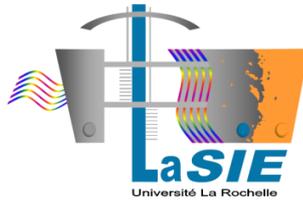


Presentation of LaSIE of University of La Rochelle (ULR)



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Associate Professors



CLIMACT Kick off meeting, September 7, 2016, Lisbon

What is LaSIE?

- **LASIE : Laboratory of Engineering Sciences for the Environment**
- **Founded in 1993**
- **Part of the French National Research Centre (CNRS)**
- **Staff (2016):**
 - Professors: 18
 - Associate Professors: 30
 - PhD Students: 63
 - Post-Doctoral fellows: 18
 - Administration/technical...

Total ~150



What is LaSIE?

A. Flows, Energy and Environment

A1: Energy Performance of Buildings and Indoor Environment Quality

AB: Mathematical and numerical methods for transfer phenomena

A2: Transfer Intensification for Eco-processes

B. Materials and Transfers in Aggressive Environment

B1: Transfers and material degradation and corrosion mechanisms

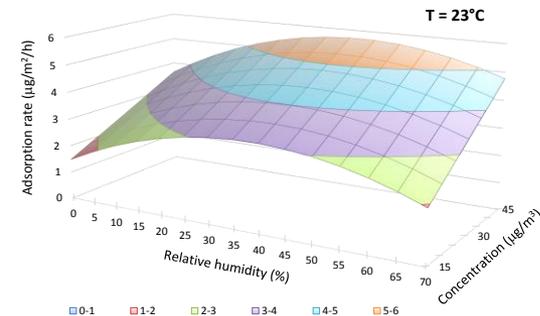
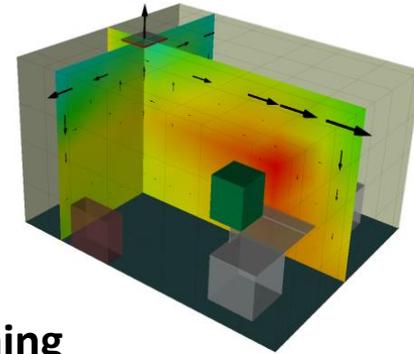
B2: Material protection and coatings

Energy Performance of Buildings and Indoor Environment quality

Ventilation and Indoor Air Quality

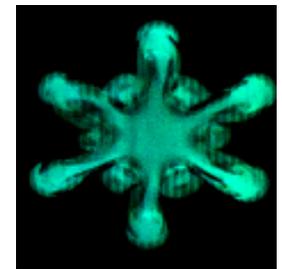
- Long term **emissions of pollutants** from the ground or from materials and their impact on IAQ (deposition, sorption, diffusion, reactions)
- **Passive control of IAQ** from materials, including smart materials
- Impact of **indoor air chemistry** on IAQ
- **Multicriteria assessment of existing ventilation systems and air cleaning solutions** (portable, in-duct): energy / comfort / health criteria

Zonal modeling of an office



- **Development of innovative systems** to improve comfort and IAQ

- Lobed air diffusers
- Rotating wheel combining heat recovery and pollutant filtration with continuous self regeneration



lobed air diffuser

Formaldehyde adsorption rate of a canvas fabric containing scavengers

- **Definition of IAQ / IEQ metrics**

Experimental facilities

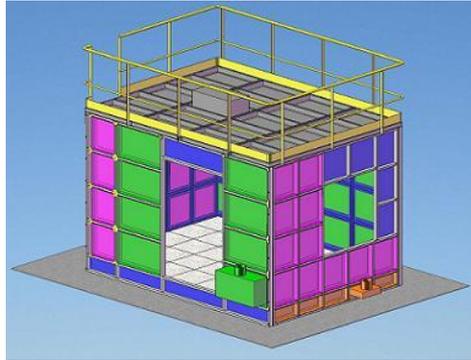
Small-scale environmental chambers



46 liter,
controlled T,
RH, ACH

1 m³, T=23°C,
RH=50%,
ACH=0.5 /h
(ISO 16000 series)

Real scale environmental chamber



30 m³, modular (wall materials/ventilation/T, RH)

Experimental House



110 m², modular (envelop permeability, wall materials, ventilation system, indoor sources)

Instruments :

- Proton-transfer-reaction mass spectrometry (PT-RMS)
- Optical particle counters: Met-one, GRIMM, Mini-WRAS
- Laser Doppler Velocimetry /Laser Particle Image Velocimetry (PIV)
- Photo-acoustic spectrometer (tracer gases)
- ...

Energy Performance of Buildings and Indoor Environment quality

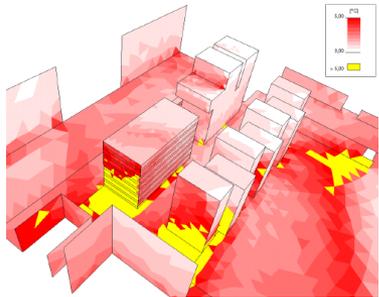
Optimal systems and control strategies for low energy buildings

- Micro-cogeneration from vacuum solar collectors
- Solar cooling systems
- Short-term storage solar walls
- Windows with improved parieto-dynamic effect
- New design of photovoltaic panels to promote convective cooling
- Advanced control strategies of building energy systems



Interactions buildings / urban micro-climates

- Characterization of solutions to reduce heat islands and energy consumption of buildings in dense urban areas : cool paints, vegetal walls, ...
- Methodologies to design new urban areas in order to avoid heat islands and decrease the cooling load of buildings



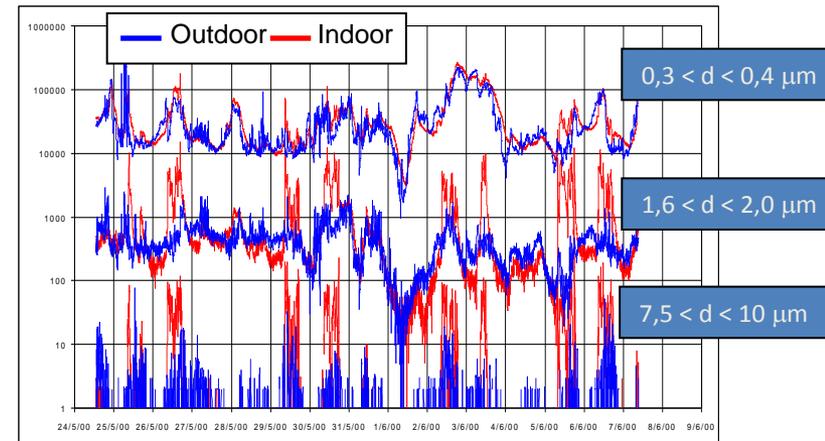
Projects / tools related to ClimAct

source : Blondeau et al, 2004

Achievement of several IAQ and temperature / energy measurements campaigns in schools

INCITAIR and IMPACTAIR projects (2014-2016)

- Time-resolved monitoring of VOC concentrations in La Rochelle schools and definition of actions to improve IAQ
- Priorization of formaldehyde sources in nursery and elementary schools
- Development of a methodology to consider the IAQ criterion in the frame of call for tenders related to schools (renovation works, order of materials and furnishings)



PANDORA database

Database on published emission rates of pollutants by all kinds of internal sources (materials, equipments, activities, ...)

