

Electronic Supplementary Information

A domino reaction of tetrahalo-7,7-dimethoxybicyclo[2.2.1]heptenyl alcohols leading to indenones and a de novo synthesis of ninhydrin derivatives

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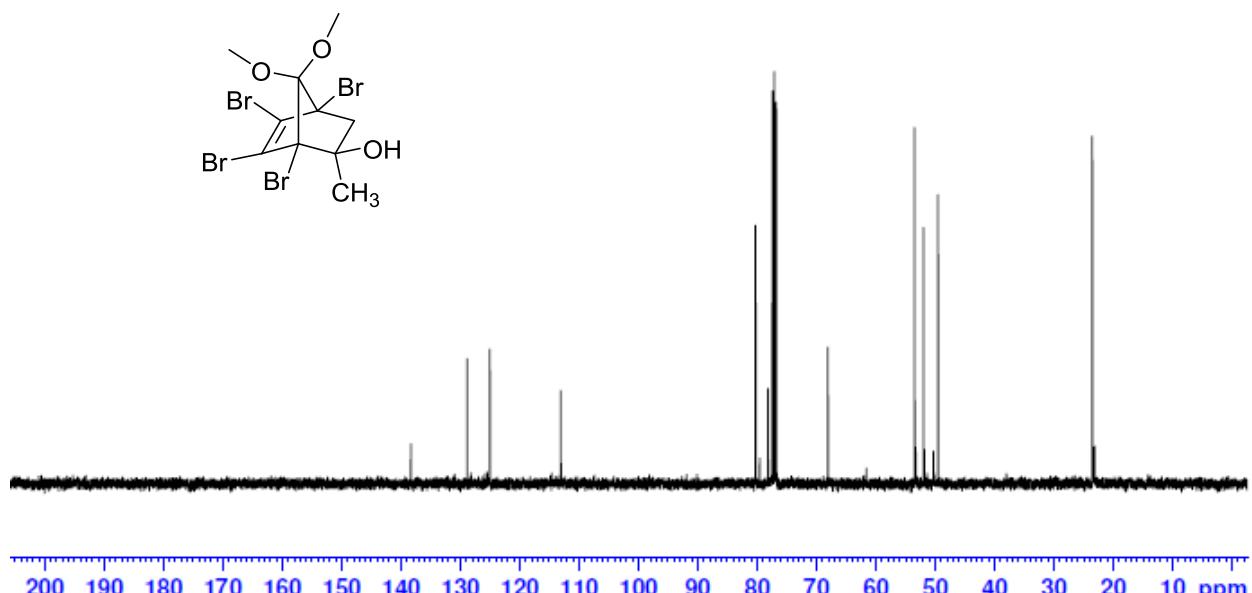
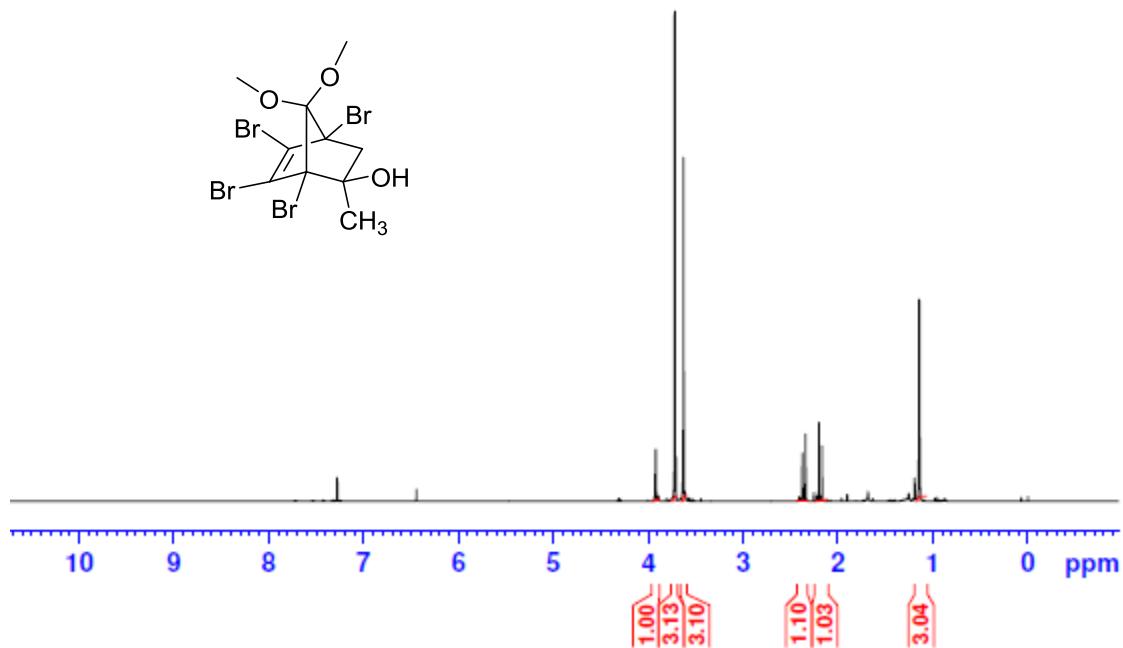
faiz@iith.ac.in

Table of contents

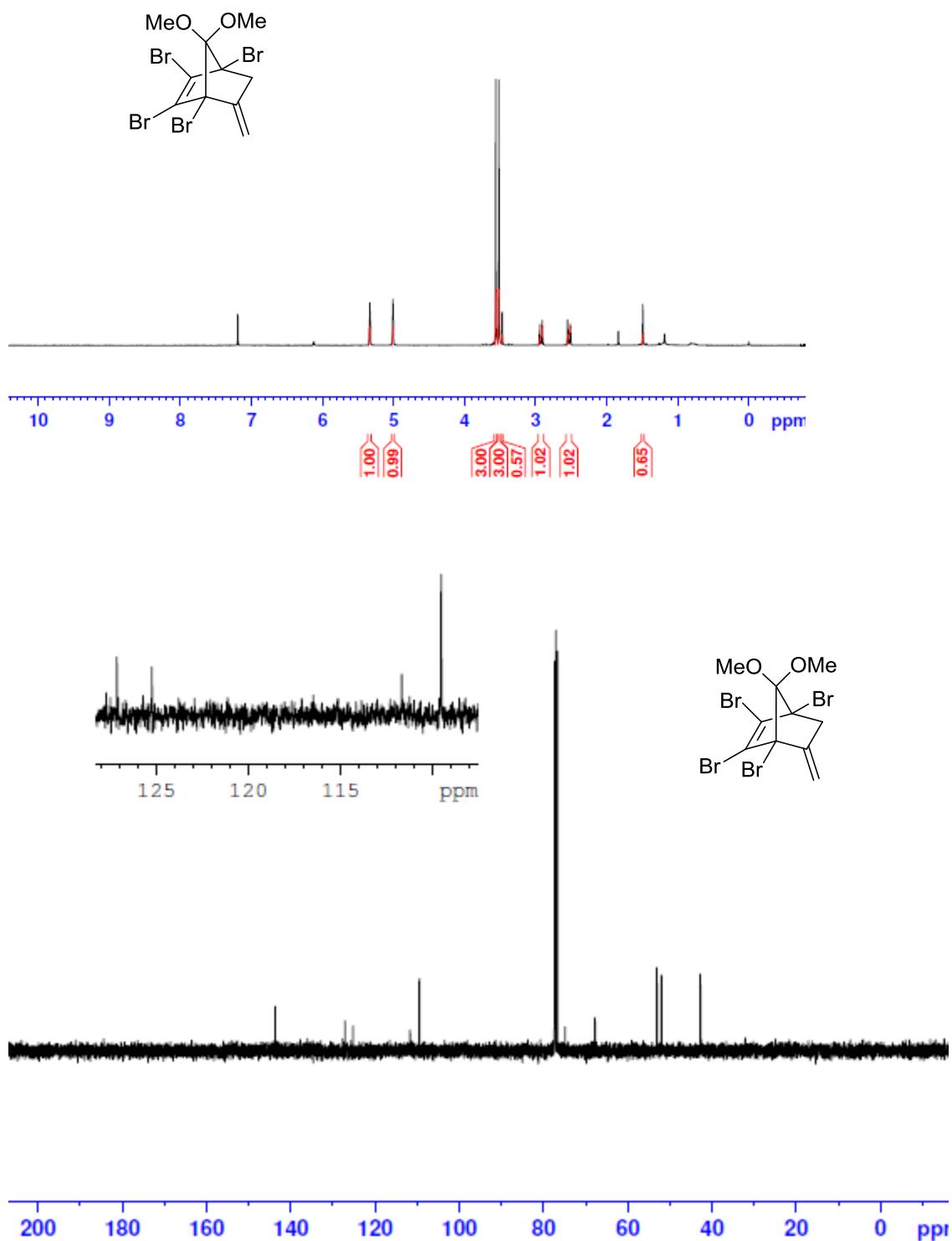
S.No	Contents	Page.No
1	Copies of ^1H and ^{13}C NMR spectra of new compounds	S2-S46
2	Crystaldatal for compound 16a	S47

1) Copies of ^1H and ^{13}C NMR spectra of new compounds

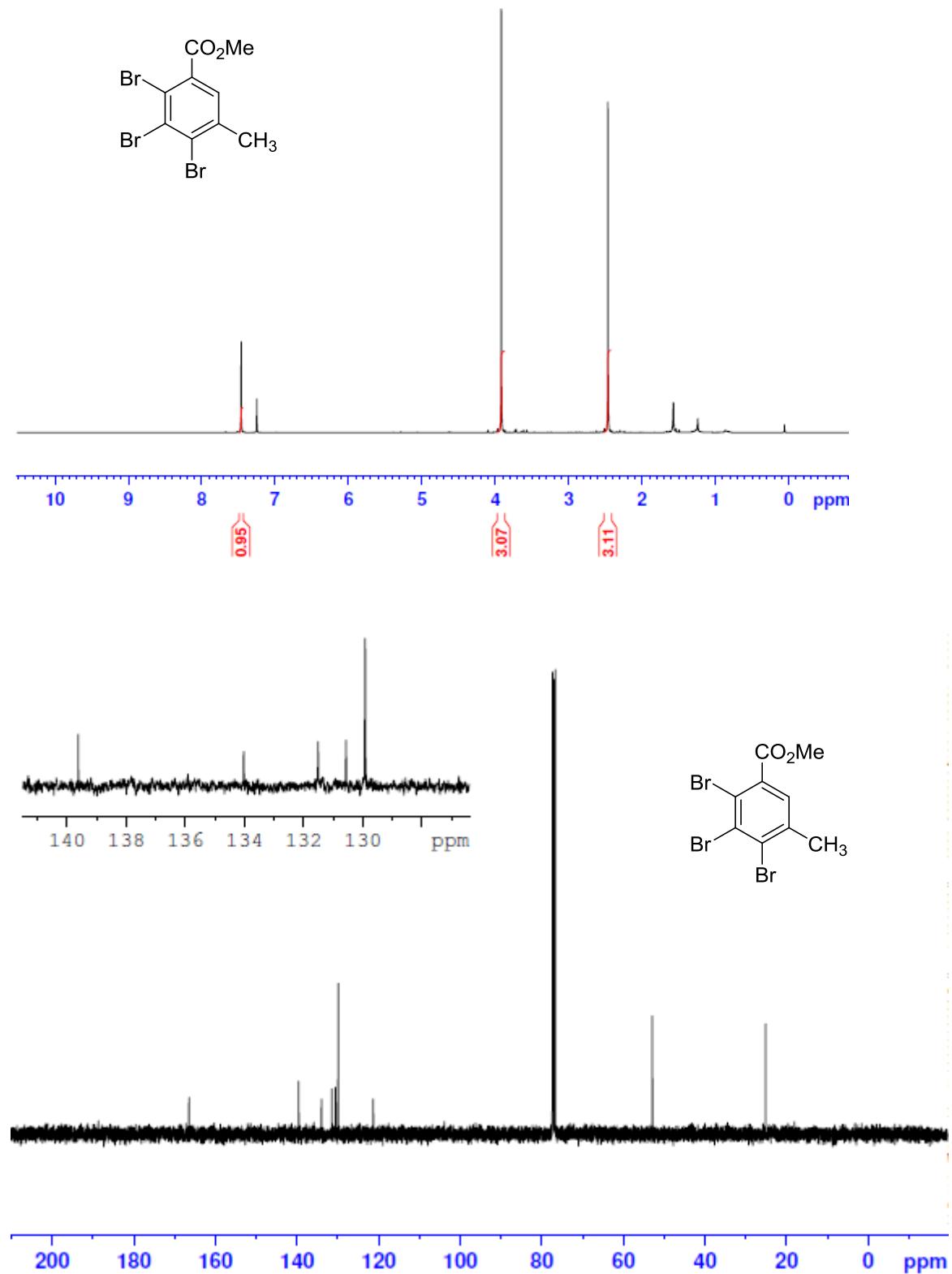
^1H NMR (400 MHz) and ^{13}C NMR (100MHz) spectrum of compound 6



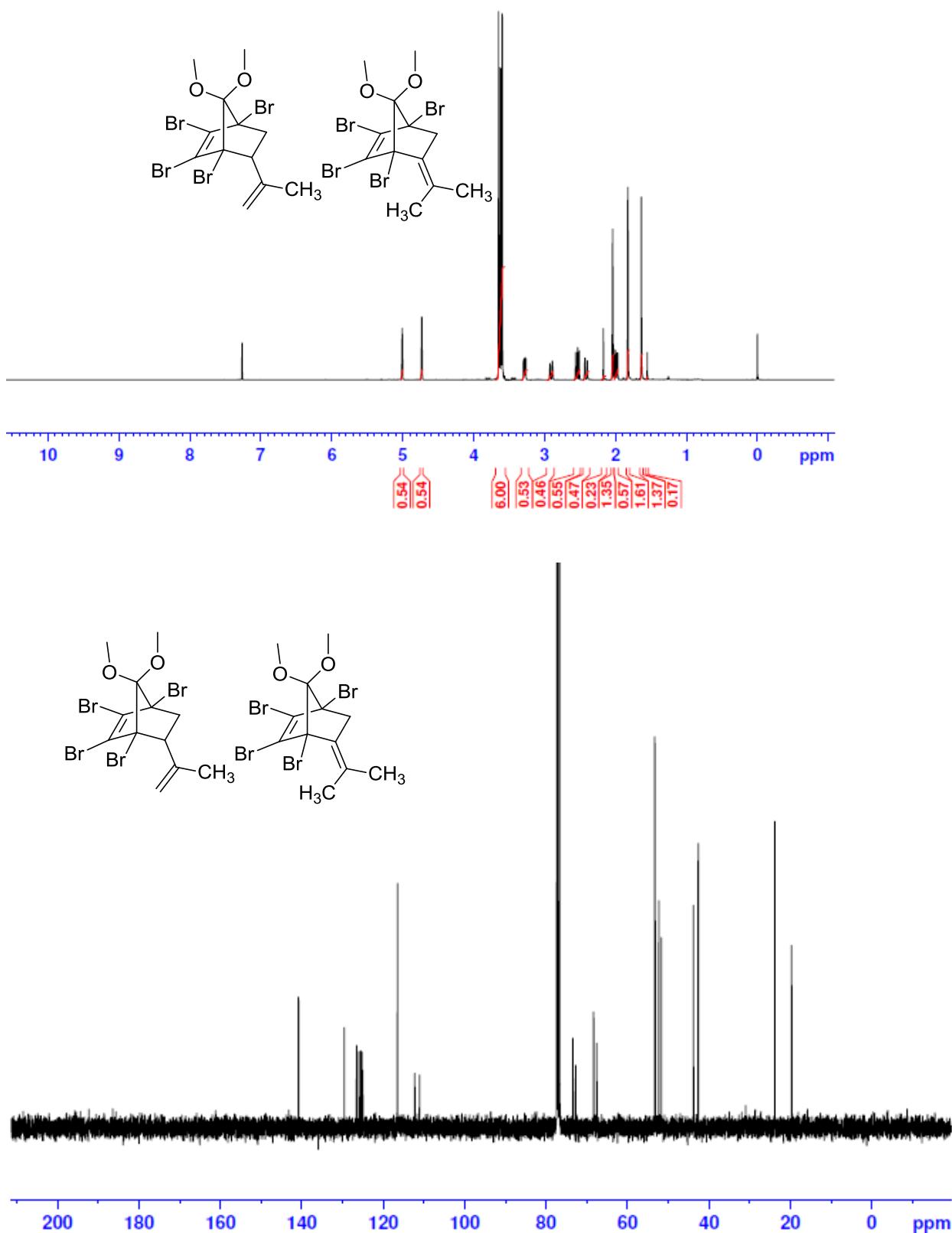
^1H NMR (400 MHz) and ^{13}C NMR (100MHz) spectrum of compound 7



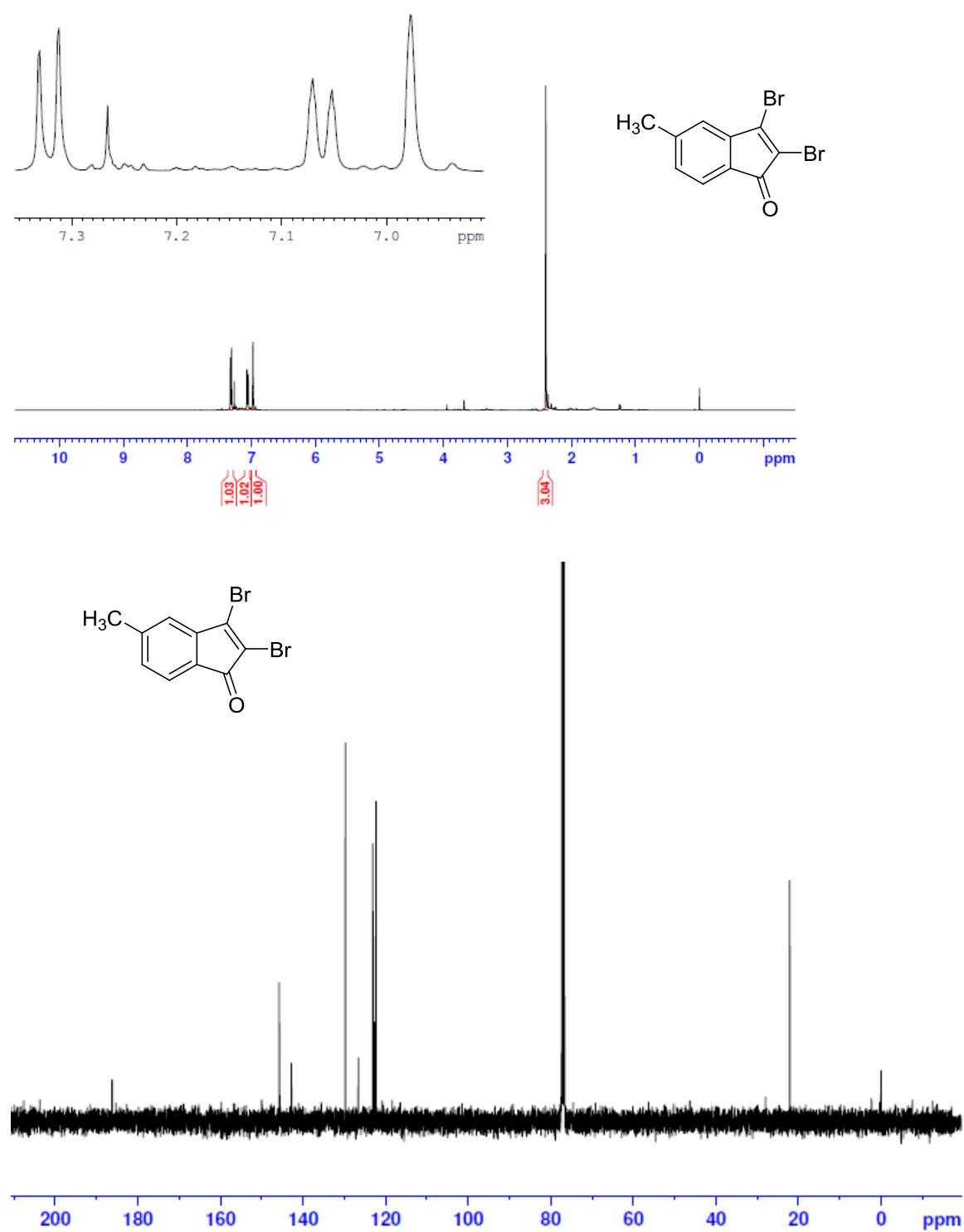
^1H NMR (400 MHz) and ^{13}C NMR (100MHz) spectrum of compound **8**



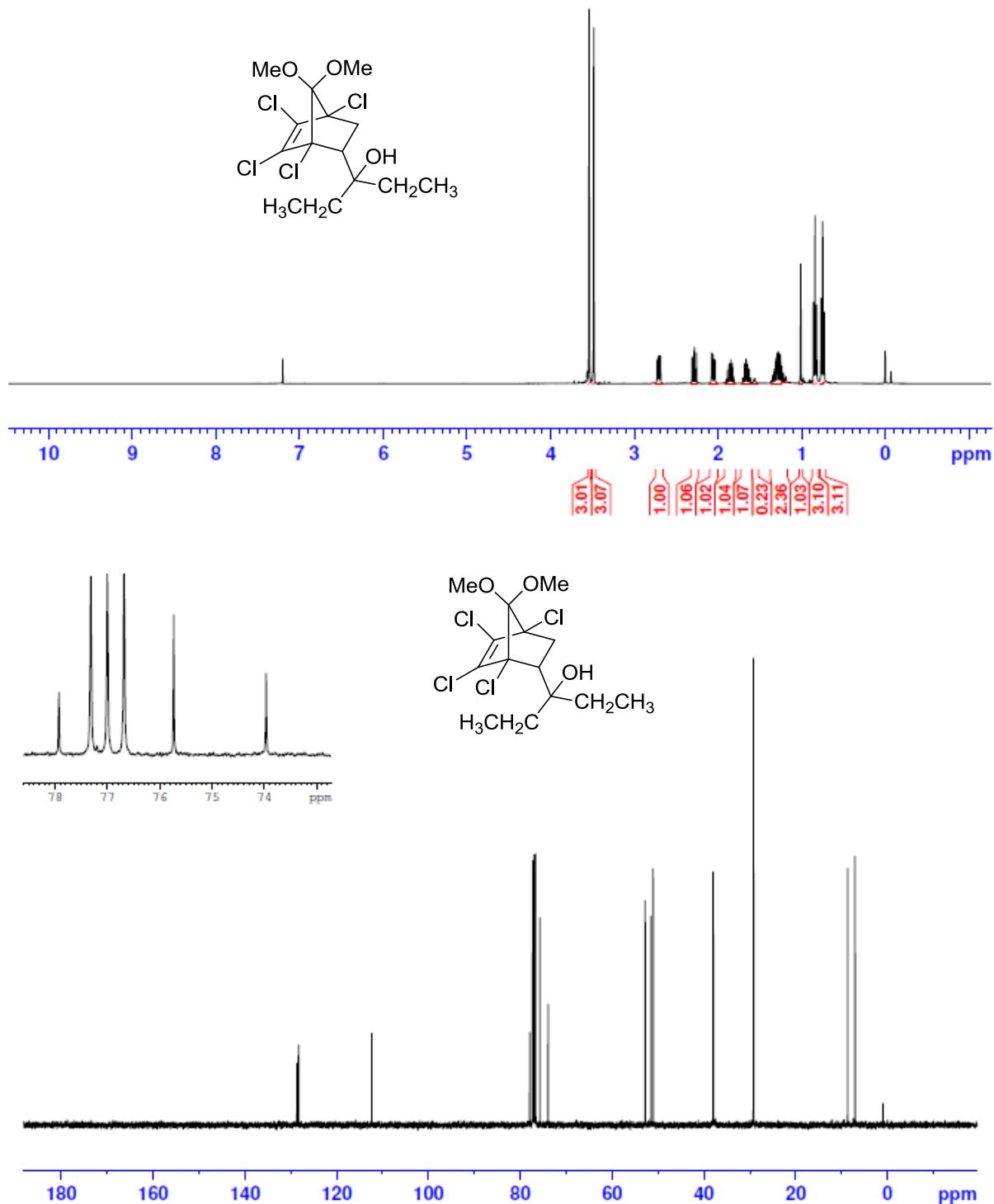
^1H NMR (400 MHz) and ^{13}C NMR (100MHz) spectrum of compound **10a**, **10b**



