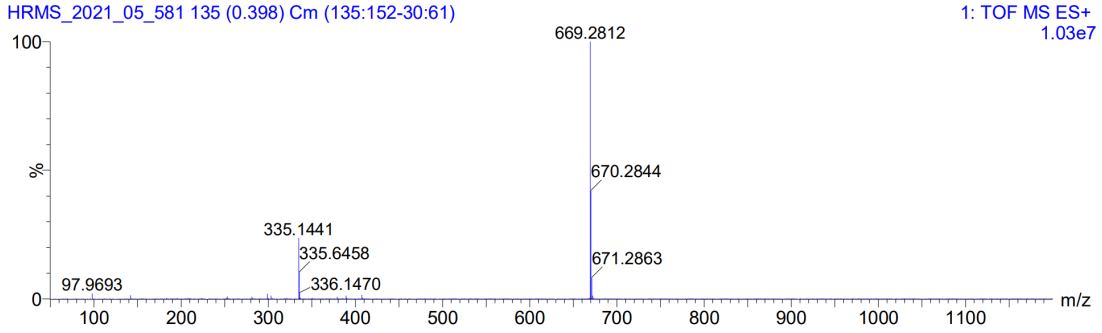
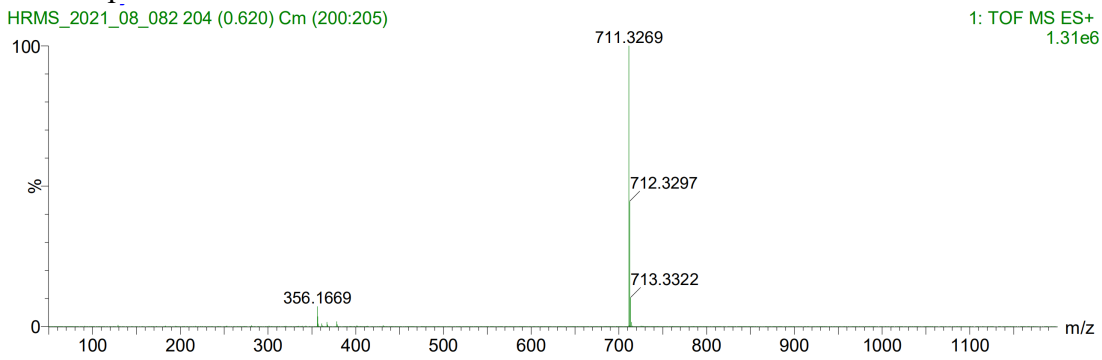
Supplementary Materials

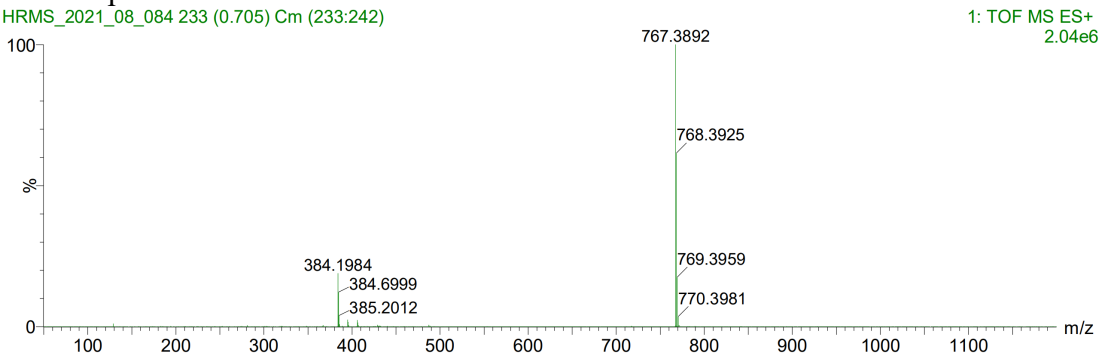
HRMS spectra of **2a**



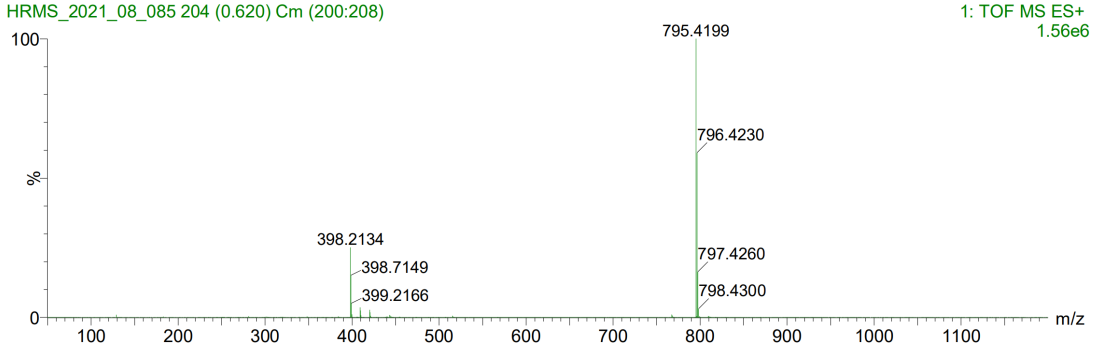
HRMS spectra of **2b**



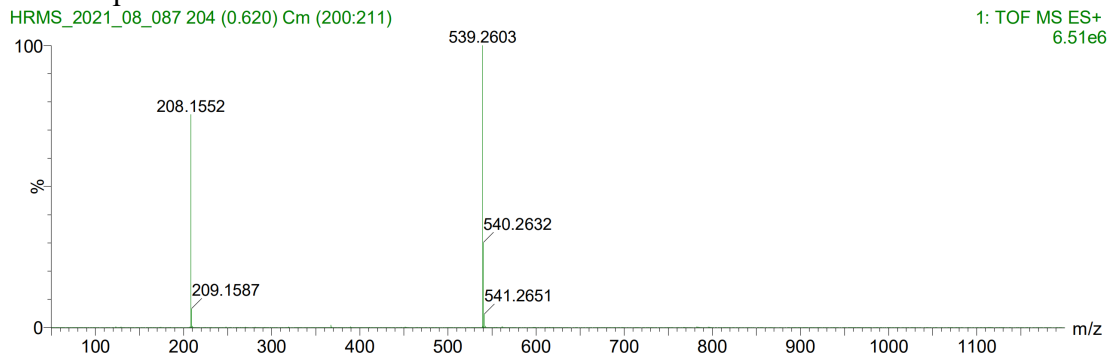
HRMS spectra of **2c**



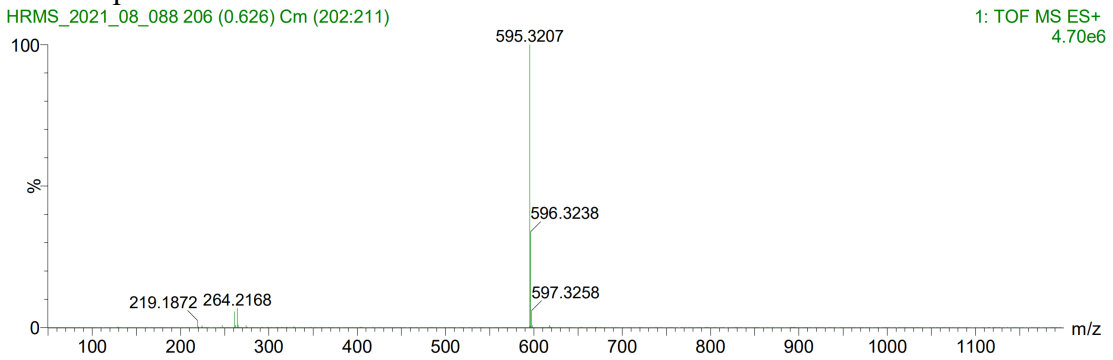
HRMS spectra of **2d**



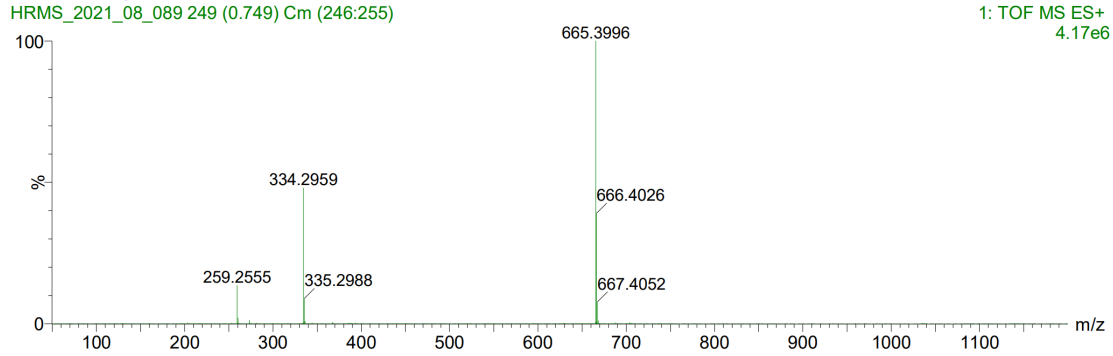
HRMS spectra of **3a**



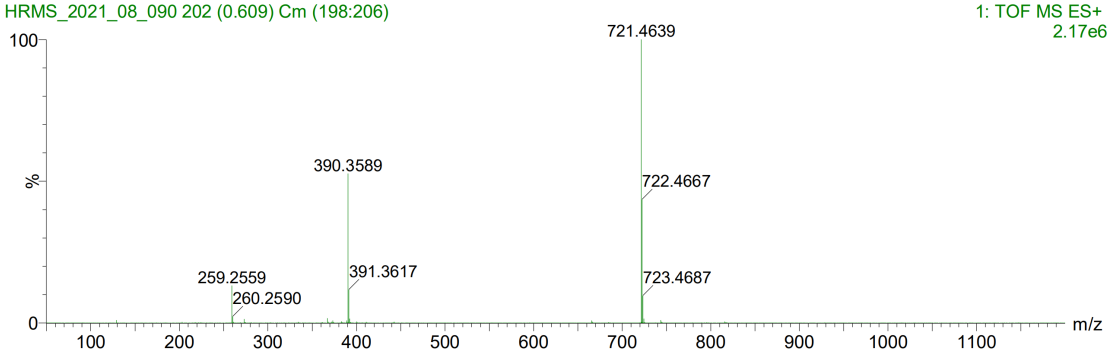
HRMS spectra of **3b**



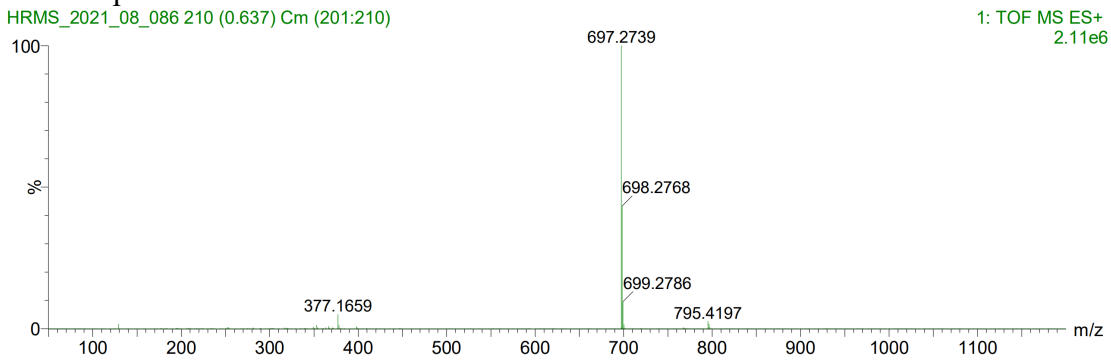
HRMS spectra of **3c**



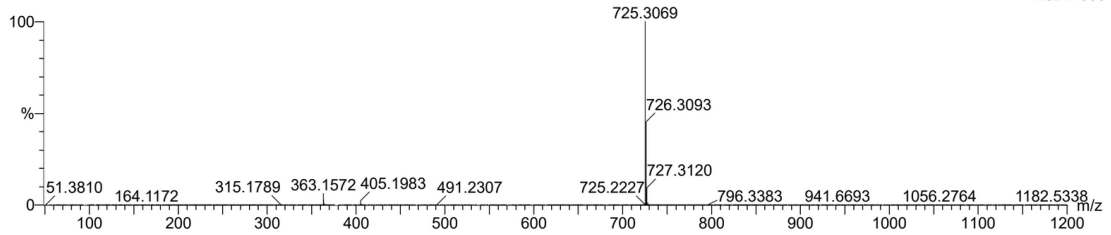
HRMS spectra of **3d**



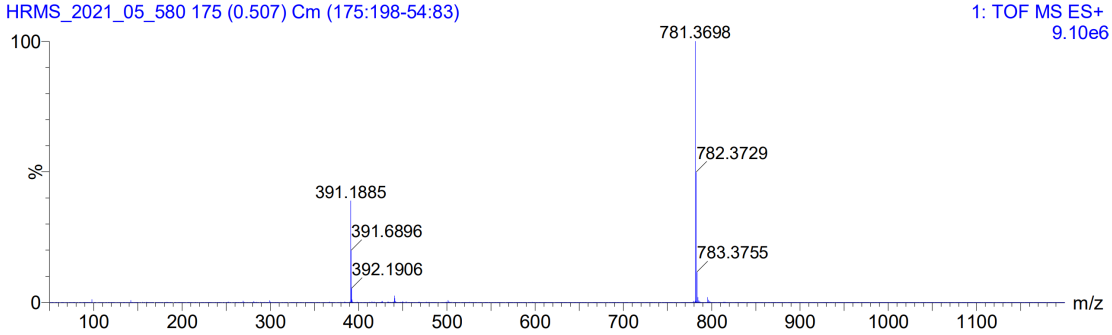
HRMS spectra of **3e**



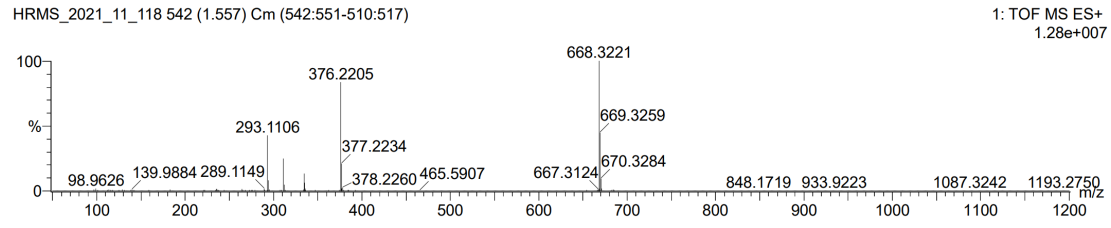
HRMS spectra of **3f**



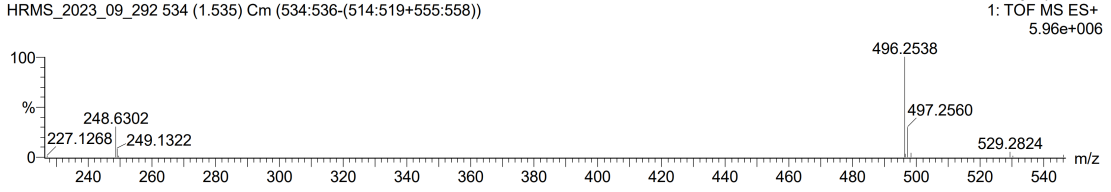
HRMS spectra of **3g**



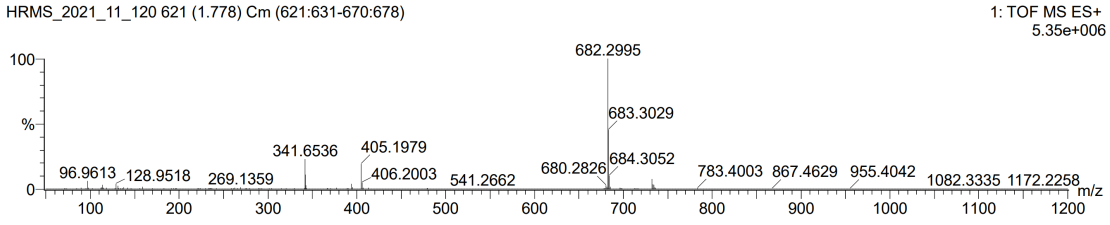
HRMS spectra of **5a**



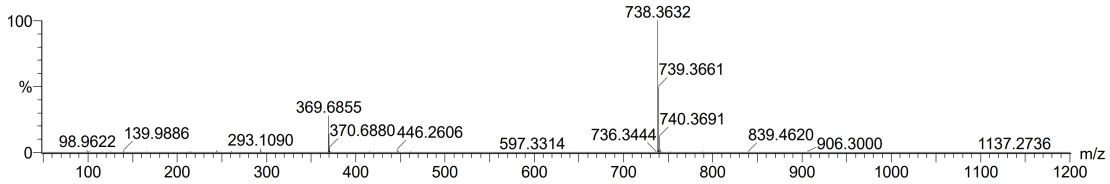
HRMS spectra of **6a**

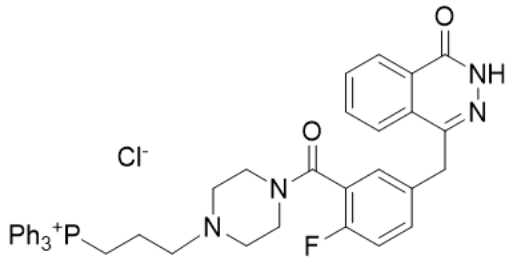


HRMS spectra of **6b**



HRMS spectra of **6c**

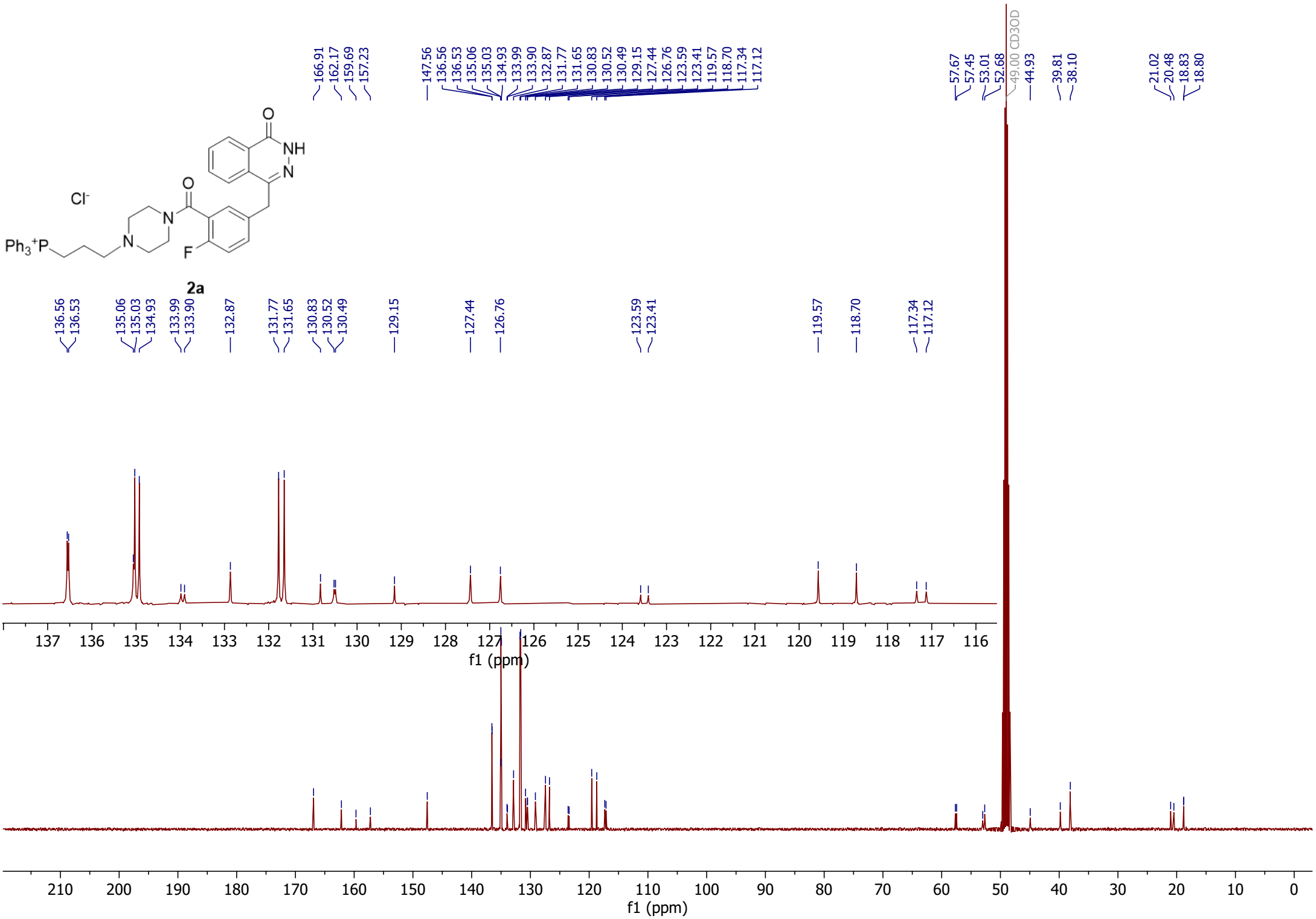


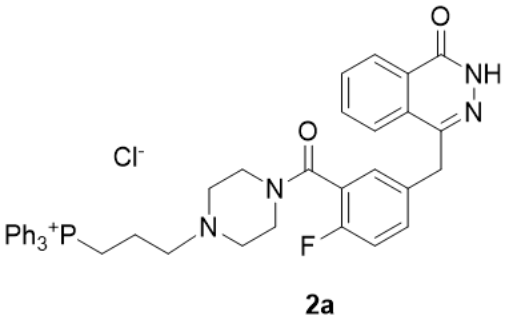


2a

f1 (ppm)

f1 (ppm)


