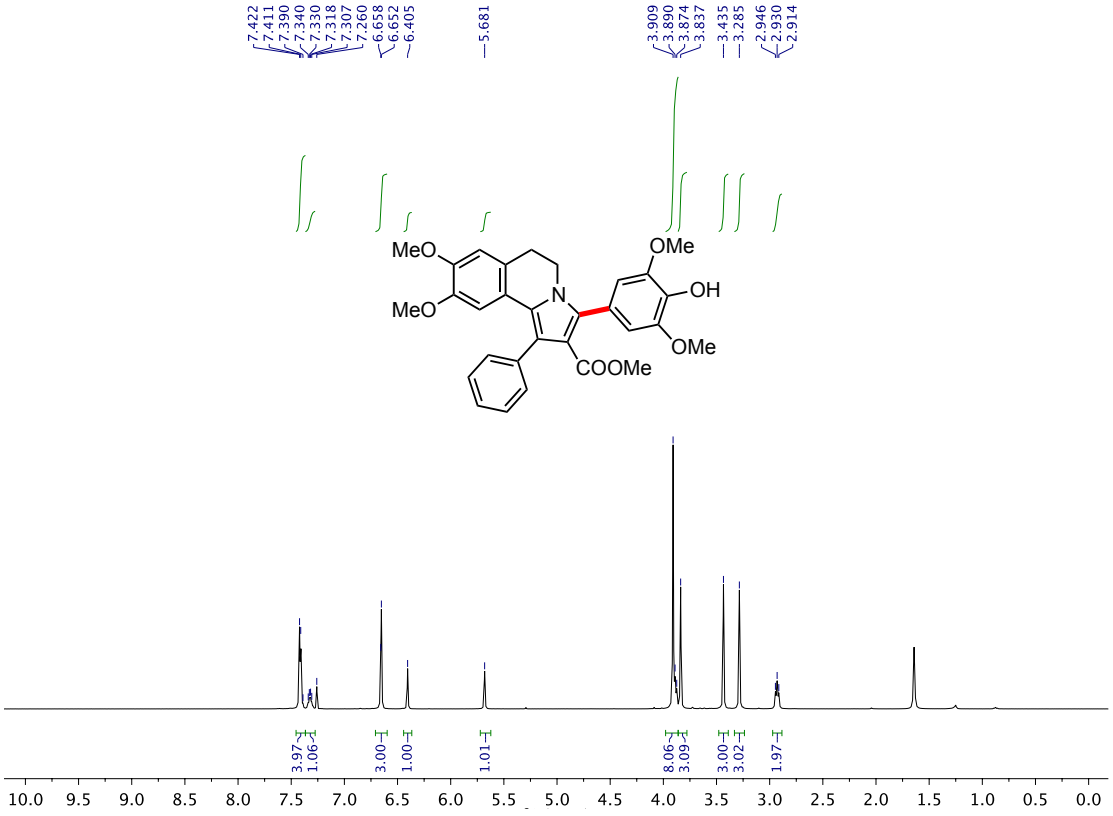
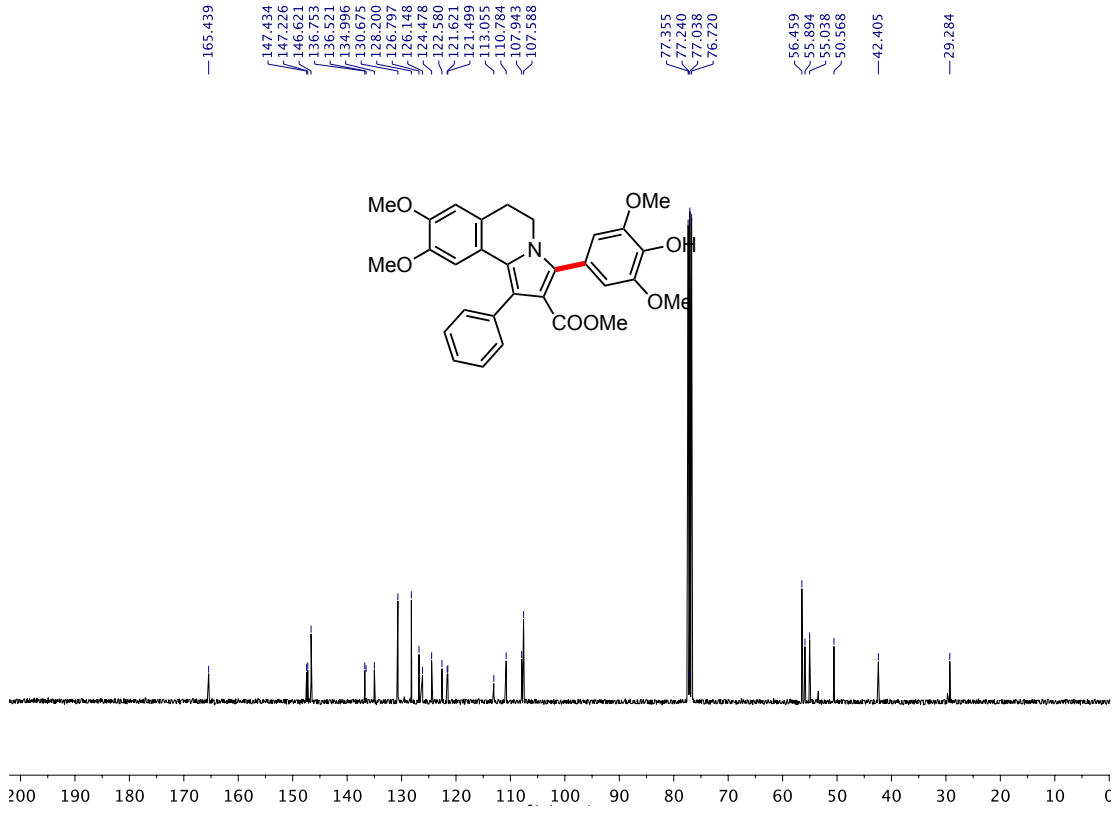
NMR Spectra

Compound 3a:





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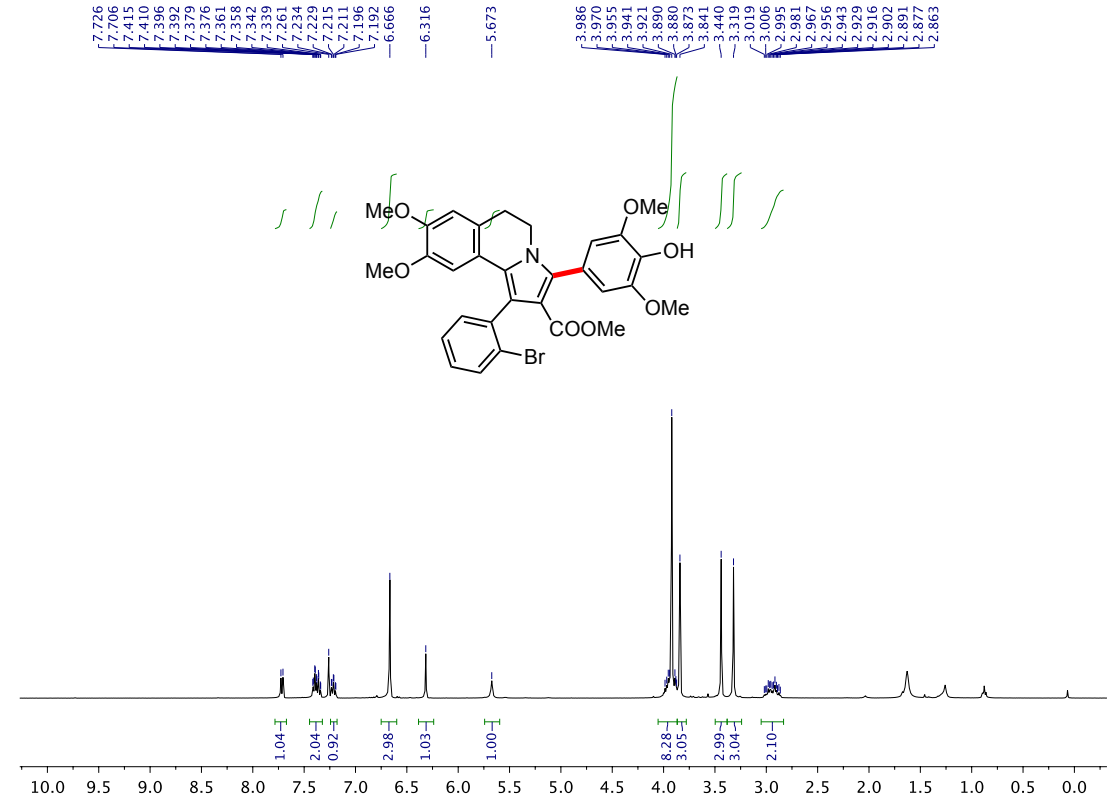
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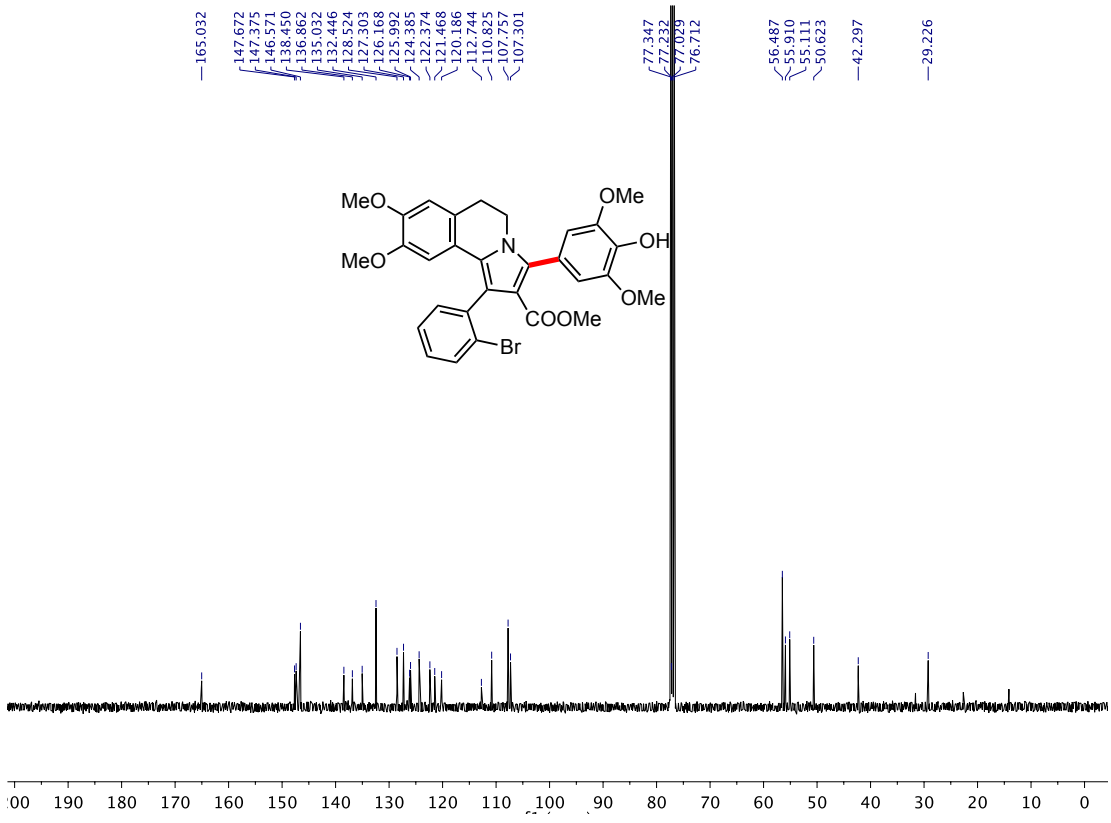
7.392
7.379
7.376
7.361
7.358
7.342
7.339
7.261
7.234
7.229
7.215
7.211
7.196
7.192
6.666
6.316
5.673
3.986
3.970
3.955
3.941
3.921
3.890
3.880
3.873
3.841
3.440
3.319
3.019
3.006
2.995
2.981
2.967
2.956
2.943
2.929
2.916
2.902
2.891
2.877
2.863
MeO
MeO
N
OMe
OH
OMe
COOMe
Br
1.04
2.04
0.92
2.98
1.03
1.00
8.28
3.05
2.99
3.04
2.10
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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147.375
146.571
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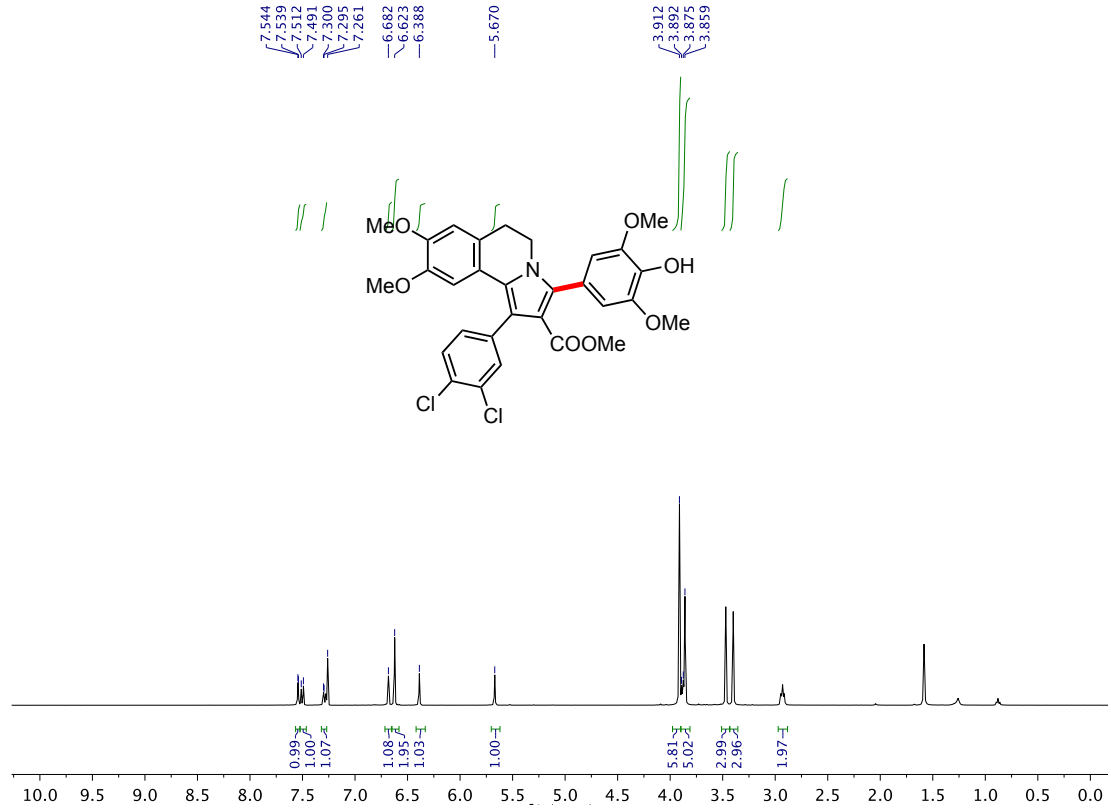
136.862
135.032
132.446
128.524
127.303
126.168
125.992
124.385
122.374
121.468
120.186
112.744
110.825
107.757
107.301
77.347
77.232
77.029
76.712
56.487
55.910
55.111
50.623
42.297
29.226
MeO
MeO
N
OMe
OH
OMe
COOMe
Br
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0

