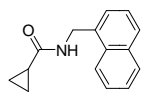


Direct amide bond formation from carboxylic acids and amines using activated alumina balls as a new, convenient, clean, reusable and low cost heterogeneous catalyst

Sabari Ghosh, Asim Bhaumik, John Mondal, Amit Mallik, Sumita Sengupta (Bandyopadhyay) and Chhanda Mukhopadhyay*

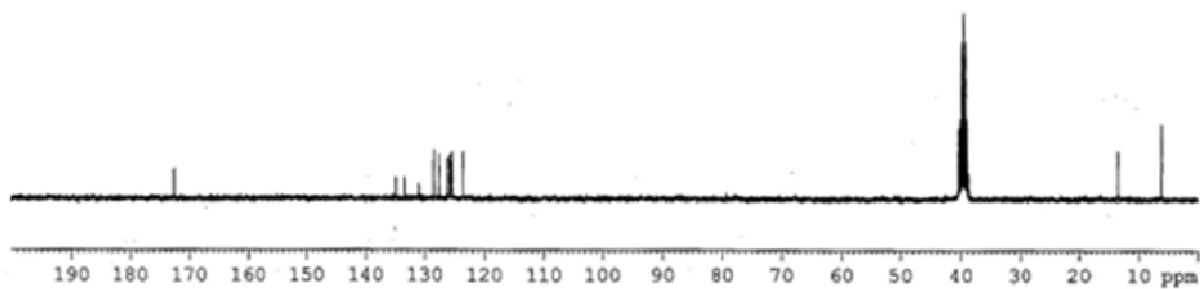
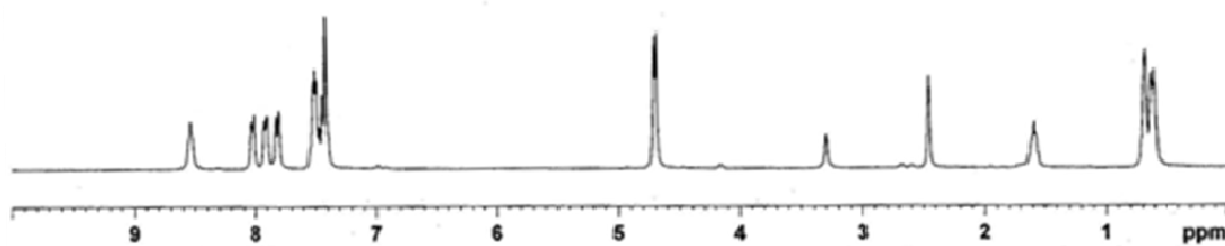
Supplementary Information
Part 2

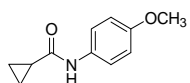
Copy of all NMR spectra



Compound **3ab**

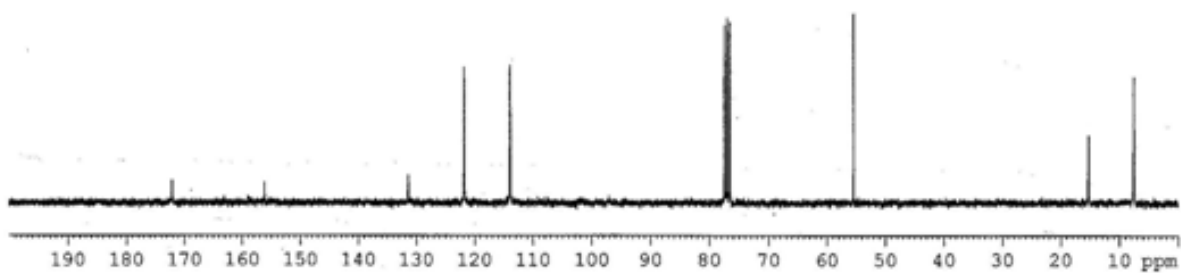
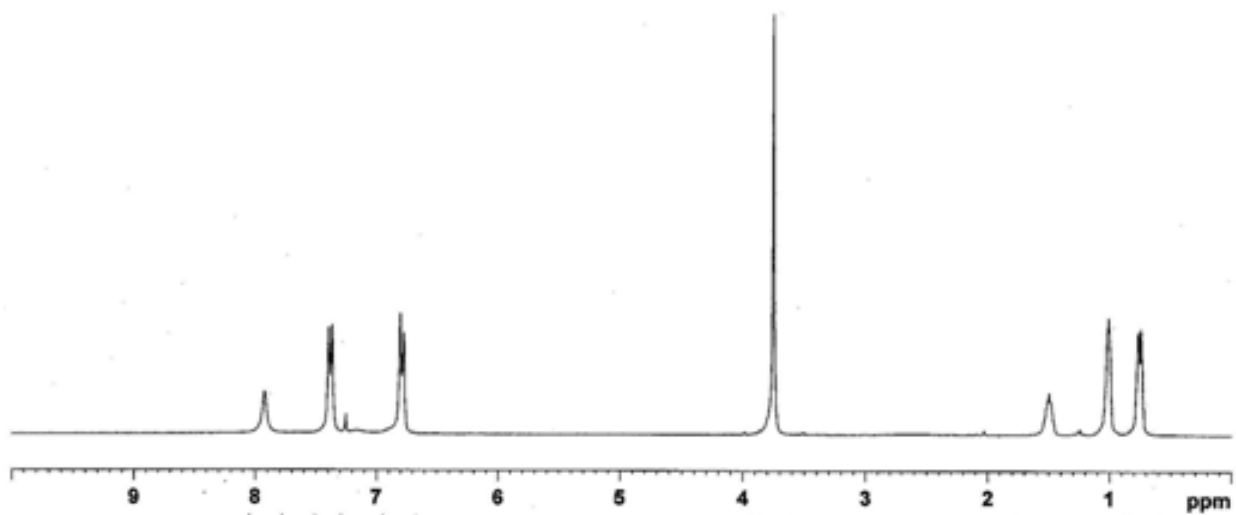
^1H NMR and ^{13}C NMR ($\text{DMSO-}d_6$)

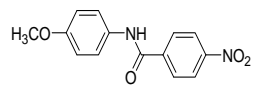




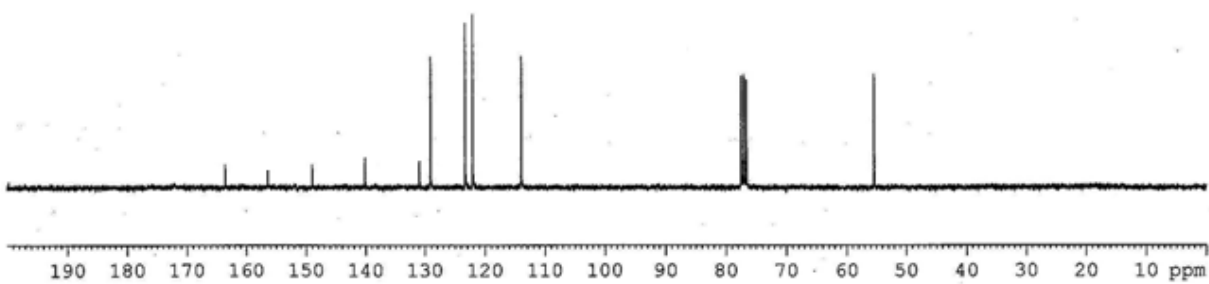
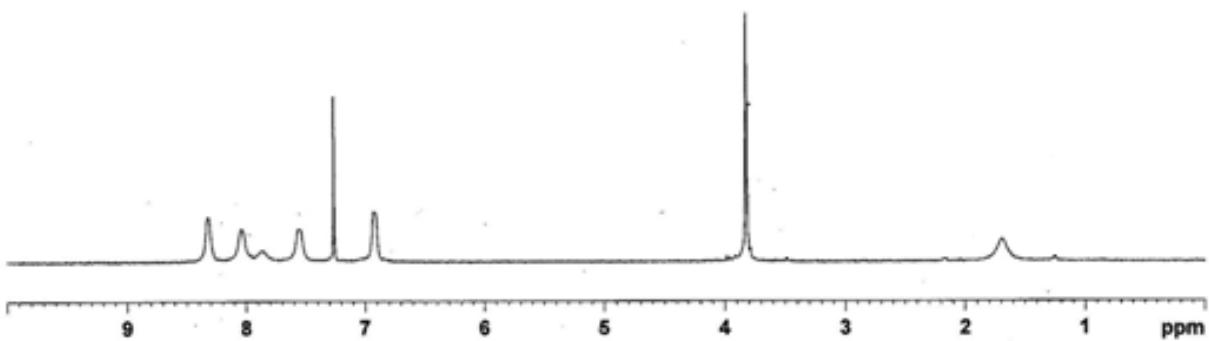
Compound **3ac**

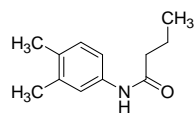
^1H NMR and ^{13}C NMR (CDCl_3)





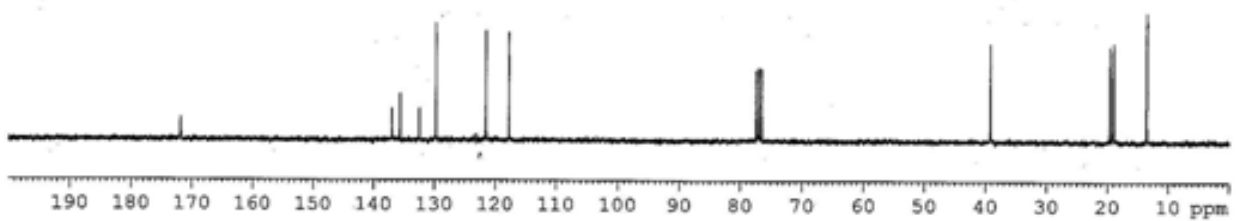
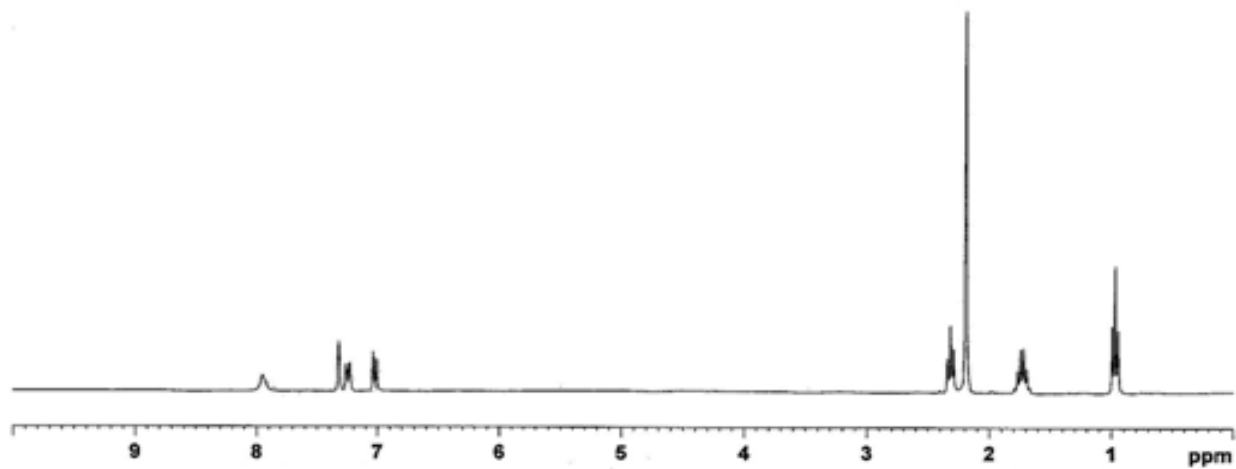
Compound **3dc**
 ^1H NMR and ^{13}C NMR (CDCl_3)

