Supporting Information

Substituted 4-oxo-crotonic acid derivatives as a new class of Protein kinase B (PknB) inhibitors: synthesis and SAR study

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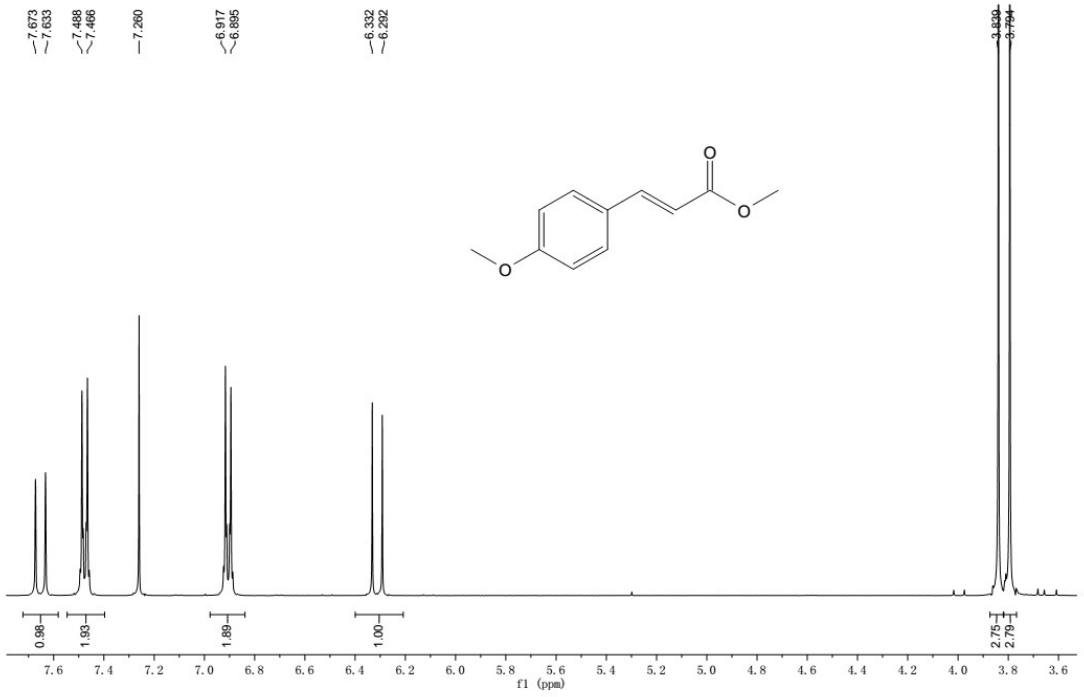
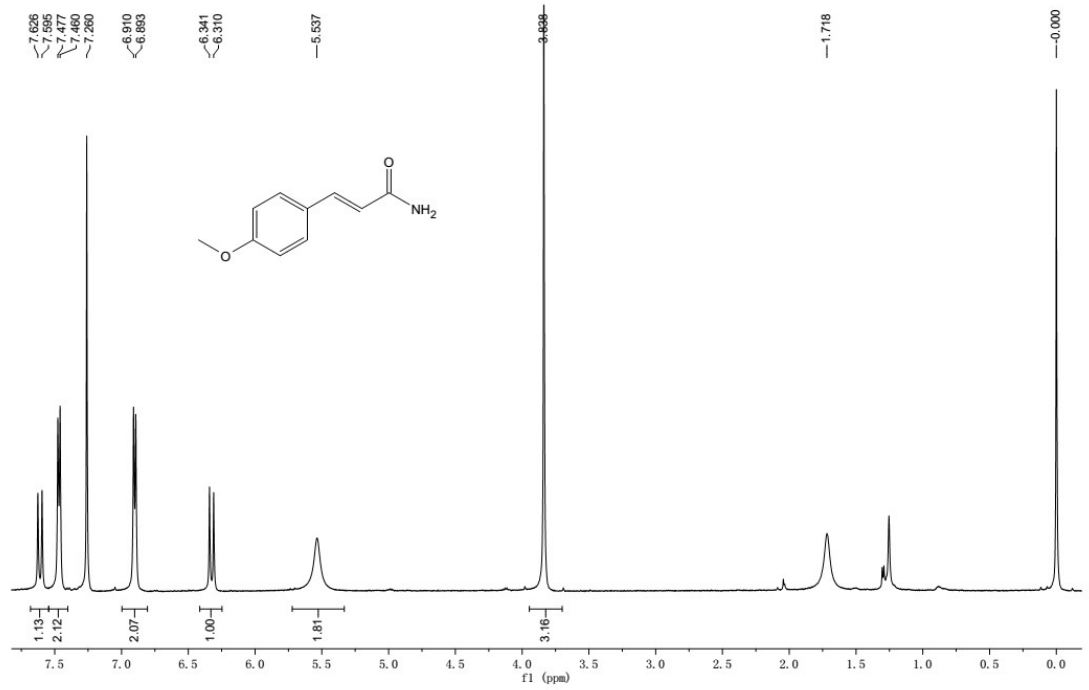
NMR spectra of synthesized compounds:

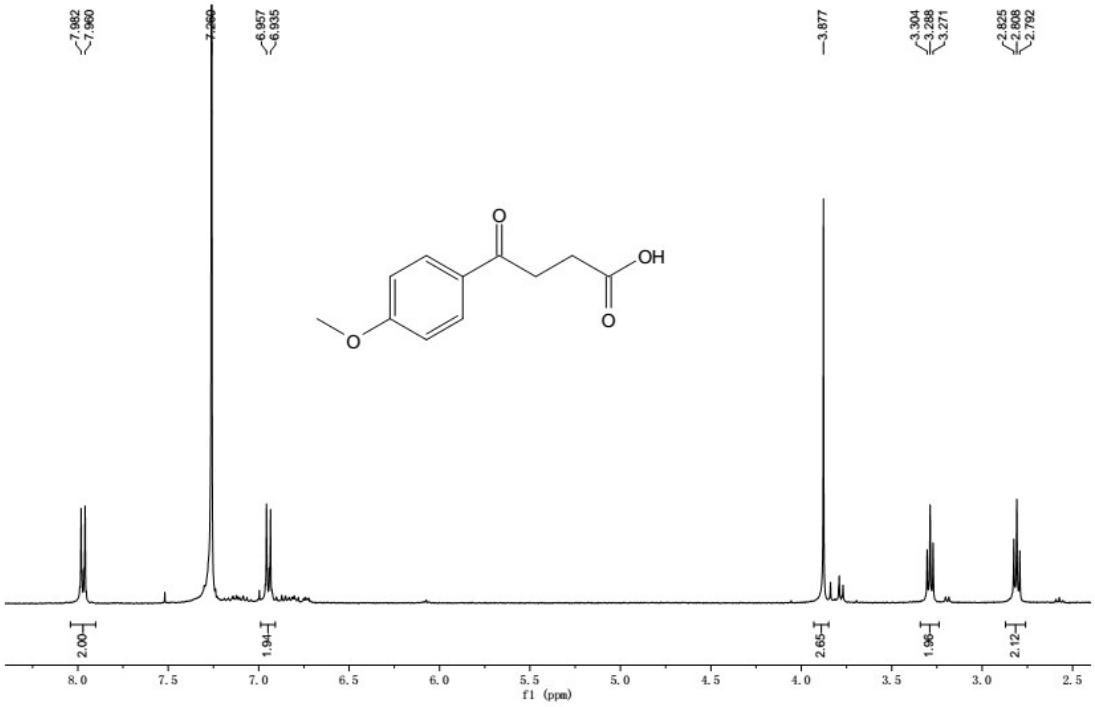
1b



1c


7.626
7.595
7.477
7.460
7.260
6.910
6.893
6.341
6.310
5.537
3.888
1.718
0.000
O
NH2
O
1.13
2.12
2.07
1.00
1.81
3.16
f1 (ppm)

2a


7.982
7.960
7.360
6.957
6.935
3.877
3.304
3.288
3.271
2.825
2.808
2.792
O
OH
O
O
2.00
1.94
2.65
1.96
2.12
f1 (ppm)

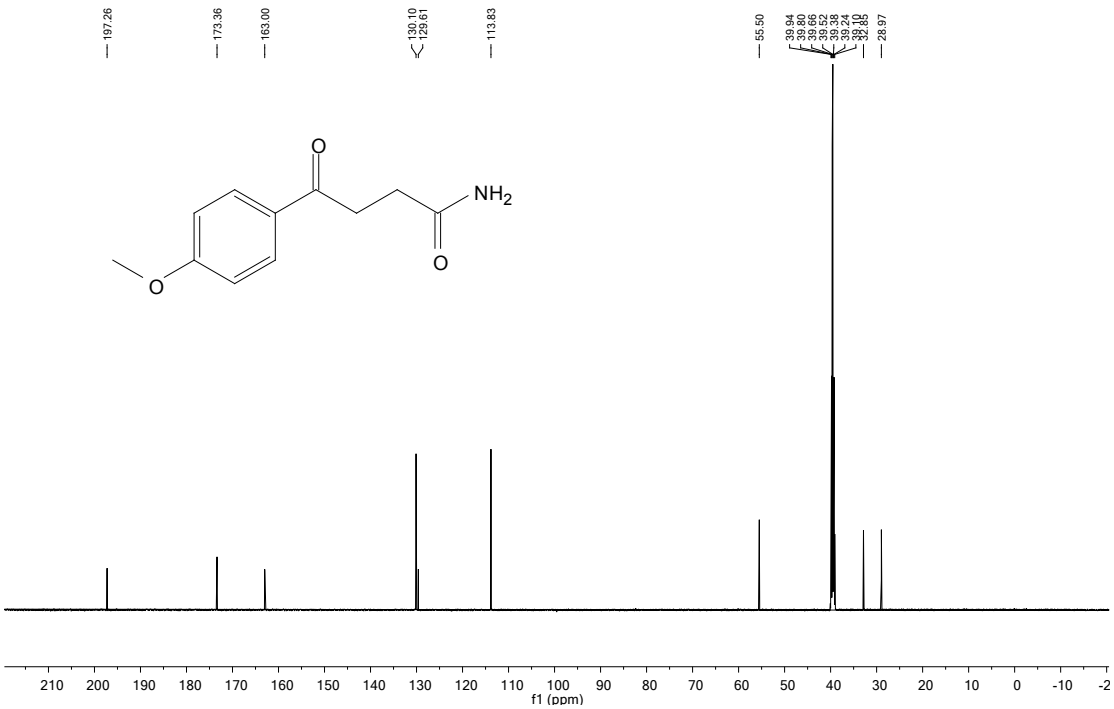
2b


7.979
7.956
7.260
6.950
6.927
3.872
3.706
3.292
3.276
3.259
2.771
2.755
2.738
1.98
2.00
3.00
2.96
2.04
2.04
f1 (ppm)

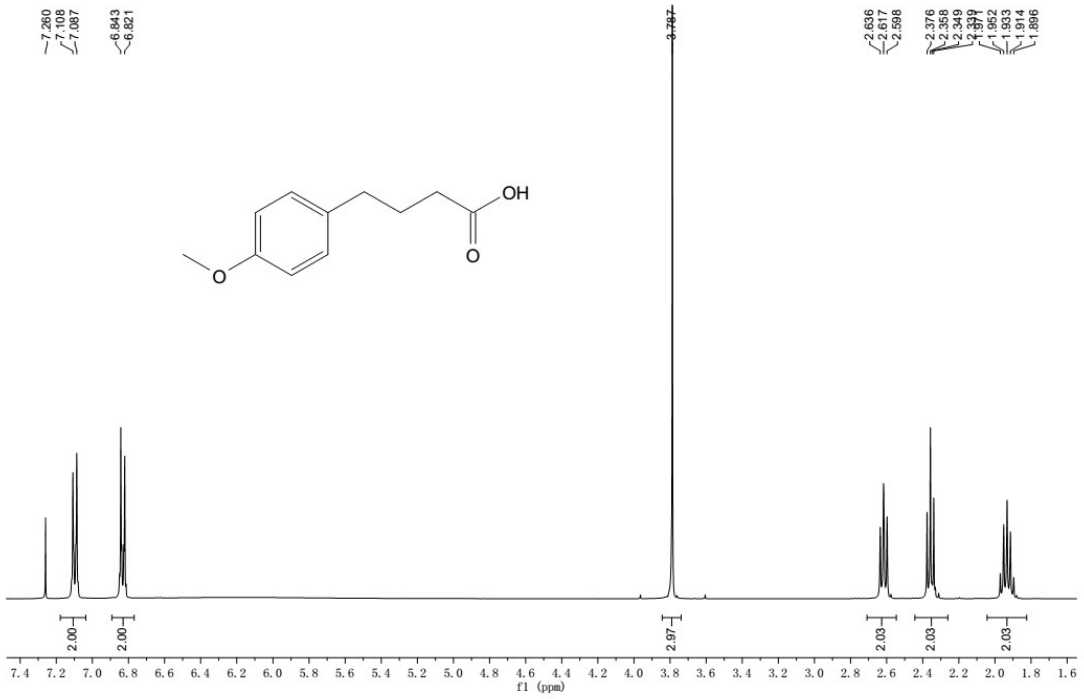
2c


7.945
7.927
7.304
7.035
7.018
6.720
3.830
3.300
3.288
3.153
3.140
3.127
2.494
2.490
2.487
2.428
2.415
2.402
NH2
1.99
0.90
2.00
0.87
3.00
1.99
2.00

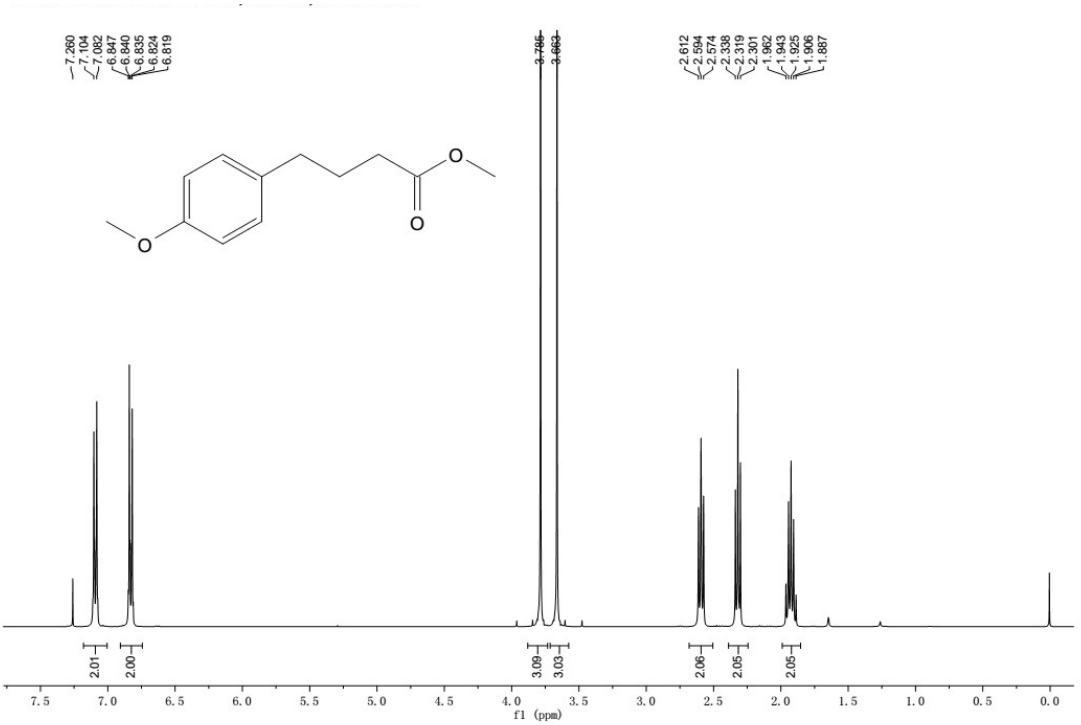
BRUKER AVANCE III 13C-NMR 2c IN DMSO-d6



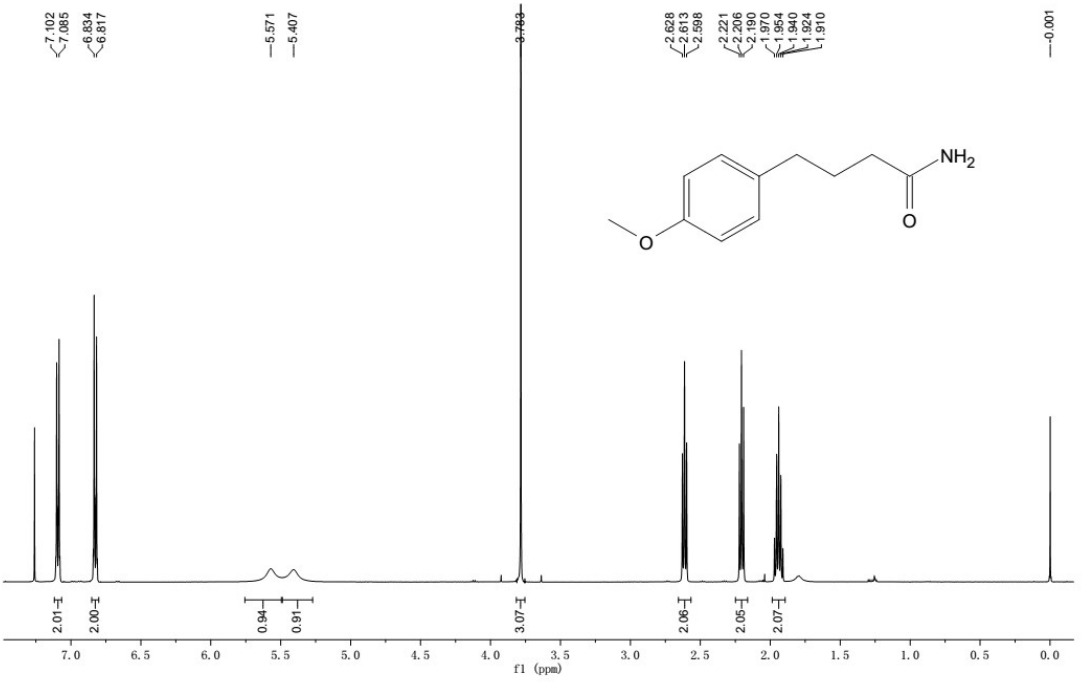
3a



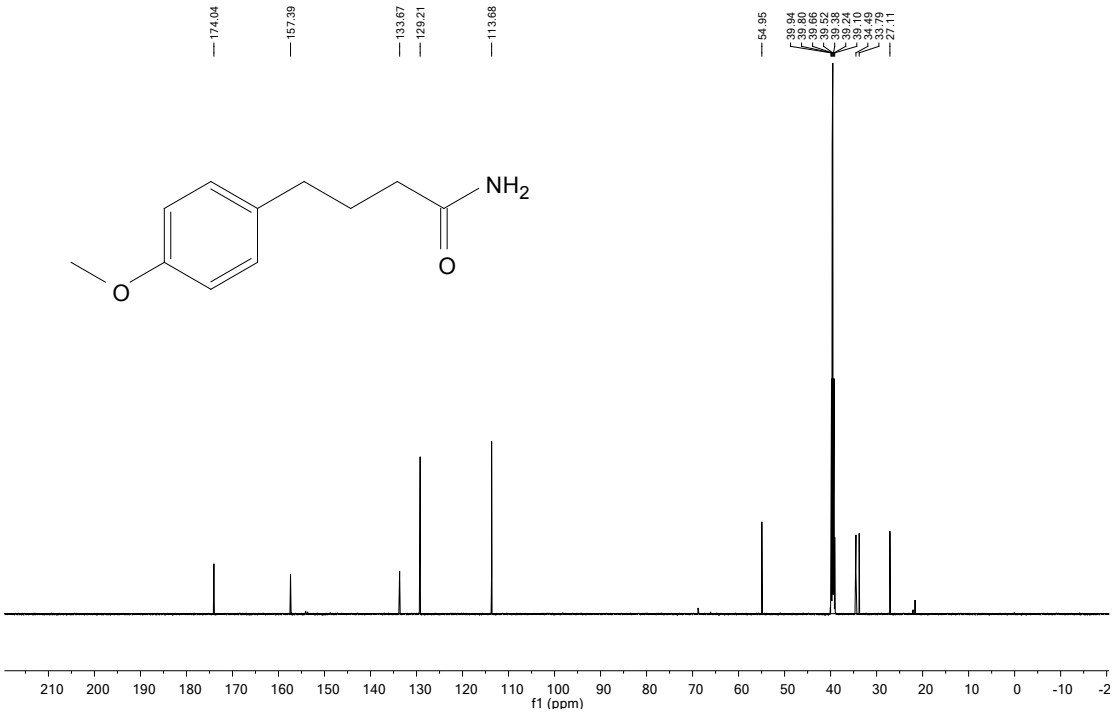
3b


7.260
7.104
7.082
6.847
6.840
6.835
6.824
6.819
3.705
3.663
2.612
2.594
2.574
2.338
2.319
2.301
1.962
1.943
1.925
1.906
1.887
O
O
O
2.01
2.00
3.09
3.03
2.06
2.05
2.05
f1 (ppm)

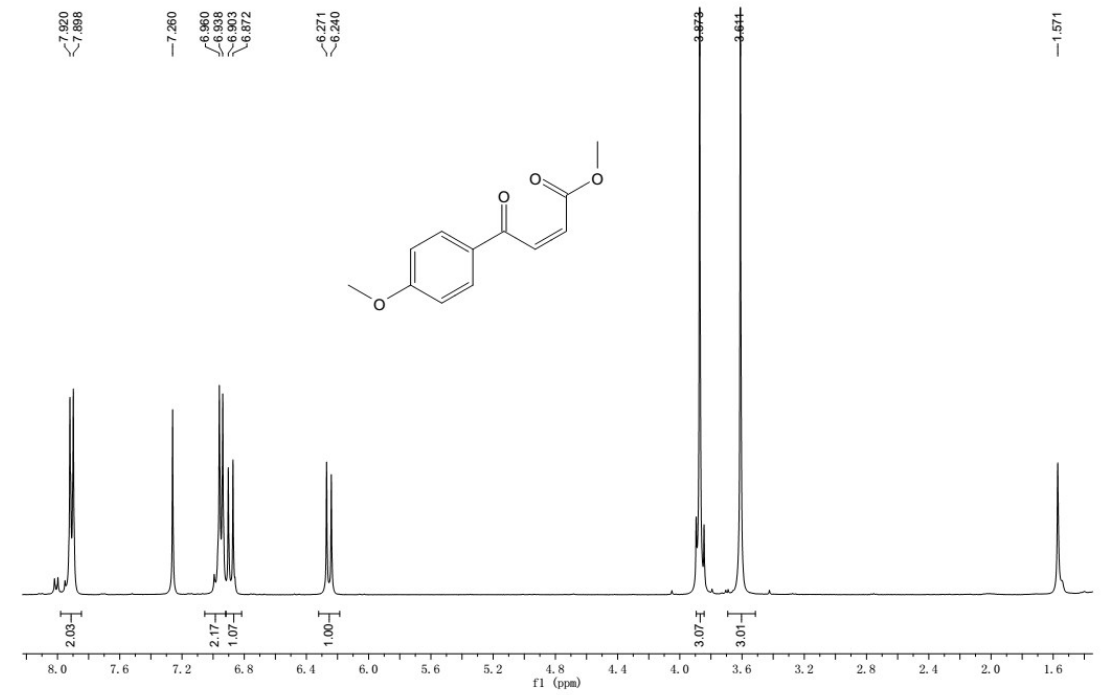
3c


7.102
7.085
6.834
6.817
5.571
5.407
3.783
2.628
2.613
2.598
2.221
2.206
2.190
1.970
1.954
1.940
1.924
1.910
0.001
NH2
O
O
2.01
2.00
0.94
0.91
3.07
2.06
2.05
2.07
f1 (ppm)

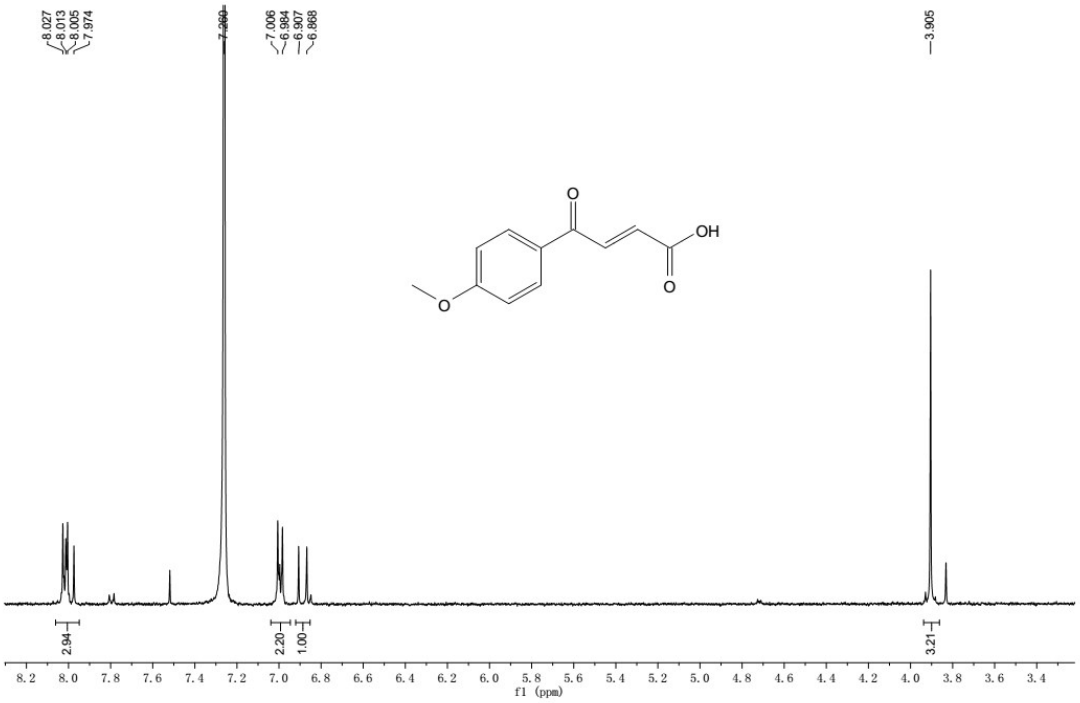
BRUKER AVANCE III 13C-NMR 3c IN DMSO-d6



4



7a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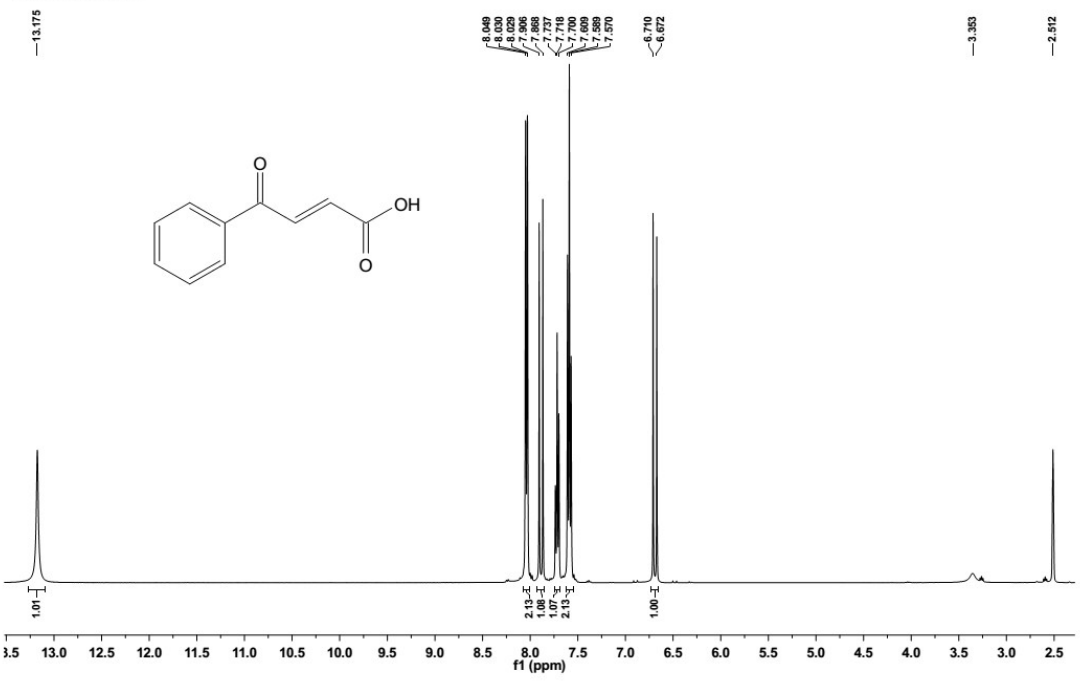
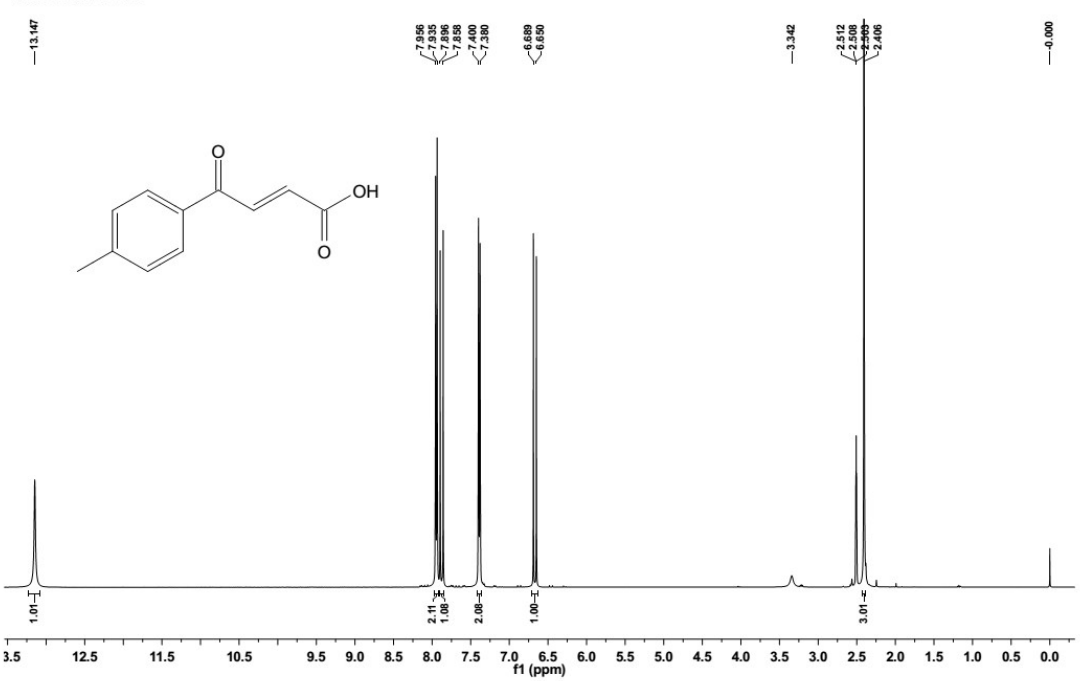
8.013
8.005
7.974
7.260
7.006
6.984
6.907
6.868
3.905
OH
O
O
O
2.94
2.20
1.00
3.21
f1 (ppm)

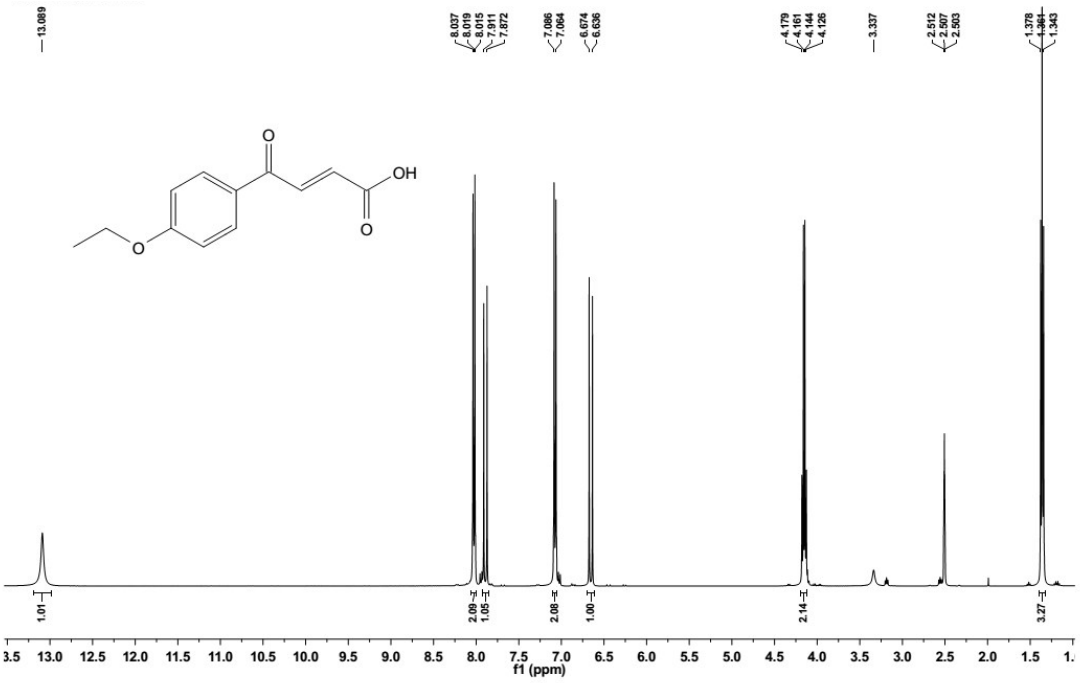
7b


13.175
8.049
8.030
8.029
7.906
7.868
7.737
7.716
7.700
7.699
7.589
7.570
6.710
6.672
3.353
2.512
OH
O
O
1.01
2.13
1.08
1.07
2.13
1.00
f1 (ppm)

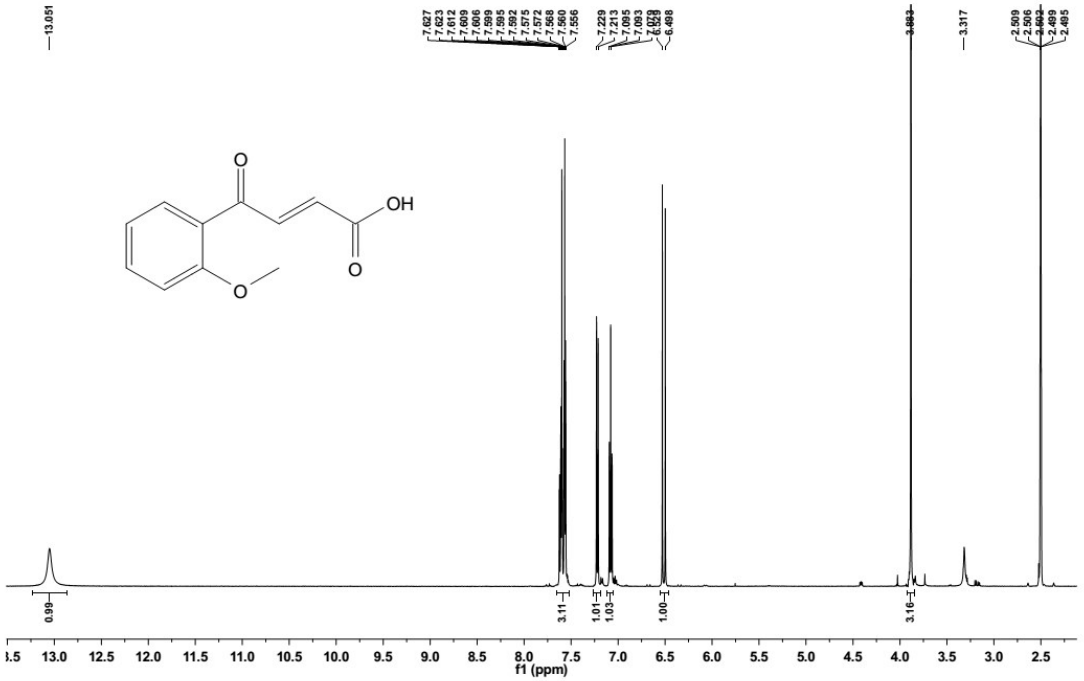
7c


13.147
7.956
7.935
7.898
7.858
7.400
7.380
6.689
6.650
3.342
2.512
2.508
2.503
2.406
0.000
O
OH
O
1.01
2.11
1.08
2.08
1.00
3.01
f1 (ppm)

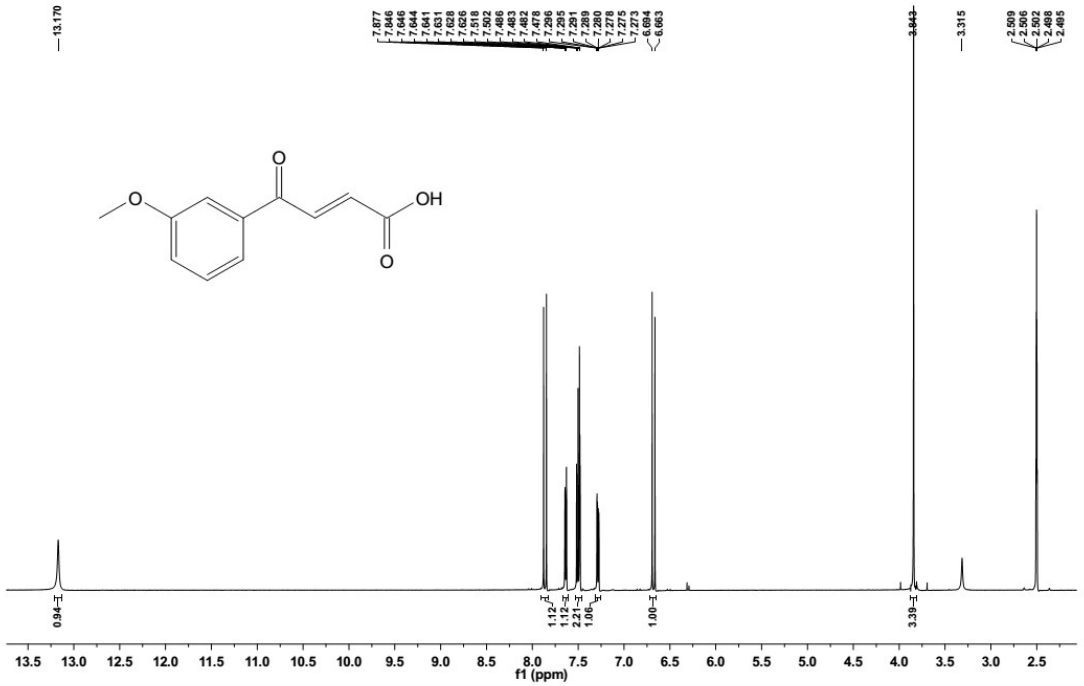
7d


13.089
8.037
8.019
8.015
7.911
7.872
7.086
7.064
6.674
6.636
4.179
4.161
4.144
4.126
3.337
2.512
2.507
2.503
1.378
1.361
1.343
O
OH
O
O
1.01
2.09
1.05
2.08
1.00
2.14
3.27
f1 (ppm)

7e


13.051
7.627
7.623
7.612
7.609
7.598
7.595
7.592
7.575
7.572
7.568
7.560
7.556
7.229
7.211
7.095
7.093
6.498
3.883
3.317
2.509
2.506
2.499
2.495
O
OH
O
O
0.99
3.11
1.01
1.03
1.00
3.16
f1 (ppm)

7f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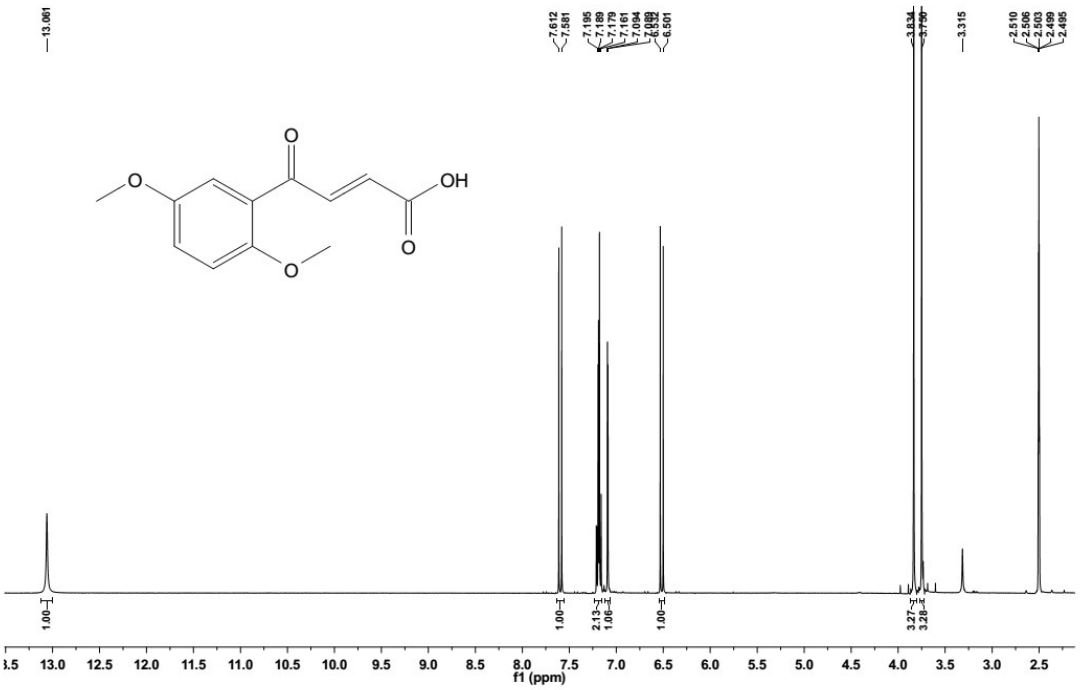
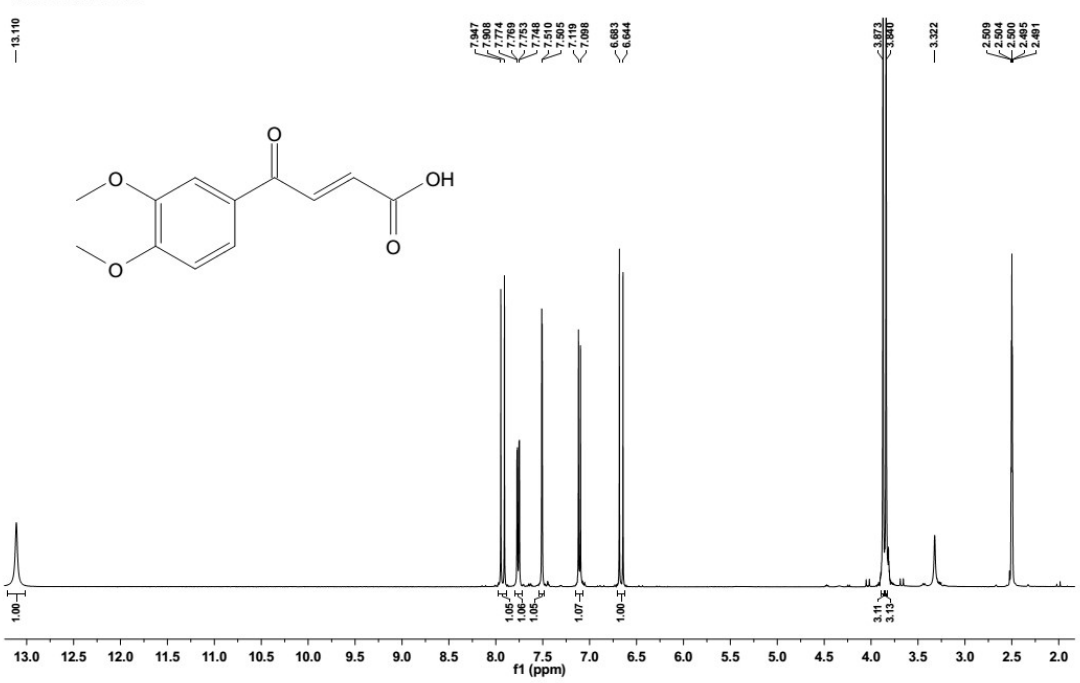
7.877
7.846
7.646
7.644
7.641
7.631
7.628
7.516
7.502
7.486
7.483
7.482
7.478
7.296
7.295
7.291
7.289
7.280
7.278
7.275
7.273
6.684
6.663
3.843
3.315
2.509
2.506
2.502
2.499
2.495
O
OH
O
0.94
1.12
1.12
2.21
1.06
1.00
3.39
f1 (ppm)

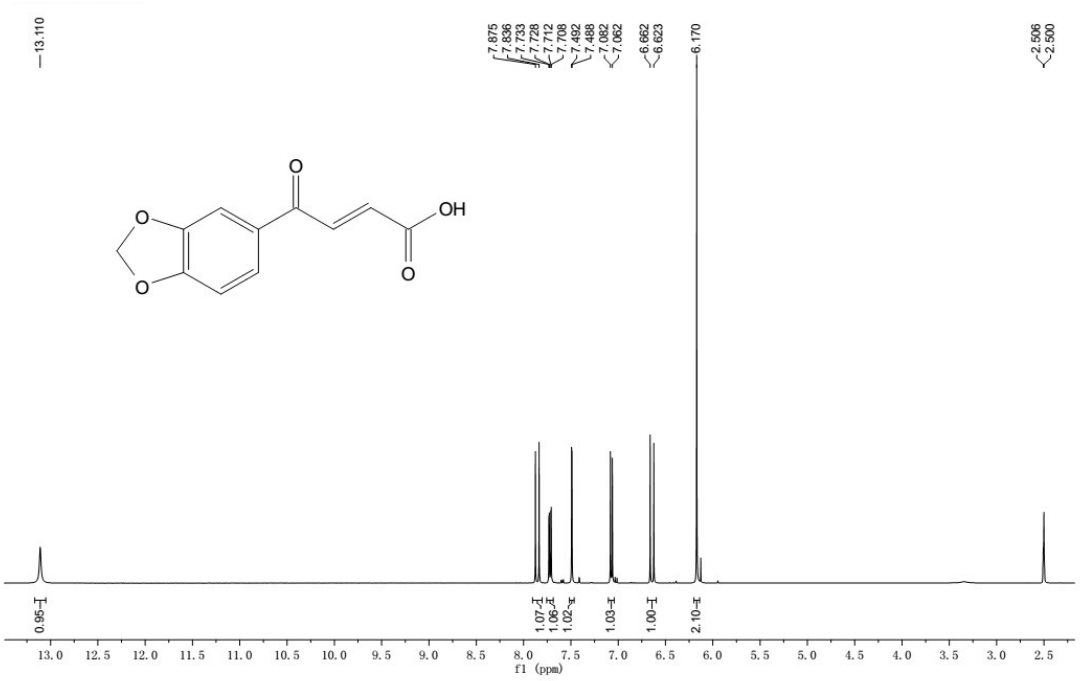
7g


13.061
7.612
7.581
7.195
7.189
7.179
7.161
7.094
6.501
3.834
3.750
3.315
2.510
2.506
2.503
2.499
2.495
O
OH
O
O
O
1.00
1.00
2.13
1.06
1.00
3.27
3.28
f1 (ppm)

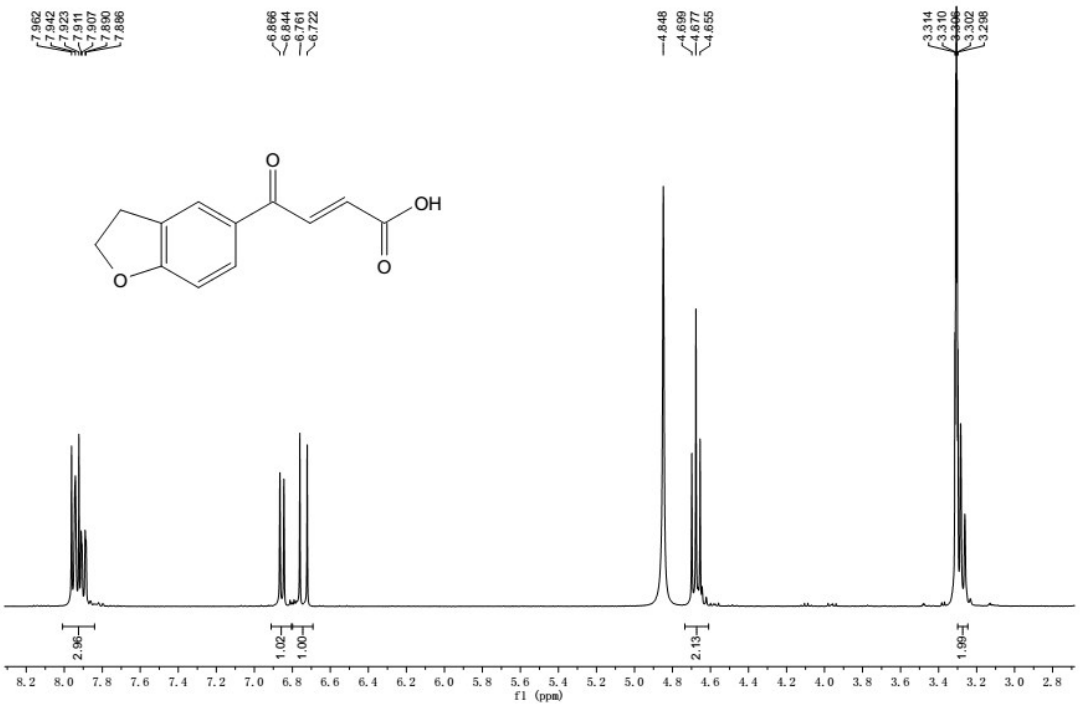
7h


13.110
7.847
7.808
7.774
7.769
7.753
7.748
7.510
7.505
7.119
7.098
6.683
6.644
3.873
3.840
3.322
2.509
2.504
2.500
2.495
2.491
O
OH
O
O
O
1.00
1.05
1.06
1.05
1.07
1.00
3.11
3.13
f1 (ppm)

