Supplementary Information

Metal-free photocatalyzed aerobic oxidative C_{sp3}–H functionalization of glycine derivatives: one-step generation of quinoline fused lactones

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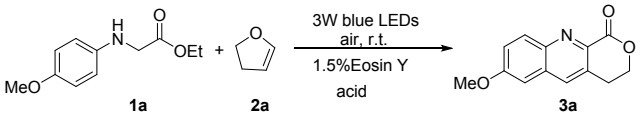
Table S1. Screening of Acids.[a]



entry	acid	yield (%)[b]
1	10M H_2SO_4(20 mol%)	85
2	10M PhCOOH (20 mol%)	-
3	10M HCl (20 mol%)	20
4	10M HAc (20 mol%)	-
5	10M TSOH (20 mol%)	-
6	10M HNO_3(20 mol%)	50
7	10M HBr (20 mol%)	28
8	10M $H_2C_2O_4$(20 mol%)	-

[a]Reaction conditions: **1a** (0.1 mmol), **2a** (0.2 mmol), CH_3CN (2 mL), Eosin Y (1.5 mol%), 3W blue LEDs, air, r.t. [b]Isolated yields.

Table S2. Screening of Solvents.[a]

entry	solvent	yield (%)[b]
1	CH_3CN	85
2	DMF	-
3	THF	79
4	1,4-Dioxane	44
5	DCE	54
6	Et_2O	-
7	MeOH	30

[a]Reaction conditions: **1a** (0.1mmol), **2a** (0.2 mmol), solvent (2 mL), EosinY (1.5 mol%), 3W blue LEDs, 10M H_2SO_4 (20 mol%), air, r.t. [b]Isolated yields.

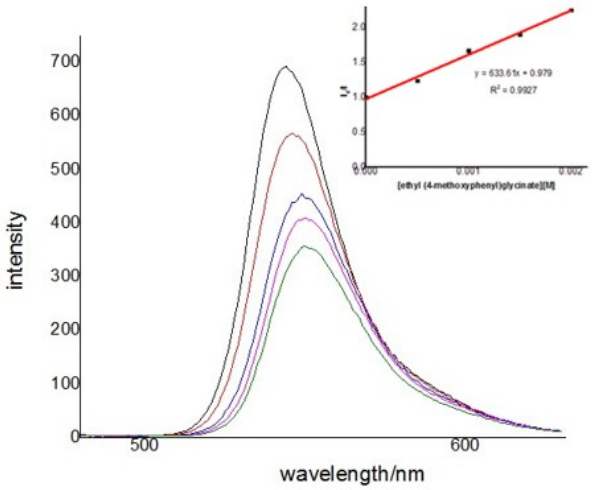


Figure S1. Photoluminescence quenching of Eosin Y (1.500×10^{-6} M) with progressive addition of **1a** in anaerobic acidic CH_3CN (2.000×10^{-5} M).

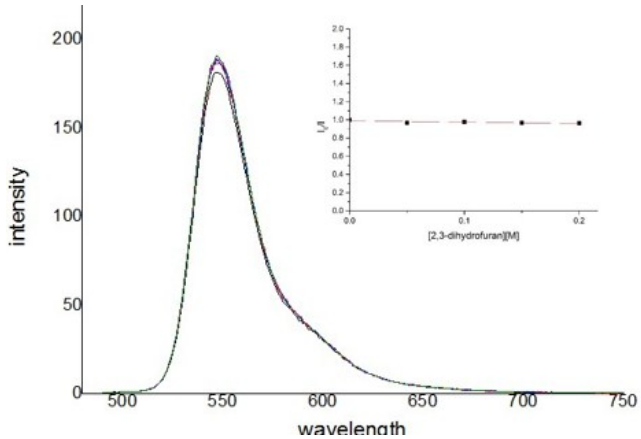


Figure S2. Photoluminescence quenching of Eosin Y (1.500×10^{-6} M) with progressive addition of **2a** in anaerobic acidic CH_3CN (2.000×10^{-5} M).

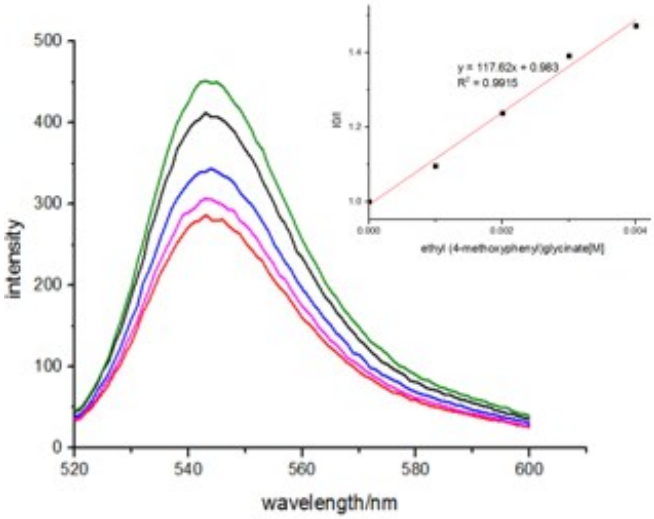


Figure S3. Photoluminescence quenching of Eosin Y (1.500×10^{-6} M) with progressive addition of **1a** in not acidic anaerobic CH_3CN.

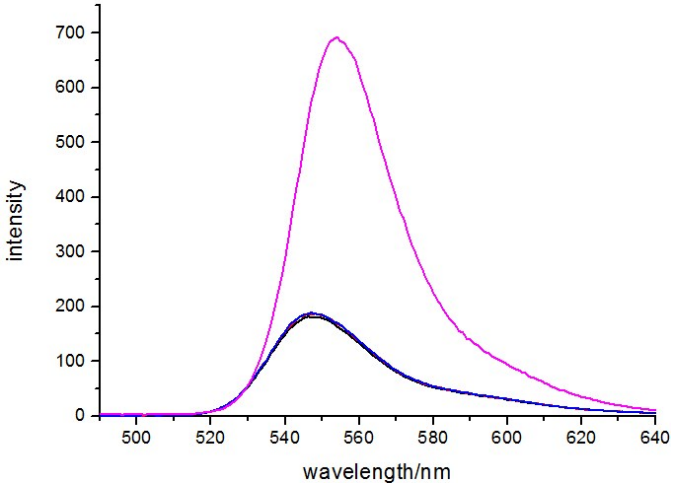
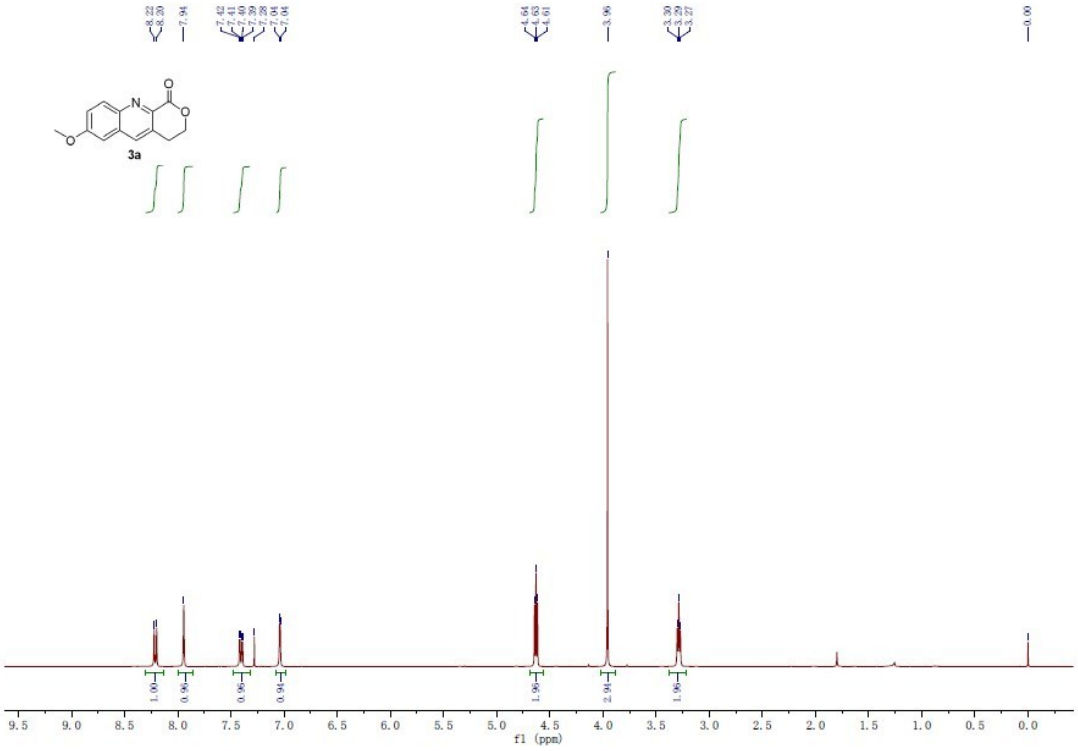


Figure S4. Photoluminescence of Eosin Y ($1.5.00 \times 10^{-3}$M) with progressive addition of 10M H_2SO_4 in anaerobic CH_3CN (0.5µL each time).

A



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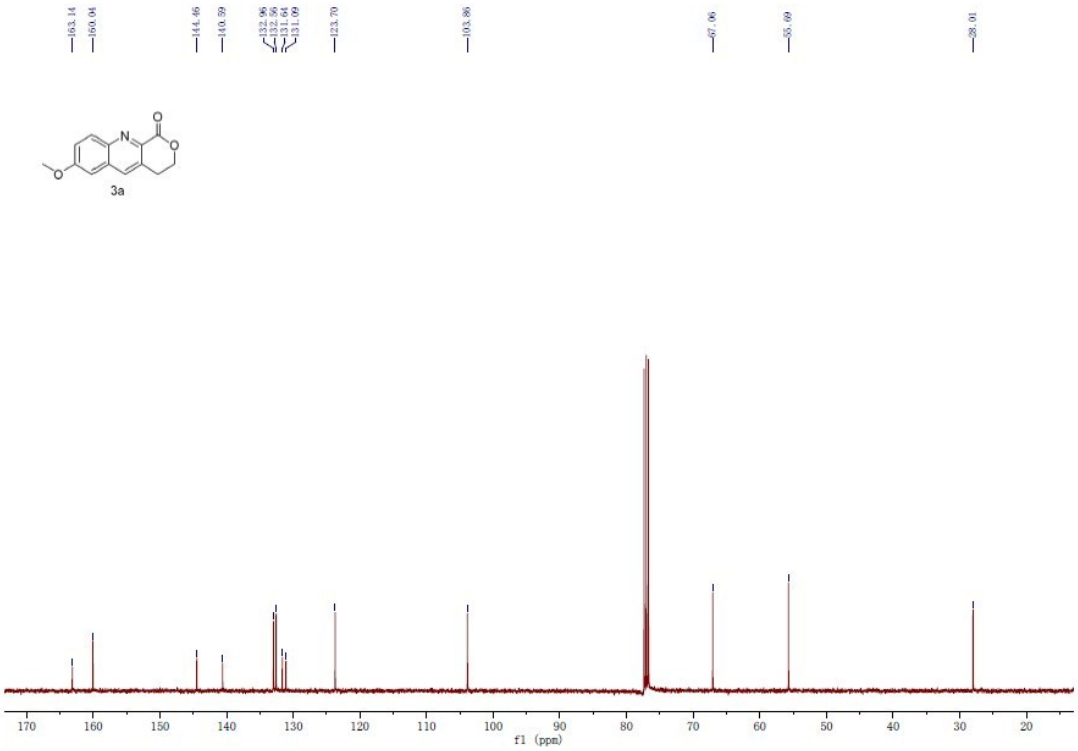
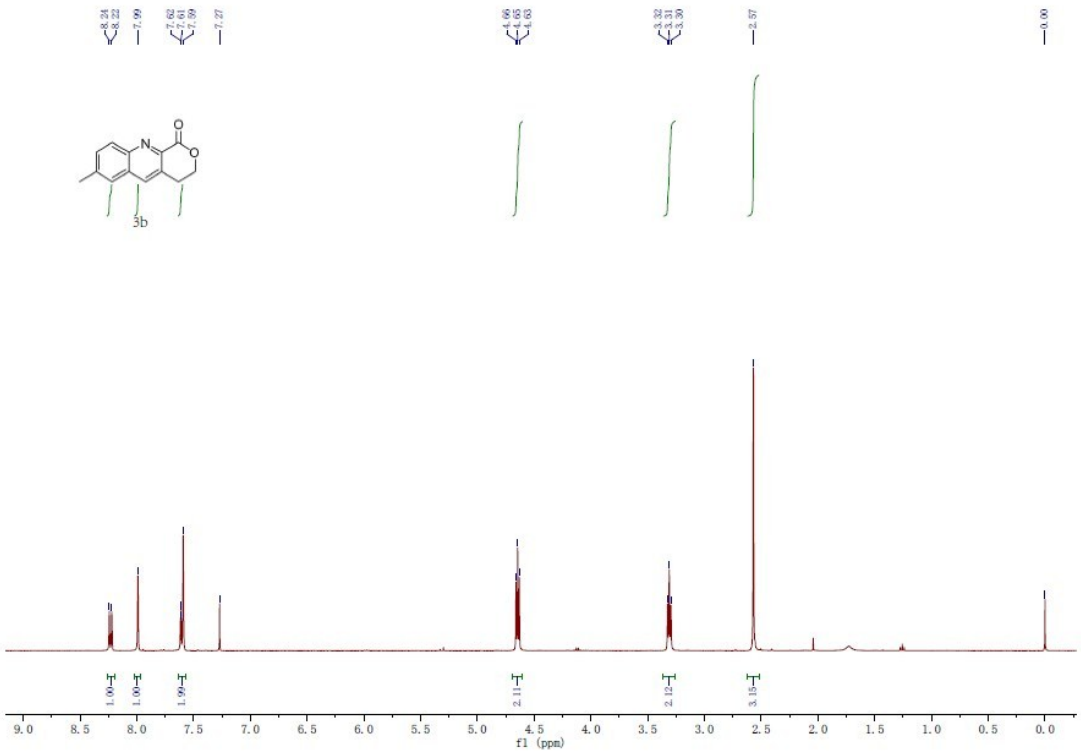


Figure S5. NMR spectra of **3a**. A. ^{1}H NMR. B. ^{13}C NMR.

