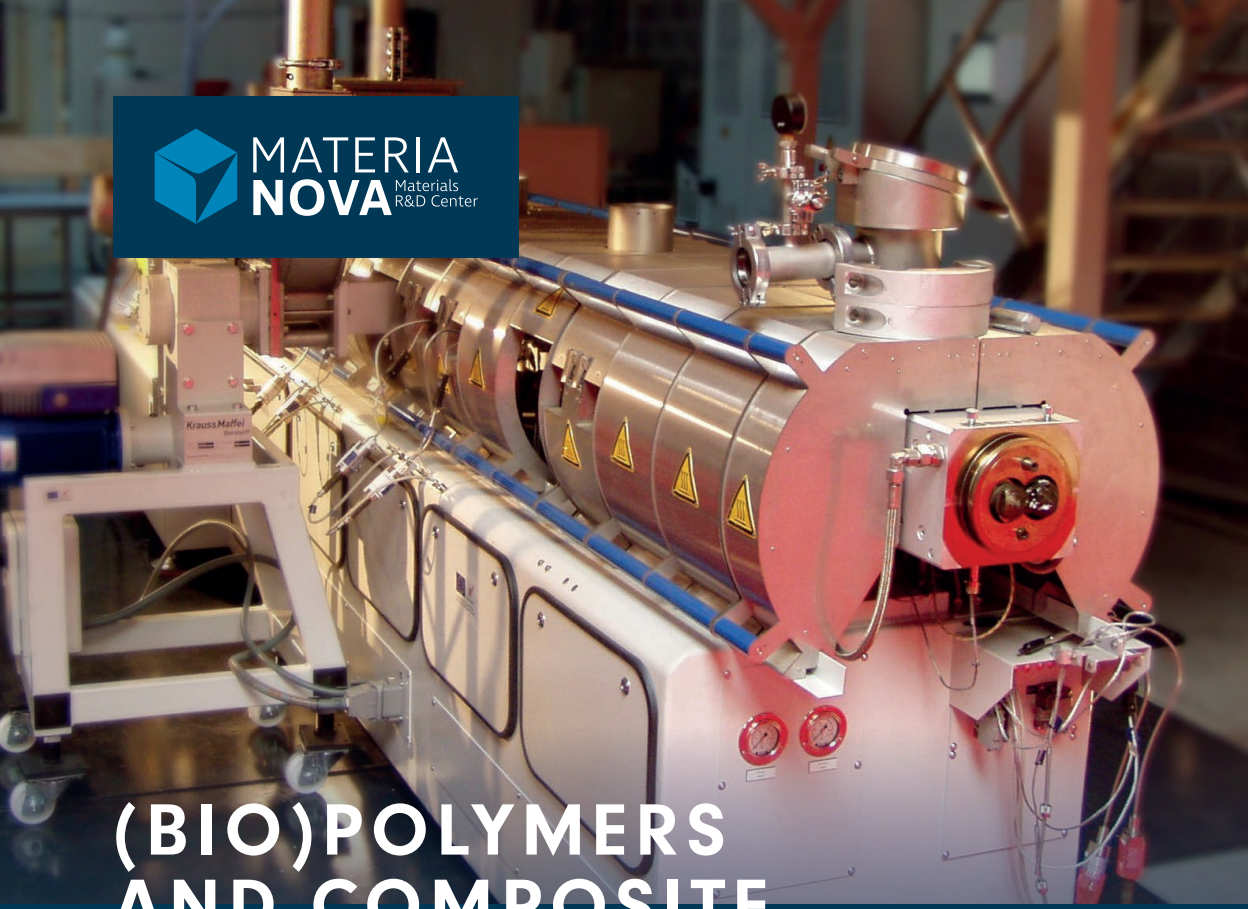


(BIO)POLYMERS AND COMPOSITE MATERIALS

MATERIA NOVA, THE TECHNOLOGICAL ACCELERATOR IN DEVELOPMENT OF SUSTAINABLE (BIO)POLYMERS AND COMPOSITE MATERIALS

(BIO)POLYMERS

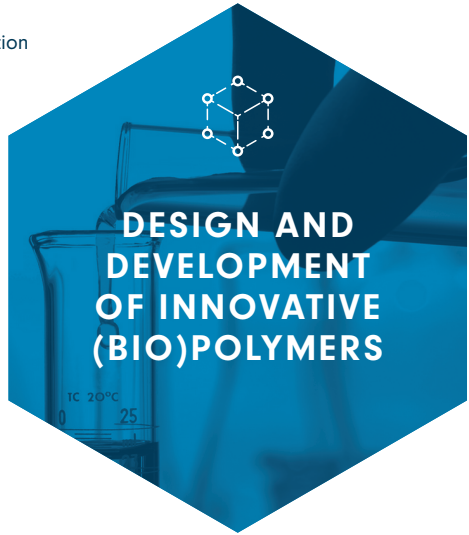
CHARACTERIZATION > OPTIMIZATION >

CHEMICAL SYNTHESIS

- Specific initiators, new catalysts
- New monomers preparation
- Macromolecular engineering
- (Bio)additives chemical modification

