Supporting Information

Reaction of diphenacylaniline and diphenacyl sulfide under Gewald condition: Generation of enamine / thioamide

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Experimental

General

Melting points were measured in open capillary tubes and are uncorrected. The ^{1}H, ^{13}C and 2D NMR were recorded on a Bruker (Avance) 300 MHz NMR instrument using TMS as internal standard and $CDCl_3$ as solvent. Standard Bruker software was used throughout. Chemical shifts are given in parts per million (δ-scale) and the coupling constants are given in Hertz. Silica gel-G plates (Merck) were used for TLC analysis with a mixture of petroleum ether (60–80 ^{o}C) and ethylacetate as eluant. Electrospray ionisation mass spectrometry (ESI-MS) analysis was performed in the positive ion mode on a liquid chromatography-ion trap mass spectrometer (LCQ Fleet, Thermo Fisher Instruments Limited, US). Elemental analyses were performed on a Perkin Elmer 2400 Series II Elemental CHNS analyzer.

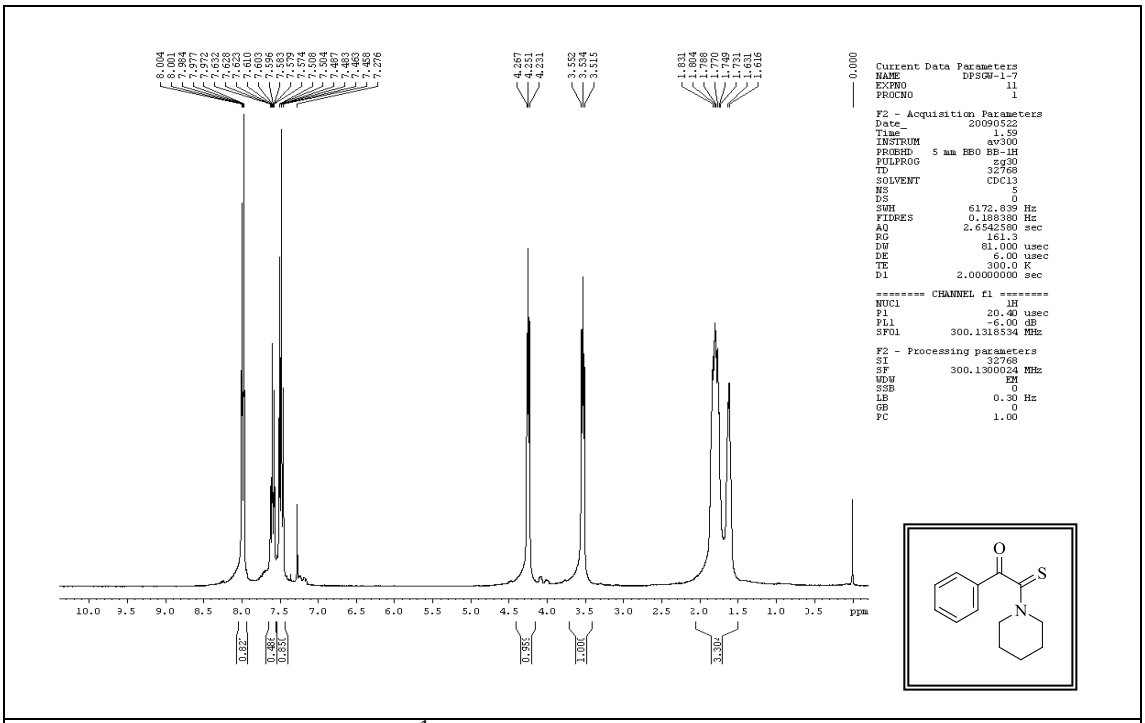

Figure 1. ^{1}H NMR Spectrum of **8a** ($CDCl_3$)

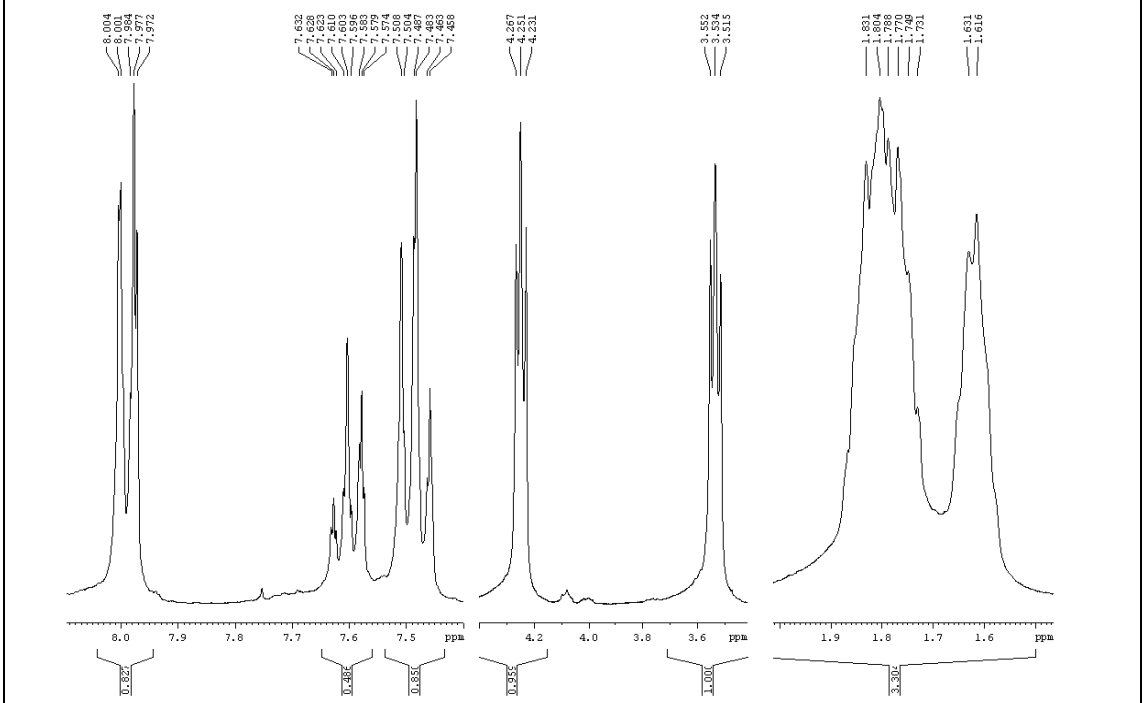

Figure 2. ^{1}H NMR Spectrum of **8a** (expanded)

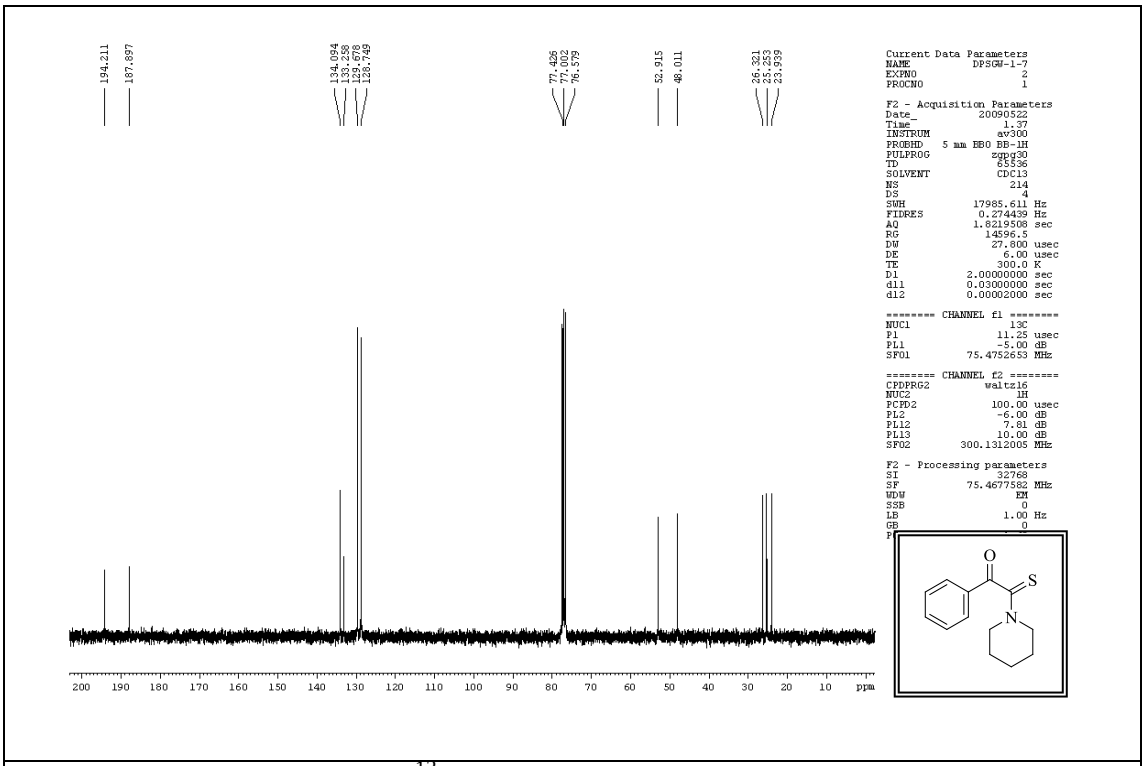

Figure 3. ^{13}C NMR Spectrum of **8a** ($CDCl_3$)

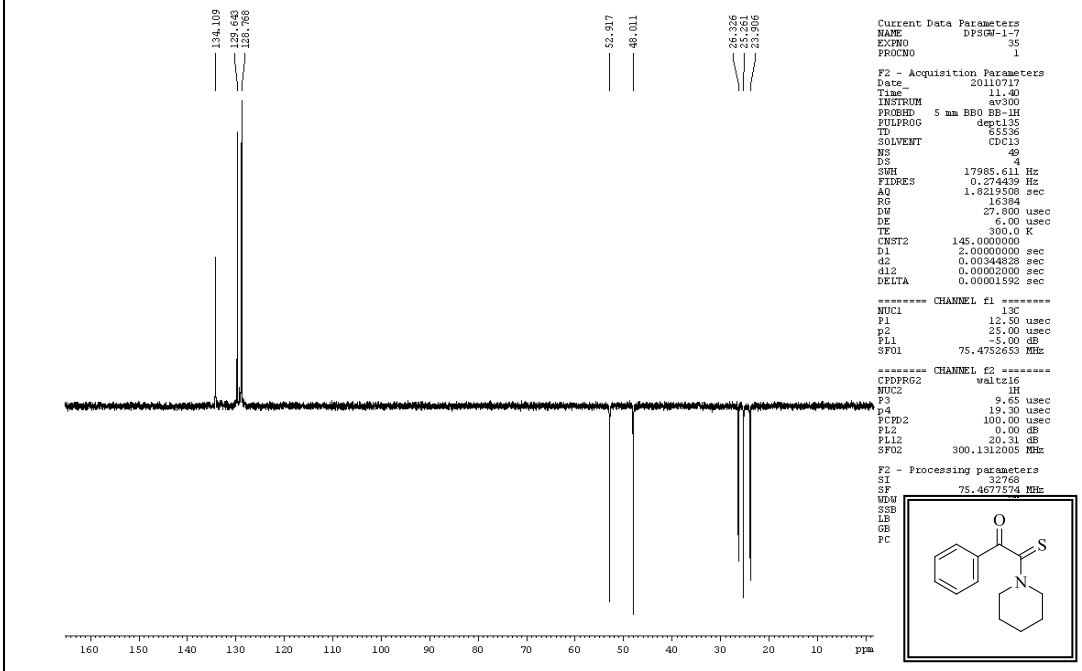

Figure 4. DEPT-135 Spectrum of **8a** ($CDCl_3$)

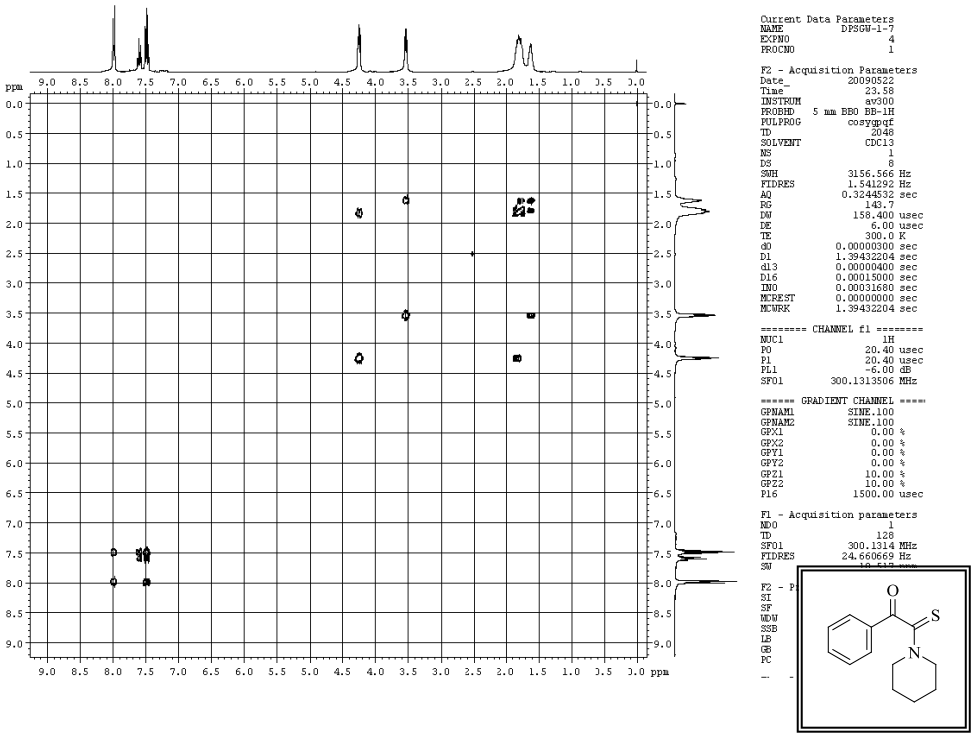

Figure 5. H,H-COSY Spectrum of **8a**

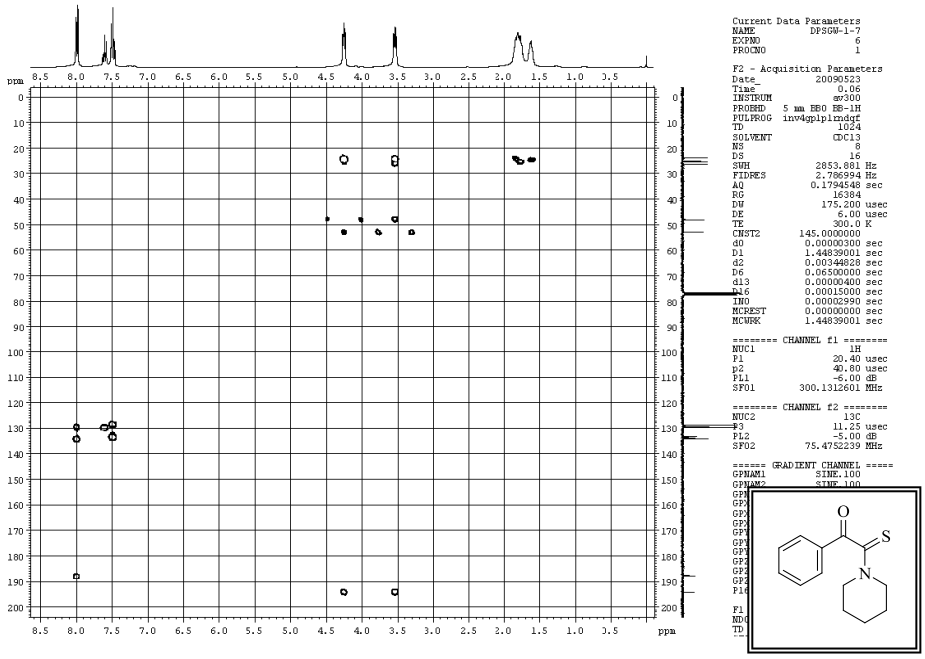

Figure 6. HMBC Spectrum of **8a**

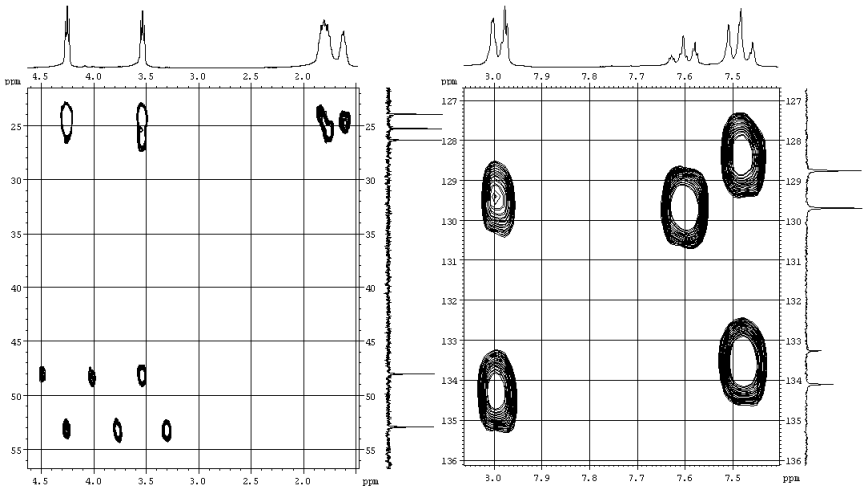

Figure 7. HMBC Spectrum of **8a** (expanded)

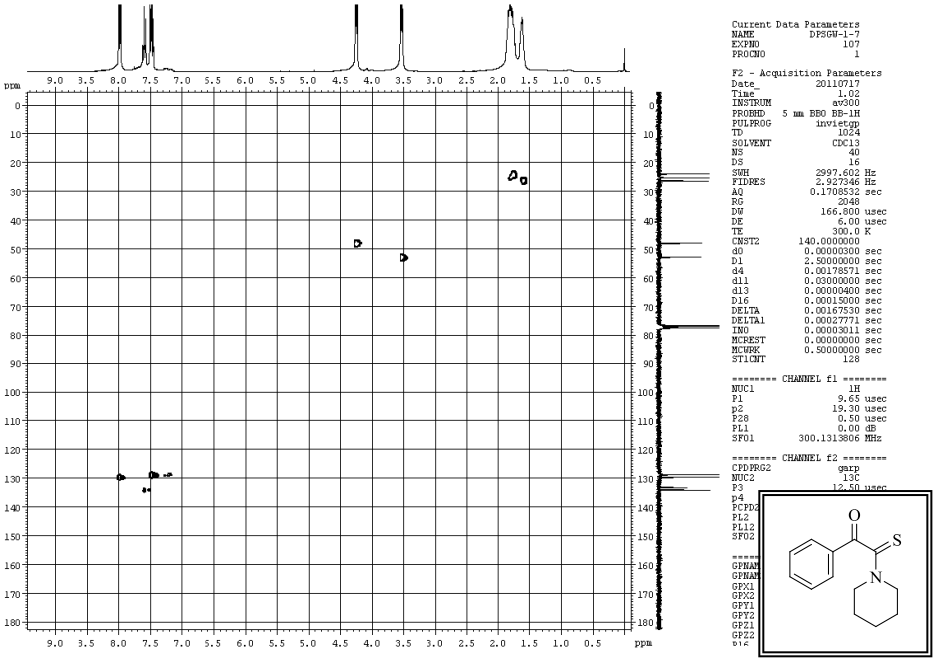

Figure 8. C,H-COSY Spectrum of **8a**

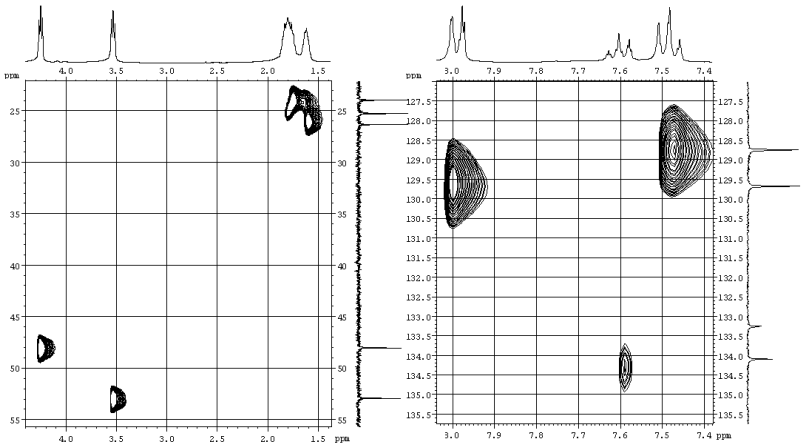

Figure 9. C,H-COSY Spectrum of **8a** (expanded)

