

Highly regio- and stereoselective *trans*-iodofluorination of ynamides enabling the synthesis of (*E*)- α -fluoro- β -iodoenamides

Yang Xi, Guohao Zhu, Luning Tang, Shihan Ma, Dongming Zhang, Rong Zhang,
Guangke He* and Hongjun Zhu*

Department of Applied Chemistry, College of Chemistry and Molecular Engineering, Nanjing

Tech University, Nanjing 211816, People's Republic of China

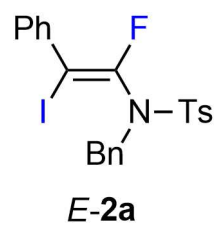
*E-mails: hegk@njtech.edu.cn; zhuhj@njtech.edu.cn.

Spectra of compounds *E*-2a~7

Spectra of compound <i>E</i> -2a	p 2-6	Spectra of compound <i>E</i> -2n	p 43-44
Spectra of compound <i>E</i> -2b	p 7-9	Spectra of compound <i>E</i> -2o	p 45-47
Spectra of compound <i>E</i> -2c	p 10-12	Spectra of compound <i>E</i> -2p	p 48-50
Spectra of compound <i>E</i> -2d	p 13-15	Spectra of compound <i>E</i> -2q	p 51-53
Spectra of compound <i>E</i> -2e	p 16-18	Spectra of compound <i>E</i> -2r	p 54-55
Spectra of compound <i>E</i> -2f	p 19-21	Spectra of compound <i>E</i> -4	p 56-58
Spectra of compound <i>E</i> -2g	p 22-24	Spectra of compound <i>Z</i> -4	p 59-60
Spectra of compound <i>E</i> -2h	p 25-27	Spectra of compound <i>E</i> -5	p 61-63
Spectra of compound <i>E</i> -2i	p 28-30	Spectra of compound <i>Z</i> -5	p 64-66
Spectra of compound <i>E</i> -2j	p 31-33	Spectra of compound <i>Z</i> -2a	p 67-69
Spectra of compound <i>E</i> -2k	p 34-36	Spectra of compound 6	p 70-72
Spectra of compound <i>E</i> -2l	p 37-39	Spectra of compound 7	p 73-75
Spectra of compound <i>E</i> -2m	p 40-42		

XY-IF-DMSO

7.896
7.876
7.514
7.493
7.359
7.354
7.346
7.343
7.337
7.334
7.329
7.325
7.310
7.302
7.296
7.288
7.277
7.270
7.122
7.102



— 4.515

3.360

2.517
2.513
2.509
2.504
2.500
2.445

-CH₂-

2.16

3.00

2.06

2.08

8.04

2.09

8.5

8.0

7.5

7.0

6.5

6.0

5.5

5.0

4.5

4.0

3.5

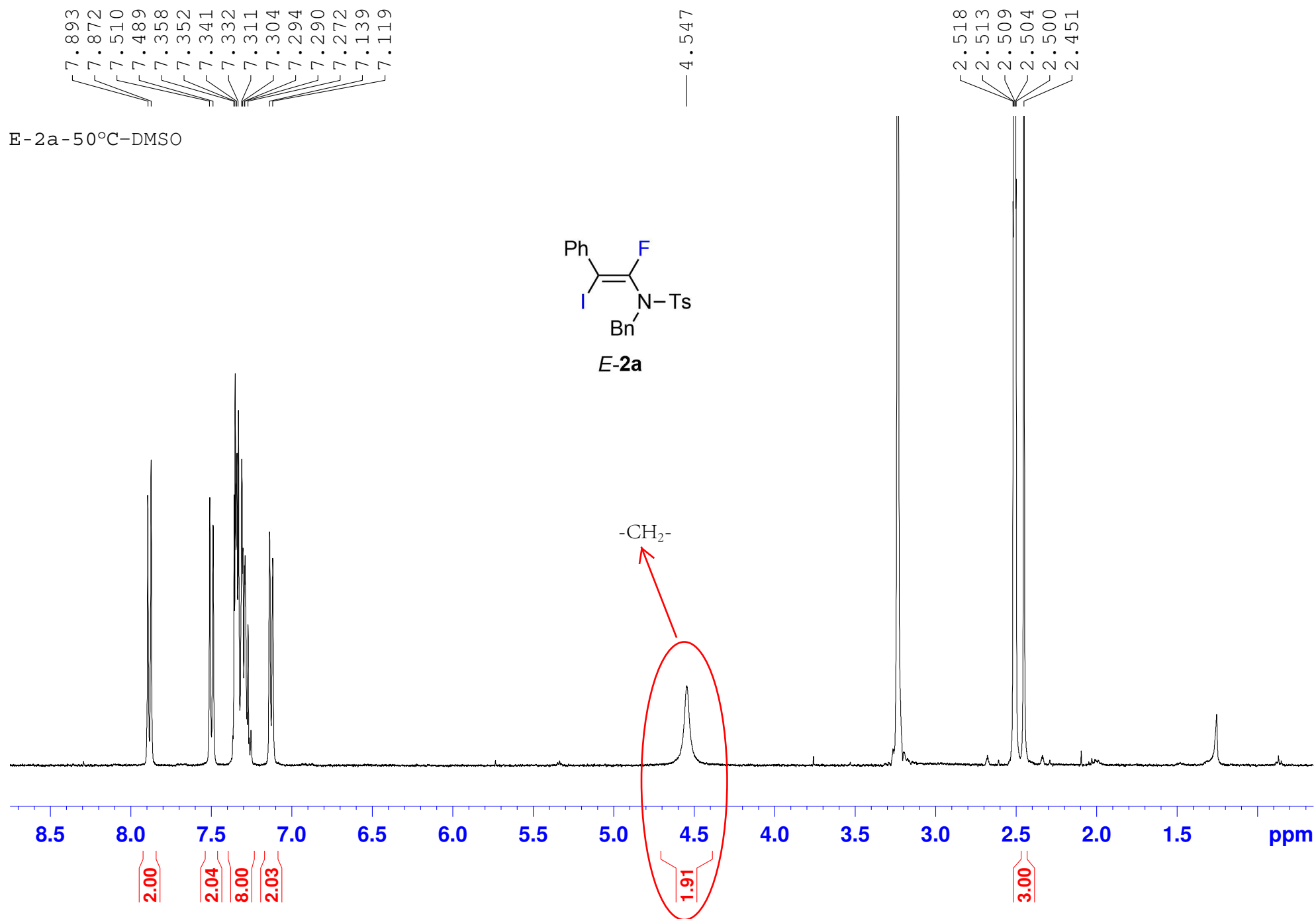
3.0

2.5

2.0

1.5

ppm



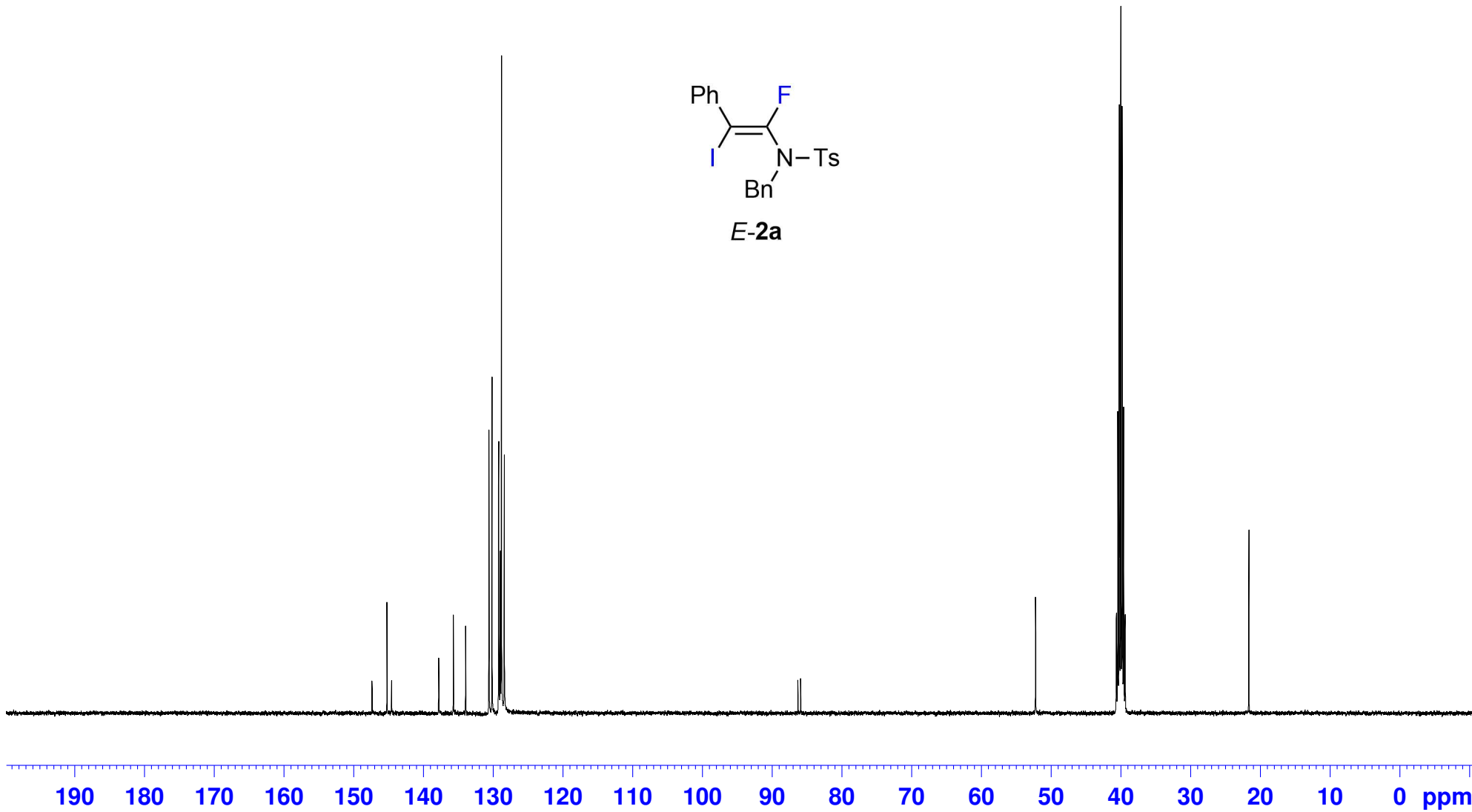
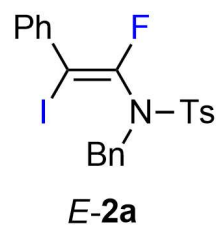
XY-DMSO-IFC

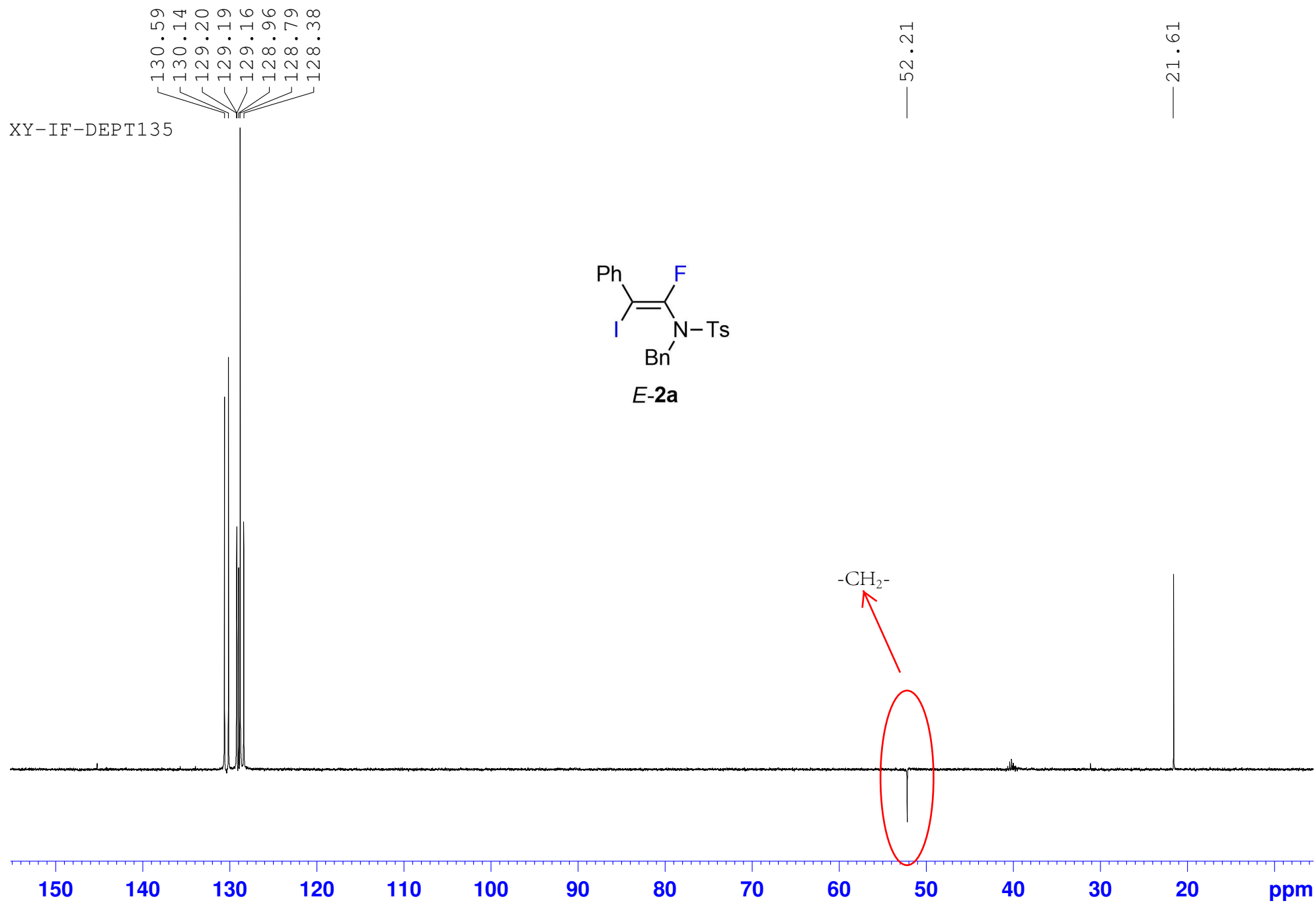
147.35
145.21
144.54
137.79
135.69
133.93
130.59
130.15
129.19
129.17
128.96
128.79
128.39

86.28
85.88

52.19
40.61
40.40
40.19
39.98
39.77
39.57
39.36

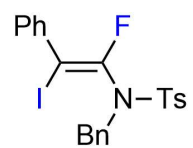
21.61



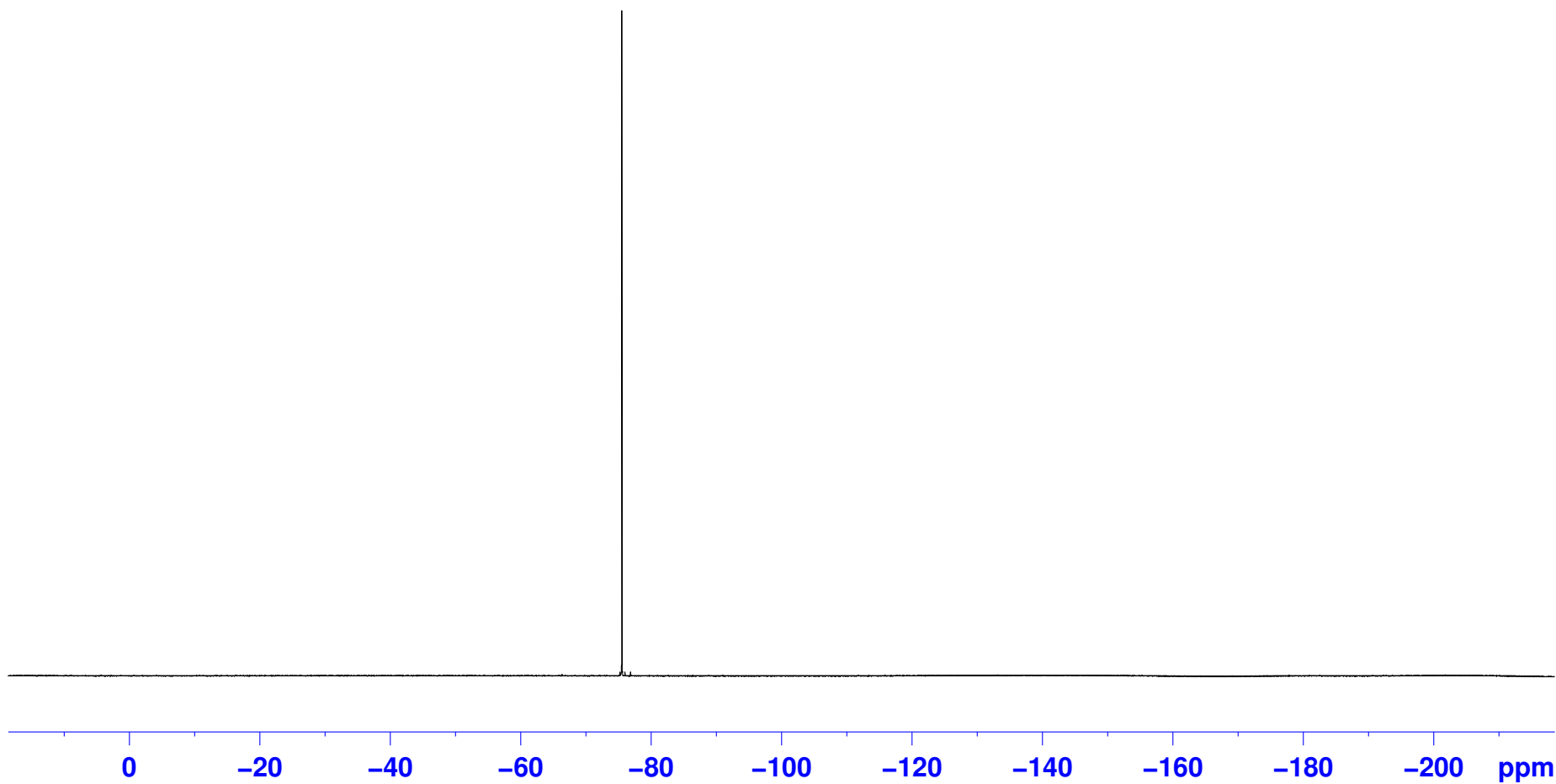


XY-2-183B

— -75.51



E-2a



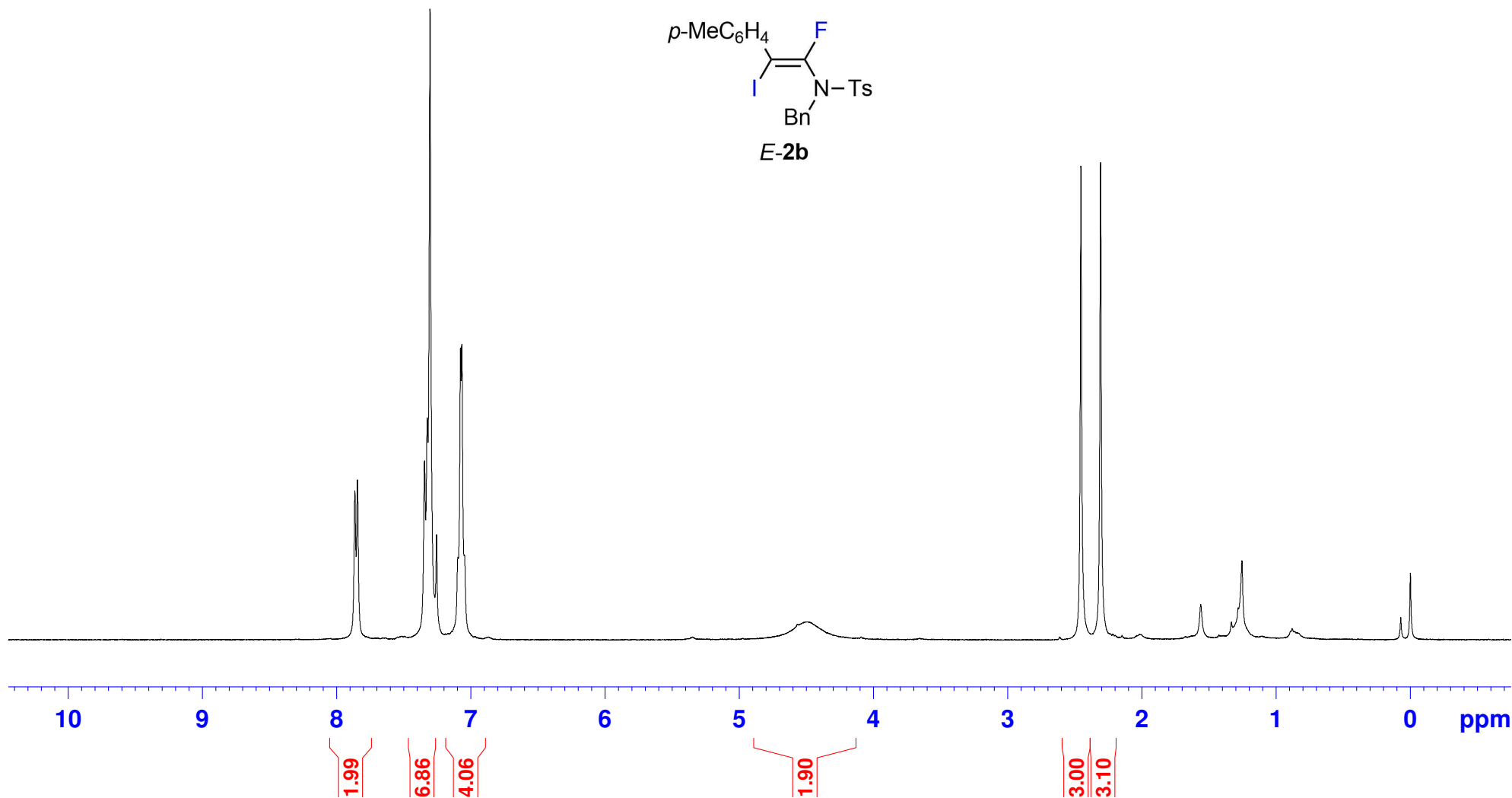
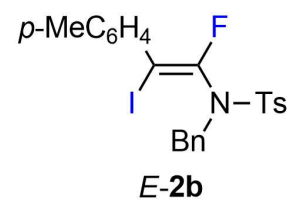
XY-4-71B

7.865
7.846
7.346
7.326
7.305
7.257
7.078
7.068

4.500

2.455
2.309

-0.000



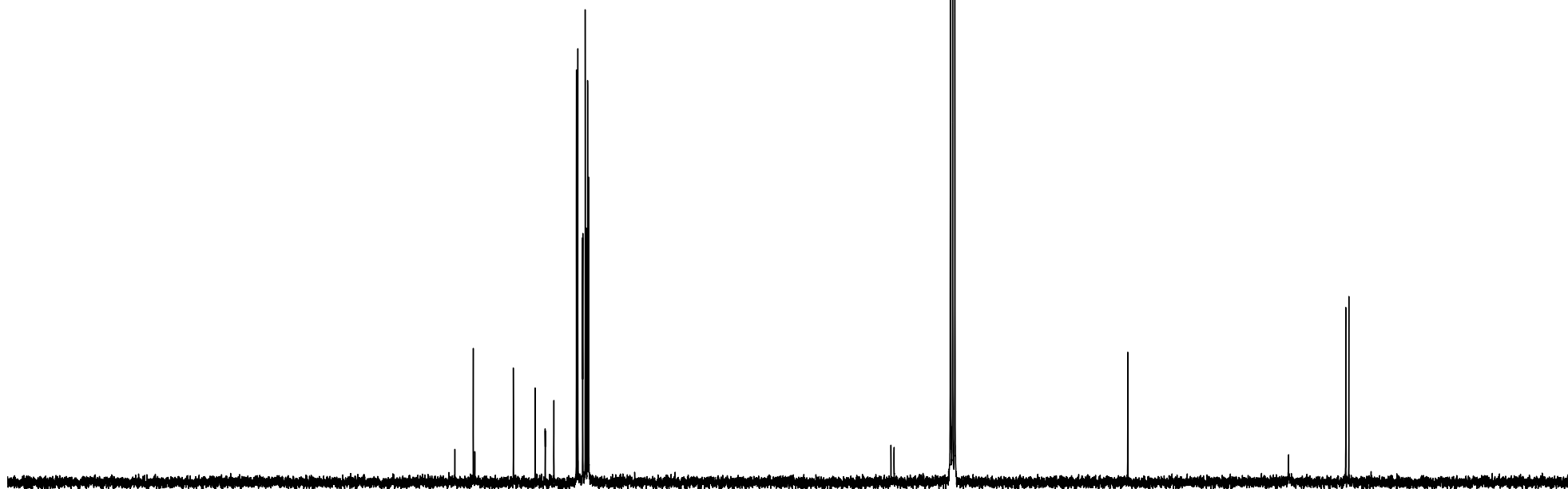
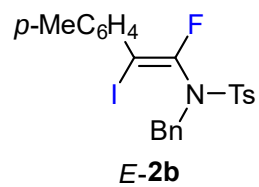
XY-4-71B

147.12
144.53
144.31
138.89
135.82
134.41
134.39
133.18
130.01
129.80
129.14
129.11
128.77
128.62
128.43
128.29

