Supplementary Material

Traceless piperidine-assisted one-pot tandem dearomative spiroannulation of phenolic compounds with nitrile oxides *via ortho*-quinone methide intermediates

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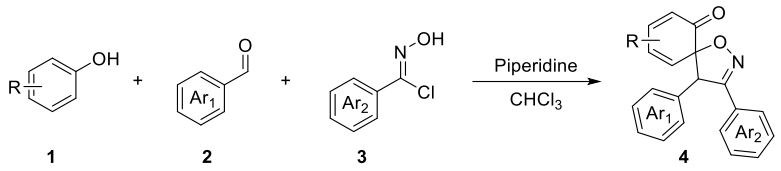
General Information

All reactions were carried out under an atmosphere of nitrogen using standard Schlenk techniques, unless otherwise noted. Commercially available reagents were used without further purification. Solvents were treated prior to use according to the standard methods. All reactions were monitored by TLC analysis. ^{1}H and ^{13}C spectra were recorded on a 400 MHz spectrometer (101 MHz for ^{13}C). Column chromatography was performed on silica gel (300-400 mesh). High resolution mass spectra for all the new compounds were done by an LTQ-Orbitrap instrument (ESI) (Thermo Fisher Scientific, USA).

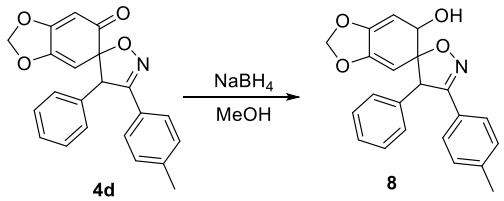
Experimental Procedures

1. General experimental procedure for thedearomatization reaction.

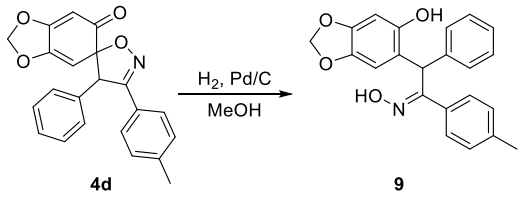


At room temperature, substrate **1** (0.2 mmol), **2** (0.2 mmol), and piperidine(0.2 mmol) were dissolved in 10 µL $CHCl_3$, and the reaction was stirred for 4 hours. Then substrate **3** (0.4 mmol) was added with $CHCl_3$ (3 mL), the mixture was stirred until the reaction complete. After the solvent was removed under reduced pressure, the residue was subjected to flash chromatography on silica gel (Hexanes/EtOAc = 10/1-5/1) to afforded the desired products **4**.The yield was obtained by column chromatography.

2. Synthetic transformations of 4d.



To a solution of **4d** (72 mg, 0.2 mmol) in MeOH (4 mL) was added $NaBH_4$ (16 mg, 0.4 mmol) at 0 °C. Then, the reaction mixture was stirred for 4 h. After the completion of the reaction indicated by TLC, the solvent was evaporated and the residue was purified by column chromatography on silica gel to give product **8** (61mg, 80% yield).

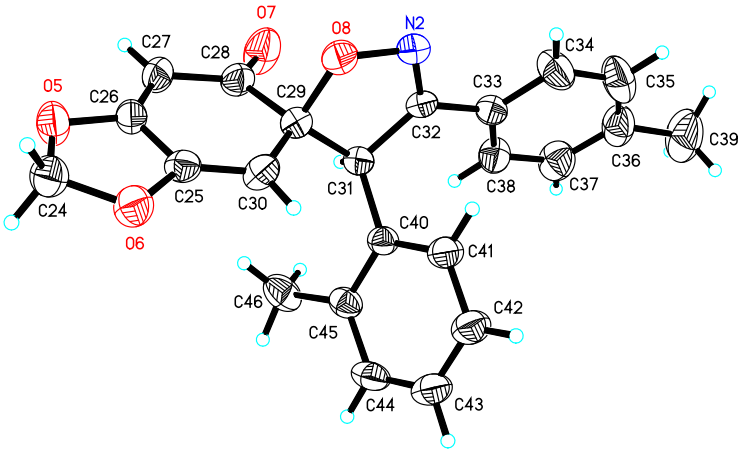


4d (72 mg, 0.2 mmol) and 10% palladium on charcoal (5 mg) were dissolved in methanol (4 mL). The mixture was hydrogenated with H_2 from a balloon for 12 h. The reaction mixture was then filtered through a pad of Celite, and the filtrate was evaporated under reduced pressure. The residue was purified by column chromatography on silica gel to afford **9** (45mg, 59% yield).

Compound Characterization Data

X-ray Crystal Structure of 4m

CCDC number of **4m**: 2298602contains the structure and supplementary crystallographic data for the structure. These data can be obtained free of charge via www.ccdc.cam.ac.uk/data_request/cif



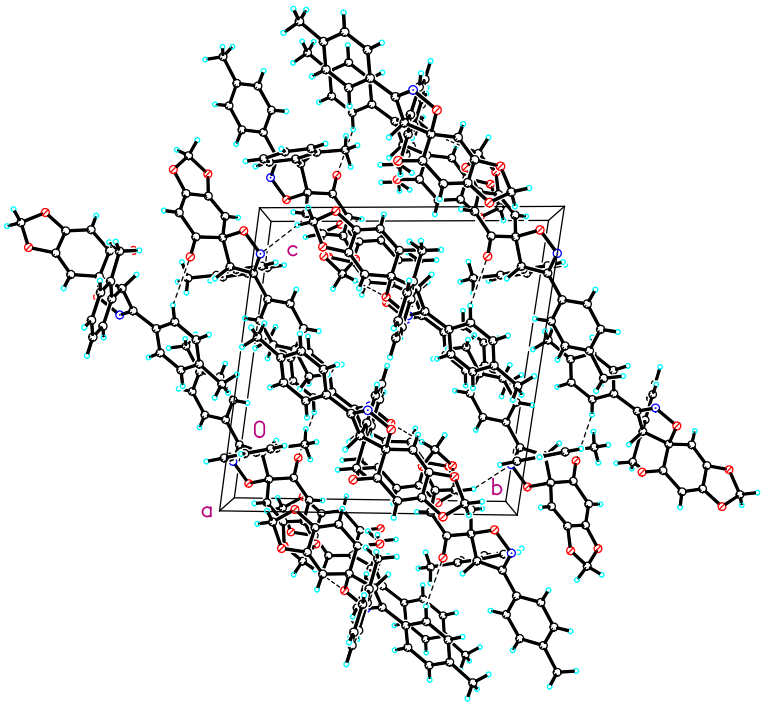


Table 1. Crystal data and structure refinement for mo_dm17338_0m

Identification code	mo_dm17338_0m	
Empirical formula	C23 H19 N O4	
Formula weight	373.39	
Temperature	296(2) K	
Wavelength	0.71073 Å	
Crystal system	Triclinic	
Space group	P -1	
Unit cell dimensions	a = 9.1026(17) Å	= 81.381(4)°.
	b = 14.495(3) Å	= 82.308(4)°.
	c = 14.899(3) Å	= 83.118(4)°.
Volume	1916.1(6) $Å^3$	
Z	4	
Density (calculated)	1.294 Mg/m^3	
Absorption coefficient	0.089 mm^{-1}	
F(000)	784	
Crystal size	0.180 x 0.150 x 0.100 mm^3	
Theta range for data collection	2.126 to 25.500°.	
Index ranges	-10<=h<=11, -17<=k<=17, -18<=l<=18	
Reflections collected	13409	
Independent reflections	7120 [R(int) = 0.0283]	
Completeness to theta = 25.242°	99.9 %	
Absorption correction	Semi-empirical from equivalents	
Max. and min. transmission	0.7456 and 0.6431	
Refinement method	Full-matrix least-squares on F^2	
Data / restraints / parameters	7120 / 0 / 510	
Goodness-of-fit on F^2	0.957	
Final R indices [I>2sigma(I)]	R1 = 0.0498, wR2 = 0.1270	
R indices (all data)	R1 = 0.1069, wR2 = 0.1612	
Extinction coefficient	0.0081(14)	
Largest diff. peak and hole	0.175 and -0.201 $e.Å^{-3}$	

Table 2. Atomic coordinates (x 10^4) and equivalent isotropic displacement parameters (Å^{2}x 10^3) for mo_dm17338_0m. U(eq) is defined as one third of the trace of the orthogonalized U^{ij} tensor.

	x	y	z	U(eq)
N(1)	2447(2)	-118(1)	1411(2)	60(1)
N(2)	3140(2)	4552(2)	3451(2)	66(1)
O(1)	3365(3)	3325(2)	-1457(2)	97(1)
O(2)	5416(2)	2244(1)	-1424(1)	75(1)
O(3)	1373(2)	2209(1)	1539(1)	74(1)
O(4)	2607(2)	566(1)	639(1)	61(1)
O(5)	2167(2)	7497(1)	21(1)	79(1)
O(6)	417(2)	7726(1)	1254(1)	76(1)
O(7)	3685(2)	4399(2)	1244(2)	103(1)
O(8)	3001(2)	5397(1)	2837(1)	71(1)
C(1)	4650(4)	2953(2)	-1998(2)	87(1)
C(2)	4502(3)	2067(2)	-624(2)	56(1)
C(3)	3236(3)	2769(2)	-646(2)	66(1)
C(4)	2166(3)	2842(2)	45(2)	71(1)
C(5)	2260(3)	2167(2)	849(2)	55(1)
C(6)	3461(2)	1312(2)	829(2)	50(1)
C(7)	4688(3)	1396(2)	58(2)	54(1)
C(8)	3930(2)	951(2)	1792(2)	48(1)
C(9)	3160(2)	66(2)	2039(2)	52(1)
C(10)	3149(3)	-551(2)	2919(2)	59(1)
C(11)	2440(3)	-1369(2)	3070(2)	78(1)
C(12)	2440(4)	-1940(2)	3902(3)	94(1)
C(13)	3131(4)	-1724(2)	4604(2)	87(1)
C(14)	3830(4)	-924(2)	4446(2)	87(1)
C(15)	3841(3)	-335(2)	3619(2)	74(1)
C(16)	3103(5)	-2338(3)	5519(3)	129(2)
C(17)	5601(2)	810(2)	1842(2)	50(1)
C(18)	6401(3)	-44(2)	1696(2)	66(1)
C(19)	7920(3)	-184(2)	1710(2)	84(1)
C(20)	8643(3)	541(3)	1888(2)	88(1)
C(21)	7869(3)	1379(2)	2037(2)	76(1)
C(22)	6339(3)	1534(2)	2014(2)	59(1)
C(23)	5540(3)	2484(2)	2138(2)	87(1)
C(24)	1082(3)	8175(2)	403(2)	77(1)
C(25)	1156(3)	6848(2)	1416(2)	56(1)
C(26)	2243(3)	6715(2)	636(2)	58(1)
C(27)	3150(3)	5930(2)	559(2)	64(1)

C(28)	2994(3)	5171(2)	1285(2)	64(1)
C(29)	1948(3)	5318(2)	2178(2)	55(1)
C(30)	951(3)	6215(2)	2137(2)	62(1)
C(31)	1215(2)	4408(2)	2594(2)	51(1)
C(32)	2198(2)	4018(2)	3325(2)	53(1)
C(33)	2055(3)	3120(2)	3925(2)	59(1)
C(34)	2684(4)	2926(2)	4739(2)	87(1)
C(35)	2477(4)	2107(3)	5320(2)	101(1)
C(36)	1674(4)	1447(2)	5113(2)	88(1)
C(37)	1096(4)	1626(2)	4301(2)	90(1)
C(38)	1262(3)	2453(2)	3708(2)	72(1)
C(39)	1409(5)	568(3)	5779(3)	135(2)
C(40)	-416(2)	4563(2)	2974(2)	50(1)
C(41)	-798(3)	4719(2)	3879(2)	63(1)
C(42)	-2260(3)	4873(2)	4251(2)	73(1)
C(43)	-3371(3)	4876(2)	3716(2)	73(1)
C(44)	-3029(3)	4721(2)	2823(2)	66(1)
C(45)	-1544(3)	4572(2)	2430(2)	56(1)
C(46)	-1209(3)	4428(2)	1442(2)	80(1)

Table 3. Bond lengths [Å] and angles [°] for mo_dm17338_0m.

N(1)-C(9)	1.283(3)
N(1)-O(4)	1.405(3)
N(2)-C(32)	1.270(3)
N(2)-O(8)	1.418(3)
O(1)-C(3)	1.348(3)
O(1)-C(1)	1.426(4)
O(2)-C(2)	1.368(3)
O(2)-C(1)	1.414(3)
O(3)-C(5)	1.224(3)
O(4)-C(6)	1.485(3)
O(5)-C(26)	1.348(3)
O(5)-C(24)	1.432(3)
O(6)-C(25)	1.371(3)
O(6)-C(24)	1.428(3)
O(7)-C(28)	1.222(3)
O(8)-C(29)	1.485(3)
C(1)-H(1A)	0.9700
C(1)-H(1B)	0.9700
C(2)-C(7)	1.311(3)
C(2)-C(3)	1.443(4)
C(3)-C(4)	1.326(4)
C(4)-C(5)	1.432(4)
C(4)-H(4)	0.9300
C(5)-C(6)	1.553(3)
C(6)-C(7)	1.493(3)
C(6)-C(8)	1.549(3)
C(7)-H(7)	0.9300
C(8)-C(9)	1.509(3)
C(8)-C(17)	1.520(3)
C(8)-H(8)	0.9800
C(9)-C(10)	1.471(3)
C(10)-C(15)	1.381(4)
C(10)-C(11)	1.391(4)
C(11)-C(12)	1.384(4)
C(11)-H(11)	0.9300
C(12)-C(13)	1.383(5)
C(12)-H(12)	0.9300
C(13)-C(14)	1.363(4)
C(13)-C(16)	1.511(4)
C(14)-C(15)	1.389(4)
C(14)-H(14)	0.9300
C(15)-H(15)	0.9300

C(16)-H(16A)	0.9600
C(16)-H(16B)	0.9600
C(16)-H(16C)	0.9600
C(17)-C(22)	1.384(3)
C(17)-C(18)	1.391(3)
C(18)-C(19)	1.375(4)
C(18)-H(18)	0.9300
C(19)-C(20)	1.380(4)
C(19)-H(19)	0.9300
C(20)-C(21)	1.362(4)
C(20)-H(20)	0.9300
C(21)-C(22)	1.388(4)
C(21)-H(21)	0.9300
C(22)-C(23)	1.503(4)
C(23)-H(23A)	0.9600
C(23)-H(23B)	0.9600
C(23)-H(23C)	0.9600
C(24)-H(24A)	0.9700
C(24)-H(24B)	0.9700
C(25)-C(30)	1.312(3)
C(25)-C(26)	1.442(3)
C(26)-C(27)	1.334(3)
C(27)-C(28)	1.428(4)
C(27)-H(27)	0.9300
C(28)-C(29)	1.555(3)
C(29)-C(30)	1.491(3)
C(29)-C(31)	1.557(3)
C(30)-H(30)	0.9300
C(31)-C(32)	1.504(3)
C(31)-C(40)	1.520(3)
C(31)-H(31)	0.9800
C(32)-C(33)	1.474(3)
C(33)-C(38)	1.371(4)
C(33)-C(34)	1.387(4)
C(34)-C(35)	1.377(4)
C(34)-H(34)	0.9300
C(35)-C(36)	1.365(5)
C(35)-H(35)	0.9300
C(36)-C(37)	1.362(5)
C(36)-C(39)	1.515(4)
C(37)-C(38)	1.389(4)
C(37)-H(37)	0.9300
C(38)-H(38)	0.9300
C(39)-H(39A)	0.9600

C(39)-H(39B)	0.9600
C(39)-H(39C)	0.9600
C(40)-C(45)	1.389(3)
C(40)-C(41)	1.392(3)
C(41)-C(42)	1.378(3)
C(41)-H(41)	0.9300
C(42)-C(43)	1.368(4)
C(42)-H(42)	0.9300
C(43)-C(44)	1.371(4)
C(43)-H(43)	0.9300
C(44)-C(45)	1.404(3)
C(44)-H(44)	0.9300
C(45)-C(46)	1.502(4)
C(46)-H(46A)	0.9600
C(46)-H(46B)	0.9600
C(46)-H(46C)	0.9600

C(9)-N(1)-O(4)	110.28(19)
C(32)-N(2)-O(8)	109.5(2)
C(3)-O(1)-C(1)	107.5(2)
C(2)-O(2)-C(1)	107.5(2)
N(1)-O(4)-C(6)	109.91(16)
C(26)-O(5)-C(24)	108.0(2)
C(25)-O(6)-C(24)	107.7(2)
N(2)-O(8)-C(29)	109.70(17)
O(2)-C(1)-O(1)	107.5(2)
O(2)-C(1)-H(1A)	110.2
O(1)-C(1)-H(1A)	110.2
O(2)-C(1)-H(1B)	110.2
O(1)-C(1)-H(1B)	110.2
H(1A)-C(1)-H(1B)	108.5
C(7)-C(2)-O(2)	128.4(2)
C(7)-C(2)-C(3)	124.1(2)
O(2)-C(2)-C(3)	107.6(2)
C(4)-C(3)-O(1)	127.5(3)
C(4)-C(3)-C(2)	123.8(3)
O(1)-C(3)-C(2)	108.7(2)
C(3)-C(4)-C(5)	117.8(2)
C(3)-C(4)-H(4)	121.1
C(5)-C(4)-H(4)	121.1
O(3)-C(5)-C(4)	122.5(2)
O(3)-C(5)-C(6)	118.1(2)
C(4)-C(5)-C(6)	119.2(2)
O(4)-C(6)-C(7)	104.94(17)

O(4)-C(6)-C(8)	103.97(17)
C(7)-C(6)-C(8)	116.55(19)
O(4)-C(6)-C(5)	102.32(17)
C(7)-C(6)-C(5)	115.4(2)
C(8)-C(6)-C(5)	111.62(19)
C(2)-C(7)-C(6)	117.8(2)
C(2)-C(7)-H(7)	121.1
C(6)-C(7)-H(7)	121.1
C(9)-C(8)-C(17)	114.49(19)
C(9)-C(8)-C(6)	101.37(19)
C(17)-C(8)-C(6)	115.27(18)
C(9)-C(8)-H(8)	108.4
C(17)-C(8)-H(8)	108.4
C(6)-C(8)-H(8)	108.4
N(1)-C(9)-C(10)	120.3(2)
N(1)-C(9)-C(8)	114.2(2)
C(10)-C(9)-C(8)	125.5(2)
C(15)-C(10)-C(11)	118.0(3)
C(15)-C(10)-C(9)	121.0(2)
C(11)-C(10)-C(9)	121.1(3)
C(12)-C(11)-C(10)	120.3(3)
C(12)-C(11)-H(11)	119.8
C(10)-C(11)-H(11)	119.8
C(13)-C(12)-C(11)	121.7(3)
C(13)-C(12)-H(12)	119.1
C(11)-C(12)-H(12)	119.1
C(14)-C(13)-C(12)	117.4(3)
C(14)-C(13)-C(16)	120.9(4)
C(12)-C(13)-C(16)	121.7(3)
C(13)-C(14)-C(15)	122.0(3)
C(13)-C(14)-H(14)	119.0
C(15)-C(14)-H(14)	119.0
C(10)-C(15)-C(14)	120.5(3)
C(10)-C(15)-H(15)	119.7
C(14)-C(15)-H(15)	119.7
C(13)-C(16)-H(16A)	109.5
C(13)-C(16)-H(16B)	109.5
H(16A)-C(16)-H(16B)	109.5
C(13)-C(16)-H(16C)	109.5
H(16A)-C(16)-H(16C)	109.5
H(16B)-C(16)-H(16C)	109.5
C(22)-C(17)-C(18)	119.6(2)
C(22)-C(17)-C(8)	120.4(2)
C(18)-C(17)-C(8)	120.0(2)

C(19)-C(18)-C(17)	121.4(3)
C(19)-C(18)-H(18)	119.3
C(17)-C(18)-H(18)	119.3
C(18)-C(19)-C(20)	118.6(3)
C(18)-C(19)-H(19)	120.7
C(20)-C(19)-H(19)	120.7
C(21)-C(20)-C(19)	120.6(3)
C(21)-C(20)-H(20)	119.7
C(19)-C(20)-H(20)	119.7
C(20)-C(21)-C(22)	121.5(3)
C(20)-C(21)-H(21)	119.2
C(22)-C(21)-H(21)	119.2
C(17)-C(22)-C(21)	118.4(2)
C(17)-C(22)-C(23)	121.8(2)
C(21)-C(22)-C(23)	119.8(3)
C(22)-C(23)-H(23A)	109.5
C(22)-C(23)-H(23B)	109.5
H(23A)-C(23)-H(23B)	109.5
C(22)-C(23)-H(23C)	109.5
H(23A)-C(23)-H(23C)	109.5
H(23B)-C(23)-H(23C)	109.5
O(6)-C(24)-O(5)	107.2(2)
O(6)-C(24)-H(24A)	110.3
O(5)-C(24)-H(24A)	110.3
O(6)-C(24)-H(24B)	110.3
O(5)-C(24)-H(24B)	110.3
H(24A)-C(24)-H(24B)	108.5
C(30)-C(25)-O(6)	128.1(2)
C(30)-C(25)-C(26)	124.1(2)
O(6)-C(25)-C(26)	107.8(2)
C(27)-C(26)-O(5)	127.1(2)
C(27)-C(26)-C(25)	123.9(2)
O(5)-C(26)-C(25)	109.0(2)
C(26)-C(27)-C(28)	117.5(2)
C(26)-C(27)-H(27)	121.3
C(28)-C(27)-H(27)	121.3
O(7)-C(28)-C(27)	122.3(2)
O(7)-C(28)-C(29)	117.6(2)
C(27)-C(28)-C(29)	120.1(2)
O(8)-C(29)-C(30)	105.23(19)
O(8)-C(29)-C(28)	103.23(18)
C(30)-C(29)-C(28)	115.3(2)
O(8)-C(29)-C(31)	103.34(18)
C(30)-C(29)-C(31)	116.73(19)

C(28)-C(29)-C(31)	111.0(2)
C(25)-C(30)-C(29)	118.4(2)
C(25)-C(30)-H(30)	120.8
C(29)-C(30)-H(30)	120.8
C(32)-C(31)-C(40)	112.44(19)
C(32)-C(31)-C(29)	100.76(19)
C(40)-C(31)-C(29)	114.94(18)
C(32)-C(31)-H(31)	109.5
C(40)-C(31)-H(31)	109.5
C(29)-C(31)-H(31)	109.5
N(2)-C(32)-C(33)	119.8(2)
N(2)-C(32)-C(31)	115.3(2)
C(33)-C(32)-C(31)	124.7(2)
C(38)-C(33)-C(34)	117.5(3)
C(38)-C(33)-C(32)	121.1(2)
C(34)-C(33)-C(32)	121.3(3)
C(35)-C(34)-C(33)	121.0(3)
C(35)-C(34)-H(34)	119.5
C(33)-C(34)-H(34)	119.5
C(36)-C(35)-C(34)	121.7(3)
C(36)-C(35)-H(35)	119.2
C(34)-C(35)-H(35)	119.2
C(37)-C(36)-C(35)	117.1(3)
C(37)-C(36)-C(39)	122.1(4)
C(35)-C(36)-C(39)	120.8(4)
C(36)-C(37)-C(38)	122.5(3)
C(36)-C(37)-H(37)	118.7
C(38)-C(37)-H(37)	118.7
C(33)-C(38)-C(37)	120.1(3)
C(33)-C(38)-H(38)	120.0
C(37)-C(38)-H(38)	120.0
C(36)-C(39)-H(39A)	109.5
C(36)-C(39)-H(39B)	109.5
H(39A)-C(39)-H(39B)	109.5
C(36)-C(39)-H(39C)	109.5
H(39A)-C(39)-H(39C)	109.5
H(39B)-C(39)-H(39C)	109.5
C(45)-C(40)-C(41)	118.9(2)
C(45)-C(40)-C(31)	121.2(2)
C(41)-C(40)-C(31)	119.8(2)
C(42)-C(41)-C(40)	121.9(2)
C(42)-C(41)-H(41)	119.1
C(40)-C(41)-H(41)	119.1
C(43)-C(42)-C(41)	119.1(3)

