

Interreg



Cofinancé par
l'Union Européenne
Medegefinancierd door
de Europese Unie

France – Wallonie – Vlaanderen



COMPOVERT

**Transborder development of vegetal reinforced functional composites.
Valorisation of local by-products.**

OBIWAN workshop and official EFTB inauguration



Priorité 1

30-04-2026 (Ghent)

Soutenir les entreprises, la croissance, la relance de l'activité économique via l'innovation et la recherche appliquée

Objectif spécifique 1.1

Développer et améliorer les capacités de recherche et d'innovation ainsi que l'utilisation des technologies de pointe



Transborder development of vegetal reinforced functional composites. Valorisation of local by-products.

Partners



Associated partners





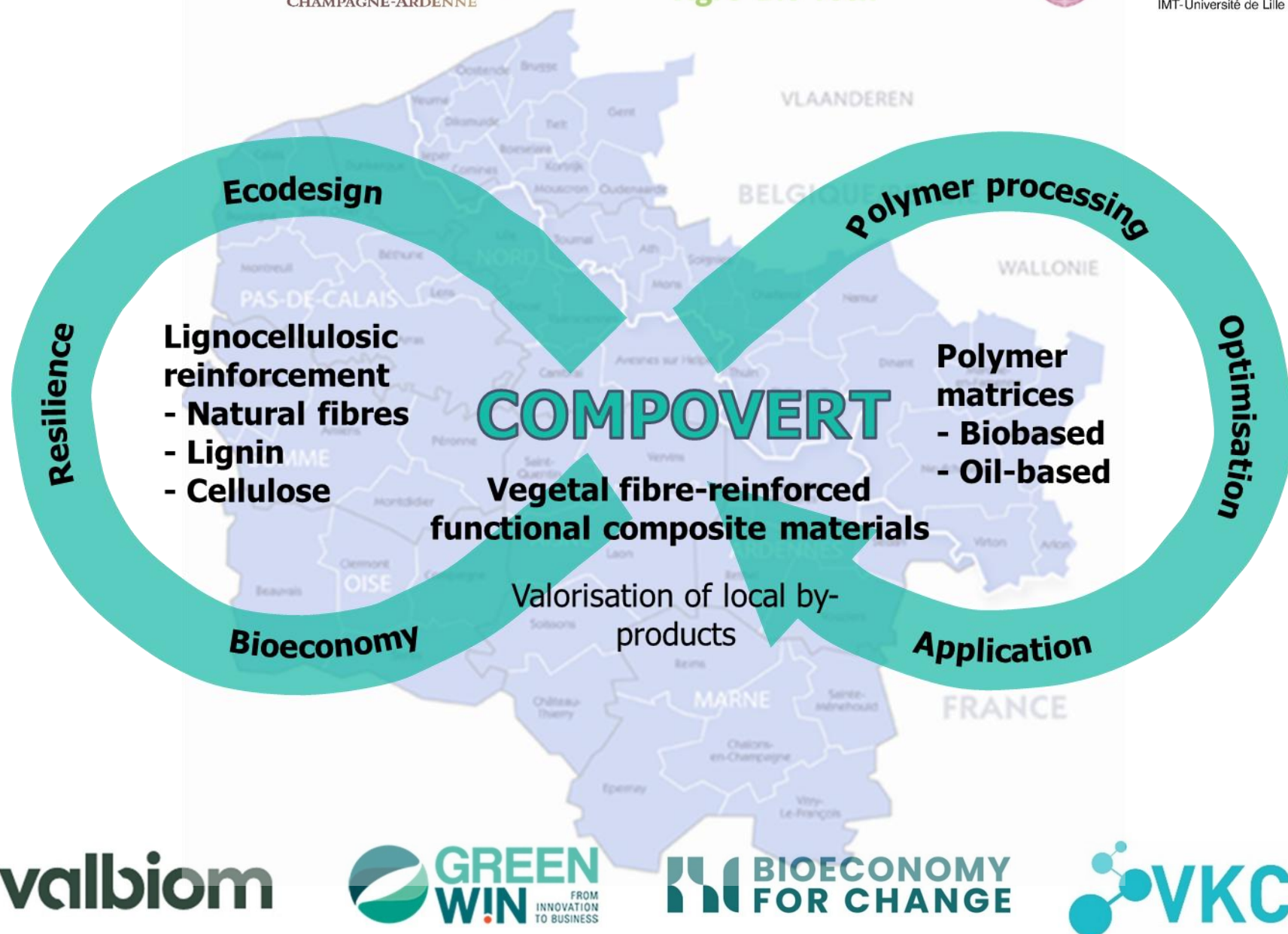
What are the objectives of the COMPOVERT project ?