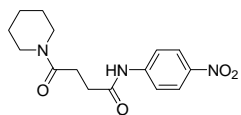




Compound **3ef**

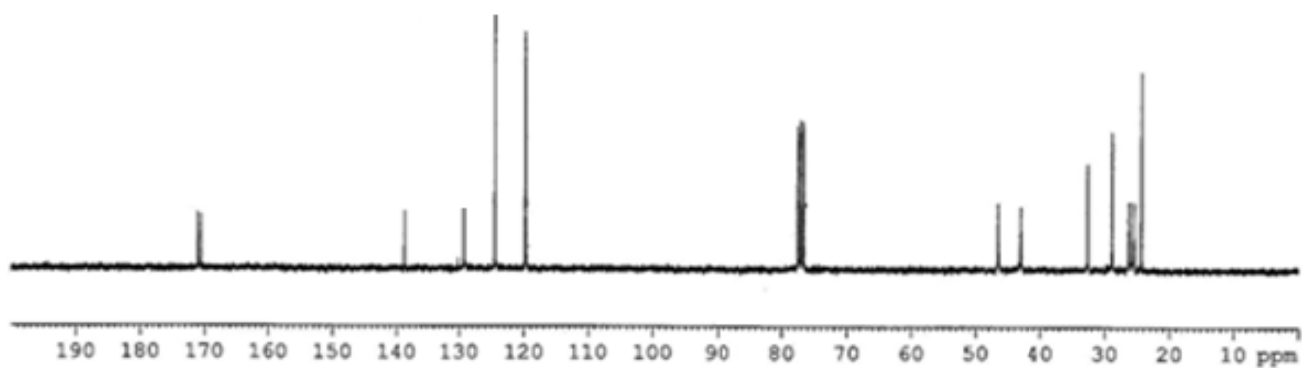
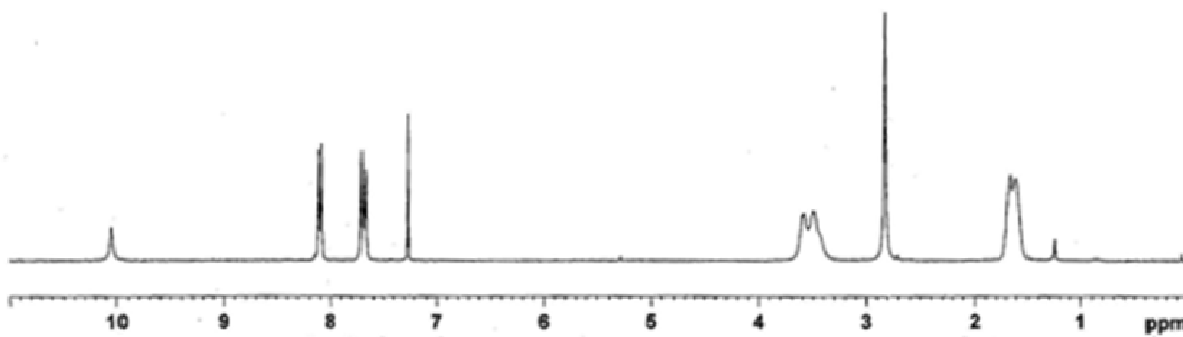
^1H NMR and ^{13}C NMR (CDCl_3)

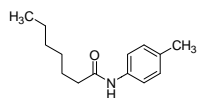




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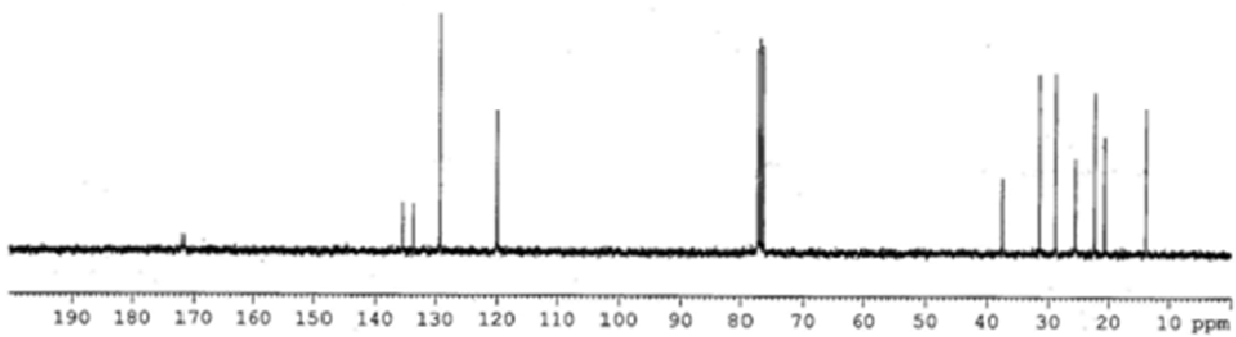
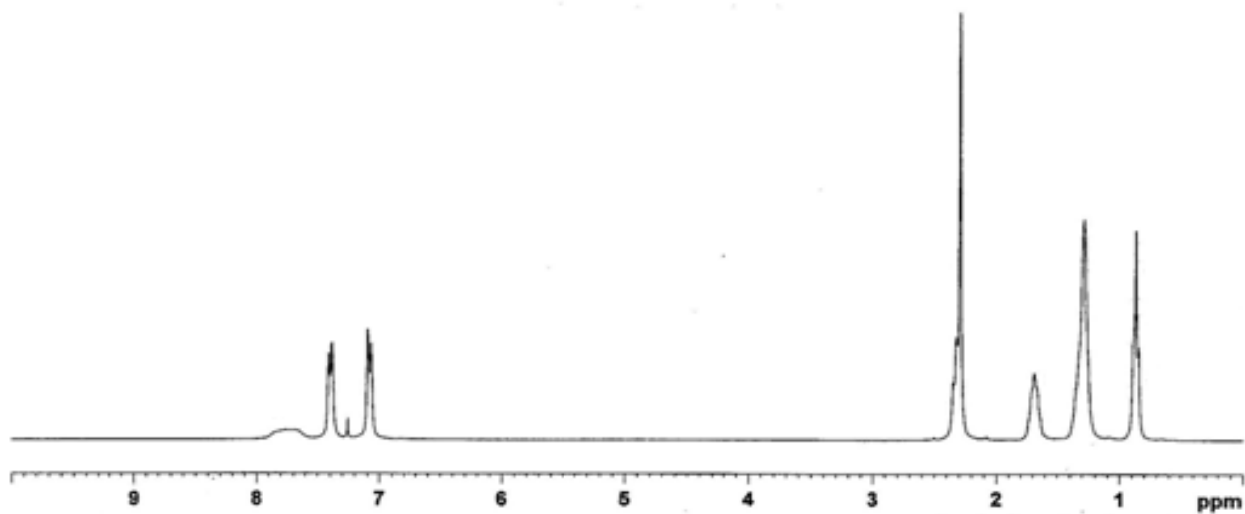
^1H NMR and ^{13}C NMR (CDCl_3)

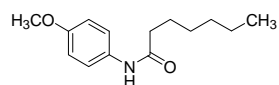




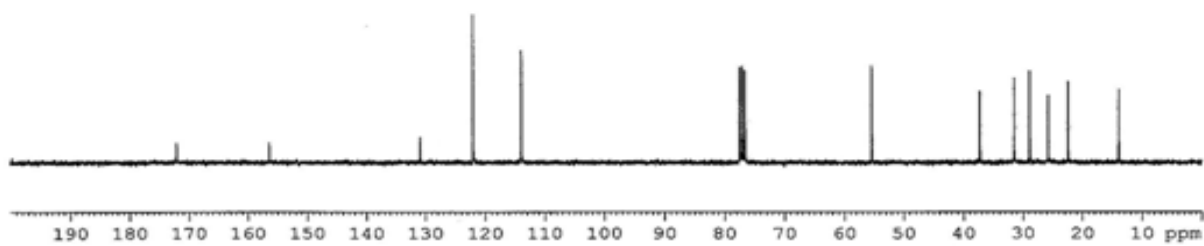
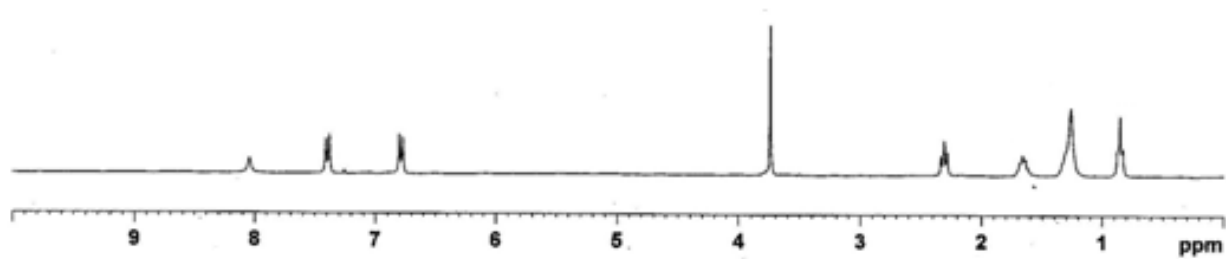
Compound **3ij**

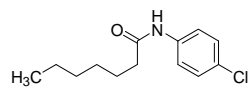
^1H NMR and ^{13}C NMR (CDCl_3)





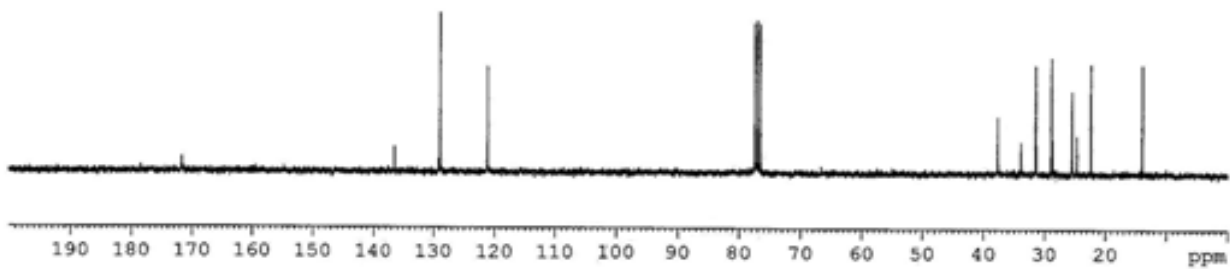
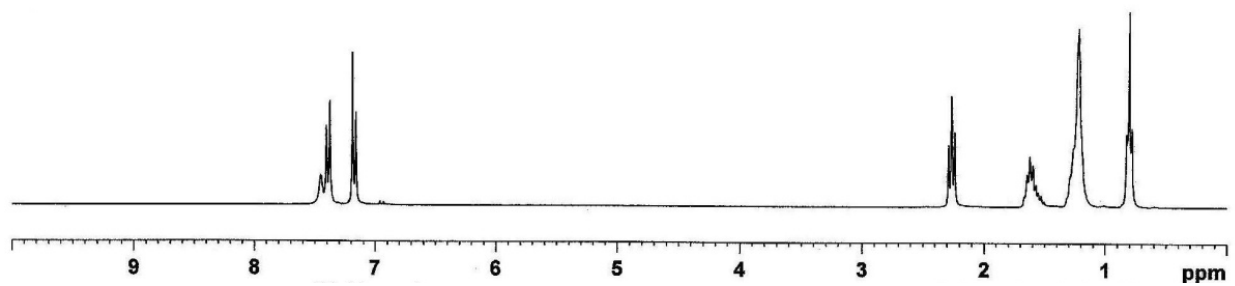
Compound 3ic
¹H NMR and ¹³C NMR (CDCl₃)

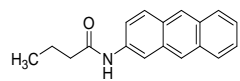




Compound **3ik**

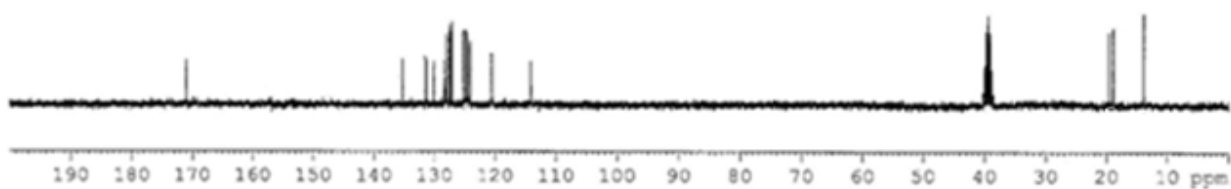
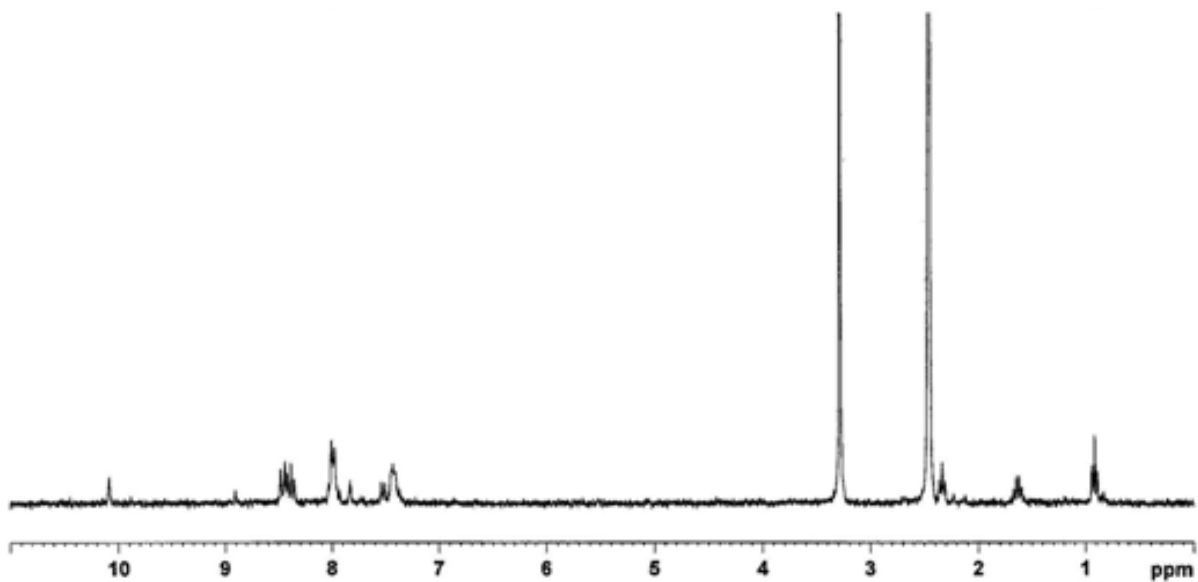
^1H NMR and ^{13}C NMR (CDCl_3)