A



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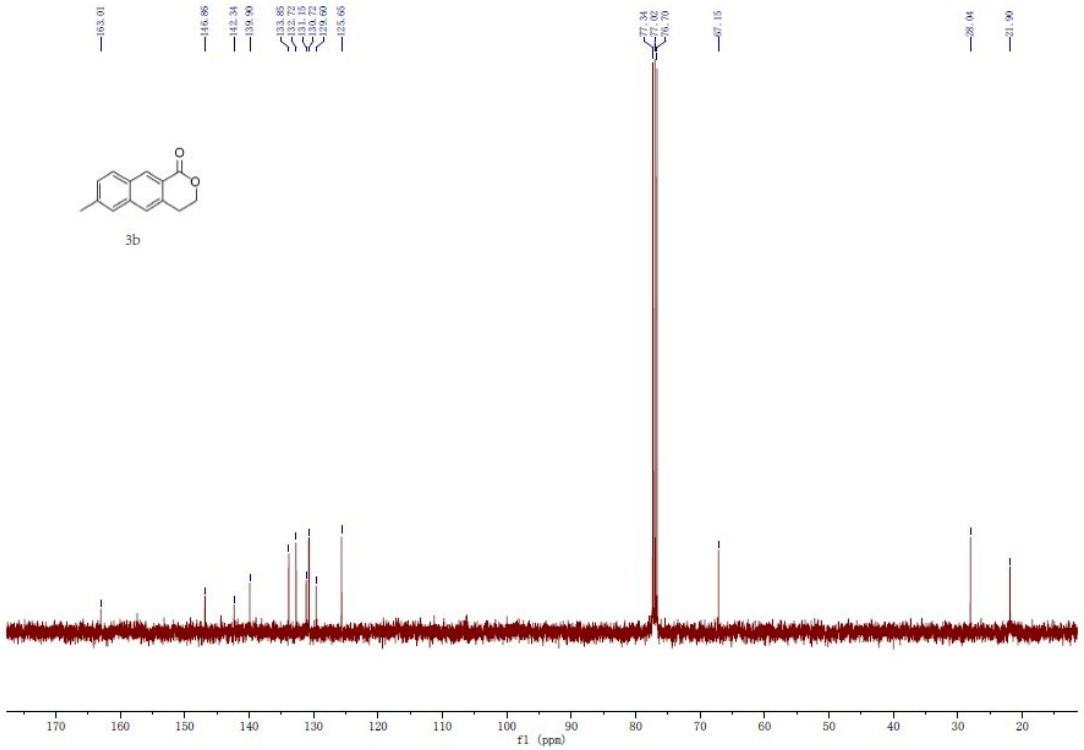
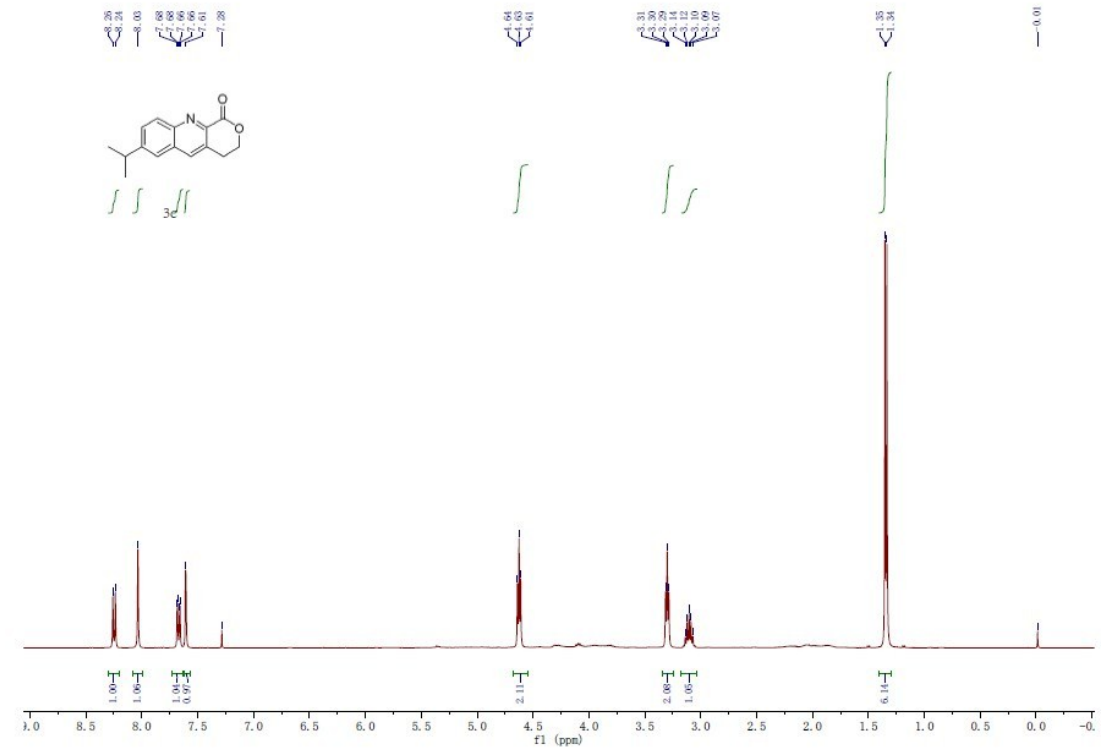


Figure S6. NMR spectra of **3b**. A. ^{1}H NMR. B. ^{13}C NMR.

A



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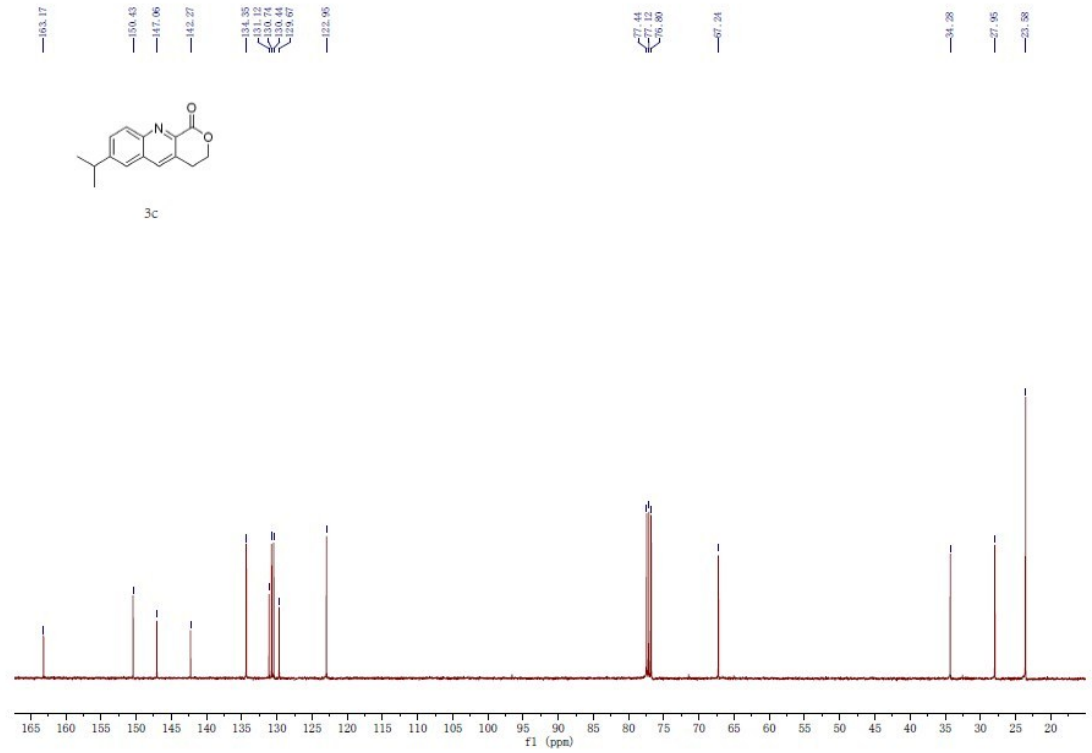
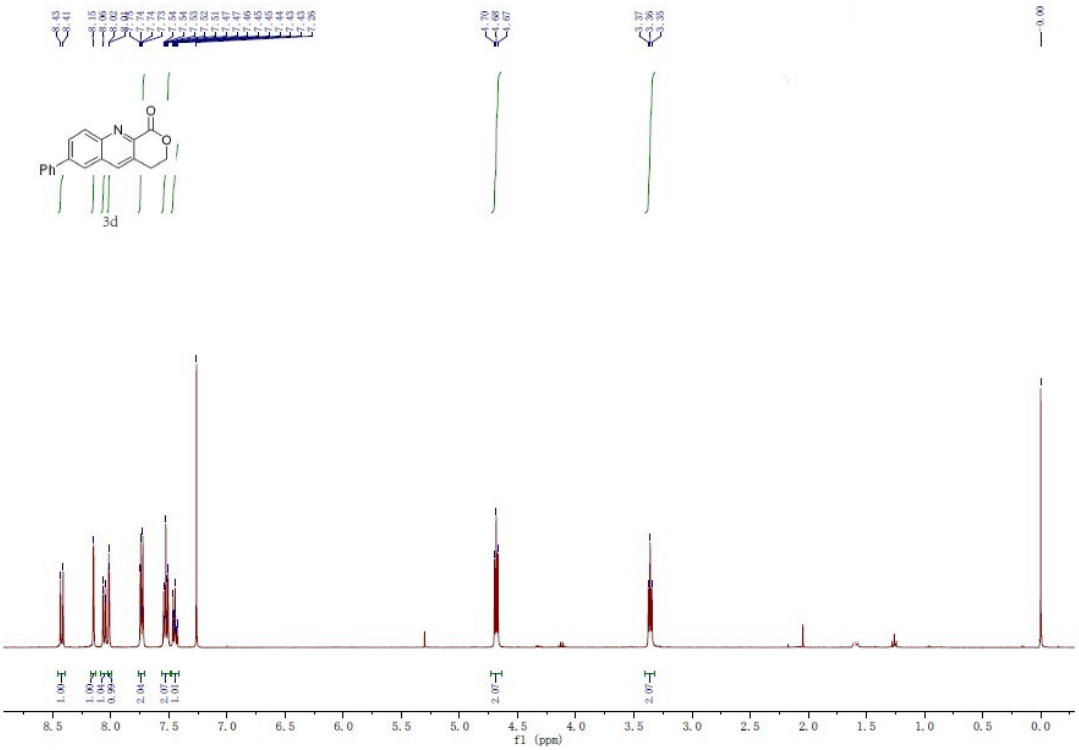


Figure S7. NMR spectra of **3c**. A. ^{1}H NMR. B. ^{13}C NMR.

A



B

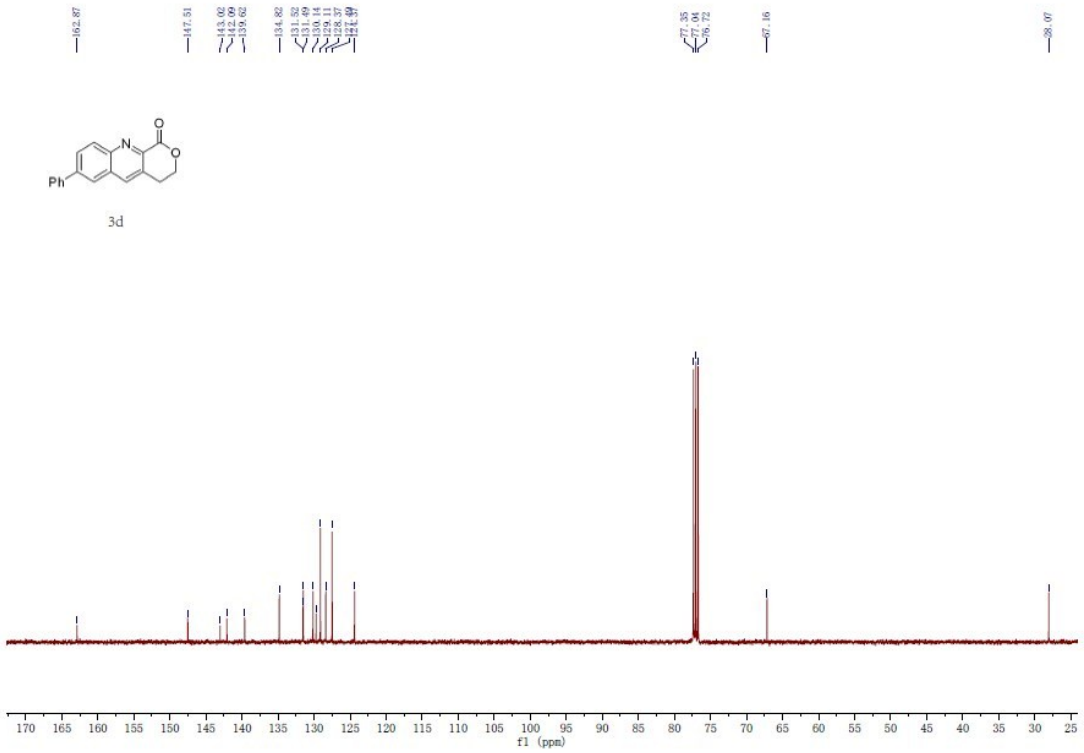
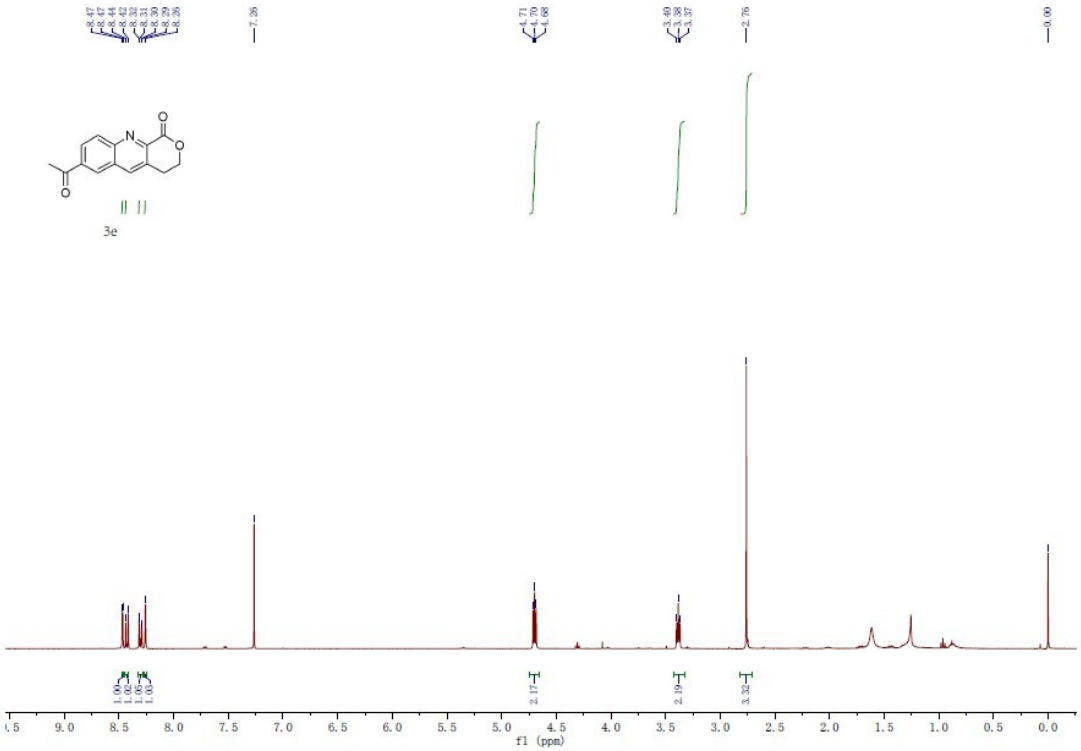


Figure S8. NMR spectra of **3d**. A. ^{1}H NMR. B. ^{13}C NMR.

