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Industrial application of pretreatments for obtaining high quality cellulose nanofibrils

Application industrielle de prétraitements pour l'obtention de nanofibrilles de cellulose haute qualité

CONFIDENTIAL



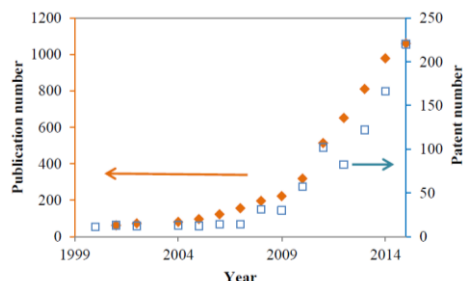
Context

Cellulose Nanofibrils (CNF)



- Produced from **biomass**
- Sustainable, renewable, biocompatible** and **biodegradable**
- Great **mechanical, optical, rheological** and **barrier** properties
- Replacement of oil-based materials for many applications: **biocomposites, packaging, papermaking, coatings, biomedicine, cosmetic**, etc.

Increasing interest from the scientific community and industry



Exported from SciFinder in July 2016

High energy consumption and **non-upscalable pretreatments** are the main limitations to CNF industrial development

Objectives

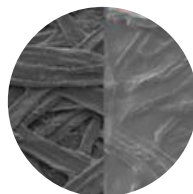
Develop **new fiber pretreatments**

Green & upscalable

Implementation at an **industrial scale**

Optimization of the pretreatment and production processes

Applications for **high added value materials**



Lavoine et al., 2012

In collaboration with an industrial partner



Methods

CNF production

Laboratory & industrial scale

- Several **cellulosic sources**



Masuko Sangyo Co., LTD

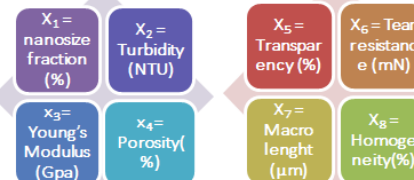
- Several **production processes**
- CNF **rheologic behavior**
- Study of **shearing forces**

Coating and printing processes

For high added value materials production

CNF characterization

Quality Index and material analysis



Criteria used in the Quality Index, developed for the characterization of a CNF suspension quality – Desmaisons et al., 2017

