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APPENDICES

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APPENDIX A

Calculation of the correction factor

The correction factor was calculated based upon the results obtained from gas chromatographic analysis (see also the experimental section). The substrate used was 5 mmol, whereas the internal standard, cyclohexanone, 0.02 mmol was employed.

Example

A : the exact amount of prepared desired product (mmol)

B : total volume of the reaction (mL)

C : peak area of the desired product

D : peak area of the internal standard

The calculation of the correction factor can be described as follows:

The amount of the desired product from the reaction mixture

$$= (0.02 \times C / D) = F \text{ mmol}$$

The amount of the desired product in B mL (total volume of the reaction)

$$= (F) \times (B) = G \text{ mmol}$$

Thus, the correction factor of the desired product

$$= (A) / (G) = H$$

The calculation of % yield of the desired product can be calculated as:

$$\% \text{ Yield of product} = (G) \times (H) / 5 \times 100$$



APPENDIX B

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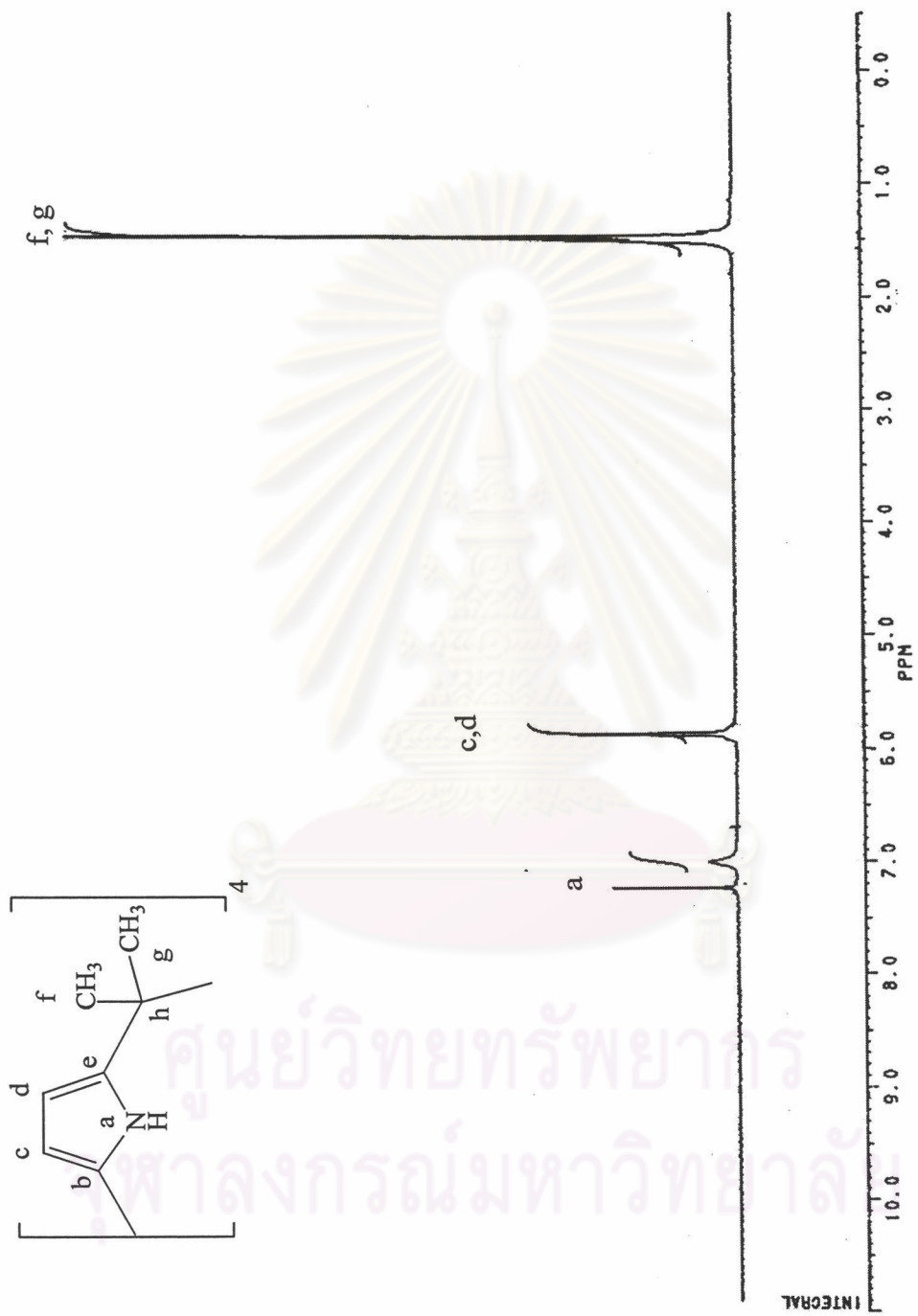


