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## **APPENDIX**

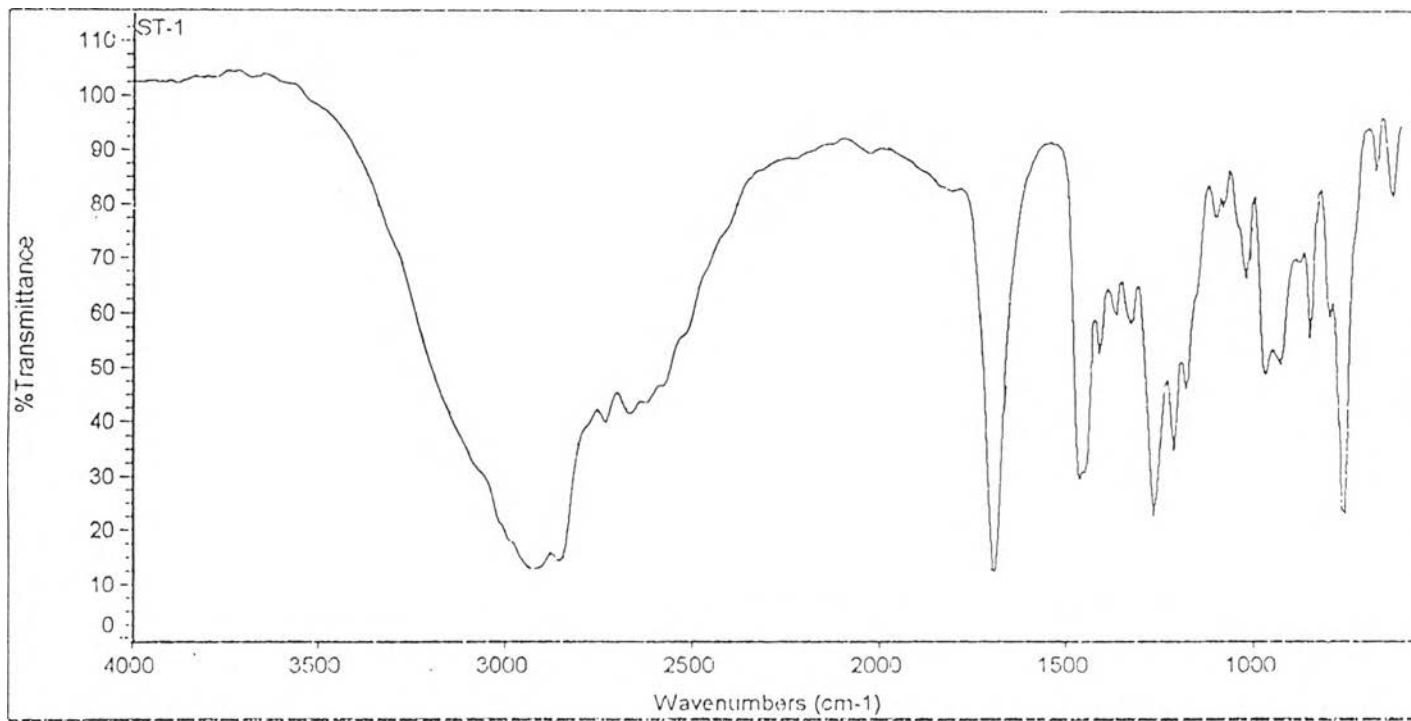


Figure18. The IR spectrum of Compound 1

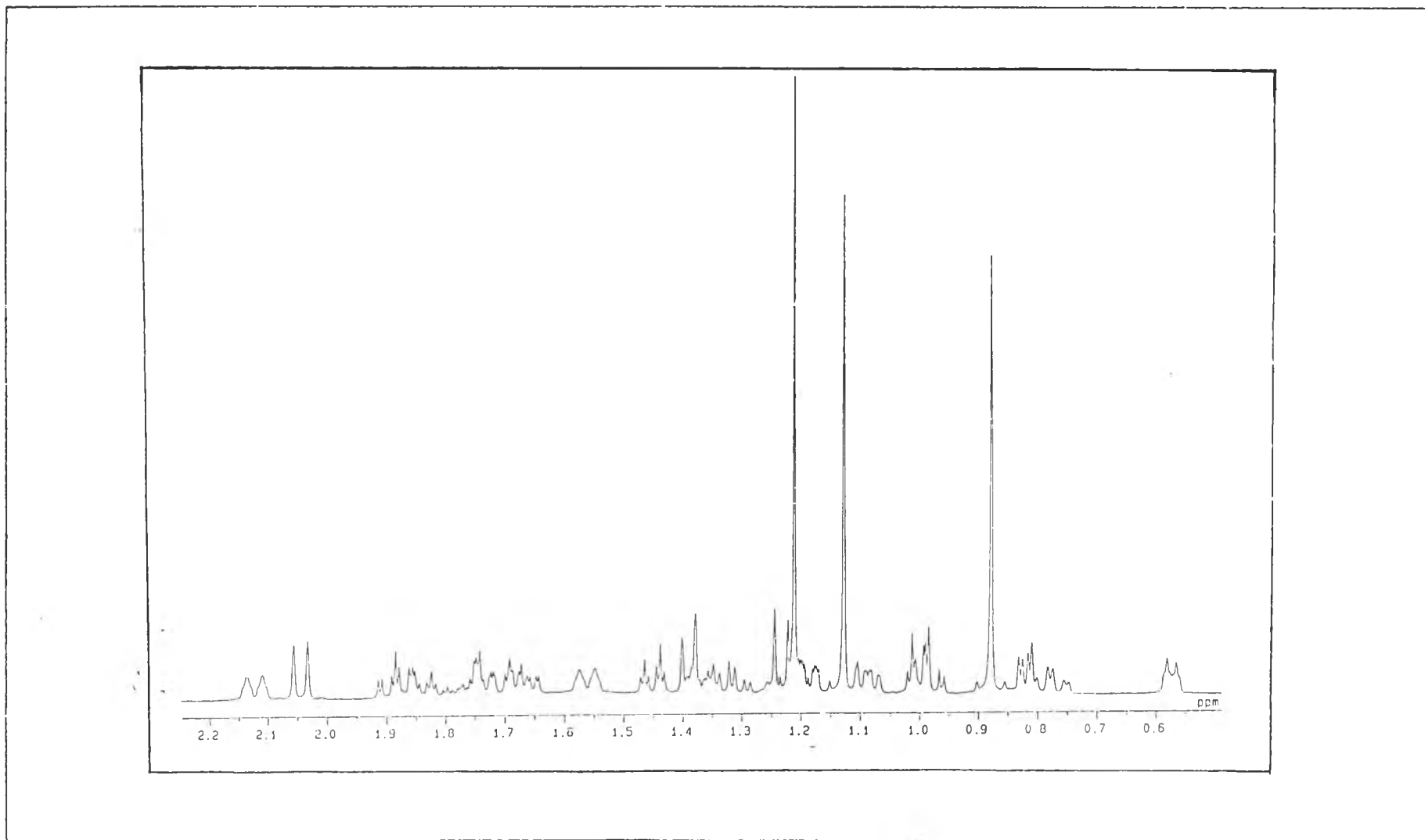


Figure 19. The  $^1\text{H}$ -NMR spectrum of Compound 1



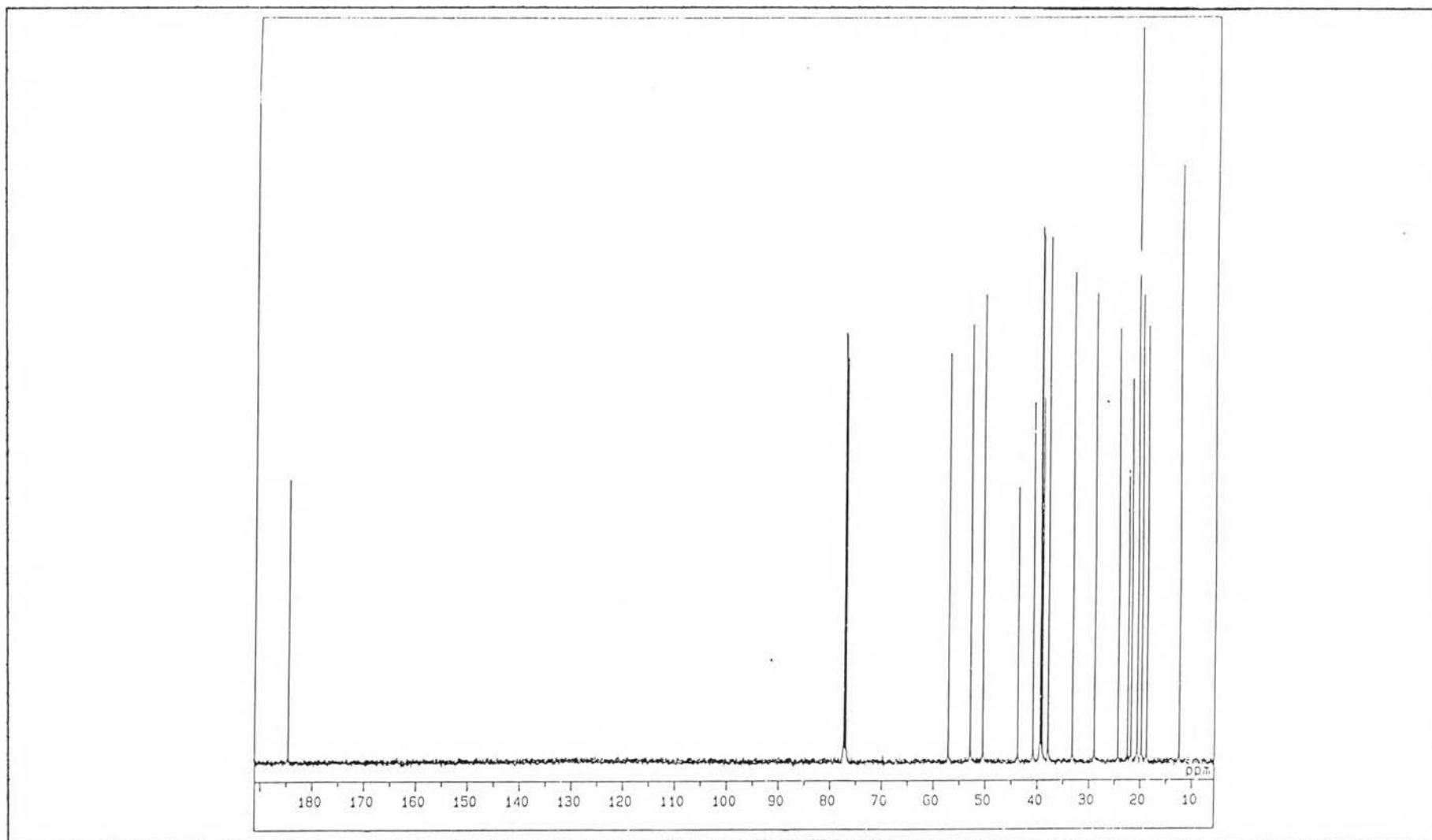


Figure 20. The  $^{13}\text{C}$ -NMR spectrum of Compound 1

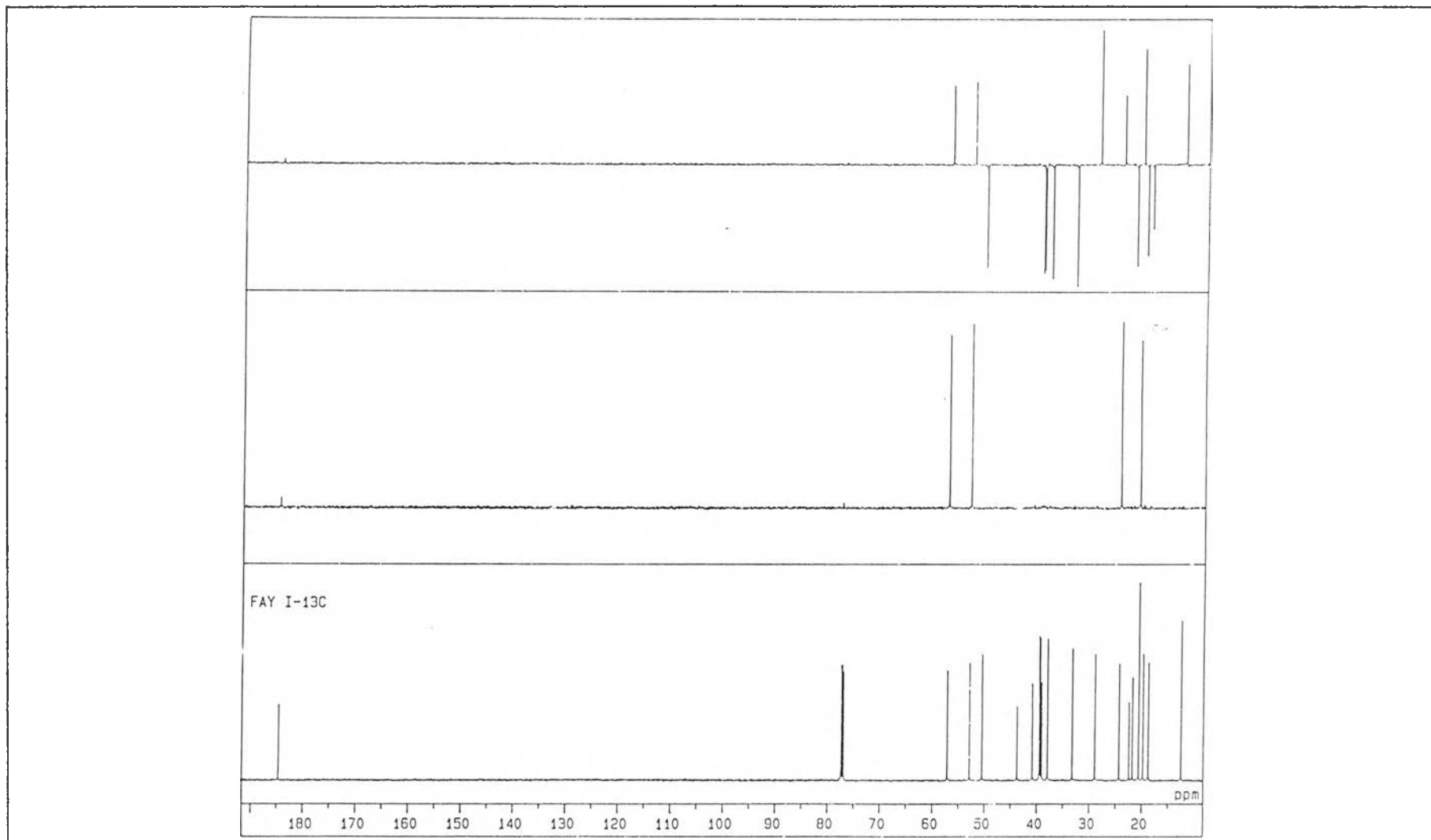


Figure 21. The Dept 135, 90 <sup>13</sup>C-NMR spectrum of Compound 1

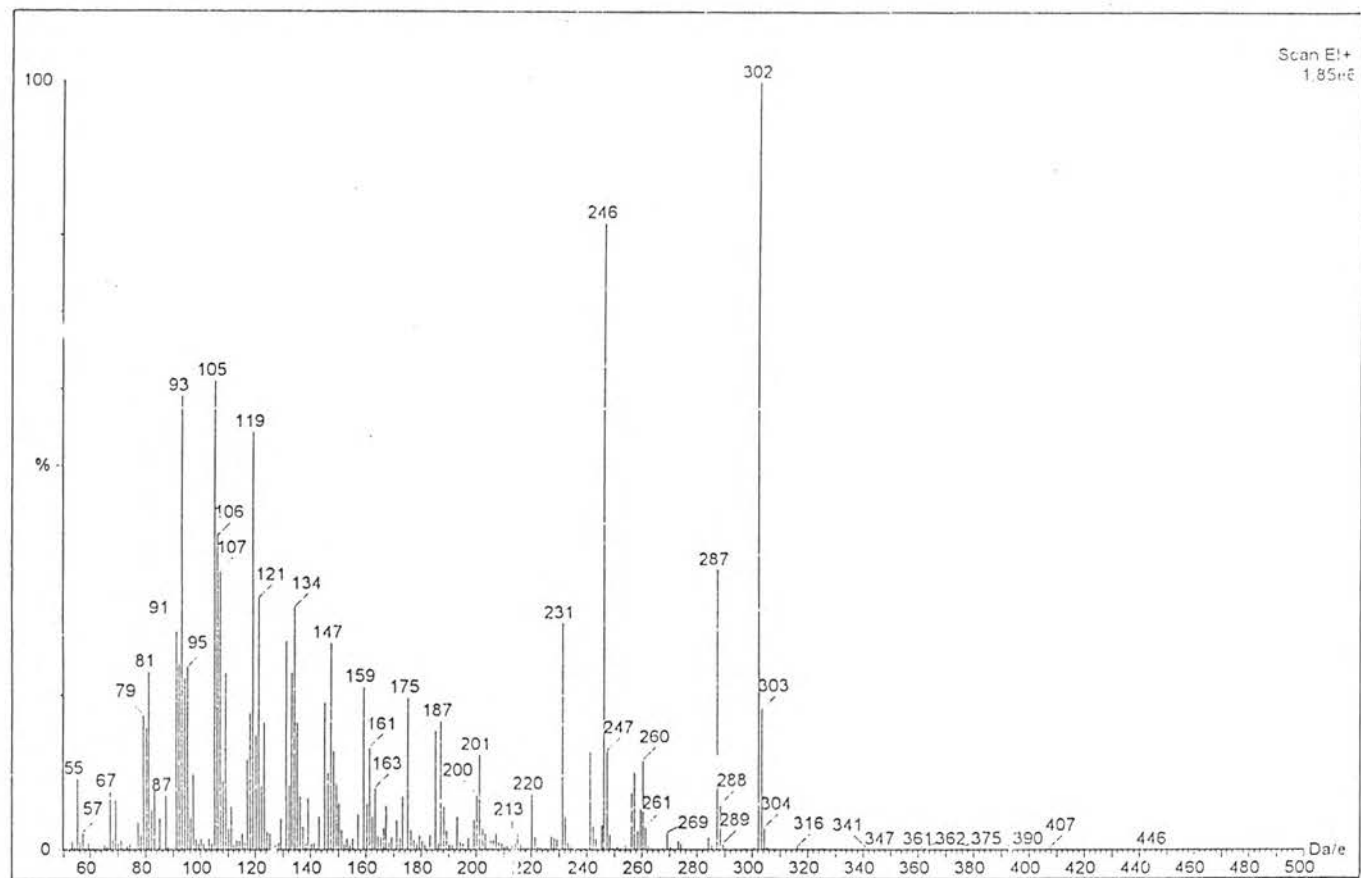


Figure 22. The EIMS spectrum of Compound 1

