

Supporting Information

Synthesis of Aryl Propionamide Scaffold Containing a Pentafluorosulfanyl Moiety as SARMs

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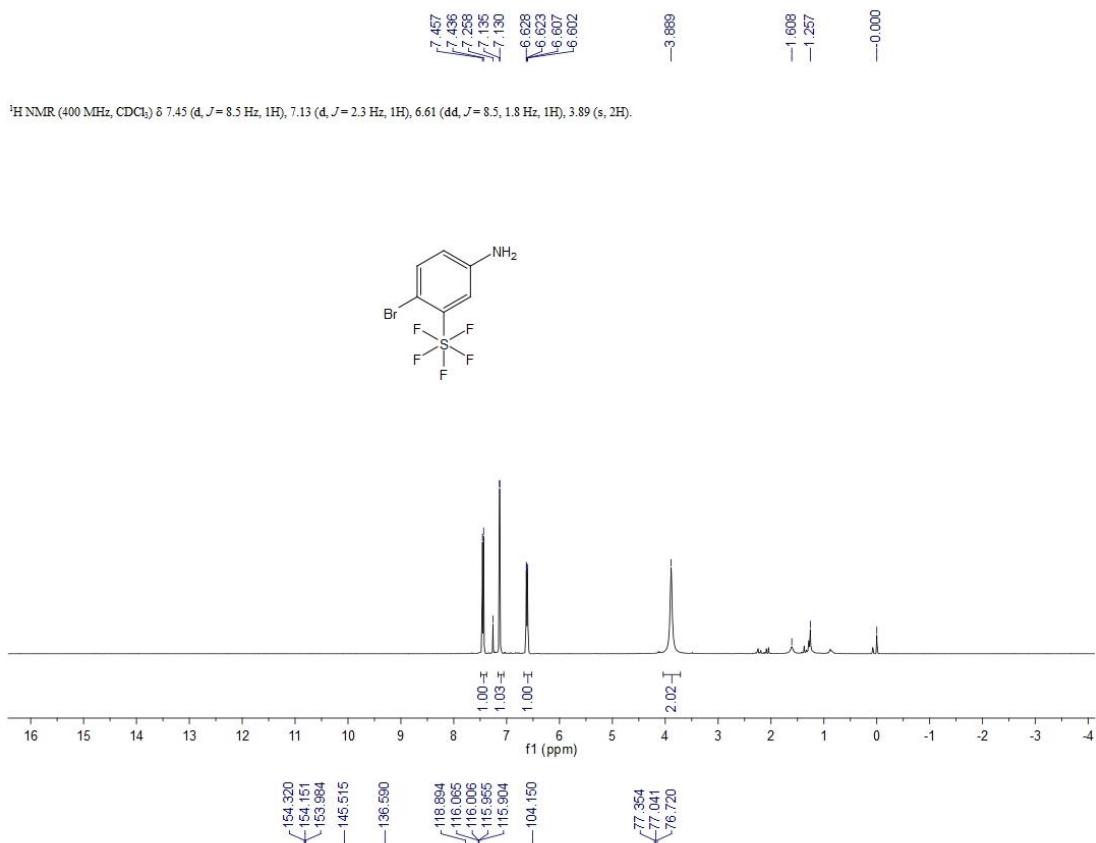
² The National Center for Drug Screening and the CAS Key Laboratory of Receptor Research, Shanghai Institute of Materia Medica, Chinese Academy of Sciences (CAS), 189 Guo Shou Jing Road, Shanghai, China

* Correspondence: mwwang@simm.ac.cn (M.-W.W.); jyjin@chem.ecnu.edu.cn (J.J.)

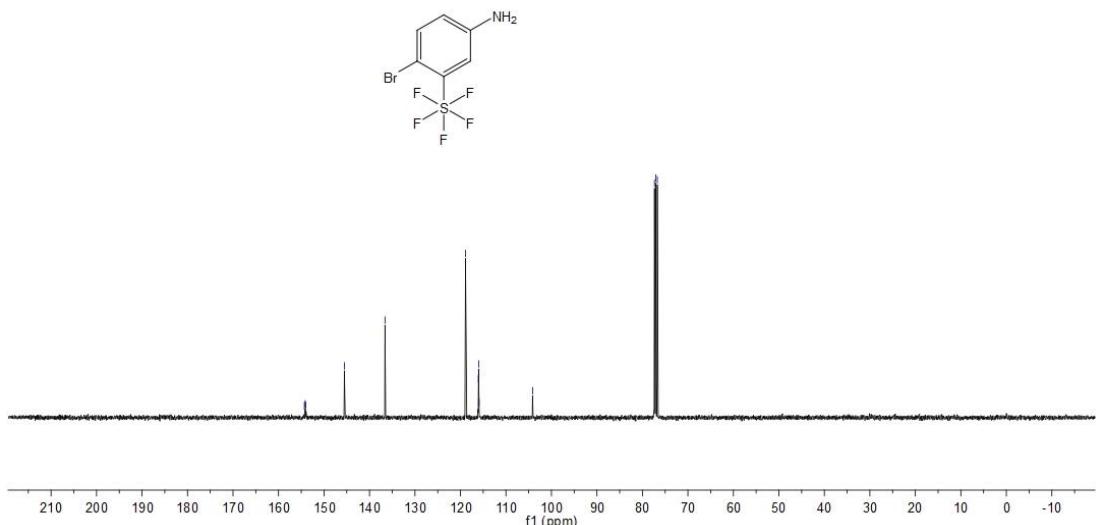
† These two authors contributed equally to this work.

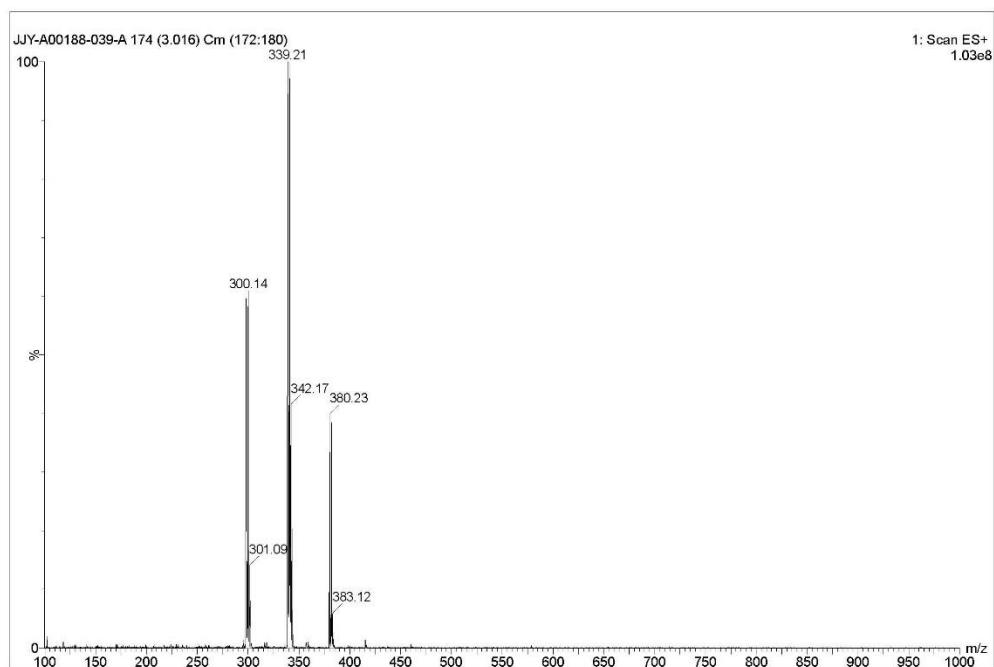
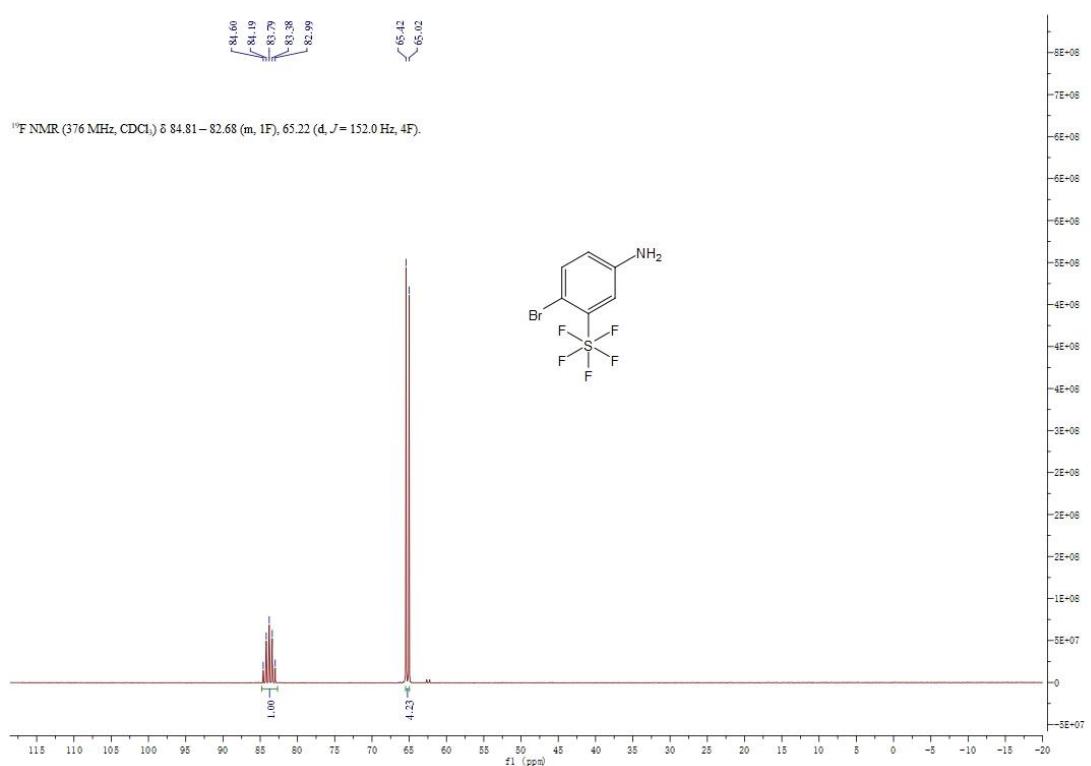
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¹H, ¹³C, ¹⁹F NMR and MS spectra of compound 2

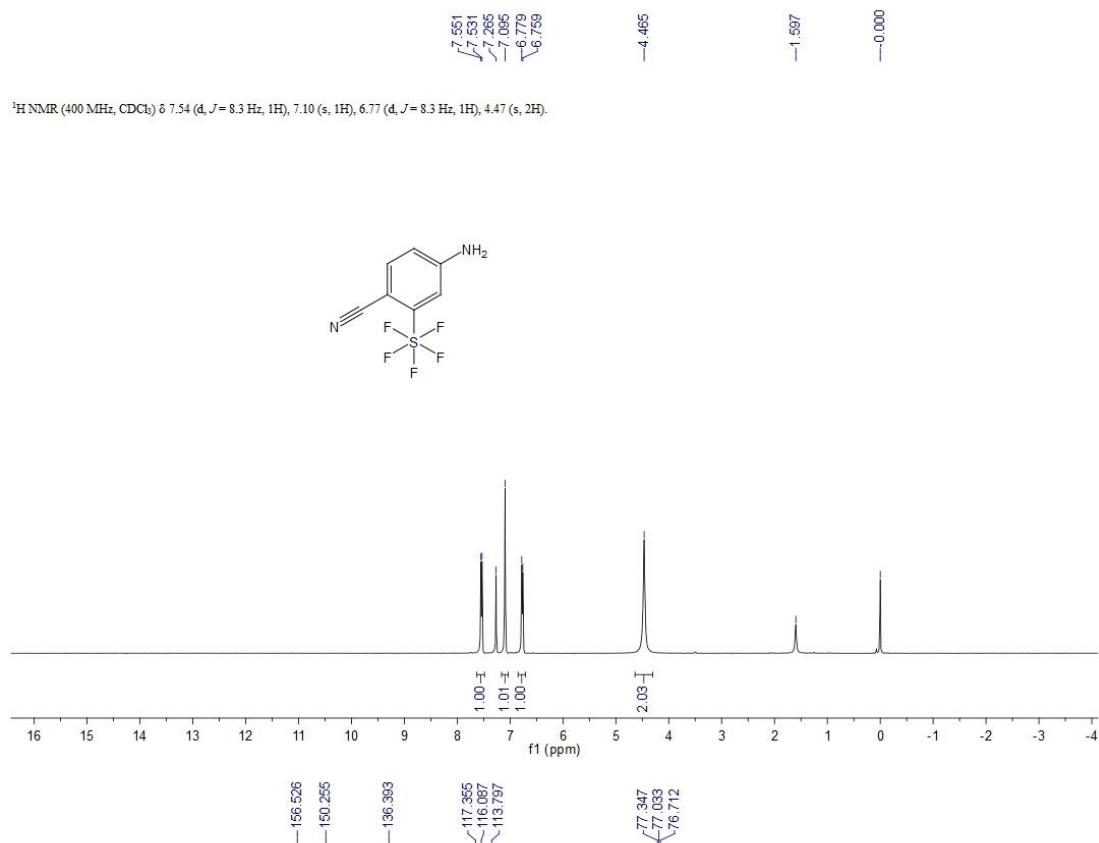


¹³C NMR (101 MHz, CDCl₃) δ 154.32, 154.15, 153.98, 145.52, 136.59, 118.89, 116.06, 116.01, 115.96, 115.90, 104.15.

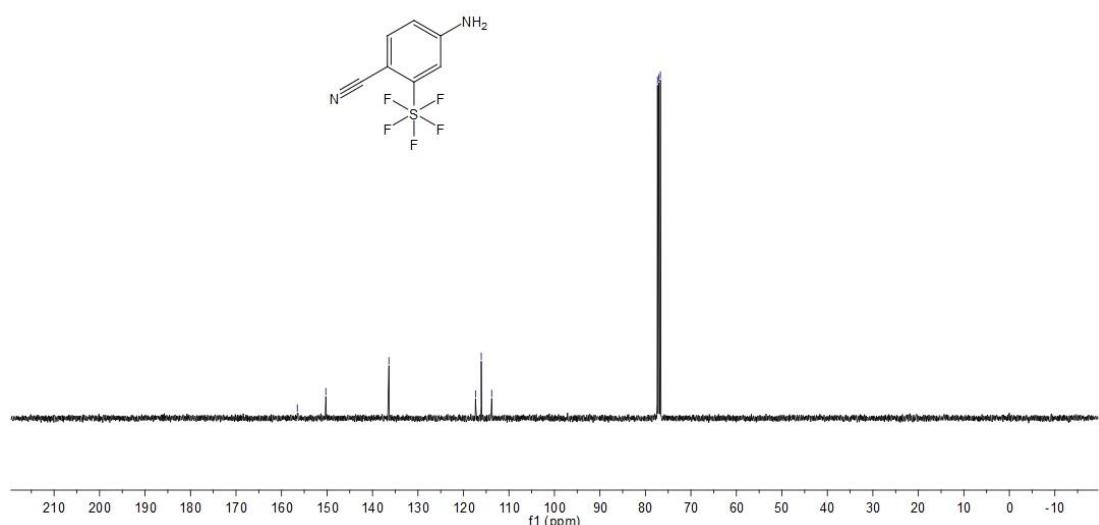


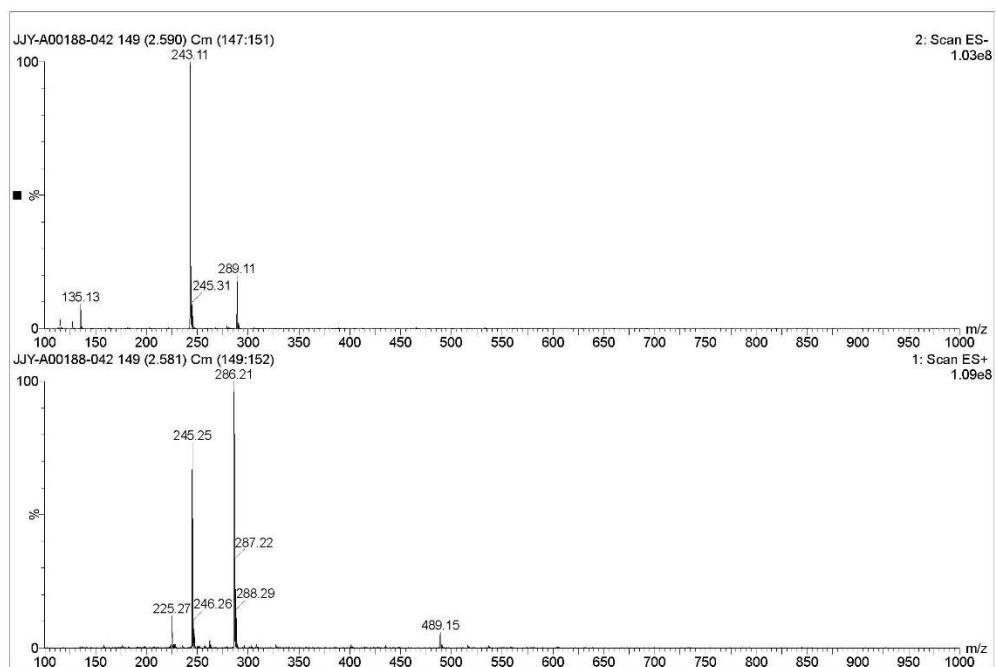
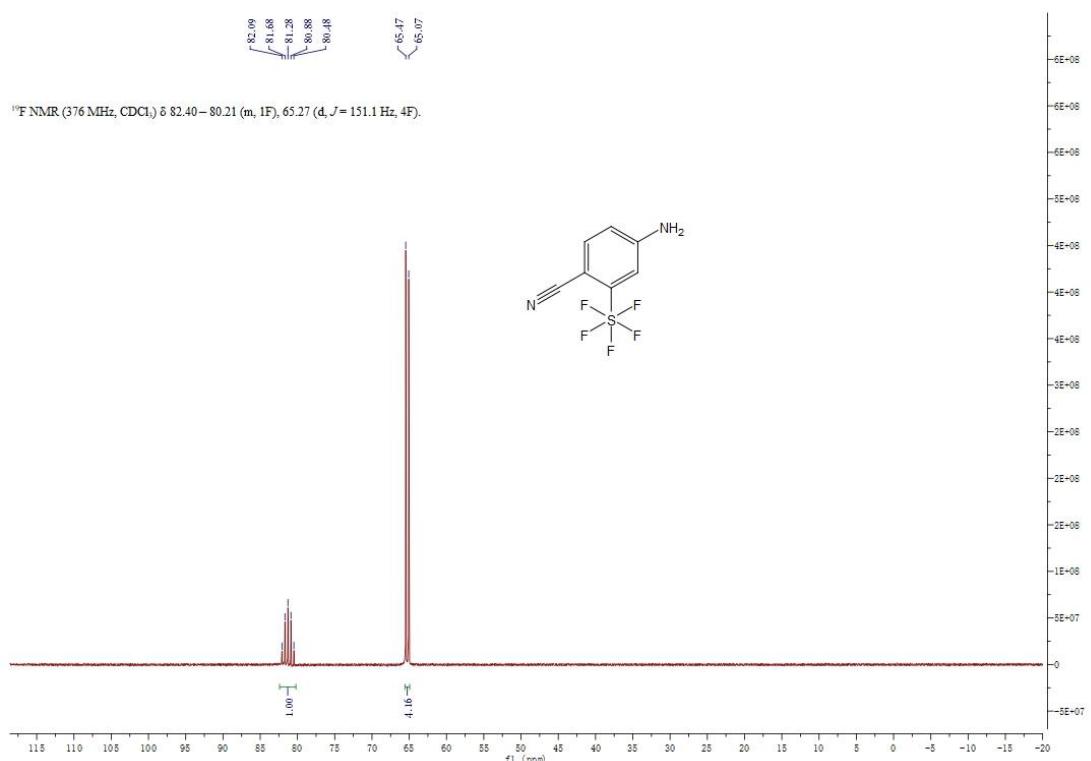


¹H, ¹³C, ¹⁹F NMR and MS spectra of compound 3

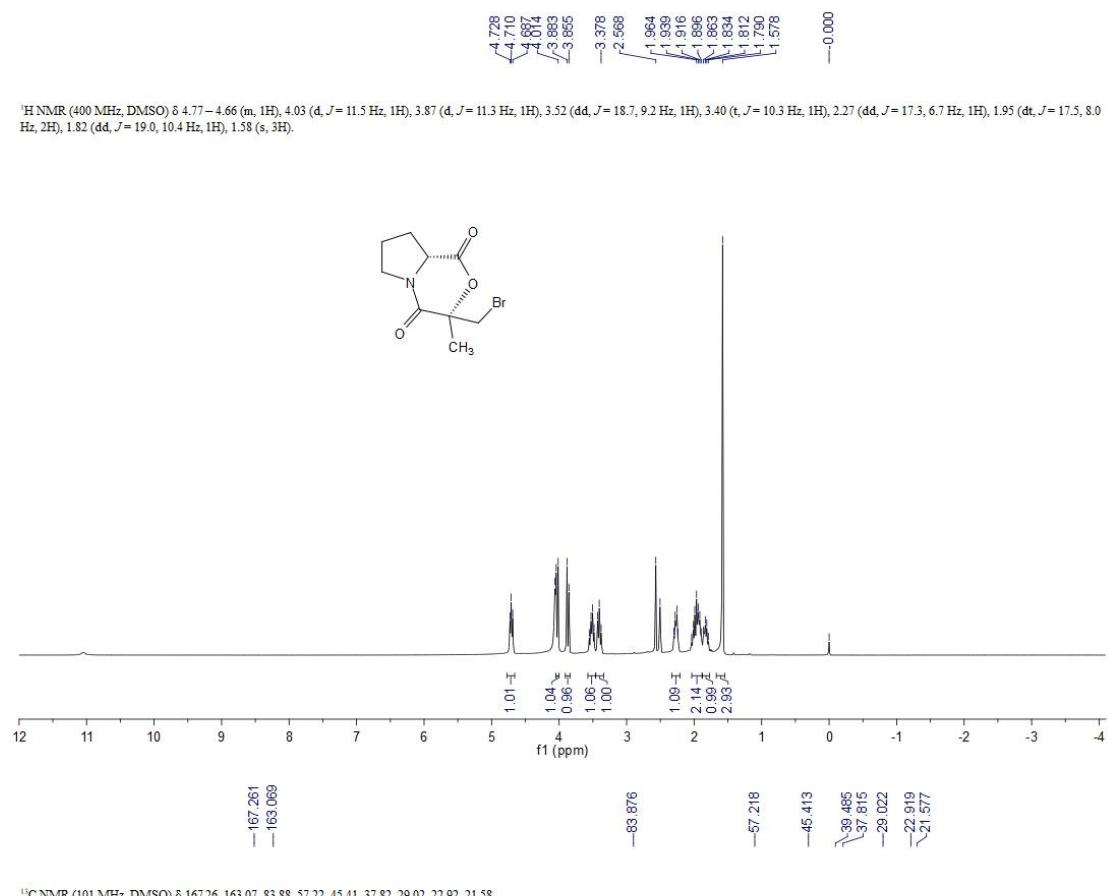


¹³C NMR (101 MHz, CDCl₃) δ 156.53, 150.25, 136.39, 117.36, 116.09, 113.80.

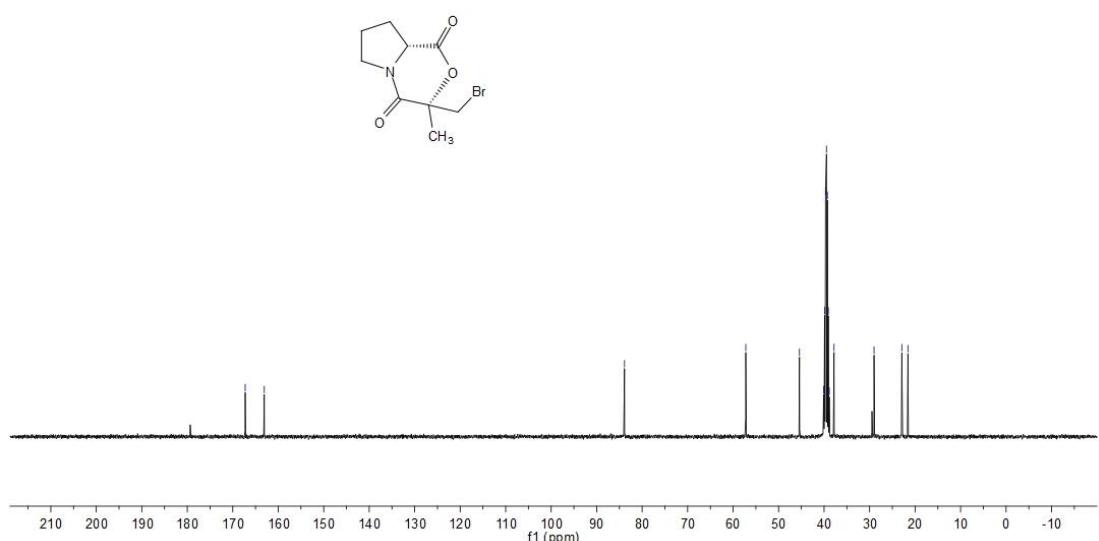




¹H and ¹³C NMR spectra of compound 7



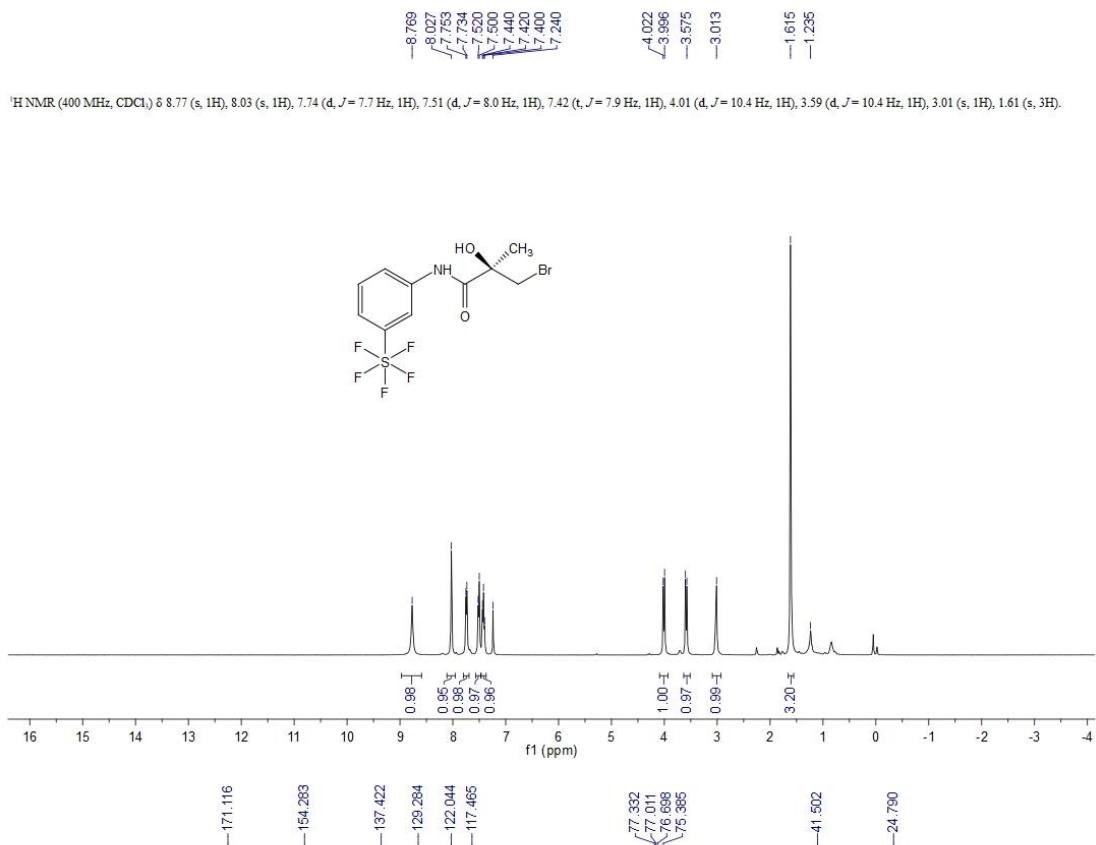
¹H NMR (400 MHz, DMSO) δ 4.77 – 4.66 (m, 1H), 4.03 (d, J = 11.5 Hz, 1H), 3.87 (d, J = 11.3 Hz, 1H), 3.52 (dd, J = 18.7, 9.2 Hz, 1H), 3.40 (t, J = 10.3 Hz, 1H), 2.27 (dd, J = 17.3, 6.7 Hz, 1H), 1.95 (dt, J = 17.5, 8.0 Hz, 2H), 1.82 (dd, J = 19.0, 10.4 Hz, 1H), 1.58 (s, 3H).



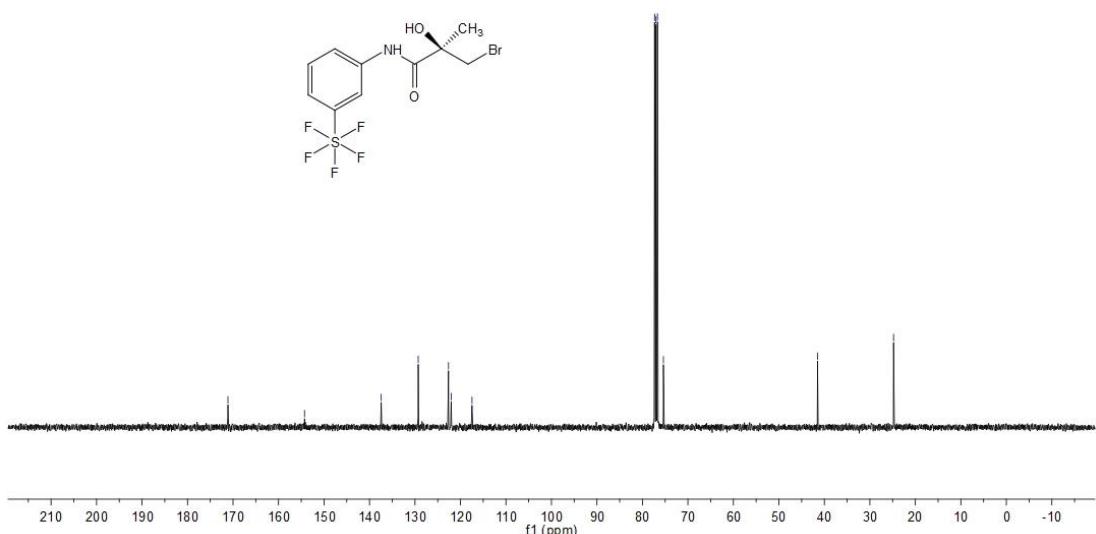
¹H and ¹³C NMR spectra of compound 8

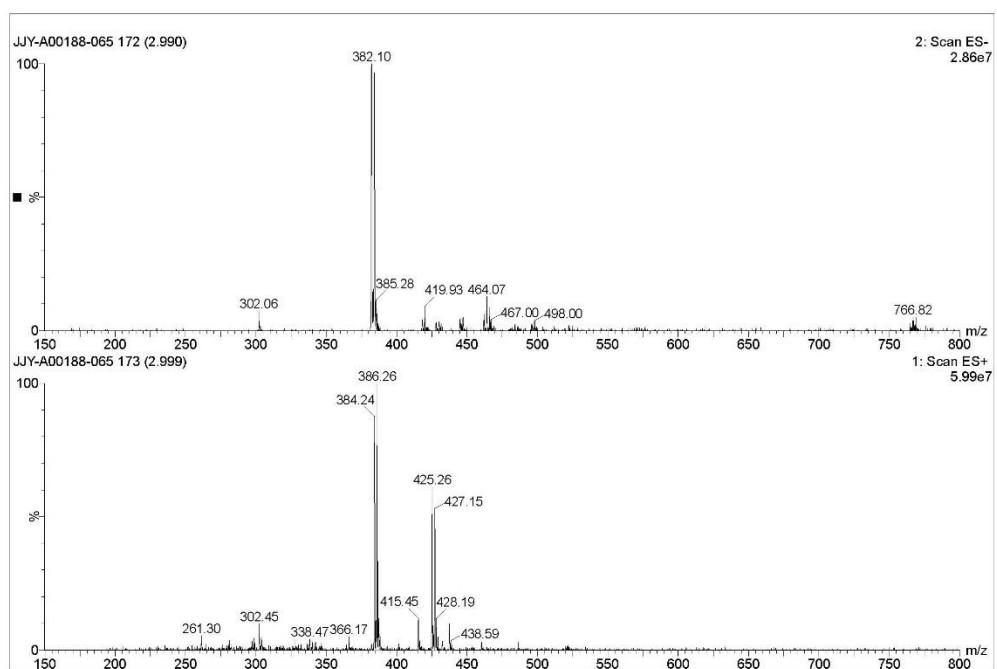
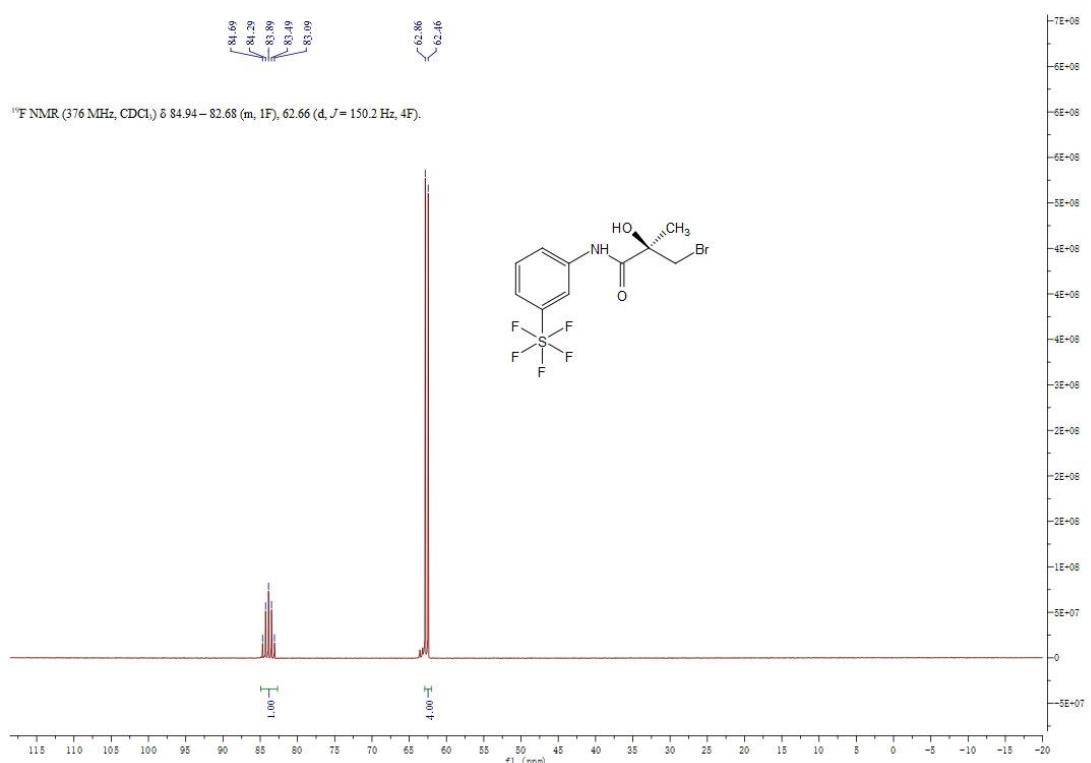


¹H, ¹³C, ¹⁹F NMR and MS spectra of compound 9

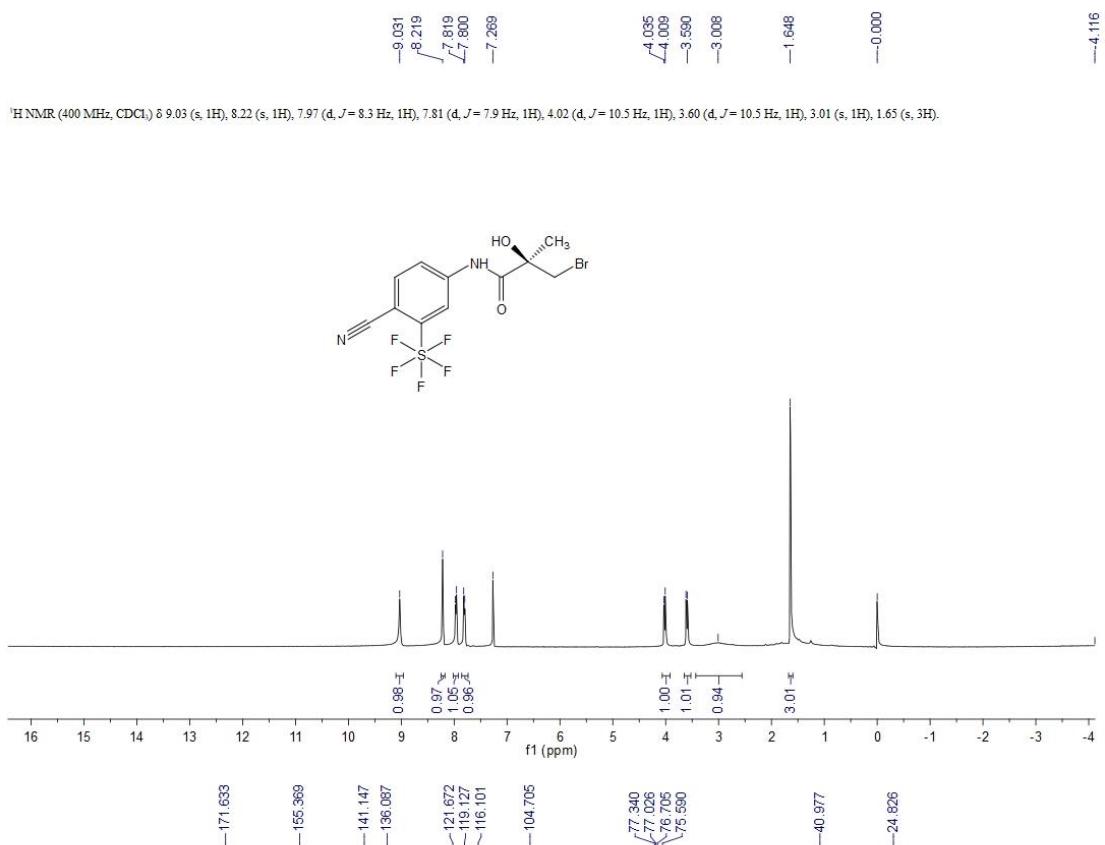


¹³C NMR (101 MHz, CDCl₃) δ 171.12, 154.28, 137.42, 129.28, 122.63, 122.04, 117.46, 75.39, 41.50, 24.79.

