

Supplementary Material

One-pot three-component tandem annulation of 4-hydroxycoumarin with aldehyde and aromatic amines using Graphene oxide as an efficient catalyst

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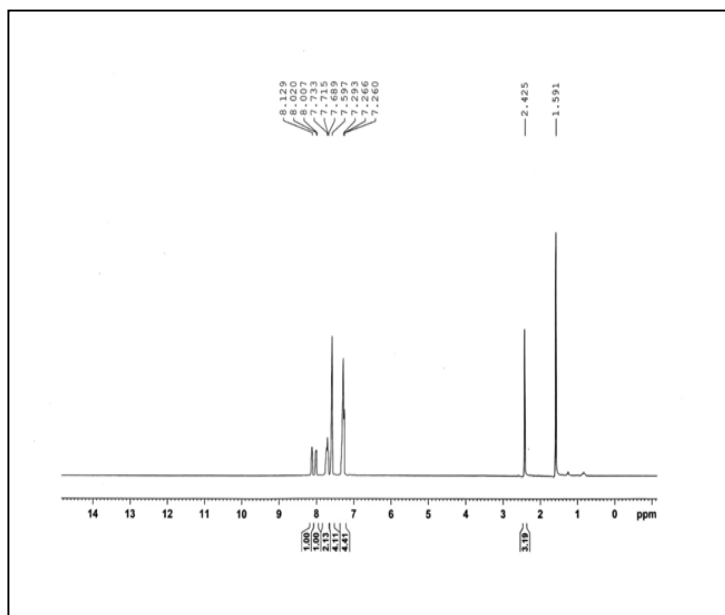