Compound 3c: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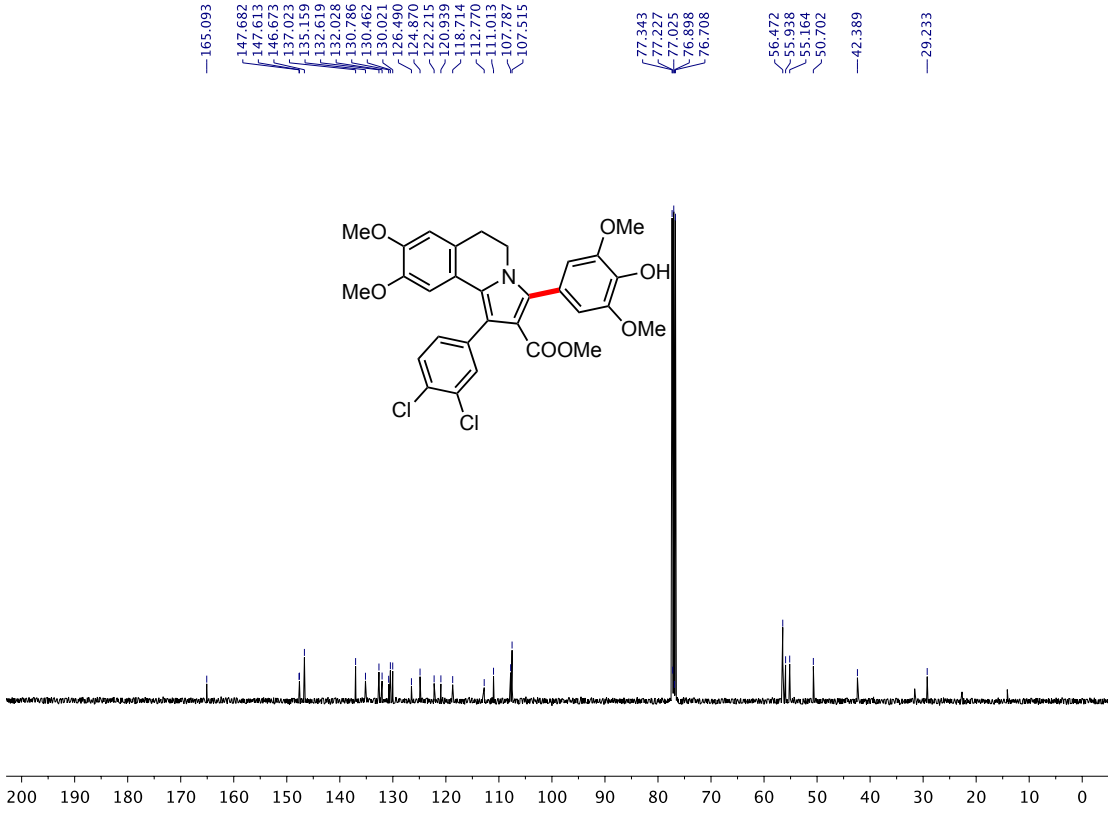
7.491
7.300
7.295
7.261
6.682
6.623
6.388
5.670
3.912
3.892
3.875
3.859
MeO
MeO
OMe
OH
OMe
COOMe
Cl
Cl
0.99
1.00
1.07
1.08
1.95
1.03
1.00
5.81
5.02
2.99
2.96
1.97
10.0 9.5 9.0 8.5 8.0 7.5 7.0 6.5 6.0 5.5 5.0 4.5 4.0 3.5 3.0 2.5 2.0 1.5 1.0 0.5 0.0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147.613
146.673
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135.159
132.619
132.028
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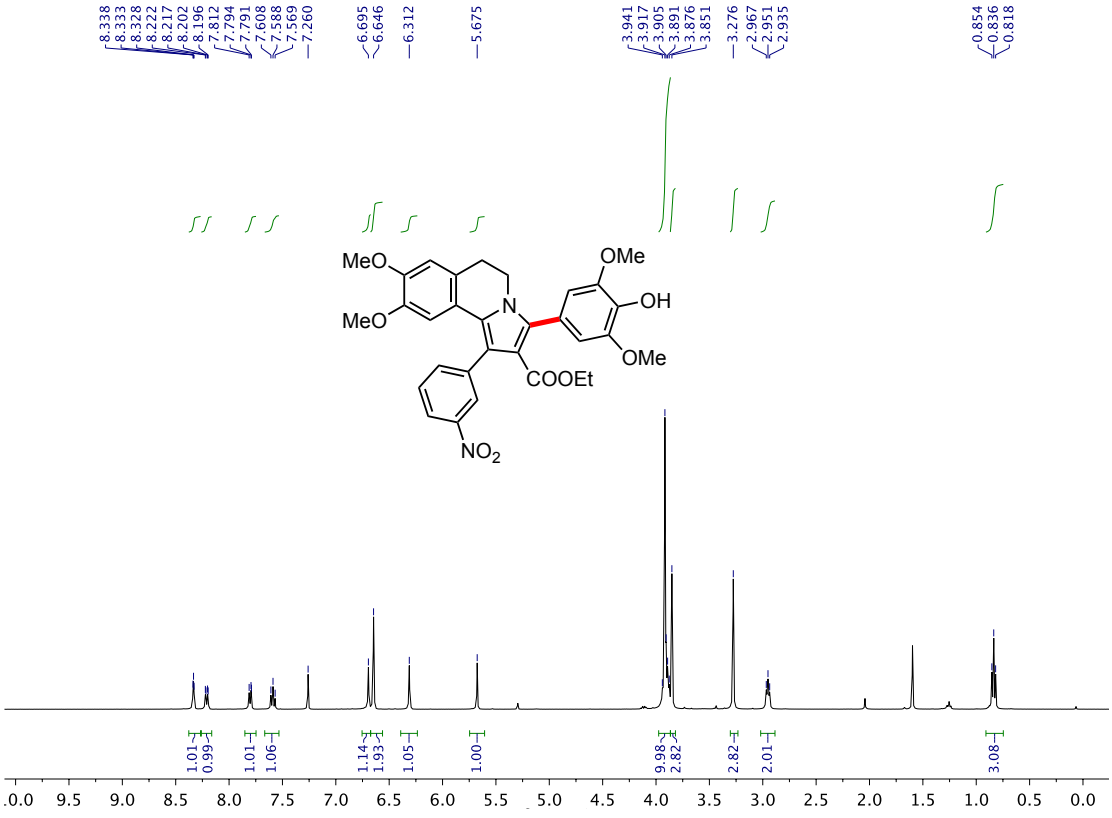
130.462
130.021
126.490
124.870
122.215
120.939
118.714
112.770
111.013
107.787
107.515
77.343
77.227
77.025
76.898
76.708
56.472
55.938
55.164
50.702
42.389
29.233
MeO
MeO
OMe
OH
OMe
COOMe
Cl
Cl
200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0

Compound 3d: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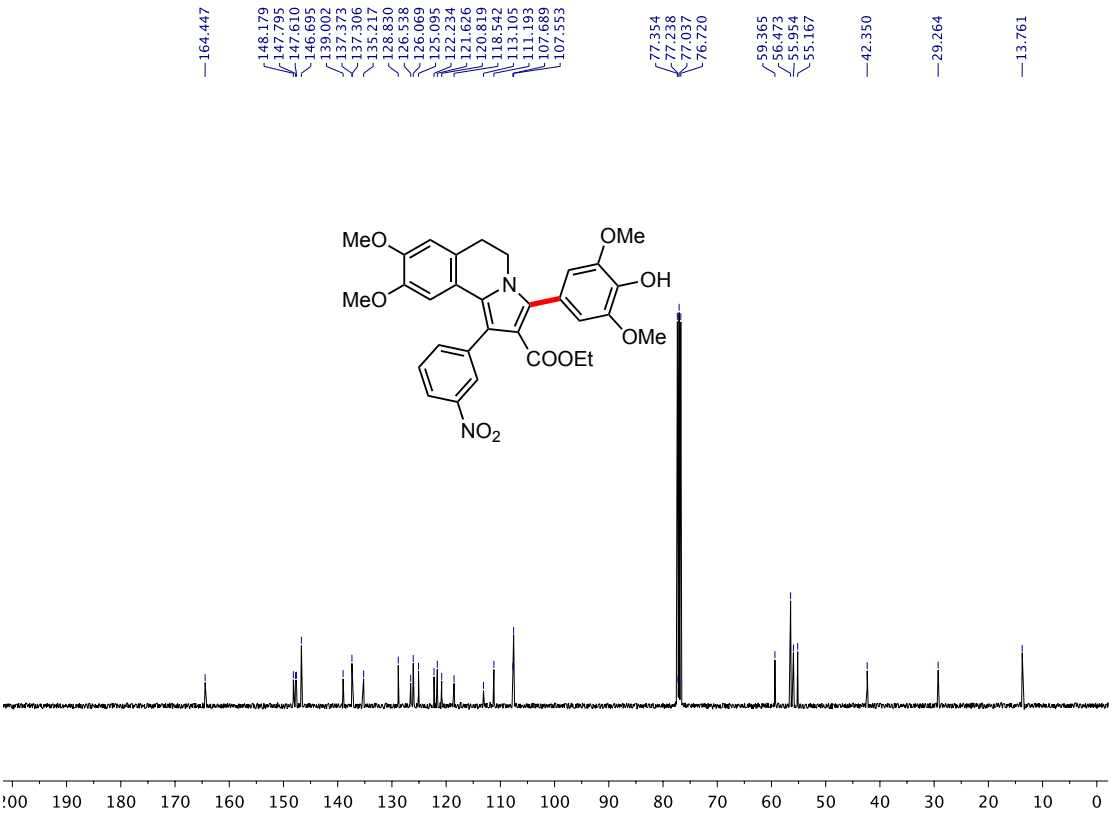
8.328
8.222
8.217
8.202
8.196
7.812
7.794
7.791
7.608
7.588
7.569
7.260
6.695
6.646
6.312
5.675
3.941
3.917
3.905
3.891
3.876
3.851
3.276
2.967
2.951
2.935
0.854
0.836
0.818
MeO
MeO
OMe
OH
OMe
N
COOEt
NO2
1.01
0.99
1.01
1.06
1.14
1.93
1.05
1.00
9.98
2.82
2.82
2.01
3.08
.0.0 9.5 9.0 8.5 8.0 7.5 7.0 6.5 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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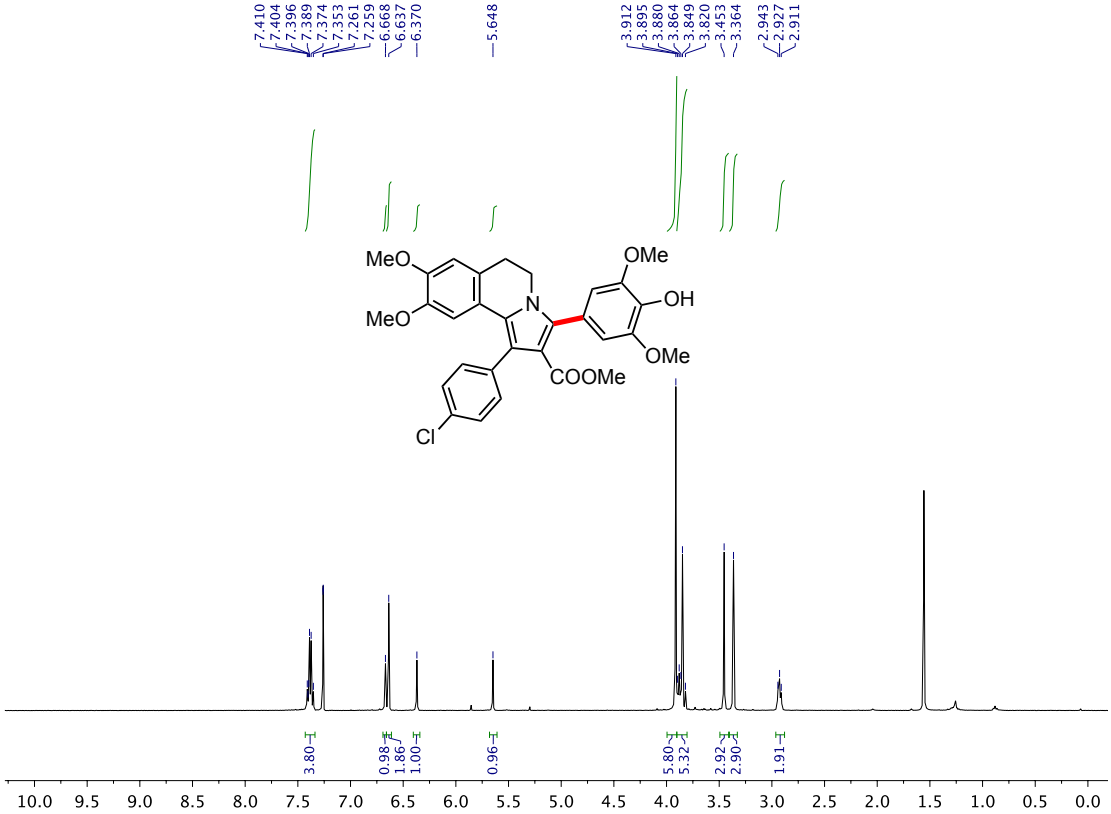
148.179
147.795
147.610
146.695
139.002
137.373
137.306
135.217
128.830
126.538
126.069
125.095
122.234
121.626
120.819
118.542
113.105
111.193
107.689
107.553
77.354
77.238
77.037
76.720
59.365
56.473
55.954
55.167
42.350
29.264
13.761
MeO
MeO
OMe
OH
OMe
N
COOEt
NO2
:00 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0

