

**DIATOMS IN SOME HOT SPRINGS  
OF NORTHERN THAILAND AND  
LIPID PRODUCTION**

**SUPATTIRA PRUETIWORANAN**

**DOCTOR OF PHILOSOPHY  
IN APPLIED MICROBIOLOGY**

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**GRADUATE SCHOOL  
CHIANG MAI UNIVERSITY  
DECEMBER 2017**

**DIATOMS IN SOME HOT SPRINGS**

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LIPID PRODUCTION**

**SUPATTIRA PRUETIWORANAN**

**A THESIS SUBMITTED TO CHIANG MAI UNIVERSITY IN PARTIAL  
FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF  
DOCTOR OF PHILOSOPHY  
IN APPLIED MICROBIOLOGY**

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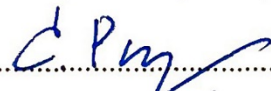
SUPATTIRA PRUETIWORANAN

THIS THESIS HAS BEEN APPROVED TO BE A PARTIAL FULFILLMENT OF  
THE REQUIREMENTS FOR THE DEGREE OF  
DOCTOR OF PHILOSOPHY  
IN APPLIED MICROBIOLOGY


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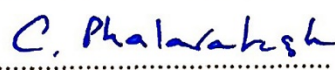
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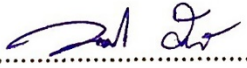
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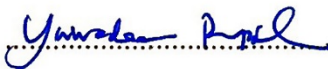
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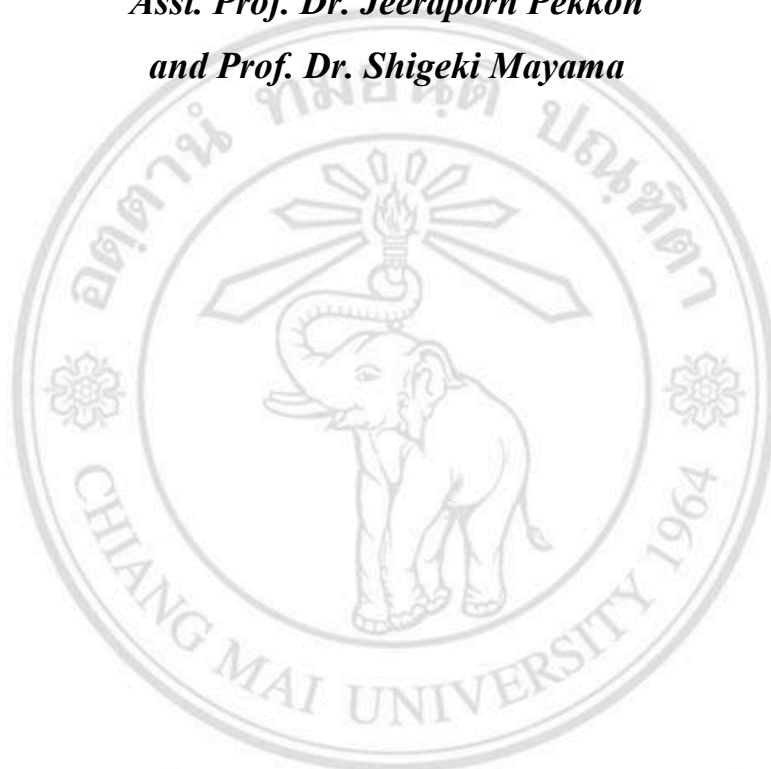
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22 December 2017

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*To my family:*

*Asst. Prof. Dr. Chayakorn Pumas,  
Assoc. Prof. Dr. Yuwadee Peerapornpisal,  
Asst. Prof. Dr. Jeeraporn Pekkoh  
and Prof. Dr. Shigeki Mayama*



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