

Supporting Information

A general and practical route to 4,5-Disubstituted Oxazoles using Acid chlorides and Isocyanides

Dipak Kumar Tiwari, Jaya Pogula and Dharmendra Kumar Tiwari*

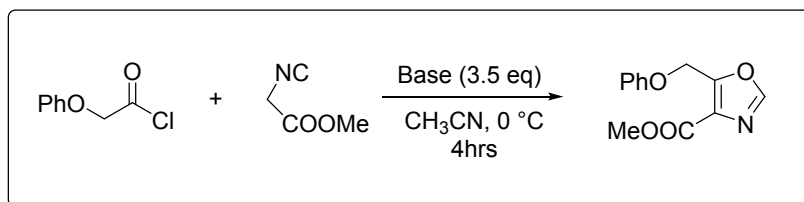
Inorganic and Physical Chemistry Division, Indian Institute of Chemical Technology,

Tarnaka, Hyderabad-500007 (India)

Email: dktiwari@iict.res.in & dk80.org@gmail.com

Table of Contents	Page No
Experimental procedure	2
¹ H and ¹³ C NMR of 1a	3
¹ H and ¹³ C NMR of 1b	4
¹ H and ¹³ C NMR of 1c	5
¹ H and ¹³ C NMR of 2a	6
¹ H and ¹³ C NMR of 2b	7
¹ H and ¹³ C NMR of 2c	8
¹ H and ¹³ C NMR of 3a	9
¹ H and ¹³ C NMR of 3b	10
¹ H and ¹³ C NMR of 3c	11
¹ H and ¹³ C NMR of 4a	12
¹ H and ¹³ C NMR of 4b	13
¹ H and ¹³ C NMR of 4c	14
¹ H and ¹³ C NMR of 5a	15
¹ H and ¹³ C NMR of 5b	16
¹ H and ¹³ C NMR of 5c	17
¹ H and ¹³ C NMR of 6a	18
¹ H and ¹³ C NMR of 6b	19
¹ H and ¹³ C NMR of 6c	20
¹ H and ¹³ C NMR of 7	21
¹ H and ¹³ C NMR of 8	22
¹ H and ¹³ C NMR of 10	23

Controlled [3+2] cycloaddition reaction of isocyanide with phenoxy acetylchloride:



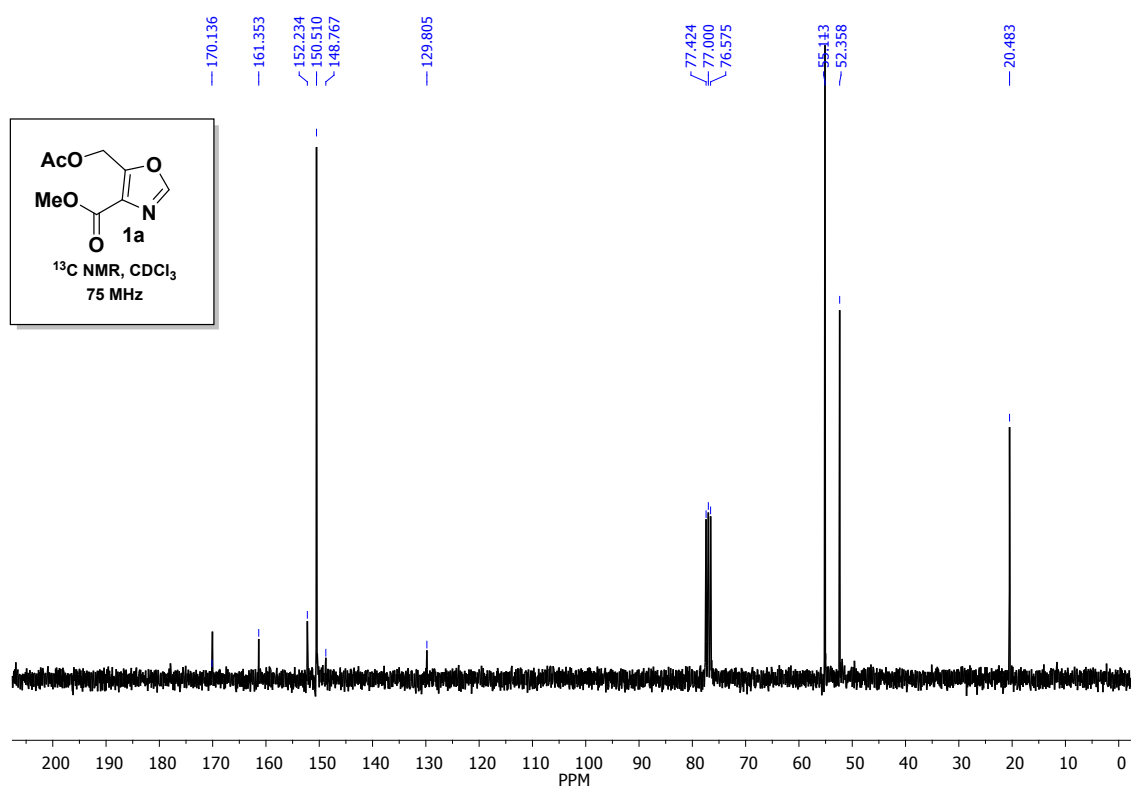
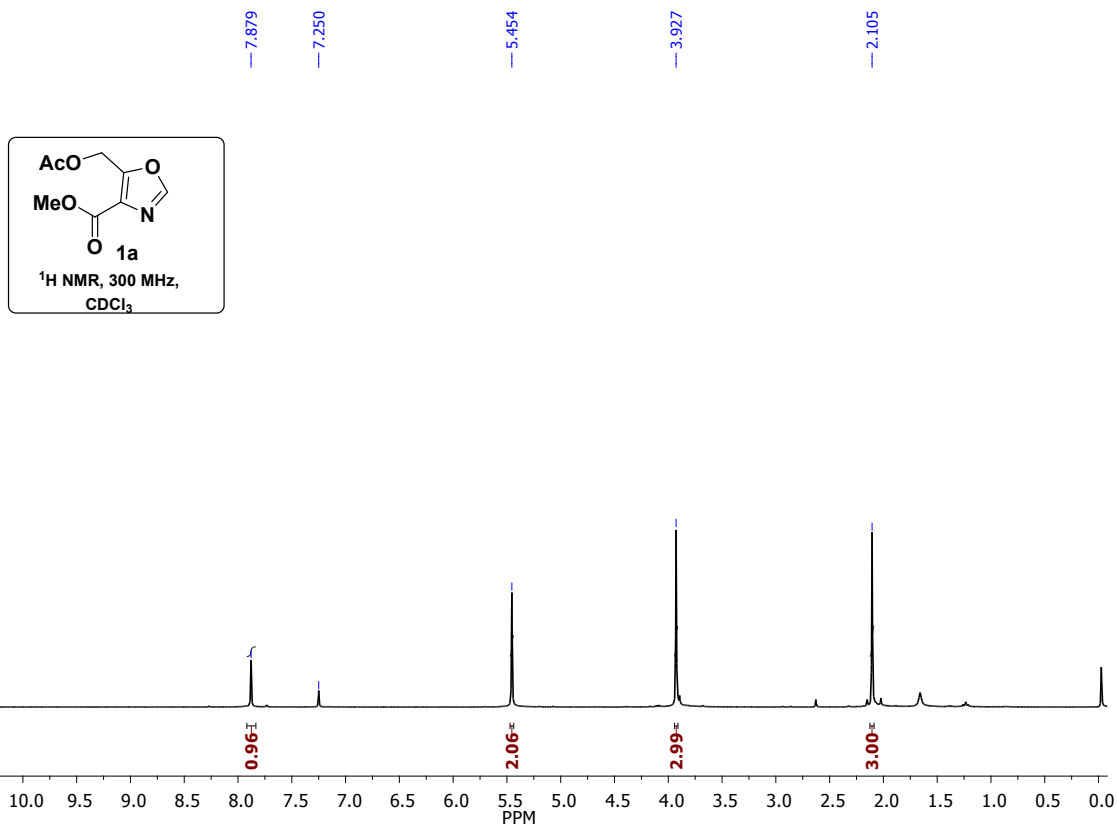
Experimental procedure: A solution of phenoxy acetylchloride **3**, (0.07 mL, 0.5 mmol) in dry CH₃CN (2 mL) was slowly added to a mixture of methyl 2-isocyanoacetate (0.05 mL, 0.5 mmol) and Base (1.75 mmol) in dry CH₃CN (4 mL) at 0 °C. The reaction mixture was allowed to stir for additional 4 hrs and at the same temperature and then allowed to attain room temperature. The reaction mixture was quenched with water (6 mL) and the mixture was diluted with ethylacetate (10 mL). The organic layer was separated and washed with aqueous NaHCO₃ solution (5 mL) and brine (5 mL). The organic layer was dried over anhydrous sodium sulphate and solvent was removed under reduced pressure to produce crude 4,5-disubstituted oxazole, which was on purification using 100-200 mesh silica gel, gave pure 4,5-disubstituted oxazoles good yields.

Table-1 Optimization of reaction condition with different bases

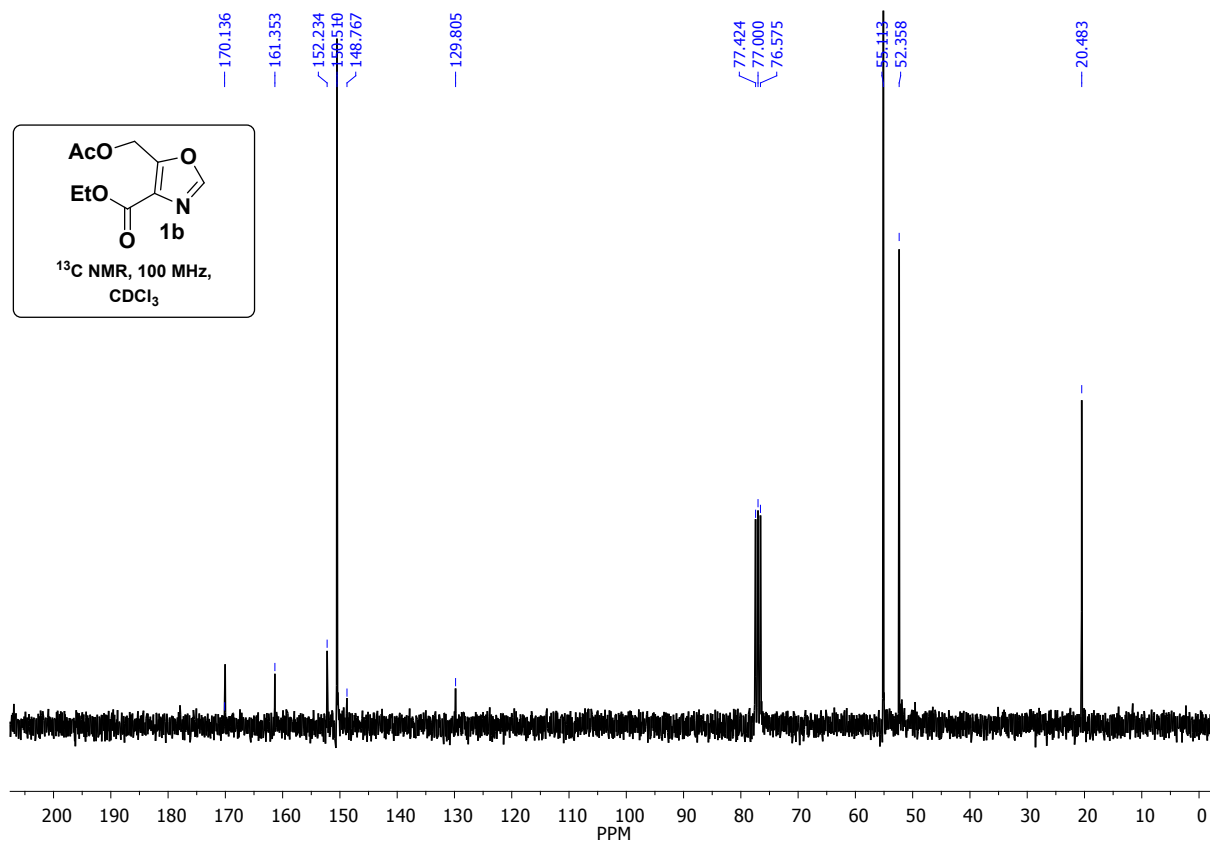
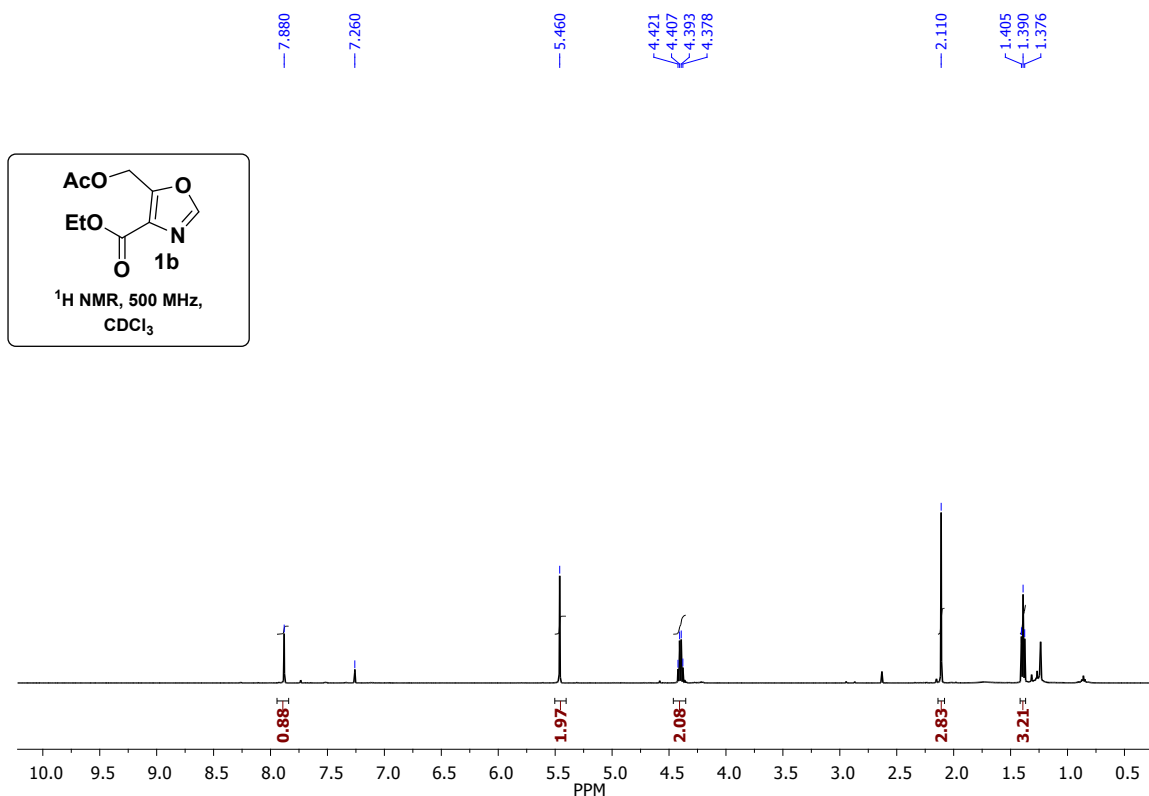
S.No	Base (3.5 equiv.)	solvent	Temp/°C	Time/hrs	Isolated yields ^b
1	CS ₂ CO ₃	CH ₃ CN	0 °C	4 hrs	58%
2	K ₂ CO ₃	CH ₃ CN	0 °C	4 hrs	69%
3	<i>t</i> -BuOK	CH ₃ CN	0 °C	4 hrs	77%
4	Et ₃ N	CH ₃ CN	0 °C	4hrs	75%
5	KOH	CH ₃ CN	0 °C	4 hrs	64%
6	NaOMe	CH ₃ CN	0 °C	4 hrs	68%

^a The reaction was carried out with 0.5 mmol of acid chlorides (**2-5**), 0.5 mmol of methyl 2-isocyanide (**2a'**) in the presence of base (3.5 equiv) in 3 mL of CH₃CN for 4-6 hrs; ^b Isolated yield.

