Supporting Information

In Situ Generation of Palladium Nanoparticles: Ligand-Free Palladium Catalyzed Pivalic Acid-Assisted Carbonylative Suzuki Reaction at Ambient Conditions

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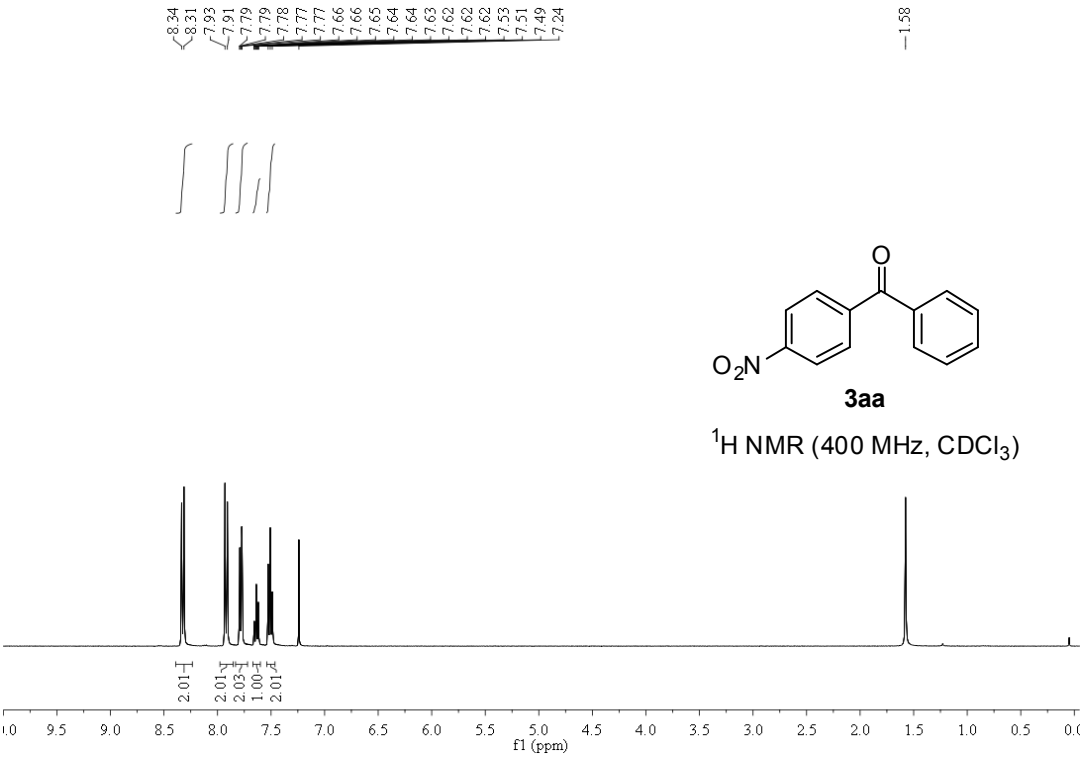
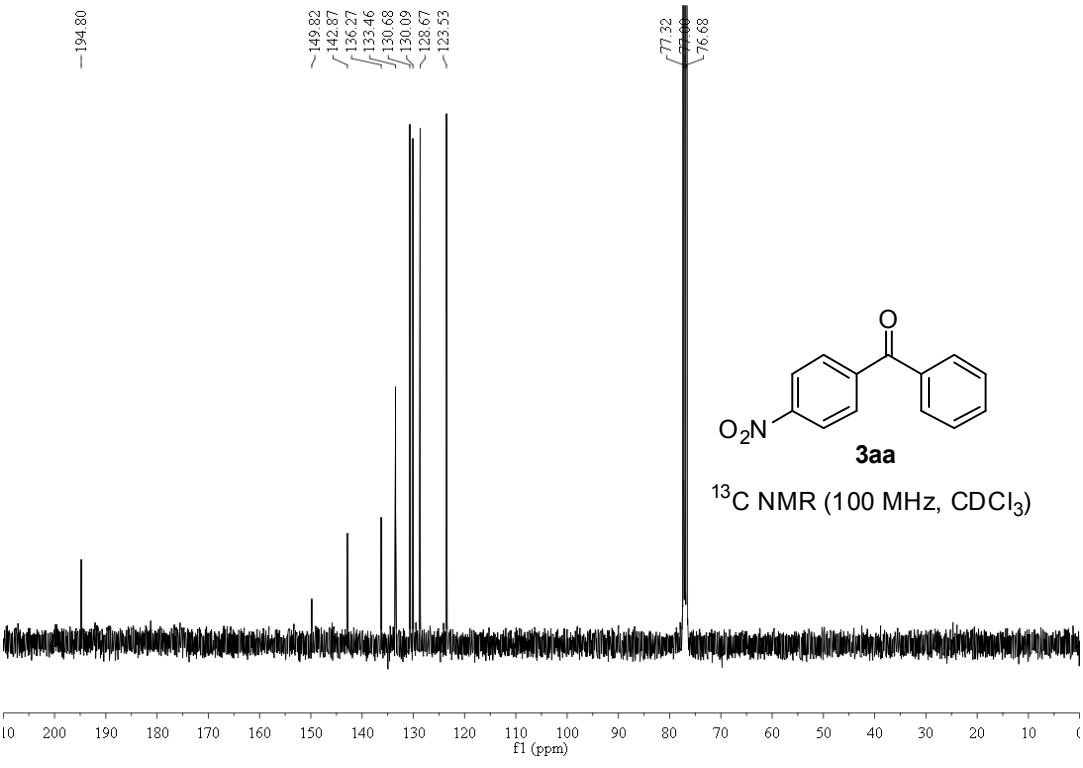
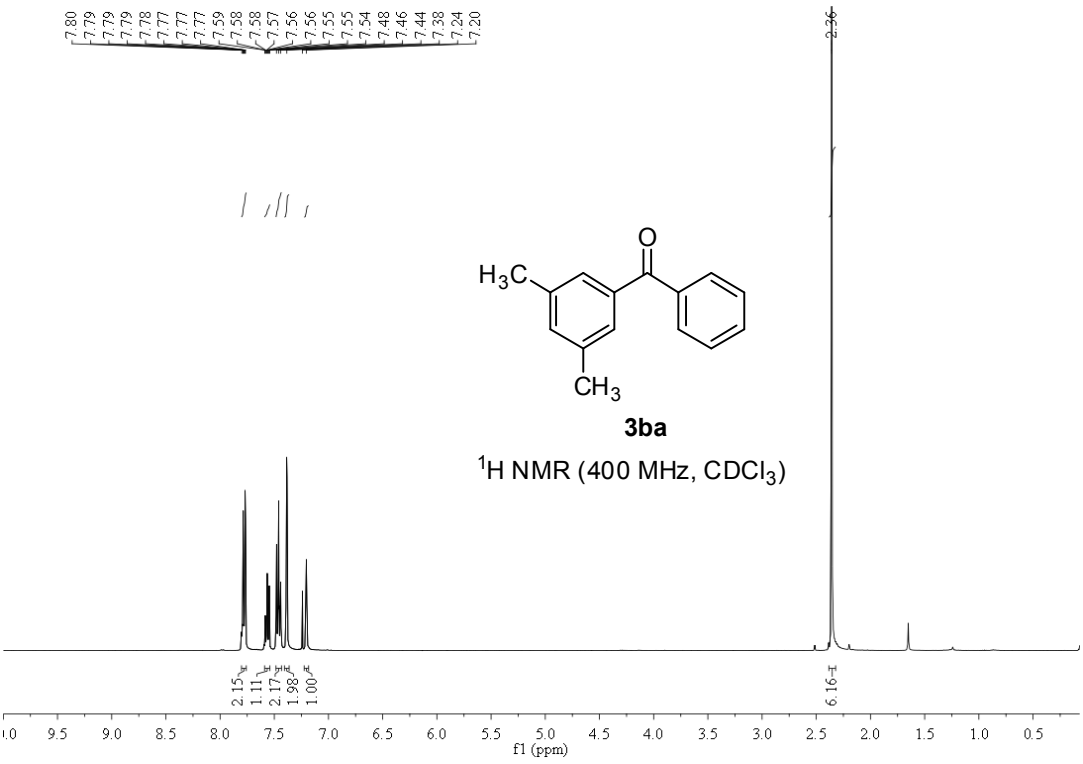
NMR spectra of all products

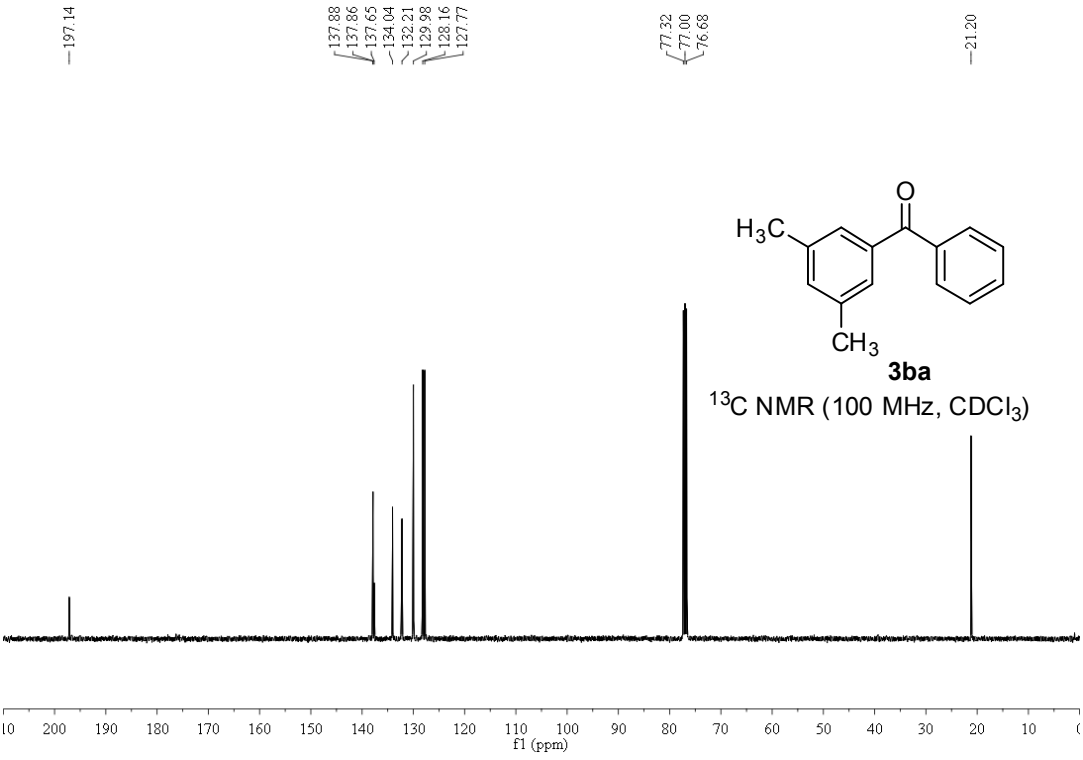






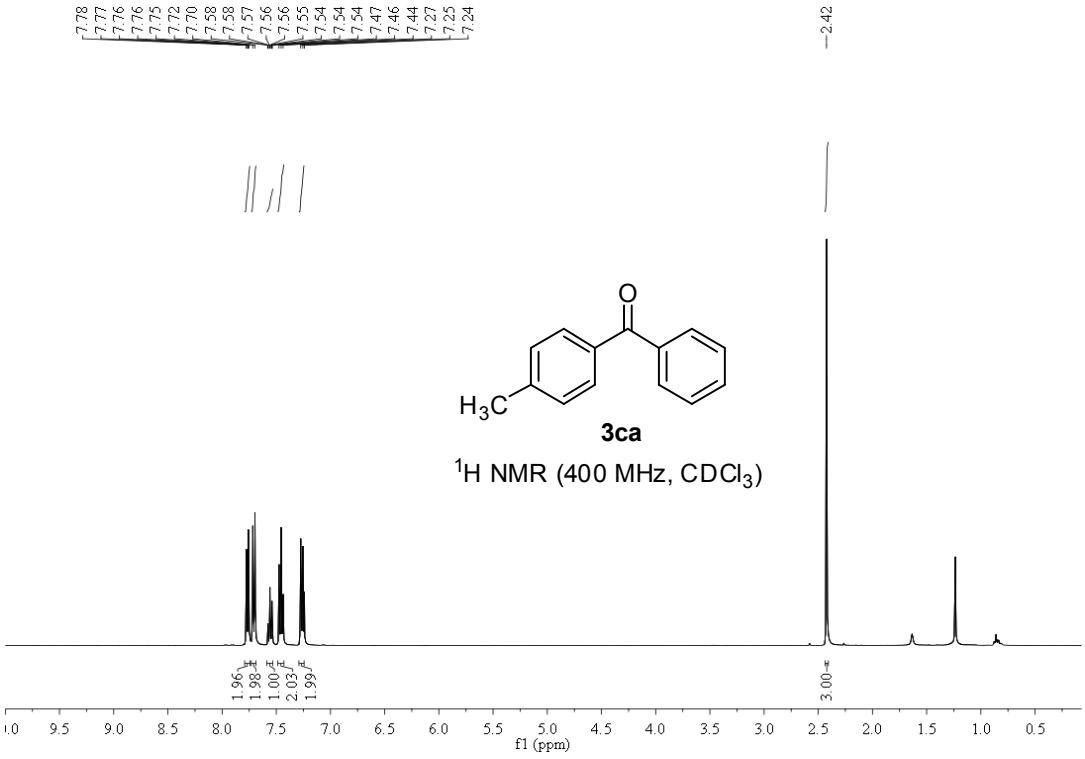
3ba

^{1}H NMR (400 MHz, $CDCl_3$)



3ba

^{13}C NMR (100 MHz, $CDCl_3$)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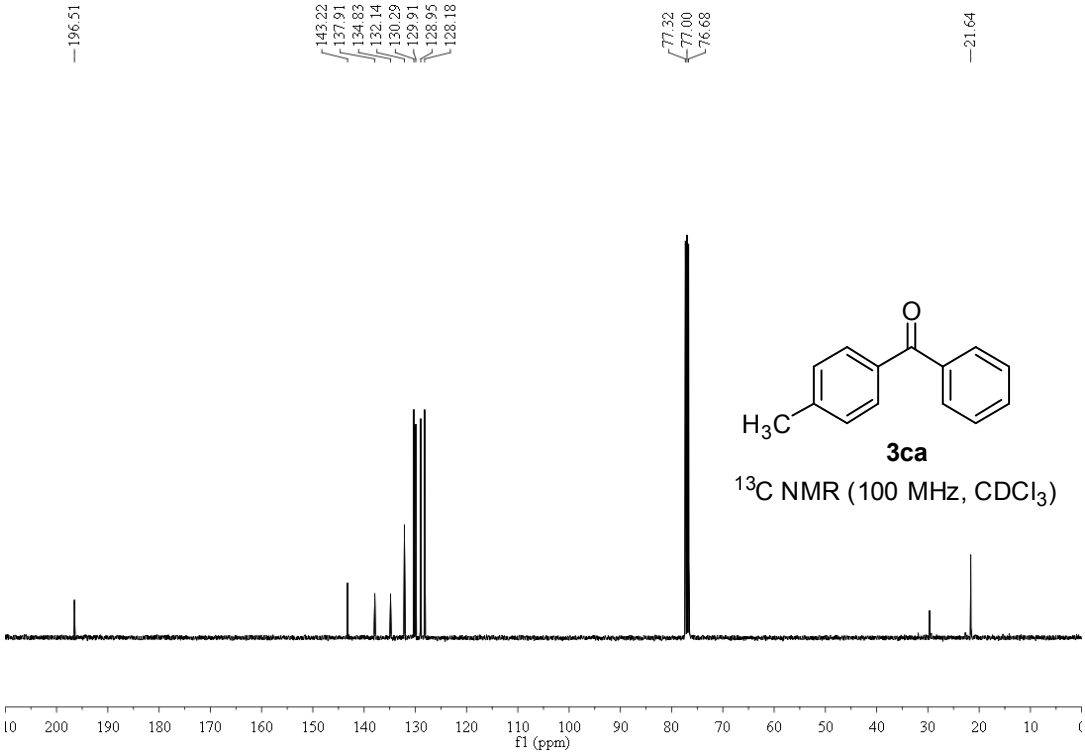
7.55
7.54
7.54
7.54
7.47
7.46
7.44
7.27
7.25
7.24
2.42
O
H3C
3ca
1H NMR (400 MHz, CDCl3)
1.96
1.98
1.00
2.03
1.99
3.00
f1 (ppm)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134.83
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77.00
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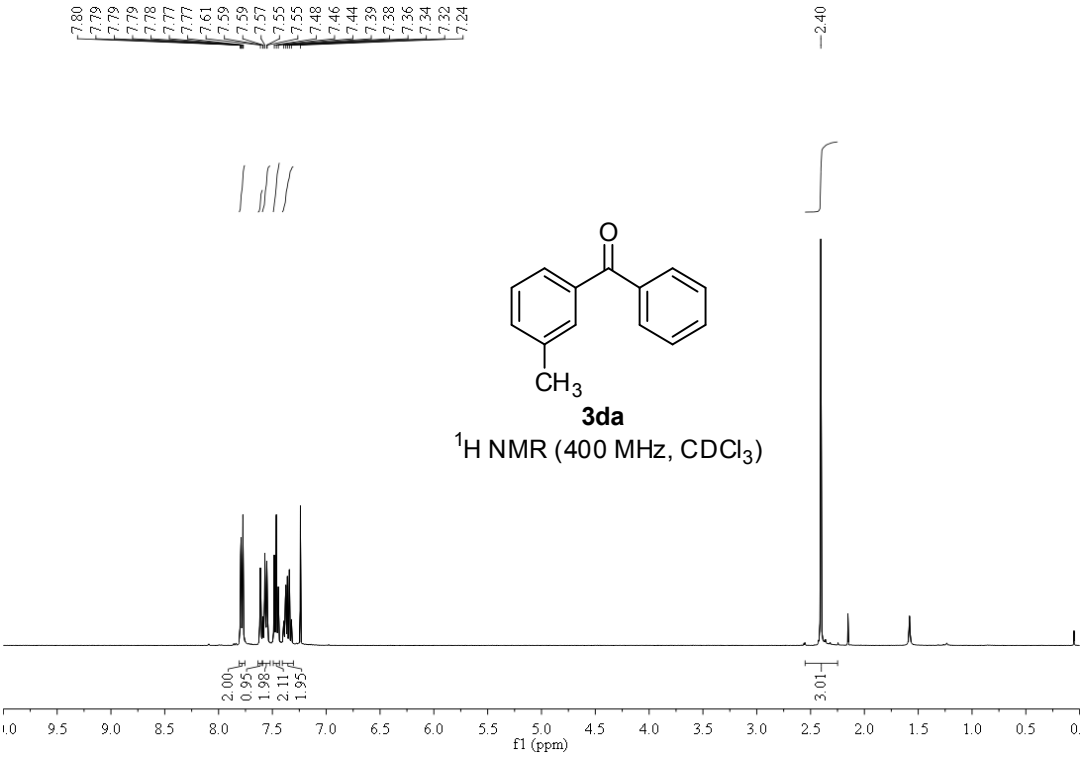
21.64
O
H3C
3ca
13C NMR (100 MHz, CDCl3)
f1 (ppm)



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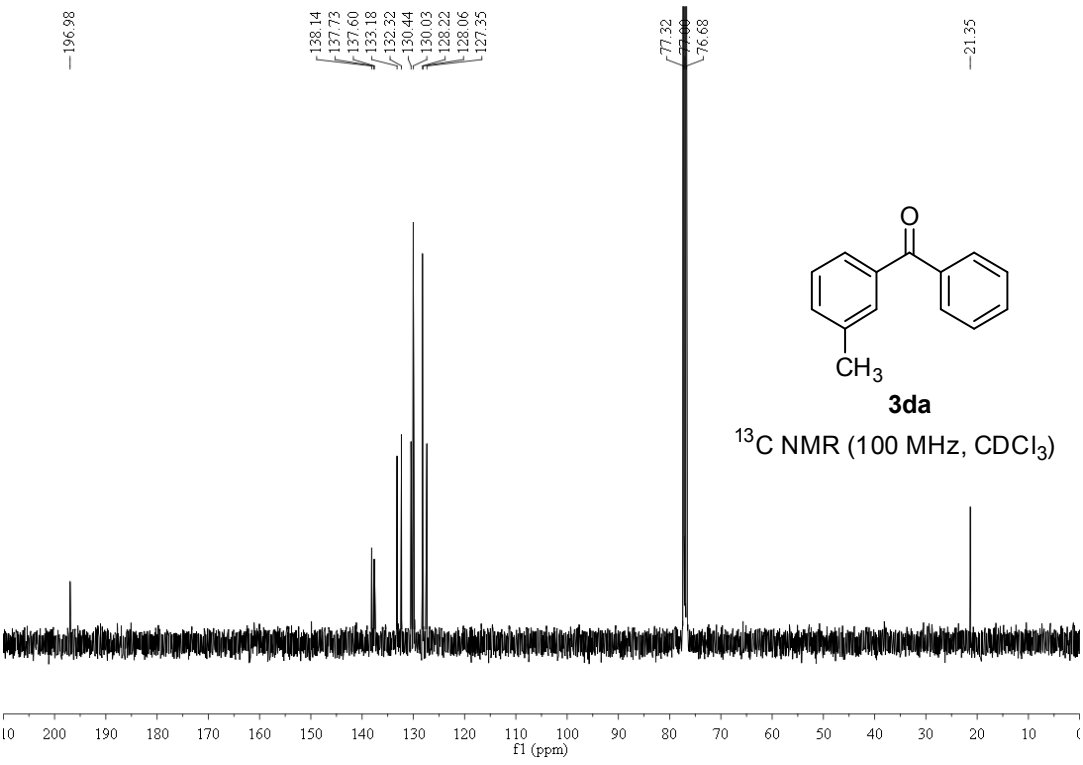

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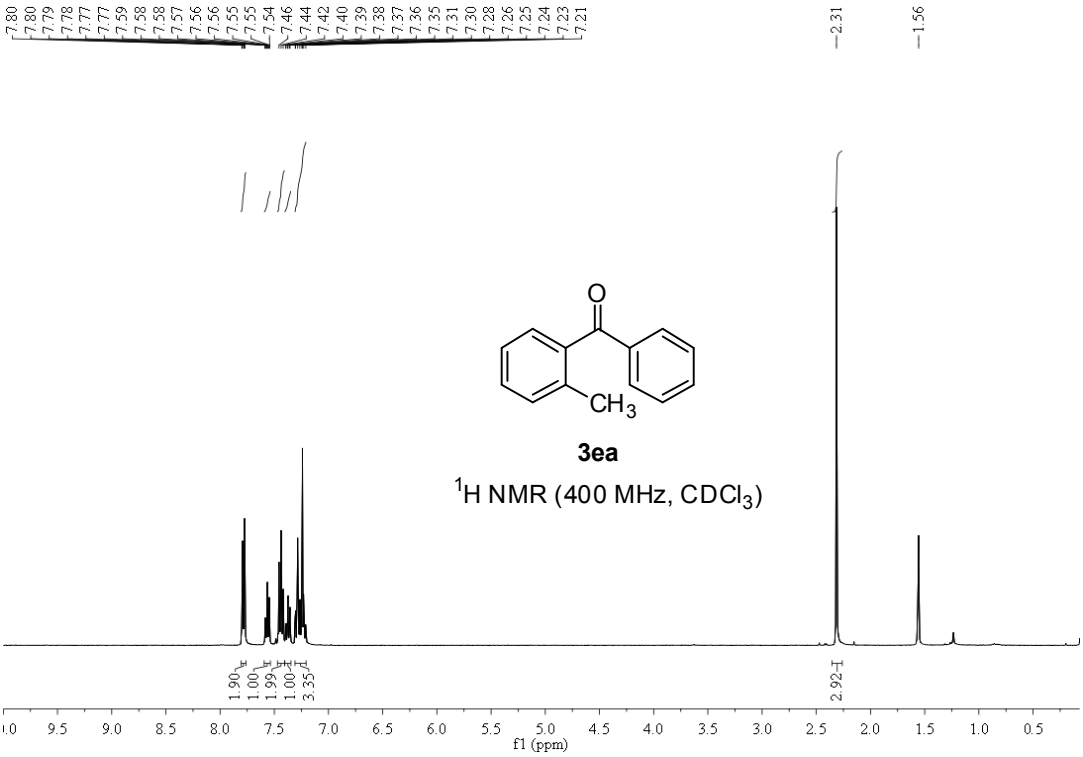

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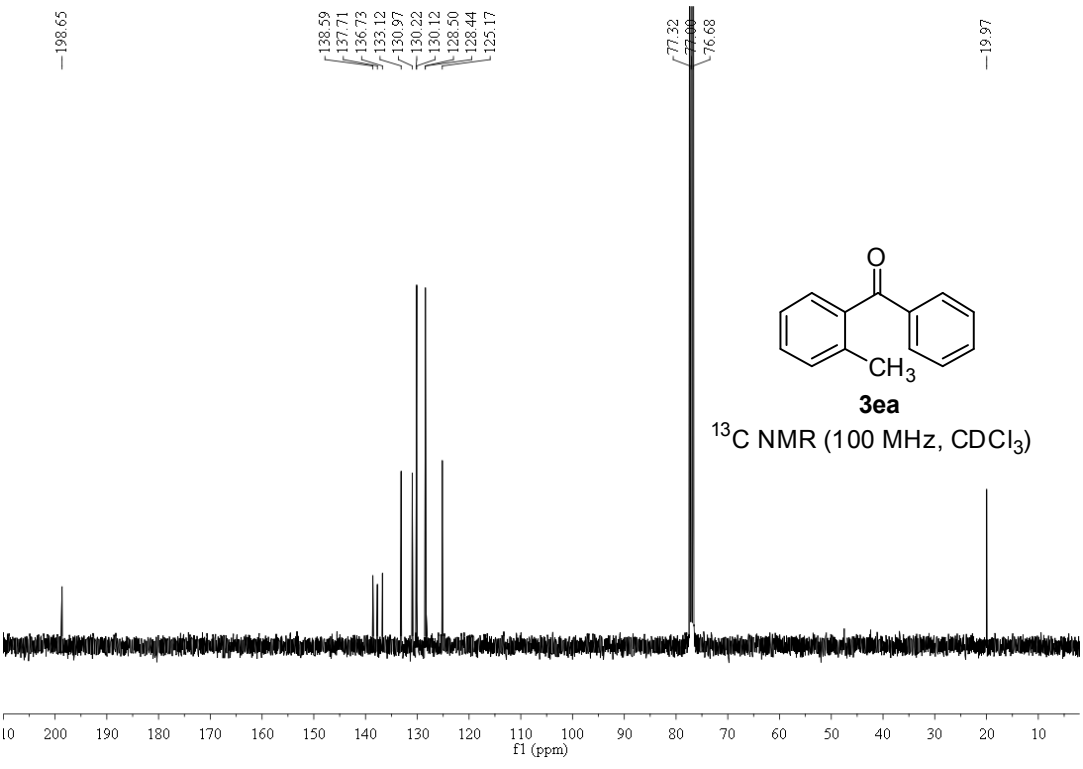

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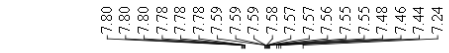