C(43)-C(42)-H(42)	120.4
C(41)-C(42)-H(42)	120.4
C(42)-C(43)-C(44)	120.3(2)
C(42)-C(43)-H(43)	119.9
C(44)-C(43)-H(43)	119.9
C(43)-C(44)-C(45)	121.4(2)
C(43)-C(44)-H(44)	119.3
C(45)-C(44)-H(44)	119.3
C(40)-C(45)-C(44)	118.4(2)
C(40)-C(45)-C(46)	121.6(2)
C(44)-C(45)-C(46)	120.0(2)
C(45)-C(46)-H(46A)	109.5
C(45)-C(46)-H(46B)	109.5
H(46A)-C(46)-H(46B)	109.5
C(45)-C(46)-H(46C)	109.5
H(46A)-C(46)-H(46C)	109.5
H(46B)-C(46)-H(46C)	109.5

Symmetry transformations used to generate equivalent atoms:

Table 4. Anisotropic displacement parameters ($Å^2 x\ 10^3$) for mo_dm17338_0m. The anisotropic displacement factor exponent takes the form: $-2\pi^2[h^2 a^{*2} U^{11} + ... + 2 h k a^* b^* U^{12}]$

	U^{11}	U^{22}	U^{33}	U^{23}	U^{13}	U^{12}
N(1)	52(1)	60(1)	68(1)	-6(1)	-4(1)	-12(1)
N(2)	50(1)	80(2)	66(1)	6(1)	-10(1)	-14(1)
O(1)	109(2)	81(1)	82(2)	22(1)	-2(1)	9(1)
O(2)	80(1)	77(1)	62(1)	4(1)	6(1)	-14(1)
O(3)	55(1)	91(1)	71(1)	-14(1)	1(1)	14(1)
O(4)	64(1)	62(1)	61(1)	-7(1)	-12(1)	-18(1)
O(5)	93(1)	70(1)	66(1)	10(1)	-10(1)	-5(1)
O(6)	75(1)	56(1)	92(1)	1(1)	-3(1)	-4(1)
O(7)	102(2)	81(2)	98(2)	6(1)	35(1)	24(1)
O(8)	65(1)	79(1)	73(1)	3(1)	-14(1)	-29(1)
C(1)	94(2)	89(2)	72(2)	12(2)	-7(2)	-21(2)
C(2)	52(1)	59(2)	56(2)	-8(1)	-1(1)	-14(1)
C(3)	74(2)	54(2)	66(2)	4(1)	-14(2)	-5(1)
C(4)	64(2)	66(2)	77(2)	-2(2)	-13(2)	14(1)
C(5)	42(1)	59(2)	64(2)	-13(1)	-10(1)	1(1)
C(6)	41(1)	51(1)	58(2)	-8(1)	-6(1)	-4(1)
C(7)	45(1)	60(2)	56(2)	-9(1)	-3(1)	1(1)
C(8)	38(1)	50(1)	56(1)	-8(1)	-3(1)	-4(1)
C(9)	40(1)	54(2)	59(2)	-6(1)	-3(1)	-4(1)
C(10)	48(1)	61(2)	65(2)	-1(1)	3(1)	-9(1)
C(11)	76(2)	78(2)	79(2)	-3(2)	6(2)	-28(2)
C(12)	100(2)	74(2)	97(3)	16(2)	11(2)	-29(2)
C(13)	81(2)	86(2)	83(2)	19(2)	-1(2)	-7(2)
C(14)	91(2)	91(2)	73(2)	15(2)	-18(2)	-17(2)
C(15)	74(2)	73(2)	75(2)	8(2)	-12(2)	-19(2)
C(16)	132(3)	120(3)	111(3)	56(3)	-7(3)	-16(3)
C(17)	38(1)	58(2)	51(1)	-2(1)	-5(1)	-2(1)
C(18)	55(2)	65(2)	76(2)	-10(1)	-9(1)	7(1)
C(19)	60(2)	96(2)	87(2)	-9(2)	-3(2)	22(2)
C(20)	40(2)	135(3)	79(2)	12(2)	-2(1)	0(2)
C(21)	53(2)	93(2)	81(2)	11(2)	-13(1)	-26(2)
C(22)	50(1)	66(2)	59(2)	6(1)	-8(1)	-14(1)
C(23)	85(2)	58(2)	124(3)	-11(2)	-23(2)	-20(2)
C(24)	79(2)	60(2)	89(2)	4(2)	-15(2)	-13(2)
C(25)	50(1)	49(2)	71(2)	-8(1)	-8(1)	-6(1)
C(26)	61(2)	61(2)	53(2)	3(1)	-12(1)	-15(1)

C(27)	63(2)	72(2)	50(2)	-2(1)	4(1)	-6(2)
C(28)	54(2)	66(2)	66(2)	-5(2)	3(1)	1(1)
C(29)	49(1)	60(2)	55(2)	-4(1)	-4(1)	-7(1)
C(30)	58(2)	54(2)	70(2)	-8(1)	9(1)	-8(1)
C(31)	44(1)	56(1)	52(1)	-6(1)	-7(1)	-3(1)
C(32)	38(1)	65(2)	56(2)	-6(1)	-2(1)	-8(1)
C(33)	50(1)	62(2)	60(2)	-2(1)	-6(1)	4(1)
C(34)	95(2)	79(2)	89(2)	6(2)	-38(2)	-3(2)
C(35)	130(3)	89(2)	76(2)	11(2)	-32(2)	15(2)
C(36)	102(3)	73(2)	75(2)	10(2)	2(2)	9(2)
C(37)	100(2)	69(2)	96(3)	2(2)	-7(2)	-17(2)
C(38)	78(2)	71(2)	64(2)	-2(2)	-5(2)	-12(2)
C(39)	172(4)	94(3)	113(3)	32(2)	9(3)	1(3)
C(40)	44(1)	49(1)	56(2)	-4(1)	-9(1)	-7(1)
C(41)	50(1)	80(2)	60(2)	-15(1)	-5(1)	-7(1)
C(42)	56(2)	91(2)	71(2)	-17(2)	2(1)	-5(2)
C(43)	49(2)	76(2)	91(2)	-11(2)	2(2)	-4(1)
C(44)	47(2)	58(2)	96(2)	-2(2)	-25(2)	-6(1)
C(45)	55(2)	47(1)	67(2)	-5(1)	-17(1)	-5(1)
C(46)	85(2)	93(2)	70(2)	-21(2)	-32(2)	4(2)

Table 5. Hydrogen coordinates (x 10^4) and isotropic displacement parameters (Å^{2}x 10^3) for mo_dm17338_0m.

	x	y	z	U(eq)
H(1A)	4356	2694	-2503	104
H(1B)	5287	3444	-2245	104
H(4)	1381	3314	9	85
H(7)	5555	985	61	65
H(8)	3479	1397	2207	58
H(11)	1965	-1532	2610	94
H(12)	1961	-2485	3991	112
H(14)	4315	-768	4905	104
H(15)	4319	209	3537	89
H(16A)	4029	-2338	5761	193
H(16B)	2964	-2967	5444	193
H(16C)	2297	-2100	5935	193
H(18)	5900	-531	1586	80
H(19)	8447	-755	1601	101
H(20)	9668	456	1906	106
H(21)	8378	1858	2157	91
H(23A)	5082	2742	1599	130
H(23B)	6239	2892	2240	130
H(23C)	4787	2425	2655	130
H(24A)	1554	8712	499	92
H(24B)	331	8390	-7	92
H(27)	3857	5878	53	76
H(30)	203	6323	2610	75
H(31)	1325	3980	2133	61
H(34)	3255	3356	4895	105
H(35)	2893	2002	5868	121
H(37)	569	1179	4136	108
H(38)	836	2555	3164	86
H(39A)	2285	358	6077	202
H(39B)	1192	86	5454	202
H(39C)	583	703	6228	202
H(41)	-44	4720	4243	75
H(42)	-2490	4973	4859	88
H(43)	-4362	4985	3958	88
H(44)	-3795	4713	2470	80
H(46A)	-559	4877	1127	121
H(46B)	-2120	4509	1168	121
H(46C)	-733	3805	1401	121

Table 6. Torsion angles [°] for mo_dm17338_0m

C(9)-N(1)-O(4)-C(6)	-4.0(2)
C(32)-N(2)-O(8)-C(29)	-7.4(2)
C(2)-O(2)-C(1)-O(1)	10.9(3)
C(3)-O(1)-C(1)-O(2)	-9.3(3)
C(1)-O(2)-C(2)-C(7)	171.7(3)
C(1)-O(2)-C(2)-C(3)	-8.2(3)
C(1)-O(1)-C(3)-C(4)	-177.3(3)
C(1)-O(1)-C(3)-C(2)	4.3(3)
C(7)-C(2)-C(3)-C(4)	4.1(4)
O(2)-C(2)-C(3)-C(4)	-176.0(3)
C(7)-C(2)-C(3)-O(1)	-177.5(2)
O(2)-C(2)-C(3)-O(1)	2.5(3)
O(1)-C(3)-C(4)-C(5)	-179.9(3)
C(2)-C(3)-C(4)-C(5)	-1.7(4)
C(3)-C(4)-C(5)-O(3)	175.8(3)
C(3)-C(4)-C(5)-C(6)	-8.5(4)
N(1)-O(4)-C(6)-C(7)	127.86(19)
N(1)-O(4)-C(6)-C(8)	5.0(2)
N(1)-O(4)-C(6)-C(5)	-111.33(19)
O(3)-C(5)-C(6)-O(4)	78.7(2)
C(4)-C(5)-C(6)-O(4)	-97.2(2)
O(3)-C(5)-C(6)-C(7)	-168.0(2)
C(4)-C(5)-C(6)-C(7)	16.1(3)
O(3)-C(5)-C(6)-C(8)	-31.9(3)
C(4)-C(5)-C(6)-C(8)	152.1(2)
O(2)-C(2)-C(7)-C(6)	-175.4(2)
C(3)-C(2)-C(7)-C(6)	4.6(4)
O(4)-C(6)-C(7)-C(2)	98.0(2)
C(8)-C(6)-C(7)-C(2)	-147.6(2)
C(5)-C(6)-C(7)-C(2)	-13.8(3)
O(4)-C(6)-C(8)-C(9)	-4.00(19)
C(7)-C(6)-C(8)-C(9)	-118.9(2)
C(5)-C(6)-C(8)-C(9)	105.6(2)
O(4)-C(6)-C(8)-C(17)	120.23(19)
C(7)-C(6)-C(8)-C(17)	5.3(3)
C(5)-C(6)-C(8)-C(17)	-130.2(2)
O(4)-N(1)-C(9)-C(10)	179.59(18)
O(4)-N(1)-C(9)-C(8)	1.1(3)
C(17)-C(8)-C(9)-N(1)	-122.7(2)
C(6)-C(8)-C(9)-N(1)	2.0(2)
C(17)-C(8)-C(9)-C(10)	58.8(3)
C(6)-C(8)-C(9)-C(10)	-176.4(2)

N(1)-C(9)-C(10)-C(15)	-176.4(2)
C(8)-C(9)-C(10)-C(15)	1.9(4)
N(1)-C(9)-C(10)-C(11)	3.6(3)
C(8)-C(9)-C(10)-C(11)	-178.1(2)
C(15)-C(10)-C(11)-C(12)	0.0(4)
C(9)-C(10)-C(11)-C(12)	-180.0(3)
C(10)-C(11)-C(12)-C(13)	0.0(5)
C(11)-C(12)-C(13)-C(14)	-0.5(5)
C(11)-C(12)-C(13)-C(16)	178.7(3)
C(12)-C(13)-C(14)-C(15)	0.9(5)
C(16)-C(13)-C(14)-C(15)	-178.3(3)
C(11)-C(10)-C(15)-C(14)	0.3(4)
C(9)-C(10)-C(15)-C(14)	-179.7(2)
C(13)-C(14)-C(15)-C(10)	-0.8(5)
C(9)-C(8)-C(17)-C(22)	-152.8(2)
C(6)-C(8)-C(17)-C(22)	90.1(3)
C(9)-C(8)-C(17)-C(18)	28.5(3)
C(6)-C(8)-C(17)-C(18)	-88.5(3)
C(22)-C(17)-C(18)-C(19)	-0.6(4)
C(8)-C(17)-C(18)-C(19)	178.0(2)
C(17)-C(18)-C(19)-C(20)	1.0(4)
C(18)-C(19)-C(20)-C(21)	-0.7(5)
C(19)-C(20)-C(21)-C(22)	-0.1(5)
C(18)-C(17)-C(22)-C(21)	-0.2(4)
C(8)-C(17)-C(22)-C(21)	-178.8(2)
C(18)-C(17)-C(22)-C(23)	177.4(3)
C(8)-C(17)-C(22)-C(23)	-1.3(4)
C(20)-C(21)-C(22)-C(17)	0.5(4)
C(20)-C(21)-C(22)-C(23)	-177.1(3)
C(25)-O(6)-C(24)-O(5)	5.0(3)
C(26)-O(5)-C(24)-O(6)	-4.9(3)
C(24)-O(6)-C(25)-C(30)	176.8(3)
C(24)-O(6)-C(25)-C(26)	-3.3(3)
C(24)-O(5)-C(26)-C(27)	-177.7(3)
C(24)-O(5)-C(26)-C(25)	2.8(3)
C(30)-C(25)-C(26)-C(27)	0.8(4)
O(6)-C(25)-C(26)-C(27)	-179.2(2)
C(30)-C(25)-C(26)-O(5)	-179.8(2)
O(6)-C(25)-C(26)-O(5)	0.3(3)
O(5)-C(26)-C(27)-C(28)	-177.5(2)
C(25)-C(26)-C(27)-C(28)	1.8(4)
C(26)-C(27)-C(28)-O(7)	173.8(3)
C(26)-C(27)-C(28)-C(29)	-7.8(4)
N(2)-O(8)-C(29)-C(30)	134.5(2)

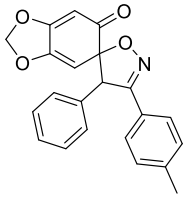
N(2)-O(8)-C(29)-C(28)	-104.3(2)
N(2)-O(8)-C(29)-C(31)	11.5(2)
O(7)-C(28)-C(29)-O(8)	75.3(3)
C(27)-C(28)-C(29)-O(8)	-103.1(3)
O(7)-C(28)-C(29)-C(30)	-170.5(3)
C(27)-C(28)-C(29)-C(30)	11.1(3)
O(7)-C(28)-C(29)-C(31)	-34.9(3)
C(27)-C(28)-C(29)-C(31)	146.7(2)
O(6)-C(25)-C(30)-C(29)	-177.1(2)
C(26)-C(25)-C(30)-C(29)	3.0(4)
O(8)-C(29)-C(30)-C(25)	104.6(3)
C(28)-C(29)-C(30)-C(25)	-8.4(3)
C(31)-C(29)-C(30)-C(25)	-141.5(2)
O(8)-C(29)-C(31)-C(32)	-10.7(2)
C(30)-C(29)-C(31)-C(32)	-125.6(2)
C(28)-C(29)-C(31)-C(32)	99.4(2)
O(8)-C(29)-C(31)-C(40)	110.4(2)
C(30)-C(29)-C(31)-C(40)	-4.5(3)
C(28)-C(29)-C(31)-C(40)	-139.5(2)
O(8)-N(2)-C(32)-C(33)	-175.94(19)
O(8)-N(2)-C(32)-C(31)	-0.4(3)
C(40)-C(31)-C(32)-N(2)	-115.4(2)
C(29)-C(31)-C(32)-N(2)	7.4(3)
C(40)-C(31)-C(32)-C(33)	59.8(3)
C(29)-C(31)-C(32)-C(33)	-177.3(2)
N(2)-C(32)-C(33)-C(38)	-167.7(2)
C(31)-C(32)-C(33)-C(38)	17.2(3)
N(2)-C(32)-C(33)-C(34)	13.9(4)
C(31)-C(32)-C(33)-C(34)	-161.1(2)
C(38)-C(33)-C(34)-C(35)	-2.1(4)
C(32)-C(33)-C(34)-C(35)	176.4(3)
C(33)-C(34)-C(35)-C(36)	1.4(5)
C(34)-C(35)-C(36)-C(37)	0.6(5)
C(34)-C(35)-C(36)-C(39)	-177.6(3)
C(35)-C(36)-C(37)-C(38)	-1.8(5)
C(39)-C(36)-C(37)-C(38)	176.4(3)
C(34)-C(33)-C(38)-C(37)	0.9(4)
C(32)-C(33)-C(38)-C(37)	-177.6(2)
C(36)-C(37)-C(38)-C(33)	1.1(5)
C(32)-C(31)-C(40)-C(45)	-155.4(2)
C(29)-C(31)-C(40)-C(45)	90.1(3)
C(32)-C(31)-C(40)-C(41)	26.0(3)
C(29)-C(31)-C(40)-C(41)	-88.5(3)
C(45)-C(40)-C(41)-C(42)	0.7(4)

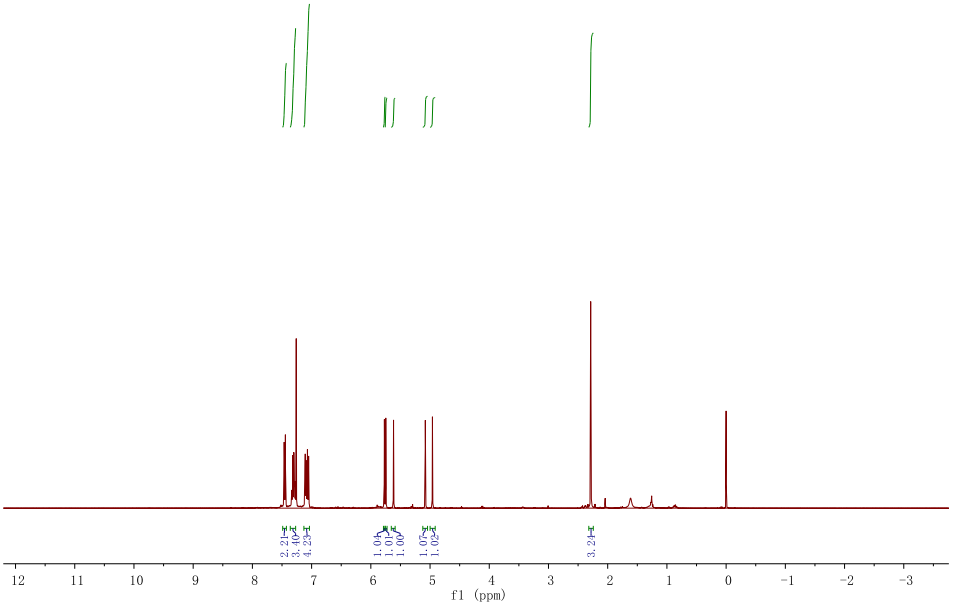
C(31)-C(40)-C(41)-C(42)	179.3(2)
C(40)-C(41)-C(42)-C(43)	-0.3(4)
C(41)-C(42)-C(43)-C(44)	0.6(5)
C(42)-C(43)-C(44)-C(45)	-1.2(4)
C(41)-C(40)-C(45)-C(44)	-1.2(4)
C(31)-C(40)-C(45)-C(44)	-179.8(2)
C(41)-C(40)-C(45)-C(46)	178.7(2)
C(31)-C(40)-C(45)-C(46)	0.1(4)
C(43)-C(44)-C(45)-C(40)	1.5(4)
C(43)-C(44)-C(45)-C(46)	-178.4(3)

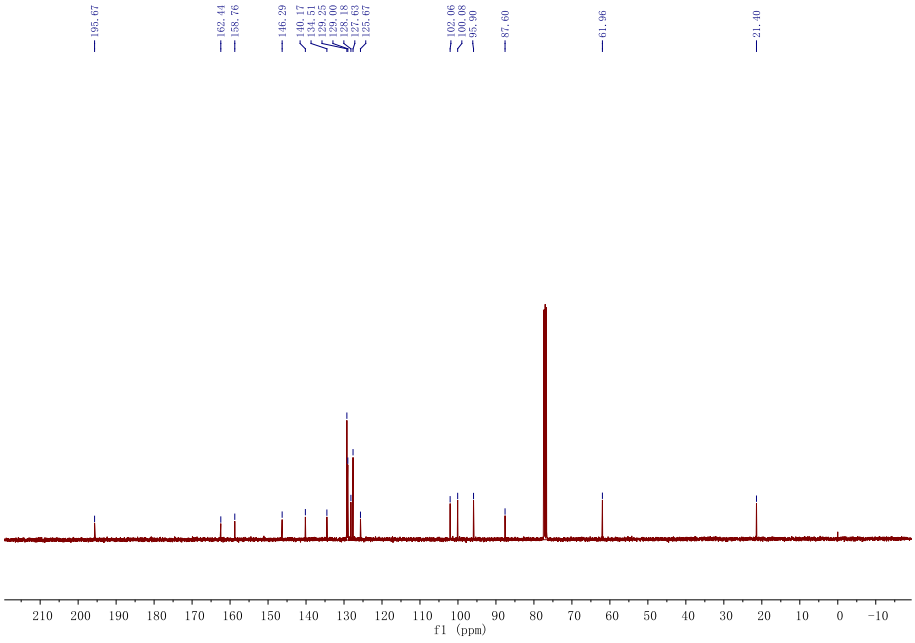
Symmetry transformations used to generate equivalent atoms:

Copy of NMR Spectra for compounds generated in this study

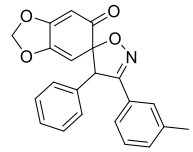
4'-Phenyl-3'-(*p*-tolyl)-4'*H*,6*H*-spiro[benzo[*d*][1,3]dioxole-5,5'-isoxazol]-6-one(4a)