166.91
162.17
159.69
157.23
147.56
136.56
136.53
135.06
135.03
134.93
133.99
133.90
132.87
131.77
131.65
130.83
130.52
130.49
129.15
127.44
126.76
123.59
123.41
119.57
118.70
117.34
117.12
57.67
57.45
53.01
52.68
49.00 CD3OD
44.93
39.81
38.10
21.02
20.48
18.83
18.80
O
NH
N
O
Cl-
N
N
Ph3+P
F
2a
f1 (ppm)
f1 (ppm)

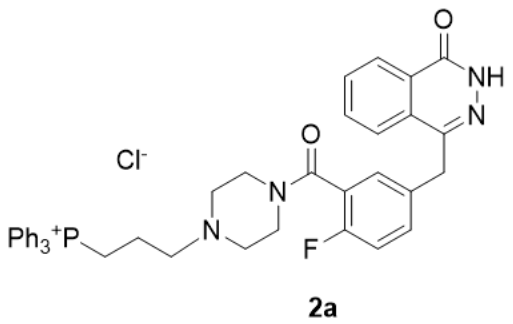


2a

-120.04
-120.25
-120.27
-120.29
-120.31
-120.48
-120.50
-120.52
-120.54
-120.69

70 60 50 40 30 20 10 0 -10 -20 -30 -40 -50 -60 -70 -80 -90 -100 -110 -120 -130 -140 -150 -160 -170 -180 -190 -200 -210 -220 -230 -240 -250 -260 -270

f1 (ppm)

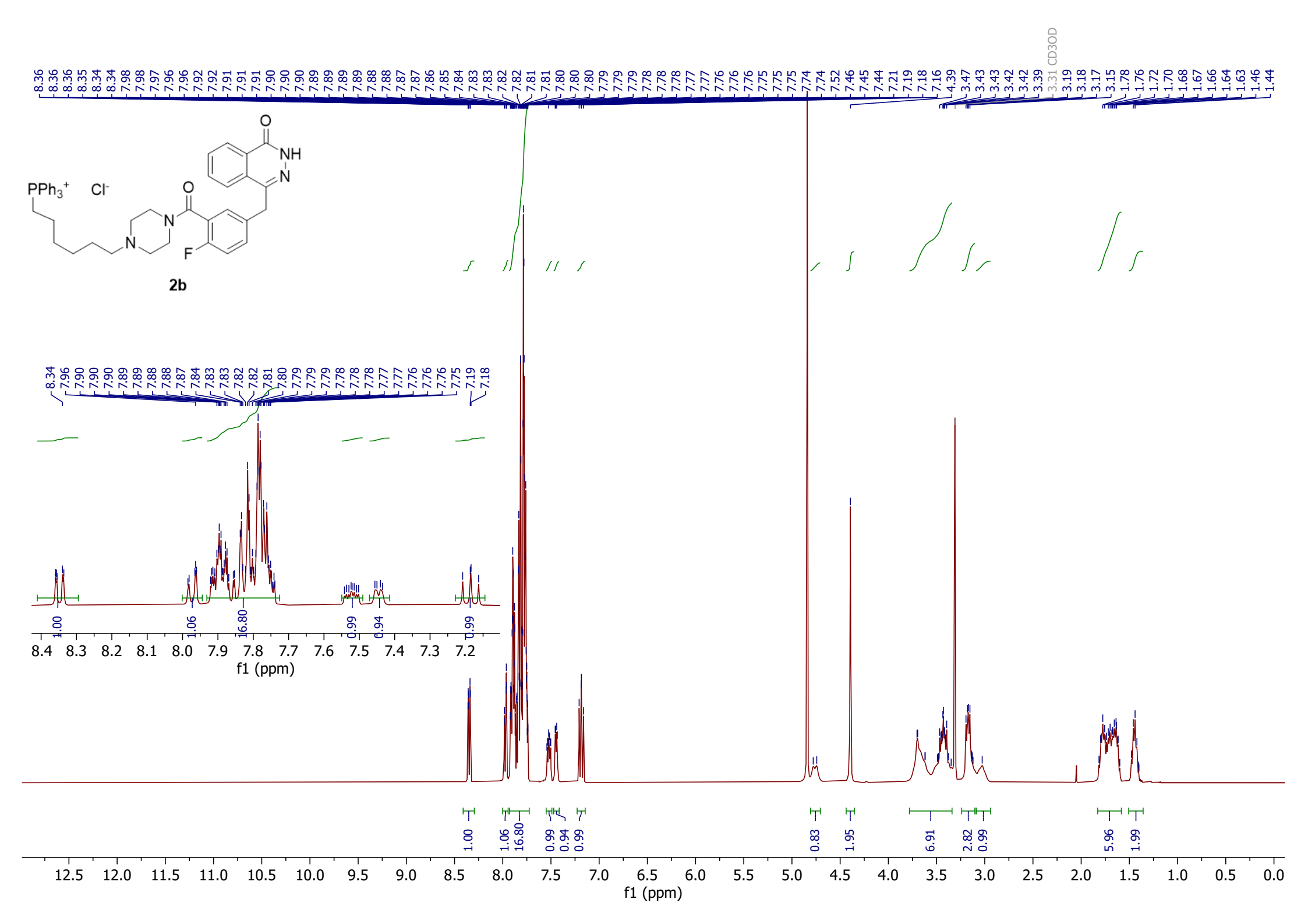


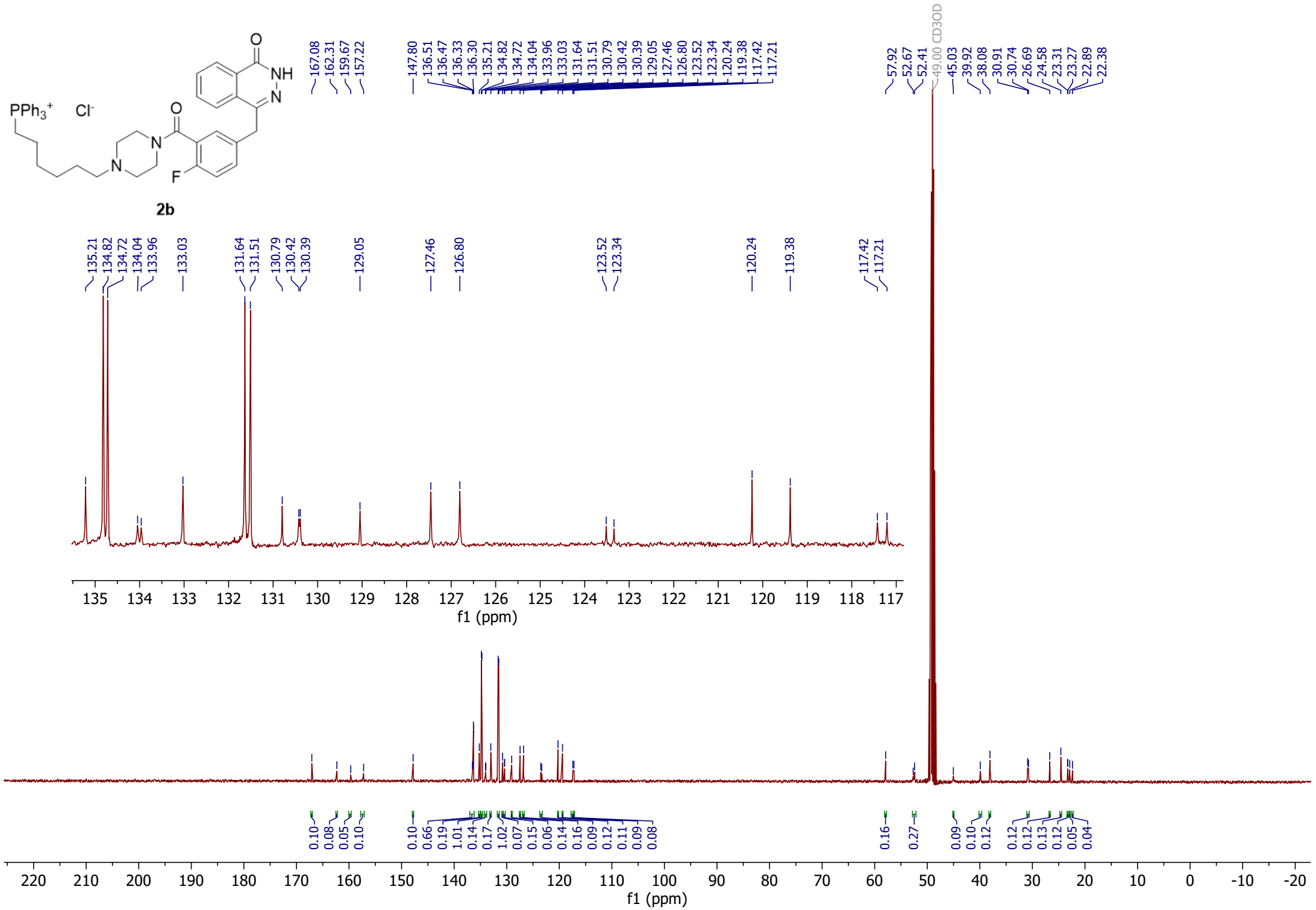
2a

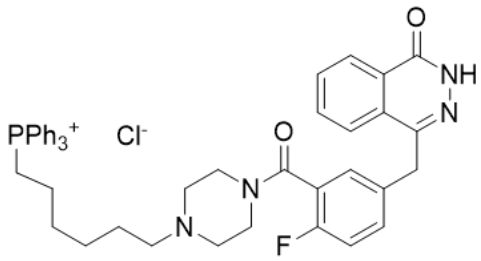
23.67

24.1 24.0 23.9 23.8 23.7 23.6 23.5 23.4 23.3 23.2 23.1
f1 (ppm)

220 200 180 160 140 120 100 80 60 40 20 0 -20 -40 -60 -80 -100 -120 -140 -160 -180 -200 -220 -240 -260 -280 -300 -320
f1 (ppm)


PPh3+ Cl-
O
NH
N
N
N
O
F
2b
3.31 CD3OD
f1 (ppm)


PPh3+ Cl-
O
NH
N
N
N
O
F
2b
167.08
162.31
159.67
157.22
147.80
136.51
136.47
136.33
136.30
135.21
134.82
134.72
134.04
133.96
133.03
131.64
131.51
130.79
130.42
130.39
129.05
127.46
126.80
123.52
123.34
120.24
119.38
117.42
117.21
57.92
52.67
52.41
49.00 CD3OD
45.03
39.92
38.08
30.91
30.74
26.69
24.58
23.31
23.27
22.89
22.38
f1 (ppm)
f1 (ppm)

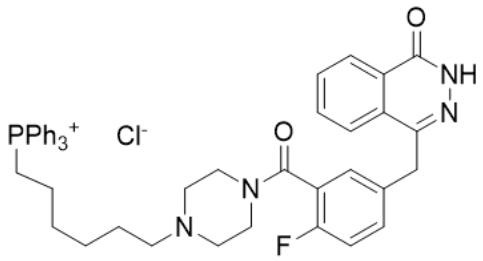


2b

-119.91
-120.13
-120.15
-120.17
-120.18

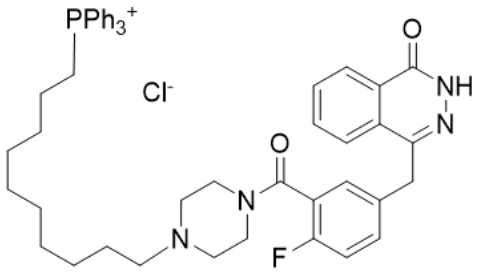
70 60 50 40 30 20 10 0 -10 -20 -30 -40 -50 -60 -70 -80 -90 -100 -110 -120 -130 -140 -150 -160 -170 -180 -190 -200 -210 -220 -230 -240 -250 -260 -270

f1 (ppm)


PPh3+
Cl-
O
NH
N
N
N
O
F

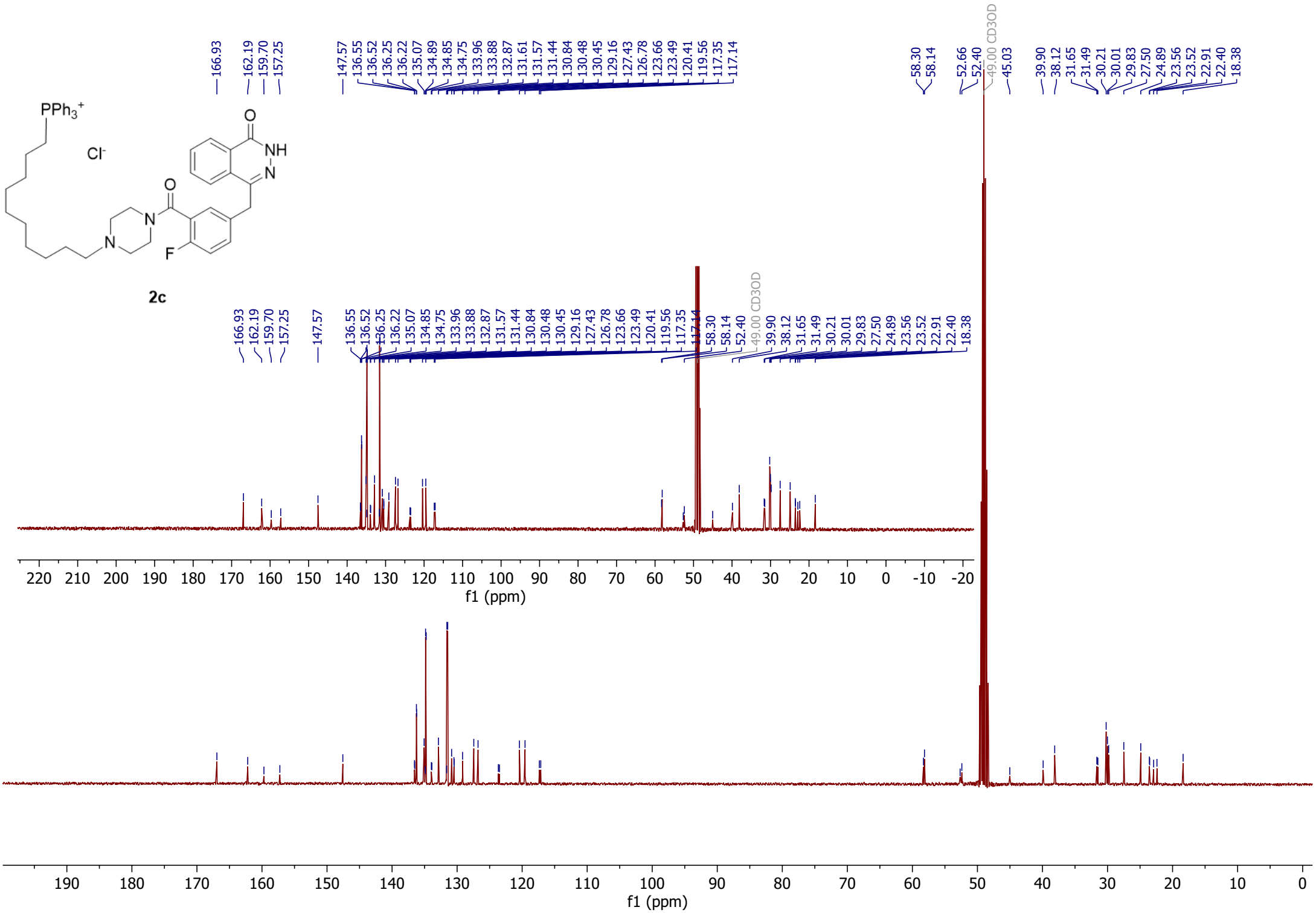
2b

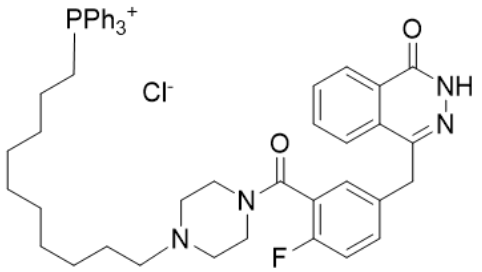
23.69
25.5
25.0
24.5
24.0
23.5
23.0
22.5
22.0
f1 (ppm)
220
200
180
160
140
120
100
80
60
40
20
0
-20
-40
-60
-80
-100
-120
-140
-160
-180
-200
-220
-240
-260
-280
-300
-320
f1 (ppm)


PPh3+
Cl-
O
NH
N
O
N
N
F

2c

8.35 8.33 7.81 7.80 7.79 7.78 7.77 7.76 7.74 7.71 7.69 7.68 7.67 7.67 7.66 7.64 7.64 7.62 7.61 7.39 7.30 7.30 7.29 7.29 7.28 7.28 7.27 7.26 7.25 7.00 6.99 6.98 6.95 4.74 4.70 4.24 3.91 3.88 3.85 3.61 3.59 3.56 3.55 3.40 3.33 3.32 3.31 3.31 CD3OD 3.31 3.31 3.30 3.27 3.10 3.05 1.80 1.57 1.52 1.50 1.47 1.29 1.26 1.24 1.19 1.17
1.00 17.65 0.89 0.97 1.01 1.00 1.98 1.00 2.97 3.38 6.85 2.04 4.06 9.95
11.5 11.0 10.5 10.0 9.5 9.0 8.5 8.0 7.5 7.0 6.5 6.0 5.5 5.0 4.5 4.0 3.5 3.0 2.5 2.0 1.5 1.0 0.5 0.0
f1 (ppm)


166.93
162.19
159.70
157.25
147.57
136.55
136.52
136.25
136.22
135.07
134.89
134.85
134.75
133.96
133.88
132.87
131.61
131.57
131.44
130.84
130.48
130.45
129.16
127.43
126.78
123.66
123.49
120.41
119.56
117.35
117.14
58.30
58.14
52.66
52.40
49.00 CD3OD
45.03
39.90
38.12
31.65
31.49
30.21
30.01
29.83
27.50
24.89
23.56
23.52
22.91
22.40
18.38
PPh3+
Cl-
O
NH
N
O
N
N
F
2c
f1 (ppm)
f1 (ppm)

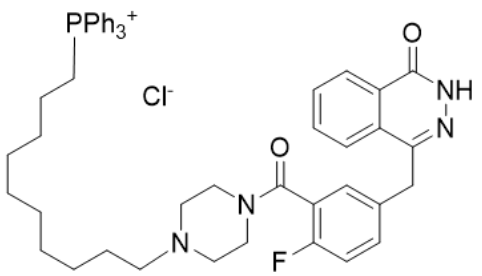


2c

-120.27
-120.30
-120.32
-120.33
-120.41
-120.42
-120.63
-120.65
-120.67
-120.69
-120.71