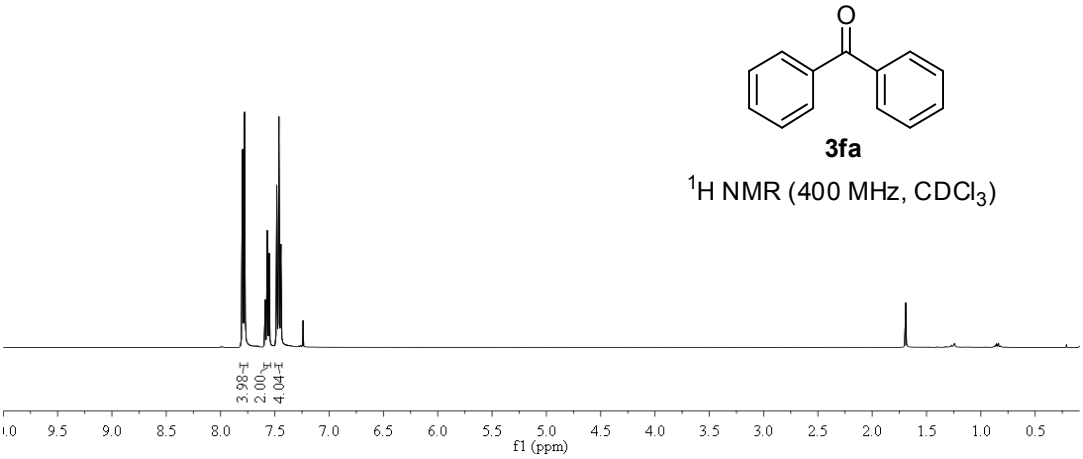

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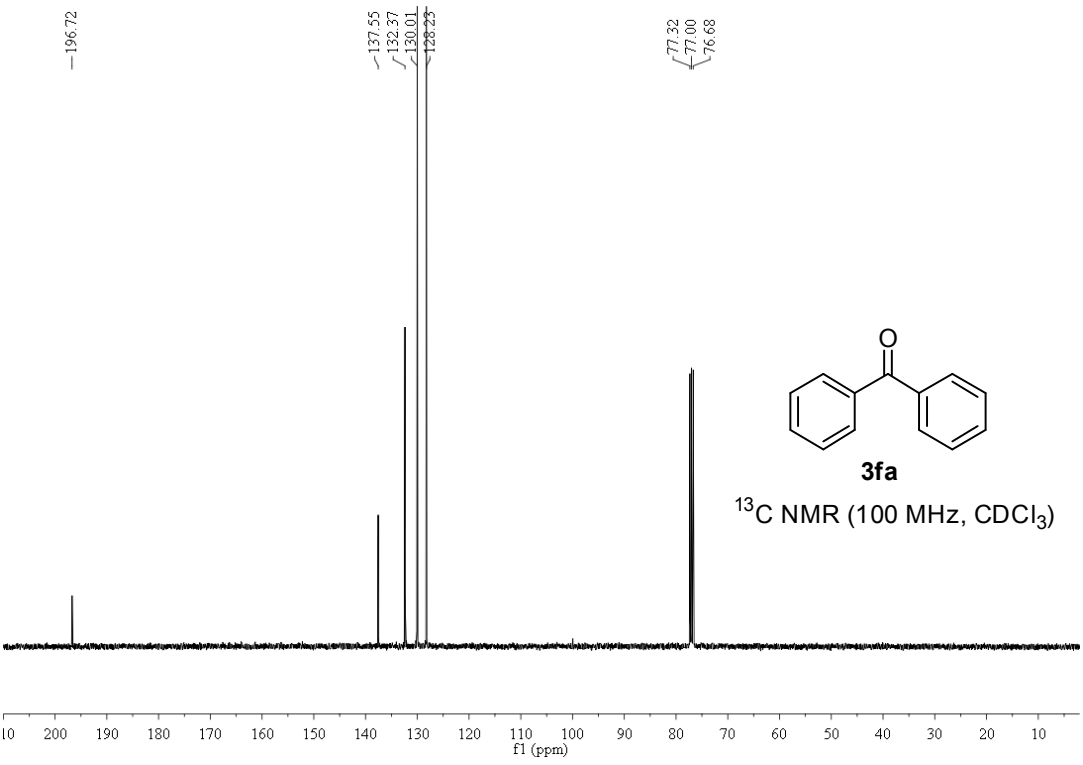

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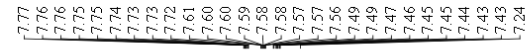
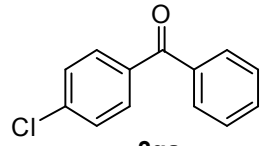
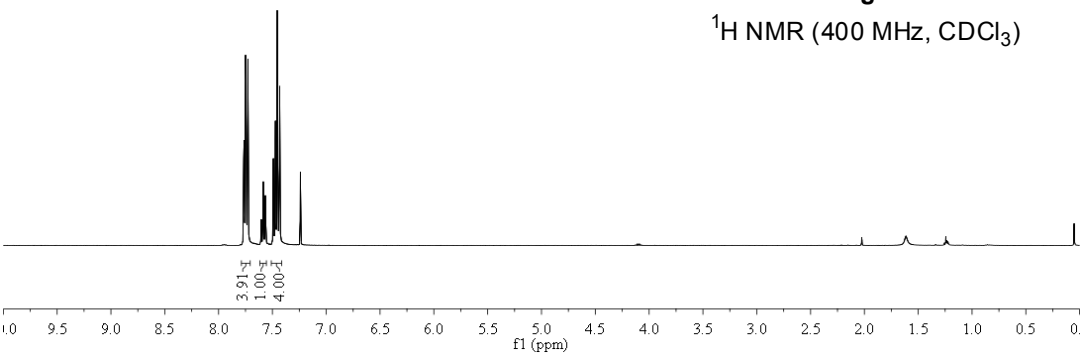
^{13}C NMR (100 MHz, $CDCl_3$)

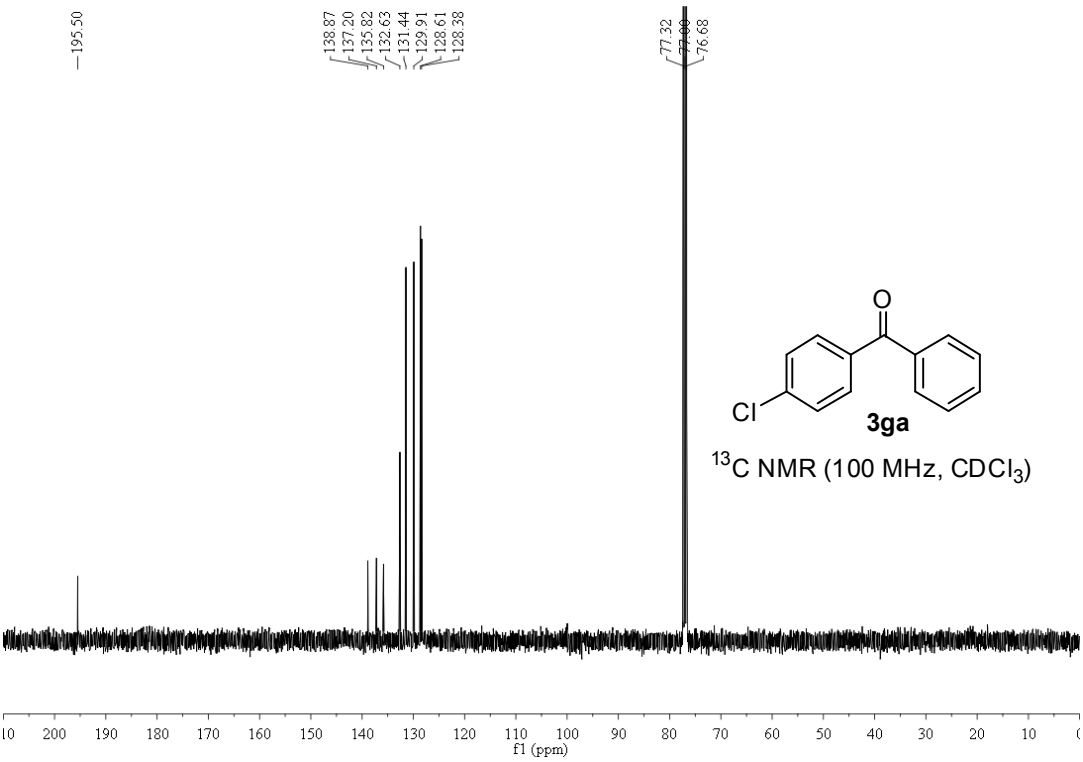




3ga

^{1}H NMR (400 MHz, $CDCl_3$)





3ga

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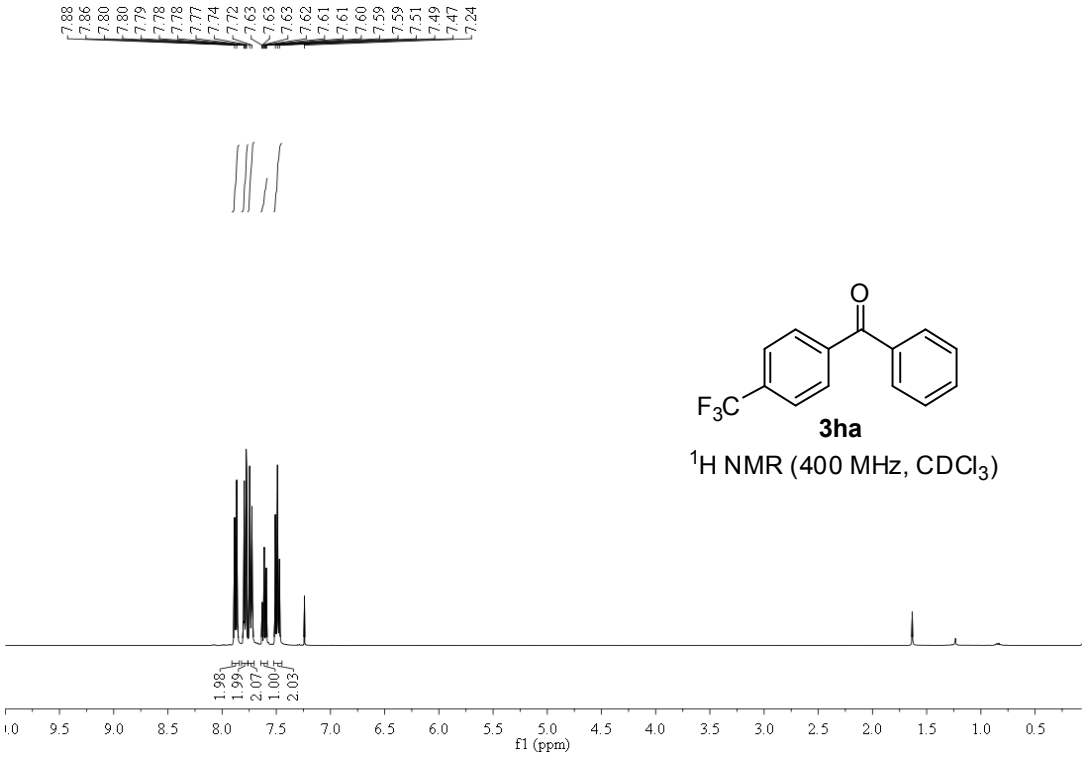
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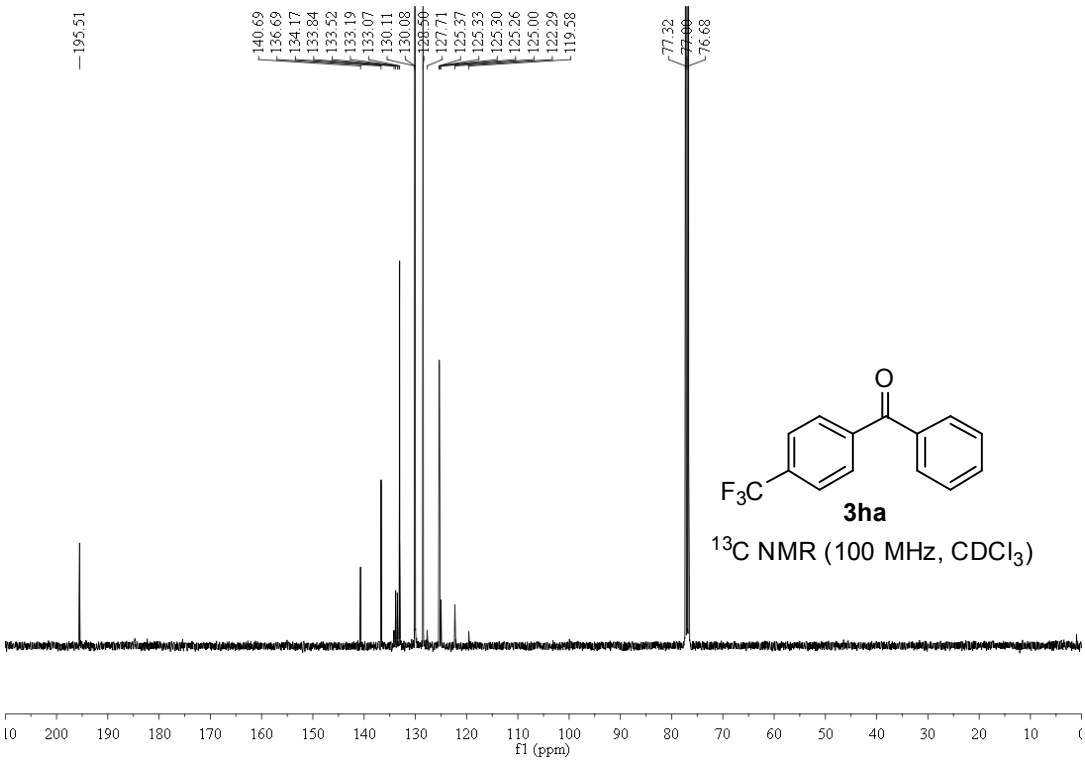
7.63
7.62
7.61
7.61
7.60
7.59
7.59
7.51
7.49
7.47
7.24
O
F3C
3ha
1H NMR (400 MHz, CDCl3)
1.98
1.99
2.07
1.00
2.03
f1 (ppm)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128.56
127.71
125.37
125.33
125.30
125.26
125.00
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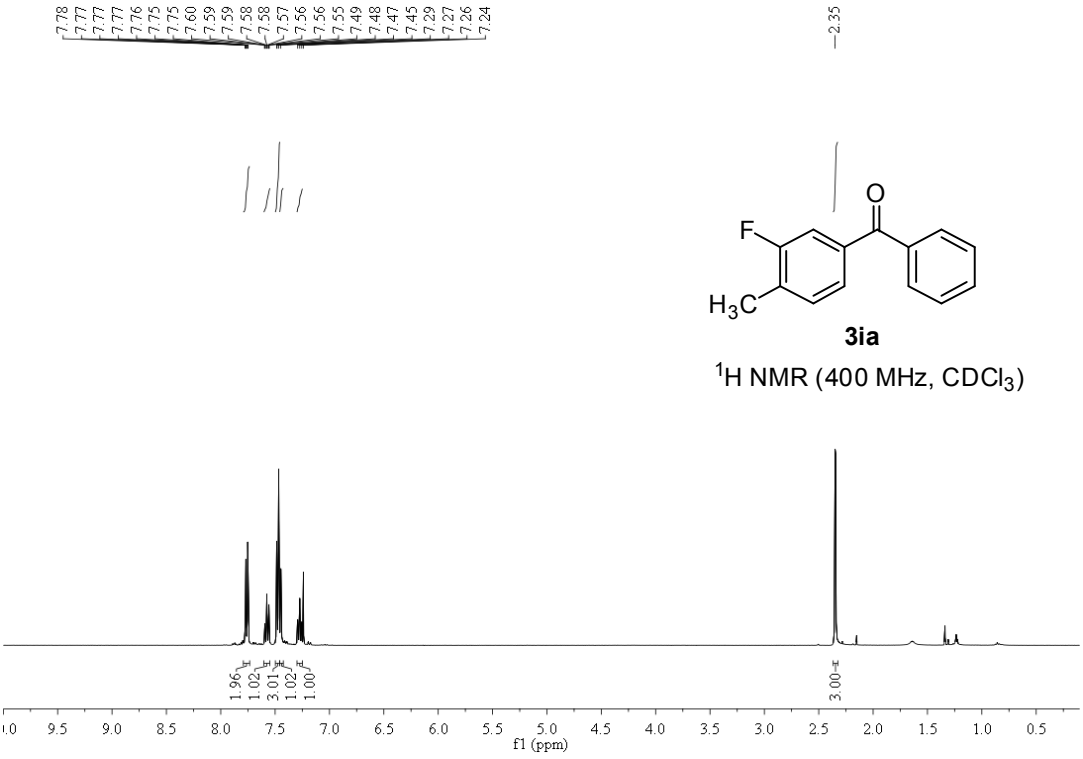
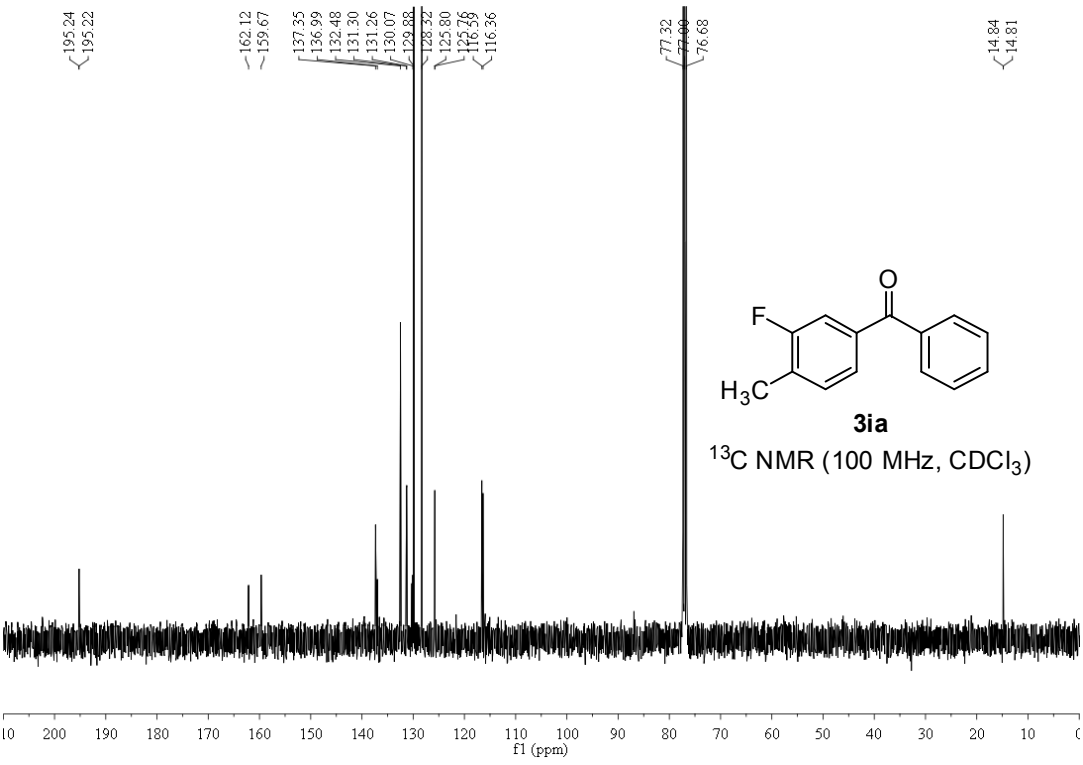
77.32
77.00
76.68
O
F3C
3ha
13C NMR (100 MHz, CDCl3)
f1 (ppm)



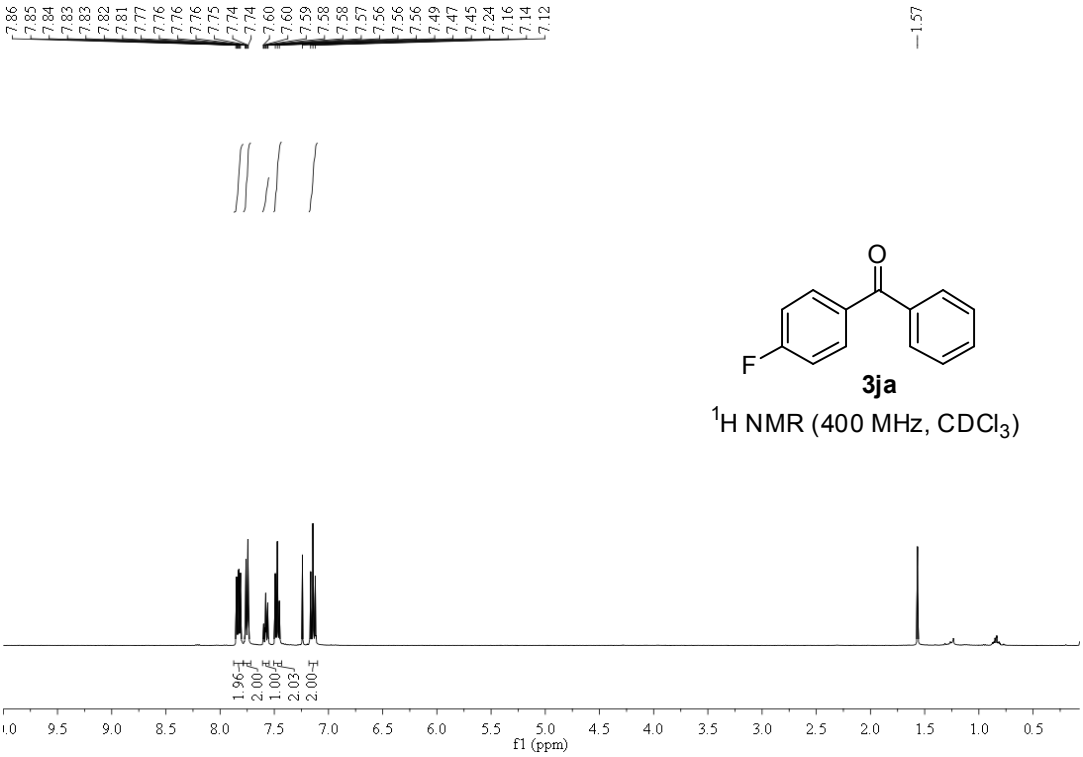
3ia

^{1}H NMR (400 MHz, $CDCl_3$)



3ia

^{13}C NMR (100 MHz, $CDCl_3$)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7.74
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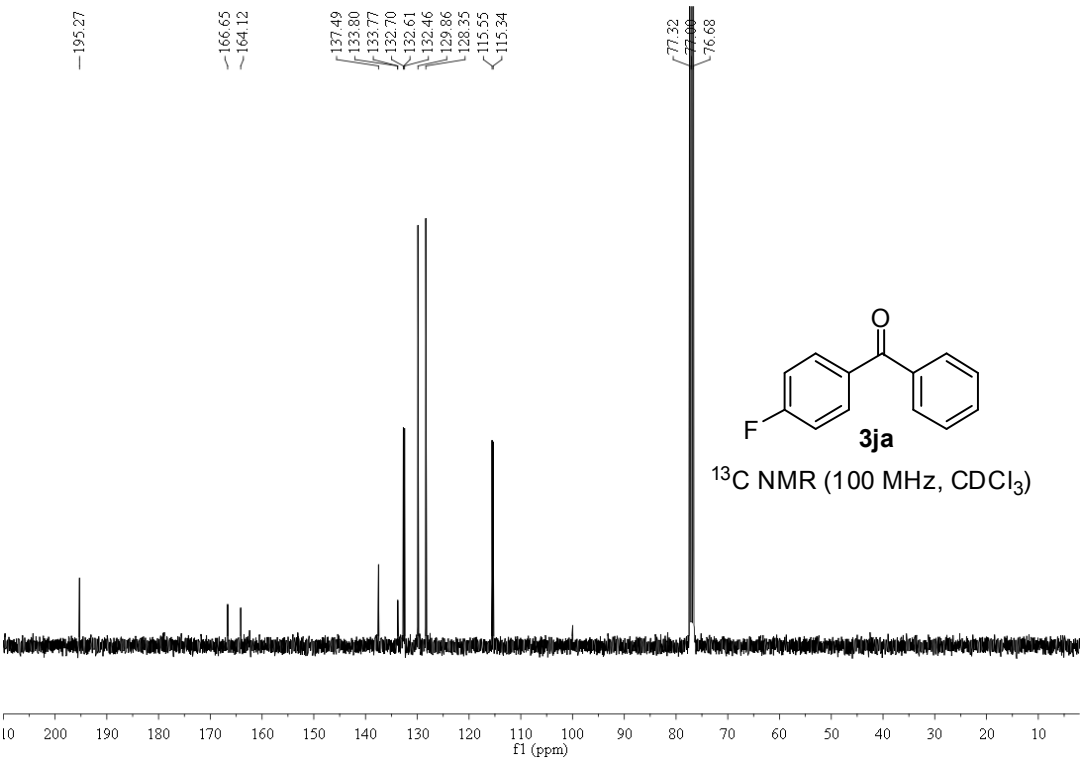
7.59
7.58
7.58
7.57
7.56
7.56
7.56
7.49
7.47
7.45
7.24
7.16
7.14
7.12
1.57
O
F
3ja
1H NMR (400 MHz, CDCl3)
1.96
2.00
1.00
2.03
2.00
f1 (ppm)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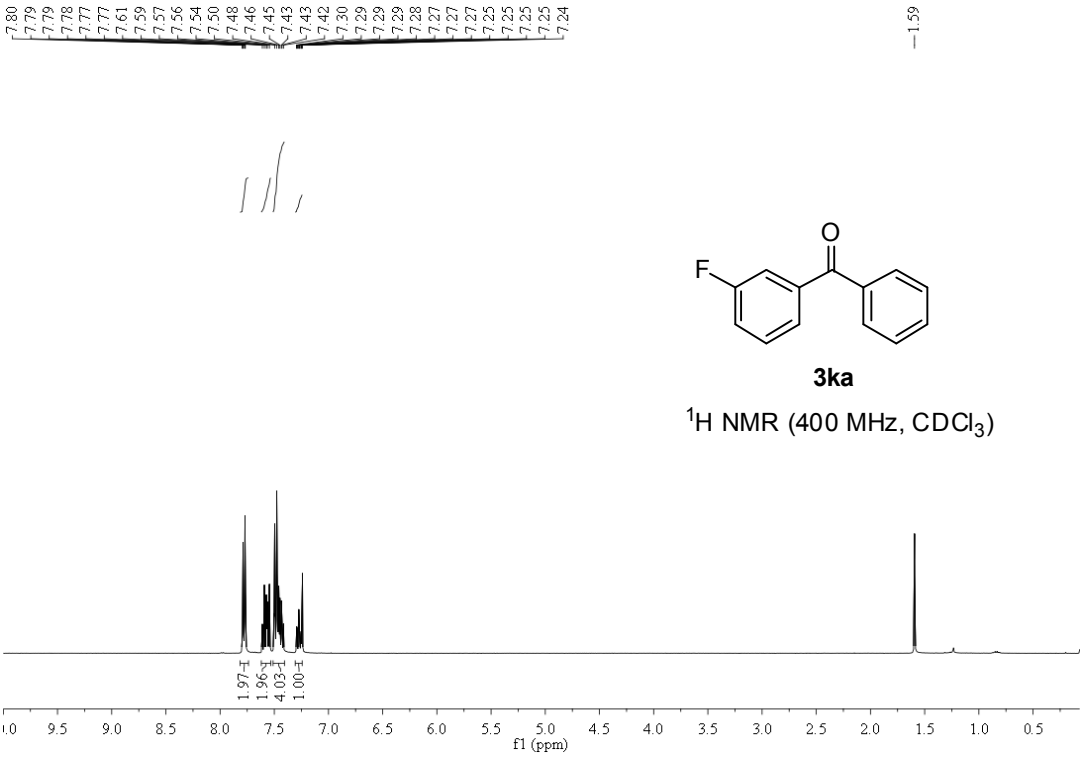
O
F
3ja
13C NMR (100 MHz, CDCl3)
f1 (ppm)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7.29
7.29
7.28
7.27
7.27
7.27
7.25
7.25
7.25
7.25
7.24
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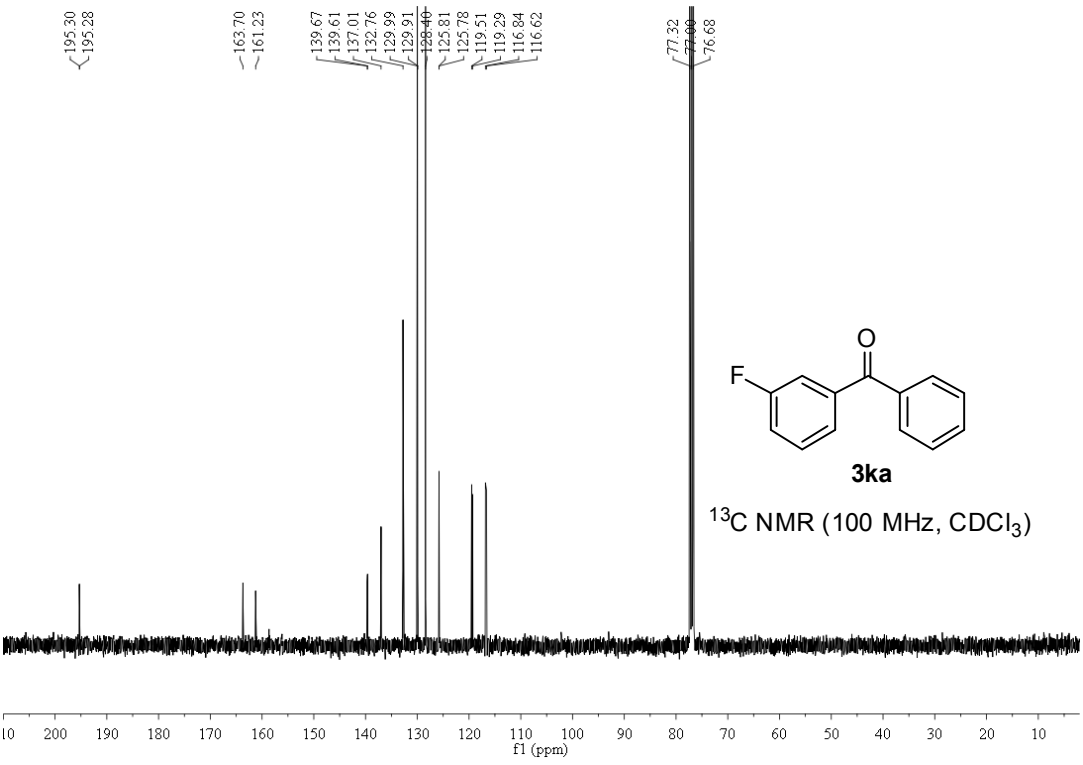
O
F
3ka
1H NMR (400 MHz, CDCl3)
1.97
1.96
4.03
1.00
f1 (ppm)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125.78
119.51
119.29
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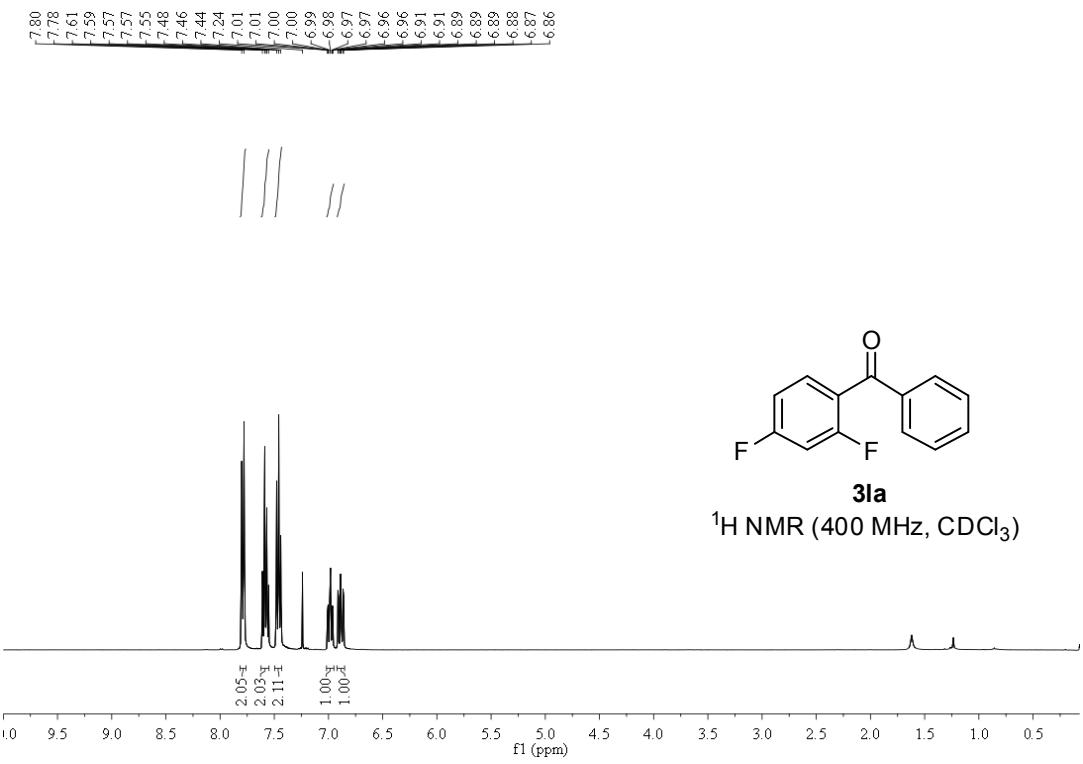
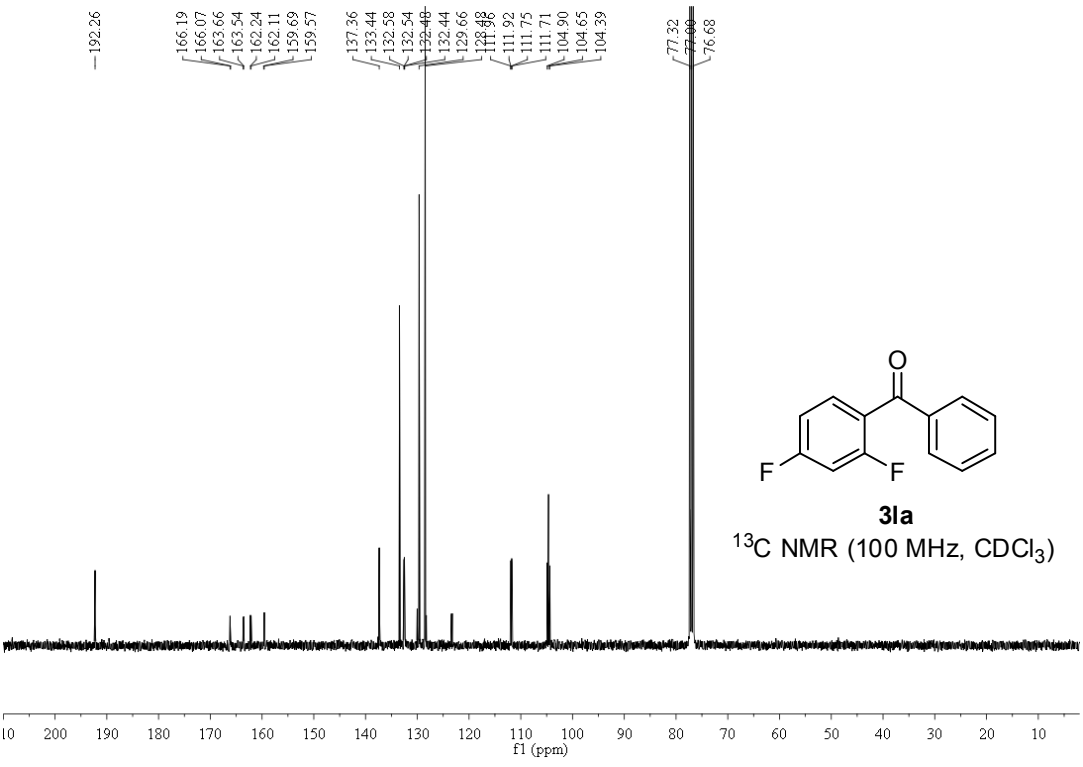
116.62
77.32
77.00
76.68
O
F
3ka
13C NMR (100 MHz, CDCl3)
f1 (ppm)