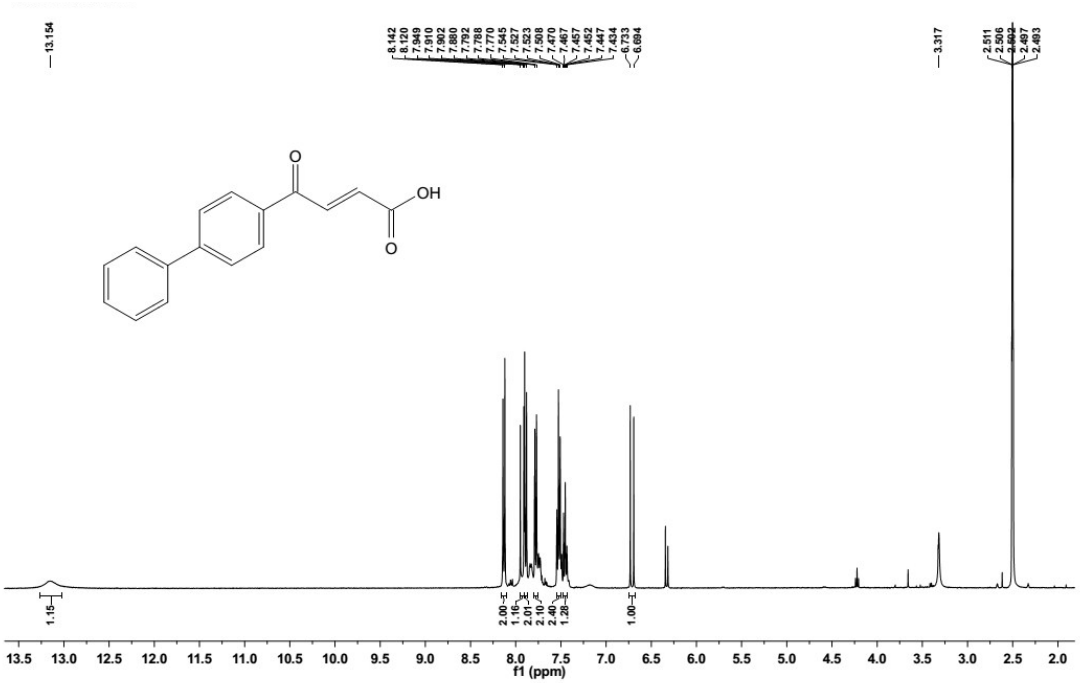
7i


13.110
7.875
7.836
7.733
7.728
7.712
7.708
7.492
7.488
7.082
7.062
6.662
6.623
6.170
2.506
2.500
O
O
O
OH
O
0.96
1.07
1.06
1.02
1.03
1.00
2.10
f1 (ppm)

7j


7.962
7.942
7.923
7.911
7.907
7.890
7.886
6.866
6.844
6.761
6.722
4.848
4.699
4.677
4.655
3.314
3.310
3.306
3.302
3.298
O
O
OH
O
2.96
1.02
1.00
2.13
1.99
f1 (ppm)

7k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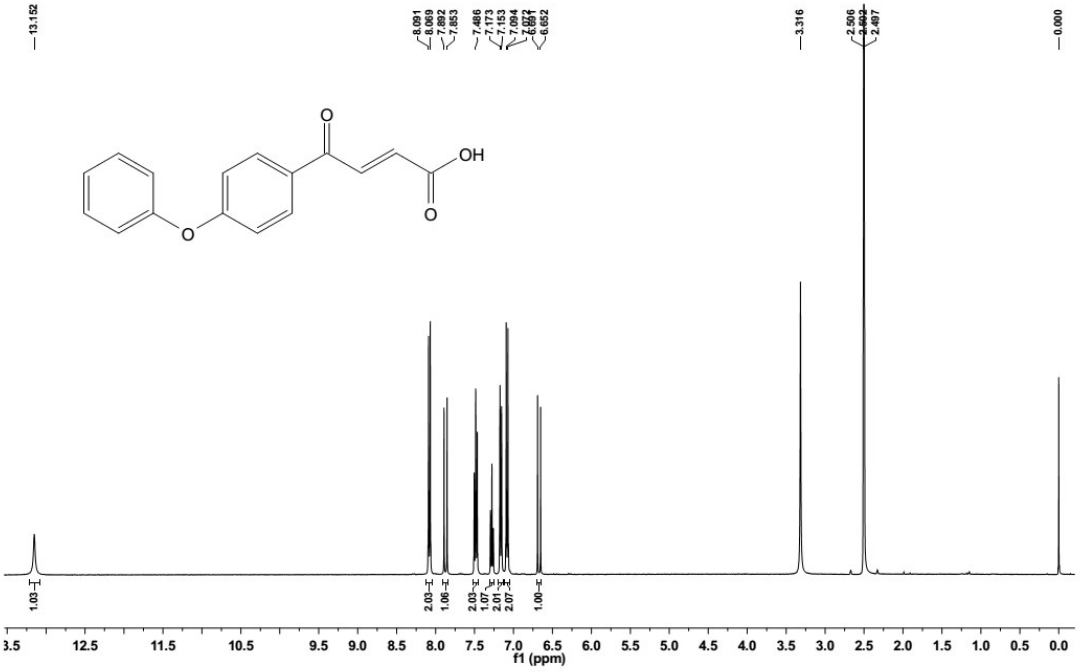
8.142
8.070
8.049
7.910
7.902
7.880
7.792
7.788
7.770
7.545
7.537
7.523
7.508
7.470
7.467
7.457
7.452
7.441
7.434
6.733
6.694
3.317
2.511
2.506
2.497
2.493
O
OH
O
1.15
2.00
1.16
2.01
2.10
2.40
1.28
1.00
13.5 13.0 12.5 12.0 11.5 11.0 10.5 10.0 9.5 9.0 8.5 8.0 7.5 7.0 6.5 6.0 5.5 5.0 4.5 4.0 3.5 3.0 2.5 2.0
f1 (ppm)

7l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8.069
7.892
7.853
7.486
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7.155
7.094
6.652
3.316
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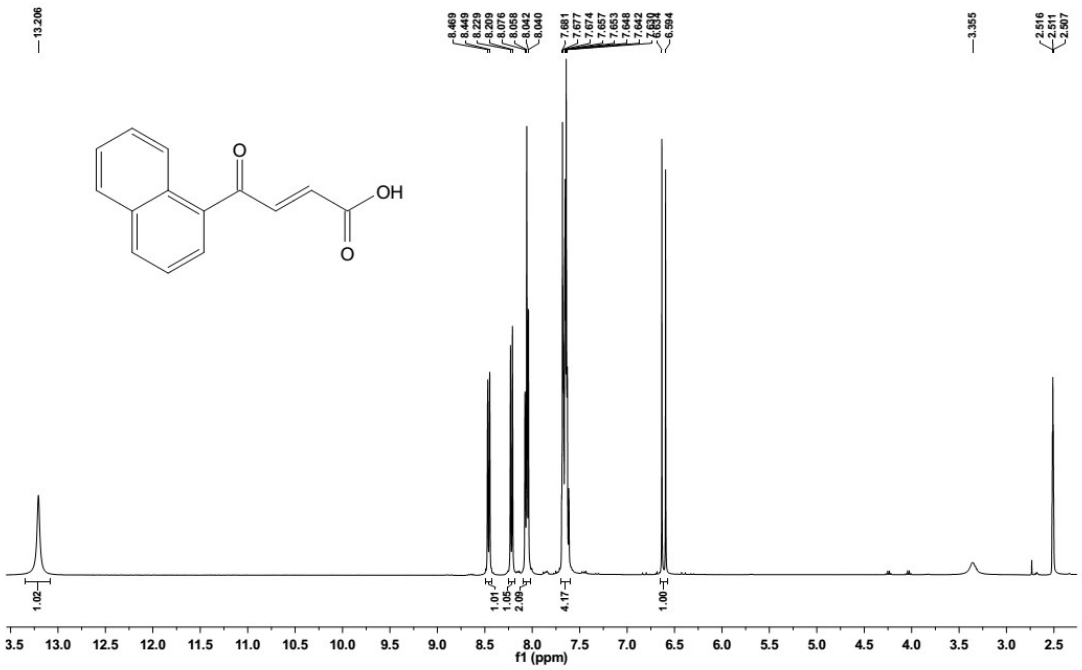
2.497
0.000
O
OH
O
O
1.03
2.03
1.06
2.03
1.07
2.01
2.07
1.00
3.5 12.5 11.5 10.5 9.5 9.0 8.5 8.0 7.5 7.0 6.5 6.0 5.5 5.0 4.5 4.0 3.5 3.0 2.5 2.0 1.5 1.0 0.5 0.0
f1 (ppm)

7m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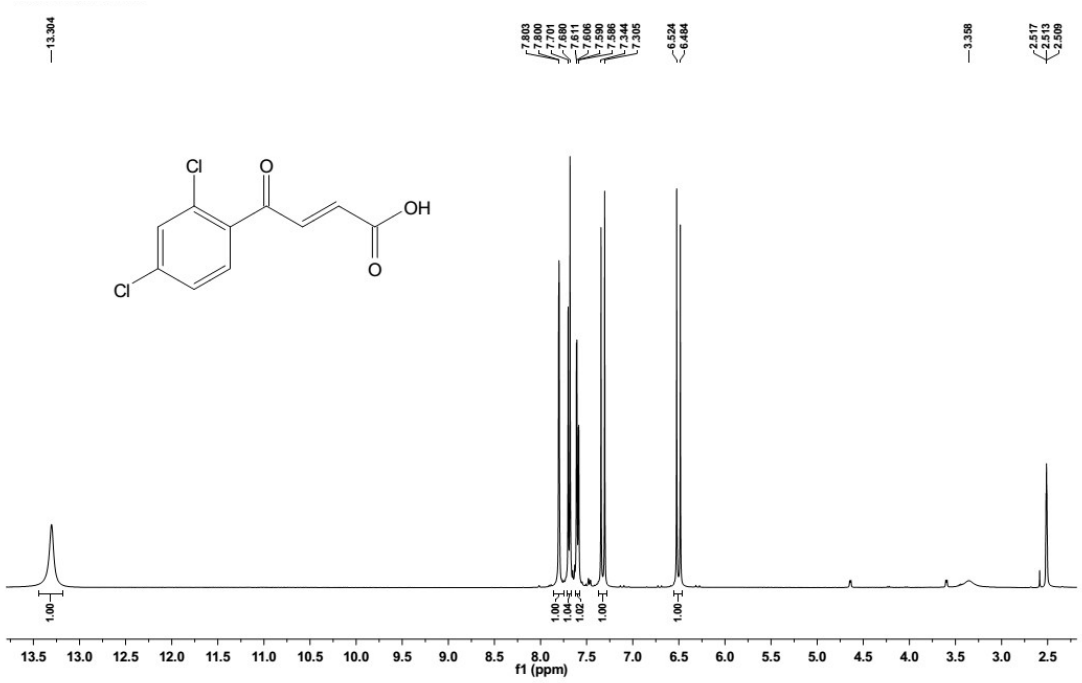
8.229
8.209
8.076
8.058
8.042
8.040
7.681
7.677
7.674
7.657
7.653
7.648
7.642
7.638
6.594
3.355
2.516
2.511
2.507
O
OH
O
1.02
1.01
1.05
2.09
4.17
1.00
f1 (ppm)

7n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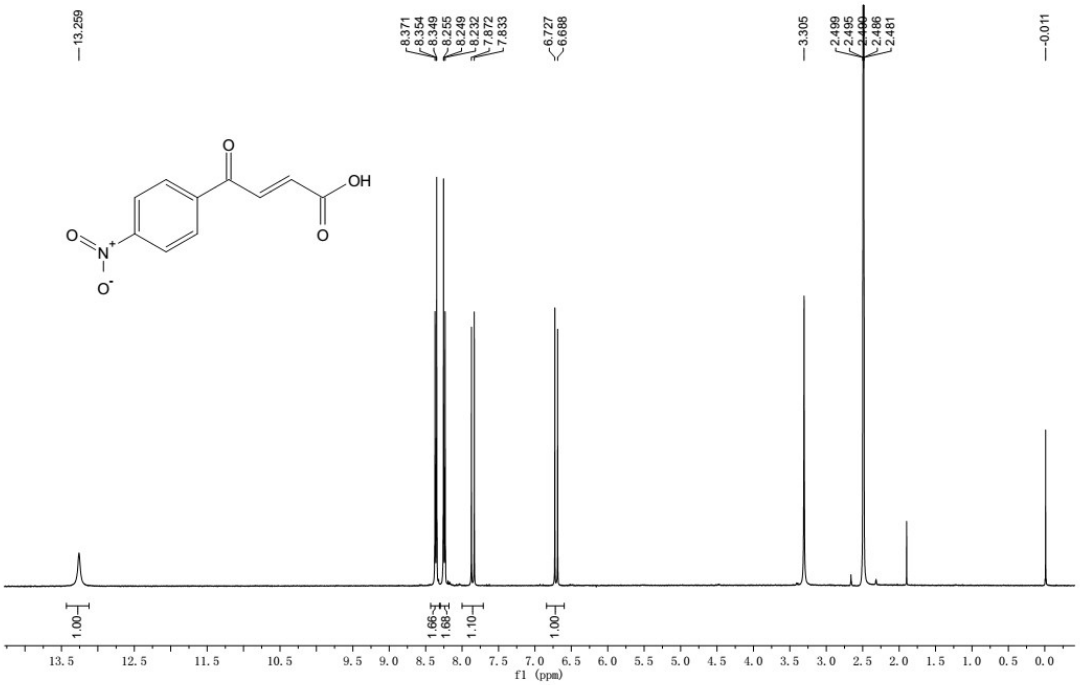
7.800
7.701
7.680
7.611
7.606
7.590
7.586
7.344
7.305
6.524
6.484
3.358
2.517
2.513
2.509
Cl
O
OH
O
Cl
1.00
1.00
1.04
1.02
1.00
1.00
f1 (ppm)

7o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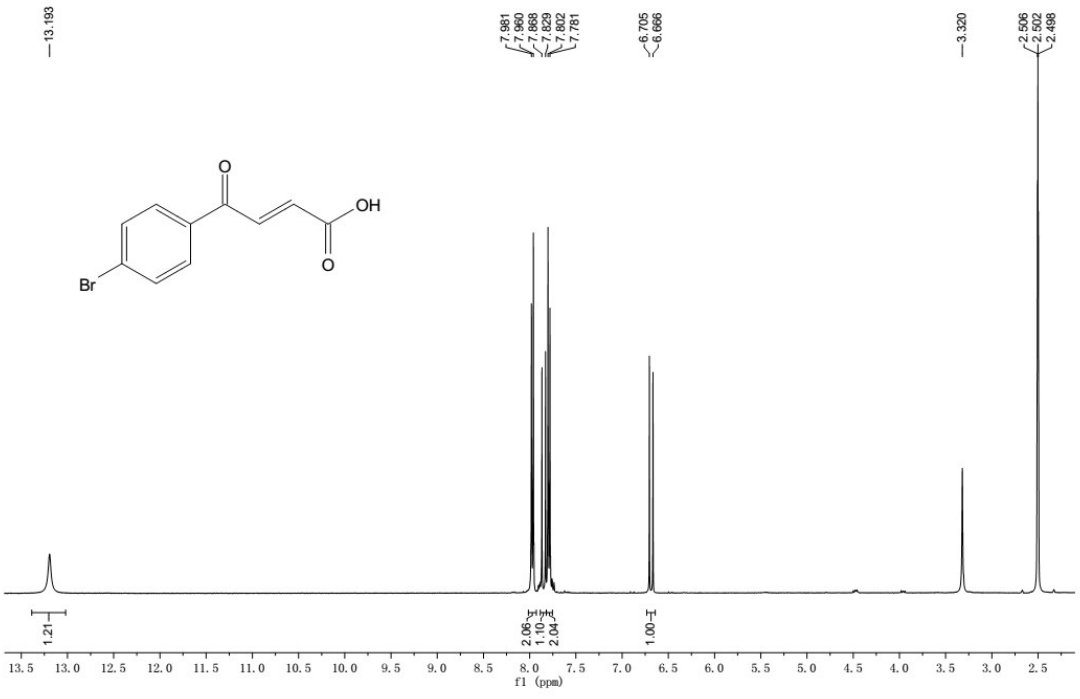
8.349
8.255
8.249
8.232
7.872
7.833
6.727
6.688
3.305
2.499
2.495
2.490
2.486
2.481
-0.011
OH
O
O
O
N
O
1.00
1.66
1.68
1.10
1.00
f1 (ppm)

7p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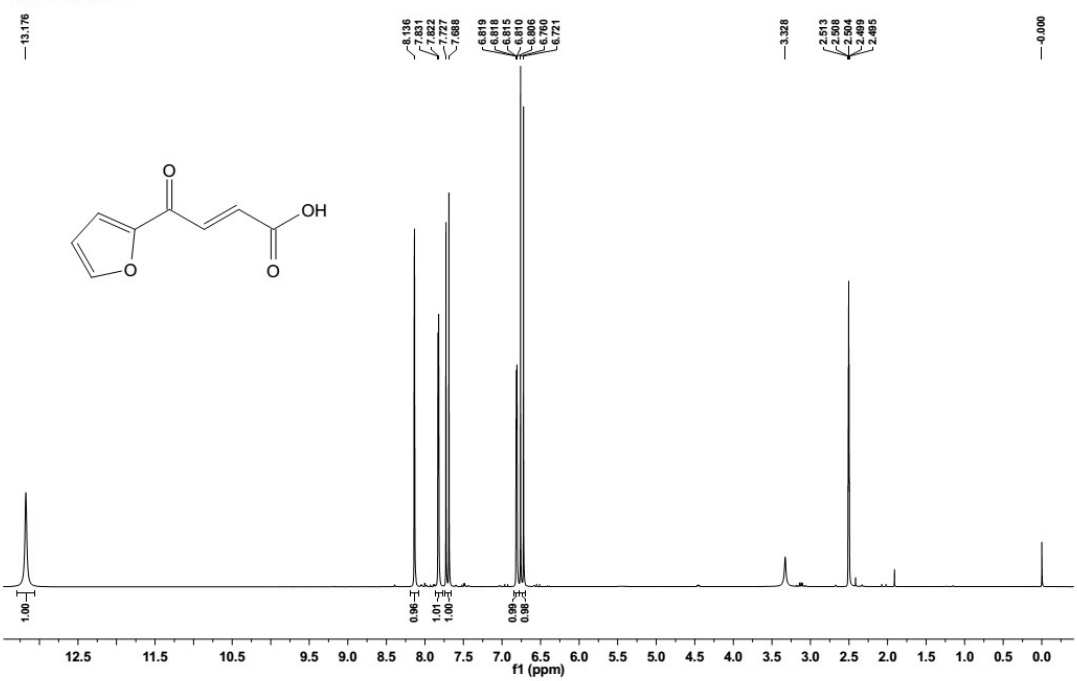
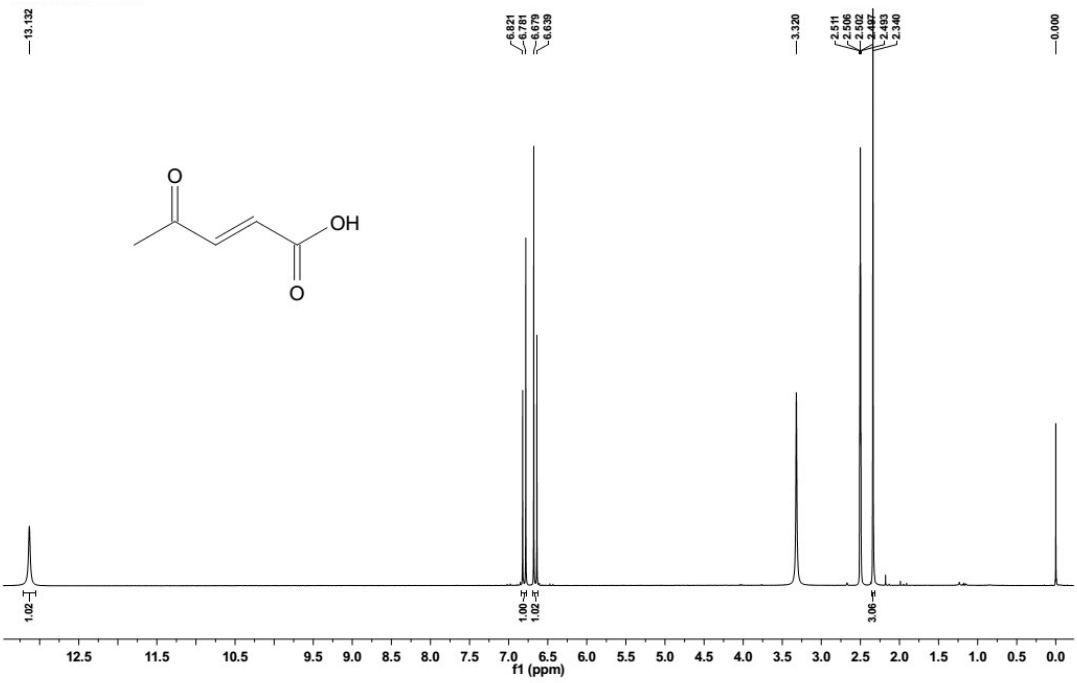
7.868
7.829
7.802
7.781
6.705
6.666
3.320
2.506
2.502
2.498
OH
O
O
Br
1.21
2.06
1.10
2.04
1.00
f1 (ppm)

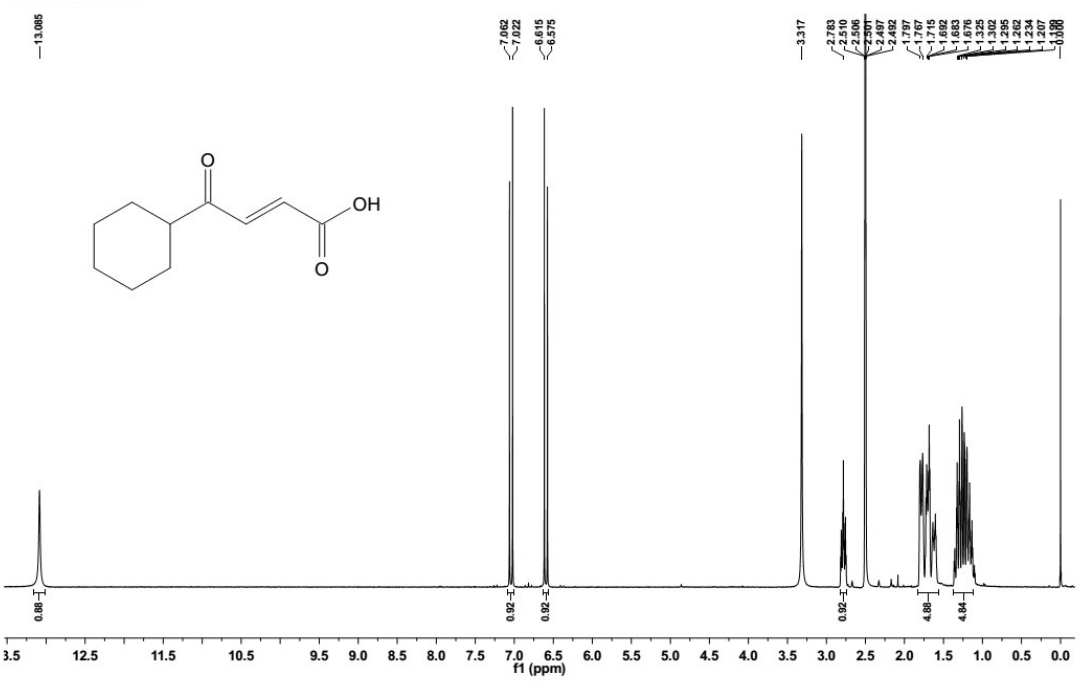
7q


13.176
8.136
7.831
7.822
7.727
7.688
6.819
6.818
6.815
6.810
6.806
6.800
6.721
3.328
2.513
2.508
2.504
2.499
2.495
0.000
OH
O
O
O
1.00
0.96
1.01
1.00
0.99
0.98
f1 (ppm)

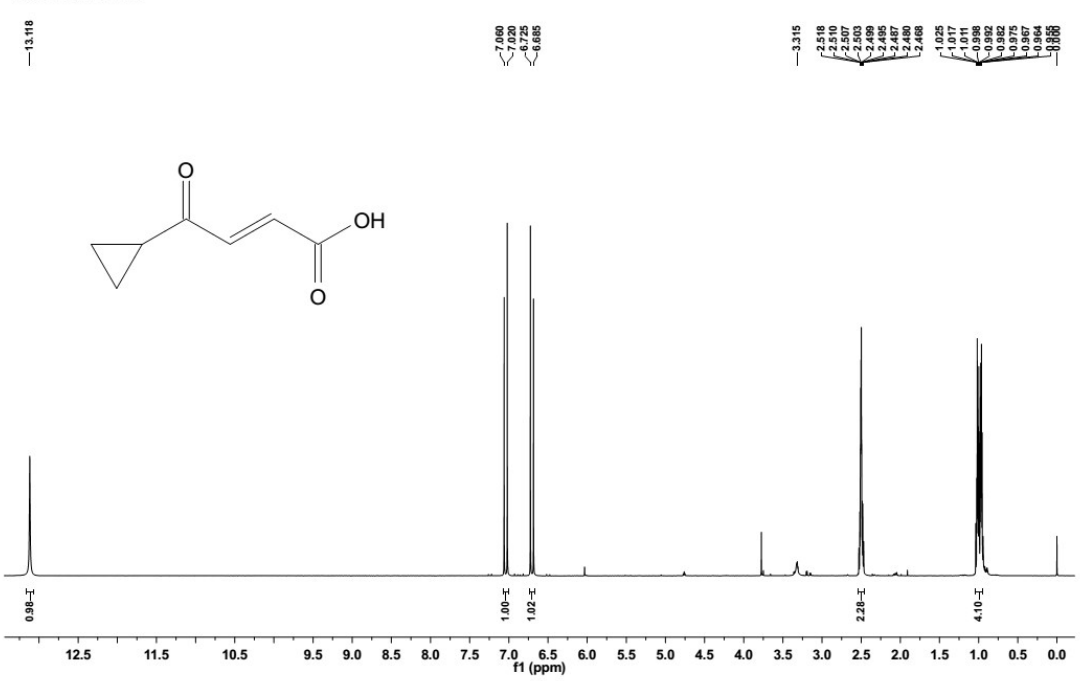
7r


13.132
6.821
6.781
6.679
6.639
3.320
2.511
2.506
2.502
2.497
2.493
2.340
0.000
OH
O
O
1.02
1.00
1.02
3.06
f1 (ppm)

7s


13.085
7.062
7.022
6.615
6.575
3.317
2.783
2.510
2.506
2.501
2.497
2.492
1.797
1.767
1.715
1.692
1.683
1.676
1.325
1.302
1.295
1.262
1.234
1.207
0.88
0.92
0.92
0.92
4.88
4.84
OH
O
O
f1 (ppm)

7t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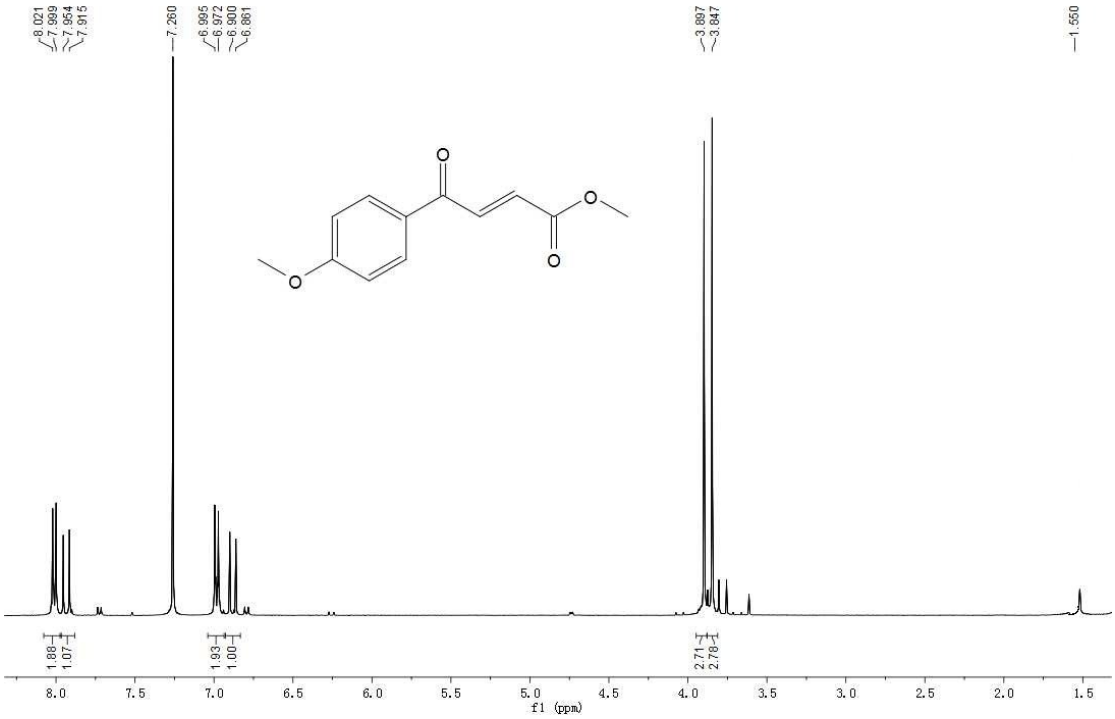
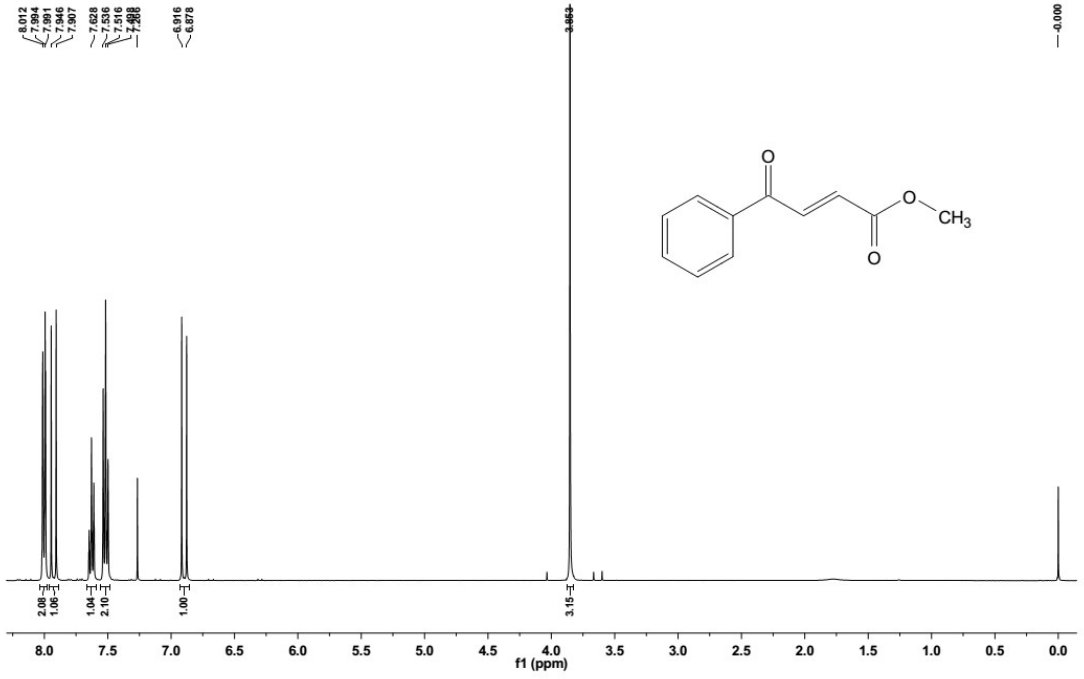
7.060
7.020
6.725
6.685
3.315
2.518
2.510
2.507
2.503
2.499
2.495
2.491
2.487
2.480
2.468
1.025
1.017
1.011
0.998
0.992
0.982
0.975
0.967
0.964
0.98
1.00
1.02
2.28
4.10
OH
O
O
f1 (ppm)

8a


8.021
7.999
7.954
7.915
7.260
6.995
6.972
6.900
6.881
3.897
3.847
1.550
1.88
1.07
1.93
1.00
2.71
2.78
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
f1 (ppm)

8b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7.994
7.991
7.946
7.907
7.628
7.536
7.516
6.916
6.878
3.853
-0.000
2.08
1.06
1.04
2.10
1.00
3.15
8.0
7.5
7.0
6.5
6.0
5.5
5.0
4.5
4.0
3.5
3.0
2.5
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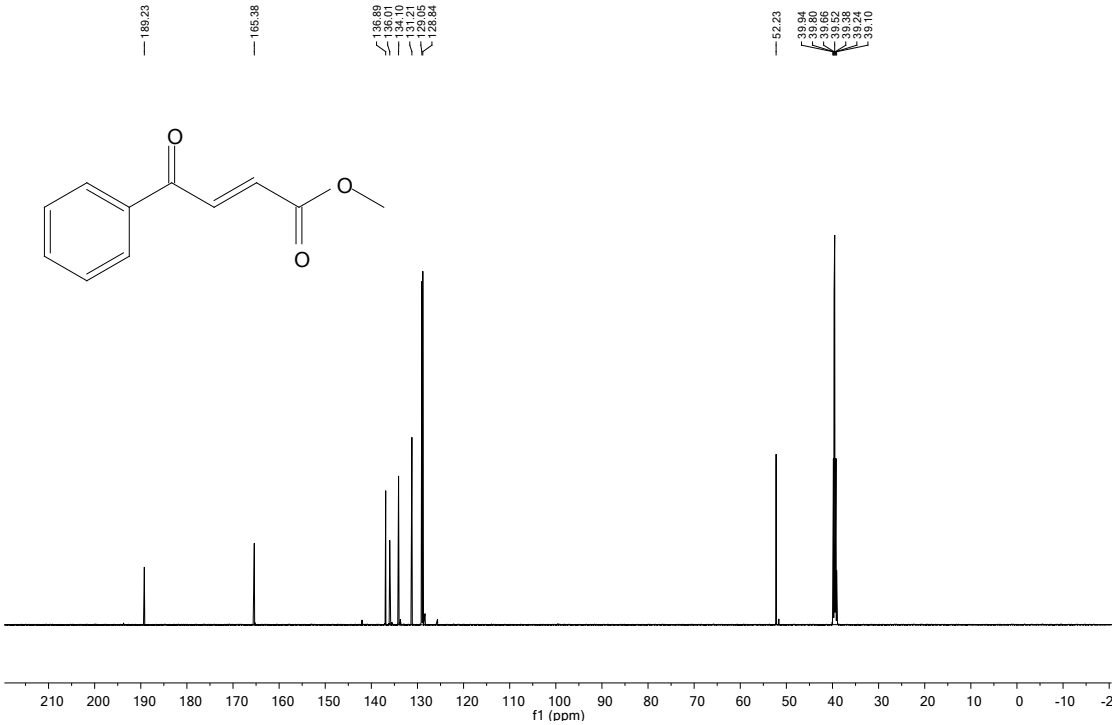
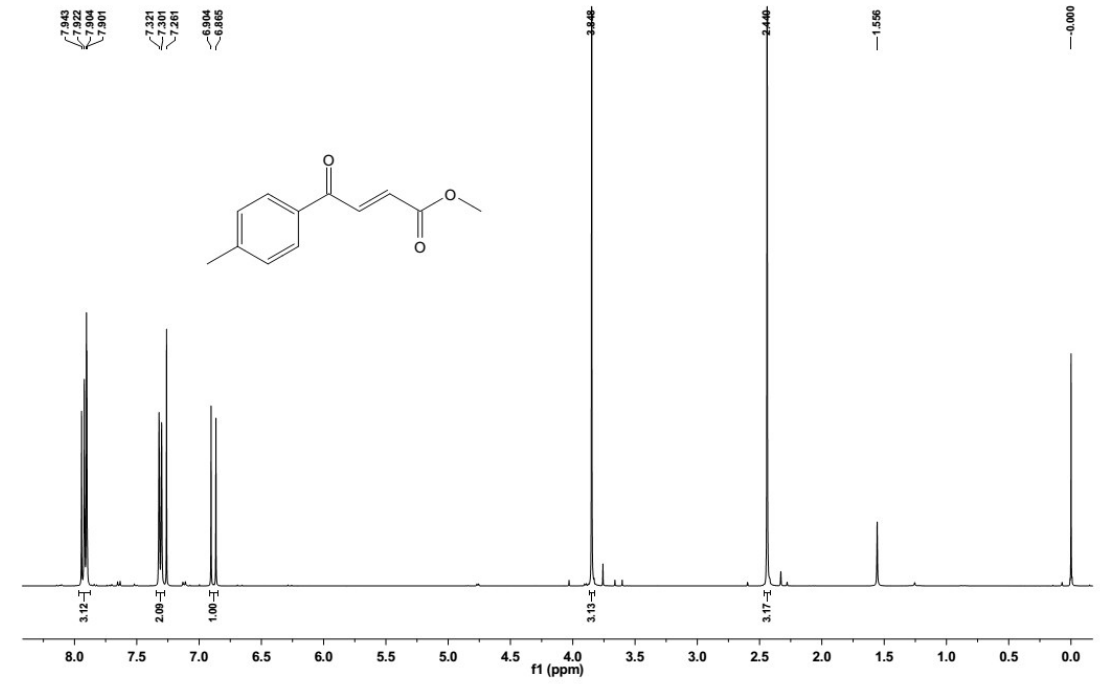
1.5
1.0
0.5
0.0
f1 (ppm)

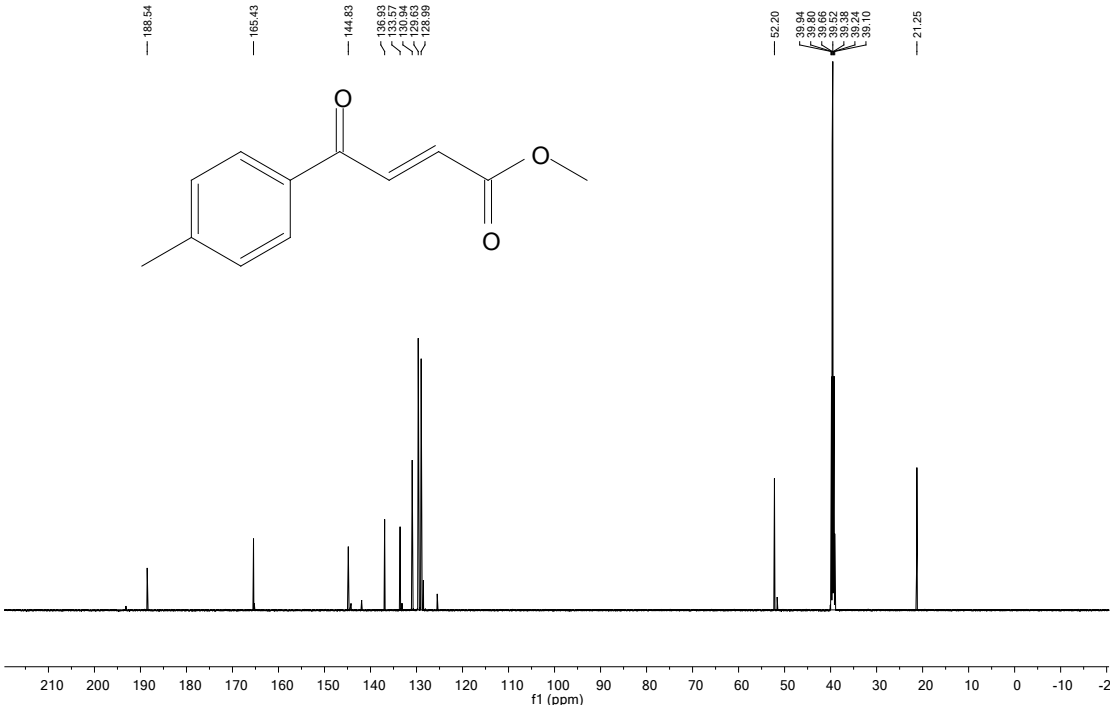
BRUKER AVANCE III 13C-NMR 8b IN DMSO-d6



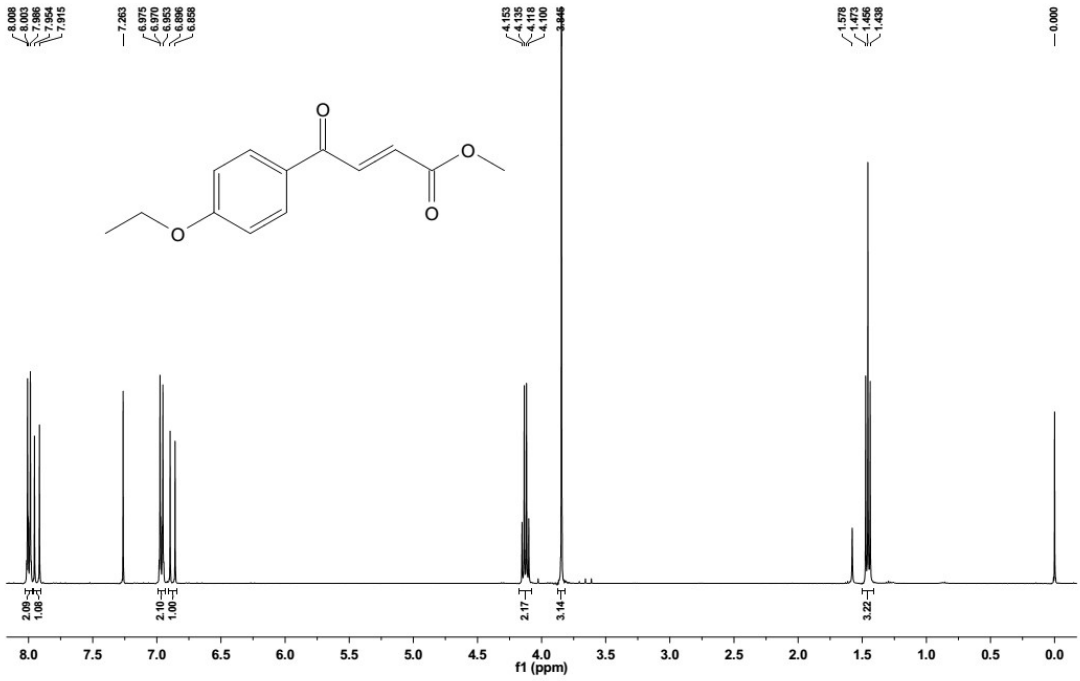
8c

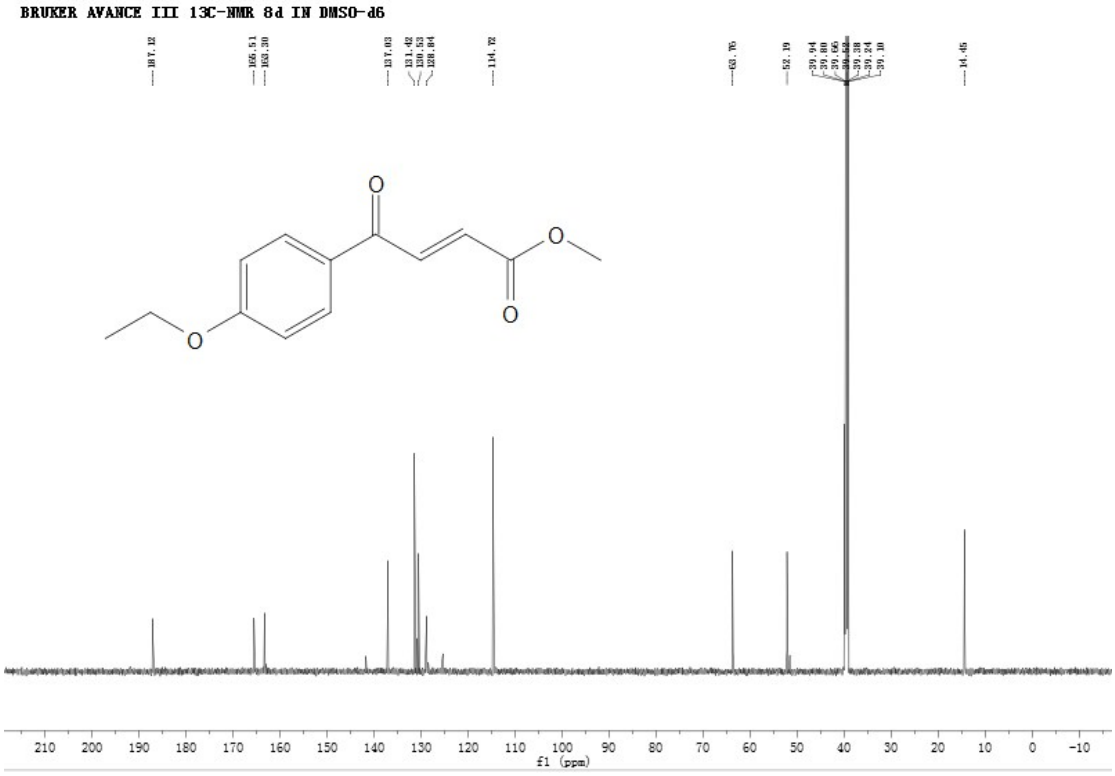


BRUKER AVANCE III 13C-NMR 8c IN DMSO-d6



8d



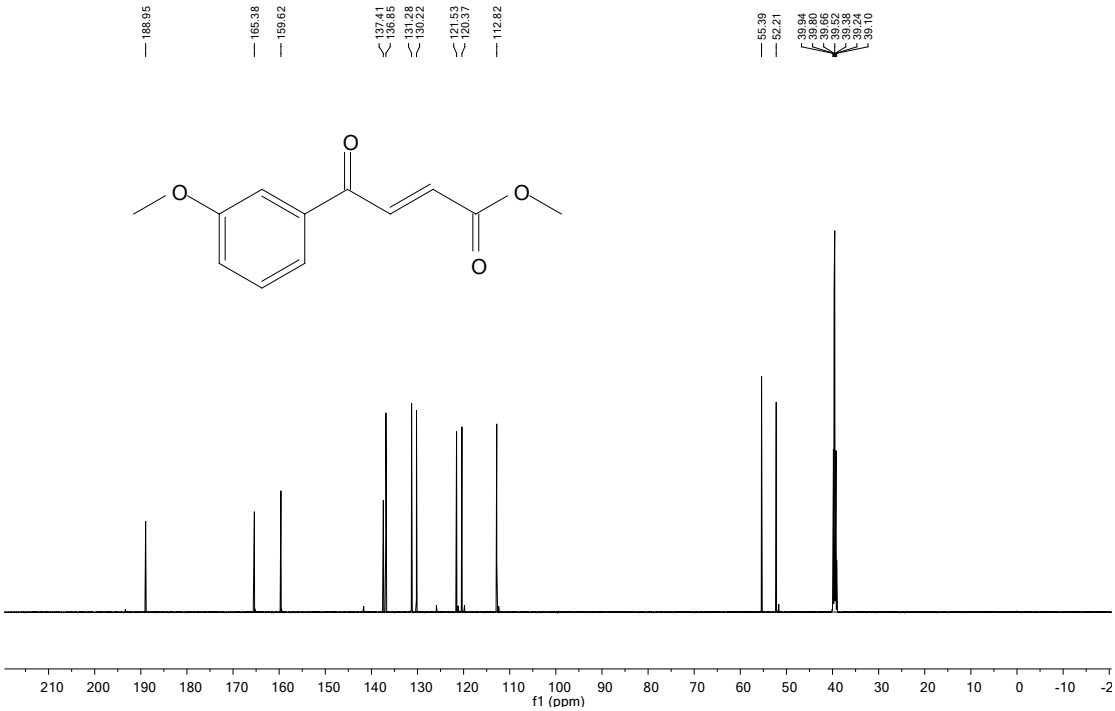

BRUKER AVANCE III 13C-NMR 8d IN DMSO-d6
187.12
165.51
163.30
137.03
131.42
130.53
128.84
114.72
63.76
52.19
39.94
39.80
39.66
39.38
39.24
39.10
14.45
O
O
O
O
210 200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 -10
f1 (ppm)

