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**Appendices**

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### Wet-pick up Calculation

The percentage wet pick-up value of fabric can be determined by the following method:

1. The initial weight of each sample was measured before padding by electronic balance(+ 0.01 g).
2. After padding, each sample was re-weighed.

Then the percentage wet pick-up can be calculated by the equation expressed below:

$$\% \text{ wet pick-up} = \frac{\text{weight of wet fabric} - \text{initial weight}}{\text{initial weight}} \times 100$$



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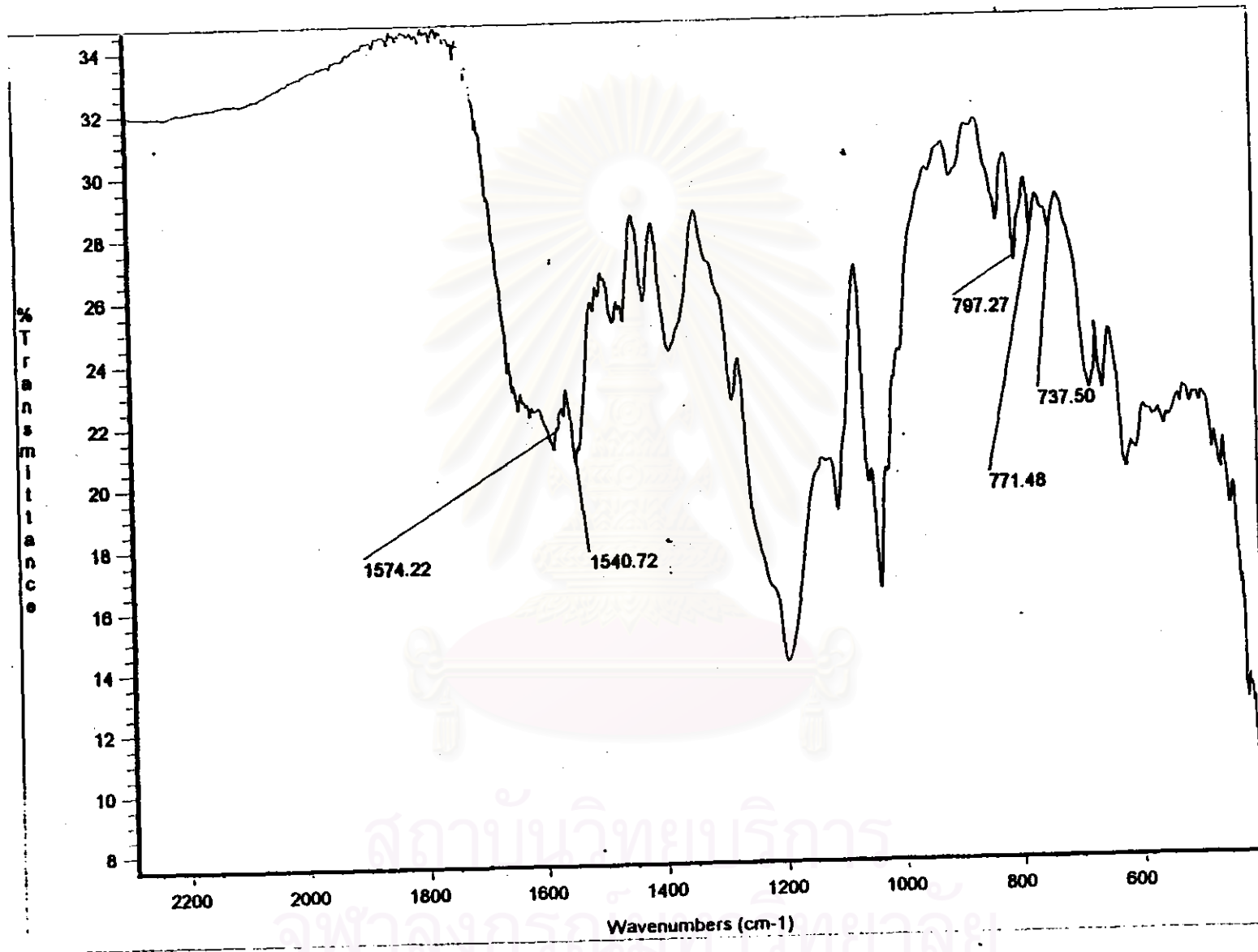


Figure A1. FT-IR spectrum of Cibacron blue P-B .

