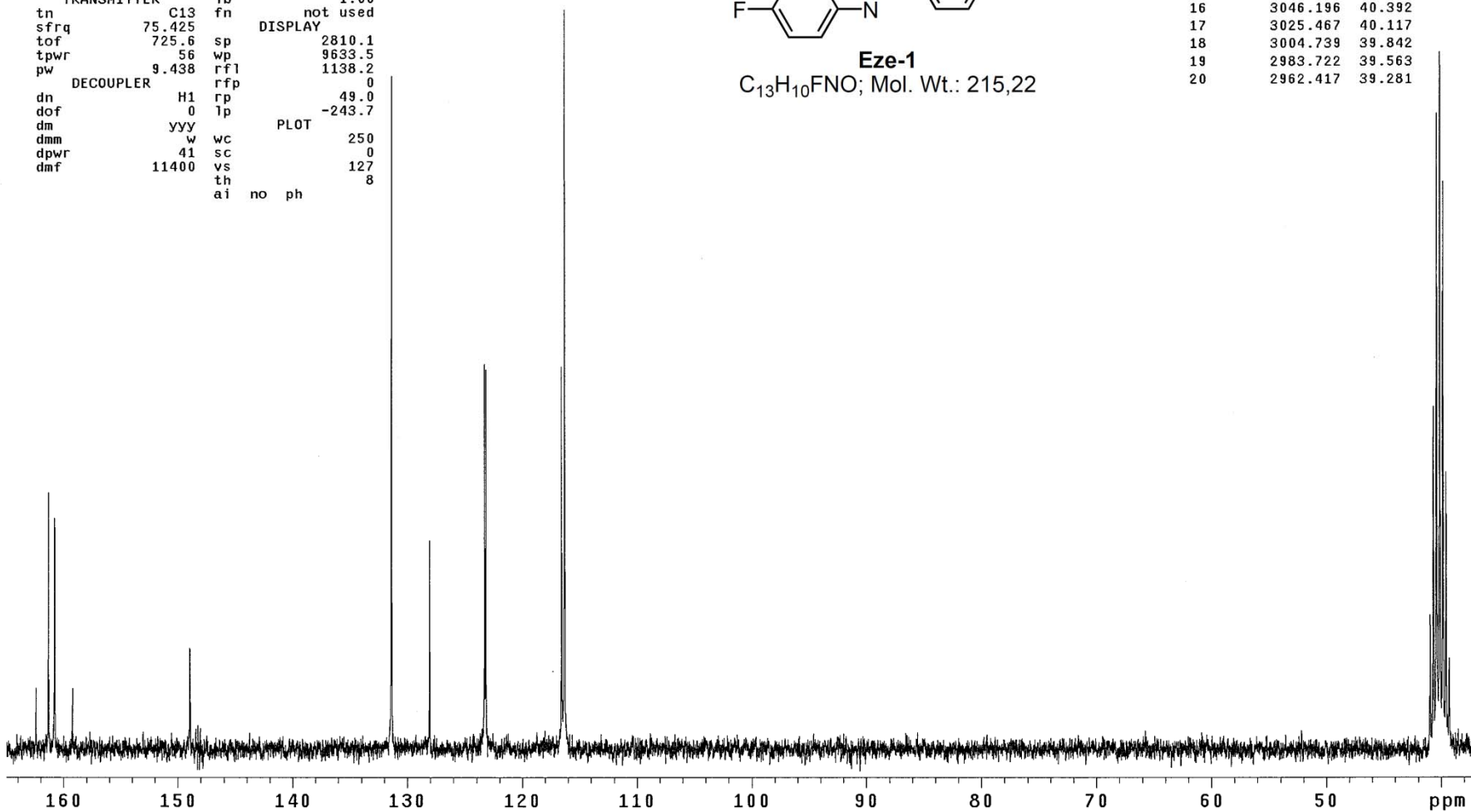
PLOT



Eze-1

C<sub>13</sub>H<sub>10</sub>FNO; Mol. Wt.: 215,22

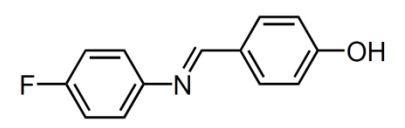
INDEX	FREQUENCY	PPM	HEI
1	12250.125	162.433	
2	12167.497	161.338	
3	12127.479	160.807	
4	12008.576	159.231	
5	11235.560	148.981	
6	11232.969	148.946	
7	9907.757	131.374	
8	9658.146	128.064	
9	9298.557	123.296	
10	9290.208	123.186	
11	8792.426	116.585	
12	8772.561	116.322	
13	8770.258	116.291	
14	3087.942	40.945	
15	3067.213	40.670	
16	3046.196	40.392	
17	3025.467	40.117	
18	3004.739	39.842	
19	2983.722	39.563	
20	2962.417	39.281	



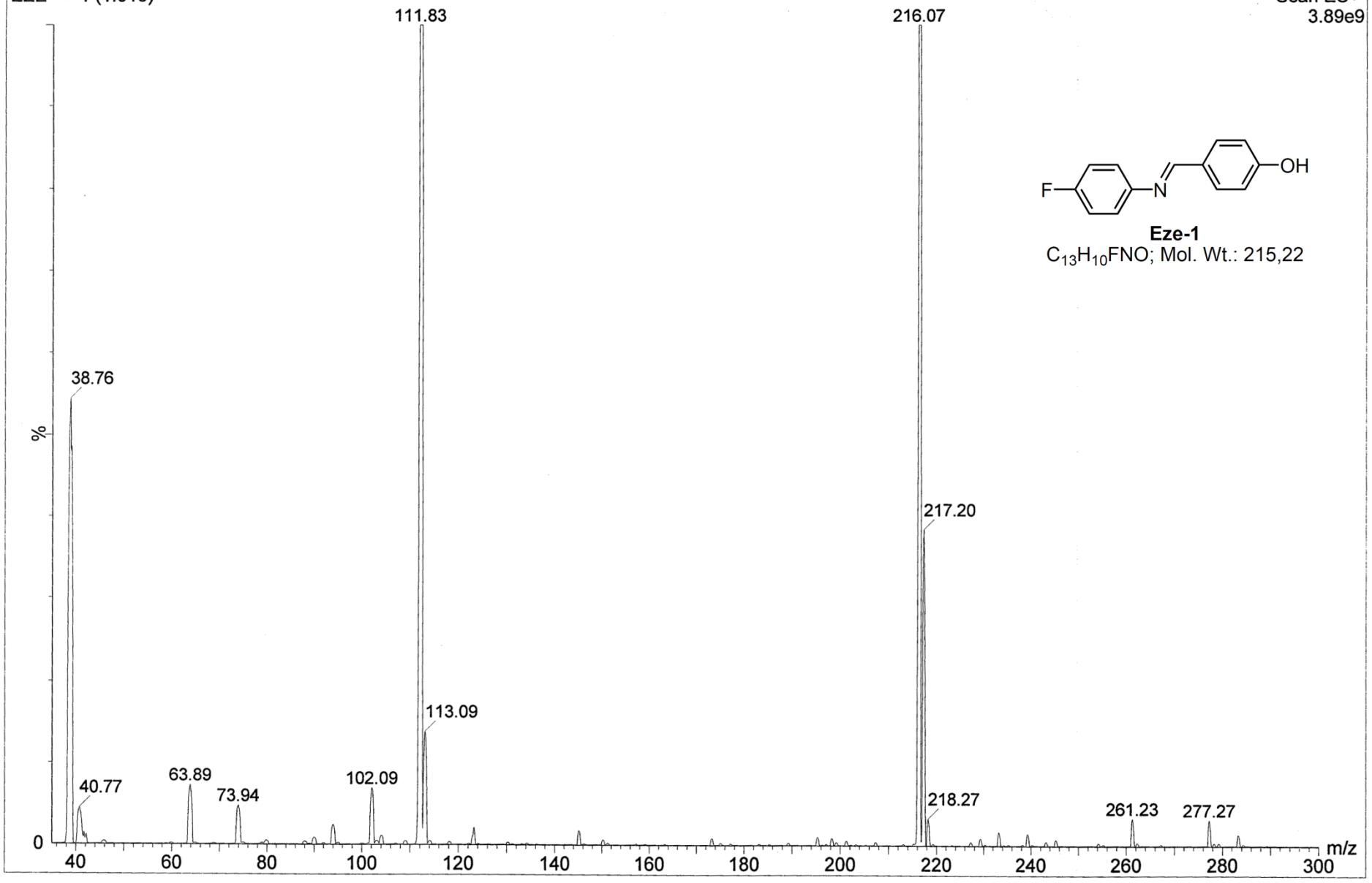
EZE

EZE + 1 (1.019)

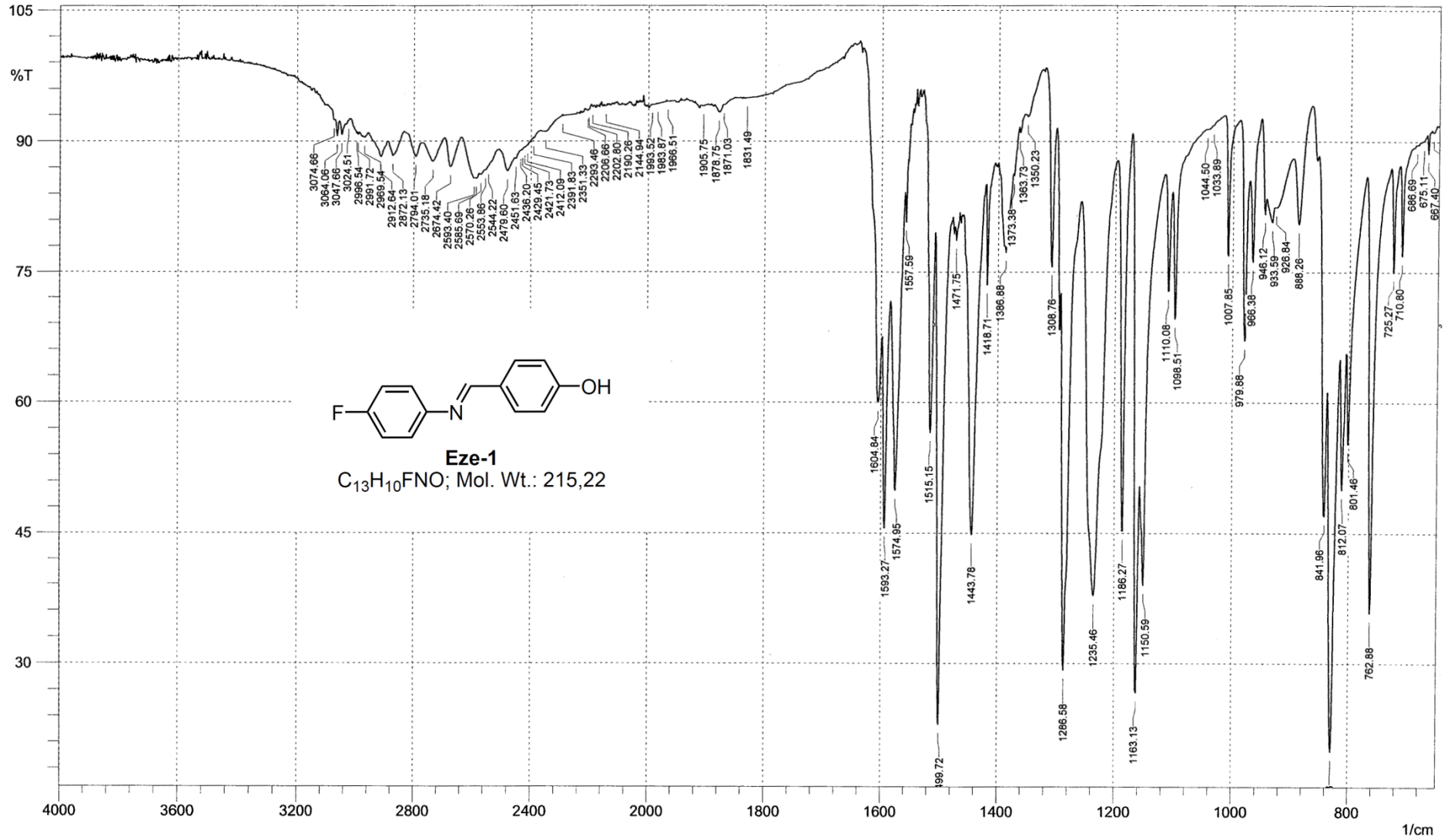
Scan ES+  
3.89e9



**Eze-1**  
C<sub>13</sub>H<sub>10</sub>FNO; Mol. Wt.: 215,22



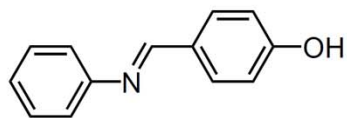




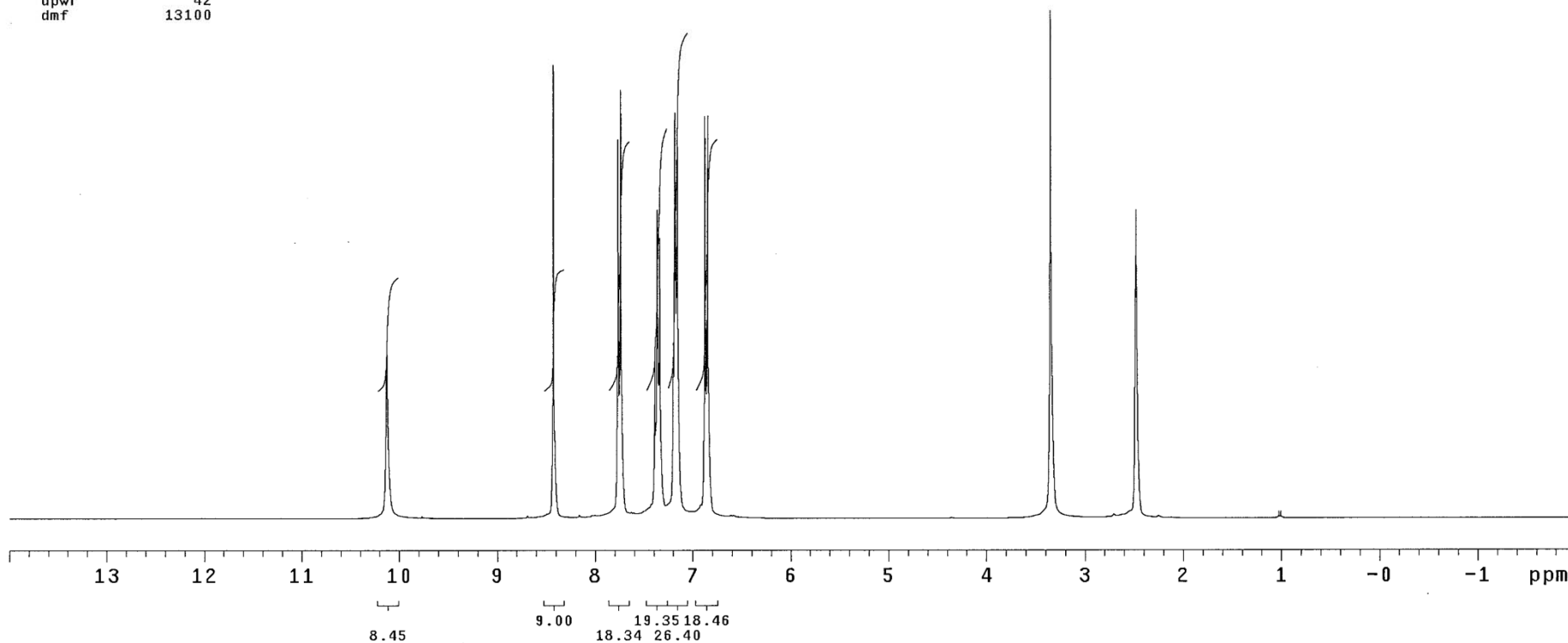
STANDARD 1H OBSERVE

exp5 s2pu1

SAMPLE		SPECIAL	
date	Jan 19 2010	temp	not used
solvent	DMSO	gain	not used
file	/export/home/~	spin	20
vnmr1/vnmrsys/data/~		hst	0.008
/EB.01.137-1-DMSO~		pw90	14.500
	H.fid	alfa	20.000
ACQUISITION		FLAGS	
sw	4798.5	il	n
at	1.998	in	n
np	19174	dp	y
fb	2600	hs	nn
bs	16	PROCESSING	
d1	1.000	fn	not used
nt	1200	DISPLAY	
ct	1200	sp	-599.4
TRANSMITTER		wp	4798.2
tn	H1	rfl	599.7
sfrq	299.927	rfp	0
tof	255.9	rp	70.5
tpwr	56	lp	-78.8
pw	7.250	PLOT	
DECOUPLER		wc	250
dn	C13	sc	0
dof	0	vs	170
dm	nnn	th	174
dmm	c	ai	cdc ph
dpwr	42		
dmf	13100		



**desfluoro Eze-1**  
 $C_{13}H_{11}NO$ ; Mol. Wt.: 197,23



13C OBSERVE

exp5 s2pu1

SAMPLE		SPECIAL	
date	Jan 19 2010	temp	not used
solvent	DMSO	gain	not used
file	/export/home/~	spin	20
vnmr1/vnmr/sys/data/~		hst	0.008
/EB.01.137-1-DMSO-~		pw90	16.750
C.fid	alfa		20.000

ACQUISITION		FLAGS	
sw	18867.9	il	n
at	1.815	in	n
np	68492	dp	y
fb	10400	hs	nn
bs	64		

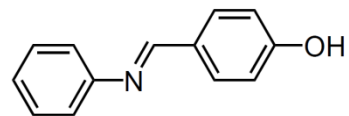
PROCESSING		
d1	1.000 lb	1.00
nt	20000 fn	not used
ct	1472	

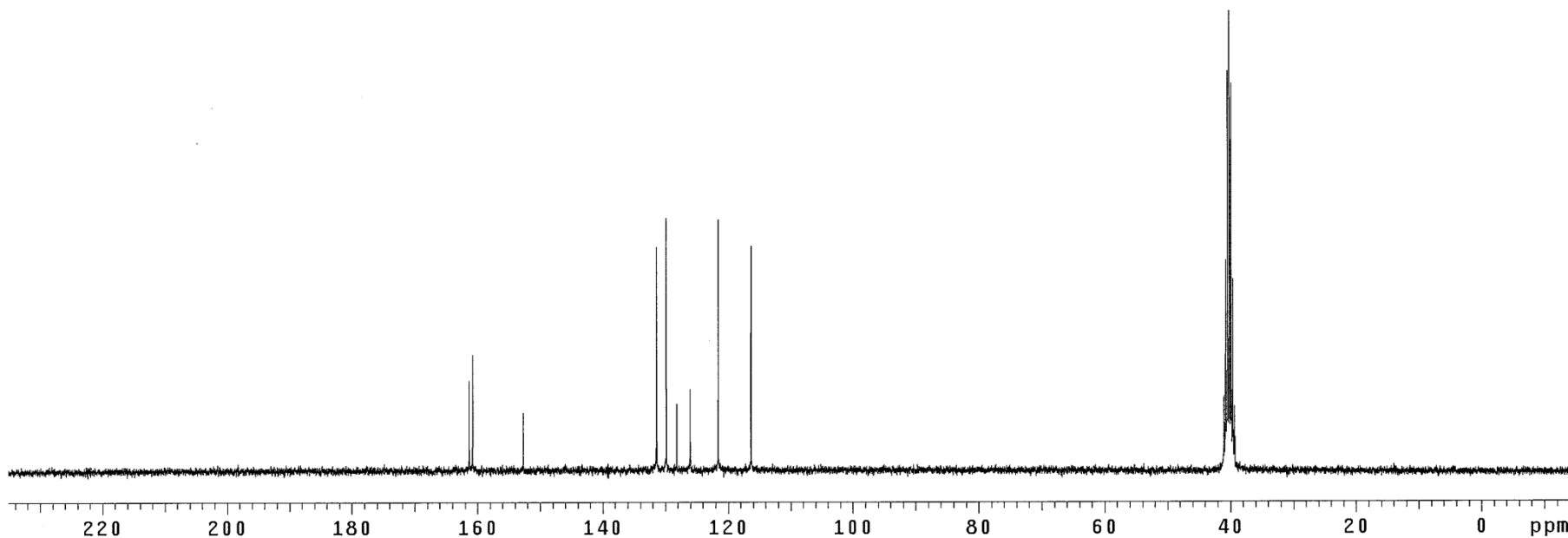
TRANSMITTER		DISPLAY	
tn	C13	sp	-1137.9
sfrq	75.425	wp	18867.6
tof	725.6	rfl	1138.2
tpwr	56	rfp	0
pw	8.375	rp	-1.0
		lp	-255.5

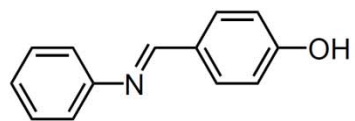
  

DECOUPLER		PLOT	
dn	H1	wc	250
dof	0	sc	0
dm	yyy	vs	181
dmm	w	th	178
dpwr	36	ai	no ph
dmf	6500		



**desfluoro Eze-1**  
C<sub>13</sub>H<sub>11</sub>NO; Mol. Wt.: 197,23





**desfluoro Eze-1**  
 $C_{13}H_{11}NO$ ; Mol. Wt.: 197,23

CH3 carbons



CH2 carbons



CH carbons



all protonated carbons

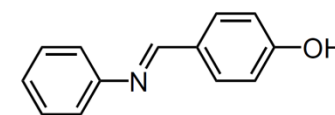
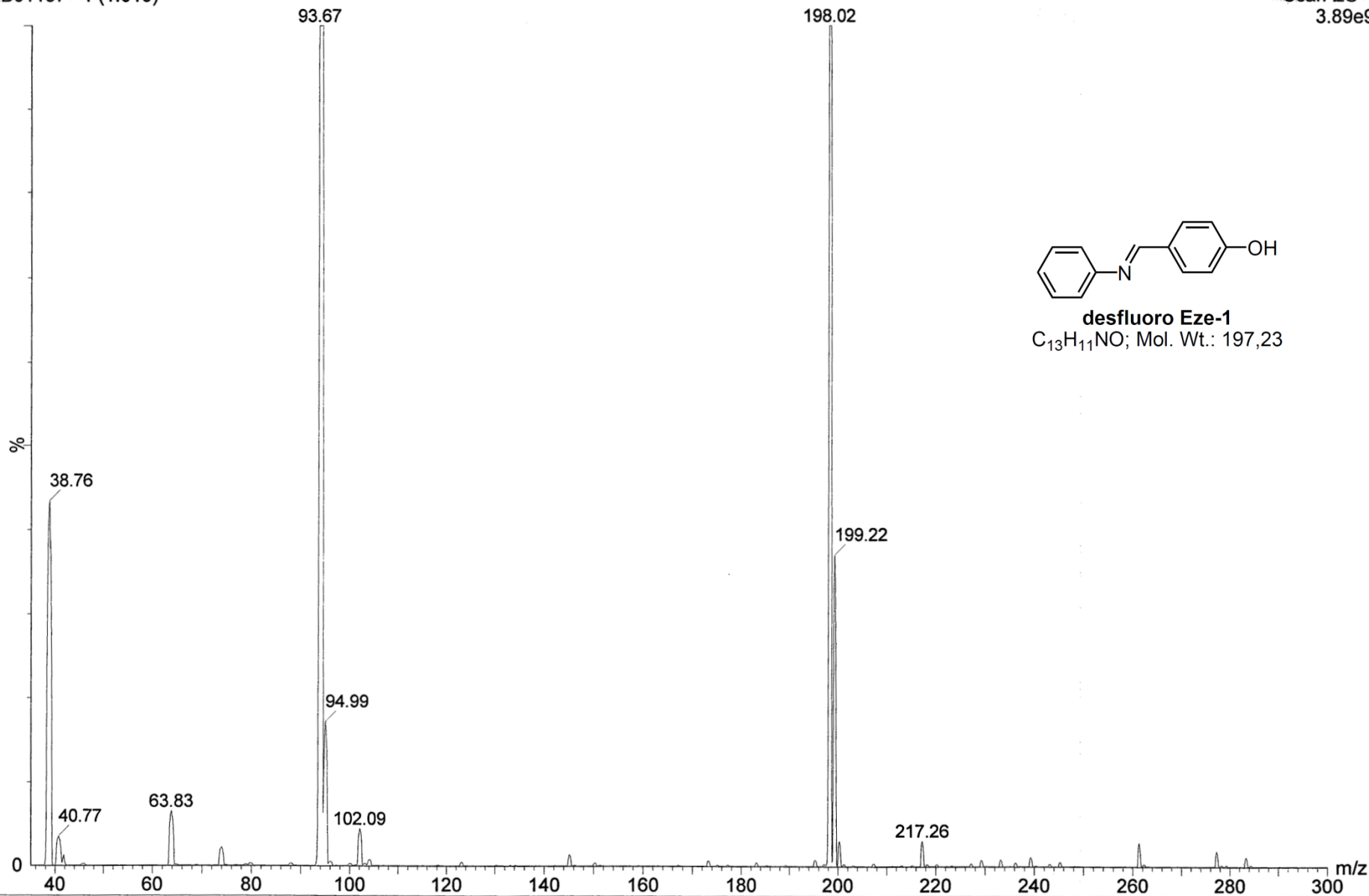


220 200 180 160 140 120 100 80 60 40 20 0 ppm

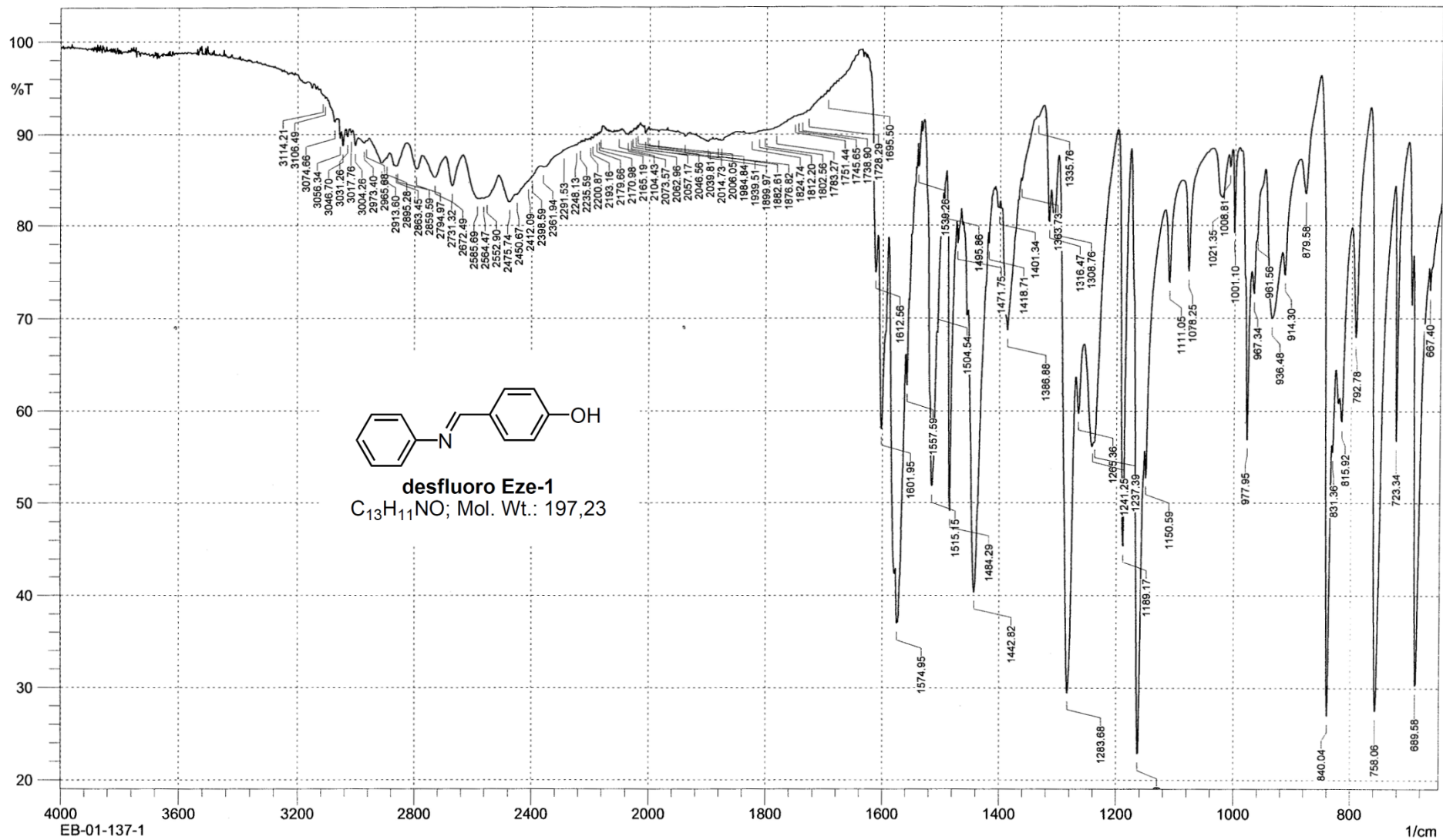
EB.01.137

EB01137+ 1 (1.019)

Scan ES+  
3.89e9



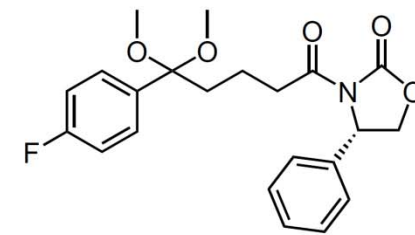
**desfluoro Eze-1**  
C<sub>13</sub>H<sub>11</sub>NO; Mol. Wt.: 197,23



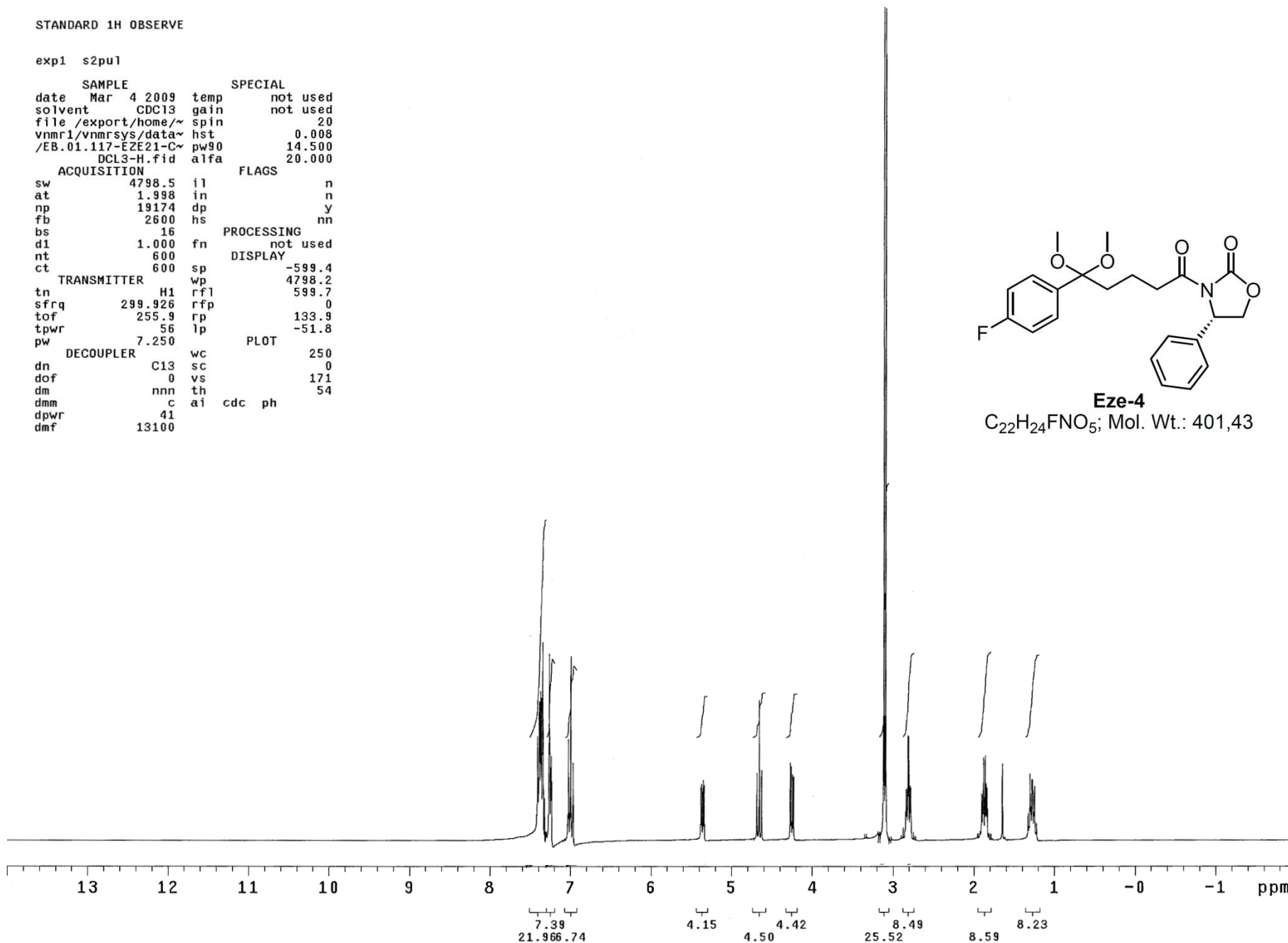
STANDARD 1H OBSERVE

exp1 s2pu1

SAMPLE		SPECIAL	
date	Mar 4 2009	temp	not used
solvent	CDC13	gain	not used
file	/export/home/~	spin	20
vnmr1/vnmrSYS/data~		hst	0.008
/EB.01.117-EZE21-C~		pw90	14.500
	DCL3-H.fid	alfa	20.000
ACQUISITION		FLAGS	
sw	4798.5	il	n
at	1.998	in	n
np	19174	dp	y
fb	2600	hs	nn
bs	16		
d1	1.000	fn	not used
nt	600		
ct	600		
TRANSMITTER		PROCESSING	
tn	H1	sp	-599.4
sfrq	299.926	wp	4798.2
tof	255.9	rfl	599.7
tpwr	56	rfl	0
pw	7.250	rp	133.9
		lp	-51.8
DECOUPLER		PLOT	
dn	C13	wc	250
dof	0	sc	0
dm	nnn	vs	171
dmm	c	th	54
dpwr	41	ai	cdc ph
dmf	13100		