85.72
85.28
77.35
77.03
76.72

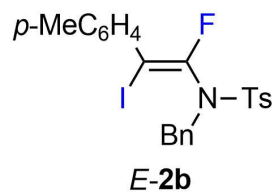
52.37

21.67
21.24

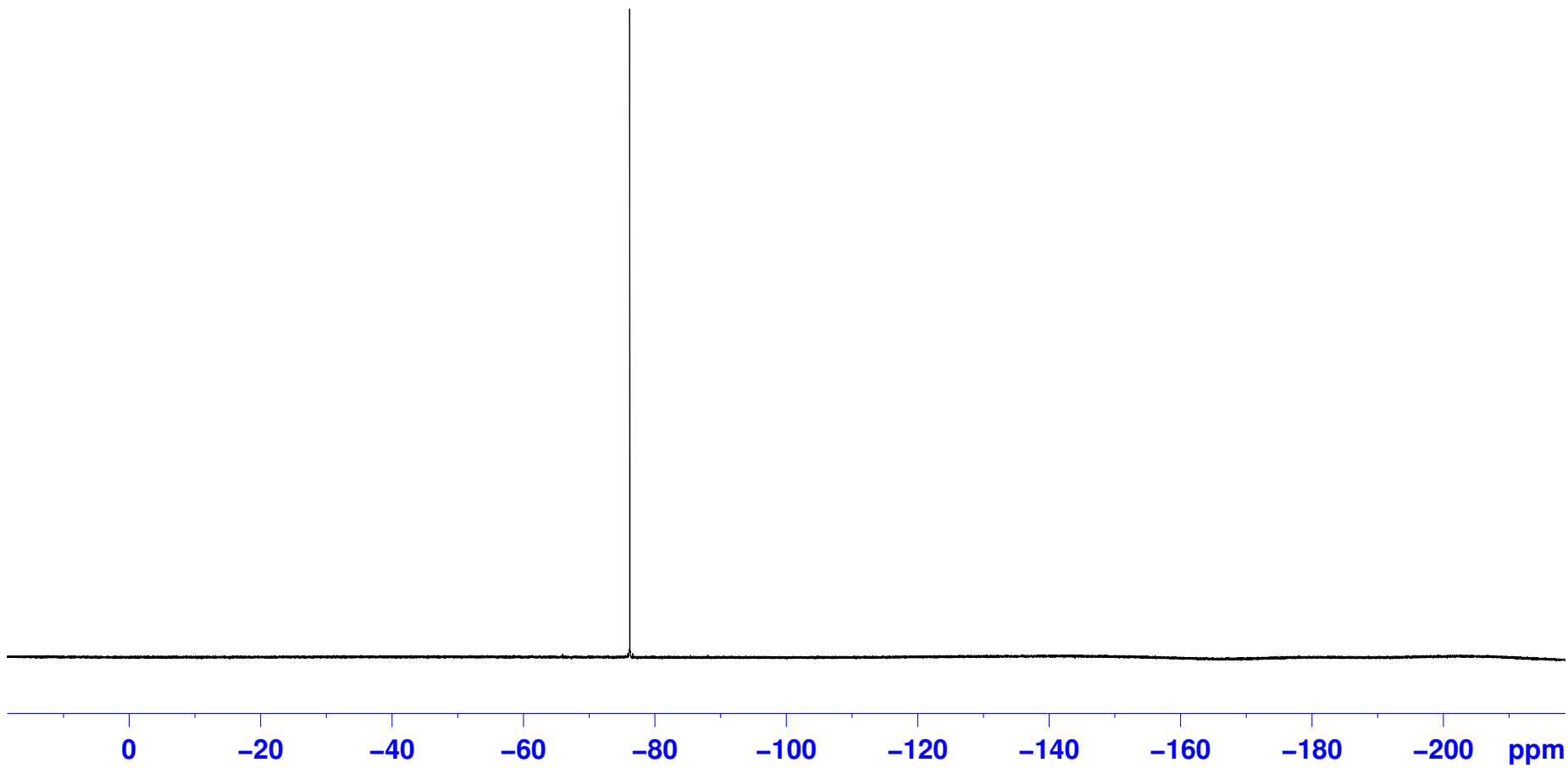


200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 ppm

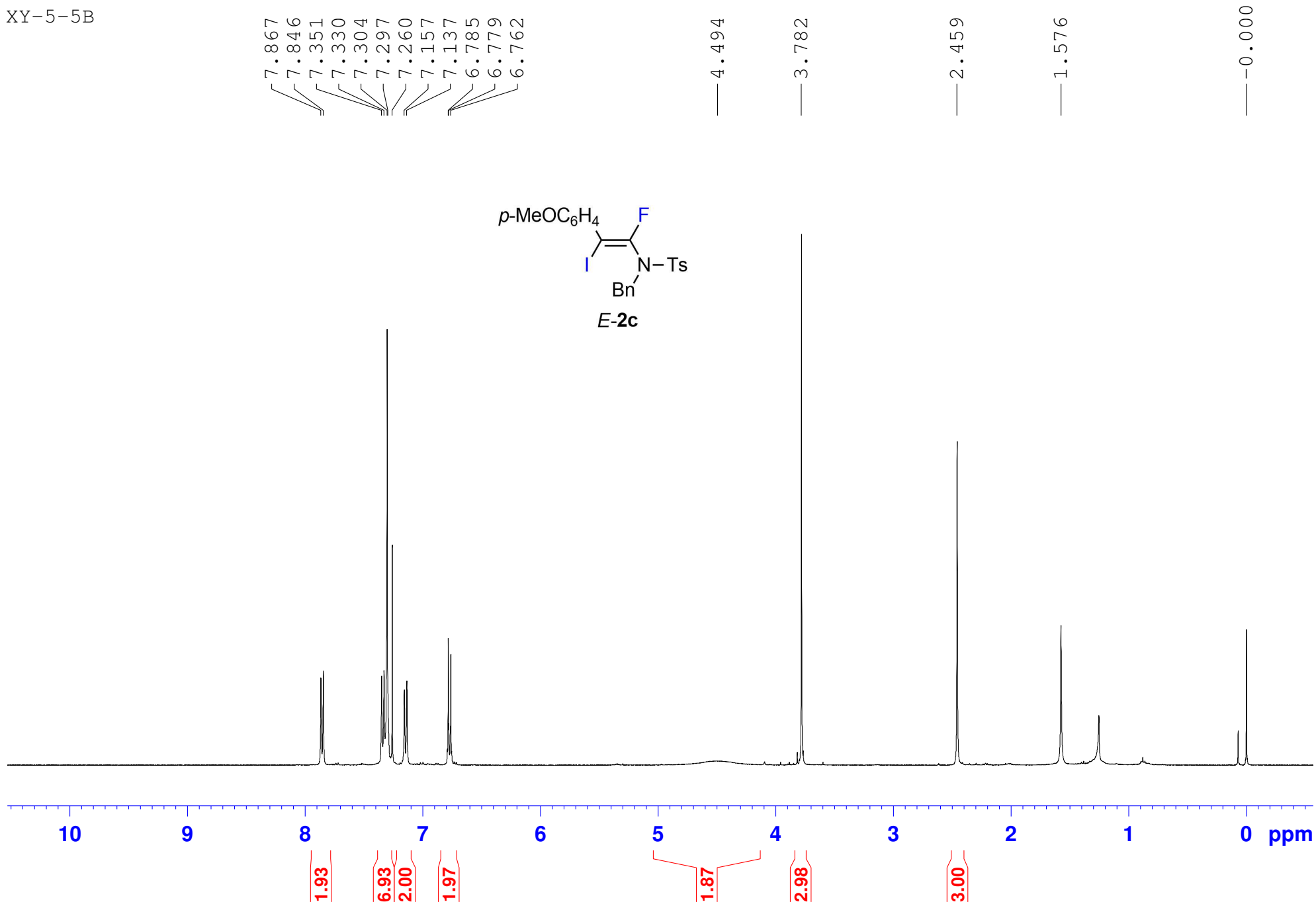
XY-4-71B



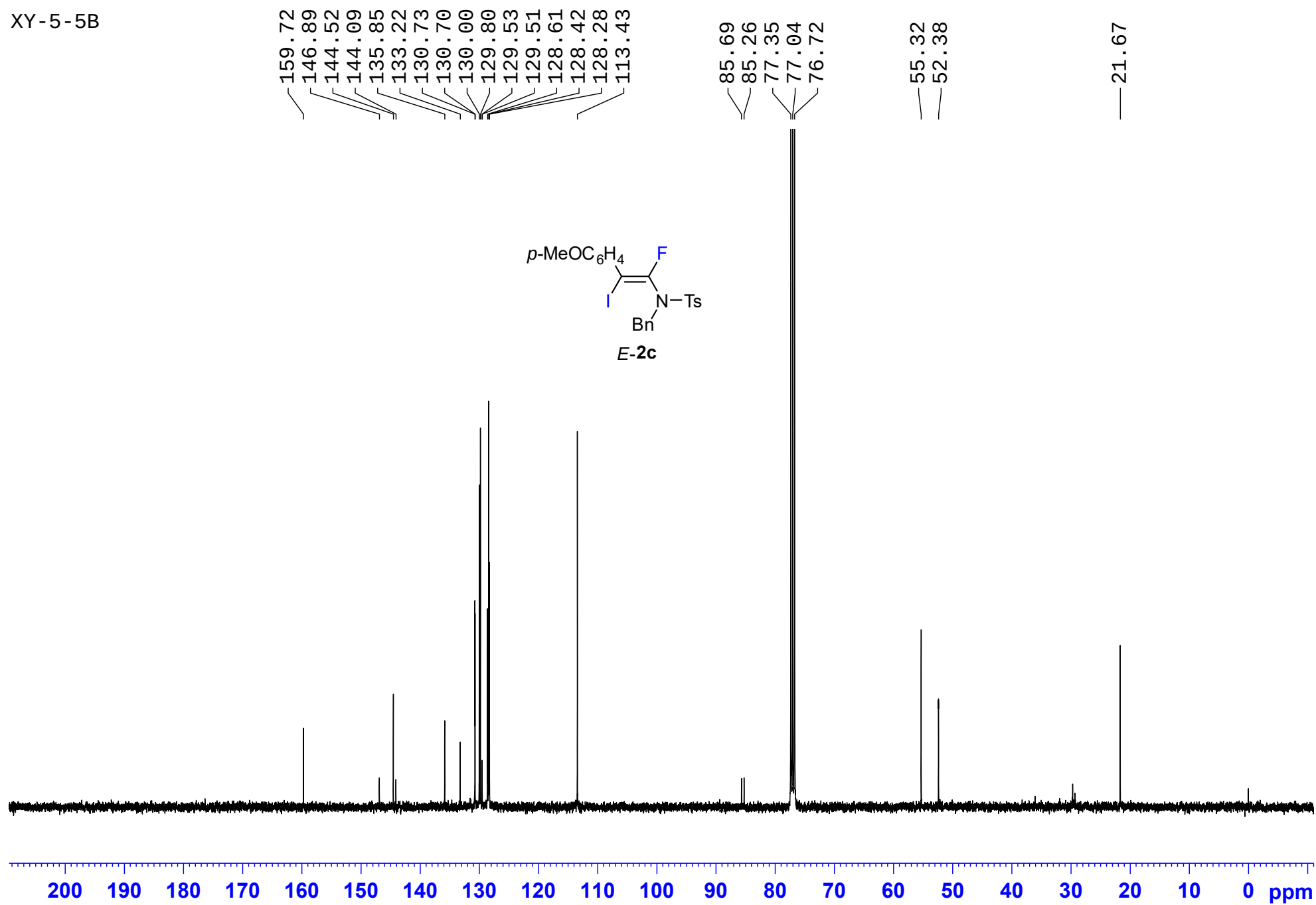
— -76.17



XY-5-5B

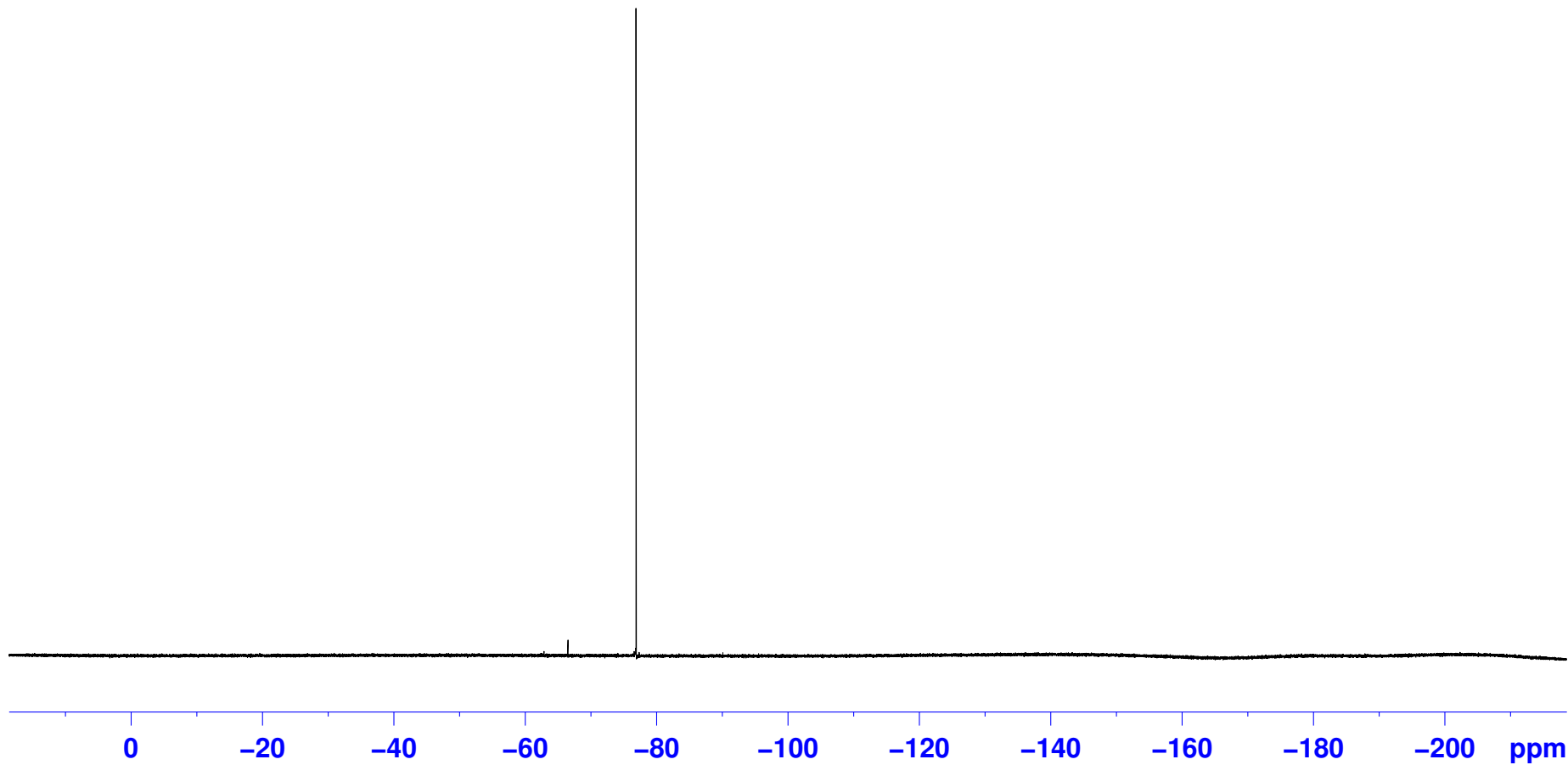
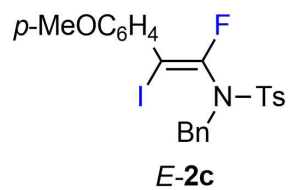


XY-5-5B



XY-5-5B

---76.89



XY-4-87B

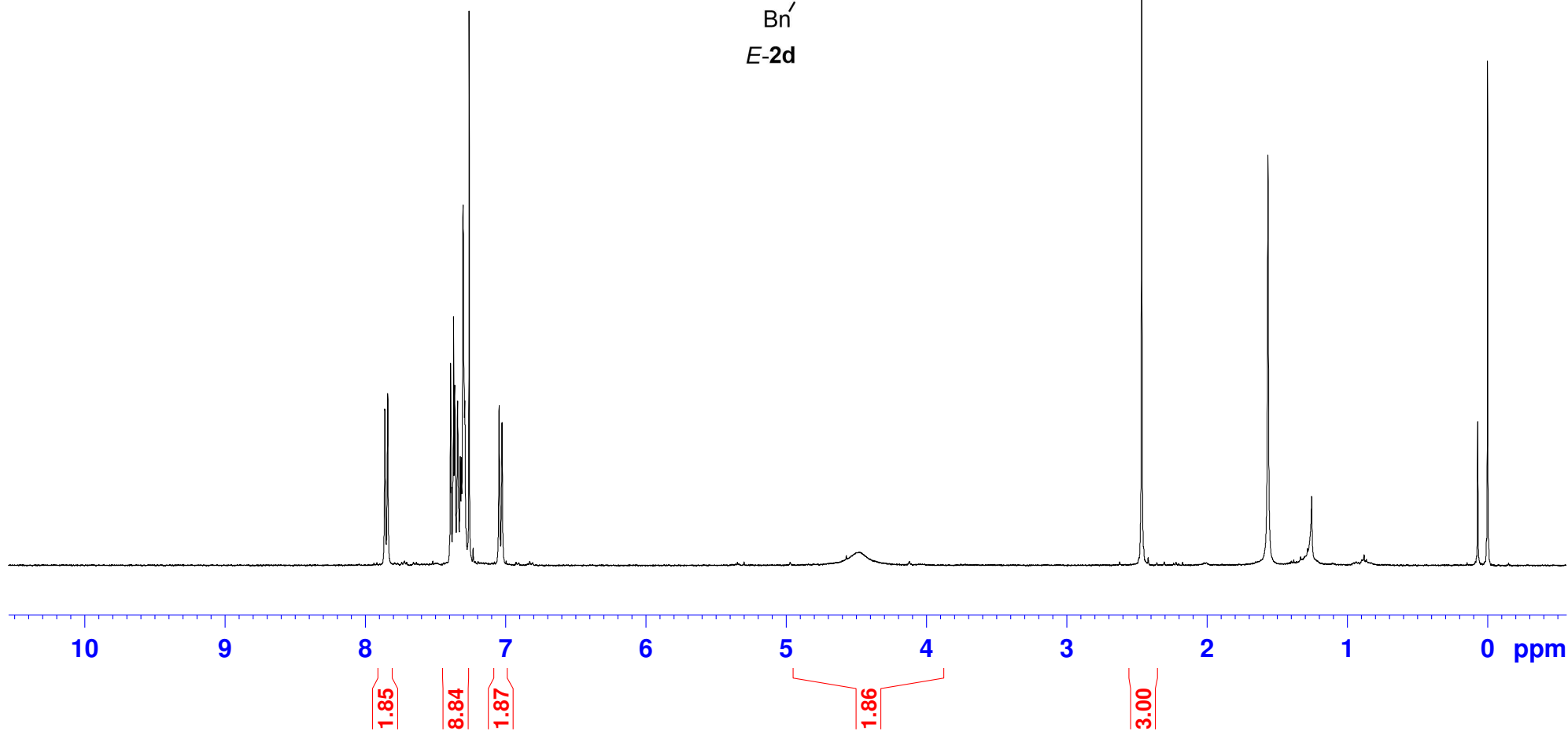
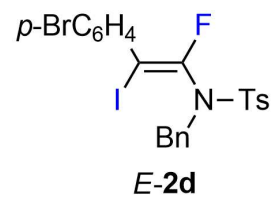
7.862
7.841
7.393
7.372
7.364
7.343
7.325
7.317
7.305
7.297
7.293
7.261
7.047
7.027

4.479

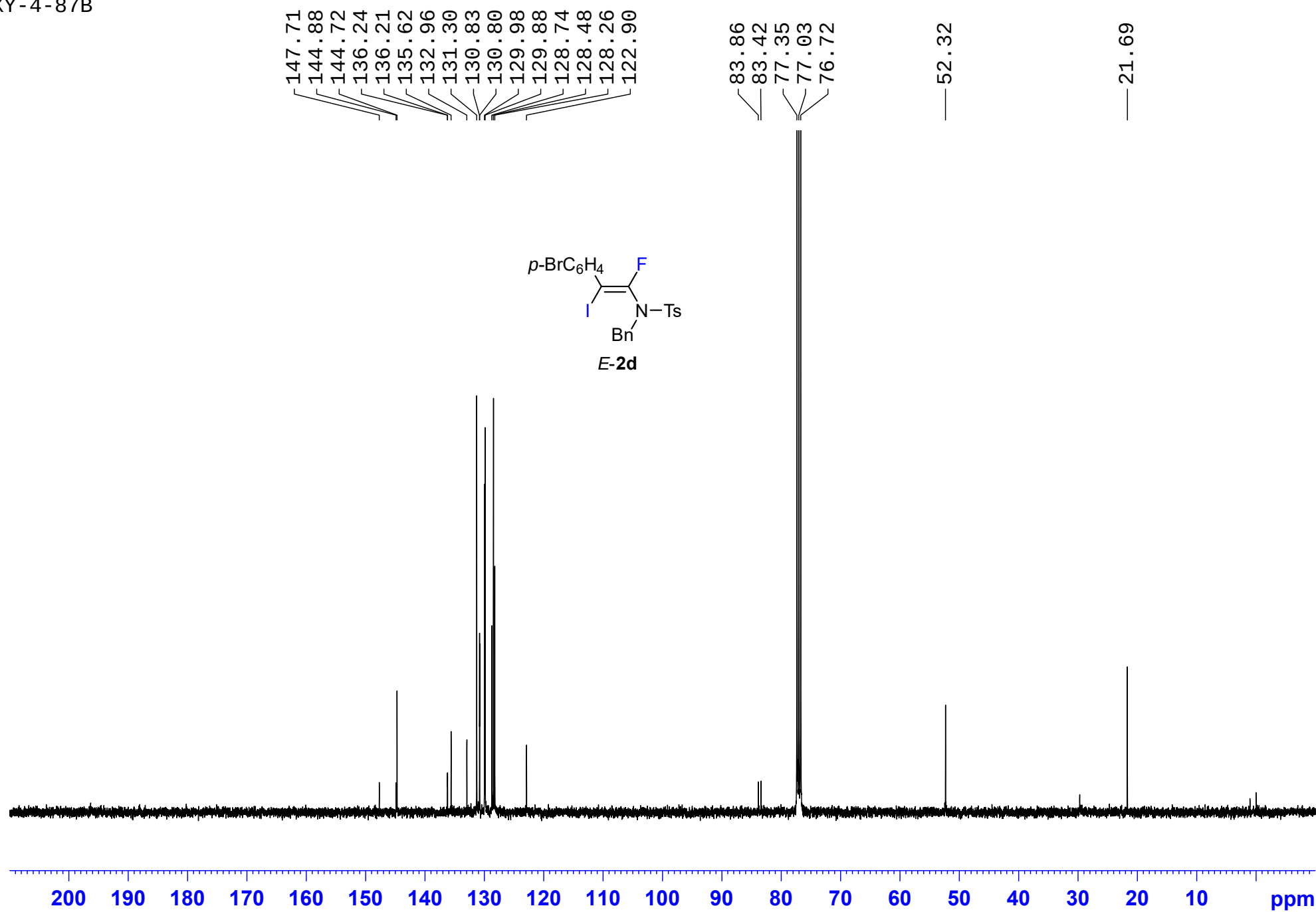
2.466

1.566

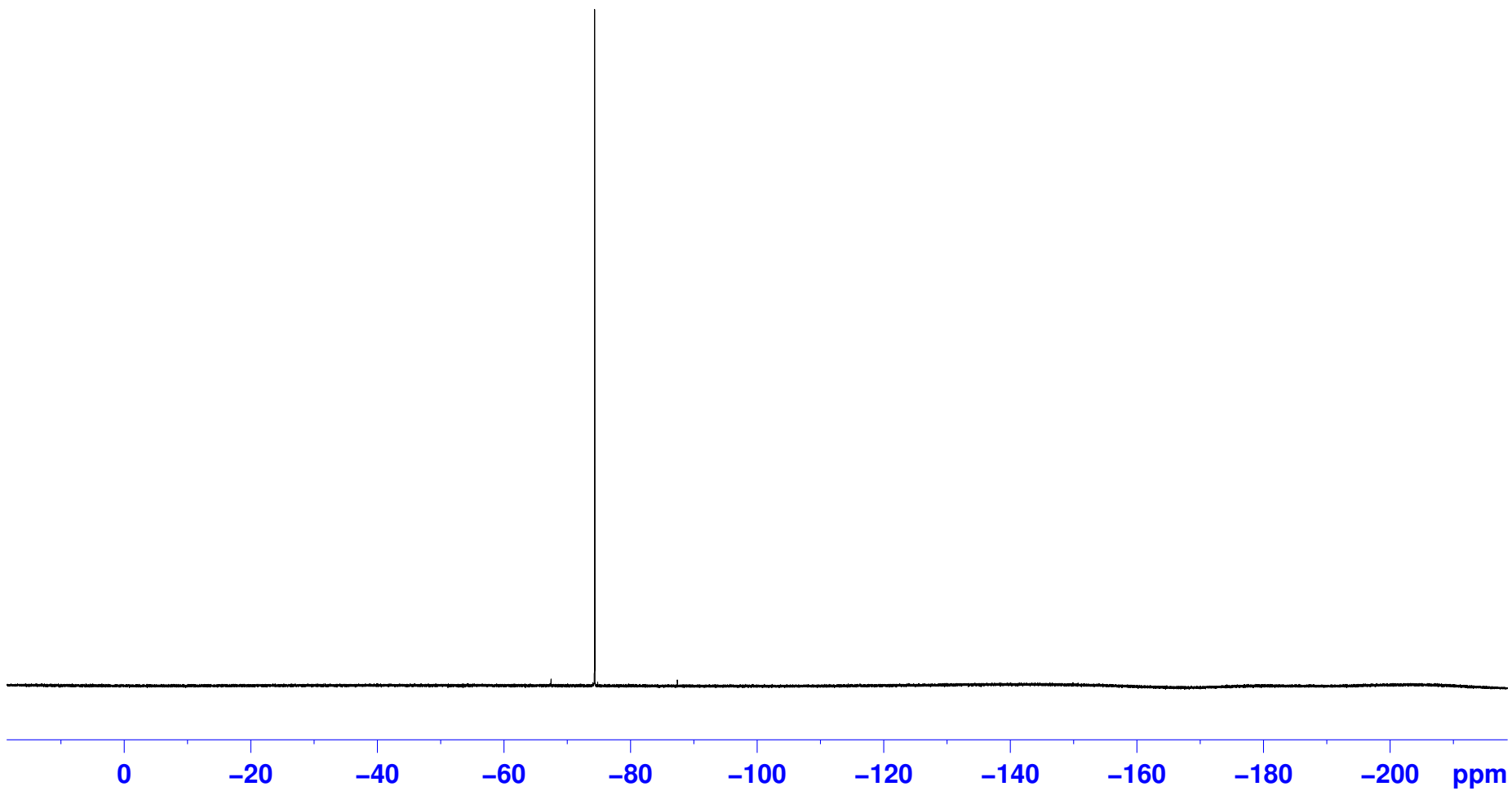
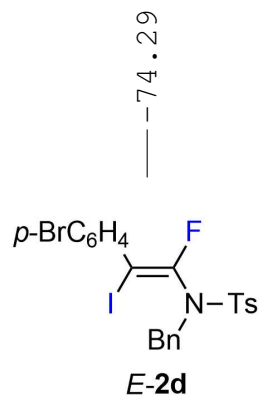
0.000



XY-4-87B



XY-4-87B



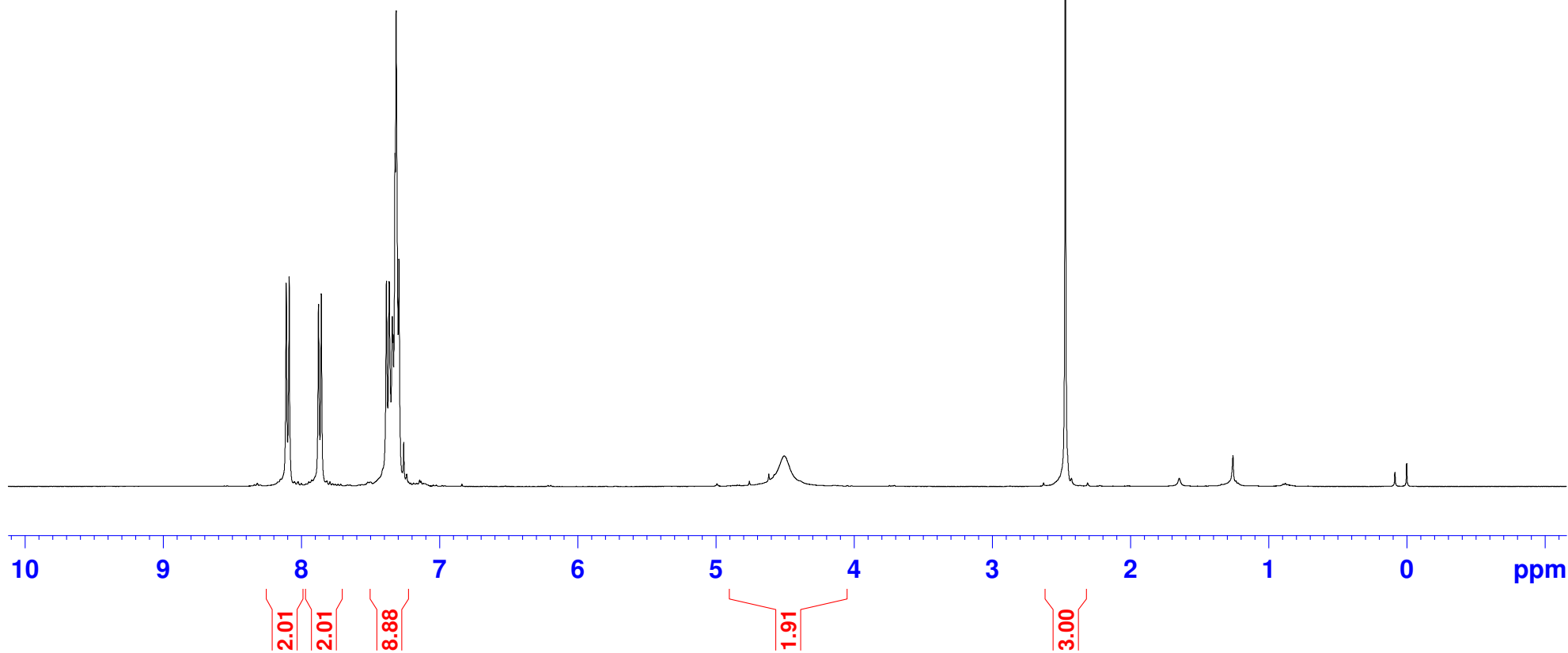
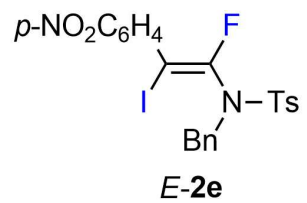
XY-5-77

8.111
8.089
7.877
7.856
7.385
7.364
7.343
7.337
7.323
7.315
7.294
7.260

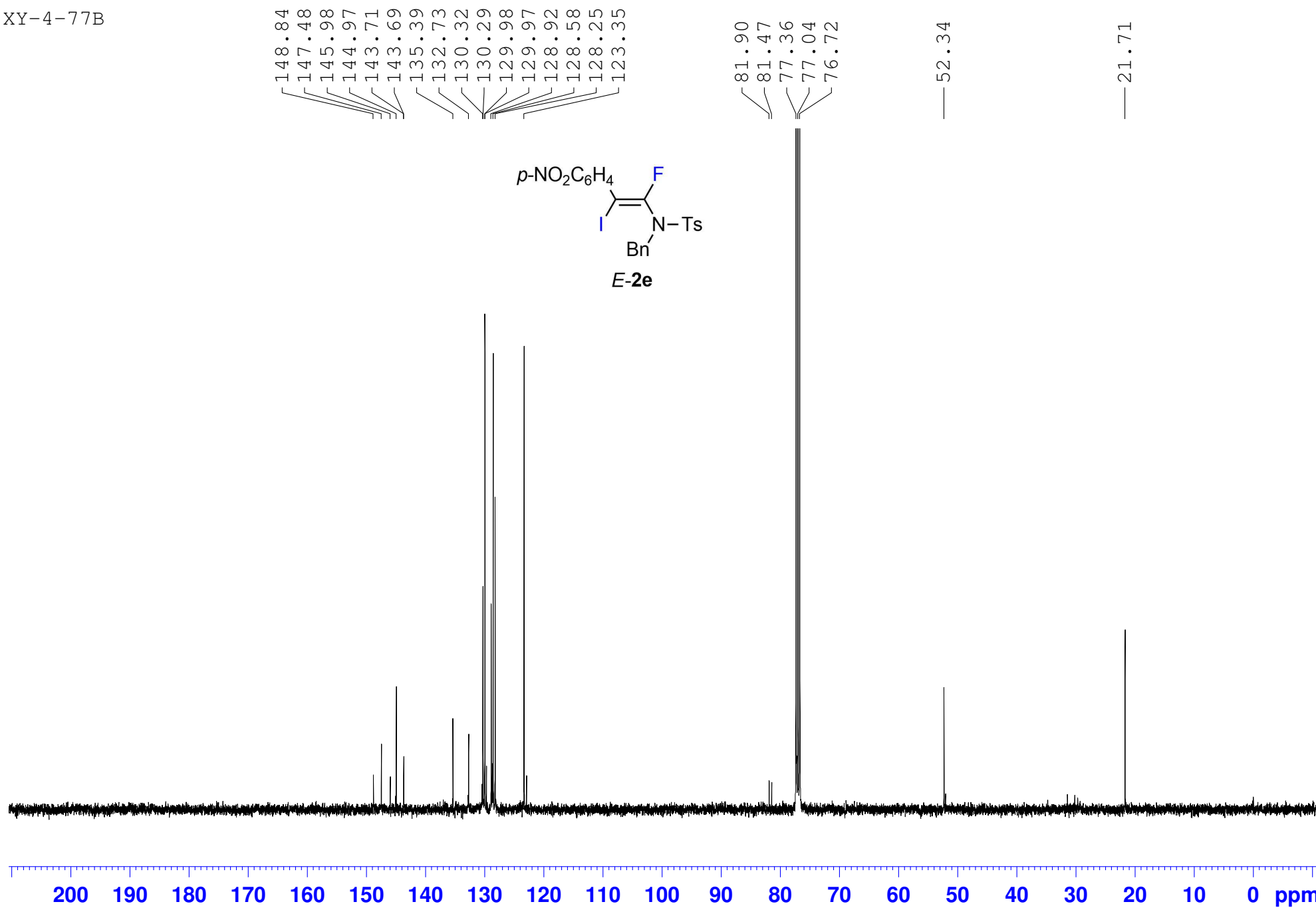
4.505

2.471

0.000

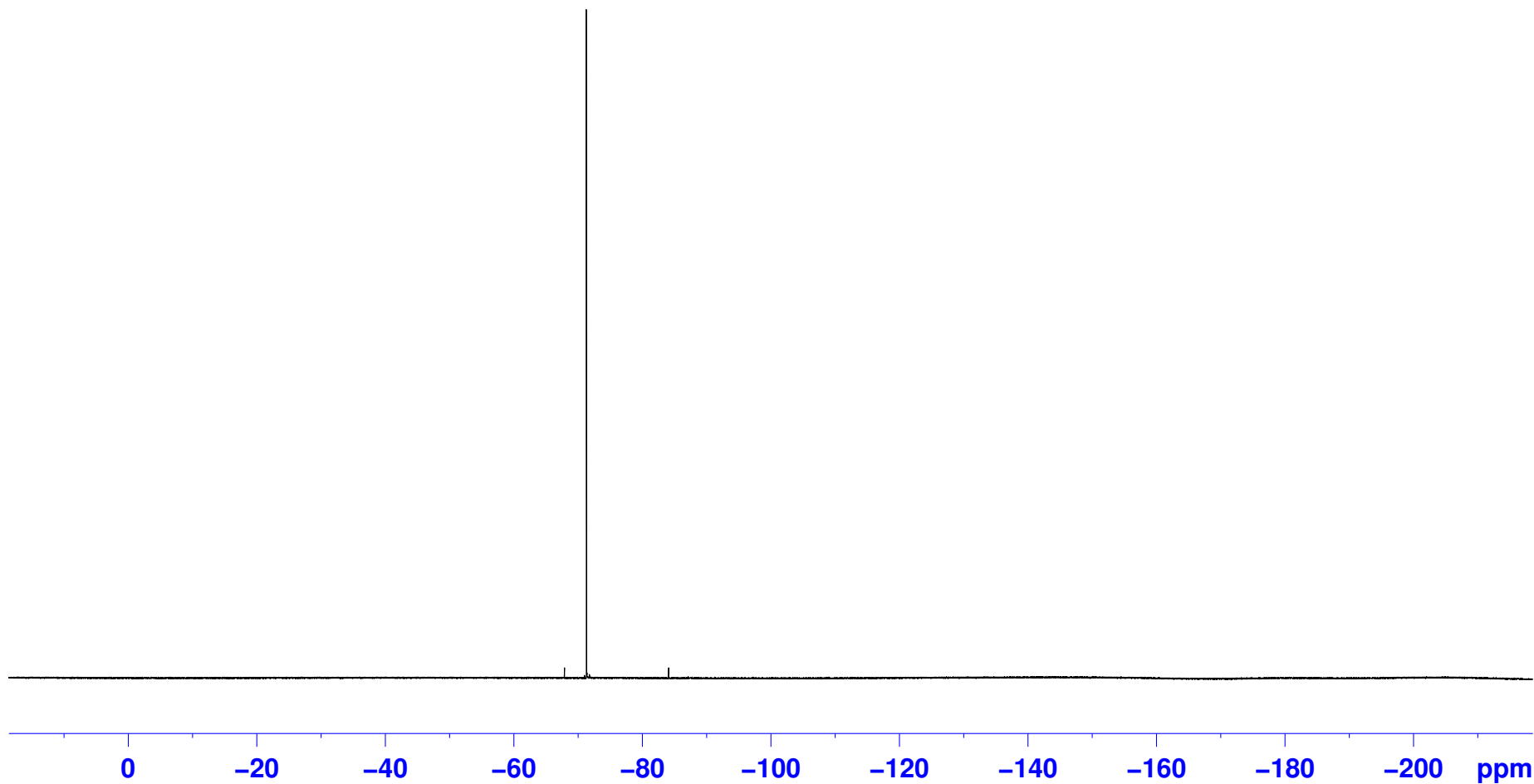
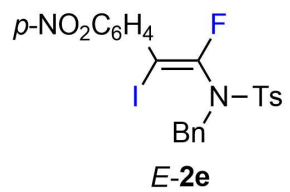


XY-4-77B



XY-4-77B

— -71.32



XY-3-167

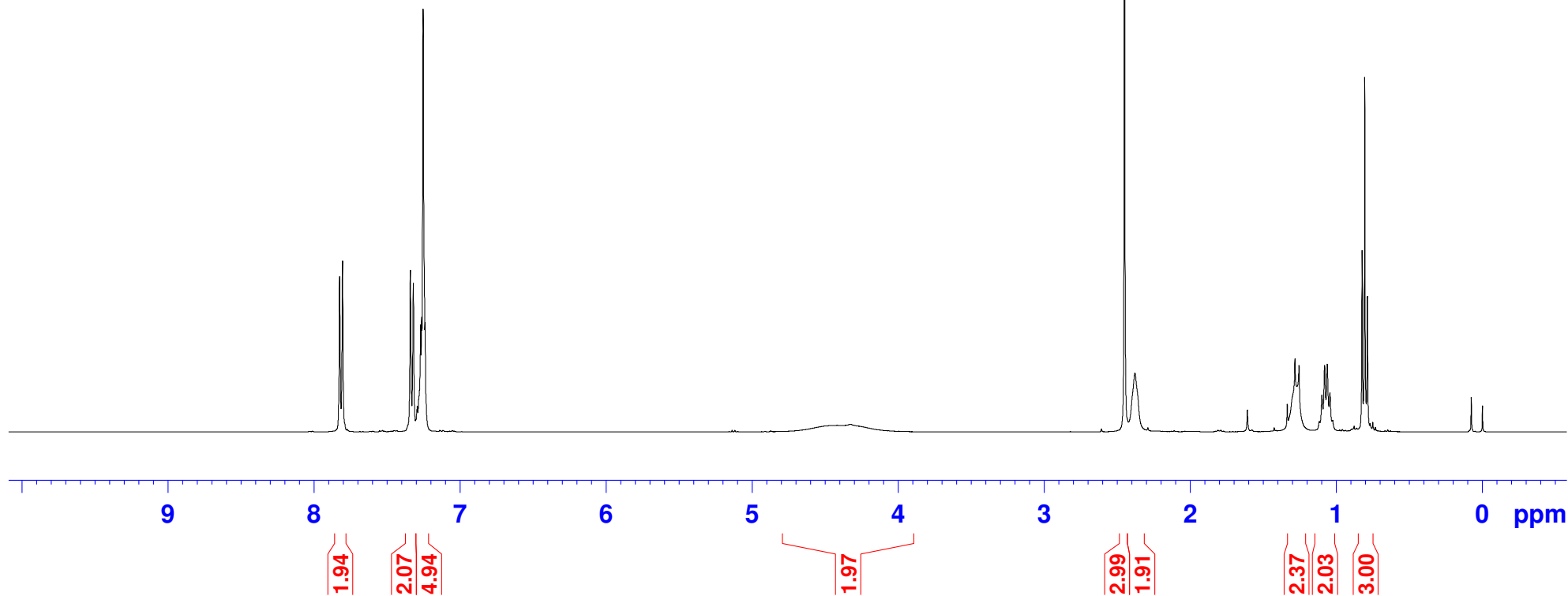
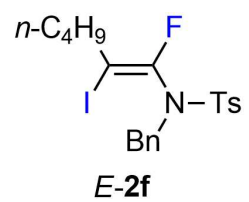
7.827
7.806
7.342
7.322
7.272
7.264
7.254
7.241