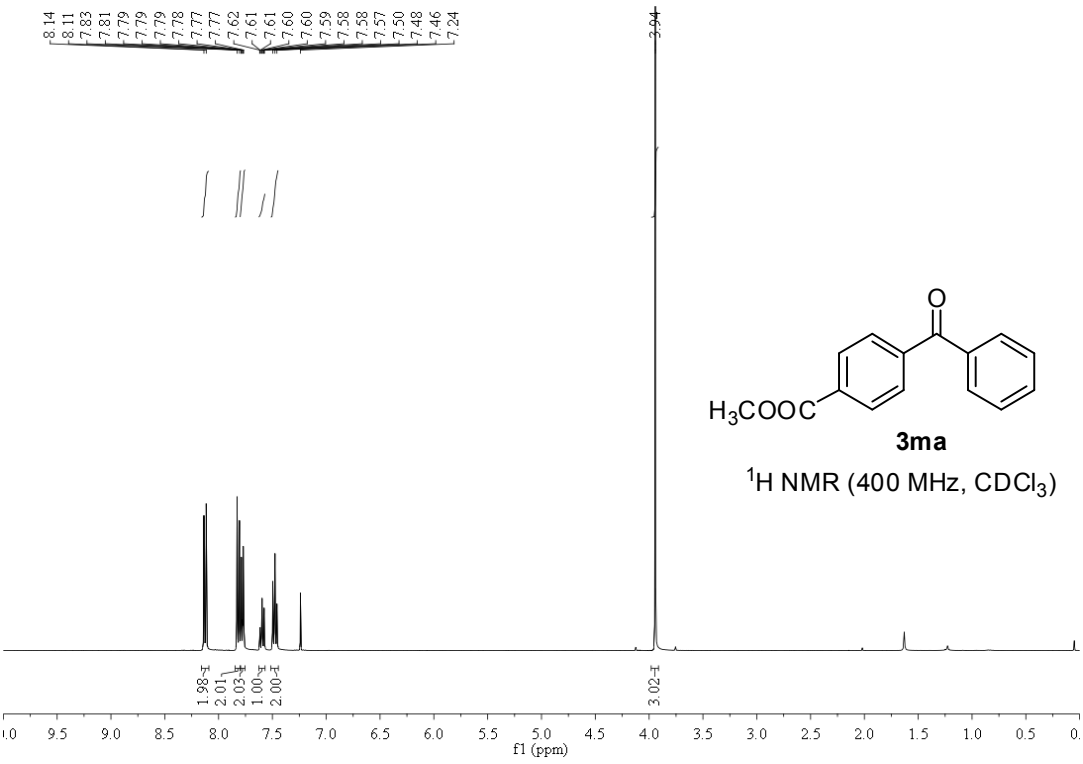
3la

^{1}H NMR (400 MHz, $CDCl_3$)



3la

^{13}C NMR (100 MHz, $CDCl_3$)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7.46
7.24
3.94
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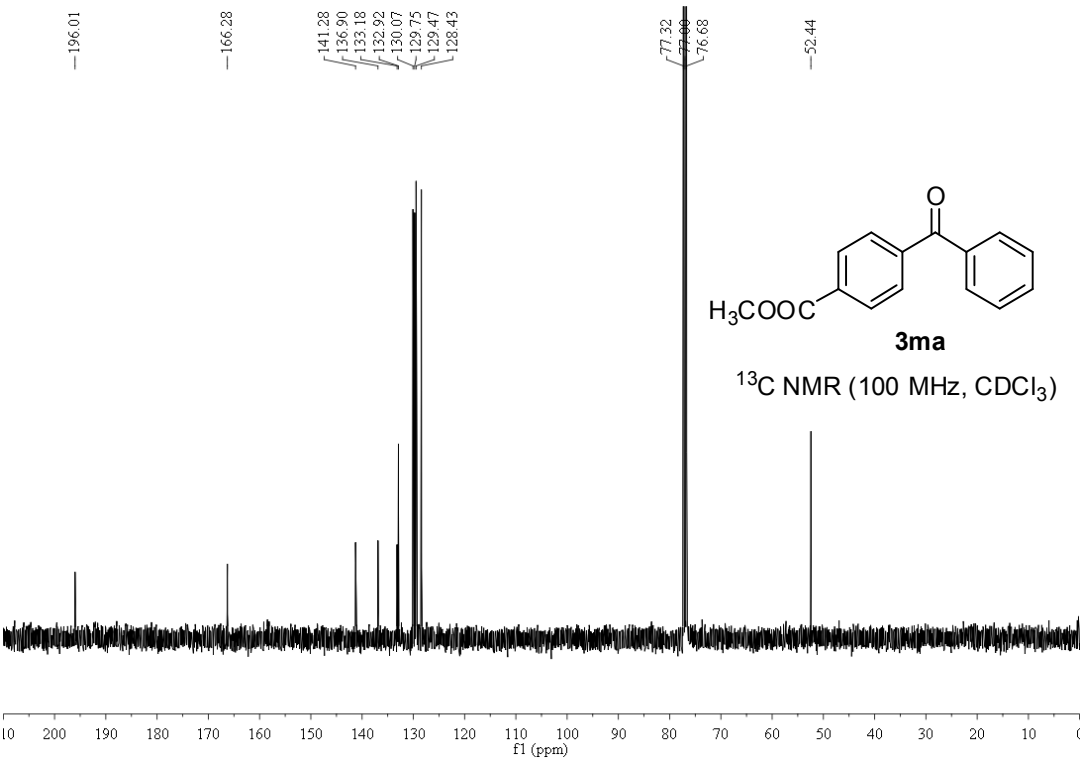
1.00
2.00
3.02
f1 (ppm)
O
H3COOC
3ma
1H NMR (400 MHz, CDCl3)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129.47
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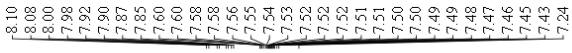
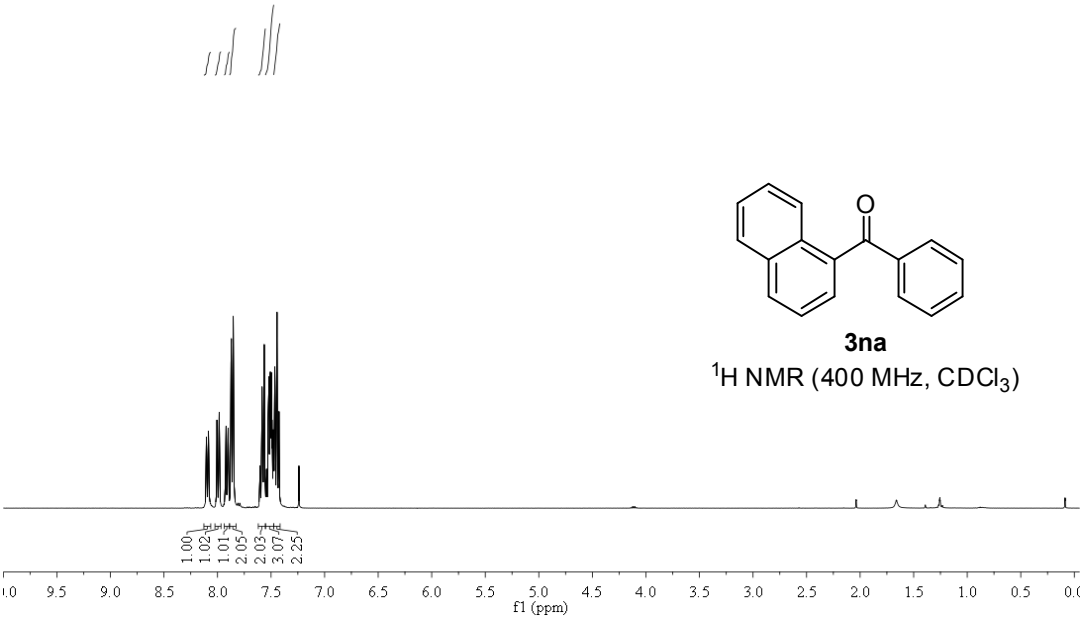
76.68
52.44
f1 (ppm)
O
H3COOC
3ma
13C NMR (100 MHz, CDCl3)





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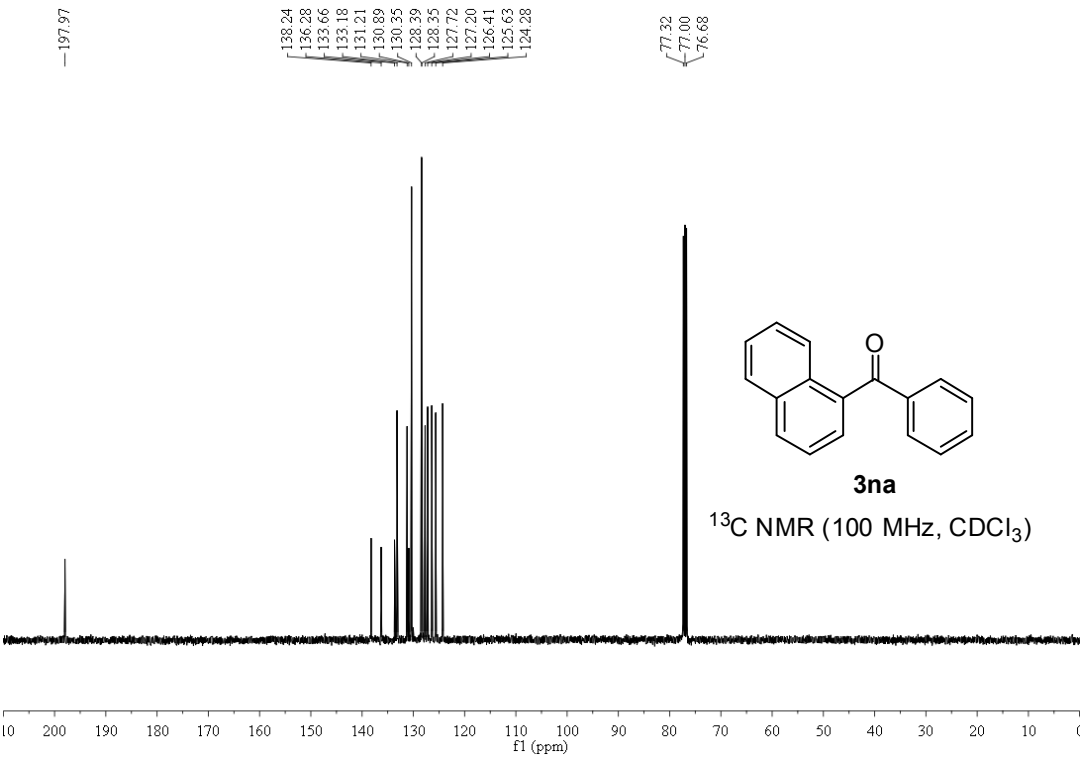

3na

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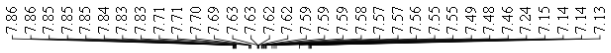

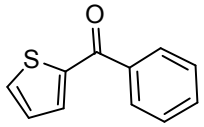

3oa

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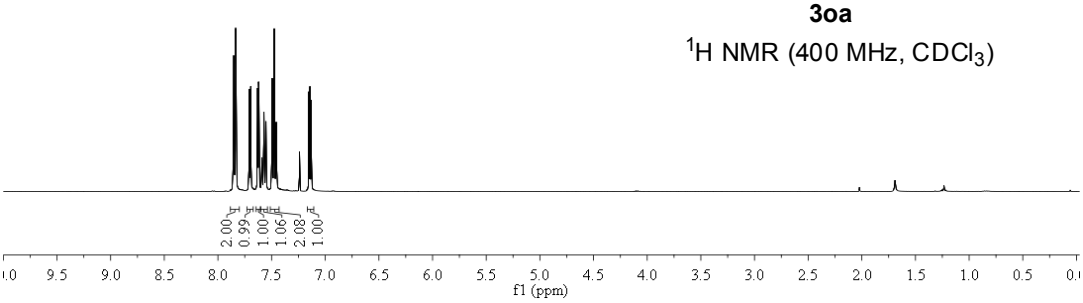
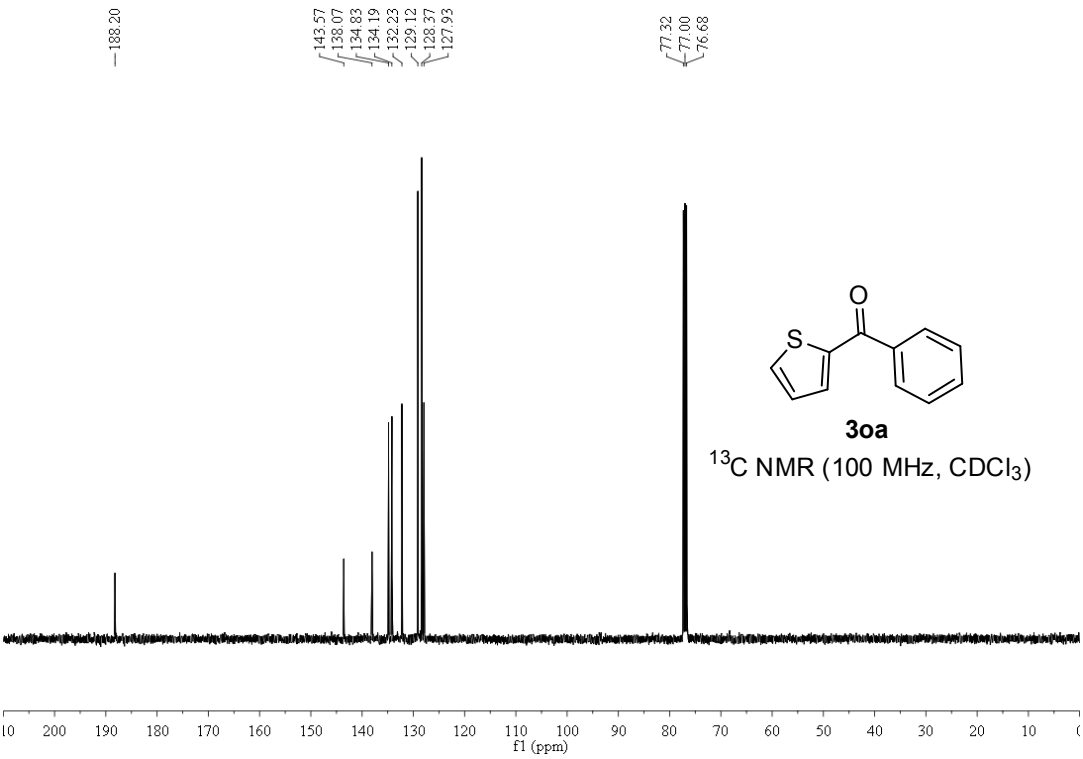
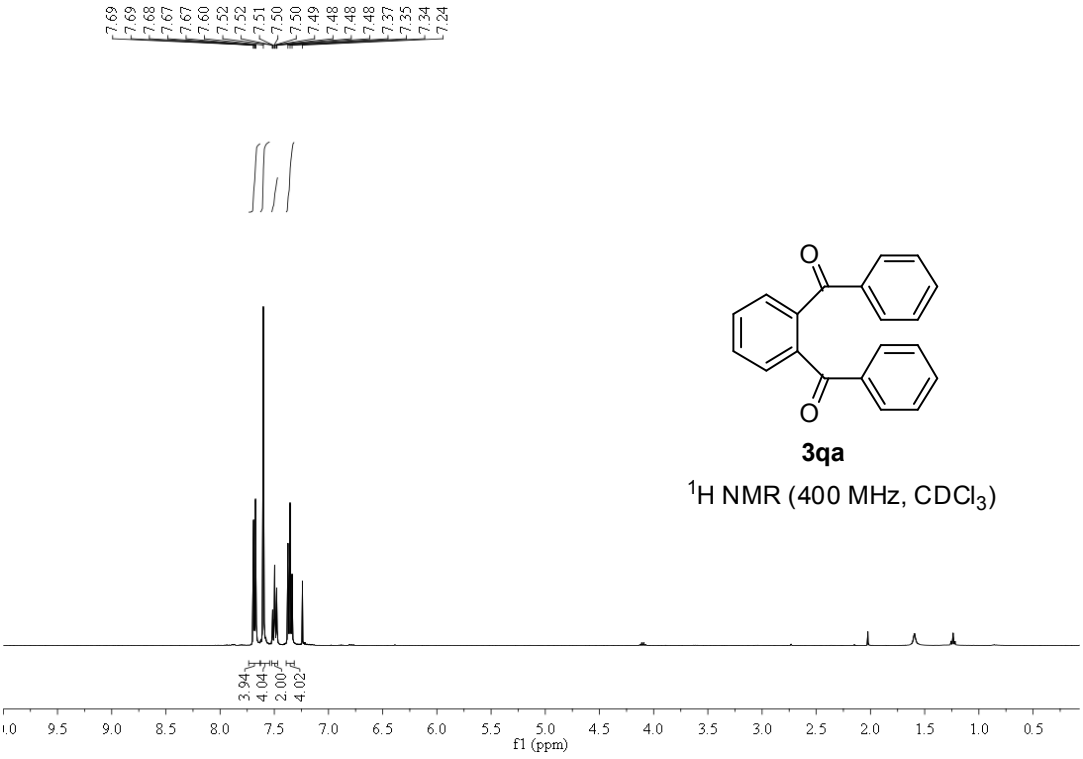




3oa

^{13}C NMR (100 MHz, $CDCl_3$)



3qa

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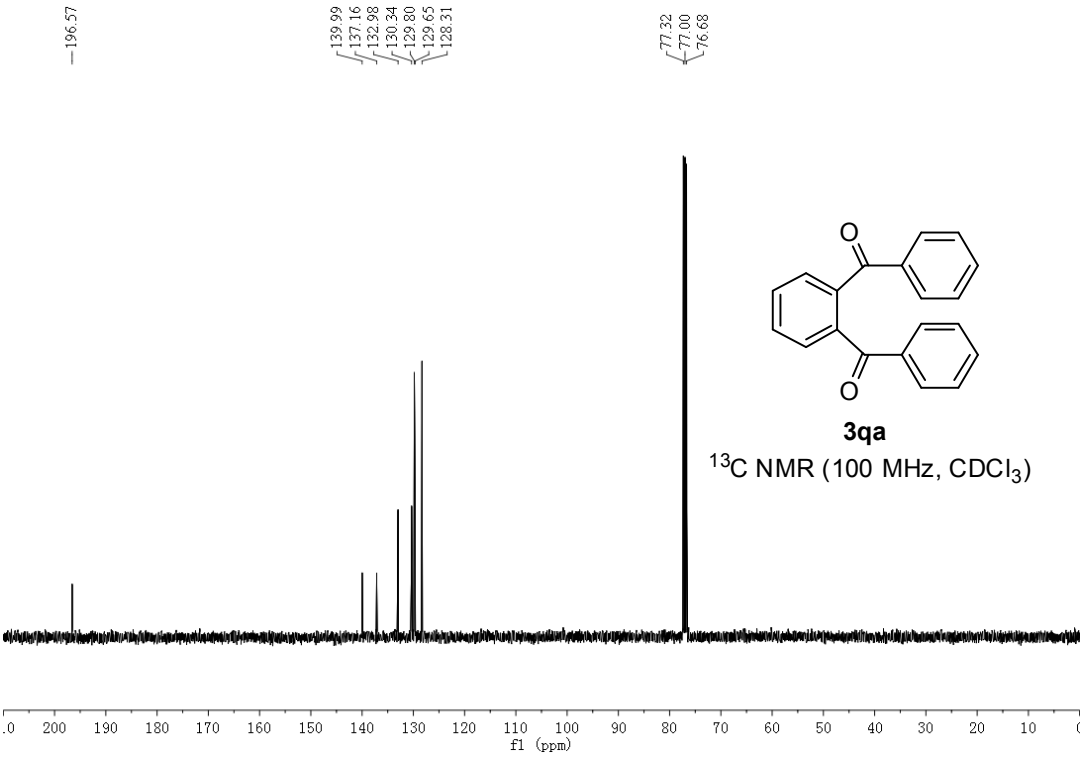

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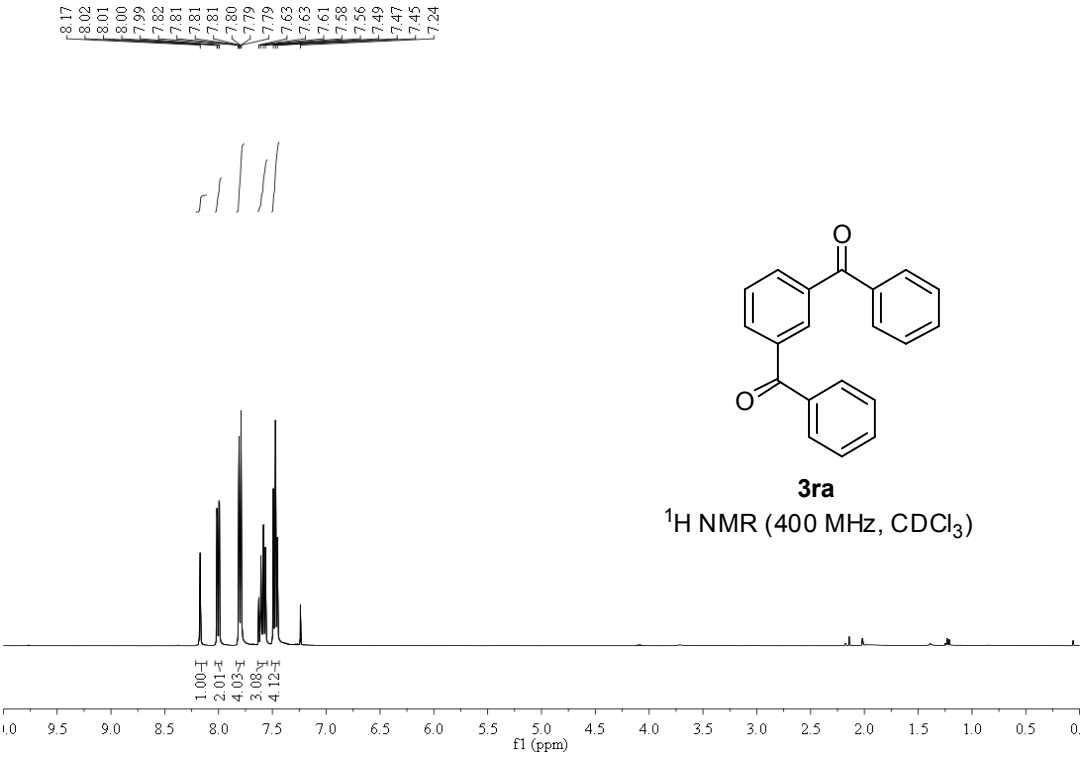