**Eze-4**  
 $C_{22}H_{24}FNO_5$ ; Mol. Wt.: 401,43



13C OBSERVE

exp1 s2pu1

```

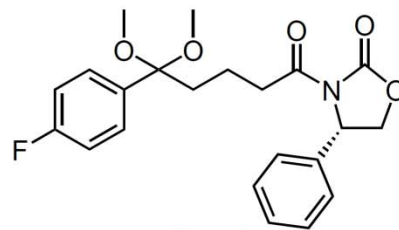
SAMPLE
date Mar 4 2009 temp not used
solvent CDC13 gain not used
file /export/home/~ spin 20
vnmr1/vnmrSYS/data~ hst 0.008
/EB.01.117-EZE21-C~ pw90 14.200
DCL3-C.fid alfa 20.000

ACQUISITION
sw 18867.9 il n
at 1.815 in n
np 68492 dp y
fb 10400 hs nn
bs 64
d1 1.000 lb 1.00
nt 5000 fn not used
ct 512

TRANSMITTER
tn C13 wp 18761.7
sfrq 75.424 rfl 1138.2
tof 725.6 rfp 0
tpwr 56 rp -48.4
pw 7.100 lp -228.1

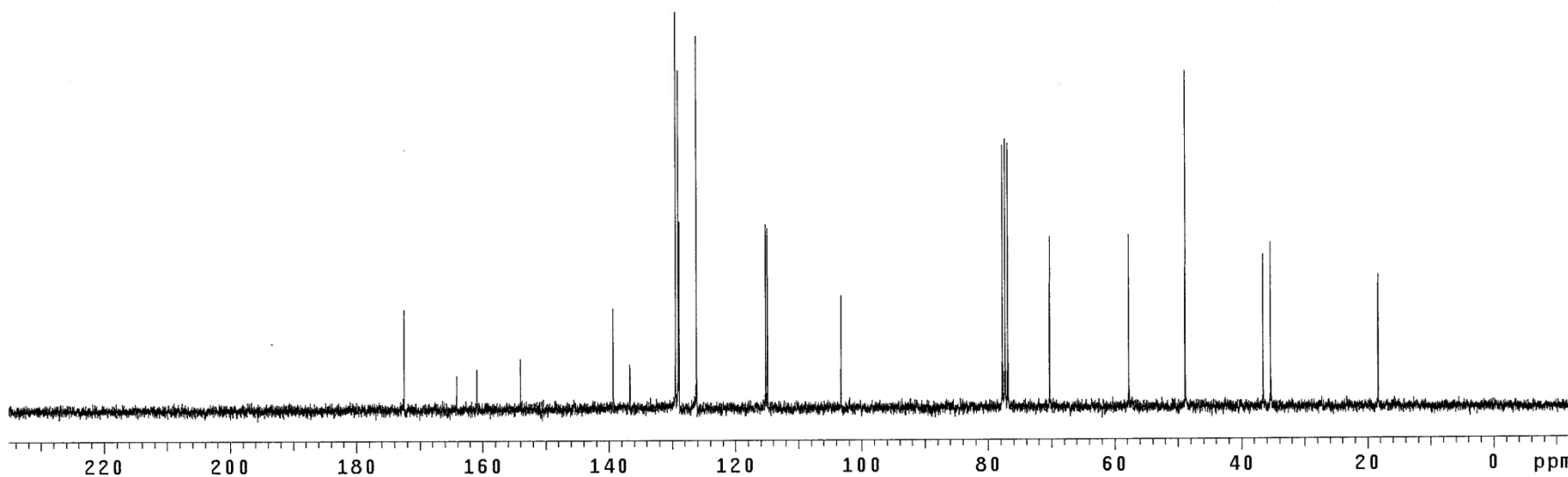
DECOUPLER
dn H1 wc 250
dof 0 sc 0
dm yy vs 102
dmm w th 9
dpwr 36 ai no ph
dmf 6500

```

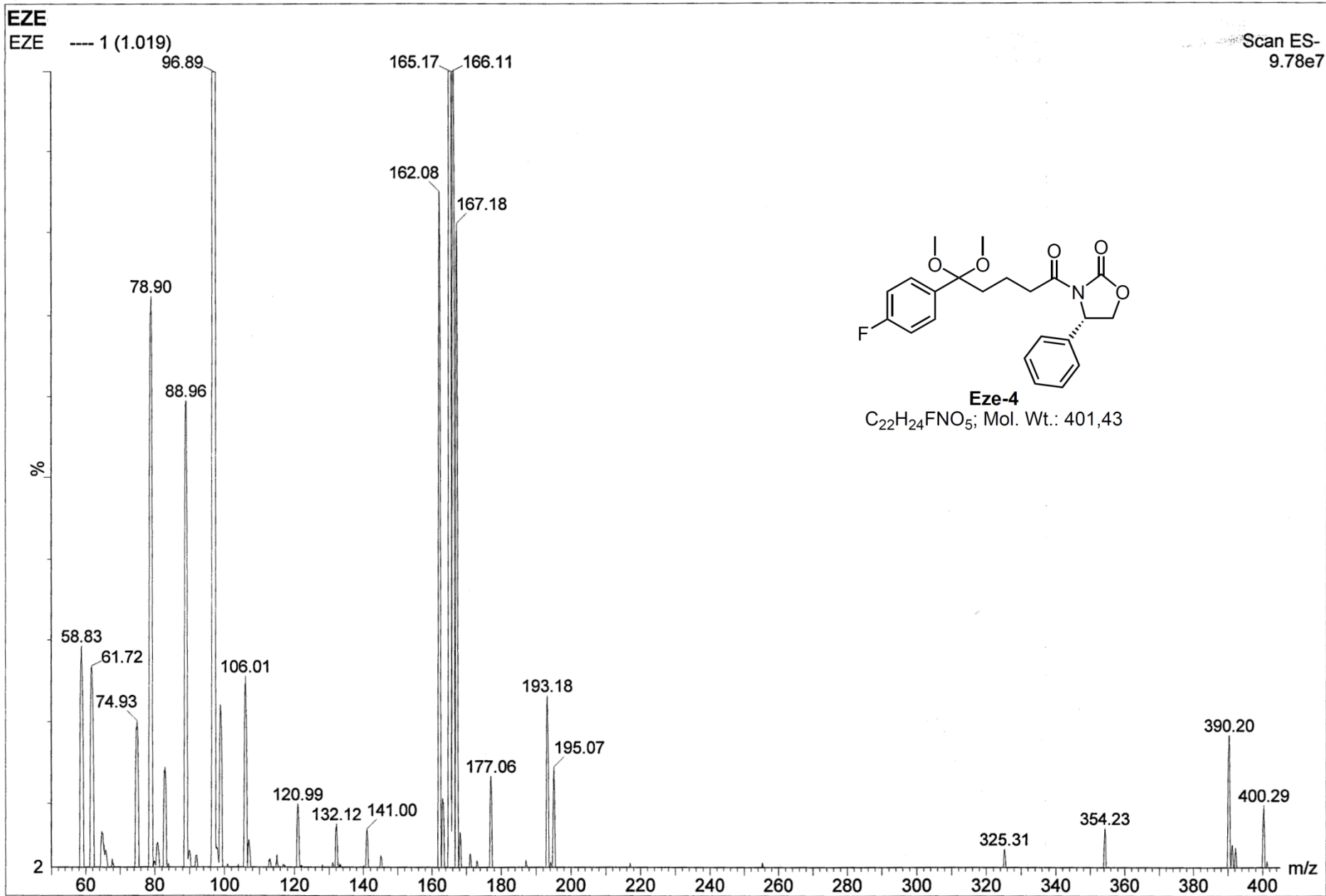


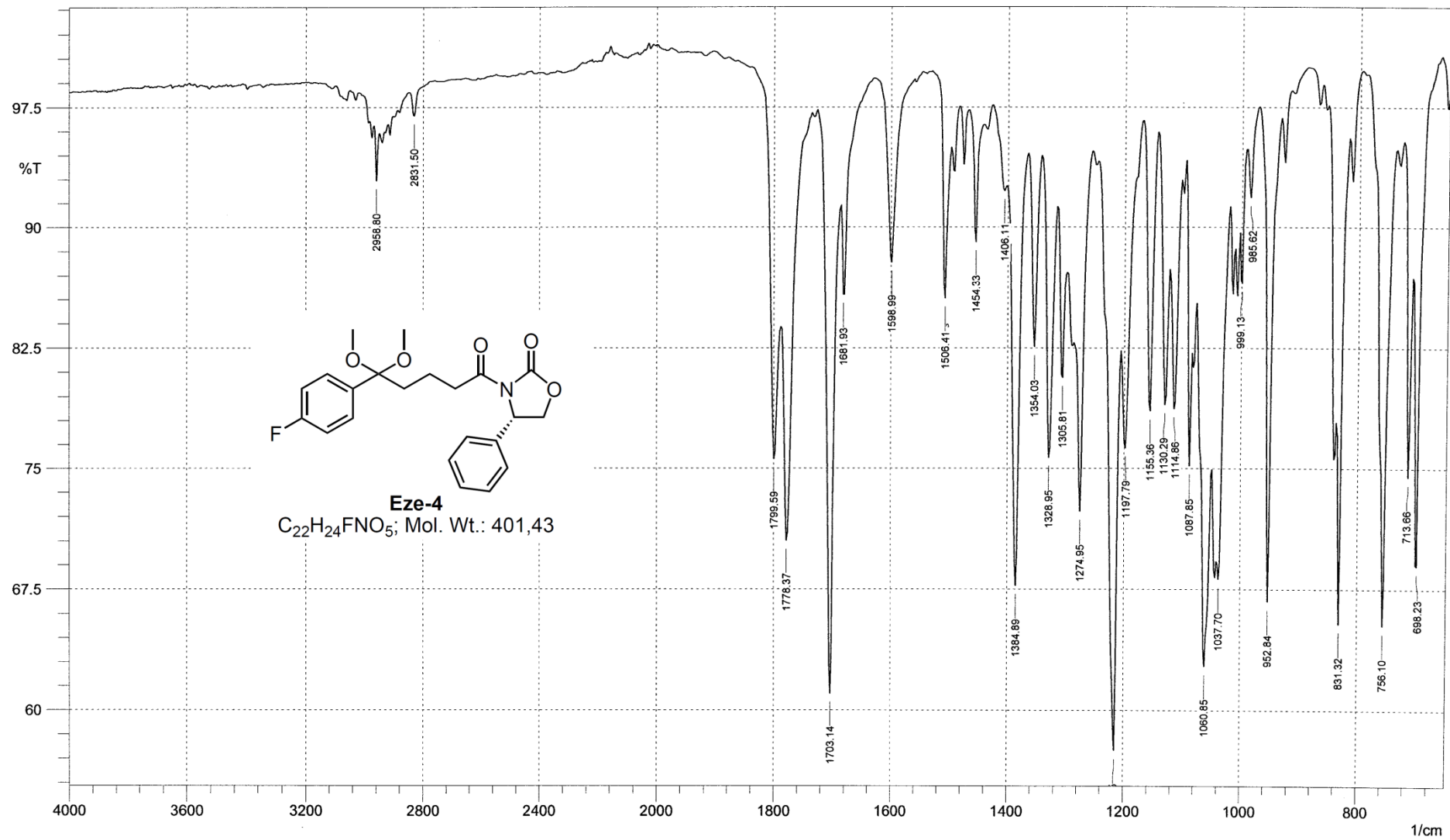
**Eze-4**

C<sub>22</sub>H<sub>24</sub>FNO<sub>5</sub>; Mol. Wt.: 401,43





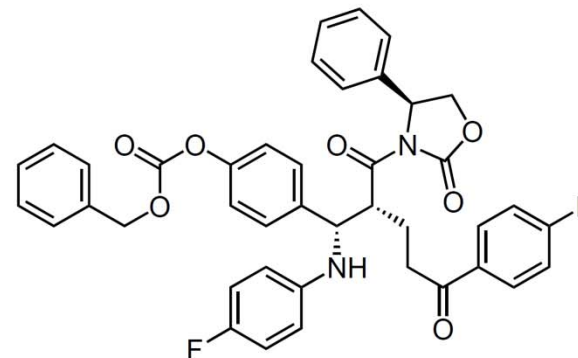




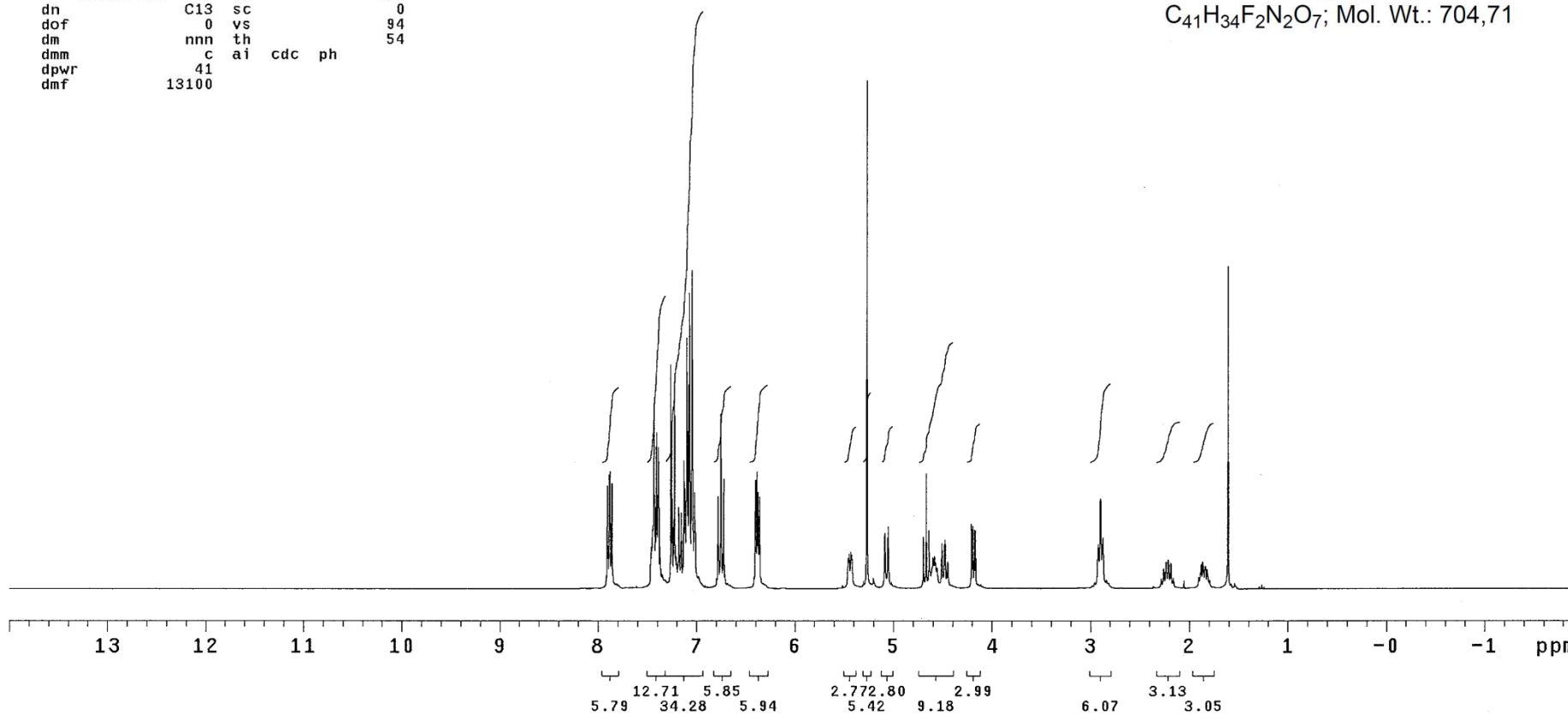
STANDARD 1H OBSERVE

exp9 s2pu1

SAMPLE		SPECIAL	
date	Mar 10 2009	temp	not used
solvent	CDC13	gain	not used
file	/export/home/~	spin	20
vnmr1/vnmr	sys/data~	hst	0.008
/EB.01.118-EZE22-C~		pw90	14.500
DCL3-H.fid		alfa	20.000
ACQUISITION		FLAGS	
sw	4798.5	il	n
at	1.998	in	n
np	19174	dp	y
fb	2600	hs	nn
bs	16	PROCESSING	
d1	1.000	fn	not used
nt	600	DISPLAY	
ct	600	sp	-599.4
TRANSMITTER		wp	4798.2
tn	H1	rf1	599.7
sfrq	299.926	rfp	0
tof	255.9	rp	77.4
tpwr	56	lp	-83.8
pw	7.250	PLOT	
DECOUPLER		wc	250
dn	C13	sc	0
dof	0	vs	94
dm	nnn	th	54
dmm	c	ai	cdc ph
dpwr	41		
dmf	13100		



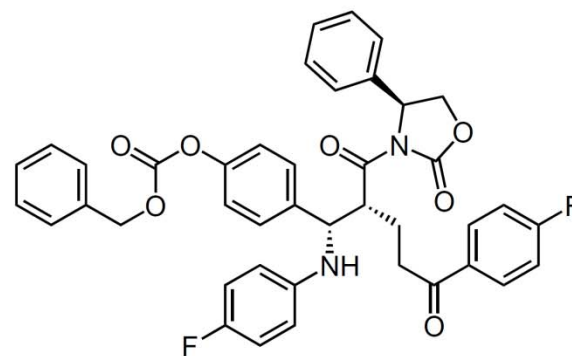
**Eze-5**  
 $C_{41}H_{34}F_2N_2O_7$ ; Mol. Wt.: 704,71



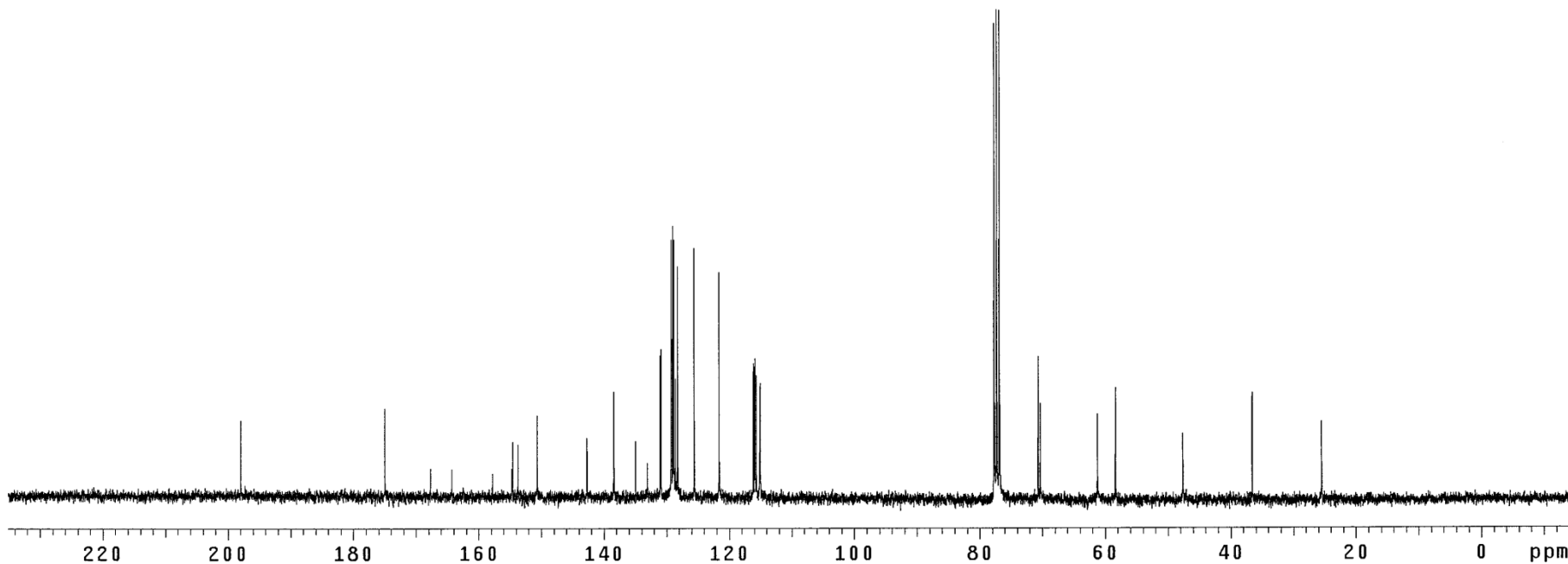
13C OBSERVE

exp9 s2pu1

SAMPLE		SPECIAL	
date	Mar 10 2009	temp	not used
solvent	CDC13	gain	not used
file	/export/home/~	spin	20
vnmr1/vnmrsys/data~		hst	0.008
/EB.01.118-EZE22-C~		pw90	14.200
DCL3-C.fid		alfa	20.000
ACQUISITION		FLAGS	
sw	18867.9	il	n
at	1.815	in	n
np	68492	dp	y
fb	10400	hs	nn
bs	64		
PROCESSING		lb	1.00
d1	1.000	fn	not used
nt	5000		
ct	3008	DISPLAY	
TRANSMITTER		sp	-1137.9
tn	C13	wp	18867.6
sfrq	75.424	rfl	1138.2
tof	725.6	rfp	0
tpwr	56	rp	-55.3
pw	7.100	lp	-247.8
DECOUPLER		PLOT	
dn	H1	wc	250
dof	0	sc	0
dm	yyy	vs	206
dmm	w	th	177
dpwr	36	ai	no ph
dmf	6500		



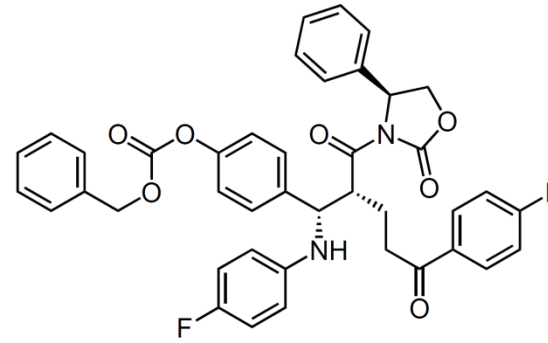
**Eze-5**  
C<sub>41</sub>H<sub>34</sub>F<sub>2</sub>N<sub>2</sub>O<sub>7</sub>; Mol. Wt.: 704,71



EZE

EZE + 1 (1.019)

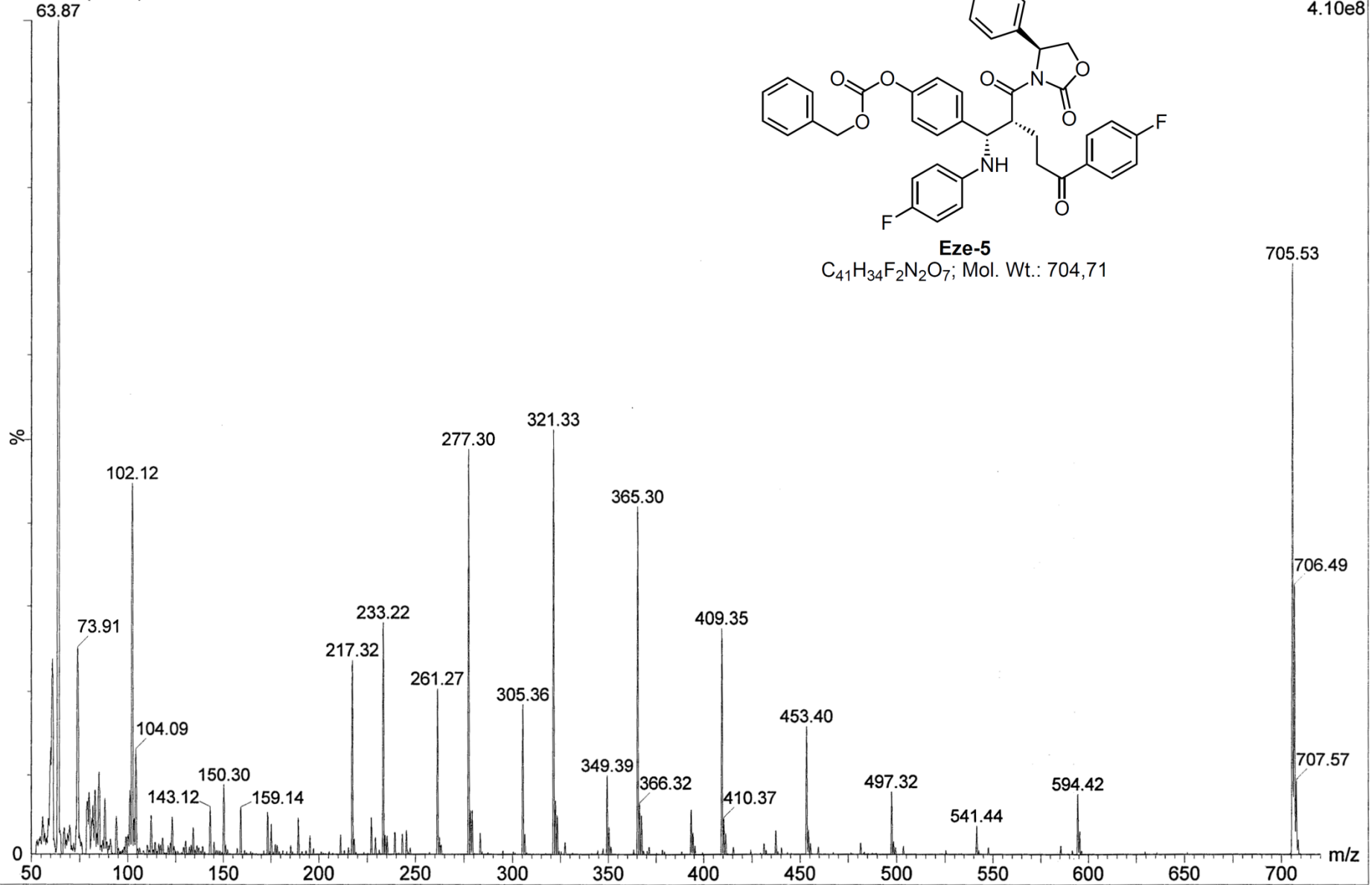
Scan ES+  
4.10e8

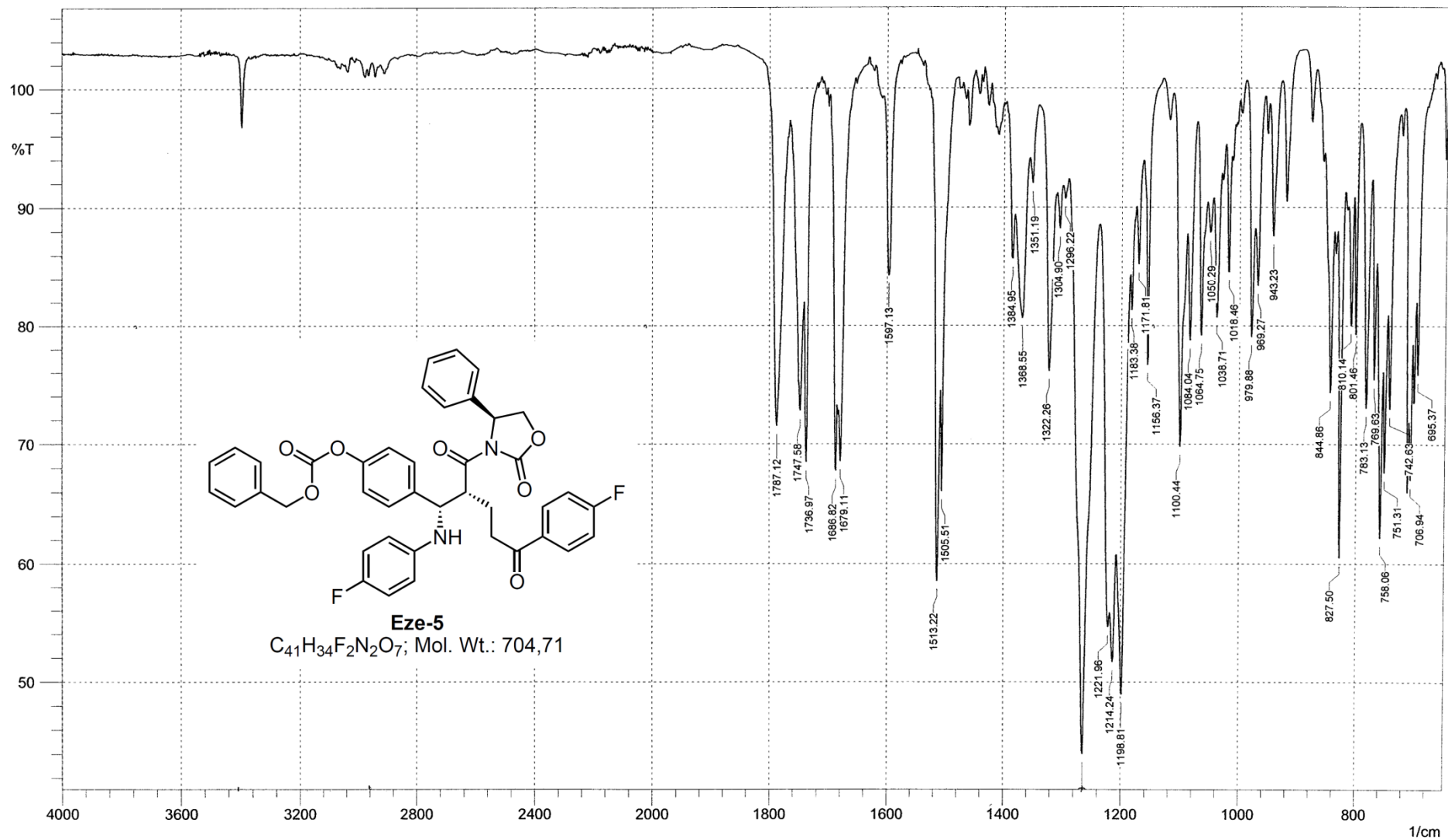


**Eze-5**

$C_{41}H_{34}F_2N_2O_7$ ; Mol. Wt.: 704,71

705.53



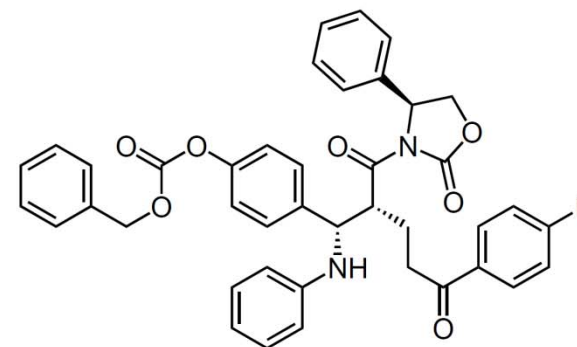


**Eze-5**  
 $C_{41}H_{34}F_2N_2O_7$ ; Mol. Wt.: 704,71

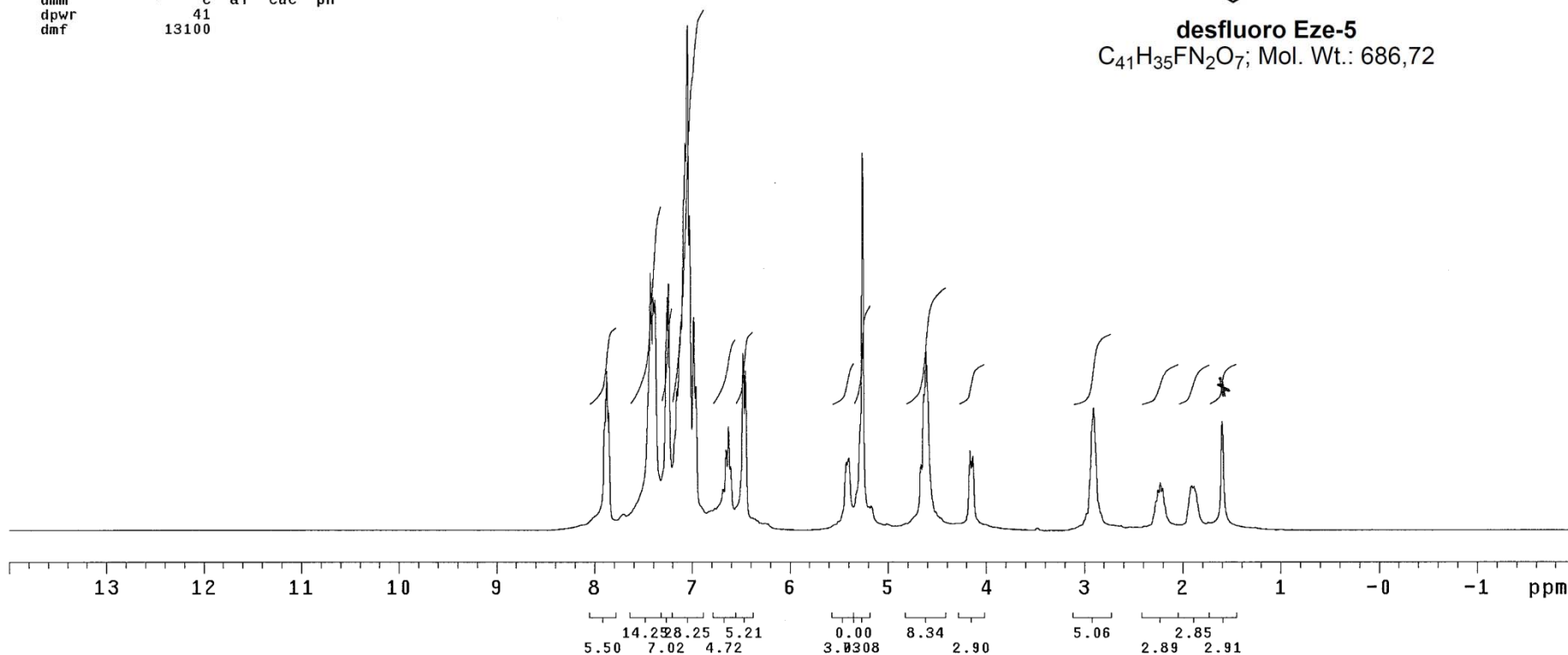
STANDARD 1H OBSERVE

exp5 s2pu1

SAMPLE		SPECIAL	
date	Jan 21 2010	temp	not used
solvent	CDC13	gain	not used
file	/export/home/~	spin	20
vnmr1/vnmrsys/data~		hst	0.008
/EB.01.138-CDCL3-H~		pw90	14.500
	.fid	alfa	20.000
ACQUISITION		FLAGS	
sw	4798.5	il	n
at	1.998	in	n
np	19174	dp	y
fb	2600	hs	nn
bs	16	PROCESSING	
d1	1.000	fn	not used
nt	1200	DISPLAY	
ct	1200	sp	-599.4
TRANSMITTER		wp	4798.2
tn	H1	rf1	599.7
sfrq	299.926	rfp	0
tof	255.9	rp	129.1
tpwr	56	lp	-38.7
pw	7.250	PLOT	
DECOUPLER		wc	250
dn	C13	sc	0
dof	0	vs	373
dm	nnn	th	177
dmm	c	ai	cdc ph
dpwr	41		
dmf	13100		



**desfluoro Eze-5**  
 $C_{41}H_{35}FN_2O_7$ ; Mol. Wt.: 686,72



13C OBSERVE

exp5 s2pu1

SAMPLE		SPECIAL	
date	Jan 21 2010	temp	not used
solvent	CDC13	gain	not used
file	/export/home/~	spin	20
vnmr1/vnmrsys/data~		hst	0.008
/EB.01.138-CDCL3-C~		pw90	14.200
.fid	alfa		20.000

ACQUISITION		FLAGS	
sw	18867.9	il	n
at	1.815	in	n
np	68492	dp	y
fb	10400	hs	nn
bs	64		

