Supporting Information

One-Pot Multicomponent Synthesis of Indole-Linked Fully Substituted Fused-Pyrroles

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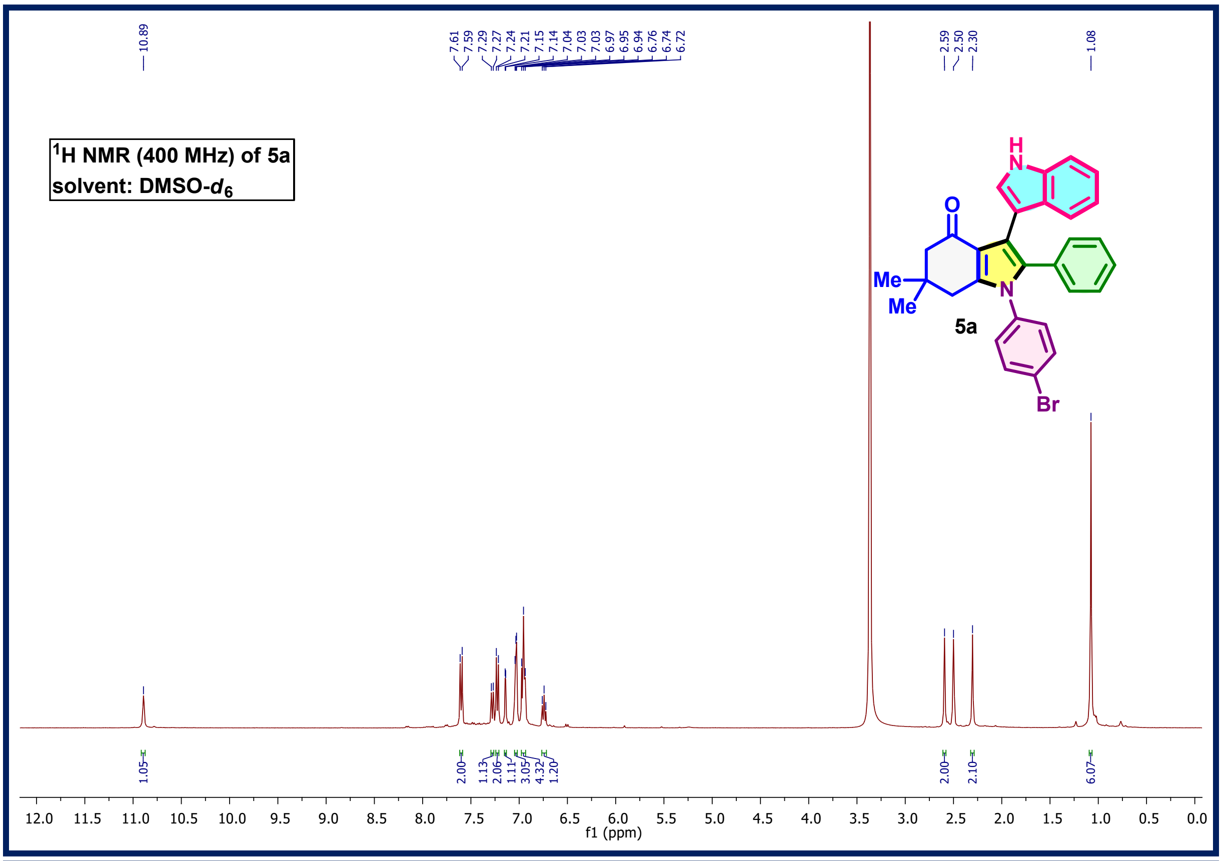
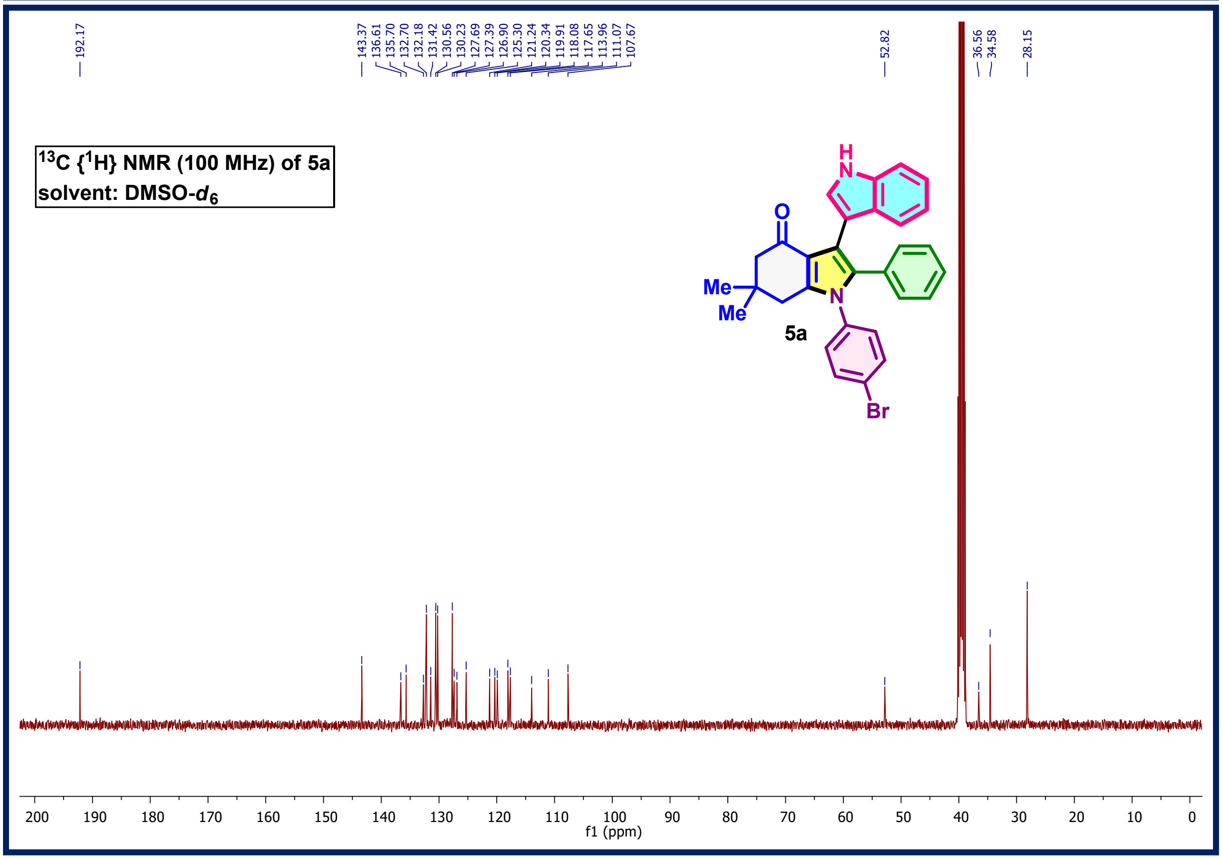
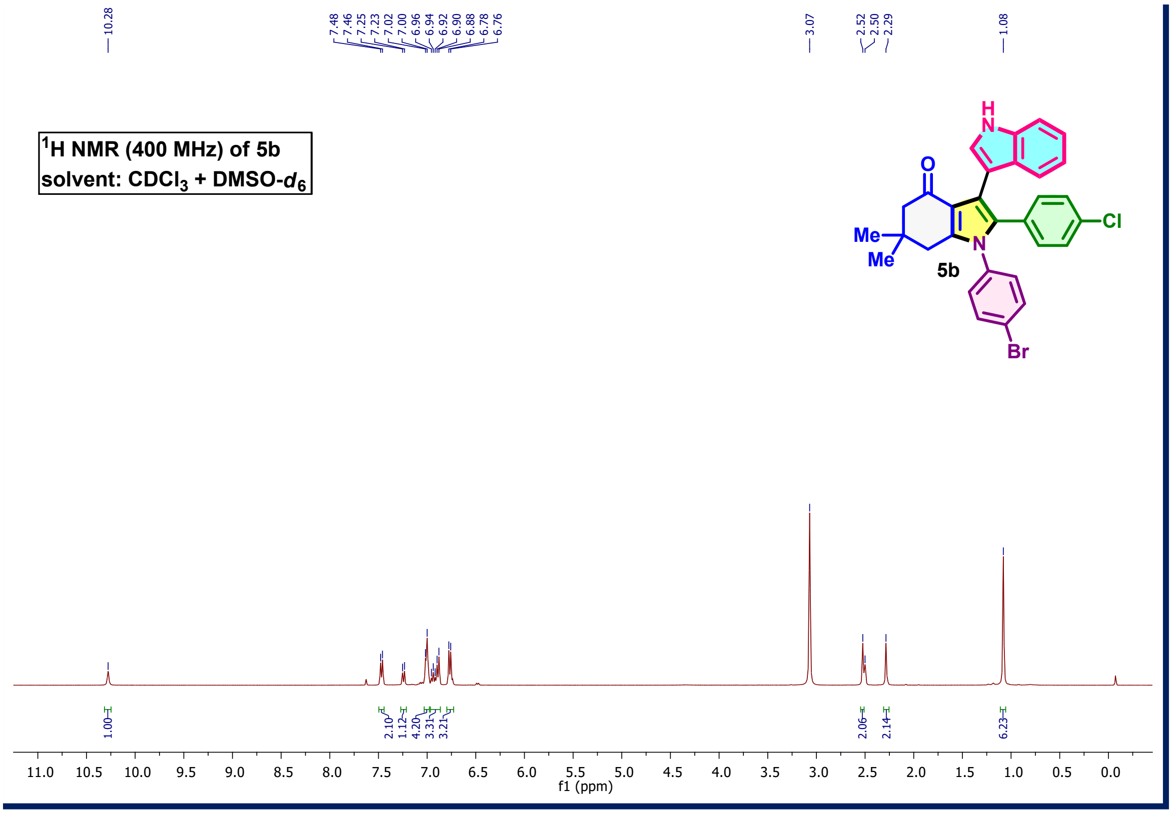
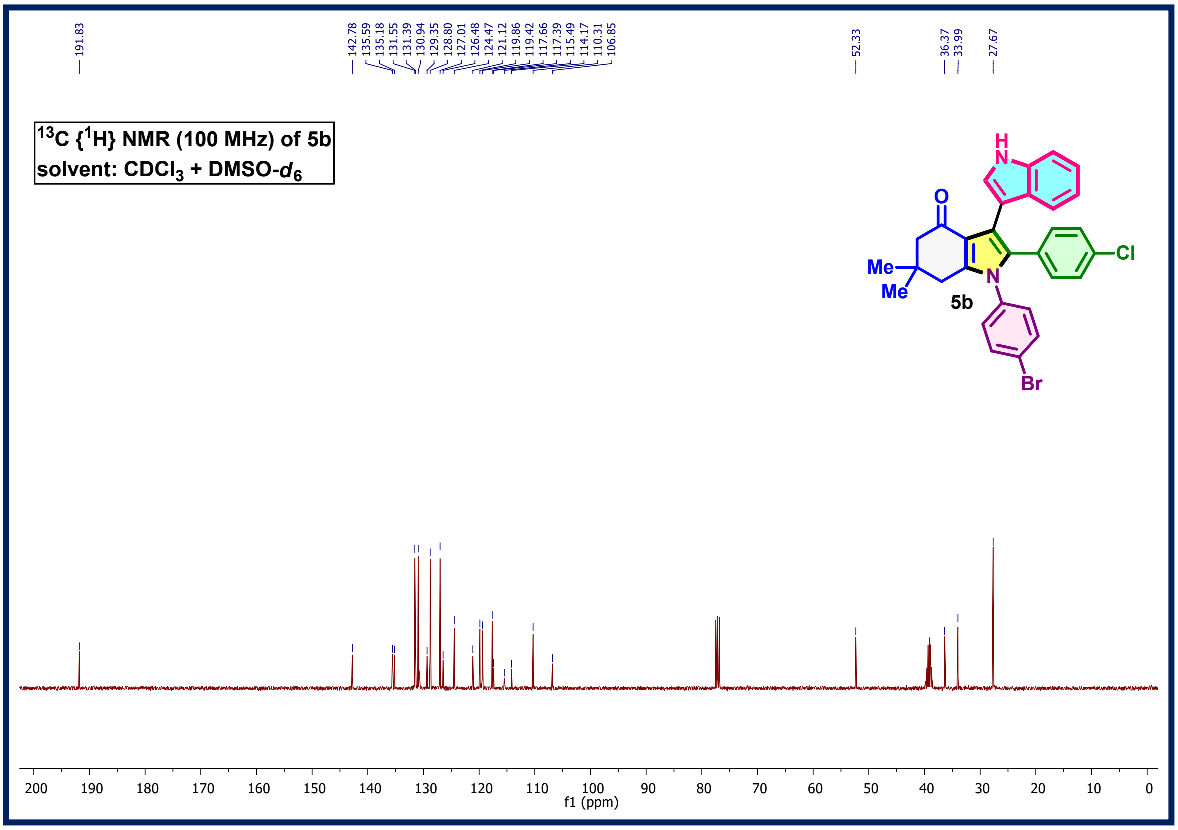