A



B

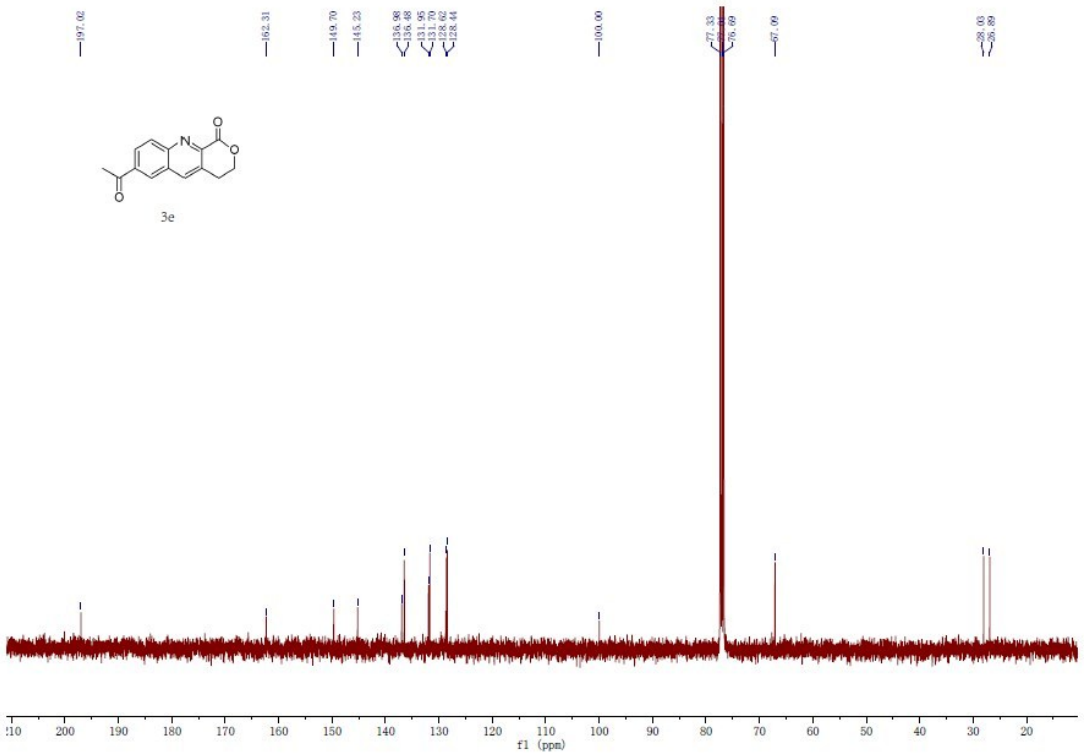
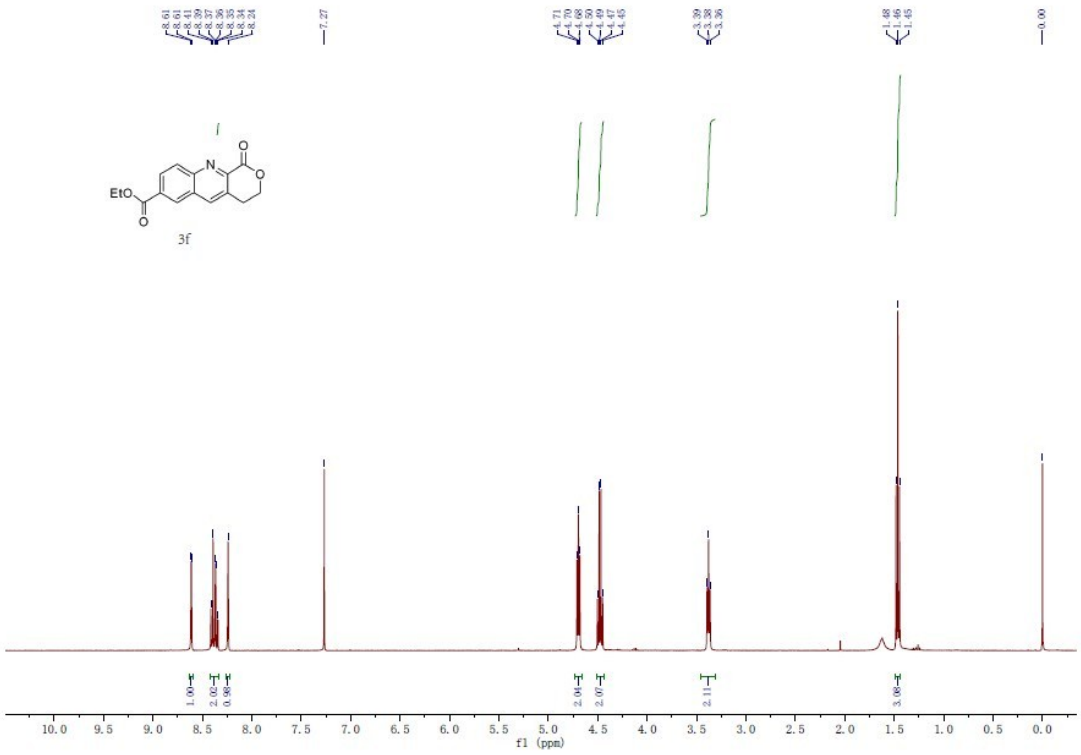


Figure S9. NMR spectra of **3e**. A. ^{1}H NMR. B. ^{13}C NMR.

A



B

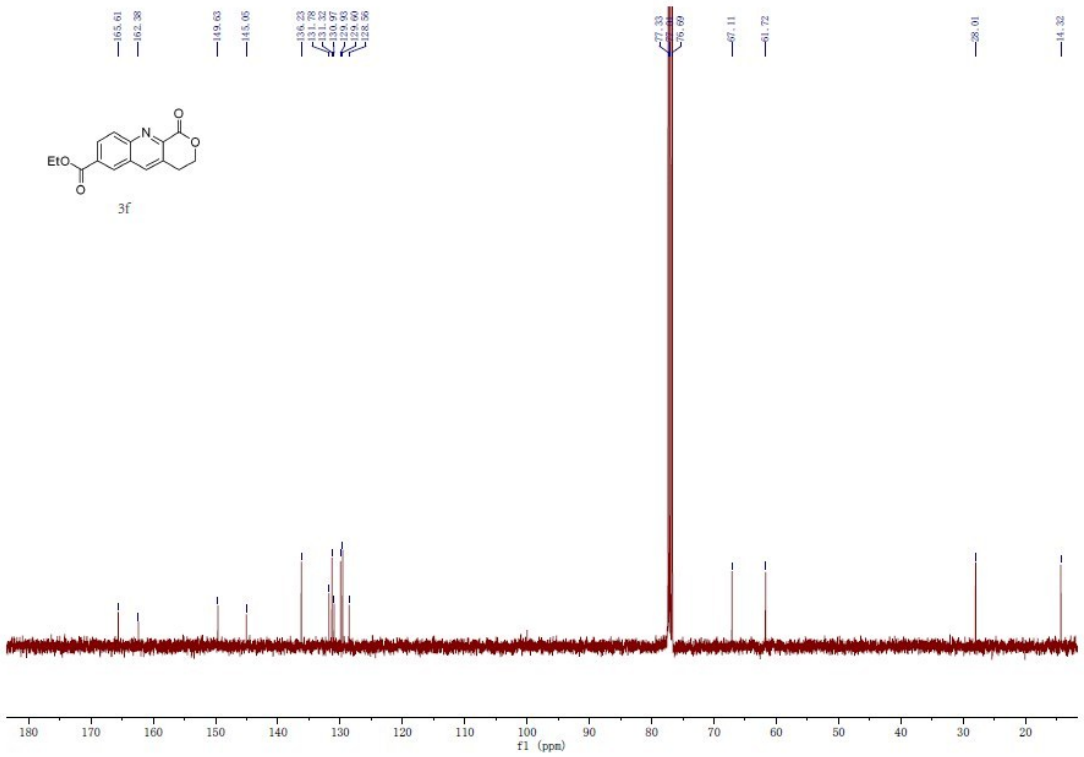
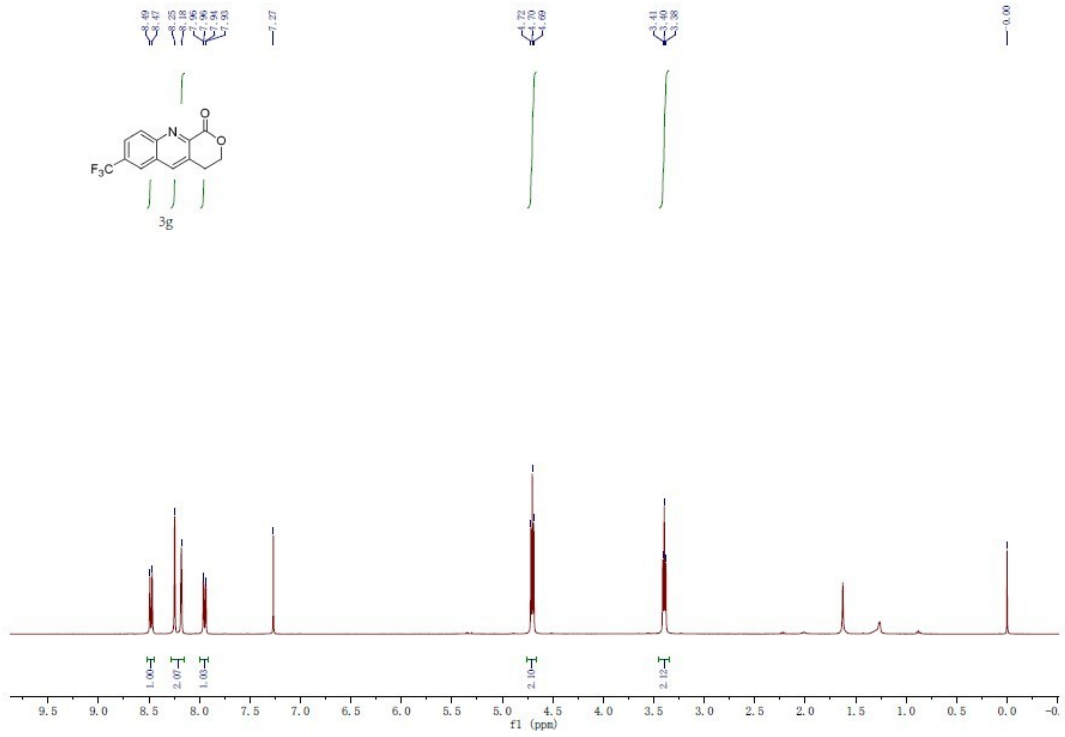
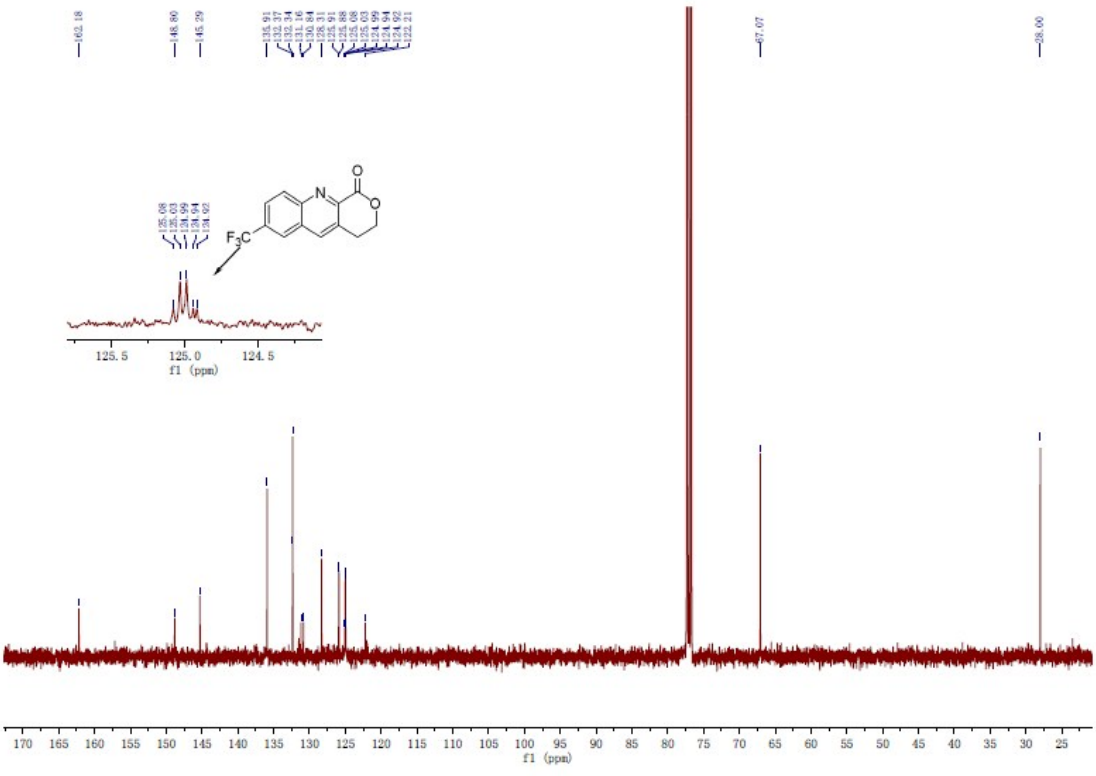


Figure S10. NMR spectra of **3f**. A. ^{1}H NMR. B. ^{13}C NMR.

A


8.49
8.47
8.25
8.18
7.96
7.95
7.94
7.93
7.27
4.72
4.70
4.69
3.41
3.40
3.38
0.00
O
N
O
F3C
3g
1.00
2.07
1.03
2.10
2.12
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)

B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148.80
145.29
135.91
133.37
132.34
131.16
130.84
128.31
125.91
125.88
125.08
125.03
124.99
124.94
124.92
122.21
67.07
28.00
O
N
O
F3C
125.08
125.03
124.99
124.94
124.92
125.5
125.0
124.5
f1 (ppm)
170 165 160 155 150 145 140 135 130 125 120 115 110 105 100 95 90 85 80 75 70 65 60 55 50 45 40 35 30 25
f1 (ppm)

C

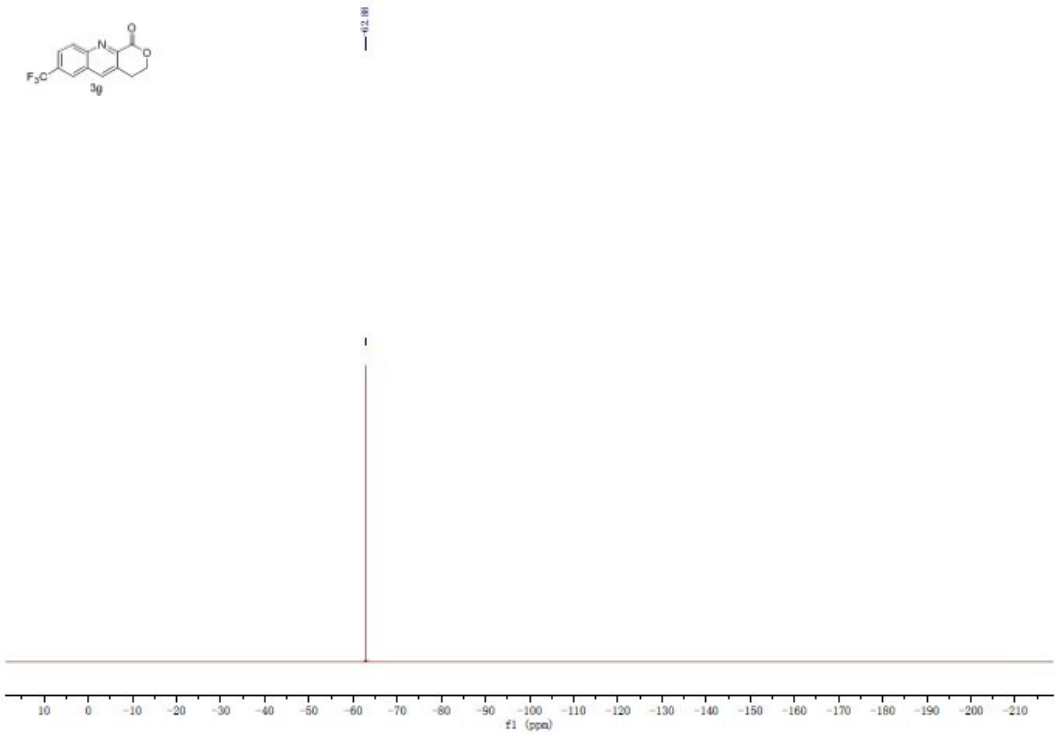
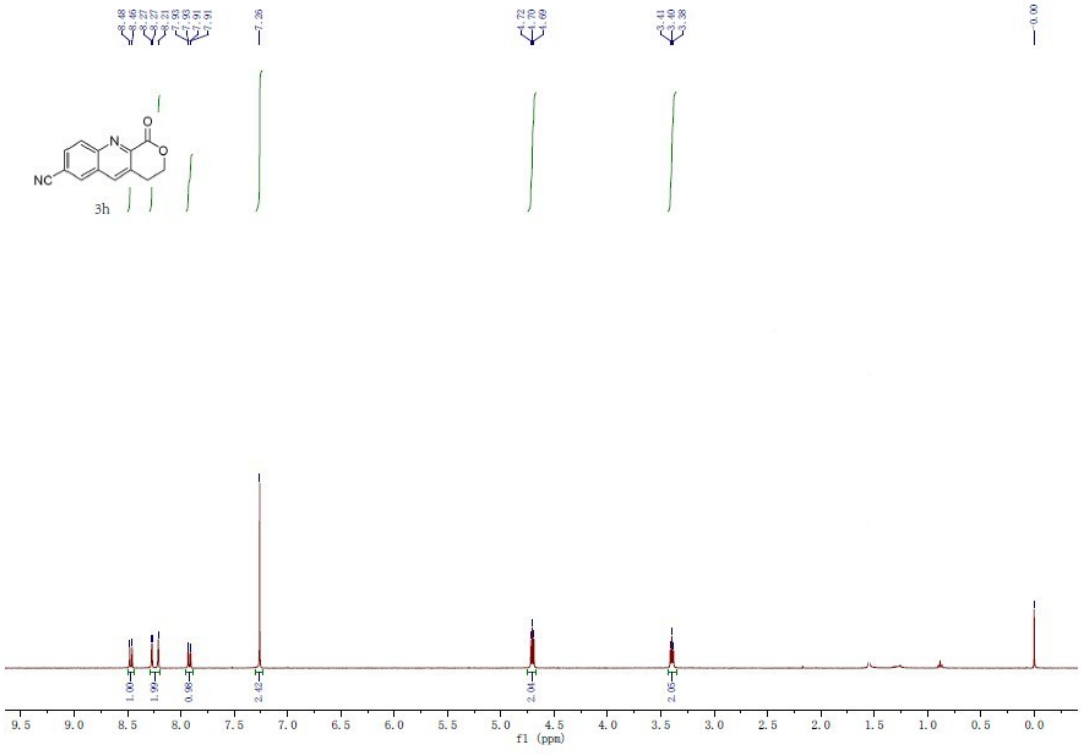


