

MATERIA NOVA



LE FONDS EUROPÉEN DE DÉVELOPPEMENT RÉGIONAL
ET LA WALLONIE INVESTISSENT DANS VOTRE AVENIR



Wallonie

Advanced Materials & Solutions for Energy Applications

Innovative and Sustainable Polymeric Materials

Cells for Materials & Materials for Cells

Multifunctional Surfaces

Life Cycle Thinking

Characterization Platform

MateriaNova
MATERIALS R&D CENTRE

FUTURE MATERIALS MADE BY TODAY'S PEOPLE

Avenue Nicolas Copernic, 1 - 7000 Mons
+32 65 55 49 02
info@materianova.be
www.materianova.be

6ème workshop Nord-Européen sur le traitement des COV - 6de Noord-Europese workshop over de behandeling van VOS

Projet Biodec 23-06-2017

Tangi Sénéchal, Driss Lahem, Mireille Poelman

EMRA

Materia Nova is member of **EMRA**

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Zero-energy buildings : Improvement of houses insulation.....Entrapment of polluta

Since 2012, air quality control are required twice a year in public buildings in France and a new signalization showing the level of emissions of furniture and construction materials is available

Market for BIODEC developpements

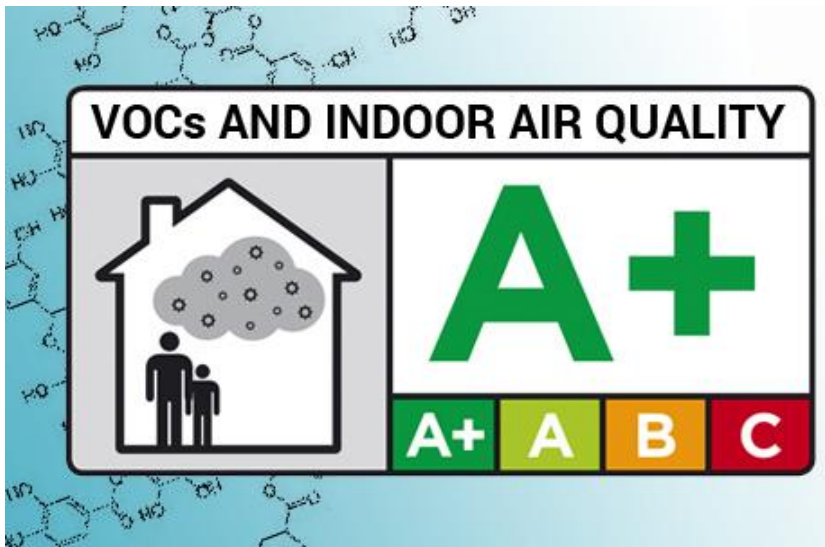
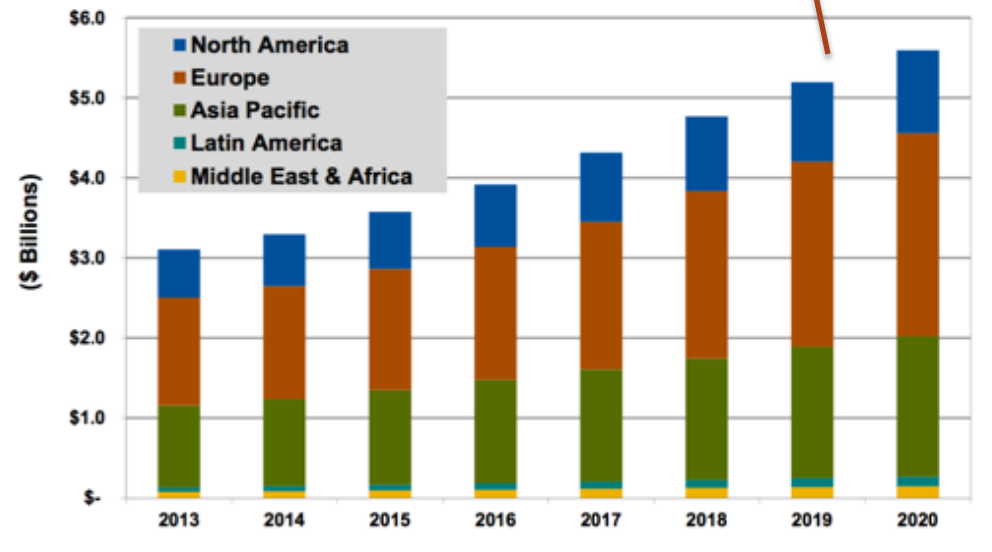