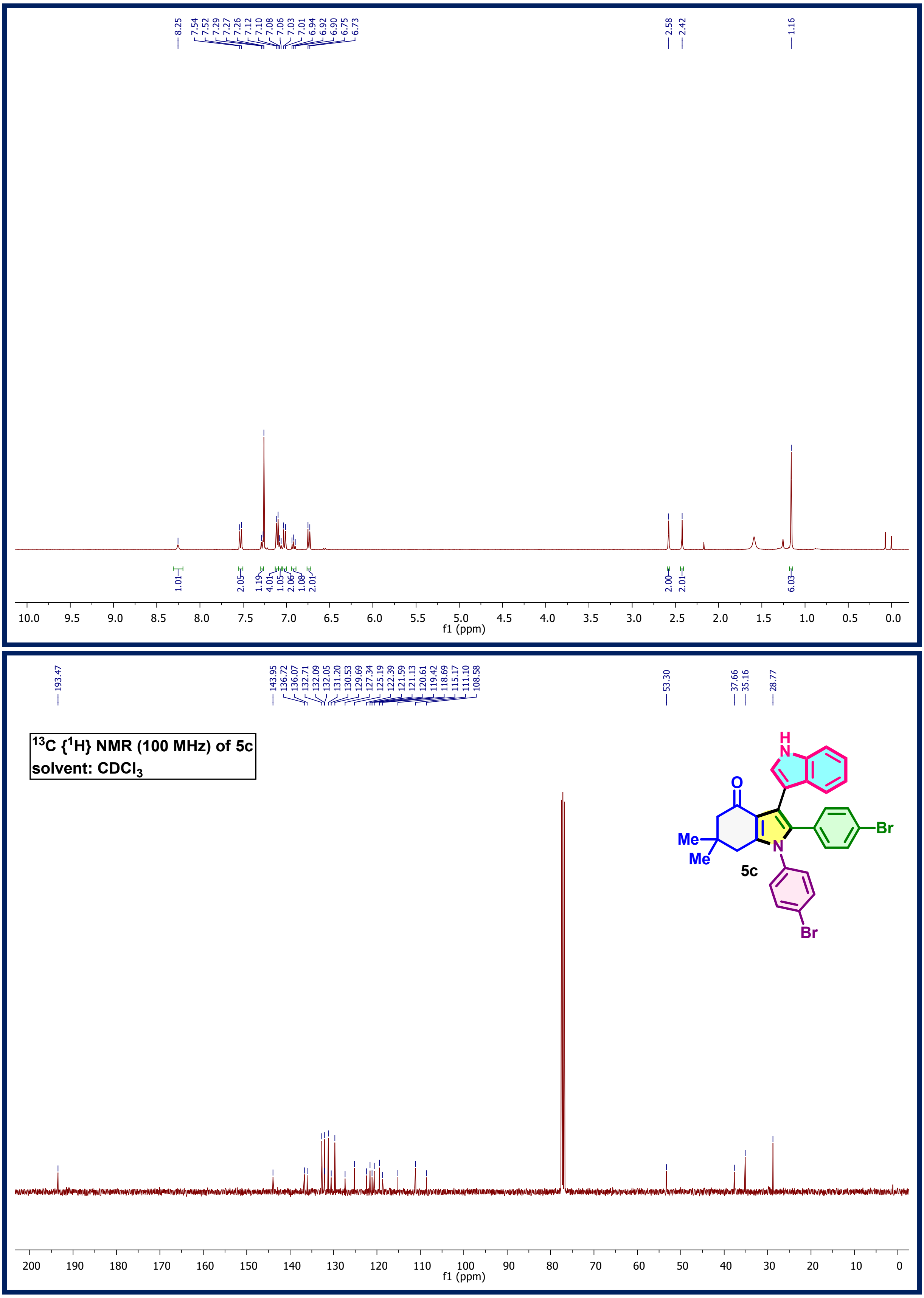


^{1}H, and ^{13}C{^{1}H} NMR spectra of **5b**

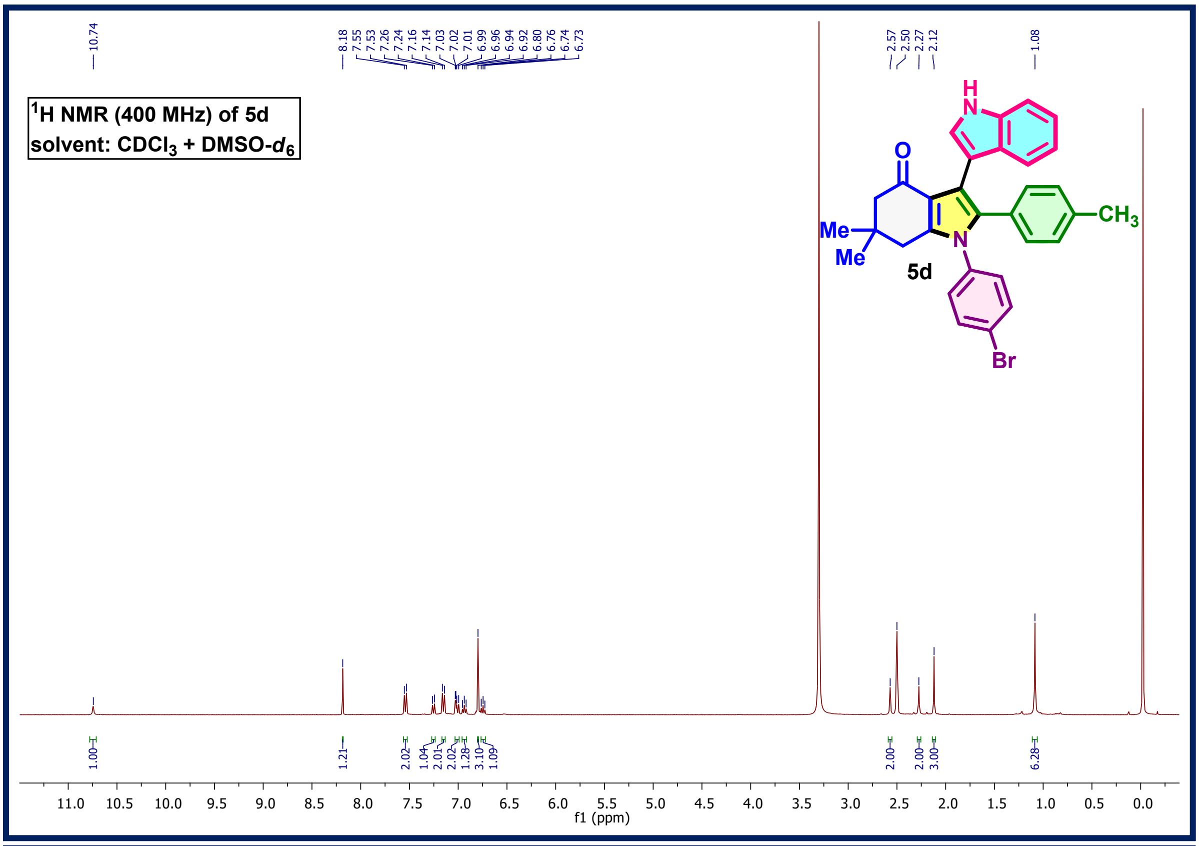


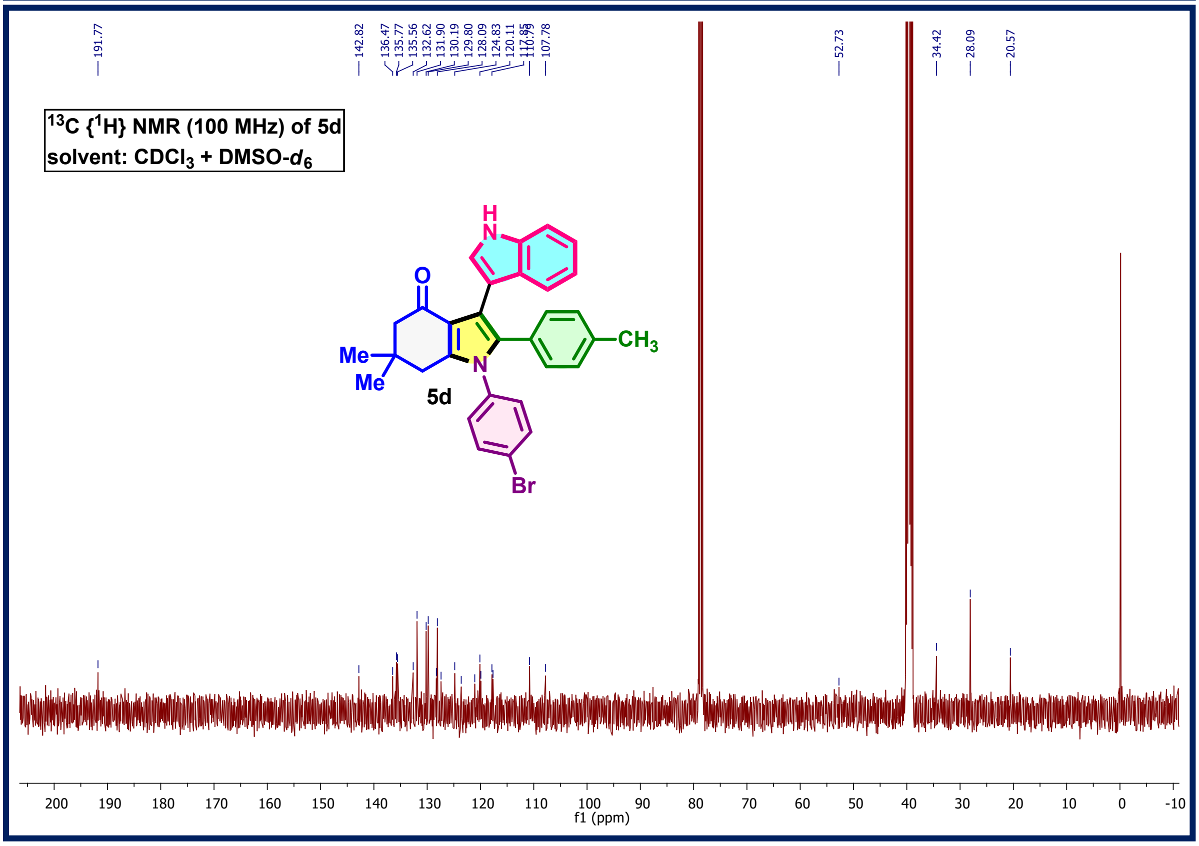


^{1}H, and ^{13}C{^{1}H} NMR spectra of **5c**

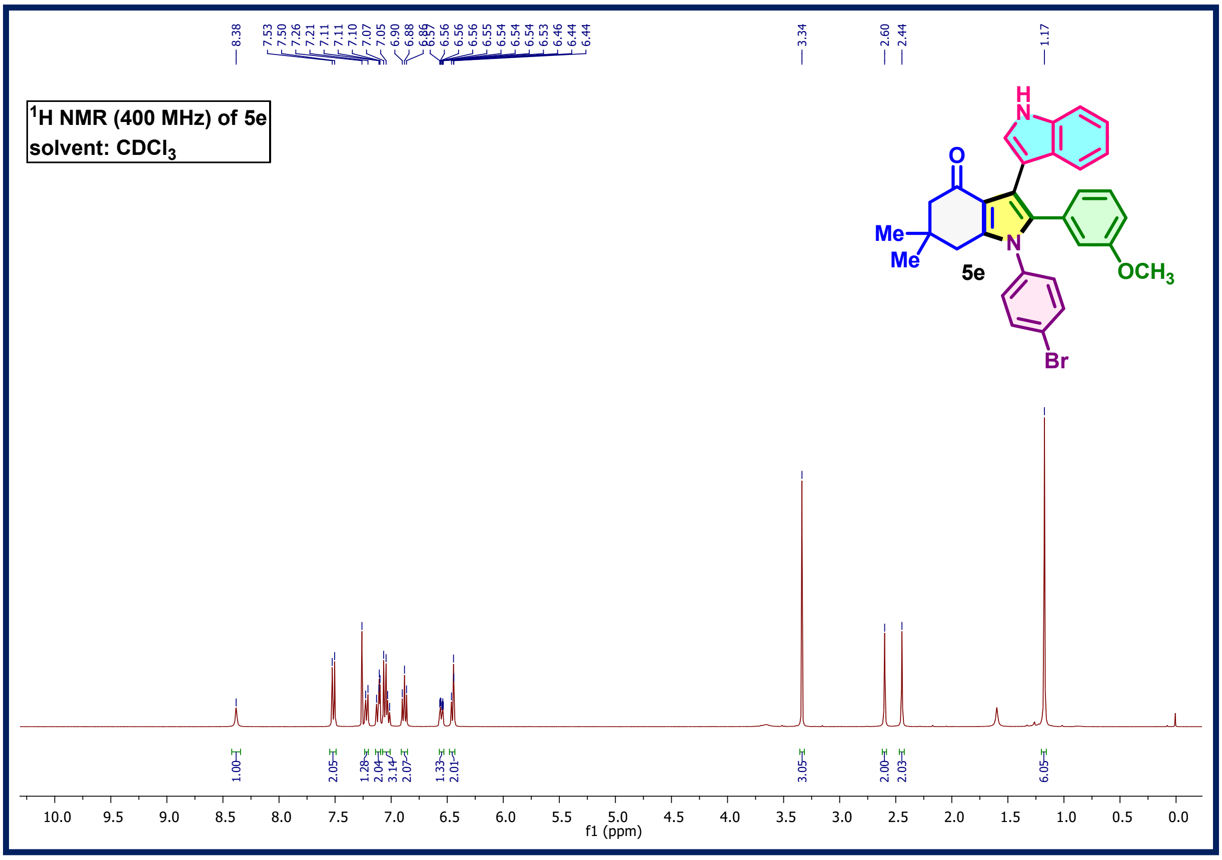


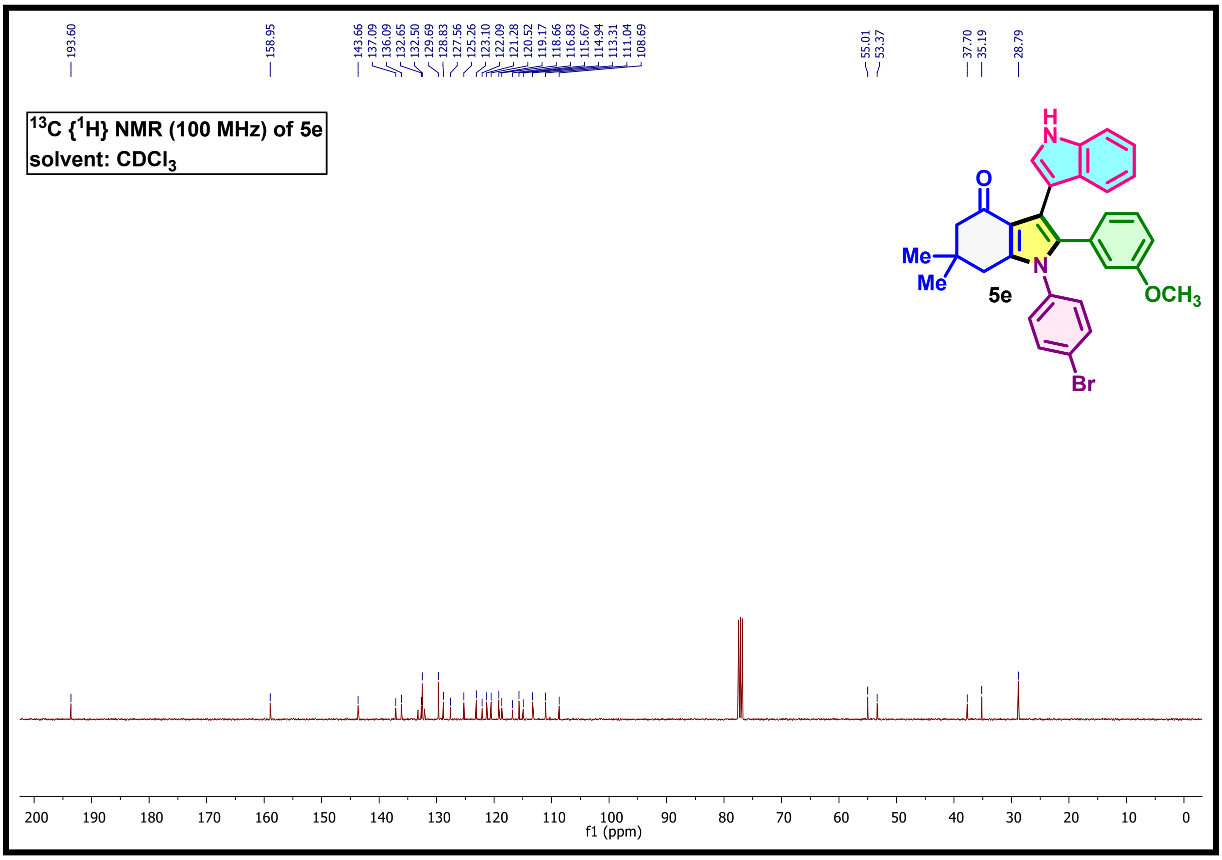
[1]H, and [13]C{[1]H} NMR spectra of **5d**



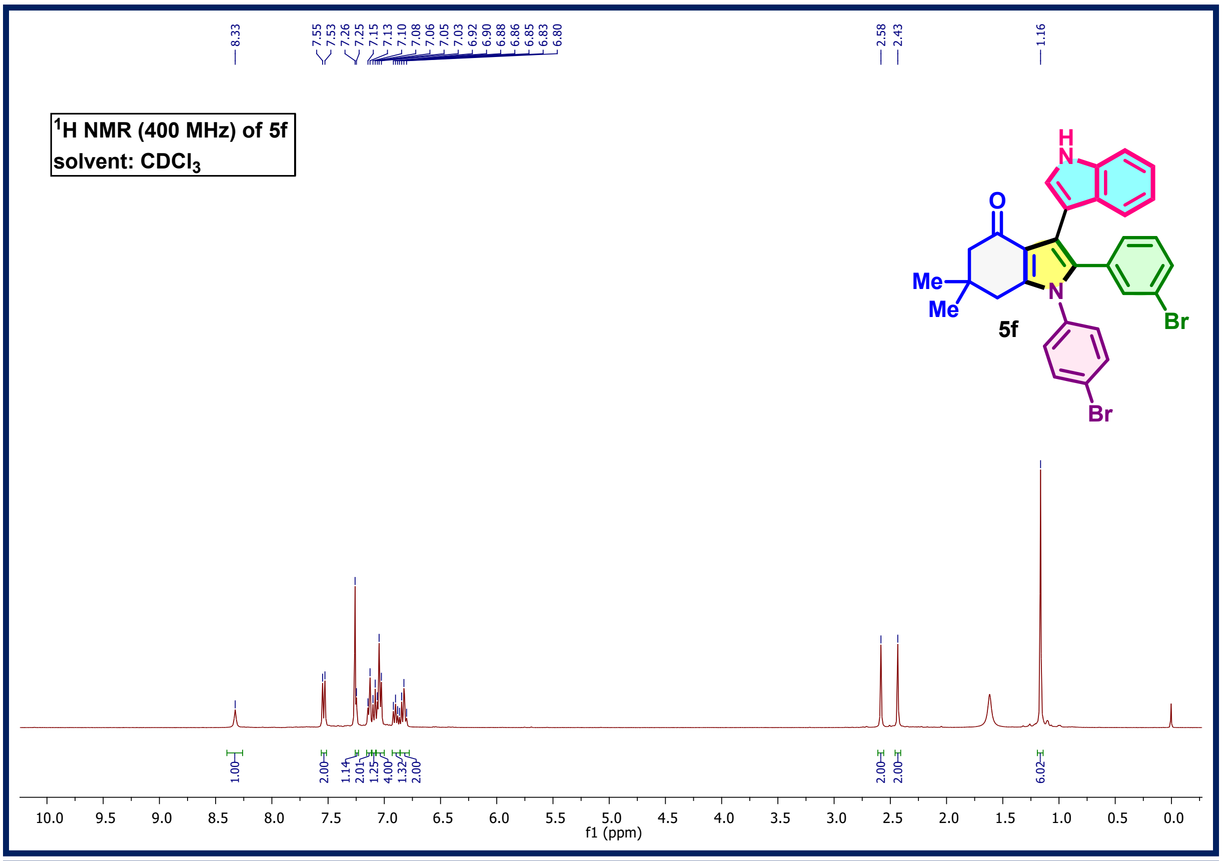


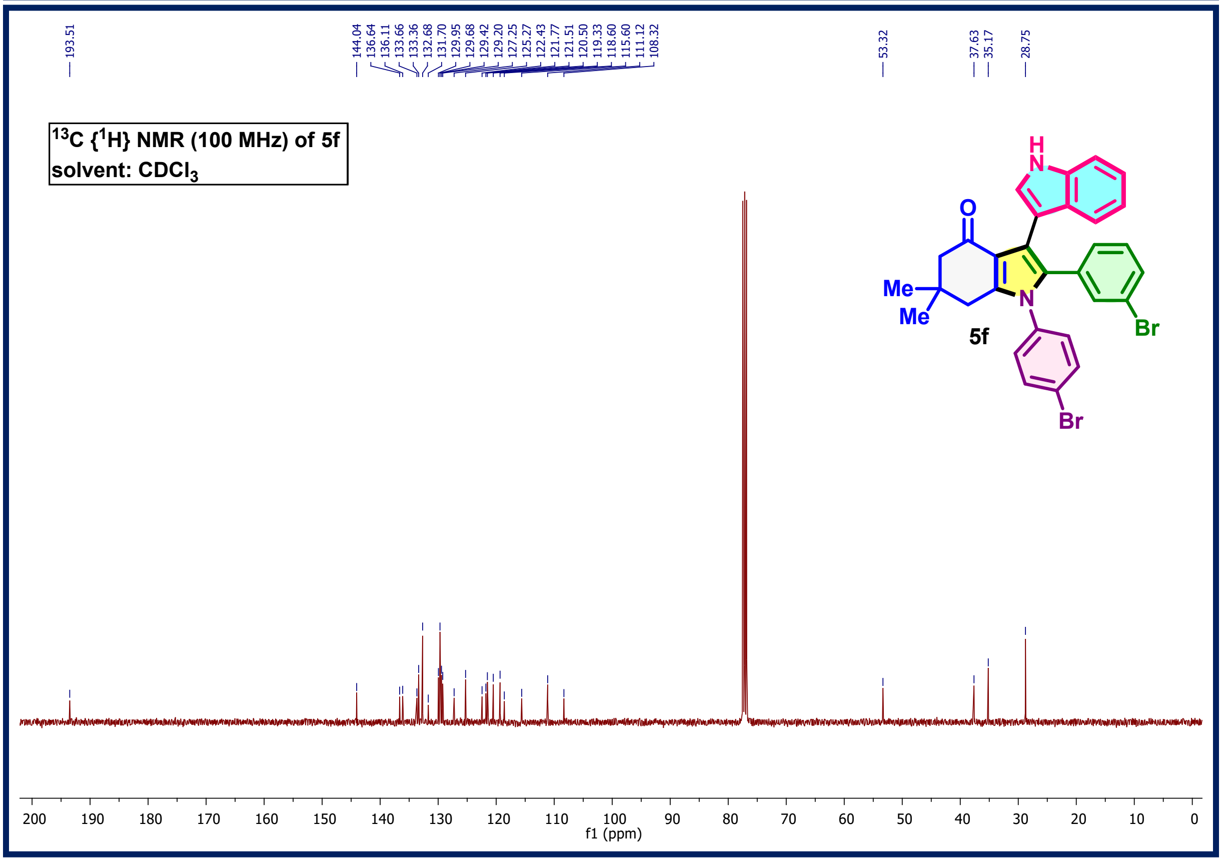
^{1}H, and ^{13}C{^{1}H} NMR spectra of **5e**