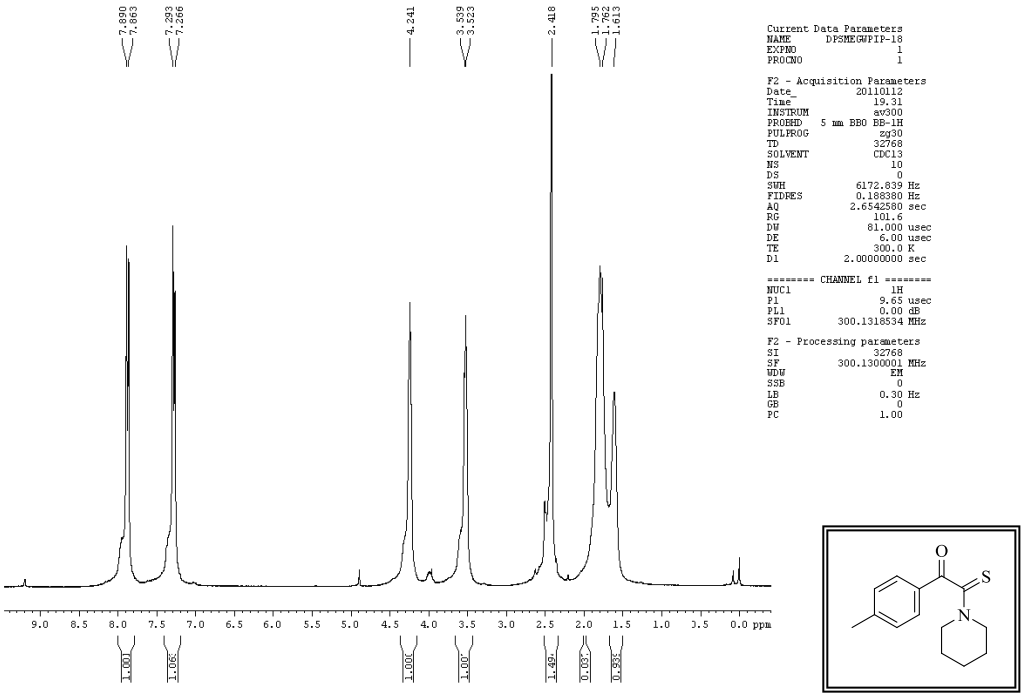

Figure 10. ^{1}H NMR Spectrum of **8b** ($CDCl_3$)

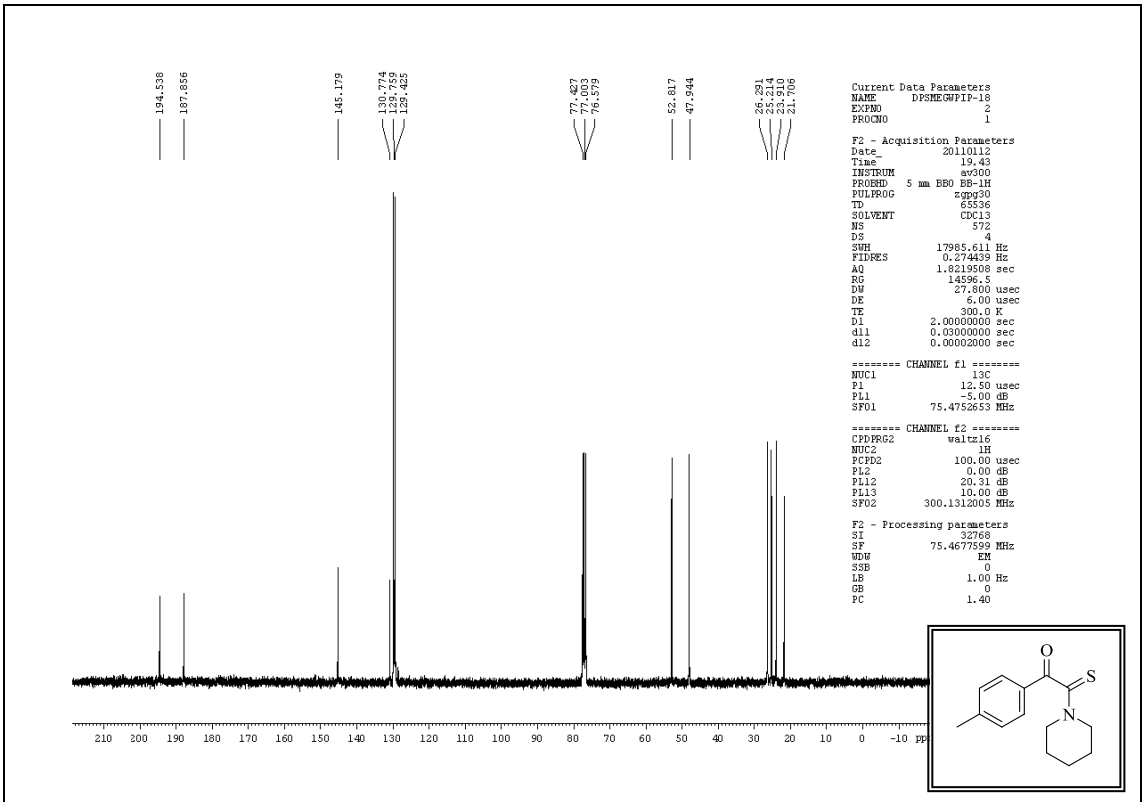

Figure 11. ^{13}C NMR Spectrum of **8b** ($CDCl_3$)

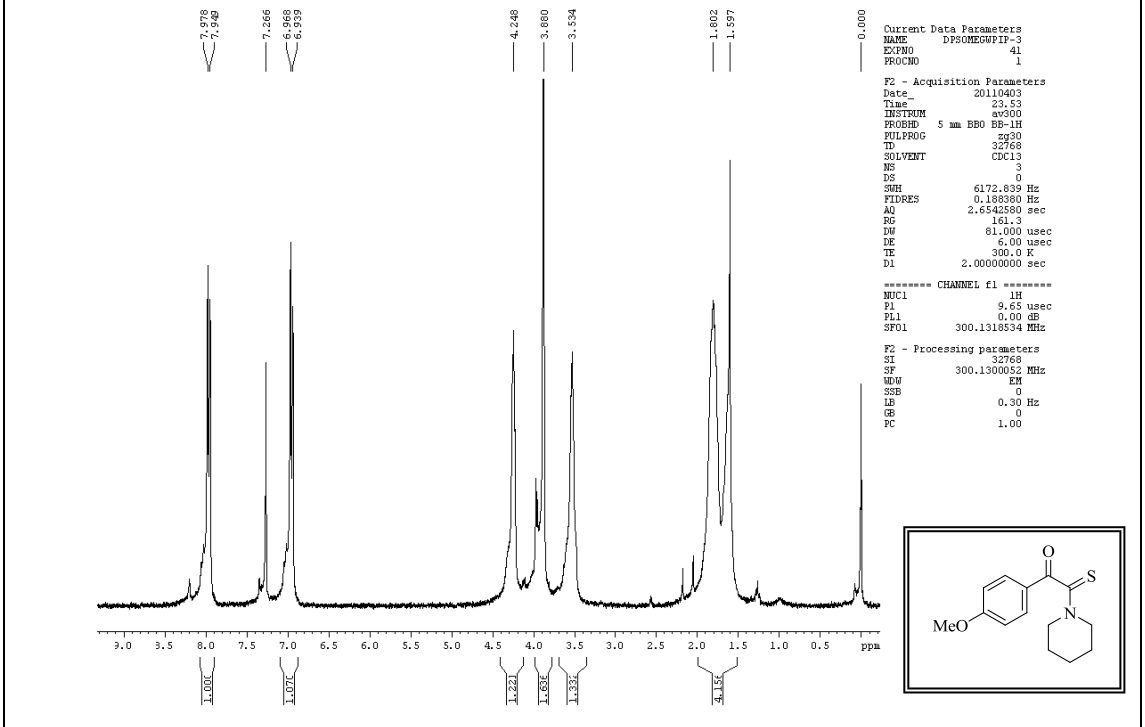

Figure 12. ^{1}H NMR Spectrum of **8c** ($CDCl_3$)

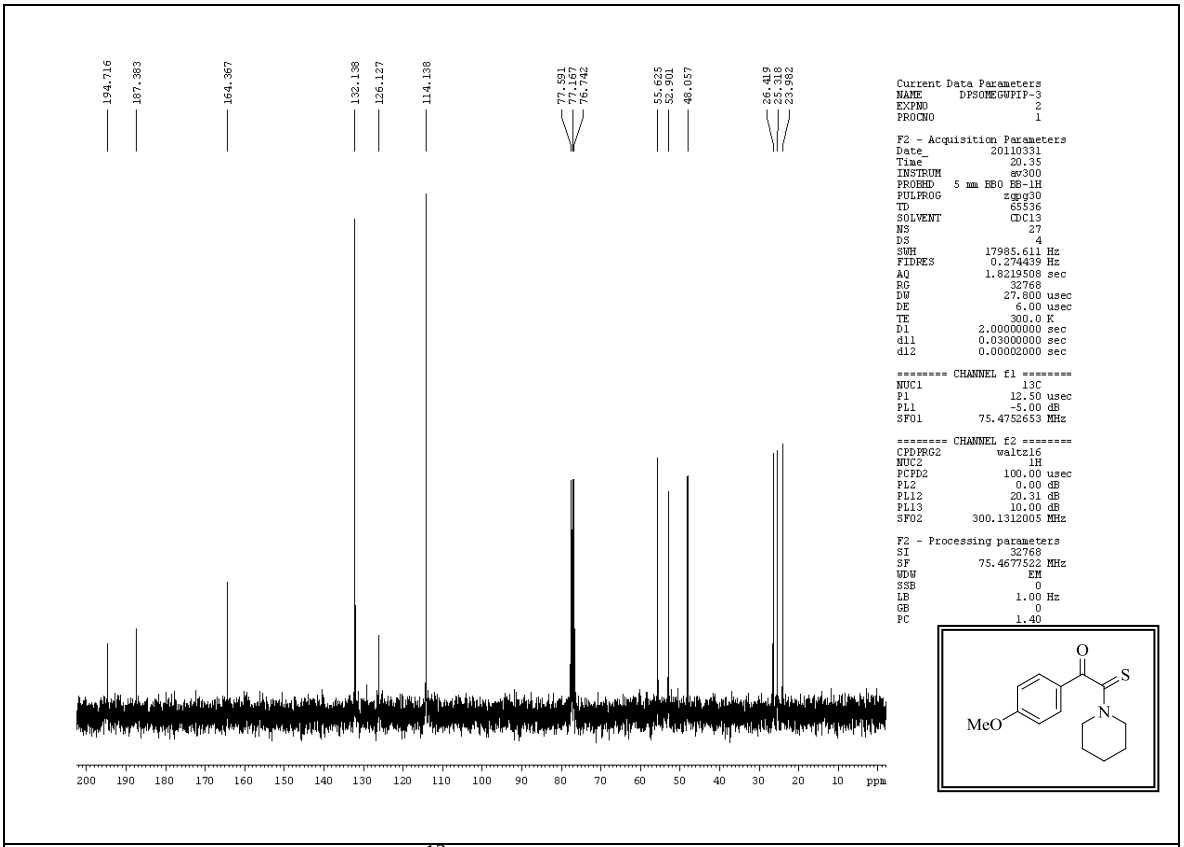

Figure 13. ^{13}C NMR Spectrum of **8c** (expanded)

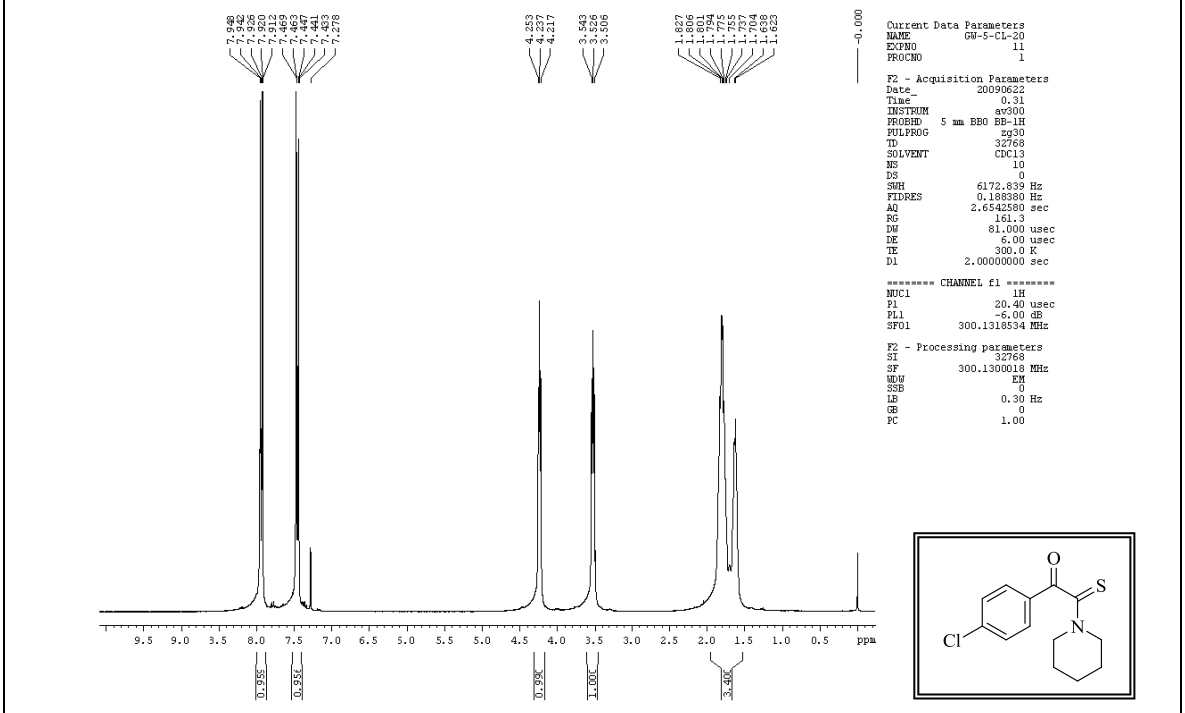

Figure 14. ^{1}H NMR Spectrum of **8d** ($CDCl_3$)

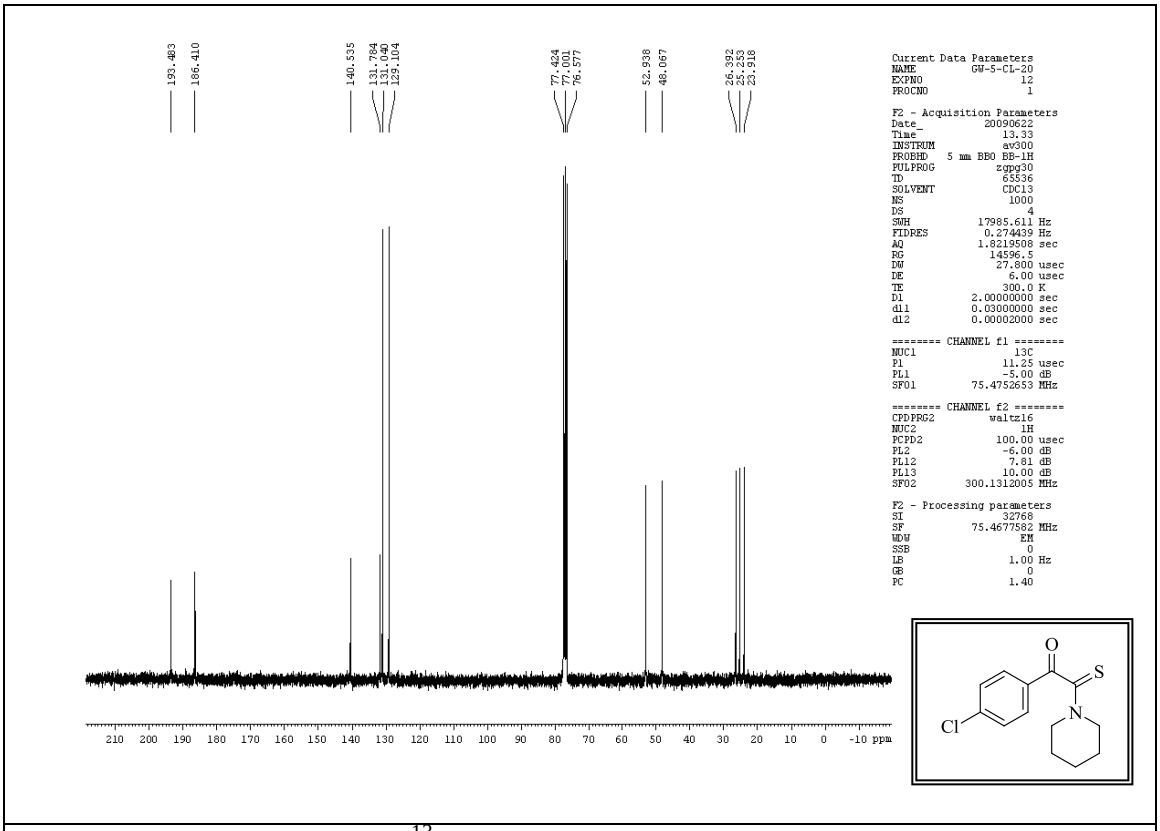

Figure 15. ^{13}C NMR Spectrum of **8d** (expanded)

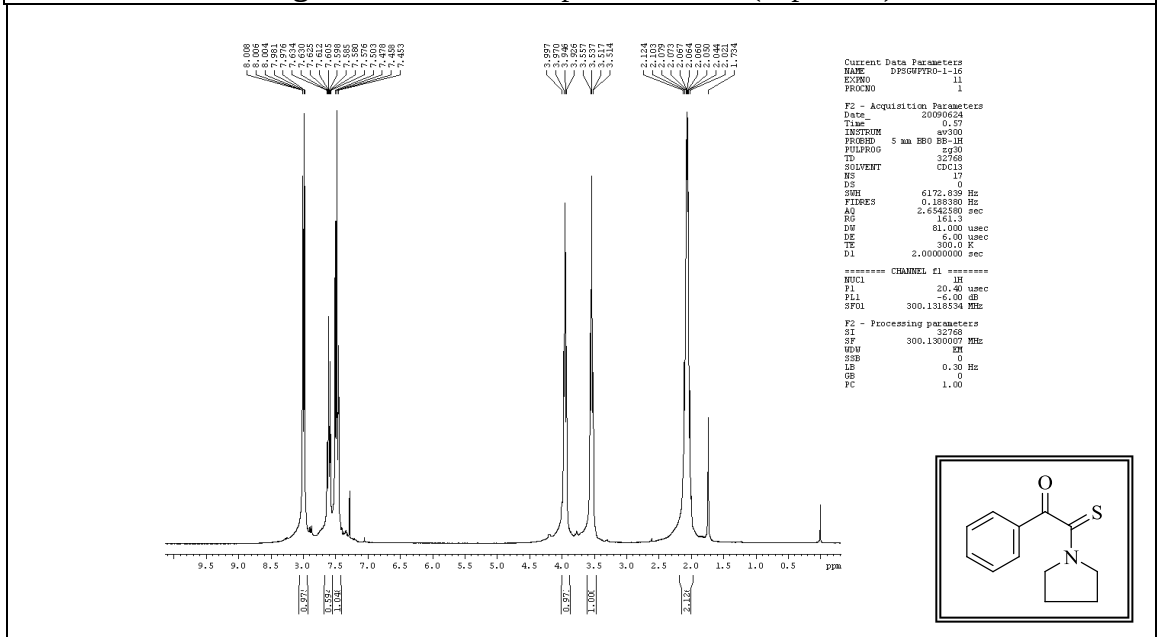

Figure 16. ^{1}H NMR Spectrum of **8e** ($CDCl_3$)

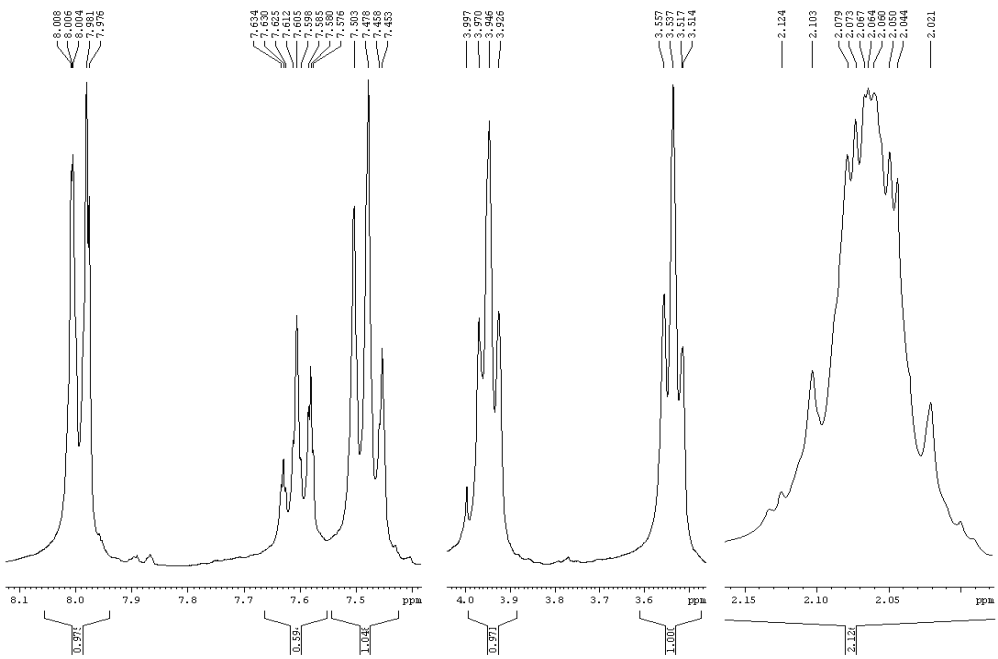

Figure 17. ^{1}H NMR Spectrum of **8e** (expanded)

