



**IMT Mines Alès**  
École Mines-Télécom

# ALCOVES

**Technological Platform** —

*Analysis of Volatile Organic Compounds and their Impact on Health and the Environment*

**KEYWORDS:** Volatile and Semi-Volatile Organic Compounds (VOCs, SVOCs), Materials, Environmental Impact, Oxidation Processes, Photocatalysis

## OUR AIMS

Respond to various issues for which it is relevant and necessary to measure VOC and SVOC levels:

- Innovative (e.g. bio-based) materials
- Technologies and materials for improving air quality
- Oxidation processes: air or water treatment
- New substances and emerging pollutants (new additives etc.)
- Help in choosing materials for improving the indoor air quality of new construction systems

## ACTIVITIES

- Impact assessment of materials/products/processes on health and the environment
- Development and application of measuring techniques
- Assessment of the performances and innocuousness of materials and processes (in the lab and *in situ*)
- Assessment of how long these properties last

## SPECIFIC FEATURE

Collaboration and mutualisation of 3 laboratories in a technology cluster unique in the Aquitaine region:



## FIELDS OF APPLICATION

- Buildings, furniture
- Automobile industry
- Environment and energy
- Food industry
- Cosmetics

## KNOWHOW

- Metrology of VOCs and SVOCs in different matrices and at the material-air interface, development of methods adapted to particular requirements
- Design and implementation of testing procedures (pilot units, reactors)
- Development of aging tests for materials and processes
- Impact of pollutants on cell cultures and *in vitro* models

## SCIENTIFIC EXPERTISE

- Analysis of VOCs and SVOCs (passive samplers, sensors and chromatographic techniques)
- Study of exchanges between materials and air (emission, adsorption, desorption) and between materials
- Validation and comprehension of advanced oxidation processes (air or water treatment)
- Assessment of photocatalytic air purification materials and systems
- Study and modelling of the air quality of indoor environments (buildings, vehicles, etc.)

## WHAT WE PROVIDE

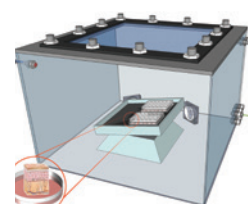
Collaborative research  
Expert assessment

Training  
Services  
Feasibility studies

**MAJOR PARTNERS :** Nobatek/INEF4, FCBA, Renault, ETHERA, ARKEMA, M2I, Cristal Union, LVMH...

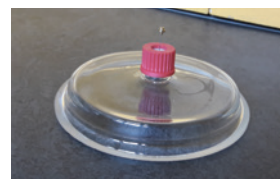


On-line analysis of VOCs (SIFT-MS)



Impact of VOCs on cell cultures

Measuring emissions on-site (DOSEC system)



Some of our equipment



Natural and controlled-condition aging

**Three centers leading cutting-edge research for and with companies.**



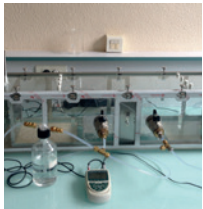
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## RECENT PROJECTS



### Indoor air quality of buildings



SafePHOTOCAT Project: Assessment of the efficacy and innocuousness of commercial photocatalytic indoor air treatment systems  
SafeMATER Project: Assessment of the emissions and performances of commercial bio-based/depolluting materials regarding indoor air quality

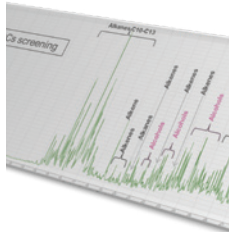
Test benches in the laboratory and real-scale testing (OAI&CO Module)



University of Pau and Pays de l'Adour



Energy Transition Institute



### Innovative food packaging



Innovative, fully recyclable, health-risk-free plastic food wrap  
Study of VOC emissions in function of polymer formulation and the number of times it is recycled (simulation by extrusion)  
Environmental impact assessment

Extrusion of a polymer  
Analysis of the VOCs emitted



University of Pau and Pays de l'Adour



University of Perpignan Via Domitia



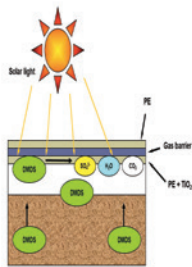
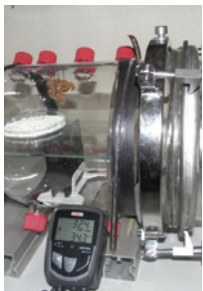
Pyrénées Adour Expérimental Food Engineering Station



University of Zaragoza



Food Engineering Technology Centre



### Agriculture

- Pheromone diffusers made of biodegradable materials to combat vine and corn pests
- Innovative agricultural film for fumigation: limitation of VOCs released into the atmosphere, real-scale application



Diffusion of pheromones  
Testing of an agricultural film



University of Pau and Pays de l'Adour



SanM2I Life Science Health / Animal and Plant Biocontrol



R&D: composite products and advanced materials



Technical Agricultural Institute



Supporting cooperative for sustainable development

### MAIN EQUIPMENT

- SIFT-MS and specially adapted vehicle for on-site measurement (On-line identification and quantification of VOCs)
- ATD-GC-MS, HS-GC-MS (VOCs in air, liquids, solids)
- UHPLC (formaldehyde, aldehydes, SVOCs)
- Online analysers (VOCs, NOx, O3, CO/CO2)
- Pilot units, reactors, emission test chambers and micro-chambers
- Climatic and QU-V chambers

The IMT Mines Alès research centers

- C2MA Materials Research Center
- LGEI Center of Industrial Environment and Industrial and Natural Risk
- LIG2P Center of Computer and Production Engineering

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Platform co-financed by



You want to develop a project ?

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