Figure 1 ^1H NMR spectrum of meso-octamethyl calix[4]pyrrole

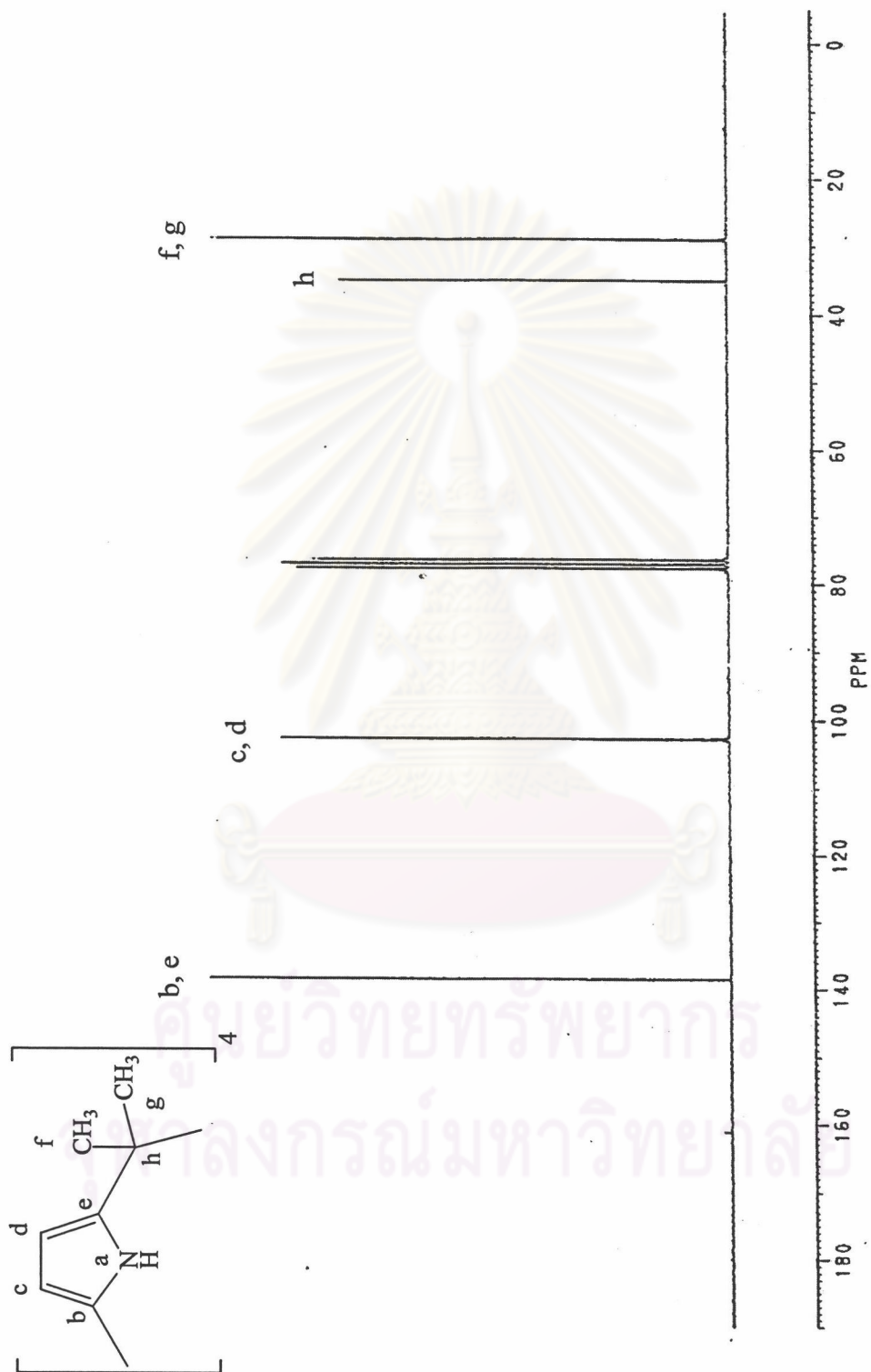


Figure 2 ^{13}C NMR spectrum of *meso*-octamethyl calix[4]pyrrole