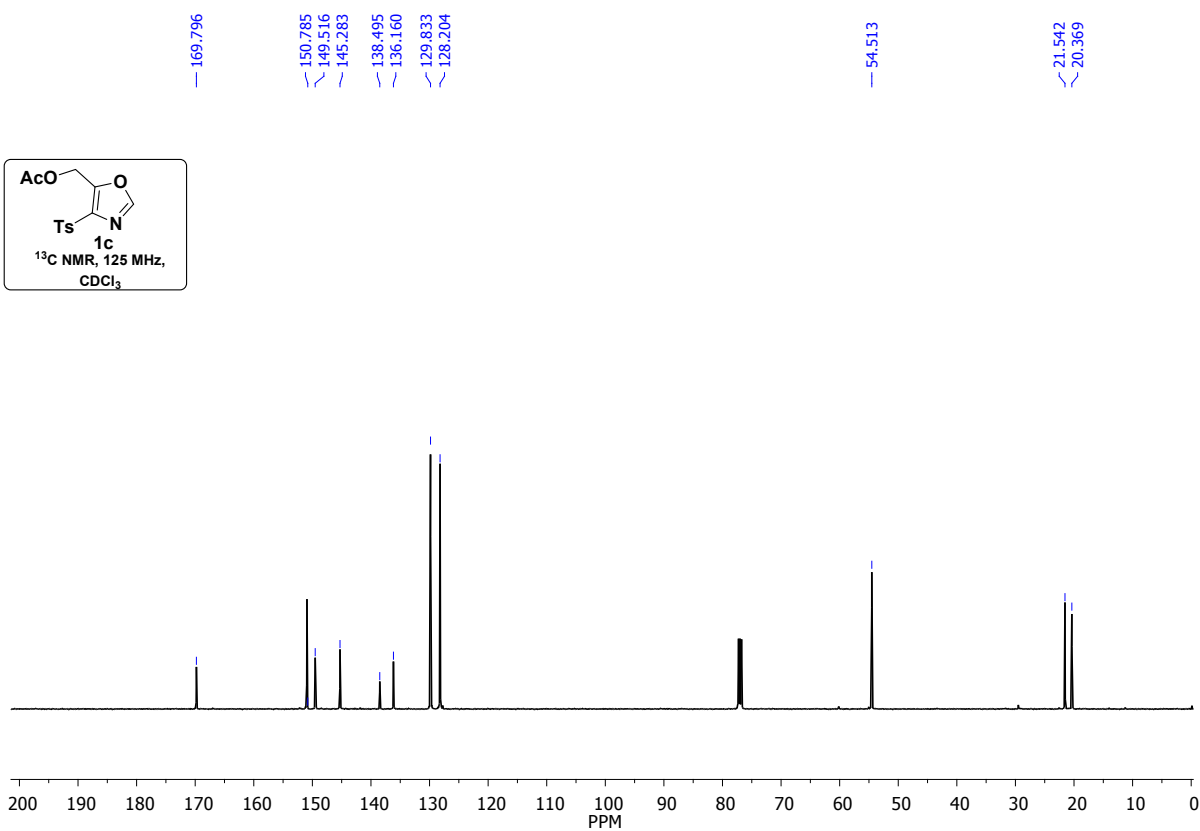
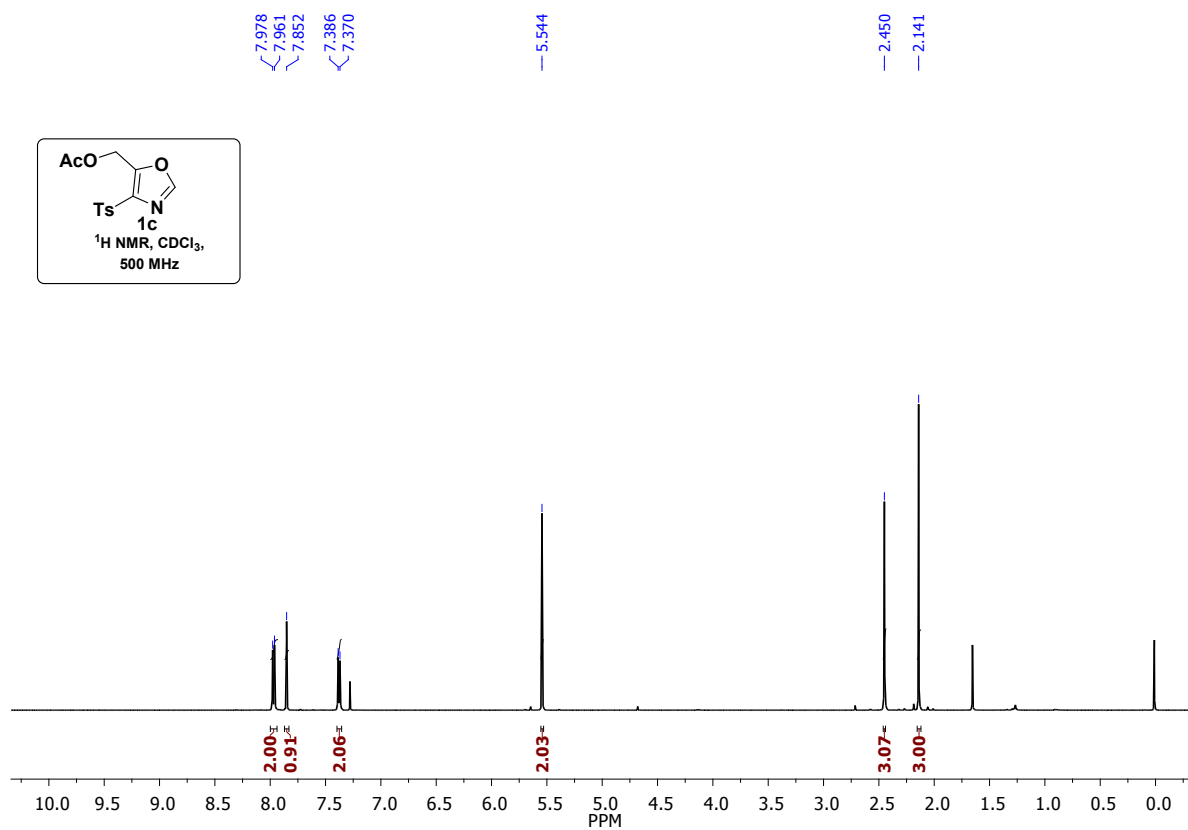
¹H and ¹³C NMR of (1a)



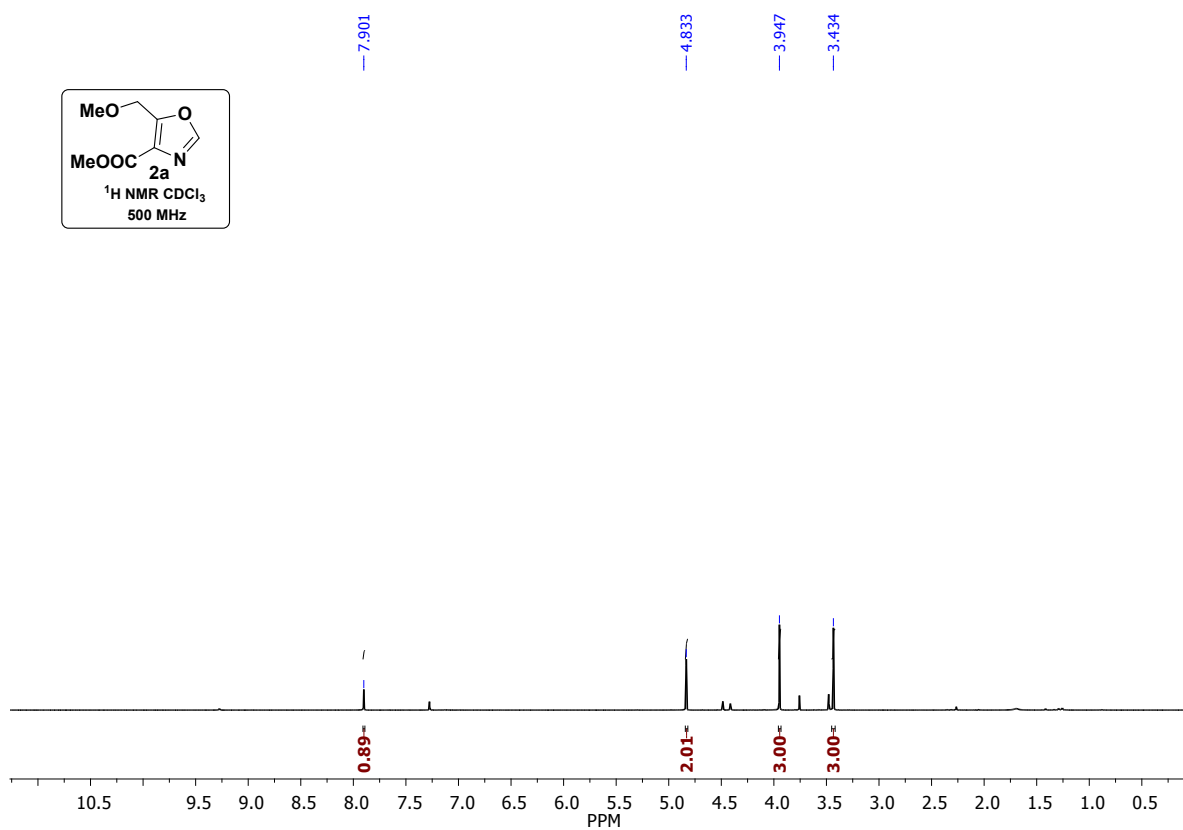
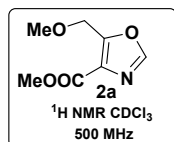
¹H and ¹³C NMR of (1b)

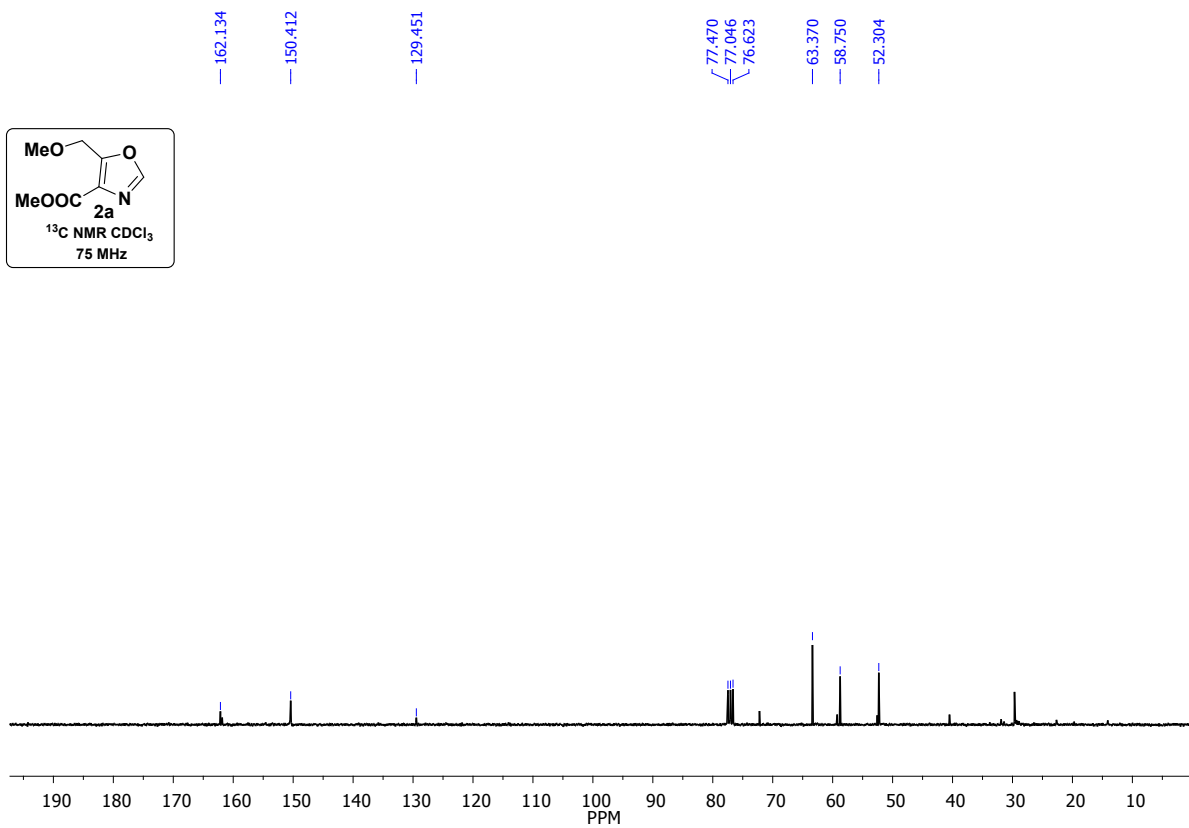


¹H and ¹³C NMR of (1c)

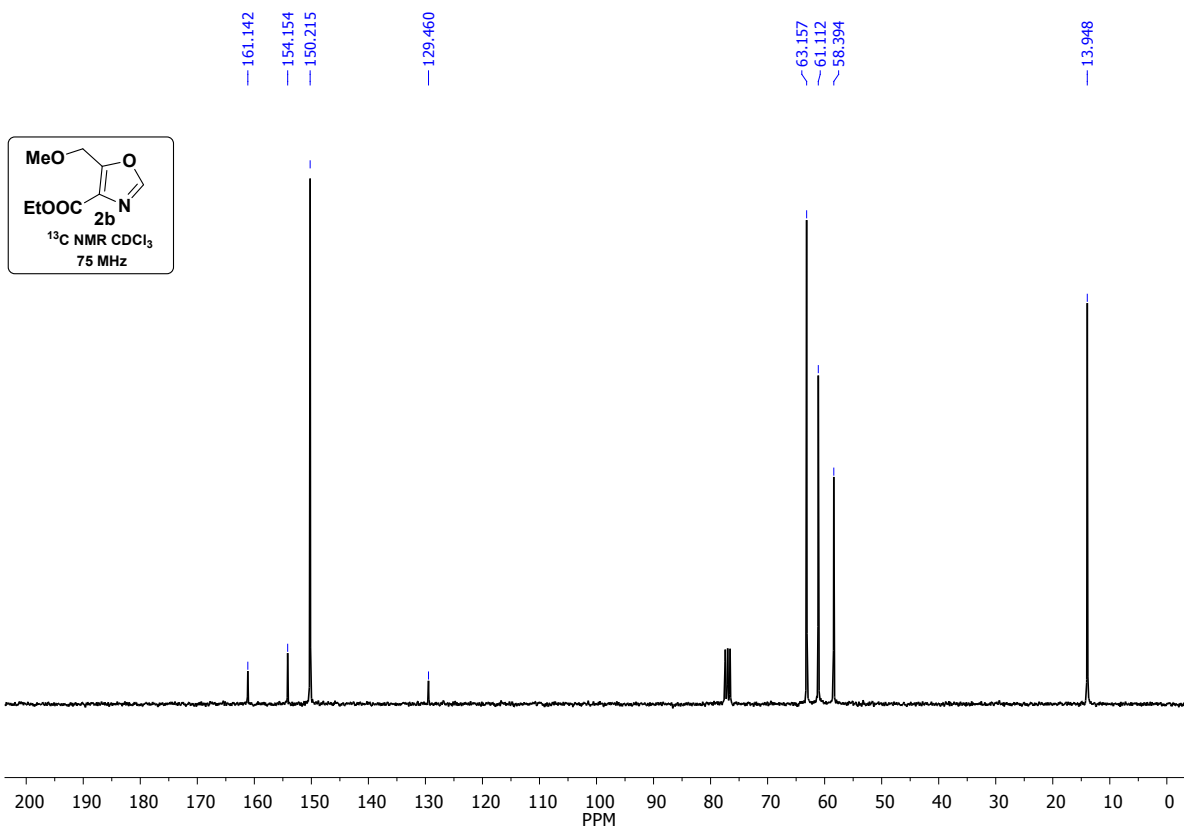
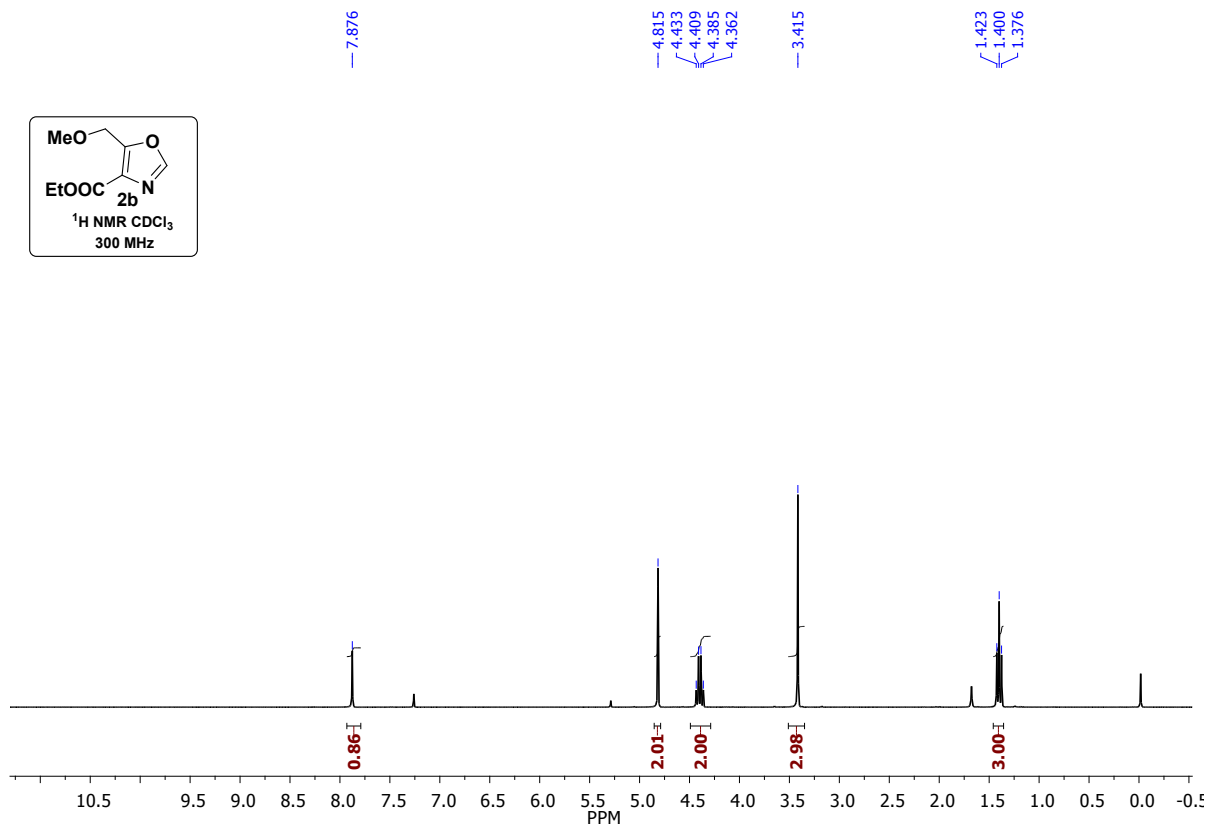
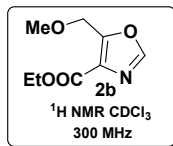


