

## **Chitosan/corn cob biocomposite films by cross-linking with glutaraldehyde**

### **Abstract**

Corn cob (CC) was used as a filler in chitosan (CS) biopolymer films. The effect of glutaraldehyde (GLA) as a crosslinking agent was studied in an effort to improve the properties of CS/CC biocomposite films prepared via solvent casting. The tensile strength and elongation at break values decreased, but the modulus of elasticity increased with CC content. However, the tensile properties of CS/CC biocomposite films improved when modified with GLA. The Fourier transform infrared (FTIR) results indicated the presence of imine bonds (C=N) and ethylenic groups due to the cross-linking reaction between CS and GLA. The thermal stability of CS/CC biocomposite films reduced with increasing CC content. The modification of CS/CC with GLA enhanced the thermal stability of the biocomposite films. Moreover, the wettability and adhesion of the CC-CS system were enhanced by modification with GLA, as demonstrated by a morphological study. The crosslinking agent glutaraldehyde positively affected the tensile strength, modulus of elasticity, and thermal stability of the biocomposite films.

### **Keywords**

Biocomposite; Chitosan; Corn cob; Films.; Glutaraldehyde