3ra

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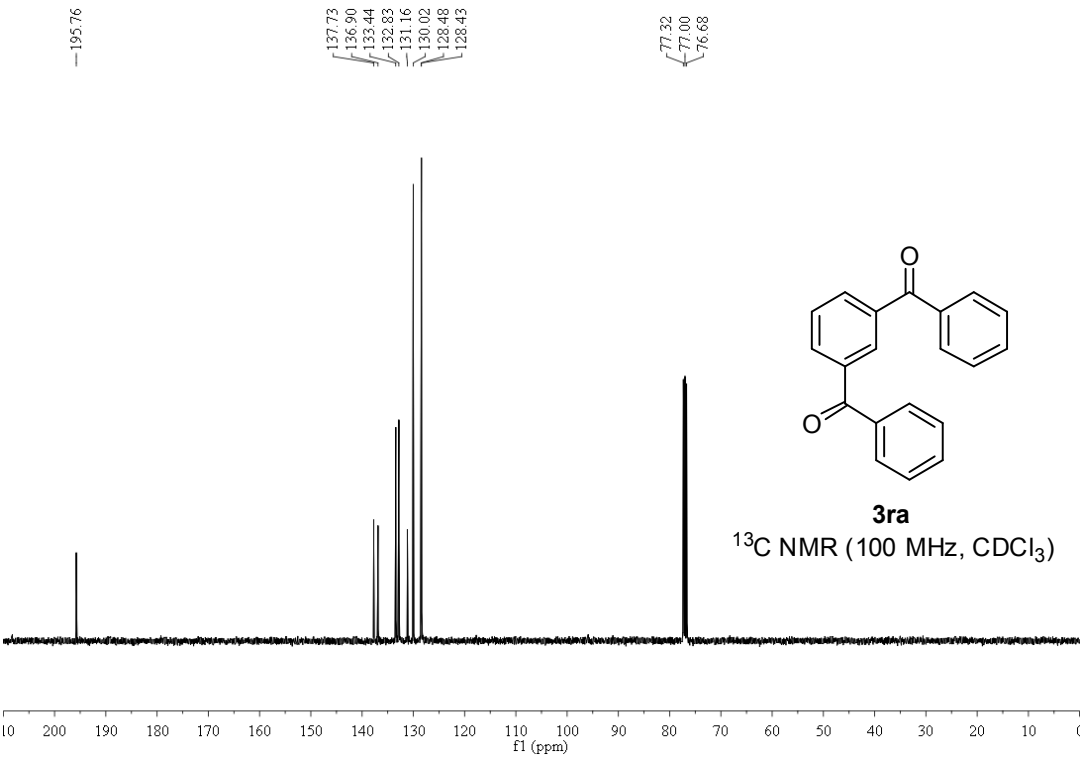
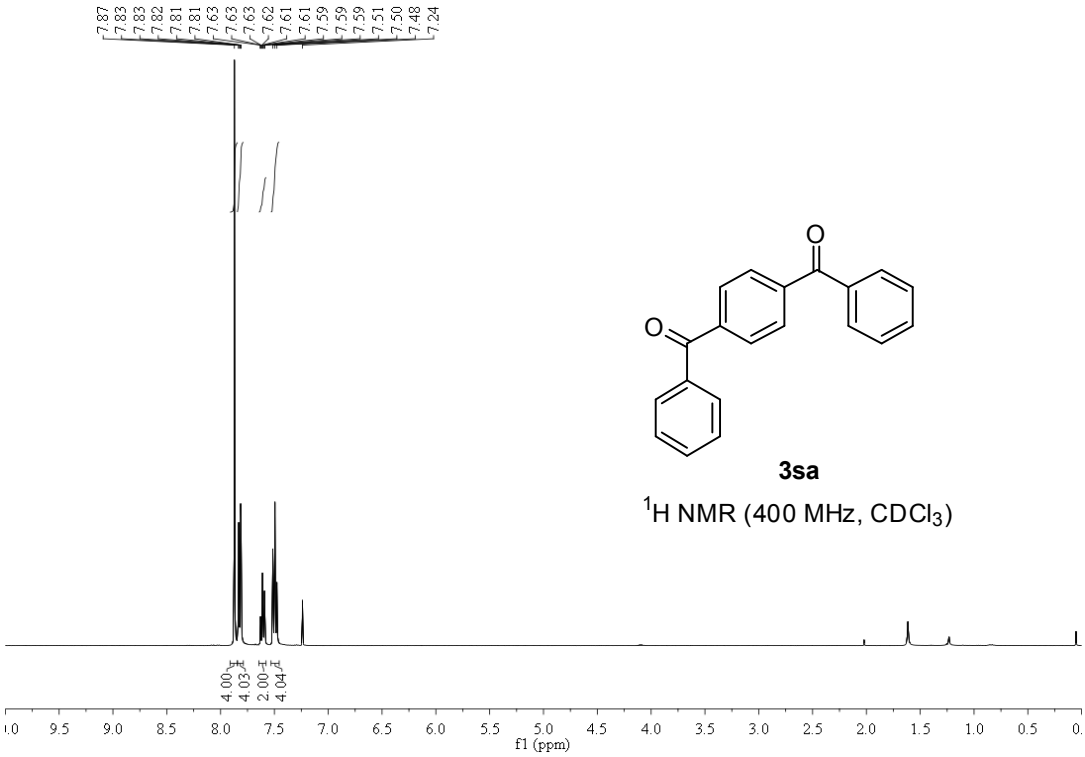


3ra

^{13}C NMR (100 MHz, $CDCl_3$)



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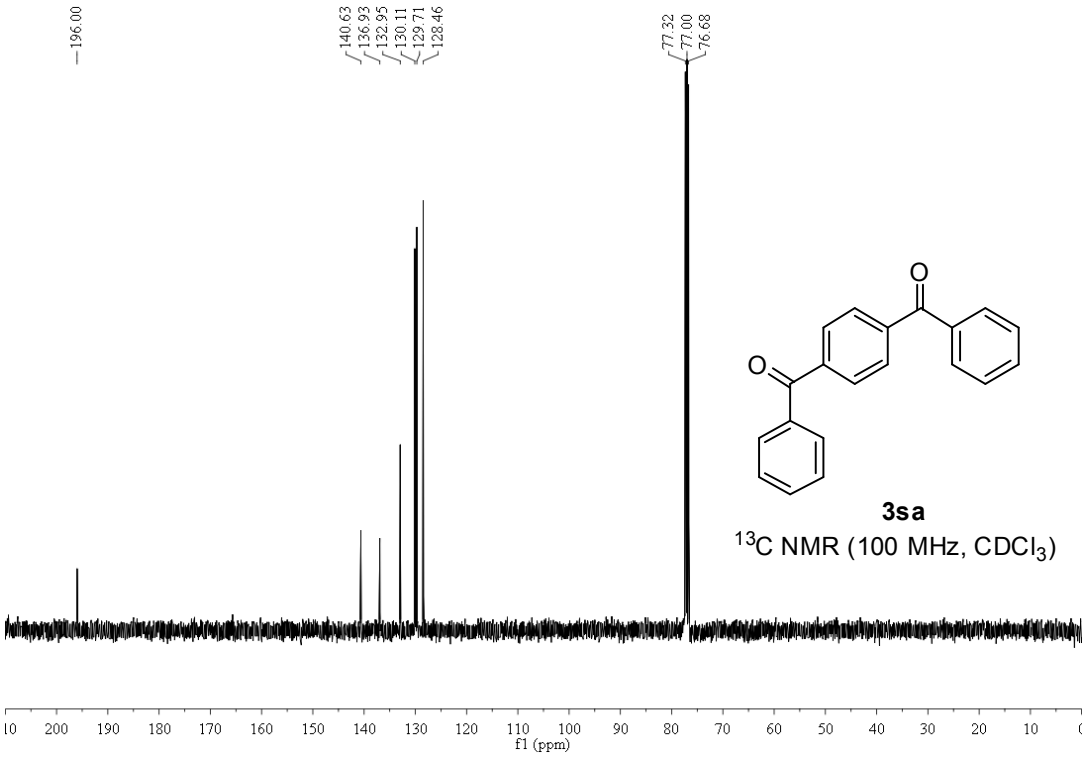

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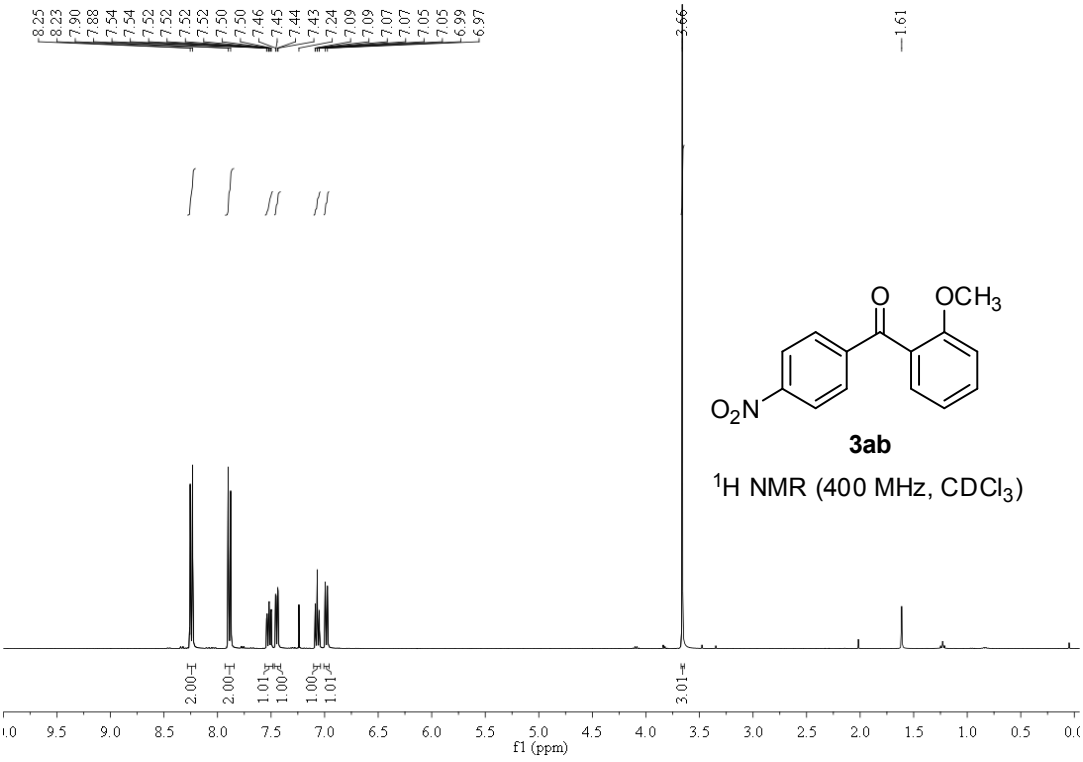

3ab

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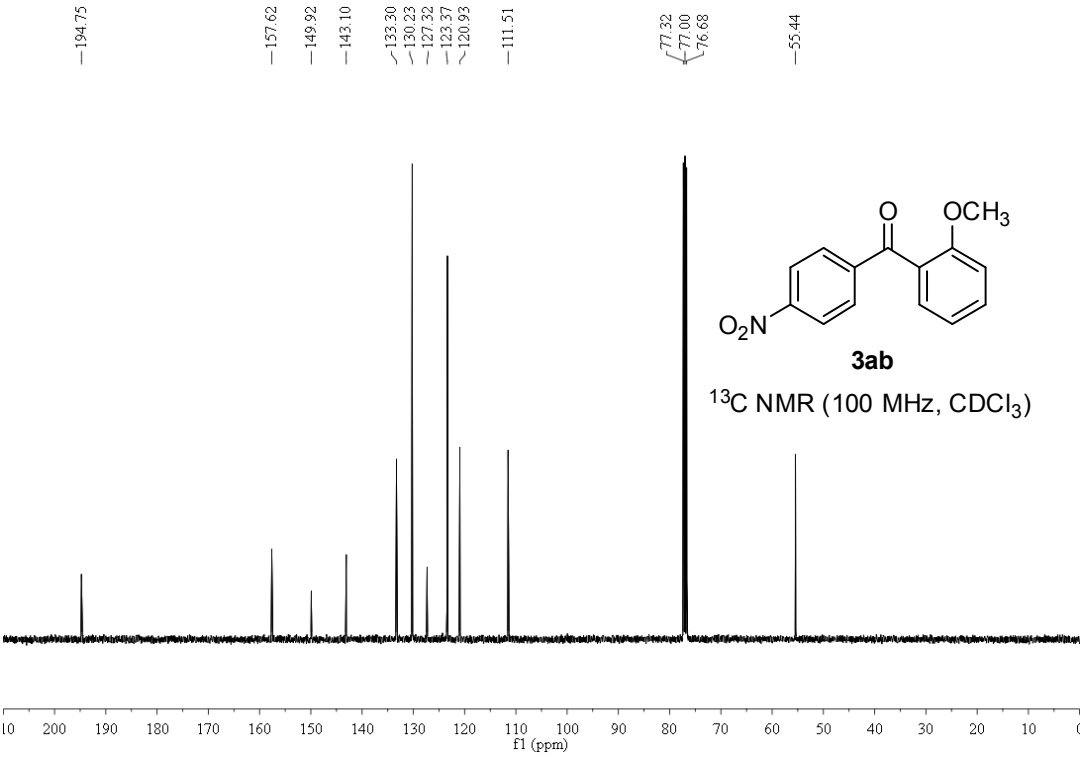

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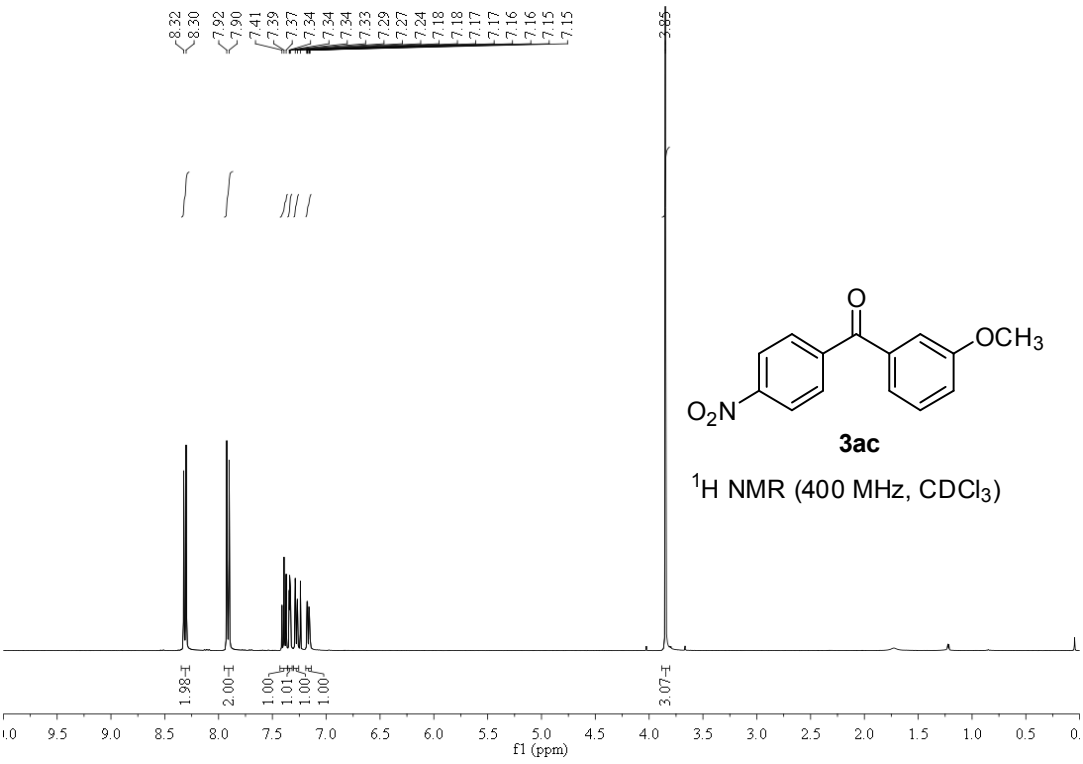

3ac

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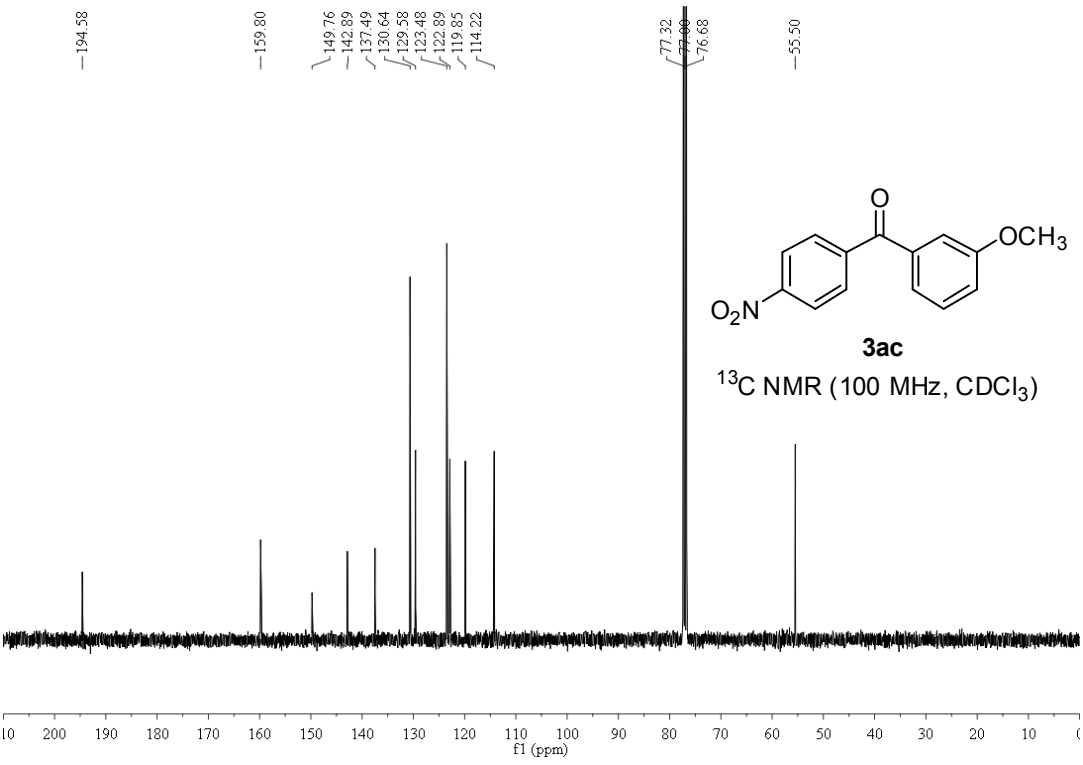
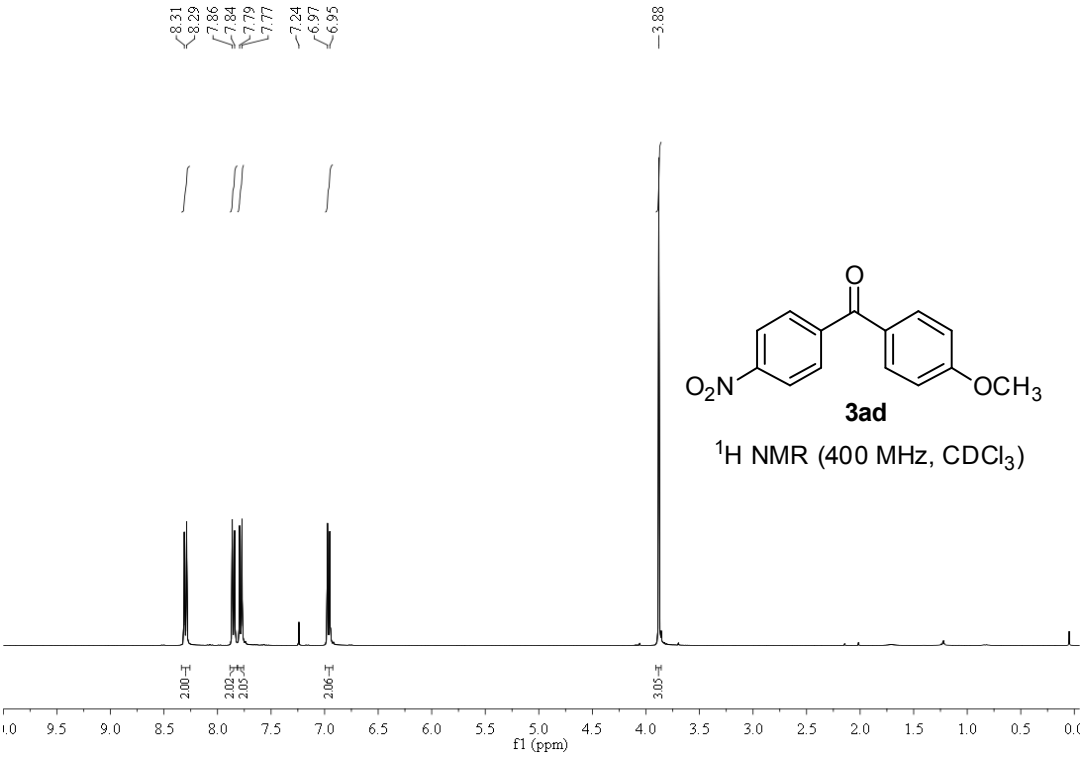
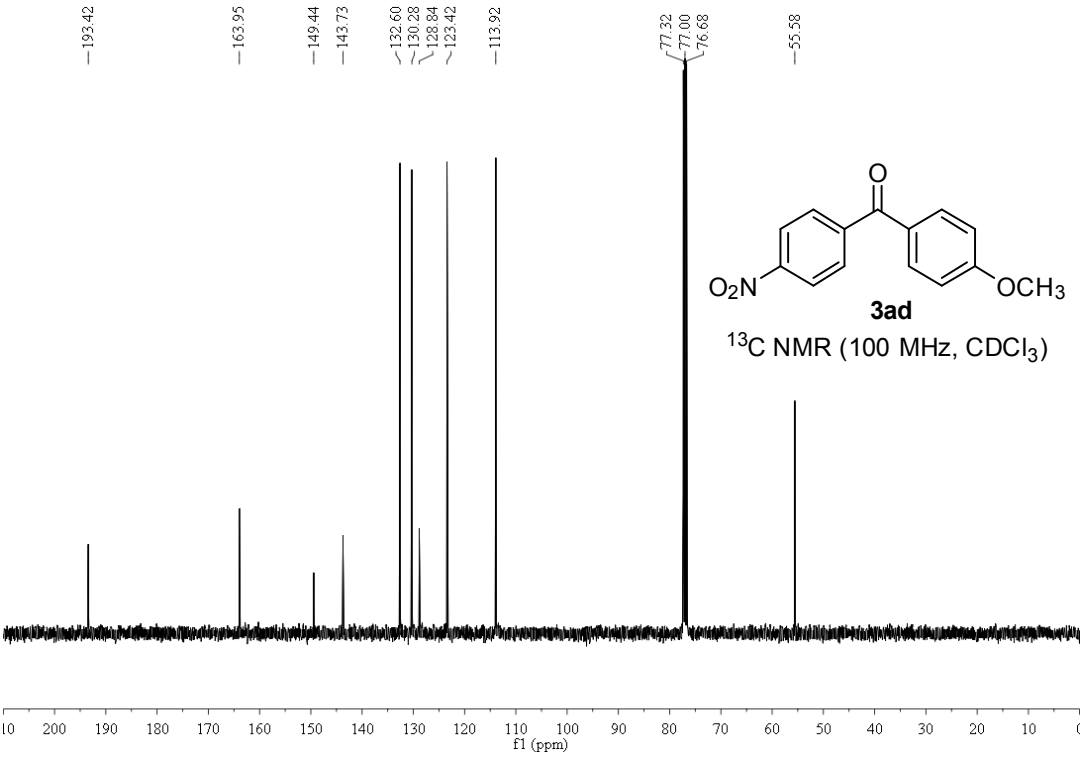
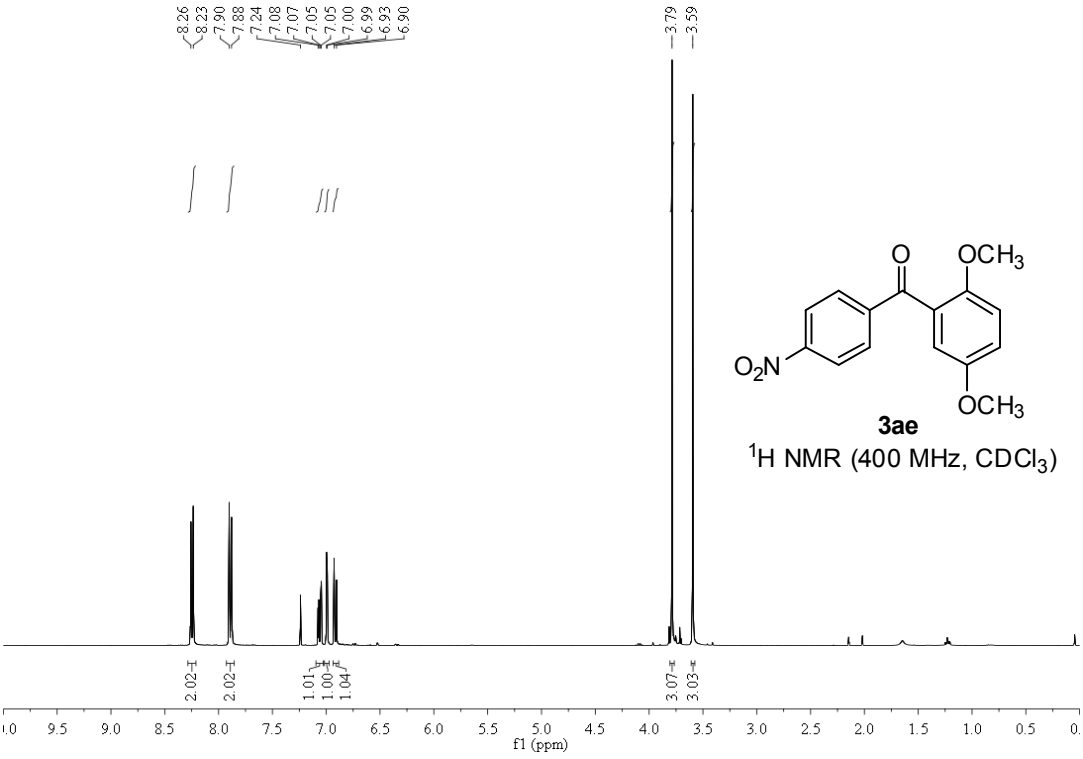


3ac

^{13}C NMR (100 MHz, $CDCl_3$)