COMPOVERT aims at developing through a transborder collaboration functional composite materials with vegetal reinforcement using local by-products such as **lignocellulosic fibres** and **lignin** for instance.

These recyclable biocomposites, that are targeted to be antioxidant, antibacterial or antistatic, will enlarge potential applications to support the transborder local industry



Certtech
R&D partner in chemistry



valbiom





Transborder project COMPOVERT



To support companies for the development of
functional biocomposite materials

- Materials (Polymer matrix, lignocellulosic charges and reinforcement) : selection, treatment, **optimisation** using **AI**
- Processing of functional biocomposites and **evaluation of their properties**.

⇒ **Demonstrators of fonctionnal biocomposites**

Specific properties : antioxidant, antibacterial, antistatic

Innovative processes : thermocompression, filament winding (continuous fibres), coextrusion, coinjection (modulation of surface properties)



Transborder project COMPOVERT



Fields of interest

- ☐ Lignocellulosic fibres
- ☐ Lignin
- ☐ Formulation and processing of fonctionnal biocomposites
- ☐ Properties of biocomposites : mechanical, antistatic, ...
- ☐ Characterisation of odours et VOCs
- ☐ 3D printing
- ☐ Recyclability
- ☐ ...



Partner



Biomasse et Technologies Vertes

Université de Liège

Prof. A. Richel (a.richel@uliege.be)



15-20 reasearchers, lab et pilot

- 50% PhD « non-BE »
- International temporary researshers



Communication and sensibilisation

- Articles, conferences, events, etc.
- Targeted communications (companies, students, etc.)
- Diffusion to a larger audience



Fondamentale (and applied) research

- Conversion of renewable feedstocks in sustainable applications (energy, materials)
- Chemistry

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Research focus (Uliège)

Fundamental and applied



Medical device

FEDER, .. Industrial
and academic
collaboration



Conductive
materials

FEDER, Academy



Molecules with
deferenciated
properties and structure

SPW, .. industry, WBI, ARES



New materials or
additives

FEDER, FNRS,
INTERREG, ARES- PRD



Intermediates
(drop-in)

Industrial collab.,
COST, academia



Synthetic fuel

SPF (FTE),





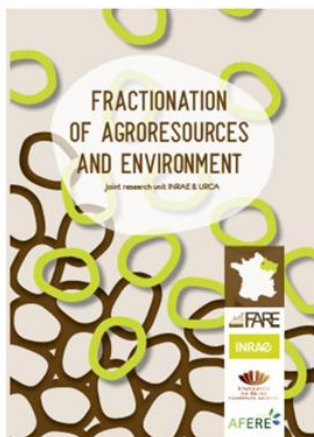
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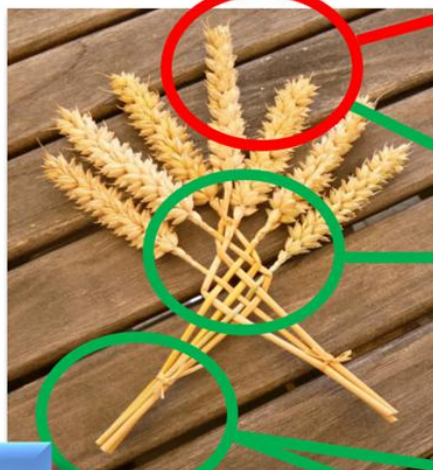
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INRAE

Deconstruction of lignocelluloses and uses of plant-based renewable carbon

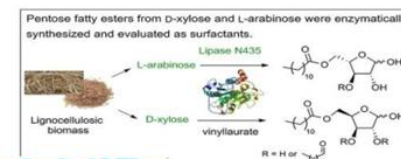
in natural systems and for biorefinery and industry



