

Project “URINIS – Urine nitrification in Space”: Opportunity for a PhD position

PROFILE SELECTION CRITERIA

Background and experience

- **Scientific researcher:** A Master degree in microbiology, environmental engineering, bioscience engineering or equivalent, completed before the start date of the position, with very good and preferably excellent grades.
- Experience in the field of applied microbiology, microbial ecology or nitrification will be greatly appreciated.

Scientific knowledge and skills

- Knowledge of pure culture incubations and microbiology.
- Ability to rigorously design experiments and to perform experiments under well-controlled conditions.
- Be experienced and interested in interdisciplinary research. This includes microbiology and chemistry.
- Ability to work with analytics, such as IC & GC, as well as experience with microbial analyses.
- Ability to rigorously design and perform experiments in a result-oriented and thorough manner.
- Ability to perform in-depth and critical data analysis.
- Ability to communicate through high-quality scientific channels, e.g. WoS publications (A1).

Personal knowledge and skills

- A strong interest in inter/multi-disciplinary applied science.
- Excellent interpersonal skills to work effectively with team members from different backgrounds, from different institutions and with different tasks.
- Excellent skills for time management and the ability to meet objectives within strictly set deadlines.
- Good oral and written communication skills in English are strictly required (C1 level).
- Demonstrated ability to work efficiently and with minimum supervision.
- Outcome focused, hands-on mentality.
- Willingness to travel internationally for project meetings and conferences.
- Willingness to apply for scholarships to obtain additional funding.

JOB DESCRIPTION

URINIS: Urine nitrification in Space

MELISSA is the regenerative life support system for human spaceflight under development by the European Space Agency (ESA) (<https://www.melissafoundation.org>). This ambitious programme aims to produce food, oxygen and water from the mission wastes. Urine is here of key interest, given its high content of nitrogen, which can be recovered to serve as fertilizer for plants and cyanobacteria. Nitrification of urine is the preferred treatment technology, as it produces a stable liquid stream rich in nitrate and low in biodegradable organics.

After two successful experiments demonstrating that nitrifiers can be reactivated after spaceflight to low Earth orbit (Lindeboom et al., 2018; Ilgrande et al., 2019), the Belgian Federal Science Policy Office (BELSPO) and ESA have recently approved the second phase of 'URINIS', the MELiSSA project to demonstrate the feasibility of urine nitrification in space. The URINIS project, led by Ghent University in collaboration with the Belgian Nuclear Science Centre (SCK-CEN), the Université de Mons and the University of Antwerp, brings together top scientific teams in the field of applied microbiology and microbial ecology and technology to tackle the challenges of performing such experiments in space and develop the needed tools and methods to analyse its outcomes.

Within this PhD project co-supervised by Ghent University (prof. Ramon Ganigué & prof. Nico Boon) and University of Antwerp (prof. Siegfried Vlaeminck), the candidate will specifically investigate the impact of storage, microgravity and radiation on the activity of a model nitrite oxidizing bacterium. The scientist will collaborate and exchange knowledge with two fellow colleagues at the other institutes working respectively on a model ammonium oxidizing bacterium, and a model ureolytic bacterium.

Type of employment

- **PhD candidate researcher:** Full-time, fixed-term appointment for initially 1 year, yearly renewable after positive evaluation up to 4 years (subject to project extension after the first two years). Intended starting date: 1st of November (or earlier if possible).
- A competitive salary including benefits is offered, salary levels account for years of professional experience.
- Ghent University is an equal opportunity employer.