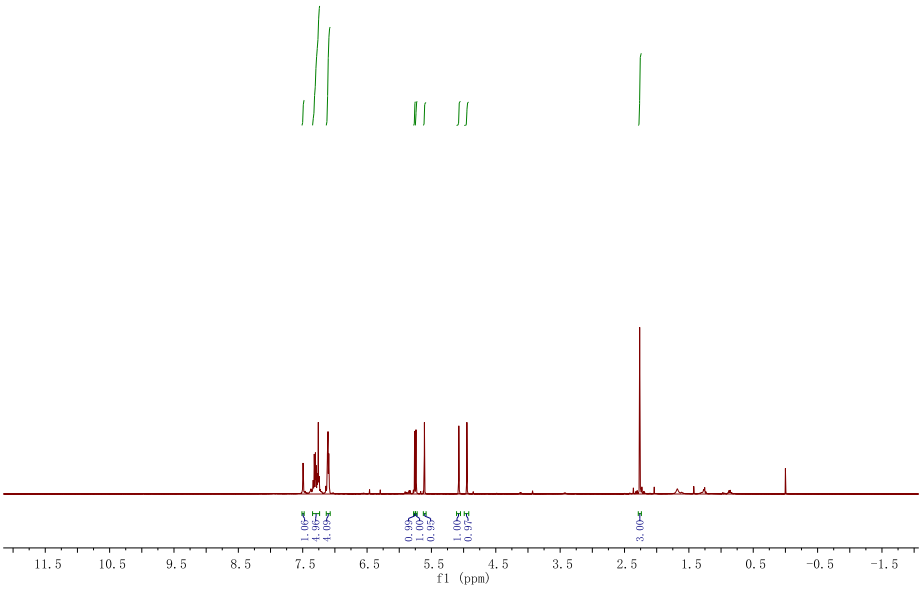


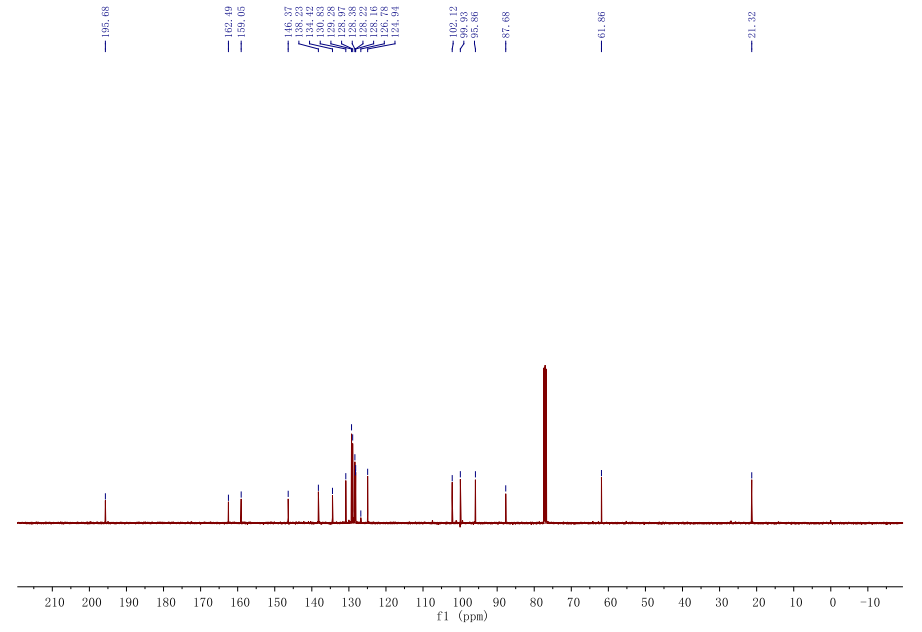




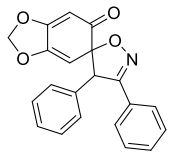
4'-Phenyl-3'-(*m*-tolyl)-4'*H*,6*H*-spiro[benzo[*d*][1,3]dioxole-5,5'-isoxazol]-6-one (4b)

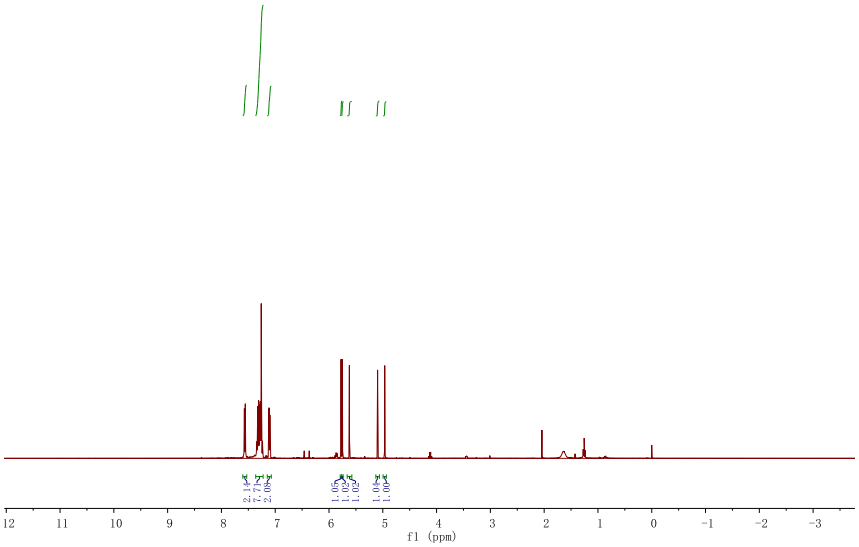


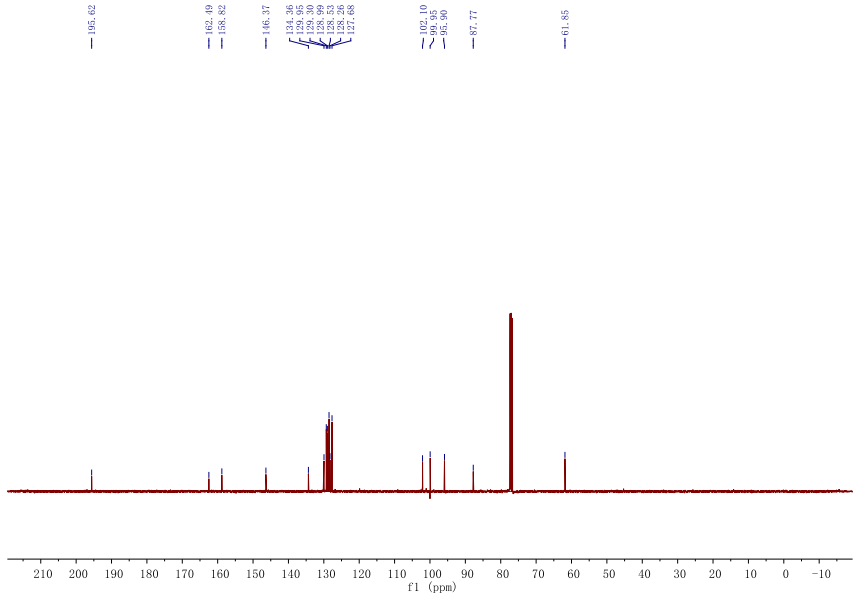




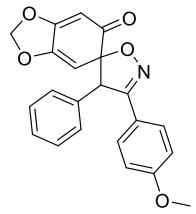
3',4'-Diphenyl-4'*H*,6*H*-spiro[benzo[*d*][1,3]dioxole-5,5'-isoxazol]-6-one (4c)

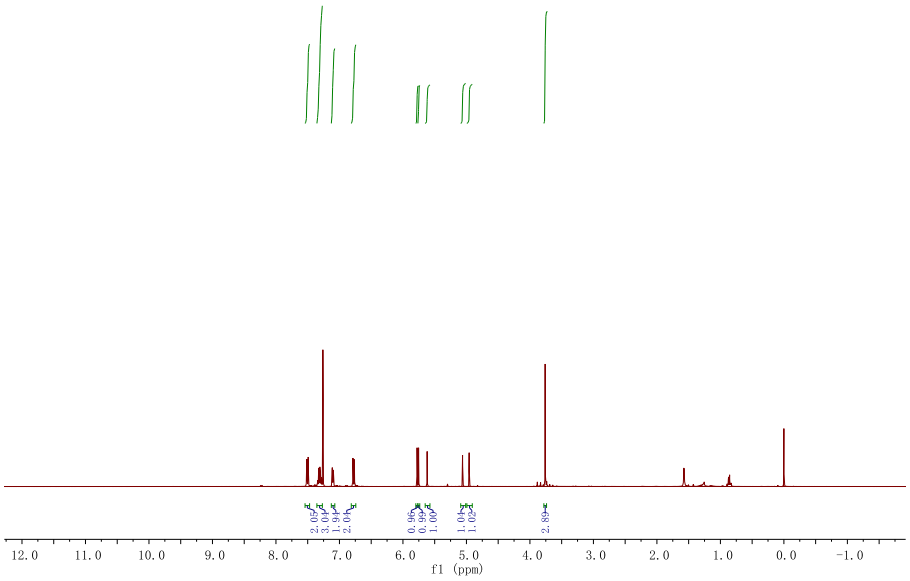


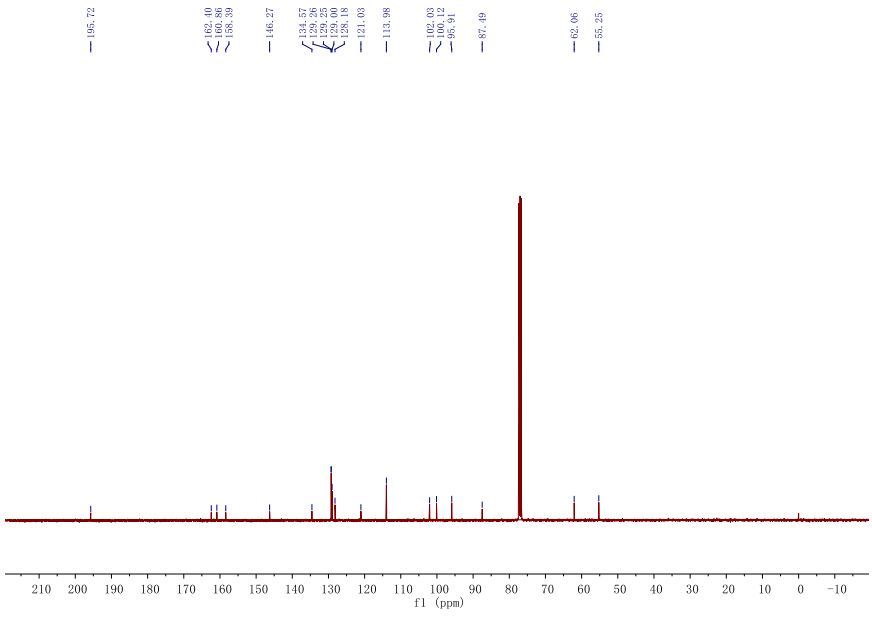




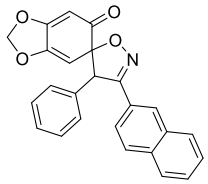
3'-(4-Methoxyphenyl)-4'-phenyl-4'*H*,6*H*-spiro[benzo[*d*][1,3]dioxole-5,5'-isoxazol]-6-one (4d)

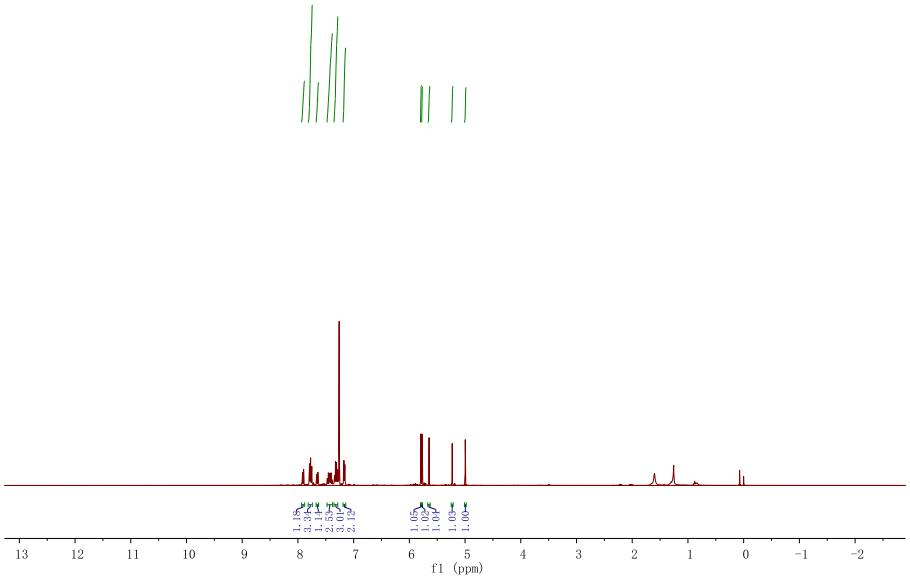


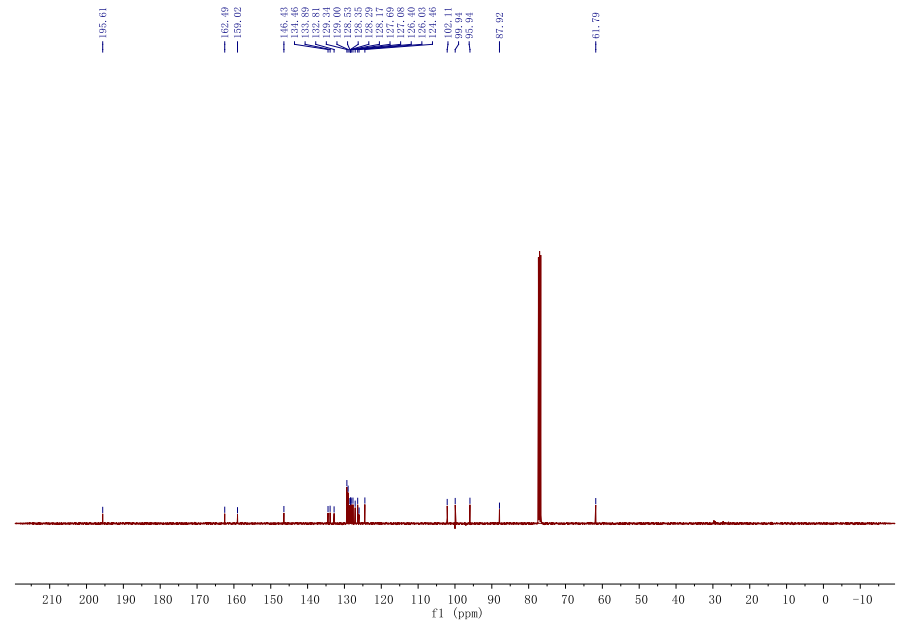




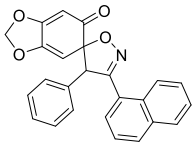
3'-(Naphthalen-2-yl)-4'-phenyl-4'*H*,6*H*-spiro[benzo[*d*][1,3]dioxole-5,5'-isoxazol]-6-one (4e)

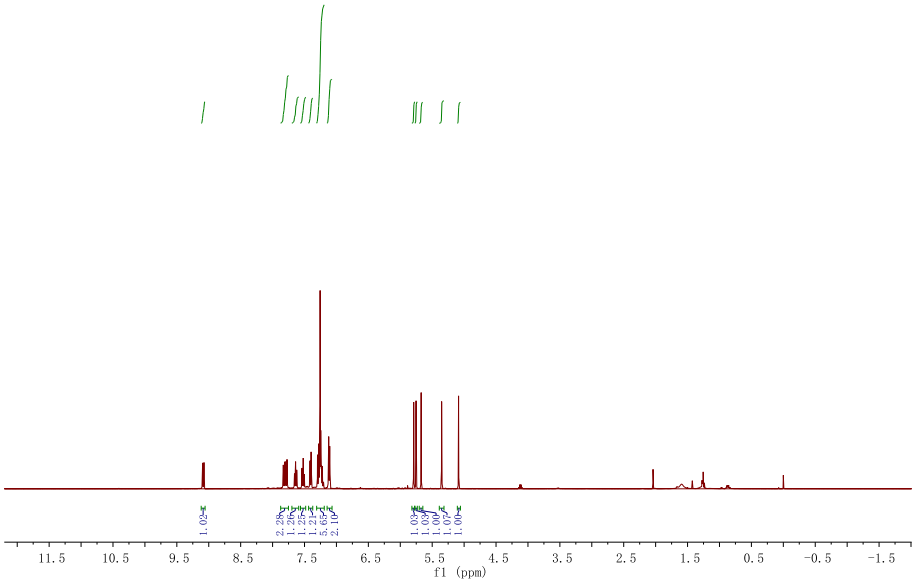


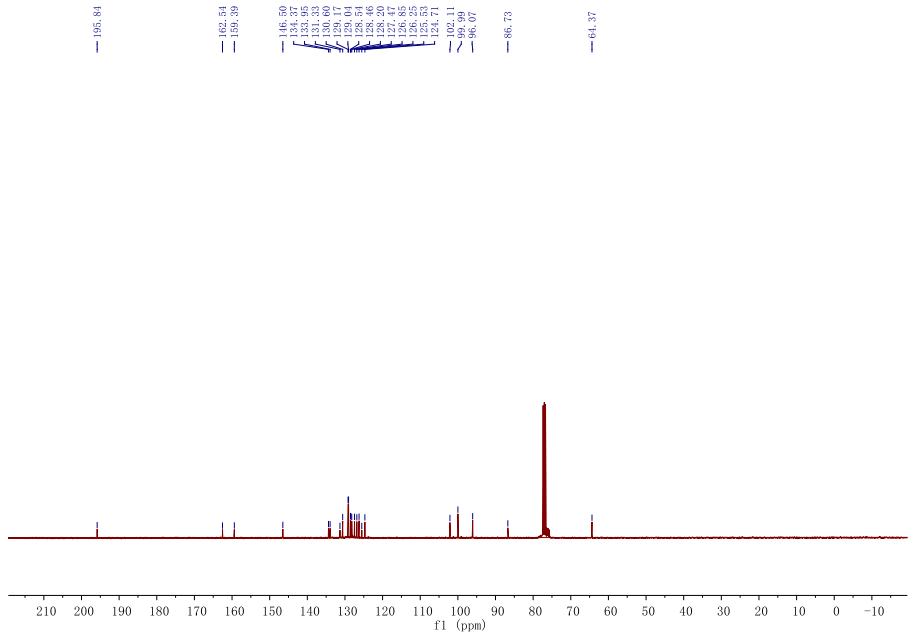




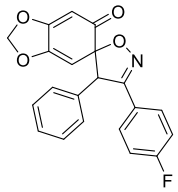
3'-(Naphthalen-1-yl)-4'-phenyl-4'*H*,6*H*-spiro[benzo[*d*][1,3]dioxole-5,5'-isoxazol]-6-one (4f)

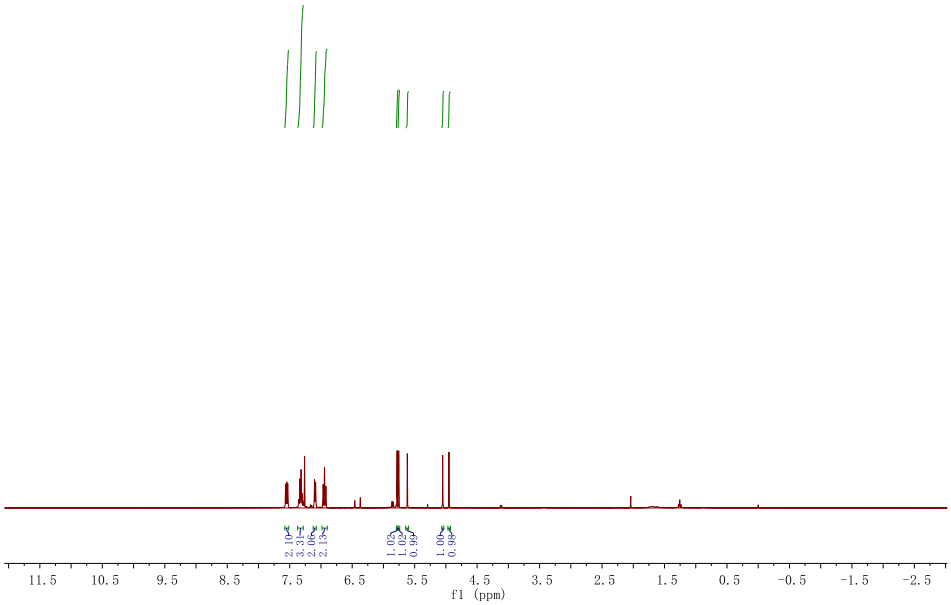


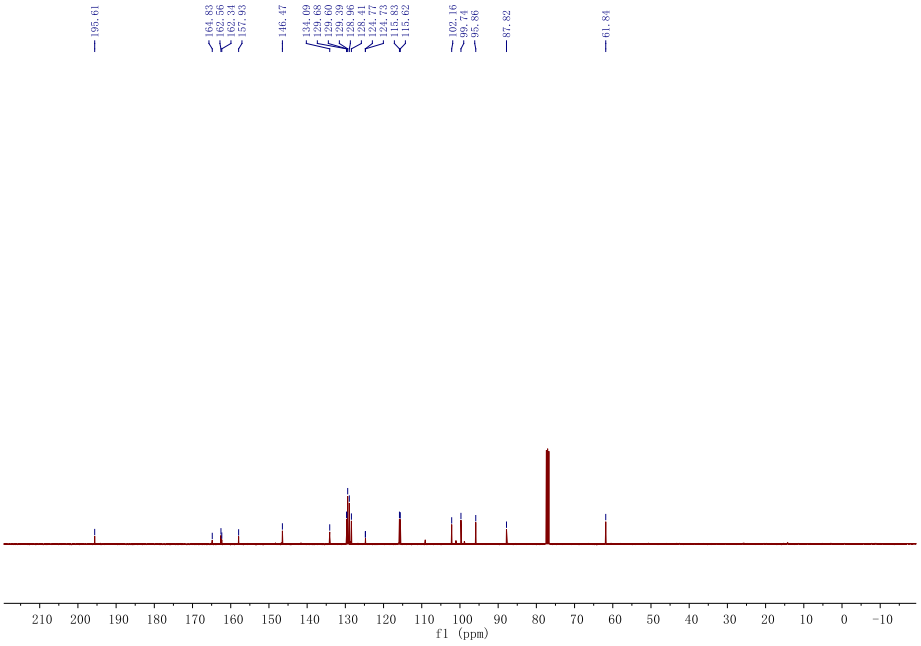




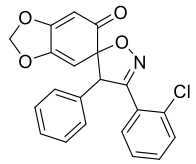
3'-(4-Fluorophenyl)-4'-phenyl-4'*H*,6*H*-spiro[benzo[*d*][1,3]dioxole-5,5'-isoxazol]-6-one (4g)