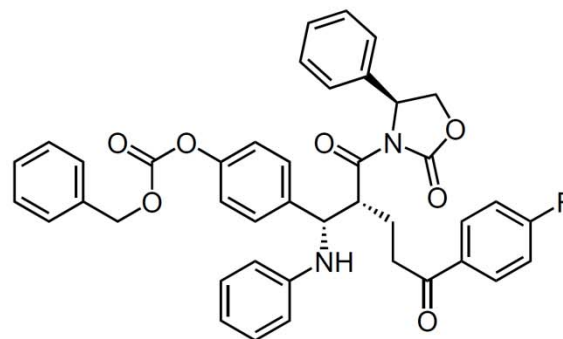
PROCESSING	
d1	1.000
nt	30000
ct	30000

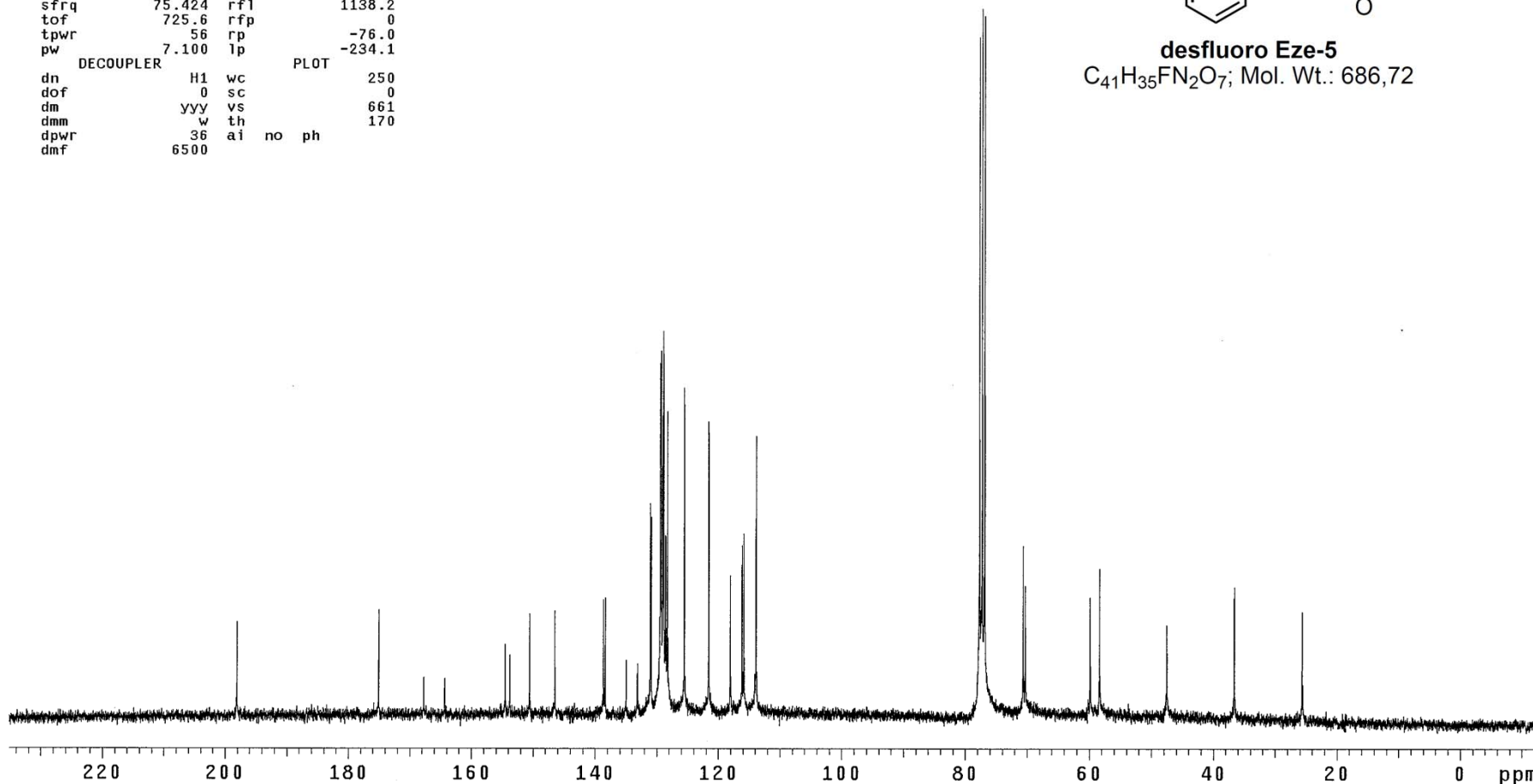
TRANSMITTER		DISPLAY	
tn	C13	sp	-1032.0
sfrq	75.424	wp	18761.7
tof	725.6	rf1	1138.2
tpwr	56	rfp	0
pw	7.100	rp	-76.0
		lp	-234.1

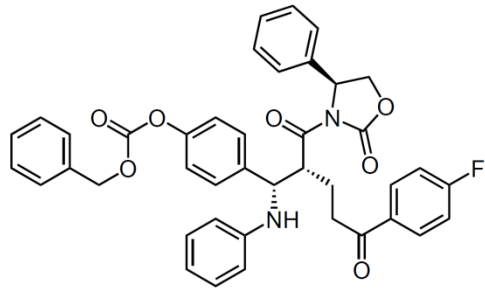
DECOUPLER		PLOT	
dn	H1	wc	250
dof	0	sc	0
dm	yyy	vs	661
dmm	w	th	170
dpwr	36	ai	no
dmf	6500	ph	



**desfluoro Eze-5**  
C<sub>41</sub>H<sub>35</sub>FN<sub>2</sub>O<sub>7</sub>; Mol. Wt.: 686,72



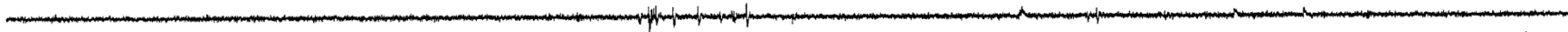




**desfluoro Eze-5**

C<sub>41</sub>H<sub>35</sub>FN<sub>2</sub>O<sub>7</sub>; Mol. Wt.: 686,72

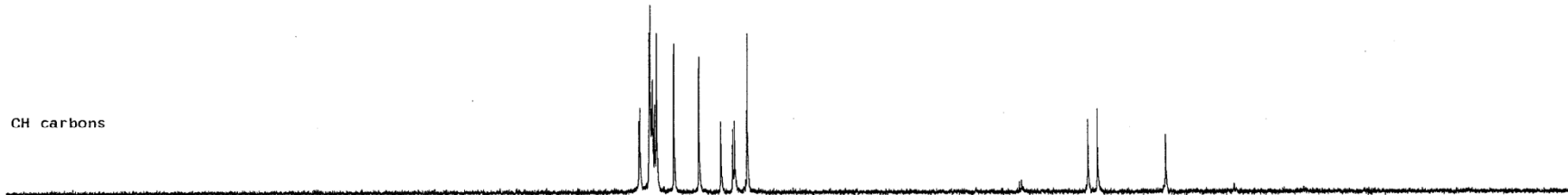
CH3 carbons



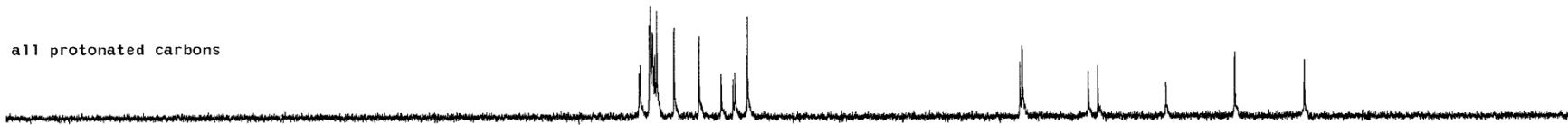
CH2 carbons



CH carbons



all protonated carbons



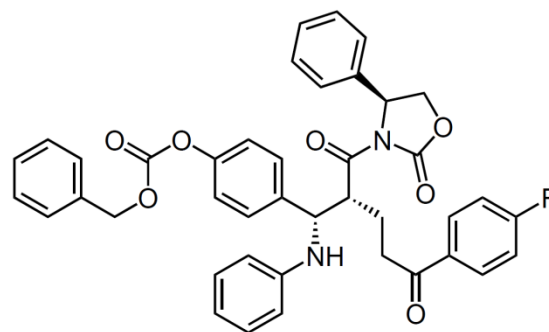
220 200 180 160 140 120 100 80 60 40 20 0 ppm

EB01138

EB01138 1 (1.019)

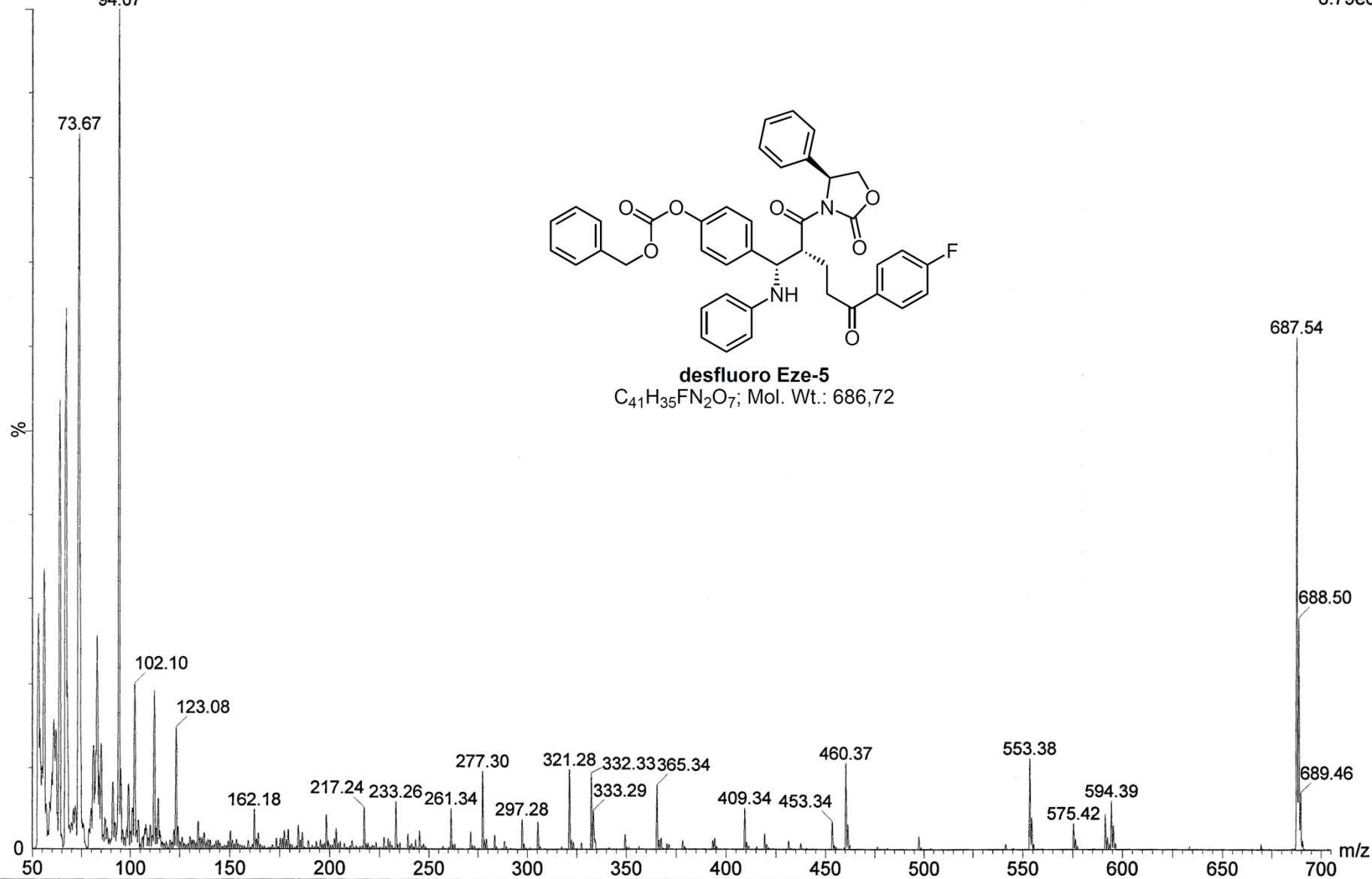
94.07

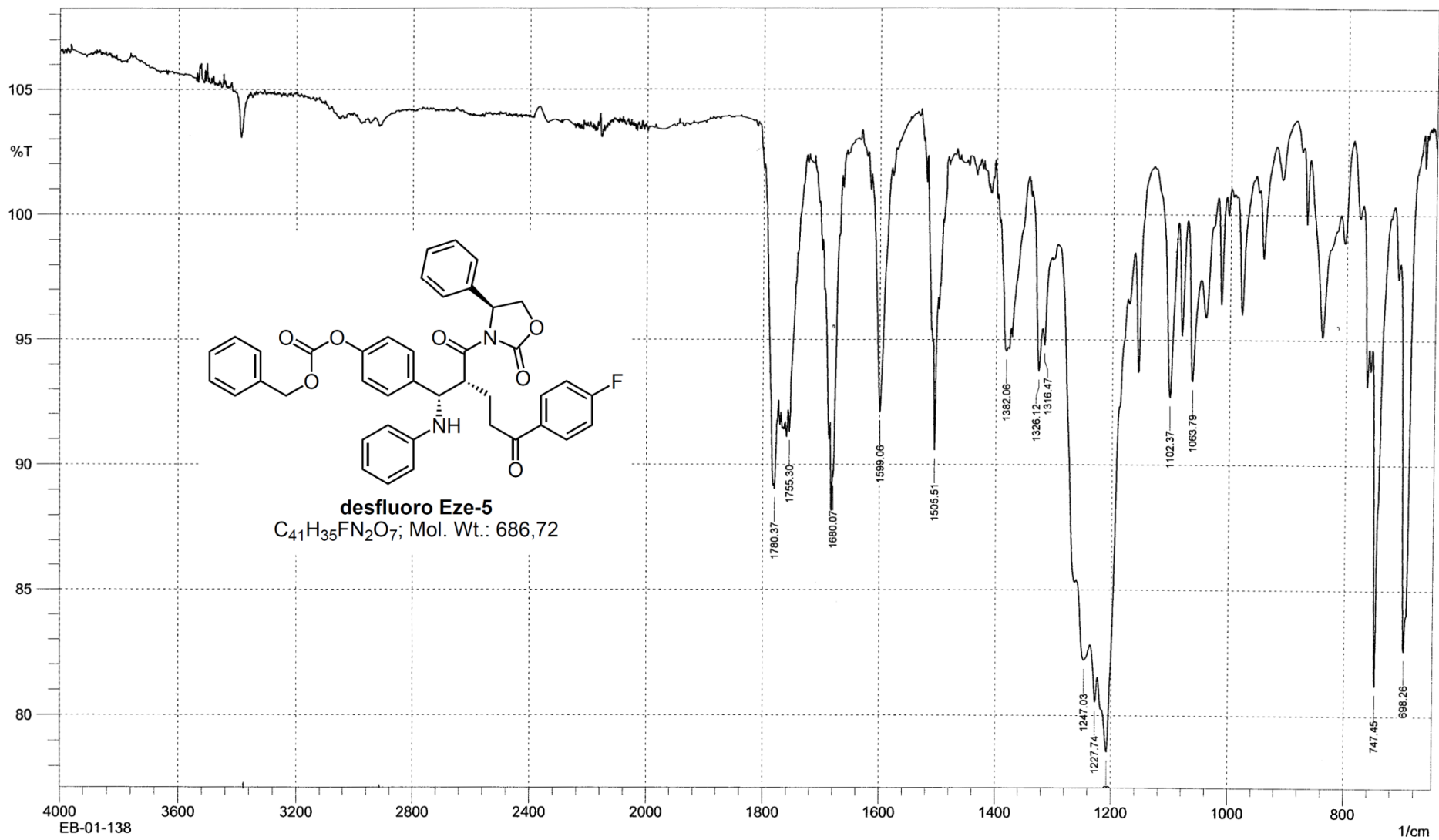
Scan ES+  
6.79e8



**desfluoro Eze-5**

C<sub>41</sub>H<sub>35</sub>FN<sub>2</sub>O<sub>7</sub>; Mol. Wt.: 686,72

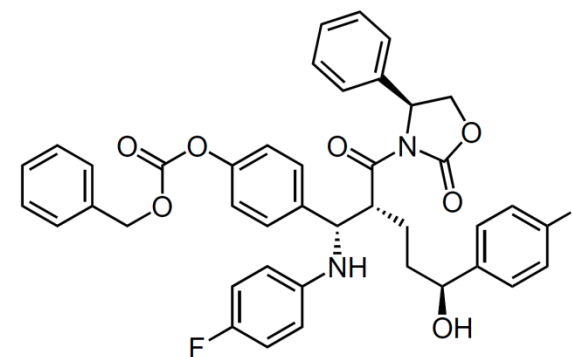




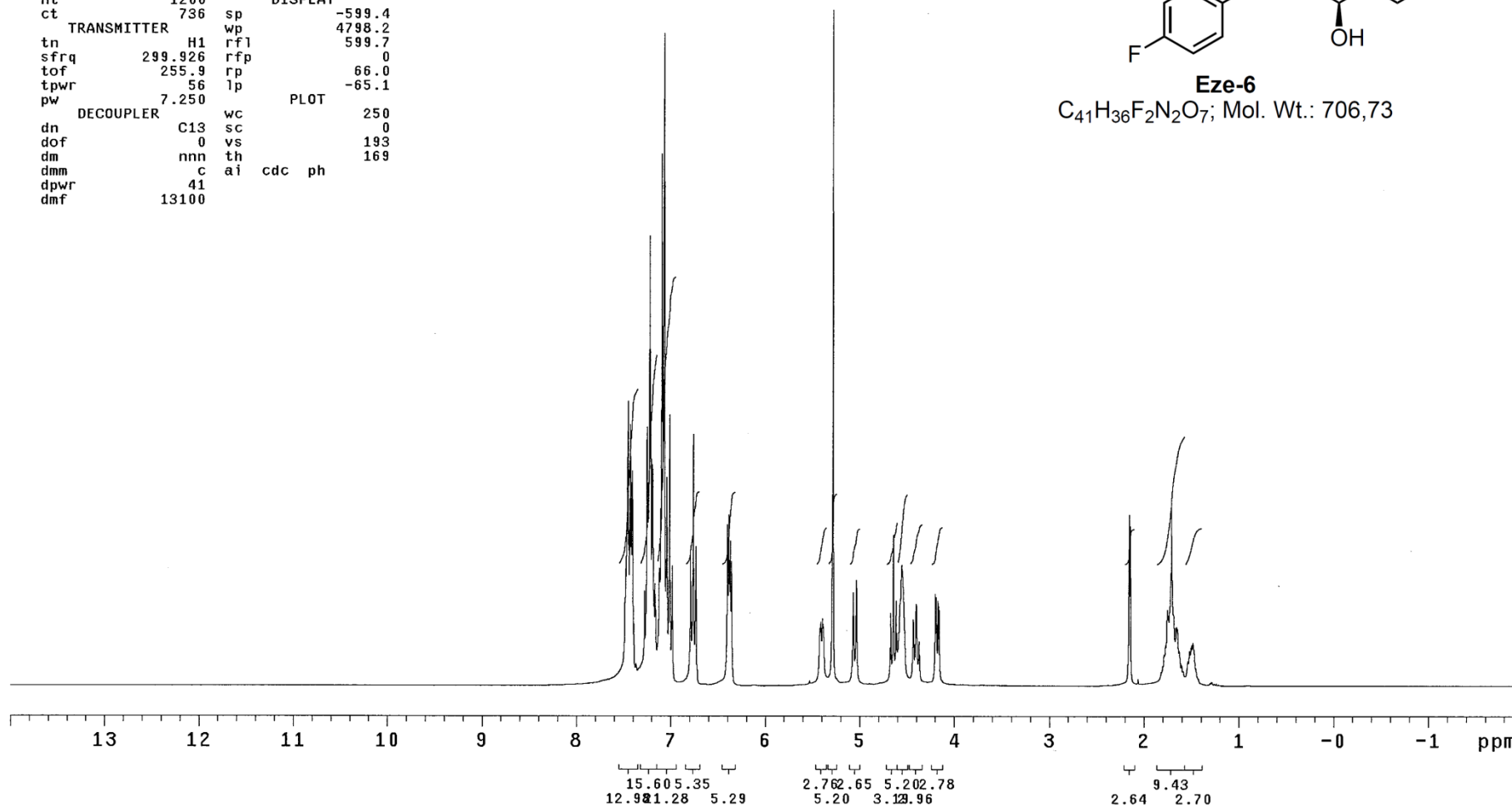
STANDARD 1H OBSERVE

exp7 s2pu1

SAMPLE		SPECIAL	
date	Apr 6 2009	temp	not used
solvent	CDC13	gain	not used
file	/export/home/~	spin	20
vnmr1/vnmrSYS/data~		hst	0.008
/EB.01.122-EZE23-C~		pw90	14.500
	DCL3-H.fid	alfa	20.000
ACQUISITION		FLAGS	
sw	4798.5	il	n
at	1.998	in	n
np	19174	dp	y
fb	2600	hs	nn
bs	16	PROCESSING	
d1	1.000	fn	not used
nt	1200	DISPLAY	
ct	736	sp	-599.4
TRANSMITTER		wp	4798.2
tn	H1	rfl	599.7
sfrq	299.926	rfp	0
tof	255.9	rp	66.0
tpwr	56	lp	-65.1
pw	7.250	PLOT	
DECOUPLER		wc	250
dn	C13	sc	0
dof	0	vs	193
dm	nnn	th	169
dmm	c	ai	cdc ph
dpwr	41		
dmf	13100		



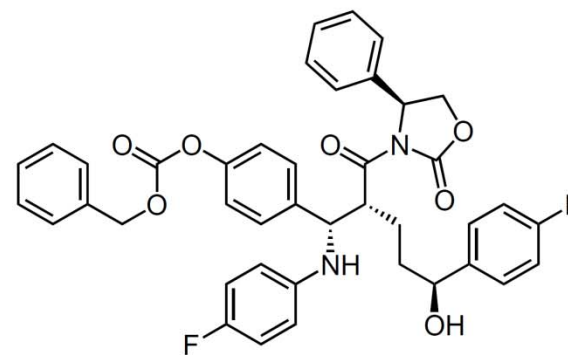
**Eze-6**  
 $C_{41}H_{36}F_2N_2O_7$ ; Mol. Wt.: 706,73



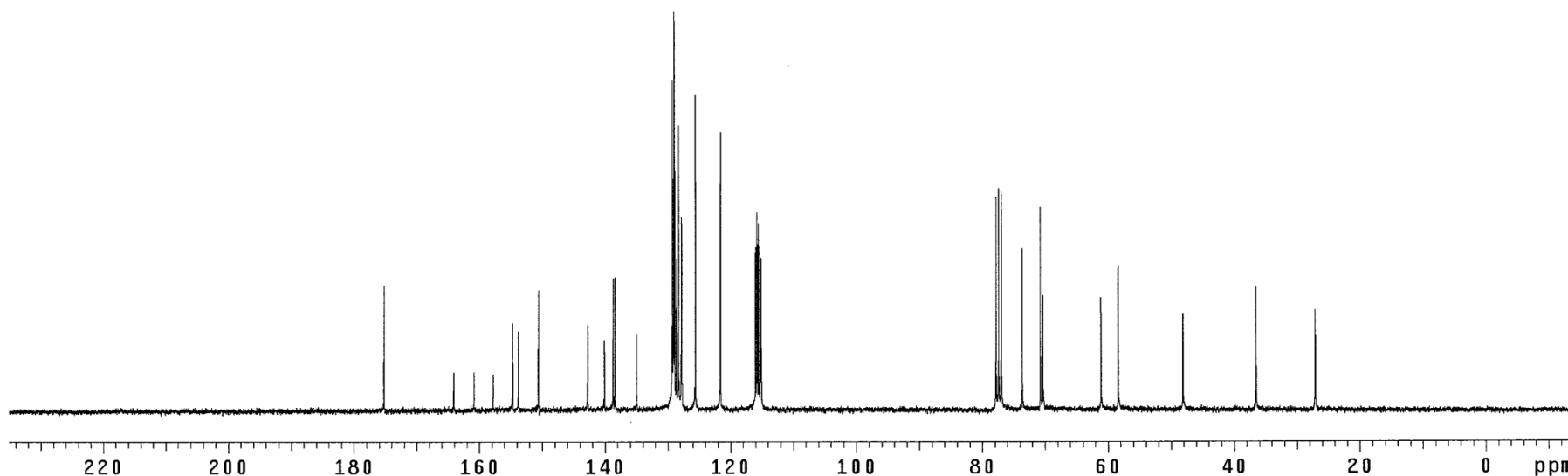
13C OBSERVE

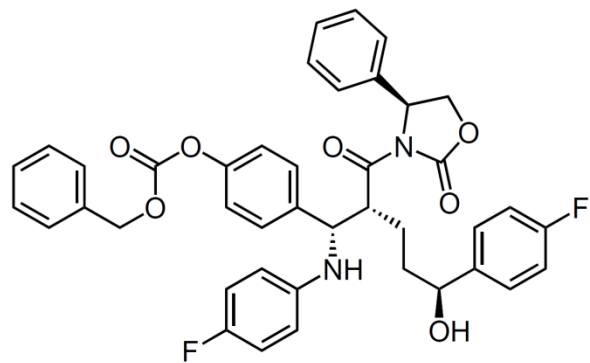
exp9 s2pu1

SAMPLE		SPECIAL	
date	Apr 6 2009	temp	not used
solvent	CDC13	gain	not used
file	/export/home/~	spin	20
vnmr1/vnmrsys/data~		hst	0.008
/EB.01.122-EZE23-C~		pw90	14.200
	DCL3-C.fid	a1fa	20.000
ACQUISITION		FLAGS	
sw	18867.9	il	n
at	1.815	in	n
np	68492	dp	y
fb	10400	hs	nn
bs	64	PROCESSING	
d1	1.000	lb	1.00
nt	50000	fn	not used
ct	3776	DISPLAY	
TRANSMITTER		sp	-1137.9
tn	C13	wp	18867.6
sfrq	75.424	rfl	1138.2
tof	725.6	rfp	0
tpwr	56	rp	-61.8
pw	7.100	lp	-227.9
DECOUPLER		PLOT	
dn	H1	wc	250
dof	0	sc	0
dm	YY	vs	123
dmm	w	th	178
dpwr	36	ai	no
dmf	6500	ph	

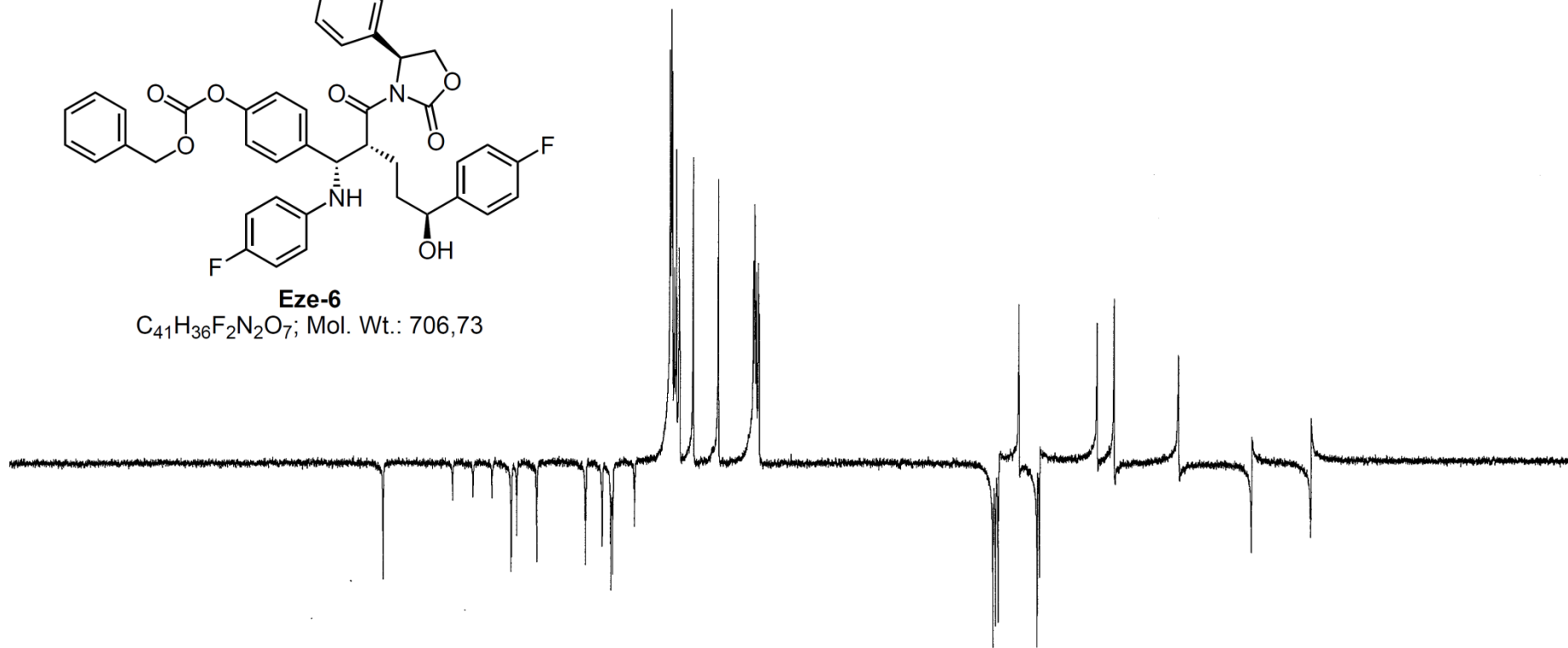


**Eze-6**  
 $C_{41}H_{36}F_2N_2O_7$ ; Mol. Wt.: 706,73





**Eze-6**  
 $C_{41}H_{36}F_2N_2O_7$ ; Mol. Wt.: 706,73



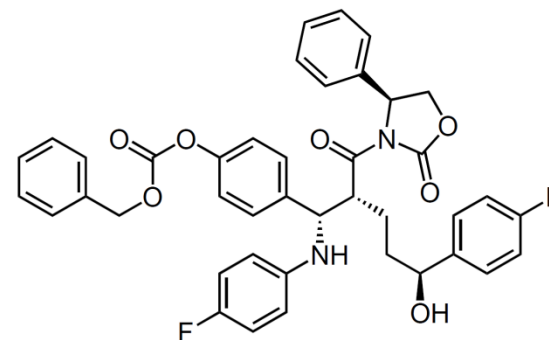
220 200 180 160 140 120 100 80 60 40 20 0 ppm

<p>PULSE SEQUENCE: APT          Relax. delay 1.000 sec          1st pulse 90.0 degrees          2nd pulse 135.0 degrees          Acq. time 1.815 sec          Width 18867.9 Hz          34560 repetitions</p>	<p>OBSERVE C13, 75.4159447          DECOUPLE H1, 299.9255951          Power 36 dB          on during acquisition          WALTZ-16 modulated</p>	<p>DATA PROCESSING          Line broadening 1.0 Hz          FT size 131072          Total time 27.0 hours</p>	<p>13C OBSERVE           Archive directory: /expor          Sample directory:          Pulse Sequence: APT          Solvent: CDCl<sub>3</sub>          Temperature</p>
---	--	---	--

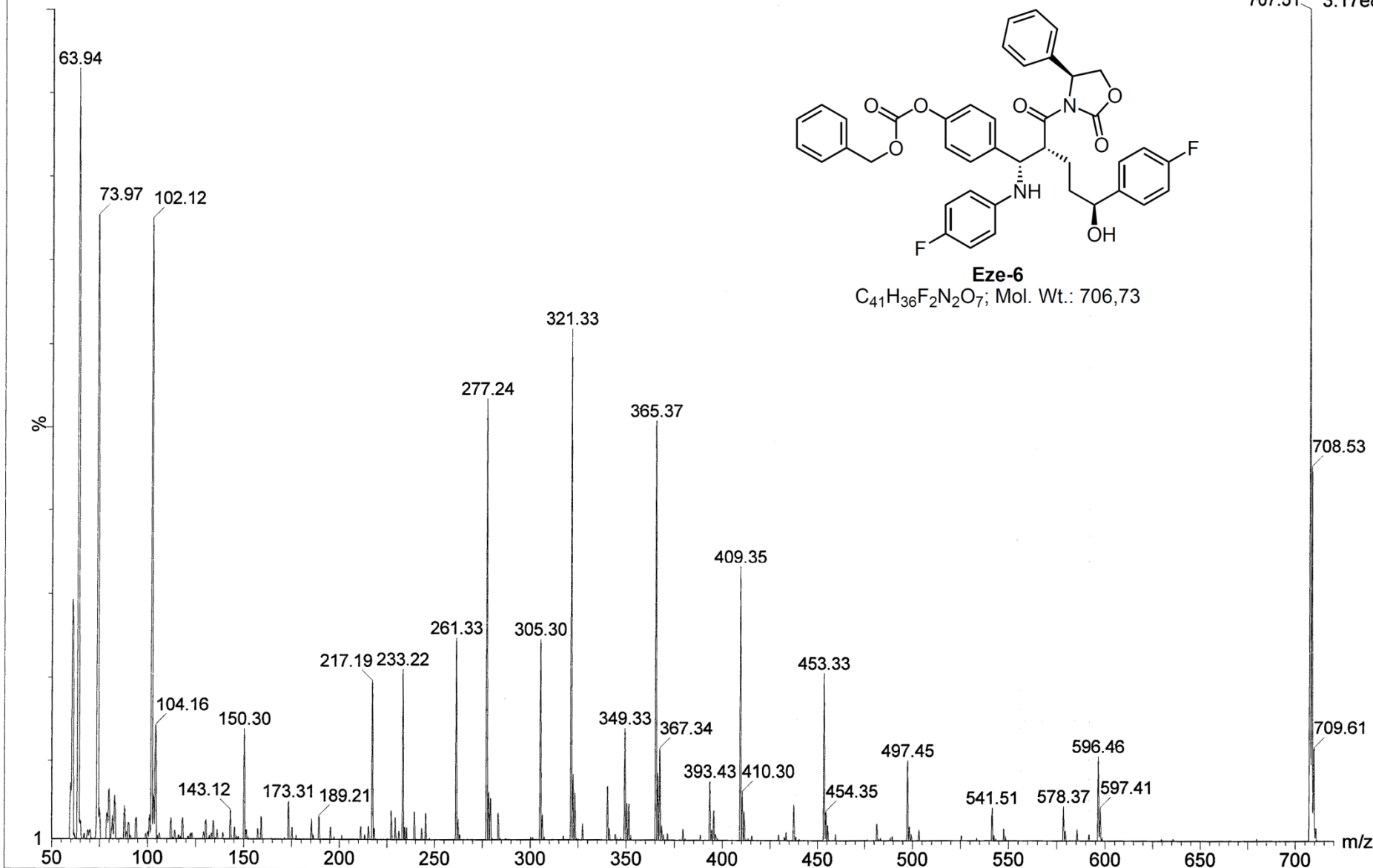
EZE

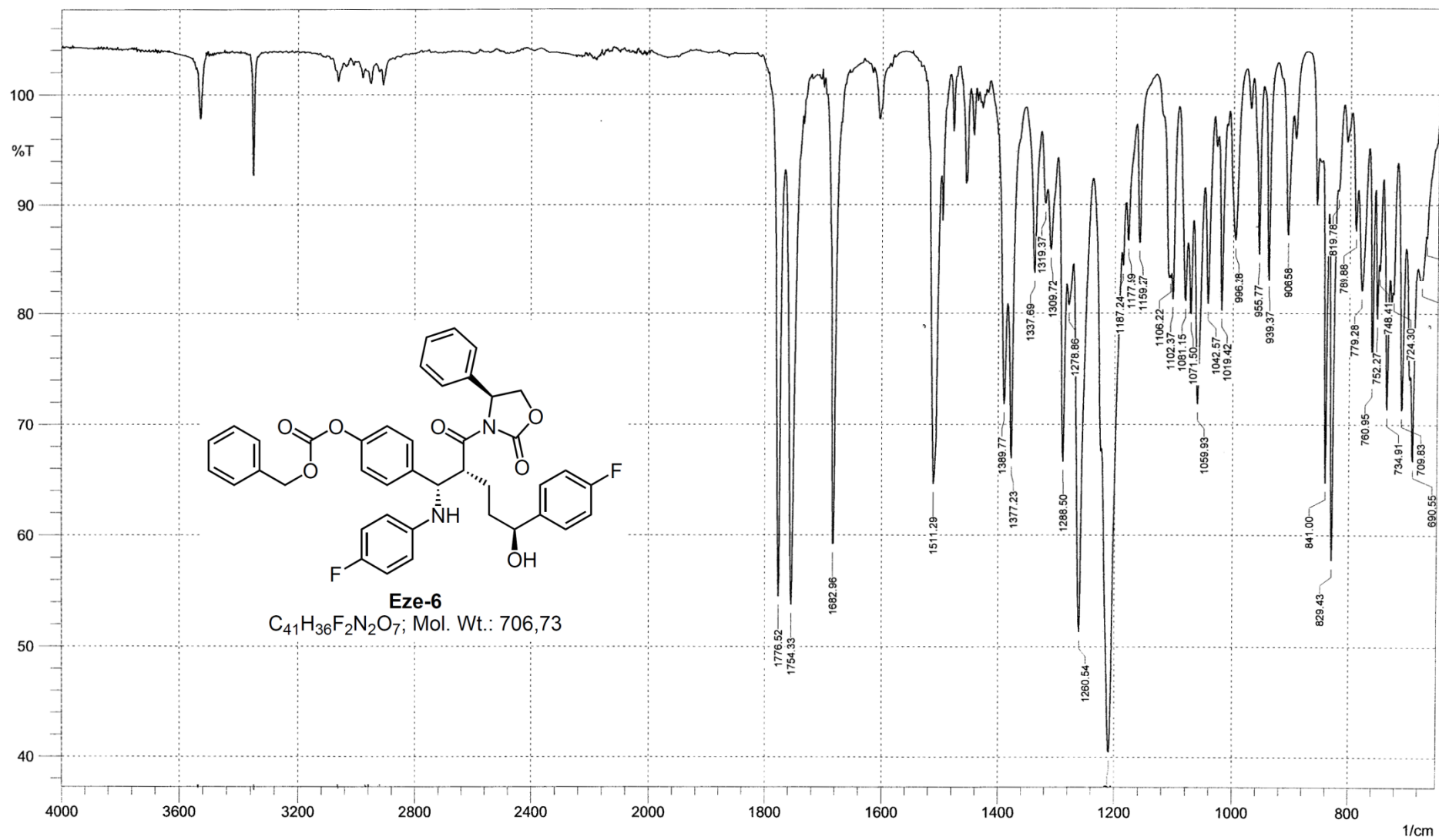
EZE +++ 1 (1.019)