Fig 1. ¹H NMR spectrum of Compound 4a

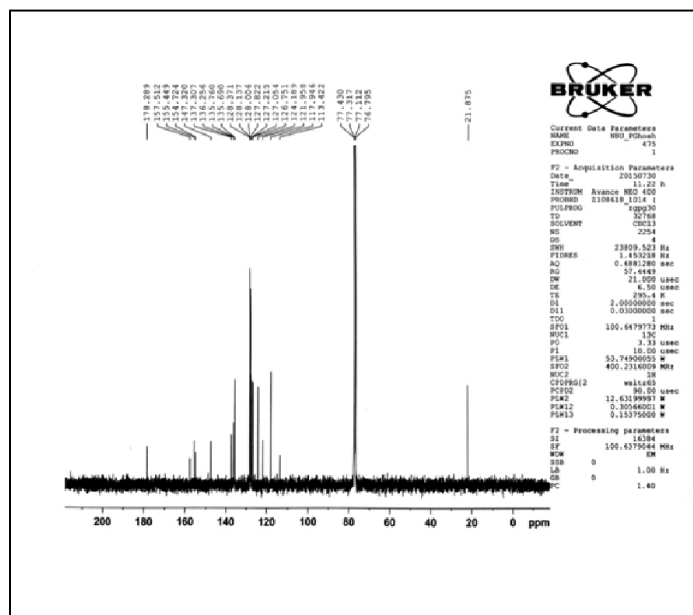


Fig 2. ¹³C NMR spectrum of compound 4a

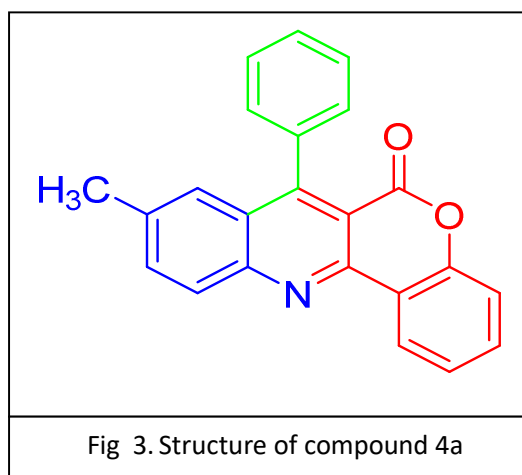


Fig 3. Structure of compound 4a

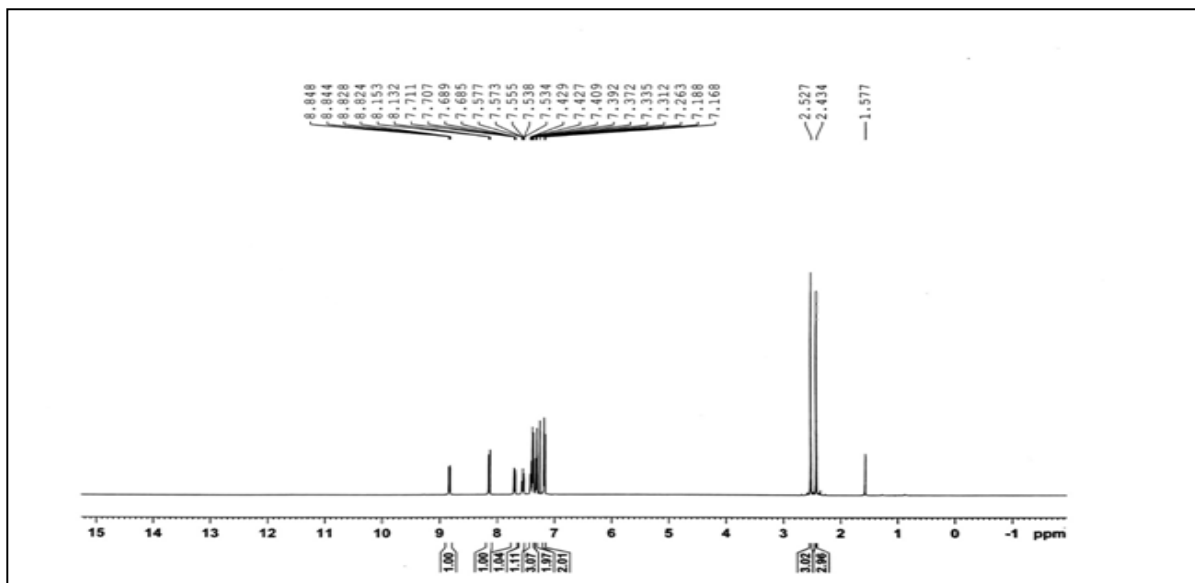


Fig 10. ¹H NMR spectrum of Compound 4d

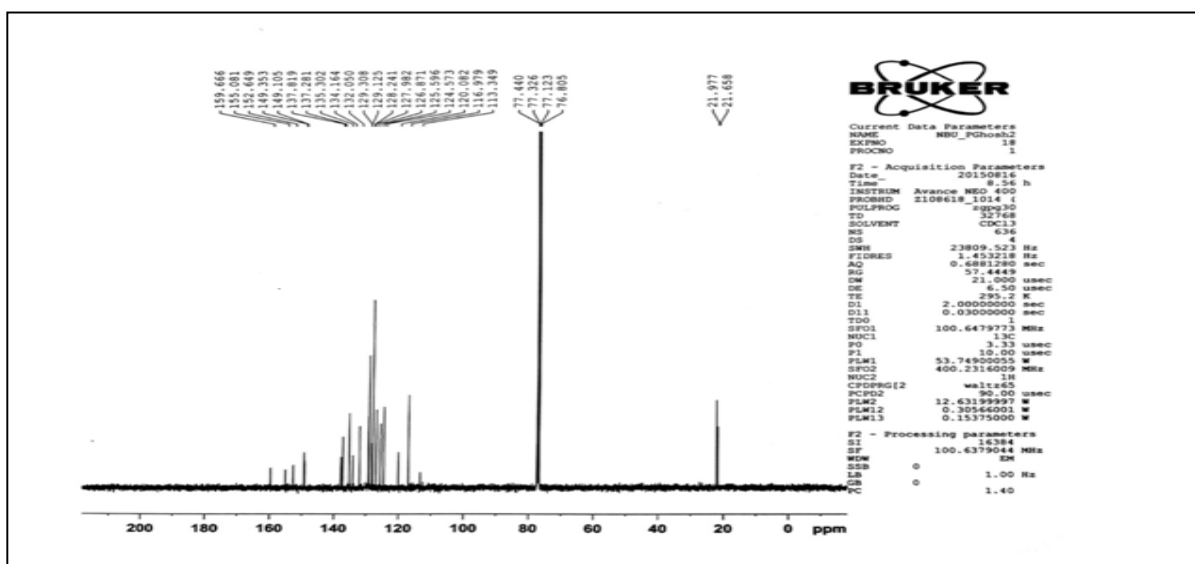


Fig 11. ¹³C NMR spectrum of compound 4d

