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APPENDIX

ศูนย์วิทยทรัพยากร  
จุฬาลงกรณ์มหาวิทยาลัย



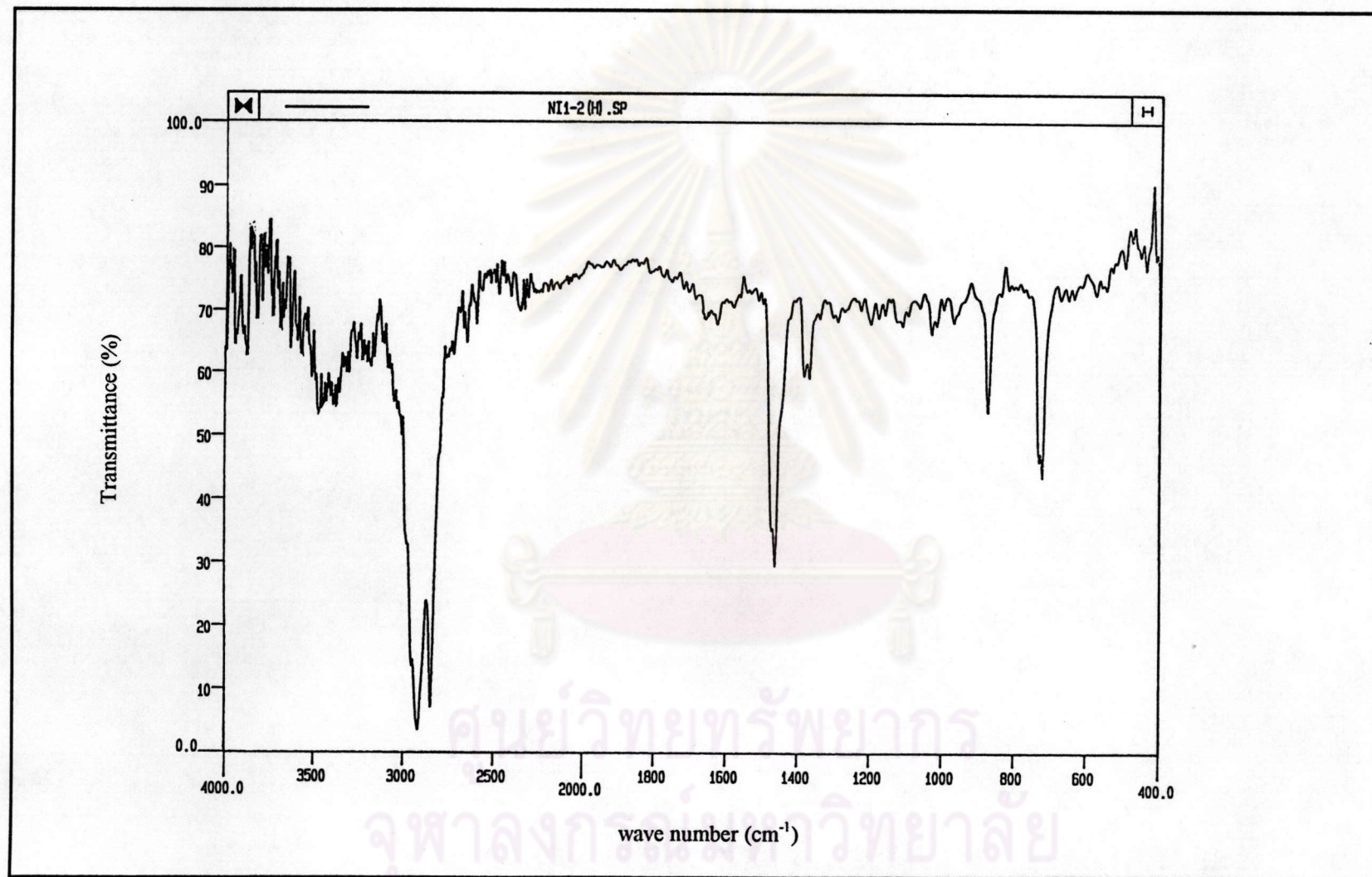
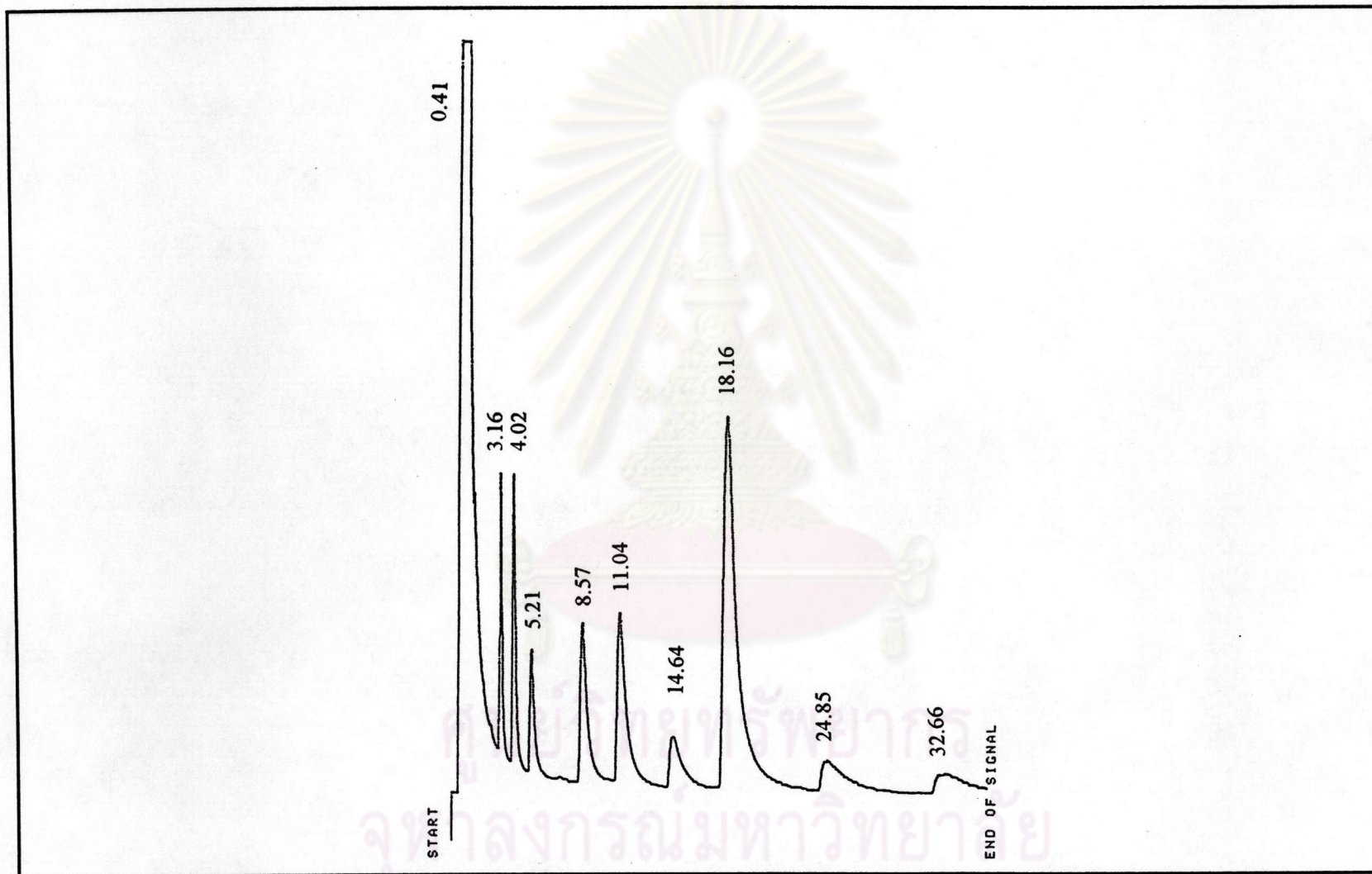


Figure 10 The IR spectrum of Compound 1





**Figure 11** The Gas-Liquid chromatogram of standard long chain aliphatic hydrocarbon ( $C_{24}$ - $C_{26}$ ,  $C_{28}$ - $C_{33}$ )



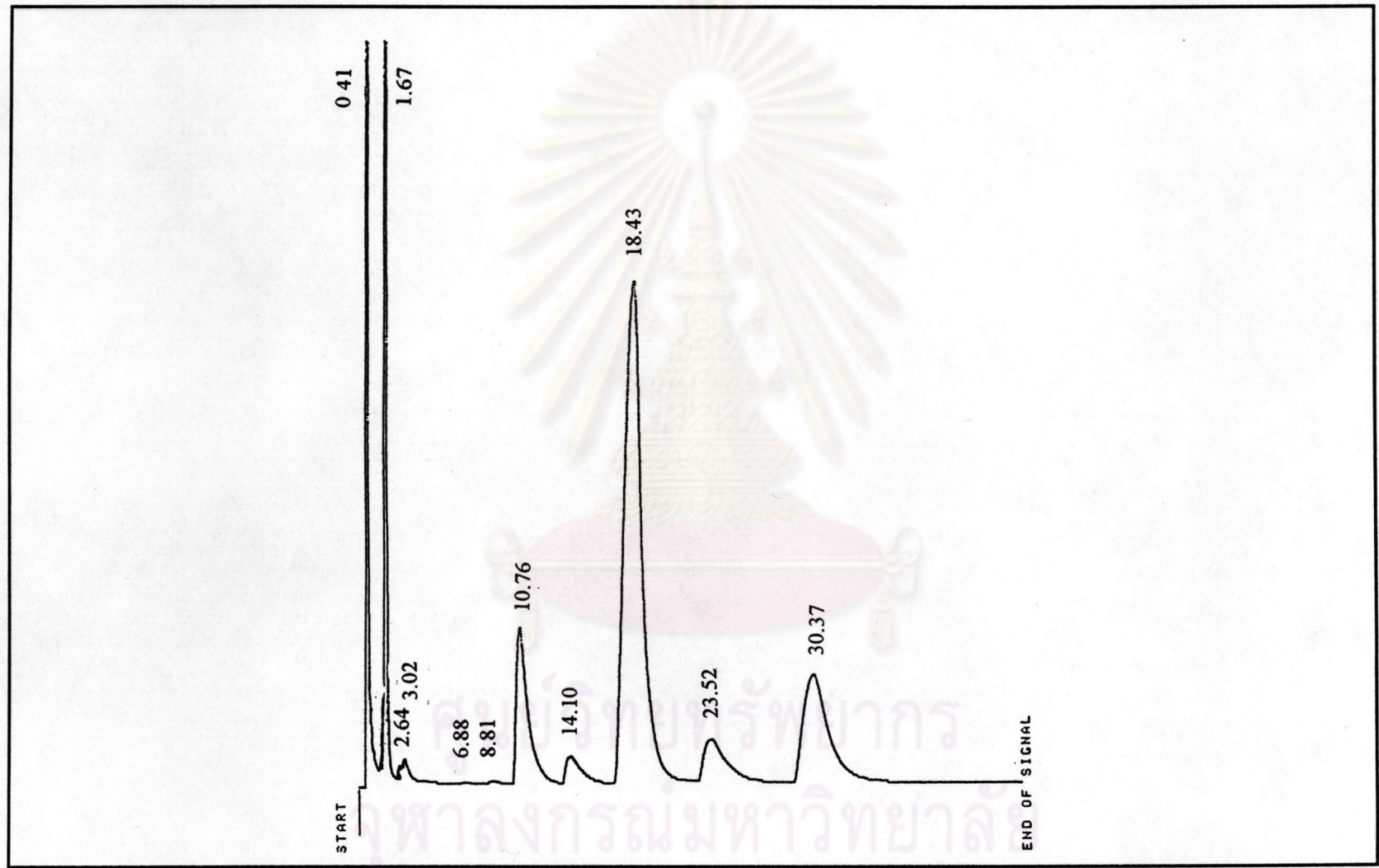


Figure 12 The Gas-Liquid chromatogram of Compound 1



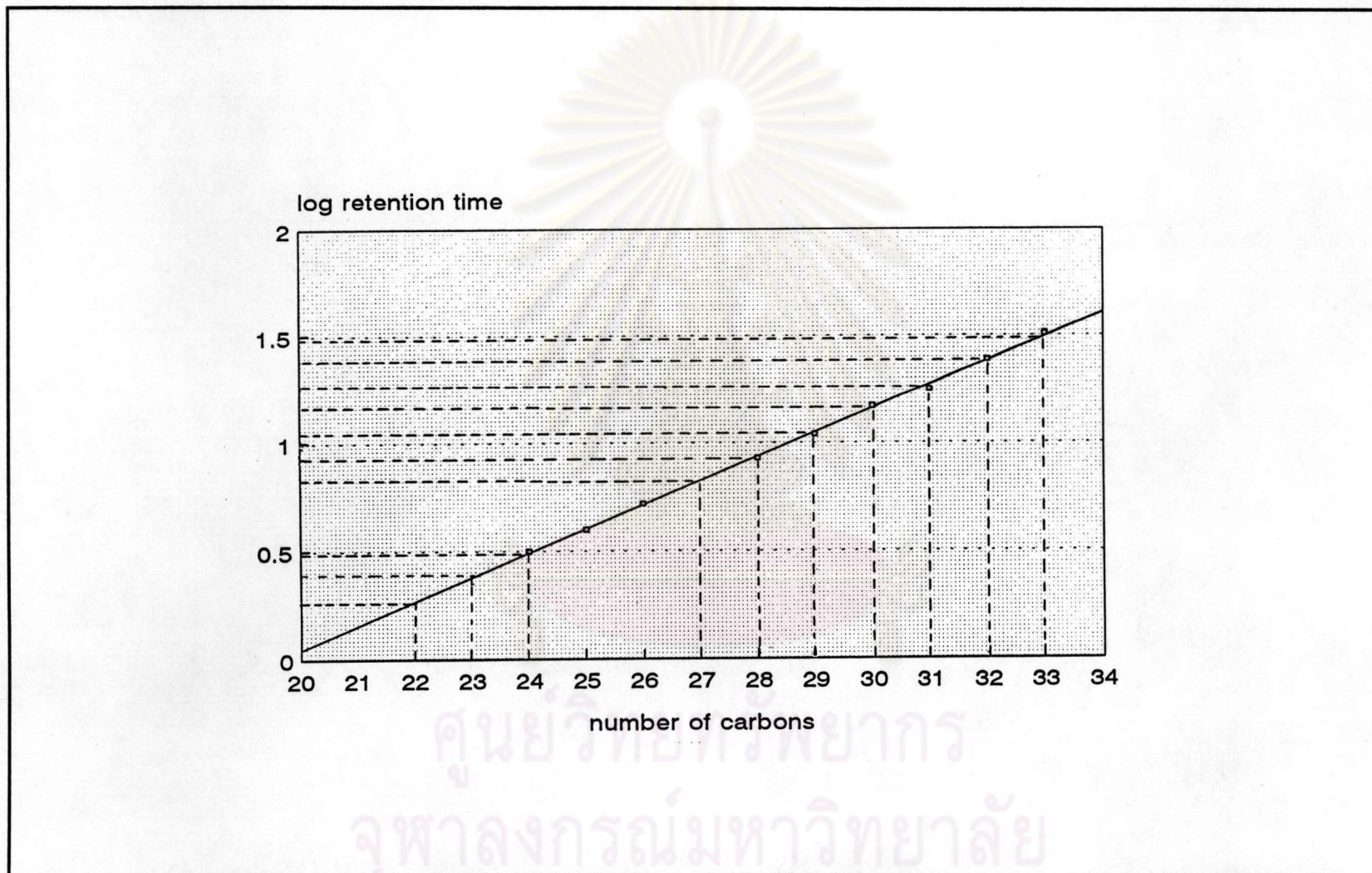


Figure 13 The calibration curve of standard long chain aliphatic hydrocarbon ( $C_{24}$ - $C_{26}$ ,  $C_{28}$ - $C_{33}$ )



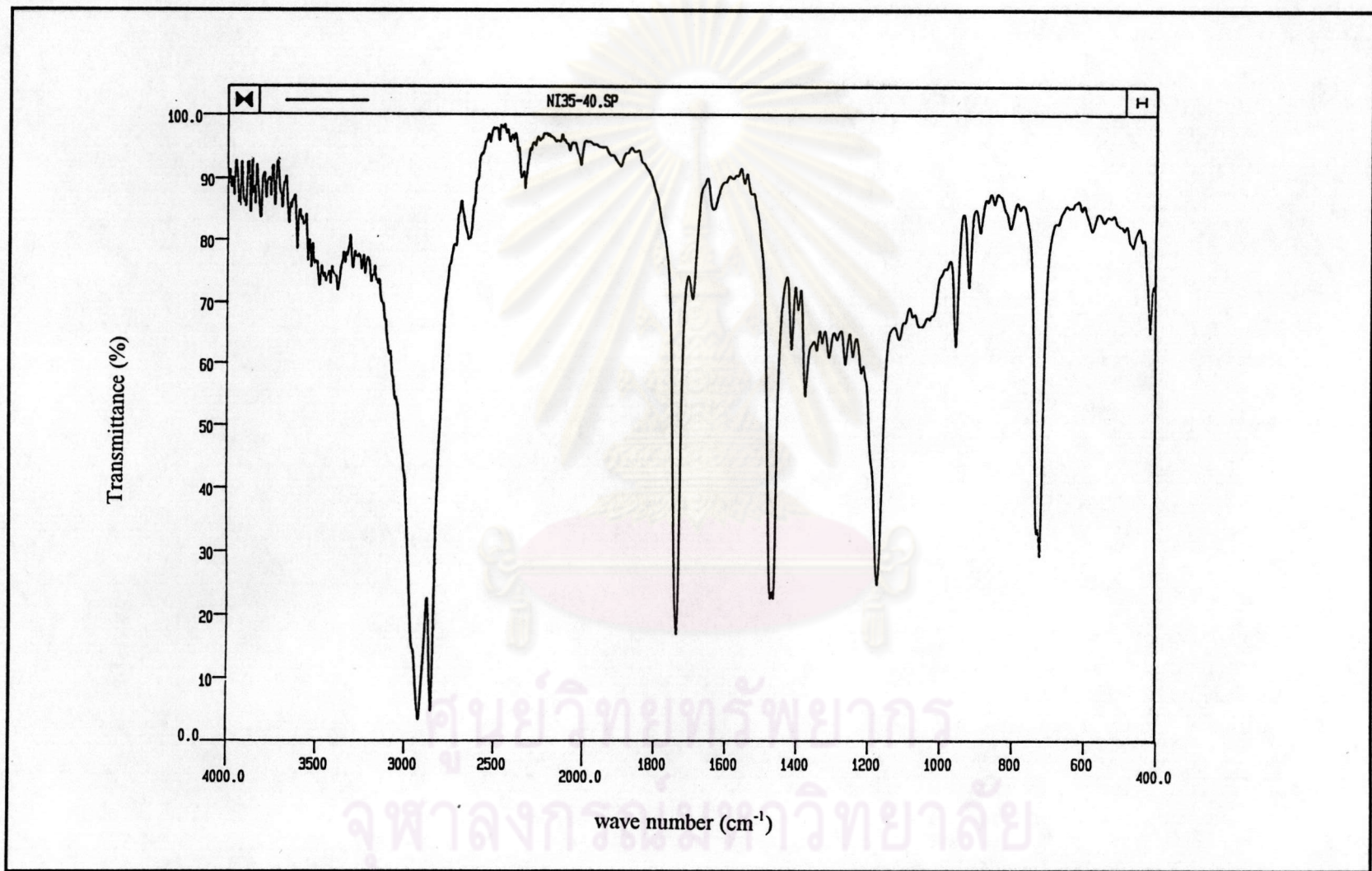


Figure 14 The IR spectrum of Compound 2

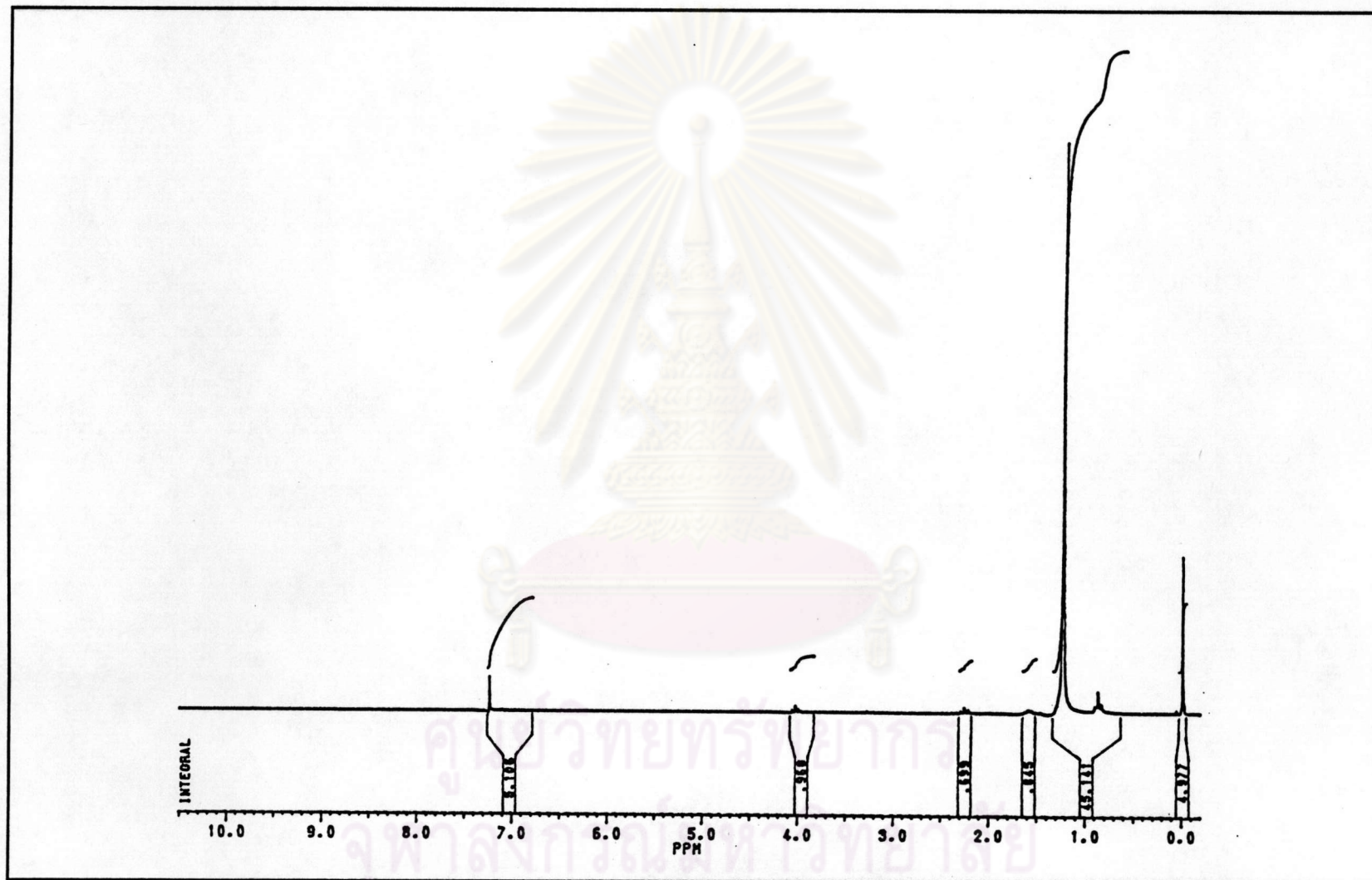


Figure 15 The <sup>1</sup>H-NMR spectrum of Compound 2



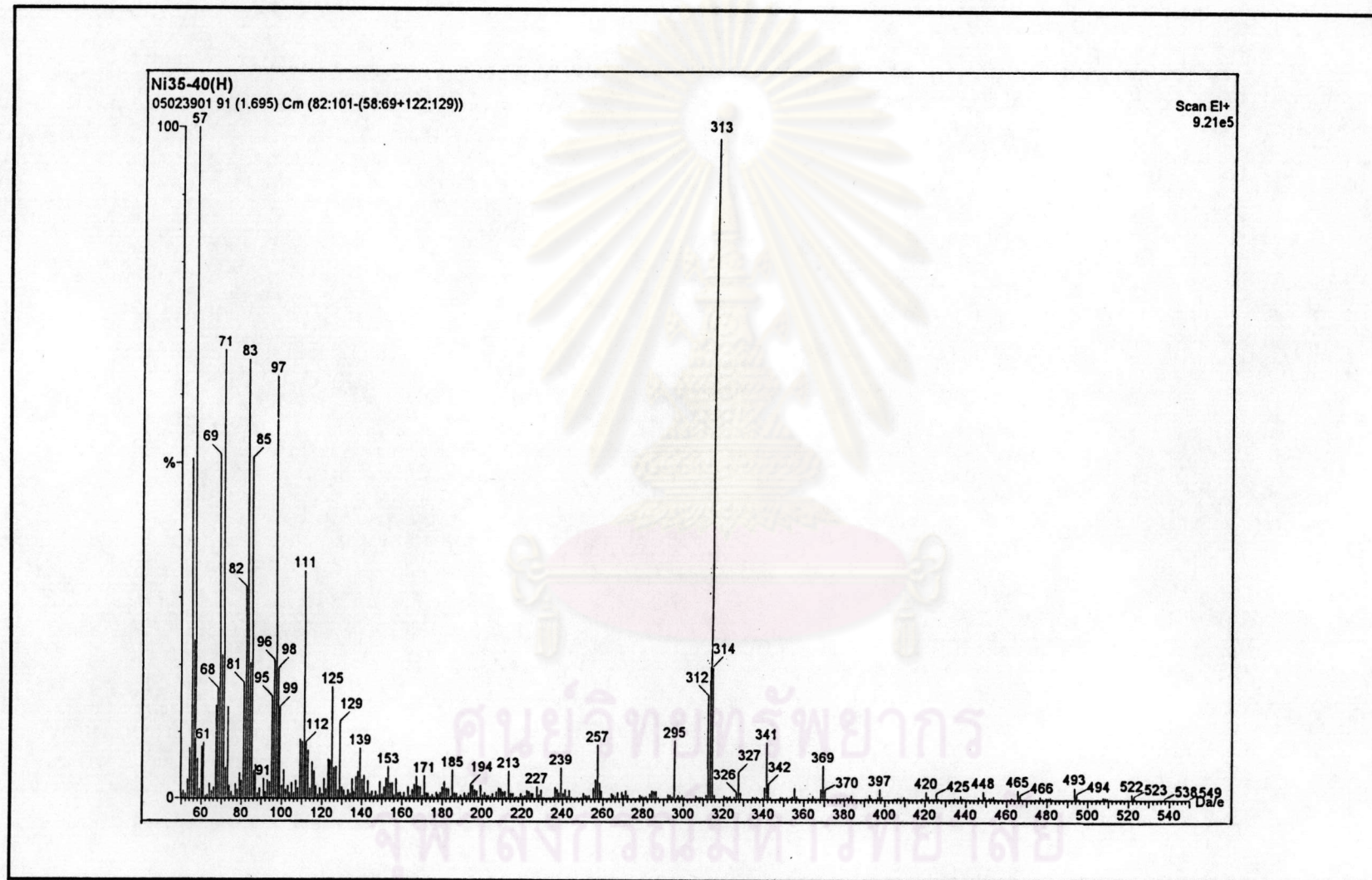


Figure 16 The mass spectrum of Compound 2

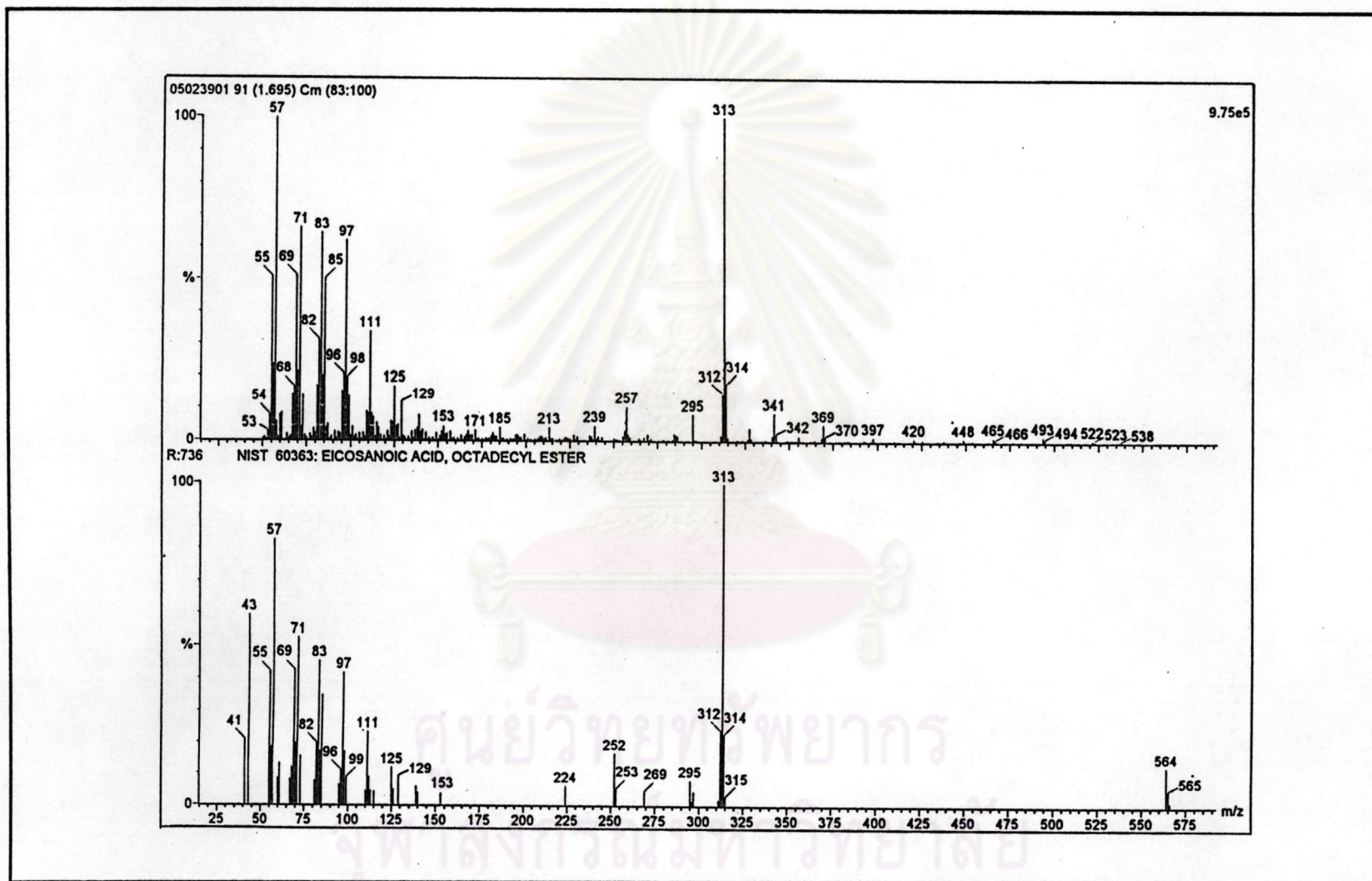
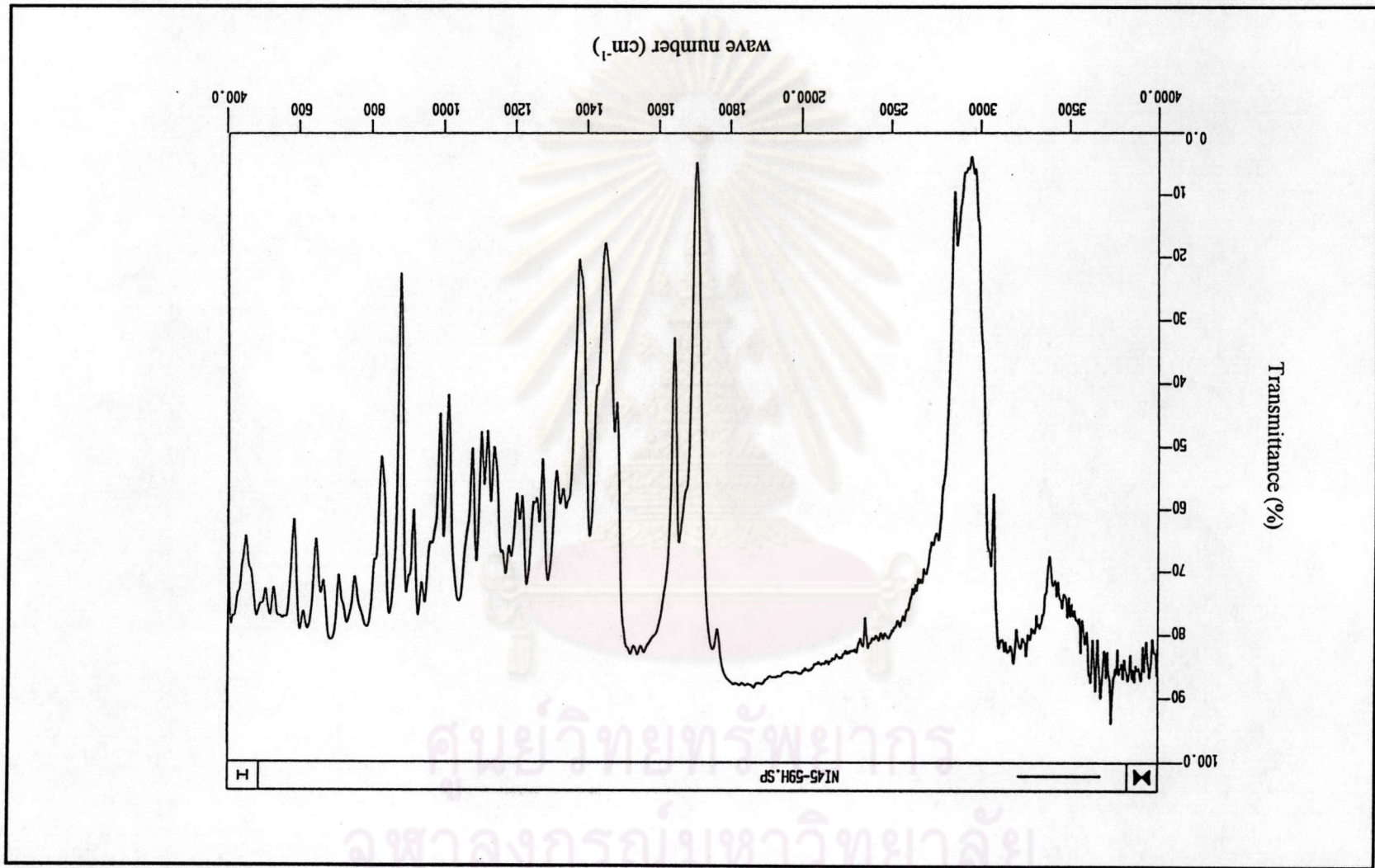


Figure 17 The mass spectrum of Compound 2 compared with mass spectrum of Eicosanoic acid, Octadecyl ester ( $C_{38}H_{76}O_2$ )