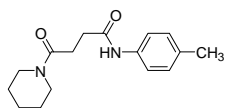




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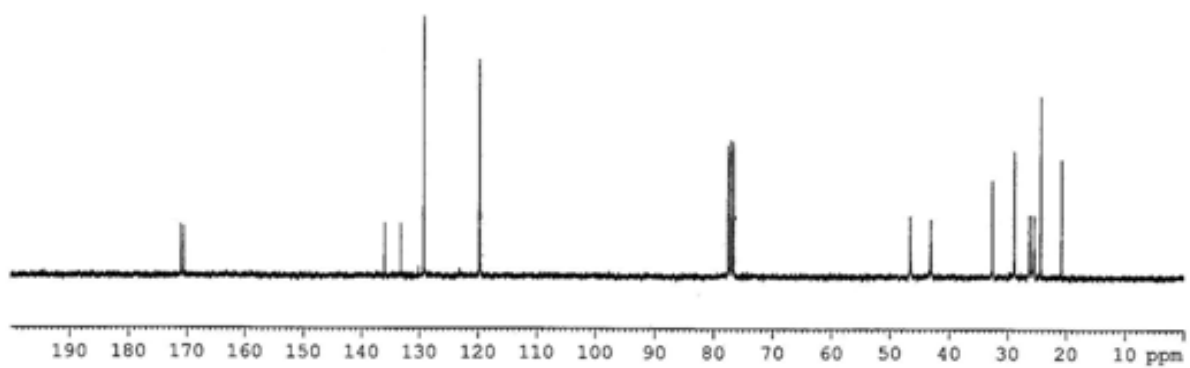
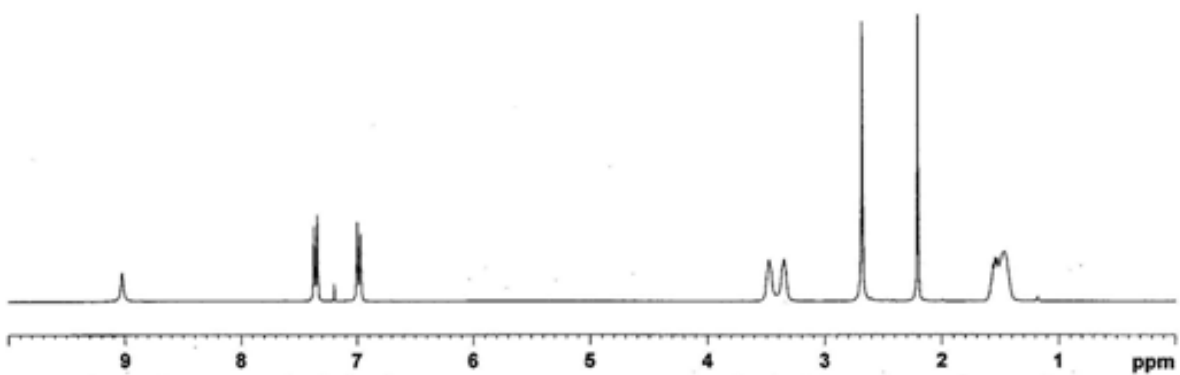
^1H NMR and ^{13}C NMR ($\text{DMSO-}d_6$)

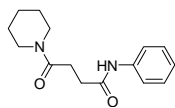




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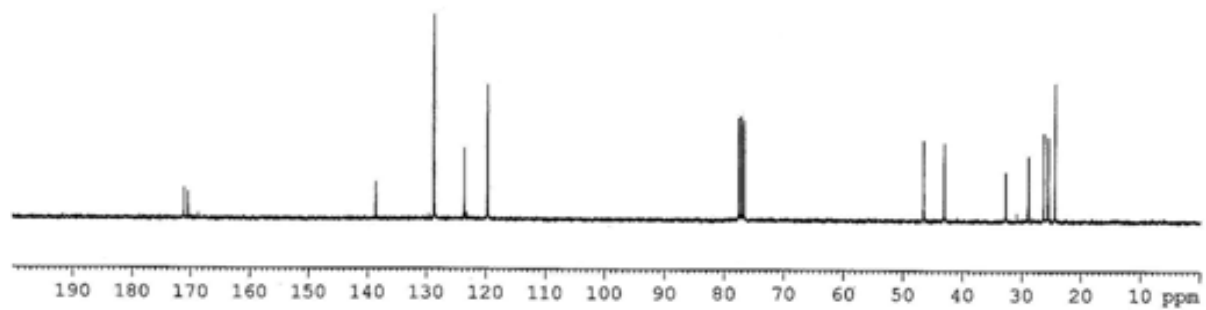
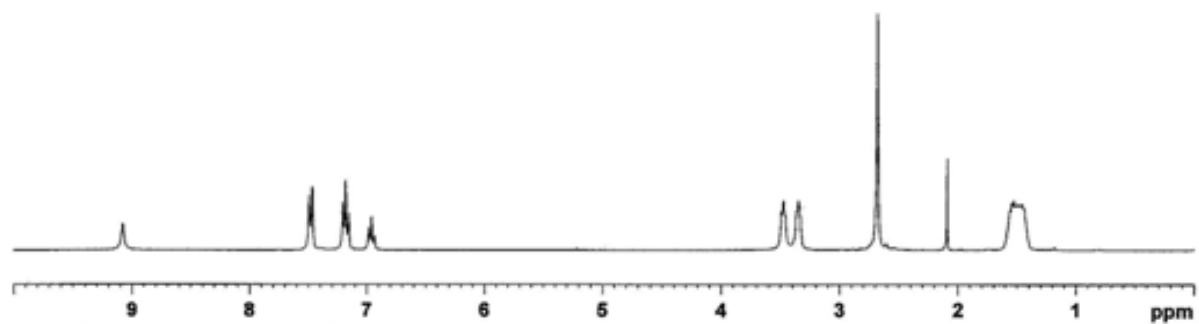
^1H NMR and ^{13}C NMR (CDCl_3)

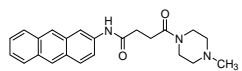




Compound **3gm**

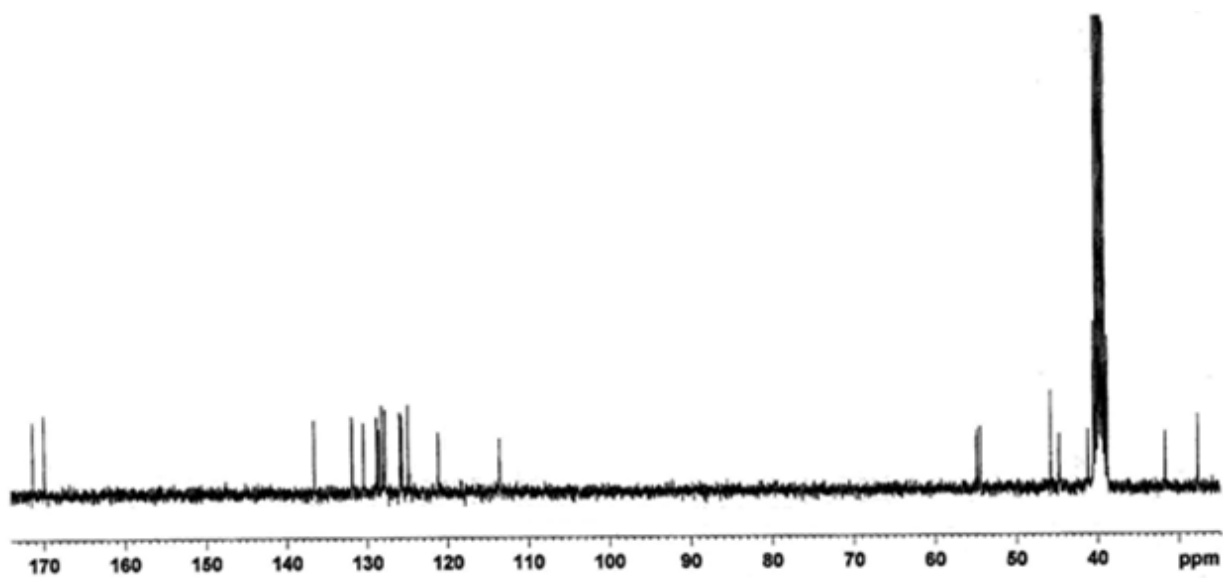
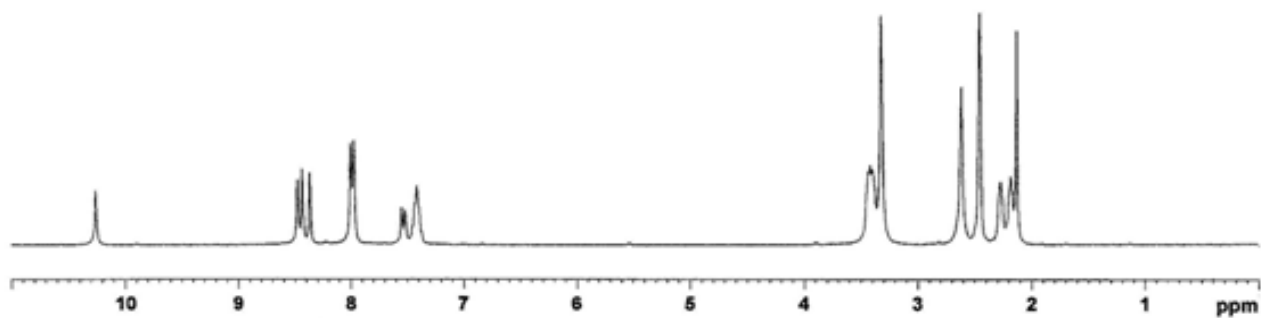
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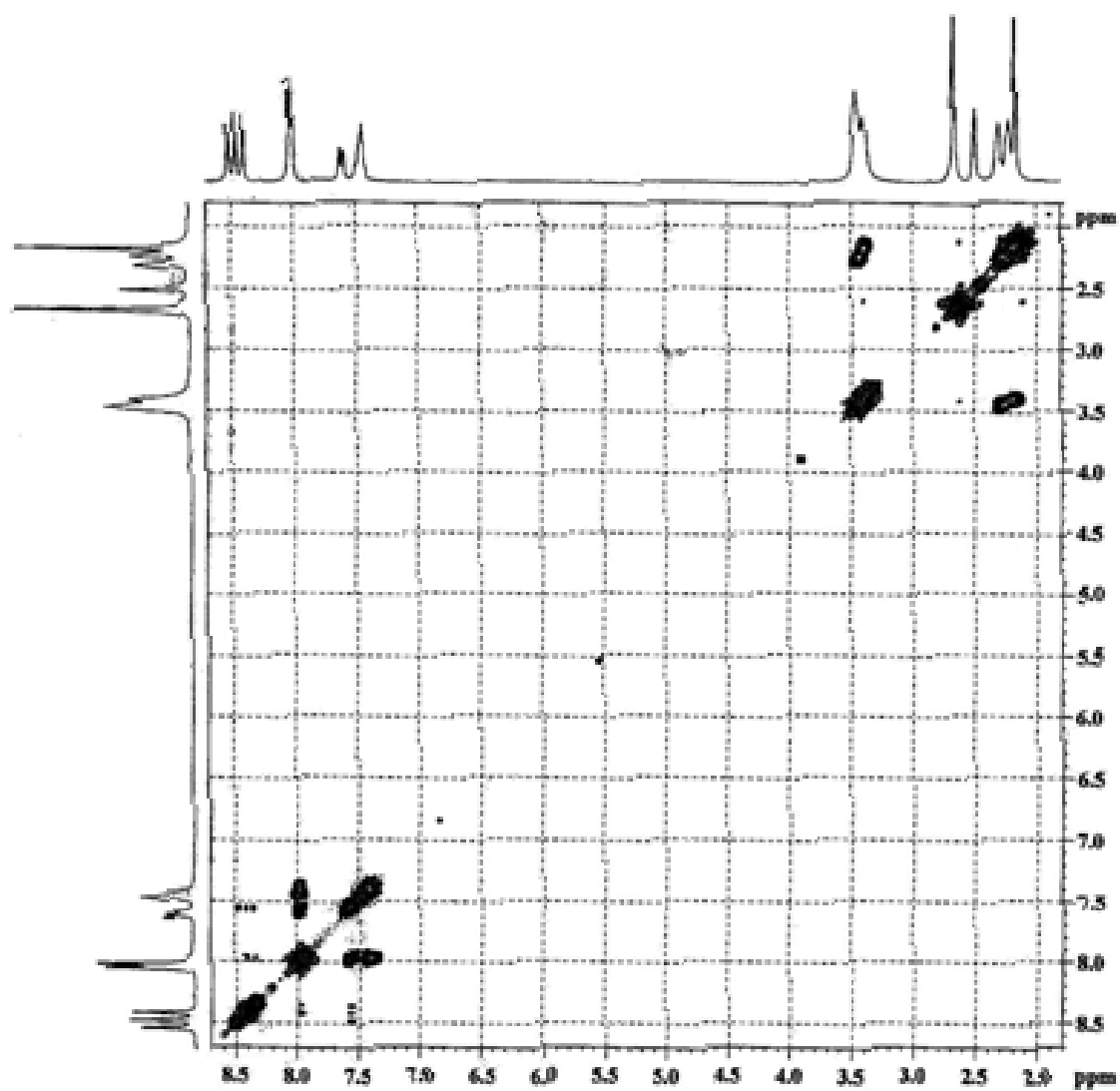