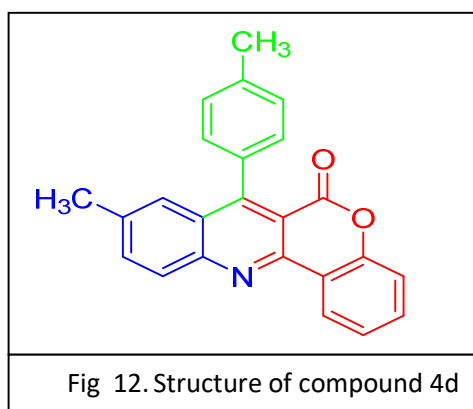


Fig 12. Structure of compound 4d

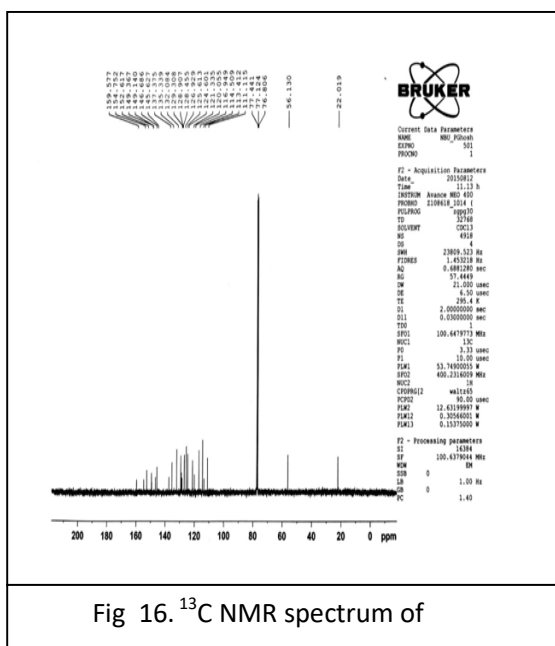


Fig 16. ¹³C NMR spectrum of

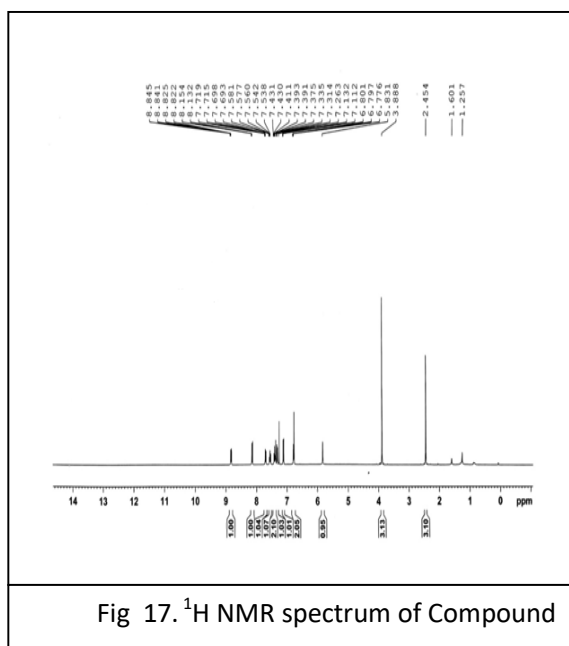


Fig 17. ¹H NMR spectrum of Compound

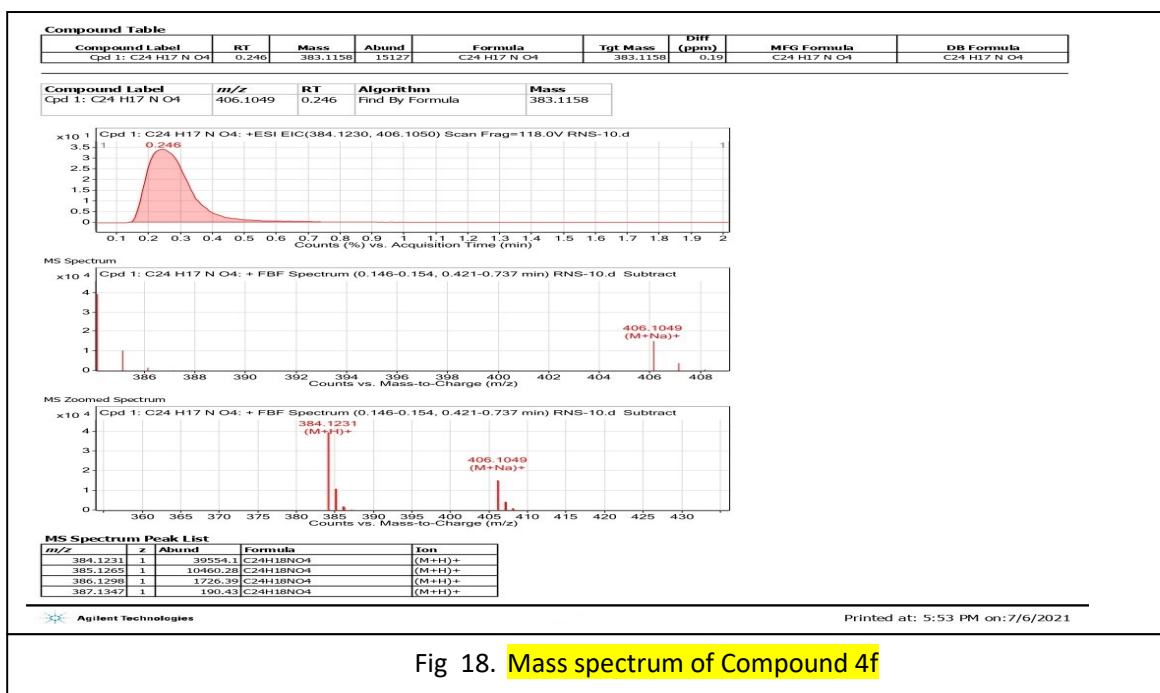


Fig 18. Mass spectrum of Compound 4f

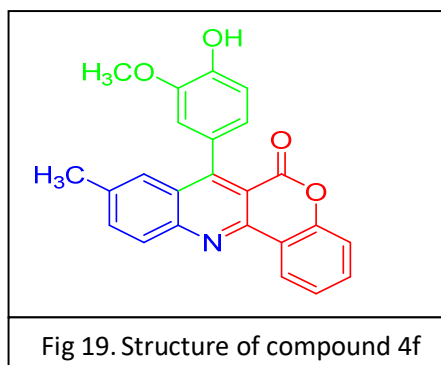