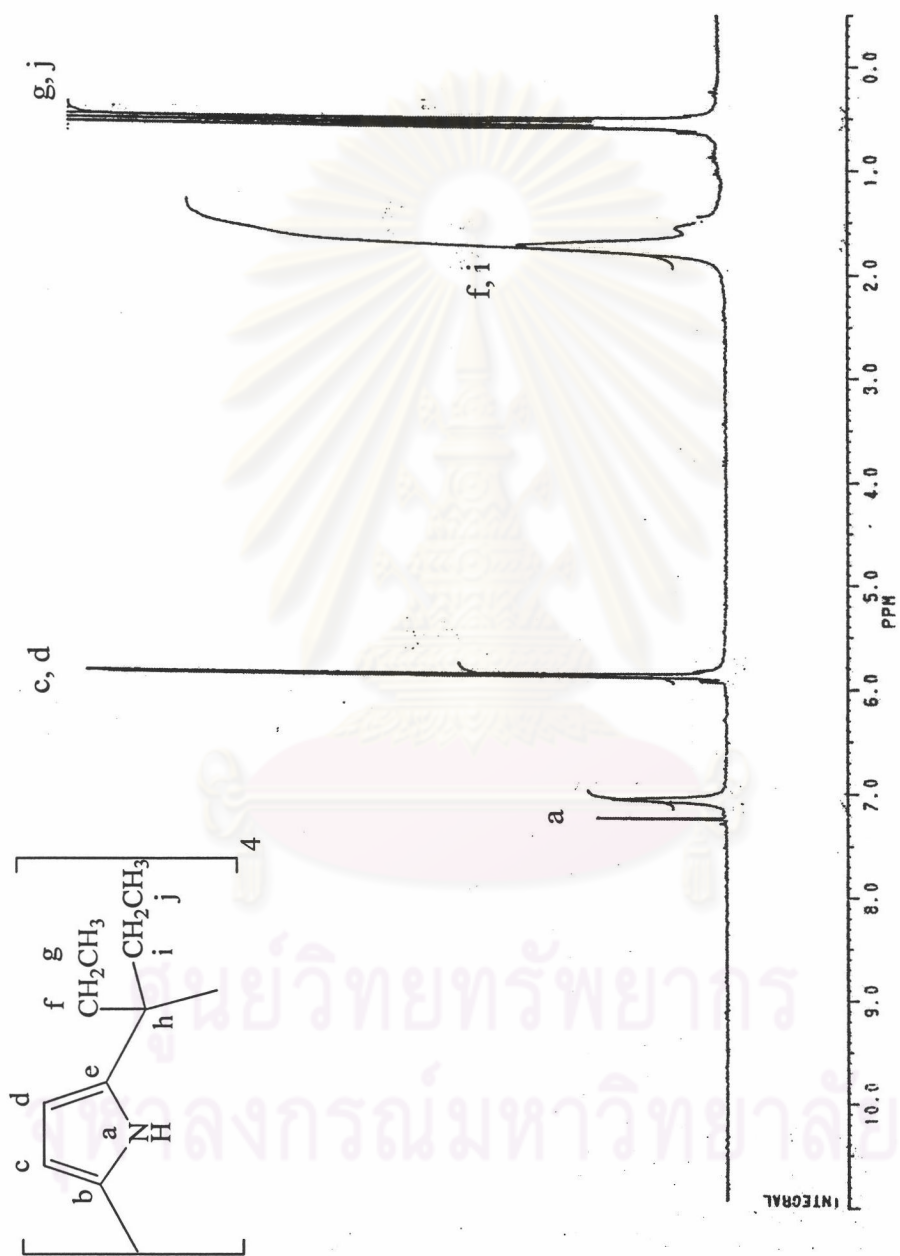


Figure 3 ^1H NMR spectrum of *meso*-octaethyl-calix[4]pyrrole

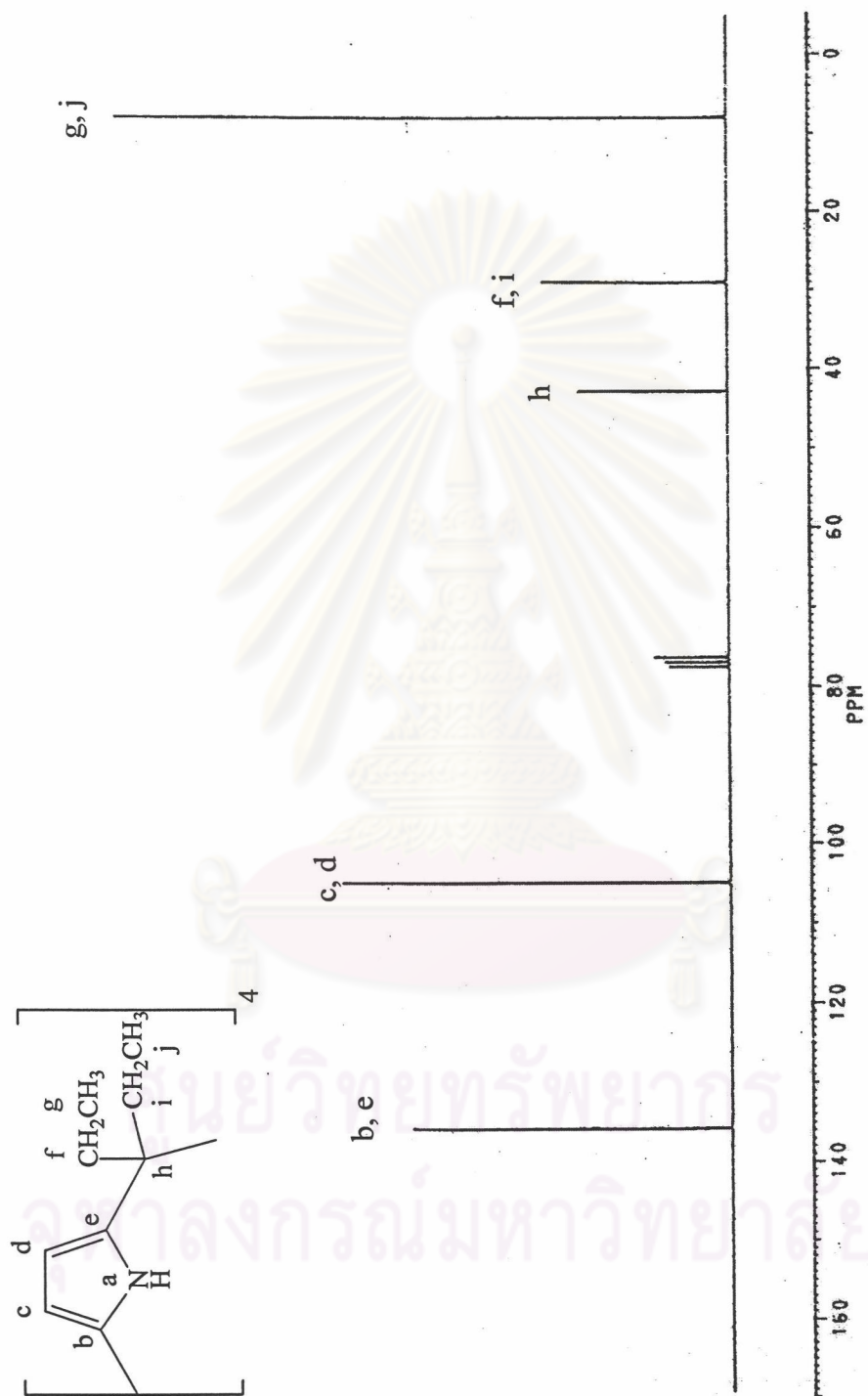


Figure 4 ^{13}C NMR spectrum of meso-octaethyl-calix[4]pyrrole