Figure 18 The IR spectrum of Compound 3



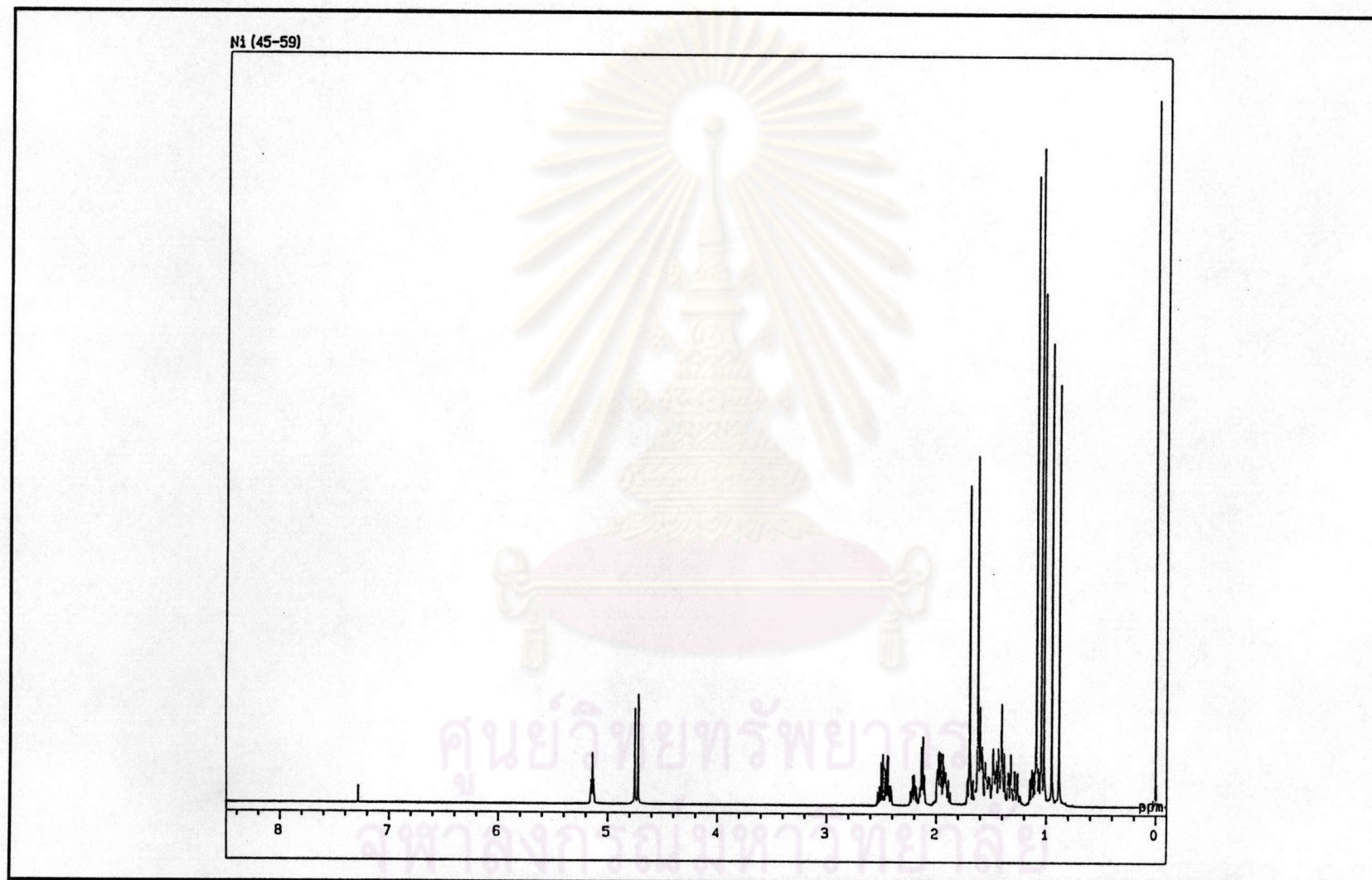


Figure 19 The  $^1\text{H-NMR}$  spectrum of Compound 3



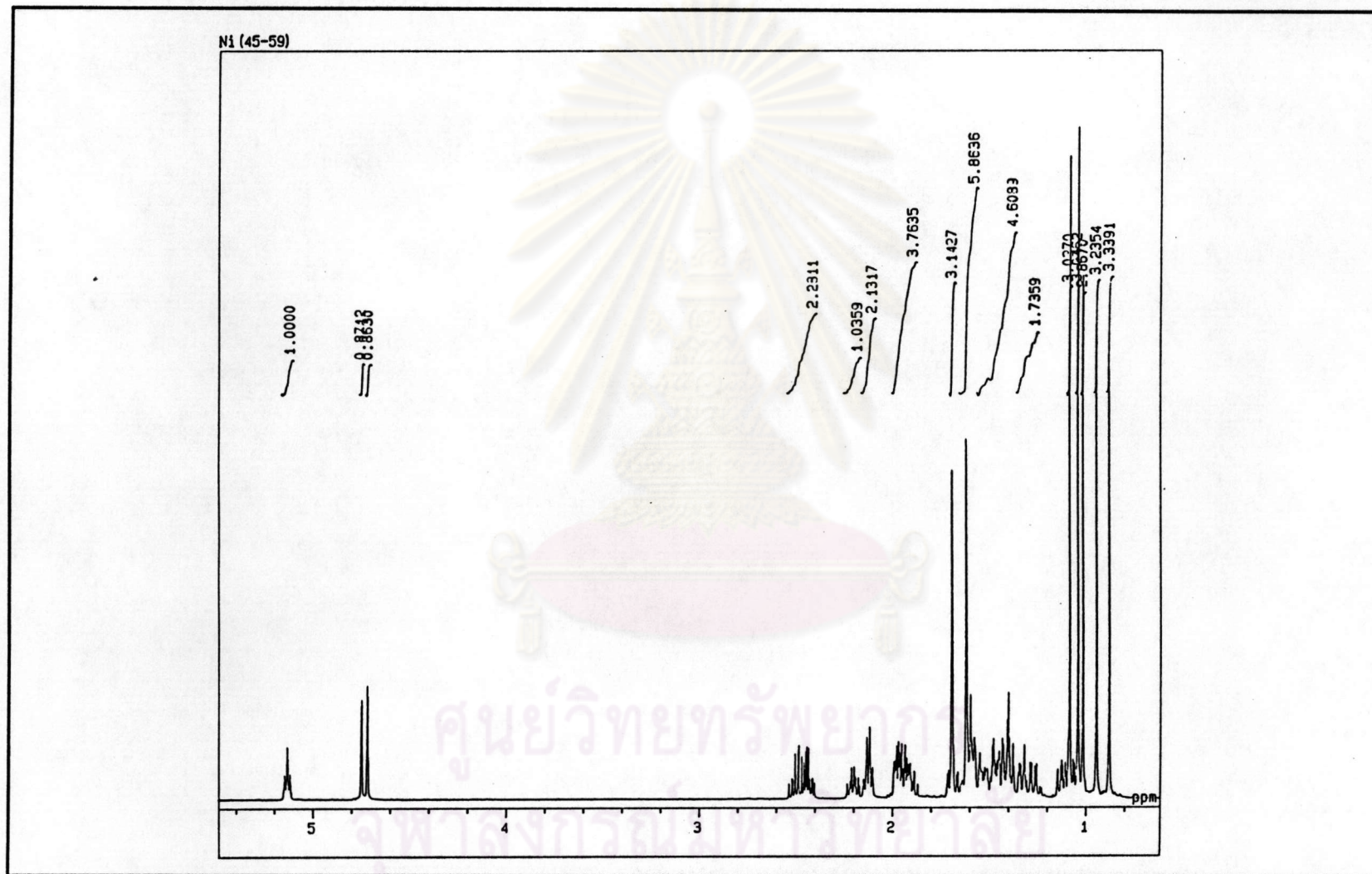


Figure 20 The <sup>1</sup>H-NMR spectrum of Compound 3

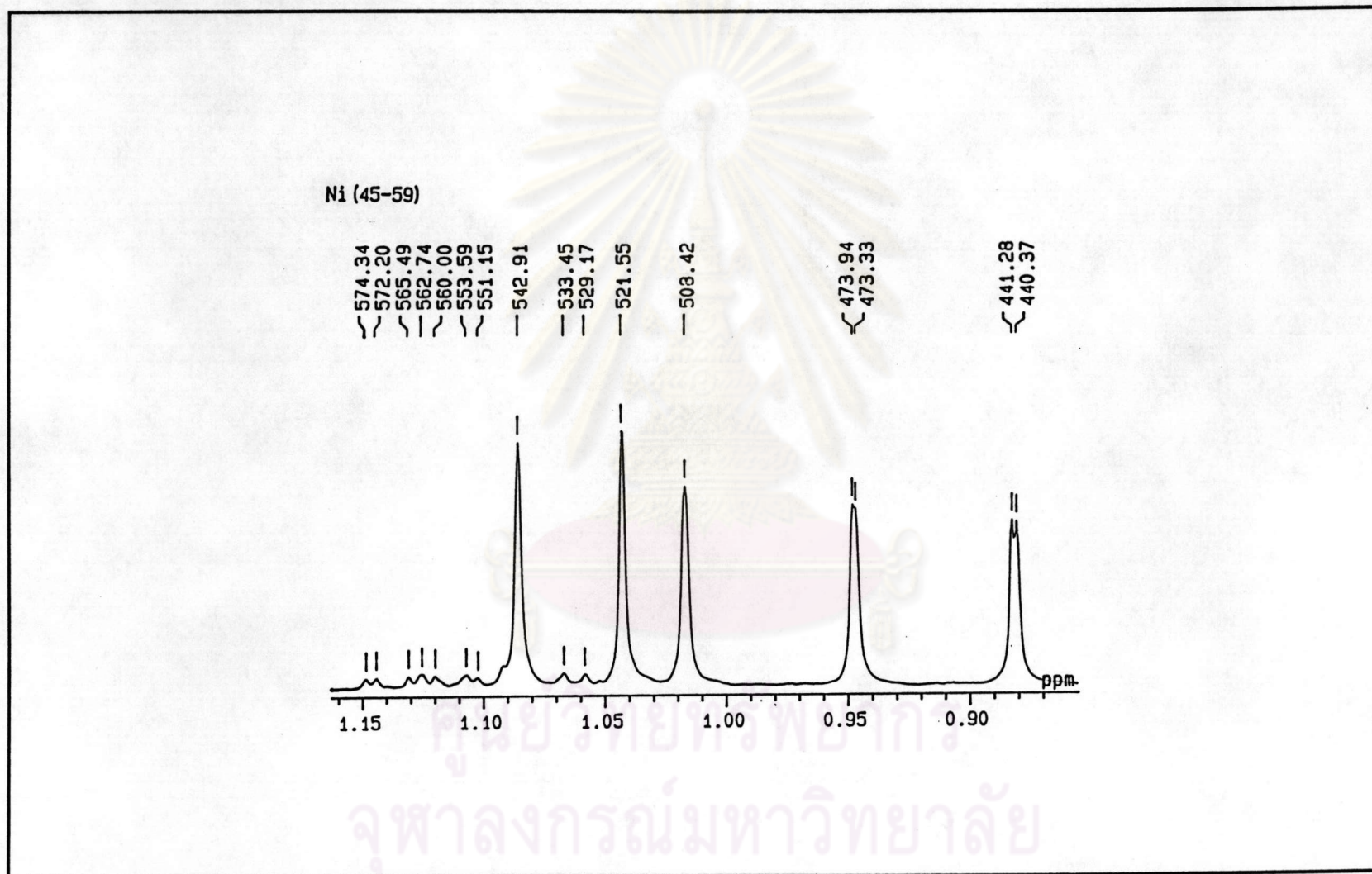


Figure 21 The  $^1\text{H}$ -NMR spectrum of Compound 3



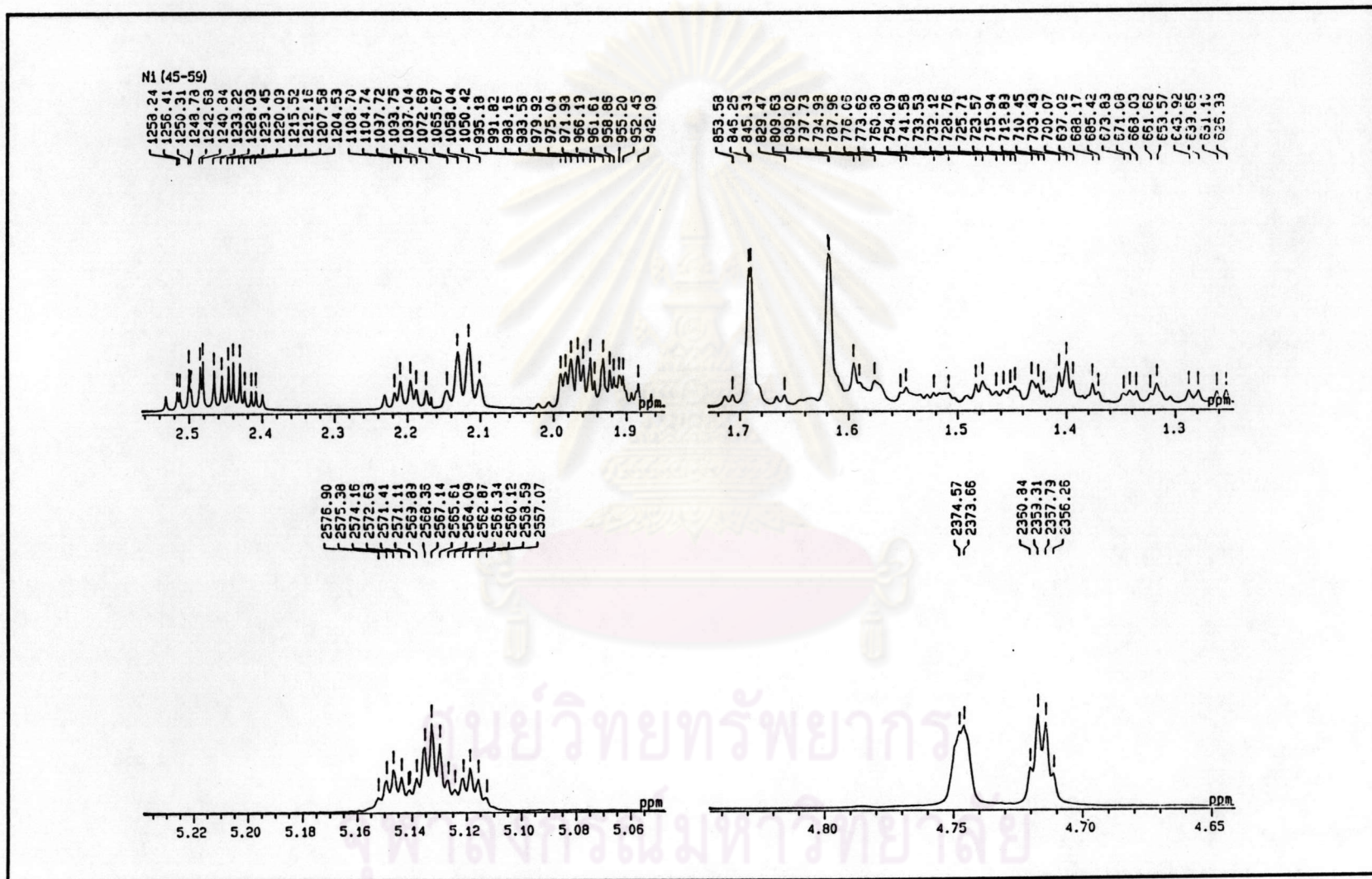


Figure 22 The <sup>1</sup>H-NMR spectrum of Compound 3

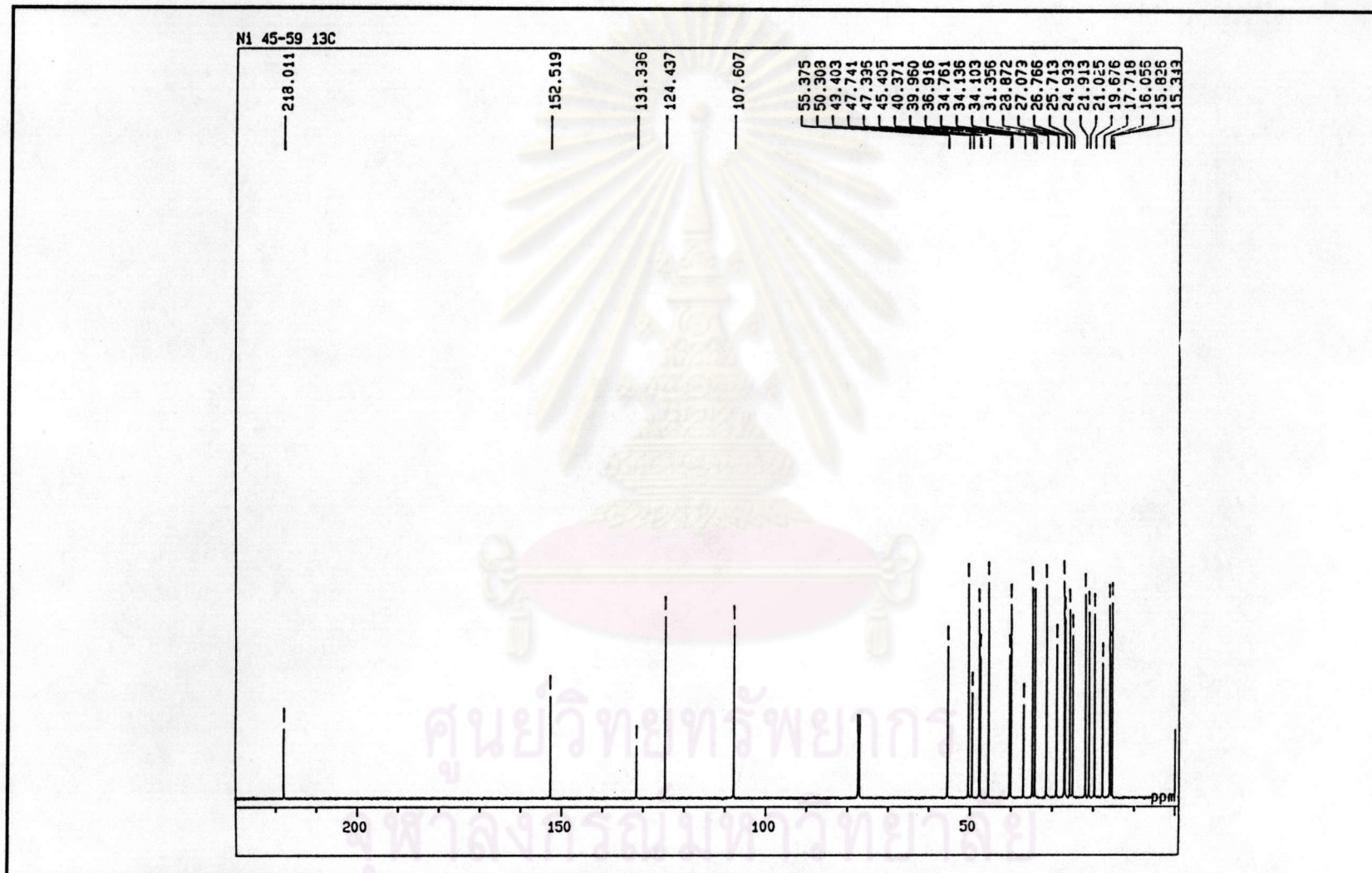


Figure 23 The  $^{13}\text{C}$ -NMR spectrum of Compound 3



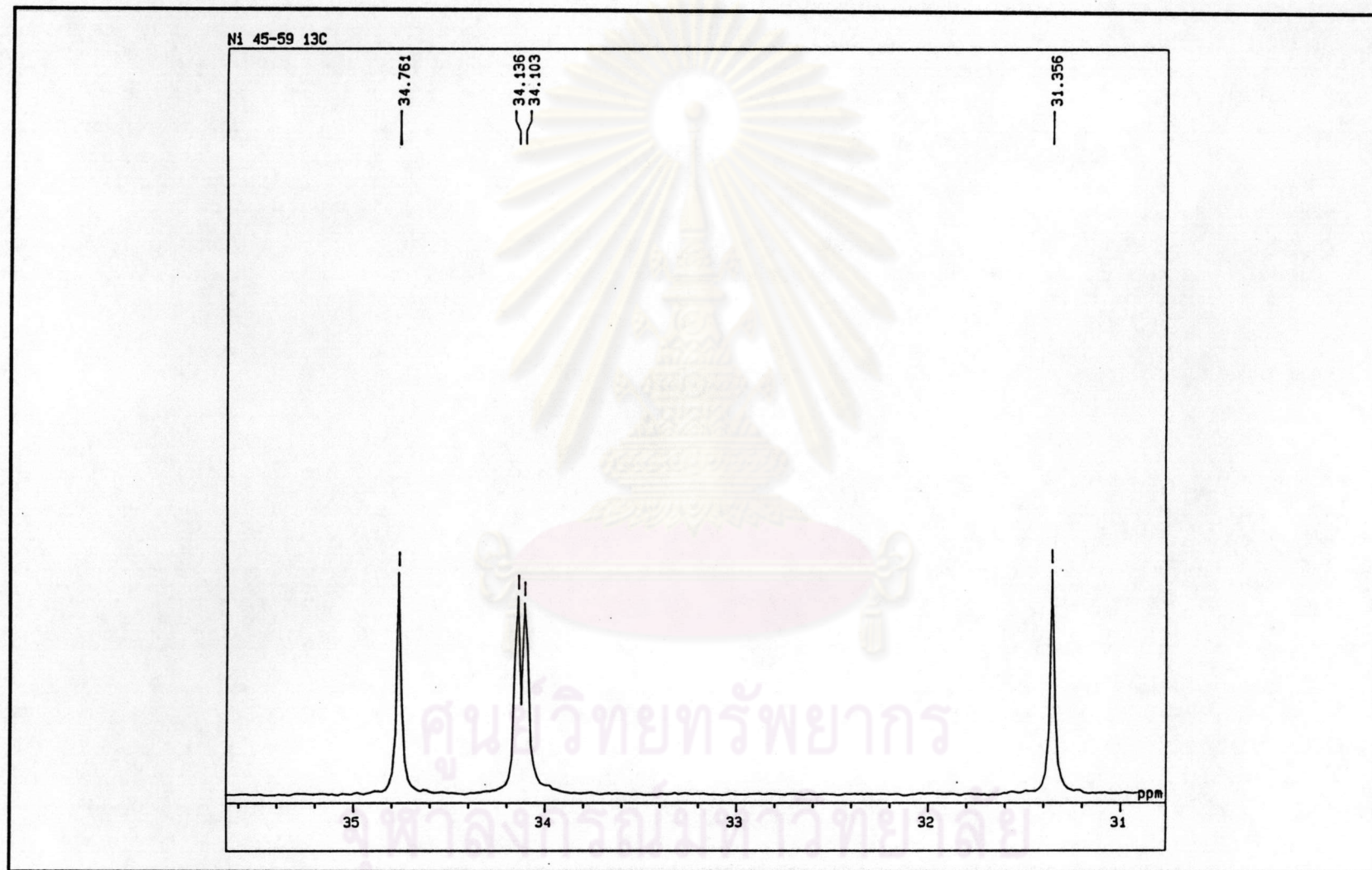


Figure 24 The  $^{13}\text{C}$ -NMR spectrum of Compound 3

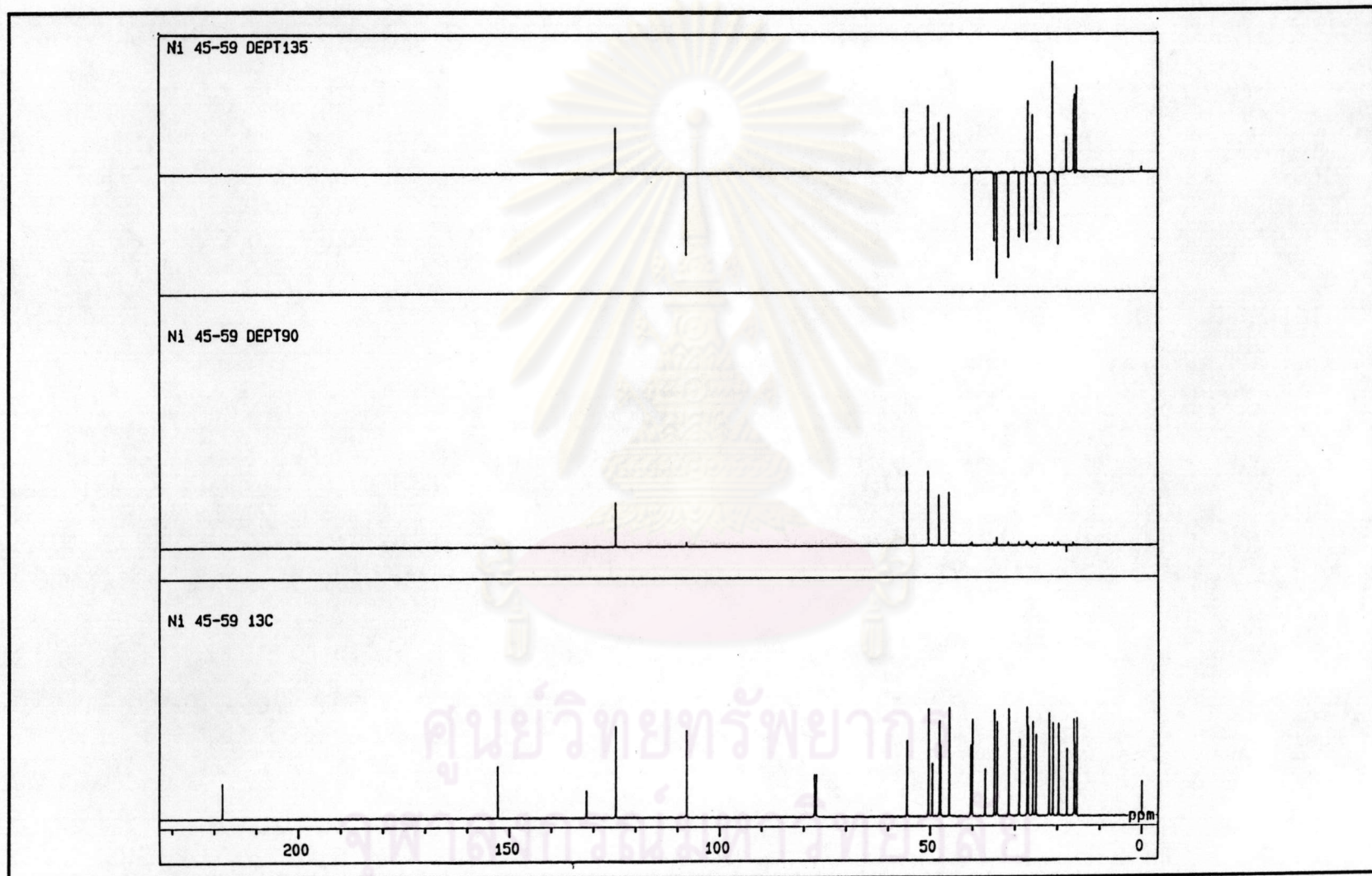


Figure 25 The DEPT 90 and DEPT 135  $^{13}\text{C}$ -NMR spectrum of Compound 3



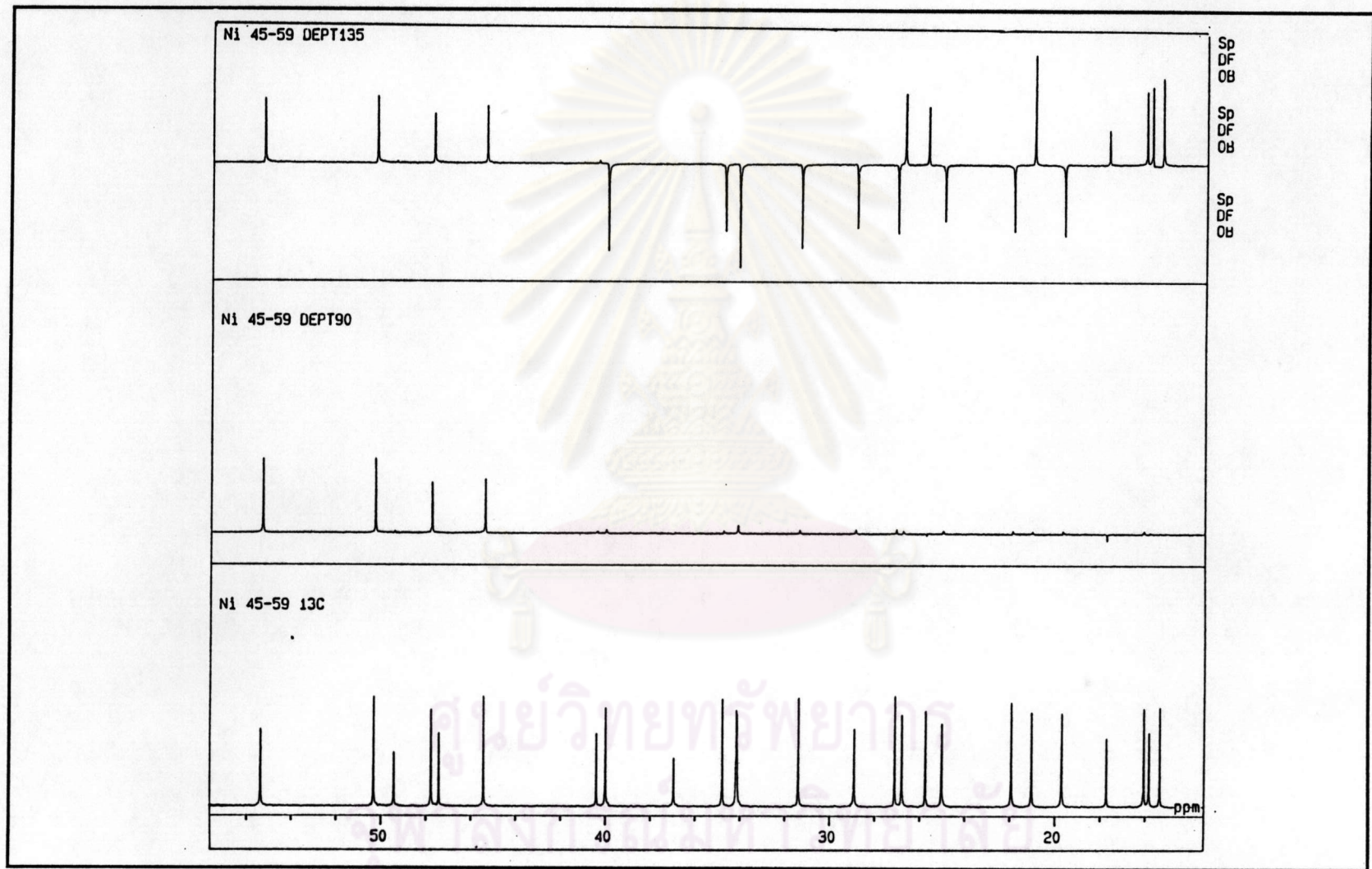


Figure 26 The DEPT 90 and DEPT 135  $^{13}\text{C}$ -NMR spectrum of Compound 3





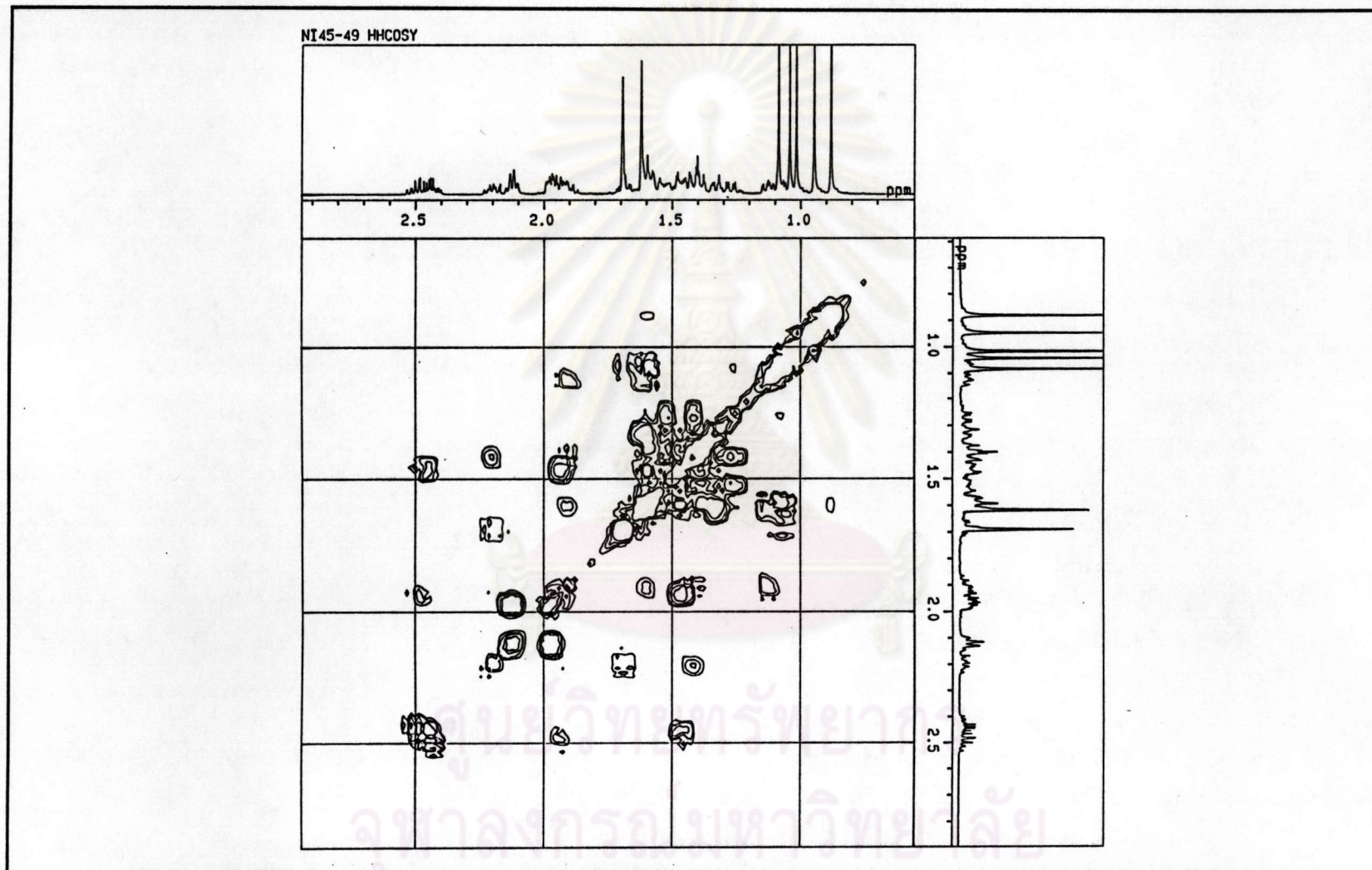


Figure 28  $^1\text{H}$ - $^1\text{H}$  COSY of Compound 3

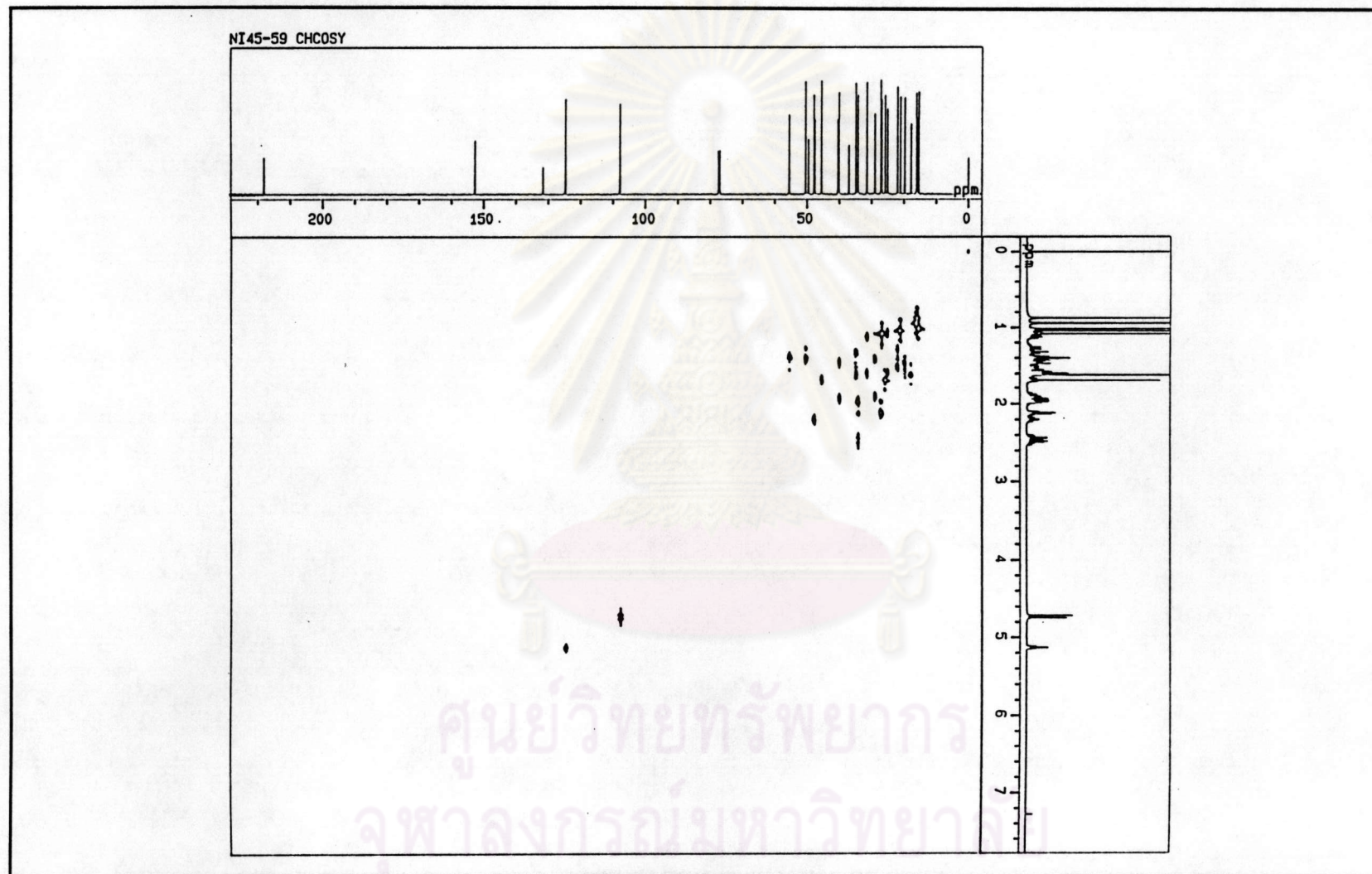


Figure 29  $^{13}\text{C}$ - $^1\text{H}$  correlation of Compound 3