Fig 19. Structure of compound 4f

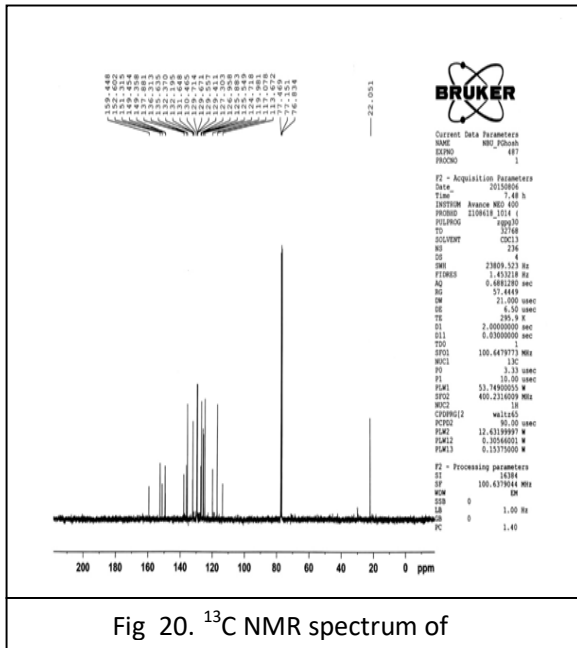


Fig 20. ¹³C NMR spectrum of

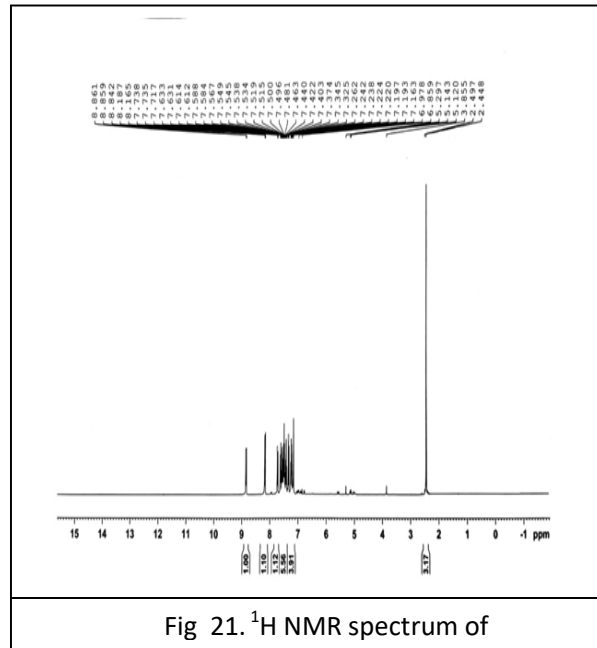


Fig 21. ¹H NMR spectrum of

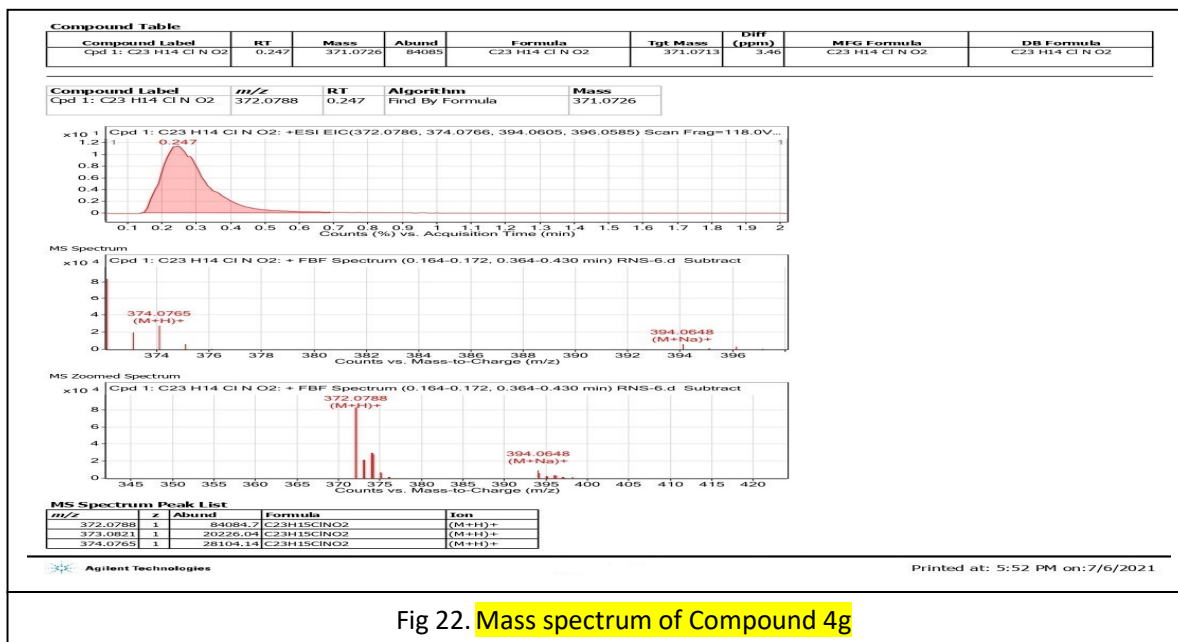
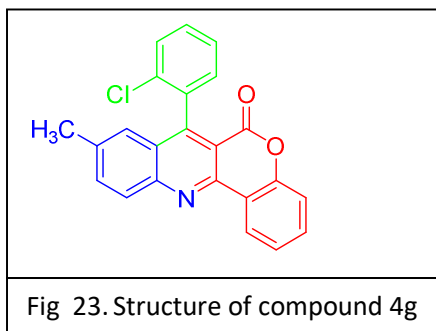
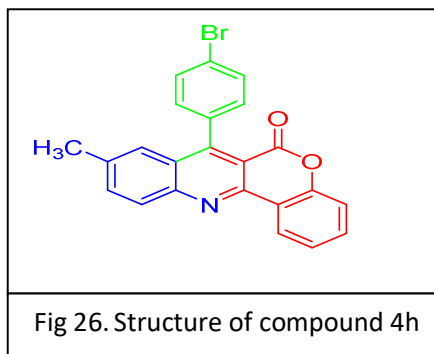
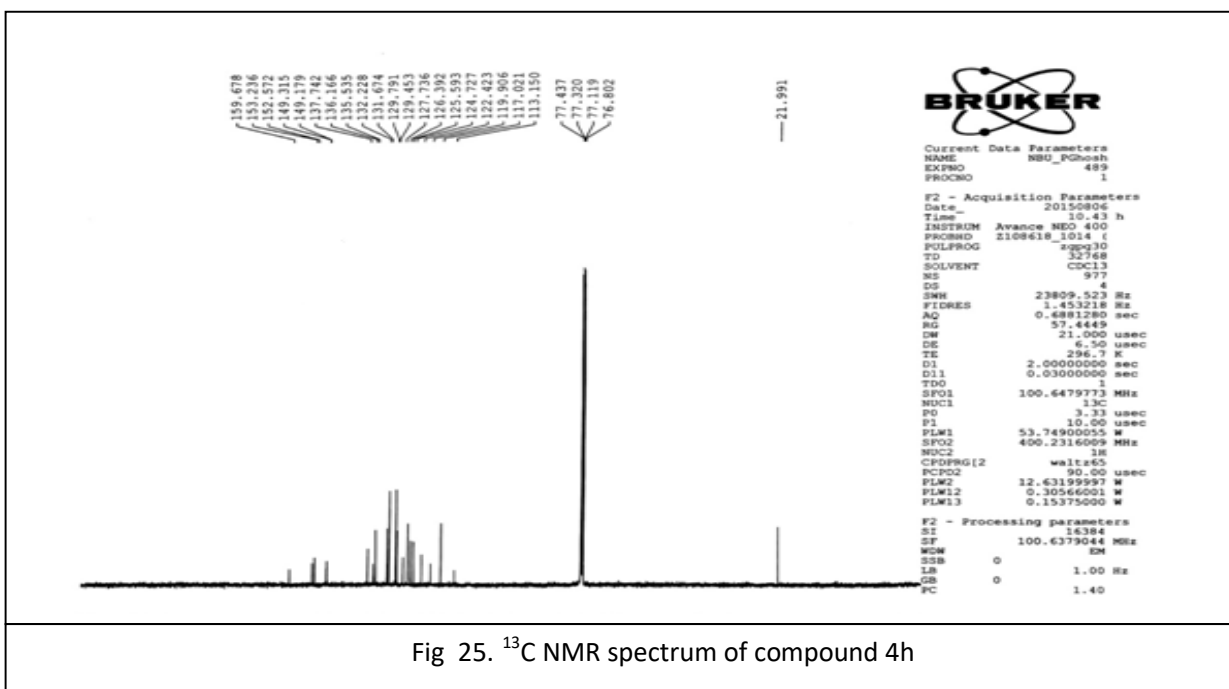
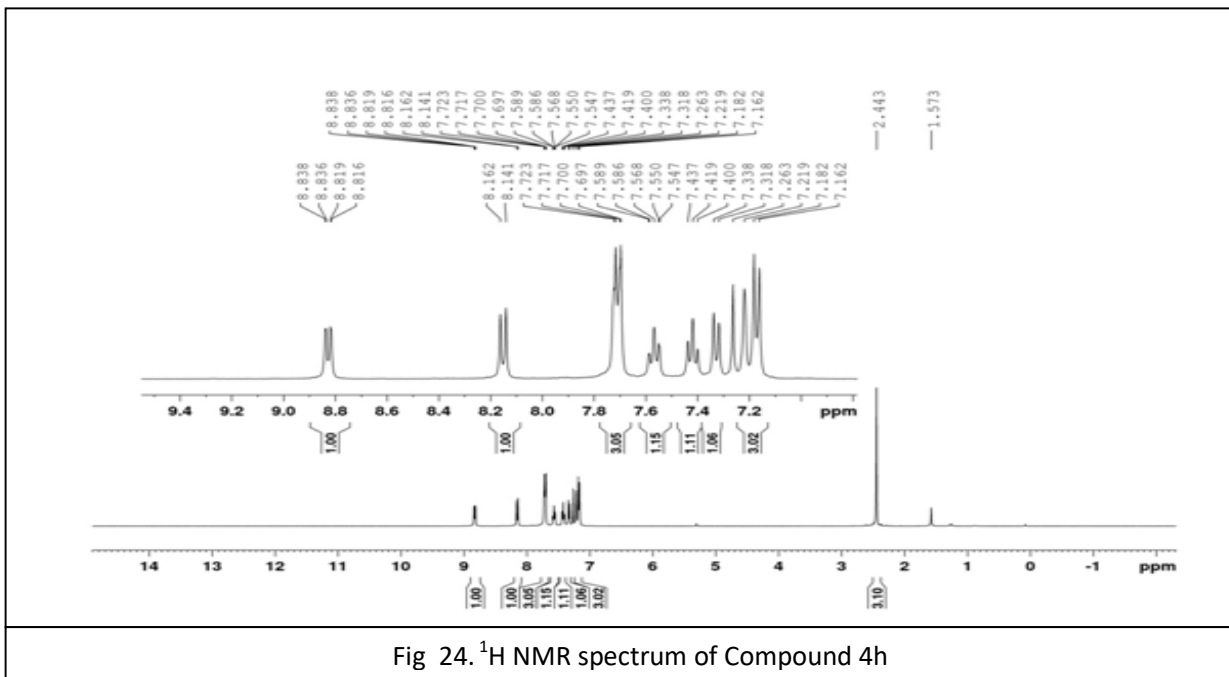