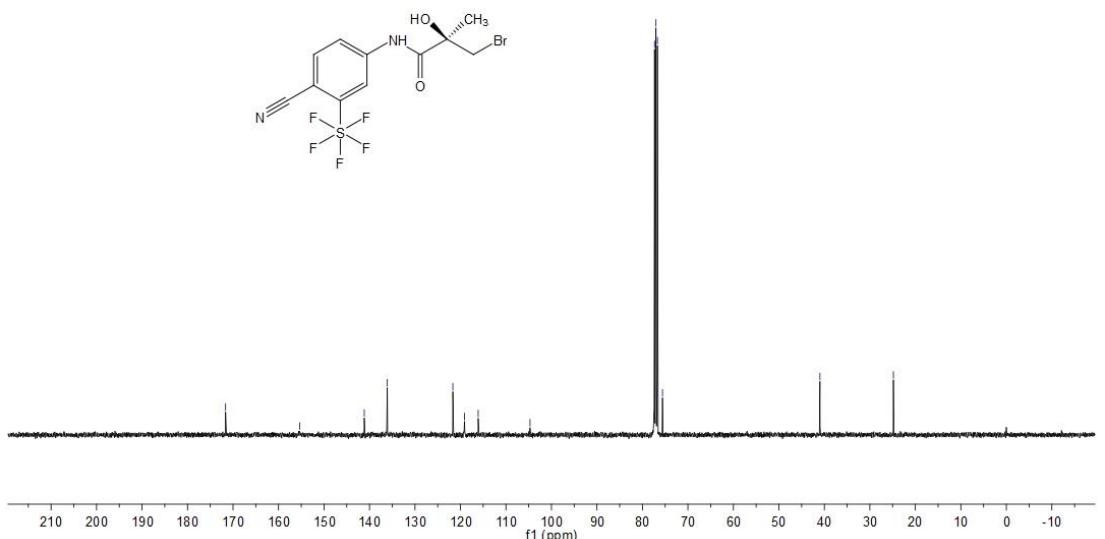


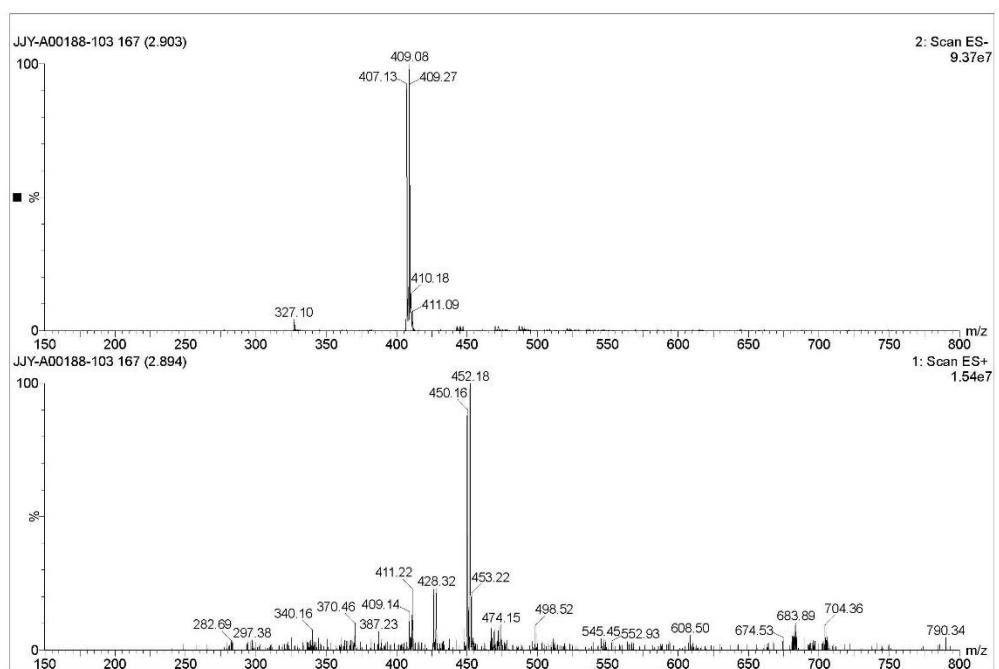
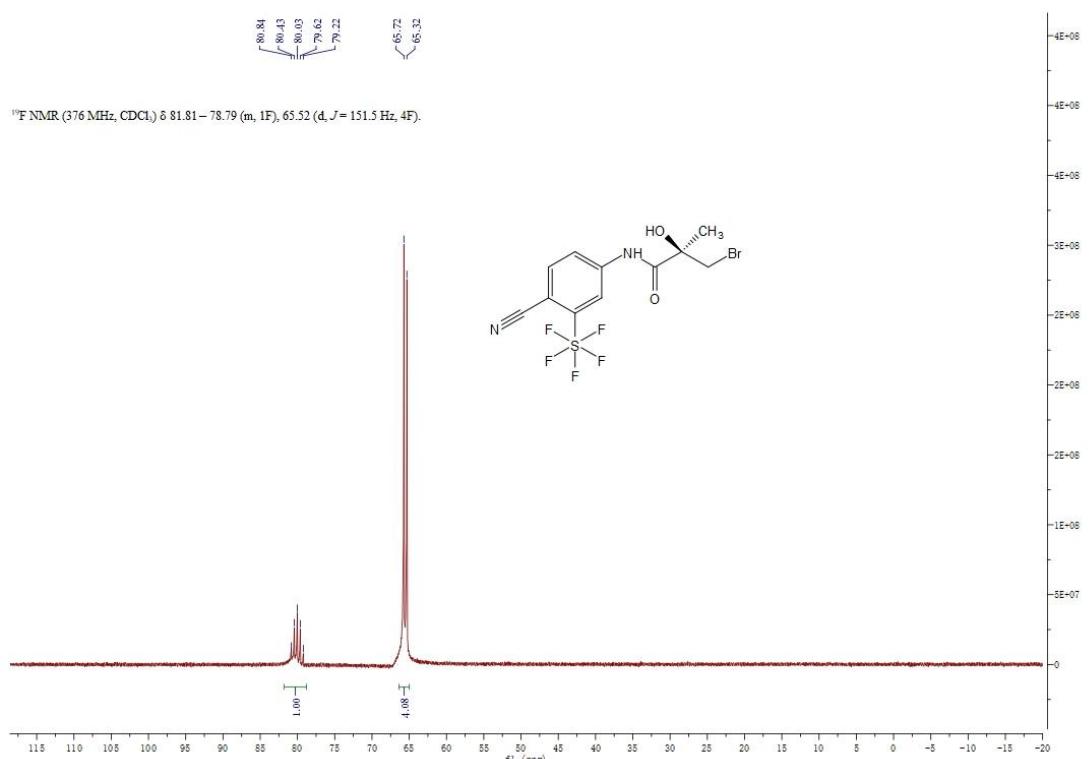


¹H, ¹³C, ¹⁹F NMR and MS spectra of compound **10**

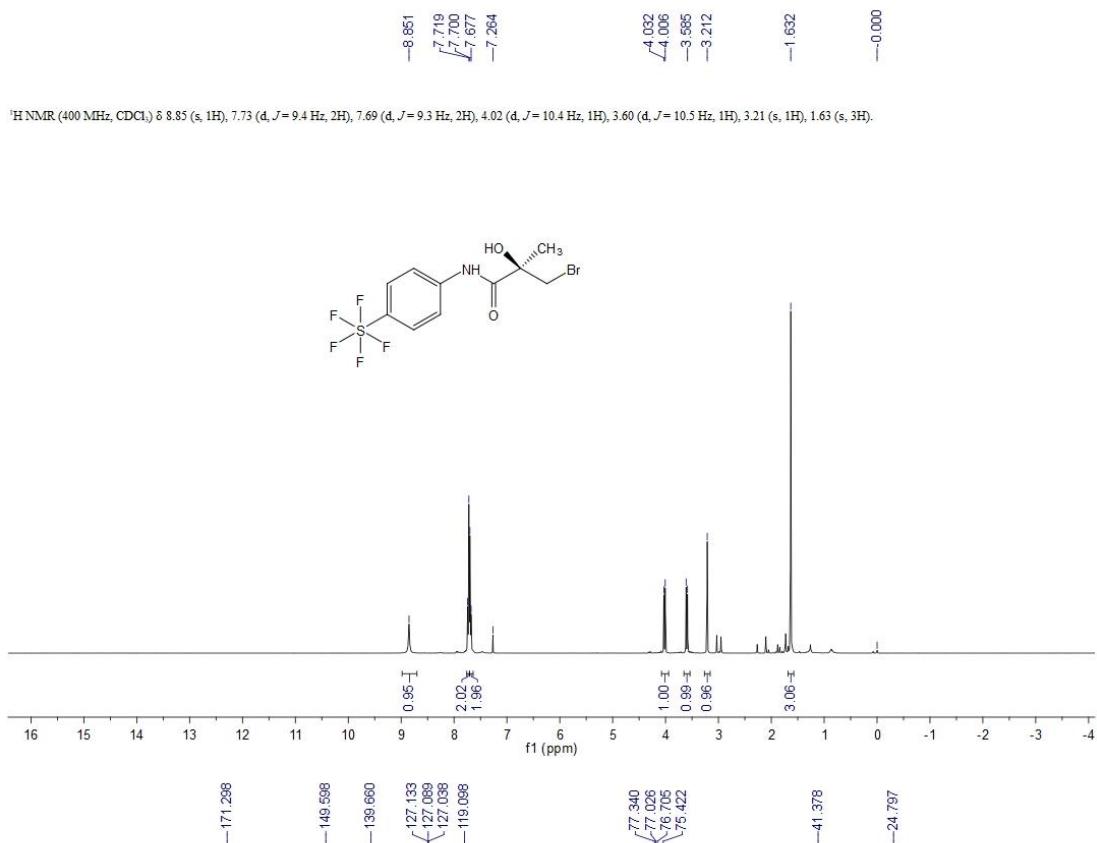


¹³C NMR (101 MHz, CDCl₃) δ 171.63, 155.37, 141.15, 136.09, 121.67, 119.13, 116.10, 104.70, 75.59, 40.98, 24.83.

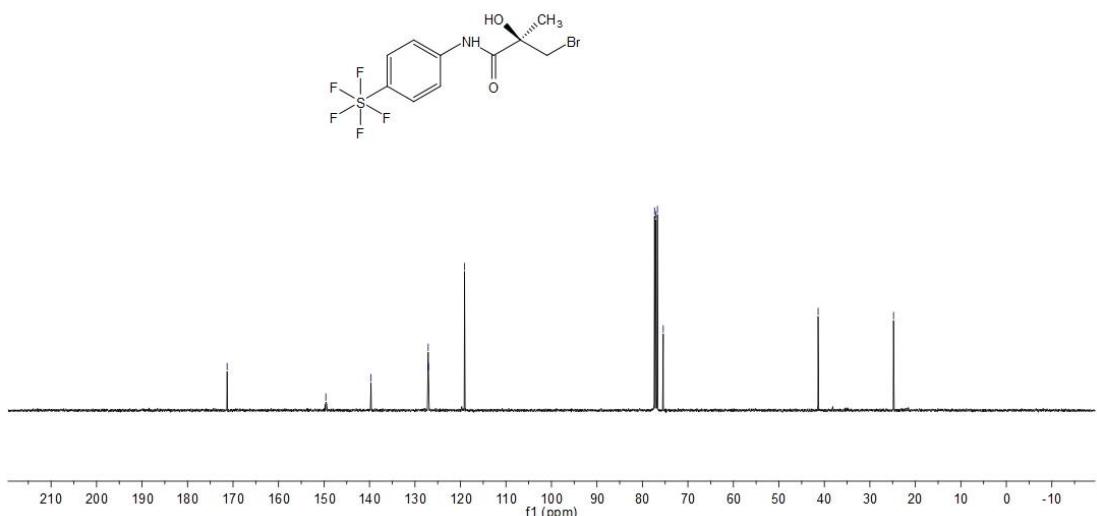


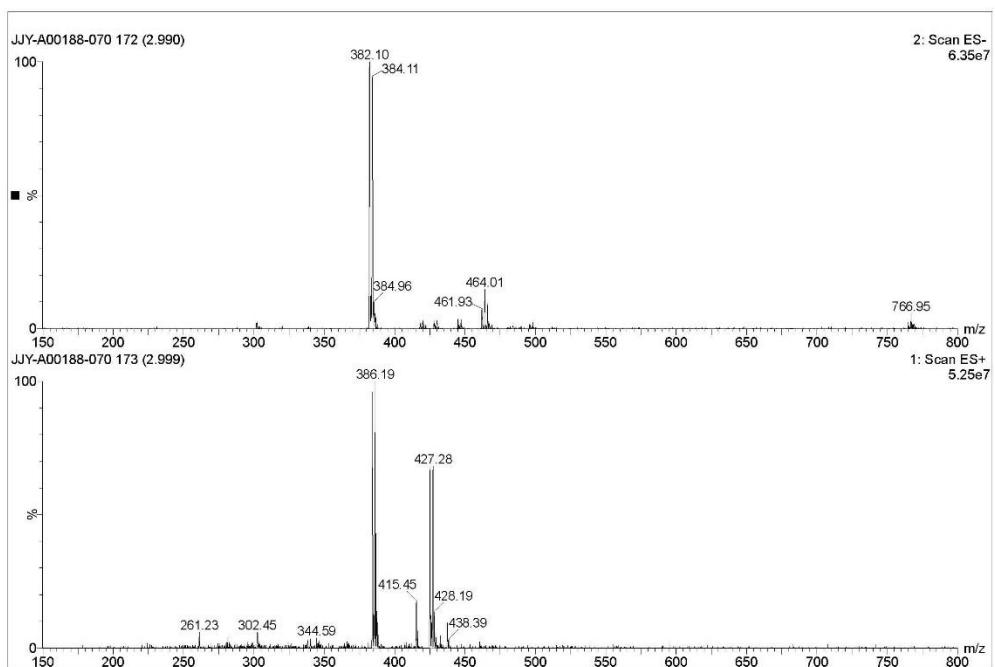
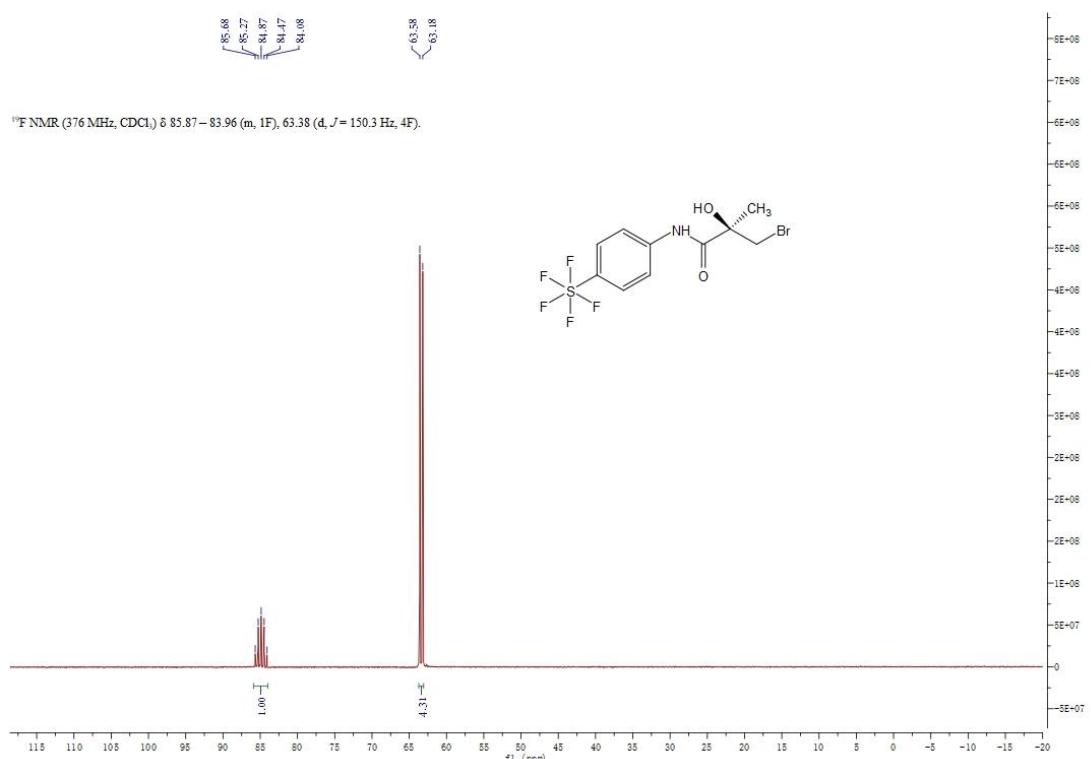


¹H, ¹³C, ¹⁹F NMR and MS spectra of compound 15

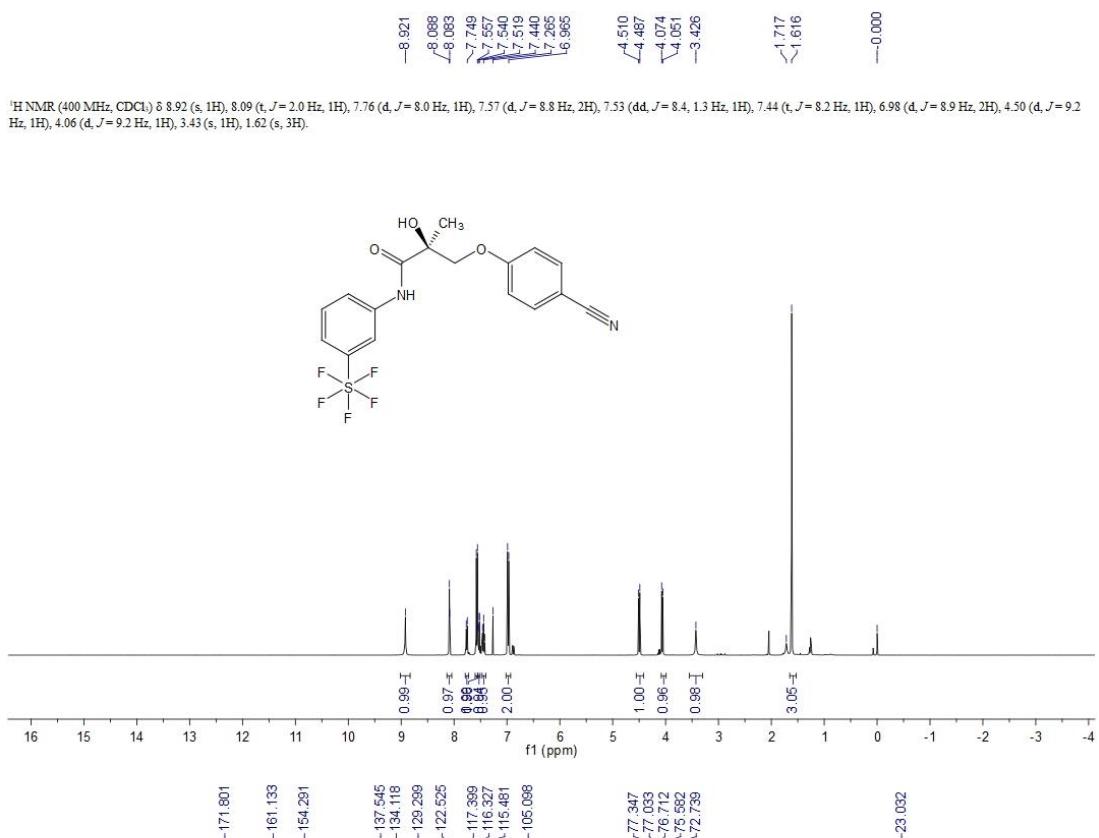


¹³C NMR (101 MHz, CDCl₃) δ 171.30, 149.60, 139.66, 127.13, 127.09, 127.04, 119.10, 75.42, 41.38, 24.80.

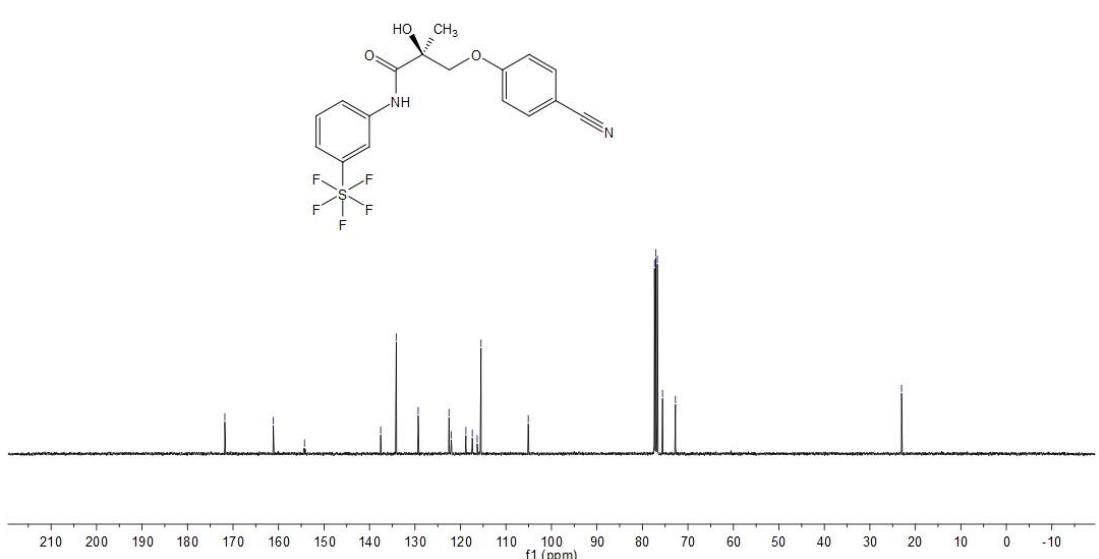


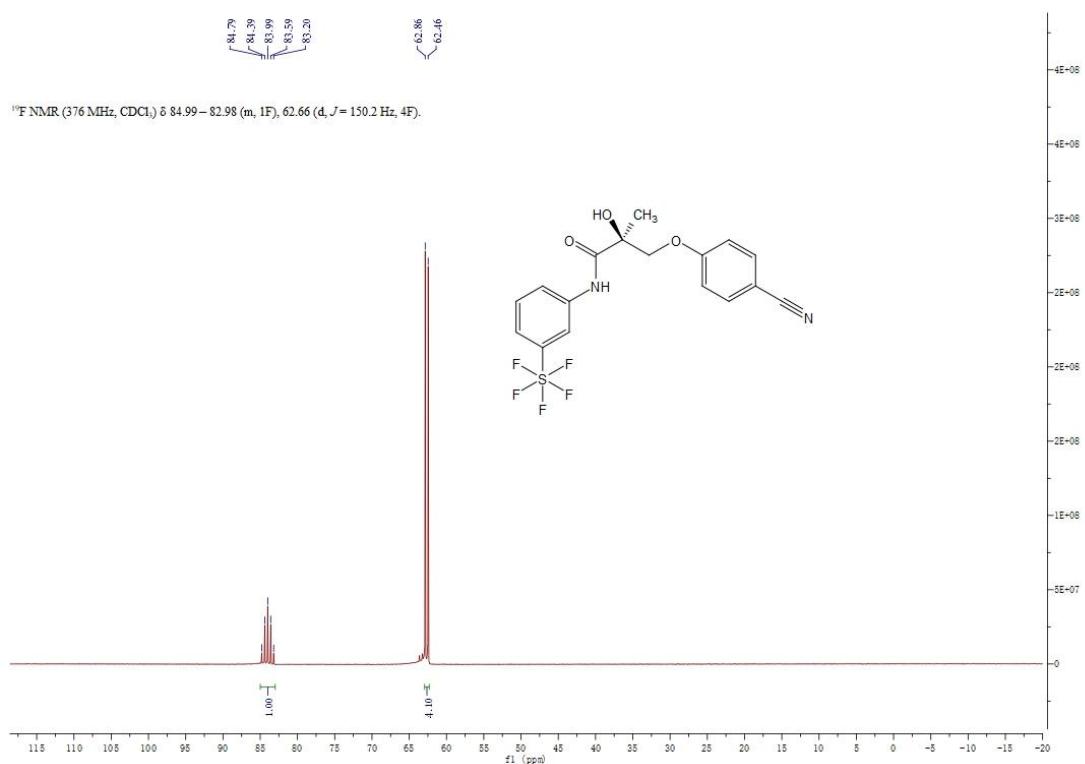


¹H, ¹³C, ¹⁹F NMR, HPLC and HRMS spectra of compound **12a**



¹H NMR (400 MHz, CDCl₃) δ 8.92 (s, 1H), 8.09 (t, J =2.0 Hz, 1H), 7.76 (d, J =8.0 Hz, 1H), 7.57 (d, J =8.8 Hz, 2H), 7.53 (dd, J =8.4, 1.3 Hz, 1H), 7.44 (t, J =8.2 Hz, 1H), 6.98 (d, J =8.9 Hz, 2H), 4.50 (d, J =9.2 Hz, 1H), 4.06 (d, J =9.2 Hz, 1H), 3.43 (s, 1H), 1.62 (s, 3H).





Elemental Composition Report

Page 1

Single Mass Analysis

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Element prediction: Off

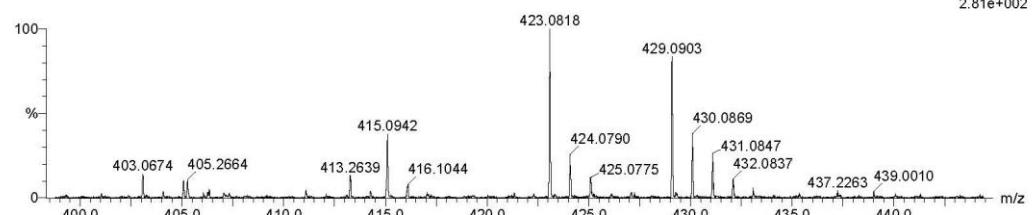
Monoisotopic Mass, Even Electron Ions

1 formula(e) evaluated with 1 results within limits (up to 50 closest results for each mass)

Elements Used:

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1: TOF MS ES+

2.81e+002

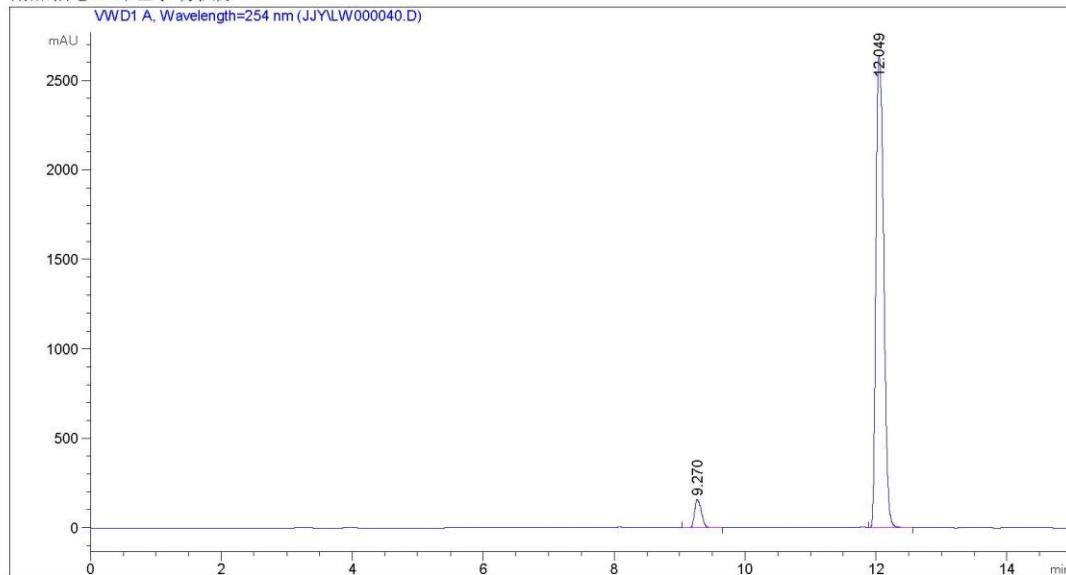


Minimum: -1.5
Maximum: 5.0 100.0 50.0

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(调用后修改)
分析方法 : C:\CHEM32\1\METHODS\JJY-15MIN.M
最后修改 : 2019/11/4 16:29:42 : CYT
附加信息: 峰已手动积分



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面积百分比报告
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排序 : 信号
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稀释因子: : 1.0000
内标使用乘积因子和稀释因子

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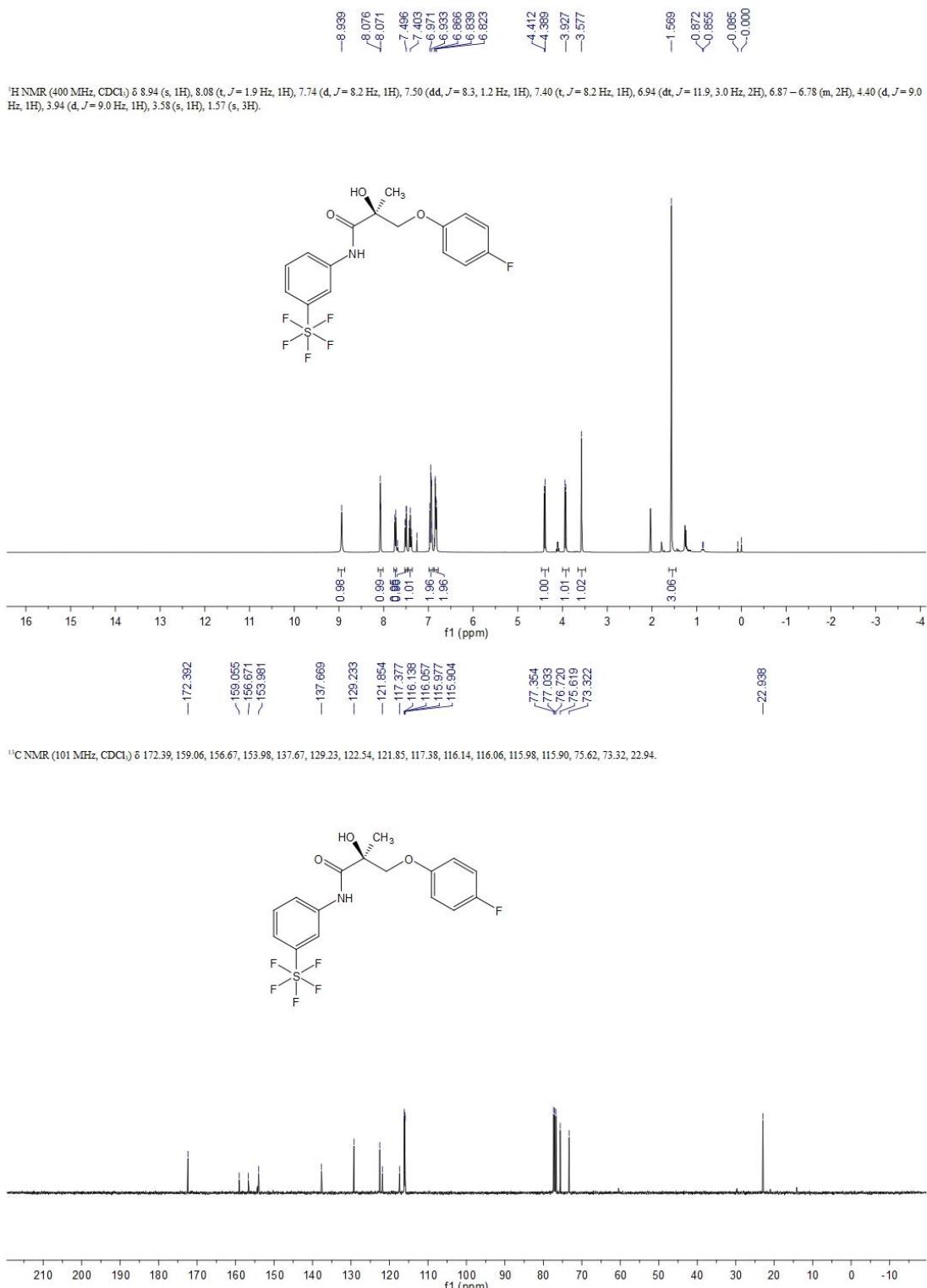
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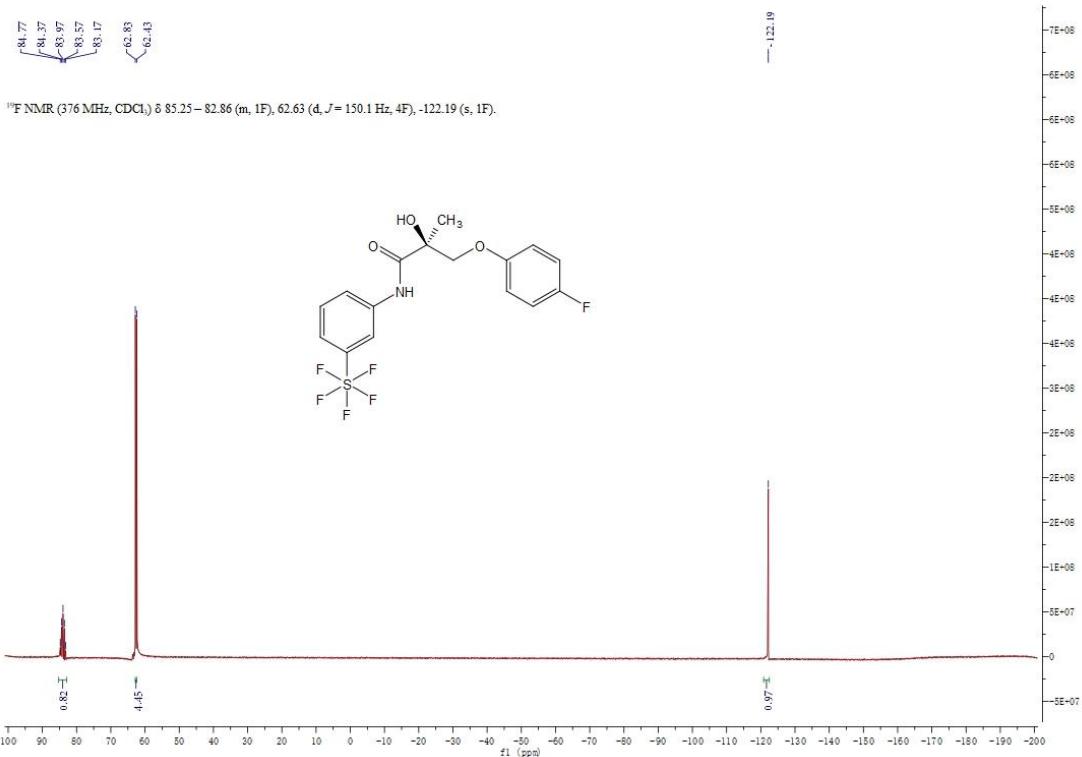
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页 1/1

¹H, ¹³C, ¹⁹F NMR, HPLC and HRMS spectra of compound **12b**





Elemental Composition Report

Page 1

Single Mass Analysis

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Element prediction: Off

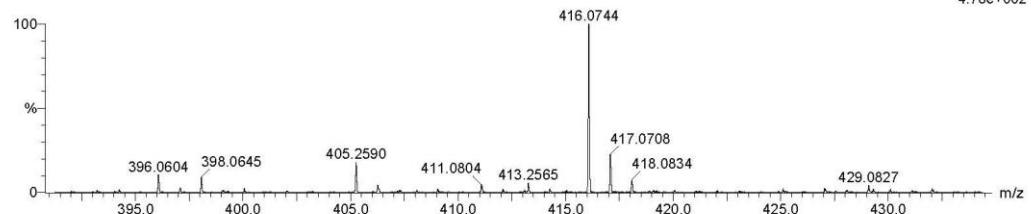
Monoisotopic Mass, Even Electron Ions

1 formula(e) evaluated with 1 results within limits (up to 50 closest results for each mass)

Elements Used:

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4.76e+002

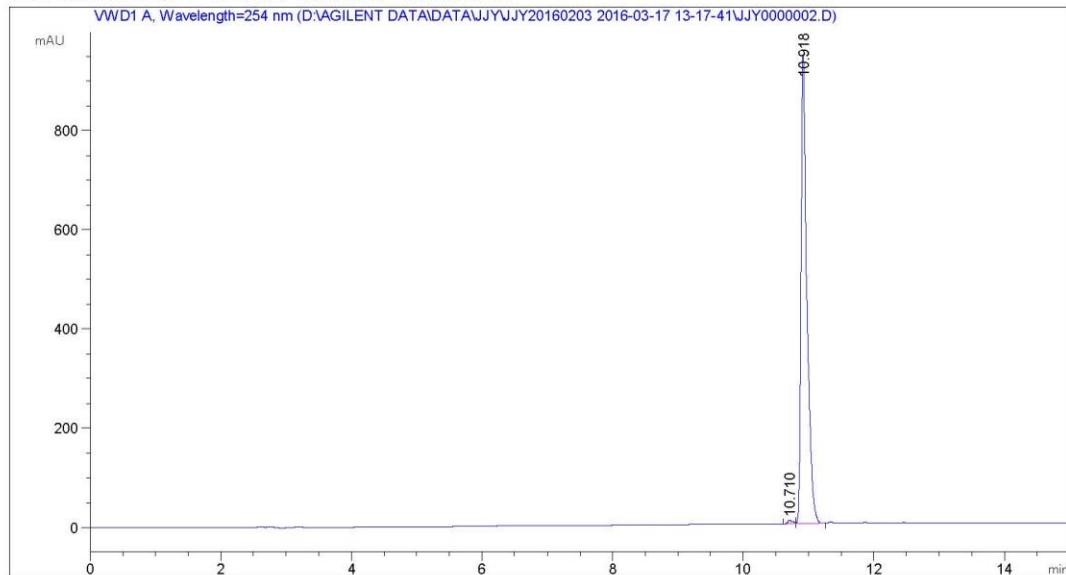


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Area Percent Report
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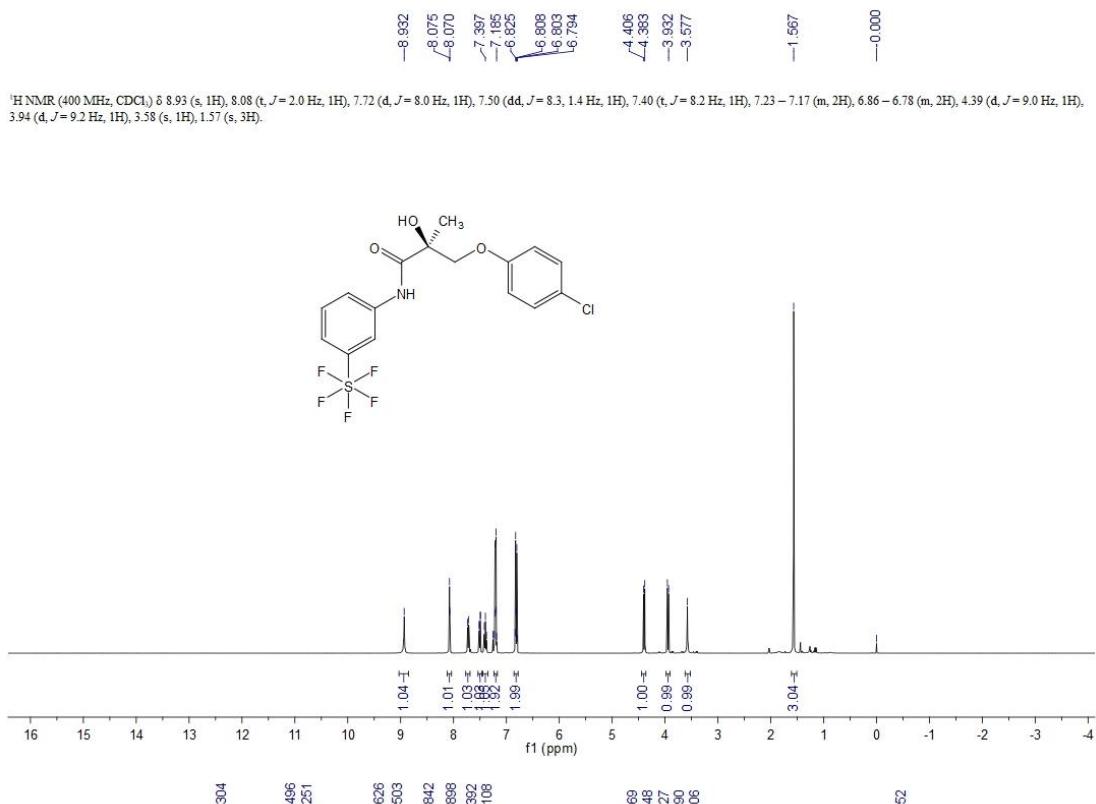
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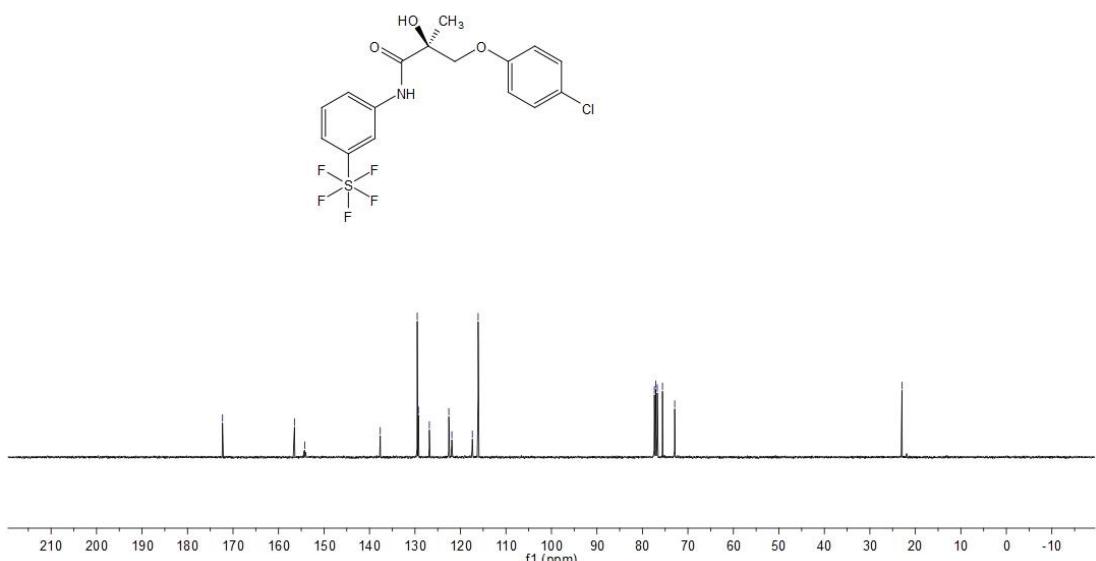
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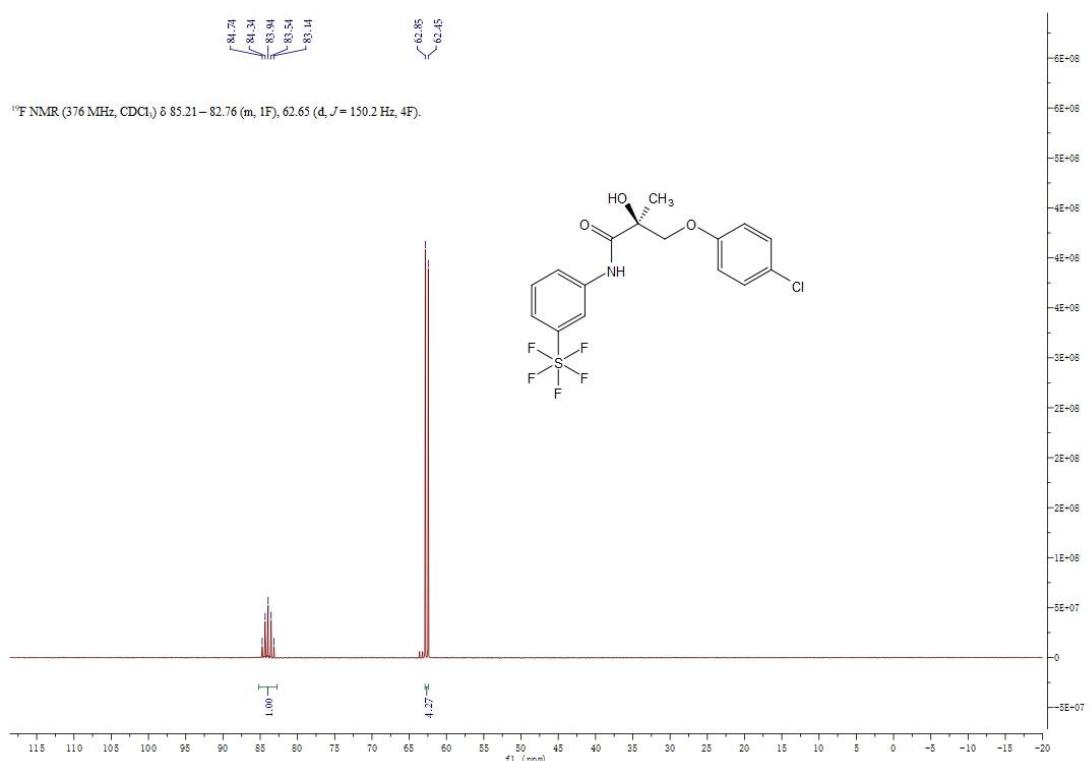
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¹H, ¹³C, ¹⁹F NMR, HPLC and HRMS spectra of compound **12c**



¹H NMR (400 MHz, CDCl₃) δ 8.93 (s, 1H), 8.08 (t, J = 2.0 Hz, 1H), 7.72 (d, J = 8.0 Hz, 1H), 7.50 (dd, J = 8.3, 1.4 Hz, 1H), 7.40 (t, J = 8.2 Hz, 1H), 7.23 – 7.17 (m, 2H), 6.86 – 6.78 (m, 2H), 4.39 (d, J = 9.0 Hz, 1H), 3.94 (d, J = 9.2 Hz, 1H), 3.58 (s, 1H), 1.57 (s, 3H).





Elemental Composition Report

Page 1

Single Mass Analysis

Tolerance = 5.0 mDa / DBE: min = -1.5, max = 50.0
Element prediction: Off

Monoisotopic Mass, Even Electron Ions

3 formula(e) evaluated with 1 results within limits (up to 50 closest results for each mass)

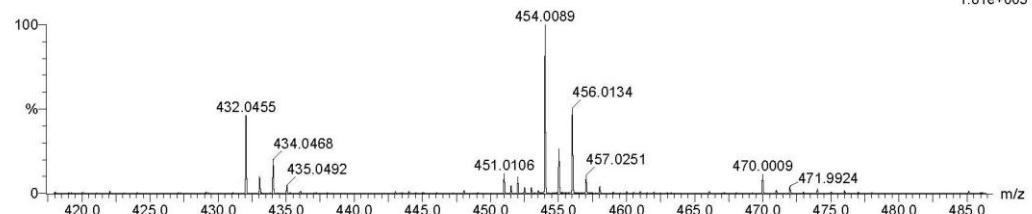
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JY-A00188-090-1.27 (0.554)

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1.81e+003

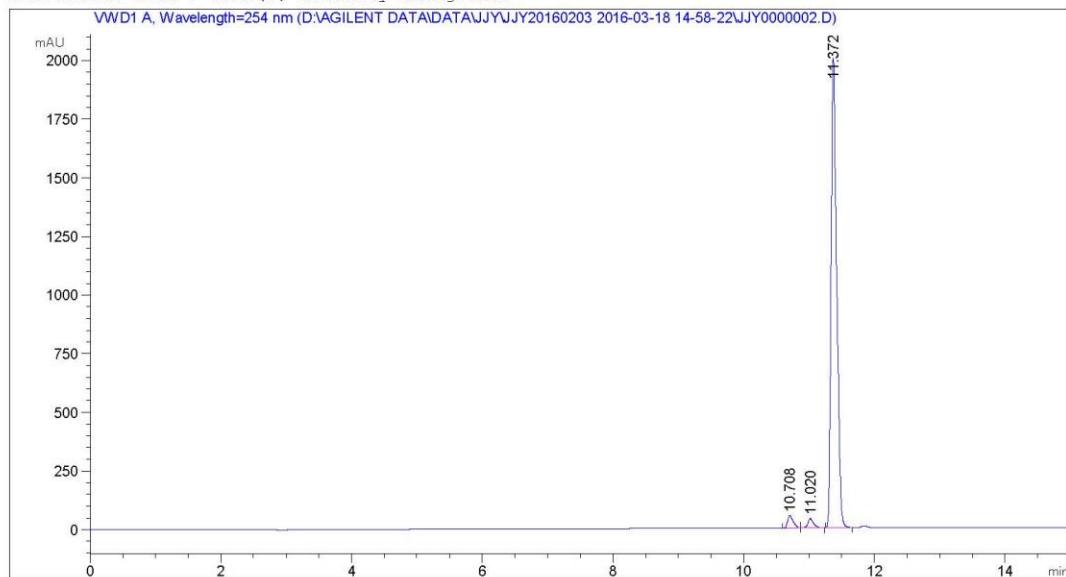


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Area Percent Report
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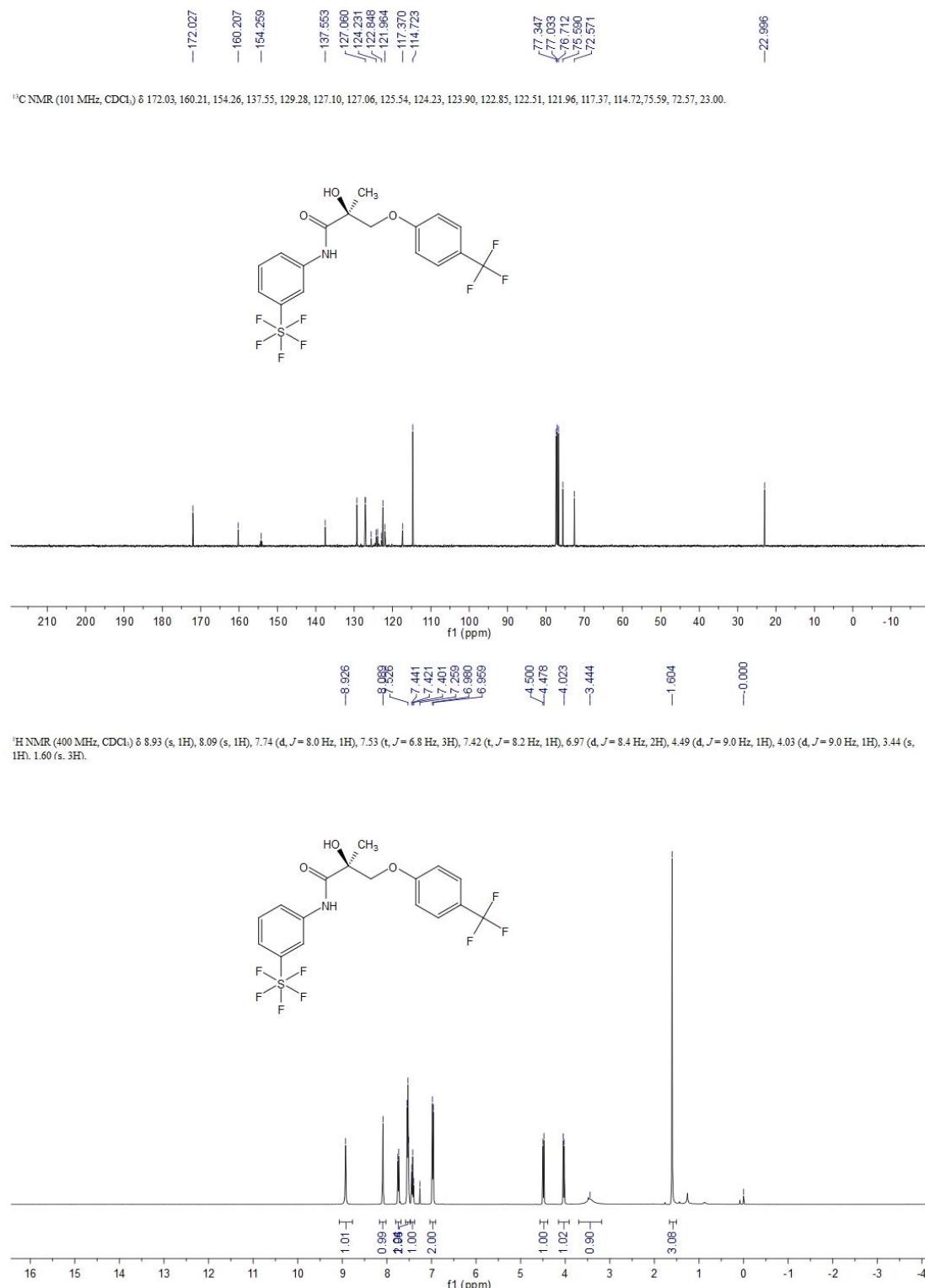
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Multiplier     : 1.0000
Dilution      : 1.0000
Use Multiplier & Dilution Factor with ISTDs
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Signal 1: VWD1 A, Wavelength=254 nm

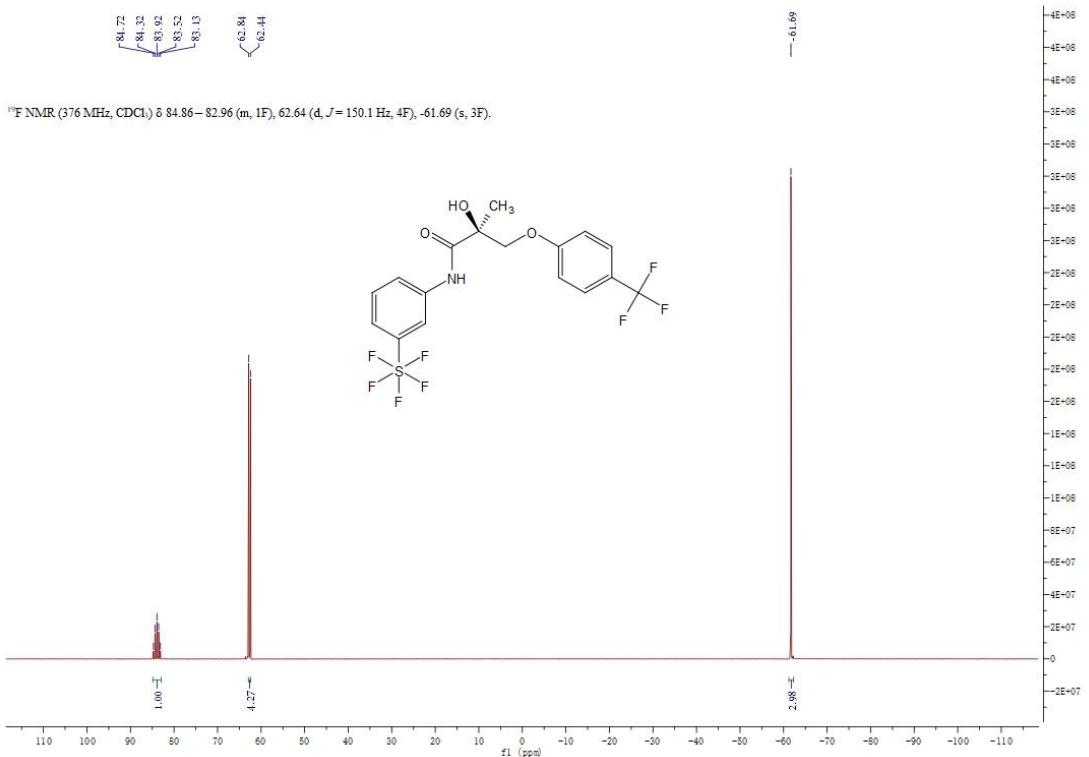
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¹H, ¹³C, ¹⁹F NMR, HPLC and HRMS spectra of compound **12d**



¹H NMR (400 MHz, CDCl₃) δ 8.93 (s, 1H), 8.09 (s, 1H), 7.74 (d, $J = 8.0$ Hz, 1H), 7.53 (t, $J = 6.8$ Hz, 3H), 7.42 (t, $J = 8.2$ Hz, 1H), 6.97 (d, $J = 8.4$ Hz, 2H), 4.49 (d, $J = 9.0$ Hz, 1H), 4.03 (d, $J = 9.0$ Hz, 1H), 3.44 (s, 1H), 1.60 (s, 3H).



¹⁹F NMR (376 MHz, CDCl₃) δ 84.86 – 82.96 (m, 1F), 62.64 (d, *J* = 150.1 Hz, 4F), -61.69 (s, 3F).

Elemental Composition Report

Page 1

Single Mass Analysis

Tolerance = 100.0 PPM / DBE: min = -1.5, max = 50.0
Element prediction: Off

Monoisotopic Mass, Even Electron Ions

1 formula(e) evaluated with 1 results within limits (up to 50 closest results for each mass)

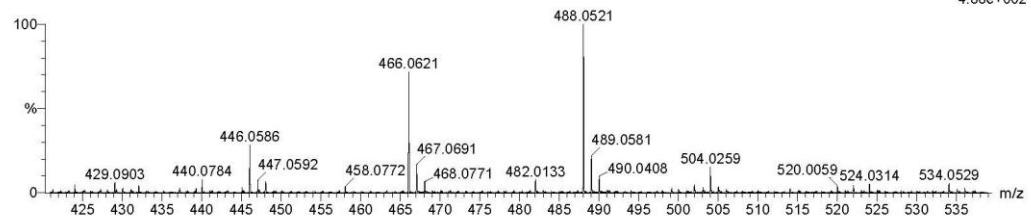
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4.88e+002

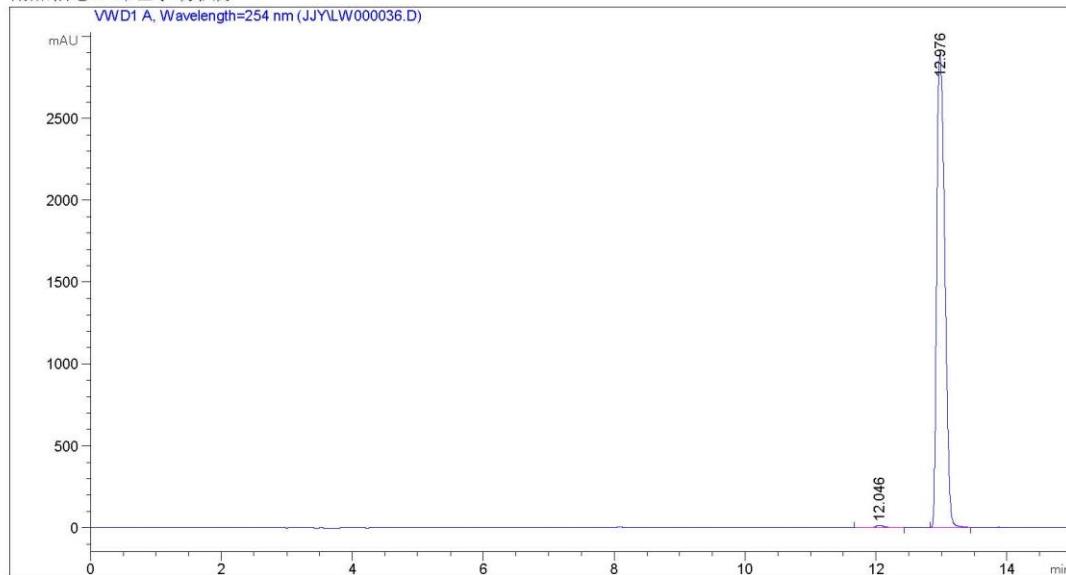


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Maximum: 5.0 100.0 50.0

Mass	Calc. Mass	mDa	PPM	DBE	Formula
488.0521	488.0543	-2.2	-4.5	6.5	C17 H15 N O3 F8 Na S

数据文件: C:\CHEM32\1\DATA\JJY\LW000036.D
样品名称: JJY-A00188-095

=====
操作者 : spx
仪器 : 仪器 1 位置 : 样品瓶 1
进样日期 : 2019/11/14 15:45:55 进样量 : 没有进样
采集方法 : C:\CHEM32\1\METHODS\JJY-15MIN.M
最后修改 : 2019/11/14 15:42:28 : spx
(调用后修改)
分析方法 : C:\CHEM32\1\METHODS\JJY-15MIN.M
最后修改 : 2019/11/4 16:29:42 : CYT
附加信息: 峰已手动积分



=====
面积百分比报告
=====
排序 : 信号
乘积因子: : 1.0000
稀释因子: : 1.0000
内标使用乘积因子和稀释因子

信号 1: VWD1 A, Wavelength=254 nm

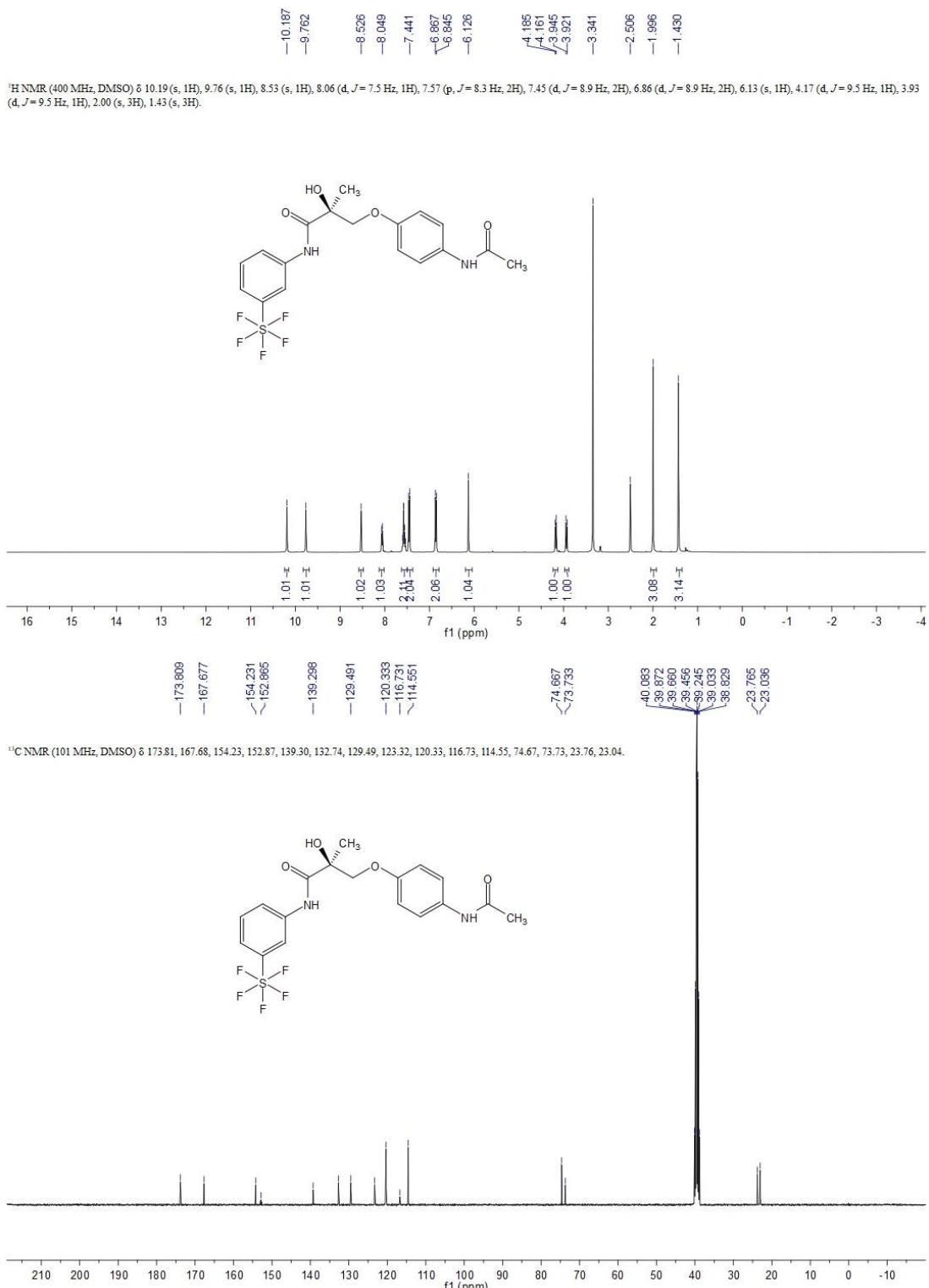
#	峰保留时间 [min]	类型	峰宽 [min]	峰面积 [mAU*s]	峰高 [mAU]	峰面积 %
1	12.046	BB	0.1280	127.06351	15.44123	0.5078
2	12.976	VV	0.1416	2.48932e4	2881.67456	99.4922

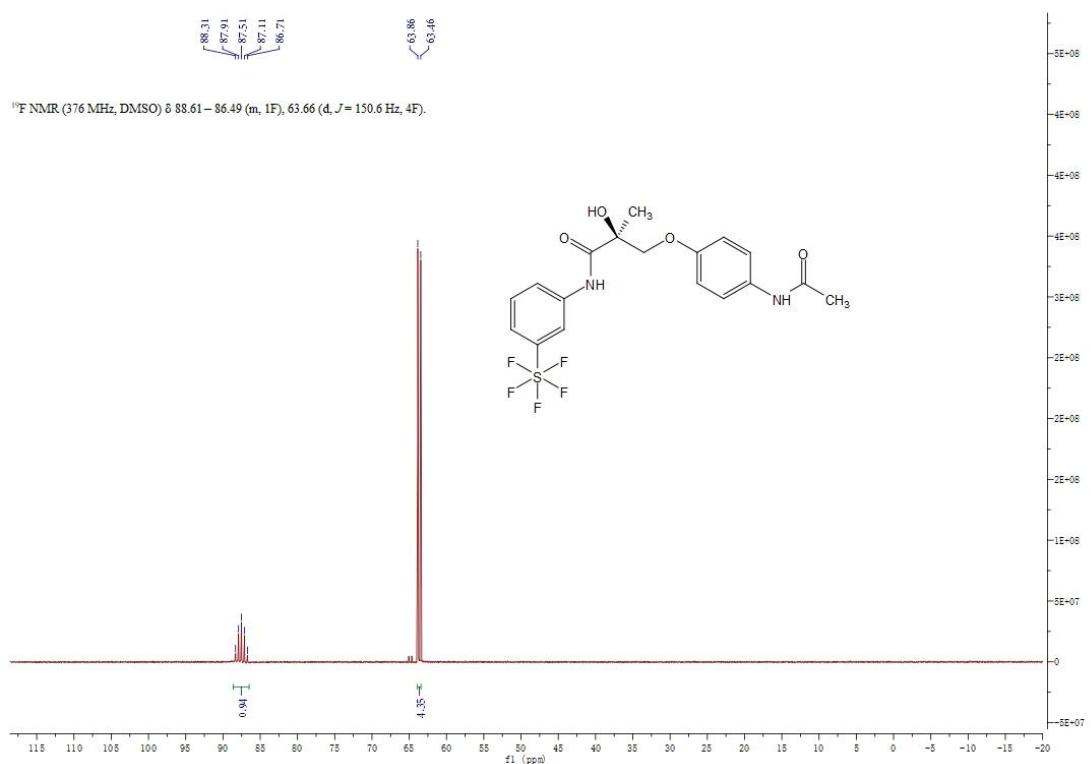
总量 : 2.50203e4 2897.11579

=====
仪器 1 2019/11/14 18:08:05 spx

页 1/1

¹H, ¹³C, ¹⁹F NMR, HPLC and HRMS spectra of compound **12e**





Elemental Composition Report

Page 1

Single Mass Analysis

Tolerance = 500.0 PPM / DBE: min = -1.5, max = 50.0
Element prediction: Off

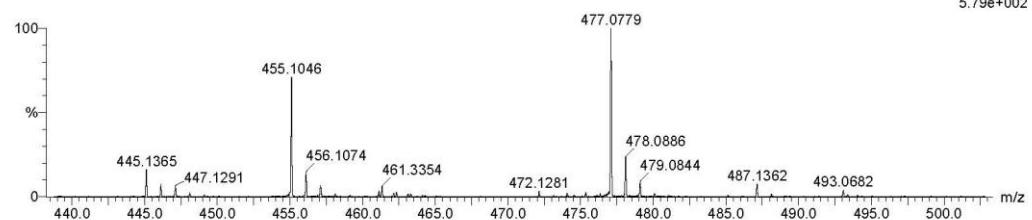
Monoisotopic Mass, Even Electron Ions

1 formula(e) evaluated with 1 results within limits (up to 50 closest results for each mass)

Elements Used:

C: 18-18 H: 20-20 N: 2-2 O: 4-4 F: 5-5 S: 1-1
JJY-A00188-086_2_32 (0.639)
1: TOF MS ES+

5.79e+002

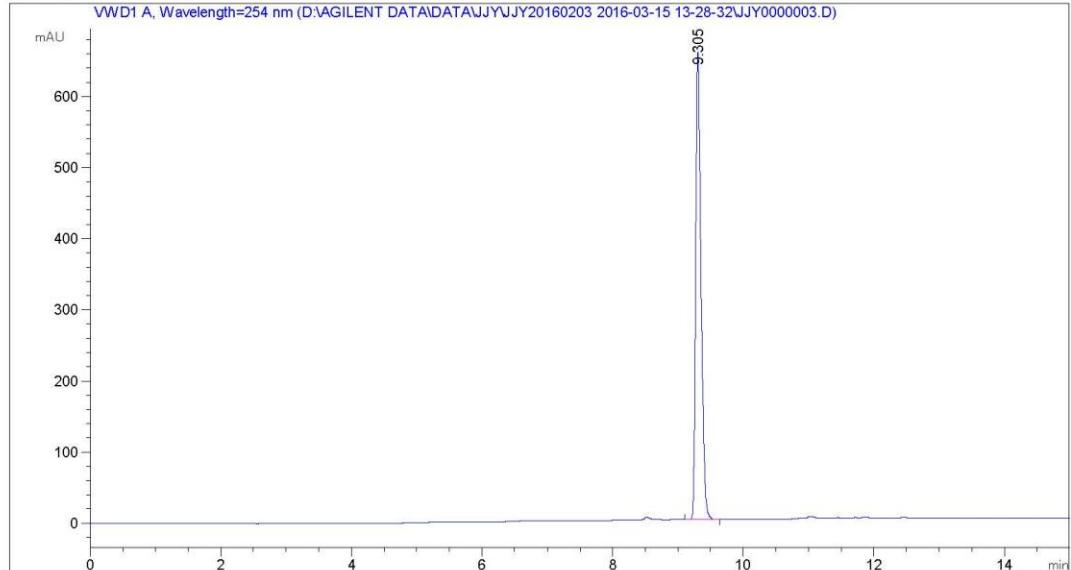


Minimum: -1.5
Maximum: 5.0 500.0 50.0

Mass	Calc. Mass	mDa	PPM	DBE	Formula
455.1046	455.1064	-1.8	-4.0	7.5	C18 H20 N2 O4 F5 S

Data File D:\AGILENT DATA\DATA\JJY\JJY20160203 2016-03-15 13-28-32\JJY0000003.D
Sample Name: JJY-A00188-086

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=====
Acq. Operator : JJY                               Seq. Line : 3
Acq. Instrument : Instrument 1                  Location : Vial 83
Injection Date : 3/15/2016 2:13:00 PM           Inj : 1
                                                Inj Volume : 10.0 µl
Different Inj Volume from Sequence !          Actual Inj Volume : 5.0 µl
Acq. Method : D:\AGILENT DATA\DATA\JJY\JJY20160203 2016-03-15 13-28-32\JJY-0.1TFA-CH3CN-
15MIN.M
Last changed : 3/14/2016 12:04:47 PM by JJY
Analysis Method : D:\AGILENT DATA\METHOD\JJY-0.1TFA-CH3CN-15MIN.M
Last changed : 3/14/2016 12:04:47 PM by JJY
Additional Info : Peak(s) manually integrated
```



