

Supporting Information

Regioselective C-3 arylation of coumarins with arylhydrazines via radical oxidation by potassium permanganate

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1. Screening of the reaction conditions

Table S1 The yield of 3-phenylcoumarin (**3a**) was influenced by the ratio of coumarin (**1a**) to phenylhydrazine (**2a**)^a

Entry	Ratio of 1a to 2a	Yield (%) ^b
1	2:1	40
2	1:1	60
3	1:1.2	65
4	1:2	85
5	1:3	75

^a Reaction conditions: coumarin **1** (0.5 mmol), phenylhydrazines **2**, KMnO₄ (1.5 mmol), CH₃CN (10 mL) at 80 °C for 4.0 h.

^b Isolated yields.

2. Copies of spectra of products

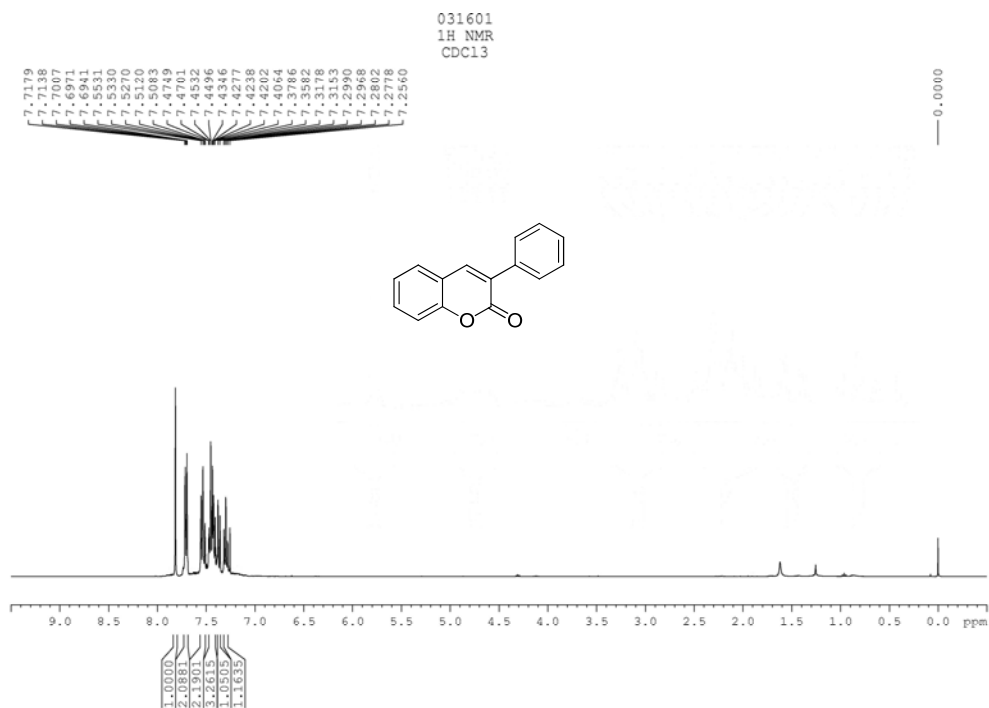


Fig. 1 ¹H NMR spectrum of 3a

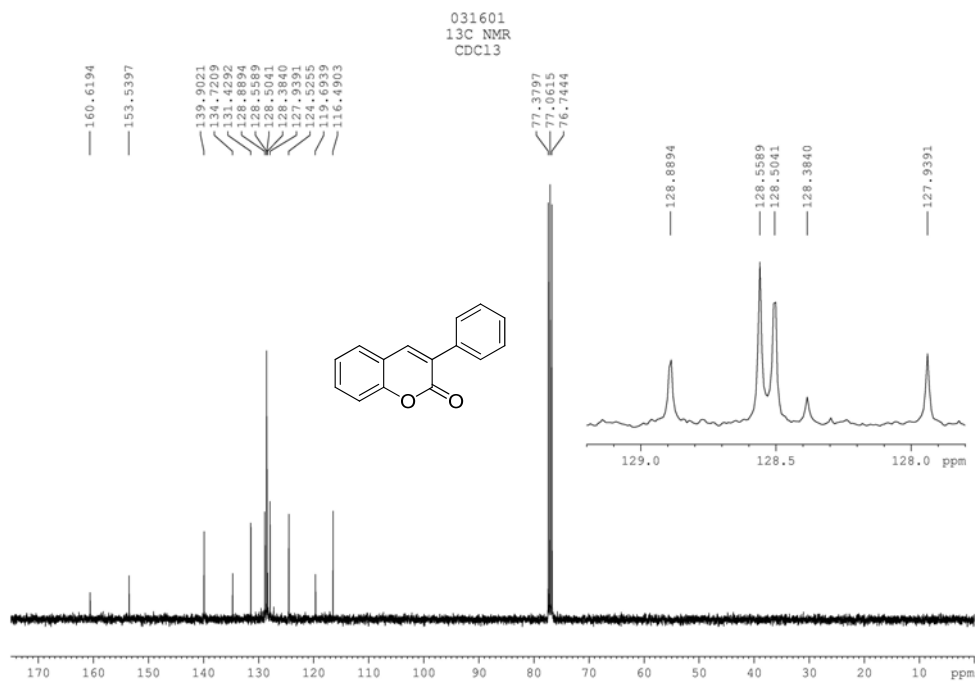


Fig. 2 ¹³C NMR spectrum of 3a

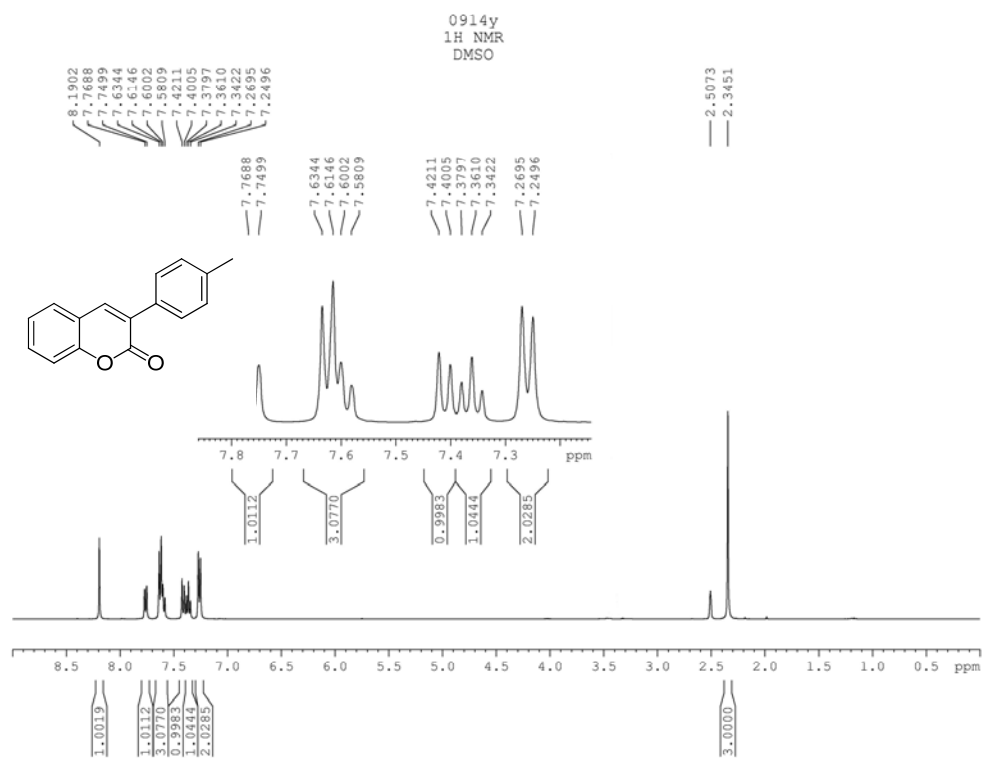


Fig. 3 ^1H NMR spectrum of **3b**

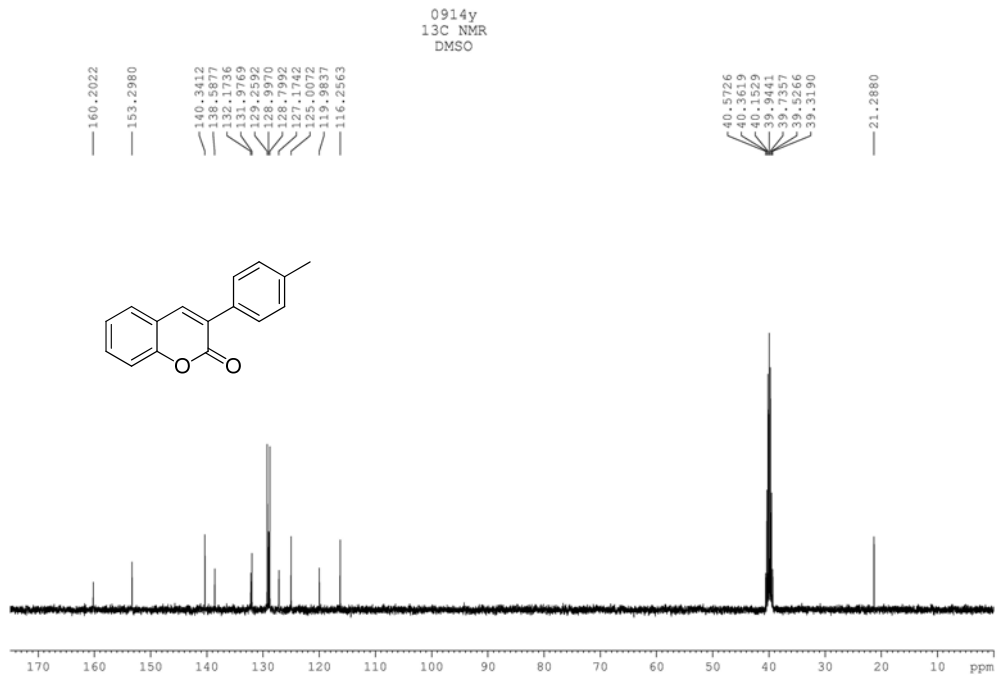


Fig. 4 ^{13}C NMR spectrum of **3b**

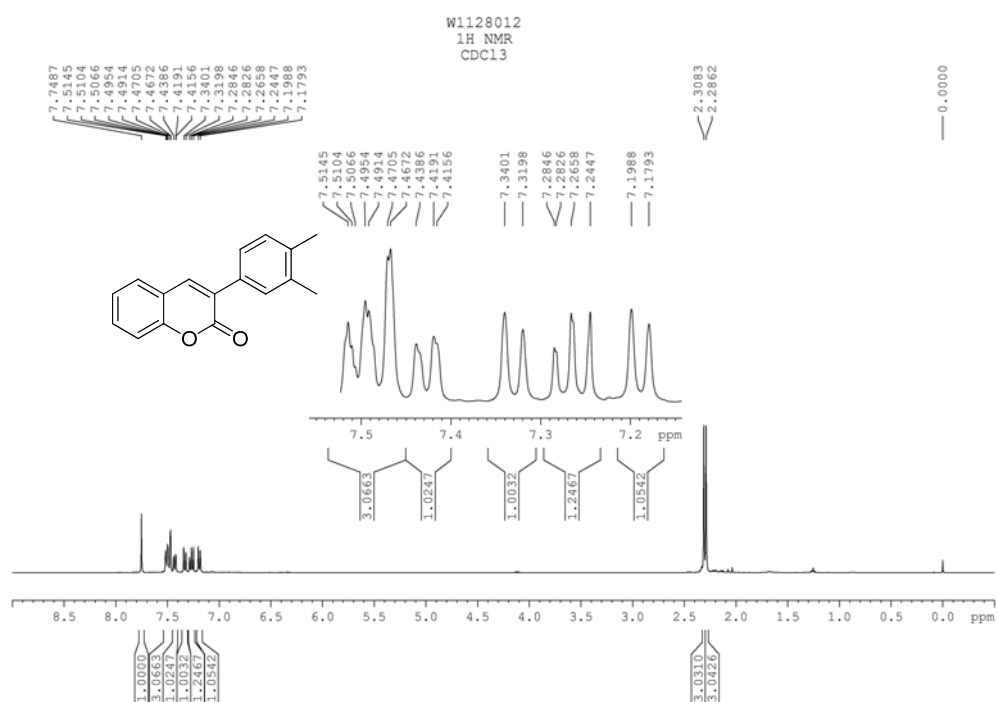


Fig. 5 ¹H NMR spectrum of **3c**

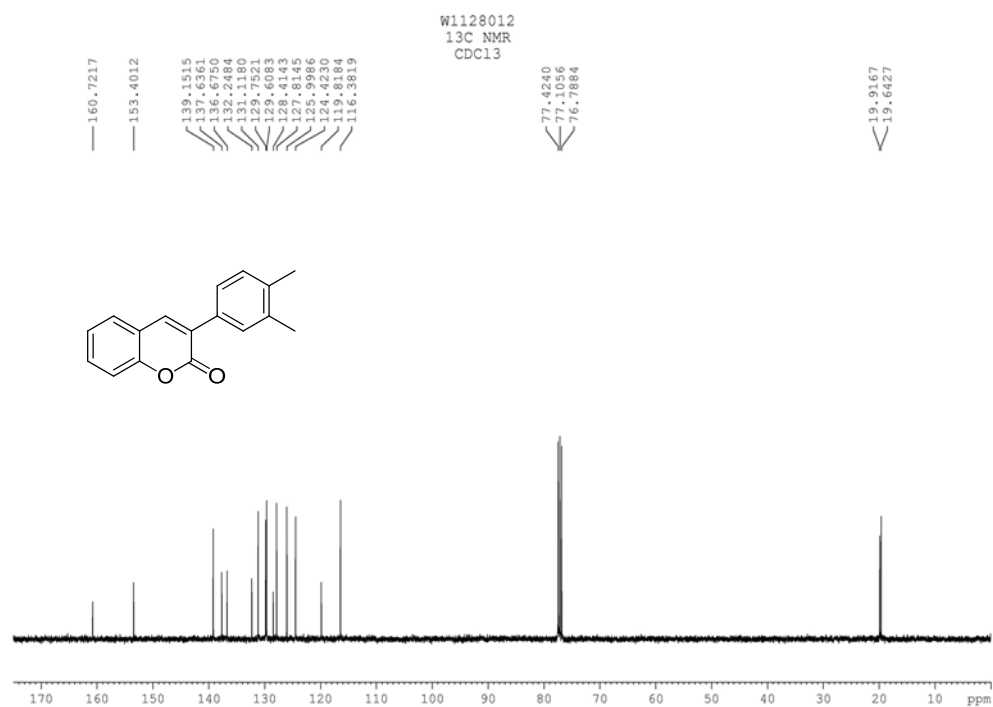


Fig. 6 ¹³C NMR spectrum of **3c**

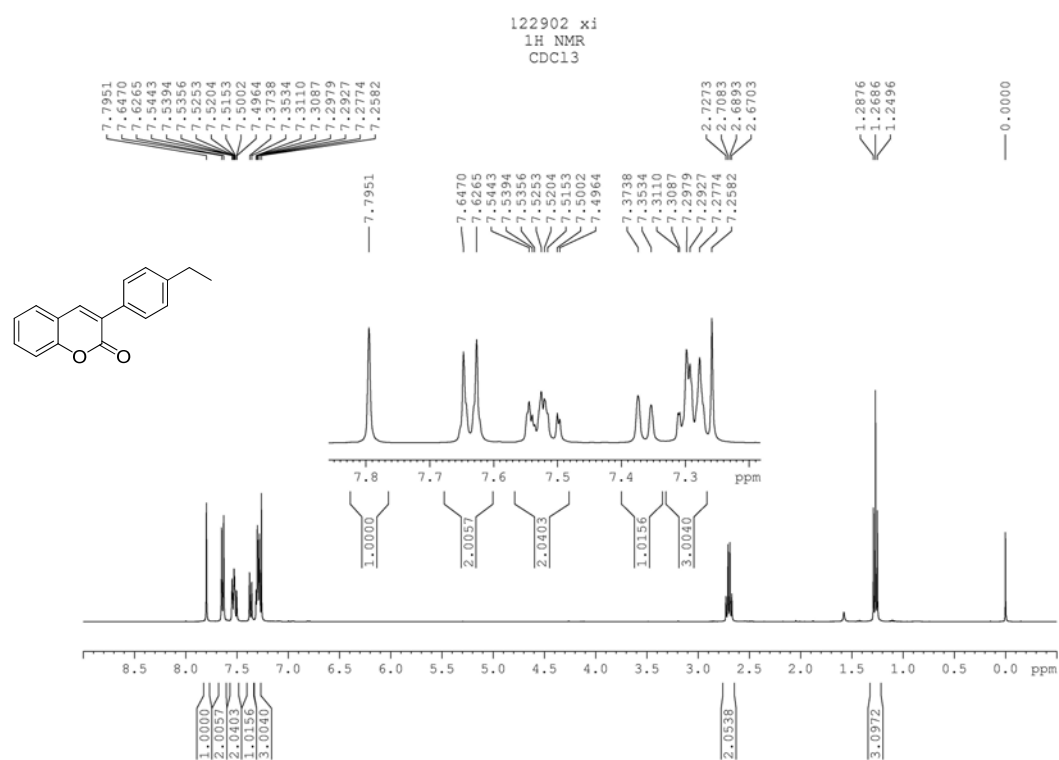


Fig. 7 ^1H NMR spectrum of **3d**

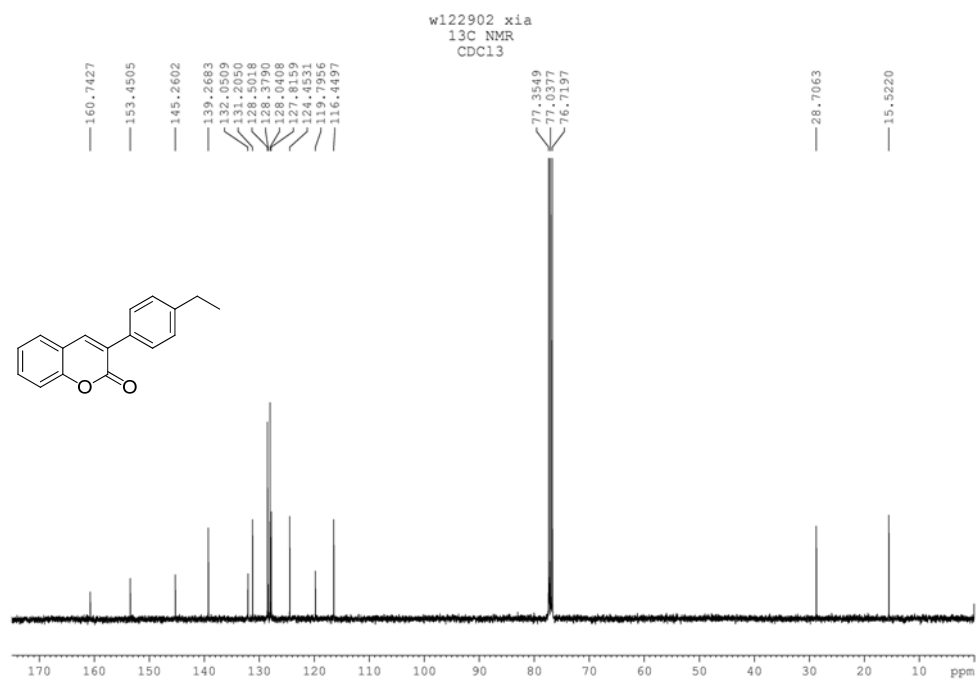


Fig. 8 ^{13}C NMR spectrum of **3d**

