

**BIOMEIDICAL CHITOSAN MATERIALS: WATER BASED SYSTEM
SUPERABSORBENT HYDROGEL AND AEROGEL**



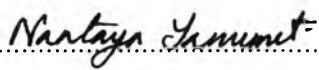
Patomporn Chantarasataporn

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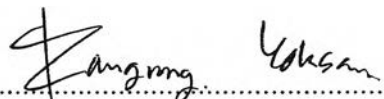
Thesis Title: Biomedical Chitosan Material: Water Based System
Superabsorbent Hydrogel and Aerogel
By: Patomporn Chantararataporn
Program: Polymer Science
Thesis Advisors: Assoc. Prof. Suwabun Chirachanchai

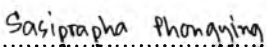
Accepted by the Petroleum and Petrochemical College, Chulalongkorn University, in partial fulfilment of the requirements for the Degree of Master of Science.



..... College Director
(Assoc. Prof. Nantaya Yanumet)

Thesis Committee:


.....
(Assoc. Prof. Suwabun Chirachanchai)


.....
(Dr. Rangrong Yoksan)


.....
(Dr. Sasiprapha Phongying)


.....
(Dr. Thanyalak Chaisuwan)

ABSTRACT

4972019063: Polymer Science Program

Patomporn Chantarasataporn: Biomedical Chitosan Material: Water Based System Superabsorbent Hydrogel and Aerogel

Thesis Advisors: Assoc. Prof. Suwabun Chirachanchai

Keywords: Chitosan / Hydrogel/ Aerogel / Clay nanocomposite

Water-based chitosan are developed for biomedical applications by simply mixing chitosan and HOBt (1-hydroxybenzotriazole monohydrate) with WSC (1-ethyl-3-(3-methyl-aminopropylcarbodiimide) hydrochloride) at room temperature. The clay and modified clay are used as enhancement fillers. The chitosan-clay aerogel is directly prepared from hydrogel. It was found that when clay is cooperated into the system it can improve appearance of gels, thermal properties and decrease swelling ratio of chitosan aerogel.

บทคัดย่อ

ประชุมพร จันทรสถาพร: ชื่อหัวข้อวิทยานิพนธ์ (ภาษาไทย) วัสดุไคโตซานสำหรับการใช้ประโยชน์ทางการแพทย์: การพัฒนาไคโตซานไฮโดรเจลคูดน้ำยิ่งยวด และ แอโรเจล จากปฏิกิริยาในระบบน้ำ (Biomedical Chitosan Material: Water Based System Superabsorbent Hydrogel and Aerogel) อ. ที่ปรึกษา: รองศาสตราจารย์ ดร. สุวบุญ จิรชาญชัย, 34 หน้า

งานวิจัยนี้เสนอแนวทางการพัฒนาไคโตซานในระบบน้ำสำหรับใช้ประโยชน์ทางการแพทย์ สามารถทำได้โดยเพียงการผสมเคลย์กับสารละลายไคโตซานในน้ำแล้วตามด้วยสารโพลีเอทิลีนไกลคอลที่มีหมู่ปลายเป็นหมู่คาร์บอกซิล และทำปฏิกิริยาที่อุณหภูมิห้อง รวมทั้งผสมแร่ดินเหนียวที่ไม่ได้ทำการปรับปรุงพื้นผิวและปรับปรุงพื้นผิวเพื่อเป็นตัวเสริมแรง การเตรียมไคโตซานแอโรเจลนาโนคอมโพสิตทำได้โดยตรงจากไคโตซานไฮโดรเจล งานวิจัยพบว่าเมื่อทำการผสมแร่ดินเหนียวลงในระบบ เจลจะมีลักษณะทางกายภาพที่ดีขึ้น, เพิ่มคุณสมบัติในการต้านทานความร้อน และลดการบวมตัวในน้ำ

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