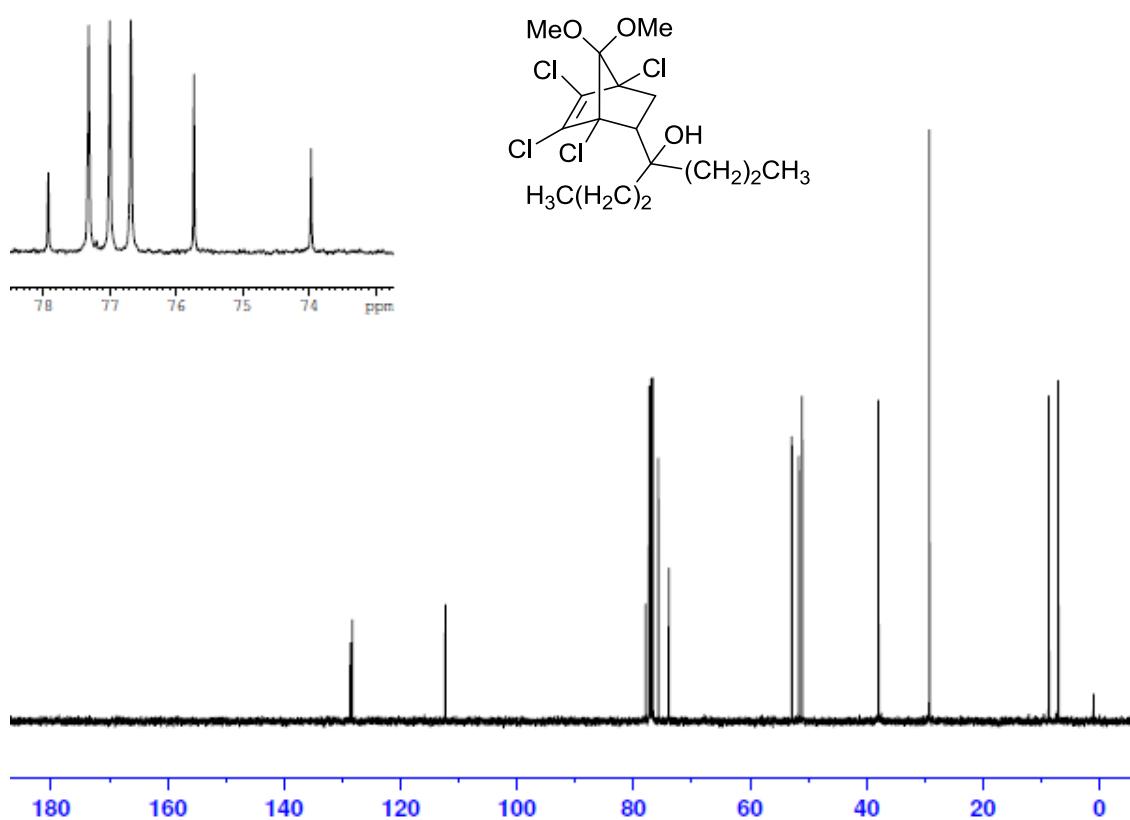
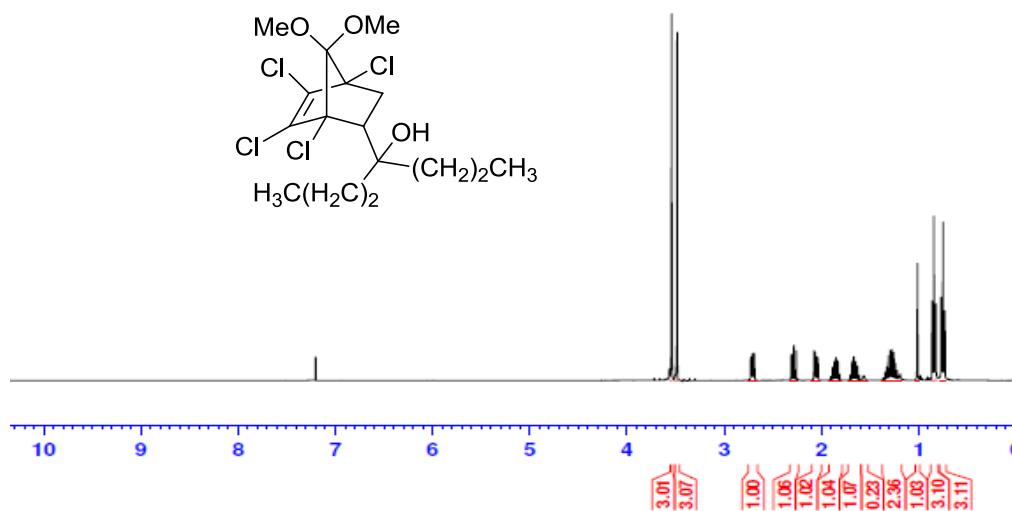
^1H NMR (400 MHz) and ^{13}C NMR (100MHz) spectrum of compound **11**



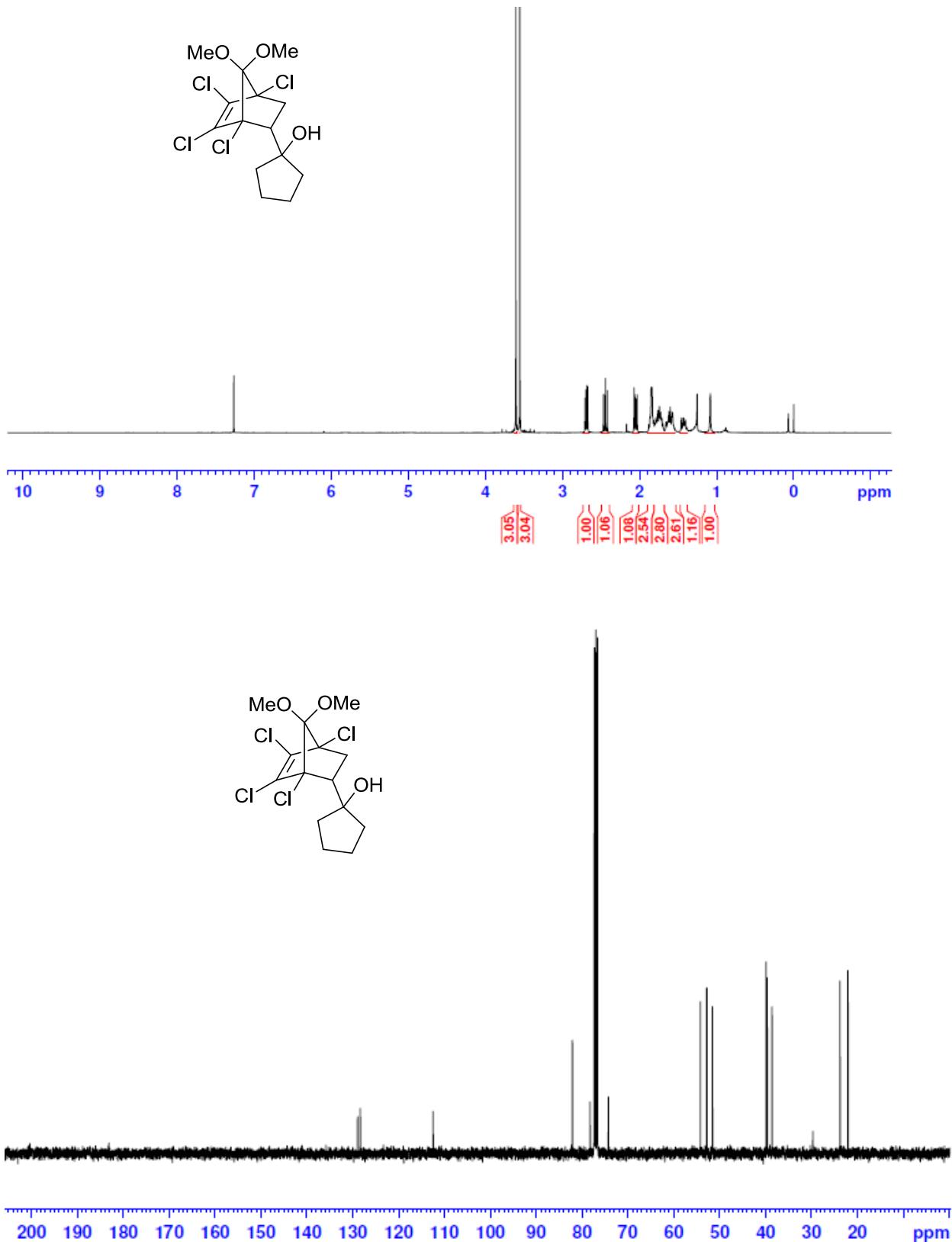
^1H NMR (400 MHz) and ^{13}C NMR (100MHz) spectrum of compound **14b**



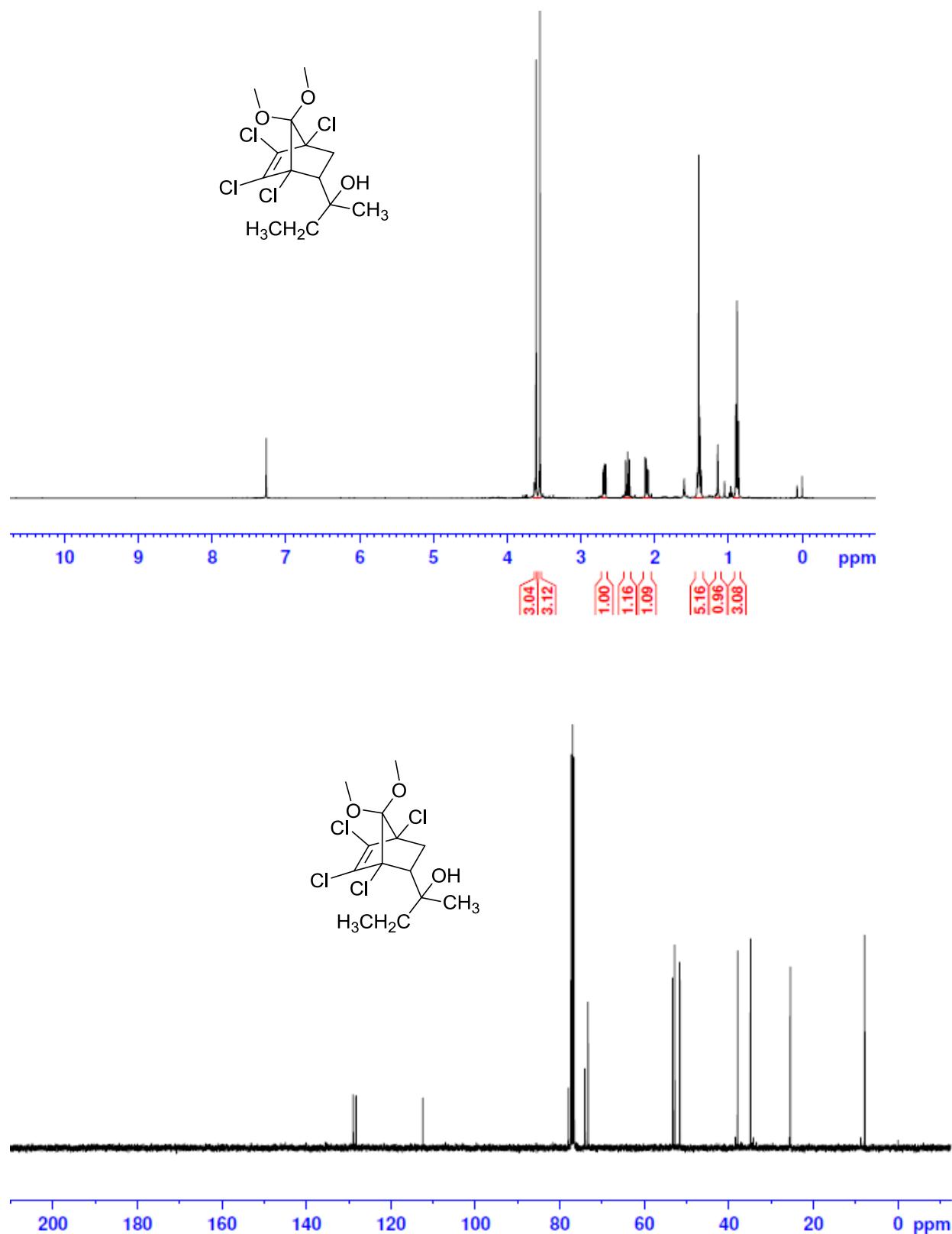
^1H NMR (400 MHz) and ^{13}C NMR (100MHz) spectrum of compound **14c**



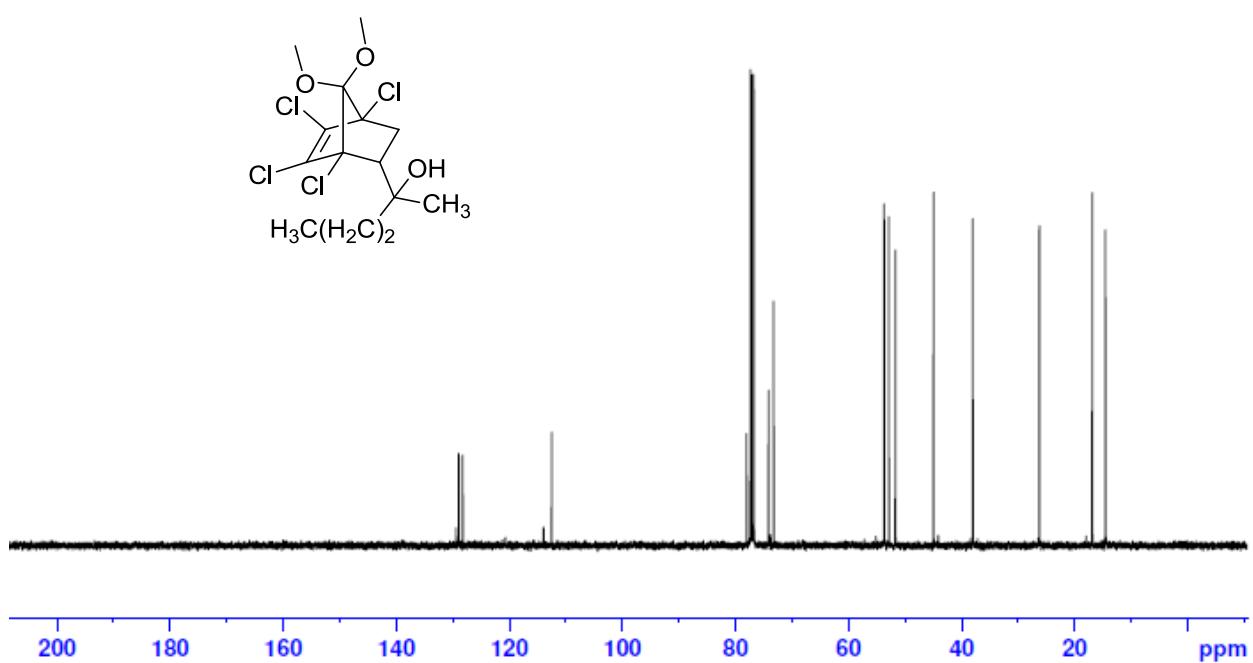
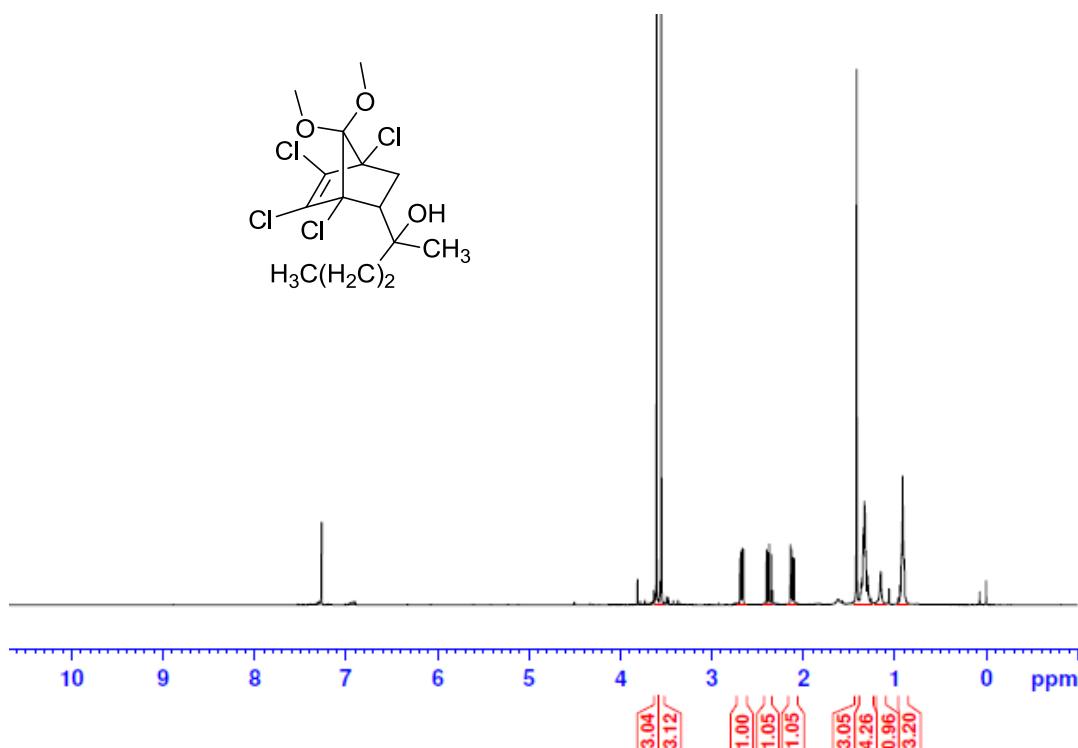
^1H NMR (400 MHz) and ^{13}C NMR (100MHz) spectrum of compound **14d**



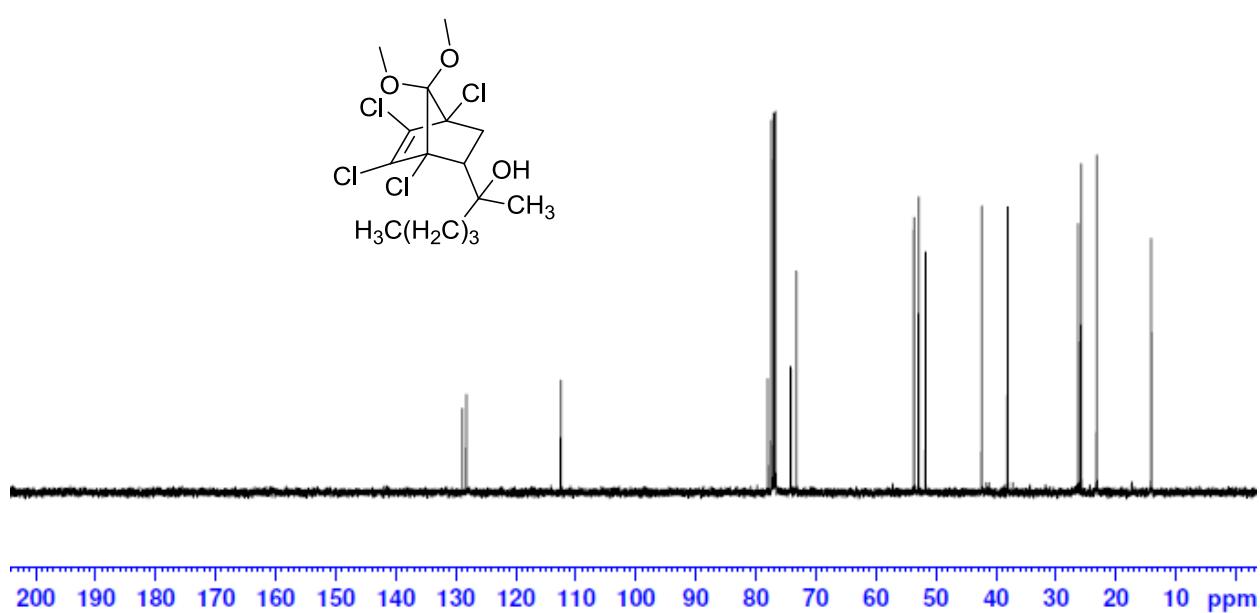
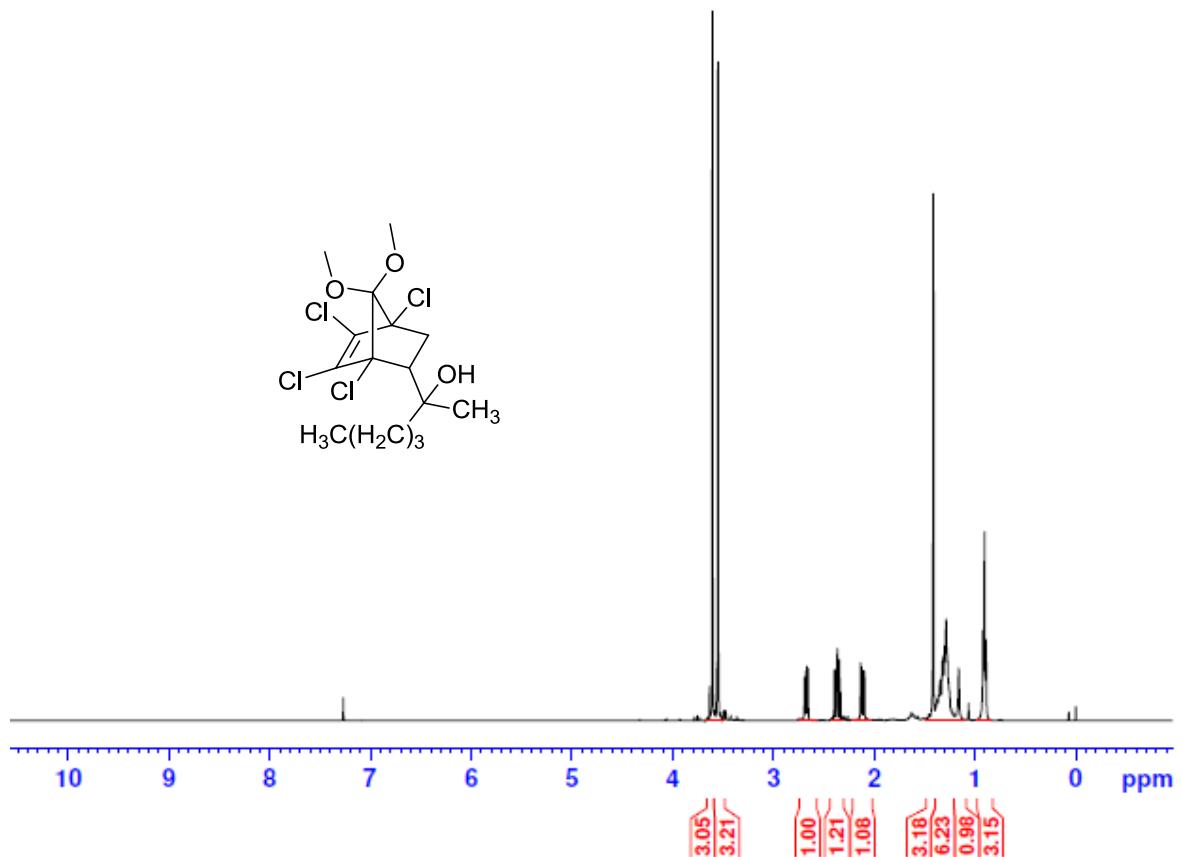
^1H NMR (400 MHz) and ^{13}C NMR (100MHz) spectrum of compound **15a**