4.330

2.452
2.380

1.284
1.256
1.081
1.063
1.044
0.825
0.806
0.788

0.000



XY-3-167

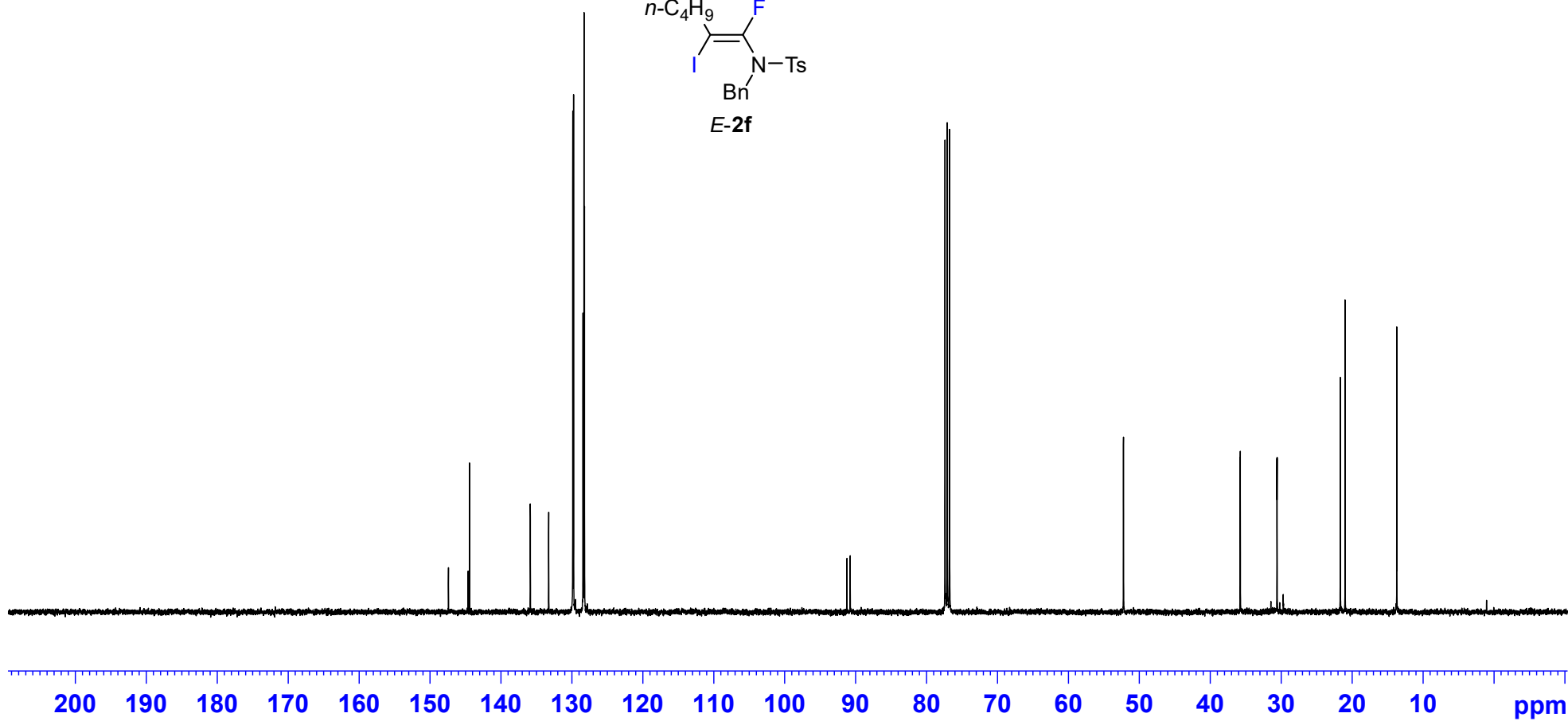
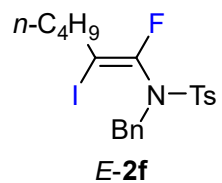
147.40
144.64
144.43
135.86
133.27
129.88
129.76
128.44
128.29
128.23

91.23
90.76

77.39
77.08
76.76

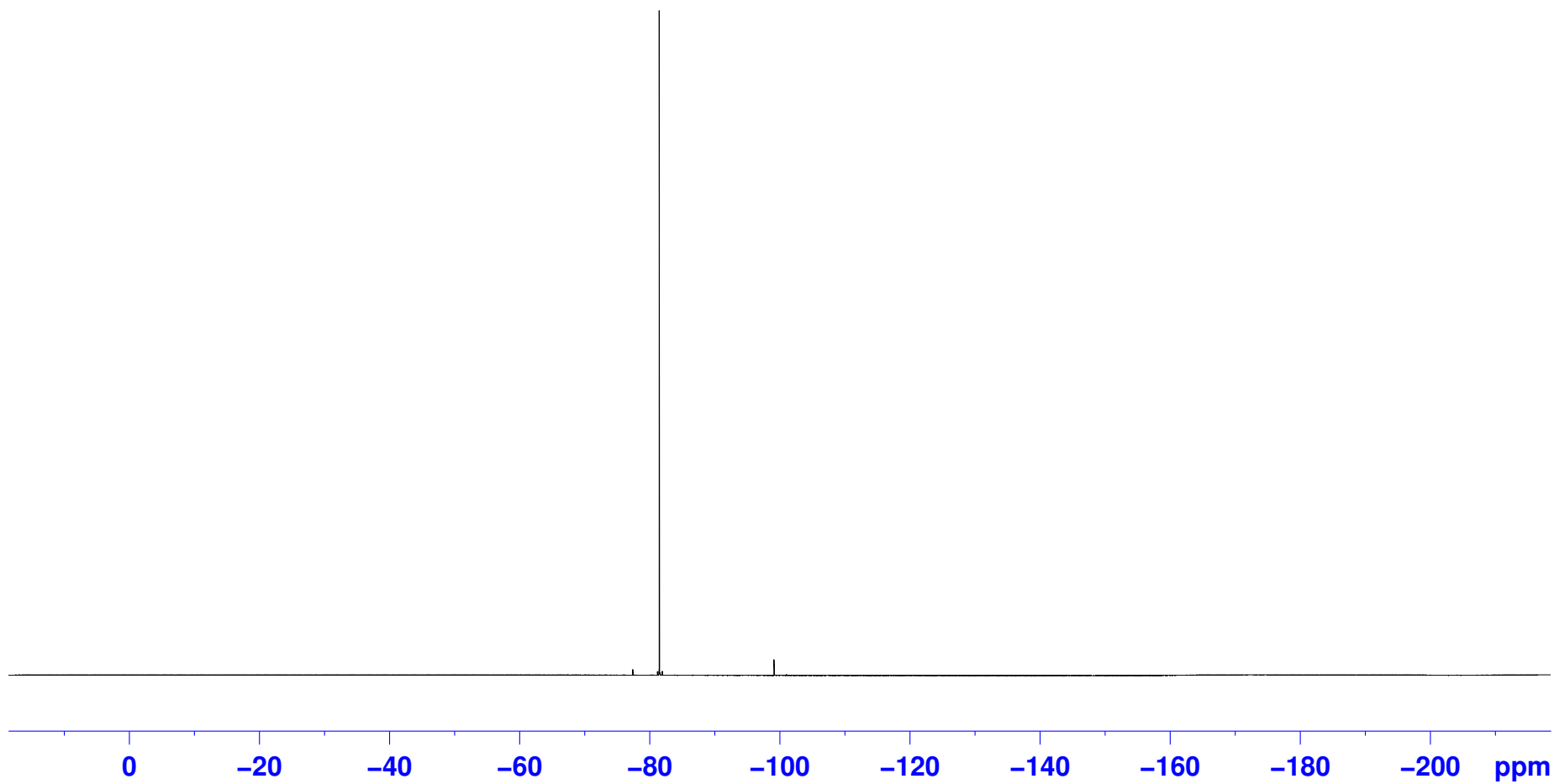
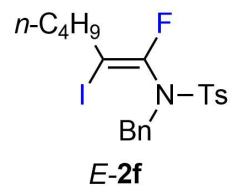
52.23

35.78
35.77
30.60
30.58
21.67
20.99
13.70

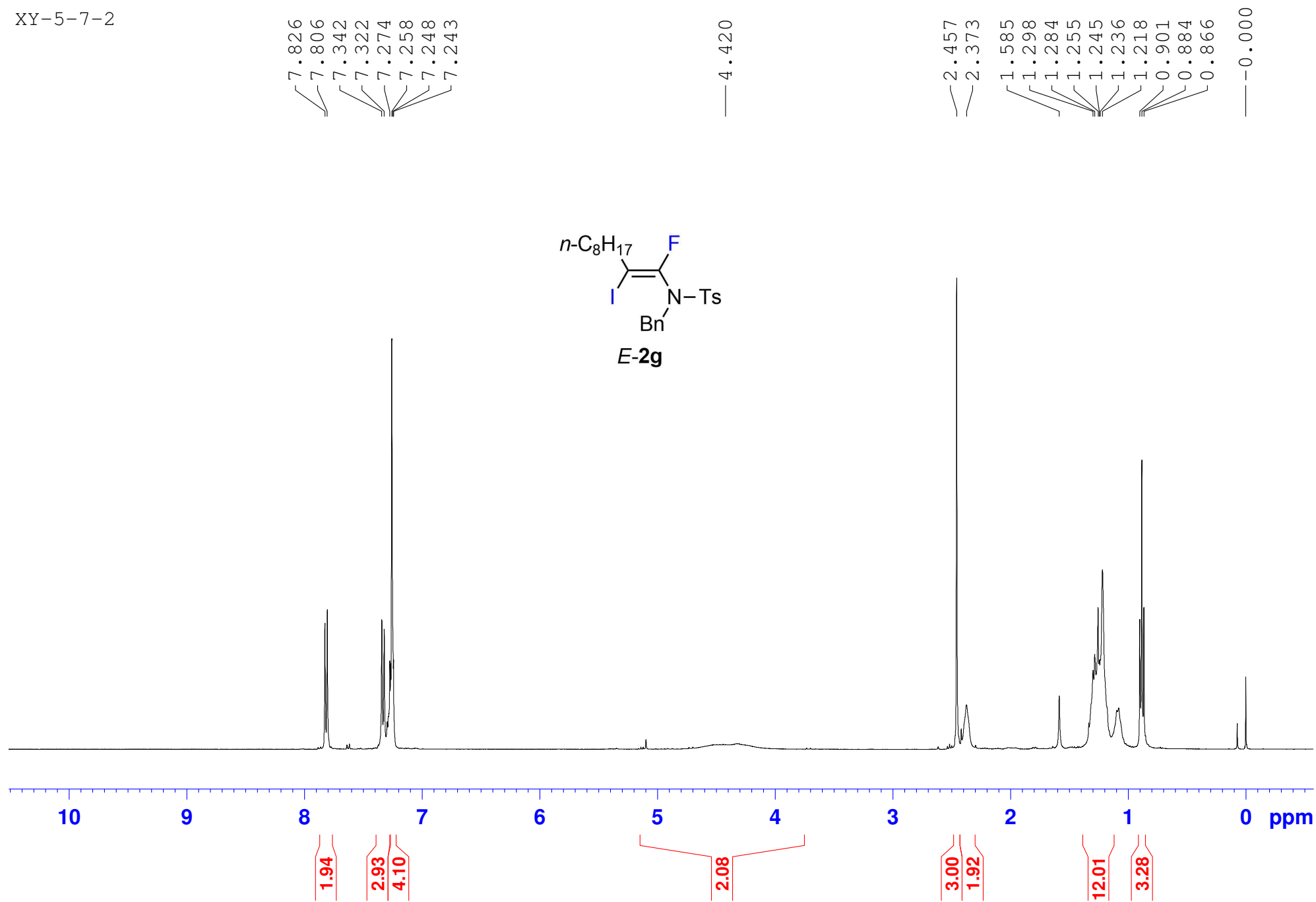


XY-3-167

—81.47



XY-5-7-2



XY-5-7-2

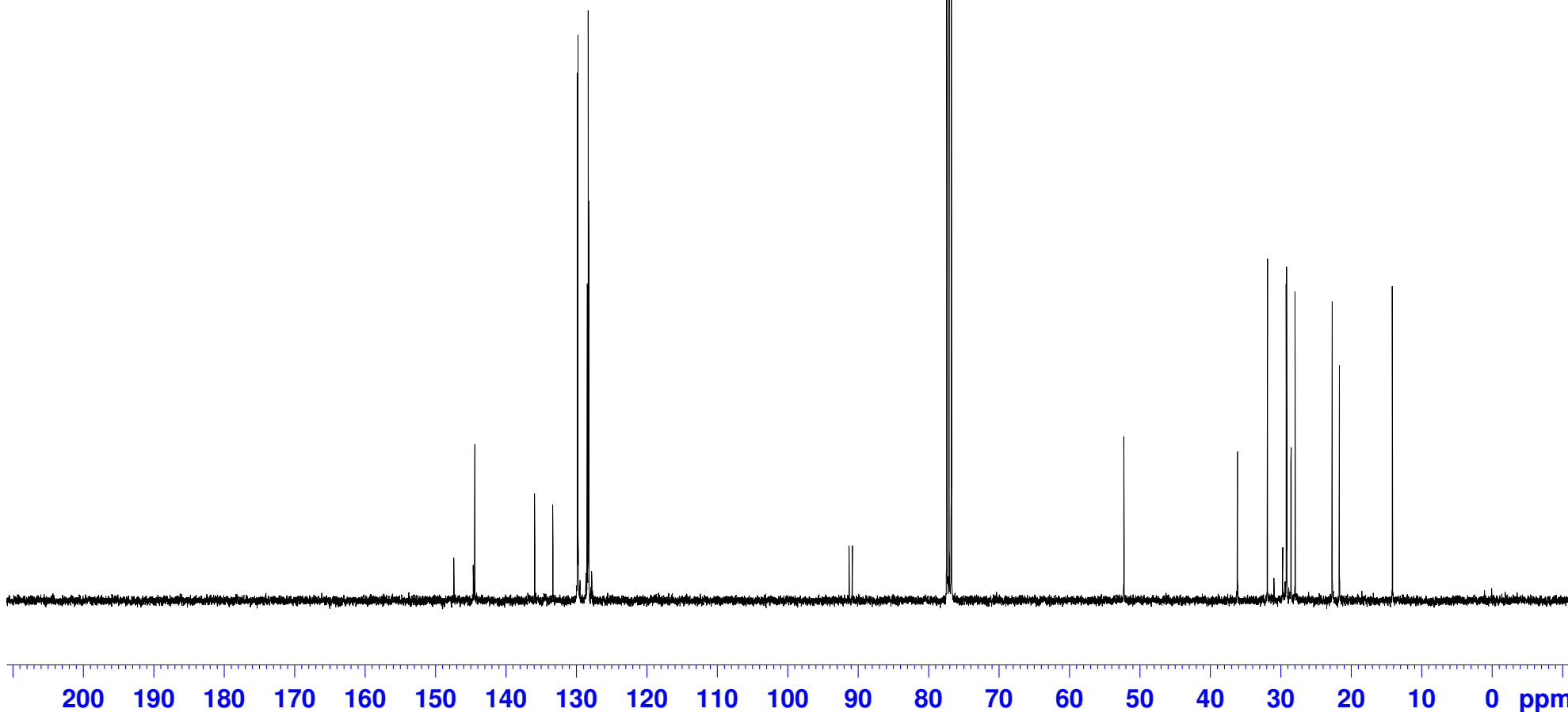
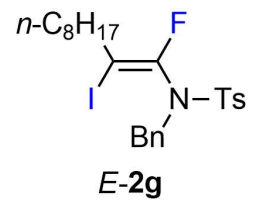
147.38
144.62
144.40
135.91
133.33
129.84
129.74
128.43
128.29
128.22

91.26
90.79

77.38
77.06
76.74

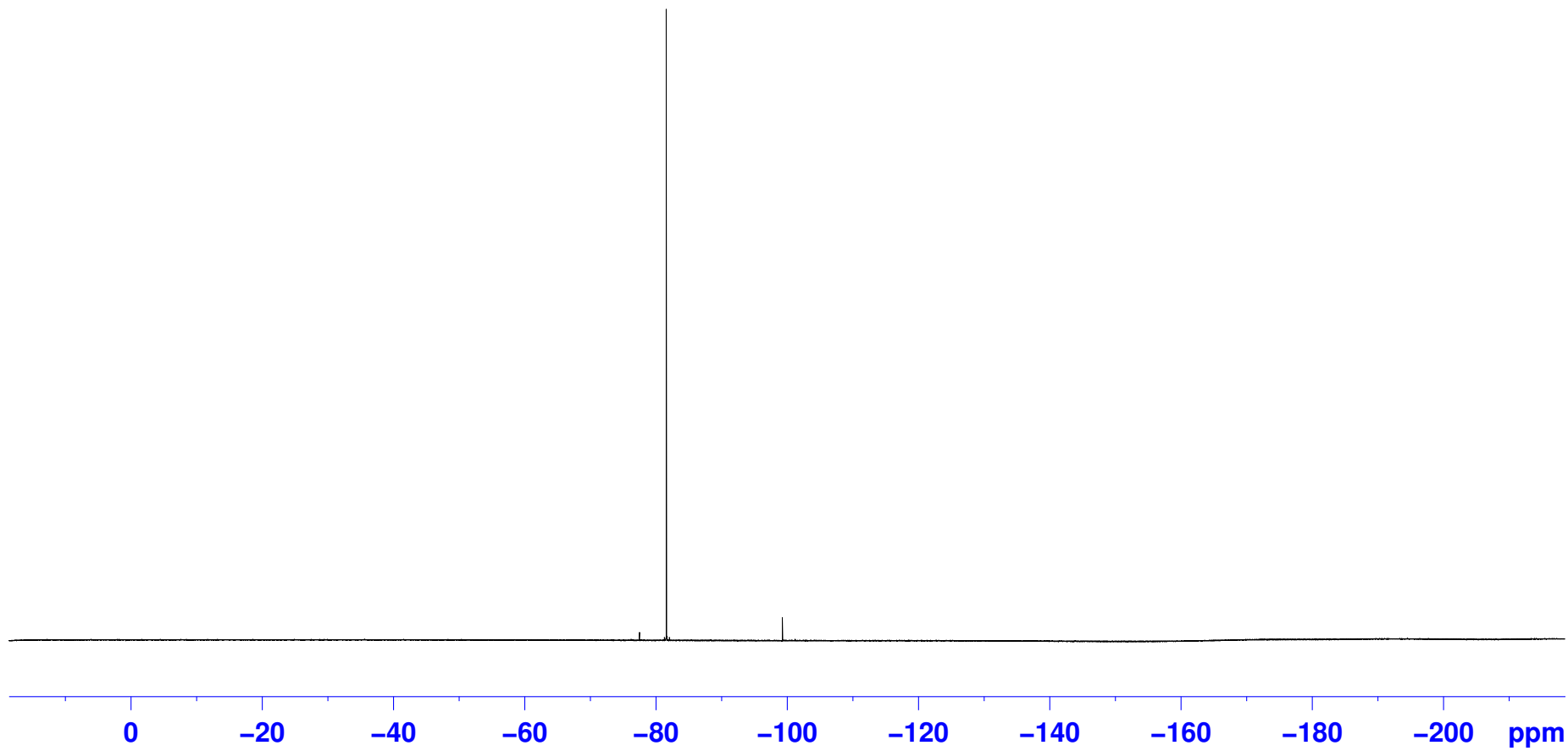
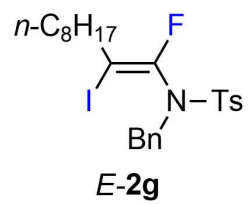
52.24

36.12
31.86
29.19
29.13
28.53
28.51
27.93
22.68
21.66
14.13

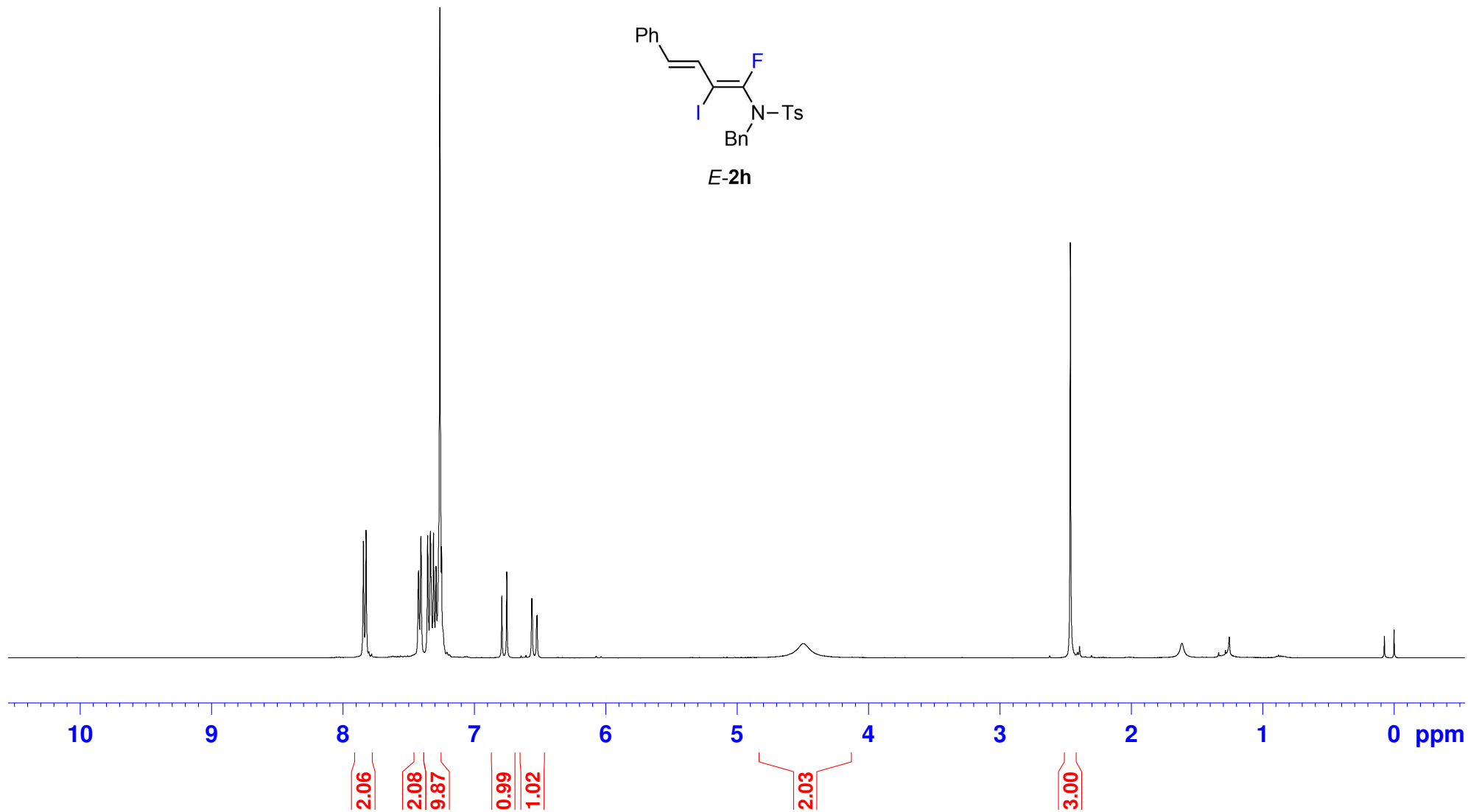


XY-5-7-2

—81.60



XY-4-27B



XY-4-27B

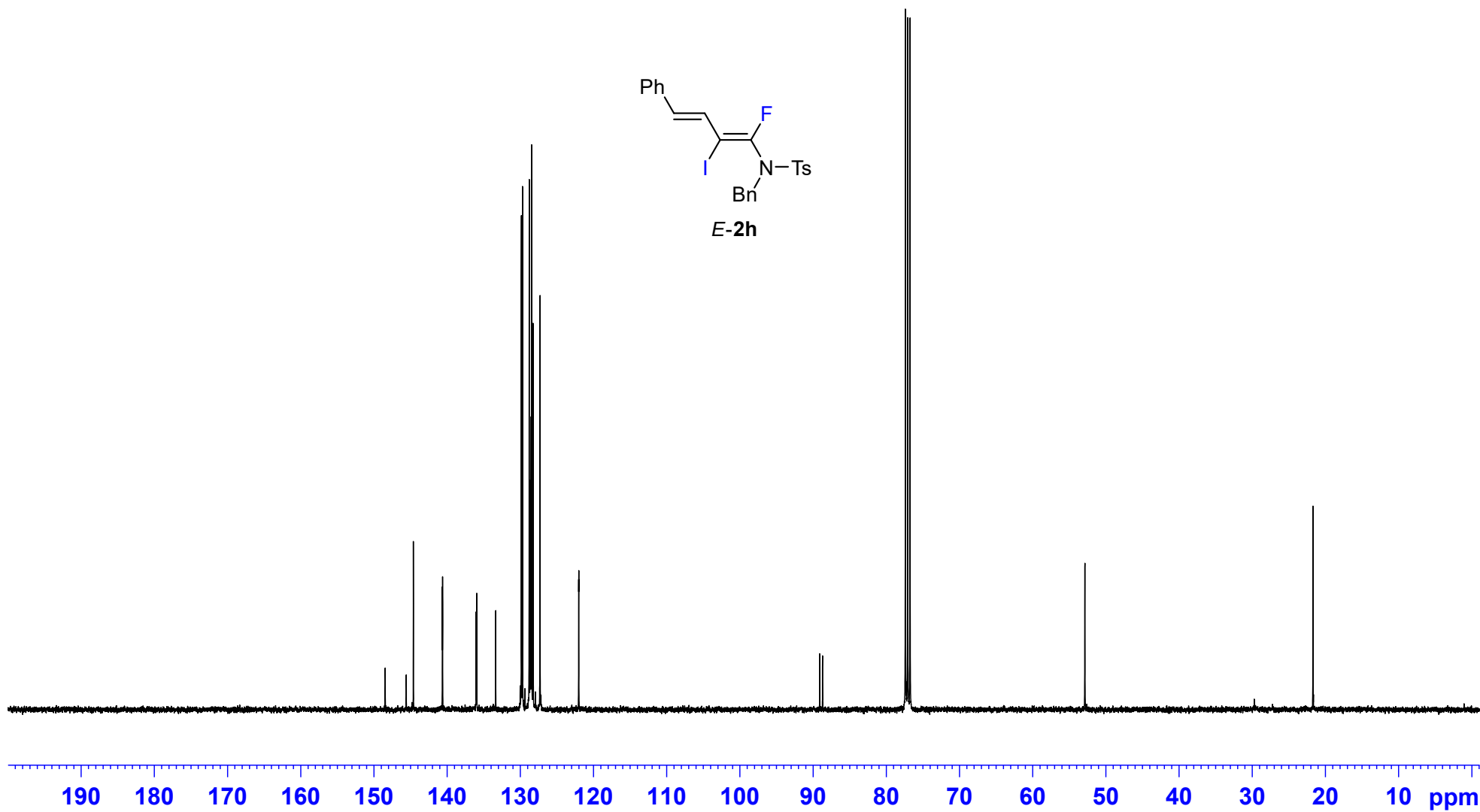
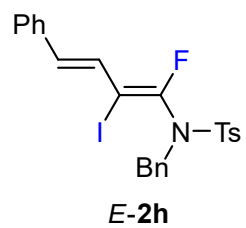
148.47
145.59
144.62
140.66
140.62
136.04
135.96
133.37
129.86
129.71
128.79
128.65
128.60
128.53
128.45
128.26
127.32
122.03
122.02

89.10
88.72

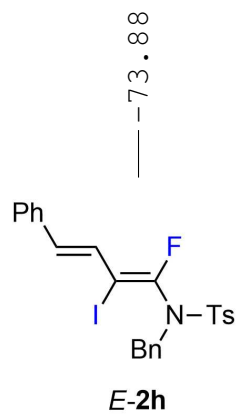
77.40
77.08
76.76

52.88
52.87

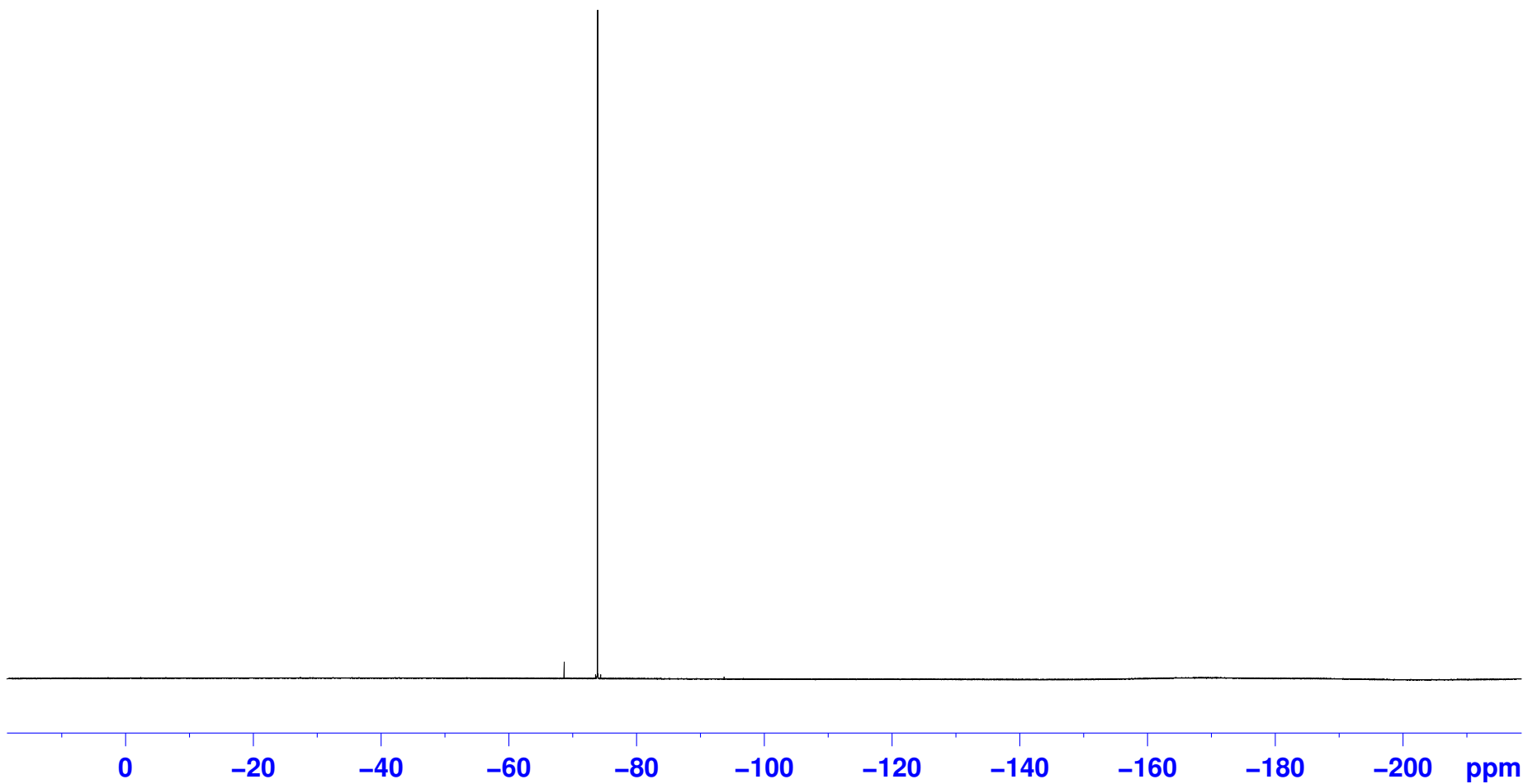
21.71



XY-4-27B



— 73.88

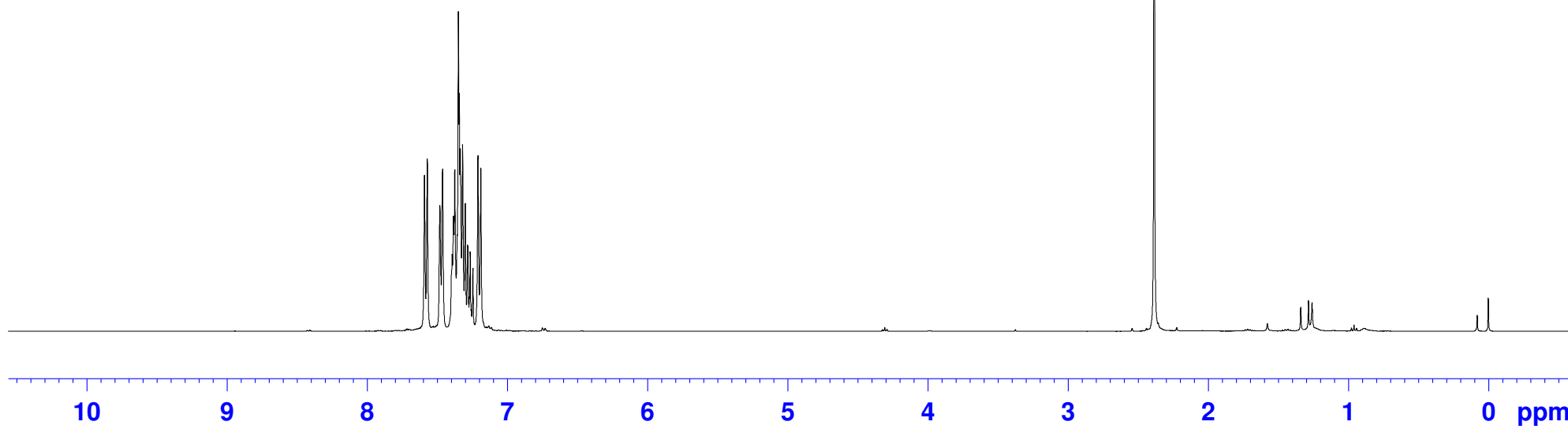
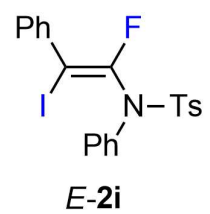