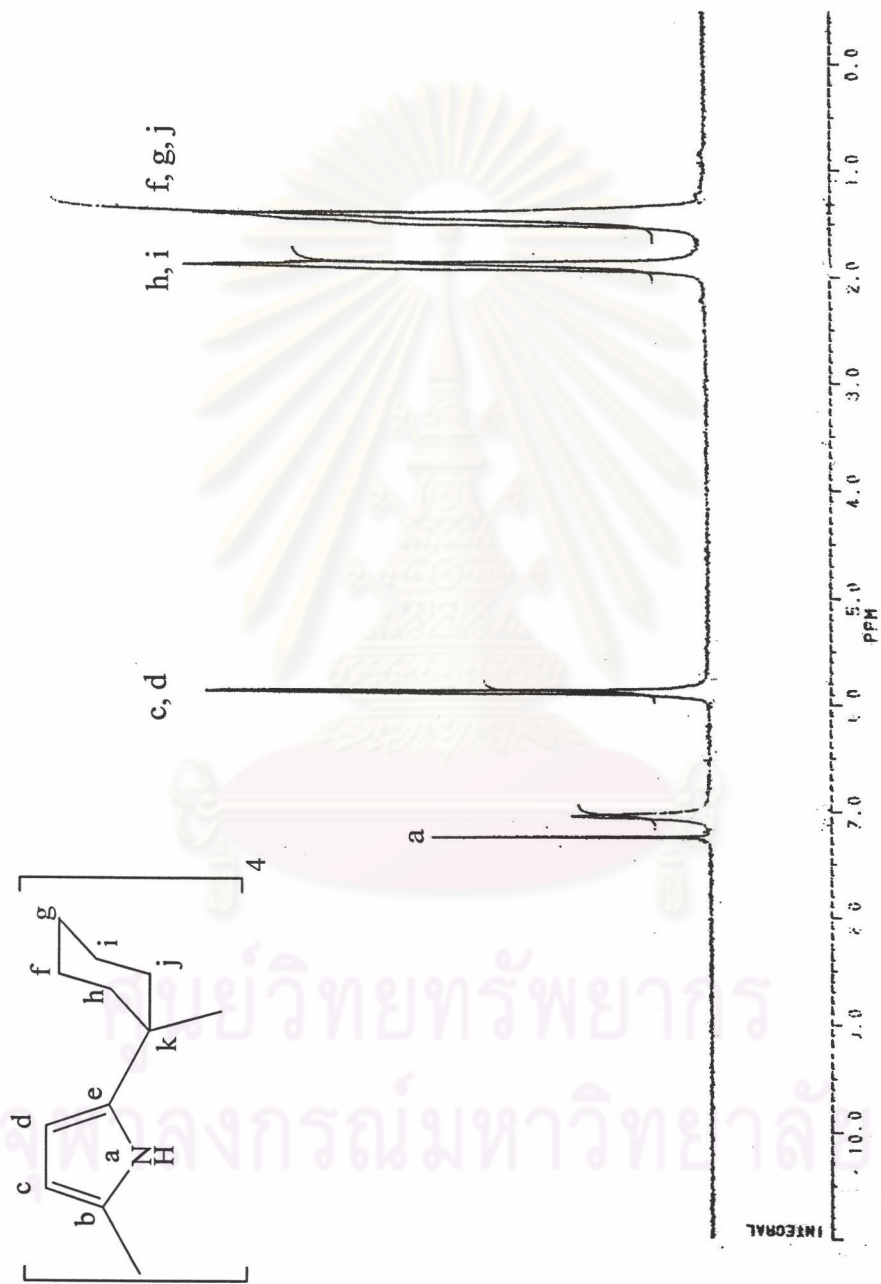


Figure 5 ^1H NMR spectrum of tetraspirohexyl-calix[4]pyrrole

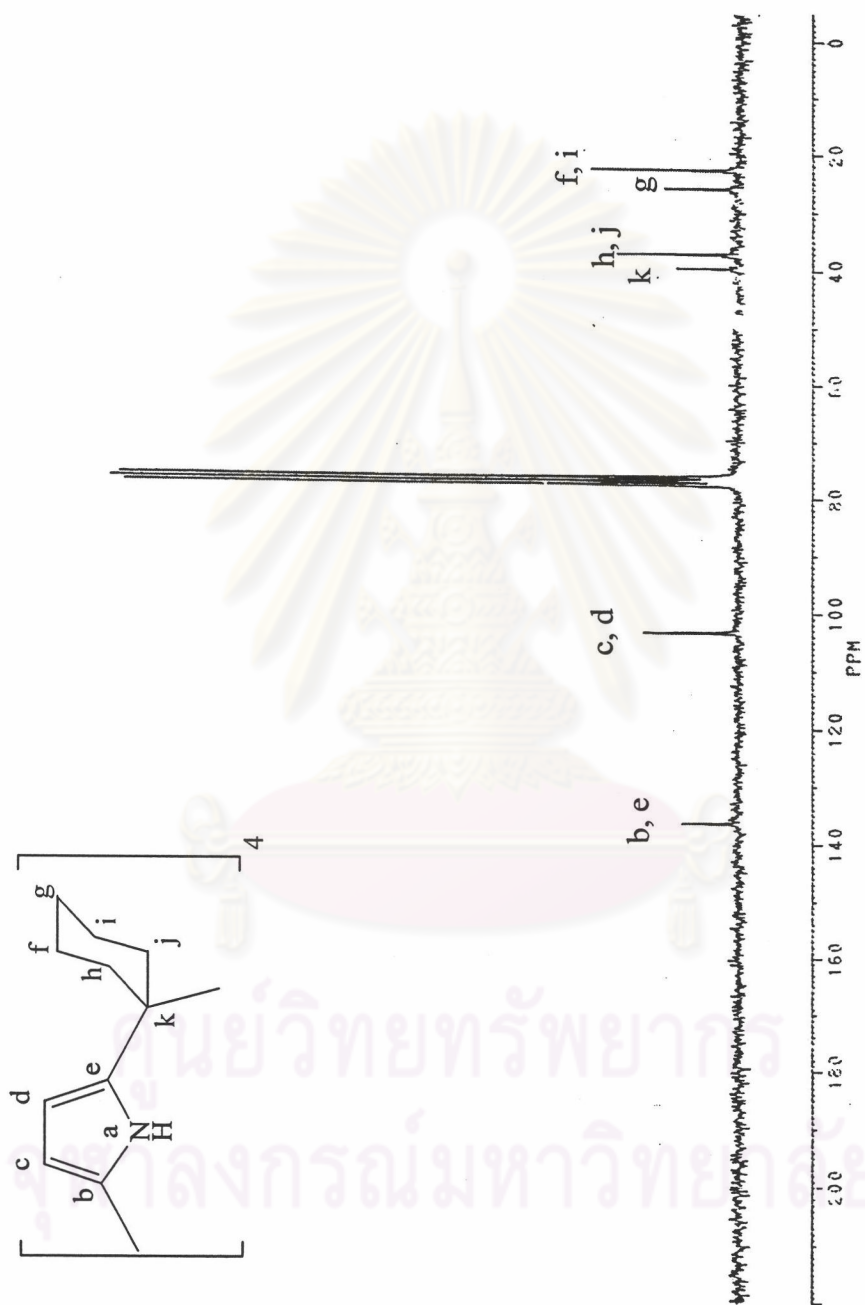