ABOUT GHENT UNIVERSITY – CMET

The Center for Microbial Ecology and Technology (CMET) formally LabMET; www.CMET.UGent.be is part of the Faculty of Bioscience Engineering at Ghent University, a top 100 university in most rankings. CMET has over 40 years of experience in the study of applied microbial processes and microbial ecology in the contexts of waste(water) treatment, bioremediation, bioproduction, bioelectrochemistry and resource recovery. In recent years a focus on electrochemical processes has emerged, often in conjunction with microbial post-processing. It is one of the top performing centres worldwide in its field and links excellent basic science with application, leading to a high level of peer reviewed outputs besides commercial outcomes including 7 spin-off companies over time. Reactor and process developments go from millilitre scale to full scale industrial. Prof. Ramon Ganigué and prof. Nico Boon will be the CMET promoters of the joint PhD project.

ABOUT THE UNIVERSITY OF ANTWERP – Sustainable Energy, Air and Water Technology

At the Research Group of Sustainable Energy, Air and Water Technology, founded in 2009, Prof. Siegfried Vlaeminck launched in 2015 a research team on microbial cleantech for a sustainable water cycle and food production chain (<https://www.uantwerpen.be/en/staff/siegfried-vlaeminck/>). The team's mission is to develop clean biotechnological solutions and to assess the environmental sustainability of such novel treatment and production pipelines. Key

application areas include nutrient recovery, nitrification, anammox, single-cell protein (microbial protein), slow-release fertilizers,... With a sustainable circular and bio-based economy as goal, the team also focusses on regenerative life support systems, a necessity also for long-term human spaceflights. Prof. Vlaeminck holds over 15 years of experience working with nitrification, has contributed to multiple MELISSA R&D projects, and will be the UAntwerp promotor of this joint PhD project.

APPLICATION PROCESS

Submission and closing date

Applications must be sent via email to cmet.recruitment@UGent.be as pdf or word documents, with in the subject line mentioning "URINIS_PhD". Final closing date is **September 25th 2019 (23h59 CET)**, but applications will be regularly reviewed prior to the deadline hence early application is recommended.

Application files

1. Covering Letter. The covering letter should include the position reference, your contact address and telephone number. It is an opportunity in not more than one page to introduce yourself and highlight the key reasons you should be considered for the role, taking into account the required skills.
2. Resume or Curriculum Vitae. A resume is a brief history of your employment and experience that covers the following areas:
 - Educational qualifications and professional affiliations that detail the full title of the qualification, the year awarded and the title of the institution attended;
 - Employment history in chronological order, starting with current position and specifying dates of employment, title of each position, name of employer, main duties or accountabilities and achievements;
 - Research fields and current interests, publications (full list as attachment with three most significant marked with an asterisk, also indicating impact factors and Quartiles according to Web of Science), research grants awarded.
 - The names and contact details (address, telephone, e-mail) of three referees, including if possible a senior person (preferably your supervisor, manager or head of organisational unit) closely associated with your current work. A referee must be able to comment on your work experience, skills and performance with respect to the selection criteria.
3. Selection Criteria. A statement addressing how each of the selection criteria has been met is required to assist the Selection Committee determine whether you have the relevant qualifications, knowledge/skills, experience and personal qualities.

Selection process

A Selection Committee will consider all applications and shortlist candidates for interview who appear to meet the selection criteria at the highest levels. They will be invited to attend an interview and the remaining unsuccessful applicants will be notified accordingly.

An invitation to attend an interview provides an opportunity to provide further information to the Selection Committee to substantiate your claims against the selection criteria or demonstrate your capabilities. Please note that for some positions interviews may be conducted by teleconference in the first instance.



The Selection Committee will subsequently seek referee reports, if not sought prior to interview, before making a decision to make an offer of appointment to the preferred candidate. The purpose of referee checks is to obtain, in confidence, factual information about your past work history, as well as opinions regarding the quality of your work, behaviour in the work place and suitability for the position. Referee reports may be sought orally, or for academic staff, in writing by post or e-mail.

If you are the preferred candidate, you will receive a written offer of appointment to the position. Do not take any action, such as resigning from your current position, before you receive a written offer of appointment.

More information regarding this position

Please contact Professor Ramon Ganigue (Ramon.Ganigue@UGent.be)

