IMPROVEMENT OF PHOTOCATALYTIC EFFICIENCY OF FERRIC VANADATE/BISMUTH OXYIODIDE COMPOSITE UNDER VISIBLE LIGHT IRRADIATION



กมยนดิ

MASTER OF SCIENCE IN CHEMISTRY

ลิ<mark>ขสิทธิ์มหาวิทยาลัยเชียงใหม่</mark> Copyright[©] by Chiang Mai University AII rights reserved

> GRADUATE SCHOOL CHIANG MAI UNIVERSITY MAY 2019

IMPROVEMENT OF PHOTOCATALYTIC EFFICIENCY OF FERRIC VANADATE/BISMUTH OXYIODIDE COMPOSITE UNDER VISIBLE LIGHT IRRADIATION



A THESIS SUBMITTED TO CHIANG MAI UNIVERSITY IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF SCIENCE IN CHEMISTRY

GRADUATE SCHOOL, CHIANG MAI UNIVERSITY MAY 2019

IMPROVEMENT OF PHOTOCATALYTIC EFFICIENCY OF FERRIC VANADATE/BISMUTH OXYIODIDE **COMPOSITE UNDER VISIBLE LIGHT IRRADIATION**

AUTTAPHON CHACHVALVUTIKUL

THIS THESIS HAS BEEN APPROVED TO BE A PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF SCIENCE IN CHEMISTRY

Advisor:

Sulanan Kaomphoni

(Asst. Prof. Dr. Sulawan Kaowphong)

Examination Committee:

Chairman

(Dr. Laemthong Chuenchom)

Sila Pittiwehing Member

(Asst. Prof. Dr. Sila Kittiwachana)

Champa Bondon Member (Asst. Prof. Dr. Chamnan Randorn) harootnya

(Asst. Prof. Dr. Praput Thavornyutikarn)

Member

Subinan kaomphong Member

(Asst. Prof. Dr. Sulawan Kaowphong)

2 May 2019 Copyright © by Chiang Mai University

ACKNOWLEDGEMENT

I would like to express my sincere thanks to my thesis advisor, Asst. Prof. Dr. Sulawan Kaowphong, for her supervision, wisdom, patient guidance, invaluable help, enthusiastic encouragement, and useful critiques of this research work. This thesis would not have been completed without all the support and constant help that I have always received from her. I would also like to thank all committees, for their strong constructive valuable comments.

I gratefully acknowledge officers and technical staffs of the Department of Chemistry, Faculty of Science, Chiang Mai University, Thailand for serving all the facilities, knowledge and valuable experiences to me. In addition, I would also like to extend my thanks to the Development and Promotion of Science and Technology Talents Project (DPST) for financial support throughout my study. Special thanks should be given to all of members in my laboratory for sharing truthful, advice, support, and helping me survive all the stress from this year and not letting me give up.

Most of all, I like to give thank my beloved family; my father, my mother and my two sisters, for their love, kindness, support, and encouragement throughout all my studies at university.

Copyright[©] by Chiang Mai University All rights reserved

Auttaphon Chachvalvutikul