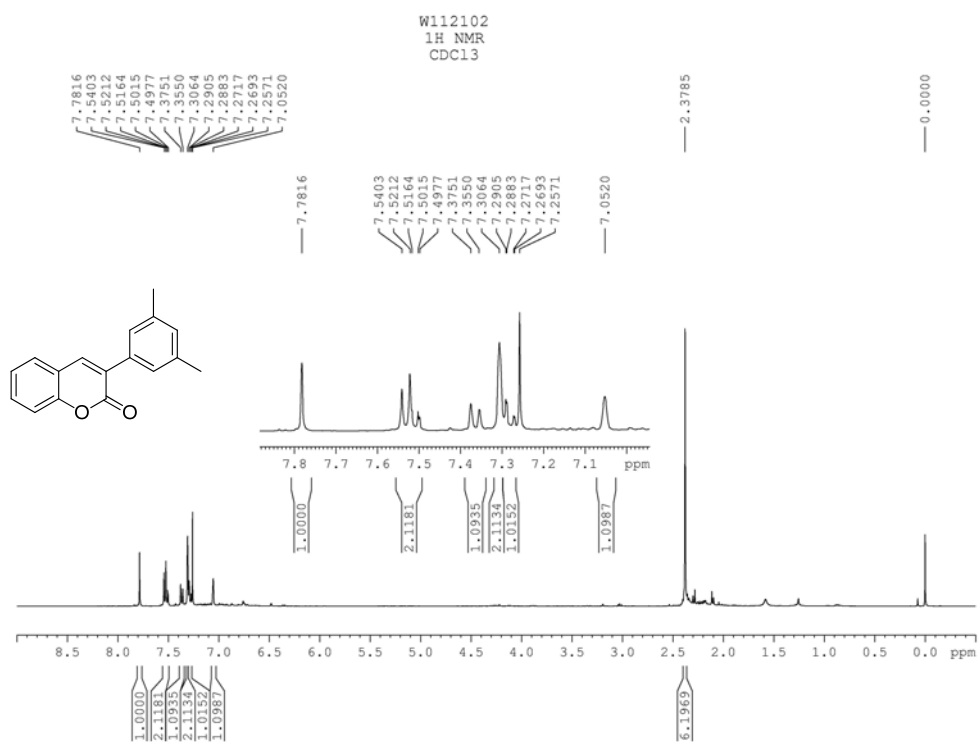


Fig. 9 ^1H NMR spectrum of **3e**

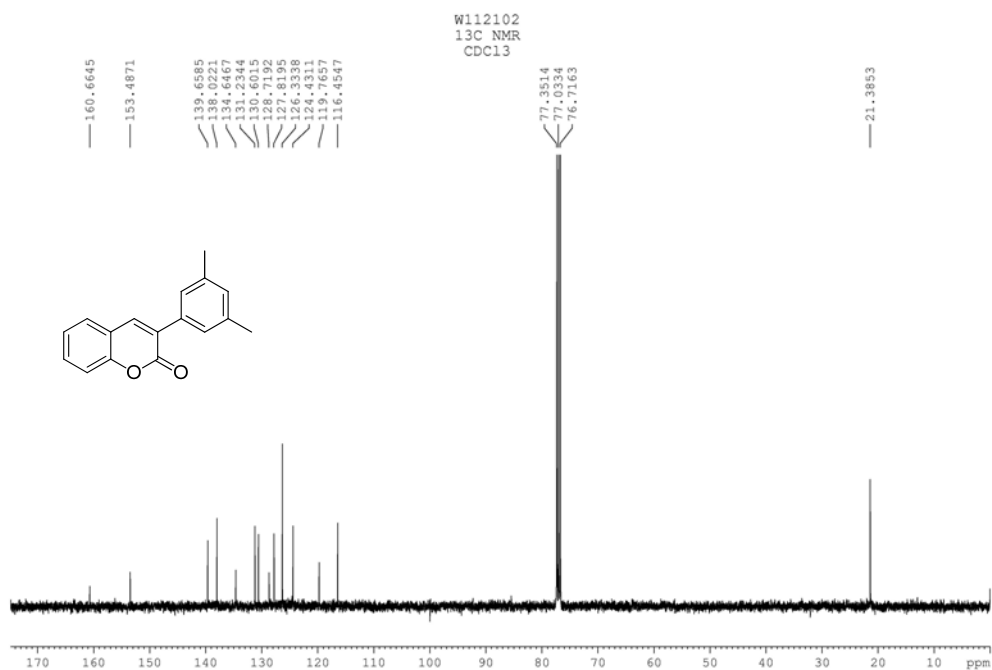


Fig. 10 ^{13}C NMR spectrum of **3e**

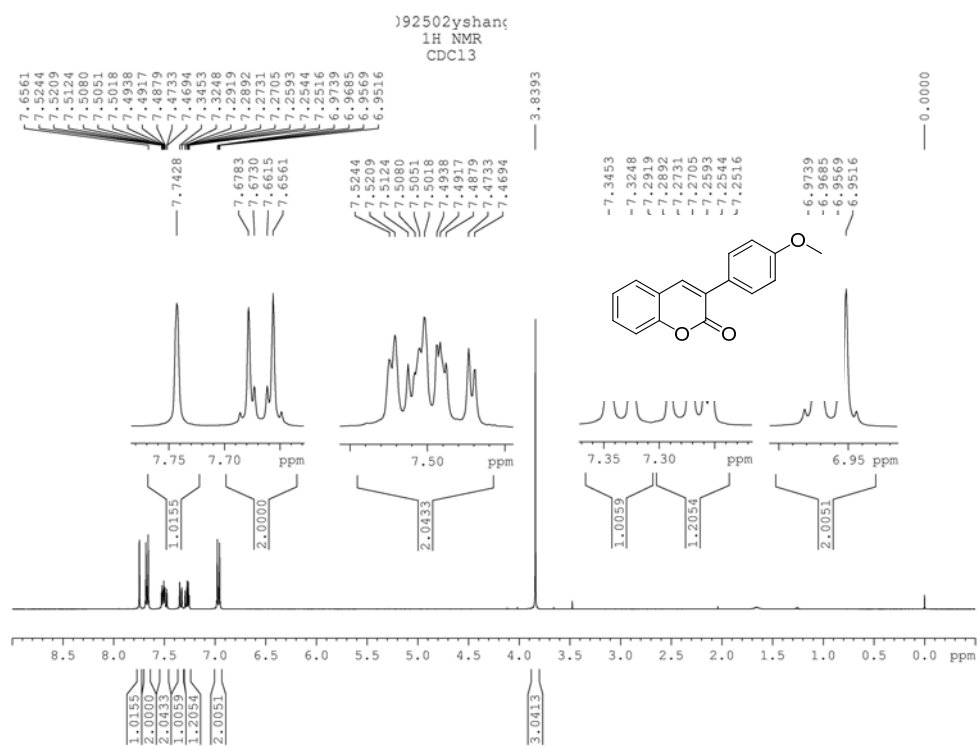


Fig. 11 ^1H NMR spectrum of **3f**

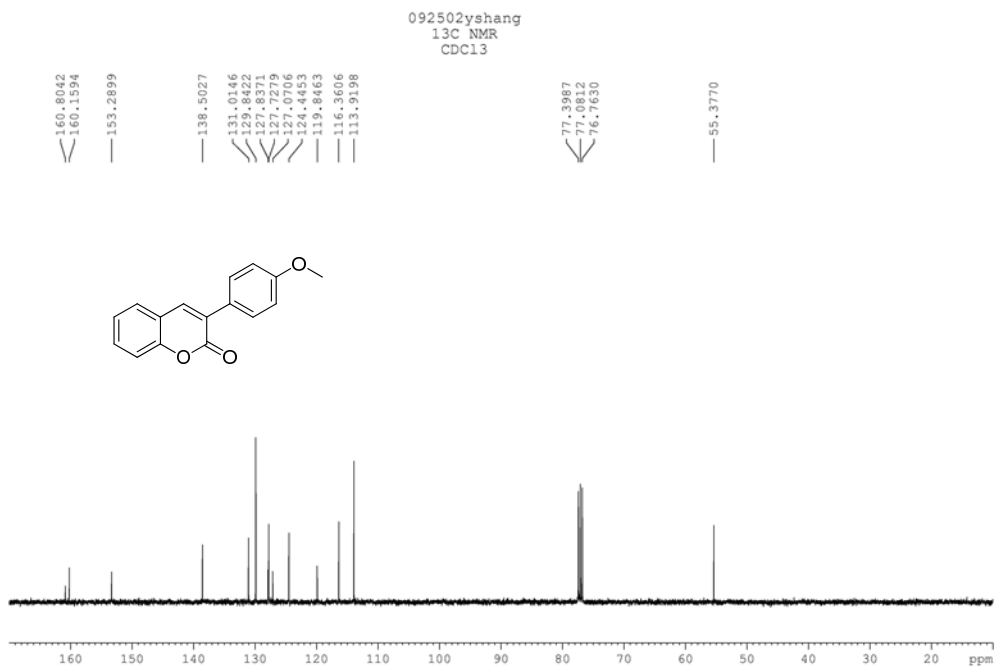


Fig. 12 ^{13}C NMR spectrum of **3f**

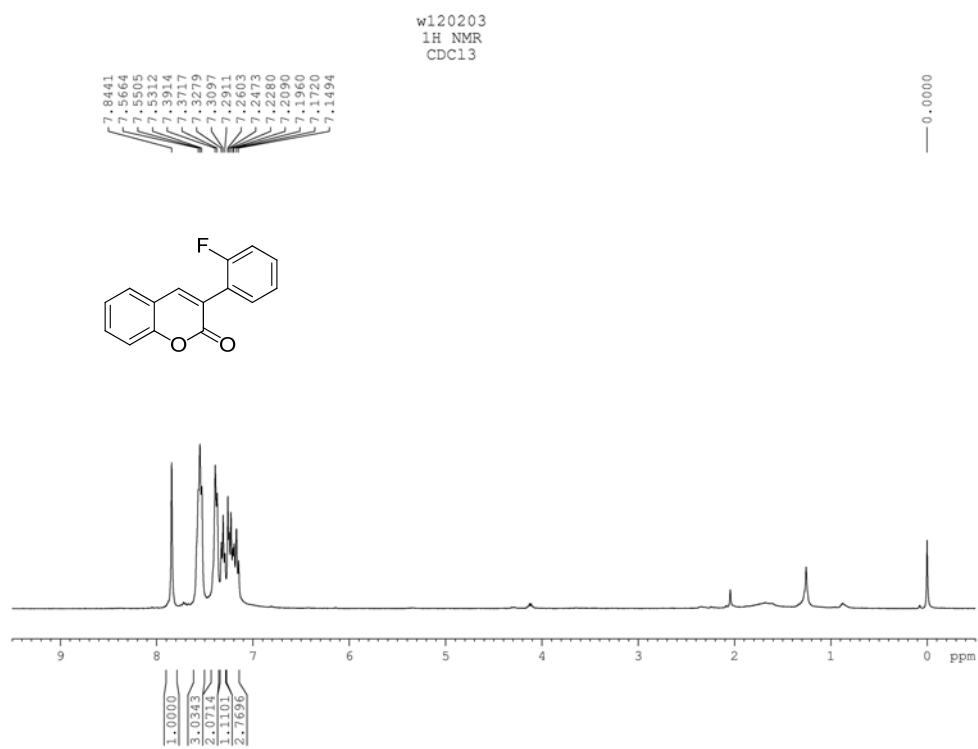


Fig. 13 ^1H NMR spectrum of **3g**

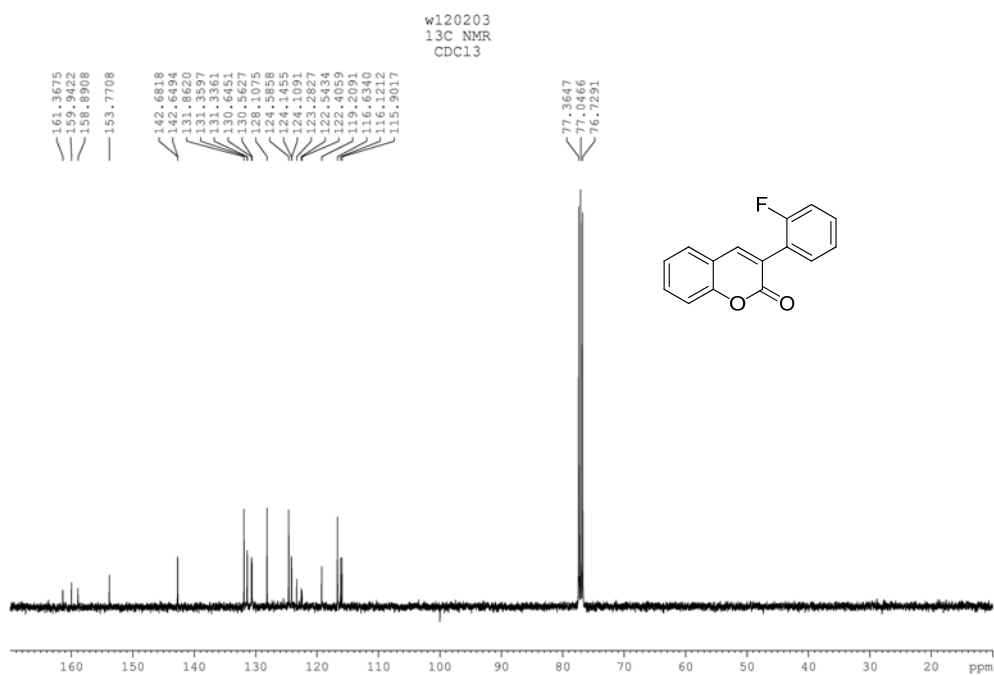


Fig. 14 ^{13}C NMR spectrum of **3g**

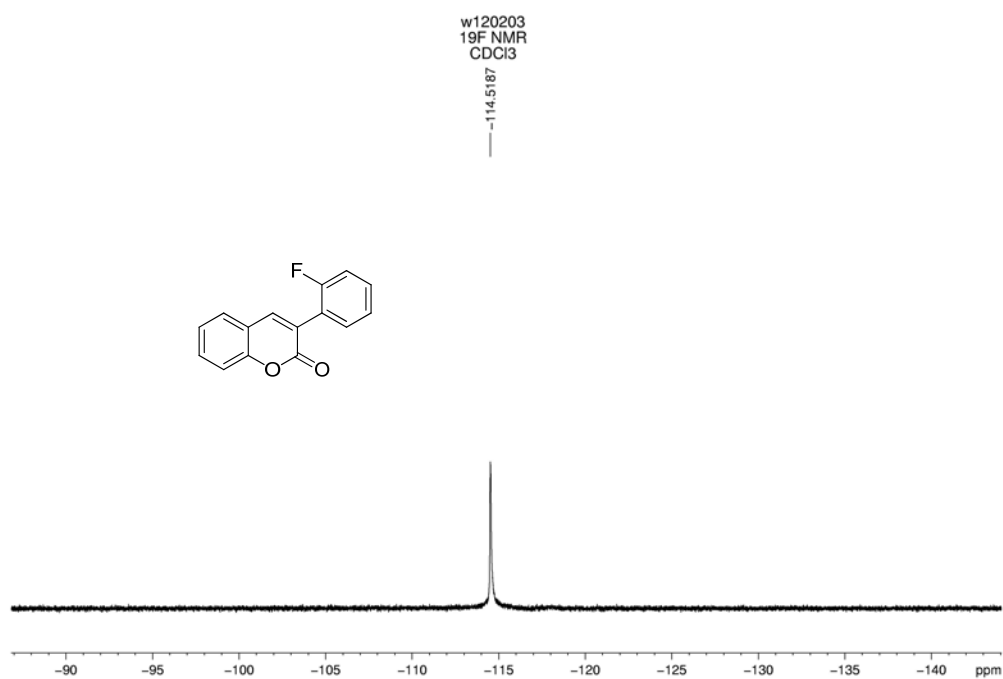


Fig. 15 ^{19}F NMR spectrum of **3g**

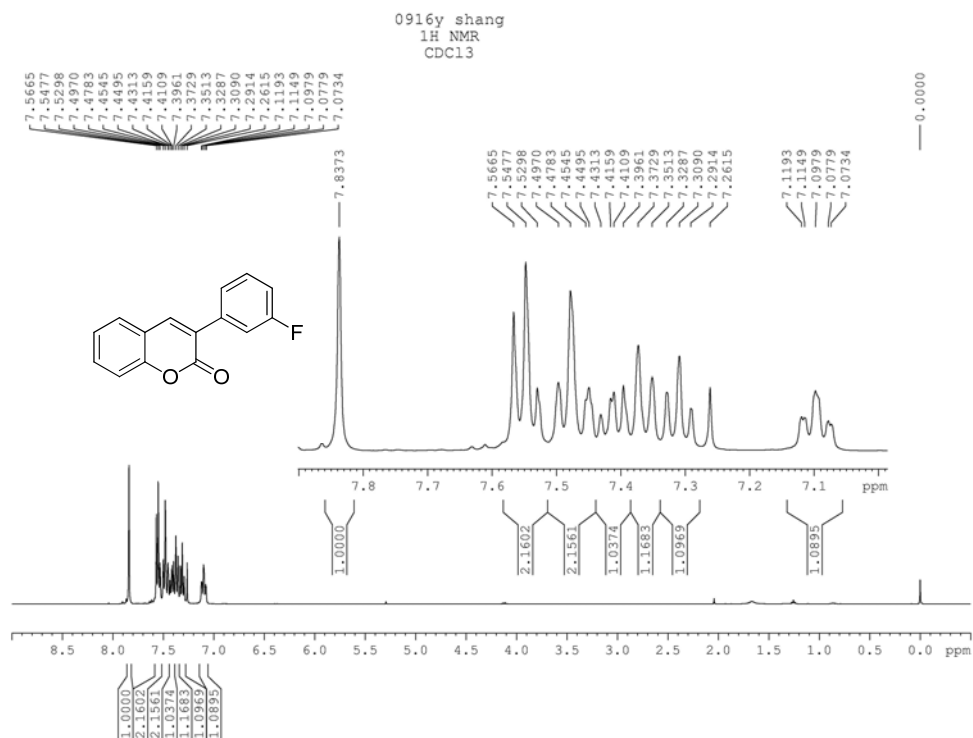


Fig. 16 ^1H NMR spectrum of **3h**

