Chair of Urban Water Systems Engineering
TUM School of Engineering and Design
Technical University of Munich

For LeAD-Marie Skłodowska-Curie Doctoral Networks Fellowship: “Leveraging Anaerobic Digestion through environmental stresses” we are looking for

Two doctoral candidates (f/m/d) in environmental engineering & microbiology

Ref. No. LeADDC69

LeAD: https://cordis.europa.eu/project/id101168769

About the project

Marie Skłodowska-Curie Doctoral Networks (https://research-and-innovation.ec.europa.eu/funding/funding-opportunities/funding-programmes-and-open-calls/horizon-europe/marie-sklodowska-curie-actions_en) are joint research and training projects funded by the European Union. Funding is provided for doctoral candidates from both inside and outside Europe to carry out individual project work in a European country other than their own. The training network “LeAD” (https://cordis.europa.eu/project/id/101168769) aims to train the next generation of environmental biotechnologists to address key knowledge gaps and develop models and technologies in anaerobic digestion responding to stressed environmental conditions, which will revolutionize resource recovery from waste towards circular bioeconomy and sustainable development. Effective (organic) waste management and renewable energy supply are essential in our present society, as they meet the targets of the European Green Deal and the Renewable Energy Directive. Anaerobic digestion can tackle both challenges simultaneously and has been commonly applied for renewable energy recovery in the form of biogas from organic waste. The complex and sensitive microbial interactions to environmental stressors can cause the failure of anaerobic digestion, imposing challenges for innovation.

In LeAD, we introduce the microbial niche nexus concept (tuning microbial communities and their metabolic pathways to achieve multidimensional microbial networks) to achieve more resistant/resilient anaerobic digestion systems, thus improving resource recovery from waste sources under stressed conditions. The 14 tailored projects are conceptualized based on the design-build-test-learn cycle to train the doctoral candidates with systems knowledge to deal with challenges for transiting waste removal towards resource recovery through anaerobic digestion. To train the 14 doctoral candidates via an international, intersectoral, and interdisciplinary program, LeAD brings together experts from several disciplines, forming a consortium of eight beneficiaries and five associated partners (including three from industries). Through both local and network-wide activities and events, LeAD will educate next-generation talents with competitive transversal skills and capacities both in the academic and non-academic sectors, further profoundly influencing the future bio-economy and society.

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Opportunities for Talents

Job description

The successful candidates will be based at the Chair of Urban Water Systems Engineering at the Technical University of Munich, Germany, and contribute towards the conduction of a research project in the field of anaerobic digestion under stressed conditions. They will work in a multidisciplinary team with colleagues from diverse organizations and companies within the EU.

- Candidate 1 (DC6) will work on the topic *Understanding the interaction of different microorganisms in selected anaerobic communities incorporating anaerobic fungi* within the research group *Urban Microbiology*.
- Candidate 2 (DC9) will work on the topic *Improved process resilience by enhanced anaerobic biofilm formation strategies* within the research group *Energy-neutral Wastewater Treatment*.

While becoming a member of our research teams, you have several responsibilities:

- Conducting the proposed research project
- Preparing the required reports and participating in the offered training
- Participating in the TUM Graduate School
- Promoting and disseminating results involved in the program

Start date: The position is available from 1. September 2025

Qualifications and eligibility

Eligibility

- Above average Master's degree (at least grade 2.5; as an orientation at least “good pass”; an admission with only a Bachelor's degree is not possible) in a relevant field for the positions (DC6: Degree in Environmental Microbiology, Biotechnology, or a related field; DC9: Degree in Environmental Engineering, Biotechnology, or a related field). Applicants must prove that their degree directly entitles them to a doctorate in the country where they obtained the master’s degree and that it is comparable to a German academic university degree.
- Researchers must be early-stage researchers, i.e. not already in possession or expectation of a doctoral degree at the date of the recruitment.
- Applicants must not have resided or carried out their main activity (work, studies, etc.) in Germany for more than 12 months in the 36 months immediately before their recruitment date (scheduled date **1.09.2025**). For refugees under the Geneva Convention (1951 Refugee Convention and the 1967 Protocol), the refugee procedure (i.e., before refugee status is conferred) will not be counted as a ‘period of residence/activity in the country of the beneficiary’.