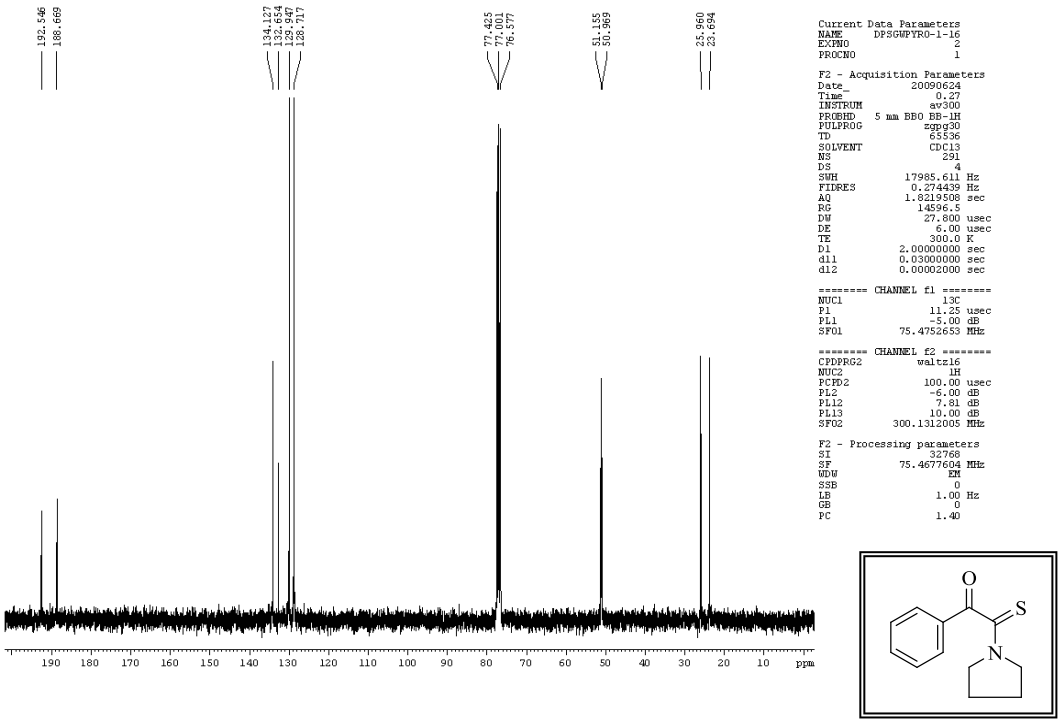

Figure 18. ^{13}C NMR Spectrum of **8e** ($CDCl_3$)

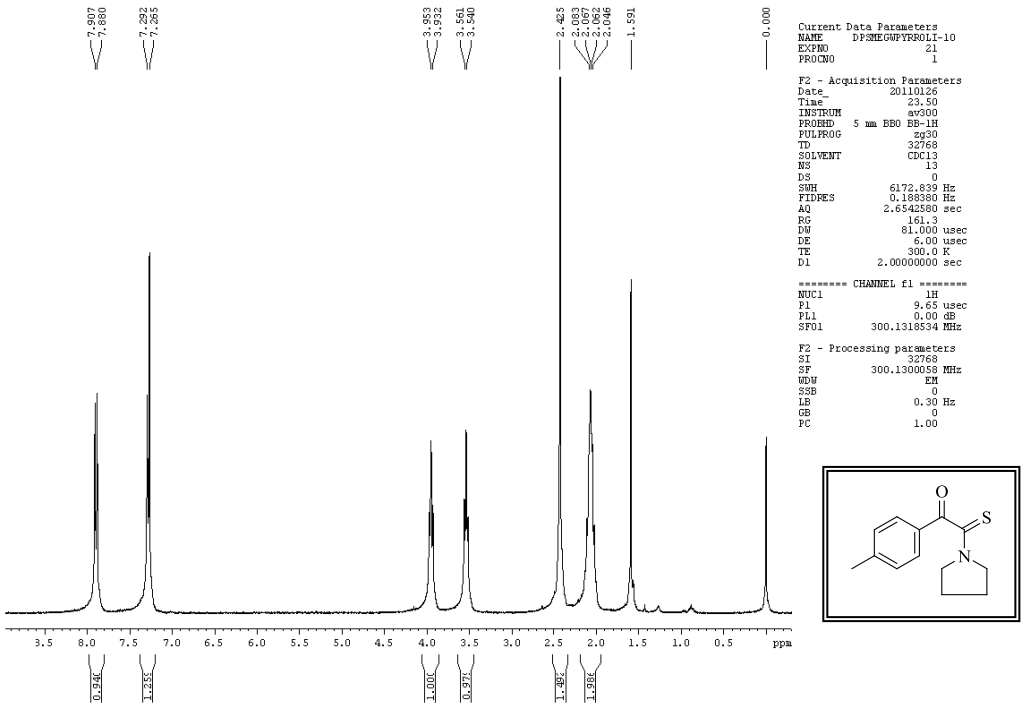

Figure 19. ^{1}H NMR Spectrum of **8f** ($CDCl_3$)

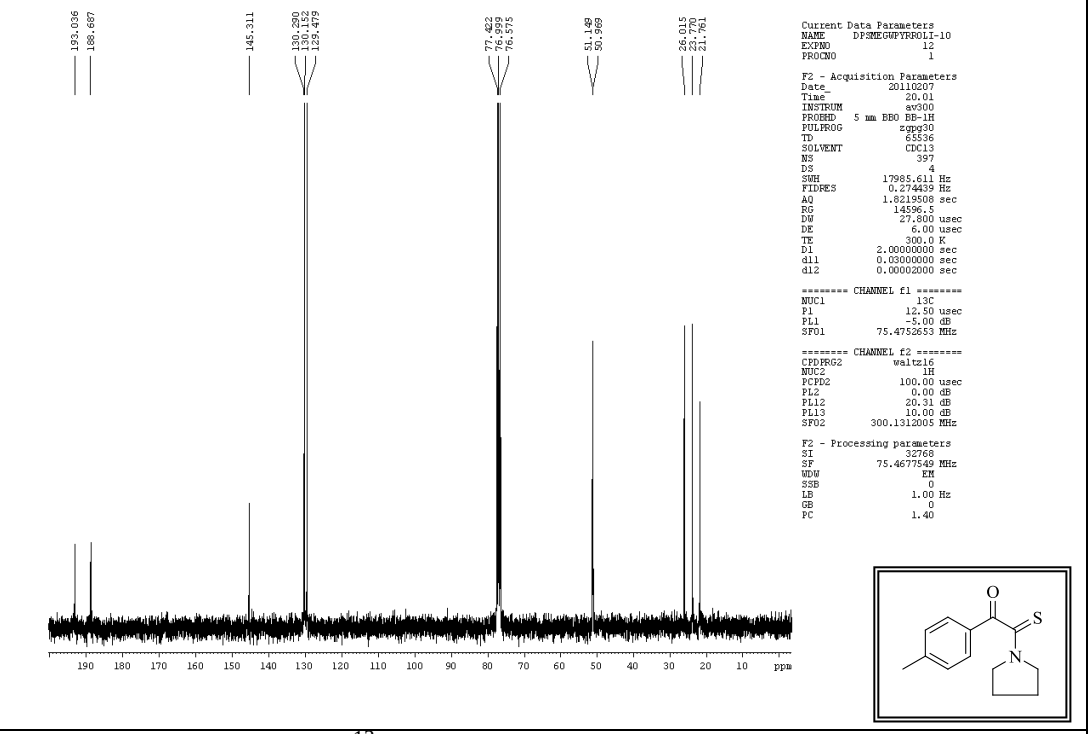

Figure 20. ^{13}C NMR Spectrum of **8f** (expanded)

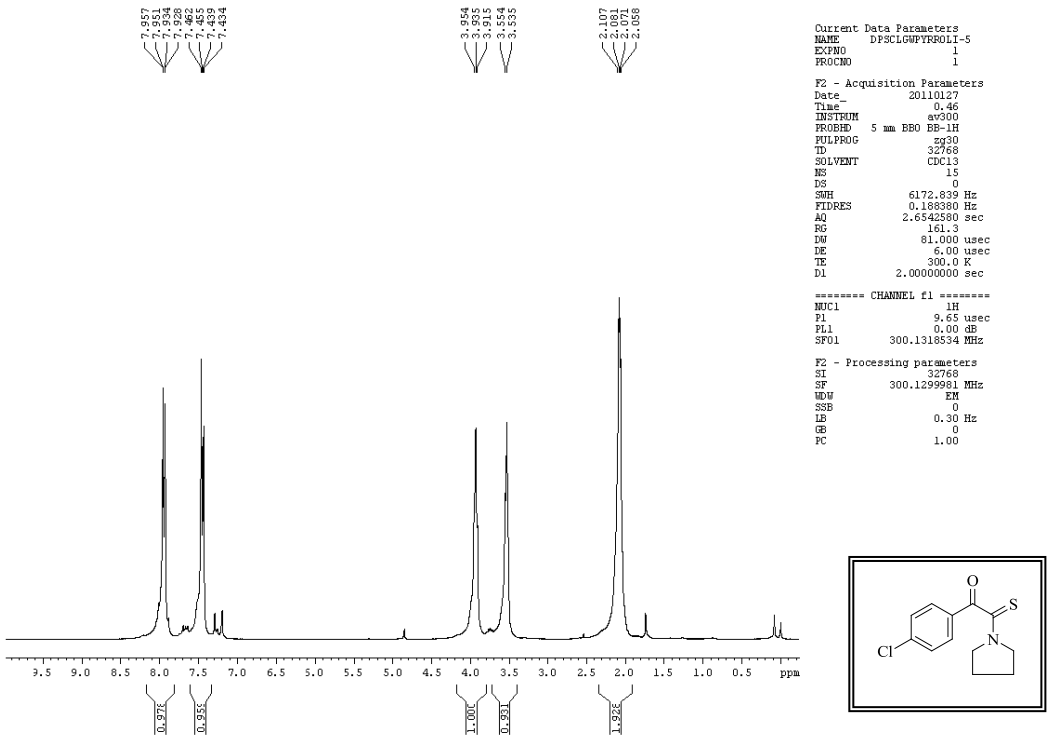

Figure 21. ^{1}H NMR Spectrum of **8g** ($CDCl_3$)

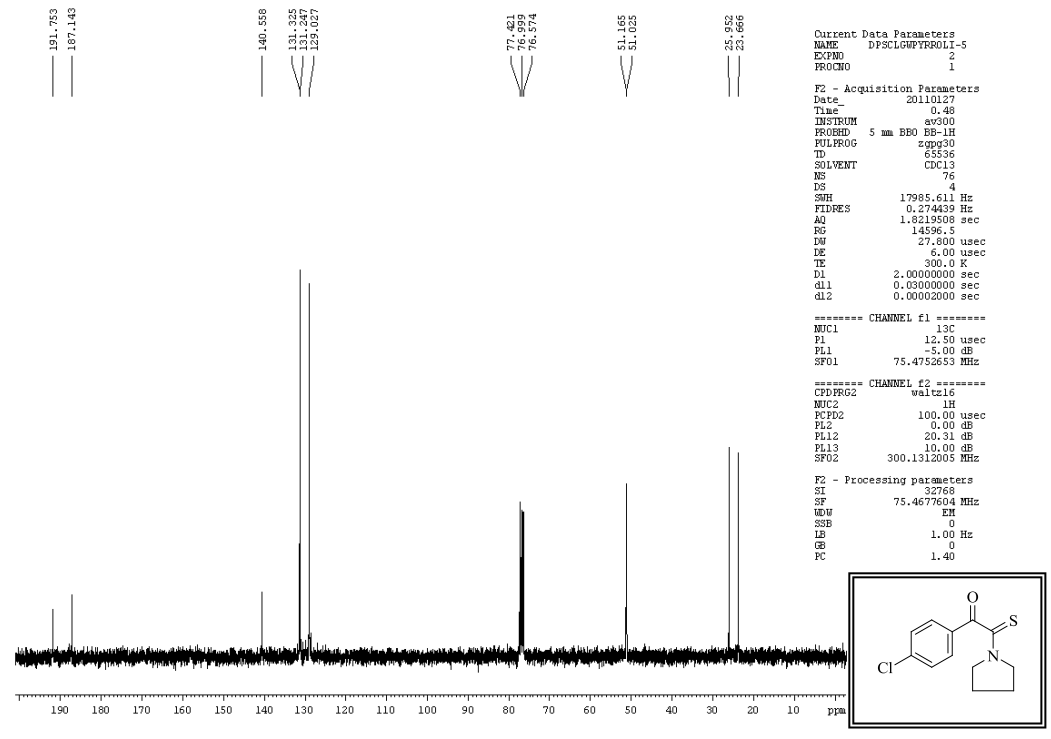

Figure 22. ^{13}C NMR Spectrum of **8g** (expanded)

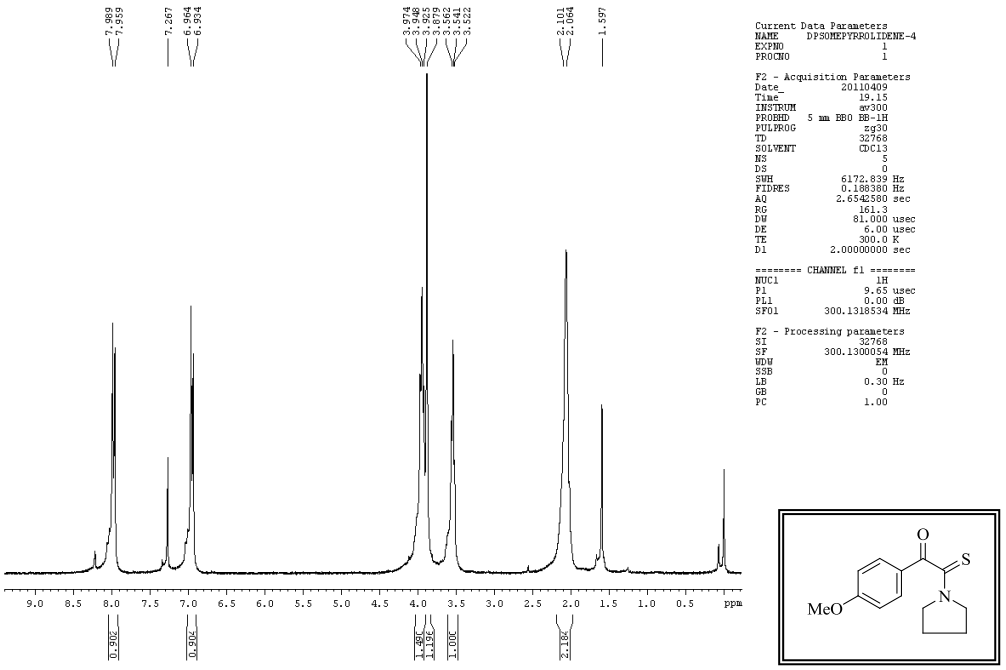

Figure 23. ^{1}H NMR Spectrum of **8h** ($CDCl_3$)

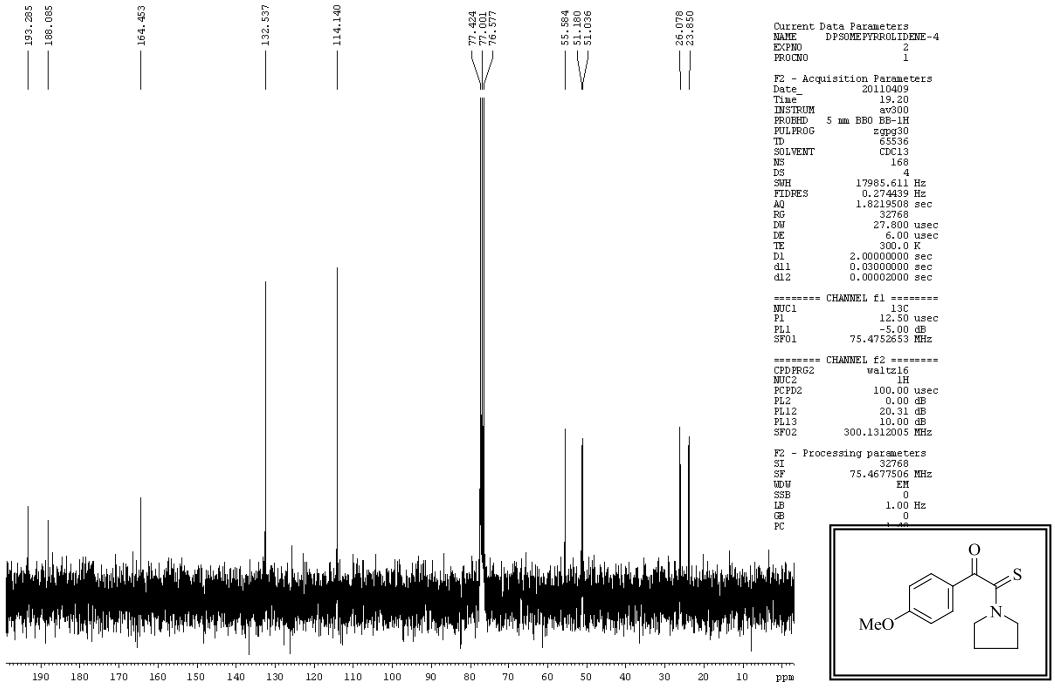

Figure 24. ^{13}C NMR Spectrum of **8h** (expanded)

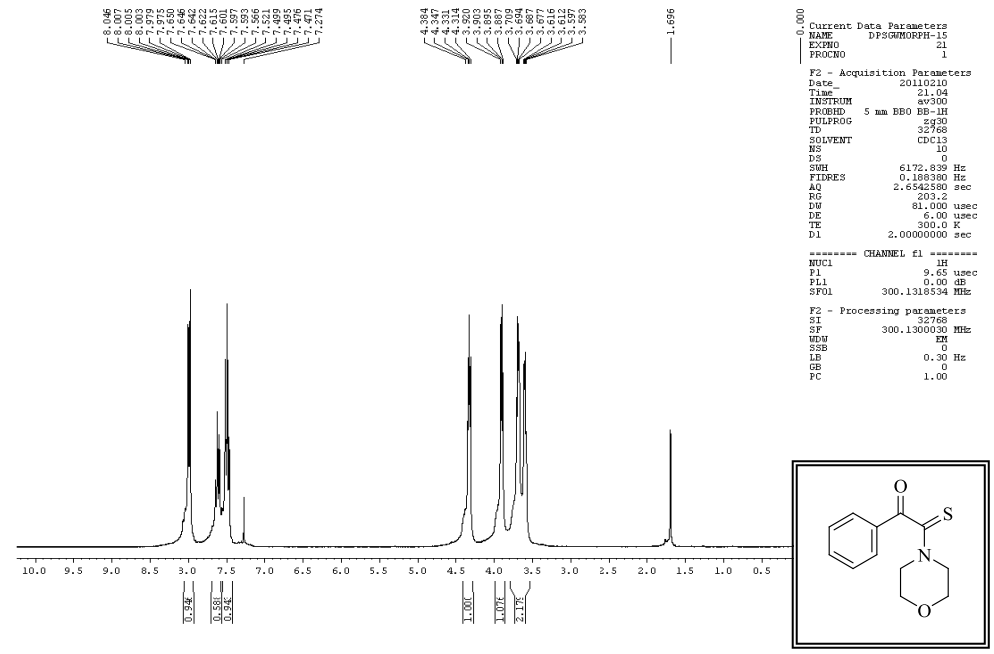

Figure 25. ^{1}H NMR Spectrum of **8i** ($CDCl_3$)