```
=====
Area Percent Report
=====
```

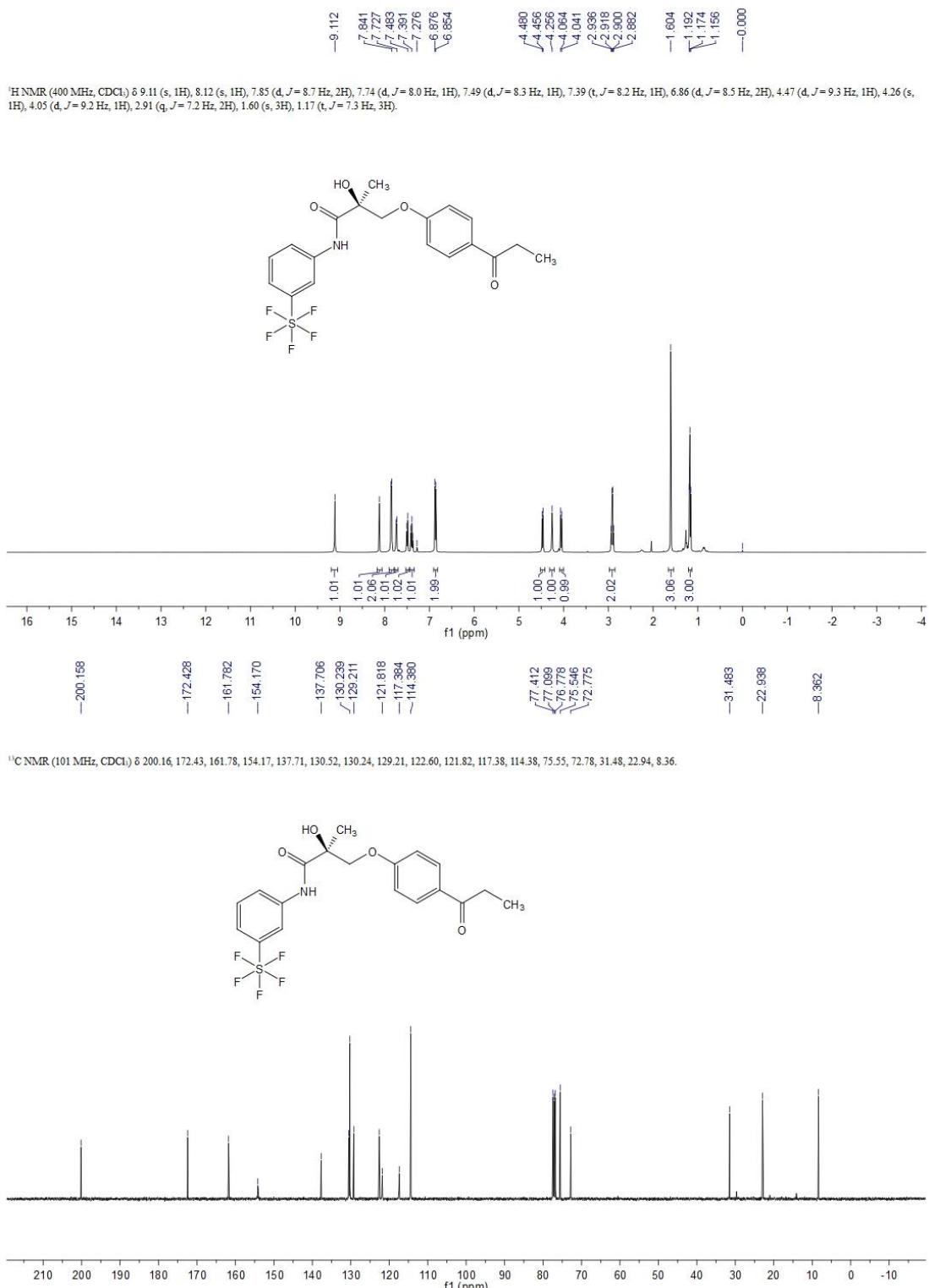
```
Sorted By : Signal
Multiplier : 1.0000
Dilution : 1.0000
Use Multiplier & Dilution Factor with ISTDs
```

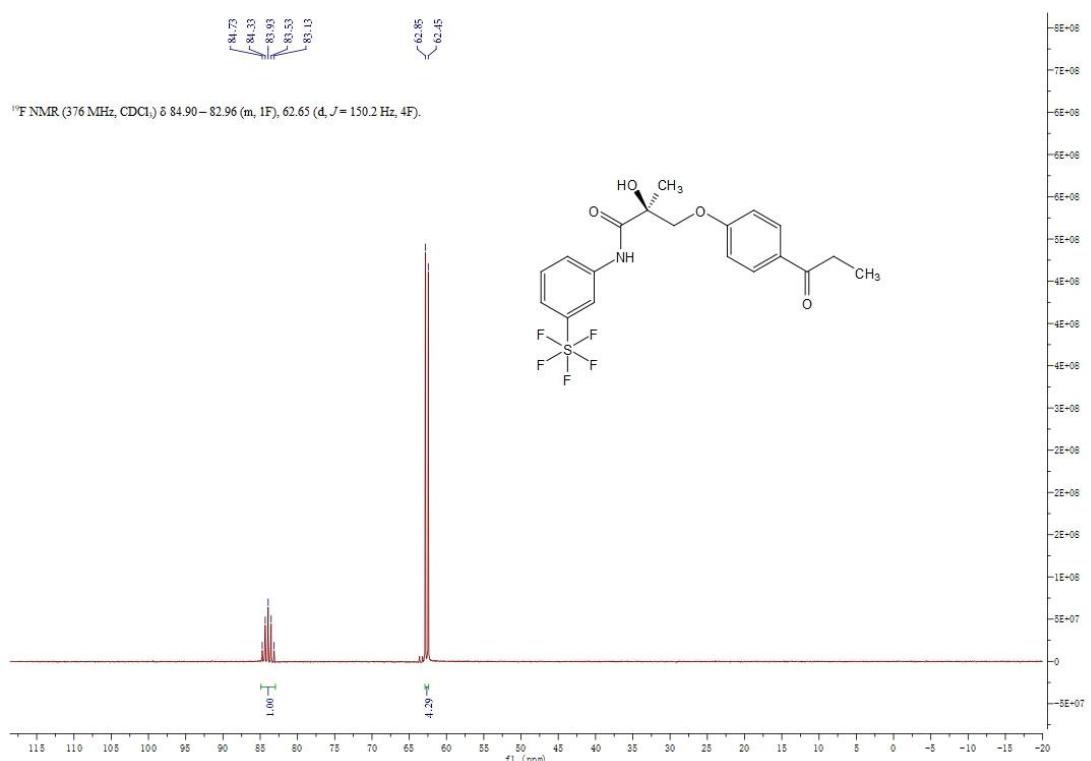
Signal 1: VWD1 A, Wavelength=254 nm

Peak #	RetTime [min]	Type	Width [min]	Area mAU	Height *s	Area [mAU]	Area %
1	9.305	BV	0.0848	3713.10205	657.75159	100.0000	

Totals : 3713.10205 657.75159

¹H, ¹³C, ¹⁹F NMR, HPLC and HRMS spectra of compound **12f**.





Elemental Composition Report

Page 1

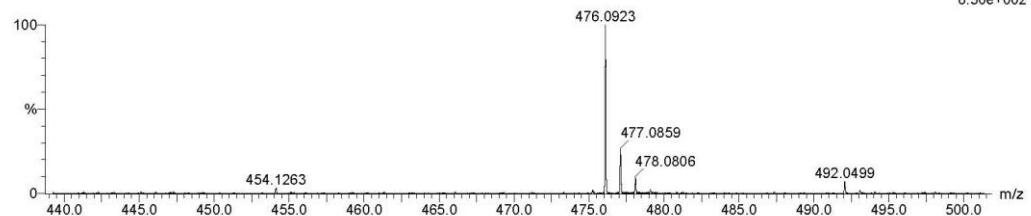
Single Mass Analysis

Tolerance = 100.0 PPM / DBE: min = -1.5, max = 50.0
Element prediction: Off

Monoisotopic Mass, Even Electron Ions
1 formula(e) evaluated with 1 results within limits (up to 50 closest results for each mass)
Elements Used:
C: 19-19 H: 20-20 N: 1-1 O: 4-4 F: 5-5 S: 1-1 Na: 0-1

JJY-A00188-094 80 (1.573)
1: TOF MS ES+

6.30e+002

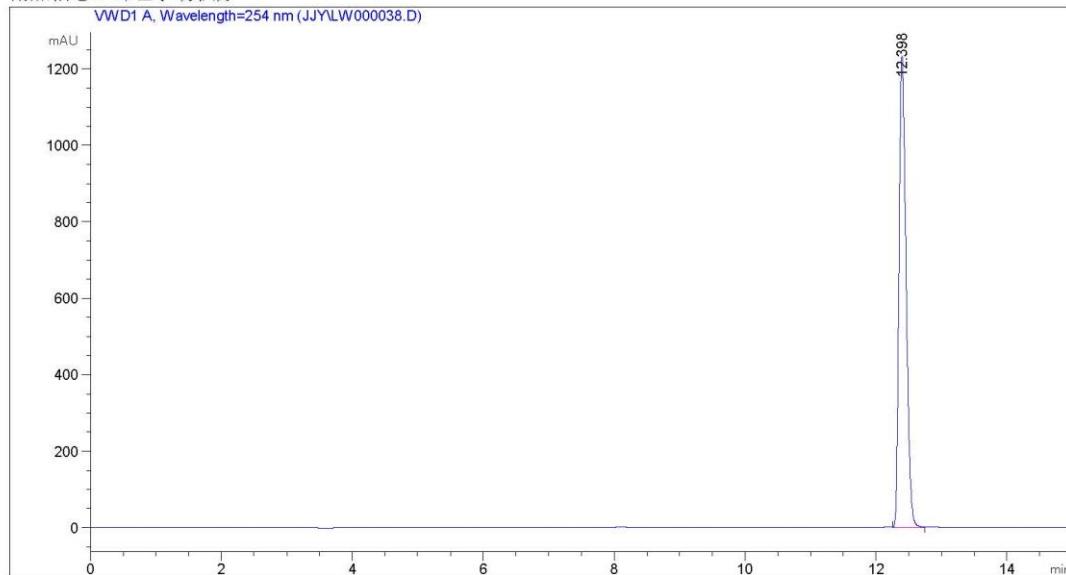


Minimum: 440.0
Maximum: 500.0

Mass	Calc. Mass	mDa	PPM	DBE	Formula
476.0923	476.0931	-0.8	-1.7	7.5	C19 H20 N O4 F5 S Na

数据文件: C:\CHEM32\1\DATA\JJY\LW000038.D
样品名称: JJY-A00188-094

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操作者      : spx
仪器        : 仪器 1
进样日期    : 2019/11/14 16:34:18
                位置 : 样品瓶 1
进样量      : 没有进样
采集方法    : C:\CHEM32\1\METHODS\JJY-15MIN.M
最后修改    : 2019/11/14 16:33:32 : spx
                (调用后修改)
分析方法    : C:\CHEM32\1\METHODS\JJY-15MIN.M
最后修改    : 2019/11/4 16:29:42 : CYT
附加信息: 峰已手动积分
```



```
=====
面积百分比报告
=====
```

```
排序      : 信号
乘积因子:      : 1.0000
稀释因子:      : 1.0000
内标使用乘积因子和稀释因子
```

信号 1: VWD1 A, Wavelength=254 nm

峰	保留时间	类型	峰宽	峰面积	峰高	峰面积
#	[min]		[min]	[mAU*s]	[mAU]	%
1	12.398	VV	0.1164	9237.38672	1234.50305	100.0000

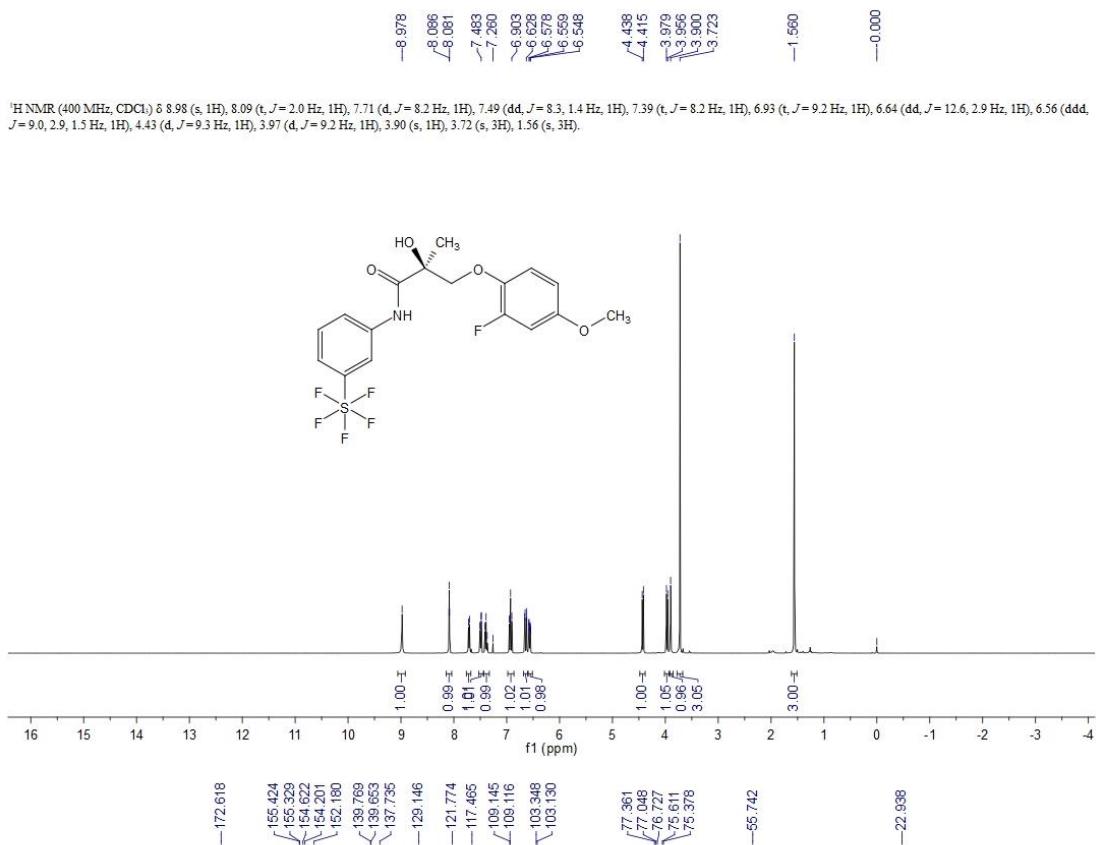
总量 : 9237.38672 1234.50305

=====
*** 报告结束 ***
=====

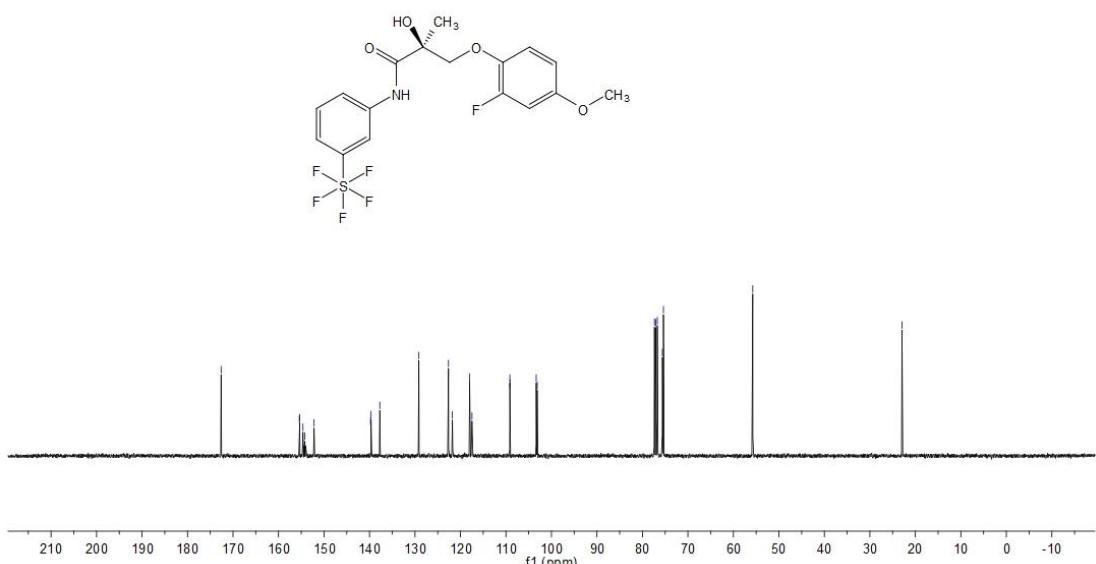
仪器 1 2019/11/14 18:06:55 spx

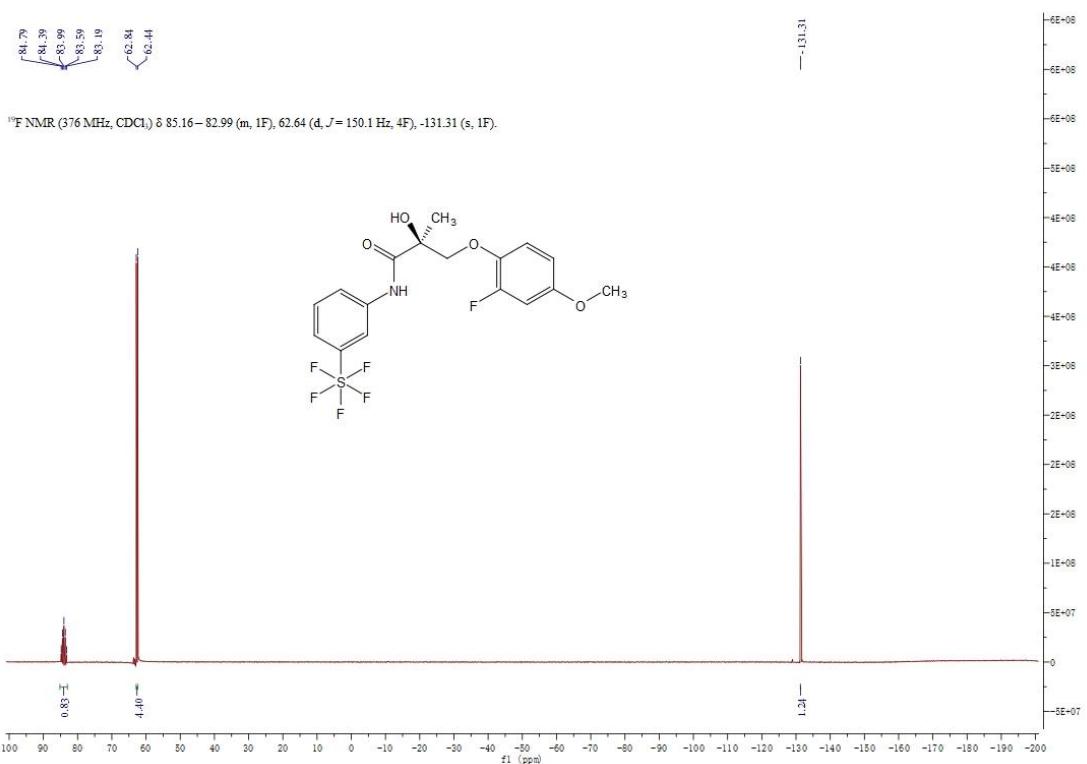
页 1/1

¹H, ¹³C, ¹⁹F NMR, HPLC and HRMS spectra of compound **12g**



¹H NMR (400 MHz, CDCl₃) δ 8.98 (s, 1H), 8.09 (t, J =2.0 Hz, 1H), 7.71 (d, J =8.2 Hz, 1H), 7.49 (dd, J =8.3, 1.4 Hz, 1H), 7.39 (t, J =8.2 Hz, 1H), 6.93 (t, J =9.2 Hz, 1H), 6.64 (dd, J =12.6, 2.9 Hz, 1H), 6.56 (ddd, J =9.0, 2.9, 1.5 Hz, 1H), 4.43 (d, J =9.3 Hz, 1H), 3.97 (d, J =9.2 Hz, 1H), 3.90 (s, 1H), 3.72 (s, 3H), 1.56 (s, 3H).





Elemental Composition Report

Page 1

Single Mass Analysis

Tolerance = 500.0 PPM / DBE: min = -1.5, max = 50.0
Element prediction: Off

Monoisotopic Mass, Even Electron Ions

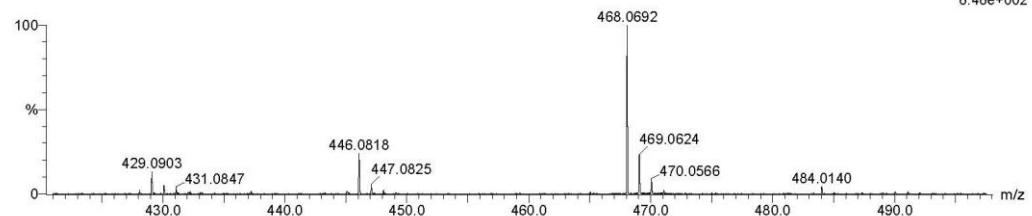
1 formula(e) evaluated with 1 results within limits (up to 50 closest results for each mass)

Elements Used:

C: 17-17 H: 17-18 N: 1-1 O: 4-4 S: 1-1 F: 6-6 Na: 0-1

JJY-A00188-092-1 50 (1.004)
1: TOF MS ES+

6.46e+002

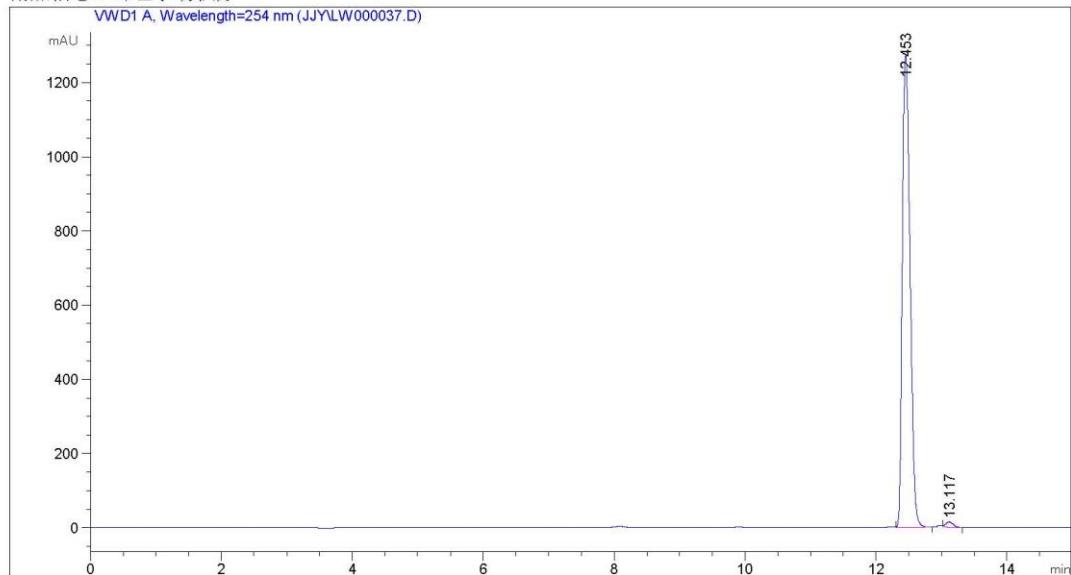


Minimum: 429.0903 Maximum: 5.0 500.0 -1.5 50.0

Mass	Calc. Mass	mDa	PPM	DBE	Formula
468.0692	468.0680	1.2	2.6	6.5	C17 H17 N O4 S F6 Na

数据文件: C:\CHEM32\1\DATA\JJY\LW000037.D
样品名称: JJY-A00188-092

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操作者 : spx
仪器 : 仪器 1 位置 : 样品瓶 1
进样日期 : 2019/11/14 16:13:34 进样量 : 没有进样
采集方法 : C:\CHEM32\1\METHODS\JJY-15MIN.M
最后修改 : 2019/11/14 16:05:53 : spx
(调用后修改)
分析方法 : C:\CHEM32\1\METHODS\JJY-15MIN.M
最后修改 : 2019/11/4 16:29:42 : CYT
附加信息: 峰已手动积分



=====
面积百分比报告
=====

排序 : 信号
乘积因子: : 1.0000
稀释因子: : 1.0000
内标使用乘积因子和稀释因子

信号 1: VWD1 A, Wavelength=254 nm

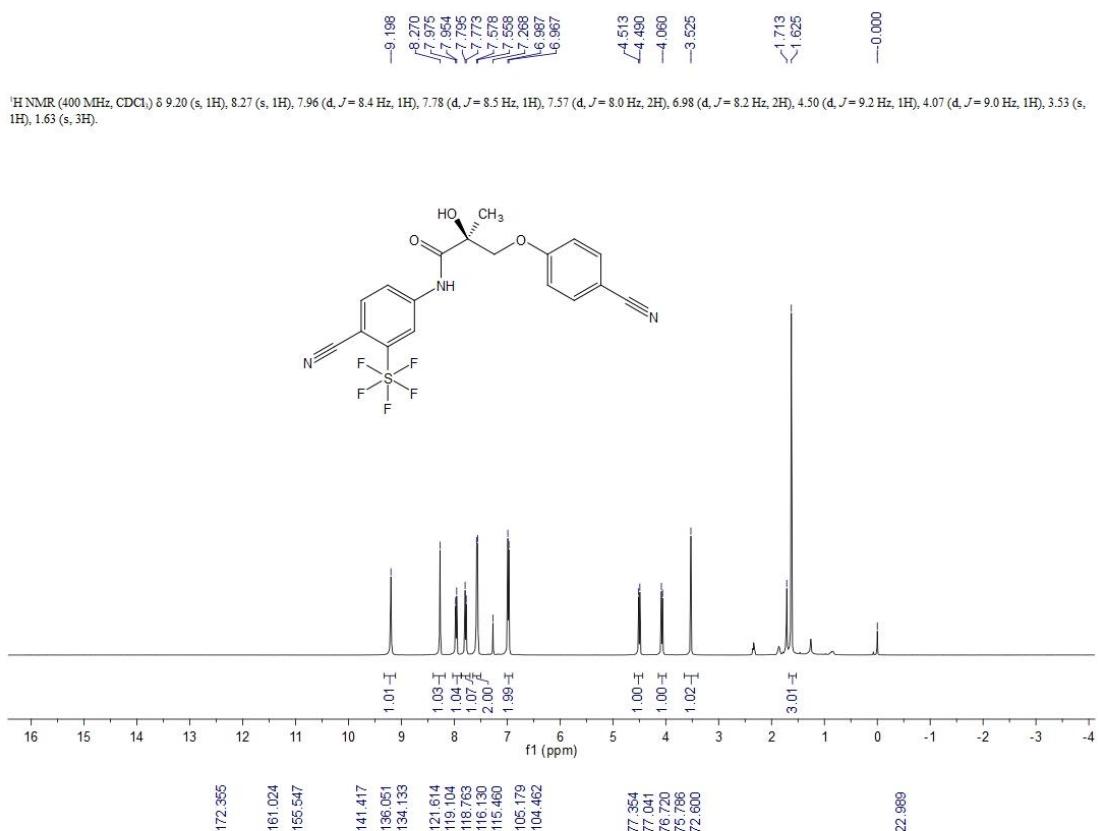
#	峰保留时间 [min]	类型	峰宽 [min]	峰面积 [mAU*s]	峰高 [mAU]	峰面积 %
1	12.453	VB	0.1320	1.04140e4	1270.64783	98.8690
2	13.117	VB	0.1248	119.13281	14.75413	1.1310

总量 : 1.05331e4 1285.40196

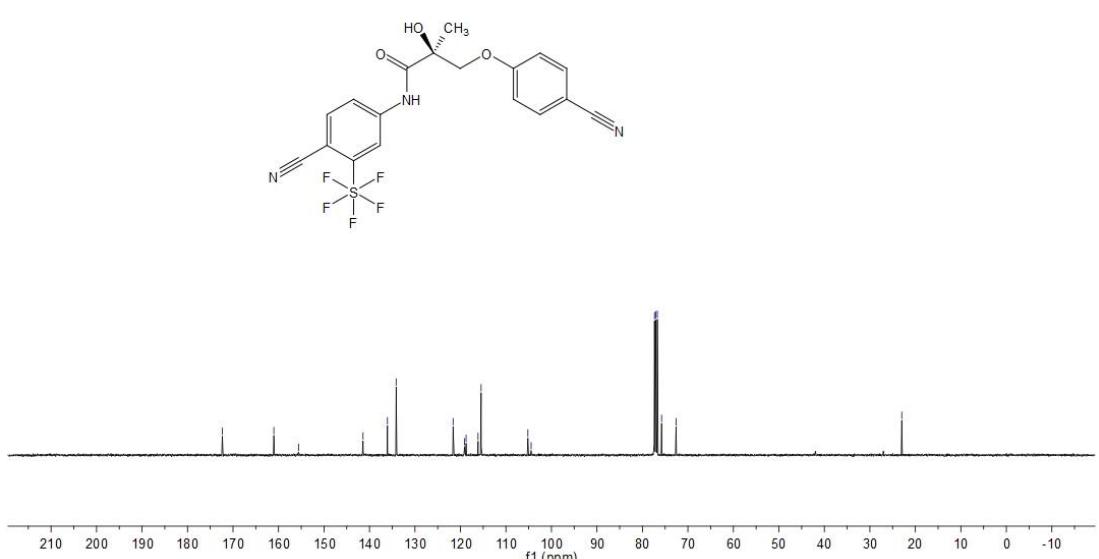
=====
仪器 1 2019/11/14 18:07:30 spx

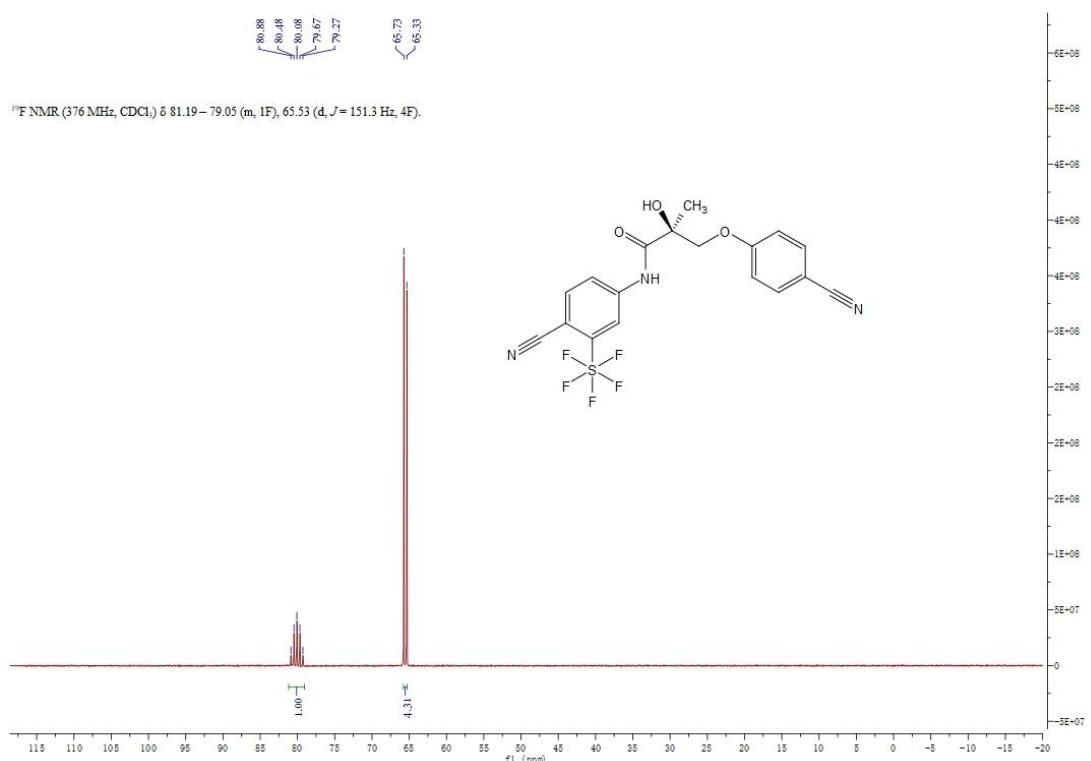
页 1/1

¹H, ¹³C, ¹⁹F NMR, HPLC and HRMS spectra of compound 13a



¹³C NMR (101 MHz, CDCl₃) δ 172.36, 161.02, 155.55, 141.42, 136.05, 134.13, 121.61, 119.10, 118.76, 116.13, 115.46, 105.18, 104.46, 75.79, 72.60, 22.99.





Elemental Composition Report

Page 1

Single Mass Analysis

Tolerance = 100.0 PPM / DBE: min = -1.5, max = 50.0
Element prediction: Off

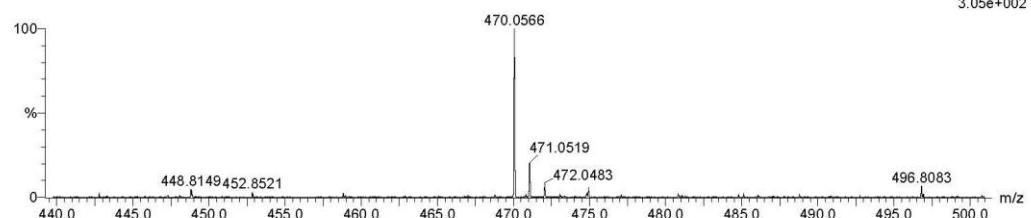
Monoisotopic Mass, Even Electron Ions

1 formula(e) evaluated with 1 results within limits (up to 50 closest results for each mass)

Elements Used:

C: 18-18 H: 14-14 N: 3-3 O: 3-3 F: 5-5 Na: 0-1 S: 1-1
JJY-A00188-044 32 (0.639)
1: TOF MS ES+

3.05e+002

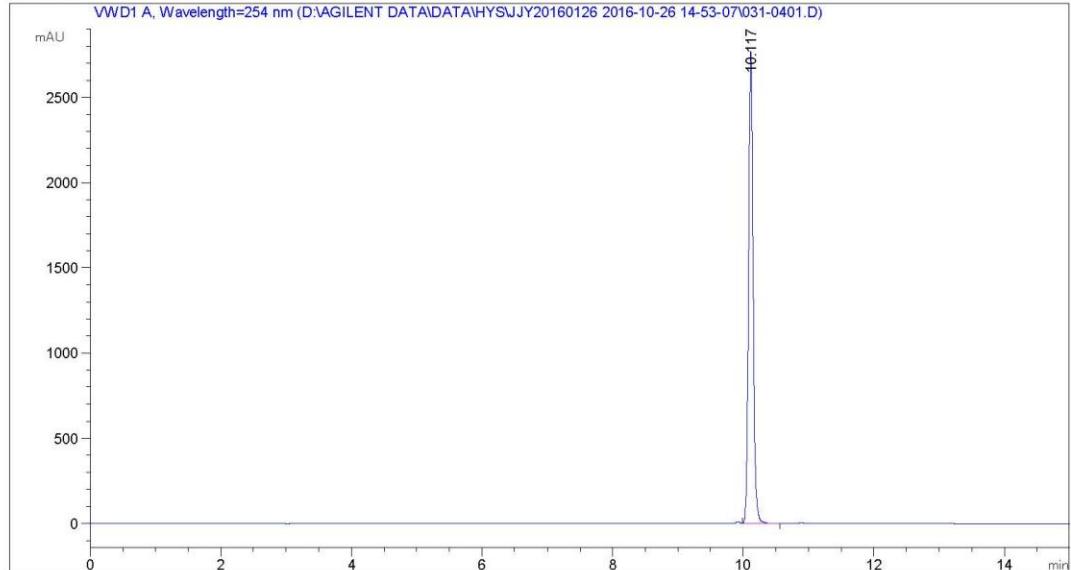


Minimum: -1.5
Maximum: 5.0 100.0 50.0

Mass	Calc. Mass	mDa	PPM	DBE	Formula
470.0566	470.0574	-0.8	-1.7	10.5	C18 H14 N3 O3 F5 Na S

Data File D:\AGILENT DATA\DATA\HYS\JJY20160126 2016-10-26 14-53-07\031-0401.D
Sample Name: JJY-A00188-044

```
=====
Acq. Operator   : HYS                               Seq. Line : 4
Acq. Instrument : Instrument 1                  Location : Vial 31
Injection Date  : 10/26/2016 3:58:13 PM           Inj : 1
                                                Inj Volume : 20.0 µl
Acq. Method    : D:\AGILENT DATA\DATA\HYS\JJY20160126 2016-10-26 14-53-07\JJY-0.1TFA-CH3CN-
                           15MIN.M
Last changed    : 10/26/2016 3:48:25 PM by HYS
                   (modified after loading)
Analysis Method : D:\AGILENT DATA\METHOD\JJY-0.1TFA-CH3CN-15MIN-1.M
Last changed    : 10/26/2016 9:54:22 AM by WS
Additional Info : Peak(s) manually integrated
```



```
=====
Area Percent Report
=====
```

```
Sorted By          :      Signal
Multiplier        :      1.0000
Dilution         :      1.0000
Use Multiplier & Dilution Factor with ISTDs
```

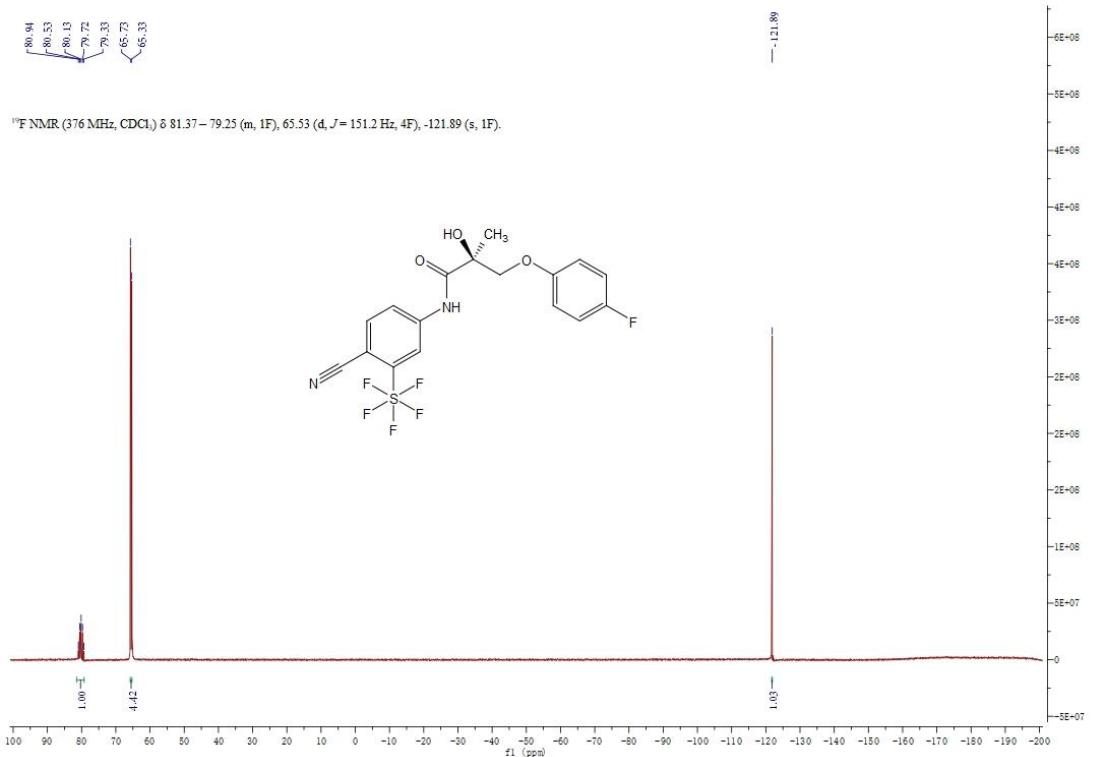
Signal 1: VWD1 A, Wavelength=254 nm

Peak #	RetTime [min]	Type	Width [min]	Area mAU	Height *s	Area [mAU]	Area %
1	10.117	VV	0.0743	1.35201e4	2775.39331	100.0000	

Totals : 1.35201e4 2775.39331

¹H, ¹³C, ¹⁹F NMR, HPLC and HRMS spectra of compound **13b**





Elemental Composition Report

Page 1

Single Mass Analysis

Tolerance = 100.0 PPM / DBE: min = -1.5, max = 50.0
Element prediction: Off

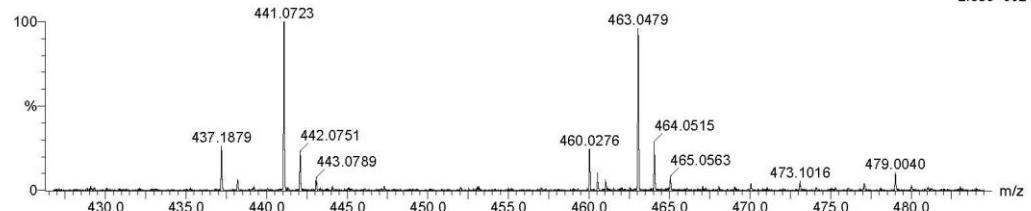
Monoisotopic Mass, Even Electron Ions

1 formula(e) evaluated with 1 results within limits (up to 50 closest results for each mass)

Elements Used:

C: 17-17 H: 15-15 N: 2-2 O: 3-3 F: 6-6 S: 1-1
JJY-A00188-105 25 (0.520)
1: TOF MS ES+

2.65e+002

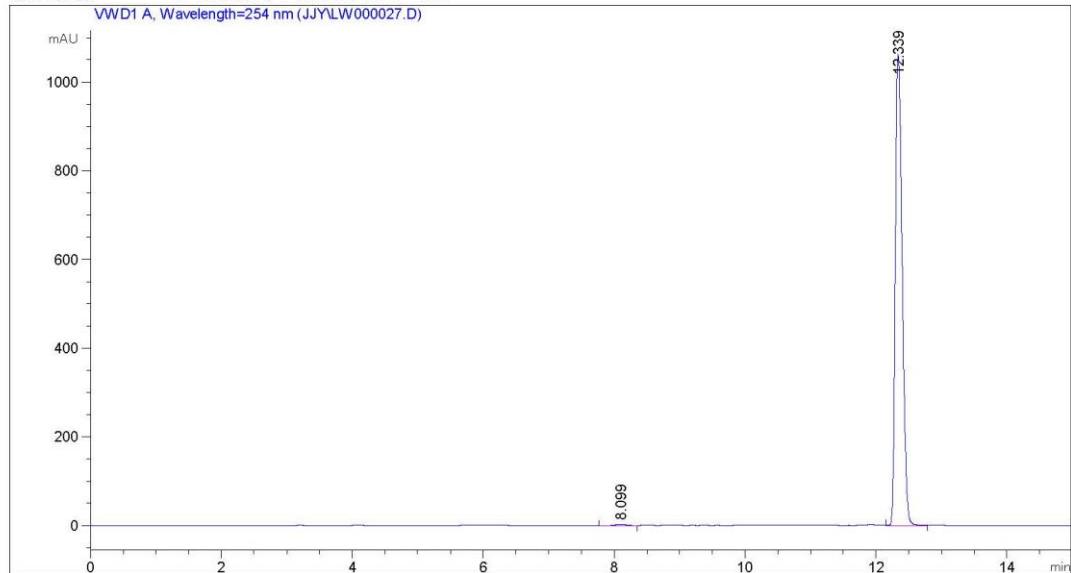


Minimum: -1.5
Maximum: 5.0 100.0 50.0

Mass	Calc. Mass	mDa	PPM	DBE	Formula
441.0723	441.0708	1.5	3.4	8.5	C17 H15 N2 O3 F6 S