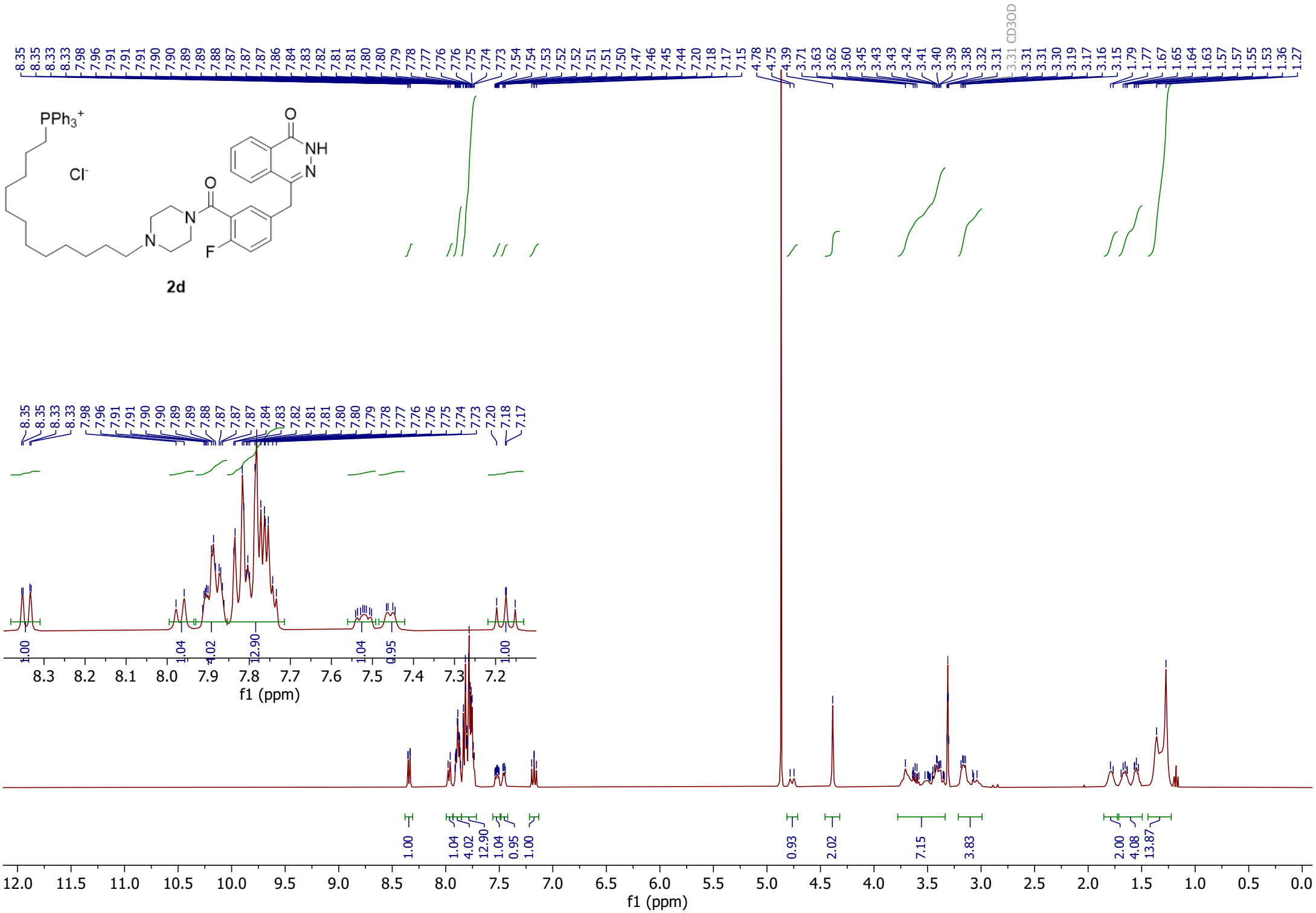
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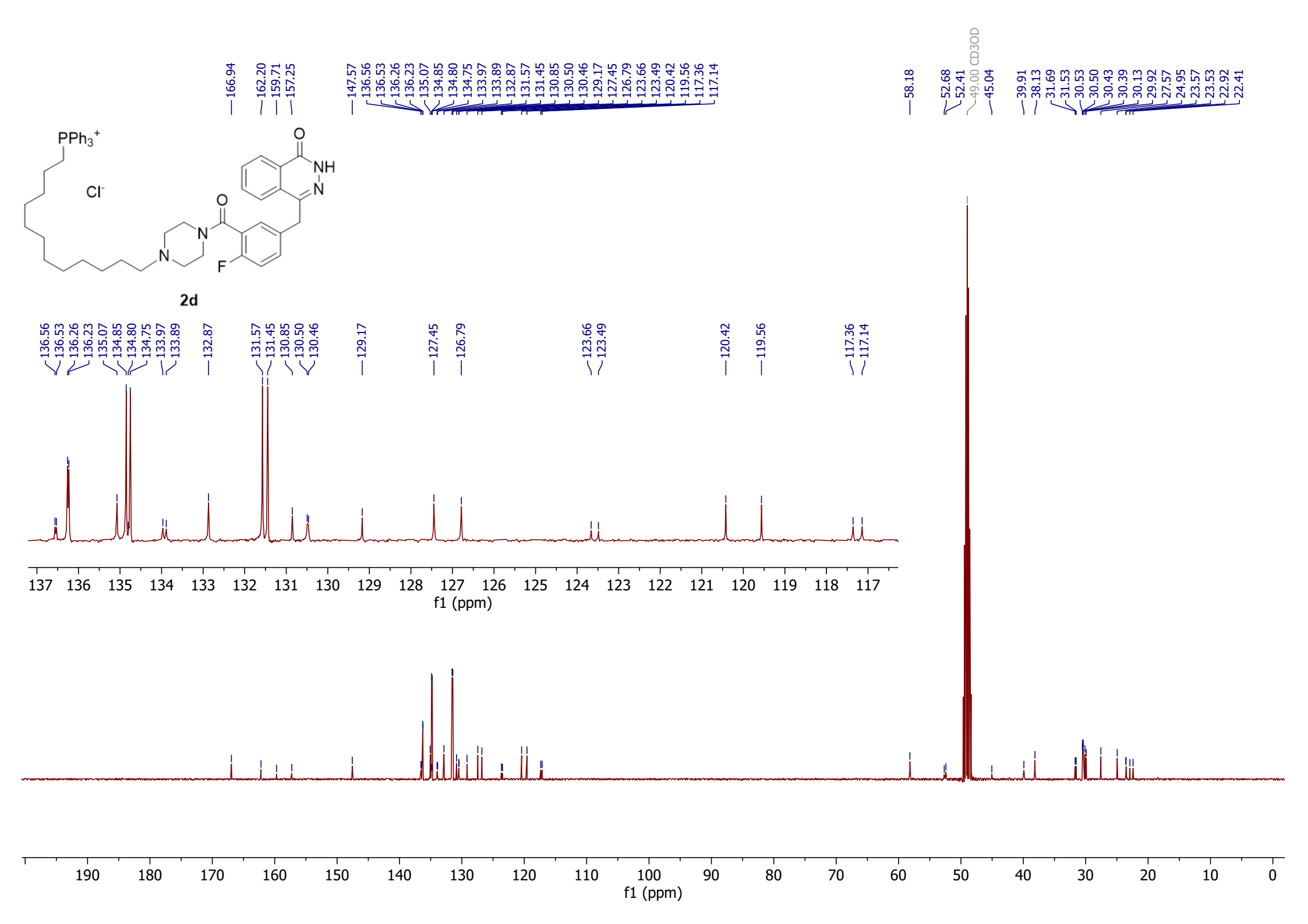
f1 (ppm)

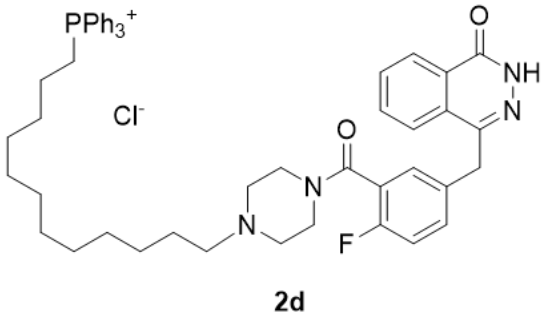

PPh3+
Cl-
O
NH
N
O
N
N
F

2c

23.81
220 200 180 160 140 120 100 80 60 40 20 0 -20 -40 -60 -80 -100 -120 -140 -160 -180 -200 -220 -240 -260 -280 -300 -320
f1 (ppm)


PPh3+
Cl-
O
NH
N
O
N
N
F
2d
CD3OD
f1 (ppm)


166.94
162.20
159.71
157.25
147.57
136.56
136.53
136.26
136.23
135.07
134.85
134.80
134.75
133.97
133.89
132.87
131.57
131.45
130.85
130.50
130.46
129.17
127.45
126.79
123.66
123.49
120.42
119.56
117.36
117.14
58.18
52.68
52.41
49.00 CD3OD
45.04
39.91
38.13
31.69
31.53
30.53
30.50
30.43
30.39
30.13
29.92
27.57
24.95
23.57
23.53
22.92
22.41
PPh3+
Cl-
O
NH
N
O
N
N
F
2d
f1 (ppm)
f1 (ppm)

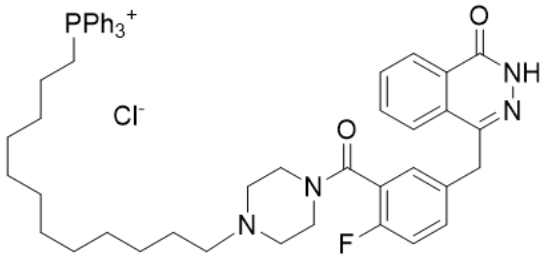


2d

-120.06
-120.27
-120.29
-120.31
-120.33
-120.63
-120.72
-120.91
-120.93
-120.95

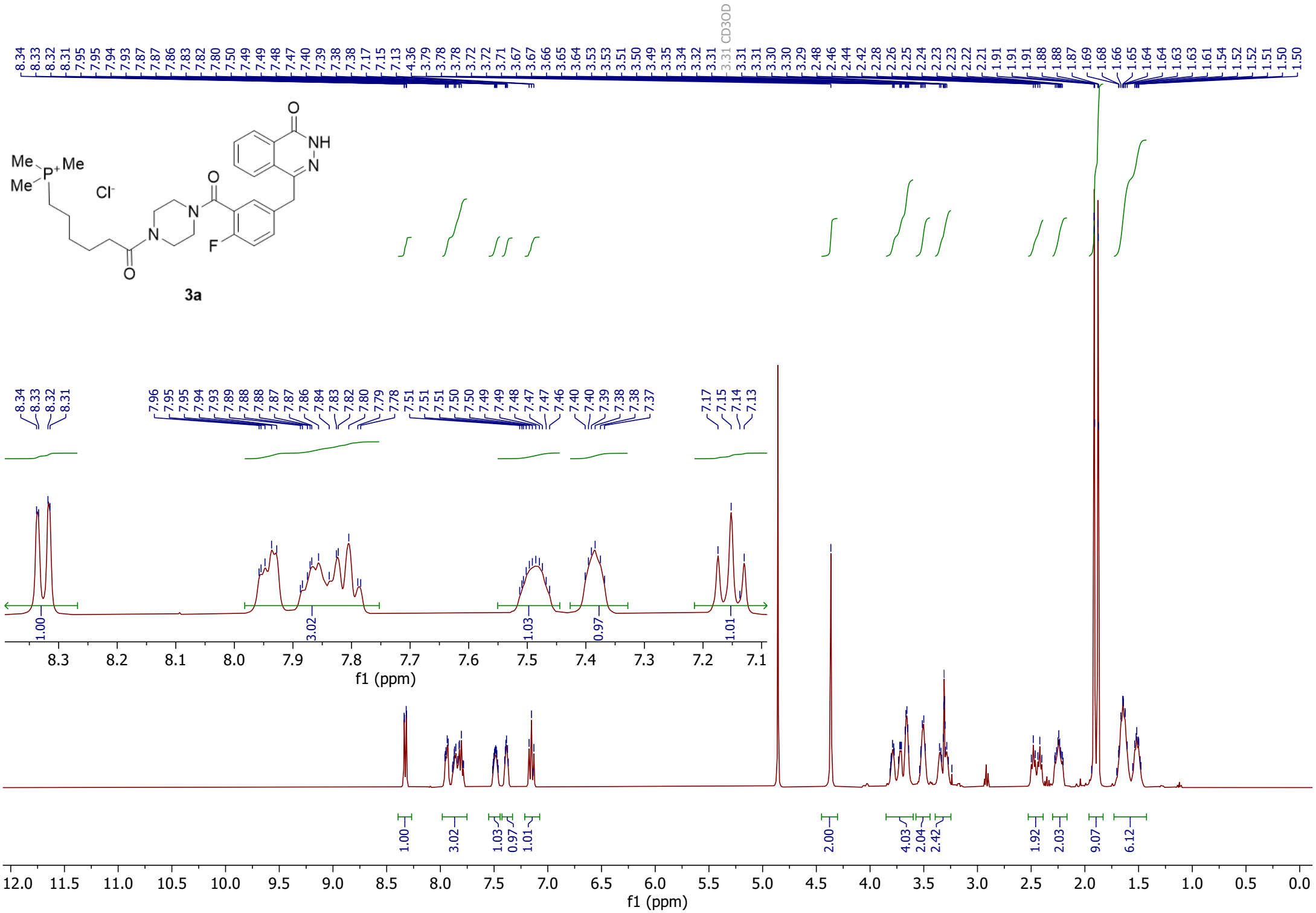
70 60 50 40 30 20 10 0 -10 -20 -30 -40 -50 -60 -70 -80 -90 -100 -110 -120 -130 -140 -150 -160 -170 -180 -190 -200 -210 -220 -230 -240 -250 -260 -270

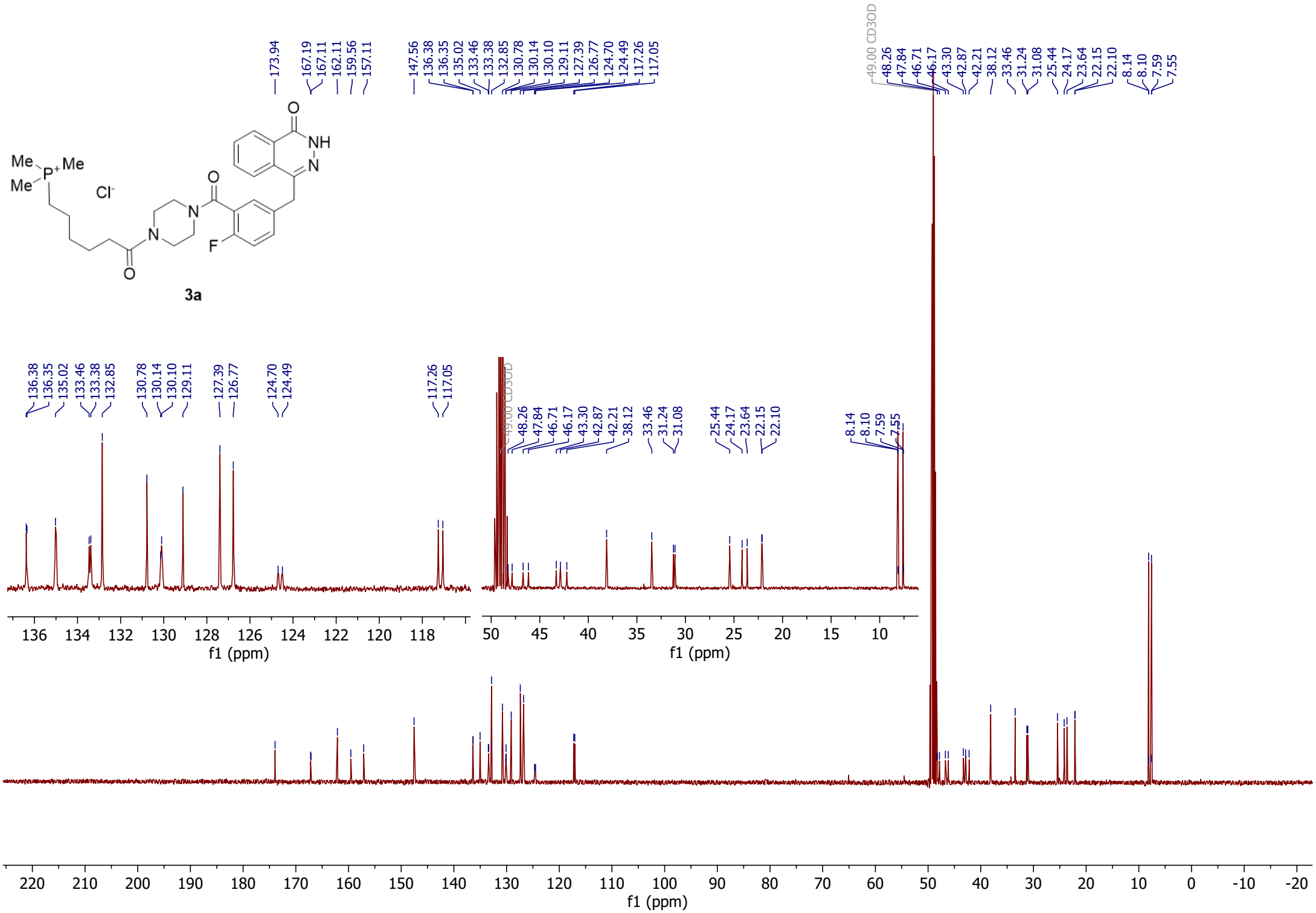
f1 (ppm)

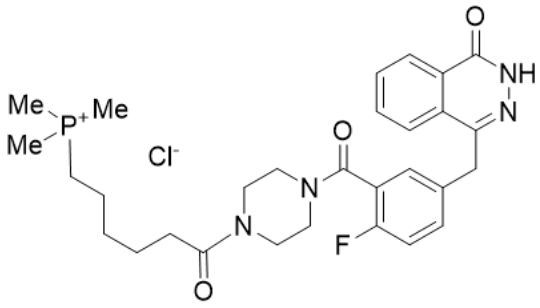

PPh3+
Cl-
O
NH
N
O
N
N
F

2d

23.81
200
180
160
140
120
100
80
60
40
20
0
-20
-40
-60
-80
-100
-120
-140
-160
-180
f1 (ppm)


3.31 CD3OD
Me
Me
P+
Me
Cl-
O
NH
N
N
N
O
F
O
3a
f1 (ppm)
f1 (ppm)


173.94
167.19
167.11
162.11
159.56
157.11
147.56
136.38
136.35
135.02
133.46
133.38
132.85
130.78
130.14
130.10
129.11
127.39
126.77
124.70
124.49
117.26
117.05
49.00 CD3OD
48.26
47.84
46.71
46.17
43.30
42.87
42.21
38.12
33.46
31.24
31.08
25.44
24.17
23.64
22.15
22.10
8.14
8.10
7.59
7.55
Me
Me
P+
Me
Cl-
O
NH
N
N
N
O
O
F
O
3a
f1 (ppm)
f1 (ppm)
f1 (ppm)