¹H and ¹³C NMR of (2a)

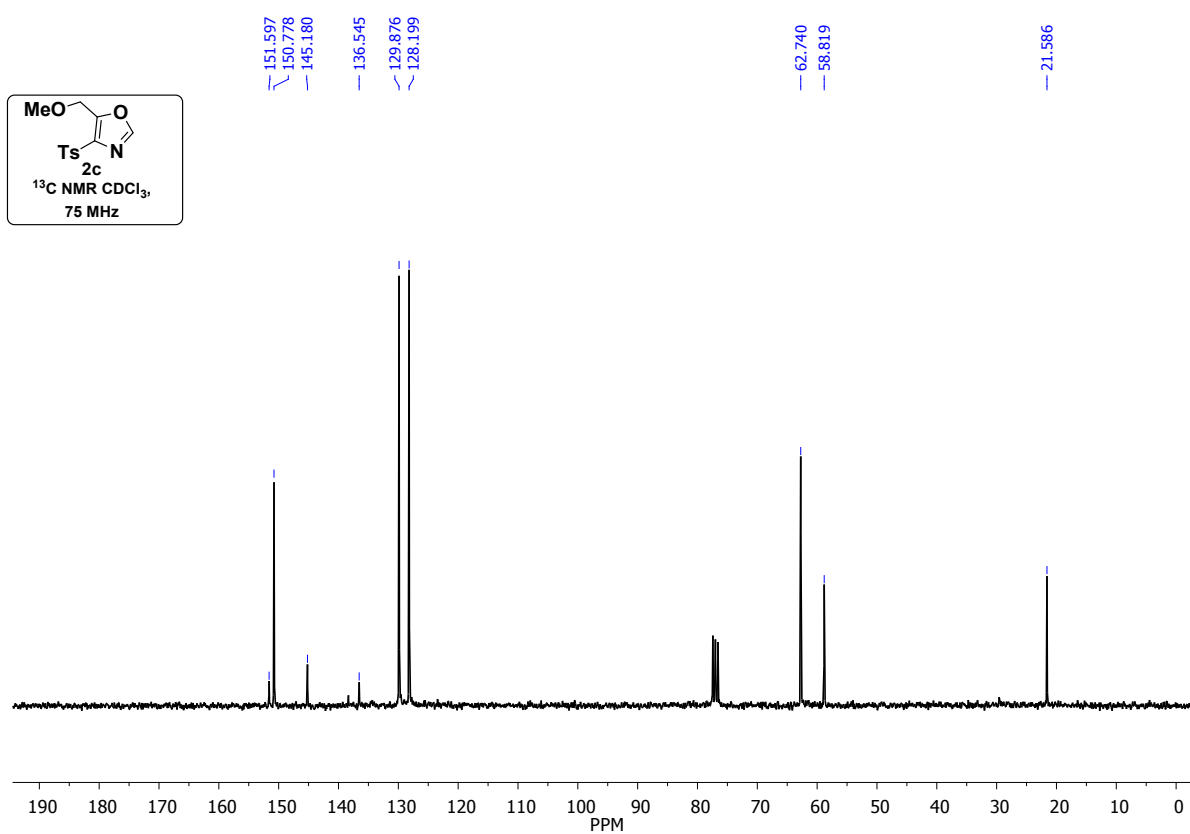
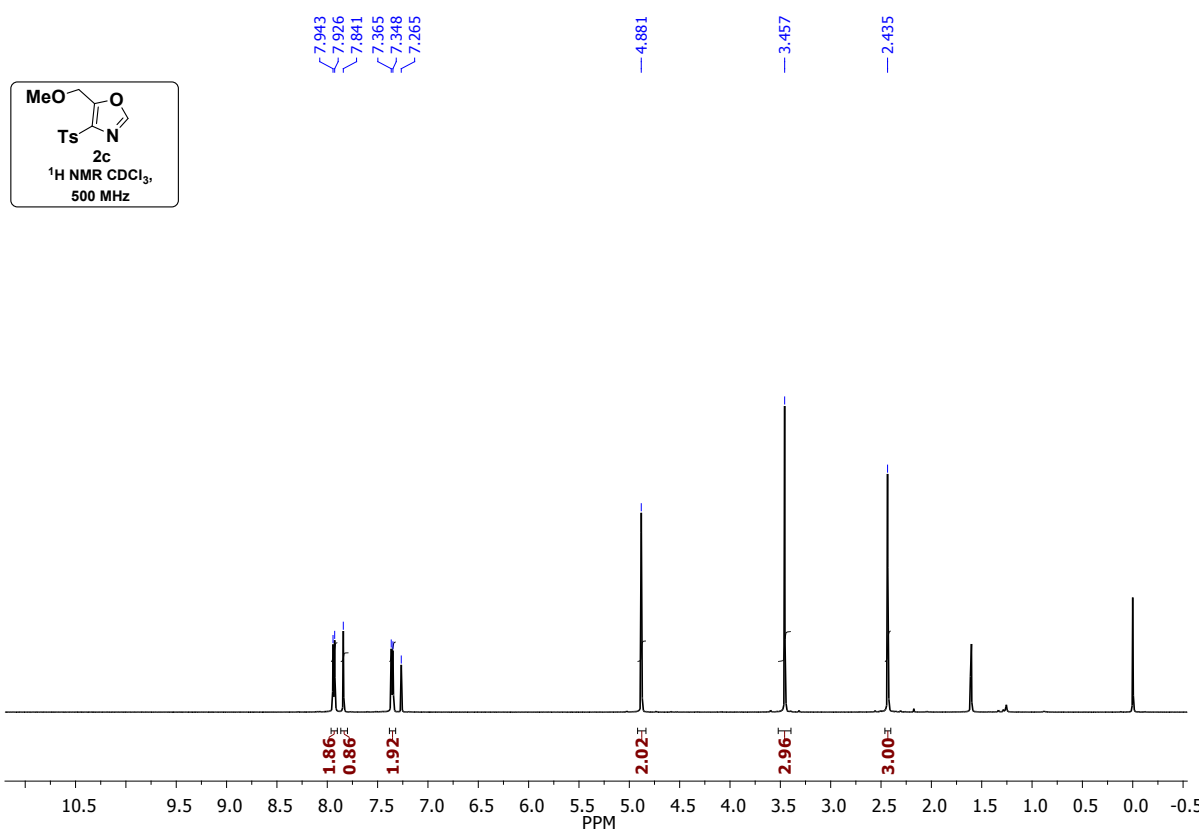




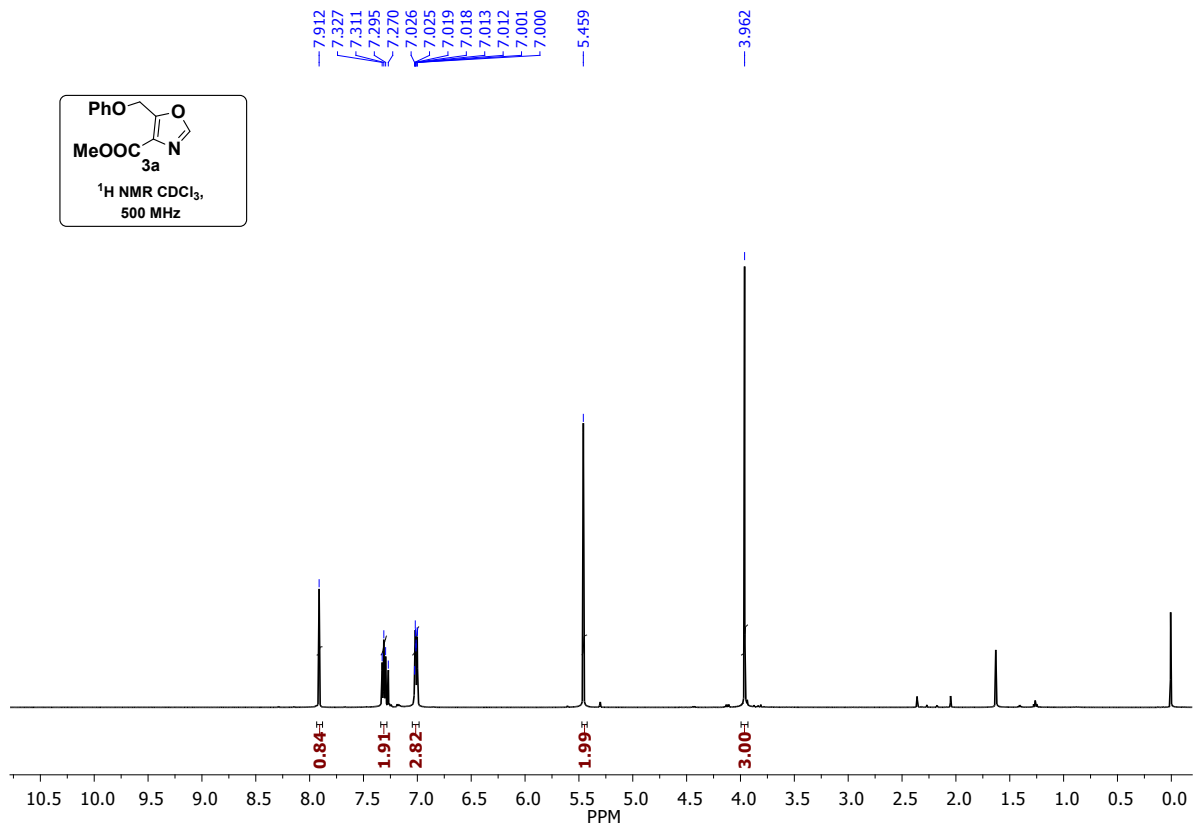
^1H and ^{13}C NMR of (**2b**)

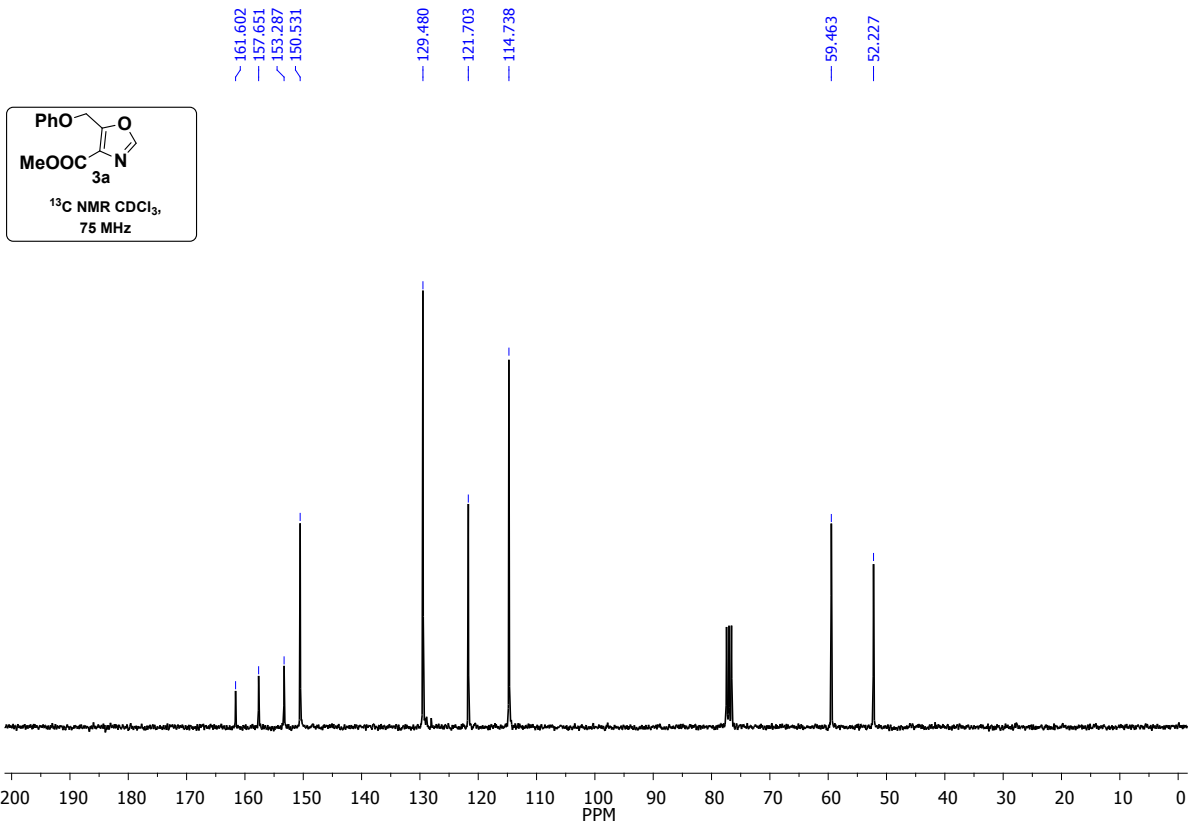


¹H and ¹³C NMR of (2c)

