

Job Offer : Researcher permanent position (in French “Chargé de recherches”) at TBI, Toulouse (Toulouse Biotechnology Institute)

The position will be available in the first half of 2020

Research area : Ecodesign of processes for bioeconomy (physical-chemical and biological processes)

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Deadline for contact: end of December 2018.

Web site of TBI : <http://www.toulouse-biotechnology-institute.fr/>

Context

The research activity at TBI is positioned at interface between biology and chemical processes with applications in the field of biotechnologies, agro- and food industries, eco-industries. The development of industrial biotechnologies and bio-resource transformation processes must consider, besides the technological and economic performances, the environmental issues. The eco-design approach is necessary in the very early stages of a process design in order to guide the scientific research and technological choices towards sustainable solutions. This activity is transversal in LISBP, aiming at the development of innovative technologies with a complementary approach based on process modelling, environmental assessment and eco-design. The researcher will foster the eco-design activity at LISBP by developing adapted methodologies and tools. The expected results will be calculation tools like models and simulators for chemical (and bio-) processes in the application field of biotechnologies and bioeconomy.

Profile

- High level candidates with a PhD degree.
- With a proved excellent background in chemical engineering
- **Strong competences and experience in: 1) chemical process modelling and simulation, 2) programming in different languages** (e.g. VBA, Python, CAPE-OPEN... or others similar), 3) numerical methods (e.g. optimization).
- Competences in life cycle assessment (LCA) are a plus.

Research project

The main question to be answered is : How to evaluate technical, environmental and economic performances of innovative processes being still under development, at (very) low TRL (technology readiness level), in order to ensure their eco-design ?

This main question comes in several sub-questions following the pillars of the eco-design approach:

- How to model unit processes given the specific properties of the raw material transformed (bioresources and their products) ?
- How to model the scale-up of such processes ?
- How to integrate different models and IT tools (homemade, commercial software) for process simulation, for environmental assessment (LCA software), and for numerical optimization ?

At short term (the first 5 years), **the main objective** is the development of a methodology and adapted calculation tools for environmental assessment of (bio-) chemical processes in the field of biotechnologies.

The scientific methods necessary to respond to the above questions belong to the field of chemical engineering and bioprocesses with the following aspects: modelling, numerical methods, programming.

Work environment

The researcher will be integrated in TBI team EAD10 (named SOPHYE), located on the campus of INSA Toulouse, in a new modern building.

The researcher will work under the supervision of Prof. L. Barna, in strong collaboration with Ass Prof A. Ahmadi and PhD L. Hamelin. The team beneficiates of specific software in the field of processes and environmental assessment and develops its own models and software. The know-how of the team and the existent assets will allow a quick launch of his (her) research activity.