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Ph.D. thesis (2023-2026)
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Confidential

Cellulose substrate functionalization for barrier & sealing solutions in beauty packaging

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

Context

Single Use Plastic pollution

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



Today's water vapor barrier papers

- Not recyclable
- Petrosourced layers
- Migration issues

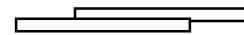
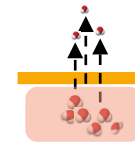
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Objectives

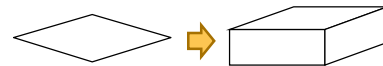
➔ **Replace flexible plastic packaging by paper packaging barrier to water vapor with bio-based coating**

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




Be sealable

Be recyclable



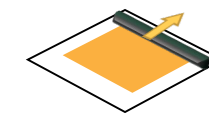
Converting resilience

- Bio-based suspension formulation 
- Coating and drying processes
- Surface design
- Other barrier development

➔ **Go towards industrialisation**

Methods

1. Suspension formulation 



2. Monitoring coating and drying parameters

3. A multilayer strategy for a better recyclability 

4. Characterisations of the material:

- Barrier performance
- Mechanical performance
- Sealability

5. Recyclability test 