Scan ES+  
707.51 3.17e8



**Eze-6**  
C<sub>41</sub>H<sub>36</sub>F<sub>2</sub>N<sub>2</sub>O<sub>7</sub>; Mol. Wt.: 706,73



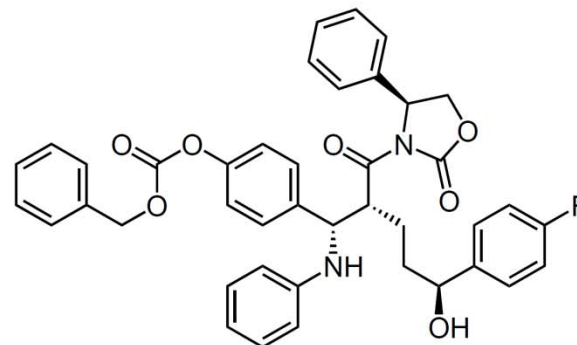




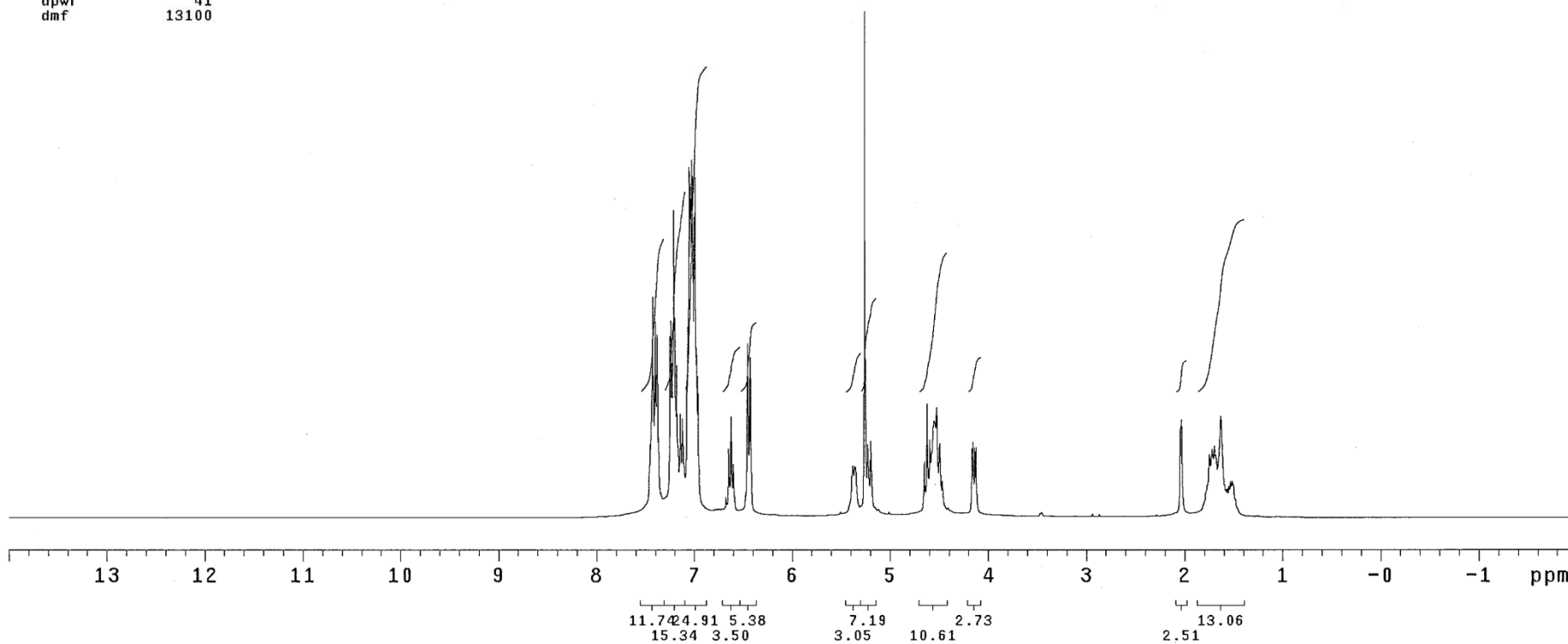
STANDARD 1H OBSERVE

exp5 s2pu1

SAMPLE		SPECIAL	
date	Jan 25 2010	temp	not used
solvent	CDC13	gain	not used
file	/export/home/~	spin	20
vnmr1/vnmrSYS/data/~		hst	0.008
/EB.01.139-CDCL3-H~		pw90	14.500
	.fid	alfa	20.000
ACQUISITION		FLAGS	
sw	4798.5	il	n
at	1.998	in	n
np	19174	dp	y
fb	2600	hs	nn
bs	16	PROCESSING	
d1	1.000	fn	not used
nt	1200	DISPLAY	
ct	1200	sp	-599.4
TRANSMITTER		wp	4798.2
tn	H1	rfl	599.7
sfrq	299.926	rfp	0
tof	255.9	rp	65.6
tpwr	56	lp	-74.4
pw	7.250	PLOT	
DECOUPLER		wc	250
dn	C13	sc	0
dof	0	vs	184
dm	nnn	th	173
dmm	c	ai	cdc ph
dpwr	41		
dmf	13100		



**desfluoro Eze-6**  
 $C_{41}H_{37}FN_2O_7$ ; Mol. Wt.: 688,74



13C OBSERVE

exp5 s2pu1

SAMPLE		SPECIAL	
date	Jan 25 2010	temp	not used
solvent	CDC13	gain	not used
file	/export/home/~	spin	20
vnmr1/vnmrsys/data~		hst	0.008
/EB.01.139-CDCL3-C~		pw90	14.200
.fid	alfa		20.000

ACQUISITION		FLAGS	
sw	18867.9	i1	n
at	1.815	in	n
np	68492	dp	y
fb	10400	hs	nn
bs	64		

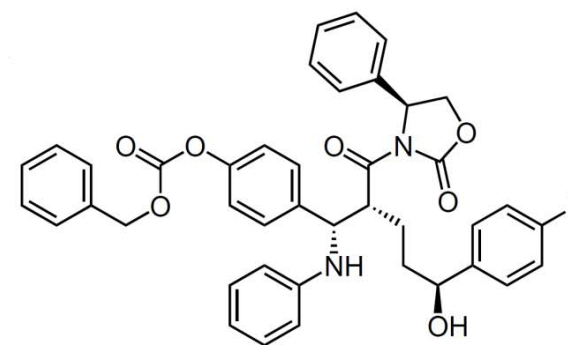
PROCESSING	
d1	1.000
nt	30000
ct	30000

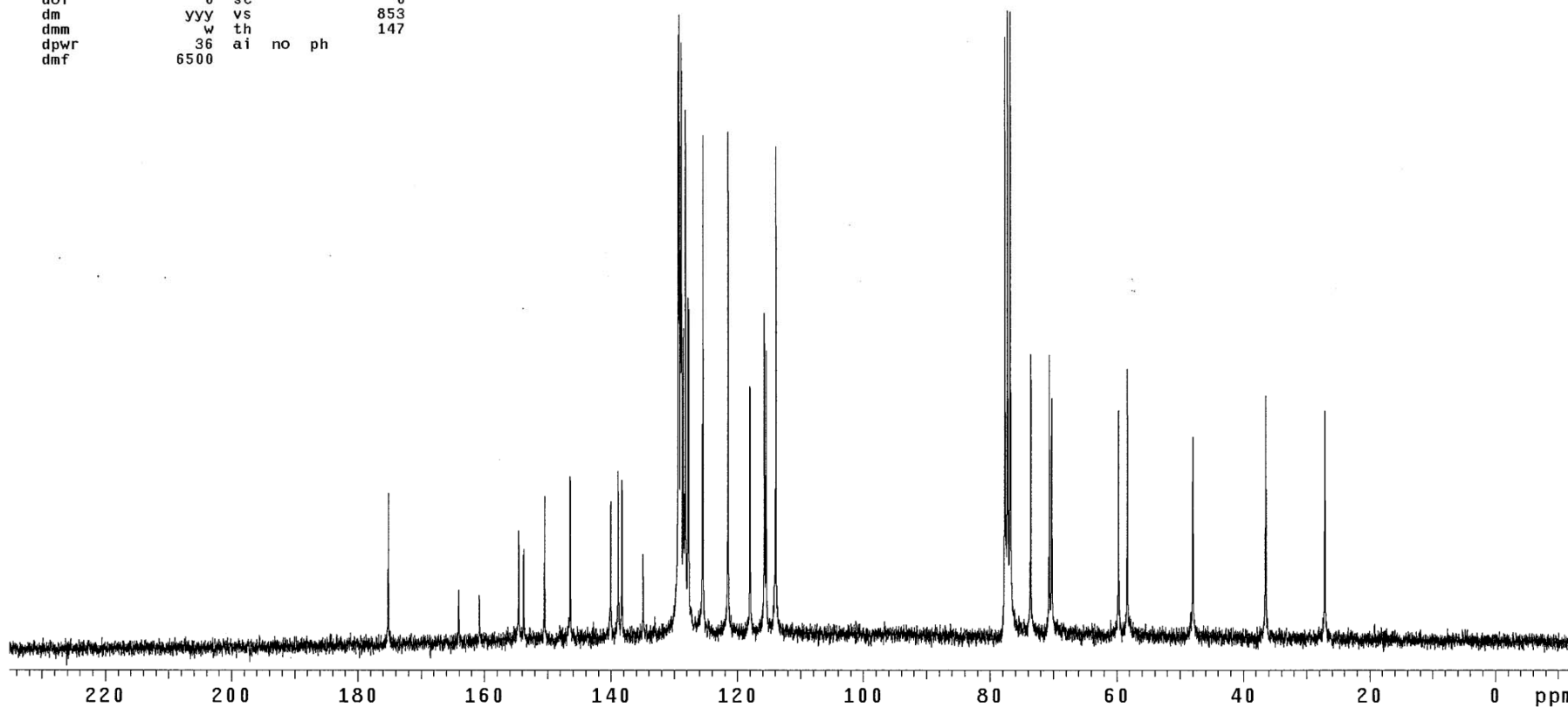
TRANSMITTER		DISPLAY	
tn	C13	sp	-1032.0
sfrq	75.424	wp	18761.7
tof	725.6	rfl	1138.2
tpwr	56	rfp	0
pw	7.100	rp	-57.8
		lp	-249.9

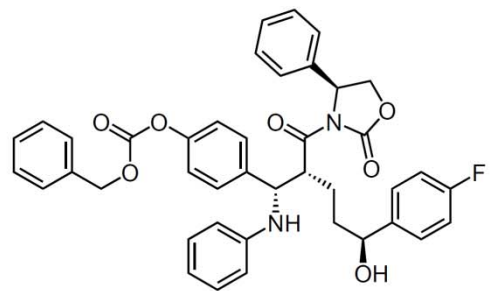
  

DECOUPLER		PLOT	
dn	H1	wc	250
dof	0	sc	0
dm	yyy	vs	853
dmm	w	th	147
dpwr	36	ai	no
dmf	6500	ph	



**desfluoro Eze-6**  
C<sub>41</sub>H<sub>37</sub>FN<sub>2</sub>O<sub>7</sub>; Mol. Wt.: 688,74





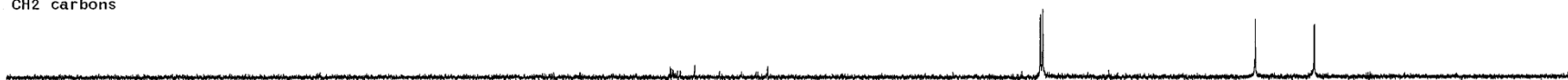
**desfluoro Eze-6**

$C_{41}H_{37}FN_2O_7$ ; Mol. Wt.: 688,74

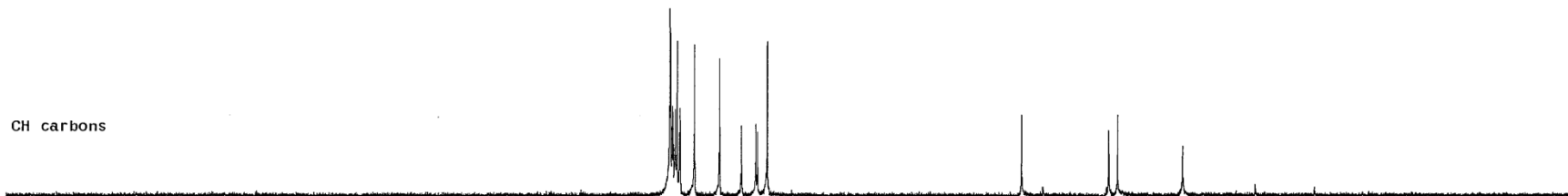
CH3 carbons



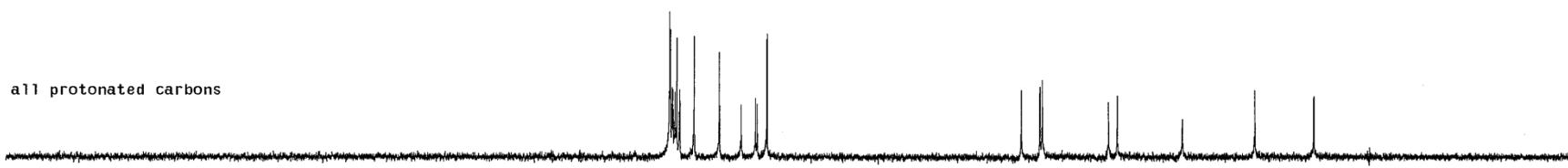
CH2 carbons



CH carbons



all protonated carbons

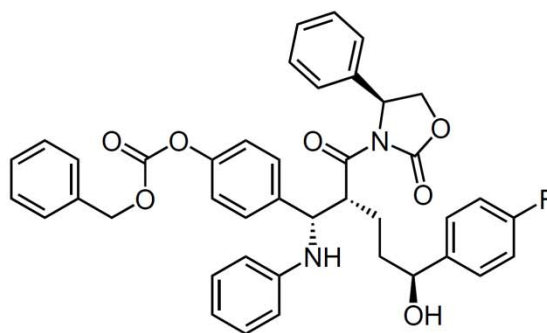


220 200 180 160 140 120 100 80 60 40 20 0 ppm

EB01139

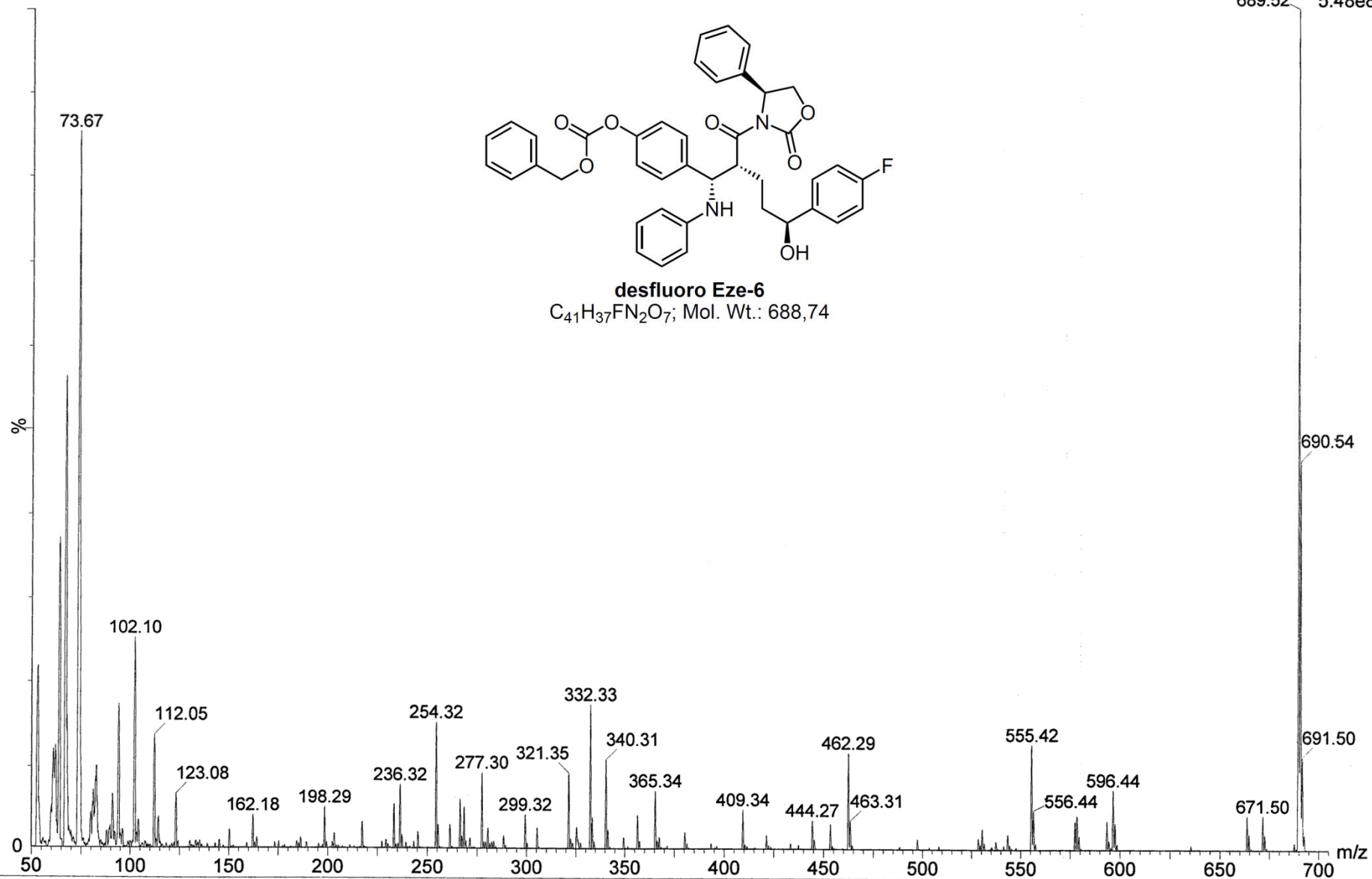
EB01139++ 1 (1.019)

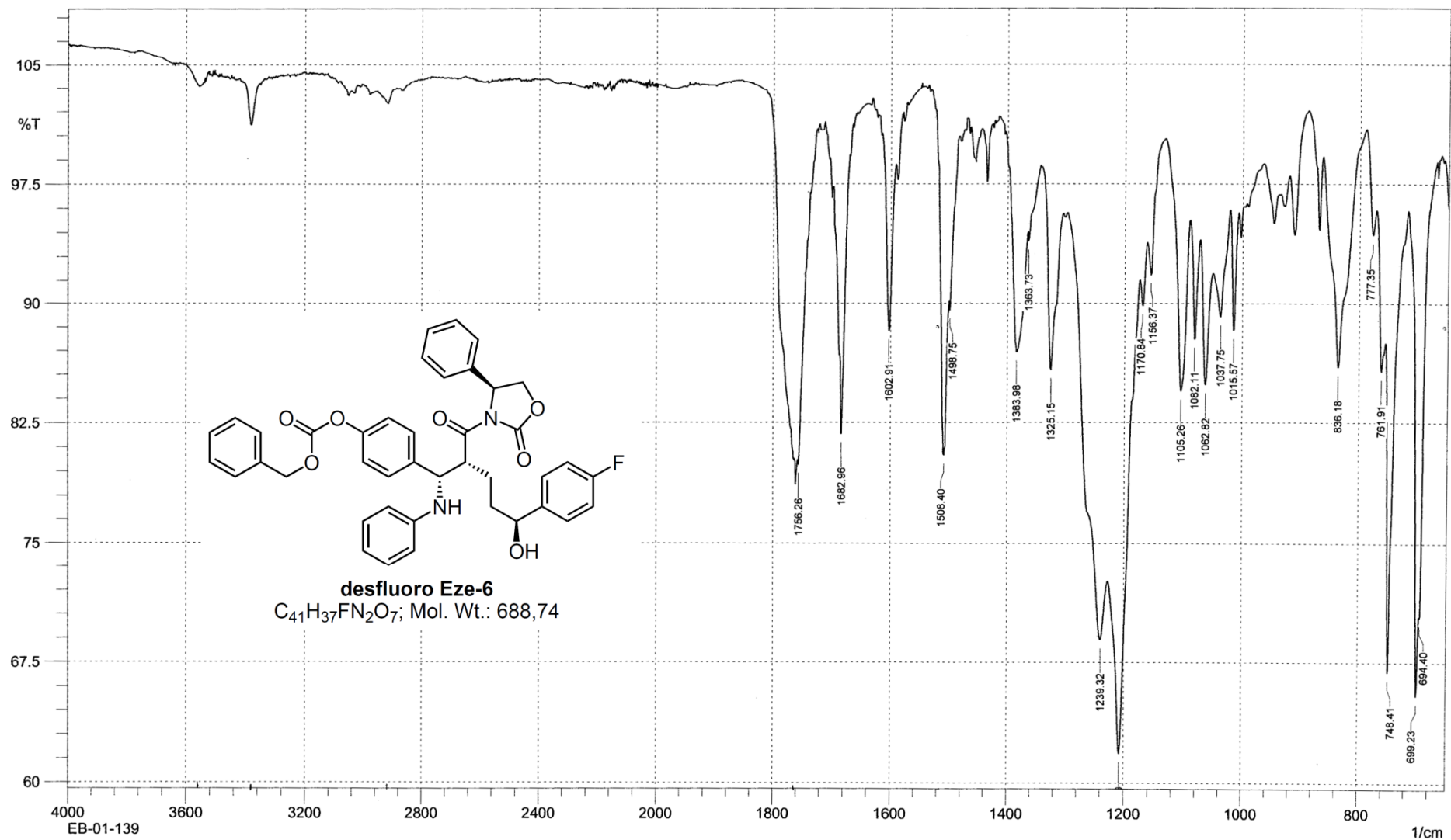
Scan ES+  
689.52 5.48e8



desfluoro Eze-6

C<sub>41</sub>H<sub>37</sub>FN<sub>2</sub>O<sub>7</sub>; Mol. Wt.: 688,74

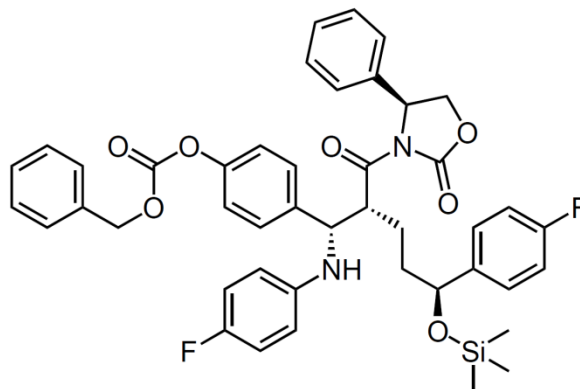




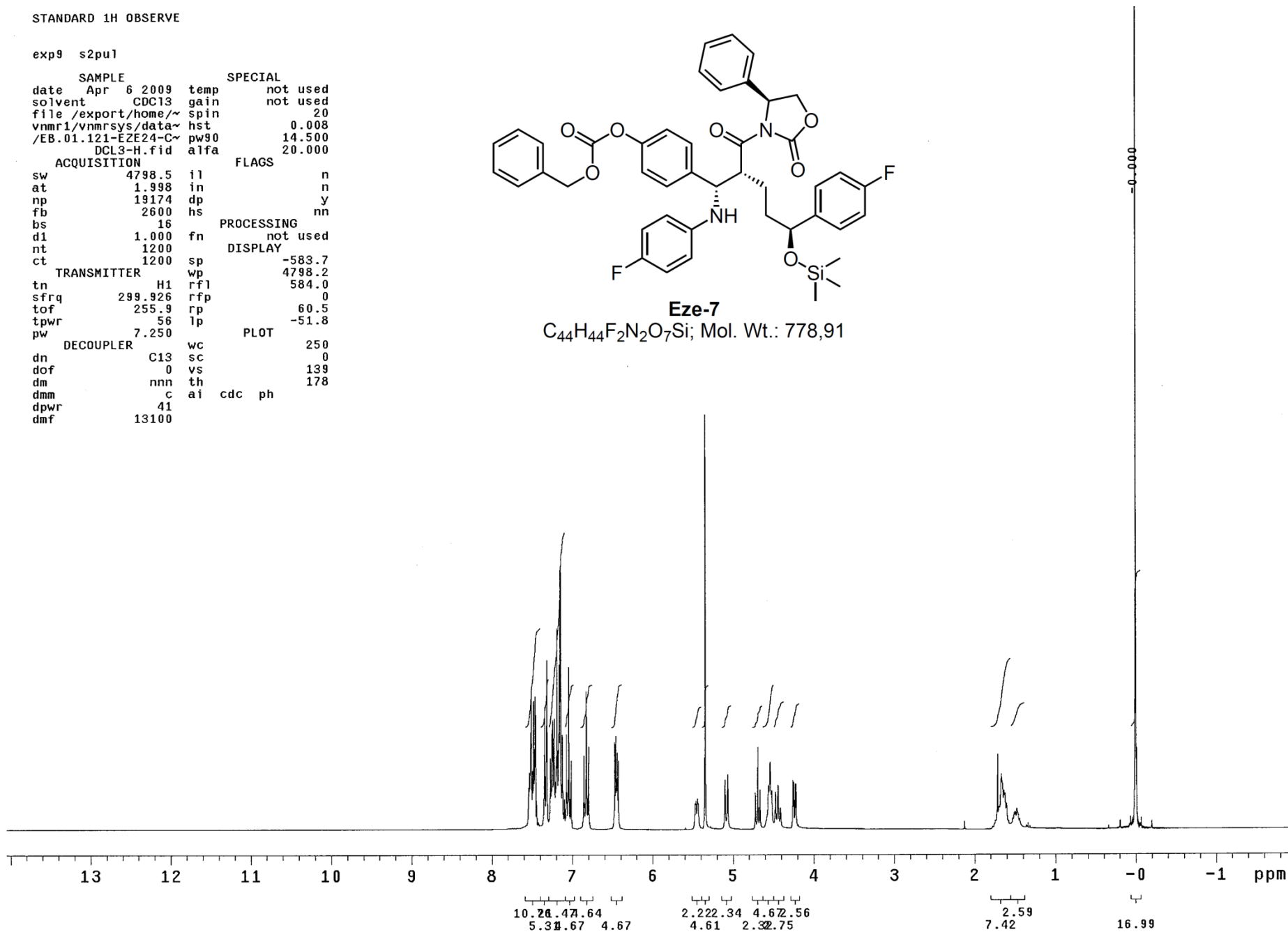
STANDARD 1H OBSERVE

exp9 s2pu1

SAMPLE		SPECIAL	
date	Apr 6 2009	temp	not used
solvent	CDC13	gain	not used
file	/export/home/~	spin	20
vnmr1/vnmrsys/data~		hst	0.008
/EB.01.121-EZE24-C~		pw90	14.500
DCL3-H.fid		alfa	20.000
ACQUISITION		FLAGS	
sw	4798.5	il	n
at	1.998	in	n
np	19174	dp	y
fb	2600	hs	nn
bs	16	PROCESSING	
d1	1.000	fn	not used
nt	1200	DISPLAY	
ct	1200	sp	-583.7
TRANSMITTER		wp	4798.2
tn	H1	rfl	584.0
sfrq	299.926	rpf	0
tof	255.9	rp	60.5
tpwr	56	lp	-51.8
pw	7.250	PLOT	
DECOUPLER		wc	250
dn	C13	sc	0
dof	0	vs	139
dm	nnn	th	178
dmm	c	ai	cdc ph
dpwr	41		
dmf	13100		



**Eze-7**  
 $C_{44}H_{44}F_2N_2O_7Si$ ; Mol. Wt.: 778,91



13C OBSERVE

exp9 s2pu1

SAMPLE		SPECIAL	
date	Apr 6 2009	temp	not used
solvent	CDC13	gain	not used
file	/export/home/~	spin	20
vmr1/vmrsys/data~	hst		0.008
/EB.01.121-EZE24-C~	pw90		14.200
DCL3-C.fid	alfa		20.000

ACQUISITION		FLAGS	
sw	18867.9	il	n
at	1.815	in	n
np	68492	dp	y
fb	10400	hs	nn
bs	64		

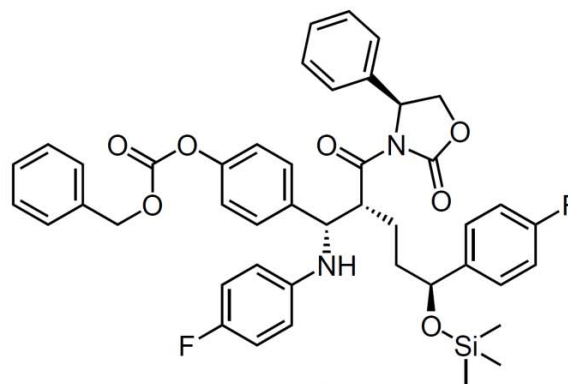
PROCESSING	
d1	1.000
nt	50000
ct	20096

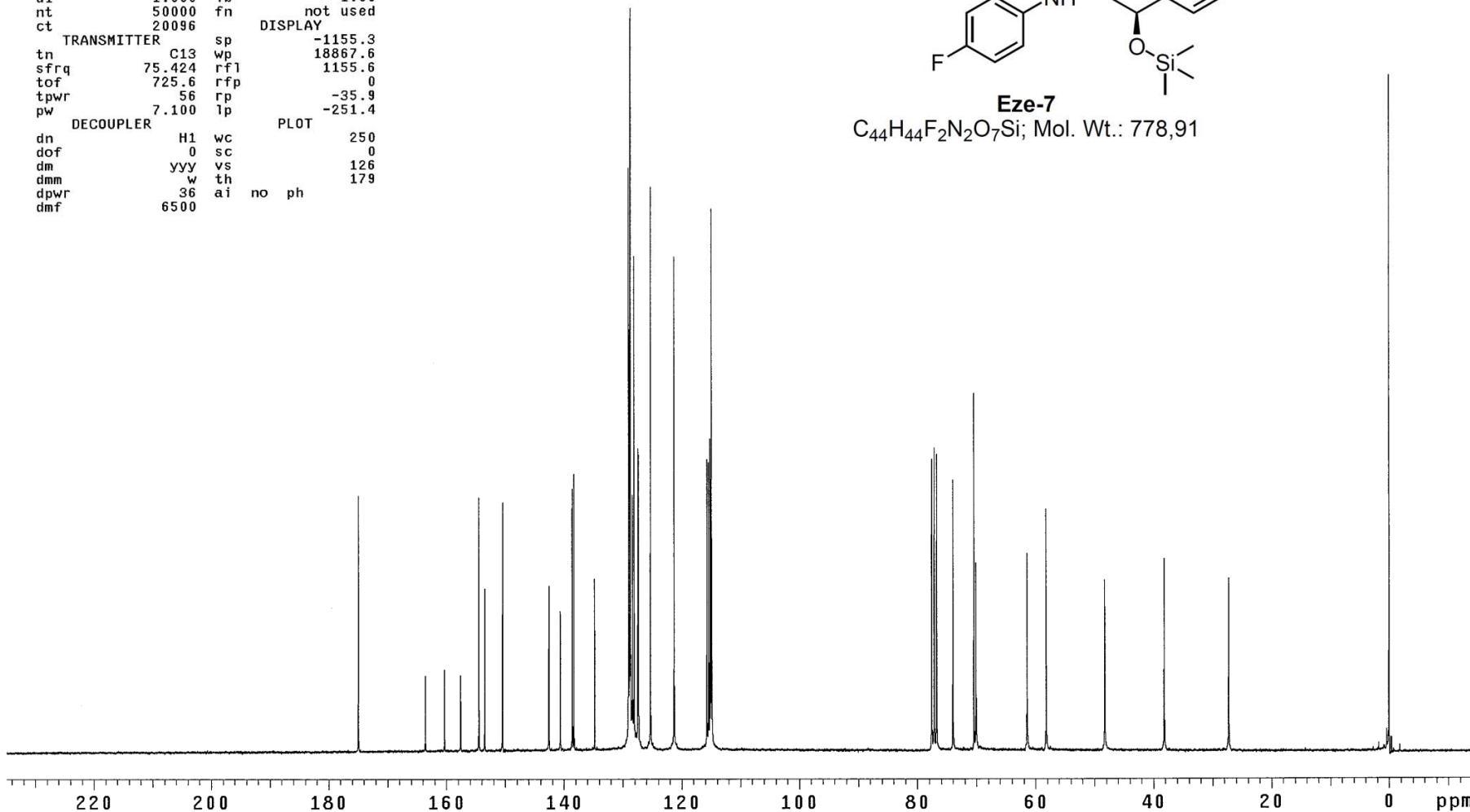
TRANSMITTER		DISPLAY	
tn	C13	sp	-1155.3
sfrq	75.424	wp	18867.6
tof	725.6	rf1	1155.6
tpwr	56	rpf	0
pw	7.100	rp	-35.9
		lp	-251.4

