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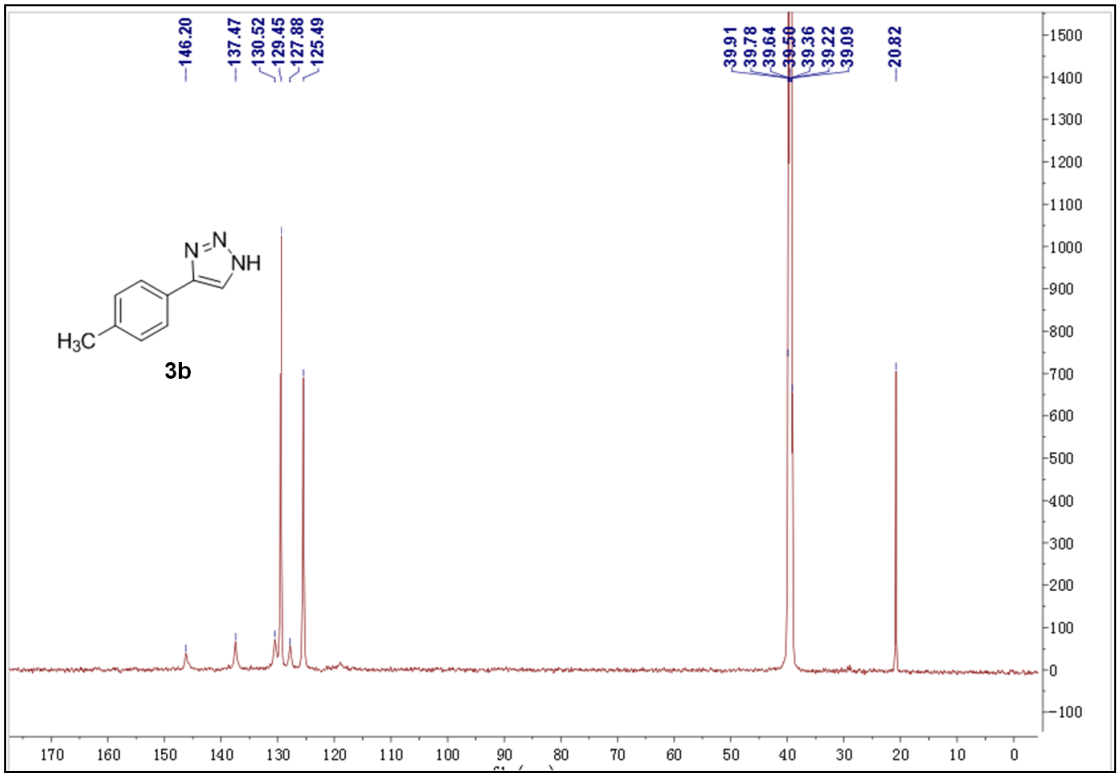
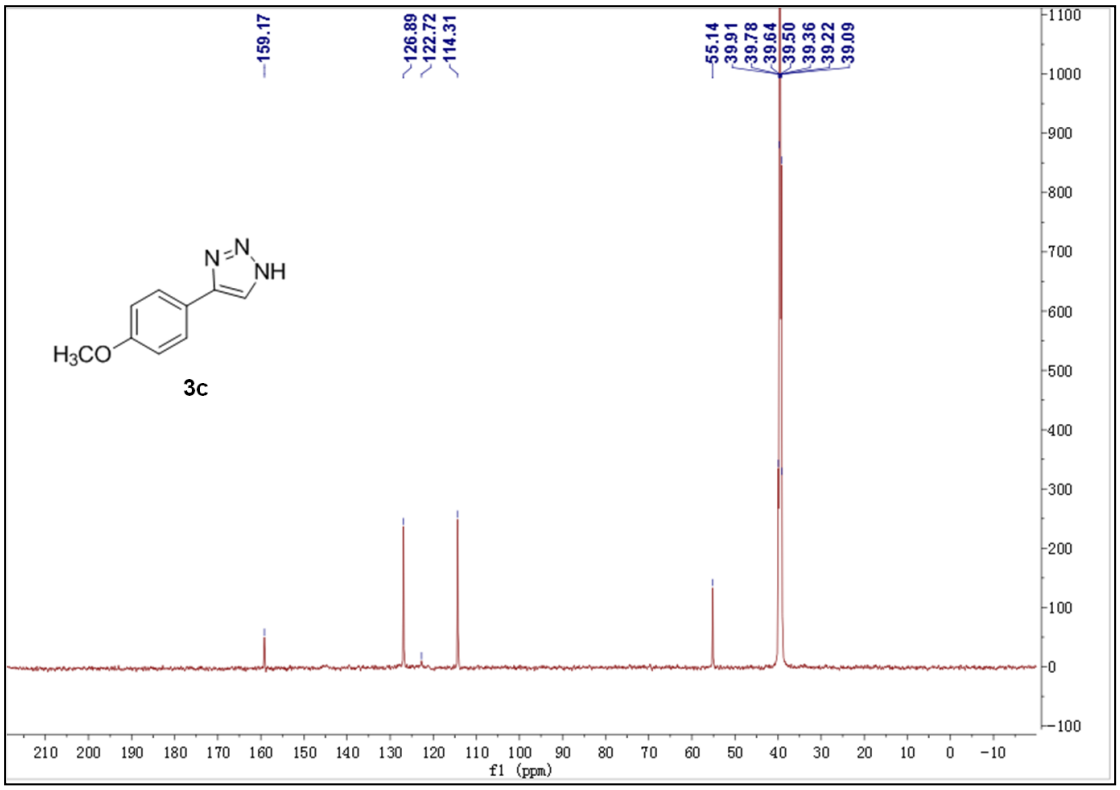
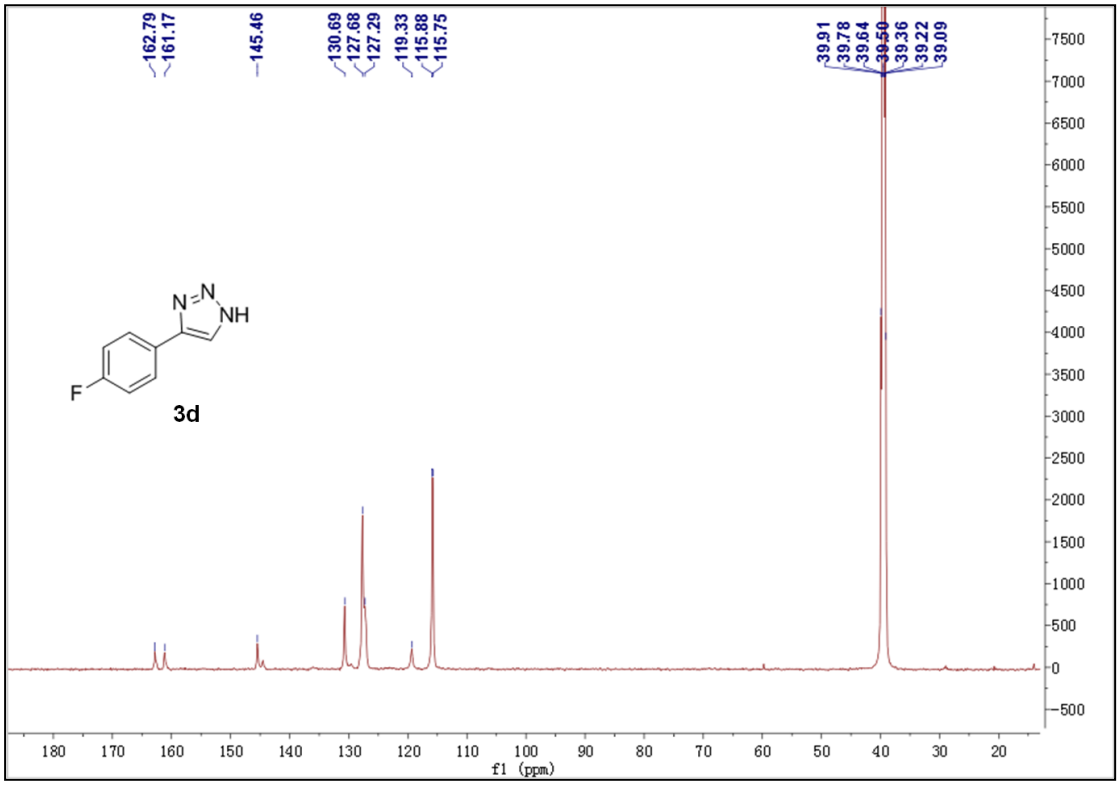
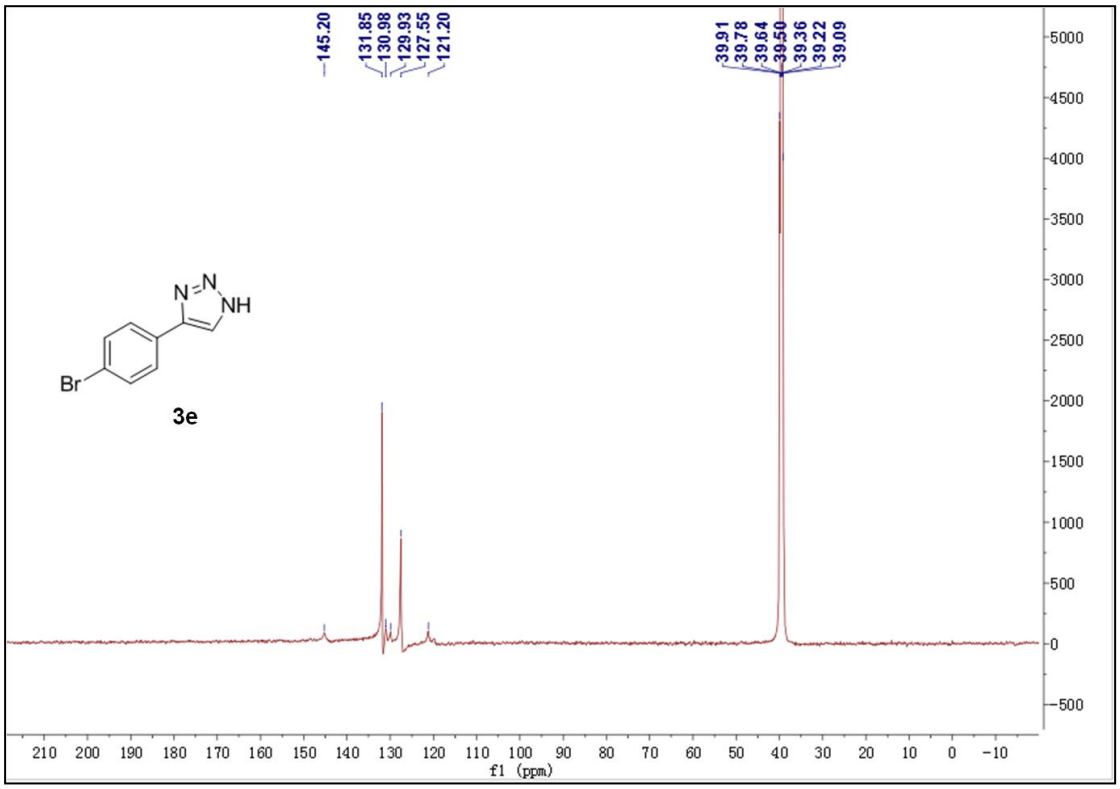