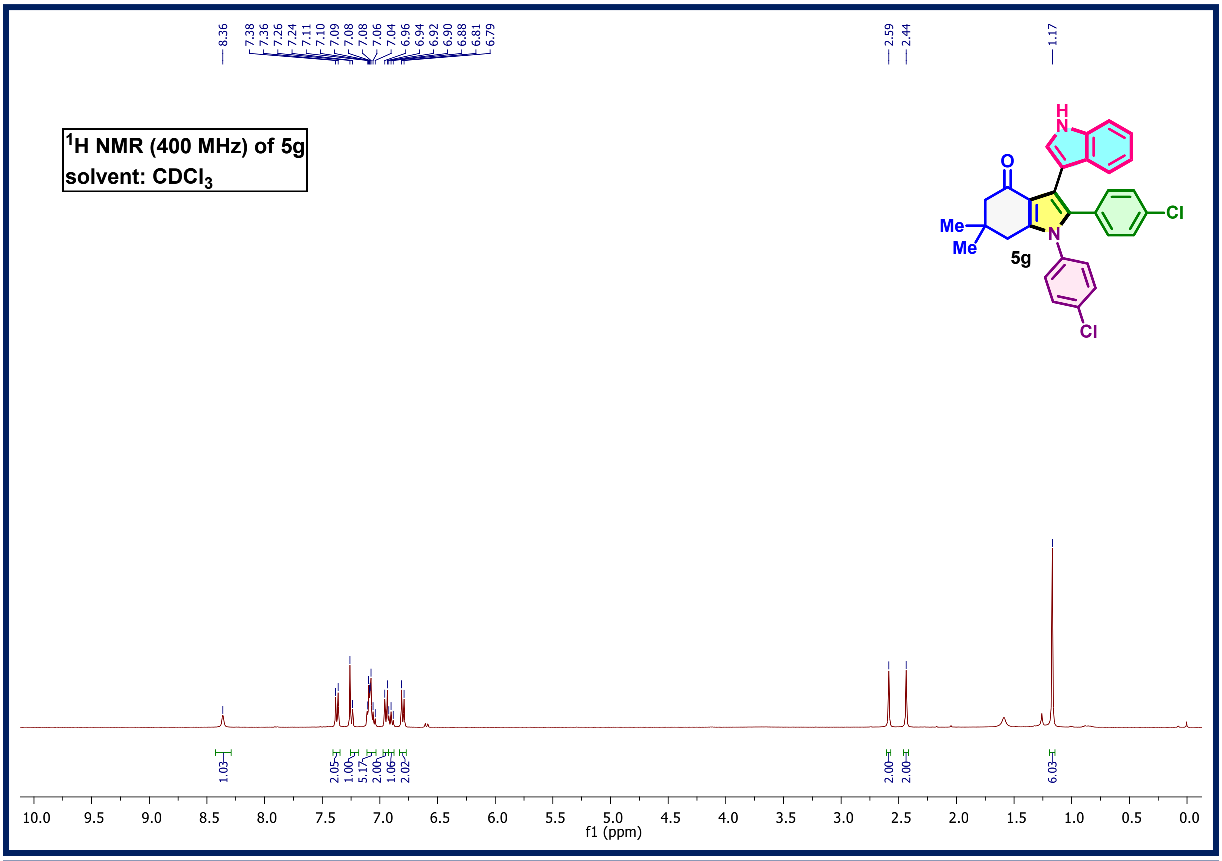


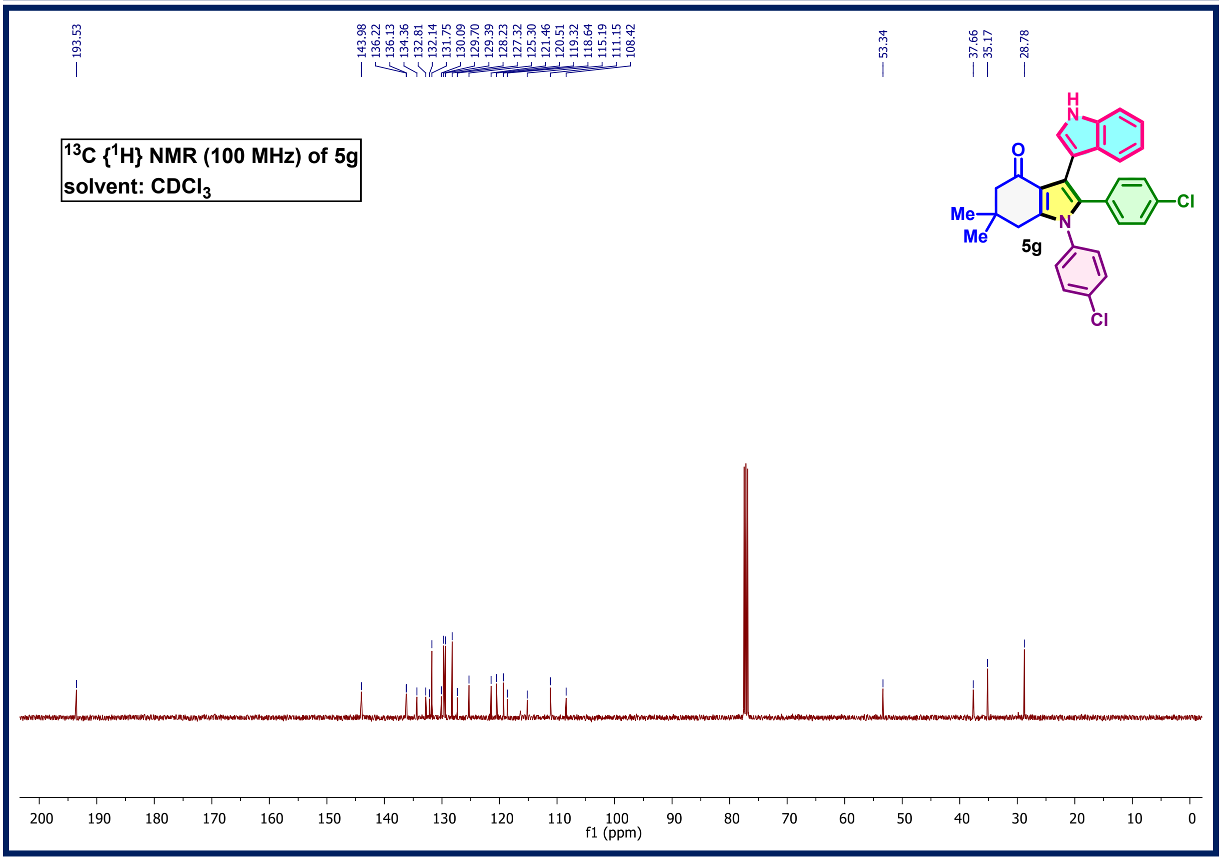
^{1}H, and $^{13}C\{^1H\}$ NMR spectra of **5f**



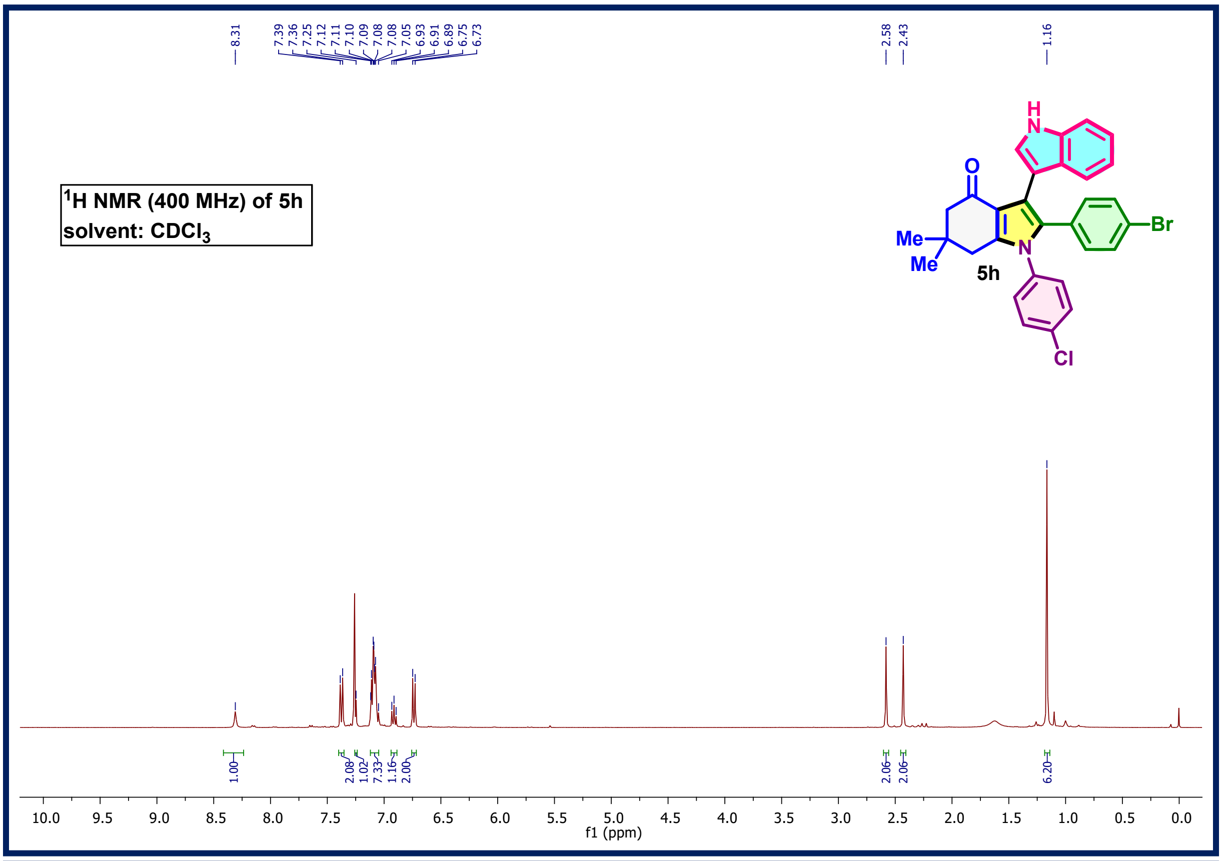


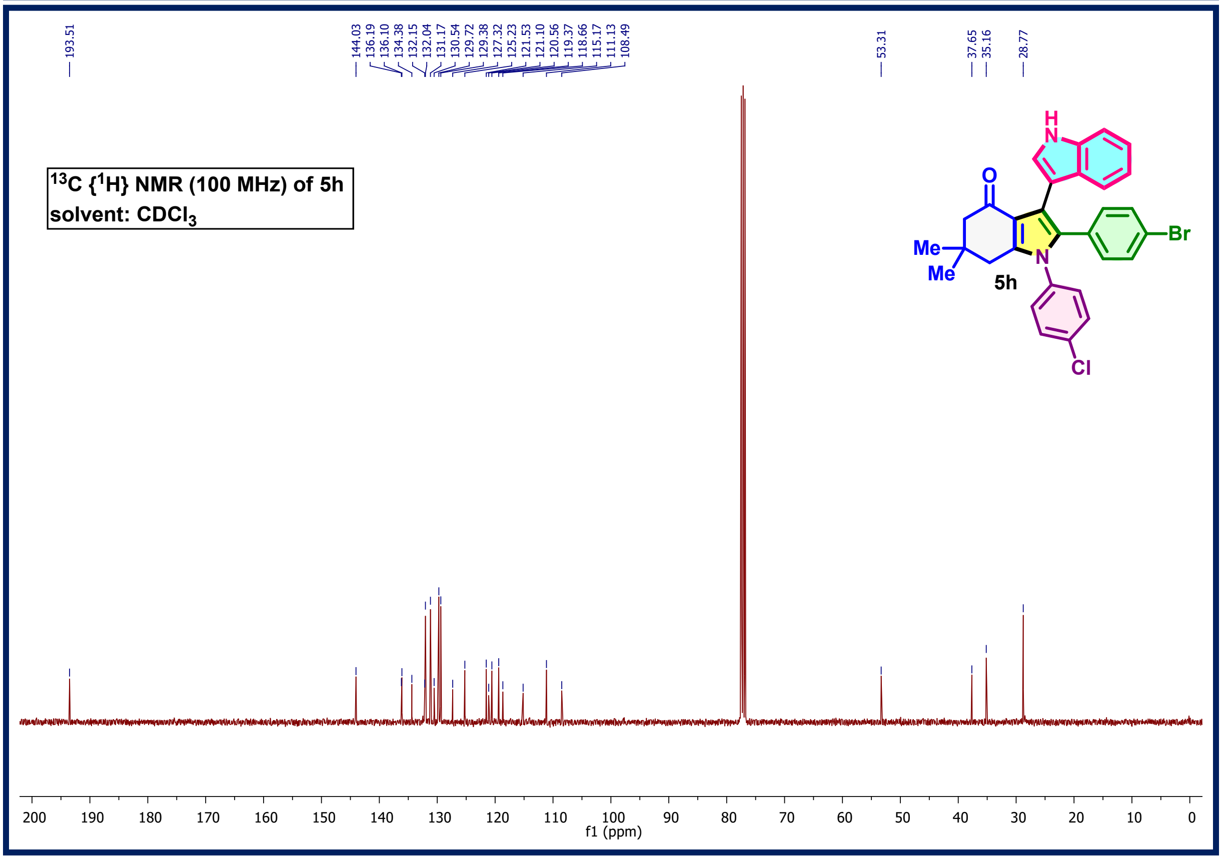
^{1}H, and $^{13}C\{^{1}H\}$ NMR spectra of **5g**



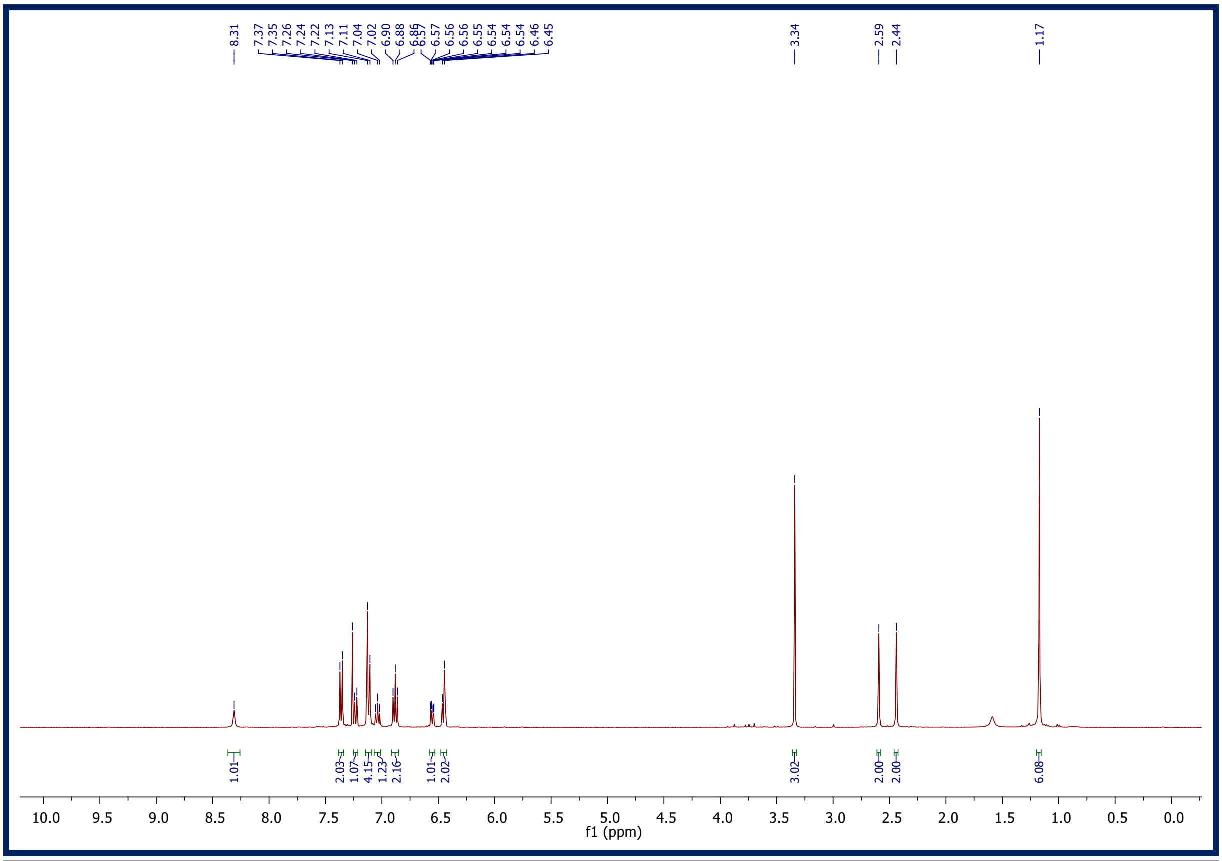


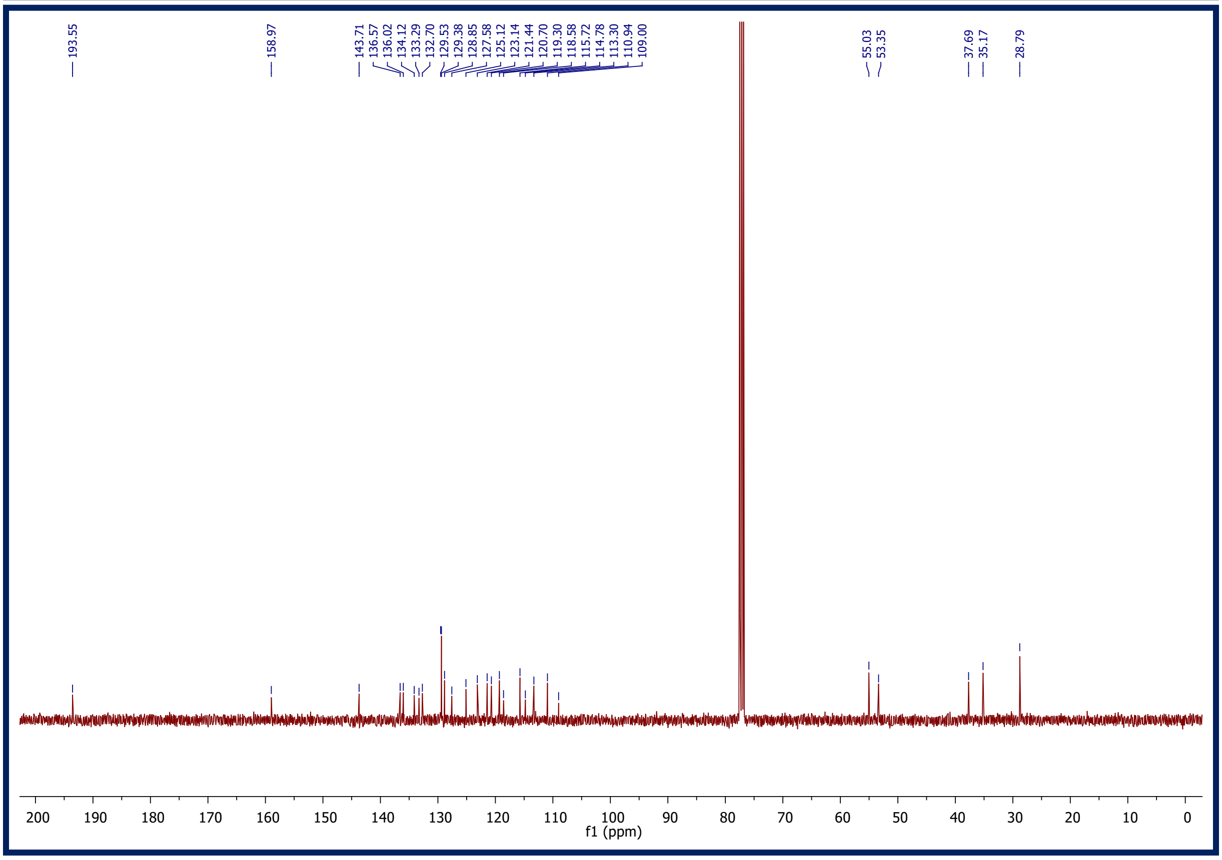
^{1}H, and $^{13}C\{^{1}H\}$ NMR spectra of **5h**