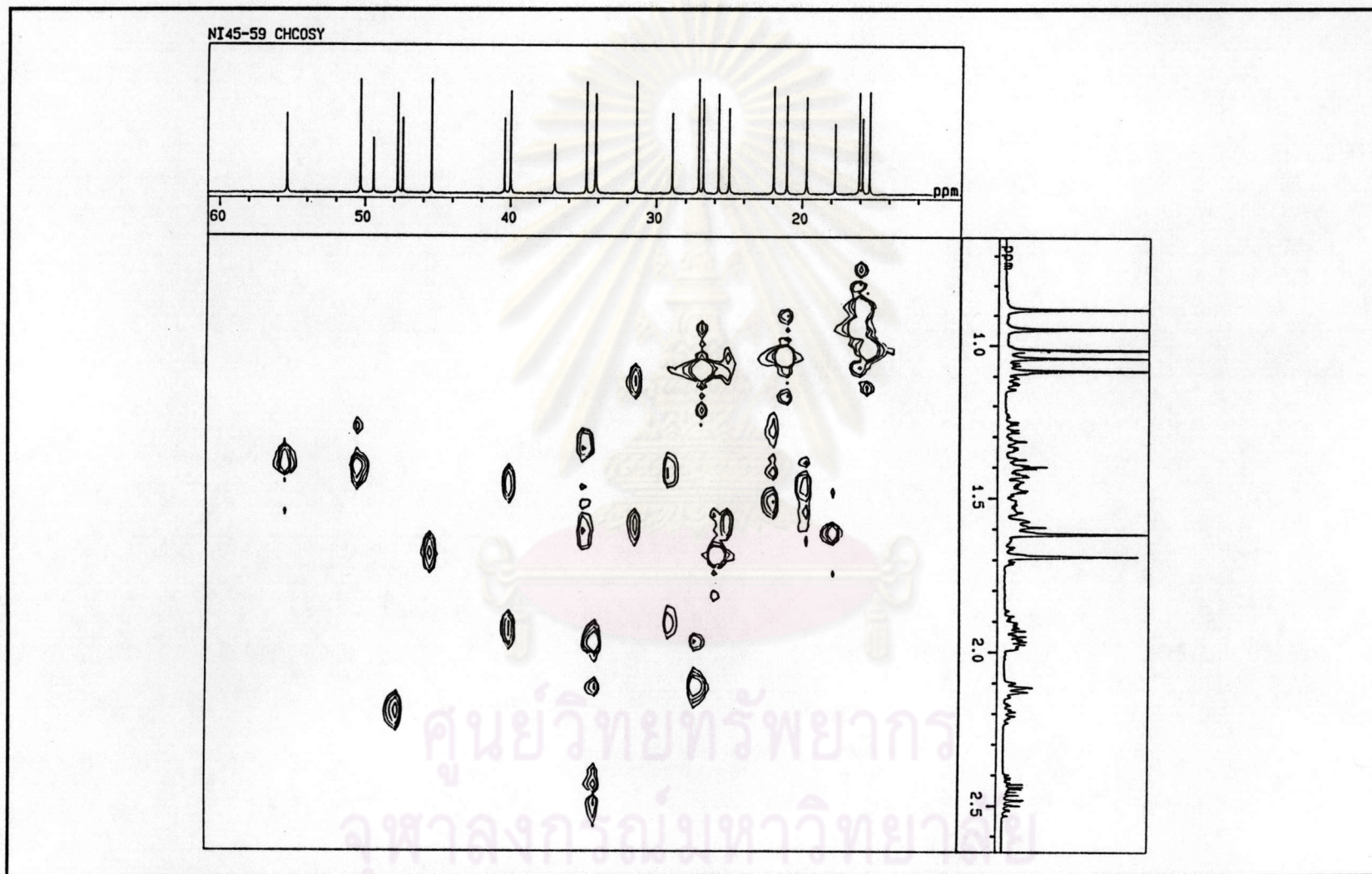


Figure 30  $^{13}\text{C}$ - $^1\text{H}$  correlation of Compound 3

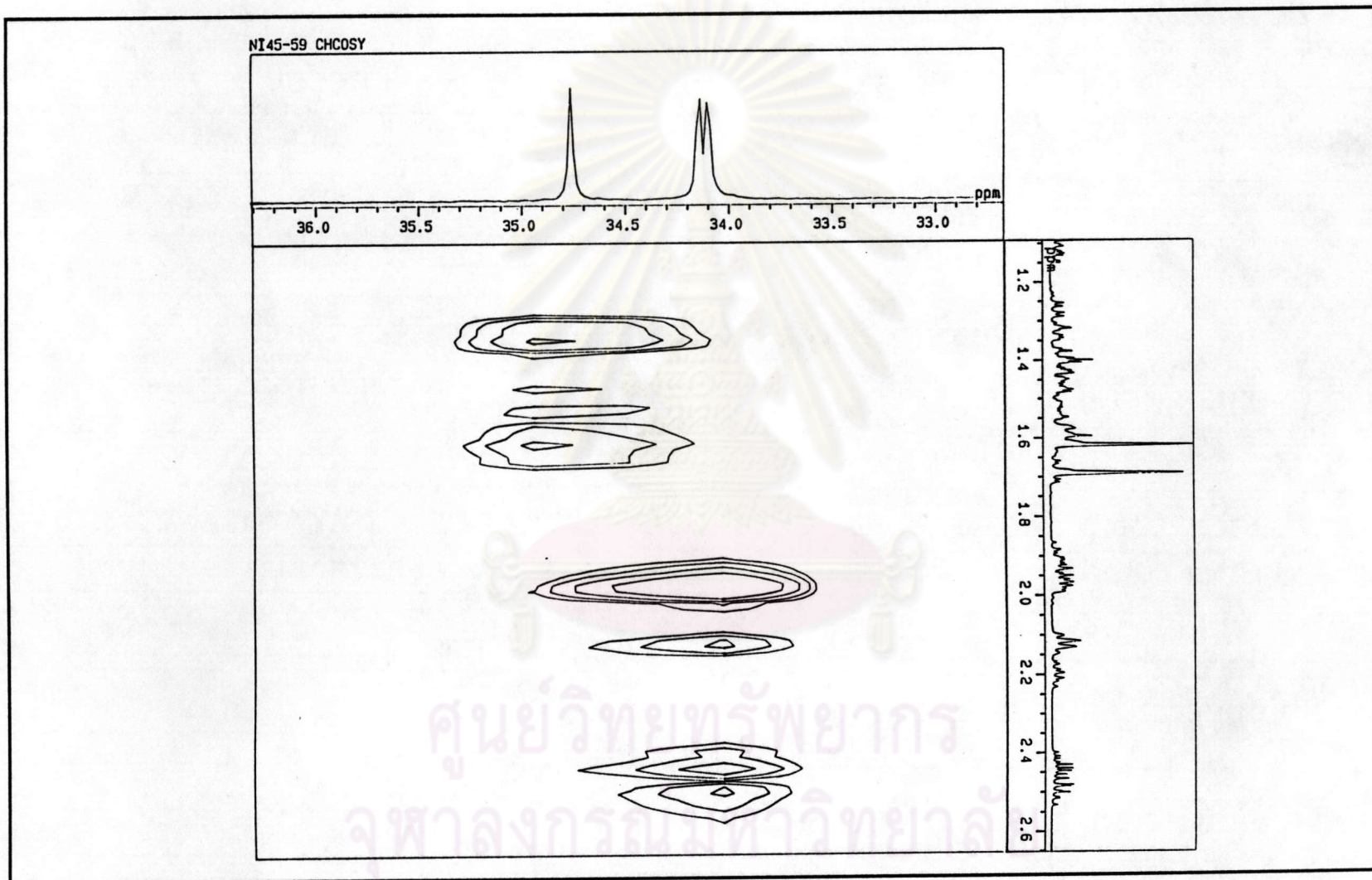


Figure 31  $^{13}\text{C}$ - $^1\text{H}$  correlation of Compound 3



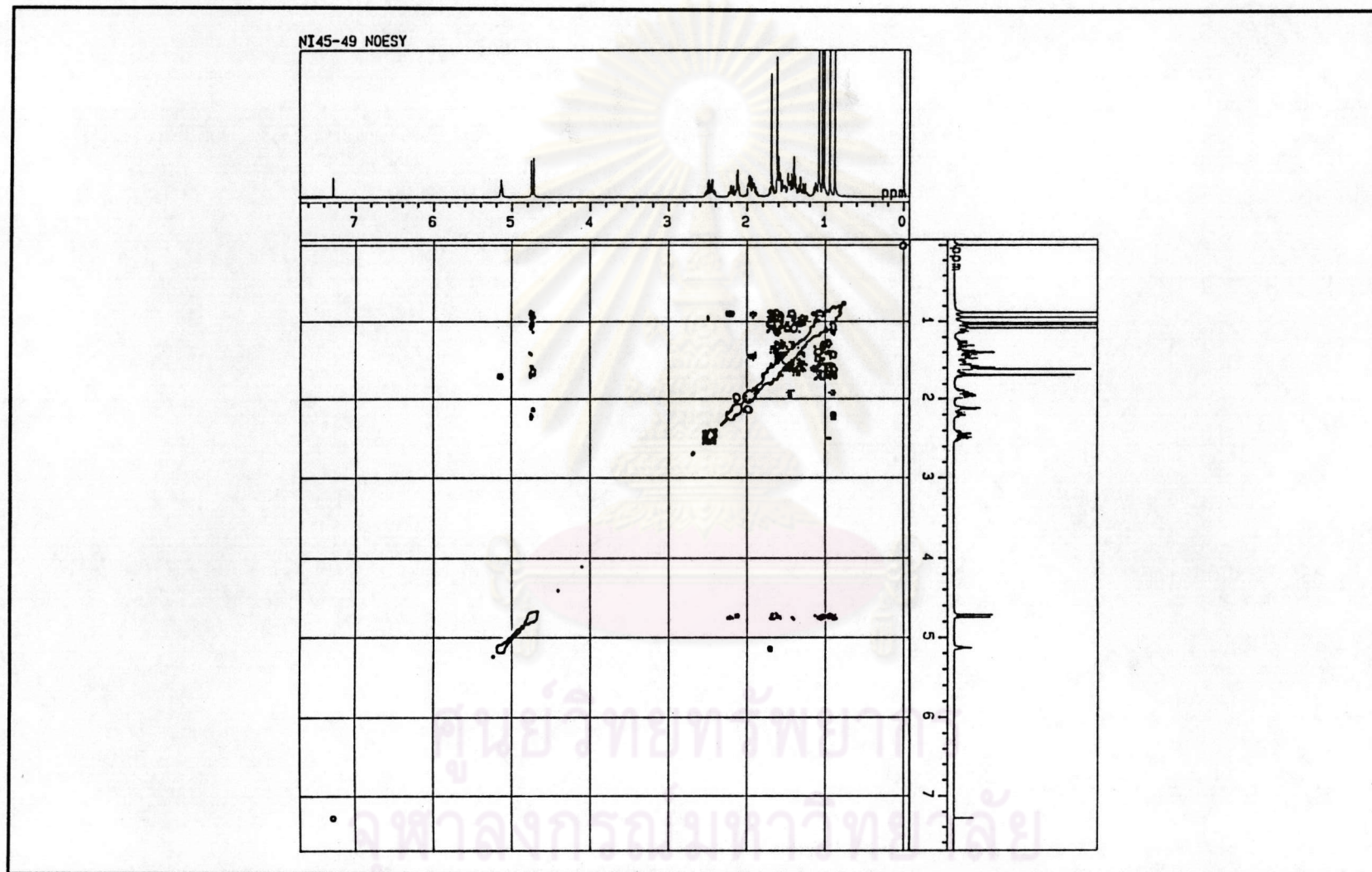


Figure 32  $^1\text{H}$ - $^1\text{H}$  NOESY of Compound 3

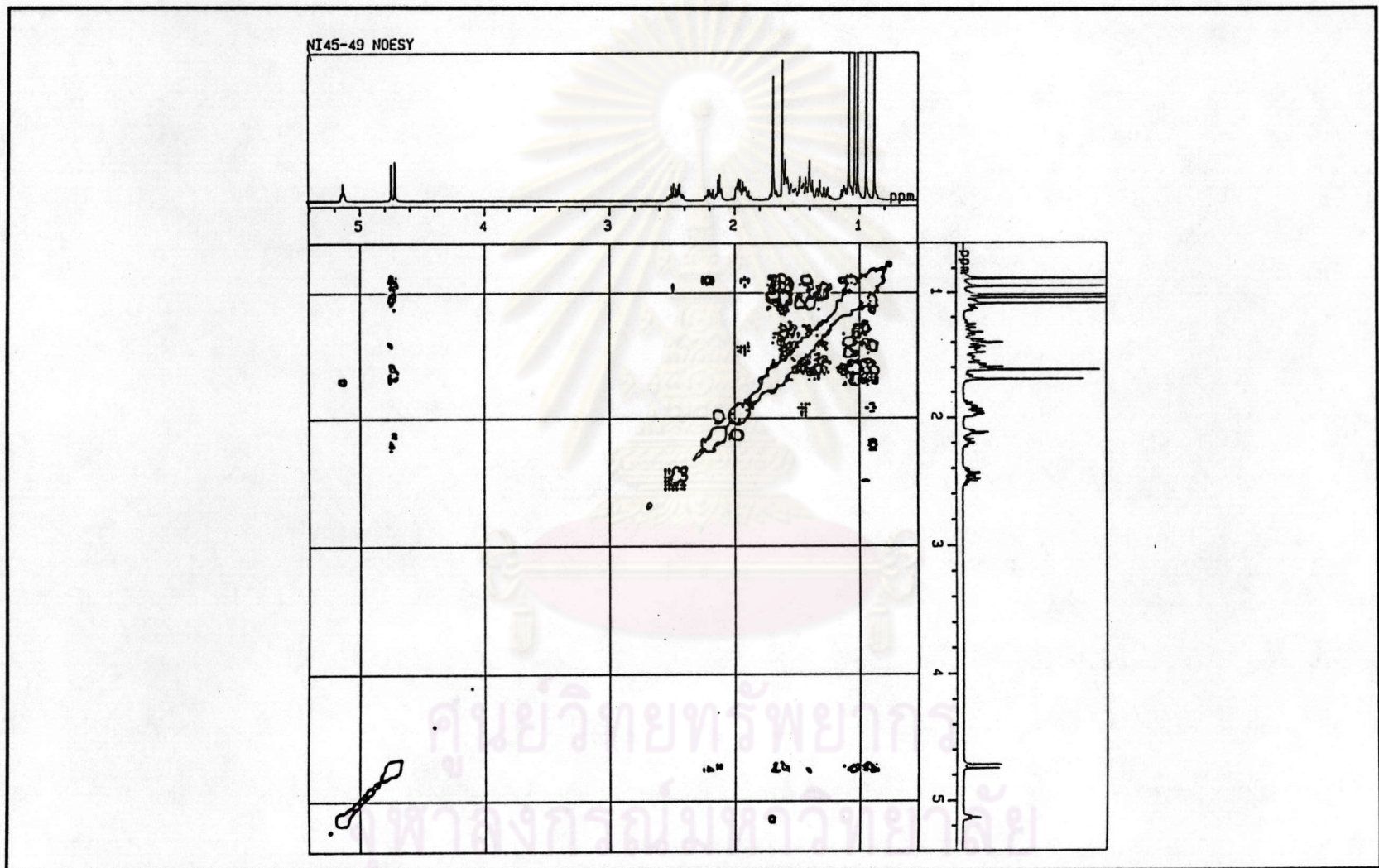


Figure 33  $^1\text{H}$ - $^1\text{H}$  NOESY of Compound 3



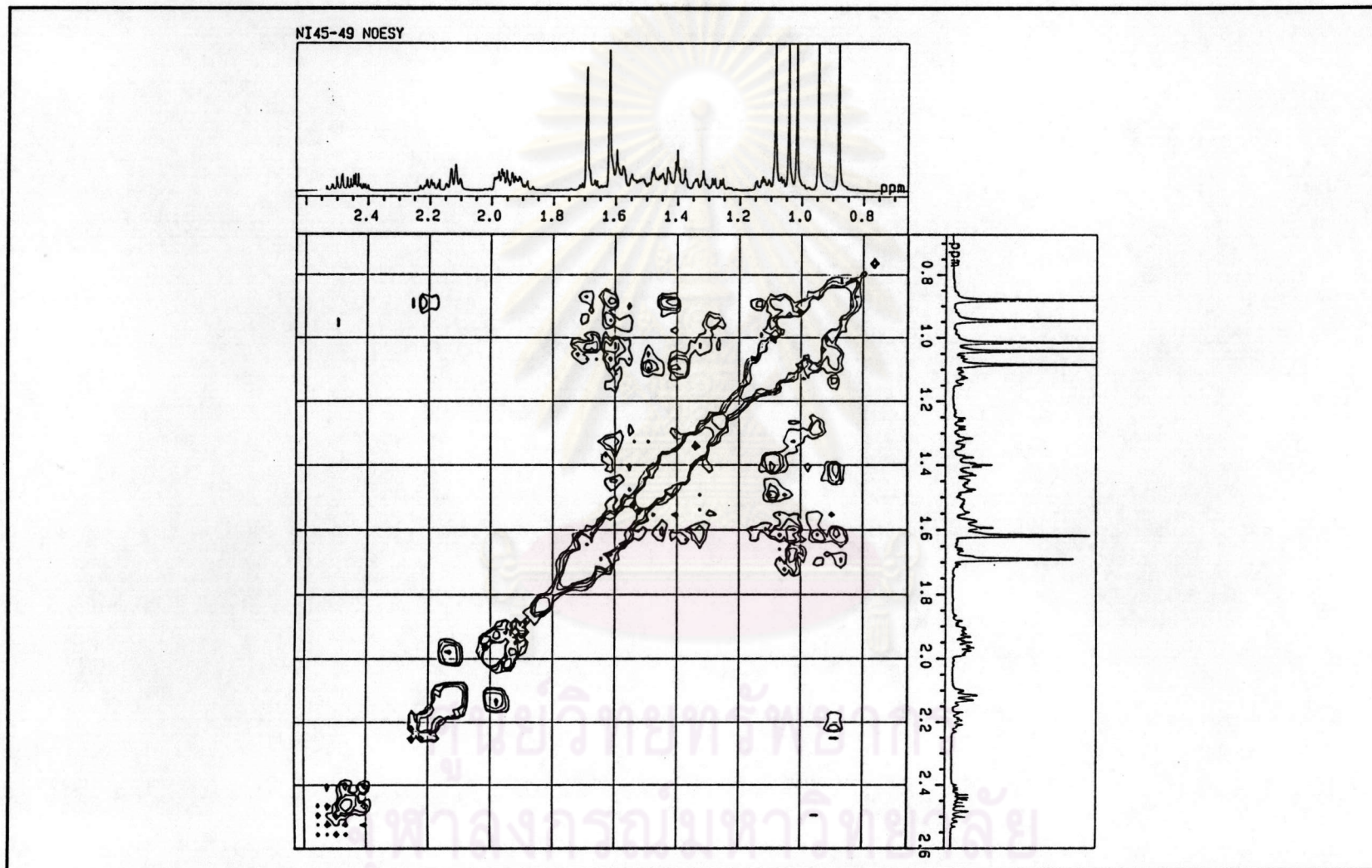


Figure 34  $^1\text{H}$ - $^1\text{H}$  NOESY of Compound 3

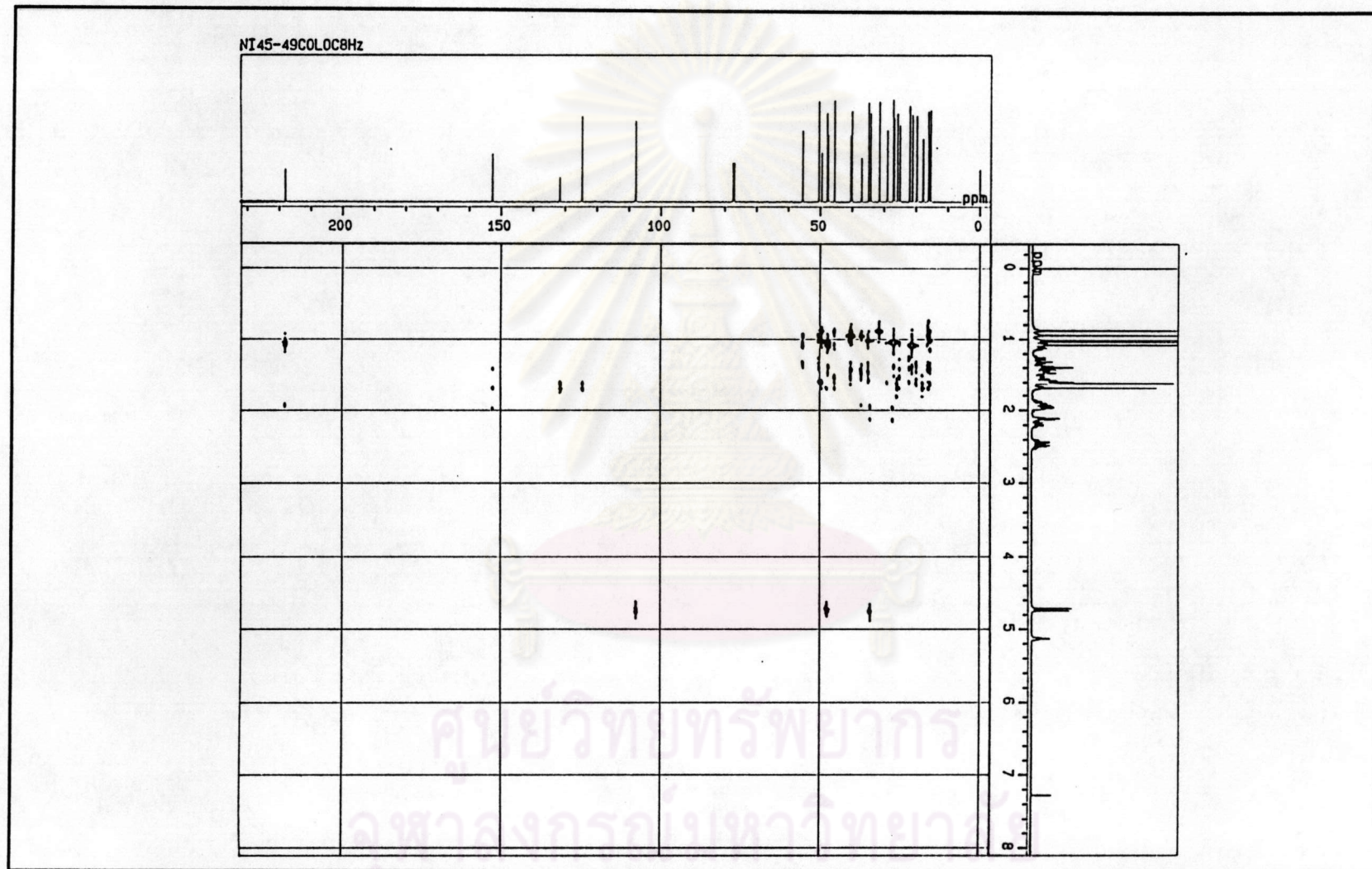


Figure 35  $^{13}\text{C}$ - $^1\text{H}$  COLOC of Compound 3



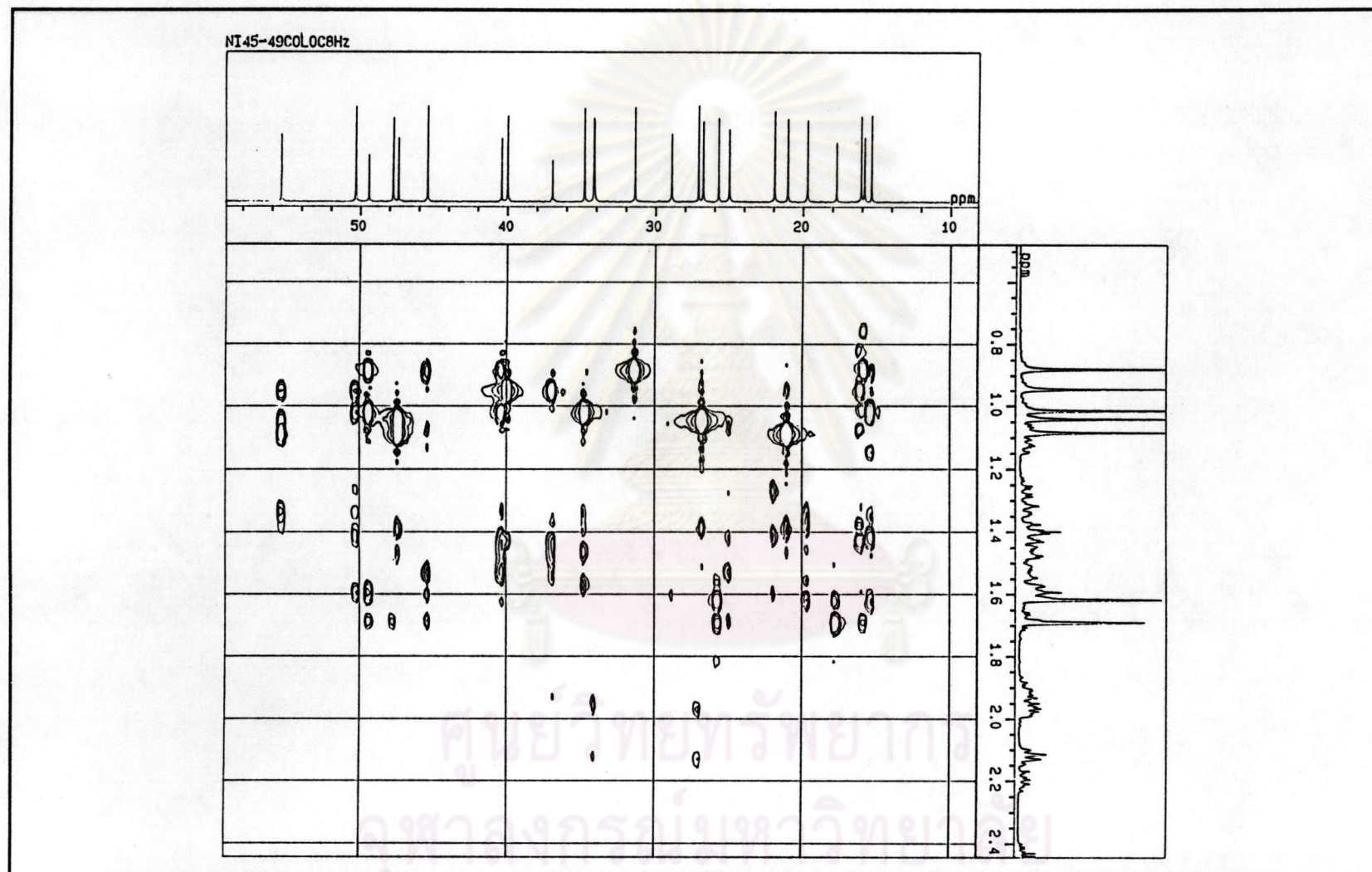


Figure 36  $^{13}\text{C}$ - $^1\text{H}$  COLOC of Compound 3

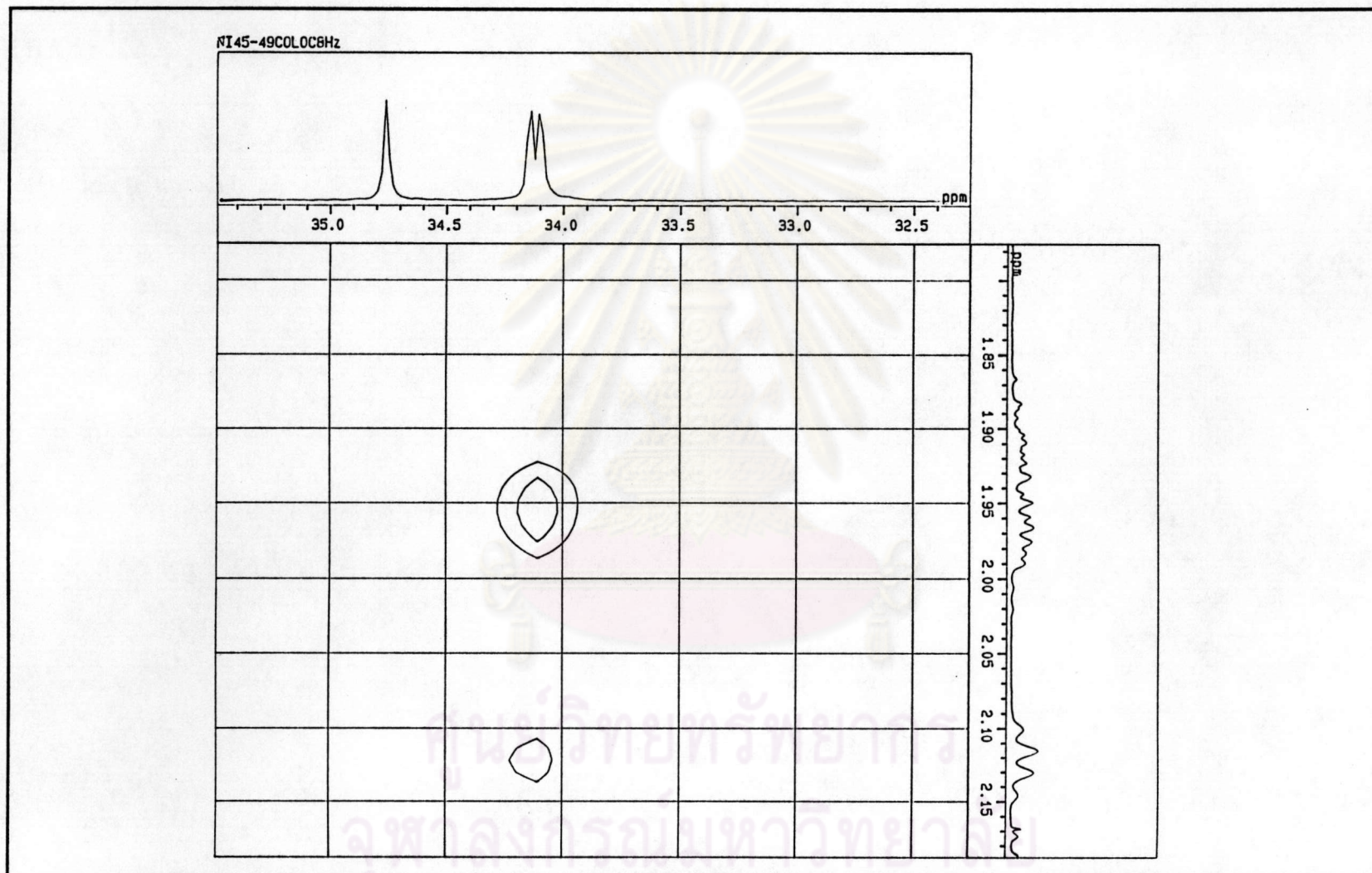


Figure 37  $^{13}\text{C}$ - $^1\text{H}$  COLOC of Compound 3



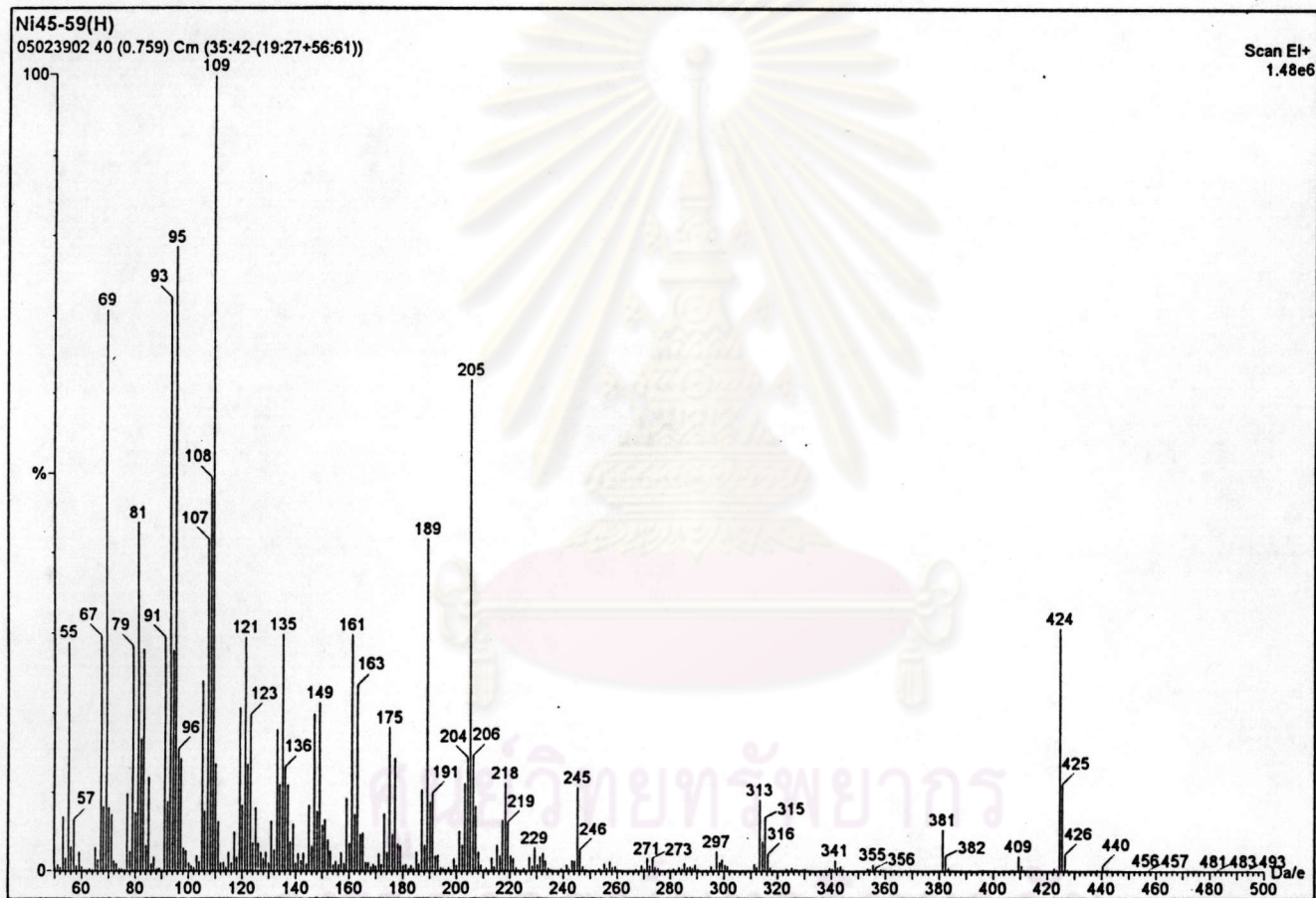
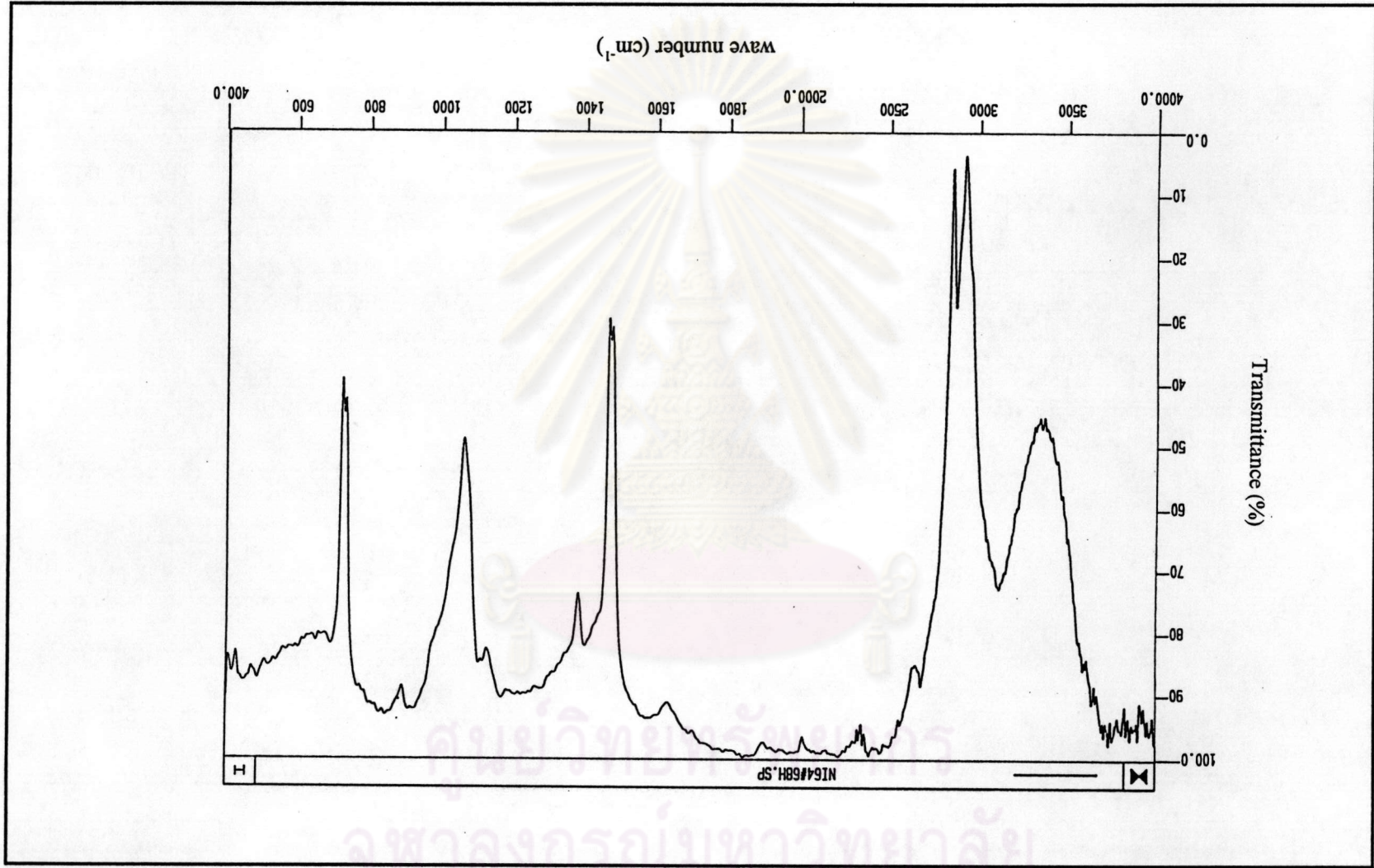


Figure 38 The mass spectrum of Compound 3

Figure 39 The IR spectrum of Compound 4





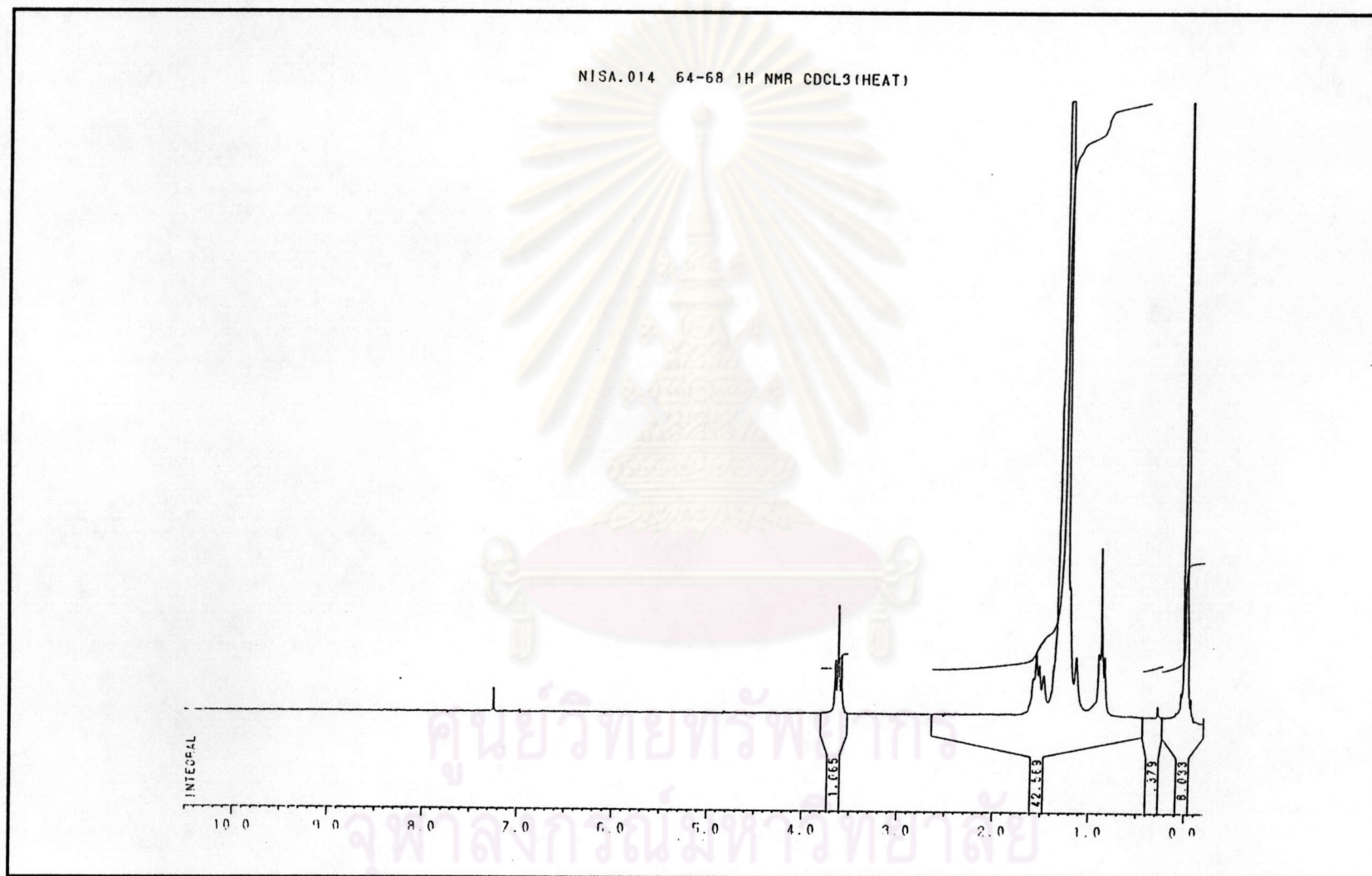
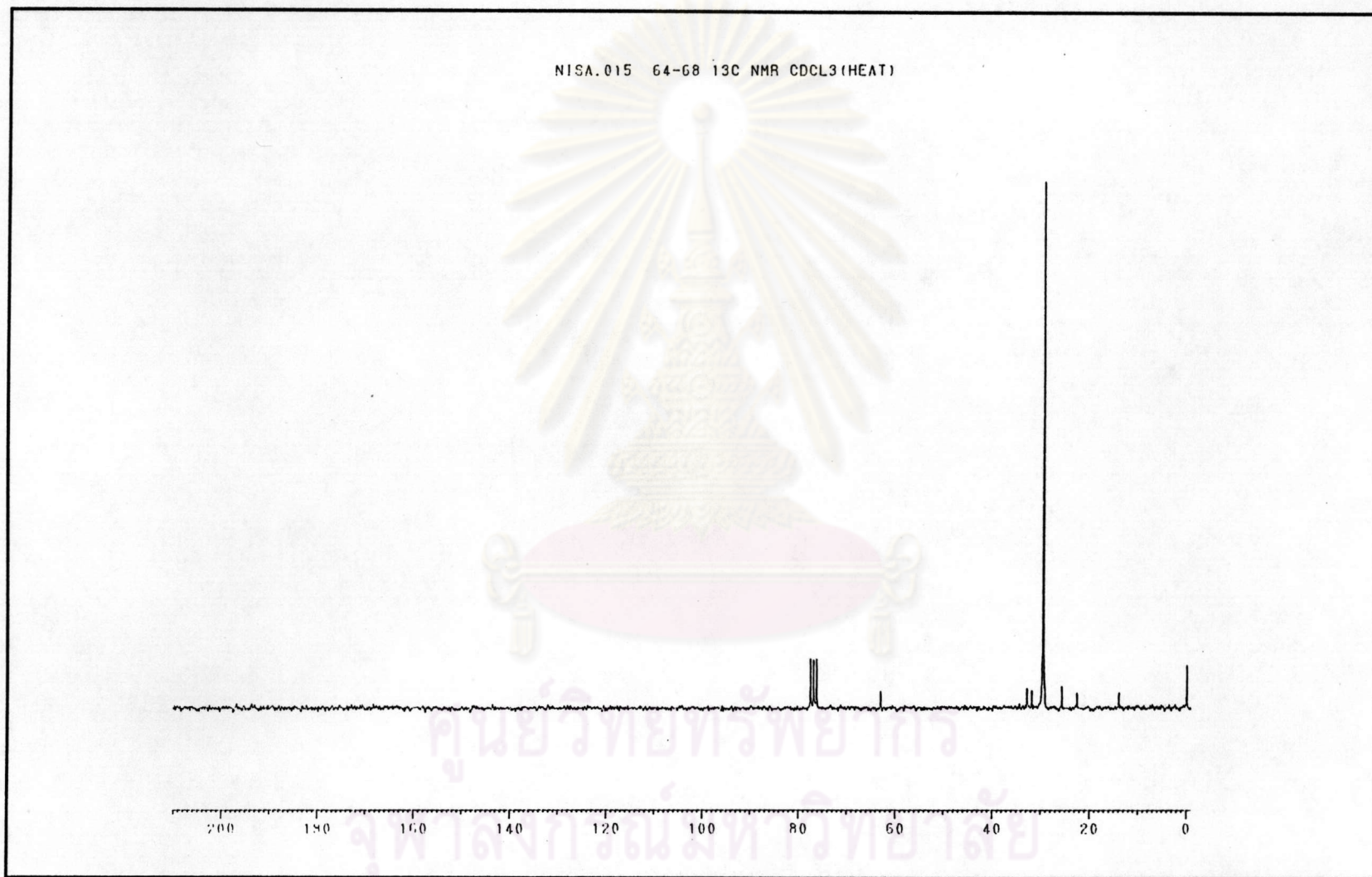
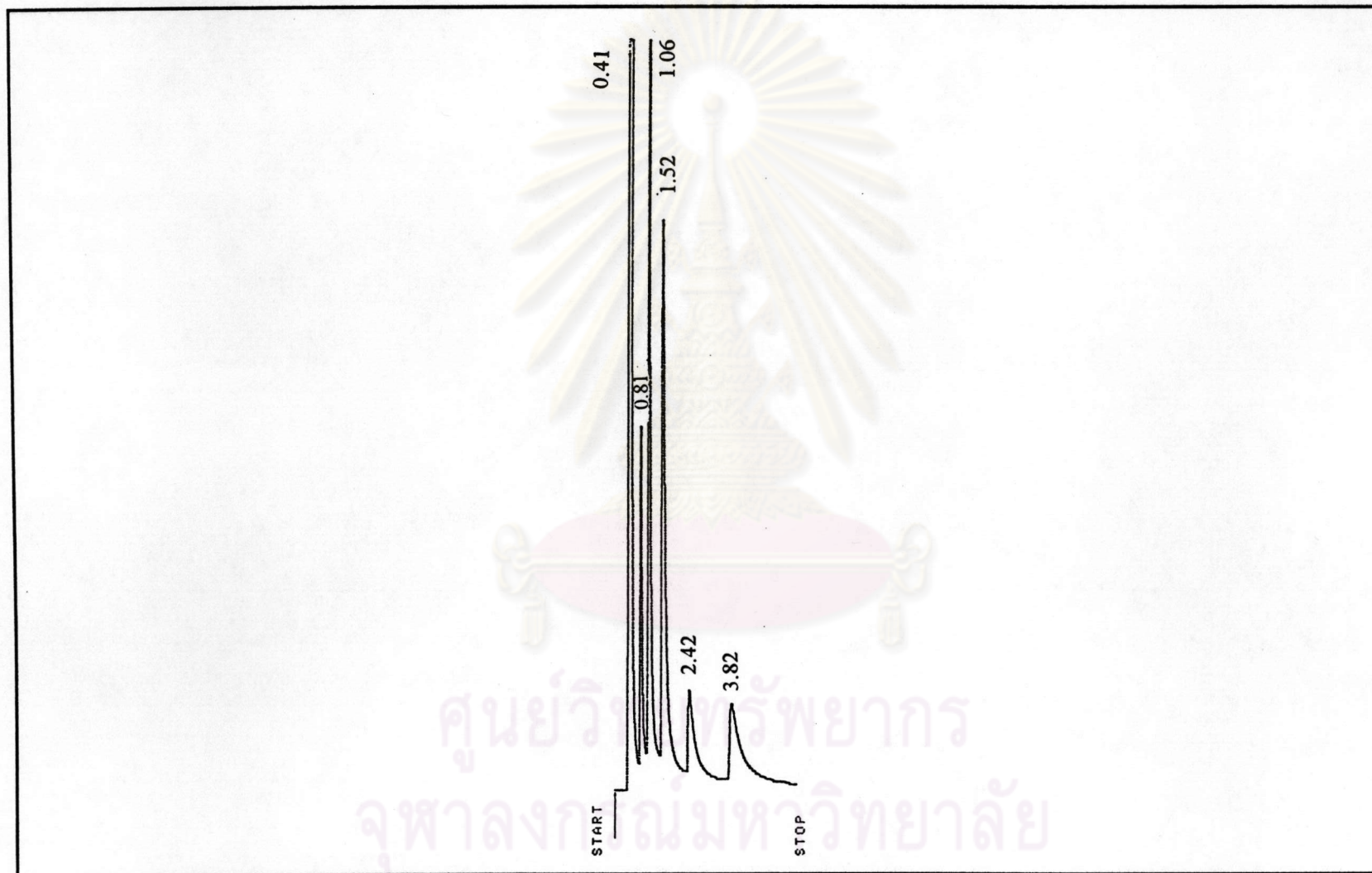