Compound 3e: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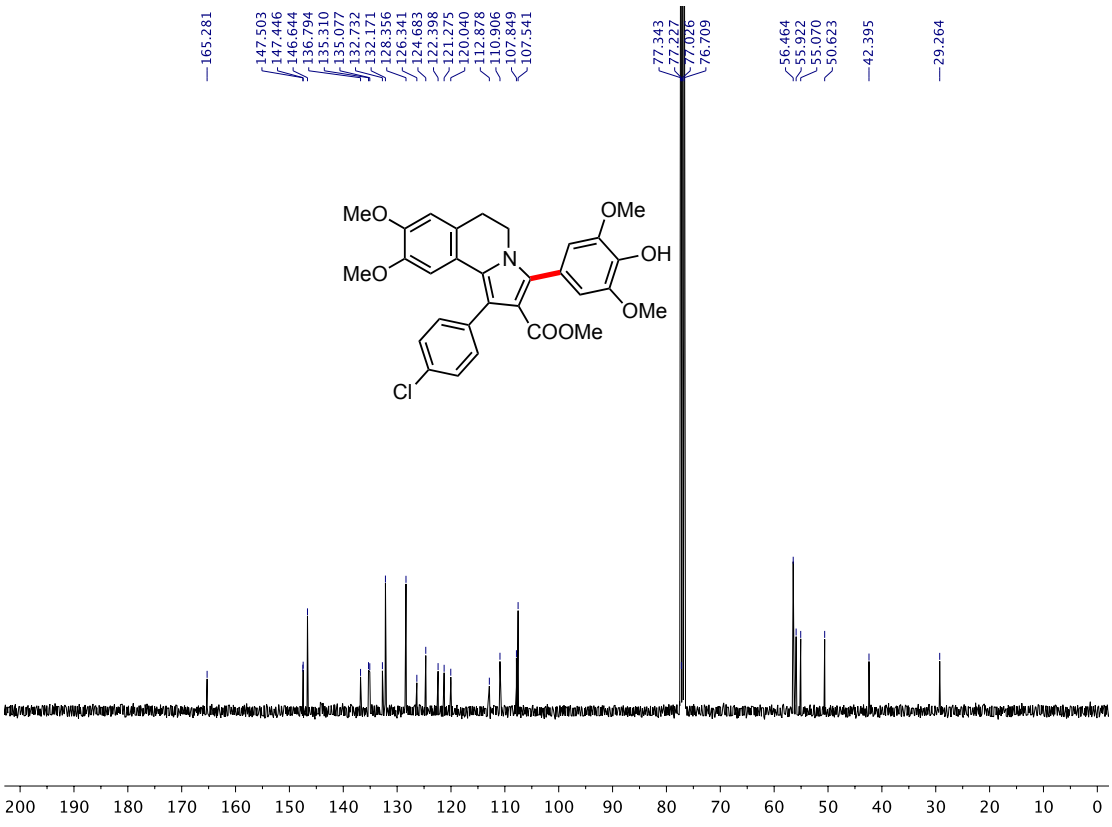
7.389
7.374
7.353
7.261
7.259
6.668
6.637
6.370
5.648
3.912
3.895
3.880
3.864
3.849
3.820
3.453
3.364
2.943
2.927
2.911
MeO
MeO
OMe
OH
OMe
COOMe
Cl
N
3.80
0.98
1.86
1.00
0.96
5.80
5.32
2.92
2.90
1.91
10.0 9.5 9.0 8.5 8.0 7.5 7.0 6.5 6.0 5.5 5.0 4.5 4.0 3.5 3.0 2.5 2.0 1.5 1.0 0.5 0.0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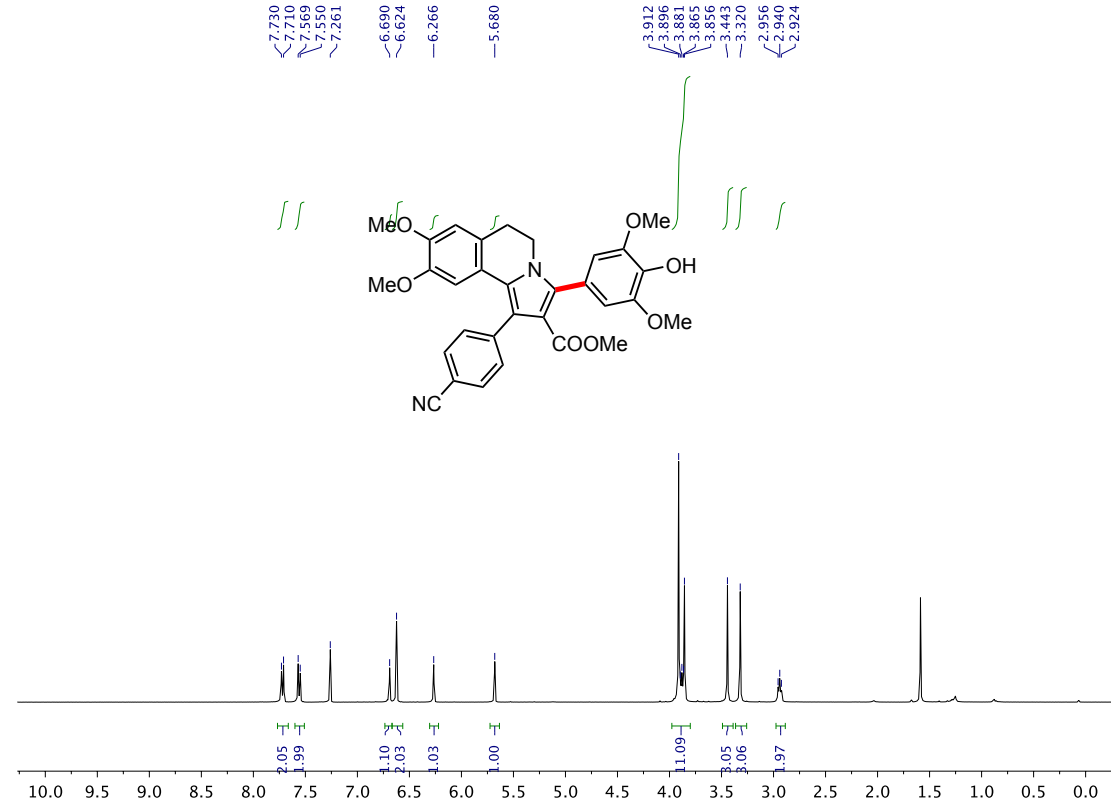
147.503
147.446
146.644
136.794
135.310
135.077
132.732
132.171
128.356
126.341
124.683
122.398
121.275
120.040
112.878
110.906
107.849
107.541
77.343
77.227
77.026
76.709
56.464
55.922
55.070
50.623
42.395
29.264
MeO
MeO
OMe
OH
OMe
COOMe
Cl
N
200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0

Compound 3f: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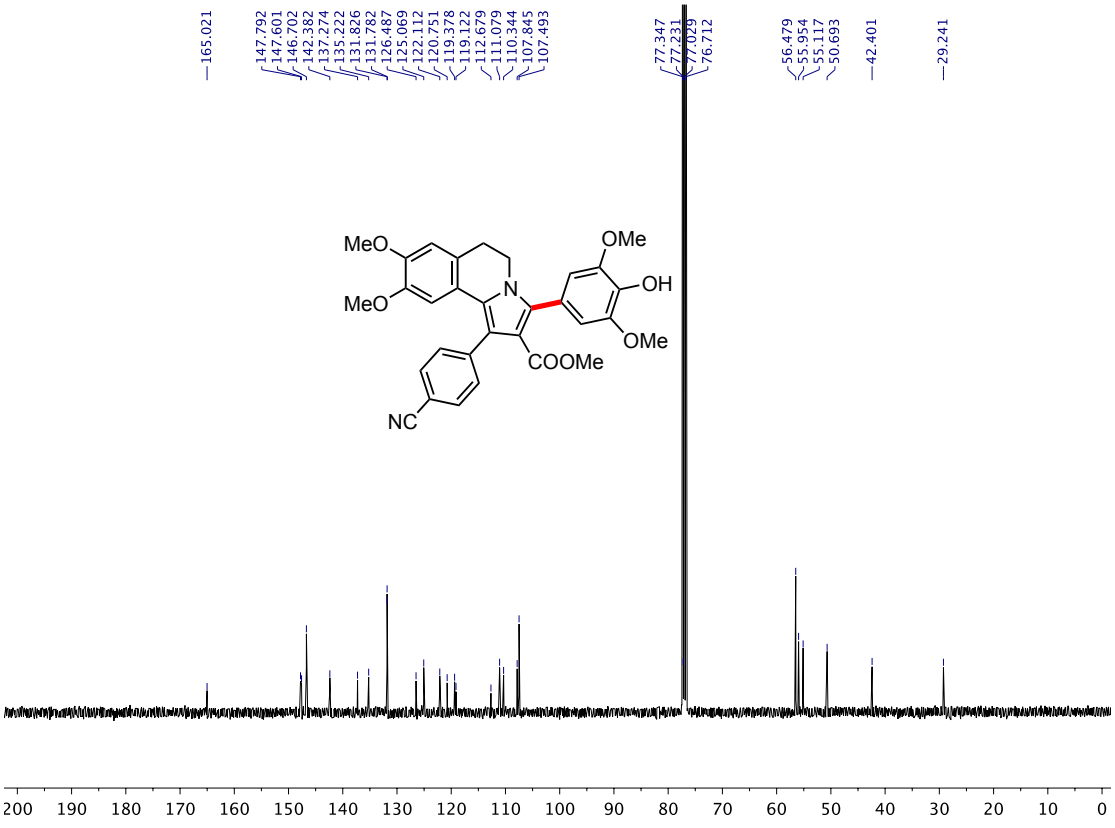
7.710
7.569
7.550
7.261
6.690
6.624
6.266
5.680
3.912
3.896
3.881
3.865
3.856
3.443
3.320
2.956
2.940
2.924
MeO
MeO
N
OMe
OH
OMe
COOMe
NC
2.05
1.99
1.10
2.03
1.03
1.00
11.09
3.05
3.06
1.97
10.0 9.5 9.0 8.5 8.0 7.5 7.0 6.5 6.0 5.5 5.0 4.5 4.0 3.5 3.0 2.5 2.0 1.5 1.0 0.5 0.0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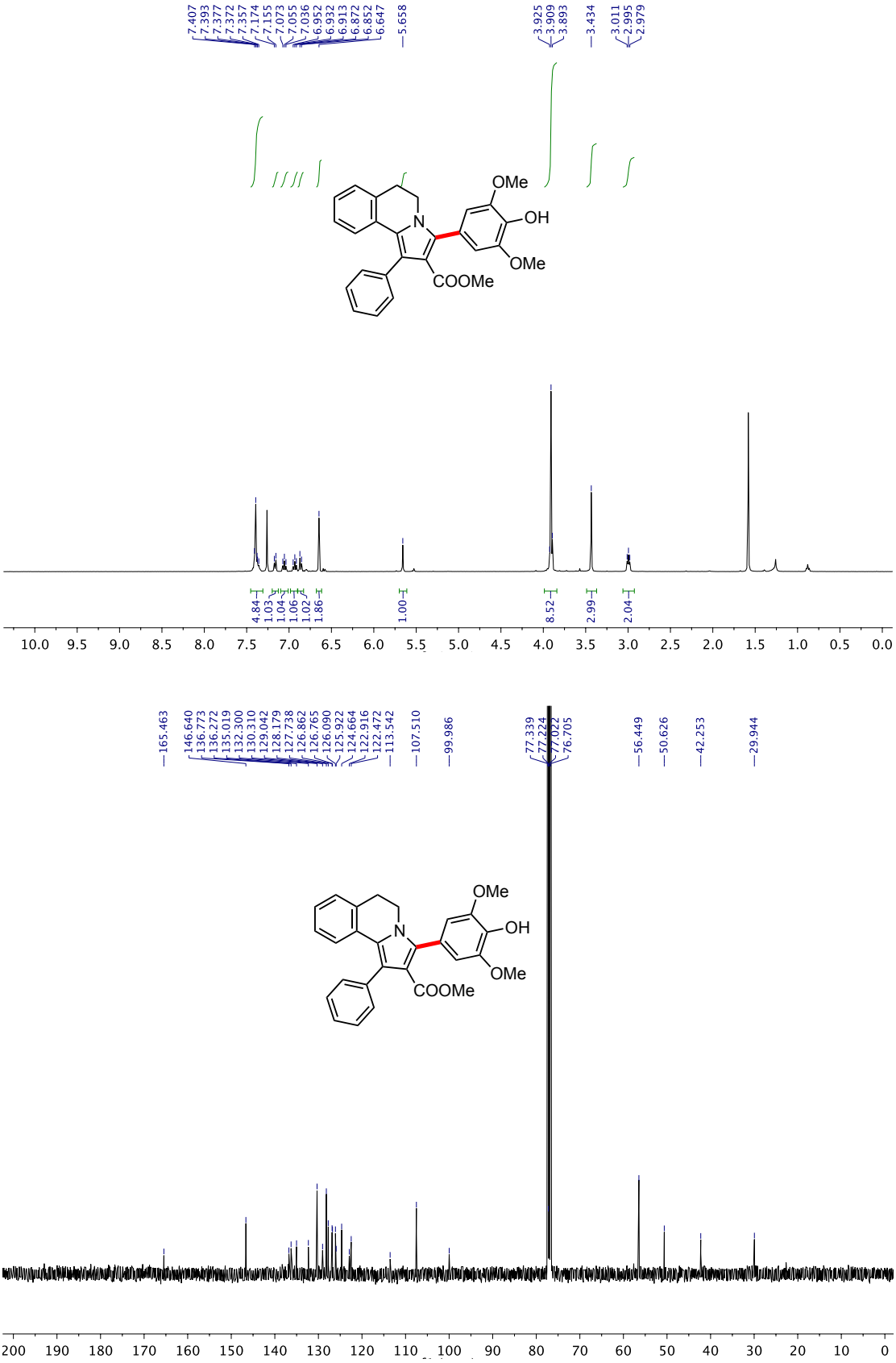
147.601
146.702
142.382
137.274
135.222
131.826
131.782
126.487
125.069
122.112
120.751
119.378
119.122
112.679
111.079
110.344
107.845
107.493
77.347
77.231
77.029
76.712
56.479
55.954
55.117
50.693
42.401
29.241
MeO
MeO
N
OMe
OH
OMe
COOMe
NC
200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0