8e

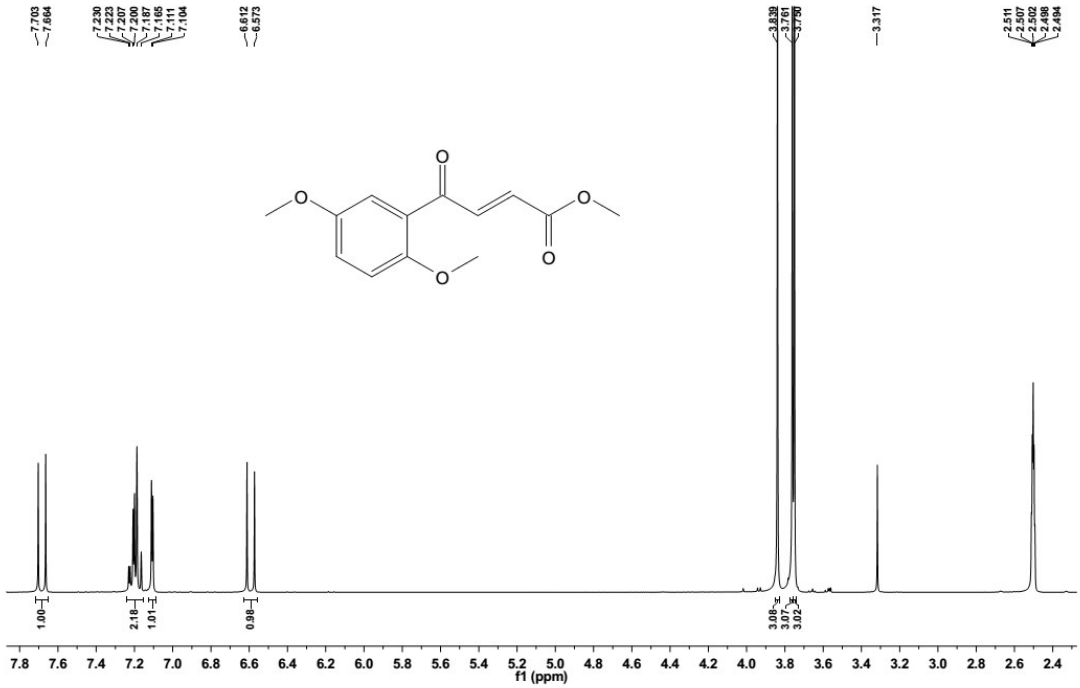
BRUKER AVANCE III 13C-NMR 8e IN DMSO-d6

8f

BRUKER AVANCE III 13C-NMR 8f IN DMSO-d6

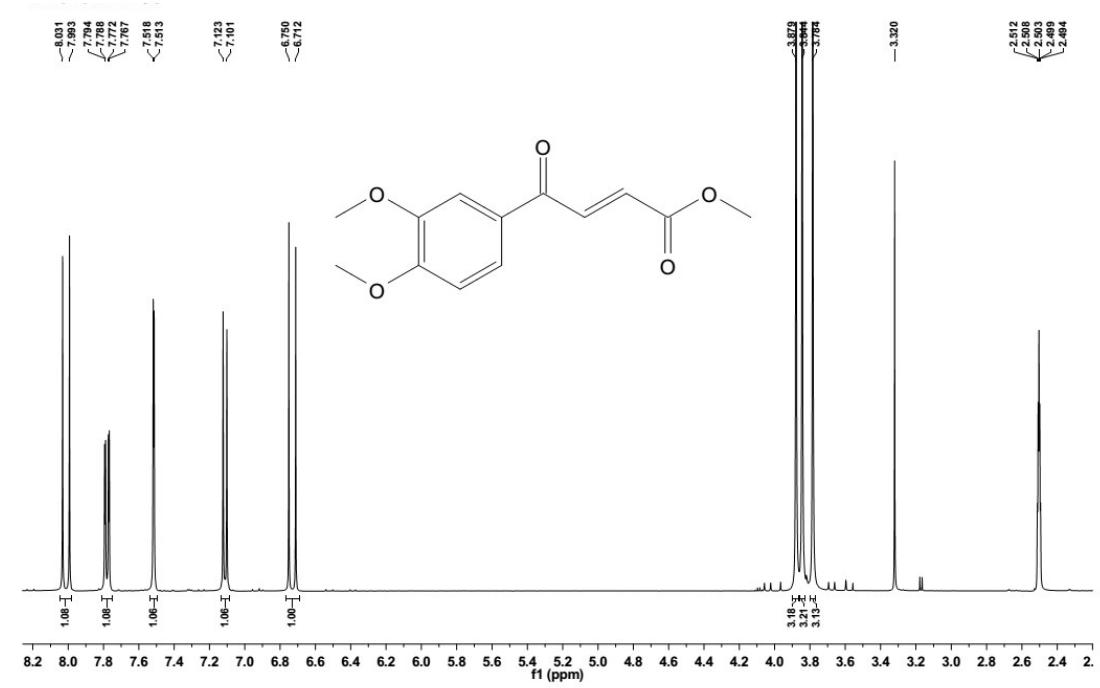


8g



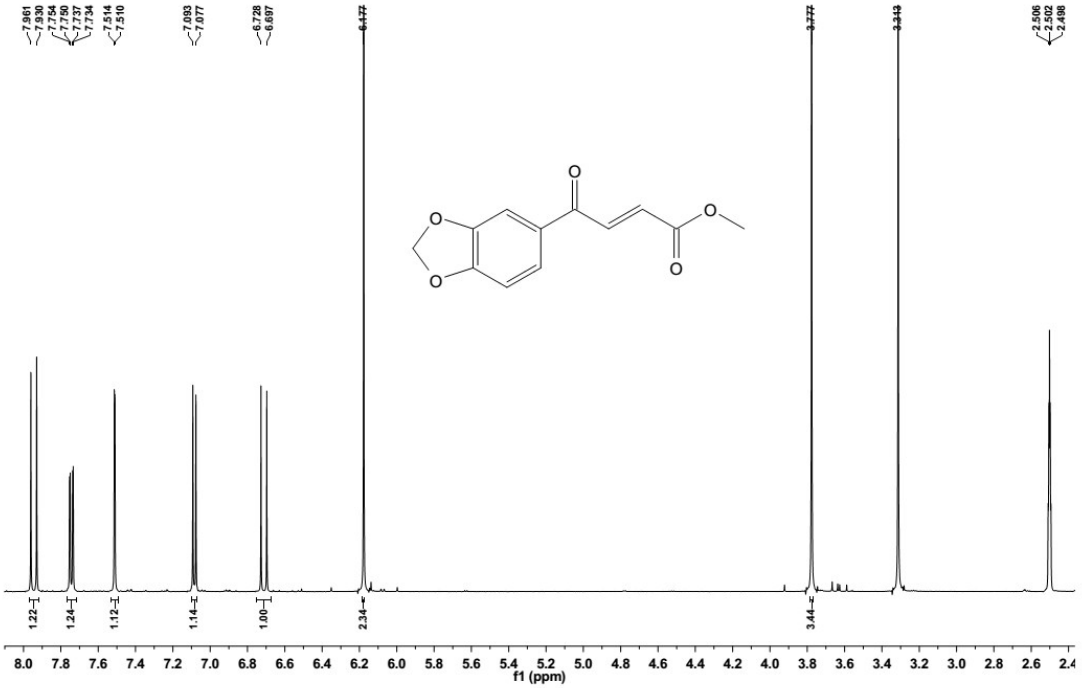
BRUKER AVANCE III 13C-NMR 8g IN DMSO-d6

8h

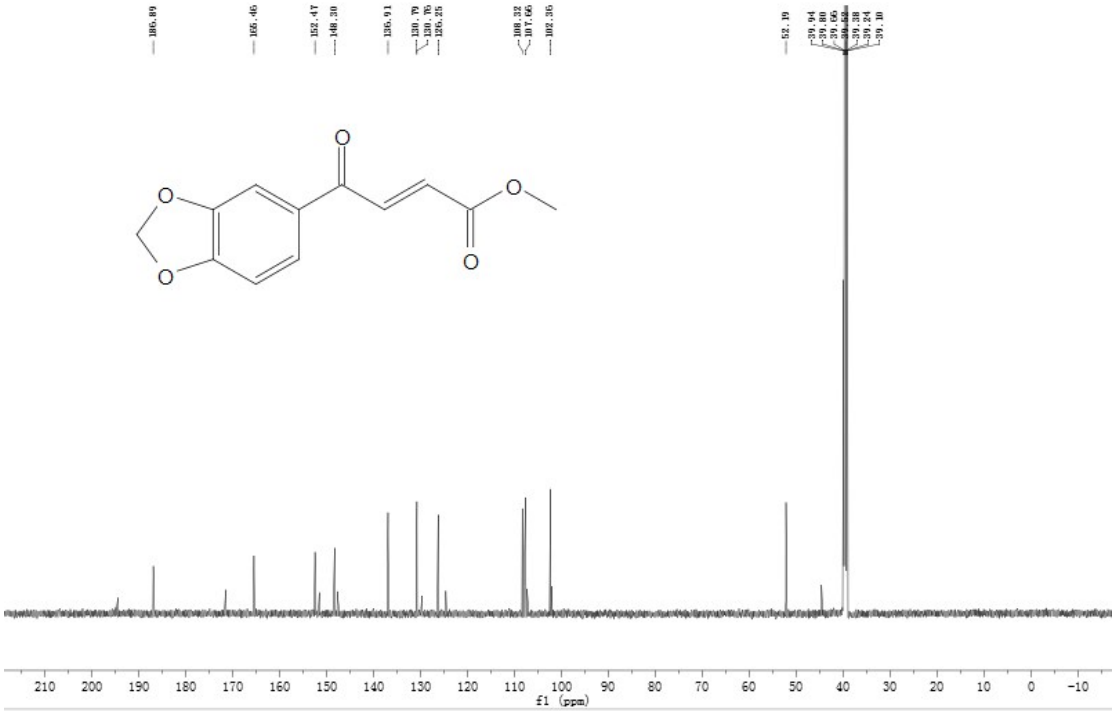


BRUKER AVANCE III 13C-NMR 8h IN DMSO-d6

8i

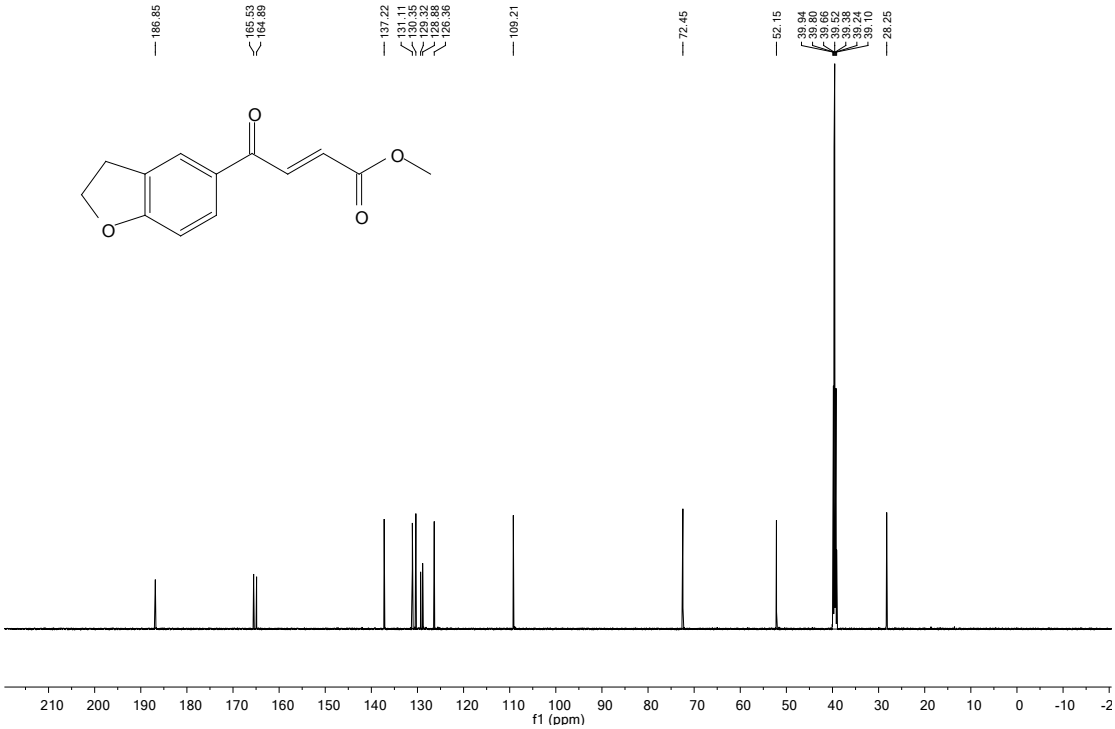


BRUKER AVANCE III 13C-NMR 8i IN DMSO-d6

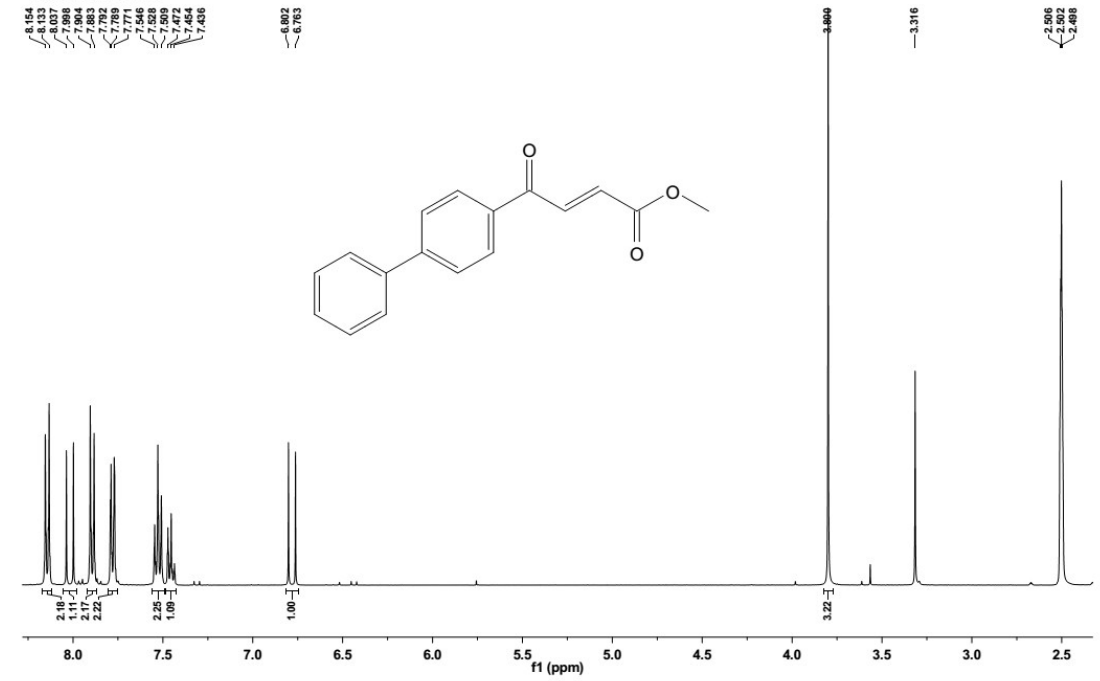


8j

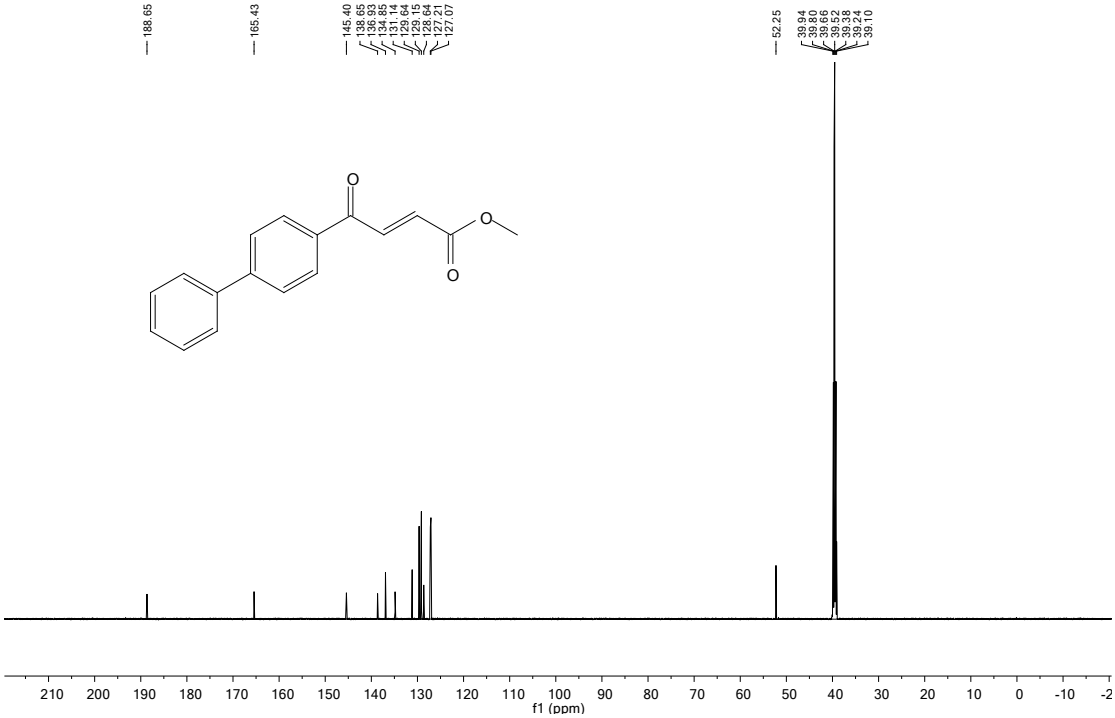
BRUKER AVANCE III 13C-NMR 8j IN DMSO-d6



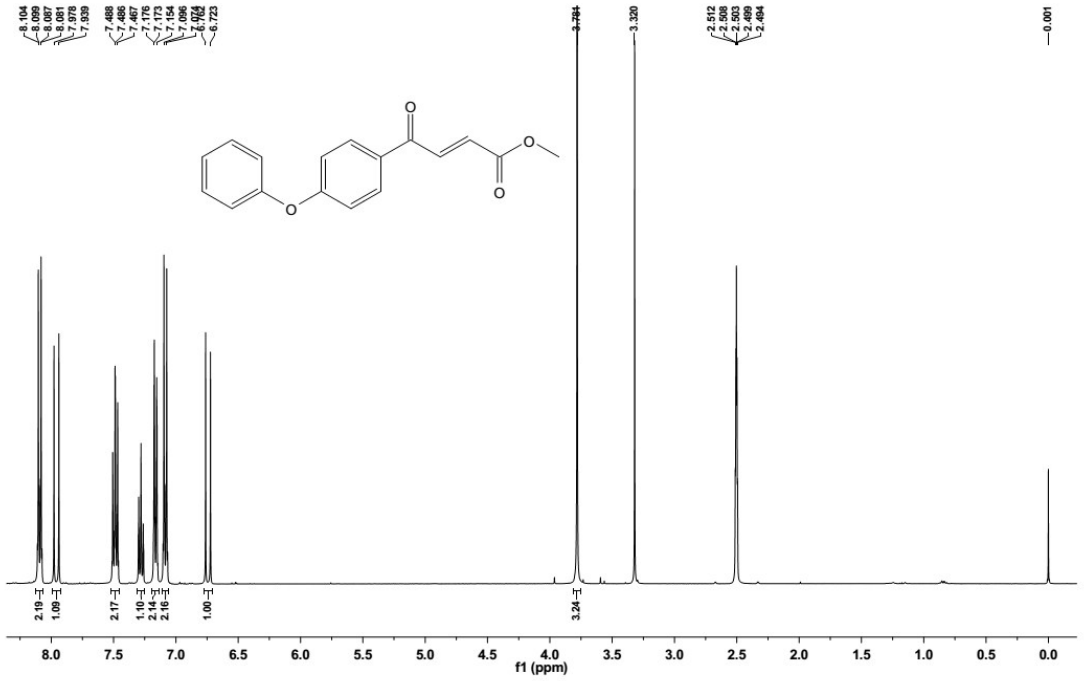
8k



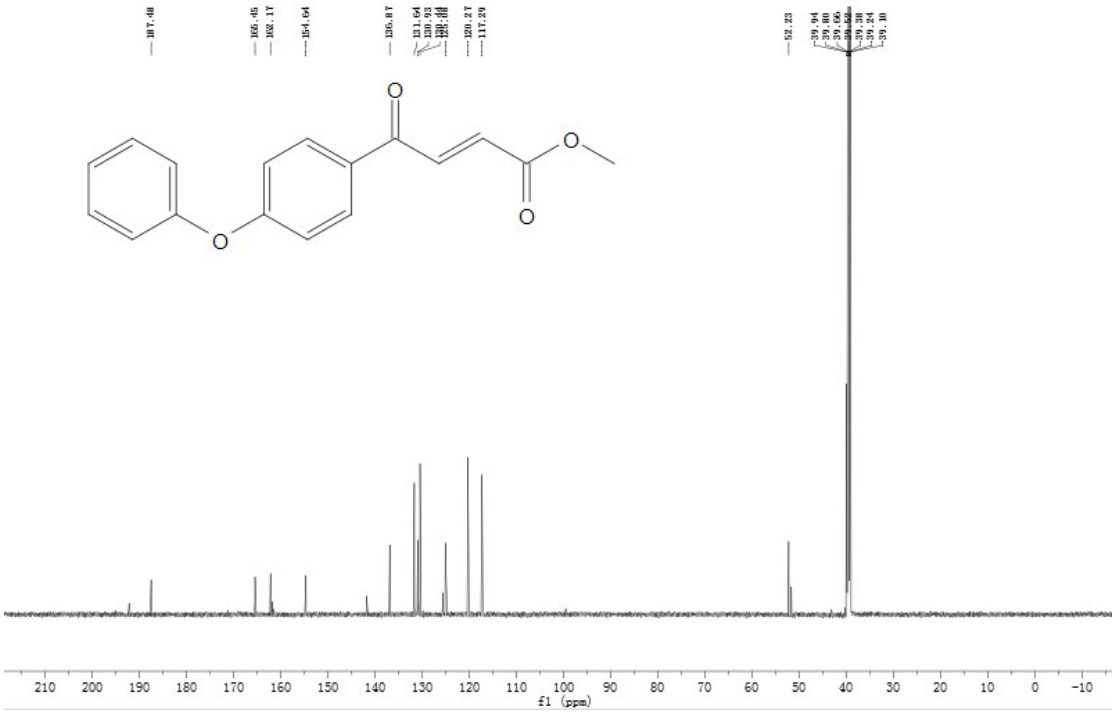
BRUKER AVANCE III 13C-NMR 8k IN DMSO-d6



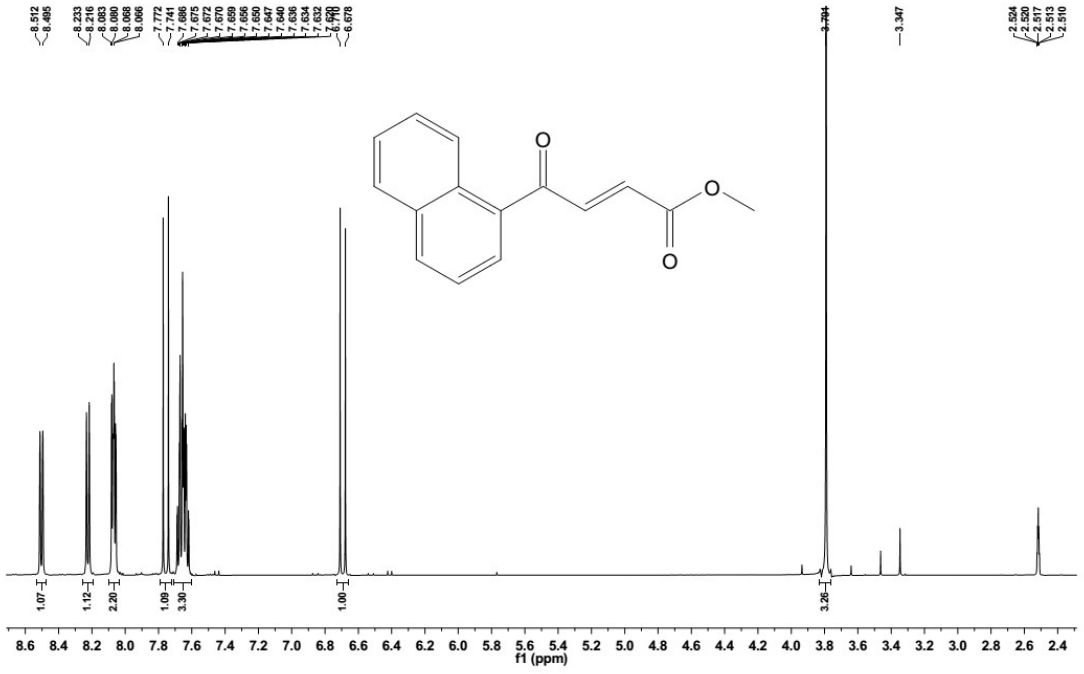
8l



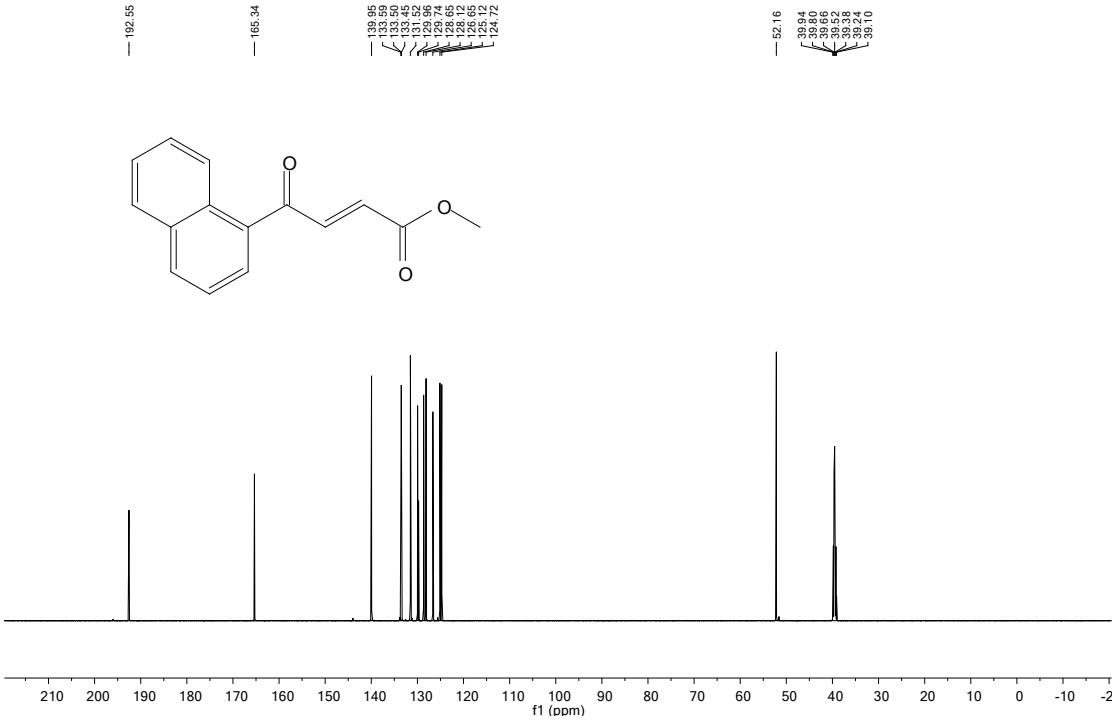
BRUKER AVANCE III 13C-NMR 81 IN DMSO-d6



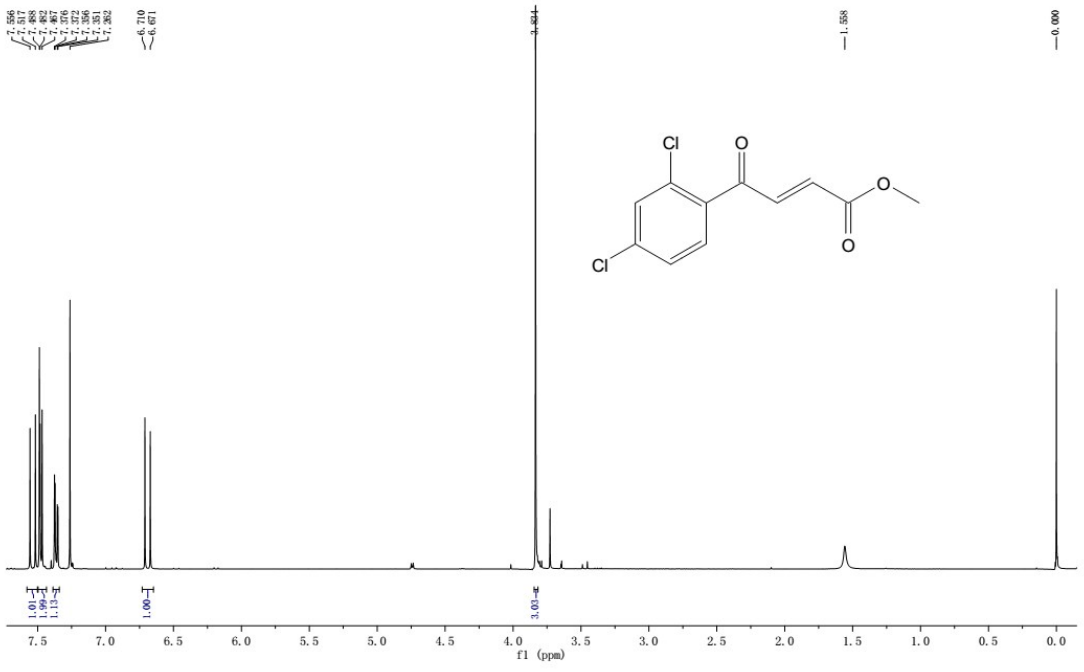
8m



BRUKER AVANCE III 13C-NMR 8m IN DMSO-d6



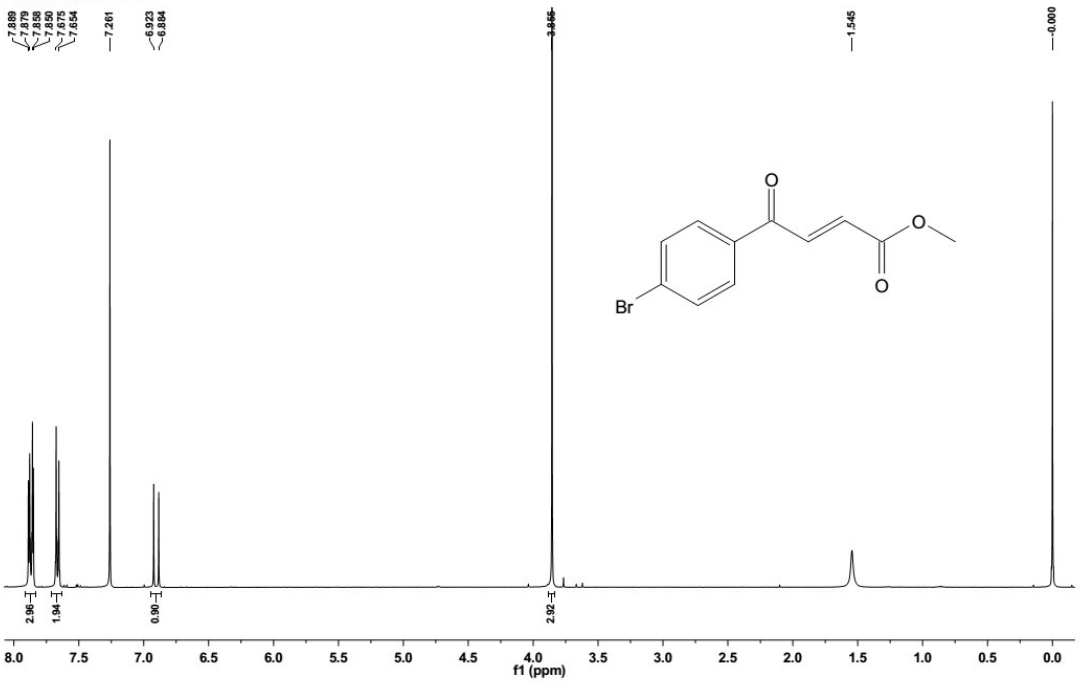
8n



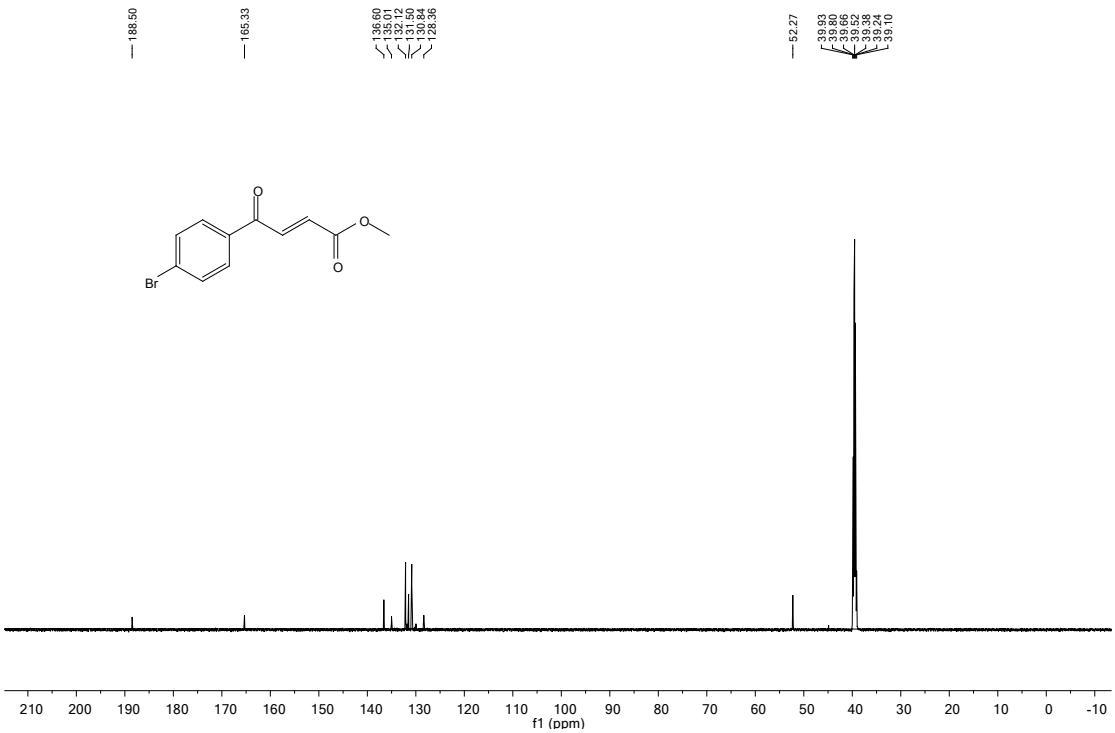
8o


8.275
8.271
8.261
8.257
7.718
7.714
7.704
7.700
6.670
6.638
6.273
6.242
3.676
3.165
2.524
2.521
2.517
2.514
2.510
O
O
O
O
N+
O-
2.04
2.08
1.00
0.99
3.09
f1 (ppm)

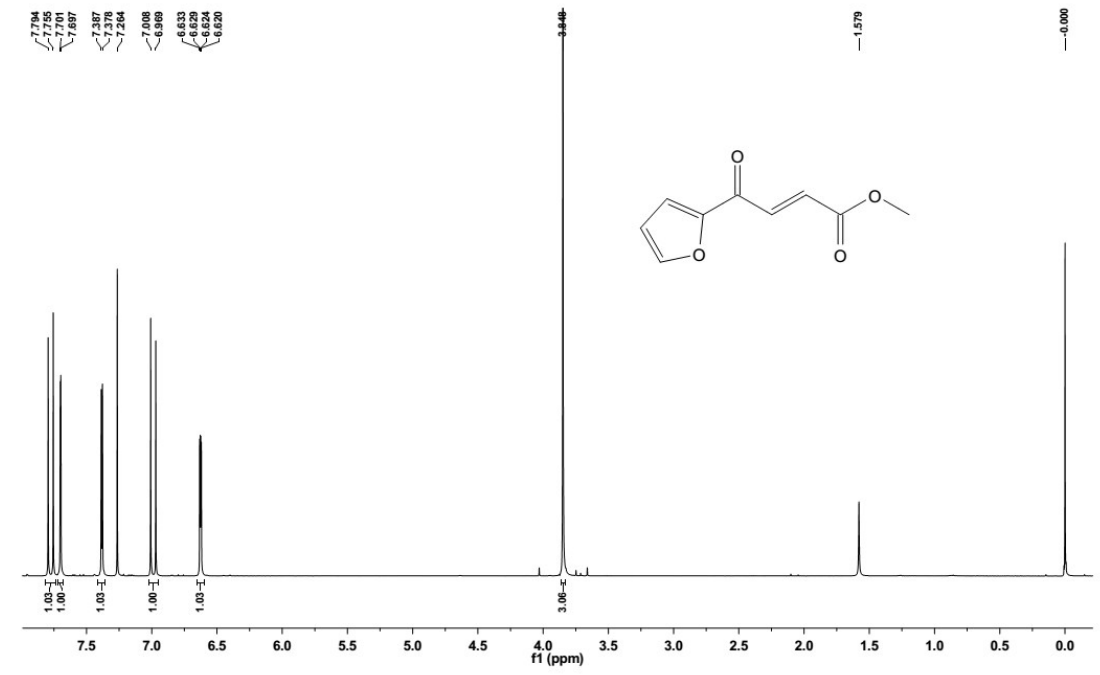
8p


7.889
7.879
7.858
7.850
7.675
7.654
7.261
6.923
6.884
3.865
1.545
0.000
O
O
O
Br
2.96
1.94
0.90
2.92
f1 (ppm)