XY-6-5

7.591
7.571
7.481
7.461
7.383
7.374
7.349
7.343
7.336
7.319
7.300
7.209
7.189

2.384

0.000



2.02
2.02
10.20

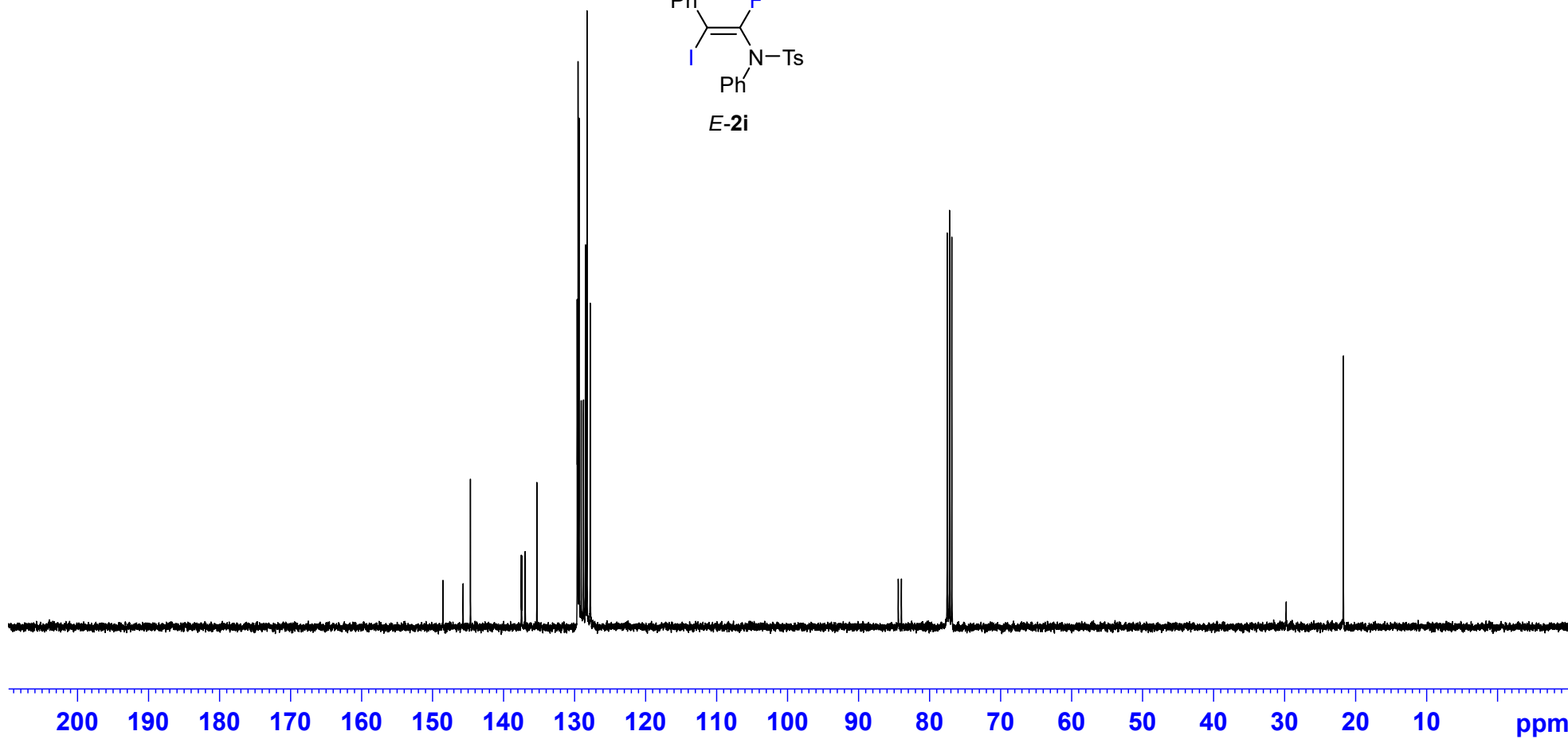
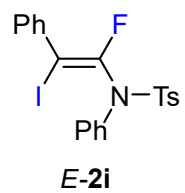
3.00

XY-6-5

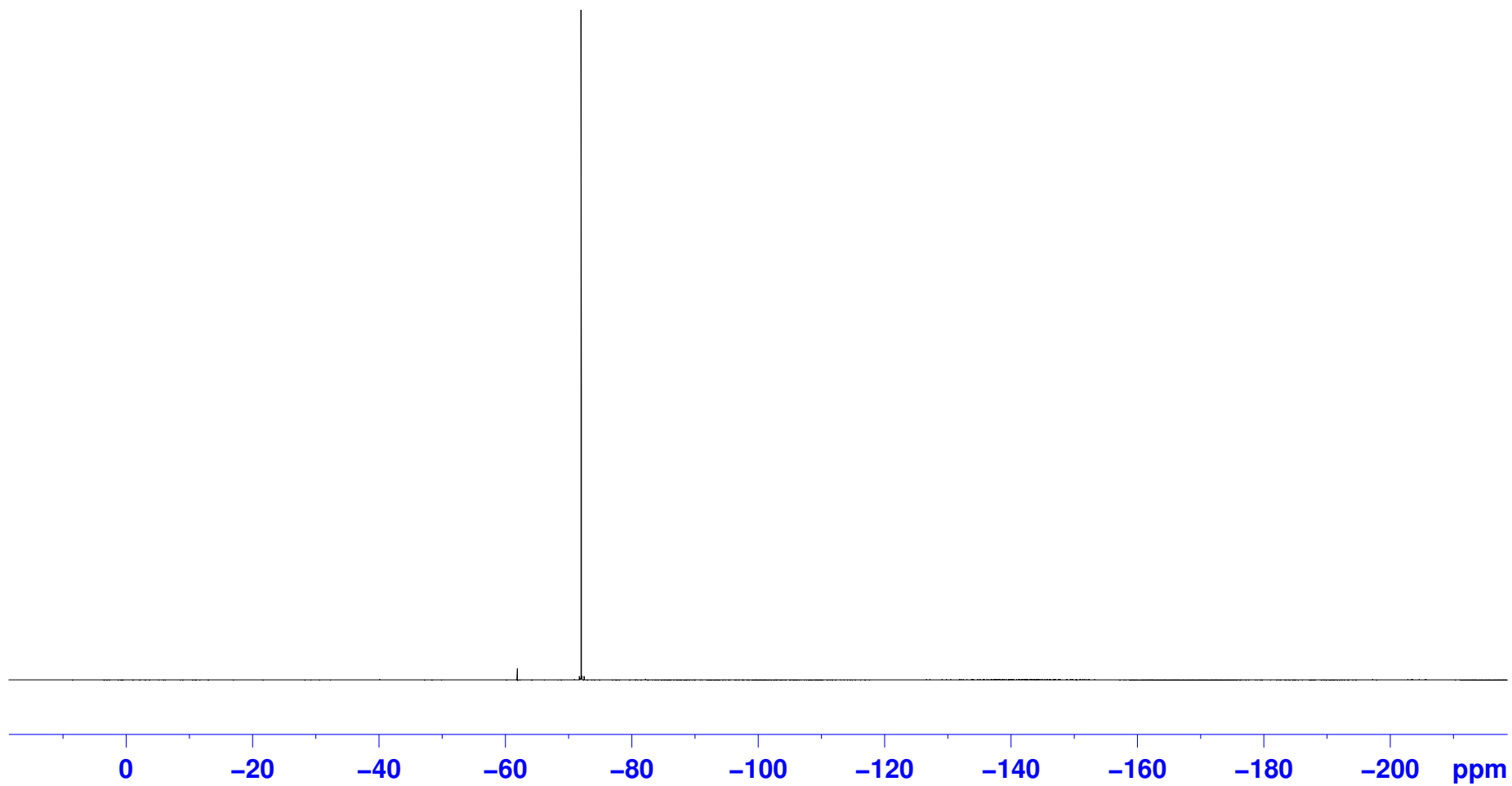
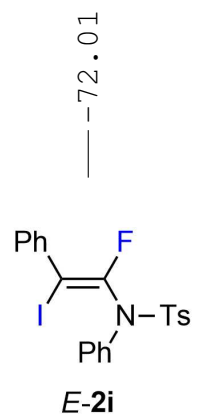
148.54
145.69
144.66
137.50
137.45
136.96
136.94
135.30
129.63
129.60
129.50
129.37
129.06
128.74
128.46
128.45
128.25
127.80
127.78

84.40
83.97
77.51
77.19
76.87

21.71



XY-6-5



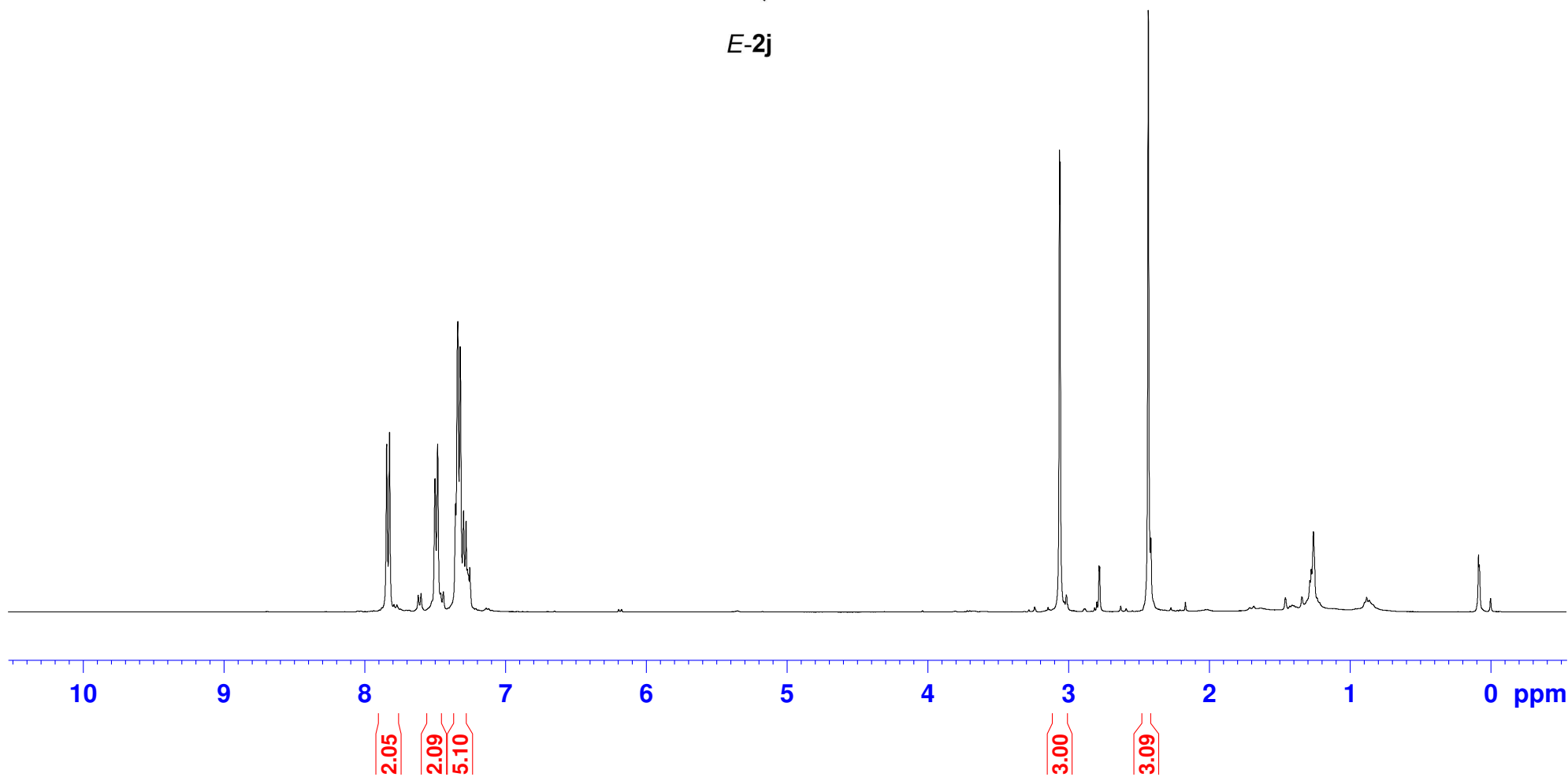
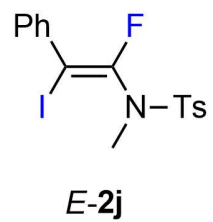
XY-5-137

7.843
7.823
7.500
7.481
7.354
7.337
7.321
7.297
7.279

3.063
3.059

2.432

0.000



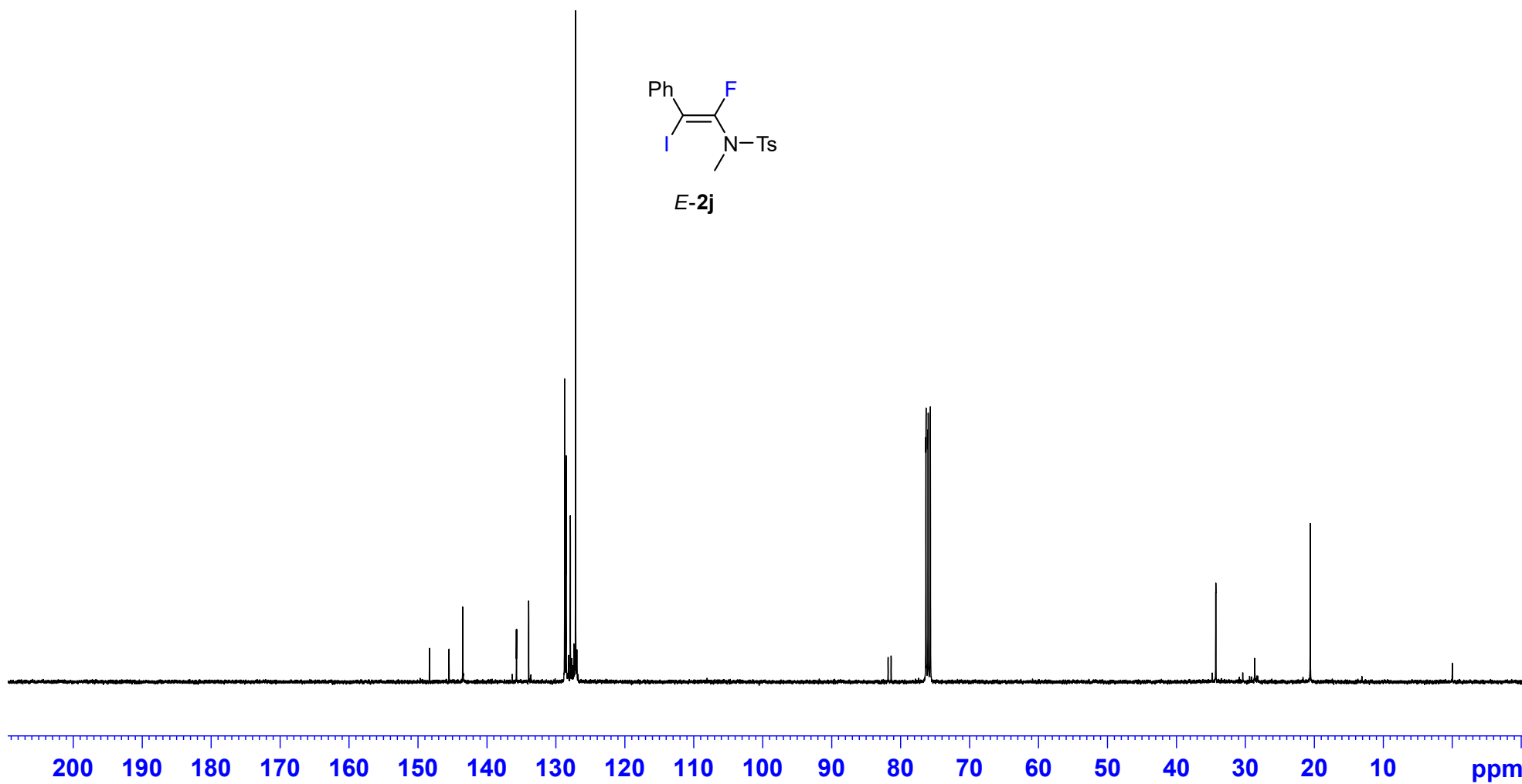
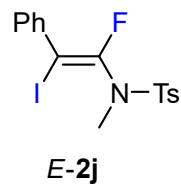
XY-5-137

148.35
145.51
143.53
135.74
135.71
133.95
128.74
128.55
128.51
127.91
127.16

81.83
81.39
76.35
76.33
76.04
76.01
75.72
75.69

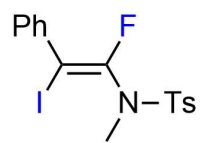
34.30
34.29

20.60

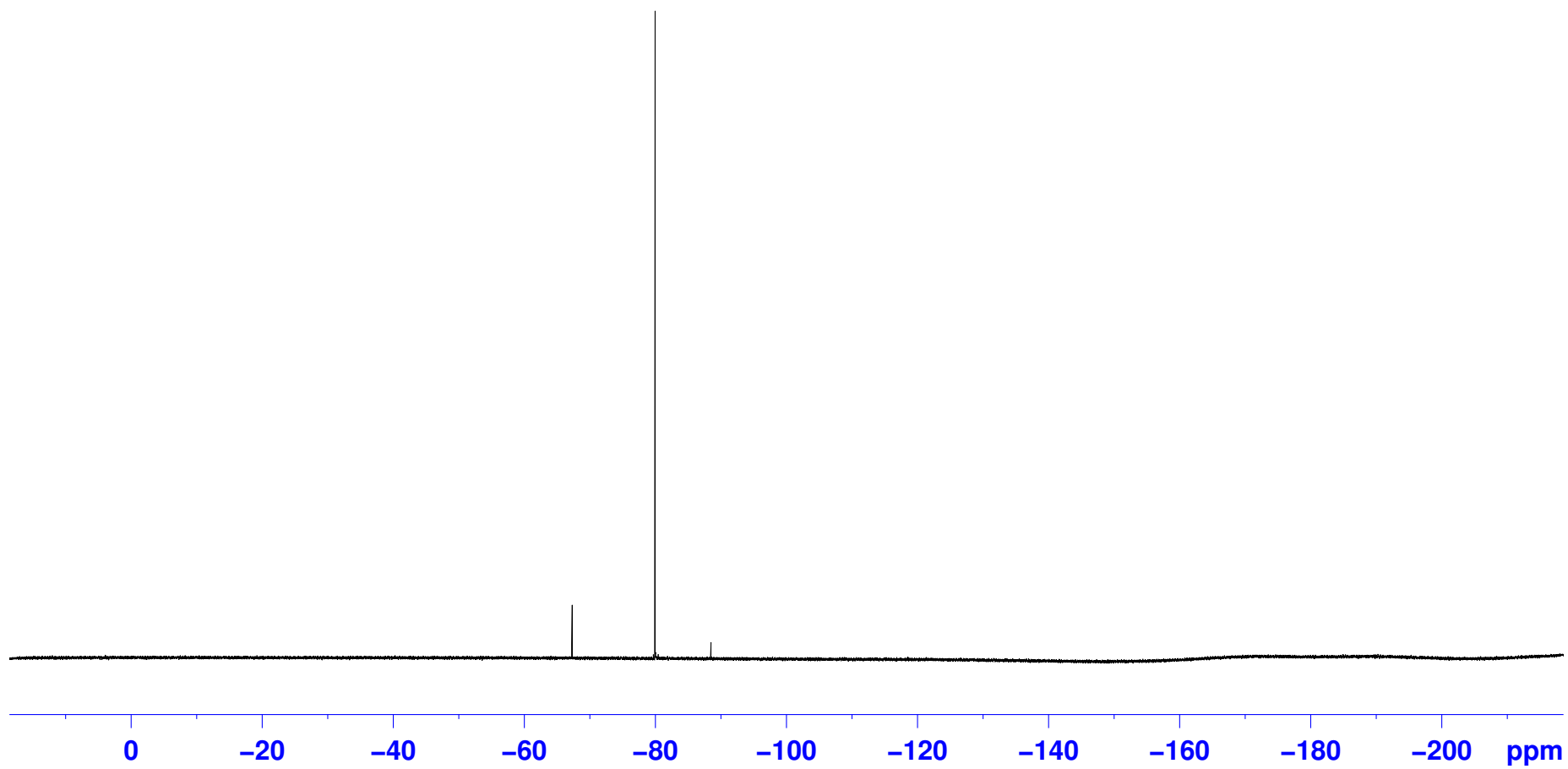


XY-5-137-2

— -79.92



E-2j



XY-5-133-2

7.817
7.797
7.344
7.324
7.263

2.962

2.446

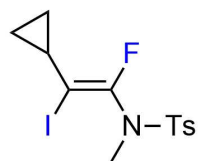
1.256

0.803

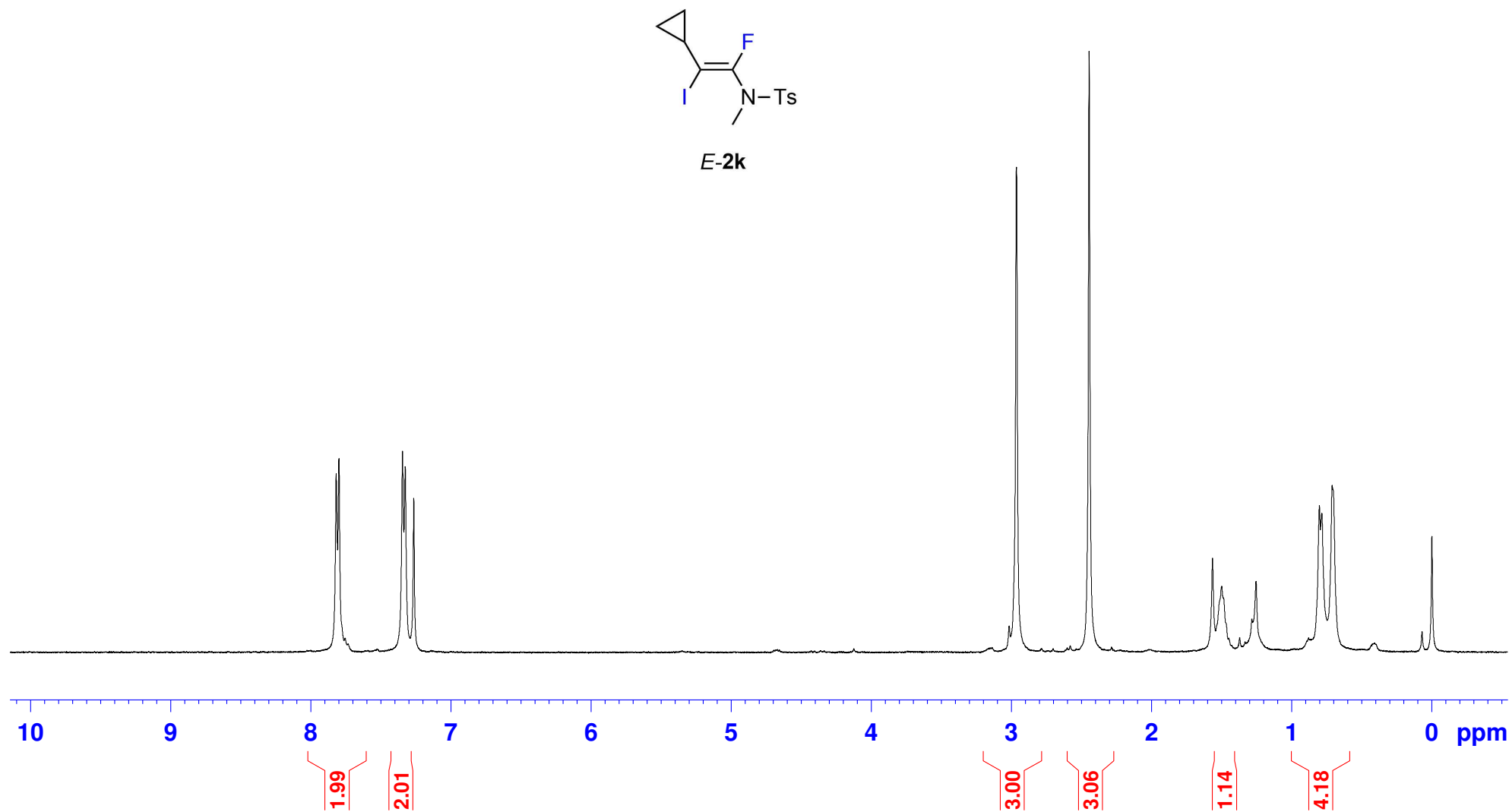
0.786

0.711

0.000



E-2k



XY-5-133-2

149.91
147.13
144.34

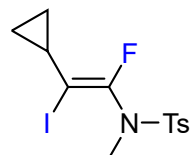
135.26
129.70
128.17

95.00
94.56

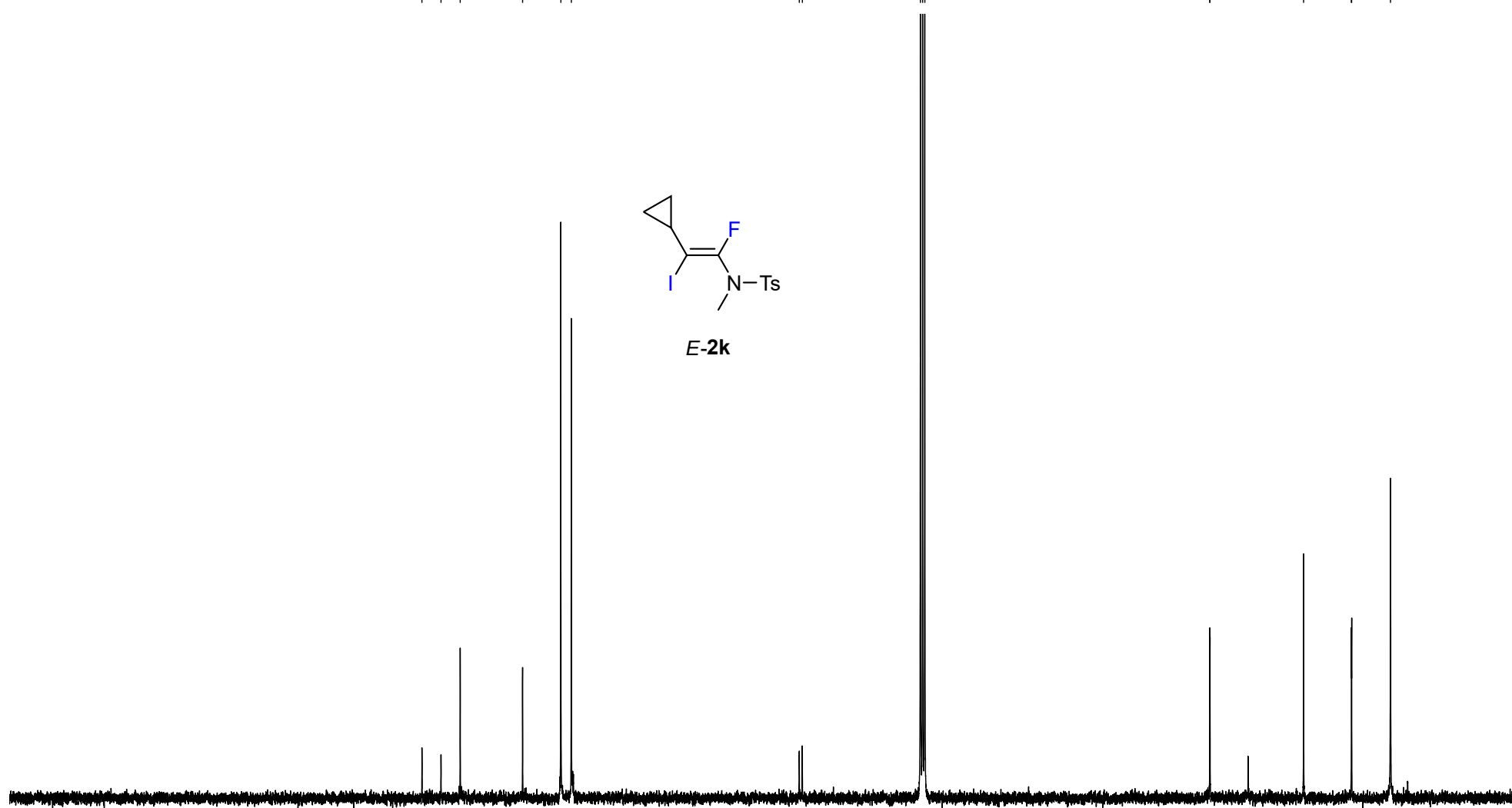
77.38
77.06
76.74

35.27
35.25

21.64
14.67
14.64
8.99



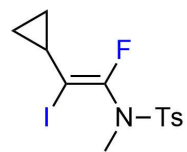
E-2k



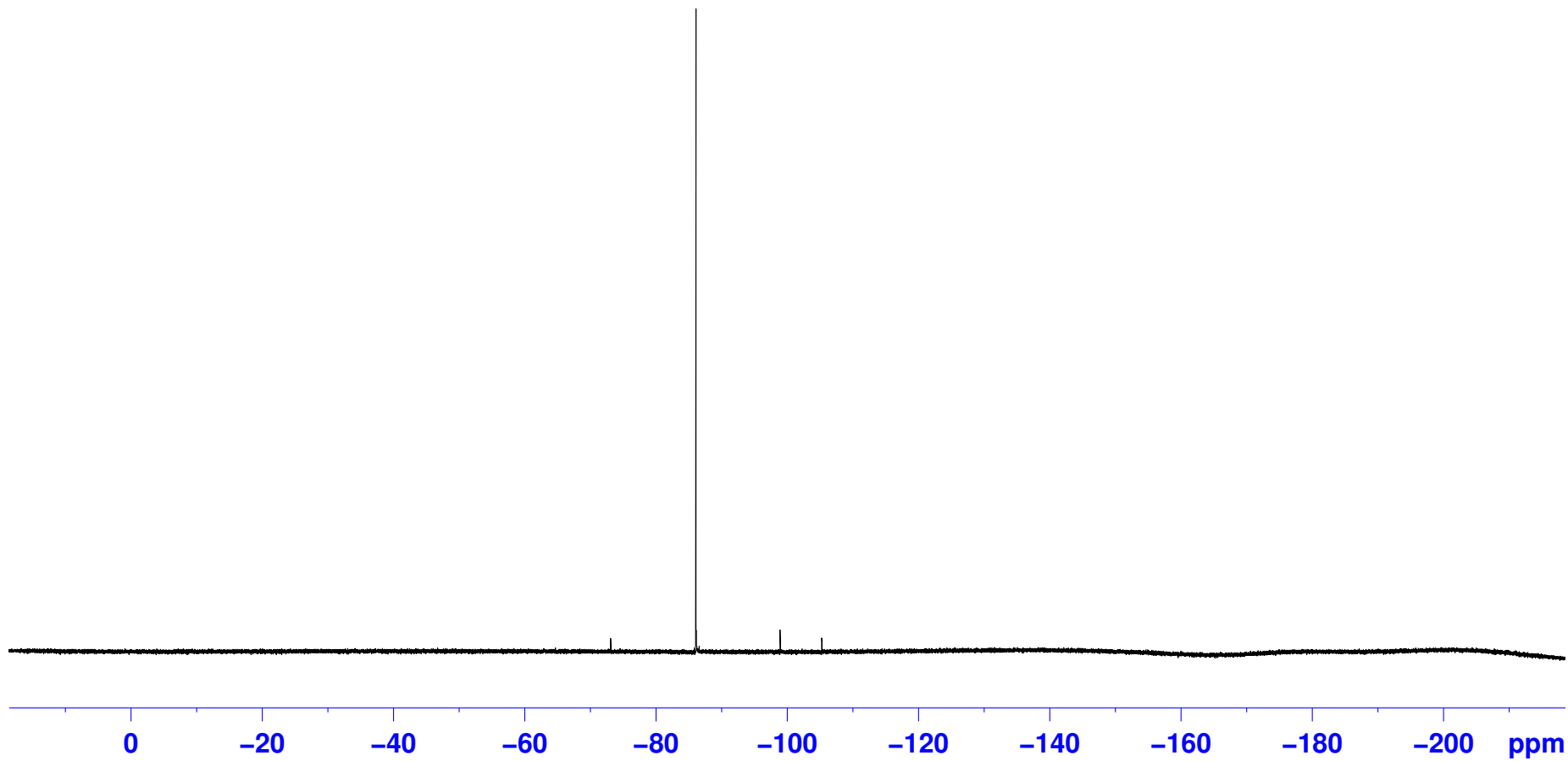
200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 ppm