Compound 3g: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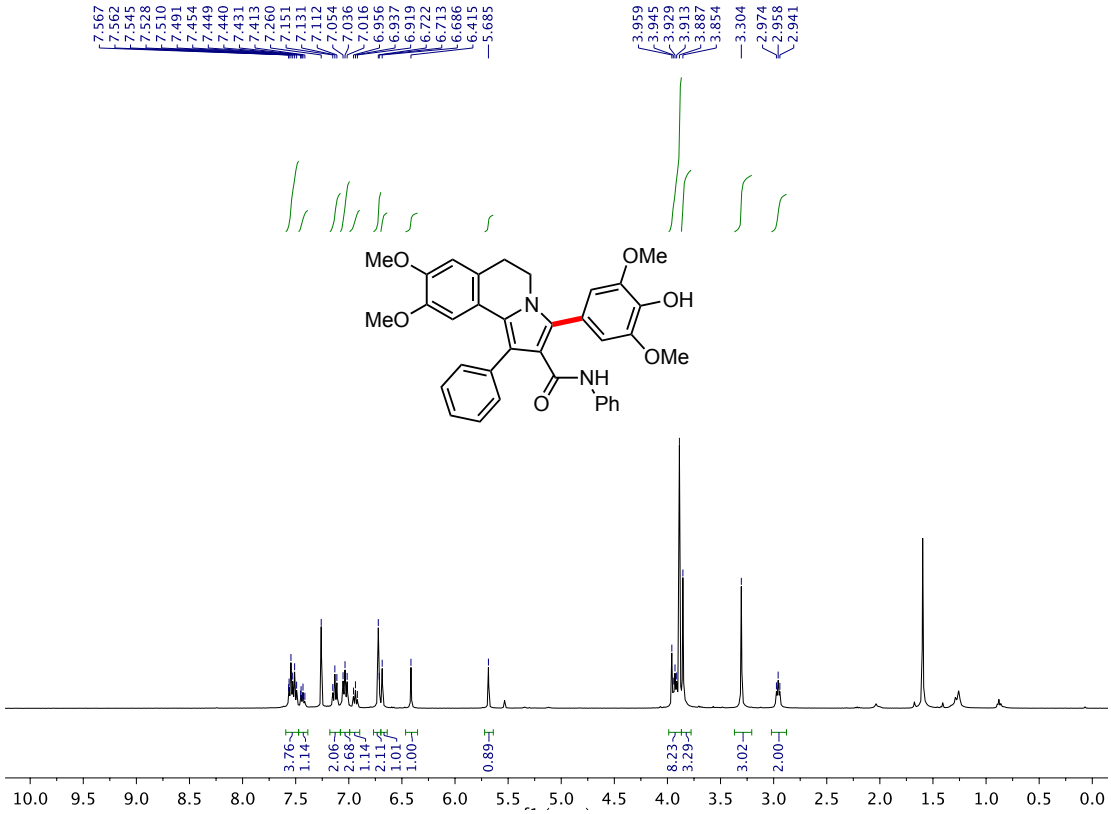
7.377
7.372
7.357
7.174
7.155
7.073
7.055
7.036
6.952
6.932
6.913
6.872
6.852
6.647
5.658
3.925
3.909
3.893
3.434
3.011
2.995
2.979
OMe
OH
OMe
COOMe
N
4.84
1.03
1.04
1.06
1.02
1.86
1.00
8.52
2.99
2.04
10.0 9.5 9.0 8.5 8.0 7.5 7.0 6.5 6.0 5.5 5.0 4.5 4.0 3.5 3.0 2.5 2.0 1.5 1.0 0.5 0.0
165.463
146.640
136.773
136.272
133.019
132.300
130.310
129.042
128.179
127.738
126.862
126.765
126.090
123.922
124.664
122.916
122.472
113.542
107.510
99.986
77.339
77.224
77.022
76.705
56.449
50.626
42.253
29.944
OMe
OH
OMe
COOMe
N
200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0

Compound 3h: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7.562
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7.528
7.510
7.491
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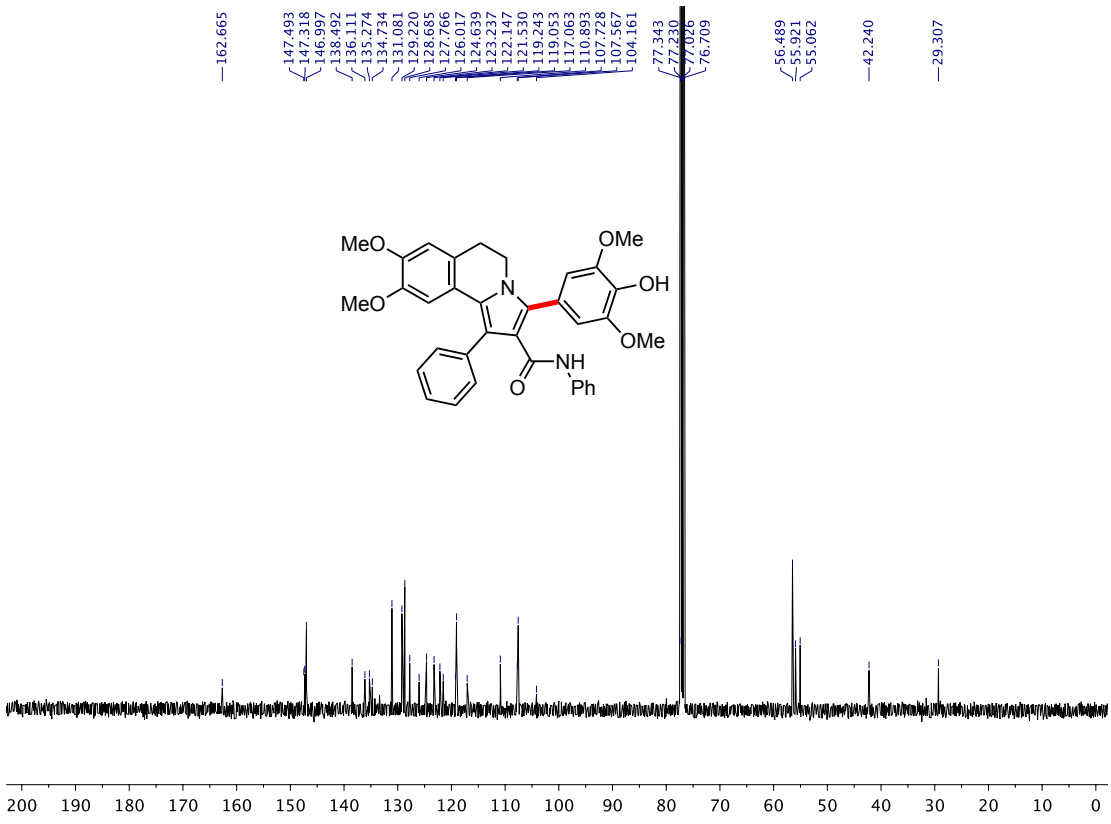
7.449
7.440
7.431
7.413
7.260
7.151
7.131
7.112
7.054
7.036
7.016
6.956
6.937
6.919
6.722
6.713
6.686
6.415
5.685
3.959
3.945
3.929
3.913
3.887
3.854
3.304
2.974
2.958
2.941
MeO
MeO
OMe
OH
OMe
N
NH
Ph
O
3.76
1.14
2.06
2.68
1.14
2.11
1.01
1.00
0.89
8.23
3.29
3.02
2.00
10.0 9.5 9.0 8.5 8.0 7.5 7.0 6.5 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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134.734
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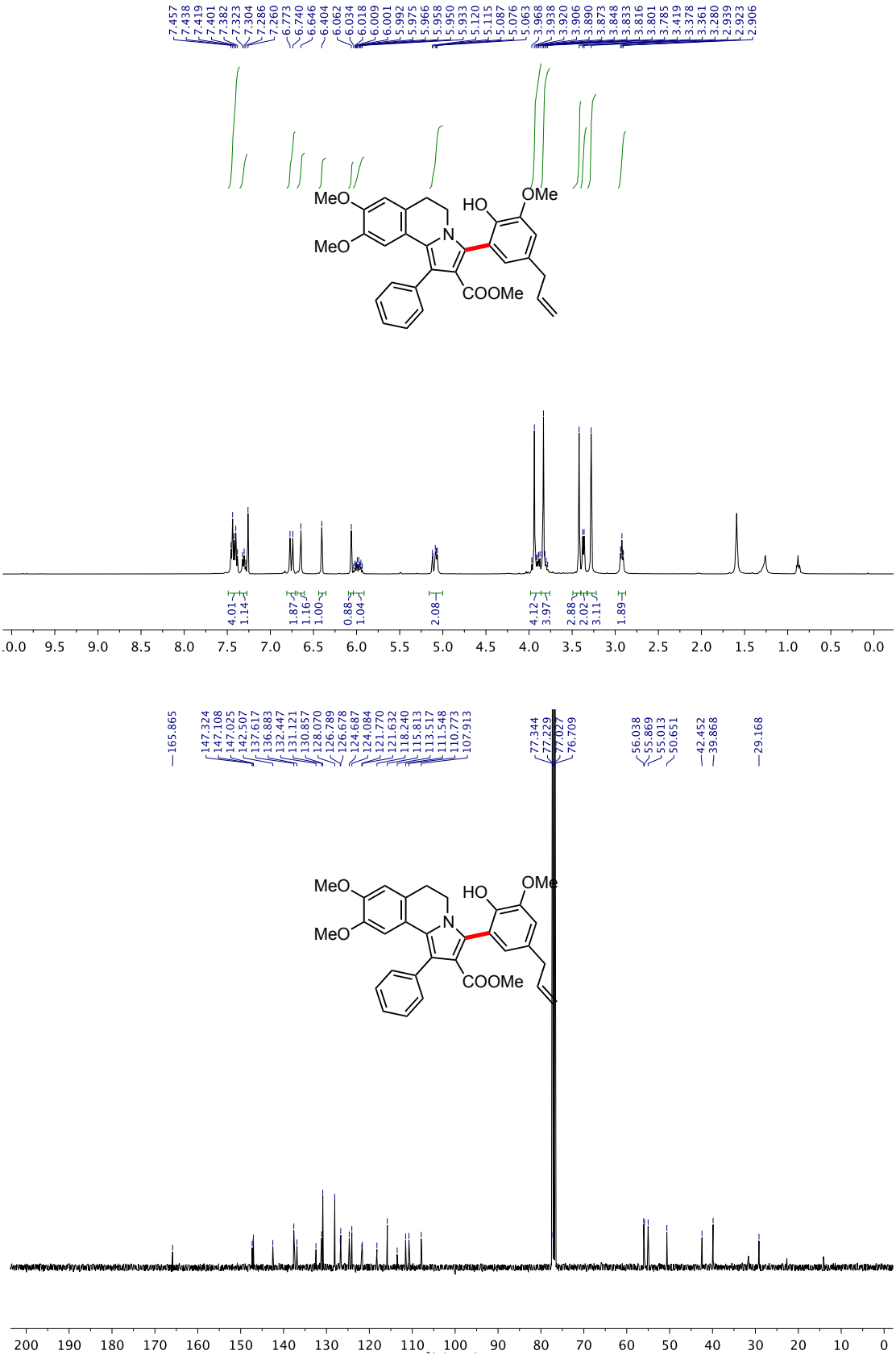
129.220
128.685
127.766
126.017
124.639
123.237
122.147
121.530
119.243
119.053
117.063
110.893
107.728
107.567
104.161
77.343
77.230
77.026
76.709
56.489
55.921
55.062
42.240
29.307
MeO
MeO
OMe
OH
OMe
N
NH
Ph
O
200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0

