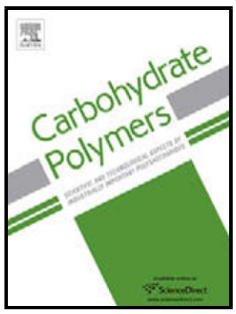

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Hydrophobization and smoothing of cellulose nanofibril films by cellulose ester coatings

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Highlights

- Nanocellulose films (CNF) were coated using molar mass controlled cellulose esters
- The cellulose ester coatings improved significantly the smoothness of CNF films.
- 3-layer films have very good water barrier properties
- 3-layer are heat sealable, which is unique for CNF films

ABSTRACT

The Cellulose nanofibrils (CNF), also referred to as nanocellulose, is one of the most studied bio-based material in recent year, which has good potential in the future for packaging applications due to its excellent mechanical strength and oxygen barrier properties. In the future, CNF films may also find new applications for example in printed electronics, if the surface smoothness of CNF films can be improved. One way to improve surface smoothness is to use thin coating solutions with zero porosity, such as molar mass controlled cellulose ester coatings. In this study, we have coated CNF films using molar mass controlled cellulose esters with different side chain lengths forming 3-layer film (ester-CNF-ester). These coatings improved significantly the smoothness of CNF films.