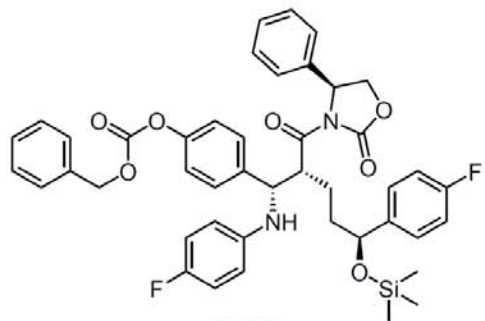
  

DECOUPLER		PLOT	
dn	H1	wc	250
dof	0	sc	0
dm	yyy	vs	126
dmm	w	th	179
dpwr	36	ai	no
dmf	6500	ph	



**Eze-7**  
C<sub>44</sub>H<sub>44</sub>F<sub>2</sub>N<sub>2</sub>O<sub>7</sub>Si; Mol. Wt.: 778,91

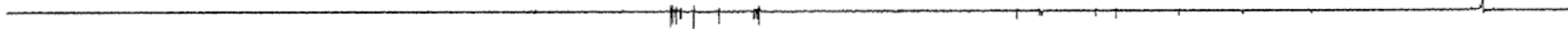




**Eze-7**

$C_{44}H_{44}F_2N_2O_7Si$ ; Mol. Wt.: 778,91

CH3 carbons



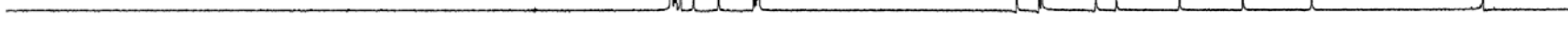
CH2 carbons



CH carbons



all protonated carbons



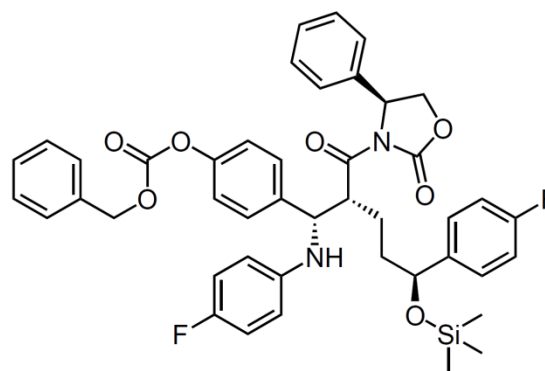
220 200 180 160 140 120 100 80 60 40 20 0 ppm



EZE

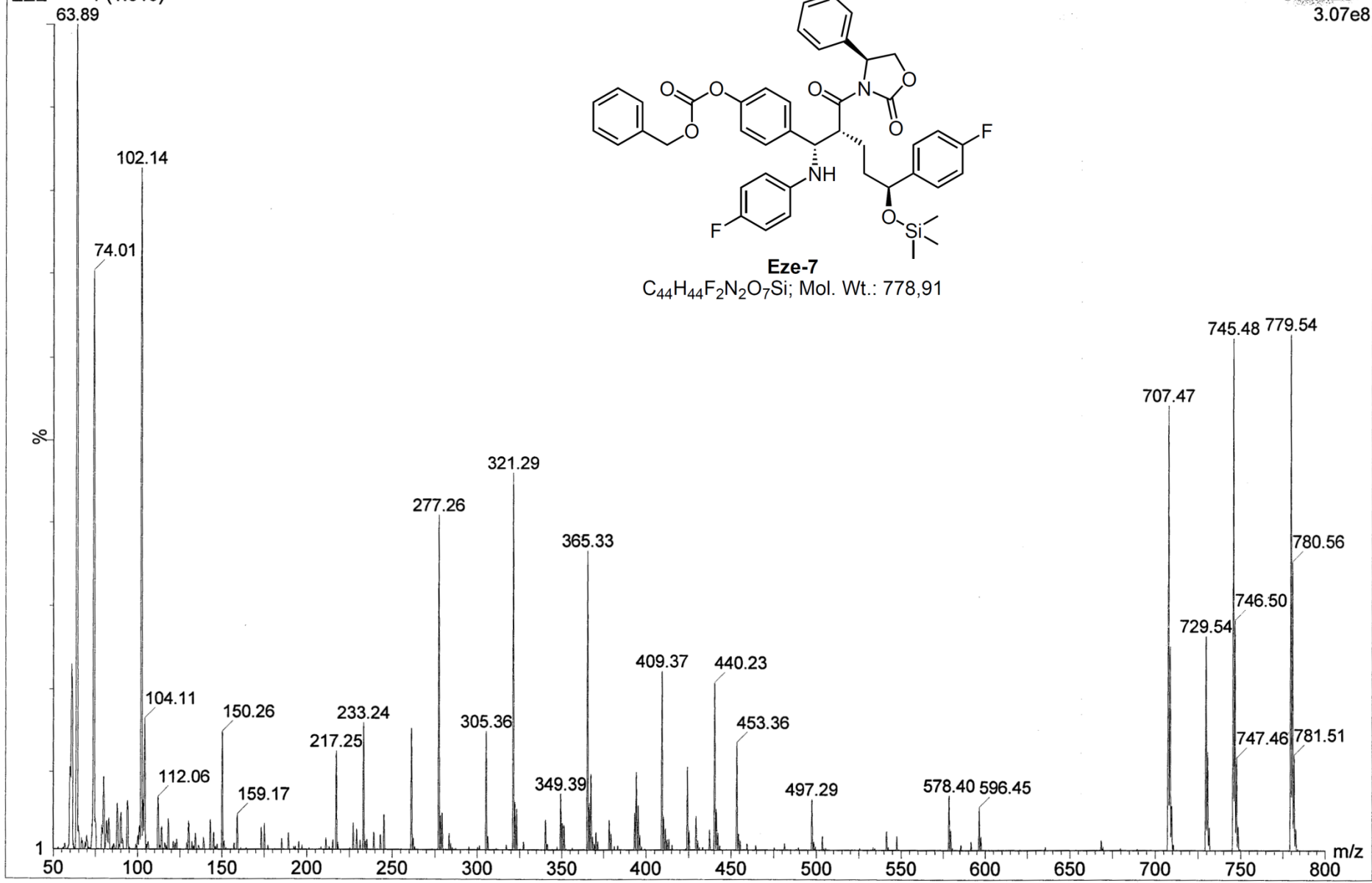
EZE: + 1 (1.019)

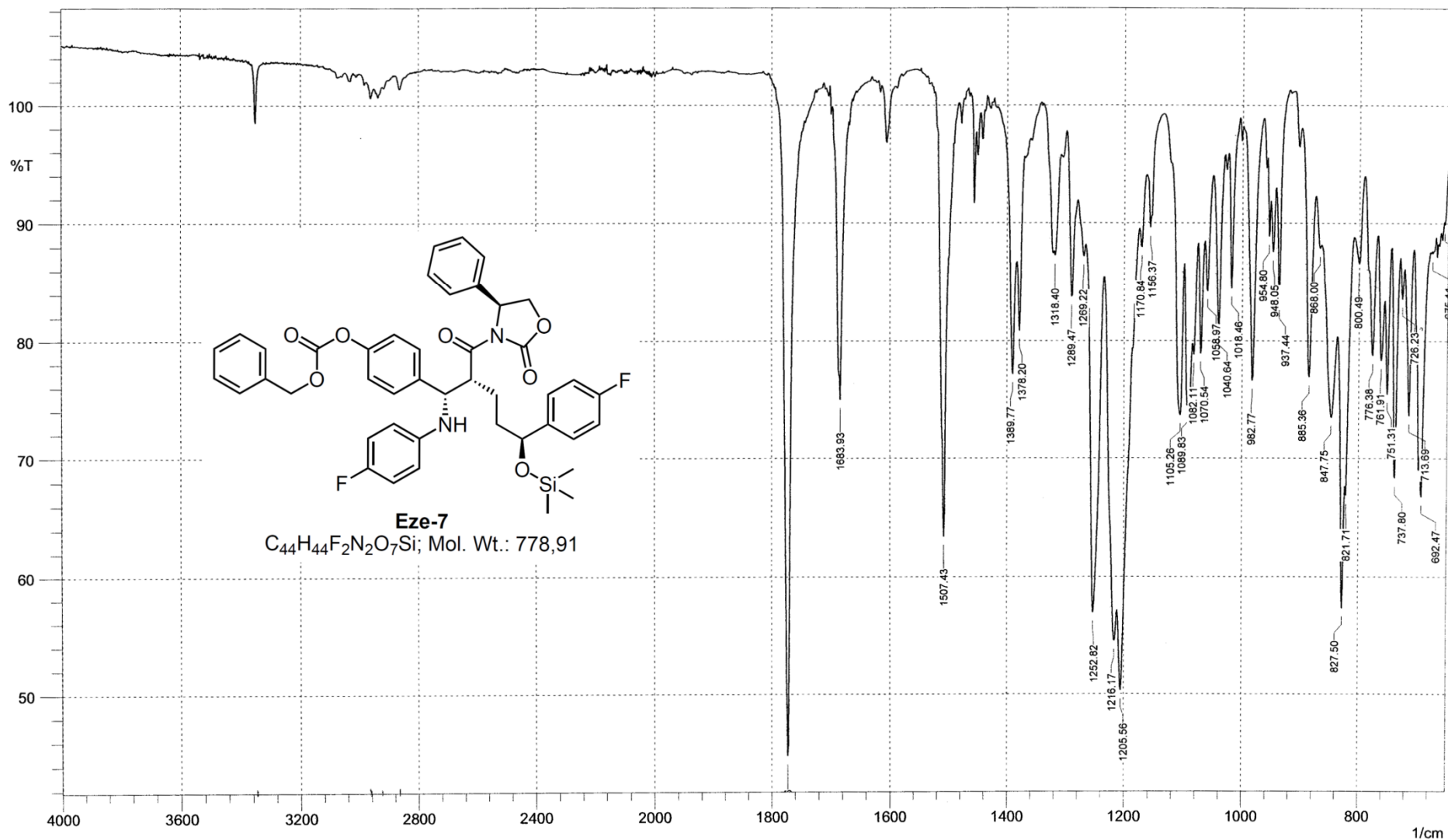
Scan ES+  
3.07e8



**Eze-7**

C<sub>44</sub>H<sub>44</sub>F<sub>2</sub>N<sub>2</sub>O<sub>7</sub>Si; Mol. Wt.: 778,91

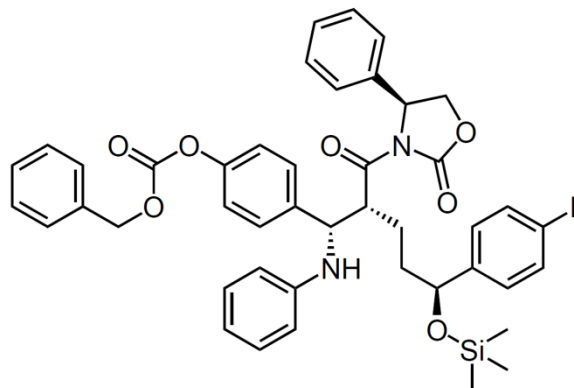




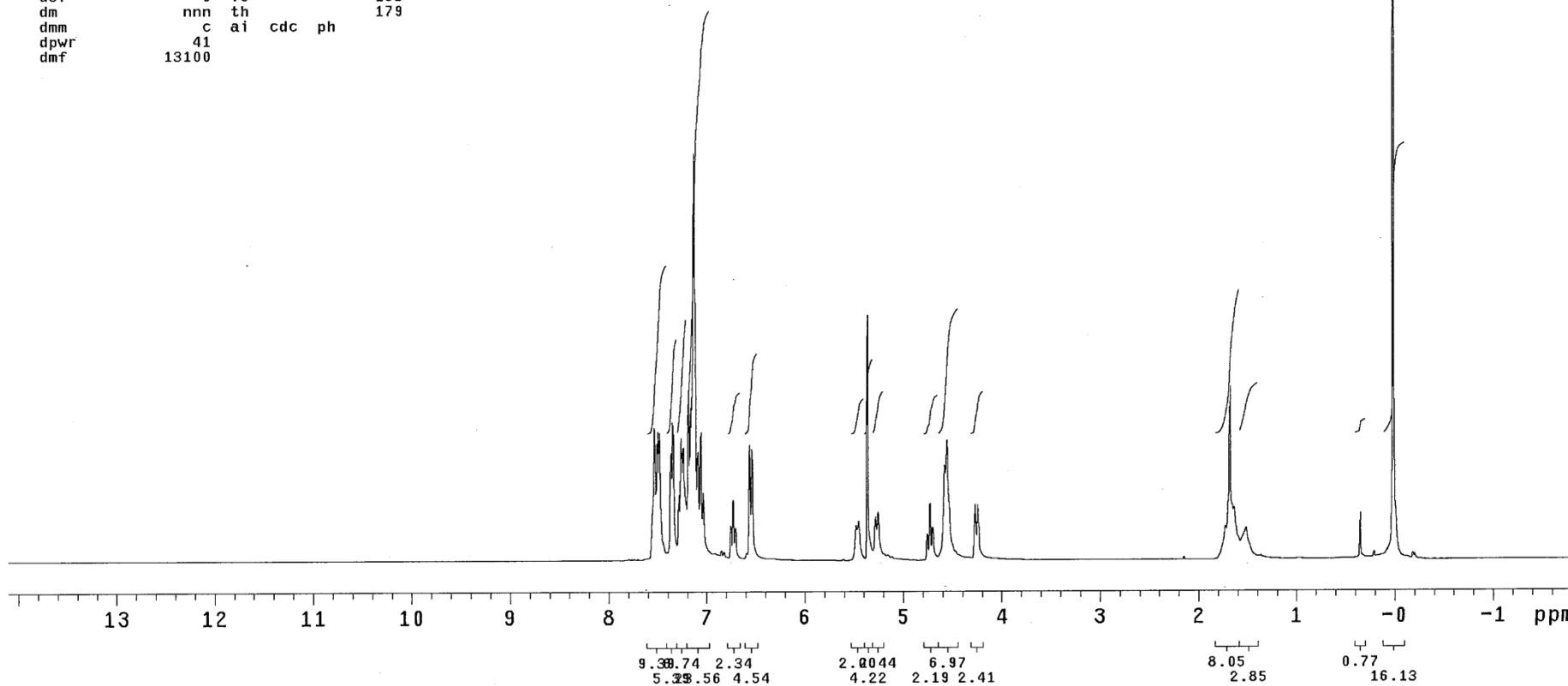
STANDARD 1H OBSERVE

exp5 s2pu1

SAMPLE		SPECIAL	
date	Jan 27 2010	temp	not used
solvent	CDCl3	gain	not used
file	/export/home/~	spin	20
vnmr1/vnmrsys/data~	hst	0.008	
/EB.01.140-CDCL3-H~	pw90	14.500	
	fid	alfa	20.000
ACQUISITION		FLAGS	
sw	4798.5	il	n
at	1.998	in	n
np	19174	dp	y
fb	2600	hs	nn
bs	16		
d1	1.000	fn	not used
nt	1200	PROCESSING	
ct	1200	DISPLAY	
TRANSMITTER		sp	-568.2
		wp	4798.2
tn	H1	rfl	568.5
sfrq	299.926	rfp	0
tof	255.9	rp	63.3
tpwr	56	lp	-63.1
pw	7.250	PLOT	
DECOUPLER		wc	250
dn	C13	sc	0
dof	0	vs	153
dm	nnn	th	179
dmm	c	ai	cdc ph
dpwr	41		
dmf	13100		



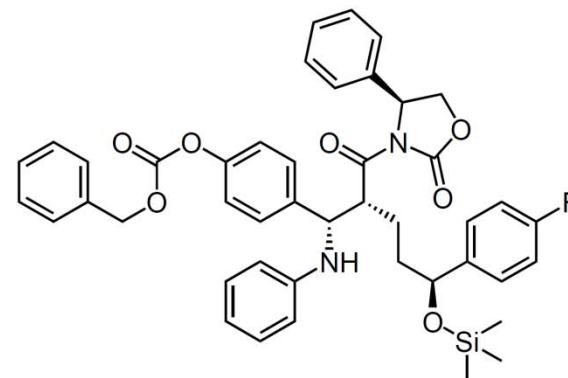
desfluoro Eze-7  
C<sub>44</sub>H<sub>45</sub>FN<sub>2</sub>O<sub>7</sub>Si; Mol. Wt.: 760,92



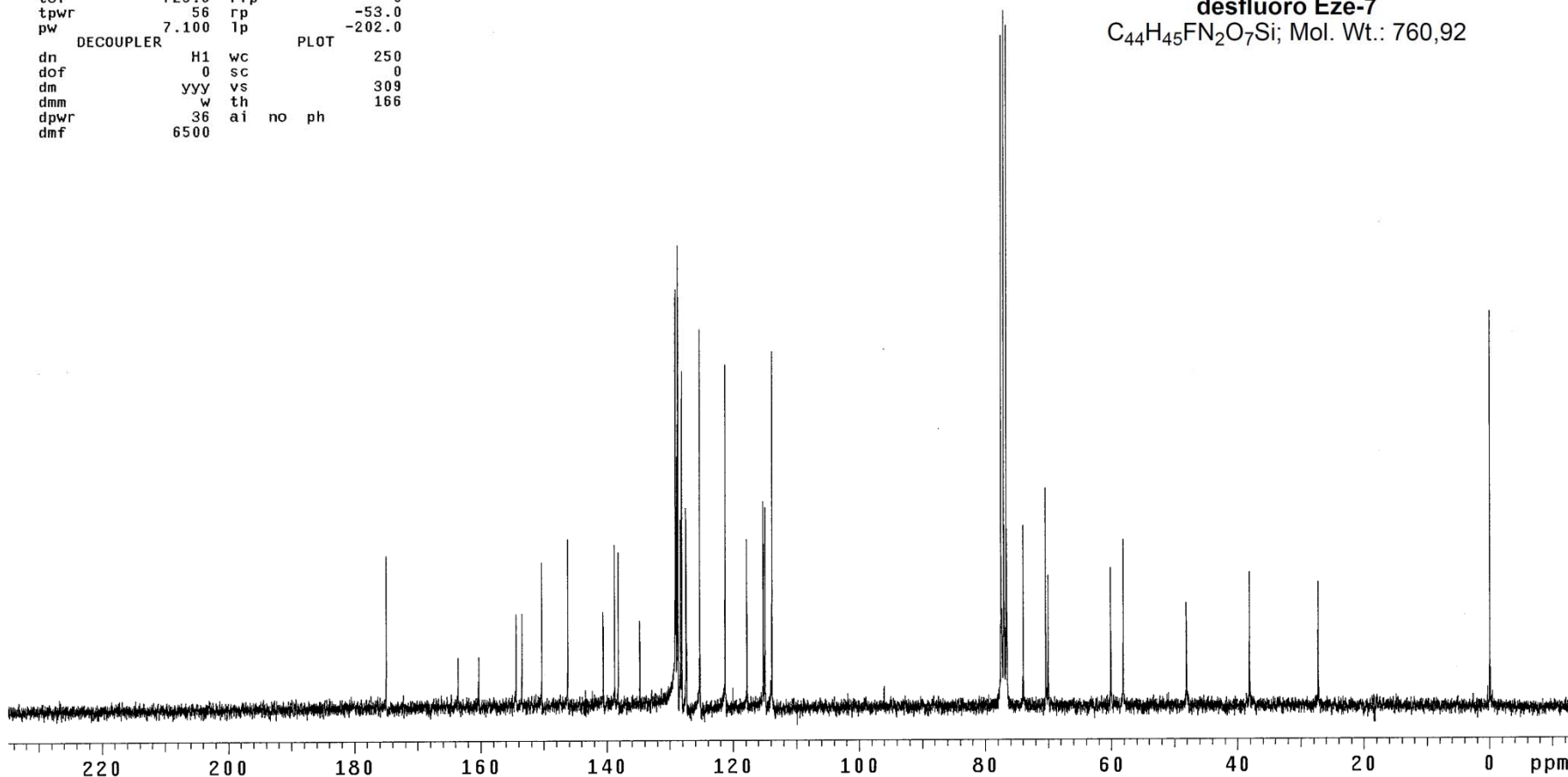
13C OBSERVE

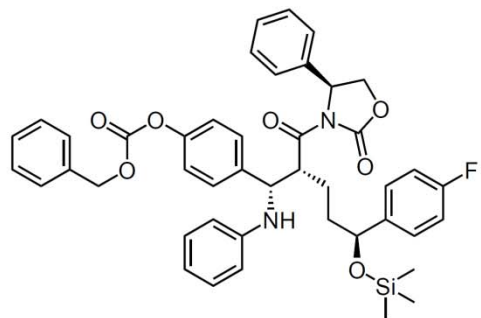
exp5 s2pu1

SAMPLE		SPECIAL	
date	Jan 27 2010	temp	not used
solvent	CDC13	gain	not used
file	/export/home/~	spin	20
vnmr1/vnmrsys/data/~	hst		0.008
/EB.01.140-CDCL3-C~	pw90		14.200
	fid	alfa	20.000
ACQUISITION		FLAGS	
sw	18867.9	il	n
at	1.815	in	n
np	68492	dp	y
fb	10400	hs	nn
bs	64	PROCESSING	
d1	1.000	lb	1.00
nt	30000	fn	not used
ct	3072	DISPLAY	
TRANSMITTER		sp	-1046.8
tn	C13	wp	18761.7
sfrq	75.424	rfl	1153.0
tof	725.6	rfp	0
tpwr	56	rp	-53.0
pw	7.100	lp	-202.0
DECOUPLER		PLOT	
dn	H1	wc	250
dof	0	sc	0
dm	YYY	vs	309
dmm	w	th	166
dpwr	36	ai	no
dmf	6500	ph	



**desfluoro Eze-7**  
 $C_{44}H_{45}FN_2O_7Si$ ; Mol. Wt.: 760,92





**desfluoro Eze-7**

$C_{44}H_{45}FN_2O_7Si$ ; Mol. Wt.: 760,92

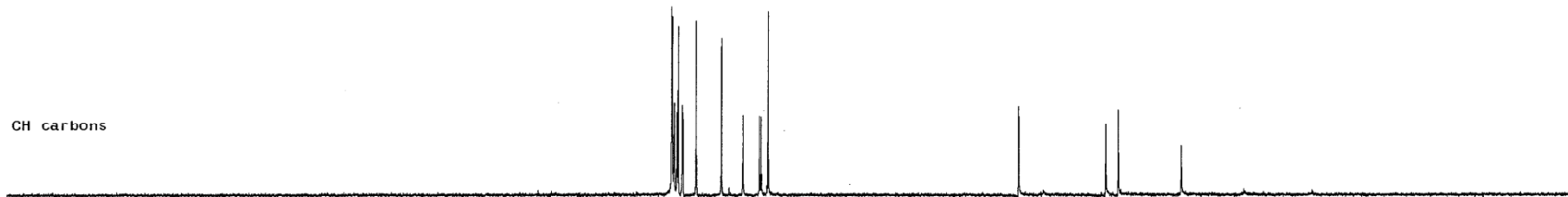
CH3 carbons



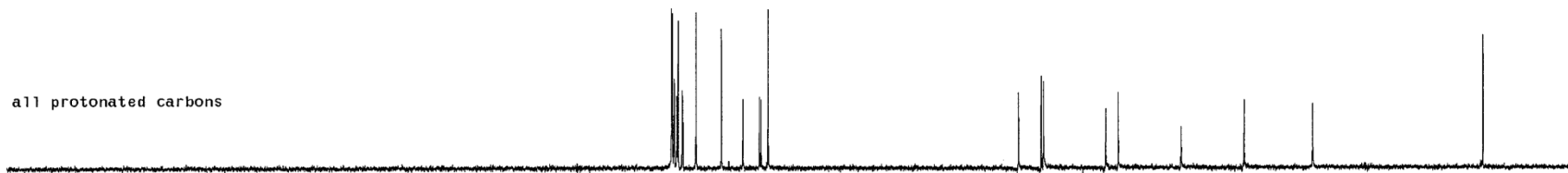
CH2 carbons



CH carbons



all protonated carbons



220

200

180

160

140

120

100

80

60

40

20

0

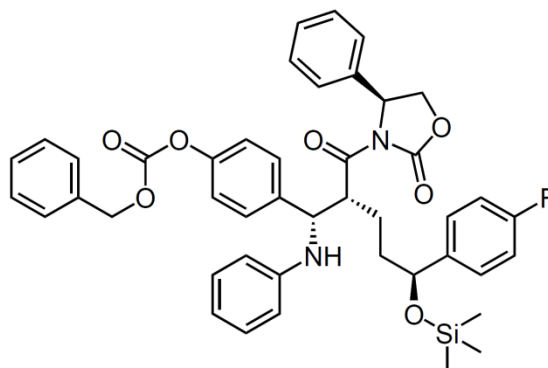
ppm

EB01140

EB01140+ 1 (1.019)

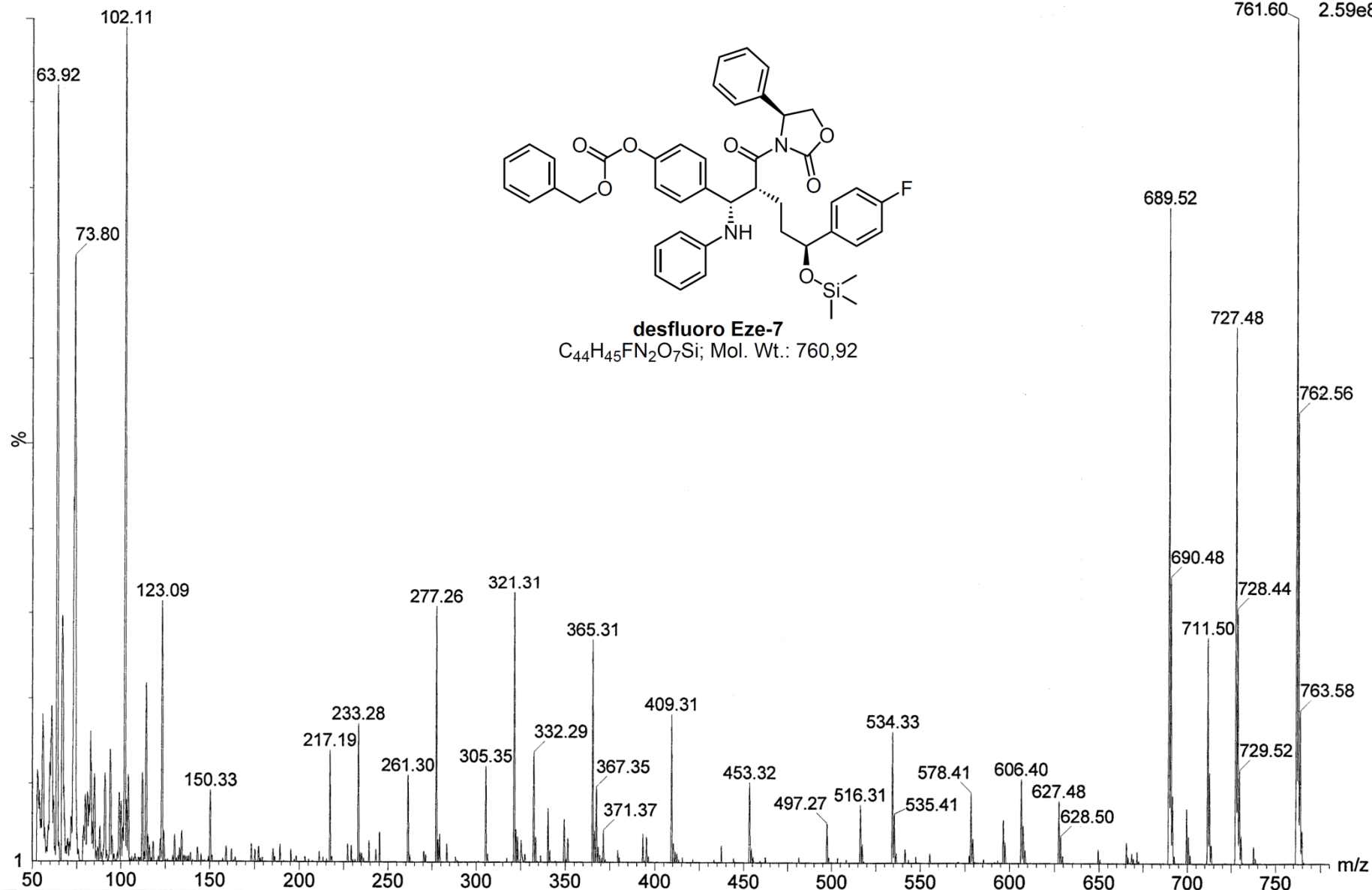
Scan ES+

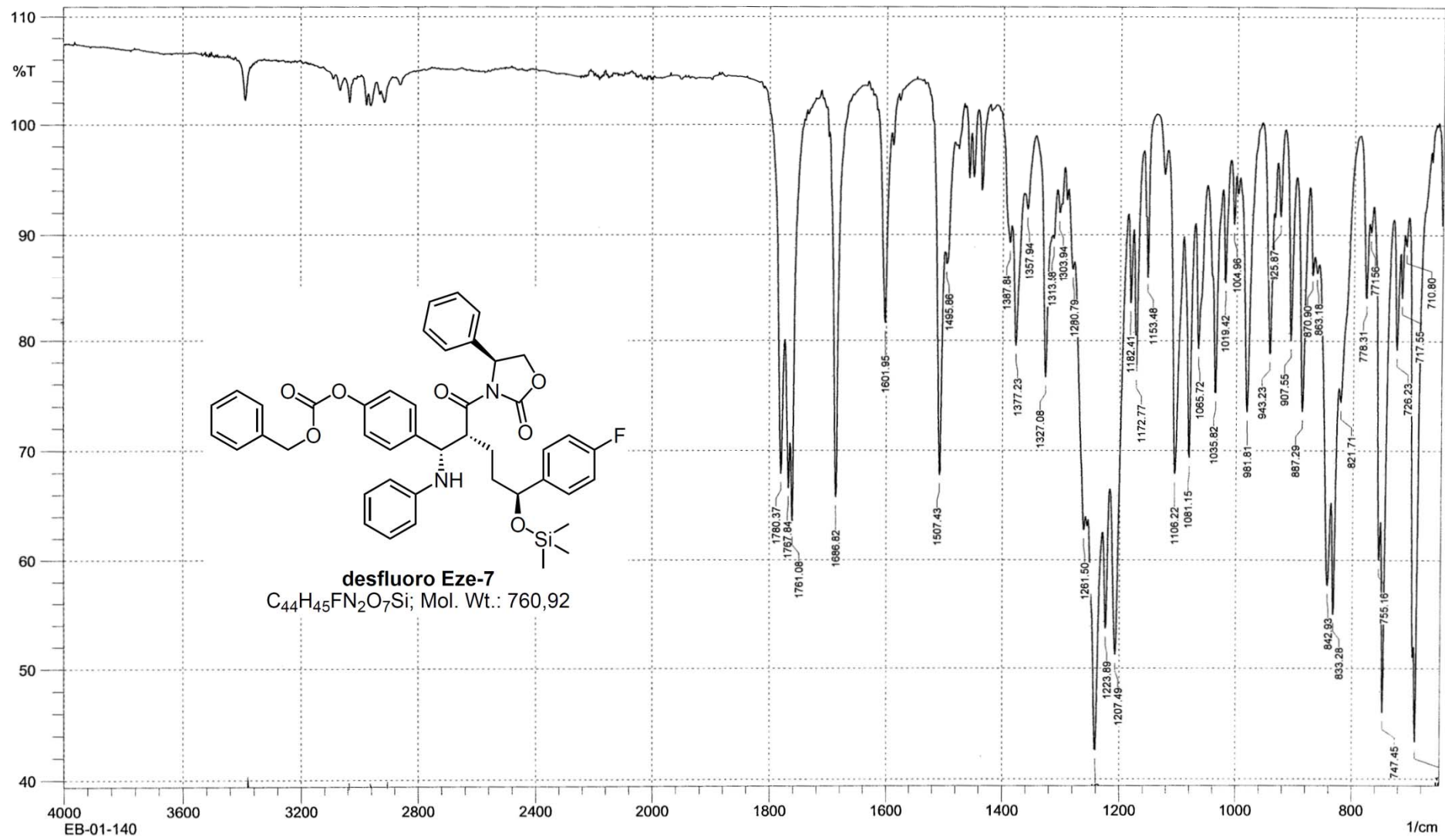
761.60 2.59e8



desfluoro Eze-7

C<sub>44</sub>H<sub>45</sub>FN<sub>2</sub>O<sub>7</sub>Si; Mol. Wt.: 760,92

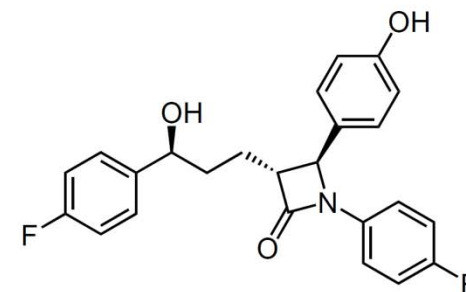




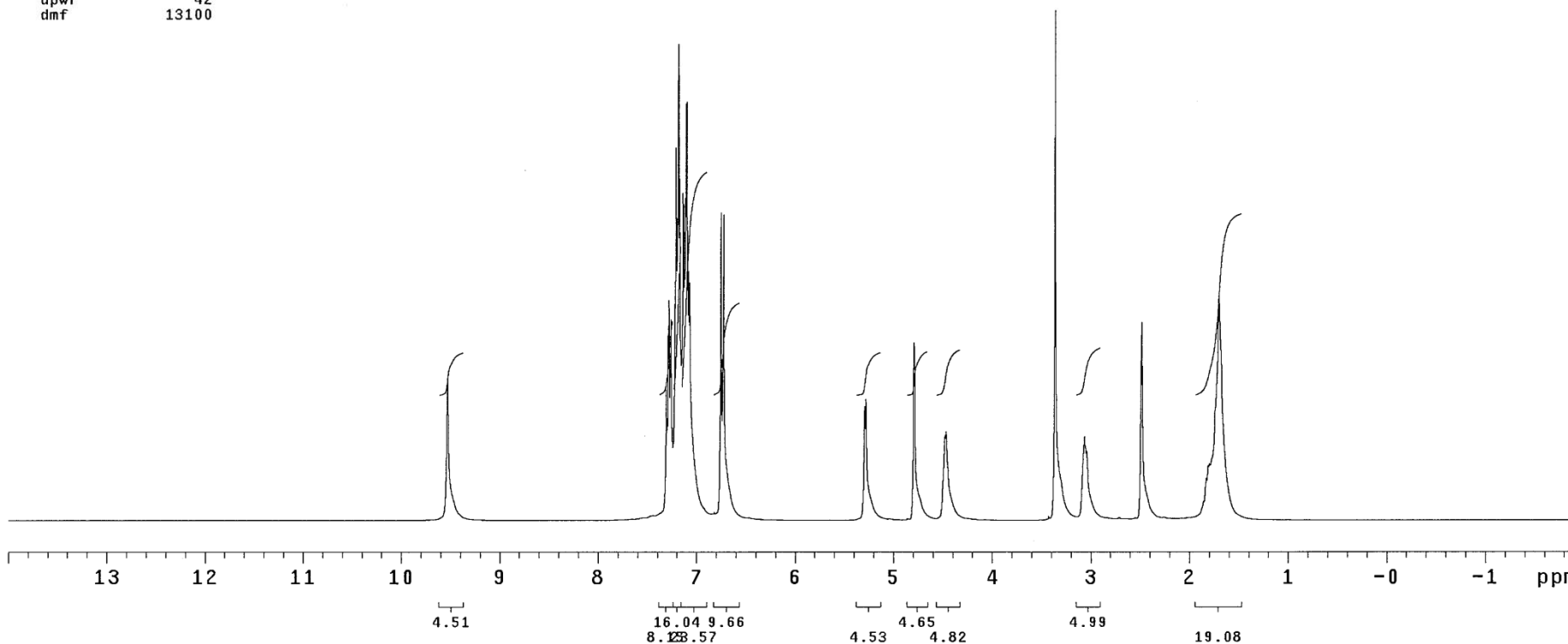
STANDARD 1H OBSERVE

exp7 s2pu1

SAMPLE		SPECIAL	
date	Nov 16 2009	temp	not used
solvent	DMSO	gain	not used
file	/export/home/~	spin	20
vnmr1/vnmr	sys/data/~	hst	0.008
/EB.01.119-EZETIMI	~	pw90	14.500
BE-DMSO-H.fid		alfa	20.000
ACQUISITION		FLAGS	
sw	4798.5	il	n
at	1.998	in	n
np	19174	dp	y
fb	2600	hs	nn
bs	16	PROCESSING	
d1	1.000	fn	not used
nt	600	DISPLAY	
ct	600	sp	-599.4
TRANSMITTER		wp	4798.2
tn	H1	rf1	599.7
sfrq	299.927	rfp	0
tof	255.9	rp	82.1
tpwr	56	lp	-73.7
pw	7.250	PLOT	
DECOUPLER		wc	250
dn	C13	sc	0
dof	0	vs	135
dm	nnn	th	171
dmm	c	ai	cdc ph
dpwr	42		
dmf	13100		