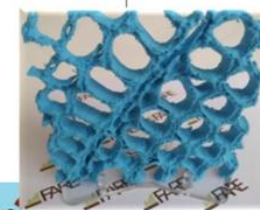
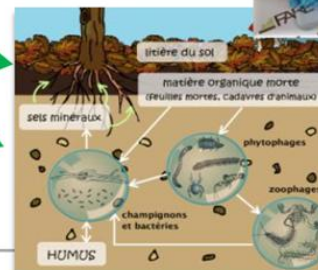
Food



Chemistry and materials

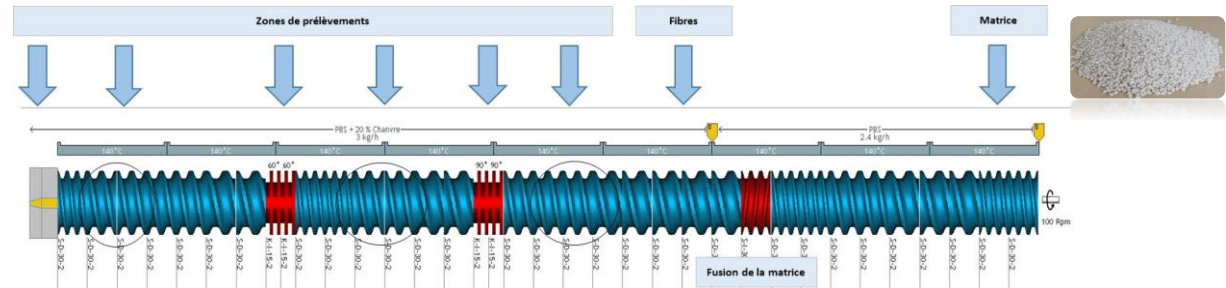


Soils





- Reinforcement : lignocellulosic fibres (flax, hemp) ans lignins



- *mechanical (traction)*
- *rheological (plate-plate rheometry)*
- *antioxidant (DSC)*
- *antimicrobial*





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Example of antimicrobial tests

- Composites

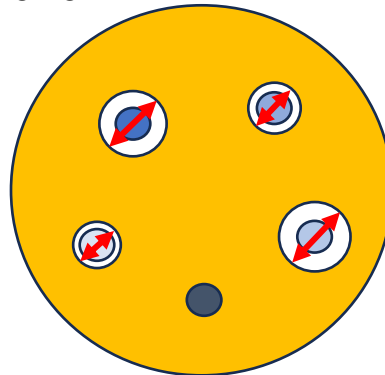


- Reference microbial stems (*Escherichia coli*, *Staphylococcus aureus*...)

- On an agar nutrient medium

→ Observation of inhibition zone for the development of micro-organisms

1. Spreading of the reference bacteria
2. Deposit on the surface of a composite
3. Determination of contact time
4. Observation of the inhibition zone around the object (↔)

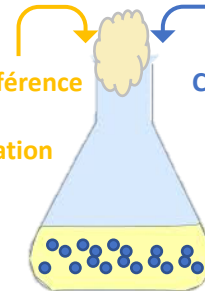


- In a liquid medium

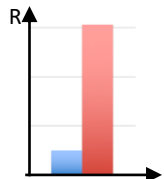
→ Determination of the decrease of the microbial population

Suspension of the référence bacteria at a specific concentration

Composites



1. Contact
2. Determination of contact time
3. Counting of the surviving bacteria
4. Estimation of the logarithmic decrease (R) of the tested population





CRITT Matériaux Innovation

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- ISO 9 001(Quality)
- ISO 45 001 (Safety)
- ISO/CEI 17025
- (COFRAC test 29.1, 29.2, 29.4, 93-1, 136)
- NADCAP (Aeronautic)