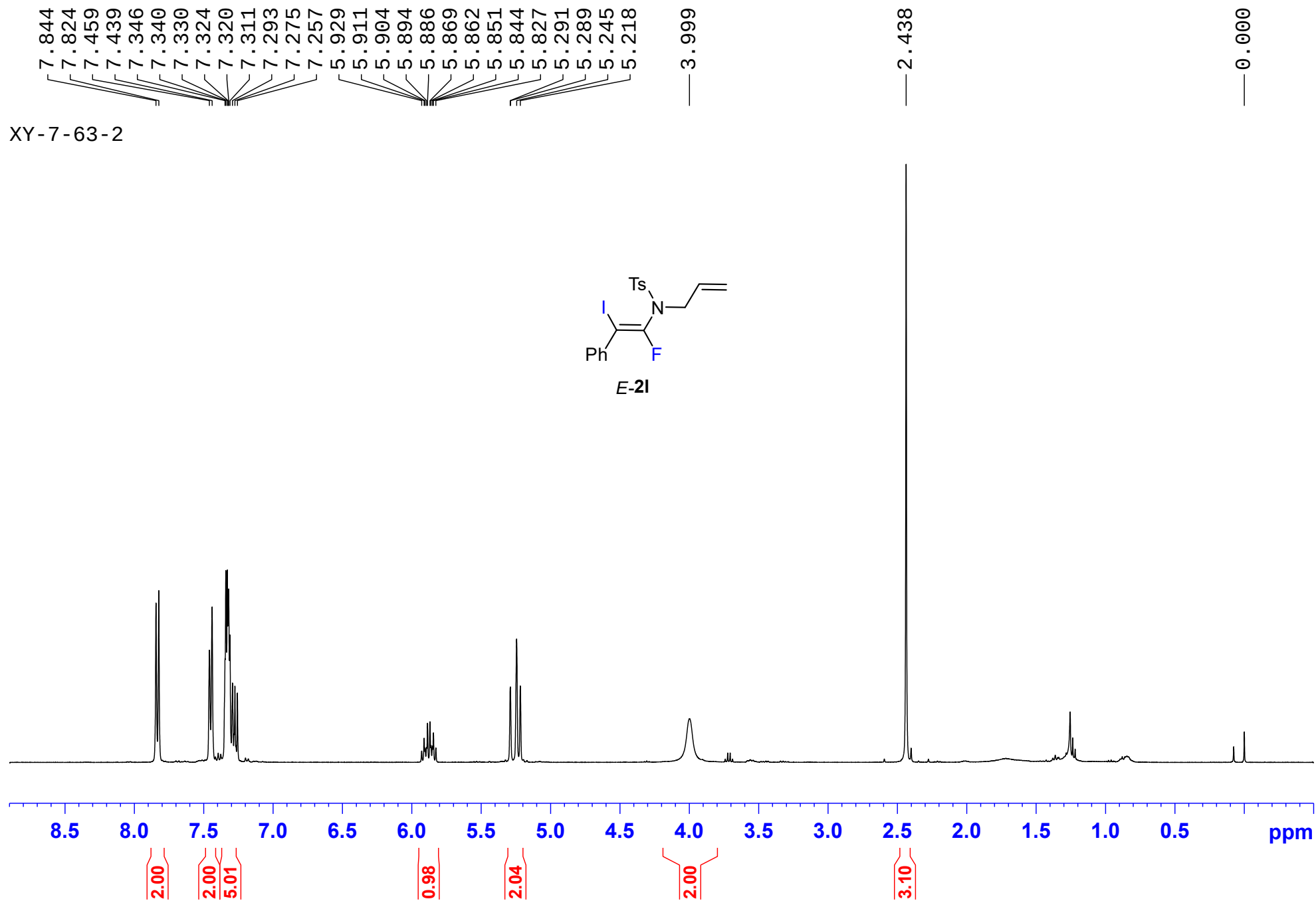
XY-5-133-2

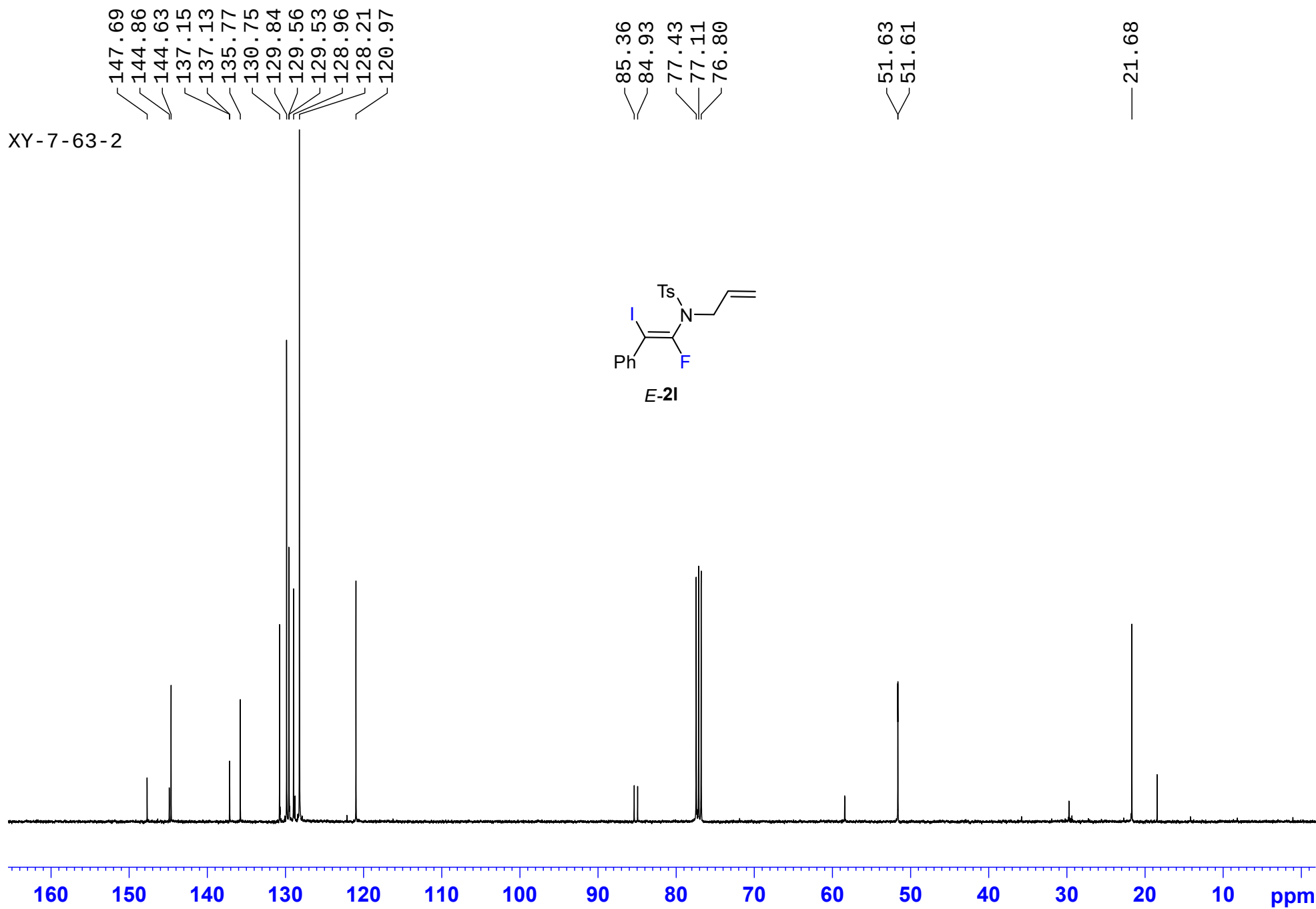
— -86.12



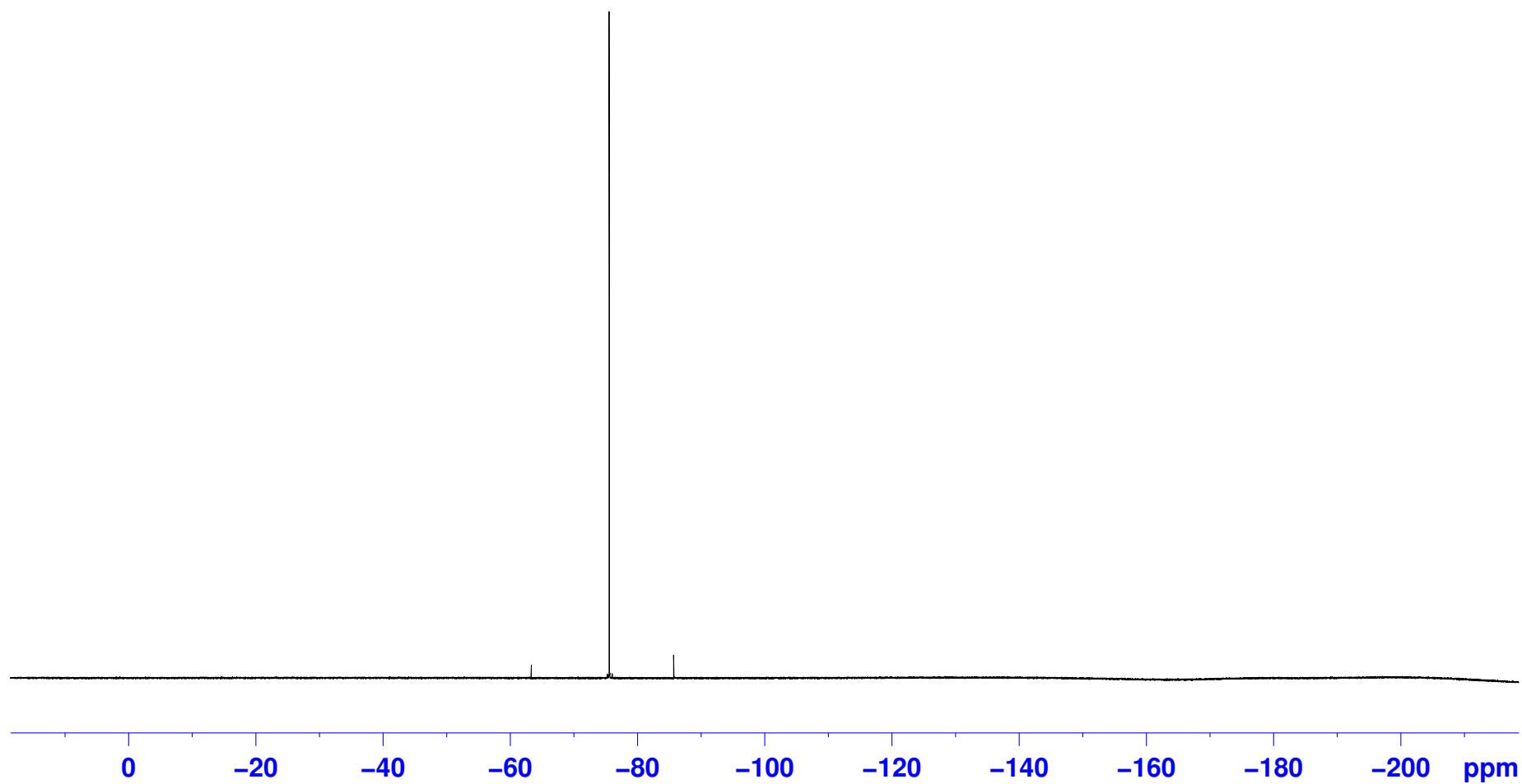
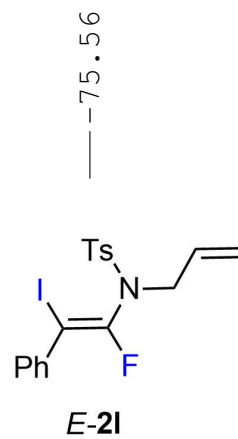
E-2k







XY-7-63-2



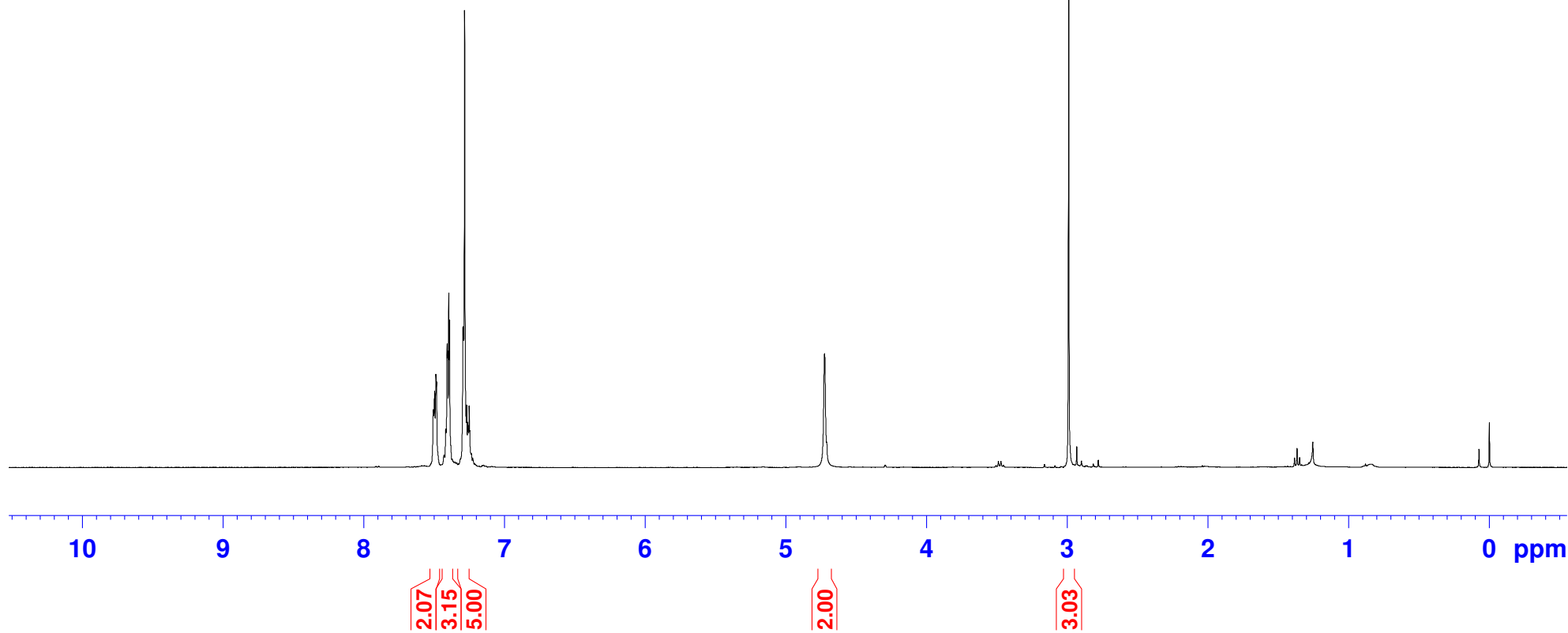
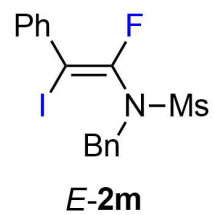
XY-4-101-2

7.507
7.497
7.488
7.484
7.408
7.404
7.396
7.391
7.295
7.292
7.284
7.269
7.252

— 4.726

— 2.990

— 0.000



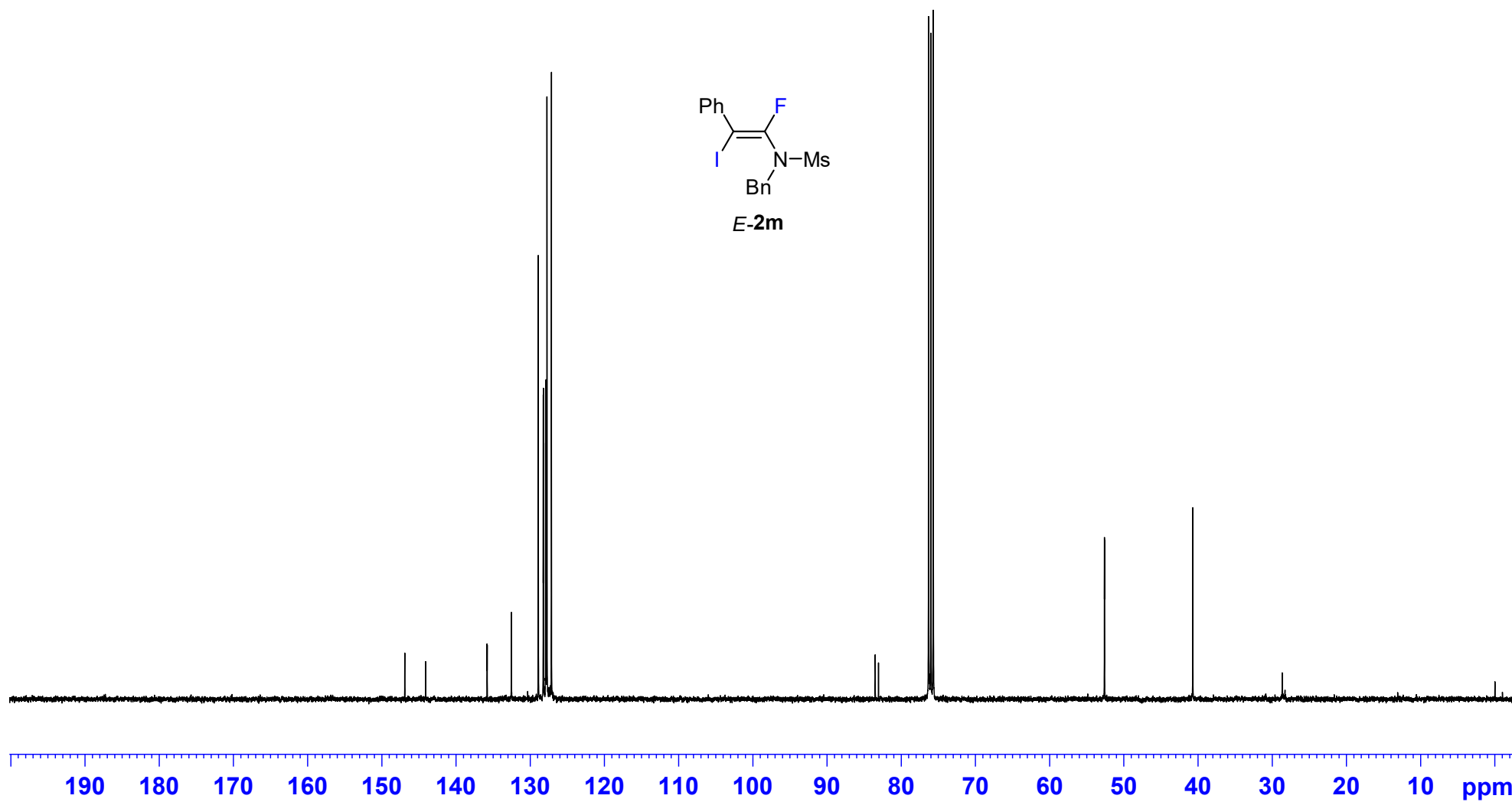
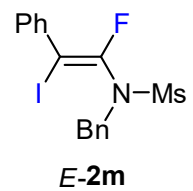
XY-4-101B

146.92
144.11
135.83
135.81
132.55
128.92
128.26
128.23
127.94
127.89
127.75
127.15

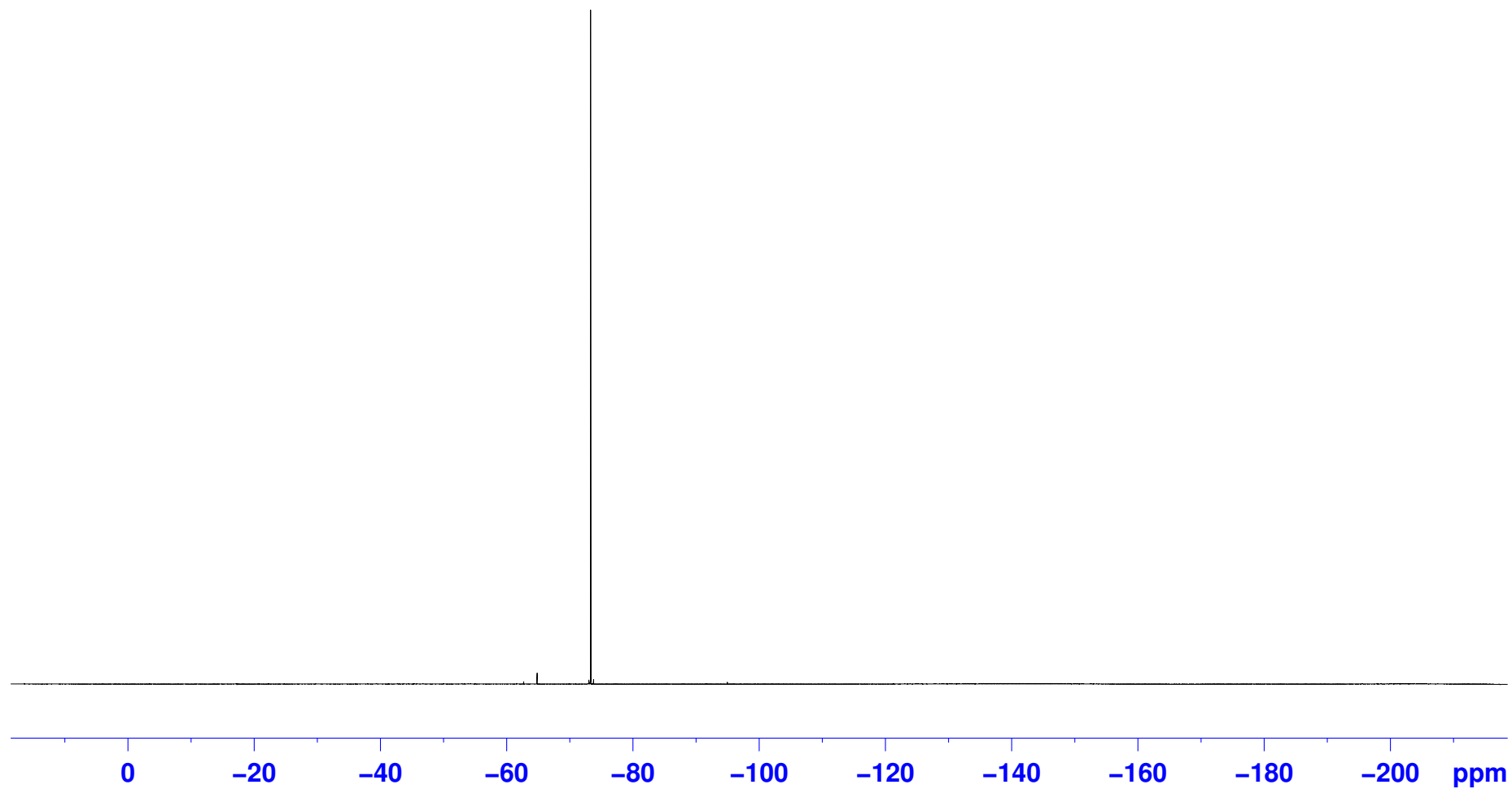
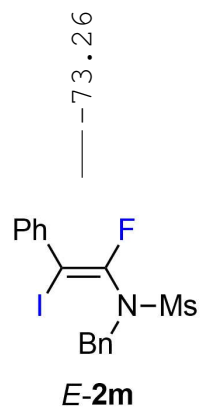
83.52
83.08
76.33
76.01
75.69

52.63
52.61

40.71



XY-4-101B

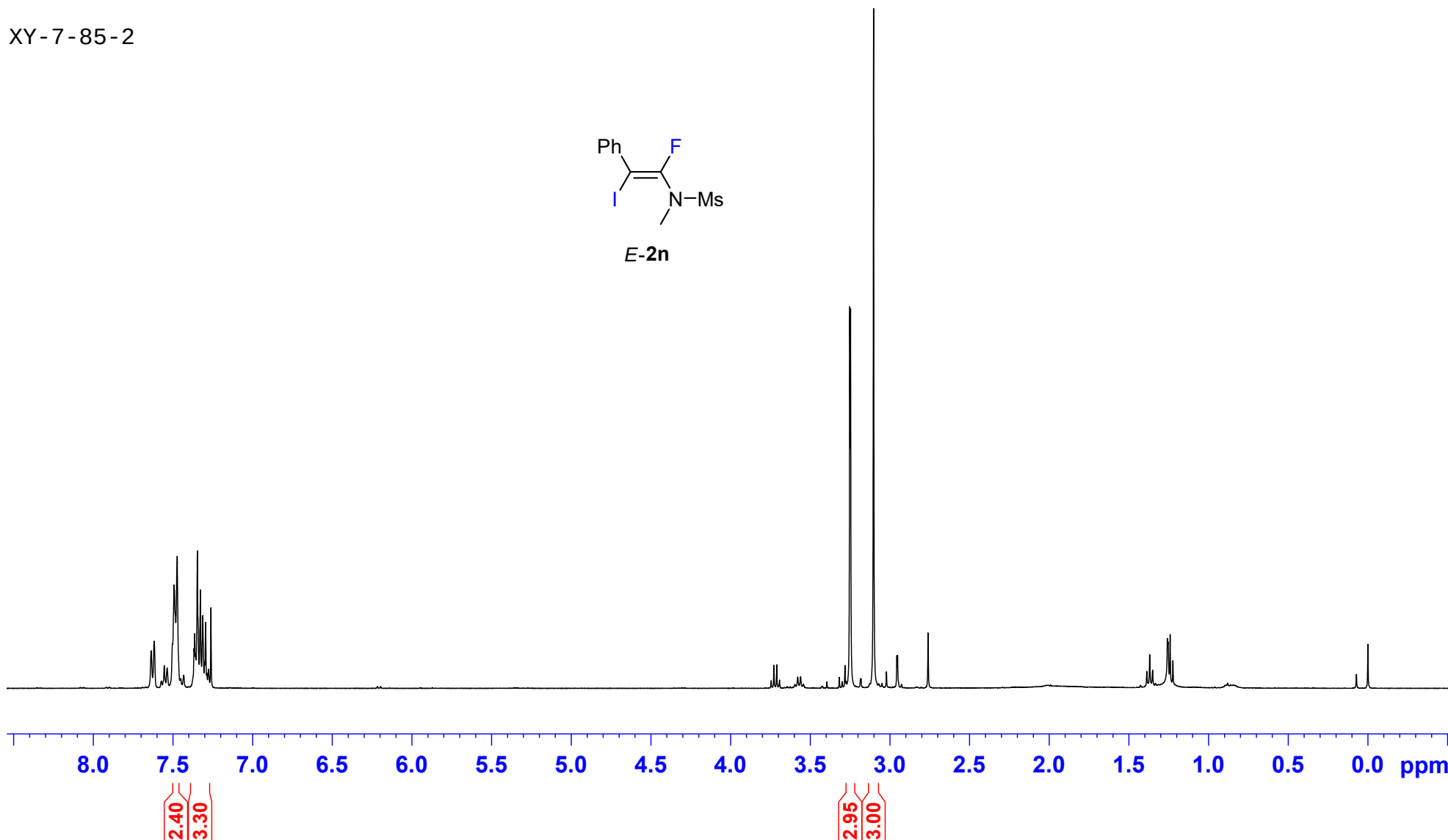
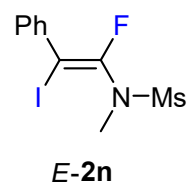


7.537
7.503
7.494
7.491
7.486
7.474
7.368
7.364
7.359
7.347
7.328
7.313
7.302
7.295
7.287
7.277
7.262

3.252
3.247
3.103

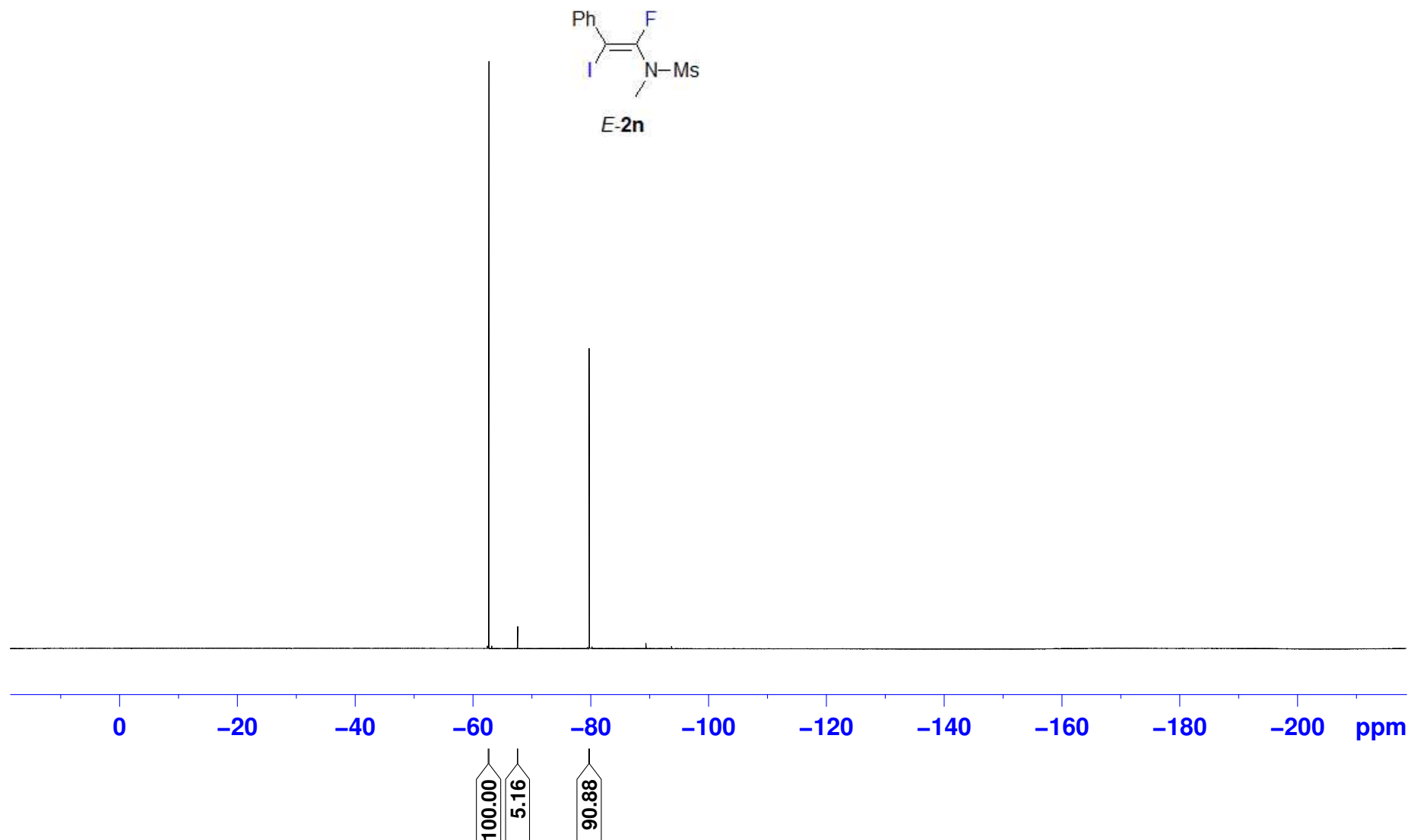
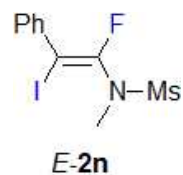
0.000

XY-7-85-2



XY-7-85-2

— -62.68
— -67.60
— -79.72

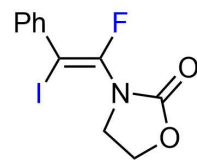


XY-6-29

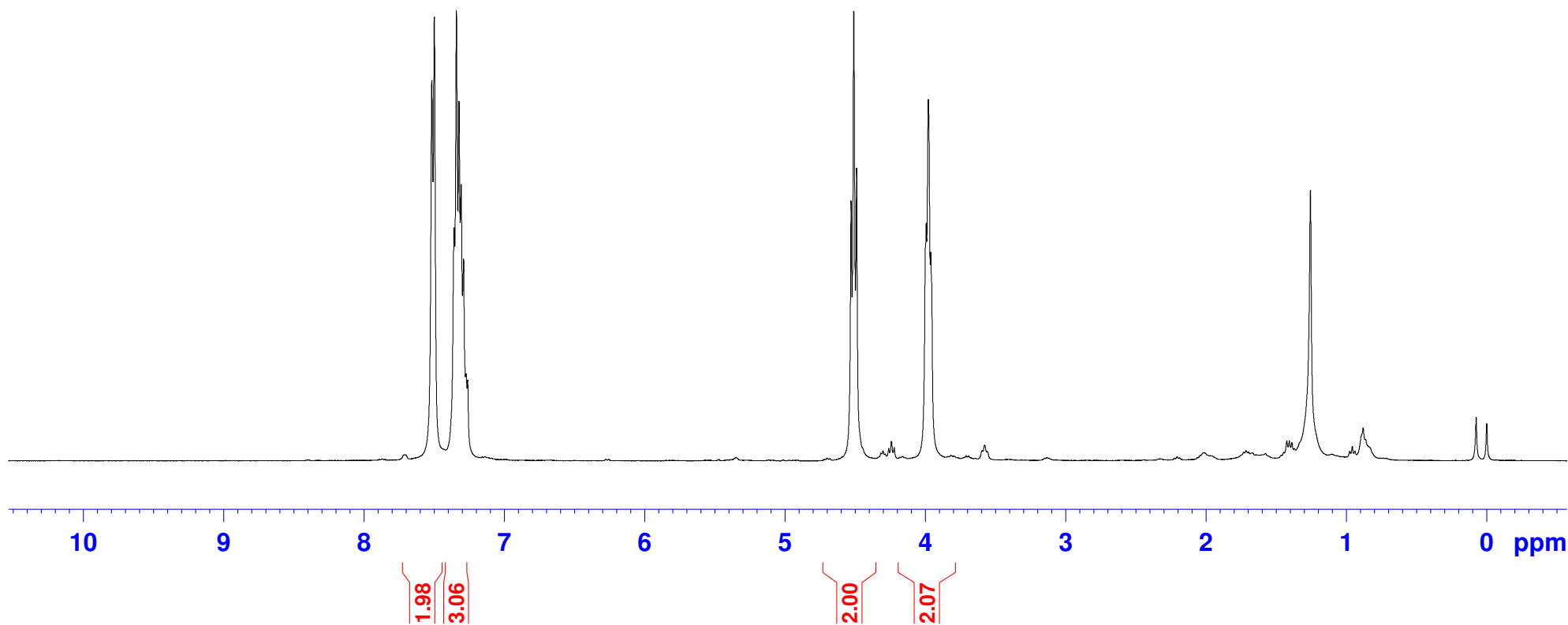
7.518
7.500
7.360
7.343
7.324
7.309
7.292
7.274
7.263