Figure 40 The  $^1\text{H-NMR}$  spectrum of Compound 4



**Figure 41** The  $^{13}\text{C}$ -NMR spectrum of Compound **4**





**Figure 42** The Gas-Liquid chromatogram of standard long chain aliphatic primary alcohols(C =14, 16, 18, 20, 22)

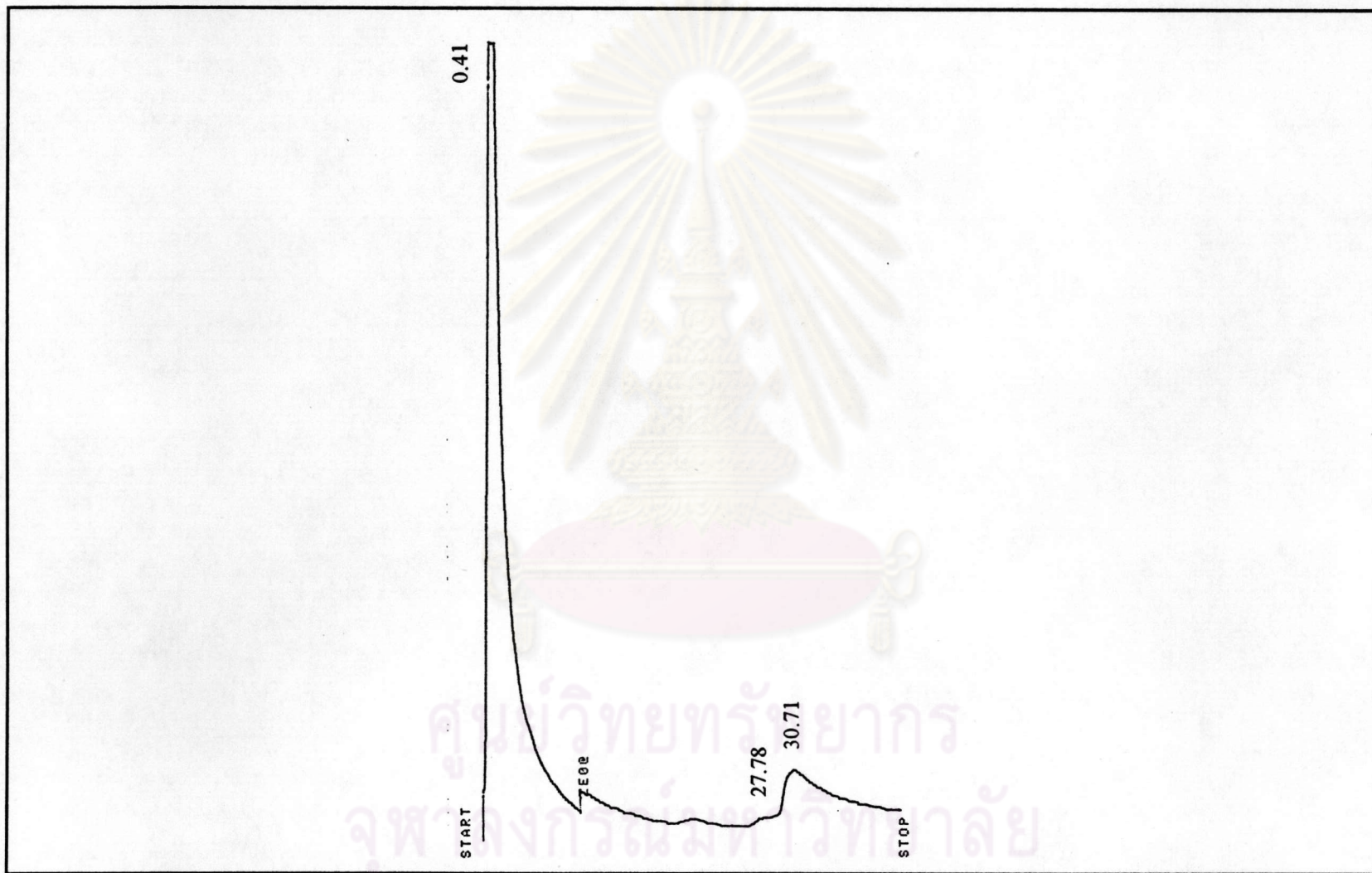
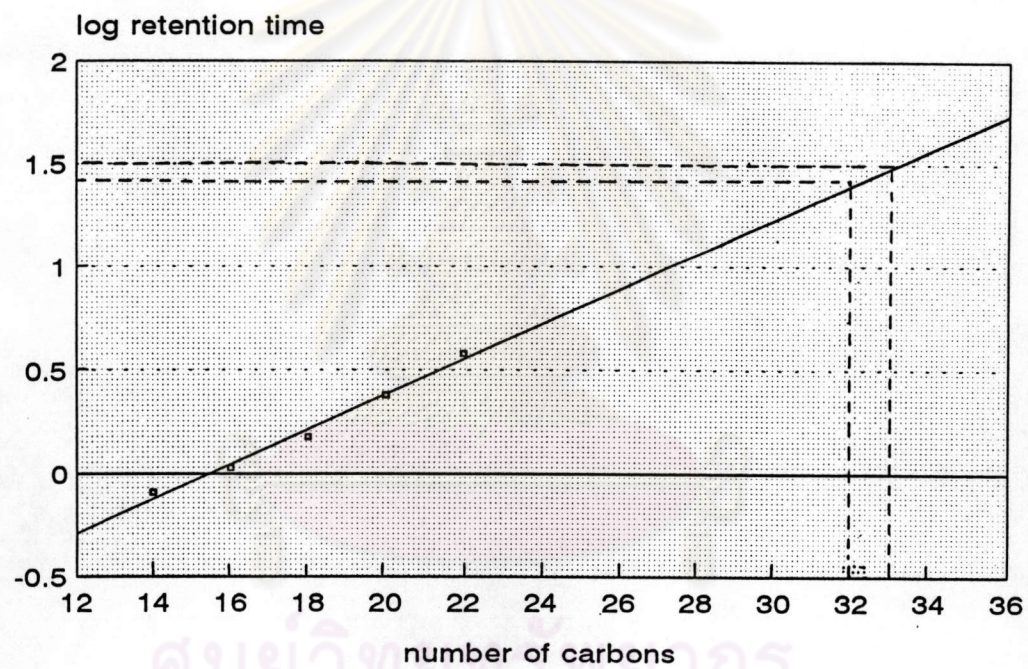


Figure 43 The Gas-Liquid chromatogram of Compound 4





**Figure 44** The calibration curve of standard long chain aliphatic primary alcohols(C =14, 16, 18, 20, 22)

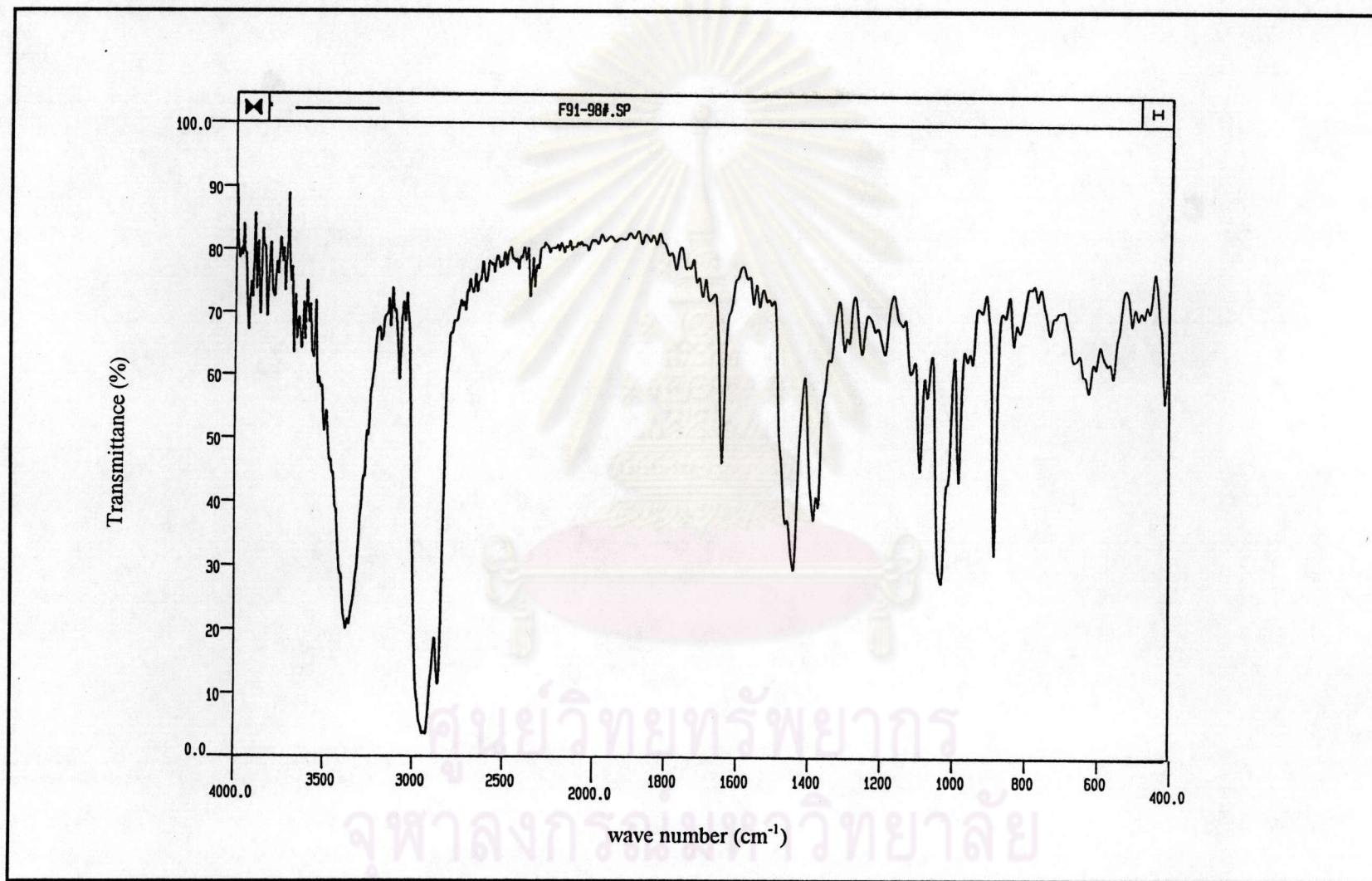
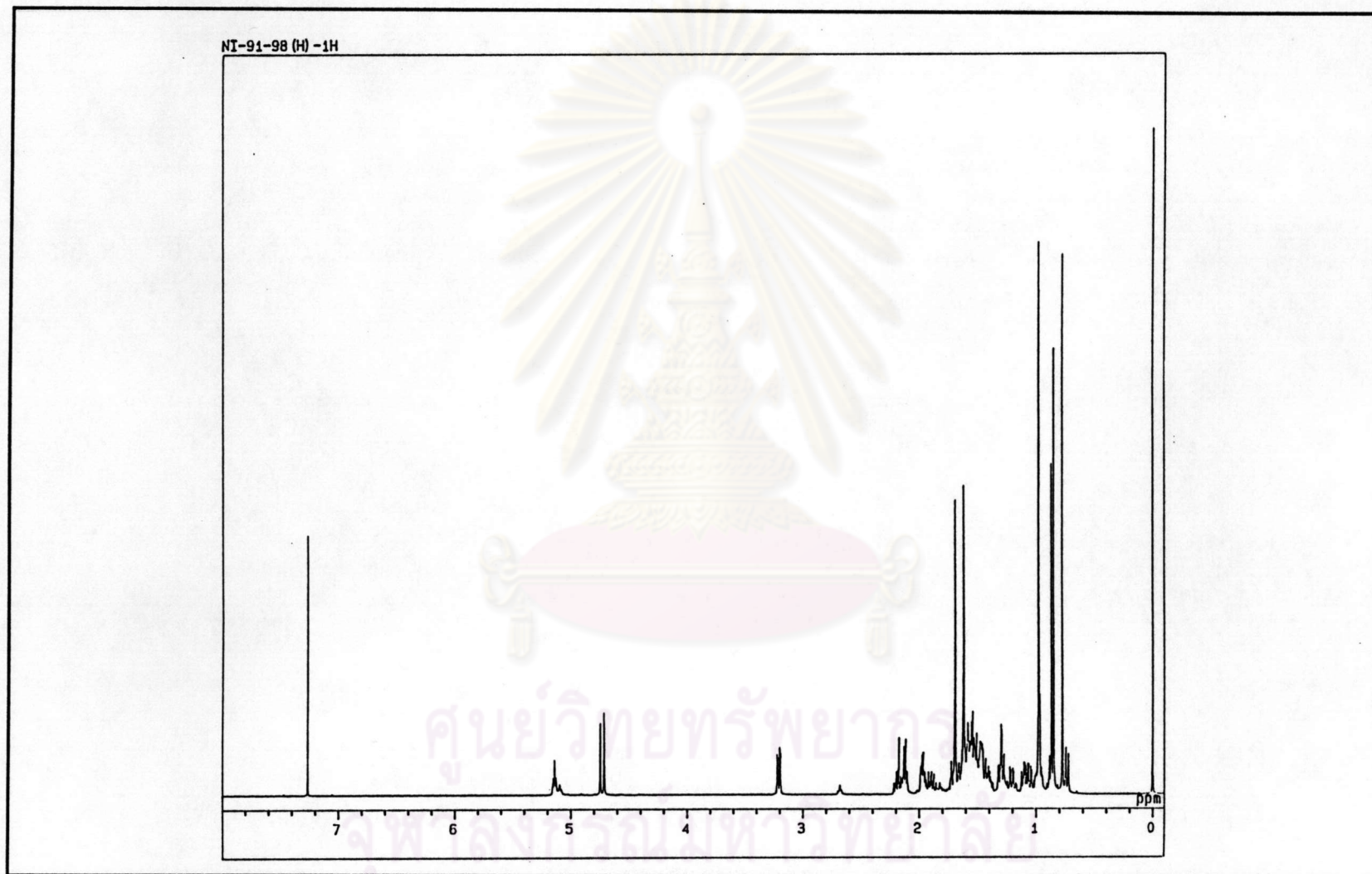