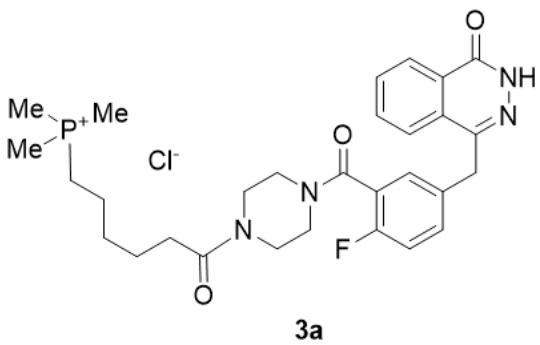


3a

-120.55
-120.56
-120.57
-120.59
-120.61
-120.63

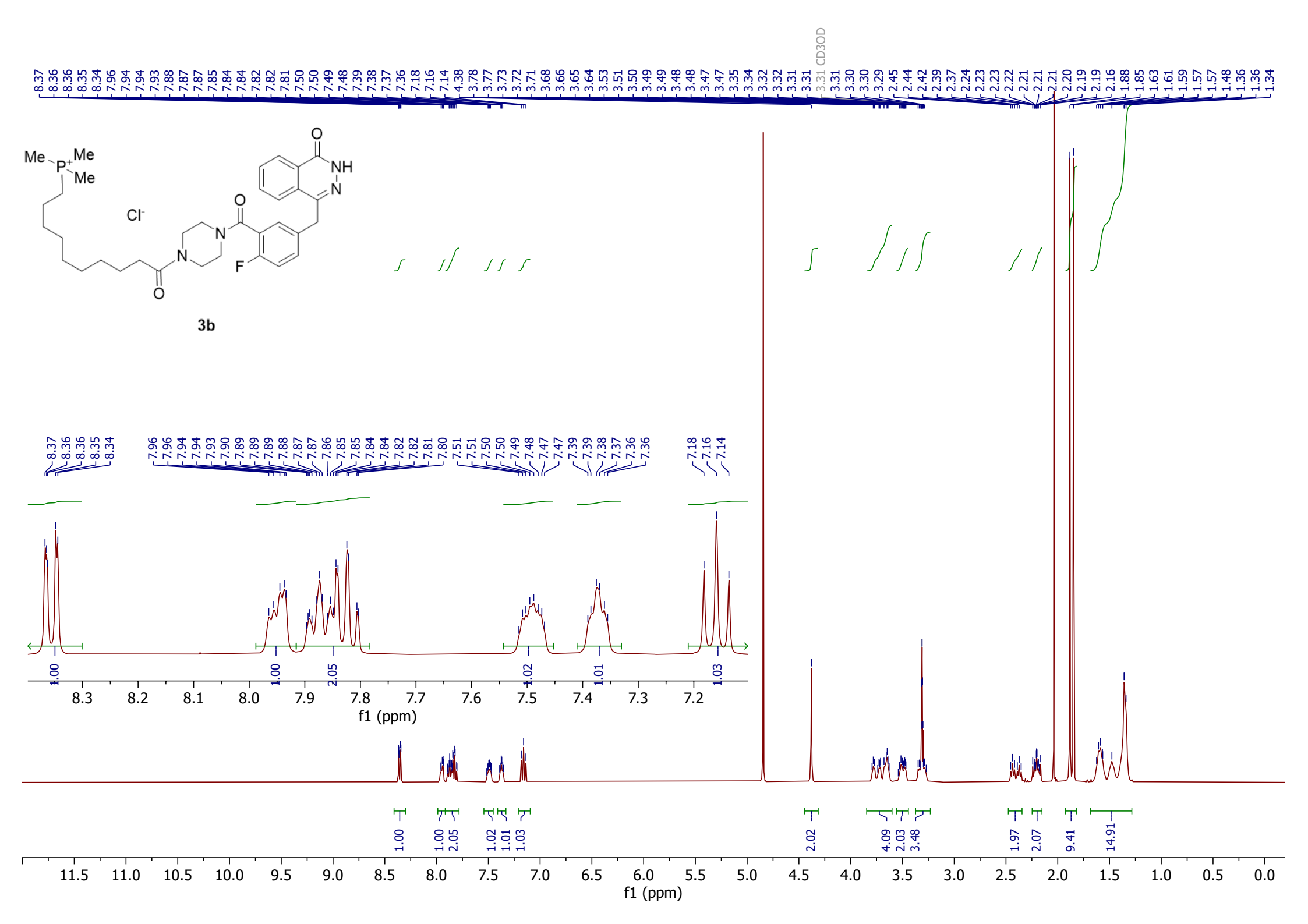
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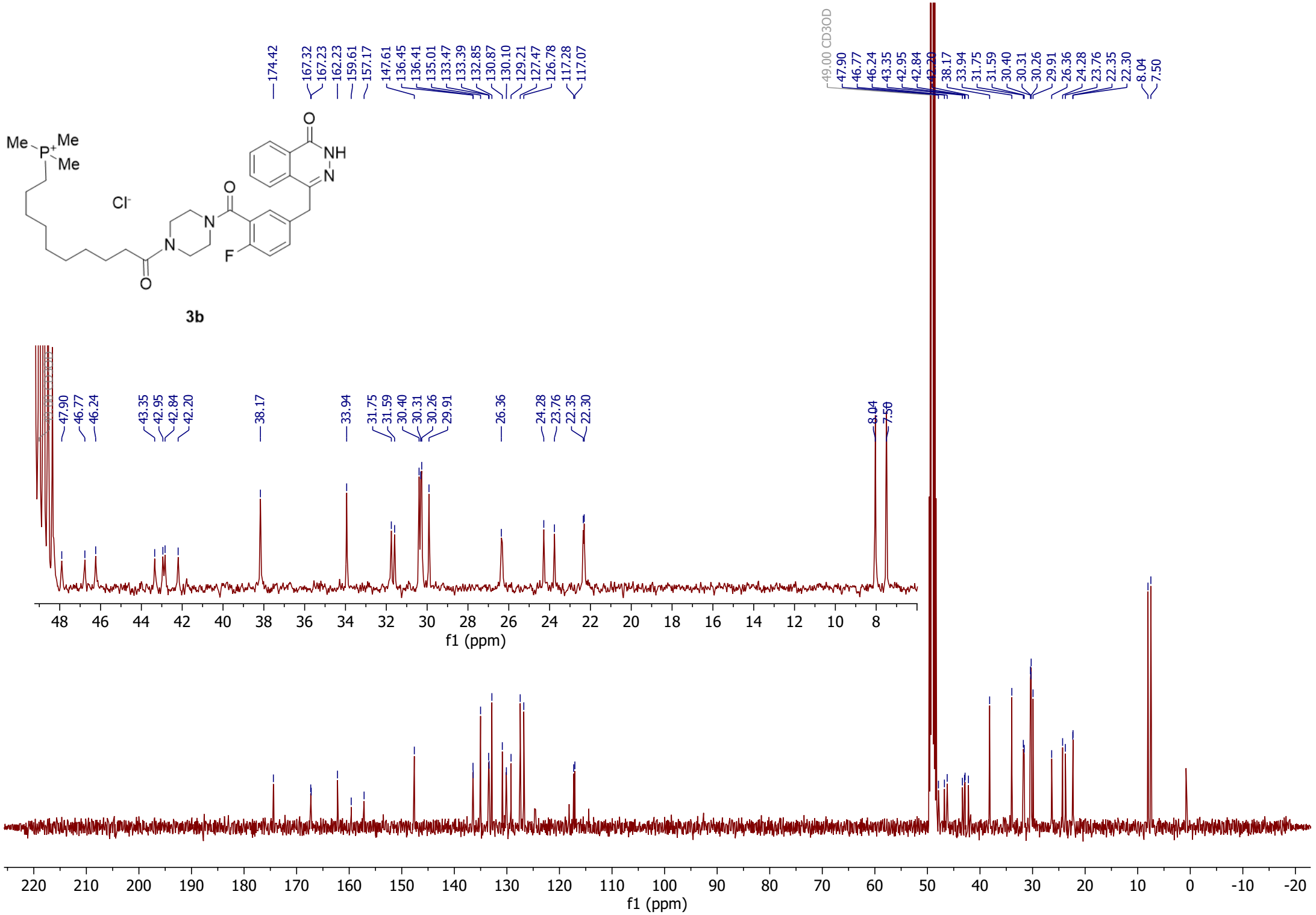
f1 (ppm)

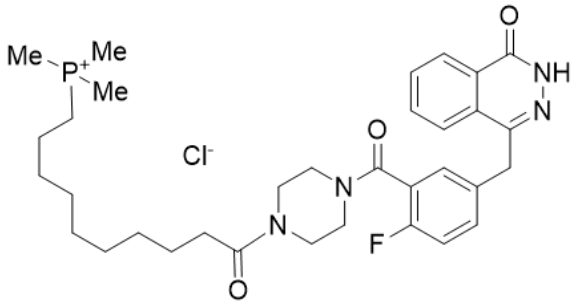

Me
Me
P+
Me
Cl-
O
N
N
O
O
NH
N
F

3a

27.29
27.29
27.8 27.7 27.6 27.5 27.4 27.3 27.2 27.1 27.0 26.9 26.8 26.7 26.6
f1 (ppm)
220 200 180 160 140 120 100 80 60 40 20 0 -20 -40 -60 -80 -100 -120 -140 -160 -180 -200 -220 -240 -260 -280 -300 -320
f1 (ppm)


3.31 CD3OD
Me
P+
Me
Me
Cl-
O
NH
N
O
N
N
O
F
O
3b
f1 (ppm)
f1 (ppm)


174.42
167.32
167.23
162.23
159.61
157.17
147.61
136.45
136.41
135.01
133.47
133.39
132.85
130.87
130.10
129.21
127.47
126.78
117.28
117.07
49.00 CD3OD
47.90
46.77
46.24
43.35
42.95
42.84
42.20
38.17
33.94
31.75
31.59
30.40
30.31
30.26
29.91
26.36
24.28
23.76
22.35
22.30
8.04
7.50
Me
P+
Me
Me
Cl-
O
NH
N
O
N
N
O
F
O
3b
f1 (ppm)
f1 (ppm)

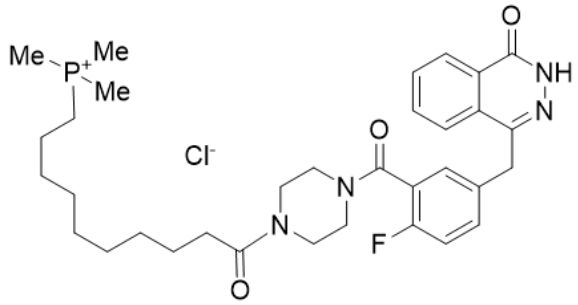


3b

-120.66
-120.67
-120.68
-120.70
-120.71
-120.73
-120.74
-120.75
-120.77

70 60 50 40 30 20 10 0 -10 -20 -30 -40 -50 -60 -70 -80 -90 -100 -110 -120 -130 -140 -150 -160 -170 -180 -190 -200 -210 -220 -230 -240 -250 -260 -270

f1 (ppm)

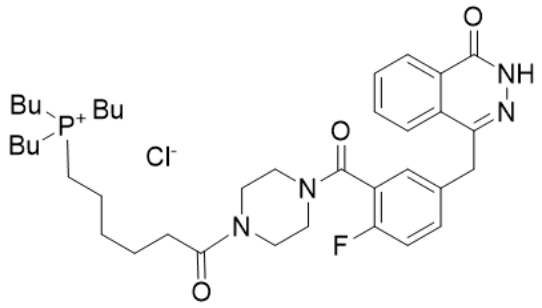


3b

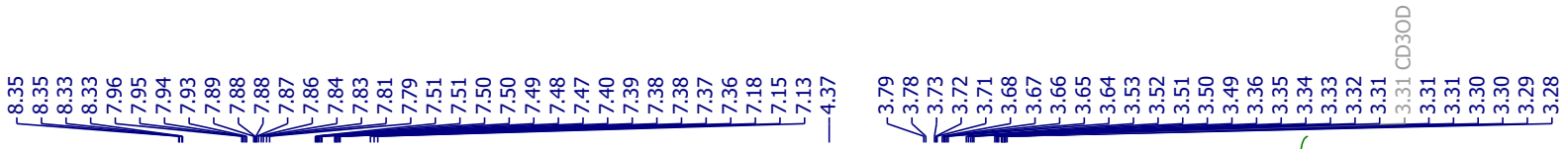
27.19

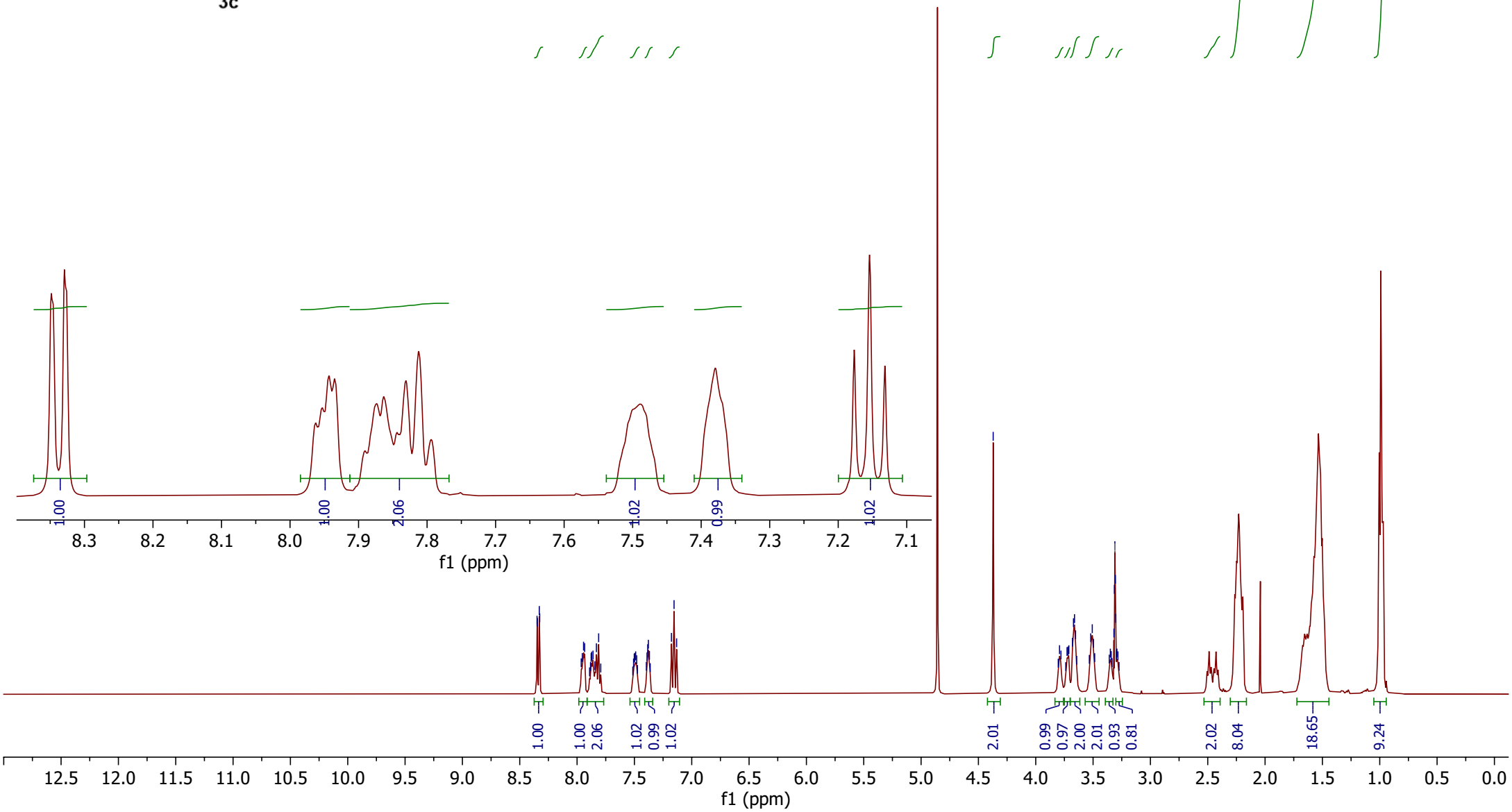
220 200 180 160 140 120 100 80 60 40 20 0 -20 -40 -60 -80 -100 -120 -140 -160 -180 -200 -220 -240 -260 -280 -300 -320

f1 (ppm)

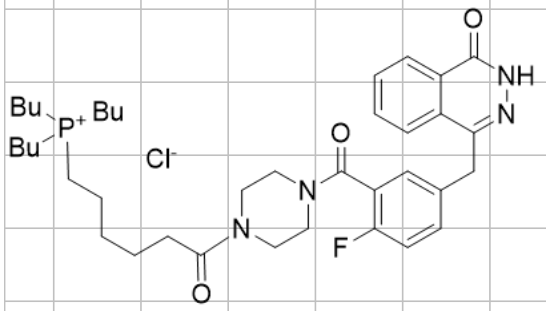

Bu
Bu
P+
Bu
Cl-
O
N
N
O
NH
N
O
F

3c


8.35 8.35 8.33 8.33 7.96 7.95 7.94 7.93 7.89 7.88 7.88 7.87 7.86 7.84 7.83 7.81 7.79 7.51 7.51 7.50 7.50 7.49 7.48 7.47 7.40 7.39 7.38 7.38 7.37 7.36 7.18 7.15 7.13 4.37
3.79 3.78 3.73 3.72 3.71 3.68 3.67 3.66 3.65 3.64 3.53 3.52 3.51 3.50 3.49 3.36 3.35 3.34 3.33 3.32 3.31 3.31 CD3OD 3.31 3.31 3.30 3.30 3.29 3.28


1.00 1.00 2.06 1.02 0.99 1.02
8.3 8.2 8.1 8.0 7.9 7.8 7.7 7.6 7.5 7.4 7.3 7.2 7.1
f1 (ppm)
1.00 1.00 2.06 1.02 0.99 1.02 2.01 0.99 0.97 2.00 2.01 0.93 0.81 2.02 8.04 18.65 9.24
12.5 12.0 11.5 11.0 10.5 10.0 9.5 9.0 8.5 8.0 7.5 7.0 6.5 6.0 5.5 5.0 4.5 4.0 3.5 3.0 2.5 2.0 1.5 1.0 0.5 0.0
f1 (ppm)

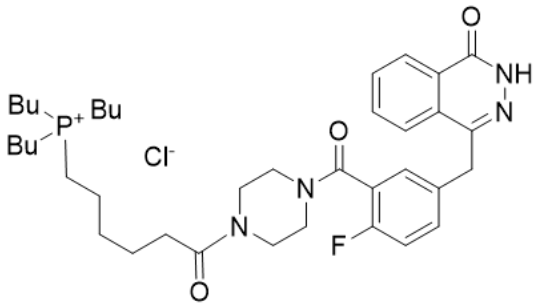
FMSG2-PD-441.11.fid



3c

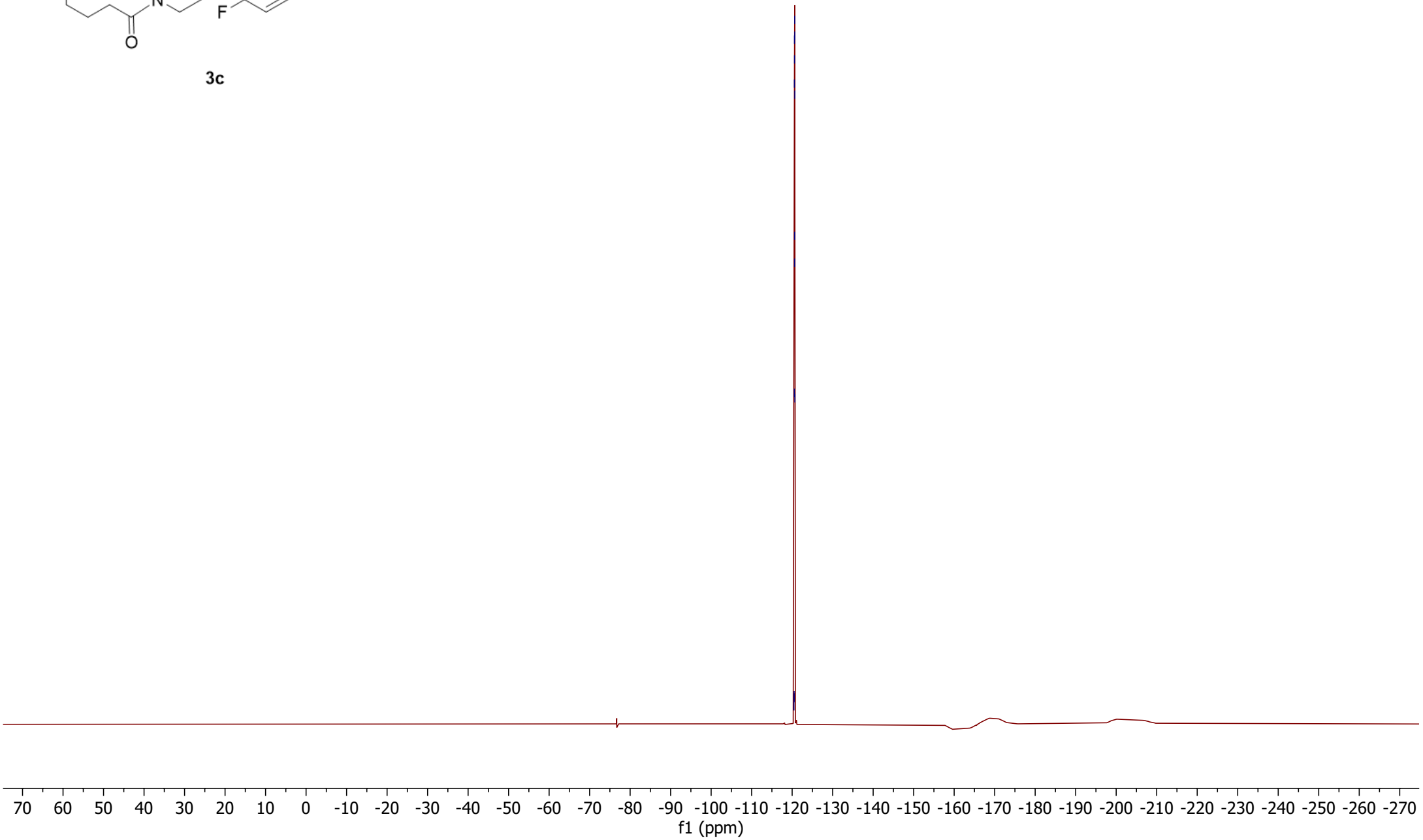
173.94
167.21
167.12
162.13
159.57
157.12
147.56
136.40
136.37
135.03
133.46
133.38
132.84
130.81
130.09
130.04
129.15
127.41
126.79
124.72
124.54
117.26
117.04
49.00 CD3OD
48.26
47.84
46.72
46.16
43.30
42.87
42.22
38.14
33.47
31.41
31.26
25.41
25.02
24.86
24.37
24.33
22.21
22.17
19.49
19.31
19.01
18.84
13.71

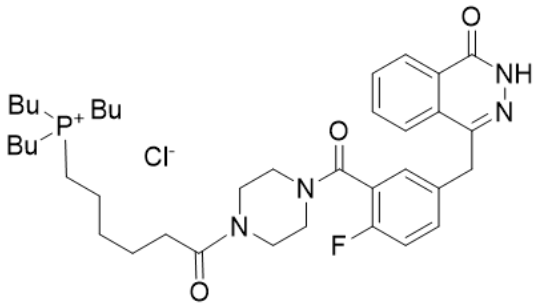
220 210 200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 -10 -20
f1 (ppm)