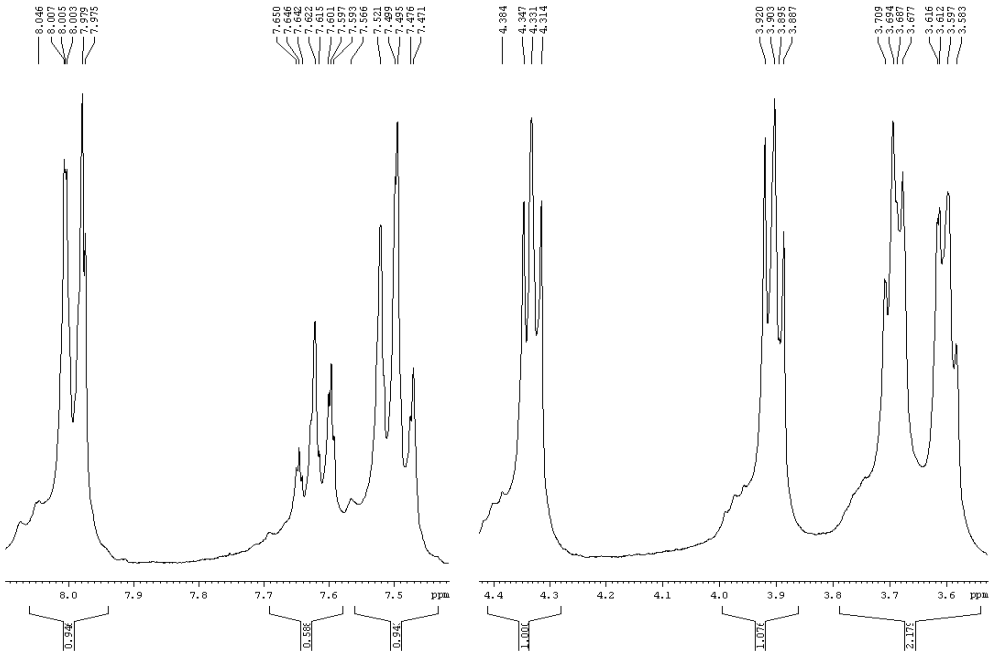

Figure 26. ^{1}H NMR Spectrum of **8i** (expanded)

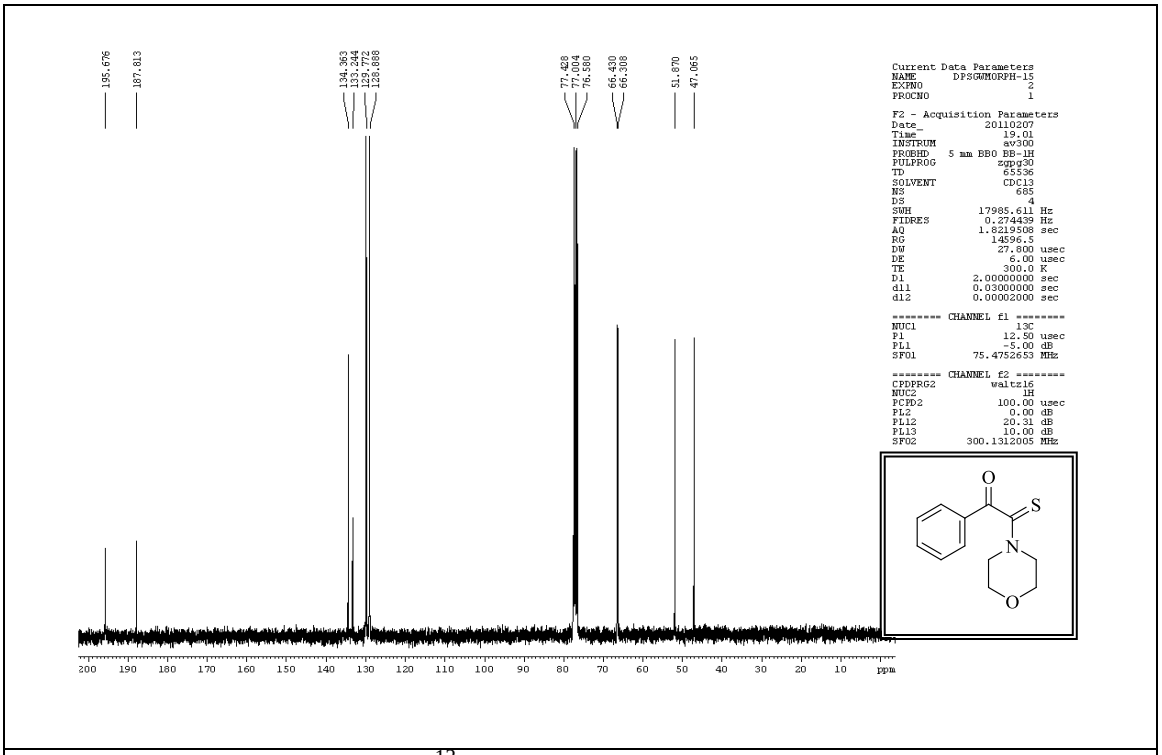

Figure 27. ^{13}C NMR Spectrum of **8i** ($CDCl_3$)

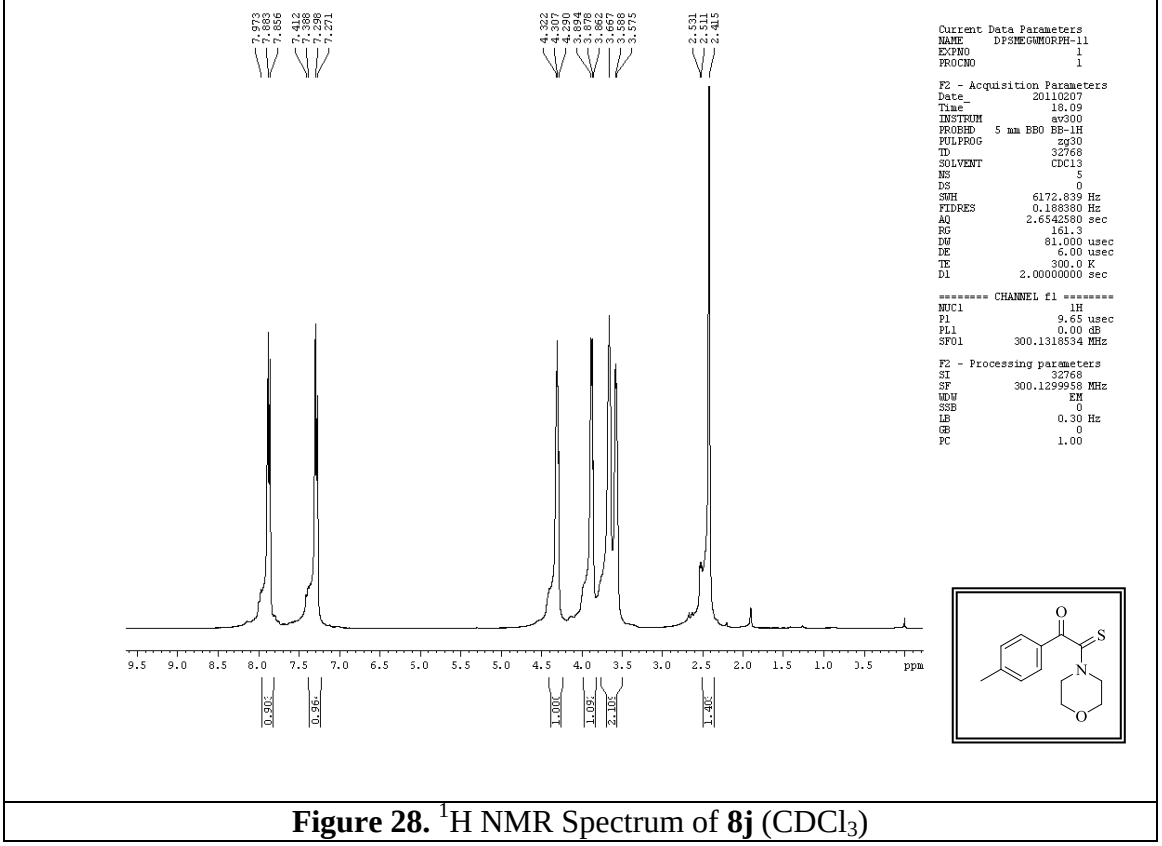

Figure 28. ^{1}H NMR Spectrum of **8j** ($CDCl_3$)

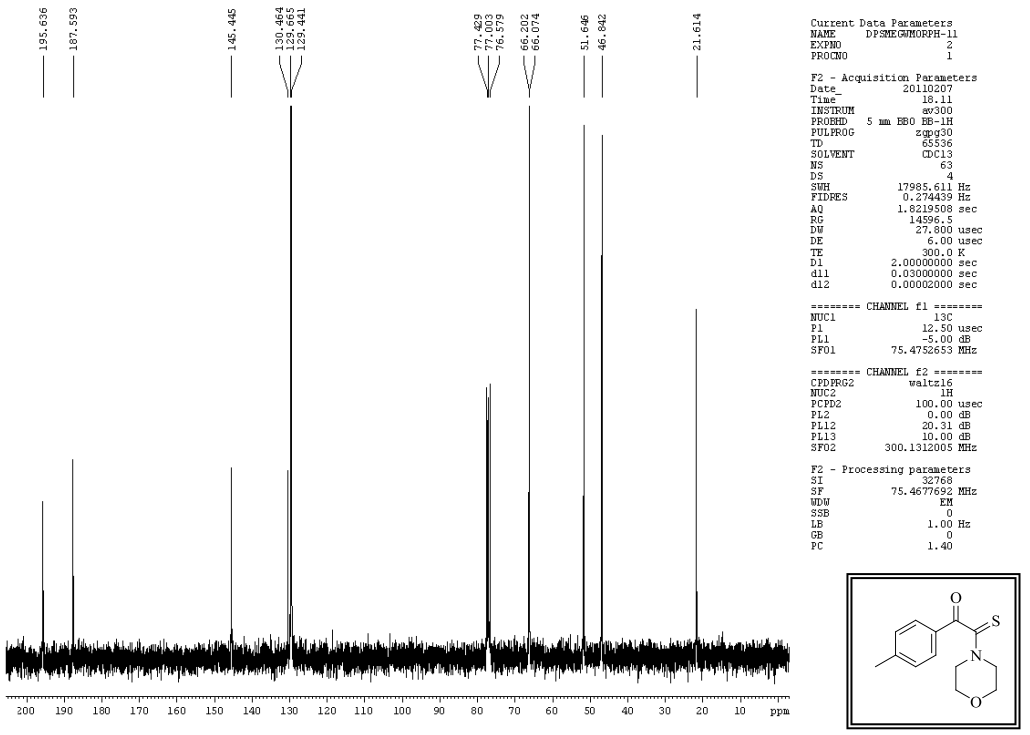

Figure 29. ^{13}C NMR Spectrum of **8j**

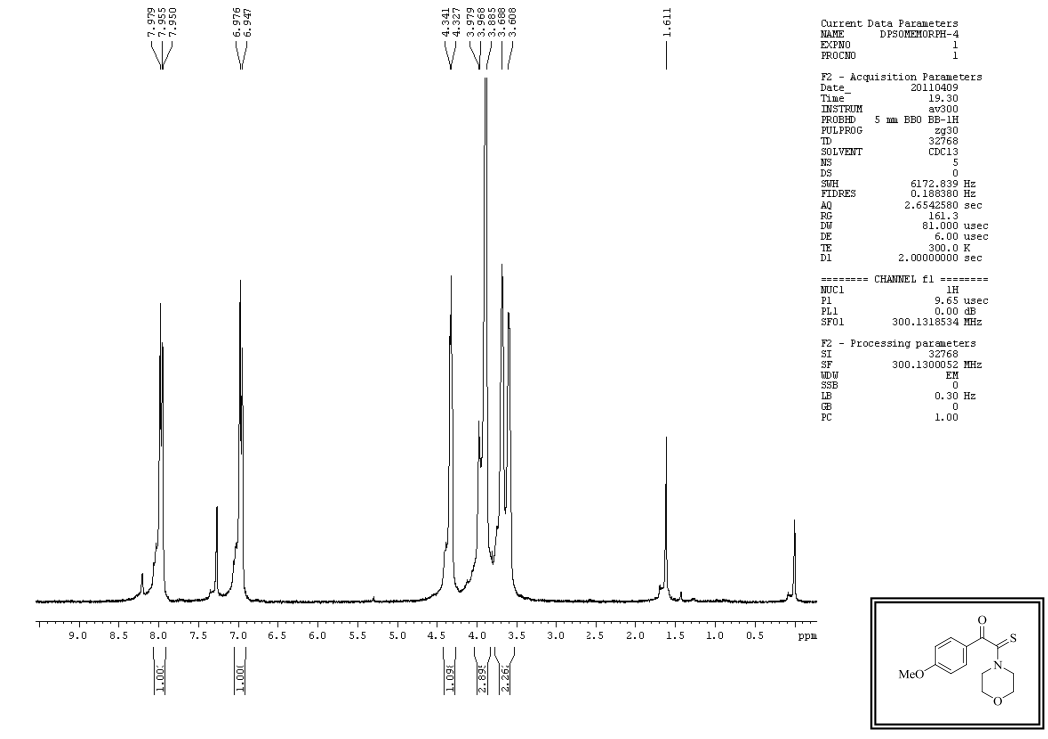

Figure 30. ^{1}H NMR Spectrum of **8k** ($CDCl_3$)

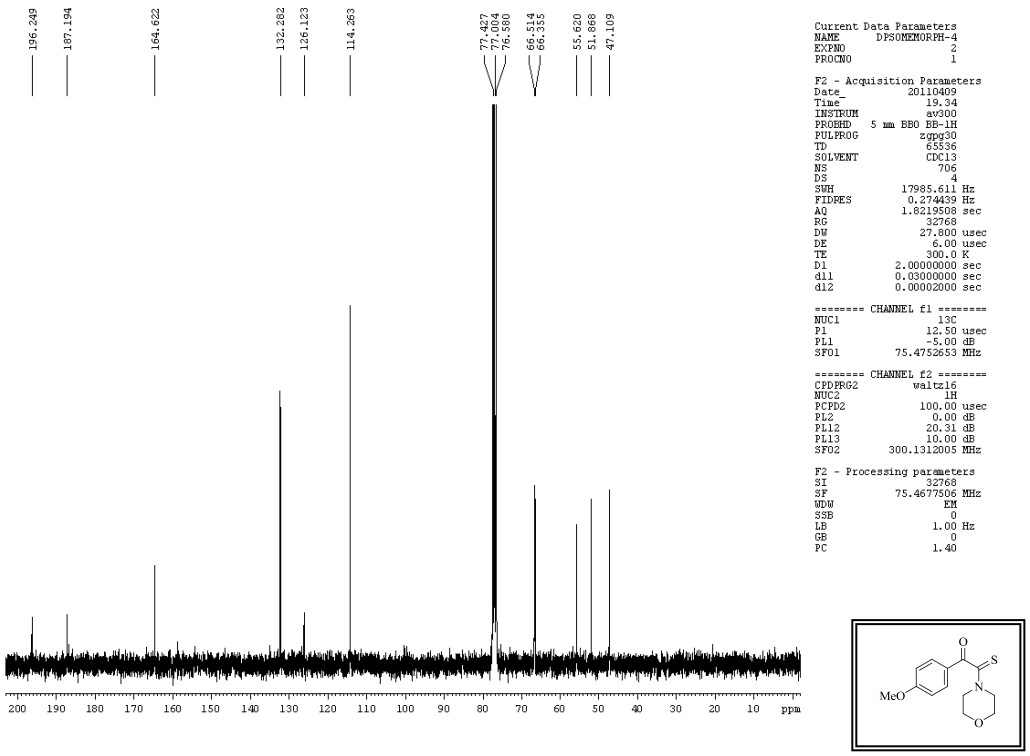

Figure 31. ^{13}C NMR Spectrum of **8k**

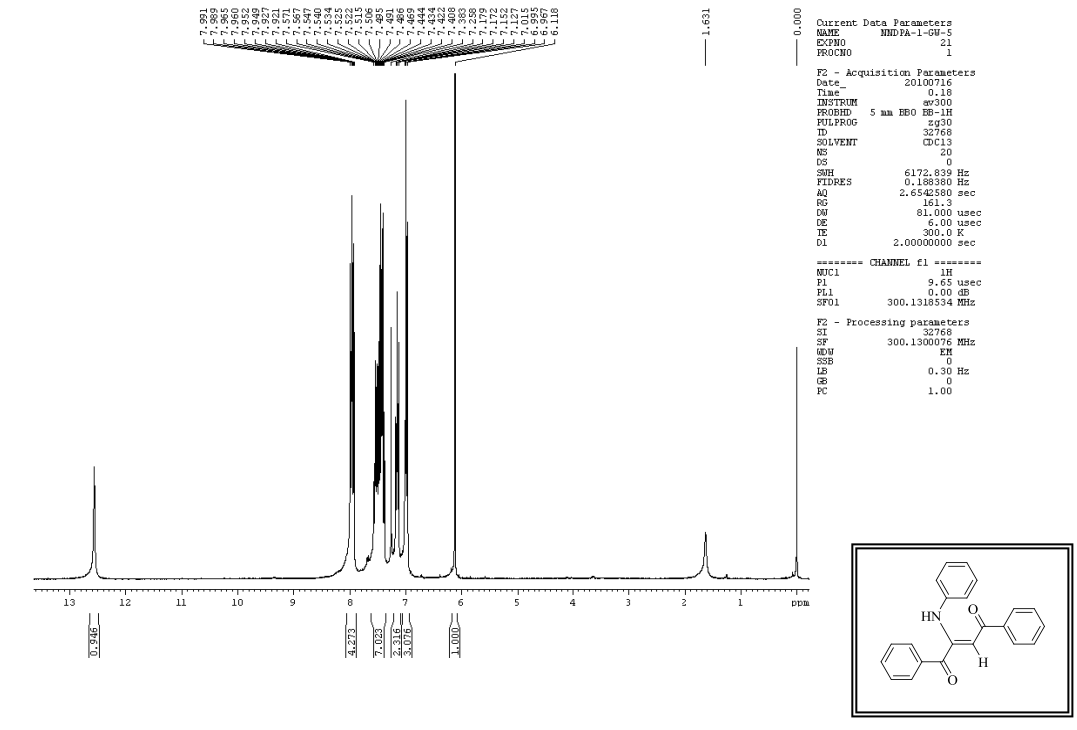

Figure 32. ^{1}H NMR Spectrum of **5a**

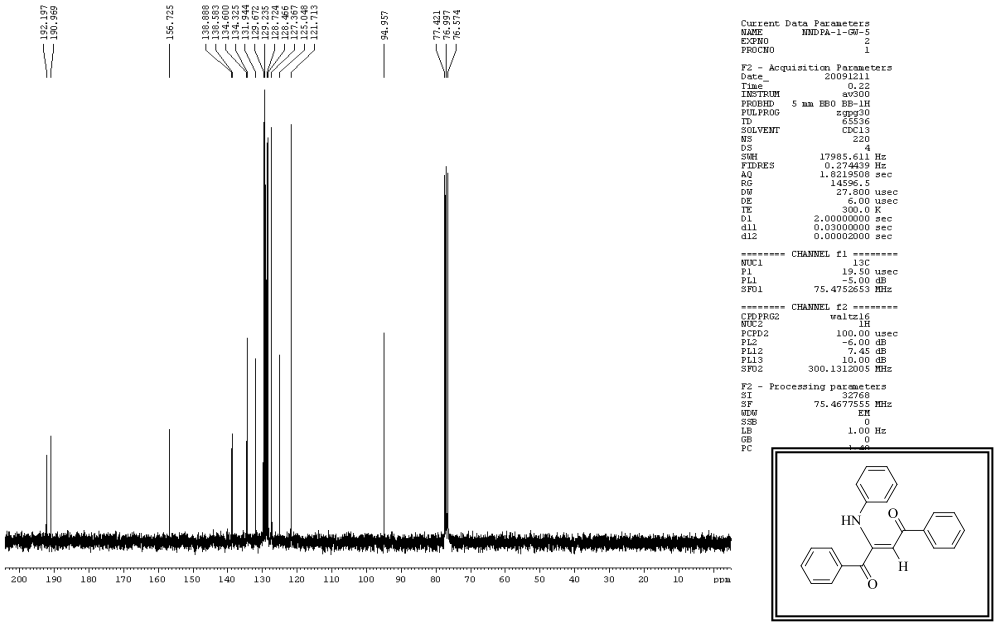

Figure 33. ^{13}C NMR Spectrum of **5a** ($CDCl_3$)