数据文件: C:\CHEM32\1\DATA\JJY\LW000027.D
样品名称: JJY-A00188-105

=====
操作者 : spx
仪器 : 仪器 1 位置 : 样品瓶 1
进样日期 : 2019/11/14 12:22:12 进样量 : 没有进样
采集方法 : C:\CHEM32\1\METHODS\JJY-15MIN.M
最后修改 : 2019/11/14 12:20:42 : spx
(调用后修改)
分析方法 : C:\CHEM32\1\METHODS\JJY-15MIN.M
最后修改 : 2019/11/4 16:29:42 : CYT



=====
面积百分比报告
=====

排序 : 信号
乘积因子: : 1.0000
稀释因子: : 1.0000
内标使用乘积因子和稀释因子

信号 1: VWD1 A, Wavelength=254 nm

峰	保留时间	类型	峰宽	峰面积	峰高	峰面积
#	[min]		[min]	[mAU*s]	[mAU]	%
1	8.099	BB	0.1456	24.87596	2.55602	0.3206
2	12.339	VV	0.1140	7735.18408	1063.18188	99.6794

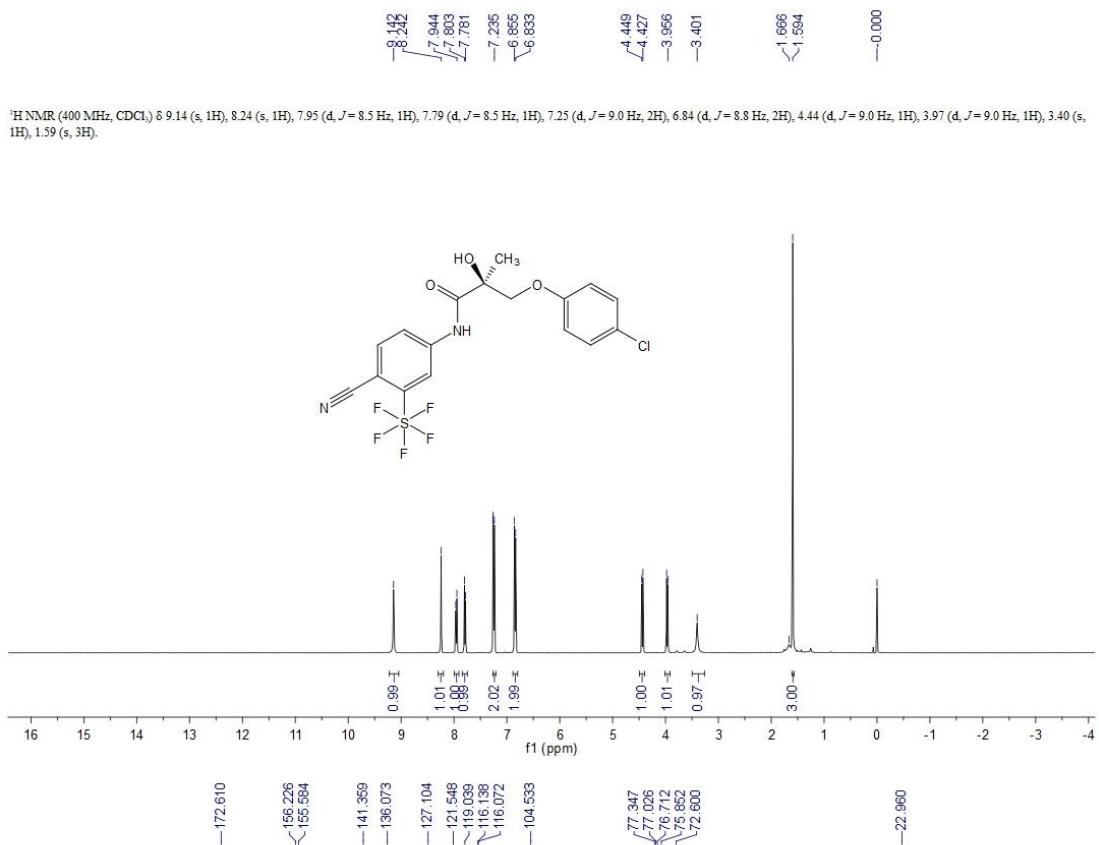
总量 : 7760.06004 1065.73790

=====
*** 报告结束 ***

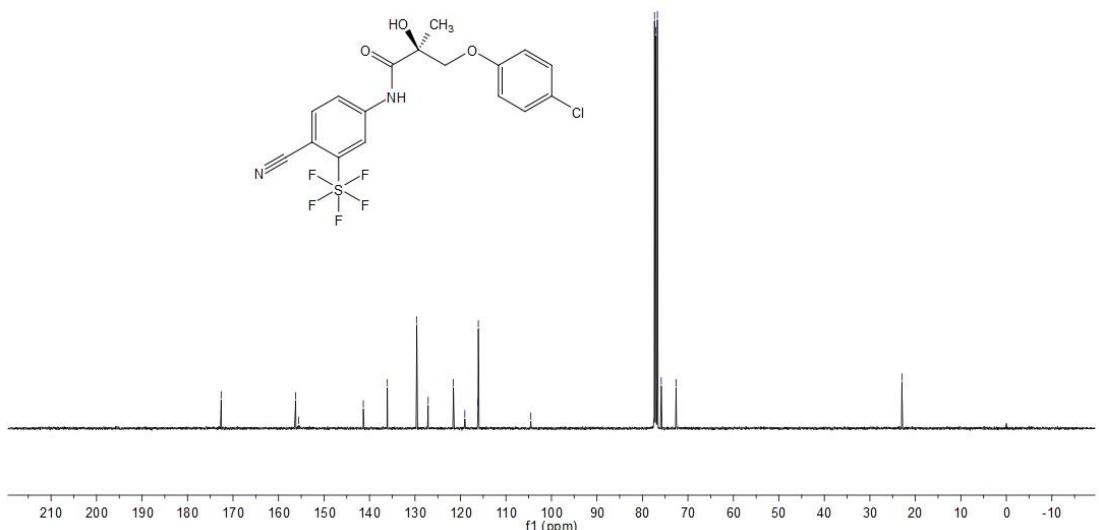
仪器 1 2019/11/14 18:11:37 spx

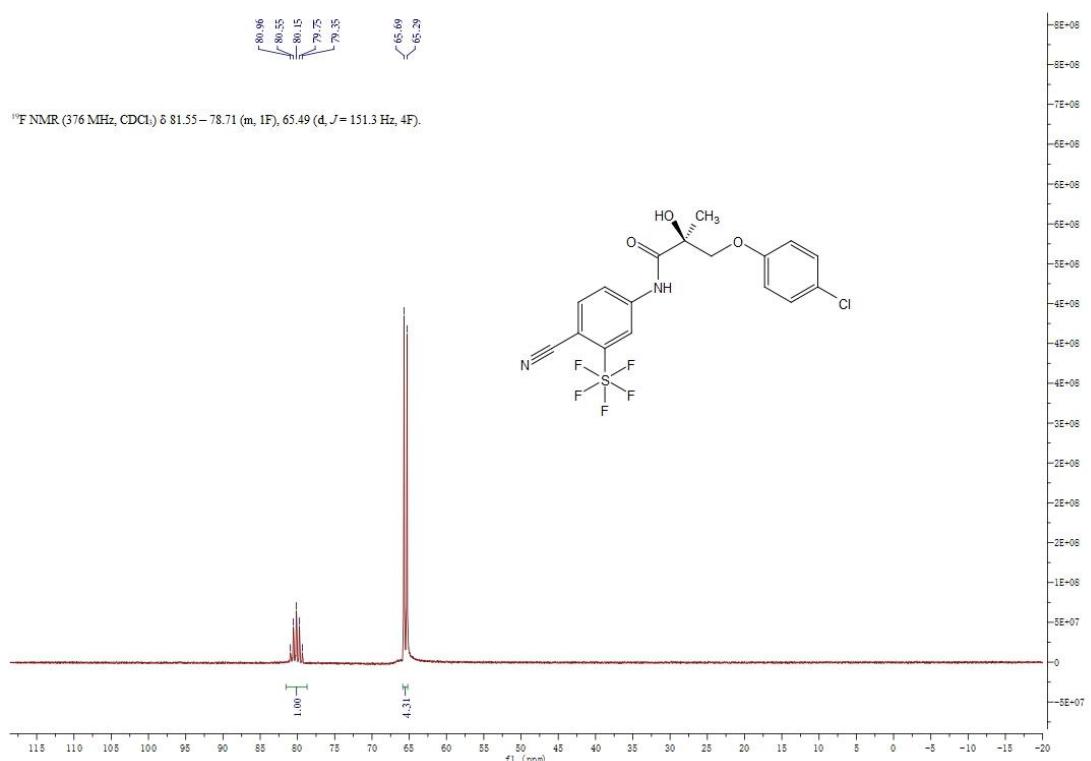
页 1/1

¹H, ¹³C, ¹⁹F NMR, HPLC and HRMS spectra of compound **13c**



¹³C NMR (101 MHz, CDCl₃) δ 172.61, 156.23, 155.58, 141.36, 136.07, 129.60, 127.10, 121.55, 119.04, 116.14, 116.07, 104.53, 75.85, 72.60, 22.96.





Elemental Composition Report

Page 1

Single Mass Analysis

Tolerance = 10.0 PPM / DBE: min = -1.5, max = 50.0
Element prediction: Off

Monoisotopic Mass, Even Electron Ions

2 formula(e) evaluated with 1 results within limits (up to 50 closest results for each mass)

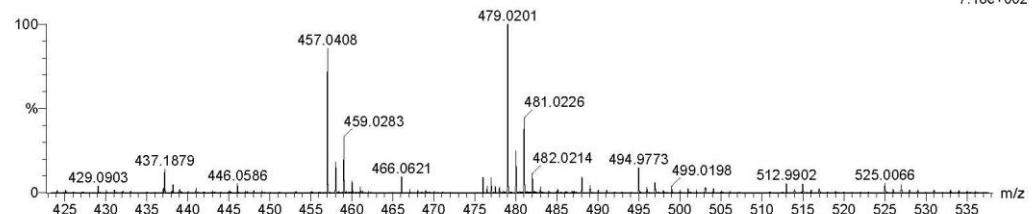
Elements Used:

C: 17-17 H: 15-15 N: 2-2 O: 3-3 F: 5-5 Na: 0-1 S: 1-1 Cl: 1-1

JY-A00188-106 26 (0.537)

1: TOF MS ES+

7.16e+002

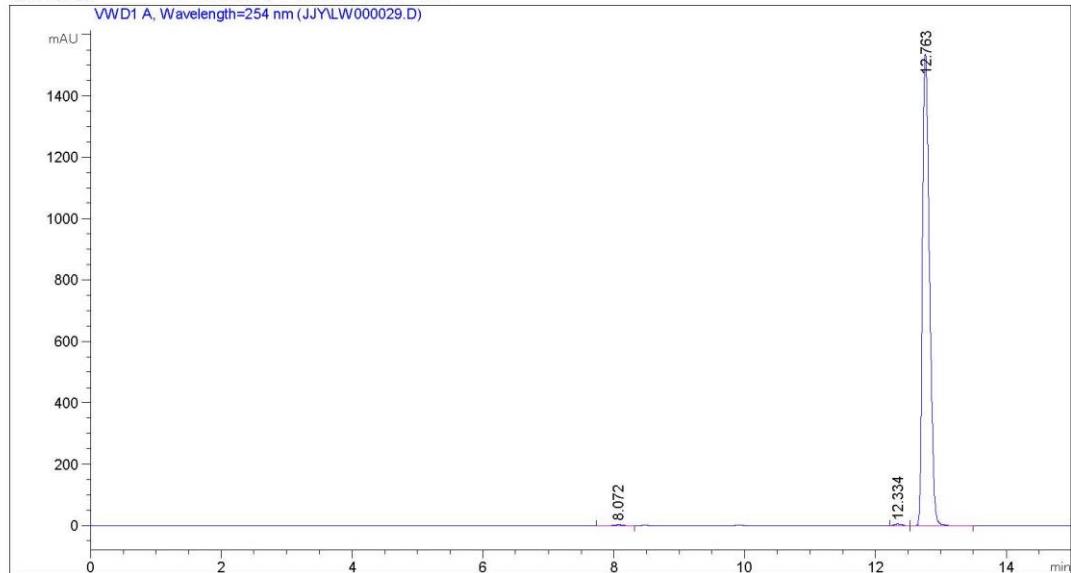


Minimum: 429.0903 Maximum: 5.0 10.0 50.0

Mass	Calc. Mass	mDa	PPM	DBE	Formula
457.0408	457.0412	-0.4	-0.9	8.5	C17 H15 N2 O3 F5 S Cl

数据文件: C:\CHEM32\1\DATA\JJY\LW000029.D
样品名称: JJY-A00188-106

=====
操作者 : spx
仪器 : 仪器 1 位置 : 样品瓶 1
进样日期 : 2019/11/14 13:05:12 进样量 : 没有进样
采集方法 : C:\CHEM32\1\METHODS\JJY-15MIN.M
最后修改 : 2019/11/14 13:03:42 : spx
(调用后修改)
分析方法 : C:\CHEM32\1\METHODS\JJY-15MIN.M
最后修改 : 2019/11/4 16:29:42 : CYT



=====
面积百分比报告
=====

排序 : 信号
乘积因子: : 1.0000
稀释因子: : 1.0000
内标使用乘积因子和稀释因子

信号 1: VWD1 A, Wavelength=254 nm

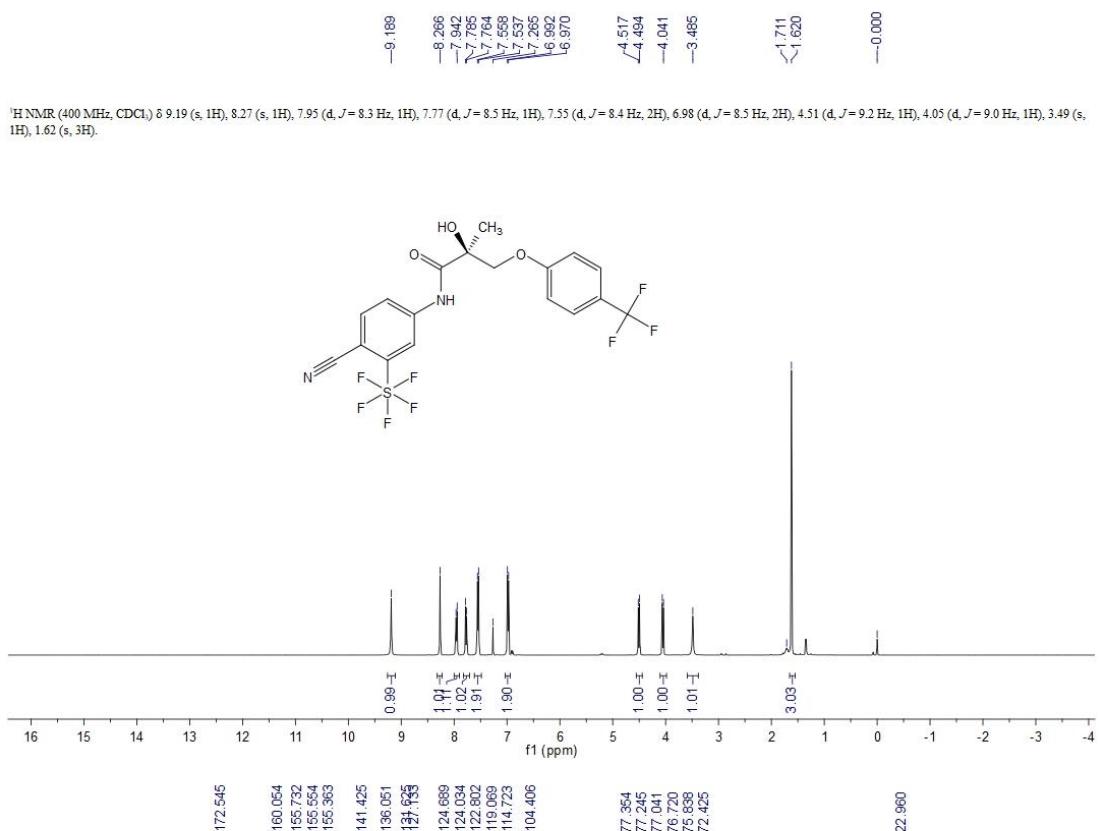
峰	保留时间	类型	峰宽	峰面积	峰高	峰面积
#	[min]		[min]	[mAU*s]	[mAU]	%
1	8.072	BB	0.1435	23.23422	2.46337	0.2022
2	12.334	VV	0.1132	37.70036	5.23289	0.3281
3	12.763	VB	0.1159	1.14291e4	1536.36047	99.4697

总量 : 1.14900e4 1544.05674

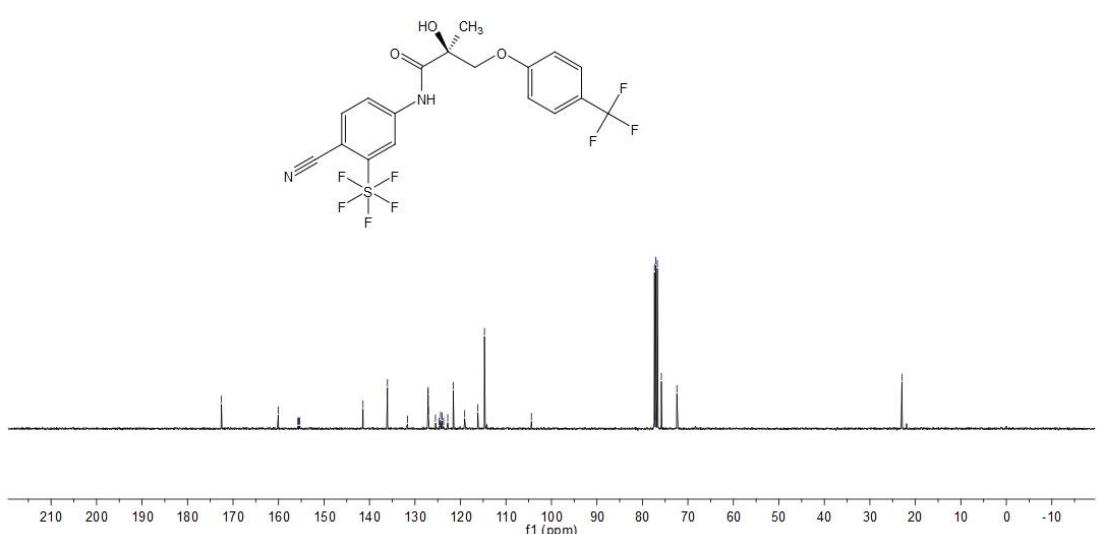
=====
仪器 1 2019/11/14 18:11:02 spx

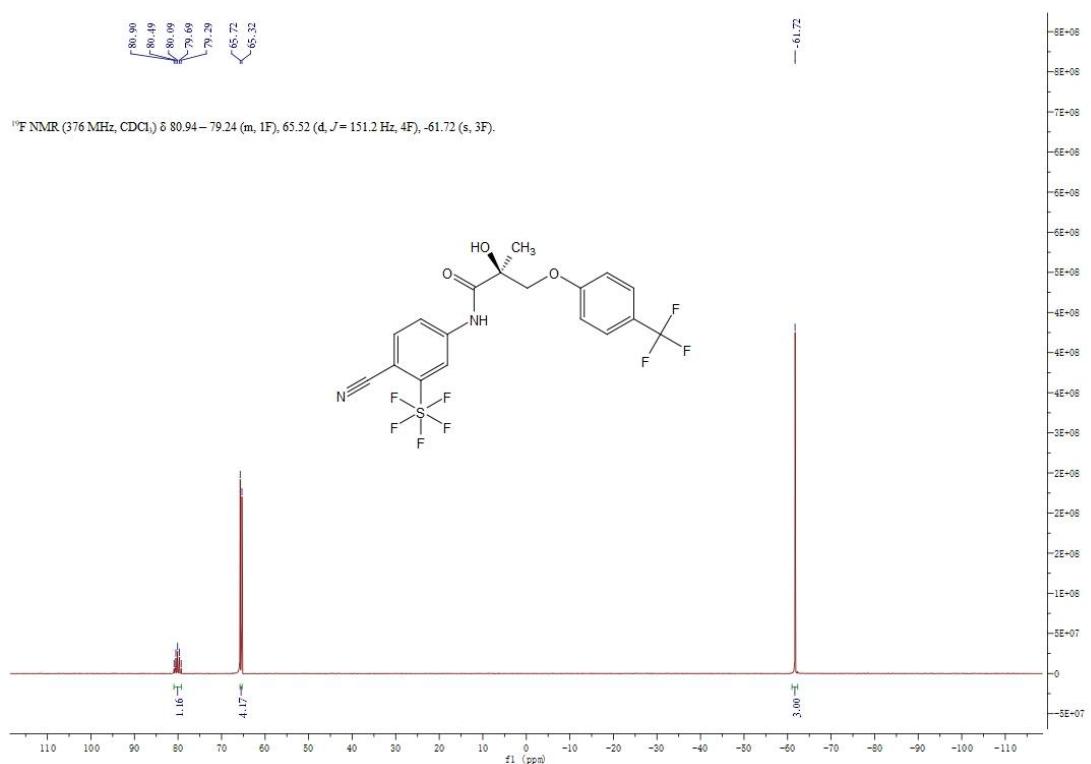
页 1/1

¹H, ¹³C, ¹⁹F NMR, HPLC and HRMS spectra of compound **13d**



¹³C NMR (101 MHz, CDCl₃) δ 172.54, 160.05, 155.73, 155.55, 155.36, 141.42, 136.05, 131.62, 127.13, 127.10, 127.06, 125.50, 124.69, 124.36, 124.03, 123.71, 122.80, 121.58, 119.07, 116.17, 114.72, 104.41, 75.84, 72.43, 22.96.





Elemental Composition Report

Page 1

Single Mass Analysis

Tolerance = 100.0 PPM / DBE: min = -1.5, max = 50.0
Element prediction: Off

Monoisotopic Mass, Even Electron Ions

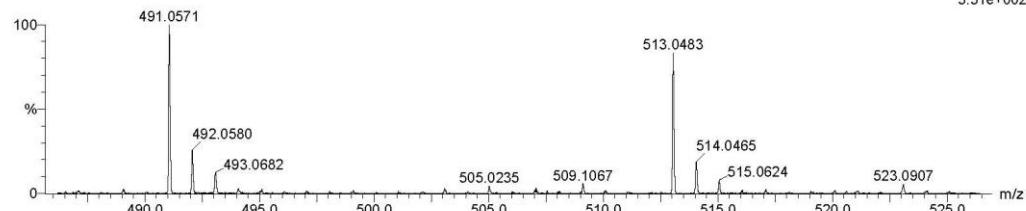
1 formula(e) evaluated with 1 results within limits (up to 50 closest results for each mass)

Elements Used:

C: 18-18 H: 14-14 N: 2-2 O: 3-3 F: 8-8 S: 1-1 Na: 0-1

JJY-A00188-116 24 (0.484)
1: TOF MS ES+

5.51e+002

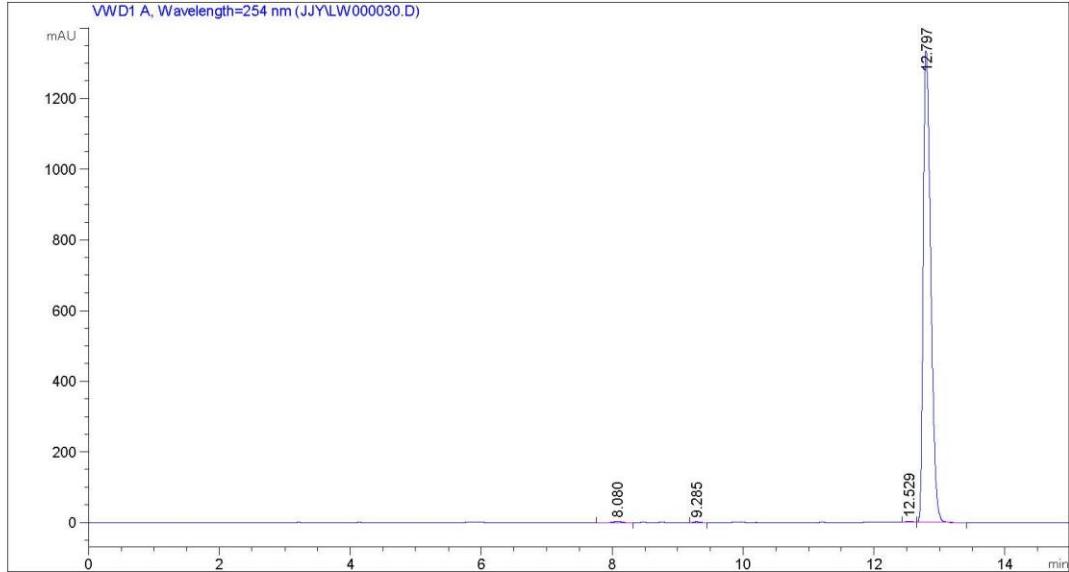


Minimum: 5.0 Maximum: 100.0 -1.5 50.0

Mass	Calc. Mass	mDa	PPM	DBE	Formula
513.0483	513.0495	-1.2	-2.3	8.5	C18 H14 N2 O3 F8 S Na

数据文件: C:\CHEM32\1\DATA\JJY\LW000030.D
样品名称: JJY-A00188-116

```
=====
操作者      : spx
仪器        : 仪器 1
进样日期    : 2019/11/14 13:52:02
                位置 : 样品瓶 1
进样量      : 没有进样
采集方法    : C:\CHEM32\1\METHODS\JJY-15MIN.M
最后修改    : 2019/11/14 13:50:21 : spx
                (调用后修改)
分析方法    : C:\CHEM32\1\METHODS\JJY-15MIN.M
最后修改    : 2019/11/4 16:29:42 : CYT
```



```
=====
面积百分比报告
=====
```

```
排序      : 信号
乘积因子: : 1.0000
稀释因子: : 1.0000
内标使用乘积因子和稀释因子
```

信号 1: VWD1 A, Wavelength=254 nm

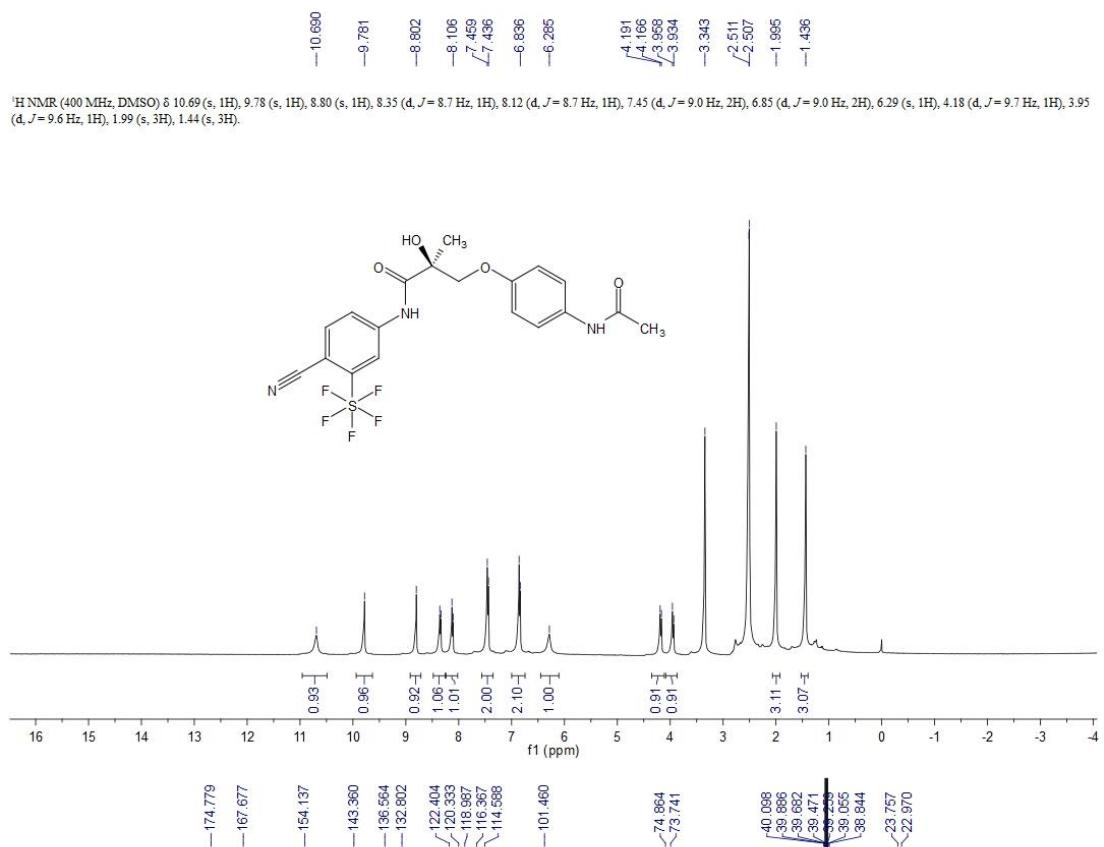
峰	保留时间	类型	峰宽	峰面积	峰高	峰面积
#	[min]		[min]	[mAU*s]	[mAU]	%
1	8.080	BB	0.1369	23.28030	2.58923	0.2174
2	9.285	BB	0.1003	10.83080	1.73947	0.1011
3	12.529	BV	0.1121	18.02388	2.48911	0.1683
4	12.797	VB	0.1266	1.06574e4	1335.09741	99.5132

总量 : 1.07096e4 1341.91522

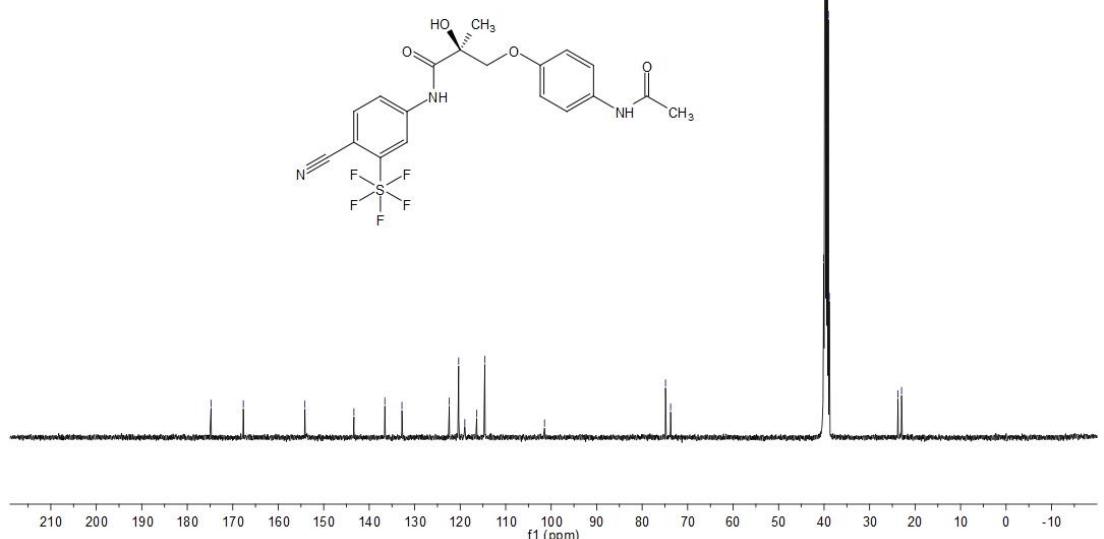
仪器 1 2019/11/14 18:10:35 spx

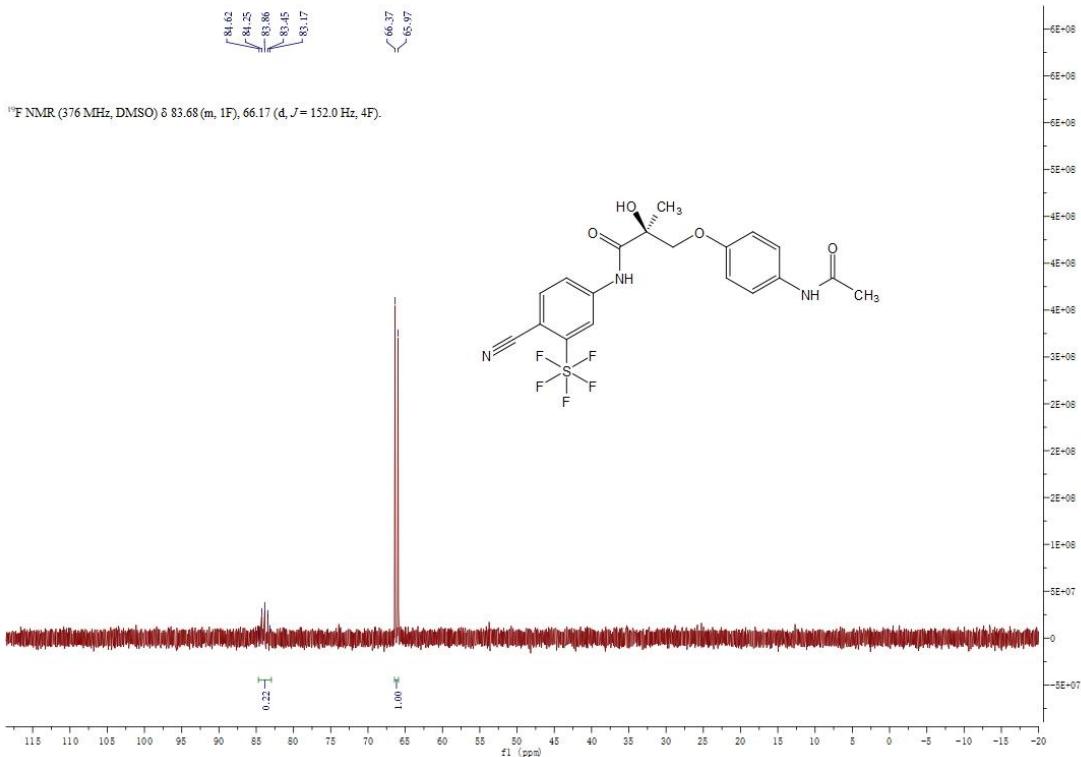
页 1/2

¹H, ¹³C, ¹⁹F NMR, HPLC and HRMS spectra of compound **13e**



¹³C NMR (101 MHz, DMSO) δ 174.78, 167.68, 154.14, 143.36, 136.56, 132.80, 122.40, 120.33, 118.99, 116.37, 114.59, 101.46, 74.86, 73.74, 23.76, 22.97.