POLYMER MELT PROCESSING

- (Nano)composites design and development
- Compatibilization of (bio)polymeric blends
- Functional composites for 3D printing
- Small and large batch production from a few grams to 100 kilograms-tones



REACTIVE EXTRUSION

- Solvent free synthesis
- (Bio)polymers grafting, reactive plasticization, chain extension, ...
- Functional (bio)plastics preparation
- Adapting screw configuration

CREATION > ANALYSIS > DEVELOPMENT

BIOMEDICAL APPLICATIONS

- Biocompatible & bioresorbable polymers
- Controlled Drug delivery systems
- Stimuli-responsive (bio)polymers

SUSTAINABLE PACKAGING

- Biodegradable films / materials
- Functional packaging: barrier properties, antimicrobial, ethylene scavenging ...
- Chemical/mechanical recycling

TECHNICAL APPLICATIONS

- Non-halogenated flame retardant materials
- Electroconductive composites
- High performance thermosets
- Mechanical resistance
- Thermal insulator (bio)materials

SMART (NANO)COMPOSITES

- Self healing
- Shape memory
- Piezoelectric (bio)polymers
- Phase change materials

EQUIPMENT

(Bio)polymer melt processing

- Multiscale double-screw extruders
- Two roll rubber mill
- Injection molding machines
- Films preparation by blow film extrusion and casting
- Fillers surface treatment (up to 1kg by batch)
- FDM & SLS 3D printers, custom filament production

Chemical synthesis

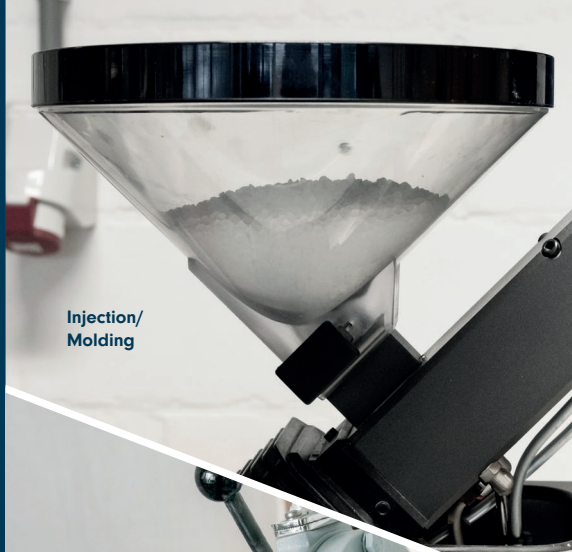
- Autoclave reactors (50-250ml) for high/low pressure polycondensation under inert atmosphere
- Gloves box with H_2O et CO_2 (< 1 ppm) controllers and analyzers

Characterization

- Chemical and structural analysis
- Thermal, mechanical & rheological analysis
- Fire testing
- Polymer films gas permeability
- Morphological analyses: SEM, XPS, AFM, ...

SERVICES

- Polymer & composite characterization
- New formulation proof of concept
- Assistance quality control
- Technological Survey



Injection/
Molding

Fillers surface
treatment

Chemical synthesis


Tensile Test


Biobased materials


Sustainable packaging


Compouding scaling up

ABOUT **MATERIA NOVA**

Materia Nova is recognized as a technological accelerator of sustainable innovations in the field of new materials and processes.

The R&D center offers five different services:

- **Materials and Processes conception and innovation**
- **Equipment Design and Process Upscaling**
- **Analysis and Characterization**
- **Life Cycle Thinking**
- **Project Development and Management**

The approach of Materia Nova is based on an open and collaborative innovation.

From the understanding of the problems and requirements of our customers, we jointly select the best scientific and technical solutions which are then tested on a pilot-scale before industrialization. The development and the service provided are always unique and customized and give effective solutions as well as a major competitive advantage to our customers.

OUR **TECHNOLOGIES** AND **SOLUTIONS**

Our expertise in **surface coatings and treatments**, in **polymers and composites** and in **biotechnology** is fertile ground for:

- **developing new functional performances of materials,**
- **taking up the energy and environmental challenges of our society,**
- **protecting and promoting the health sector.**

OUR **STRENGTHS**

- A multidisciplinary team of experts
- A wide range of cutting-edge equipment
- An open and collaborative innovation strategy at national and international level
- Innovative projects for and with industrial companies
- Collaborations with R&D centers and universities worldwide
- A strong network of companies, spin offs and start-ups (B-SENS, ESIX, IONICS and NANO4)

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