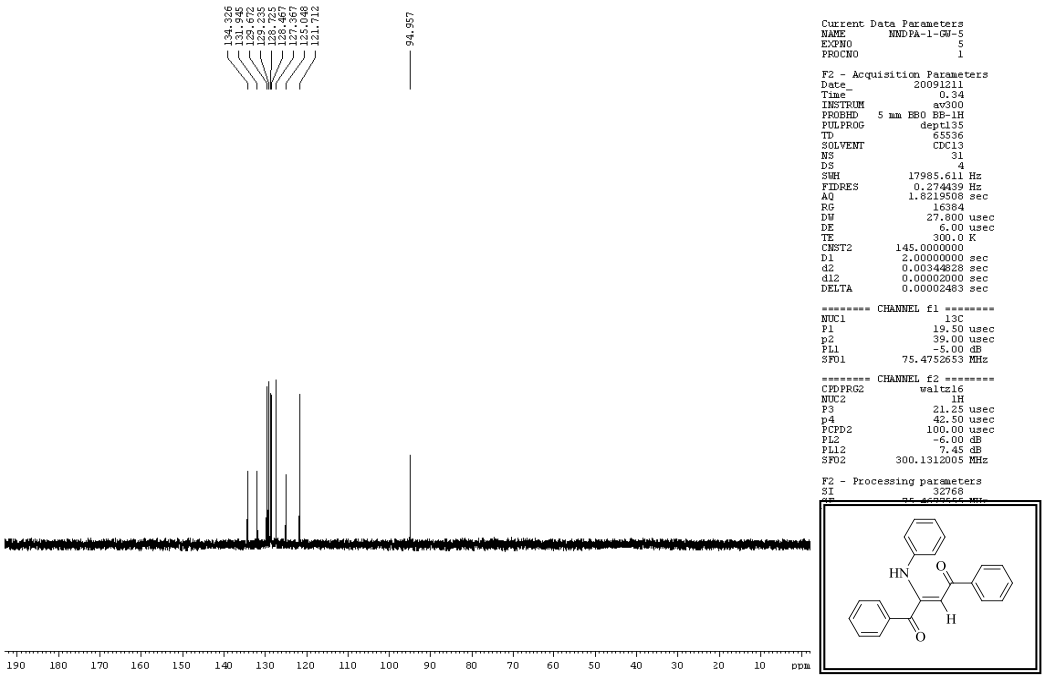

Figure 34. DEPT-135 Spectrum of **5a** ($CDCl_3$)

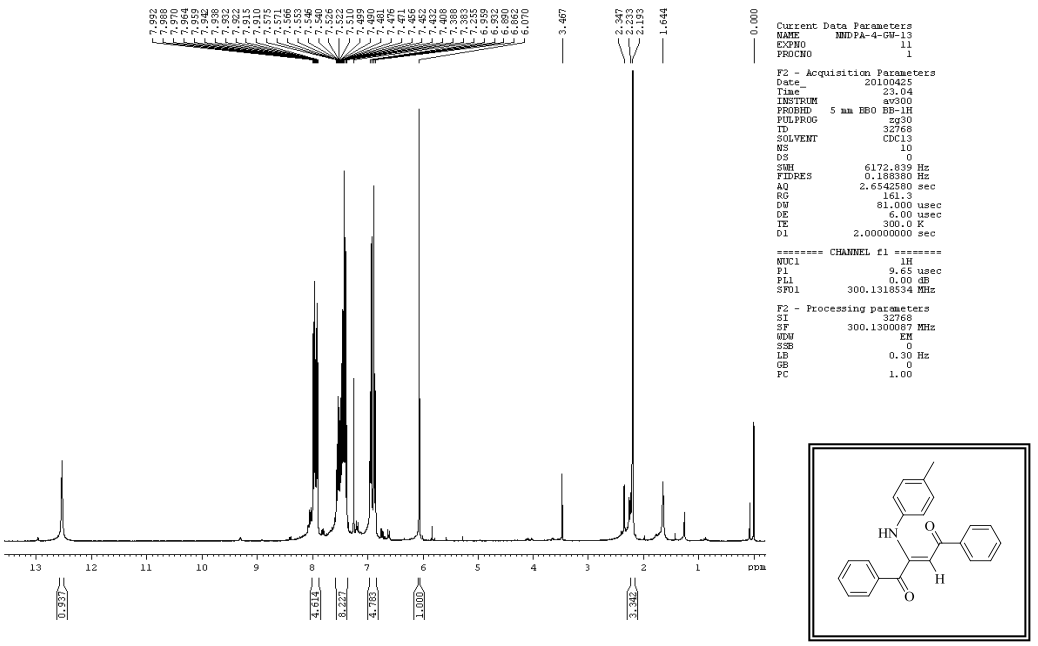

Figure 35. ^{1}H NMR Spectrum of **5b**

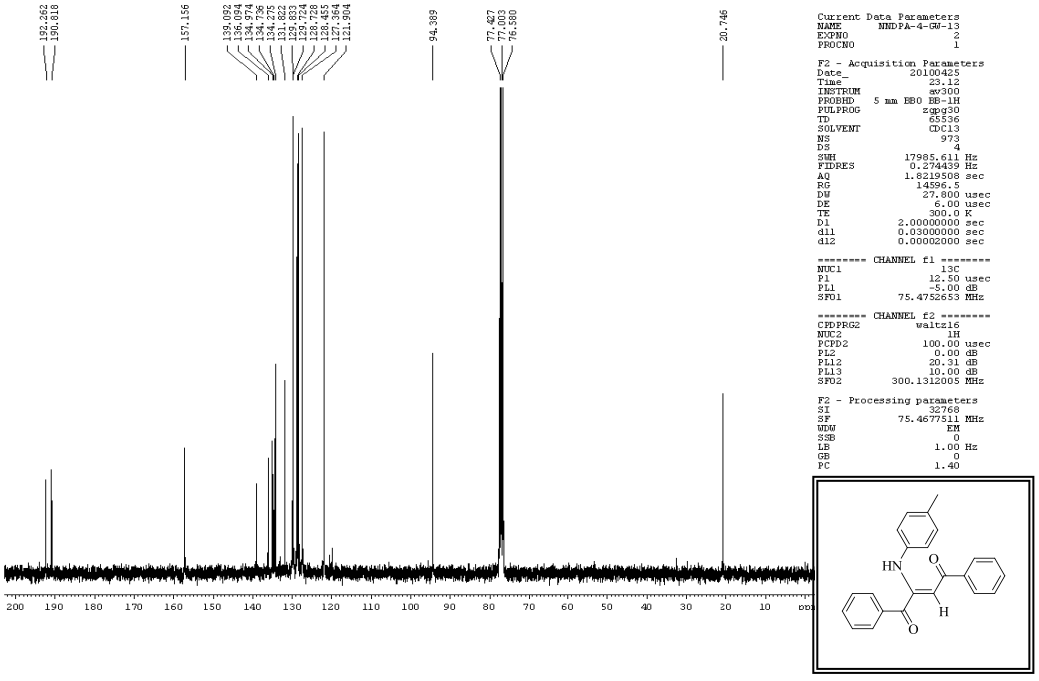

Figure 36. ^{13}C NMR Spectrum of **5b** ($CDCl_3$)

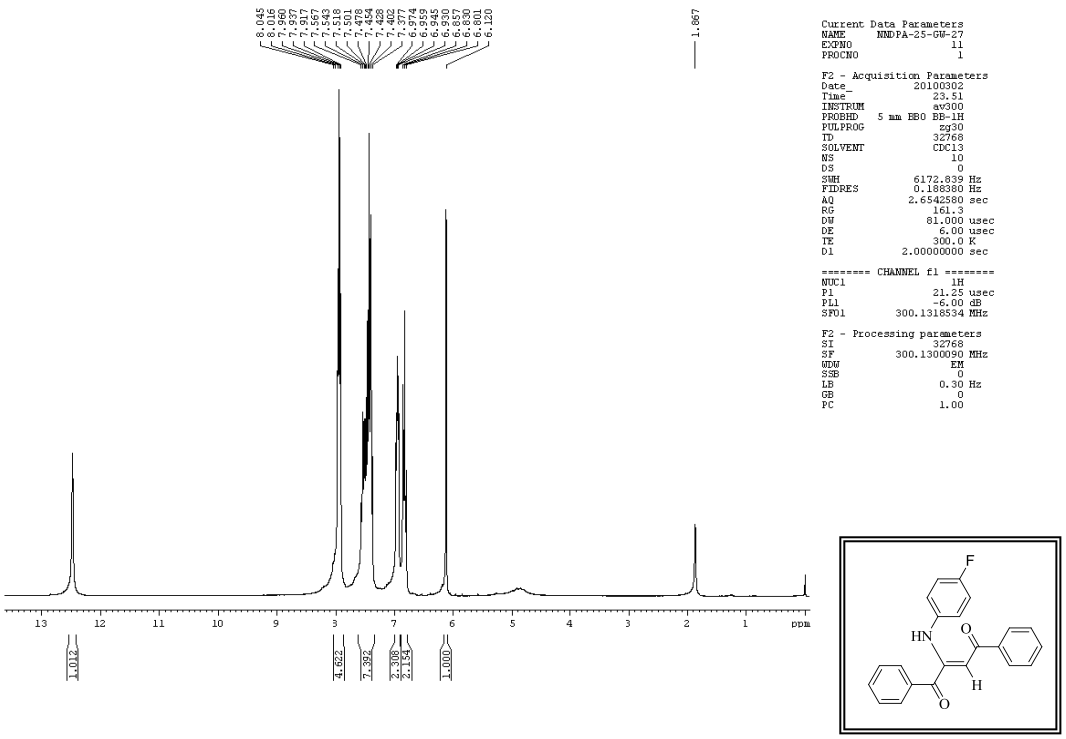

Figure 37. ^{1}H NMR Spectrum of **5c**

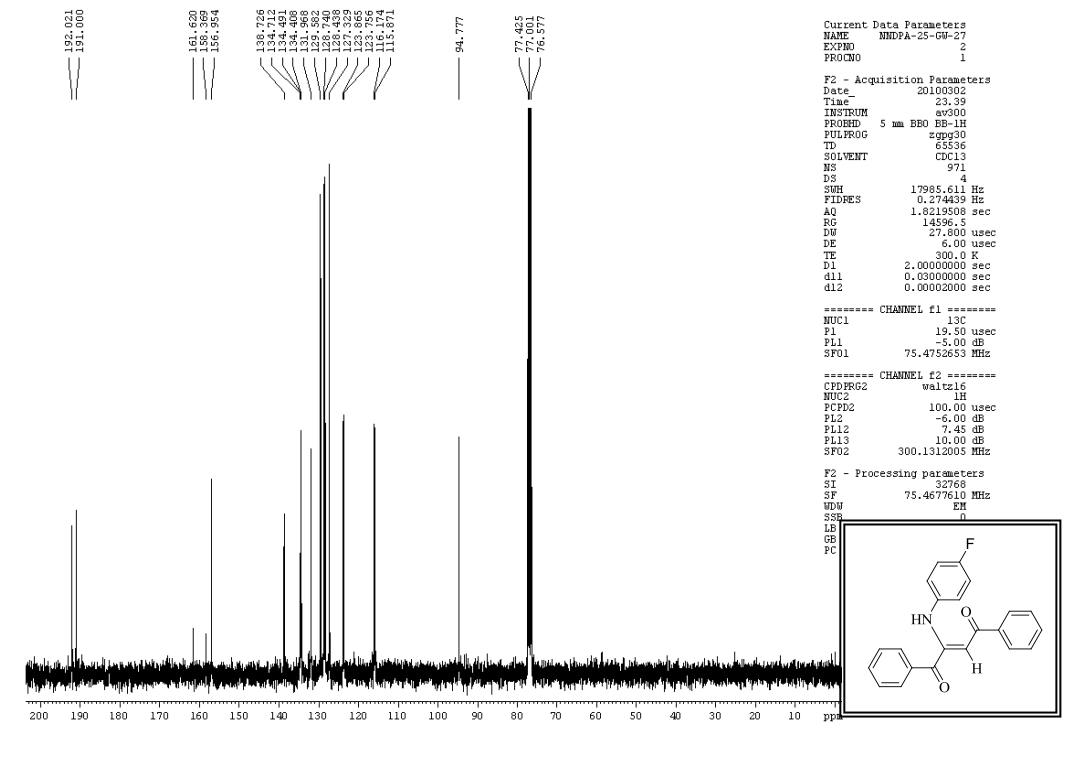

Figure 38. ^{13}C NMR Spectrum of **5c** ($CDCl_3$)

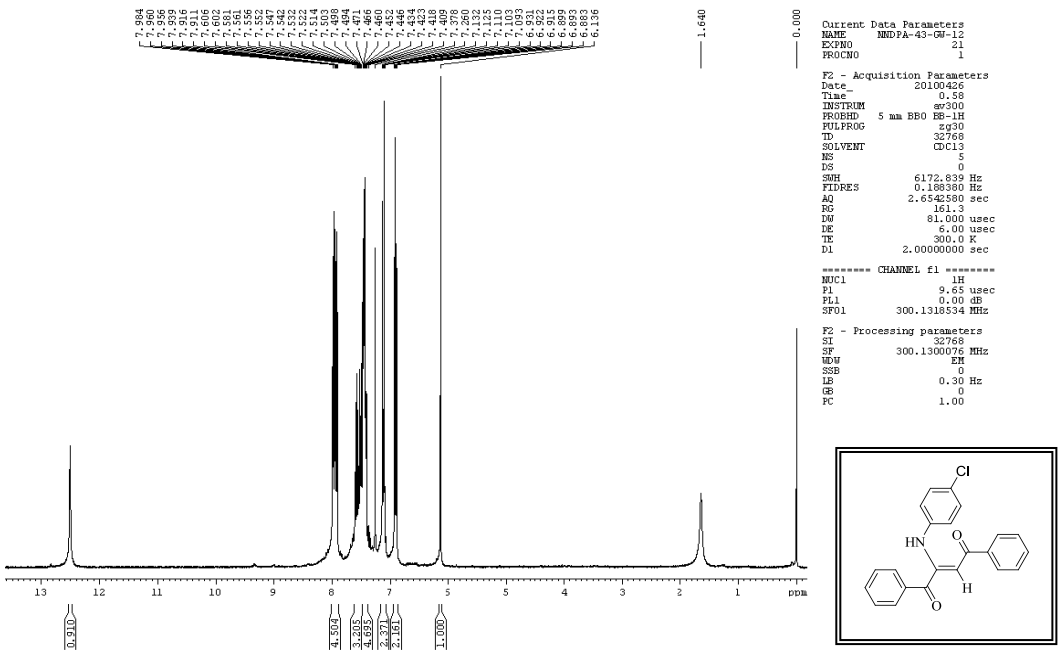

Figure 39. ^{1}H NMR Spectrum of **5d**

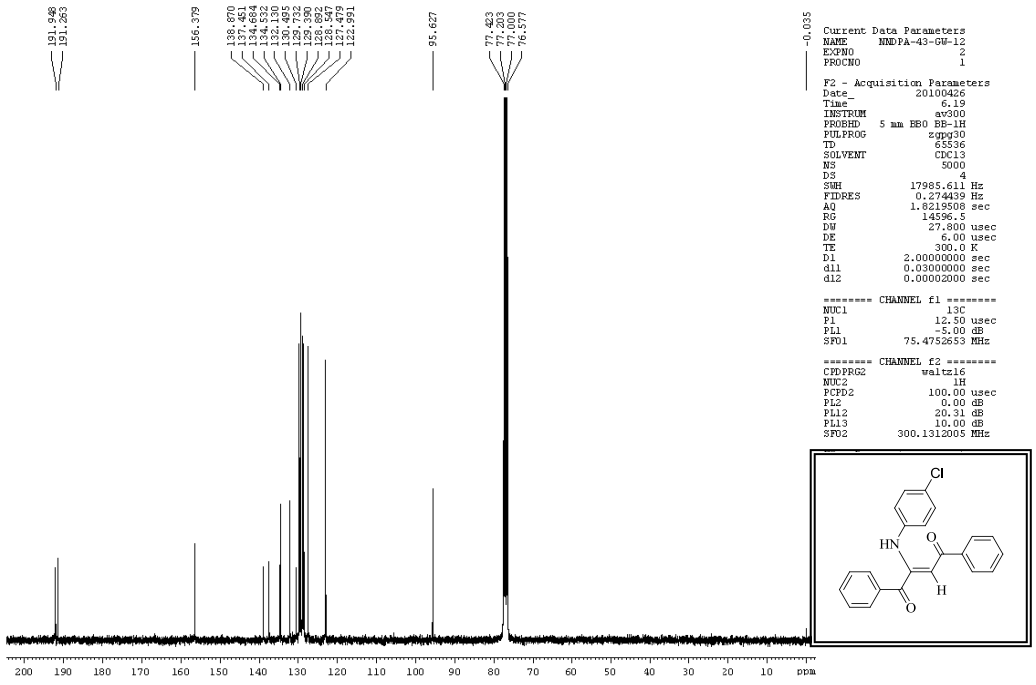

Figure 40. ^{13}C NMR Spectrum of **5d** ($CDCl_3$)

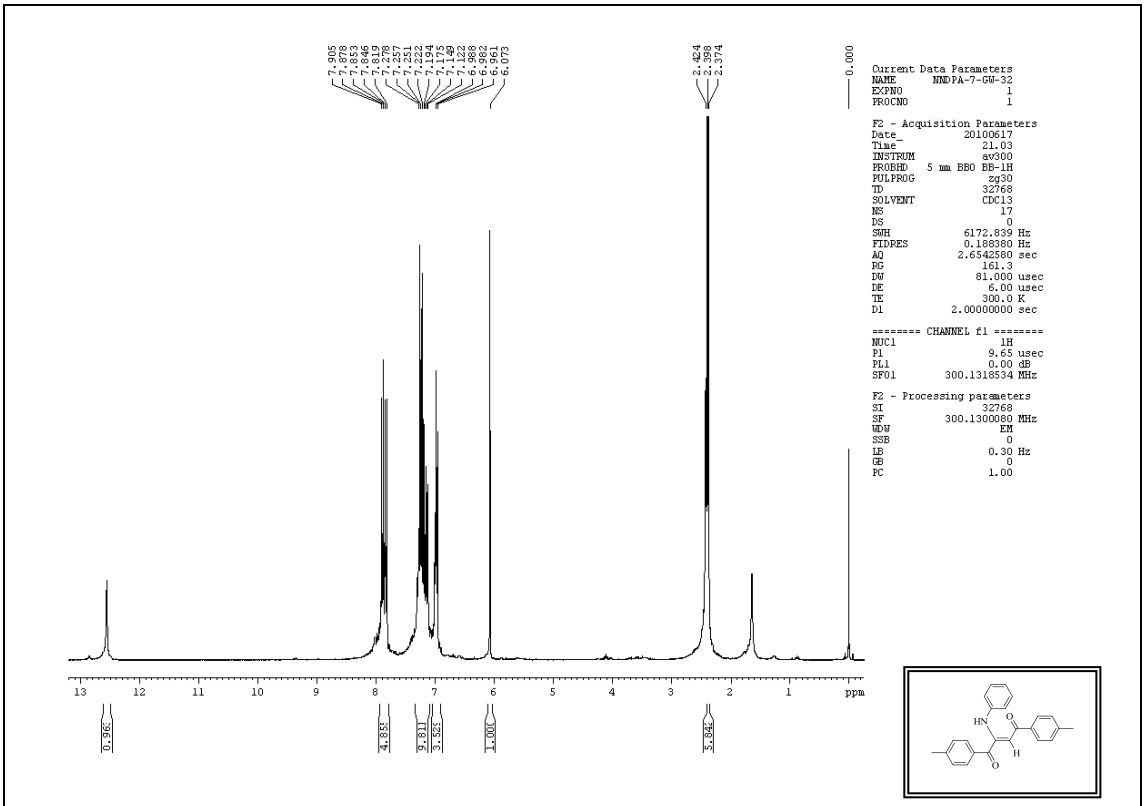

Figure 41. ^{1}H NMR Spectrum of **5e** ($CDCl_3$)

