PRESELECTION FOR RESEARCH CONTRACT ON BIOPROCESS MODELLING

Position's characteristics

A research contract of 1 year is offered by the Group of Environmental Biotechnology (Biogroup) of the University of Santiago de Compostela in the framework of a European Project. The contract starting date is flexible and foreseen to take place in February/March 2023. It is possible to extend this contract up to 4 years for the completion of a PhD thesis.

Project description

Biological transformations present a vast unleashed potential to produce chemicals from low-cost raw materials in an environmentally friendly manner. An active research line at Biogroup deals with the conversion of waste into short- and medium-chain carboxylic acids, which are valuable chemical building blocks and one of the branches of the biorefinery known as "carboxylate platform". This research contract focuses on the development and use of mathematical models for the production of carboxylic acids in anaerobic fermentation processes. In particular, the envisioned models will describe the process at metabolic level to bring mechanistic understanding on how the bioreactor operational conditions affect the microbial process. The aim of this knowledge is to gain the ability of steering the fermentation process towards the production of the most desired carboxylic acids. These research activities are planned to take place in parallel to experimental research. Mutually enriching collaboration is foreseen between the experimental and modelling activities.

Biogroup is one of the most important research groups in Environmental Engineering at European level. As part of a world-renowned research group you will work at state-of-the-art lab facilities with the support of experienced technicians. Biogroup staff is composed by 12 full/assoc. professors, 3 technicians, 3 administrative support staff, 7 postdocs and ~30 PhD students providing a stimulating and multidisciplinary work environment to conduct your research. You will have the opportunity to collaborate in other research activities related to biorefinery development.

Research area

Mathematical modelling of bioprocesses, in particular focused on anaerobic fermentation

Supervisors

Miguel Mauricio Iglesias and Alberte Regueira

Brief work description

- Development of metabolic models to describe the production of short- and medium-chain fatty acids from residual waste streams at metabolic level.
- Close collaboration with experimental activities (i.e. experimental design, data analysis) carried out in the biorefinery research line of Biogroup

Requirements

- Candidates must have a master level degree in Chemical Engineering, Environmental Engineering, Biotechnology, Applied Mathematics, Physics or similar.
- Experience in mathematical modelling, programming and the use of scientific software (e.g. Matlab, Octave, Python, etc.) will be appreciated, especially if applied to biochemical models and biosystems

- Candidates must be skilled in problem solving and understanding of complex scientific texts
- Candidates must have good communication skills as well as proficiency in written and spoken English language
- An interest in developing a research career culminating in the completion of a PhD thesis will be positively valued but it is not a requirement

Preselection process

Applications and information requests must be sent to miguel.mauricio@usc.es (including in the subject: "BIOPROCESS MODELLING position") before January 30th at 17:00 (CET). The position will be filled as soon as a suitable candidate is found, therefore interested candidates are advised not to delay their application

Applications must contain the following documents:

- Motivation letter (not more than 1 page), indicating the contact details of the candidate and a brief description of the reasons why they should be selected.
- Curriculum Vitae
- Name and contact of two references (e.g. former supervisors)

The preselection process involves the following steps:

1. Evaluation of applications (motivation letter and CV) and screening test

The goal of this evaluation is to assess the adequacy of applicant's profile to the requirements of the call. Upon reception of application files, the candidates will be invited to a qualifying screening test which will consist on commenting a scientific paper in a limited time.

2. Personal interview

Top three candidates after CV screening will be invited for a formal application to the research position, including a personal interview