Compound **3nl**

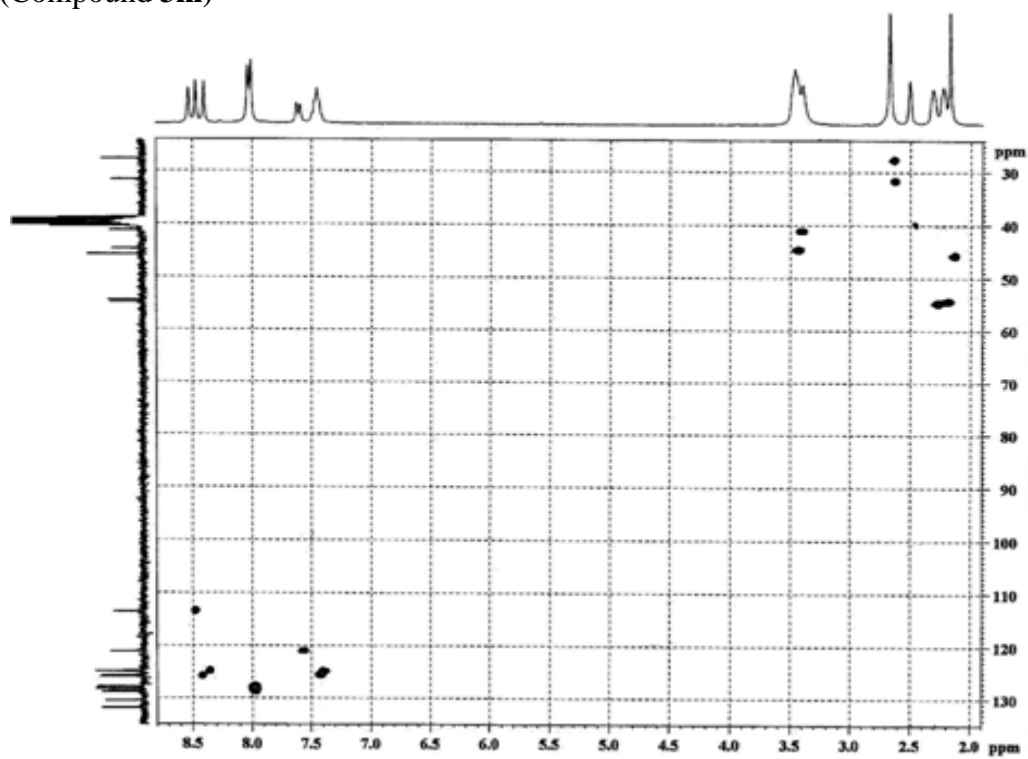
^1H NMR and ^{13}C NMR ($\text{DMSO-}d_6$)



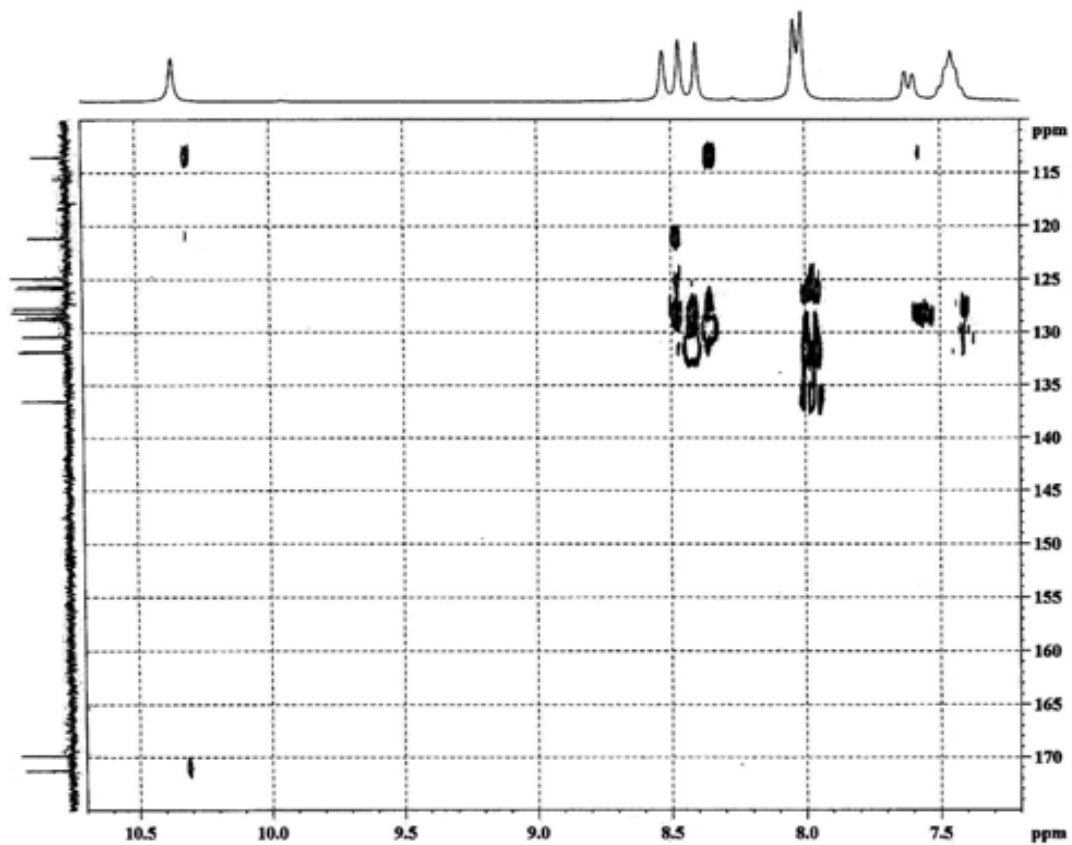
COSY (Compound **3nl**)



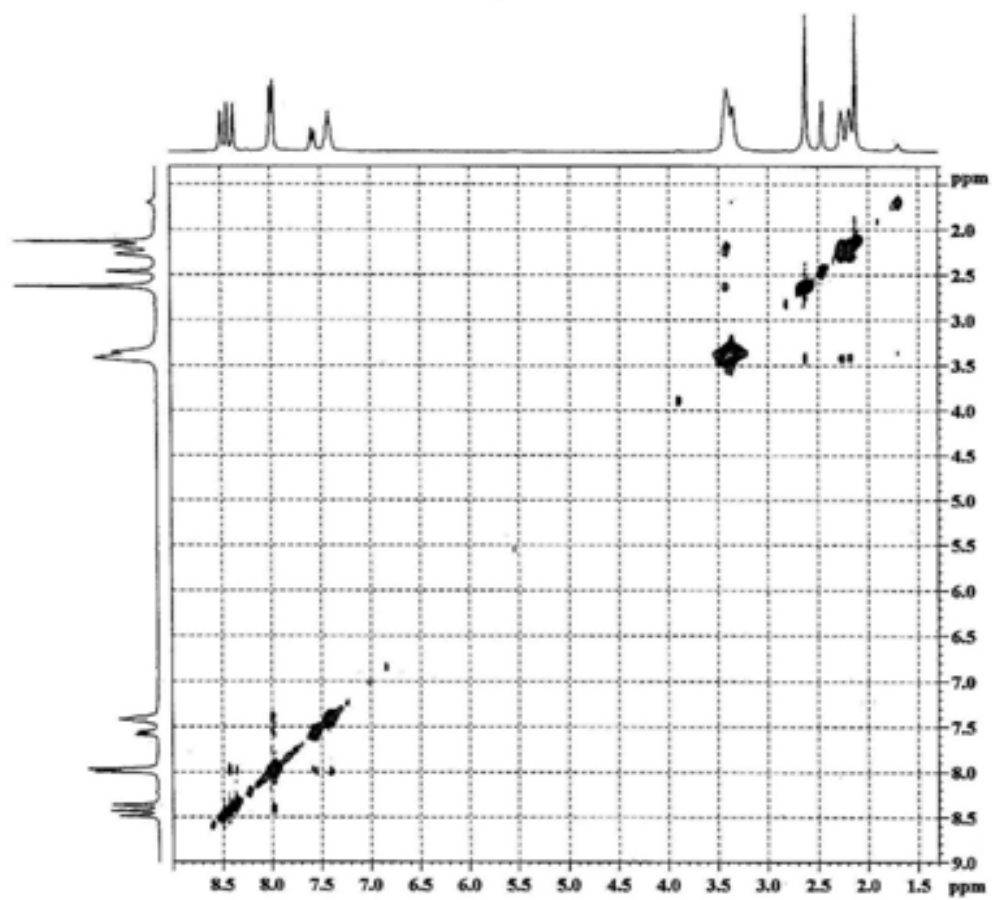
HSQC (Compound **3nl**)

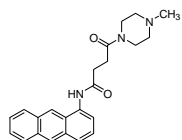


HMBC (Compound **3nl**)