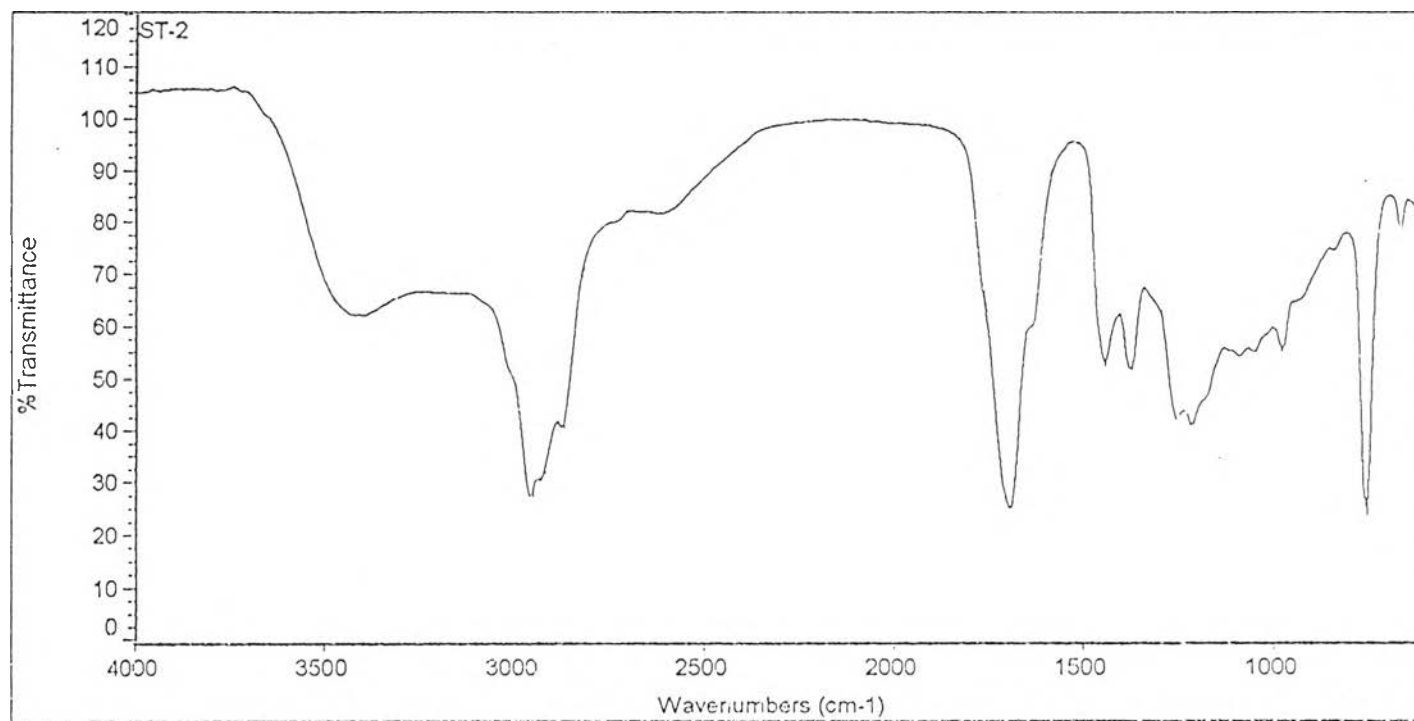


Figure 23. The IR spectrum of Compound 2

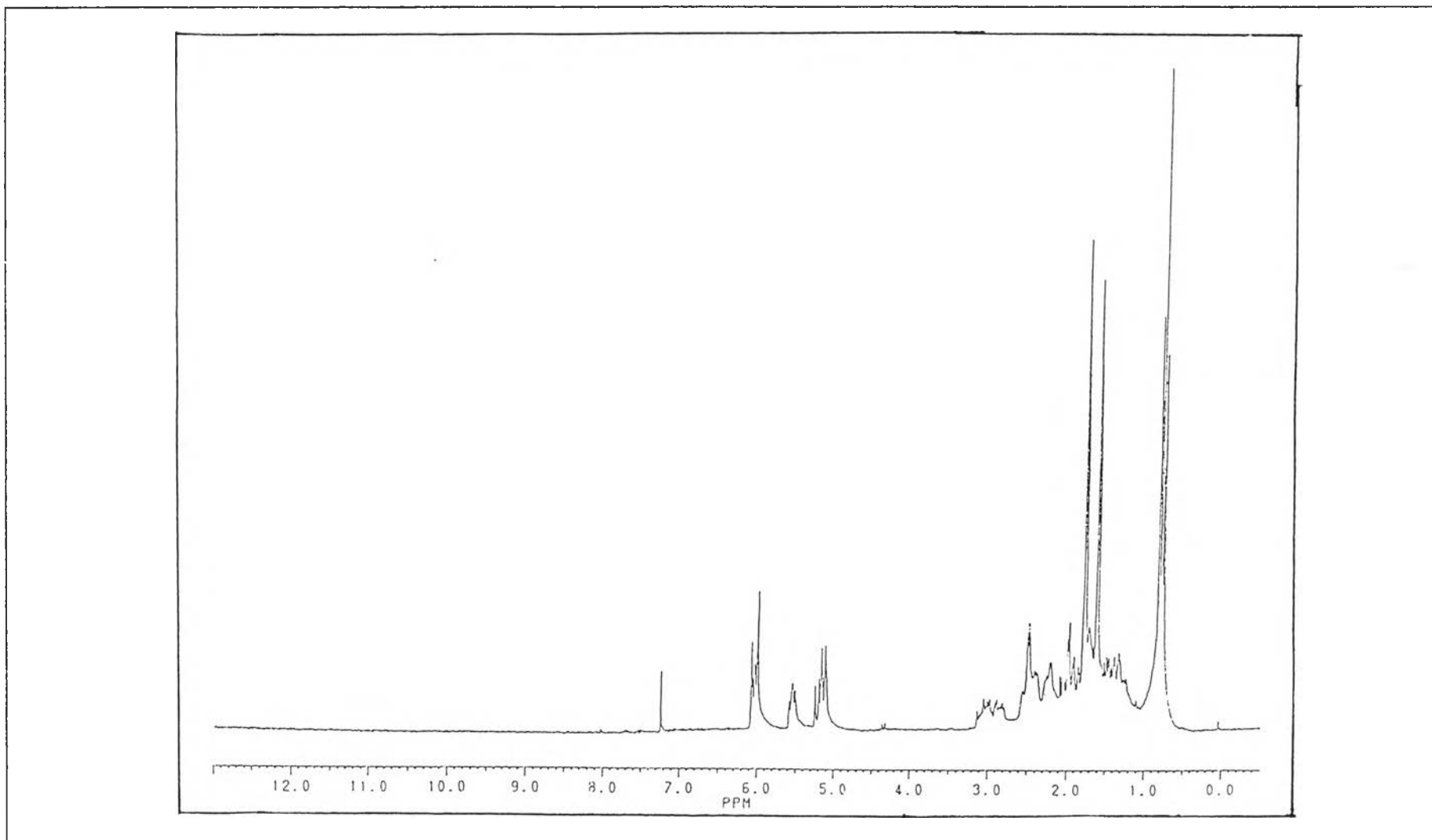


Figure 24. The  $^1\text{H}$ -NMR spectrum of Compound 2

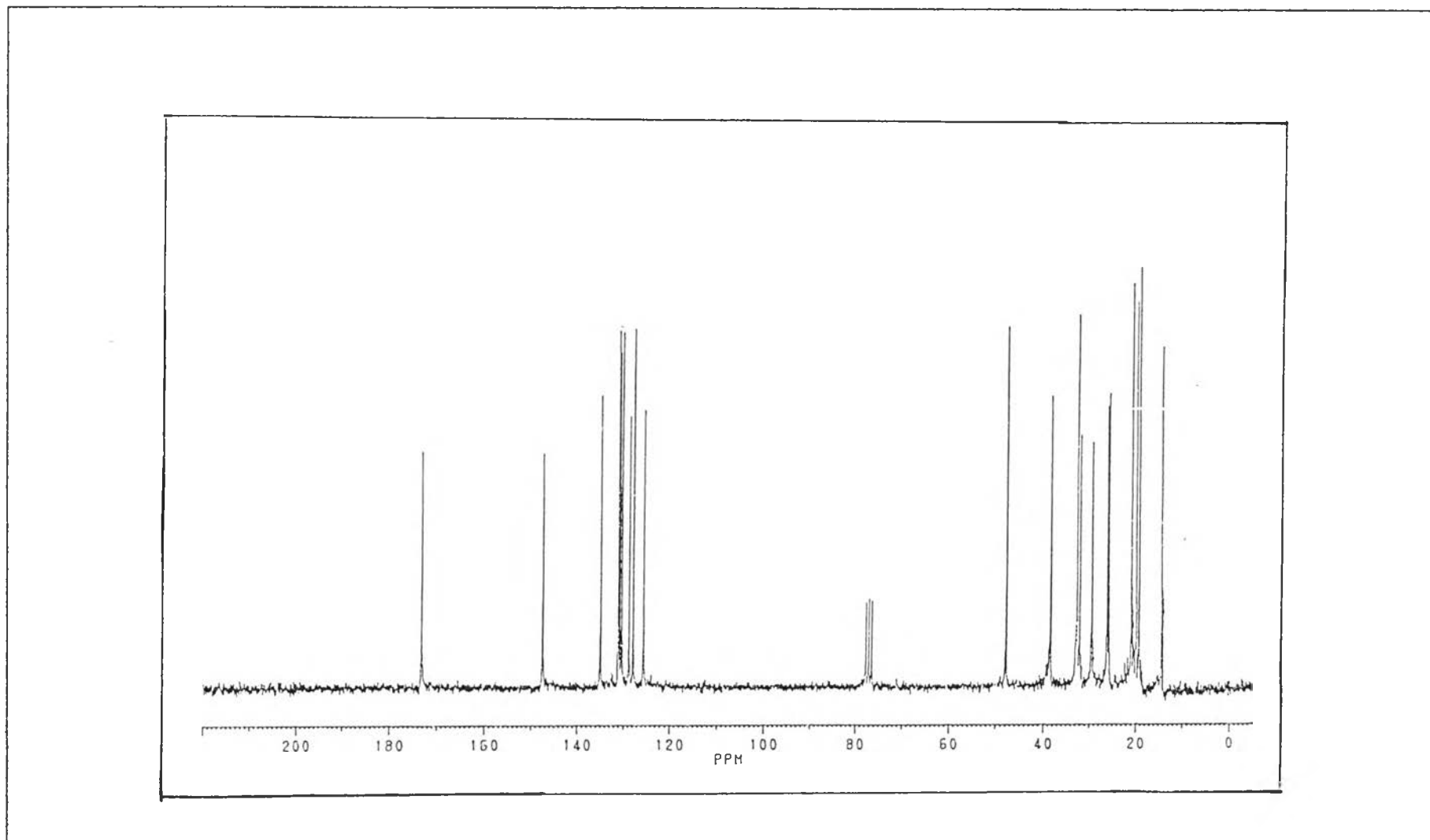


Figure 25. The  $^{13}\text{C}$ -NMR spectrum of Compound 2

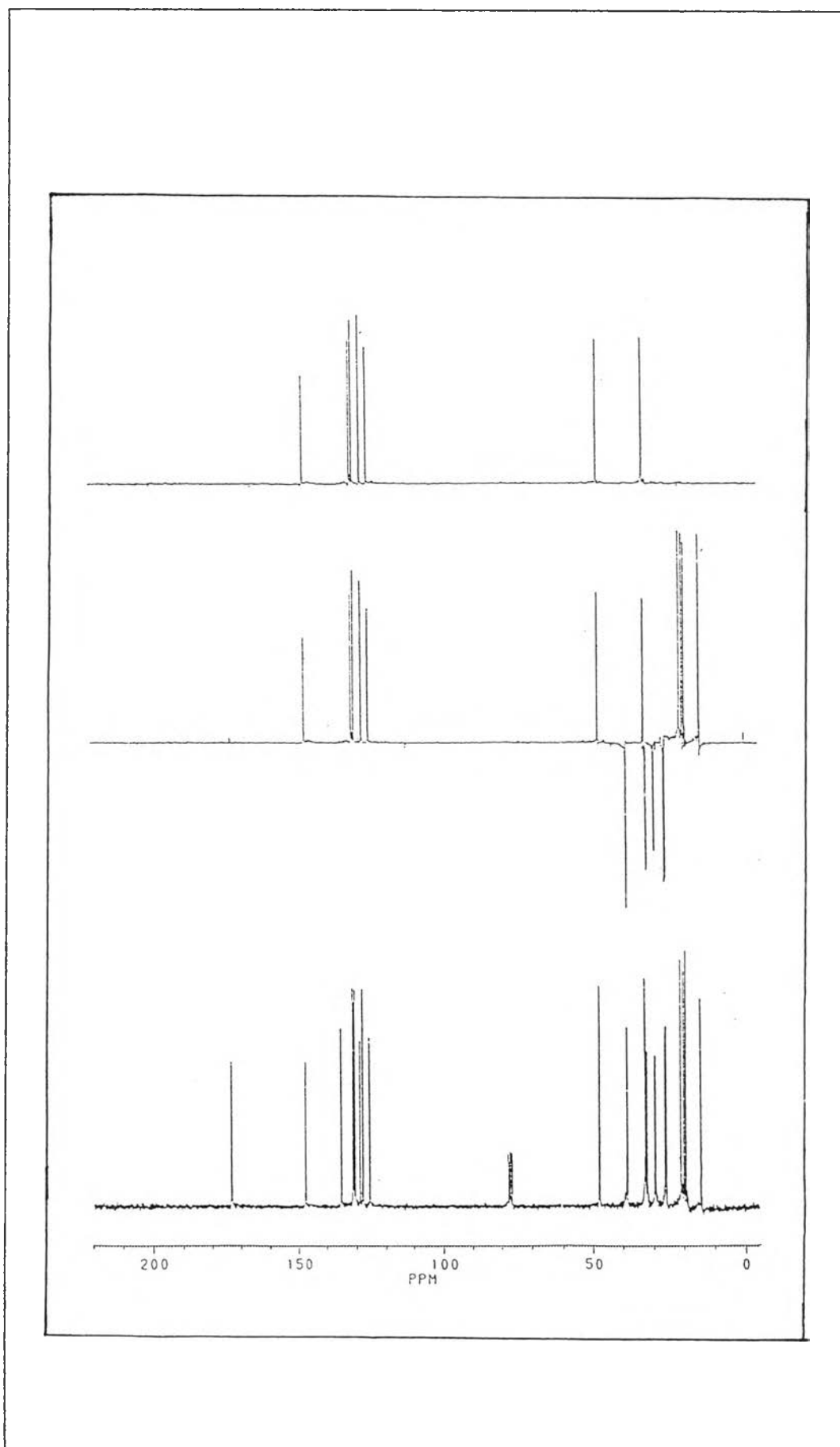


Figure 26. The Dept 135, 90  $^{13}\text{C}$ -NMR spectrum of Compound 2

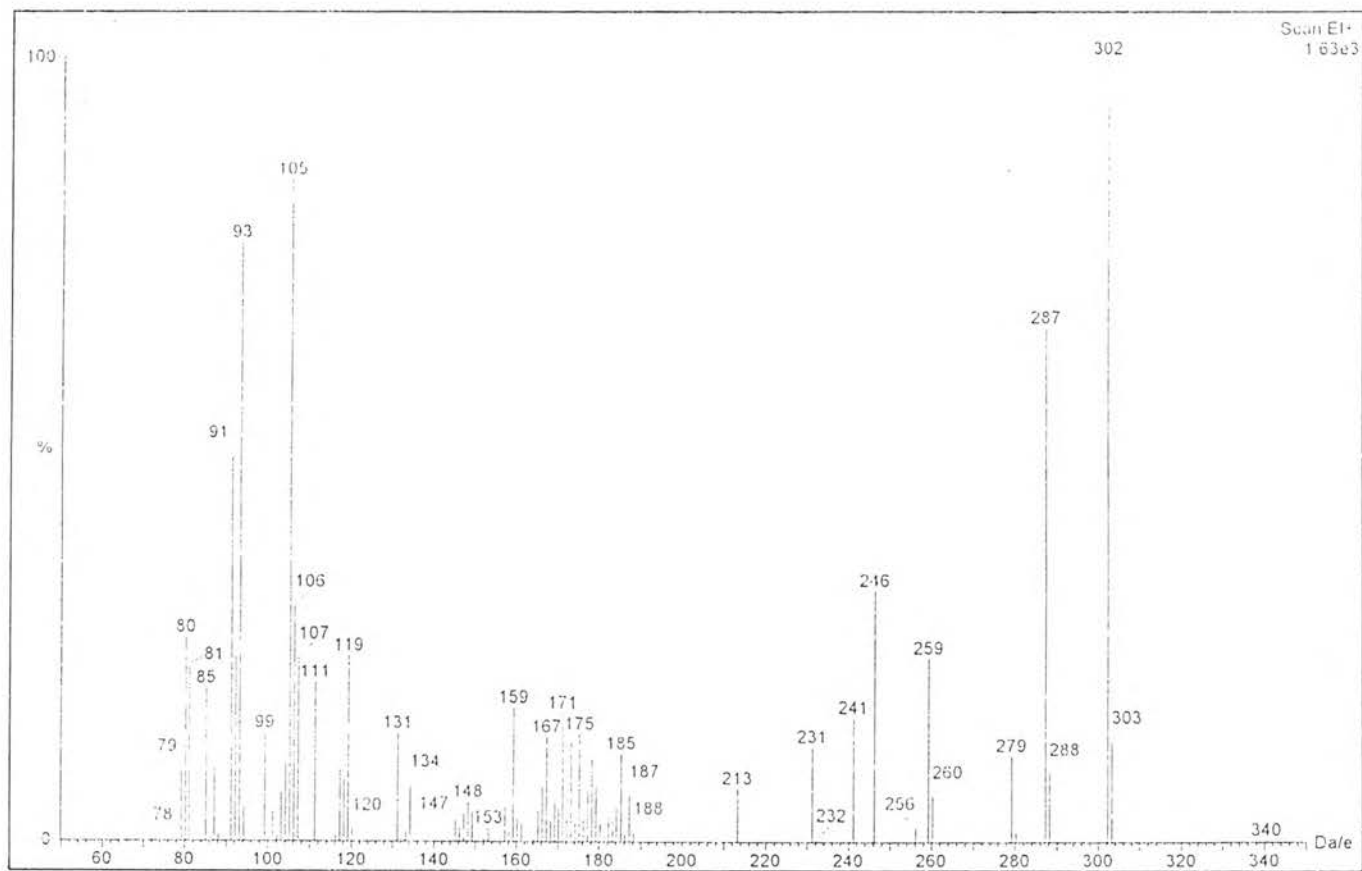


Figure 27. The EIMS spectrum of Compound 2



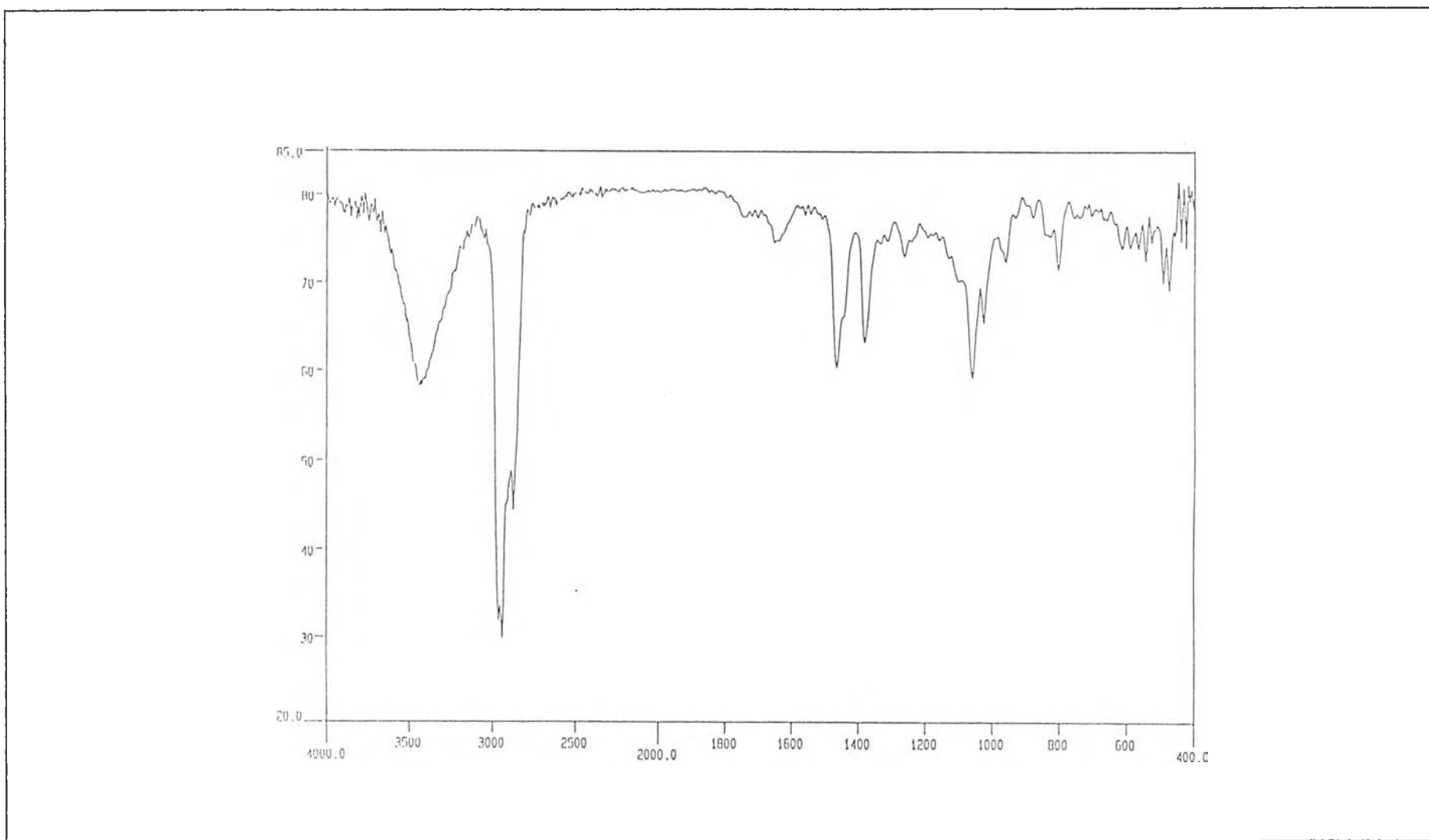