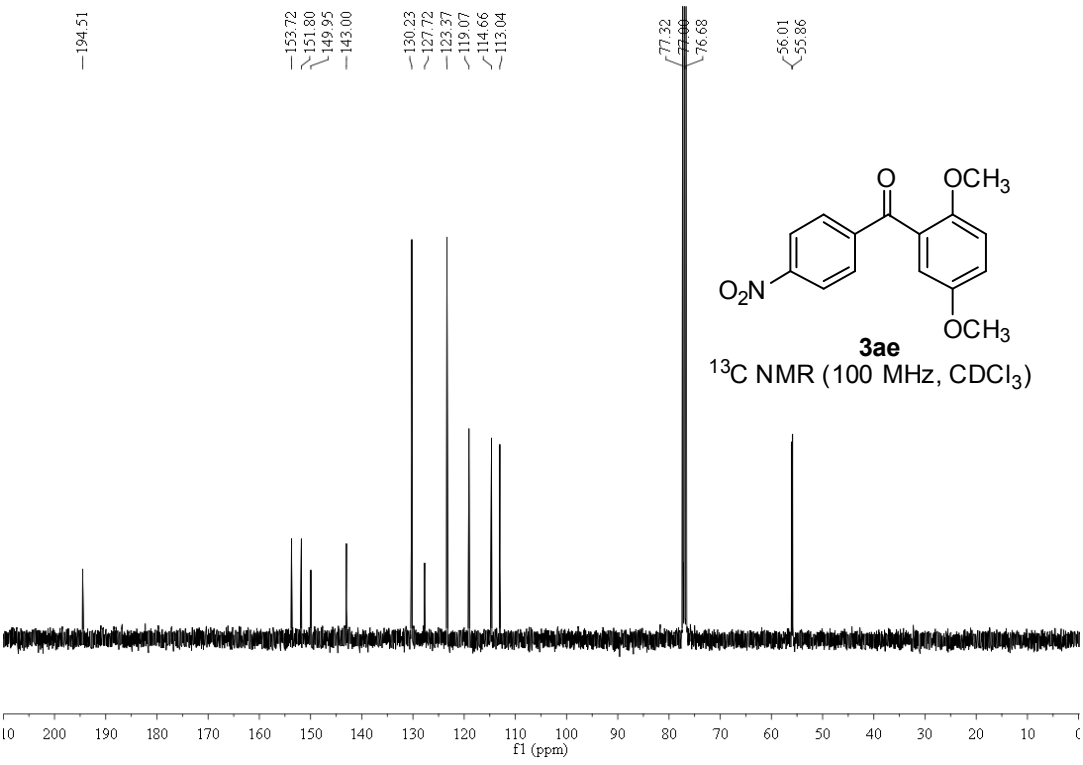

8.31
8.29
7.86
7.84
7.79
7.77
7.24
6.97
6.95
3.88
2.00
2.02
2.05
2.06
3.05
f1 (ppm)
O
O2N
OCH3
3ad
1H NMR (400 MHz, CDCl3)


193.42
163.95
149.44
143.73
132.60
130.28
128.84
123.42
113.92
77.32
77.00
76.68
55.58
f1 (ppm)
O
O2N
OCH3
3ad
13C NMR (100 MHz, CDCl3)



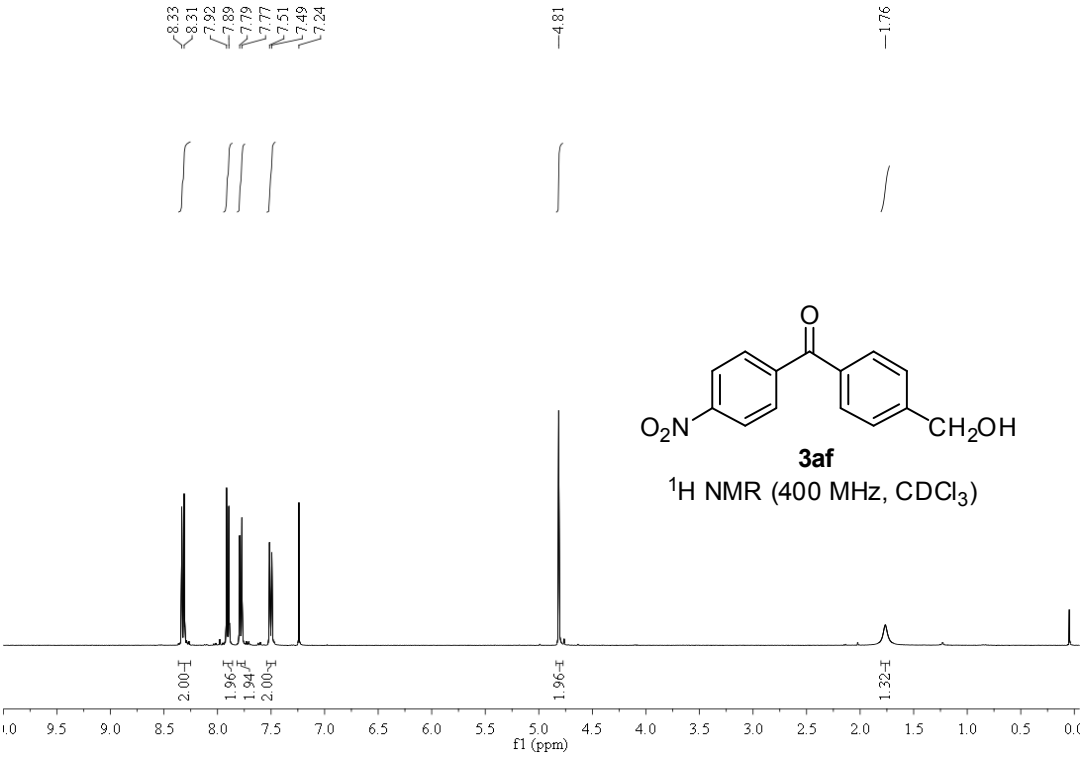
3ae

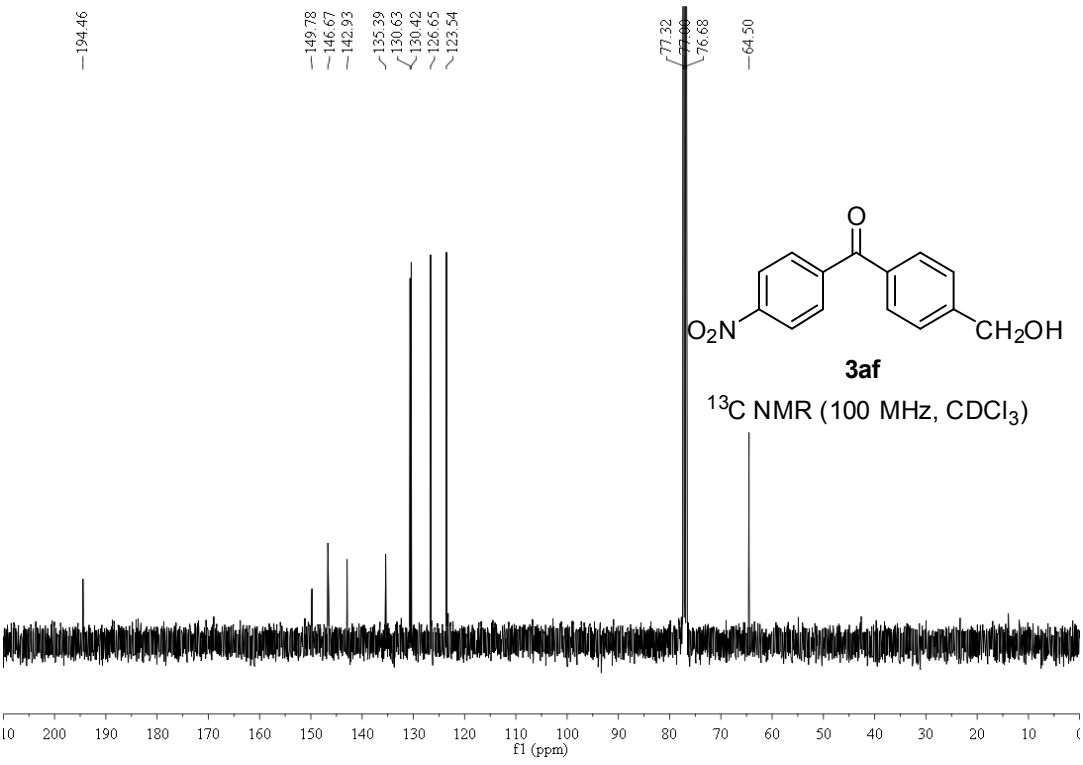
^{1}H NMR (400 MHz, $CDCl_3$)

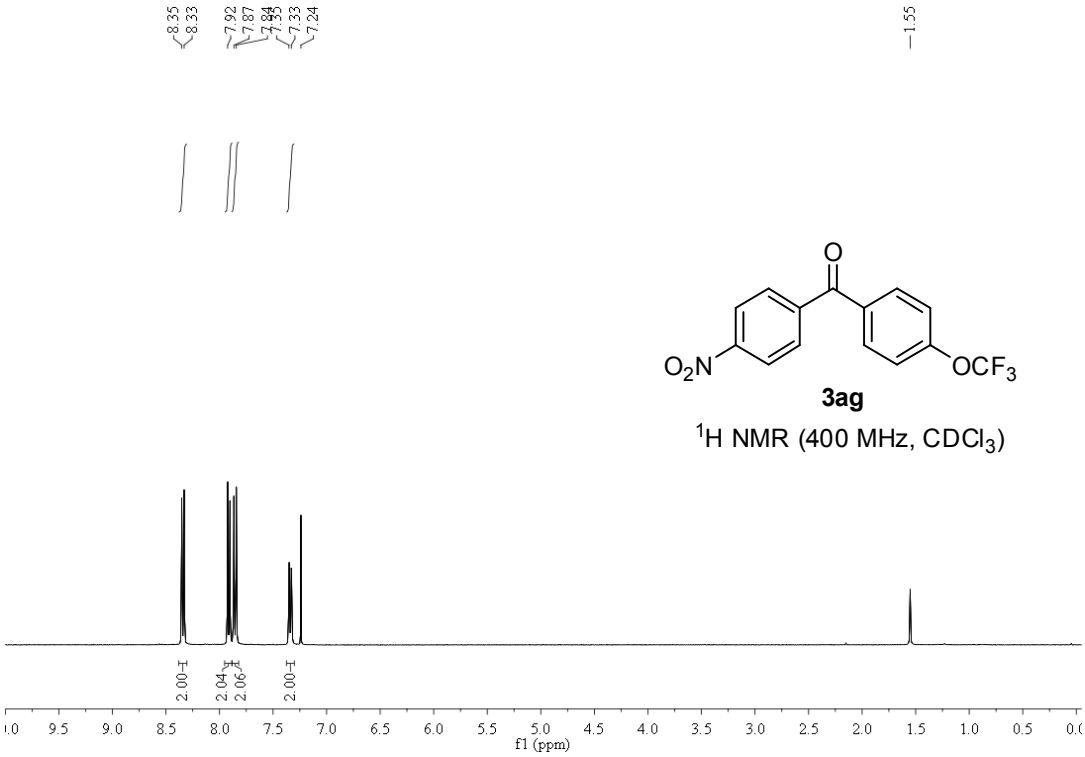


3ae

^{13}C NMR (100 MHz, $CDCl_3$)

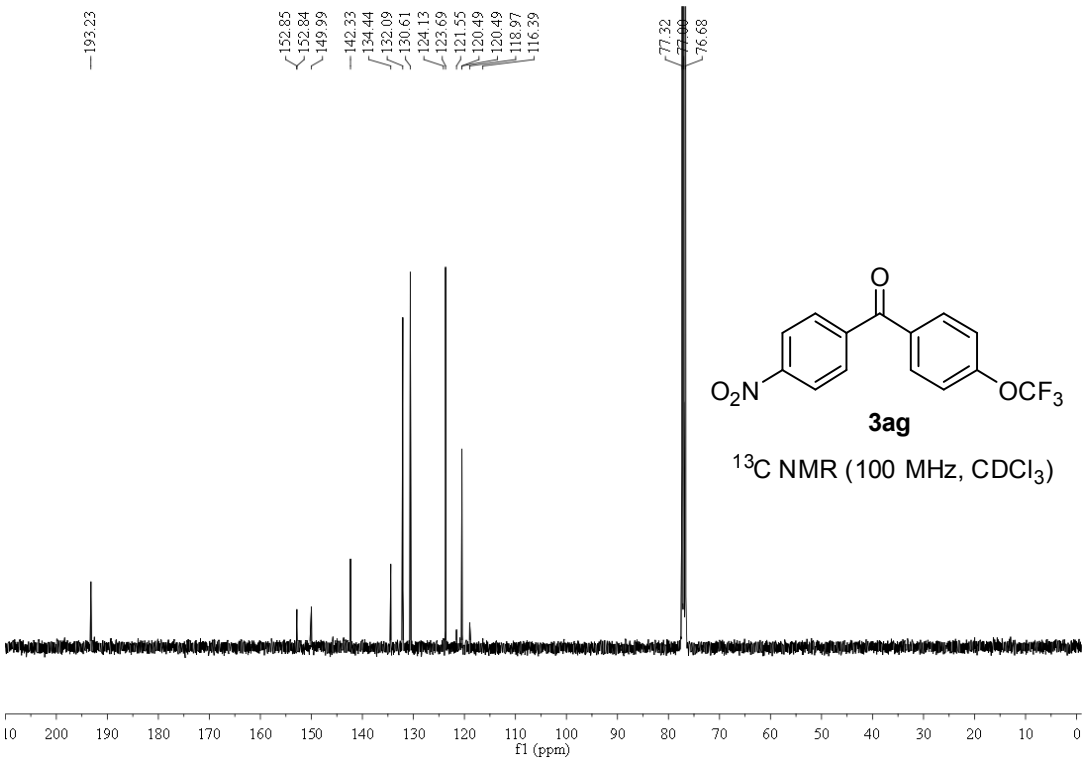

8.33
8.31
7.92
7.89
7.79
7.77
7.51
7.49
7.24
4.81
1.76
O
O2N
CH2OH
3af
1H NMR (400 MHz, CDCl3)
2.00
1.96
1.94
2.00
1.96
1.32
f1 (ppm)


194.46
149.78
146.67
142.93
135.39
130.63
130.42
126.65
123.54
77.32
77.00
76.68
64.50
O
O2N
CH2OH
3af
13C NMR (100 MHz, CDCl3)
f1 (ppm)



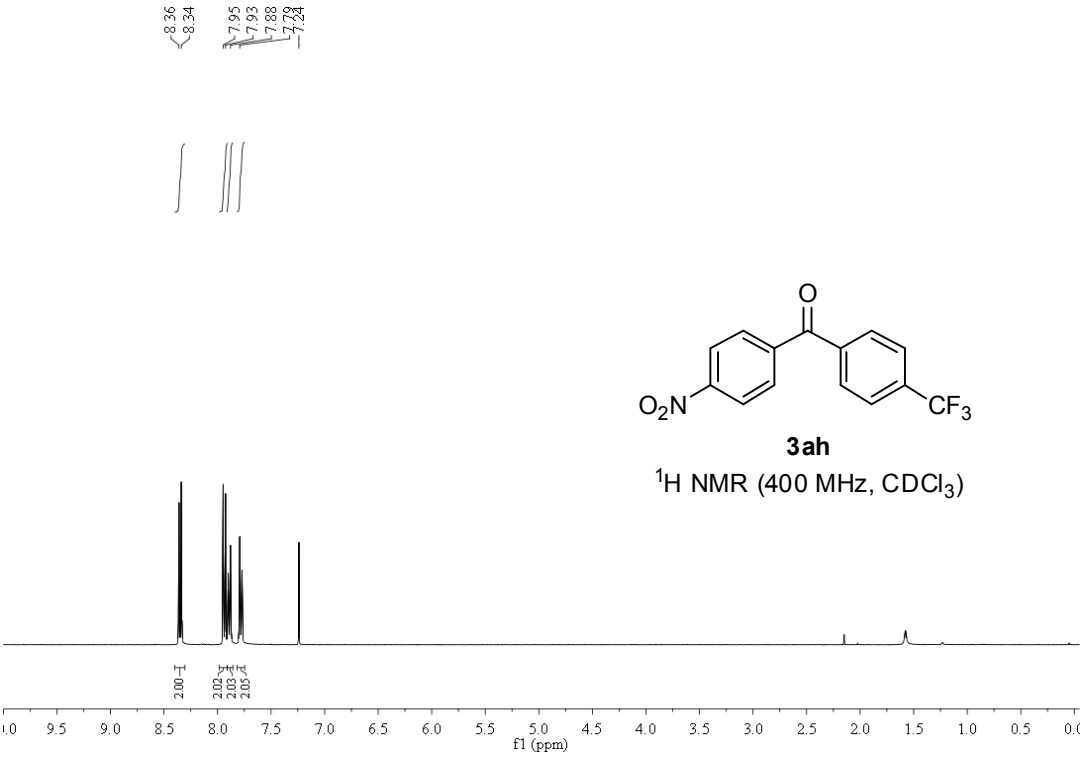
3ag

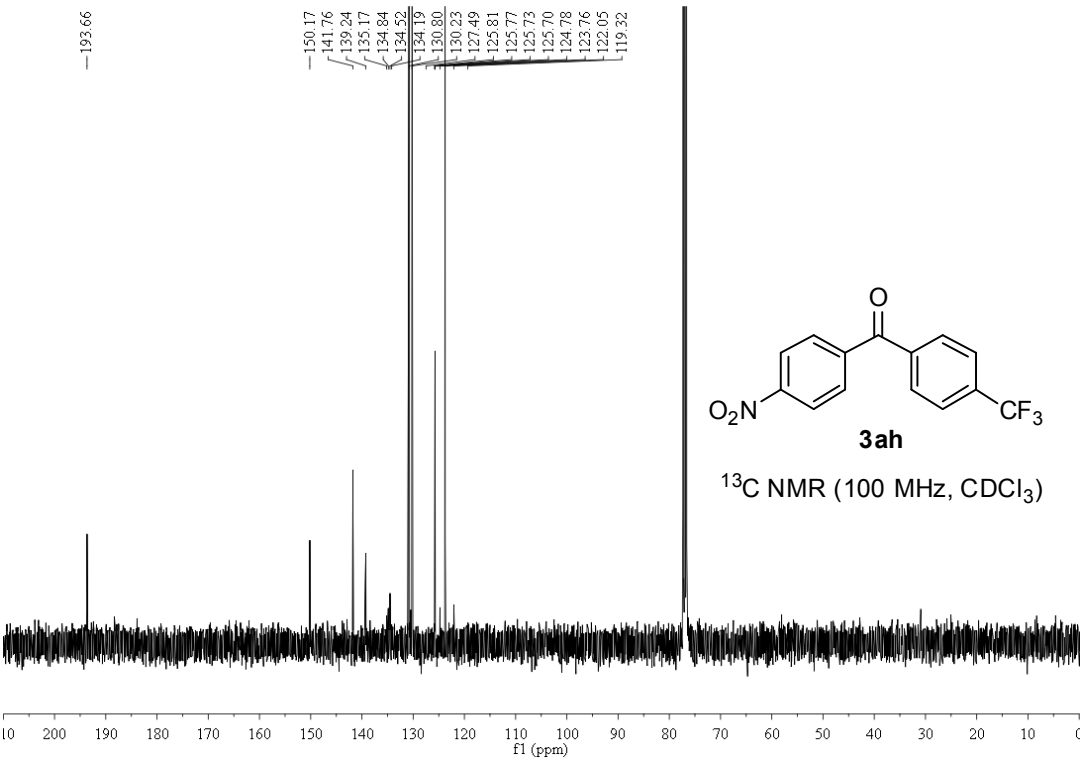
^{1}H NMR (400 MHz, $CDCl_3$)

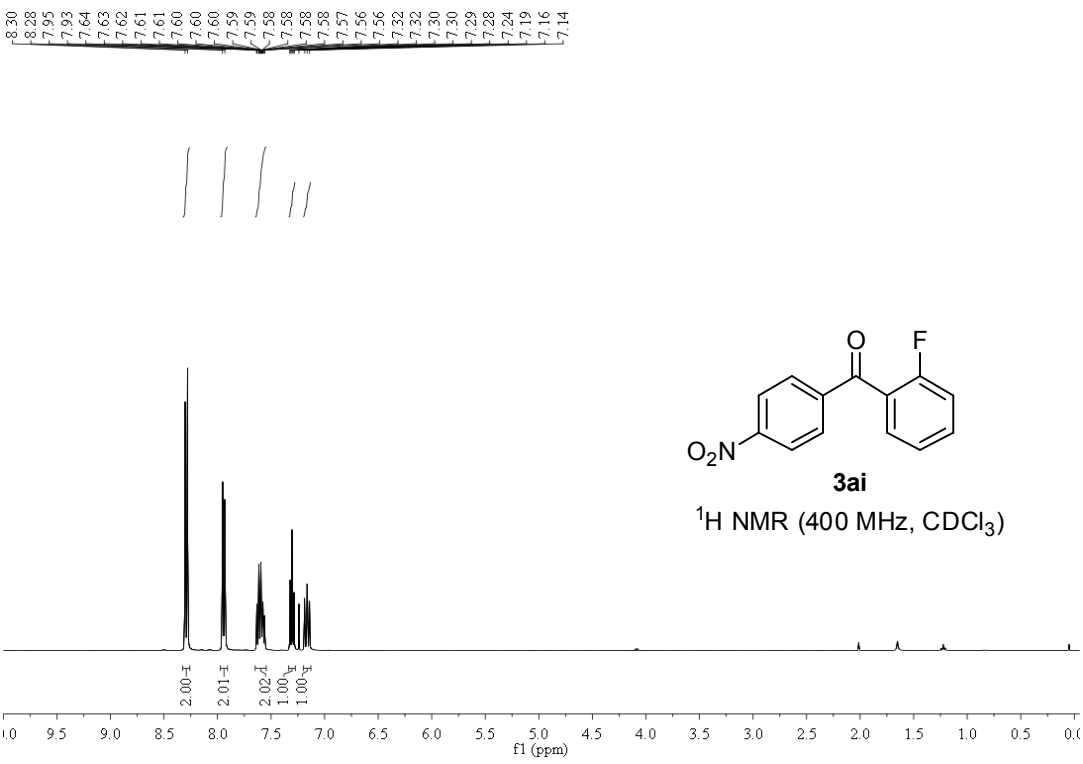


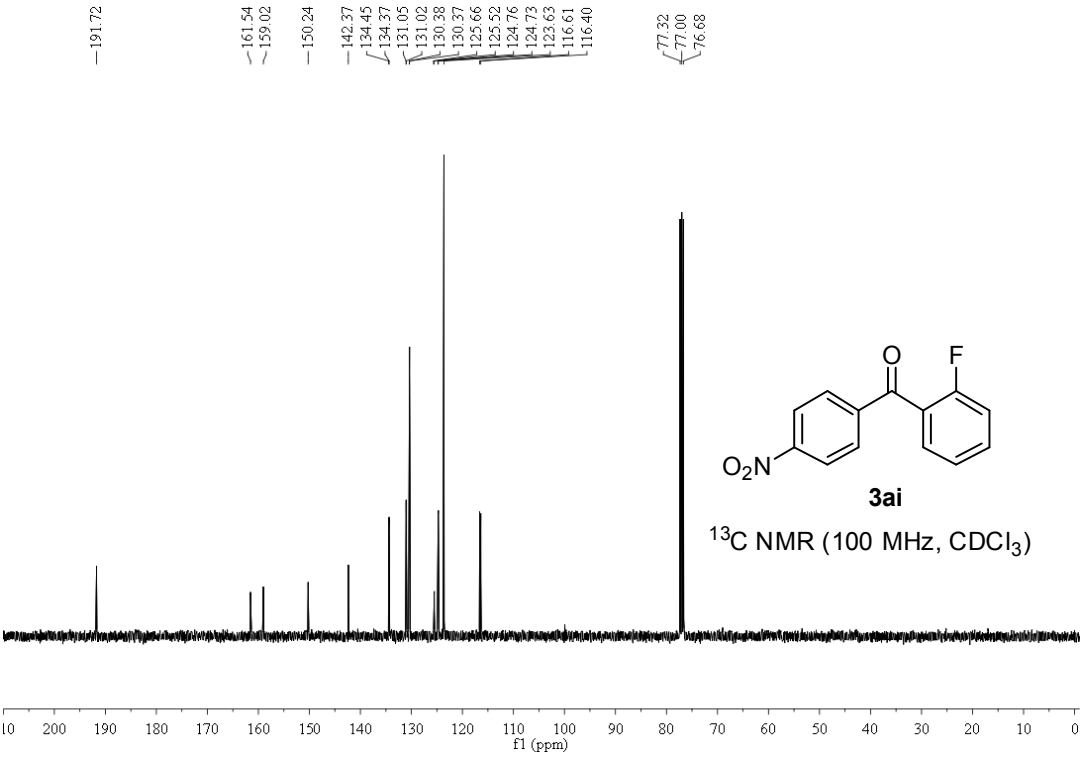
3ag

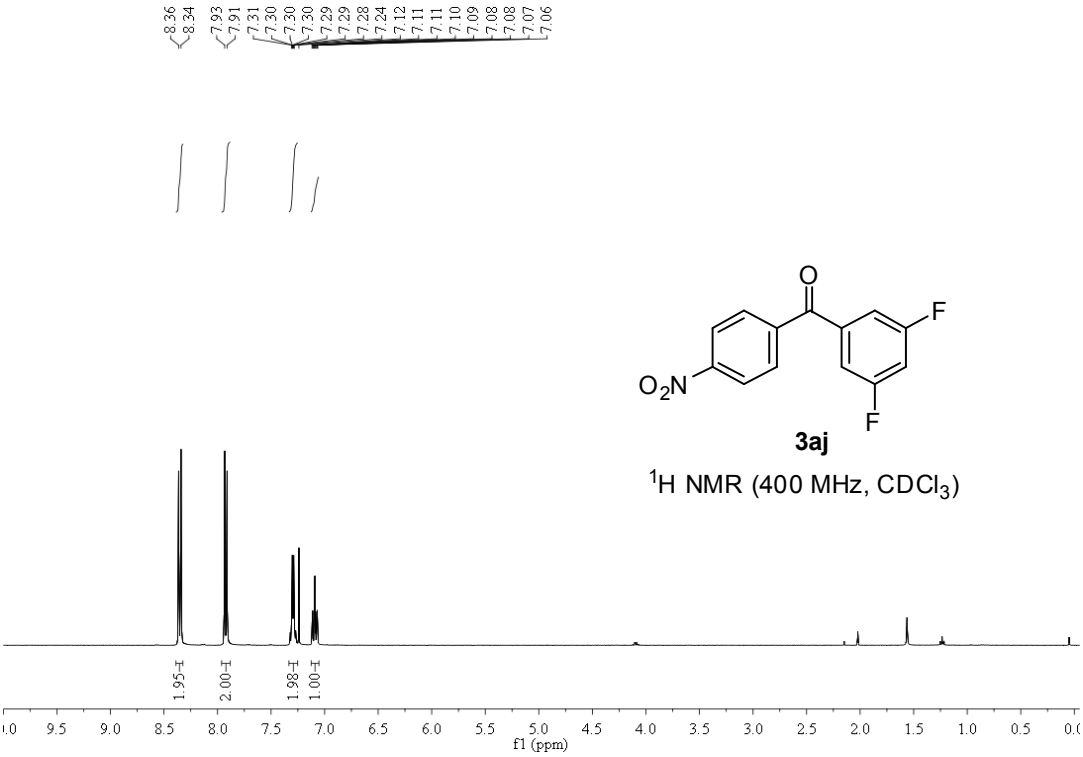
^{13}C NMR (100 MHz, $CDCl_3$)


8.36
8.34
7.95
7.93
7.88
7.79
7.24
O
O2N
CF3
3ah
1H NMR (400 MHz, CDCl3)
2.00
2.02
2.03
2.05
f1 (ppm)


193.66
150.17
141.76
139.24
135.17
134.84
134.52
134.19
130.80
130.23
127.49
125.81
125.77
125.73
125.70
124.78
123.76
122.05
119.32
O
O2N
CF3
3ah
13C NMR (100 MHz, CDCl3)
f1 (ppm)