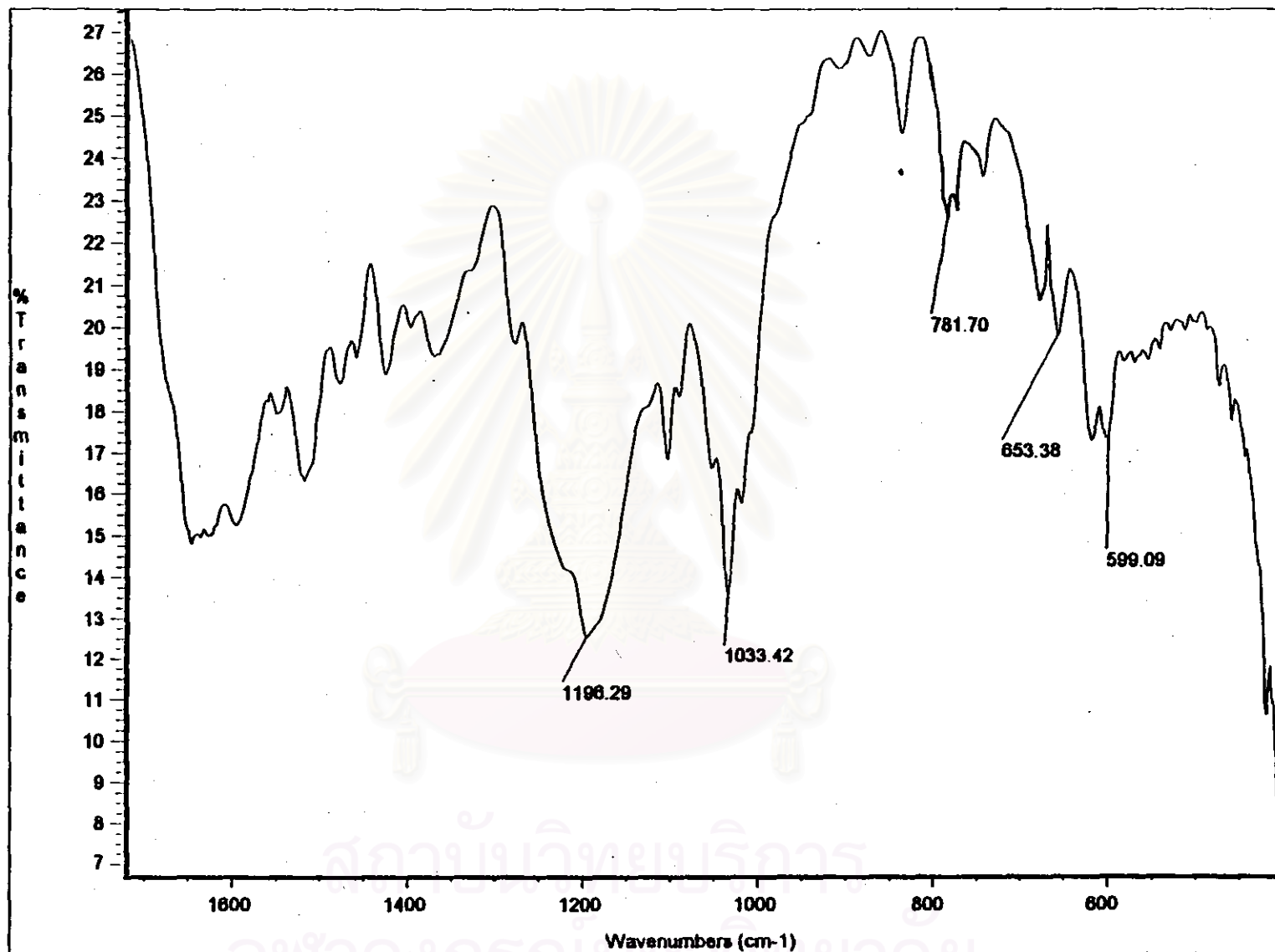


Figure A2. FT-IR spectrum of Cibacron blue P-B was modified by ethanolamine.

