

LETI'S BIOSOURCED MATERIALS

DRUG DELIVERY BIOSOURCED MATERIALS

+ WHAT ARE BIOSOURCED MATERIALS?

Specializing in nanobiotechnologies, Leti develops biomaterials for drug delivery systems, such as aerogels, patches for bandage and coating to speed up the wound healing process. Biosourced materials are processed from natural biopolymers such as polysaccharides or polypeptides. The chemical nature of such surfaces involves specific characterization, advanced material processing and drug loading techniques. Leti researchers offer:

- **A double encapsulation technology:** encapsulation of lipophilic / hydrophobic drugs into lipid nanoparticles or cyclodextrins, which are then loaded into the material matrix
- **A controlled solution:** material morphology and porosity are controlled during to the entire process
- **Various end-products:** films, bulk materials, hydrogels, microbeads and fibers
- **Further functionalities:** conductivity and stretchability leveraging synthetic polymers (PEDOT, PANI, PEG, etc.)

+ APPLICATIONS

By developing new Biosourced materials, Leti addresses new challenges in biotechnology and nanomedicine:

- **Trans-dermal or trans-mucosal drug delivery systems:** drug-delivering patches, dressings
- **Support and coating for medical devices:**
 - Support materials for biosensors
 - Coating for prostheses, medical devices
- **Injectable hydrogels and tissue reconstruction:**
 - Injectable matrices for post-surgical tissue reconstruction
 - Resorbable localized drug delivery systems
- **3D cell culture:** Organs-on-chips, Drug and siRNA screening



+ WHAT'S NEW?

- **Materials with various mechanical properties** (young modulus from one to hundreds of kPa) to match the elasticity of targeted tissues
- **Materials processed in different final forms**, such as hydrogels, films, sponges or fibers, to match the targeted medical application
- **Material processing with various techniques** to fit the active ingredients properties (spin coating, dip coating, molding & cross-linking, supercritical fluid deposition, electro-spinning, freeze-drying...)
- **Complete set of characterization processes** available at Leti (structural, thermal, surface, rheological, mechanical, biological, optical spectroscopic...)

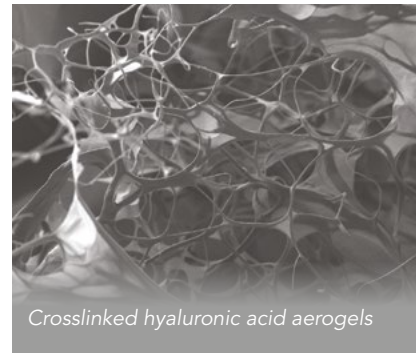
+ WHAT'S NEXT?

Leti is continuously working on improving its biosourced solutions. Its team is currently developing:

- Resorbable polymers with controlled kinetics of biodegradation (from days to years)
- Multi-functional materials (stretchable, conductive)
- Stimuli-triggered delivery



Sponge, hydrogel and film



Crosslinked hyaluronic acid aerogels



Collagen sponge and chitosan film

INTERESTED IN THIS TECHNOLOGY?

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