4.530
4.511
4.491
3.995
3.980
3.963

— -0.000



E-2o



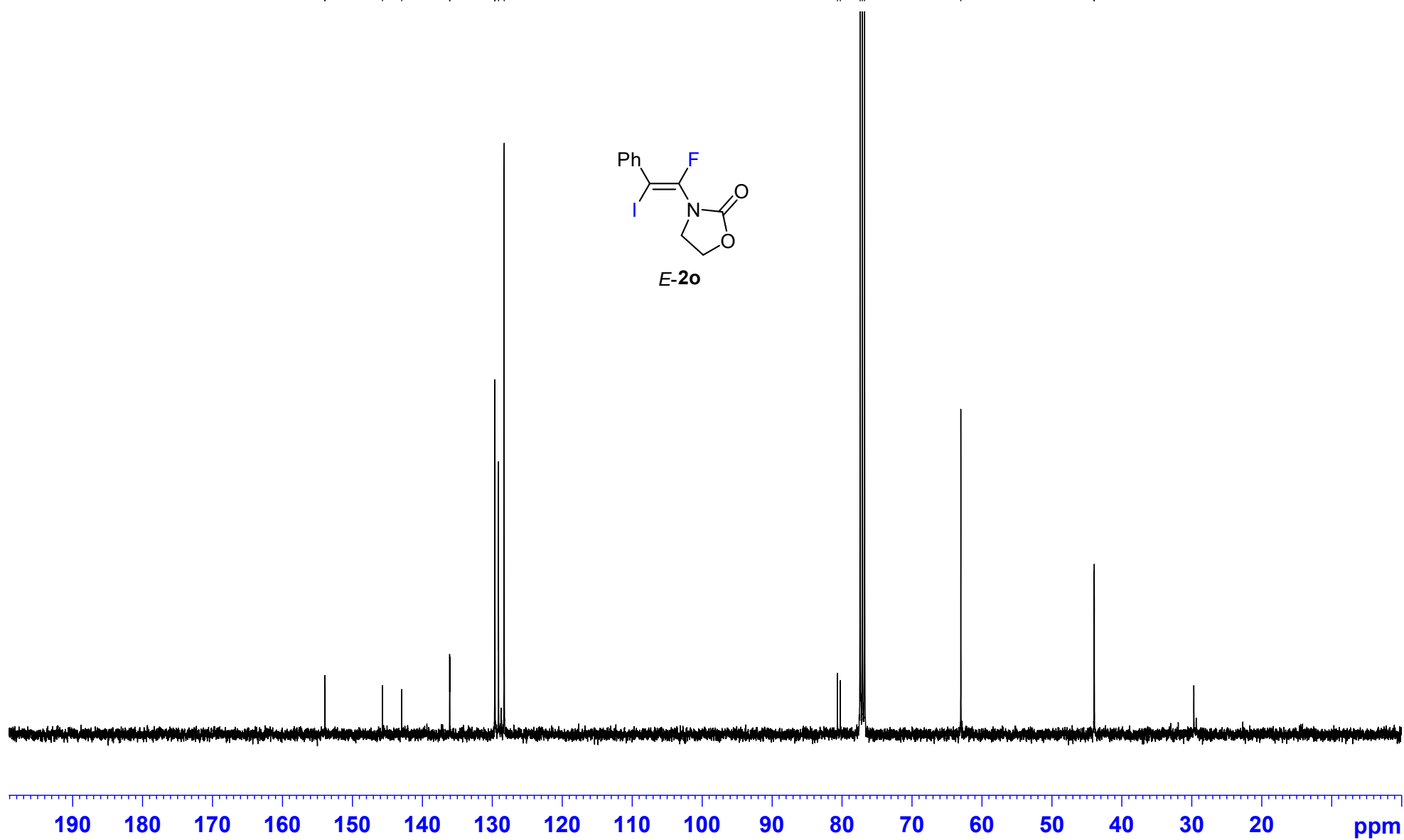
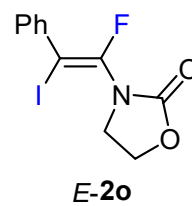
XY-6-29

153.95
153.91
145.71
142.96
136.10
136.07
129.65
129.62
129.11
128.30

80.65
80.24
77.42
77.11
76.79

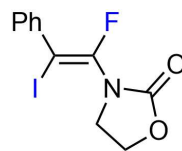
63.03

43.97
43.95

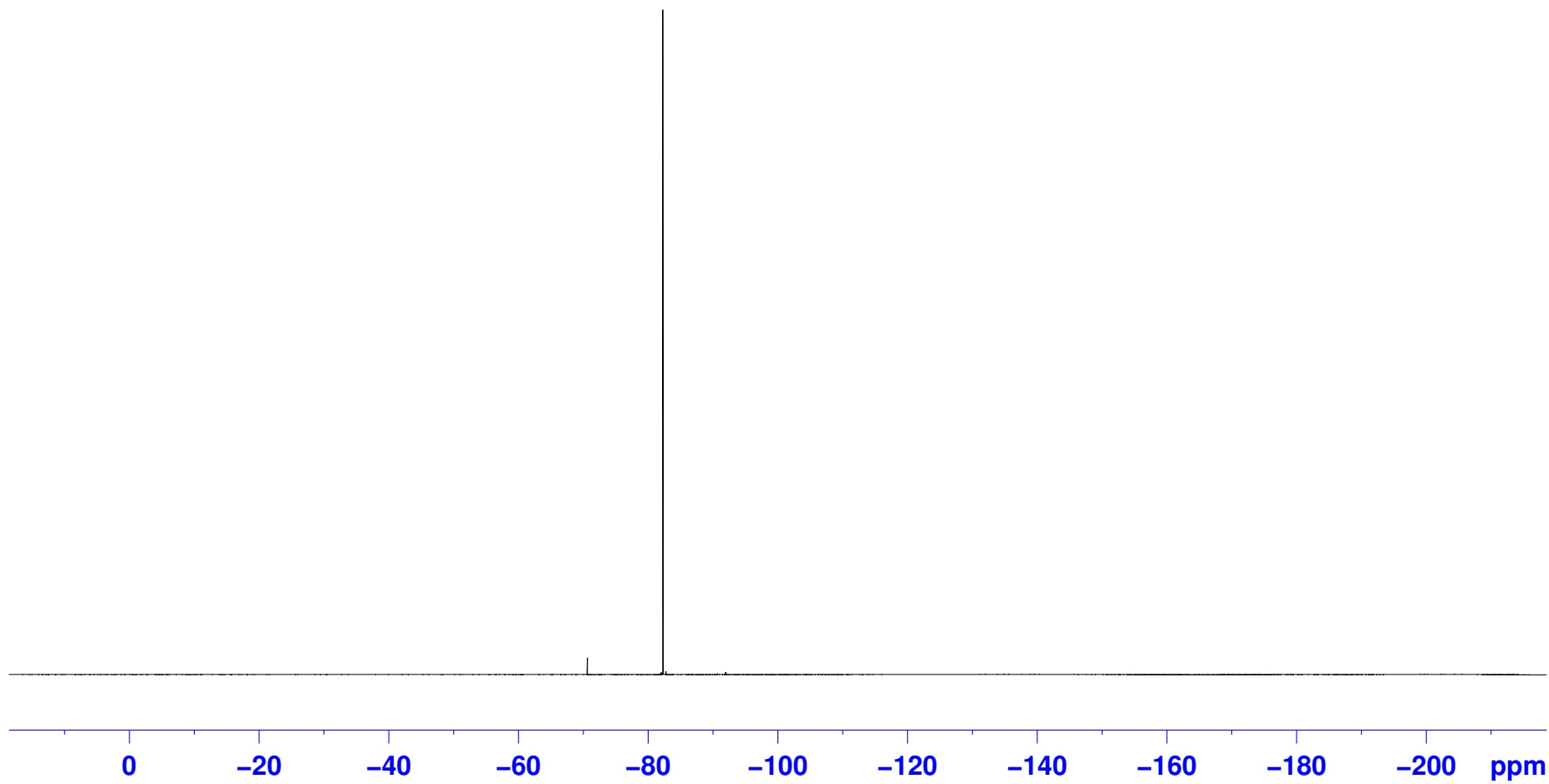


XY-6-29-2

—82.27

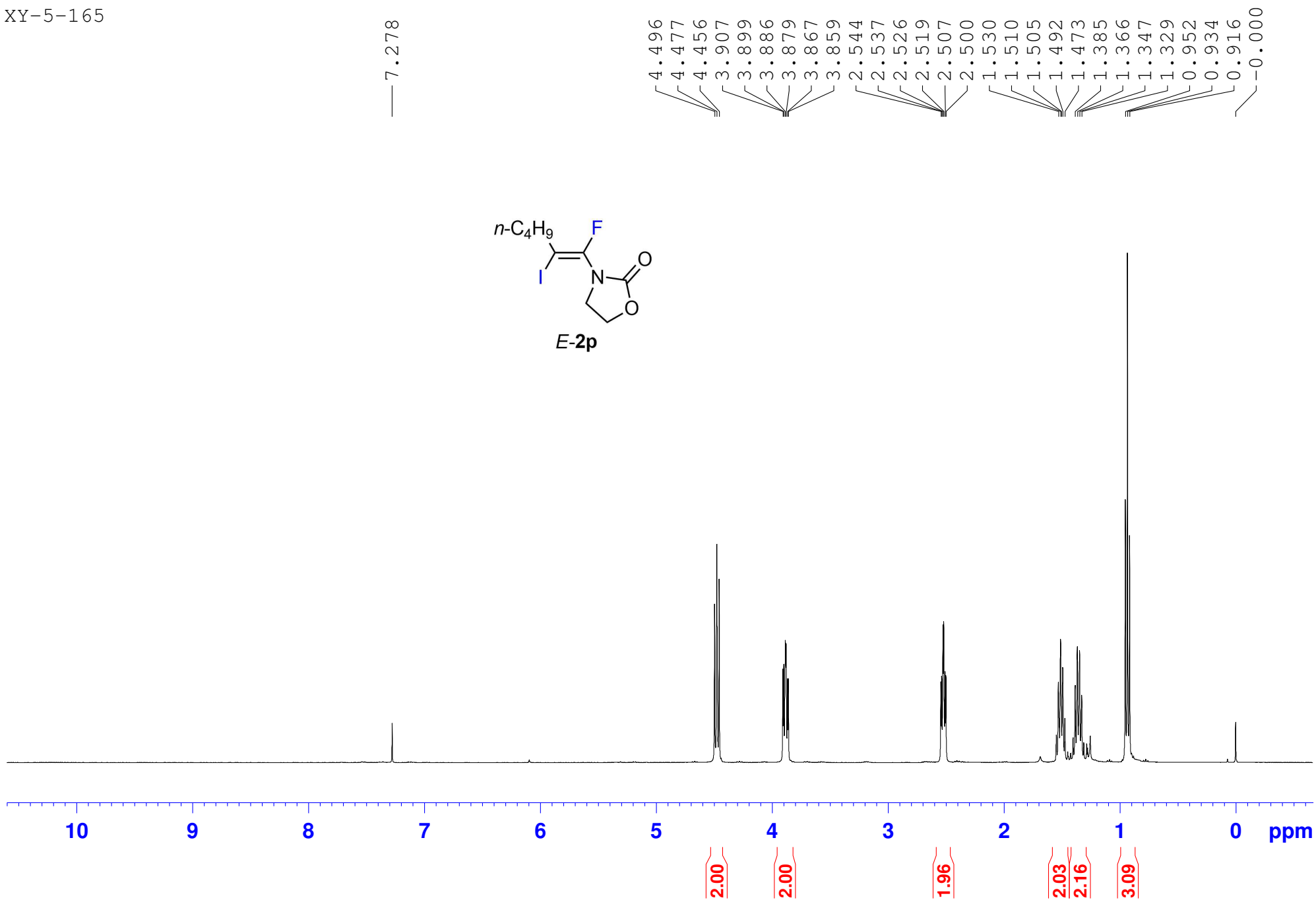
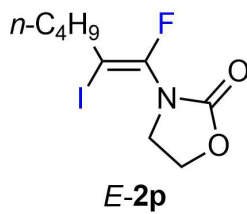


E-2o



XY-5-165

— 7.278



XY-3-161

154.26
154.22

145.76
143.07

86.32
85.87
77.44
77.12
76.81

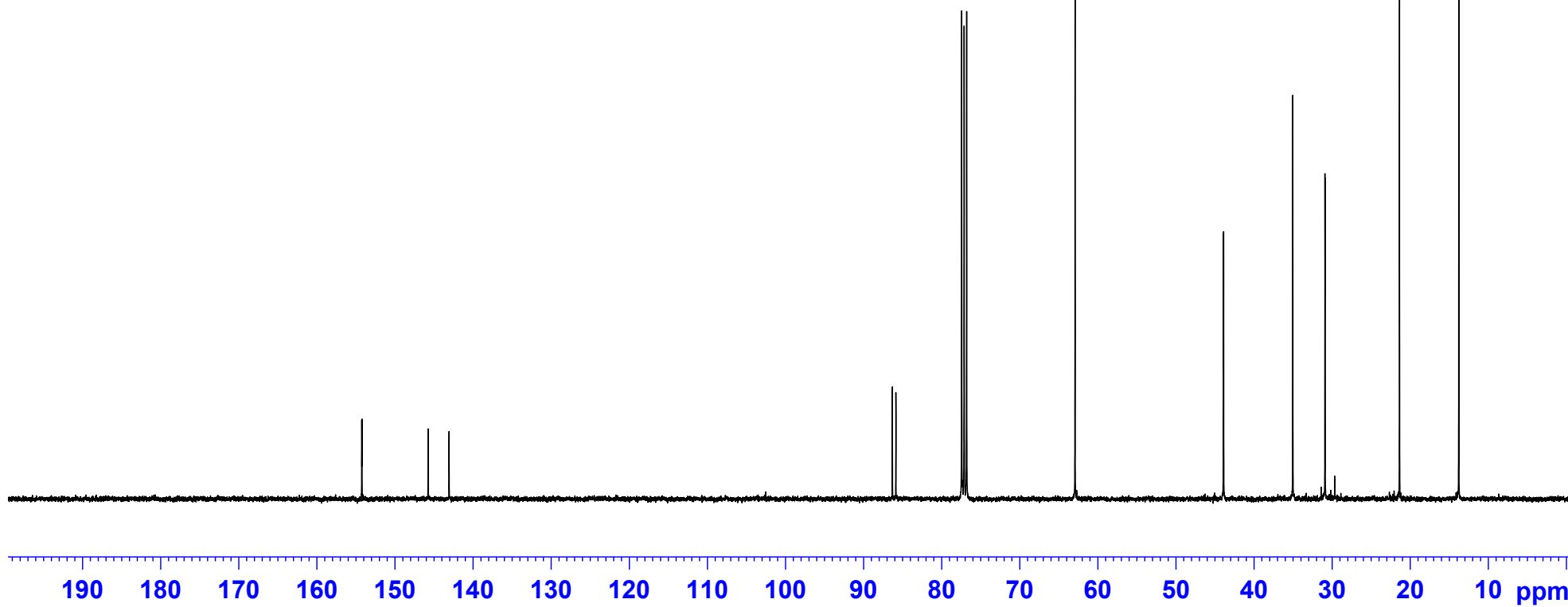
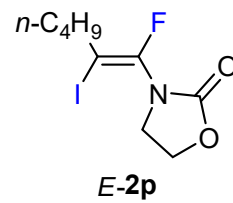
62.93

43.93
43.90

35.04
30.92
30.90

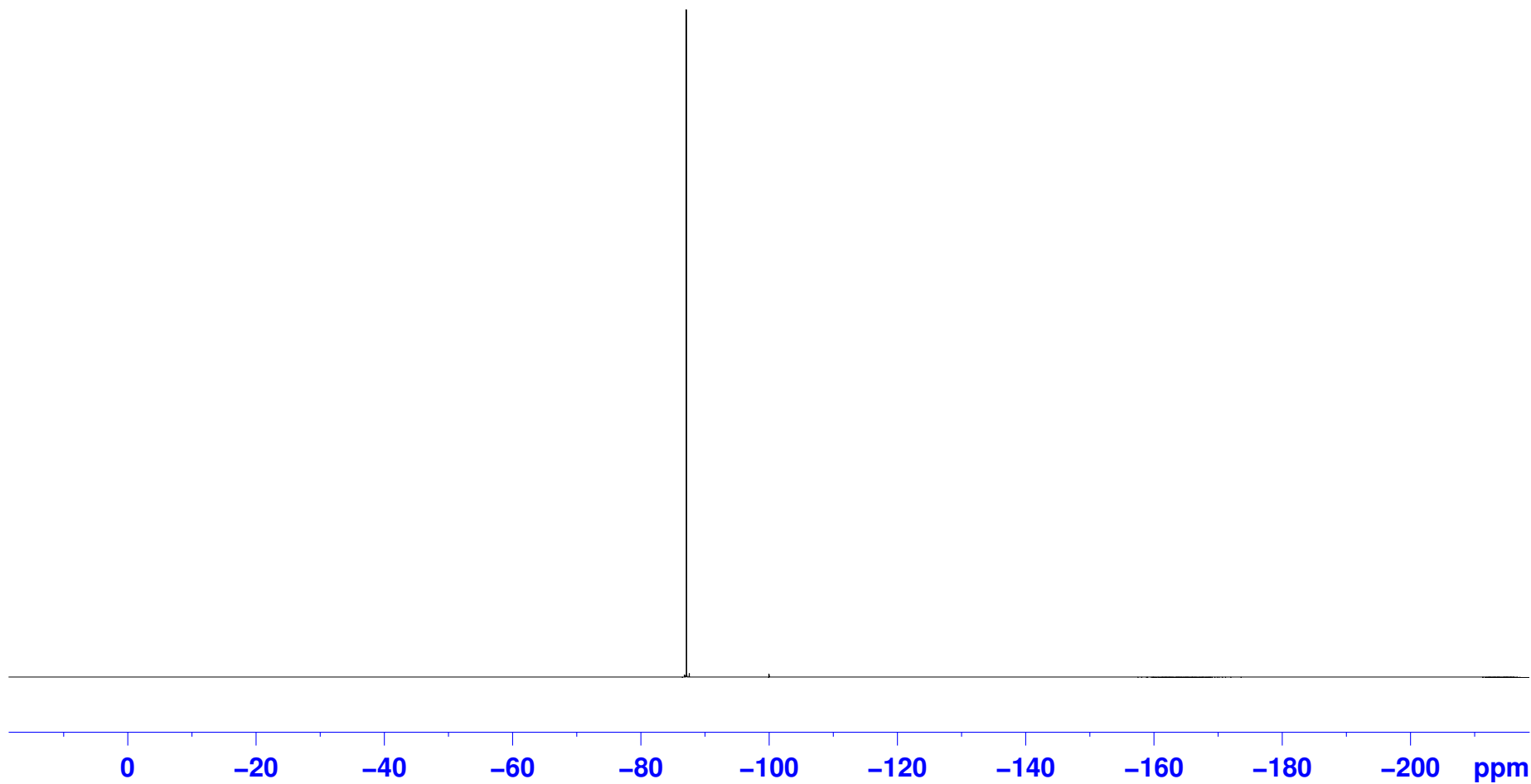
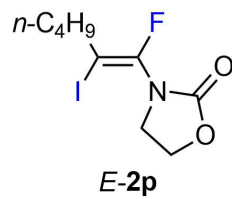
21.37

13.78



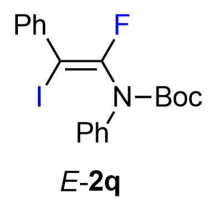
XY-3-161

— 87.08



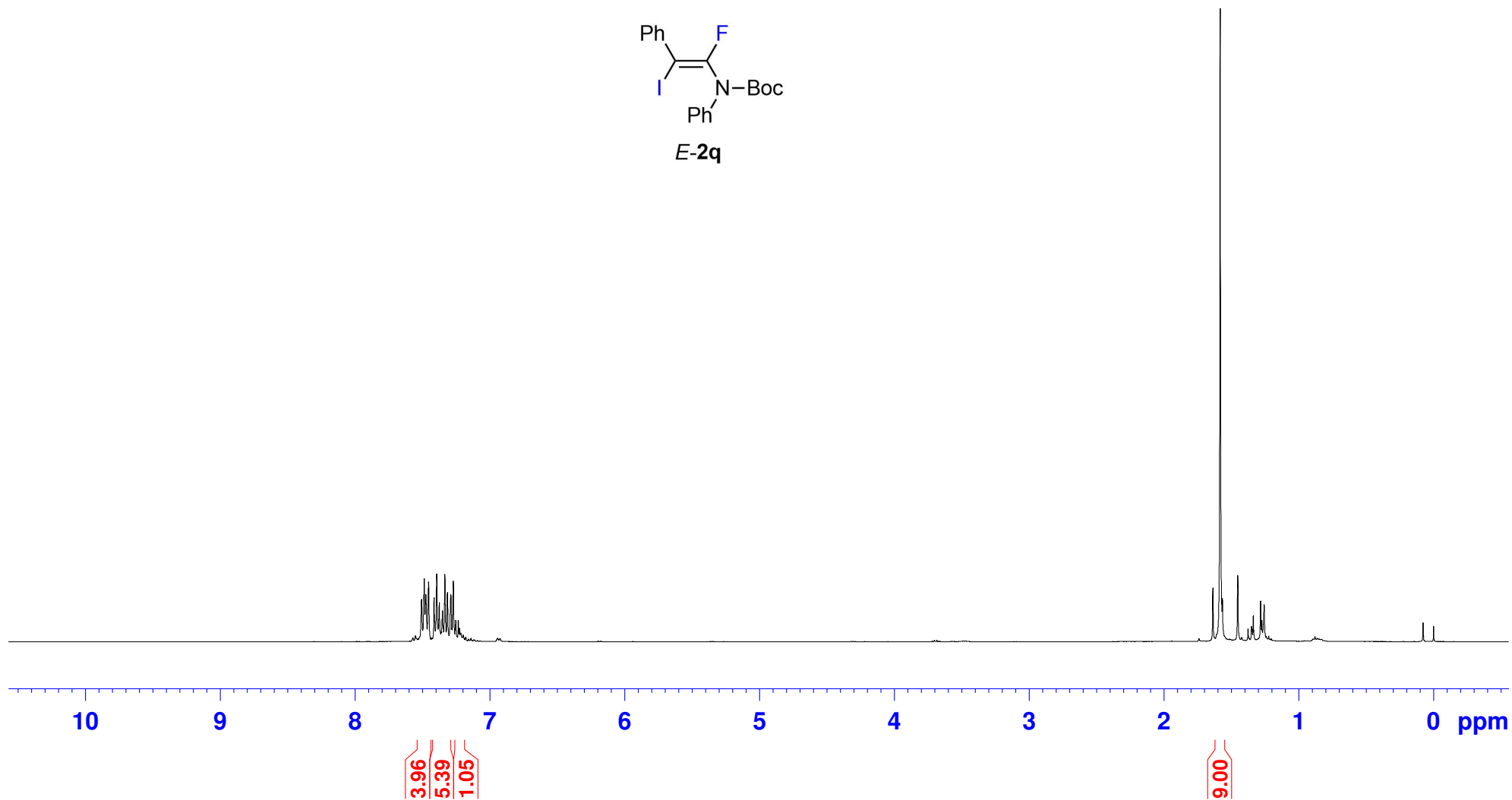
XY-6-31

7.507
7.487
7.476
7.456
7.415
7.396
7.375
7.353
7.335
7.316
7.290
7.272
7.255
7.235
7.226
7.220
7.216
7.199
7.180



— 1.583

— 0.000

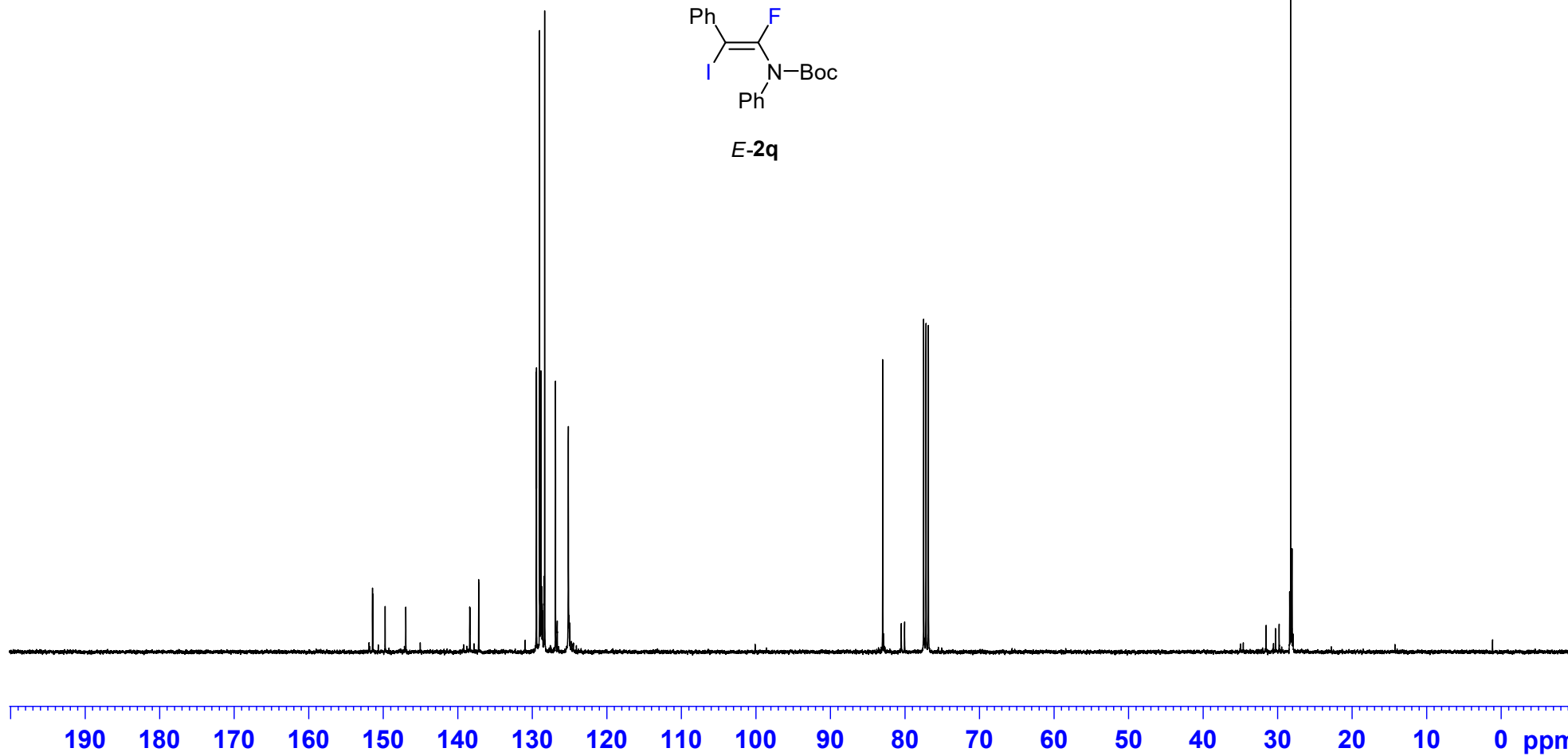
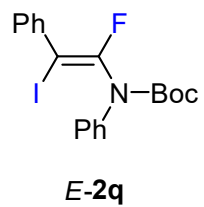


XY-6-31

151.44
151.39
149.75
146.97
138.39
138.35
137.20
137.17
129.46
129.43
129.02
128.84
128.34
126.88
125.16

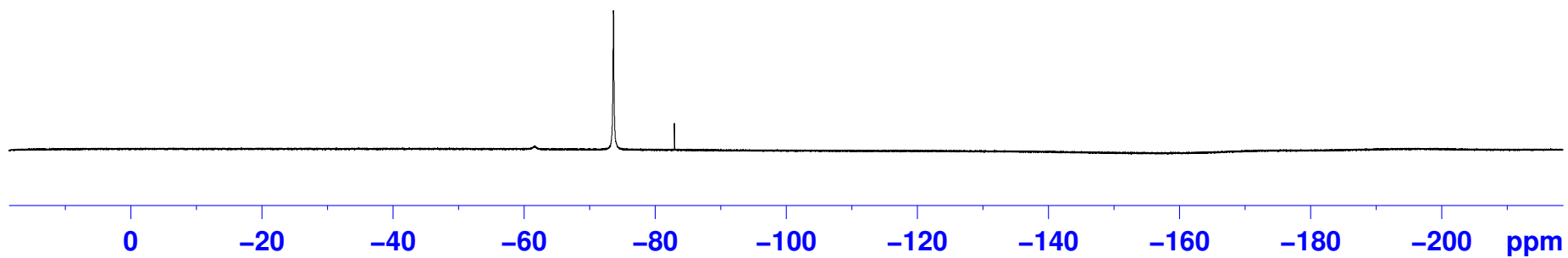
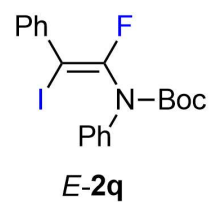
82.99
80.49
80.04
77.49
77.17
76.85