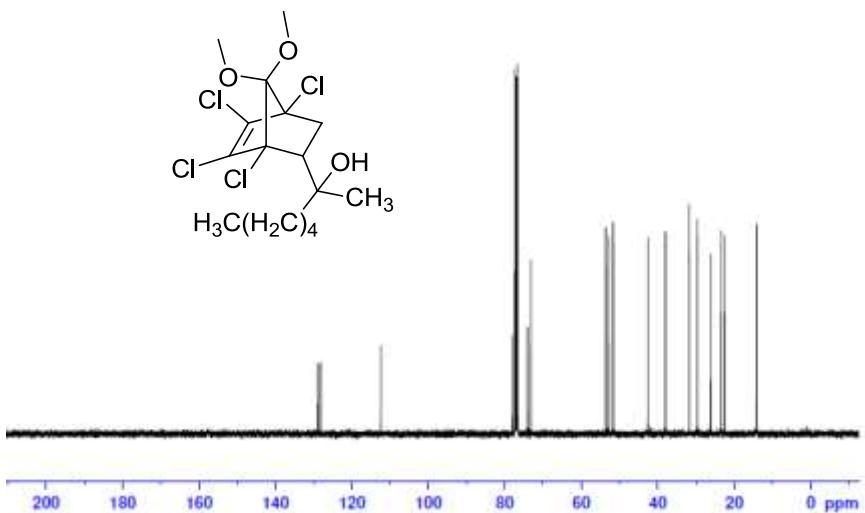
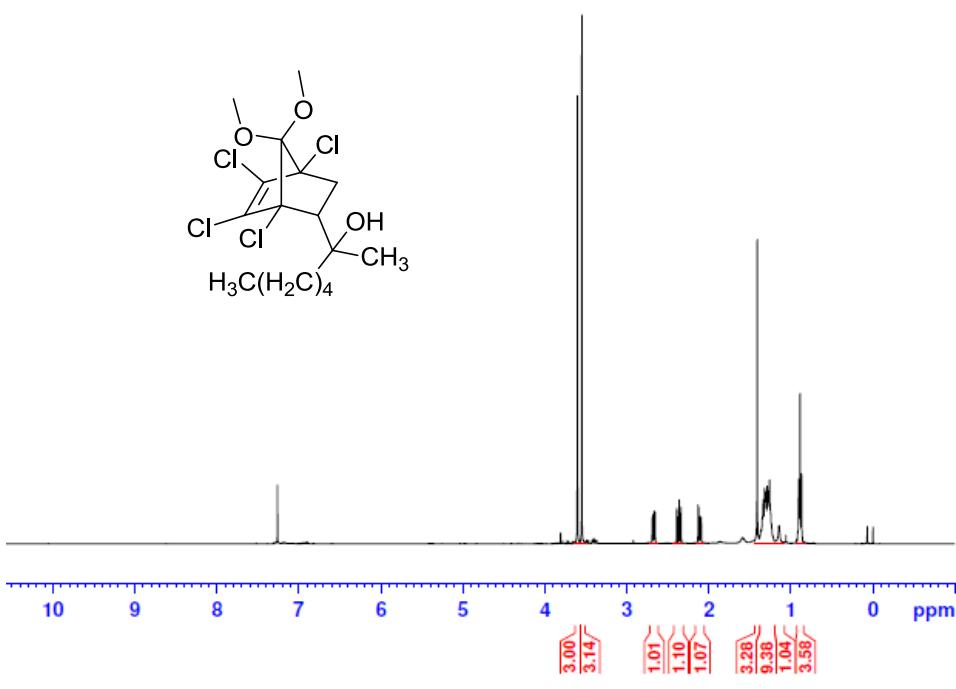
^1H NMR (400 MHz) and ^{13}C NMR (100MHz) spectrum of compound **15b**



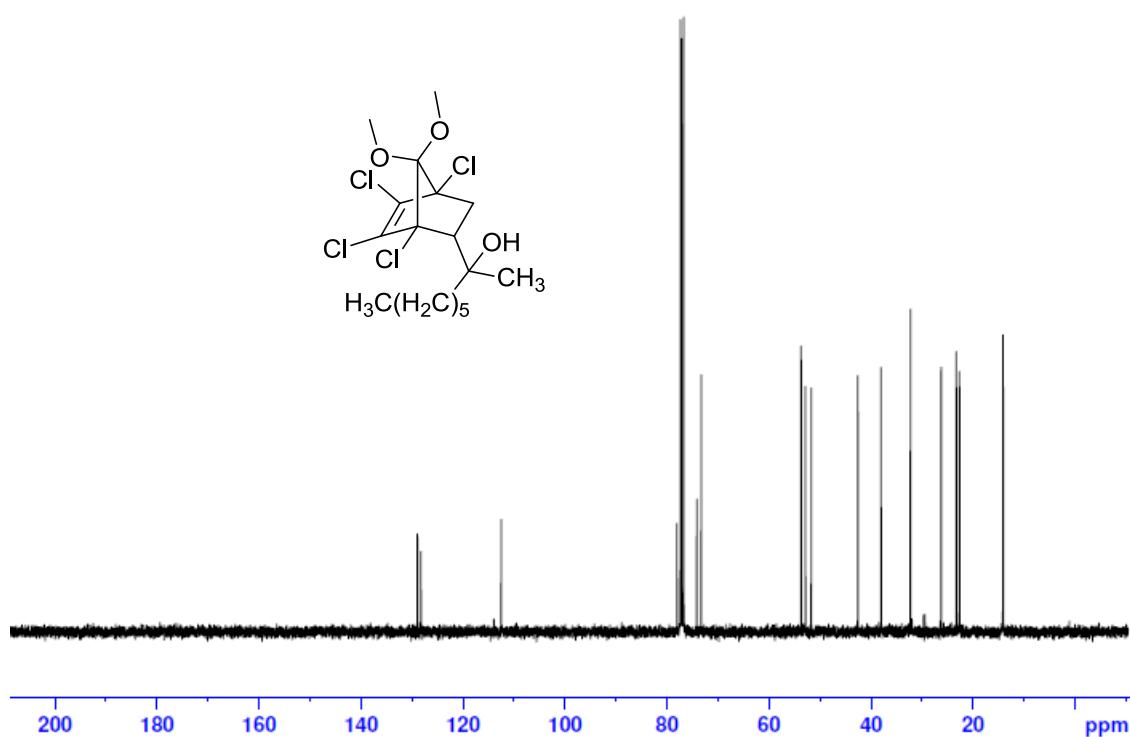
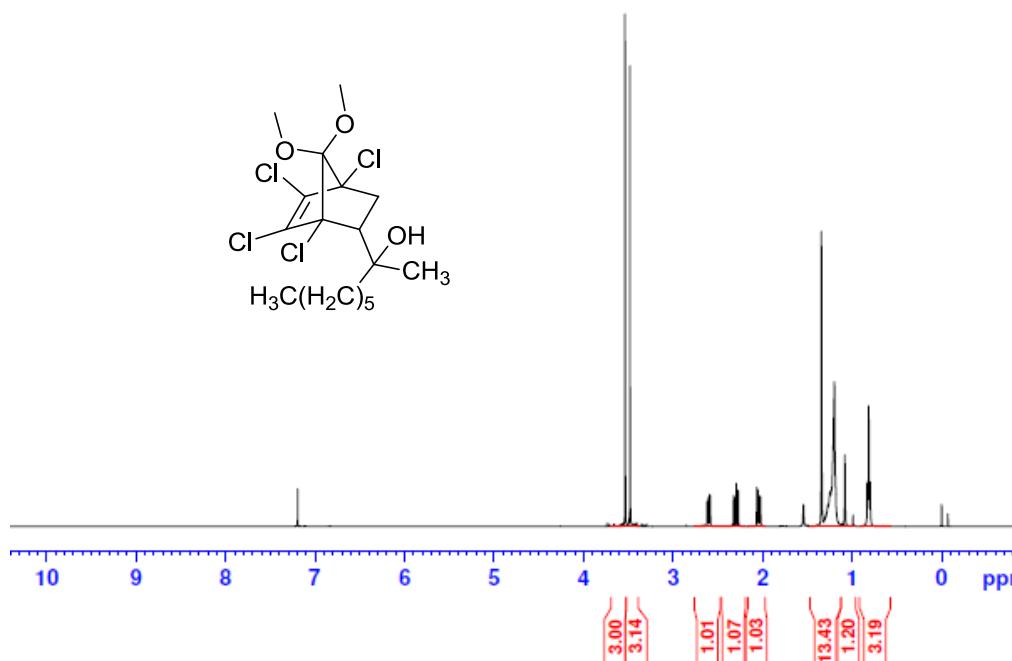
^1H NMR (400 MHz) and ^{13}C NMR (100MHz) spectrum of compound **15c**



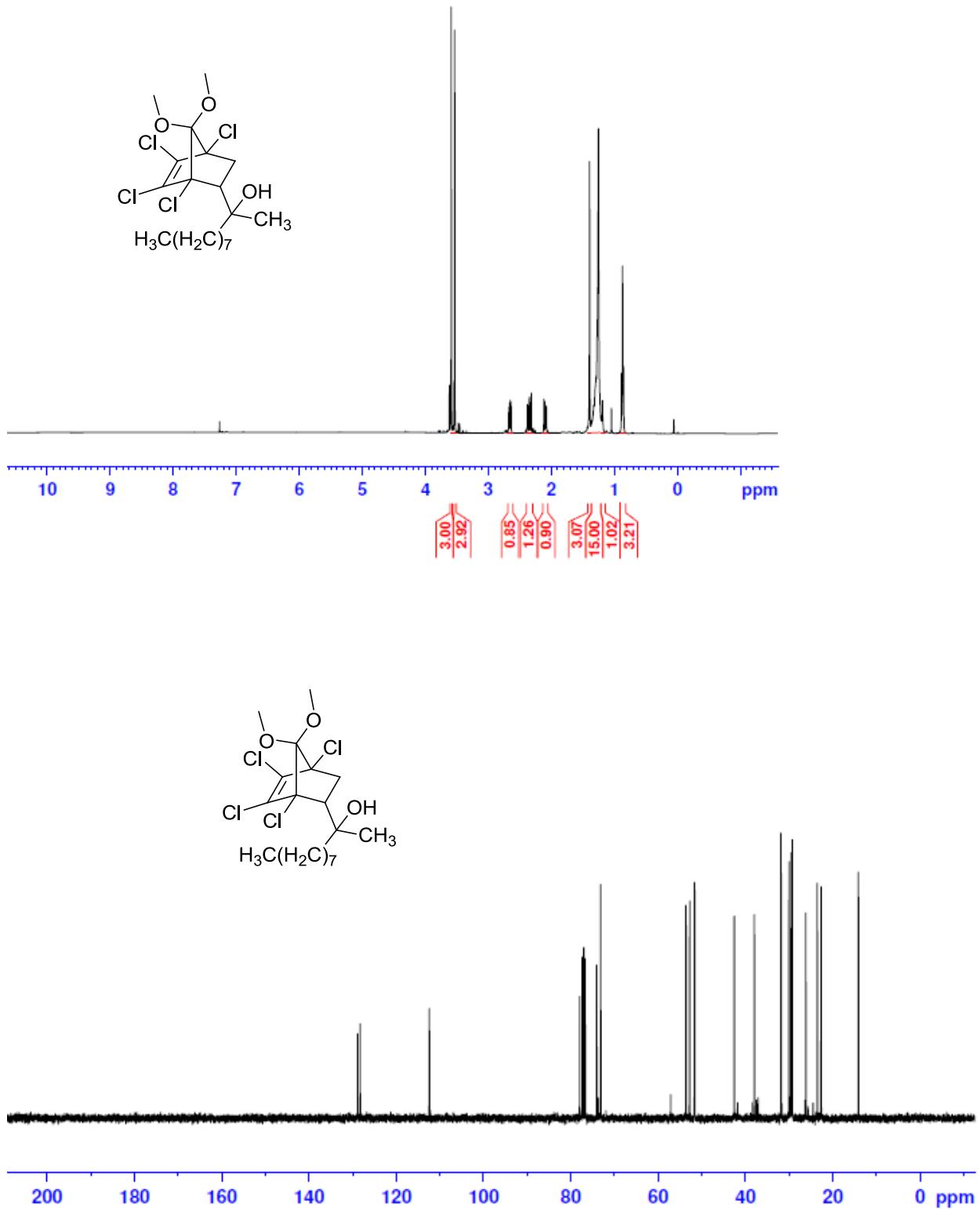
^1H NMR (400 MHz) and ^{13}C NMR (100MHz) spectrum of compound **15d**



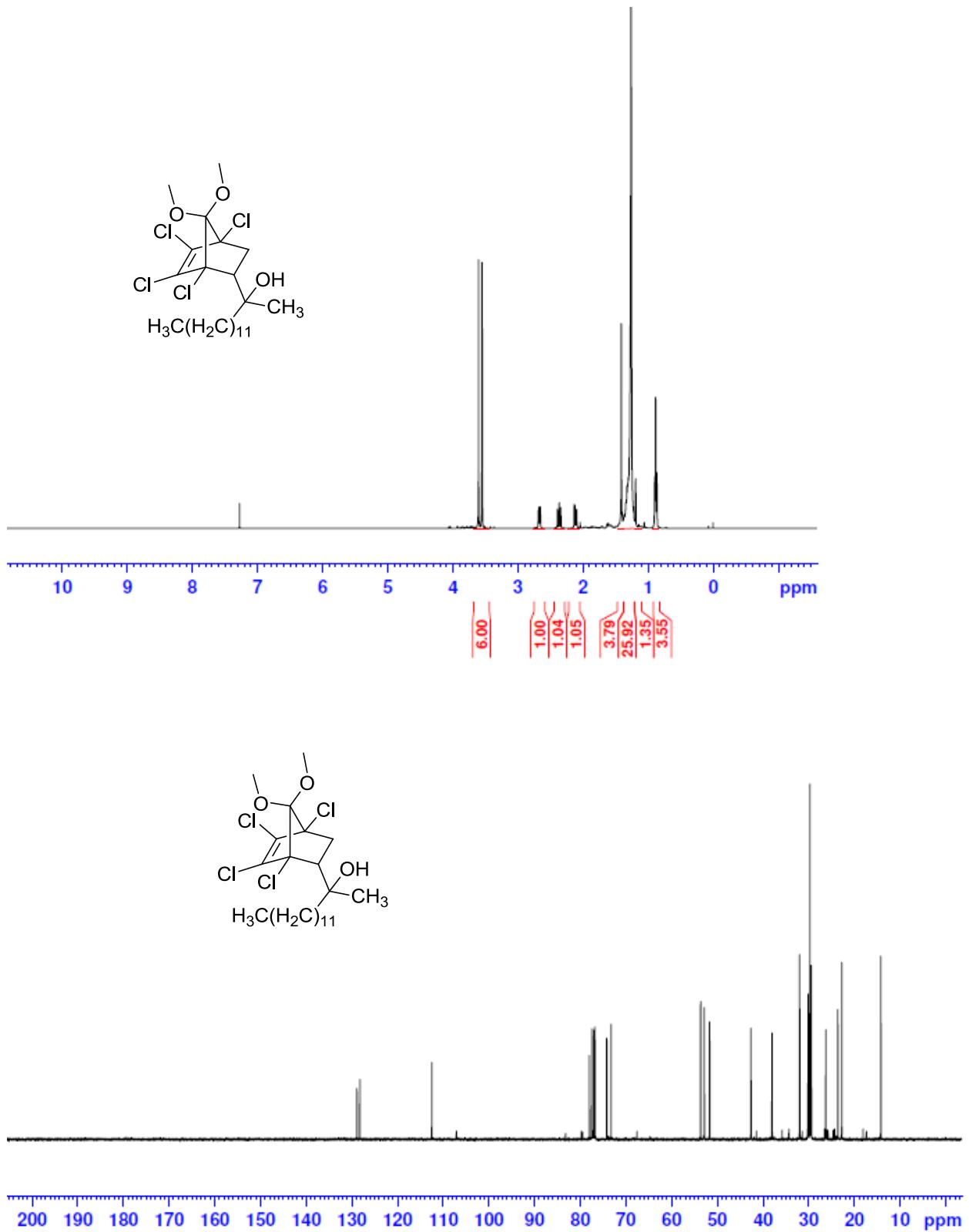
^1H NMR (400 MHz) and ^{13}C NMR (100MHz) spectrum of compound **15e**



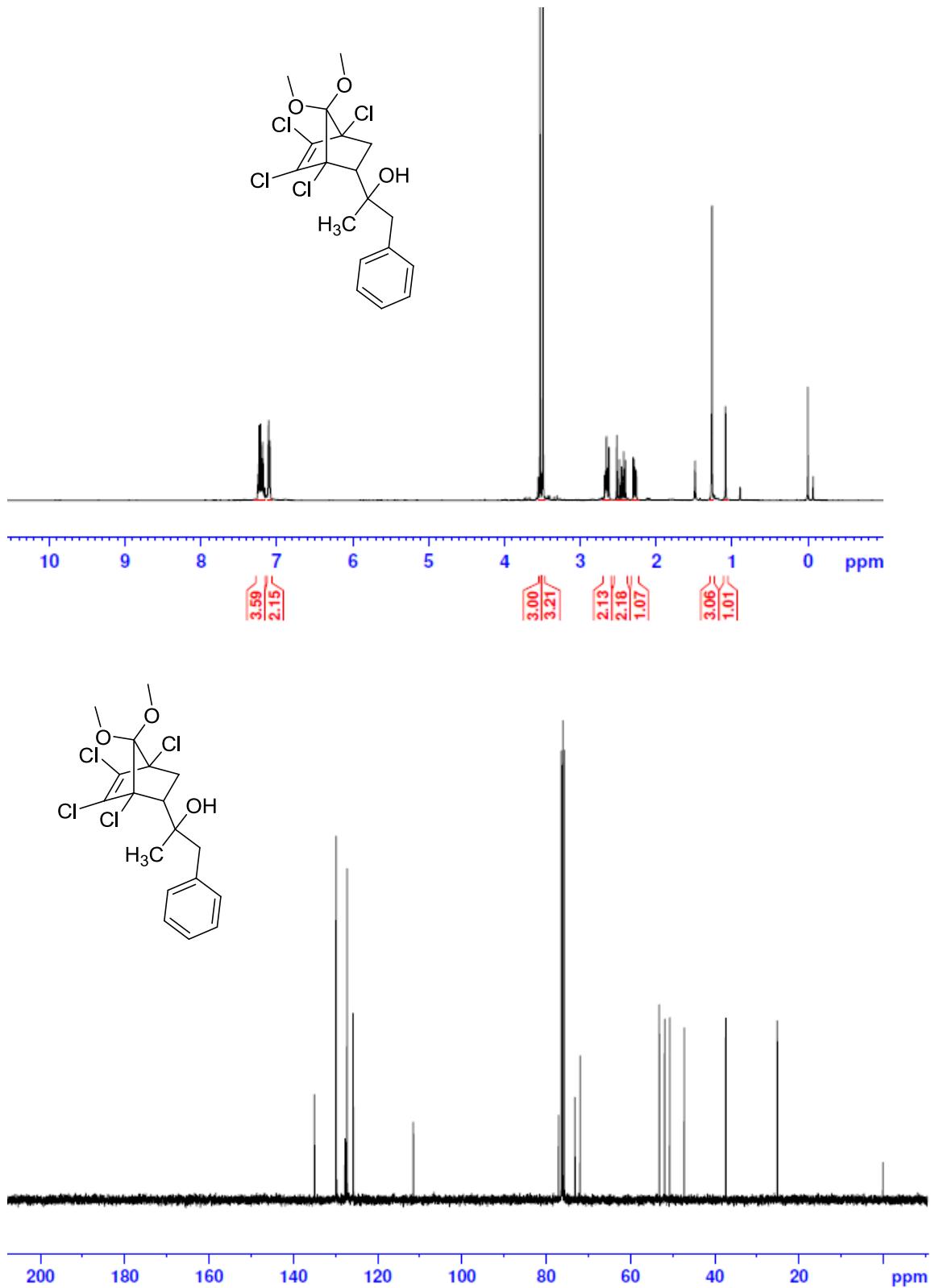
^1H NMR (400 MHz) and ^{13}C NMR (100MHz) spectrum of compound **15f**