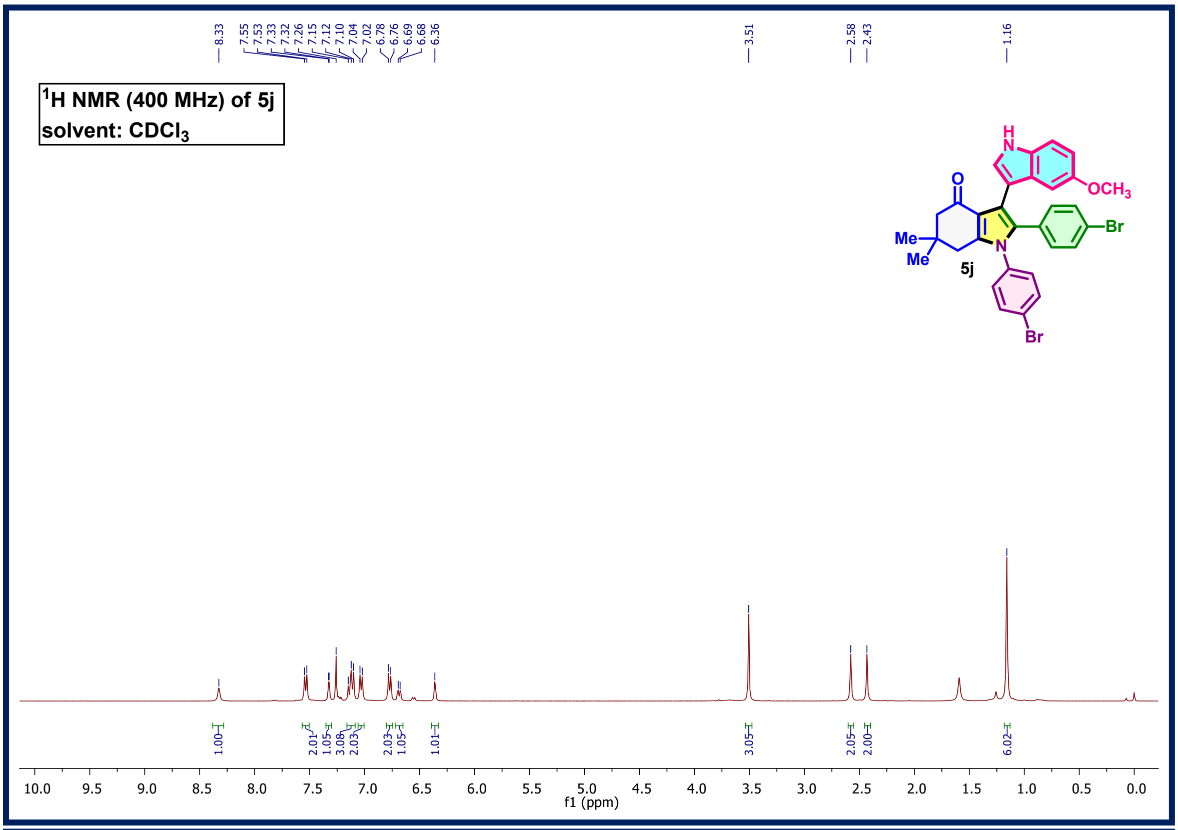


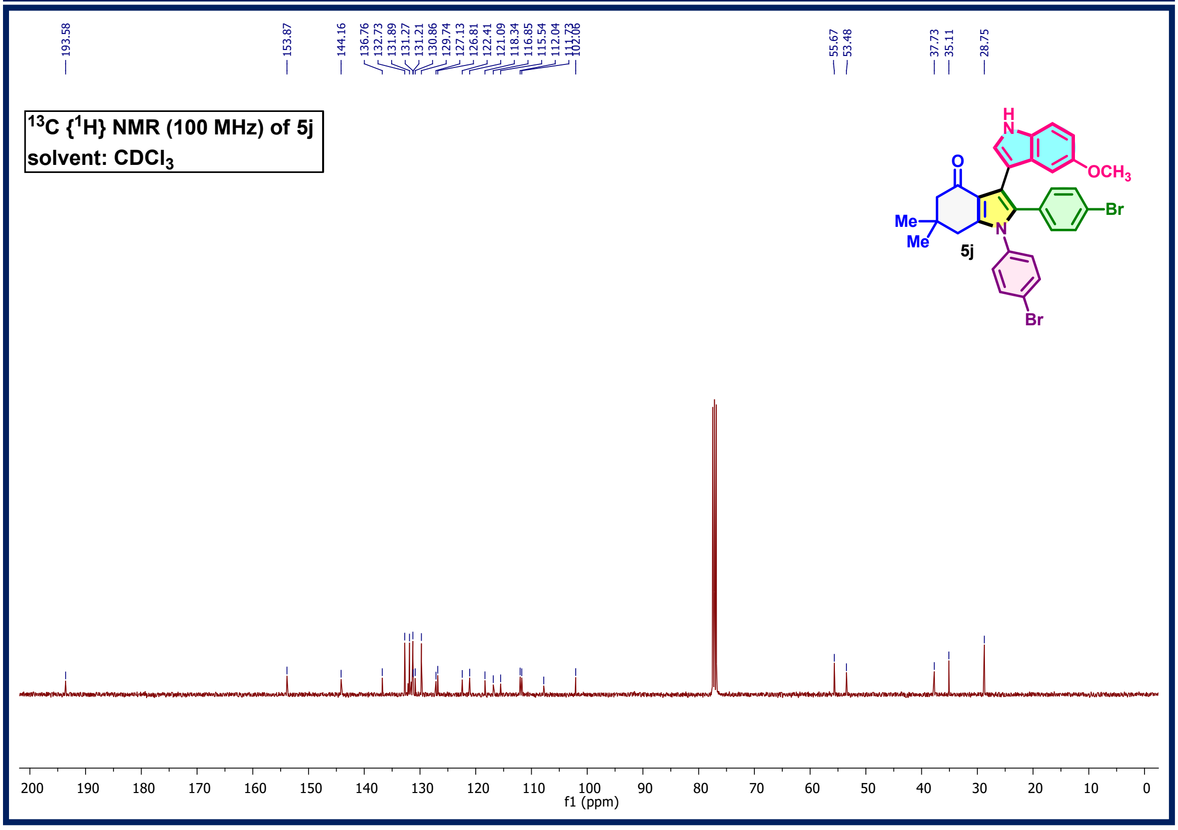
^{1}H, and ^{13}C{^{1}H} NMR spectra of **5i**



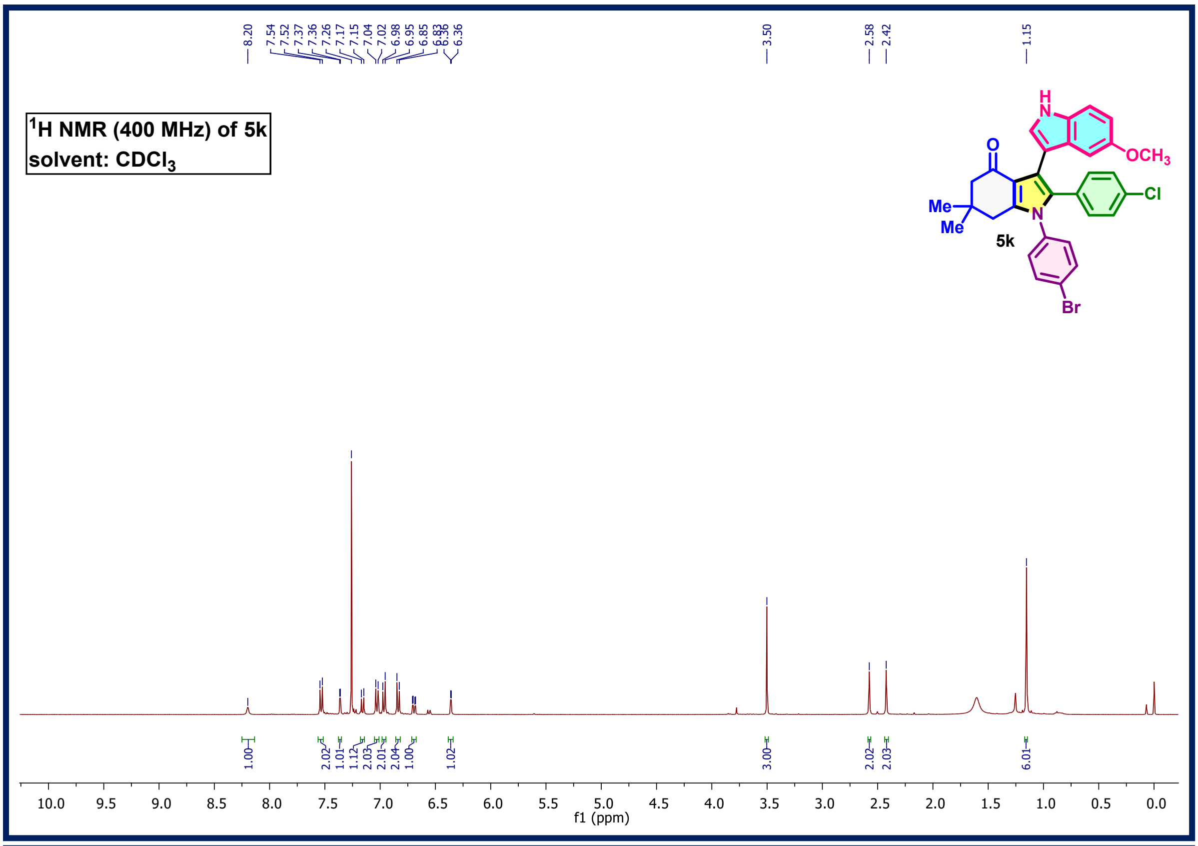


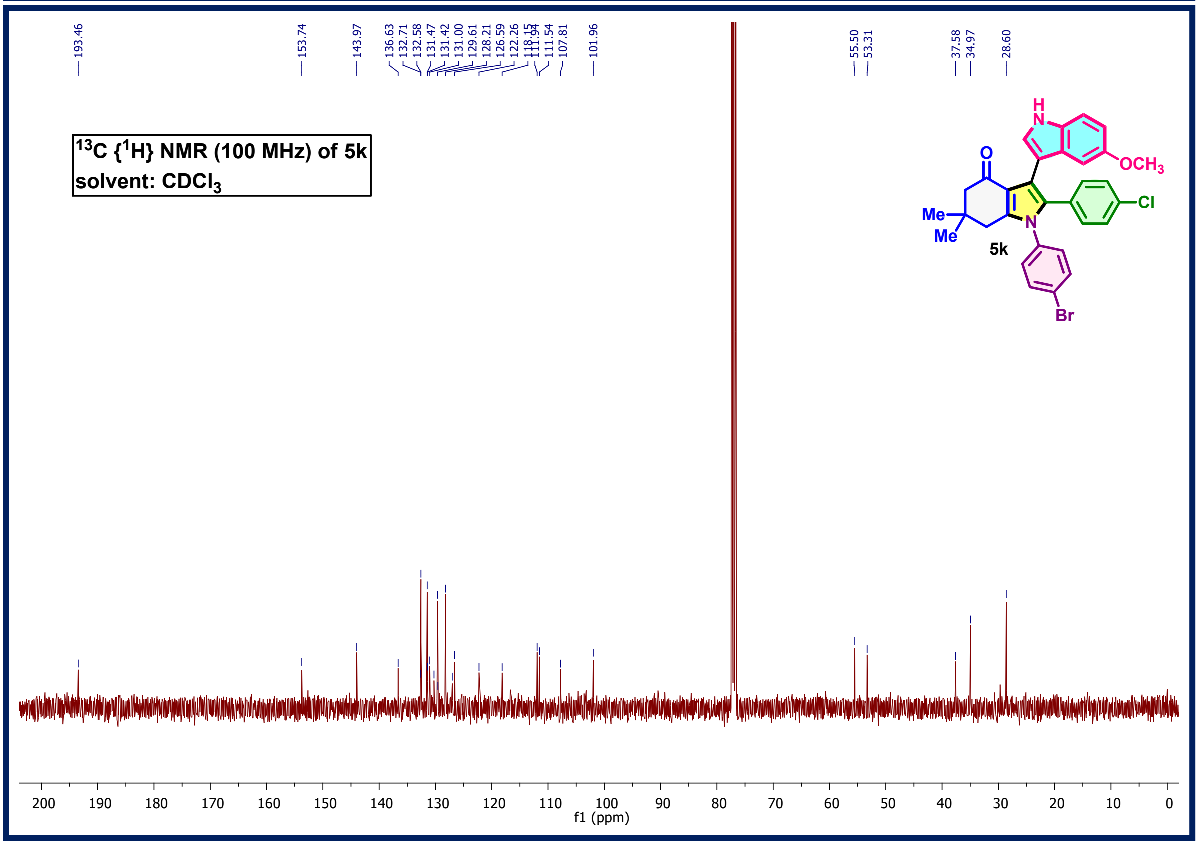
^1H, and $^{13}C\{^1H\}$ NMR spectra of **5j**



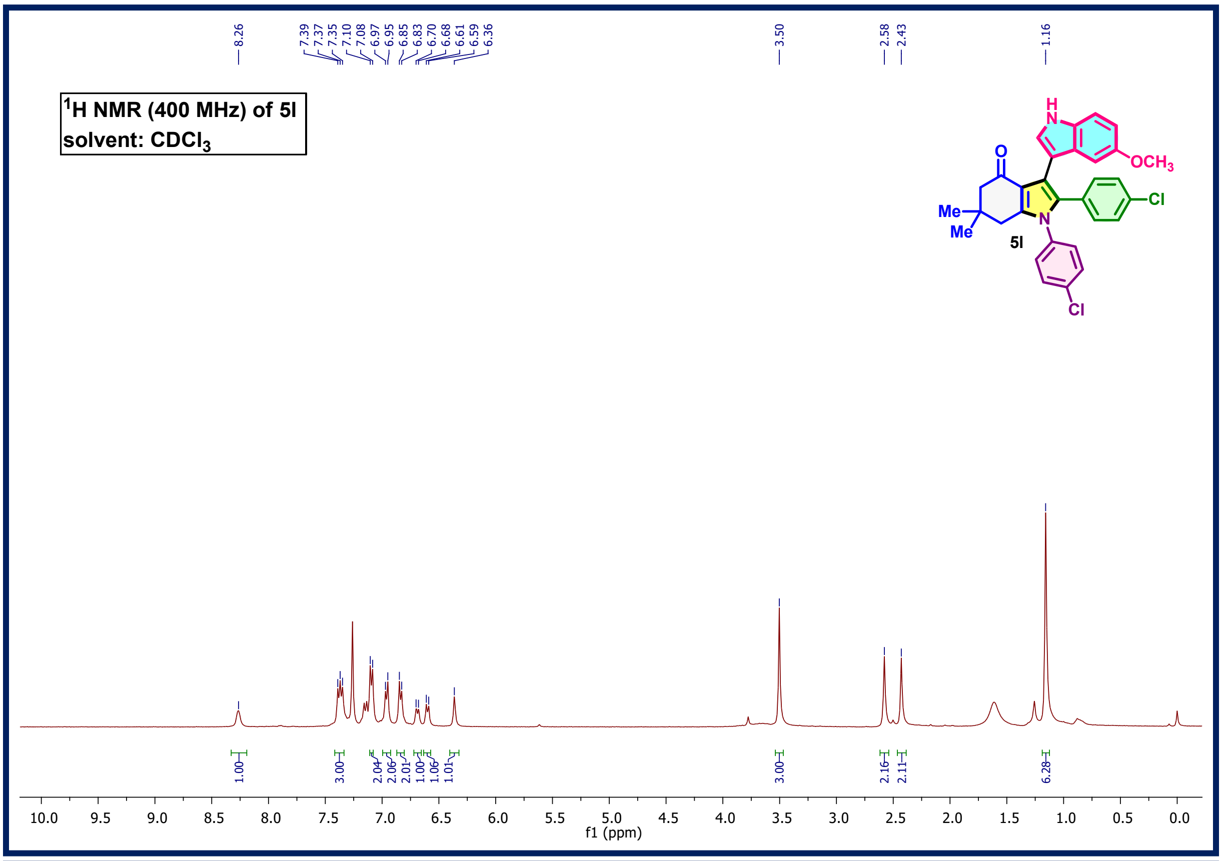


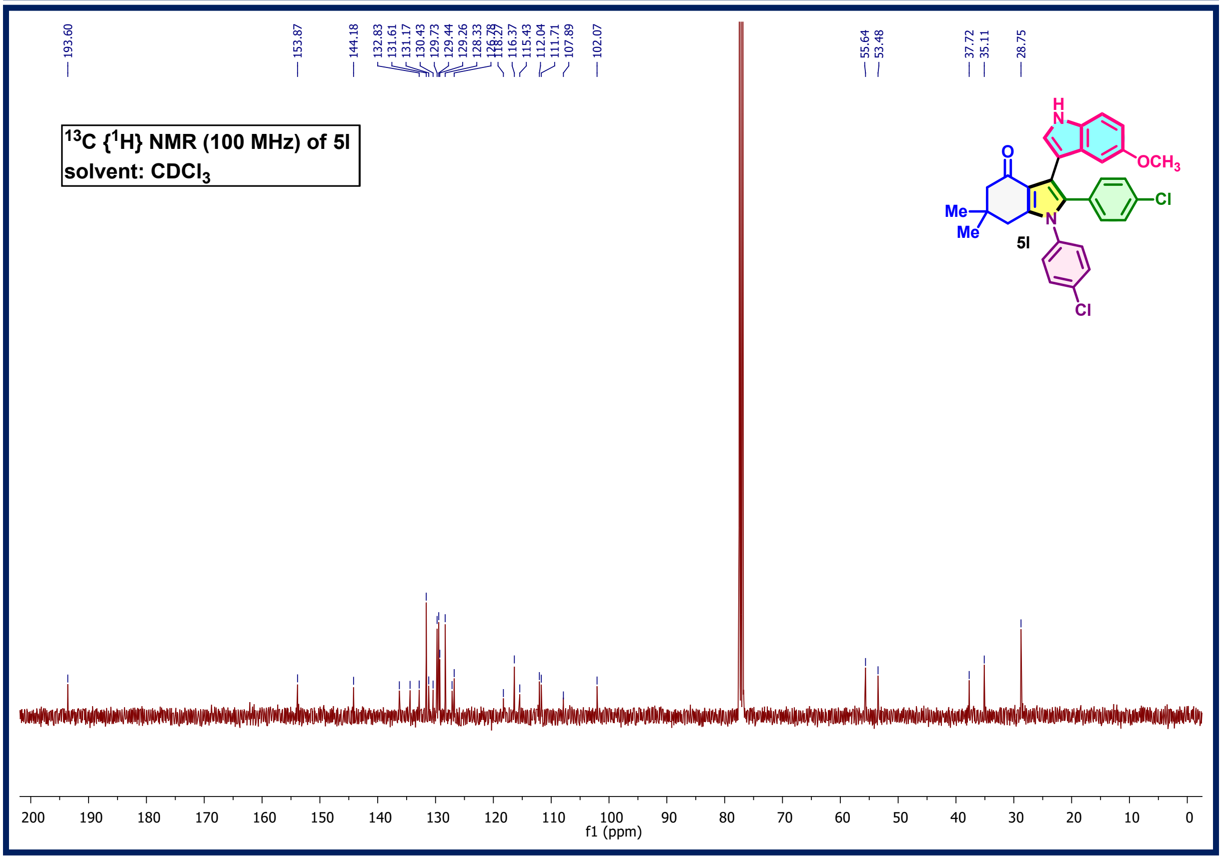
^{1}H, and $^{13}C\{^{1}H\}$ NMR spectra of **5k**