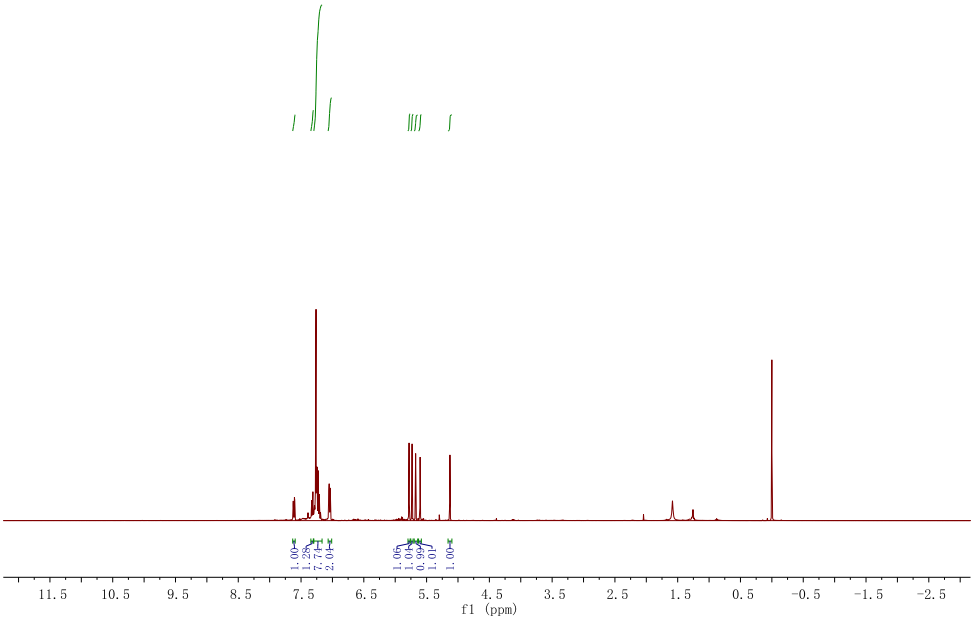


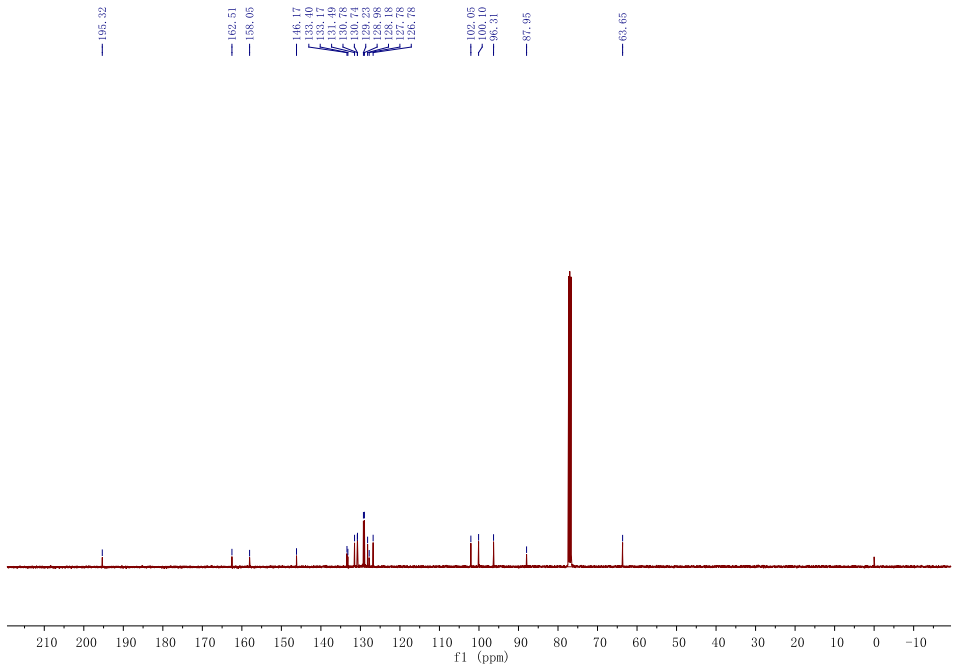




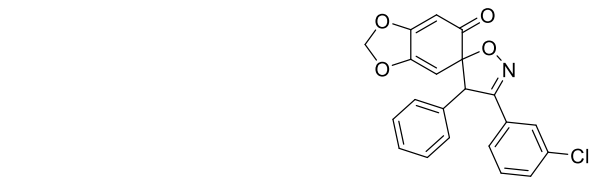
3'-(2-Chlorophenyl)-4'-phenyl-4'*H*,6*H*-spiro[benzo[*d*][1,3]dioxole-5,5'-isoxazol]-6-one (4h)

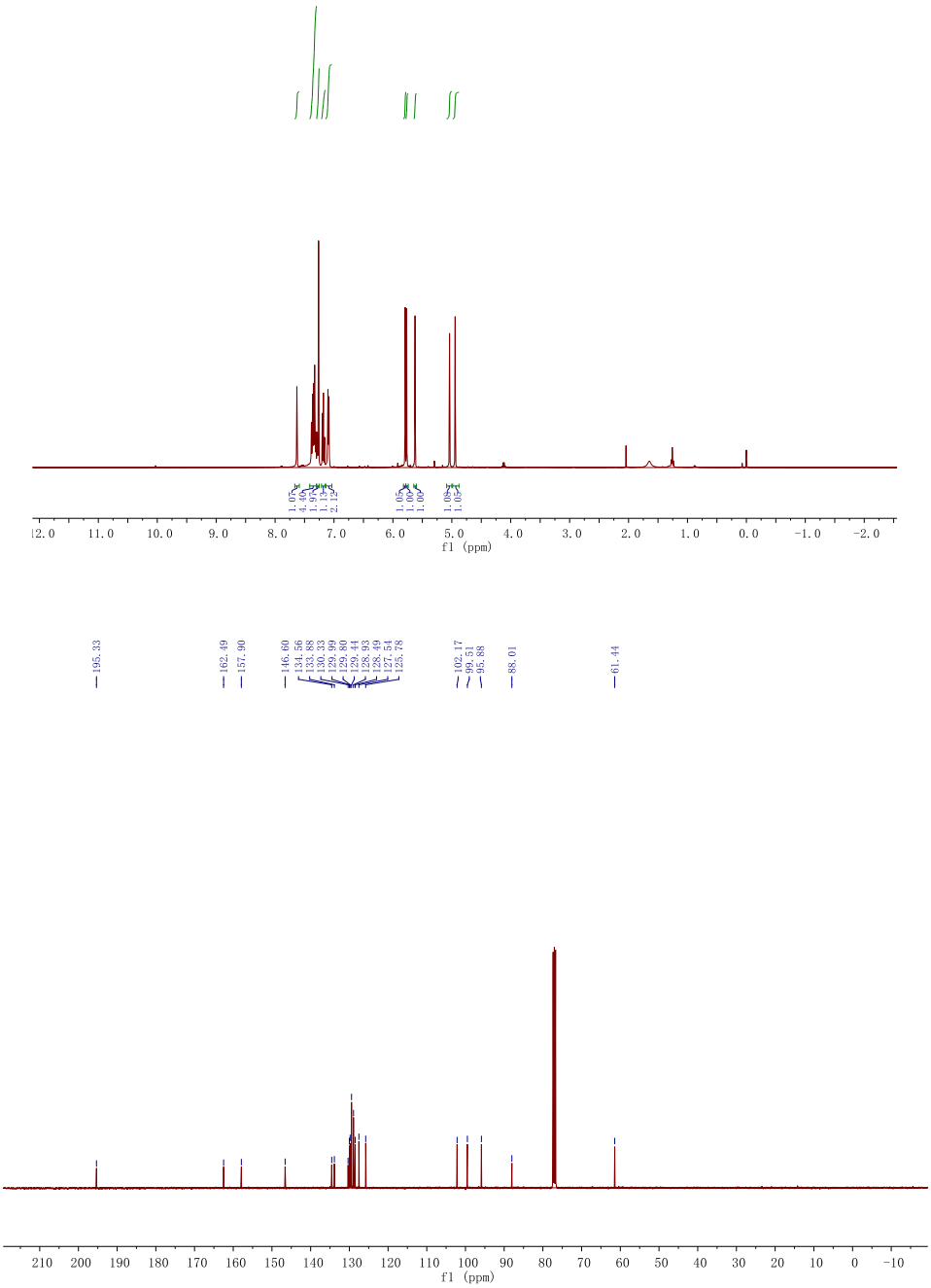




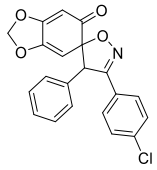


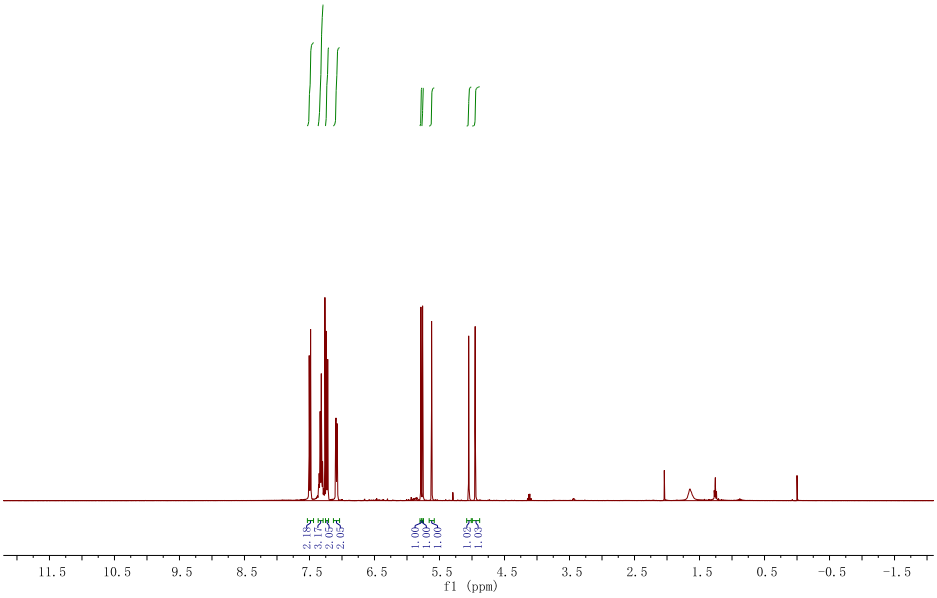
3'-(3-Chlorophenyl)-4'-phenyl-4'*H*,6*H*-spiro[benzo[*d*][1,3]dioxole-5,5'-isoxazol]-6-one(4i)

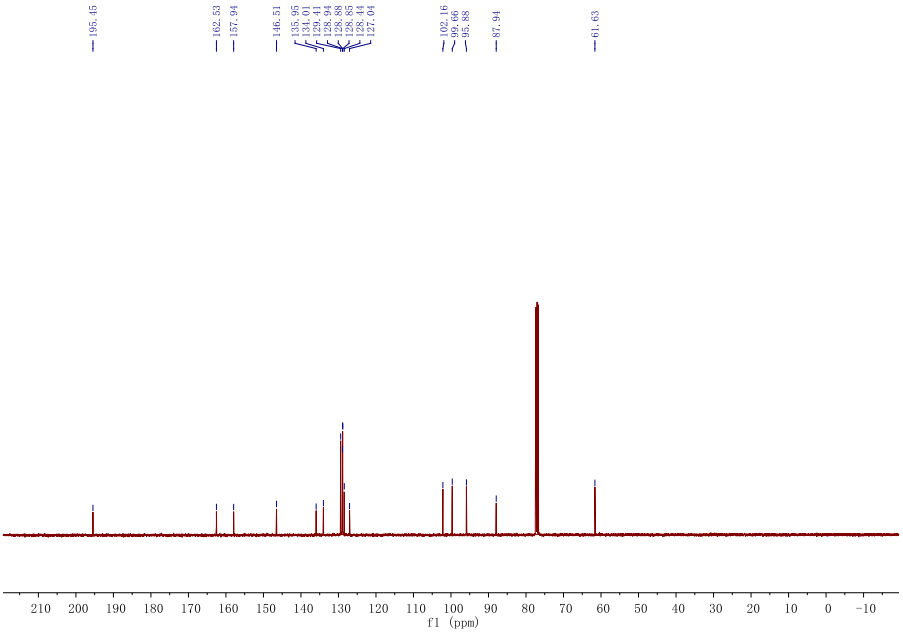




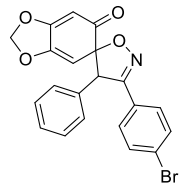
3'-(4-Chlorophenyl)-4'-phenyl-4'*H*,6*H*-spiro[benzo[*d*][1,3]dioxole-5,5'-isoxazol]-6-one (4j)

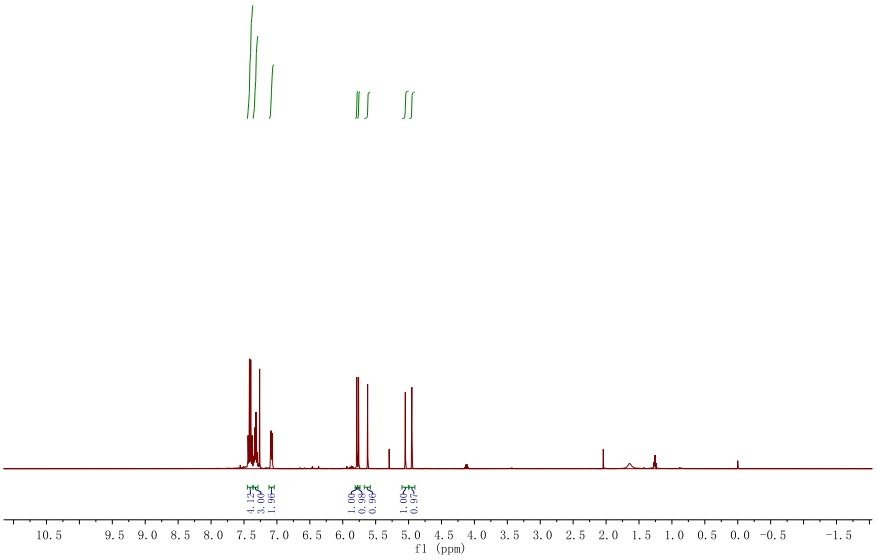


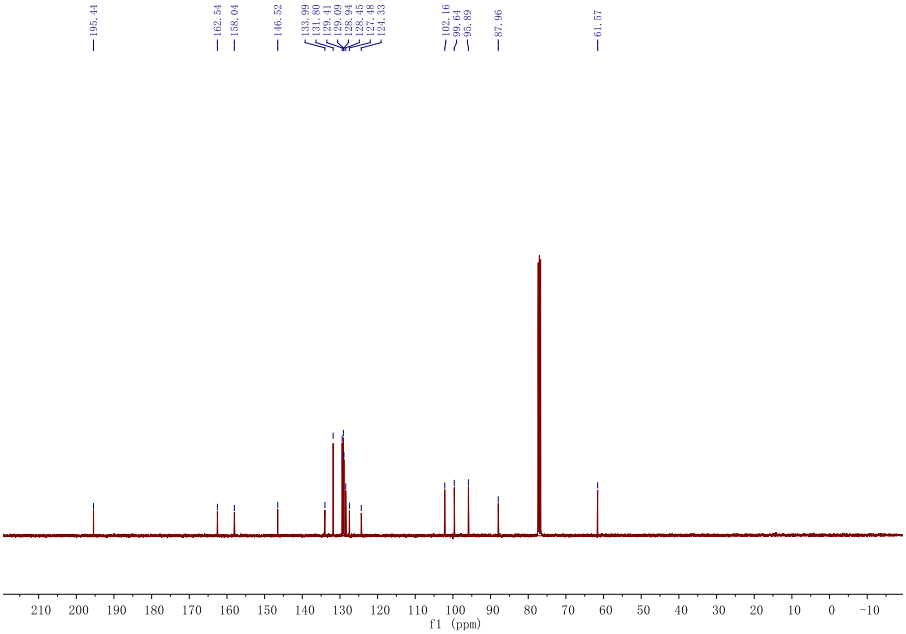




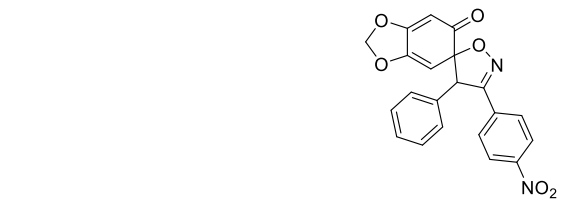
3'-(4-Bromophenyl)-4'-phenyl-4'*H*,6*H*-spiro[benzo[*d*][1,3]dioxole-5,5'-isoxazol]-6-one (4k)

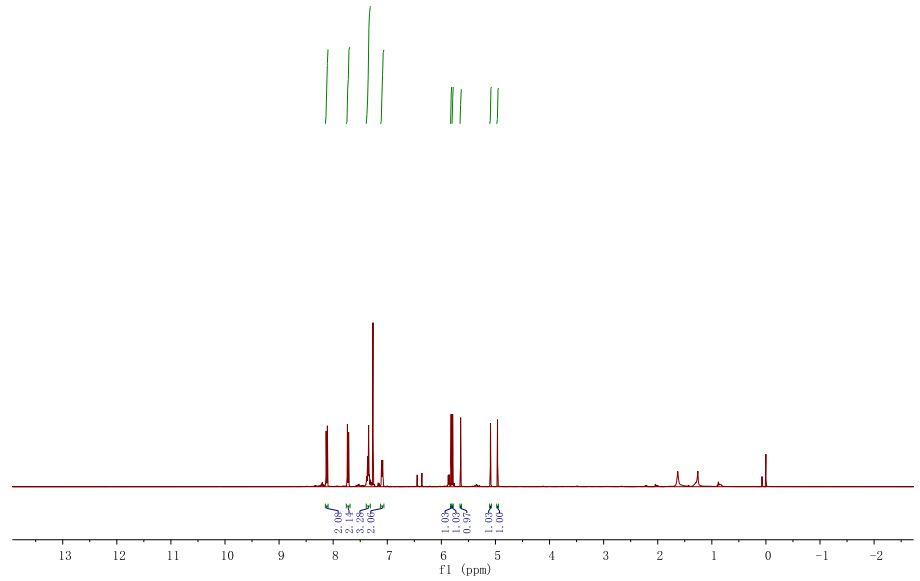


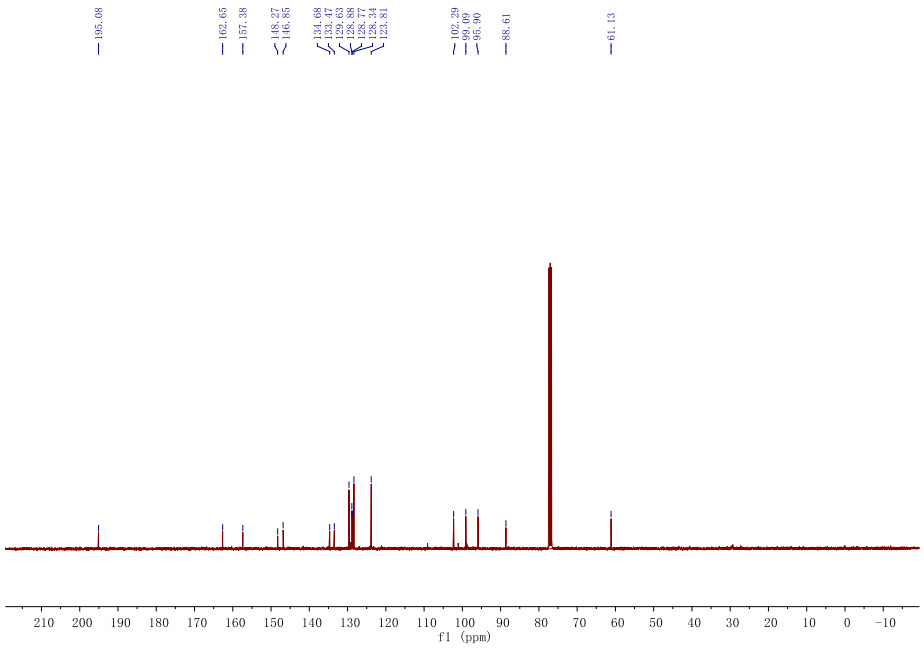




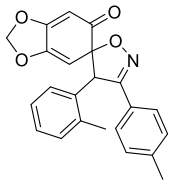
3'-(4-Nitrophenyl)-4'-phenyl-4'*H*,6*H*-spiro[benzo[*d*][1,3]dioxole-5,5'-isoxazol]-6-one (4l)

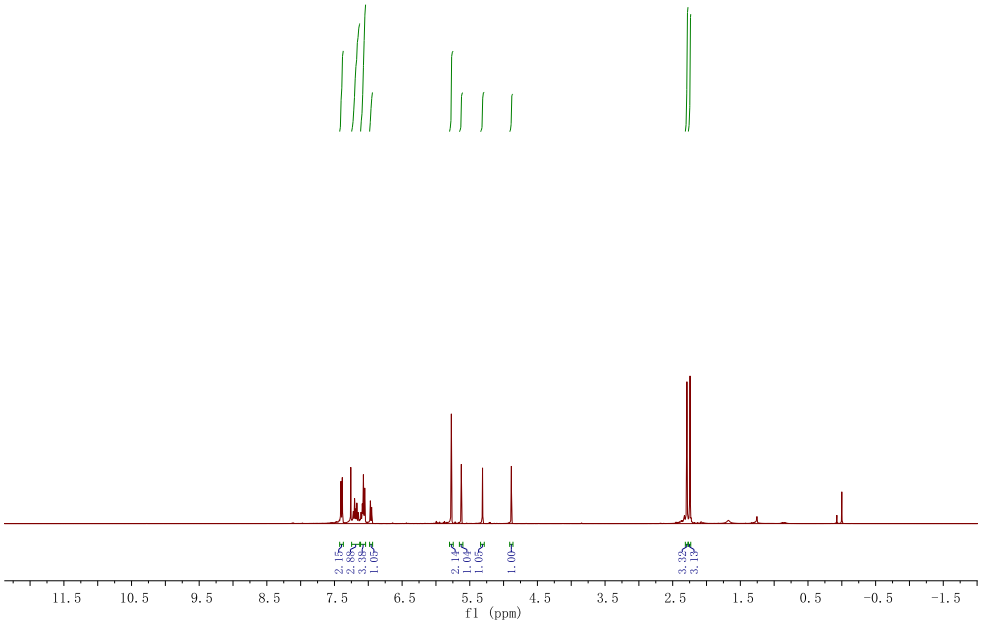


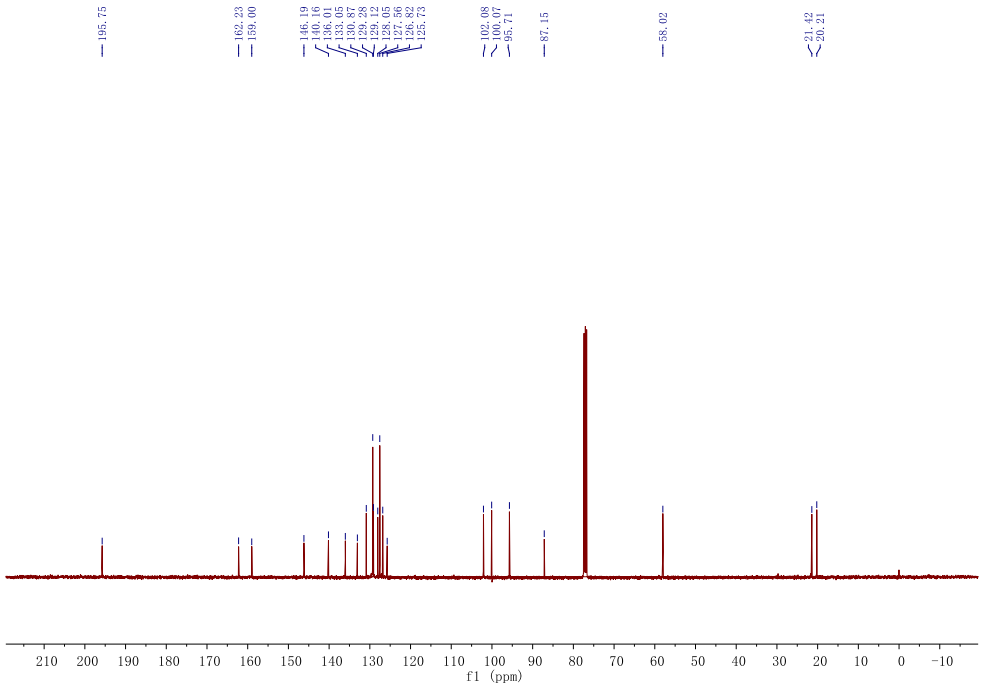




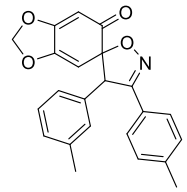
4'-(*o*-Tolyl)-3'-(*p*-tolyl)-4'*H*,6*H*-spiro[benzo[*d*][1,3]dioxole-5,5'-isoxazol]-6-one (4m)