Fig 22. Mass spectrum of Compound 4g





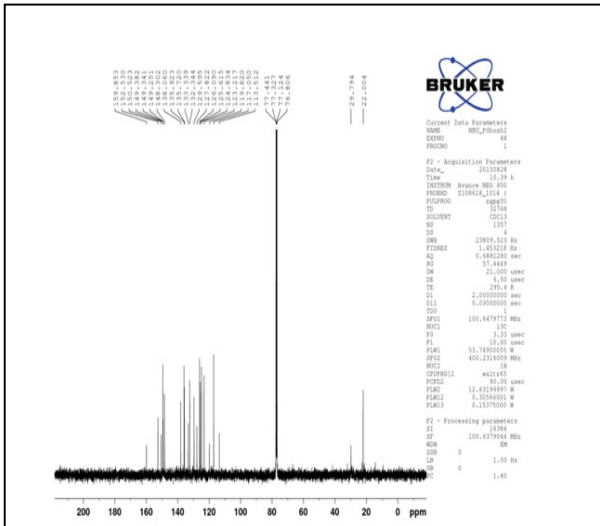


Fig 30. ¹³C NMR spectrum of compound 4k

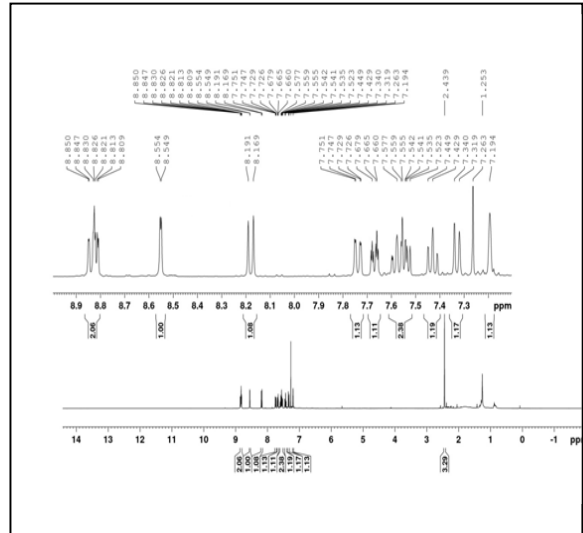


Fig 31. ¹H NMR spectrum of Compound 4k

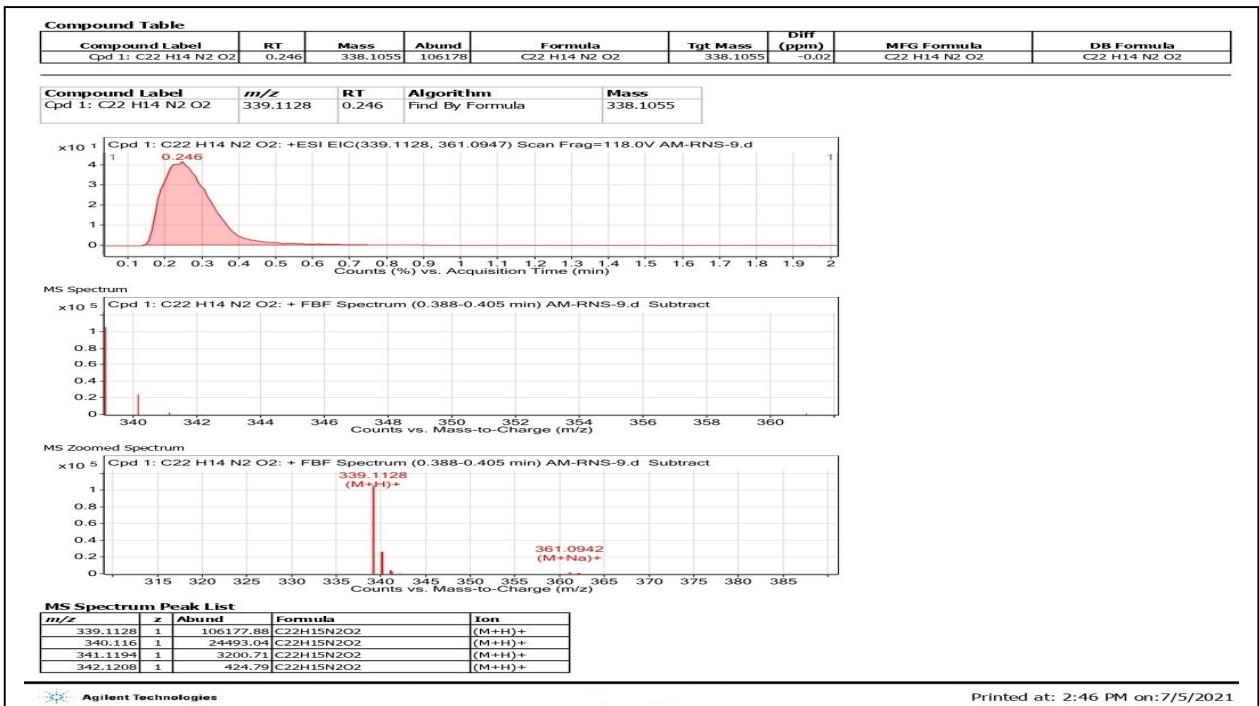


Fig 32. Mass spectrum of Compound 4k

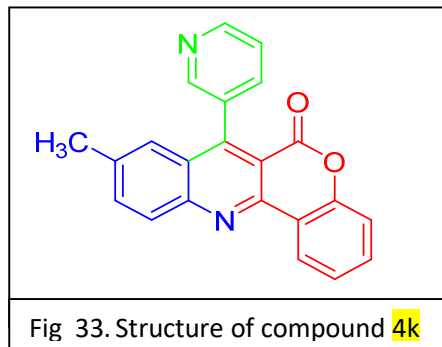


Fig 33. Structure of compound 4k