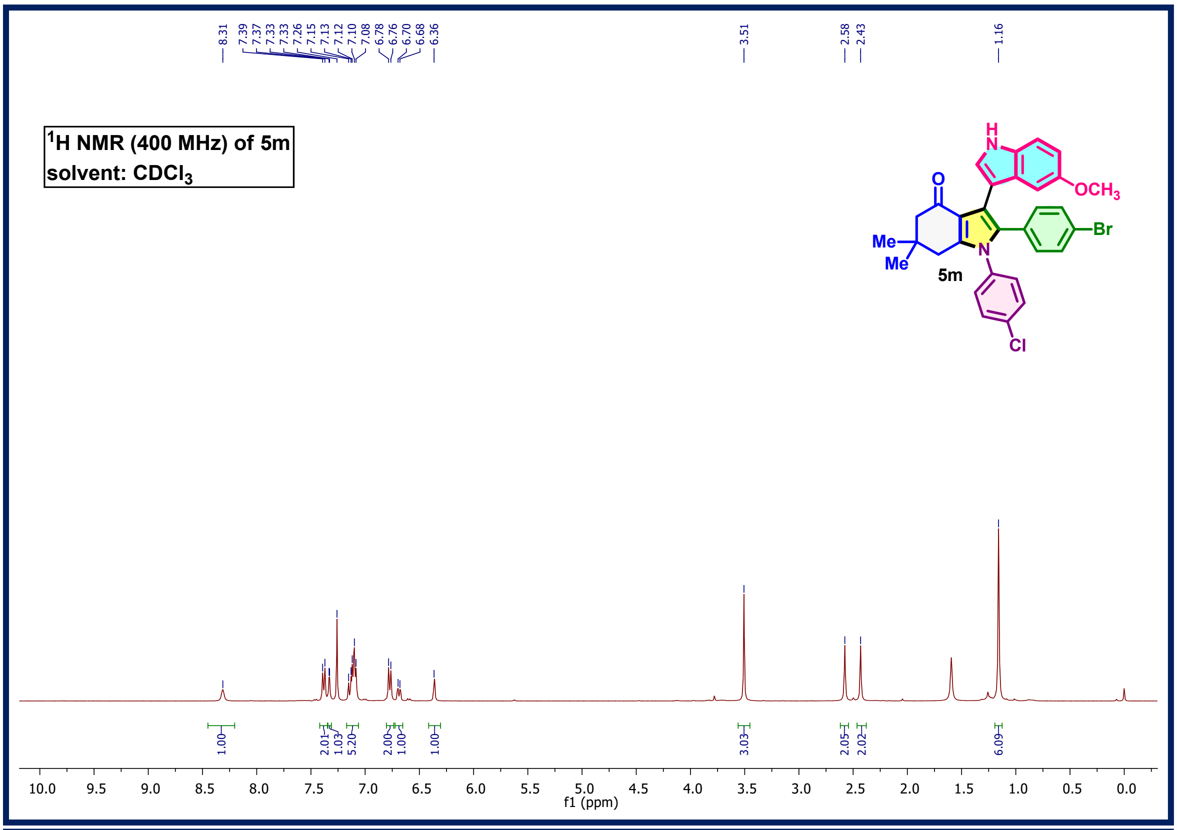


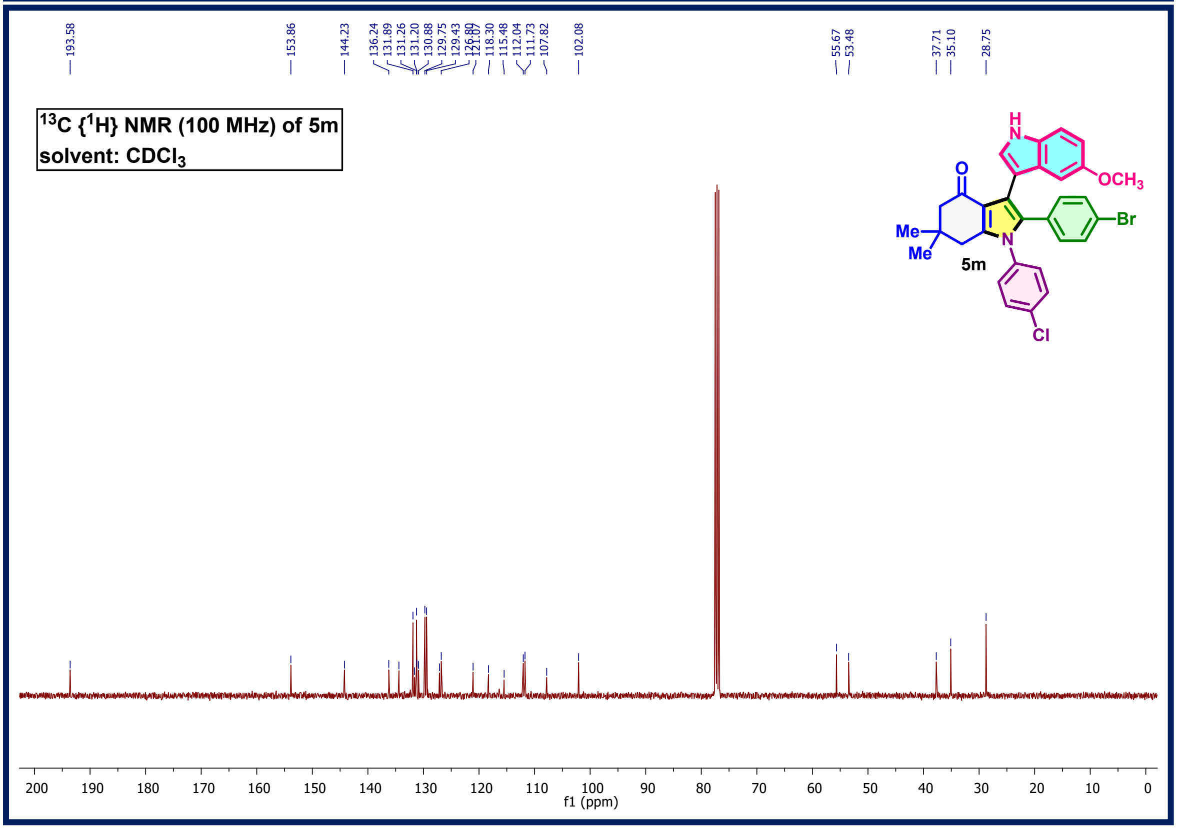
^{1}H, and $^{13}C\{^{1}H\}$ NMR spectra of **5l**



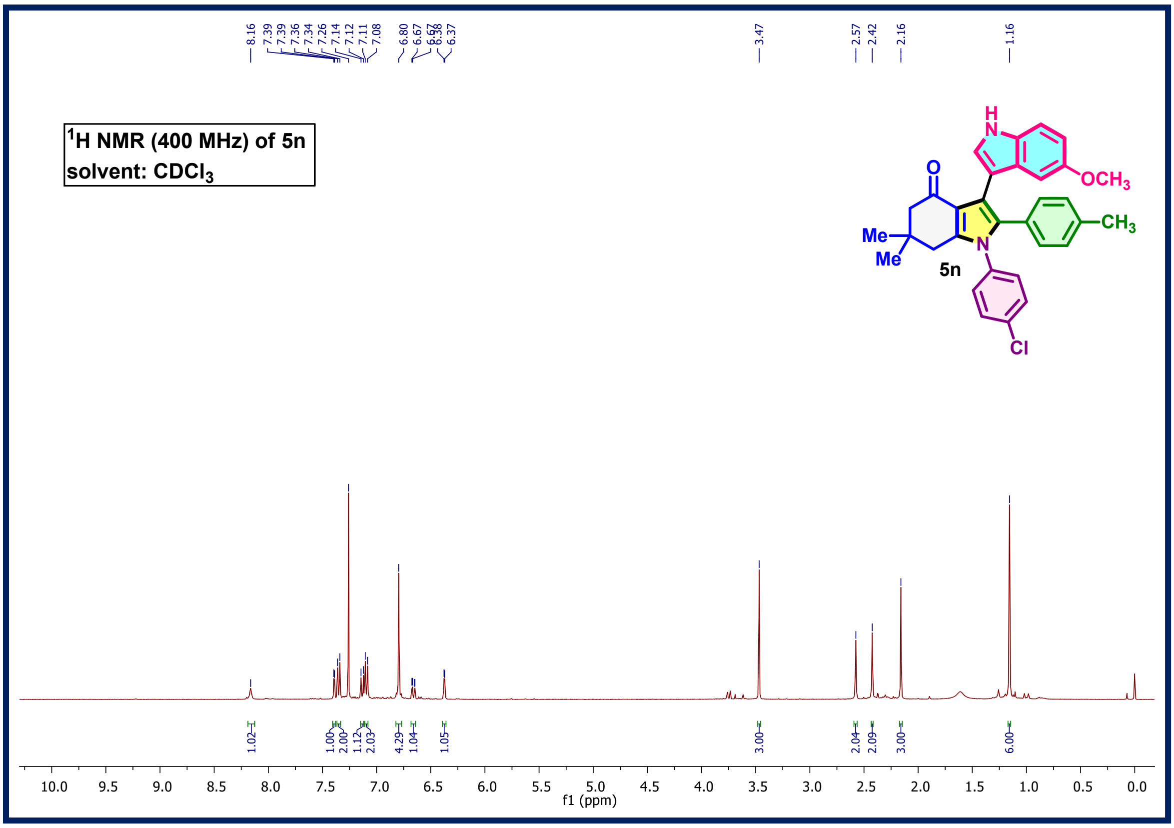


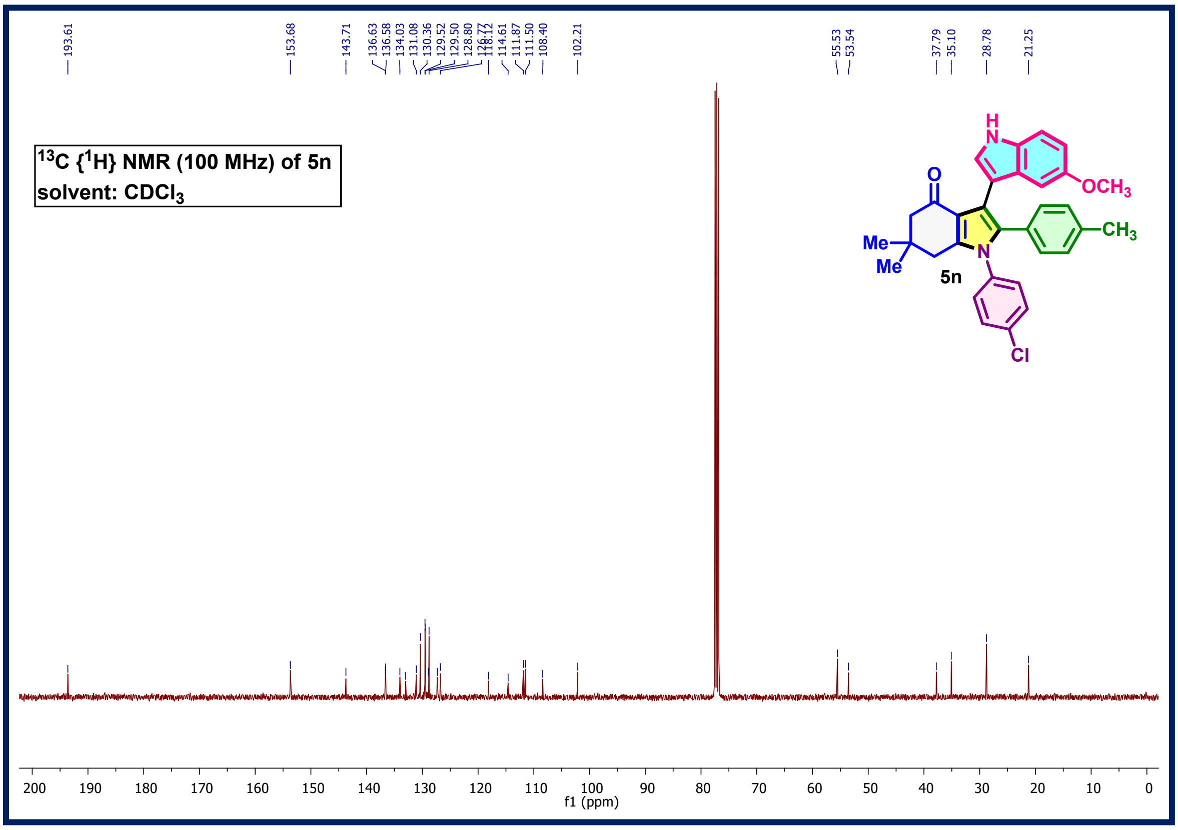
[1]H, and [13]C{[1]H} NMR spectra of **5m**



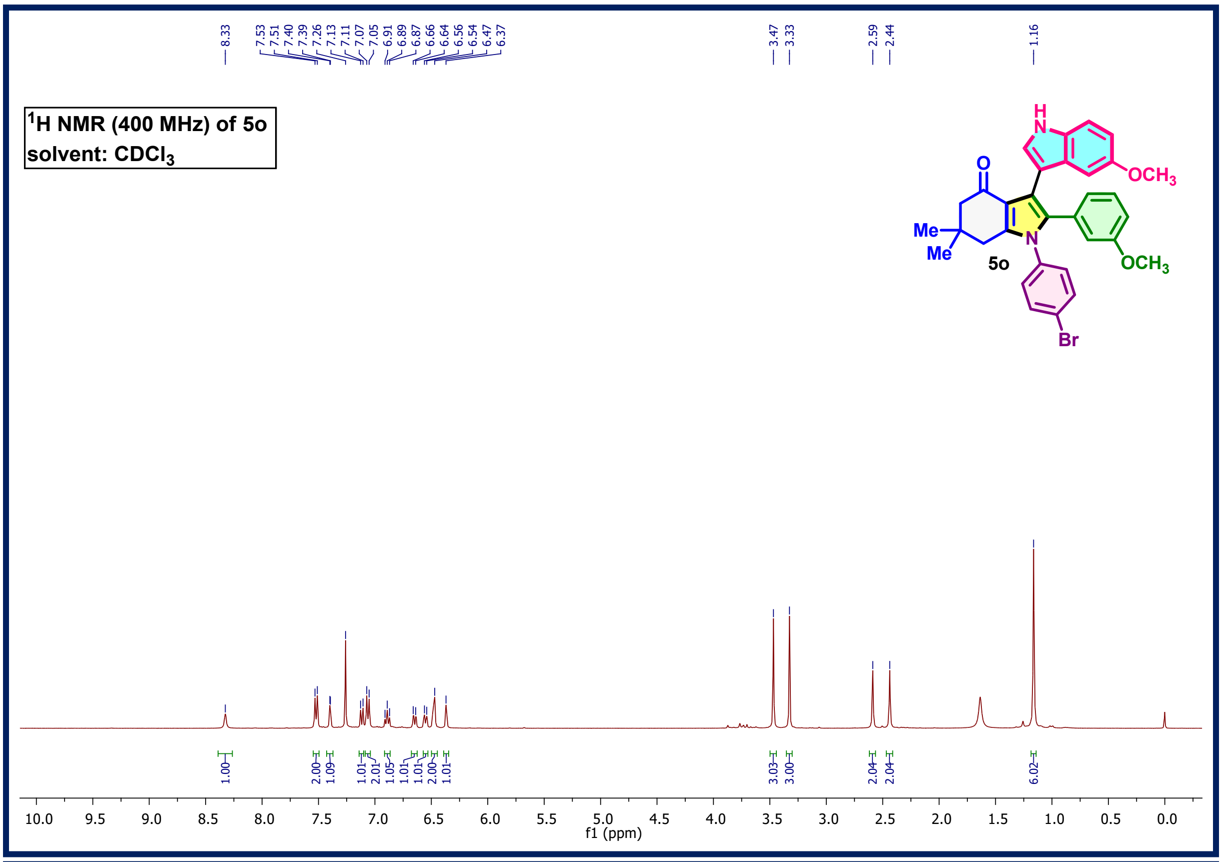


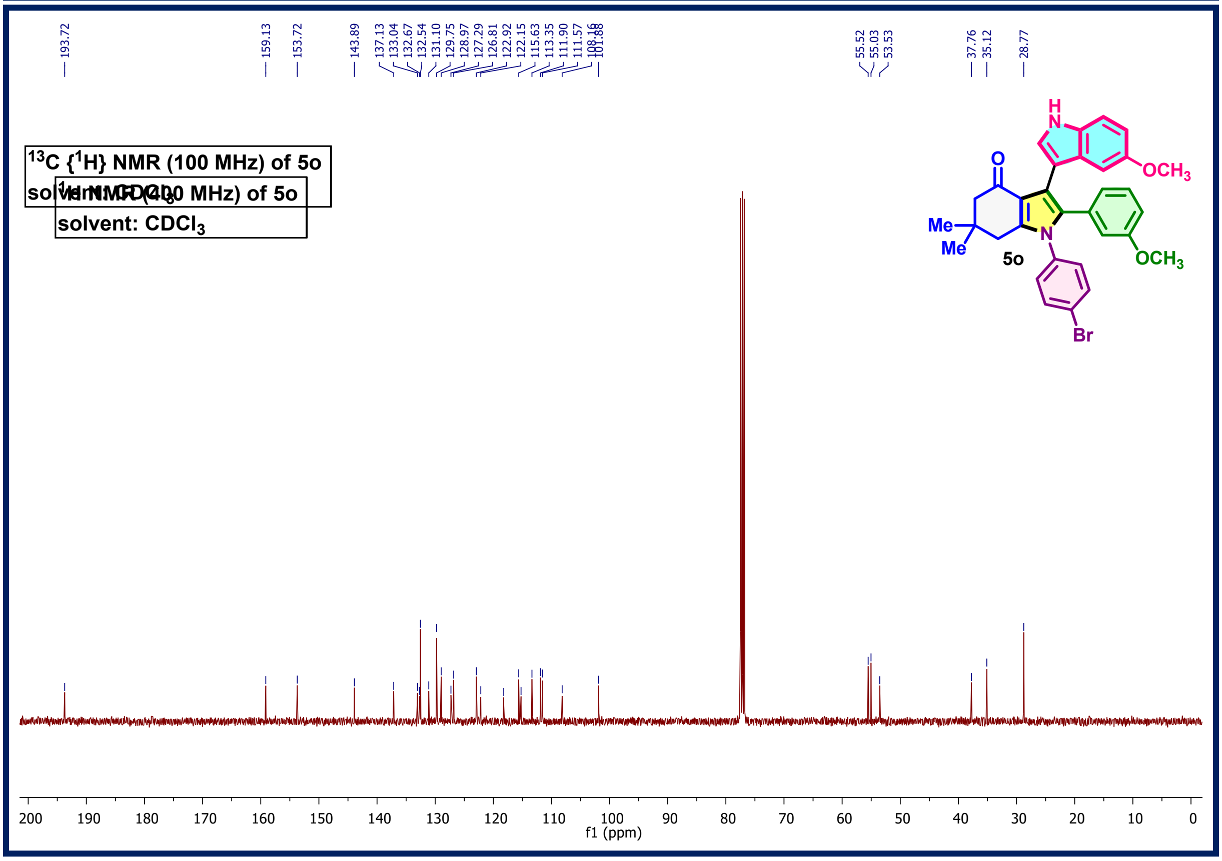
^{1}H, and ^{13}C{^{1}H} NMR spectra of **5n**