Figure S11. NMR spectra of **3g**. A. ^{1}H NMR. B. ^{13}C NMR. C. ^{19}F NMR

A



B

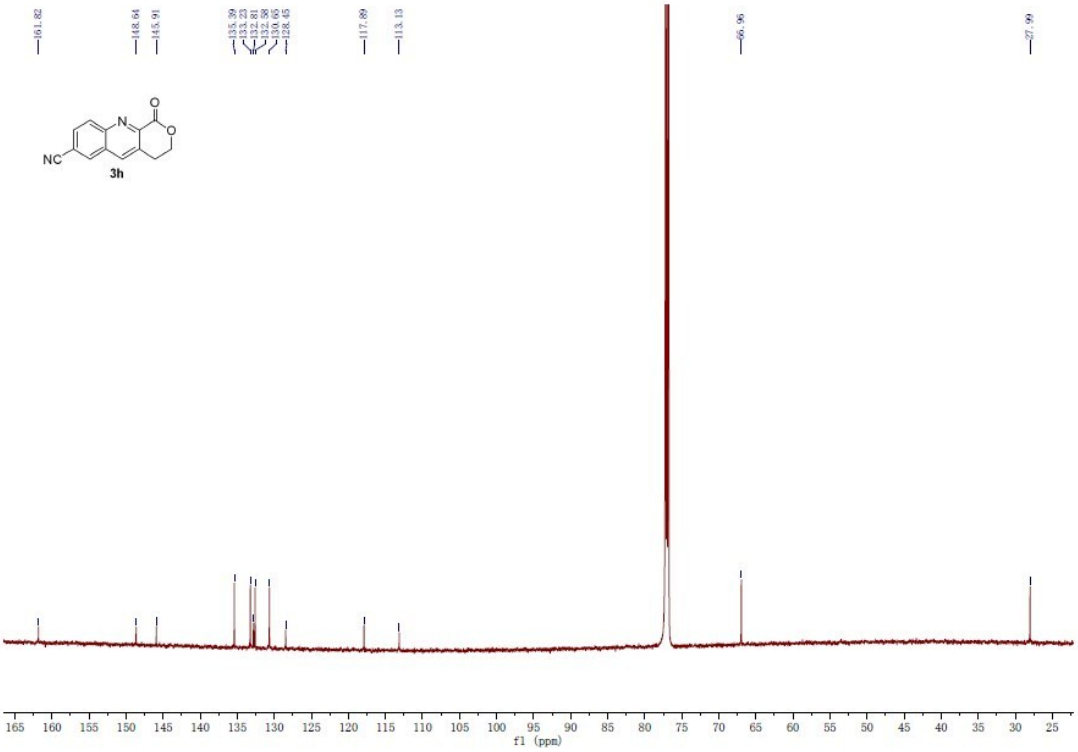
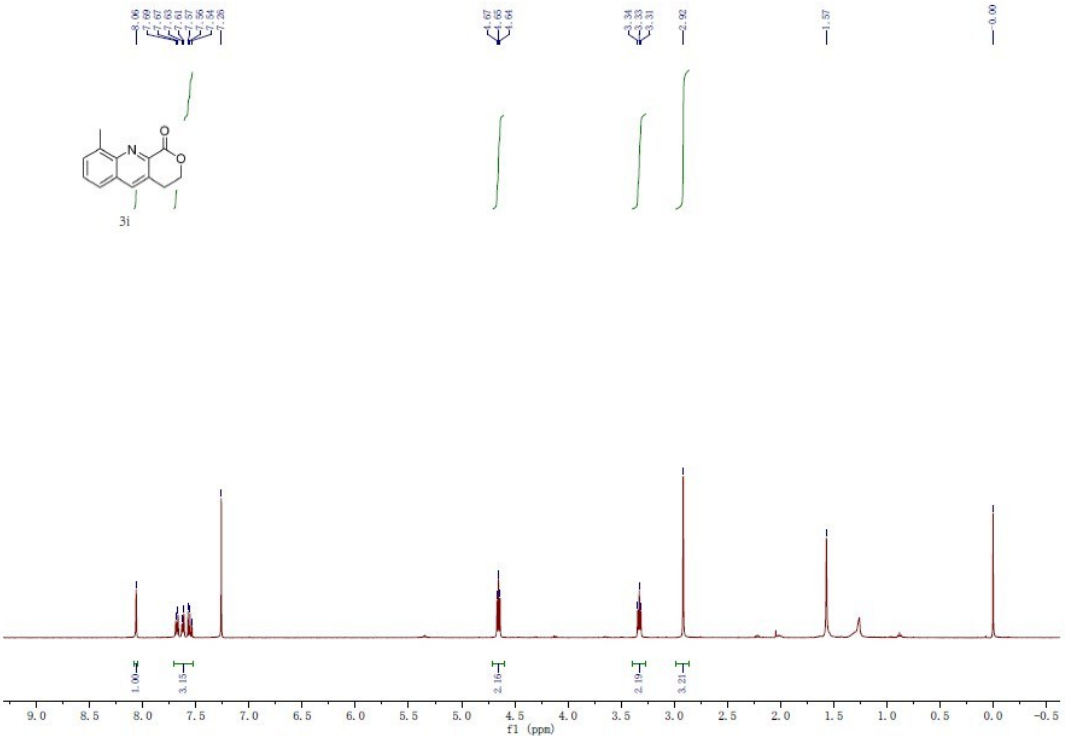


Figure S12. NMR spectra of **3h**. A. ^{1}H NMR. B. ^{13}C NMR.

A



B

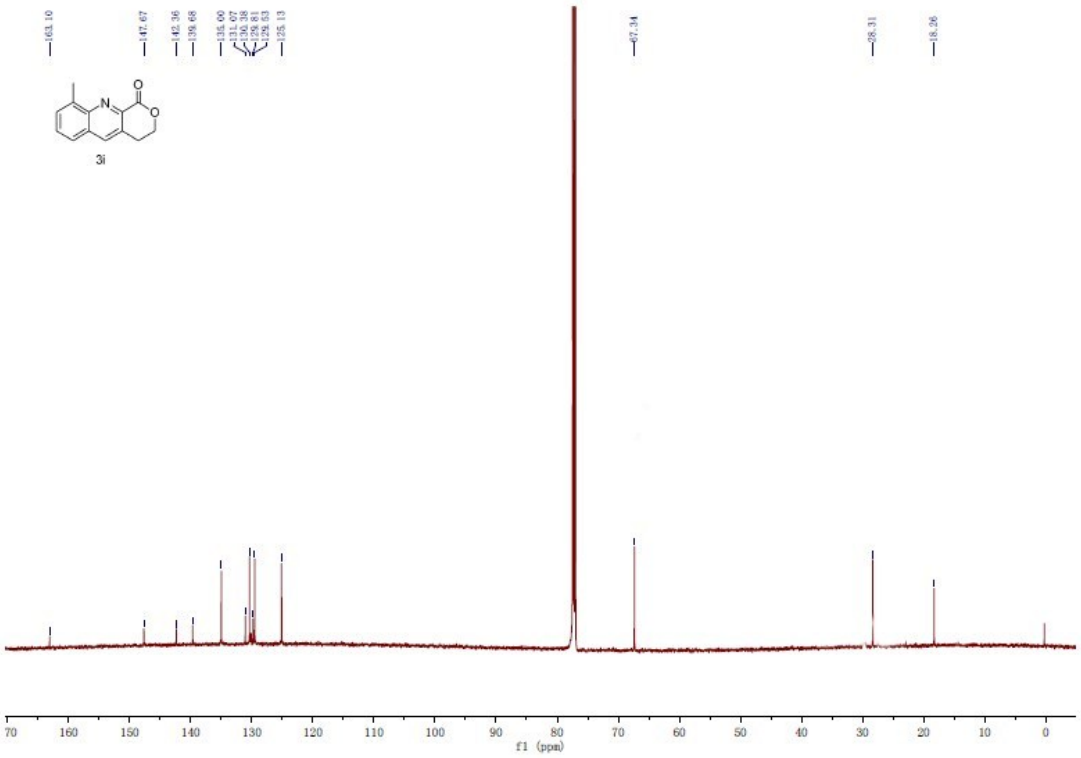
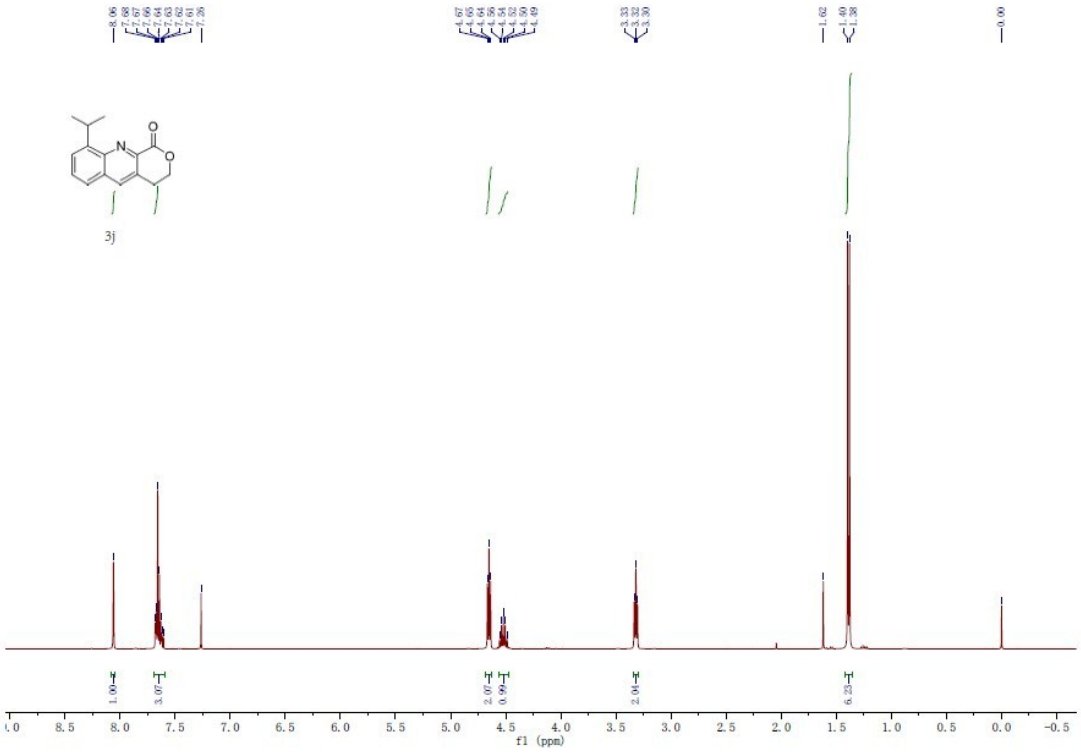


Figure S13. NMR spectra of **3i**. A. ^{1}H NMR. B. ^{13}C NMR.