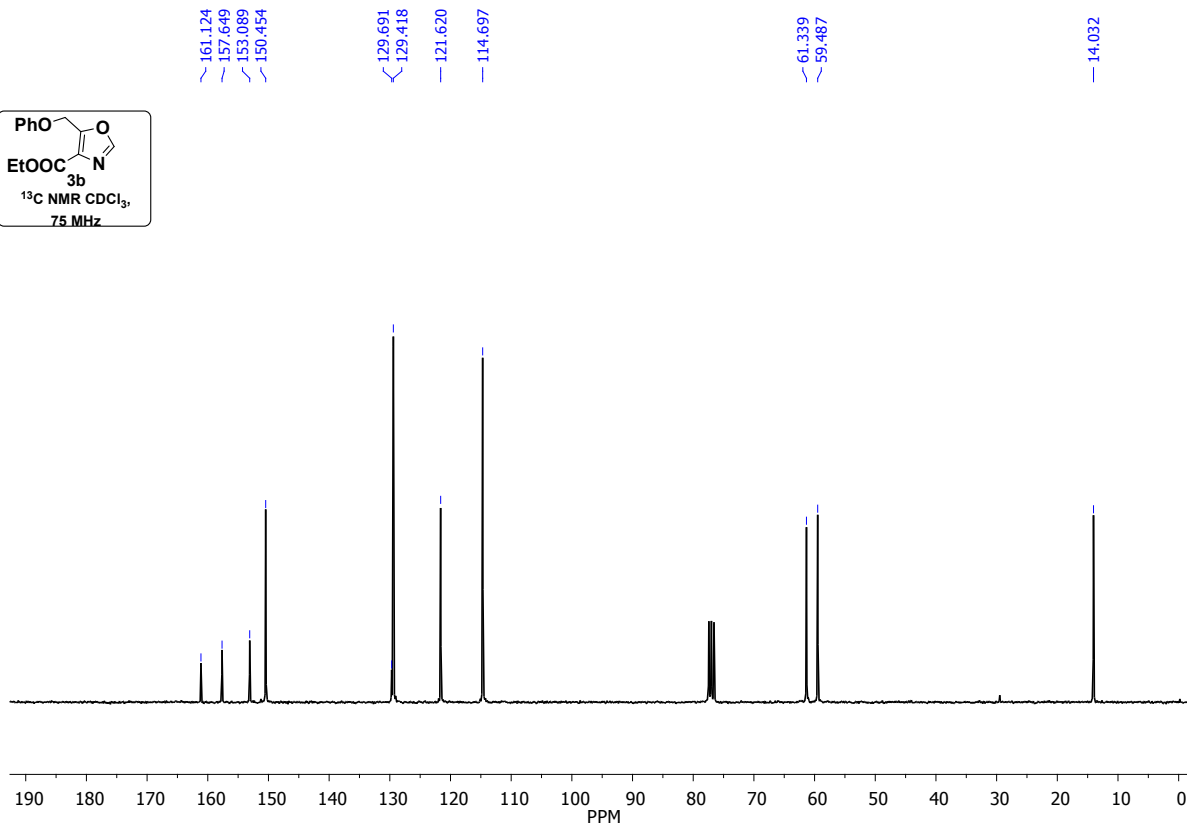
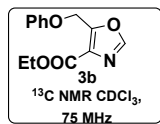
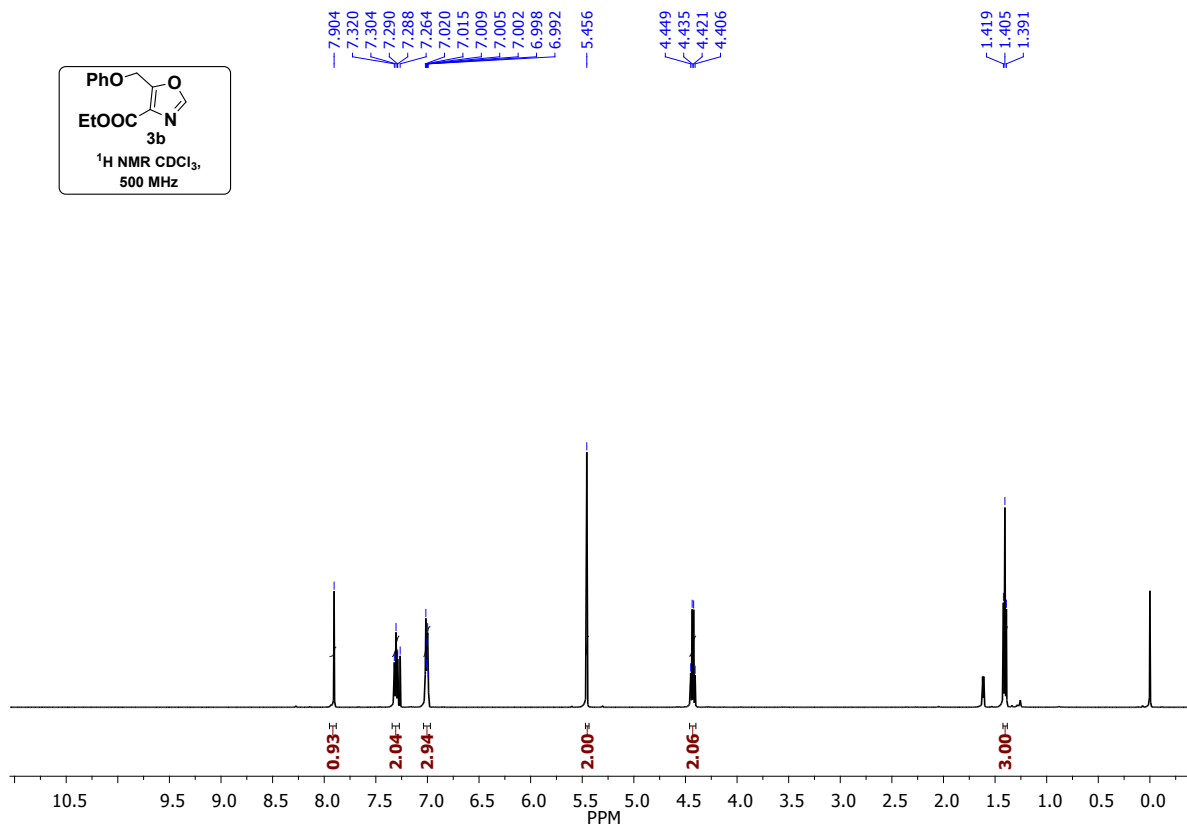
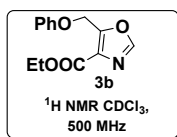


^1H and ^{13}C NMR of (3a)

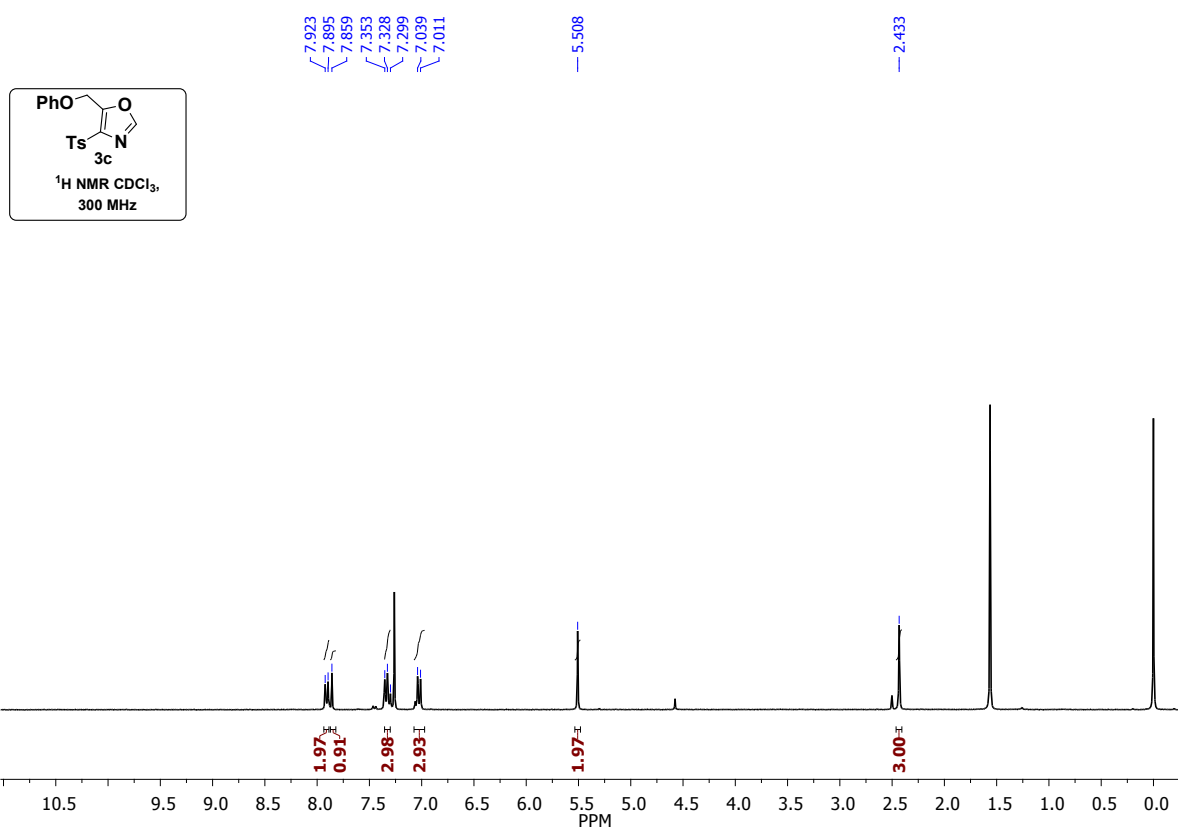


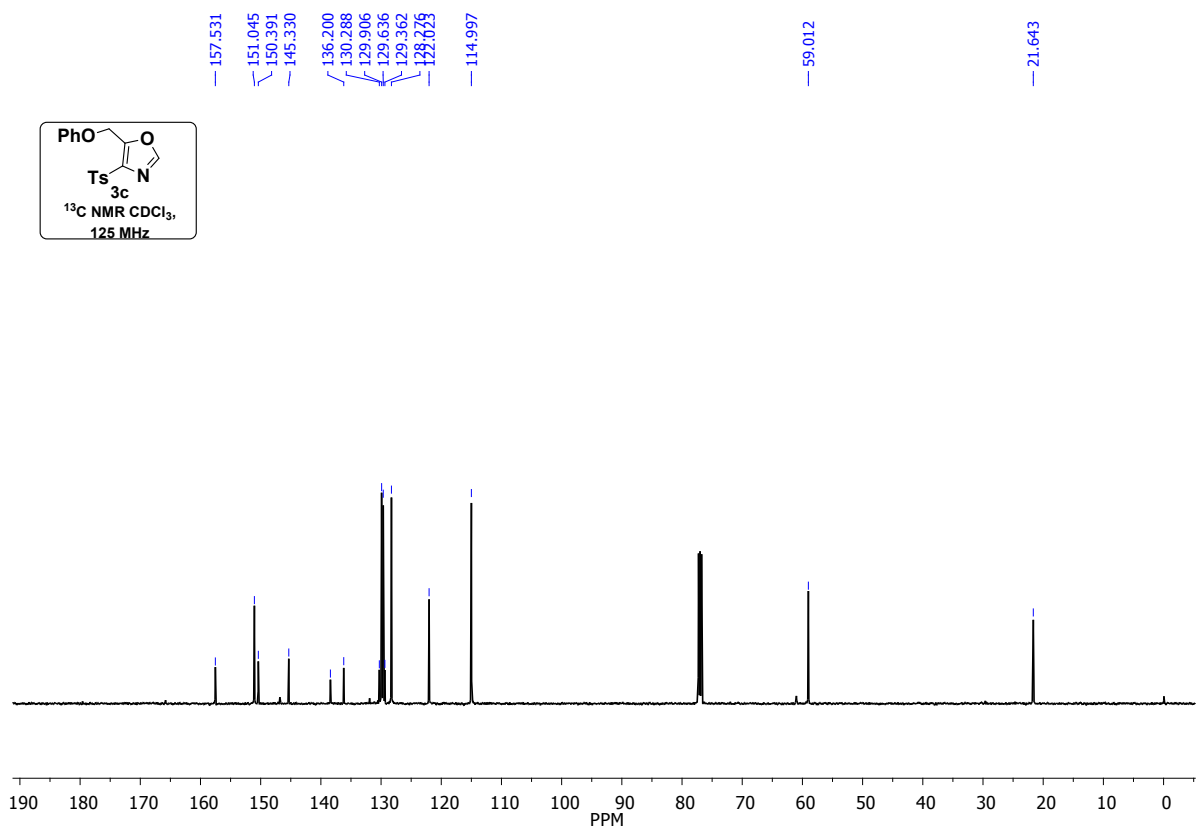


^1H and ^{13}C NMR of (3b)

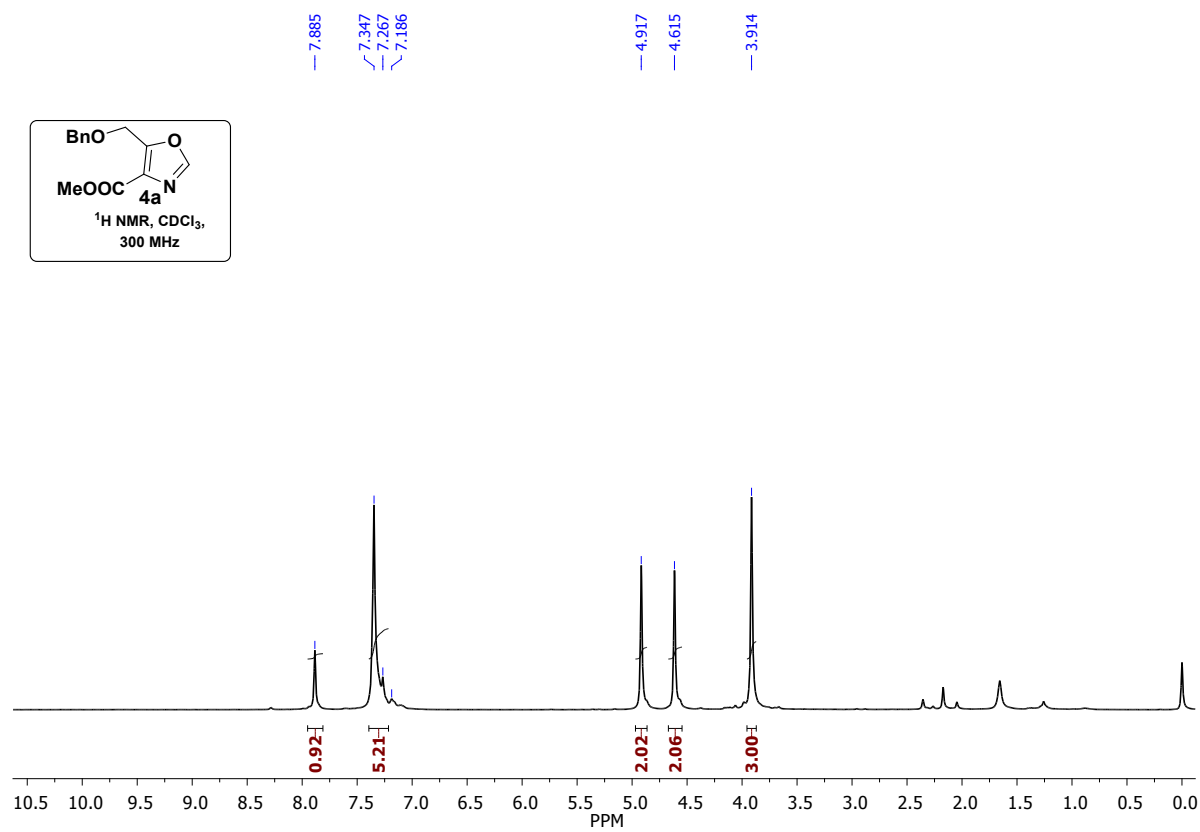


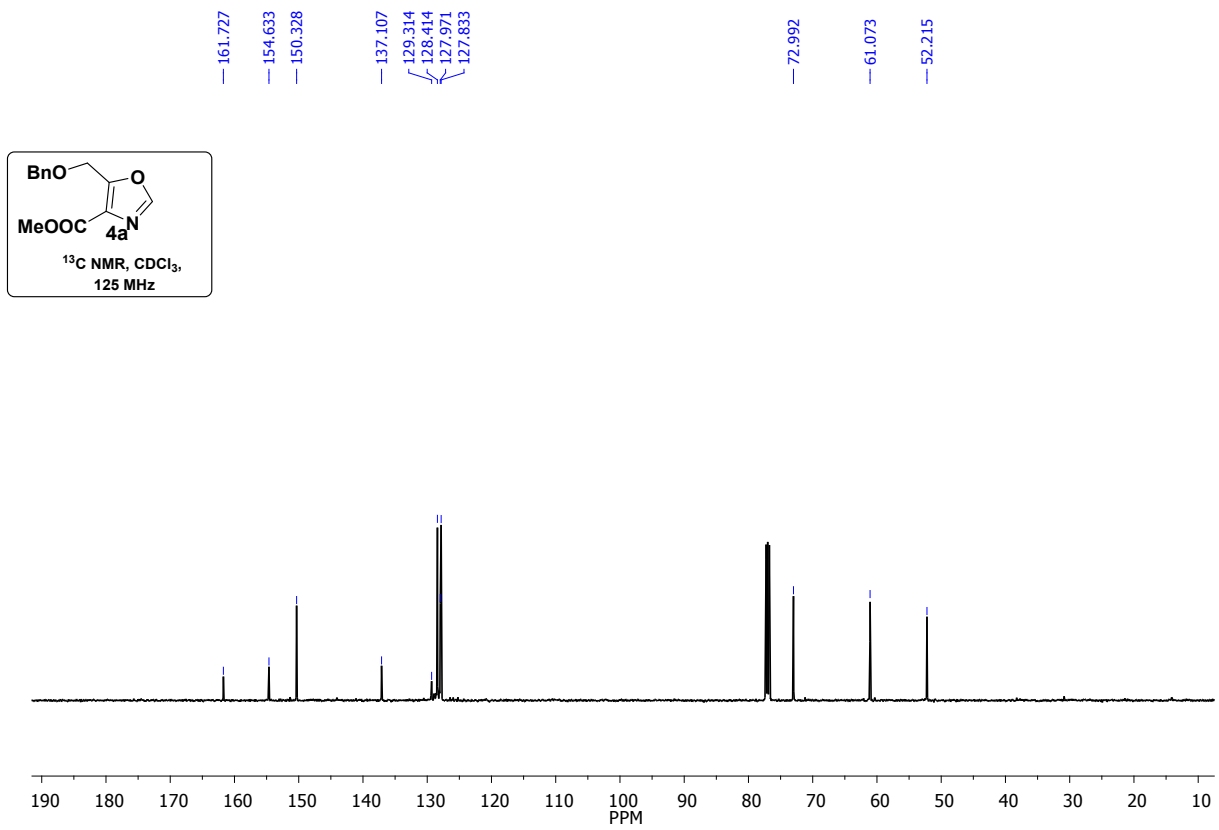
^1H and ^{13}C NMR of (3c)