Elemental Composition Report

Page 1

Single Mass Analysis

Tolerance = 100.0 PPM / DBE: min = -1.5, max = 50.0
Element prediction: Off

Monoisotopic Mass, Even Electron Ions

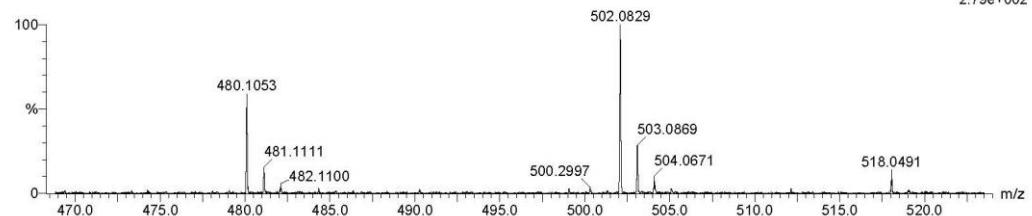
1 formula(e) evaluated with 1 results within limits (up to 50 closest results for each mass)

Elements Used:

C: 19-19 H: 18-18 N: 3-3 O: 4-4 F: 5-5 Na: 0-1 S: 1-1
JJY-A00188-118 83 (1.644)

1: TOF MS ES+

2.79e+002

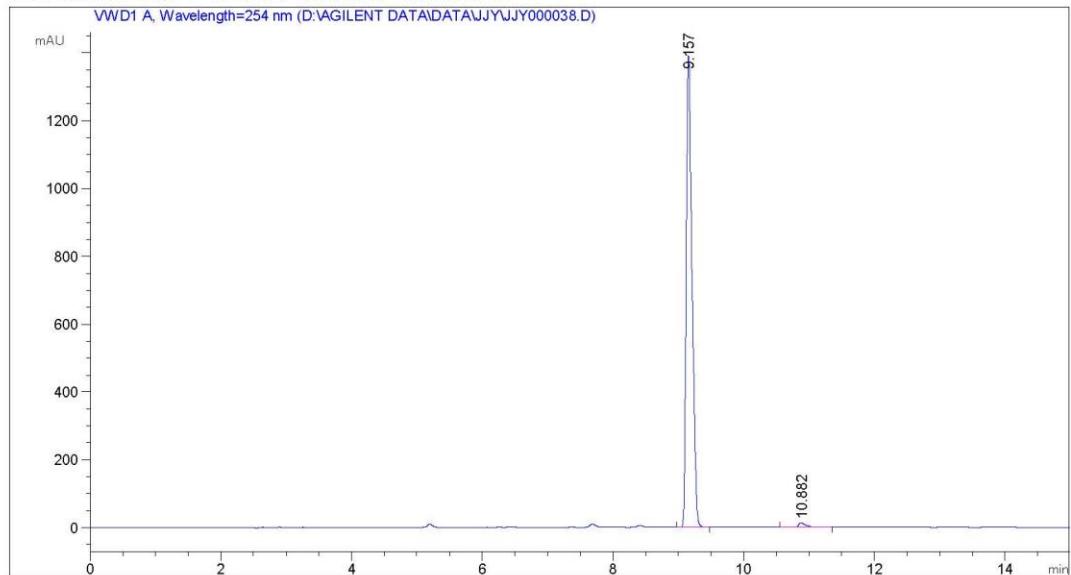


Minimum: -1.5
Maximum: 5.0 100.0 50.0

Mass	Calc. Mass	mDa	PPM	DBE	Formula
502.0829	502.0836	-0.7	-1.4	9.5	C19 H18 N3 O4 F5 Na S

Data File D:\AGILENT DATA\DATA\JJY\JJY000038.D
Sample Name: JJY-A00188-118

```
=====
Acq. Operator   : JJY
Acq. Instrument : Instrument 1          Location : Vial 71
Injection Date  : 4/29/2016 1:02:49 PM      Inj Volume : 15.0 µl
Acq. Method     : D:\AGILENT DATA\METHOD\JJY-0.1TFA-CH3CN-15MIN.M
Last changed    : 4/29/2016 1:00:53 PM by JJY
                  (modified after loading)
Analysis Method : D:\AGILENT DATA\METHOD\XYY-0.1TFA-CH3CN-30MIN-254NM-.M
Last changed    : 4/22/2016 6:27:47 PM by XYY
Additional Info : Peak(s) manually integrated
```



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Area Percent Report
=====
```

```
Sorted By       : Signal
Multiplier      : 1.0000
Dilution       : 1.0000
Use Multiplier & Dilution Factor with ISTDs
```

Signal 1: VWD1 A, Wavelength=254 nm

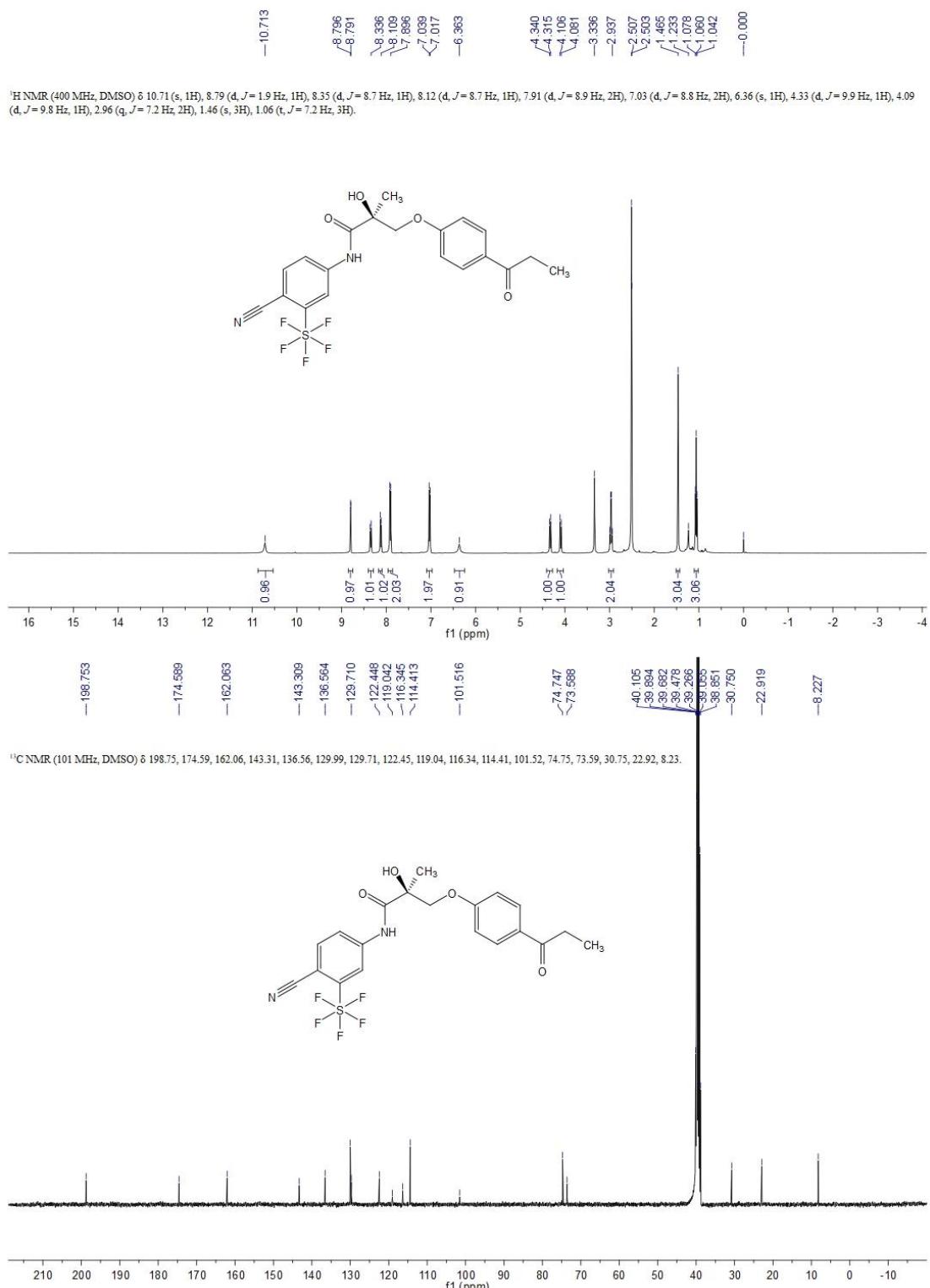
Peak #	RetTime [min]	Type	Width [min]	Area mAU	Height *s	Area [mAU]	Area %
1	9.157	BV	0.0917	8510.41406	1391.34851	98.8238	
2	10.882	BV	0.1099	101.29104	13.41785	1.1762	

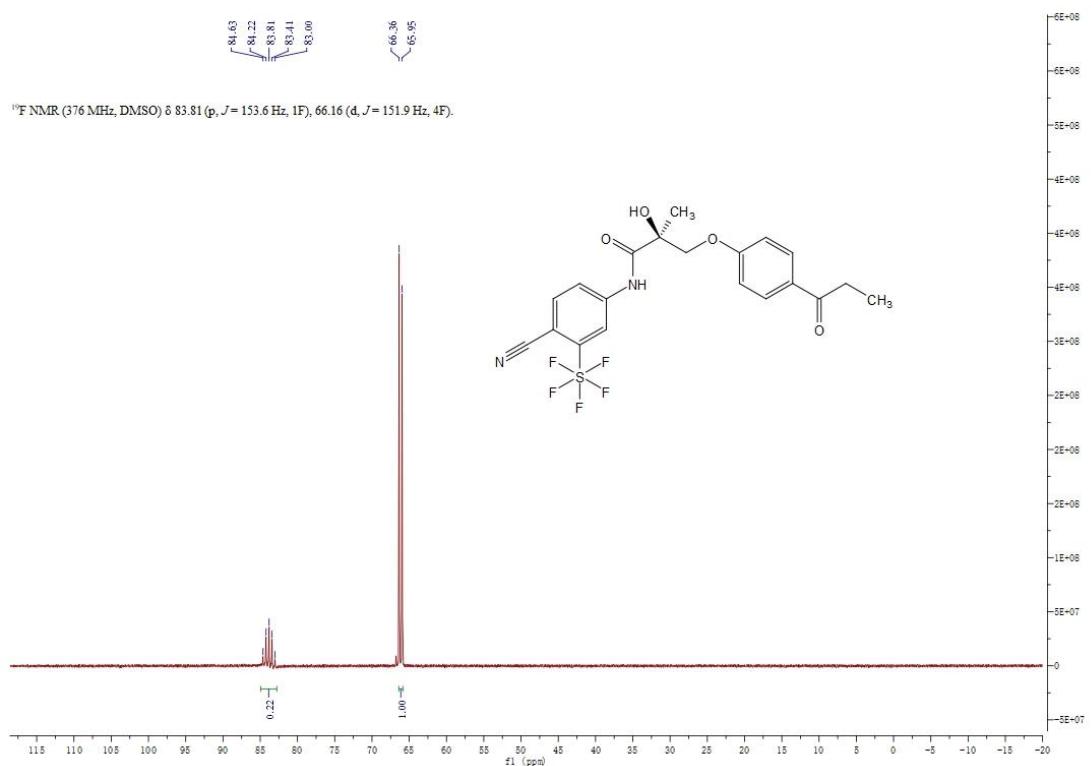
Totals : 8611.70510 1404.76636

Instrument 1 4/29/2016 1:38:25 PM JJY

Page 1 of 1

¹H, ¹³C, ¹⁹F NMR, HPLC and HRMS spectra of compound **13f**





Elemental Composition Report

Page 1

Single Mass Analysis

Tolerance = 100.0 PPM / DBE: min = -1.5, max = 50.0
Element prediction: Off

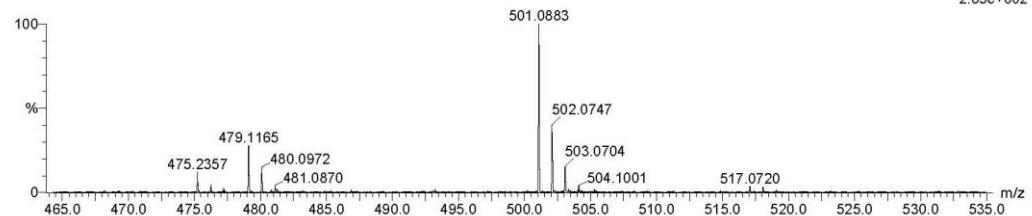
Monoisotopic Mass, Even Electron Ions

1 formula(e) evaluated with 1 results within limits (up to 50 closest results for each mass)

Elements Used:

C: 20-20 H: 19-19 N: 2-2 O: 4-4 F: 5-5 Na: 0-1 S: 1-1
JJY-A00188-110 70 (1.384)
1: TOF MS ES+

2.83e+002

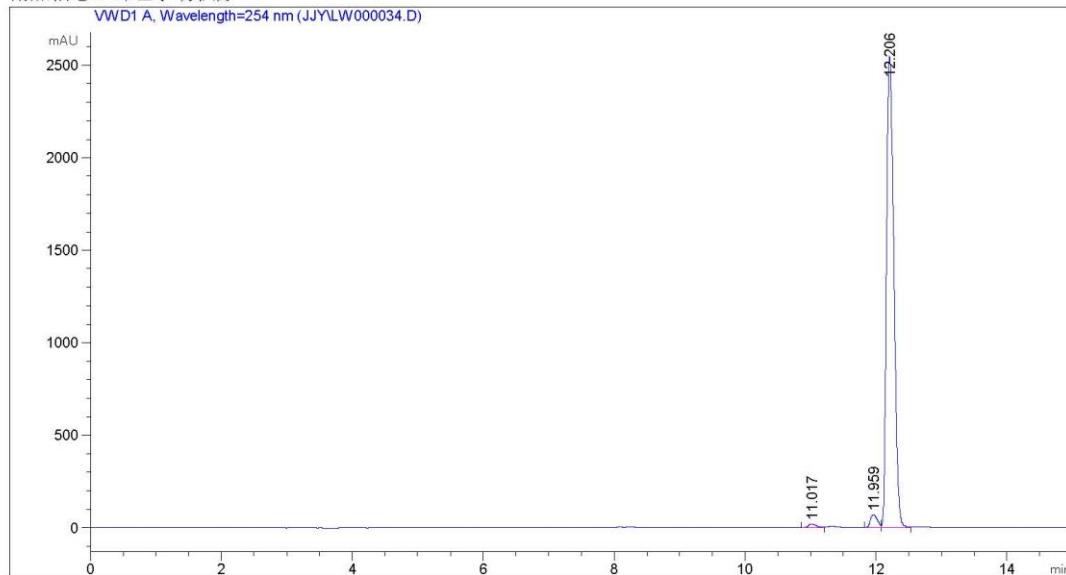


Minimum: -1.5
Maximum: 5.0 100.0 50.0

Mass	Calc. Mass	mDa	PPM	DBE	Formula
501.0883	501.0883	0.0	0.0	9.5	C ₂₀ H ₁₉ N ₂ O ₄ F ₅ Na S

数据文件: C:\CHEM32\1\DATA\JJY\LW000034.D
样品名称: JJY-A00188-110

```
=====
操作者      : spx
仪器      : 仪器 1
进样日期    : 2019/11/14 14:56:15
                位置 : 样品瓶 1
进样量     : 没有进样
采集方法    : C:\CHEM32\1\METHODS\JJY-15MIN.M
最后修改    : 2019/11/14 14:55:10 : spx
                (调用后修改)
分析方法    : C:\CHEM32\1\METHODS\JJY-15MIN.M
最后修改    : 2019/11/4 16:29:42 : CYT
附加信息: 峰已手动积分
```



```
=====
面积百分比报告
=====
```

```
排序      : 信号
乘积因子:      : 1.0000
稀释因子:      : 1.0000
内标使用乘积因子和稀释因子
```

信号 1: VWD1 A, Wavelength=254 nm

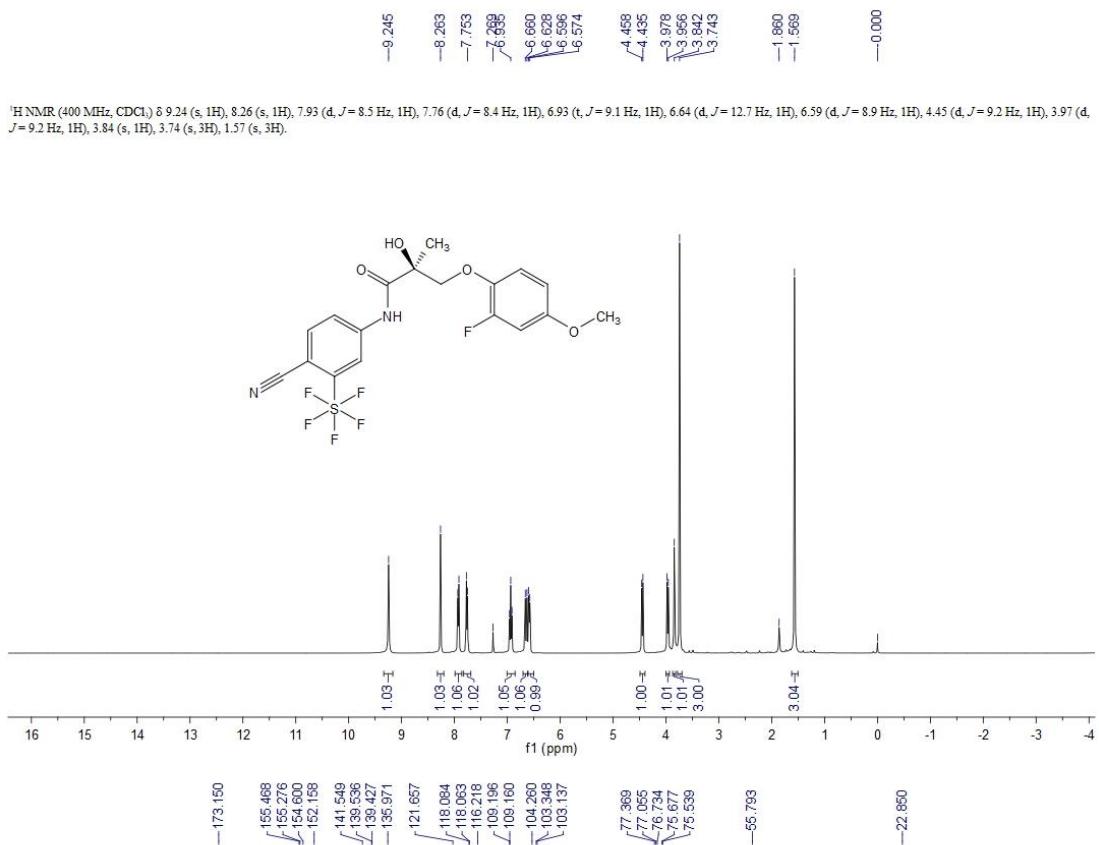
峰	保留时间	类型	峰宽	峰面积	峰高	峰面积
#	[min]		[min]	[mAU*s]	[mAU]	%
1	11.017	BV	0.1276	155.63445	19.28533	0.7636
2	11.959	BV	0.1160	506.72784	70.39314	2.4863
3	12.206	VV	0.1238	1.97186e4	2548.52173	96.7501

总量 : 2.03809e4 2638.20020

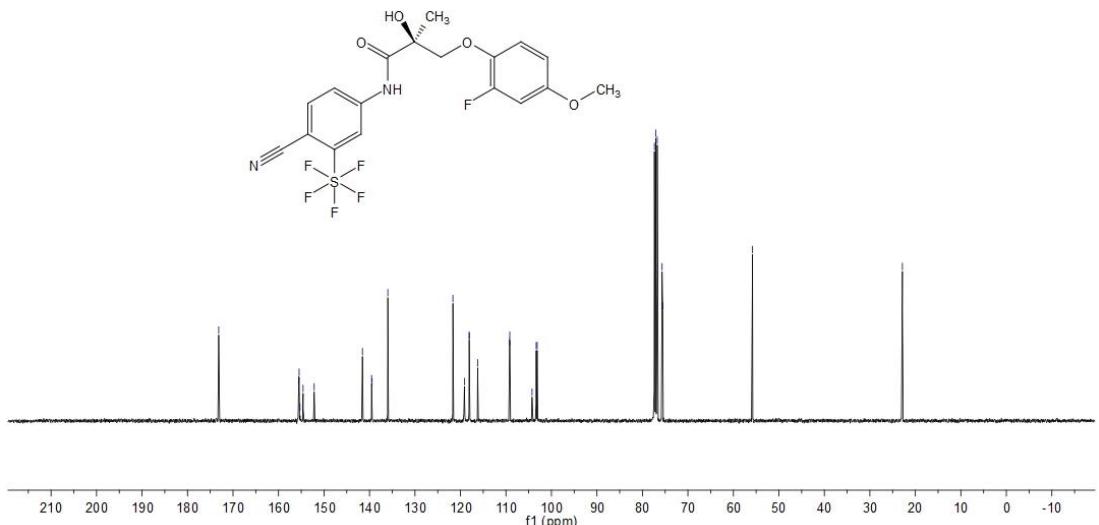
仪器 1 2019/11/14 18:08:51 spx

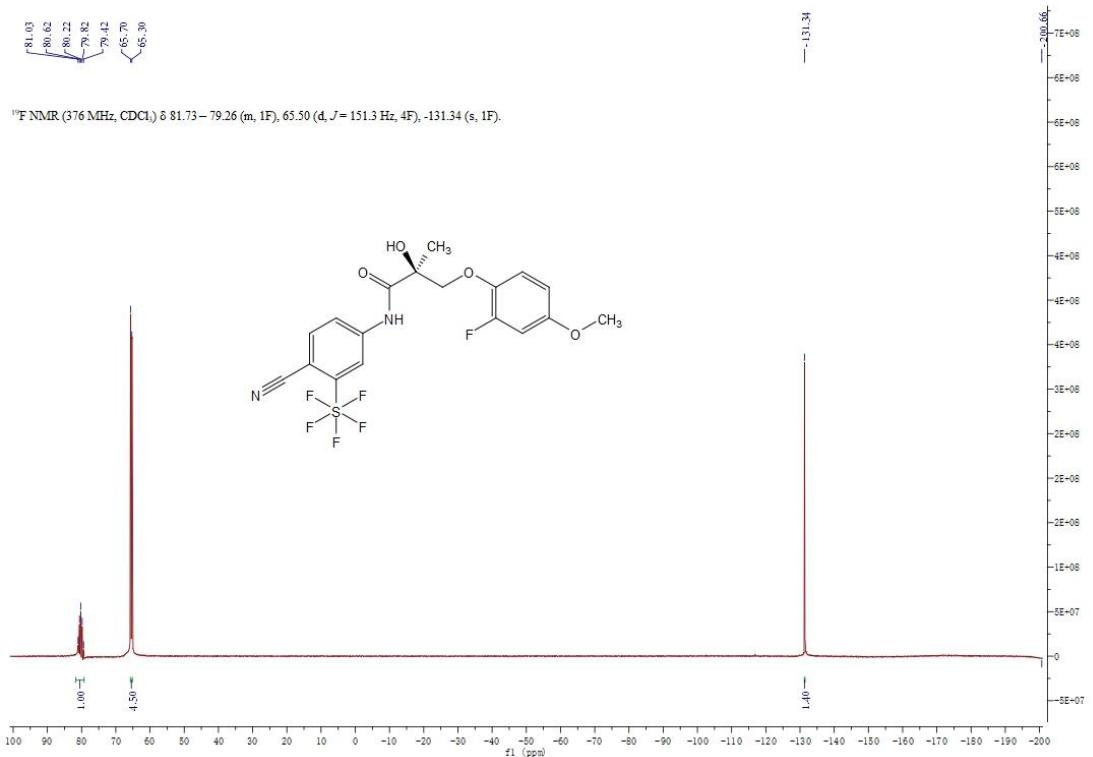
页 1/2

¹H, ¹³C, ¹⁹F NMR, HPLC and HRMS spectra of compound **13g**



¹H NMR (400 MHz, CDCl₃) δ 9.24 (s, 1H), 8.26 (s, 1H), 7.93 (d, J = 8.5 Hz, 1H), 7.76 (d, J = 8.4 Hz, 1H), 6.93 (t, J = 9.1 Hz, 1H), 6.64 (d, J = 12.7 Hz, 1H), 6.59 (d, J = 8.9 Hz, 1H), 4.45 (d, J = 9.2 Hz, 1H), 3.97 (d, J = 9.2 Hz, 1H), 3.84 (s, 1H), 3.74 (s, 3H), 1.57 (s, 3H).





Elemental Composition Report

Page 1

Single Mass Analysis

Tolerance = 100.0 PPM / DBE: min = -1.5, max = 50.0
Element prediction: Off

Monoisotopic Mass, Even Electron Ions

1 formula(e) evaluated with 1 results within limits (up to 50 closest results for each mass)

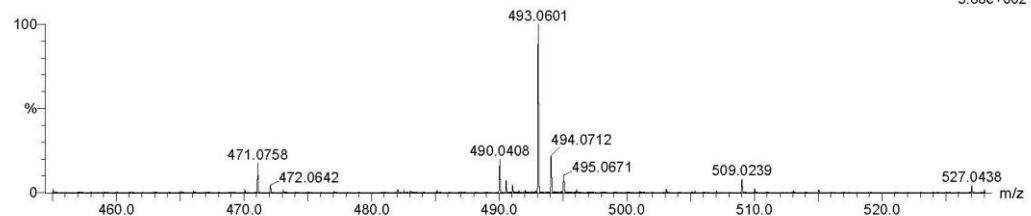
Elements Used:

C: 18-18 H: 16-17 N: 2-2 O: 4-4 F: 6-6 Na: 0-1 S: 1-1

JY-A00188-108 32 (0.639)

1: TOF MS ES+

5.68e+002

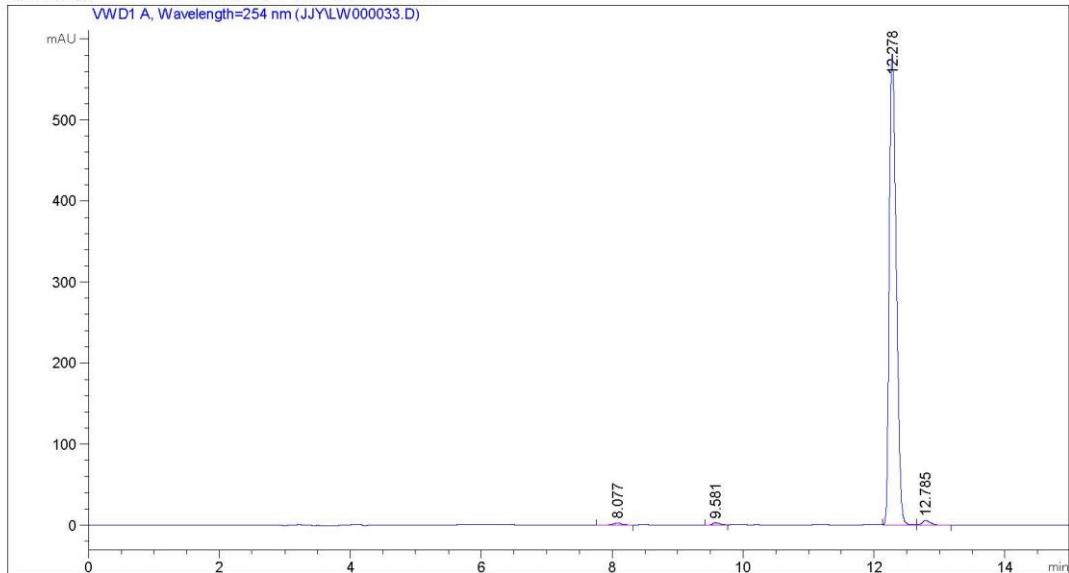


Minimum: -1.5
Maximum: 5.0 100.0 50.0

Mass	Calc. Mass	mDa	PPM	DBE	Formula
493.0601	493.0633	-3.2	-6.5	8.5	C18 H16 N2 O4 F6 Na S

数据文件: C:\CHEM32\1\DATA\JJY\LW000033.D
样品名称: JJY-A00188-108

=====
操作者 : spx
仪器 : 仪器 1 位置 : 样品瓶 1
进样日期 : 2019/11/14 14:35:12 进样量 : 没有进样
采集方法 : C:\CHEM32\1\METHODS\JJY-15MIN.M
最后修改 : 2019/11/14 14:33:37 : spx
(调用后修改)
分析方法 : C:\CHEM32\1\METHODS\JJY-15MIN.M
最后修改 : 2019/11/4 16:29:42 : CYT



=====
面积百分比报告
=====

排序 : 信号
乘积因子: : 1.0000
稀释因子: : 1.0000
内标使用乘积因子和稀释因子

信号 1: VWD1 A, Wavelength=254 nm

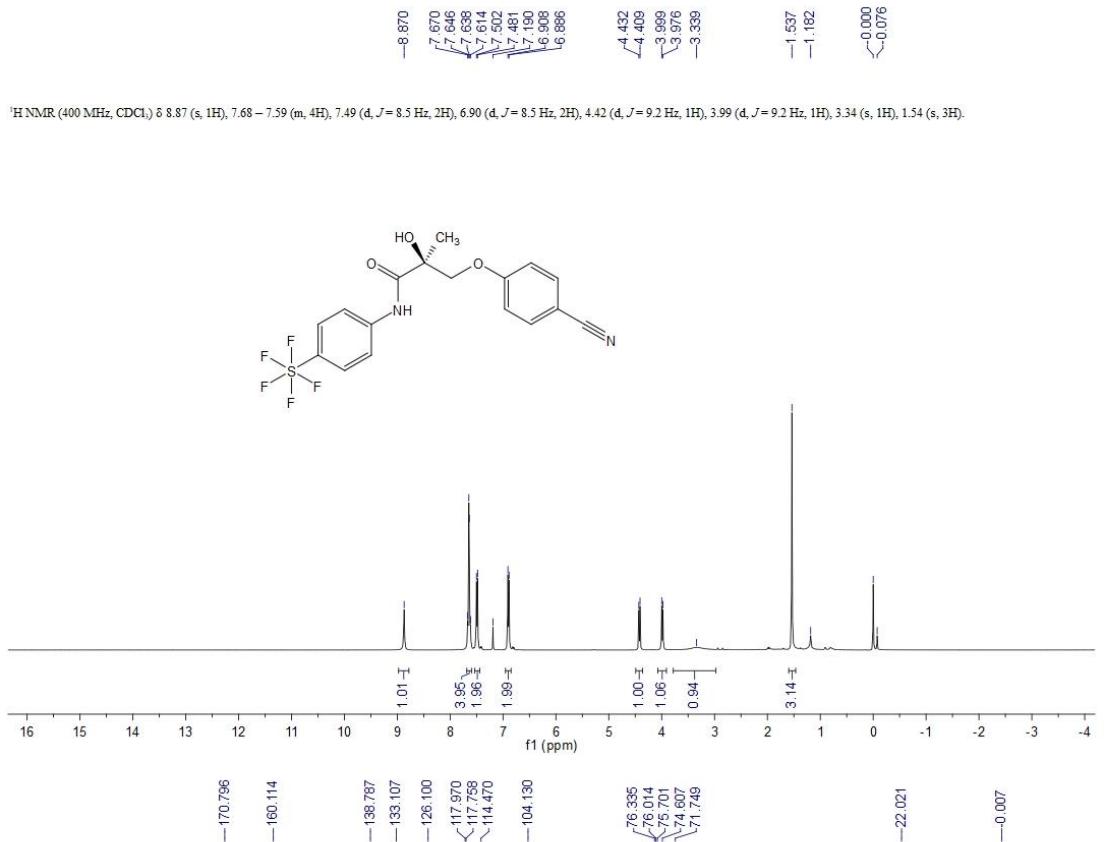
峰	保留时间	类型	峰宽	峰面积	峰高	峰面积
#	[min]		[min]	[mAU*s]	[mAU]	%
1	8.077	BB	0.1347	22.07032	2.50782	0.4985
2	9.581	BV	0.1136	21.32775	2.94525	0.4818
3	12.278	VV	0.1175	4330.63037	581.43524	97.8211
4	12.785	VB	0.1362	53.06511	6.02596	1.1986

总量 : 4427.09355 592.91427

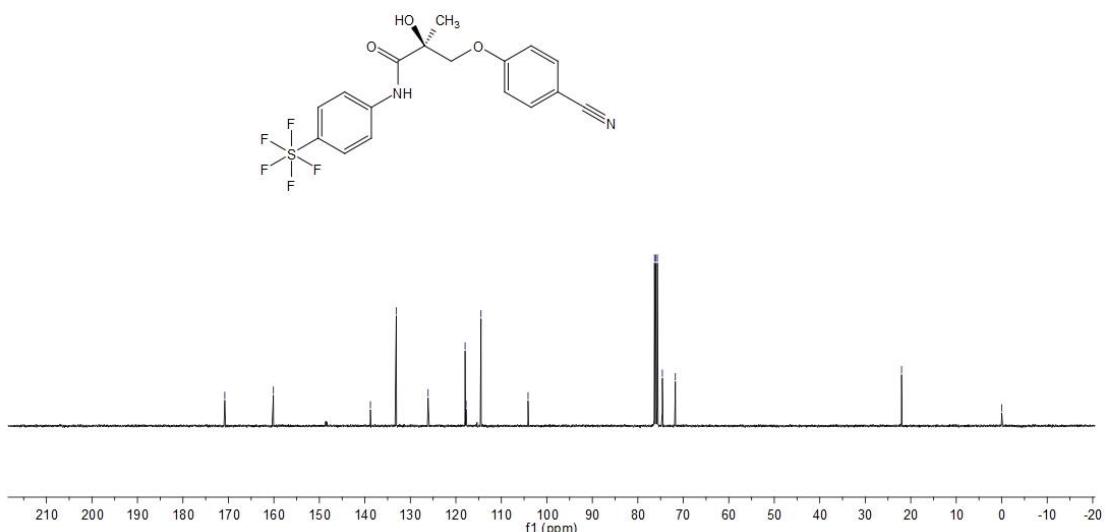
仪器 1 2019/11/14 18:09:30 spx

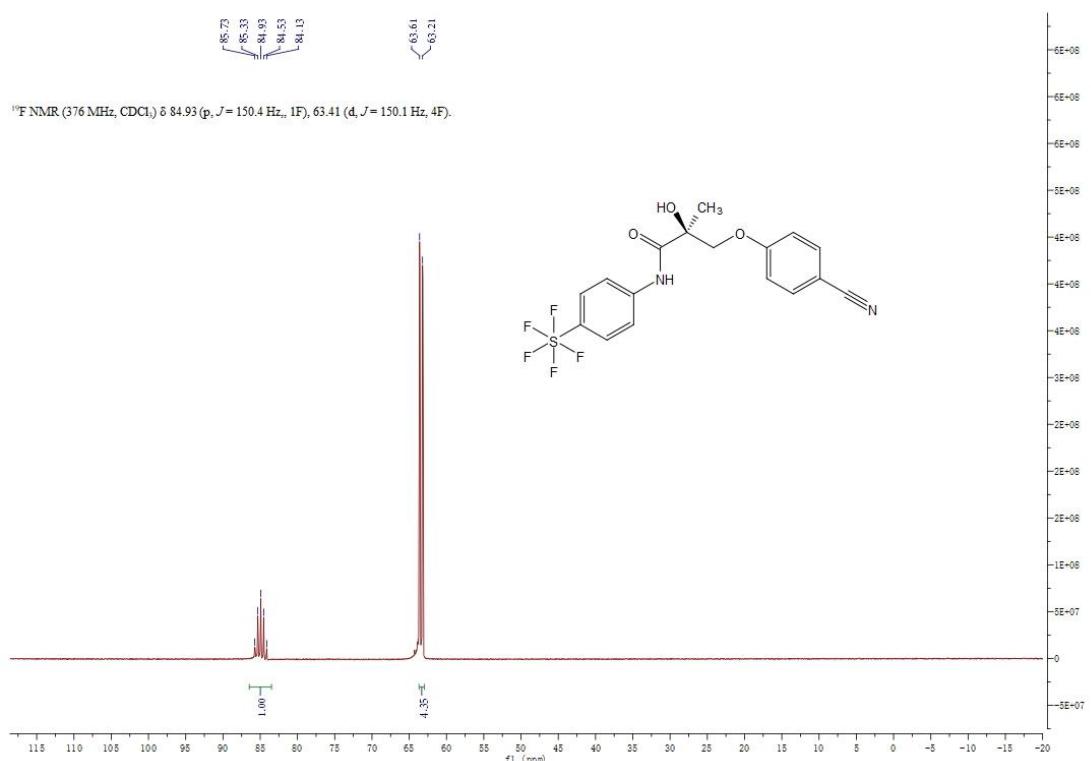
页 1/2

¹H, ¹³C, ¹⁹F NMR, HPLC and HRMS spectra of compound **16a**



¹³C NMR (101 MHz, CDCl₃) δ 170.80, 160.11, 138.79, 133.11, 126.10, 117.97, 117.76, 114.47, 104.13, 74.61, 71.75, 22.02.





Elemental Composition Report

Page 1

Single Mass Analysis

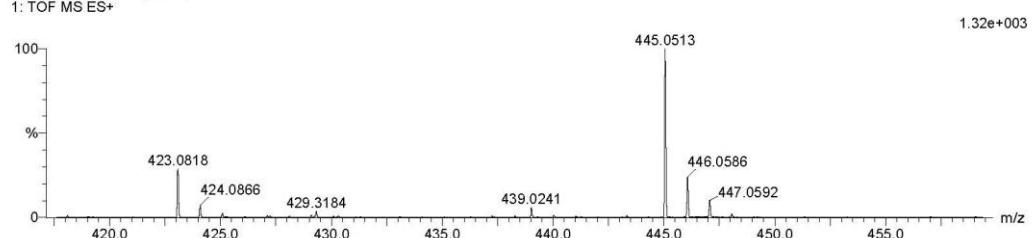
Tolerance = 100.0 PPM / DBE: min = -1.5, max = 50.0
Element prediction: Off

Monoisotopic Mass, Even Electron Ions

1 formula(e) evaluated with 1 results within limits (up to 50 closest results for each mass)

Elements Used:

C: 17-17 H: 16-16 N: 2-2 O: 3-3 F: 5-5 S: 1-1
JJY-A00188-071 35 (0.710)
1: TOF MS ES+

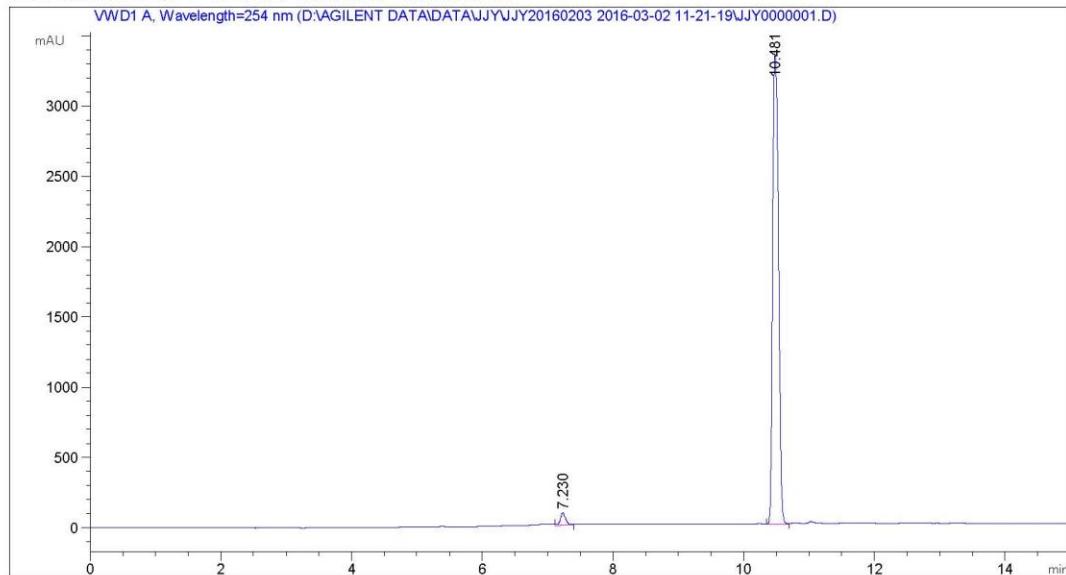


Minimum: -1.5
Maximum: 5.0 100.0 50.0

Mass	Calc. Mass	mDa	PPM	DBE	Formula
423.0818	423.0802	1.6	3.8	8.5	C17 H16 N2 O3 F5 S

Data File D:\AGILENT DATA\DATA\JJY\JJY20160203 2016-03-02 11-21-19\JJY0000001.D
Sample Name: JJY-A00188-071

```
=====
Acq. Operator : JJY                               Seq. Line : 1
Acq. Instrument : Instrument 1                  Location : Vial 82
Injection Date : 3/2/2016 11:22:52 AM           Inj : 1
                                                Inj Volume : 10.0 µl
Acq. Method   : D:\AGILENT DATA\DATA\JJY\JJY20160203 2016-03-02 11-21-19\JJY-0.1TFA-CH3CN-
                           15MIN.M
Last changed   : 3/2/2016 10:11:59 AM by JJY
Analysis Method : D:\AGILENT DATA\METHOD\xxy-PTX.M
Last changed   : 11/6/2019 2:57:04 PM by HY
Additional Info : Peak(s) manually integrated
```



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Area Percent Report
=====
```