Figure 6 ^{13}C NMR spectrum of tetraspirohexyl-calix[4]pyrrole

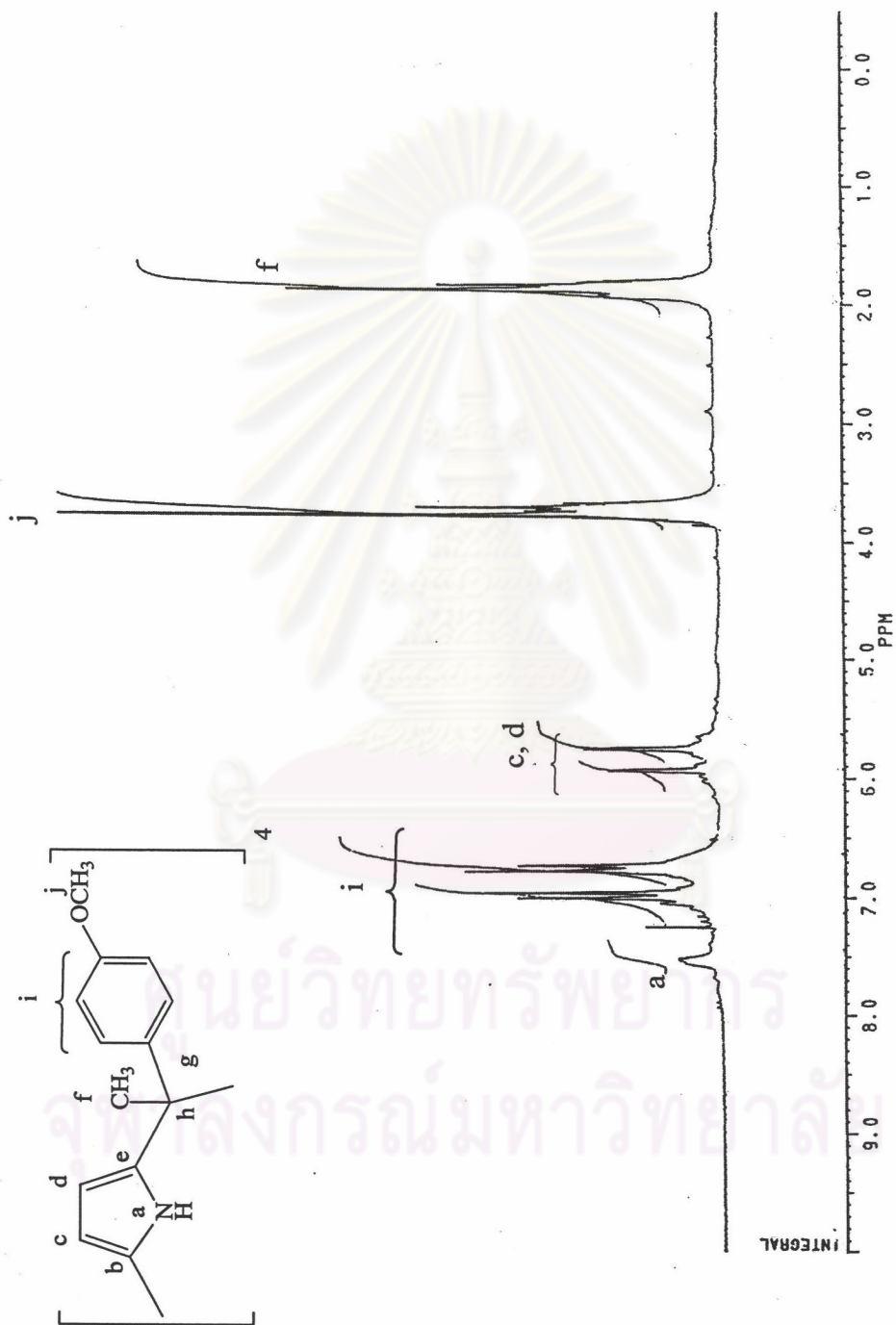


Figure 7 ¹H NMR spectrum of *meso*-tetrakis(4-methoxyphenyl)-tetramethylcalix[4]pyrrole

