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Author: Ngesa Ezekiel Mushi Nuria Butchosa Michaela Salajkova Qi Zhou Lars A. Berglund



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# Nanostructured membranes based on native chitin nanofibers prepared by mild process

Ngesa Ezekiel Mushi<sup>1</sup>, Nuria Butchosa<sup>1</sup>, Michaela Salajkova<sup>1</sup>, Qi Zhou<sup>1,2</sup>, Lars A.  
Berglund<sup>1,3,\*</sup>

<sup>1</sup>Department of Fiber and Polymer Technology, Royal Institute of Technology, SE-100 44  
Stockholm, Sweden.

<sup>2</sup>School of Biotechnology, Royal Institute of Technology, AlbaNova University Centre, SE-  
106 91 Stockholm, Sweden.

<sup>3</sup>Wallenberg Wood Science Center, Royal Institute of Technology, SE-100 44 Stockholm,  
Sweden.

\*Corresponding author: Tel: +46-8-7908118; Fax: +4687908101; E-mail address:  
blund@kth.se (Prof. Lars Berglund).

## Highlights,

- Procedures for chitin nanofiber or nanocrystal extraction from Crustaceans modify the chitin structure significantly, through surface deacetylation, surface oxidation and/or molar mass degradation. Here, very mild conditions were used to disintegrate chitin fibril bundles and isolate low protein content individualized chitin nanofibers, and prepare nanostructured high-strength chitin membranes. Most of the strongly ‘bound’ protein was removed. The degree of acetylation, crystal structure as well as length and width of the native chitin microfibrils in the organism were successfully preserved. Atomic force microscopy and scanning transmission electron microscopy, showed chitin nanofibers with width between 3 and 4 nm. Chitin

## Abstract

Procedures for chitin nanofiber or nanocrystal extraction from Crustaceans modify the chitin structure significantly, through surface deacetylation, surface oxidation and/or molar mass degradation. Here, very mild conditions were used to disintegrate chitin fibril bundles and isolate low protein content individualized chitin nanofibers, and prepare nanostructured high-strength chitin membranes. Most of the strongly ‘bound’ protein was removed. The degree of acetylation, crystal structure as well as length and width of the native chitin microfibrils in the organism were successfully preserved. Atomic force microscopy and scanning transmission electron microscopy, showed chitin nanofibers with width between 3 and 4 nm. Chitin

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