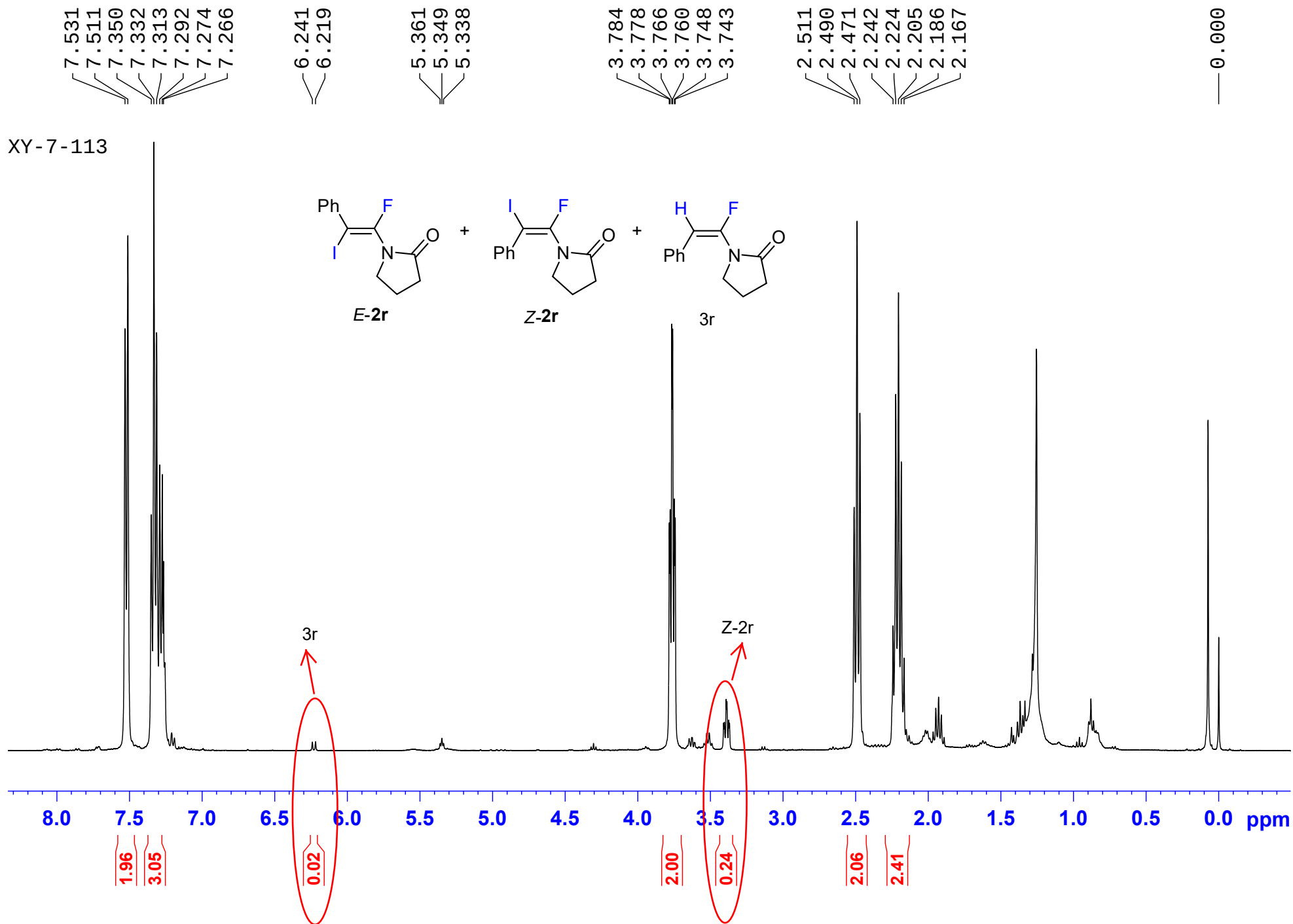
28.24



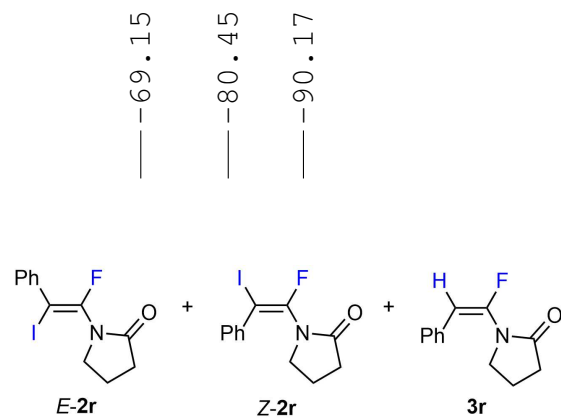
XY-6-31

—73.65

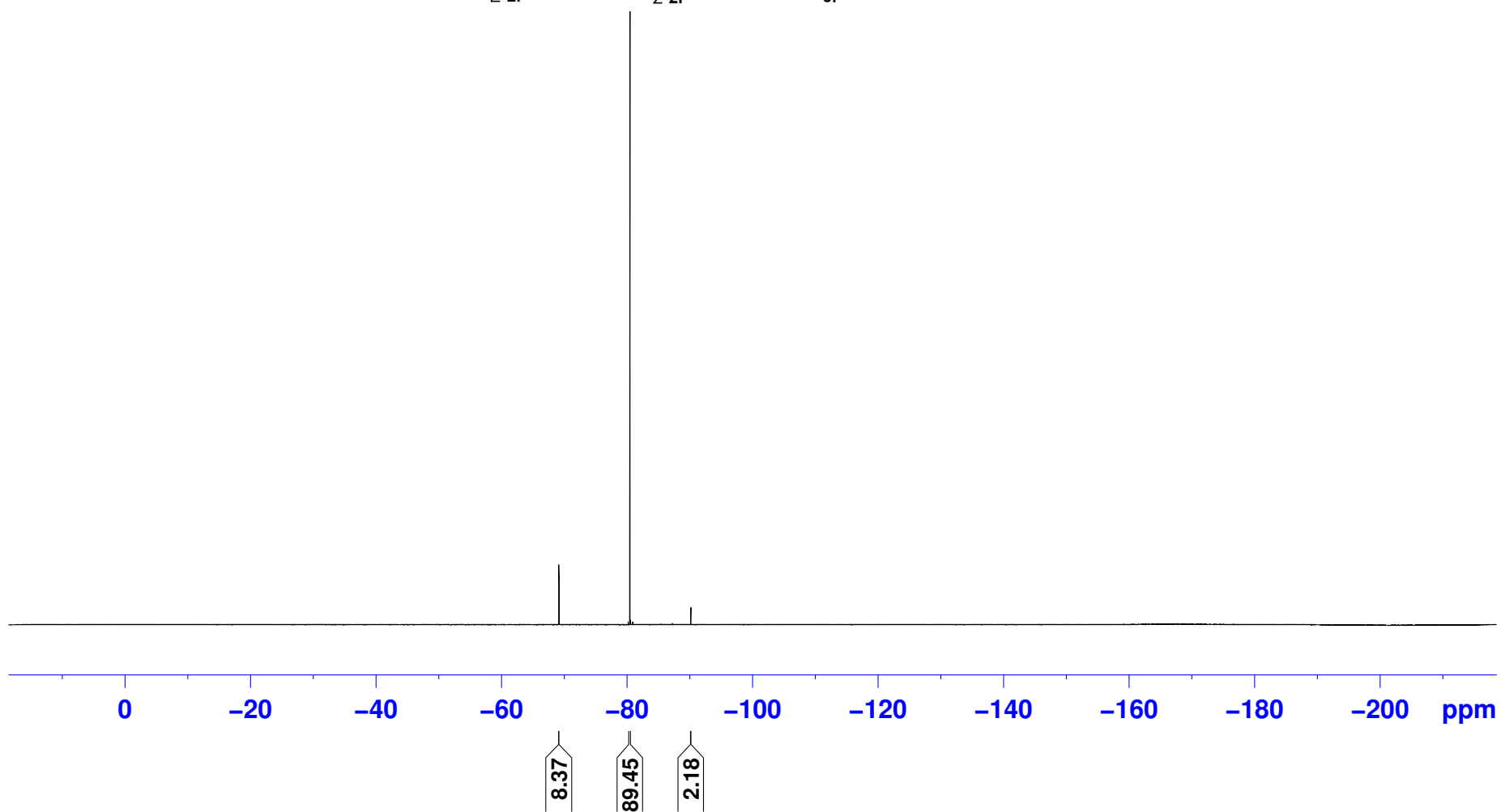


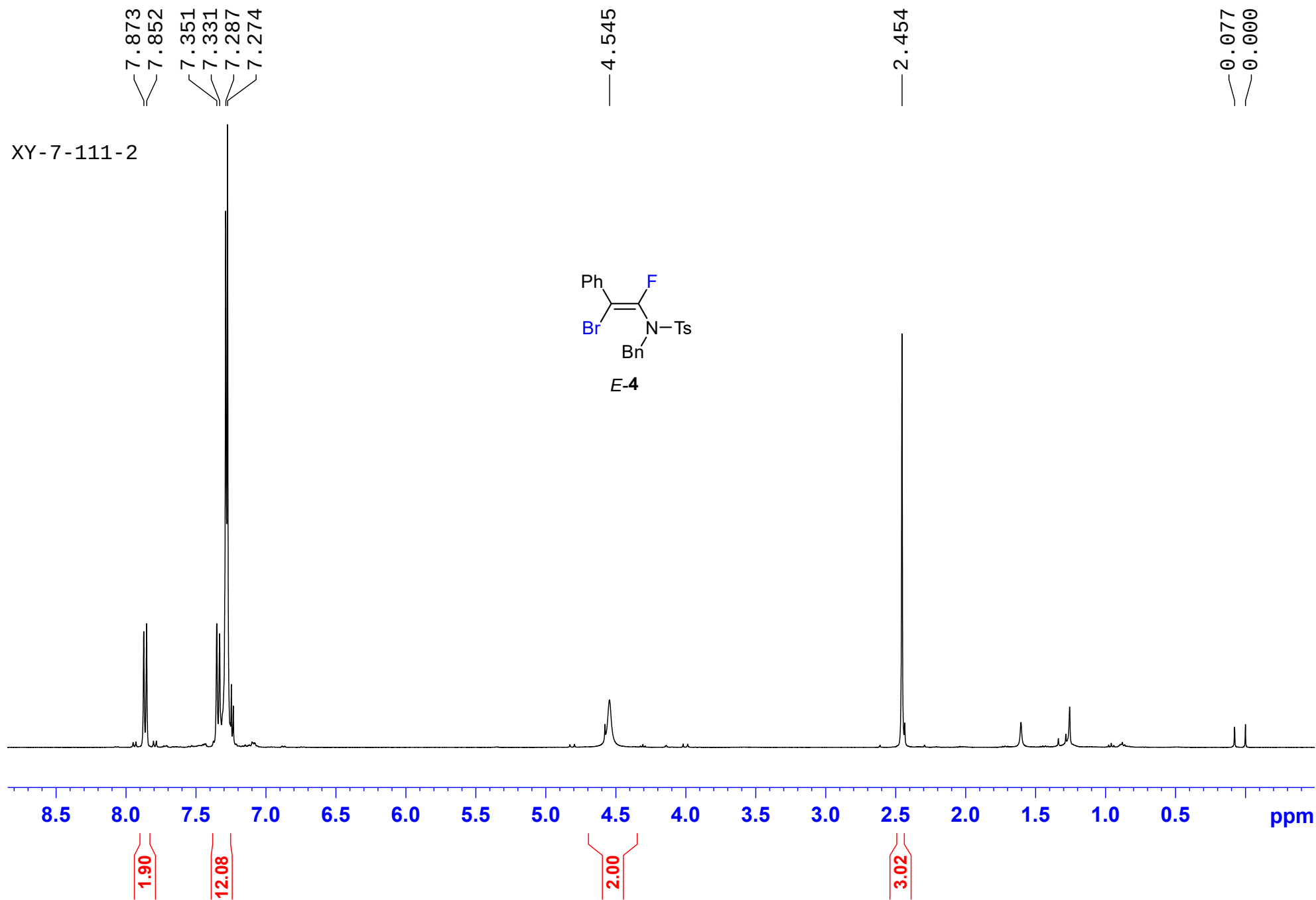


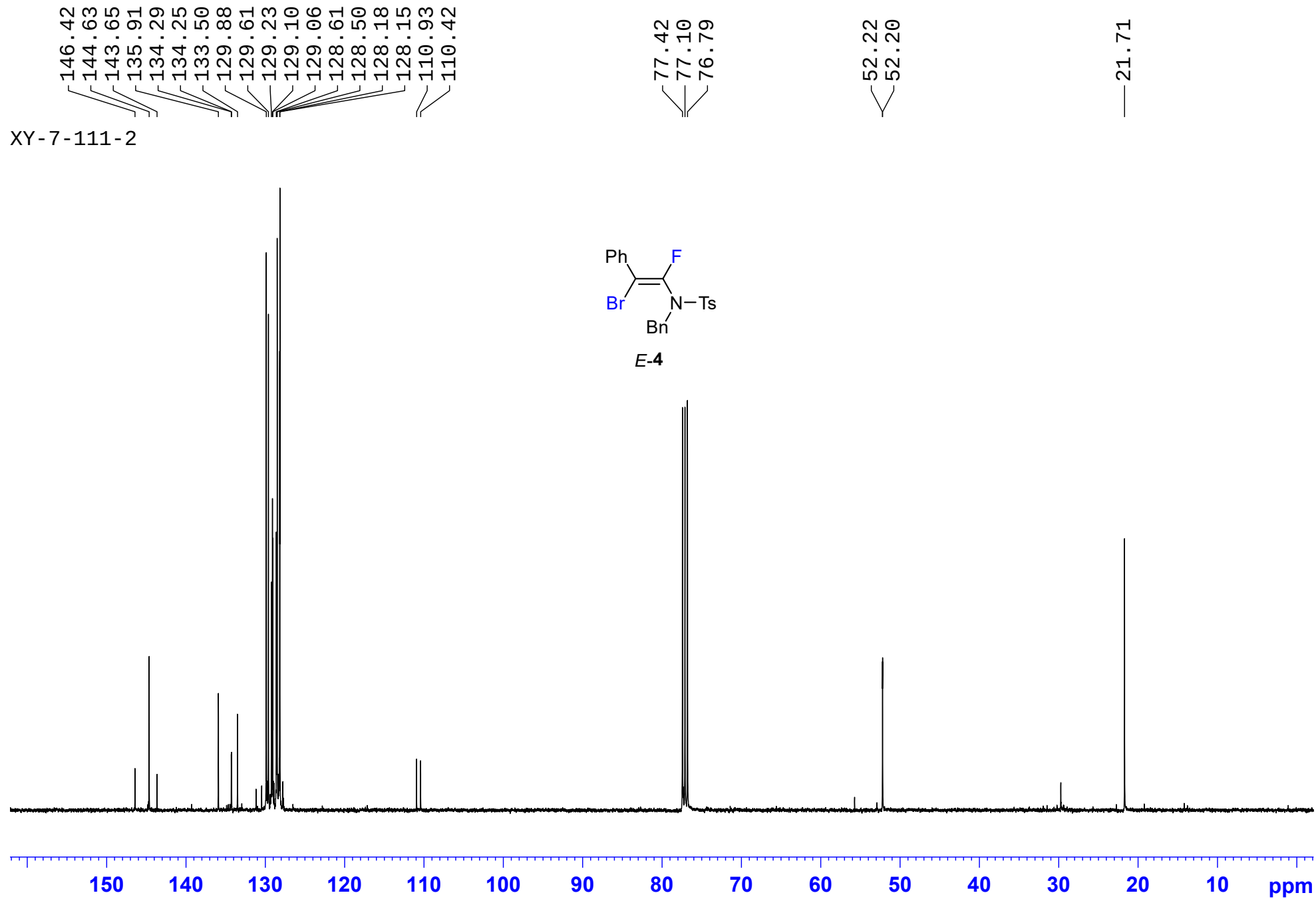
XY-7-113



— -69.15
— -80.45
— -90.17

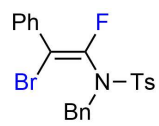






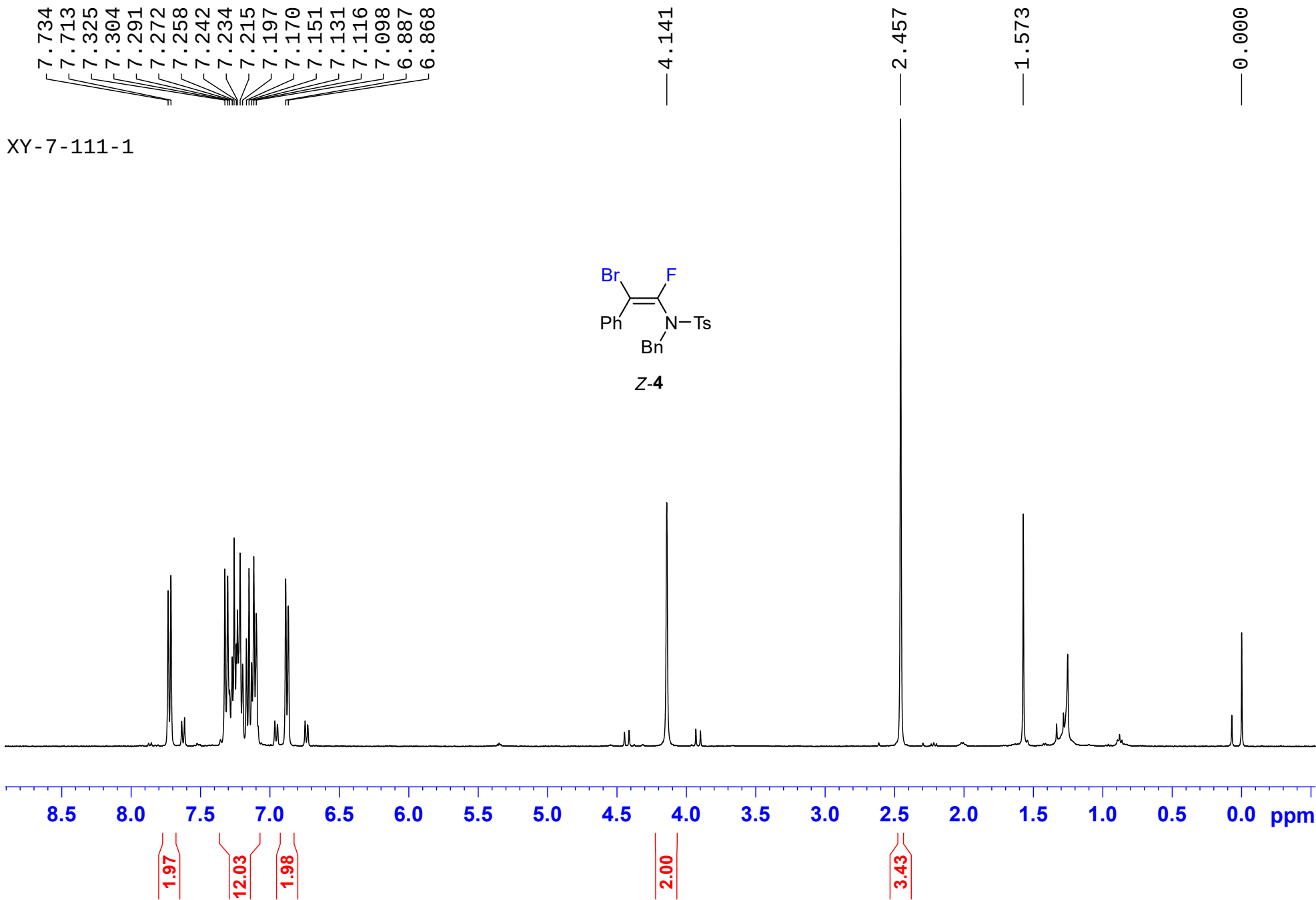
XY-7-111-2

— -82.35



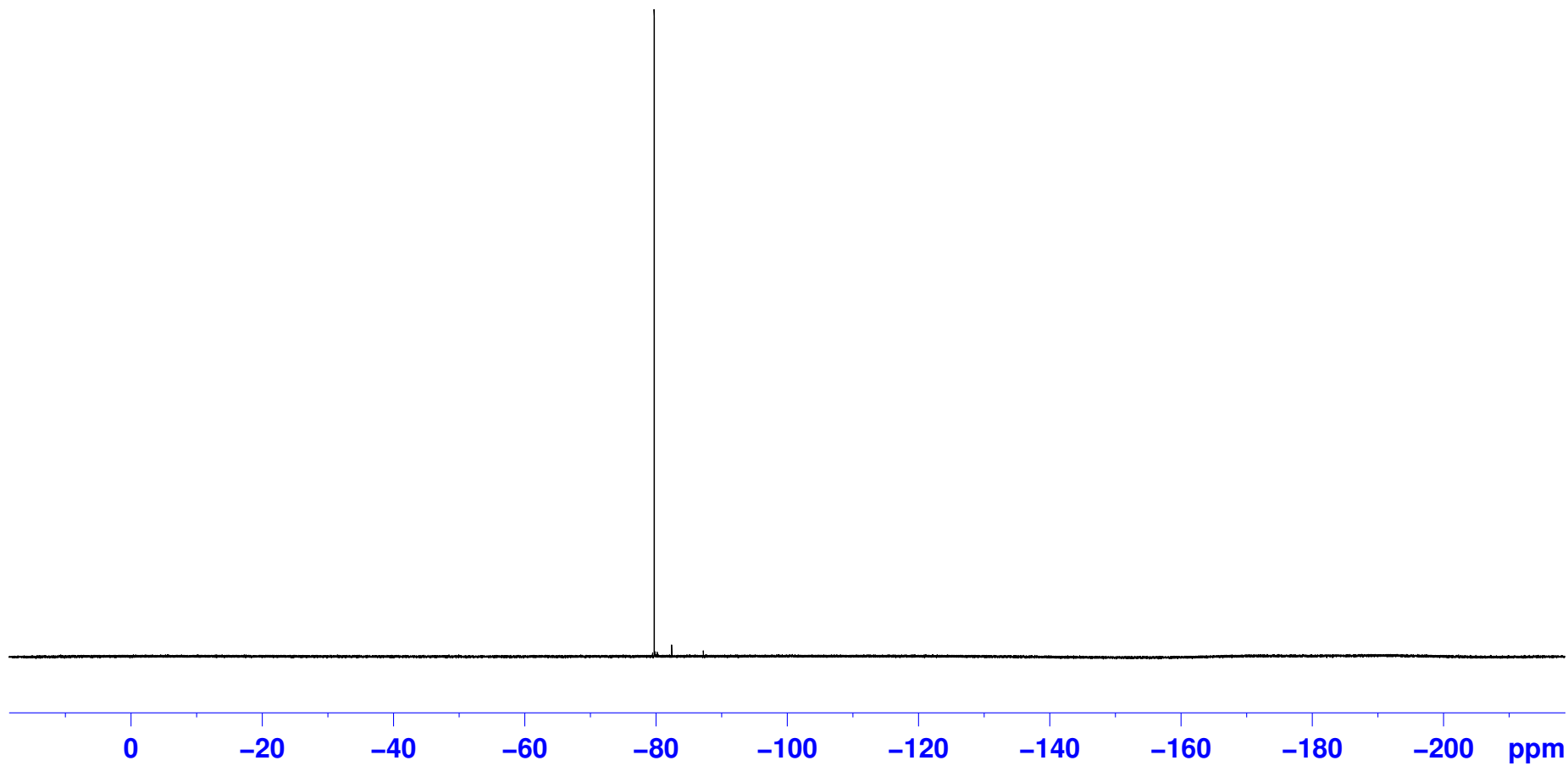
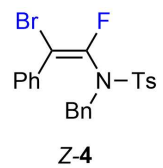
E-4





XY-7-111-1

— -79.75



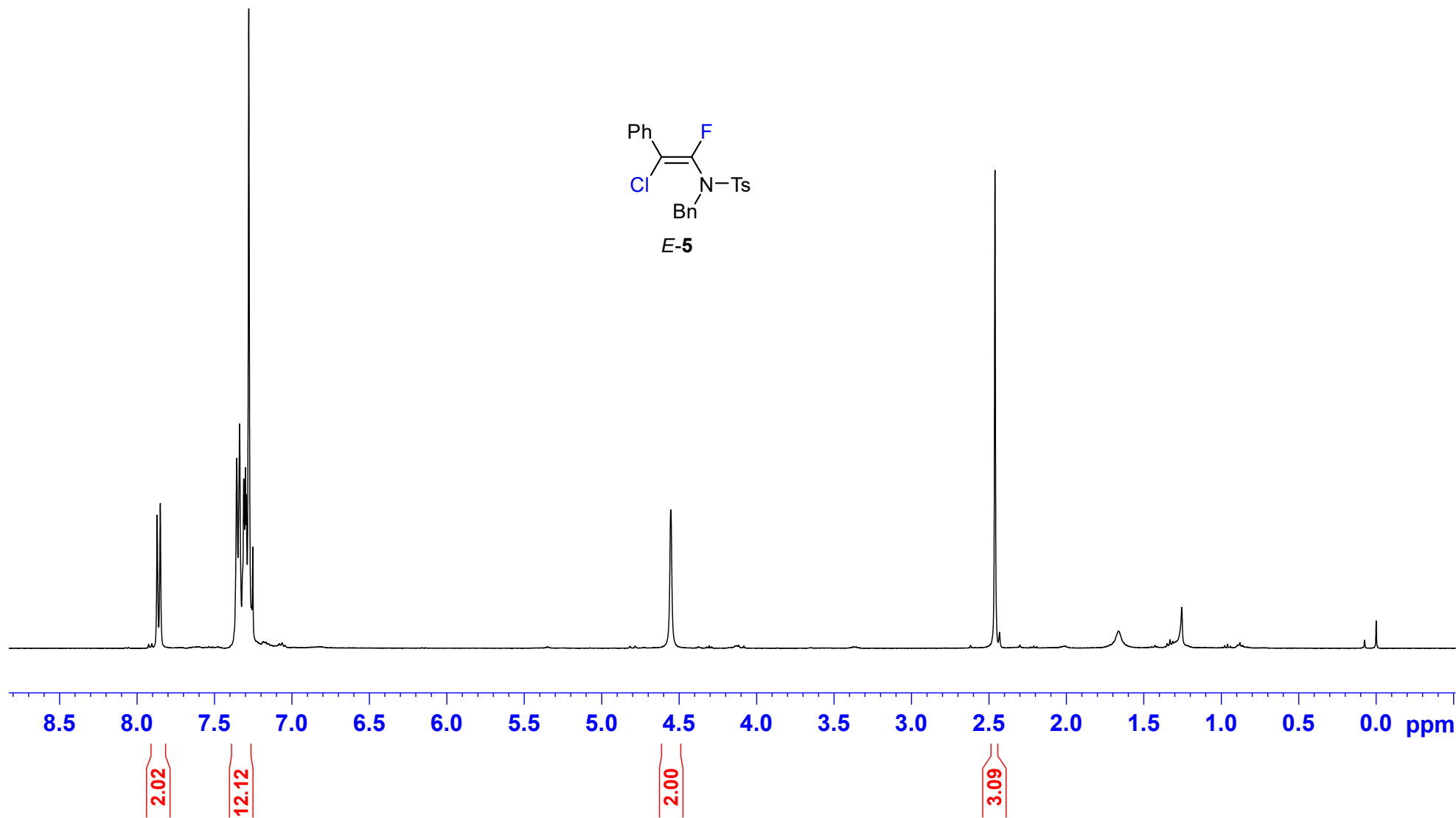
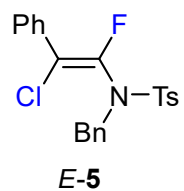
7.870
7.850
7.357
7.338
7.311
7.300
7.294
7.278
7.253

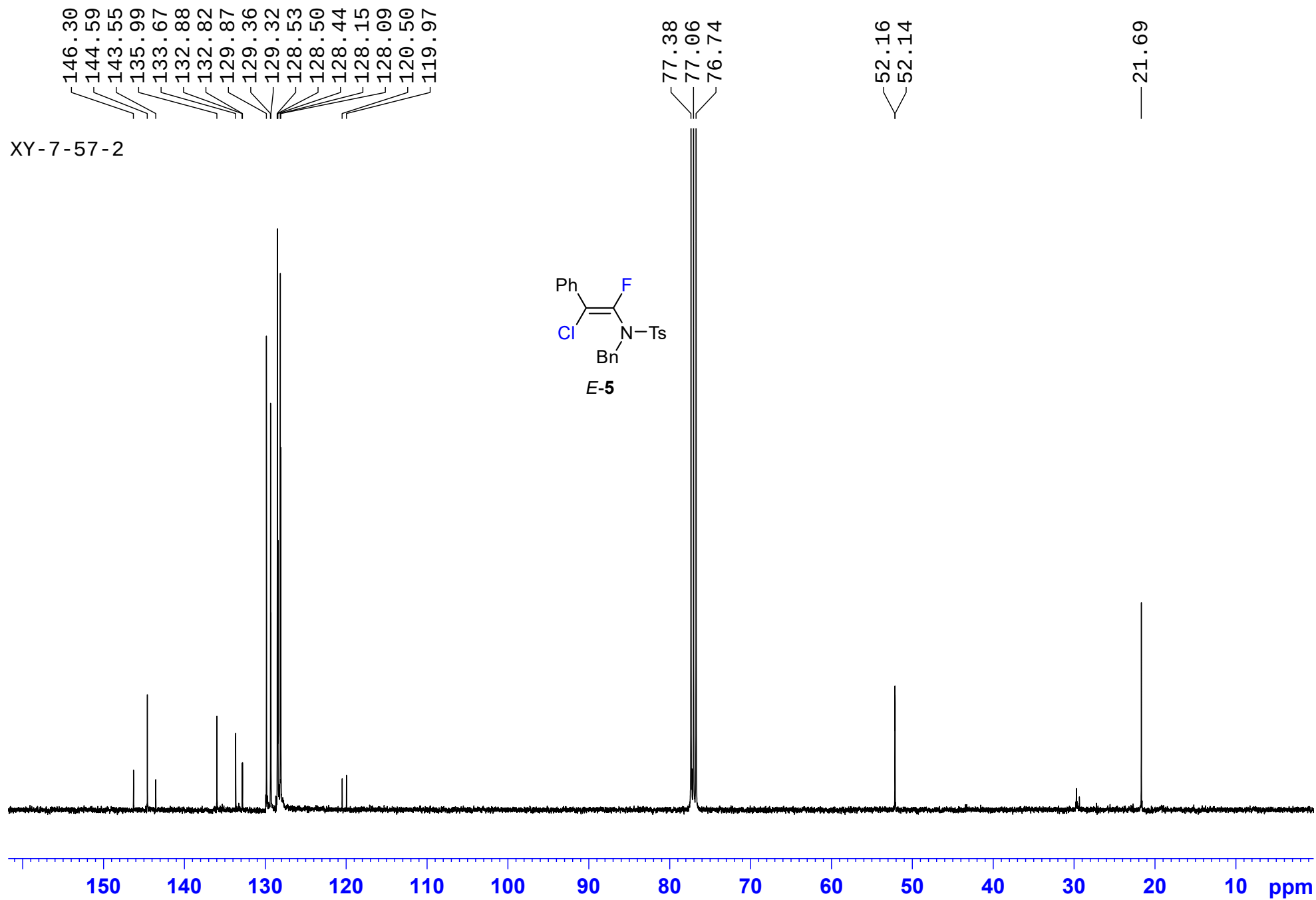
4.553

2.461

0.000

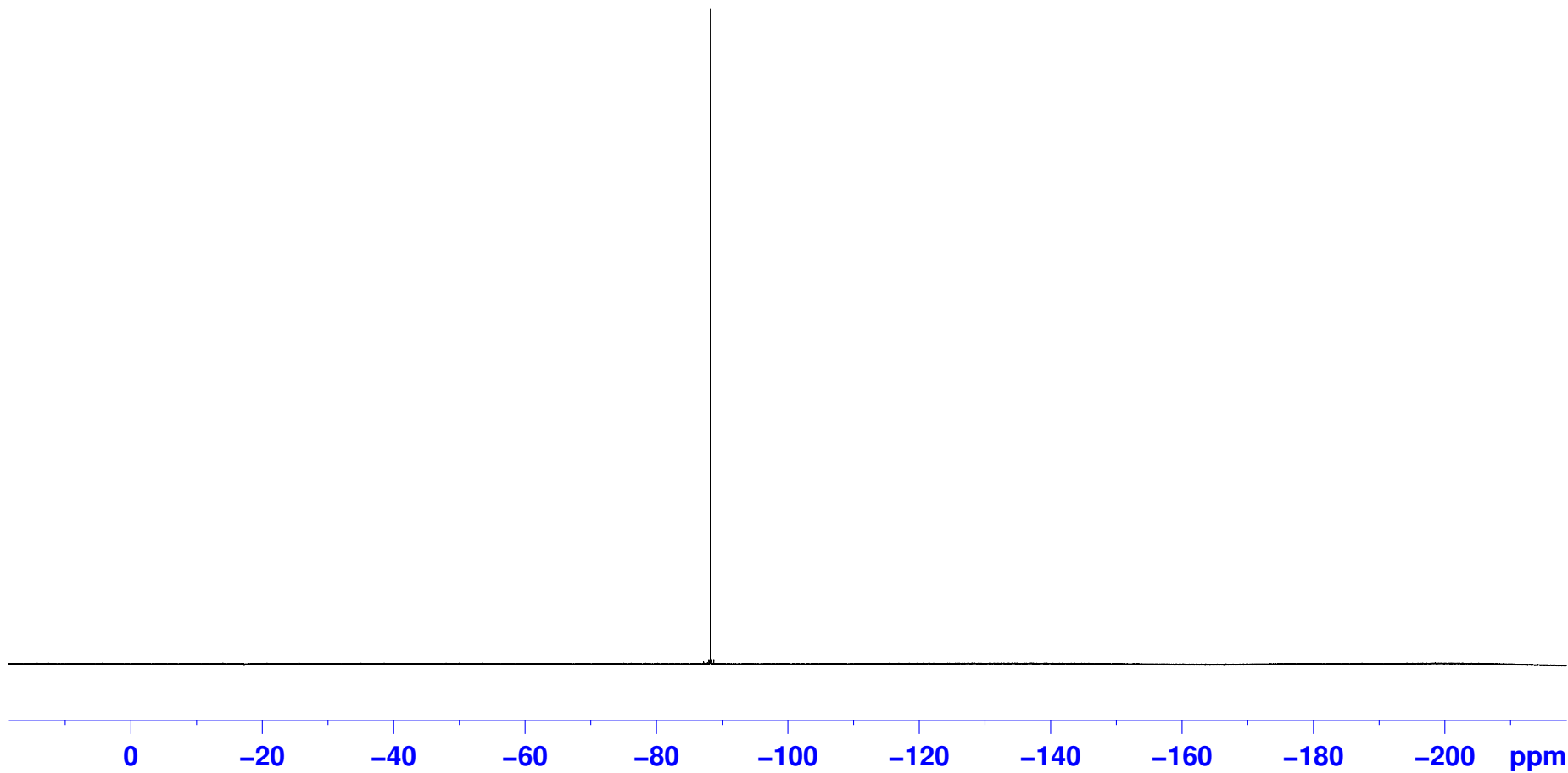
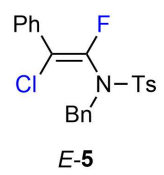
XY-7-57-2

