

Abstract Submitted  
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**The Effects of pH and Temperature on the Nanostructure of Chitosan Films**<sup>1</sup> RAMONA LUNA, AHMED TOUHAMI, University of Texas Rio Grande Valley — Developing a matrix that can mimic tissue-like environment for cell cultures and molecular studies can help reduce the loss of some cell functions that occur when investigations are performed in vitro. Of particular interest is chitosan (CS): abundant and renewable biopolymer that is also biodegradable and non-toxic. The present study focuses on synthesizing CS films under various conditions and for multiple applications. We are using several techniques to characterize the physicochemical properties of the synthesized films. The contact angle technique is used to determine the hydrophobicity, hydrophilicity, and the surface free energy. The atomic force microscopy is used to determine the nanostructure, and nanomechanical properties. Here we specifically investigated the effect of the pH and the temperature on the nanostructure of the CS films. AFM images showed remarkable changes in the surface nanostructures that increase the roughness of the films when the pH of the solution increases. However, the surface free energy of these films has not shown any significant changes with the pH. By investigating the properties of these films, the needed biomaterial platform for a specific biological system can be designed and manipulated to increase its performance and lifetime.

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