

**CHEMICAL MODIFICATION OF CHITIN/CHITOSAN;
AN APPROACH FOR
PROCESSING THERMOPLASTIC-CHITIN BLEND**

Ms. Wanpen Tachaboonyakiat

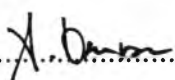
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By : Ms. Wanpen Tachaboonyakiat
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Thesis Advisors : Assoc. Prof. David C. Martin
Dr. Suwabun Chirachanchai

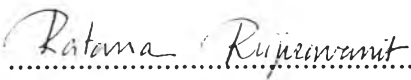
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..... Director of the College
(Prof. Somchai Osuwan)

Thesis Committee


.....
(Assoc. Prof. David C. Martin)


.....
(Dr. Suwabun Chirachanchai)


.....
(Dr. Ratana Rujiravanit)

ABSTRACT

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KEYWORDS : Chitin/ Chitosan/ Chemical Modification/ Tosylation/
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Tosylation of chitosan was accomplished by interfacial condensation to prepare an active precursor as tosylated chitosan. Tosylation was successful with 15-fold excess of tosylchloride in low temperature. The tosyl group can be replaced at both the C-2 carbon of the amino group and the C-6 carbon of the primary alcohol group. Chitosan acetate was prepared to protect the amino group and found to be tosylated at the C-6 carbon. Acylation of tosylated chitosan or tosylated chitosan acetate with stearic acid via nucleophilic substitution was achieved by heterogeneous reaction in dimethylformamide aprotic solvent.

บทคัดย่อ

วันเพ็ญ เตชะบุญเกียรติ : การปรับปรุงโครงสร้างทางเคมีของไคติน/ไคโตแซน สำหรับการขึ้นรูปพอลิเมอร์ผสมเทอร์โมพลาสติก-ไคติน (Chemical Modification of Chitin/Chitosan; An Approach for Processing Thermoplastic-Chitin Blend.) อ. ที่ปรึกษา : รศ. ดร. เดวิด ซี มาร์ติน (Assoc. Prof. David C. Martin) และ ดร. สุวบุญ จิราญชัย 48 หน้า ISBN 974-638-442-2

การสังเคราะห์โทซิลเลตเตทไคโตแซน (Tosylated chitosan) เพื่อใช้เป็นสารตั้งต้นที่ว่องไวสามารถทำได้โดยผ่านปฏิกิริยาโทซิลเลชัน (Tosylation) ซึ่งเป็นปฏิกิริยาการควบแน่นระหว่างชั้นของสารละลาย ปฏิกิริยาโทซิลเลชันสามารถดำเนินได้โดยเงื่อนไขซึ่งใช้ปริมาณของโทซิลคลอไรด์ในปริมาณที่มากกว่าวงไพราโนส (pyranose) 15 เท่า ภายใต้อุณหภูมิต่ำ กลุ่มโทซิลสามารถเข้าไปแทนที่ได้ทั้งที่กลุ่มอะมิโน ๗ คาร์บอนตำแหน่งที่สองและที่กลุ่มแอลกอฮอล์ปฐมภูมิ (primary alcohol) ๘ คาร์บอนตำแหน่งที่หก ไคโตแซนอะซิเตทถูกเตรียมขึ้นเพื่อปกป้องหมู่อะมิโนและพบว่าหมู่โทซิลสามารถแทนที่ได้ที่แอลกอฮอล์ปฐมภูมิ ๘ คาร์บอนตำแหน่งที่หกเท่านั้น ปฏิกิริยาเอซิลเลชัน (Acylation) ของโทซิลเลตเตทไคโตแซนหรือโทซิลเลตเตทไคโตแซนอะซิเตทกับกรดสเตียริก (Stearic acid) สามารถทำได้โดยปฏิกิริยาเฮเทอโรจีเนียส (Heterogeneous reaction) ในตัวทำละลายที่ไม่ให้โปรตอน (Aprotic solvent) เช่น ไดเมทิลฟอร์มมาไมด์ (N,N-Dimethylformamide)

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