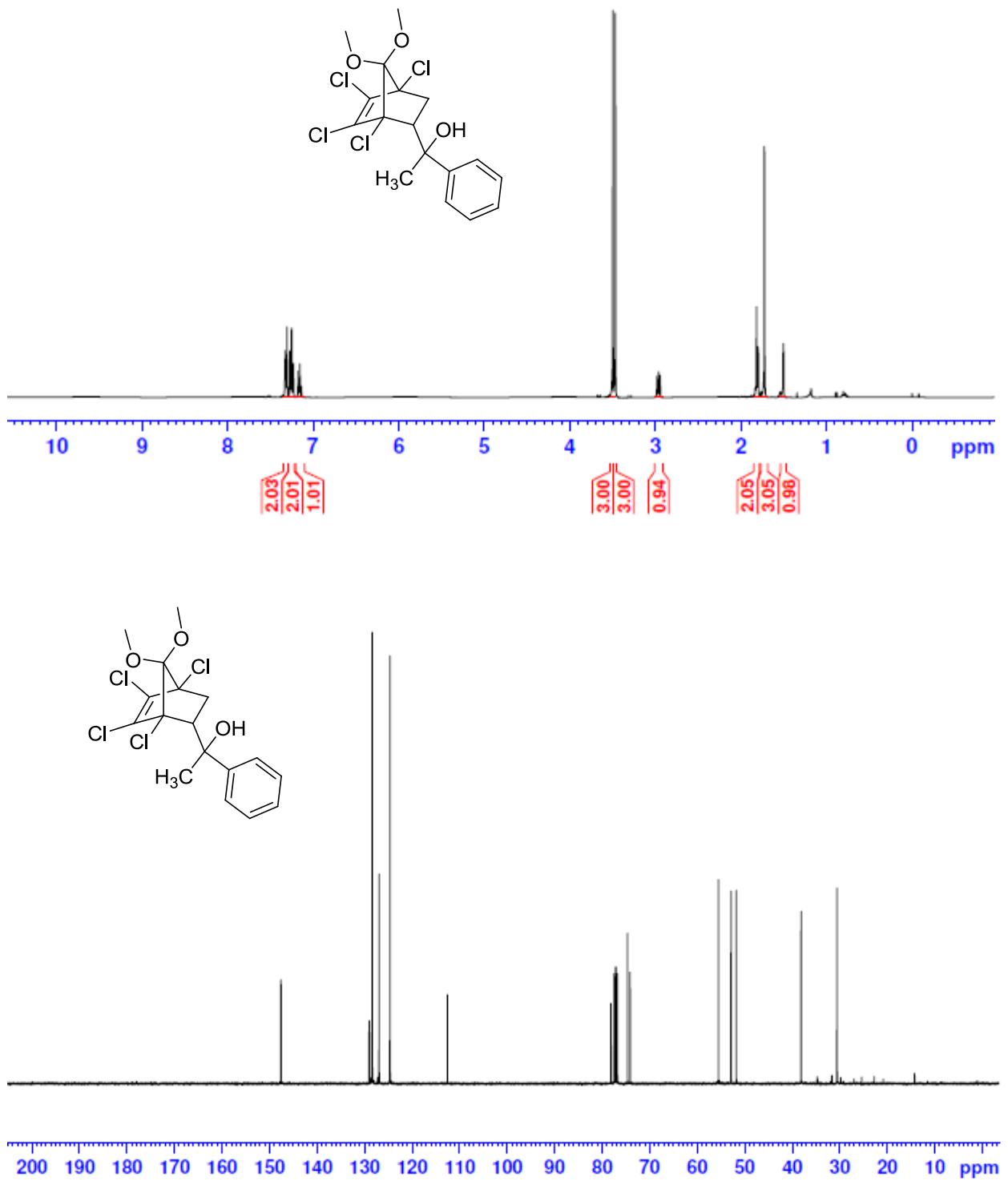
^1H NMR (400 MHz) and ^{13}C NMR (100MHz) spectrum of compound **15g**



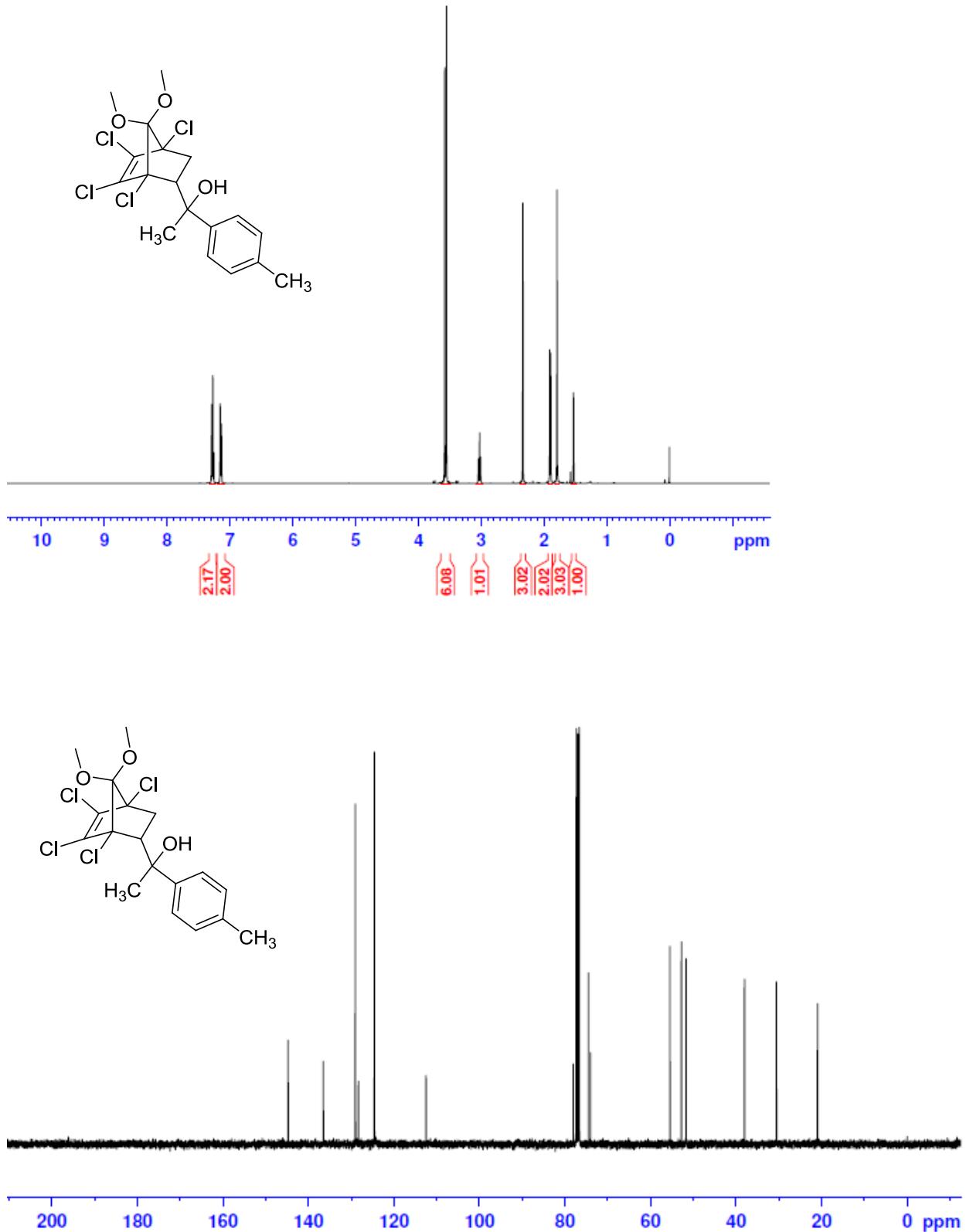
^1H NMR (400 MHz) and ^{13}C NMR (100MHz) spectrum of compound **15h**



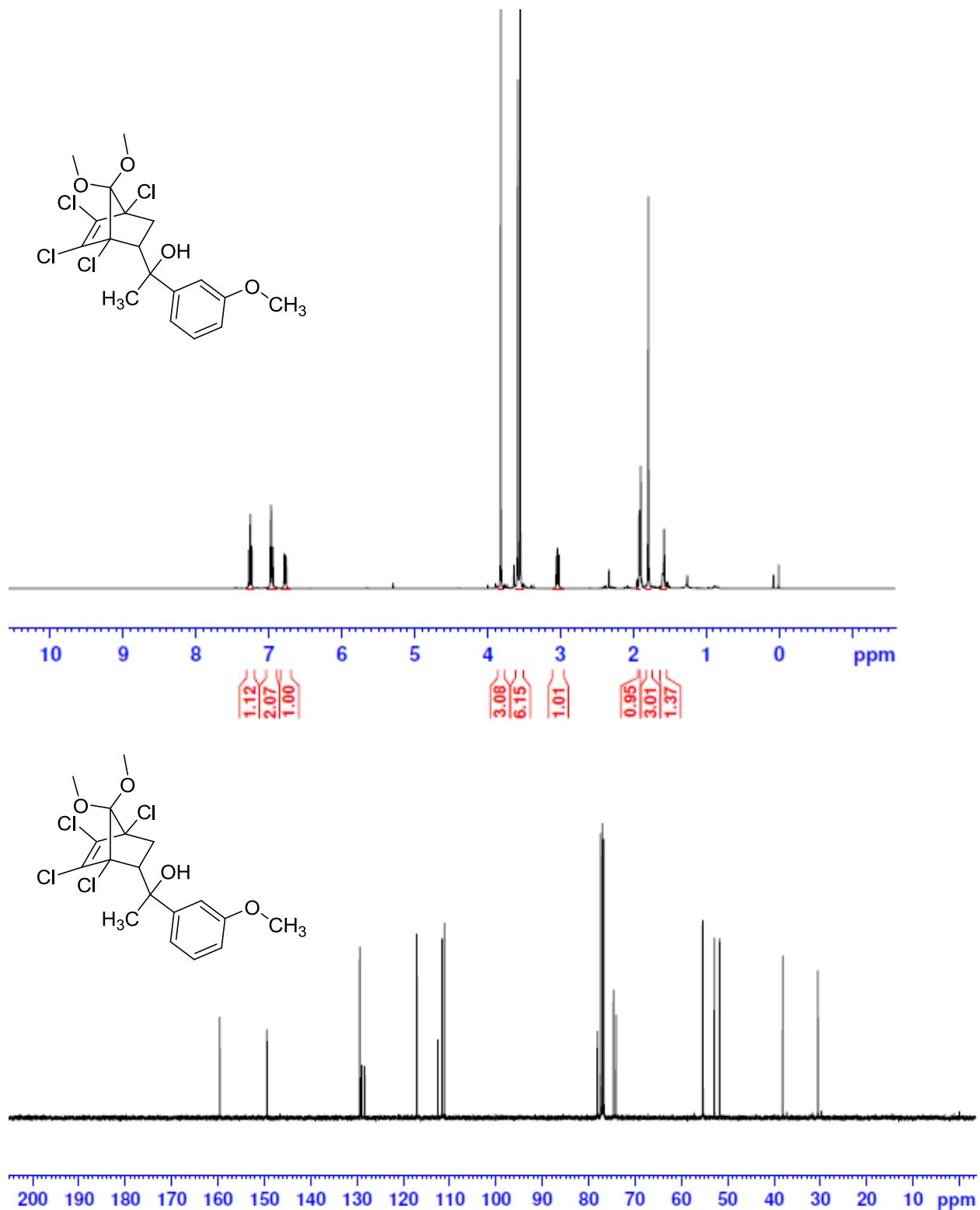
^1H NMR (400 MHz) and ^{13}C NMR (100MHz) spectrum of compound **15i**



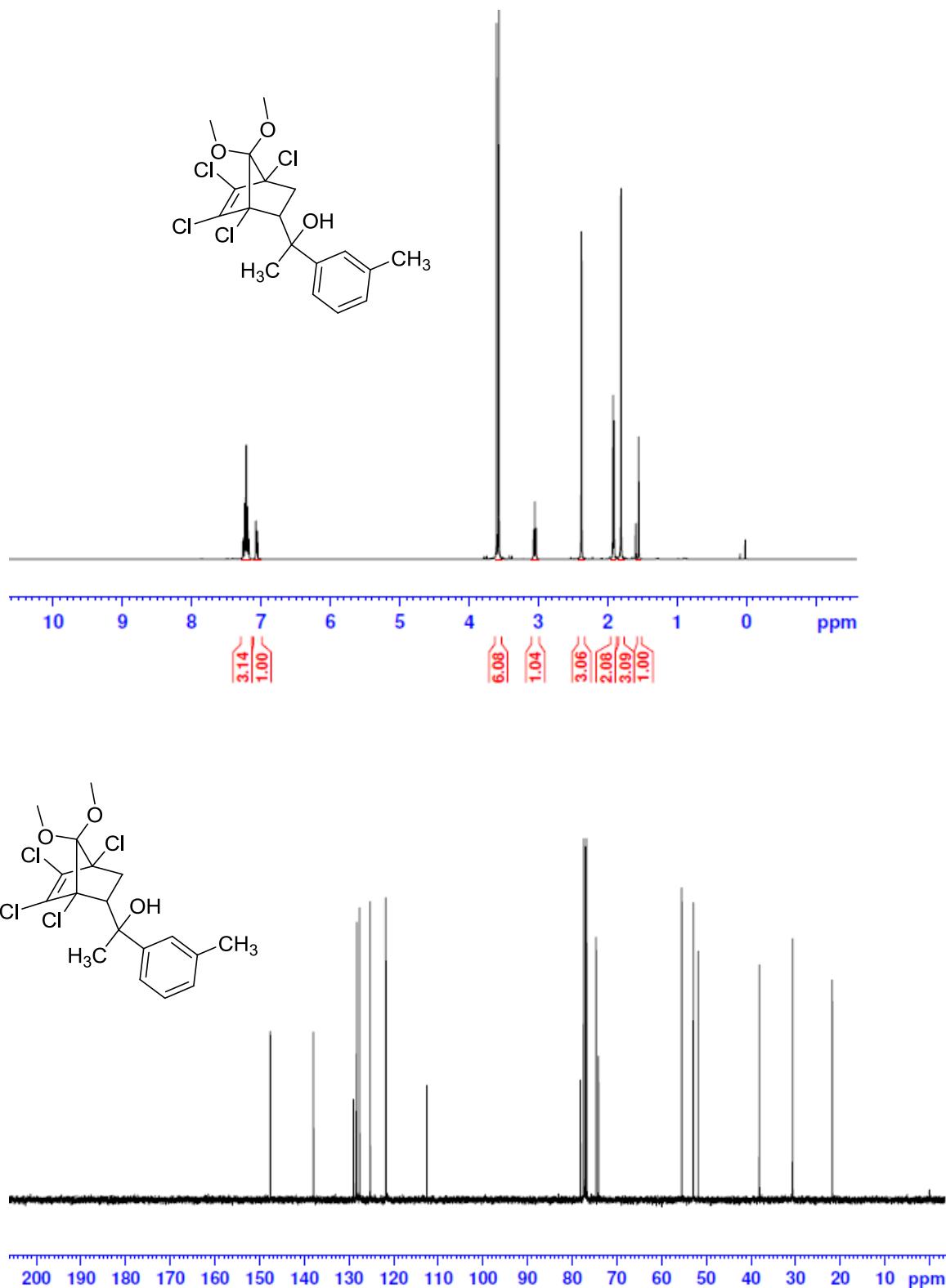
^1H NMR (400 MHz) and ^{13}C NMR (100MHz) spectrum of compound **15j**



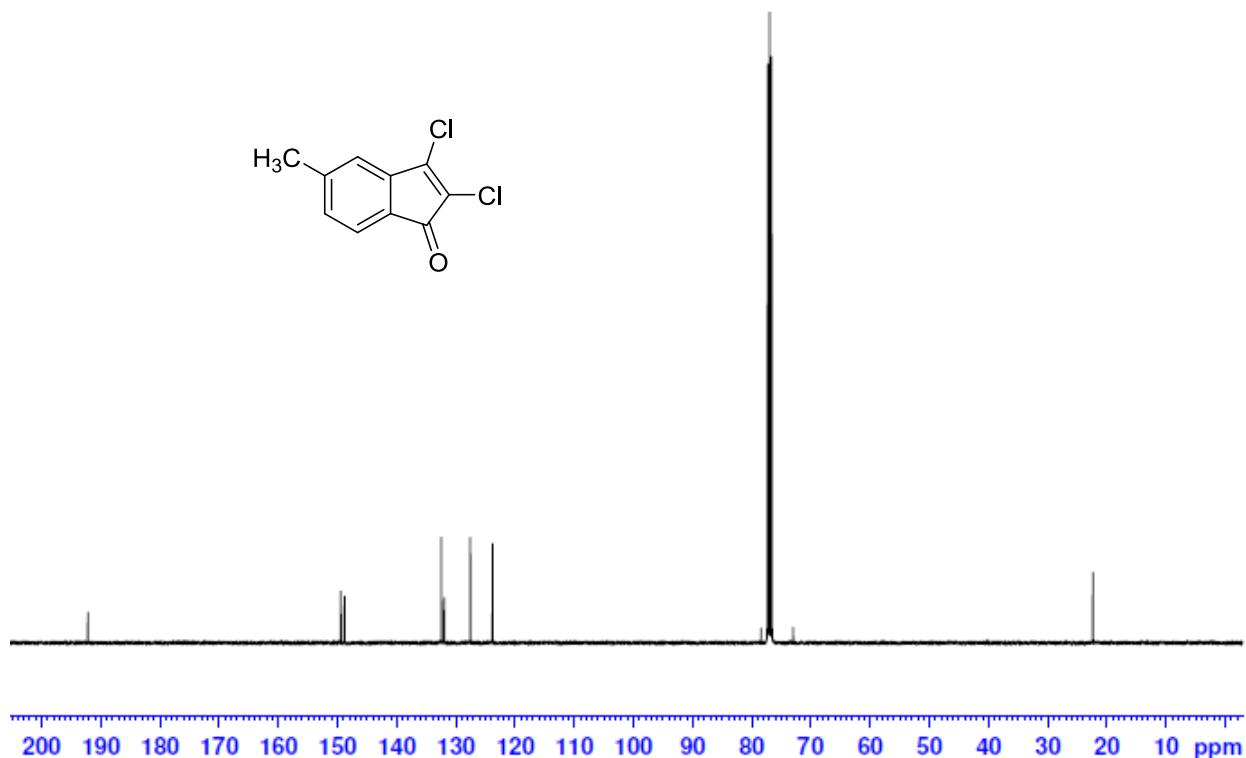
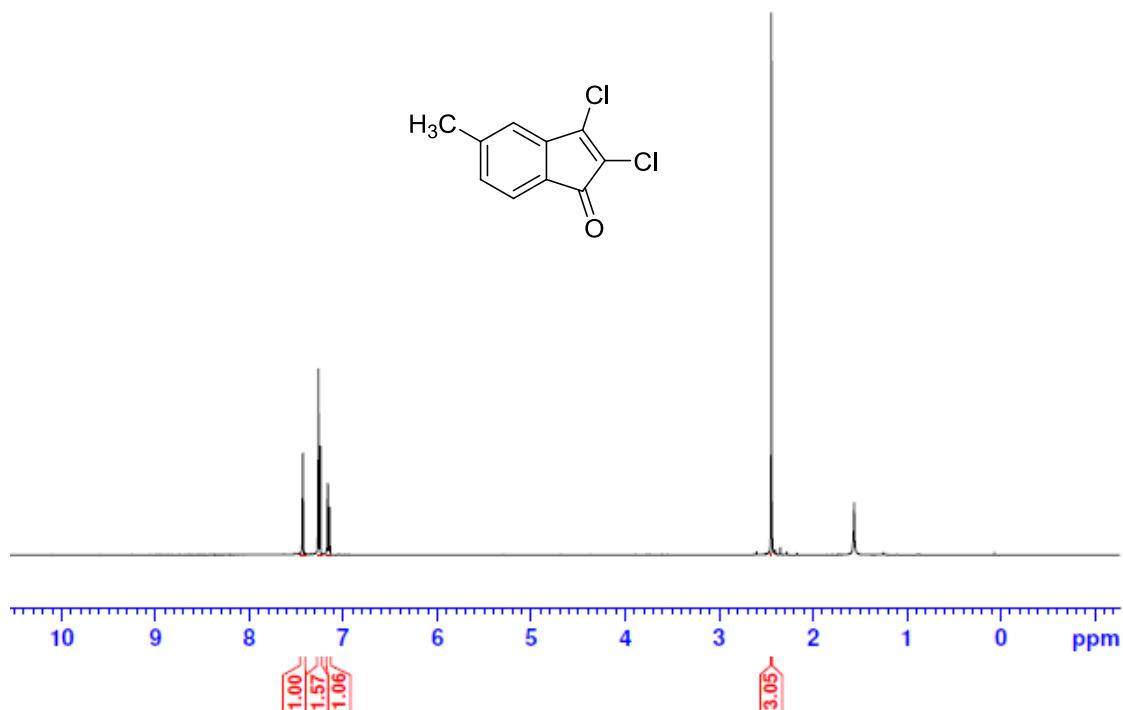
^1H NMR (400 MHz) and ^{13}C NMR (100MHz) spectrum of compound **15k**



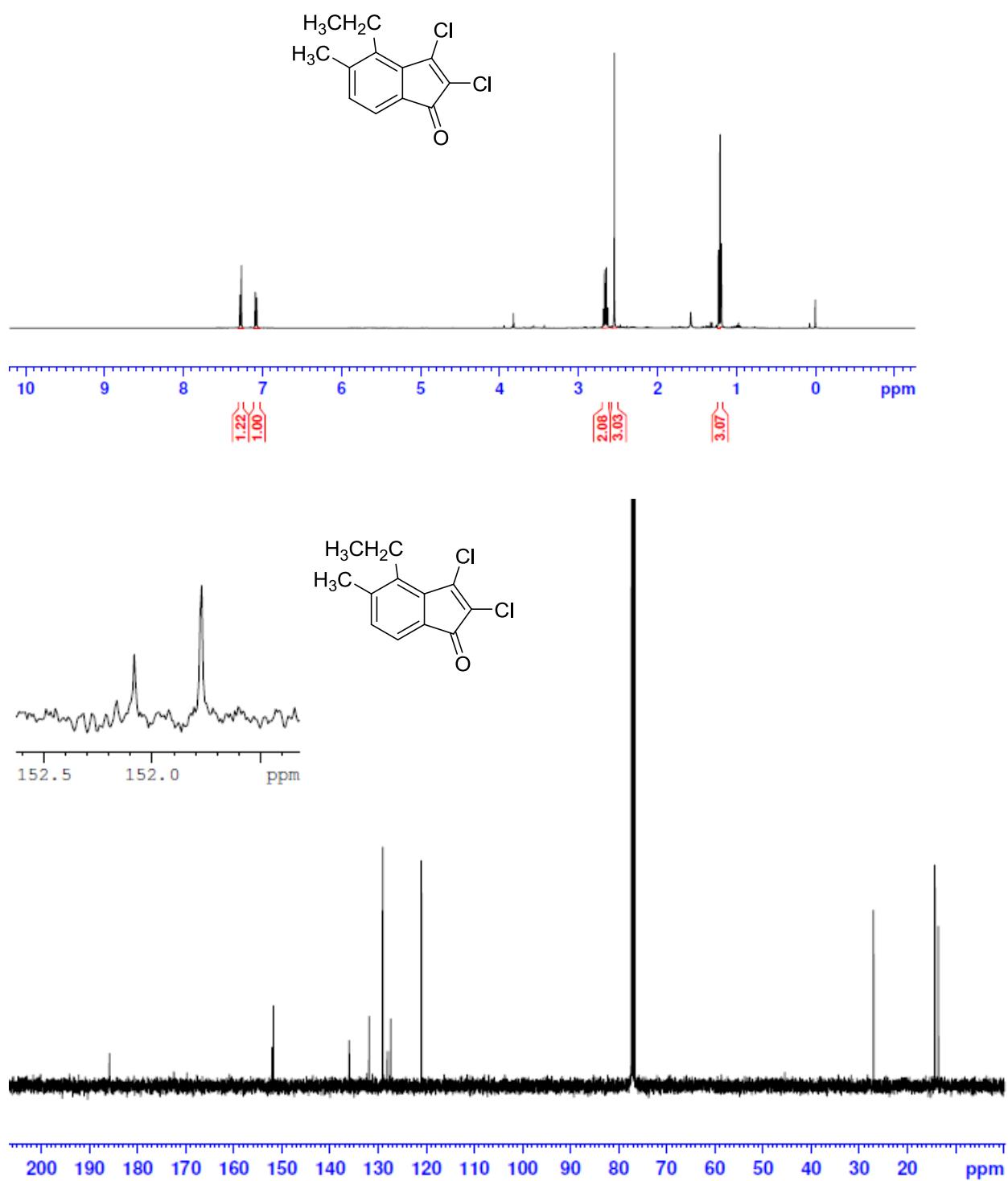
^1H NMR (400 MHz) and ^{13}C NMR (100MHz) spectrum of compound **15l**