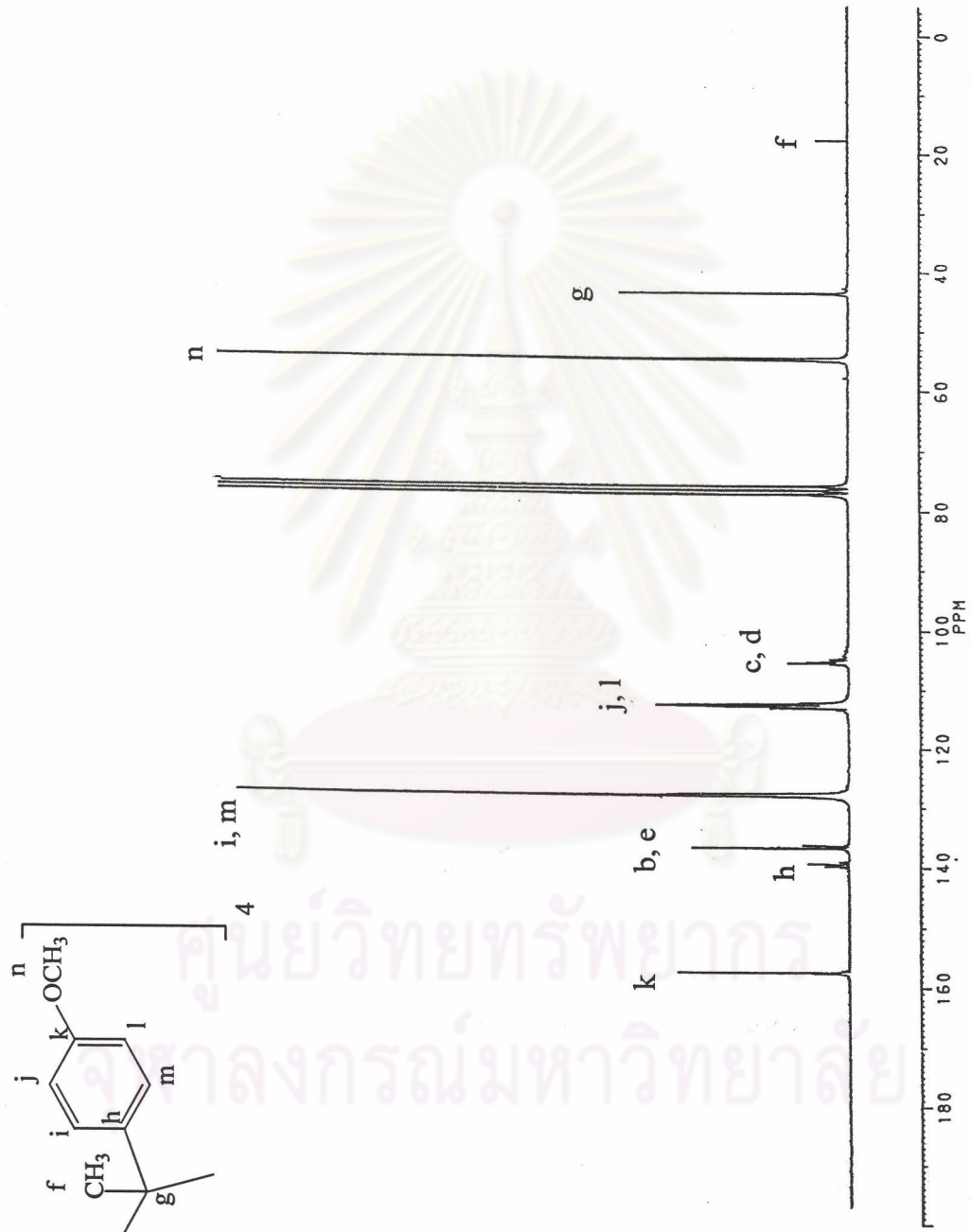


Figure 8 ^{13}C NMR spectrum of *meso*-tetrakis(4-methoxyphenyl)-tetramethyl[4]pyrrole