Figure 45 The IR spectrum of Compound 5





**Figure 46** The <sup>1</sup>H-NMR spectrum of Compound 5

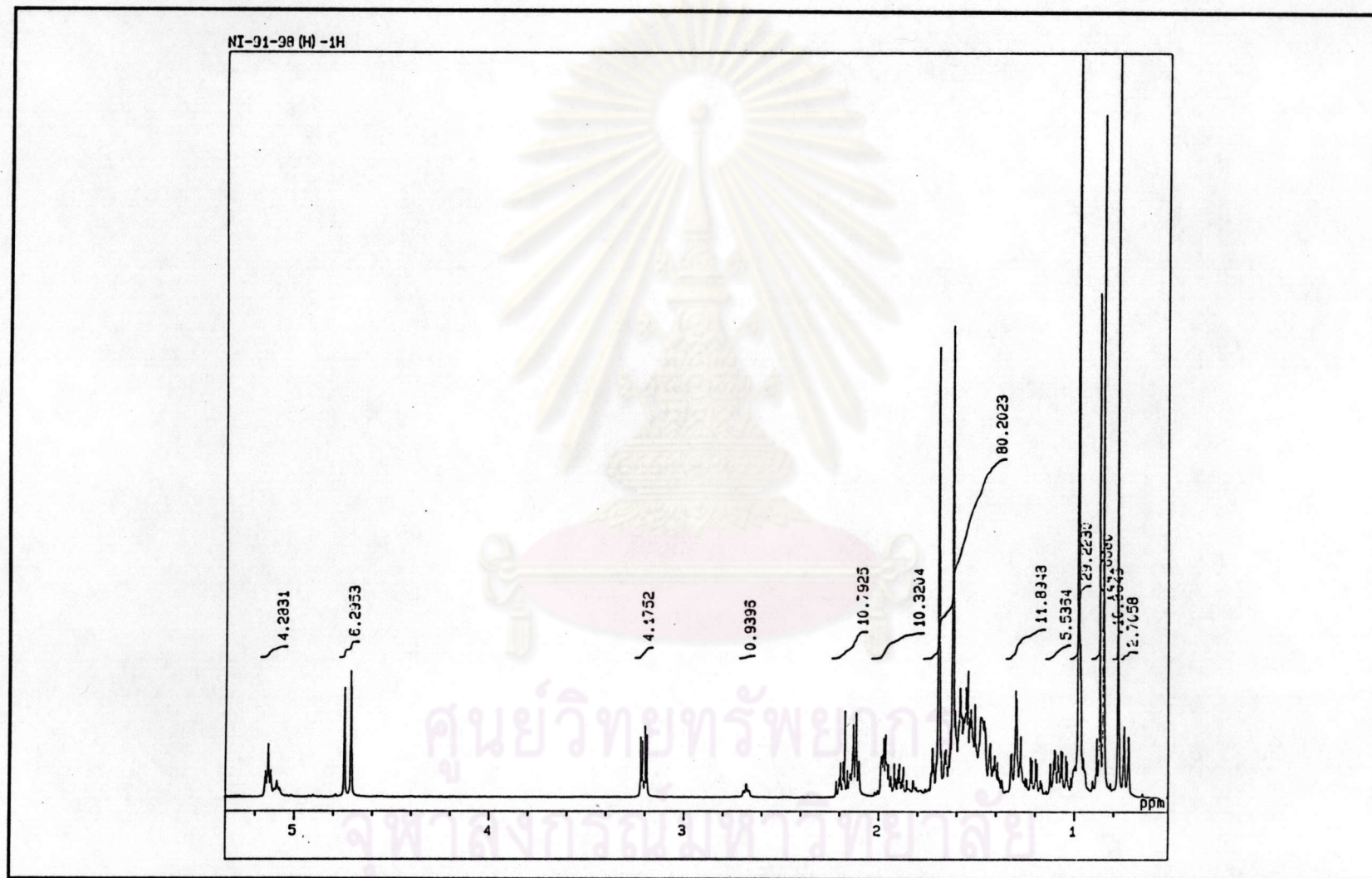


Figure 47 The  $^1\text{H-NMR}$  spectrum of Compound 5



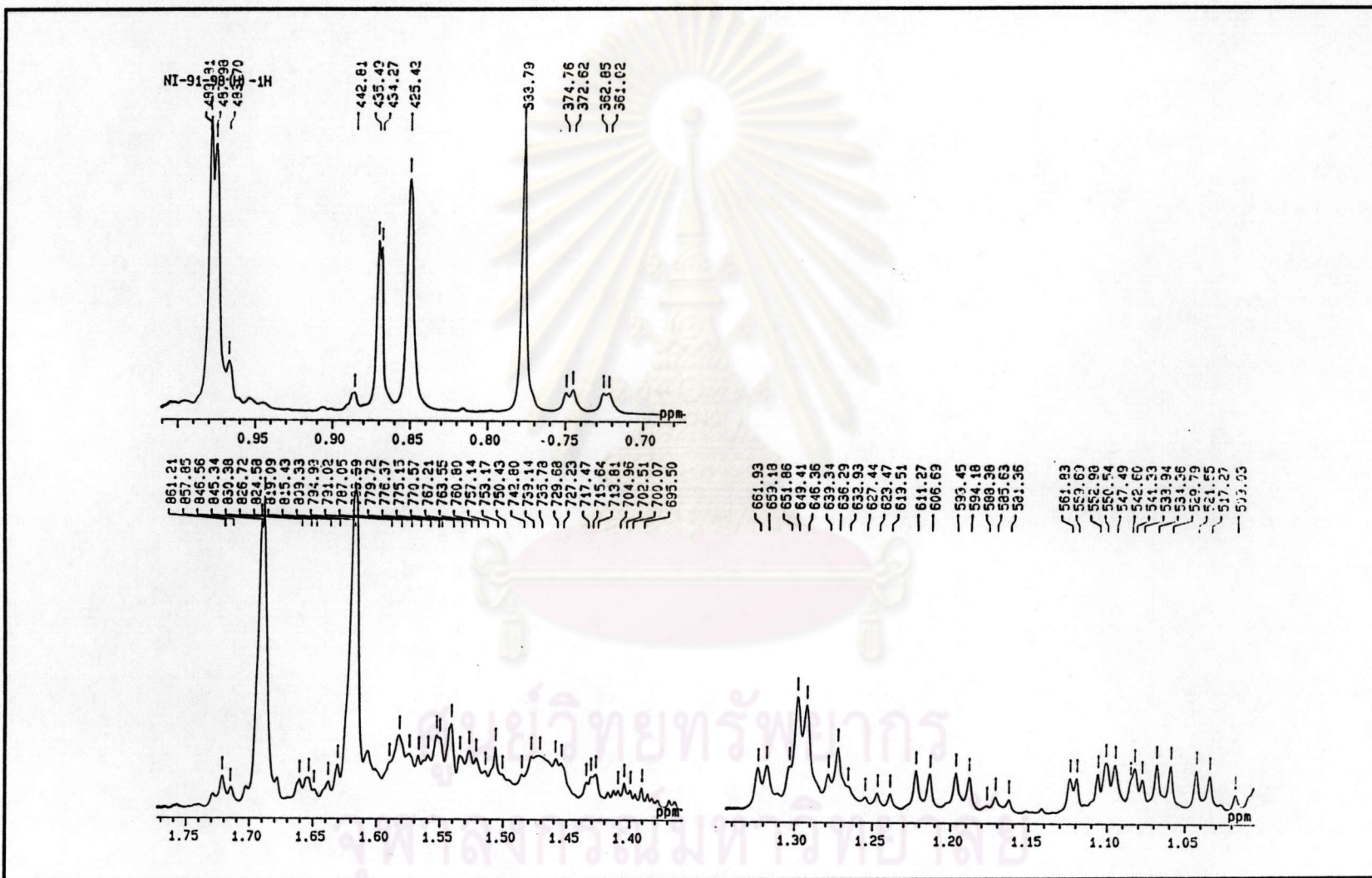


Figure 48 The  $^1\text{H-NMR}$  spectrum of Compound 5

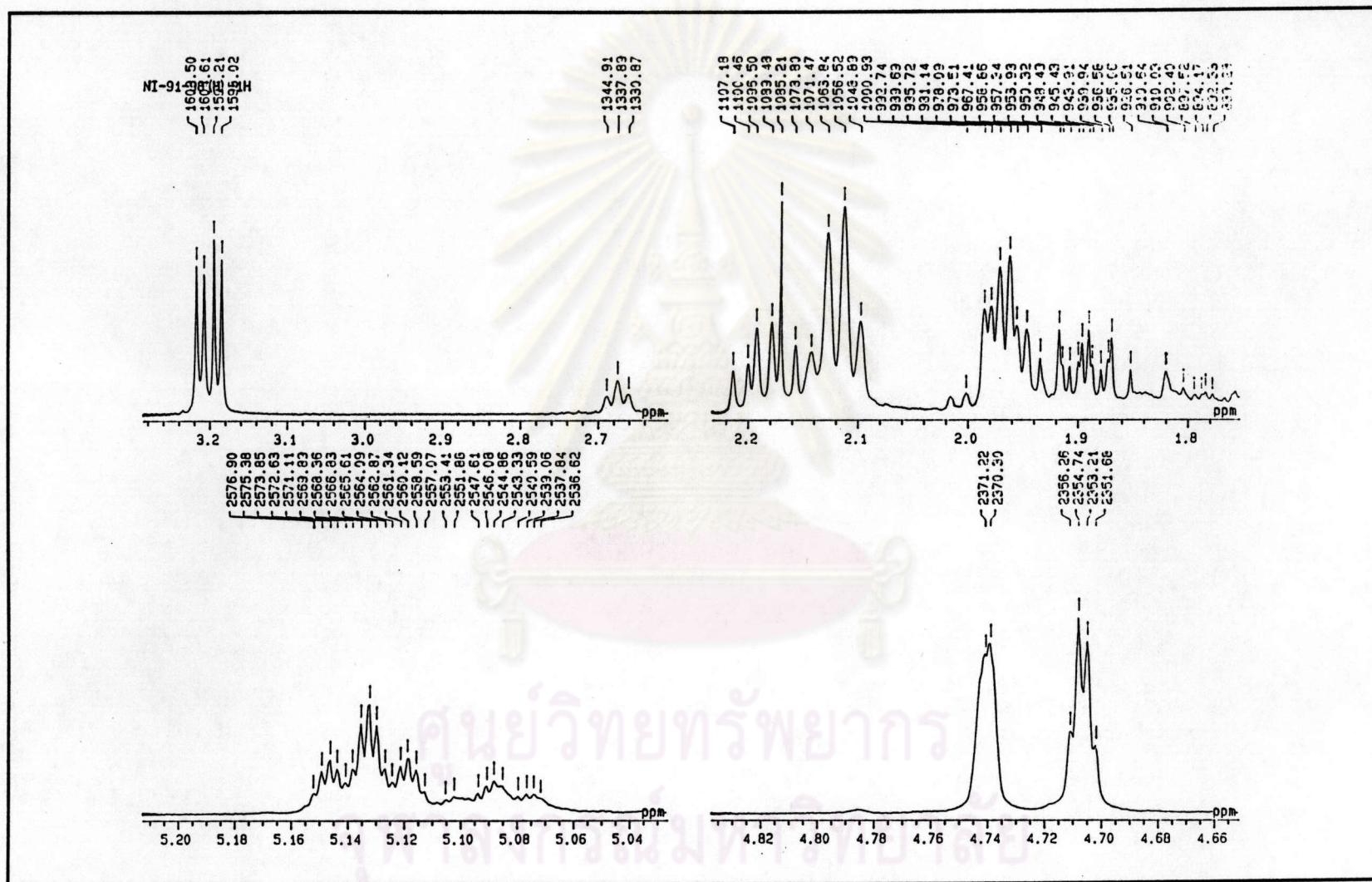


Figure 49 The  $^1\text{H-NMR}$  spectrum of Compound 5



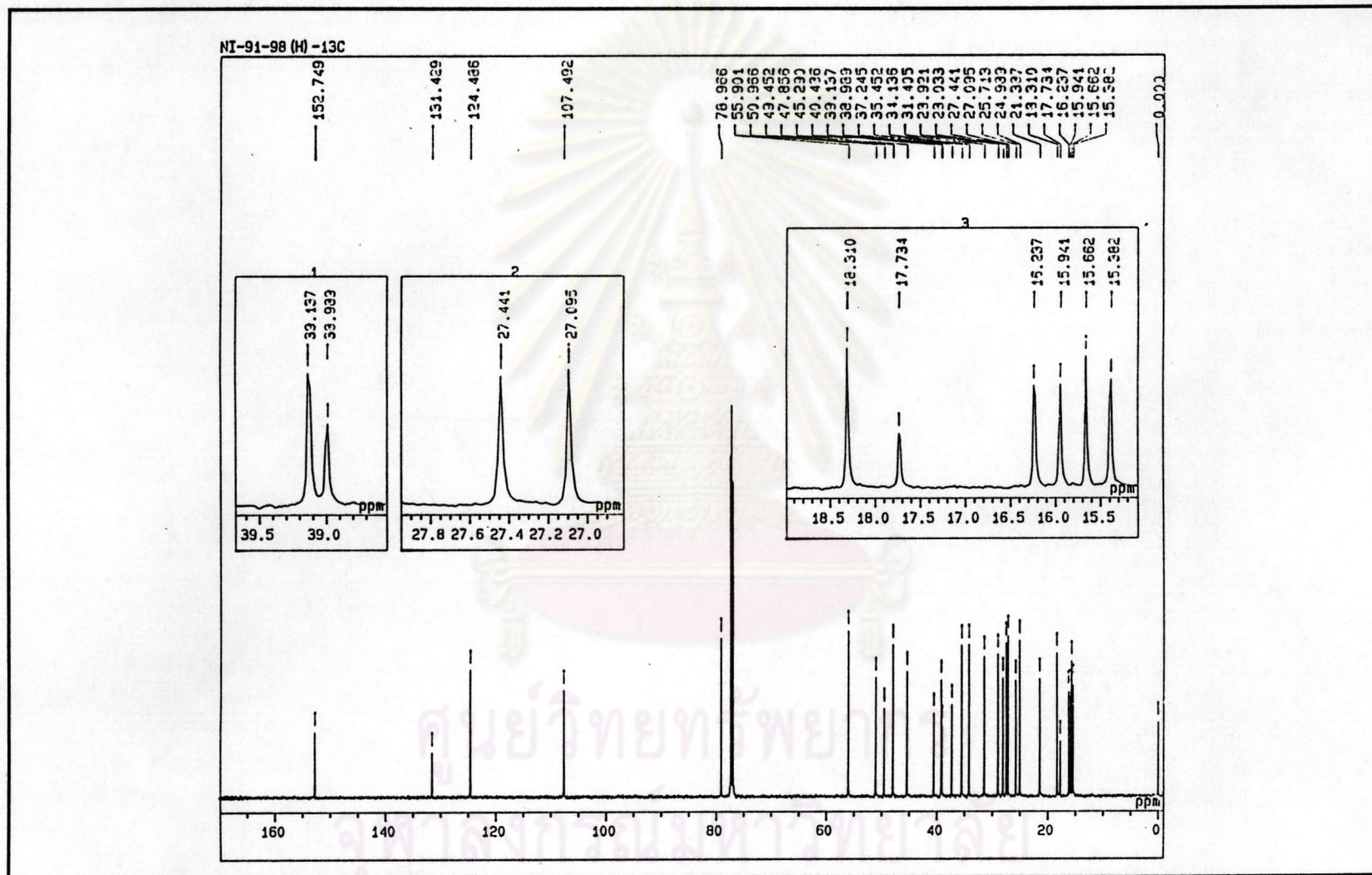


Figure 50 The  $^{13}\text{C}$ -NMR spectrum of Compound 5

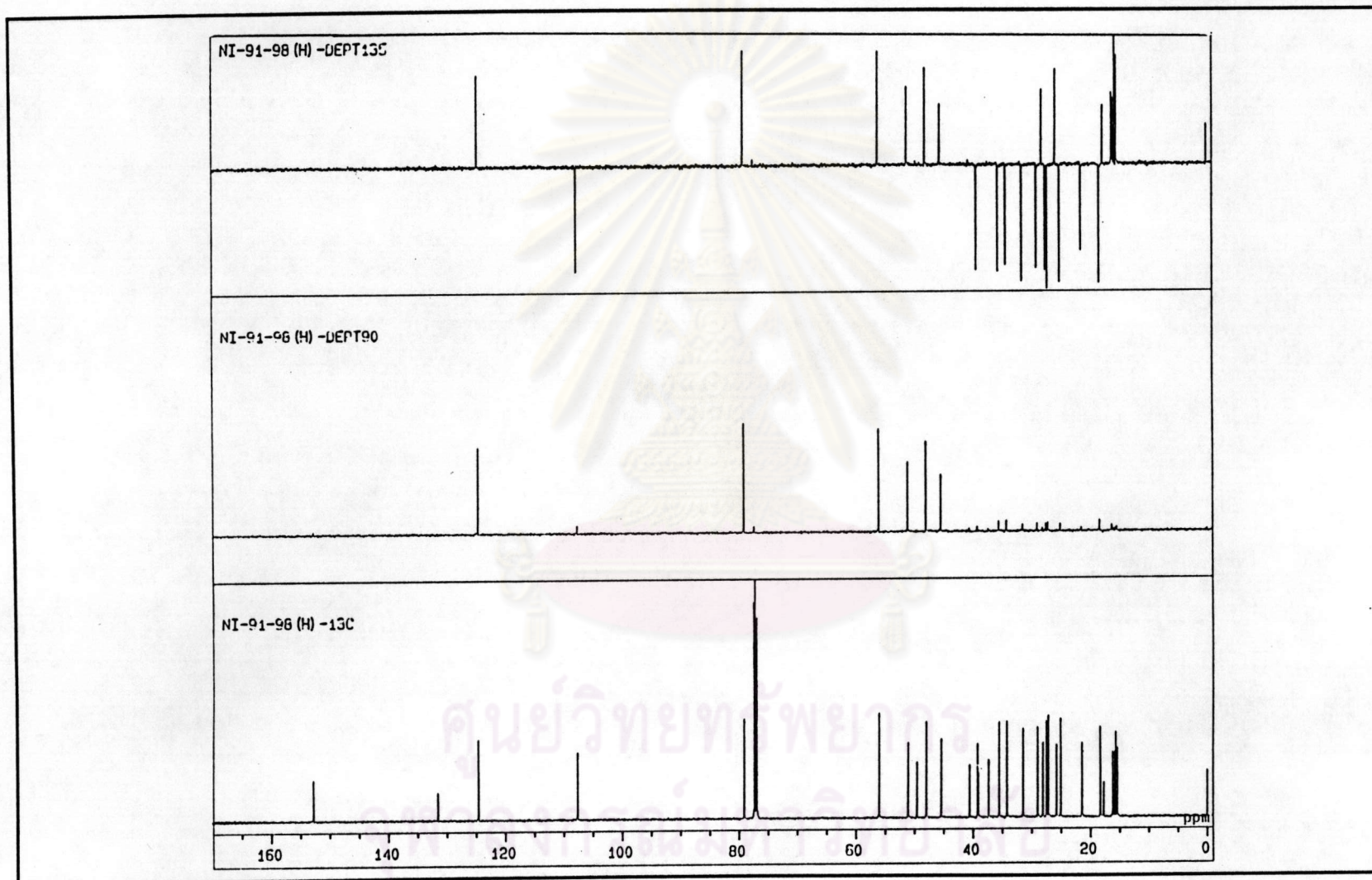


Figure 51 The DEPT 90 and DEPT 135  $^{13}\text{C}$ -NMR spectrum of Compound 5



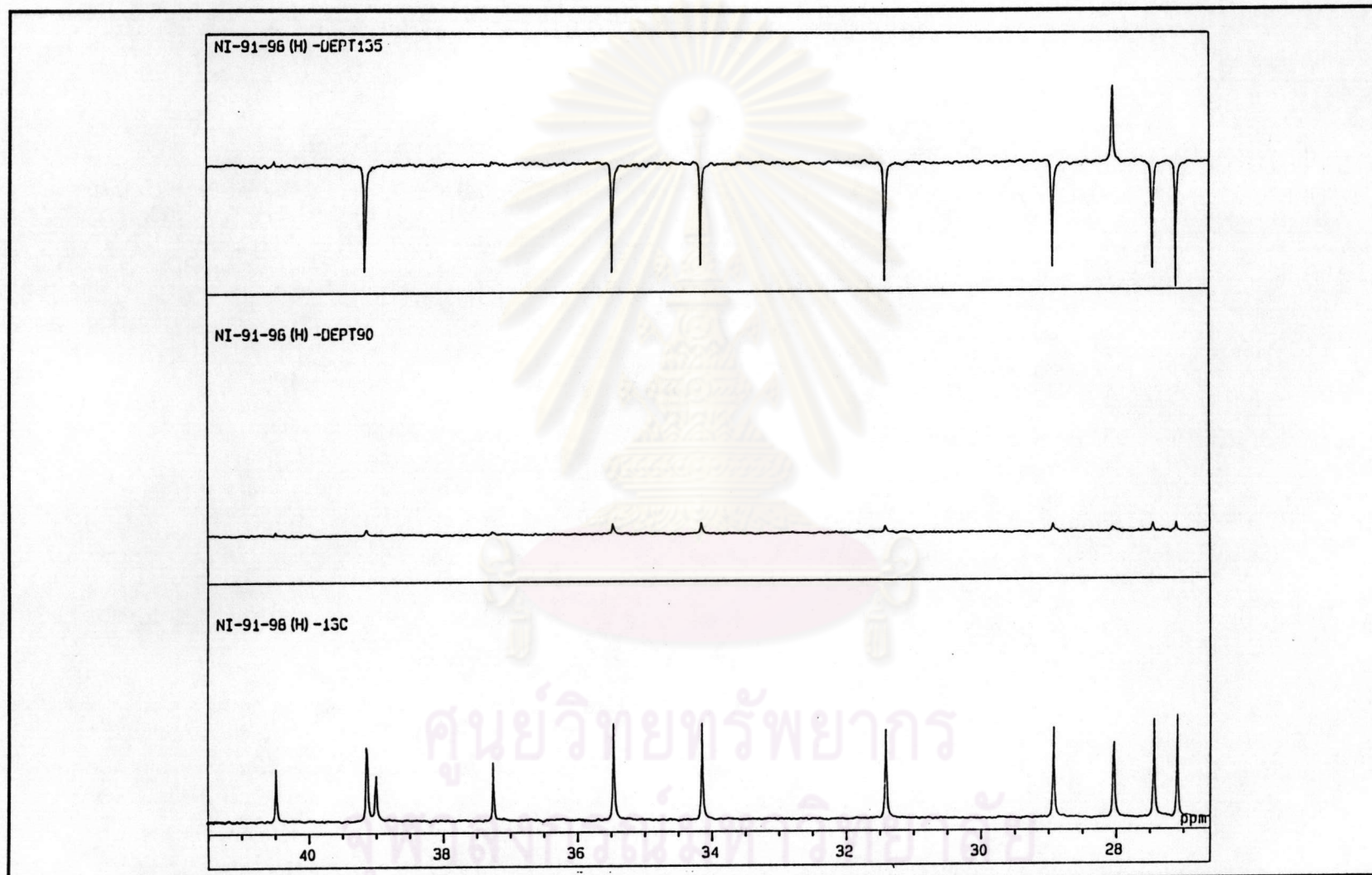


Figure 52 The DEPT 90 and DEPT 135  $^{13}\text{C}$ -NMR spectrum of Compound 5

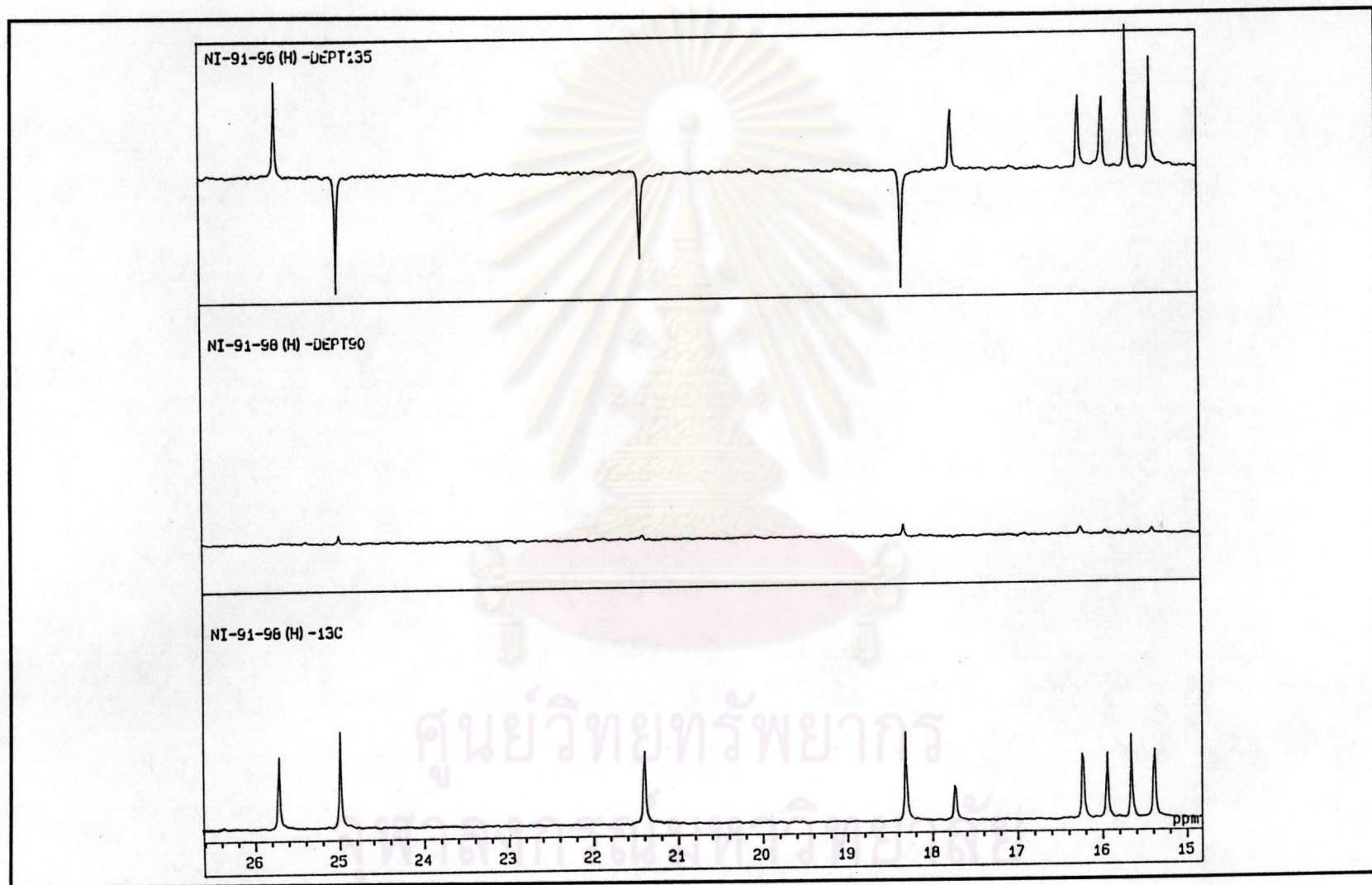


Figure 53 The DEPT 90 and DEPT 135  $^{13}\text{C}$ -NMR spectrum of Compound 5



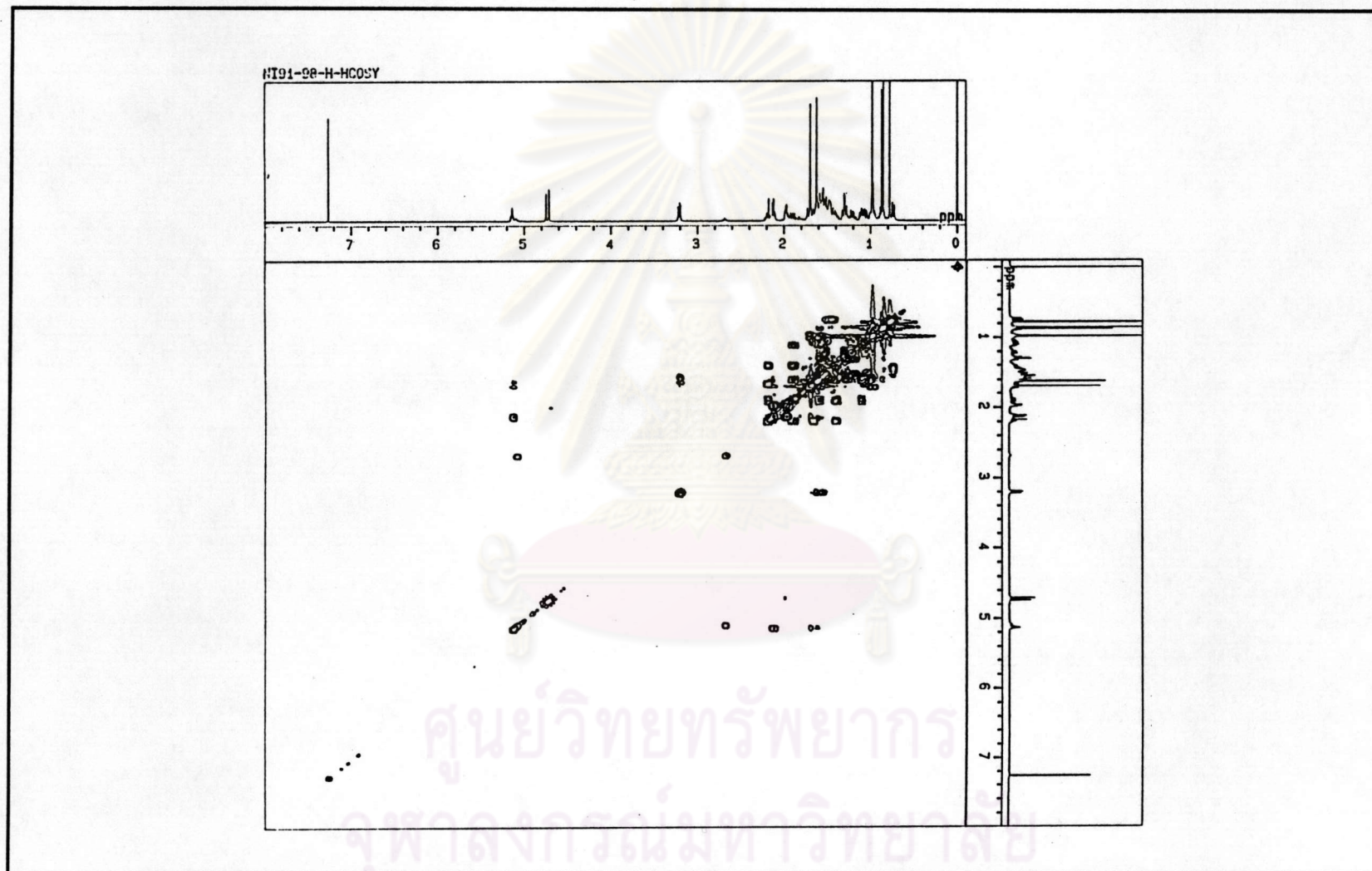


Figure 54  $^1\text{H}$ - $^1\text{H}$  COSY of Compound 5

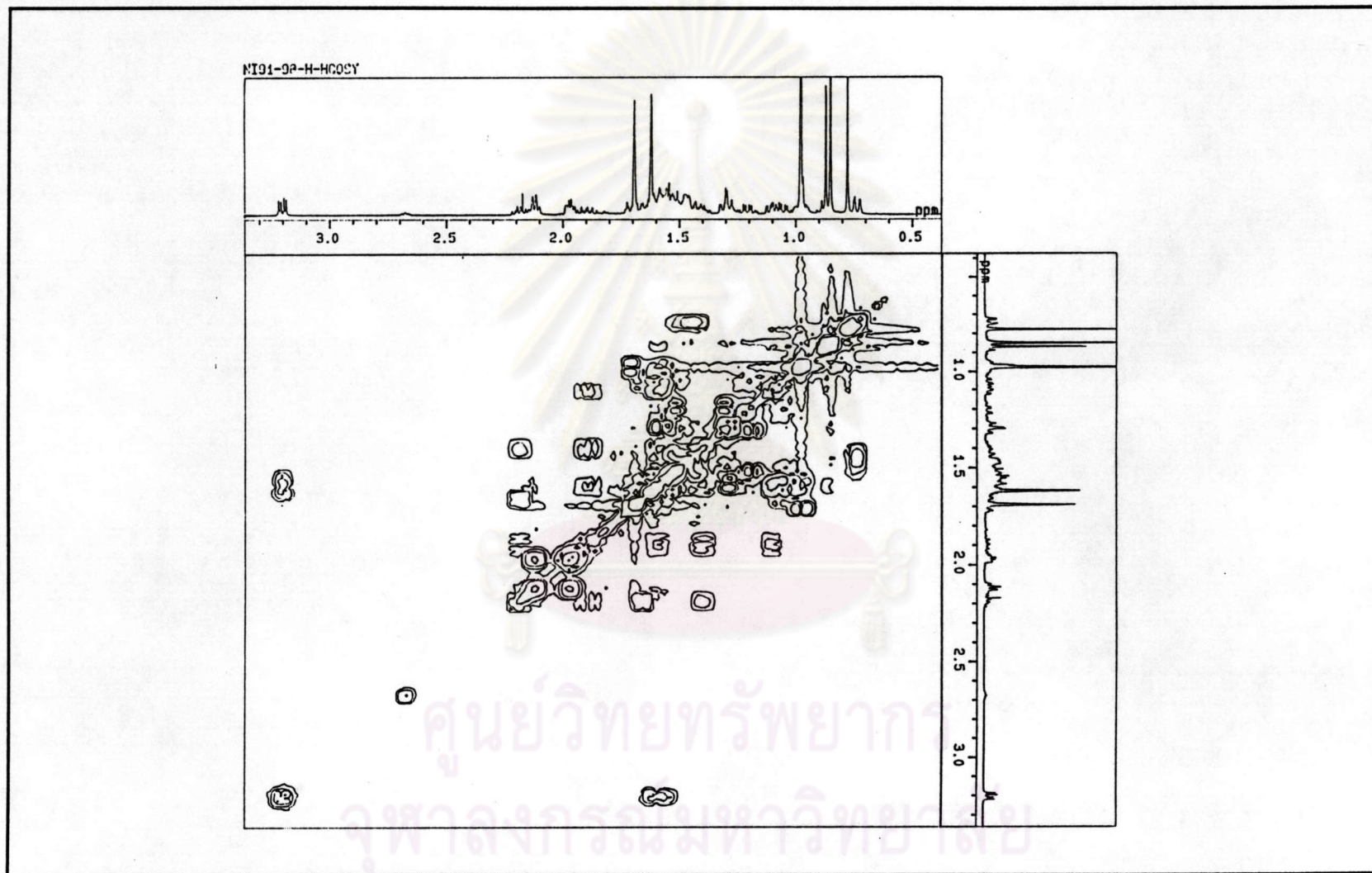


Figure 55  $^1\text{H}$ - $^1\text{H}$  COSY of Compound 5



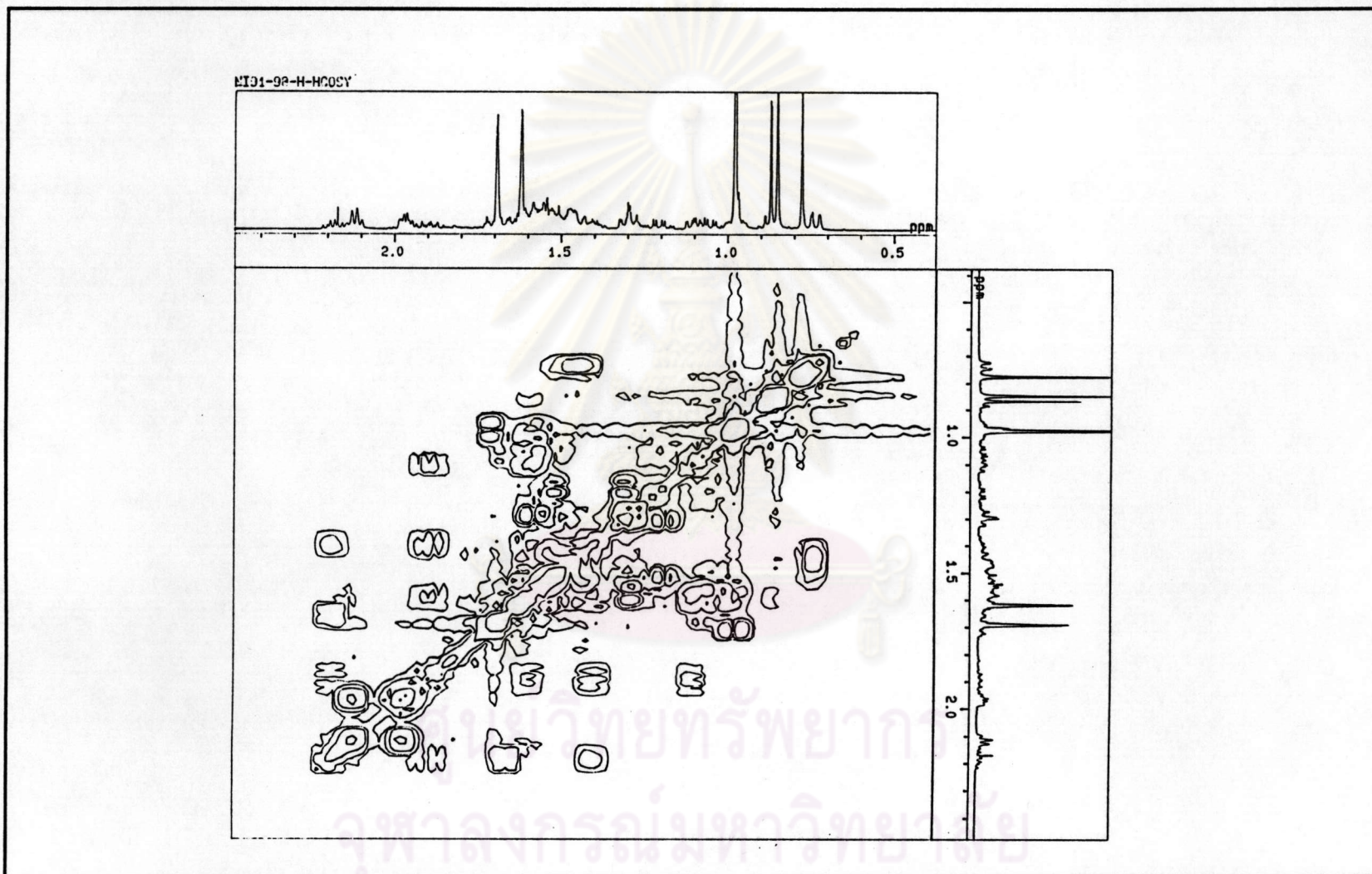


Figure 56  $^1\text{H}$ - $^1\text{H}$  COSY of Compound 5

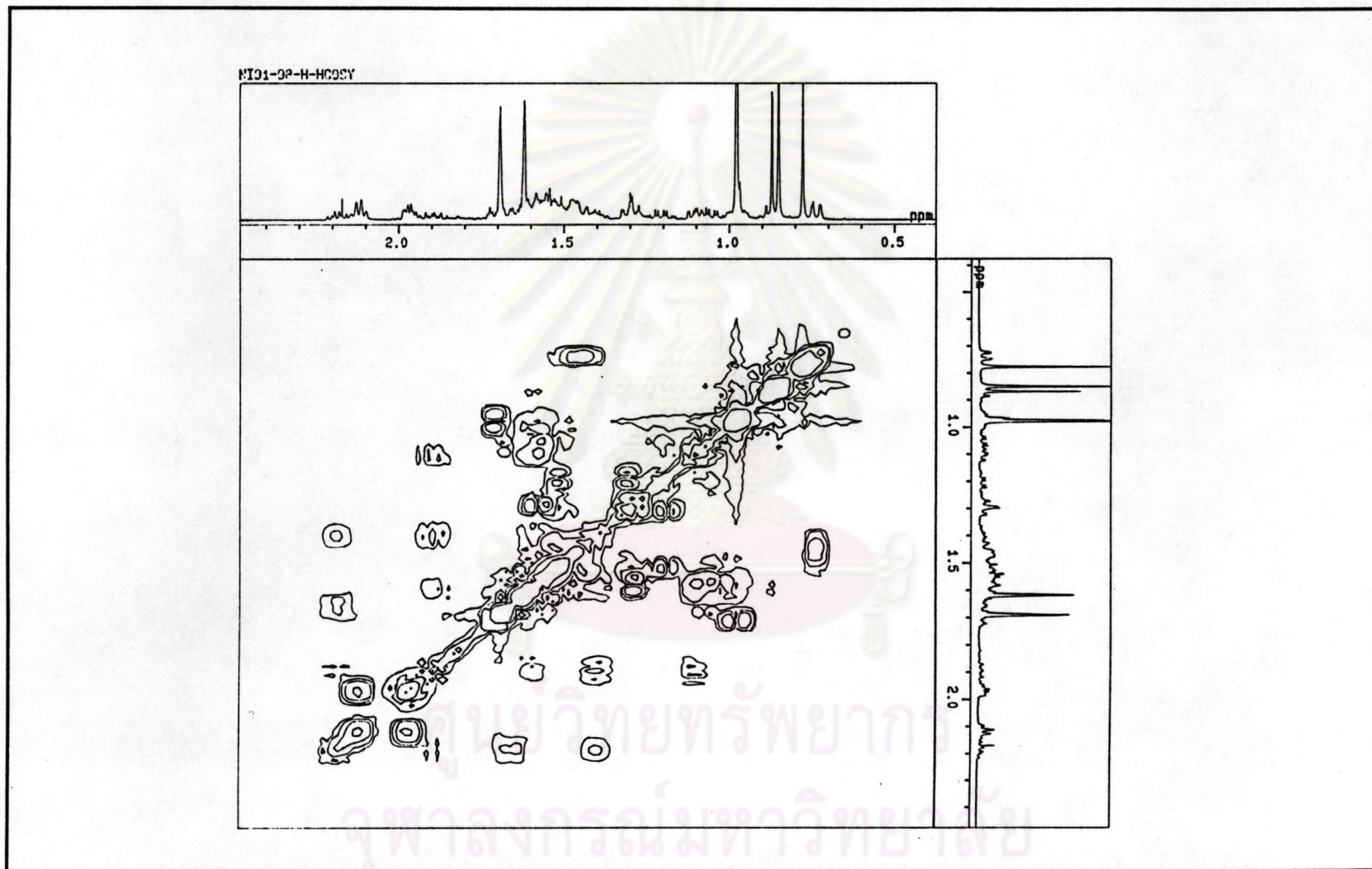


Figure 57  $^1\text{H}$ - $^1\text{H}$  COSY of Compound 5



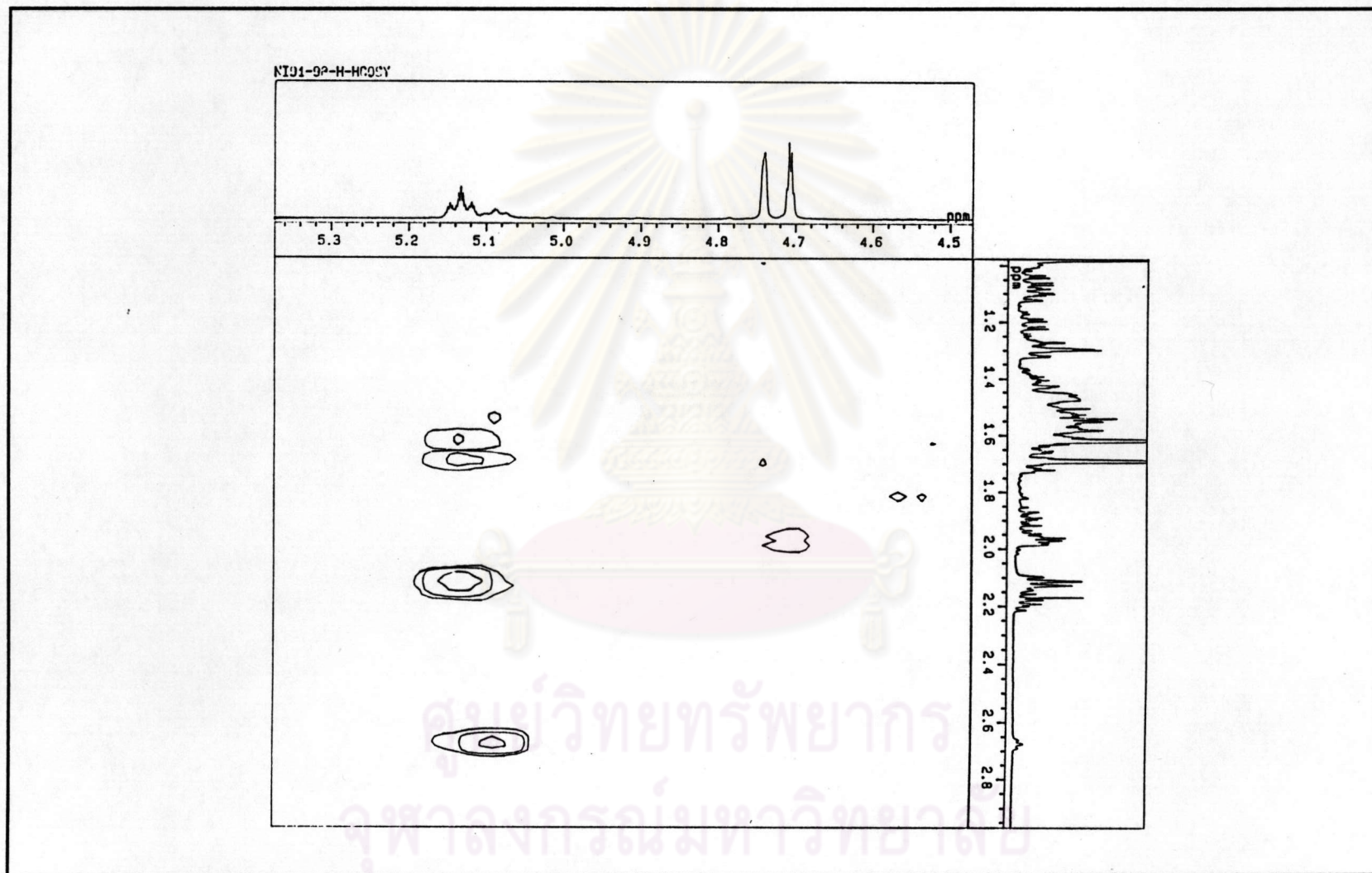