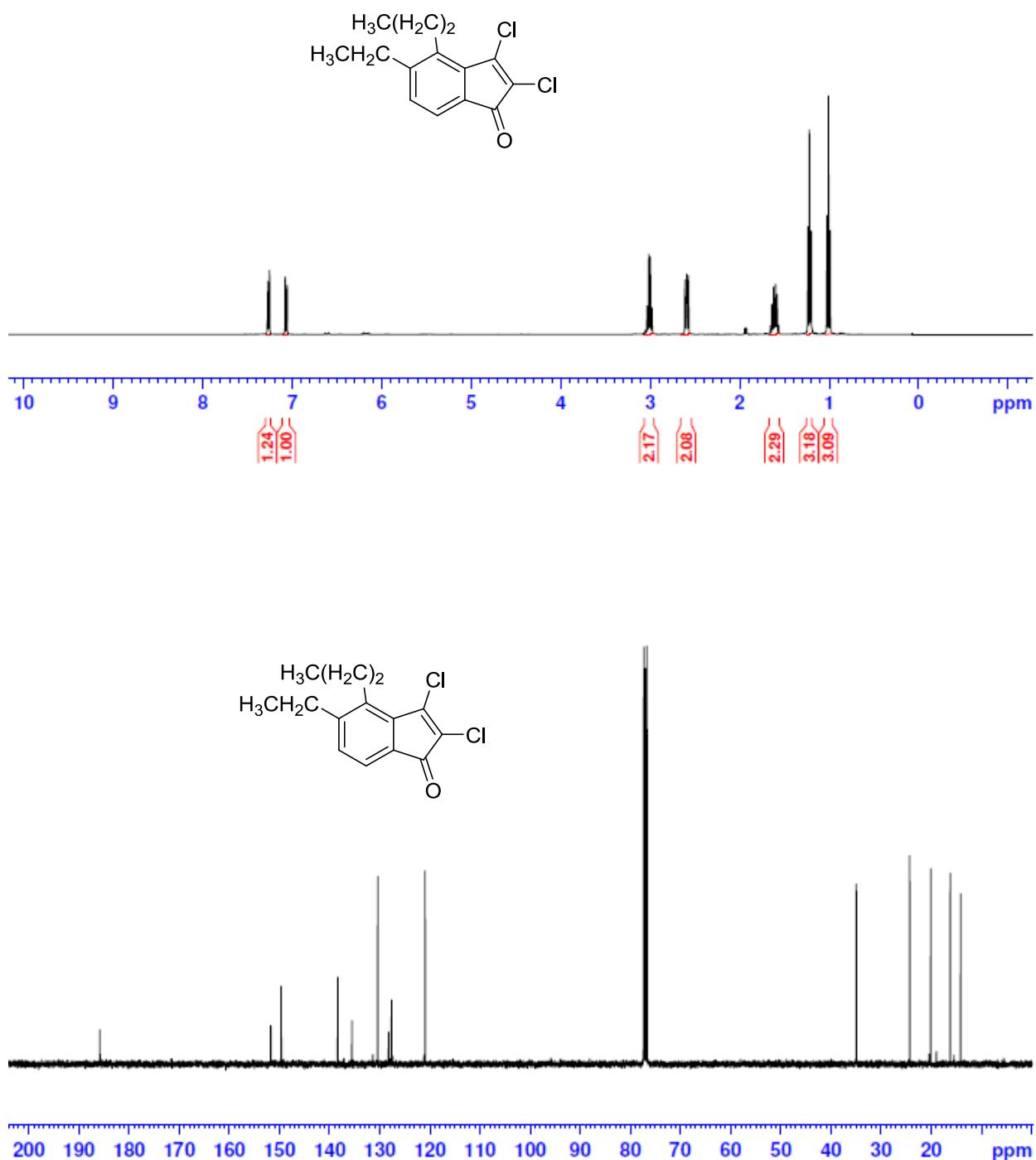
^1H NMR (400 MHz) and ^{13}C NMR (100MHz) spectrum of compound **16a**



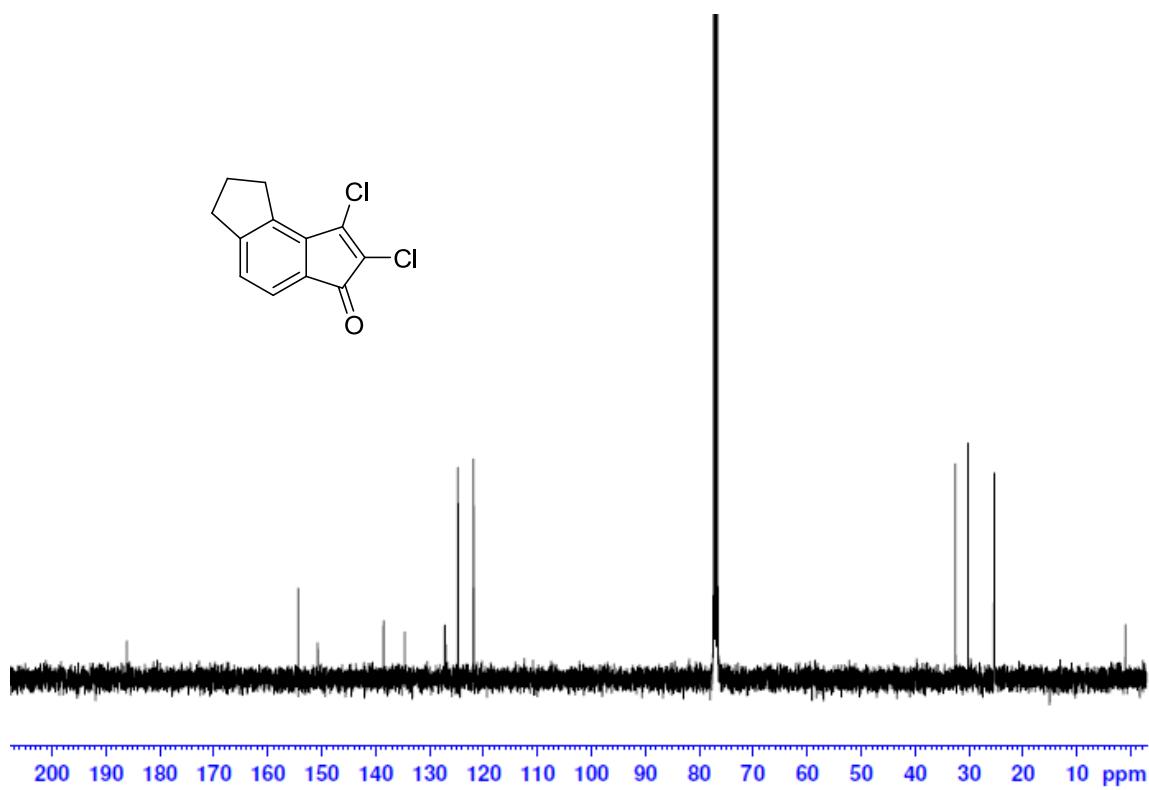
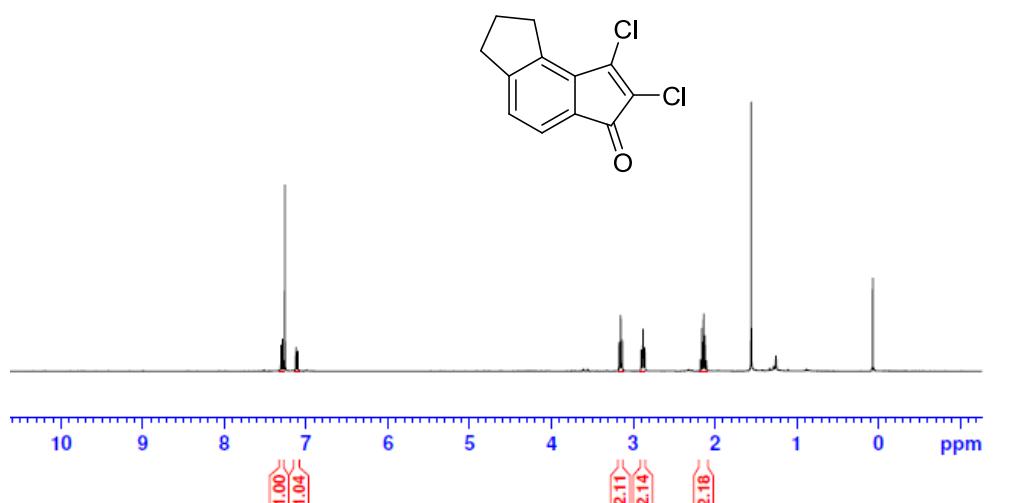
^1H NMR (400 MHz) and ^{13}C NMR (100MHz) spectrum of compound **16b**



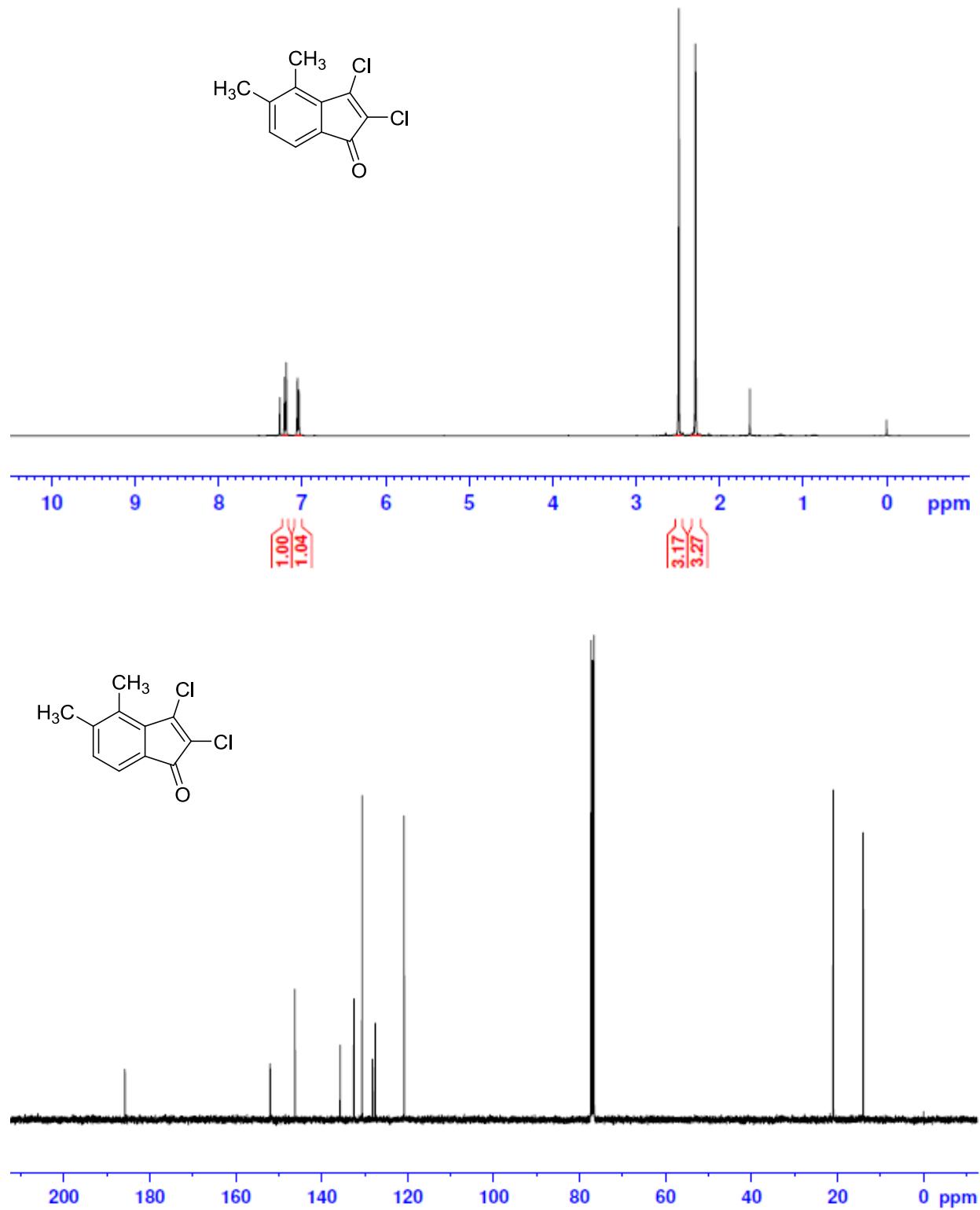
^1H NMR (400 MHz) and ^{13}C NMR (100MHz) spectrum of compound **16c**



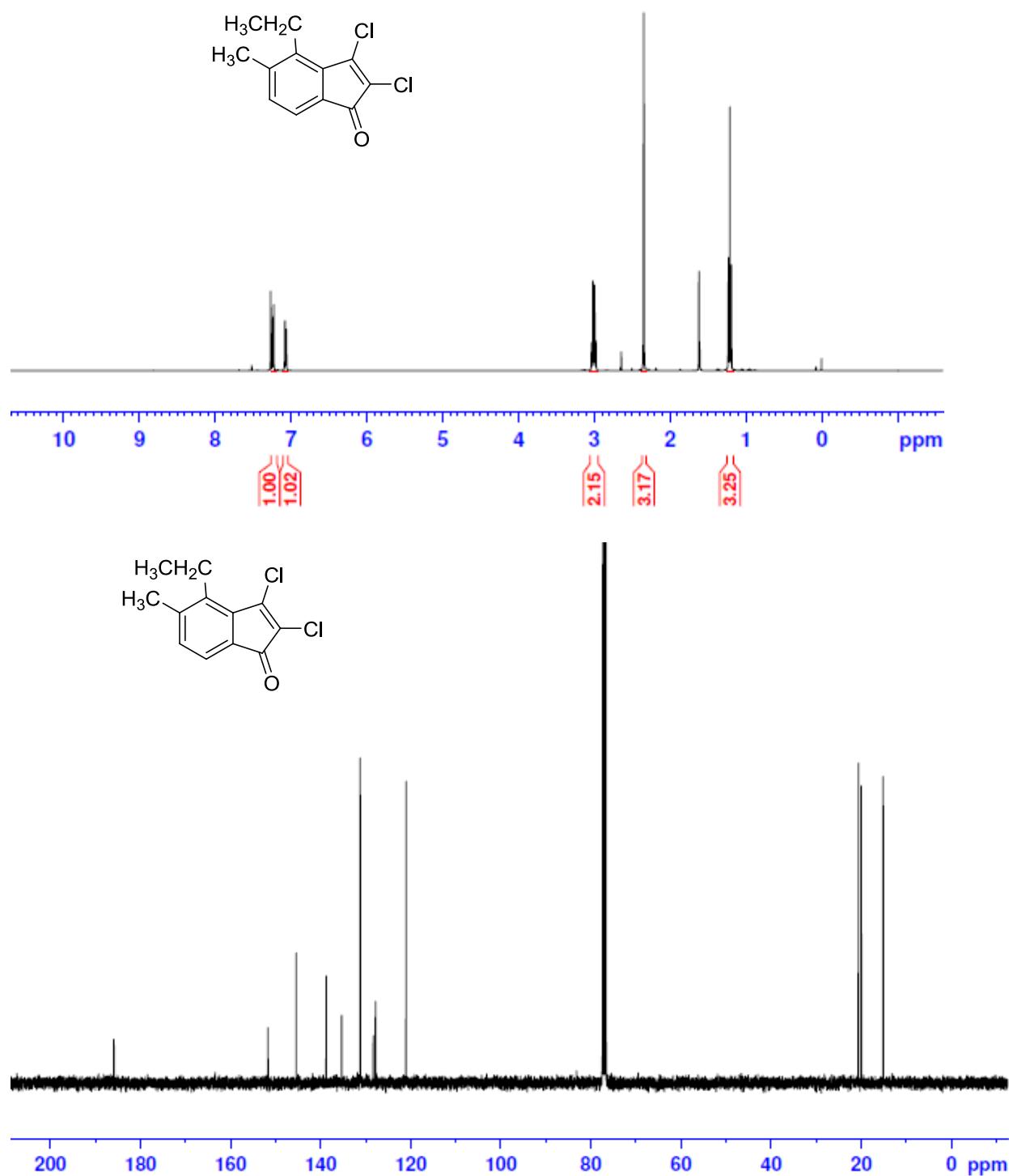
¹H NMR (400 MHz) and ¹³C NMR (100MHz) spectrum of compound **16d**



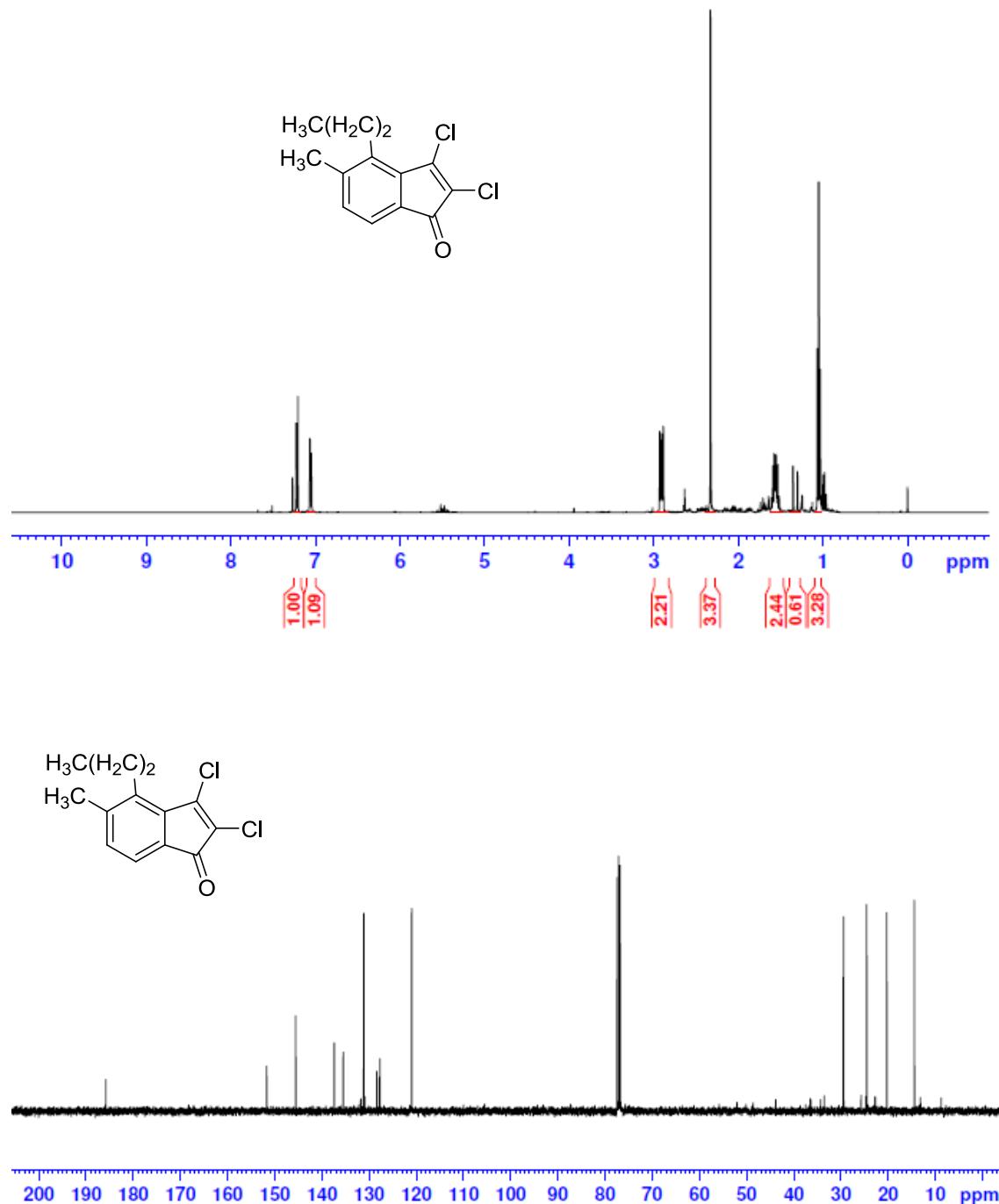
^1H NMR (400 MHz) and ^{13}C NMR (100MHz) spectrum of compound **17a**



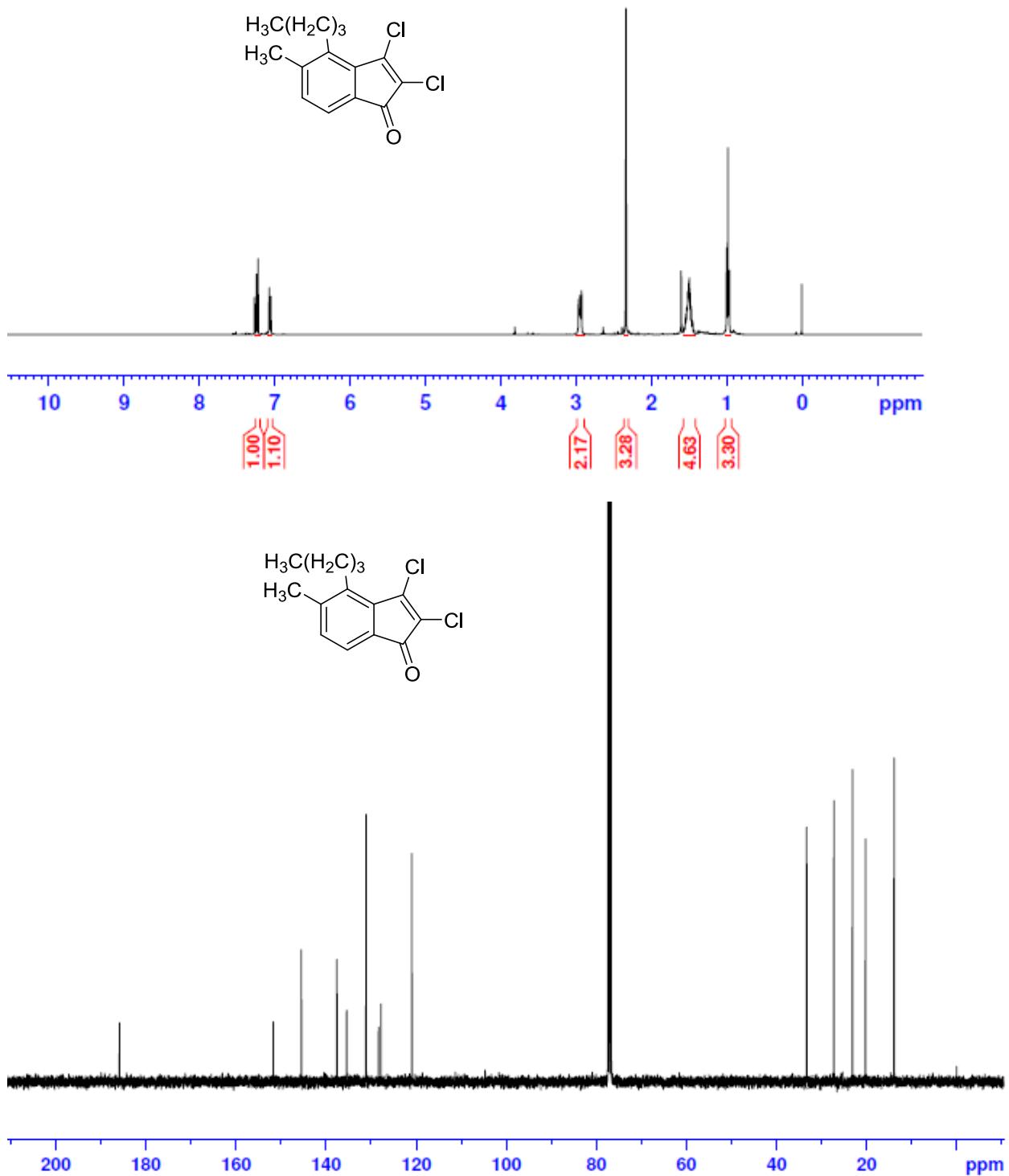
^1H NMR (400 MHz) and ^{13}C NMR (100MHz) spectrum of compound **17b**