Chart 1.1 Indoor Air Quality Technologies Revenue by Region, World Markets: 2013-2020



(Source: Navigant Research)

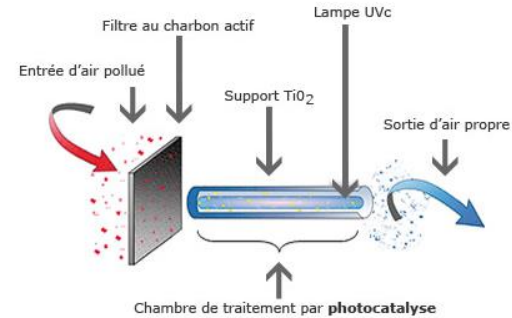
On the market of air cleaning

Air recycling systems with activated carbon filters



pollutants entrapment

Stand-alone photocatalytic systems



Degradation of pollutants

Biodec aims to develop systems :

- Able to **capture** and **decompose** the contaminants in **non-toxic** products toward health and environment
- Easily coated on existing substrats by **sustainable water-based technics and industrializable**
- Using **bio-based products** and **bio-inspired** active components

Biodec consortium with active partners in the field of coatings:

Universities (7 labs)

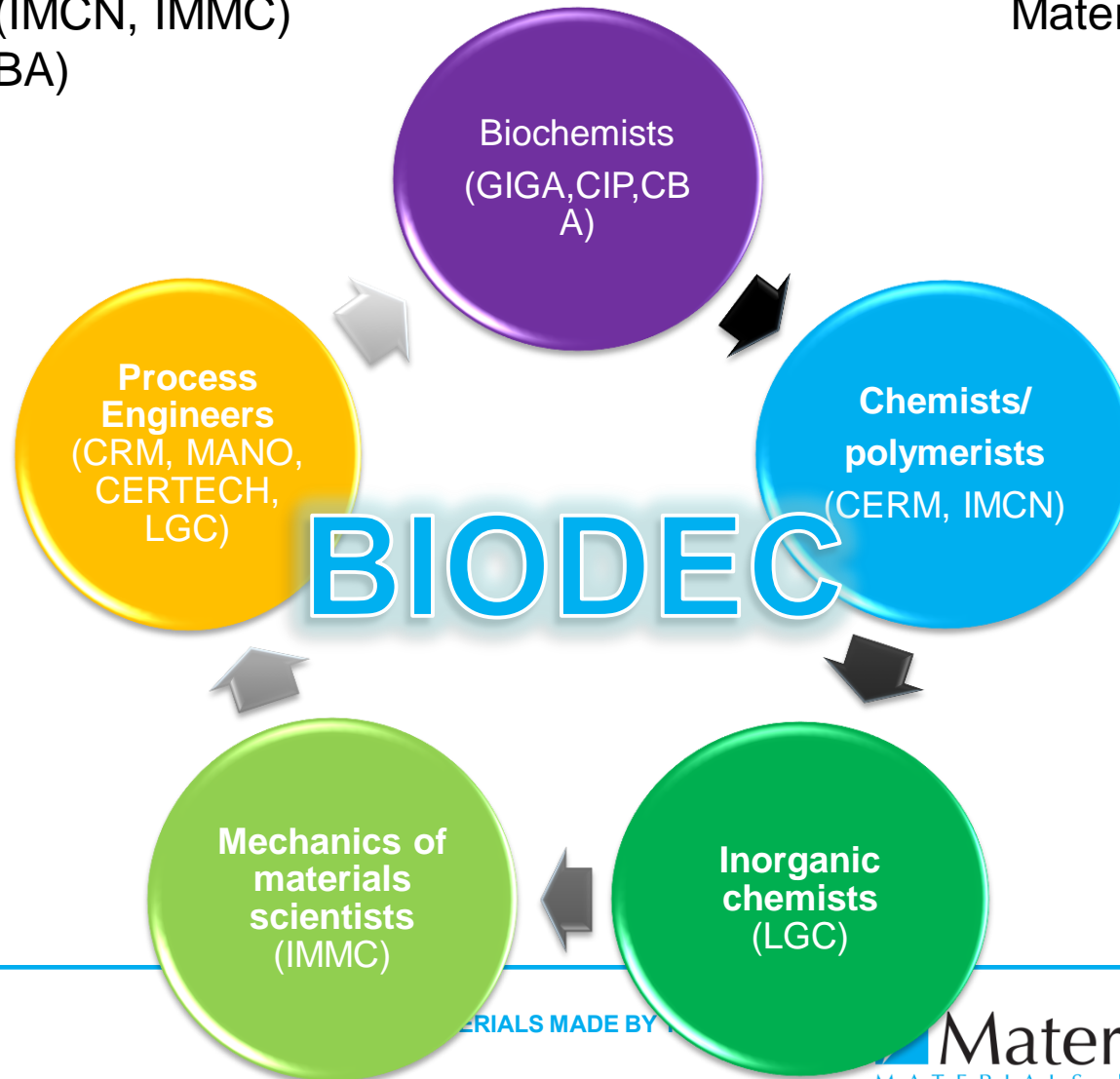
Univ. Liège (CERM, GIGA, CIP, LGC)