BRUKER AVANCIII 13C-NMR 8p IN DMSO-d6

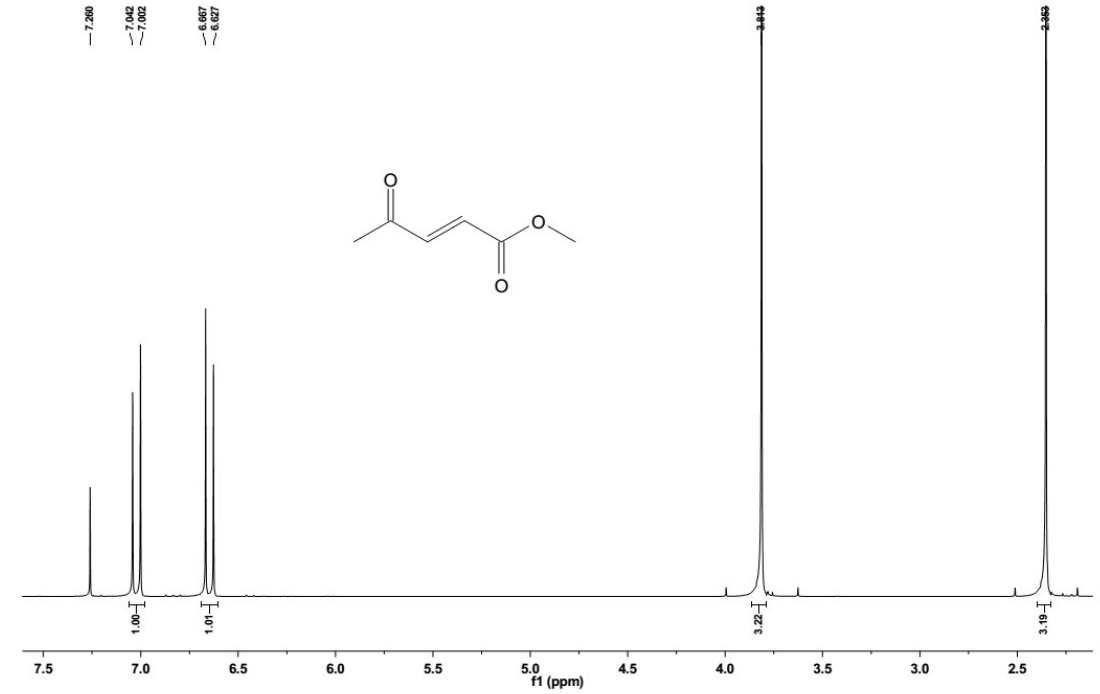


8q

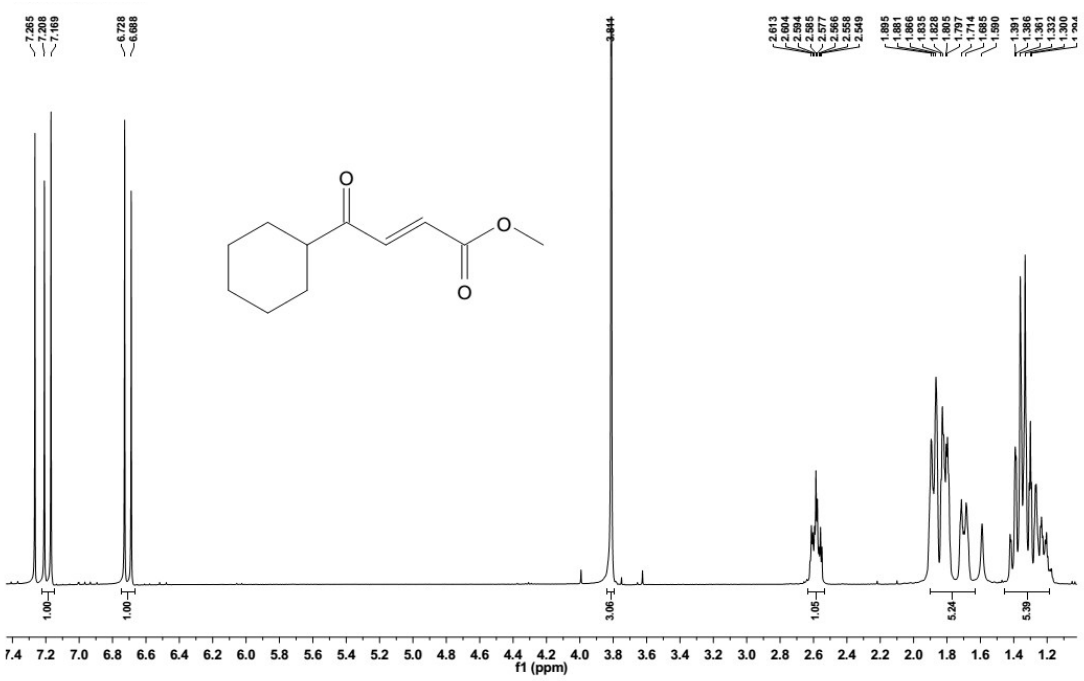


BRUKER AVANCE III 13C-NMR 8q IN DMSO-d6

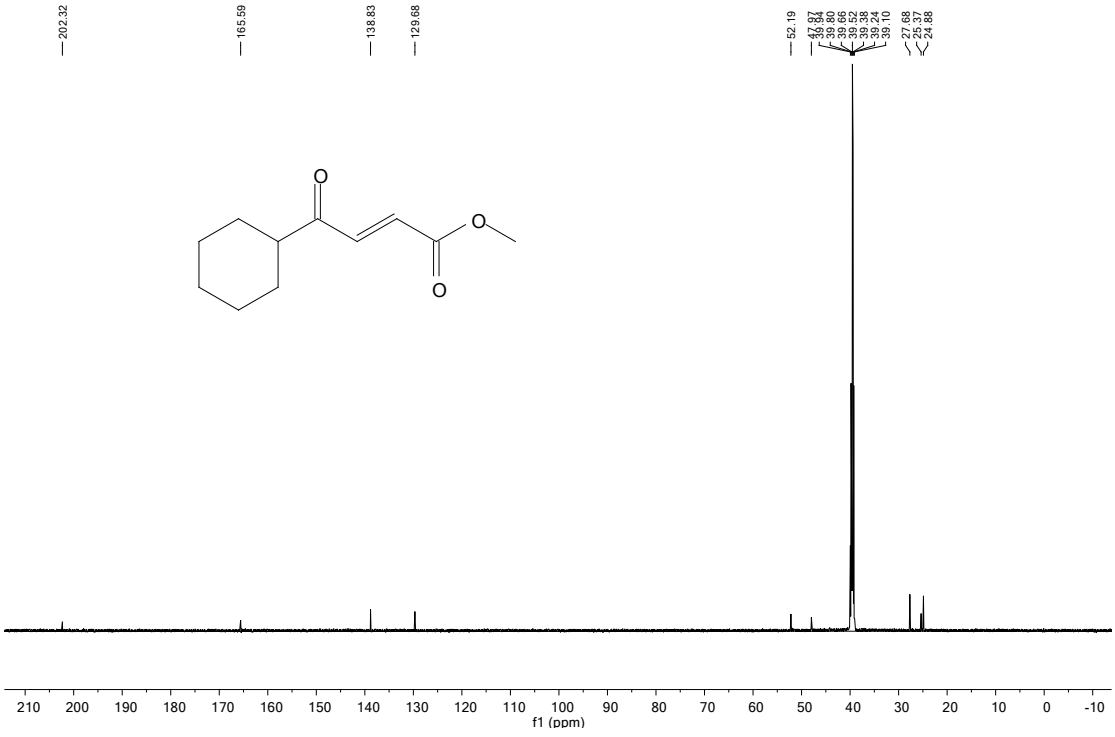
8r



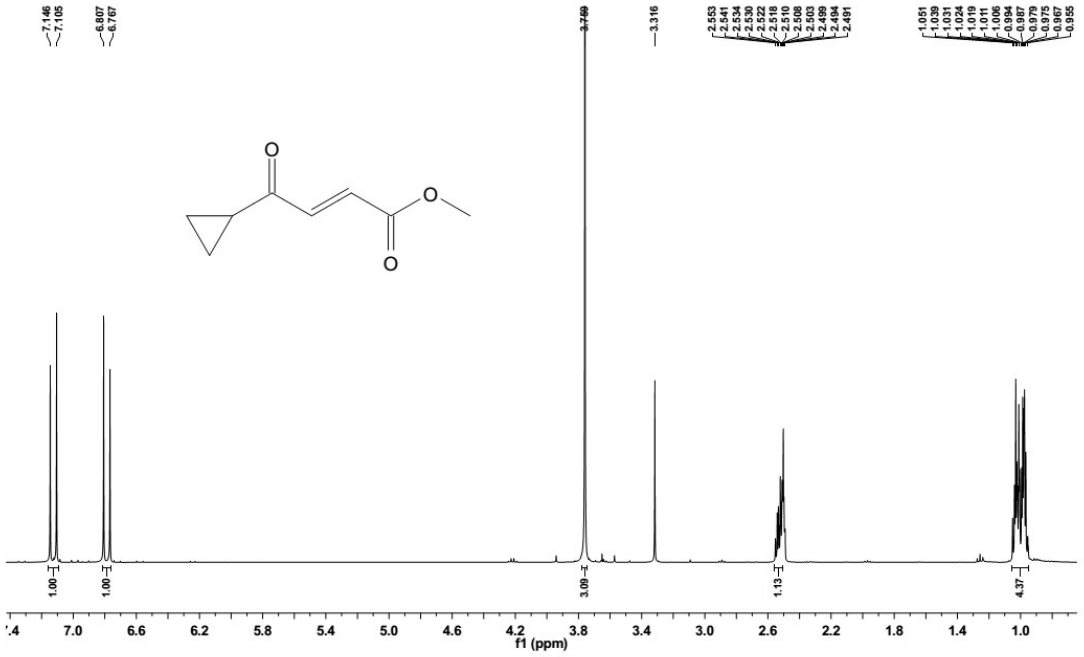
8s



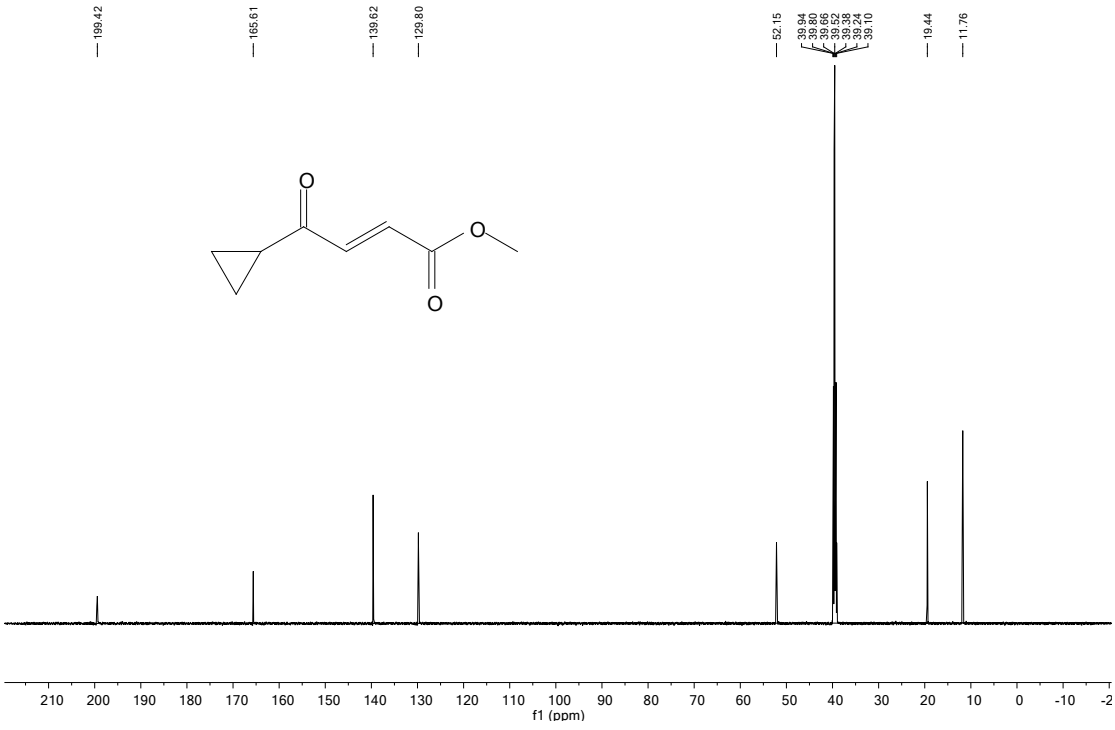
BRUKER AVANCⅢ13C-NMR 8S IN DMSO-d6



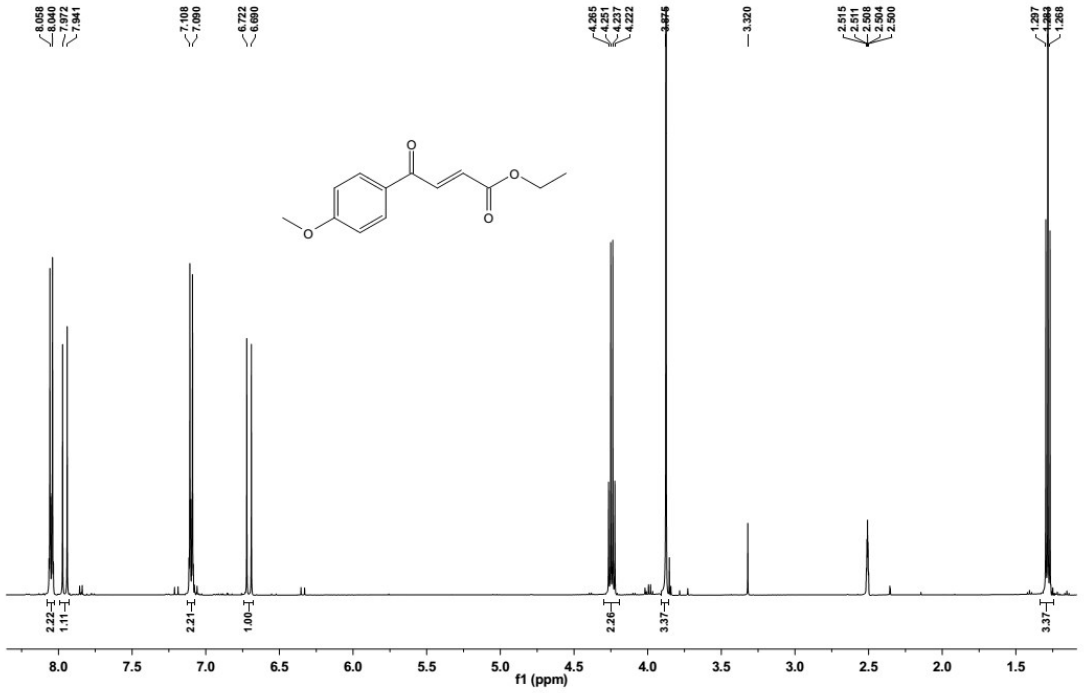
8t



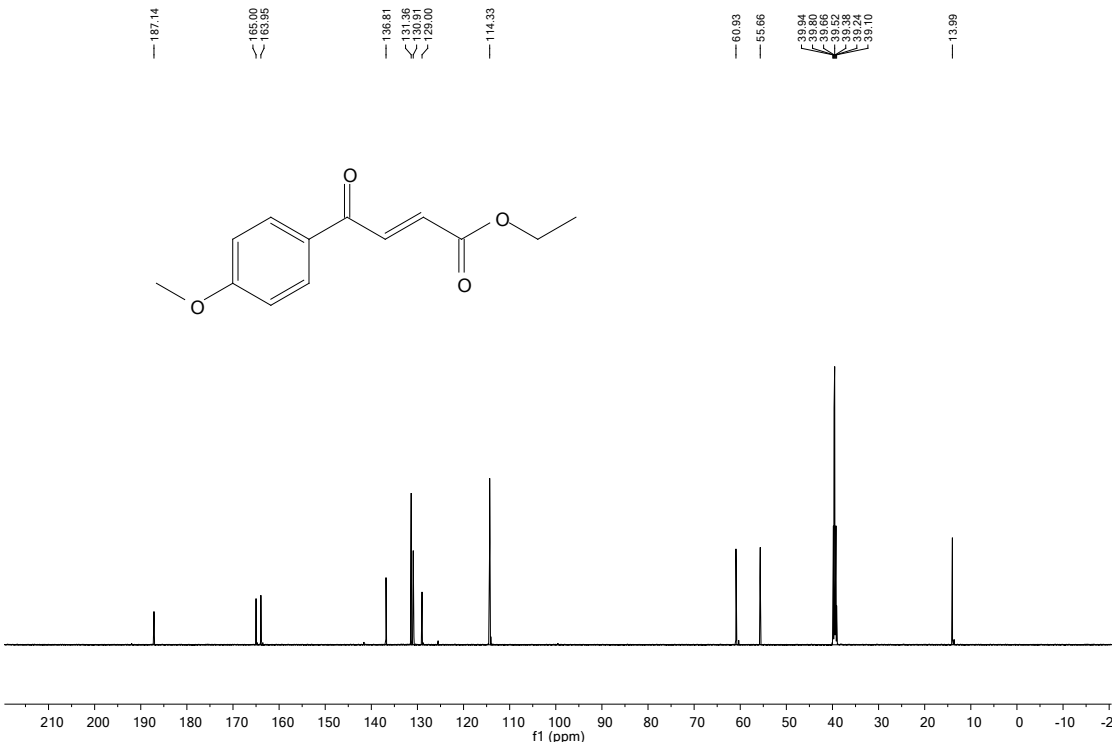
BRUKER AVANCE III 13C-NMR 8t IN DMSO-d6



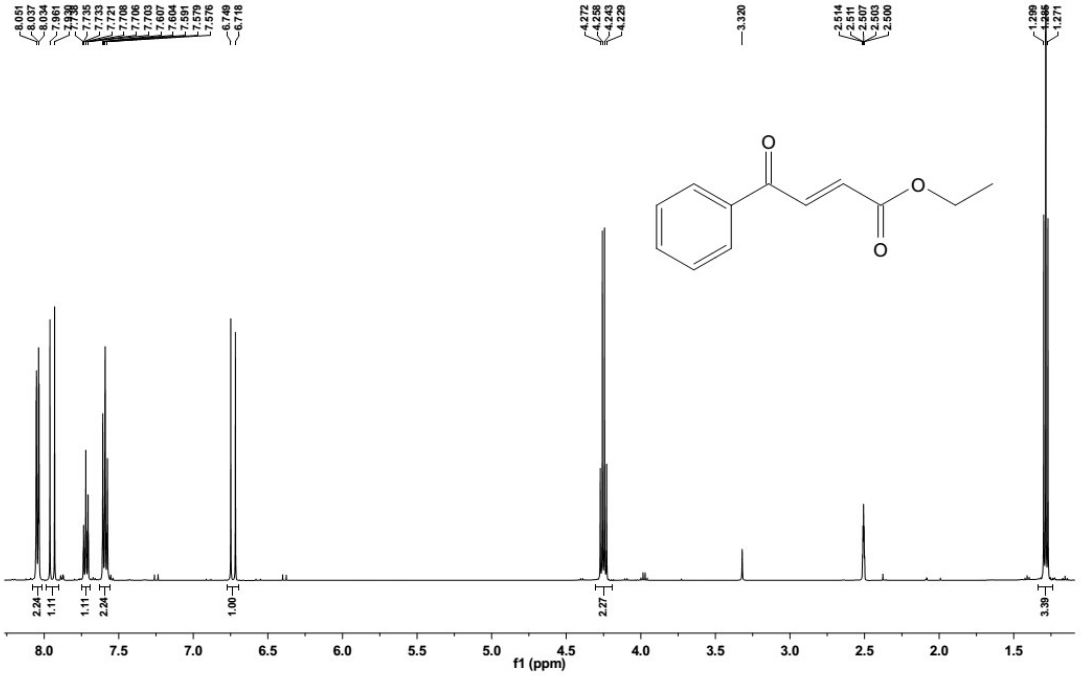
9a



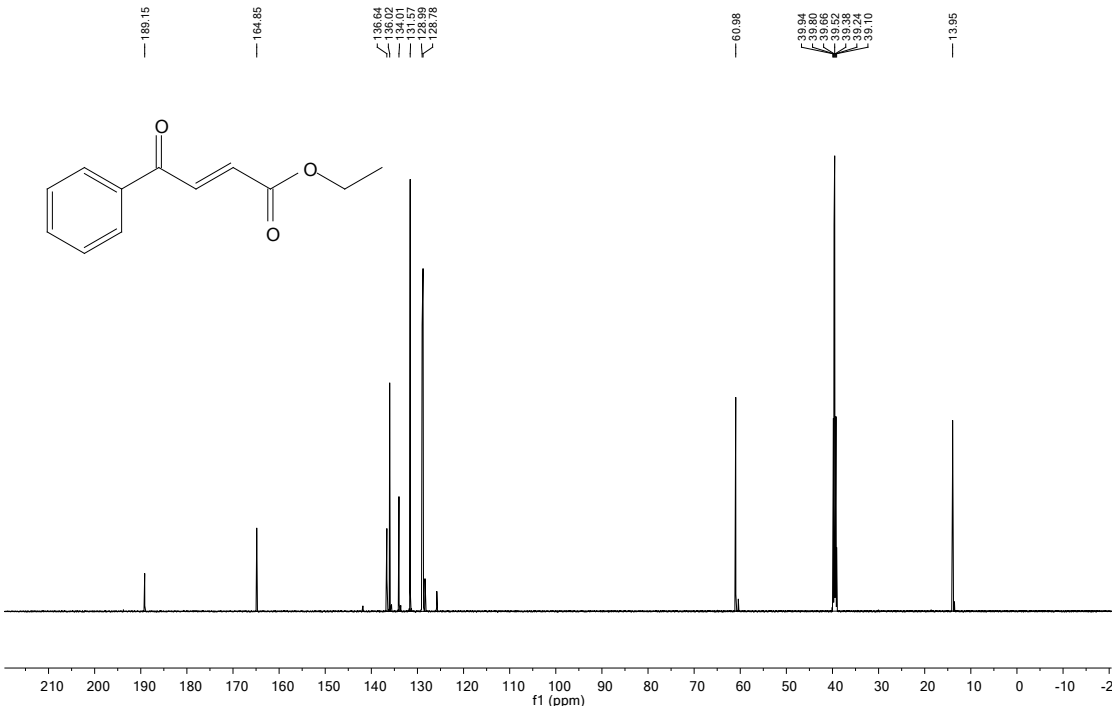
BRUKER AVANCE III 13C-NMR 9a IN DMSO-d6



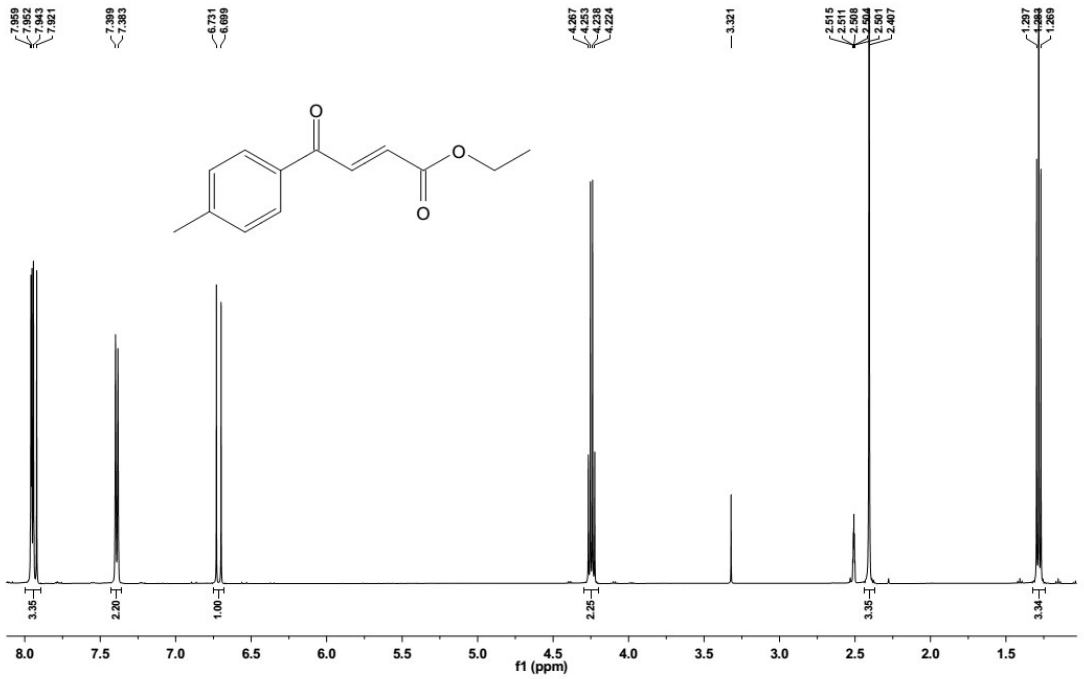
9b



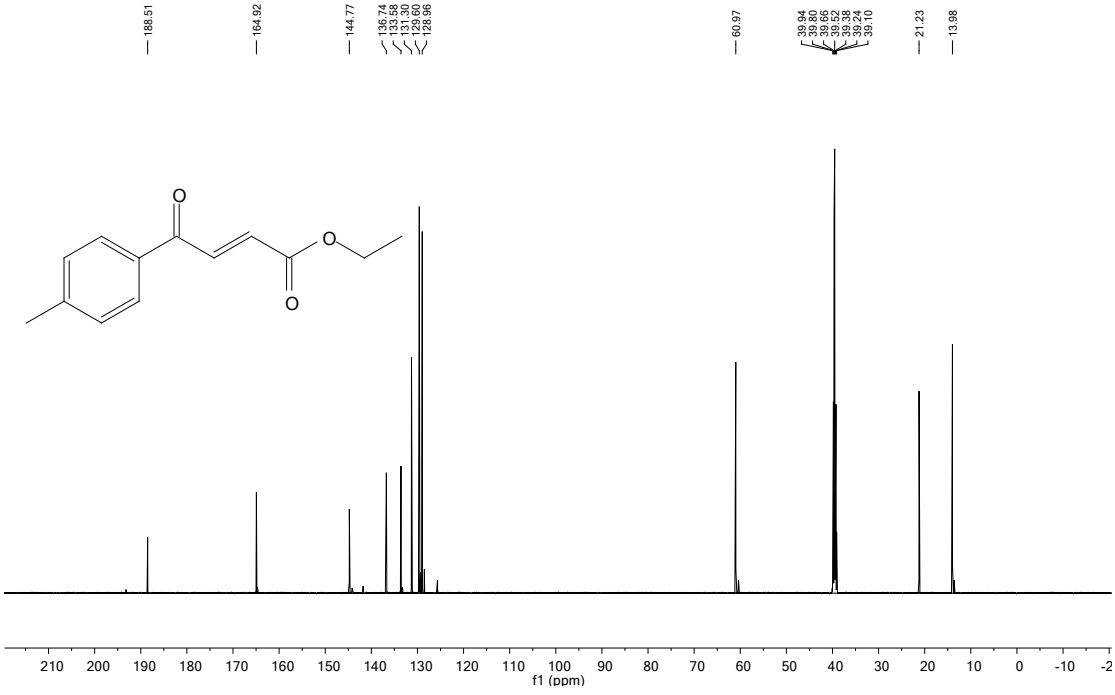
BRUKER AVANCE III 13C-NMR 9b IN DMSO-d6



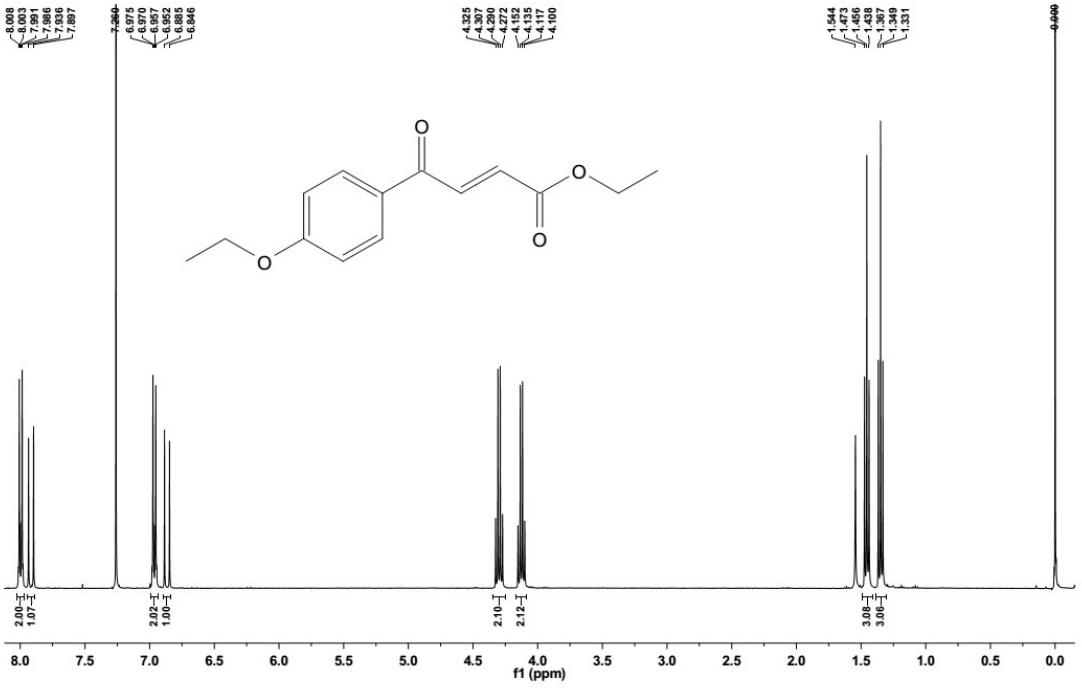
9c



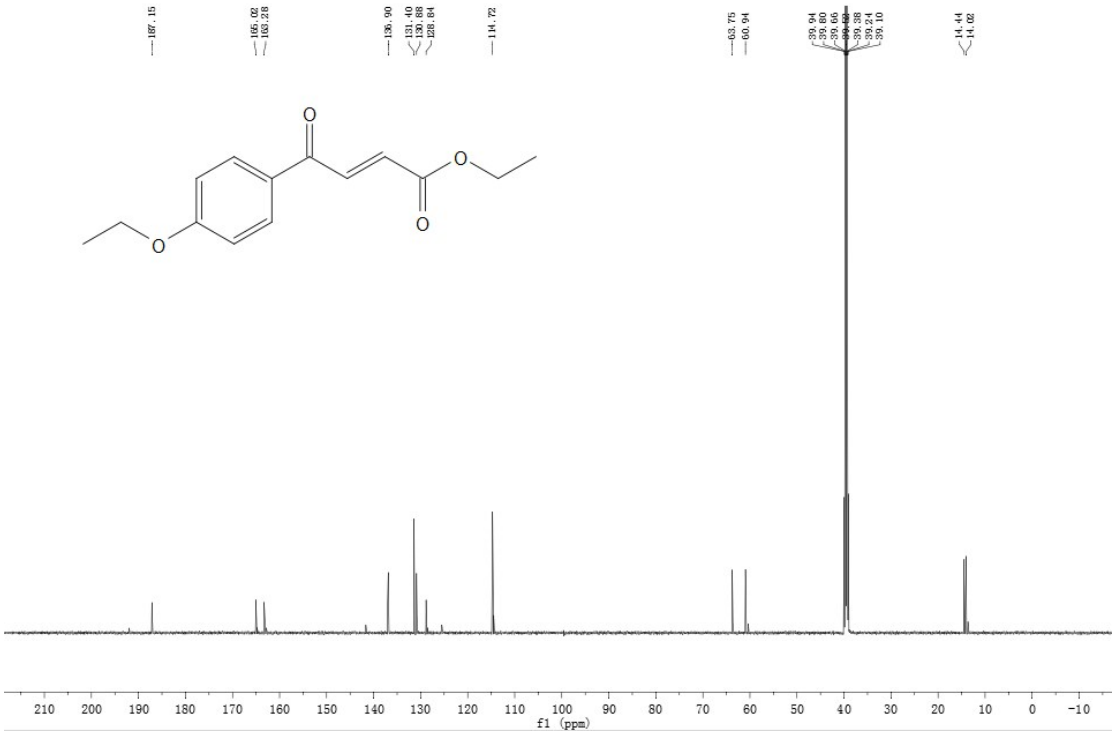
BRUKER AVANCE III 13C-NMR 9c IN DMSO-d6



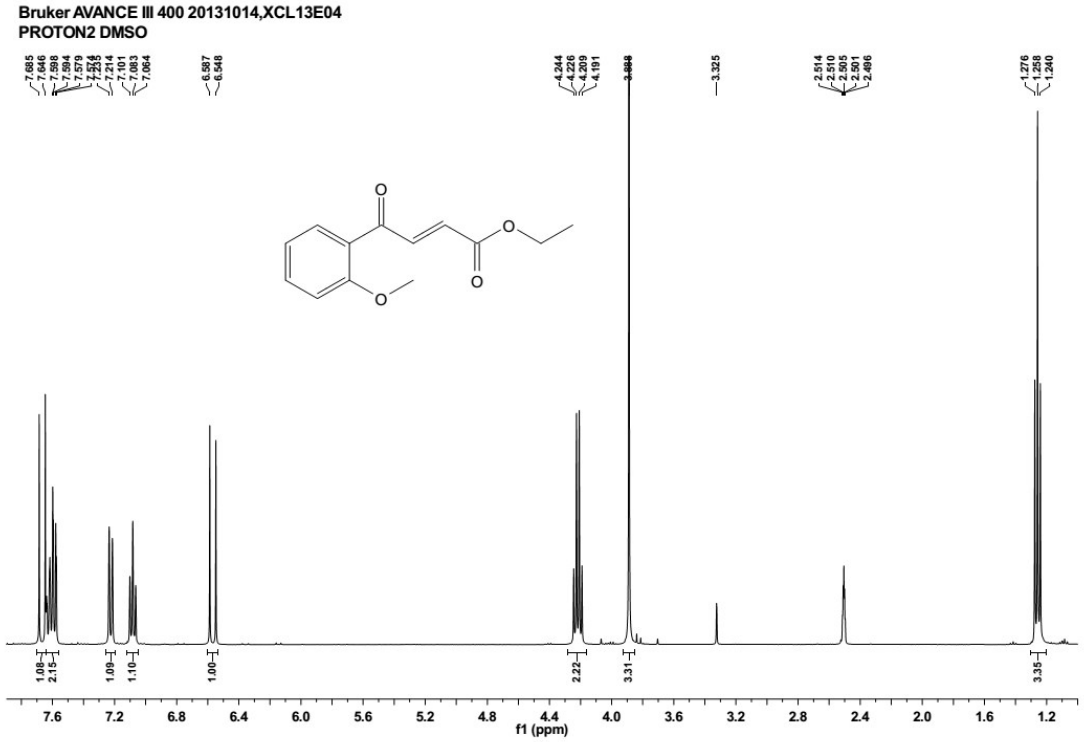
9d



BRUKER AVANCE III 13C-NMR 9d IN DMSO-d6

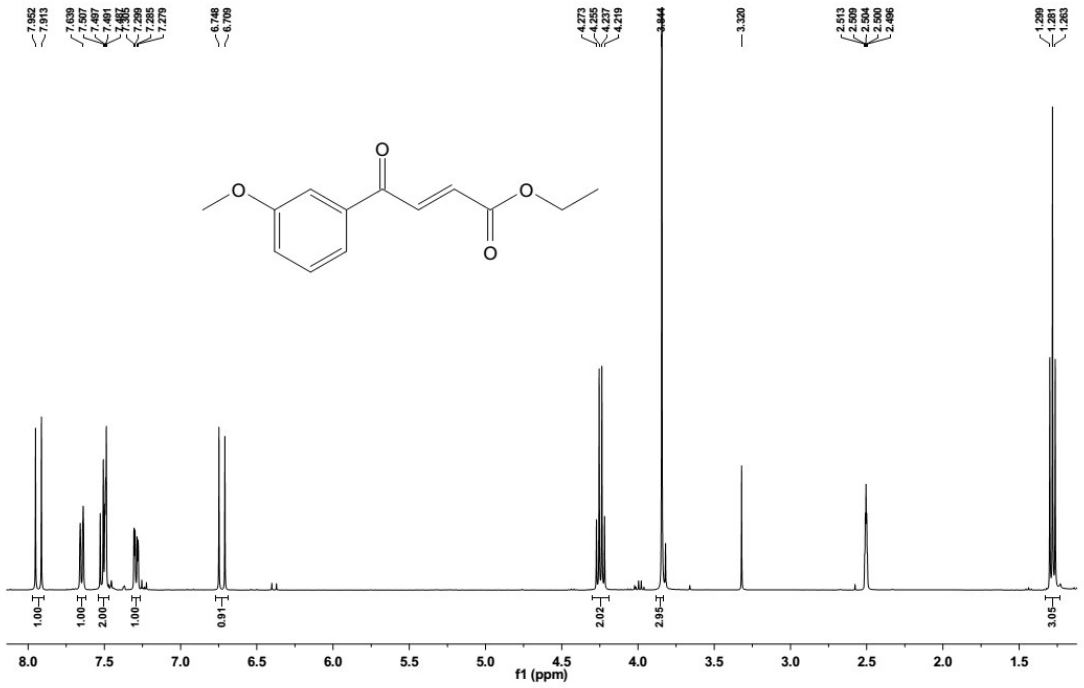


9e

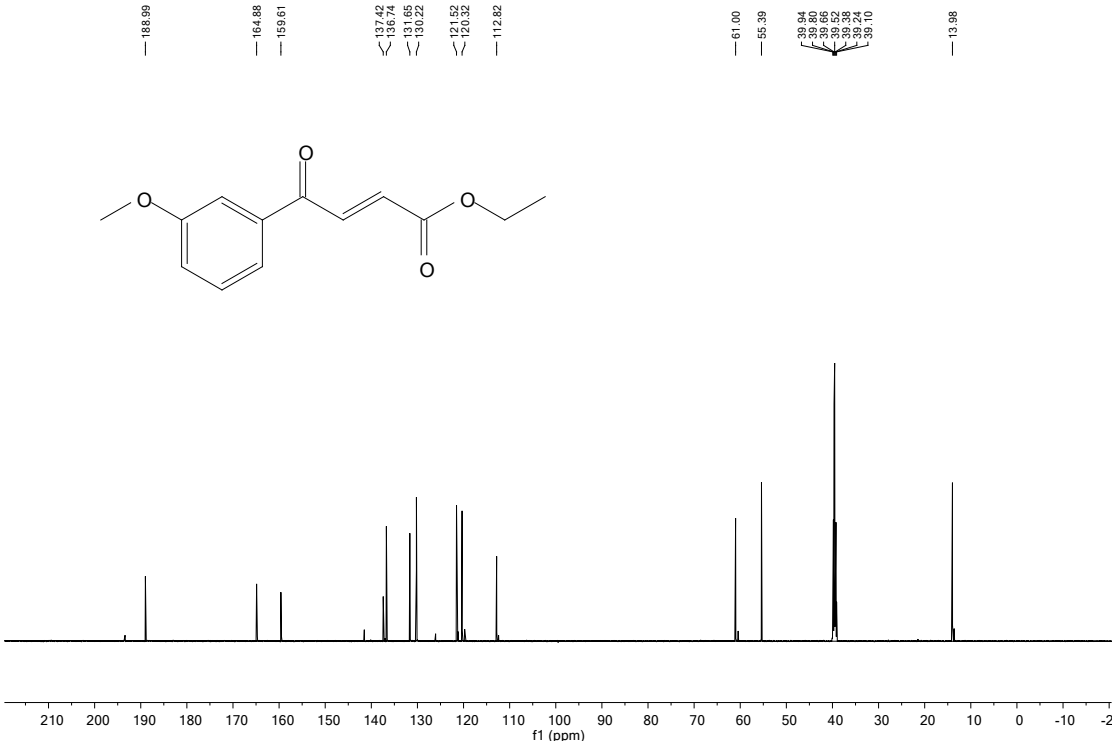

Bruker AVANCE III 400 20131014,XCL13E04
PROTON2 DMSO
f1 (ppm)


BRUKER AVANCE III 13C-NMR 9e IN DMSO-d6
f1 (ppm)

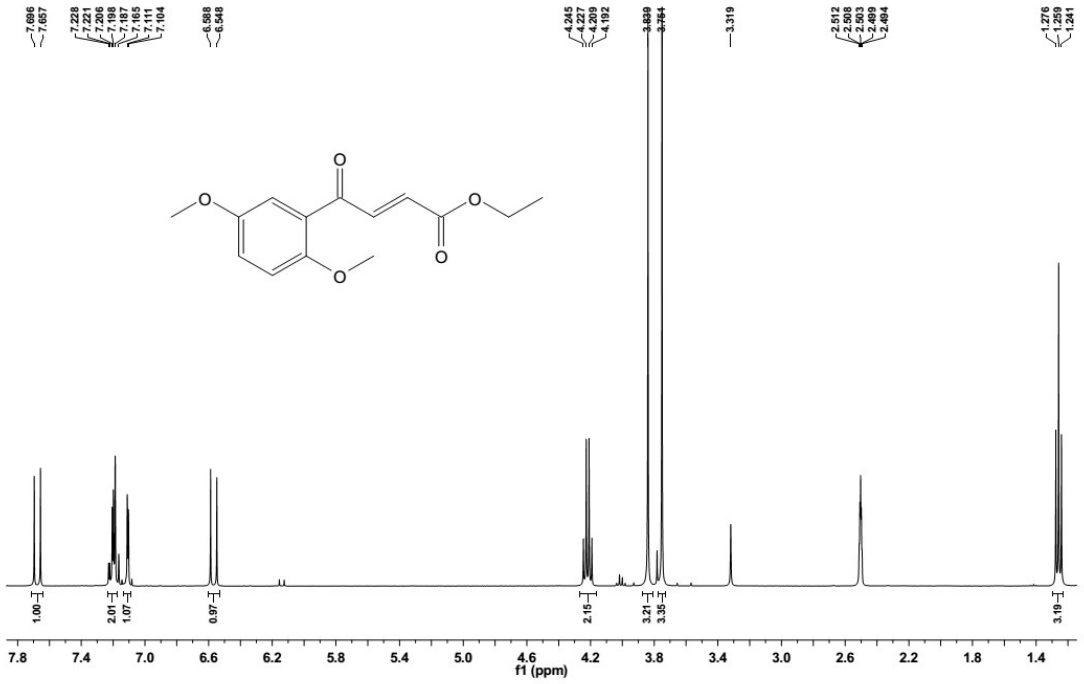
9f



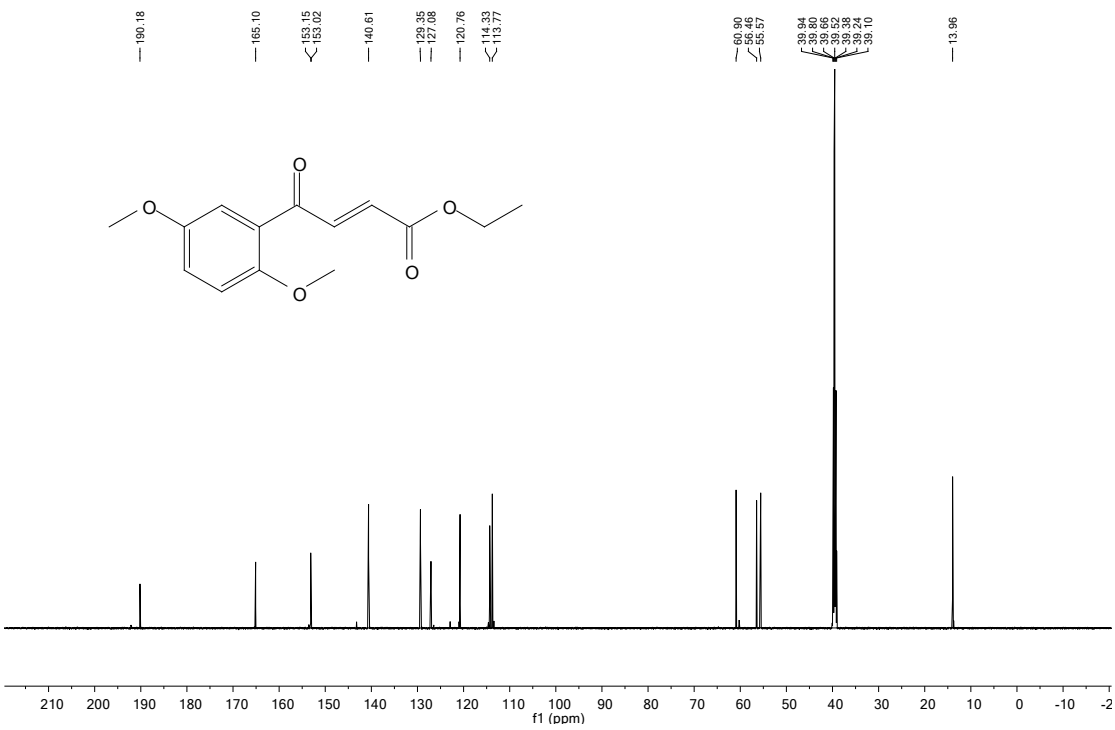
BRUKER AVANCE III 13C-NMR 9f IN DMSO-d6



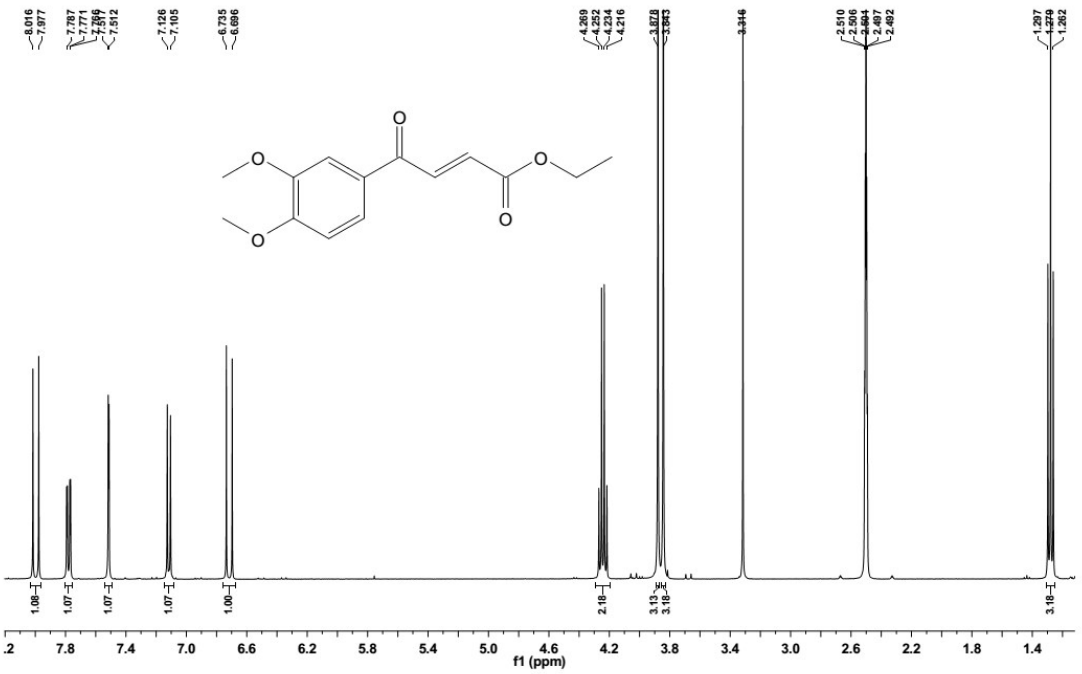
9g



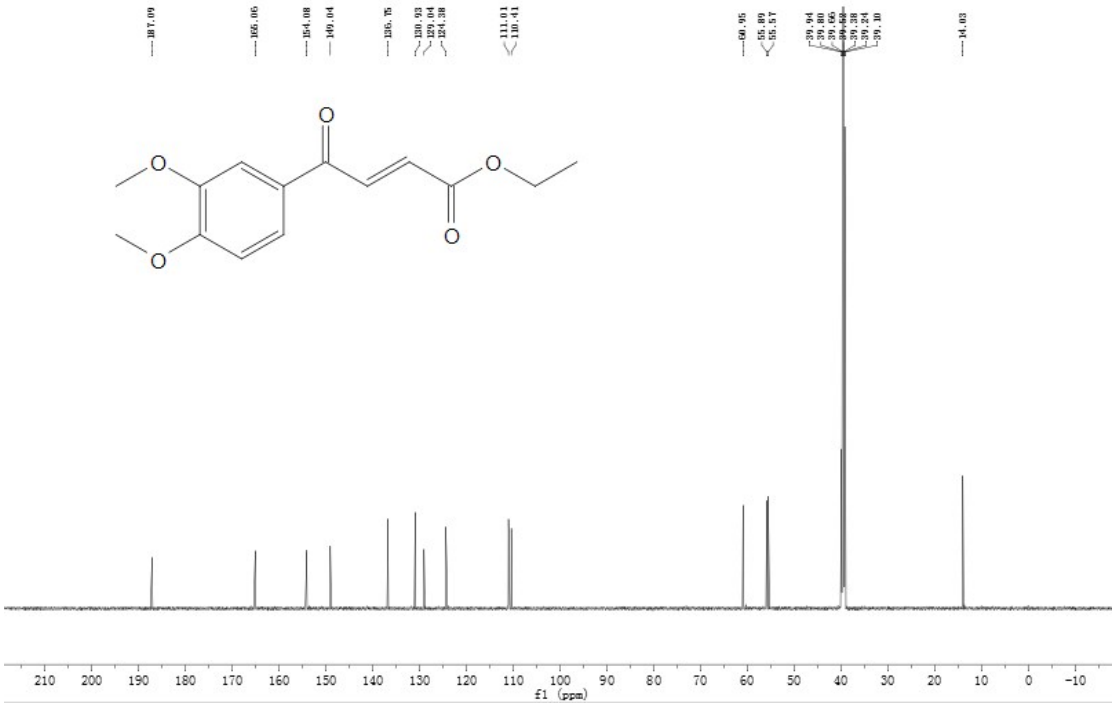
BRUKER AVANCE III 13C-NMR 9g IN DMSO-d6



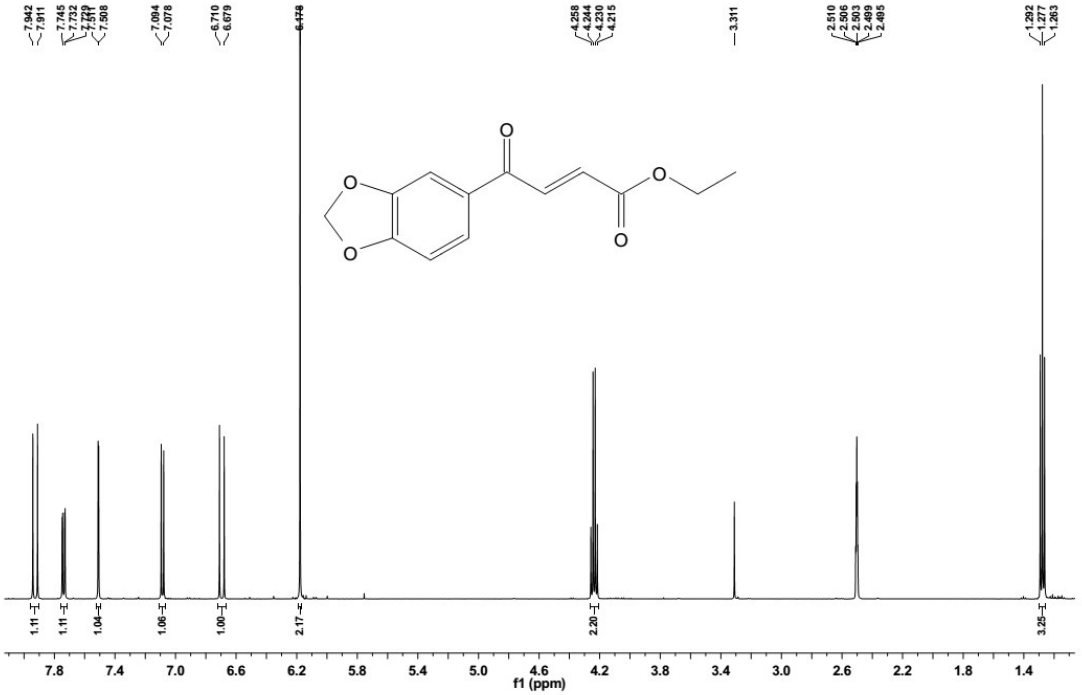
9h



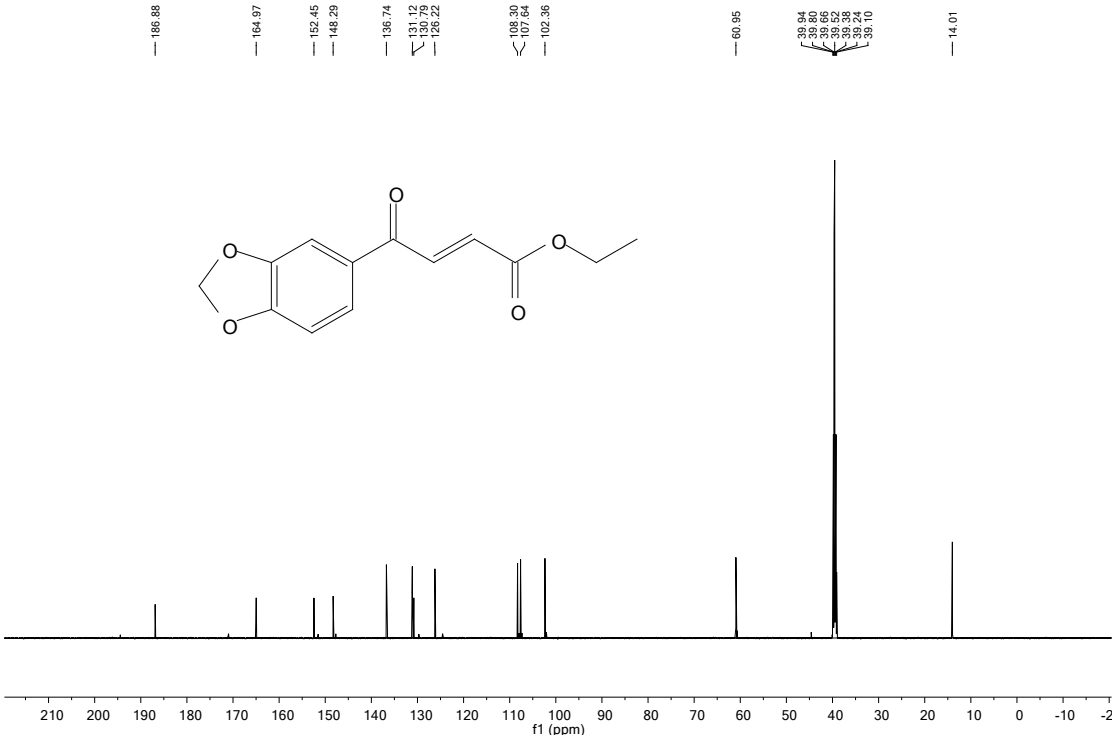
BRUKER AVANCE III 13C-NMR 9hIN DMSO-d6



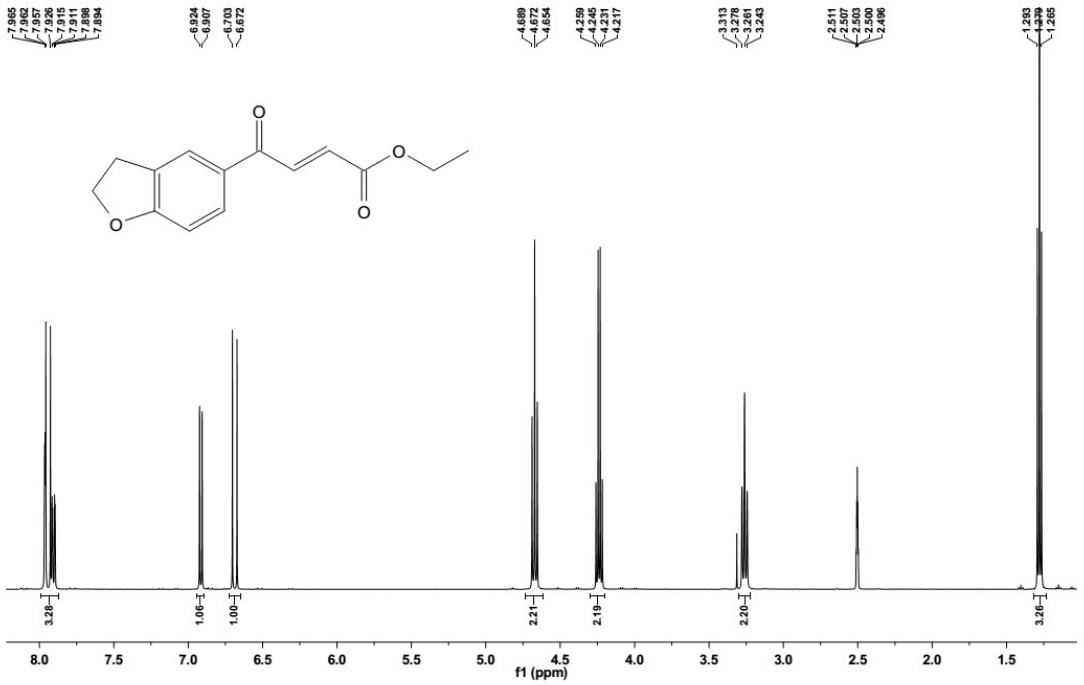
9i



BRUKER AVANCE III 13C-NMR 9i IN DMSO-d6



9j



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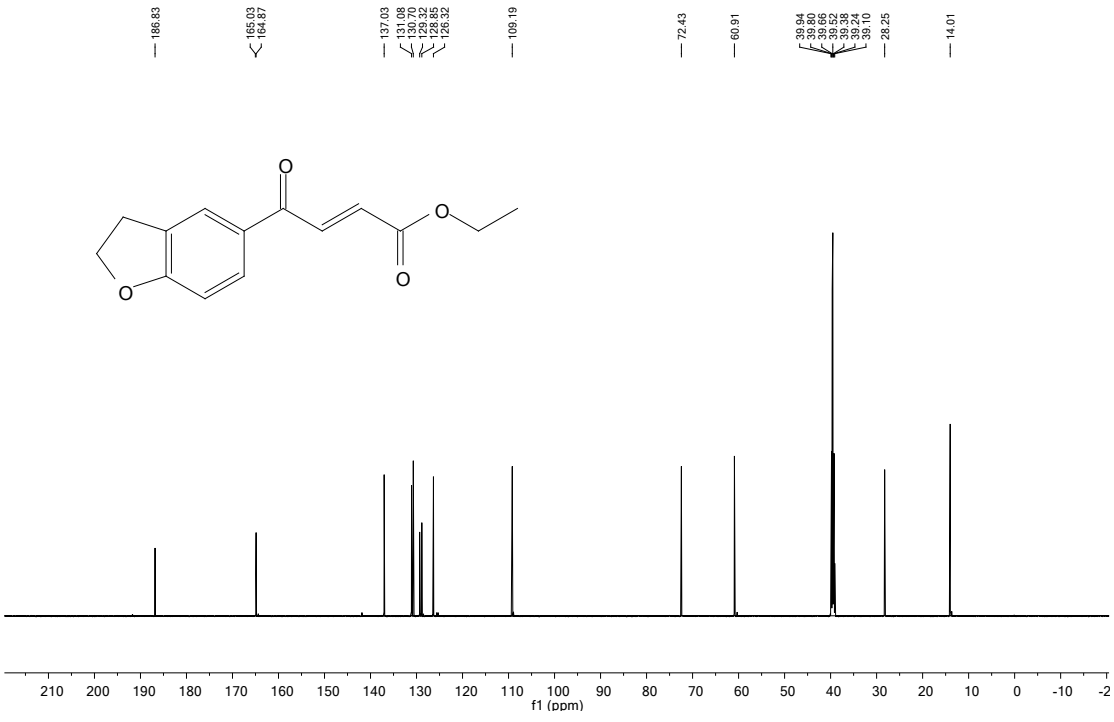
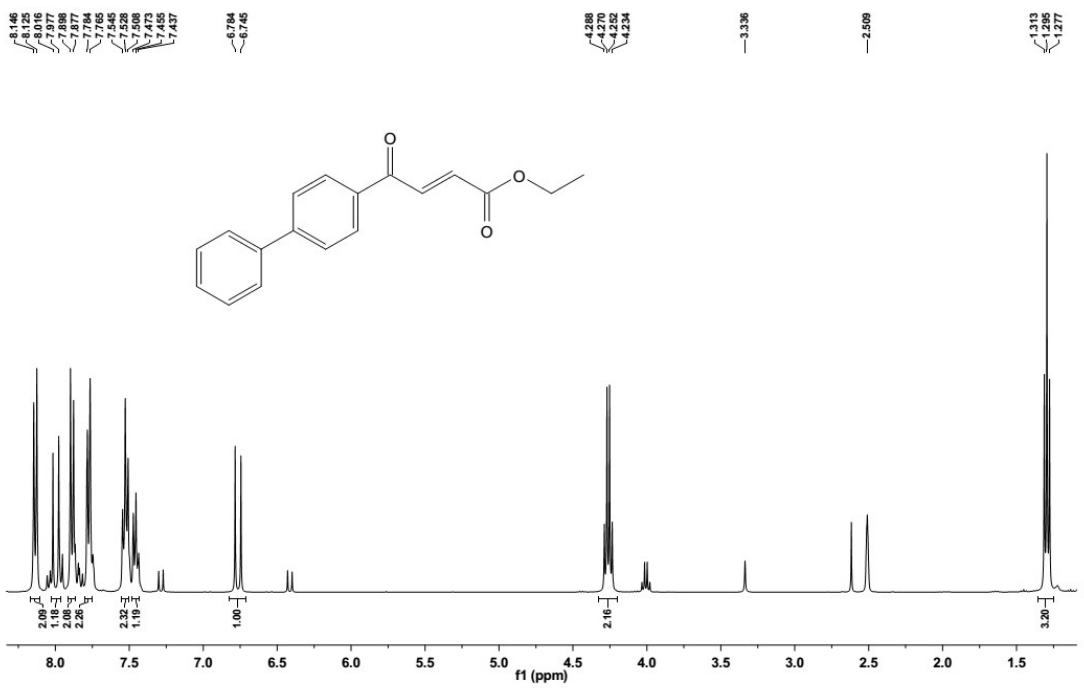
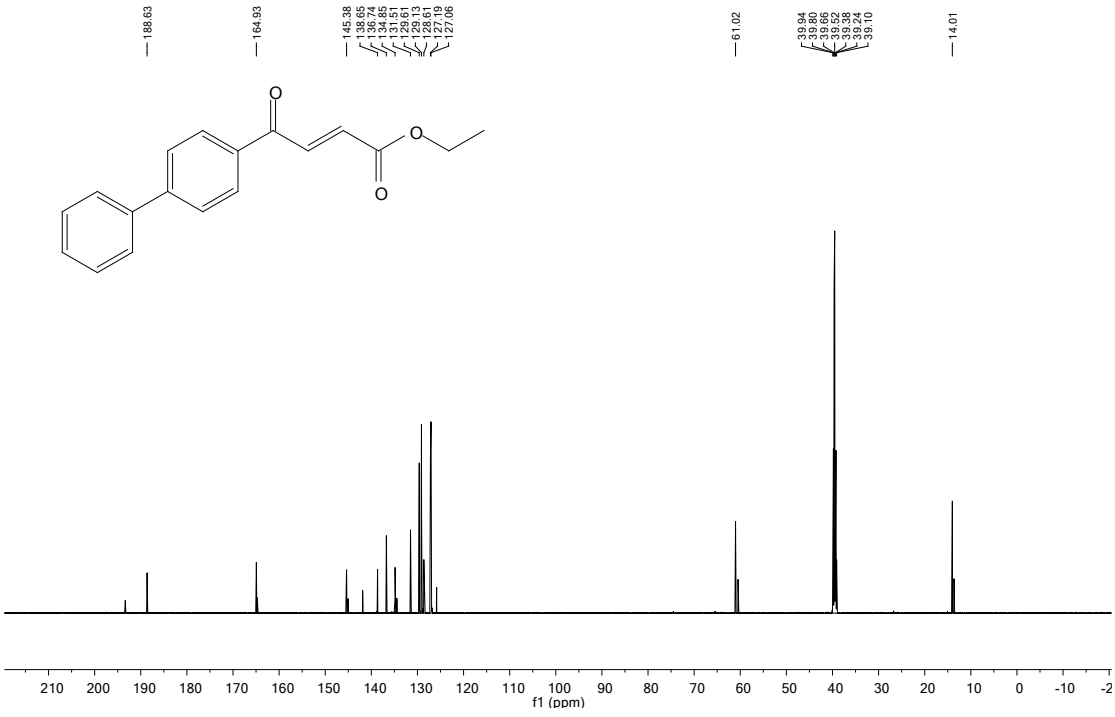