Accreditation SAFRAN-SNECMA

Qualification AIRBUS



Self-accreditation RENAULT



Research and development topics



1. Materials from powders



2. Tribology



3. Characterisation of
end surface



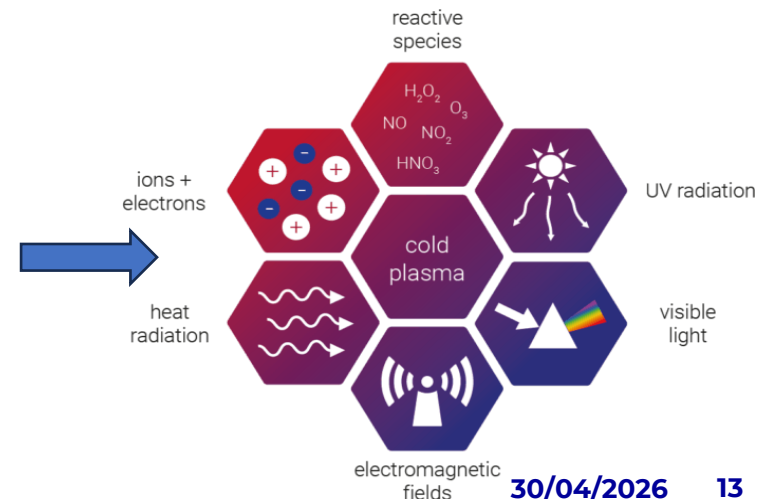
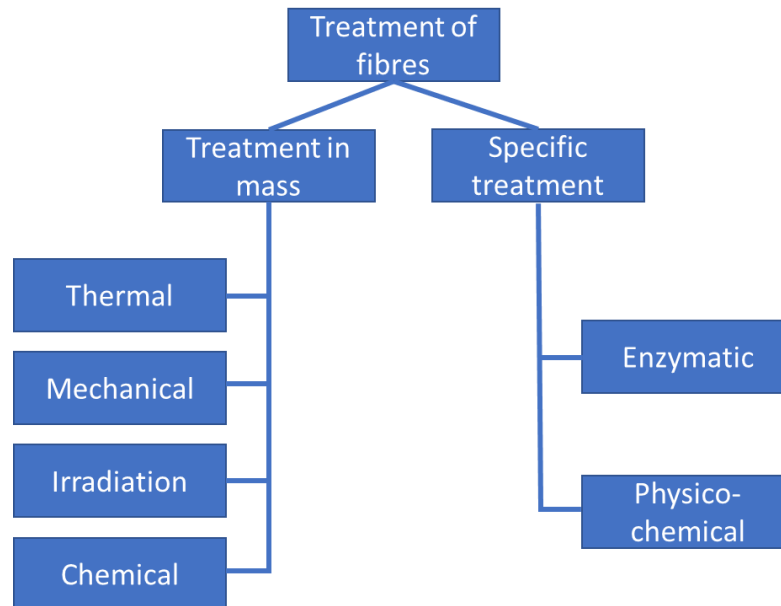
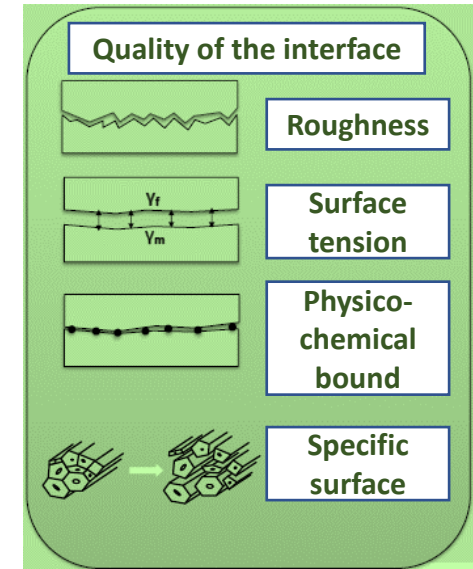
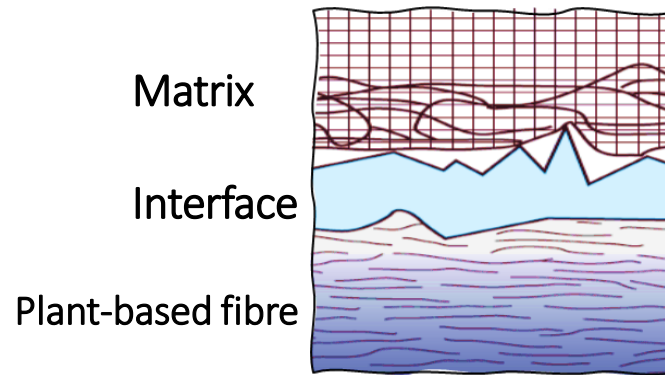
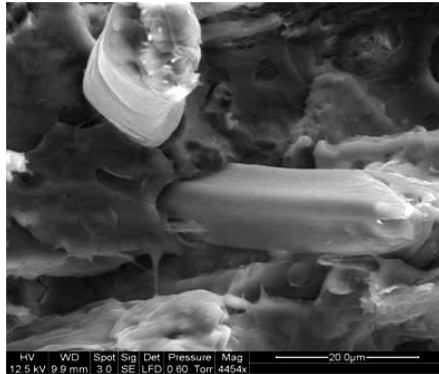
4. Surface treatment
by plasma