Figure 58  $^1\text{H}$ - $^1\text{H}$  COSY of Compound 5

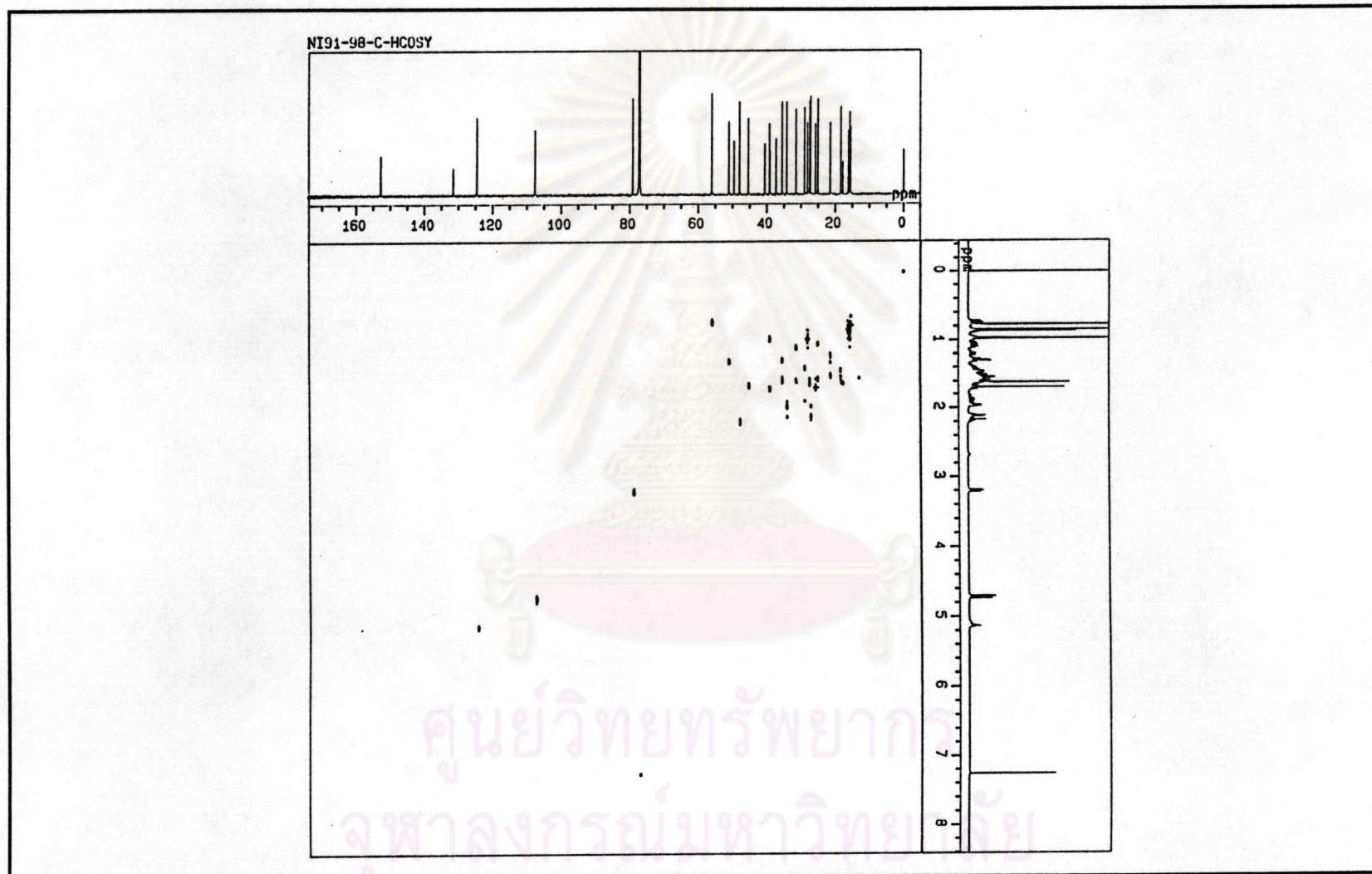


Figure 59  $^{13}\text{C}$ - $^1\text{H}$  correlation of Compound 5



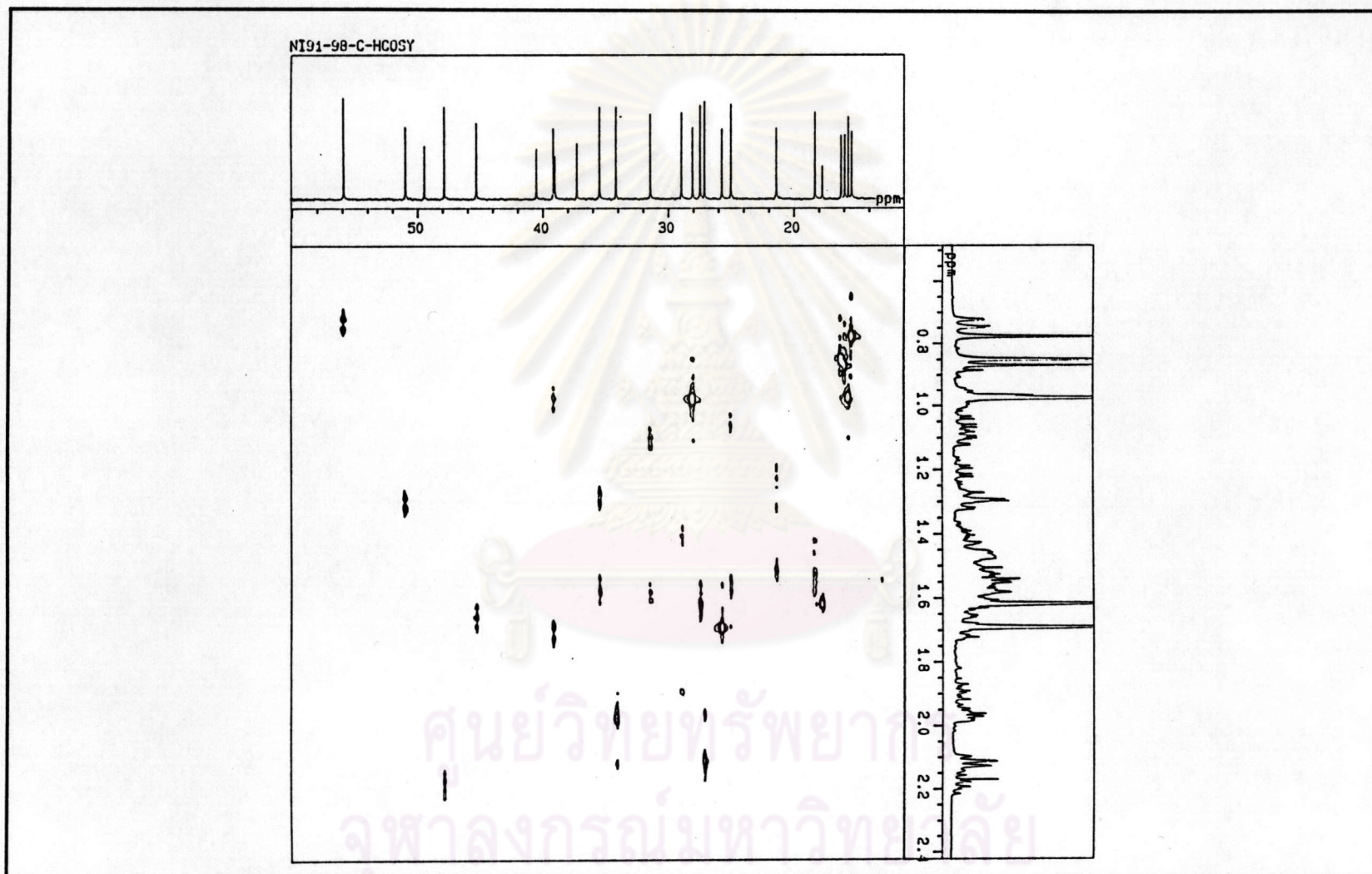


Figure 60  $^{13}\text{C}$ - $^1\text{H}$  correlation of Compound 5





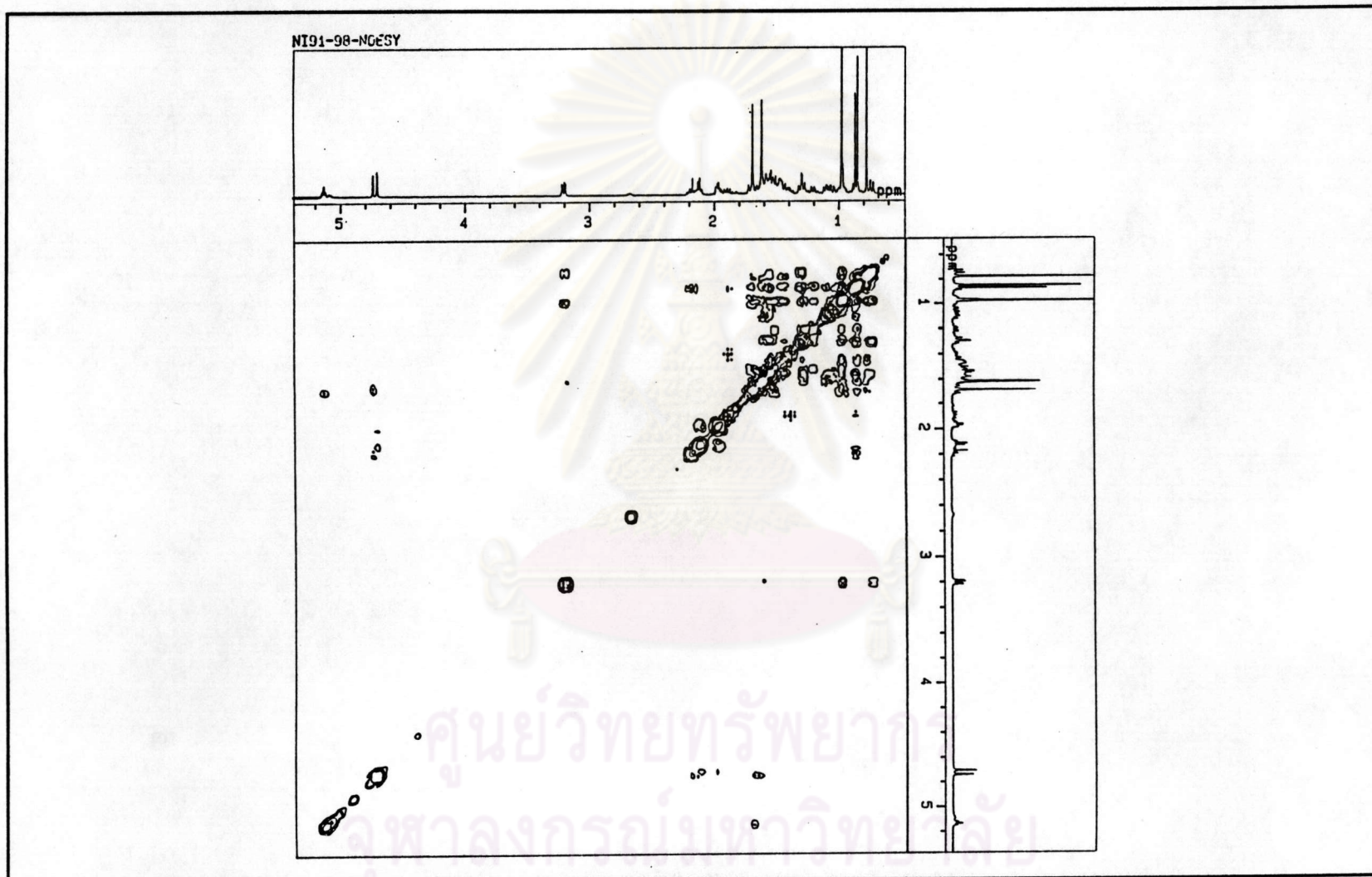


Figure 62  $^1\text{H}$ - $^1\text{H}$  NOESY of Compound 5

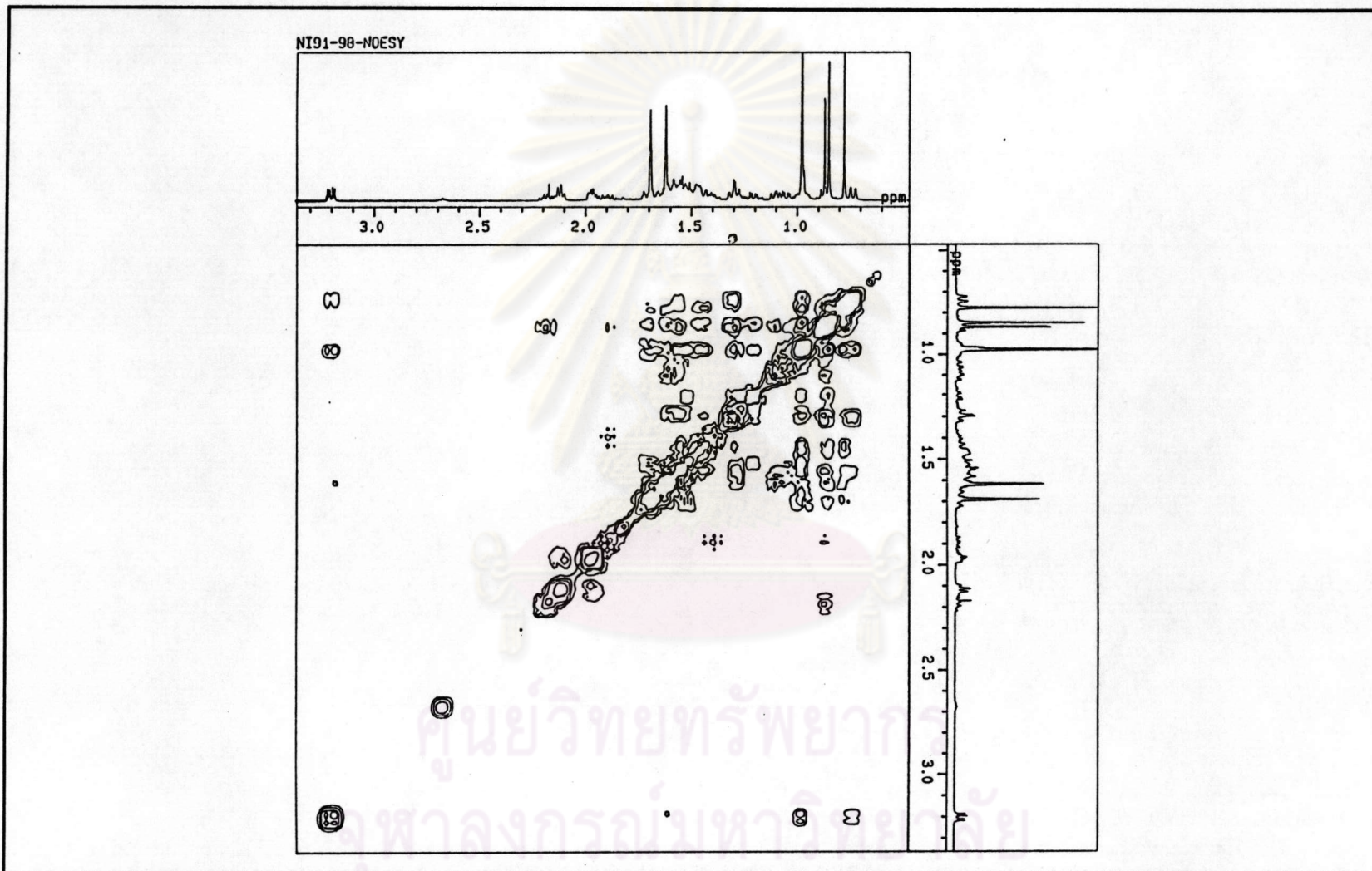


Figure 63  $^1\text{H}$ - $^1\text{H}$  NOESY of Compound 5



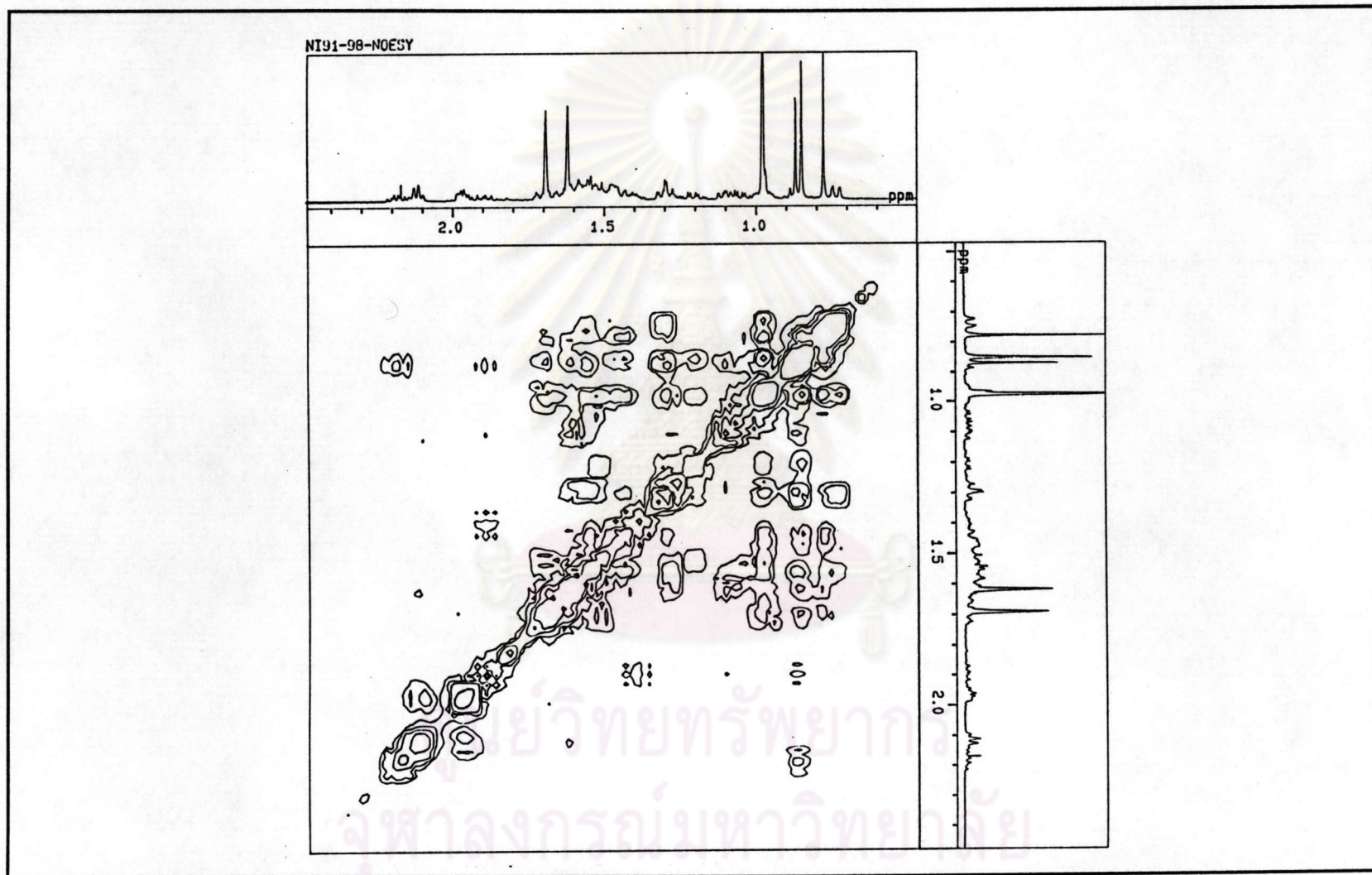


Figure 64  $^1\text{H}$ - $^1\text{H}$  NOESY of Compound 5

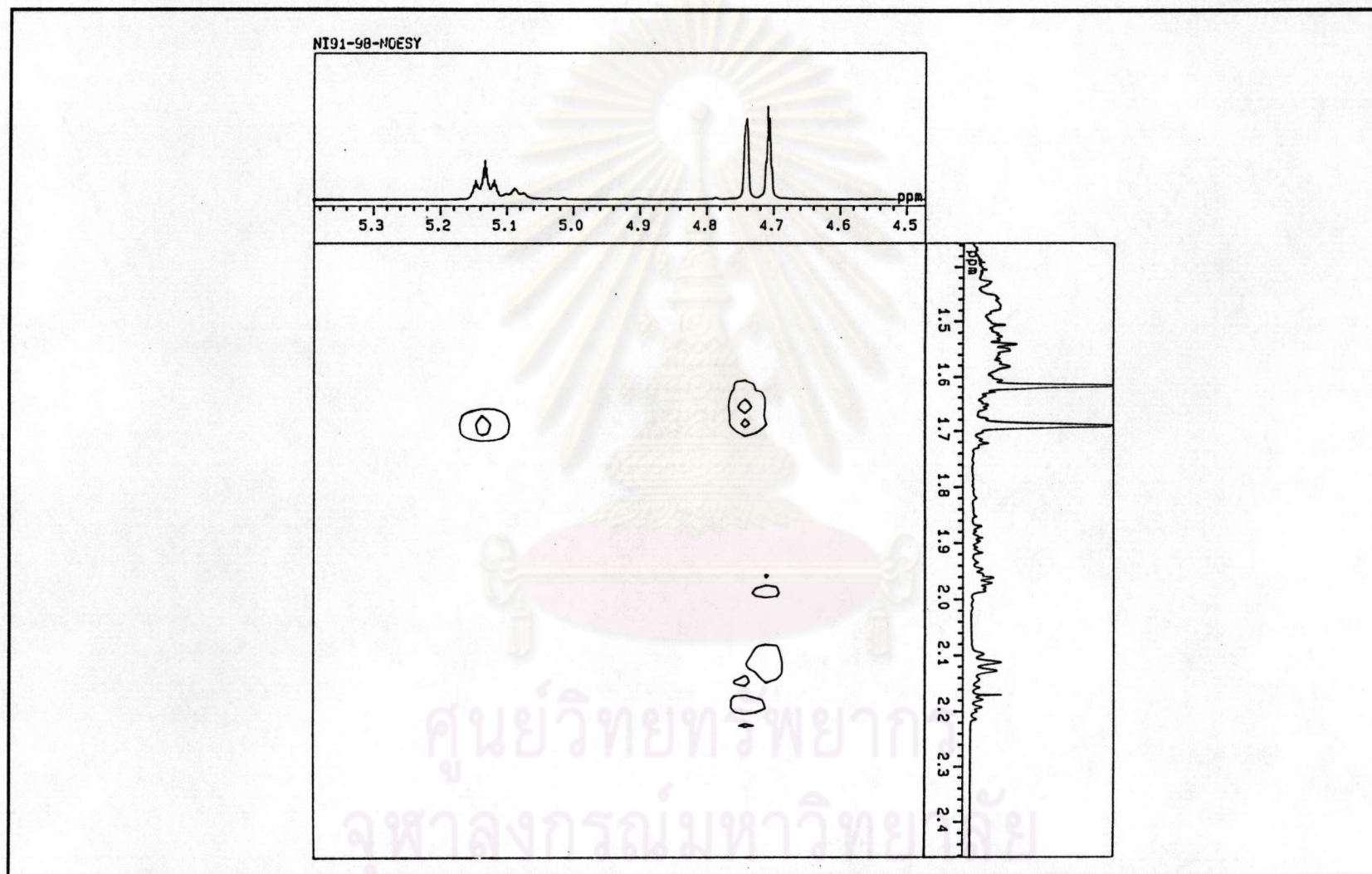


Figure 65  $^1\text{H}$ - $^1\text{H}$  NOESY of Compound 5



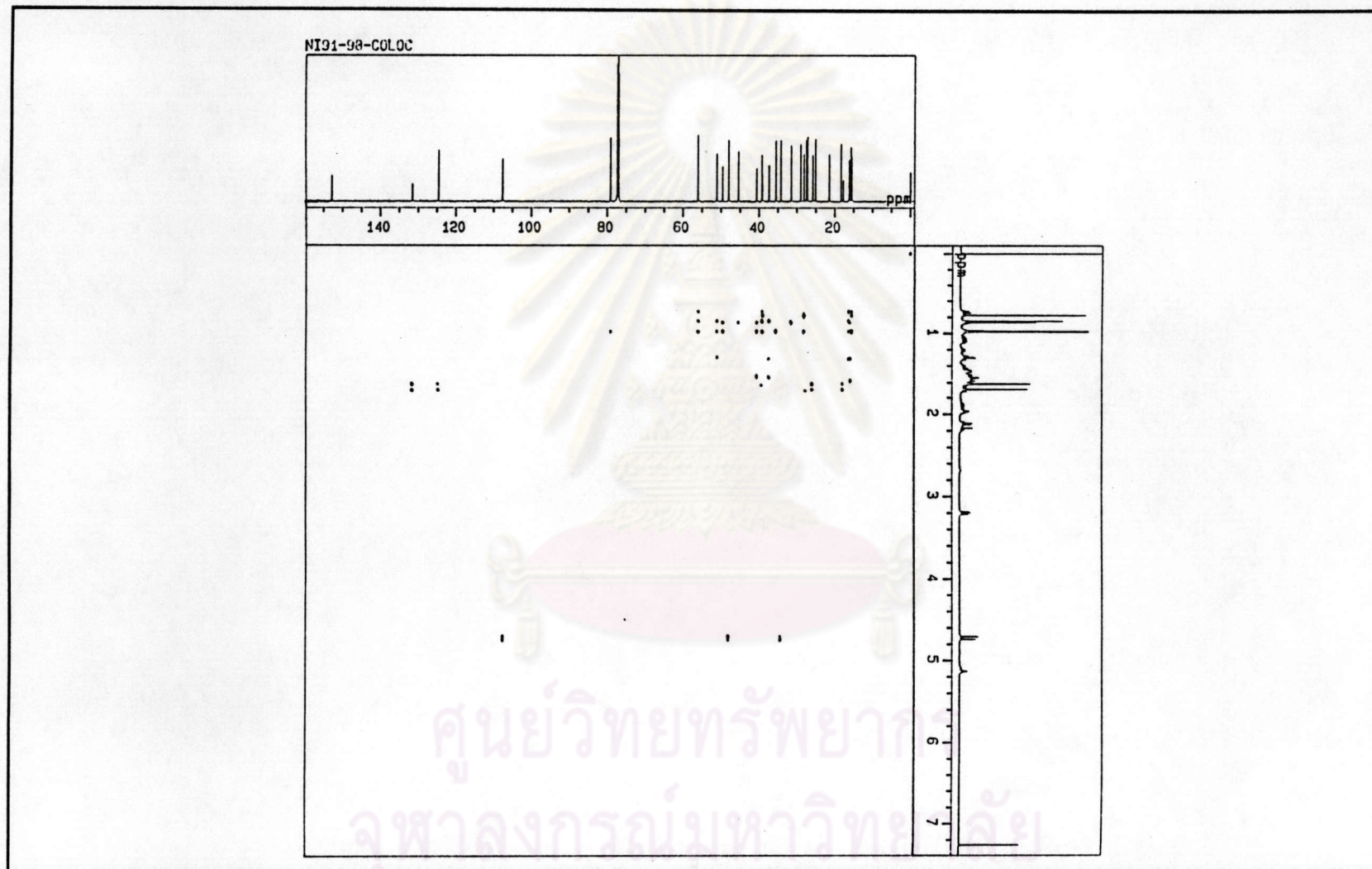


Figure 66  $^{13}\text{C}$ - $^1\text{H}$  COLOC of Compound 5

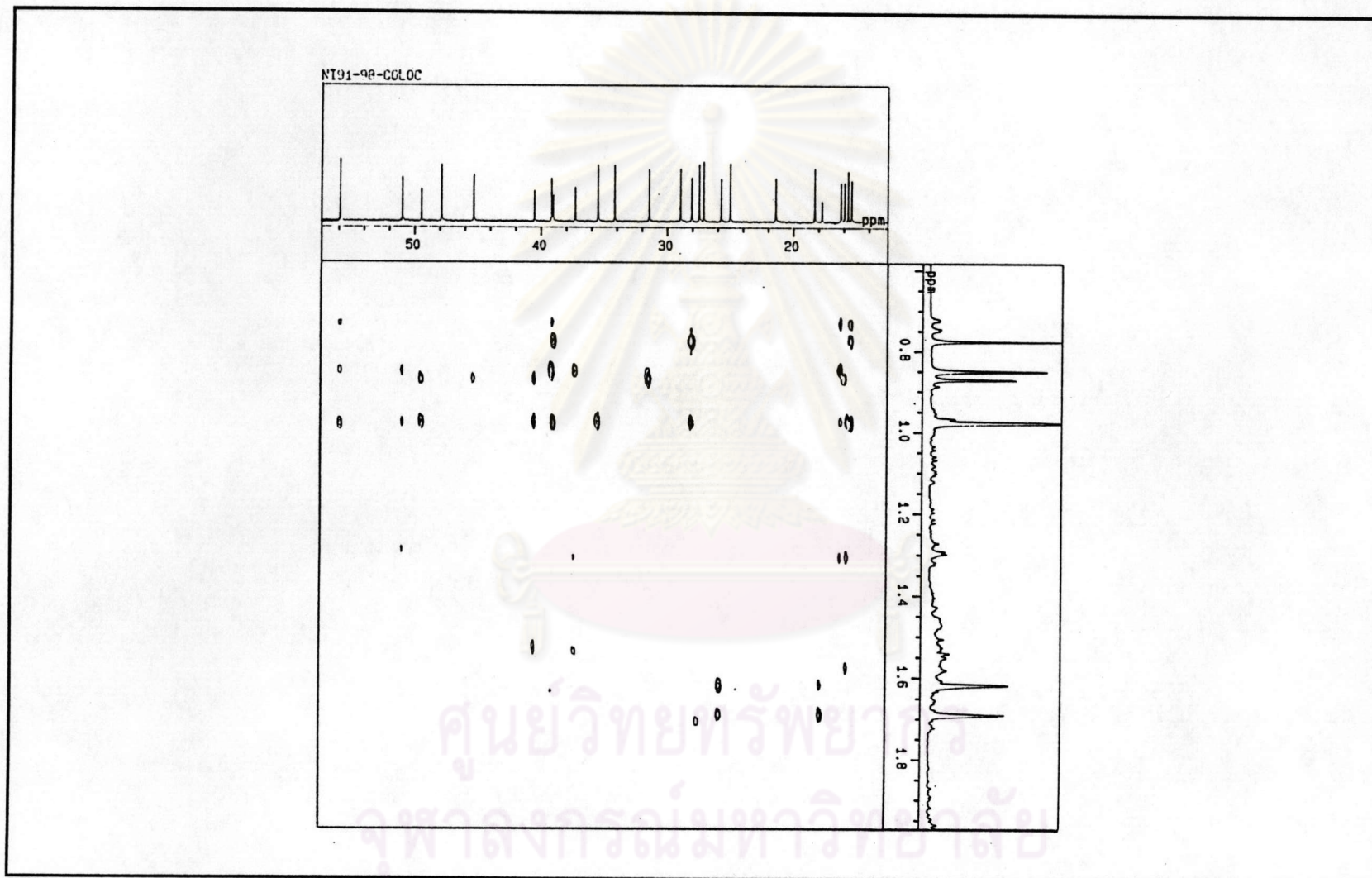


Figure 67  $^{13}\text{C}$ - $^1\text{H}$  COLOC of Compound 5



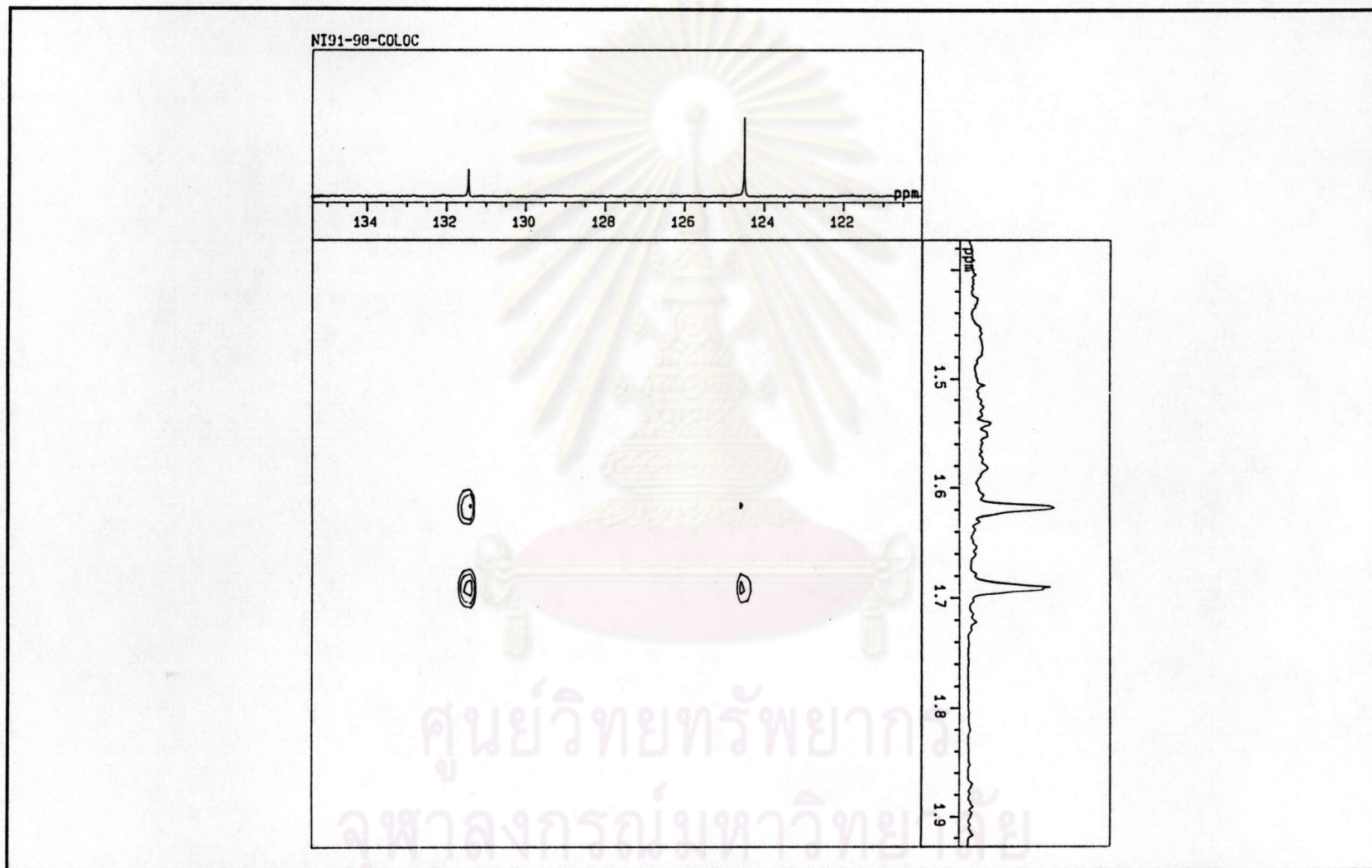


Figure 68  $^{13}\text{C}$ - $^1\text{H}$  COLOC of Compound 5

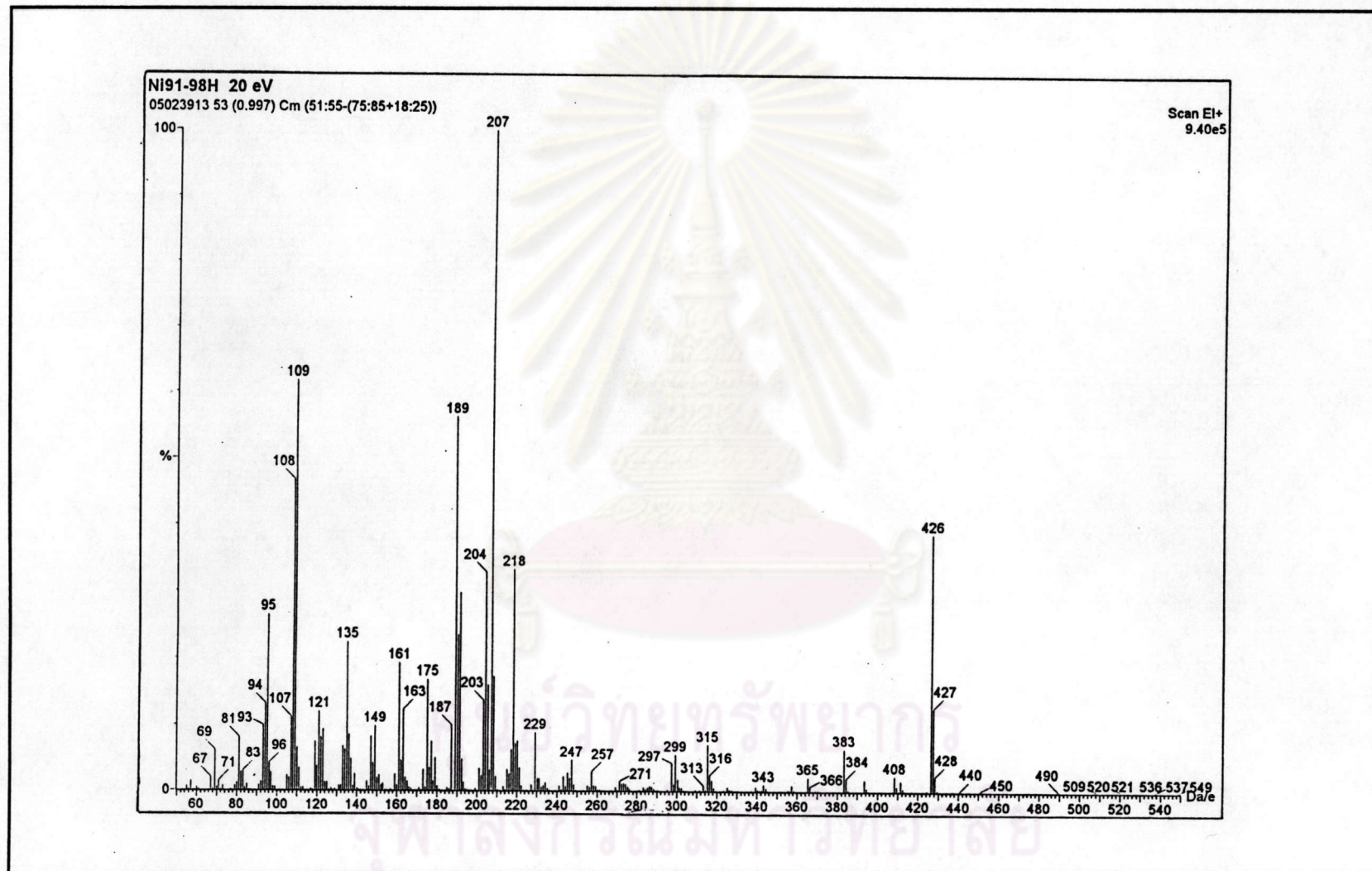


Figure 69 The mass spectrum of Compound 5



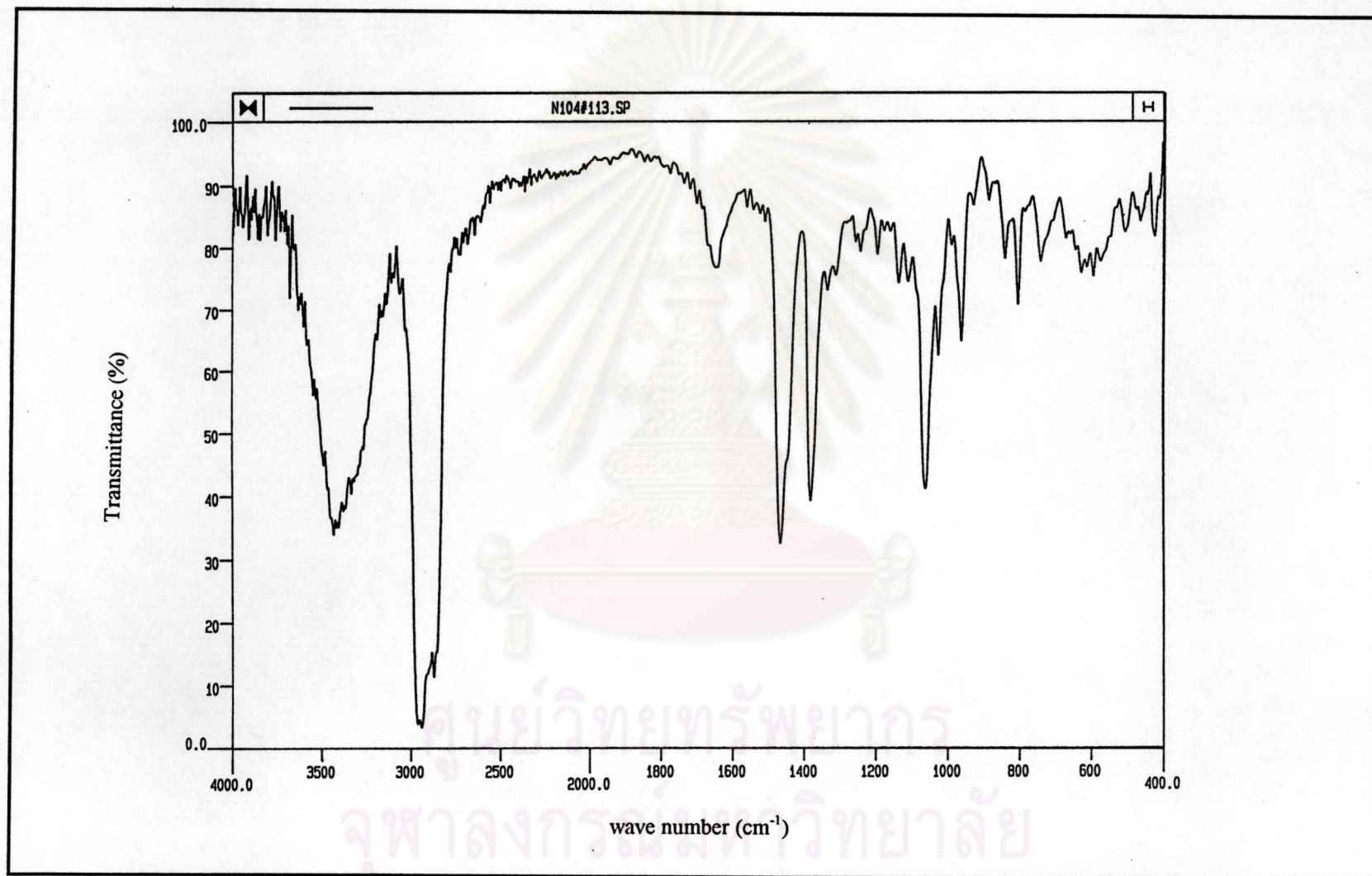


Figure 70 The IR spectrum of Compound 6

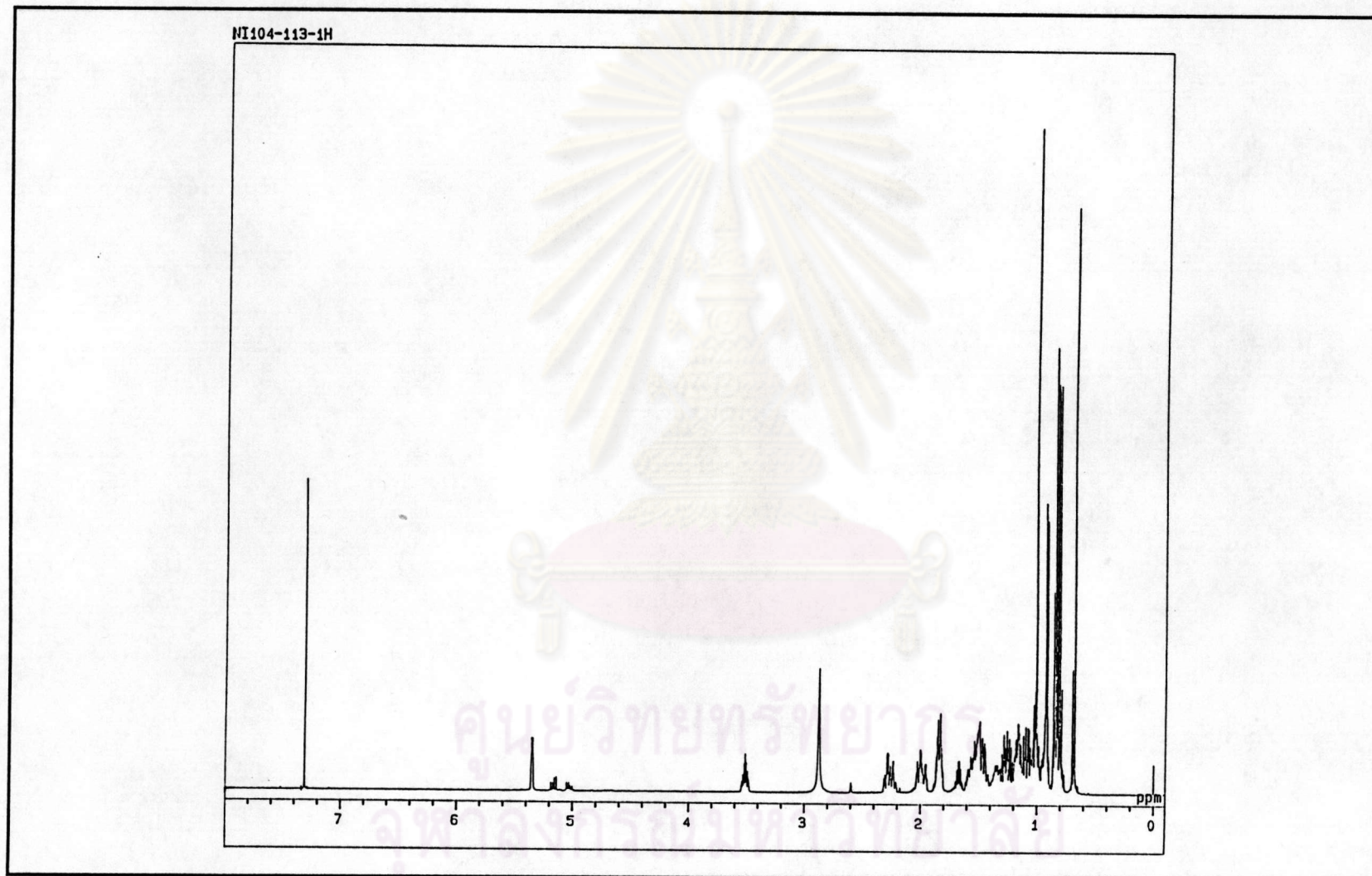


Figure 71 The  $^1\text{H-NMR}$  spectrum of Compound 6



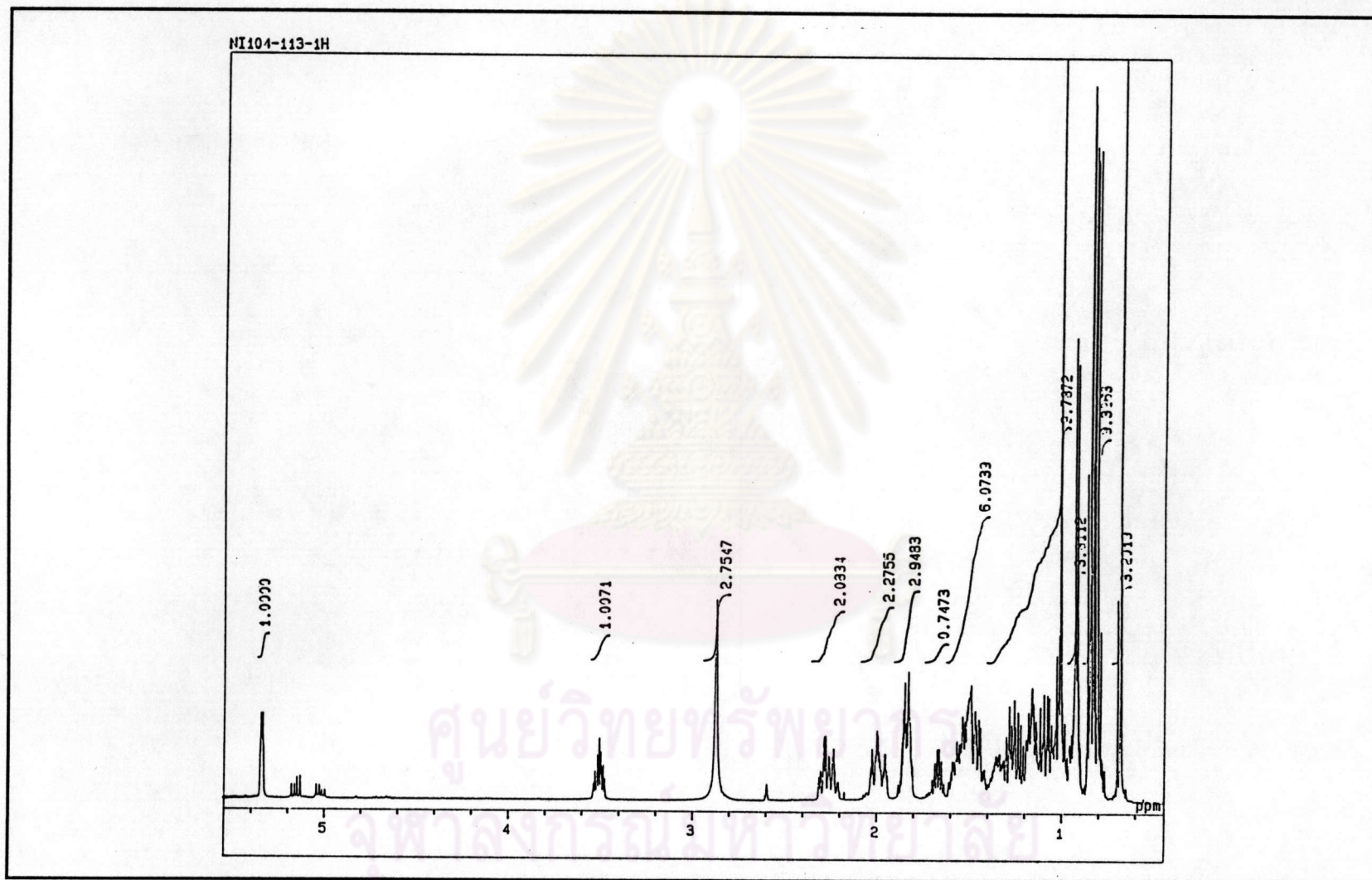
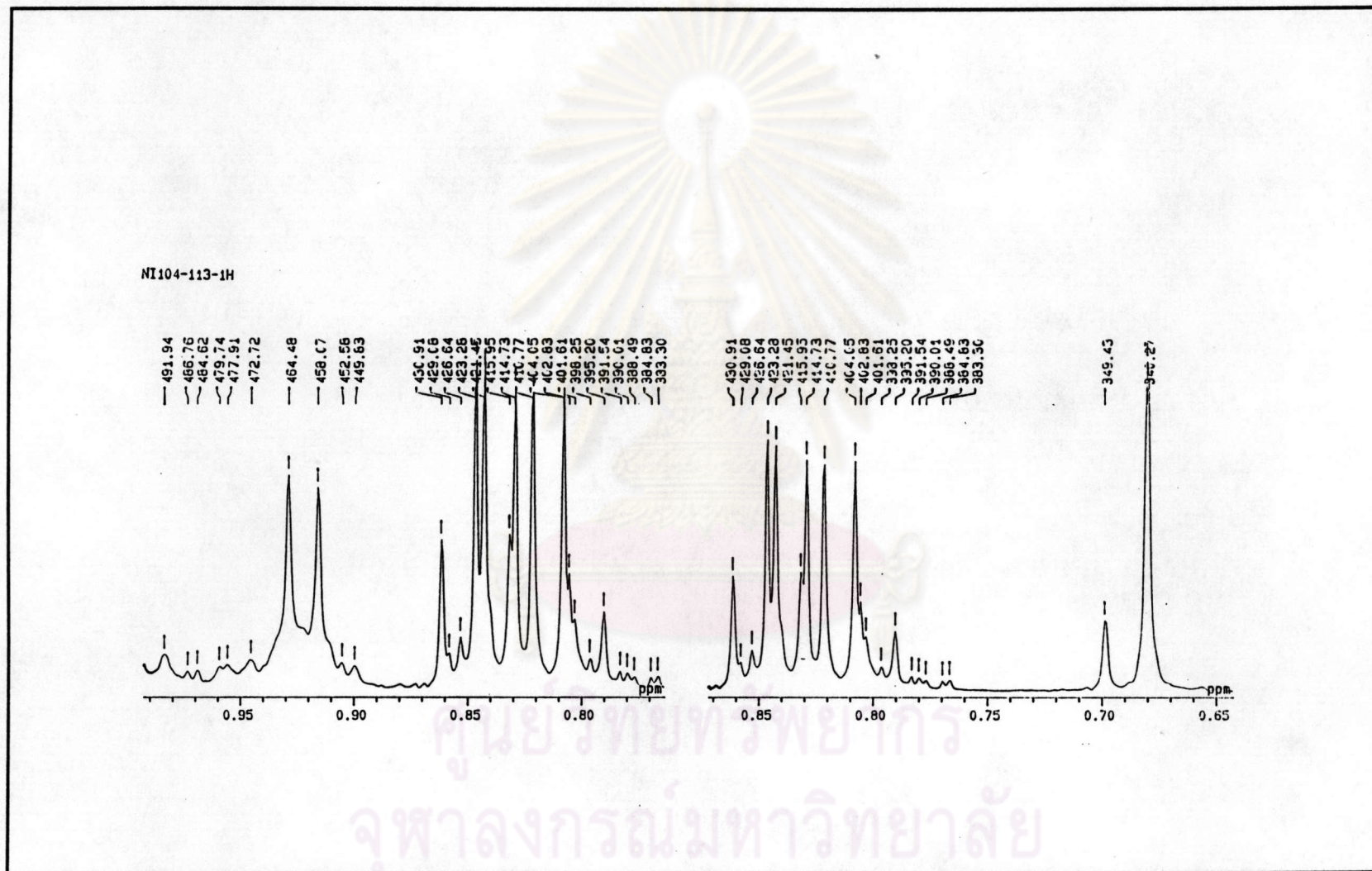