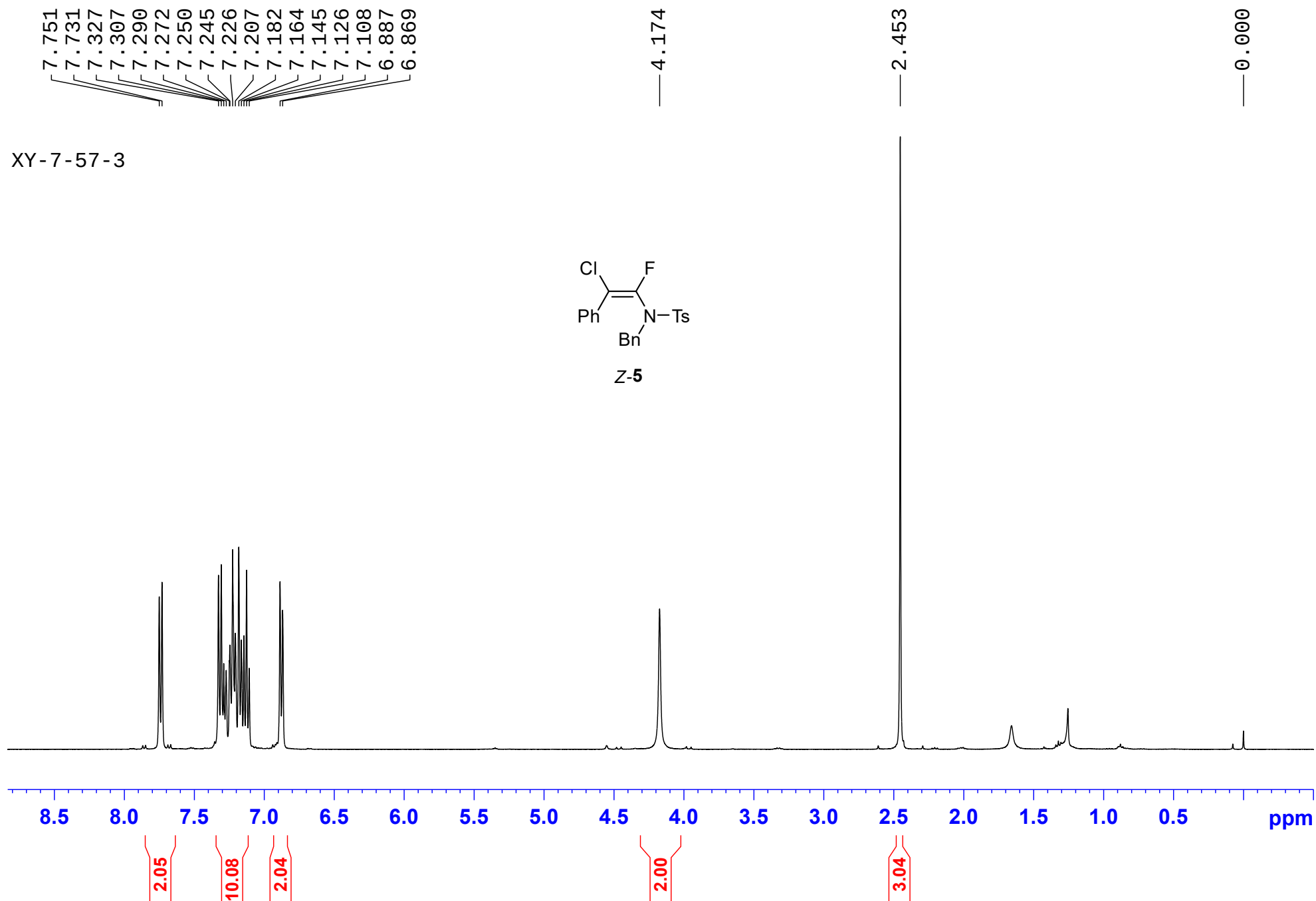




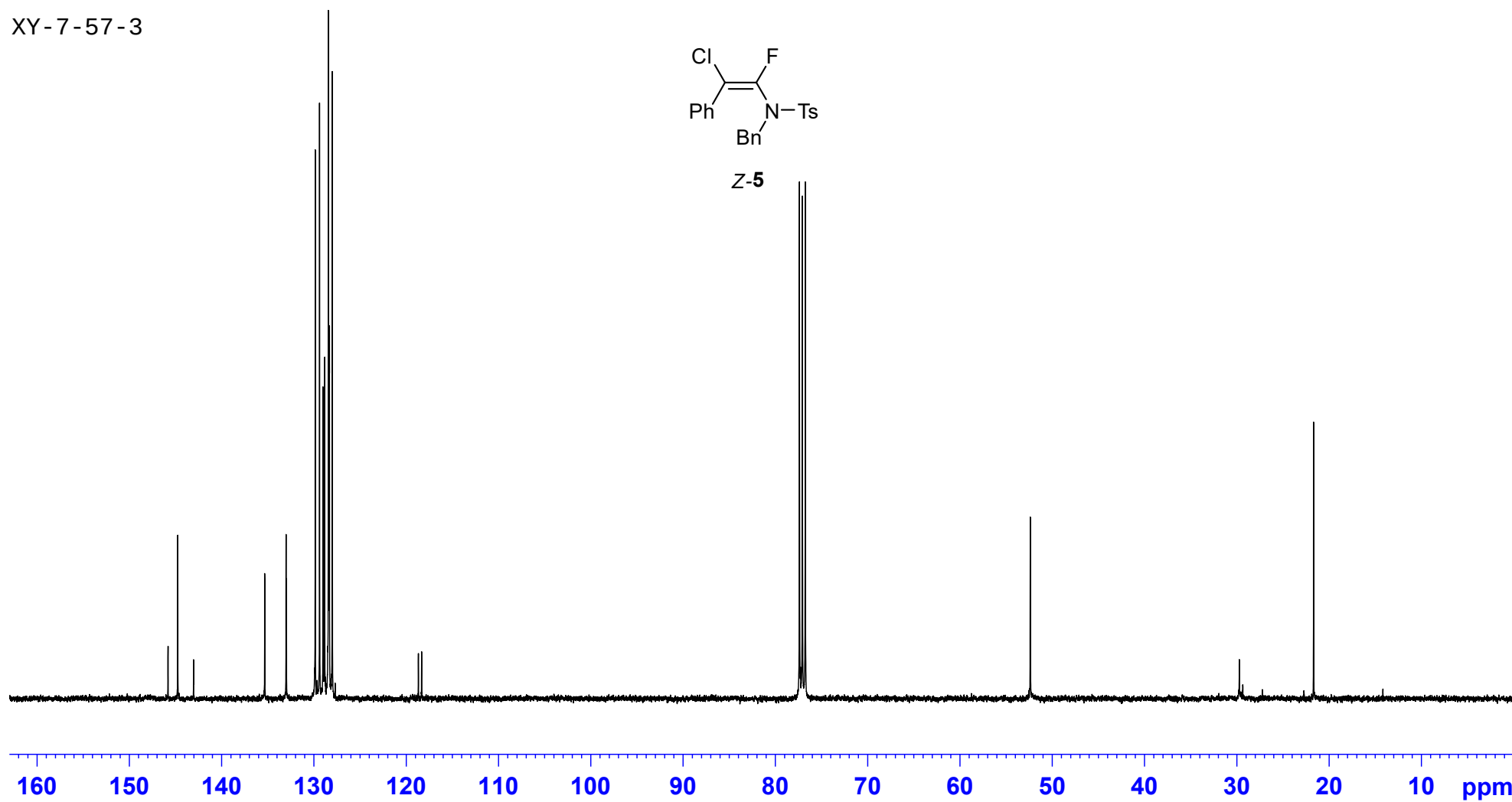
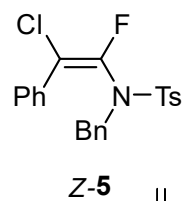
XY-7-57-2

— 88.26



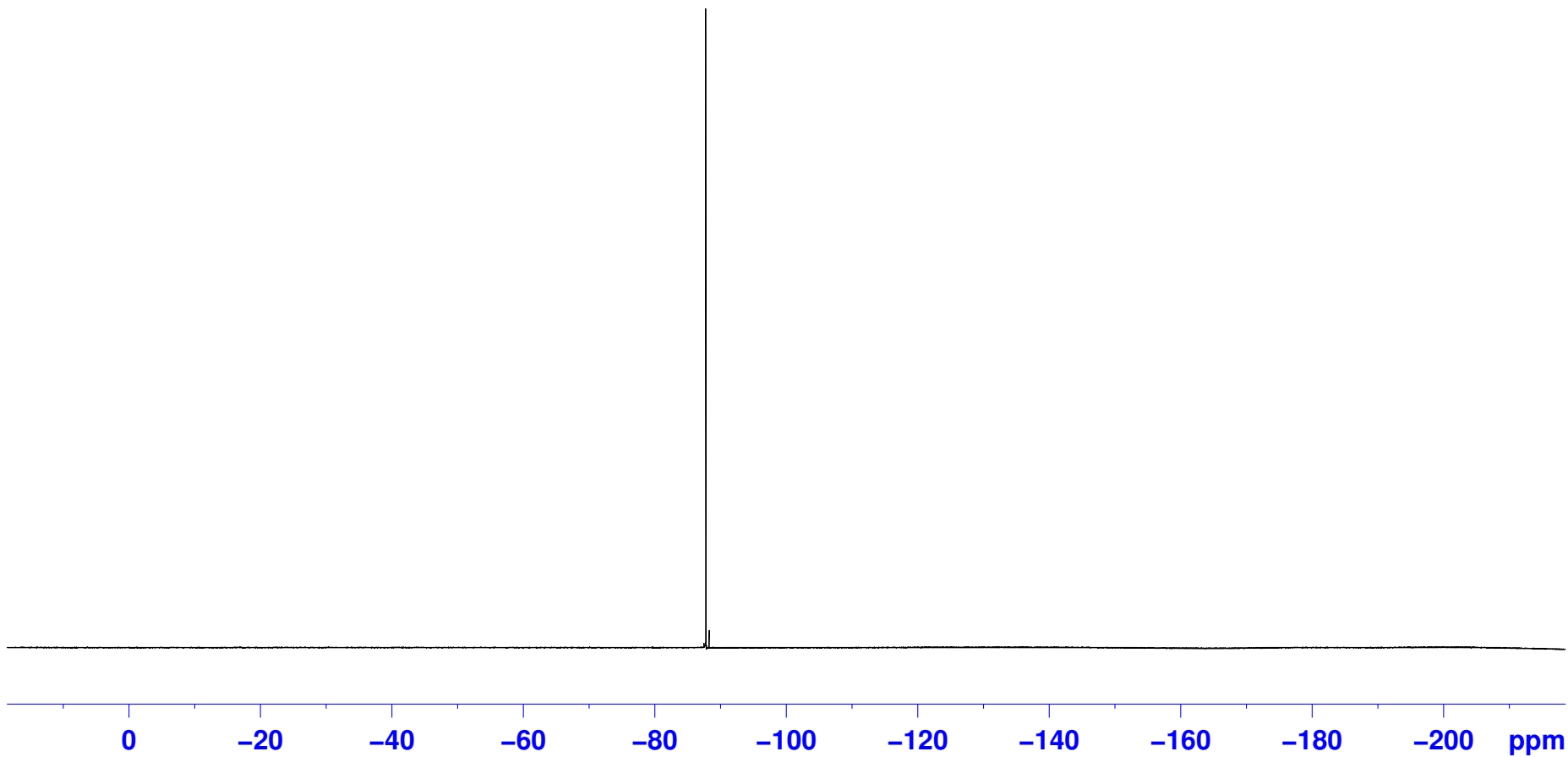
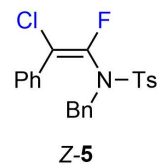


XY-7-57-3



XY-7-57-3

— -87.74



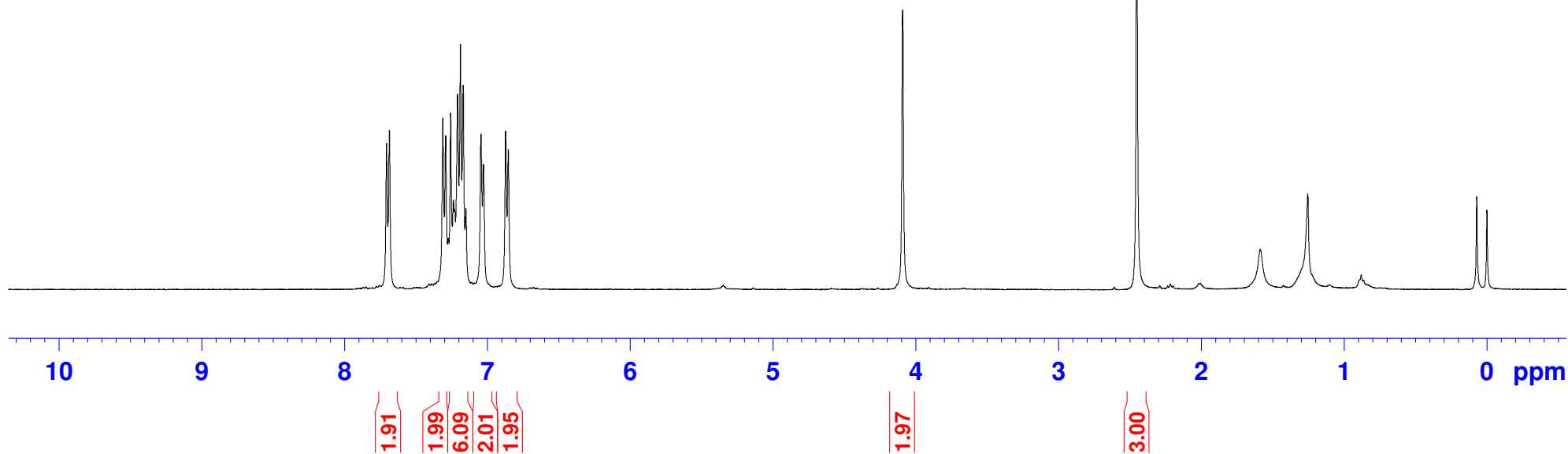
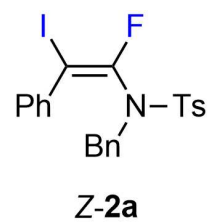
XY-5-111-2

7.707
7.687
7.313
7.293
7.258
7.239
7.230
7.209
7.190
7.170
7.152
7.046
7.029
6.873
6.855

—4.092

—2.453

—0.000



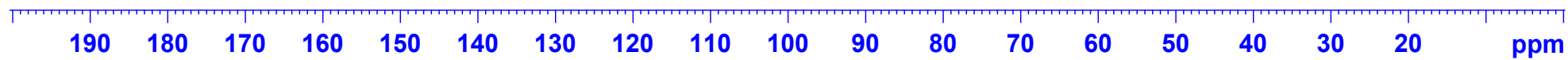
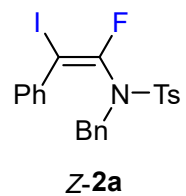
XY-5-111-2

148.20
145.48
144.62
137.03
135.44
133.20
129.80
129.42
129.39
129.33
128.52
128.49
128.36
128.31
128.29
128.00

81.19
77.38
77.06
76.74

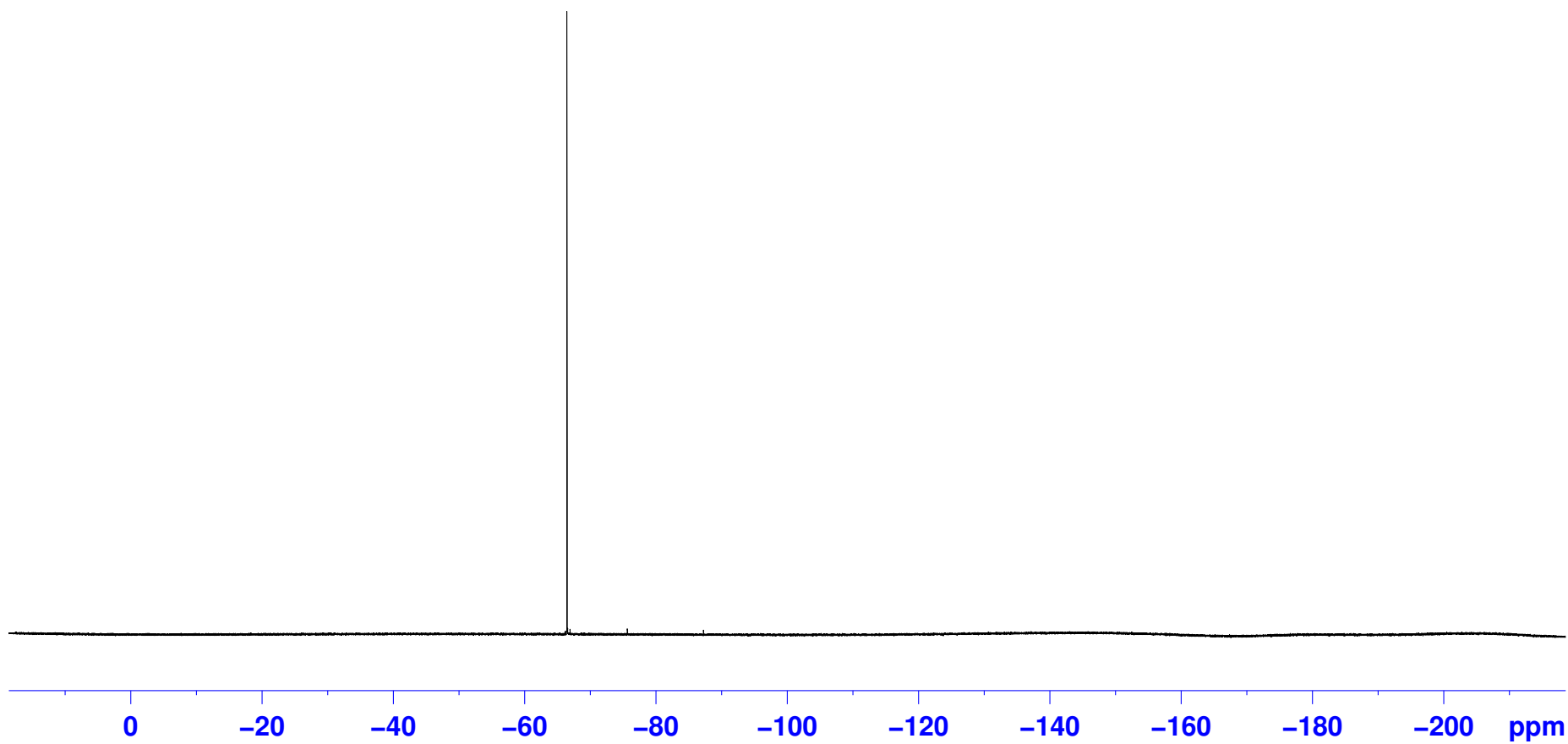
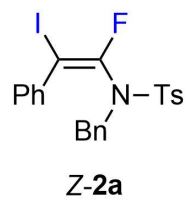
52.15

21.68



XY-5-111-2

—66.45



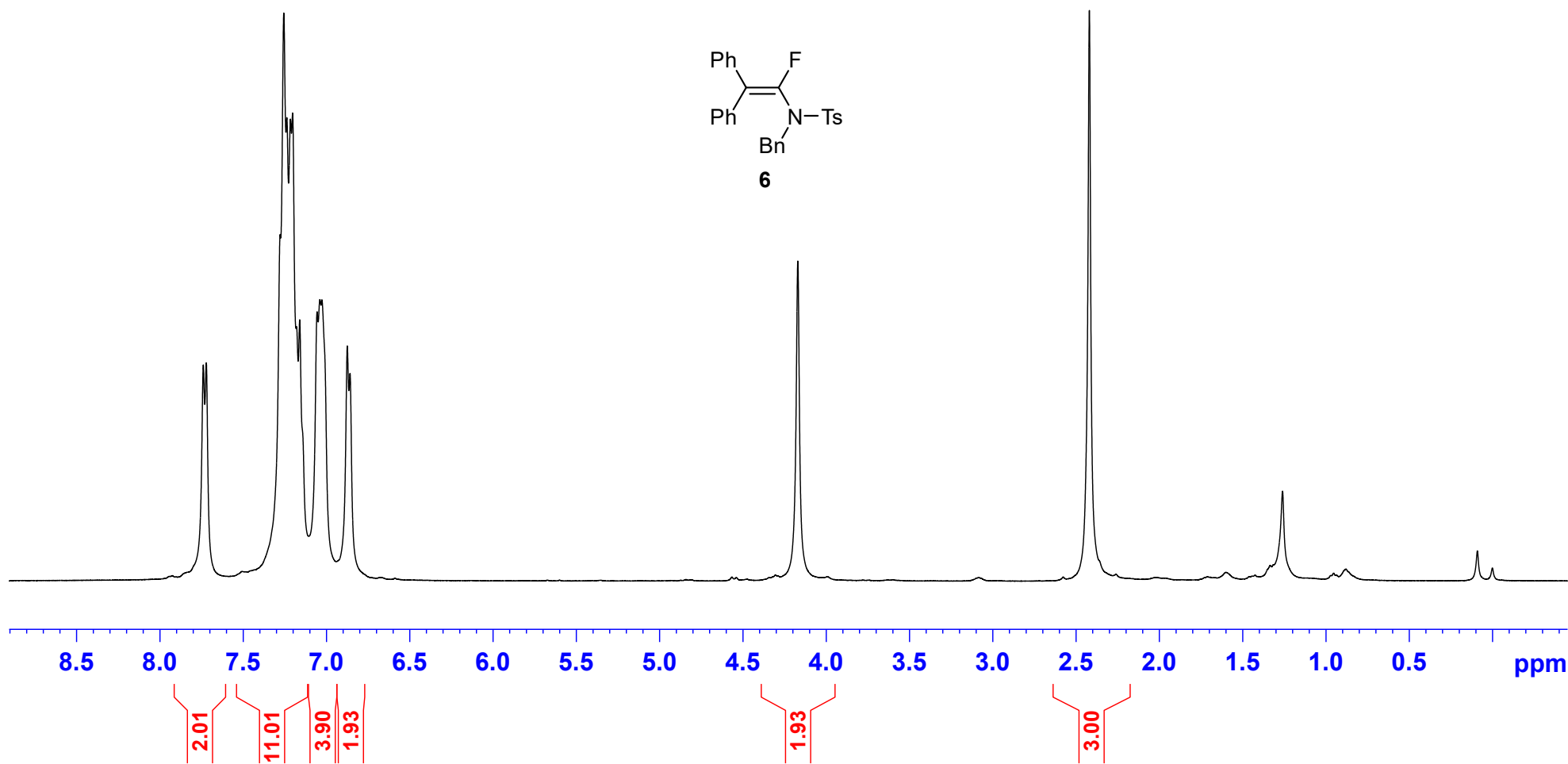
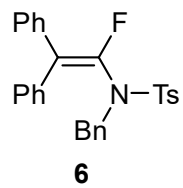
XY-6-27

7.739
7.721
7.278
7.256
7.238
7.216
7.203
7.180
7.161
7.056
7.039
7.027
6.875
6.859

4.170

2.420

0.000



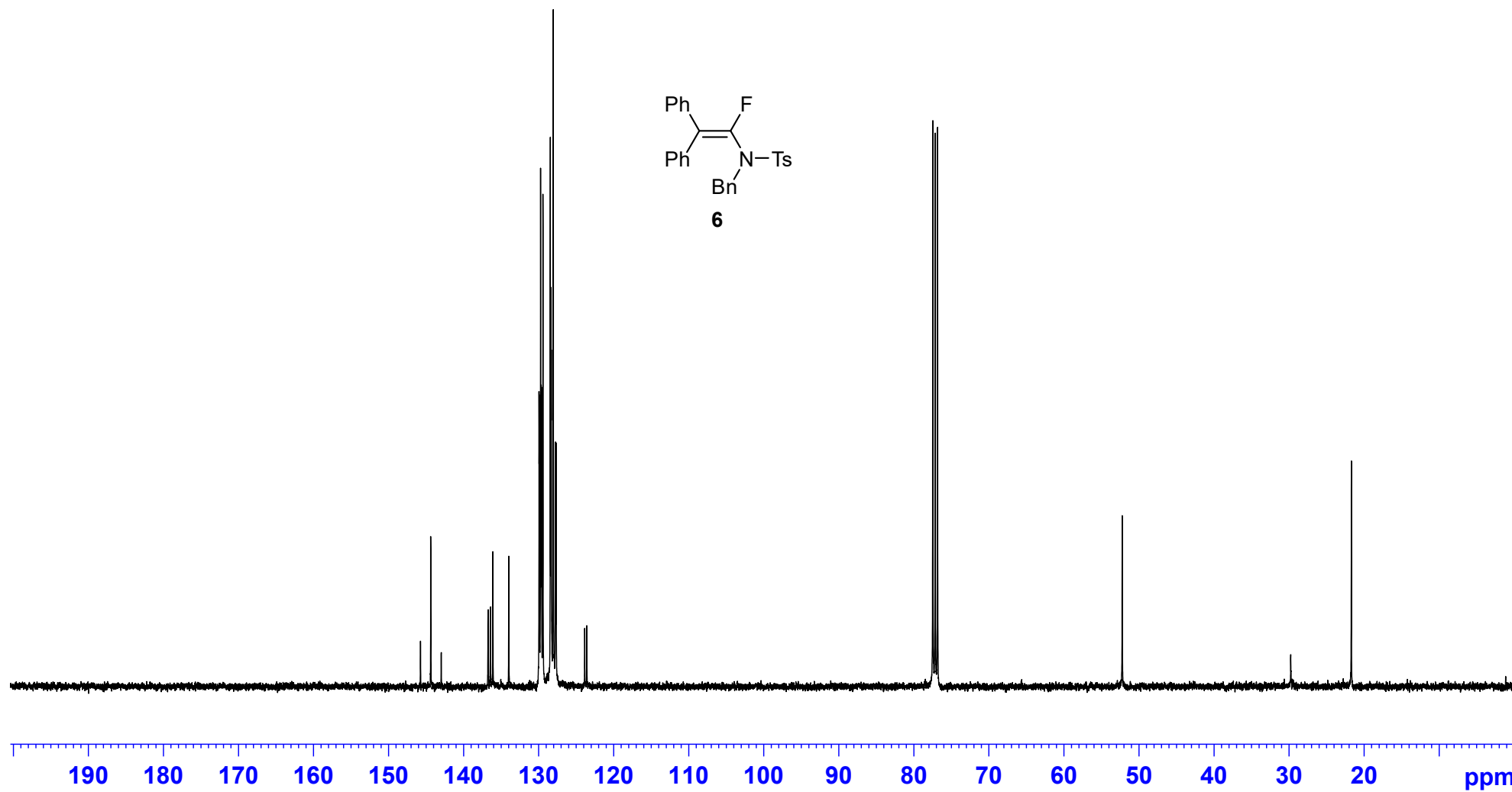
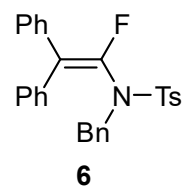
XY-6-27

145.74
144.38
142.98
136.76
136.72
136.44
136.41
136.10
133.99
129.95
129.92
129.74
129.66
129.61
129.43
128.44
128.35
128.31
128.06
128.05
127.76
127.67
123.86
123.58

77.47
77.15
76.84

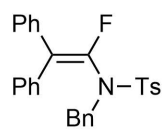
52.23

21.69

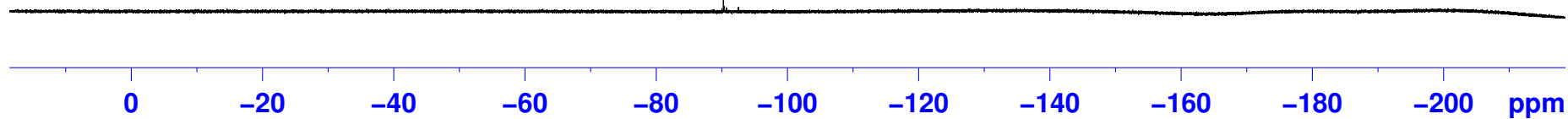


XY-6-27

— -90.23



6



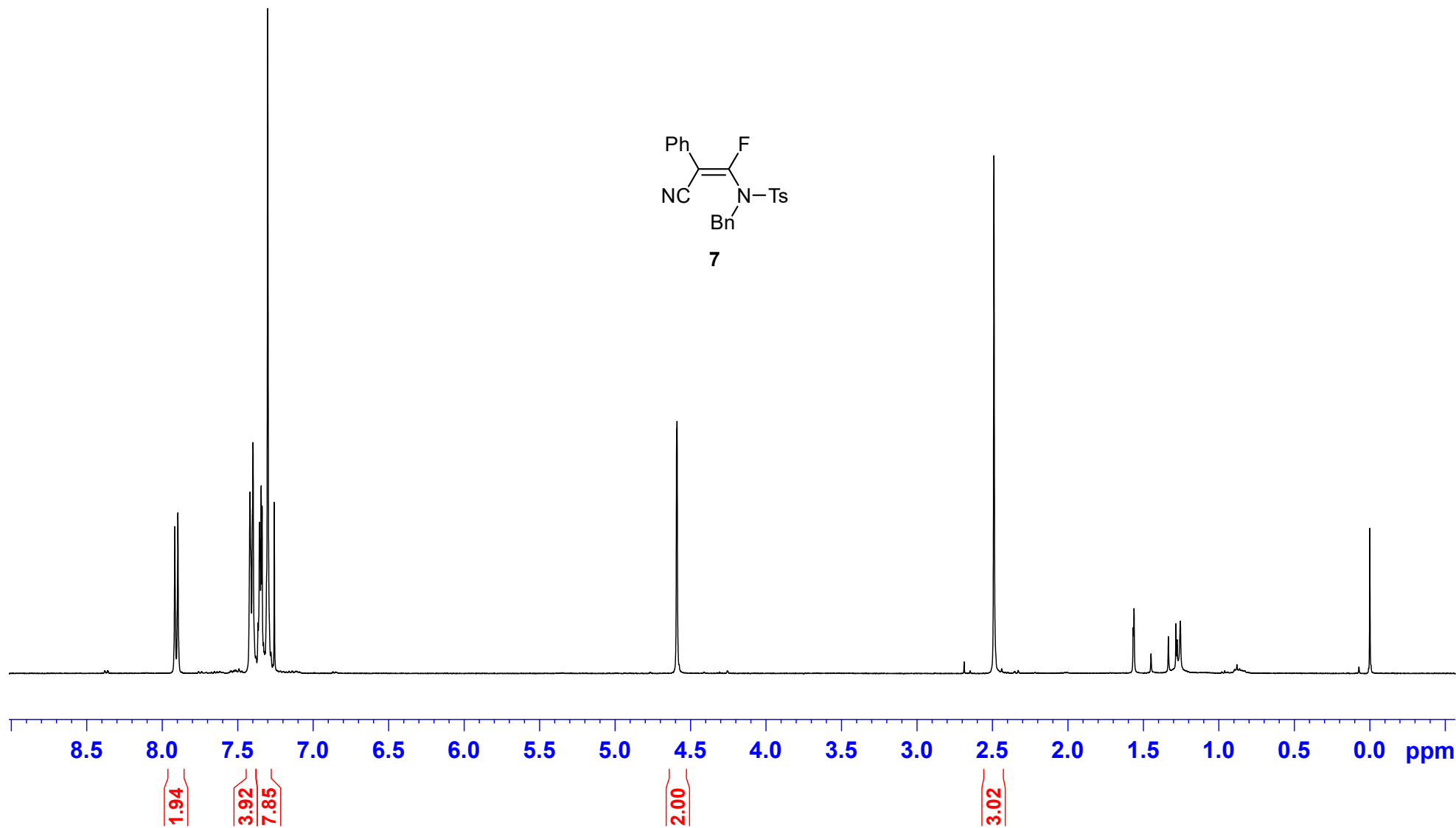
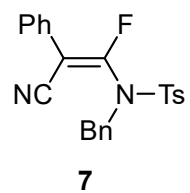
7.917
7.896
7.419
7.399
7.356
7.345
7.339
7.302
7.258

4.590

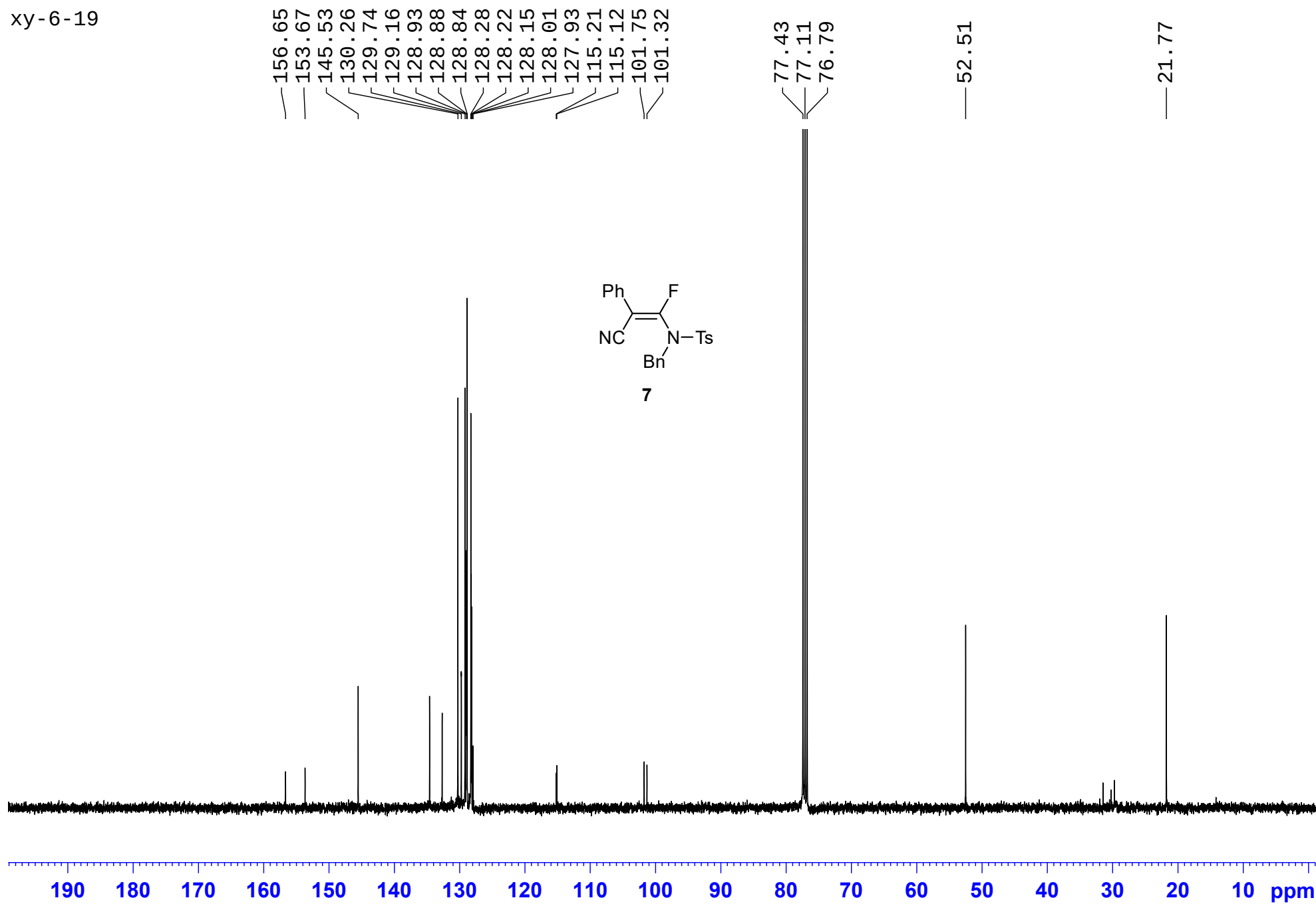
2.490

0.000

XY-6-19



xy-6-19



XY-6-19

---68.55