Compound 3i: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7.286
7.260
6.773
6.740
6.646
6.404
6.062
6.034
6.018
6.009
6.001
5.992
5.975
5.966
5.958
5.950
5.933
5.120
5.115
5.087
5.076
5.063
3.968
3.938
3.920
3.906
3.890
3.873
3.848
3.833
3.816
3.801
3.785
3.419
3.378
3.361
3.280
2.939
2.923
2.906
MeO
MeO
HO
OMe
N
COOMe
4.01
1.14
1.87
1.16
1.00
0.88
1.04
2.08
4.12
3.97
2.88
2.02
3.11
1.89
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147.108
147.025
142.507
137.617
136.883
132.447
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130.857
128.070
126.789
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124.084
121.770
121.632
118.240
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113.517
111.548
110.773
107.913
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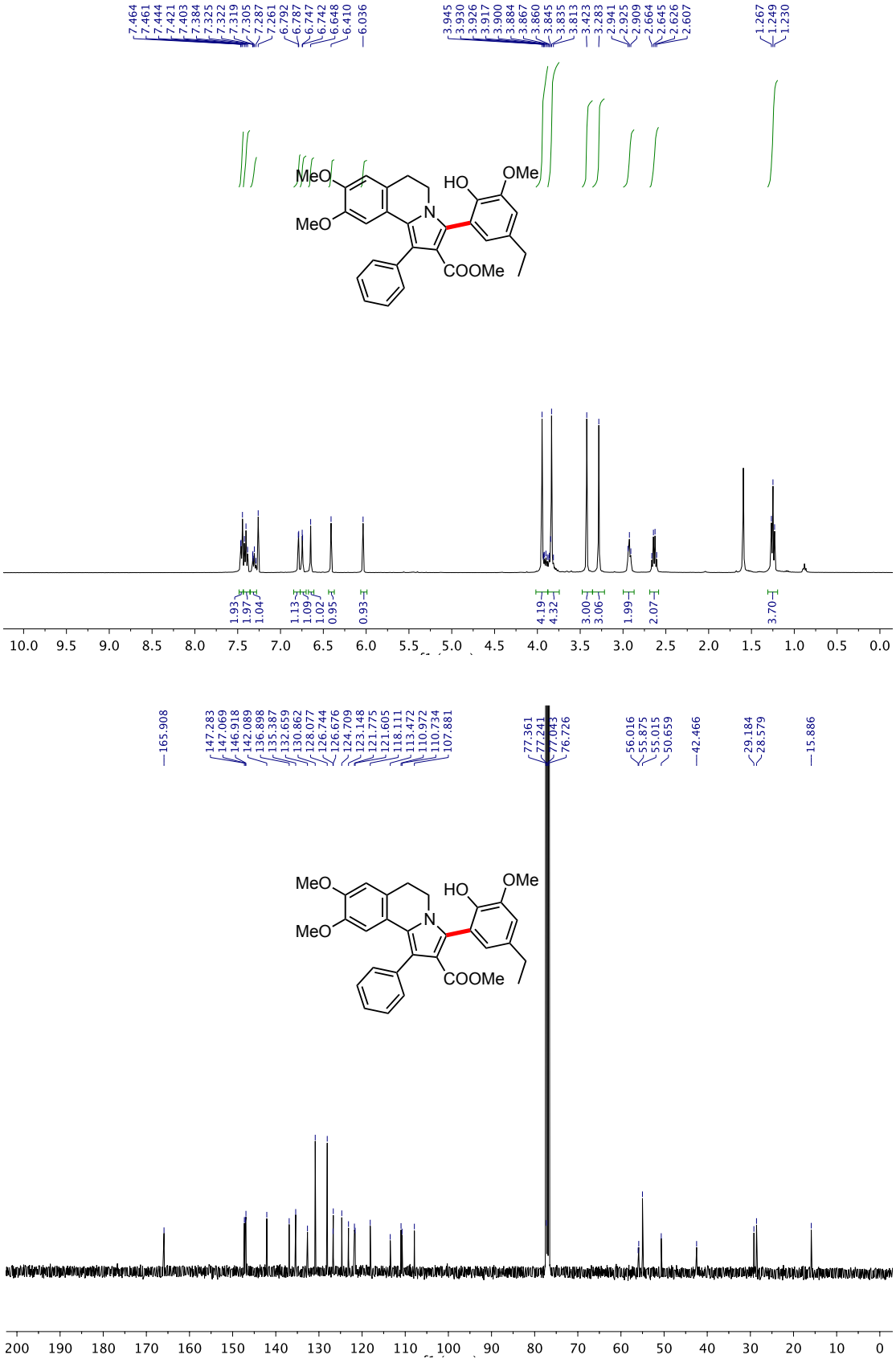
39.868
29.168

Compound 3j: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7.322
7.319
7.305
7.287
7.261
6.792
6.787
6.747
6.742
6.648
6.410
6.036
3.945
3.930
3.926
3.917
3.900
3.884
3.867
3.860
3.845
3.835
3.813
3.423
3.283
2.941
2.925
2.909
2.664
2.645
2.626
2.607
1.267
1.249
1.230
MeO
MeO
HO
OMe
N
COOMe
1.93
1.97
1.04
1.13
1.09
1.02
0.95
0.93
4.19
4.32
3.00
3.06
1.99
2.07
3.70
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
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147.283
147.069
146.918
142.089
136.898
135.387
132.659
130.862
128.077
126.744
126.676
124.709
123.148
121.775
121.605
118.111
113.472
110.972
110.734
107.881
77.361
77.241
77.043
76.726
56.016
55.875
55.015
50.659
42.466
29.184
28.579
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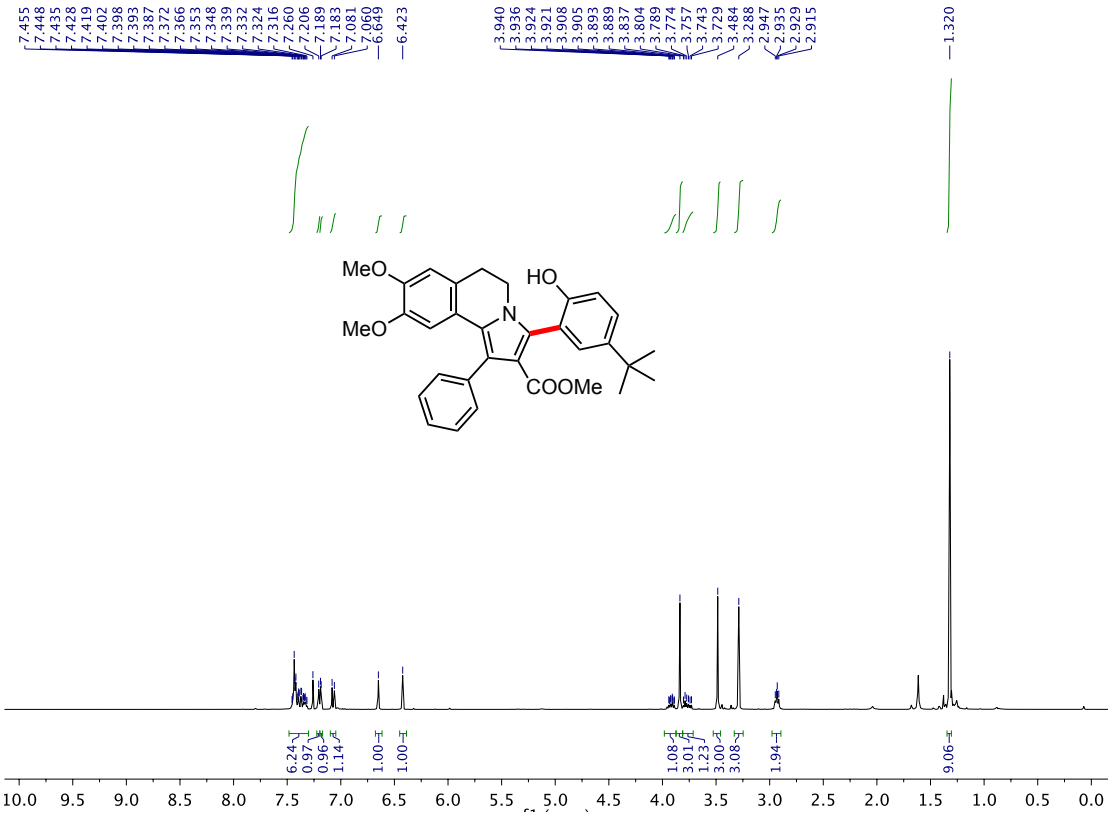
MeO
HO
OMe
N
COOMe
200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0