A



B

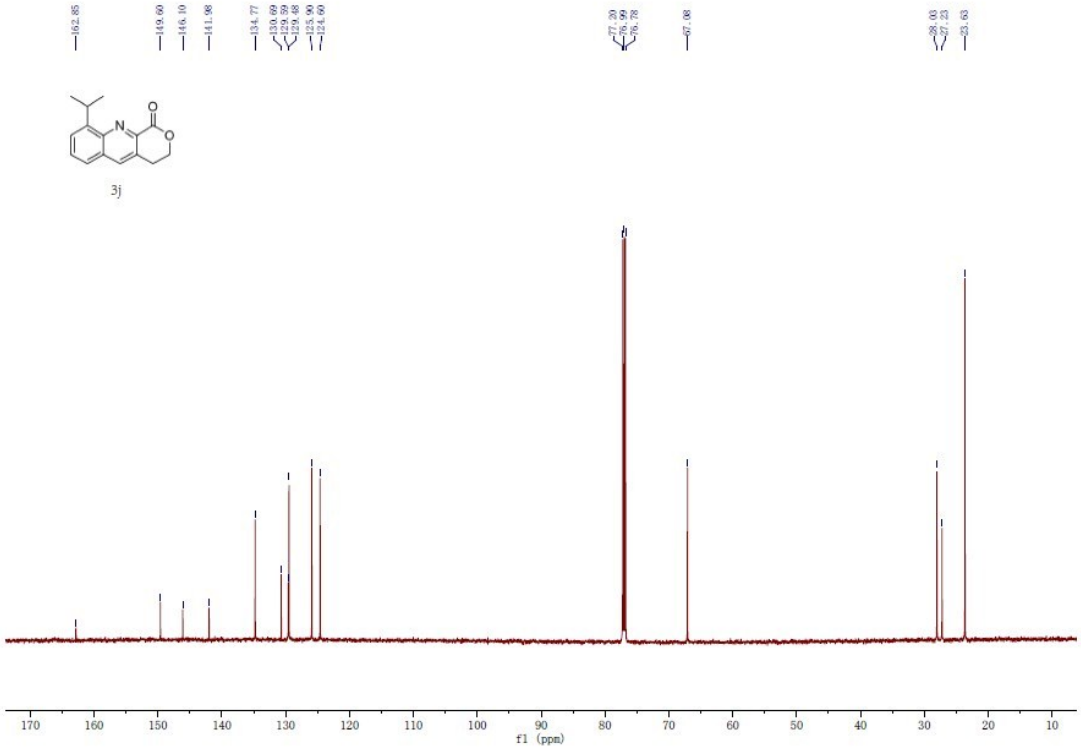
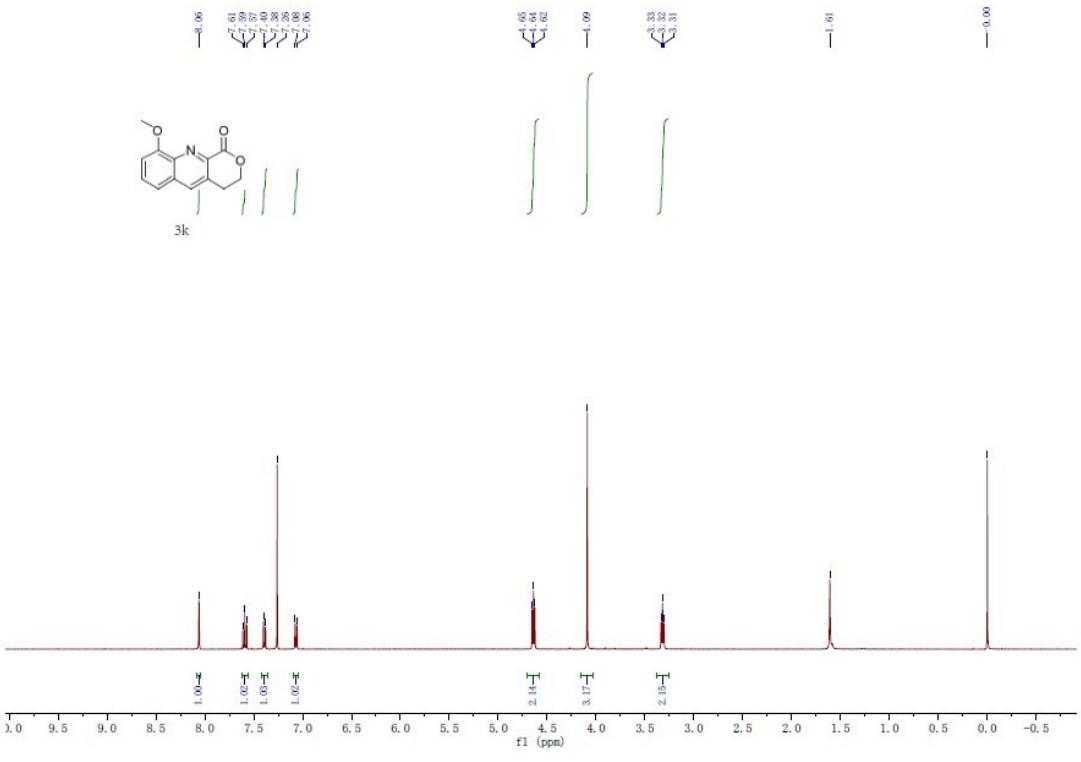


Figure S14. NMR spectra of **3j**. A. ^{1}H NMR. B. ^{13}C NMR.

A



B

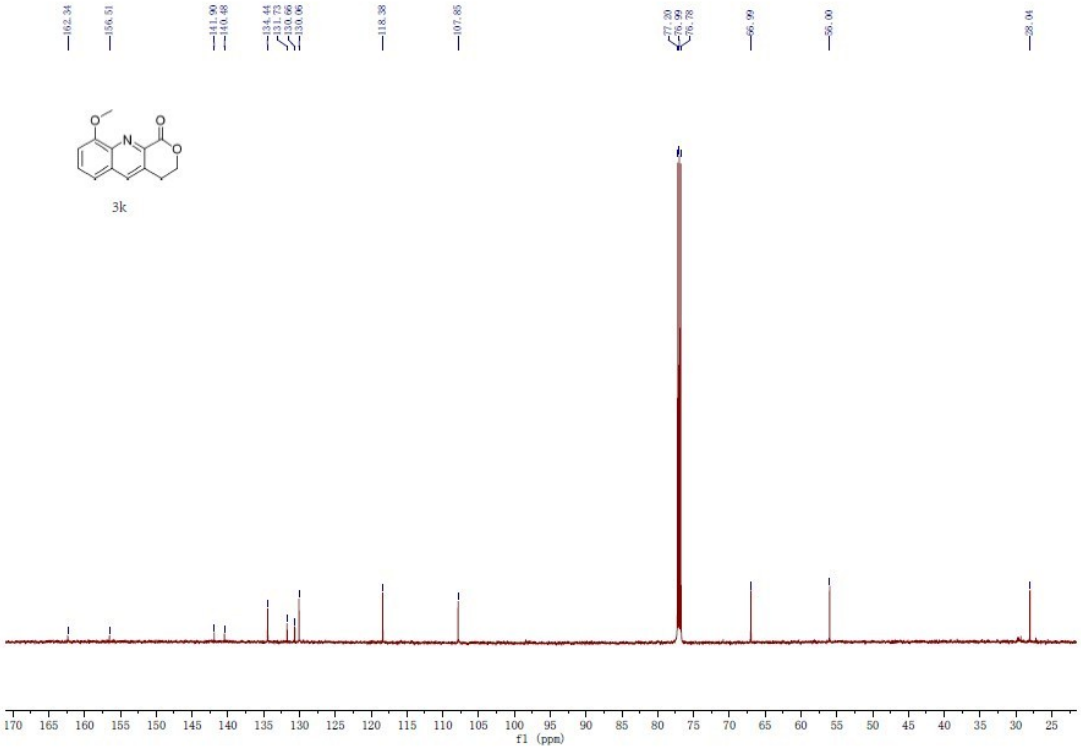
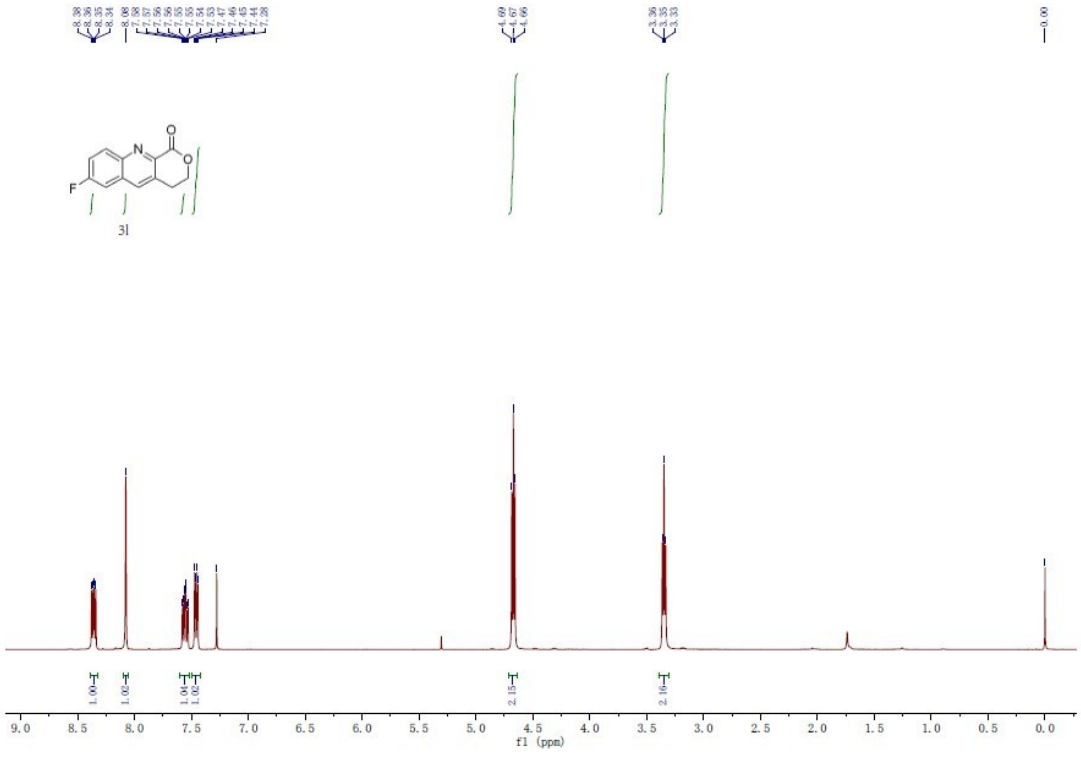
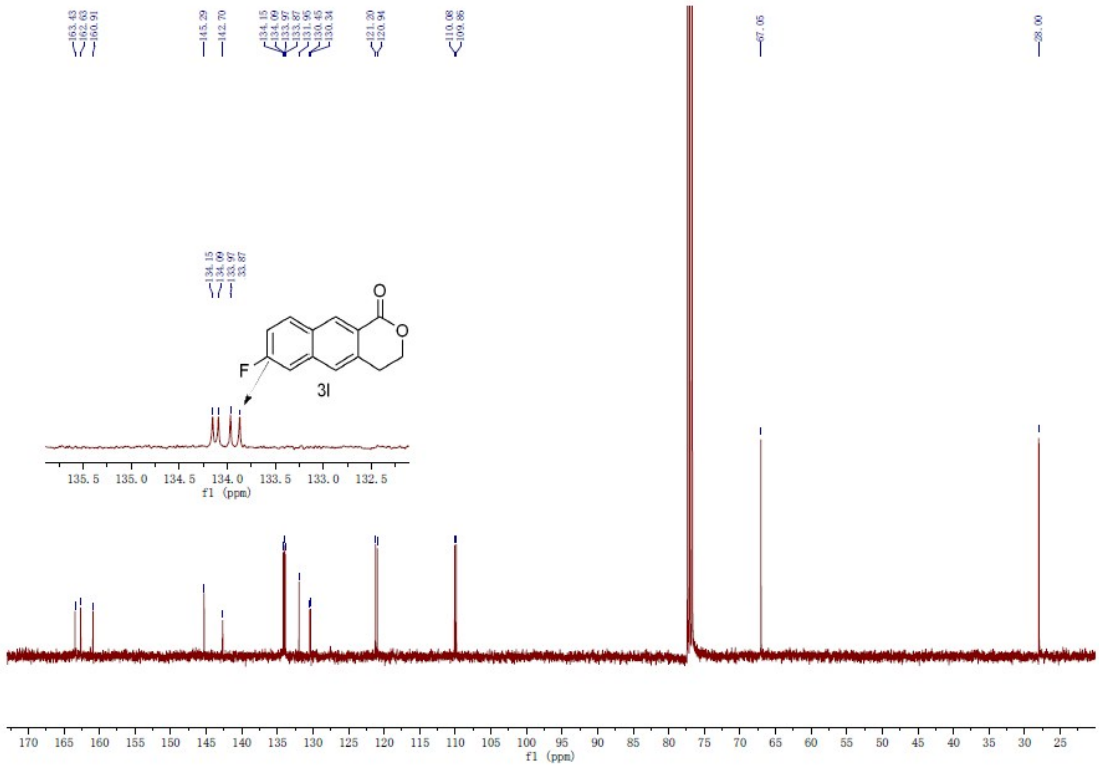


Figure S15. NMR spectra of **3k**. A. ^{1}H NMR. B. ^{13}C NMR.

A



B



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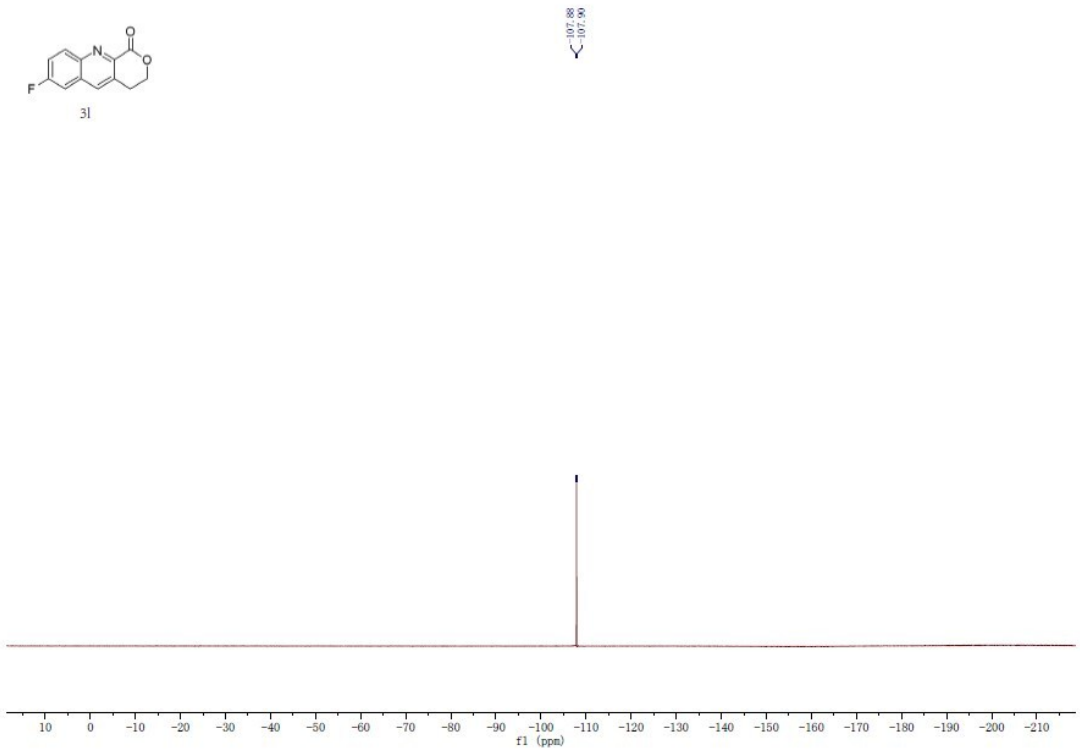
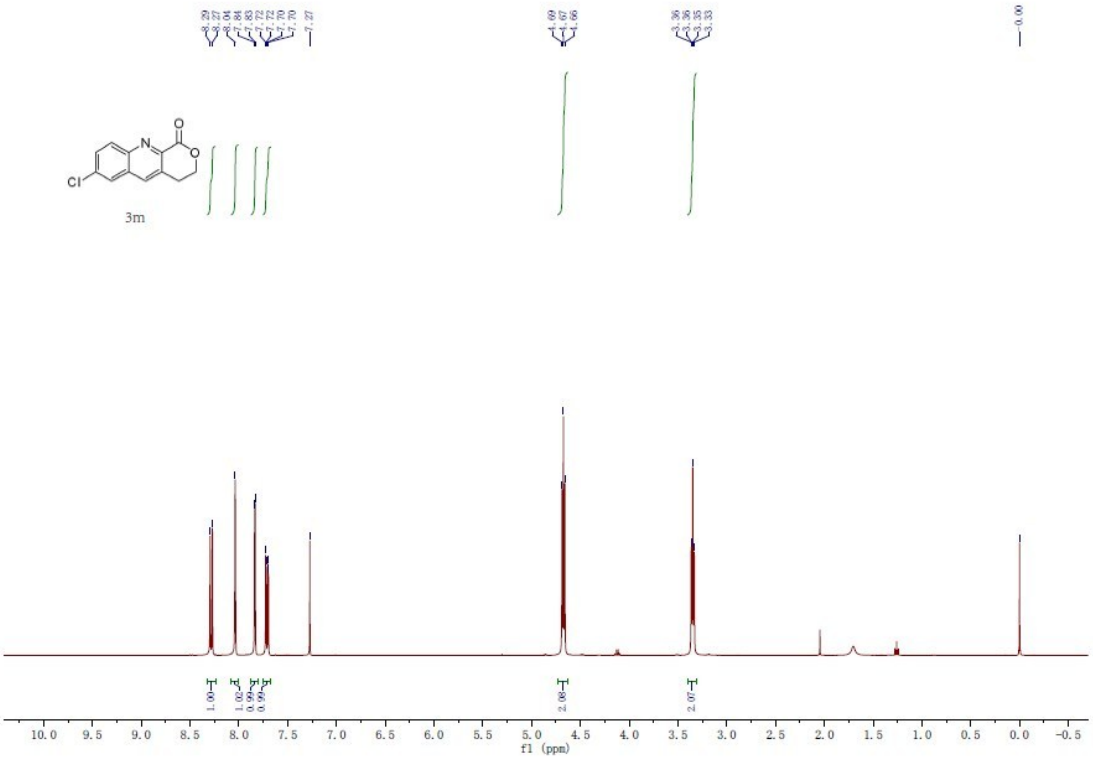


Figure S16. NMR spectra of **3l**. A. ^{1}H NMR. B. ^{13}C NMR. C. ^{19}F NMR.

