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Ph.D. thesis (2022-2025)
LGP2 (J. BRAS; I. DESLOGES, J. VIGUIE)

Multilayer Biomaterial Processing to produce high value-added active cellulose packaging solution.



Context

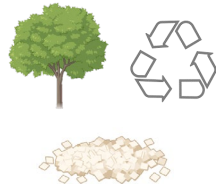
European directive on single use plastics

New legislations pushing the transformation of the packaging industry:

- New required sustainable solutions.
- Recyclable packaging.

Cellulosic Materials

- Bio-based and Biodegradable.
- Most abundant material on earth.
- Most recycled material in Europe.



Chaire Cellulose Valley

An organisation working to:

- Upgrade cellulosic materials.
- Propose new innovative and high performance solutions.

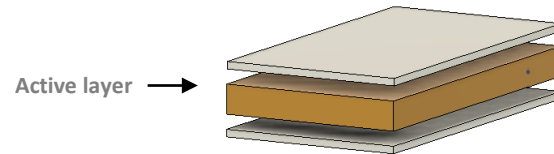


Funded by:

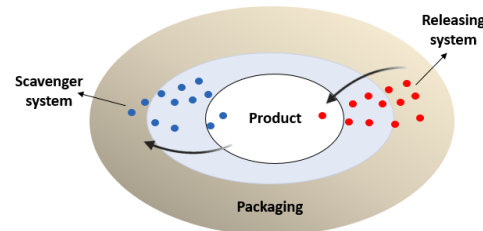


Objectives

➔ Create a multilayer structure for active packaging.



- Extend shelf life product's.
- Ensure barrier properties during storage.



Active packaging mechanisms

Three different main targeted properties:

- Antimicrobial and antioxidation protection.
- Moisture protection.
- Barrier shift.

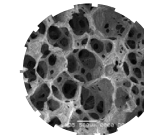


Methods

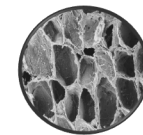
Cellulosic materials



Cardboard



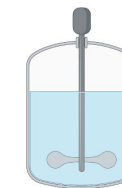
Foams



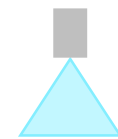
New cellulose forms

Processing

➔ Preparation of active layers

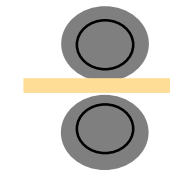


Foaming processes

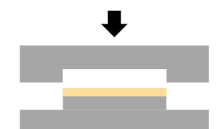


Spray coating

➔ Manufacturing processes



New assembly cardboard process



New 3D thermoforming process