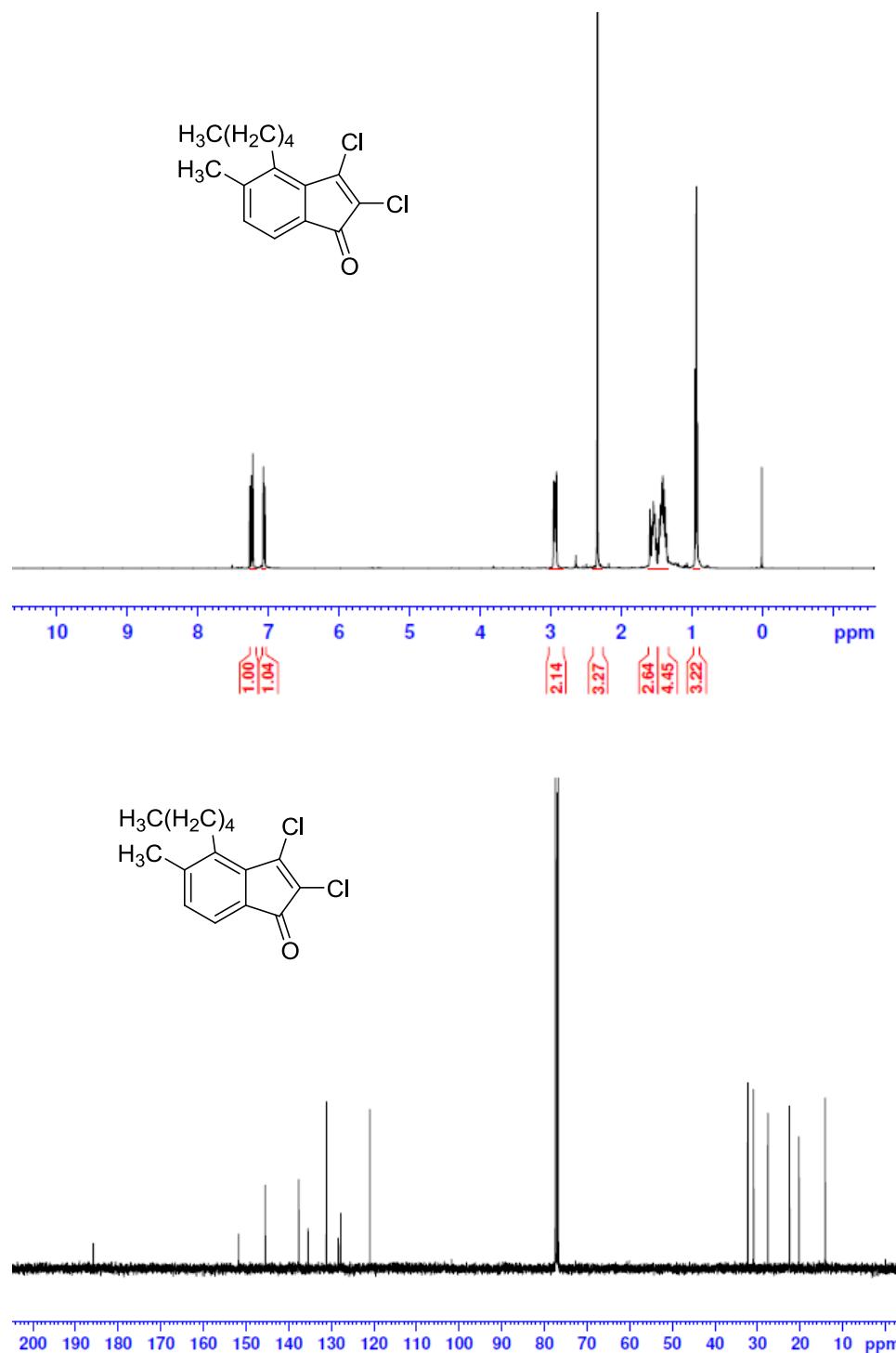
^1H NMR (400 MHz) and ^{13}C NMR (100MHz) spectrum of compound **17c**



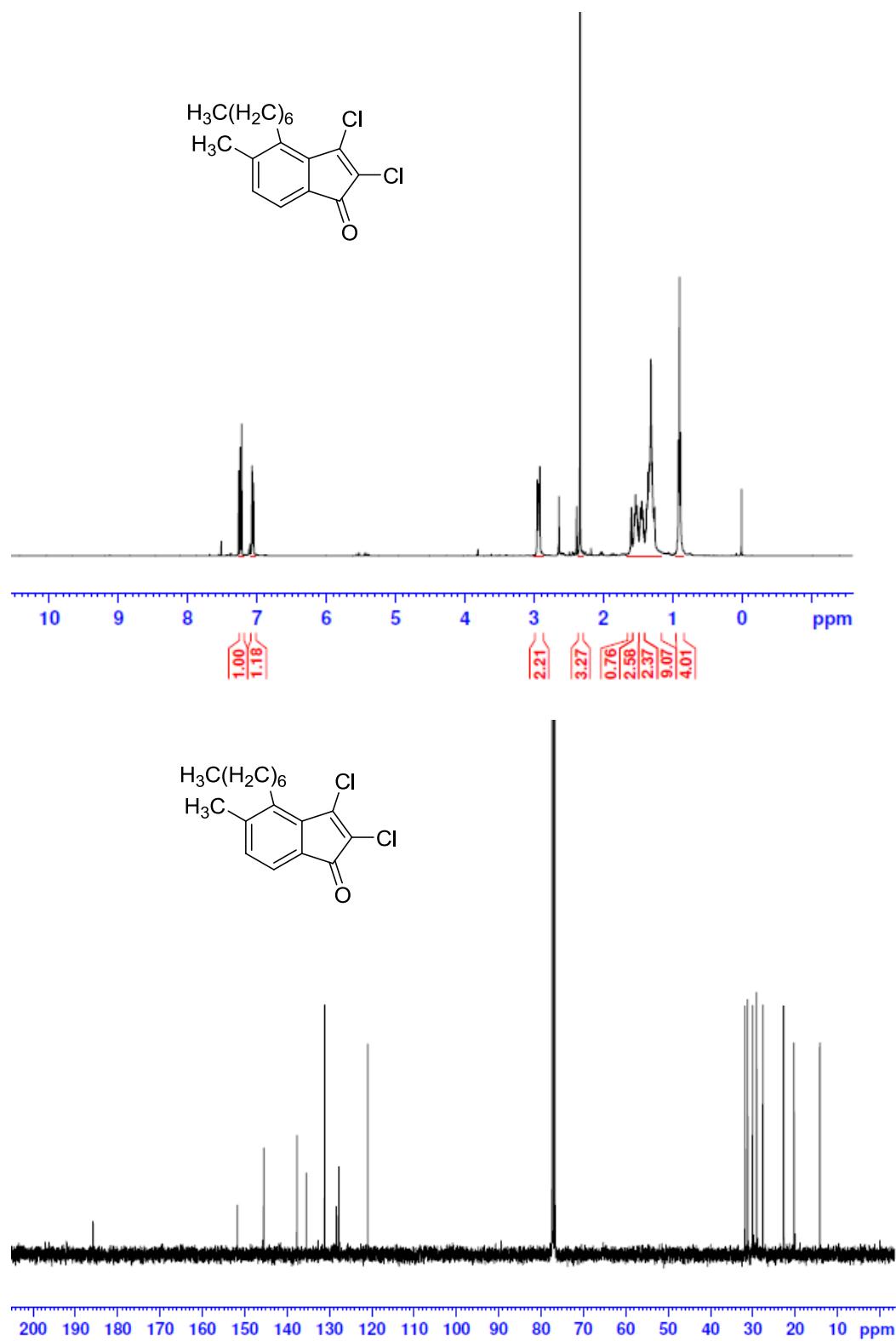
^1H NMR (400 MHz) and ^{13}C NMR (100MHz) spectrum of compound **17d**



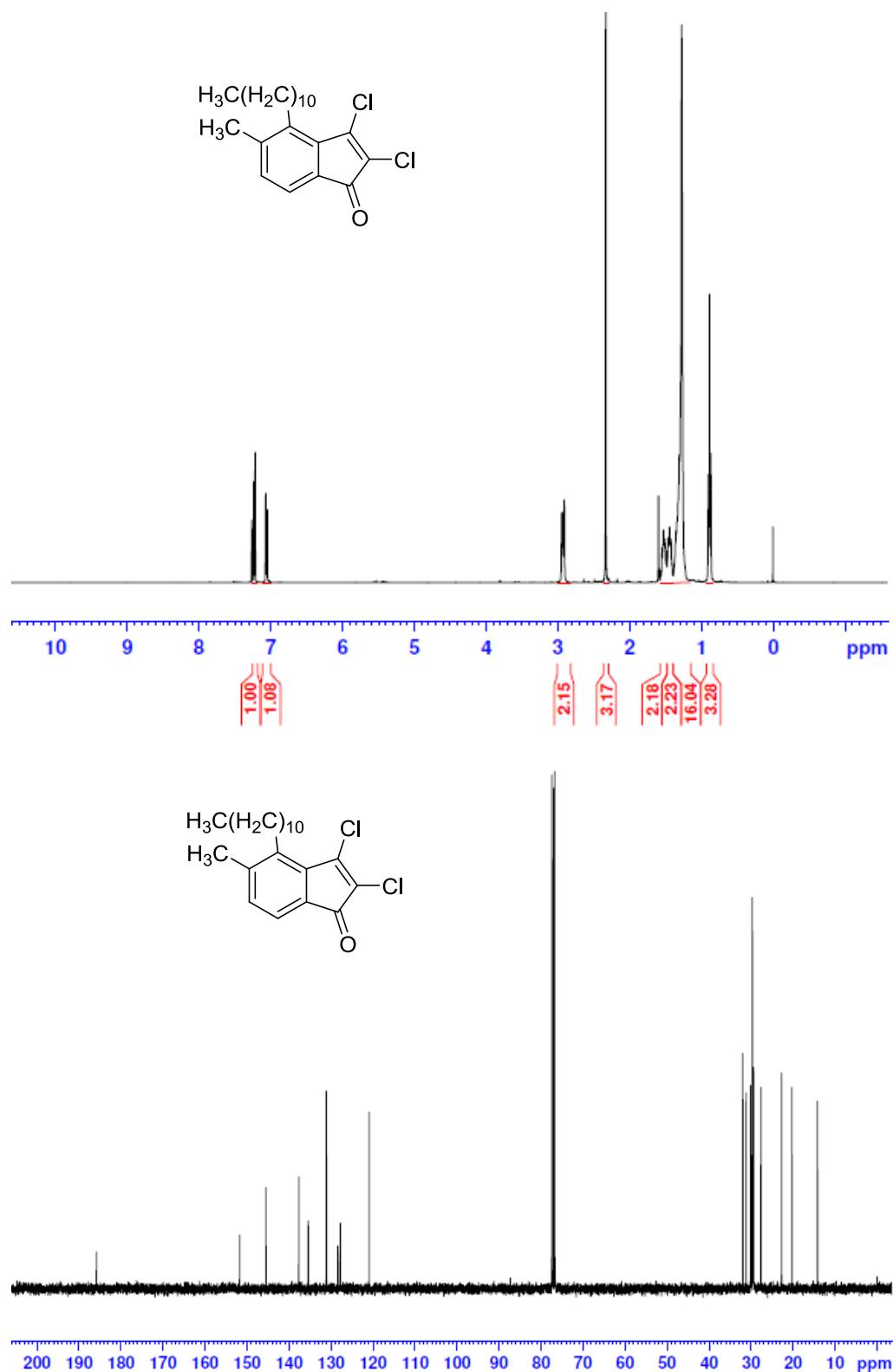
^1H NMR (400 MHz) and ^{13}C NMR (100MHz) spectrum of compound **17e**



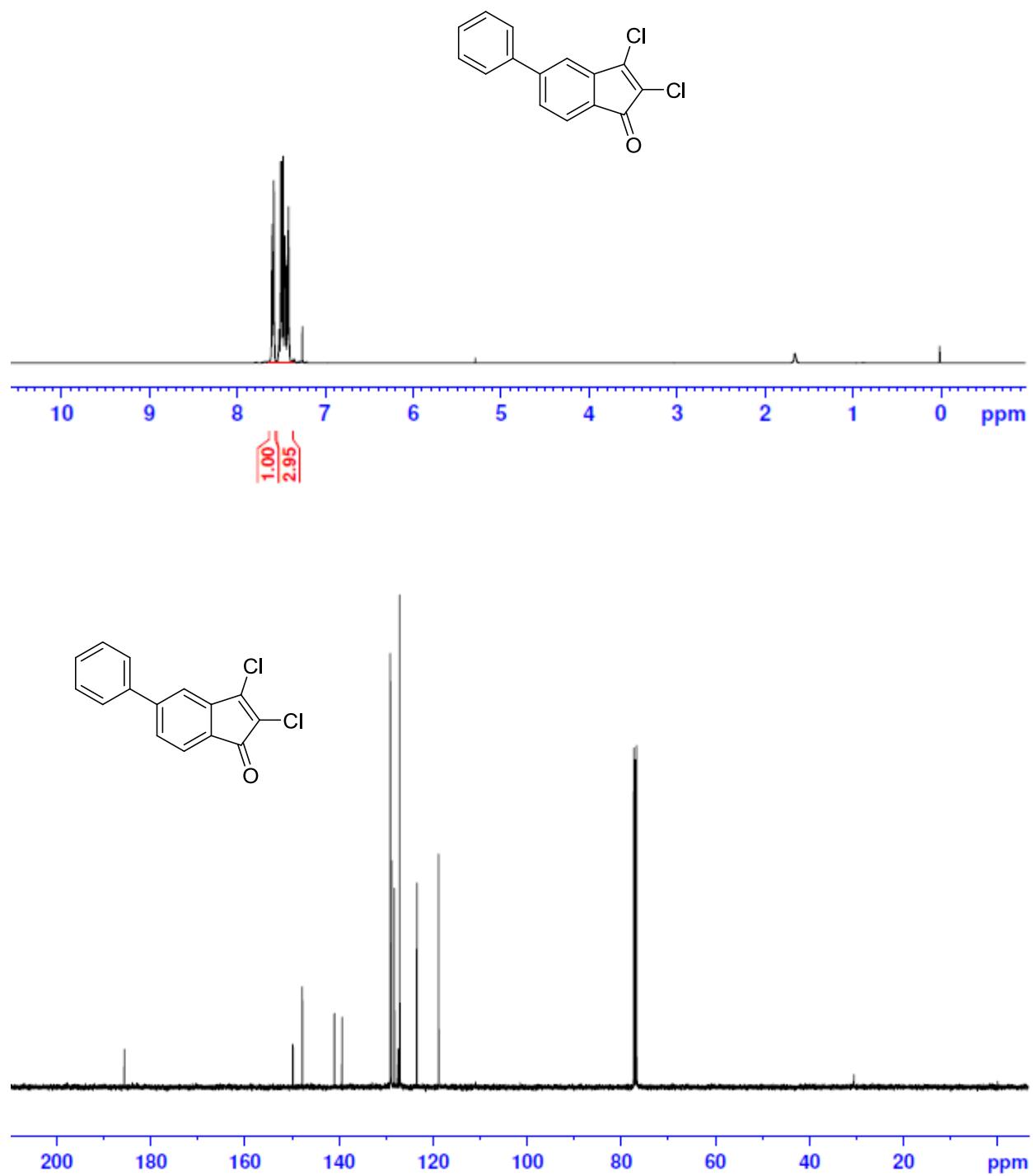
^1H NMR (400 MHz) and ^{13}C NMR (100MHz) spectrum of compound **17f**



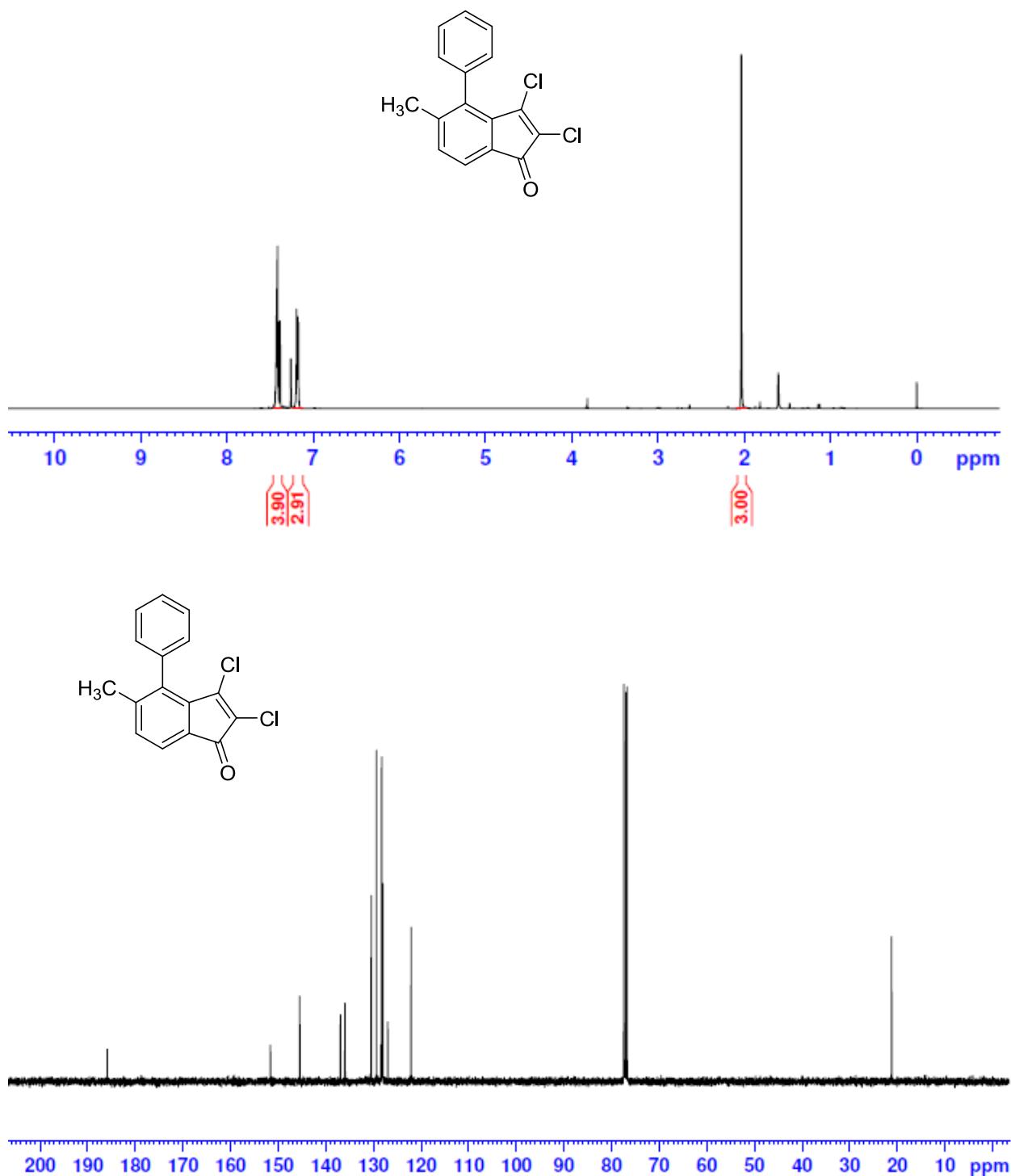
^1H NMR (400 MHz) and ^{13}C NMR (100MHz) spectrum of compound **17g**



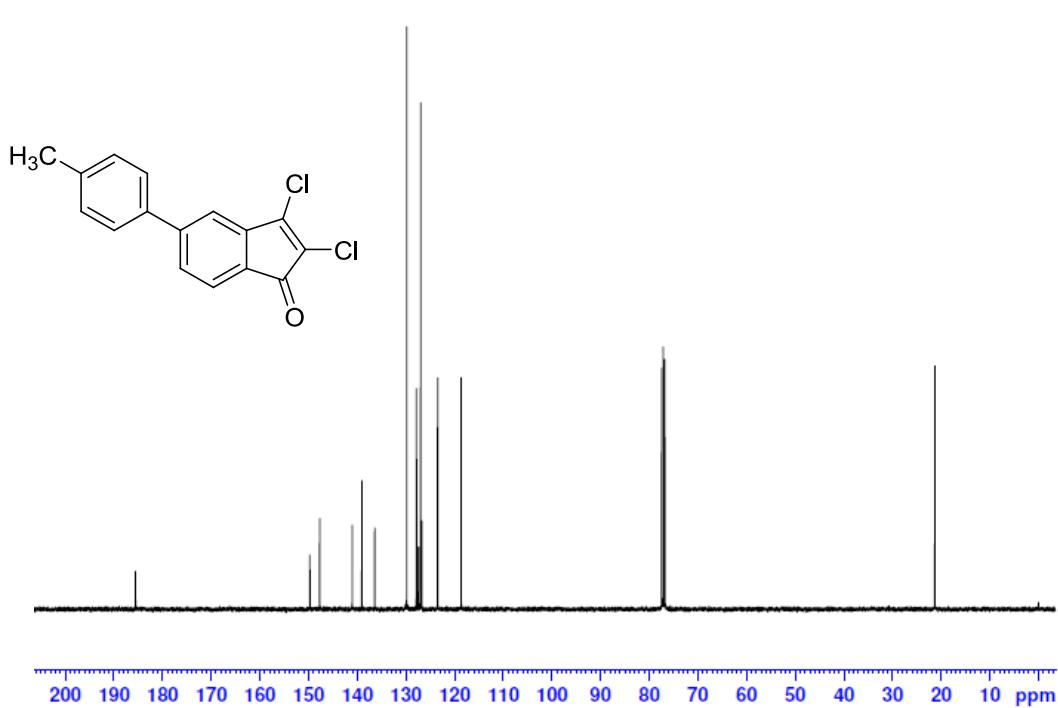
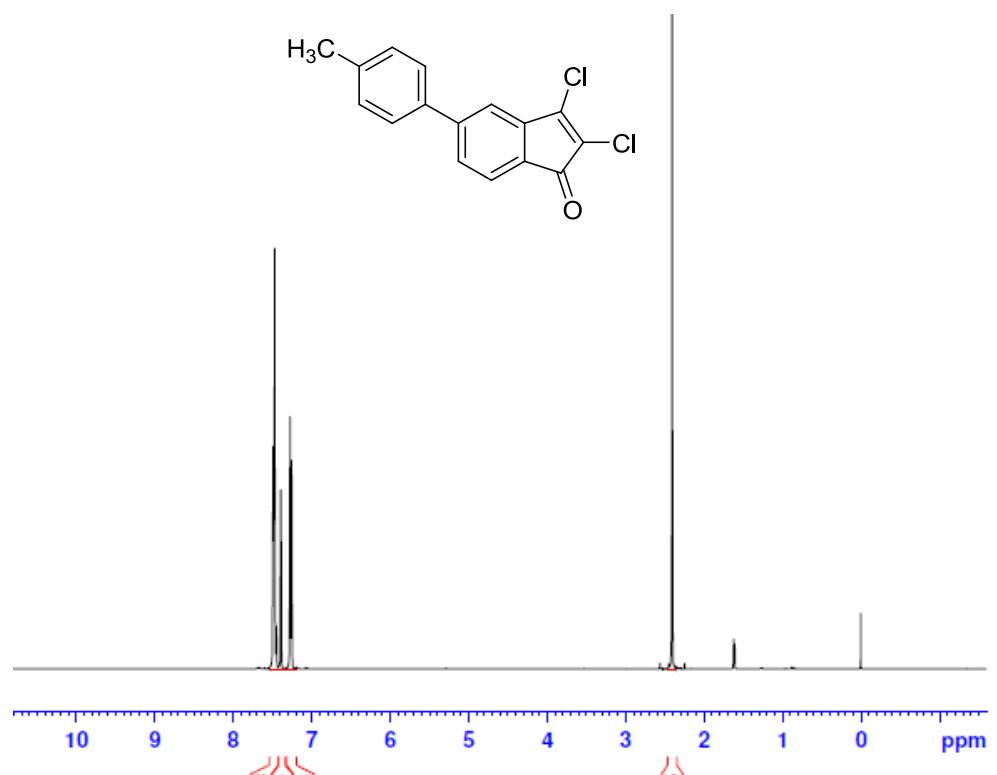
^1H NMR (400 MHz) and ^{13}C NMR (100MHz) spectrum of compound **17h**



