

## **Biodegradable chitosan coating for wood protection**

### **ABSTRACT**

Chitosan coating is a biopolymer-based coat made out of modified chitin that is usually derived from shellfish. The general development of the chitosan coating was to provide adequate, albeit impermanent, lamination of food products for protection during long transportation. With the idea for a pro tempore coating, this study focused on the production of a transient coating made from cockle shells-derived chitin, for the temporary protection coating for pre-machined wood instead. Due to its solubility in organic acids, the purpose of the coating primarily focused on the protection of pre-machined wood that is high in moisture content and susceptible to damages, in which will allow the easy removal of said coating whenever necessary. The process started with the extraction of chitin from the cockle shells through the demineralization, deproteinization, and deacetylation steps before integrating it with starch and glycerol to produce the biodegradable coating. The aim of this study was to determine the effect of the different deacetylation time (30, 60, and 90 minutes) on the physical and chemical properties of the coating. The physical properties observed includes the water absorption, drying time, various temperature resistance, and viscosity, meanwhile the chemical properties were observed based on its infrared spectra identification and pH value. Based on the results, the samples with the longest deacetylation time of 90 minutes displayed the best physical properties with a lower water absorption, shorter drying time, lower pH value, and best resistance towards the various temperature cycles, as compared to the other samples. This evidently shows the importance of the deacetylation process, as well as a sufficient hydrolysis prolongation in producing a desirable chitosan coating quality.