Univ. Louvain (IMCN, IMMC)

Univ. Mons (CBA)

research center

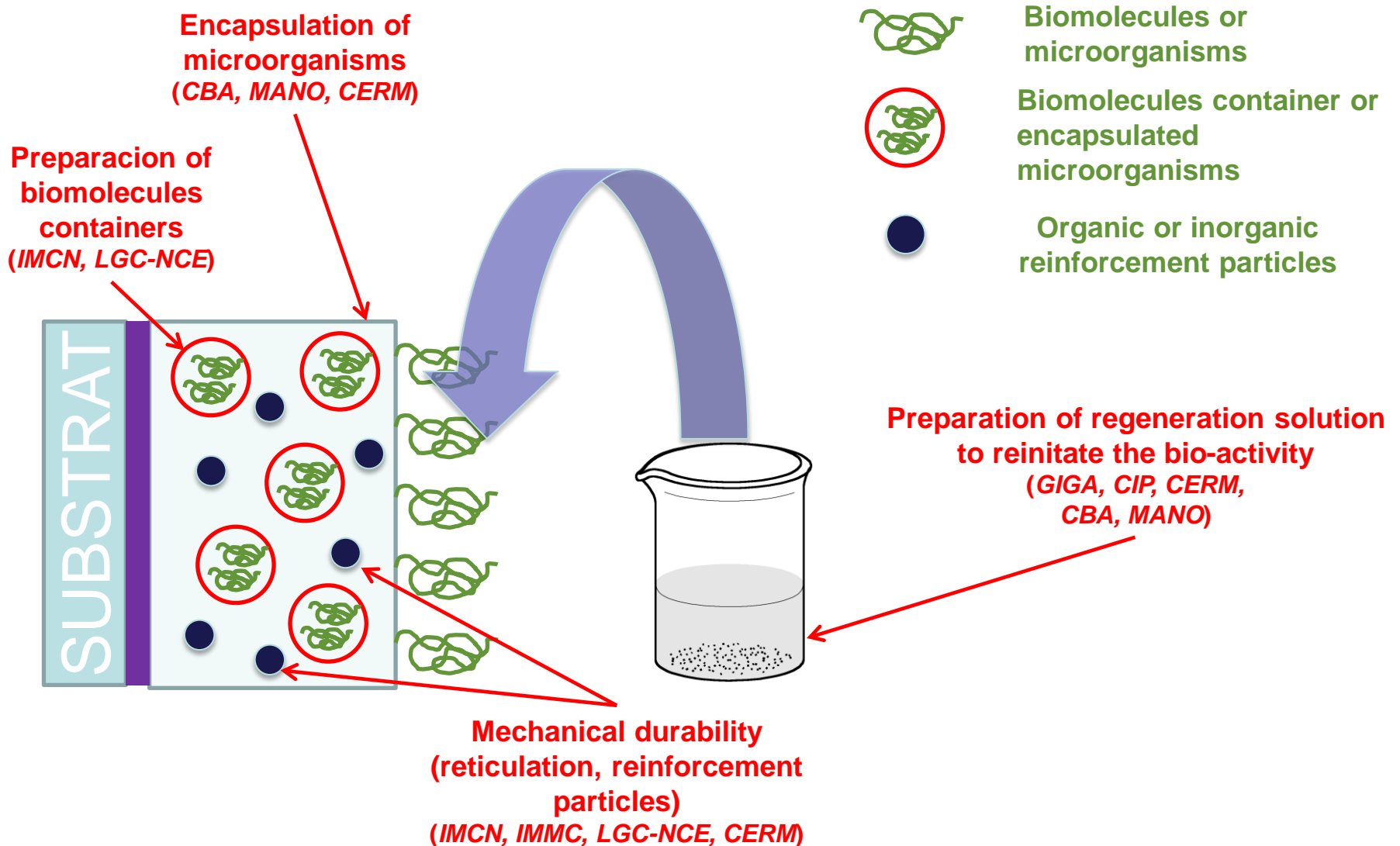
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Solution developed in BIODEC project

