

Method to reduce VOC (volatile organic compounds) concentration in air

■ KEYWORDS

Pseudomonas putida
Volatile organic compounds
Sol-gel matrix
Materials coating

■ PATENT

Title: Bioactive coating for indoor air quality improvement

Priority date: 17/12/2020

■ LICENSING

Exclusive, non-exclusive licences and research collaborations

■ INVENTORS

UMONS

Pr. Anne-Lise HANTSON
Dr. Cristiana CORDEIRO DE CASTRO

Materia Nova

Tangi SENECHAL
Driss LAHEM
Mireille POELMAN

■ PROBLEM

Indoor air pollution of residential units and workplaces is a major concern of nowadays. Toxic pollutants such as formaldehyde, which may have carcinogenic effects in health, are constantly released from distinct construction and decoration materials and/or household's products.

The development of bioactive coatings incorporating biomolecules able to capture and degrade these toxic compounds is of major interest. However, the conservation of their bioactivity is crucial throughout time.

■ SOLUTION

The invention relates to a method to reduce VOC (volatile organic compounds) concentration in air in contact with a surface coated with a sol gel matrix comprising encapsulated microorganism of *Pseudomonas putida* and to the use of encapsulated microorganism of *Pseudomonas putida* in a sol-gel matrix to reduce the concentration of VOCs in air. The main steps of the method are :

- Providing a surface
- Encapsulation of whole microorganism of *Pseudomonas putida* in a sol-gel matrix
- Application of the obtained sol-gel matrix to the surface by a coating method to form a coated surface
- Exposing the air to the coated surface.

■ INNOVATION

- Degradation of formaldehyde into non-toxic or less polluting compounds
- Incorporation and encapsulation of whole microorganism (no extraction/purification of the enzyme)

■ TECHNOLOGY STATUS

TRL 6 : Pilot testing of prototype component or process / of integrated system

■ MARKETS

- **Buildings and construction (construction materials, furnitures, paints/varnishes, ...)**
- **Air ventilation**
- **Automotive sector**
- **Textiles and clothing**
- **Cosmetics**
- **Aircraft industry**

Contact

Barbara MARCHI
AVRE
+32(0)65 37 47 76
barbara.marchi@umons.ac.be