**ezetimibe**  
 $C_{24}H_{21}F_2NO_3$ ; Mol. Wt.: 409,43

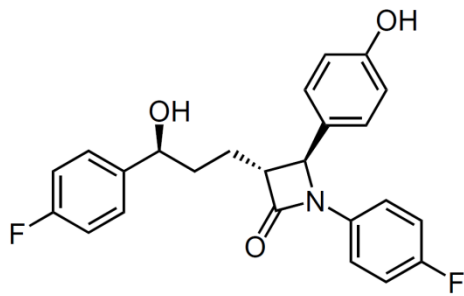




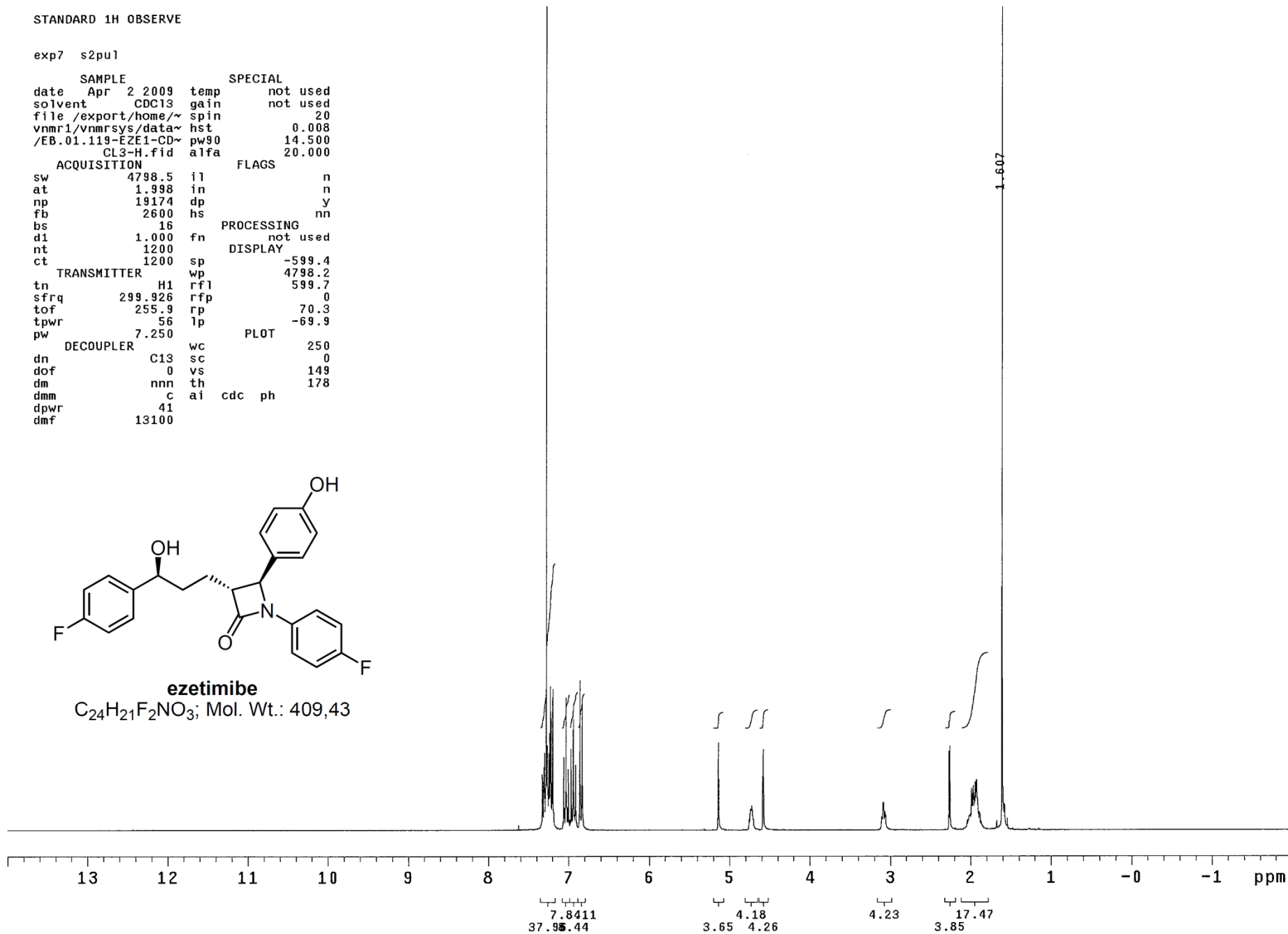
STANDARD 1H OBSERVE

exp7 s2pu1

SAMPLE		SPECIAL	
date	Apr 2 2009	temp	not used
solvent	CDC13	gain	not used
file	/export/home/~	spin	20
vnmr1/vnmrsys/data/~		hst	0.008
/EB.01.119-EZE1-CD~		pw90	14.500
CL3-H.fid		alfa	20.000
ACQUISITION		FLAGS	
sw	4798.5	il	n
at	1.998	in	n
np	19174	dp	y
fb	2600	hs	nn
bs	16	PROCESSING	
d1	1.000	fn	not used
nt	1200	DISPLAY	
ct	1200	sp	-599.4
TRANSMITTER		wp	4798.2
tn	H1	rfl	599.7
sfrq	299.926	rfp	0
tof	255.9	rp	70.3
tpwr	56	lp	-69.9
pw	7.250	PLOT	
DECOUPLER		wc	250
dn	C13	sc	0
dof	0	vs	149
dm	nnn	th	178
dmm	c	ai	cdc ph
dpwr	41		
dmf	13100		



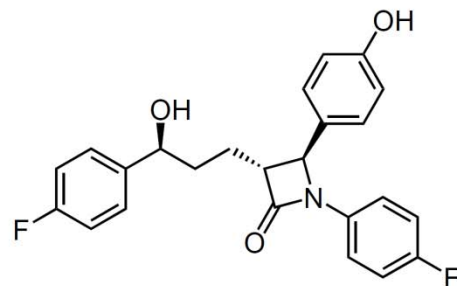
**ezetimibe**  
 $C_{24}H_{21}F_2NO_3$ ; Mol. Wt.: 409,43



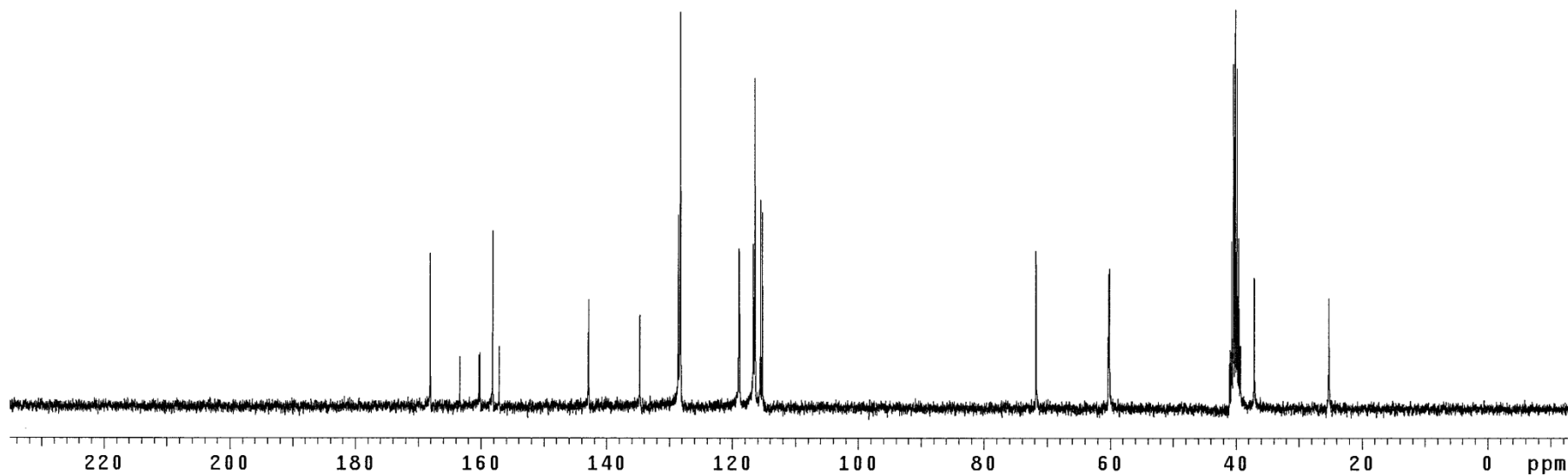
13C OBSERVE

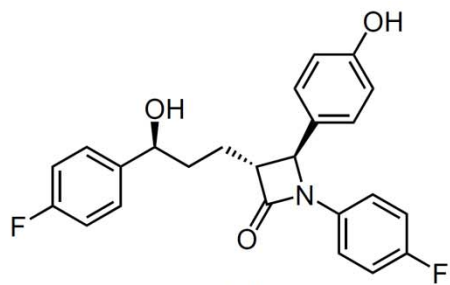
exp7 s2pu1

SAMPLE		SPECIAL	
date	Nov 12 2009	temp	not used
solvent	DMSO	gain	not used
file	/export/home/~	spin	20
vnmr1/vnmrsys/data/~		hst	0.008
/EB.01.119-EZETIMI~		pw90	16.750
BE-DMSO-C.fid	alfa		20.000
ACQUISITION		FLAGS	
sw	18867.9	il	n
at	1.815	in	n
np	68492	dp	y
fb	10400	hs	nn
bs	64		
PROCESSING		1b	1.00
d1	1.000	fn	not used
nt	30000		
ct	512	DISPLAY	
TRANSMITTER		sp	-1031.9
tn	C13	wp	18761.7
sfrq	75.425	rfl	1138.2
tof	725.6	rfp	0
tpwr	56	rp	-21.5
pw	8.375	lp	-219.8
DECOUPLER		PLOT	
dn	H1	wc	250
dof	0	sc	0
dm	yyy	vs	154
dmm	w	th	97
dpwr	36	ai	no
dmf	6500	ph	



ezetimibe  
 $C_{24}H_{21}F_2NO_3$ ; Mol. Wt.: 409,43





**ezetimibe**

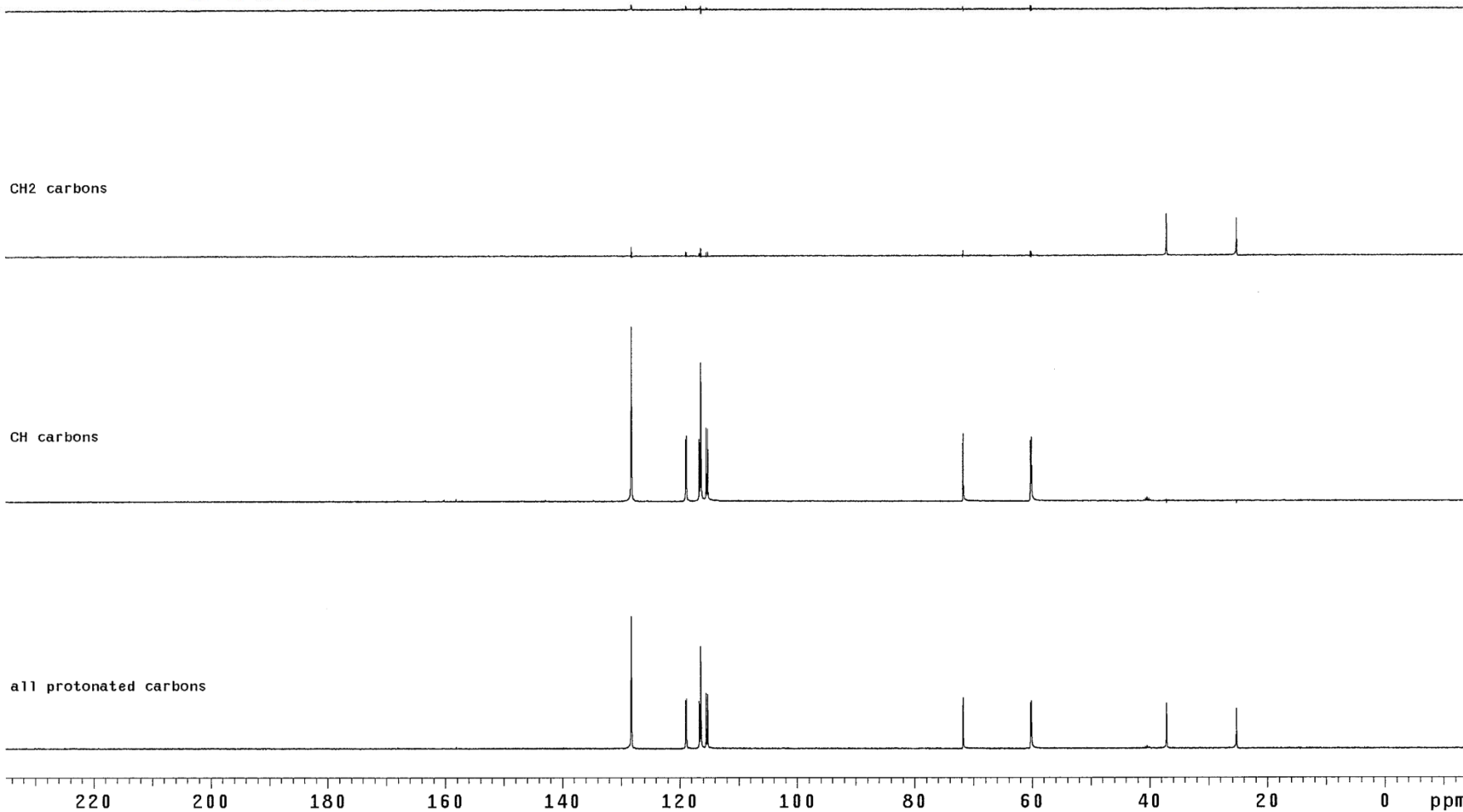
$C_{24}H_{21}F_2NO_3$ ; Mol. Wt.: 409,43

CH3 carbons

CH2 carbons

CH carbons

all protonated carbons



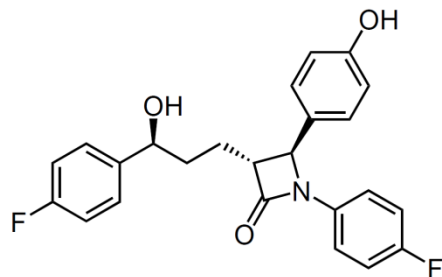
Ezetimibe

Sample Name:  
Ezetimibe  
Data Collected on:  
Varian-NMR-mercury300  
Archive directory:  
/home/vnmr1/vnmrsys/data/Esen  
Sample directory:  
Ezetimibe\_20100217\_01  
FidFile: FLUORINE\_001

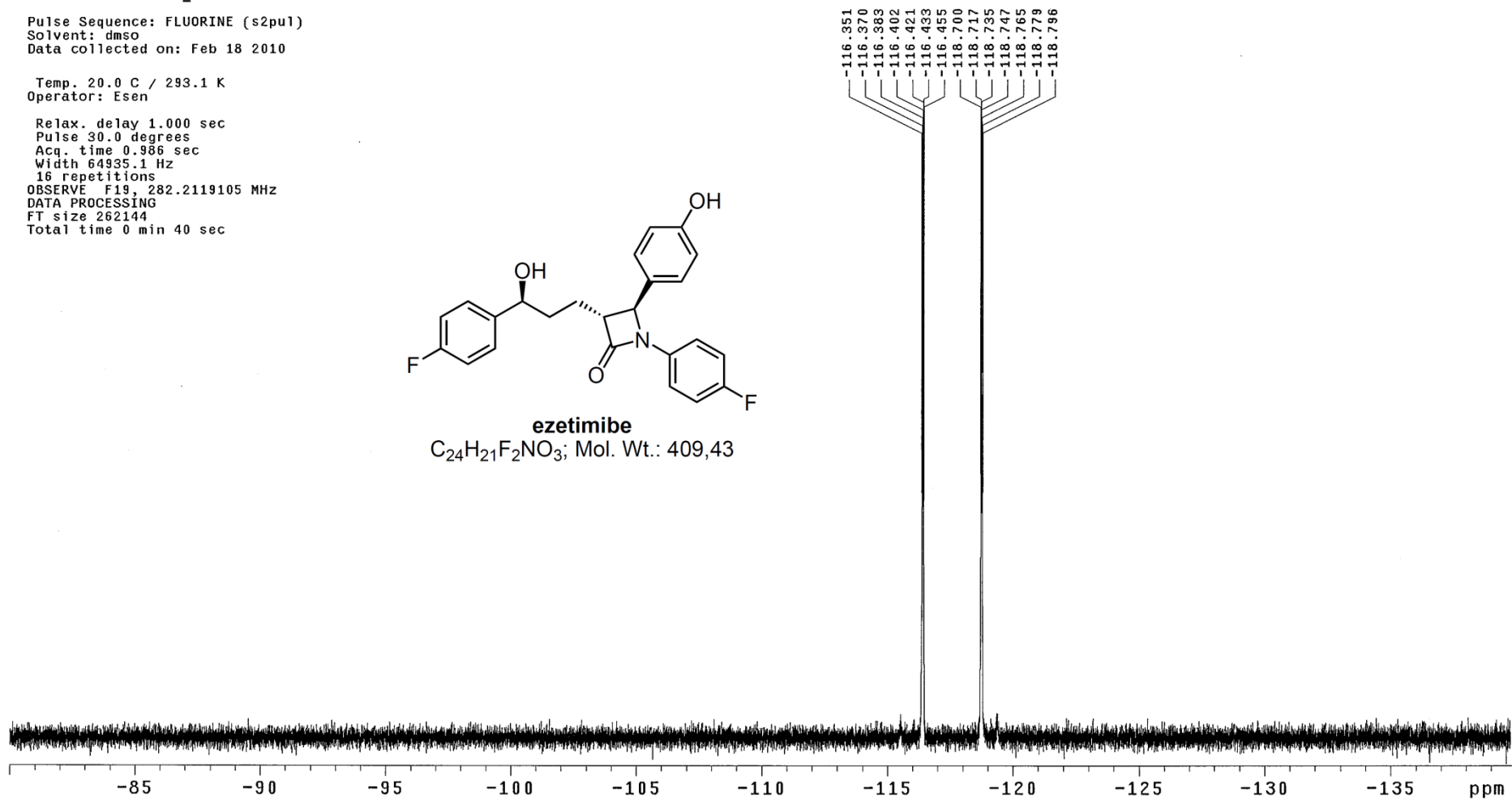
Pulse Sequence: FLUORINE (s2pu1)  
Solvent: dmsd  
Data collected on: Feb 18 2010

Temp. 20.0 C / 293.1 K  
Operator: Esen

Relax. delay 1.000 sec  
Pulse 30.0 degrees  
Acq. time 0.986 sec  
Width 64935.1 Hz  
16 repetitions  
OBSERVE F19, 282.2119105 MHz  
DATA PROCESSING  
FT size 262144  
Total time 0 min 40 sec



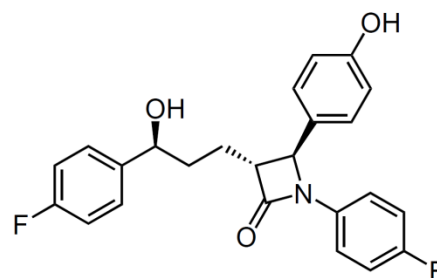
**ezetimibe**  
 $C_{24}H_{21}F_2NO_3$ ; Mol. Wt.: 409,43



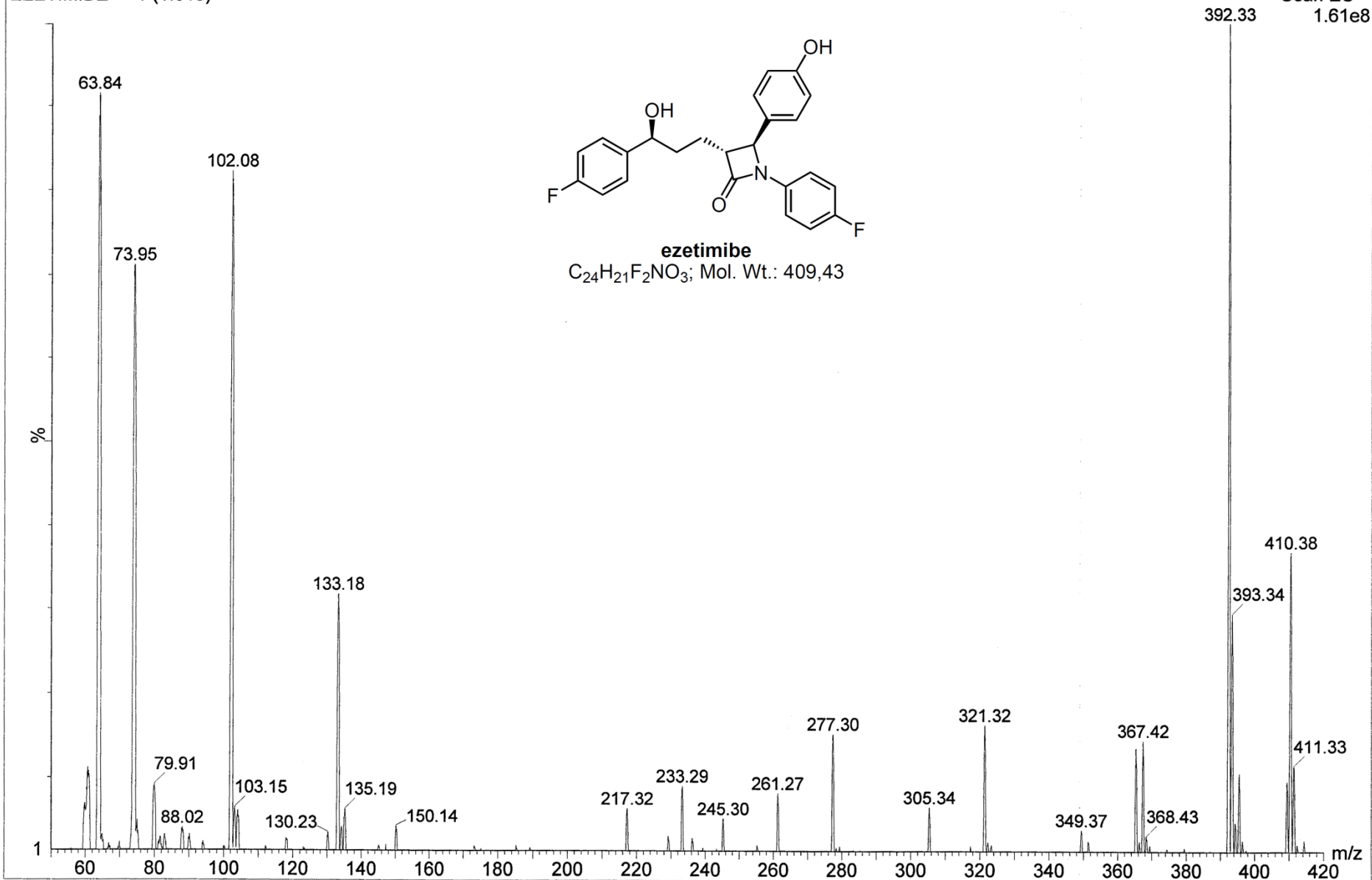
**EZETIMIBE**

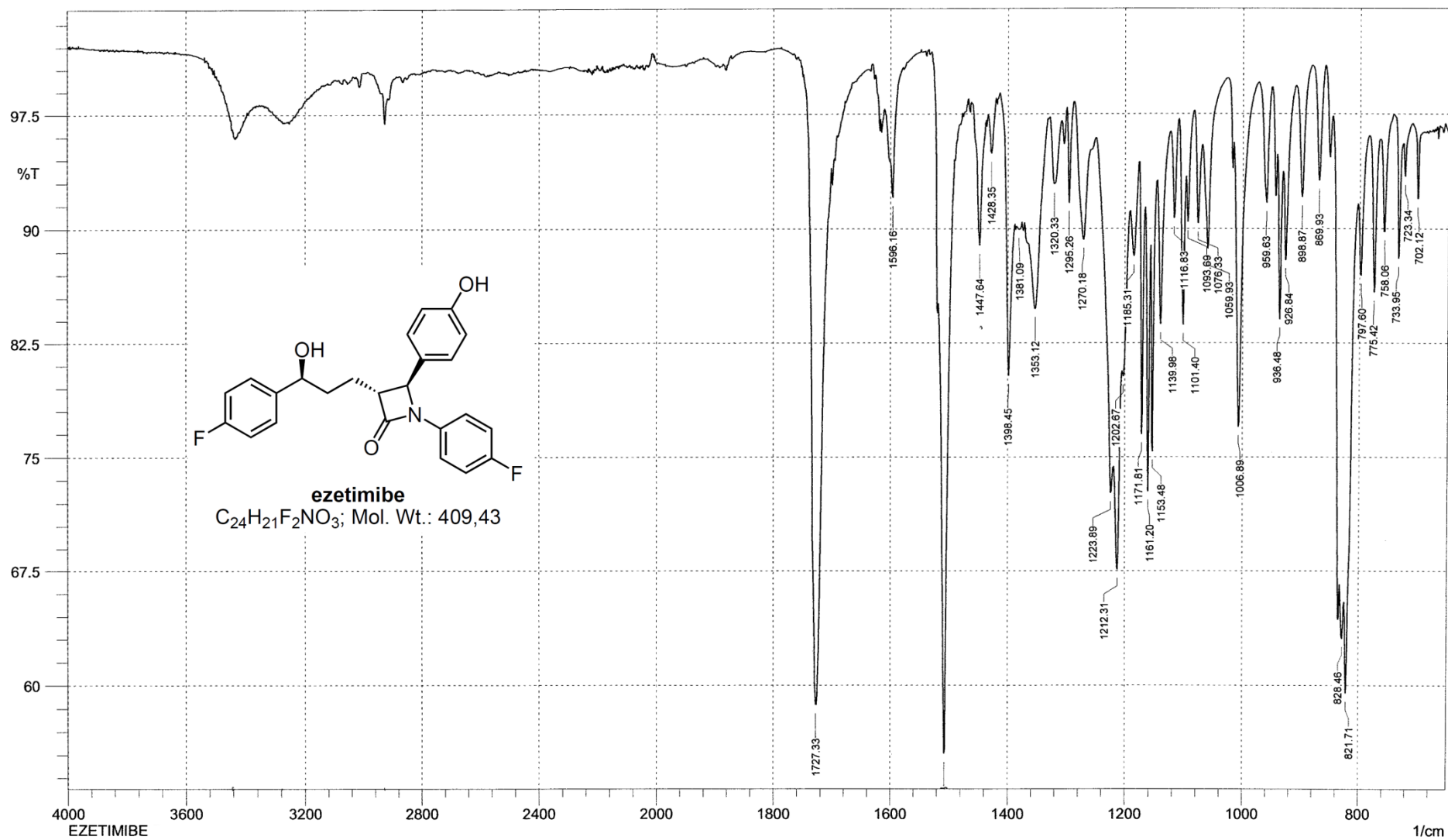
EZETIMIBE++ 1 (1.019)

Scan ES+  
1.61e8



**ezetimibe**  
C<sub>24</sub>H<sub>21</sub>F<sub>2</sub>NO<sub>3</sub>; Mol. Wt.: 409,43

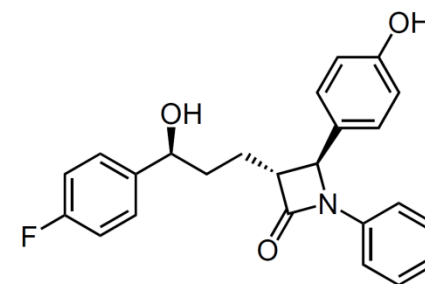




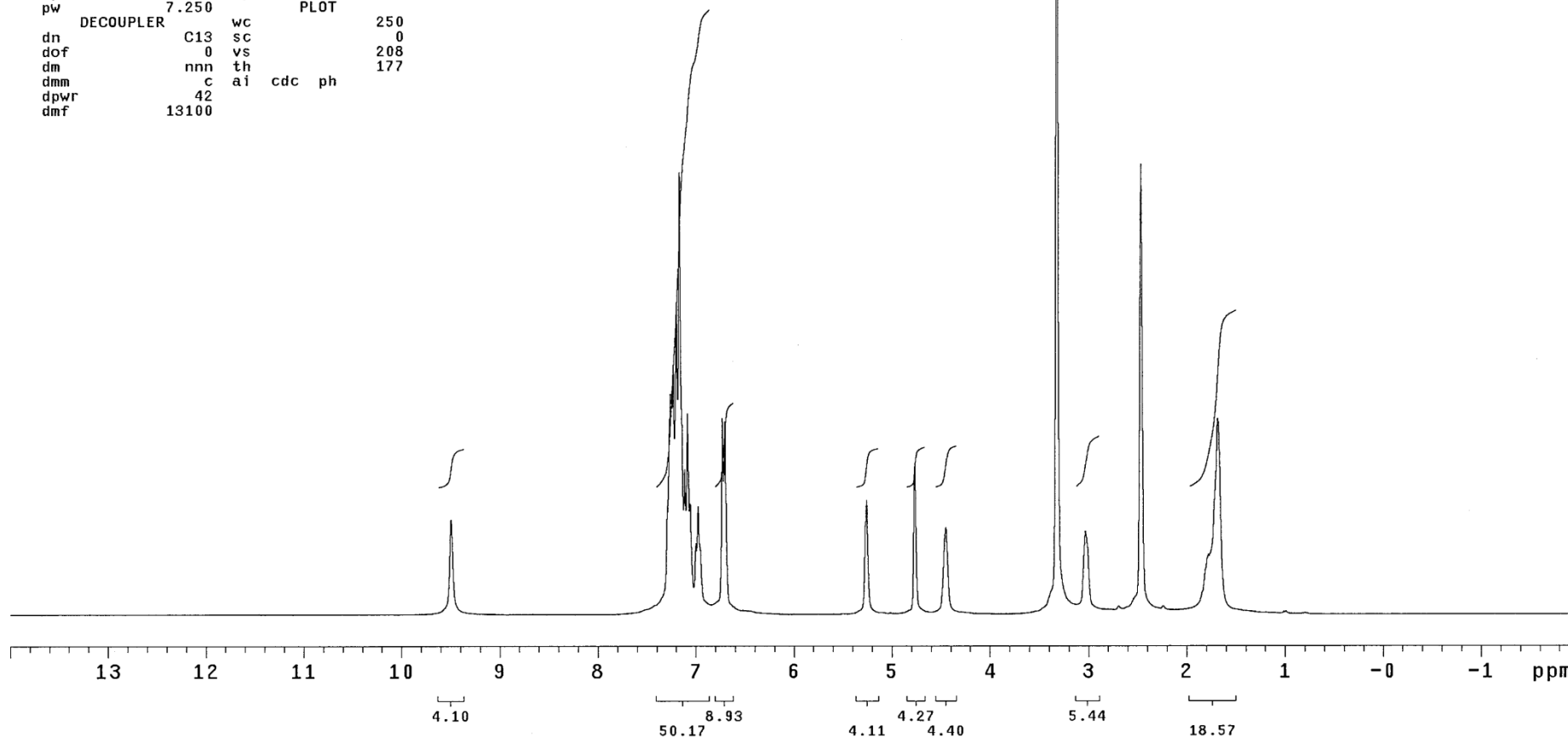
STANDARD 1H OBSERVE

exp5 s2pu1

SAMPLE		SPECIAL	
date	Feb 1 2010	temp	not used
solvent	DMSO	gain	not used
file	/export/home/~	spin	20
vnmr1/vnmr	sys/data/~	hst	0.008
/EB.01.141-DMSO-H.	~	pw90	14.500
	fid	alfa	20.000
ACQUISITION		FLAGS	
sw	4798.5	il	n
at	1.998	in	n
np	19174	dp	y
fb	2600	hs	nn
bs	16	PROCESSING	
d1	1.000	fn	not used
nt	1200	DISPLAY	
ct	1200	sp	-599.4
TRANSMITTER		wp	4798.2
tn	H1	rfl	599.7
sfrq	299.927	rfp	0
tof	255.9	rp	71.9
tpwr	56	lp	-75.1
pw	7.250	PLOT	
DECOUPLER		wc	250
dn	C13	sc	0
dof	0	vs	208
dm	nnn	th	177
dmm	c	ai	cdc ph
dpwr	42		
dmf	13100		



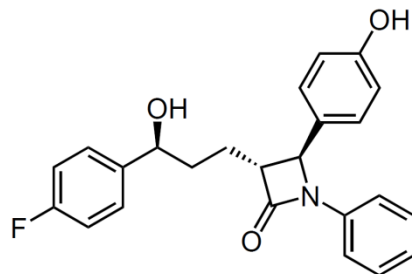
**desfluoro ezetimibe**  
 $C_{24}H_{22}FNO_3$ ; Mol. Wt.: 391,43