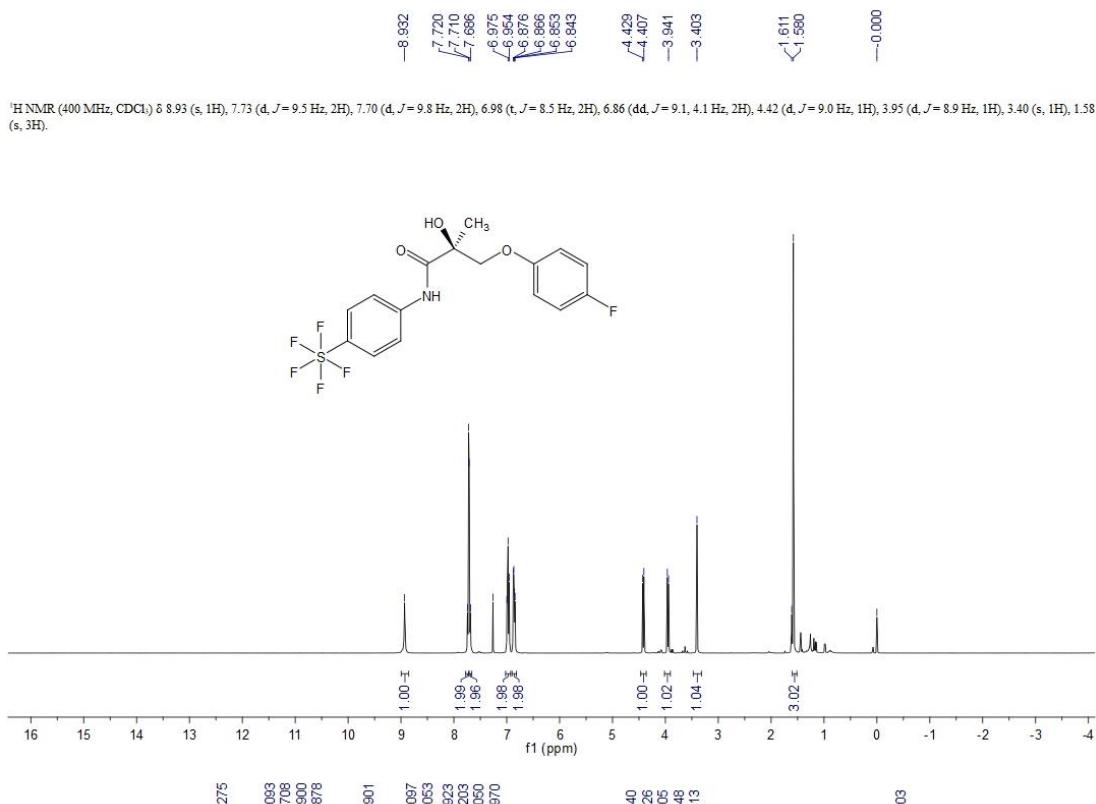
```
Sorted By      : Signal
Multiplier     : 1.0000
Dilution      : 1.0000
Use Multiplier & Dilution Factor with ISTDs
```

Signal 1: VWD1 A, Wavelength=254 nm

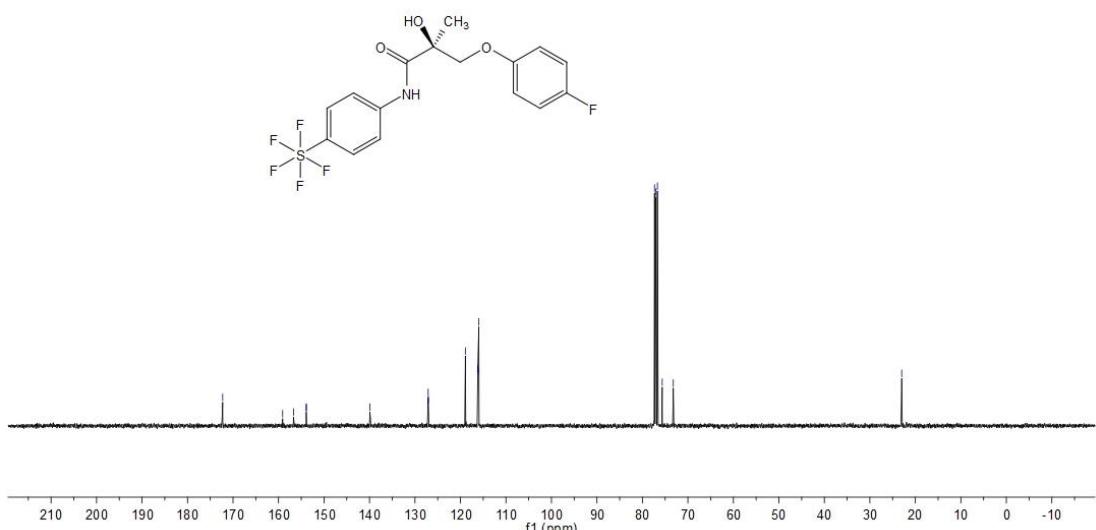
Peak #	RetTime [min]	Type	Width [min]	Area mAU	Height *s	Area [mAU]	Area %
1	7.230	VV	0.0838	504.59473	88.70807	2.3702	
2	10.481	BV	0.1019	2.07847e4	3331.57300	97.6298	

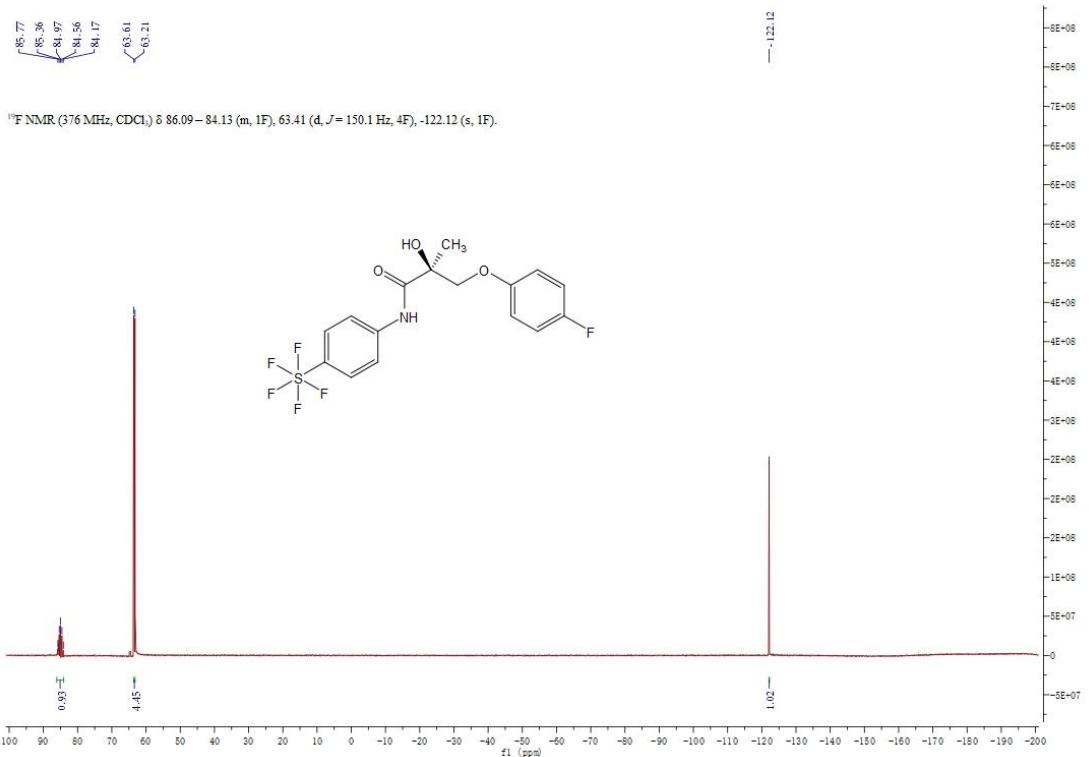
Totals : 2.12893e4 3420.28107

¹H, ¹³C, ¹⁹F NMR, HPLC and HRMS spectra of compound **16b**



¹H NMR (400 MHz, CDCl₃) δ 8.93 (s, 1H), 7.73 (d, J = 9.5 Hz, 2H), 7.70 (d, J = 9.8 Hz, 2H), 6.98 (t, J = 8.5 Hz, 2H), 6.86 (dd, J = 9.1, 4.1 Hz, 2H), 4.42 (d, J = 9.0 Hz, 1H), 3.95 (d, J = 8.9 Hz, 1H), 3.40 (s, 1H), 1.58 (s, 3H).





Elemental Composition Report

Page 1

Single Mass Analysis

Tolerance = 100.0 PPM / DBE: min = -1.5, max = 50.0
Element prediction: Off

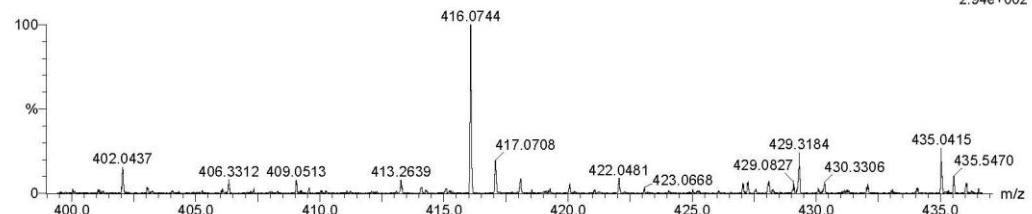
Monoisotopic Mass, Even Electron Ions

1 formula(e) evaluated with 1 results within limits (up to 50 closest results for each mass)

Elements Used:

C: 16-16 H: 16-16 N: 1-1 O: 3-3 F: 6-6 S: 1-1
JJY-A00188-072 35 (0.710)
1: TOF MS ES+

2.94e+002



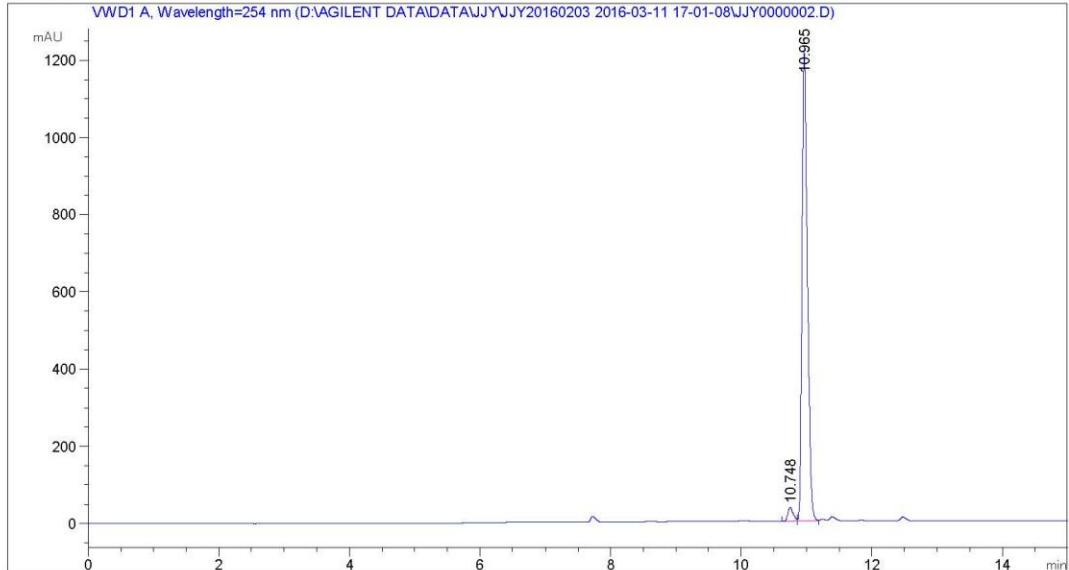
Minimum: -1.5
Maximum: 5.0 100.0 50.0

Mass Calc. Mass mDa PPM DBE

Mass	Calc. Mass	mDa	PPM	DBE	Formula
416.0744	416.0755	-1.1	-2.6	6.5	C16 H16 N O3 F6 S

Data File D:\AGILENT DATA\DATA\JJY\JJY20160203 2016-03-11 17-01-08\JJY0000002.D
Sample Name: JJY-A00188-072

```
=====
Acq. Operator : JJY                               Seq. Line : 2
Acq. Instrument : Instrument 1                  Location : Vial 82
Injection Date : 3/11/2016 5:24:12 PM           Inj : 1
                                                Inj Volume : 10.0 µl
Different Inj Volume from Sequence !          Actual Inj Volume : 5.0 µl
Acq. Method : D:\AGILENT DATA\DATA\JJY\JJY20160203 2016-03-11 17-01-08\JJY-0.1TFA-CH3CN-
15MIN.M
Last changed : 3/11/2016 4:14:26 PM by JJY
Analysis Method : D:\AGILENT DATA\METHOD\JJY-0.1TFA-CH3CN-15MIN.M
Last changed : 3/2/2016 10:11:59 AM by JJY
Additional Info : Peak(s) manually integrated
```



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=====
Area Percent Report
=====
```

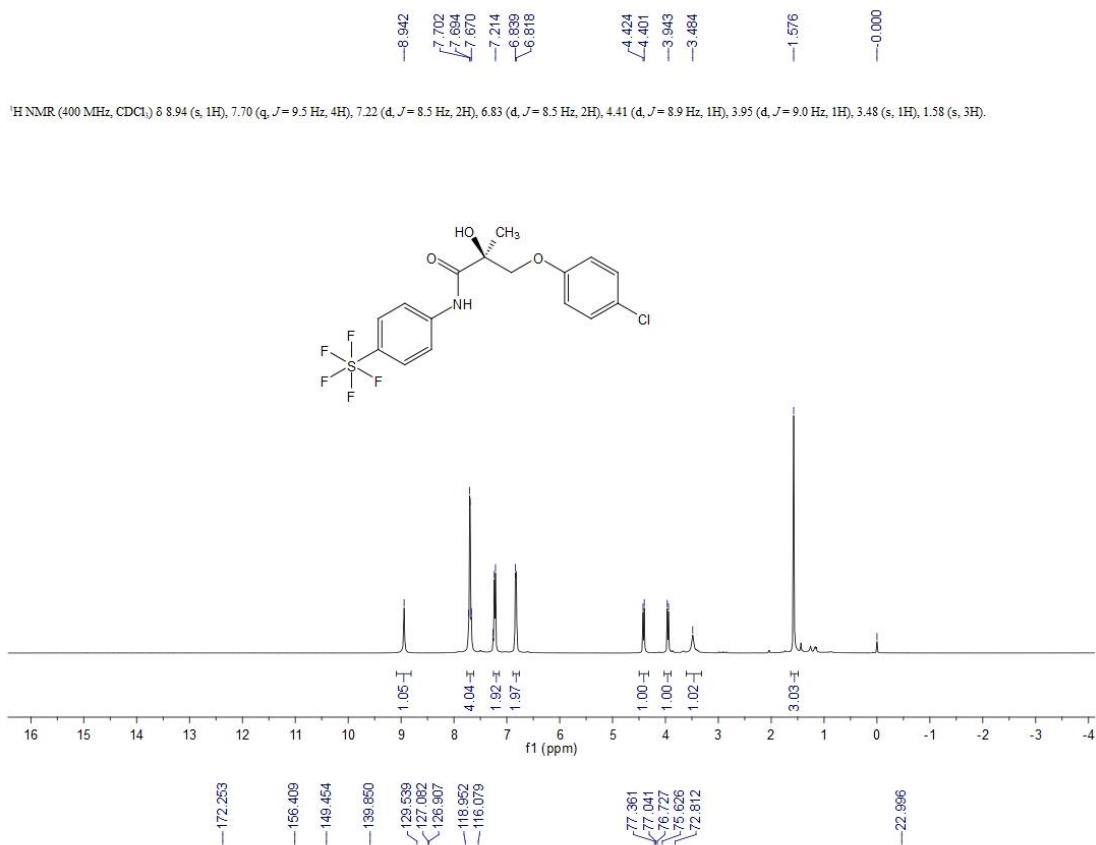
```
Sorted By : Signal
Multiplier : 1.0000
Dilution : 1.0000
Use Multiplier & Dilution Factor with ISTDs
```

Signal 1: VWD1 A, Wavelength=254 nm

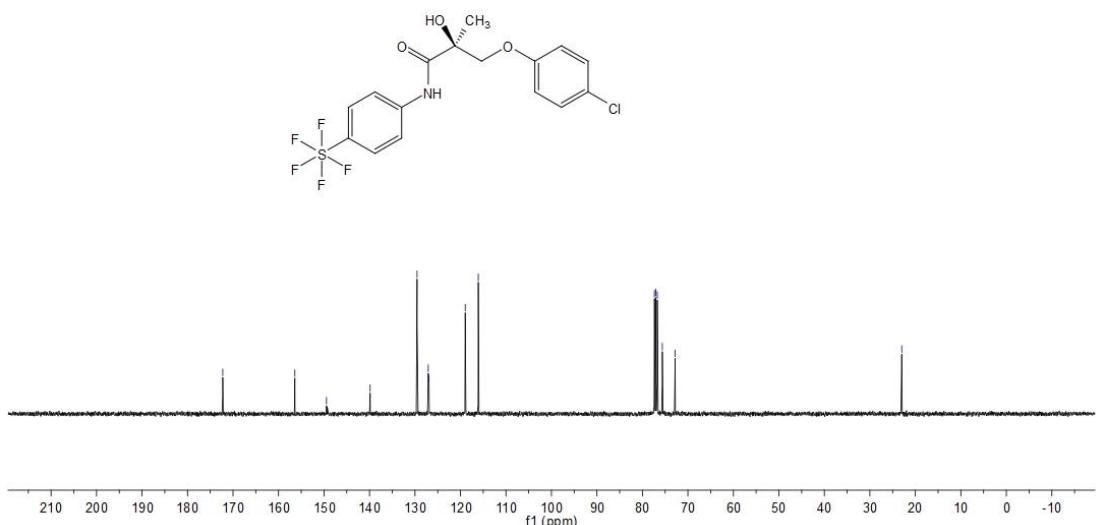
Peak #	RetTime [min]	Type	Width [min]	Area mAU	Height *s	Area [mAU]	Area %
1	10.748	BV	0.0848	201.79230	35.73984	2.8204	
2	10.965	VV	0.0857	6952.95068	1215.25793	97.1796	

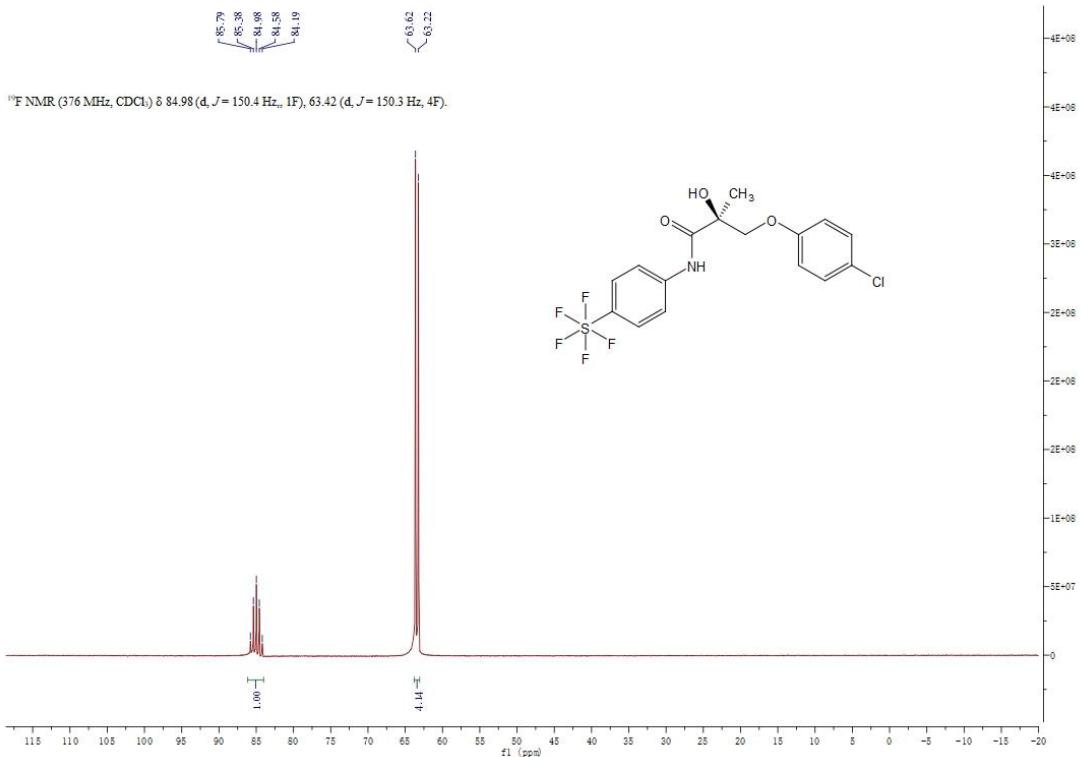
Totals : 7154.74298 1250.99778

¹H, ¹³C, ¹⁹F NMR, HPLC and HRMS spectra of compound **16c**



¹³C NMR (101 MHz, CDCl₃) δ 172.25, 156.41, 149.45, 139.85, 129.54, 127.08, 126.91, 118.95, 116.08, 75.63, 72.81, 23.00





Elemental Composition Report

Page 1

Single Mass Analysis

Tolerance = 100.0 PPM / DBE: min = -1.5, max = 50.0
Element prediction: Off

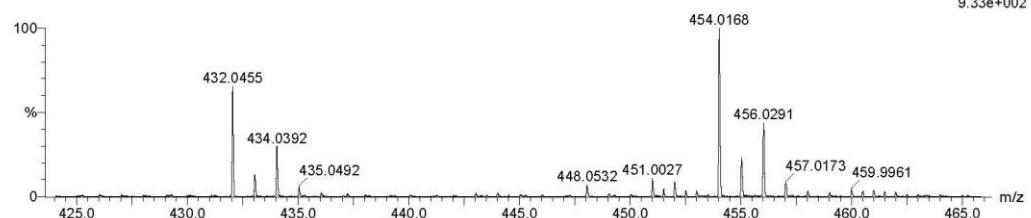
Monoisotopic Mass, Even Electron Ions

1 formula(e) evaluated with 1 results within limits (up to 50 closest results for each mass)

Elements Used:

C: 16-16 H: 16-16 N: 1-1 O: 3-3 F: 5-5 S: 1-1 Cl: 1-1
JJY-A00188-081 29 (0.588)
1: TOF MS ES+

9.33e+002

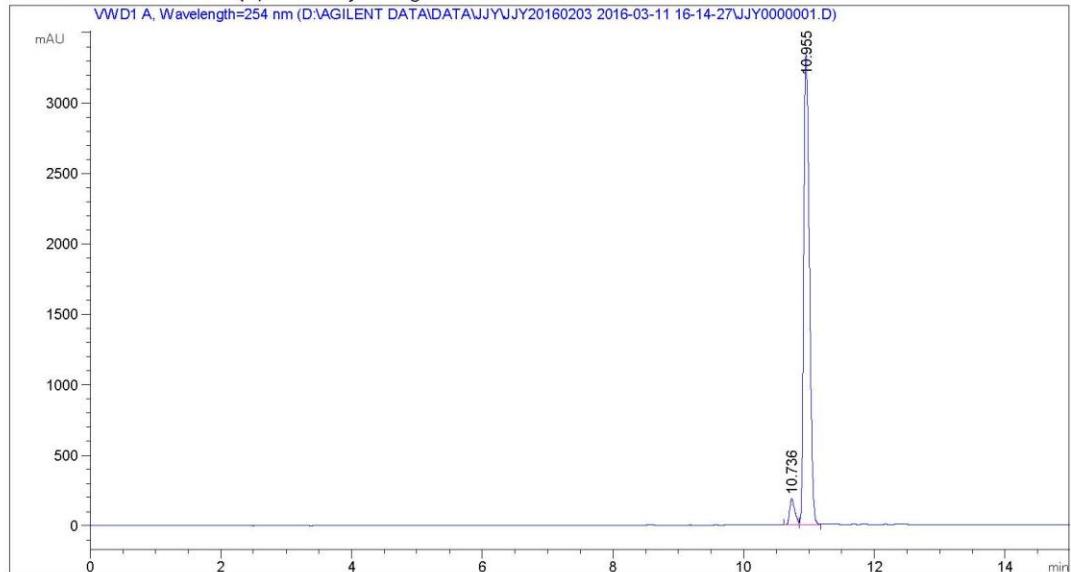


Minimum: -1.5
Maximum: 5.0 100.0 50.0

Mass	Calc. Mass	mDa	PPM	DBE	Formula
432.0455	432.0460	-0.5	-1.2	6.5	C16 H16 N O3 F5 S Cl

Data File D:\AGILENT DATA\DATA\JJY\JJY20160203 2016-03-11 16-14-27\JJY0000001.D
Sample Name: JJY-A00188-081-1

```
=====
Acq. Operator   : JJY                      Seq. Line :  1
Acq. Instrument : Instrument 1           Location : Vial 81
Injection Date  : 3/11/2016 4:15:59 PM      Inj :  1
                                                Inj Volume : 10.0 µl
Different Inj Volume from Sequence !      Actual Inj Volume : 15.0 µl
Acq. Method     : D:\AGILENT DATA\DATA\JJY\JJY20160203 2016-03-11 16-14-27\JJY-0.1TFA-CH3CN-
                                                15MIN.M
Last changed    : 3/11/2016 4:14:26 PM by JJY
Analysis Method : D:\AGILENT DATA\METHOD\XXY-PTX.M
Last changed    : 11/6/2019 2:57:04 PM by HY
Additional Info : Peak(s) manually integrated
```



```
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Area Percent Report
=====
```

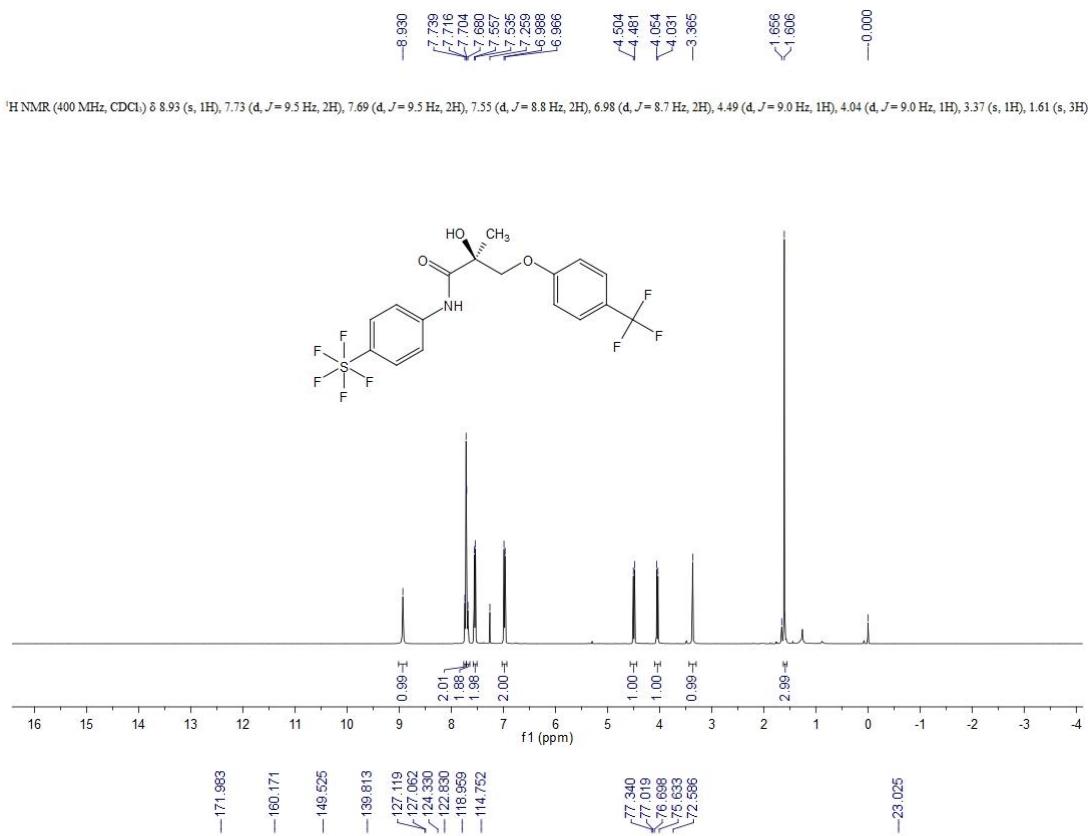
```
Sorted By       : Signal
Multiplier      : 1.0000
Dilution       : 1.0000
Use Multiplier & Dilution Factor with ISTDs
```

Signal 1: VWD1 A, Wavelength=254 nm

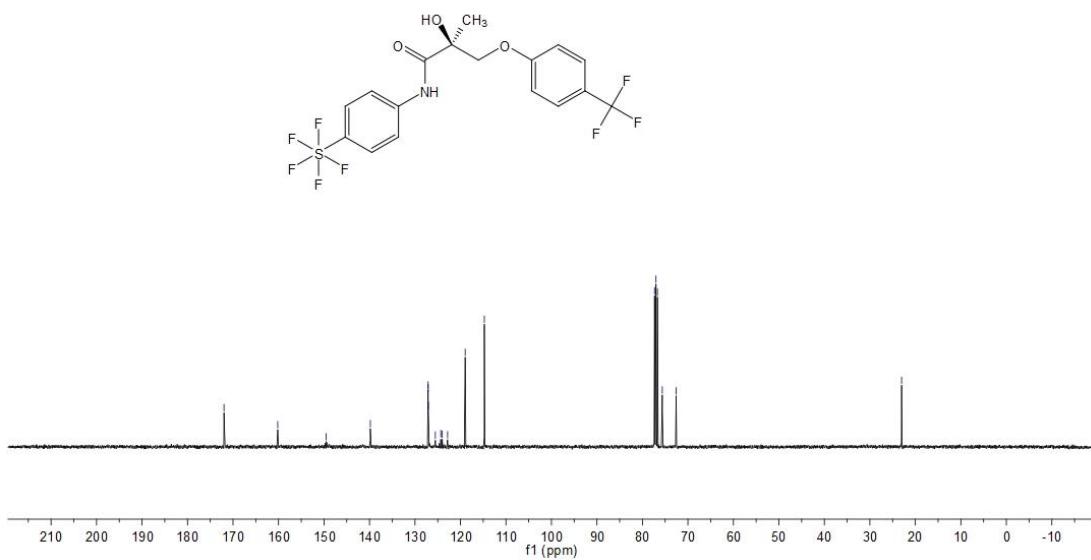
Peak	RetTime	Type	Width	Area	Height	Area	
#	[min]		[min]	mAU	*s	[mAU]	%
1	10.736	BV	0.0820	1029.82776	186.29970	4.8199	
2	10.955	VV	0.0957	2.03361e4	3341.78809	95.1801	

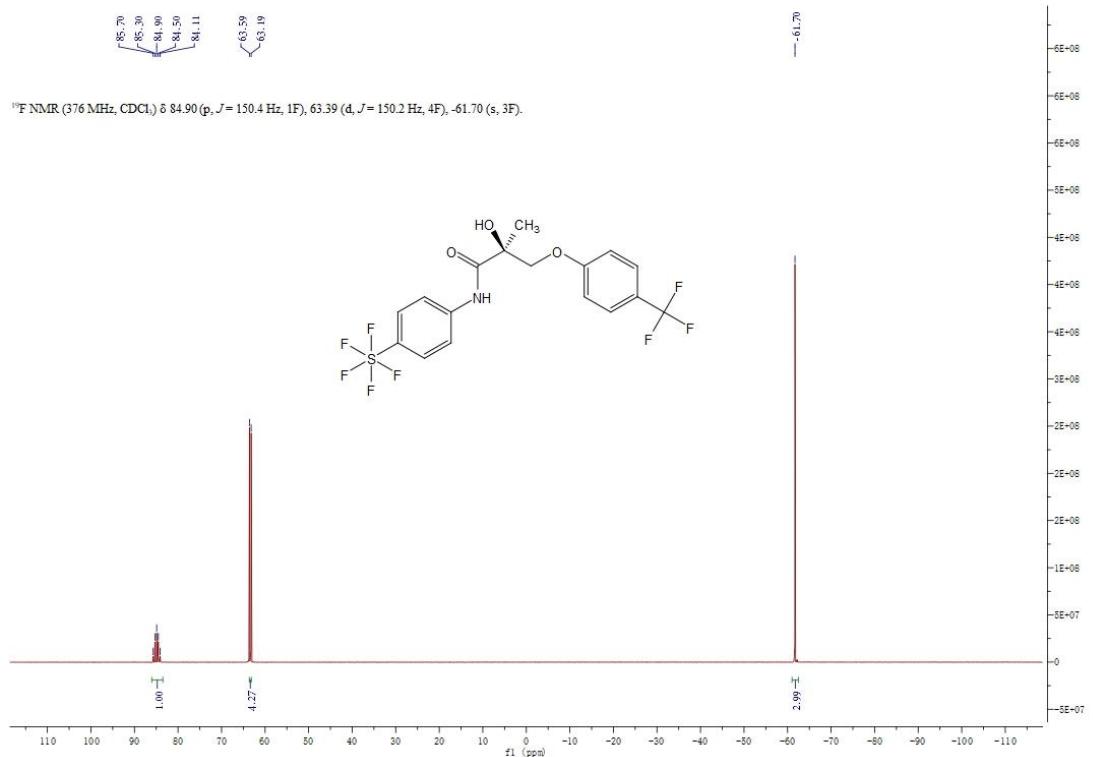
Totals : 2.13660e4 3528.08778

¹H, ¹³C, ¹⁹F NMR, HPLC and HRMS spectra of compound **16d**



¹H NMR (400 MHz, CDCl₃) δ 8.93 (s, 1H), 7.73 (d, J = 9.5 Hz, 2H), 7.69 (d, J = 9.5 Hz, 2H), 7.55 (d, J = 8.8 Hz, 2H), 6.98 (d, J = 8.7 Hz, 2H), 4.49 (d, J = 9.0 Hz, 1H), 4.04 (d, J = 9.0 Hz, 1H), 3.37 (s, 1H), 1.61 (s, 3H).





Elemental Composition Report

Page 1

Single Mass Analysis

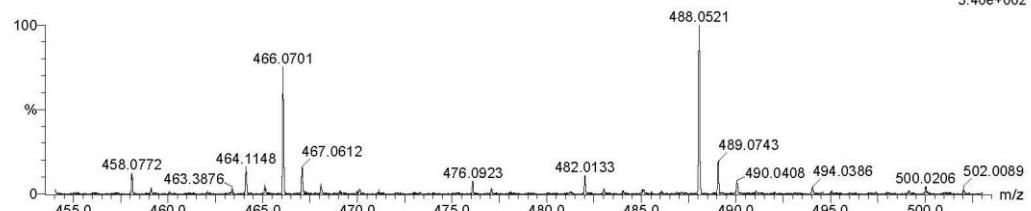
Tolerance = 100.0 PPM / DBE: min = -1.5, max = 50.0
Element prediction: Off

Monoisotopic Mass, Even Electron Ions

1 formula(e) evaluated with 1 results within limits (up to 50 closest results for each mass)
Elements Used:
C: 17-17 H: 15-15 N: 1-1 O: 3-3 F: 8-8 S: 1-1 Na: 0-1

JJY-A00188-085 31 (0.622)
1: TOF MS ES+

3.40e+002

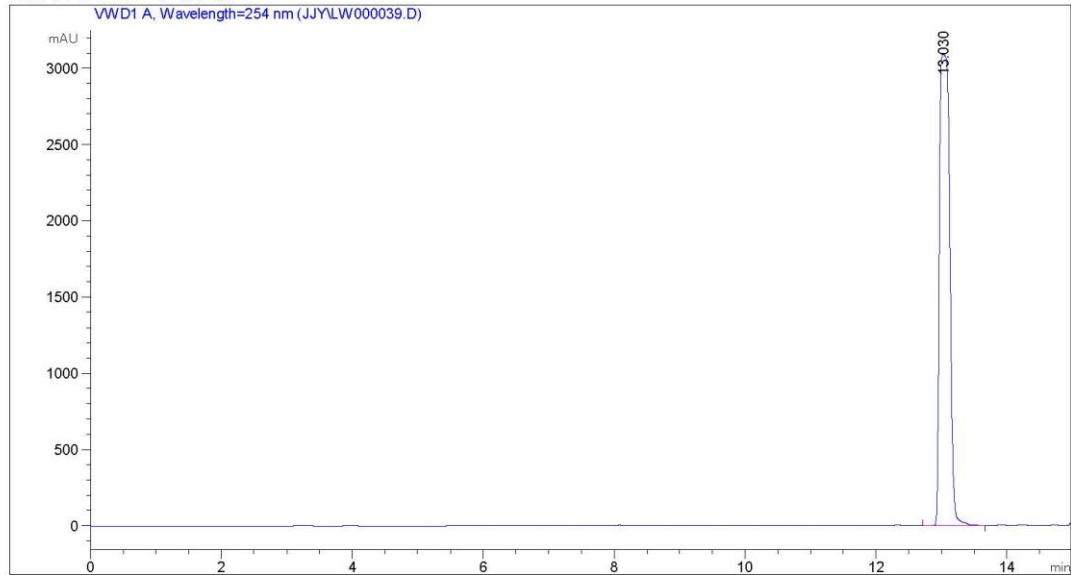


Minimum: 455.0 Maximum: 500.0

Mass	Calc. Mass	mDa	PPM	DBE	Formula
488.0521	488.0543	-2.2	-4.5	6.5	C17 H15 N O3 F8 S Na

数据文件: C:\CHEM32\1\DATA\JJY\LW000039.D
样品名称: JJY-A00188-085

```
=====
操作者      : spx
仪器      : 仪器 1
进样日期    : 2019/11/14 16:57:04
                位置 : 样品瓶 1
进样量      : 没有进样
采集方法    : C:\CHEM32\1\METHODS\JJY-15MIN.M
最后修改    : 2019/11/14 16:54:16 : spx
                (调用后修改)
分析方法    : C:\CHEM32\1\METHODS\JJY-15MIN.M
最后修改    : 2019/11/4 16:29:42 : CYT
附加信息: 峰已手动积分
```



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=====
面积百分比报告
=====
```

```
排序      : 信号
乘积因子:      : 1.0000
稀释因子:      : 1.0000
内标使用乘积因子和稀释因子
```