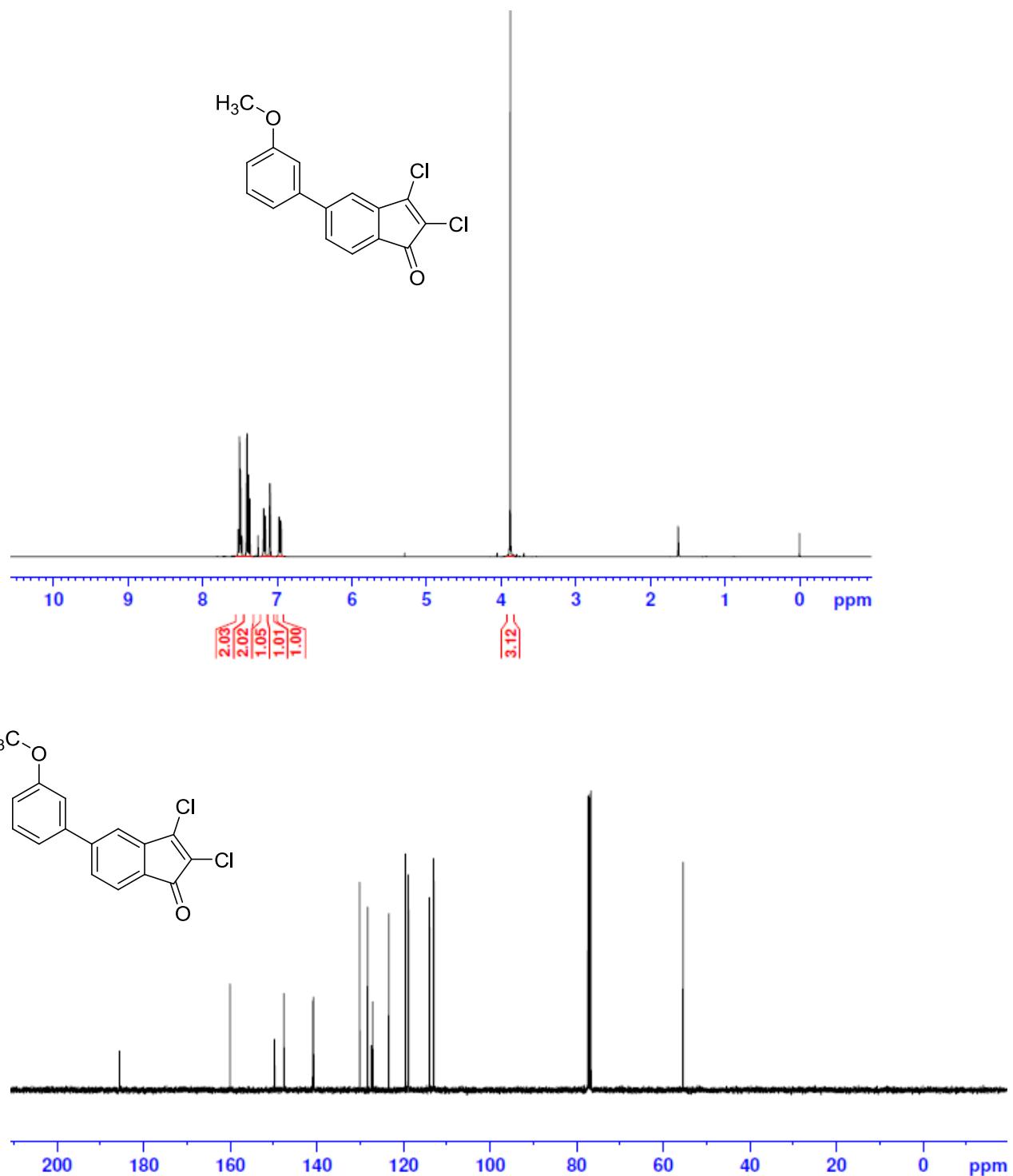
^1H NMR (400 MHz) and ^{13}C NMR (100MHz) spectrum of compound **17i**



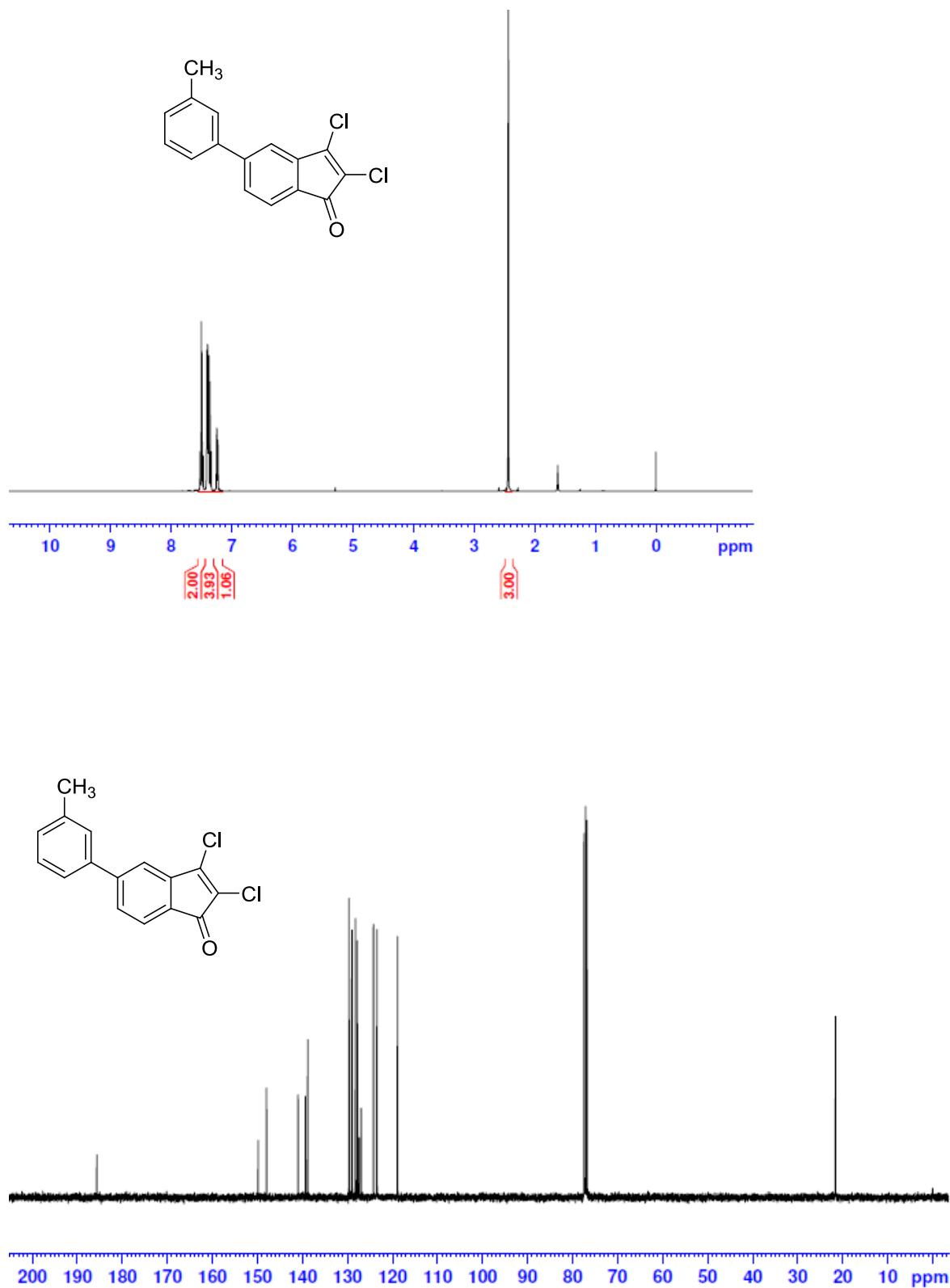
^1H NMR (400 MHz) and ^{13}C NMR (100MHz) spectrum of compound **17j**



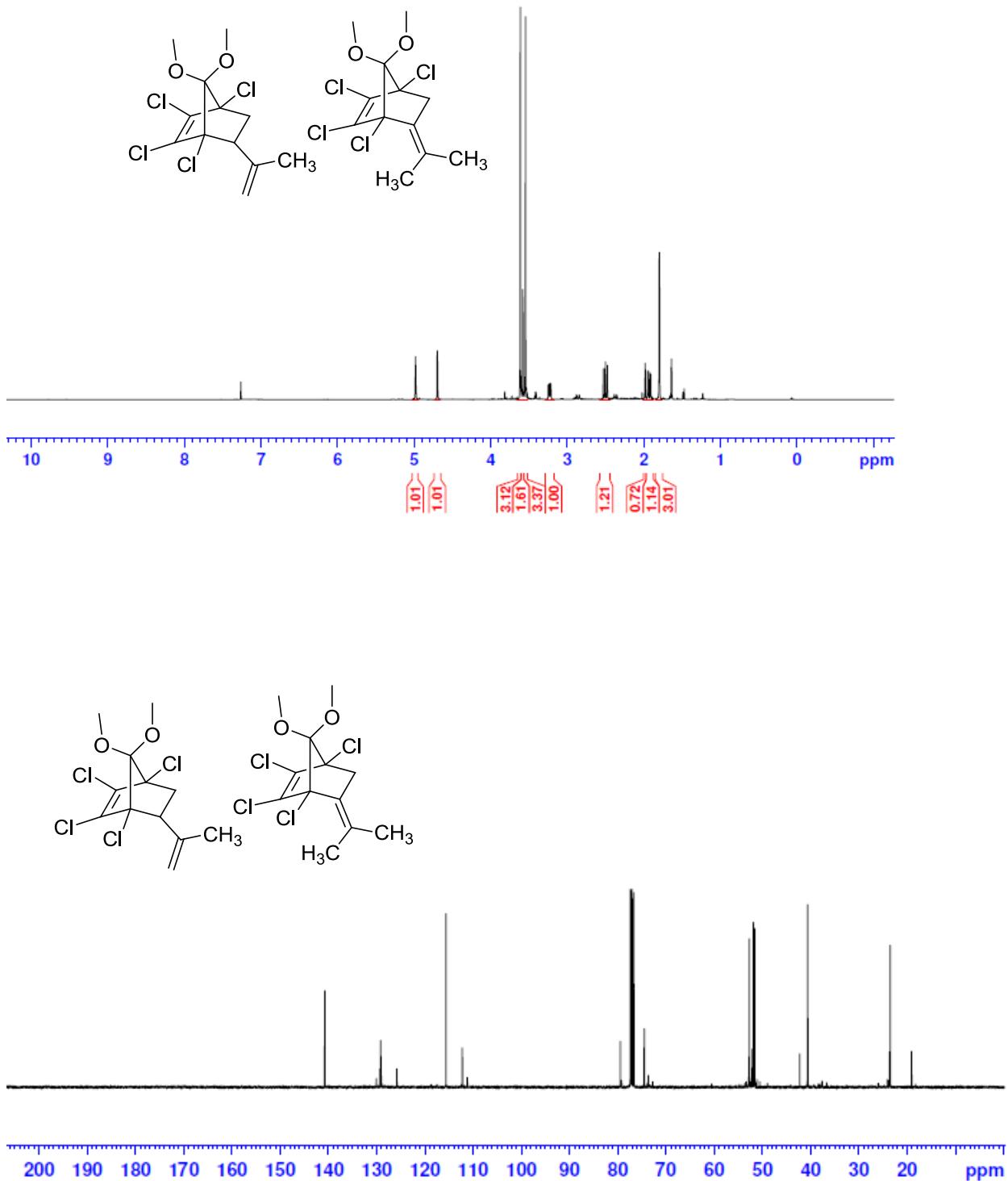
^1H NMR (400 MHz) and ^{13}C NMR (100MHz) spectrum of compound **17k**



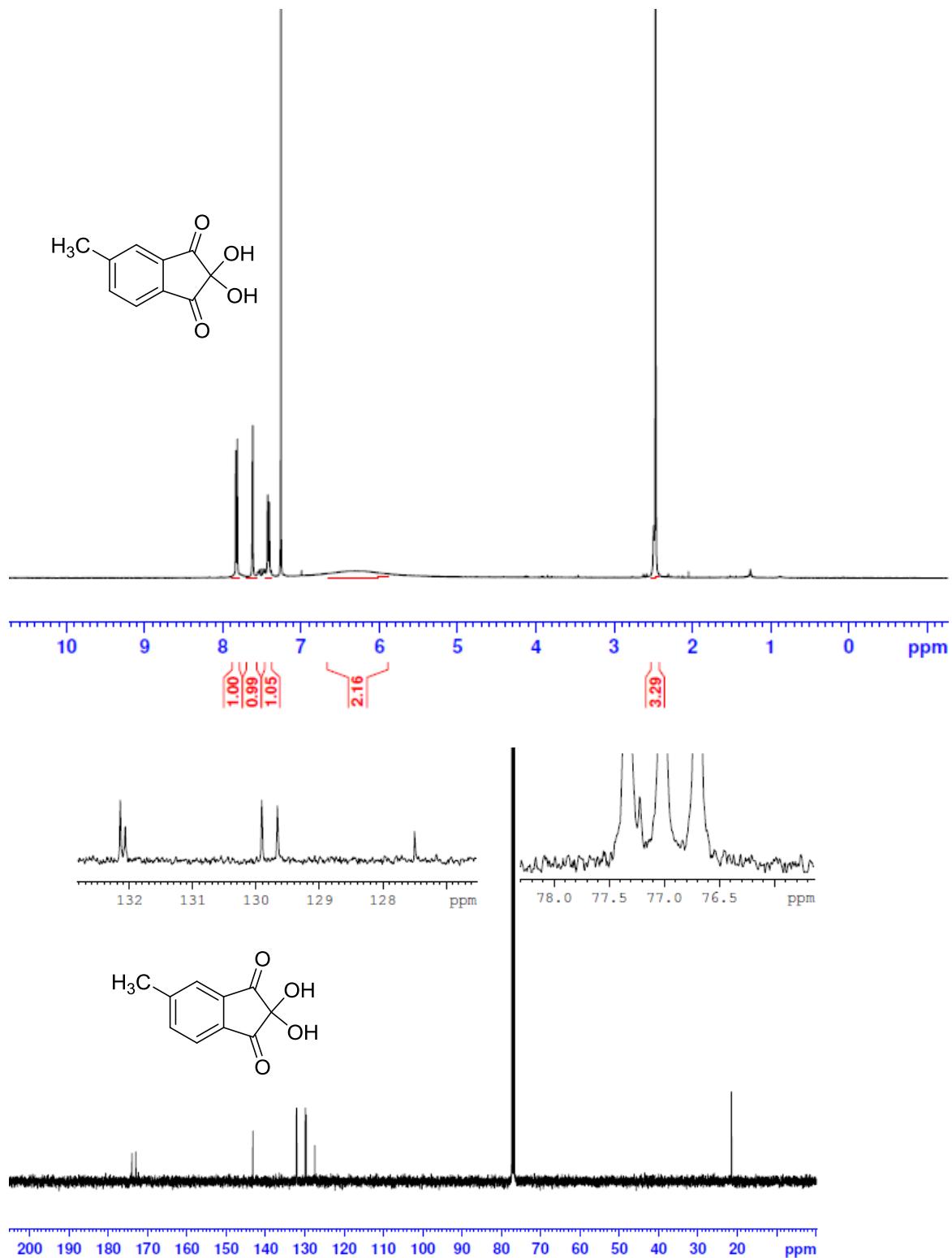
^1H NMR (400 MHz) and ^{13}C NMR (100MHz) spectrum of compound **17l**



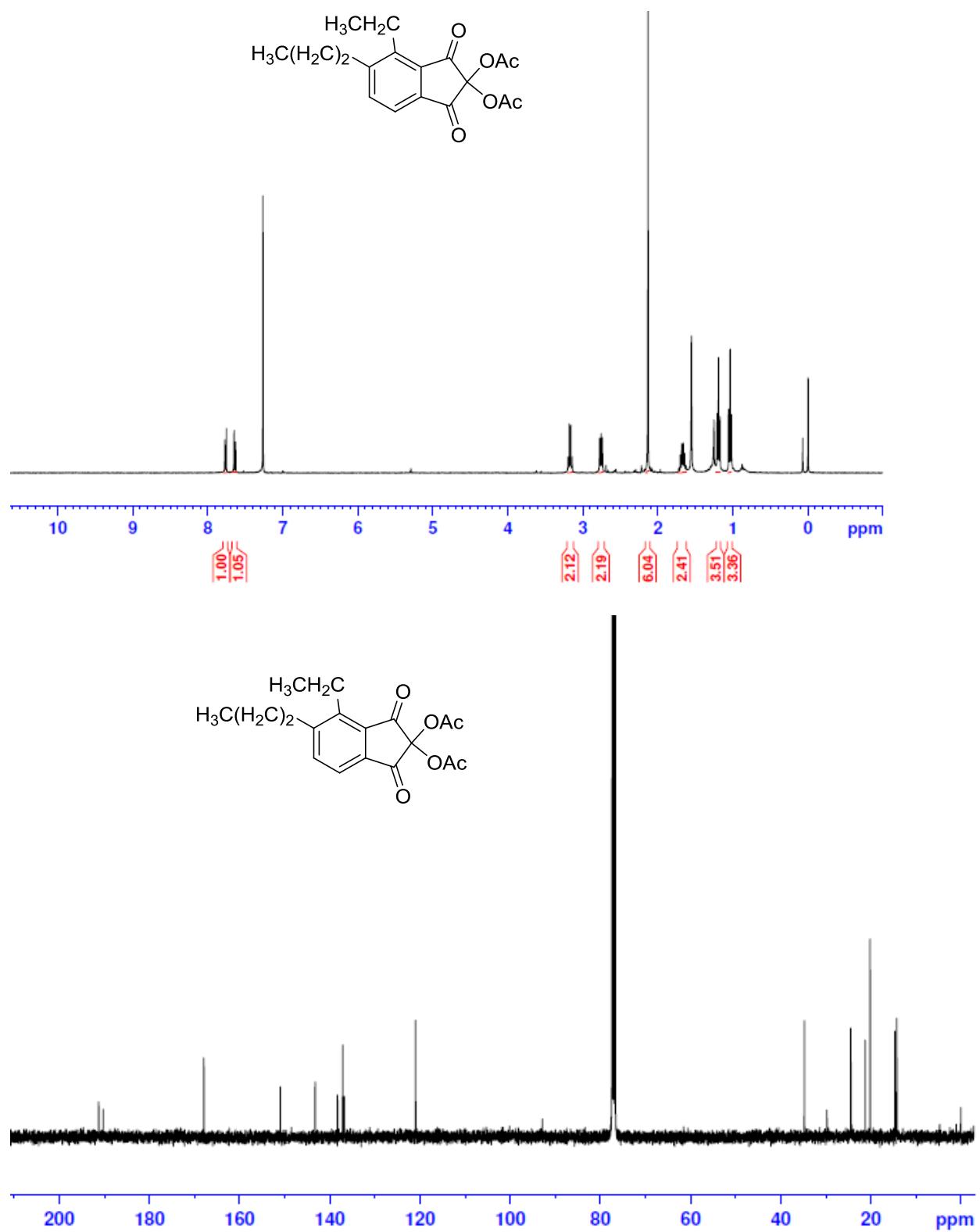
^1H NMR (400 MHz) and ^{13}C NMR (100MHz) spectrum of compound **18a**, **18b**