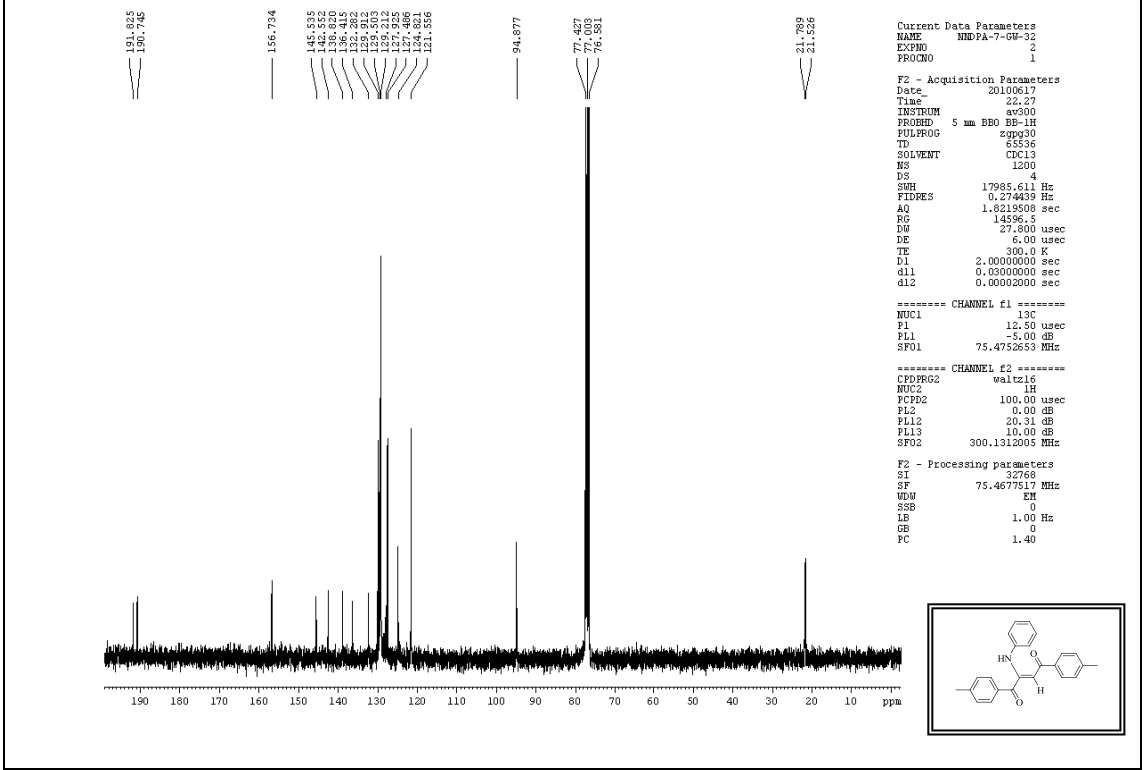

Figure 42. ^{13}C NMR Spectrum of **5e**

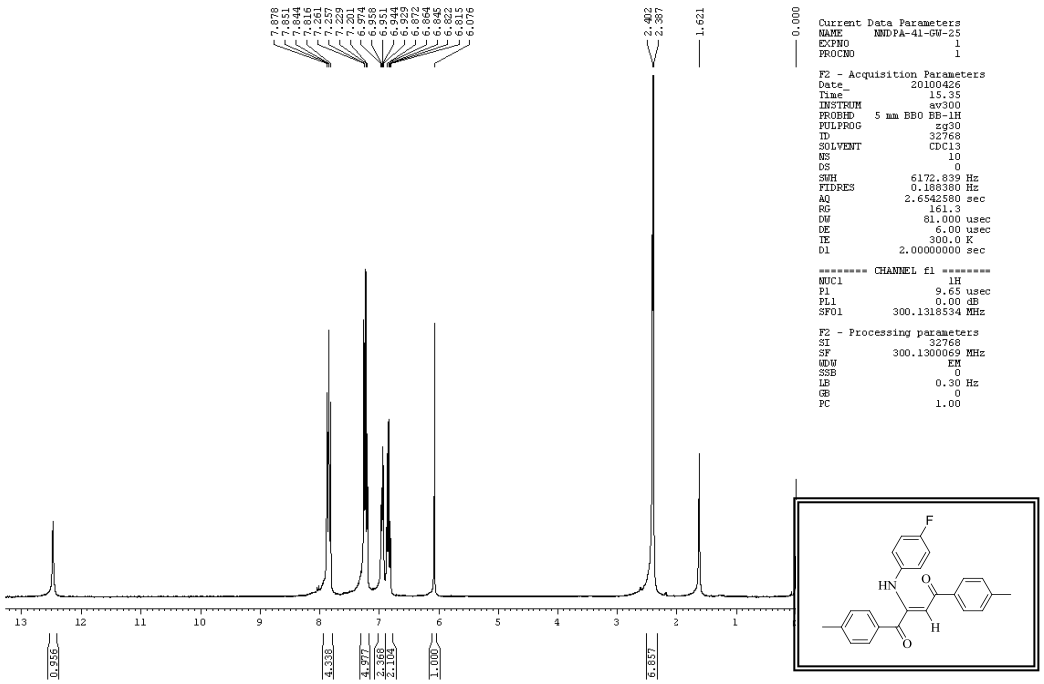

Figure 43. ^{1}H NMR Spectrum of **5f**

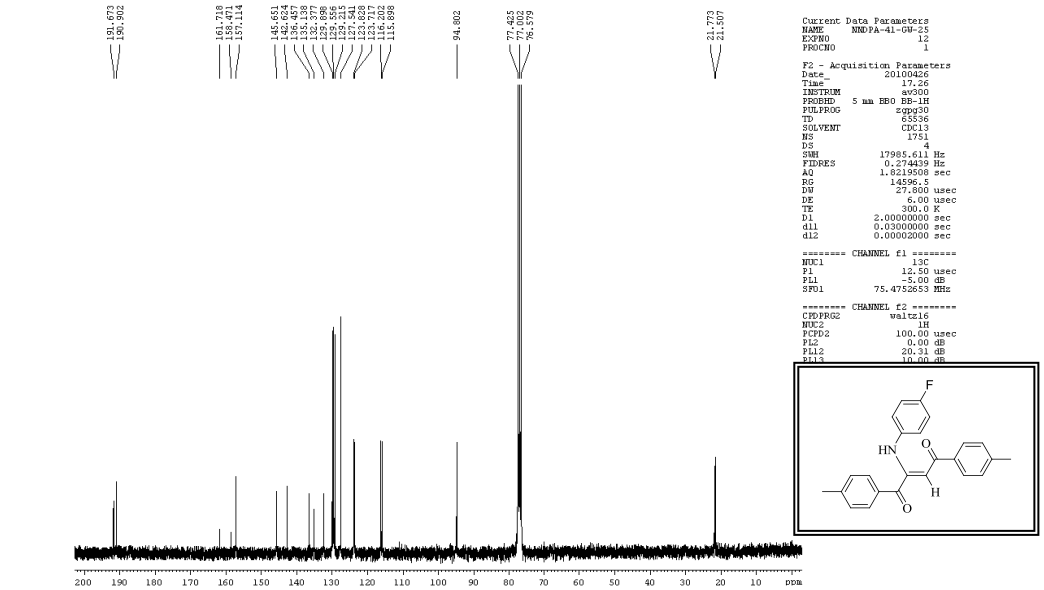

Figure 44. ^{13}C NMR Spectrum of **5f** ($CDCl_3$)

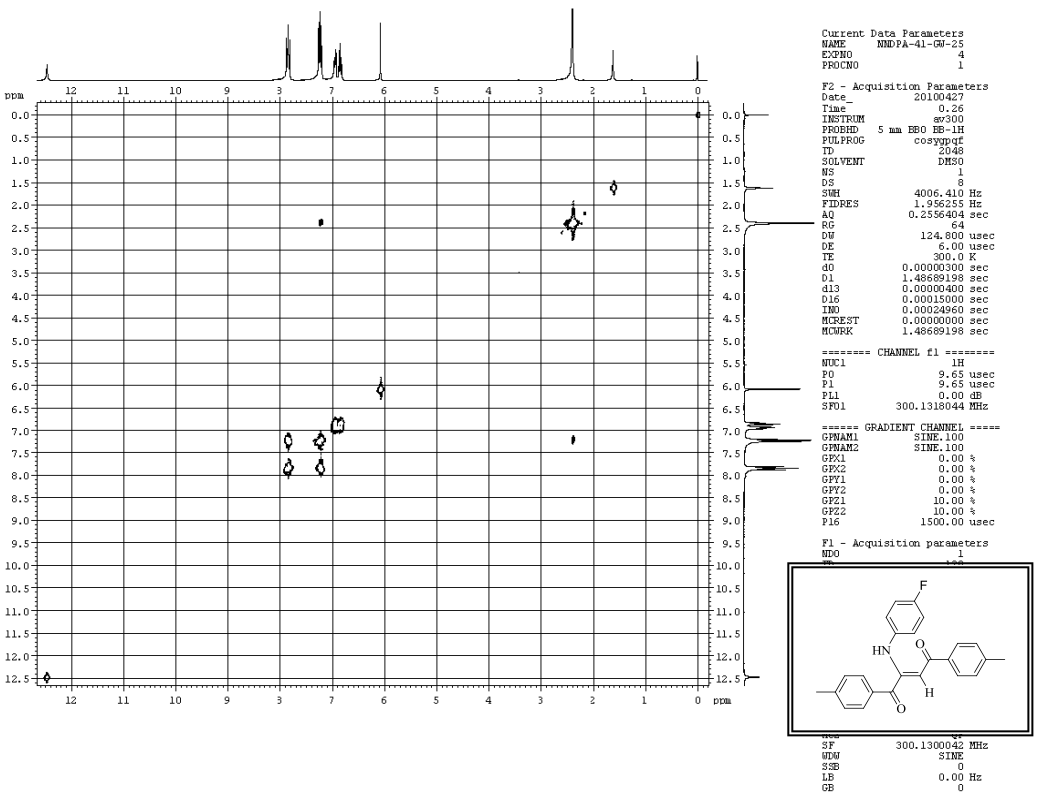

Figure 45. H,H-COSY Spectrum of **5f**

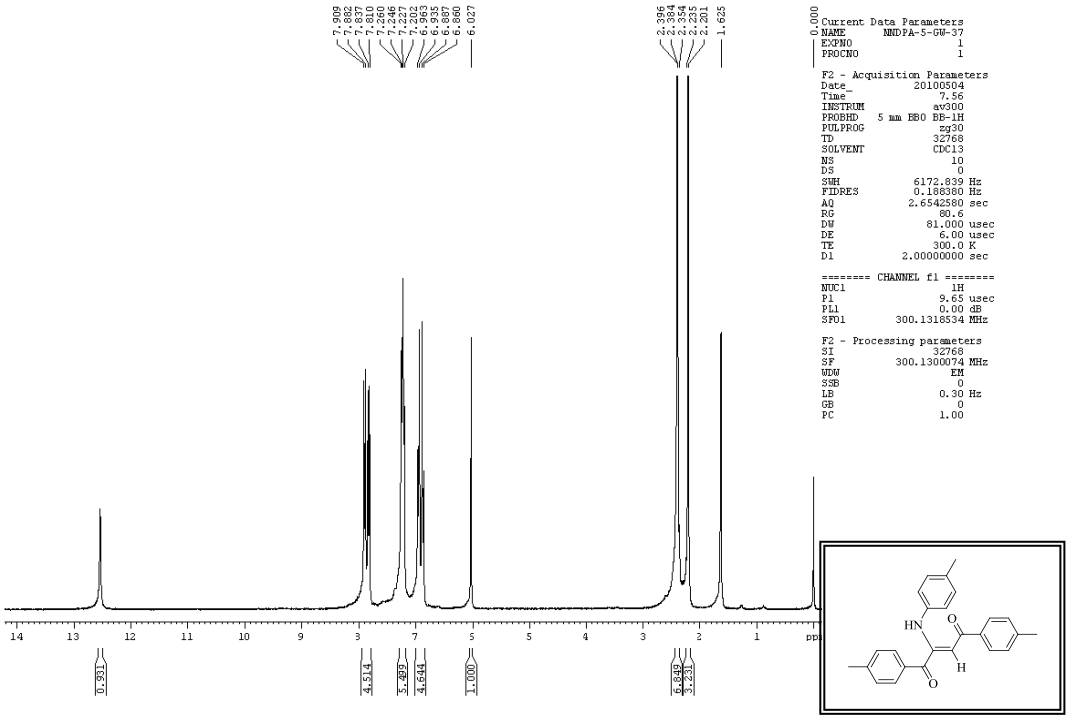

Figure 46. ^{1}H NMR Spectrum of **5g**

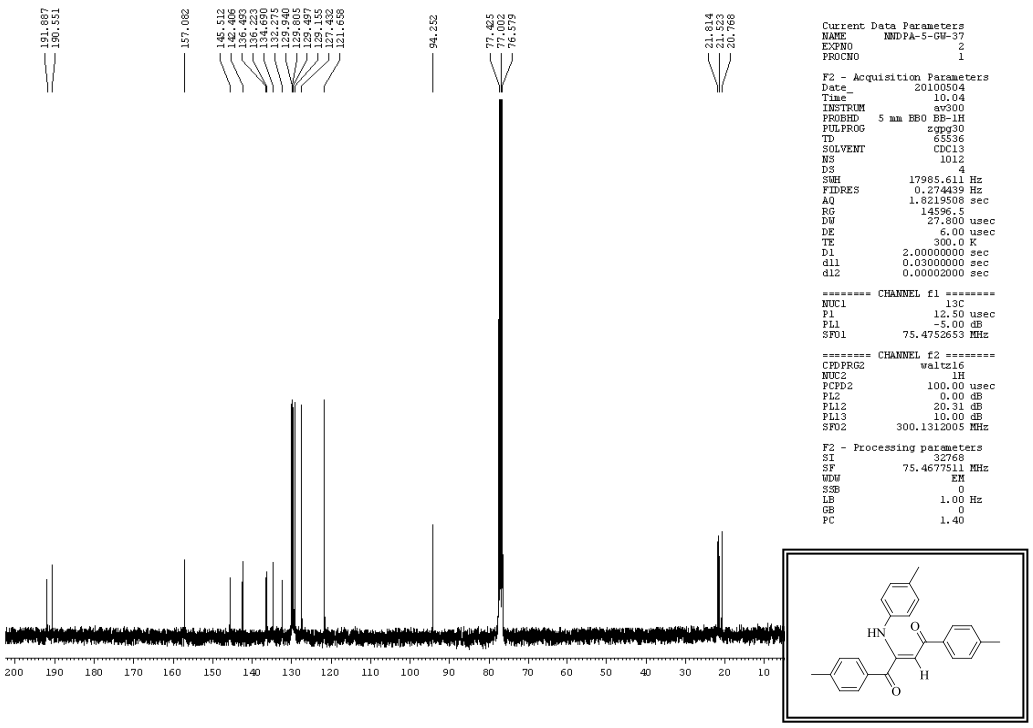

Figure 47. ^{13}C NMR Spectrum of **5g** ($CDCl_3$)

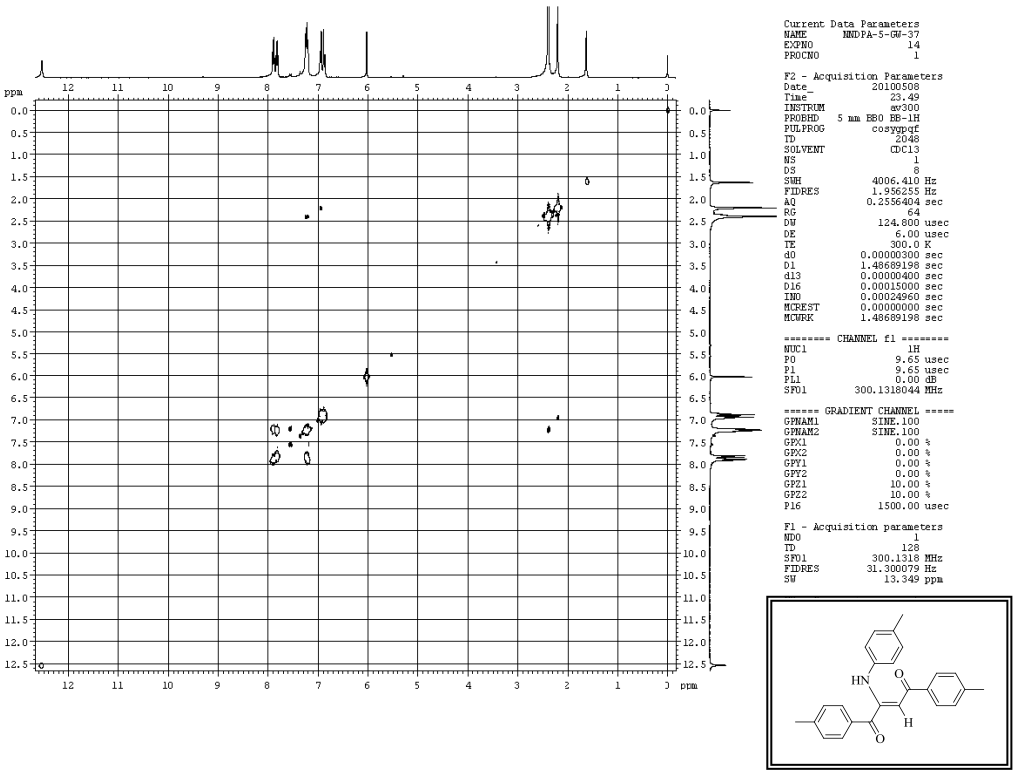

Figure 48. H,H-COSY Spectrum of **5g**

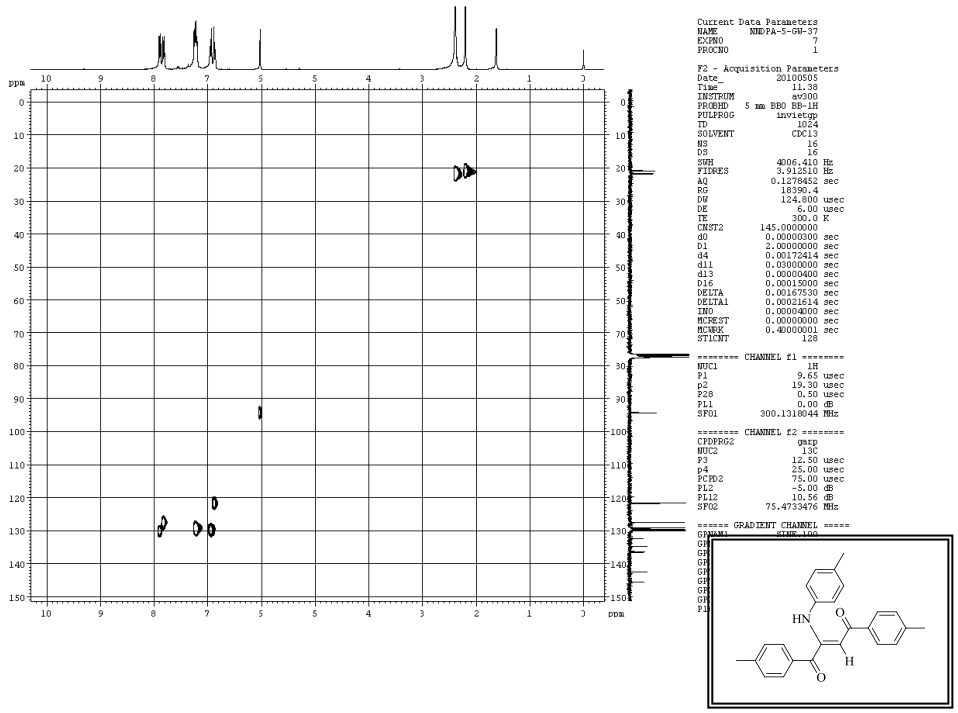

Figure 49. C,H-COSY Spectrum of **5g**

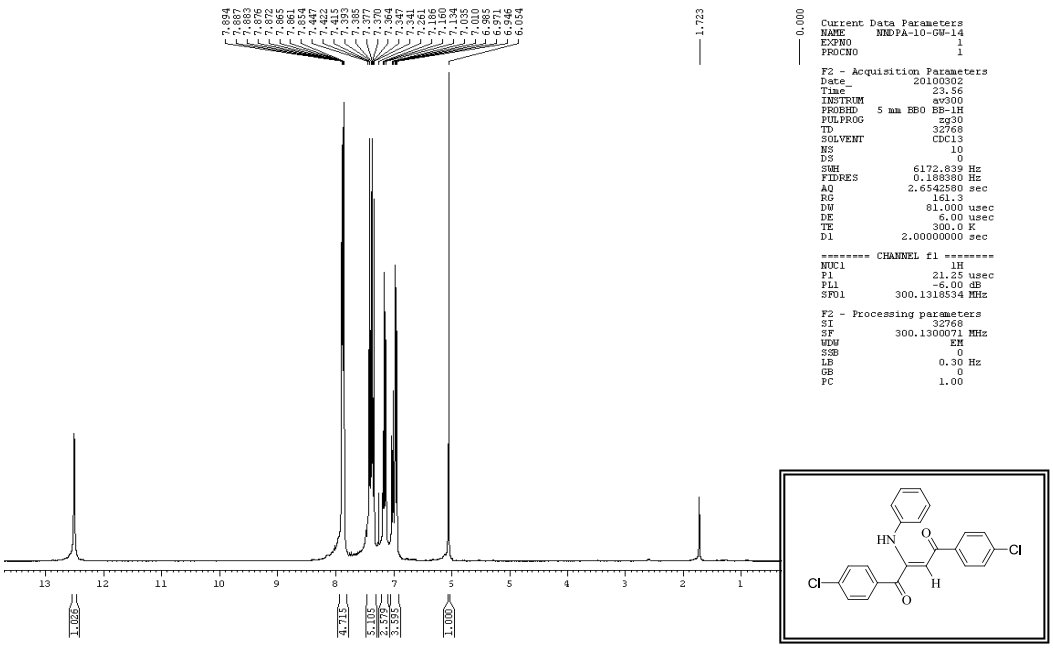

Figure 50. ^{1}H NMR Spectrum of **5h**

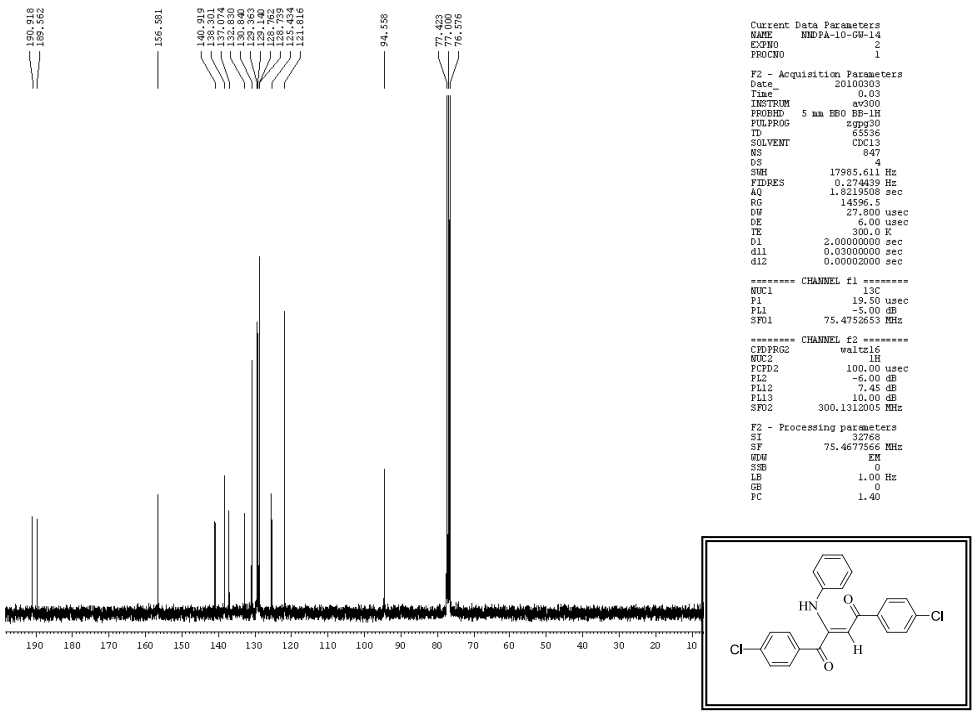

Figure 51. ^{13}C NMR Spectrum of **5h** ($CDCl_3$)