Figure 28. The IR spectrum of Mixture 3

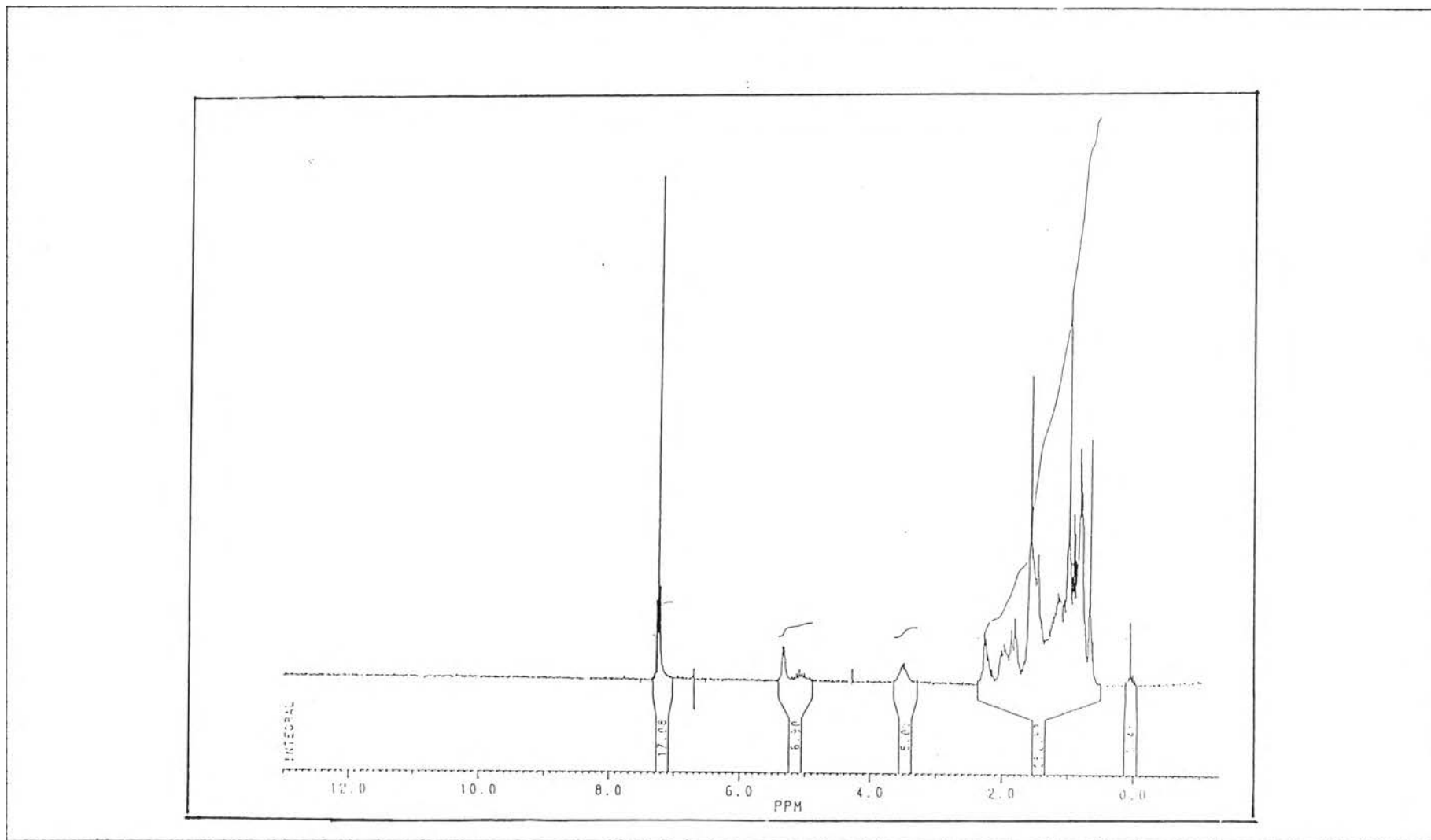


Figure 29. The  $^1\text{H}$ -NMR spectrum of Mixture 3

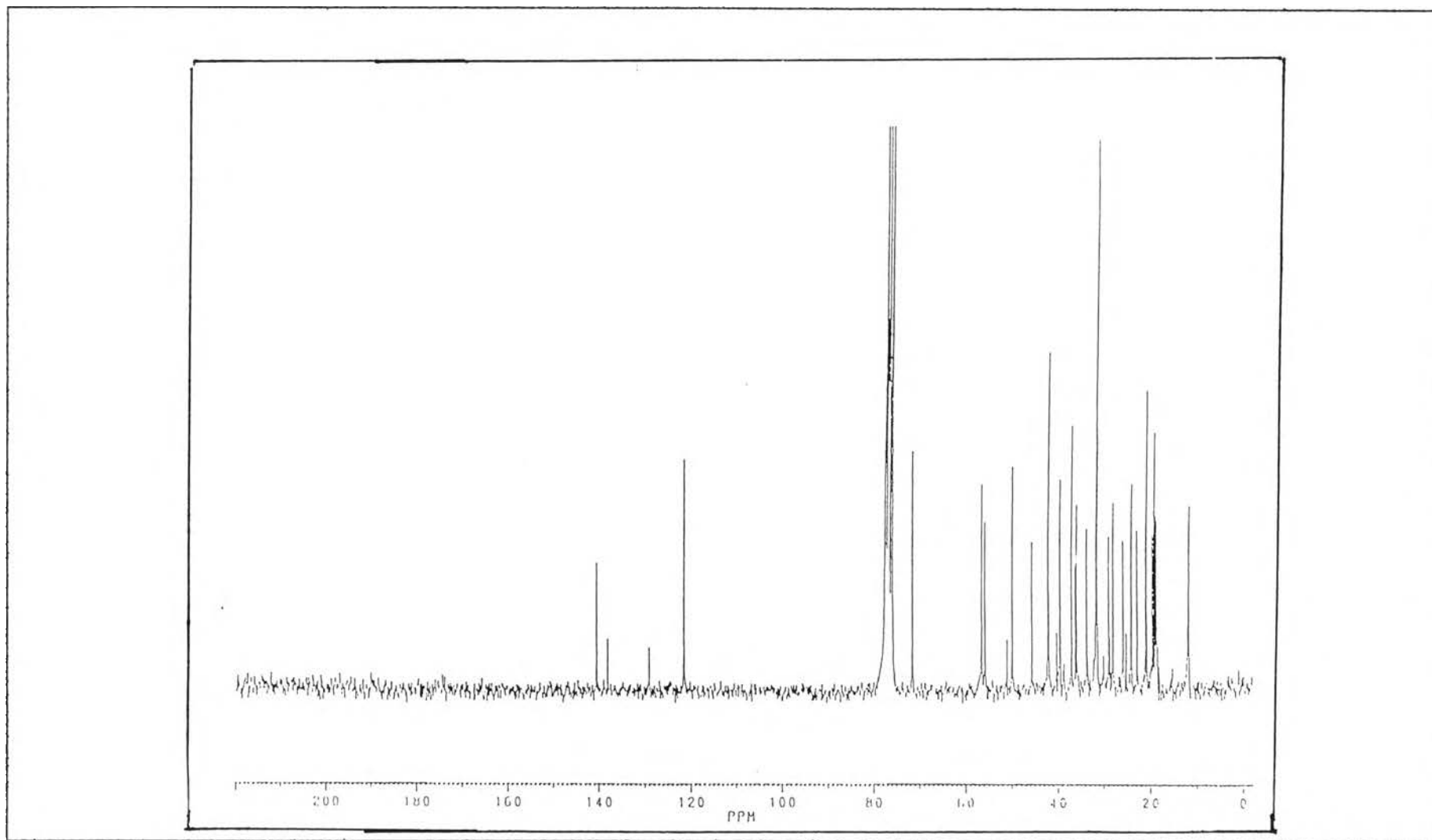


Figure 30. The  $^{13}\text{C}$ -NMR spectrum of Mixture 3

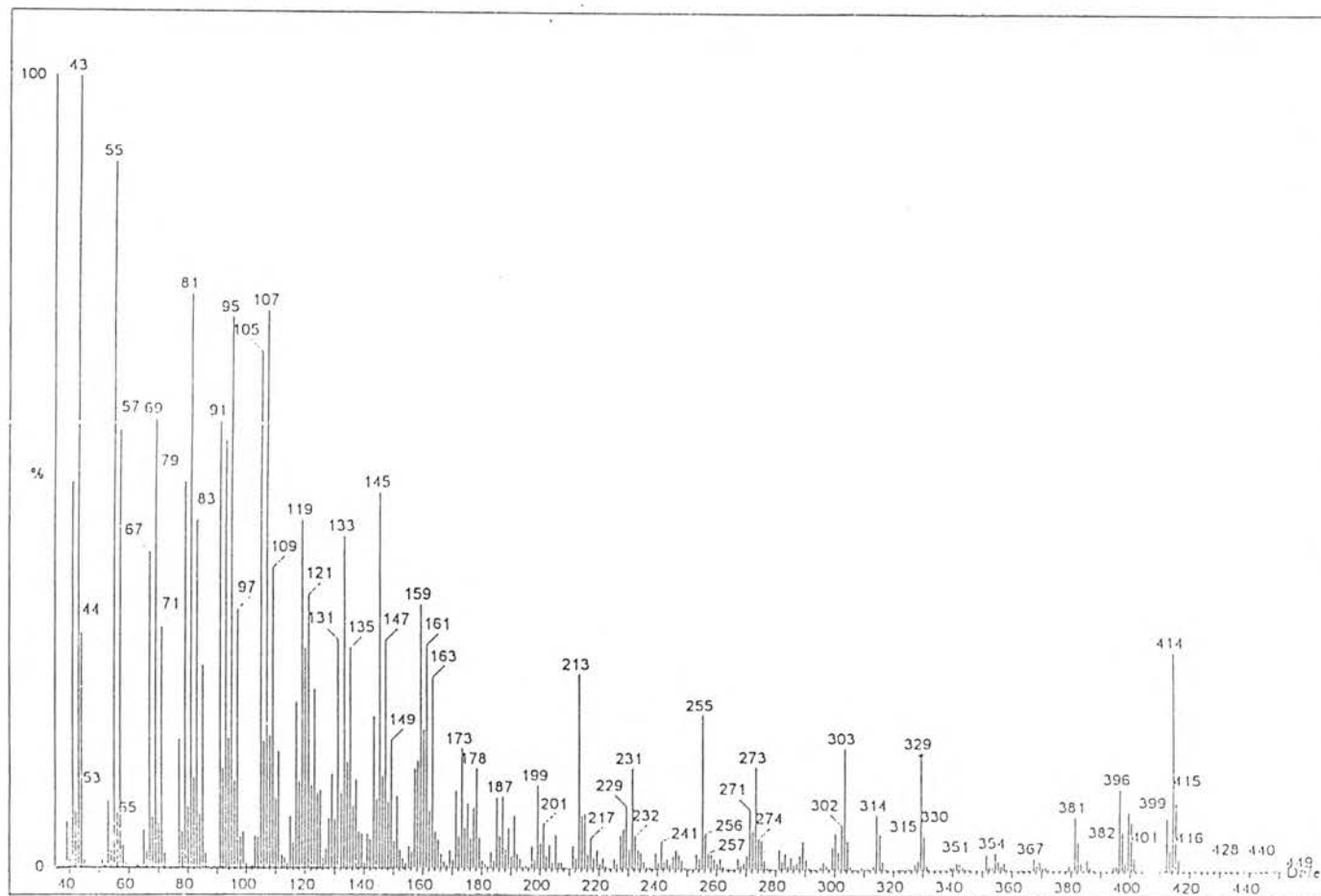


Figure 31. The EIMS spectrum of Mixture 3

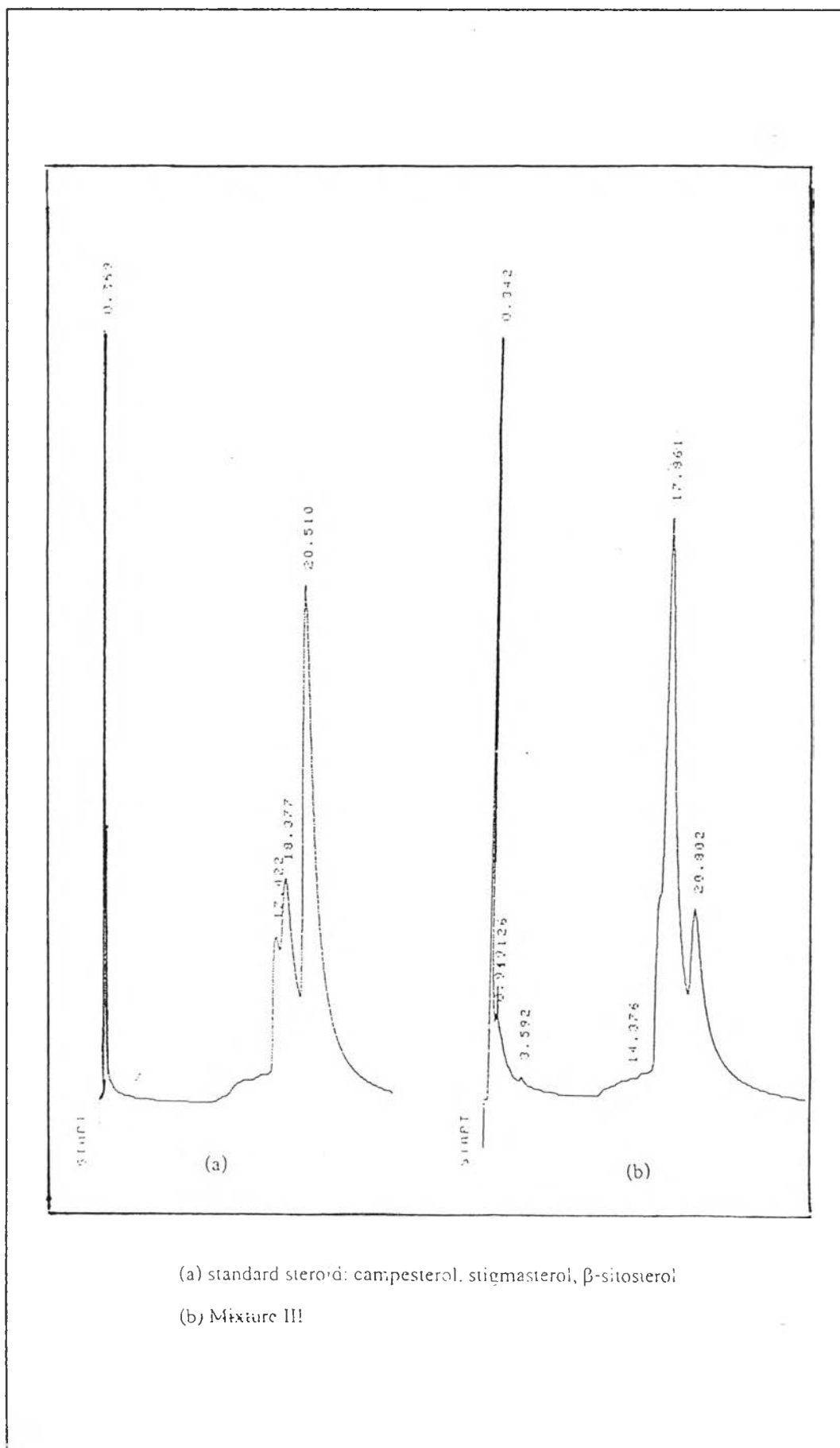


Figure 32. The GC spectrum of Mixture 3

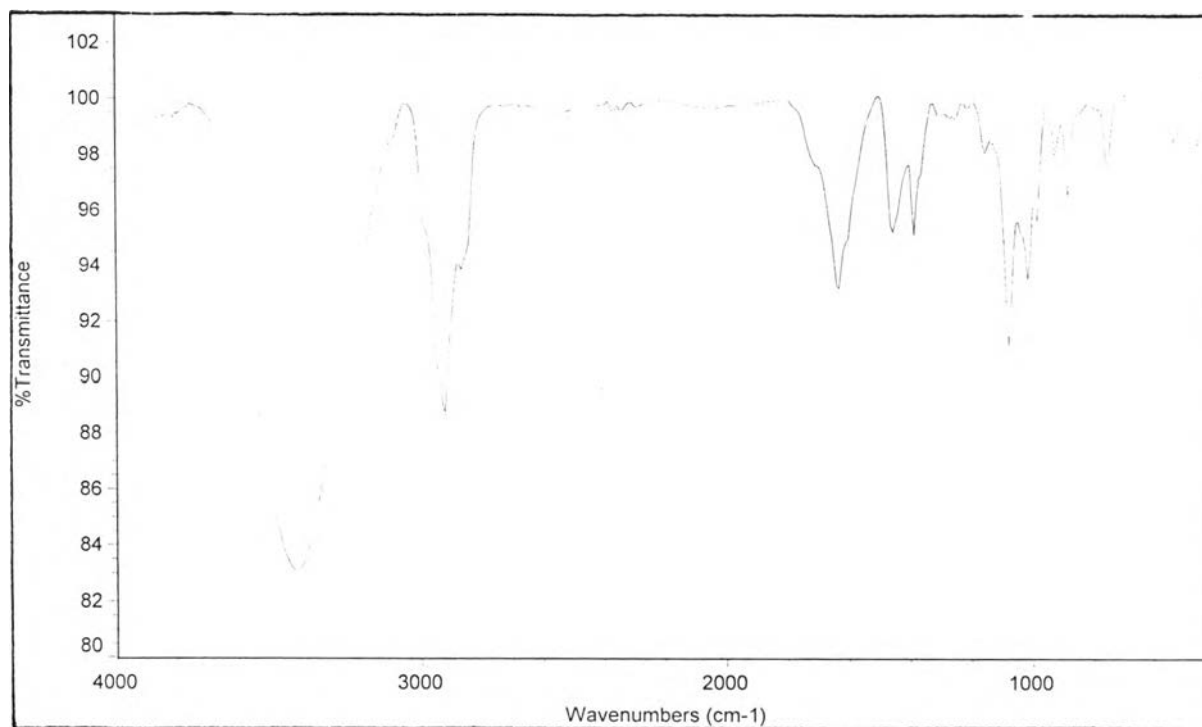


Figure 33. The IR spectrum of Compound 4

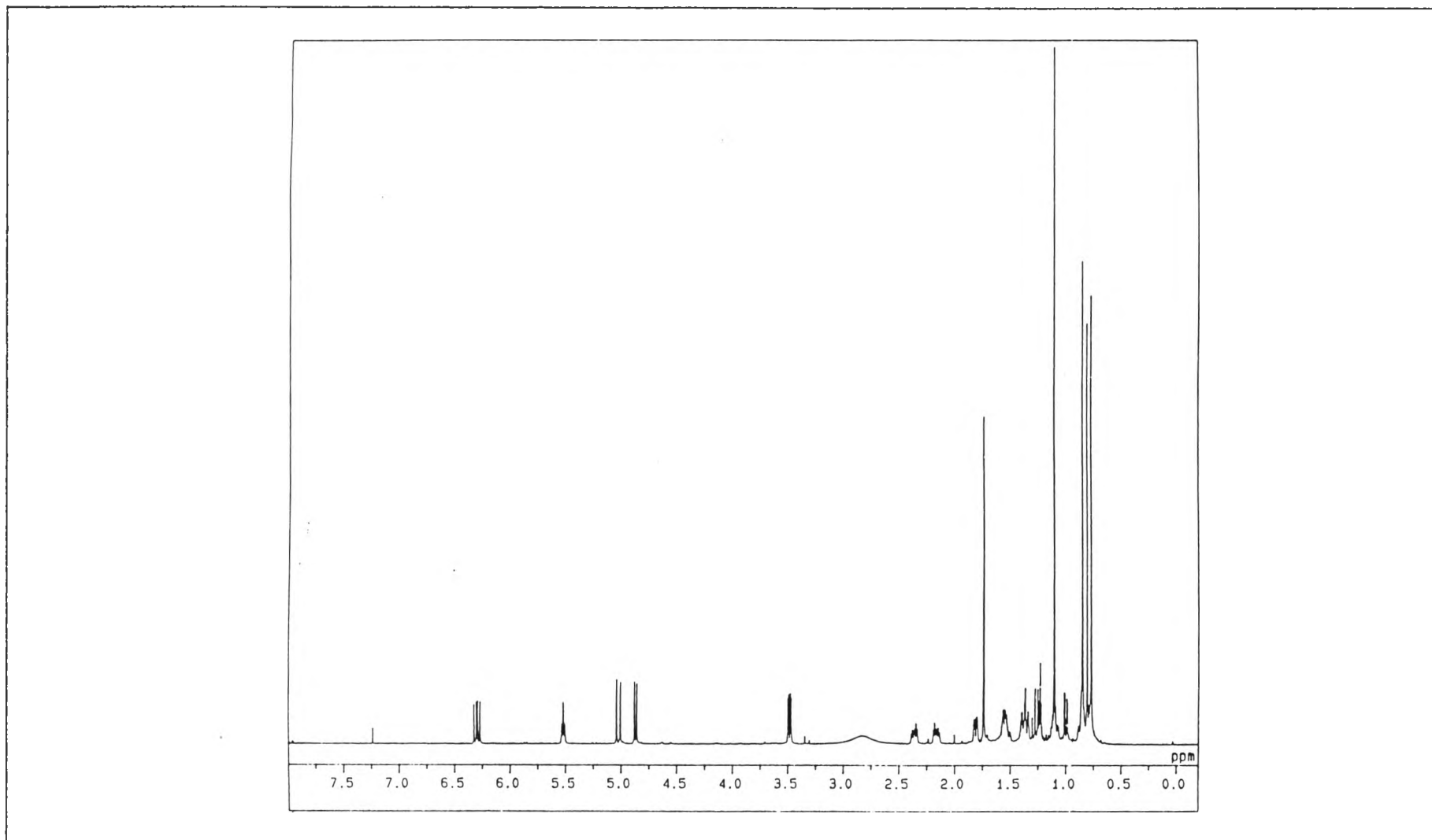