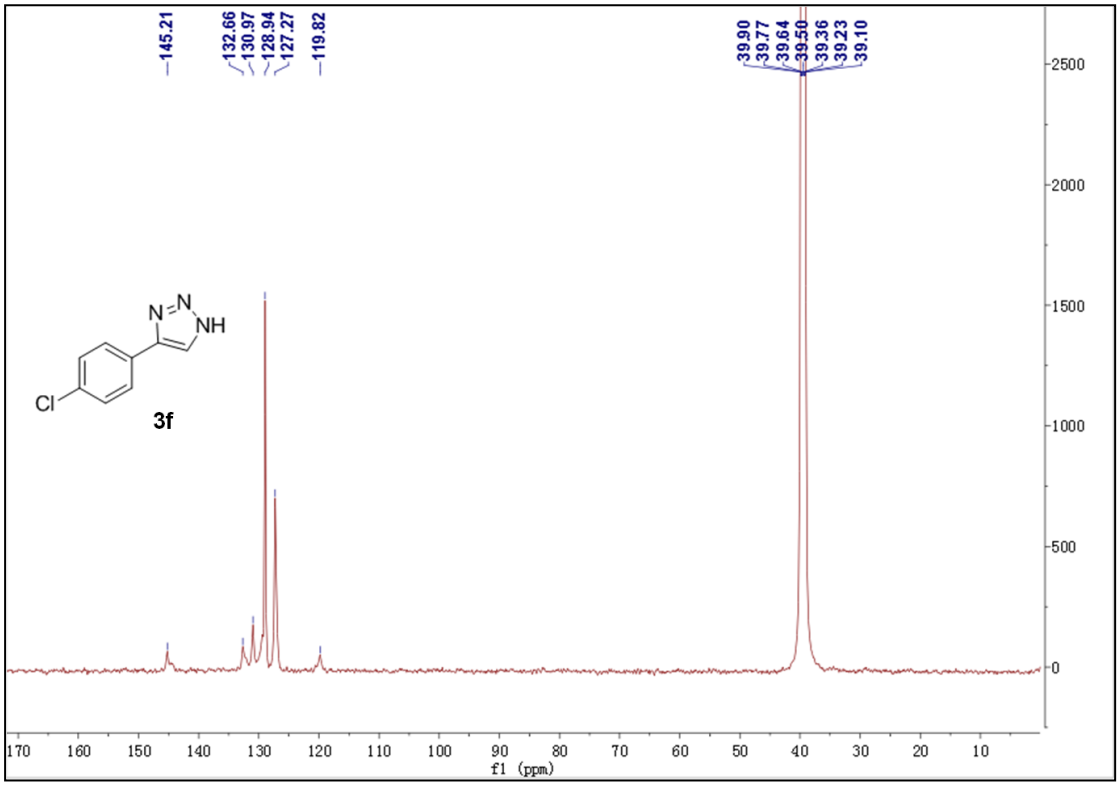
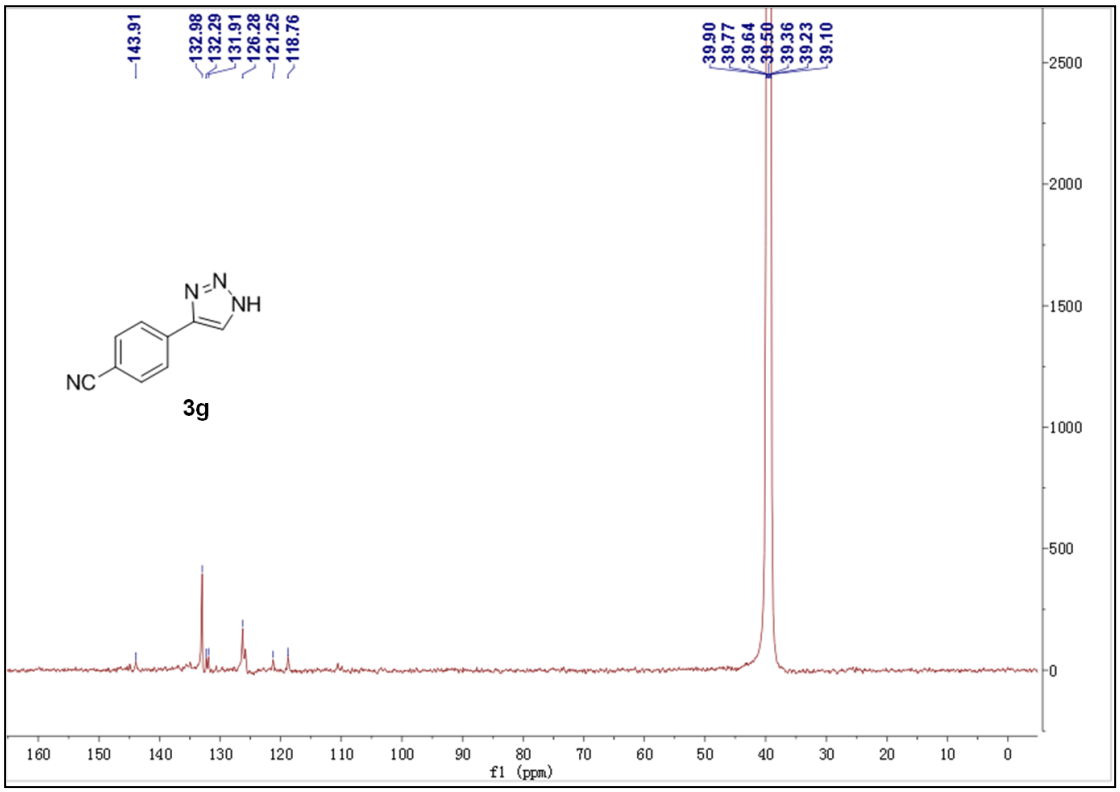


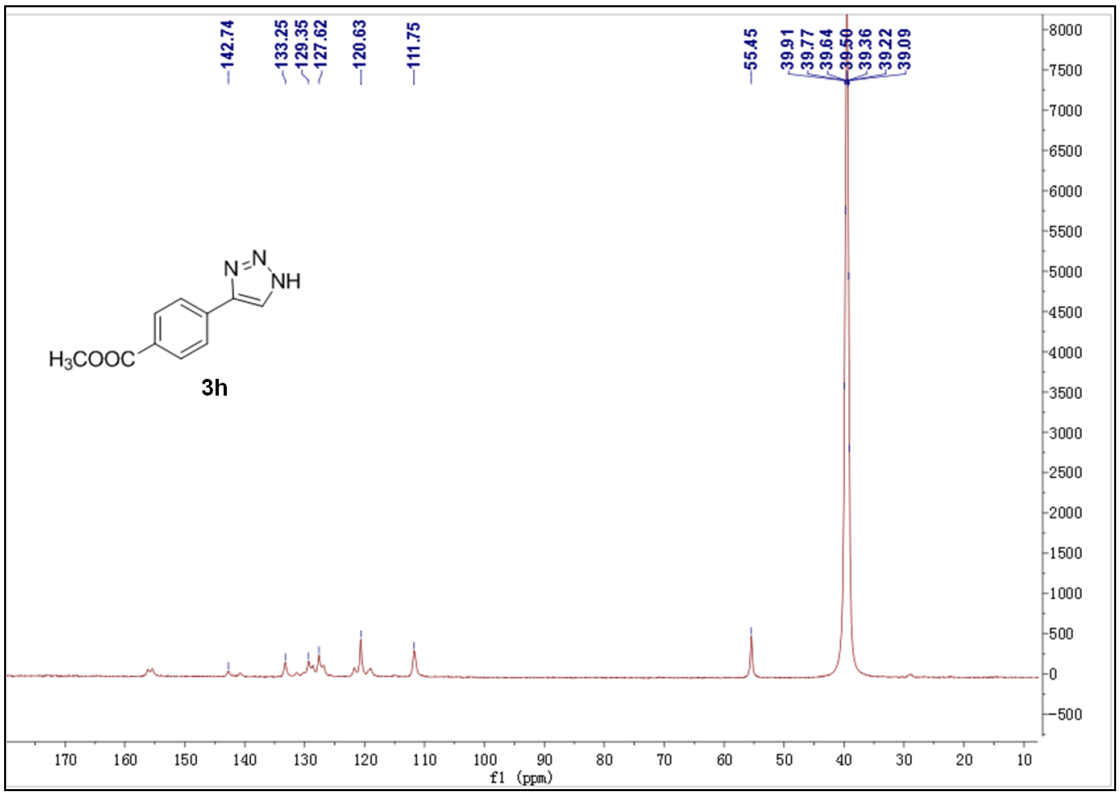


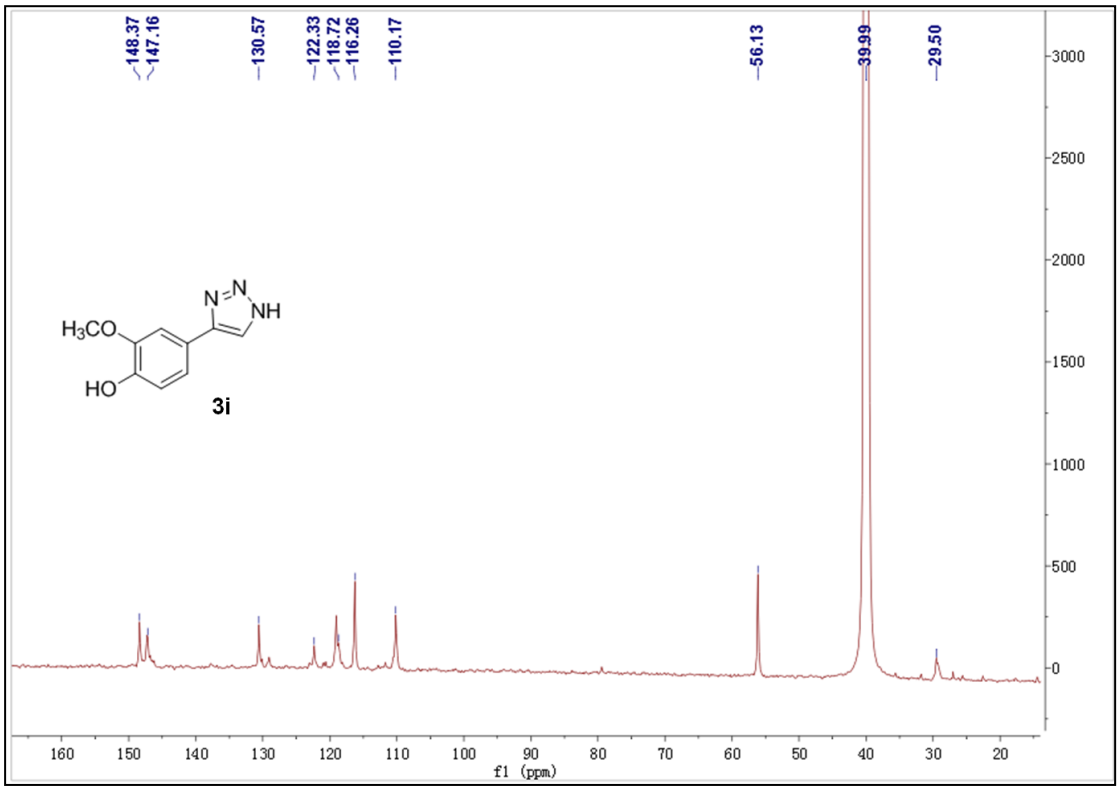

162.79
161.17
145.46
130.69
127.68
127.29
119.33
115.88
115.75
39.91
39.78
39.64
39.50
39.36
39.22
39.09
N
N
NH
F
3d
f1 (ppm)


145.20
131.85
130.98
129.93
127.55
121.20
39.91
39.78
39.64
39.50
39.36
39.22
39.09
N
N
NH
Br
3e
f1 (ppm)


145.21
132.66
130.97
128.94
127.27
119.82
39.90
39.77
39.64
39.50
39.36
39.23
39.10
N
N
NH
Cl
3f
2500
2000
1500
1000
500
0
170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10
f1 (ppm)


143.91
132.98
132.29
131.91
126.28
121.25
118.76
39.90
39.77
39.64
39.50
39.36
39.23
39.10
N
N
NH
NC
3g
2500
2000
1500
1000
500
0
160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0
f1 (ppm)


142.74
133.25
129.35
127.62
120.63
111.75
55.45
39.91
39.77
39.64
39.50
39.36
39.22
39.09
N=N
NH
H3COOC
3h
f1 (ppm)


148.37
147.16
130.57
122.33
118.72
116.26
110.17
56.13
39.99
29.50
N=N
NH
H3CO
HO
3i
f1 (ppm)