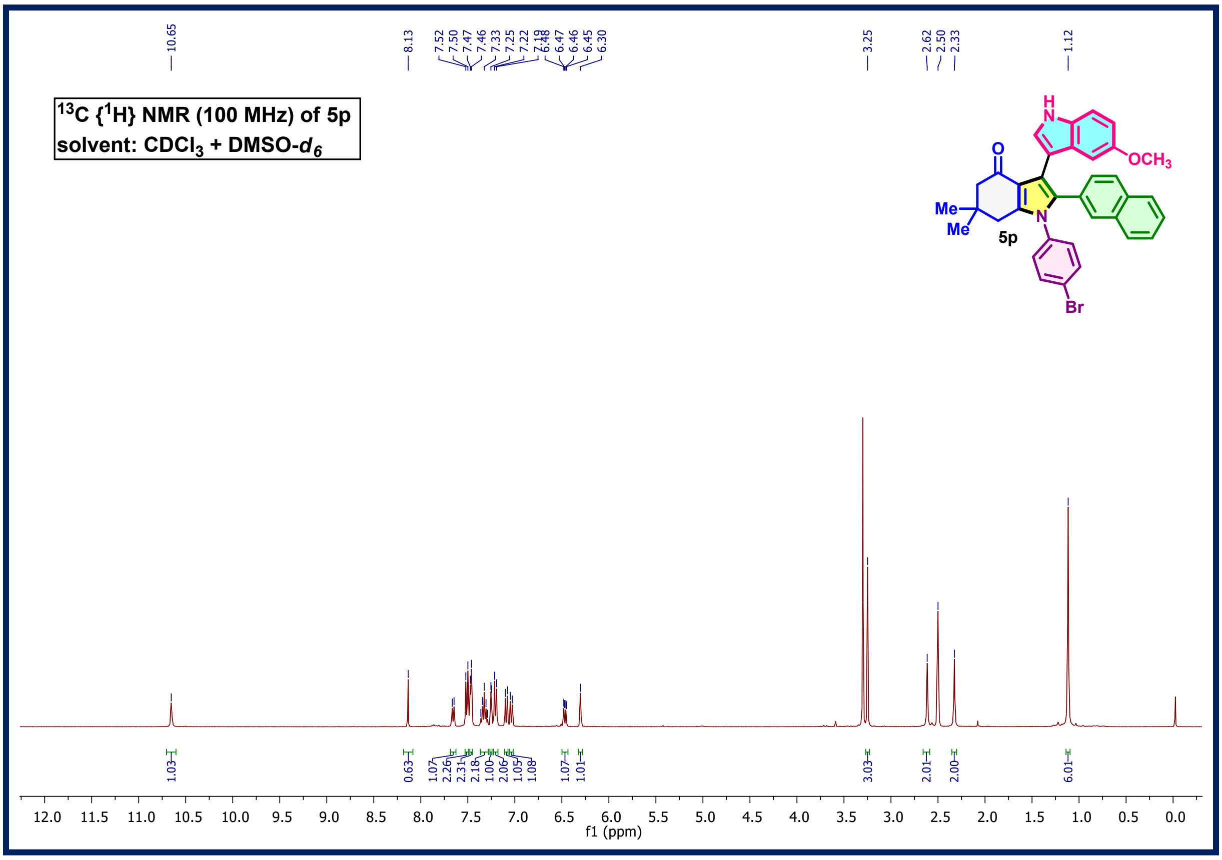


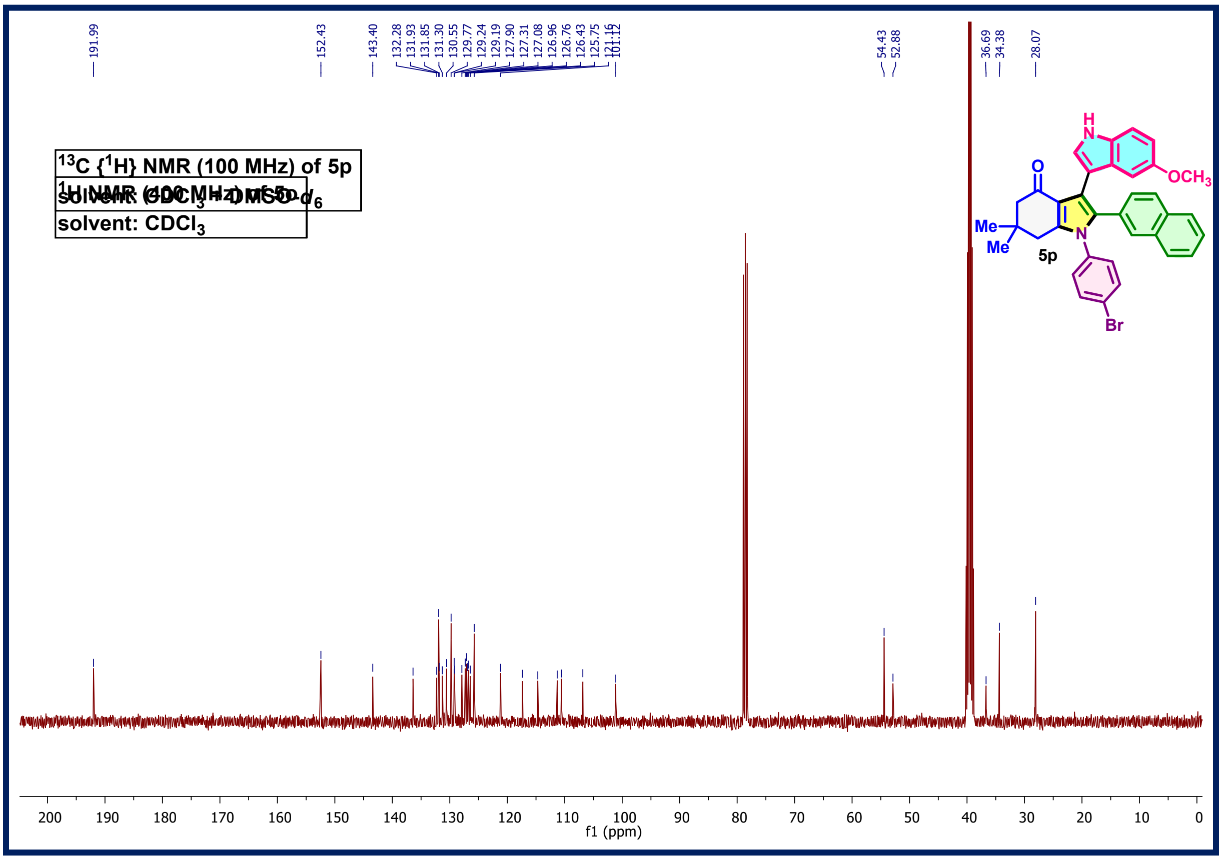
^{1}H, and ^{13}C{^{1}H} NMR spectra of **5o**



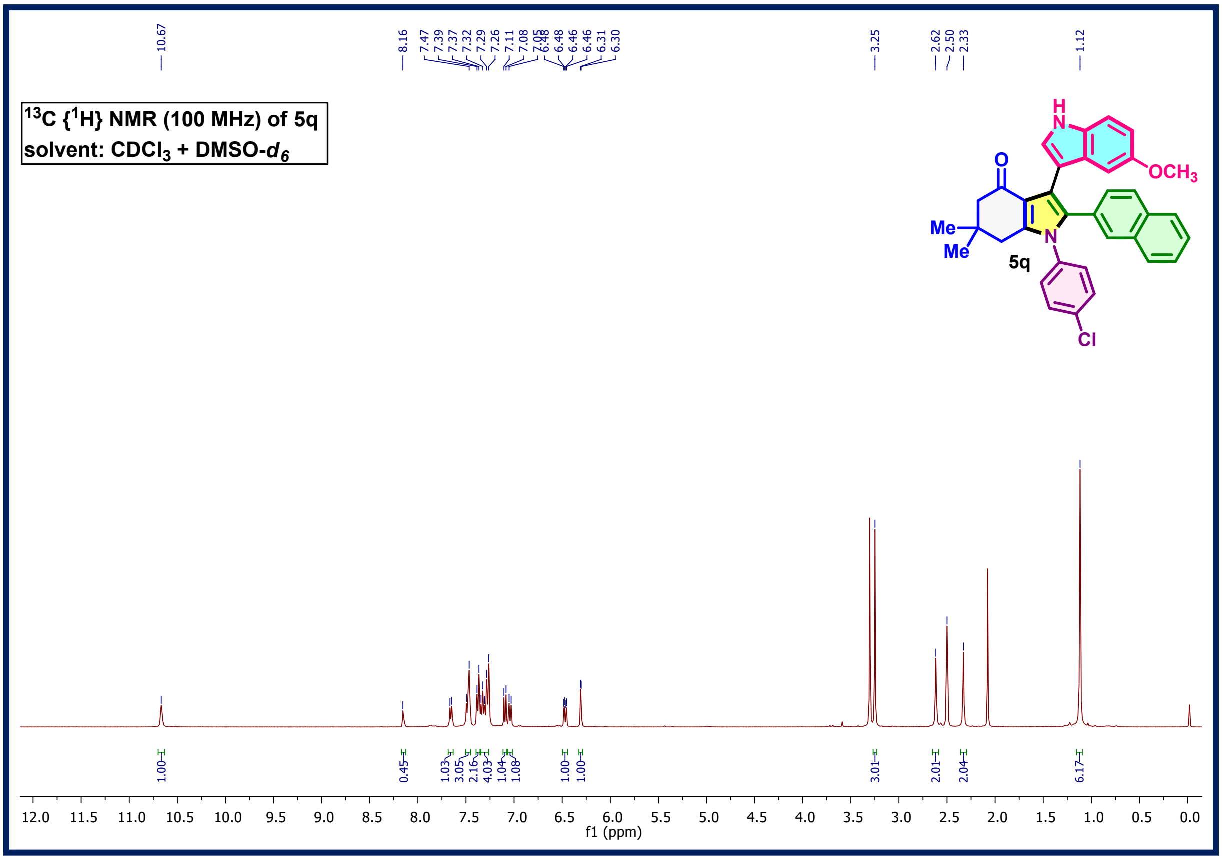


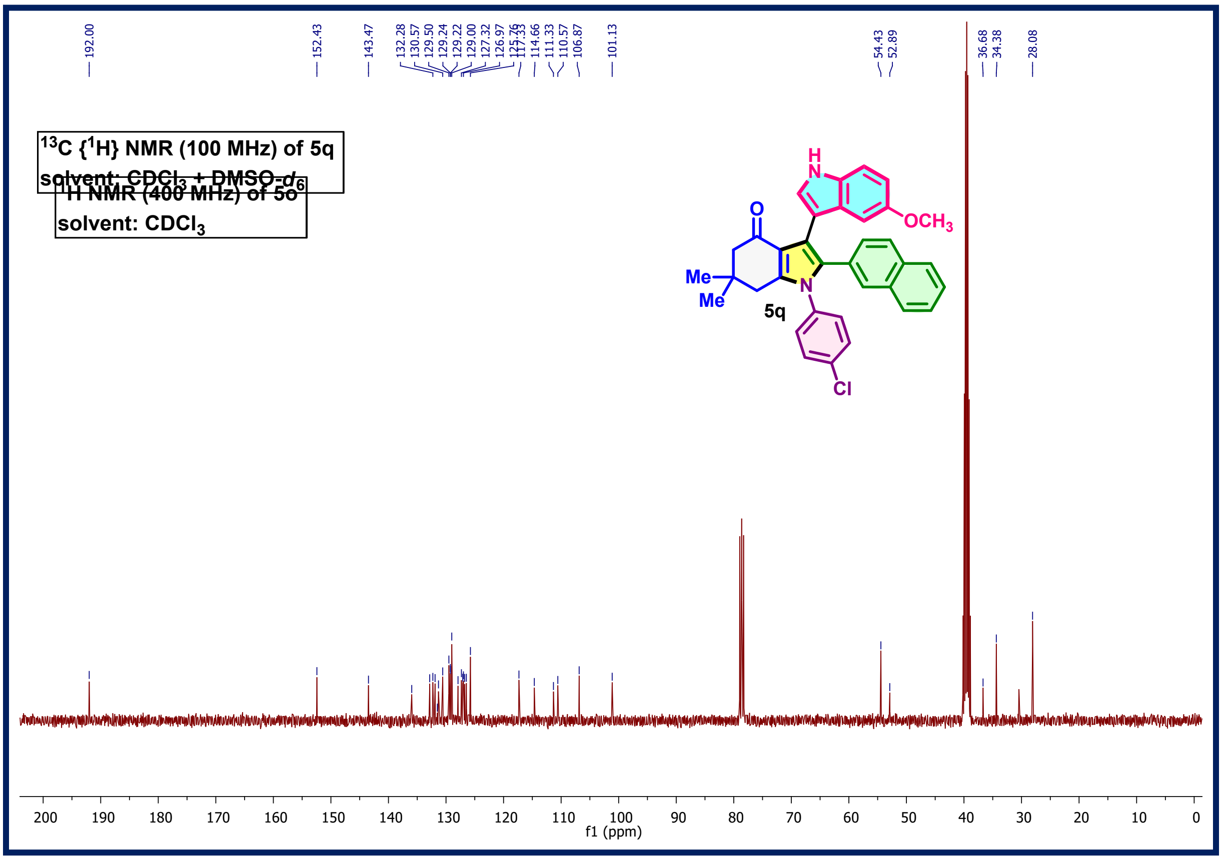
^{1}H, and ^{13}C{^{1}H} NMR spectra of **5p**



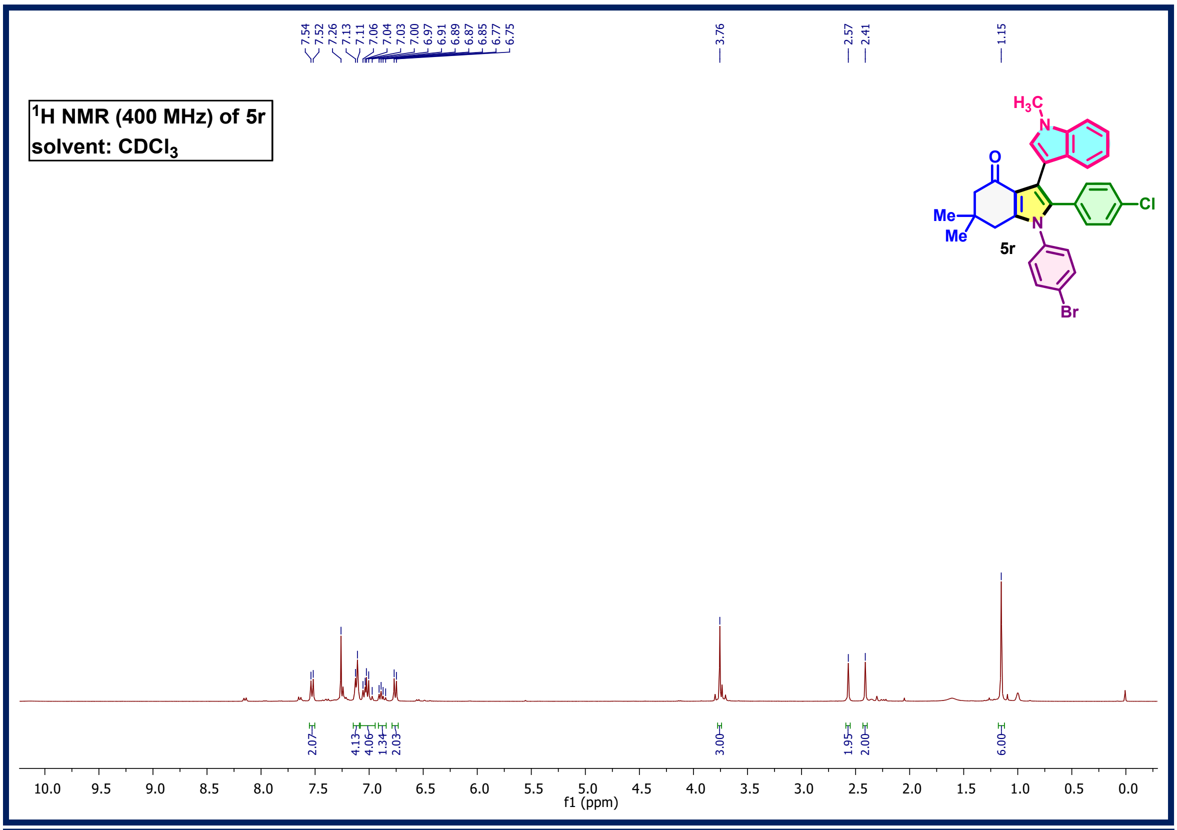


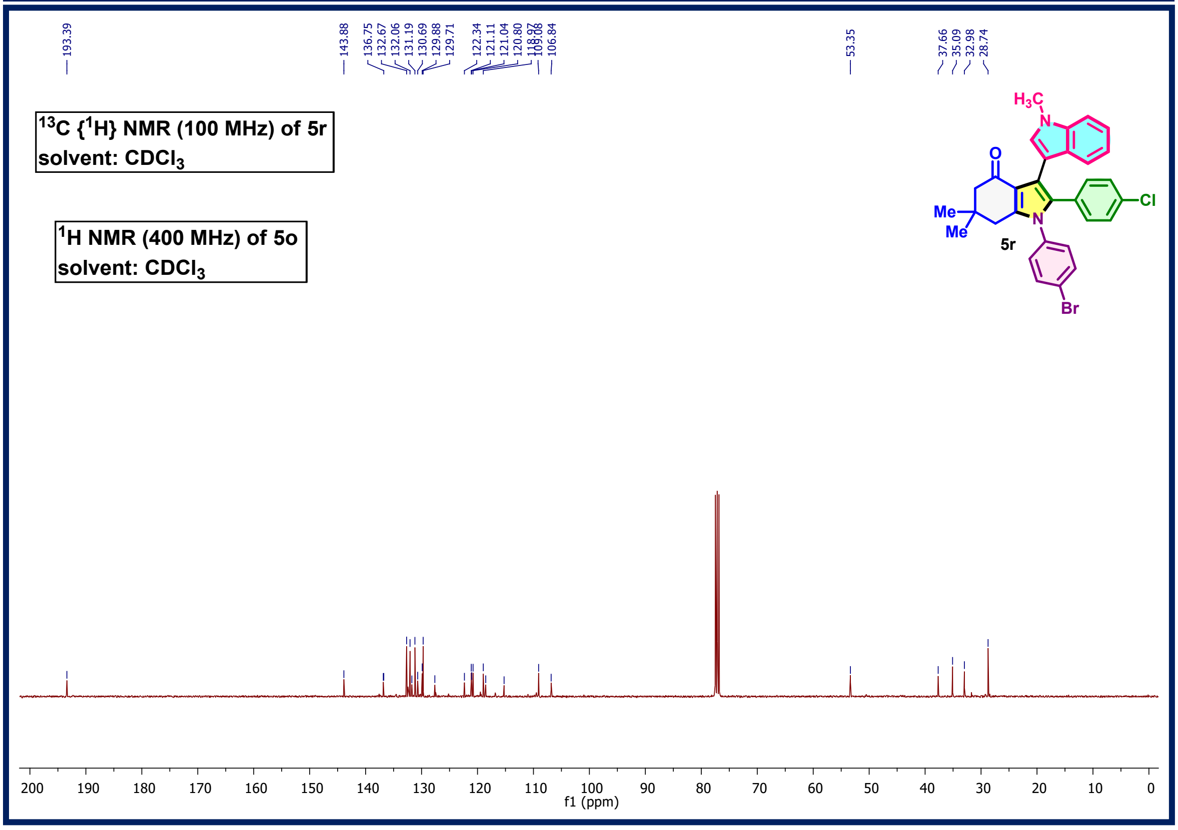
^{1}H, and ^{13}C{^{1}H} NMR spectra of **5q**





