

**BIOMIMETIC SUPRA-STRUCTURED CRUSTACEAN SHELL
VIA CHITOSAN-CLAY BIONANOCOMPOSITES**


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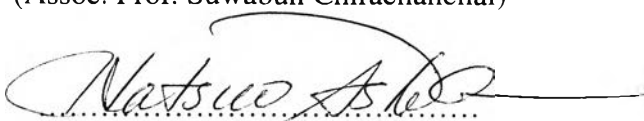
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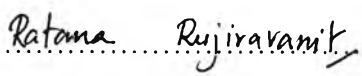

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ABSTRACT

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The preparation of chitosan nanocomposite is reported. Preparation of chitosan-clay-oligo/polyester nanocomposite was accomplished by simply mixing organoclay with chitosan acid solution in the first step followed by esterification with ethylene glycol. Chitosan oligo/polyester nanocomposite without organoclay was also prepared. The preparation of chitosan carboxylate salt gave the open layer structured of chitosan intercalating with carboxylic acid molecules. In the case of chitosan-dicarboxylate, the reaction with ethylene glycol gave chitosan-oligo/polyester nanocomposite. All types of chitosan nanocomposites and their nanocomposite formation were characterized by XRD, FTIR, and TGA.

บทคัดย่อ

นพคุณ แสนโพธิ์: การเลียนแบบโครงสร้างของเปลือกกุ้ง-ปู โดยไคโตซาน-เคลย์-นาโนคอมโพสิต (Biomimetic Supra-structured Crustacean Shell via Chitosan-Clay Bionanocomposites) อ.ที่ปรึกษา: รองศาสตราจารย์ ดร. สุวบุญ จิรชาญชัย และ ศาสตราจารย์ ดร. ฮัทสุโอะ อิซิดะ, 61 หน้า ISBN 974-9651-61-8

งานวิจัยนี้รายงานถึงการเตรียมไคโตซานนาโนคอมโพสิต การเตรียมไคโตซาน-เคลย์-โอลิโก/โพลีเอสเทอร์นาโนคอมโพสิต สามารถทำได้โดยเพียงการผสมเคลย์กับสารละลายไคโตซานในกรดในขั้นแรกแล้วตามด้วยการเกิดเอสเทอร์ฟิเคชันด้วยเอทิลีนไกลคอล นอกจากนี้ในรายงานได้รวมถึงไคโตซาน-โอลิโก/โพลีเอสเทอร์นาโนคอมโพสิตด้วย โดยเริ่มจากการเตรียมเกลือของไคโตซานคาร์บอกซิเลท ซึ่งชั้นของไคโตซานจะถูกเปิดออกโดยการแทรกของโมเลกุลกรดคาร์บอกซิลิก ในกรณีของไคโตซานไคคาร์บอกซิเลทปฏิกิริยากับเอทิลีนไกลคอลทำให้เกิดเป็นไคโตซาน-โอลิโก/โพลีเอสเทอร์นาโนคอมโพสิตได้ ไคโตซานนาโนคอมโพสิตและนาโนคอมโพสิตที่ก่อตัวขึ้นในโครงสร้างถูกตรวจวิเคราะห์แปลผลด้วย XRD, FTIR และ TGA.

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