A



B

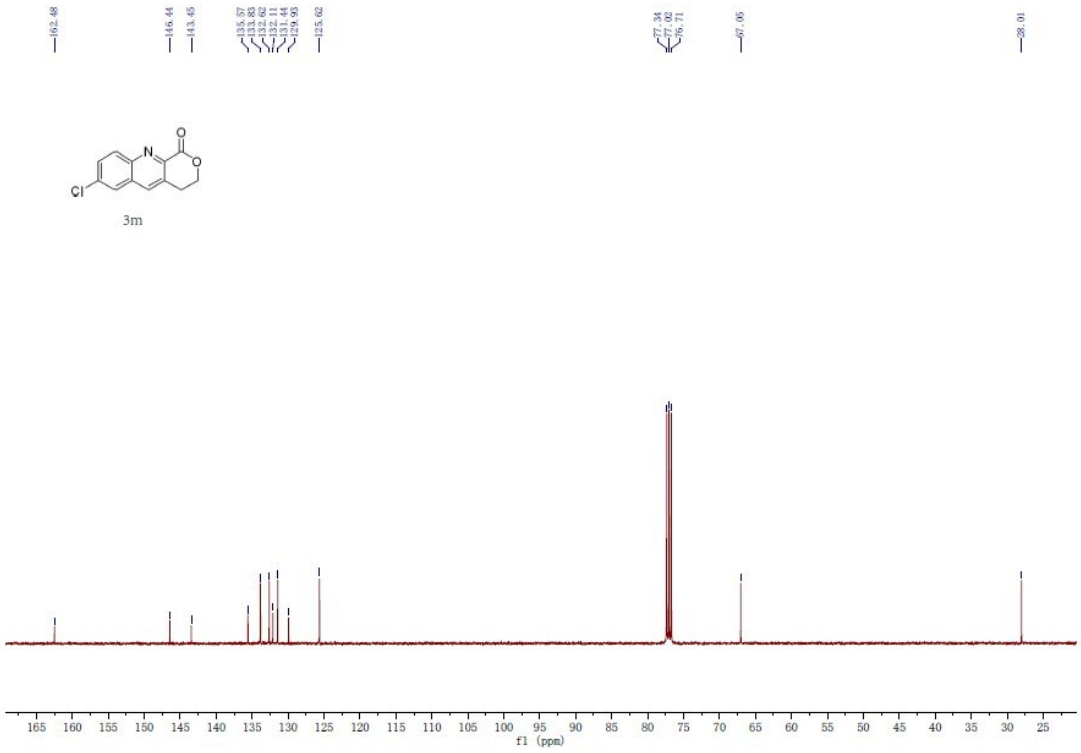
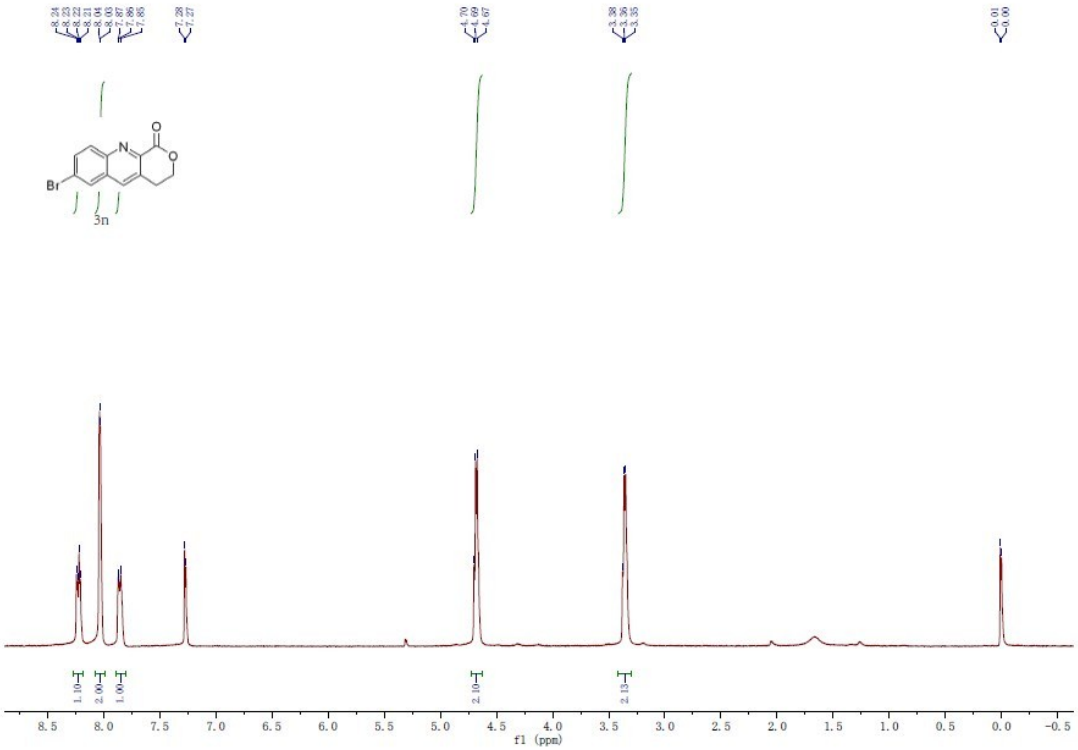


Figure S17. NMR spectra of **3m**. A. ^{1}H NMR. B. ^{13}C NMR.

A



B

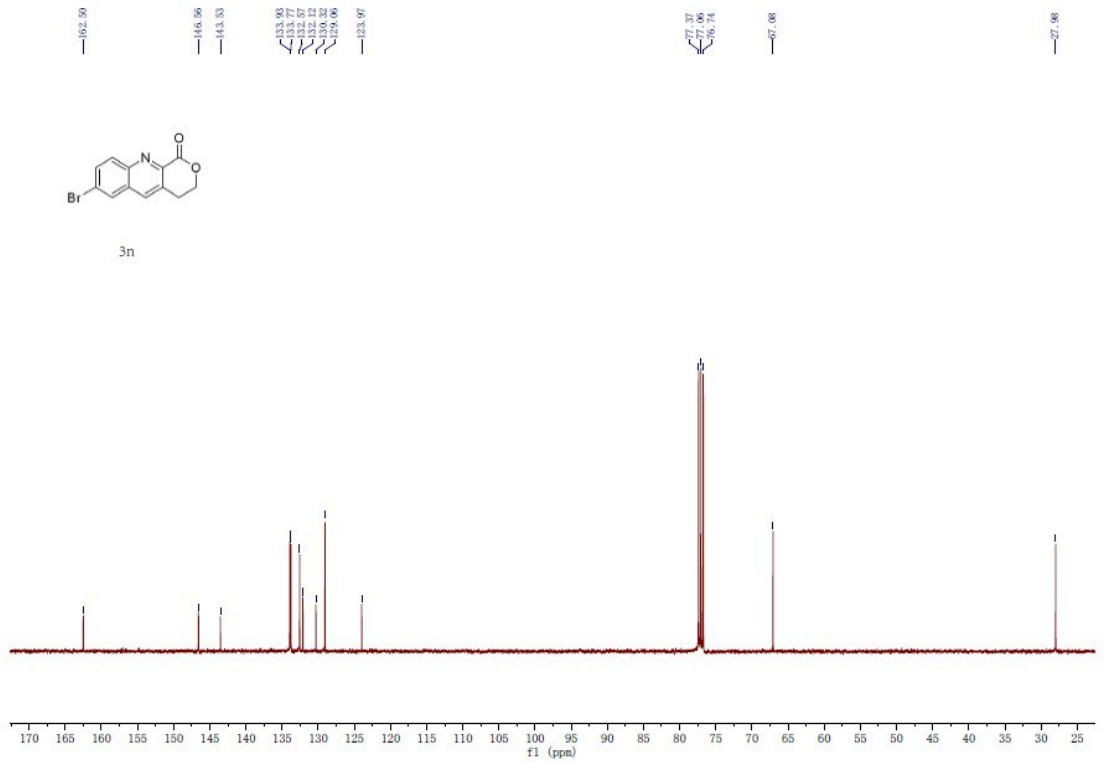
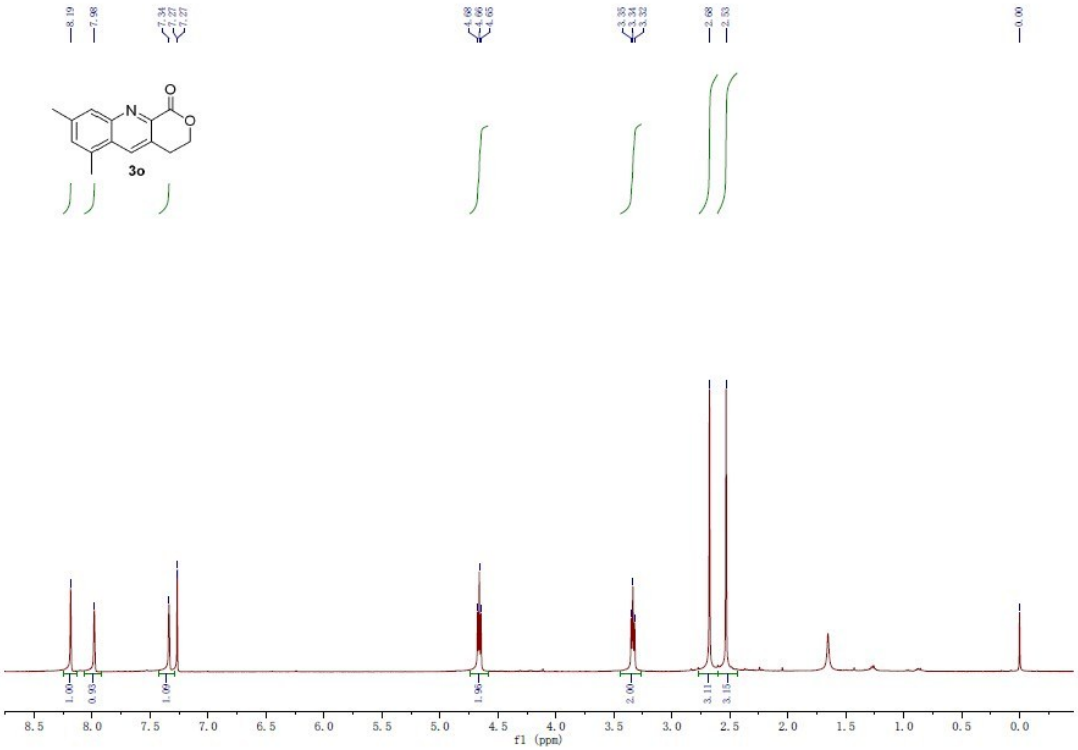


Figure S18. NMR spectra of **3n**. A. ^{1}H NMR. B. ^{13}C NMR.

A



B

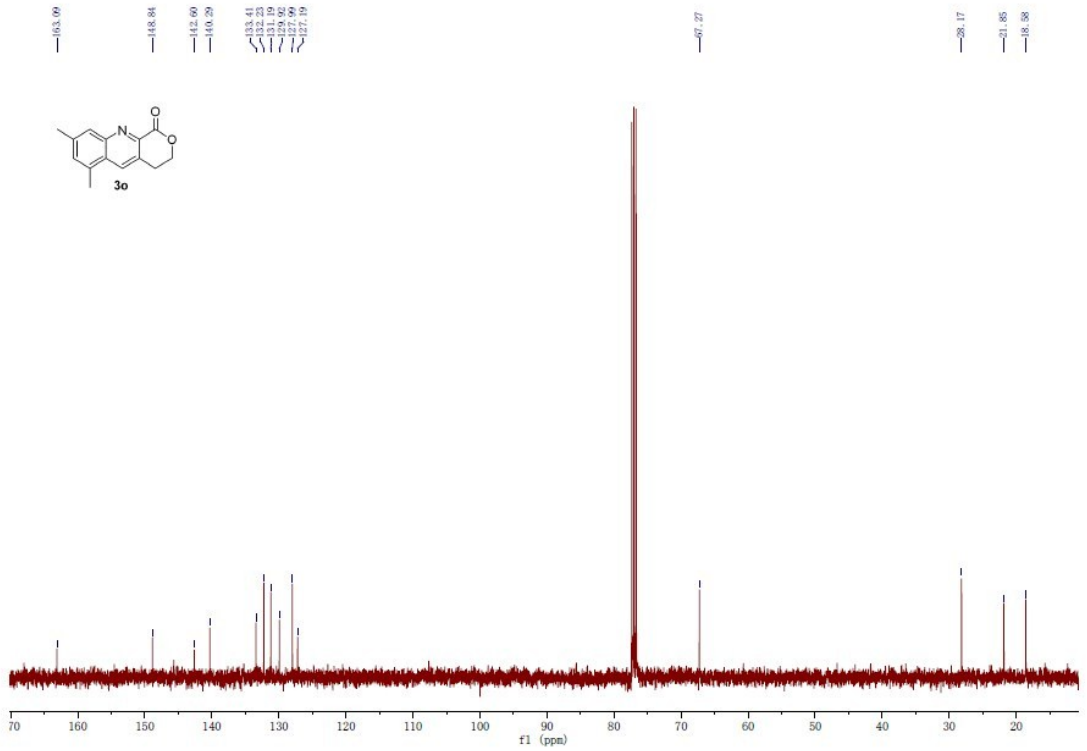
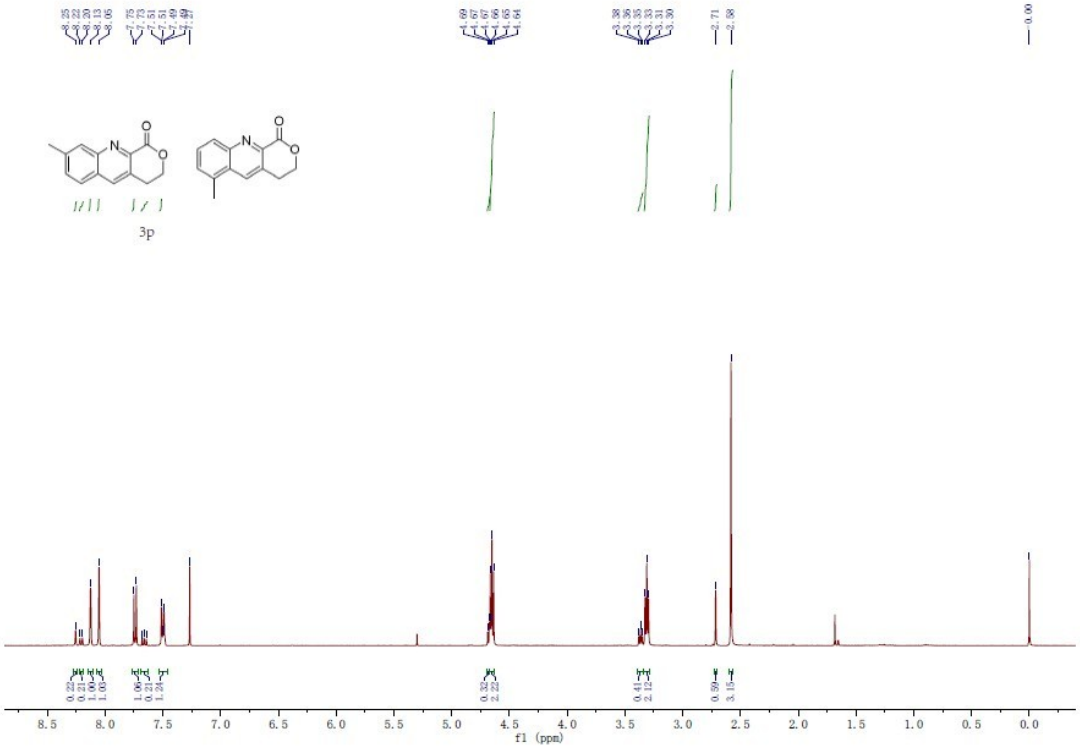


Figure S19. NMR spectra of **3o**. A. ^{1}H NMR. B. ^{13}C NMR.