Partenaire



About interfaces



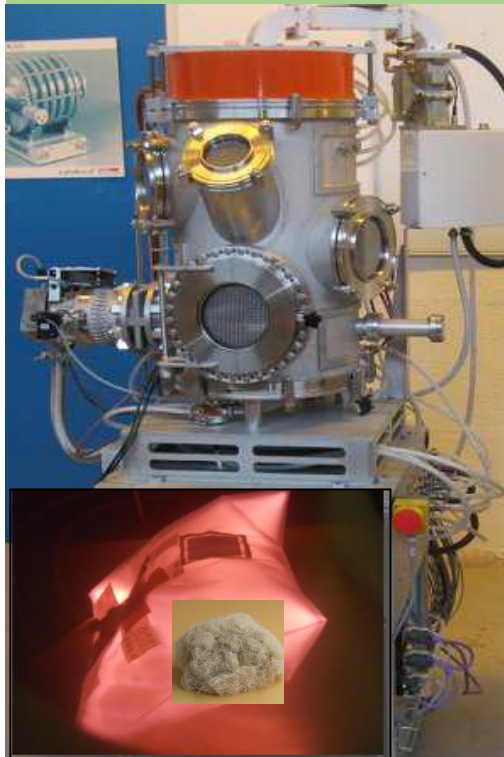


Partner

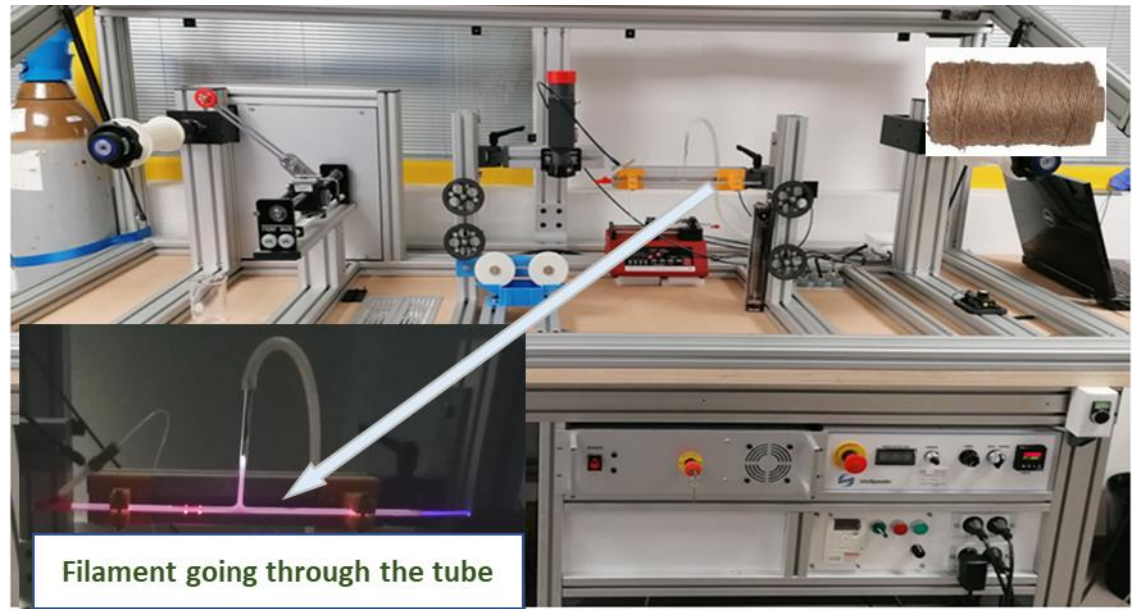


Objective : Within COMPOVERT, CRITT Matériaux Innovation aims at performing surface treatment or coating assisted by plasma to optimise the mechanical, physicochemical and biological properties natural fibres-based composites.

