

## Poste ouvert à candidature

### A 2-year post-doctoral position in mathematical modelling of microbial phototrophic growth

**Keywords:** Photosynthesis, thermodynamics, programming, modelling, microbial growth

A high calibre candidate is sought to join a joint project between laboratories of AgroParisTech, IRSTEA and CentraleSupélec that aim to develop mathematical models of photosynthetic metabolism grounded on thermodynamic principles. All three partners of this project are established in process and chemical engineering as well as model development.

**MISSION:** The successful candidate will join a very active research team (LGPM) with many years of experience with photosynthetic microorganisms, photo-bioreactor design and phenomenological modelling. In parallel, a second partner of the project (IRSTEA) has a proven record in thermodynamic modelling of microbial growth. The third partner (AgroParisTech) is also known for metabolic modelling.

The project includes the development of innovative and generic approaches to model microbial growth by further building on a recent theoretical framework (<http://www.nature.com/ismej/journal/v8/n8/abs/ismej20147a.html>). It also involves taking data and programs from previous and current PhD projects for developing *in silico* models to simulate the dynamics of photosynthetic cultures, their efficiencies, minimum energy (light) requirements and future biotechnological potential. Once the outlines of a model become clear the possibility for experimentation through current projects exist. A track record of publication is essential, with a strong background in physics and modelling, preferably applied to biological systems. Familiarity with biological experimentation, although not essential, would be a nice to have for the candidate.

#### **COMPETENCES:**

- A recent doctor from a good research establishment and a background in physics and mathematics is sought who will have a natural curiosity for the biological world and sciences.
- Knowledge of computer programming and construction of models is essential for this project.
- The candidate must be a strong communicator who could work in conjunction with different teams in harmony and must integrate himself into all three partners of the project.

- Strong communication skills in either French or English are also required for the candidate.

## **MODALITIES:**

The LGPM (Laboratoire de Génie de Procédés et Matériaux) is one of the eighteen departments of CentraleSupélec, part of the University Paris-Saclay at Gif-sur-Yvette. A chair of Biotechnology is attached to LGPM with considerable research activity. The Post-doc will be principally based at LGPM but with frequent stays at Irstea-HBAN (Antony) and Genial AgroParisTech – INRA (Massy), both located nearby Gif

Irstea-HBAN is located in Antony, about 15 km away from LGPM. The candidate will join the Hydrosystems and Bioprocess Research Unit and will be hosted in BIOMIC research group (<http://www.irstea.fr/en/research/research-fields/ted/biomic>) actively working in the field of environmental biotechnology. There, the candidate will have the opportunity to interact with an active network of French and international laboratories working on microbial thermodynamic models in the framework of a large 4 years project (2016-2020).

This position is open immediately and recruitment will be completed by the end of November 2017. The postdoc will be recruited on a two-year contract.

## **CONTACTS:**

Please send your CV and covering letter to the following

Behnam TAIDI, Responsable de l’Axe de Biotransformation de la Chaire de Biotechnologie,  
LGPM, CentraleSupélec

[behnam.taidi@centralesupelec.fr](mailto:behnam.taidi@centralesupelec.fr)

Tél. : + 33 6 47 54 82 70

Patrick PERRE, Titulaire de la Chaire de Biotechnologie, LGPM, CentraleSupélec

[Patrick.perre@centralesupelec.fr](mailto:Patrick.perre@centralesupelec.fr)

Tél. : + 33 6 42 61 24 18

Théodore BOUCHEZ, Responsable de l'équipe BIOMIC, Irstea-Antony.

[Theodore.bouchez@irstea.fr](mailto:Theodore.bouchez@irstea.fr)

Tél. : +33 1 40 96 60 40