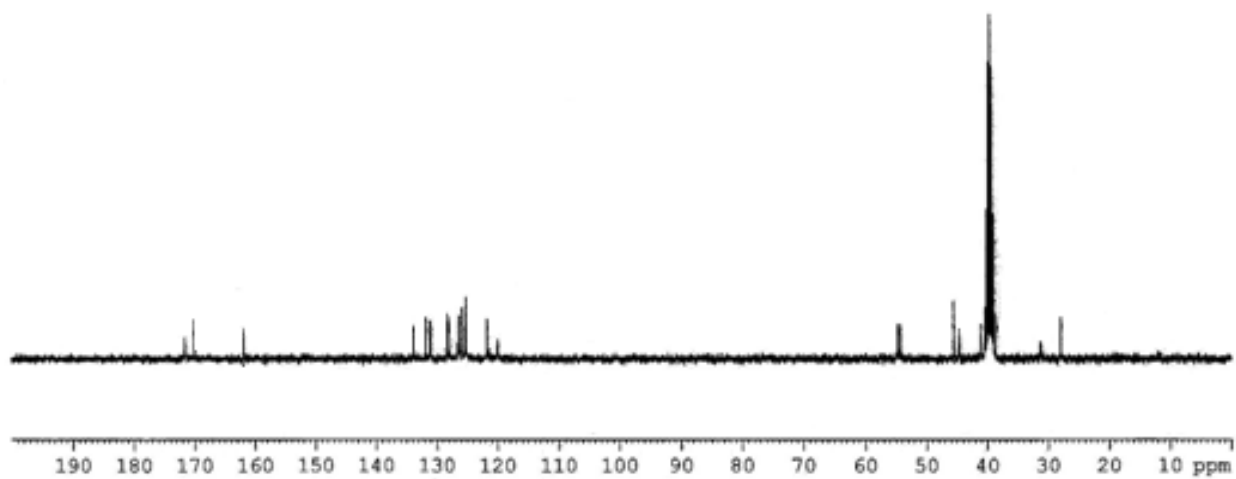
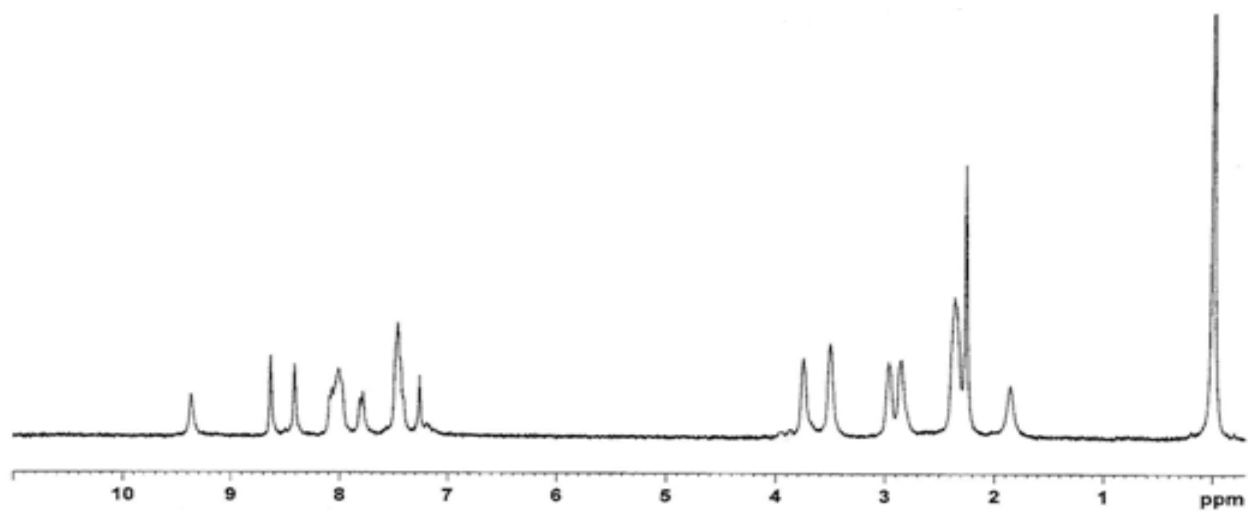
NOESY (Compound **3nl**)

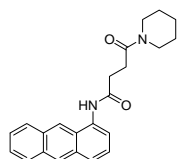




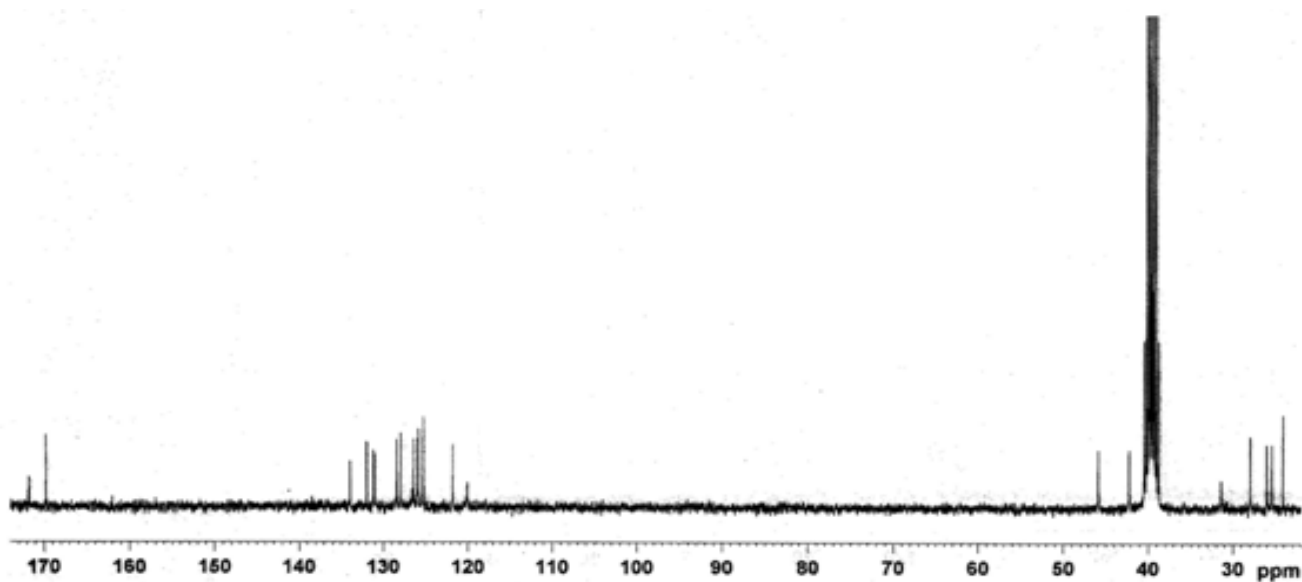
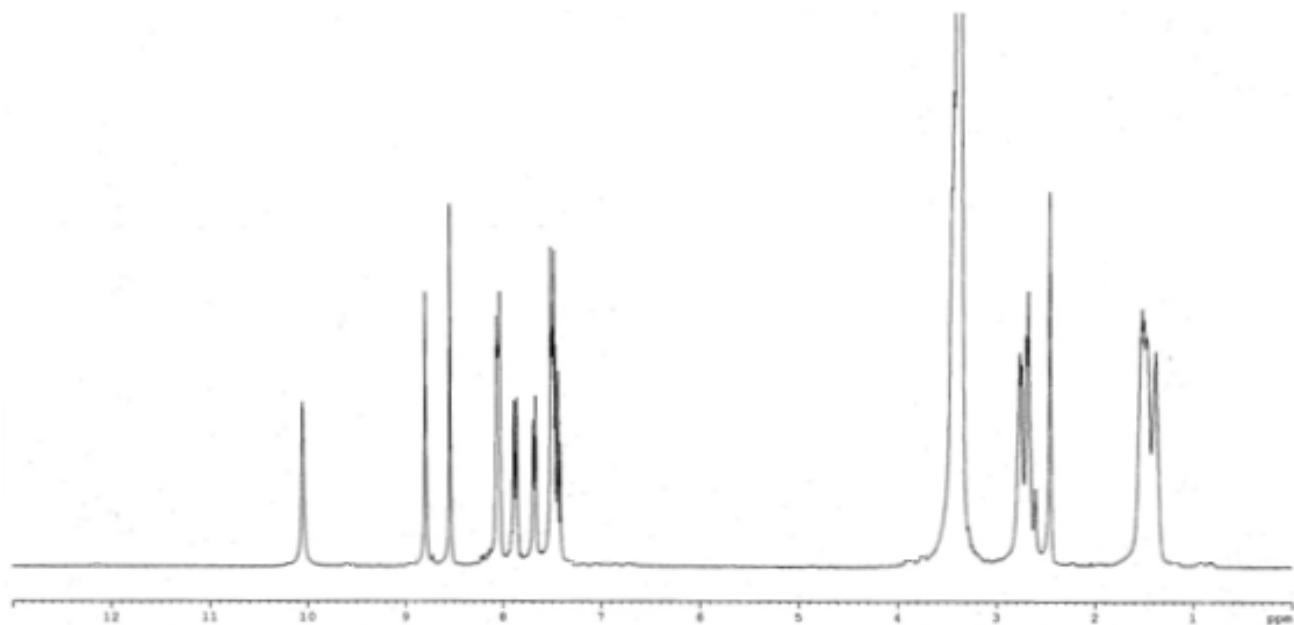
Compound **3no**

^1H NMR and ^{13}C NMR (DMSO- d_6)

