

## 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)

## CONTACT

### Belgium:

Thomas Godfroid - Scientific coordinator  
Thomas.godfroid@materianova.be  
+32 65 55 49 20 / +32 497 73 23 59  
Avenue Nicolas Copernic 3  
B-7000 Mons - Belgium

### Germany:

Frédéric Haase - Business development manager  
frederic.haase@materianova.de  
+49 711 758 74 613 / +49 1520 39 38 580  
Fritz-Müller-Straße 137  
D-73730 Esslingen - Germany

[WWW.MATERIANOVA.BE](http://WWW.MATERIANOVA.BE)



UMONS  
Innovation Center

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# MATERIA NOVA

**PLASMA**  
MATERIA NOVA, THE TECHNOLOGICAL ACCELERATOR  
OF PLASMA TREATMENT



## Plasma, an environmentally friendly technology

### Development of new functionalities

#### Protection and durability:

- Anti-corrosion, anti-fouling
- Resistance: friction, wear, impact, scratch ...
- Barrier ( $O_2$ ,  $H_2O$ , ...)

#### Environment:

- Catalytic properties
- Energy efficiency

#### Aesthetic properties:

- Anti-fingerprint, easy cleaning
- Coloring
- Structuring



#### Optical properties:

- Transparent functional materials
- Optoelectronic devices (PV & OPV and OLED)

#### Adhesion and surface preparation:

- Cleaning
- Wettability
- Adhesion or anti-sticking

#### Health:

- Anti-microbial, anti-viral properties
- Biocompatibility
- Sterilization, decontamination

#### Electrical properties:

- Conductivity
- Piezoelectricity

### Services

- Waste and pollutants management
- Mass spectrometry and optical diagnostics
- Surface characterization
- Qualitative and quantitative outgassing measurements
- Training and guidance

### Improvement and modification of surface properties

#### Thin film deposition

- Metals (pure metals and alloys)
- Amorphous alloys
- High entropy alloys
- Ceramics and composites
- Plasma polymers
- Hybrids (metal-ceramic)

#### Ion beam implantation

- Doping
- Work hardening

#### Preparation and functionalization of surfaces

- Cleaning
- Grafting of chemical functions (amines, carbonyls, hydroxyls ...)



### Design and development

#### Tailor-made development on all types of supports and shapes

- Wires and cables
- Powders and small items
- Cavity walls
- Liquids

#### Equipment

#### Specific power supplies

#### Combination of processes