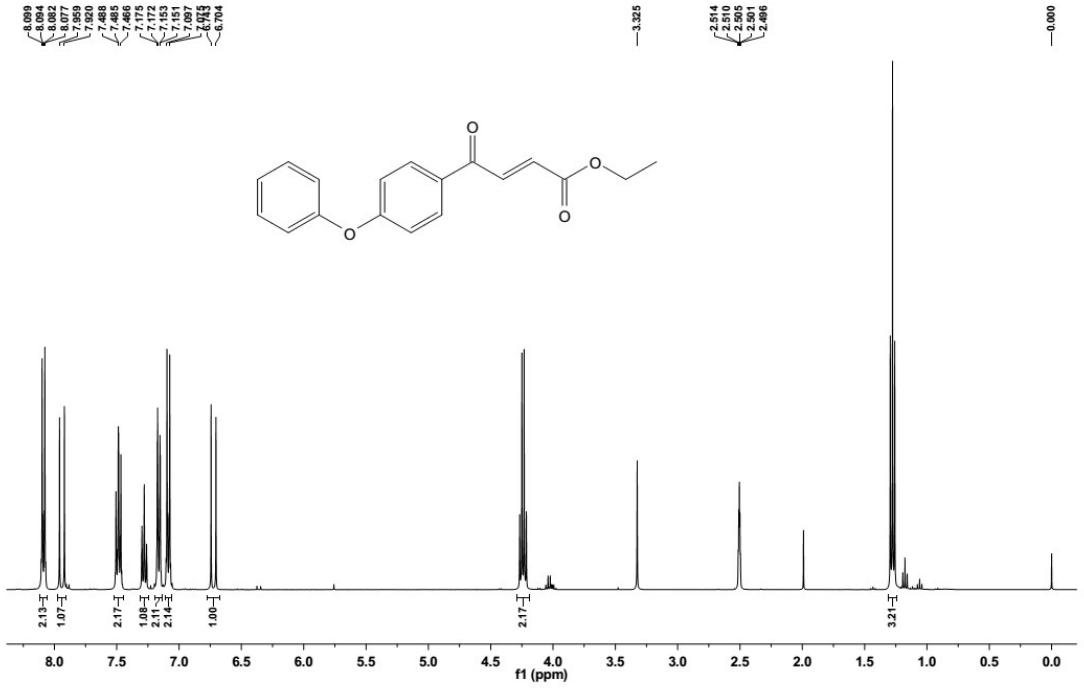
9k



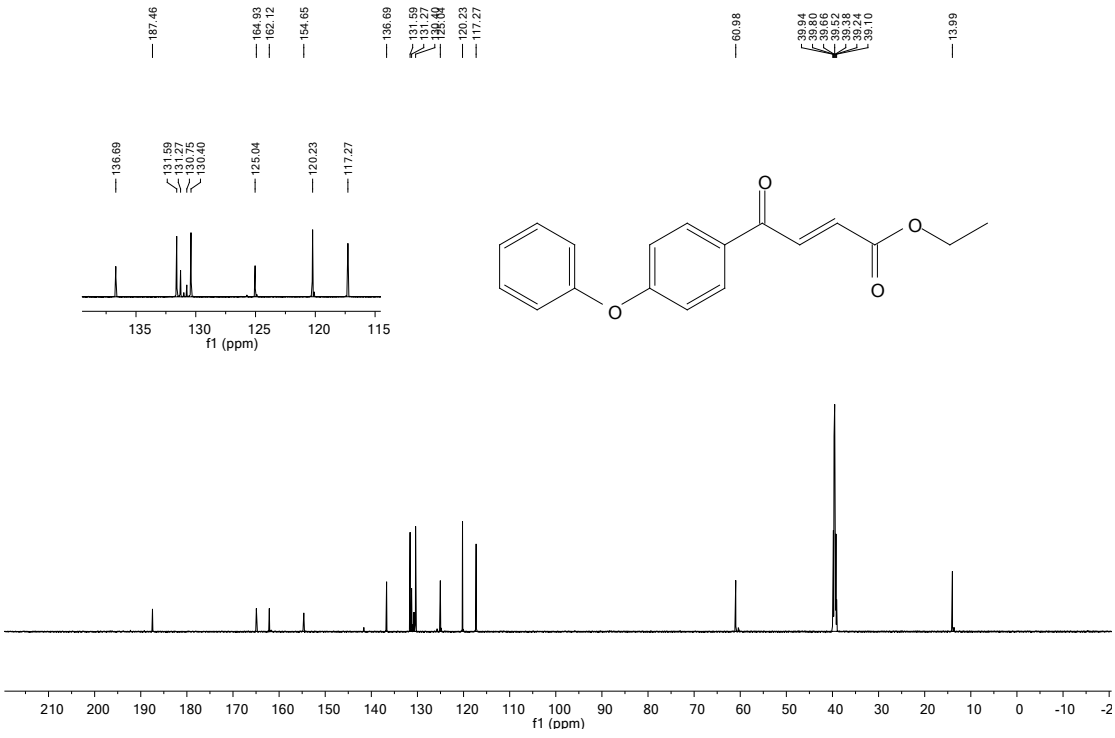
BRUKER AVANCE III 13C-NMR 9k IN DMSO-d6



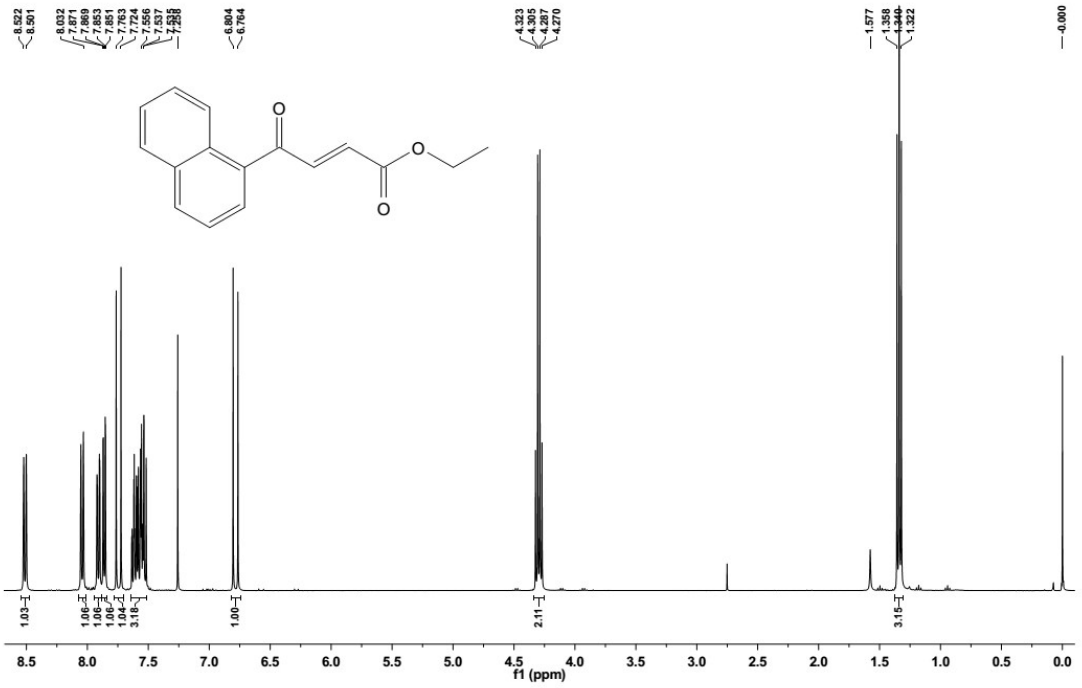
9l



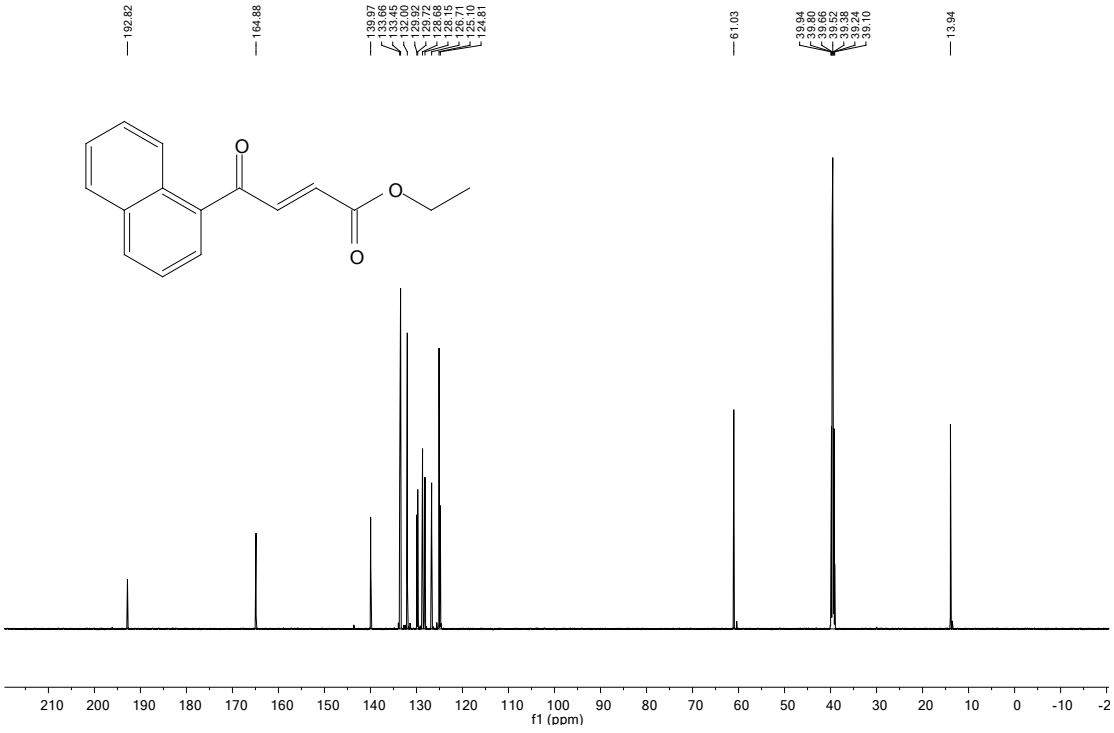
BRUKER AVANCE III 13C-NMR 91 IN DMSO-d6



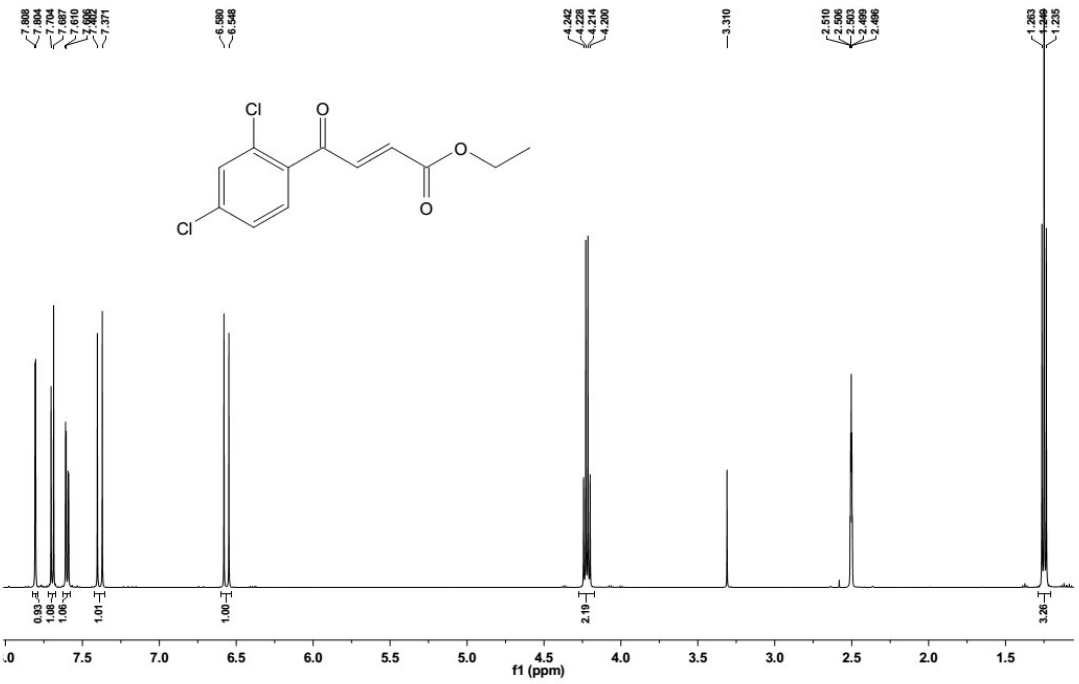
9m



BRUKER AVANCE III 13C-NMR 9m IN DMSO-d6



9n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7.904
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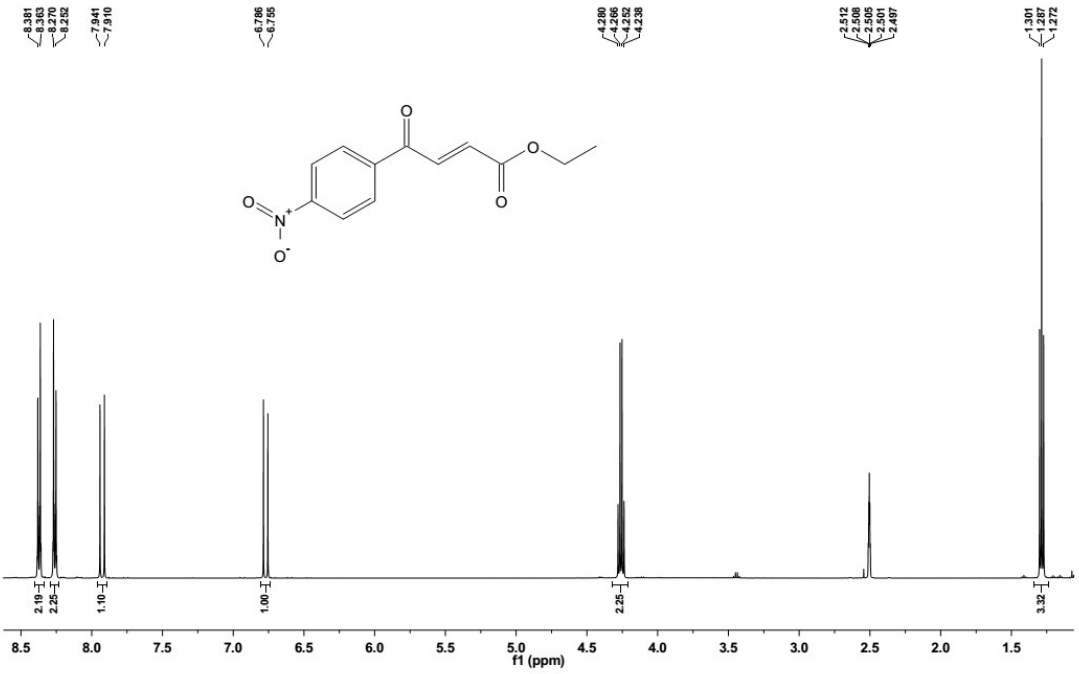
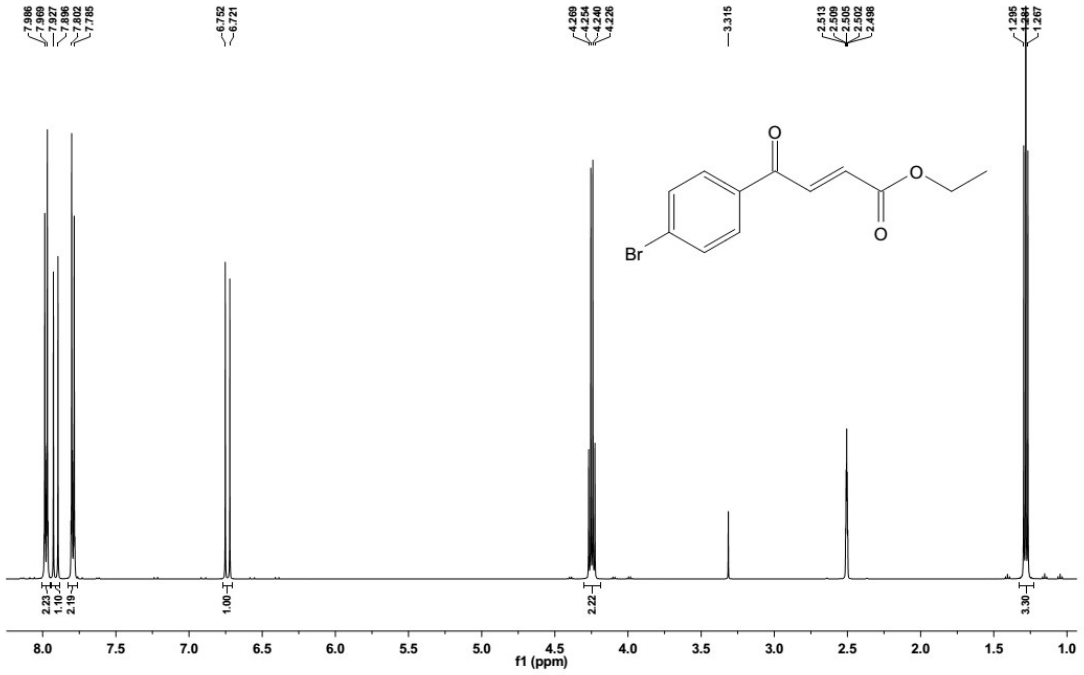
7.687
7.610
7.371
6.580
6.548
4.242
4.226
4.214
4.200
3.310
2.510
2.506
2.503
2.499
2.496
1.263
1.247
1.235
Cl
O
O
O
Cl
0.93
1.08
1.06
1.01
1.00
2.19
3.26
f1 (ppm)

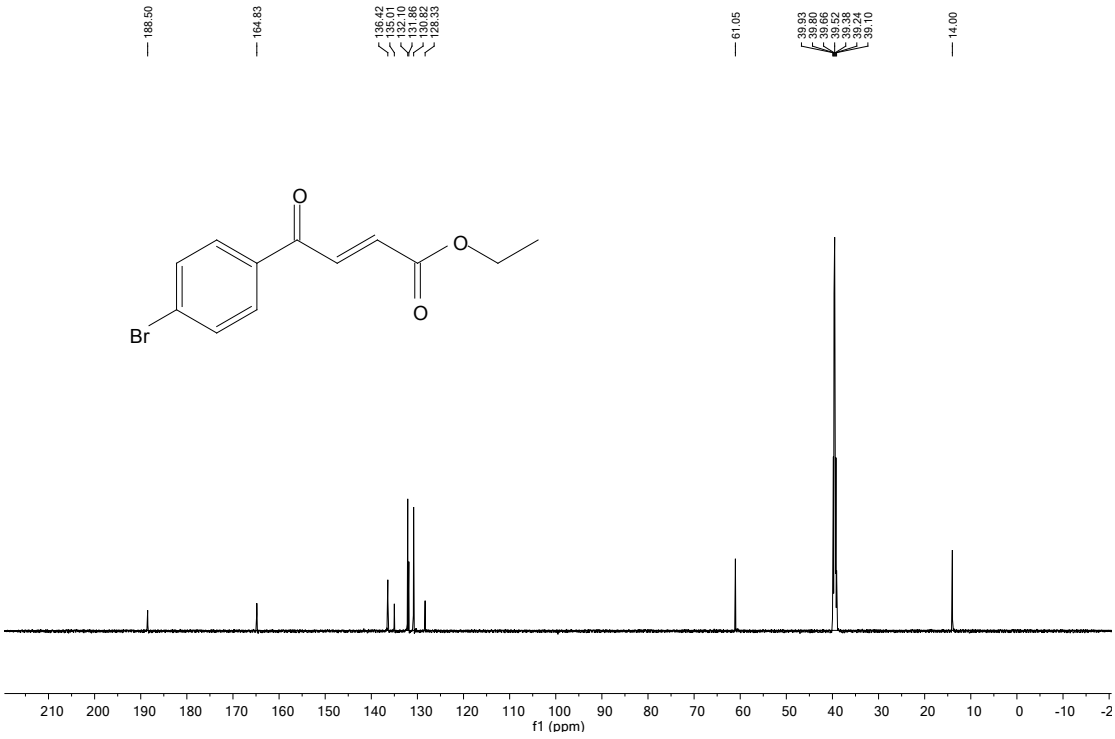
9o


8.381
8.363
8.270
8.252
7.941
7.910
6.786
6.755
4.280
4.266
4.252
4.238
2.512
2.508
2.505
2.501
2.497
1.301
1.287
1.272
O
O
O
O
N+
O-
2.10
2.25
1.10
1.00
2.25
3.32
f1 (ppm)

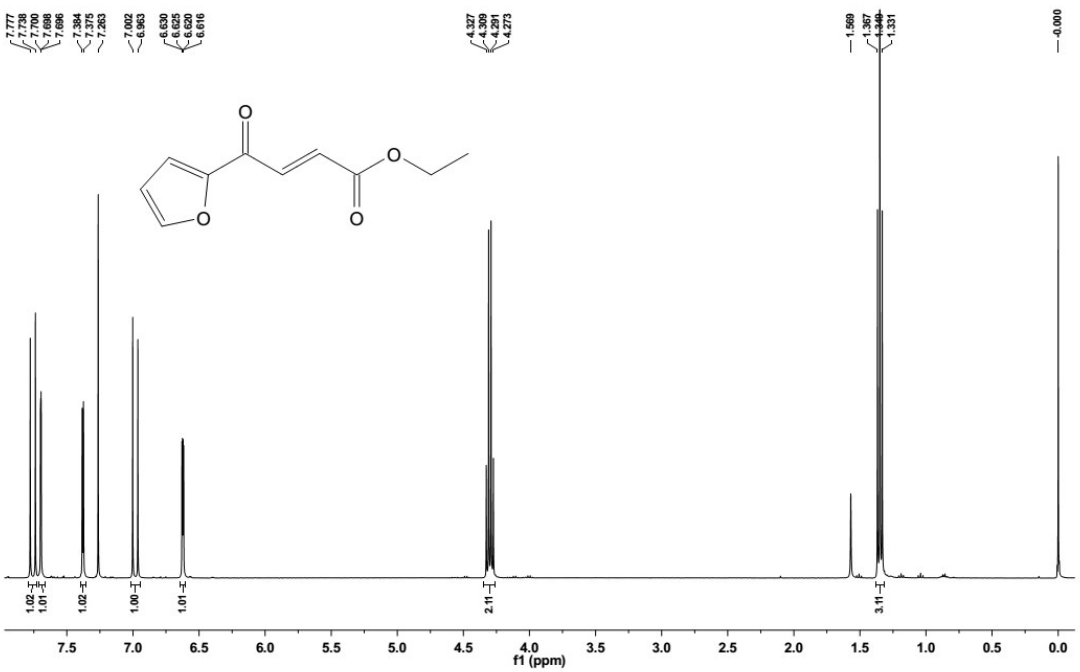
9p



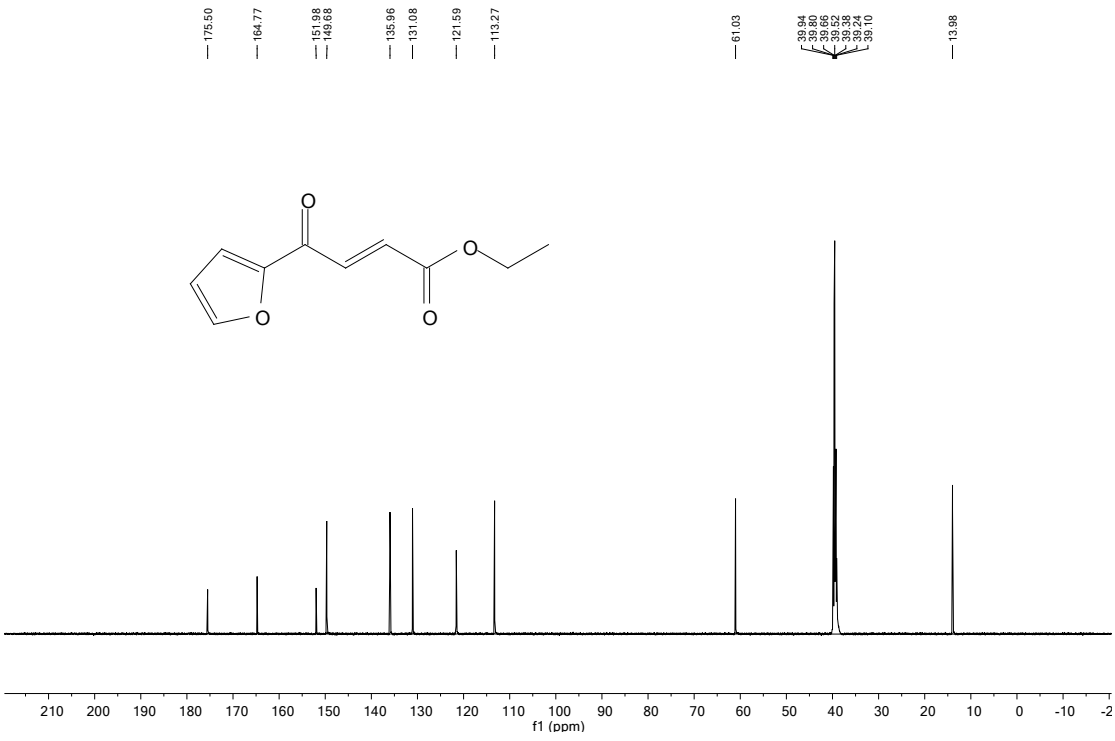
BRUKER AVANCE III 13C-NMR 9p IN DMSO-d6



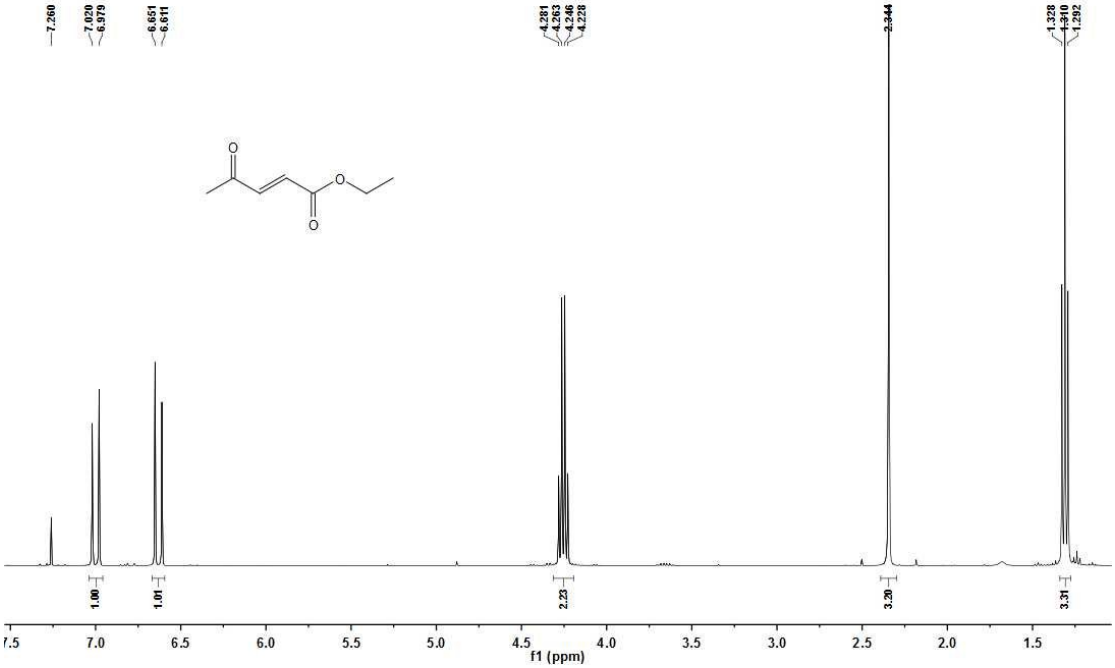
9q



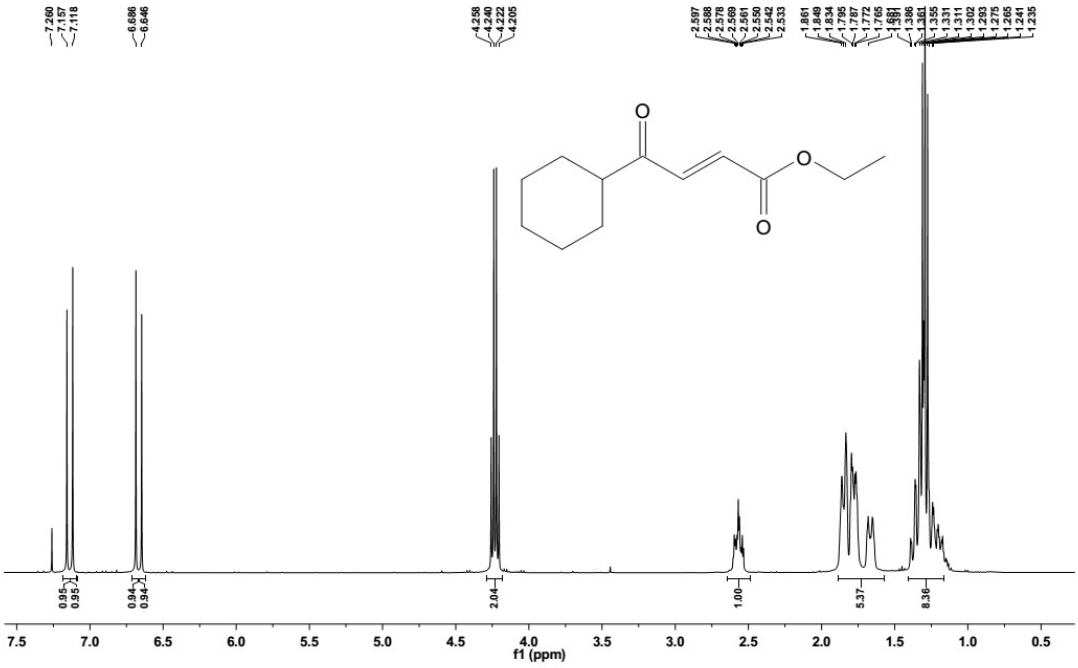
BRUKER AVANCE III 13C-NMR 9q IN DMSO-d6



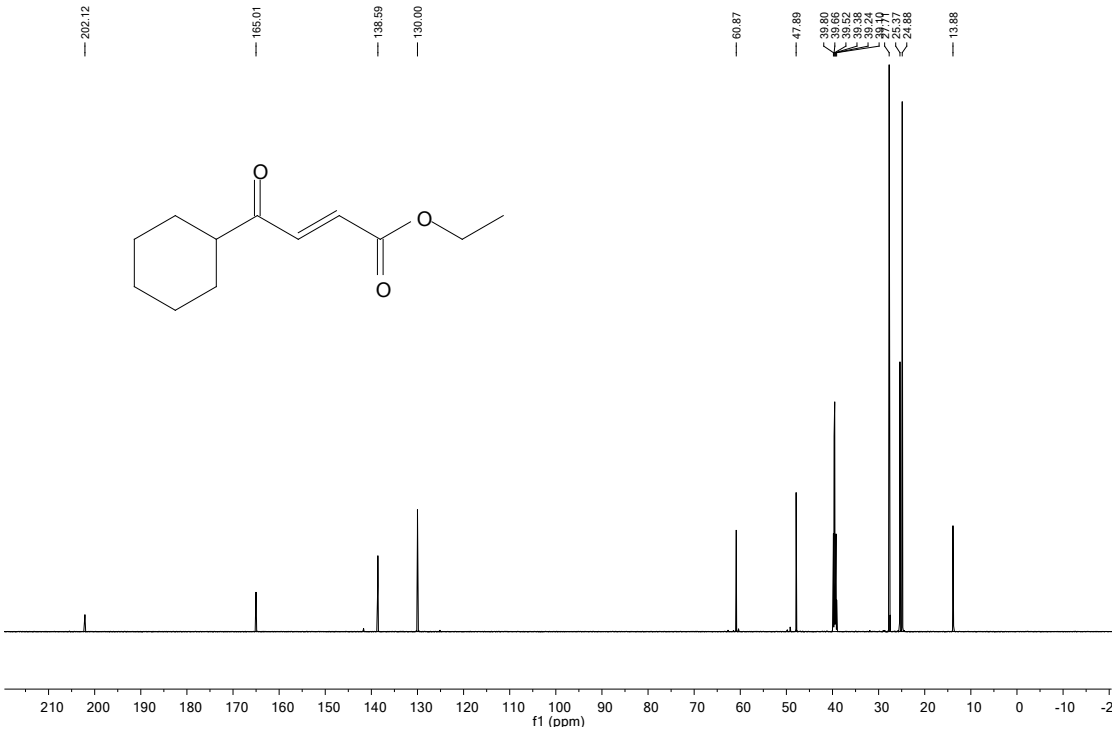
9r


7.260
7.020
6.979
6.651
6.611
4.281
4.263
4.246
4.228
2.344
1.328
1.310
1.292
1.00
1.01
2.23
3.20
3.31
f1 (ppm)

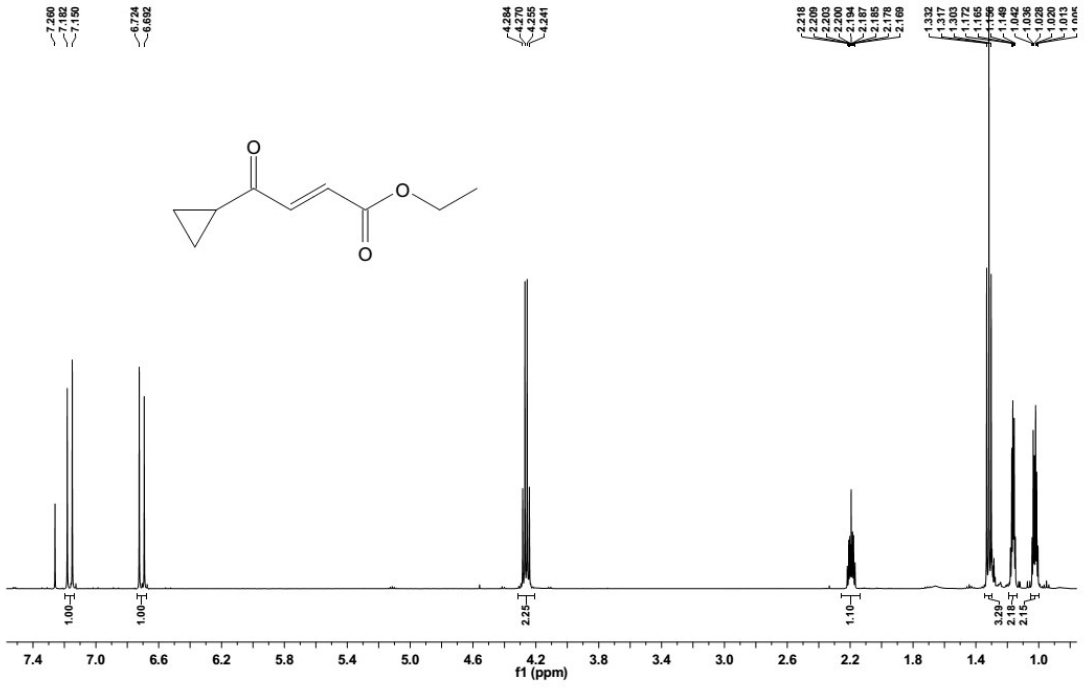
9s


7.260
7.157
7.118
6.686
6.646
4.258
4.240
4.222
4.205
2.597
2.588
2.578
2.569
2.561
2.550
2.542
2.533
1.861
1.849
1.834
1.795
1.787
1.772
1.705
1.681
1.391
1.386
1.355
1.331
1.311
1.302
1.293
1.275
1.265
1.241
1.235
0.95
0.95
0.94
0.94
2.04
1.00
5.37
8.36
f1 (ppm)