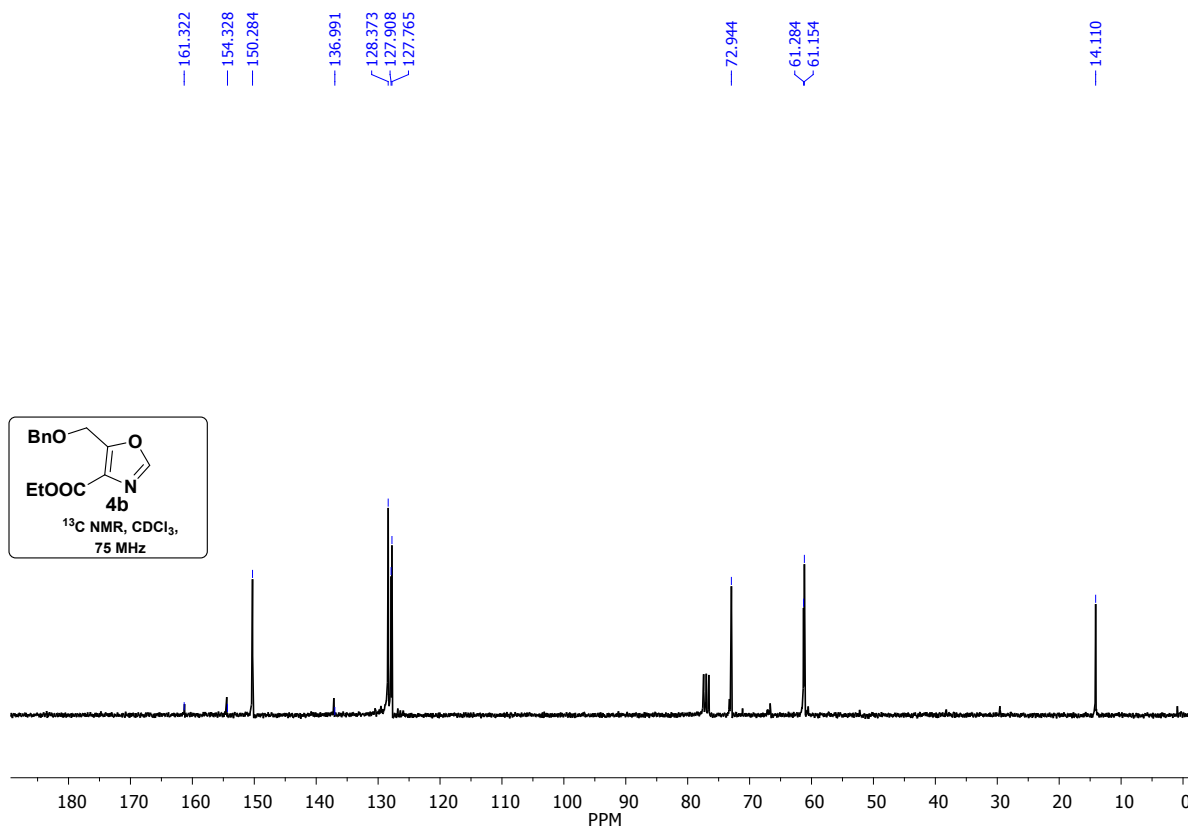
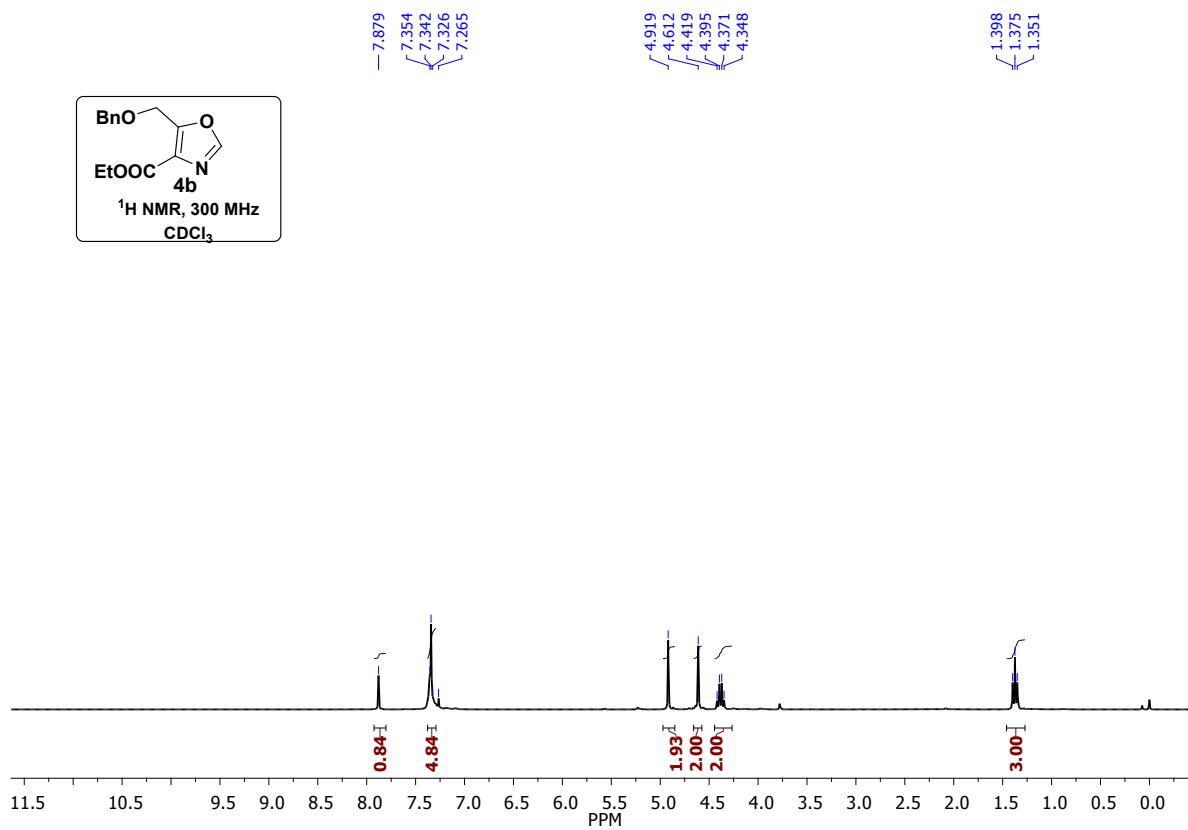
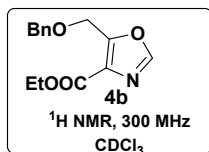


¹H and ¹³C NMR of (4a)

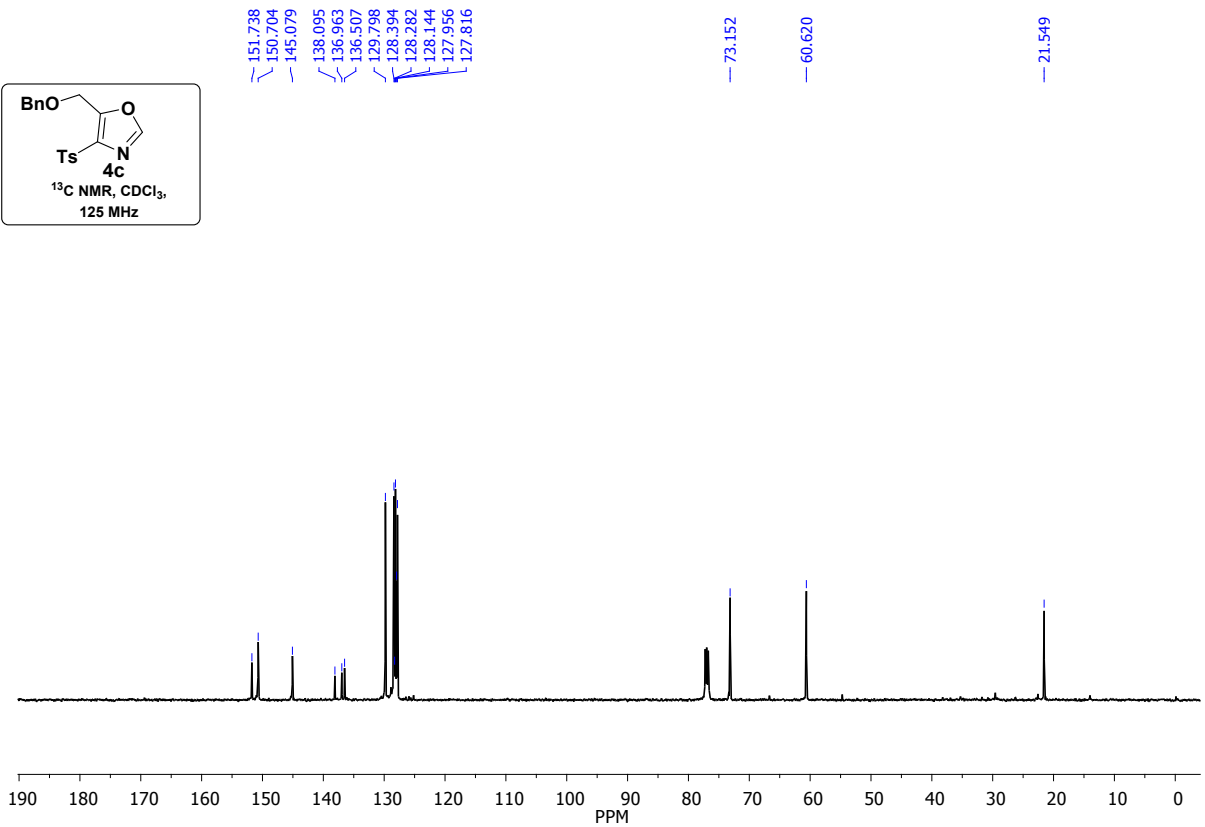
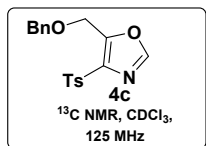
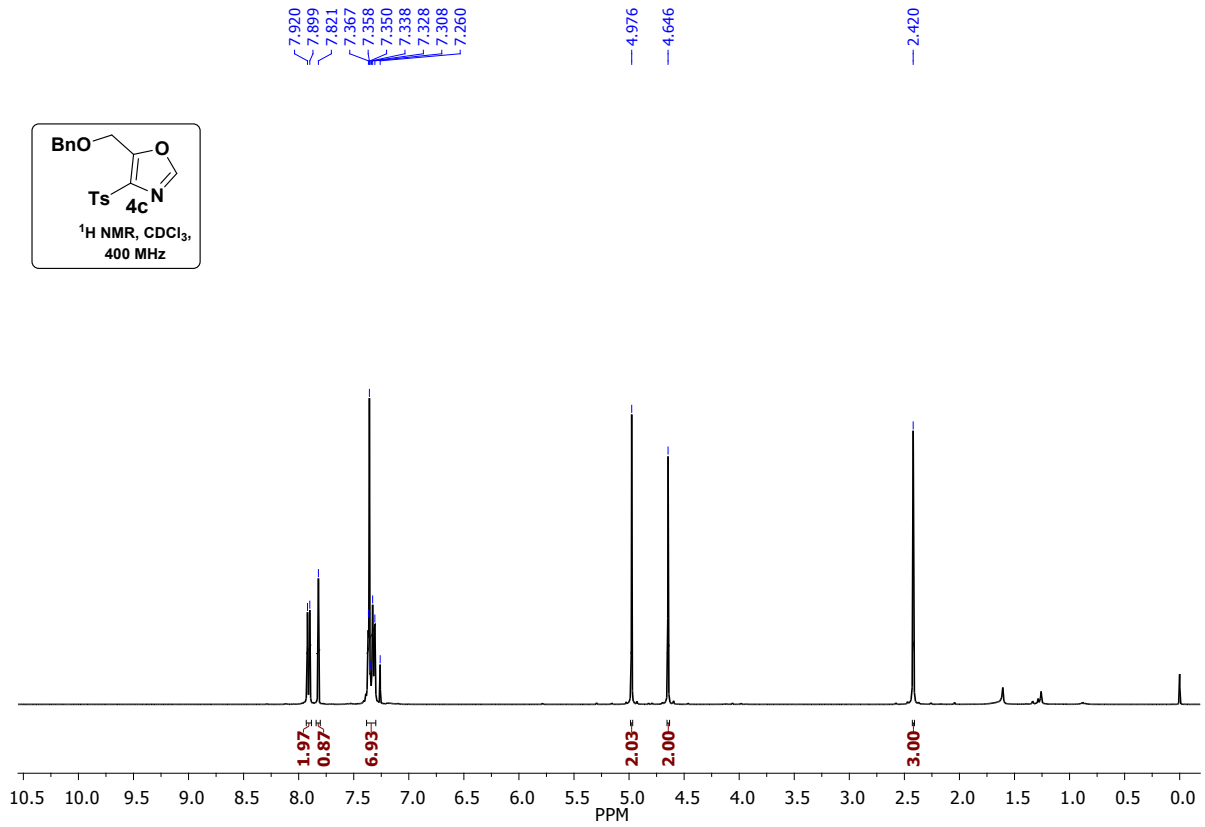
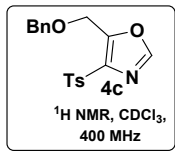