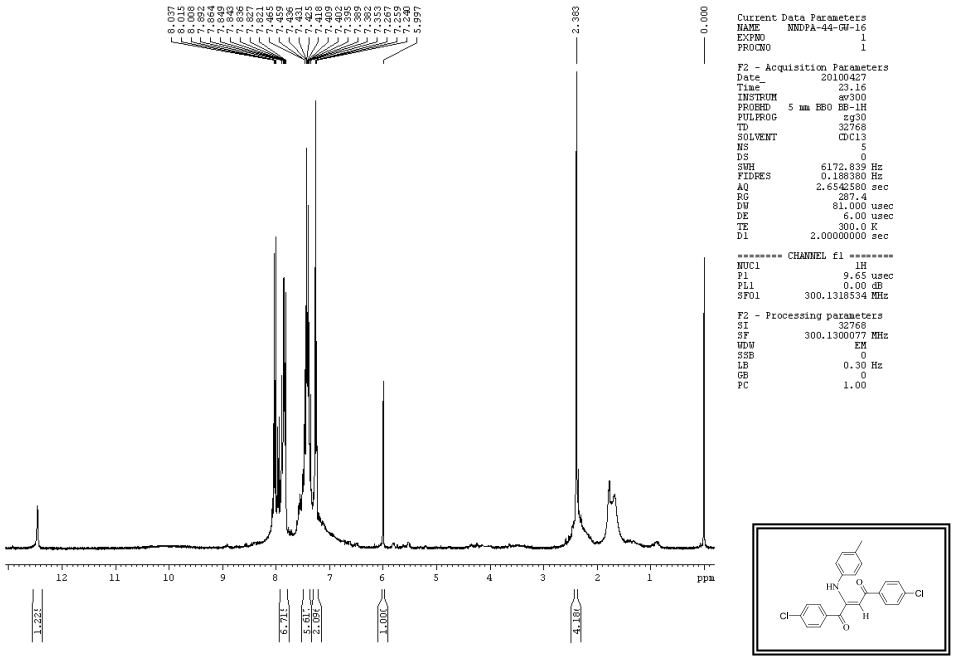

Figure 52. ^{1}H NMR Spectrum of **5i** ($CDCl_3$)

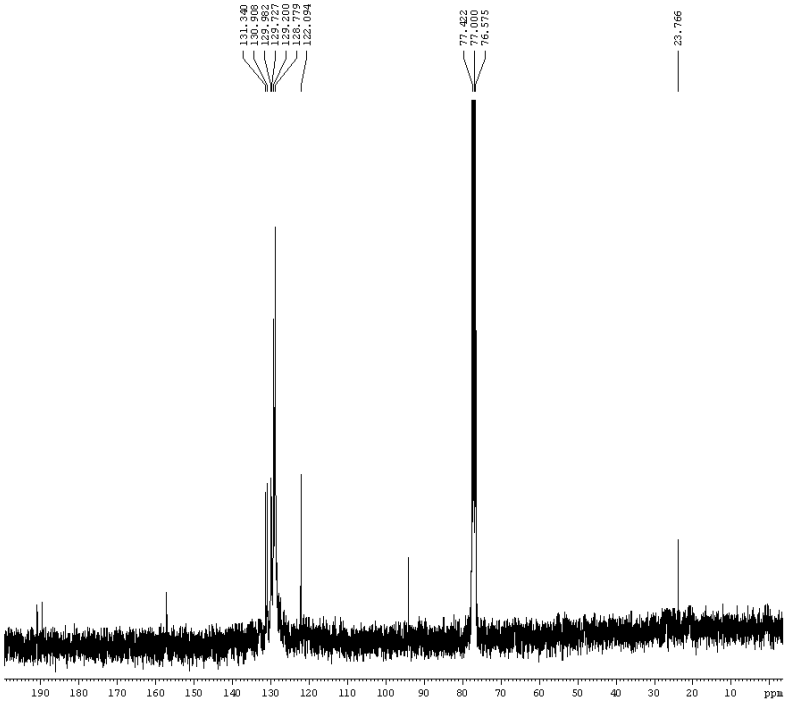

Figure 53. ^{13}C NMR Spectrum of **5i**

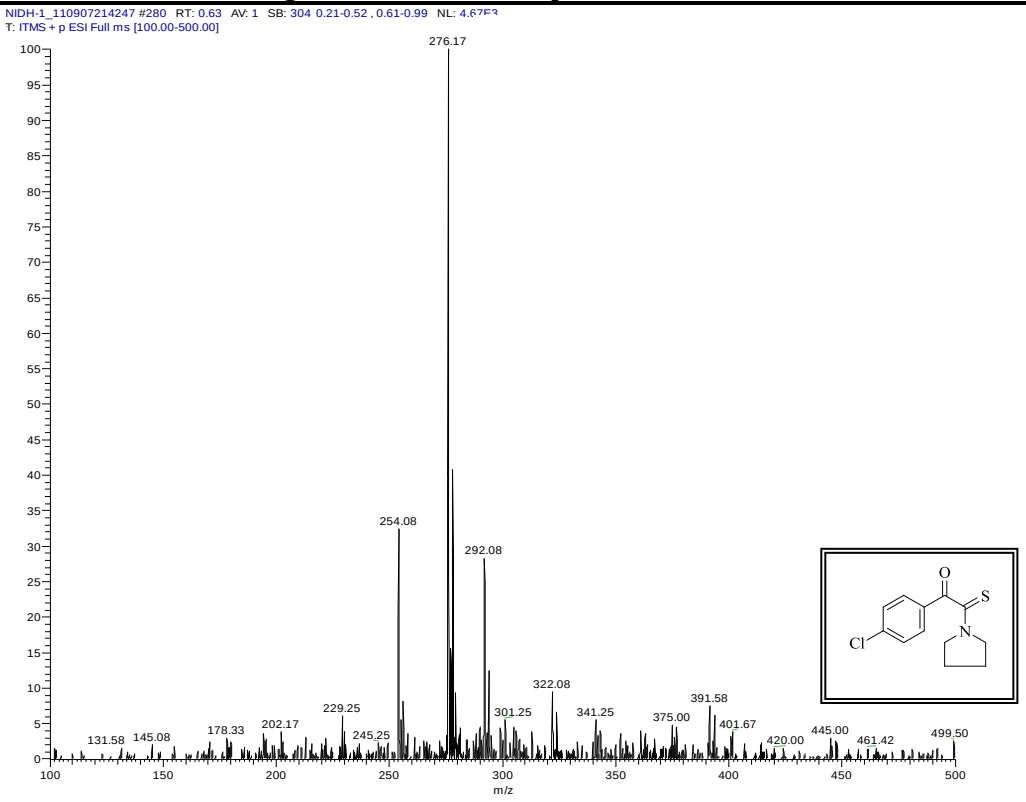

Figure 54. Mass spectrum of **8g**

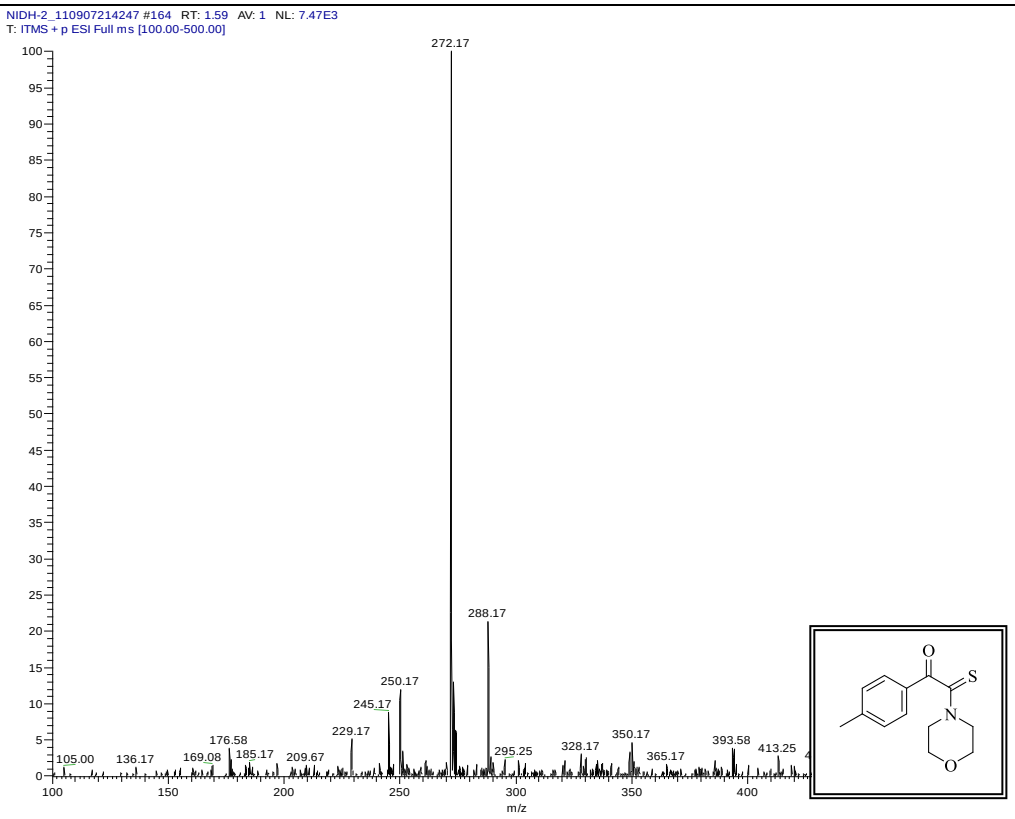

Figure 55. Mass spectrum of **8j**

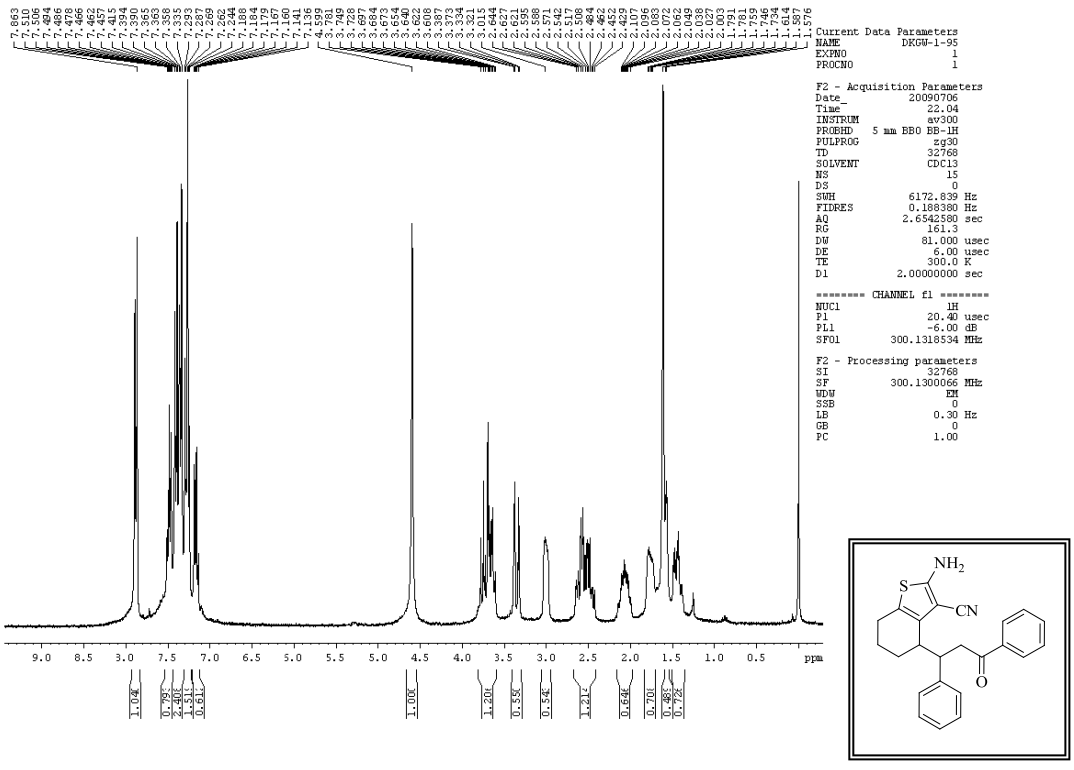

Figure 56. ^{1}H NMR Spectrum of **11** ($CDCl_3$)

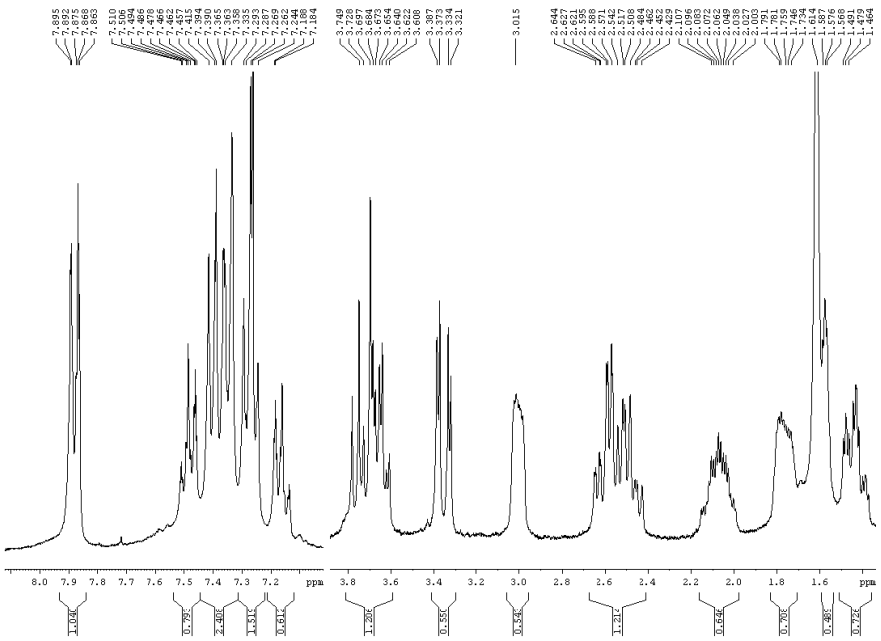

Figure 57. ^{1}H NMR Spectrum of **11** (expanded)

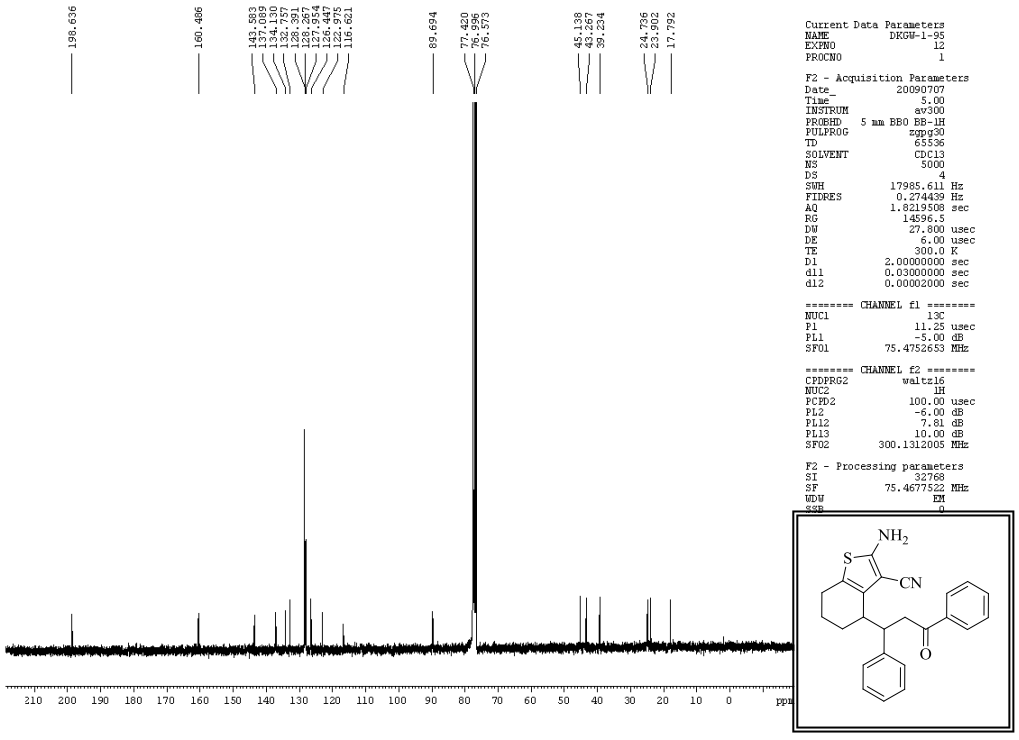

Figure 58. ^{13}C NMR Spectrum of **11** ($CDCl_3$)

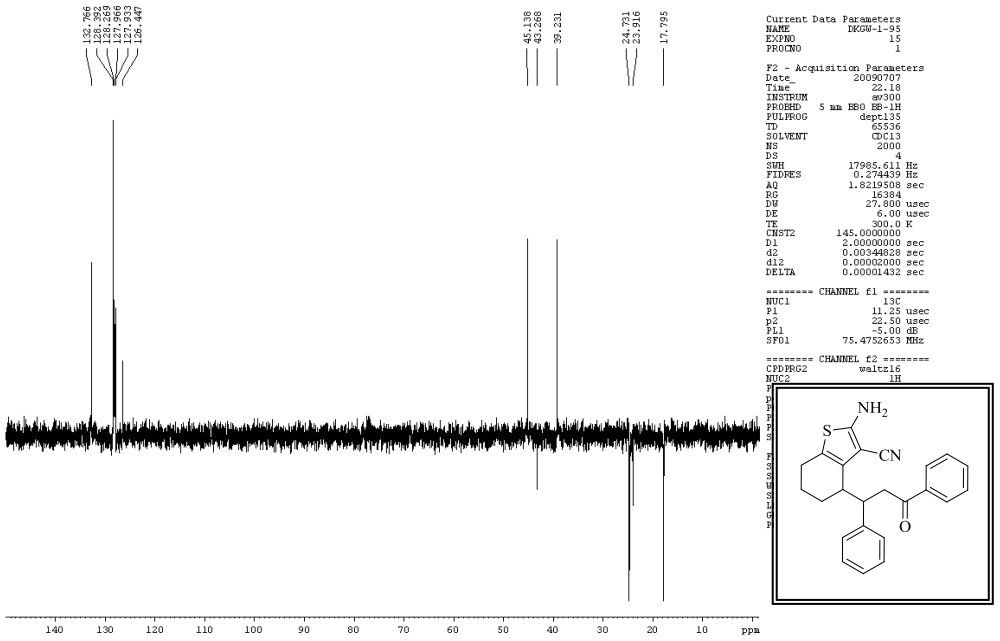

Figure 59. DEPT Spectrum of **11** ($CDCl_3$)