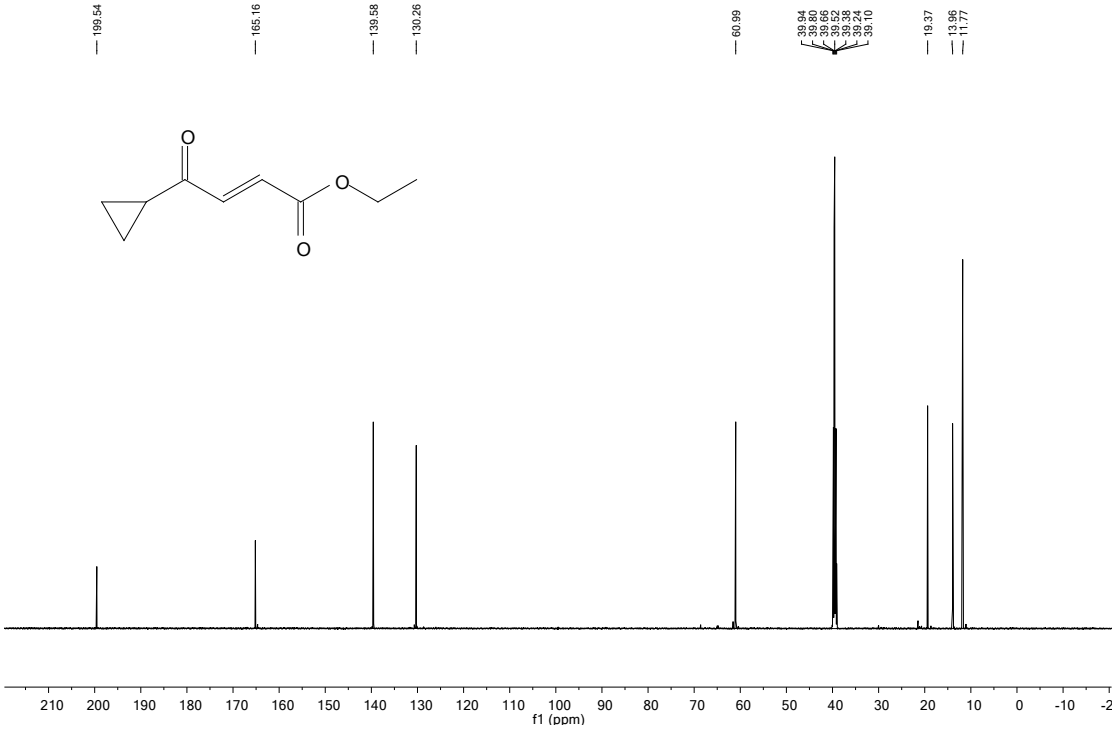
BRUKER AVANCE III 13C-NMR 9s IN DMSO-d6



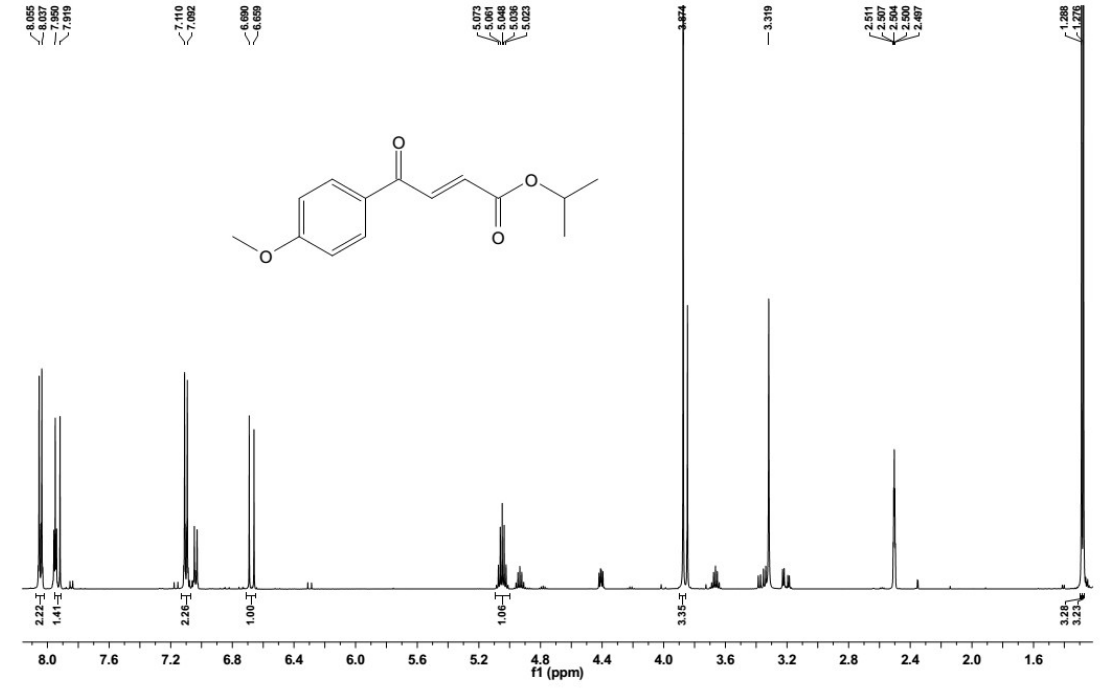
9t



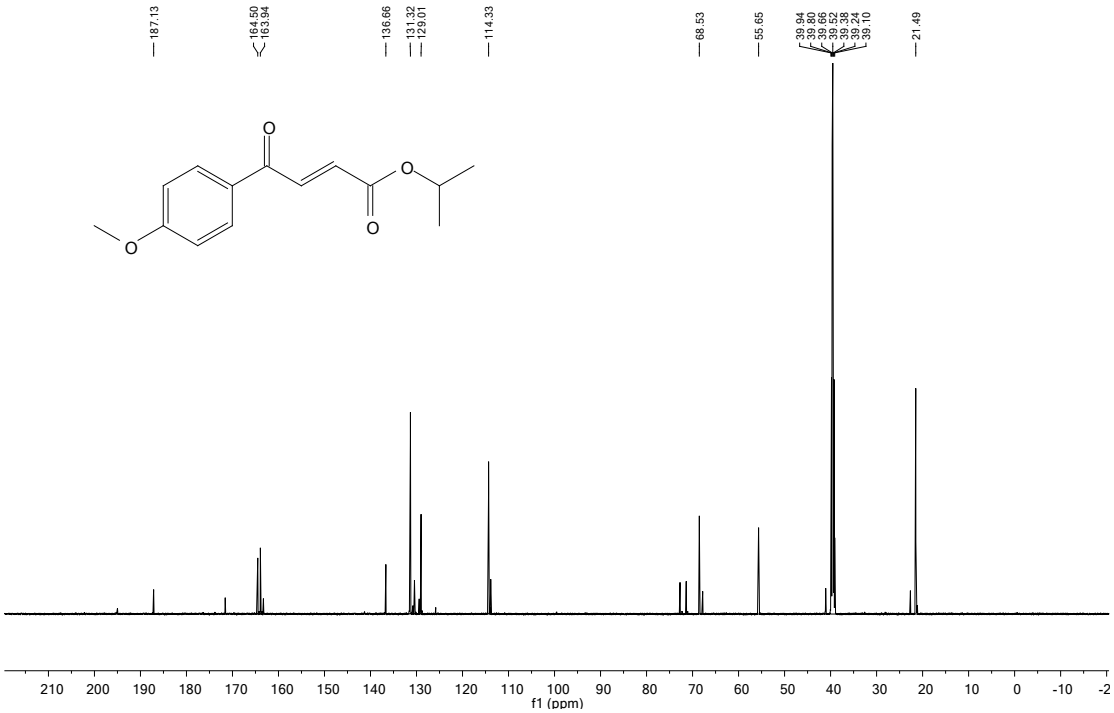
BRUKER AVANCE III 13C-NMR 9t IN DMSO-d6



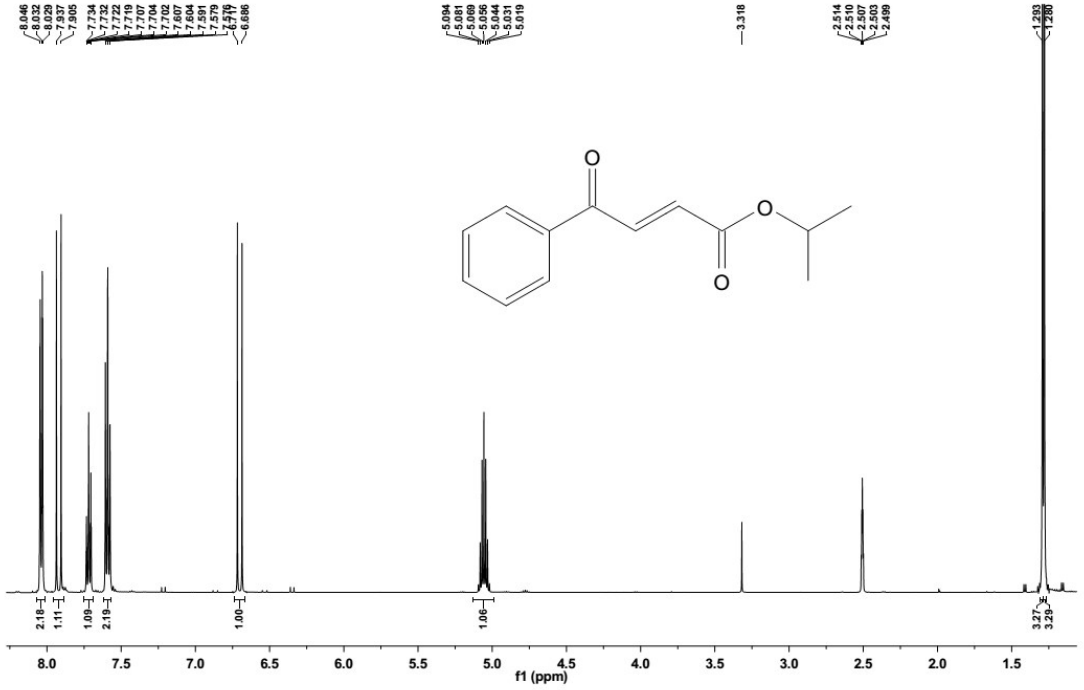
10a



BRUKER AVANCE III 13C-NMR 10a IN DMSO-d6

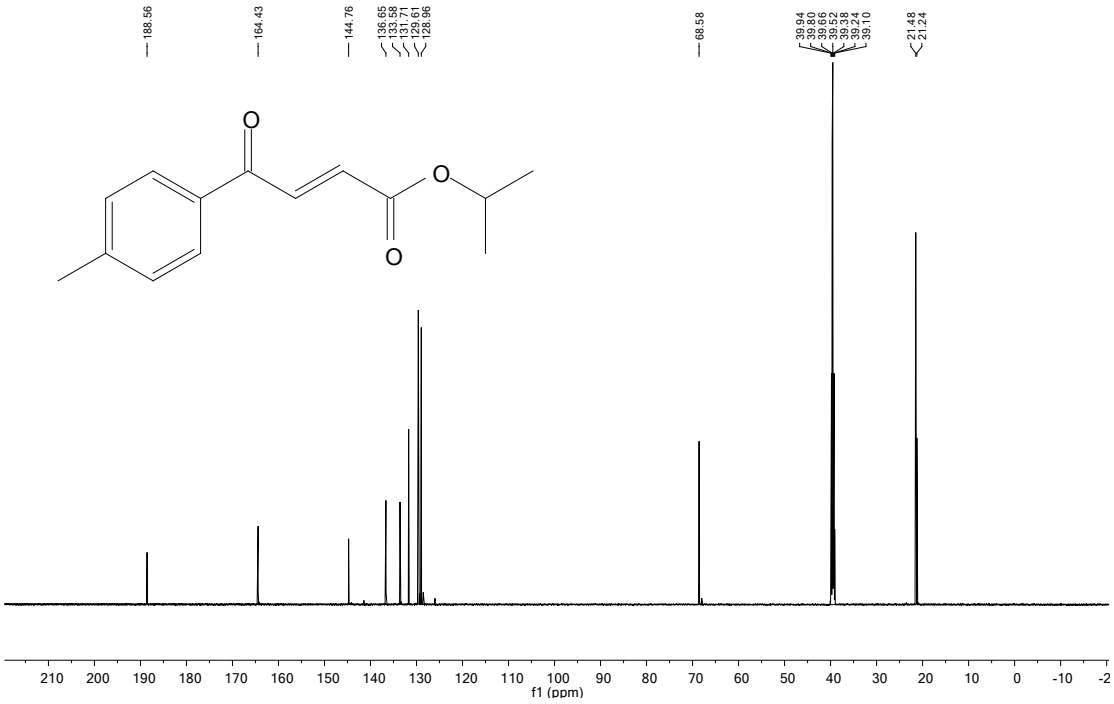


10b

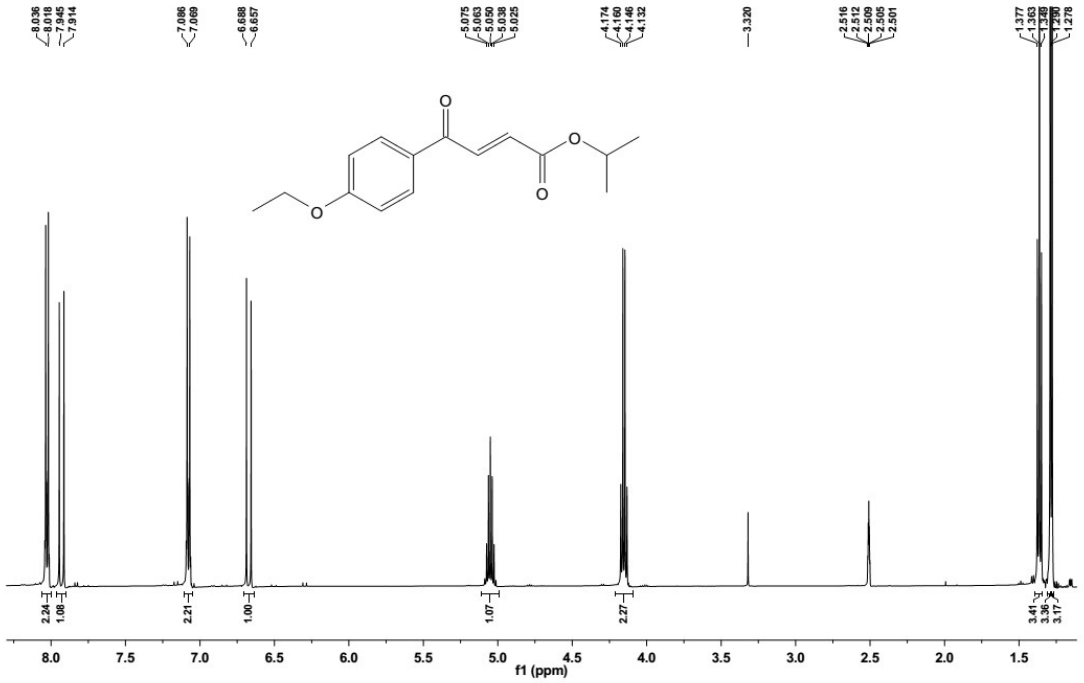


10c

BRUKER AVANCE III 13C-NMR 10c IN DMSO-d6

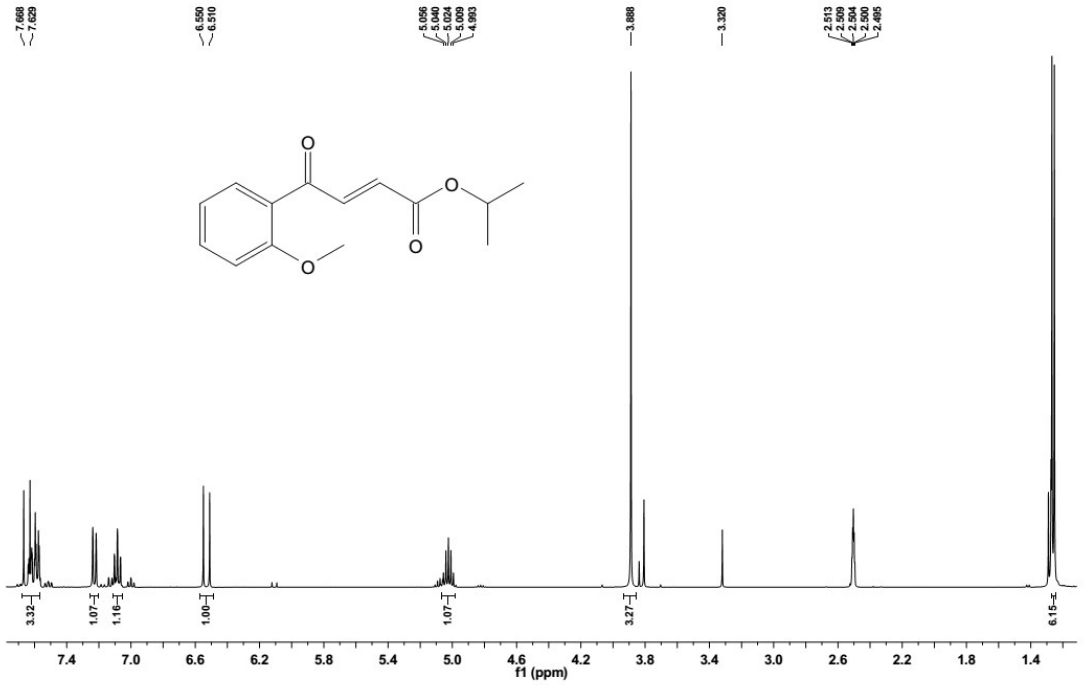


10d

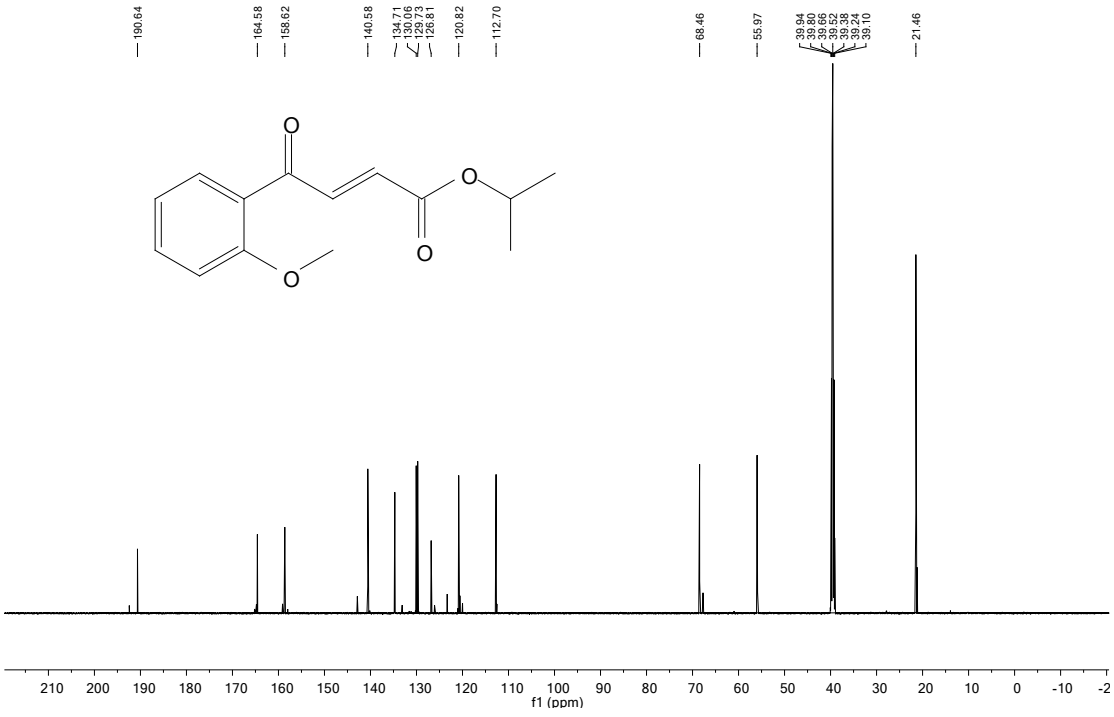


BRUKER AVANCE III 13C-NMR 10d IN DMSO-d6

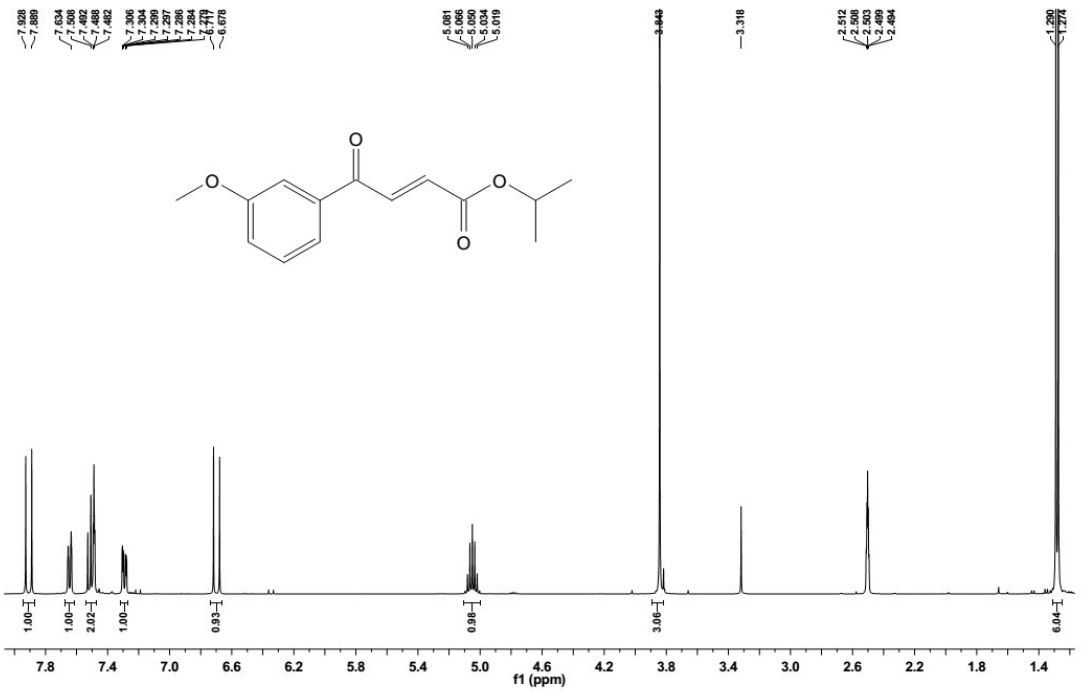
10e



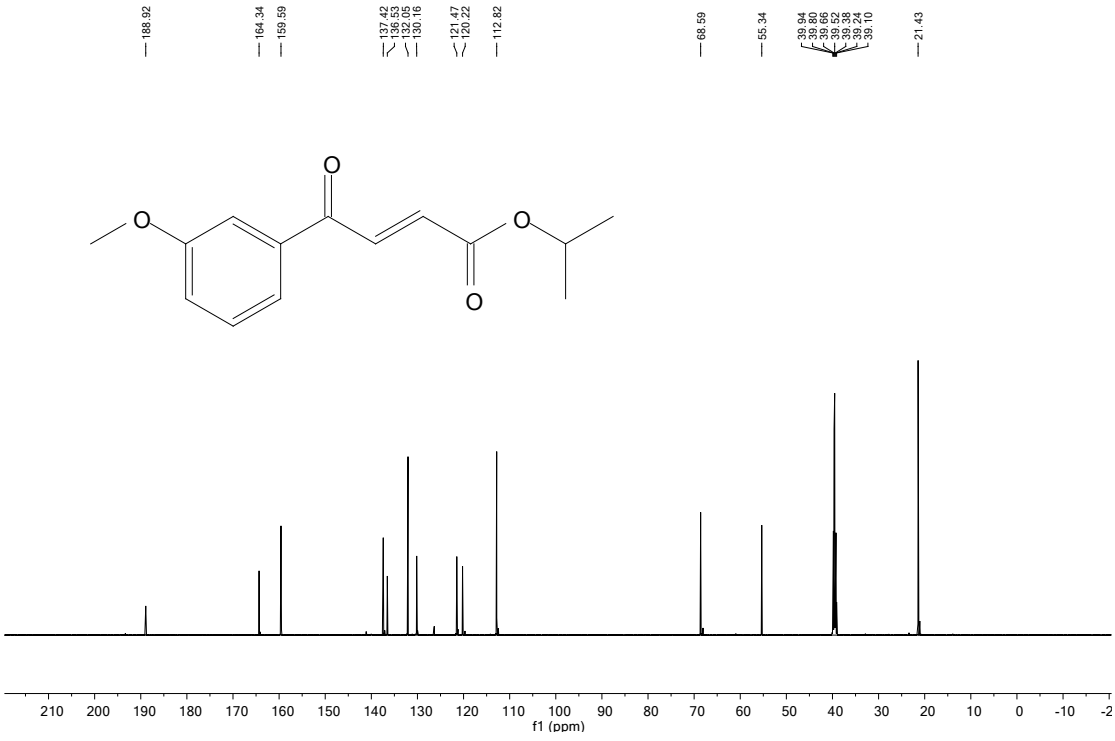
BRUKER AVANCE III 13C-NMR 10e IN DMSO-d6



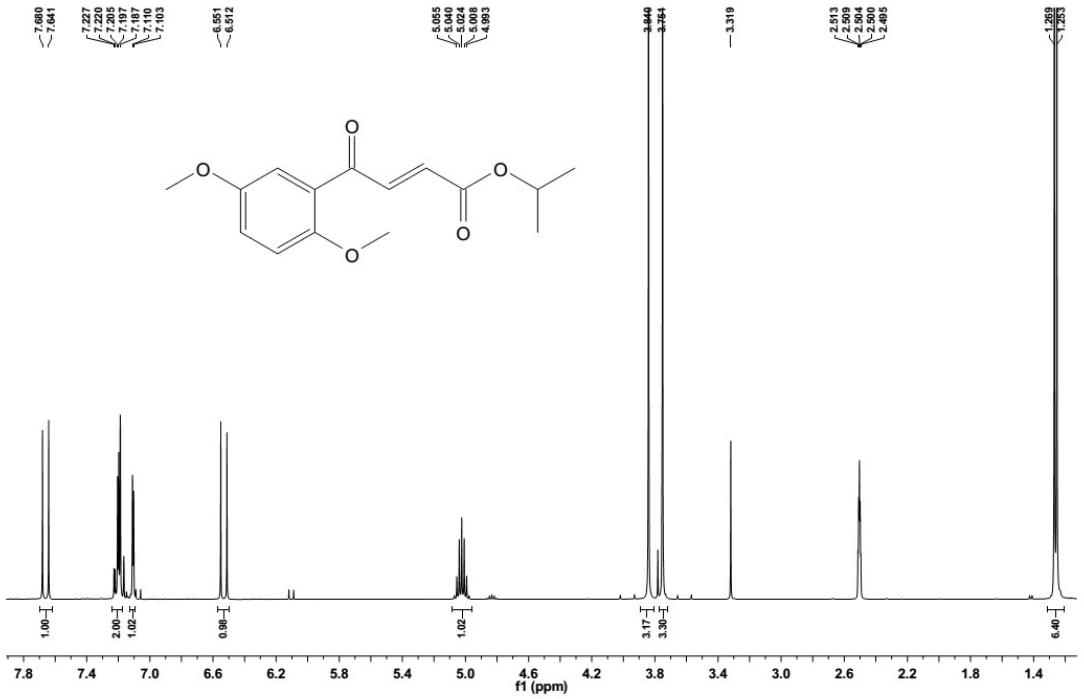
10f



BRUKER AVANCE III 13C-NMR 10f IN DMSO-d6

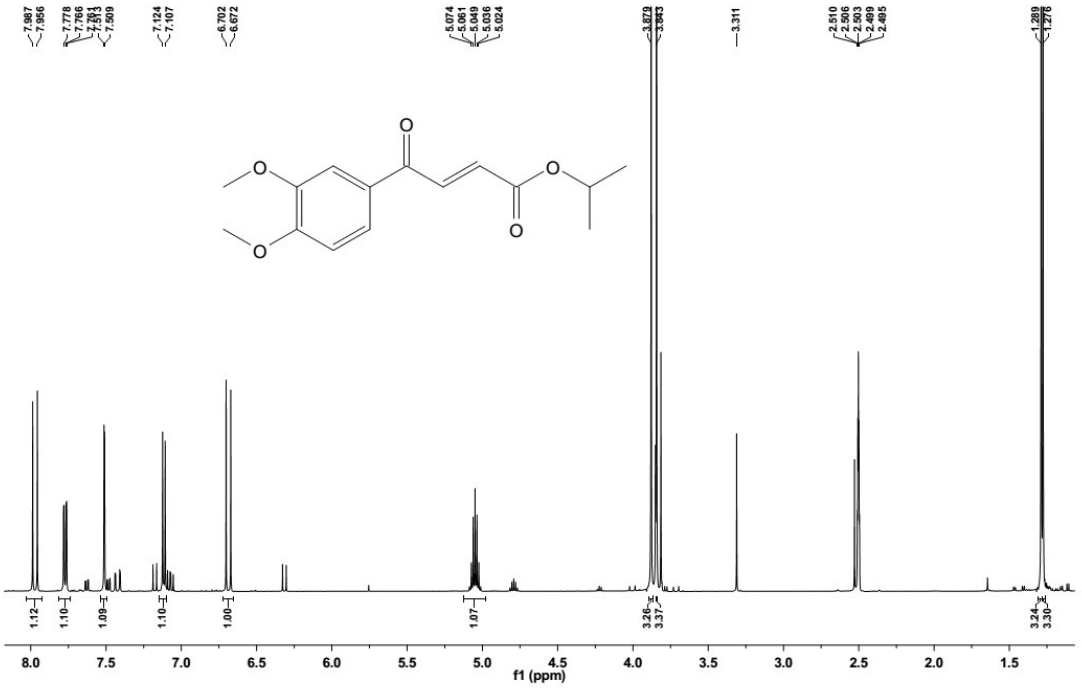


10g

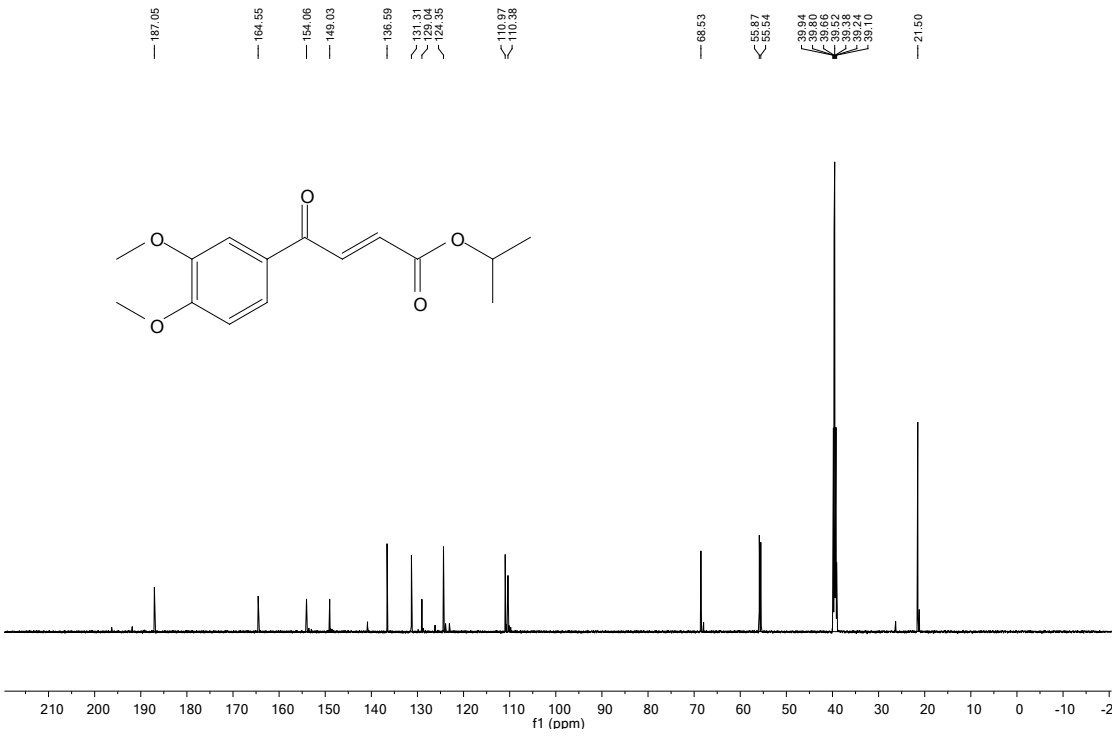


BRUKER AVANCE III 13C-NMR 10g IN DMSO-d6

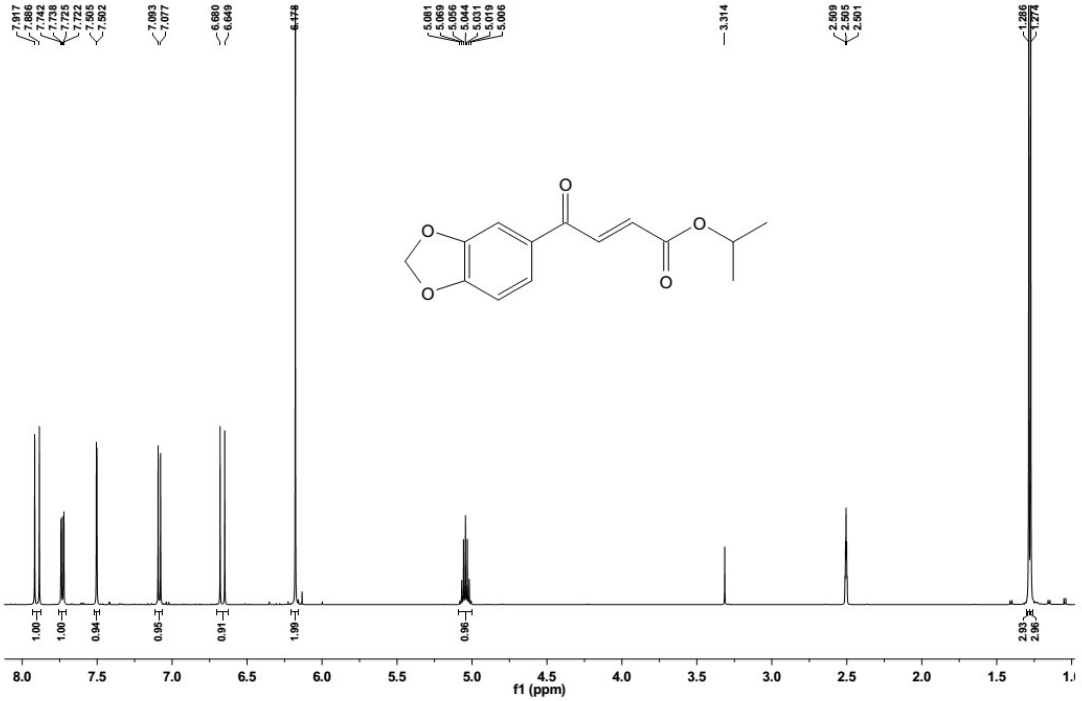
10h



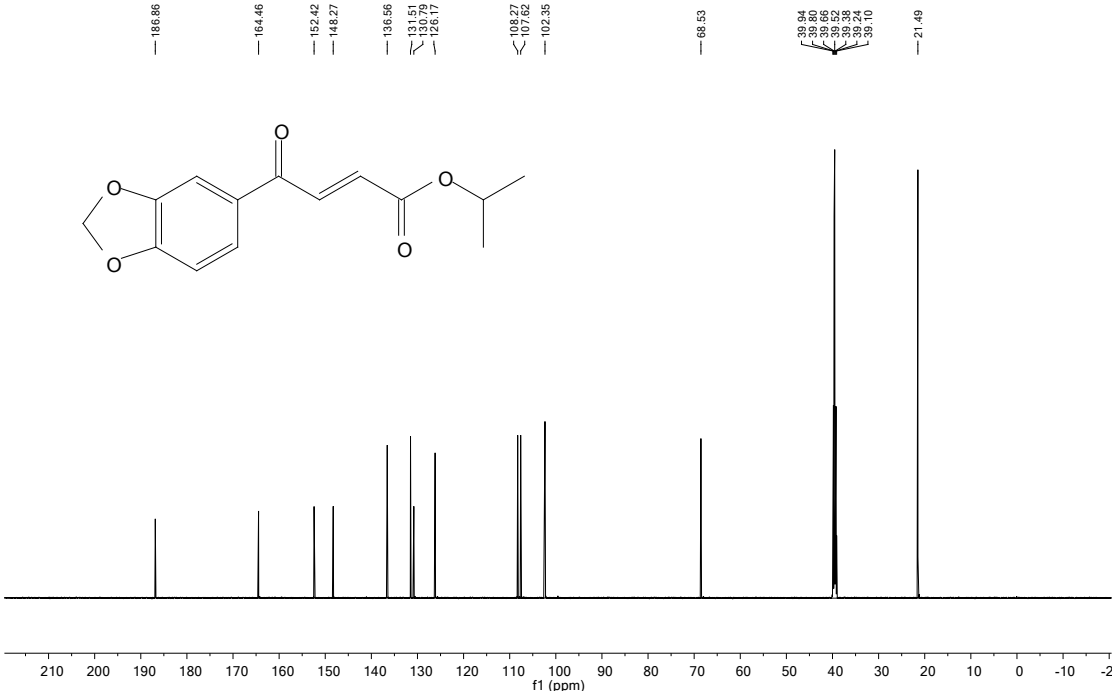
BRUKER AVANCE III 13C-NMR 10h IN DMSO-d6



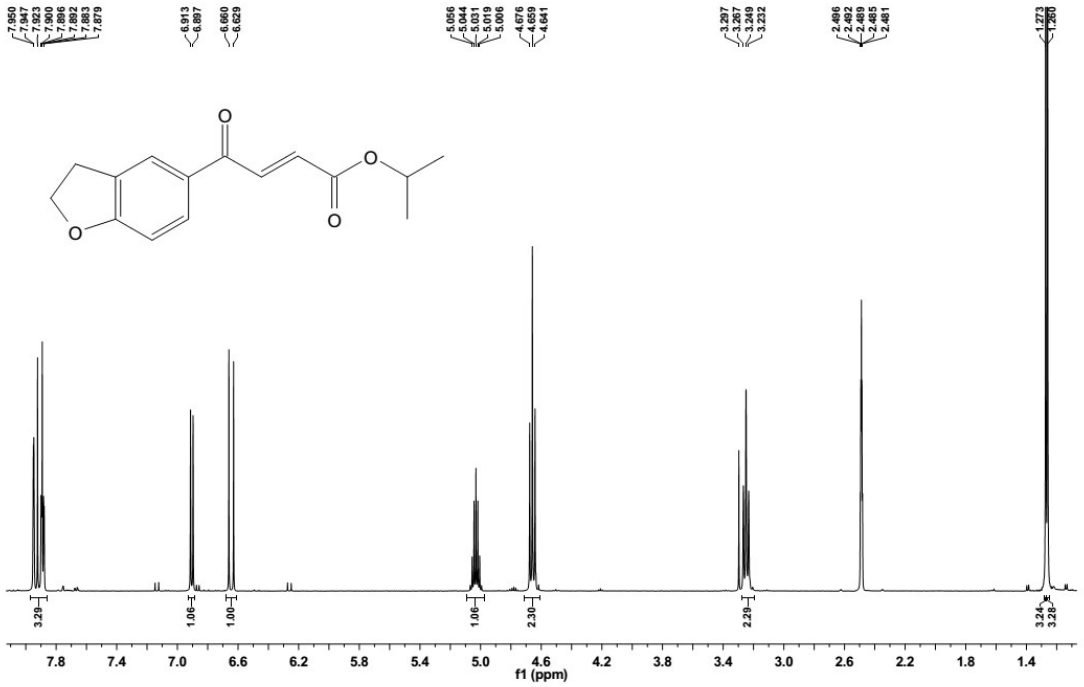
10i



BRUKER AVANCE III 13C-NMR 10i IN DMSO-d6

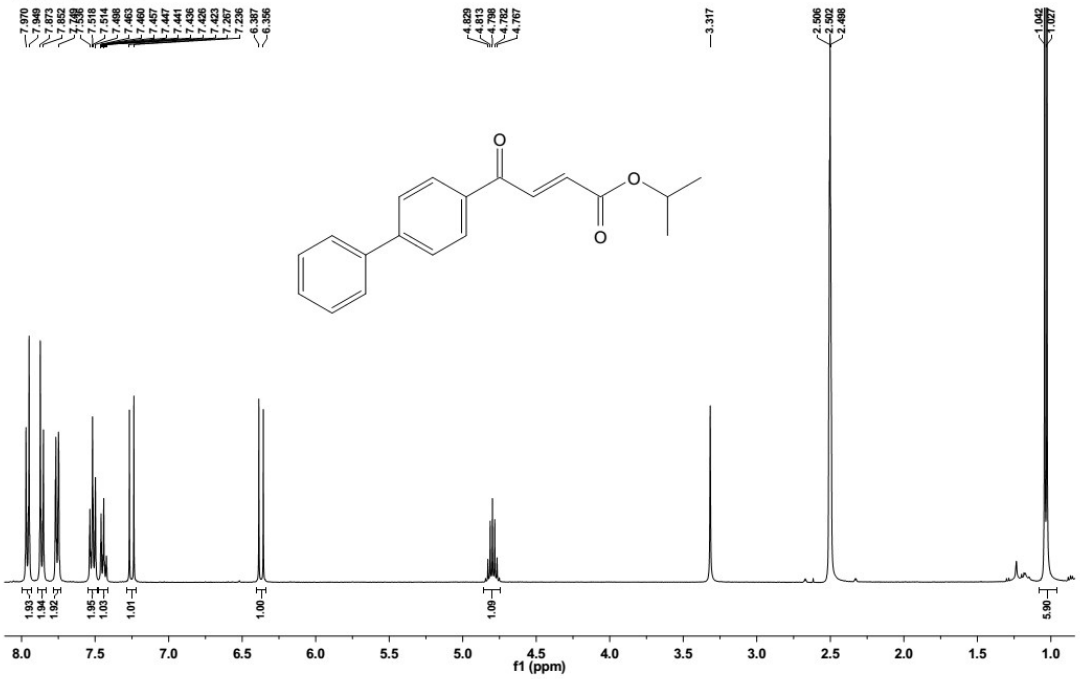


10j

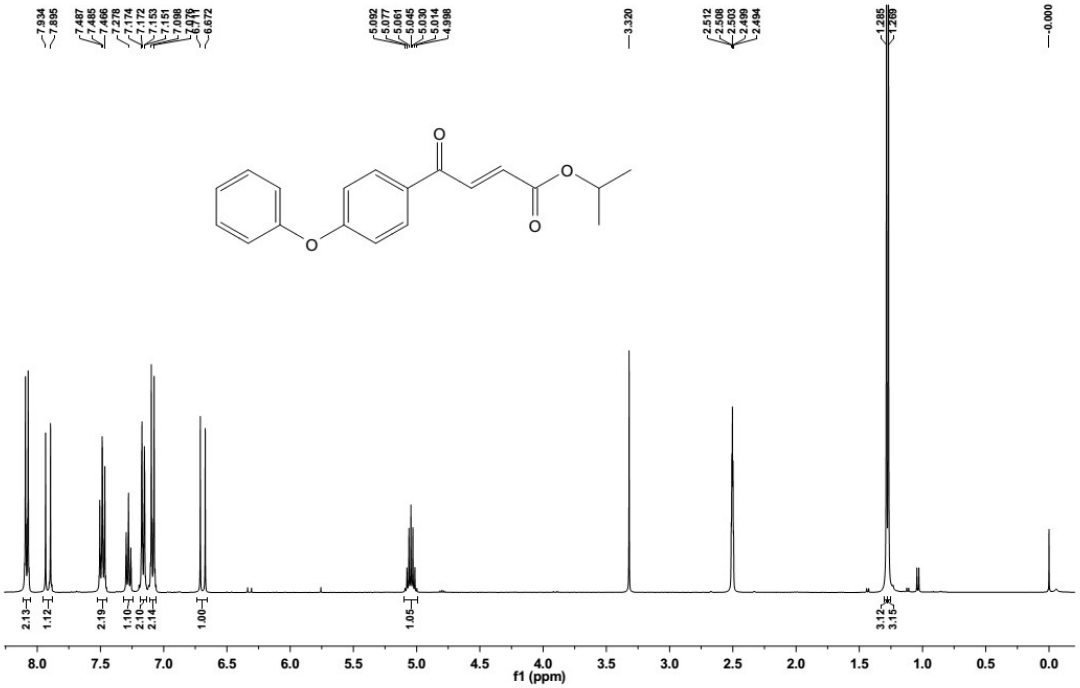


BRUKER AVANCE III 13C-NMR 10j IN DMSO-d6

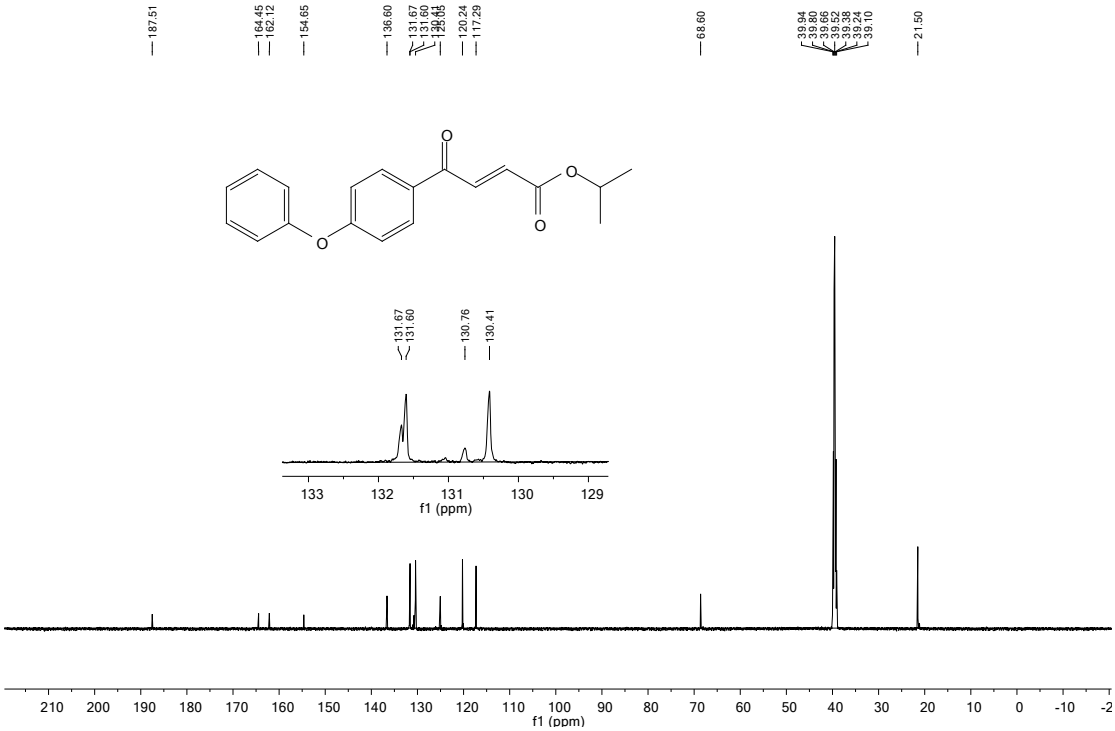
10k


7.970
7.949
7.873
7.852
7.514
7.498
7.463
7.460
7.457
7.447
7.441
7.436
7.426
7.423
7.267
7.236
6.387
6.356
4.829
4.813
4.798
4.782
4.767
3.317
2.506
2.502
2.498
1.042
1.027
O
O
O
1.93
1.94
1.92
1.95
1.03
1.01
1.00
1.09
5.90
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
f1 (ppm)

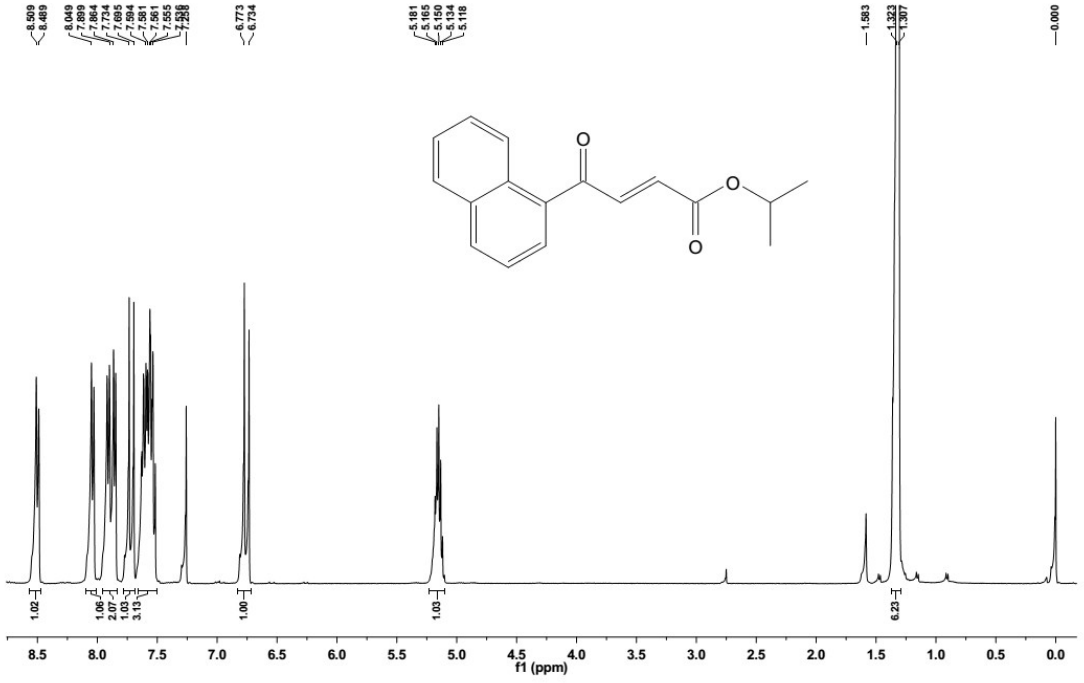
10l


7.934
7.895
7.487
7.485
7.466
7.278
7.174
7.172
7.153
7.151
7.098
6.711
6.672
5.092
5.077
5.061
5.045
5.030
5.014
4.998
3.320
2.512
2.508
2.503
2.499
2.494
1.285
1.269
0.000
O
O
O
O
2.13
1.12
2.19
1.10
2.10
2.14
1.00
1.05
3.12
3.15
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)

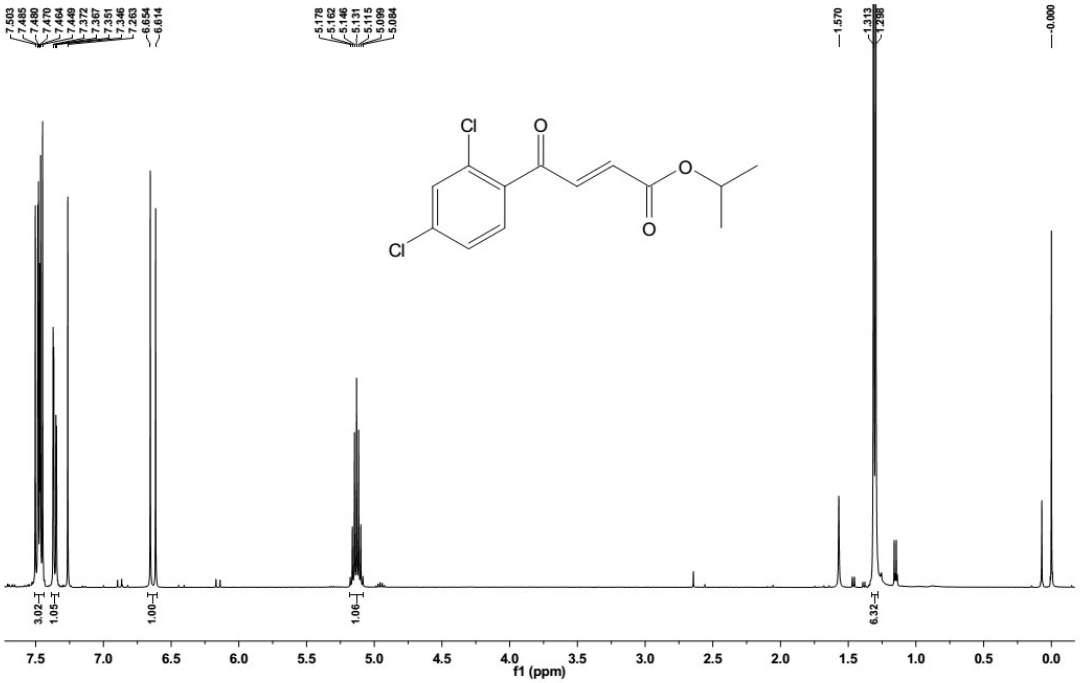
BRUKER AVANCE III 13C-NMR 101 IN DMSO-d6



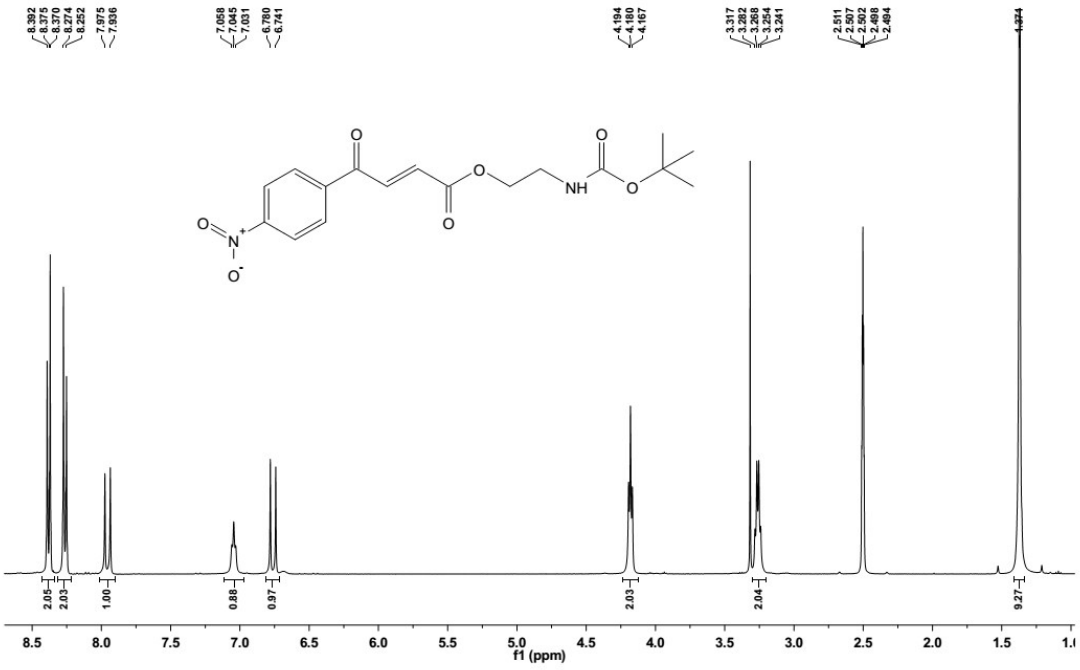
10m



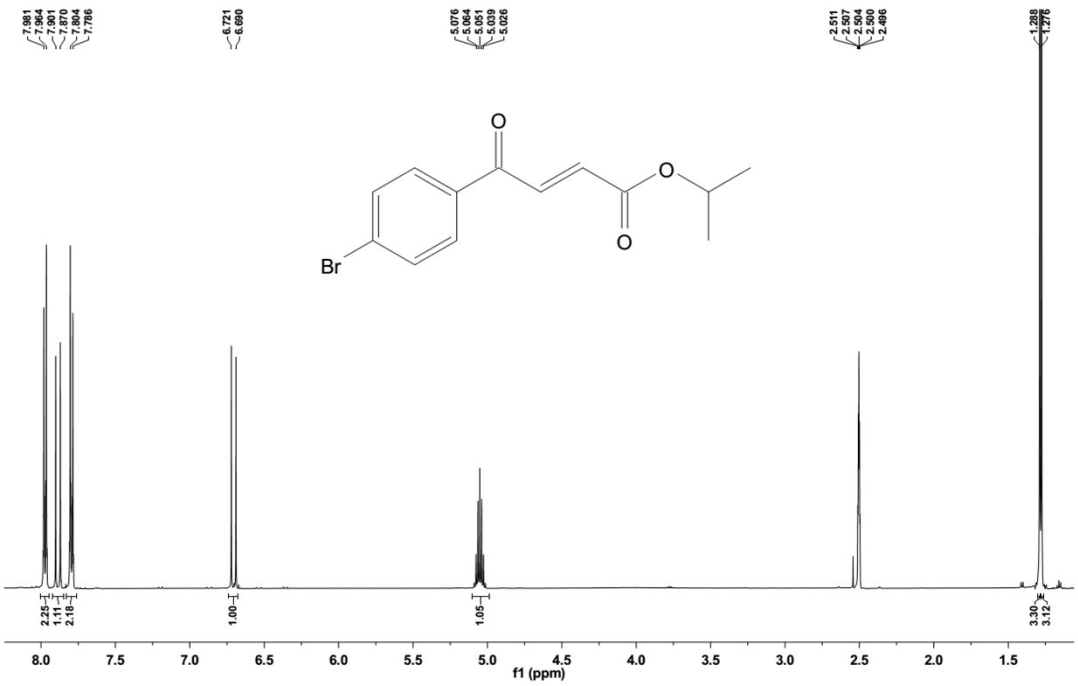
10n


7.503
7.485
7.480
7.470
7.464
7.449
7.372
7.367
7.351
7.346
7.263
6.654
6.614
5.178
5.162
5.146
5.131
5.115
5.099
5.084
1.570
1.313
1.298
0.000
Cl
O
O
O
Cl
3.02
1.05
1.00
1.06
6.32
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)

