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Ph.D. thesis (2023-2026)
LGP2 (C. Martin; J. Bras; Q. Charlier)

Cellulose substrate functionalization for barrier & sealing solutions in beauty packaging

Fonctionnalisation de substrat cellulosique pour des emballages barrières et scellables dans le domaine cosmétique

MatBio

Thèse confidentielle

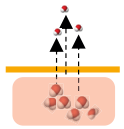
Context / Objectives

Single Use Plastic pollution

- SUPD in Europe, more and more regulations around the world
- Society expectations to have less plastic packaging

Replace flexible plastic packaging by barrier to water vapor paper packaging with bio-based coating

Reach the **barrier performance** required for high moisture products



Be **sealable**

Be **recyclable and 100% biobased**

Methods

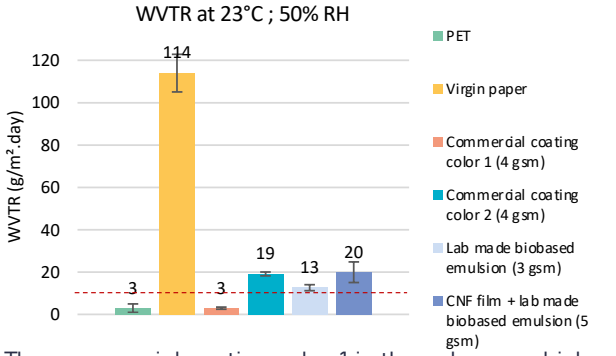
1. Suspensions formulations

2. Monitoring coating and drying parameters

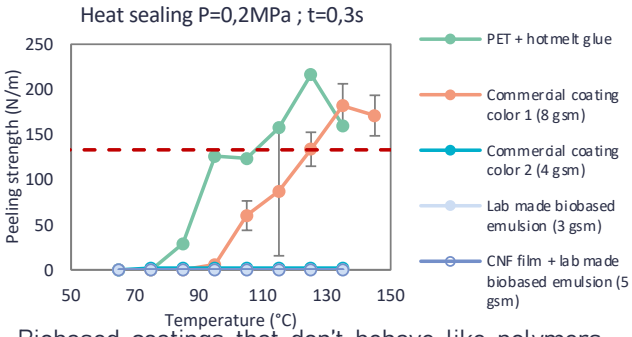
A multilayer strategy to reach all the targets

3. Characterisations of the material
   - Barrier performance
   - Recyclability
   - Sealability
     - Mechanical
     - Ultrasound
     - Heat

Results



The commercial coating color 1 is the only one which enables to reached the target (10 g/m².day). However, the lab made biobased emulsion is quit close to the target, which is promising.



Biobased coatings that don't behave like polymers are not heat selables.