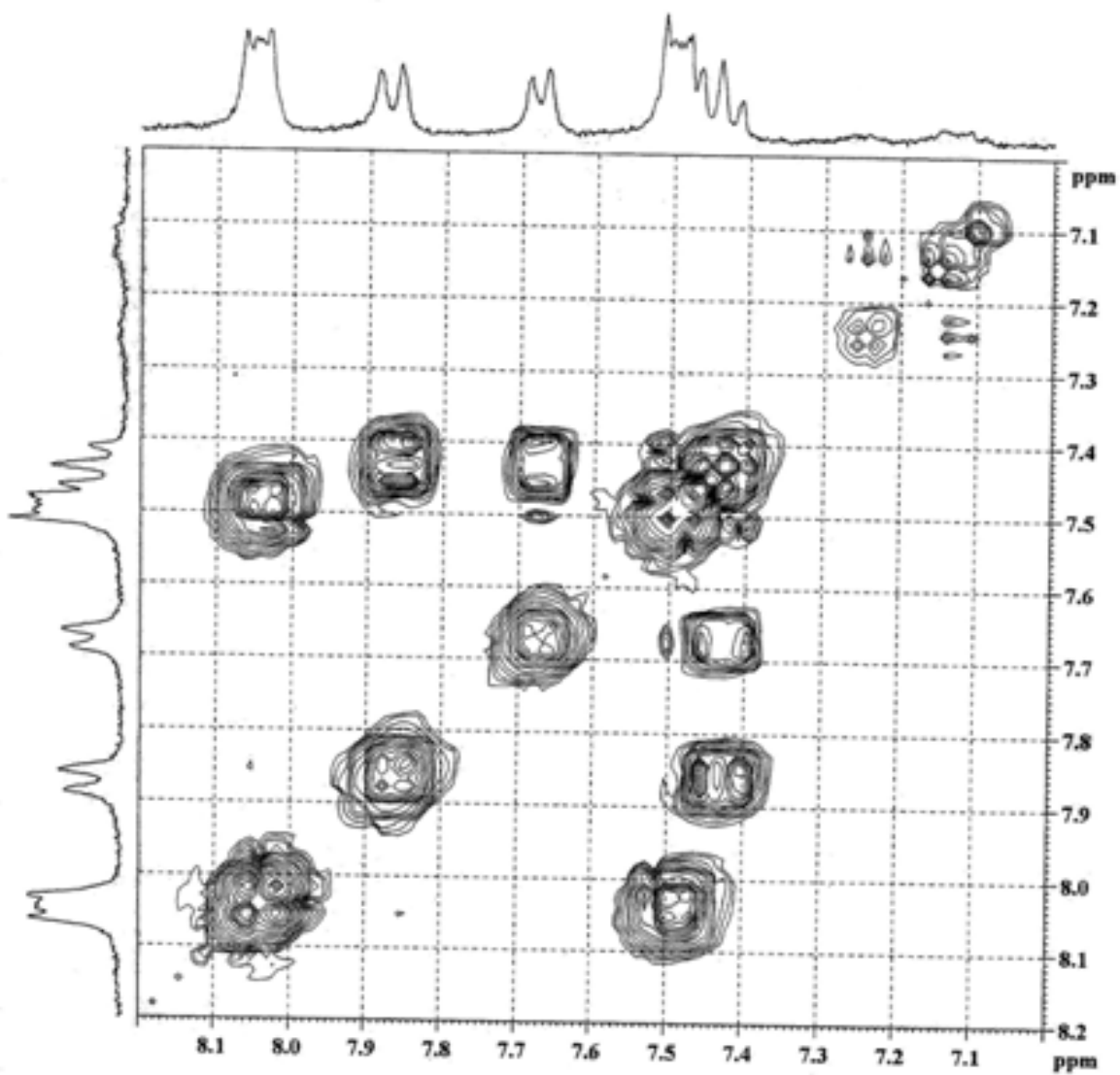




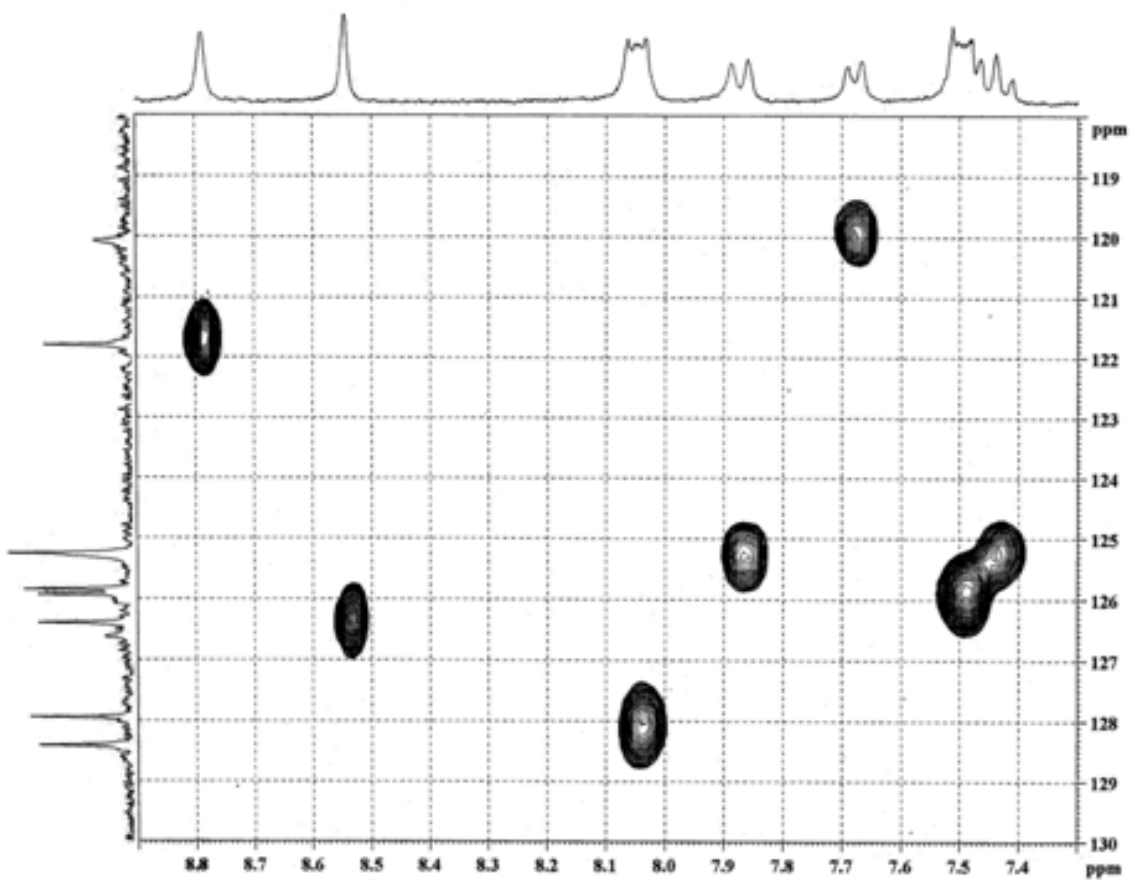
Compound **3go**
 ^1H NMR and ^{13}C NMR (DMSO- d_6)



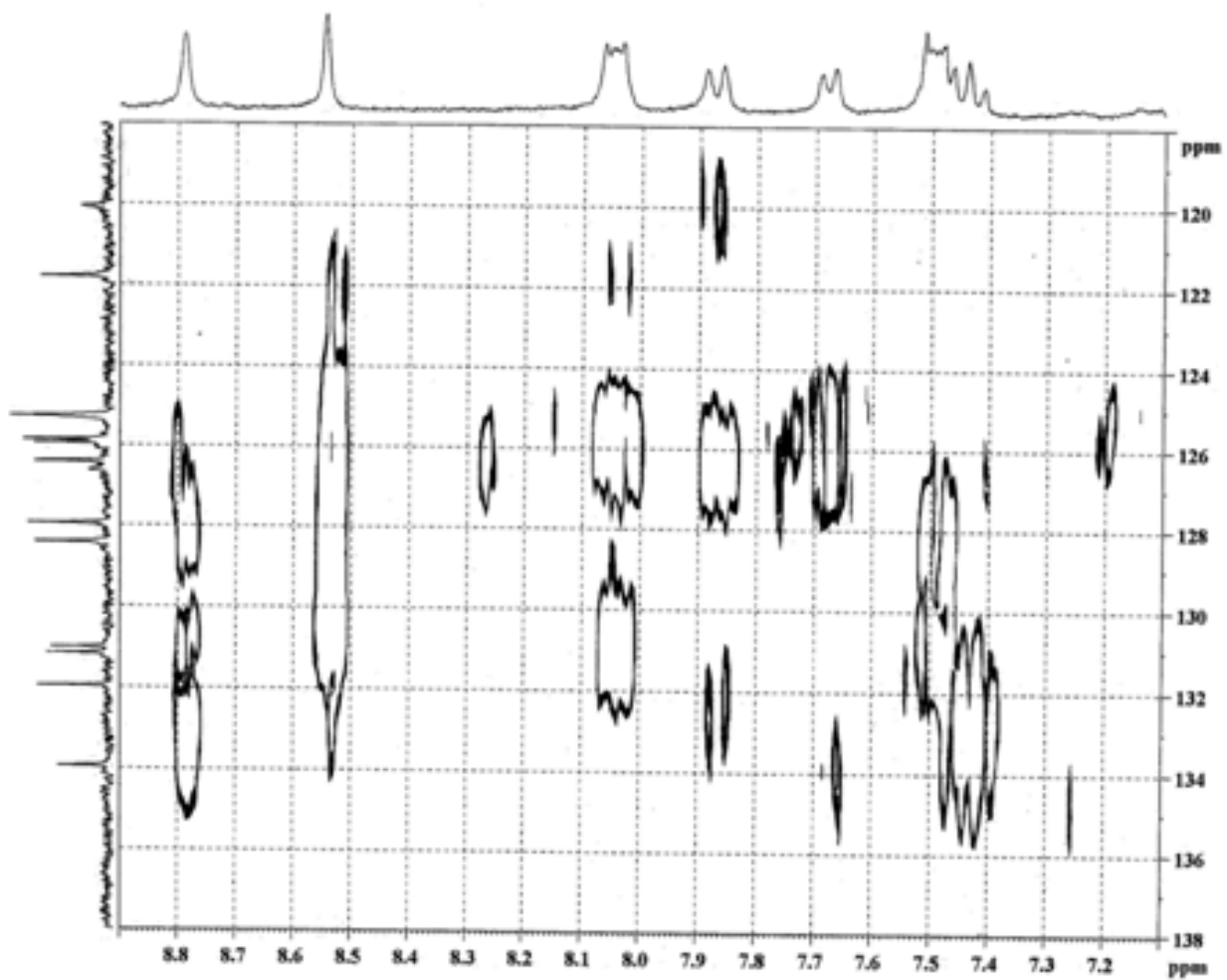
COSY (Compound **3go**)



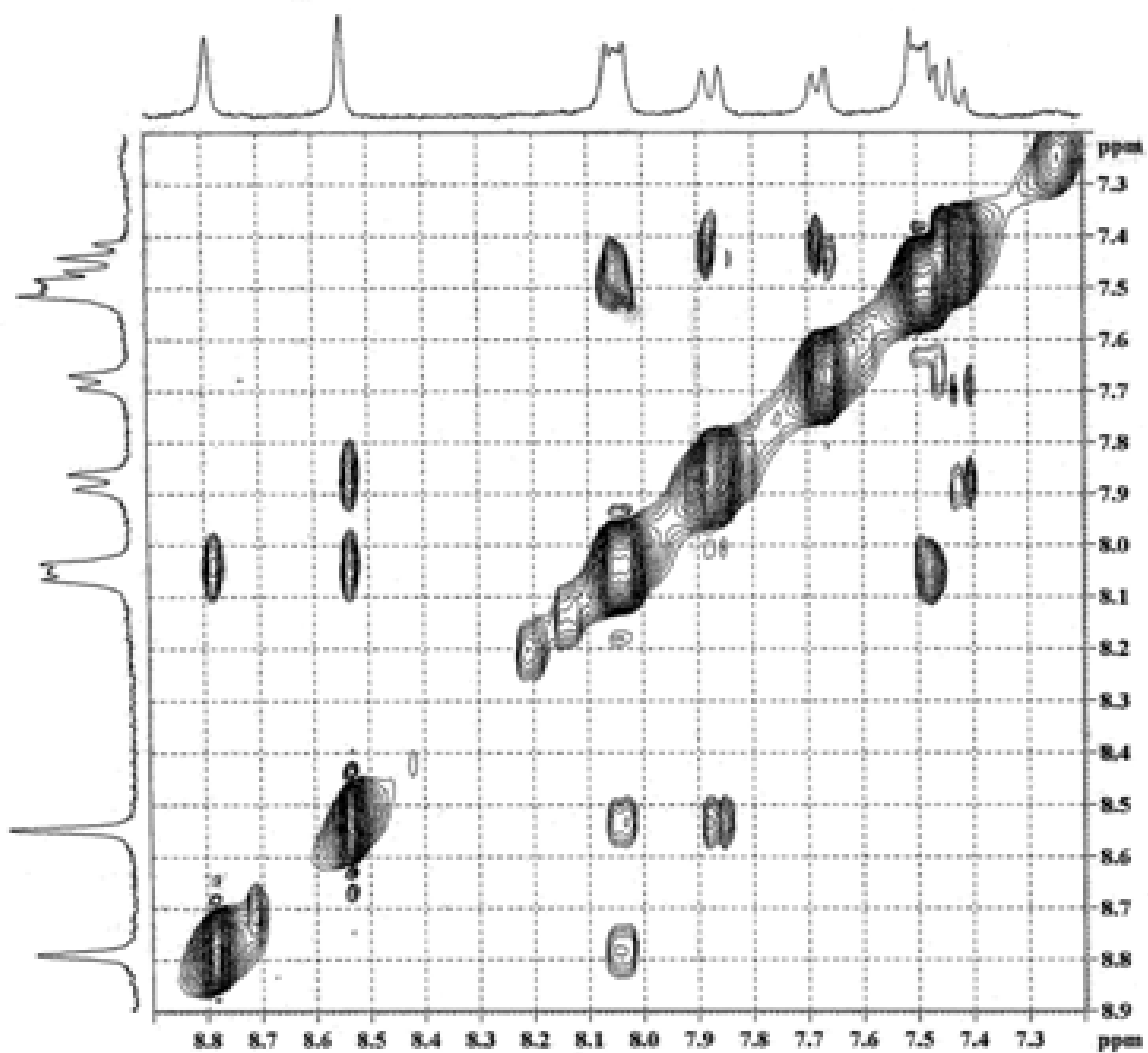
HSQC (Compound **3go**)

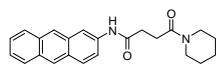


HMBC (Compound 3go)



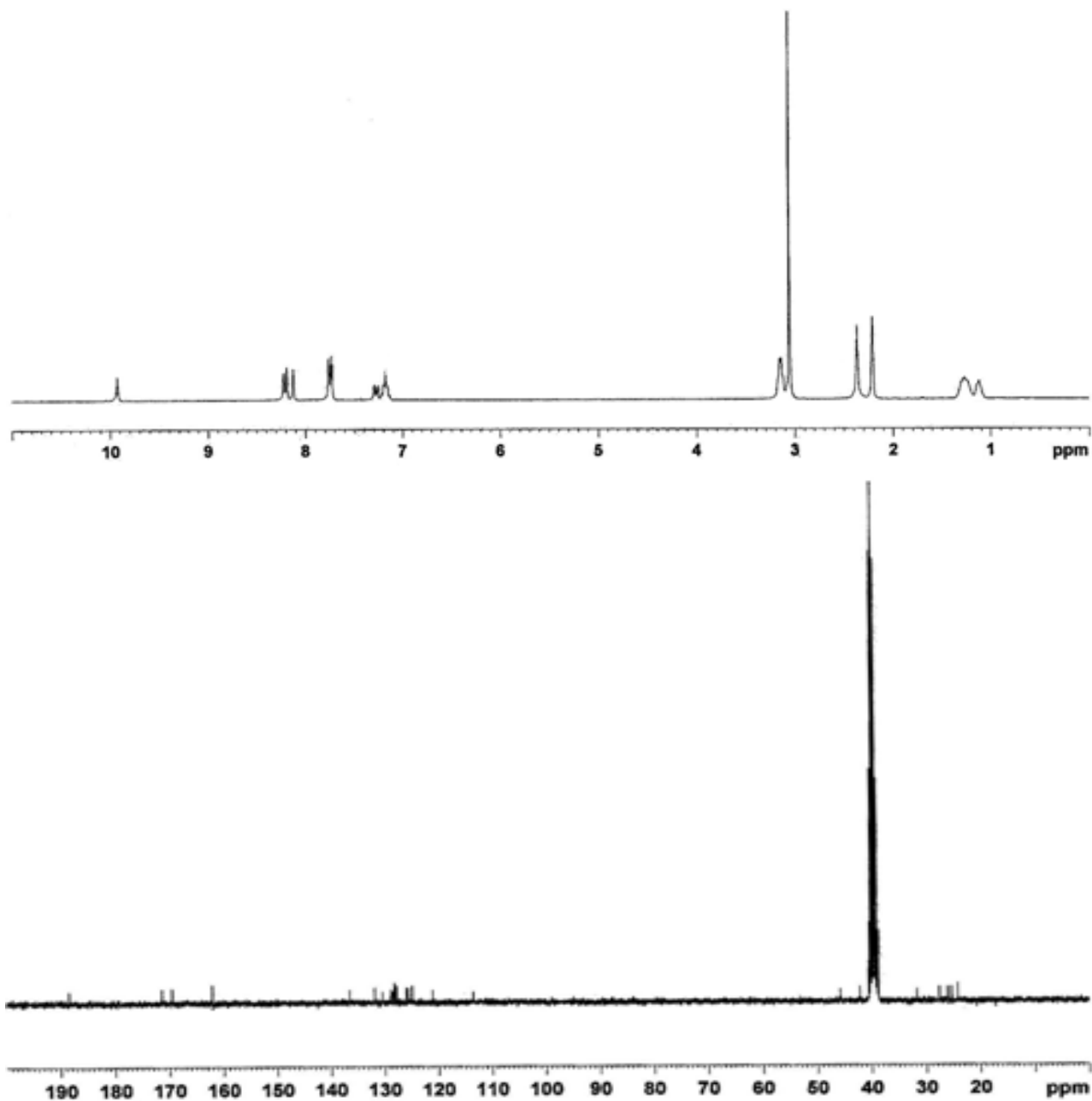
NOESY (Compound **3go**)