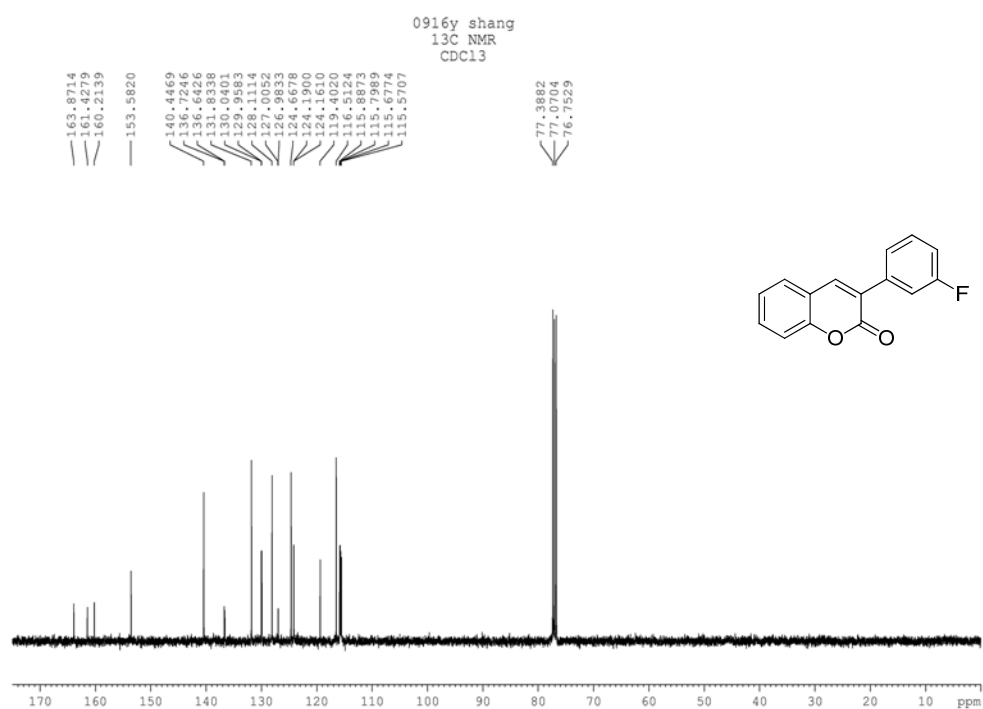


Fig. 17 ¹³C NMR spectrum of **3h**

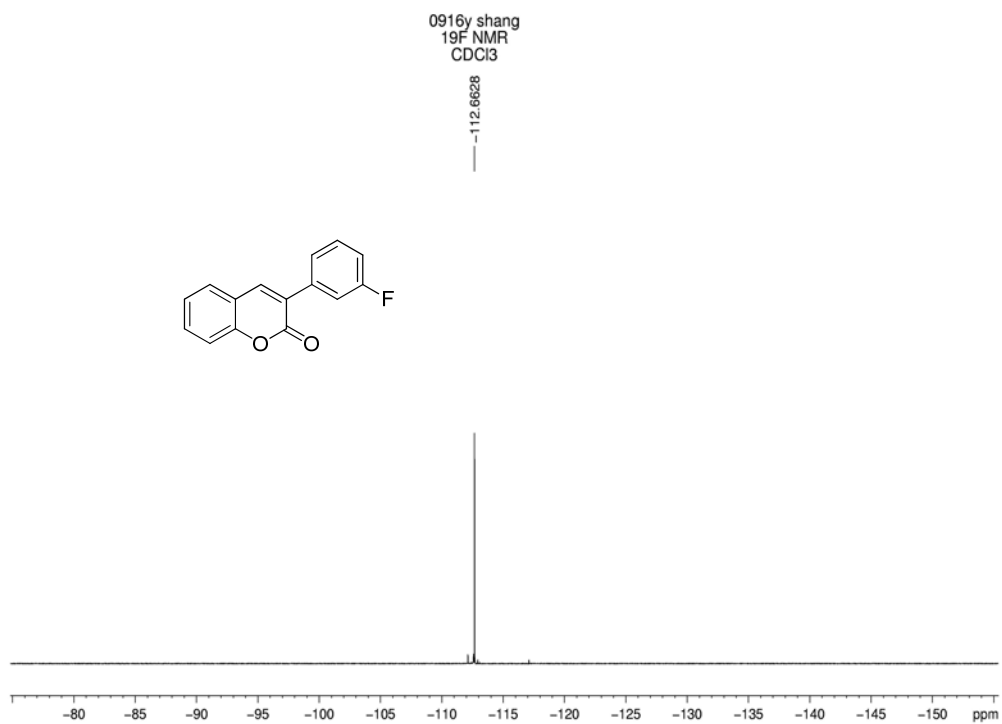


Fig. 18 ¹⁹F NMR spectrum of **3h**

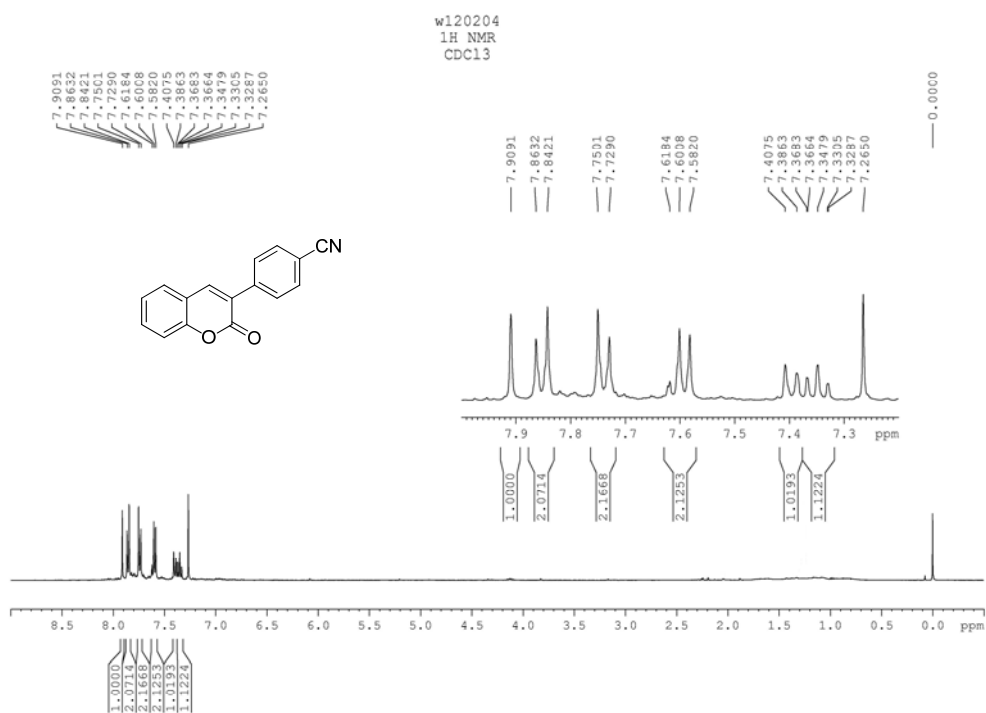


Fig. 19 ¹H NMR spectrum of **3i**

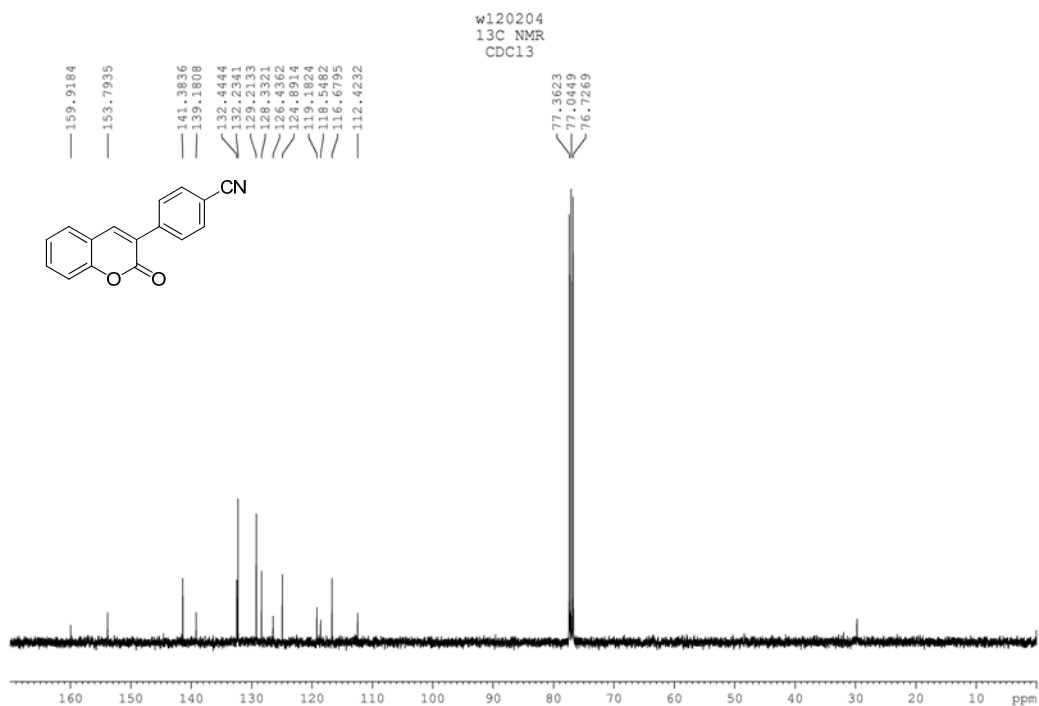


Fig. 20 ¹³C NMR spectrum of **3i**

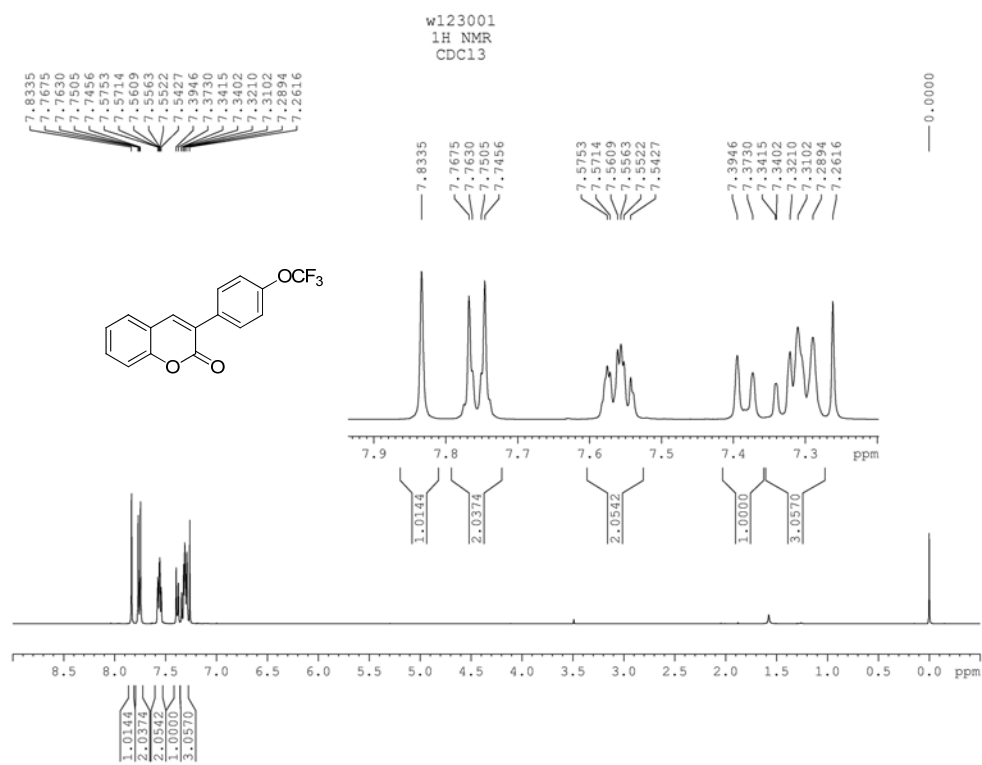


Fig. 21 ^1H NMR spectrum of **3j**

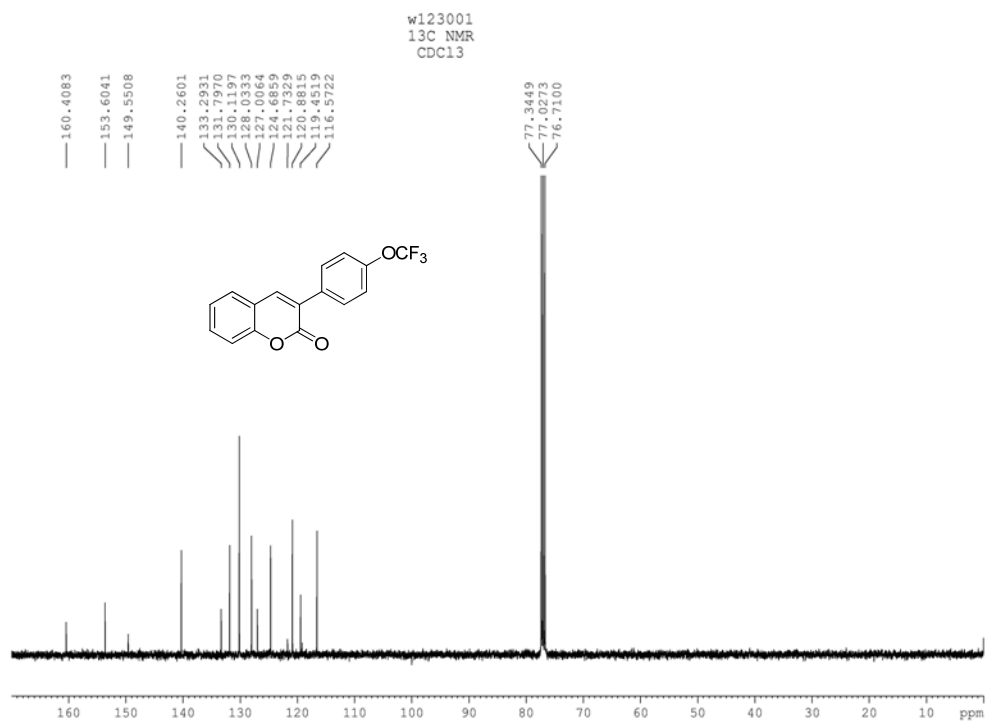


Fig. 22 ^{13}C NMR spectrum of **3j**

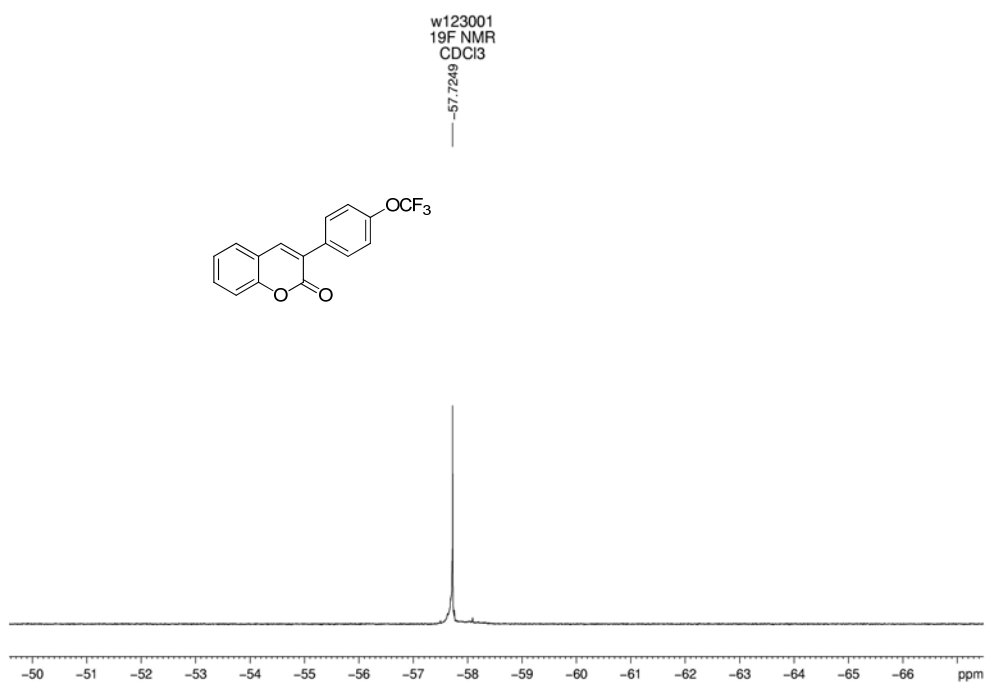


Fig. 23 ^{19}F NMR spectrum of **3j**

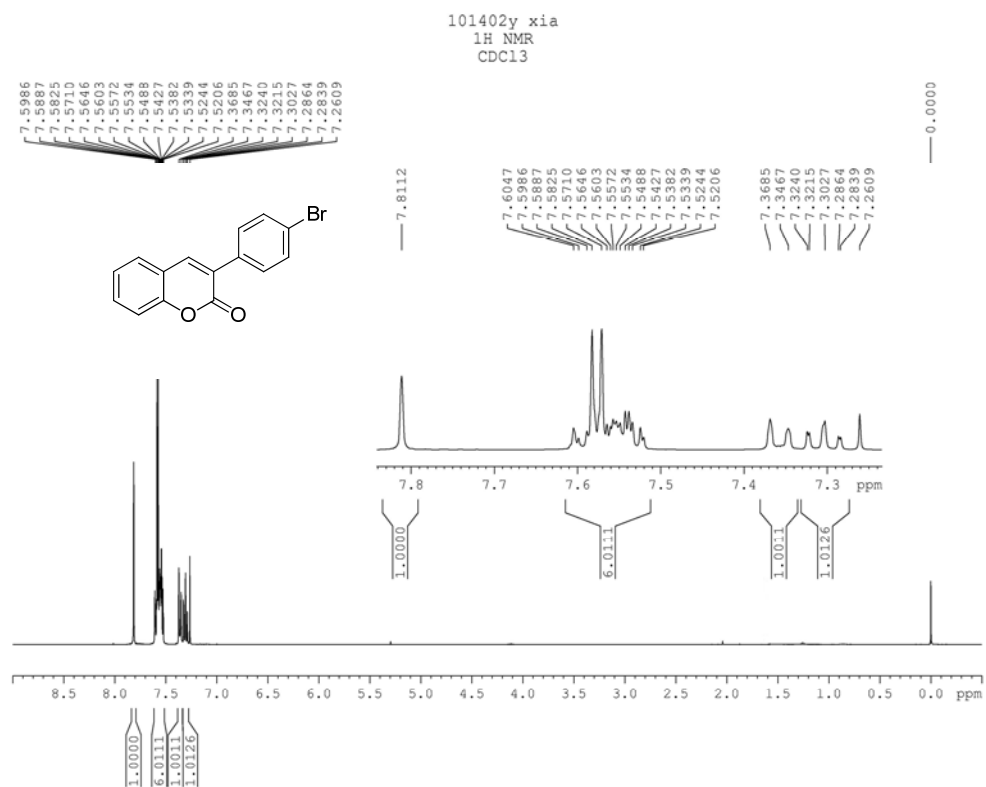