A



B

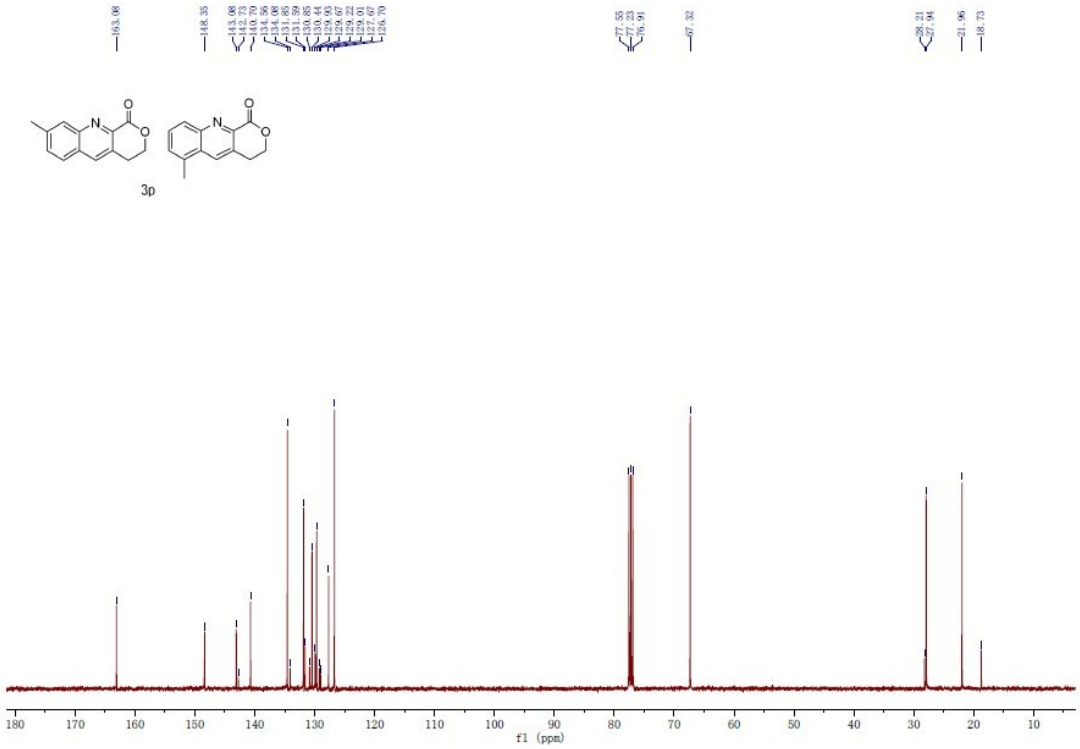
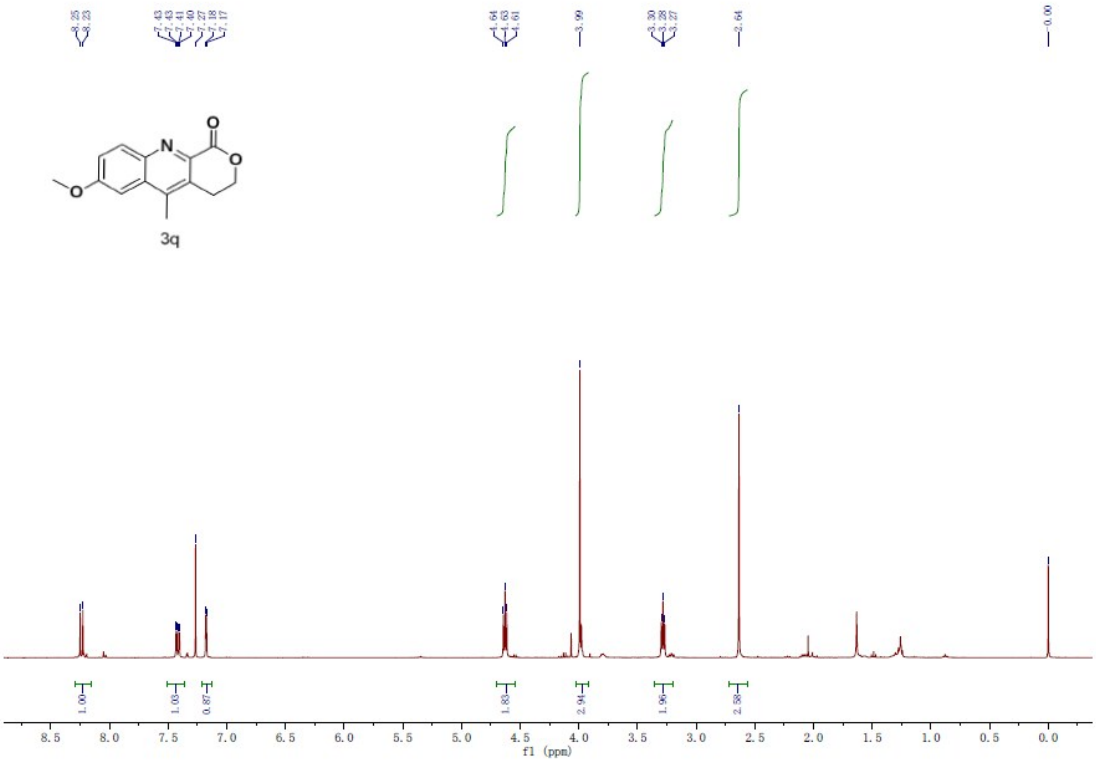


Figure S20. NMR spectra of **3p**. A. ^{1}H NMR. B. ^{13}C NMR.

A



B

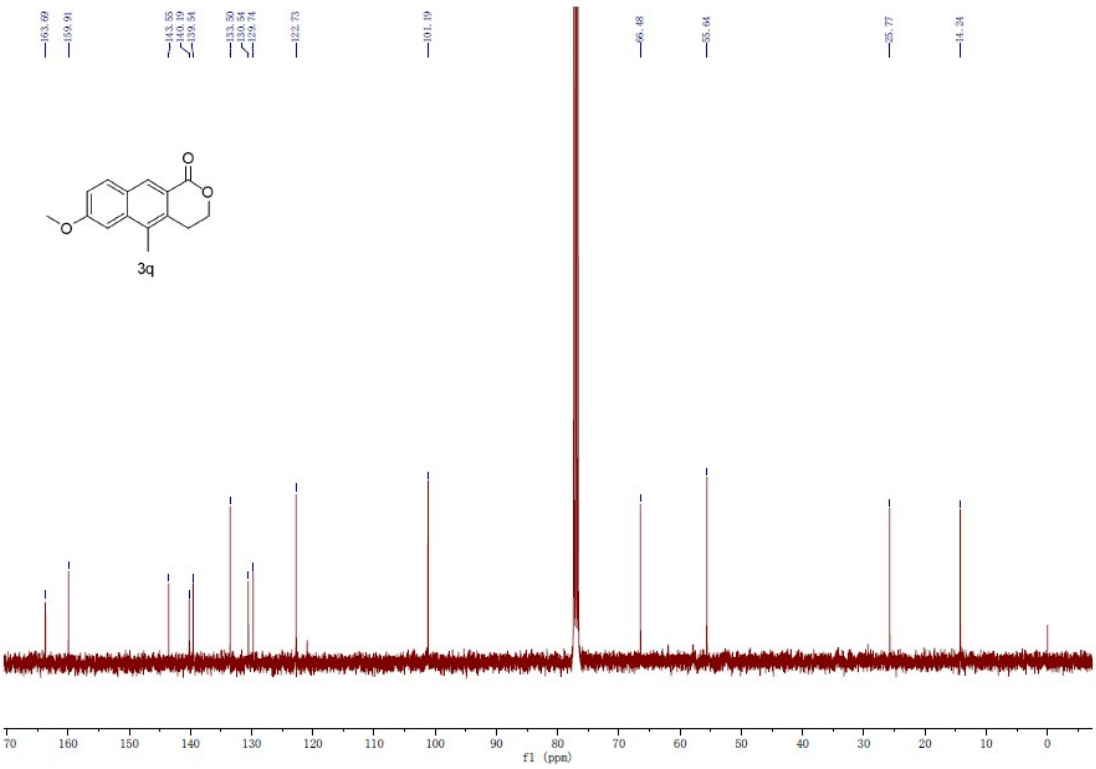
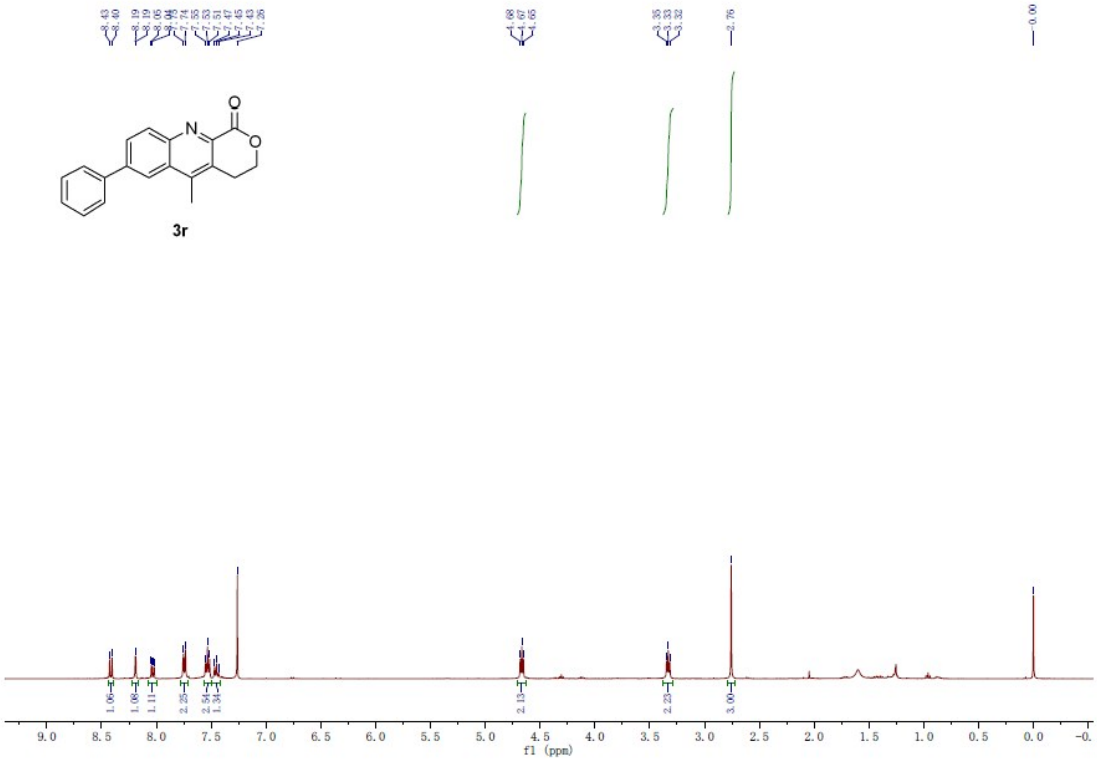


Figure S21. NMR spectra of **3q**. A. ^{1}H NMR. B. ^{13}C NMR.

A



B

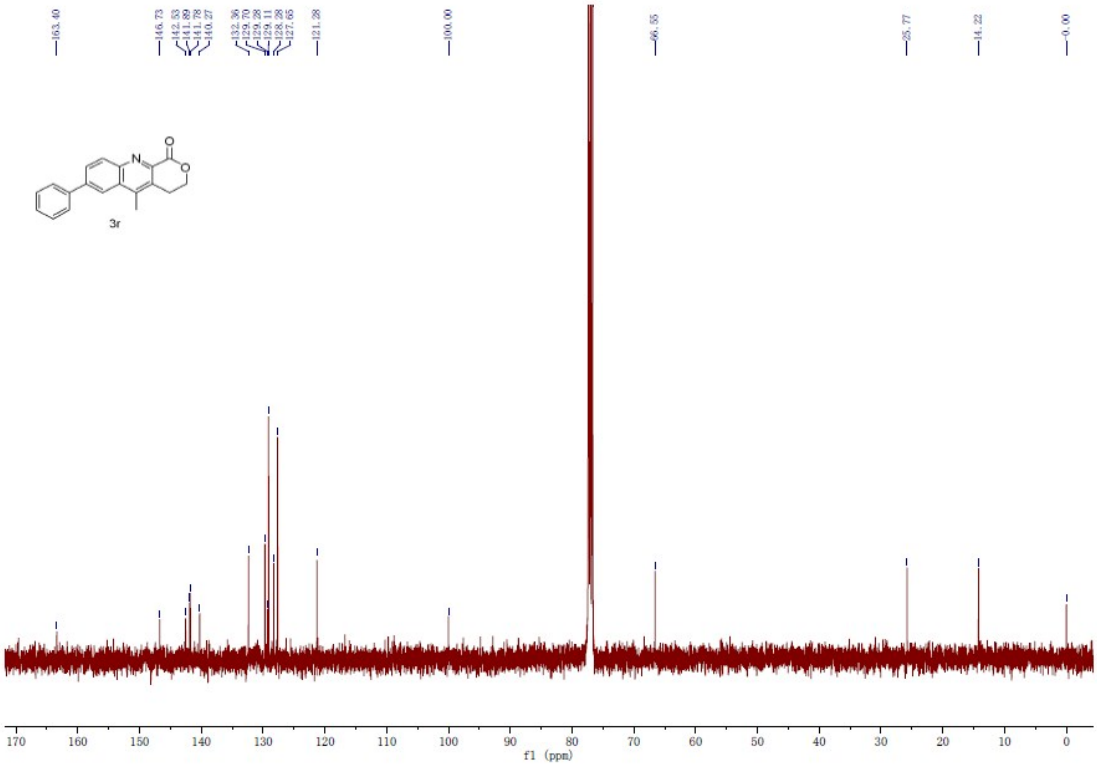
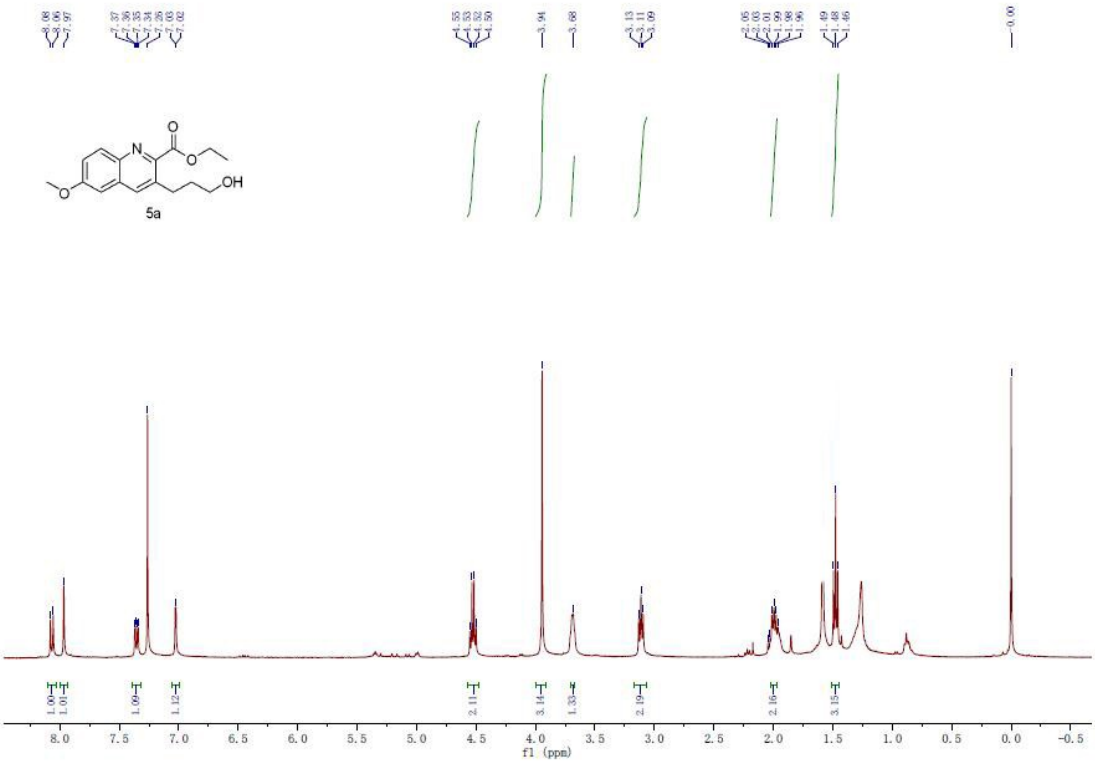


Figure S22. NMR spectra of **3r**. A. ^{1}H NMR. B. ^{13}C NMR.