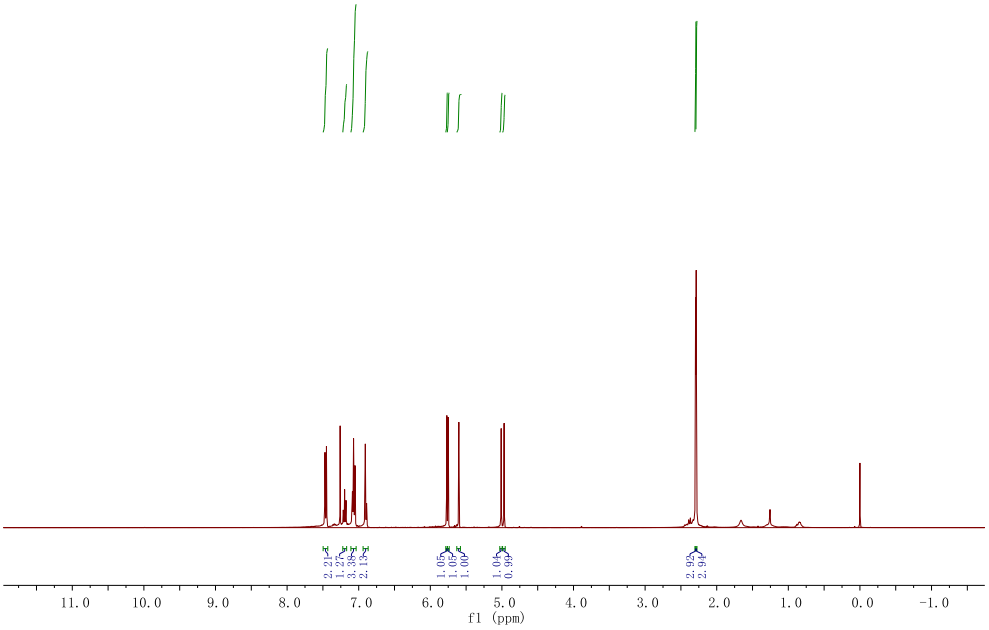


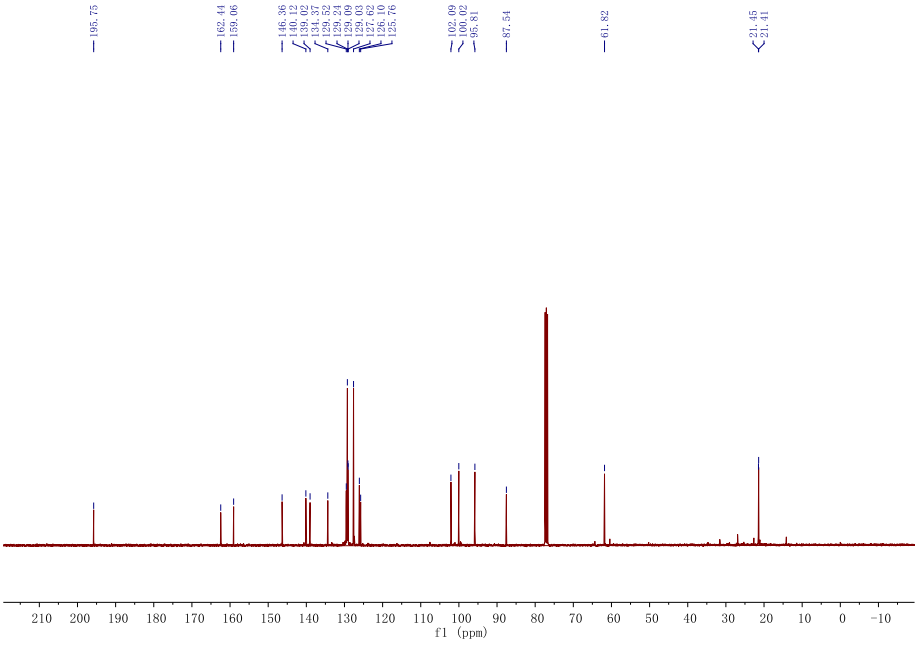




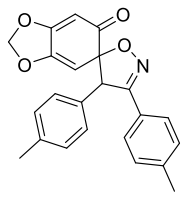
4'-(*m*-Tolyl)-3'-(*p*-tolyl)-4'*H*,6*H*-spiro[benzo[*d*][1,3]dioxole-5,5'-isoxazol]-6-one (4n)

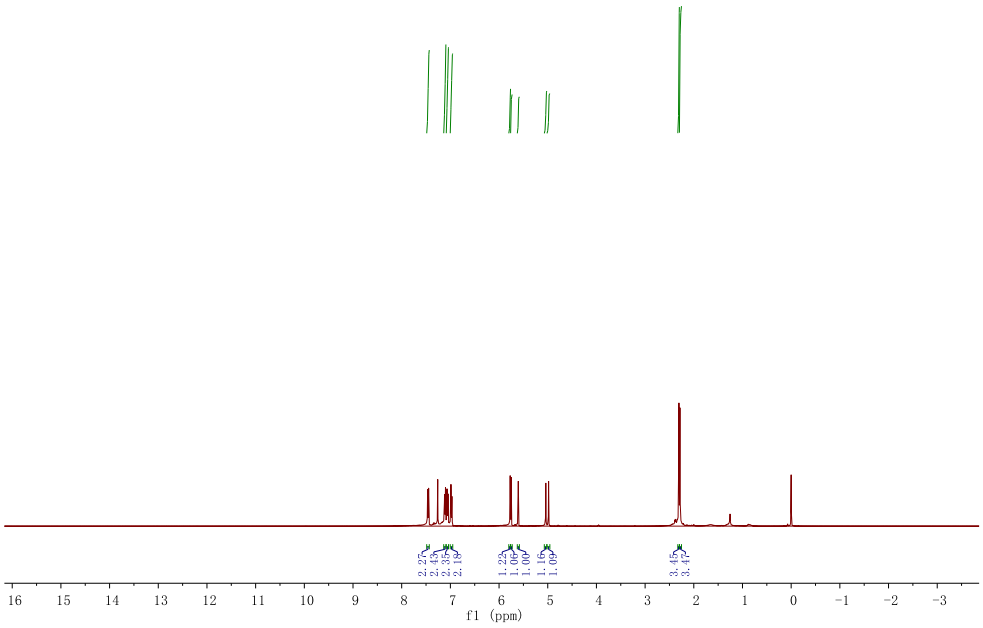


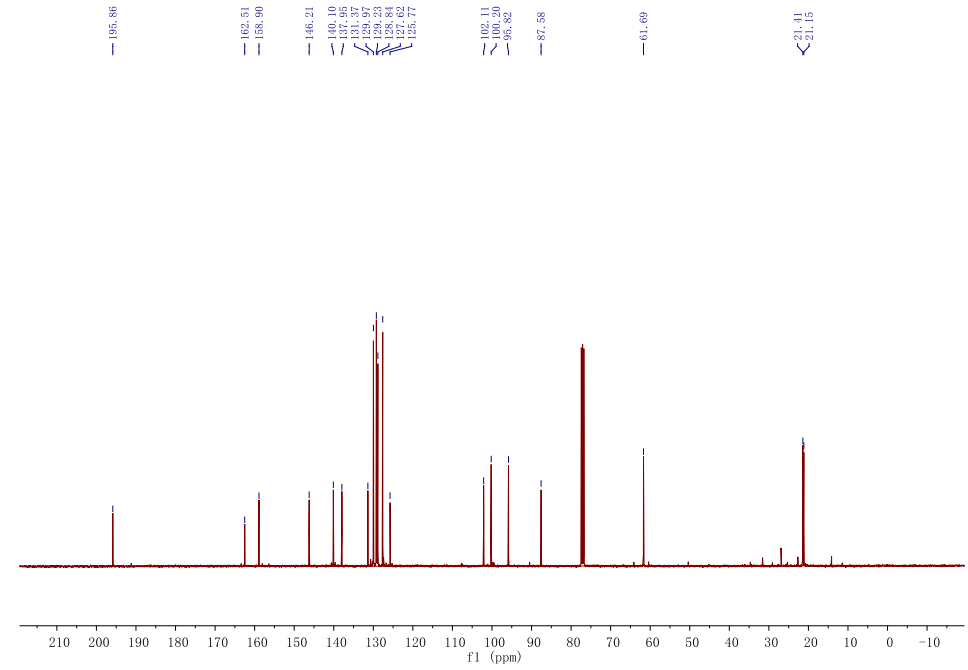




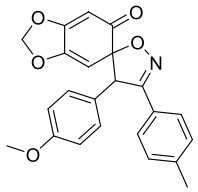
3',4'-di-*p*-Tolyl-4'*H*,6*H*-spiro[benzo[*d*][1,3]dioxole-5,5'-isoxazol]-6-one (4o)

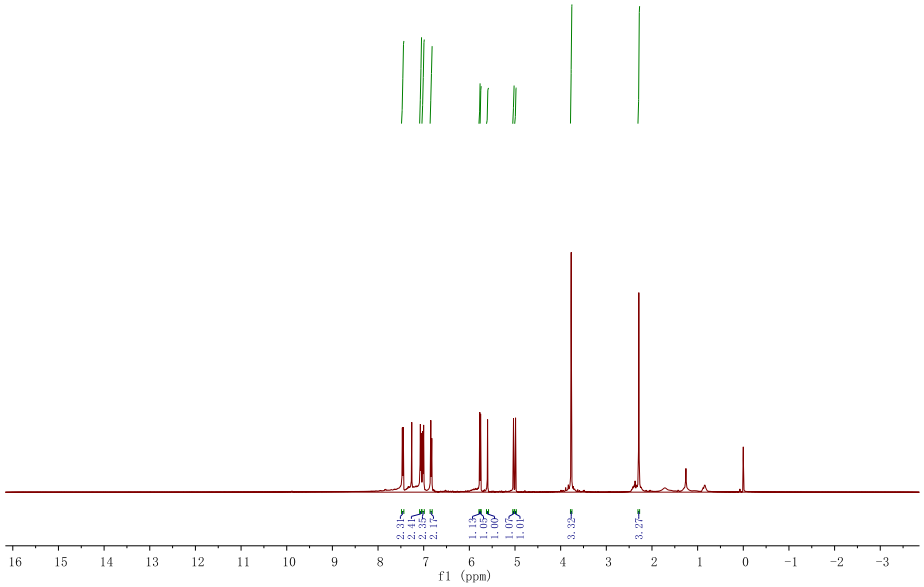


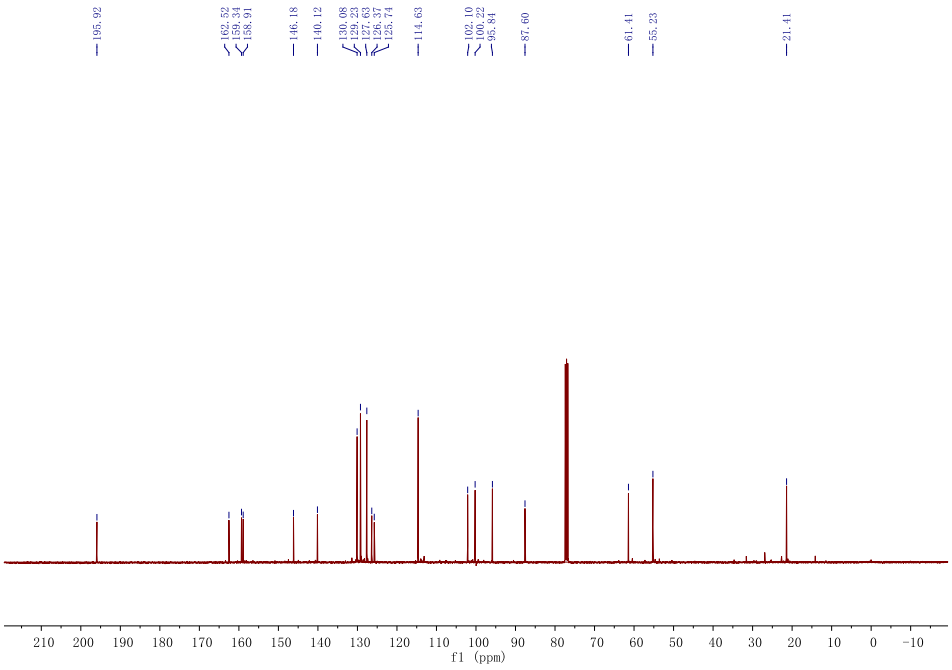




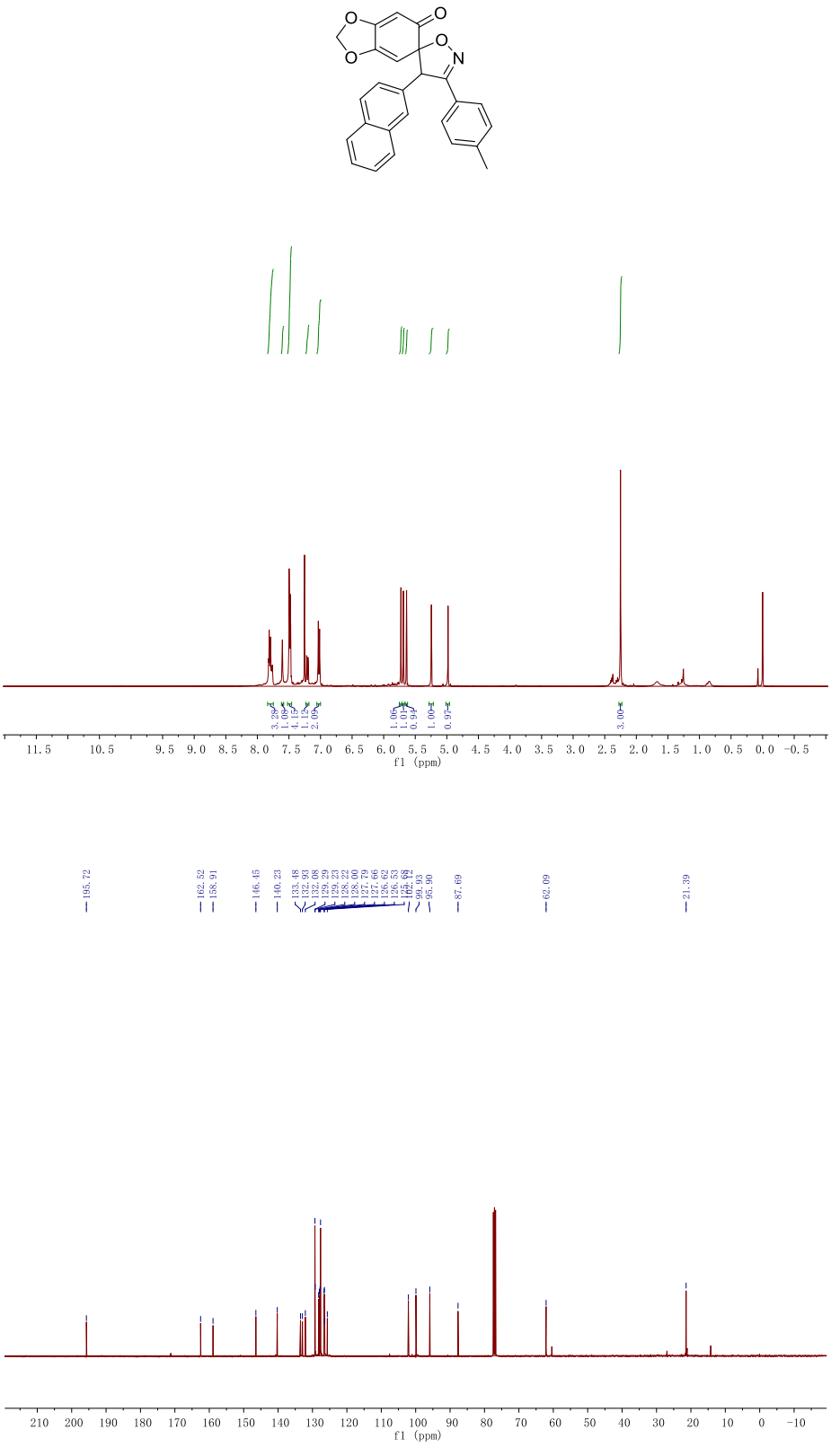
4'-(4-Methoxyphenyl)-3'-(*p*-tolyl)-4'*H*,6*H*-spiro[benzo[*d*][1,3]dioxole-5,5'-isoxazol]-6-one (4p)



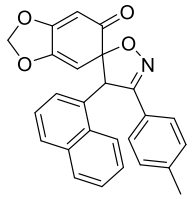


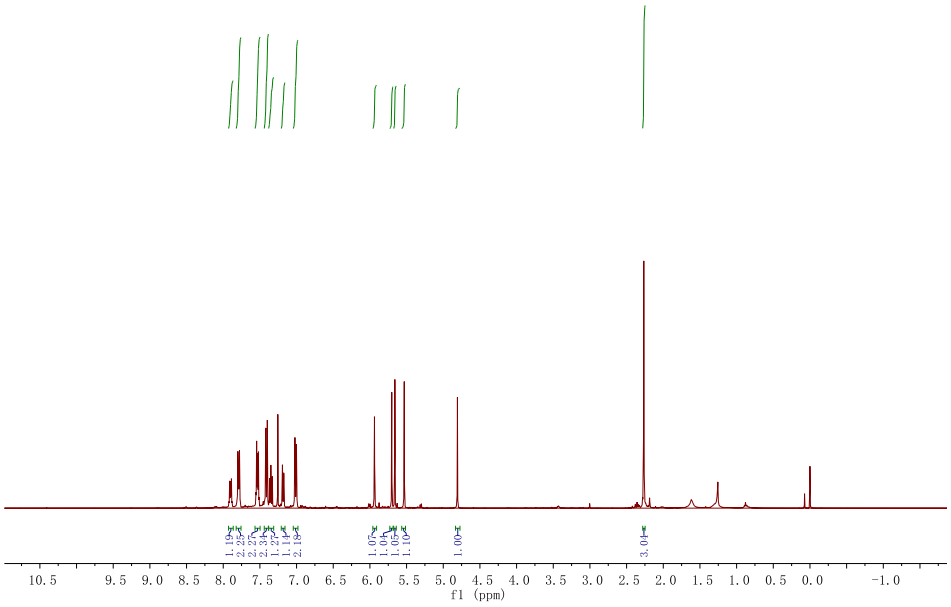


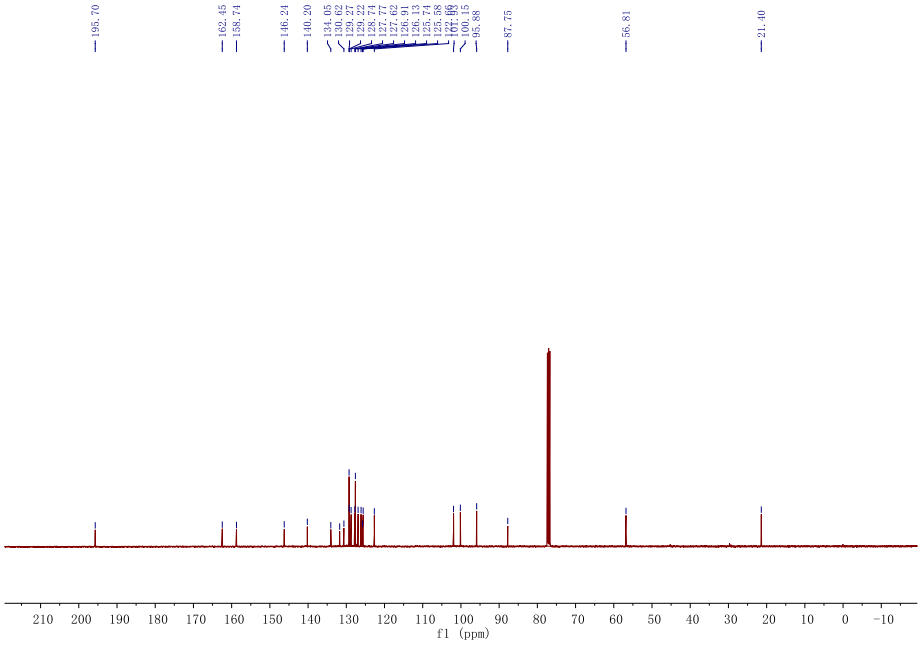
4'-(Naphthalen-2-yl)-3'-(*p*-tolyl)-4'H,6*H*-spiro[benzo[*d*][1,3]dioxole-5,5'-isoxazol]-6-one (4q)



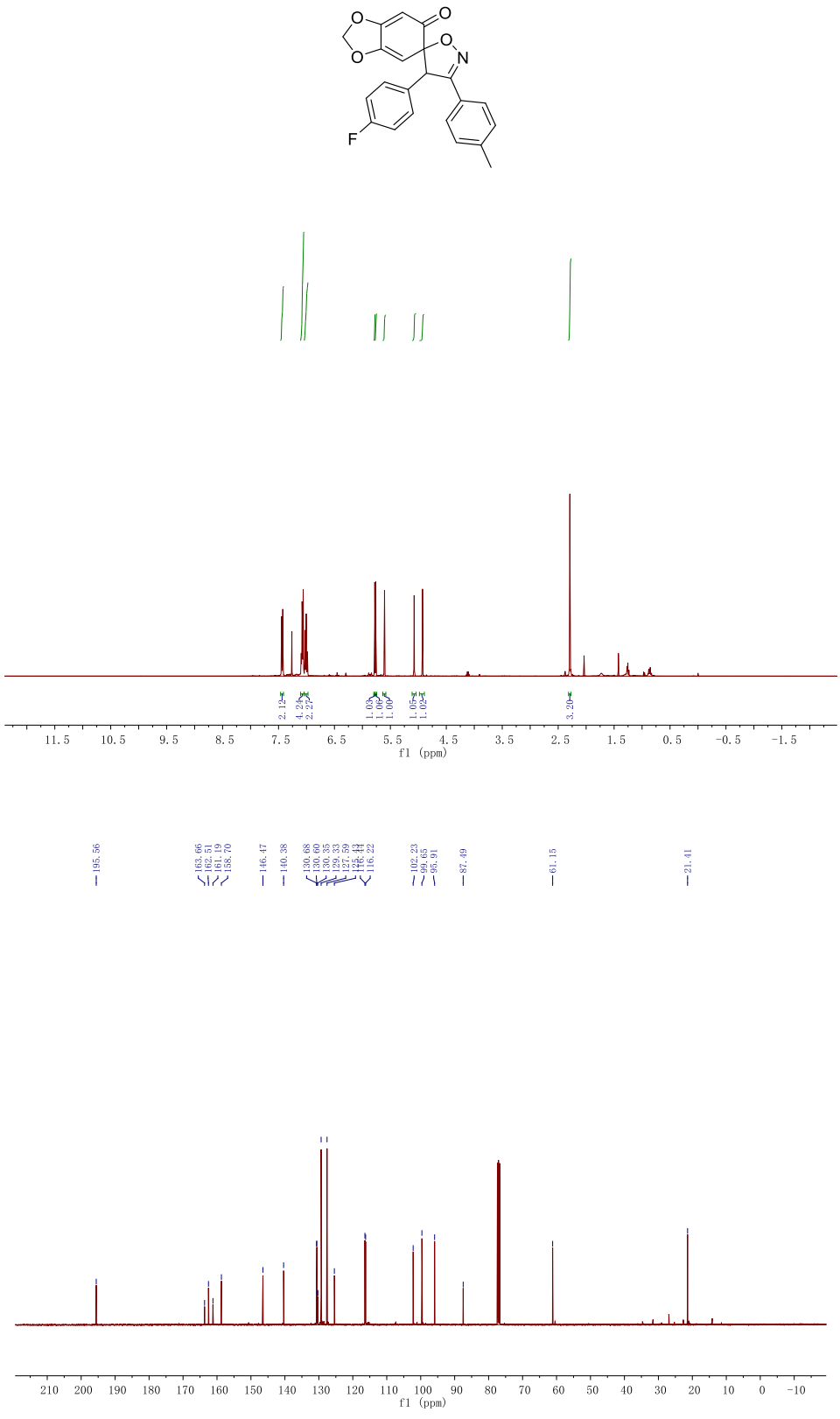
4'-(Naphthalen-1-yl)-3'-(*p*-tolyl)-4'*H*,6*H*-spiro[benzo[*d*][1,3]dioxole-5,5'-isoxazol]-6-one (4r)