Figure 34. The  $^1\text{H-NMR}$  spectrum of Compound 4

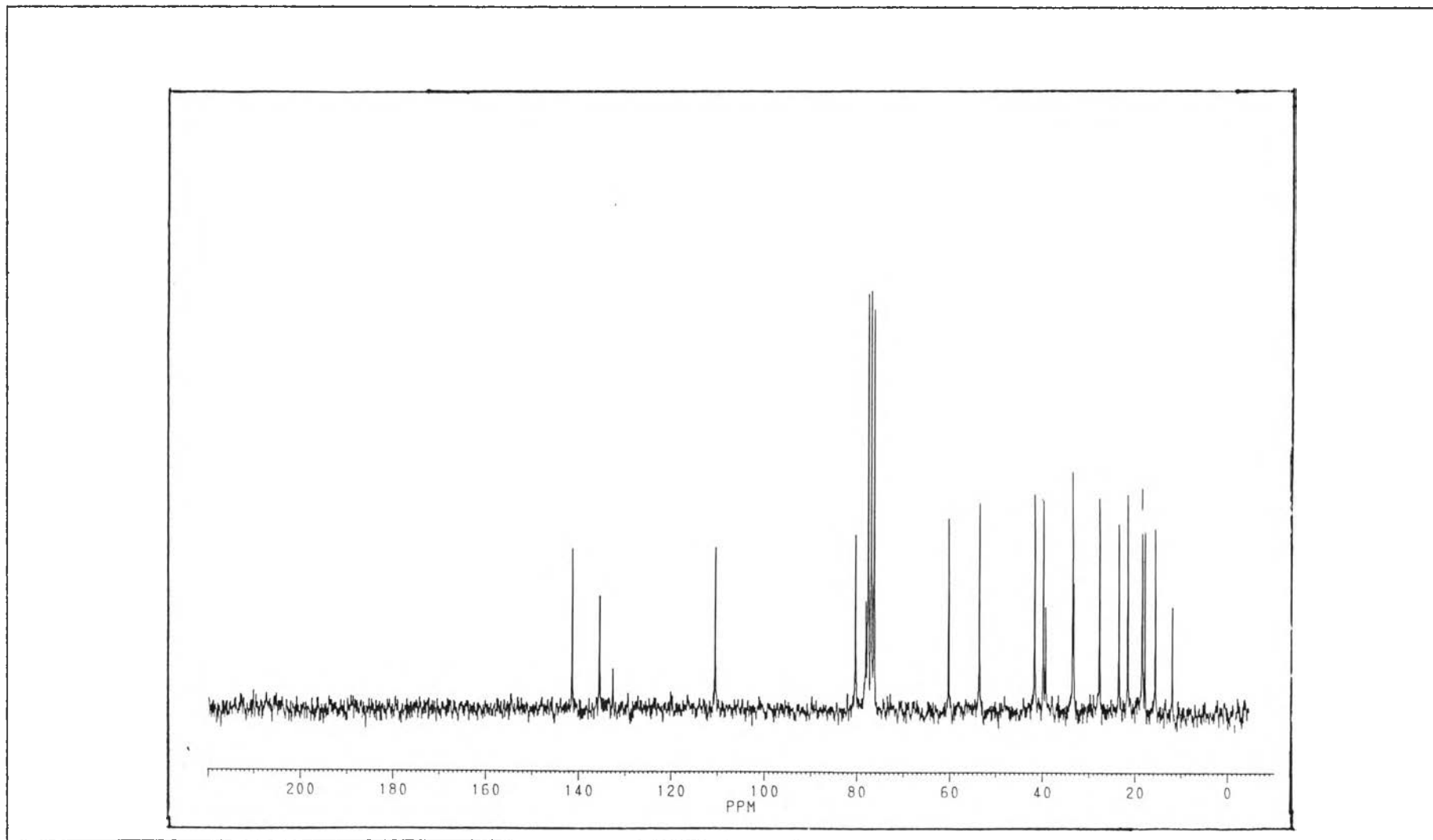


Figure 35. The  $^{13}\text{C}$ -NMR spectrum of Compound 4



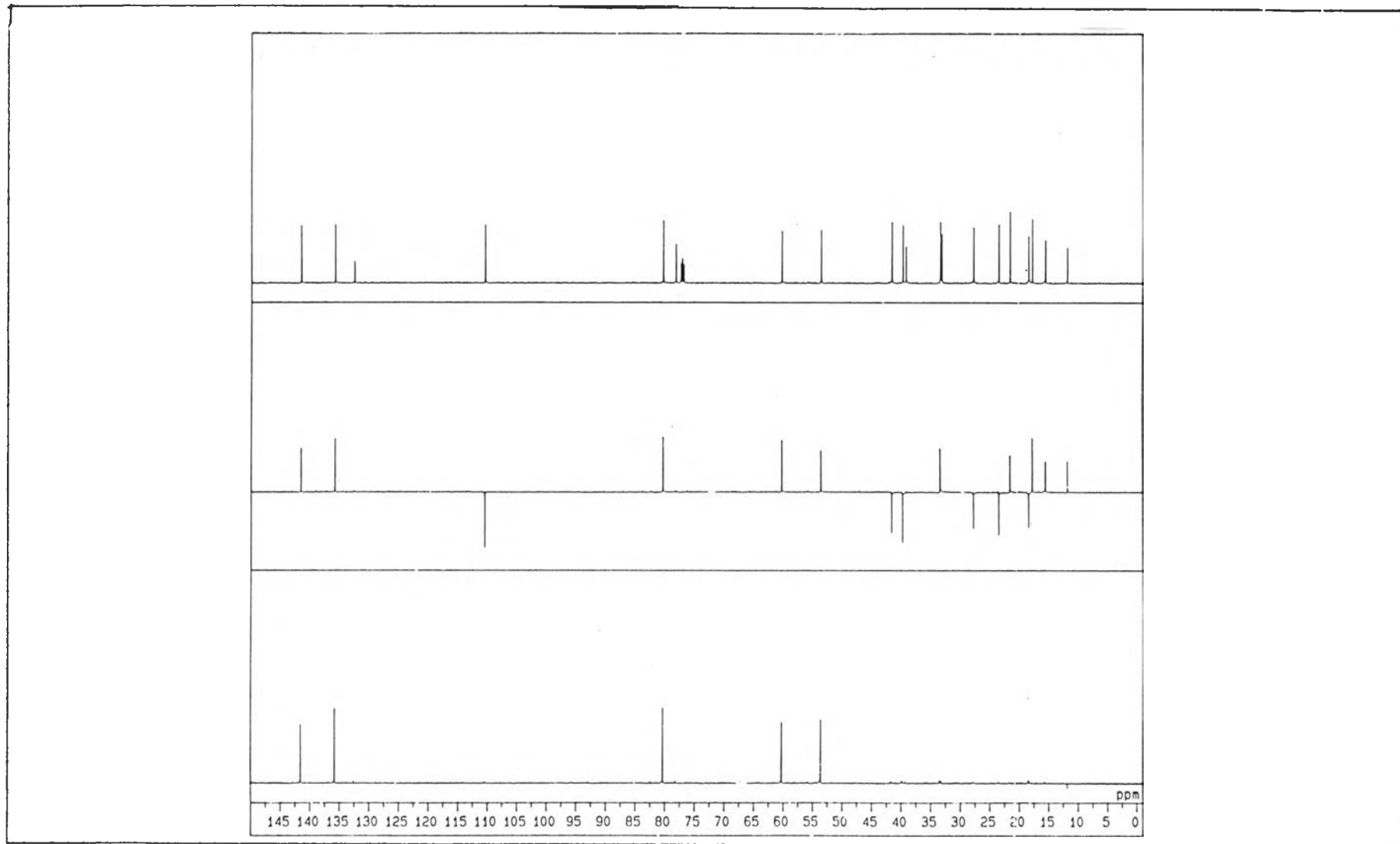


Figure 36. The Dept 135,90  $^{13}\text{C}$ -NMR spectrum of Compound 4

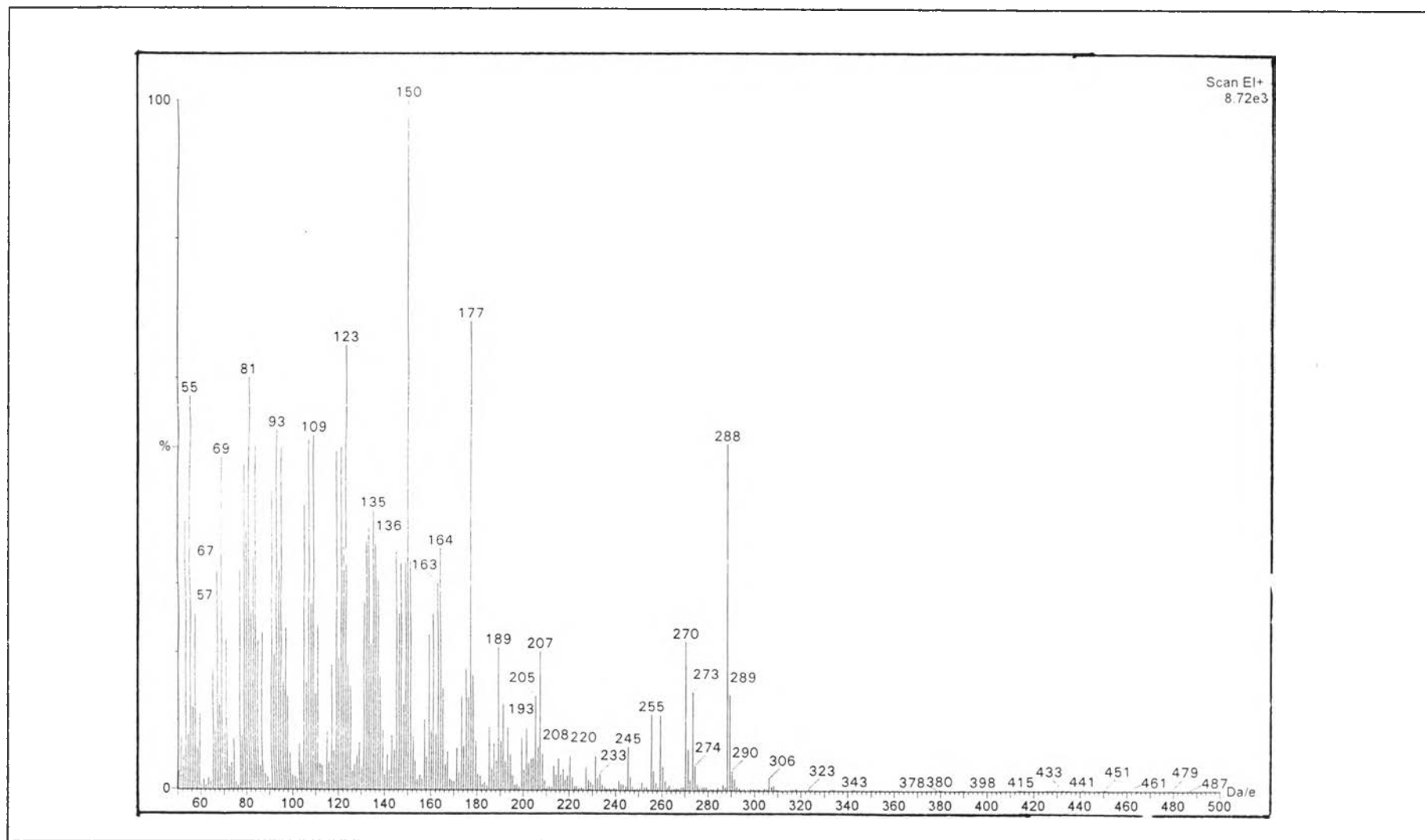


Figure 37. The EIMS spectrum of Compound 4

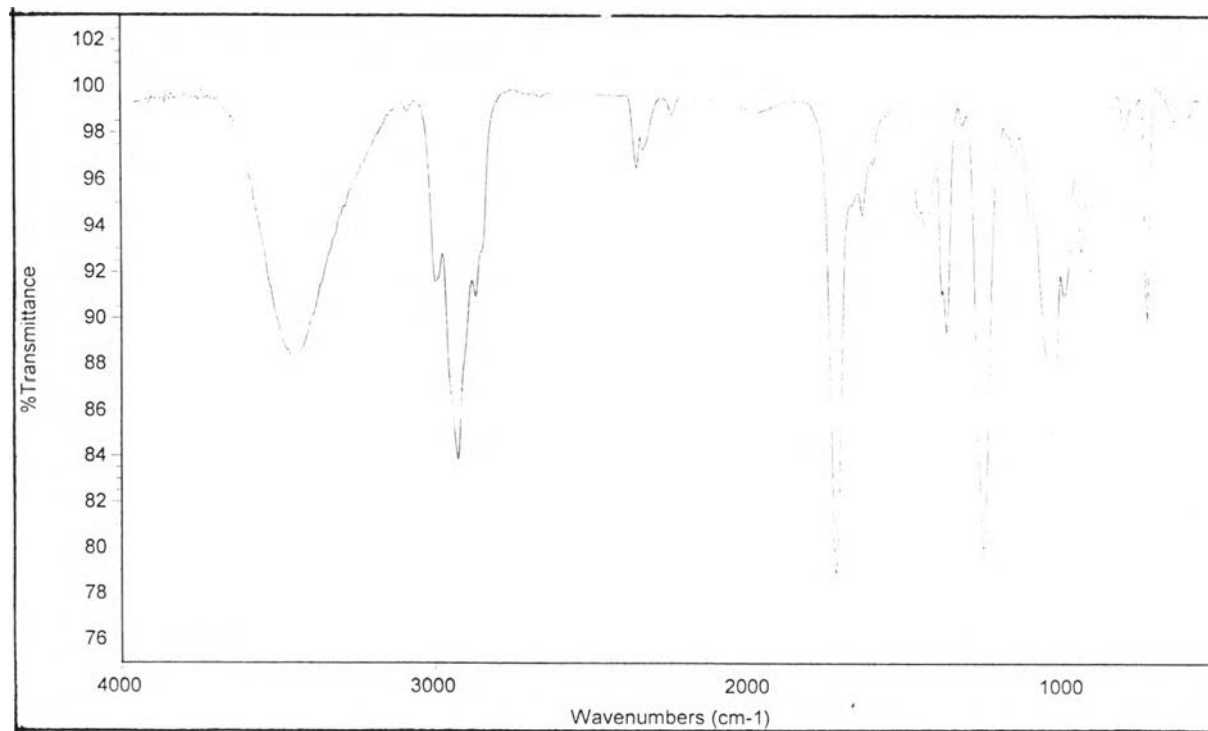


Figure 38. The IR spectrum of Compound 5

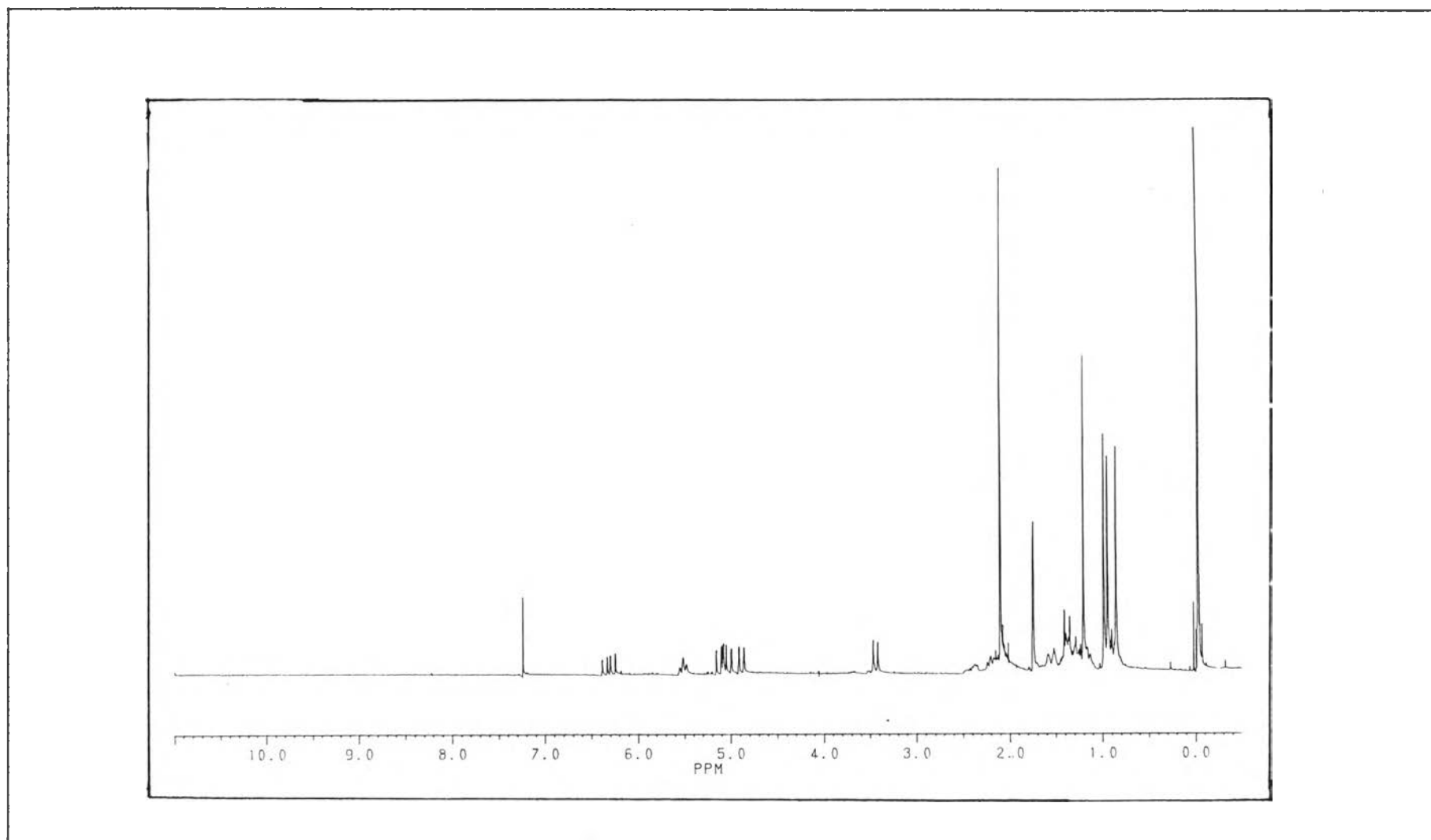


Figure 39. The  $^1\text{H}$ -NMR spectrum of Compound 5