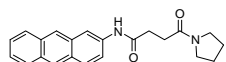




Compound **3no**

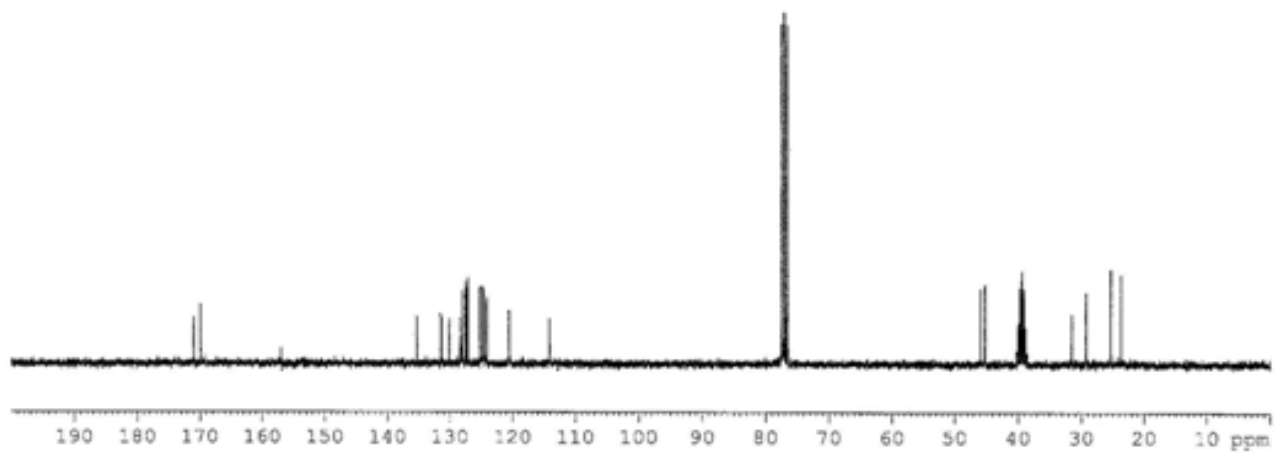
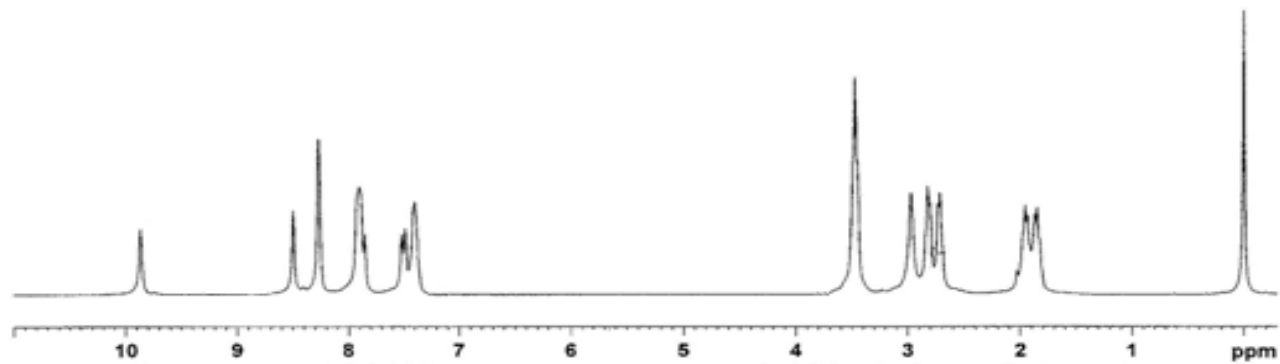
^1H NMR and ^{13}C NMR (DMSO- d_6)

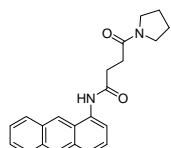




Compound **3pl**

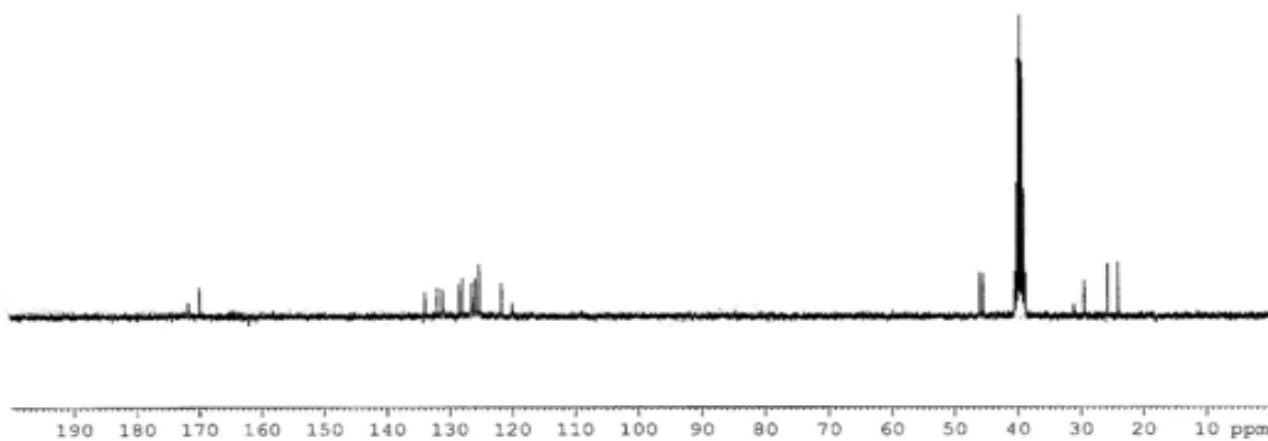
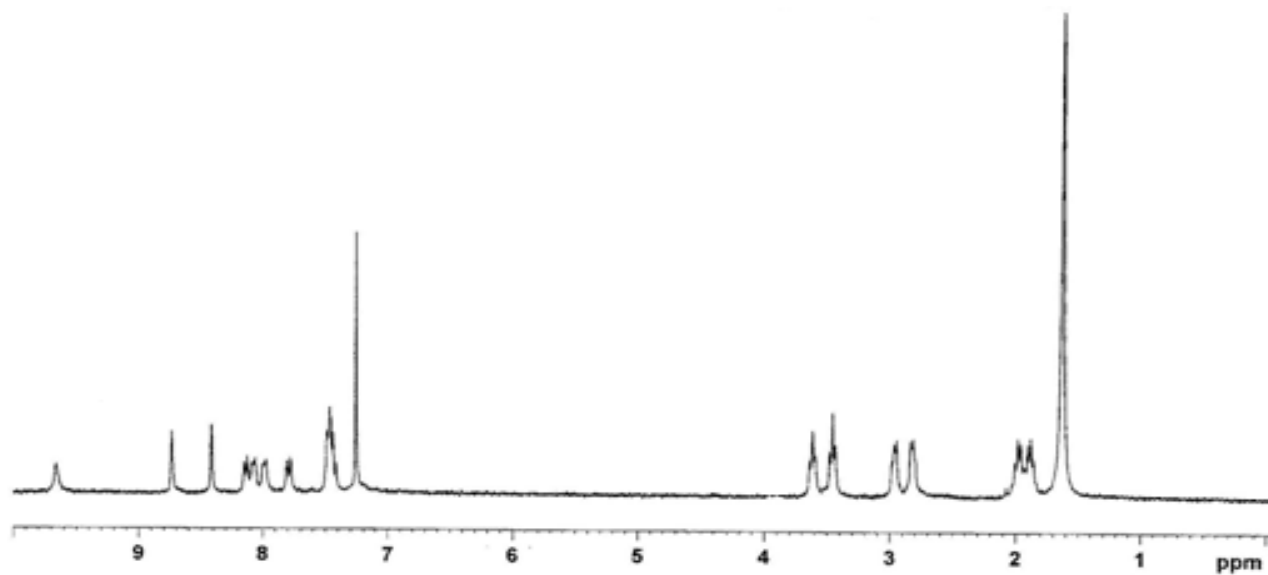
^1H NMR and ^{13}C NMR (CDCl_3)

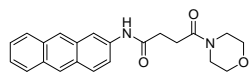




Compound **3po**

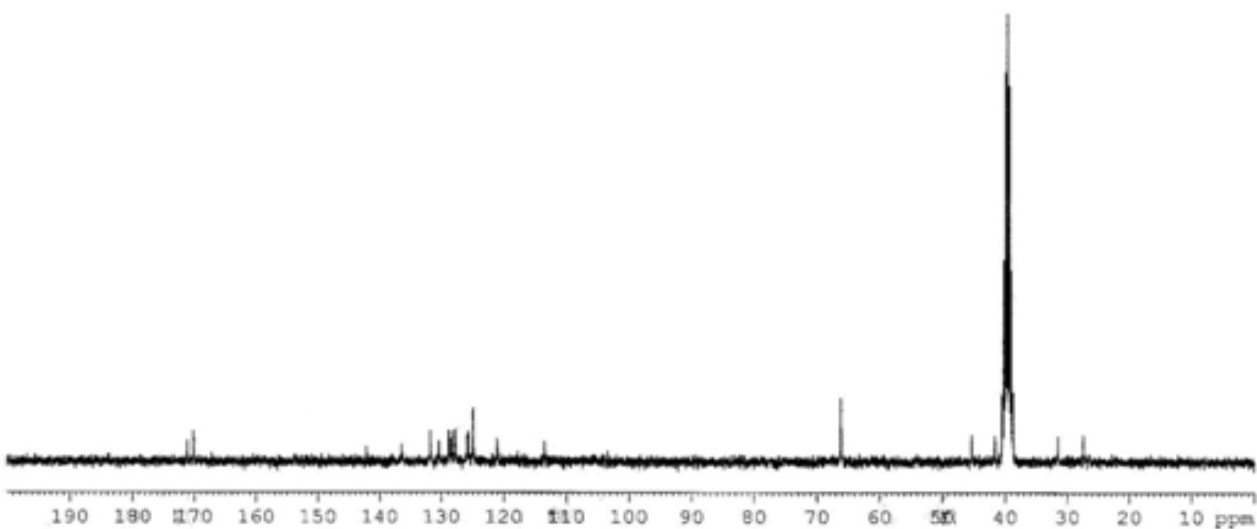
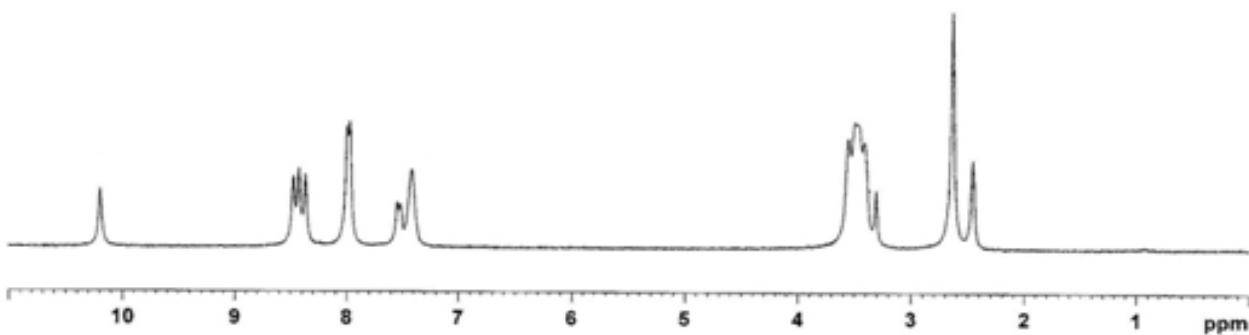
^1H NMR (CDCl_3) and ^{13}C NMR ($\text{DMSO-}d_6$)