^{1}H, and ^{13}C{^{1}H} NMR spectra of **5r**





^{1}H, and $^{13}C\{^{1}H\}$ NMR spectra of **5s**

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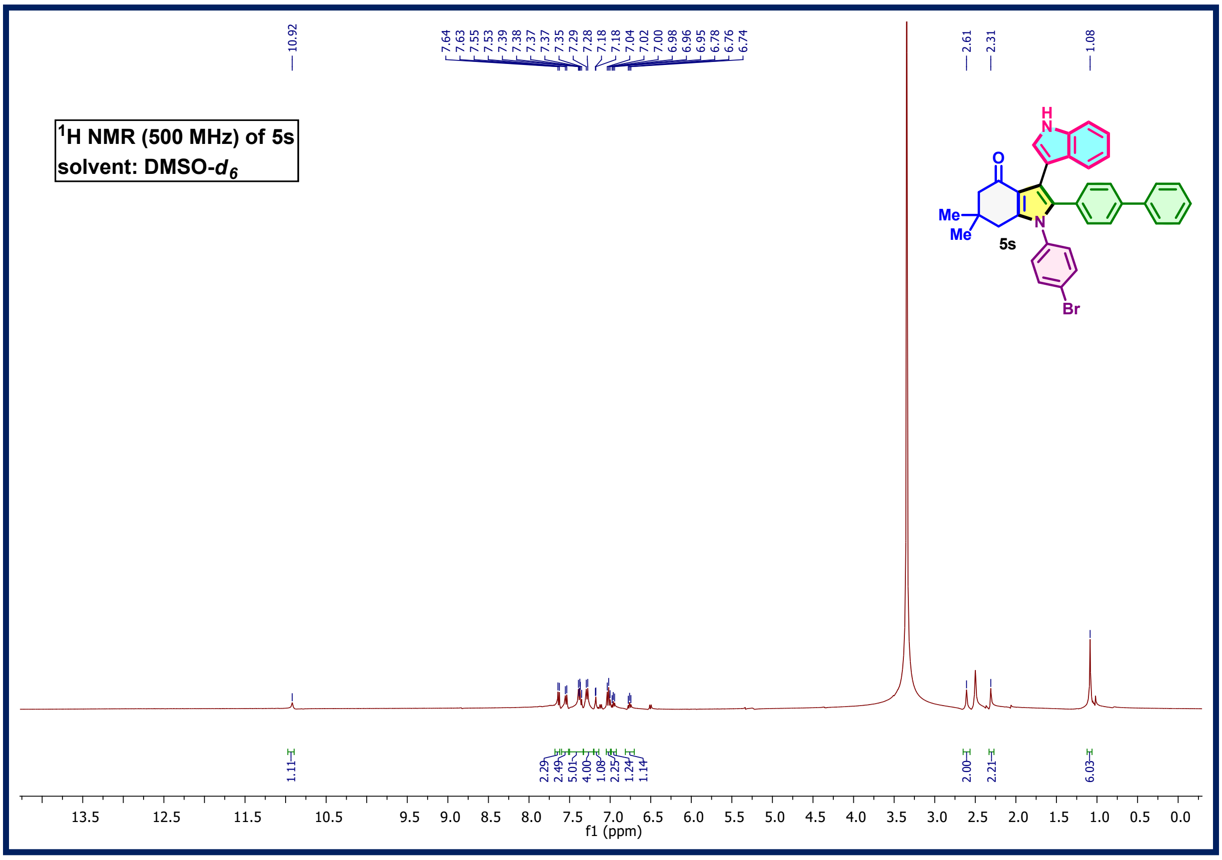
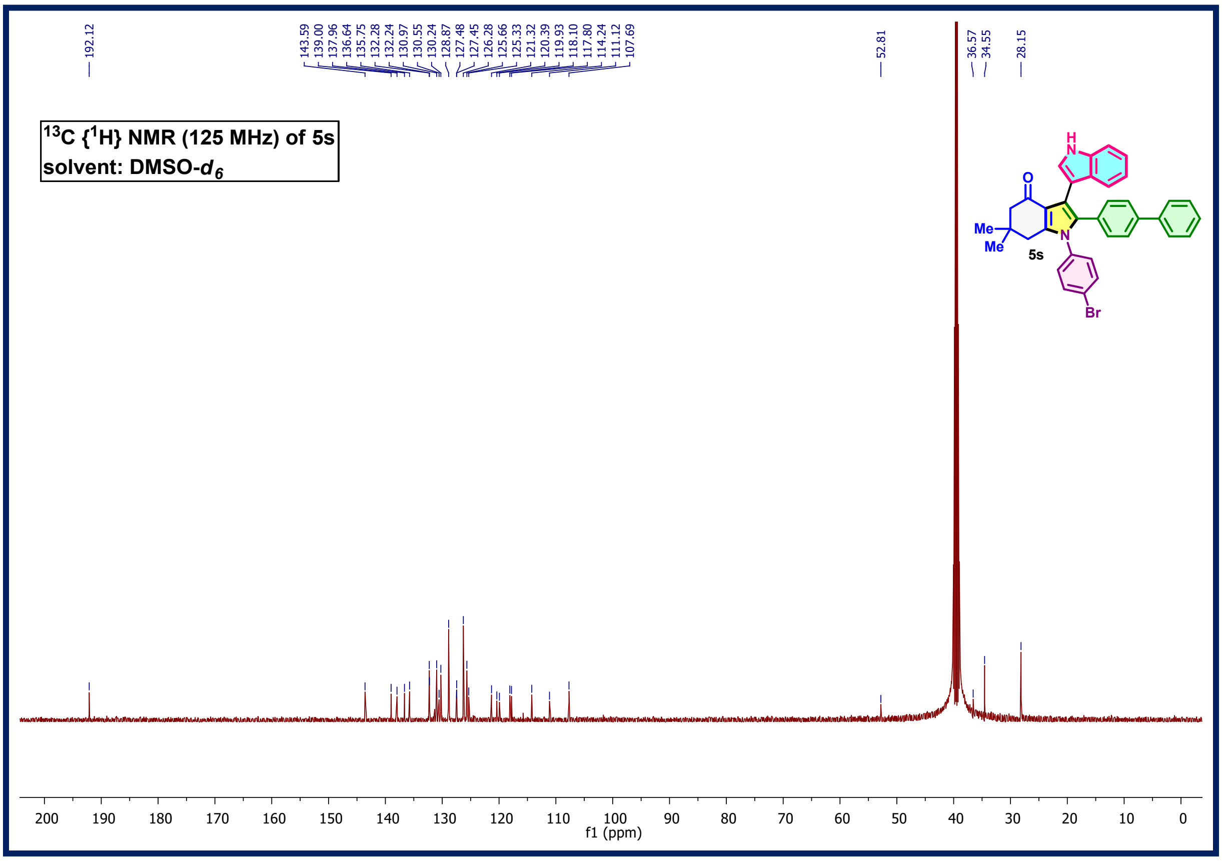
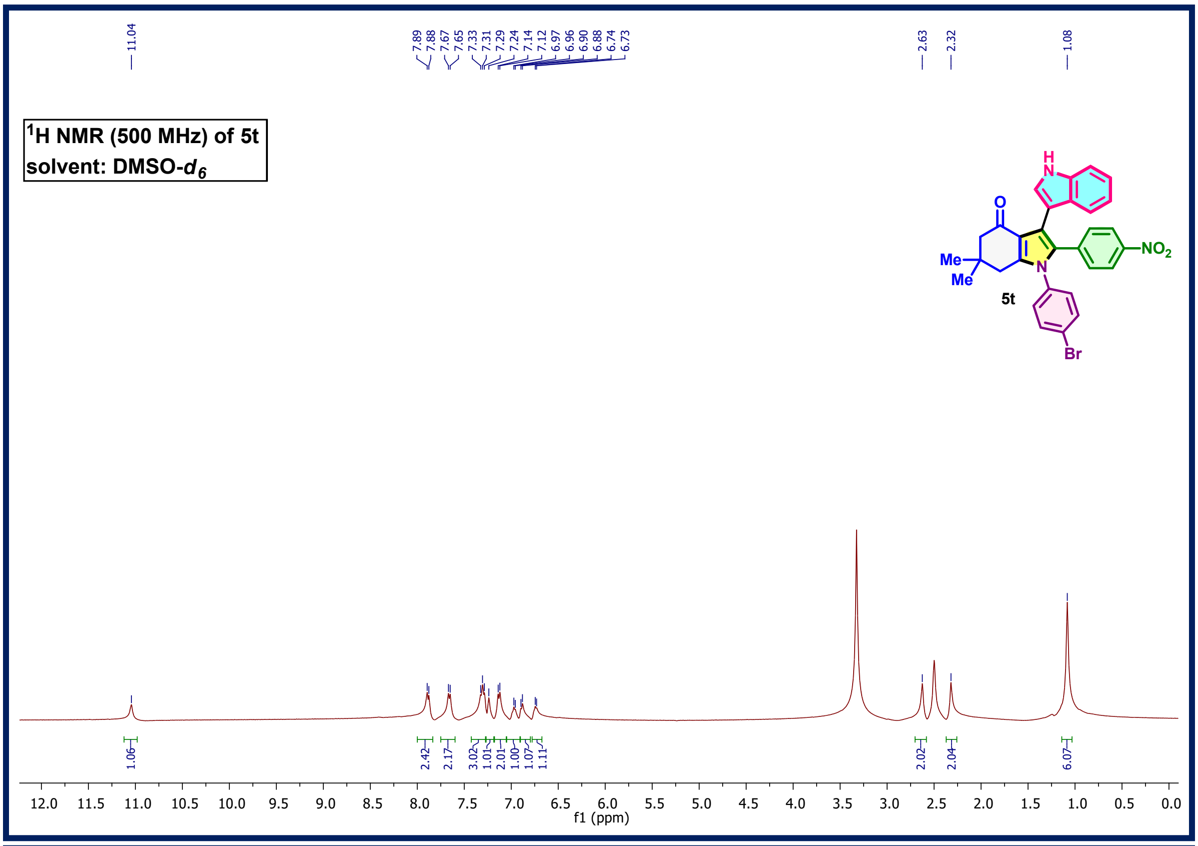
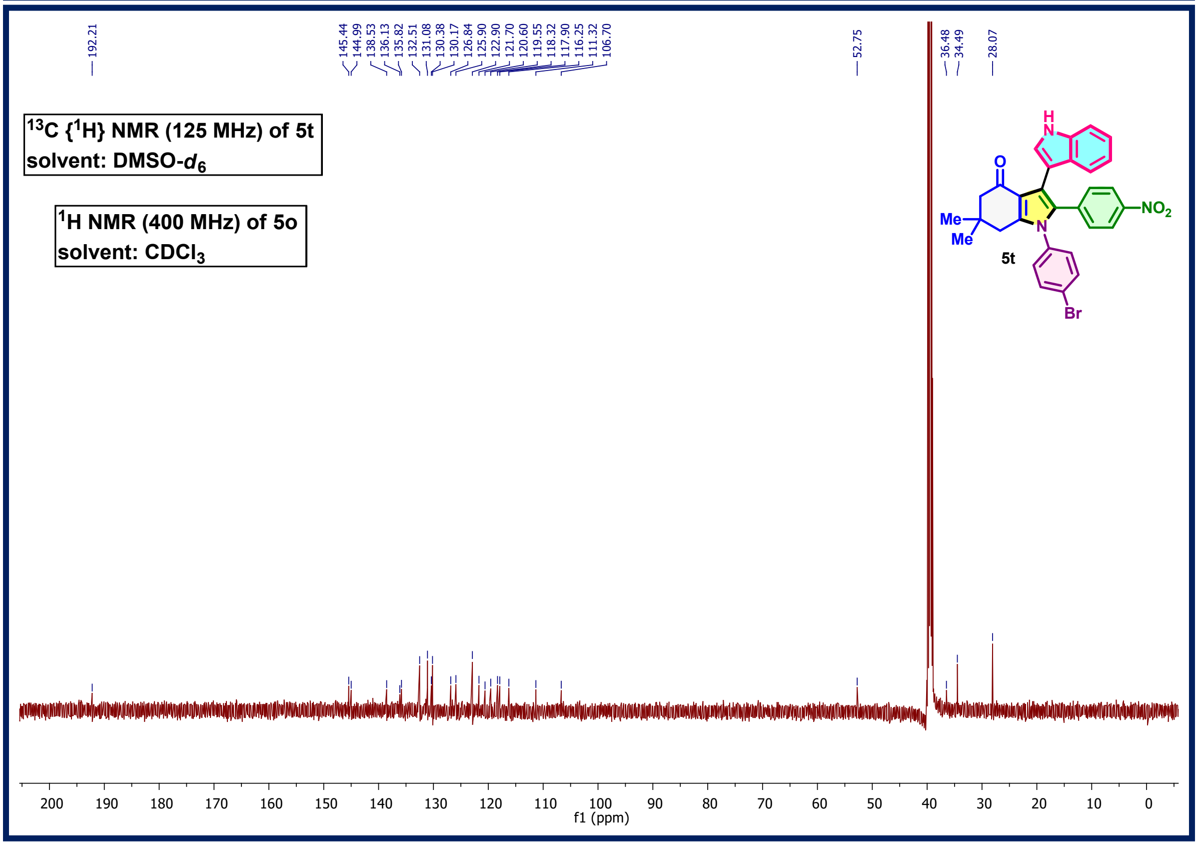


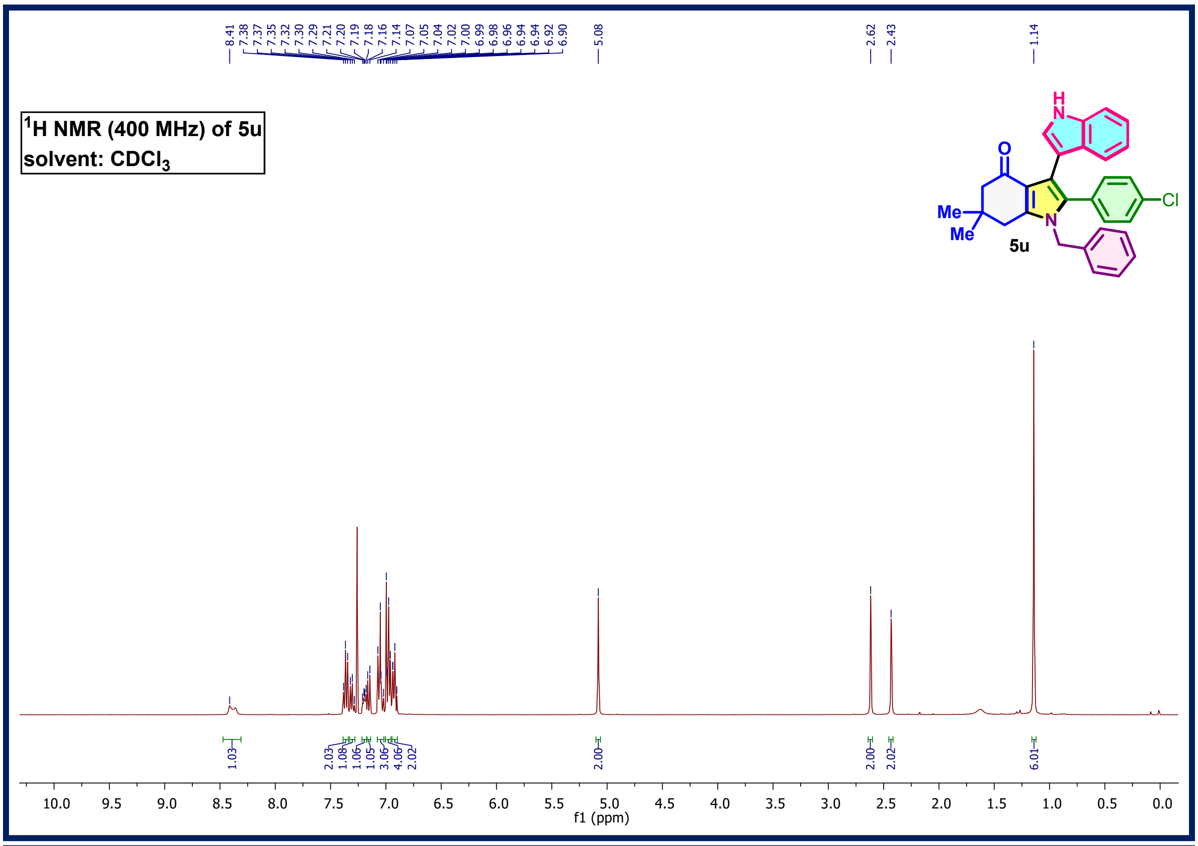


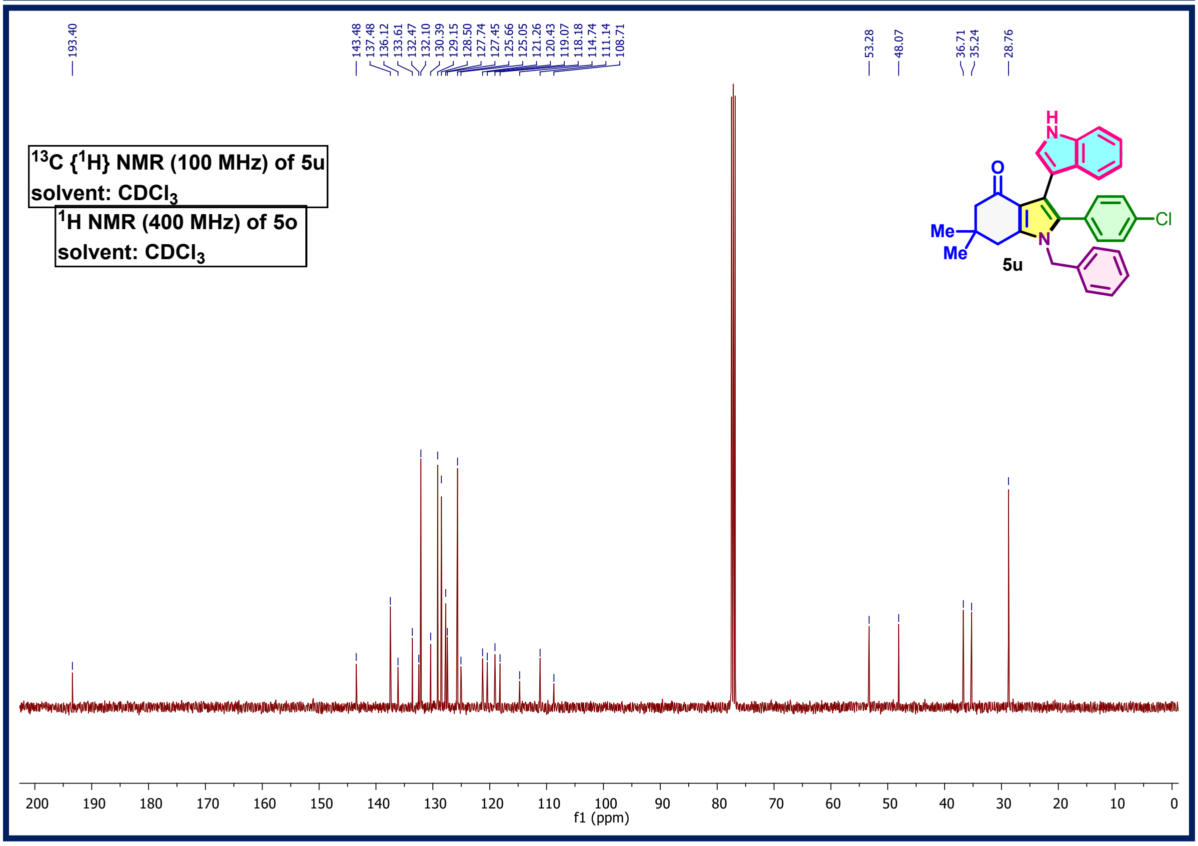
^{1}H, and $^{13}C\{^1H\}$ NMR spectra of **5t**