Fig. 24 ^1H NMR spectrum of **3l**

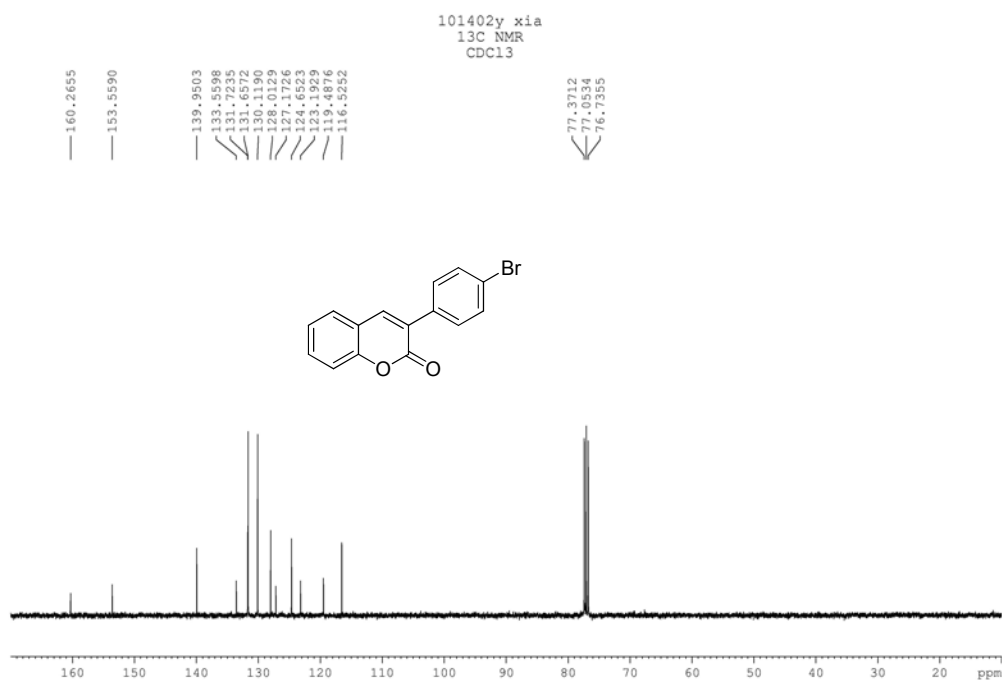


Fig. 25 ^{13}C NMR spectrum of **3l**

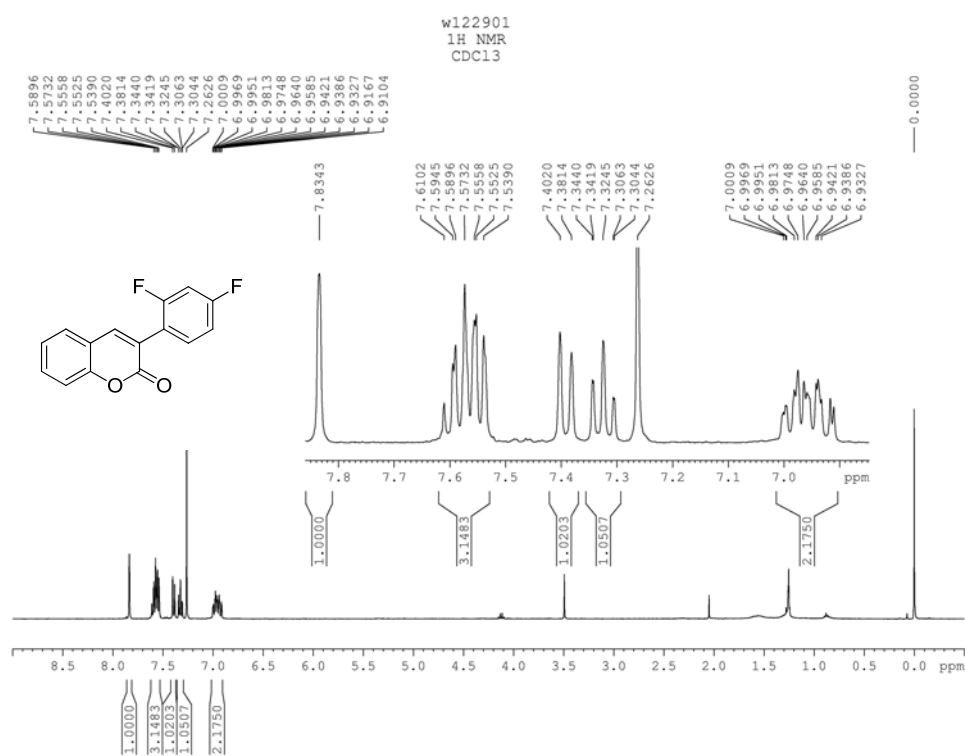


Fig. 26 ^1H NMR spectrum of **3m**

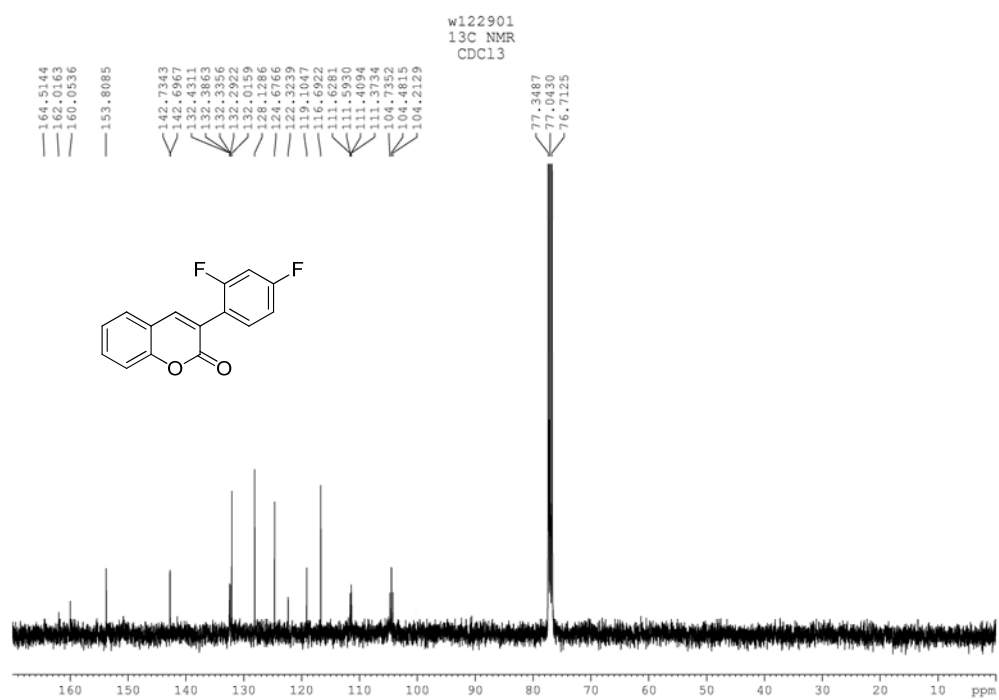


Fig. 27 ^{13}C NMR spectrum of **3m**

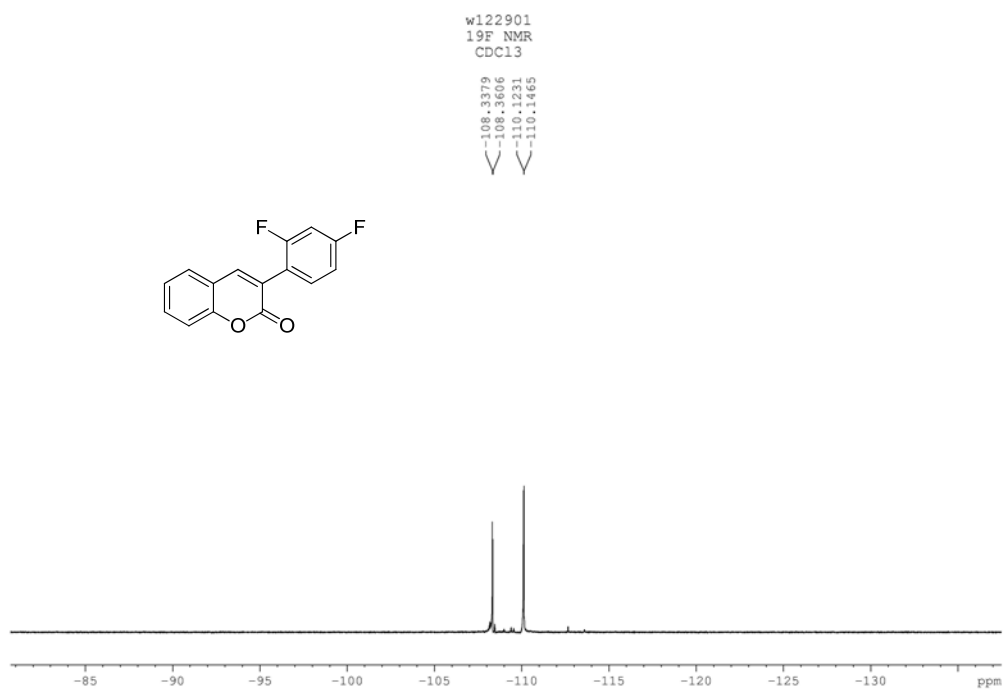


Fig. 28 ^{19}F NMR spectrum of **3m**

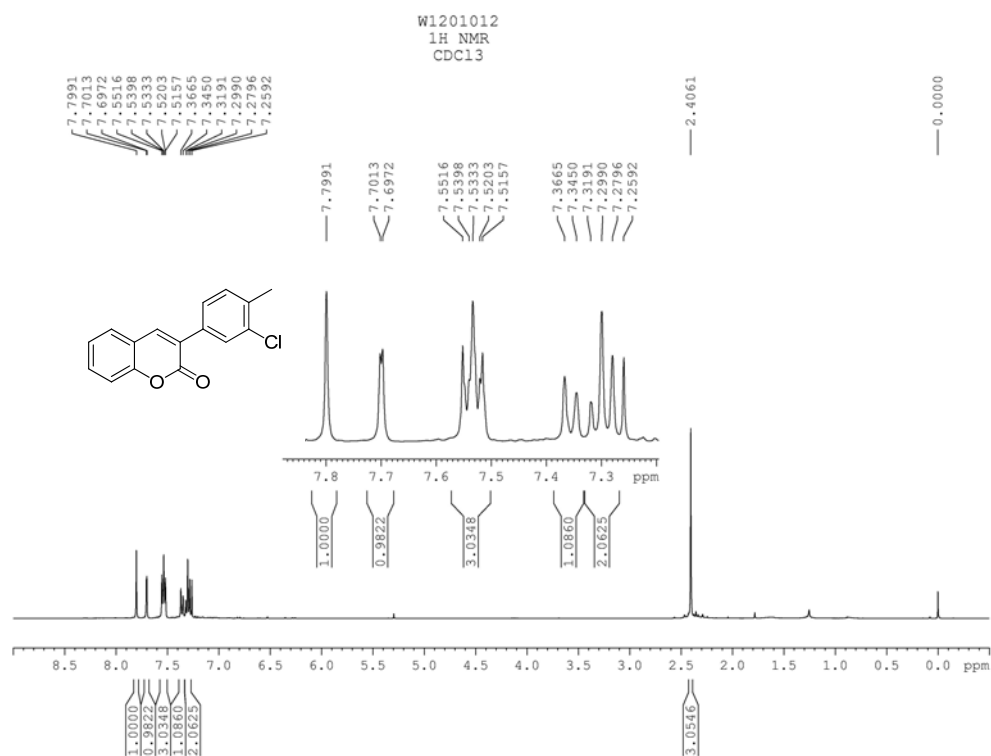


Fig. 29 ^1H NMR spectrum of 3n

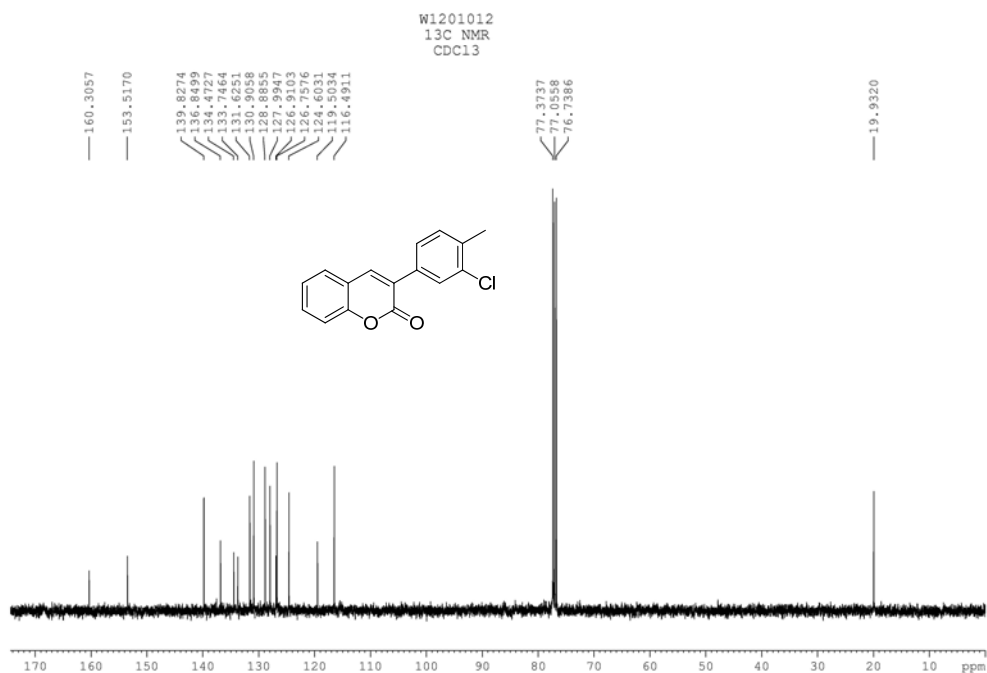


Fig. 30 ^{13}C NMR spectrum of 3n

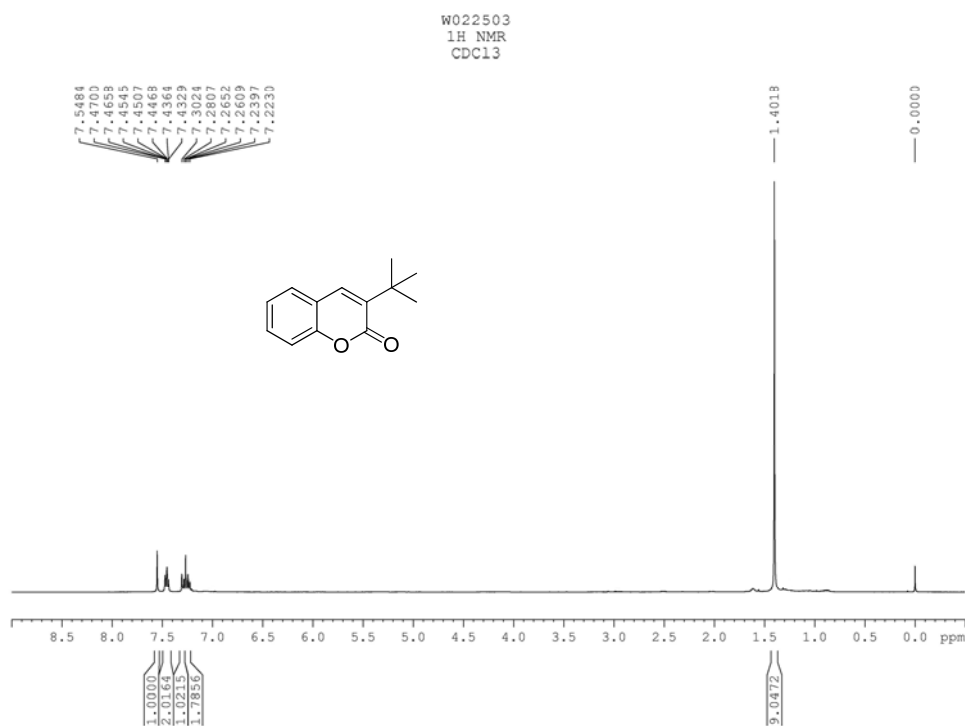


Fig. 31 ^1H NMR spectrum of **3o**

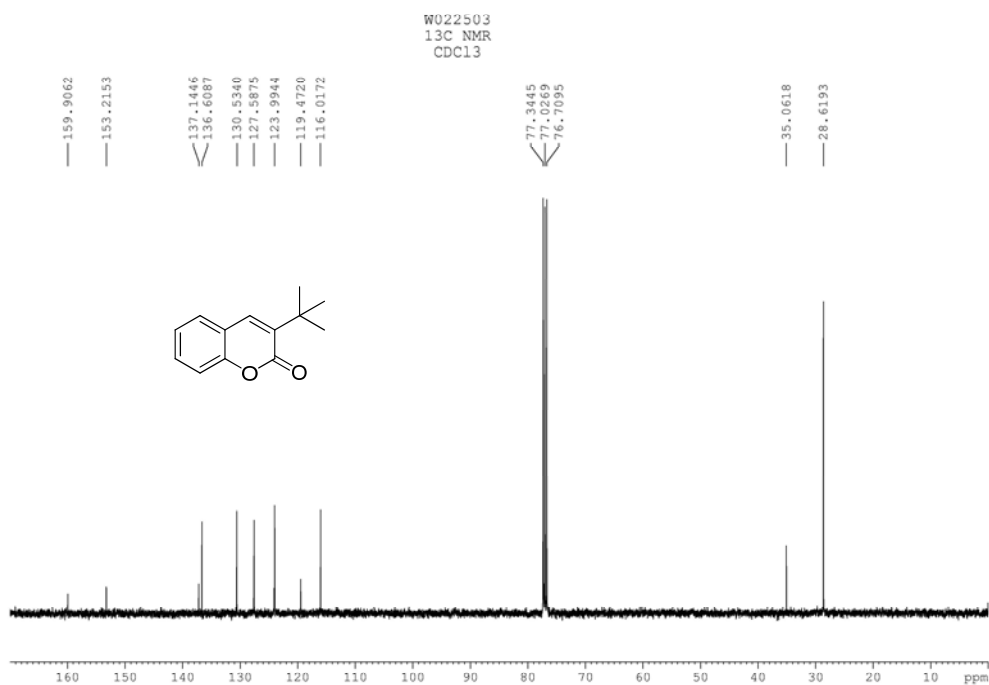