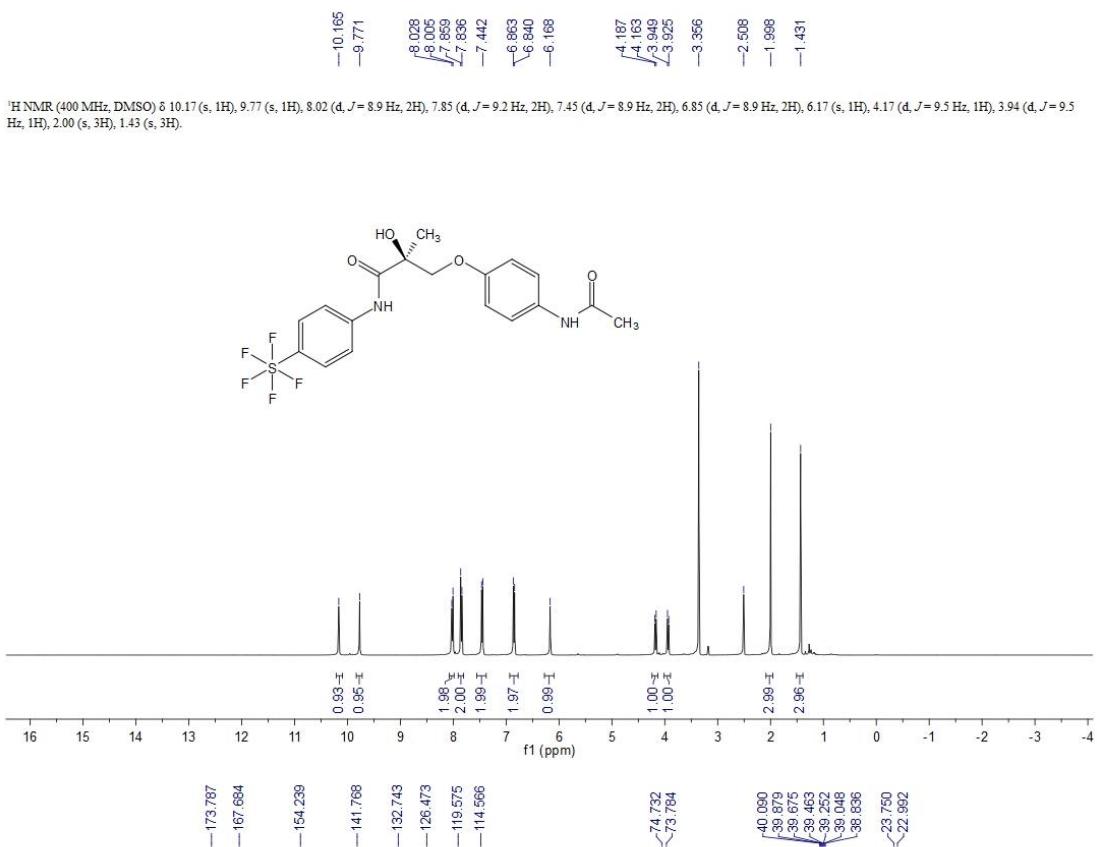
信号 1: VWD1 A, Wavelength=254 nm

峰	保留时间	类型	峰宽	峰面积	峰高	峰面积
#	[min]		[min]	[mAU*s]	[mAU]	%
1	13.030	VB	0.1758	3.34704e4	3092.09277	100.0000

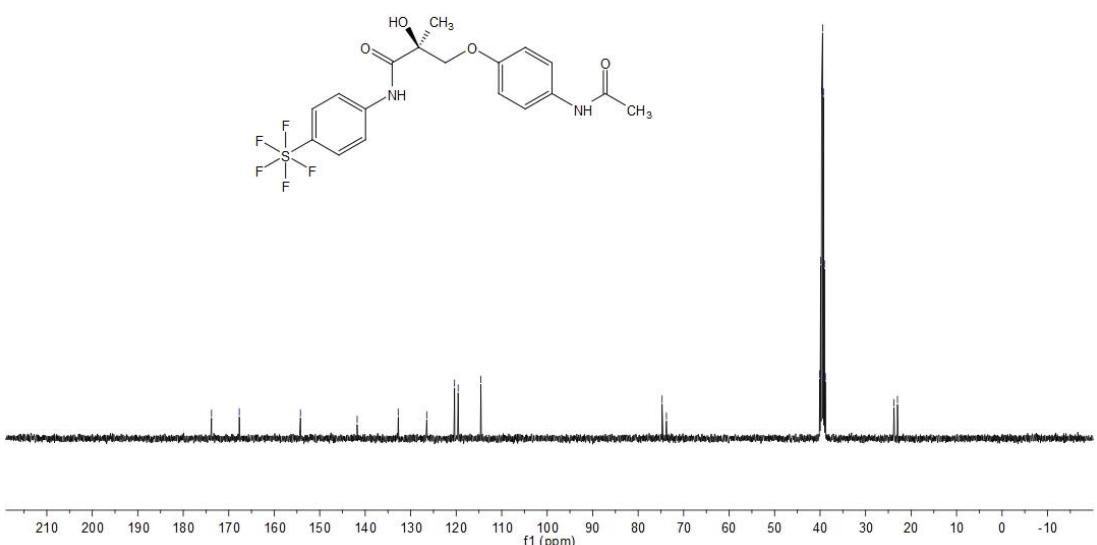
总量 : 3.34704e4 3092.09277

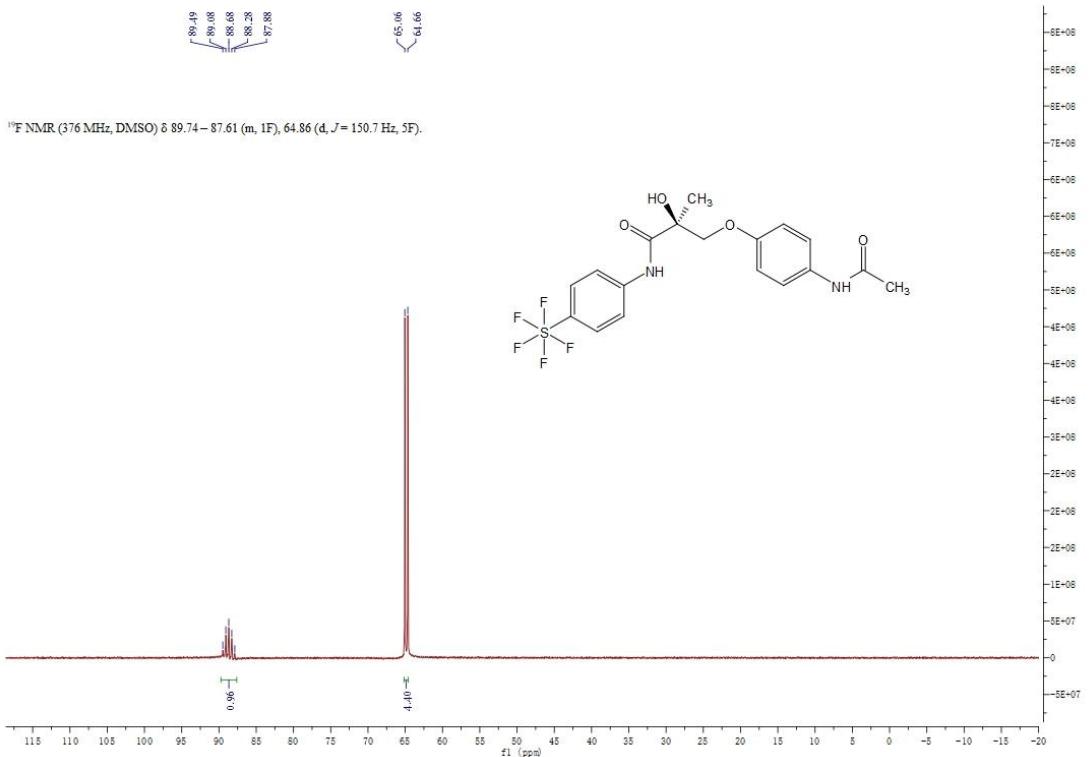
=====
*** 报告结束 ***
=====

¹H, ¹³C, ¹⁹F NMR, HPLC and HRMS spectra of compound **16e**



¹H NMR (400 MHz, DMSO) δ 10.17 (s, 1H), 9.77 (s, 1H), 8.02 (d, J = 8.9 Hz, 2H), 7.85 (d, J = 9.2 Hz, 2H), 7.45 (d, J = 8.9 Hz, 2H), 6.85 (d, J = 8.9 Hz, 2H), 6.17 (s, 1H), 4.17 (d, J = 9.5 Hz, 1H), 3.94 (d, J = 9.5 Hz, 1H), 2.00 (s, 3H), 1.43 (s, 3H).





Elemental Composition Report

Page 1

Single Mass Analysis

Tolerance = 100.0 PPM / DBE: min = -1.5, max = 50.0
Element prediction: Off

Monoisotopic Mass, Even Electron Ions

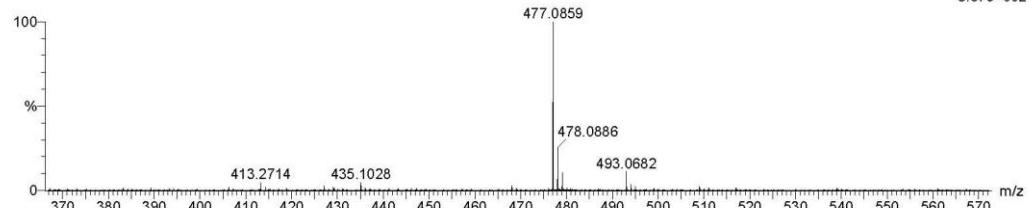
1 formula(e) evaluated with 1 results within limits (up to 50 closest results for each mass)

Elements Used:

C: 18-18 H: 19-20 N: 2-2 O: 4-4 F: 5-5 S: 1-1 Na: 0-1

JJY-A00188-083 60 (1.194)
1: TOF MS ES+

5.87e+002

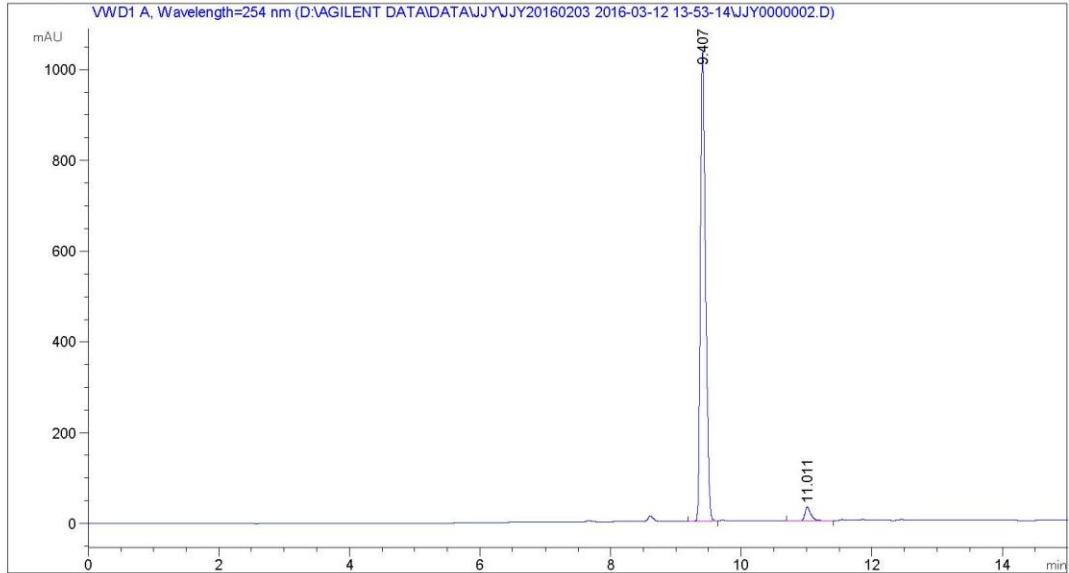


Minimum: 5.0 Maximum: 100.0 -1.5
50.0

Mass	Calc. Mass	mDa	PPM	DBE	Formula
477.0859	477.0883	-2.4	-5.0	7.5	C18 H19 N2 O4 F5 S Na

Data File D:\AGILENT DATA\DATA\JJY\JJY20160203 2016-03-12 13-53-14\JJY0000002.D
Sample Name: JJY-A00188-083

```
=====
Acq. Operator : JJY                               Seq. Line : 2
Acq. Instrument : Instrument 1                  Location : Vial 82
Injection Date : 3/12/2016 2:16:01 PM           Inj : 1
                                                Inj Volume : 10.0 µl
Different Inj Volume from Sequence !          Actual Inj Volume : 3.0 µl
Acq. Method : D:\AGILENT DATA\DATA\JJY\JJY20160203 2016-03-12 13-53-14\JJY-0.1TFA-CH3CN-
15MIN.M
Last changed : 3/11/2016 4:14:26 PM by JJY
Analysis Method : D:\AGILENT DATA\METHOD\JJY-0.1TFA-CH3CN-15MIN.M
Last changed : 3/11/2016 4:14:26 PM by JJY
Additional Info : Peak(s) manually integrated
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Area Percent Report
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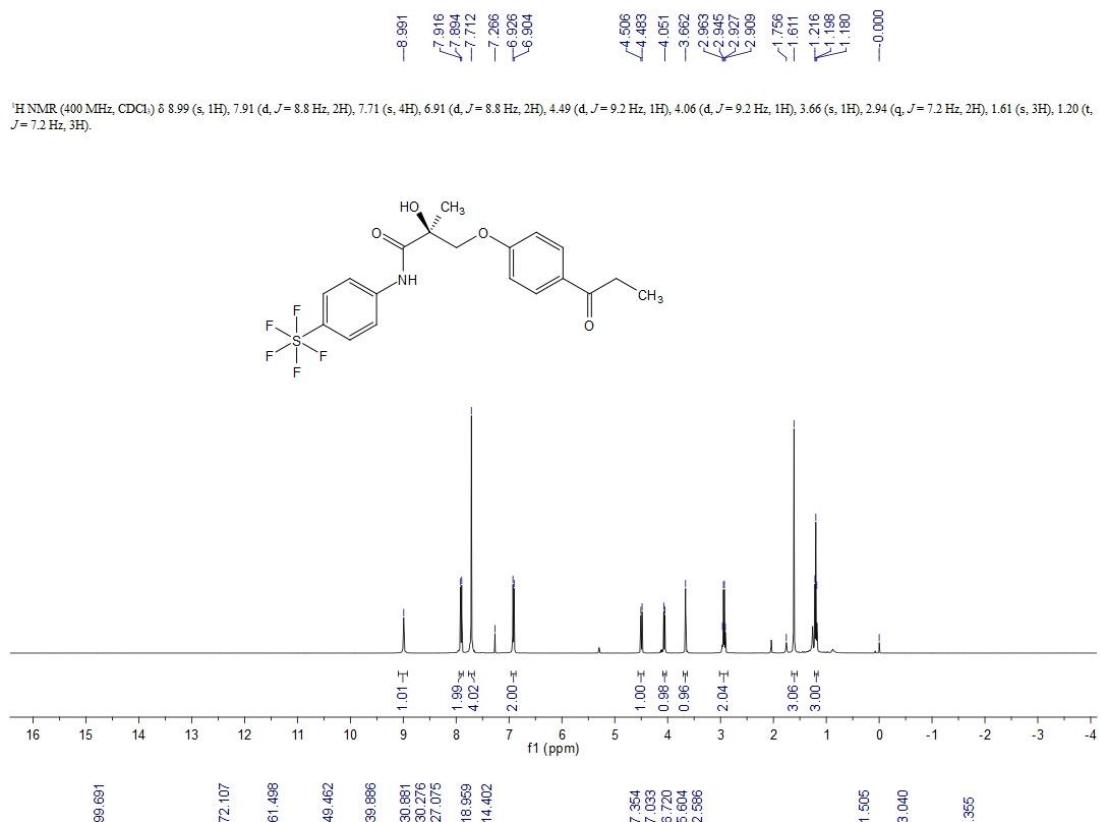
```
Sorted By : Signal
Multiplier : 1.0000
Dilution : 1.0000
Use Multiplier & Dilution Factor with ISTDs
```

Signal 1: VWD1 A, Wavelength=254 nm

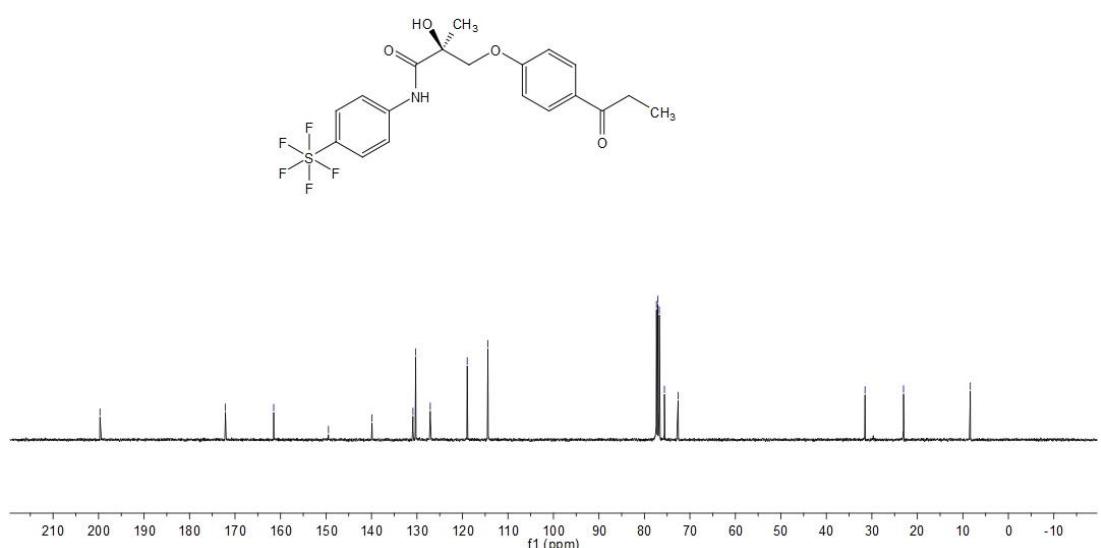
Peak #	RetTime [min]	Type	Width [min]	Area mAU	Height *s	Area [mAU]	Area %
1	9.407	BV	0.0827	5656.05322	1034.53369	96.7496	
2	11.011	BB	0.0904	190.02280	30.41092	3.2504	

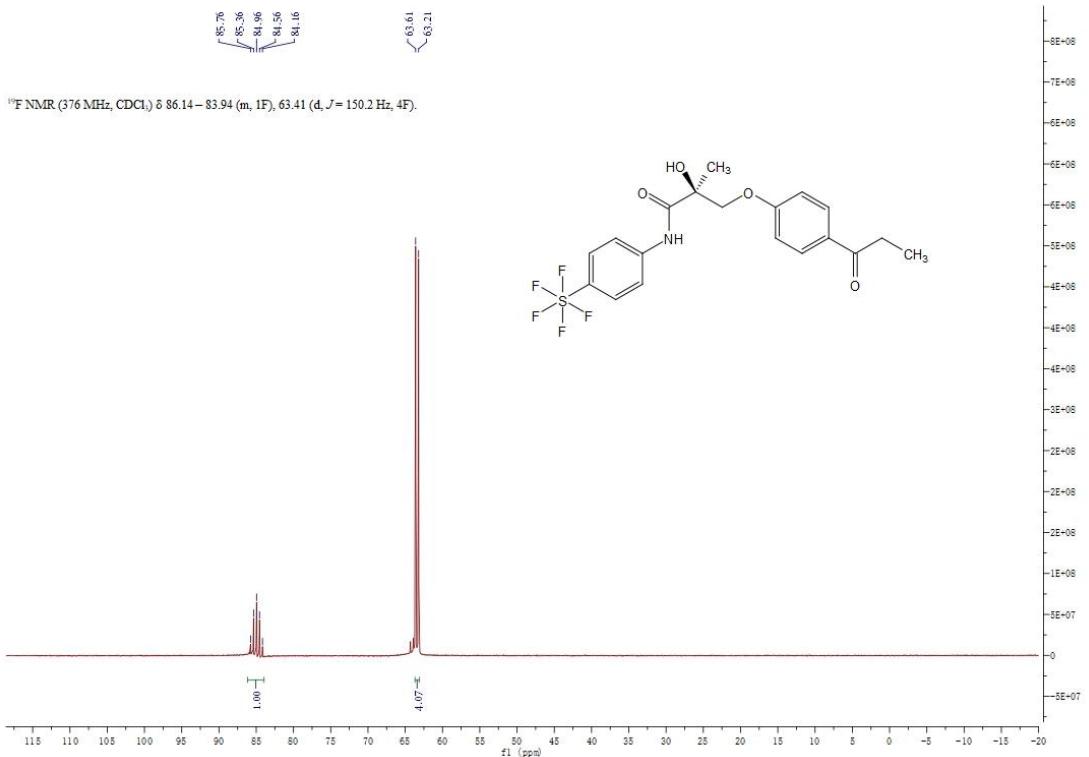
Totals : 5846.07602 1064.94461

¹H, ¹³C, ¹⁹F NMR, HPLC and HRMS spectra of compound **16f**



¹³C NMR (101 MHz, CDCl₃) δ 199.69, 172.11, 161.50, 149.46, 139.89, 130.88, 130.28, 127.07, 118.96, 114.40, 75.60, 72.59, 31.51, 23.04, 8.35.





Elemental Composition Report

[Page 1](#)

Single Mass Analysis

Tolerance = 100.0 PPM / DBE: min = -1.5, max = 50.0
Element prediction: Off

Monoisotopic Mass, Even Electron Ions

1 formula(e) evaluated with 1 results within limits (up to 50 closest results for each mass)

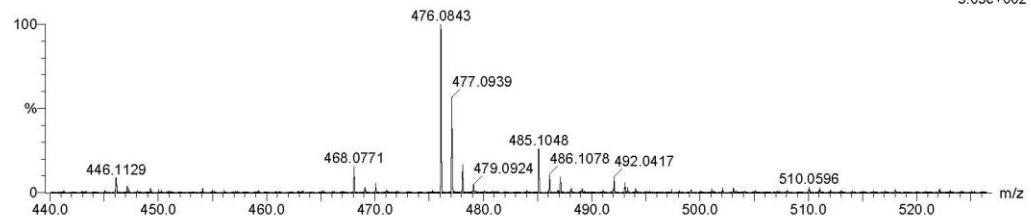
Elements Used:

C: 19-19 H: 20-20 N: 1-1 O: 4-4 F: 5-5 Na: 0-1 S: 1-1

JY-A00188-084 27 (0.554)

1: TOF MS ES+

3.05e+002

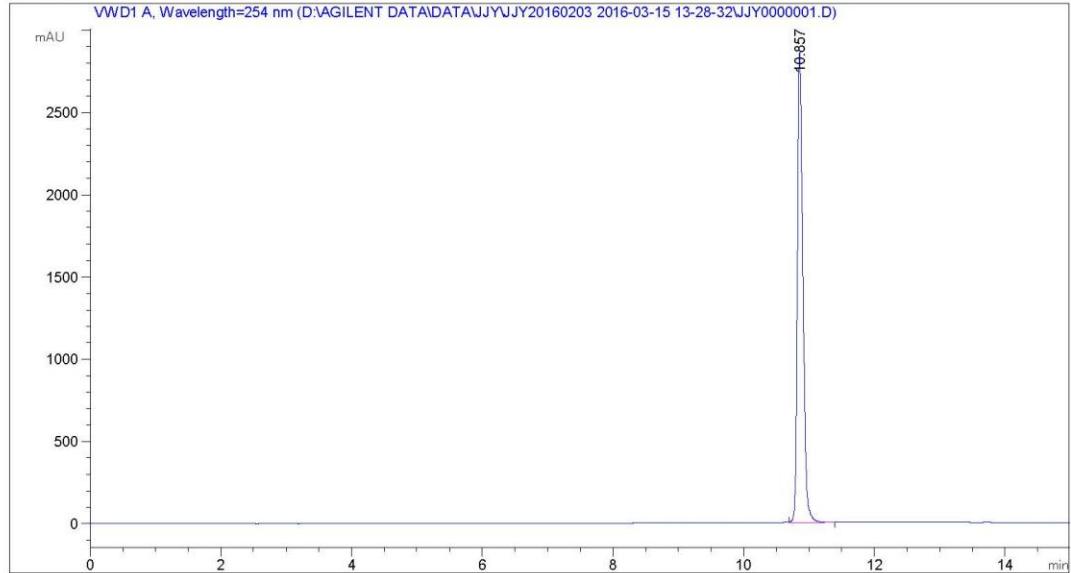


Minimum: -1.5
Maximum: 5.0 100.0 50.0

Mass	Calc. Mass	mDa	PPM	DBE	Formula
476.0923	476.0931	-0.8	-1.7	7.5	C19 H20 N O4 F5 Na S

Data File D:\AGILENT DATA\DATA\JJY\JJY20160203 2016-03-15 13-28-32\JJY0000001.D
Sample Name: JJY-A00188-084

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=====
Acq. Operator : JJY                               Seq. Line : 1
Acq. Instrument : Instrument 1                  Location : Vial 81
Injection Date : 3/15/2016 1:30:01 PM           Inj : 1
                                                Inj Volume : 10.0 µl
Different Inj Volume from Sequence !          Actual Inj Volume : 5.0 µl
Acq. Method : D:\AGILENT DATA\DATA\JJY\JJY20160203 2016-03-15 13-28-32\JJY-0.1TFA-CH3CN-
15MIN.M
Last changed : 3/14/2016 12:04:47 PM by JJY
Analysis Method : D:\AGILENT DATA\METHOD\JJY-0.1TFA-CH3CN-15MIN.M
Last changed : 3/14/2016 12:04:47 PM by JJY
Additional Info : Peak(s) manually integrated
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Area Percent Report
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Sorted By : Signal
Multiplier : 1.0000
Dilution : 1.0000
Use Multiplier & Dilution Factor with ISTDs
```

Signal 1: VWD1 A, Wavelength=254 nm

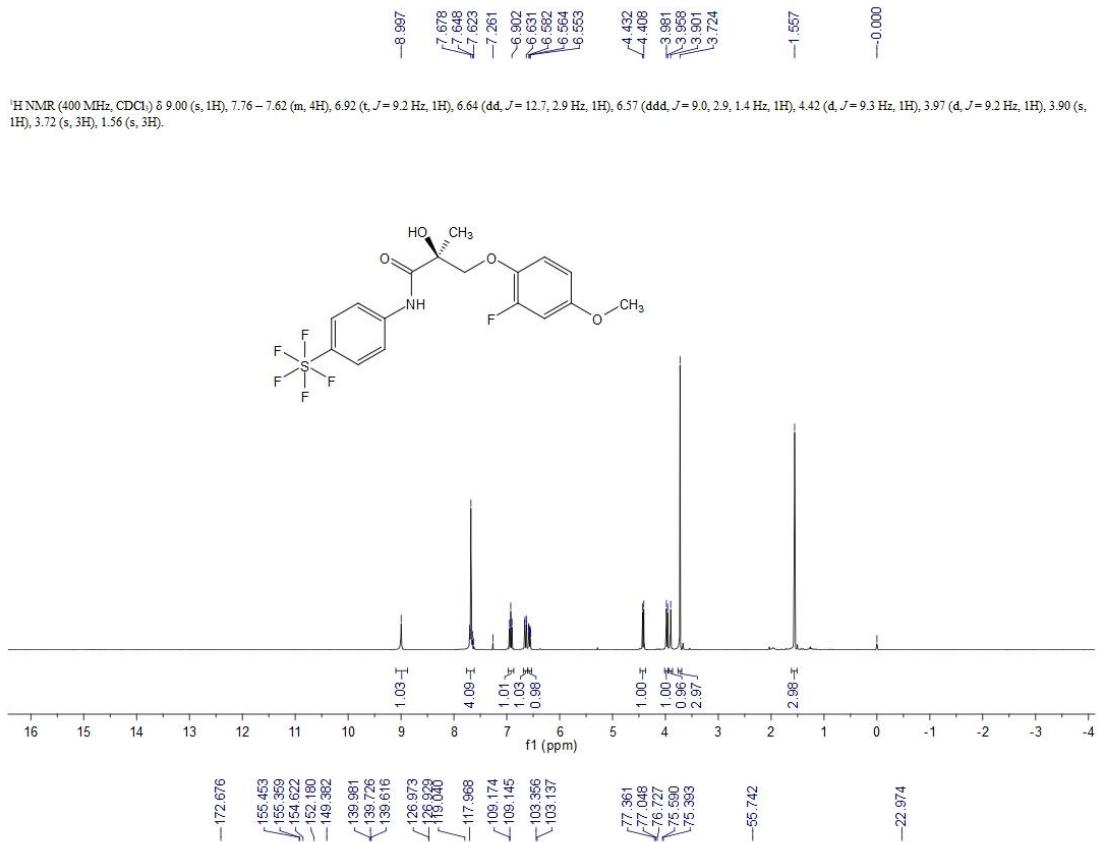
Peak #	RetTime [min]	Type	Width [min]	Area mAU	Height *s	Area [mAU]	Area %
1	10.857	VB	0.0870	1.66829e4	2860.37720	100.0000	

Totals : 1.66829e4 2860.37720

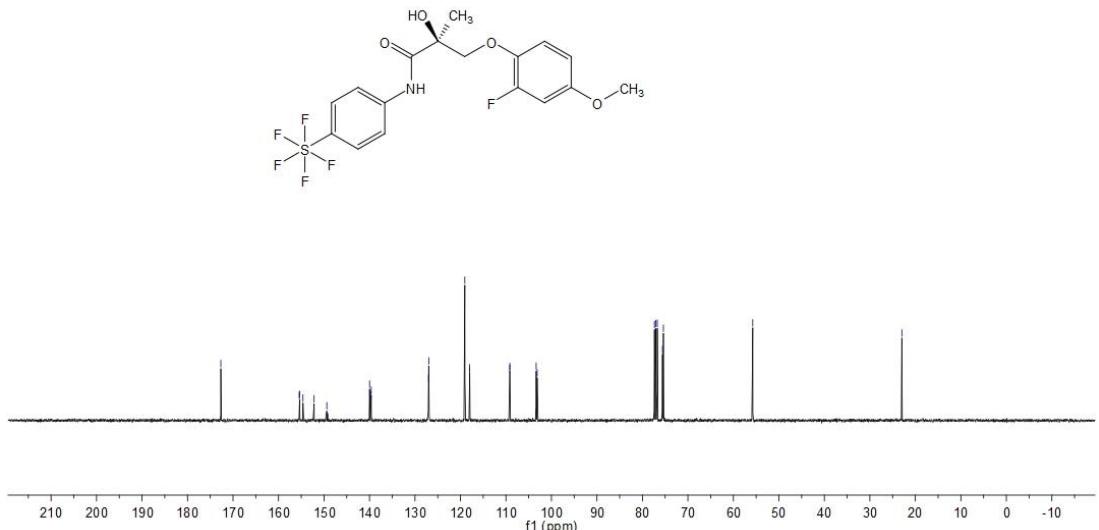
Instrument 1 3/15/2016 1:50:46 PM JJY

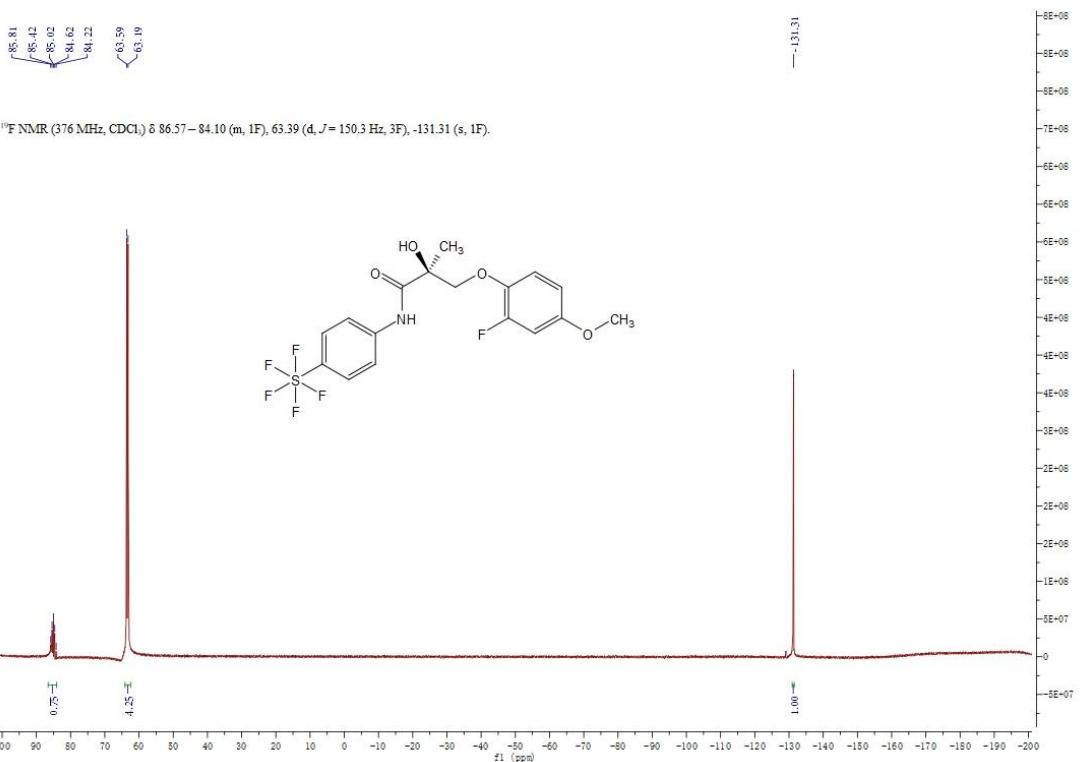
Page 1 of 1

¹H, ¹³C, ¹⁹F NMR, HPLC and HRMS spectra of compound **16g**



¹³C NMR (101 MHz, CDCl₃) δ 172.68, 155.45, 155.36, 154.62, 152.18, 149.38, 139.98, 139.73, 139.62, 127.02, 126.97, 126.93, 119.04, 117.99, 117.97, 109.17, 109.15, 103.36, 103.14, 75.59, 75.39, 55.74, 22.97.





Elemental Composition Report

Page 1

Single Mass Analysis

Tolerance = 100.0 PPM / DBE: min = -1.5, max = 50.0
Element prediction: Off

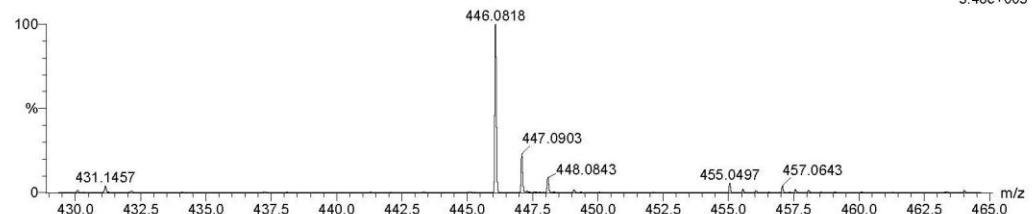
Monoisotopic Mass, Even Electron Ions

1 formula(e) evaluated with 1 results within limits (up to 50 closest results for each mass)

Elements Used:

C: 17-17 H: 18-18 N: 1-1 O: 4-4 F: 6-6 S: 1-1
JJY-A00188-089 33 (0.676) Cm (33.42)
1: TOF MS ES+

5.46e+003

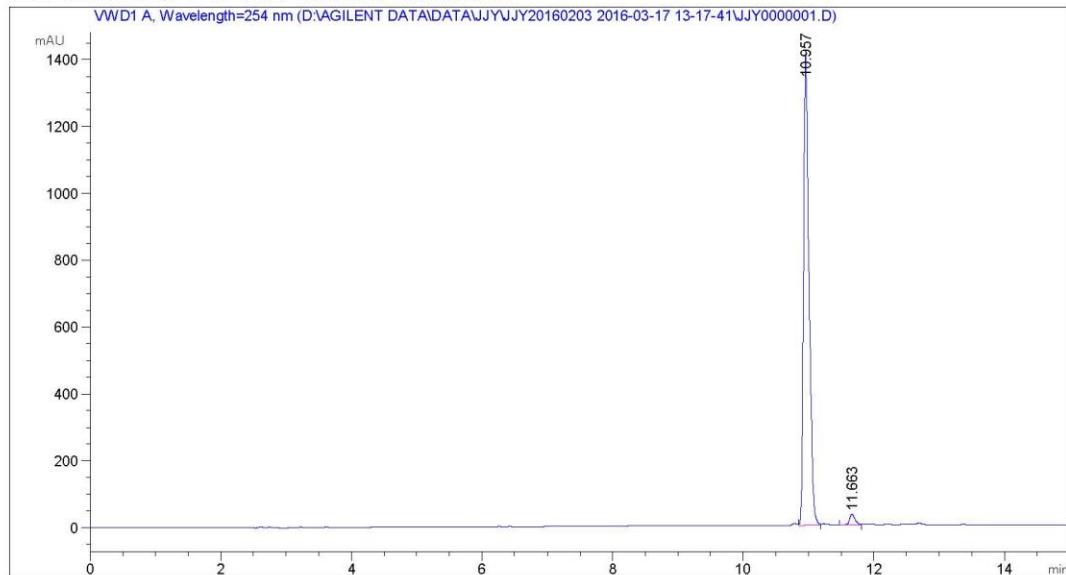


Minimum: -1.5
Maximum: 5.0 100.0 50.0

Mass	Calc. Mass	mDa	PPM	DBE	Formula
446.0818	446.0861	-4.3	-9.6	6.5	C17 H18 N O4 F6 S

Data File D:\AGILENT DATA\DATA\JJY\JJY20160203 2016-03-17 13-17-41\JJY0000001.D
Sample Name: JJY-A00188-089

```
=====
Acq. Operator : JJY                               Seq. Line : 1
Acq. Instrument : Instrument 1                 Location : Vial 81
Injection Date : 3/17/2016 1:19:11 PM           Inj : 1
                                                Inj Volume : 10.0 µl
Acq. Method   : D:\AGILENT DATA\DATA\JJY\JJY20160203 2016-03-17 13-17-41\JJY-0.1TFA-CH3CN-
                  15MIN.M
Last changed   : 3/17/2016 12:29:03 PM by JJY
Analysis Method : D:\AGILENT DATA\METHOD\JJY-0.1TFA-CH3CN-15MIN.M
Last changed   : 3/17/2016 12:29:03 PM by JJY
Additional Info : Peak(s) manually integrated
```



```
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Area Percent Report
=====
```

```
Sorted By      : Signal
Multiplier     : 1.0000
Dilution      : 1.0000
Use Multiplier & Dilution Factor with ISTDs
```

Signal 1: VWD1 A, Wavelength=254 nm

Peak #	RetTime [min]	Type	Width [min]	Area mAU	Height *s	Area [mAU]	Area %
1	10.957	VV	0.0834	8127.12256	1406.40491	97.8307	
2	11.663	BV	0.0823	180.21136	32.43166	2.1693	

Totals : 8307.33392 1438.83657