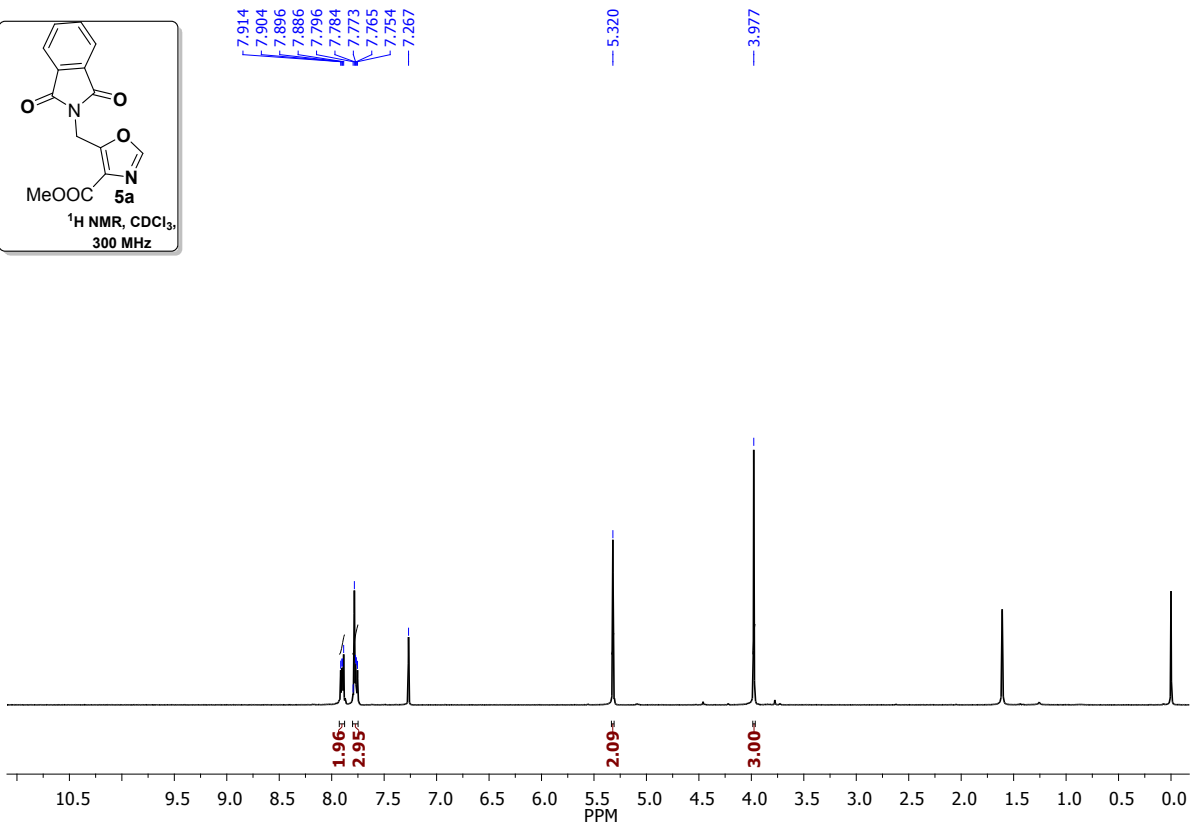
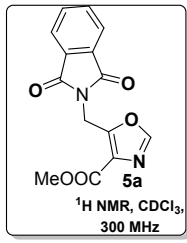
¹H and ¹³C NMR of (4b)

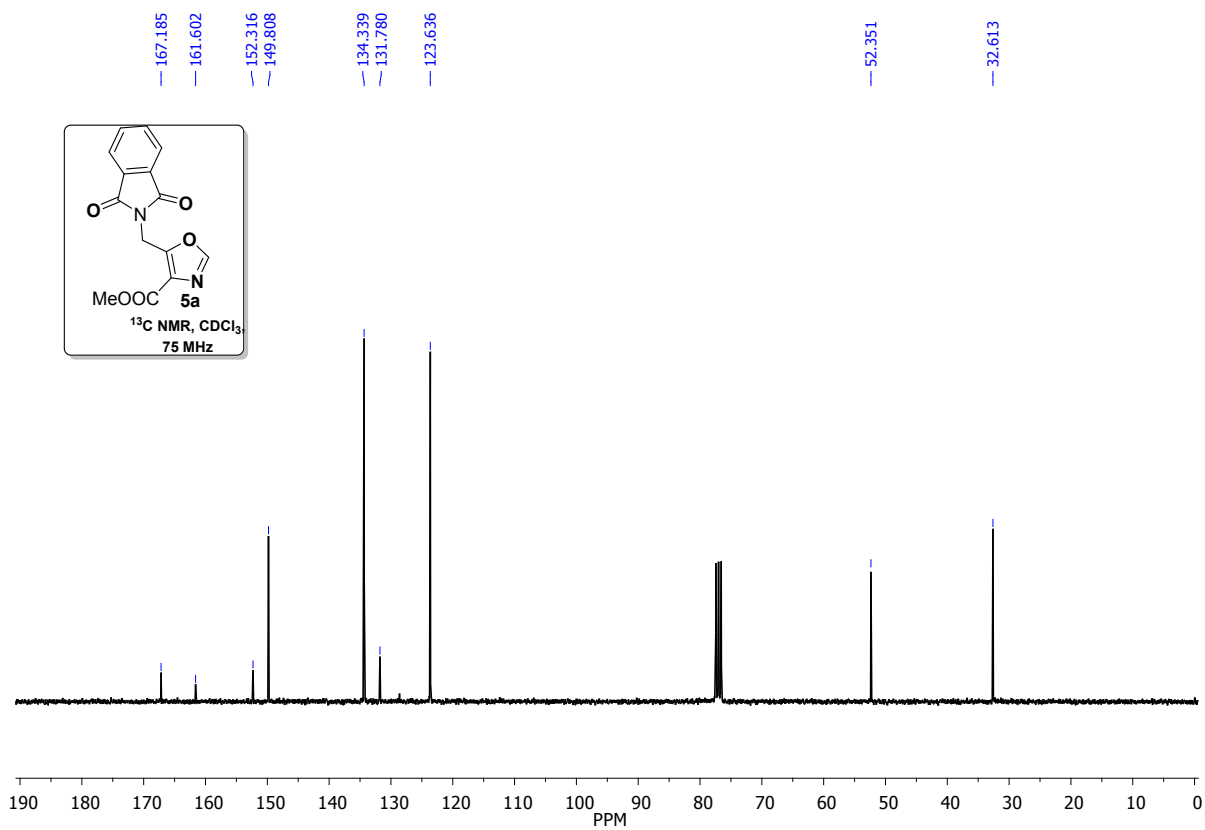


¹H and ¹³C NMR of (4c)

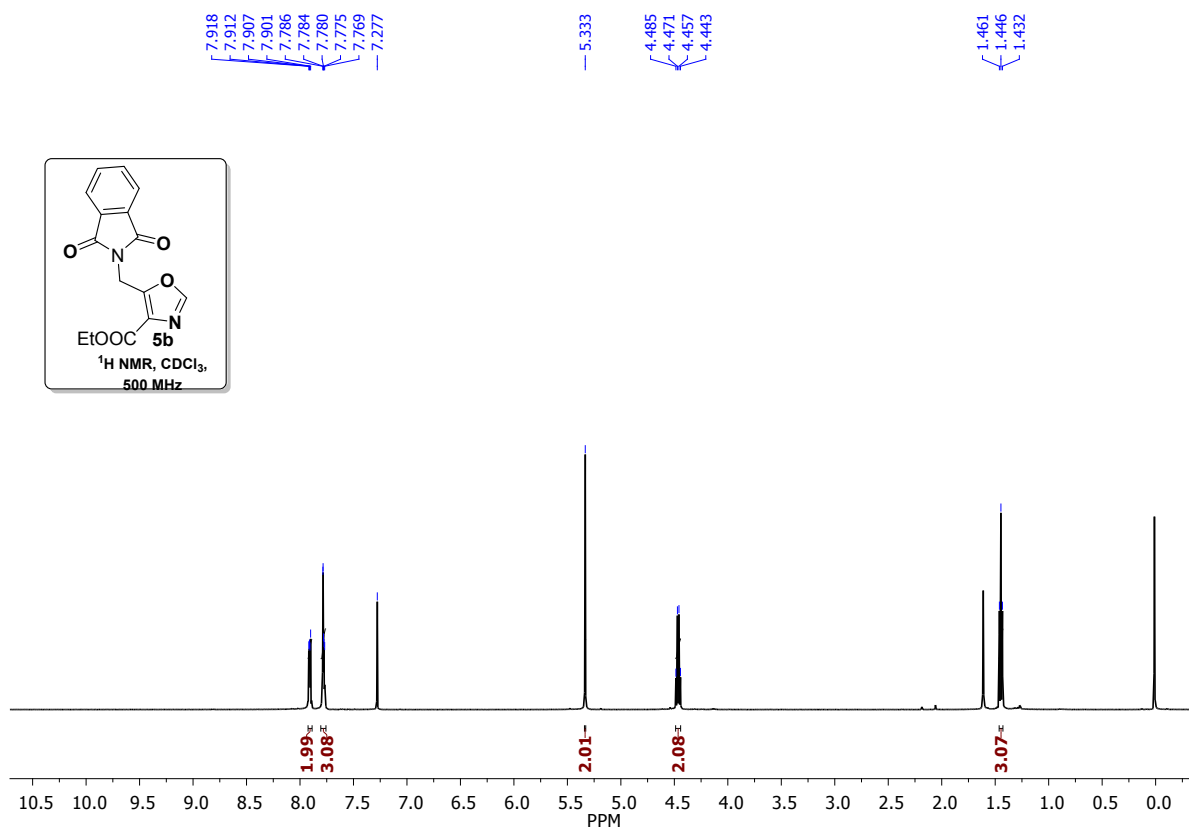


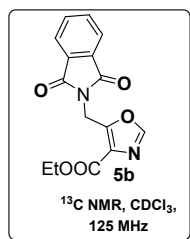
¹H and ¹³C NMR of (5a)





¹H and ¹³C NMR of (5b)



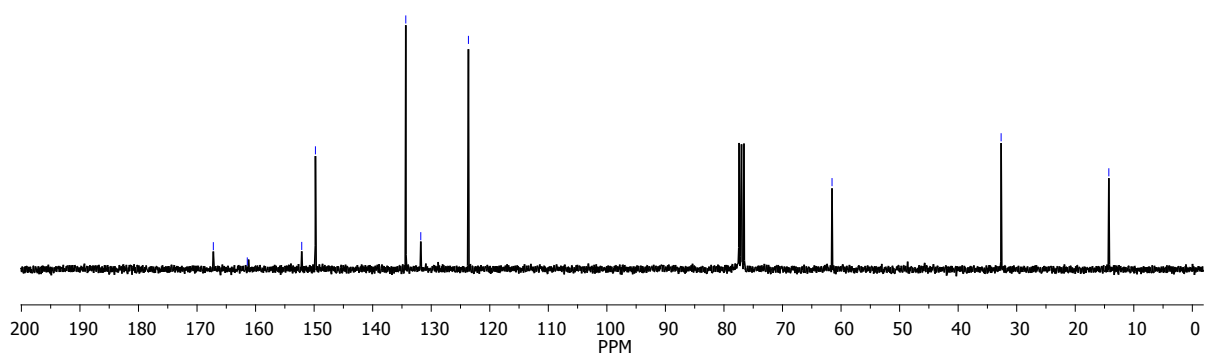


— 167.217
— 161.419
— 152.118
— 149.778
— 134.344
— 131.785
— 123.645

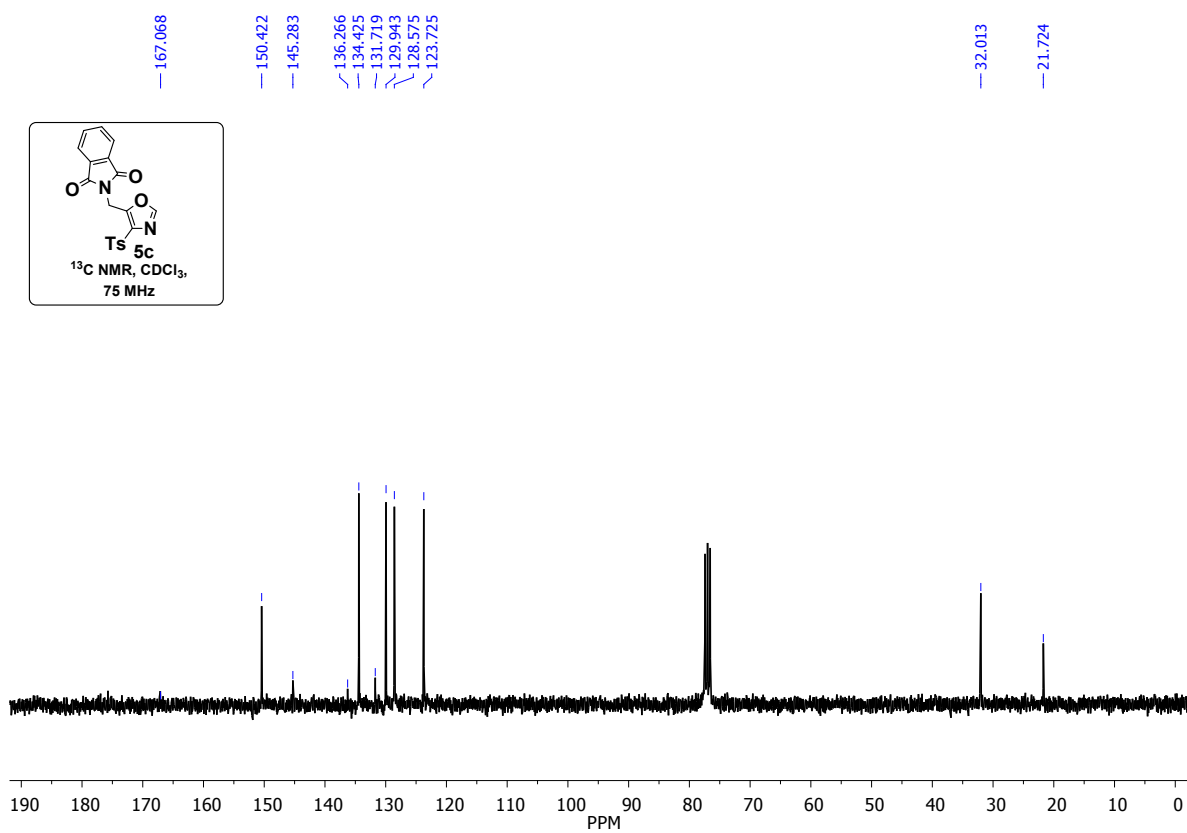
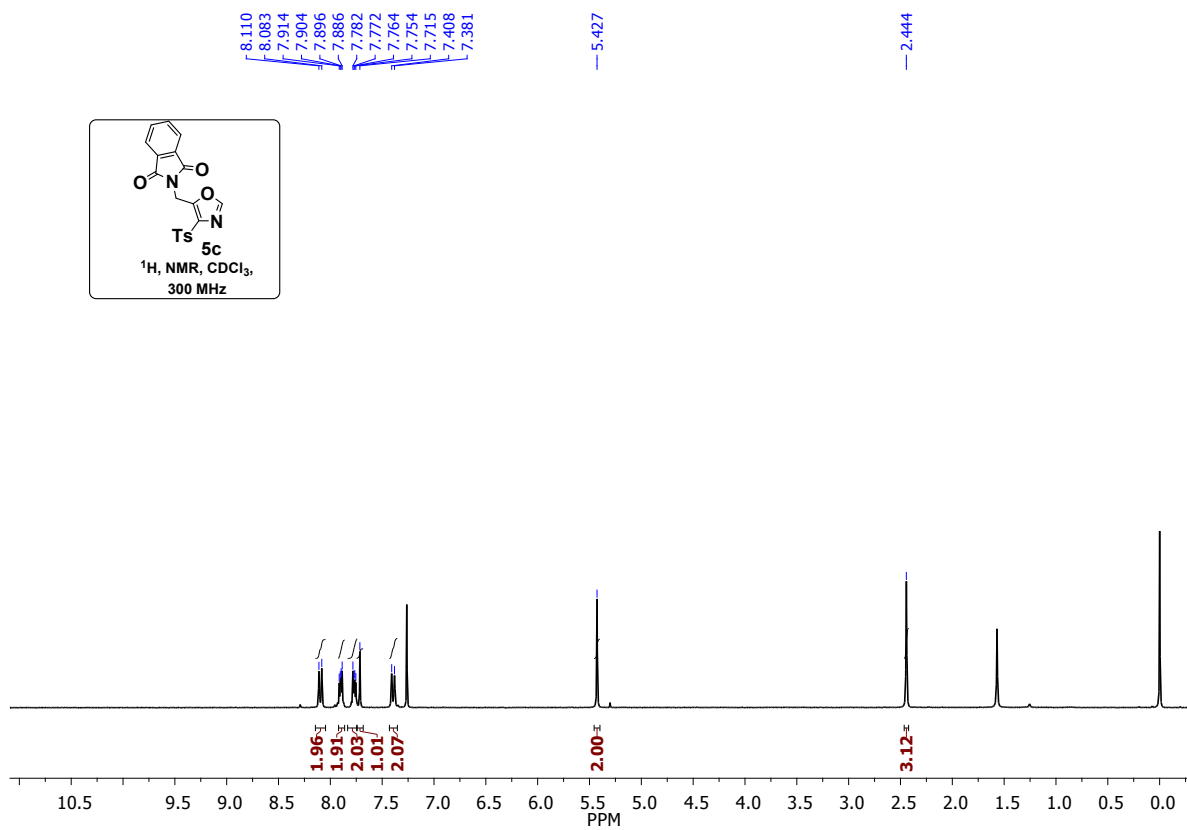
— 61.542