Fig. 32 ^{13}C NMR spectrum of **3o**

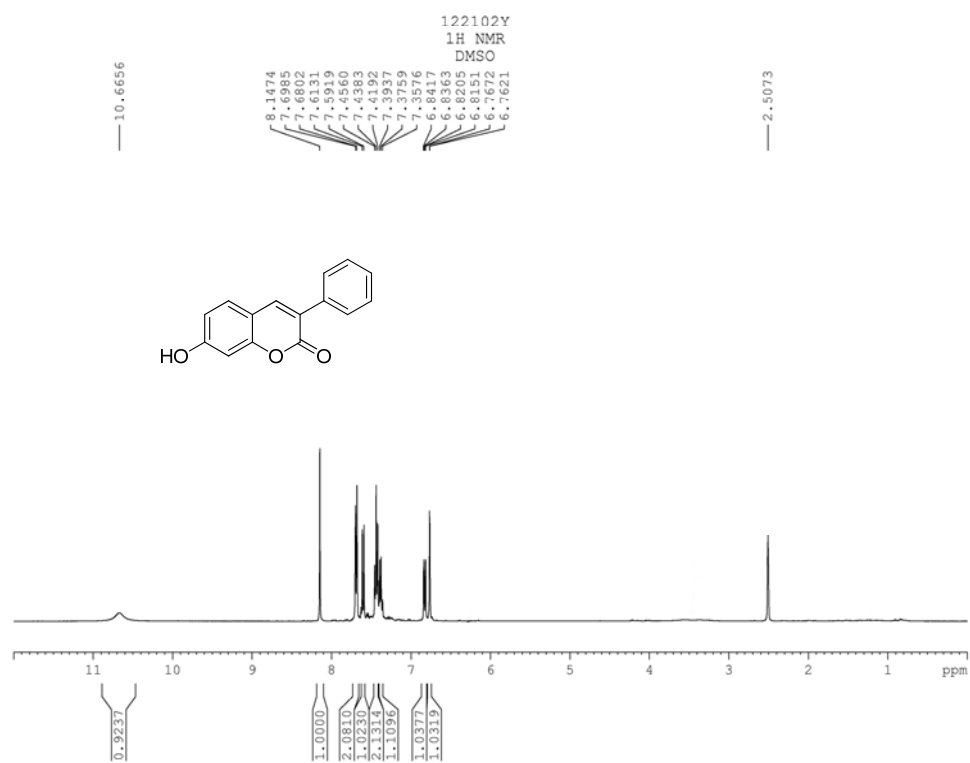


Fig. 33 ^1H NMR spectrum of **3p**

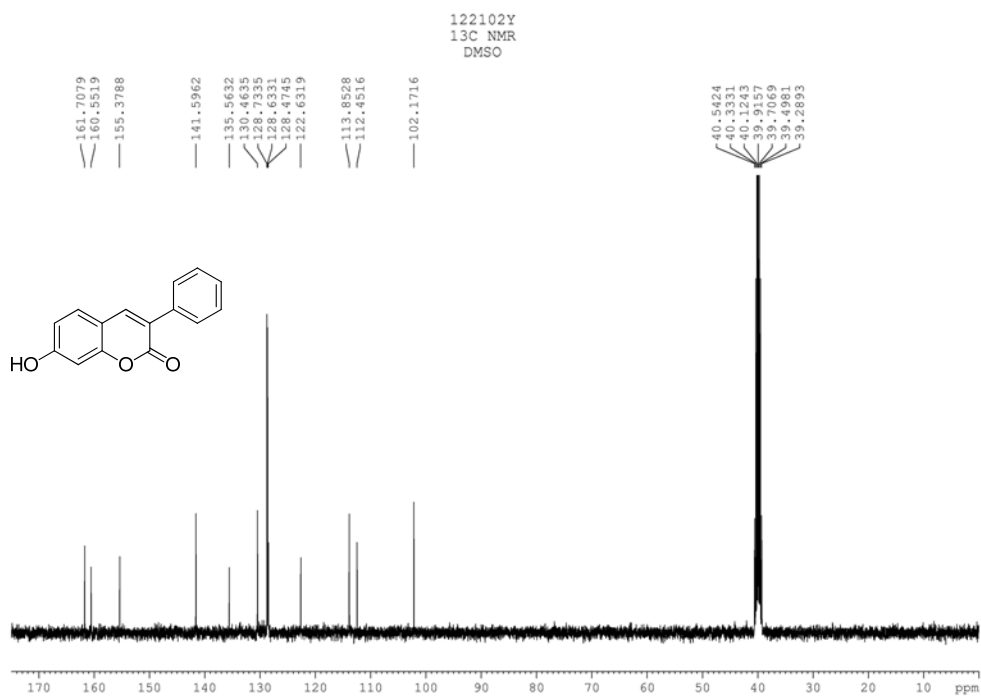


Fig. 34 ^{13}C NMR spectrum of **3p**

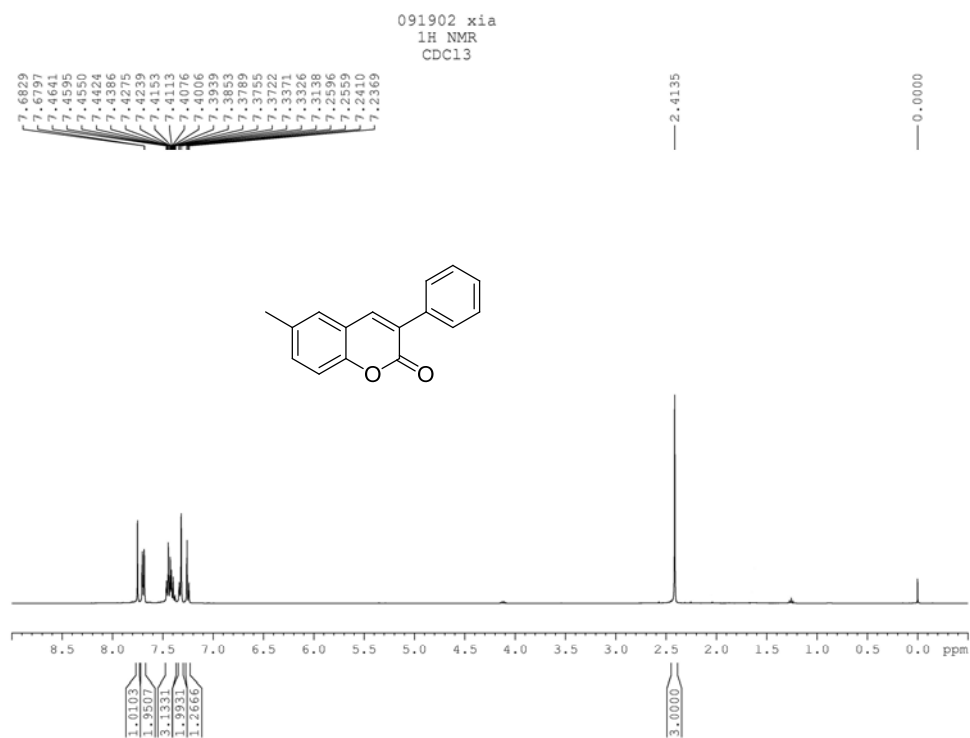


Fig. 37 ¹H NMR spectrum of **3r**

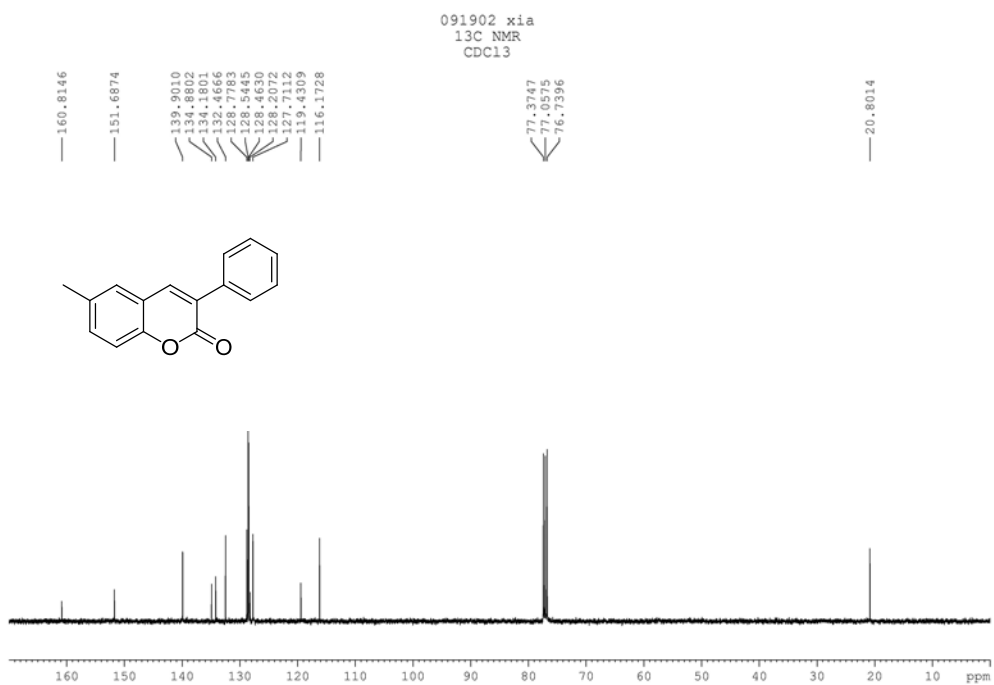


Fig. 38 ¹³C NMR spectrum of **3r**

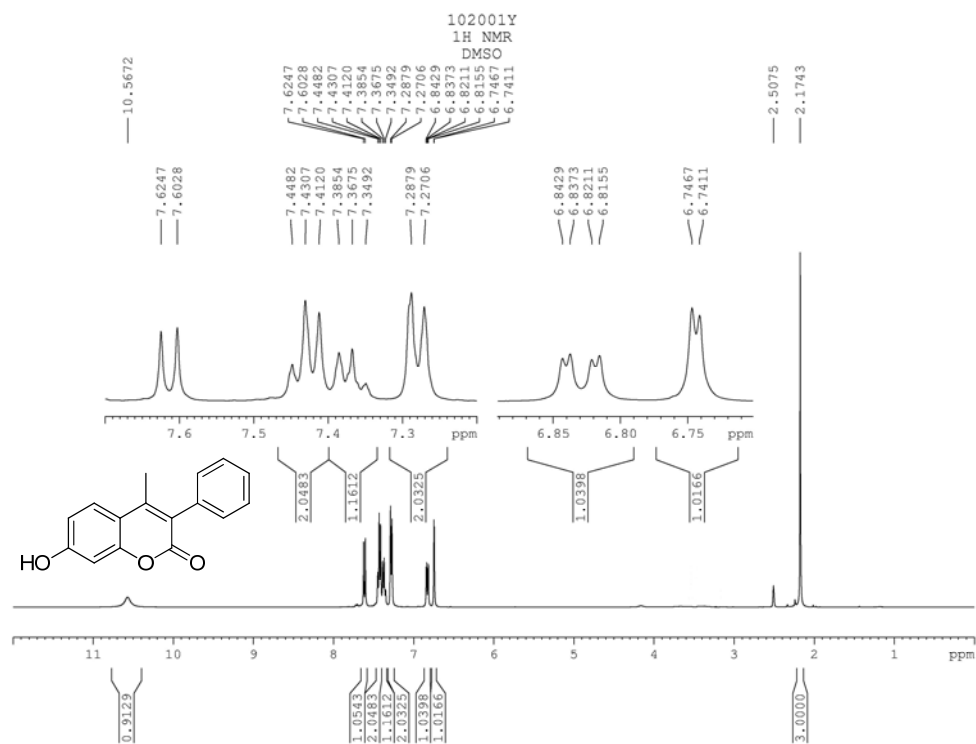


Fig. 39 ^1H NMR spectrum of 3s

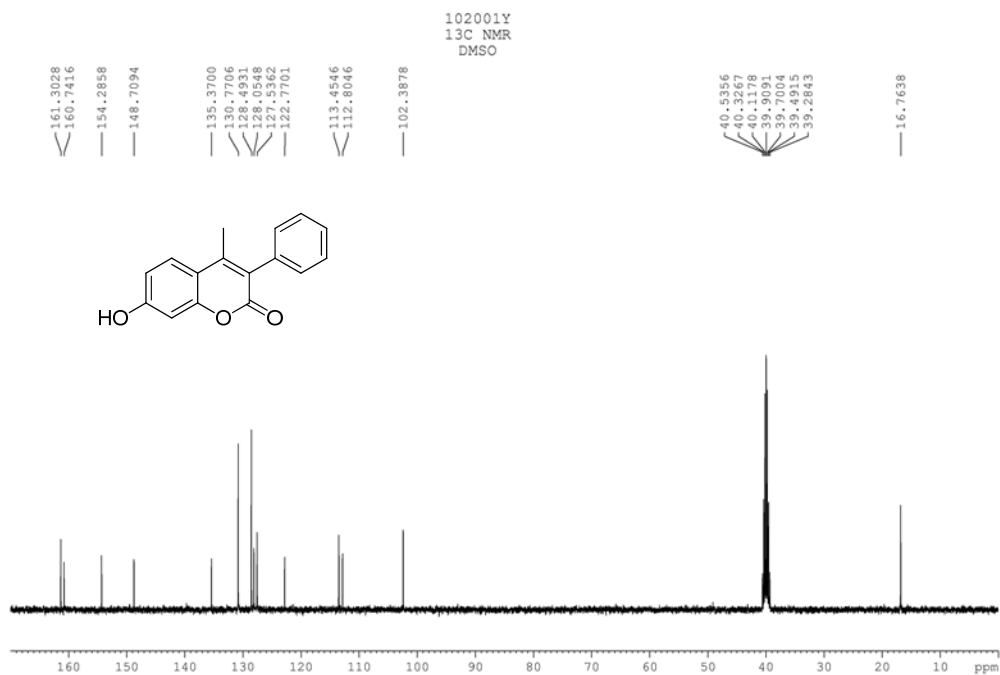


Fig. 40 ^{13}C NMR spectrum of 3s

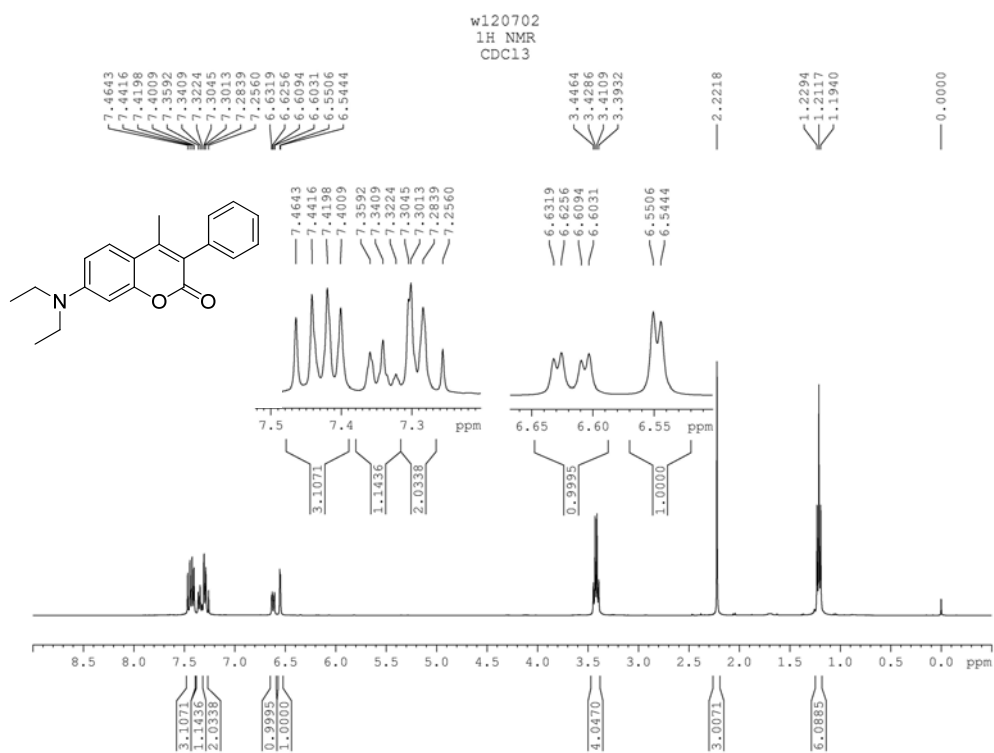


Fig. 41 ¹H NMR spectrum of **3t**

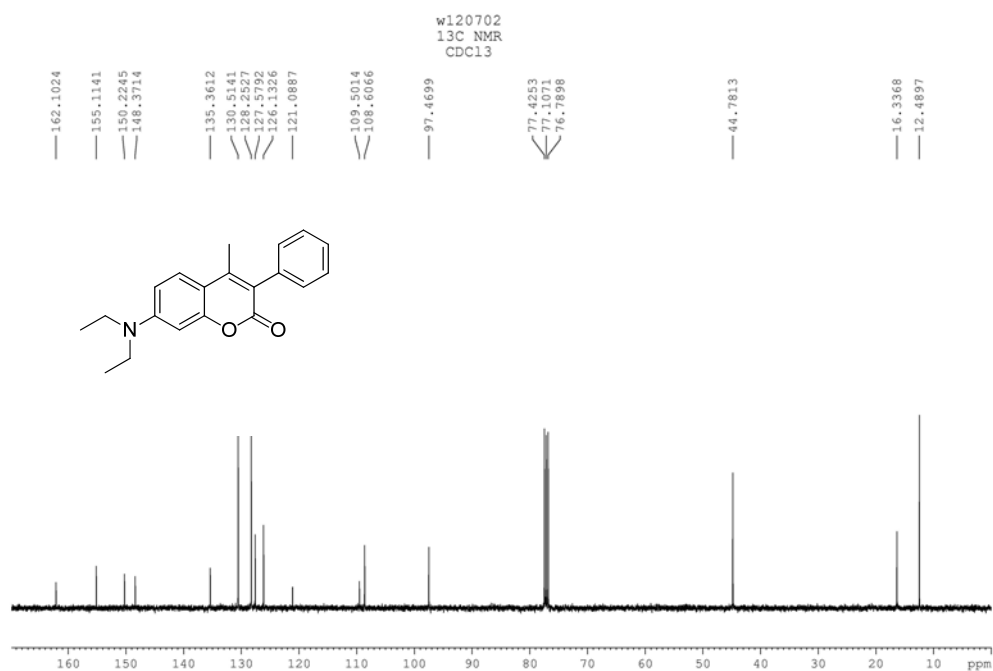