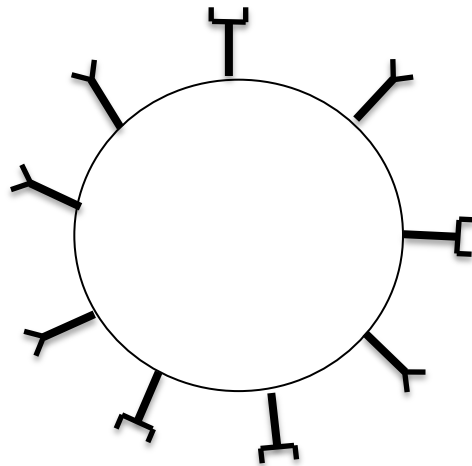


Active biomolecules and microorganism



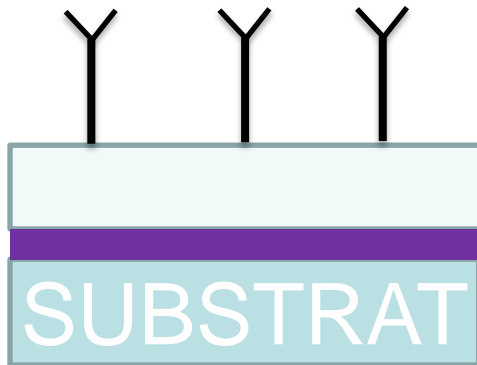
Enzymes specifically dedicated to VOC degradation

Ex : Formaldehyde deshydrogenase



Inhibited microorganism with a « cocktail » of active enzymes

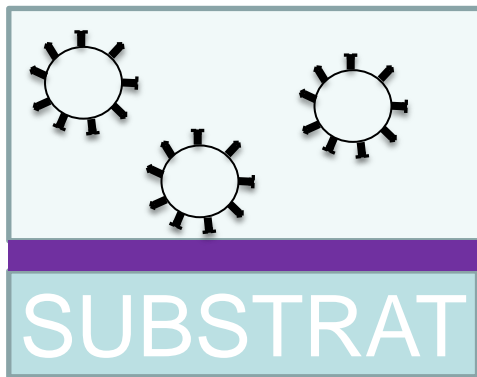
Coating solutions



- Grafting of biomolecules on the surface

→ Nanogel

→ Sol-gel



- Encapsulation of microorganisms in coatings

→ Flexible latexes

→ Sol-gel

Control of pH, temperature, solvents for enzymes viability

- Accessibility of enzymes to pollutants
- Applicability by spray or brush
- Regeneration of enzyme cofactors