Bu
Bu
P+
Bu
Cl-
O
NH
N
O
N
N
F
O

3c

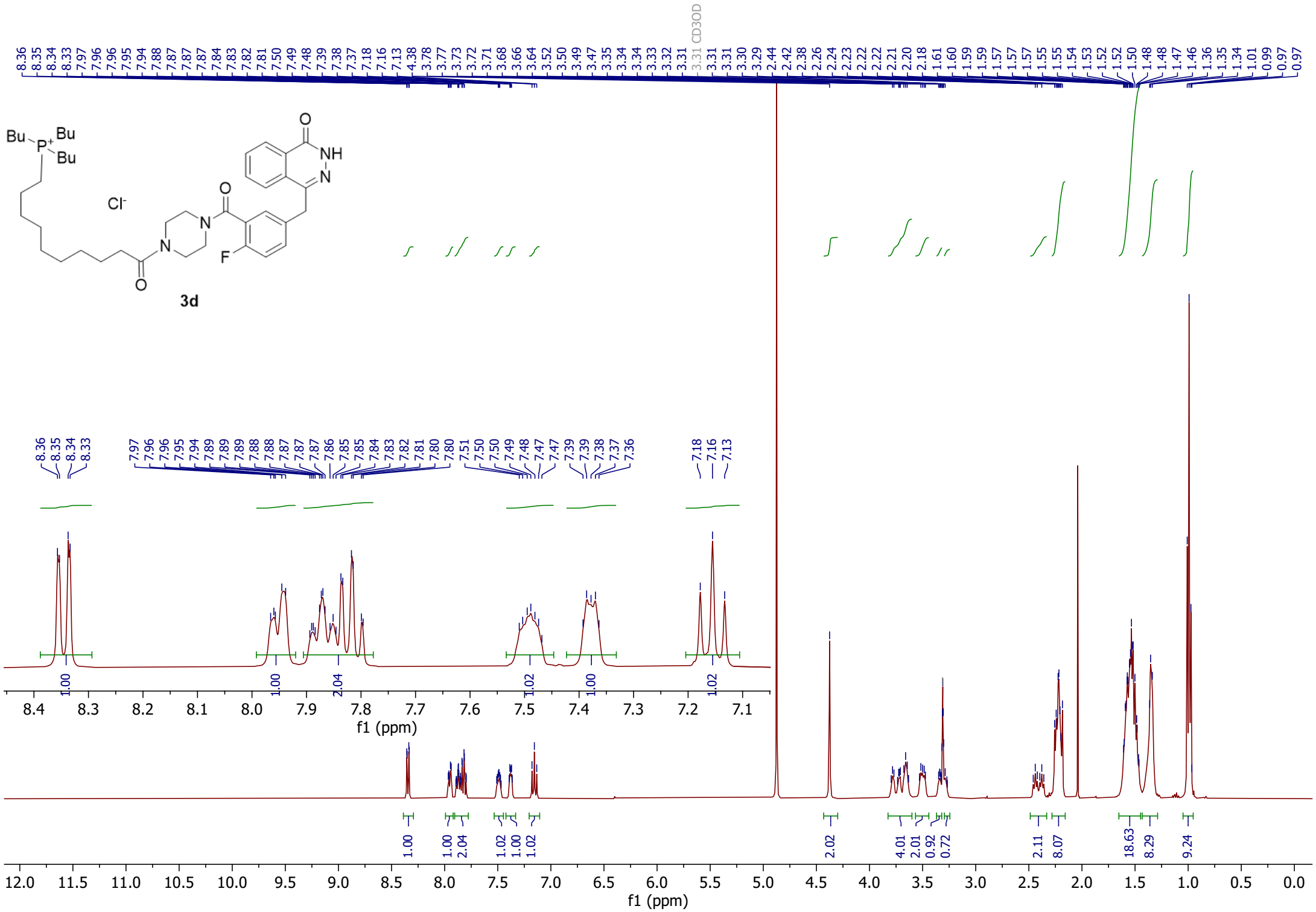

-120.44
-120.46
-120.47
-120.49
-120.50
-120.55
-120.56
-120.57
-120.59
-120.60
-120.61
-120.63
-120.64
-120.65
-120.67

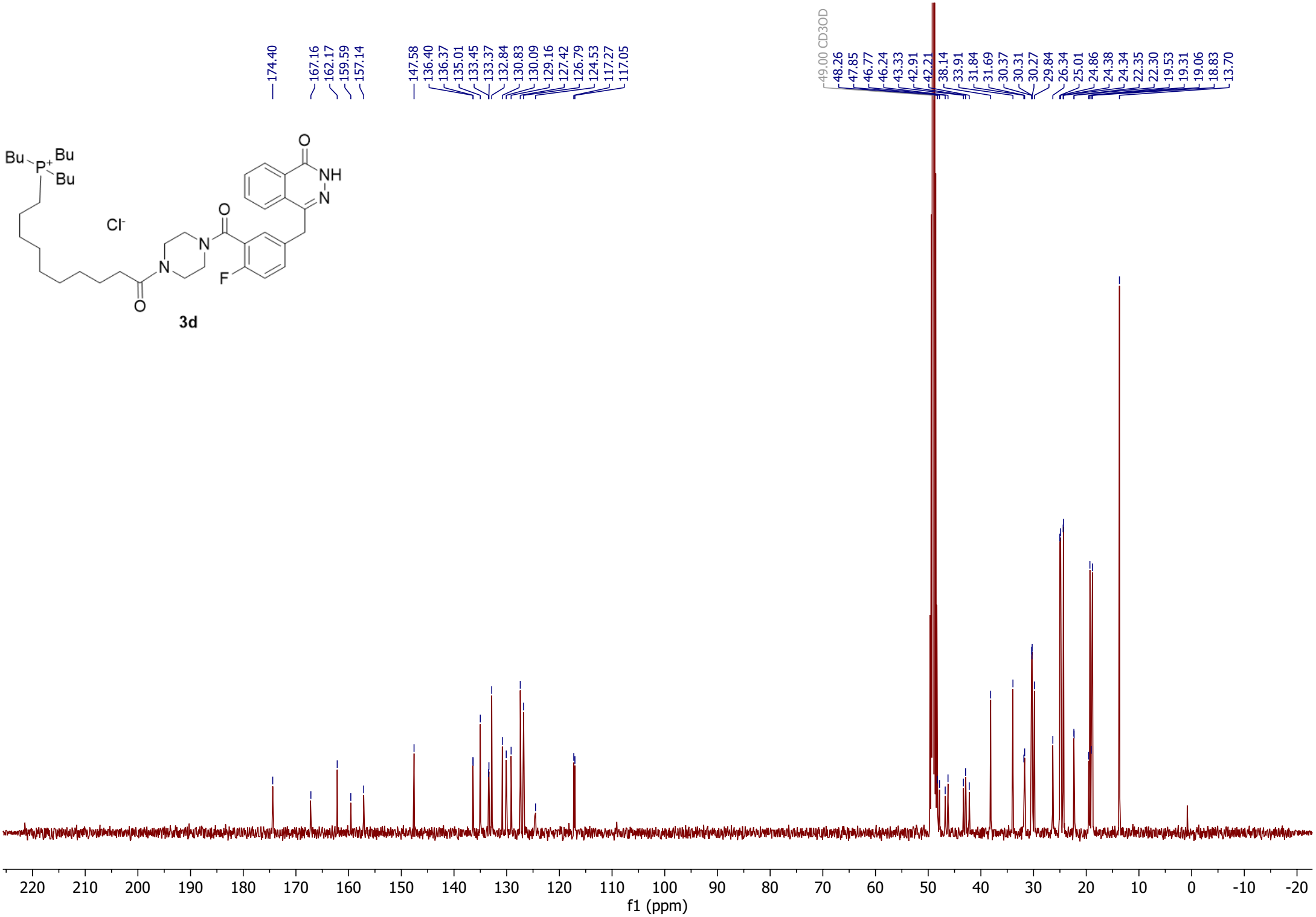

70 60 50 40 30 20 10 0 -10 -20 -30 -40 -50 -60 -70 -80 -90 -100 -110 -120 -130 -140 -150 -160 -170 -180 -190 -200 -210 -220 -230 -240 -250 -260 -270
f1 (ppm)

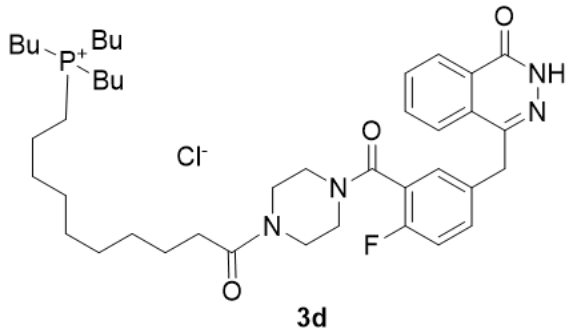

Bu
Bu
P+
Bu
Cl-
O
NH
N
O
N
N
F
O

3c

33.45
220 200 180 160 140 120 100 80 60 40 20 0 -20 -40 -60 -80 -100 -120 -140 -160 -180 -200 -220 -240 -260 -280 -300 -320
f1 (ppm)


3.31 CD3OD
Bu
P+
Bu
Bu
Cl-
O
NH
N
O
N
N
F
O
O
3d
f1 (ppm)
f1 (ppm)


174.40
167.16
162.17
159.59
157.14
147.58
136.40
136.37
135.01
133.45
133.37
132.84
130.83
130.09
129.16
127.42
126.79
124.53
117.27
117.05
49.00 CD3OD
48.26
47.85
46.77
46.24
43.33
42.91
42.21
38.14
33.91
31.84
31.69
30.37
30.31
30.27
29.84
26.34
25.01
24.86
24.38
24.34
22.35
22.30
19.53
19.31
19.06
18.83
13.70
Bu
P+
Bu
Bu
Cl-
O
NH
N
O
N
N
O
F
O
3d
220
210
200
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
-10
-20
f1 (ppm)

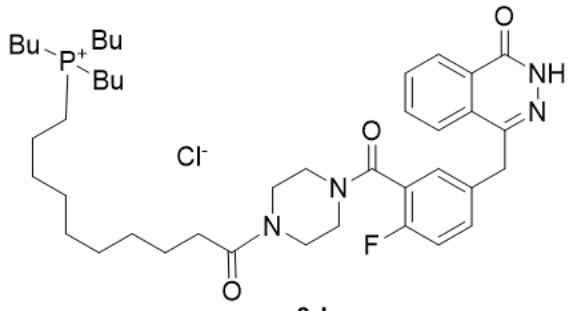


3d

-120.47
-120.49
-120.50
-120.51
-120.53
-120.58
-120.60
-120.61
-120.62
-120.63
-120.65
-120.67
-120.69

70 60 50 40 30 20 10 0 -10 -20 -30 -40 -50 -60 -70 -80 -90 -100 -110 -120 -130 -140 -150 -160 -170 -180 -190 -200 -210 -220 -230 -240 -250 -260 -270

f1 (ppm)

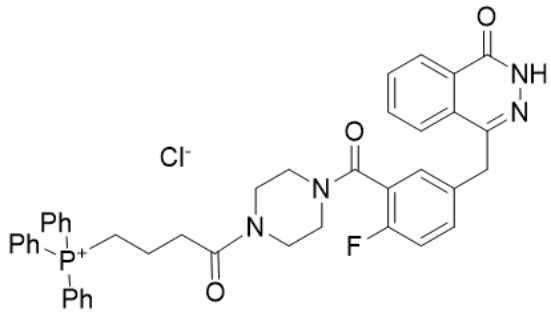


3d

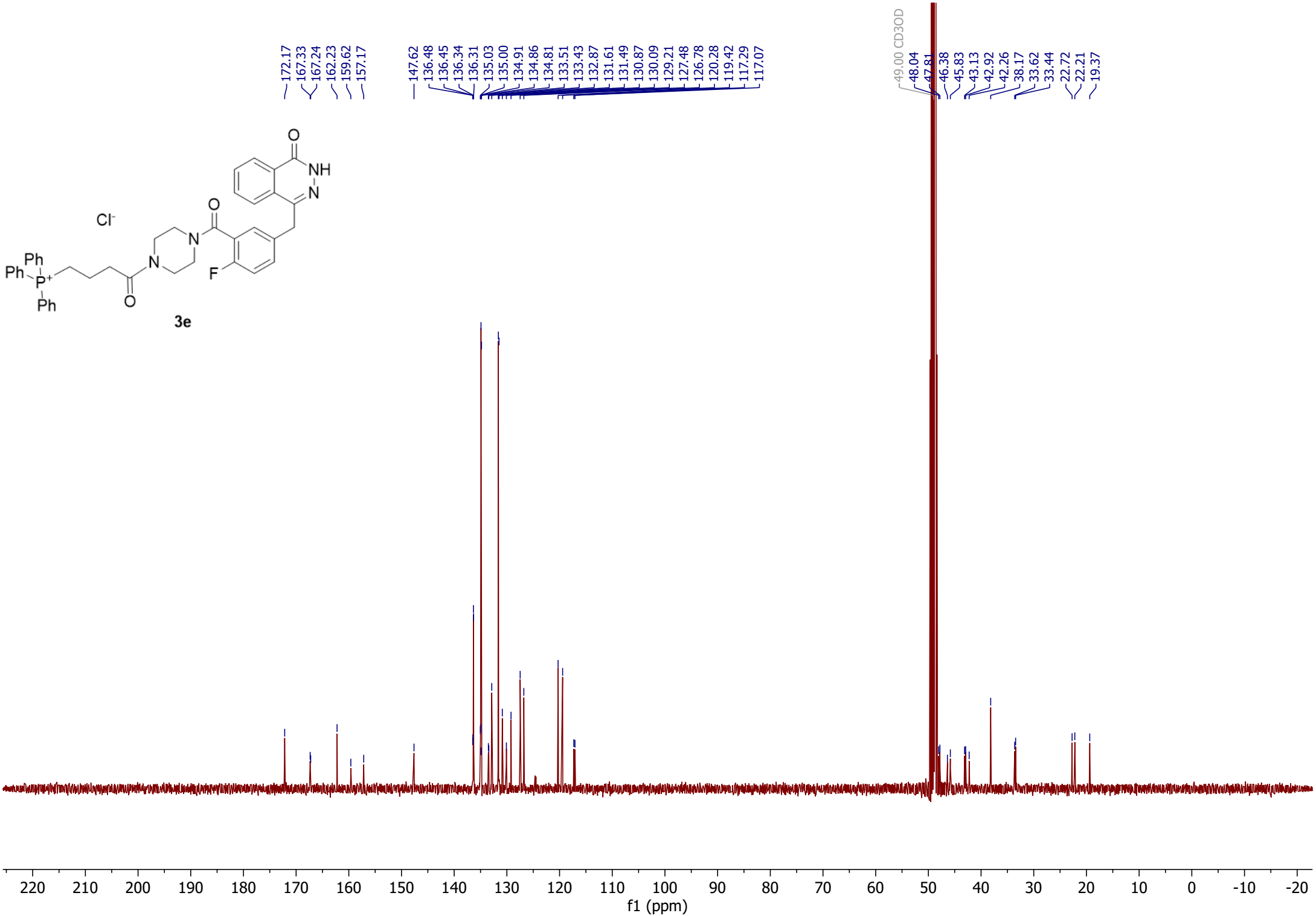
33.41

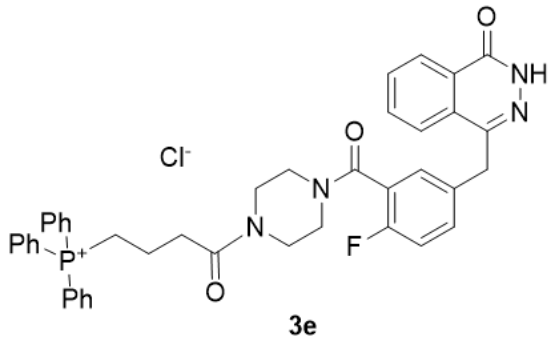
220 200 180 160 140 120 100 80 60 40 20 0 -20 -40 -60 -80 -100 -120 -140 -160 -180 -200 -220 -240 -260 -280 -300 -320

f1 (ppm)



3e

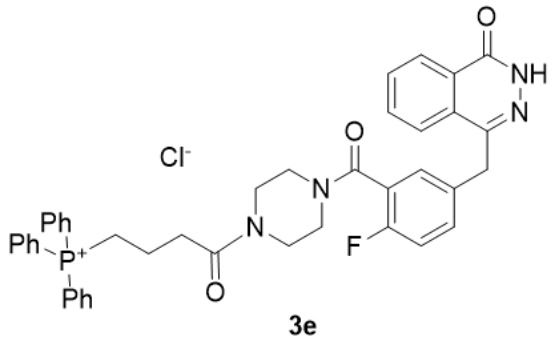

172.17
167.33
167.24
162.23
159.62
157.17
147.62
136.48
136.45
136.34
136.31
135.03
135.00
134.91
134.86
134.81
133.51
133.43
132.87
131.61
131.49
130.87
130.09
129.21
127.48
126.78
120.28
119.42
117.29
117.07
49.00 CD3OD
48.04
47.81
46.38
45.83
43.13
42.92
42.26
38.17
33.62
33.44
22.72
22.21
19.37
Cl⁻
Ph
Ph
P⁺
Ph
O
NH
N
O
N
N
O
F
O
3e
220
210
200
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
-10
-20
f1 (ppm)


O
NH
N
O
Cl⁻
N
N
Ph
Ph
P+
Ph
O
F

3e

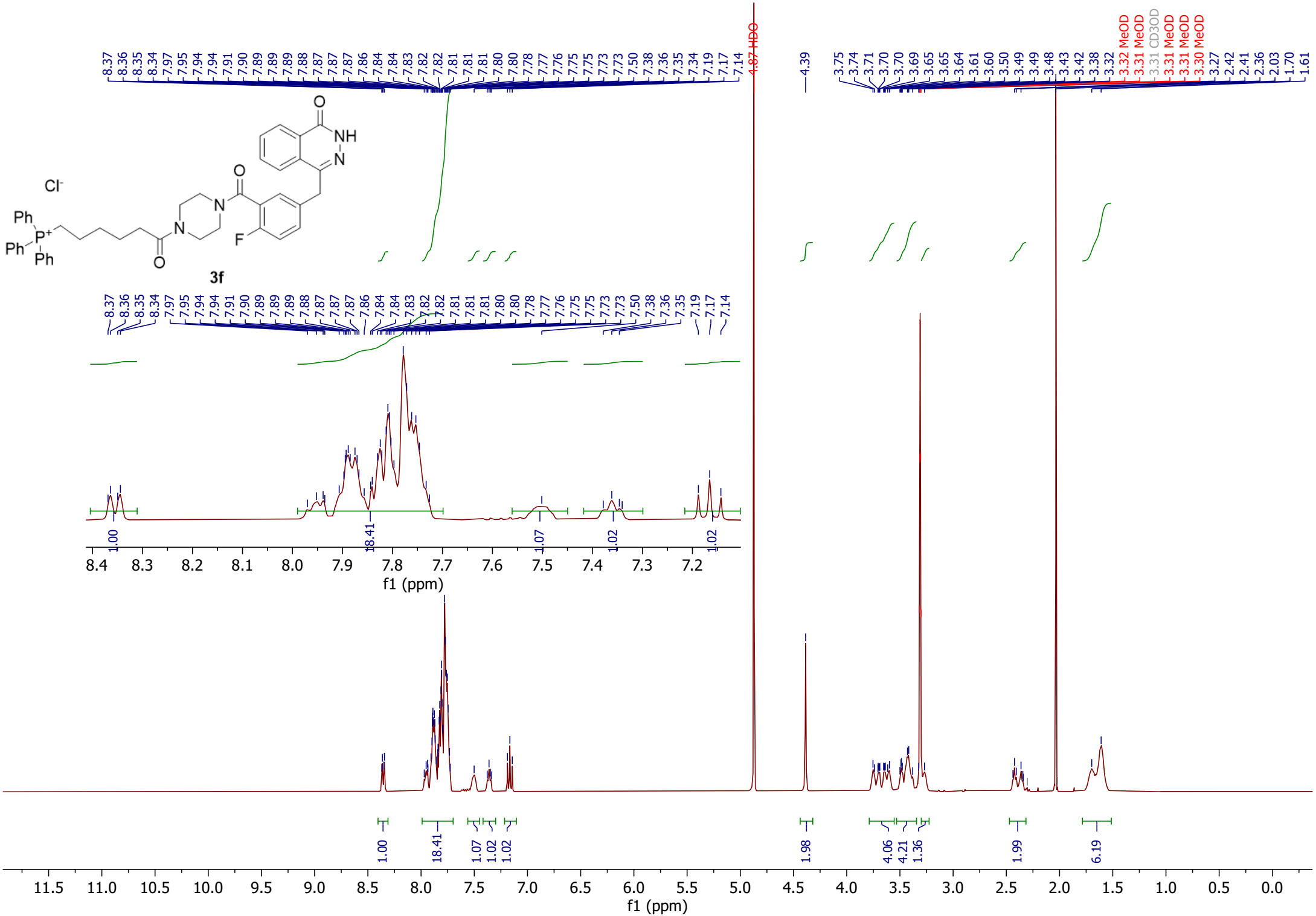

-120.63
-120.65
-120.66
-120.68
-120.69
-120.70
-120.72
-120.73
-120.74
-120.76

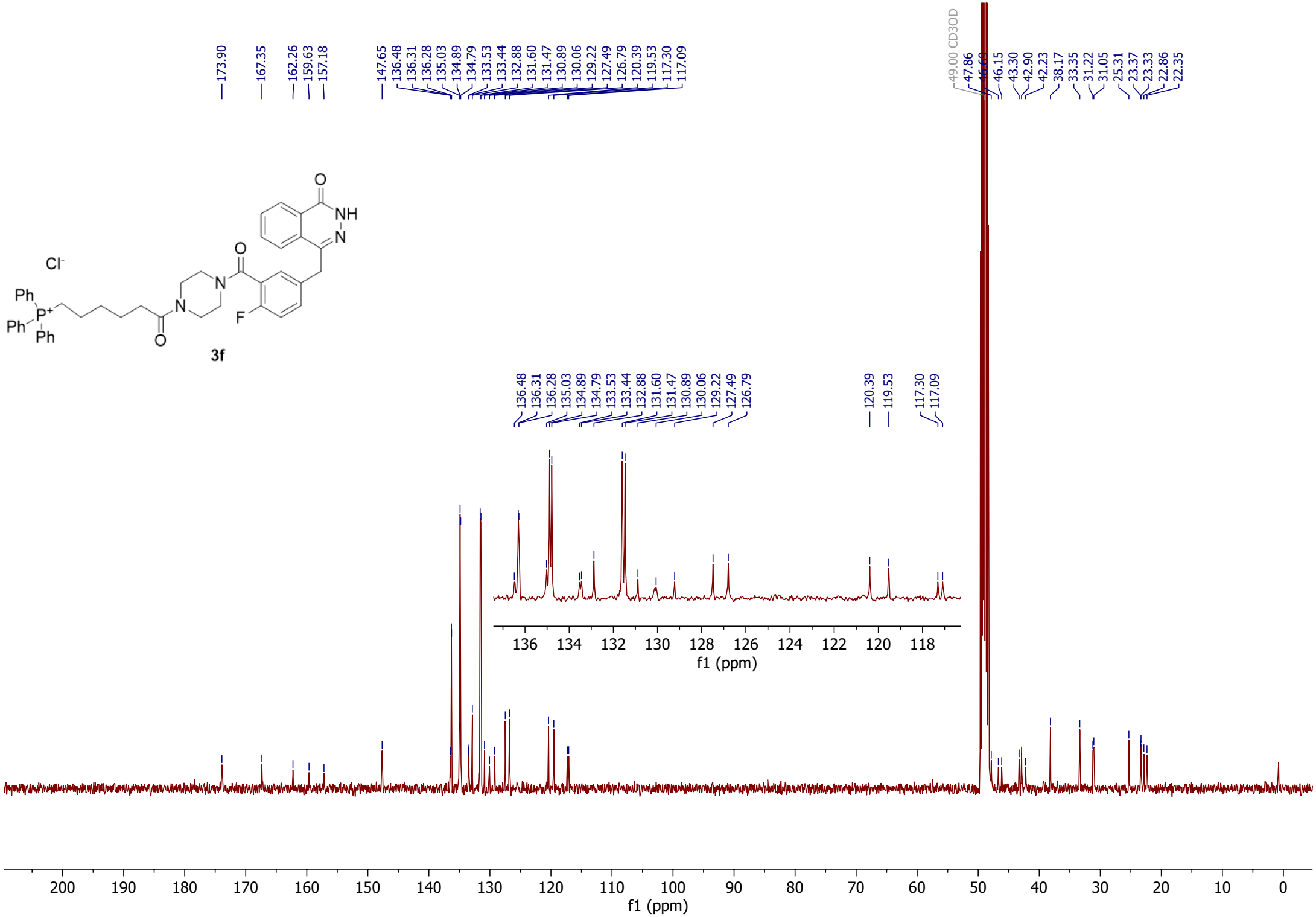
900000
850000
800000
750000
700000
650000
600000
550000
500000
450000
400000
350000
300000
250000
200000
150000
100000
50000
0
70
50
30
10
-10
-30
-50
-70
-90
-110
-130
-150
-170
-190
-210
-230
-250
-270
f1 (ppm)