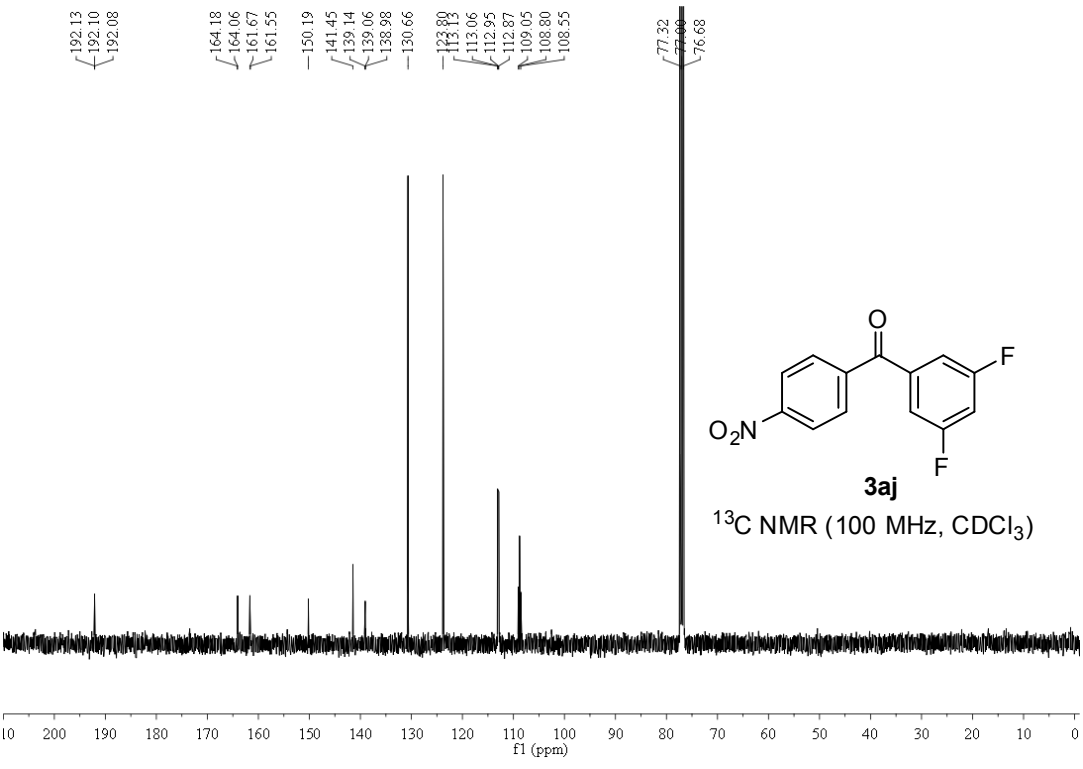

O
F
O2N
3ai
1H NMR (400 MHz, CDCl3)
f1 (ppm)


O
F
O2N
3ai
13C NMR (100 MHz, CDCl3)
f1 (ppm)



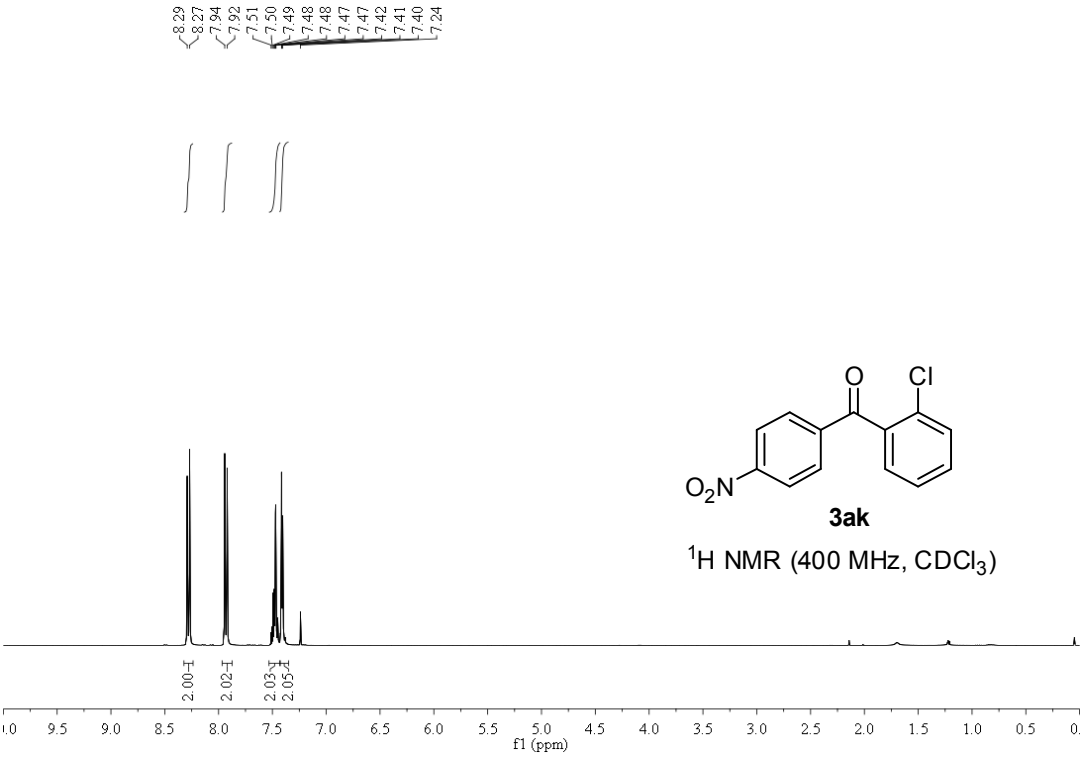
3aj

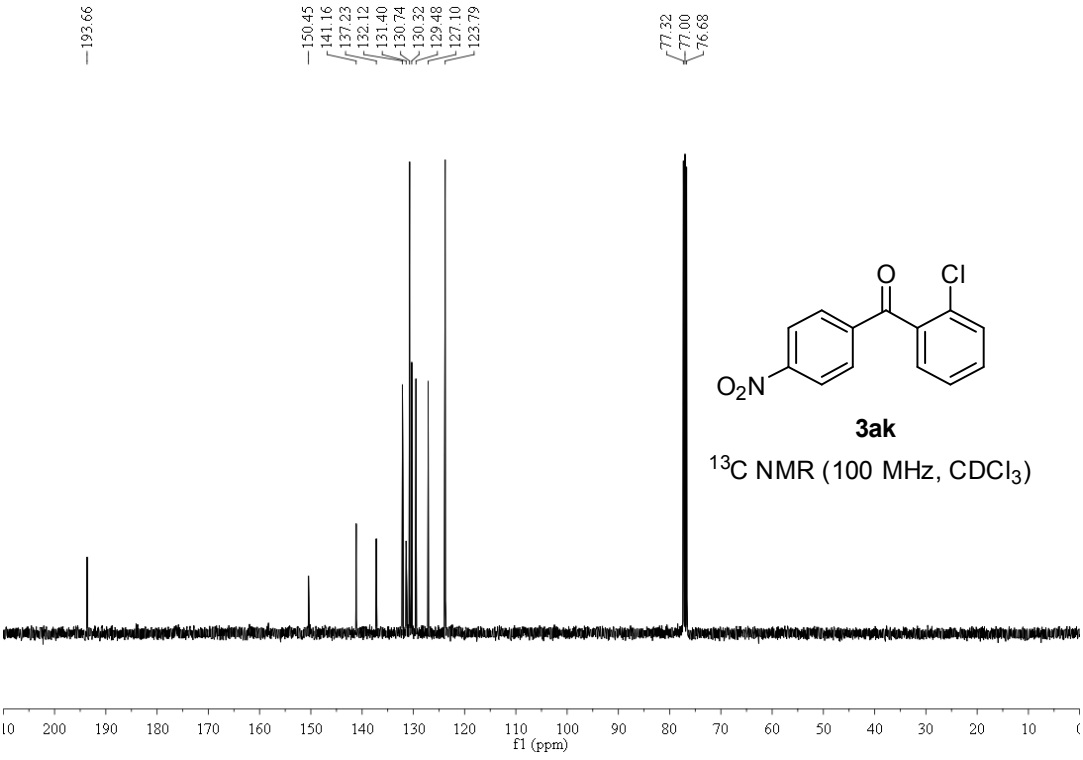
^{1}H NMR (400 MHz, $CDCl_3$)

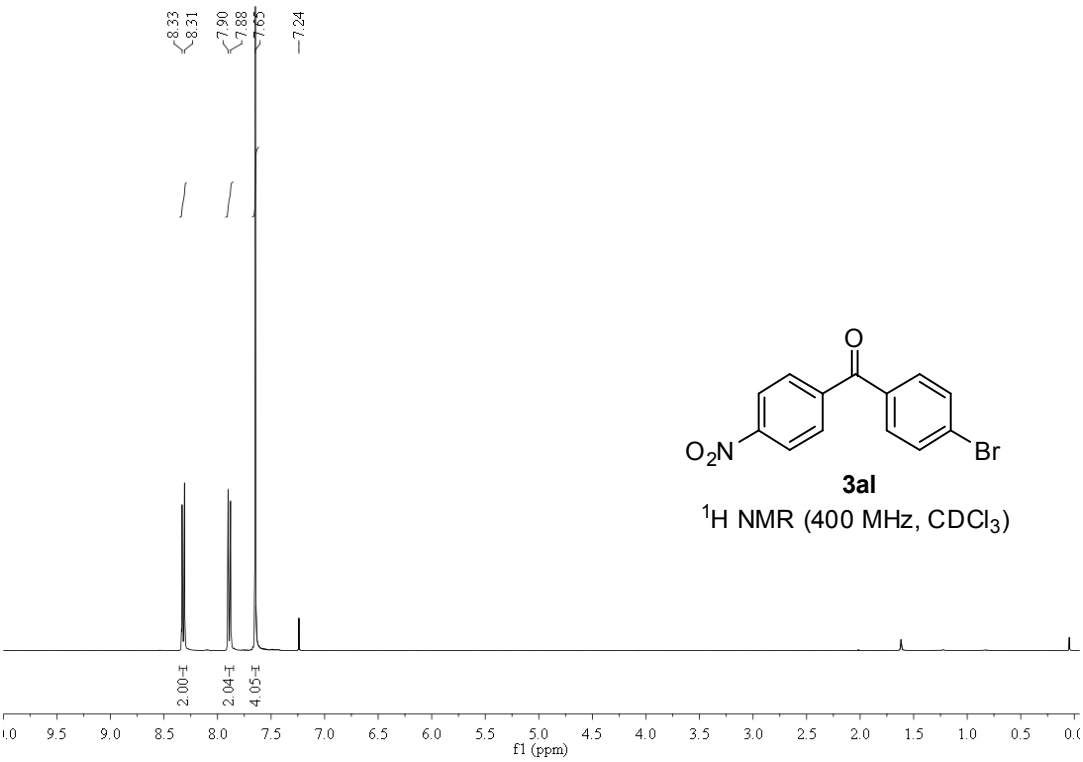


3aj

^{13}C NMR (100 MHz, $CDCl_3$)

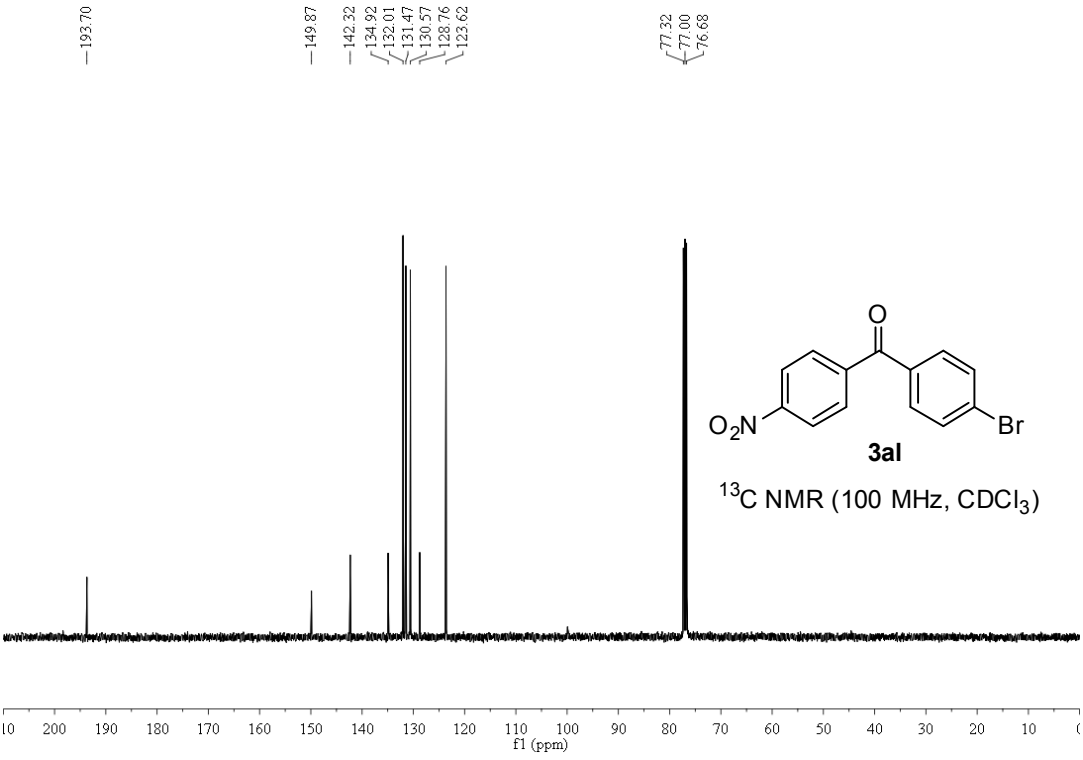

8.29
8.27
7.94
7.92
7.51
7.50
7.49
7.48
7.48
7.47
7.47
7.42
7.41
7.40
7.24
O
Cl
O2N
3ak
1H NMR (400 MHz, CDCl3)
2.00
2.02
2.03
2.05
f1 (ppm)


193.66
150.45
141.16
137.23
132.12
131.40
130.74
130.32
129.48
127.10
123.79
77.32
77.00
76.68
O
Cl
O2N
3ak
13C NMR (100 MHz, CDCl3)
f1 (ppm)



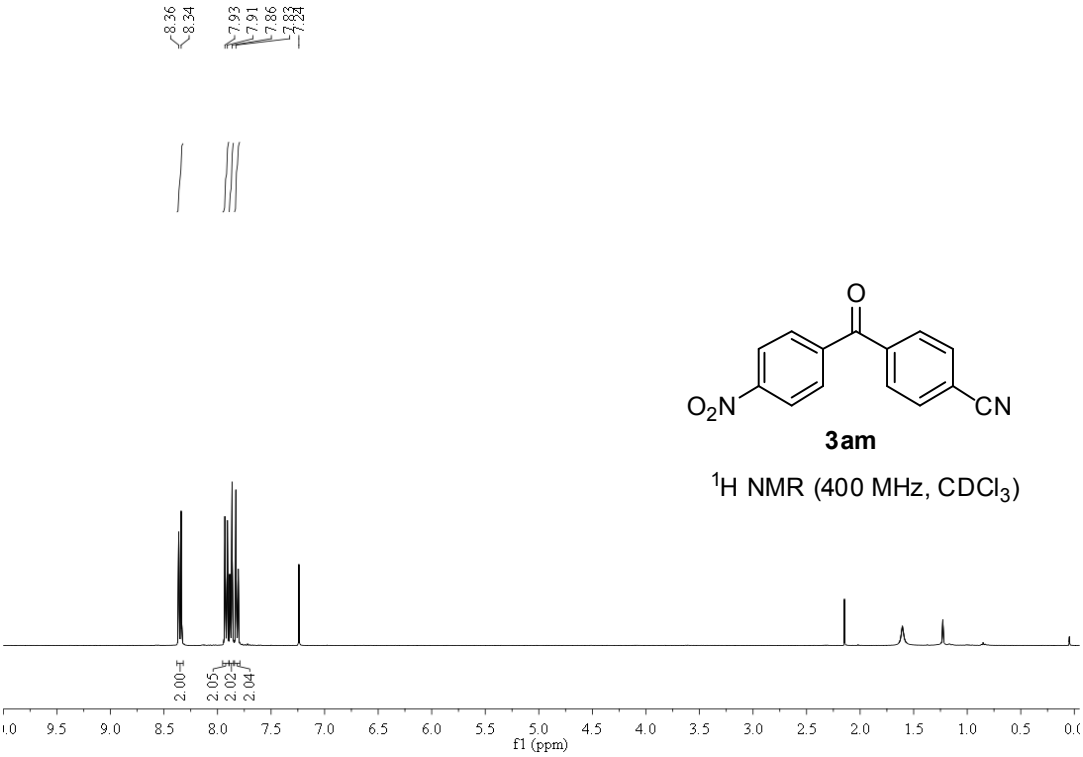
3al

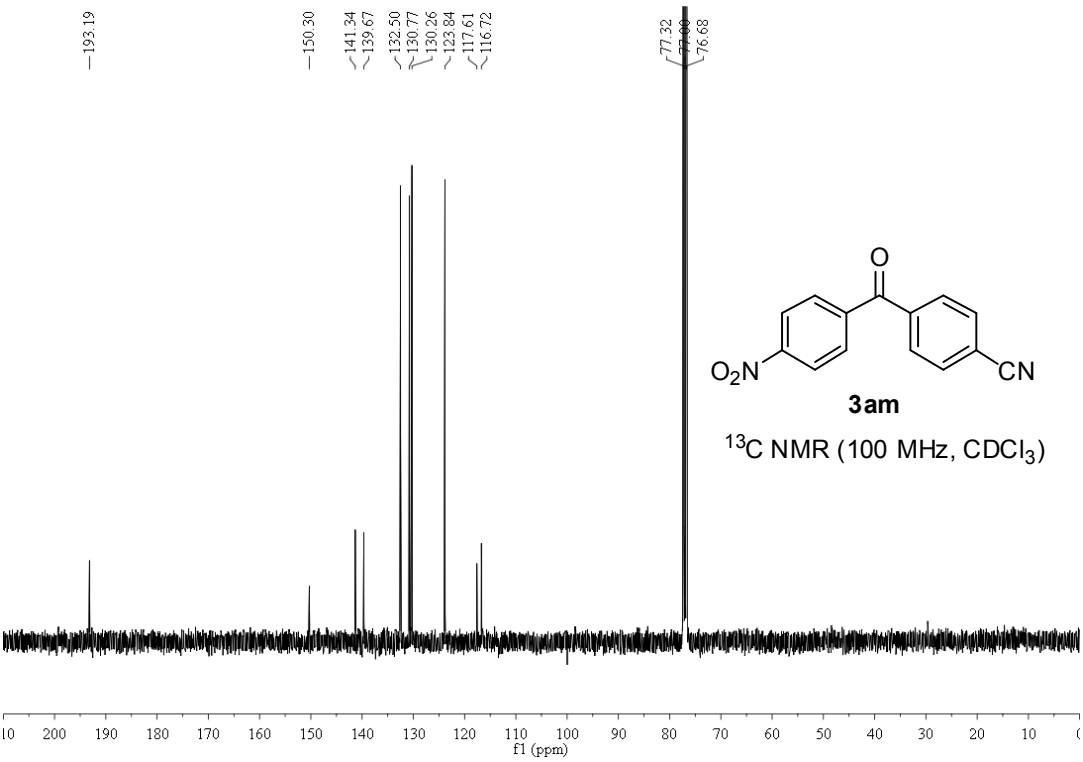
^{1}H NMR (400 MHz, $CDCl_3$)

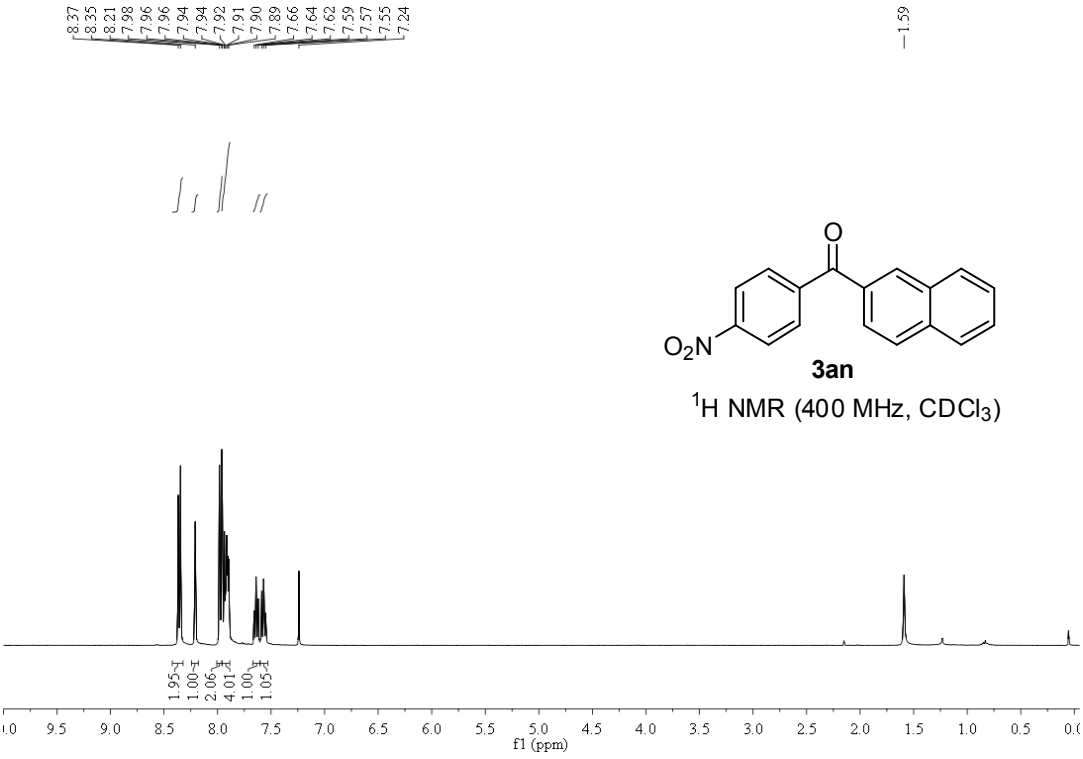


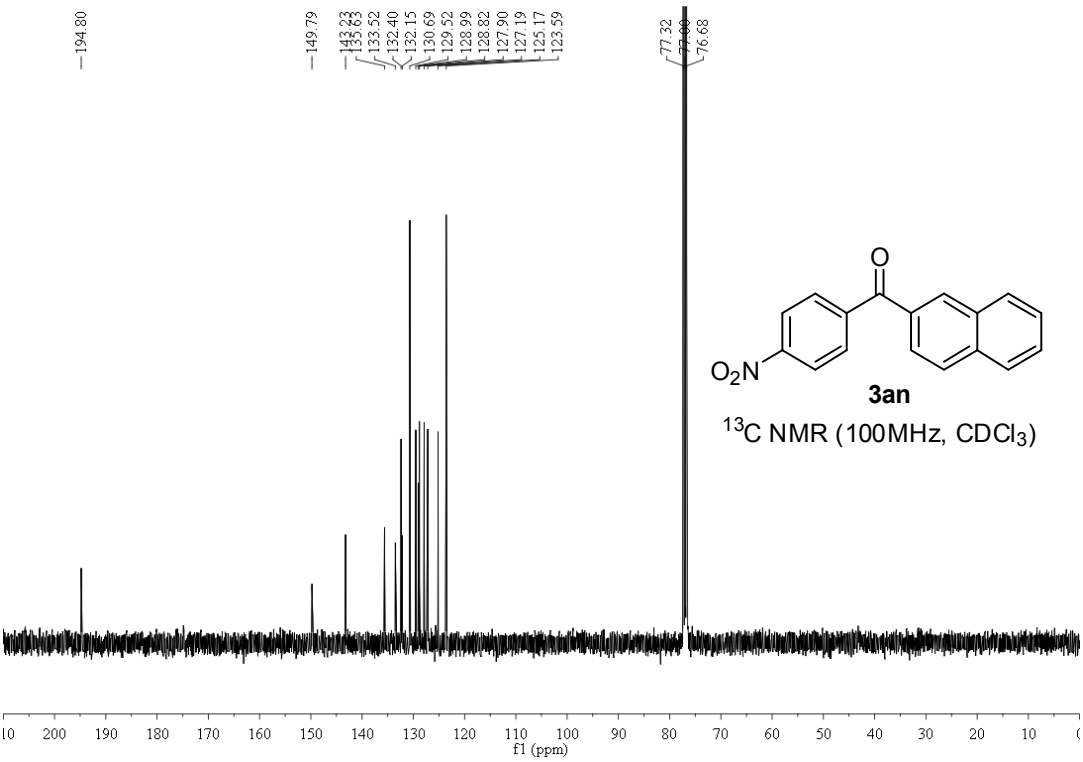
3al

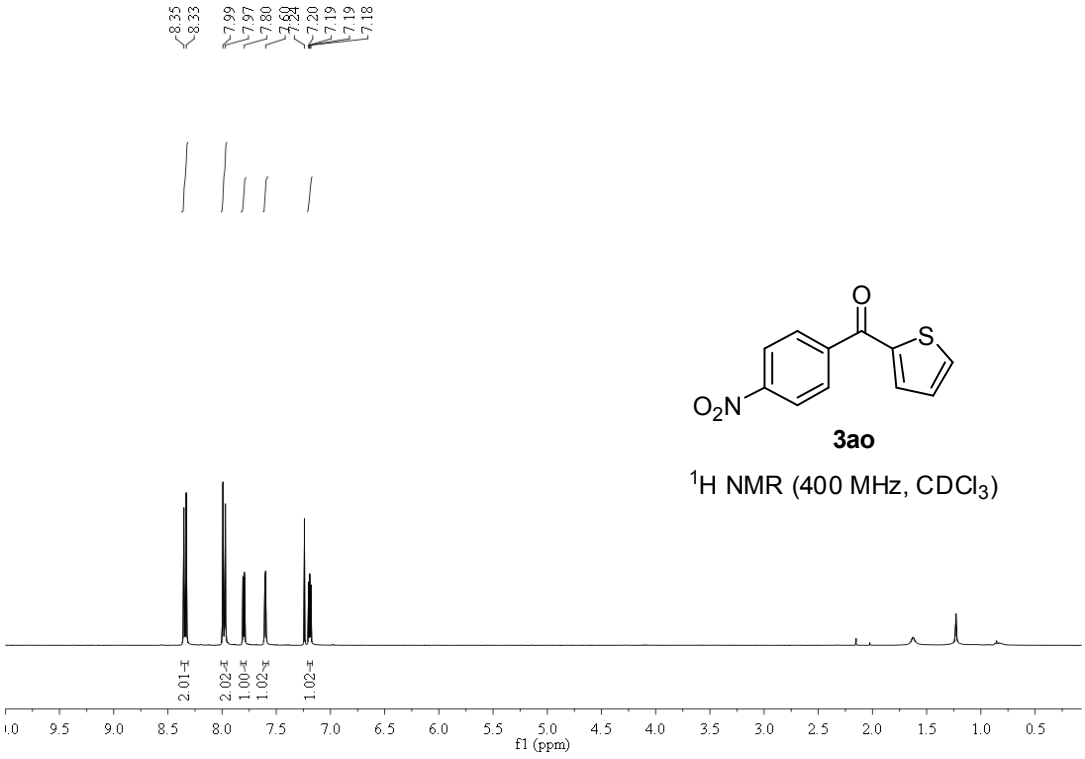
^{13}C NMR (100 MHz, $CDCl_3$)