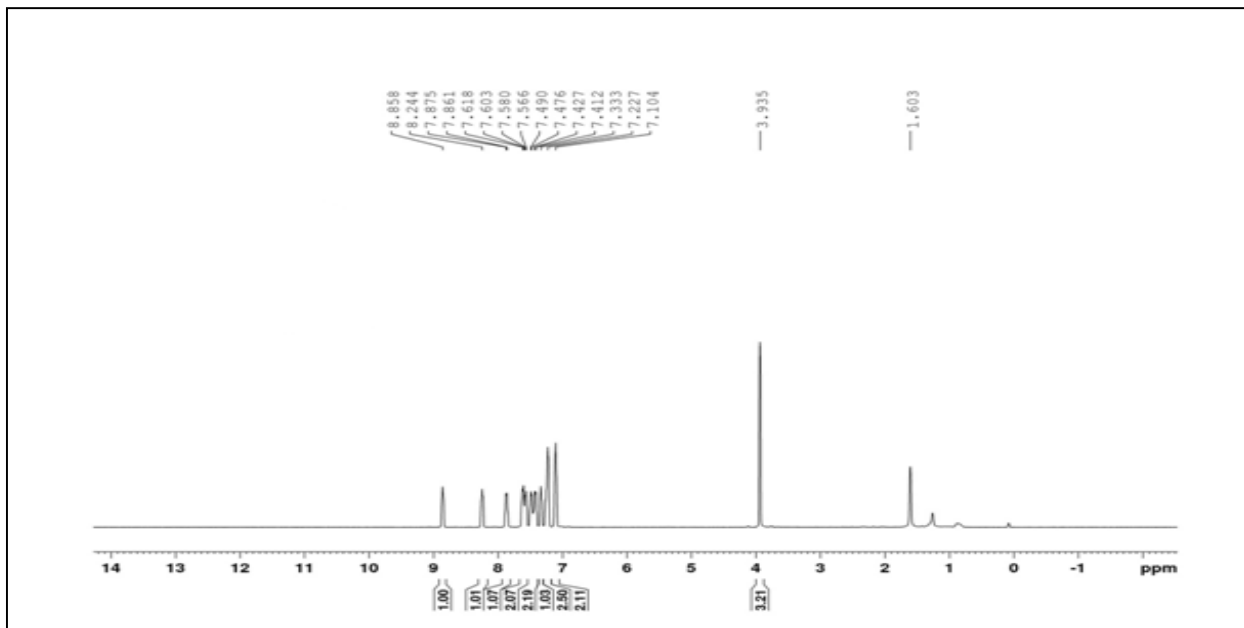


Fig 34. ¹H NMR spectrum of Compound 4I

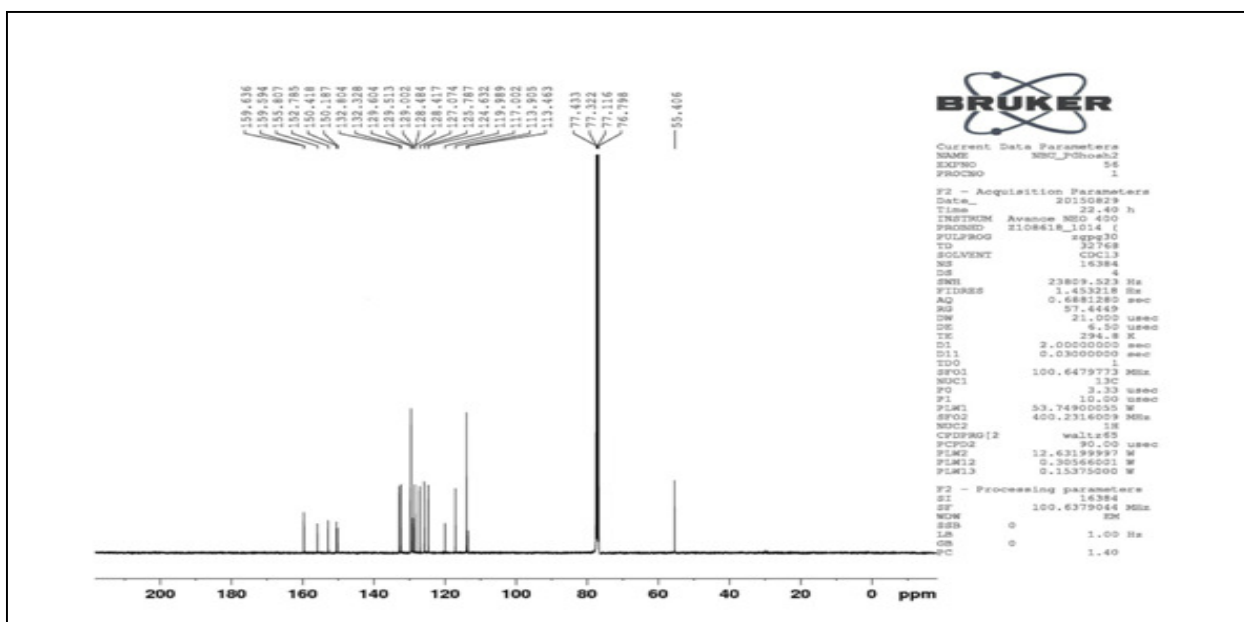


Fig 35. ¹³C NMR spectrum of compound 4I

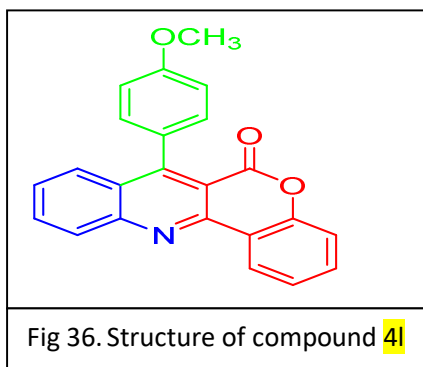
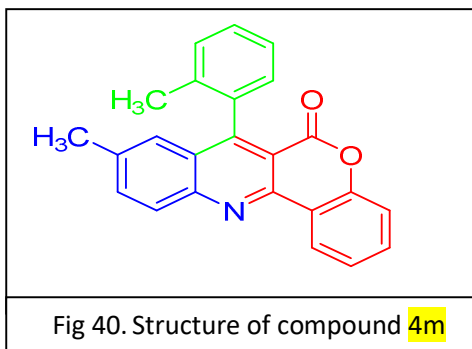
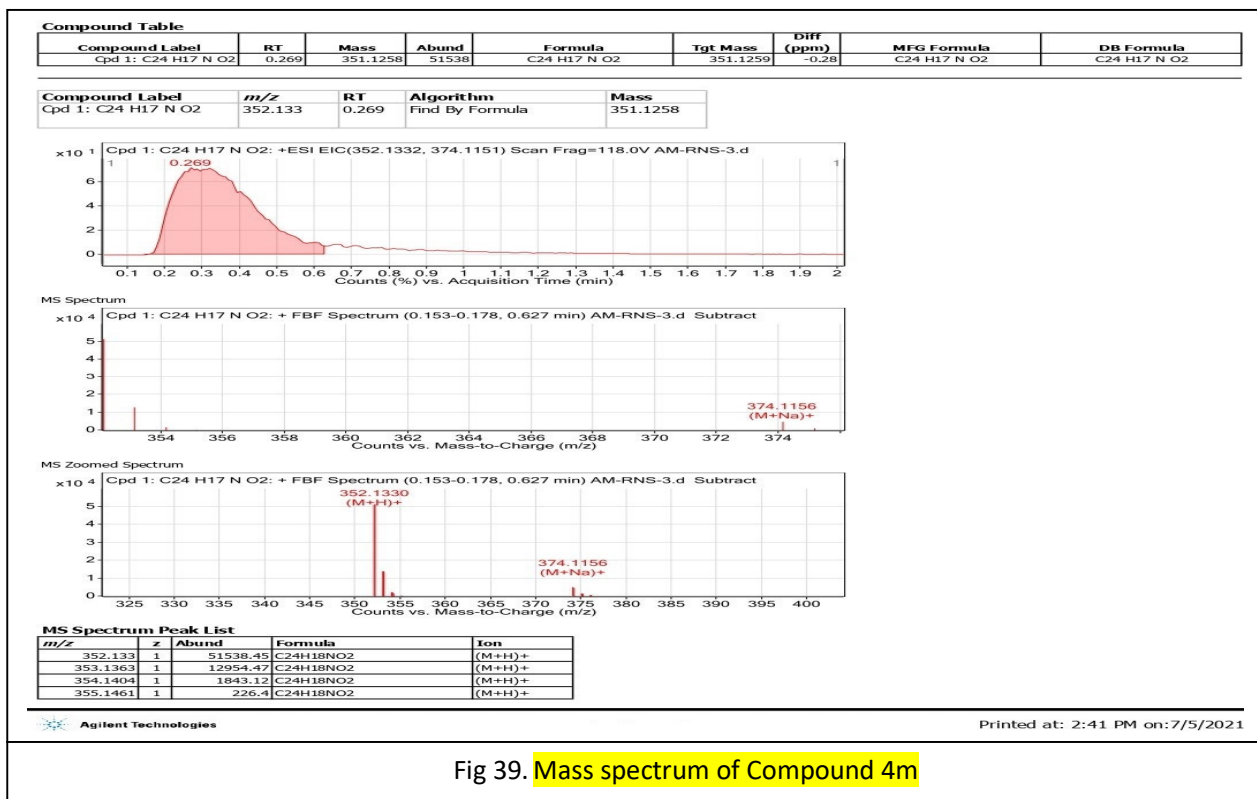
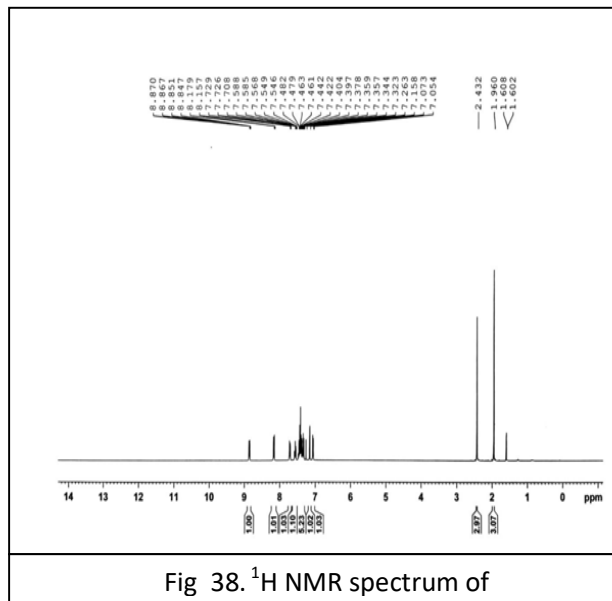
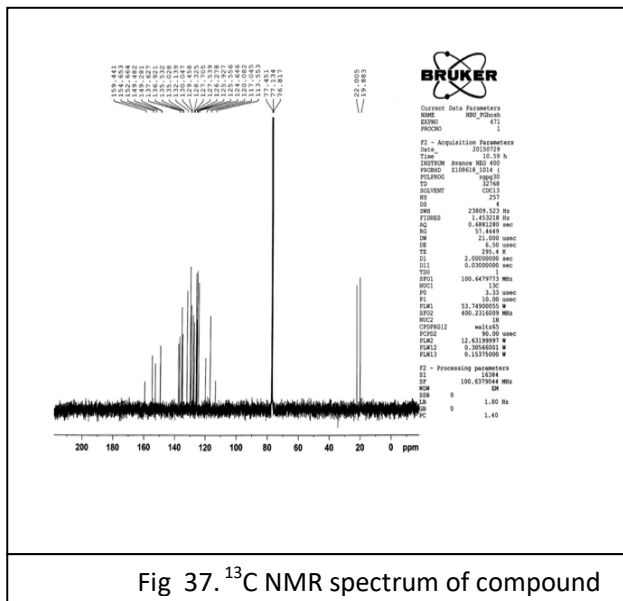