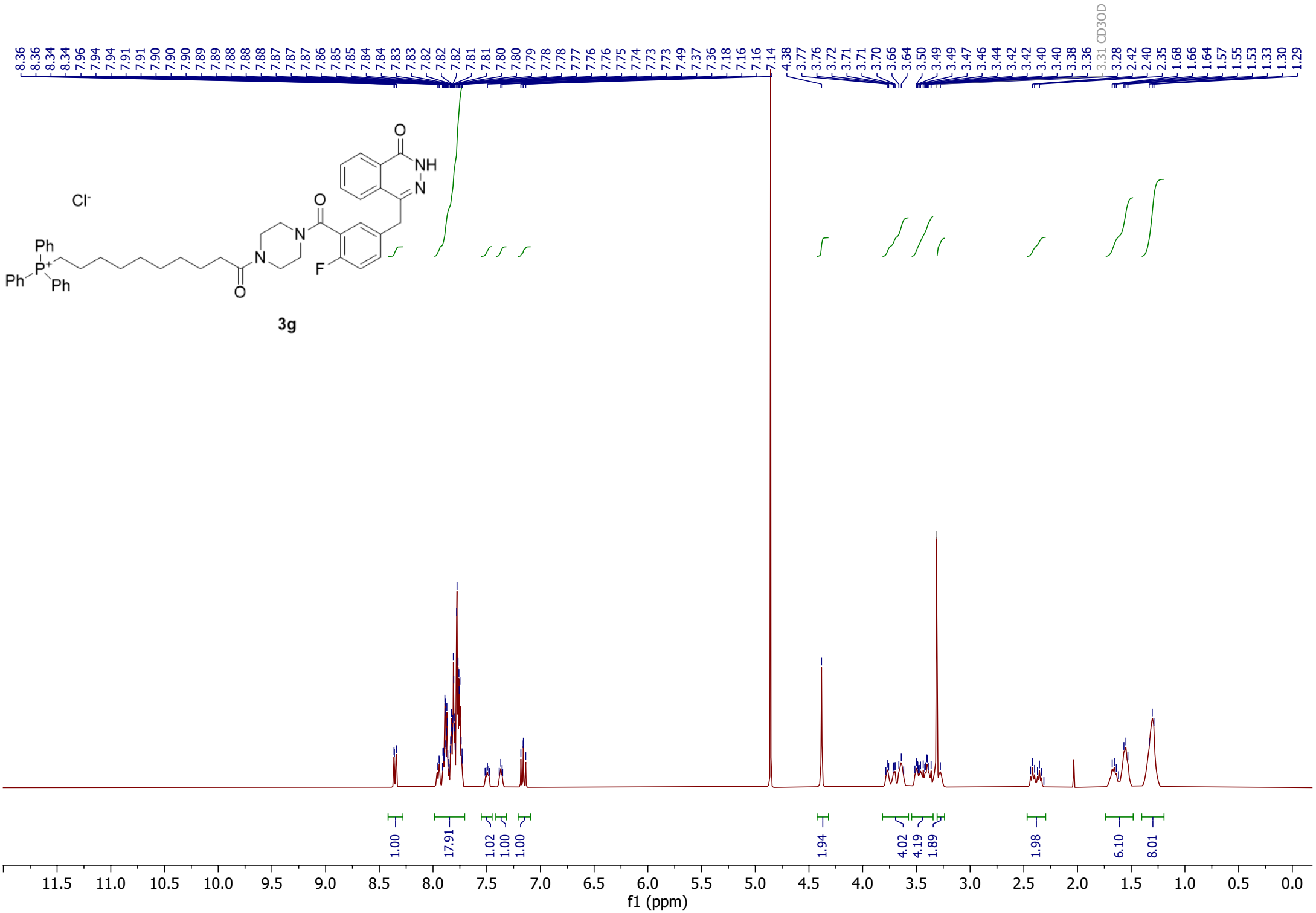

O
NH
N
O
Cl⁻
N
Ph
Ph
P+
Ph
N
F
O

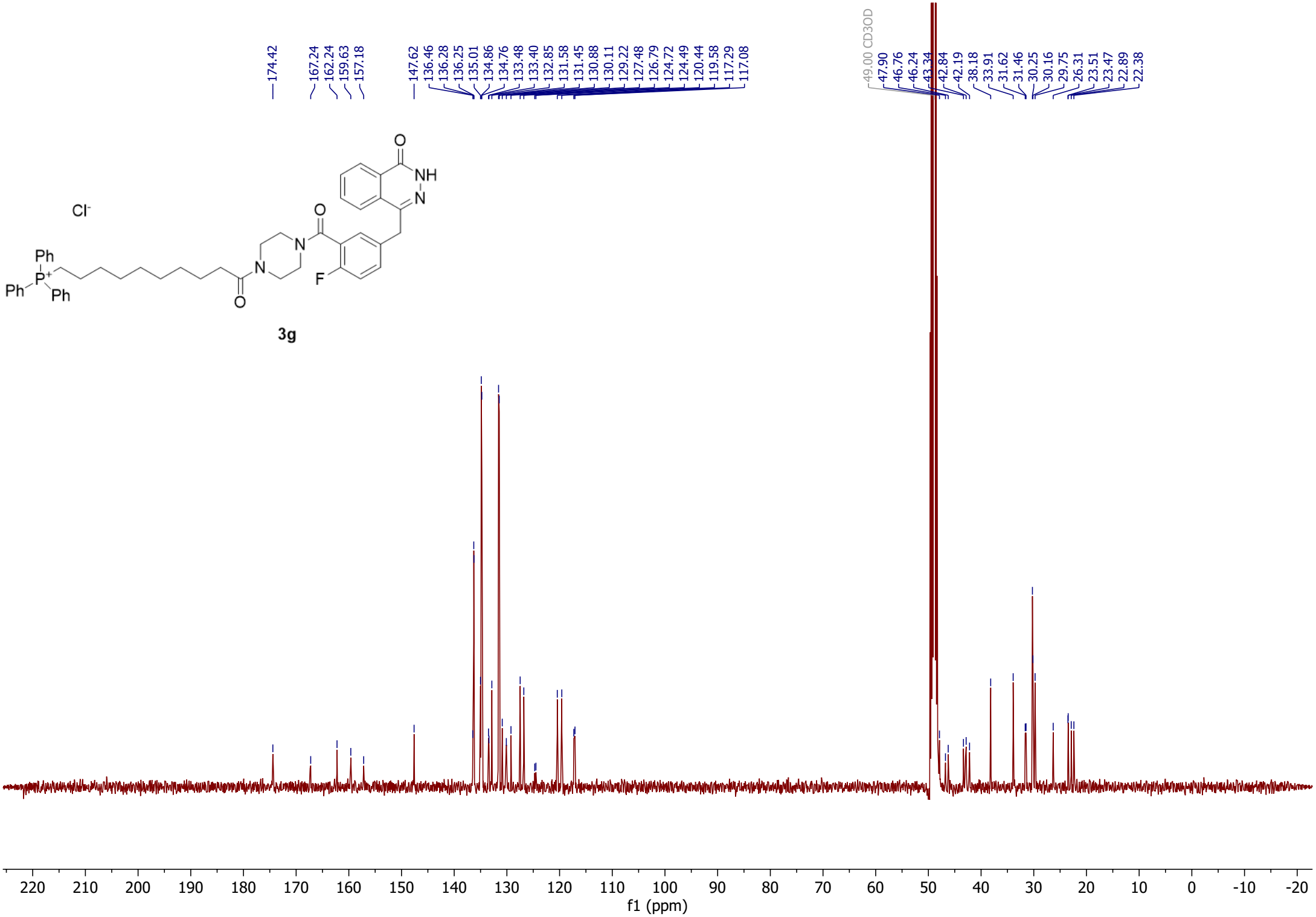
3e

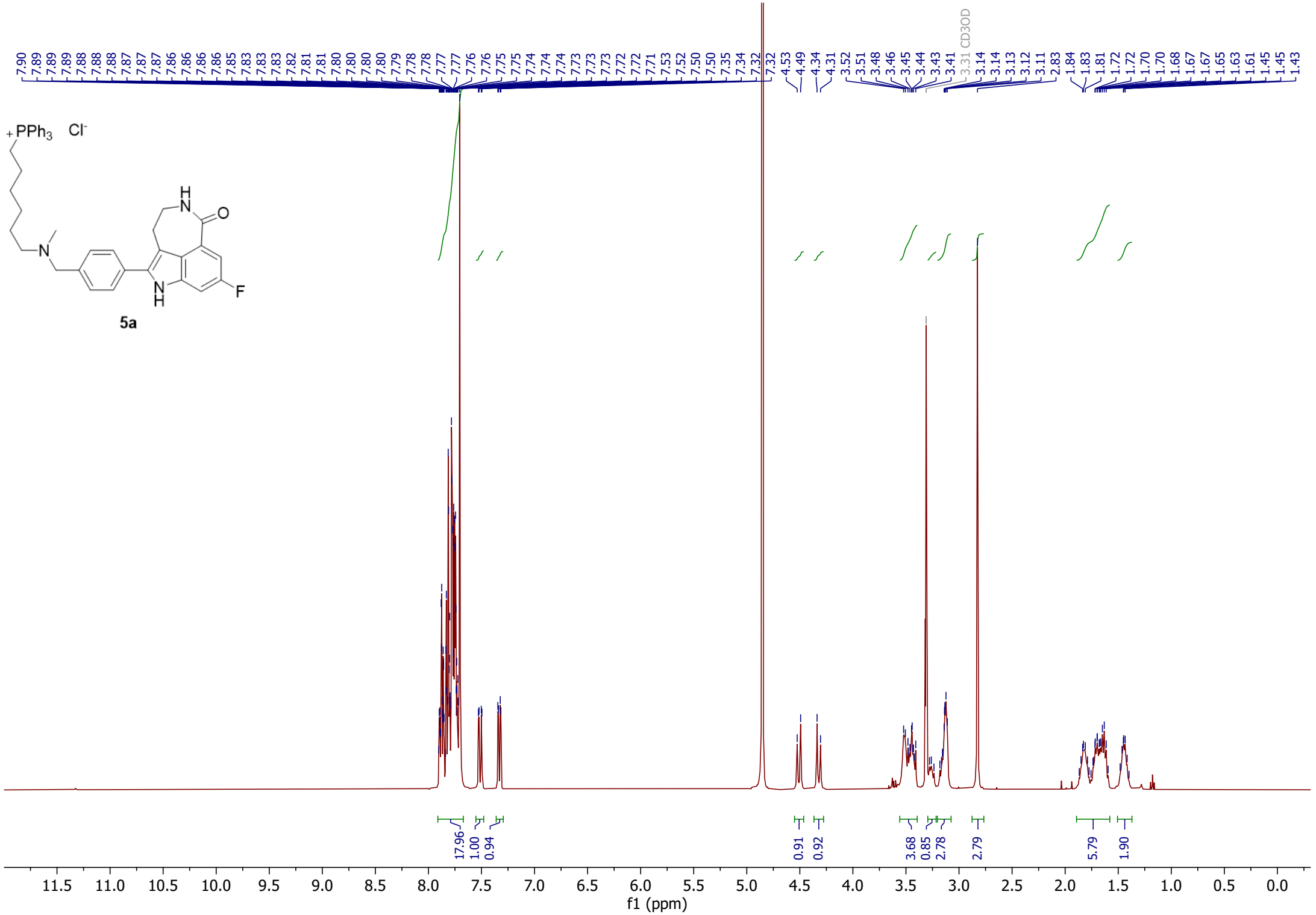
23.74
220
200
180
160
140
120
100
80
60
40
20
0
-20
-40
-60
-80
-100
-120
-140
-160
-180
-200
-220
-240
-260
-280
-300
-320
f1 (ppm)

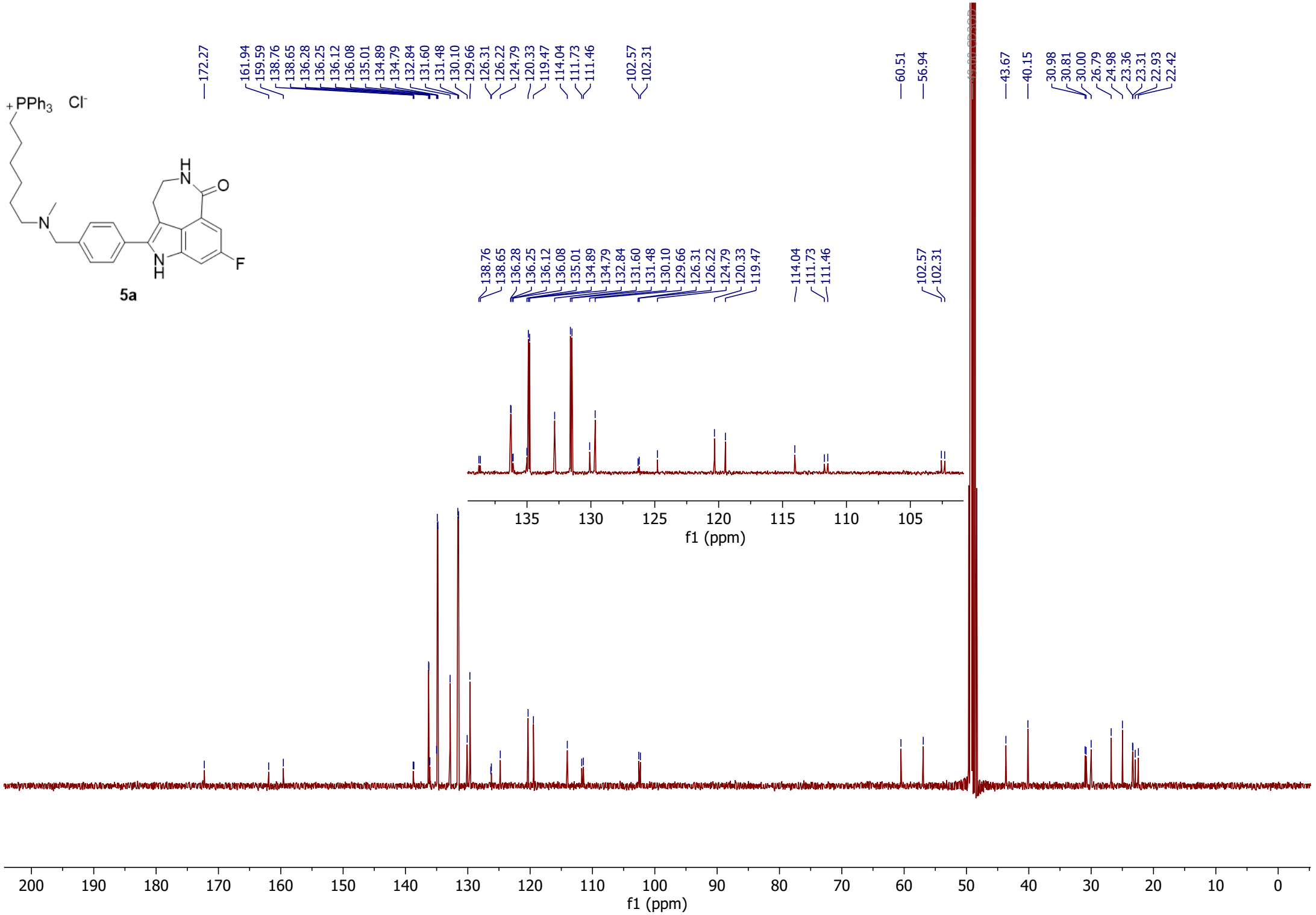

3f
f1 (ppm)
f1 (ppm)

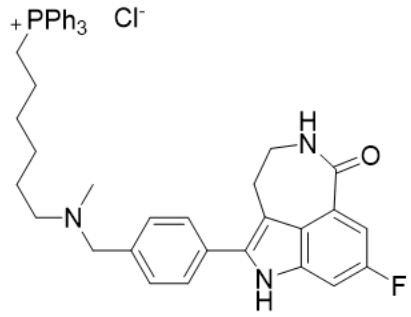

173.90
167.35
162.26
159.63
157.18
147.65
136.48
136.31
136.28
135.03
134.89
134.79
133.53
133.44
132.88
131.60
131.47
130.89
130.06
129.22
127.49
126.79
120.39
119.53
117.30
117.09
49.00 CD3OD
47.86
46.69
46.15
43.30
42.90
42.23
38.17
33.35
31.22
31.05
25.31
23.37
23.33
22.86
22.35
Cl-
Ph
P+
Ph
Ph
N
N
O
O
NH
N
O
F
3f
f1 (ppm)
f1 (ppm)


8.36 8.36 8.34 8.34 7.96 7.94 7.94 7.91 7.91 7.90 7.90 7.90 7.89 7.89 7.88 7.88 7.88 7.87 7.87 7.87 7.86 7.85 7.85 7.84 7.84 7.83 7.83 7.82 7.82 7.82 7.81 7.81 7.80 7.80 7.79 7.78 7.78 7.77 7.76 7.76 7.75 7.74 7.73 7.73 7.49 7.37 7.36 7.18 7.16 7.16 7.14 4.38 3.77 3.76 3.72 3.71 3.71 3.70 3.66 3.64 3.50 3.49 3.49 3.47 3.46 3.44 3.42 3.42 3.40 3.40 3.38 3.36 3.31 CD3OD 3.28 2.42 2.40 2.35 1.68 1.66 1.64 1.57 1.55 1.53 1.33 1.30 1.29
Cl-
Ph
P+
Ph
Ph
O
NH
N
N
N
O
O
F
3g
1.00
17.91
1.02
1.00
1.00
1.94
4.02
4.19
1.89
1.98
6.10
8.01
11.5 11.0 10.5 10.0 9.5 9.0 8.5 8.0 7.5 7.0 6.5 6.0 5.5 5.0 4.5 4.0 3.5 3.0 2.5 2.0 1.5 1.0 0.5 0.0
f1 (ppm)


174.42
167.24
162.24
159.63
157.18
147.62
136.46
136.28
136.25
135.01
134.86
134.76
133.48
133.40
132.85
131.58
131.45
130.88
130.11
129.22
127.48
126.79
124.72
124.49
120.44
119.58
117.29
117.08
49.00 CD3OD
47.90
46.76
46.24
43.34
42.84
42.19
38.18
33.91
31.62
31.46
30.25
30.16
29.75
26.31
23.51
23.47
22.89
22.38
Cl-
Ph
Ph
Ph
P+
O
N
N
O
O
NH
N
F
3g
220
210
200
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
-10
-20
f1 (ppm)