I. Treatment of short fibres using **RF plasma** under vacuum



II. Treatment of roll-to-roll continuous fibres by **plasma** at atmospheric pressure





Partner



On-going development

1. Surface treatment of natural fibres using plasma under vacuum or at atmospheric pressure
2. Tests on the plasma treatment of lignins
3. Characterisation of the fibre/matrix interface by determination of the adhesion on the final composite and of the physicochemical and mechanical properties.
4. Aging tests (under O₂ or in combining UV-moisture-temperature) based on norms and protocols of the automotive and aeronautical industries.
5. Development of application of cellulose nanofibres (CNF) as hydrogels for 3D printing



Partner



ENVIRONMENT

Air quality
Health & safety
Energy
Circular Economy

MATERIALS

(Bio-based) polymers & composites
Emissions and odours from materials
Lightweight materials
Mechanical Recycling

CHEMISTRY & INDUSTRIAL PROCESSES

Micro / Meso fluidic technologies
Catalysis and synthesis
Chemical Recycling

ANALYTICAL & TECHNOLOGICAL SERVICES

Extended characterization platform / reverse engineering
Pilot equipment
Products and processes improvement

R&D partner and supplier of analytical and technological services for companies involved in activities related to chemicals, life science and plastics

- 420 industrial contract in 2025
- 33 employees
- 1830+ industrial collaborations since 2000



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Identification and
supply of
biobased fibres

+

Post-treatment
of biobased
fibres

Identification and supply of
thermoplastic polymer matrices : PBS,
PLA, Starch

Process and
formulation
of a
biocomposite

Shaping of a
biocomposite

Characterisation of intermediates and final products



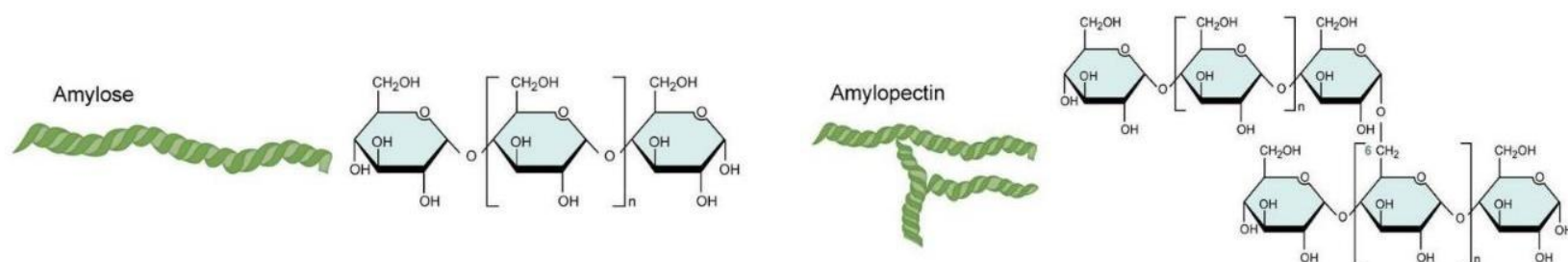
= contribution of Certech



Partner



Development of a biobased thermoplastic matrix



Starting material: Starch ($\neq$ grades)

Method : Modification/fonctionnalisation of starch with various chemical agents.

Process : Batch, reactive extrusion.

Target : Thermoplasticity, hydrophobicity, mechanical properties.

Shaping: Film extrusion, hot-pressing, thermoforming, injection molding.

Applications : Packaging, agriculture, pharma.



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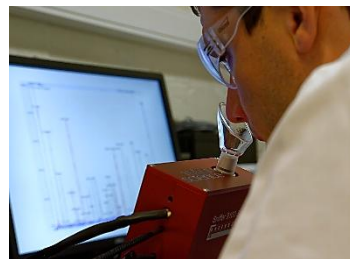
Characterisation of the biocomposite

Expertise in odours and emissions :

- Sampling methods: Emission chambres, specific conditioning...
- Characterisation of emissions : sensorial and chemical.
- Solutions/remediation : impact of the process, formulation, post-treatment...