Compound 3k: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7.402
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7.393
7.387
7.372
7.366
7.353
7.348
7.339
7.332
7.324
7.316
7.260
7.206
7.189
7.183
7.081
7.060
6.649
6.423
3.940
3.936
3.924
3.921
3.908
3.905
3.893
3.889
3.837
3.804
3.789
3.774
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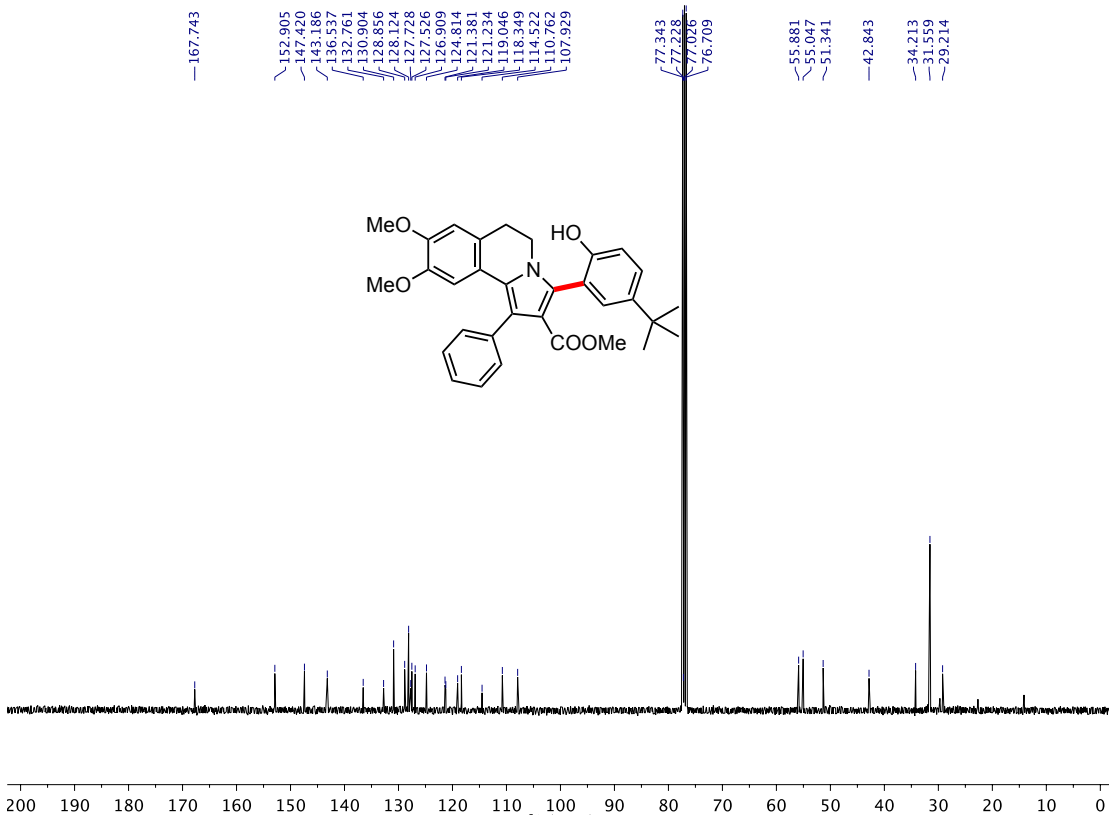
3.484
3.288
2.947
2.935
2.929
2.915
1.320
MeO
MeO
HO
N
COOMe
6.24
0.97
0.96
1.14
1.00
1.00
1.08
3.01
1.23
3.00
3.08
1.94
9.06
10.0 9.5 9.0 8.5 8.0 7.5 7.0 6.5 6.0 5.5 5.0 4.5 4.0 3.5 3.0 2.5 2.0 1.5 1.0 0.5 0.0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147.420
143.186
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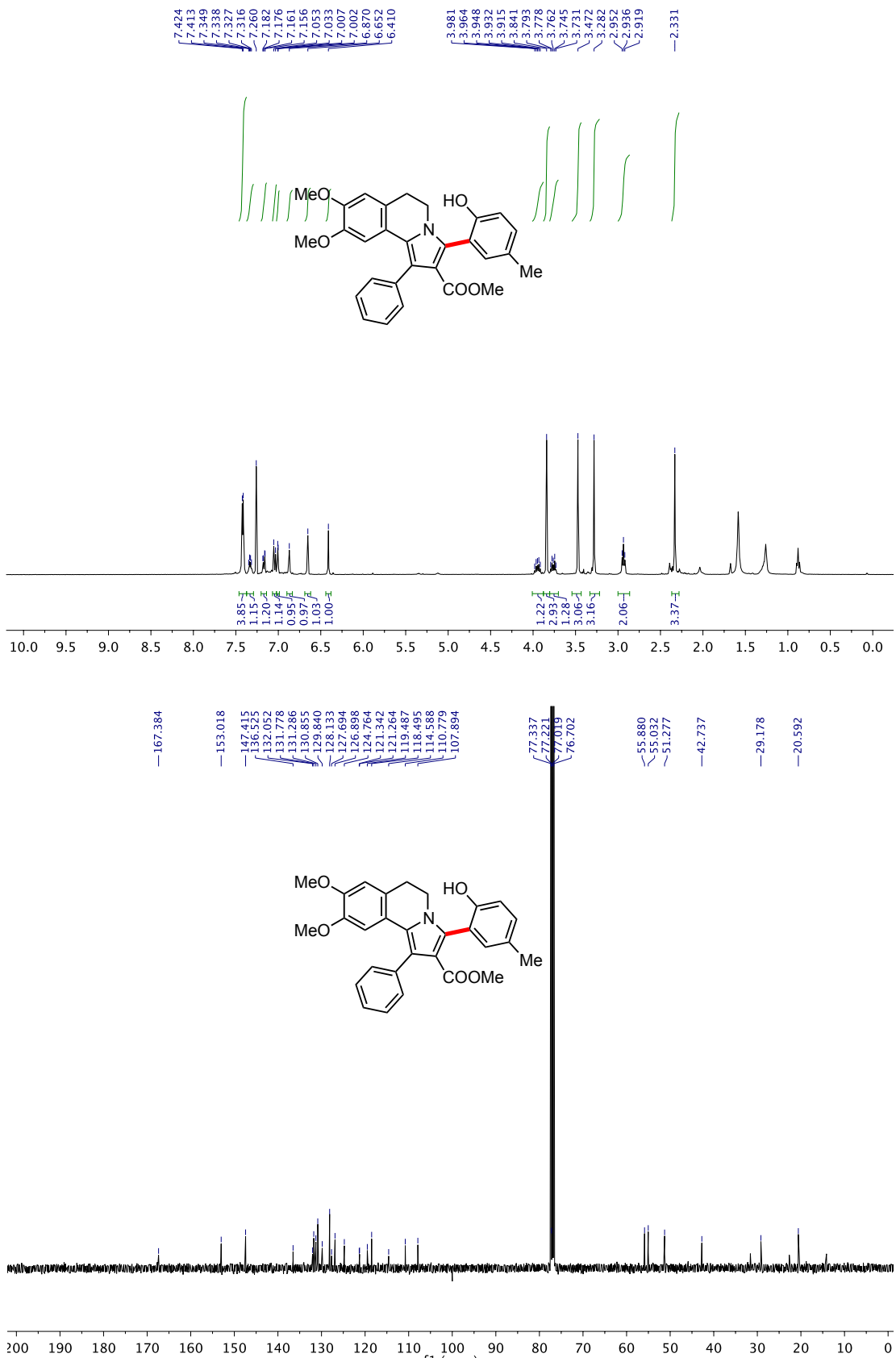
130.904
128.856
128.124
127.728
127.526
126.909
124.814
121.381
121.234
119.046
118.349
114.522
110.762
107.929
77.343
77.228
77.026
76.709
55.881
55.047
51.341
42.843
34.213
31.559
29.214
MeO
MeO
HO
N
COOMe
200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0

Compound 3l: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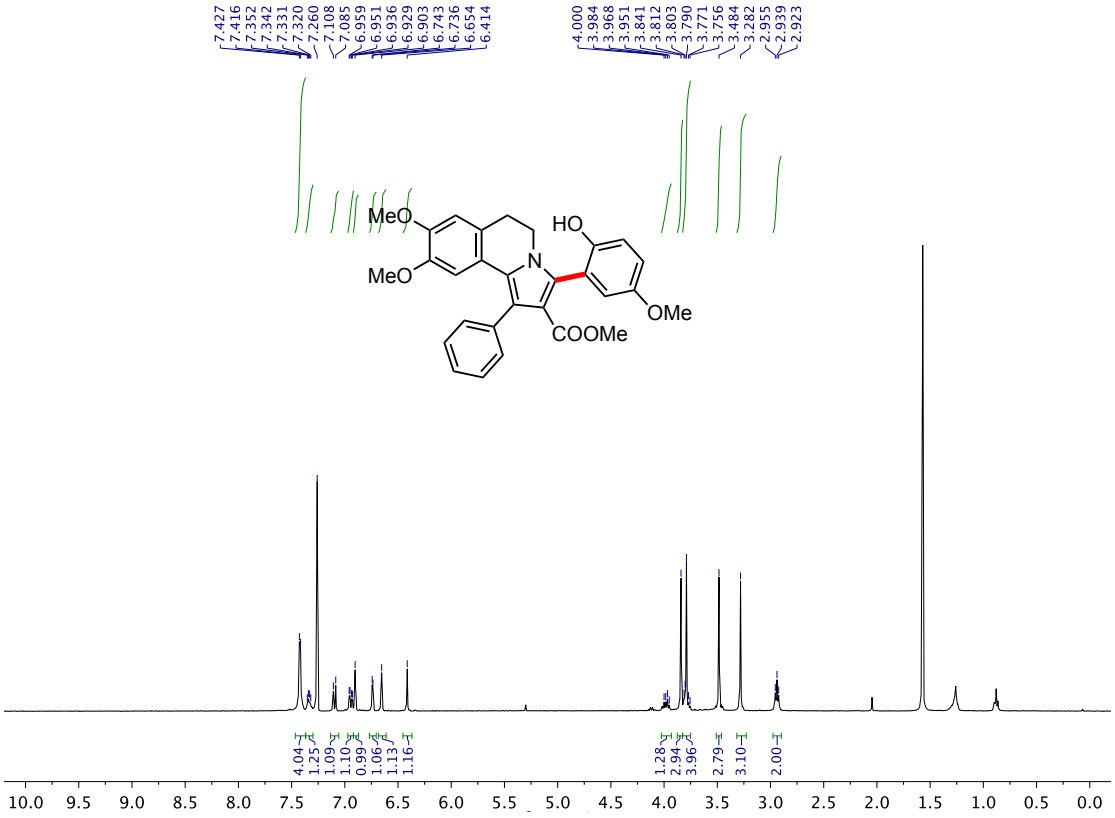
7.338
7.327
7.316
7.260
7.182
7.176
7.161
7.156
7.053
7.033
7.007
7.002
6.870
6.652
6.410
3.981
3.964
3.948
3.932
3.915
3.841
3.793
3.778
3.762
3.745
3.731
3.472
3.282
2.952
2.936
2.919
2.331
MeO
MeO
HO
N
Me
COOMe
3.85
1.15
1.20
1.14
0.95
0.97
1.03
1.00
1.22
2.93
1.28
3.06
3.16
2.06
3.37
10.0 9.5 9.0 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
167.384
153.018
147.415
136.525
132.052
131.778
131.286
130.855
129.840
128.133
127.694
126.898
124.764
121.342
121.264
119.487
118.495
114.588
110.779
107.894
77.337
77.221
77.019
76.702
55.880
55.032
51.277
42.737
29.178
20.592
MeO
MeO
HO
N
Me
COOMe
200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0

Compound 3m: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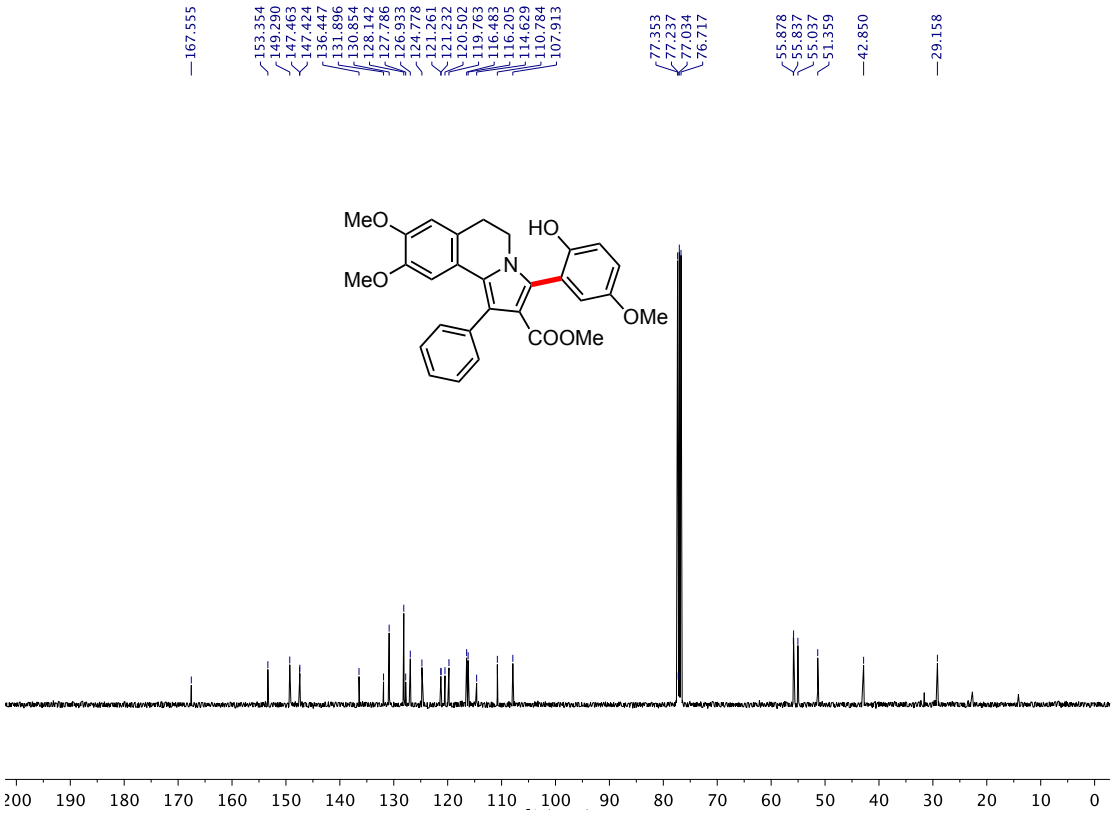
7.331
7.320
7.260
7.108
7.085
6.959
6.951
6.936
6.929
6.903
6.743
6.736
6.654
6.414
4.000
3.984
3.968
3.951
3.841
3.812
3.803
3.790
3.771
3.756
3.484
3.282
2.955
2.939
2.923
MeO
MeO
HO
OMe
COOMe
4.04
1.25
1.09
1.10
0.99
1.06
1.13
1.16
1.28
2.94
3.96
2.79
3.10
2.00
10.0 9.5 9.0 8.5 8.0 7.5 7.0 6.5 6.0 5.5 5.0 4.5 4.0 3.5 3.0 2.5 2.0 1.5 1.0 0.5 0.0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153.354
149.290
147.463
147.424
136.447
131.896
130.854
128.142
127.786
126.933
124.778
121.261
121.232
120.502
119.763
116.483
116.205
114.629
110.784
107.913
77.353
77.237
77.034
76.717
55.878
55.837
55.037
51.359
42.850
29.158
MeO
MeO
HO
OMe
COOMe
200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0