Figure 72 The <sup>1</sup>H-NMR spectrum of Compound 6







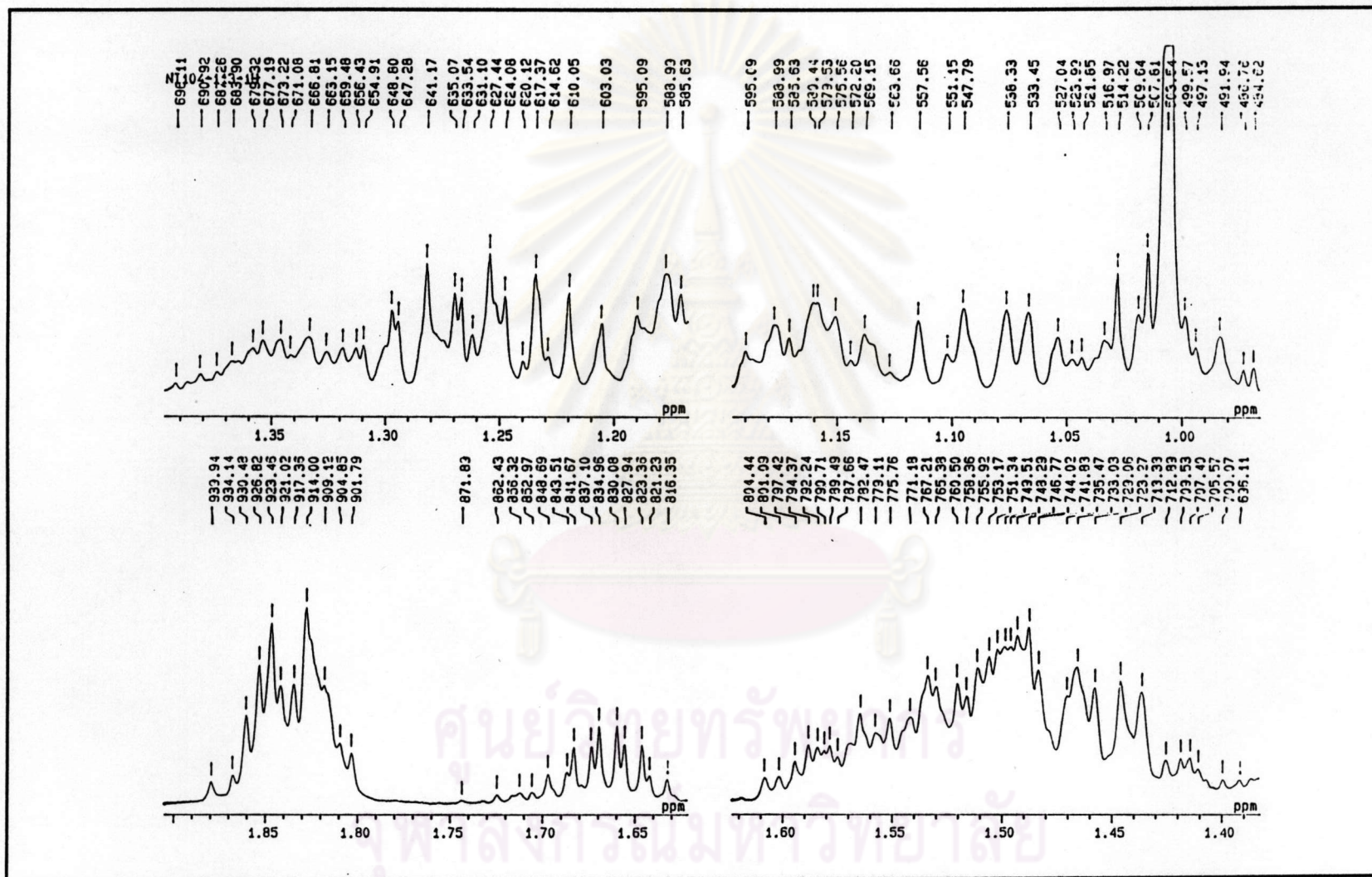


Figure 75 The  $^1\text{H}$ -NMR spectrum of Compound 6



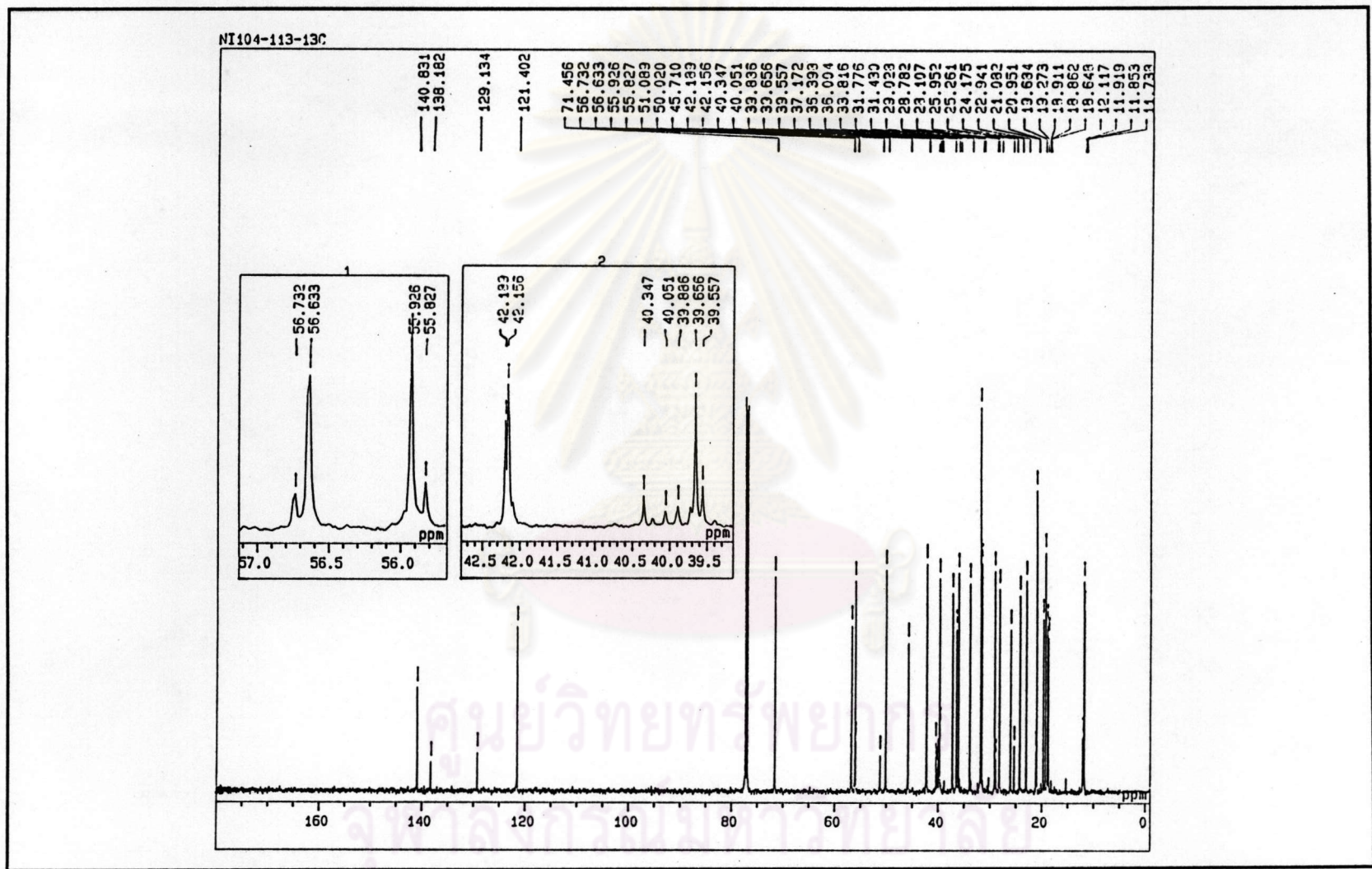


Figure 76 The  $^{13}\text{C}$ -NMR spectrum of Compound 6

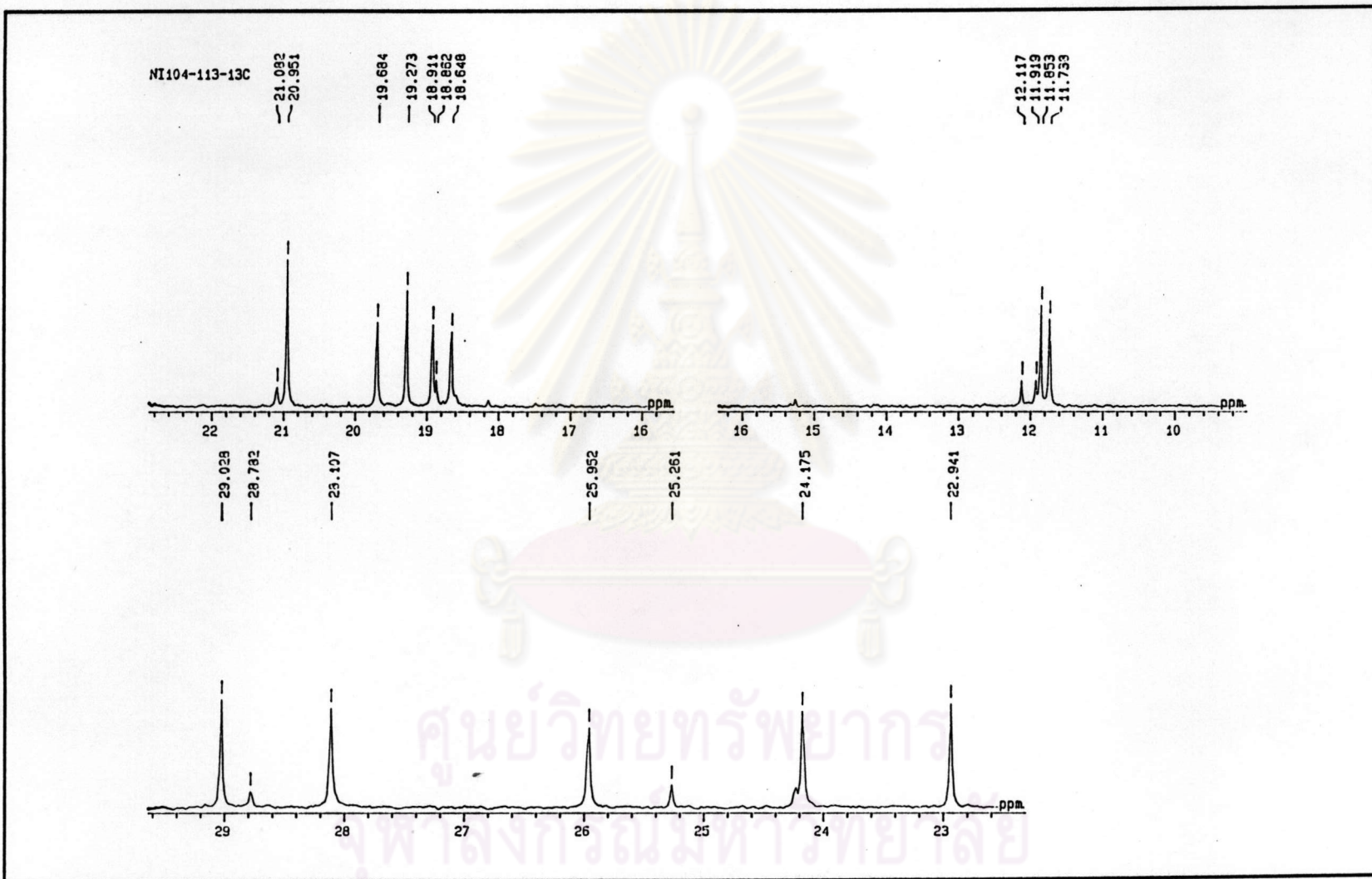


Figure 77 The  $^{13}\text{C}$ -NMR spectrum of Compound 6



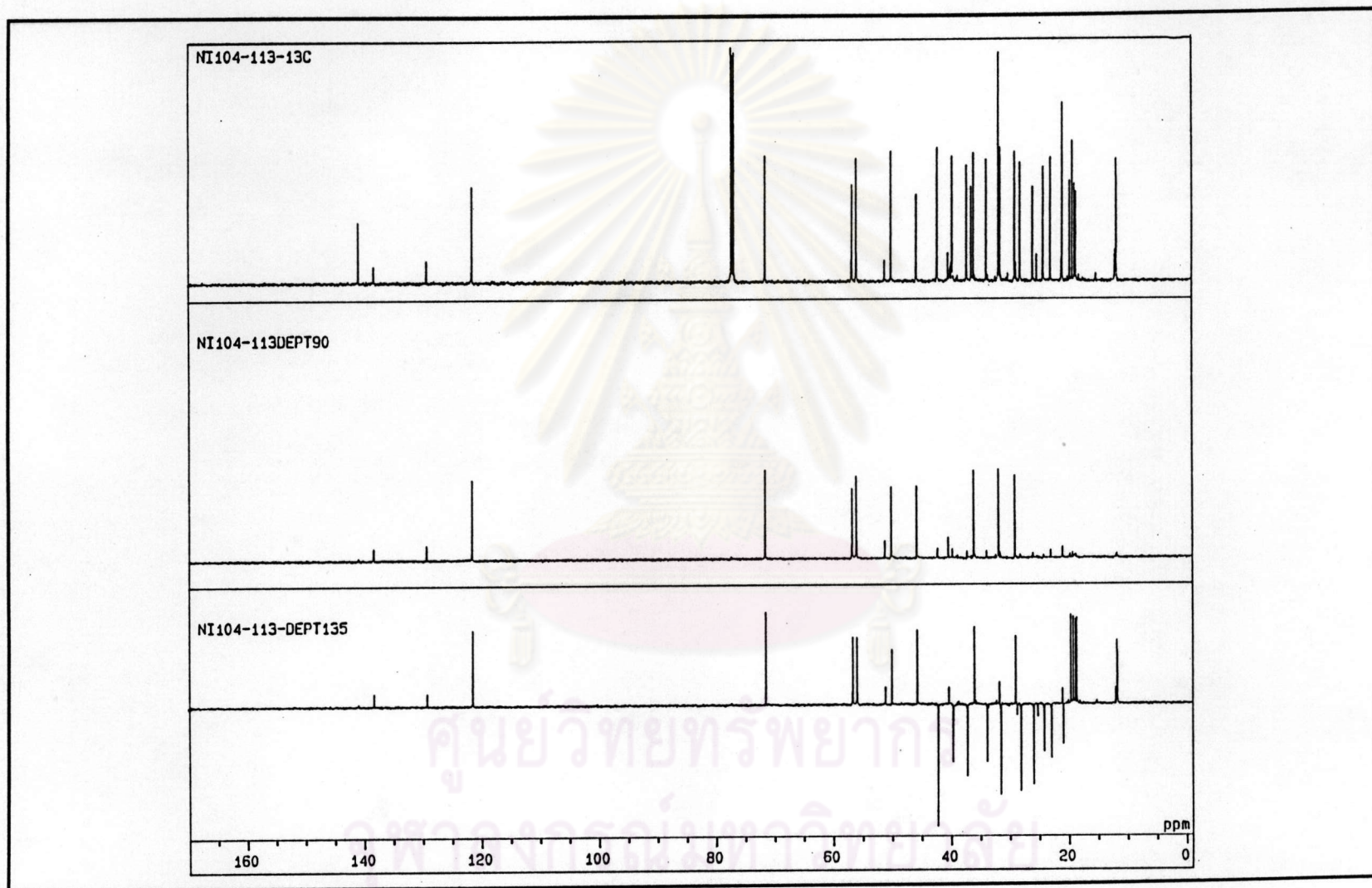


Figure 78 The DEPT 90 and DEPT 135  $^{13}\text{C}$ -NMR spectrum of Compound 6

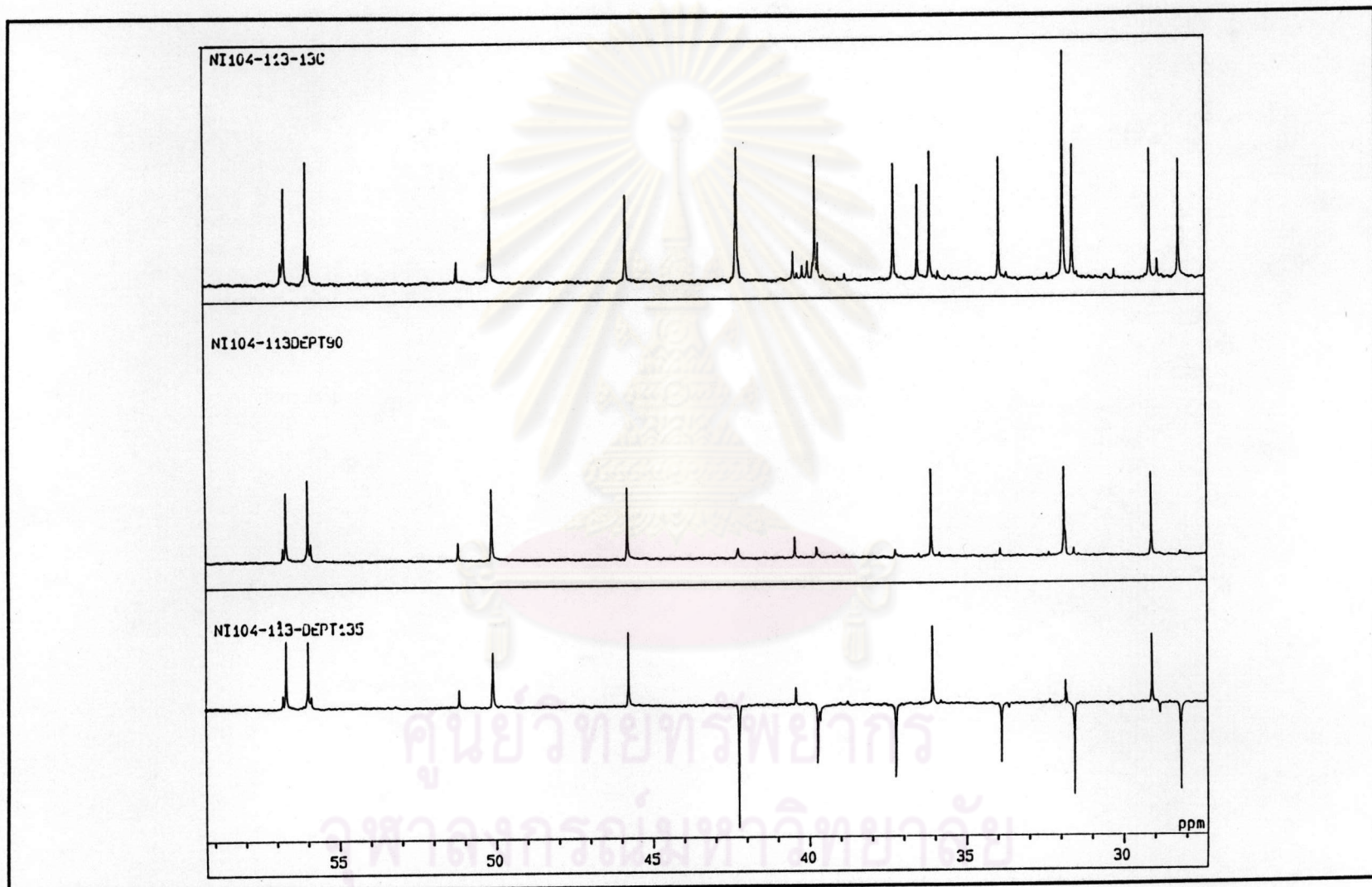


Figure 79 The DEPT 90 and DEPT 135  $^{13}\text{C}$ -NMR spectrum of Compound 6



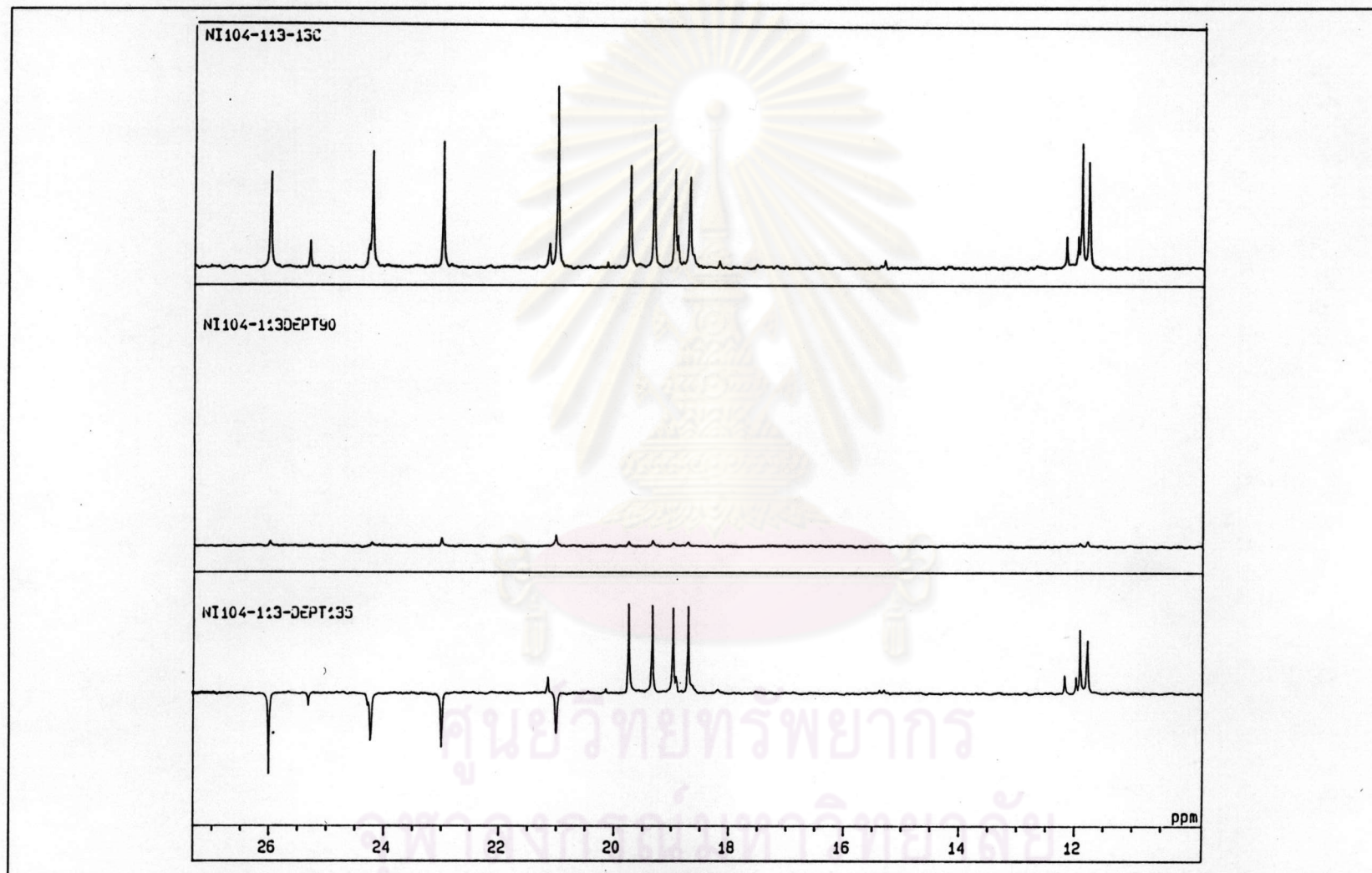


Figure 80 The DEPT 90 and DEPT 135  $^{13}\text{C}$ -NMR spectrum of Compound 6

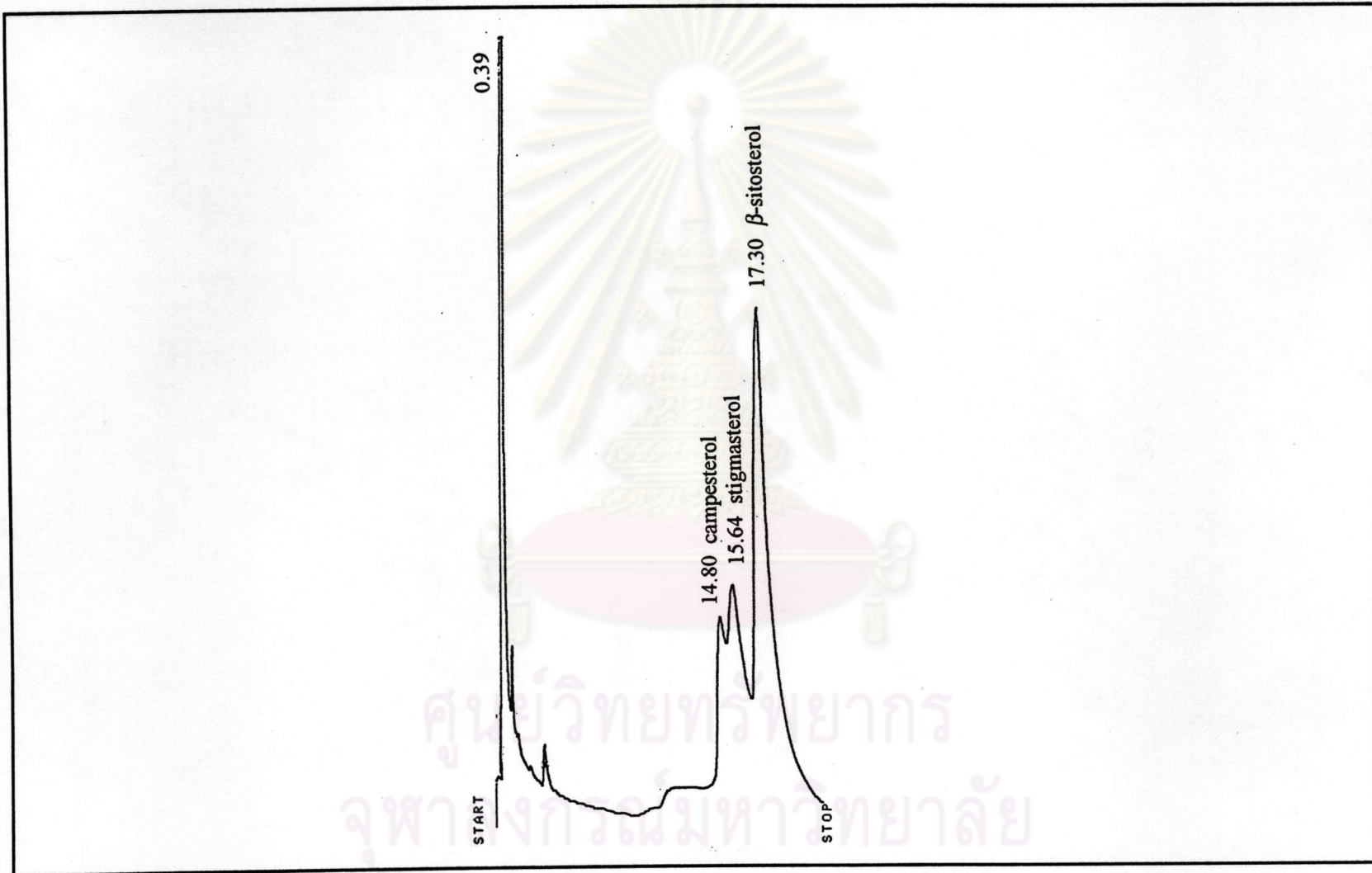


Figure 81 The Gas-Liquid chromatogram of three standard steroids.