Fig 36. Structure of compound 4I



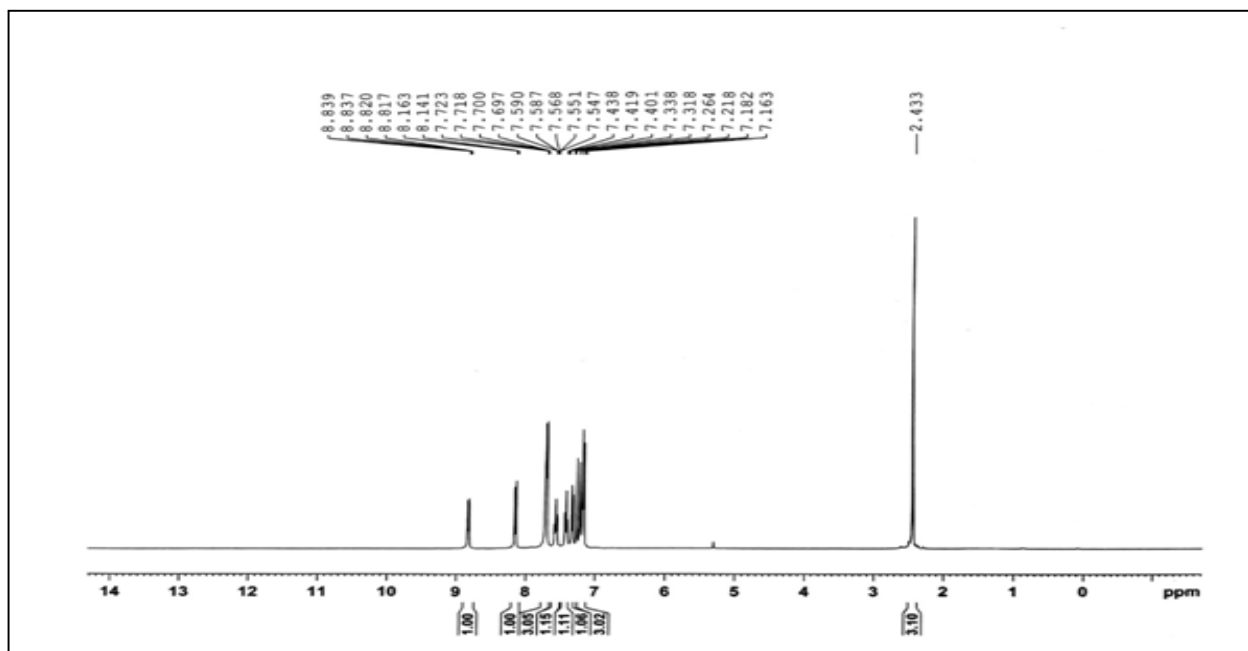


Fig 41. ¹H NMR spectrum of Compound 4n

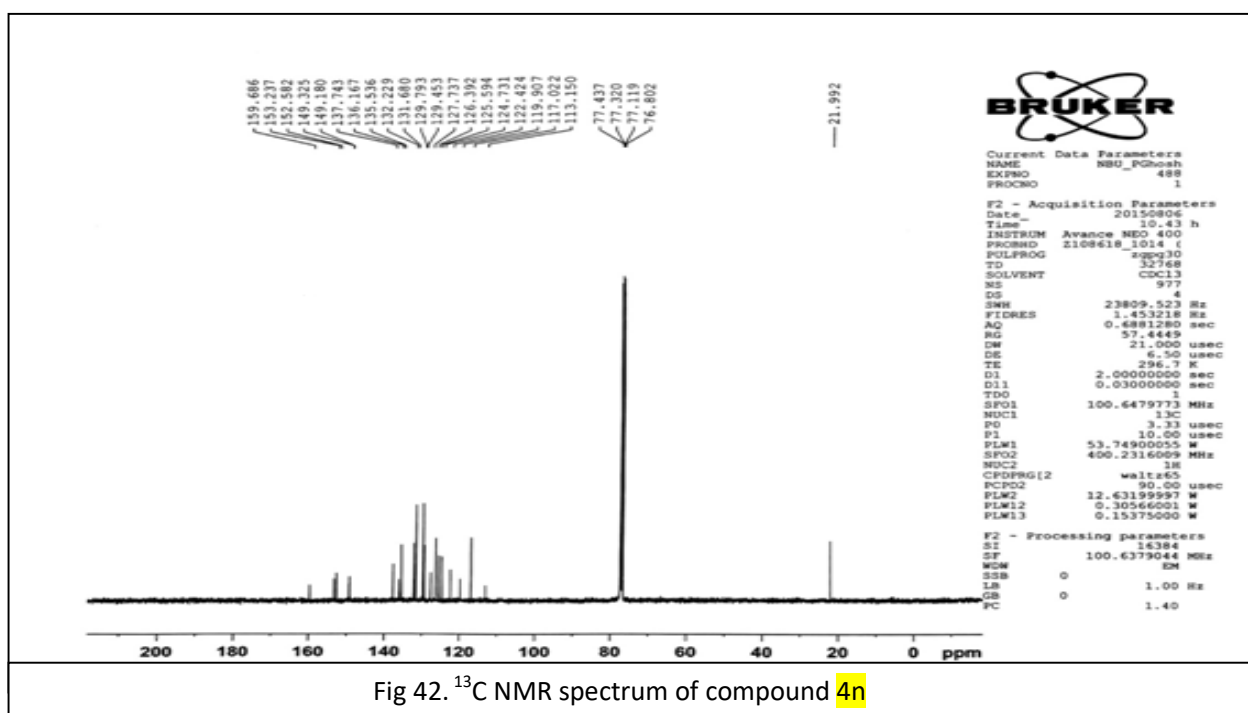


Fig 42. ¹³C NMR spectrum of compound 4n

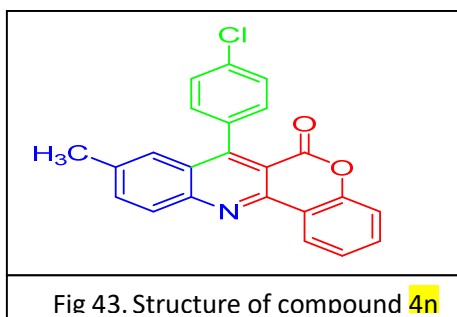