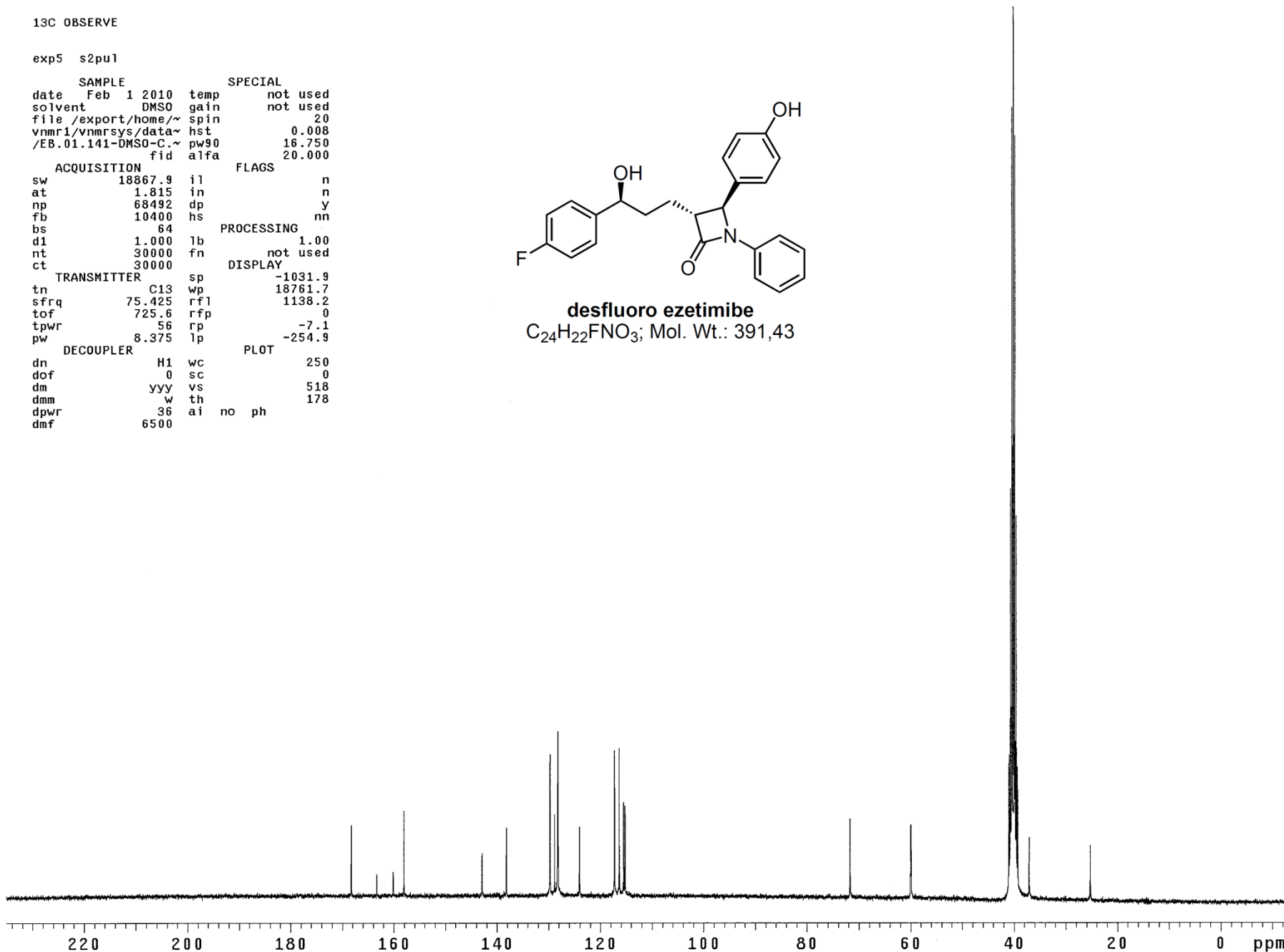
13C OBSERVE

exp5 s2pu1

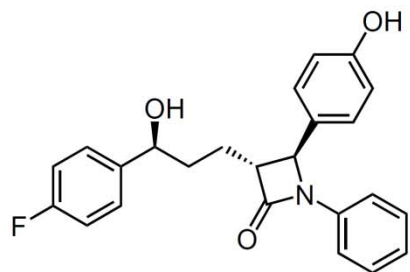
SAMPLE		SPECIAL	
date	Feb 1 2010	temp	not used
solvent	DMSO	gain	not used
file	/export/home/~	spin	20
vnmr1/vnmrsys/data/~		hst	0.008
/EB.01.141-DMSO-C.~		pw90	16.750
	fid	alfa	20.000
ACQUISITION		FLAGS	
sw	18867.9	il	n
at	1.815	in	n
np	68492	dp	y
fb	10400	hs	nn
bs	64	PROCESSING	
d1	1.000	lb	1.00
nt	30000	fn	not used
ct	30000	DISPLAY	
TRANSMITTER		sp	-1031.9
tn	C13	wp	18761.7
sfrq	75.425	rf1	1138.2
tof	725.6	rfp	0
tpwr	56	rp	-7.1
pw	8.375	lp	-254.9
DECOUPLER		PLOT	
dn	H1	wc	250
dof	0	sc	0
dm	yyy	vs	518
dmm	w	th	178
dpwr	36	ai	no
dmf	6500	ph	



**desfluoro ezetimibe**  
C<sub>24</sub>H<sub>22</sub>FNO<sub>3</sub>; Mol. Wt.: 391,43







**desfluoro ezetimibe**  
 $C_{24}H_{22}FNO_3$ ; Mol. Wt.: 391,43

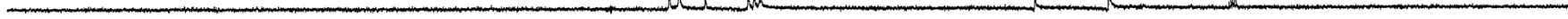
CH3 carbons



CH2 carbons



CH carbons



all protonated carbons



220 200 180 160 140 120 100 80 60 40 20 0 ppm

EB\_01\_141

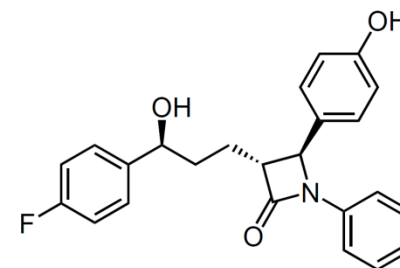
Sample Name:  
EB\_01\_141  
Data Collected on:  
Varian-NMR-mercury300  
Archive directory:  
/home/vnmr1/vnmrsys/data/Esen  
Sample directory:  
EB\_01\_141\_20140828\_01  
FidFile: FLUORINE

Pulse Sequence: FLUORINE (s2pul)  
Solvent: dms0  
Data collected on: Aug 28 2014

Temp. 24.4 C / 297.6 K  
Operator: Esen

Relax. delay 1.000 sec  
Pulse 30.0 degrees  
Acq. time 0.984 sec  
Width 16949.2 Hz  
1472 repetitions  
OBSERVE F19, 282.2119105 MHz  
DATA PROCESSING  
FT size 262144  
Total time 2 hr, 22 min

-116.375  
-116.395  
-116.408  
-116.415  
-116.427  
-116.440  
-116.447  
-116.459  
-116.479



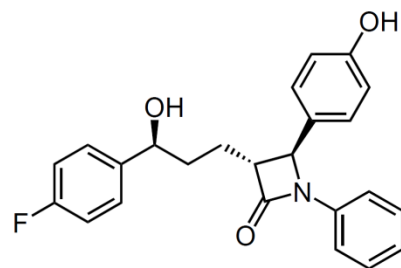
**desfluoro ezetimibe**  
C<sub>24</sub>H<sub>22</sub>FNO<sub>3</sub>; Mol. Wt.: 391,43

-85 -90 -95 -100 -105 -110 -115 -120 -125 -130 -135 ppm

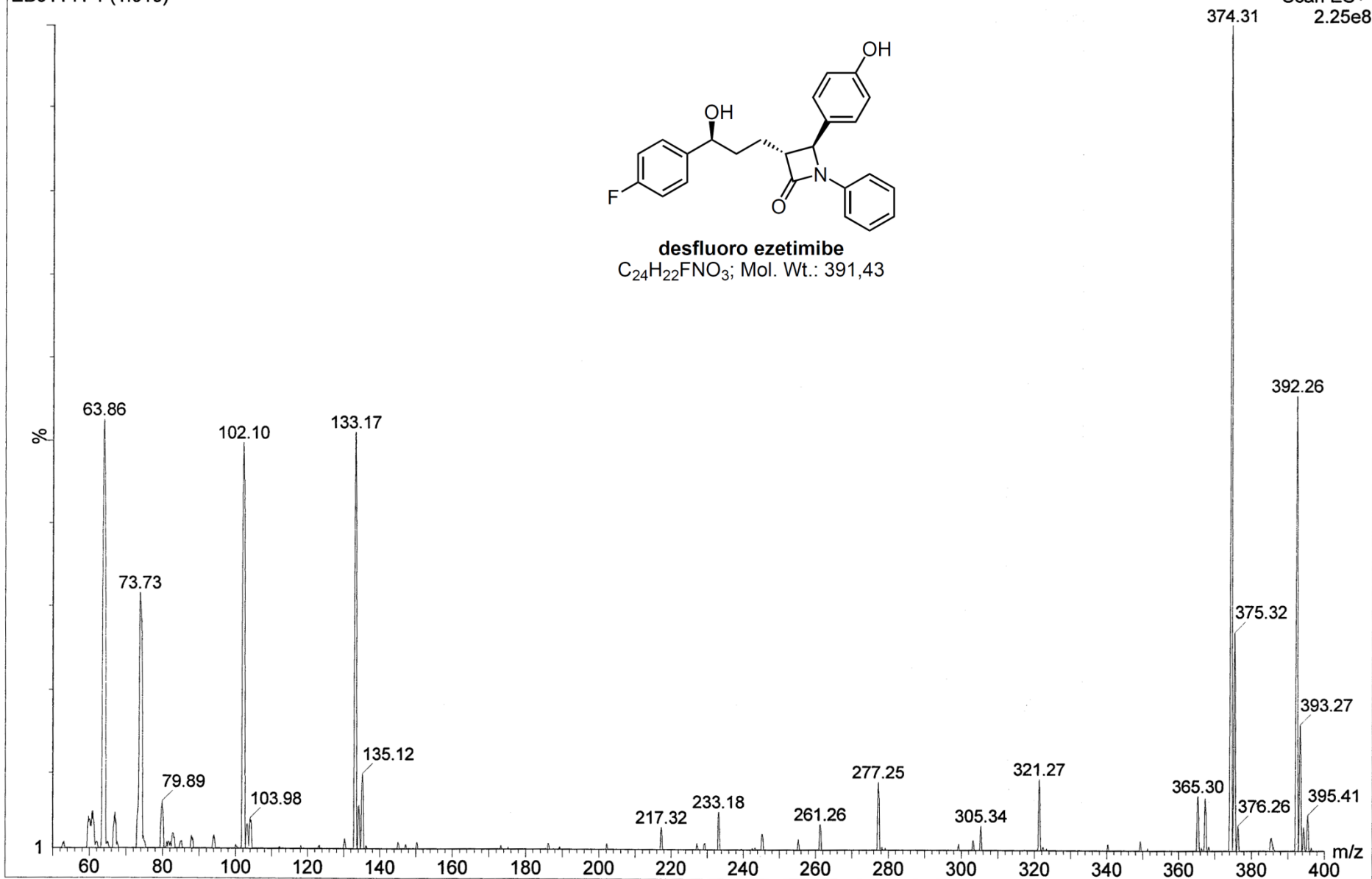
EB01141

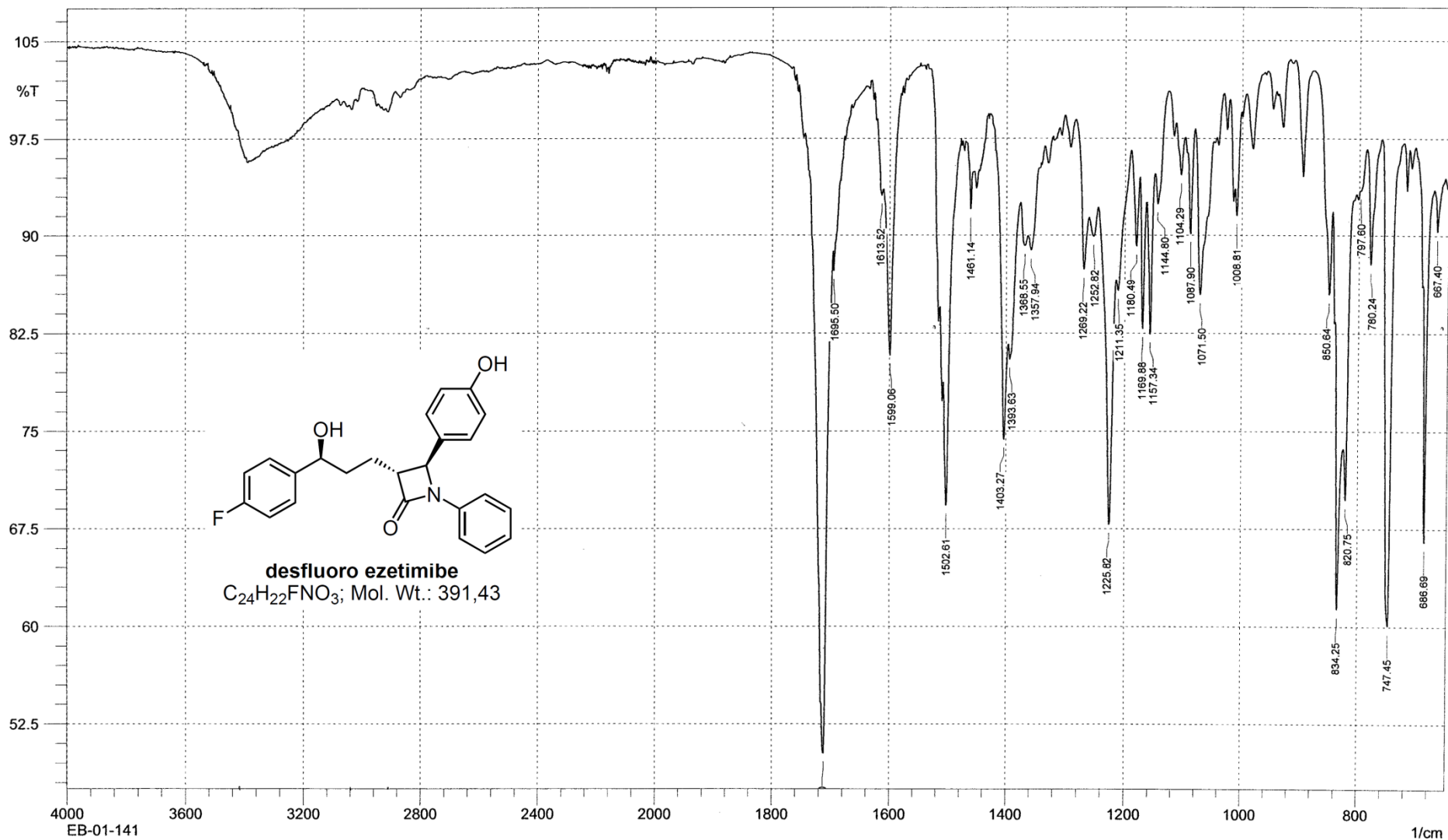
EB01141 1 (1.019)

Scan ES+  
2.25e8

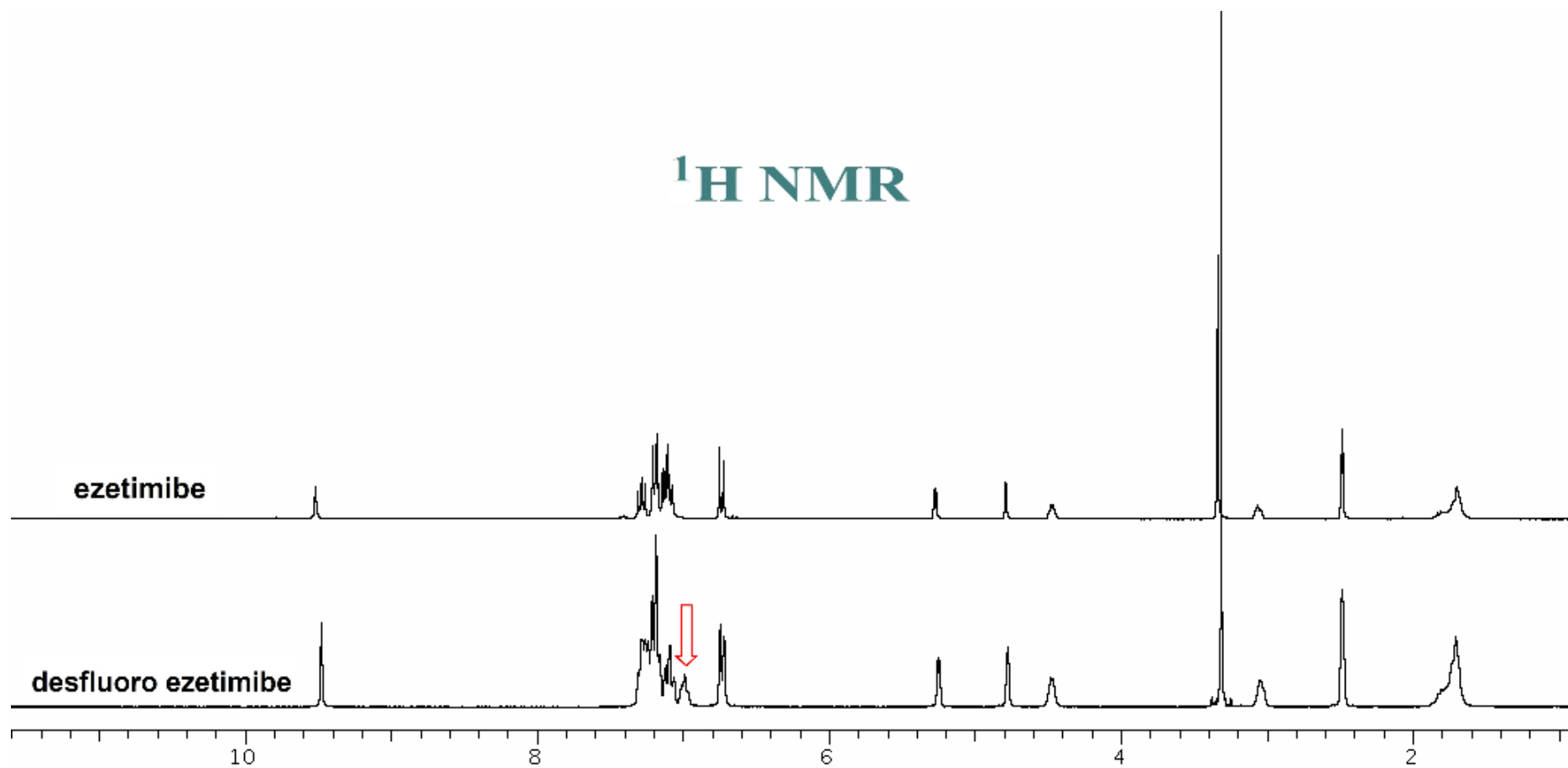


**desfluoro ezetimibe**  
C<sub>24</sub>H<sub>22</sub>FNO<sub>3</sub>; Mol. Wt.: 391,43

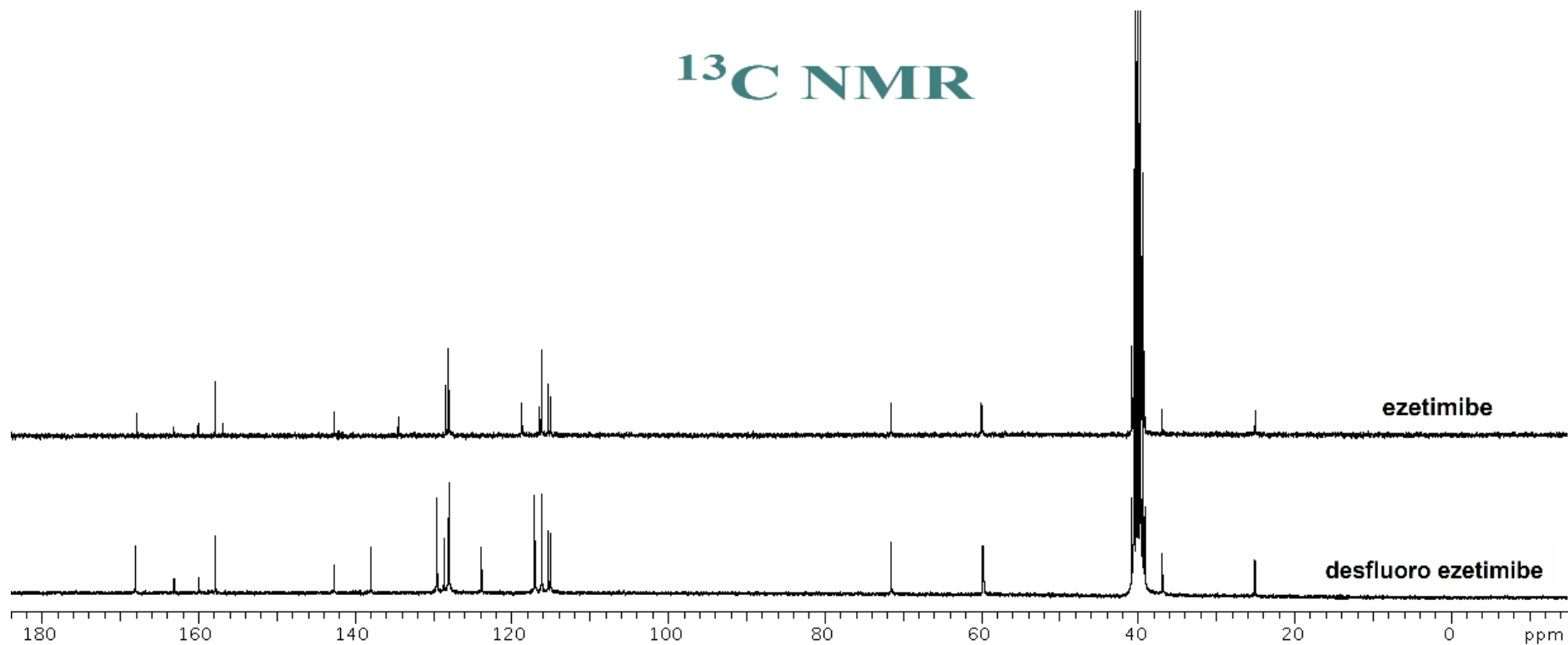




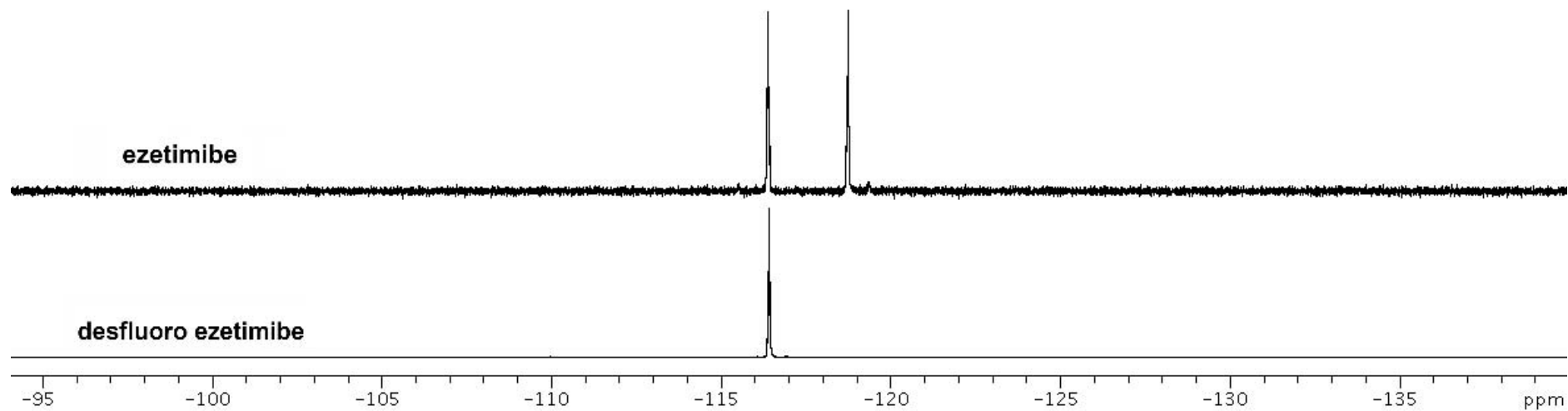
# $^1\text{H}$ NMR

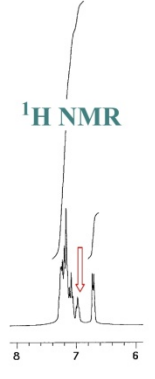
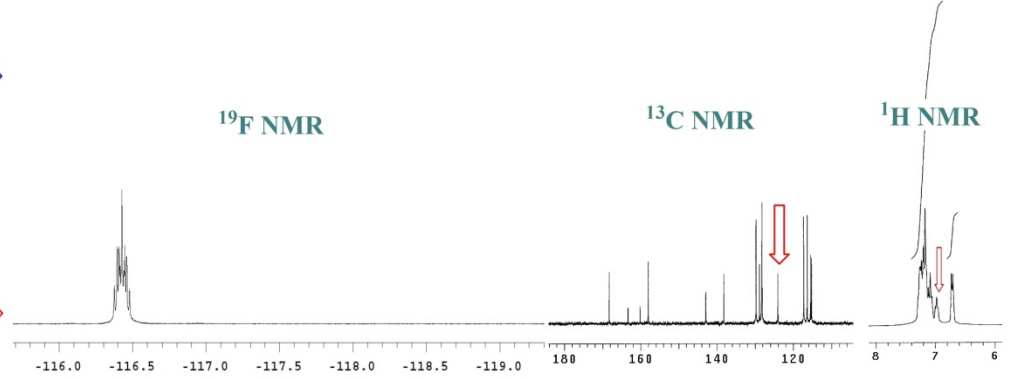
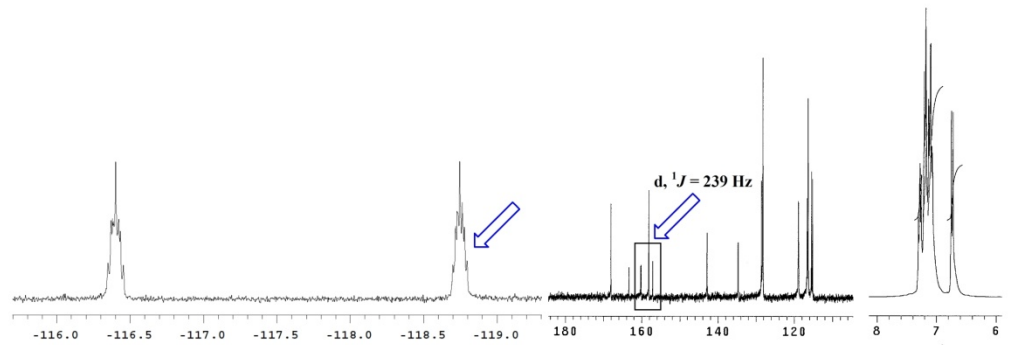
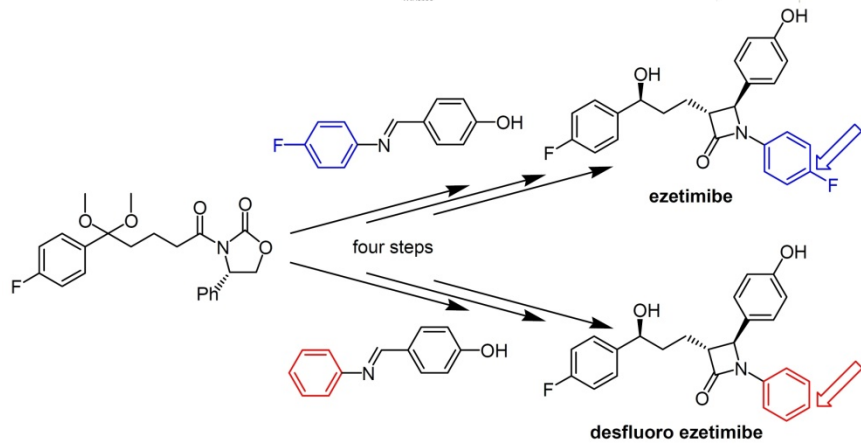
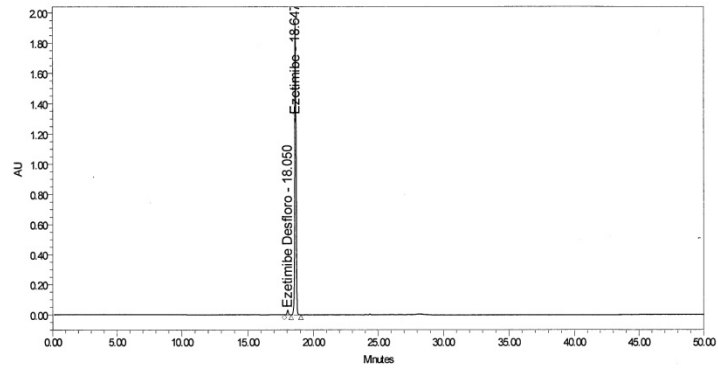


# $^{13}\text{C}$ NMR



# $^{19}\text{F}$ NMR

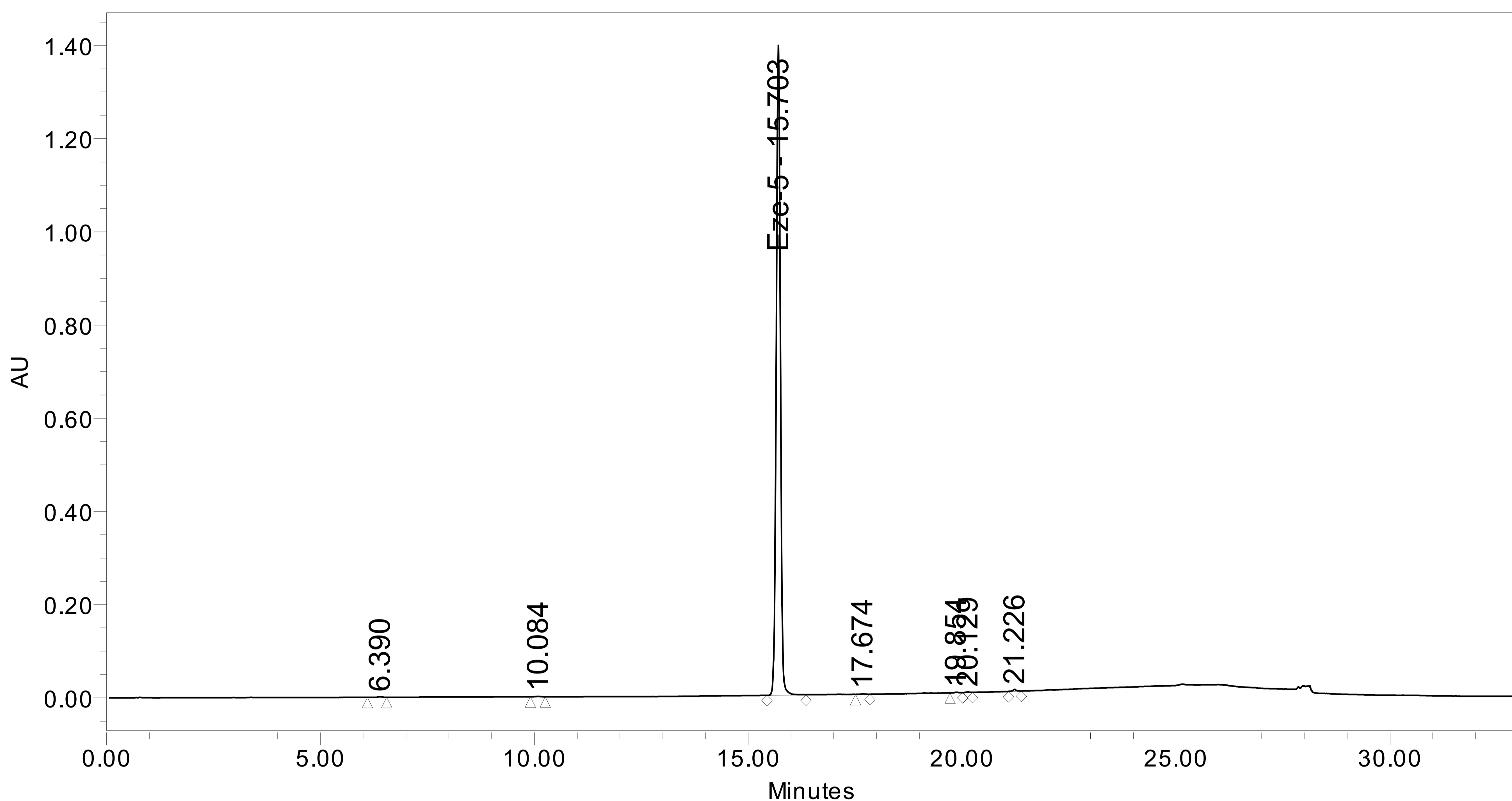






SAMPLE INFORMATION

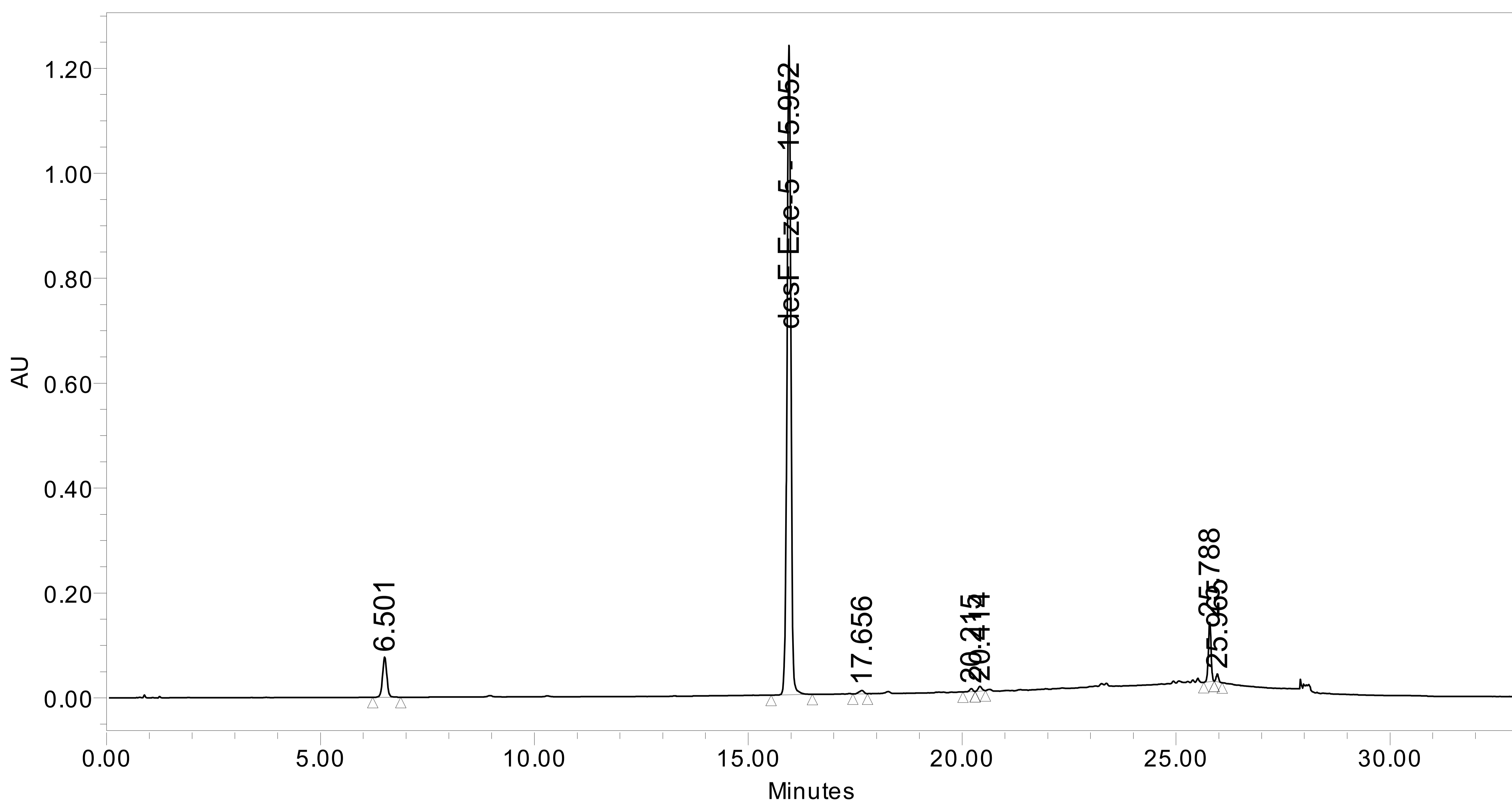
Sample Name:	Eze-5	Acquired By:	System
Sample Type:	Unknown	Sample Set Name:	EZE 22 23 24 DESFLORO
Vial:	1:A,2	Acq. Method Set:	EZETIMIBE EZE_22
Injection #:	1	Processing Method:	desF Eze intermediates
Injection Volume:	2.00 ul	Channel Name:	ACQUITY TUV ChA
Run Time:	33.0 Minutes	Proc. Chnl. Descr.:	ACQUITY TUV ChA 220nm
Date Acquired: 8/14/2014 4:52:38 PM EEST			
Date Processed: 8/15/2014 8:34:16 AM EEST			