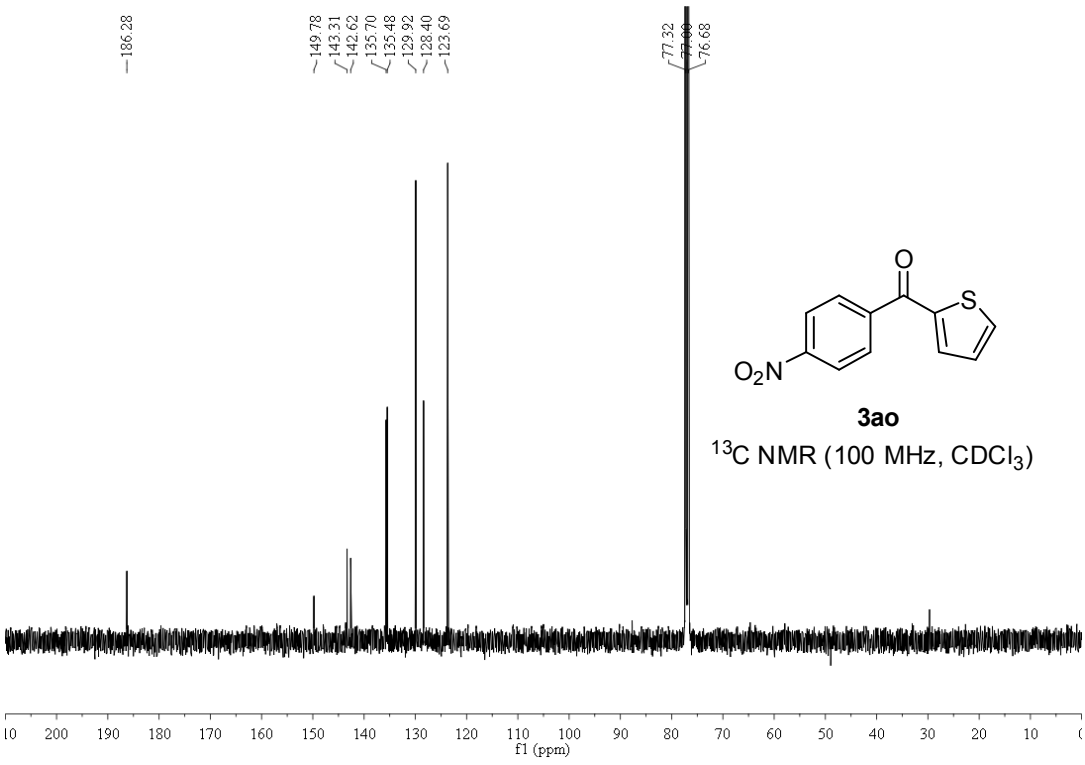

8.36
8.34
7.93
7.91
7.86
7.83
7.24
O
O2N
CN
3am
1H NMR (400 MHz, CDCl3)
2.00
2.05
2.02
2.04
f1 (ppm)

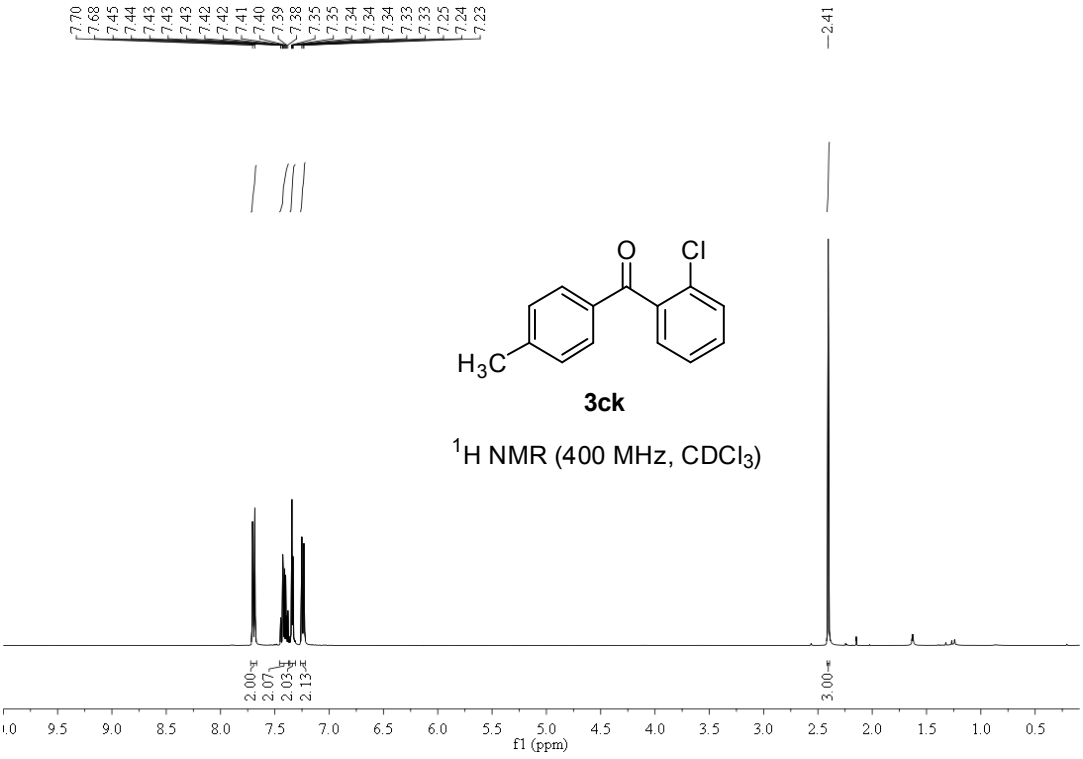

193.19
150.30
141.34
139.67
132.50
130.77
130.26
123.84
117.61
116.72
77.32
77.00
76.68
O
O2N
CN
3am
13C NMR (100 MHz, CDCl3)
f1 (ppm)

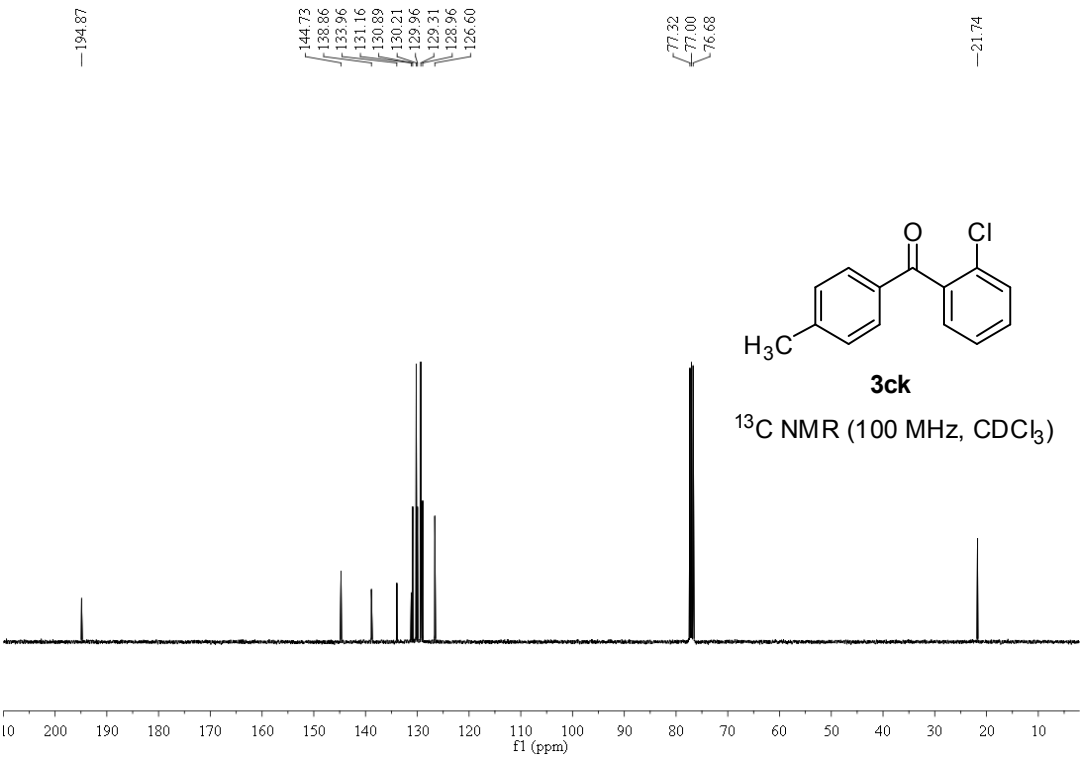

8.37
8.35
8.21
7.98
7.96
7.96
7.94
7.94
7.92
7.91
7.90
7.89
7.66
7.64
7.62
7.59
7.57
7.55
7.24
1.59
O
O2N
3an
1H NMR (400 MHz, CDCl3)
1.95
1.00
2.06
4.01
1.00
1.05
f1 (ppm)

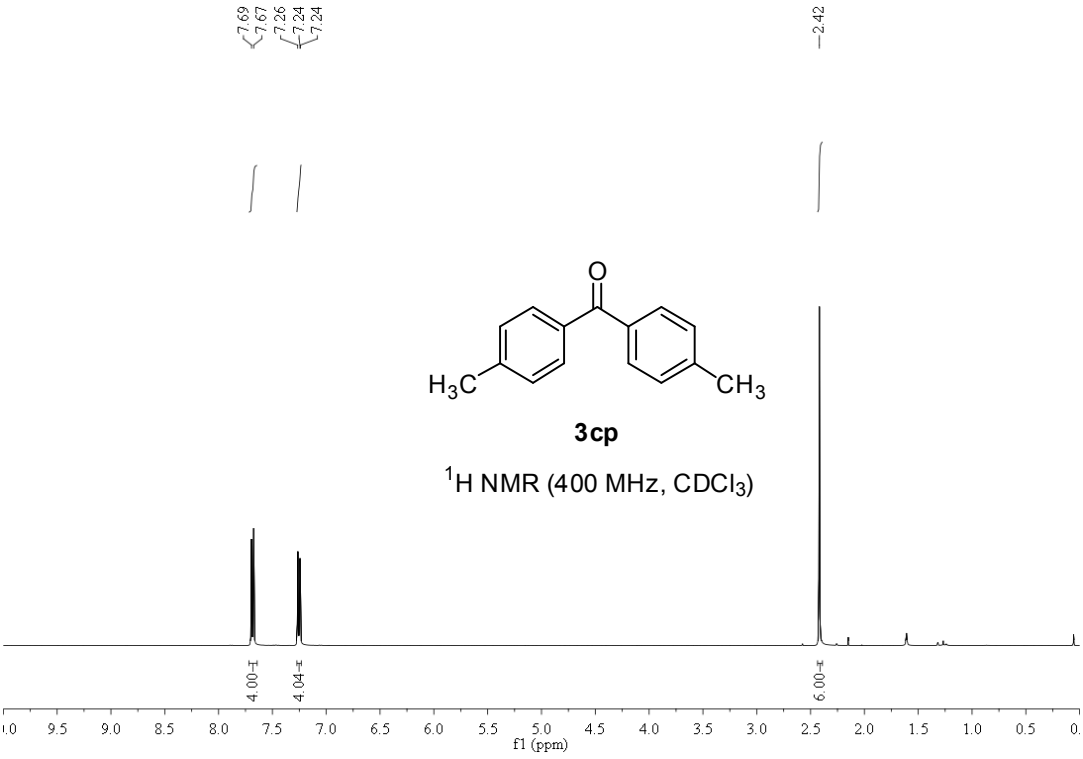

194.80
149.79
143.23
135.63
133.52
132.40
132.15
130.69
129.52
128.99
128.82
127.90
127.19
125.17
123.59
77.32
77.00
76.68
O
O2N
3an
13C NMR (100MHz, CDCl3)
f1 (ppm)

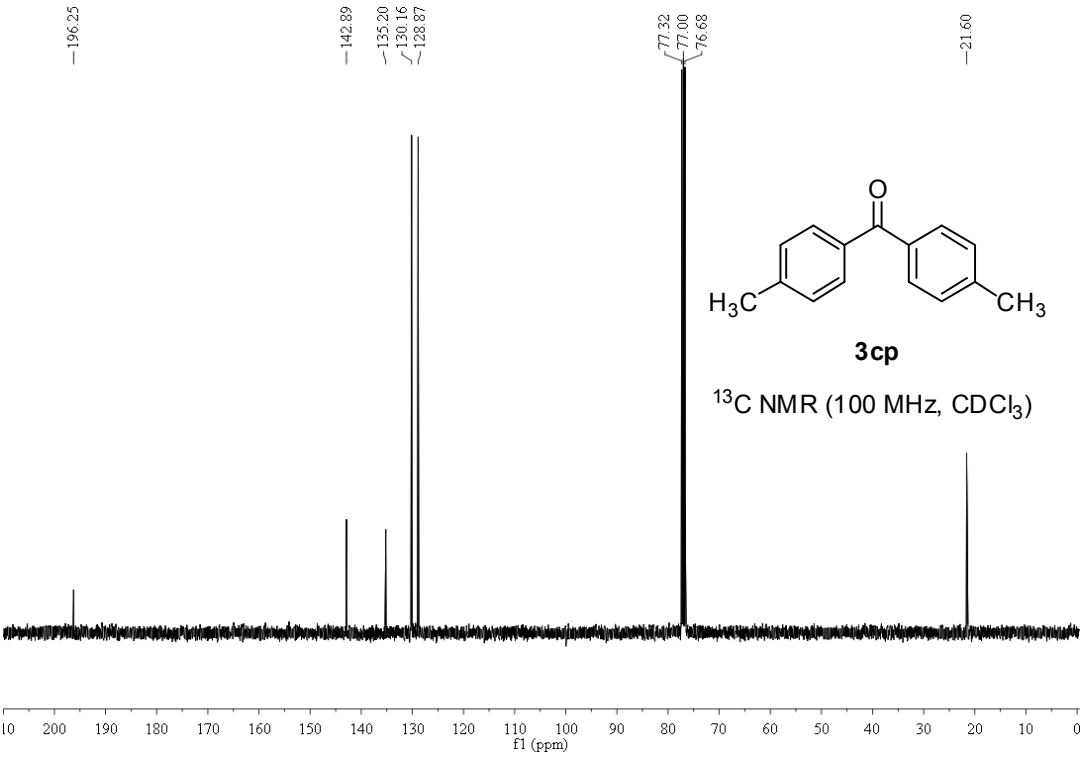

8.35
8.33
7.99
7.97
7.80
7.60
7.24
7.20
7.19
7.19
7.18
O
S
O2N
3ao
1H NMR (400 MHz, CDCl3)
2.01
2.02
1.00
1.02
1.02
f1 (ppm)

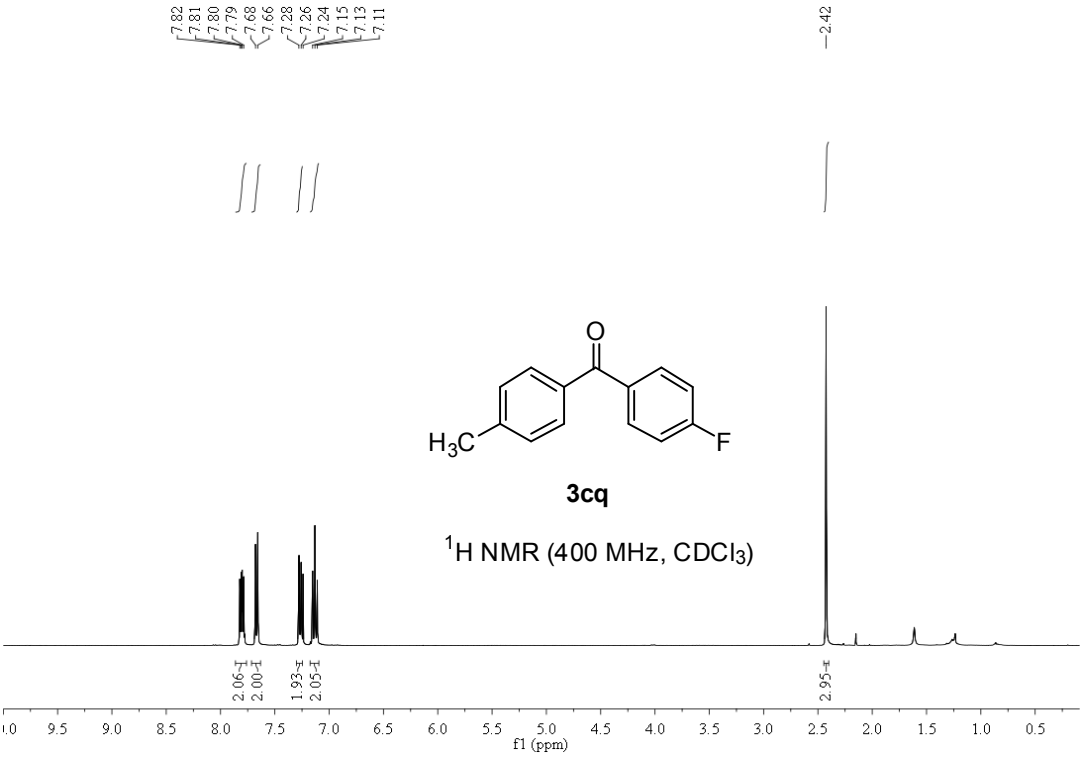

186.28
149.78
143.31
142.62
135.70
135.48
129.92
128.40
123.69
77.32
77.00
76.68
O
S
O2N
3ao
13C NMR (100 MHz, CDCl3)
f1 (ppm)

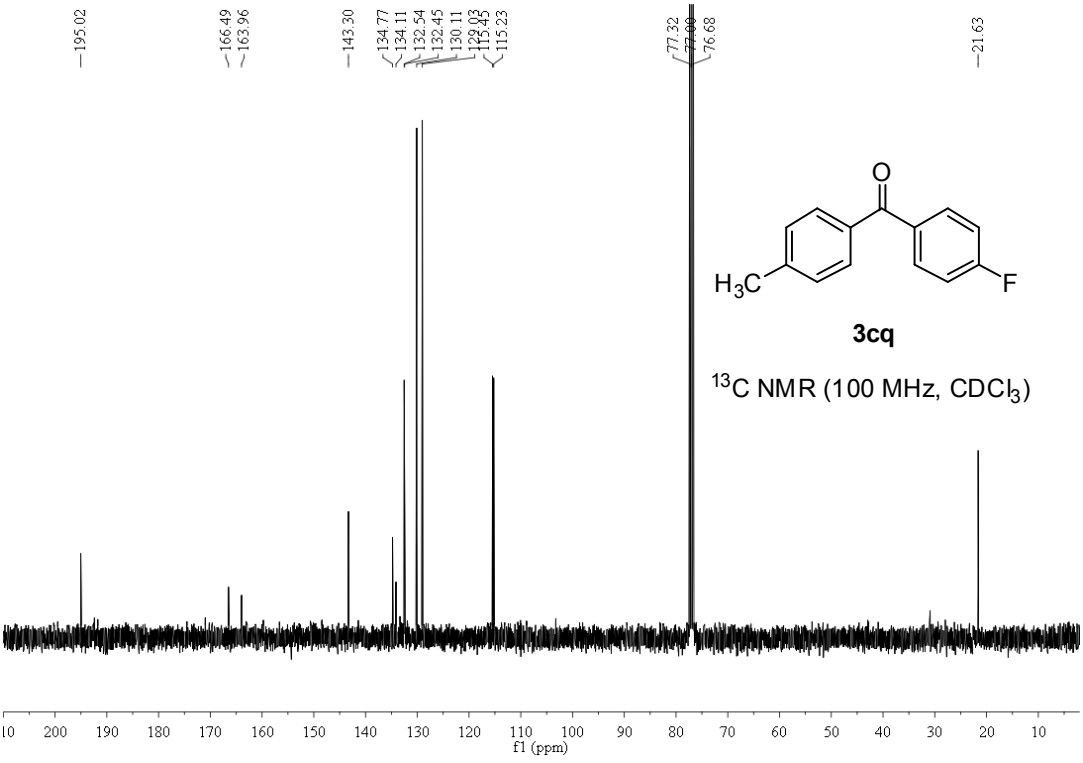

7.70
7.68
7.45
7.44
7.43
7.43
7.43
7.42
7.42
7.41
7.40
7.39
7.38
7.35
7.35
7.34
7.34
7.34
7.33
7.33
7.25
7.24
7.23
2.41
O
Cl
H3C
3ck
1H NMR (400 MHz, CDCl3)
2.00
2.07
2.03
2.13
3.00
f1 (ppm)

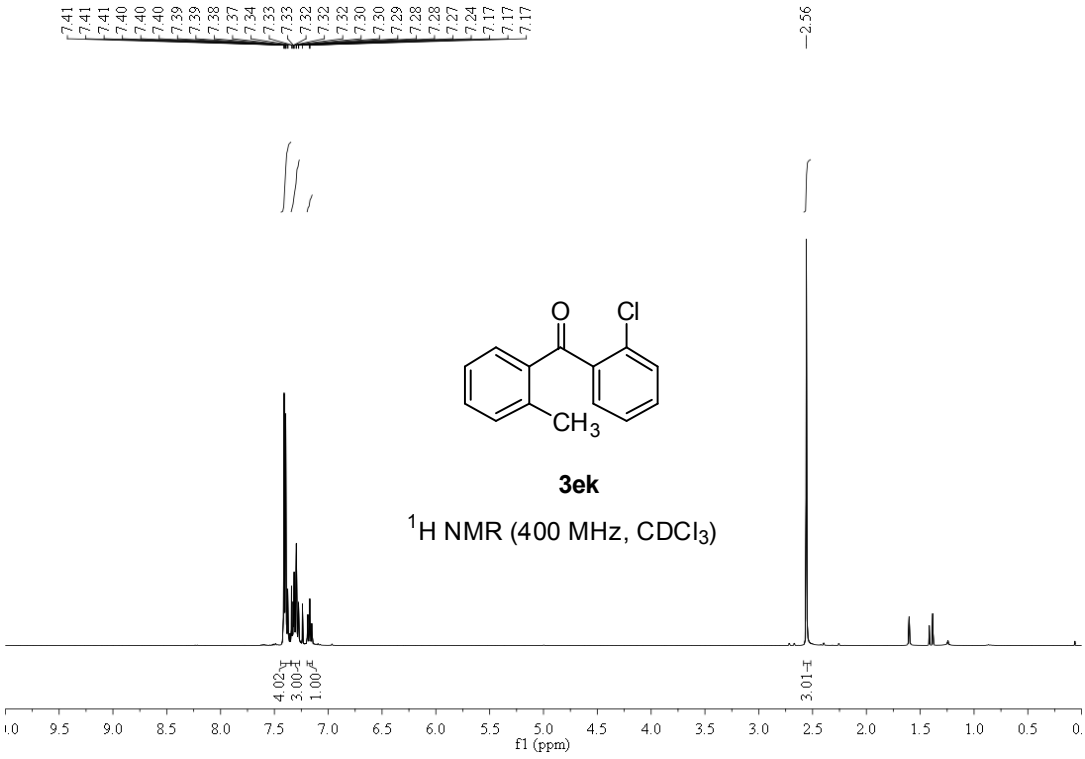

194.87
144.73
138.86
133.96
131.16
130.89
130.21
129.96
129.31
128.96
126.60
77.32
77.00
76.68
21.74
O
Cl
H3C
3ck
13C NMR (100 MHz, CDCl3)
f1 (ppm)


7.69
7.67
7.26
7.24
7.24
2.42
O
H3C
CH3
3cp
1H NMR (400 MHz, CDCl3)
4.00
4.04
6.00
f1 (ppm)


196.25
142.89
135.20
130.16
128.87
77.32
77.00
76.68
21.60
O
H3C
CH3
3cp
13C NMR (100 MHz, CDCl3)
f1 (ppm)

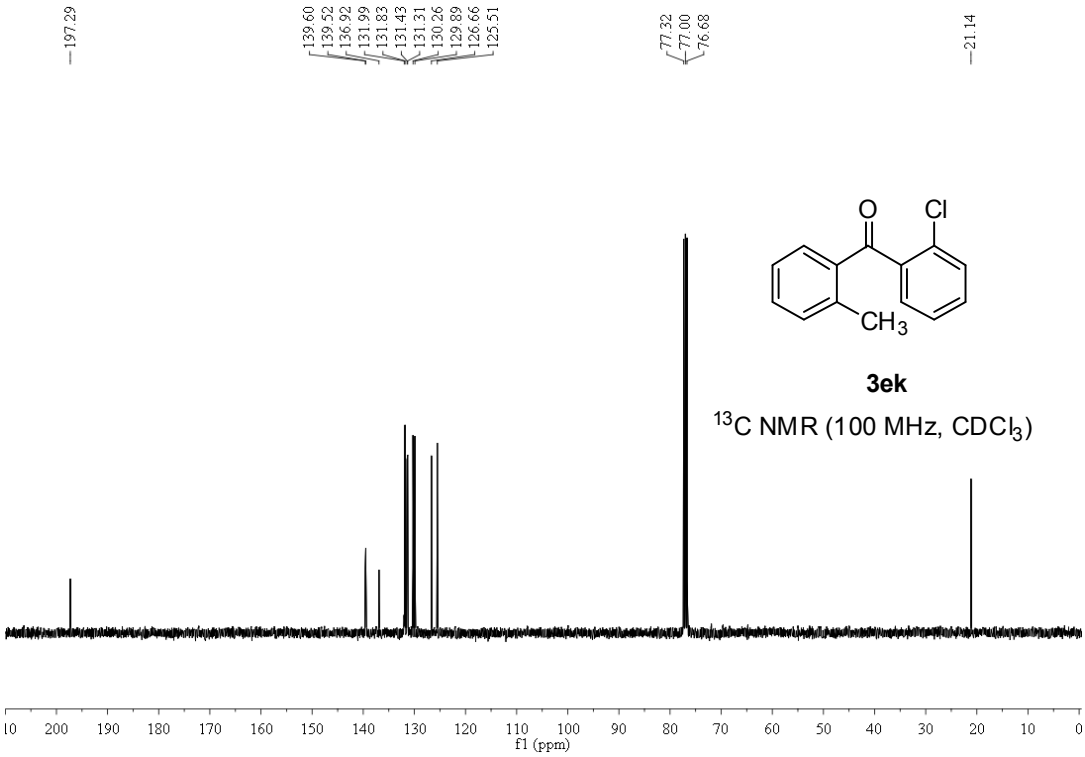

7.82
7.81
7.80
7.79
7.68
7.66
7.28
7.26
7.24
7.15
7.13
7.11
2.42
O
H3C
F
3cq
1H NMR (400 MHz, CDCl3)
2.06
2.00
1.93
2.05
2.95
f1 (ppm)


195.02
166.49
163.96
143.30
134.77
134.11
132.54
132.45
130.11
129.03
115.45
115.23
77.32
77.00
76.68
21.63
O
H3C
F
3cq
13C NMR (100 MHz, CDCl3)
f1 (ppm)



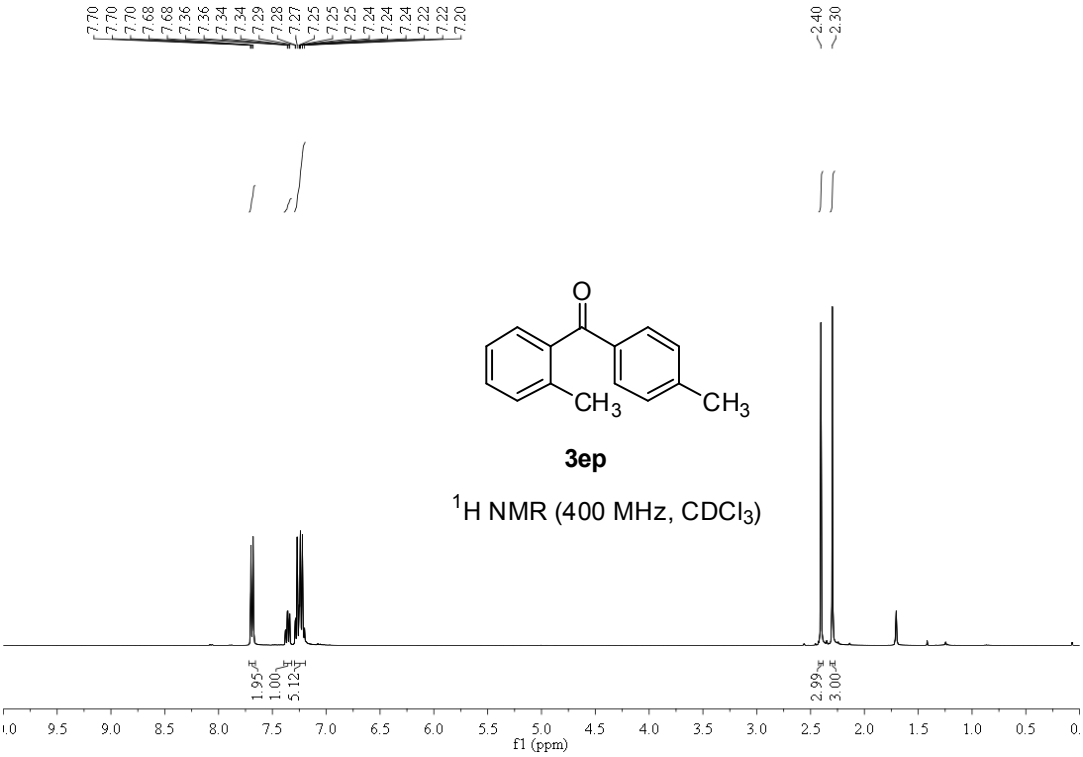
3ek

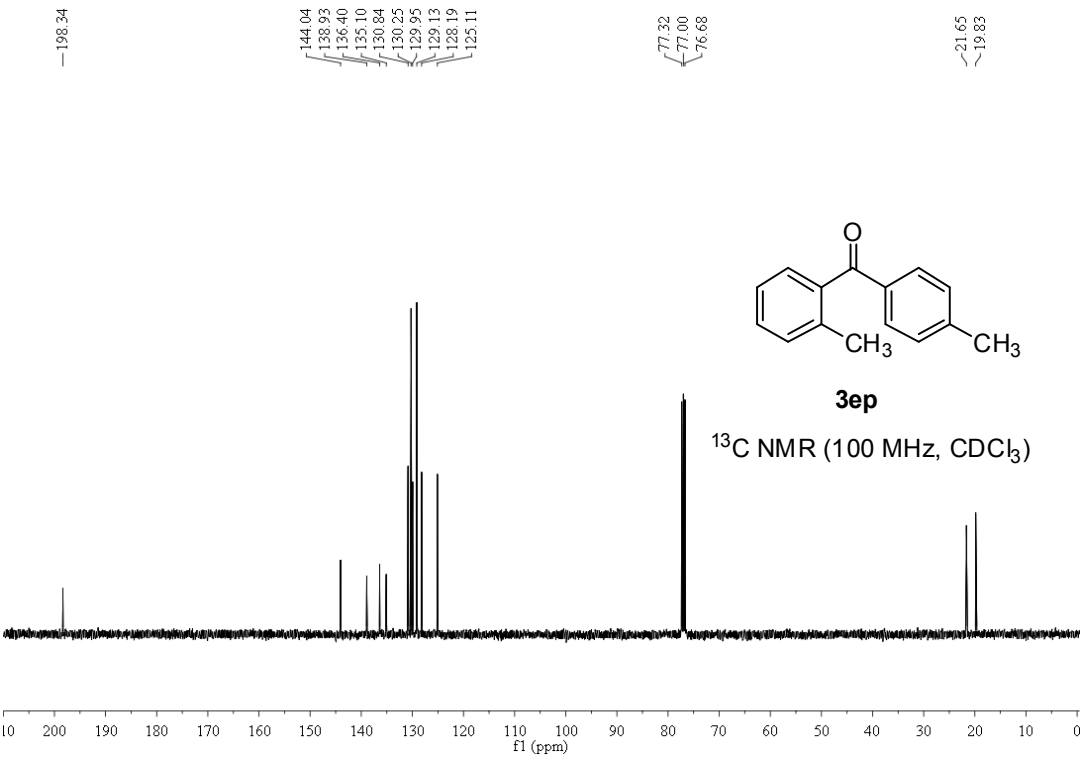
^{1}H NMR (400 MHz, $CDCl_3$)