— 32.662

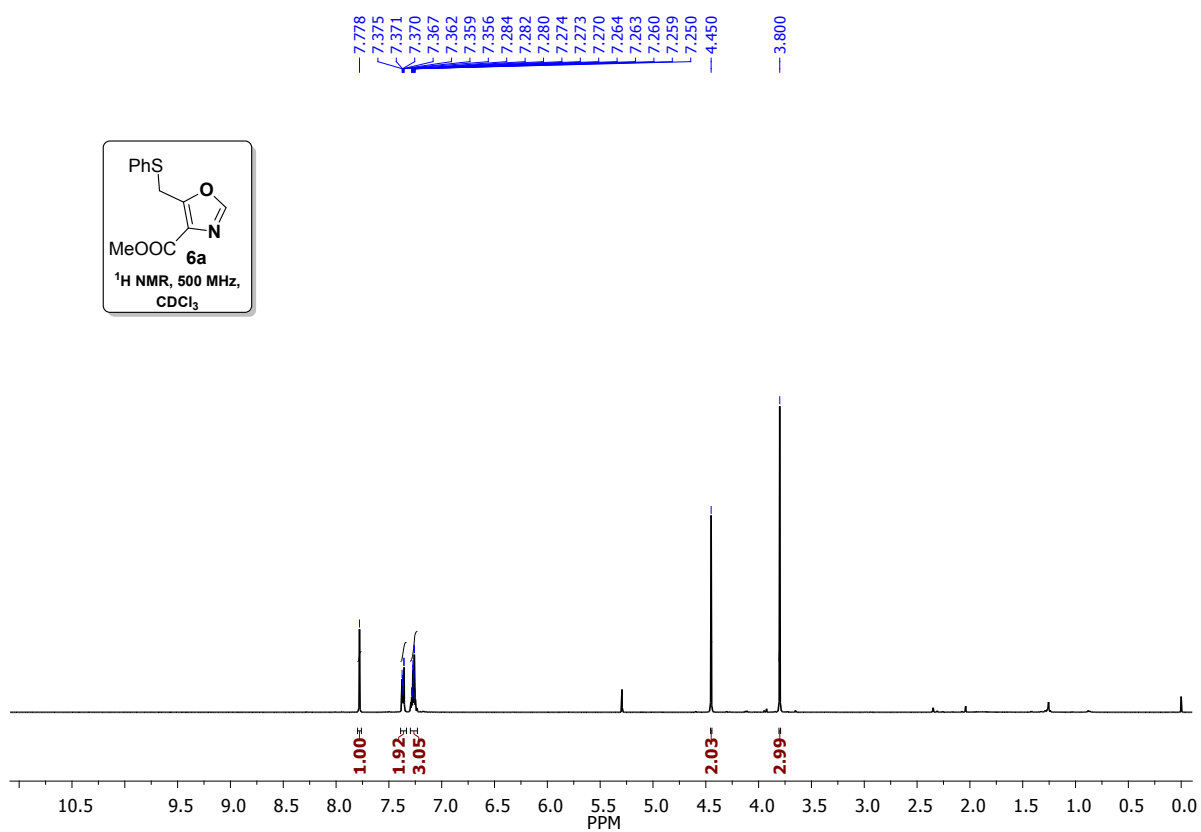
— 14.263

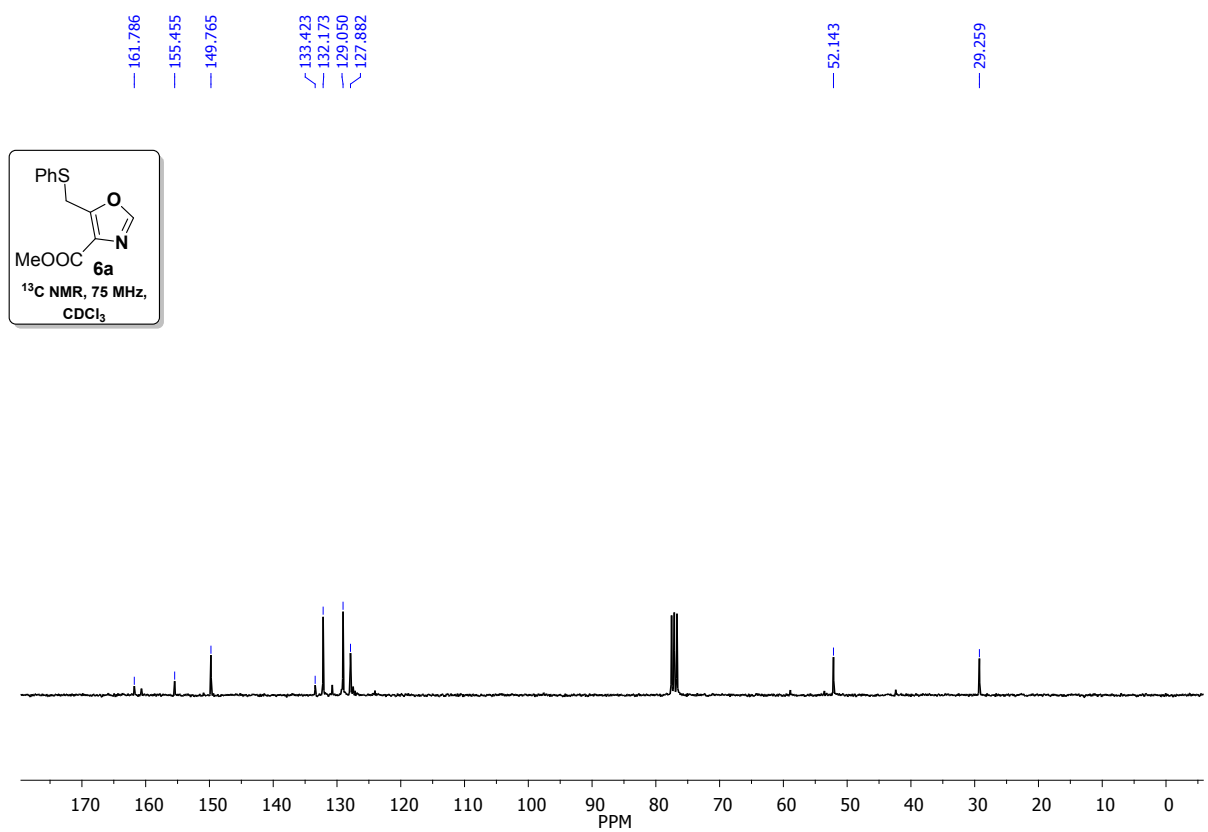


¹H and ¹³C NMR of (5c)

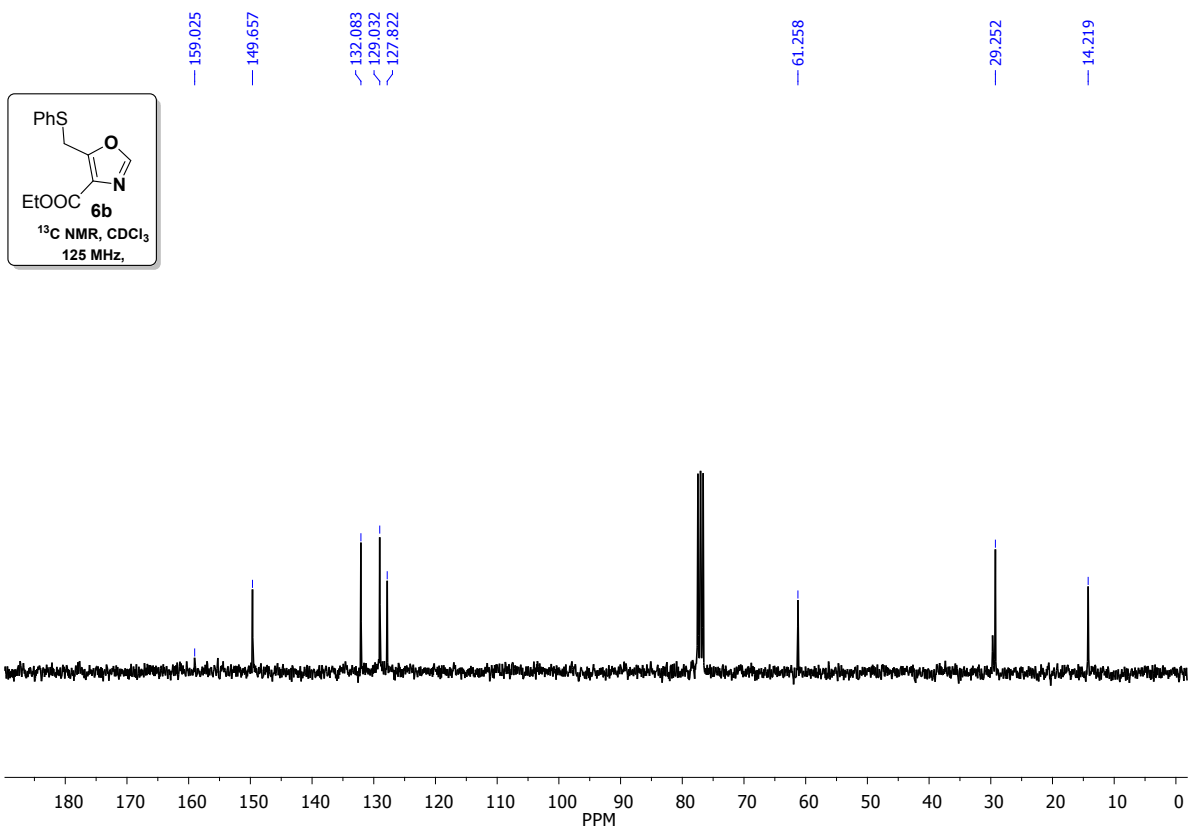
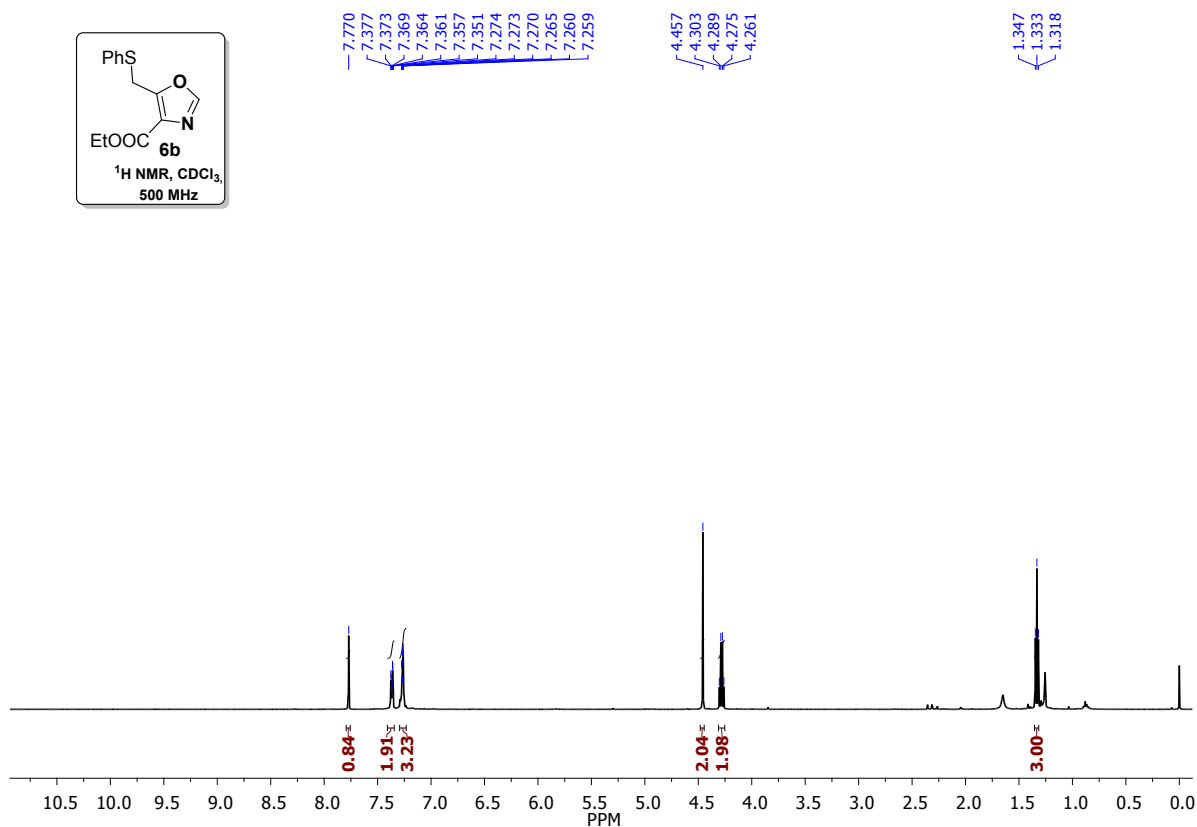
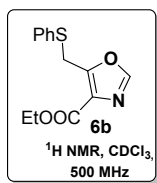


¹H and ¹³C NMR of (6a)