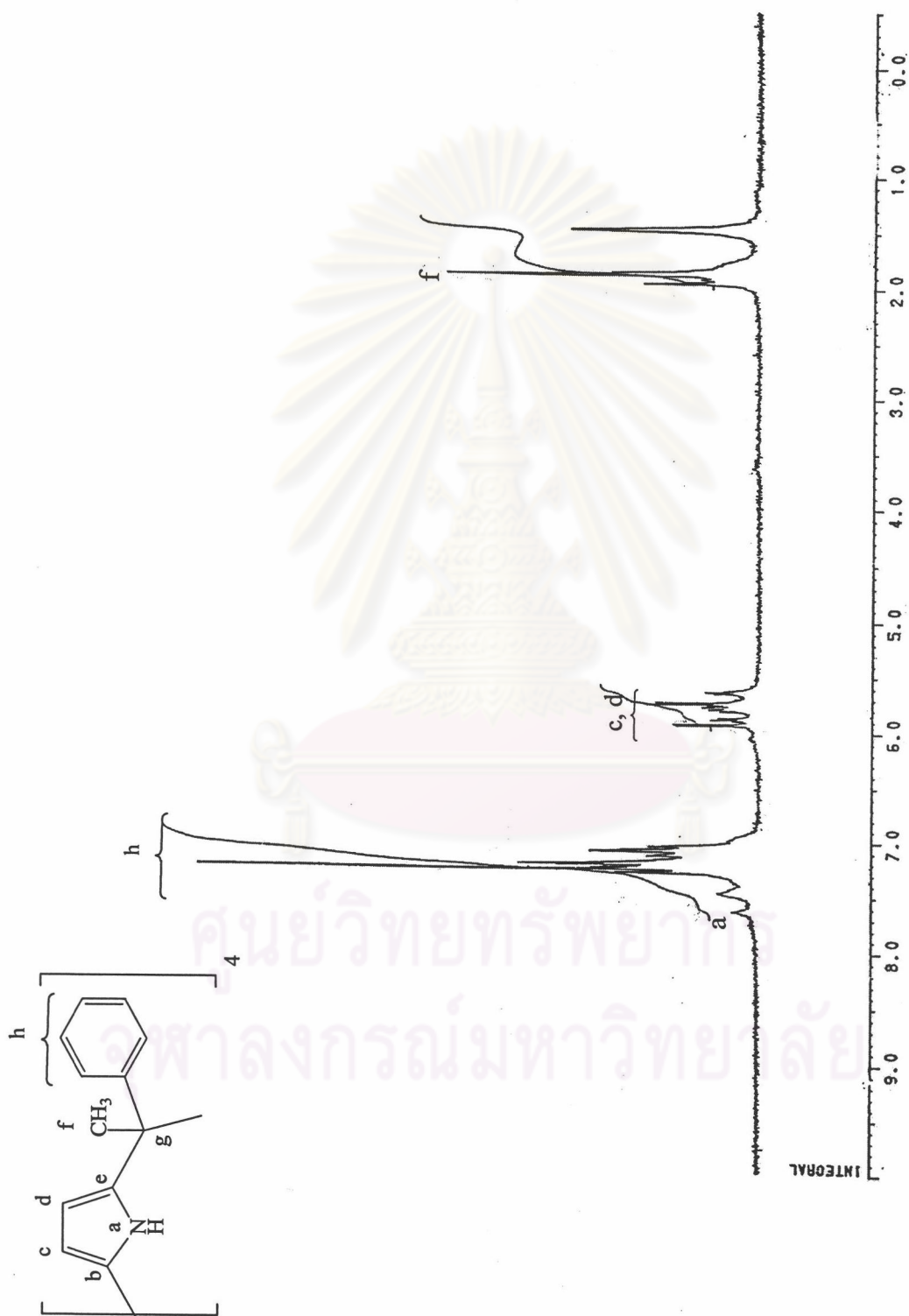


Figure 9 ^1H NMR spectrum of *meso*-tetramethyl-tetraphenyl-calix[4]pyrrole

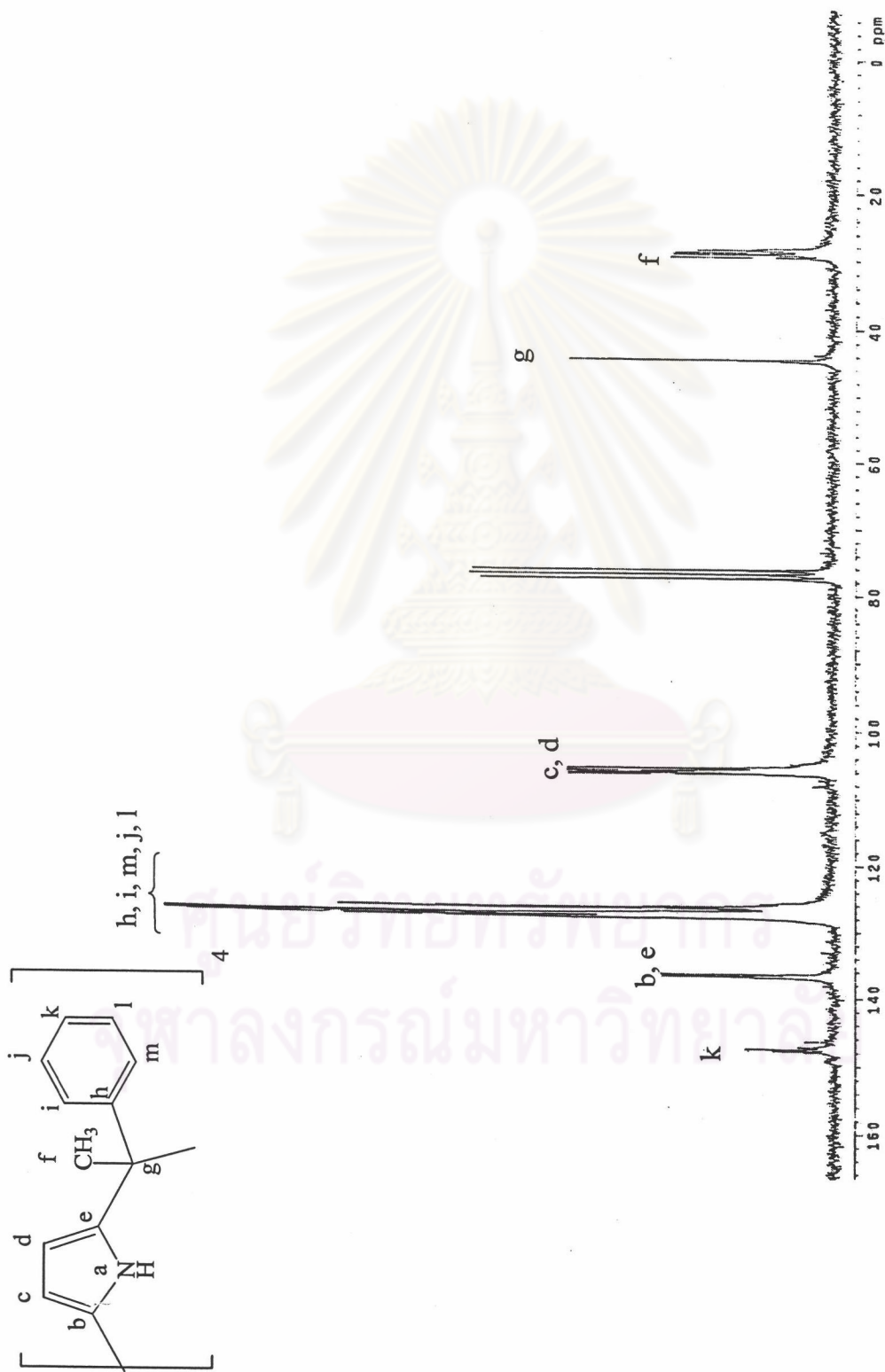


Figure 10 ^{13}C NMR spectrum of meso-tetramethyl-tetraphenyl-calix[4]pyrrole

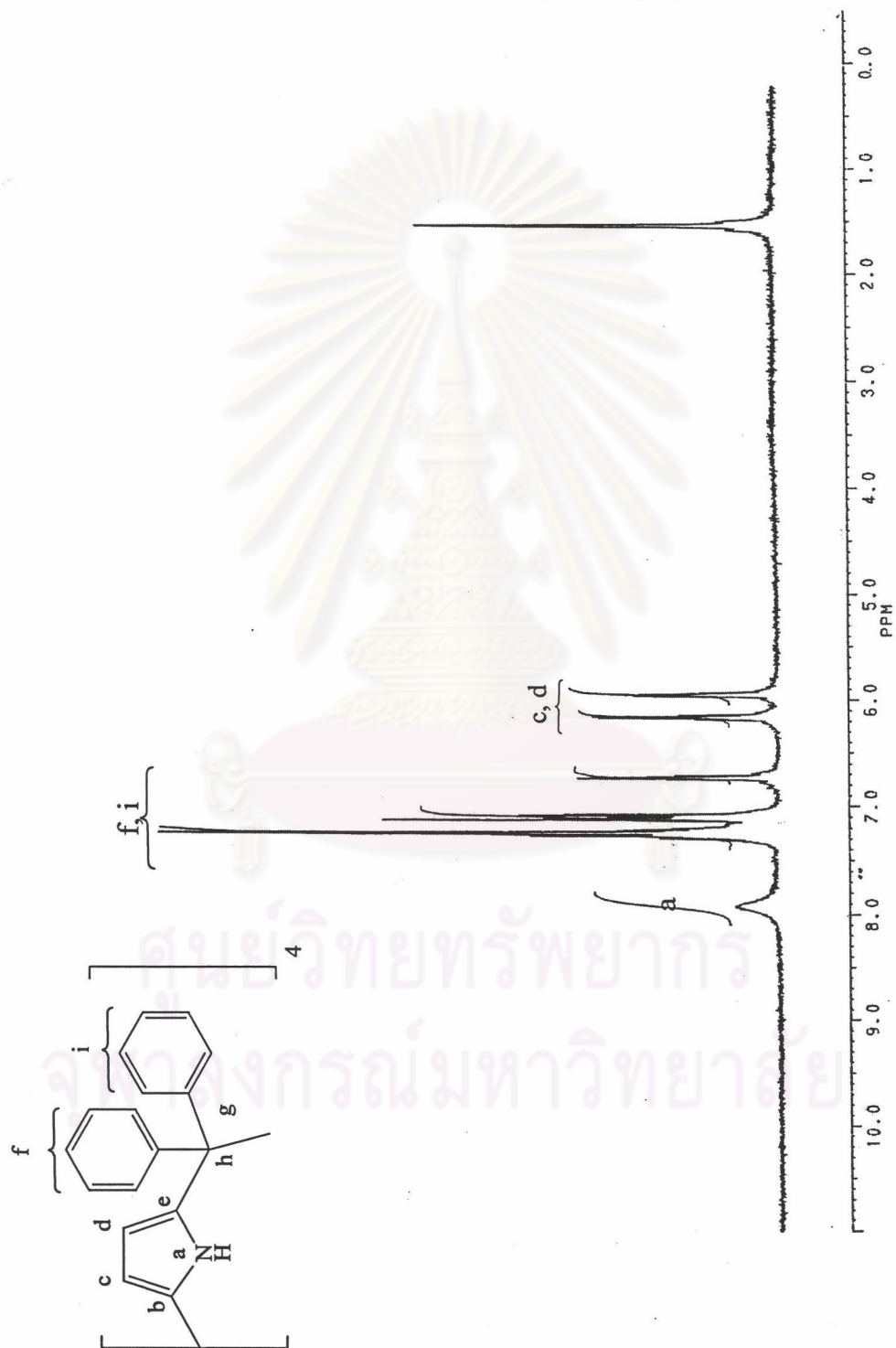


Figure 11 ^1H NMR spectrum of meso-octaphenyl-calix[4]pyrrole

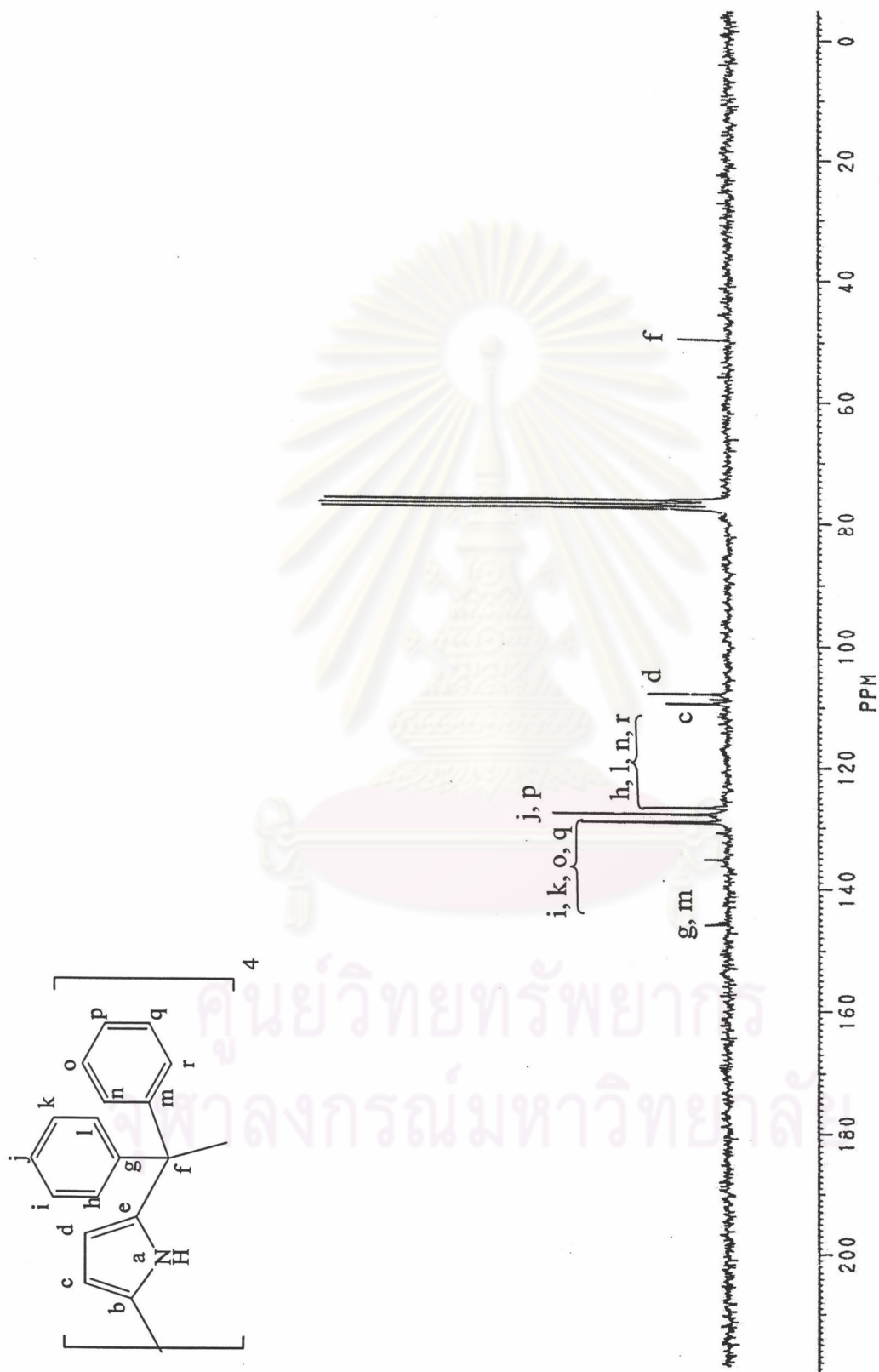


Figure 12 ^1H NMR spectrum of *meso*-octaphenyl-calix[4]pyrrole

VITA

Miss Yupa Tangsakol was born on June 26, 1977 in Bangkok, Thailand. She graduated with Bachelor degree in Chemistry from Faculty of Science and Technology, Thammasat University in 2000. She continued her study for Master degree in Program of Petrochemistry and Polymer Science, Faculty of Science, Chulalongkorn University and completed in 2003.

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