

**DESIGN AND SIMULATION OF MATERIALS  
IN POLYMER MEMBRANE FOR  
FUEL CELL APPLICATION**

**JANCHAI YANA**

**DOCTOR OF PHILOSOPHY  
IN CHEMISTRY**

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**THE GRADUATE SCHOOL  
CHIANG MAI UNIVERSITY  
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IN POLYMER MEMBRANE FOR  
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**JANCHAI YANA**

**A THESIS SUBMITTED TO THE GRADUATE SCHOOL IN  
PARTIAL FULFILLMENT OF THE REQUIREMENTS  
FOR THE DEGREE OF  
DOCTOR OF PHILOSOPHY  
IN CHEMISTRY**

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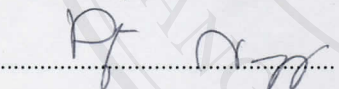
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THIS THESIS HAS BEEN APPROVED  
TO BE A PARTIAL FULFILLMENT OF THE REQUIREMENTS  
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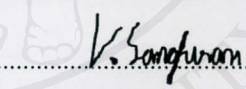
  
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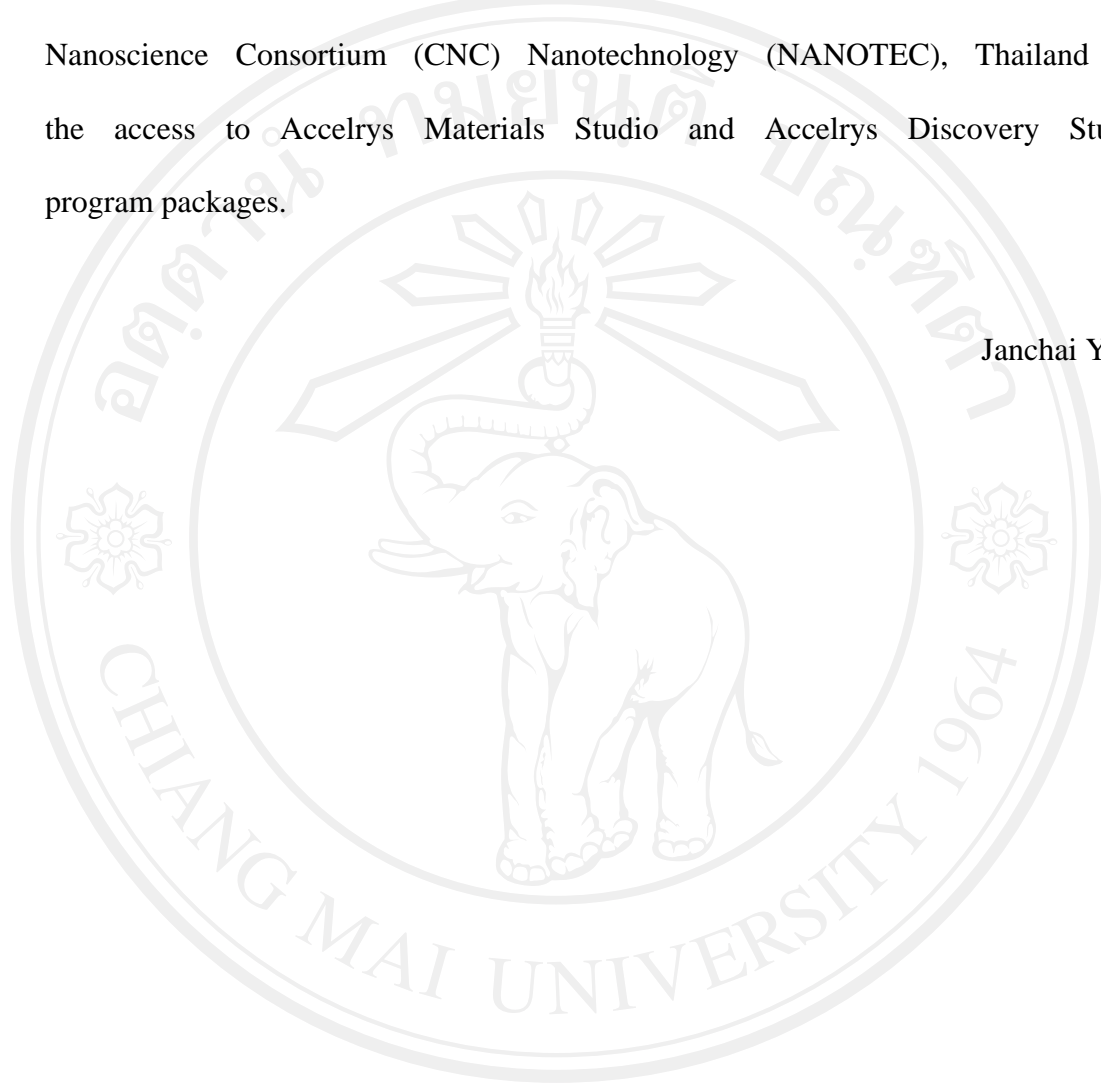
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