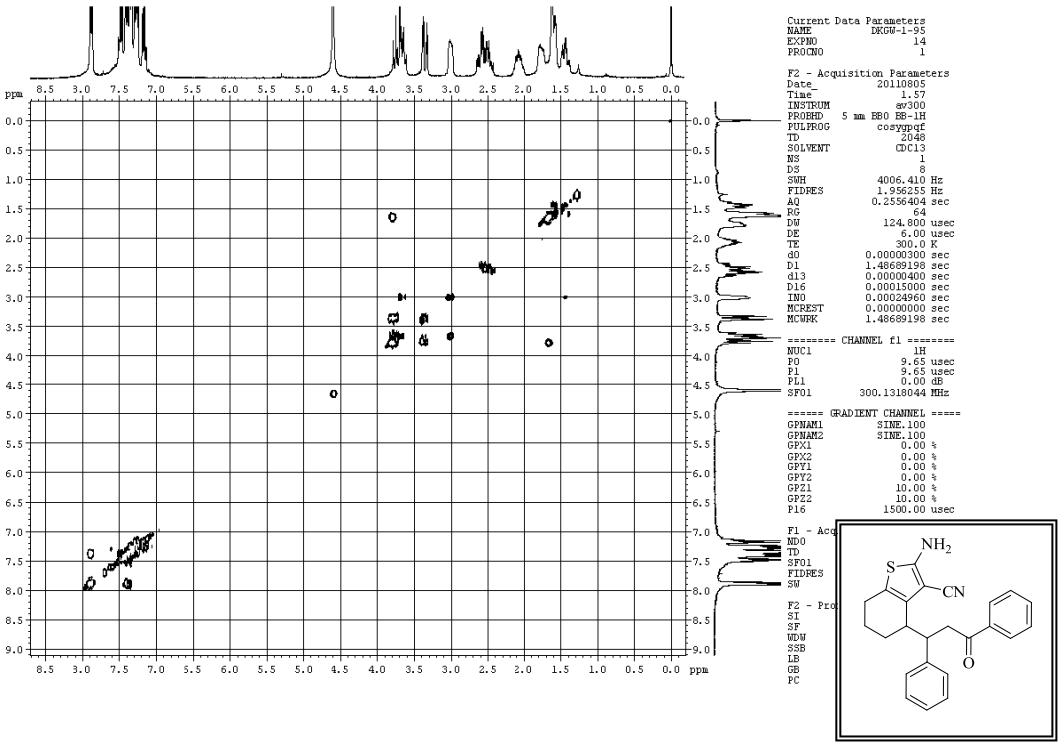

Figure 60. H,H-COSY Spectrum of **11** ($CDCl_3$)

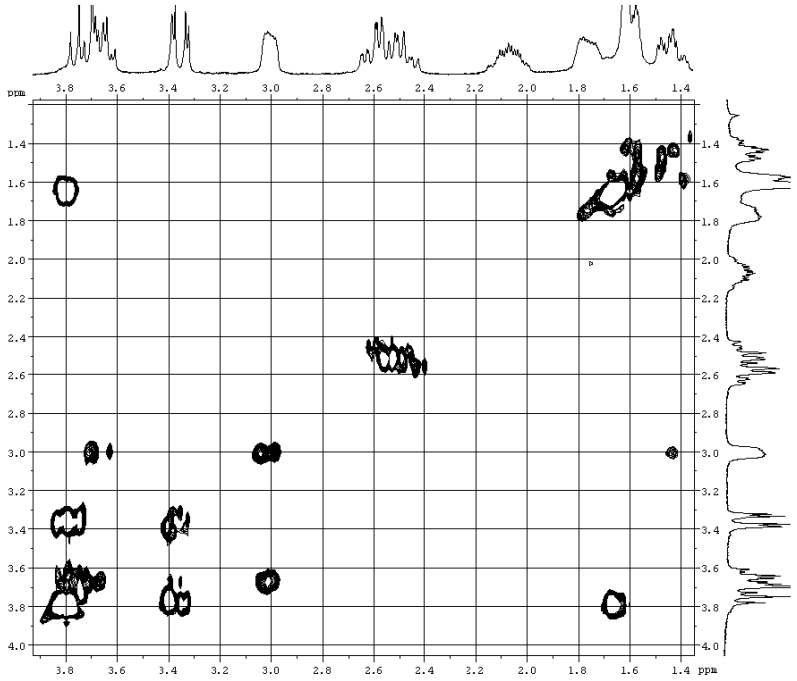

Figure 61. H,H-COSY Spectrum of **11** (expanded)

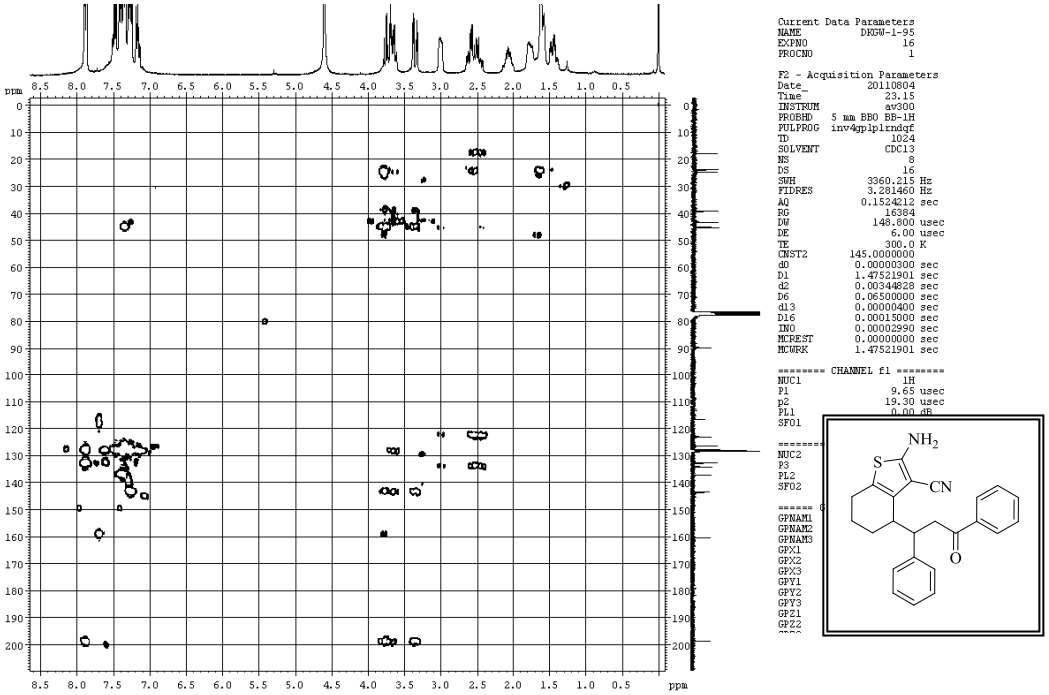

Figure 62. HMBC Spectrum of **11**

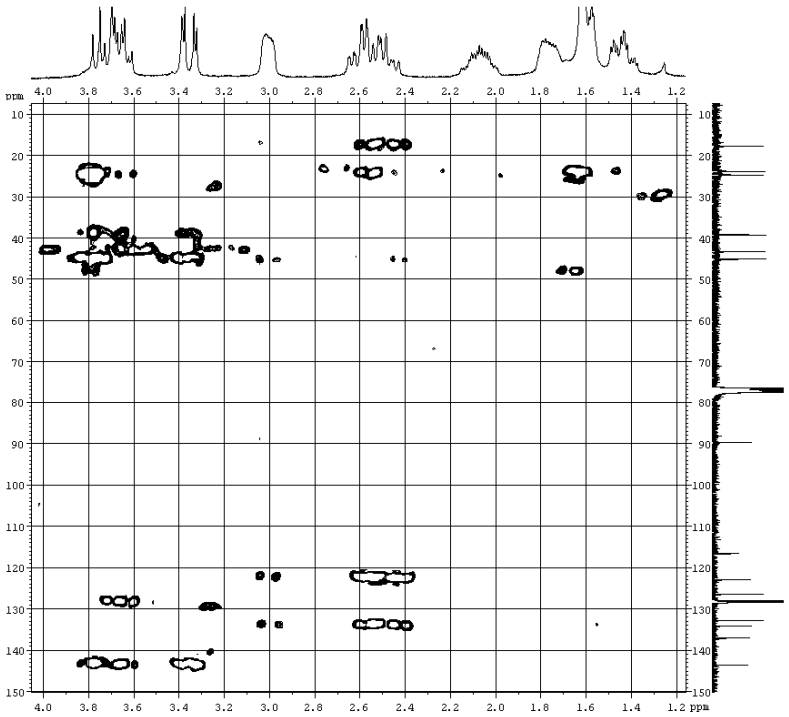

Figure 63. HMBC Spectrum of **11** (expanded)

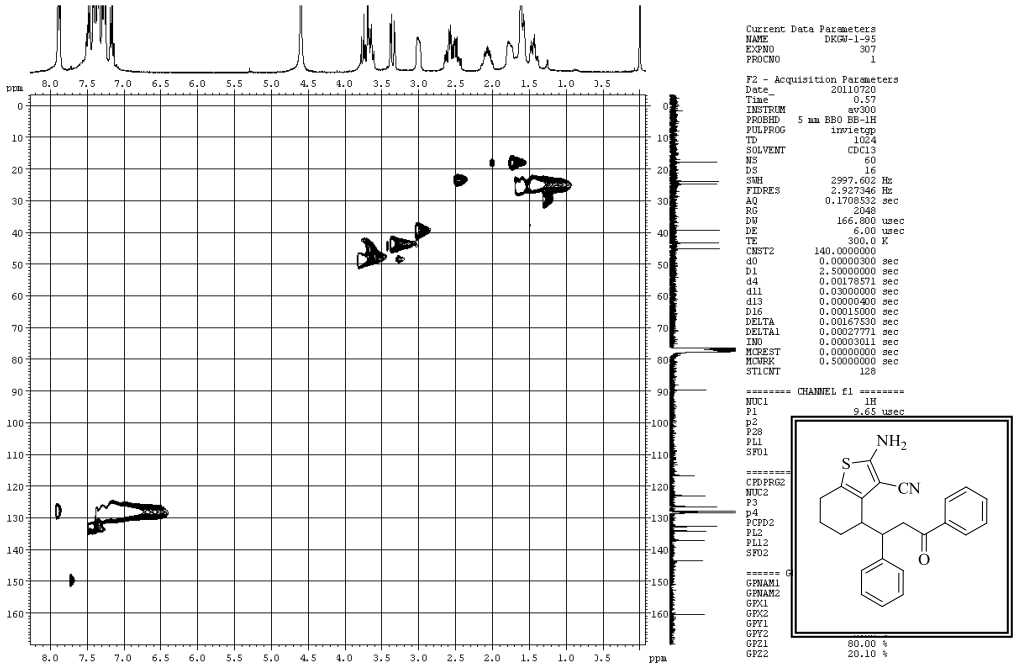

Figure 64. C,H-COSY Spectrum of **11**

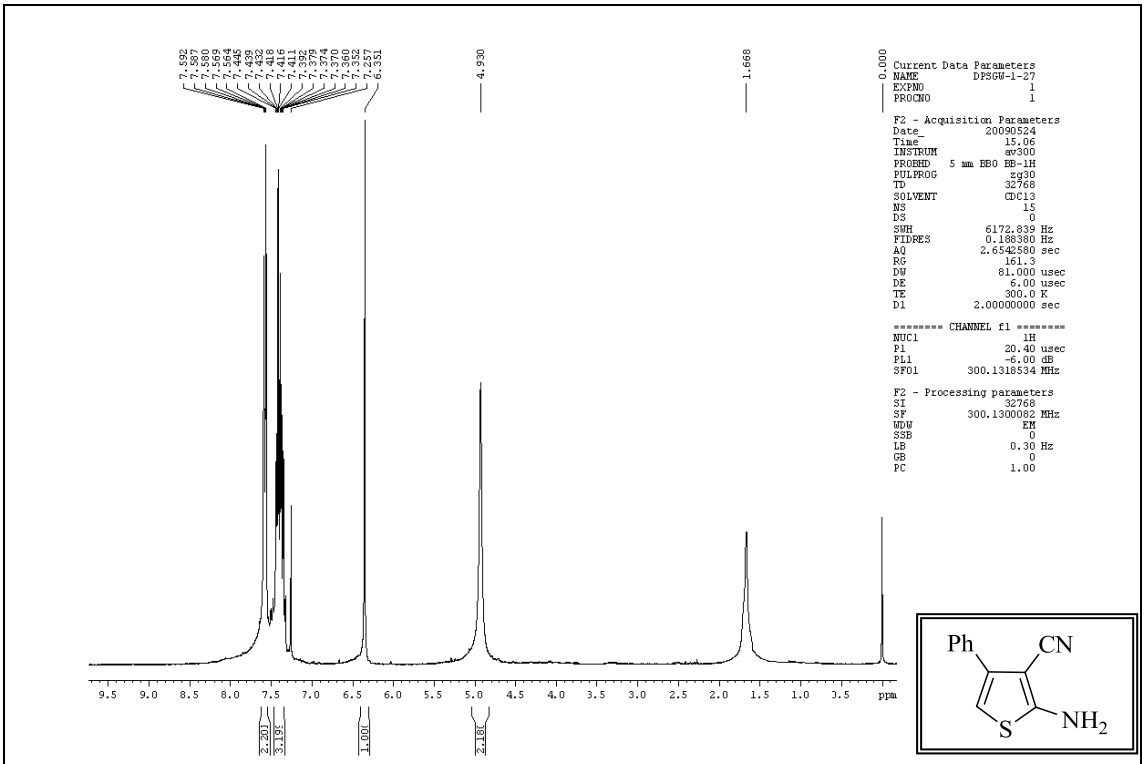

Figure 65. ^{1}H NMR Spectrum of **9** ($CDCl_3$)

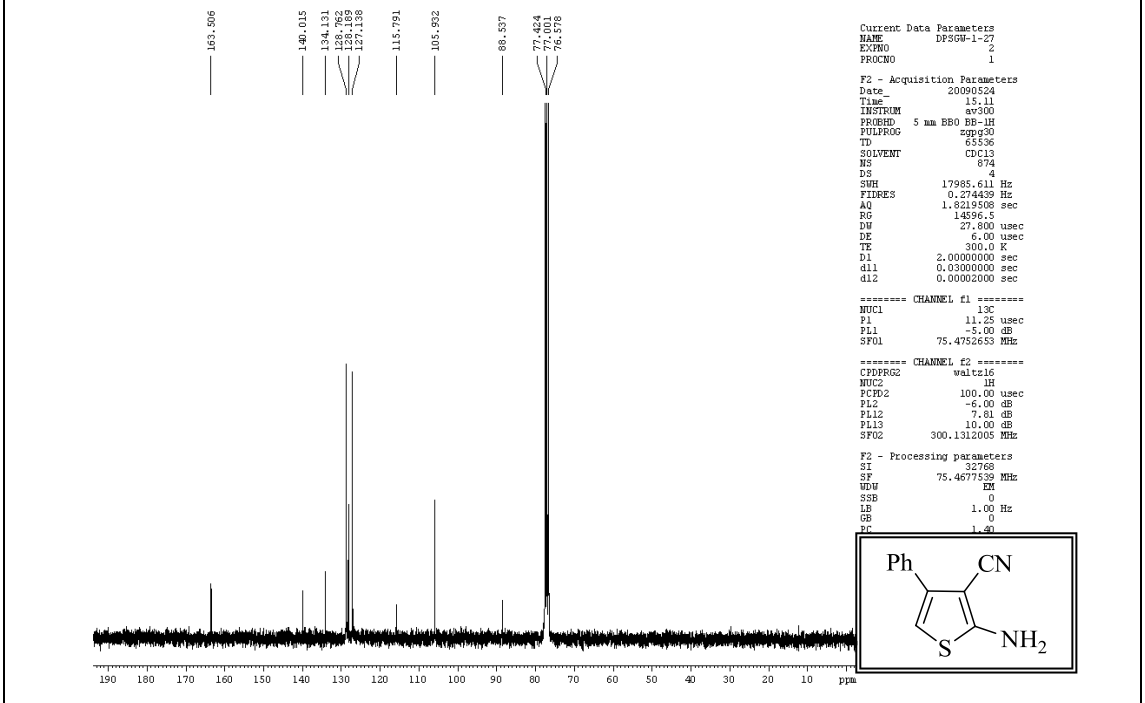

Figure 66. ^{13}C NMR Spectrum of **9** ($CDCl_3$)

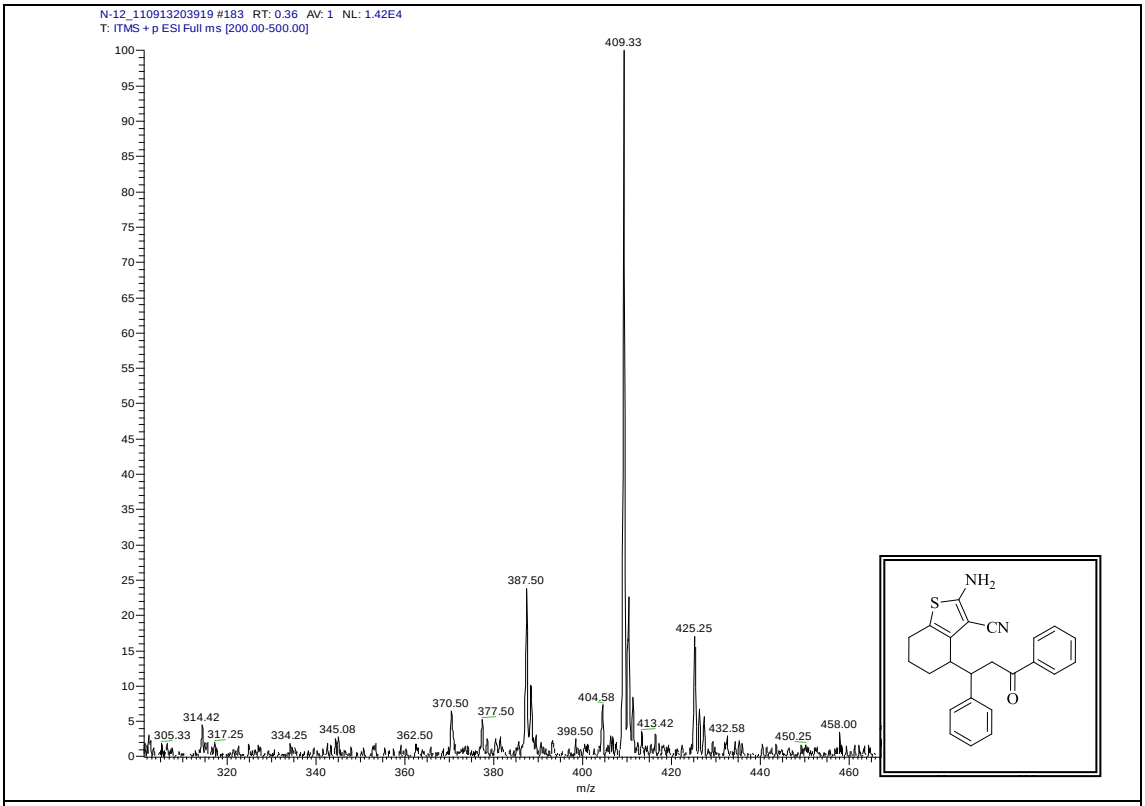

Figure 67. Mass spectrum for **11**

Crystal Data for compound 5b

Compound	5b
Empirical formula	C_{23} H_{19} N O_2
Formula weight	341.39
Temperature	293(2) K
Wavelength	0.71073 Å
Crystal system	Monoclinic
Space group	P 2 1/c
Unit cell dimensions	a = 10.0504(7) Å α= 90.00°. b = 8.6750(7) Å β= 103.066(6)°. c = 21.4200(12) Å γ = 90.00°.
Volume	1819.2(2) $Å^3$
Z	4
Density (calculated)	1.246 Mg/m^3
Absorption coefficient	0.079 mm^{-1}
F(000)	720
Crystal size	0.4 x 0.3 x 0.2 mm^3
Theta range for data collection	3.05 to 25.00°.
Index ranges	-11<=h<=11, -10<=k<=9, -25<=l<=24
Reflections collected	11790
Independent reflections	3197 [R(int) = 0.0331]
Completeness to theta = 60.00°	99.9 %
Max. and min. transmission	0.9902 and 0.9797
Data / restraints / parameters	3197 / 0 / 236
Goodness-of-fit on F^2	1.018
Final R indices [I>2sigma(I)]	R1 = 0.0477, wR2 = 0.1407
R indices (all data)	R1 = 0.0695, wR2 = 0.1626
Largest diff. peak and hole	0.158 and -0.193 $e.Å^{-3}$