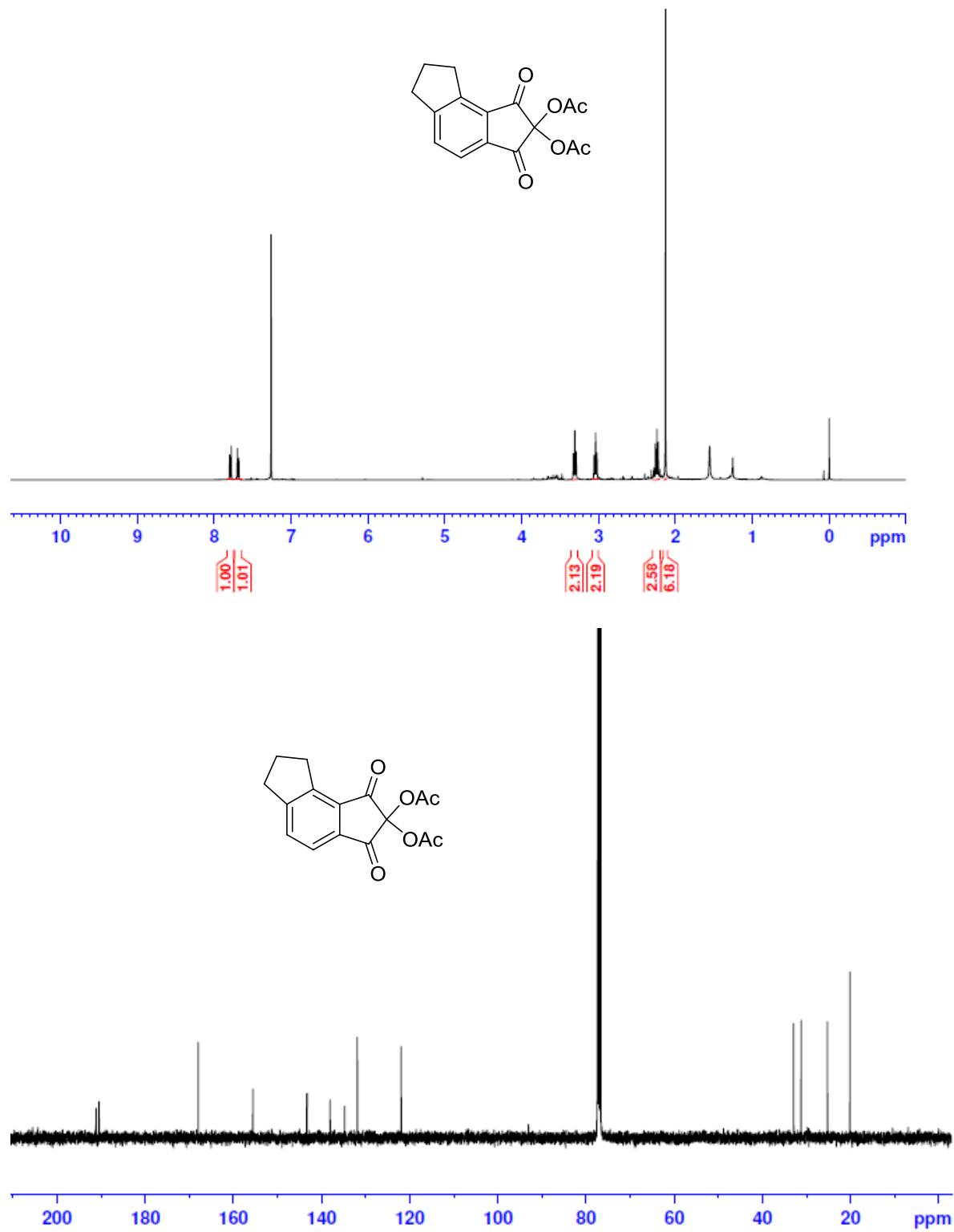
^1H NMR (400 MHz) and ^{13}C NMR (100MHz) spectrum of compound **19**



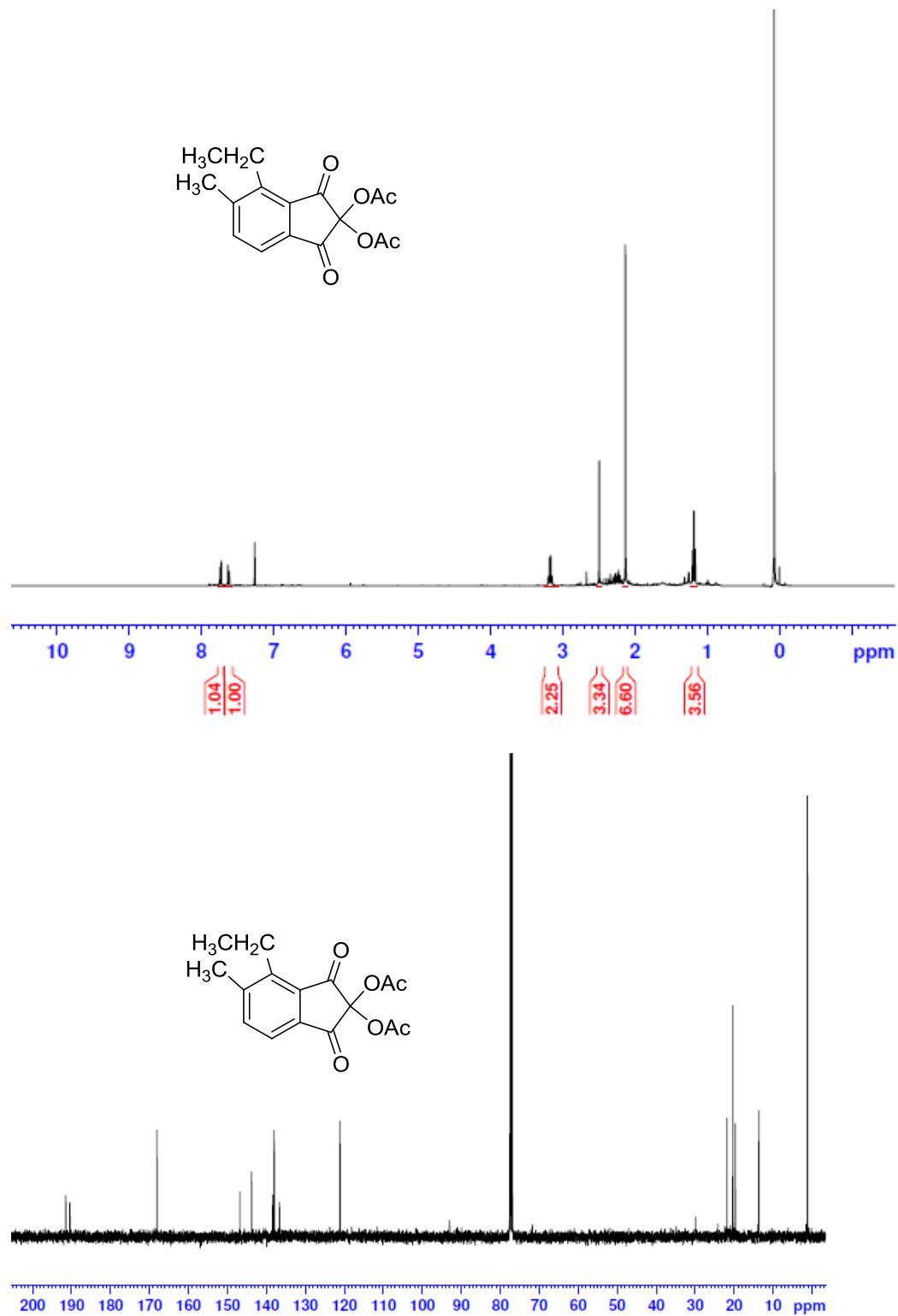
^1H NMR (400 MHz) and ^{13}C NMR (100MHz) spectrum of compound **20a**



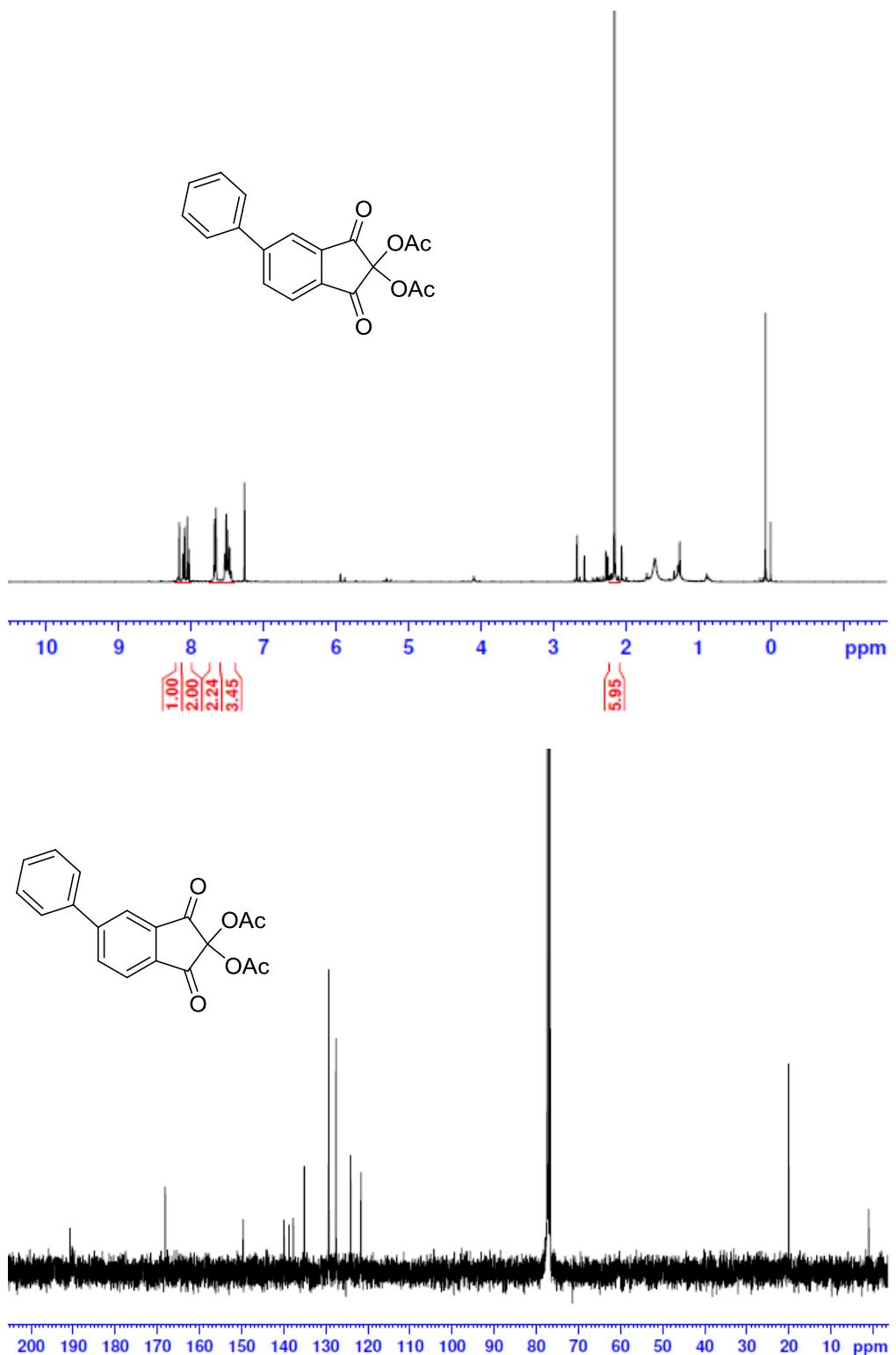
¹H NMR (400 MHz) and ¹³C NMR (100MHz) spectrum of compound **20b**



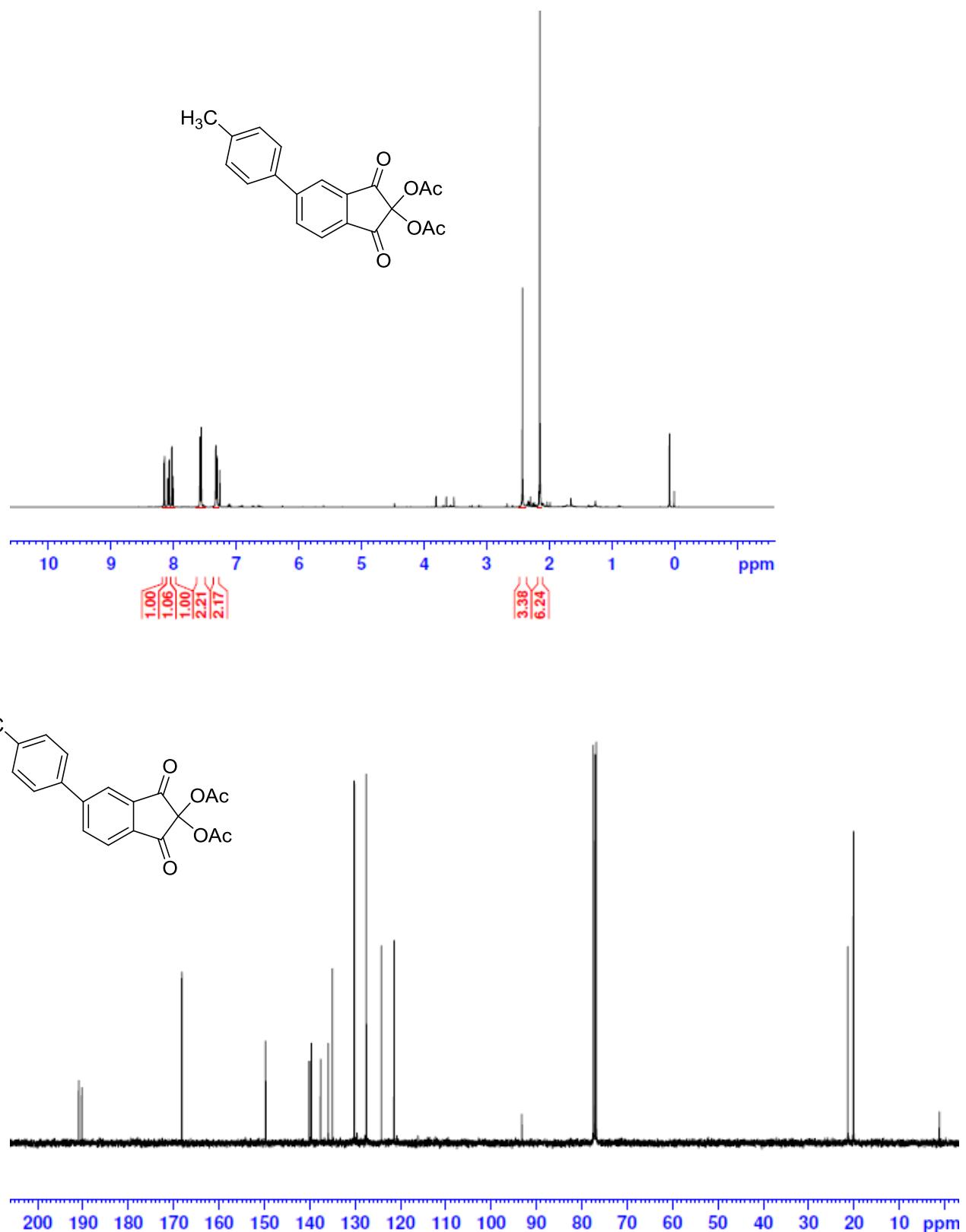
^1H NMR (400 MHz) and ^{13}C NMR (100MHz) spectrum of compound **20c**



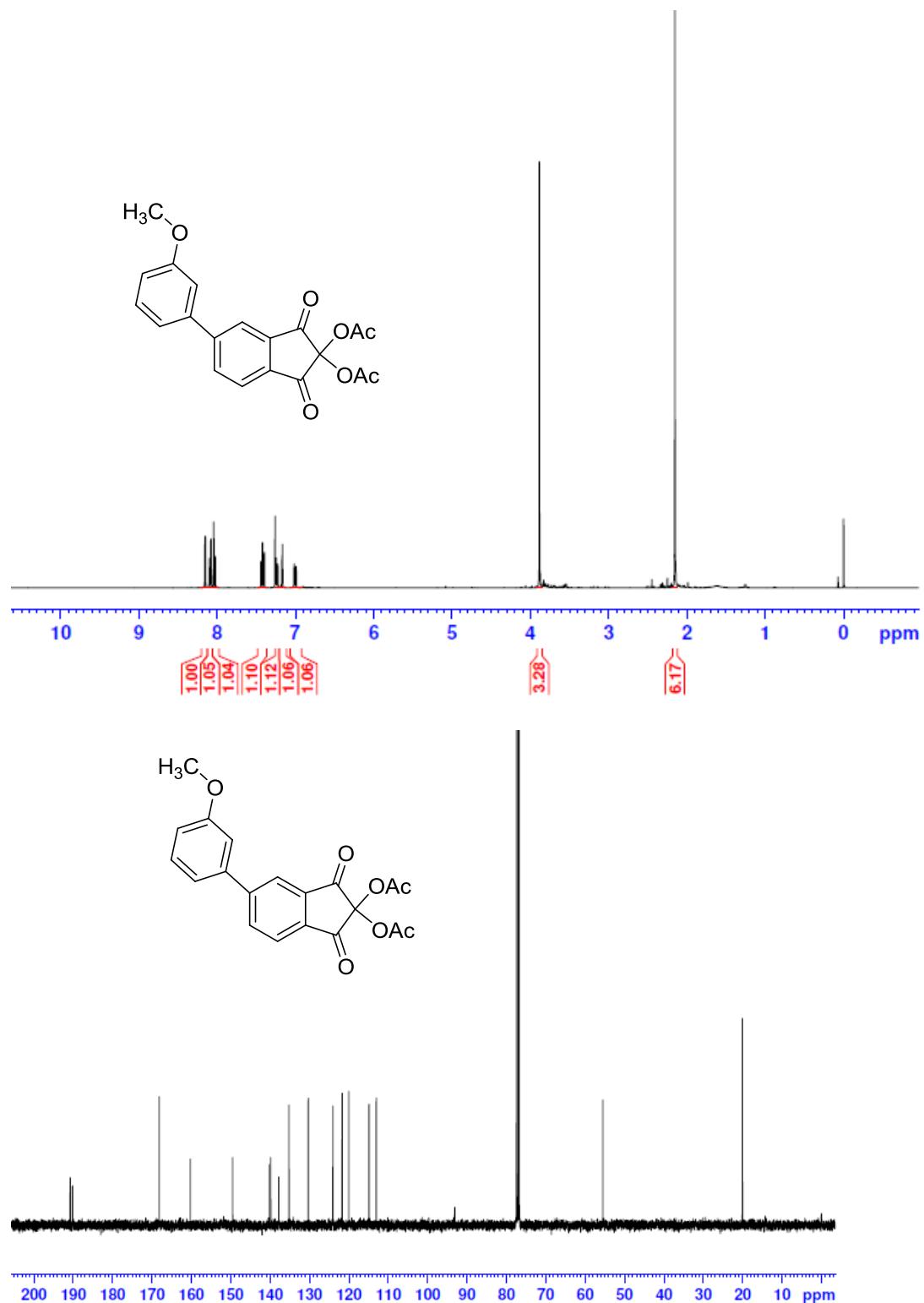
¹H NMR (400 MHz) and ¹³C NMR (100MHz) spectrum of compound **20d**



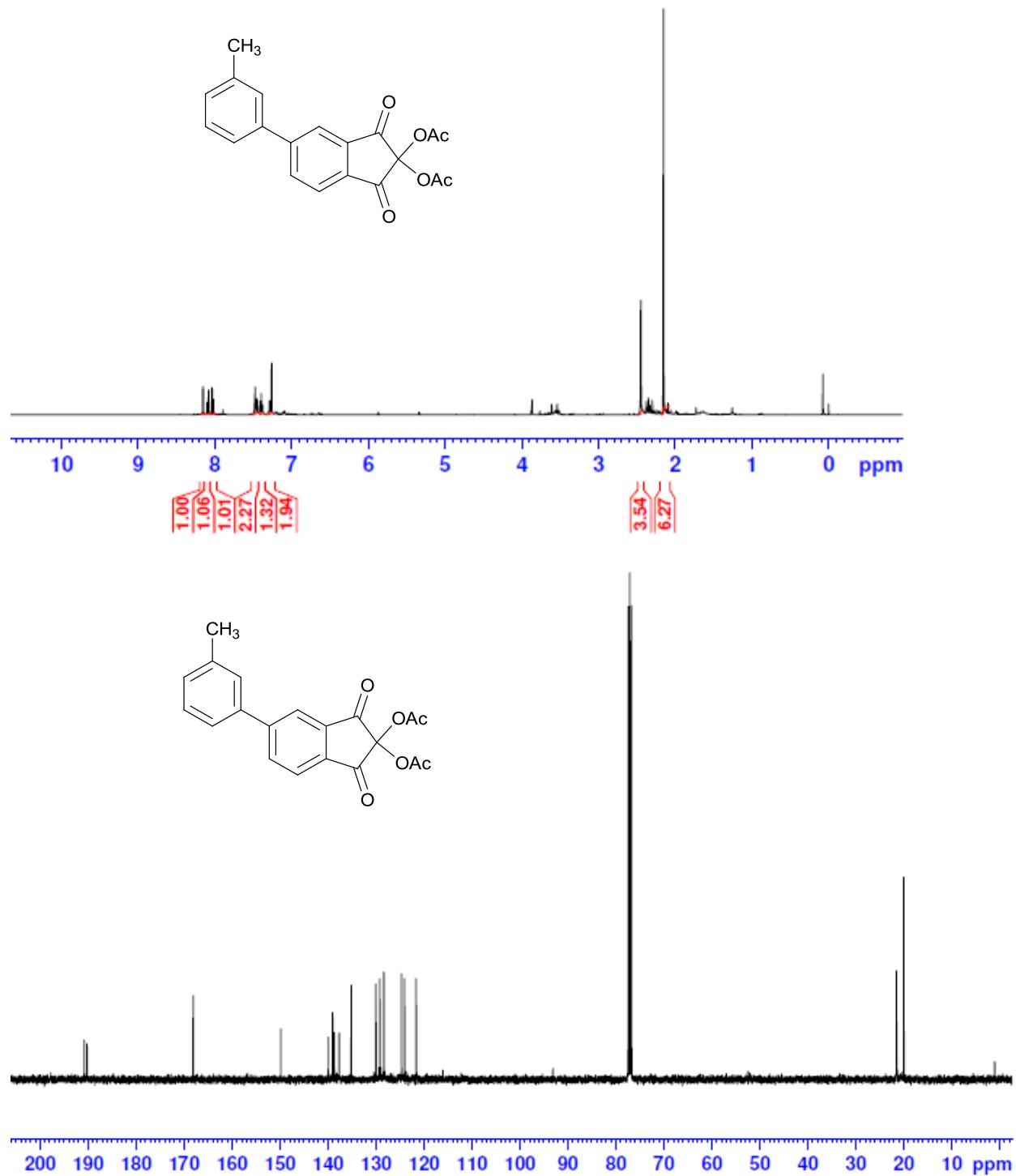
¹H NMR (400 MHz) and ¹³C NMR (100MHz) spectrum of compound **20e**



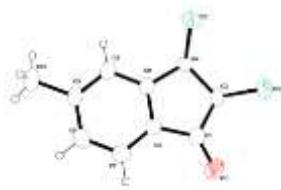
^1H NMR (400 MHz) and ^{13}C NMR (100MHz) spectrum of compound **20f**



^1H NMR (400 MHz) and ^{13}C NMR (100MHz) spectrum of compound **20g**



2) X-ray Crystal structure and crystal data for compound 16a (CCDC No: 1015482).



Empirical formula	C ₂₀ H ₁₂ Cl ₄ O ₂
Formula weight	426.10
Temperature/K	293(2) K
Crystal system	Monoclinic
Space group	C 2/c
a/Å	18.378(3)
b/Å	8.8145(3)
c/Å	14.806(2)
α/°	90.00
β/°	130.00
γ/°	90.00
Volume/Å ³	1820.3(9) Å ³
Z	4
ρ _{calc} mg/mm ³	1.555 Mg/m ³
m/mm ⁻¹	6.015
F(000)	864
Crystal size/mm ³	0.16 x 0.14 x 0.12 mm
2Θ range for data collection	5.874 to 70.518 deg°
Index ranges	-21<=h<=22, -10<=k<=7, -18<=l<=17
Reflections collected	3396
Independent reflections	1717 [R(int) = 0.0260]
Data/restraints/parameters	1717 / 0 / 119
Goodness-of-fit on F ²	1.036
Final R indexes [I>=2σ (I)]	R1 = 0.0465, wR2 = 0.1308
Final R indexes [all data]	R1 = 0.0559, wR2 = 0.1428
Largest diff. peak/hole / e Å ⁻³	0.342 and -0.247 e.Å ⁻³