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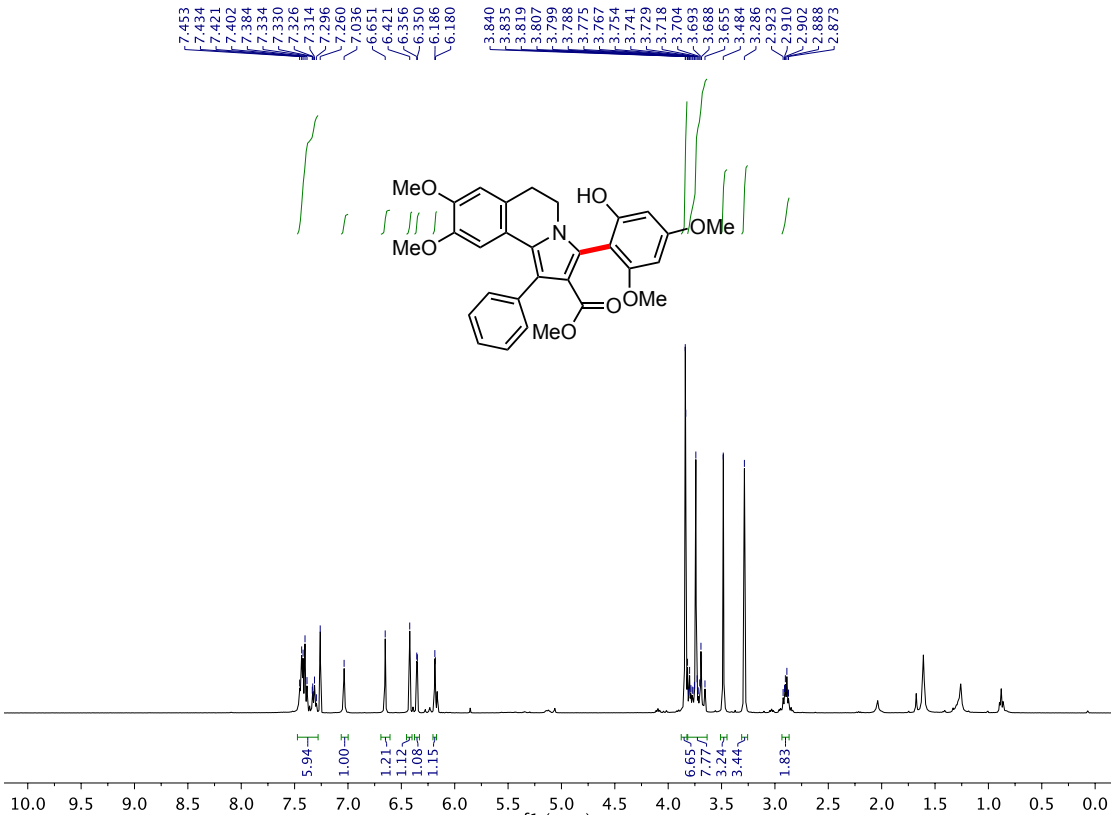
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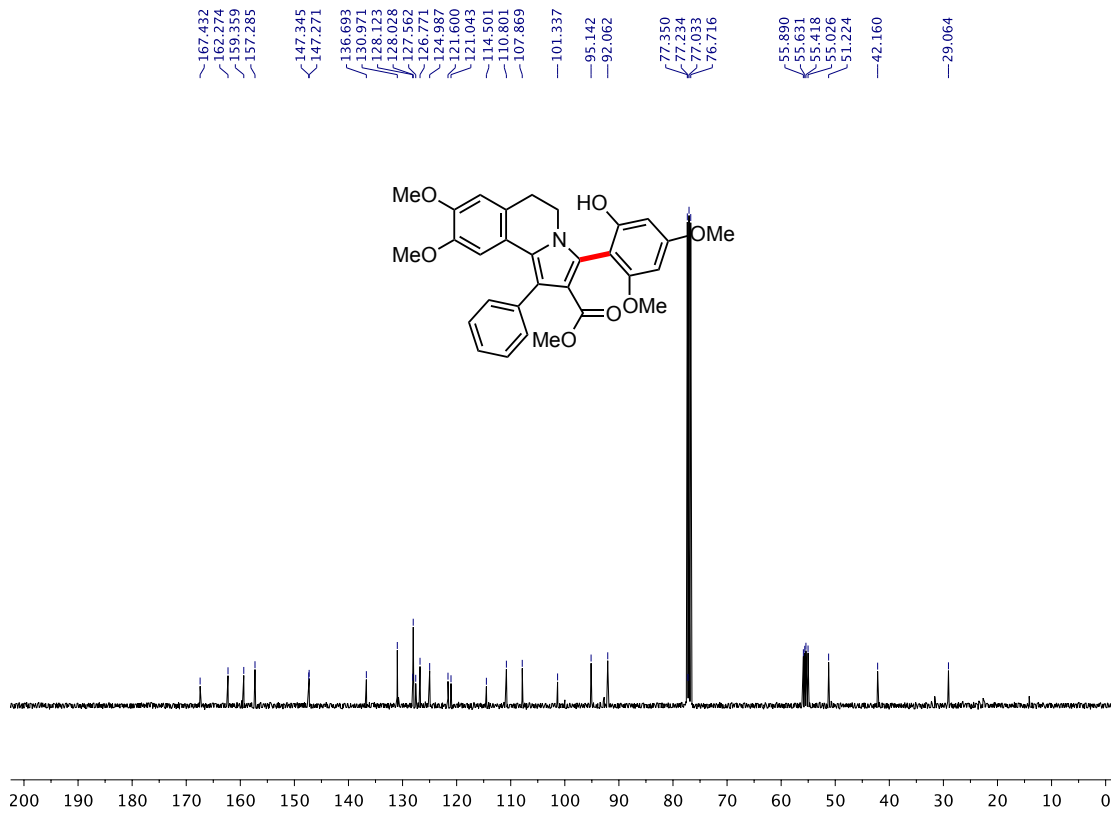
7.421
7.402
7.384
7.334
7.330
7.326
7.314
7.296
7.260
7.036
6.651
6.421
6.356
6.350
6.186
6.180
3.840
3.835
3.819
3.807
3.799
3.788
3.775
3.767
3.754
3.741
3.729
3.718
3.704
3.693
3.688
3.655
3.484
3.286
2.923
2.910
2.902
2.888
2.873
MeO
MeO
HO
N
OMe
O
OMe
MeO
5.94
1.00
1.21
1.12
1.08
1.15
6.65
7.77
3.24
3.44
1.83
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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147.271
136.693
130.971
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128.028
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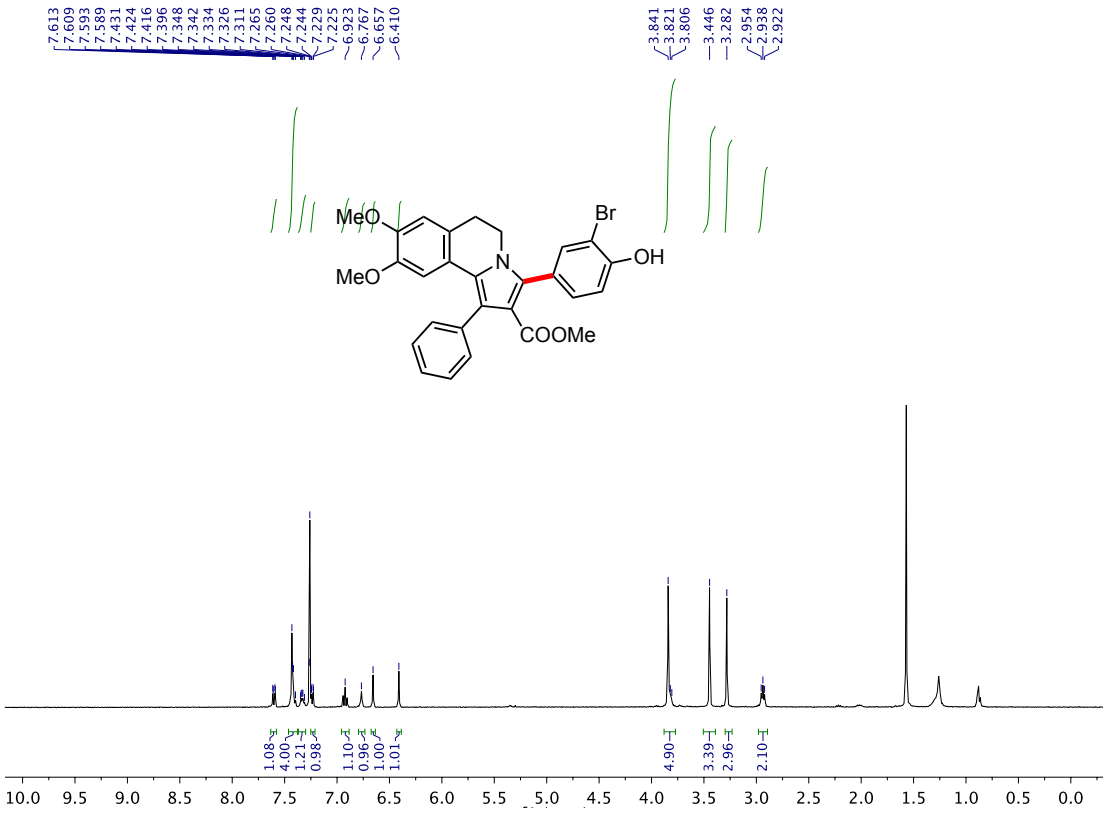
124.987
121.600
121.043
114.501
110.801
107.869
101.337
95.142
92.062
77.350
77.234
77.033
76.716
55.890
55.631
55.418
55.026
51.224
42.160
29.064
MeO
MeO
HO
N
OMe
O
OMe
MeO
200
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0

Compound 3o: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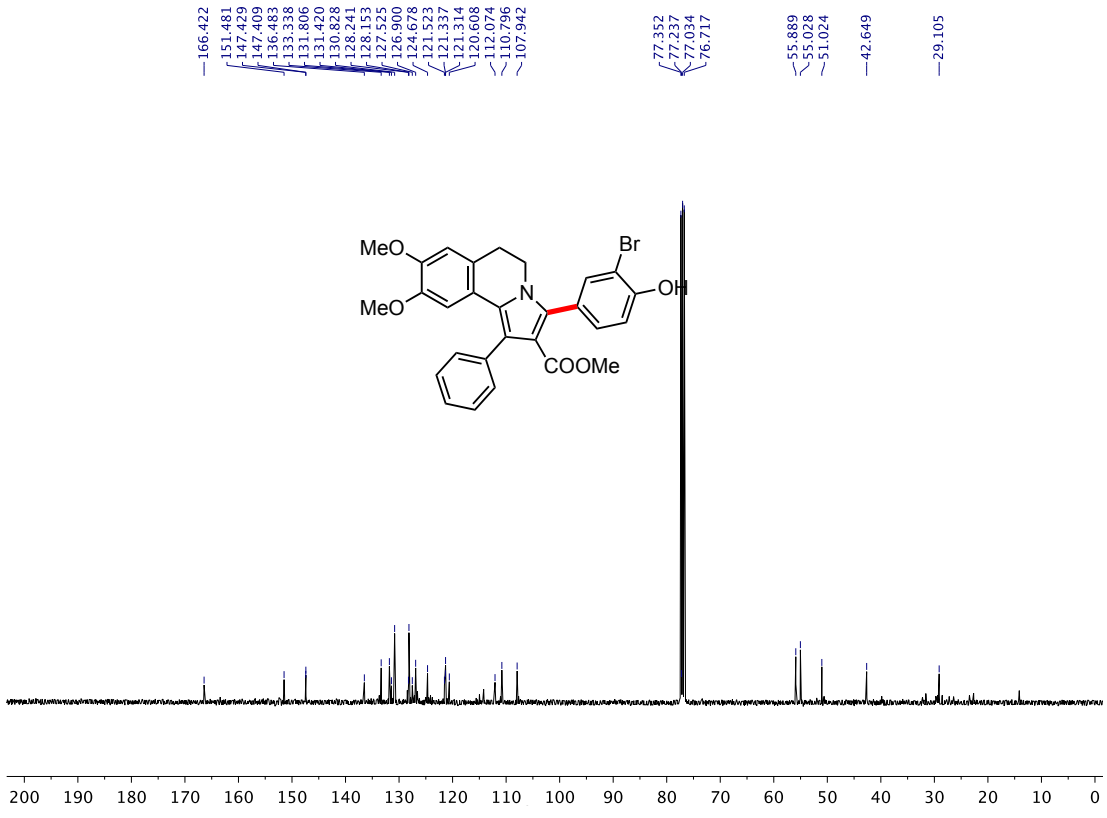
7.424
7.416
7.396
7.348
7.342
7.334
7.326
7.311
7.265
7.260
7.248
7.244
7.229
7.225
6.923
6.767
6.657
6.410
3.841
3.821
3.806
3.446
3.282
2.954
2.938
2.922
MeO
MeO
Br
OH
N
COOMe
1.08
4.00
1.21
0.98
1.10
0.96
1.00
1.01
4.90
3.39
2.96
2.10
10.0 9.5 9.0 8.5 8.0 7.5 7.0 6.5 6.0 5.5 5.0 4.5 4.0 3.5 3.0 2.5 2.0 1.5 1.0 0.5 0.0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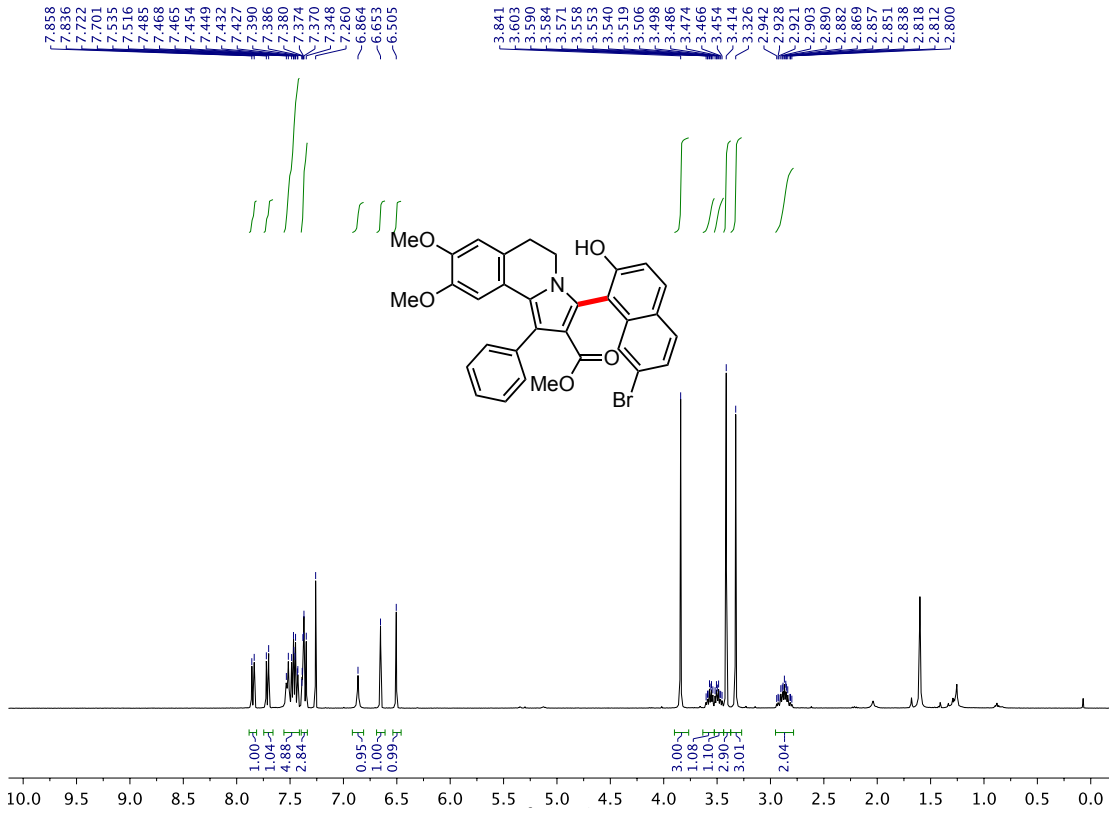
131.806
131.420
130.828
128.241
128.153
127.525
126.900
124.678
121.523
121.337
121.314
120.608
112.074
110.796
107.942
77.352
77.237
77.034
76.717
55.889
55.028
51.024
42.649
29.105
MeO
MeO
Br
OH
N
COOMe
200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0