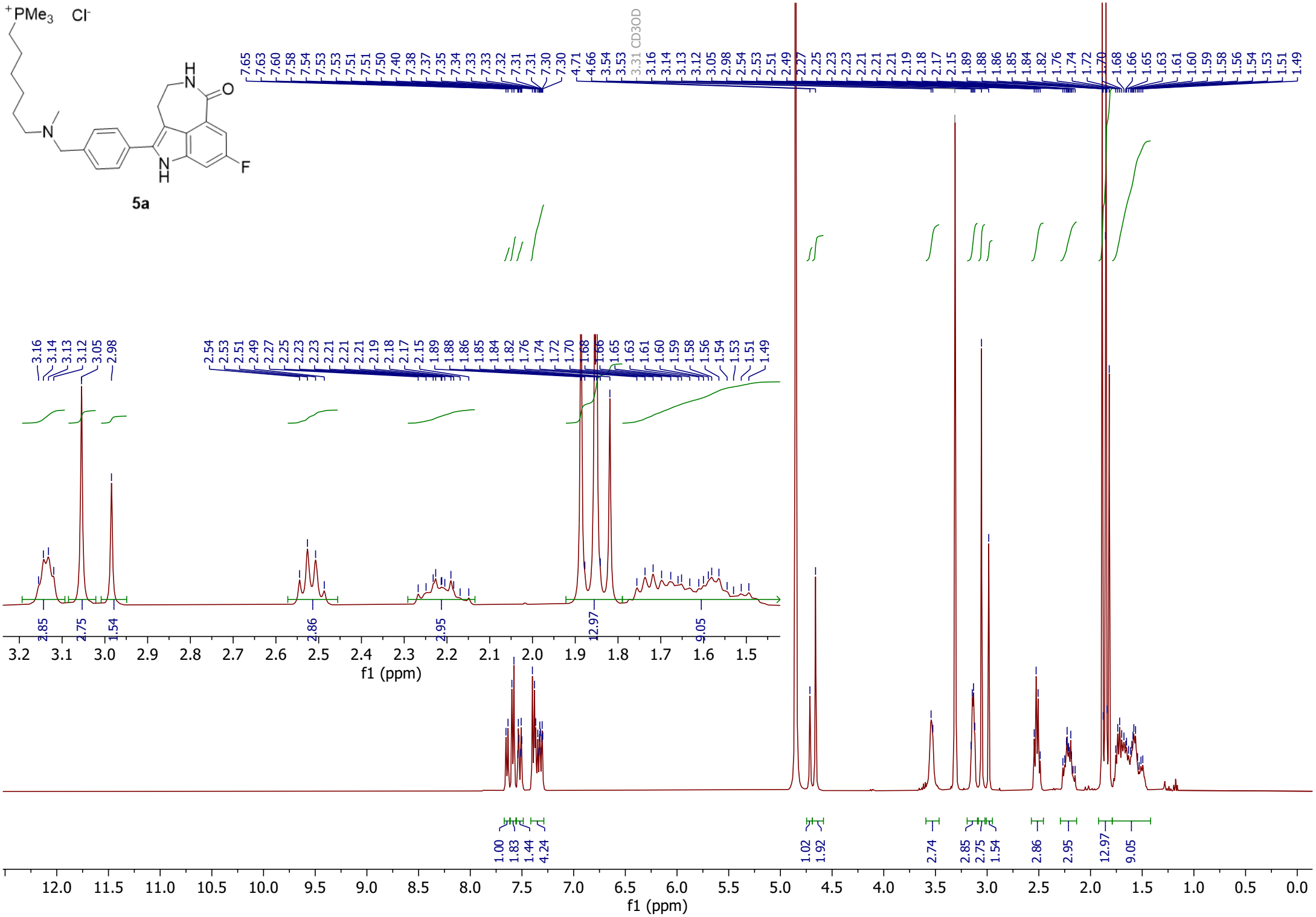

7.90 7.89 7.89 7.89 7.88 7.88 7.88 7.87 7.87 7.87 7.86 7.86 7.86 7.85 7.83 7.83 7.83 7.82 7.81 7.81 7.80 7.80 7.80 7.80 7.79 7.78 7.78 7.77 7.77 7.76 7.76 7.75 7.75 7.74 7.74 7.74 7.73 7.73 7.73 7.72 7.72 7.71 7.53 7.52 7.50 7.50 7.35 7.34 7.32 7.32
4.53 4.49 4.34 4.31
3.52 3.51 3.48 3.46 3.45 3.44 3.43 3.41 3.31 CD3OD 3.14 3.14 3.13 3.12 3.11
2.83
1.84 1.83 1.81 1.72 1.72 1.70 1.70 1.68 1.67 1.67 1.65 1.63 1.61 1.45 1.45 1.43
+PPh3 Cl-
H
N
O
N
N
H
F
5a
17.96
1.00
0.94
0.91
0.92
3.68
0.85
2.78
2.79
5.79
1.90
11.5 11.0 10.5 10.0 9.5 9.0 8.5 8.0 7.5 7.0 6.5 6.0 5.5 5.0 4.5 4.0 3.5 3.0 2.5 2.0 1.5 1.0 0.5 0.0
f1 (ppm)

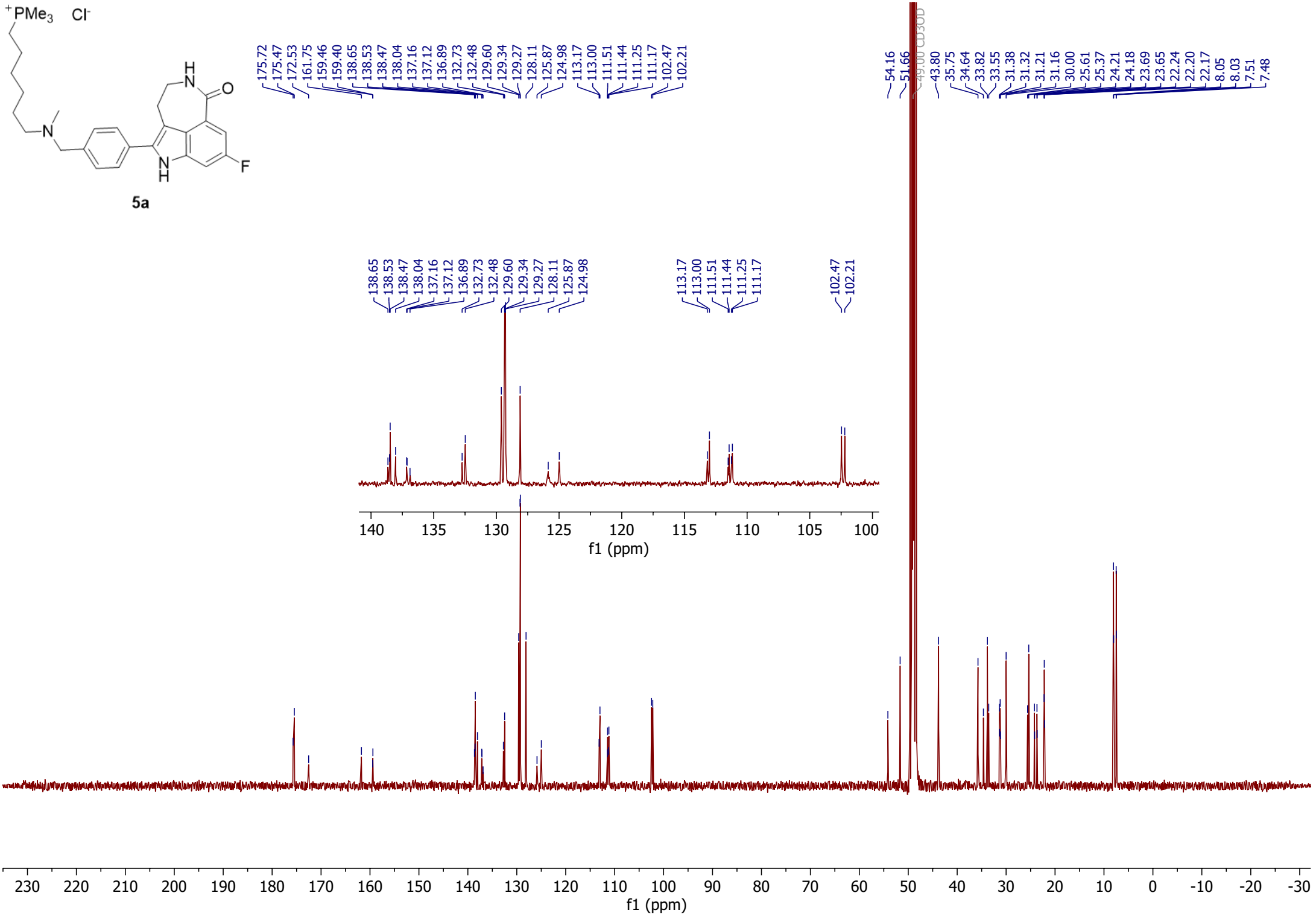

172.27
161.94
159.59
138.76
138.65
136.28
136.25
136.12
136.08
135.01
134.89
134.79
132.84
131.60
131.48
130.10
129.66
126.31
126.22
124.79
120.33
119.47
114.04
111.73
111.46
102.57
102.31
60.51
56.94
43.67
40.15
30.98
30.81
30.00
26.79
24.98
23.36
23.31
22.93
22.42
+PPh3 Cl-
H
N
O
N
N
H
F
5a
f1 (ppm)
f1 (ppm)

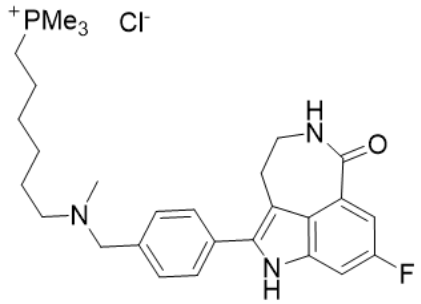

+PPh3 Cl-
H
N
O
N
N
H
F

5a

23.79
220 200 180 160 140 120 100 80 60 40 20 0 -20 -40 -60 -80 -100 -120 -140 -160 -180 -200 -220 -240 -260 -280 -300 -320
f1 (ppm)

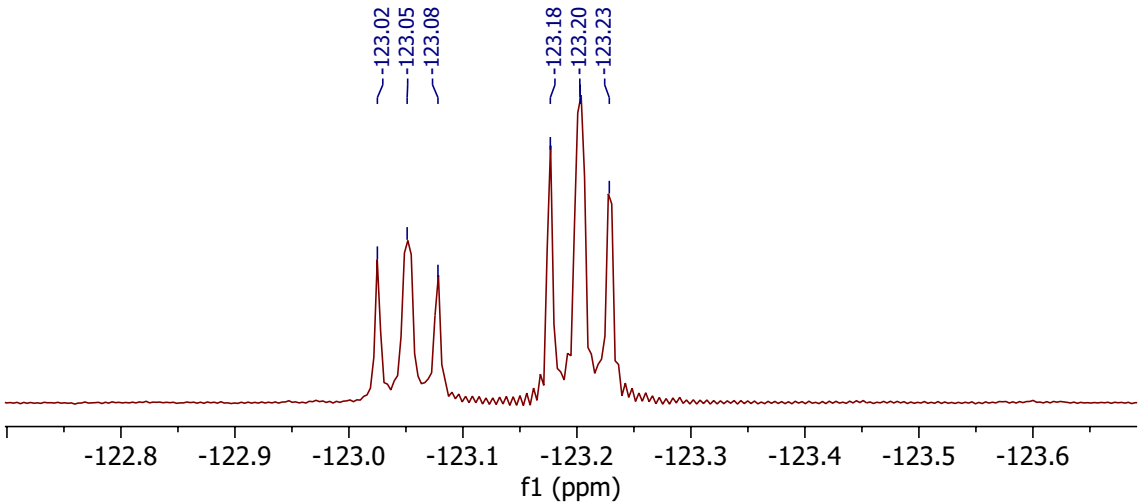

+PMe3 Cl-
5a
CD3OD
f1 (ppm)
f1 (ppm)

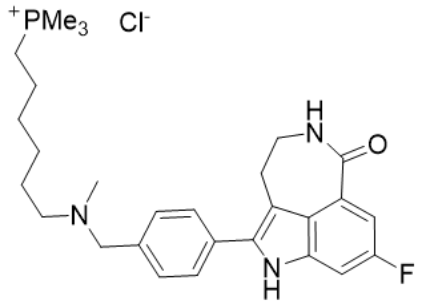

+PMe3 Cl-
5a
175.72
175.47
172.53
161.75
159.46
159.40
138.65
138.53
138.47
138.04
137.16
137.12
136.89
132.73
132.48
129.60
129.34
129.27
128.11
125.87
124.98
113.17
113.00
111.51
111.44
111.25
111.17
102.47
102.21
54.16
51.66
49.00 CD3OD
43.80
35.75
34.64
33.82
33.55
31.38
31.32
31.21
31.16
30.00
25.61
25.37
24.21
24.18
23.69
23.65
22.24
22.20
22.17
8.05
8.03
7.51
7.48
140 135 130 125 120 115 110 105 100
f1 (ppm)
230 220 210 200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 -10 -20 -30
f1 (ppm)



5a

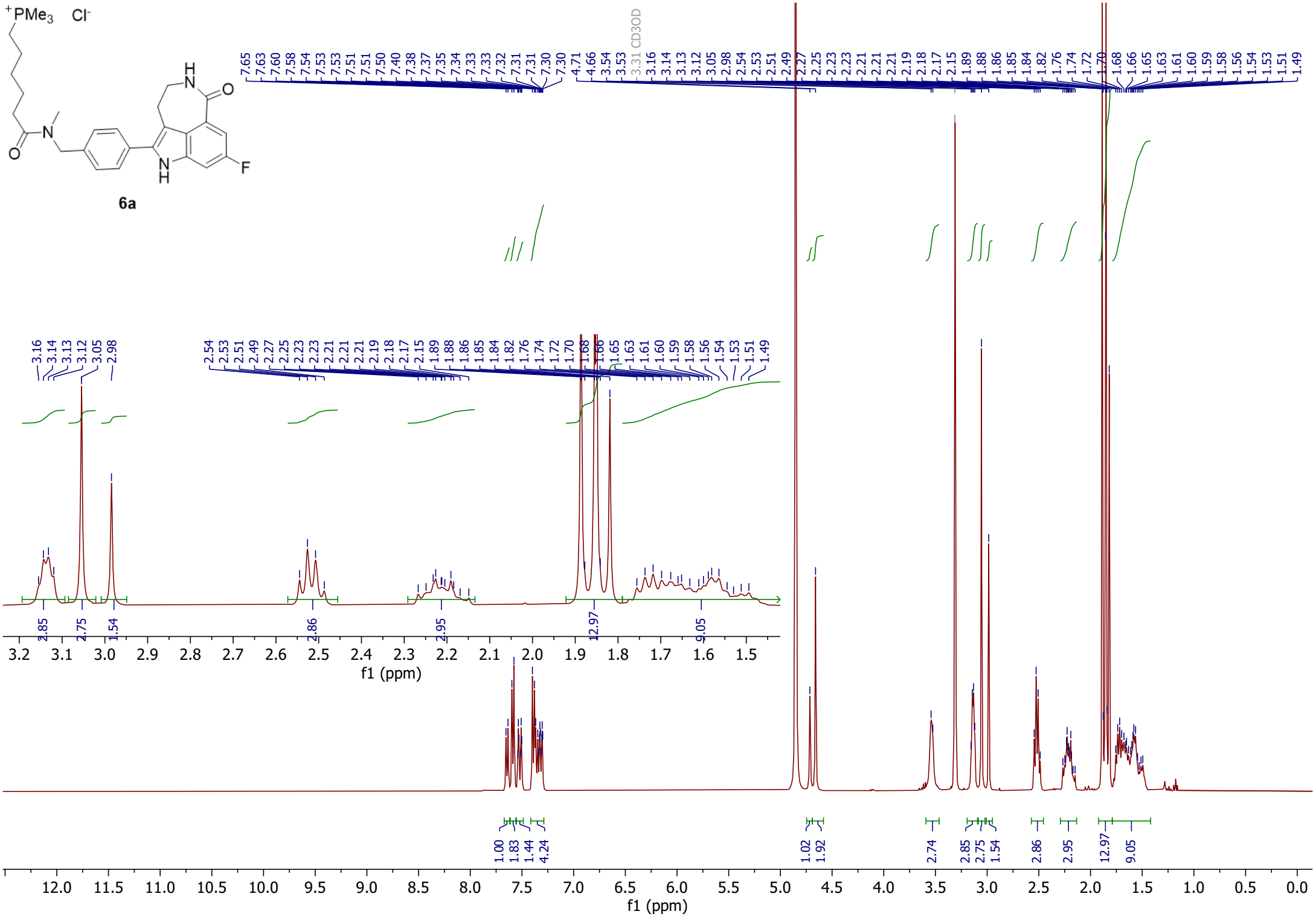
-123.02
-123.05
-123.08
-123.18
-123.20
-123.23

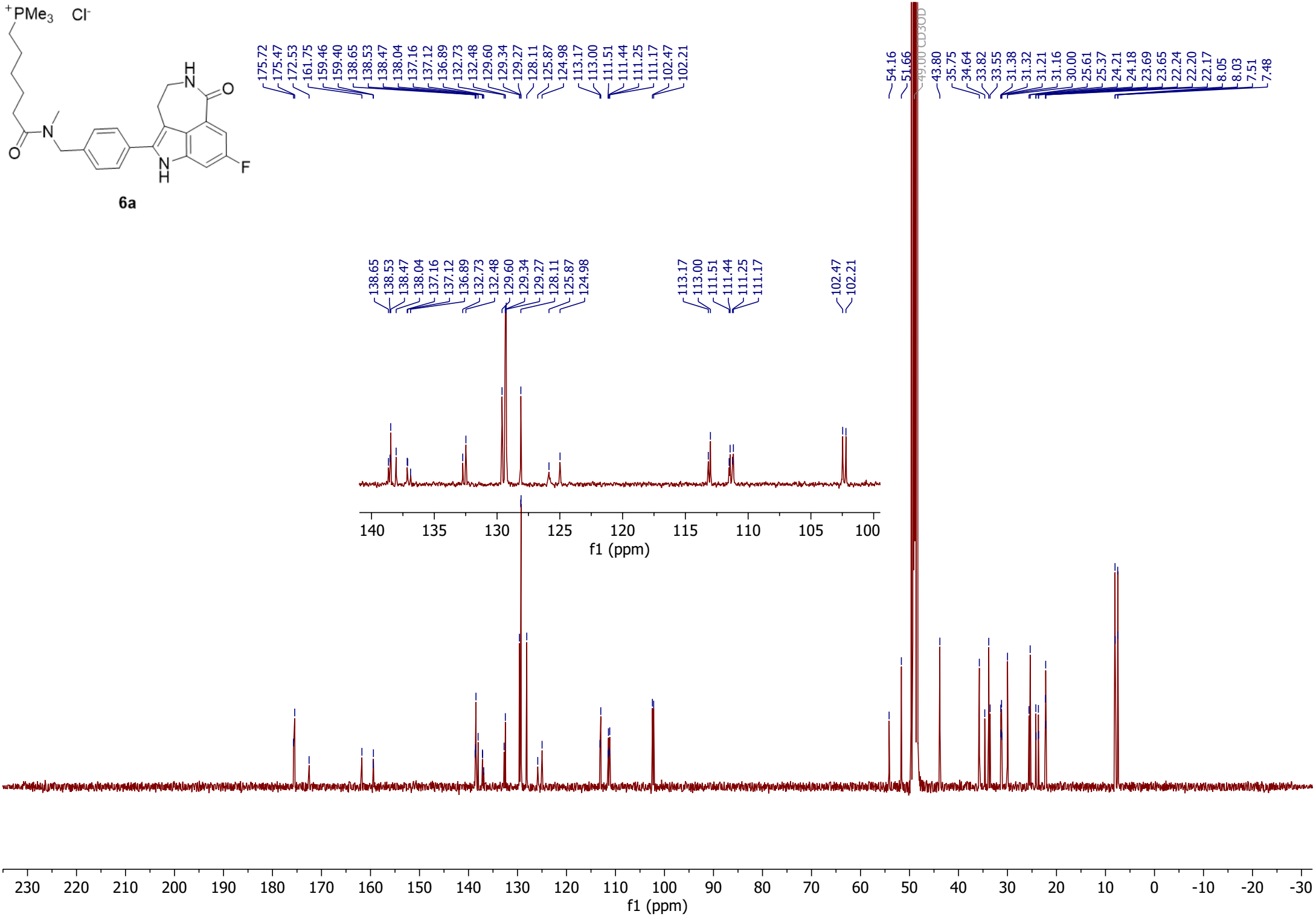


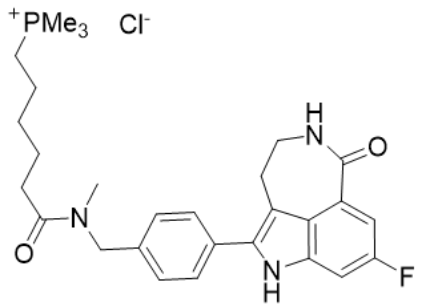

+PMe3 Cl-
H
N
O
N
N
H
F

5a

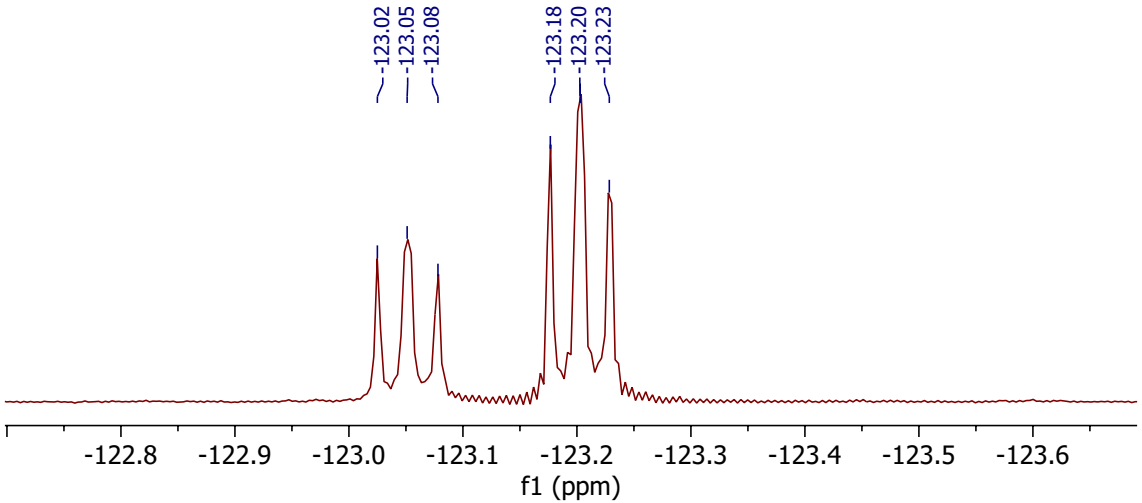
27.29
27.25
27.29
27.25
27.55 27.50 27.45 27.40 27.35 27.30 27.25 27.20 27.15 27.10 27.05 27.00
f1 (ppm)
260 240 220 200 180 160 140 120 100 80 60 40 20 0 -20 -40 -60 -80 -100 -120 -140 -160 -180 -200 -220 -240 -260 -280
f1 (ppm)