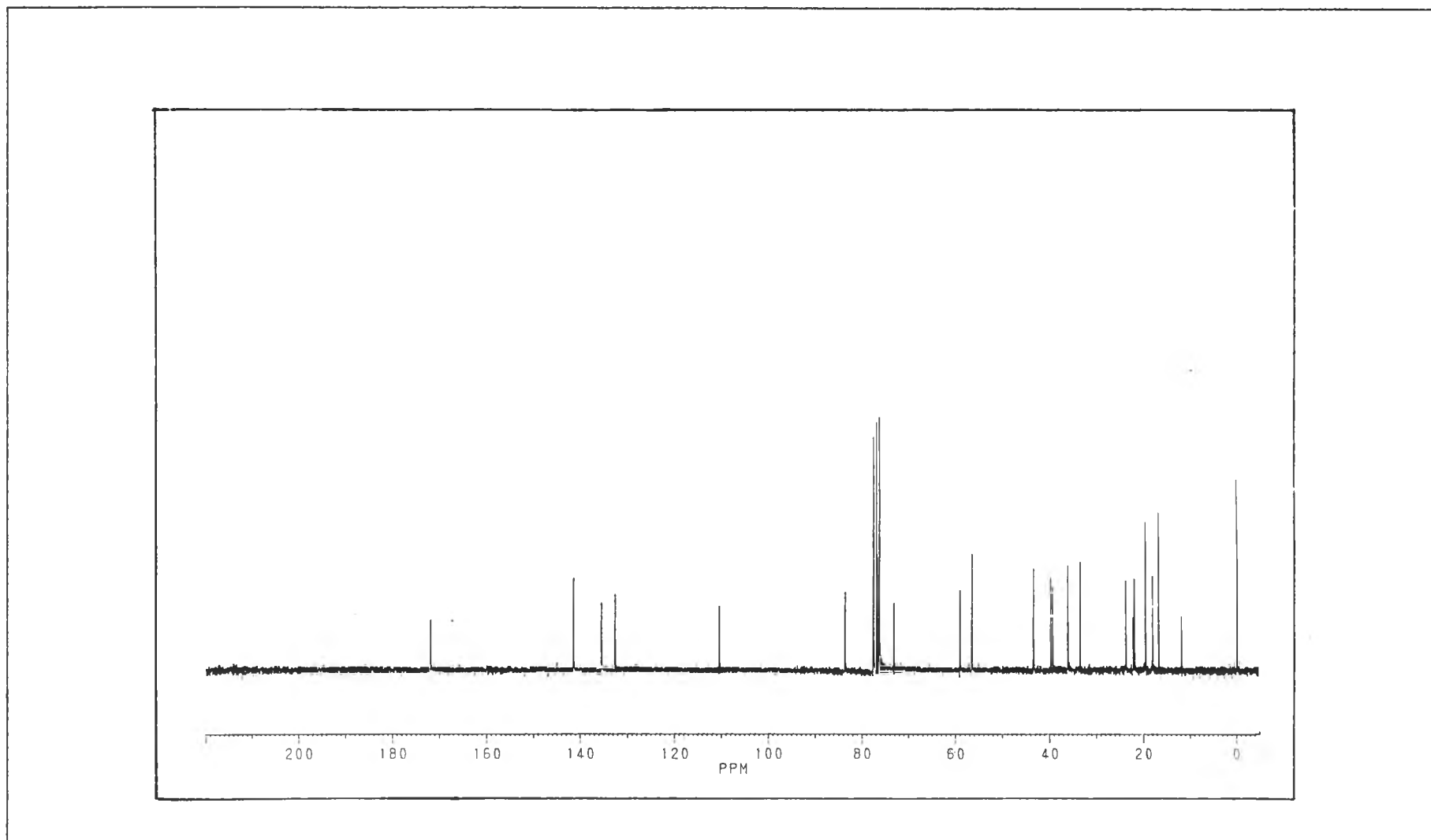


Figure 40. The  $^{13}\text{C}$ -NMR spectrum of Compound 5

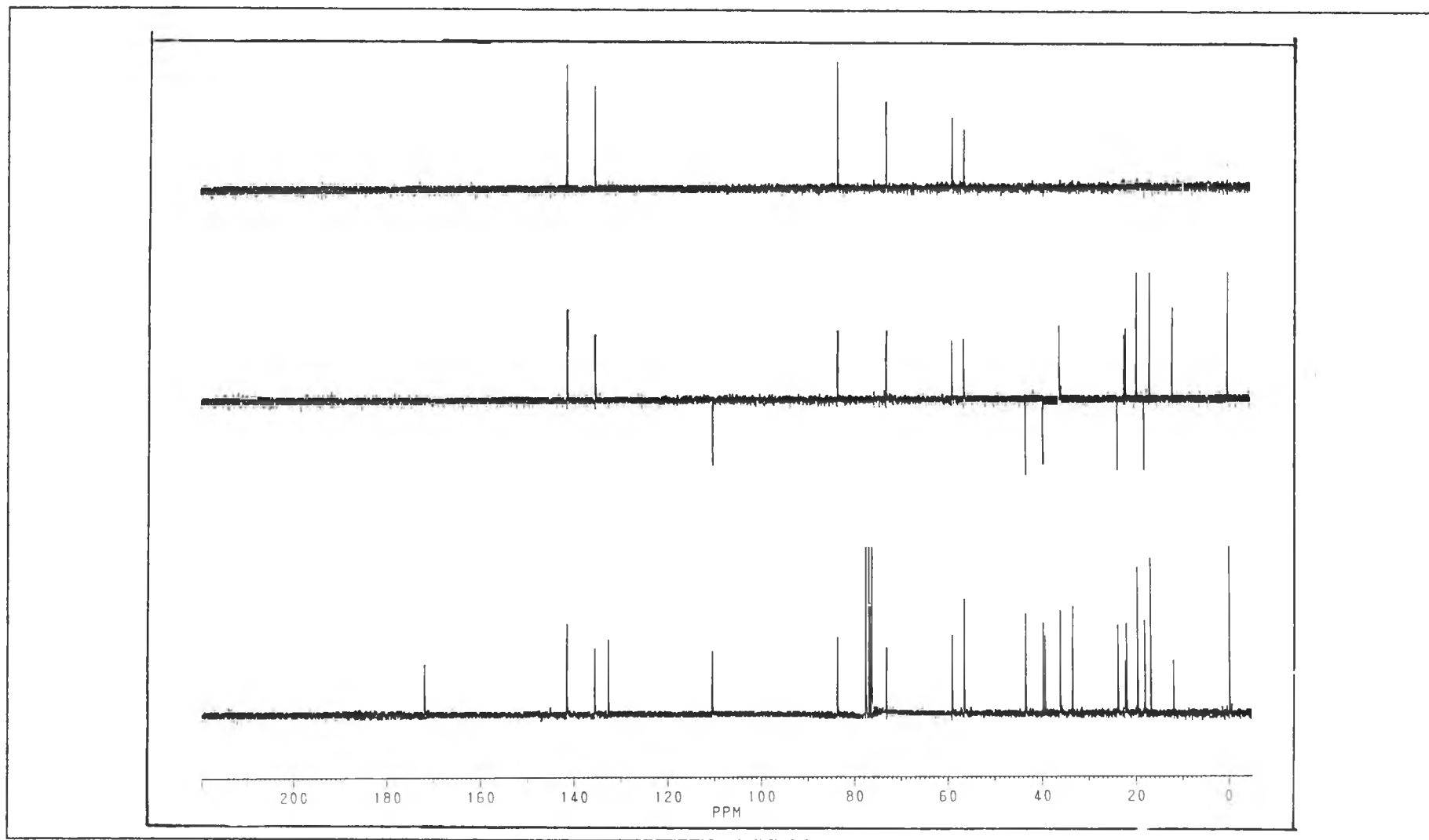


Figure 41. The Dept 135, 90  $^{13}\text{C}$ -NMR spectrum of Compound 5

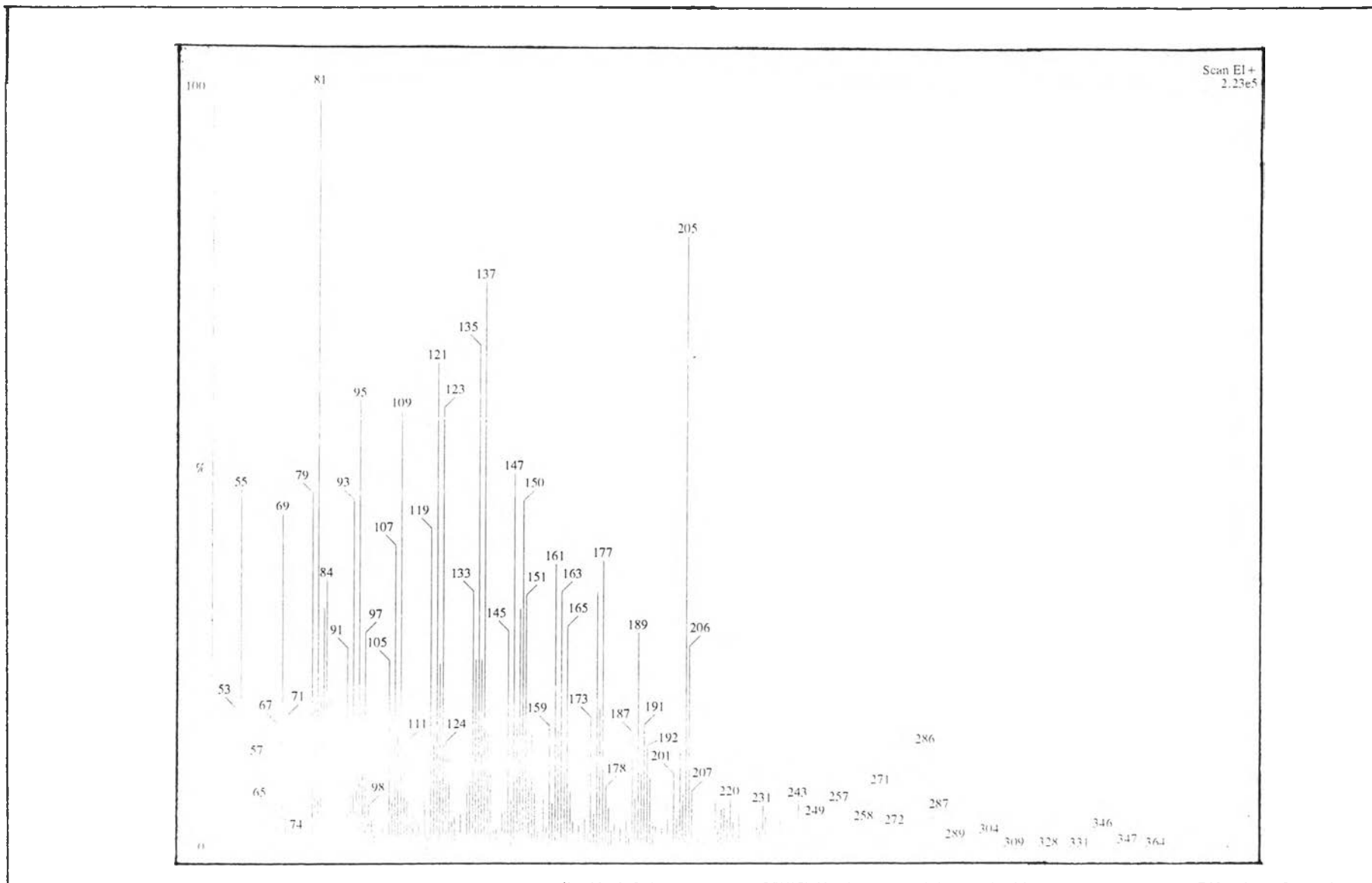


Figure 42. The EIMS spectrum of Compound 5

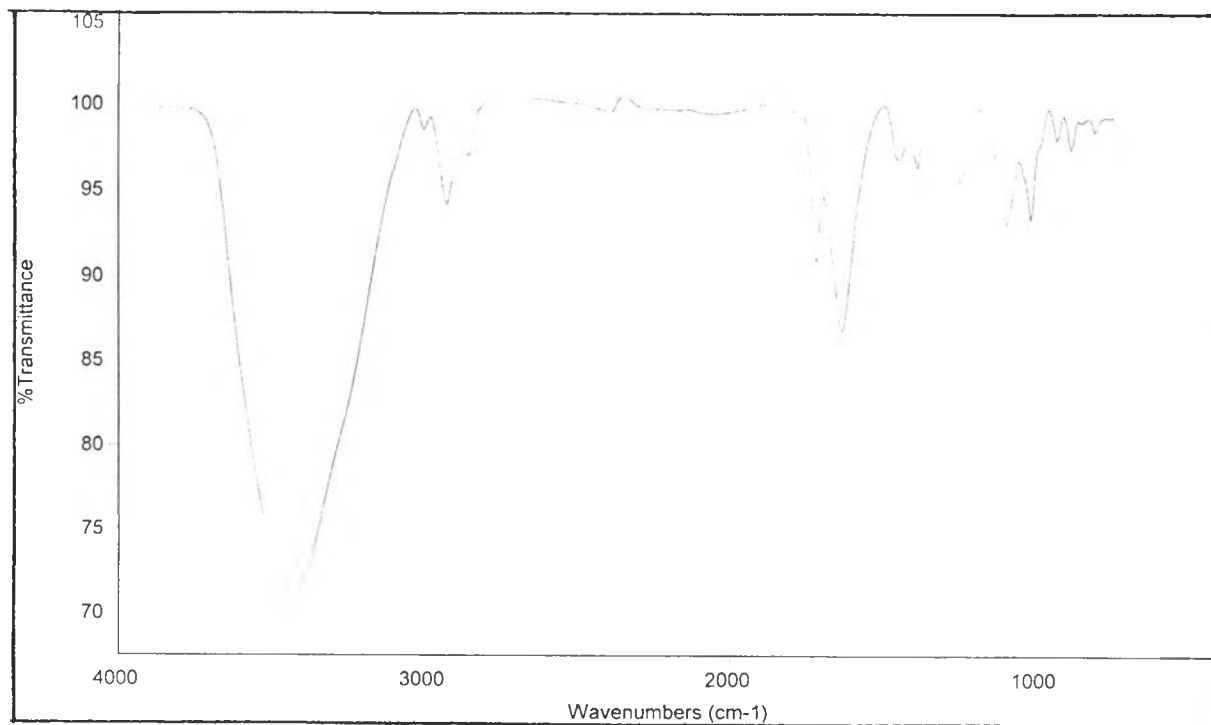


Figure 43 The IR spectrum of Compound 6



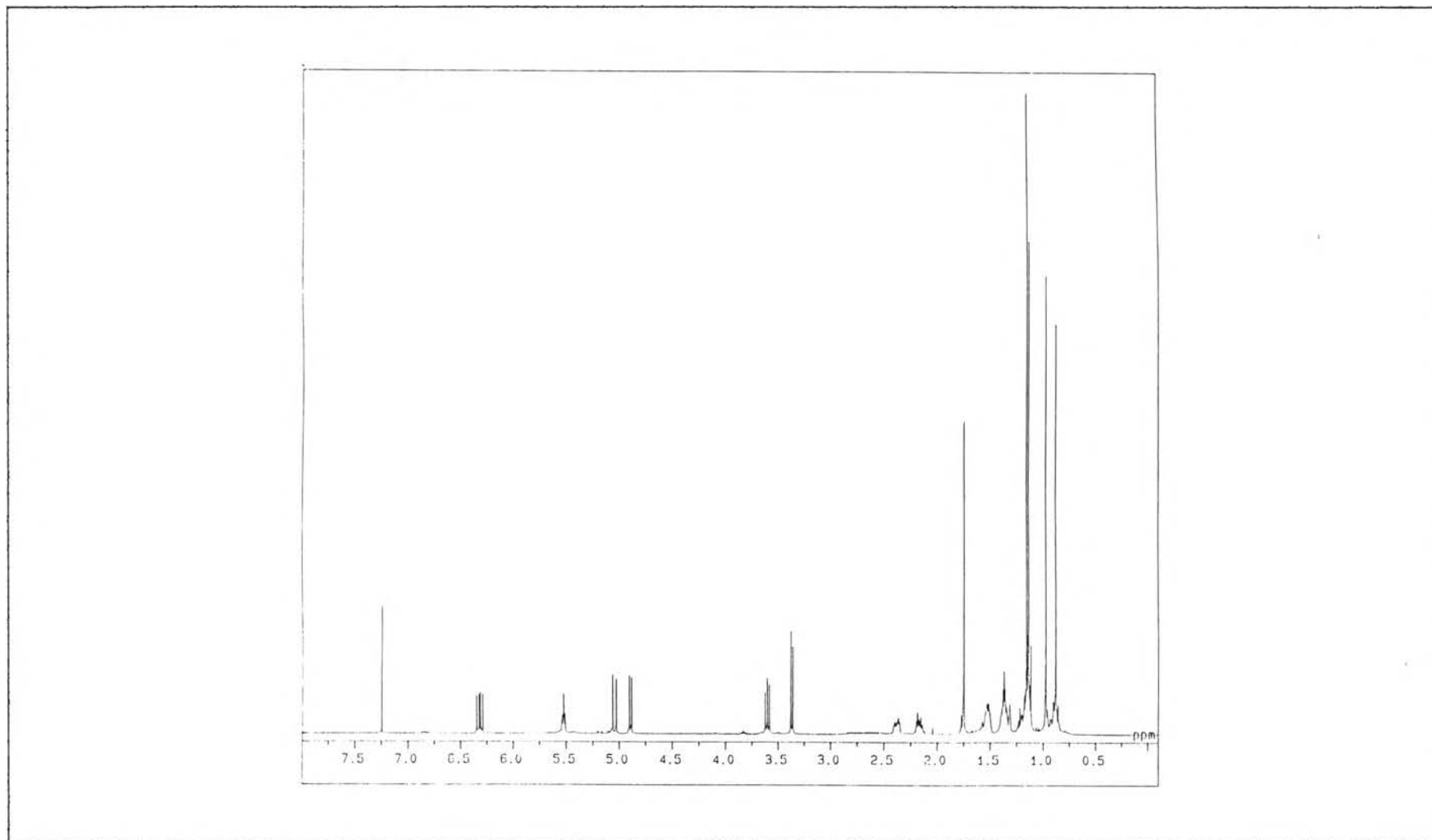


Figure 44. The  $^1\text{H}$ -NMR spectrum of Compound 6

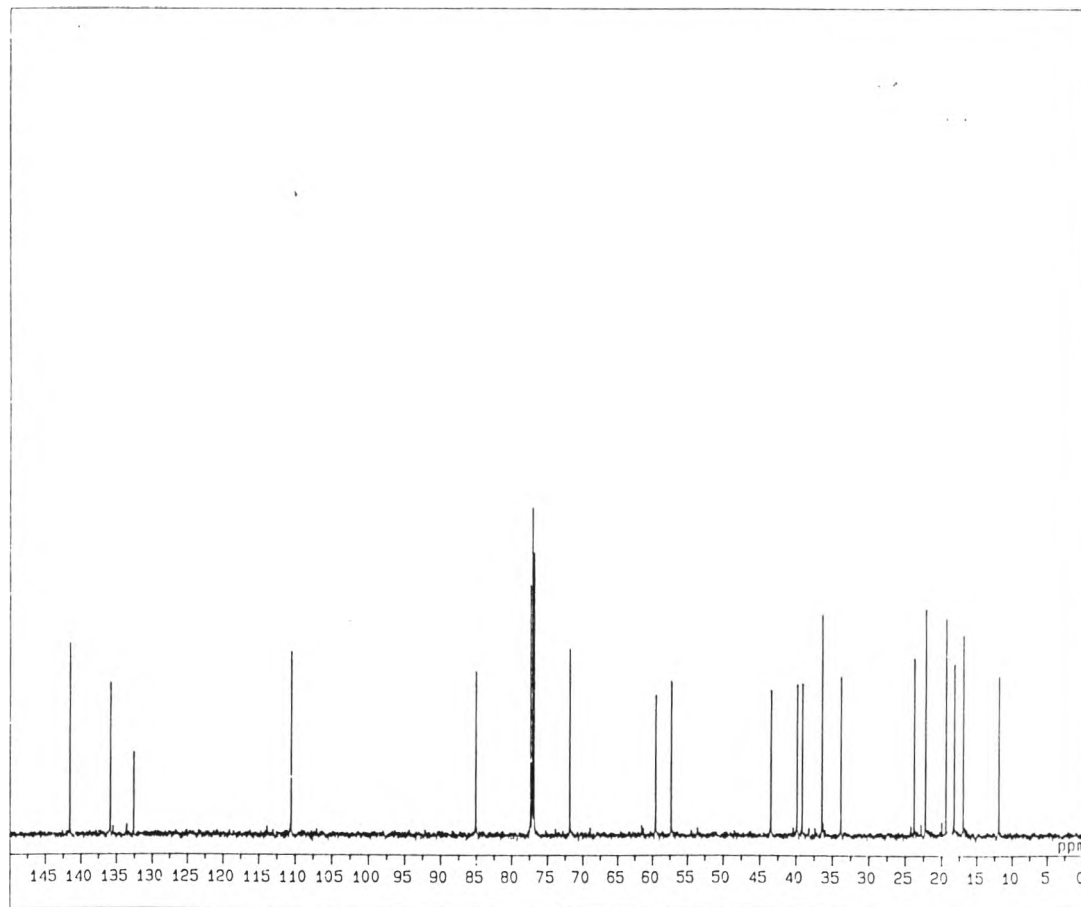


Figure 45. The  $^{13}\text{C}$ -NMR spectrum of Compound 6

