



# Chaire de Biotechnologie

CentraleSupélec

*Process engineering at the  
service of sustainable development*



## Characterization and conversion of lignocellulosics

Our advanced characterization techniques are applied to the study of the physico-mechanical properties of lignocellulosic materials. They are involved in both the optimization of pretreatment processes for energy and the design of innovative bio-based materials.

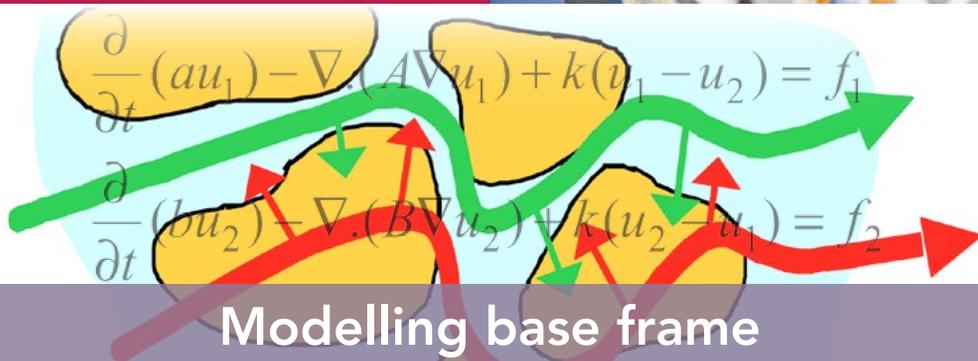


## Biotransformation

CentraleSupélec's long standing expertise in process engineering is applied to biotransformation with the aim of producing high-value compounds, processing industrial effluents or system optimization for growth control and new (photo)bioreactor design.

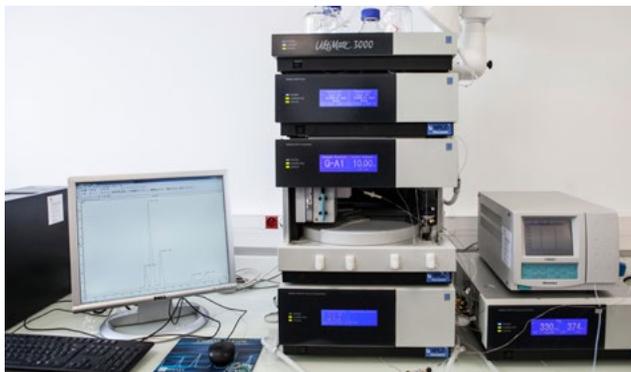
## Separation techniques

Our vocation is to develop effective, sober and sustainable separation processes to extract and purify biosourced molecules. In addition, we offer solutions for upgrading industrial effluents and co-products (lignocellulose, pentoses, biogas, etc.).



## Modelling base frame

The three axis of the Chair rely on a cross-disciplinary base frame Modelling. Formulation, resolution, predictive simulation and visualization are at the heart of all our activities, helping us further to understand, analyze, innovate and scale up processes.



## Analytical platform

*Bleeding edge equipments to better analyze and valorize*

Chromatography is the core of our analytical platform. Various analytical technologies are used such as HPLC-RI, HPLC-FLD, HPLC-UV-MS, IC, ICP-AES and CHNS/O allowing us to quantify carbohydrates, organic acids, alcohols, stilbenoids, inorganic anions and cations, metals and elemental composition. In addition, cell counter and RT-qPCR are used for monitoring cell cultures.



## Laboratory pilots fleet

*A link to secure the transfer of innovation to industry*

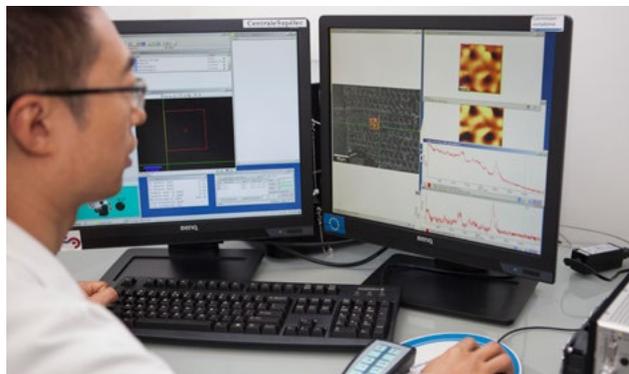
The upscaling of separation processes is based on a fleet of laboratory pilots, located in a dedicated hall: ultra-, nano-filtration and reverse osmosis, conventional and bipolar electro dialysis, preparative chromatography, continuous ion exchange and gas-liquid absorption with membrane contactors.



## Growth systems

*The biological factory aiming to produce high added-value molecules*

The Chair of Biotechnology possesses of a considerable range of equipment adapted for the culture, analysis and treatment of microscopic cell (plant, bacteria, yeasts and fungi as well as microalgae). The cultures can be grown at different scales: petri-dish, shake-flask, 2-20 L (photo)bioreactor. In addition to the 20 L pilot-scale bioreactor, a fully automated 30 L raceway pond allows the initial stages of scale-up of photosynthetic cultures.



## Imagery platform

*Observe what is infinity small to optimize industrial processes*

Diagnosis, quantitative analysis and modeling on real morphology with temporal evolution rely on the imagery platform. Our confocal, Raman, ESEM microscopes and X-ray nano-tomograph allow the acquisition of high-resolution images in 2D, 3D and 4D that are compatible with digital post-processing.



## CONTACT INFORMATIONS



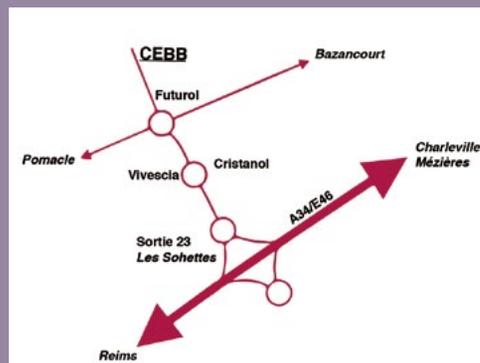
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## Acess map



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