+PMe3 Cl-
6a
CD3OD
f1 (ppm)
f1 (ppm)

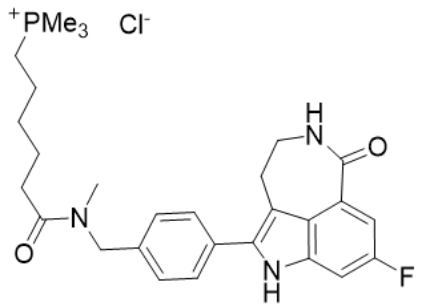

+PMe3 Cl-
6a
175.72
175.47
172.53
161.75
159.46
159.40
138.65
138.53
138.47
138.04
137.16
137.12
136.89
132.73
132.48
129.60
129.34
129.27
128.11
125.87
124.98
113.17
113.00
111.51
111.44
111.25
111.17
102.47
102.21
54.16
51.66
49.00 CD3OD
43.80
35.75
34.64
33.82
33.55
31.38
31.32
31.21
31.16
30.00
25.61
25.37
24.21
24.18
23.69
23.65
22.24
22.20
22.17
8.05
8.03
7.51
7.48
140 135 130 125 120 115 110 105 100
f1 (ppm)
230 220 210 200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 -10 -20 -30
f1 (ppm)


+PMe3 Cl-
H
N
O
N
O
N
H
F

6a

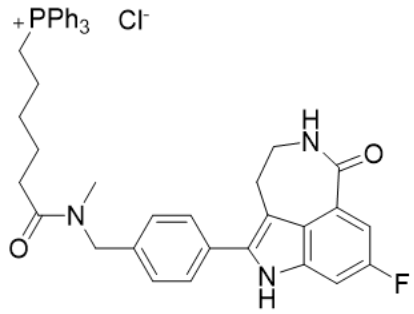

-123.02
-123.05
-123.08
-123.18
-123.20
-123.23
-122.8
-122.9
-123.0
-123.1
-123.2
-123.3
-123.4
-123.5
-123.6
f1 (ppm)

-123.02
-123.05
-123.08
-123.18
-123.20
-123.23
90
70
50
30
10
-10
-30
-50
-70
-90
-110
-130
-150
-170
-190
-210
-230
-250
-270
-290
f1 (ppm)


+PMe3 Cl-
H
N
O
N
O
N
H
F

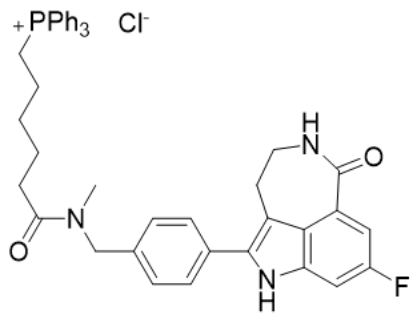
6a

27.29
27.25
27.29
27.25
27.55 27.50 27.45 27.40 27.35 27.30 27.25 27.20 27.15 27.10 27.05 27.00
f1 (ppm)
260 240 220 200 180 160 140 120 100 80 60 40 20 0 -20 -40 -60 -80 -100 -120 -140 -160 -180 -200 -220 -240 -260 -280
f1 (ppm)

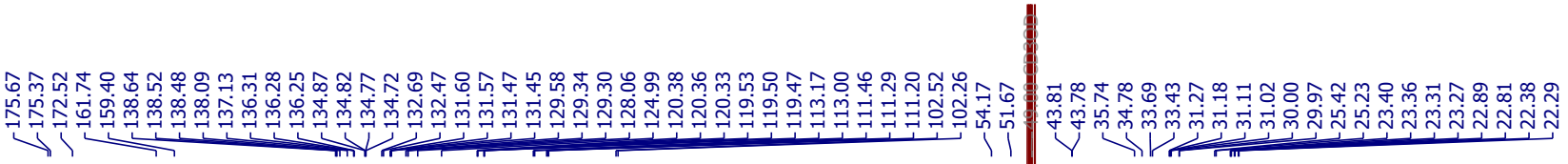

+PPh3 Cl-
H
N
O
N
O
N
H
F

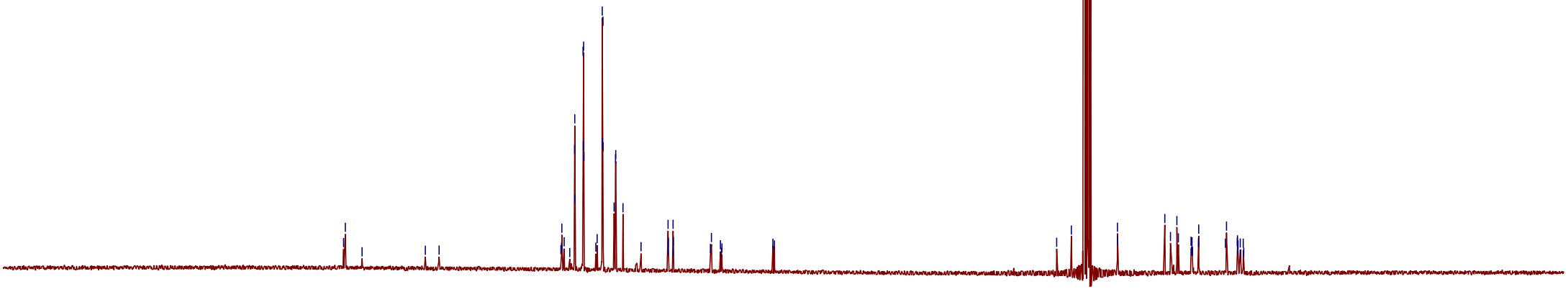
6b

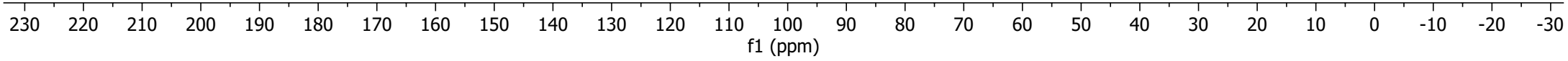
7.90 7.90 7.89 7.88 7.88 7.88 7.87 7.87 7.87 7.86 7.86 7.86 7.85 7.84 7.84 7.83 7.82 7.82 7.81 7.81 7.80 7.80 7.80 7.79 7.79 7.78 7.78 7.77 7.77 7.76 7.76 7.75 7.75 7.74 7.74 7.73 7.73 7.73 7.72 7.72 7.72 7.71 7.71 7.70 7.70 7.63 7.61 7.58 7.57 7.56 7.53 7.53 7.50 7.50 7.39 7.37 7.34 7.33 7.33 7.32 7.32 7.31 7.31 7.30 7.30
4.68 HDO
4.64 3.53 3.51
3.31 CD3OD
3.13
3.12 MeOD
3.11 MeOD
3.10 MeOD
3.01 2.97 2.47 2.45 2.43 1.72 1.70 1.68 1.66 1.65 1.63 1.63
14.24 2.61 1.00 1.41
0.60 1.00
1.49 2.10
1.61 1.52 0.93
1.62
5.80
11.5 11.0 10.5 10.0 9.5 9.0 8.5 8.0 7.5 7.0 6.5 6.0 5.5 5.0 4.5 4.0 3.5 3.0 2.5 2.0 1.5 1.0 0.5 0.0
f1 (ppm)

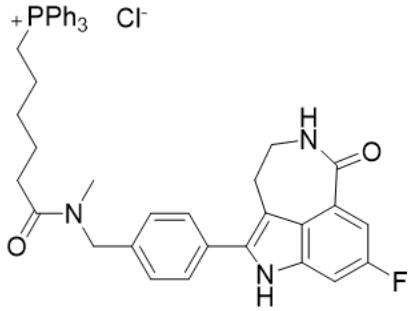

+PPh3 Cl-
H
N
O
N
O
N
H
F

6b


175.67
175.37
172.52
161.74
159.40
138.64
138.52
138.48
138.09
137.13
136.31
136.28
136.25
134.87
134.82
134.77
134.72
132.69
132.47
131.60
131.57
131.47
131.45
129.58
129.34
129.30
128.06
124.99
120.38
120.36
120.33
119.53
119.50
119.47
113.17
113.00
111.46
111.29
111.20
102.52
102.26
54.17
51.67
43.81
43.78
35.74
34.78
33.69
33.43
31.27
31.18
31.11
31.02
30.00
29.97
25.42
25.23
23.40
23.36
23.31
23.27
22.89
22.81
22.38
22.29




230
220
210
200
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
-10
-20
-30
f1 (ppm)



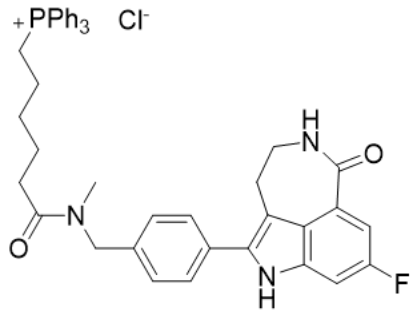
6b

-122.92
-122.94
-122.97
-123.11
-123.13
-123.16

-122.92
-122.94
-122.97
-123.11
-123.13
-123.16

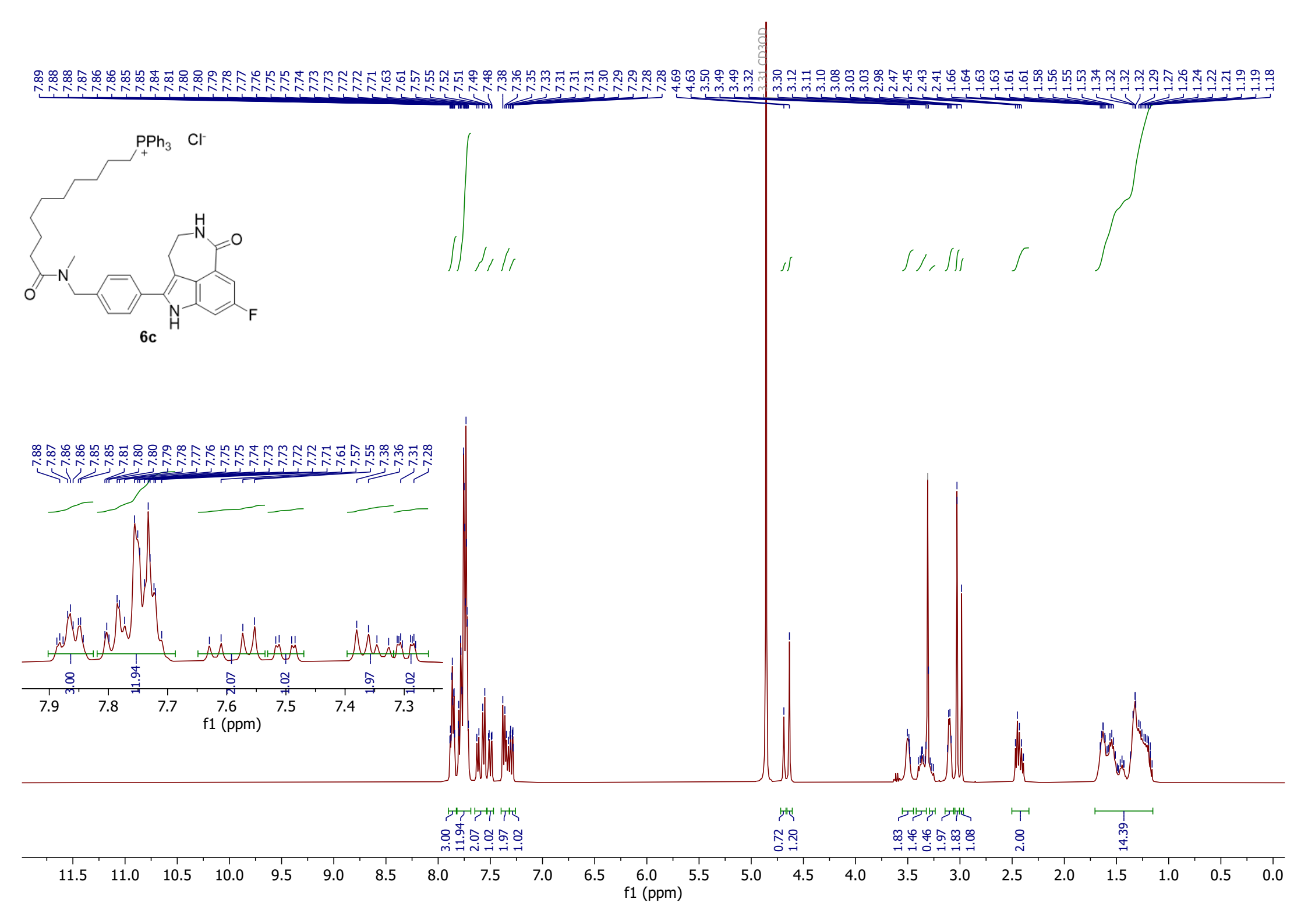
-122.0 -122.5 -123.0 -123.5 -124.0 -124.5
f1 (ppm)

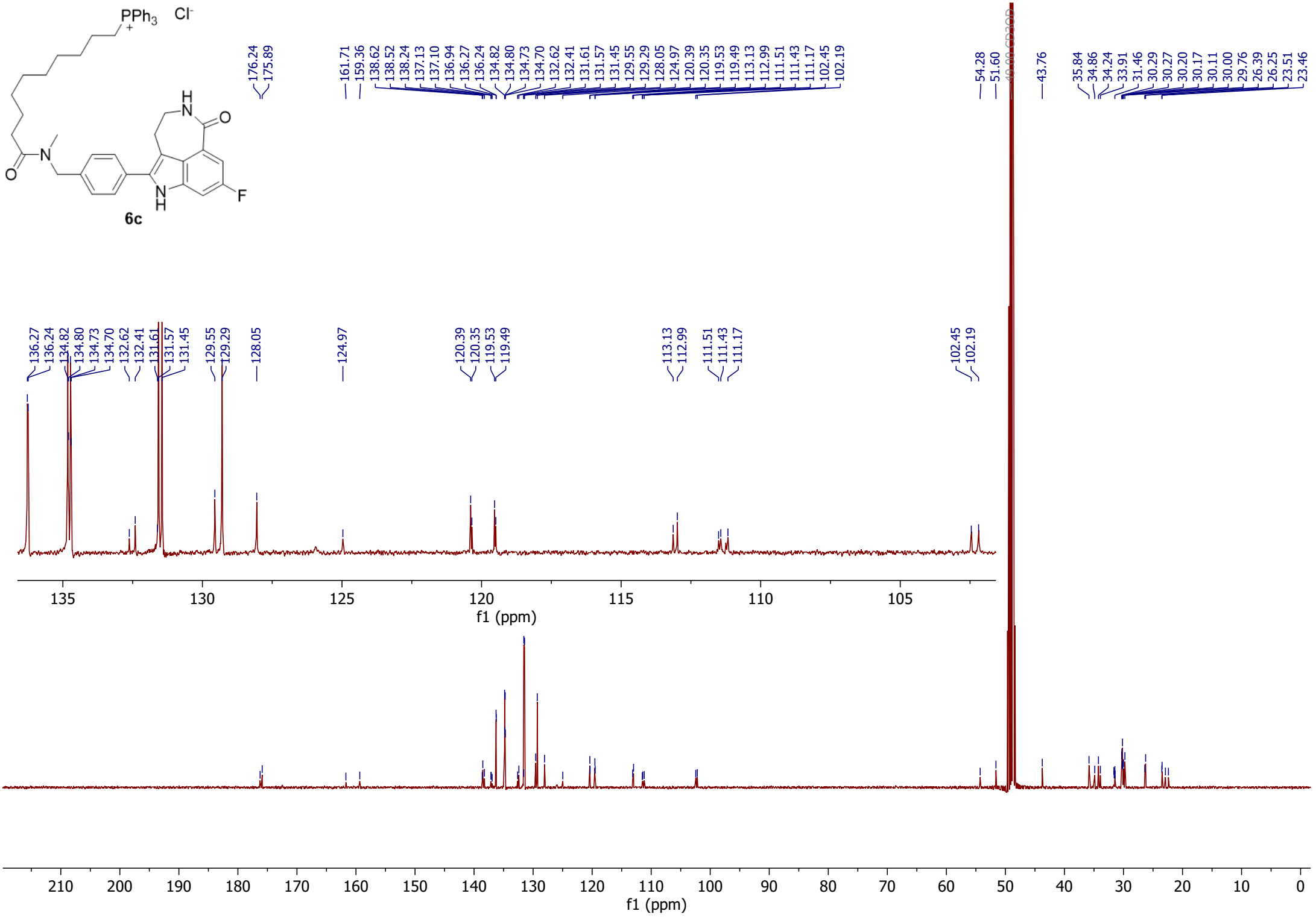
90 70 50 30 10 -10 -30 -50 -70 -90 -110 -130 -150 -170 -190 -210 -230 -250 -270 -290
f1 (ppm)

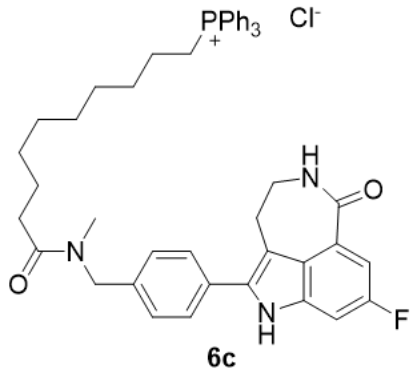

+PPh3 Cl-
H
N
O
N
O
N
H
F

6b

23.80
23.75
24.6
24.4
24.2
24.0
23.8
23.6
23.4
23.2
23.0
22.8
22.6
f1 (ppm)
260
240
220
200
180
160
140
120
100
80
60
40
20
0
-20
-40
-60
-80
-100
-120
-140
-160
-180
-200
-220
-240
-260
-280
f1 (ppm)


PPh3
Cl-
6c
f1 (ppm)


PPh3
Cl-
6c
176.24
175.89
161.71
159.36
138.62
138.52
138.24
137.13
137.10
136.94
136.27
136.24
134.82
134.80
134.73
134.70
132.62
132.41
131.61
131.57
131.45
129.55
129.29
128.05
124.97
120.39
120.35
119.53
119.49
113.13
112.99
111.51
111.43
111.17
102.45
102.19
54.28
51.60
43.76
35.84
34.86
34.24
33.91
31.46
30.29
30.27
30.20
30.17
30.11
30.00
29.76
26.39
26.25
23.51
23.46
f1 (ppm)
f1 (ppm)



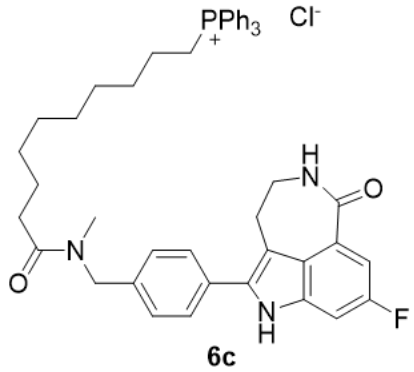
6c

-122.79
-122.82
-122.84
-123.02
-123.05
-123.07

-122.79
-122.82
-122.84
-123.02
-123.05
-123.07

-121.8 -122.0 -122.2 -122.4 -122.6 -122.8 -123.0 -123.2 -123.4 -123.6 -123.8 -124.0
f1 (ppm)

70 60 50 40 30 20 10 0 -10 -20 -30 -40 -50 -60 -70 -80 -90 -100 -110 -120 -130 -140 -150 -160 -170 -180 -190 -200 -210 -220 -230 -240 -250 -260 -270
f1 (ppm)


PPh3
Cl-
H
N
O
N
O
N
H
F

6c

23.79
23.75
23.79
23.75
24.5 24.4 24.3 24.2 24.1 24.0 23.9 23.8 23.7 23.6 23.5 23.4 23.3 23.2 23.1 23.0
f1 (ppm)
220 200 180 160 140 120 100 80 60 40 20 0 -20 -40 -60 -80 -100 -120 -140 -160 -180 -200 -220 -240 -260 -280 -300 -320
f1 (ppm)