



**THESIS APPROVAL**  
**GRADUATE SCHOOL, KASETSART UNIVERSITY**

Master of Engineering (Chemical Engineering)

**DEGREE**

Chemical Engineering

**FIELD**

Chemical Engineering

**DEPARTMENT**

**TITLE:** Investigation on Structural and Energetic Properties of Chitosan Membrane  
Surface of PEM Fuel Cell by Quantum Chemical Calculations

**NAME:** Mr. Vasavis Punnasukhirom

**THIS THESIS HAS BEEN ACCEPTED BY**

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