Specific requirements

- Excellent skills in literature search
- Excellent communication skills in English, both written and oral
- Ability and commitment to produce scientific outputs for publication in peer-reviewed journals
- Evidence of ability to work independently and collaboratively within an international team
- Strong motivation, with excellent organization skills and attention to detail and quality
- Adaptability, reliability, and interest in collaborating across disciplines

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Opportunities for Talents

We offer

- Remuneration aligns with EC rules for Marie Skłodowska-Curie Doctoral Networks grants. Salaries are subject to taxes and deductions, e.g., health and social insurance, which is mandatory when working in Germany.
- The MSCA-DN Program PhD Scholarship offers a monthly competitive gross salary (approximately 3,342 €, as defined by the EU MSCA-DN regulations) to cover living allowance, mobility allowance (600 €/month), plus a family allowance (if applicable).
- Exciting research and work environment in an international, multidisciplinary team.
- Linkages and networks to environmental engineering and applied sciences.
- Professional training courses by the TUM Graduate School.

About us

Become a member of the staff of the only German University of Excellence that conducts large-scale research on the national level. Work under excellent working conditions in an international environment. Benefit from specific training when starting your job and from a wide range of further qualification offers. The Chair of Urban Water Systems Engineering at the Technical University of Munich (https://www.cee.ed.tum.de/en/sww) is engaged in research activities that are centered around sustainable, energy-efficient urban water and wastewater systems, energy recovery from wastewater and anaerobic technologies, urban stormwater treatment and management, urban microbiology, water reuse, advanced water treatment, water-energy-food-ecosysetem nexus, and state-of-the-art chemical analysis for process control and water quality. The chair maintains a physico-chemical laboratory, a microbiology laboratory, and an analytical organic chemical laboratory. Core facilities with shared equipment support all of the TUM's scientific faculties. At the Chair of Urban Water Systems Engineering the candidates are embedded in international and interdisciplinary research teams and doctoral training programs. Informal inquiries concerning the post may be made to Prof. Konrad Koch (k.koch@tum.de) and Dr. Christian Wurzbacher (c.wurzbacher@tum.de).

Application

TUM has been pursuing the strategic goal of substantially increasing the diversity of its staff. As an equal opportunity and affirmative action employer, TUM explicitly encourages applications from women who had a career break due to maternal leave as well as from all others who would bring additional diversity dimensions to the university's research and teaching strategies. Preference will be given to disabled candidates with essentially the same qualifications. International candidates are highly encouraged to apply.

Please send your application, including a letter of motivation, a CV (format: Europass CV), your research plan (1-2 pages), a statement of your residence(s) for the last 36 months, certificates, and contact information of two references as one pdf-file via E-mail using the subject "LeADDC69" to Dr. Christian Wurzbacher (c.wurzbacher@tum.de). **Closing date for the application is 21.04.2025 (CEST).** We reserve the right to re-advertise or extend the closing date for this post.

Selection process

The selection committee comprises several members from the host university and other LeAD beneficiaries. Shortlisted candidates will be invited to an online recruitment interview focusing, among other things, on further discussing the motivation letter and planned research. Candidates' language and communication skills will be assessed during the interview.

Data Protection Information

When you apply for a position with the Technical University of Munich (TUM), you submit personal information. With regard to personal information, please take note of the Datenschutzhinweise gemäß Art. 13 Datenschutz-Grundverordnung (DSGVO) zur Erhebung und Verarbeitung von personenbezogenen Daten im Rahmen Ihrer Bewerbung. (data protection information on collecting and processing personal data contained in your application in accordance with Art. 13 of the General Data Protection Regulation (GDPR)). By submitting your application, you confirm that you have acknowledged the above data protection information of TUM.