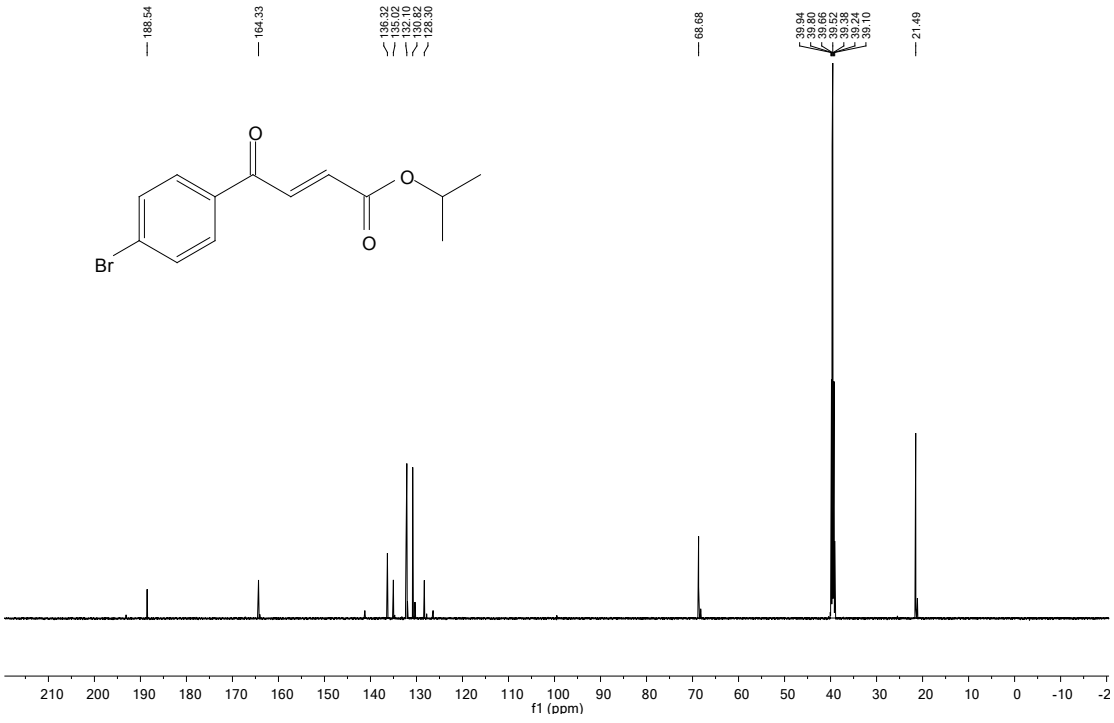
10o


8.392
8.375
8.370
8.274
8.252
7.975
7.936
7.058
7.045
7.031
6.780
6.741
4.194
4.180
4.167
3.317
3.282
3.268
3.254
3.241
2.511
2.507
2.502
2.498
2.494
1.324
O
O
O
NH
O
O
O
N
O
2.05
2.03
1.00
0.88
0.97
2.03
2.04
9.27
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
f1 (ppm)

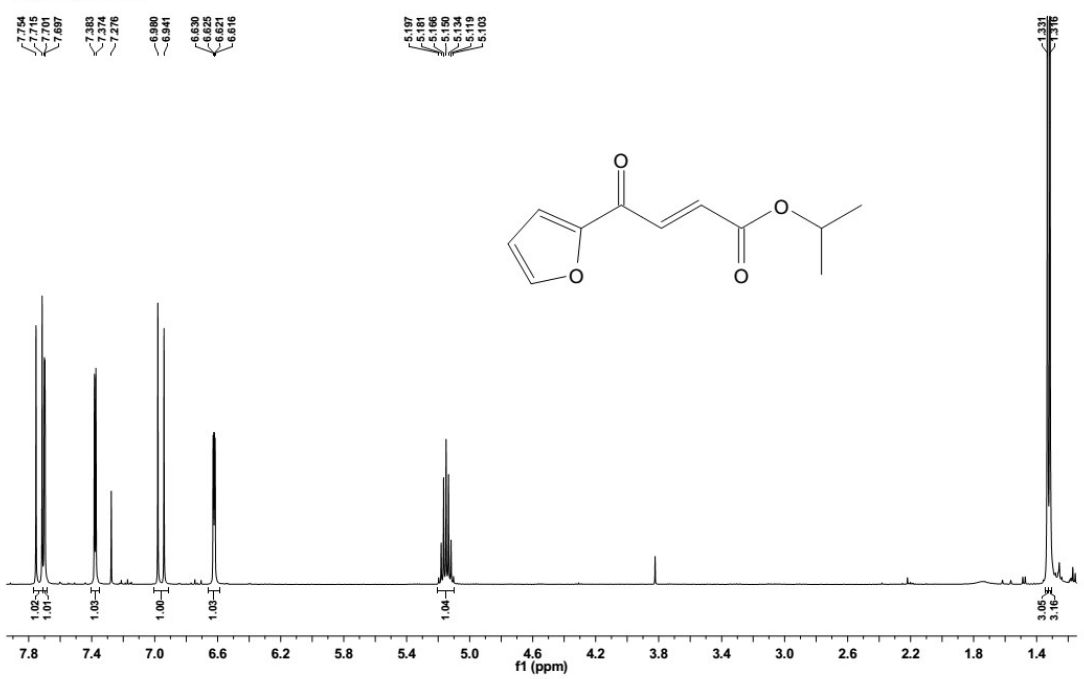
10p



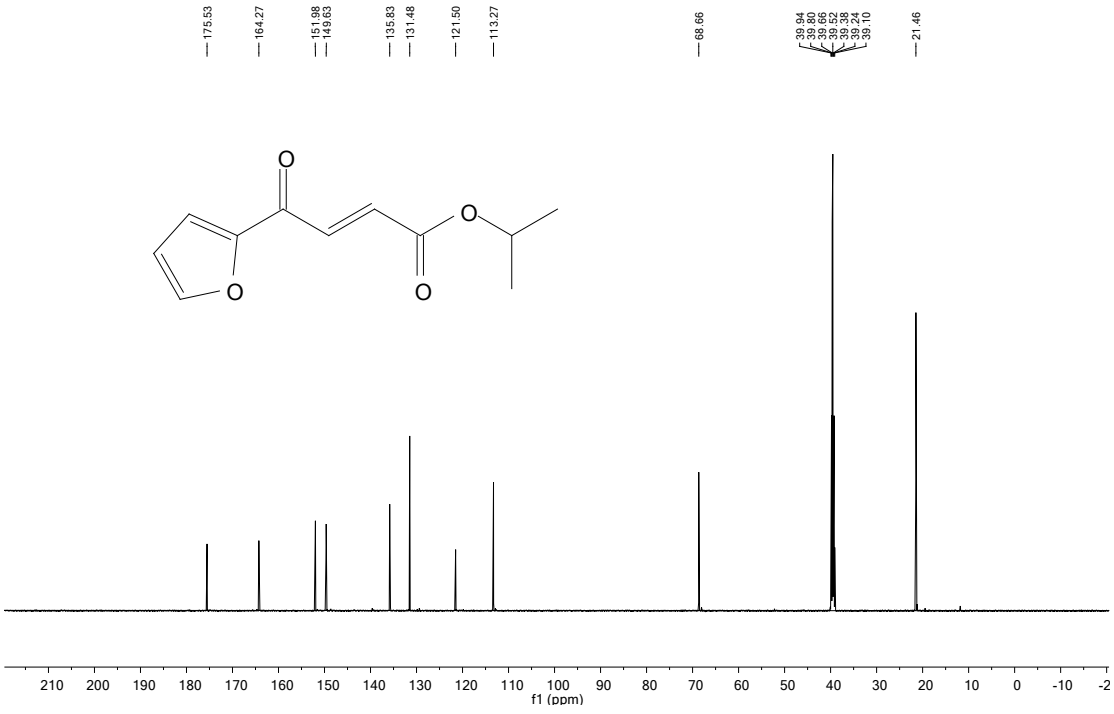
BRUKER AVANCE III 13C-NMR 10p IN DMSO-d6



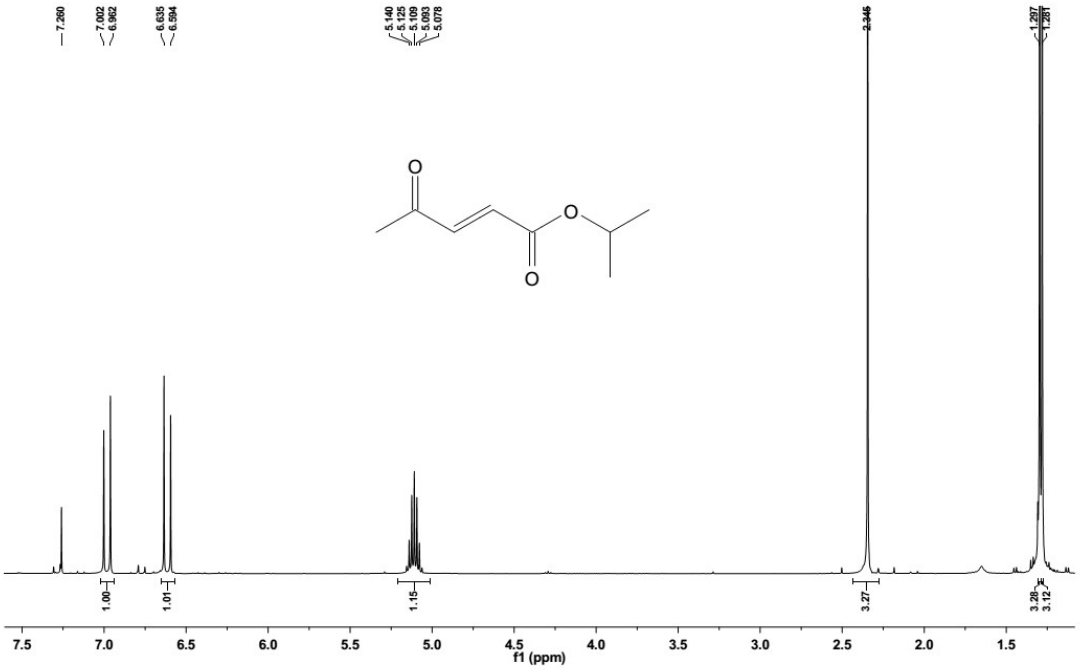
10q



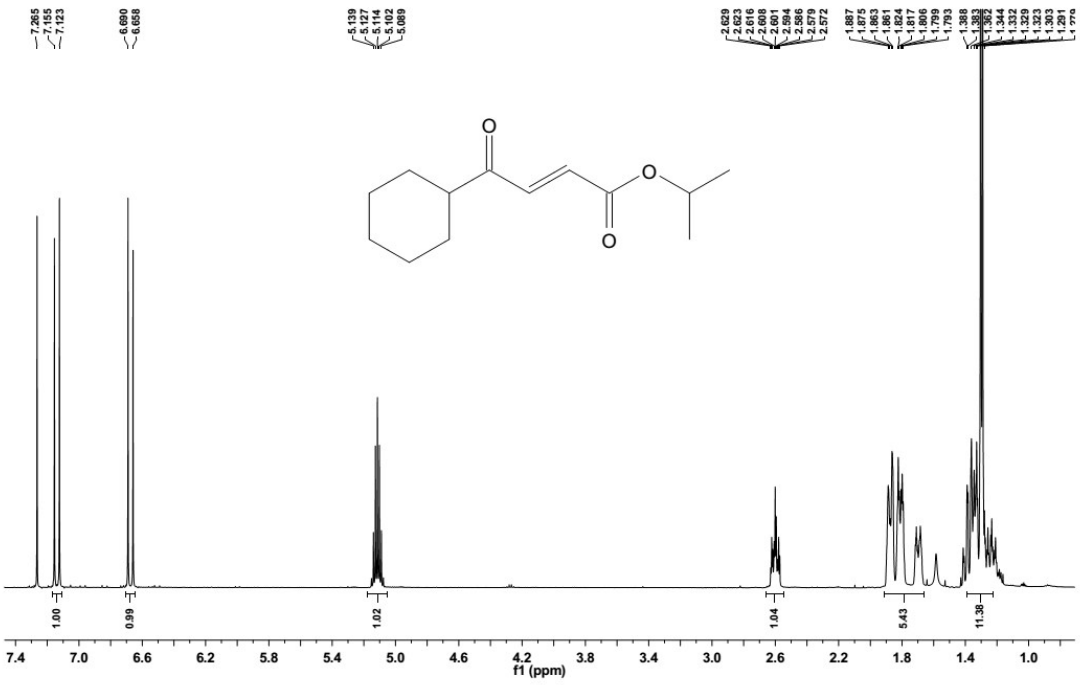
BRUKER AVANCE III 13C-NMR 10q IN DMSO-d6



10r

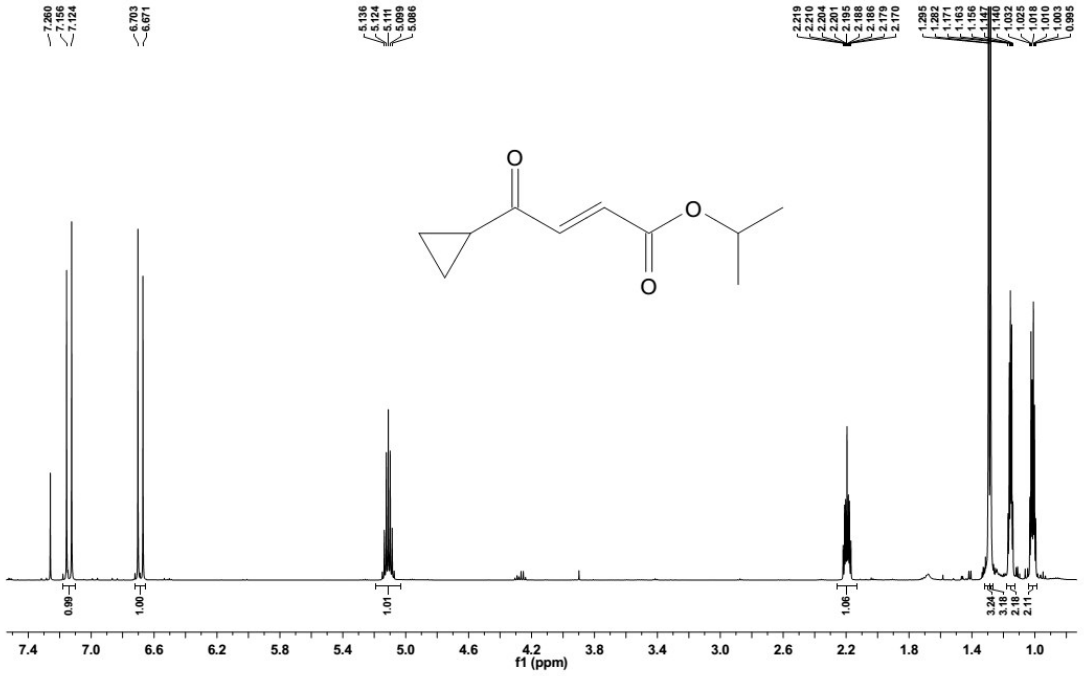

7.260
7.002
6.982
6.635
6.594
5.140
5.125
5.109
5.093
5.078
2.346
1.297
1.281
1.00
1.01
1.15
3.27
3.28
3.12
7.5
7.0
6.5
6.0
5.5
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
f1 (ppm)

10s


7.265
7.155
7.123
6.690
6.658
5.139
5.127
5.114
5.103
5.089
2.639
2.623
2.616
2.608
2.601
2.594
2.586
2.579
2.572
1.887
1.875
1.863
1.861
1.824
1.817
1.806
1.793
1.793
1.388
1.383
1.362
1.344
1.332
1.329
1.323
1.303
1.291
1.00
0.99
1.02
1.04
5.43
11.38
7.4
7.0
6.6
6.2
5.8
5.4
5.0
4.6
4.2
3.8
3.4
3.0
2.6
2.2
1.8
1.4
1.0
f1 (ppm)

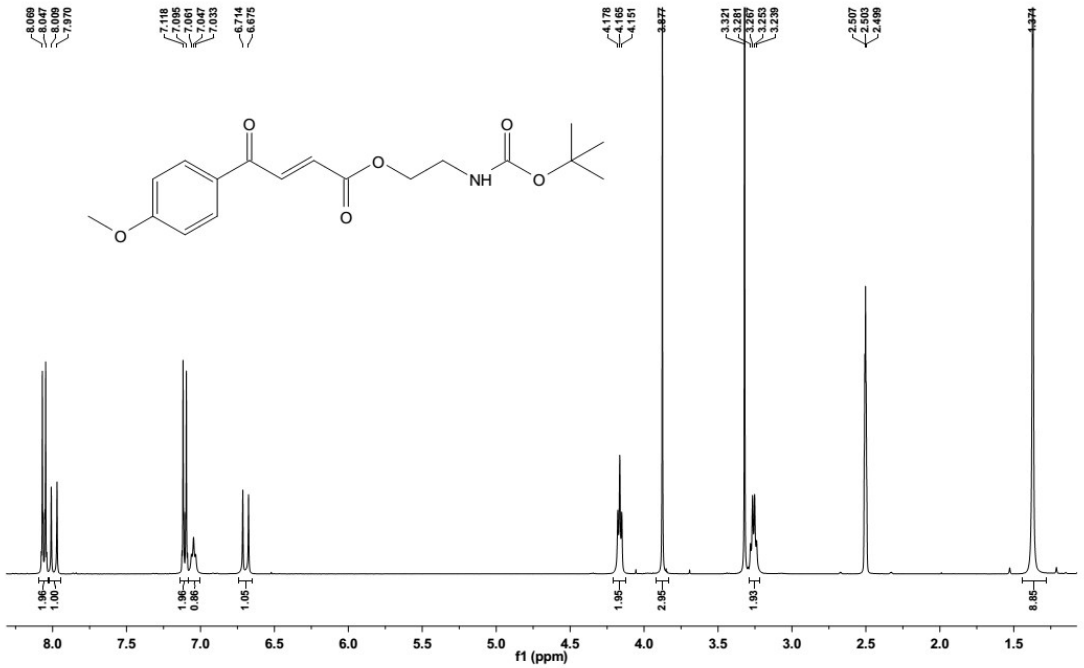
BRUKER AVANCE III 13C-NMR 10s IN DMSO-d6

10t

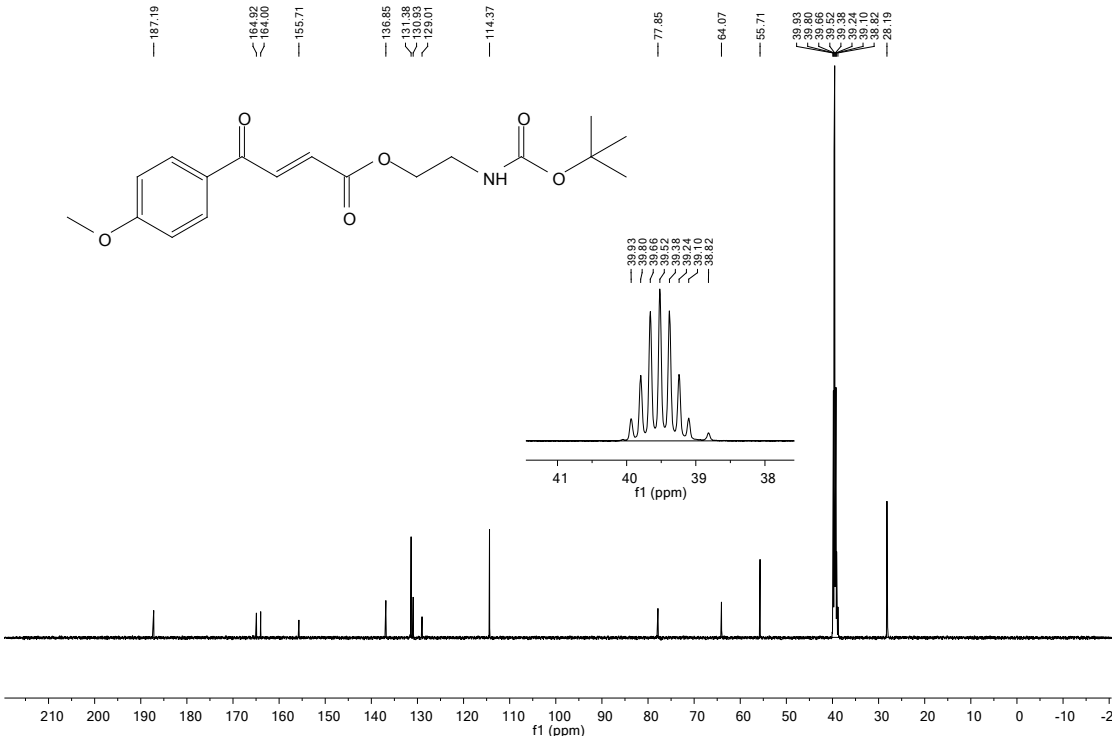


BRUKER AVANCE III 13C-NMR 10t IN DMSO-d6

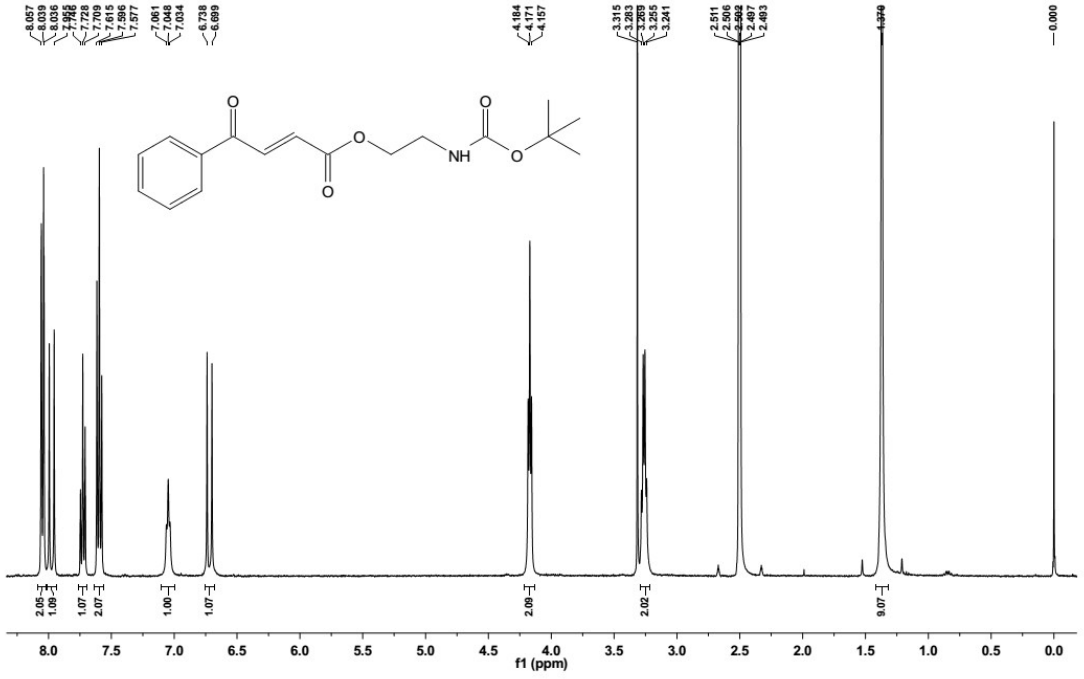
11a



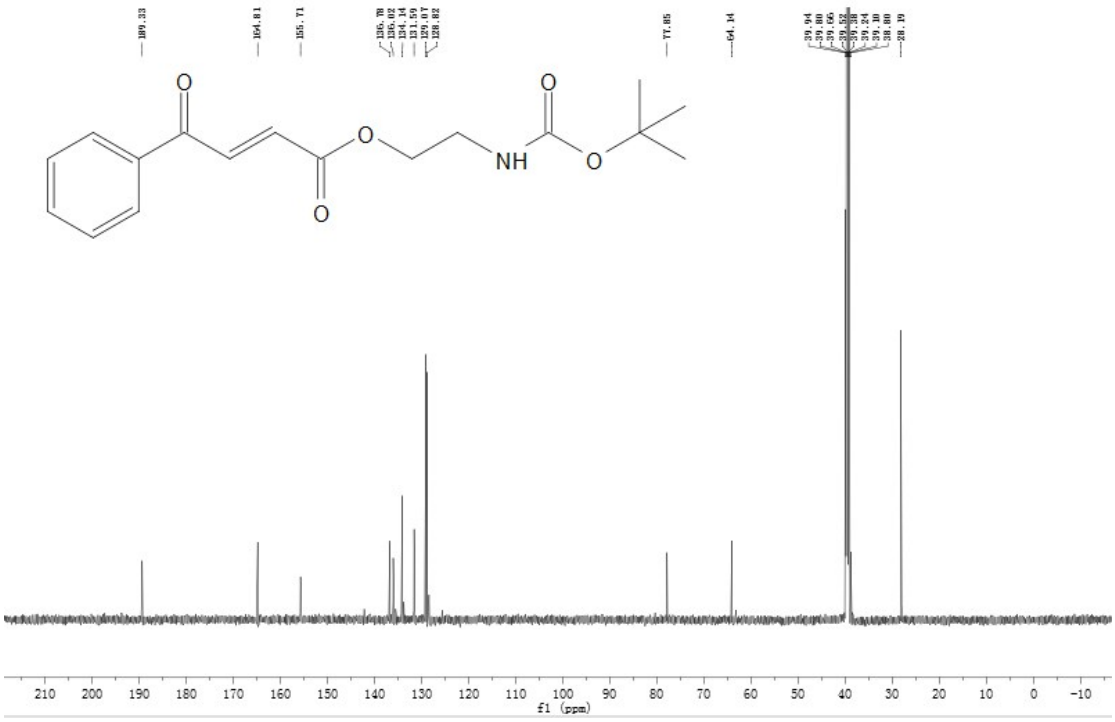
BRUKER AVANCE III 13C-NMR 11a IN DMSO-d6



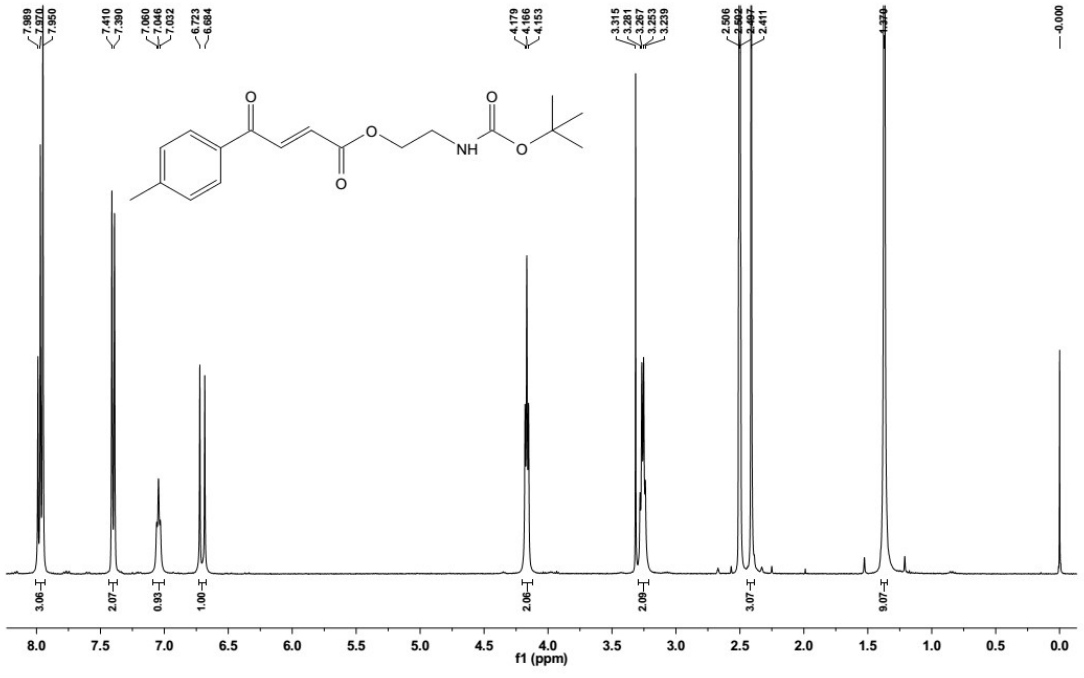
11b



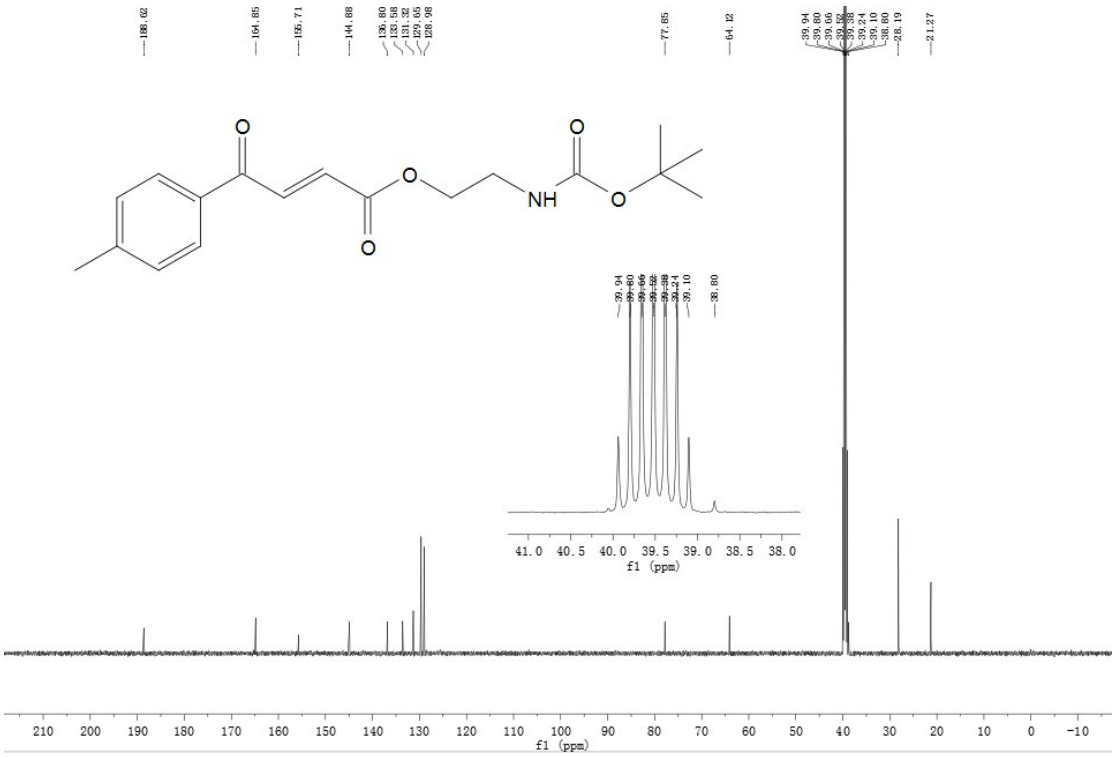
BRUKER AVANCE III 13C-NMR 11b IN DMSO-d6



11c

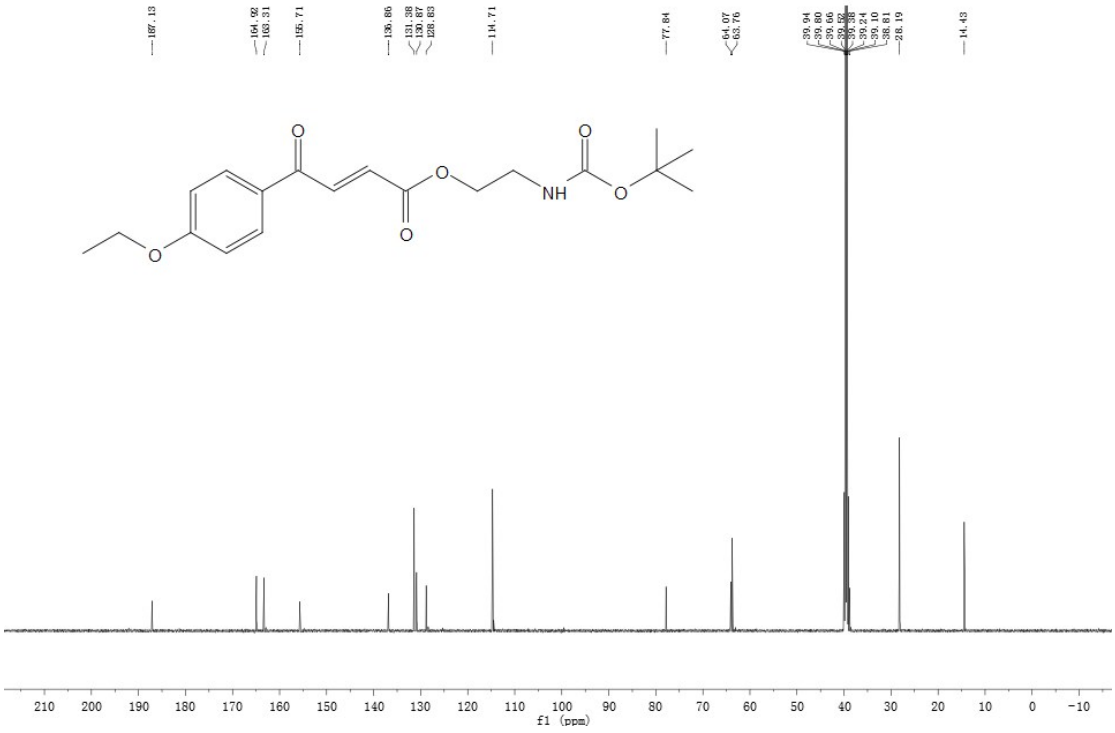


BRUKER AVANCE III 13C-NMR 11c IN DMSO-d6

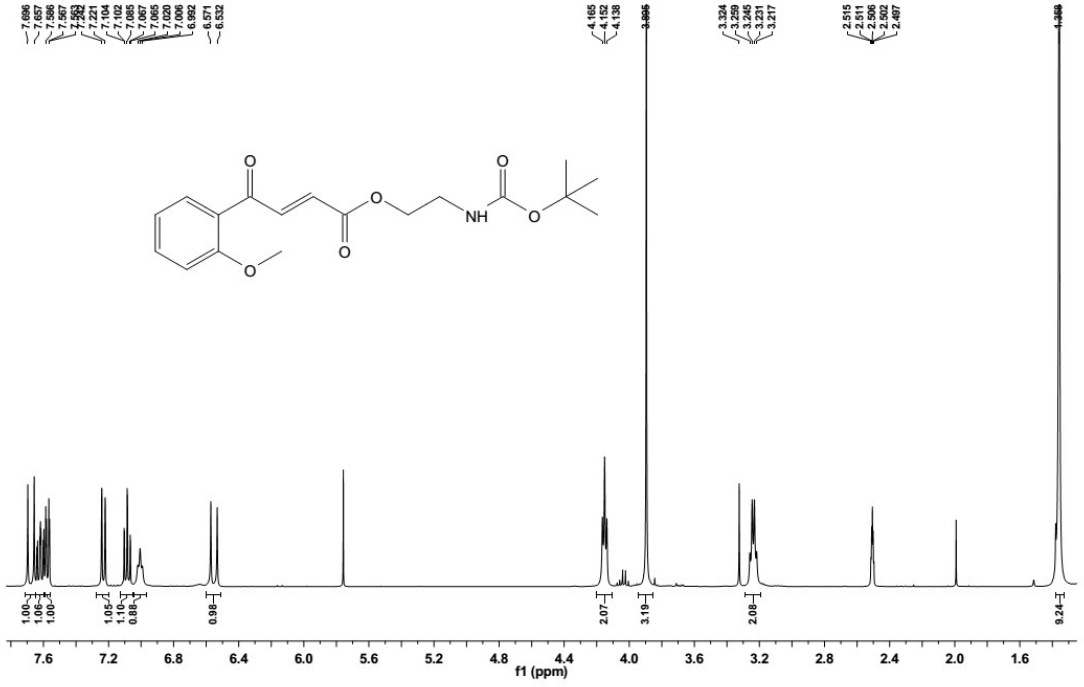


11d

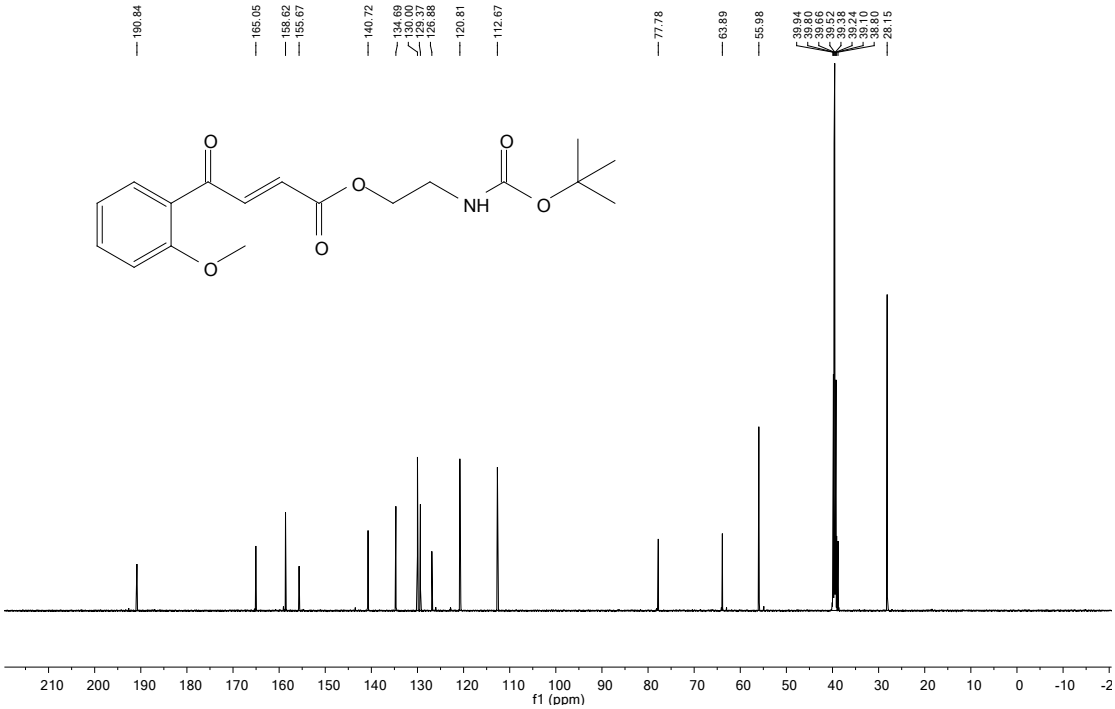
BRUKER AVANCE III 13C-NMR 11d IN DMSO-d6



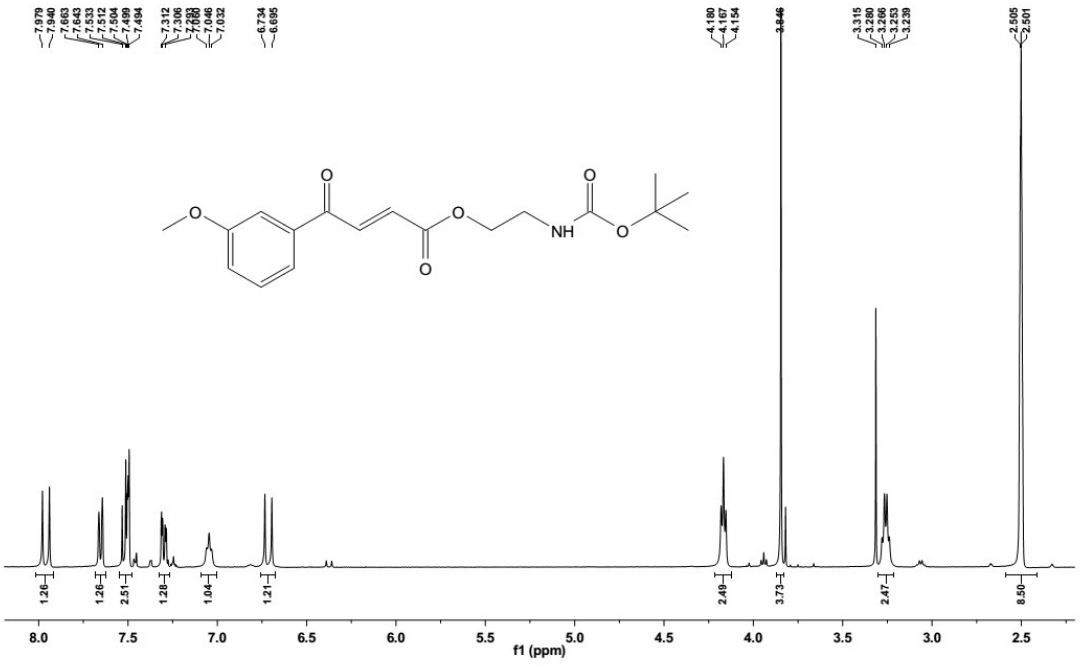
11e



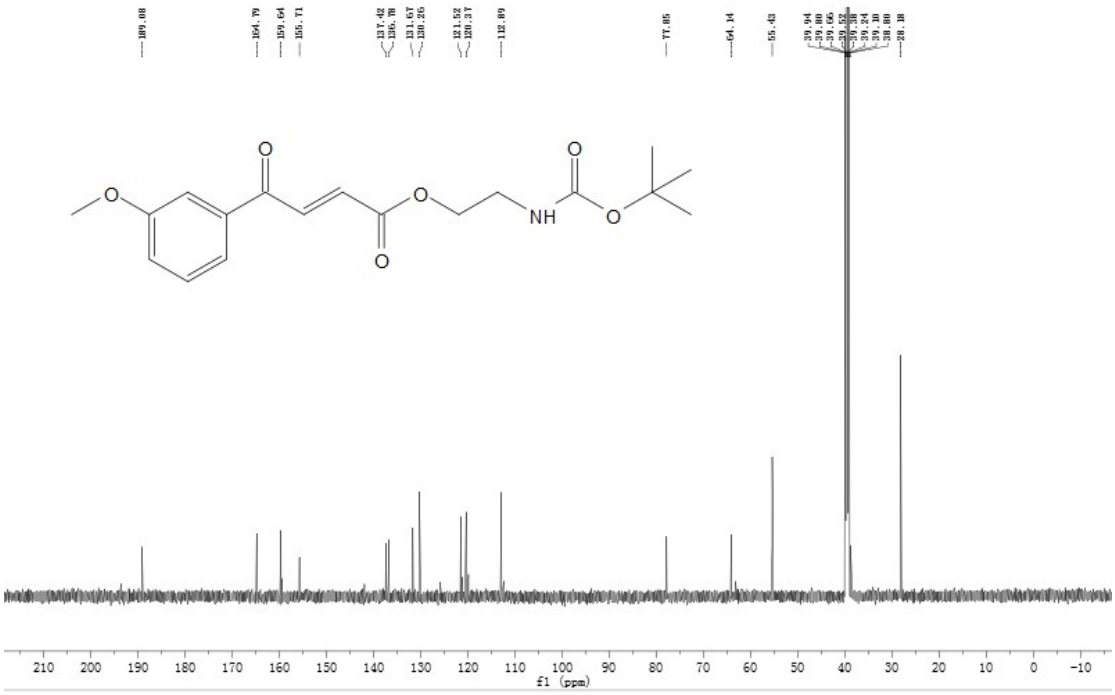
BRUKER AVANCE III 13C-NMR 11e IN DMSO-d6



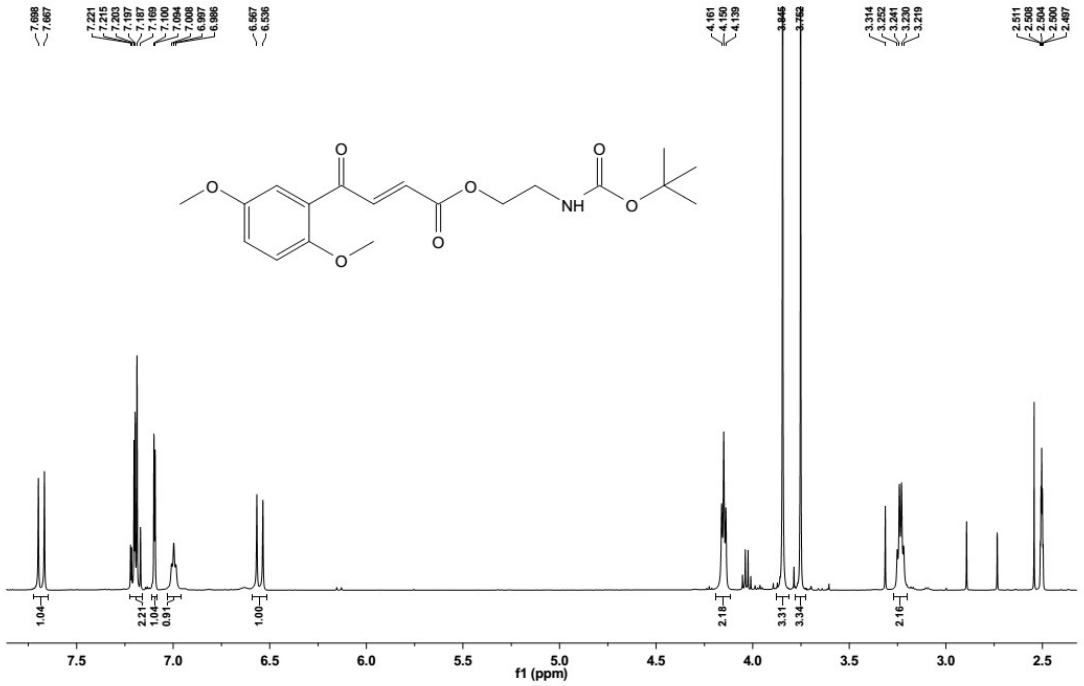
11f



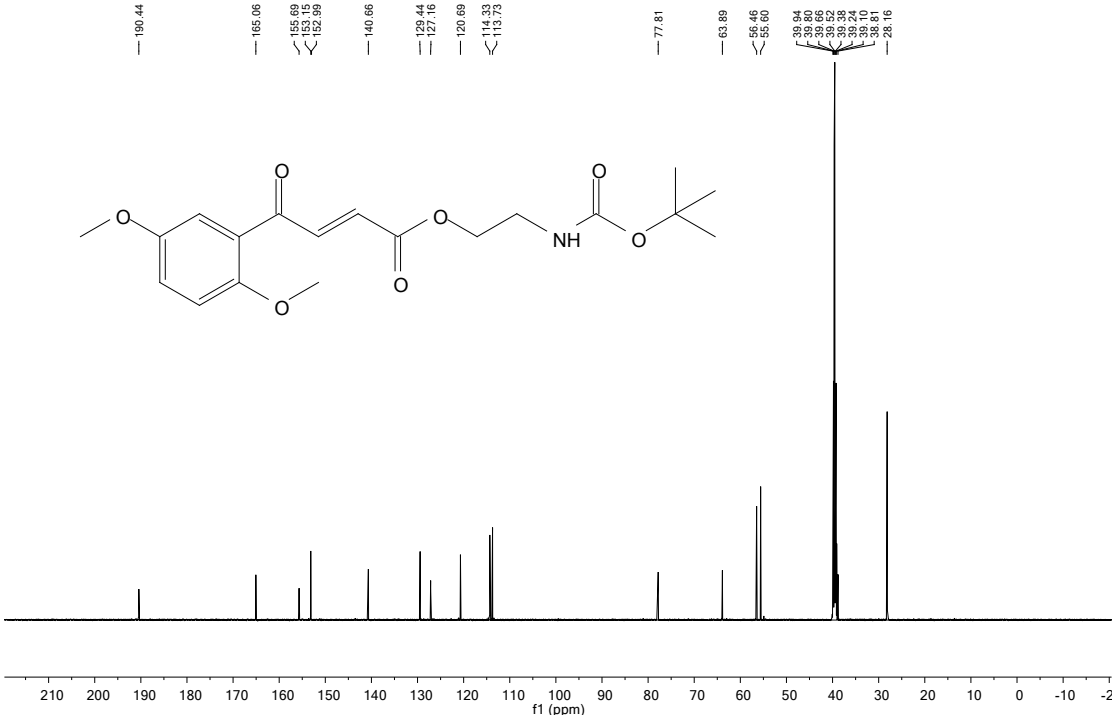
BRUKER AVANCE III 13C-NMR 11f IN DMSO-d6