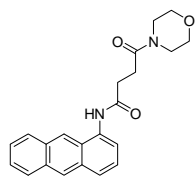




Compound **3ql**

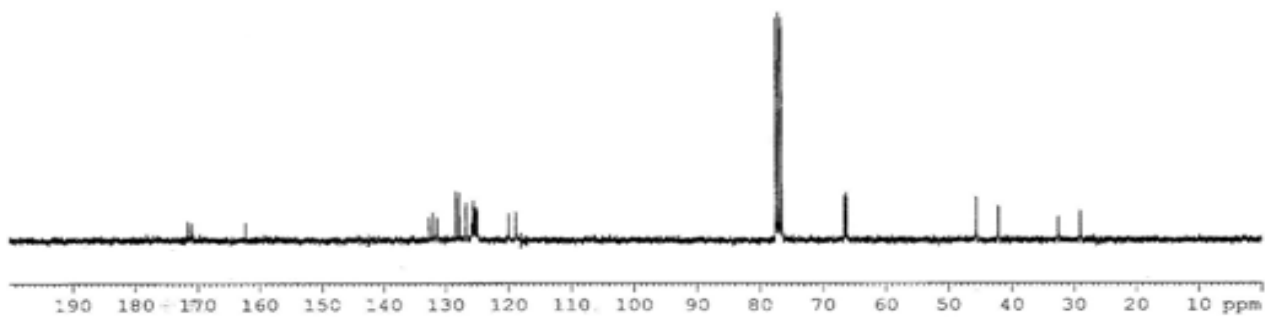
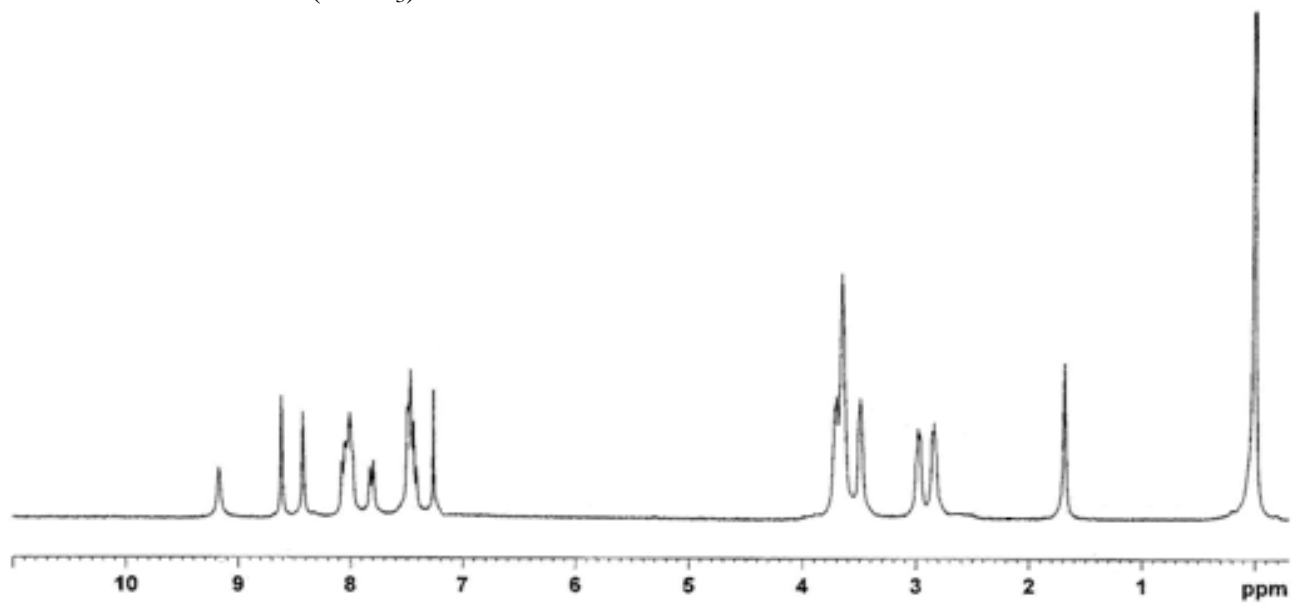
^1H NMR and ^{13}C NMR ($\text{DMSO-}d_6$)

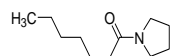




Compound **3qo**

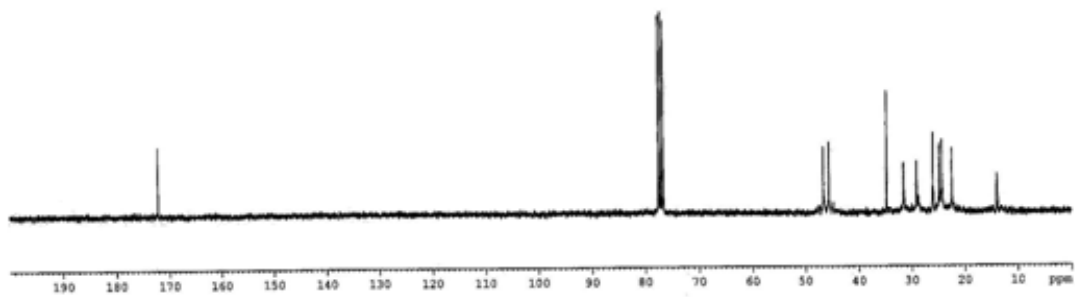
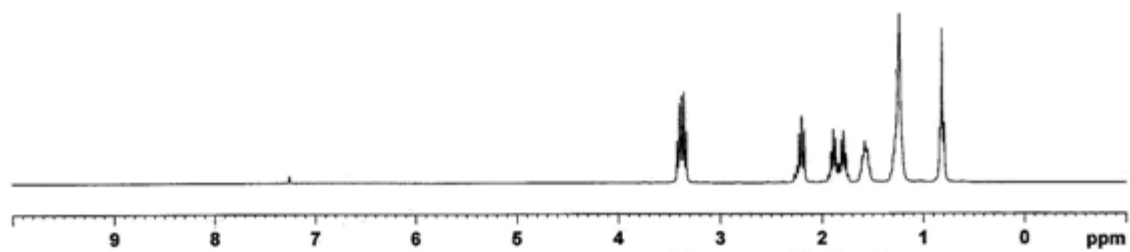
¹H NMR and ¹³C NMR (CDCl₃)

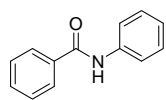




Compound **3ir**

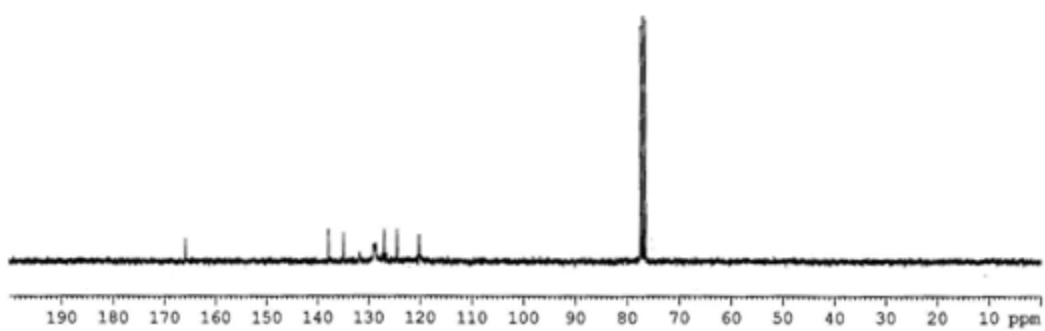
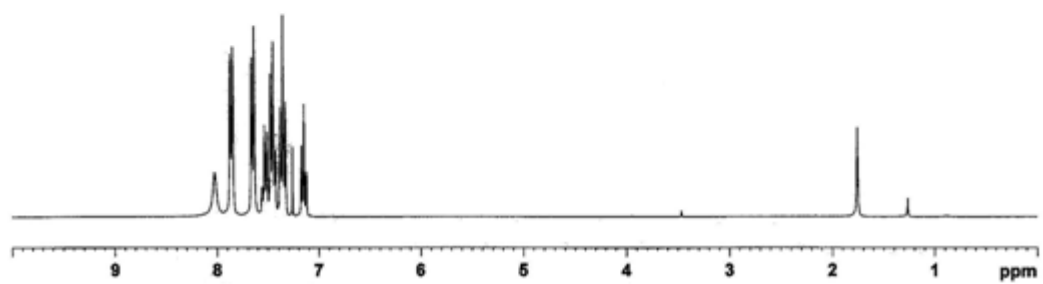
^1H NMR and ^{13}C NMR (CDCl_3)

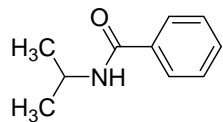




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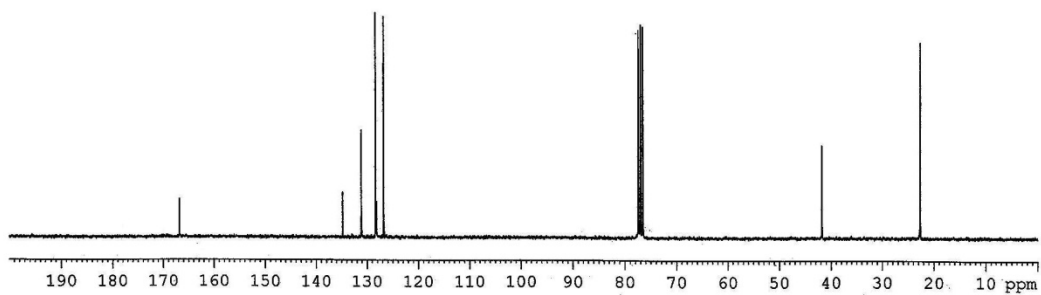
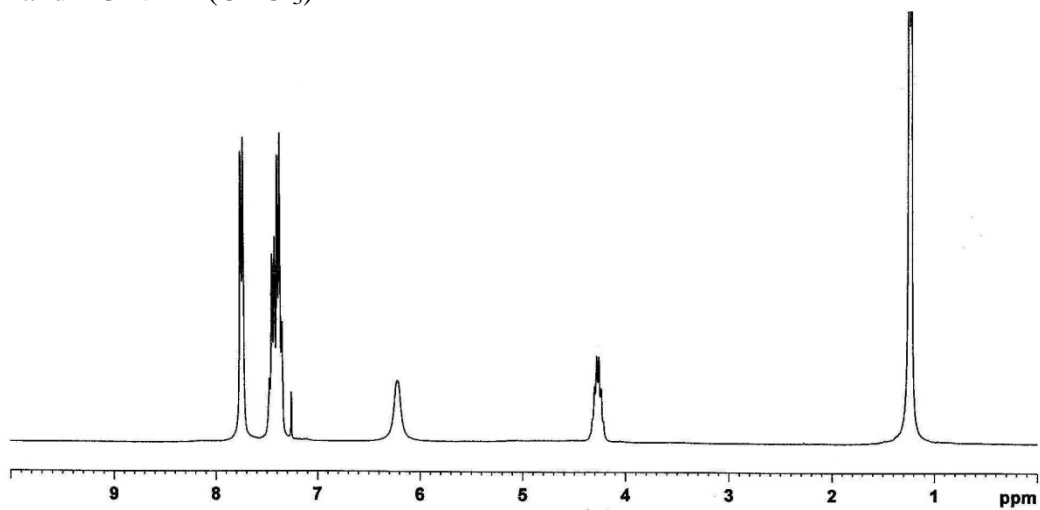
^1H NMR and ^{13}C NMR (CDCl_3)

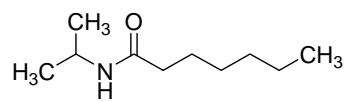




Compound 3st

^1H NMR and ^{13}C NMR (CDCl_3)





Compound **3it**
 ^1H NMR and ^{13}C NMR (CDCl_3)