Fig. 42 ¹³C NMR spectrum of **3t**

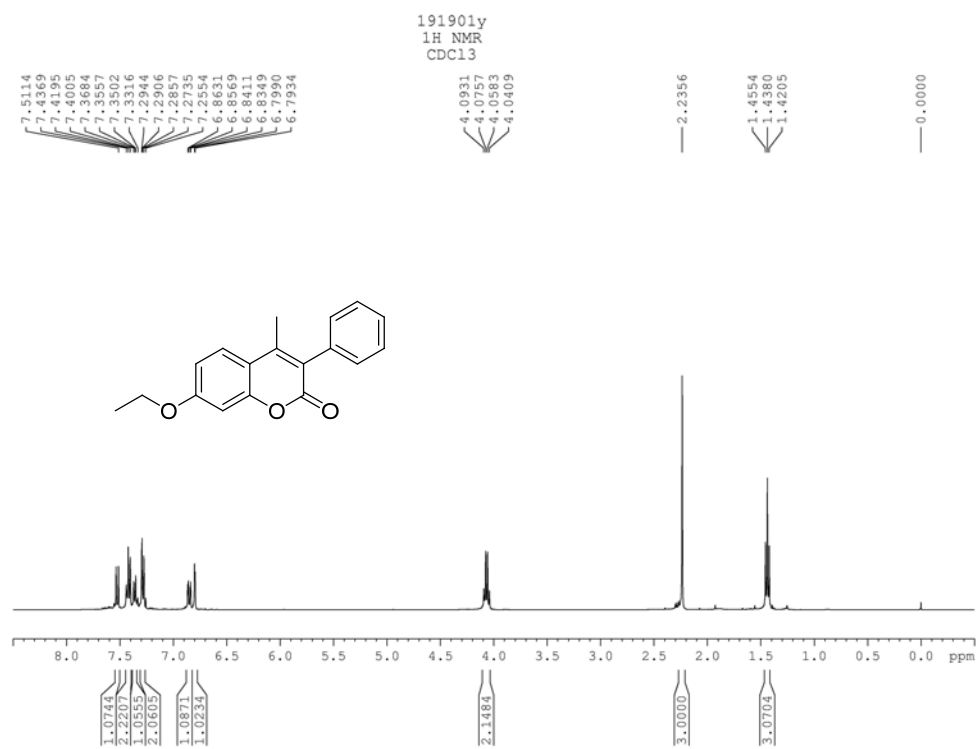


Fig. 43 ¹H NMR spectrum of **3u**



Fig. 44 ¹³C NMR spectrum of **3u**

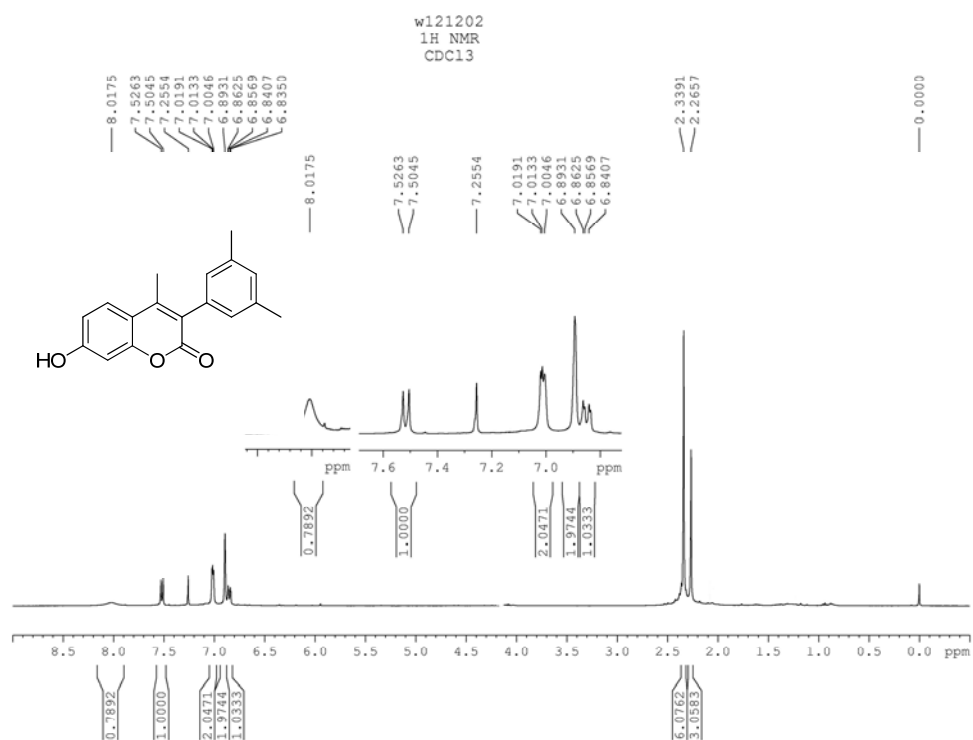


Fig. 45 ^1H NMR spectrum of **3v**

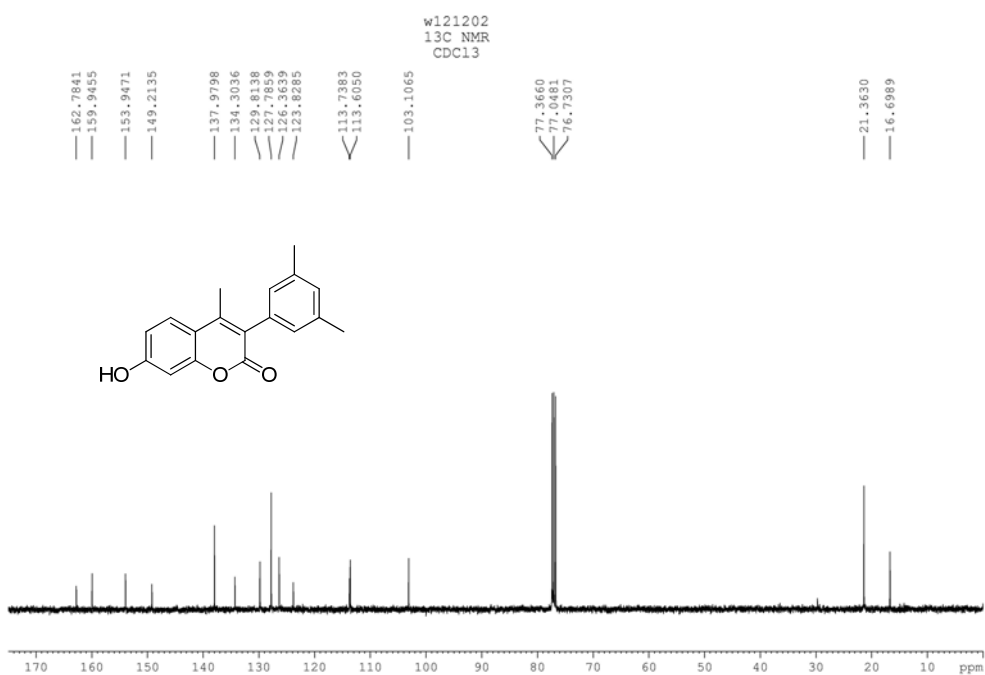


Fig. 46 ^{13}C NMR spectrum of **3v**

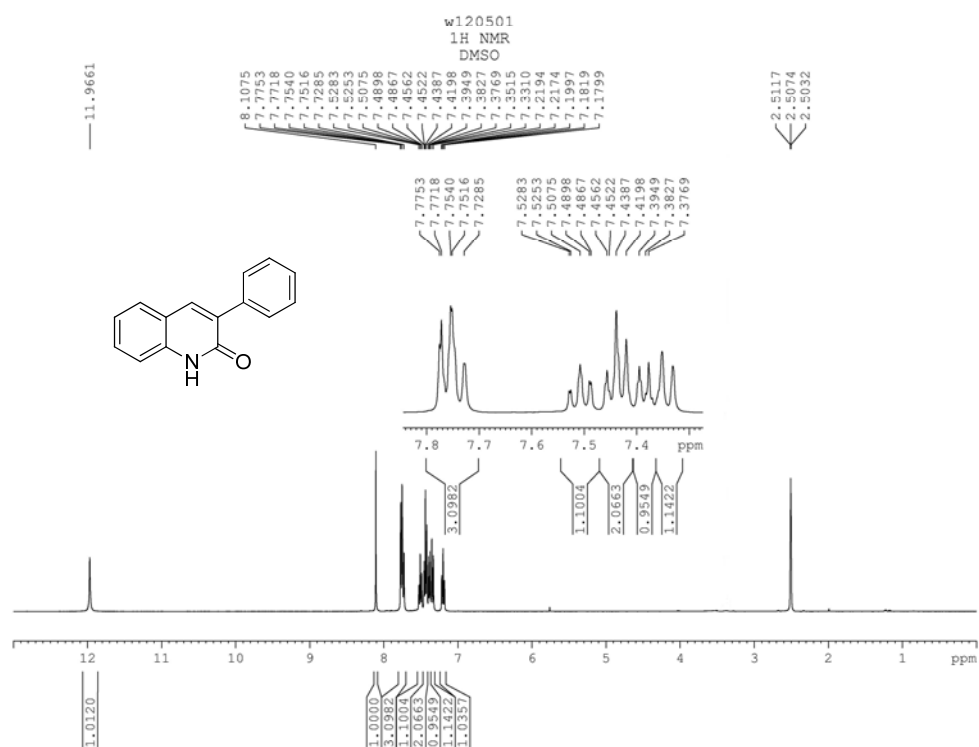


Fig. 47 ^1H NMR spectrum of 5a

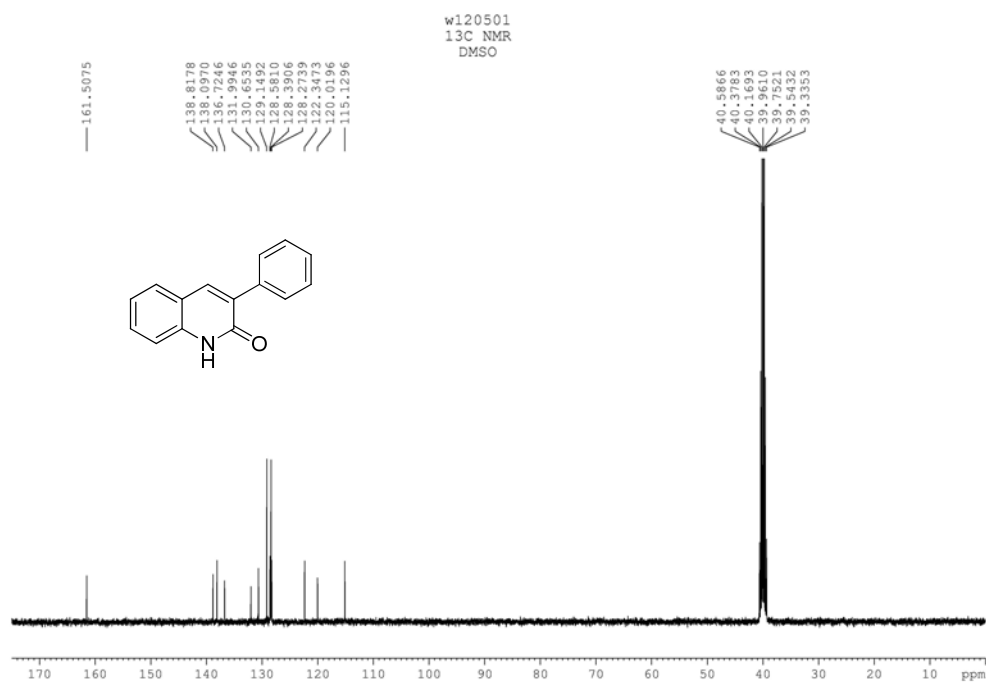


Fig. 48 ^{13}C NMR spectrum of 5a



Fig. 49 ^1H NMR spectrum of 5b

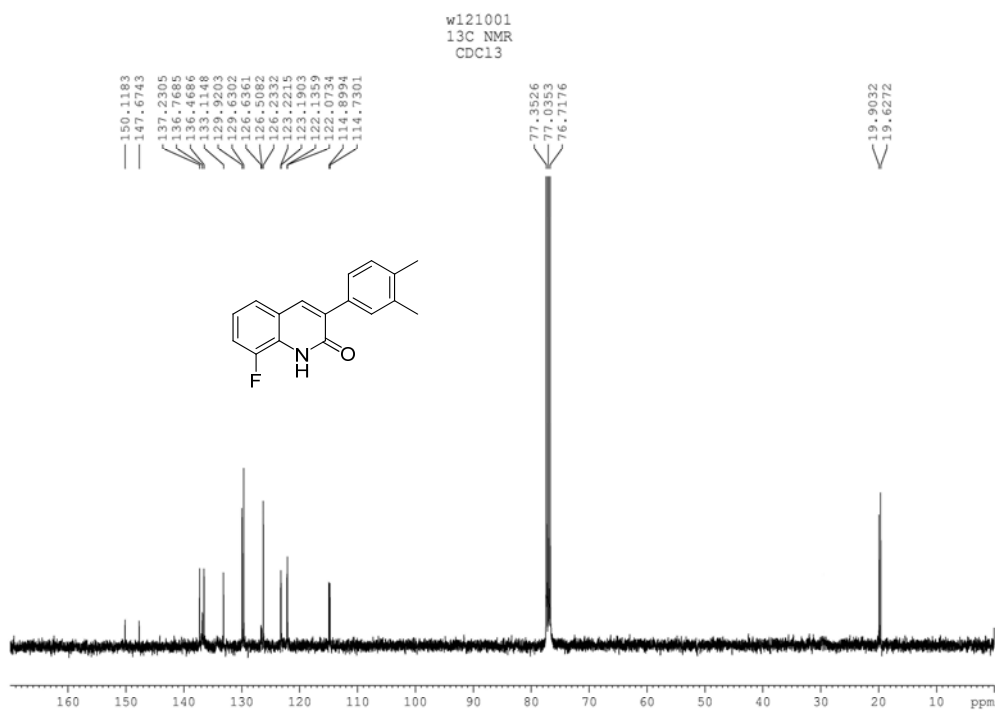


Fig. 50 ^{13}C NMR spectrum of 5b

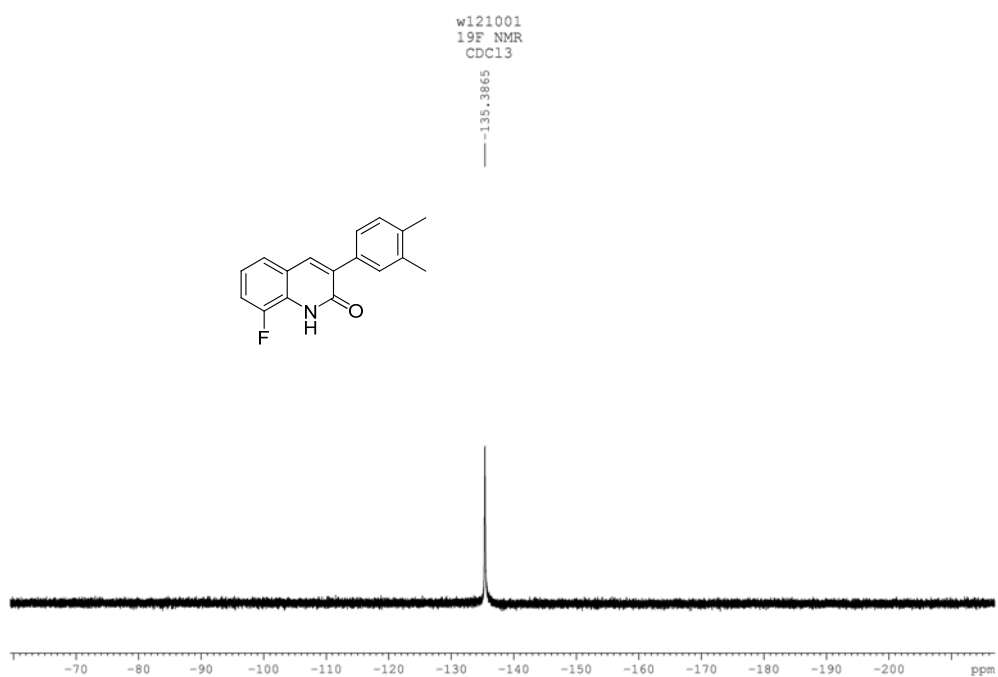