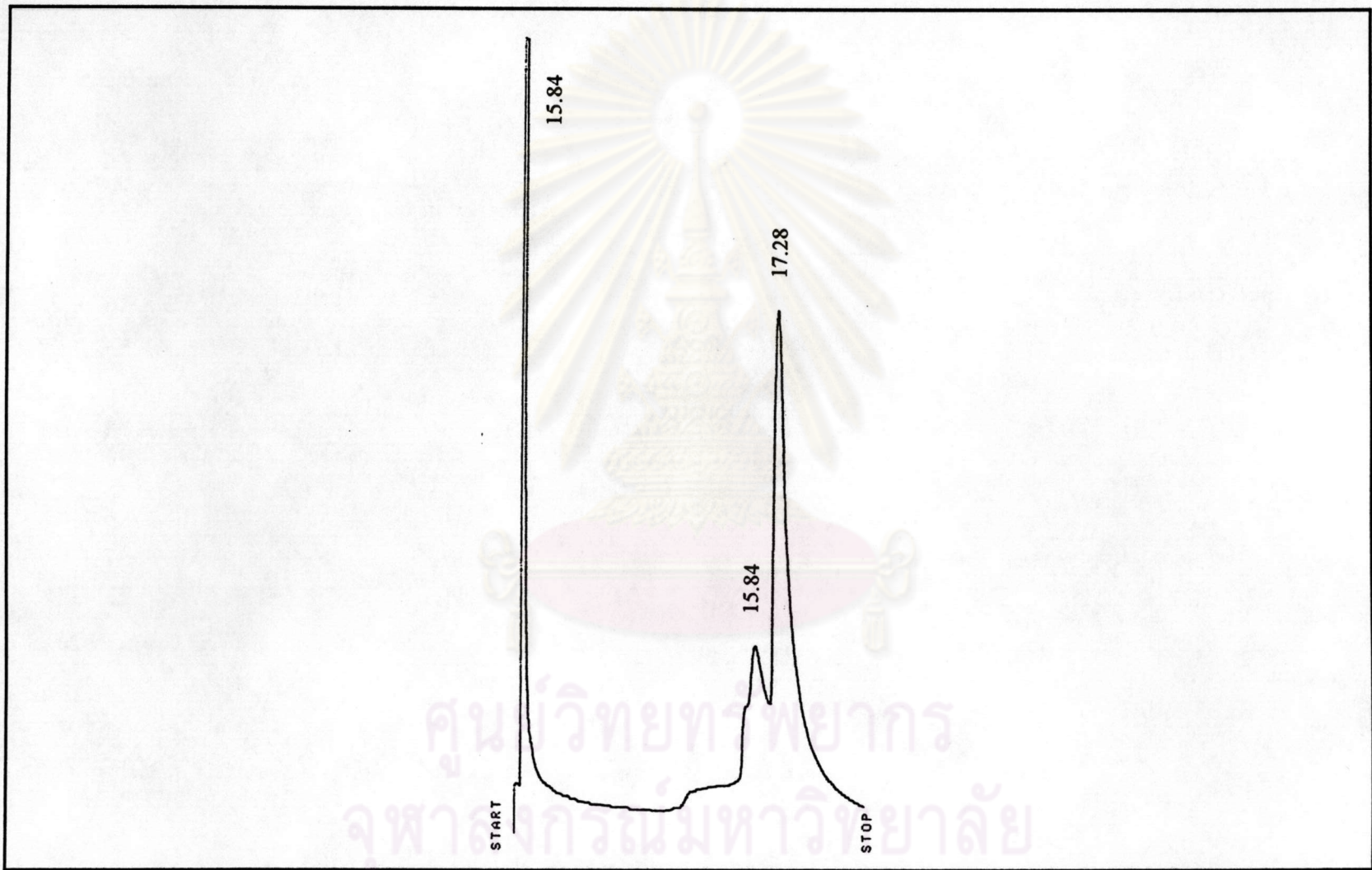


Figure 82 The Gas-Liquid chromatogram of Compound 6

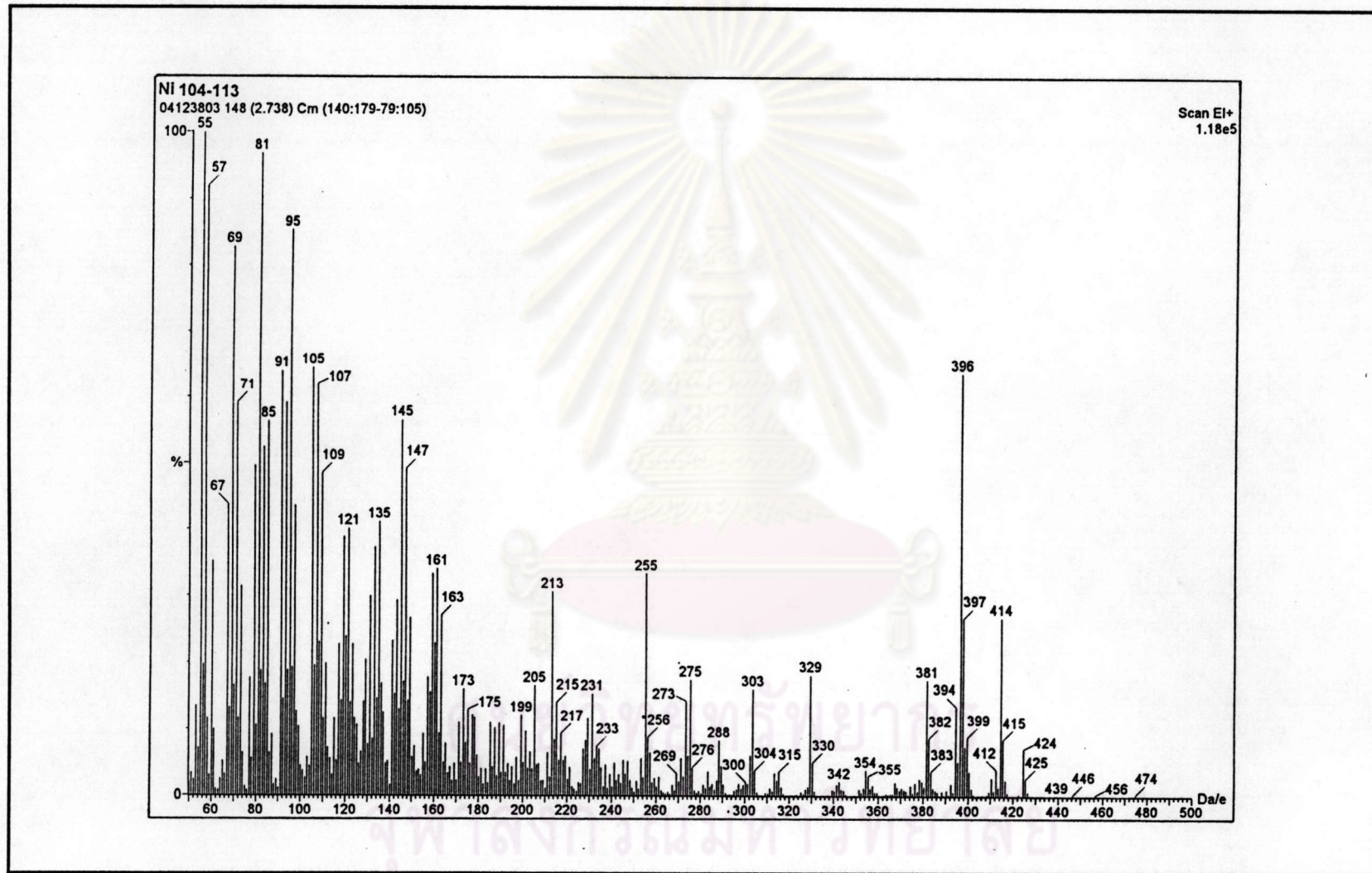


Figure 83 The mass spectrum of Compound 6



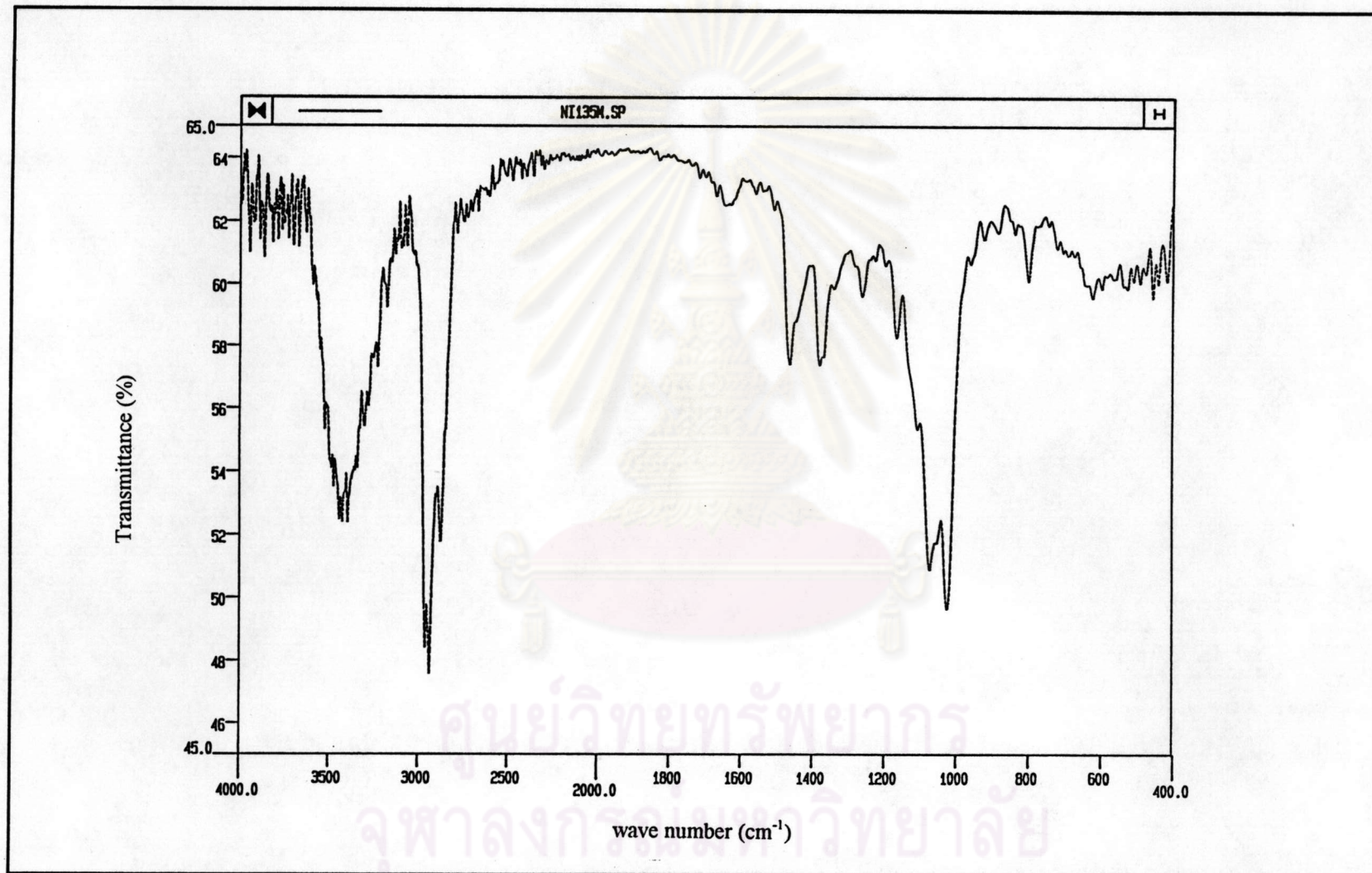


Figure 84 The IR spectrum of Compound 7

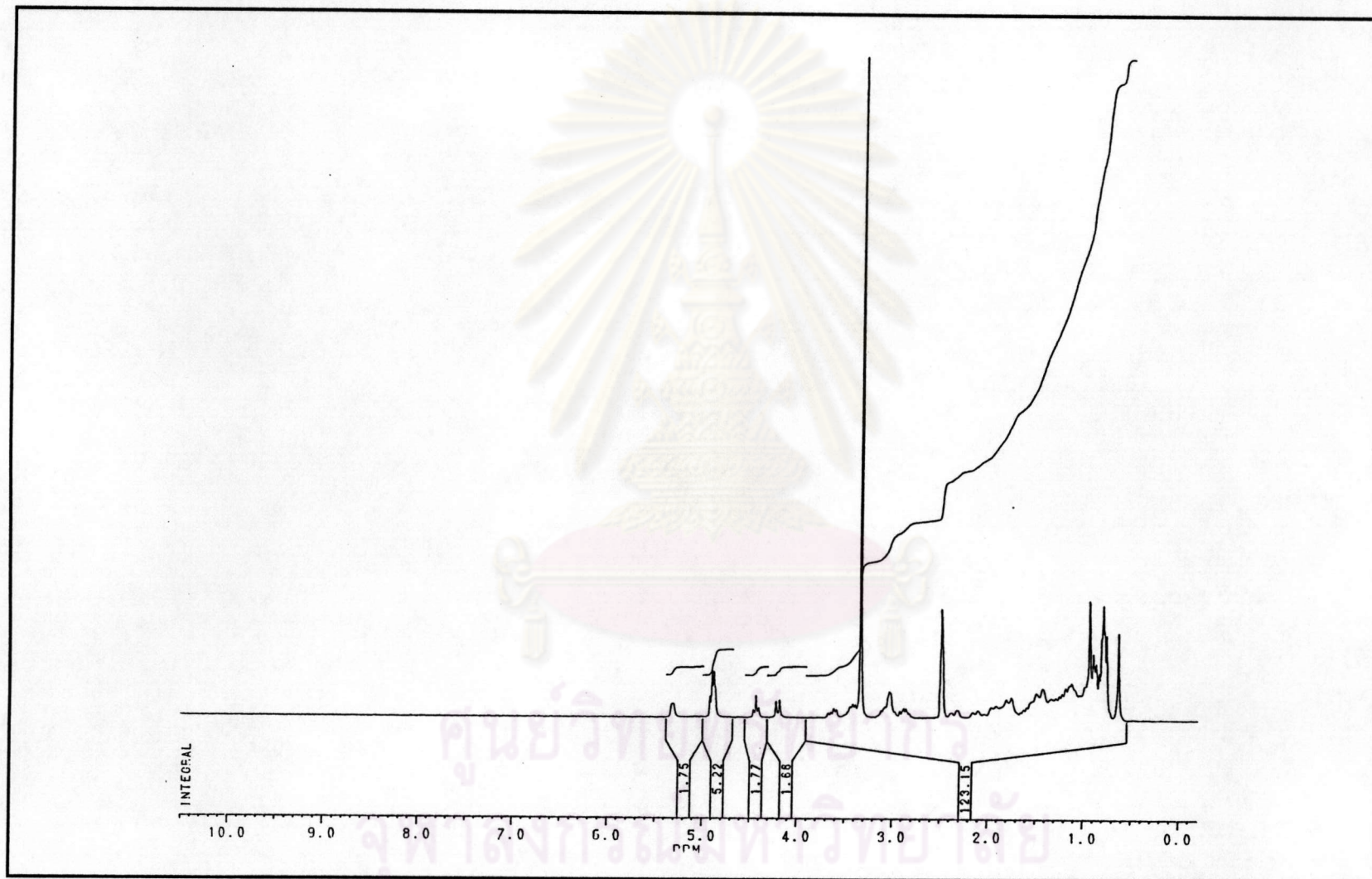


Figure 85 The  $^1\text{H-NMR}$  spectrum of Compound 7



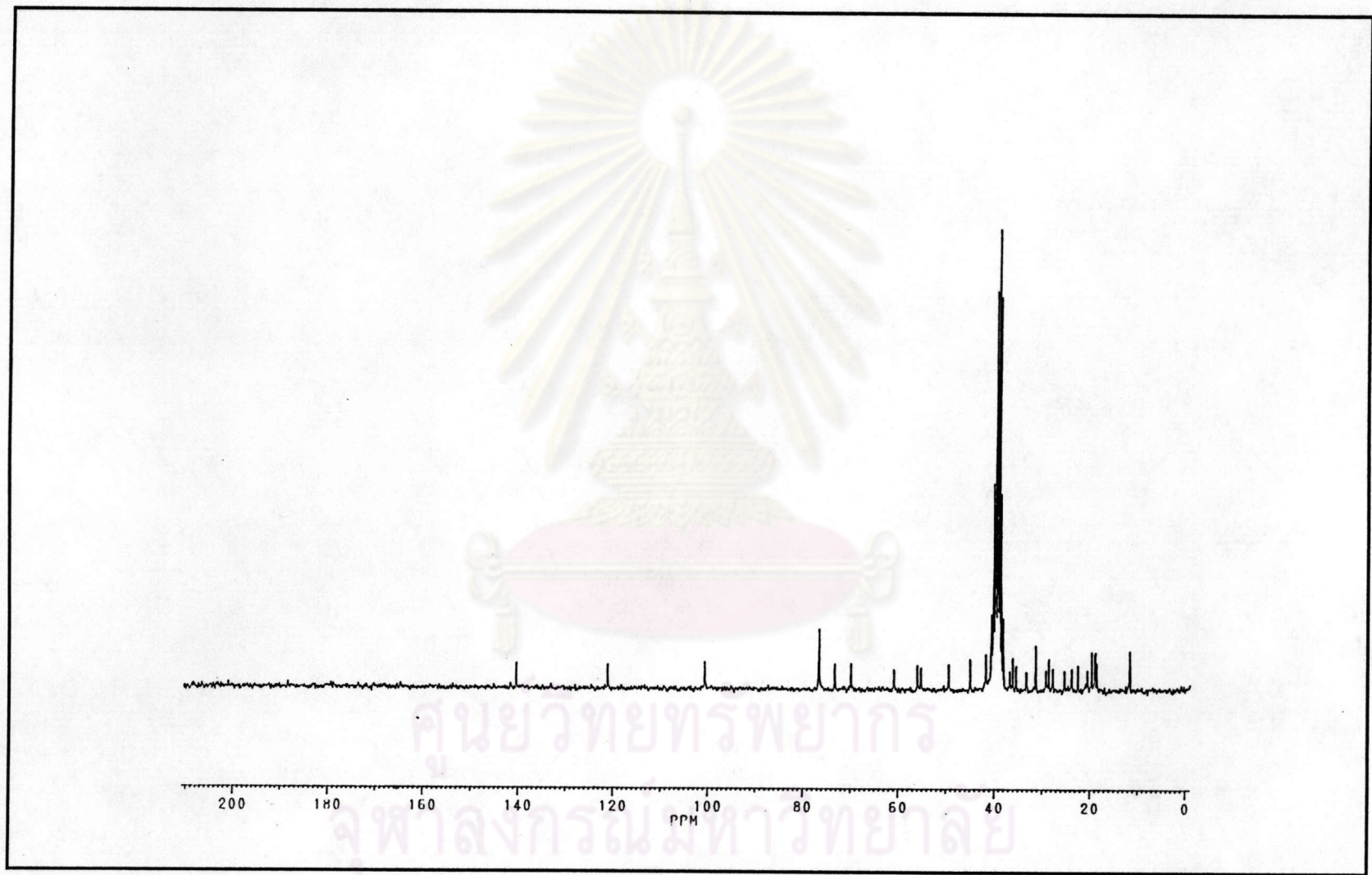


Figure 86 The  $^{13}\text{C}$ -NMR spectrum of Compound 7

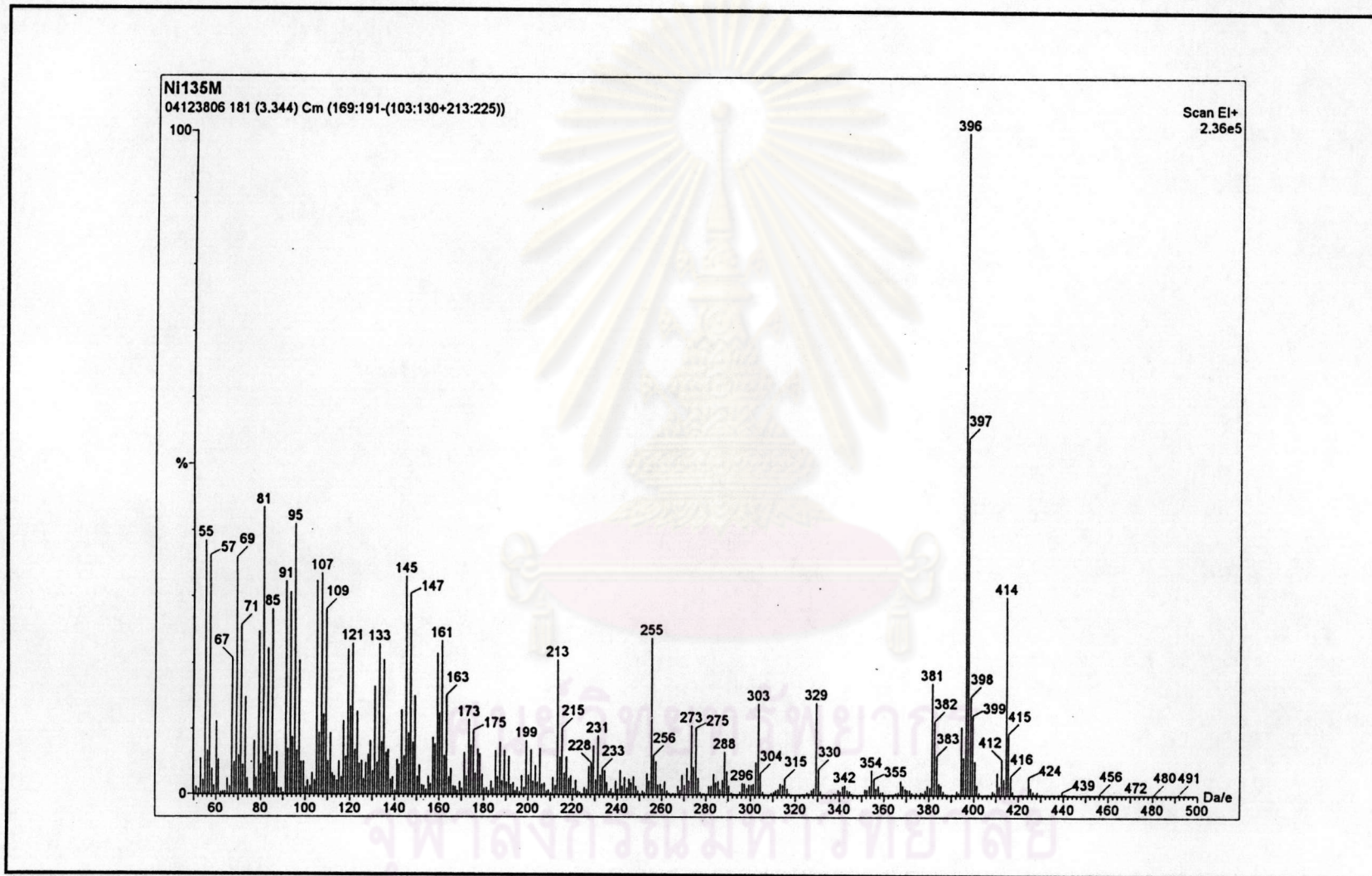


Figure 87 The mass spectrum of Compound 7



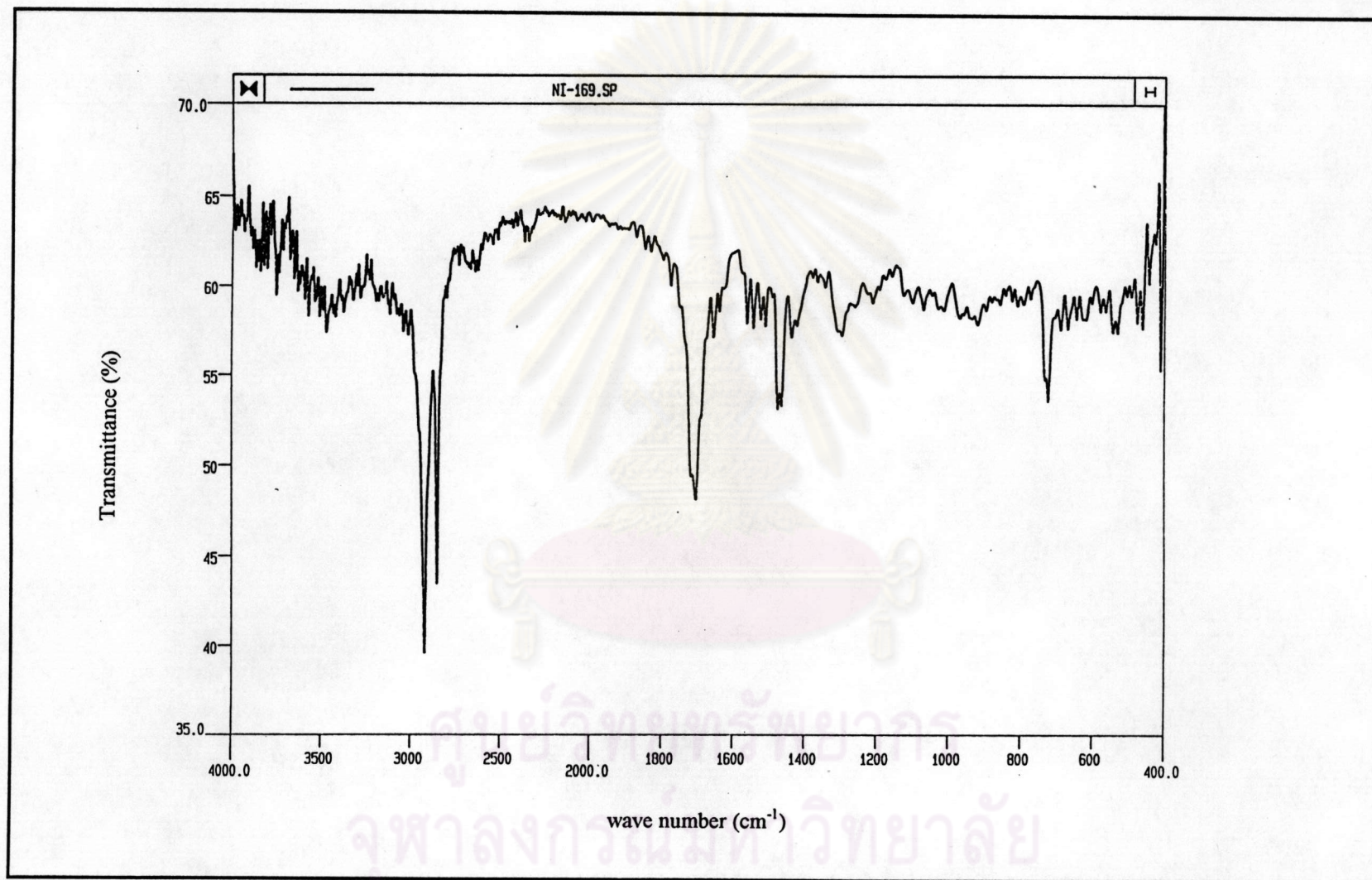


Figure 88 The IR spectrum of Compound 8

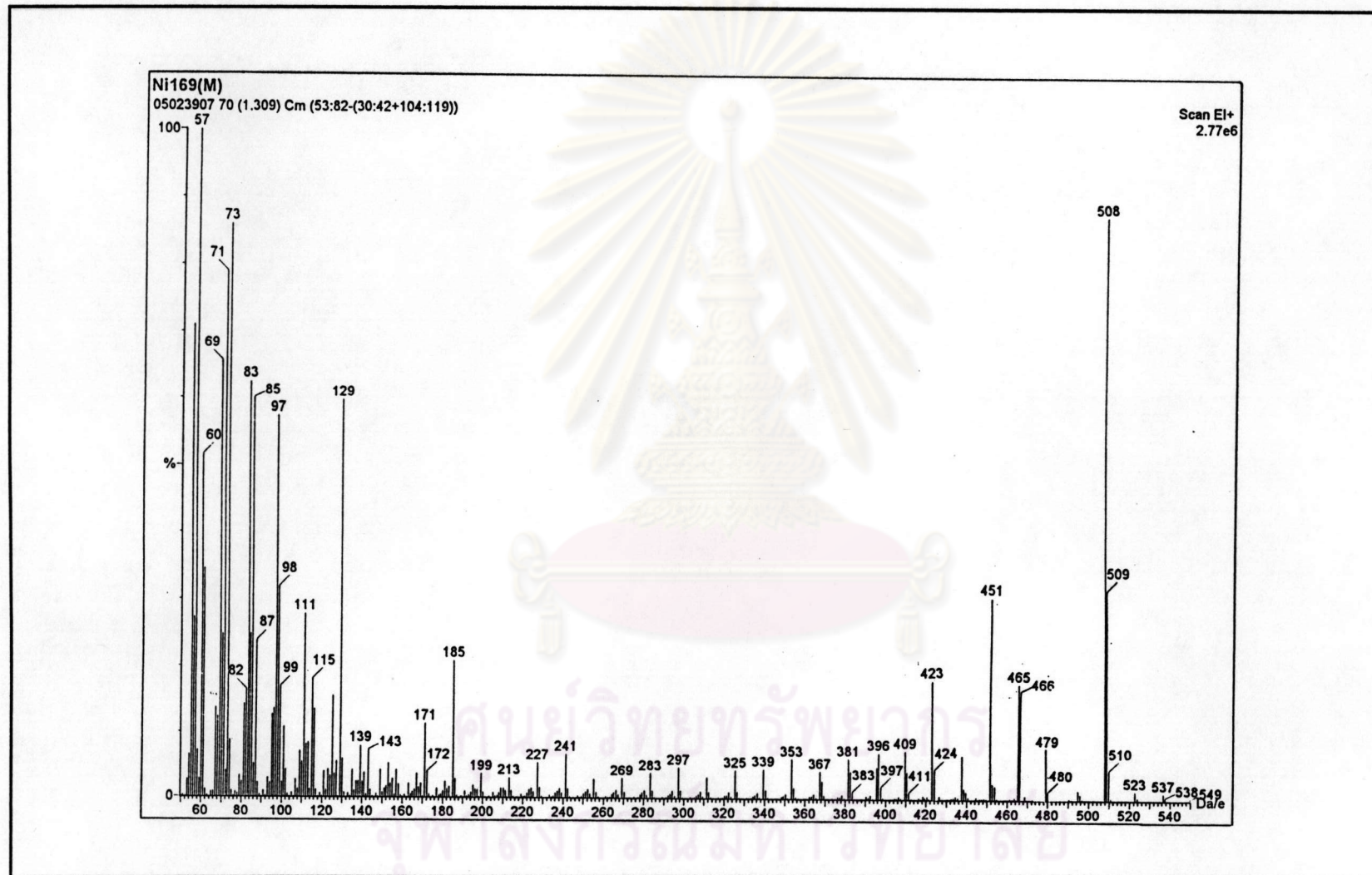


Figure 89 The mass spectrum of Compound 8



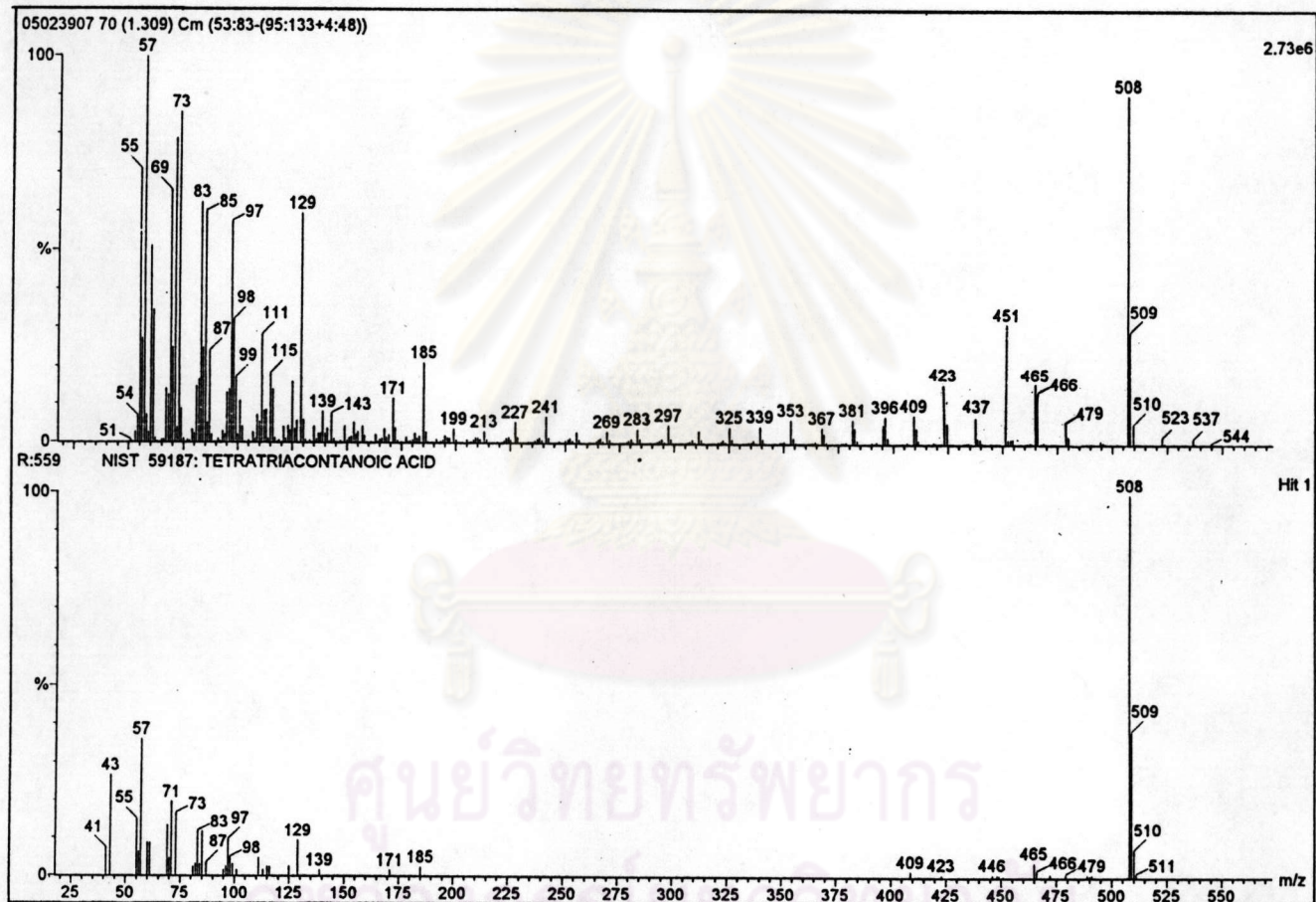
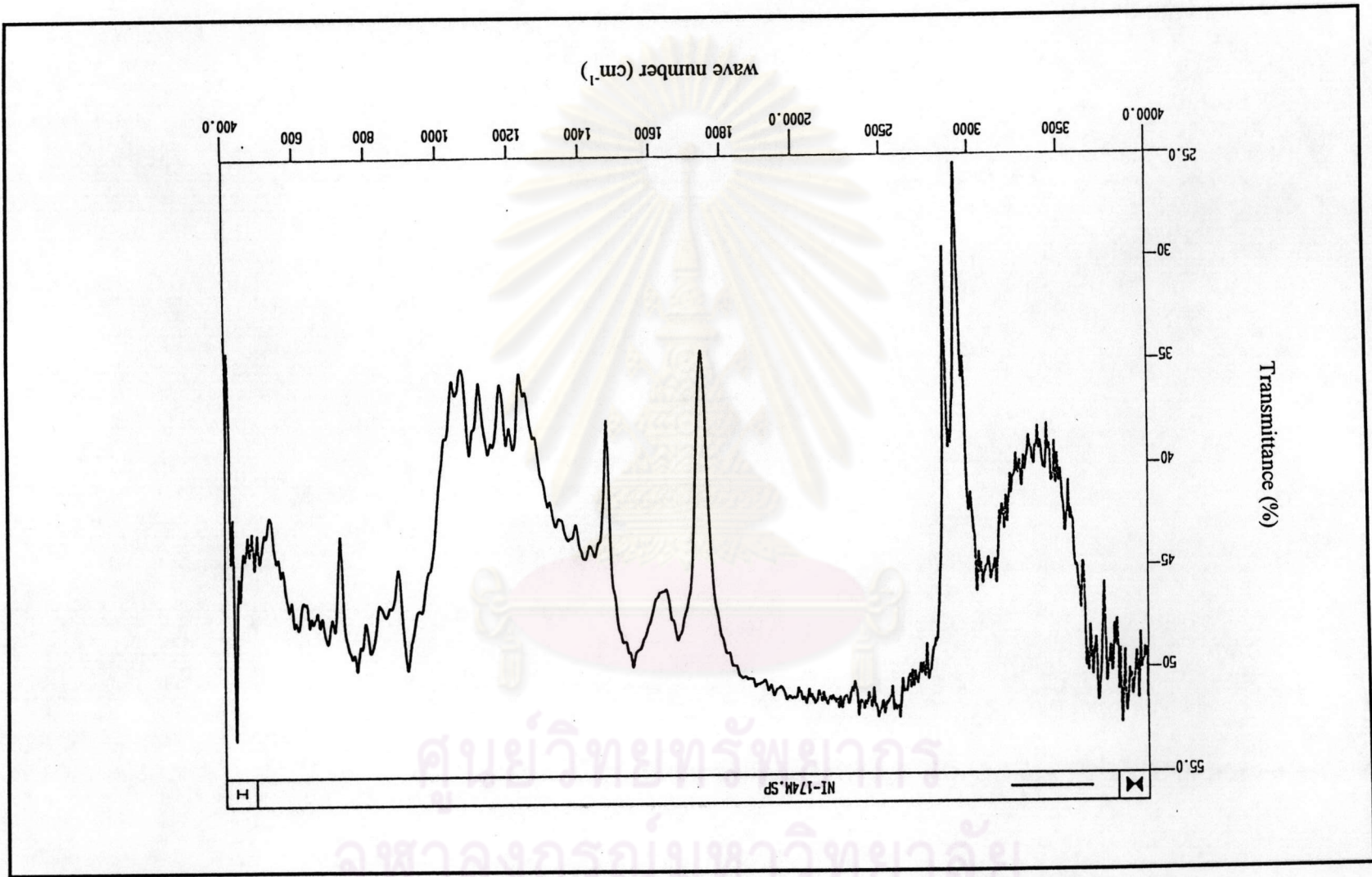


Figure 90 The mass spectrum of Compound 8 compared with mass spectrum of tetratriacontanoic acid ( $C_{34}H_{68}O_2$ )

Figure 91 The IR spectrum of Compound 9





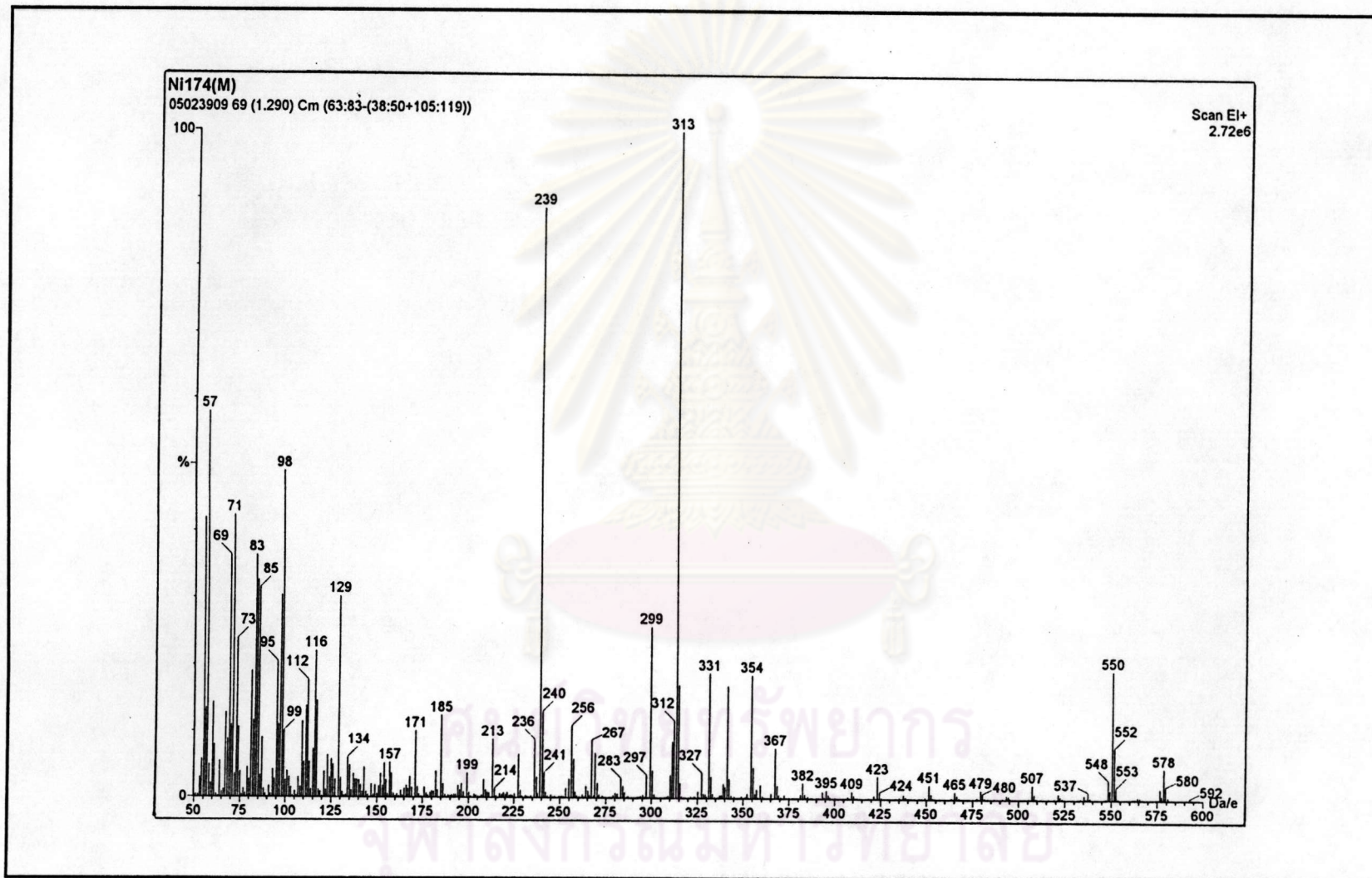
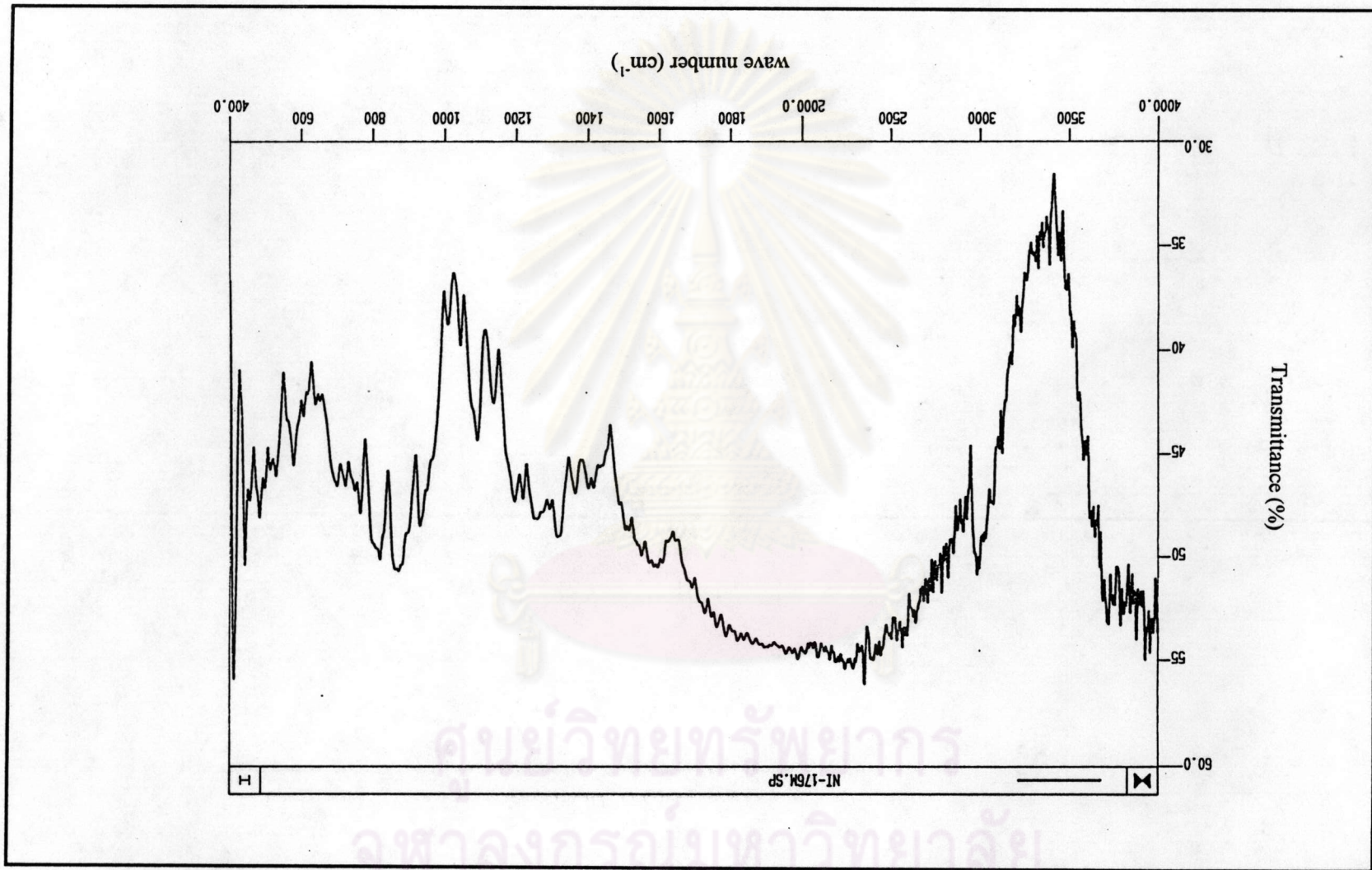


Figure 92 The mass spectrum of Compound 9

Figure 93 The IR spectrum of Compound 10





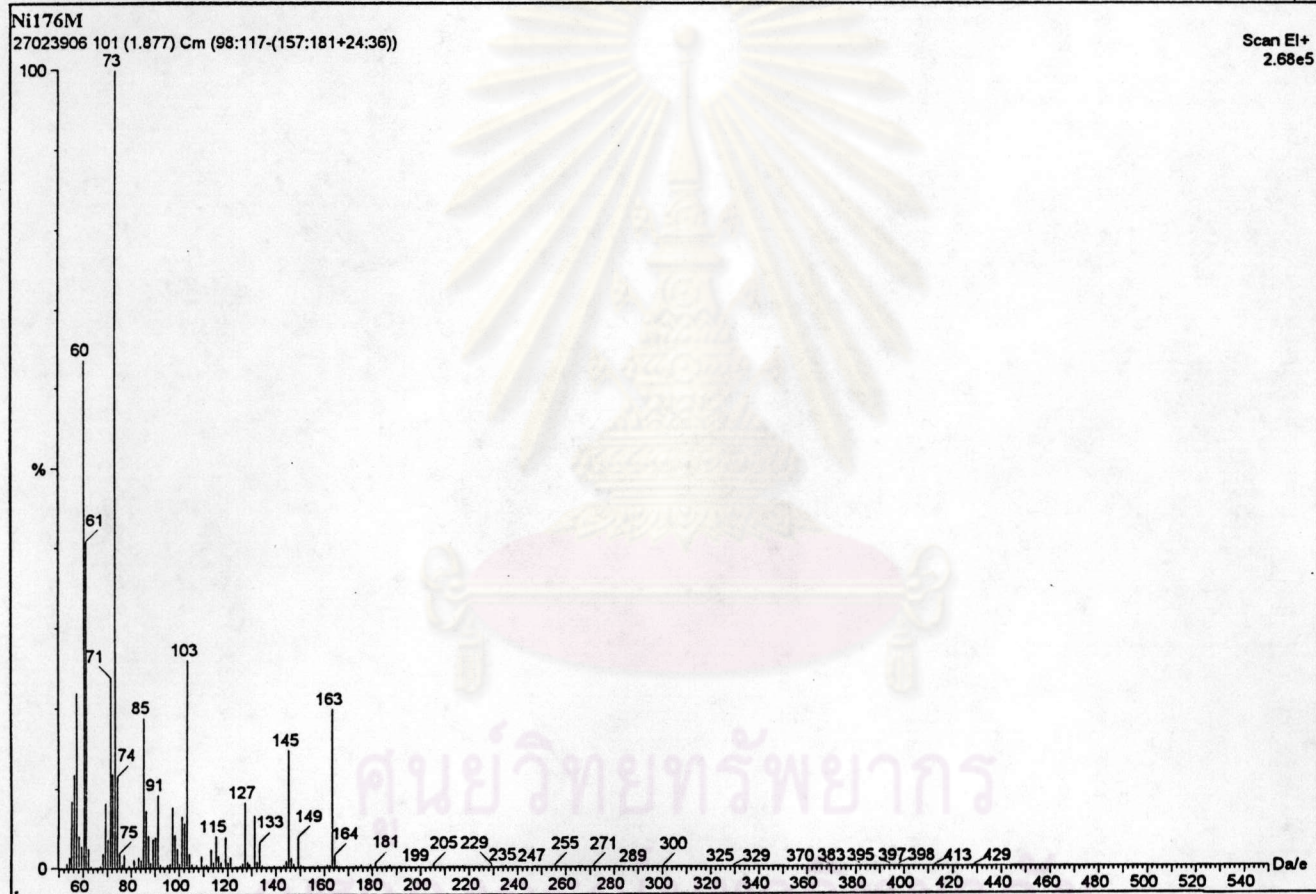


Figure 94 The mass spectrum of Compound 10

## VITA

Miss Nisakorn Kamjaikittikul was born on May 1, 1971 in Chonburi province, Thailand. She graduated with Bachelor Degree of Science of chemistry at Rhamkamhaeng University in 1992. In the same year, she worked at Institute of Biotechnology and Genetic Engineering, Chulalongkorn University. In 1994, she was admitted into a Master Degree program in organic chemistry at Chulalongkorn University. During her study toward the Master's degree, she received financial support from Department of Chemical Faculty of Science, Chulalongkorn University in 1994-95.



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