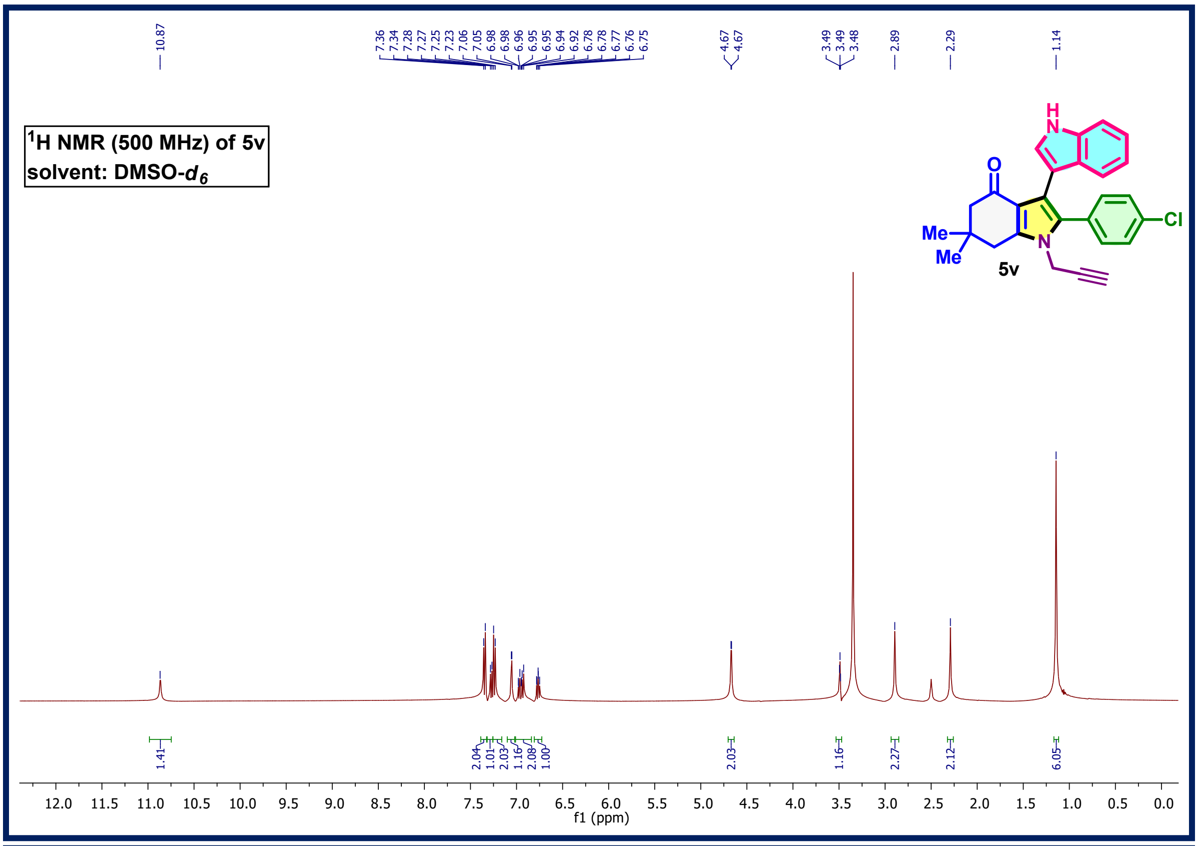


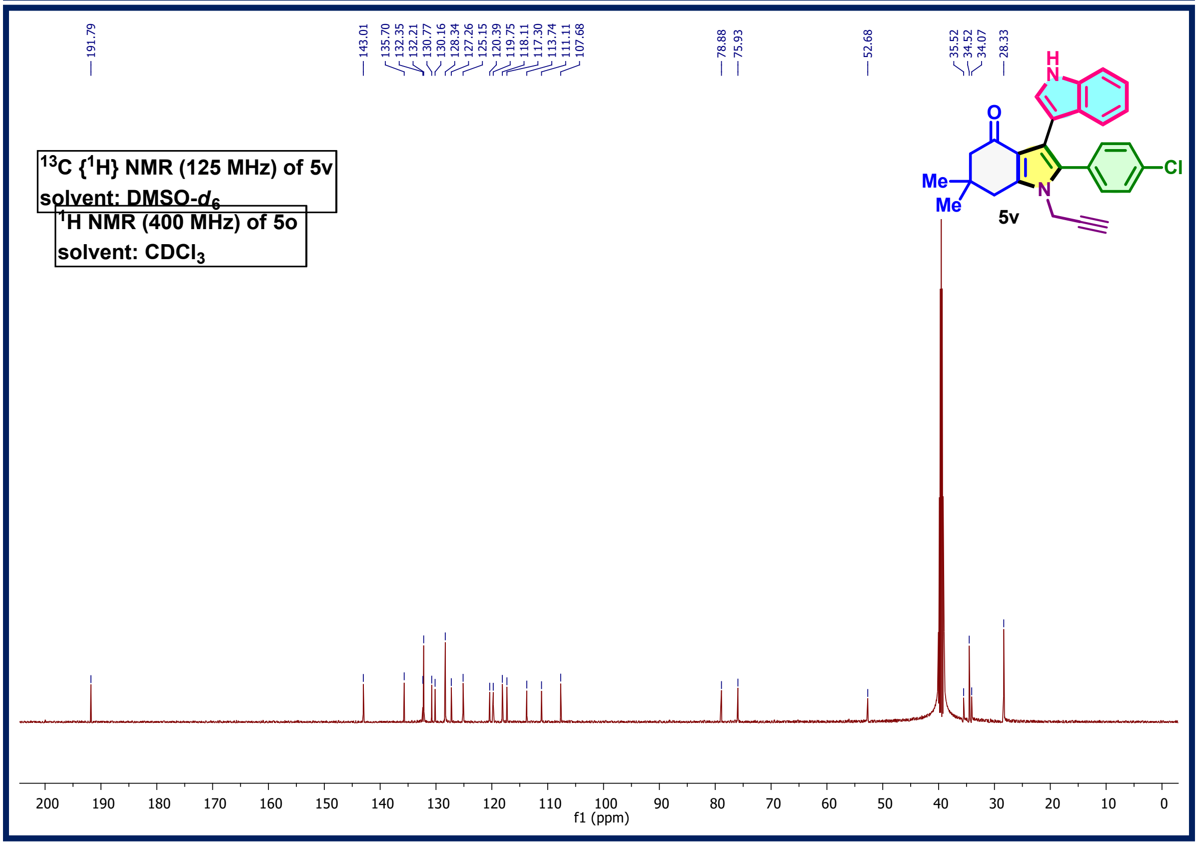
^{1}H, and ^{13}C{^{1}H} NMR spectra of **5u**



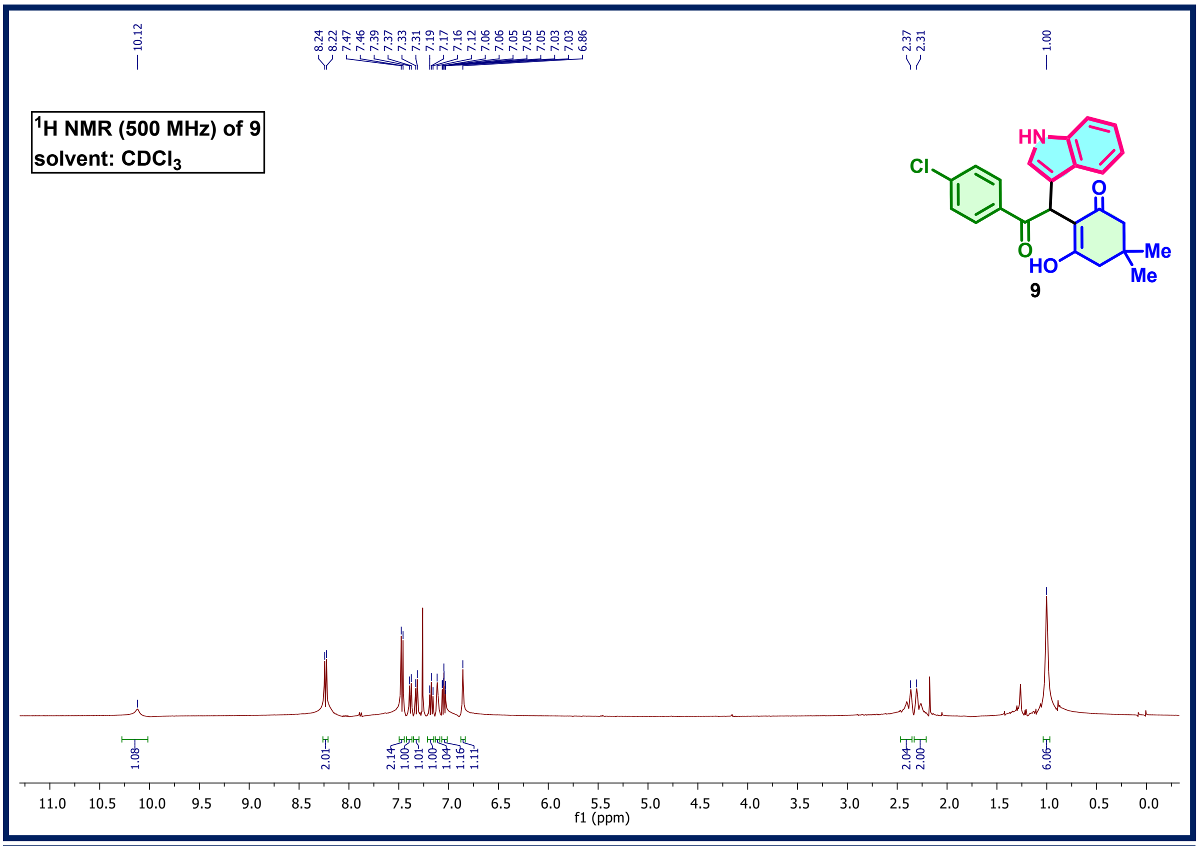


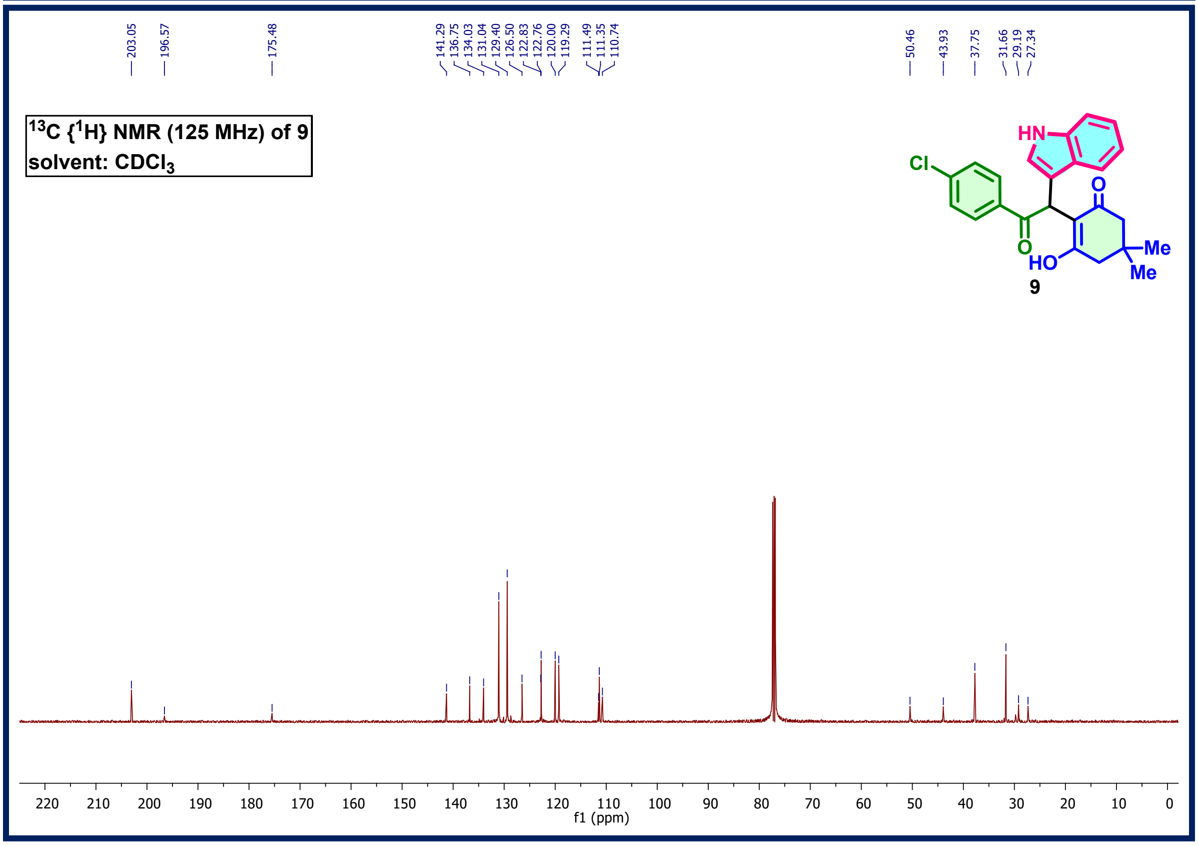
[1]H, and [13]C{[1]H} NMR spectra of **5v**





^{1}H, and $^{13}C\{^{1}H\}$ NMR spectra of **9**





2. Green parameters[1] of the protocol of representative compound 5b

$$Effective\ Mass\ Yield\ (EMY) = \frac{Mass\ of\ product}{Mass\ of\ non\ benign\ reagent} \times 100$$

$$= \frac{0.132\ g}{0.04662\ g\ +\ 0.03502g\ +\ 0.02927g\ +0.043g} \times 100 =\ 85.76\ \%$$

$$Atom\ Economy\ (AE) = \frac{Molecular\ weight\ of\ product}{Total\ molecular\ weight\ of\ reactants} \times 100$$

$$= \frac{543.88}{186.59 + 140.17 + 117.14 + 172.02} \times 100 =\ 88.30\%$$

$$Atom\ Efficiency\ (AEf) = AE\ \times Yield\% = 88.30\ \times 97 = 85.65\%$$

$$Carbon\ Economy\ (CE) = \frac{Amount\ of\ carbon\ in\ the\ product}{Total\ carbon\ present\ in\ the\ reactants} \times 100$$

$$= \frac{30\ \times 0.00024}{8\ \times\ 0.00025 +\ 8\ \times\ 0.00025 ++\ 8\ \times\ 0.00025 +\ 6\ \times\ 0.00025} \times 100 = 96\%$$

$$Reaction\ Mass\ Efficiency\ (RME) = \frac{Mass\ of\ isolated\ the\ product}{Total\ mass\ of\ reactants} \times 100$$

$$= \frac{0.132\ g}{0.04662\ g\ +\ 0.03502g\ +\ 0.02927g\ +0.043g} \times 100 =\ 85.76\ \%$$

$$Optimum\ Efficiency\ (OE) = \frac{RME}{AE}\ \times 100 = \frac{85.76}{88.30} \times 100 = 97.12\%$$

$$E\ factor = \frac{Mass\ of\ raw\ materials - Mass\ of\ product}{Mass\ of\ product}$$

$$= \frac{(0.04662g +\ 0.3502g + 0.02927g) - 0.132g}{0.132g} =\ 0.16\ (g/g)$$

Eco score (E-score) calculation:[2,3]

Sl. No.	Parameter	Values	Penalty points
1	yield	(100-97)/2	1.5
2	Price of the reaction components	Inexpensive	0
3	Technical setup	Common setup	0
4	Temperature/time	heating, <1	2
5	Workup and purification	Simple filtration	0
6	Safety*	5+5	10
Total penalty point			13.5

*Based on the hazard warning symbols

E-score = 100 – the sum of the individual penalties

E-score = 100 – 13.5 = **86.5** (>75, excellent synthesis).

3. References:

1 G. Brahmachari, N. Nayek, I. Karmakar, K. Nurjamal, S. K. Chandra, A. Bhowmick, *J. Org. Chem.*, 2020, **85**, 8405–8414.

2 K. V. Aken, L. Strekowski, L. Patiny, *Beilstein J. Org. Chem.*, 2006, **2**, 3.

3 S. Teli, S. Soni, P. Teli, N. Sahiba, S. Agarwal, *Res. Chem. Intermed.,* 2024, **50**, 1475–1495.