Fig. 51 ^{19}F NMR spectrum of 5b

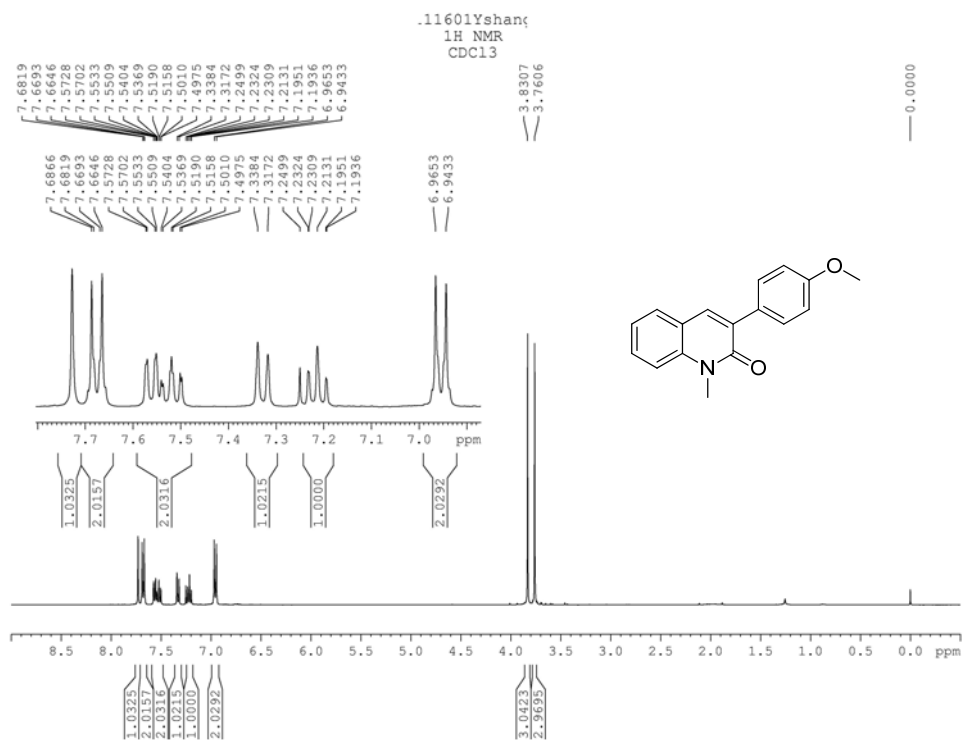


Fig. 52 ^1H NMR spectrum of 5c

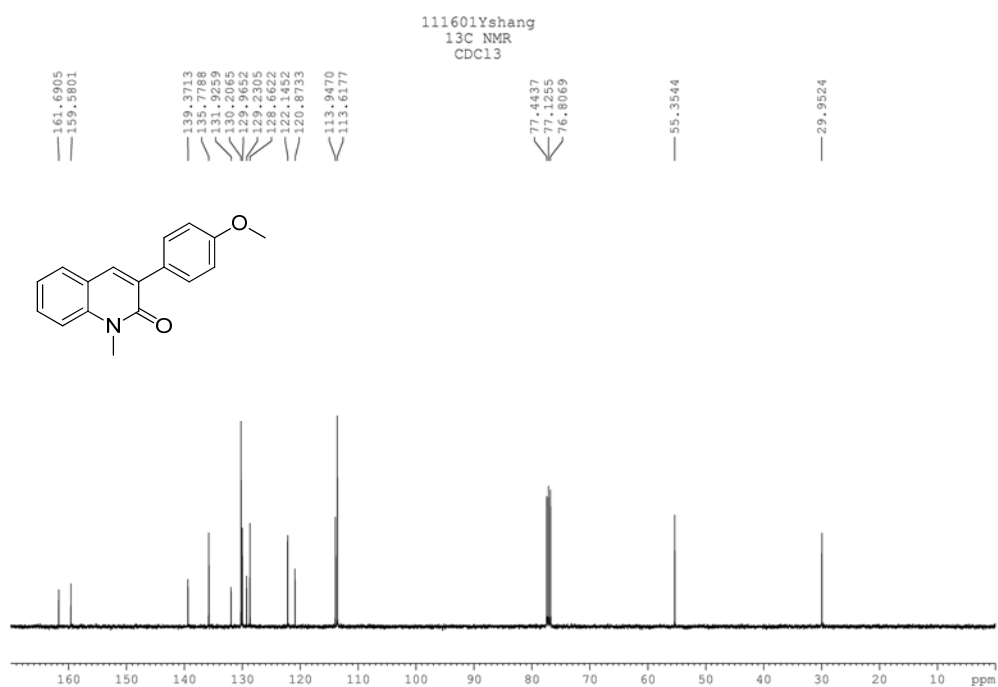


Fig. 53 ¹³C NMR spectrum of 5c

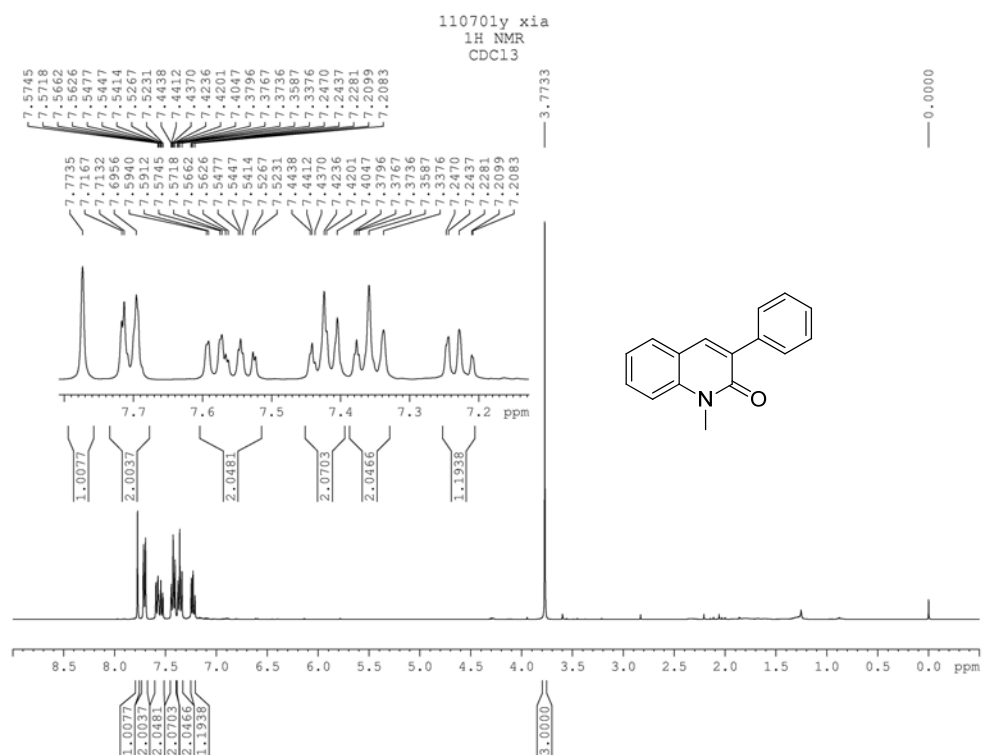


Fig. 54 ¹H NMR spectrum of 5d

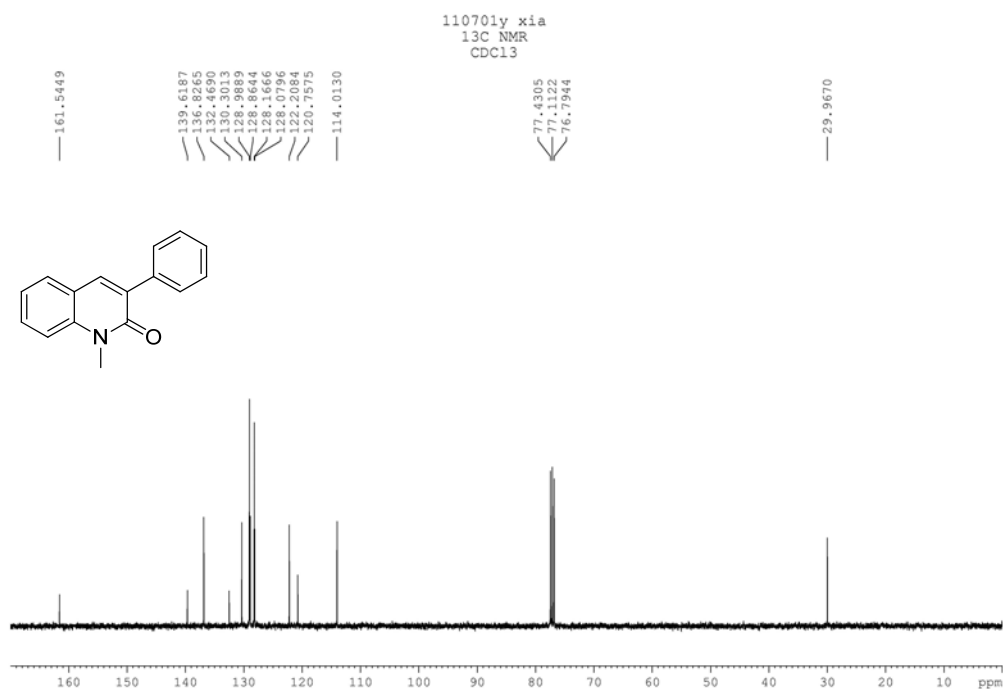


Fig.55 ¹³C NMR spectrum of 5d

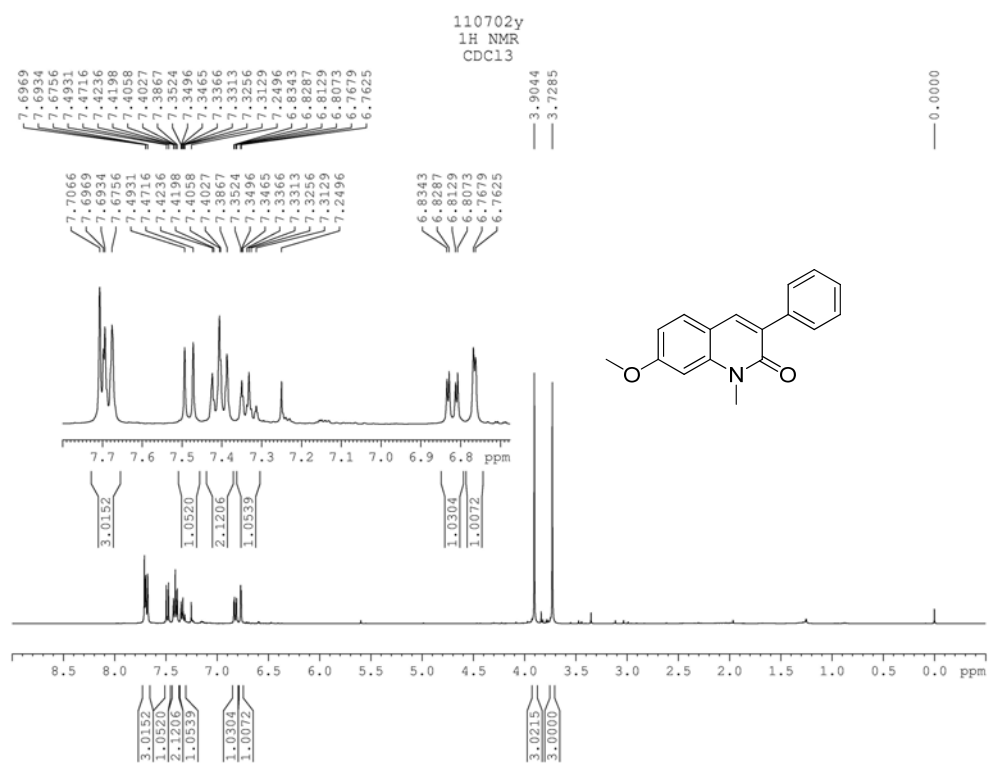


Fig. 56 ¹H NMR spectrum of 5e

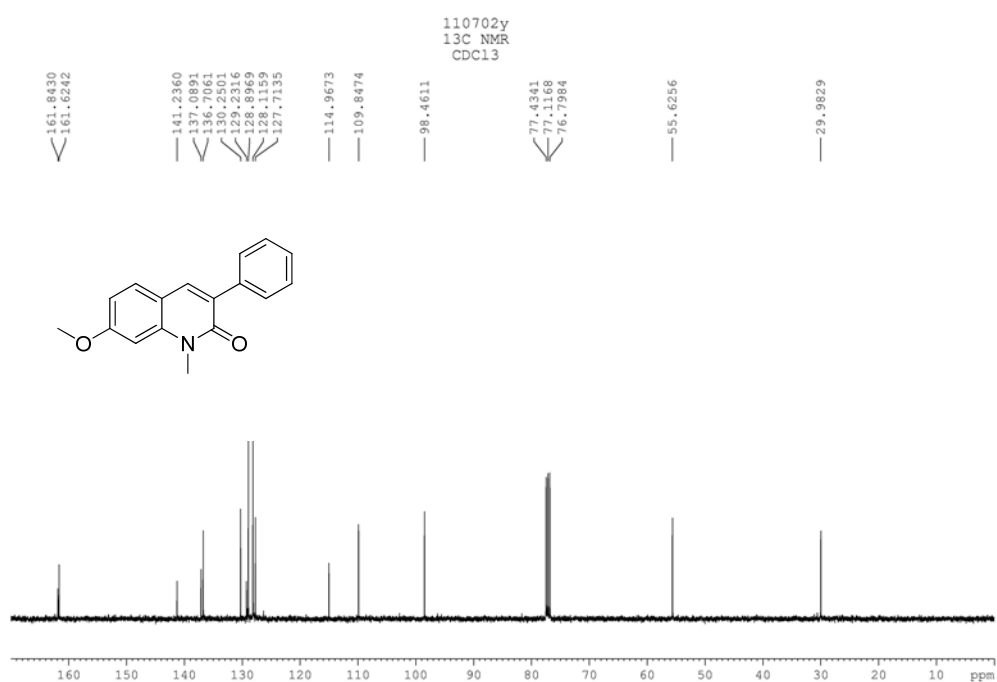


Fig.57 ¹³C NMR spectrum of 5e

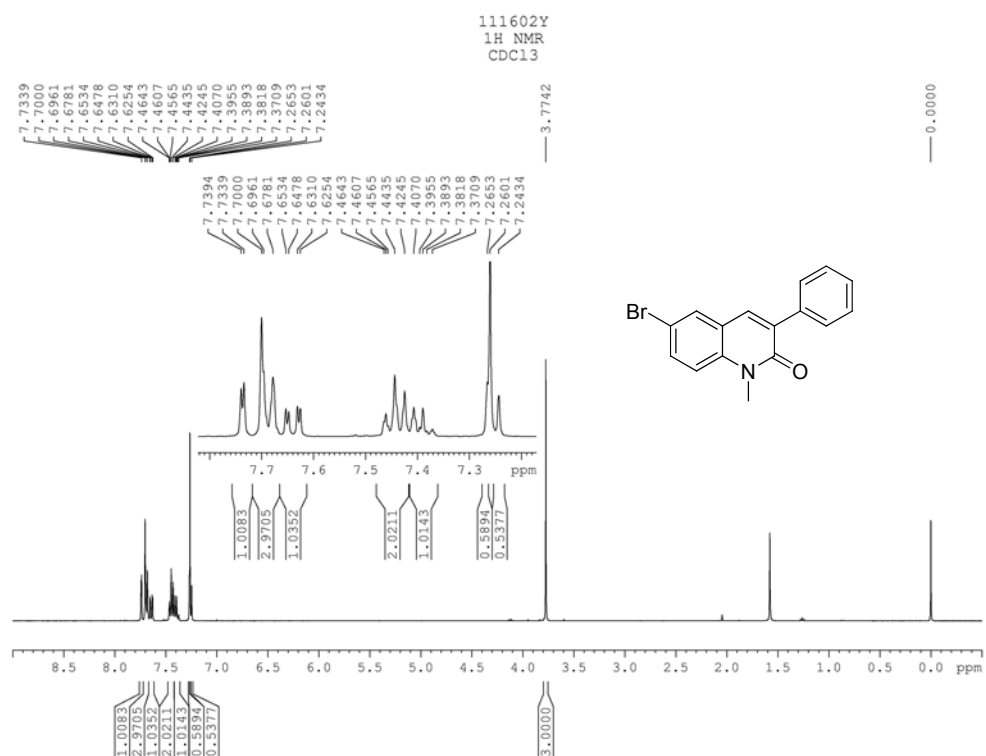


Fig. 58 ¹H NMR spectrum of 5f

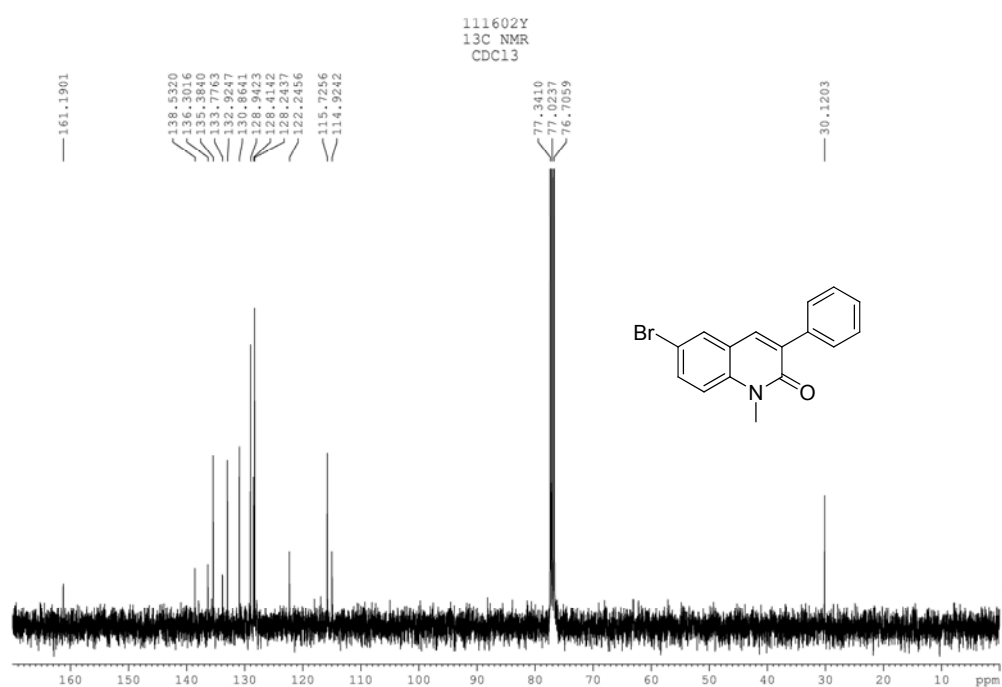


Fig. 59 ^{13}C NMR spectrum of **5f**