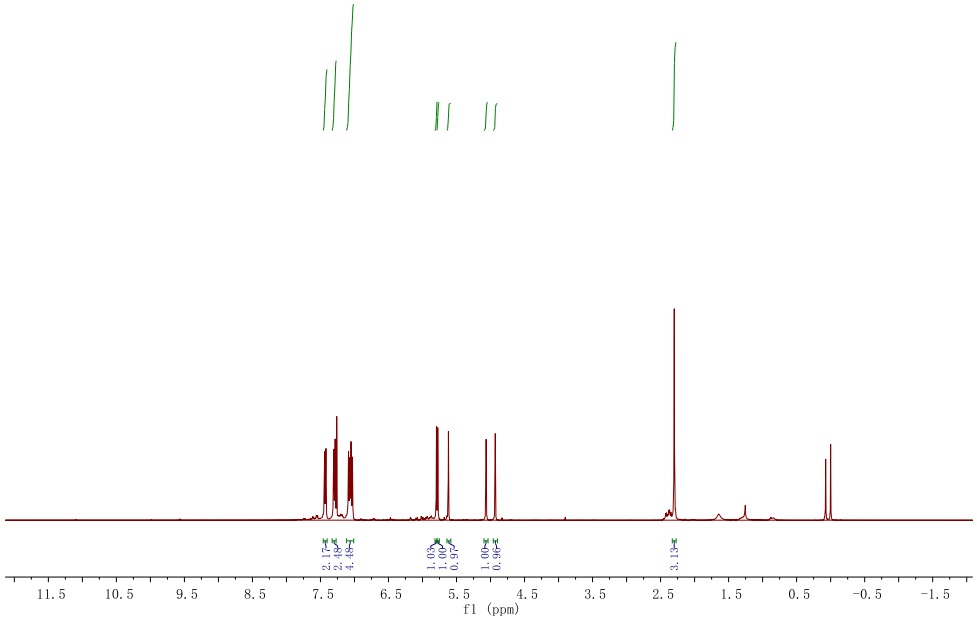


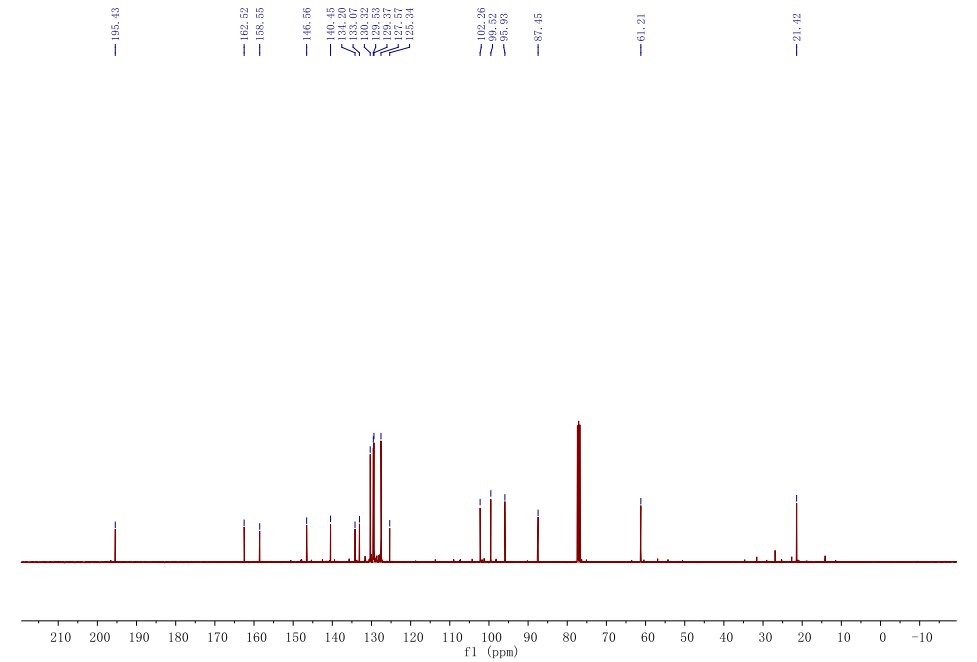


4'-(4-Fluorophenyl)-3'-(*p*-tolyl)-4'*H*,6*H*-spiro[benzo[*d*][1,3]dioxole-5,5'-isoxazol]-6-one (4s)

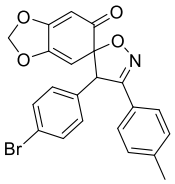


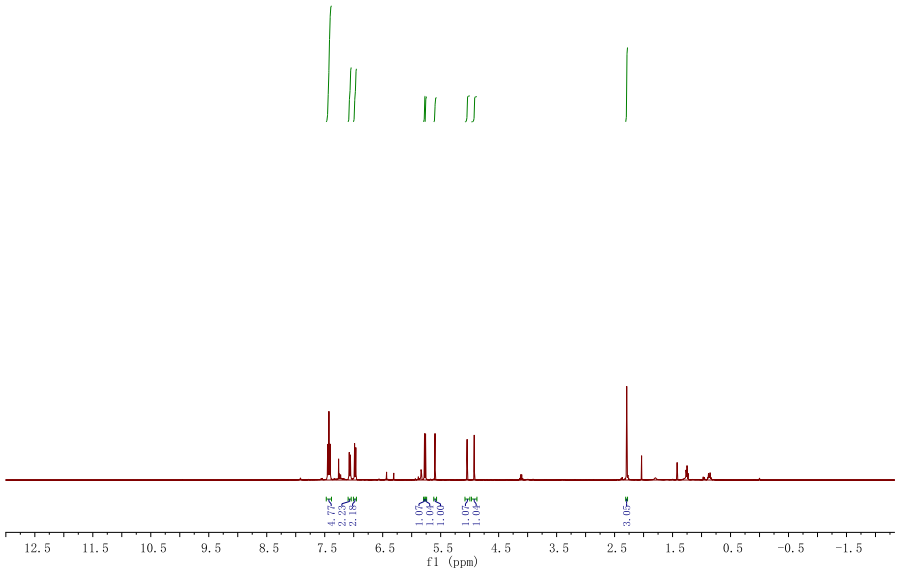
4'-(4-Chlorophenyl)-3'-(*p*-tolyl)-4'*H*,6*H*-spiro[benzo[*d*][1,3]dioxole-5,5'-isoxazol]-6-one (4t)

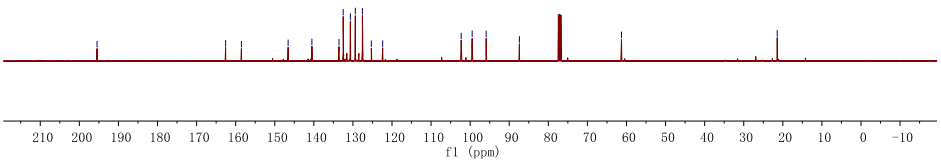




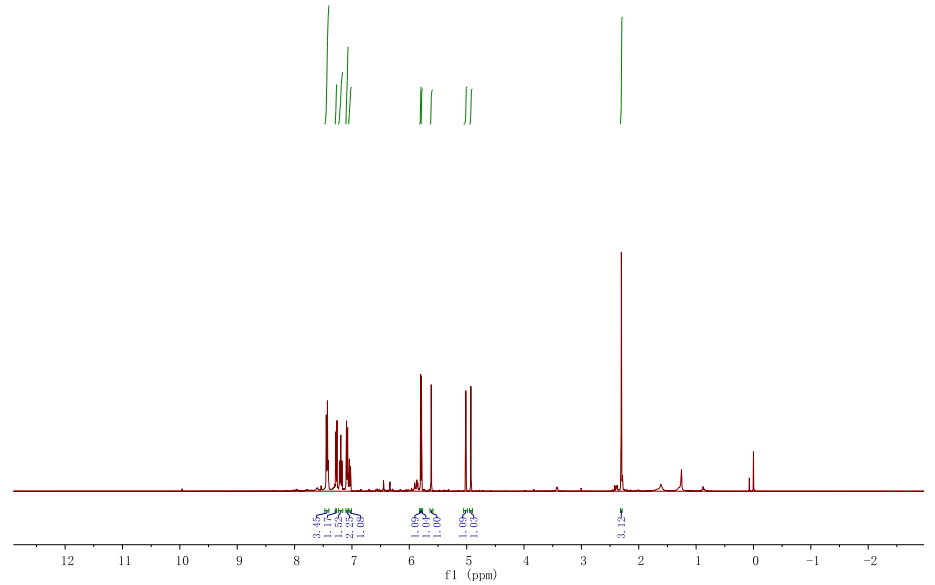
4'-(4-Bromophenyl)-3'-(*p*-tolyl)-4'*H*,6*H*-spiro[benzo[*d*][1,3]dioxole-5,5'-isoxazol]-6-one (4u)

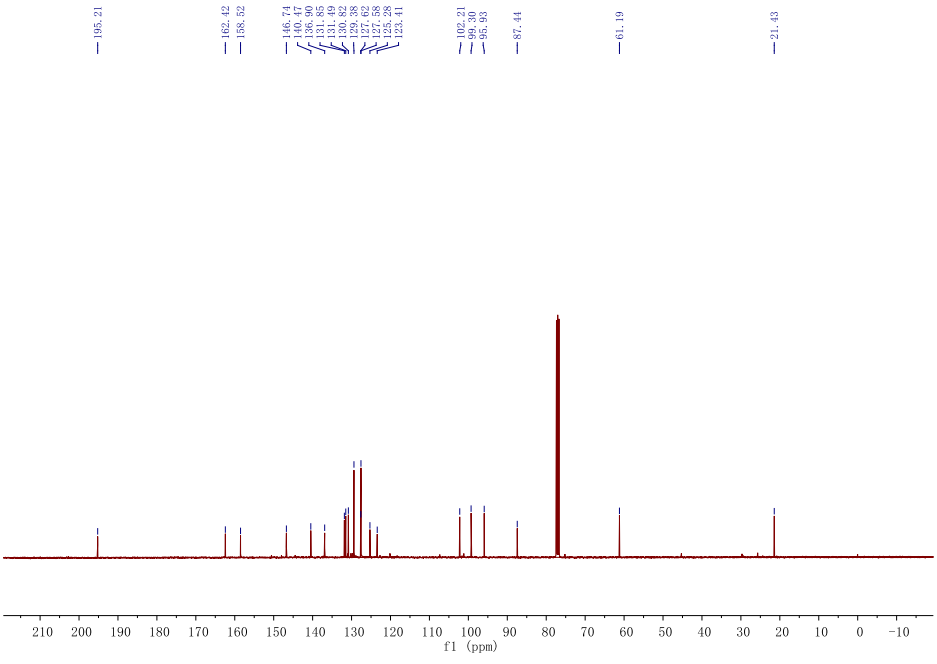




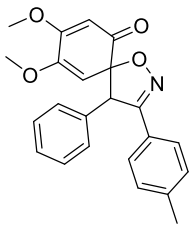


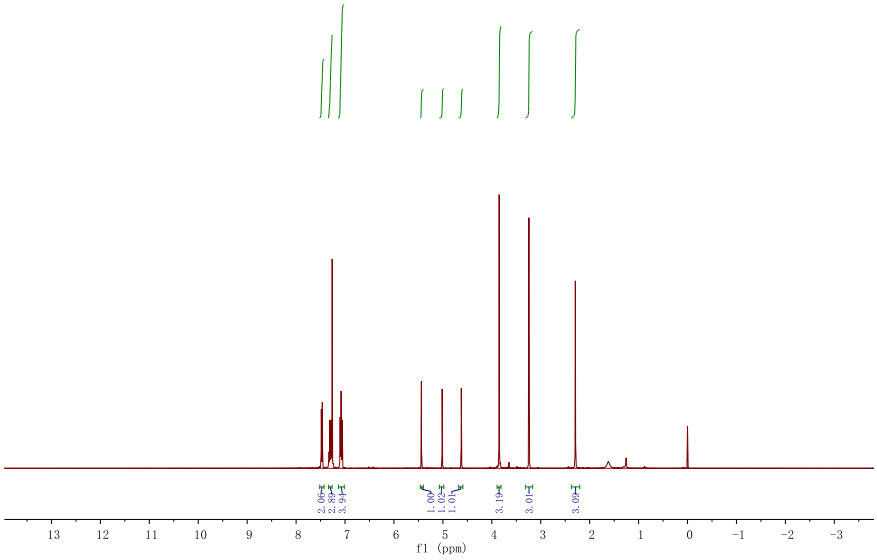
4'-(3-Bromophenyl)-3'-(*p*-tolyl)-4'*H*,6*H*-spiro[benzo[*d*][1,3]dioxole-5,5'-isoxazol]-6-one (4v)

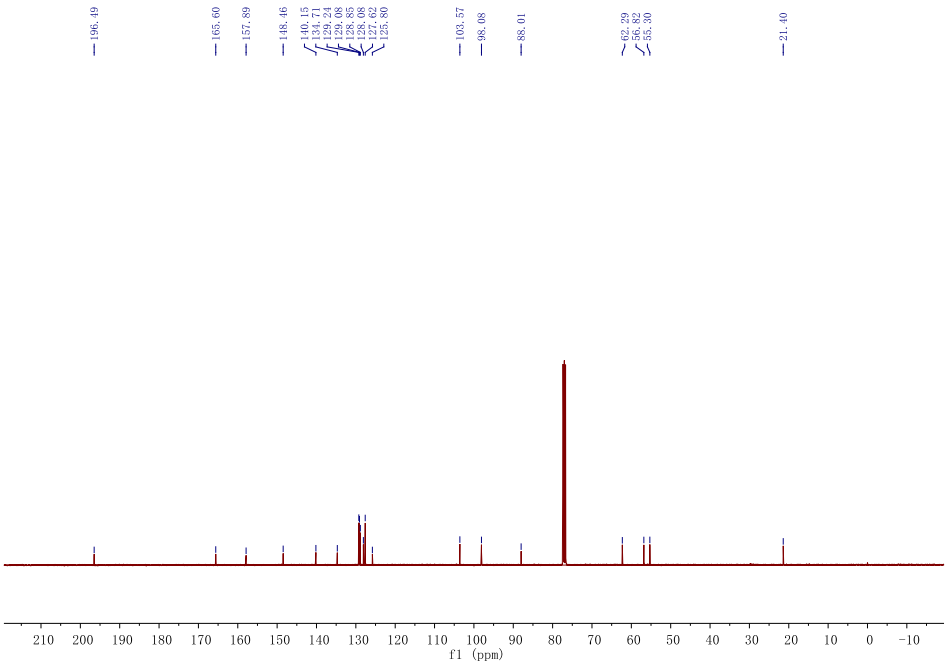




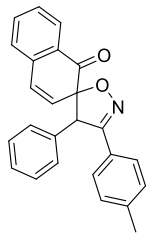
8,9-Dimethoxy-4-phenyl-3-(*p*-tolyl)-1-oxa-2-azaspiro[4.5]deca-2,7,9-trien-6-one (4w)

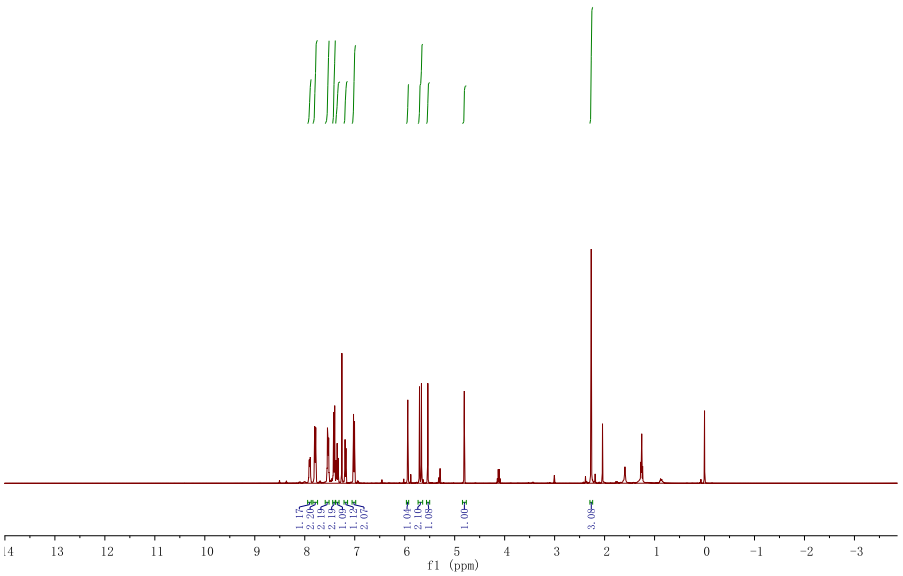


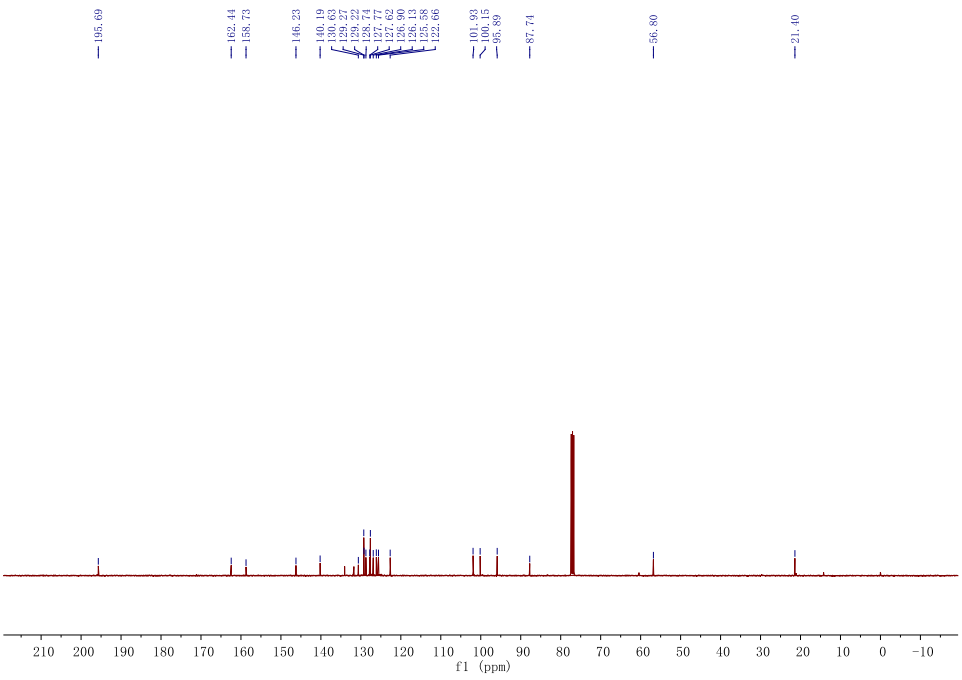




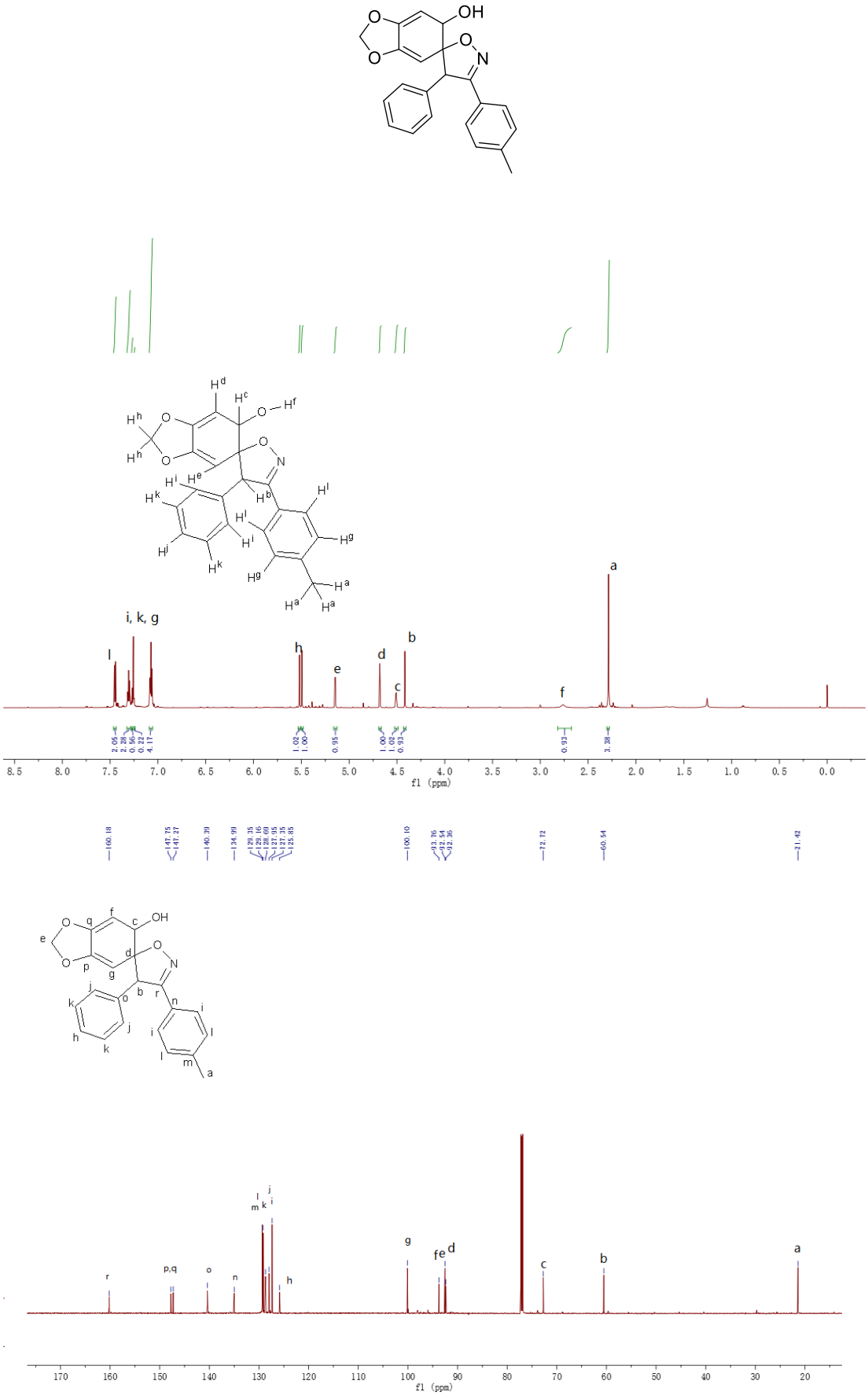
4-Phenyl-3-(*p*-tolyl)-1'*H*,4*H*-spiro[isoxazole-5,2'-naphthalen]-1'-one (4x)