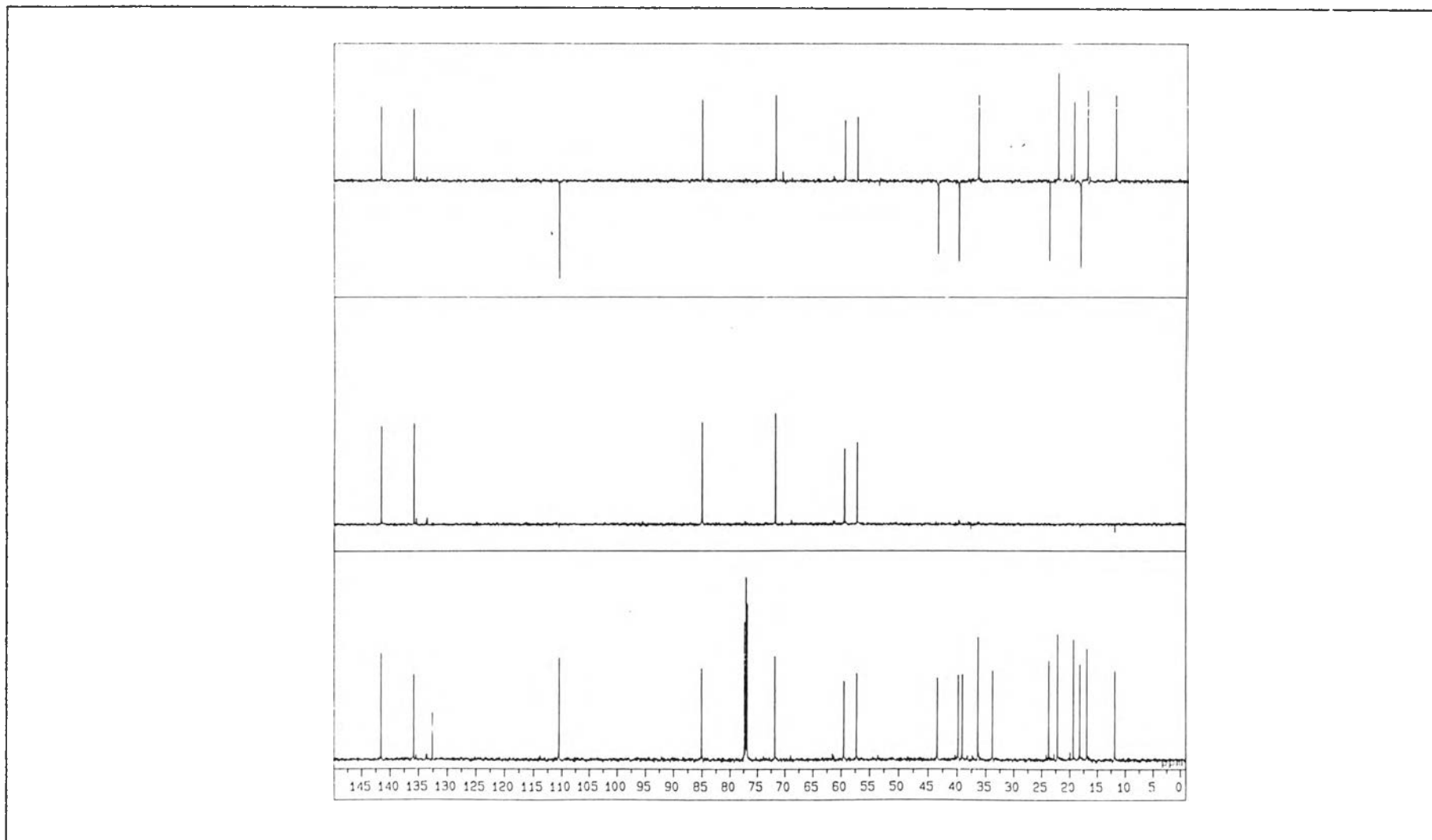


Figure 46. The DEPT 135, 90  $^{13}\text{C}$ -NMR spectrum of Compound 6

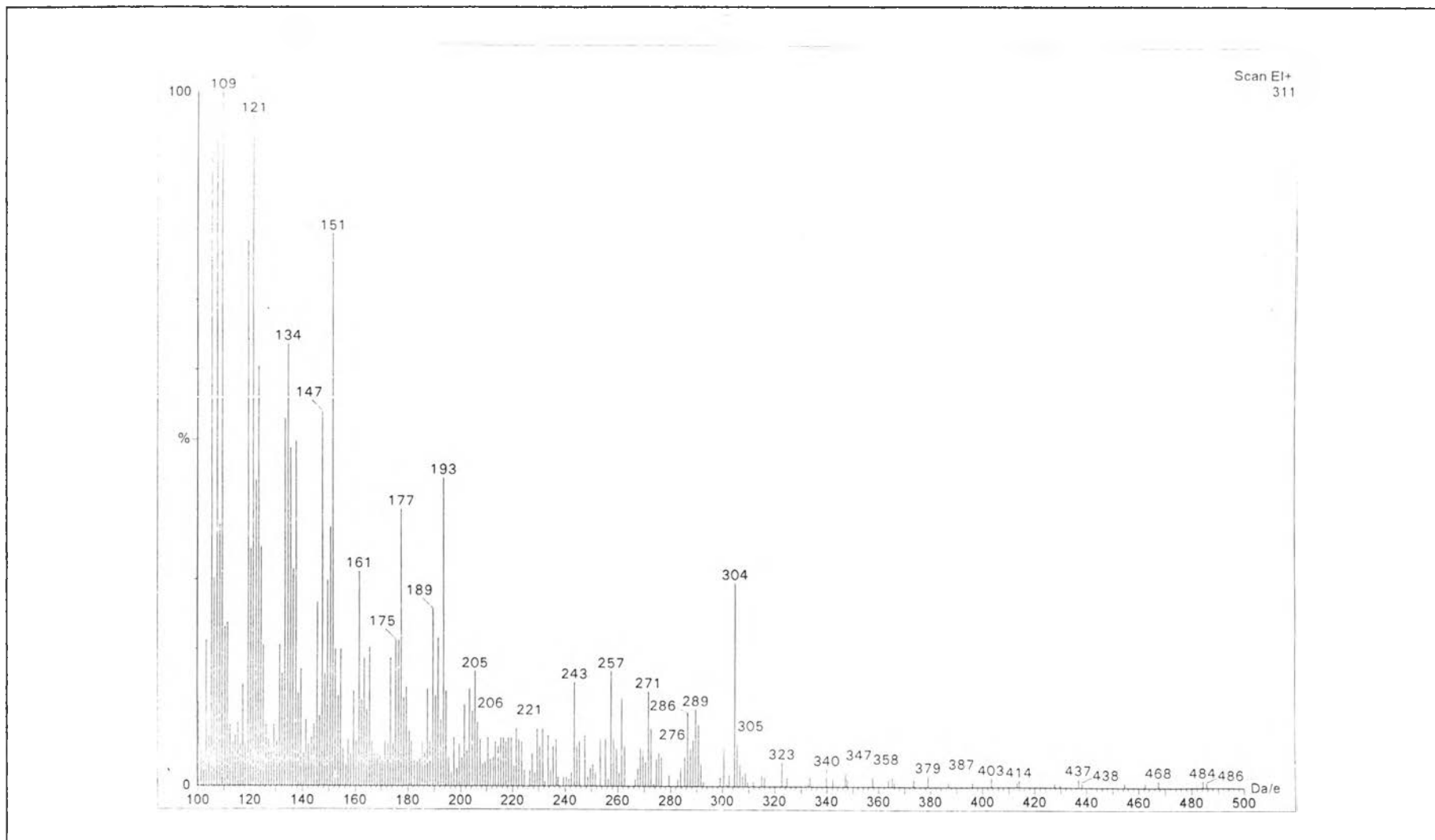


Figure 47. The EI MS spectrum of Compound 6

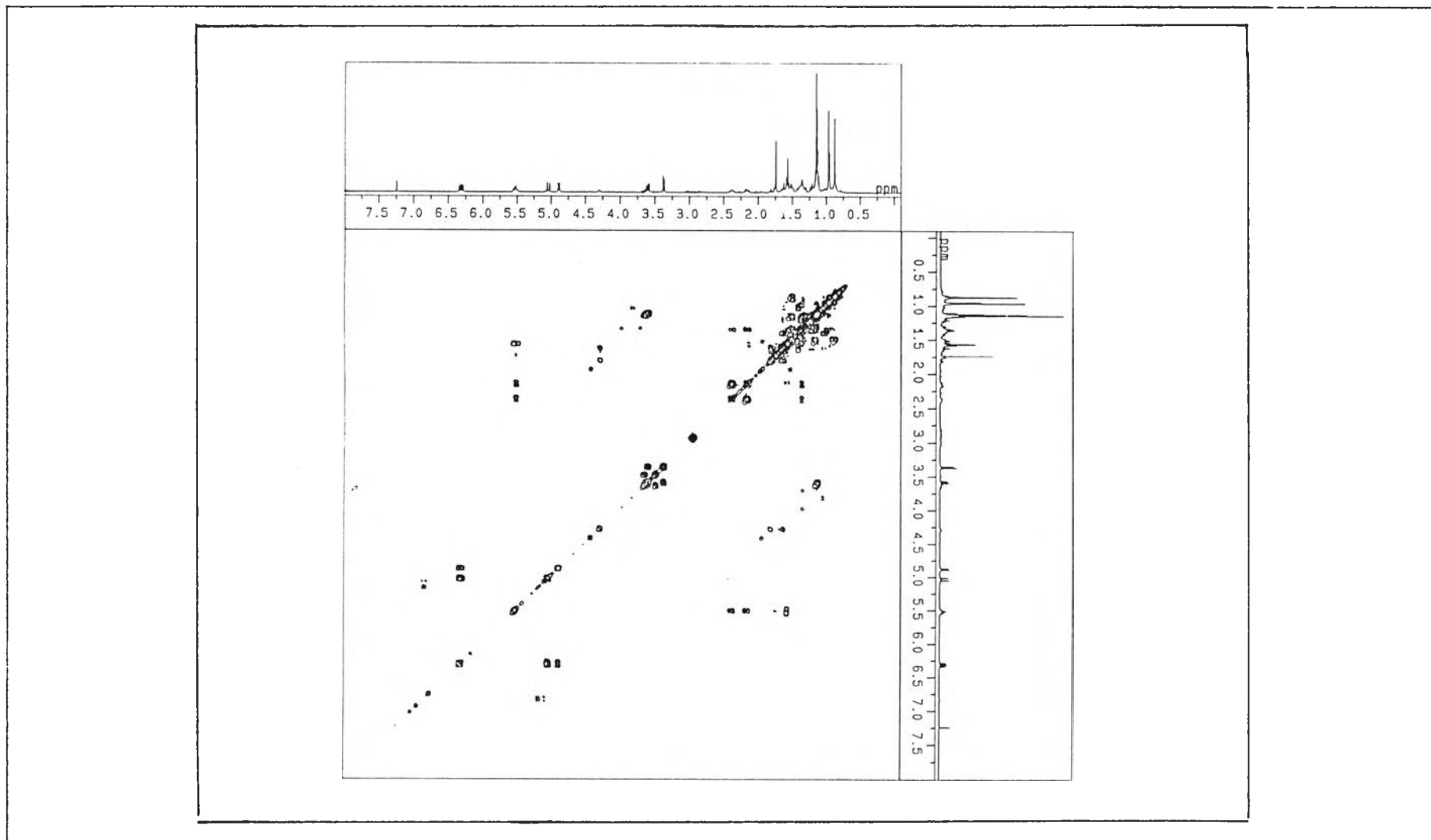


Figure 48. The COSY-NMR spectrum of Compound 6

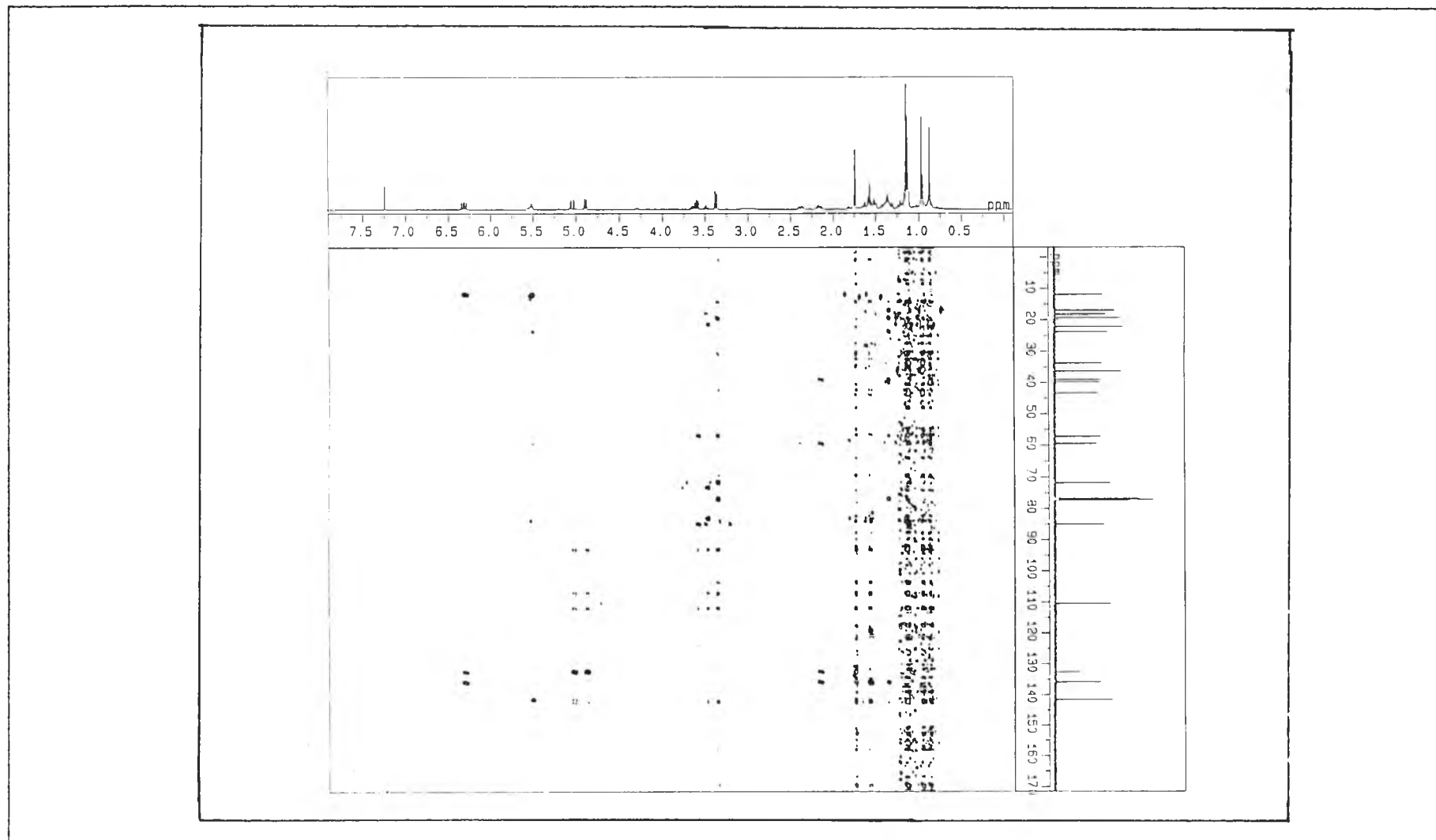


Figure 49 The HMBC-NMR spectrum of Compound 6

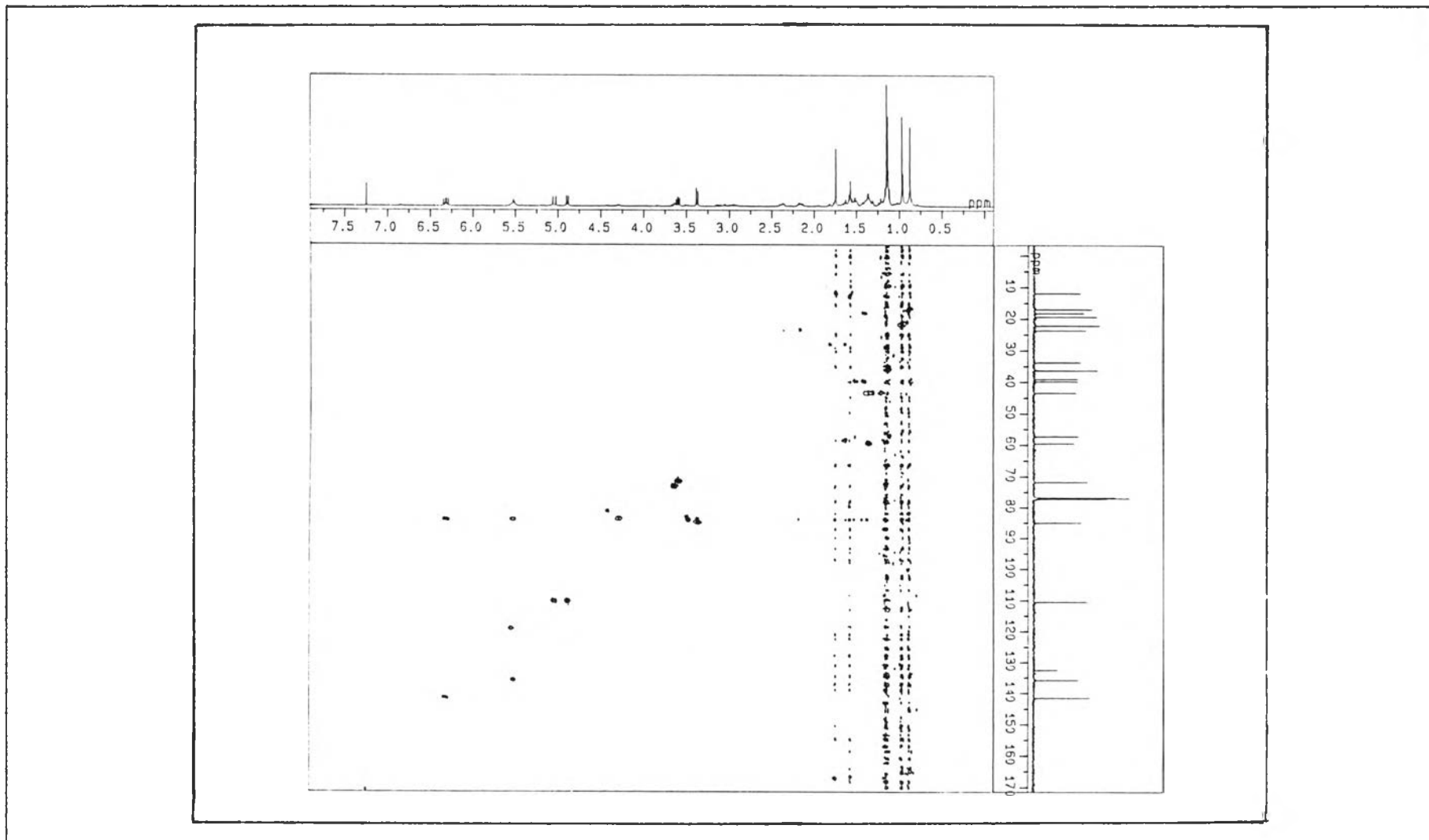


Figure 50. The HMQC-NMR spectrum of Compound 6

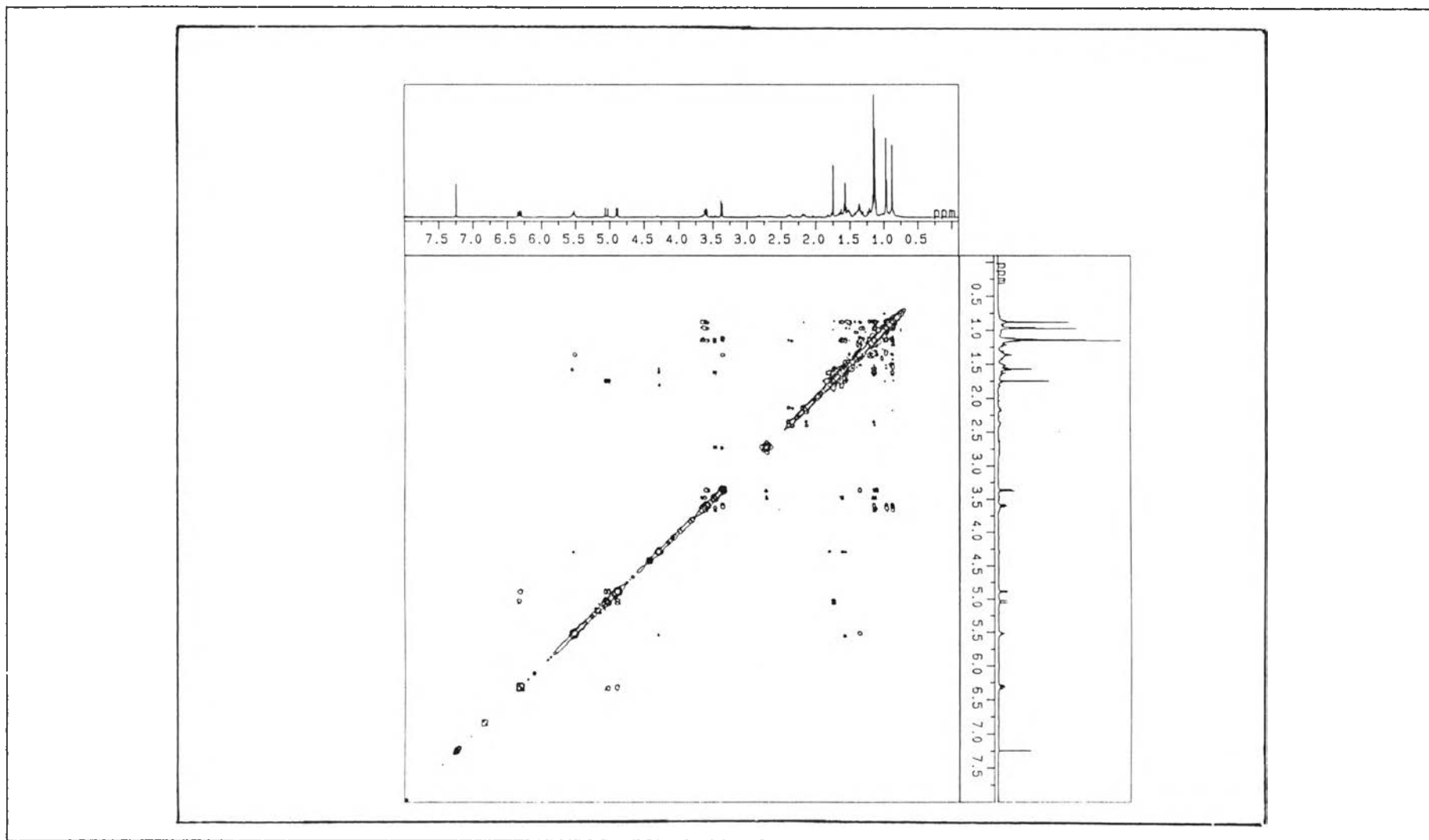