A



B

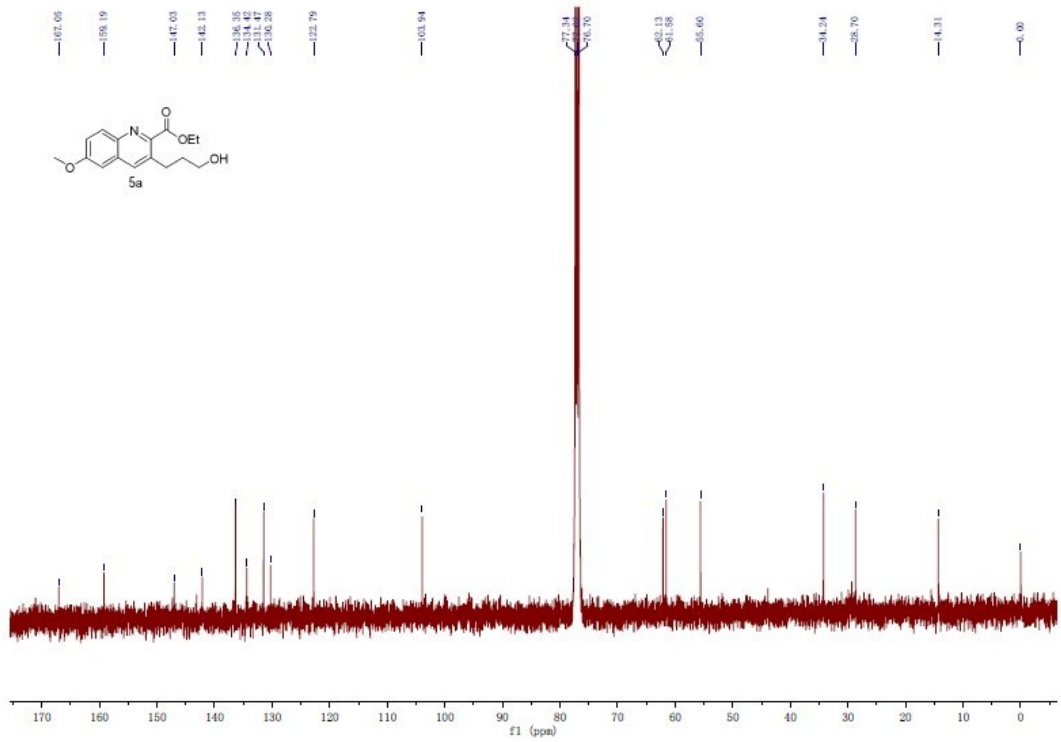
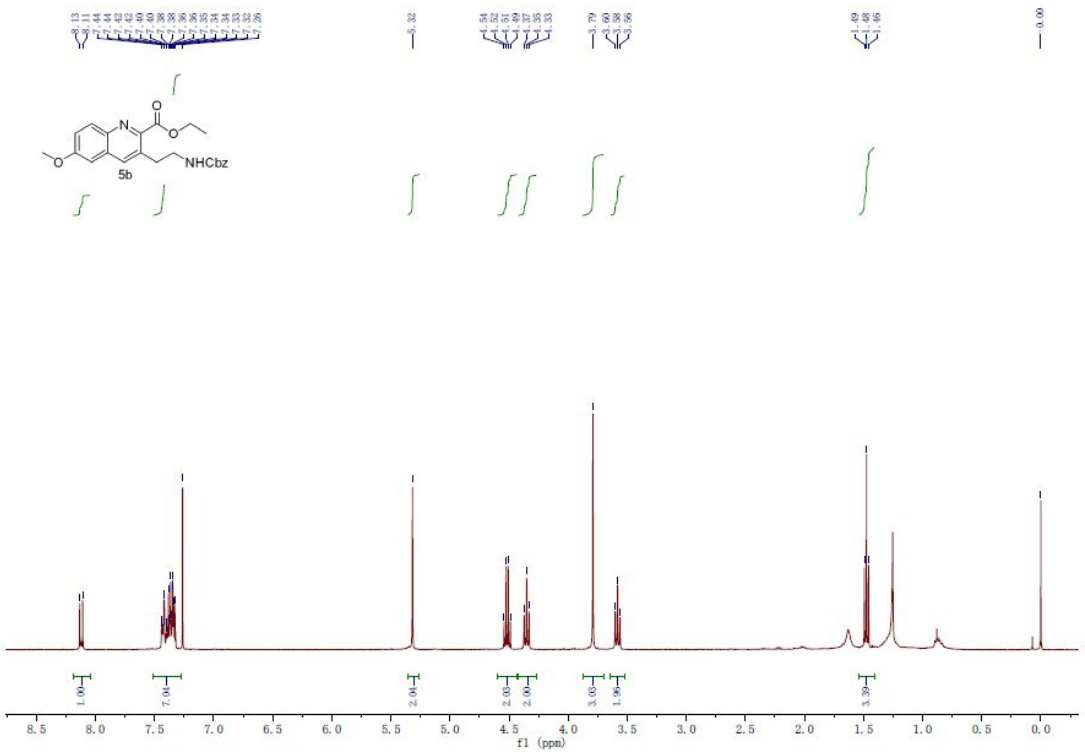


Figure S23. NMR spectra of of **5a**. A. ^{1}H NMR. B. ^{13}C NMR.

A



B

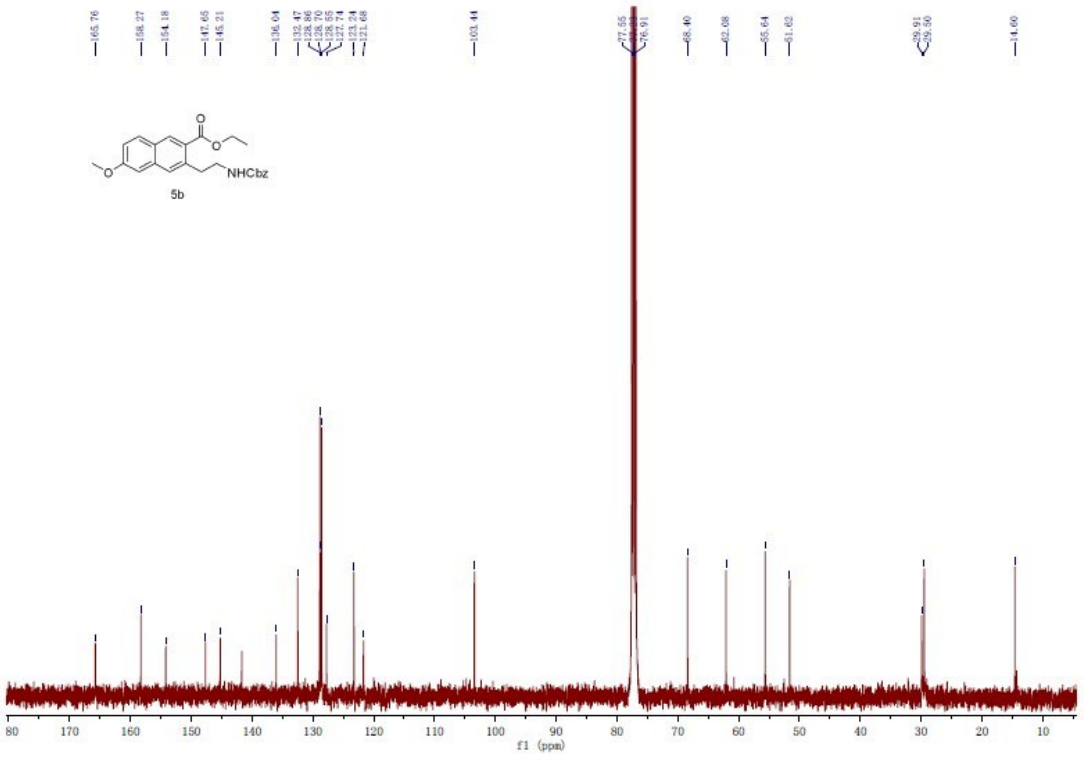
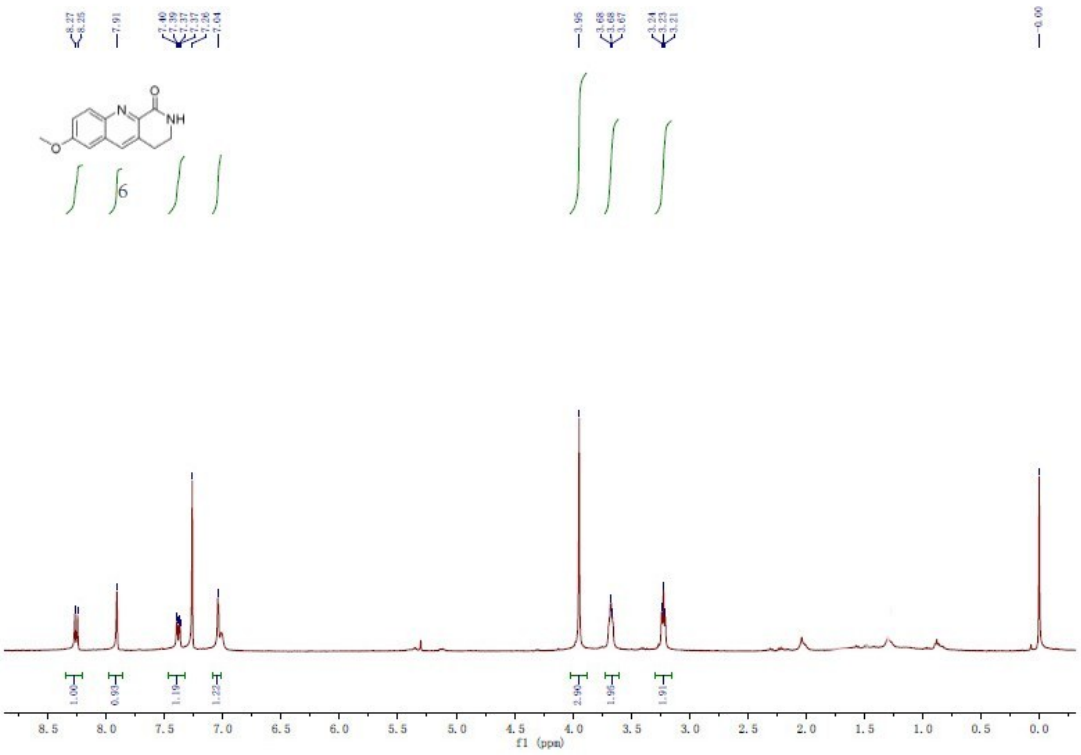


Figure S24. NMR spectra of **5b**. A. ^{1}H NMR. B. ^{13}C NMR.

A



B

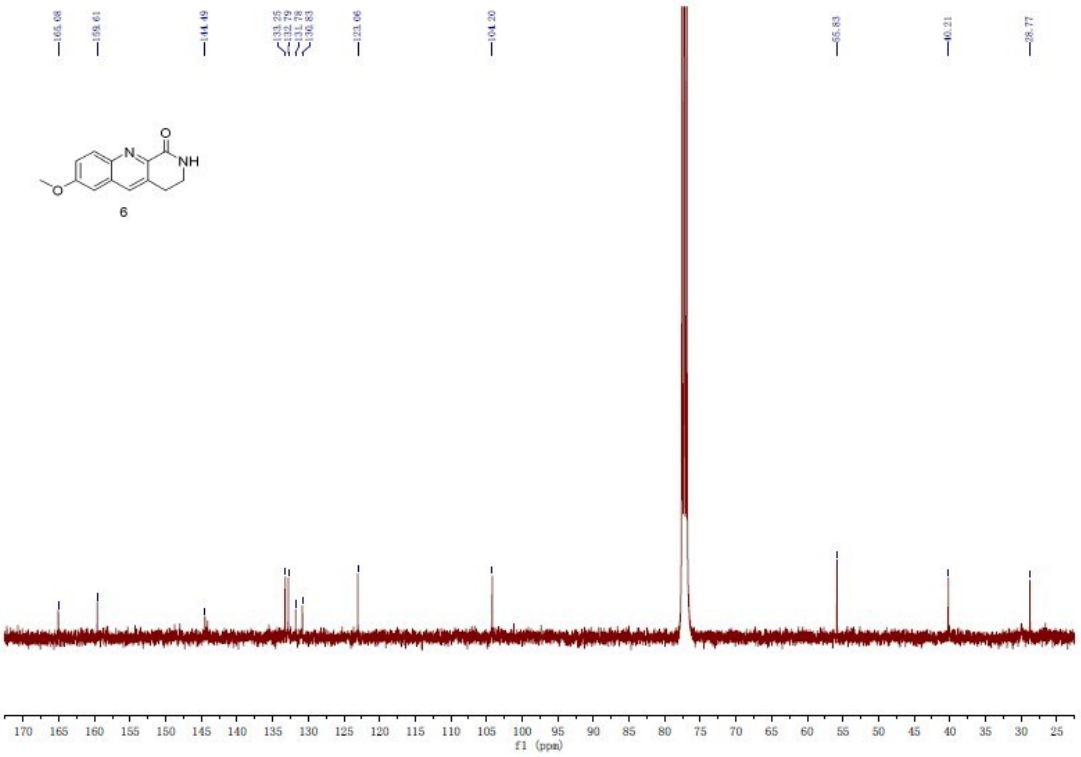


Figure S25. NMR spectra of **6**. A. ^{1}H NMR. B. ^{13}C NMR.