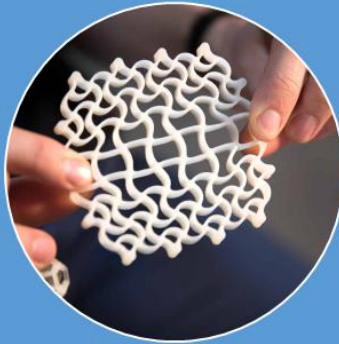
composition of an odour :

- Detectability : detection level, quantification by dynamic olfactometry.
- Intensity : mesurment on a specific scale.
- Quality : decomposition in fondamental notes via the *Field of odours*® approach.
- Hedonic tone : acceptability, subjective and global perception.





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Polymers

Thermoplastics, polyolefins
PVC PMMA PA Elastomers
Mixture of polymers Recycling
Piezoelectric polymers
1biobased PLA PBS
Compoundage Extrusion
Injection 3D printing



Civil engineering

Beton, Granulates, soils,
Bituminous materials, Hydraulic
binders, Mineral additives,
Géopolymers Recycling,
Sediments, Alternative
materials Biobased flax hemp
rapeseed
Autoclave, 3D printing Flash
Calcination



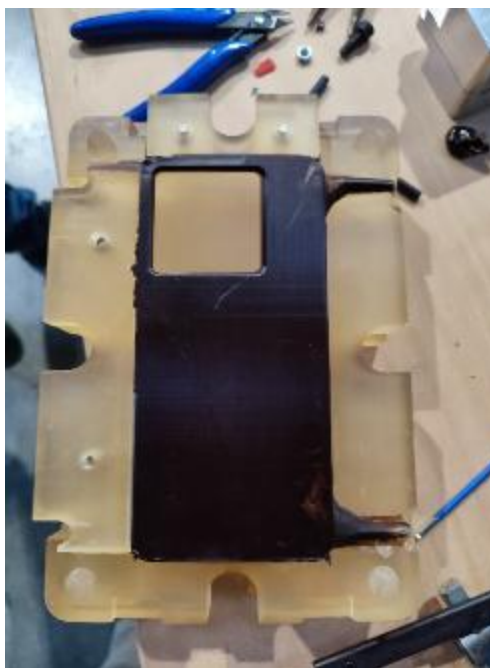
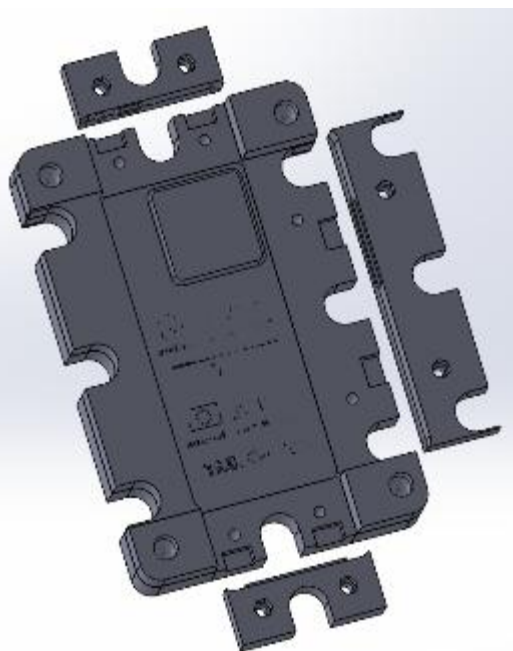
Composites

Structural composite
Thermoplastic matrix
Thermosets Prepreg
Reinforcement Film stacking
Recycling Glass Carbon
Biobased Flax Hemp
RTM Infusion Autoclave

Towards diversified Materials & Processes



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Exemple of pieces – conception of a mold for a phone case

- Additive manufacturing of the mold
- Injection with PLA and lignin (Holypress, 2x16cm³)
- Personnalisation of phone cases by laser etching (snapmaker artisan module diode 40W)



**Bedankt !
Merci !**



in www.linkedin.com/company/compovert/

www.compovert-interreg.eu

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