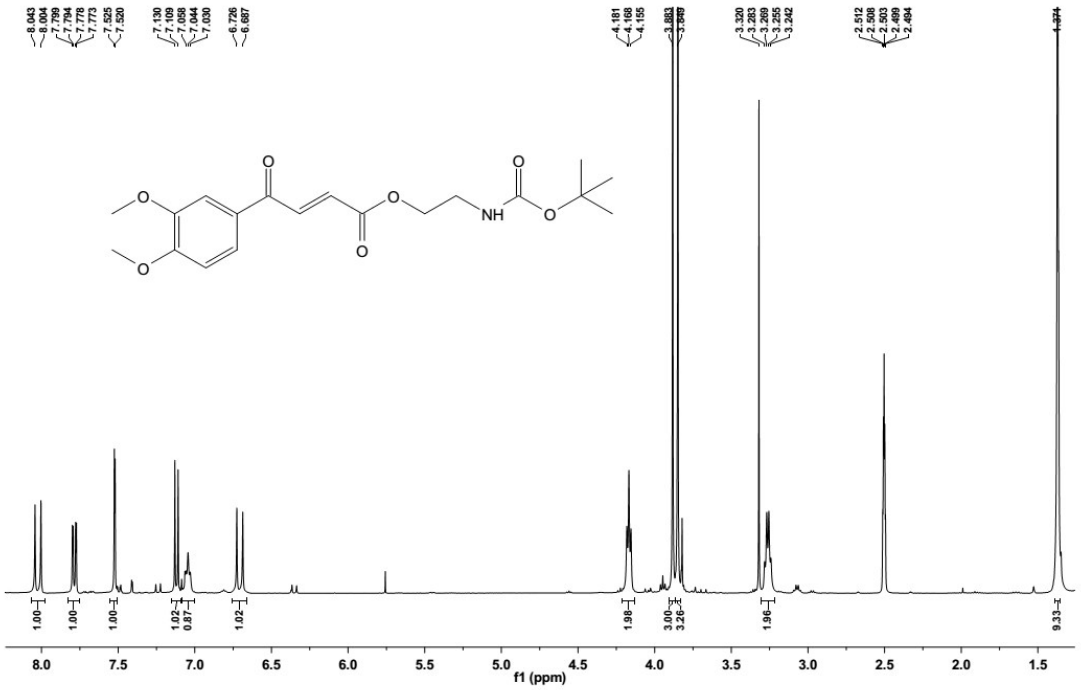
11g

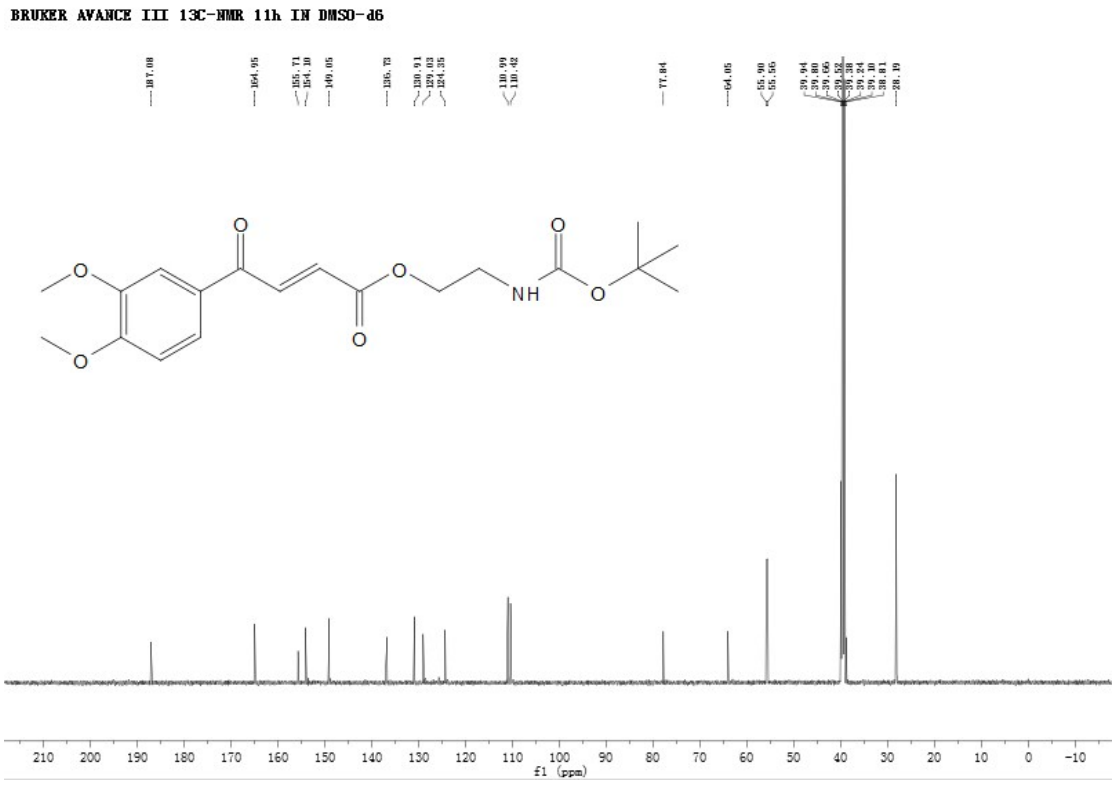


BRUKER AVANCE III 13C-NMR 11g IN DMSO-d6

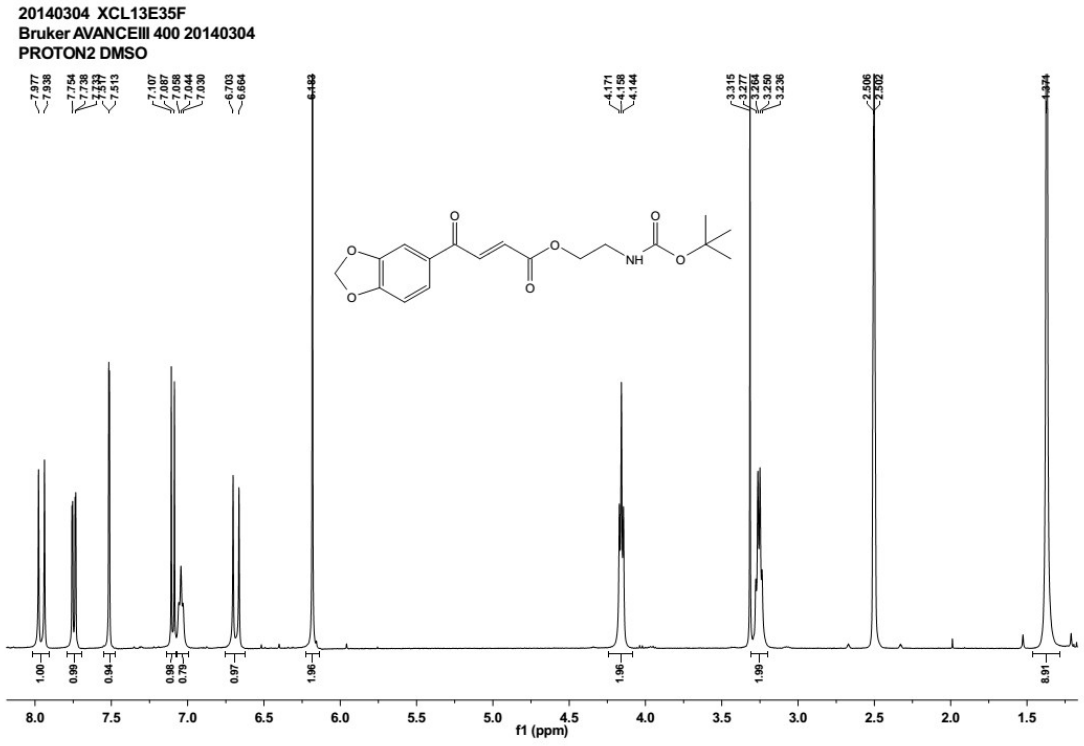


11h

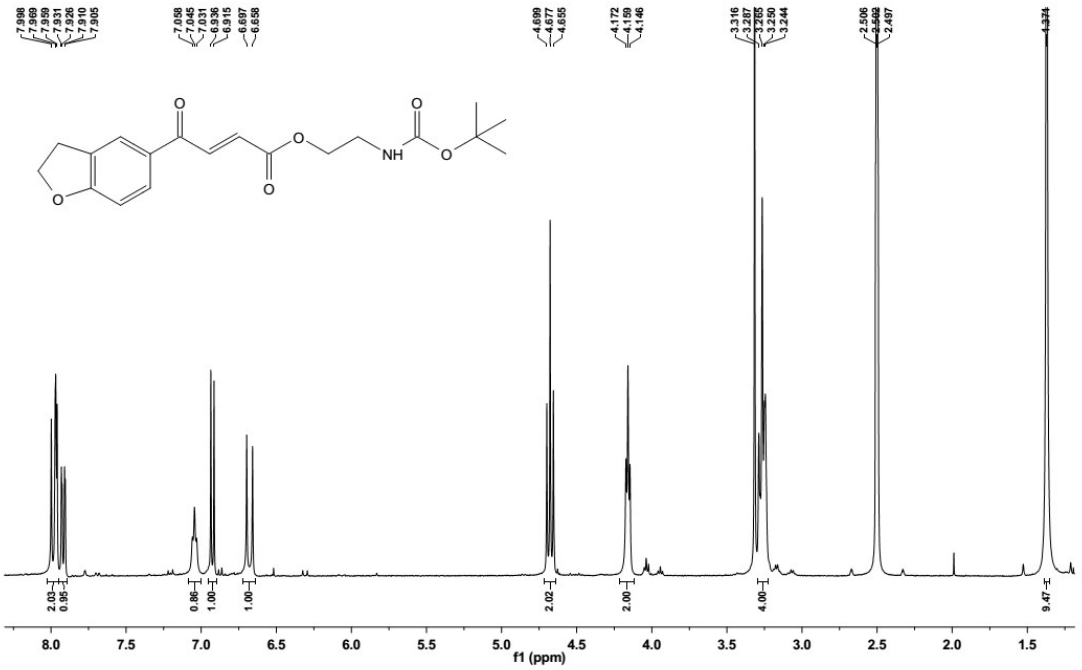



BRUKER AVANCE III 13C-NMR 11h IN DMSO-d6
187.08
164.95
155.71
154.10
149.05
135.73
130.91
129.03
124.35
110.99
110.42
77.84
64.05
55.90
55.55
39.94
39.80
39.66
39.52
39.38
39.24
39.10
38.81
28.19
O
O
O
O
O
NH
O
O
210 200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 -10
f1 (ppm)

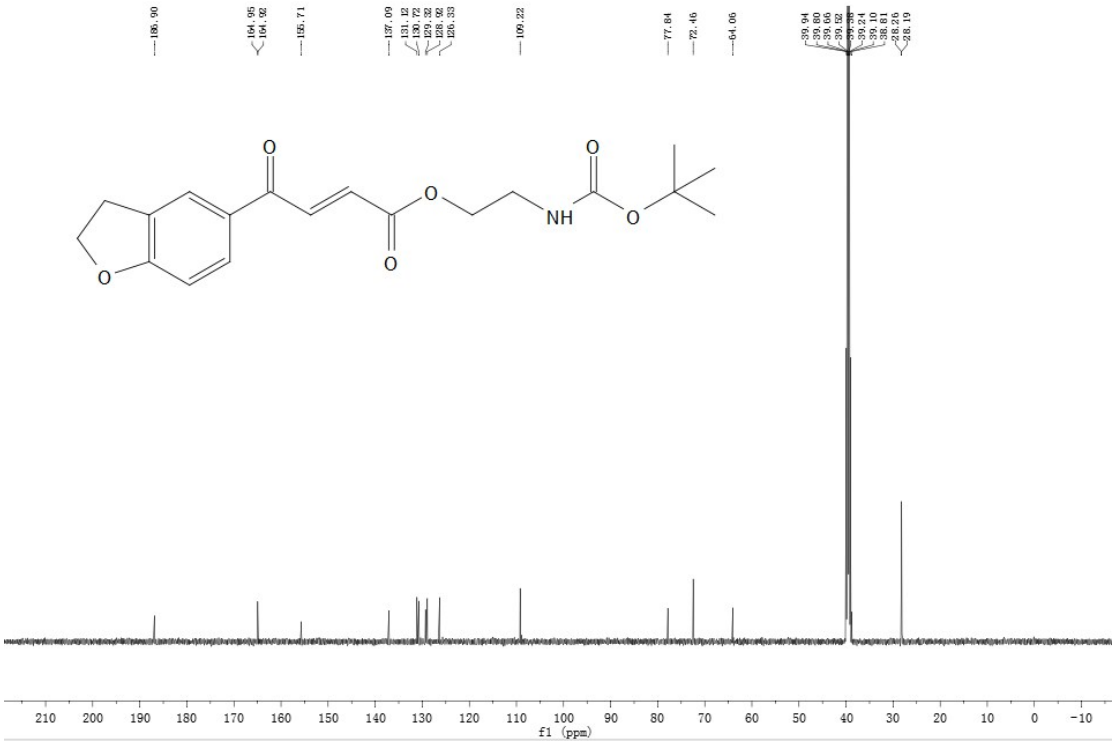
11i


20140304 XCL13E35F
Bruker AVANCEIII 400 20140304
PROTON2 DMSO
7.977
7.938
7.754
7.738
7.517
7.513
7.107
7.087
7.058
7.044
7.030
6.703
6.664
6.183
4.171
4.158
4.144
3.315
3.277
3.264
3.250
3.236
2.506
2.502
1.374
O
O
O
O
O
NH
O
1.00
0.99
0.94
0.98
0.79
0.97
1.96
1.96
1.99
8.91
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
f1 (ppm)

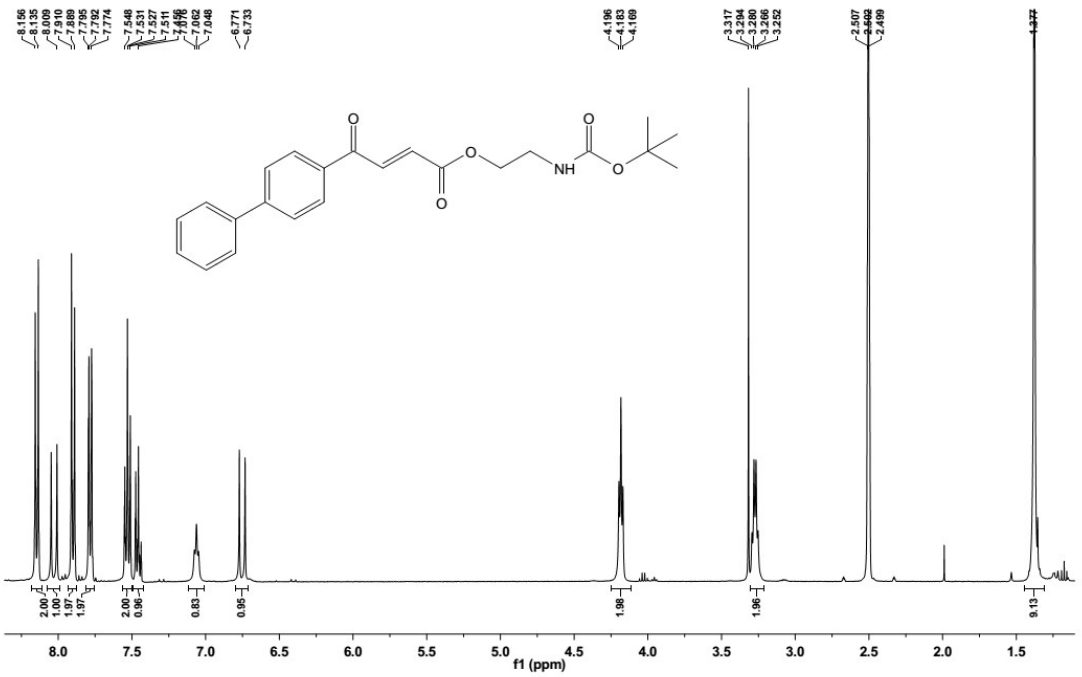
11j



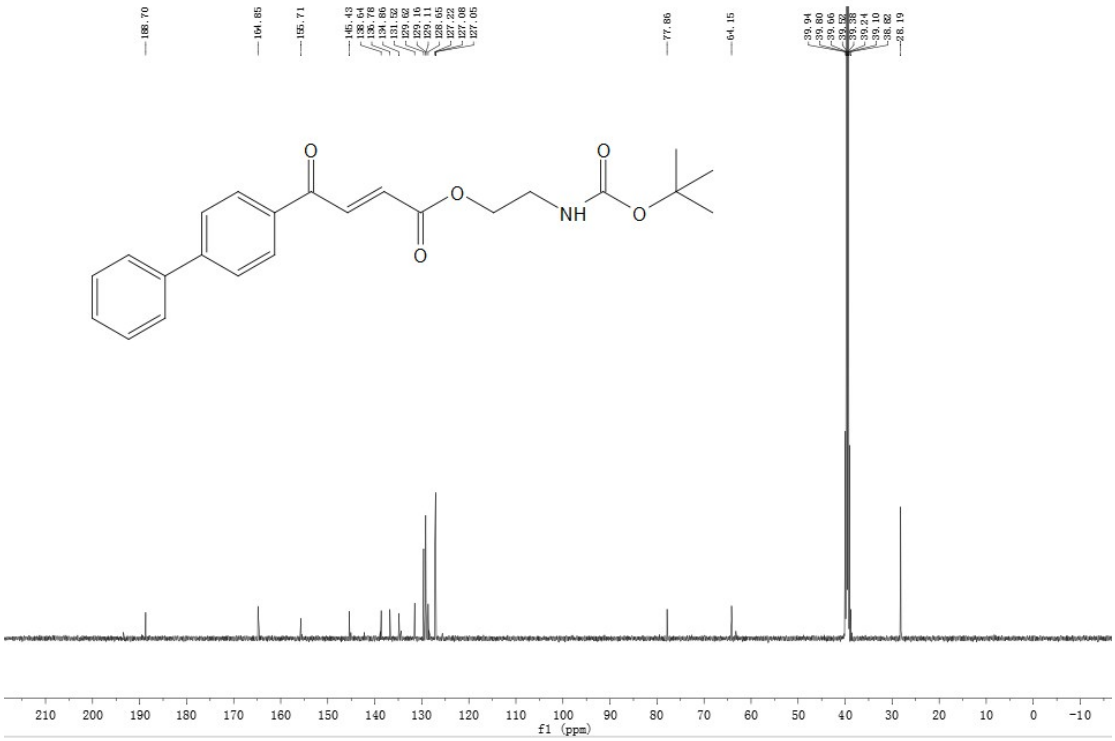
BRUKER AVANCE III 13C-NMR 11j IN DMSO-d6



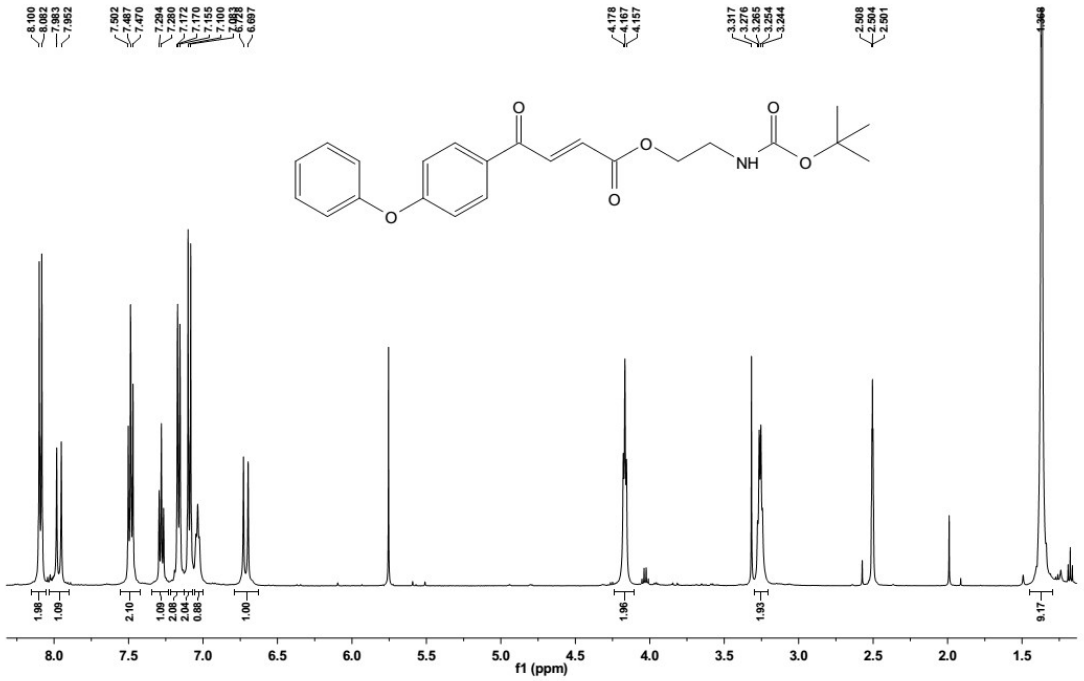
11k



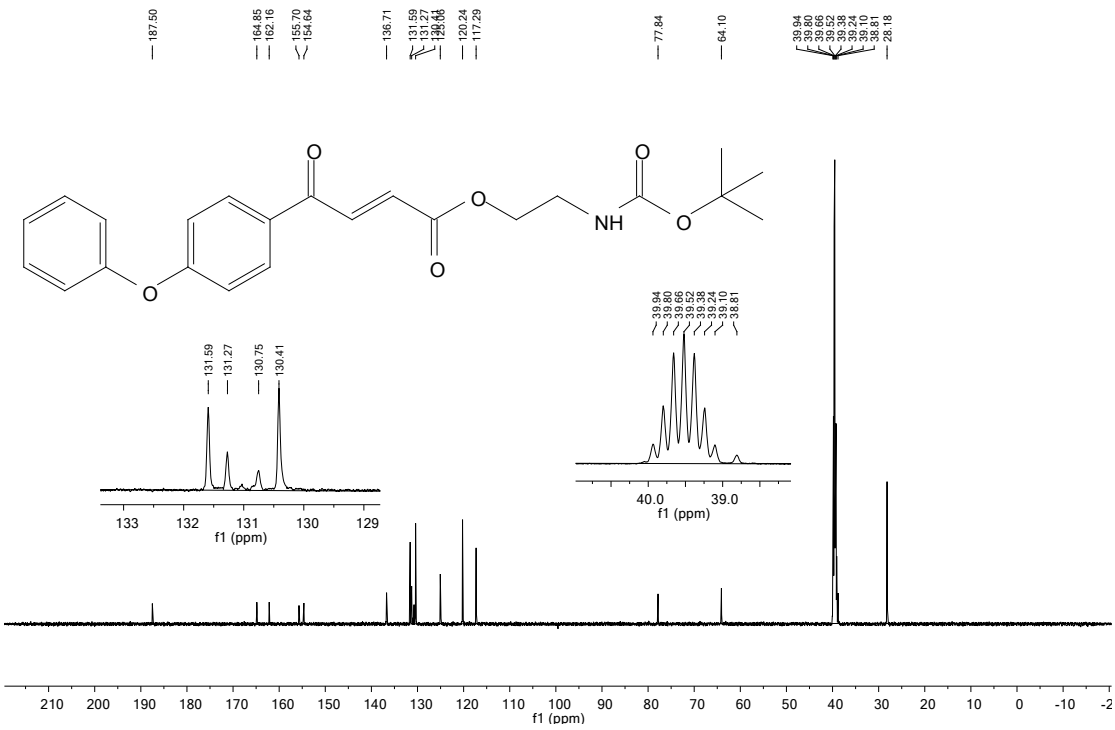
BRUKER AVANCE III 13C-NMR 11k IN DMSO-d6



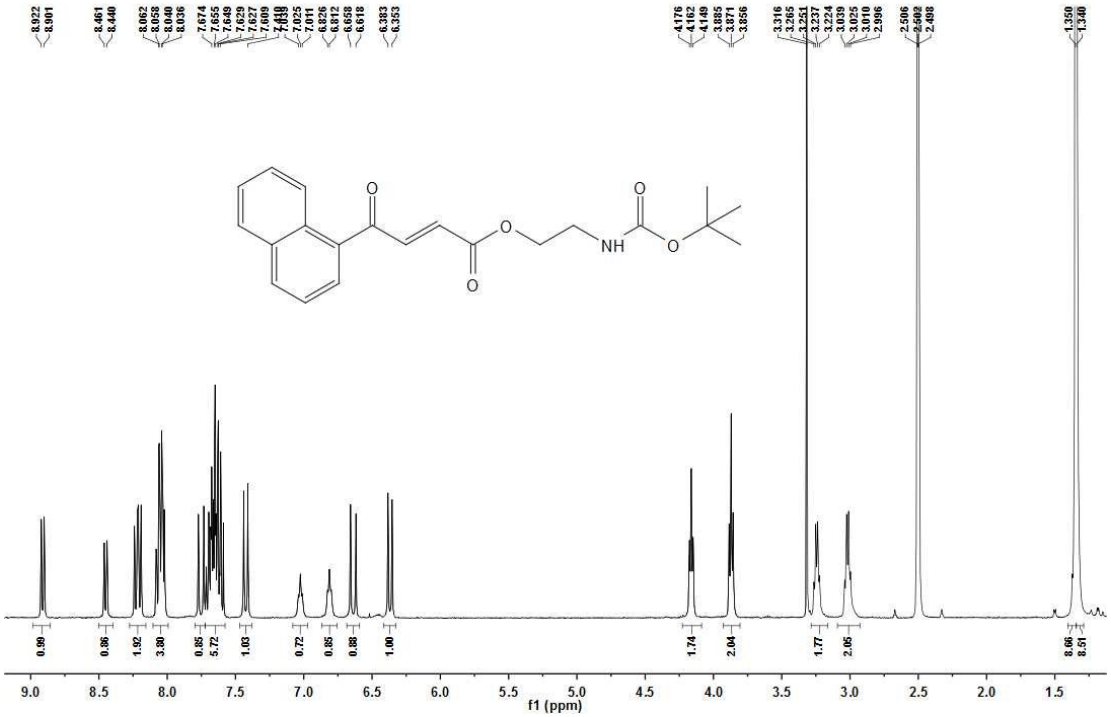
11l



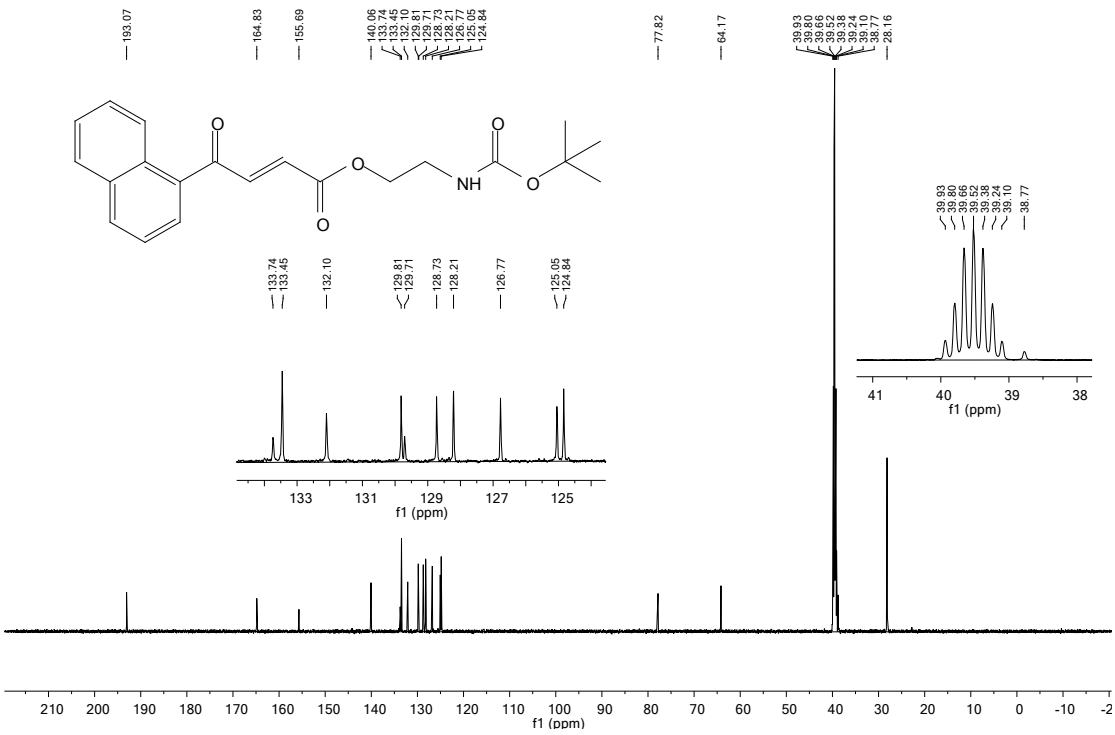
BRUKER AVANCE III 13C-NMR 111 IN DMSO-d6



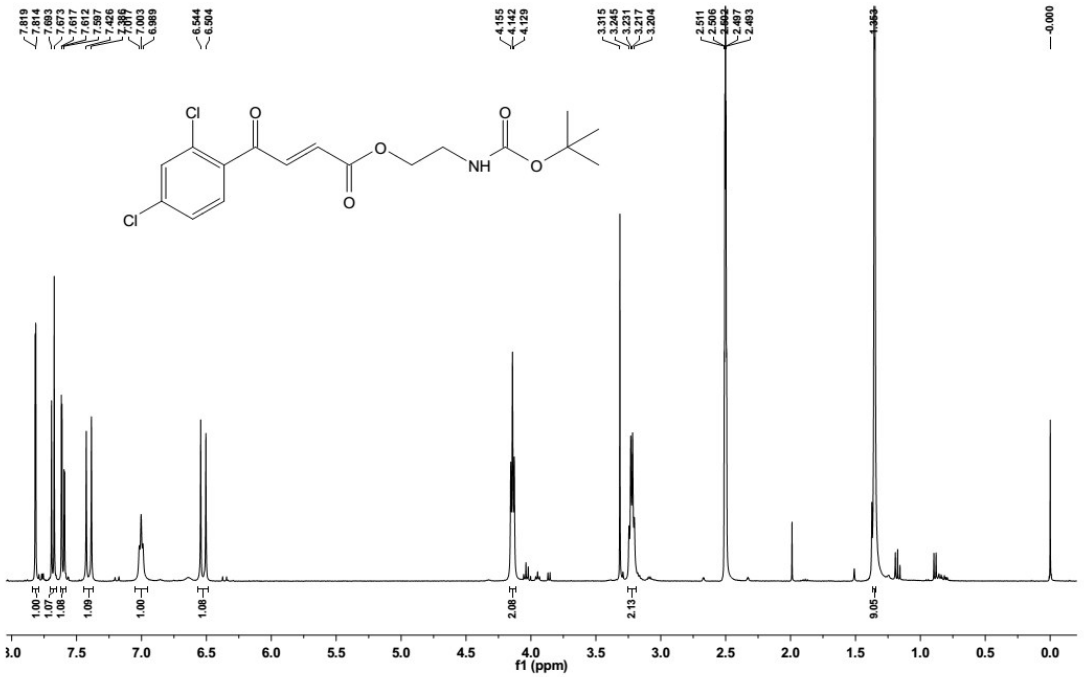
11m



BRUKER AVANCE III 13C-NMR 11m IN DMSO-d6



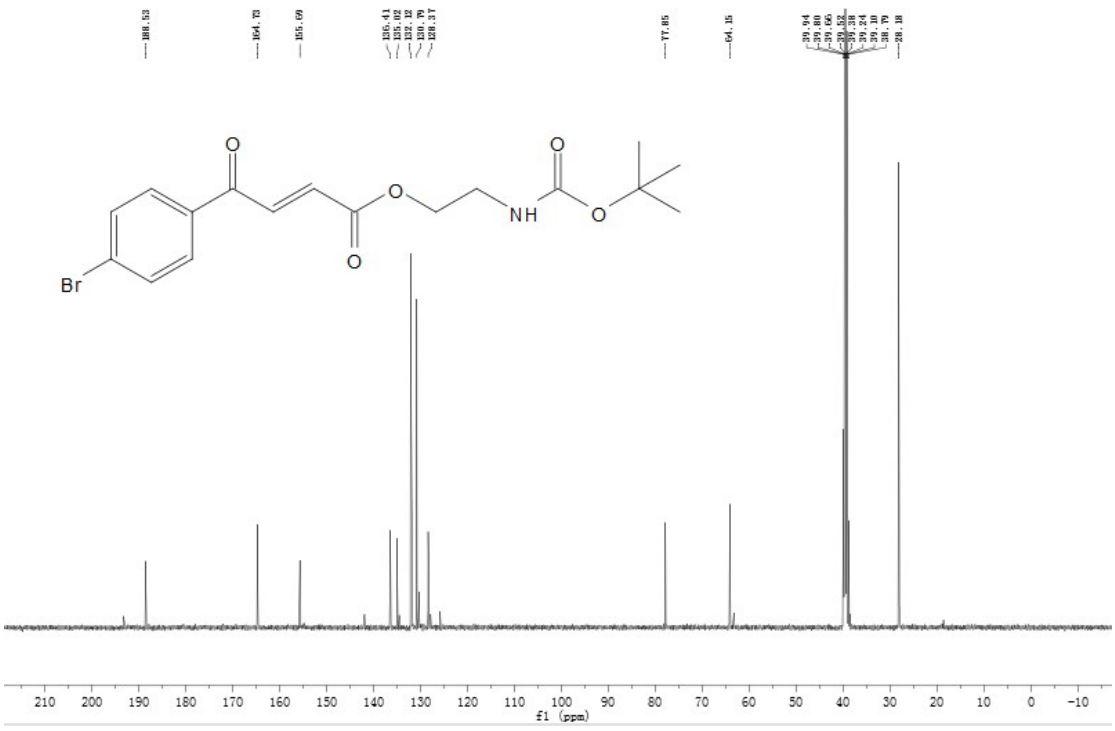
11n



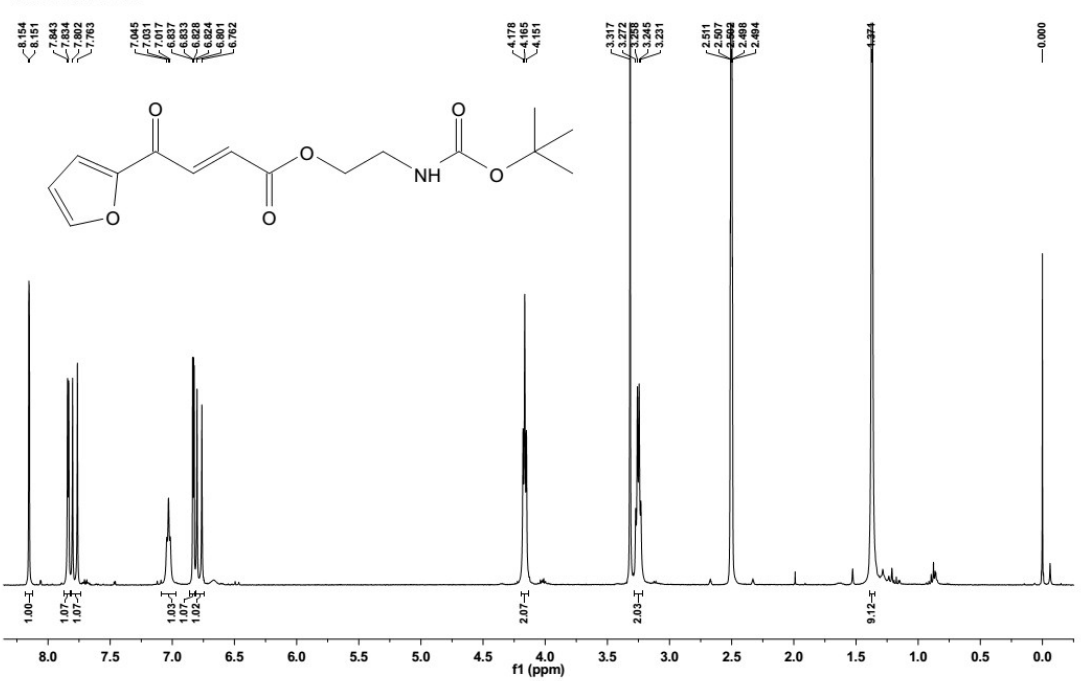
11o

11p

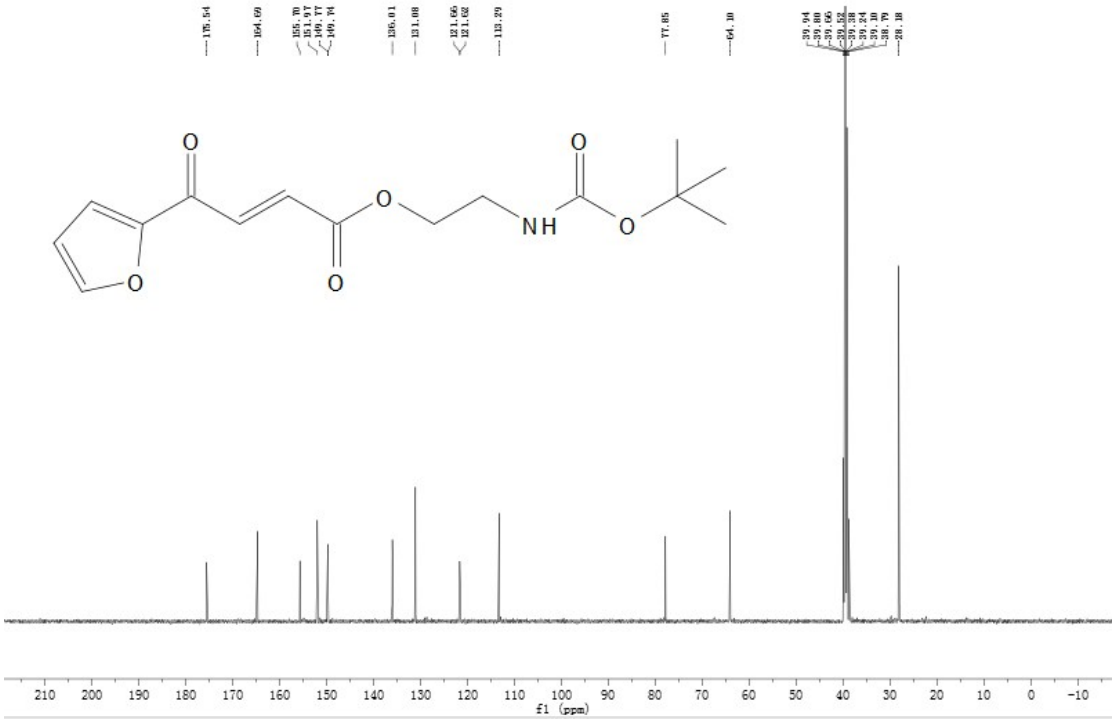
BRUKER AVANCE III 13C-NMR 11p IN DMSO-d6



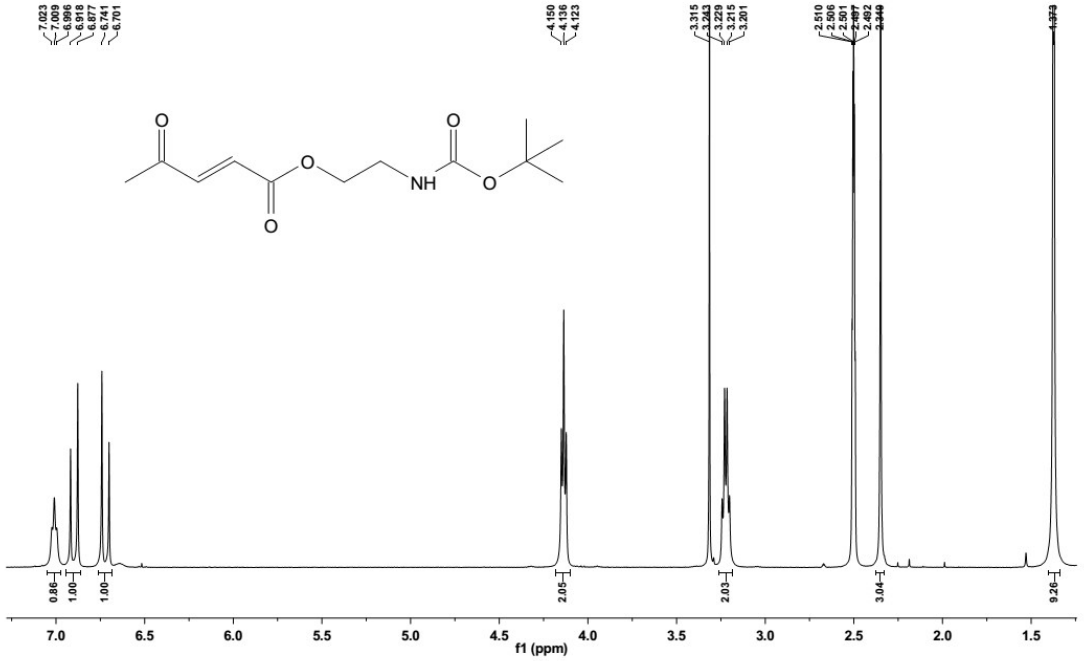
11q



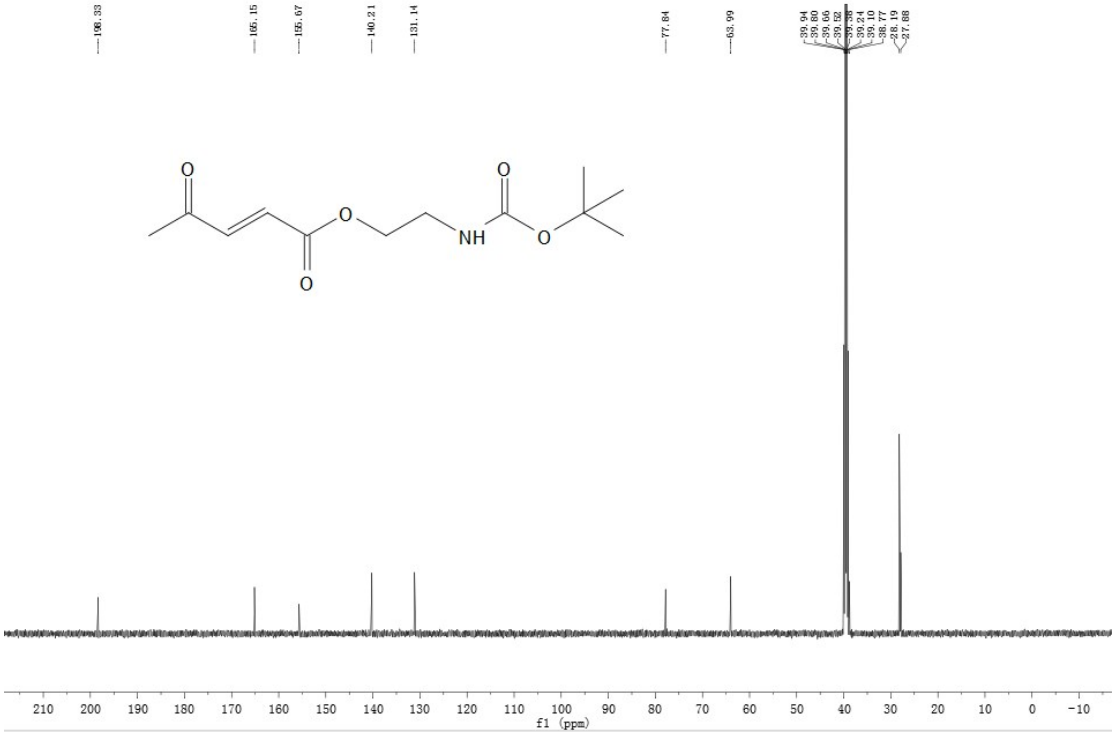
BRUKER AVANCE III 13C-NMR 11q IN DMSO-d6



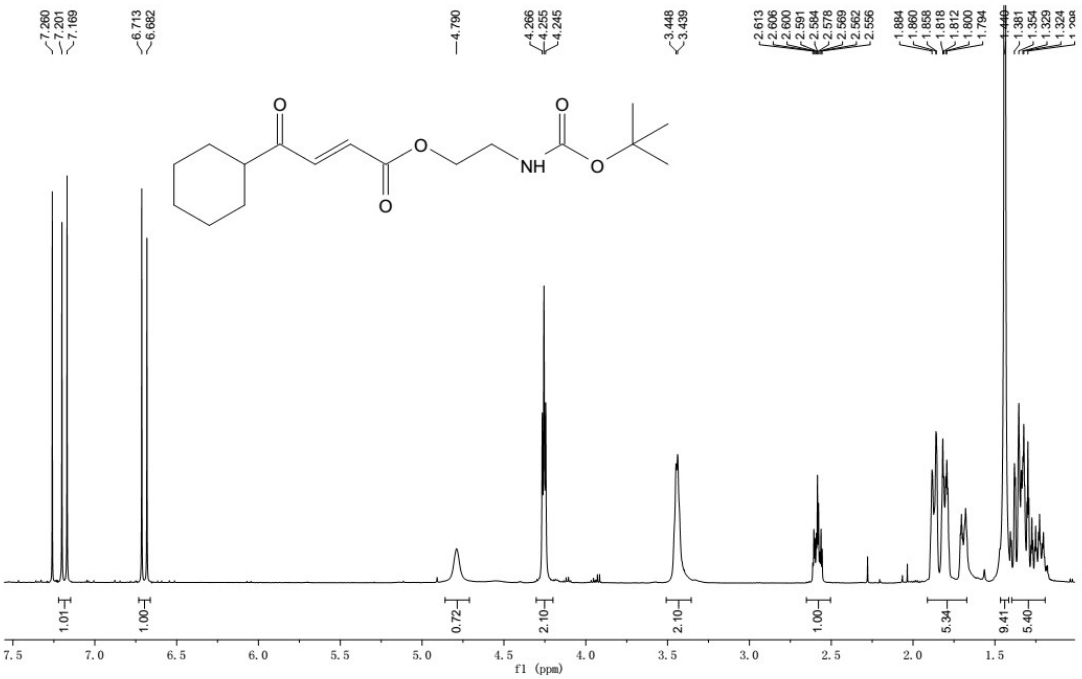
11r



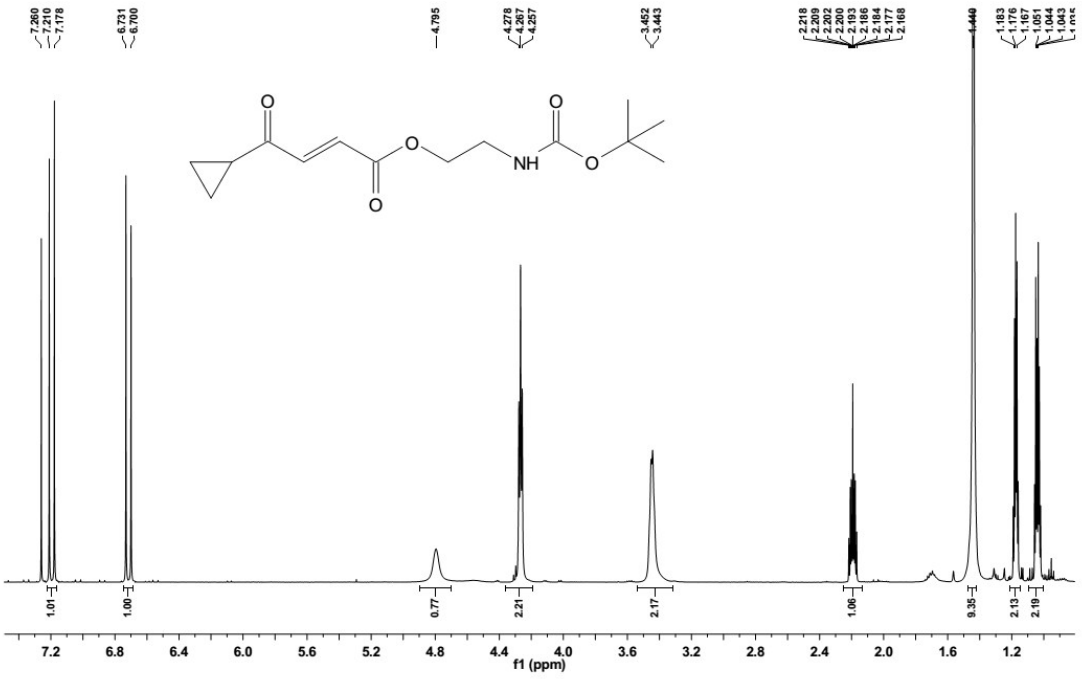
BRUKER AVANCE III 13C-NMR 11r IN DMSO-d6



11s


7.260
7.201
7.169
6.713
6.682
4.790
4.266
4.255
4.245
3.448
3.439
2.613
2.606
2.600
2.591
2.584
2.578
2.569
2.562
2.556
1.884
1.860
1.858
1.818
1.812
1.800
1.794
1.440
1.381
1.354
1.329
1.324
O
NH
O
1.01
1.00
0.72
2.10
2.10
1.00
5.34
9.41
5.40
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
f1 (ppm)

11t


7.260
7.210
7.178
6.731
6.700
4.795
4.278
4.267
4.257
3.452
3.443
2.218
2.209
2.202
2.200
2.193
2.186
2.184
2.177
2.168
1.440
1.183
1.176
1.167
1.051
1.044
O
NH
O
1.01
1.00
0.77
2.21
2.17
1.06
9.35
2.13
2.19
7.2
6.8
6.4
6.0
5.6
5.2
4.8
4.4
4.0
3.6
3.2
2.8
2.4
2.0
1.6
1.2
f1 (ppm)

BRUKER AVANCE III 13C-NMR 11t IN DMSO-d6