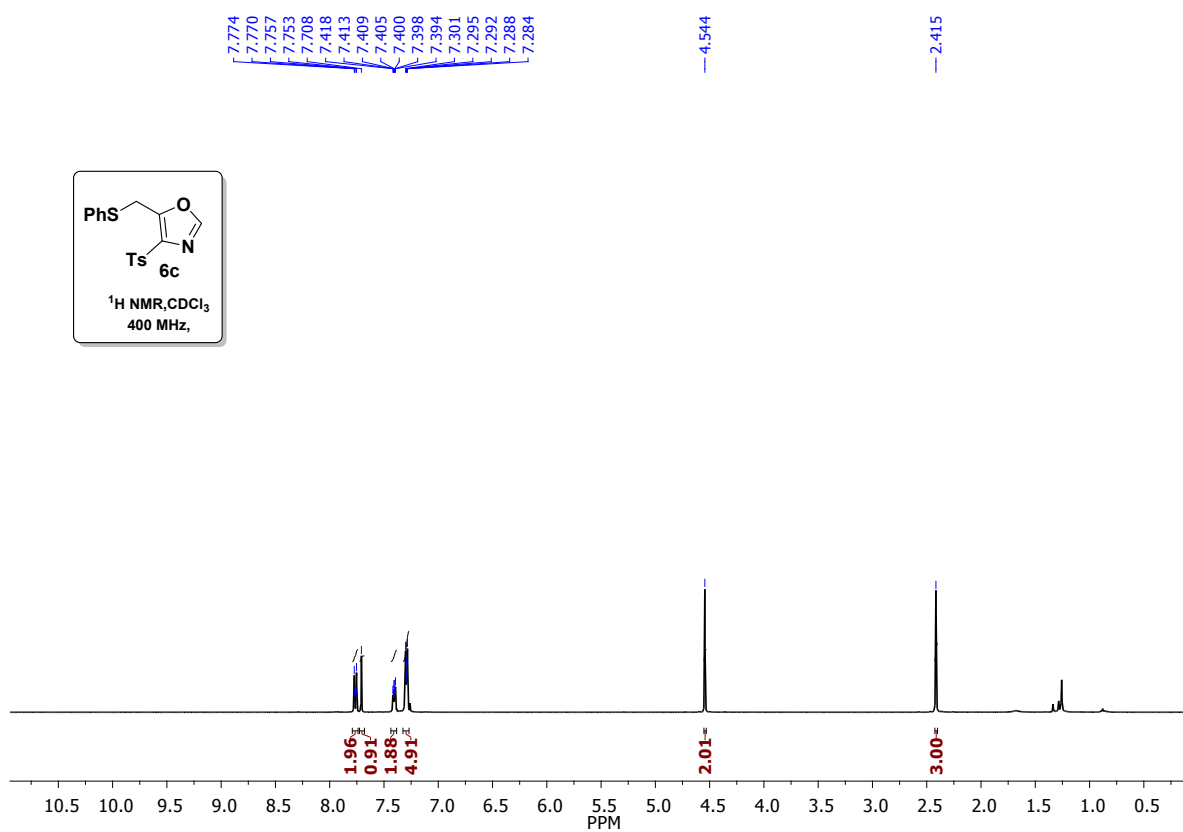


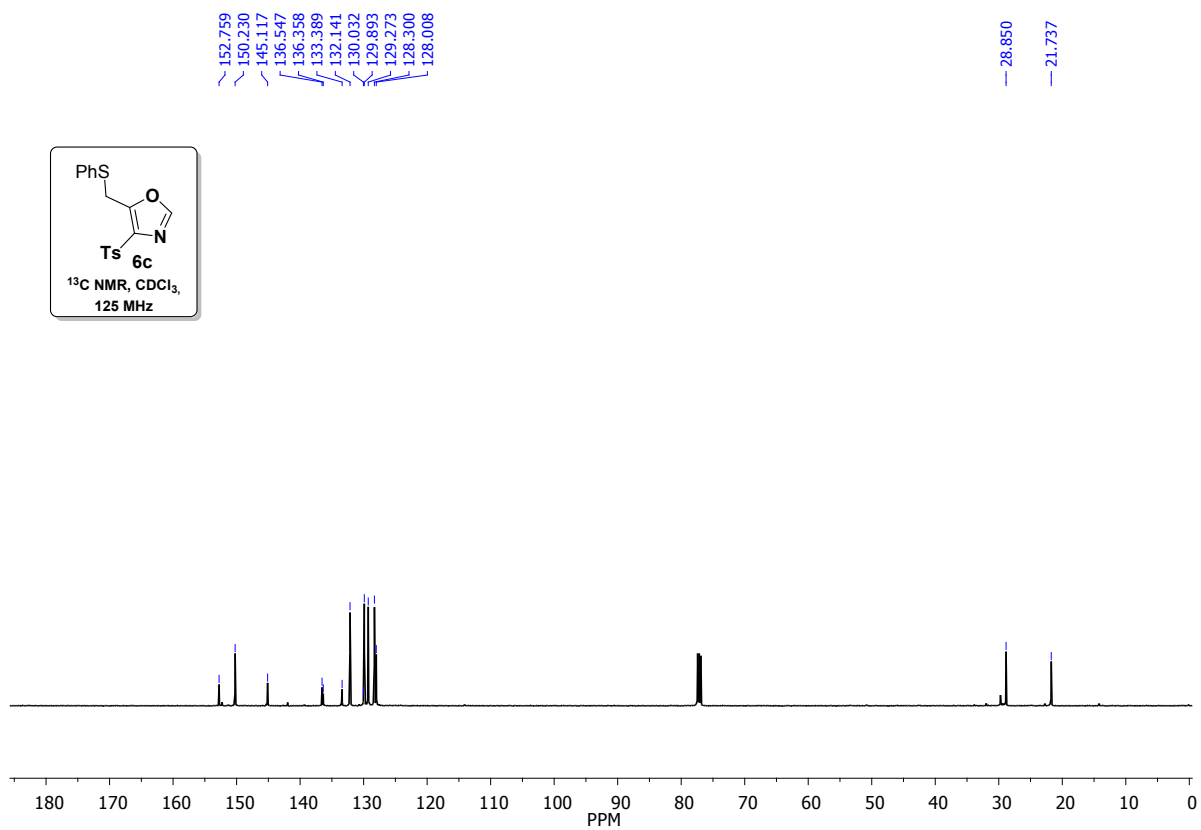


¹H and ¹³C NMR of (6b)

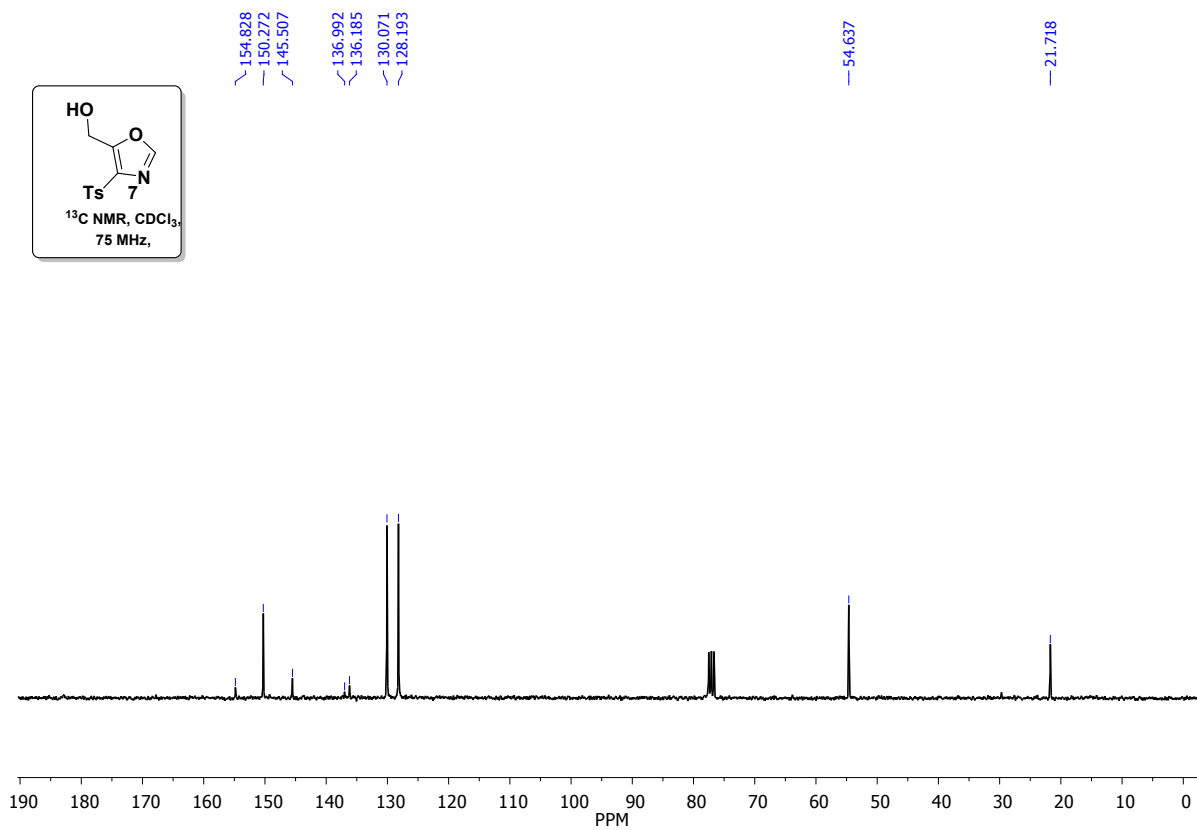
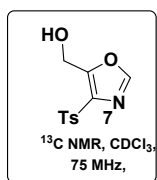
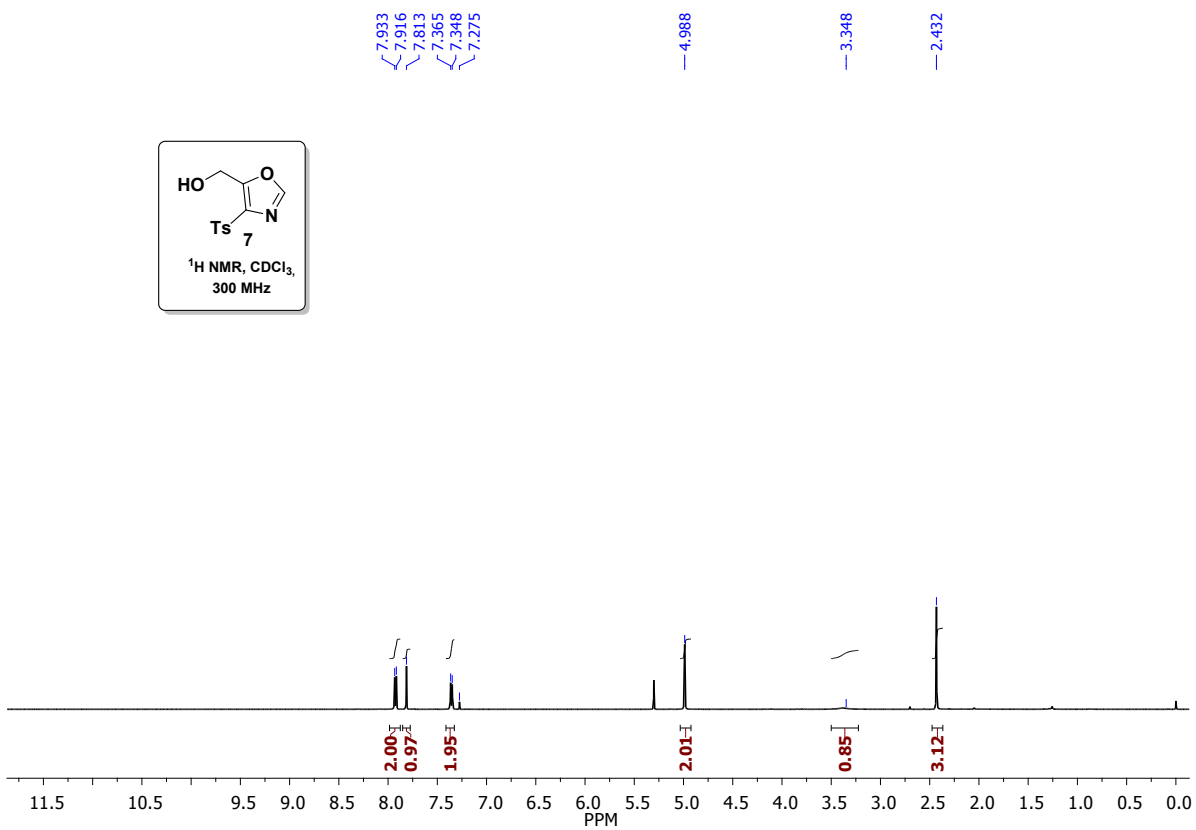
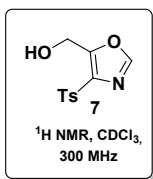


^1H and ^{13}C NMR of (6c)

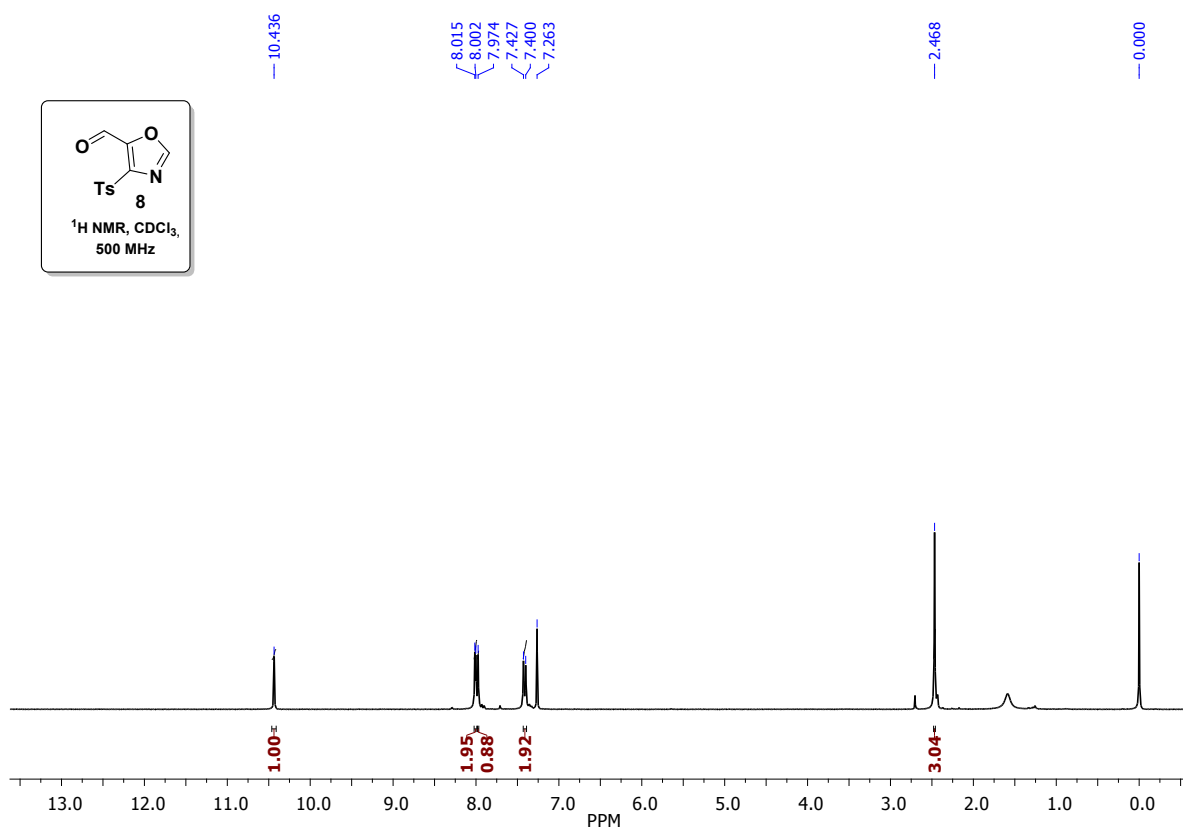
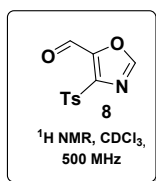


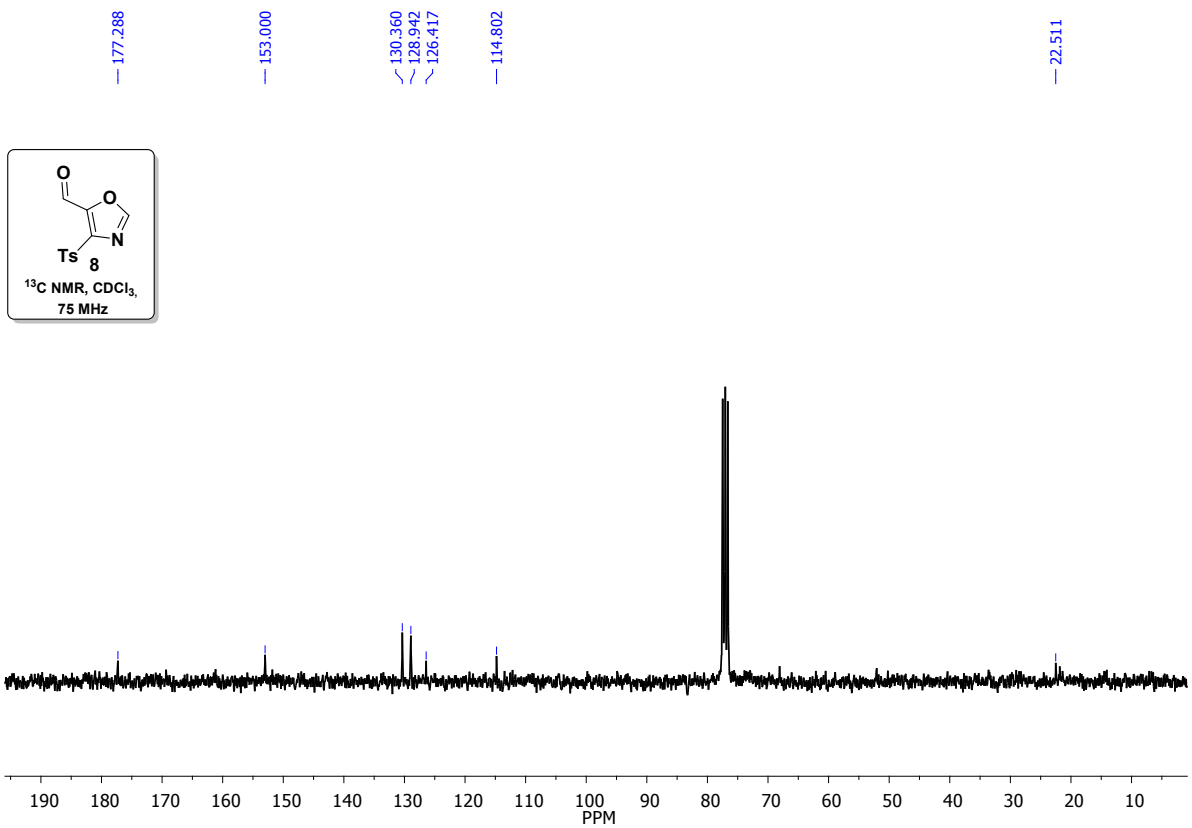


¹H and ¹³C NMR of (7)



^1H and ^{13}C NMR of (8)





¹H and ¹³C NMR of (11)