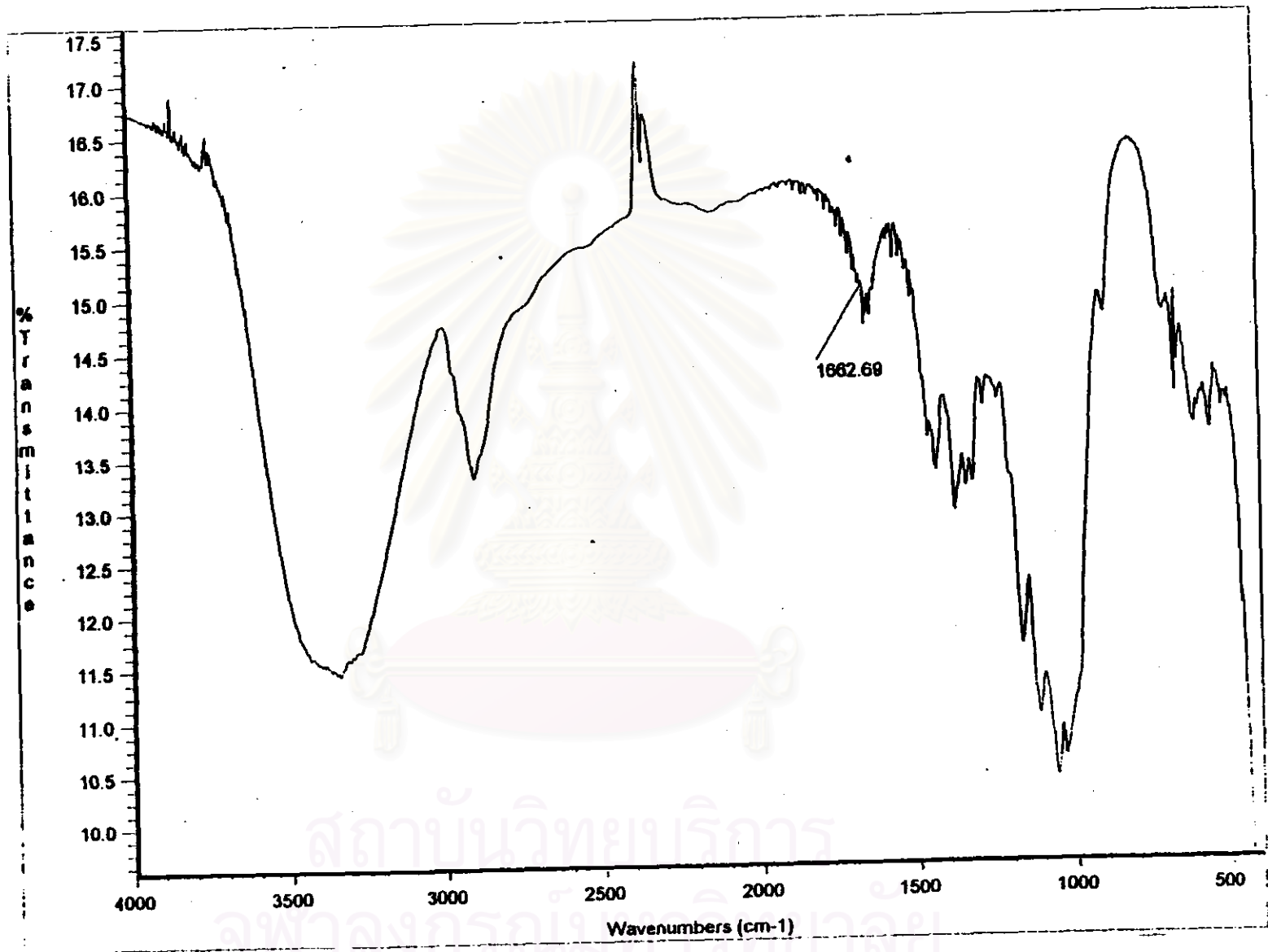
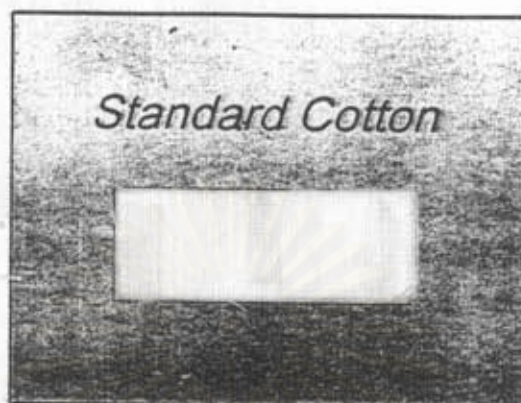


Figure A3. FT-IR spectrum of cotton fabric.





