

Postdoctoral Research Position

Location: Rubí and Bellaterra (Barcelona)	Placed on: 23th July 2015
Salary: 25,000-30,000 € p.a.	Closes: 15th September 2015
Hours: Full Time	Start Date: 1st October 2015
Contract Type: Contract / Temporary	Eligibility: Spain, EU, International
Duration of the contract: 1 year (renewable up to 3 years)	Supervisor: Dr. Julián Carrera

Organisational Environment: GENOCOV Research Group

GENOCOV stands for Group of biological treatment and of liquid and gaseous effluents, nutrient removal, and odors and Volatile Organic Compounds. The research group belongs to the Department of Chemical Engineering at the Universitat Autònoma de Barcelona. GENOCOV has been active over the last 25 years understanding the biological processes for the treatment of urban and industrial water and gaseous effluents, with special emphasis on monitoring, modelling and control of such complex biological systems.

The research group has managed several EU projects as well as projects funded by the Spanish Government. With respect to publications, in the last 5 years the group has more than 70 peer-reviewed international journals publications as well as an important participation in international conferences.

The group consists nowadays of seven senior researchers: Francisco Javier Lafuente Sancho (professor and head of the group), Juan Antonio Baeza Labat, Julián Carrera Muyo, David Gabriel Buguña, Albert Guisasola Canudas, Julio Perez Cañestro and María Eugenia Suárez-Ojeda and around 15 active researchers (including postdocs, PhD students and lab technicians).

More information can be found at www.genocov.com

Opportunity and project description

We seek one highly motivated post-doctoral researcher to work in the LIFE14 ENV/ES/000633 – LIFE SAVING-E “Two-Stage Autotrophic N-remoVal for mainstream sewaGe trEatment”:

The current urban wastewater treatment plant (WWTP) requires a minimum energy consumption of 8-15 kWh/inhabitant/year to meet the legal requirements of effluent discharge of organic matter, nitrogen and phosphorus. This means a significant economic cost and also noteworthy greenhouse gas emissions. The challenge of SAVING-E is to radically redesign the urban WWTPs in a way they become energy-producers rather than energy consumers, without affecting its performance or even improving it. SAVING-E aims at demonstrating, at pilot scale and with real urban wastewater that the energetic balance of an urban WWTP can be severely improved at both, high and low temperatures (as far as 10°C).

SAVING-E technology uses most of the entering organic matter for biogas production purposes by designing a first biological step with low oxygen consumption and high biomass production, i.e. with very low sludge residence time (1 day or less). The biomass produced in this step, therefore, would have a very favourable methane production potential, greater than the achieved in the current urban WWTPs.

Then, SAVING-E technology is able to biologically remove nitrogen in the mainstream without the need of organic matter. SAVING-E uses the autotrophic biological nitrogen removal (BNR) for this aim with a novel two-step approach. This novel approach consists of two reactors, a first aerobic partial nitrification reactor followed by a second anammox reactor. The application of autotrophic BNR to the mainstream severely reduces the aeration costs compared with the one of current urban WWTPs. Moreover, the novel two-step approach for autotrophic BNR represents an improvement compared with one-step autotrophic BNR because is able to stably work at low temperatures (10 °C).

Therefore, the main objective of this project is to demonstrate, in a relevant environment at pilot scale, the feasibility, applicability, replicability and transferability of the SAVING-E technology.

Requisites

- The appointee should hold a Ph.D. in Chemical/Environmental Engineering or in a relevant field related to biological wastewater treatment. In particular, knowledge on partial nitrification and anammox processes will be highly valued.
- The appointee should be self-motivated, have good communication skills in English for regular interaction with other stakeholders and with European Commission. Also, the appointee should possess good writing and presentation skills to disseminate the research findings at international conferences and in the peer-reviewed literature.
- The appointee will join the Department of Chemical Engineering at Universitat Autònoma de Barcelona (UAB). However, the place of work is located 15 km away from UAB, therefore the appointee need to be in possession of a car and European B driver license or equivalent.

Desirable Knowledge and Experience

- Interest for pilot scale research.
- Analysis of chemical oxygen demand, total organic carbon, ammonium, nitrate, nitrite, volatile suspended solids, total suspended solids, sludge volumetric index, etc.
- Characterisation of granular biomass (morphological assays, density, exopolymeric substances, etc.).
- Molecular biology tools such as fluorescent in-situ hybridisation, pyrosequencing and sequence data analysis/bioinformatics.
- Assays of anaerobic biodegradability of primary and secondary sludge.
- Measurement and characterisation of greenhouse gas emissions.
- Life cycle analysis.

Enquiries

If you wish to discuss this project further informally, please contact Dr. Julián Carrera (julian.carrera@uab.cat).

To submit an application for this role, please send an email to Dr. Julián Carrera including the following documents: Cover letter and your detailed resume.