



# 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

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## ■ LICENSING

Exclusive, non-exclusive licences and research collaborations

## ■ INVENTORS

### UMONS

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## ■ 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**

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