Fig 43. Structure of compound 4n

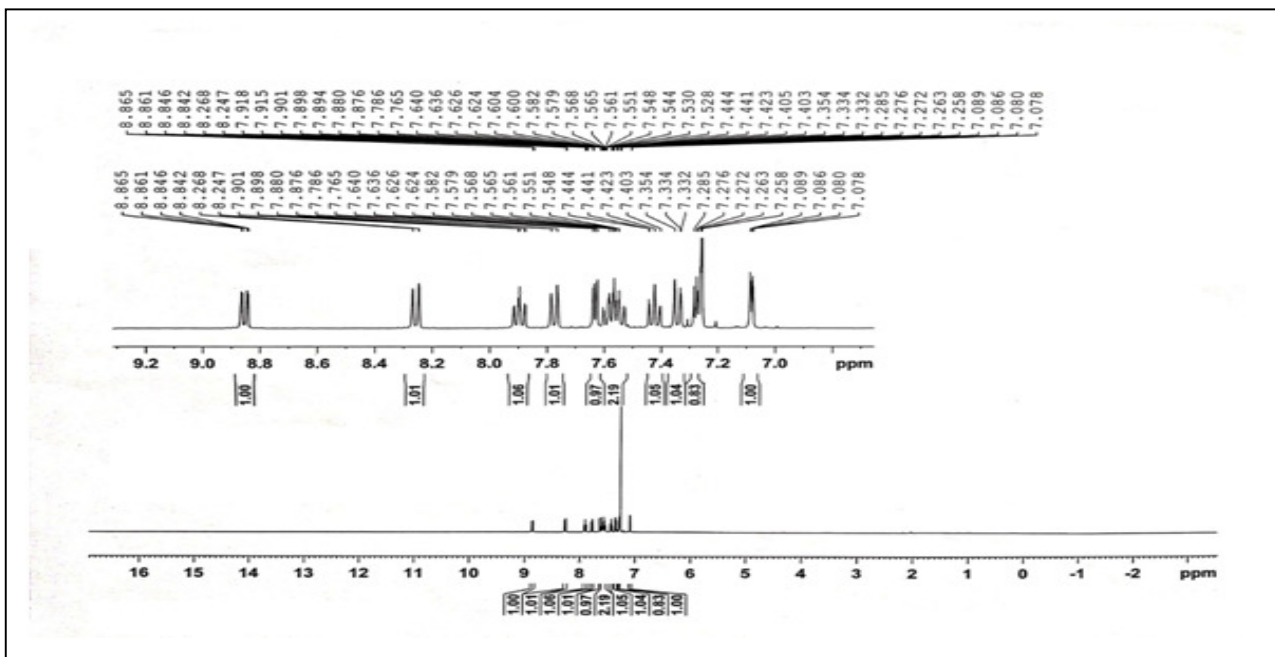


Fig 44. ¹H NMR spectrum of Compound 4o

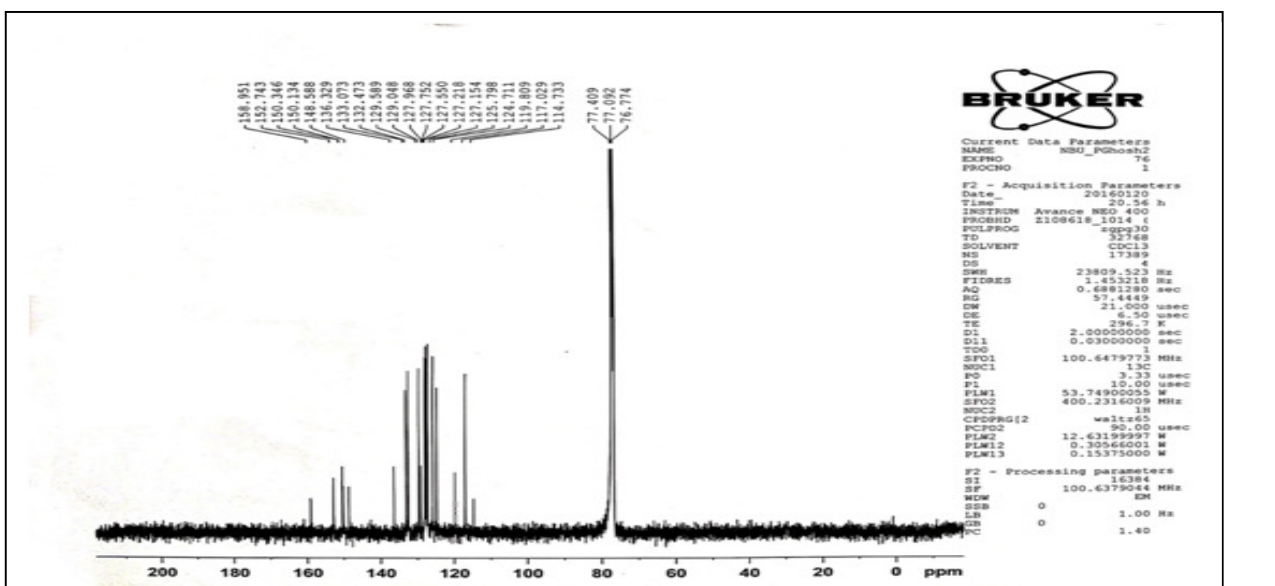


Fig 45. ¹³C NMR spectrum of compound 4o

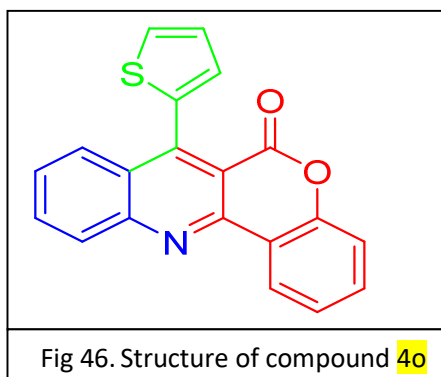


Fig 46. Structure of compound 4o

