



**CROSS-LINKING CARBOXYMETHYL CELLULOSE AND CHITOSAN WITH
CITRIC ACID**

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Carboxymethyl cellulose and chitosan are organic polysaccharides. When combined via a dip-coating process, they produced a thin hydrophilic film [1]. This film was transparent and may have useful industrial applications. However, the film was easily destroyed and saturated with water quickly.

To alleviate these issues, the polysaccharide film was cross-linked using citric acid. Citric acid was chosen as an environmentally-safe alternative to other crosslinkers [2]. This led to an increase in film stability and an increase in the amount of water absorbed. Additionally, cross-linking did not remove the film's transparency.

Future work may include reducing the amount of cross-linker necessary or speeding up the cross-linking reaction. These efforts will help make the polysaccharide films more robust and easier to produce.

References

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- [2] de Cuadro, P., Belt, T., Kontturi, K., Reza, M., Kontturi, E., Vuorinen, T., & Hughes, M. (2015). Cross-linking of cellulose and poly(ethylene glycol) with citric acid. *Reactive and Functional Polymers*, 90, 21-24. <http://dx.doi.org/10.1016/j.reactfunctpolym.2015.03.007>