Figure 51. The NOESY-NMR spectrum of Compound 6



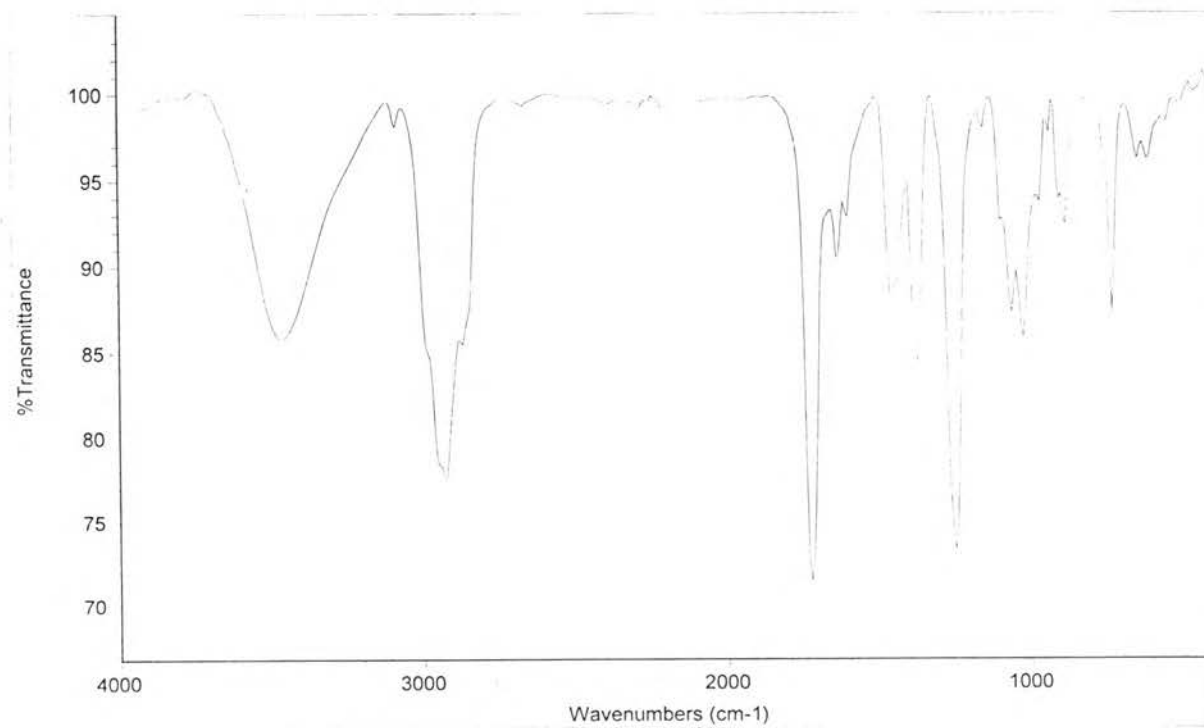


Figure 52. The IR spectrum of Compound 4a

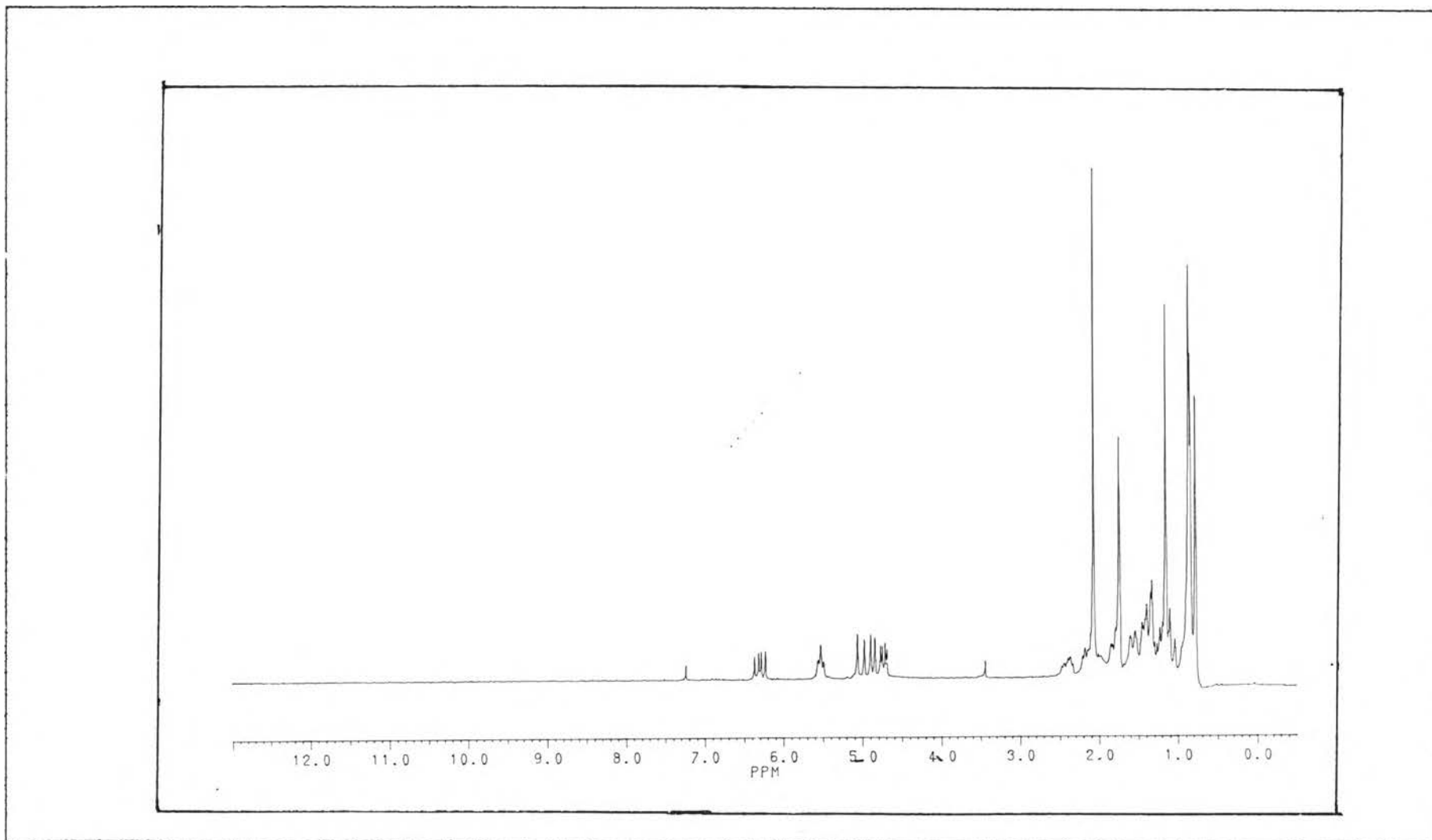


Figure 53. The  $^1\text{H-NMR}$  spectrum of Compound 4a

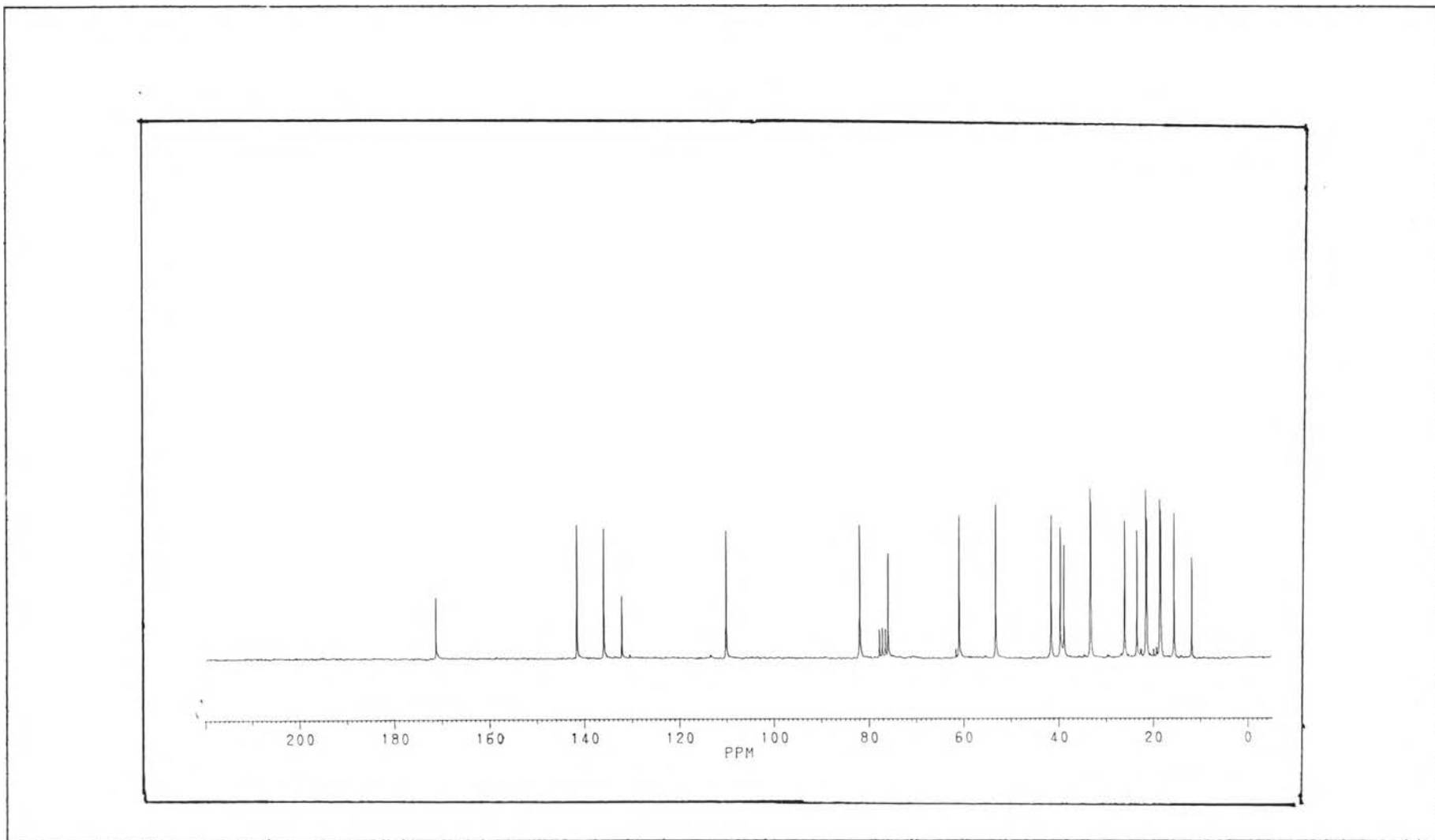


Figure 54. The  $^{13}\text{C}$ -NMR spectrum of Compound 4a

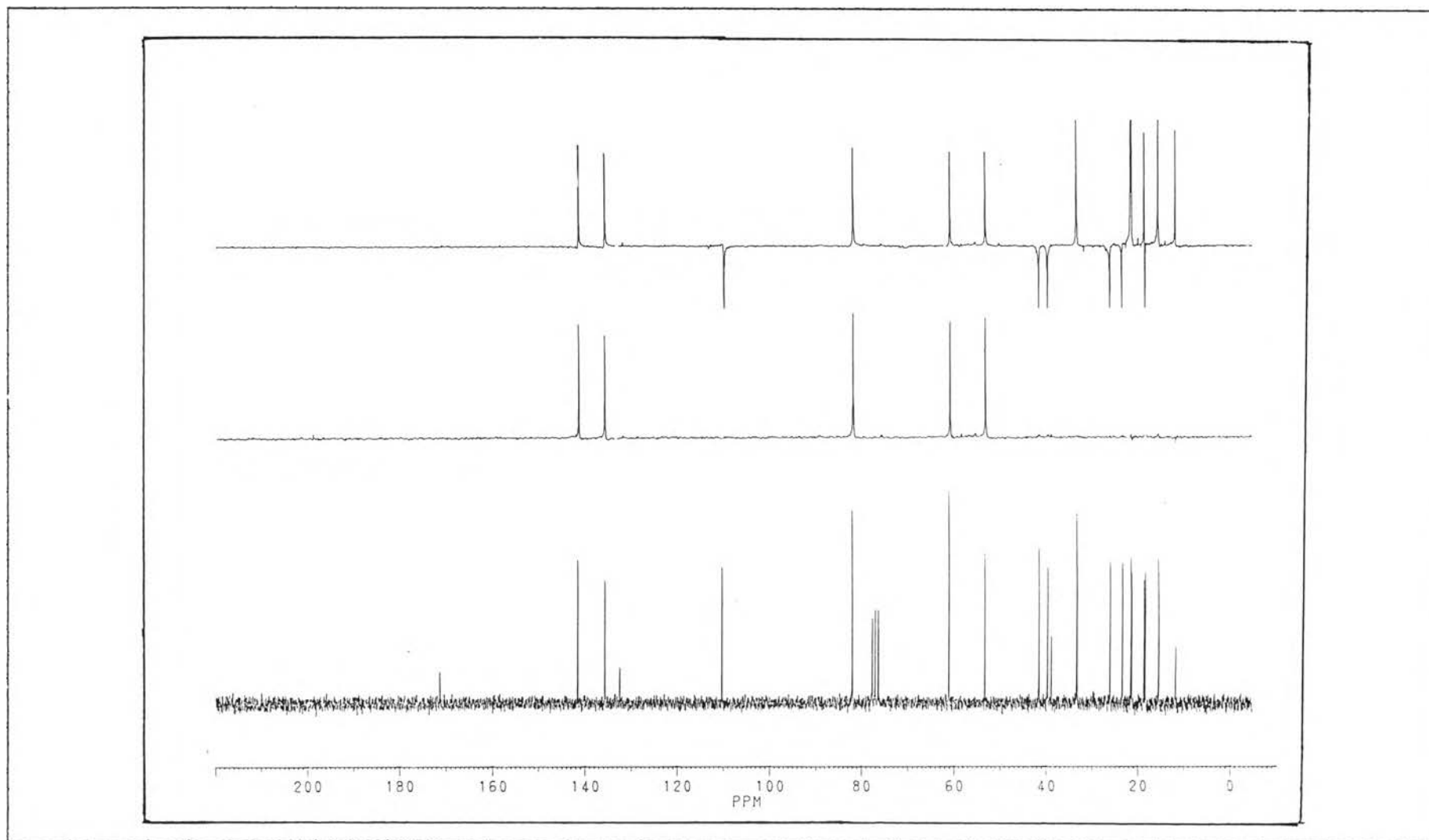


Figure 55. The Dept 135, 90  $^{13}\text{C}$ -NMR spectrum of Compound 4a

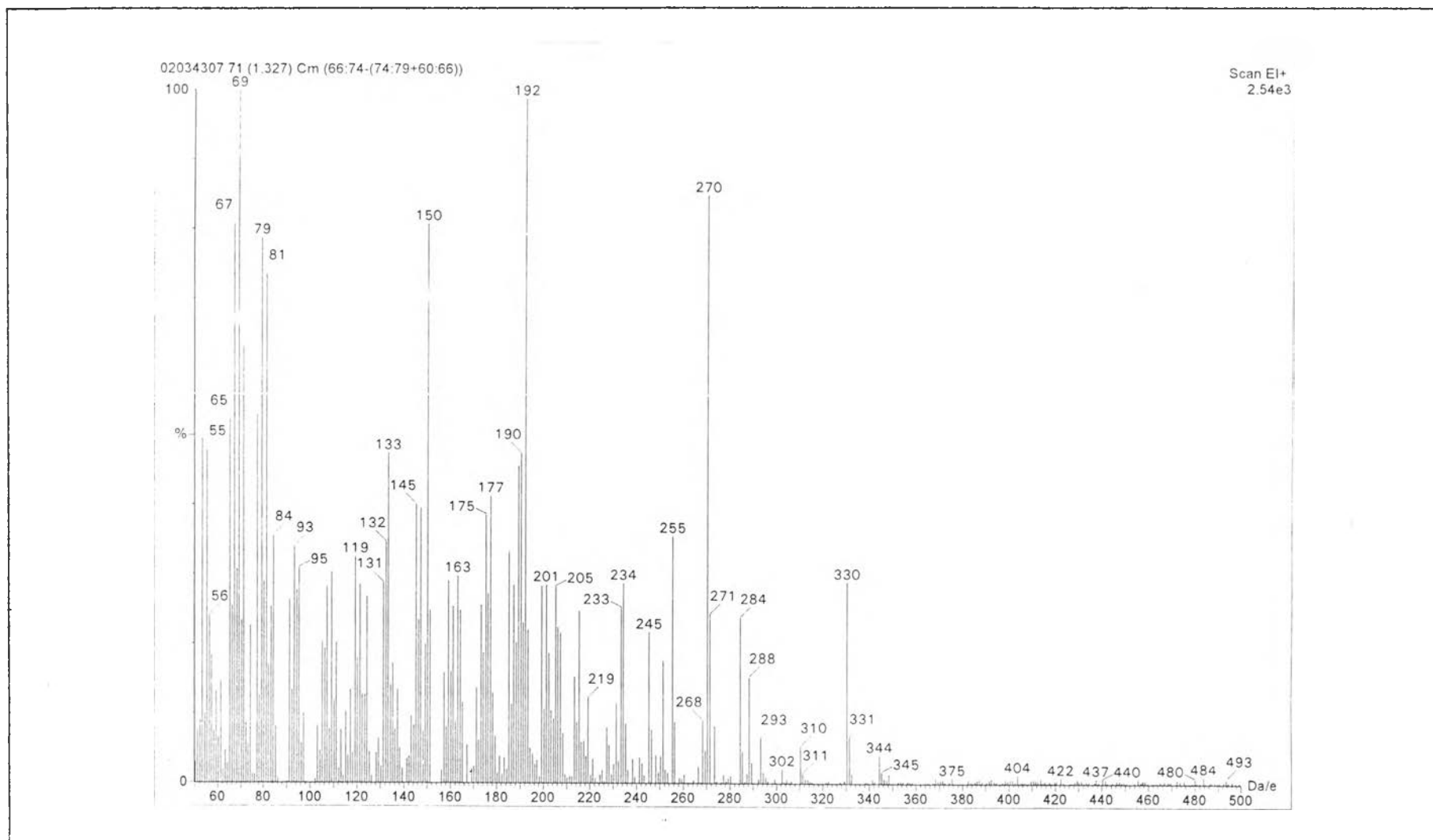


Figure 56. The EIMS spectrum of Compound 4a

**VITA**

Miss. Boonjira Boontha was born on June 29, 1976 in Uttaradit, Thailand. She graduated with a Bachelor's Degree of science, majoring in Chemistry, from Chaingmai University in 1997. In the same year, she was admitted into the Master Degree program in organic chemistry at Chulalongkorn University. During her study toward the Master's degree, she received a scholarship from Promotion of Science and Technology (DPST) Project in 1997-2000 and financial support from the Department of Chemistry Faculty of Science, Chulalongkorn University in 1999-2000.