Unmodified Dye 10 g/l  
BTCA 50 g/l,  $\text{NaH}_2\text{PO}_2 \cdot \text{H}_2\text{O}$  50 g/l  
using pad-dry-cure process

Before soaping



After soaping

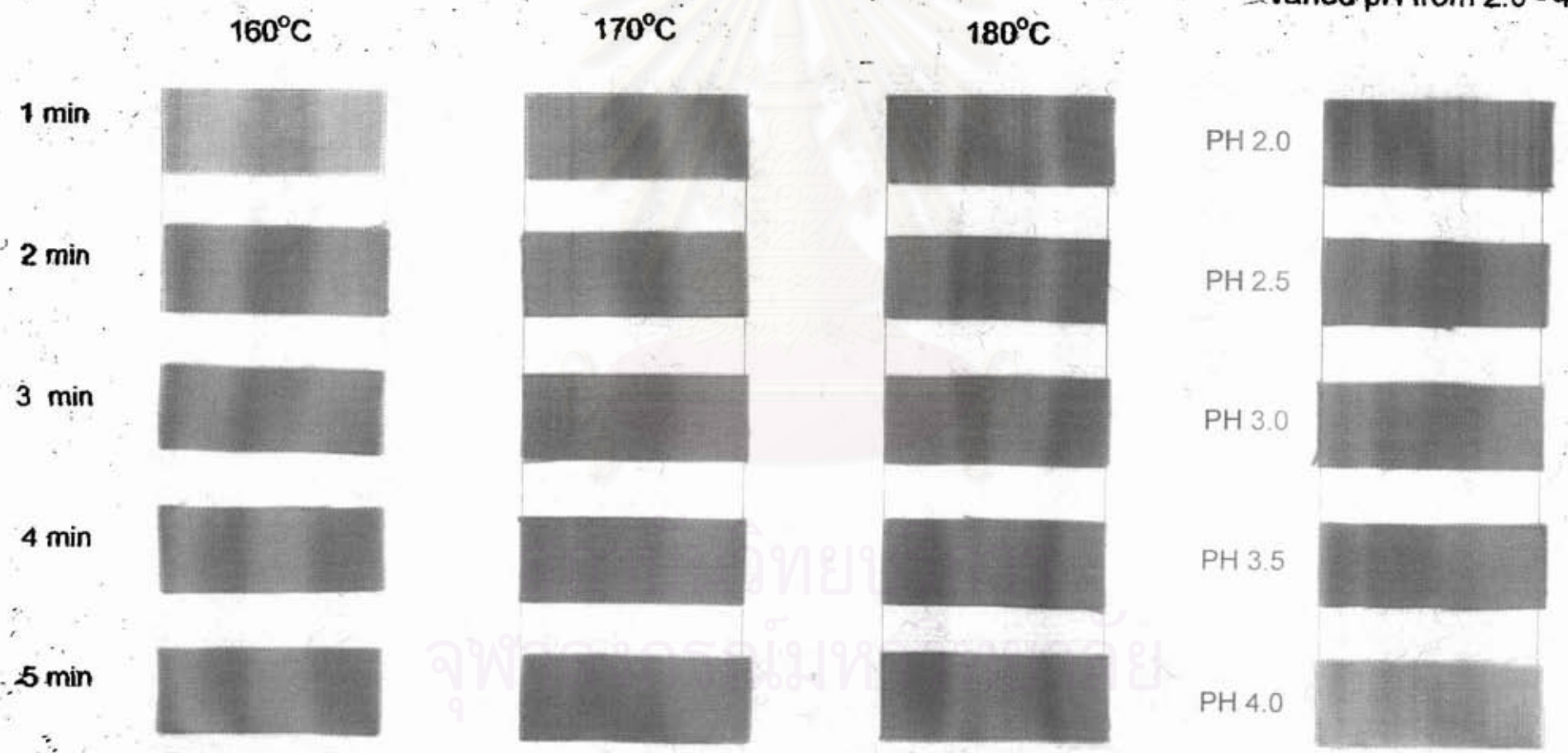


Modified dye 10 g/l, BTCA 50 g/l,  $\text{NaH}_2\text{PO}_2 \cdot \text{H}_2\text{O}$  50 g/l

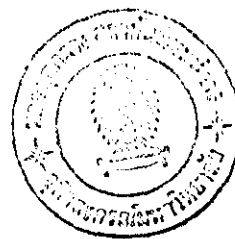
Cured at Different Temperature and Time

pH 2.5-3.0

Cured at 180 °C for 5 min  
varied pH from 2.0 - 4.0



## BIOGRAPHY



Miss Sirinun Kaenthong received a Bachelor of Science degree with a major General Science from Chulalongkorn University in 1996. She started as a graduate student in the department of Material Science with a major in Applied Polymer Science and Textile Technology, Chulalongkorn University in June 1996, and completed the program in September 1998.



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