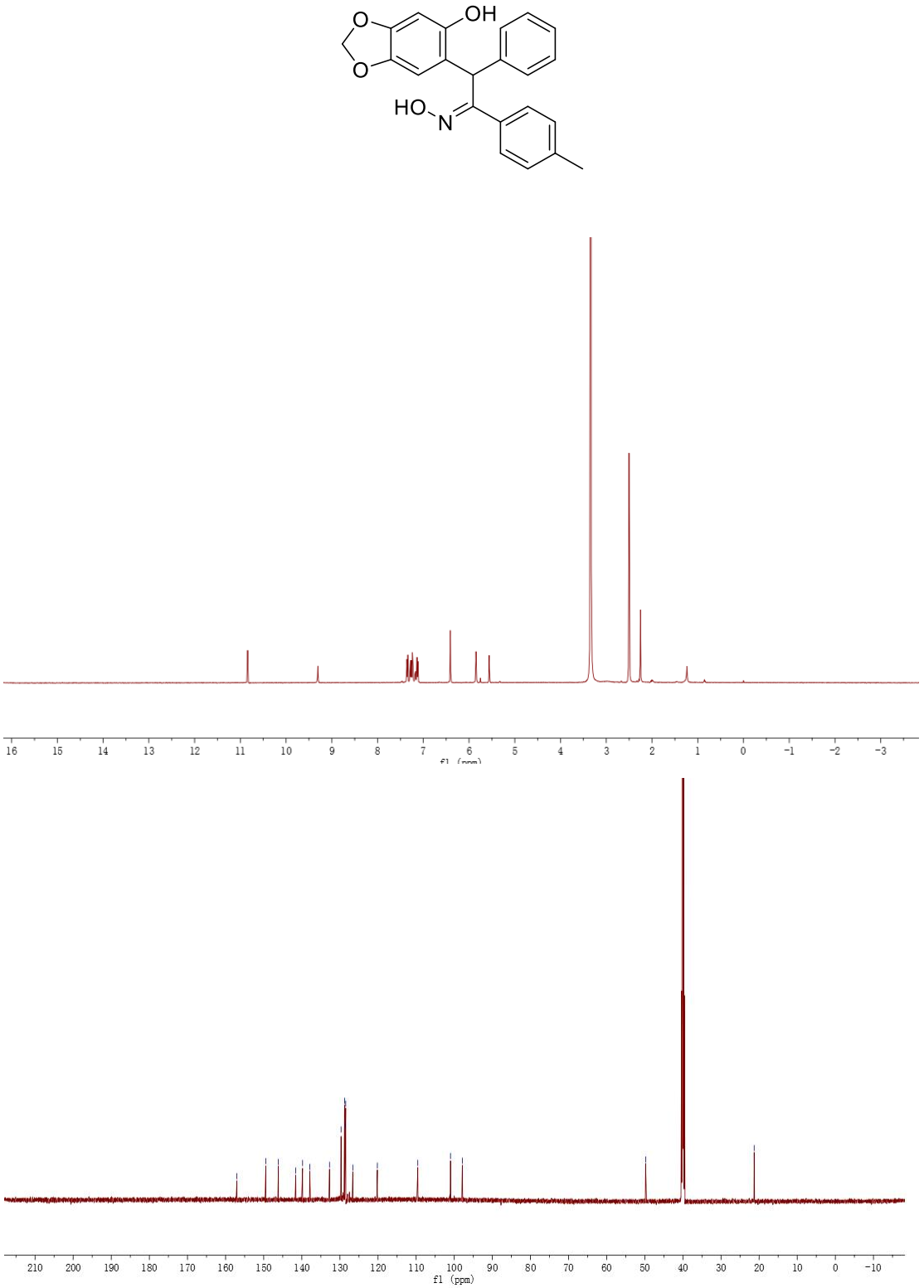




4'-Phenyl-3'-(*p*-tolyl)-6*H*-spiro[benzo[*d*][1,3]dioxole-5,5'-isoxazolidin]-6-one (8)

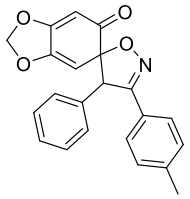


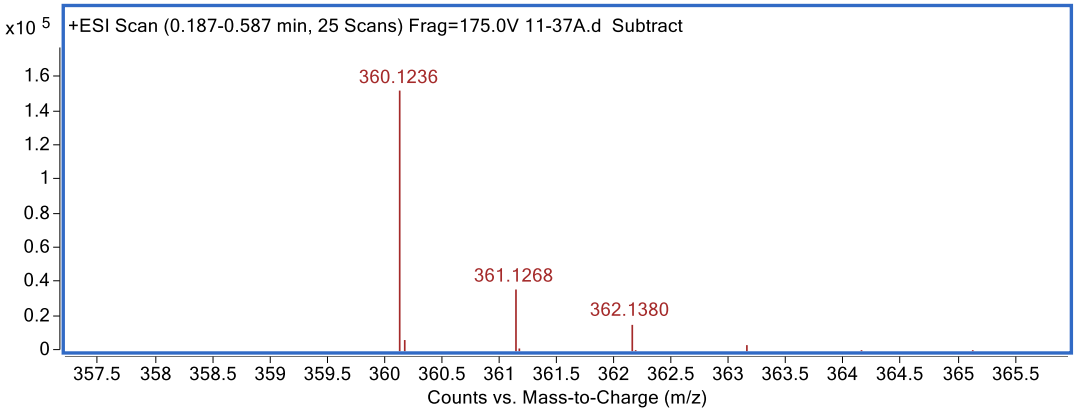
(*E*)-2-(6-Hydroxybenzo[*d*][1,3]dioxol-5-yl)-2-phenyl-1-(*p*-tolyl)ethan-1-one oxime (9):



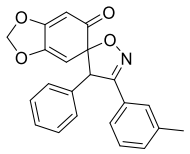
Copy of HRMS

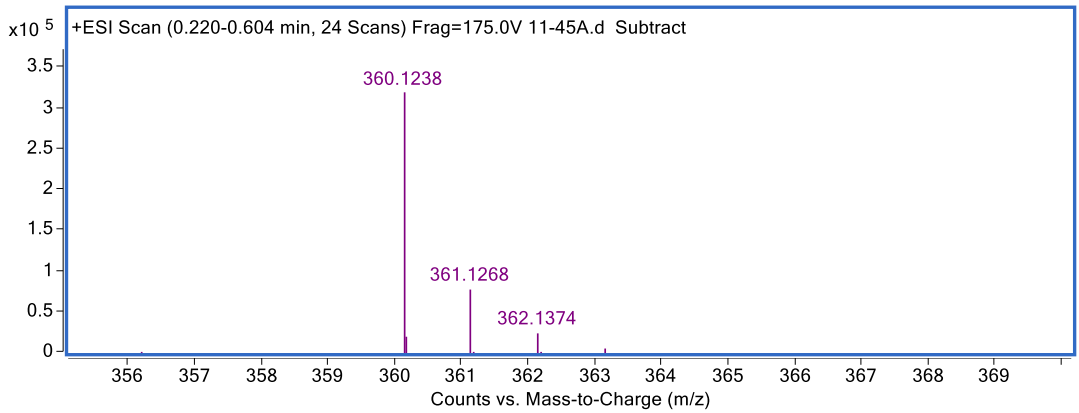
4'-Phenyl-3'-(*p*-tolyl)-4'*H*,6*H*-spiro[benzo[*d*][1,3]dioxole-5,5'-isoxazol]-6-one (4a)



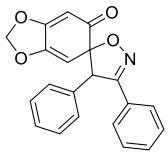


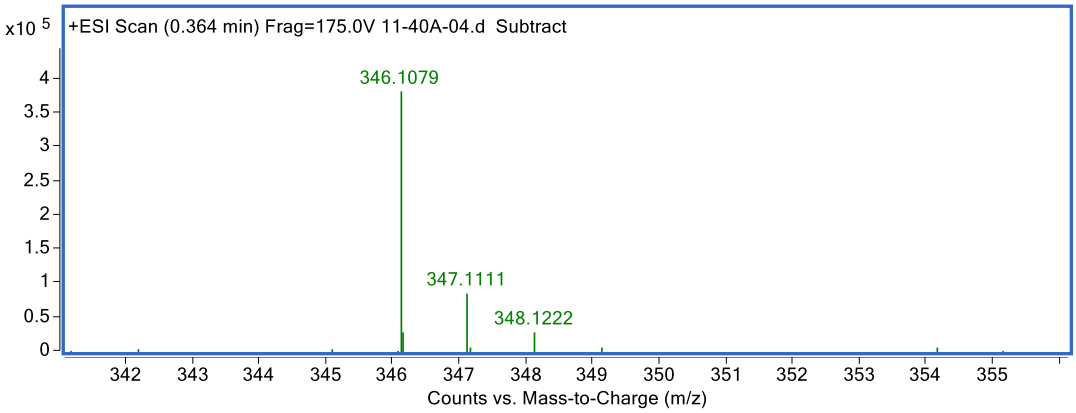
4'-Phenyl-3'-(*m*-tolyl)-4'*H*,6*H*-spiro[benzo[*d*][1,3]dioxole-5,5'-isoxazol]-6-one (4b)



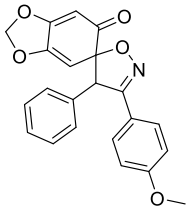


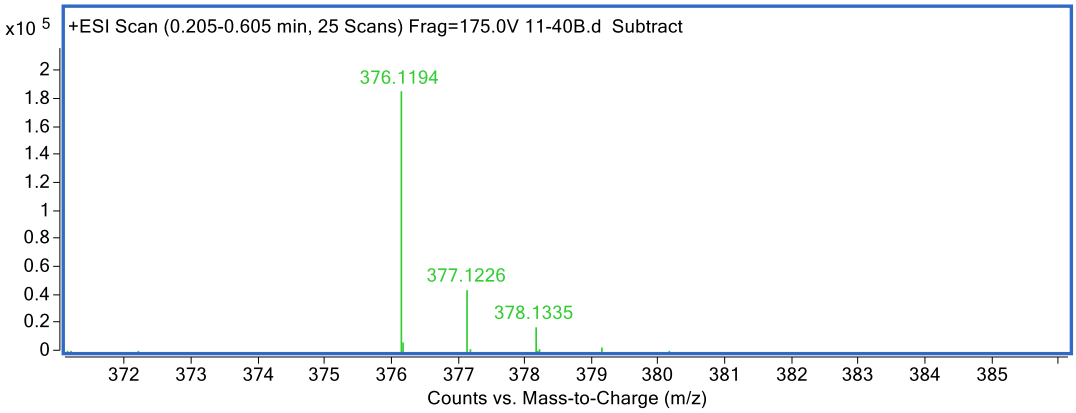
3',4'-Diphenyl-4'*H*,6*H*-spiro[benzo[*d*][1,3]dioxole-5,5'-isoxazol]-6-one (4c)



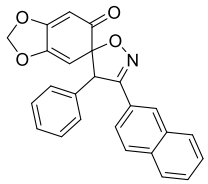


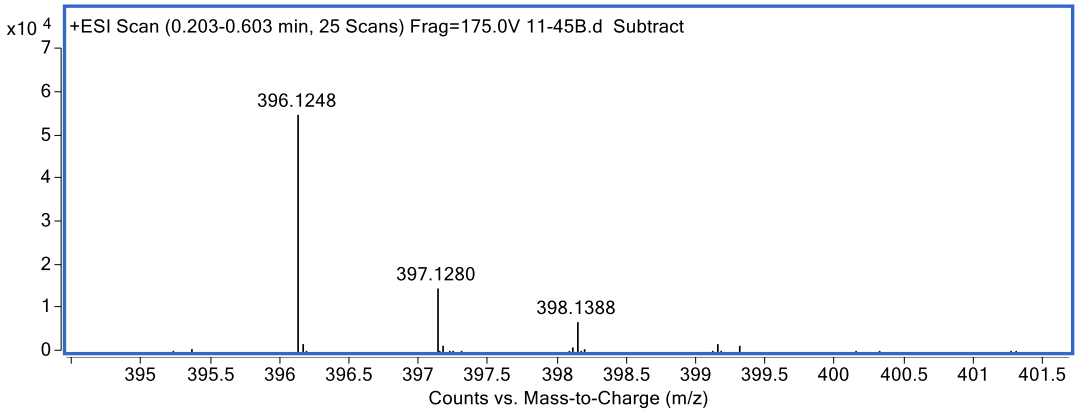
3'-(4-Methoxyphenyl)-4'-phenyl-4'*H*,6*H*-spiro[benzo[*d*][1,3]dioxole-5,5'-isoxazol]-6-one (4d)



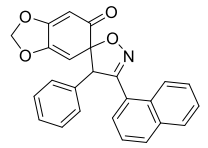


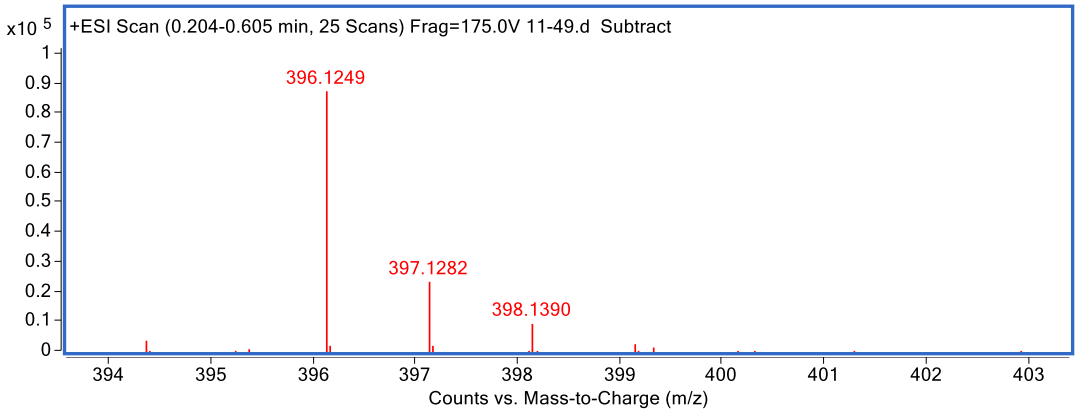
3'-(Naphthalen-2-yl)-4'-phenyl-4'*H*,6*H*-spiro[benzo[*d*][1,3]dioxole-5,5'-isoxazol]-6-one (4e)



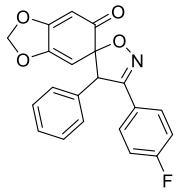


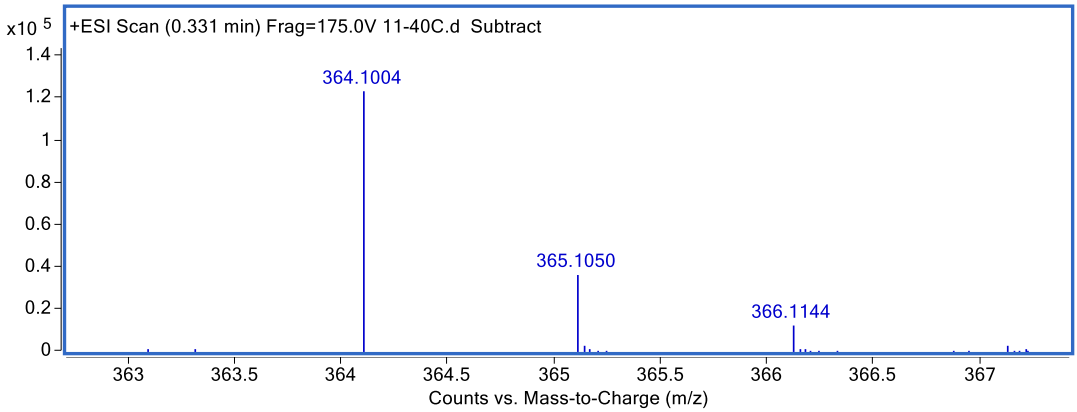
3'-(Naphthalen-1-yl)-4'-phenyl-4'*H*,6*H*-spiro[benzo[*d*][1,3]dioxole-5,5'-isoxazol]-6-one (4f)



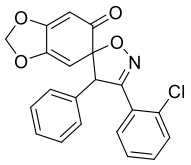


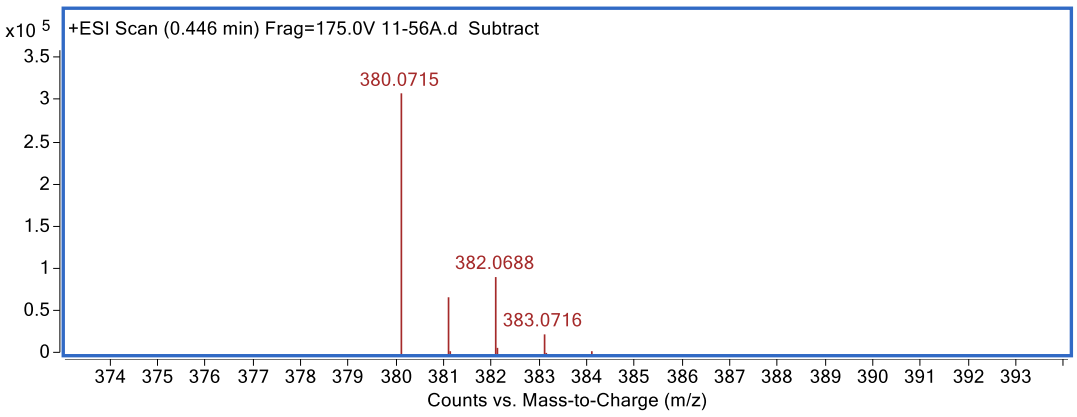
3'-(4-Fluorophenyl)-4'-phenyl-4'*H*,6*H*-spiro[benzo[*d*][1,3]dioxole-5,5'-isoxazol]-6-one (4g)



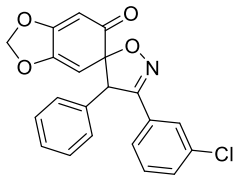


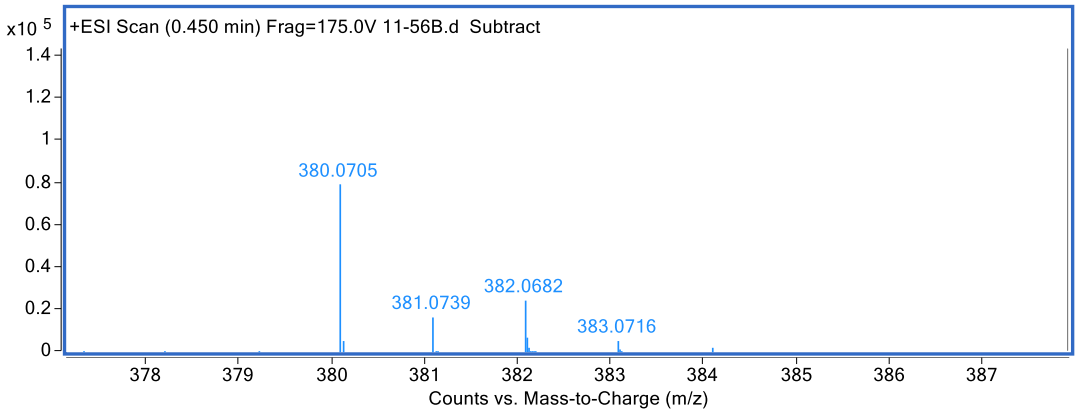
3'-(2-Chlorophenyl)-4'-phenyl-4'*H*,6*H*-spiro[benzo[*d*][1,3]dioxole-5,5'-isoxazol]-6-one (4h)



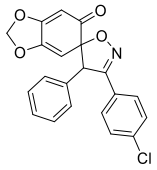


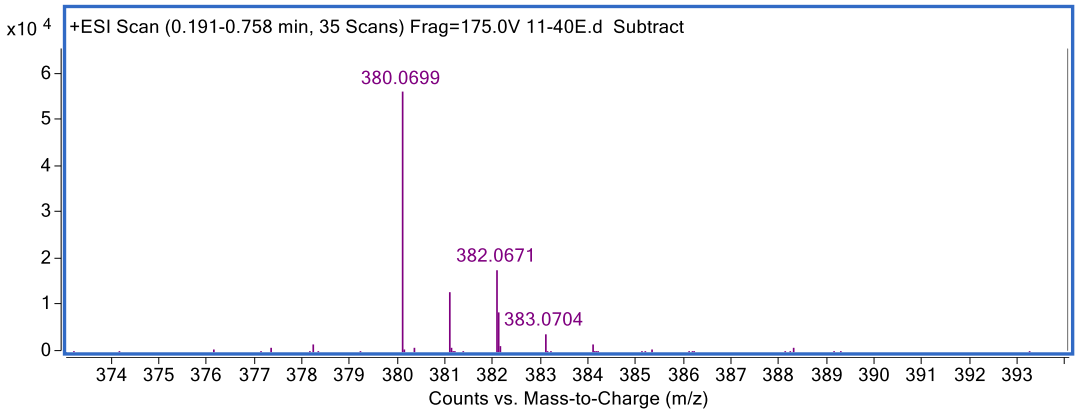
3'-(3-Chlorophenyl)-4'-phenyl-4'*H*,6*H*-spiro[benzo[*d*][1,3]dioxole-5,5'-isoxazol]-6-one (4i)



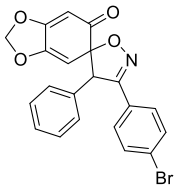


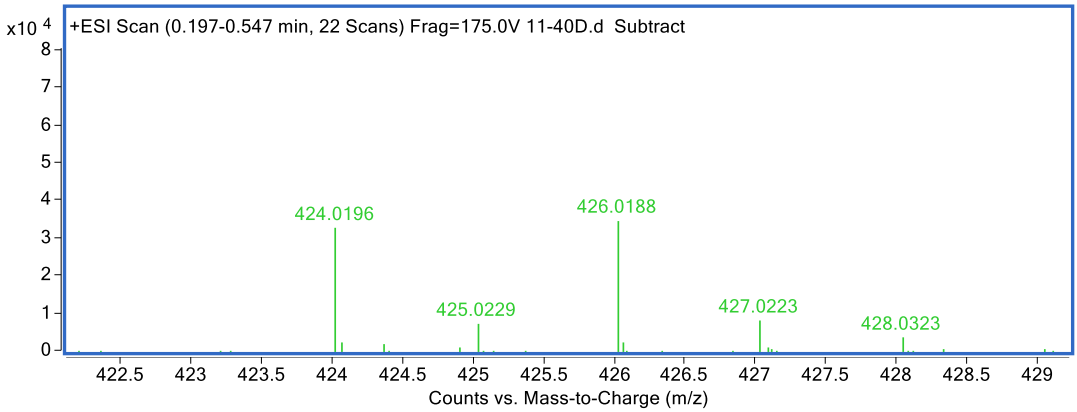
3'-(4-Chlorophenyl)-4'-phenyl-4'*H*,6*H*-spiro[benzo[*d*][1,3]dioxole-5,5'-isoxazol]-6-one (4j)



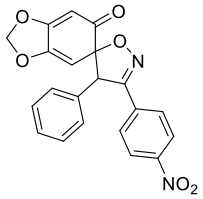


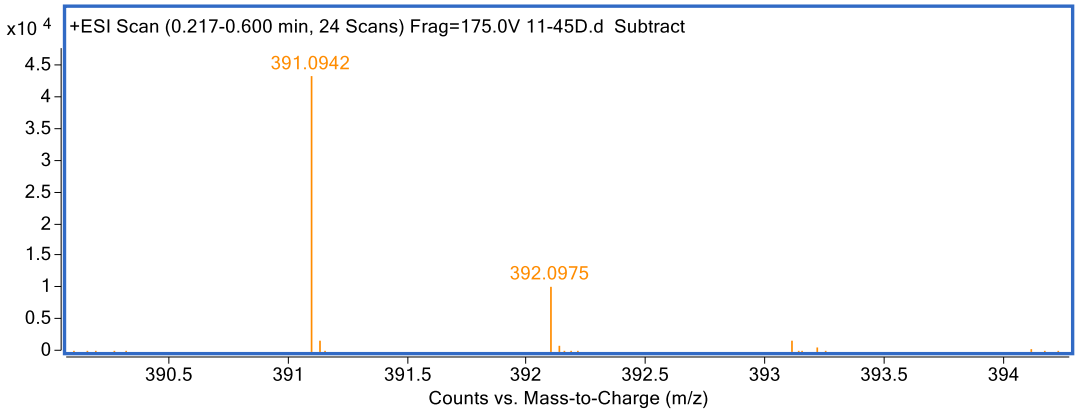
3'-(4-Bromophenyl)-4'-phenyl-4'*H*,6*H*-spiro[benzo[*d*][1,3]dioxole-5,5'-isoxazol]-6-one (4k)