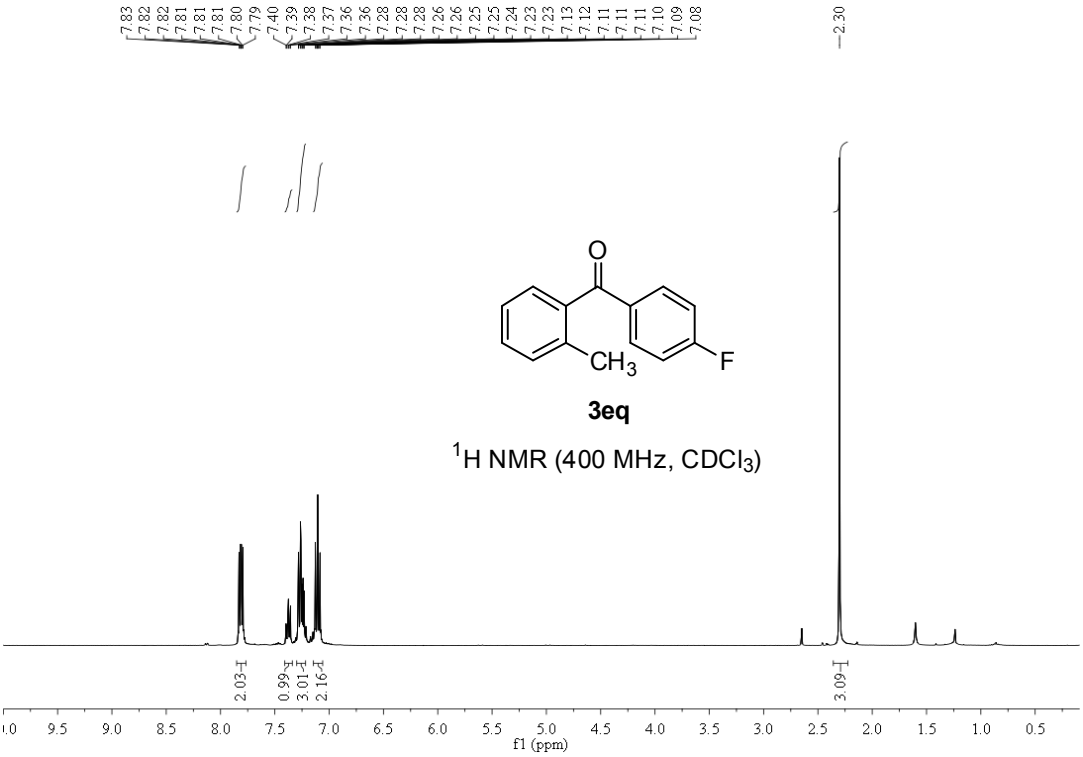


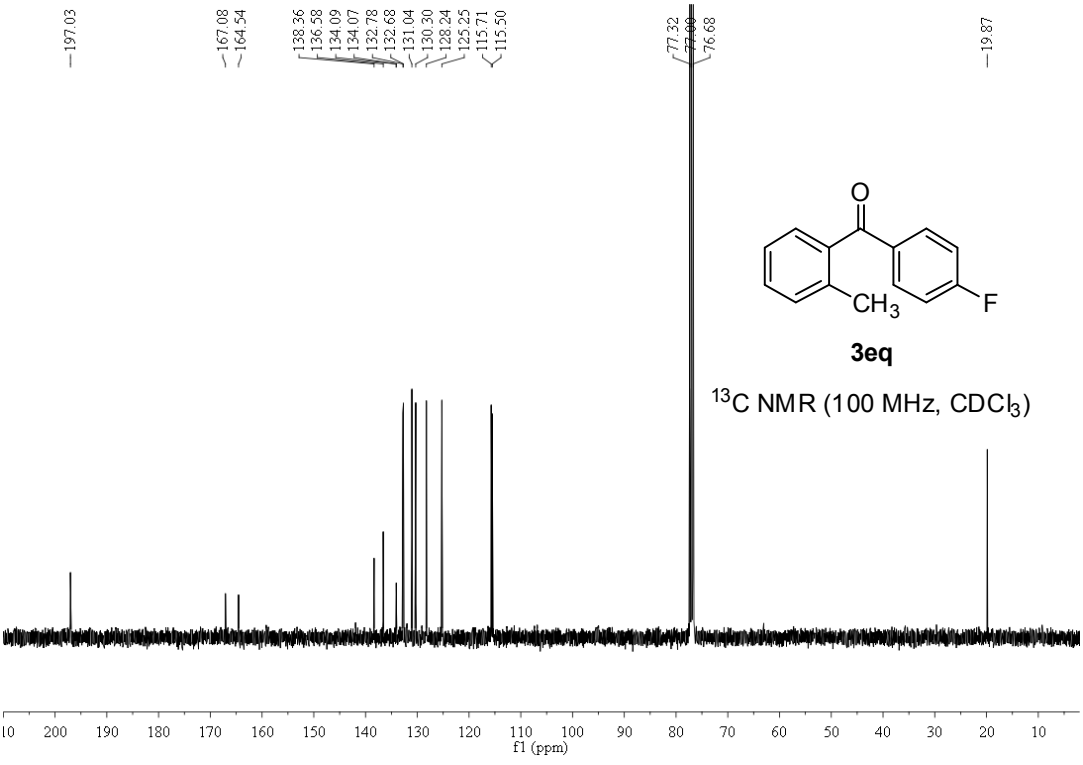
3ek

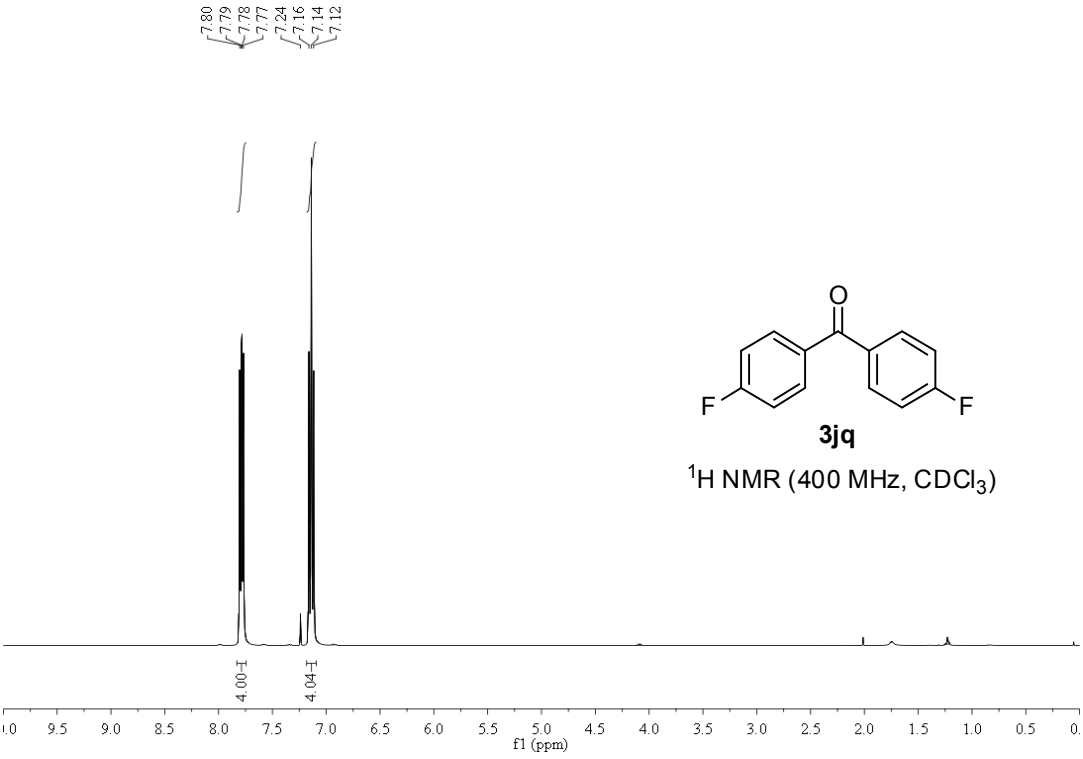
^{13}C NMR (100 MHz, $CDCl_3$)


7.70
7.70
7.70
7.68
7.68
7.36
7.36
7.34
7.34
7.29
7.28
7.27
7.25
7.25
7.25
7.24
7.24
7.24
7.22
7.22
7.20
2.40
2.30
O
CH3
CH3
3ep
1H NMR (400 MHz, CDCl3)
1.95
1.00
5.12
2.99
3.00
f1 (ppm)


198.34
144.04
138.93
136.40
135.10
130.84
130.25
129.95
129.13
128.19
125.11
77.32
77.00
76.68
21.65
19.83
O
CH3
CH3
3ep
13C NMR (100 MHz, CDCl3)
f1 (ppm)

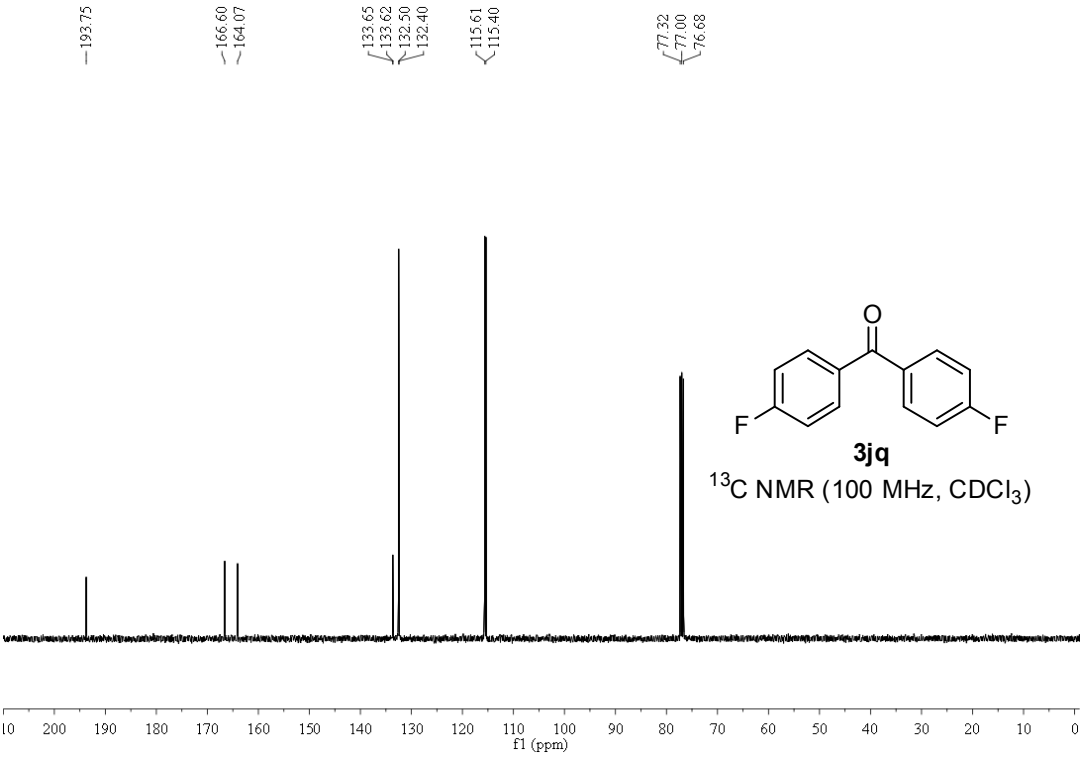

7.83
7.82
7.82
7.81
7.81
7.81
7.80
7.79
7.40
7.39
7.38
7.37
7.36
7.36
7.28
7.28
7.28
7.26
7.26
7.25
7.25
7.24
7.23
7.23
7.13
7.12
7.11
7.11
7.11
7.10
7.09
7.08
2.30
O
CH3
F
3eq
1H NMR (400 MHz, CDCl3)
2.03
0.99
3.01
2.16
3.09
f1 (ppm)


197.03
167.08
164.54
138.36
136.58
134.09
134.07
132.78
132.68
131.04
130.30
128.24
125.25
115.71
115.50
77.32
77.00
76.68
19.87
O
CH3
F
3eq
13C NMR (100 MHz, CDCl3)
f1 (ppm)



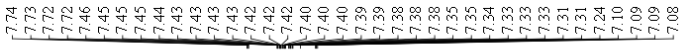
3jq

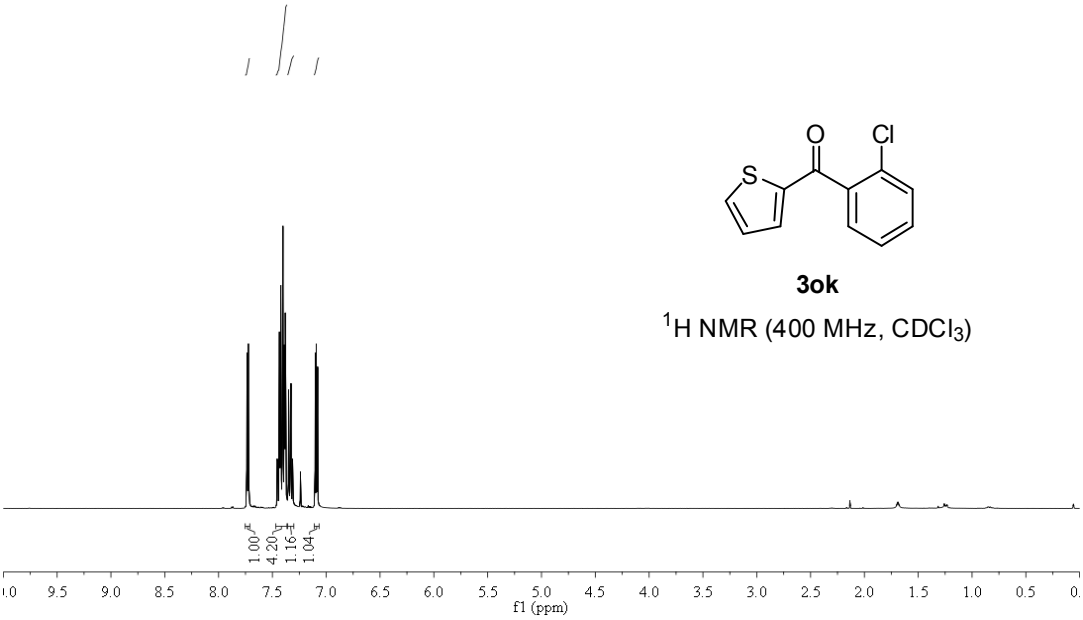
^{1}H NMR (400 MHz, $CDCl_3$)



3jq

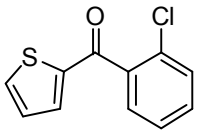
^{13}C NMR (100 MHz, $CDCl_3$)





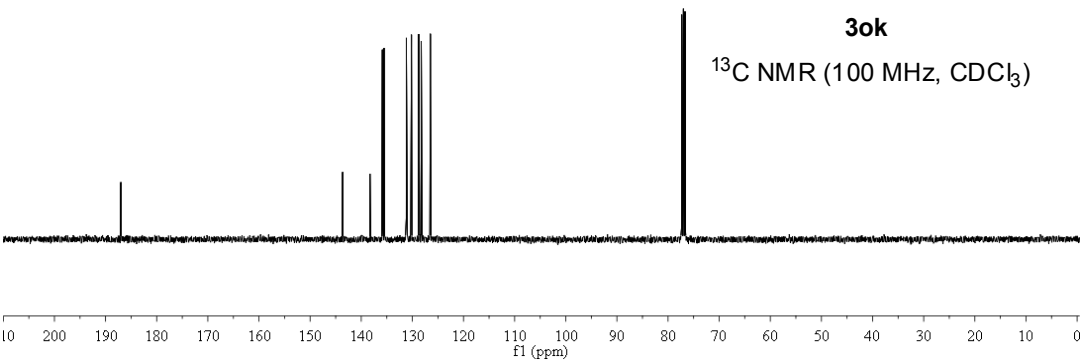
3ok

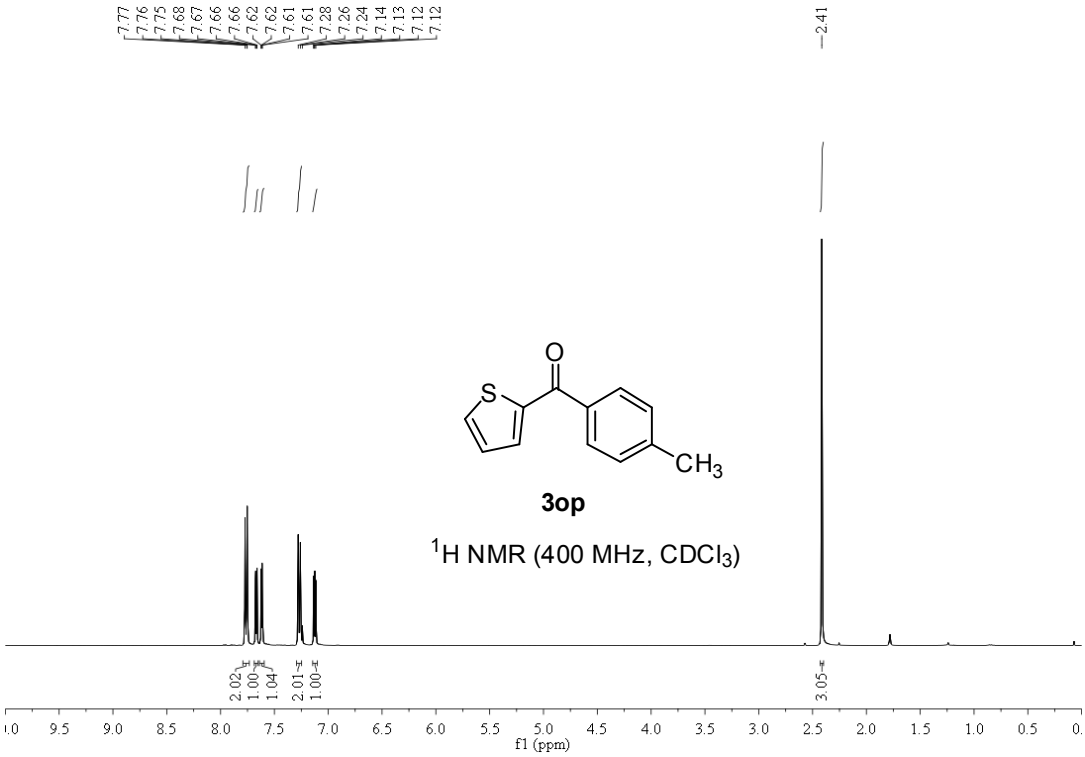
^{1}H NMR (400 MHz, $CDCl_3$)



3ok

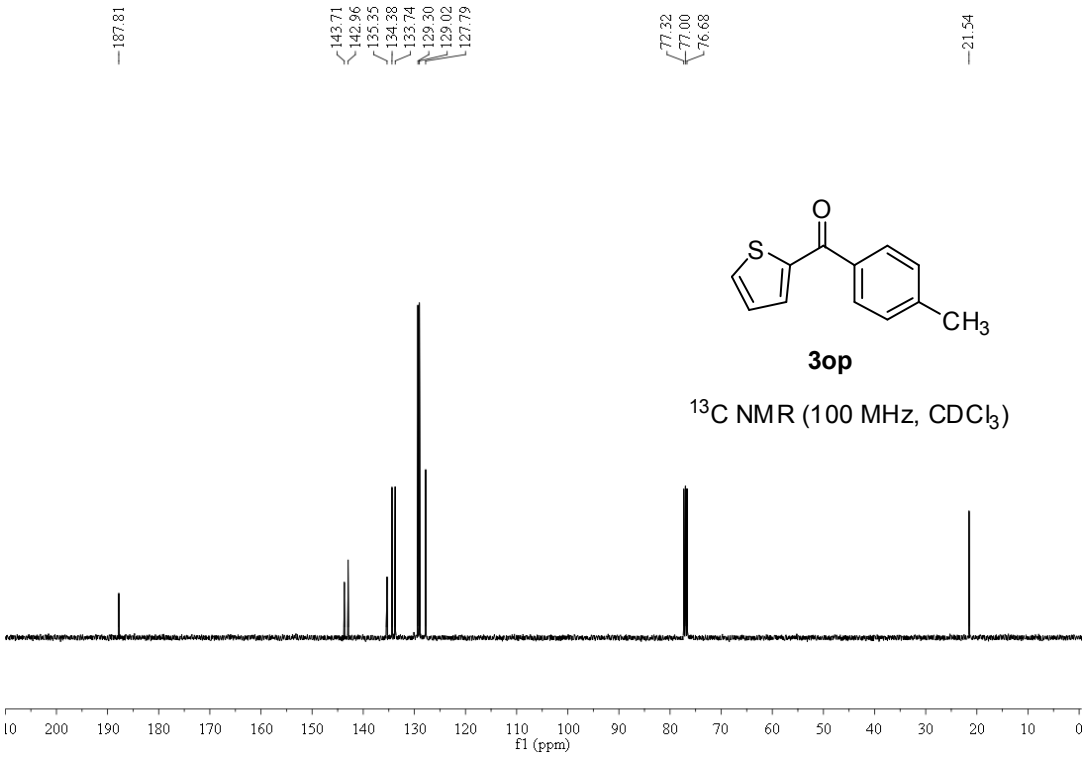
^{13}C NMR (100 MHz, $CDCl_3$)





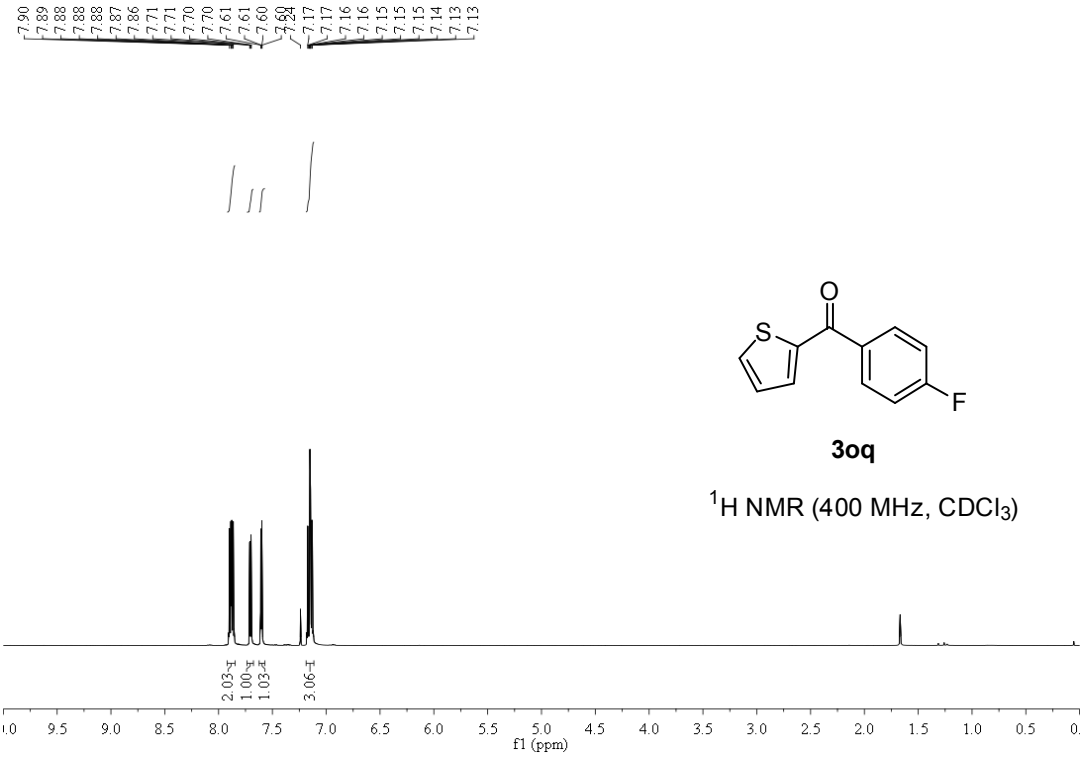
3op

^{1}H NMR (400 MHz, $CDCl_3$)



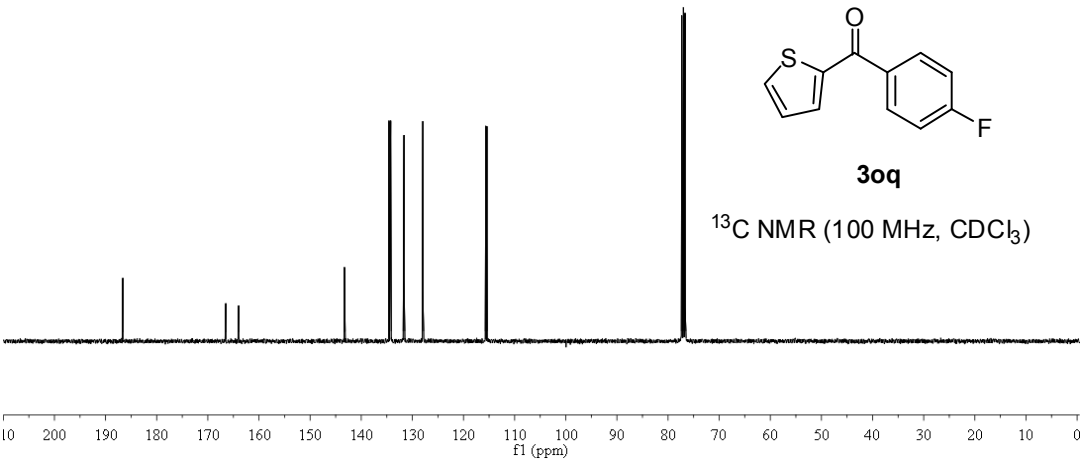
3op

^{13}C NMR (100 MHz, $CDCl_3$)



3oq

^{1}H NMR (400 MHz, $CDCl_3$)



3oq

^{13}C NMR (100 MHz, $CDCl_3$)