Biodec project applications

Reagents

Production, purification and supply of biomolecules

Formulation of bio-active coatings

sol-gel solution

Formulation of regenerative solution

Substrates

steel

Cellulose

Plaster

Prototypes/direct applications

ventilation duct and air filtration

Purifying suspended ceiling

Indirect application*

Water treatment systems

MATERIA NOVA



Tangi Sénéchal

Tangi.senechal@materianova.be

rue de l'épargne, 56

7000-MONS

Belgique

0032.65.37.44.33

www.materianova.be

FEDER

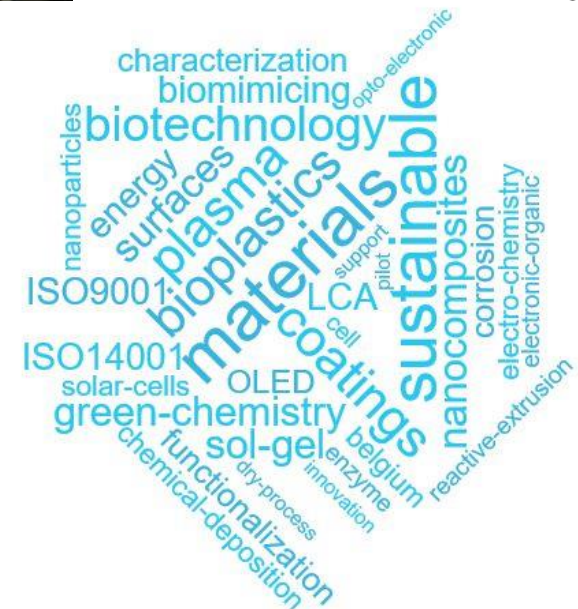


UNION EUROPEENNE



Wallonie

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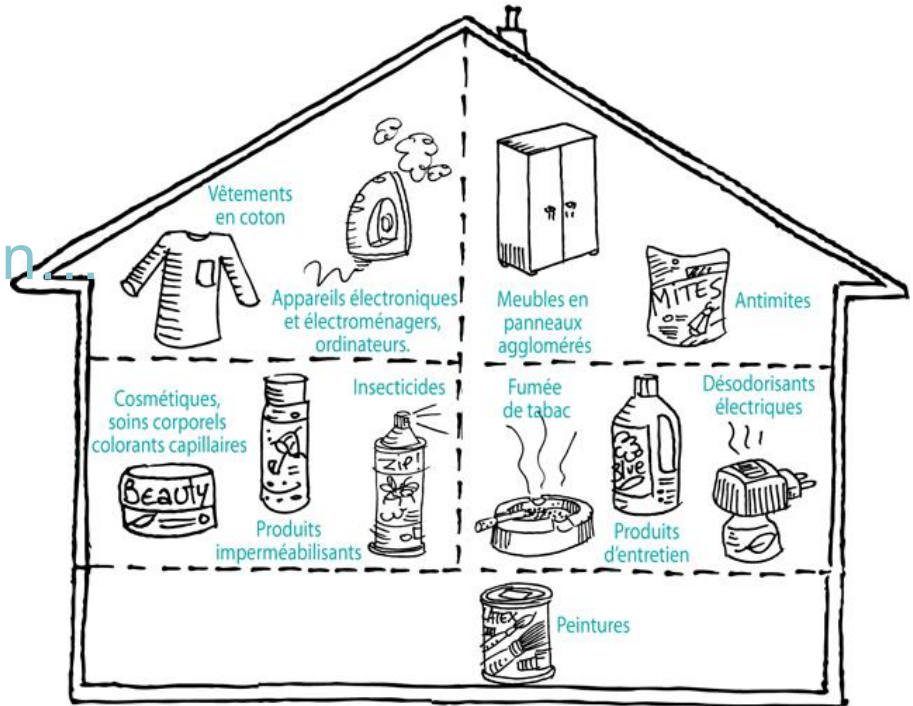
Zero-energy buildings :

Improvement of houses insulation

- Energy saving
- Lower environmental footprint
- Improvement of houses confort

...Entrappement of pollutants

Pollutants:
COV (formaldehyde, BTX, etc.),
mould, bacteria, particules, ...



Negative impact on health



New regulation with more constraints

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