Compound 3p: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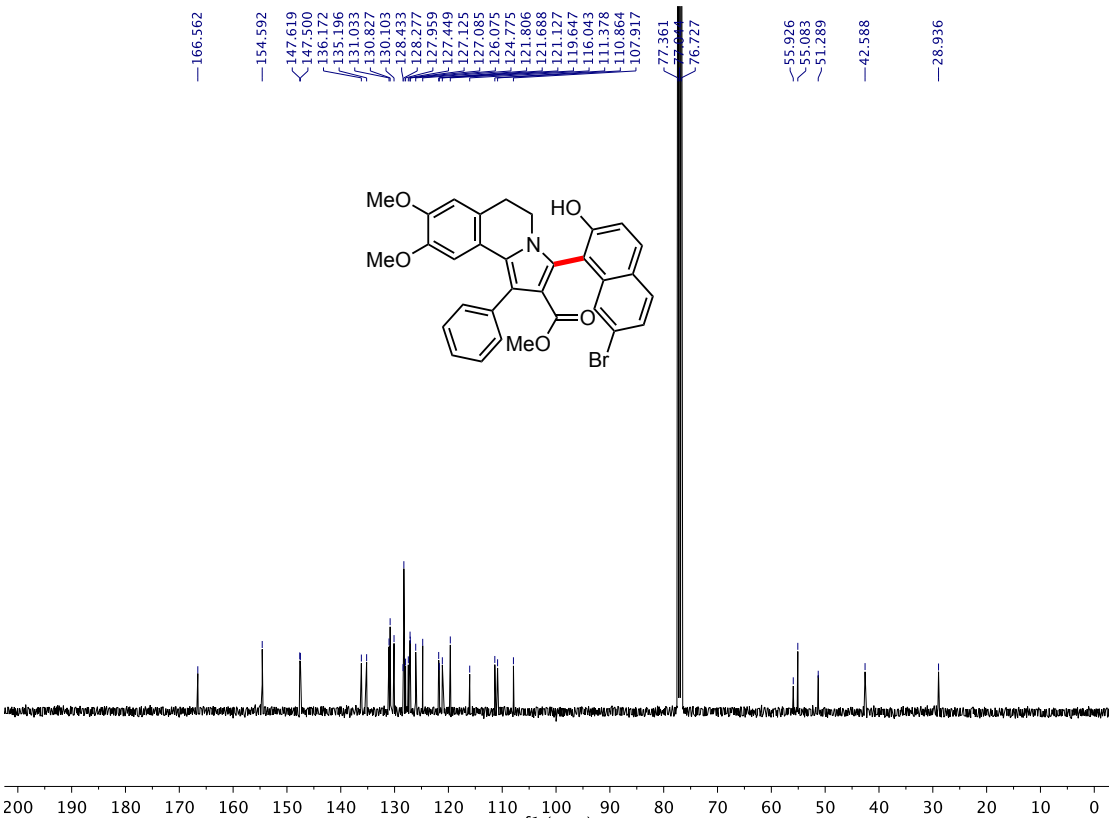
7.485
7.468
7.465
7.454
7.449
7.432
7.427
7.390
7.386
7.380
7.374
7.370
7.348
7.260
6.864
6.653
6.505
3.841
3.603
3.590
3.584
3.571
3.558
3.553
3.540
3.519
3.506
3.498
3.486
3.474
3.466
3.454
3.414
3.326
2.942
2.928
2.921
2.903
2.890
2.882
2.869
2.857
2.851
2.838
2.818
2.812
2.800
MeO
MeO
HO
N
O
MeO
Br
1.00
1.04
4.88
2.84
0.95
1.00
0.99
3.00
1.08
1.10
2.90
3.01
2.04
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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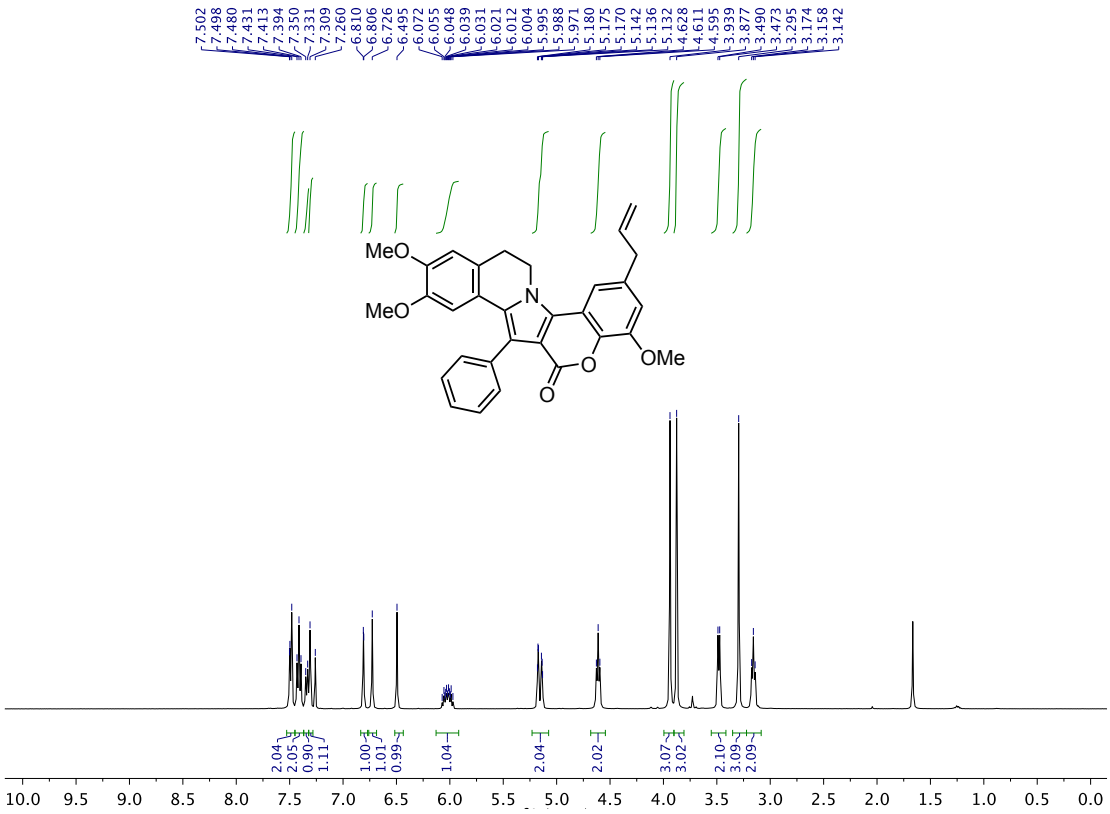
130.103
128.433
128.277
127.959
127.449
127.125
127.085
126.075
124.775
121.806
121.688
121.127
119.647
116.043
111.378
110.864
107.917
77.361
76.727
55.926
55.083
51.289
42.588
28.936
MeO
MeO
HO
N
O
MeO
Br
200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0

Compound 4: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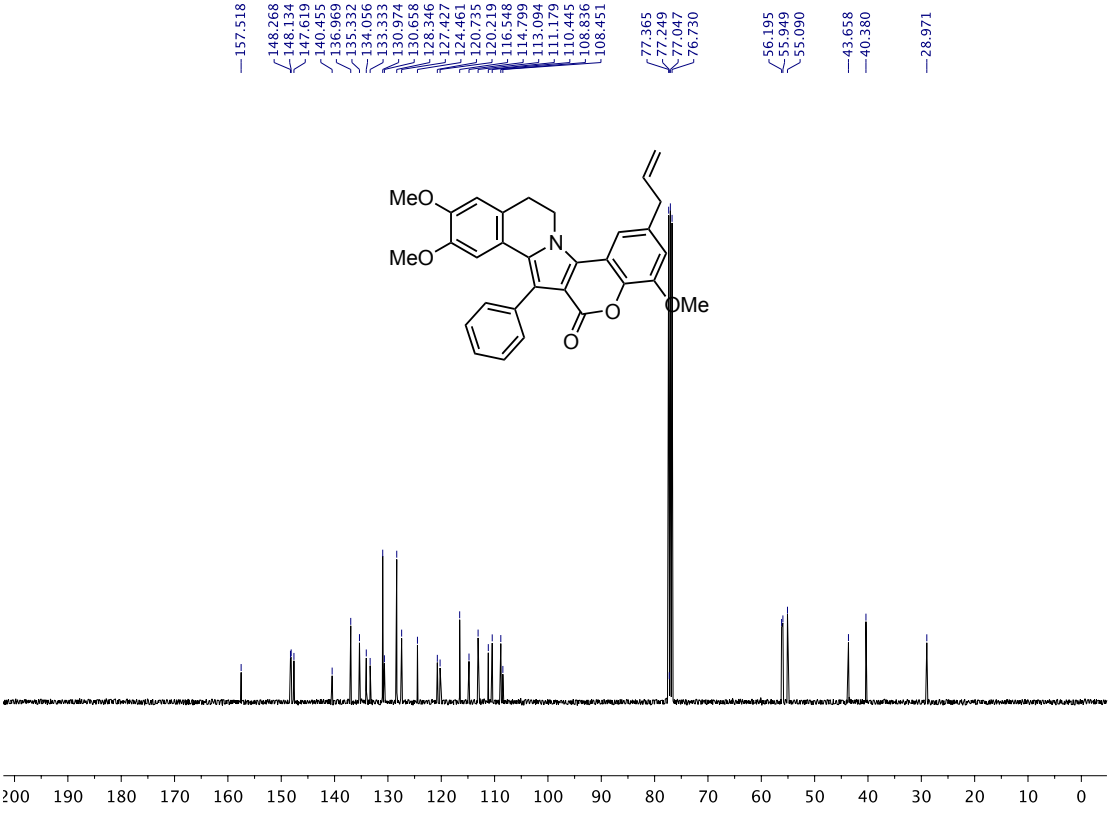
7.480
7.431
7.413
7.394
7.350
7.331
7.309
7.260
6.810
6.806
6.726
6.495
6.072
6.055
6.048
6.039
6.031
6.021
6.012
6.004
5.995
5.988
5.971
5.180
5.175
5.170
5.142
5.136
5.132
4.628
4.611
4.595
3.939
3.877
3.490
3.473
3.295
3.174
3.158
3.142
MeO
MeO
N
O
OMe
O
2.04
2.05
0.90
1.11
1.00
1.01
0.99
1.04
2.04
2.02
3.07
3.02
2.10
3.09
2.09
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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135.332
134.056
133.333
130.974
130.658
128.346
127.427
124.461
120.735
120.219
116.548
114.799
113.094
111.179
110.445
108.836
108.451
77.365
77.249
77.047
76.730
56.195
55.949
55.090
43.658
40.380
28.971
MeO
MeO
N
O
OMe
O
200
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0