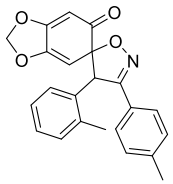


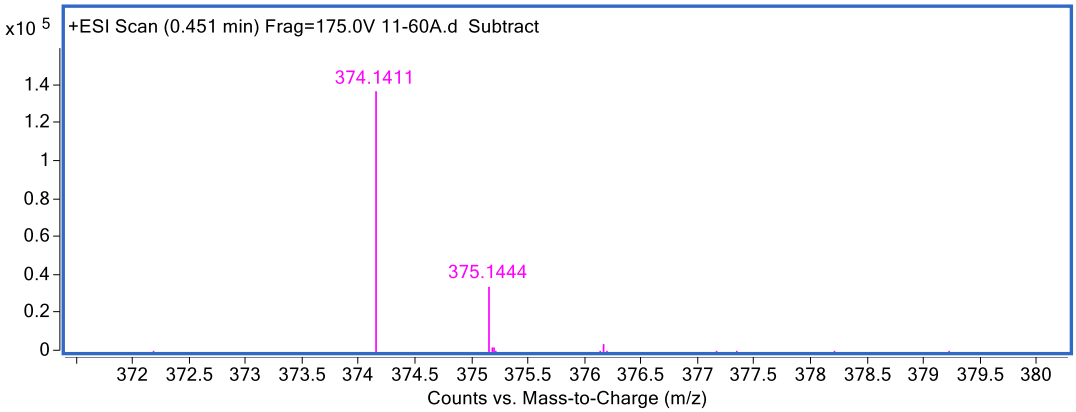
3'-(4-Nitrophenyl)-4'-phenyl-4'*H*,6*H*-spiro[benzo[*d*][1,3]dioxole-5,5'-isoxazol]-6-one (4l)



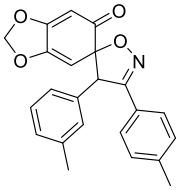


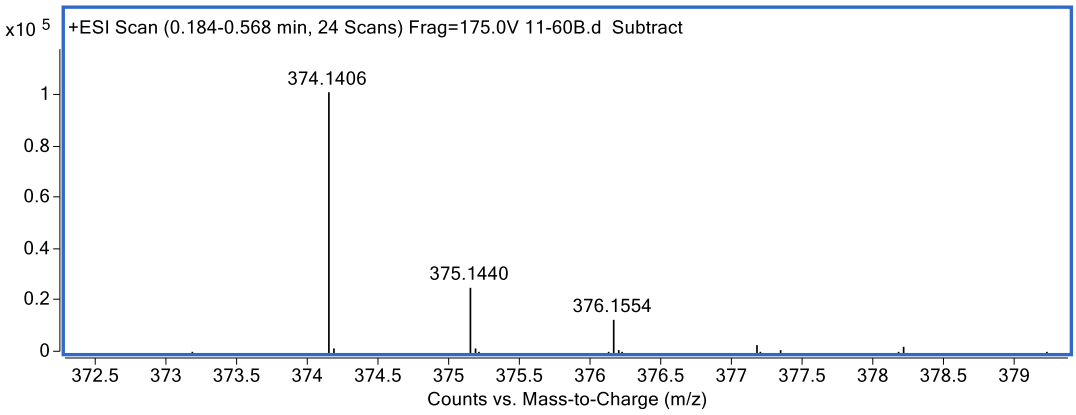
4'-(*o*-tolyl)-3'-(*p*-tolyl)-4'*H*,6*H*-spiro[benzo[*d*][1,3]dioxole-5,5'-isoxazol]-6-one (4m)



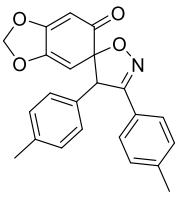


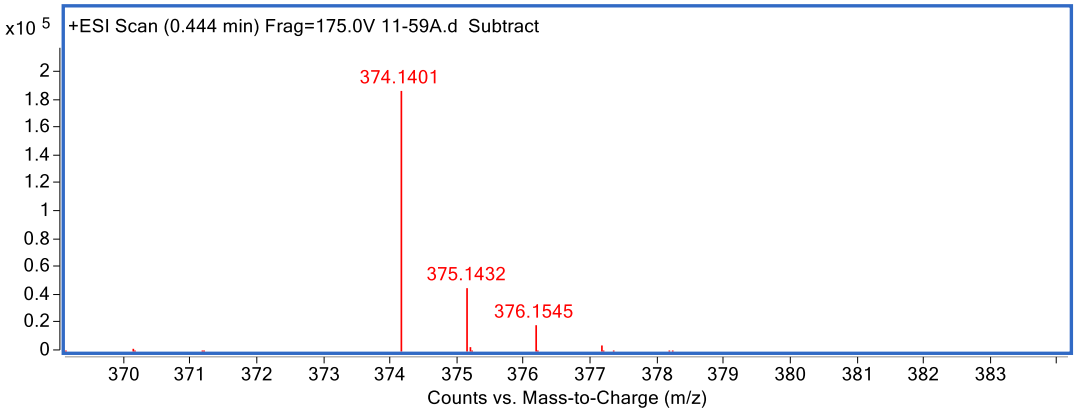
4'-(*m*-tolyl)-3'-(*p*-tolyl)-4'*H*,6*H*-spiro[benzo[*d*][1,3]dioxole-5,5'-isoxazol]-6-one (4n)



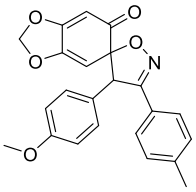


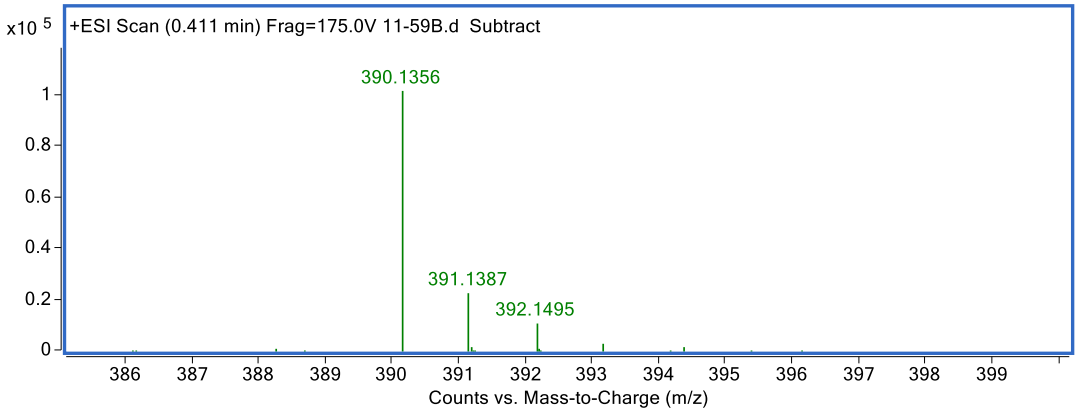
3',4'-di-*p*-Tolyl-4'*H*,6*H*-spiro[benzo[*d*][1,3]dioxole-5,5'-isoxazol]-6-one (4o)



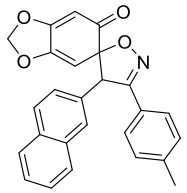


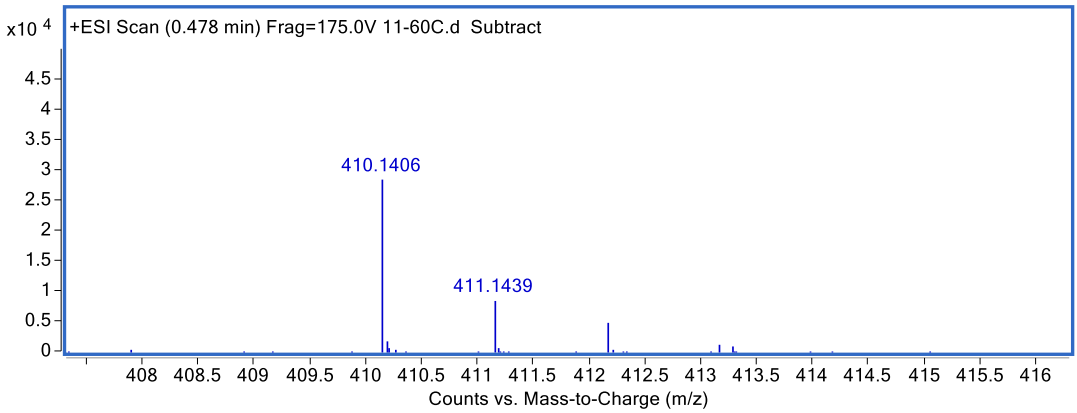
4'-(4-Methoxyphenyl)-3'-(*p*-tolyl)-4'*H*,6*H*-spiro[benzo[*d*][1,3]dioxole-5,5'-isoxazol]-6-one (4p)



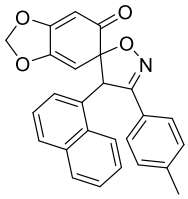


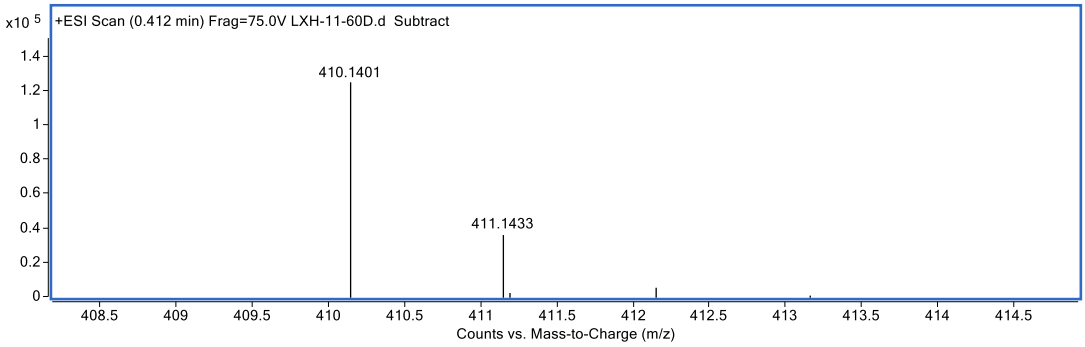
4'-(Naphthalen-2-yl)-3'-(*p*-tolyl)-4'*H*,6*H*-spiro[benzo[*d*][1,3]dioxole-5,5'-isoxazol]-6-one (4q)



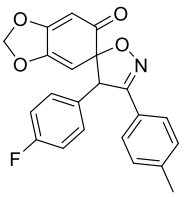


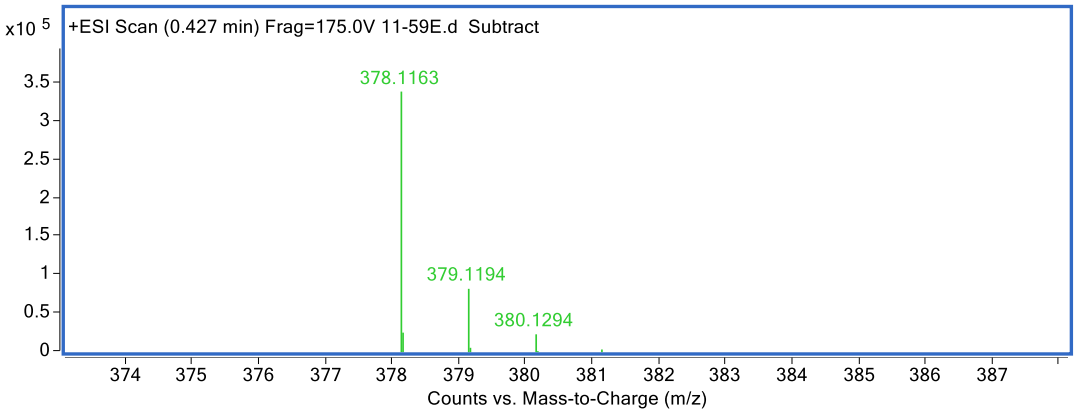
4'-(Naphthalen-1-yl)-3'-(*p*-tolyl)-4'*H*,6*H*-spiro[benzo[*d*][1,3]dioxole-5,5'-isoxazol]-6-one (4r)



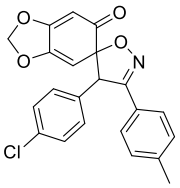


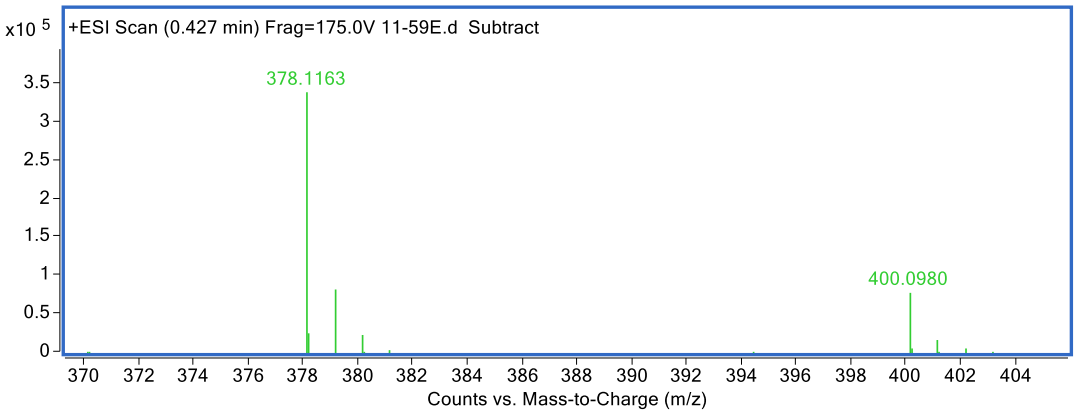
4'-(4-Fluorophenyl)-3'-(*p*-tolyl)-4'*H*,6*H*-spiro[benzo[*d*][1,3]dioxole-5,5'-isoxazol]-6-one (4s)



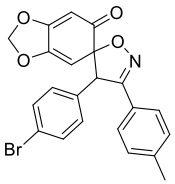


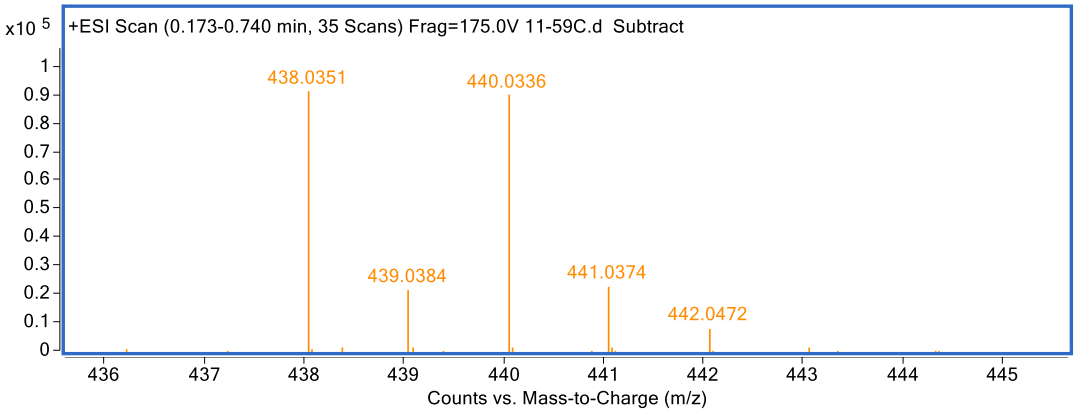
4'-(4-Chlorophenyl)-3'-(*p*-tolyl)-4'*H*,6*H*-spiro[benzo[*d*][1,3]dioxole-5,5'-isoxazol]-6-one (4t)



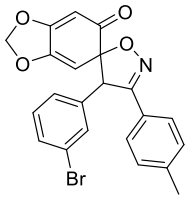


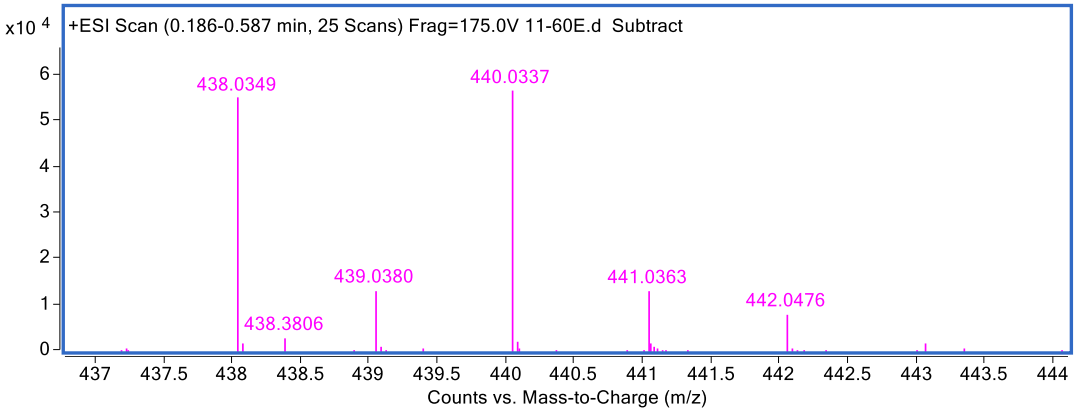
4'-(4-Bromophenyl)-3'-(*p*-tolyl)-4'*H*,6*H*-spiro[benzo[*d*][1,3]dioxole-5,5'-isoxazol]-6-one (4u)



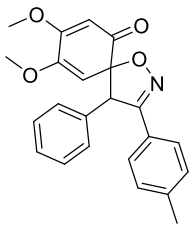


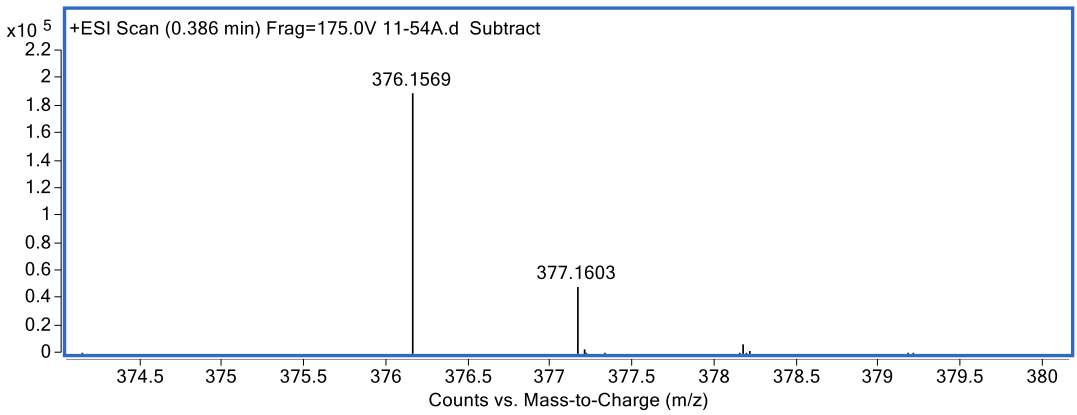
4'-(3-Bromophenyl)-3'-(*p*-tolyl)-4'*H*,6*H*-spiro[benzo[*d*][1,3]dioxole-5,5'-isoxazol]-6-one (4v)



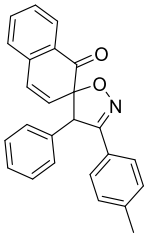


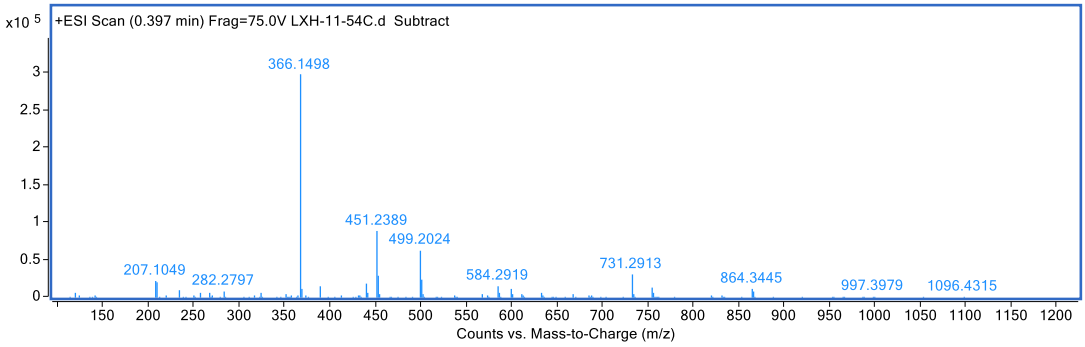
8,9-Dimethoxy-4-phenyl-3-(*p*-tolyl)-1-oxa-2-azaspiro[4.5]deca-2,7,9-trien-6-one (4w)



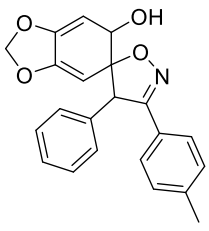


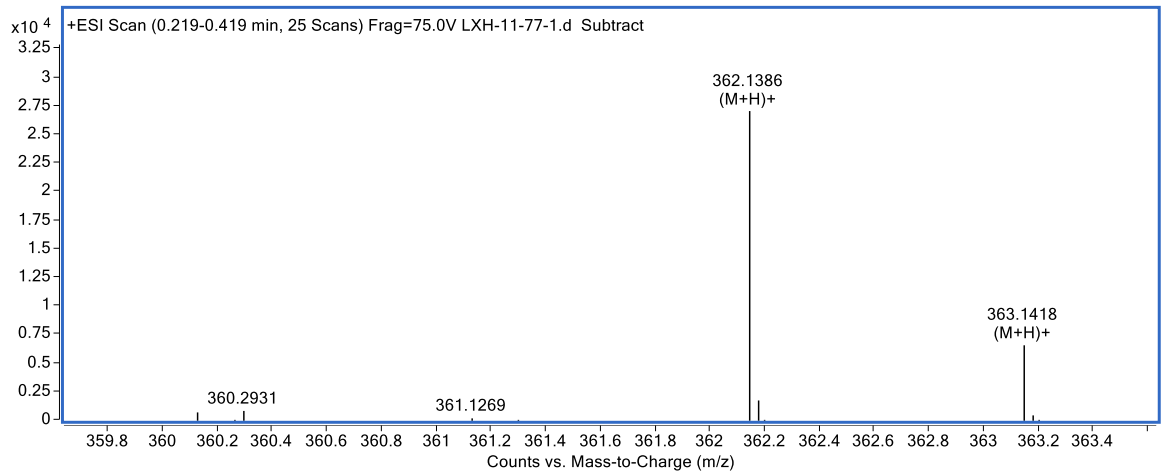
4-Phenyl-3-(*p*-tolyl)-1'*H*,4*H*-spiro[isoxazole-5,2'-naphthalen]-1'-one (4x)





4'-Phenyl-3'-(*p*-tolyl)-6H-spiro[benzo[*d*][1,3]dioxole-5,5'-isoxazolidin]-6-one (8)





(*E*)-2-(6-Hydroxybenzo[*d*][1,3]dioxol-5-yl)-2-phenyl-1-(*p*-tolyl)ethan-1-one oxime (9):