	Peak Name	RT	Area	% Area	Height
1		6.390	6263	0.07	836
2		10.084	7173	0.08	876
3	Eze-5	15.703	9384444	99.35	1394752
4	desF Eze-5	15.952			
5		17.674	8779	0.09	1117
6		19.854	7717	0.08	1029
7		20.129	7359	0.08	1148
8		21.226	23832	0.25	4157

SAMPLE INFORMATION

Sample Name:	desF Eze-5	Acquired By:	System
Sample Type:	Unknown	Sample Set Name:	EZE 22 23 24 DESFLORO
Vial:	1:A,3	Acq. Method Set:	EZETIMIBE EZE_22
Injection #:	1	Processing Method:	desF Eze intermediates
Injection Volume:	2.00 ul	Channel Name:	ACQUITY TUV ChA
Run Time:	33.0 Minutes	Proc. Chnl. Descr.:	ACQUITY TUV ChA 220nm
Date Acquired: 8/14/2014 5:26:52 PM EEST			
Date Processed: 8/15/2014 8:30:32 AM EEST			

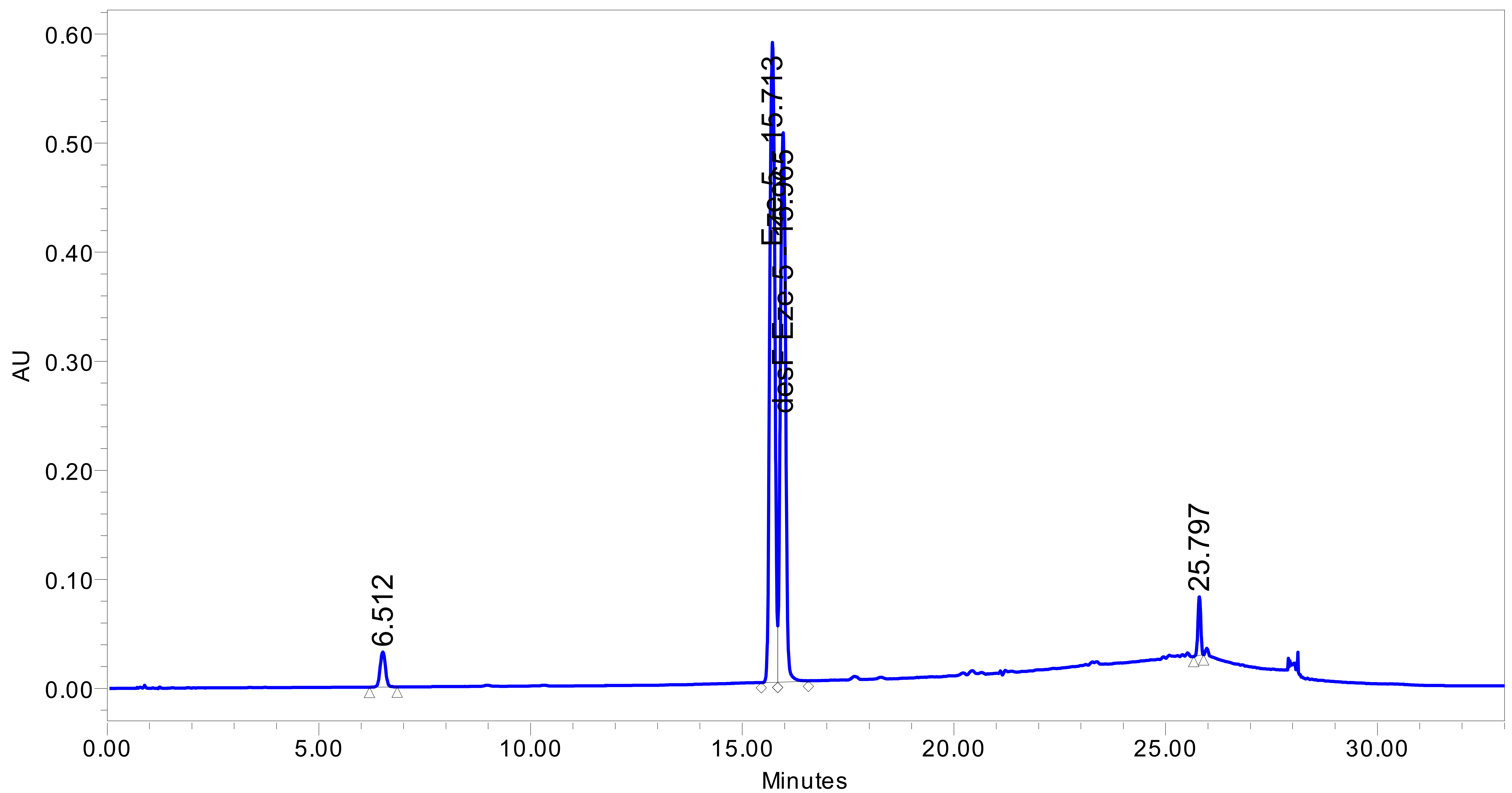


	Peak Name	RT	Area	% Area	Height
1		6.501	538109	5.86	76405
2	Eze-5	15.586			
3	desF Eze-5	15.952	7963161	86.78	1237925
4		17.656	50954	0.56	6266
5		20.215	29082	0.32	5523
6		20.414	53270	0.58	8857
7		25.788	485090	5.29	112724
8		25.965	56820	0.62	15109



SAMPLE INFORMATION

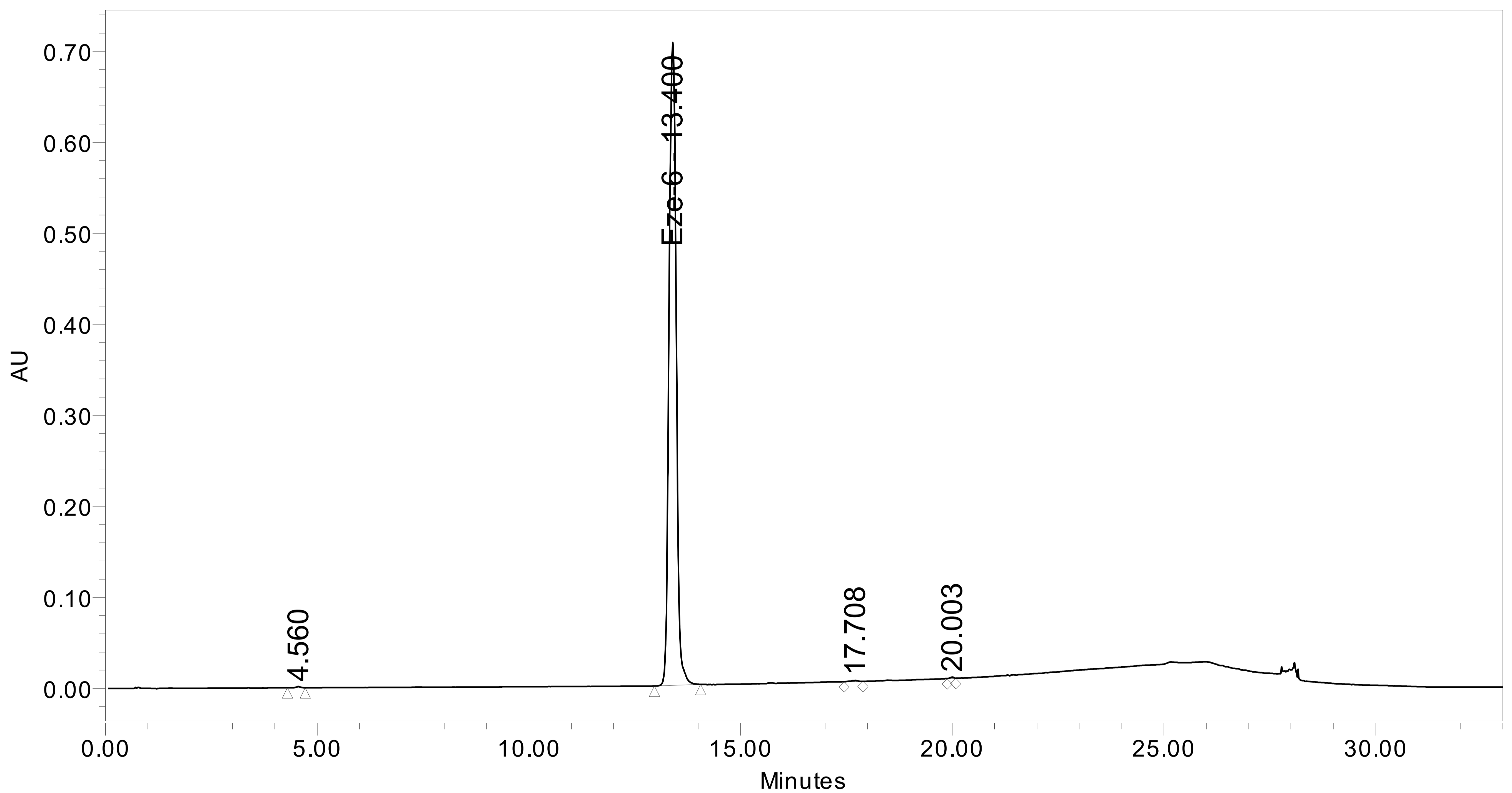
Sample Name:	Eze-5+desF Eze-5	Acquired By:	System
Sample Type:	Unknown	Sample Set Name:	EZE 22 23 24 DESFLORO
Vial:	1:A,4	Acq. Method Set:	EZETIMIBE EZE_22
Injection #:	1	Processing Method:	desF Eze intermediates
Injection Volume:	2.00 ul	Channel Name:	ACQUITY TUV ChA
Run Time:	33.0 Minutes	Proc. Chnl. Descr.:	ACQUITY TUV ChA 220nm
Date Acquired:	8/14/2014 6:01:04 PM EEST		
Date Processed:	8/15/2014 8:32:39 AM EEST		



	Peak Name	RT	Area	% Area	Height
1		6.512	282633	2.89	32216
2	Eze-5	15.713	4906302	50.23	586872
3	desF Eze-5	15.965	4323114	44.26	503542
4		25.797	255495	2.62	53777

SAMPLE INFORMATION

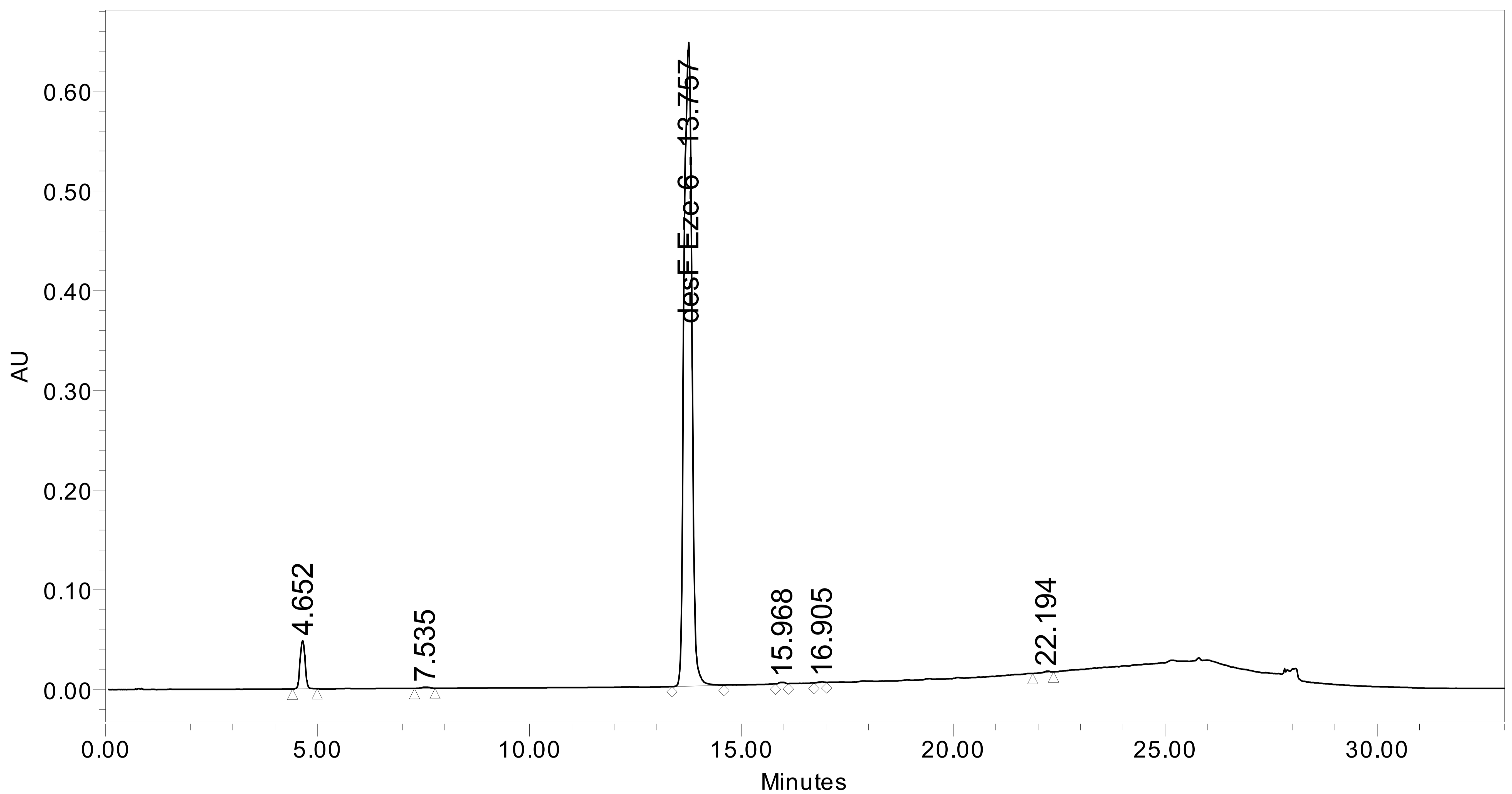
Sample Name:	Eze-6	Acquired By:	System
Sample Type:	Unknown	Sample Set Name:	EZE 22 23 24 DESFLORO
Vial:	1:A,5	Acq. Method Set:	EZETIMIBE EZE_22
Injection #:	1	Processing Method:	desF Eze intermediates
Injection Volume:	2.00 ul	Channel Name:	ACQUITY TUV ChA
Run Time:	33.0 Minutes	Proc. Chnl. Descr.:	ACQUITY TUV ChA 220nm
Date Acquired: 8/14/2014 7:09:28 PM EEST			
Date Processed: 8/15/2014 8:38:13 AM EEST			



	Peak Name	RT	Area	% Area	Height
1		4.560	9372	0.11	1297
2	Eze-6	13.400	8373997	99.61	706384
3	desF Eze-6	13.800			
4		17.708	14197	0.17	1075
5		20.003	9587	0.11	1463

SAMPLE INFORMATION

Sample Name:	desF Eze-6	Acquired By:	System
Sample Type:	Unknown	Sample Set Name:	EZE 22 23 24 DESFLORO
Vial:	1:A,6	Acq. Method Set:	EZETIMIBE EZE_22
Injection #:	1	Processing Method:	desF Eze intermediates
Injection Volume:	2.00 ul	Channel Name:	ACQUITY TUV ChA
Run Time:	33.0 Minutes	Proc. Chnl. Descr.:	ACQUITY TUV ChA 220nm
Date Acquired: 8/14/2014 7:43:40 PM EEST			
Date Processed: 8/15/2014 8:40:56 AM EEST			

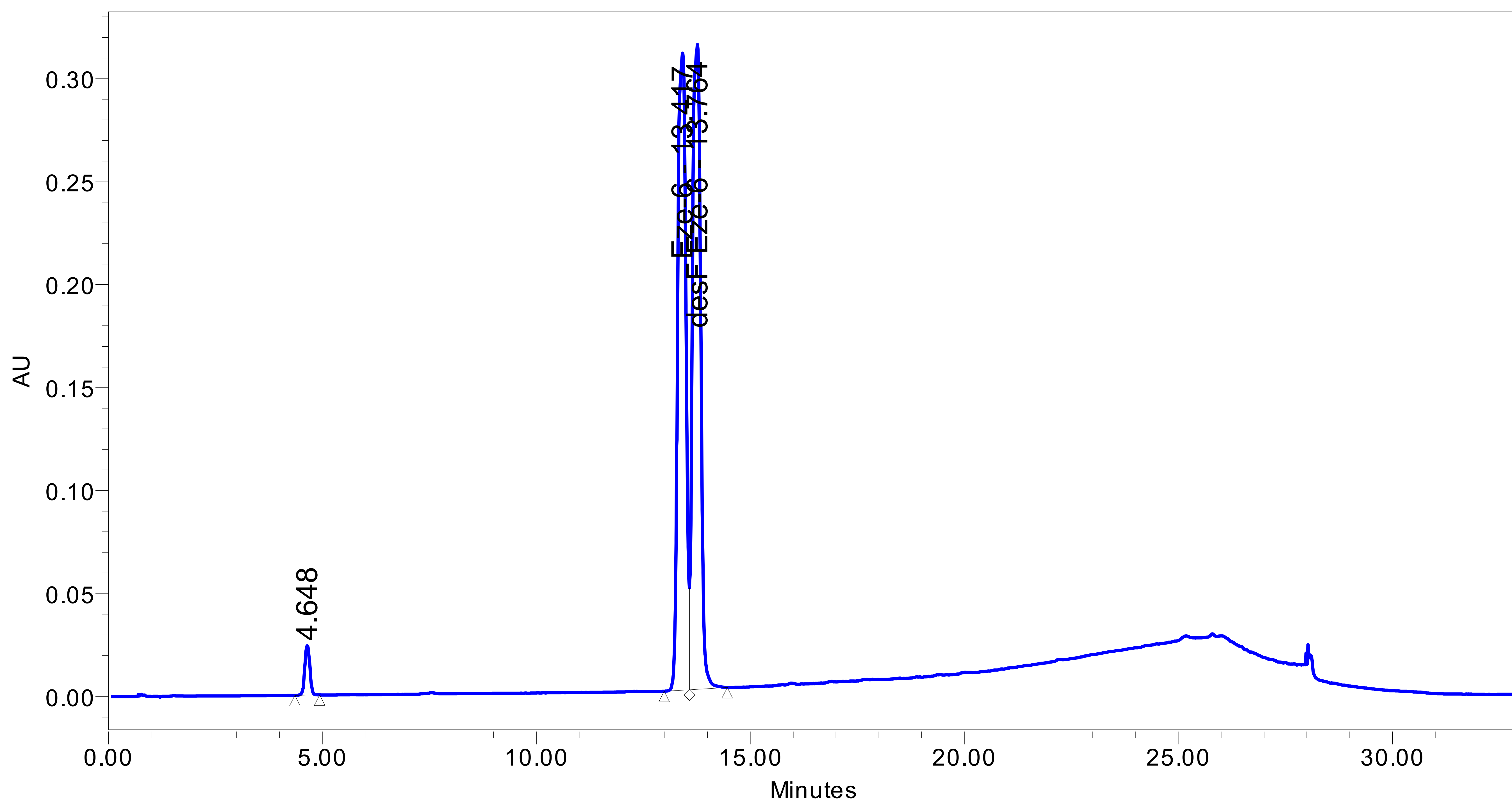


	Peak Name	RT	Area	% Area	Height
1		4.652	400104	4.57	48282
2		7.535	14664	0.17	1168
3	Eze-6	13.400			
4	desF Eze-6	13.757	8304438	94.81	645441
5		15.968	17220	0.20	1661
6		16.905	12484	0.14	1110
7		22.194	10351	0.12	1169



SAMPLE INFORMATION

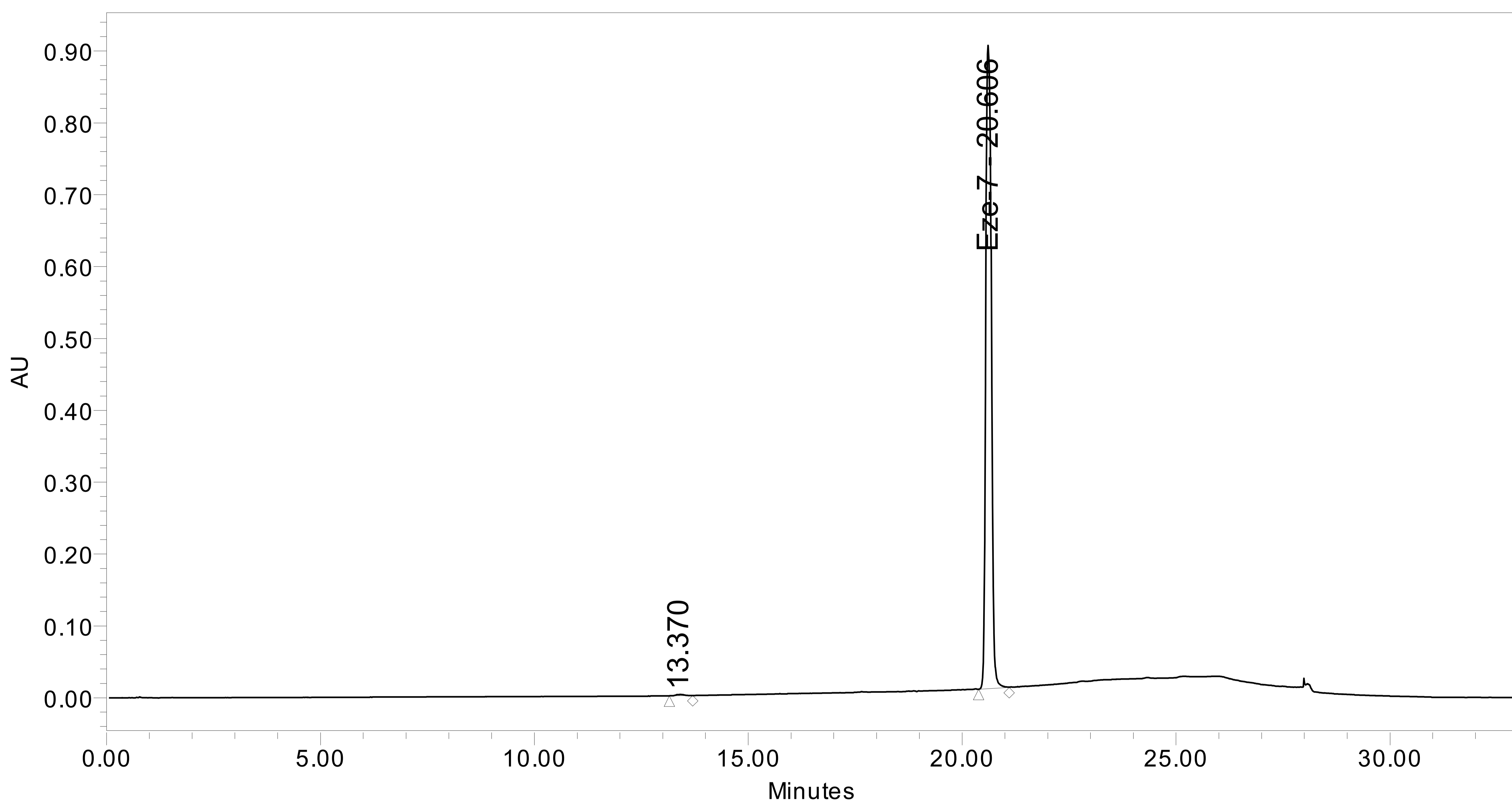
Sample Name:	Eze-6+desF Eze-6	Acquired By:	System
Sample Type:	Unknown	Sample Set Name:	EZE 22 23 24 DESFLORO
Vial:	1:A,7	Acq. Method Set:	EZETIMIBE EZE_22
Injection #:	1	Processing Method:	desF Eze intermediates
Injection Volume:	2.00 ul	Channel Name:	ACQUITY TUV ChA
Run Time:	33.0 Minutes	Proc. Chnl. Descr.:	ACQUITY TUV ChA 220nm
Date Acquired: 8/14/2014 8:17:52 PM EEST			
Date Processed: 8/15/2014 8:41:33 AM EEST			



	Peak Name	RT	Area	% Area	Height
1		4.648	200525	2.36	23982
2	Eze-6	13.417	4102778	48.26	309299
3	desF Eze-6	13.764	4198150	49.38	313047

SAMPLE INFORMATION

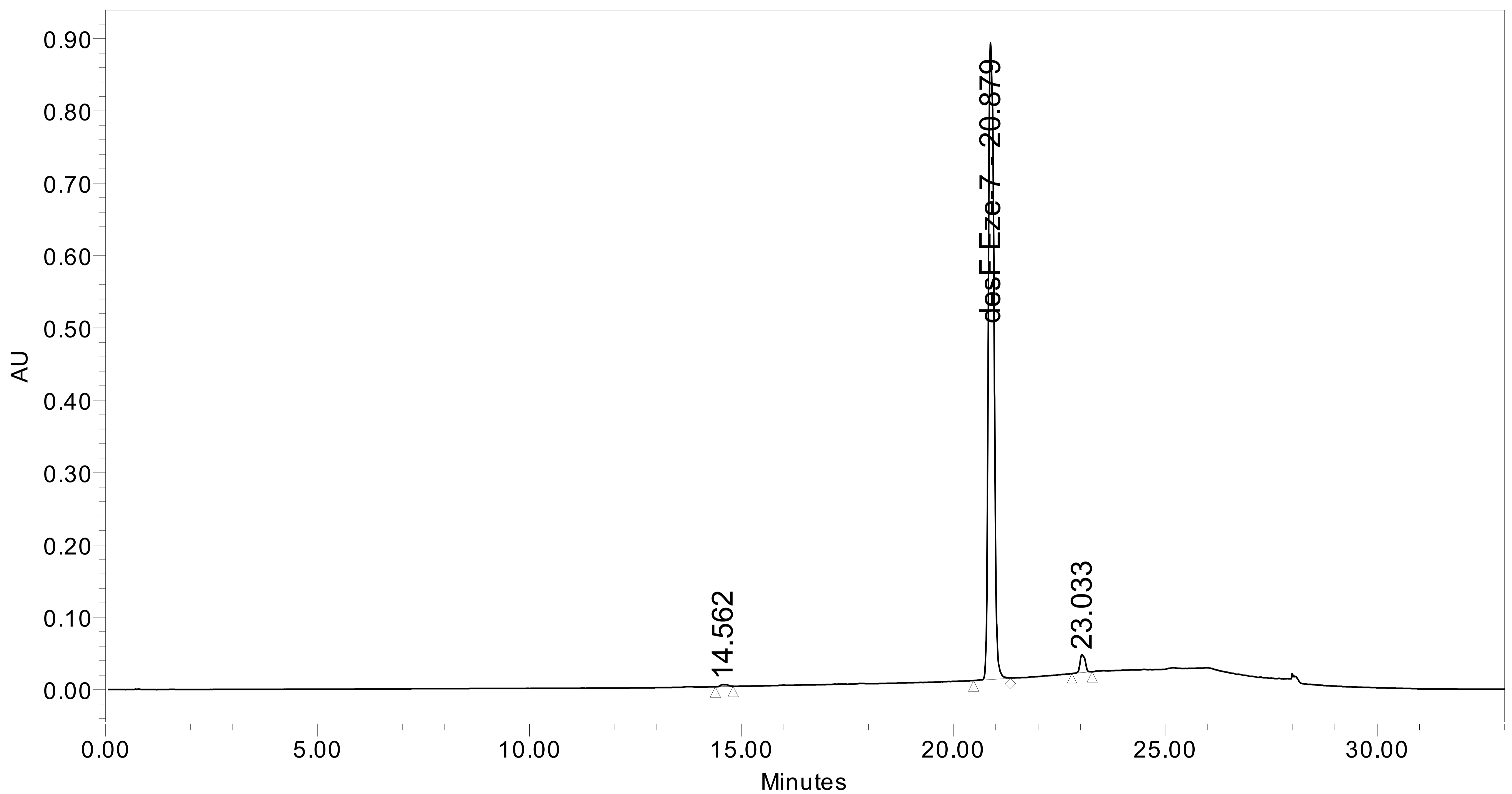
Sample Name:	Eze-7	Acquired By:	System
Sample Type:	Unknown	Sample Set Name:	EZE 22 23 24 DESFLORO
Vial:	1:A,8	Acq. Method Set:	EZETIMIBE EZE_22
Injection #:	1	Processing Method:	desF Eze intermediates
Injection Volume:	2.00 ul	Channel Name:	ACQUITY TUV ChA
Run Time:	33.0 Minutes	Proc. Chnl. Descr.:	ACQUITY TUV ChA 220nm
Date Acquired: 8/14/2014 9:26:19 PM EEST			
Date Processed: 8/15/2014 8:45:23 AM EEST			



	Peak Name	RT	Area	% Area	Height
1		13.370	21890	0.27	1563
2	Eze-7	20.606	8122363	99.73	895164
3	desF Eze-7	20.900			

SAMPLE INFORMATION

Sample Name:	desF Eze-7	Acquired By:	System
Sample Type:	Unknown	Sample Set Name:	EZE 22 23 24 DESFLORO
Vial:	1:B,1	Acq. Method Set:	EZETIMIBE EZE_22
Injection #:	1	Processing Method:	desF Eze intermediates
Injection Volume:	2.00 ul	Channel Name:	ACQUITY TUV ChA
Run Time:	33.0 Minutes	Proc. Chnl. Descr.:	ACQUITY TUV ChA 220nm
Date Acquired: 8/14/2014 10:00:31 PM EEST			
Date Processed: 8/15/2014 8:45:54 AM EEST			

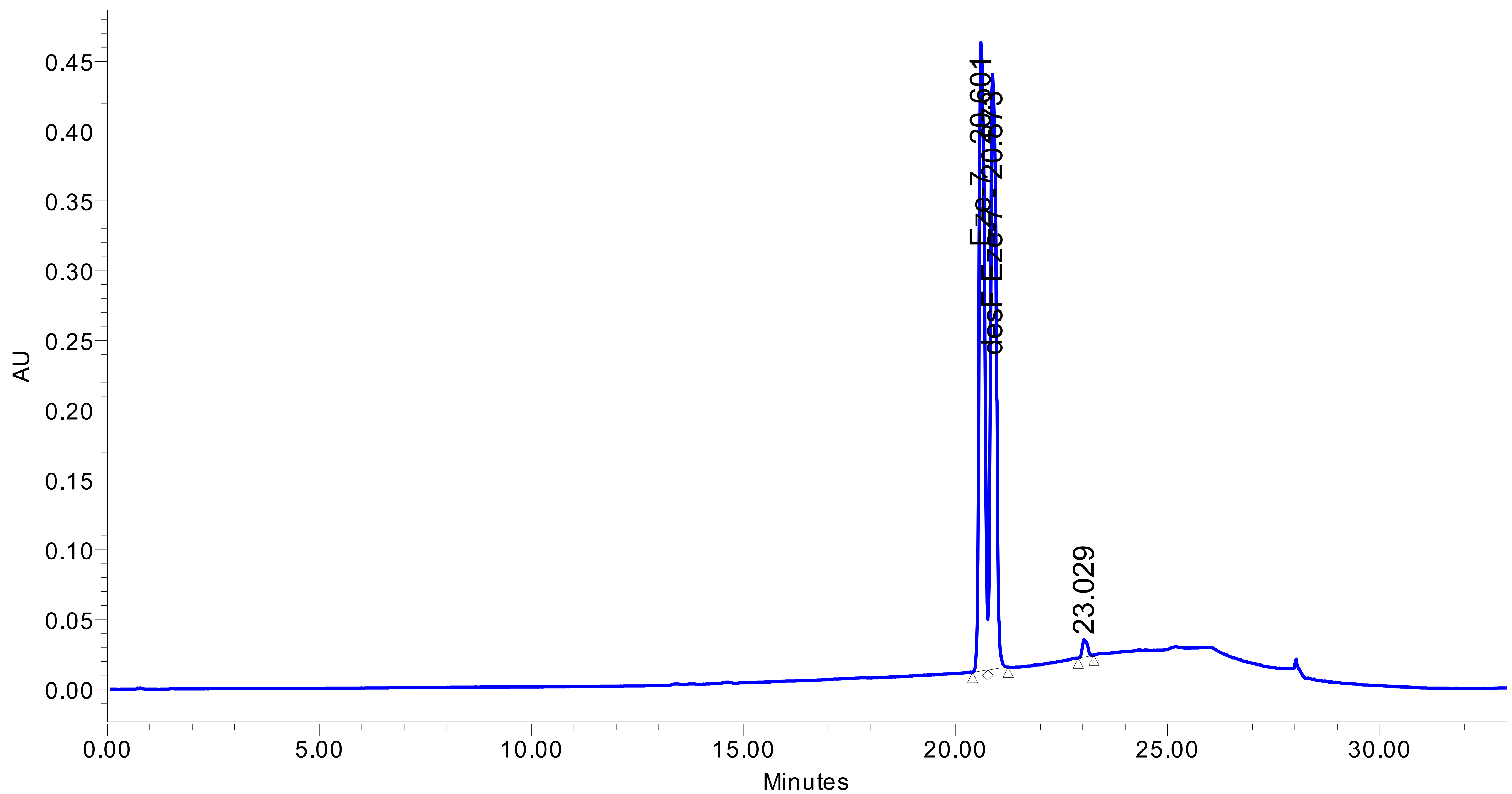


	Peak Name	RT	Area	% Area	Height
1		14.562	32275	0.39	2731
2	Eze-7	20.600			
3	desF Eze-7	20.879	8099125	97.10	880831
4		23.033	209447	2.51	24775



SAMPLE INFORMATION

Sample Name:	Eze-7+desF Eze-7	Acquired By:	System
Sample Type:	Unknown	Sample Set Name:	EZE 22 23 24 DESFLORO
Vial:	1:B,2	Acq. Method Set:	EZETIMIBE EZE_22
Injection #:	1	Processing Method:	desF Eze intermediates
Injection Volume:	2.00 ul	Channel Name:	ACQUITY TUV ChA
Run Time:	33.0 Minutes	Proc. Chnl. Descr.:	ACQUITY TUV ChA 220nm
Date Acquired: 8/14/2014 10:34:44 PM EEST			
Date Processed: 8/15/2014 8:44:17 AM EEST			



	Peak Name	RT	Area	% Area	Height
1	Eze-7	20.601	3992463	49.81	450456
2	desF Eze-7	20.873	3919906	48.91	426300
3		23.029	102276	1.28	12319