

Master Internship Opportunity (10-15 ECTS)

Topic: Experimental Development of Fermentation Strategies for 2G Bioethanol from Invasive Aquatic Biomass

Start Date: May 2026

Deadline: 15th May 2026

Background

The transition to a circular bioeconomy depends on the efficient conversion of non-food biomass into 2G ethanol. As this work shifts toward low-cost, decentralized systems based on invasive aquatic biomass, success hinges on robust and reproducible upstream bioprocesses. This project focuses on establishing the necessary laboratory foundations through the development of Standard Operating Procedures (SOPs) and the generation of proof-of-concept (POC) data at small scale. By comparing Separate Hydrolysis and Fermentation (SHF) with Simultaneous Saccharification and Fermentation (SSF) across defined media and aquatic biomass, the project establishes key operational baselines while isolating inhibitor effects relevant to real feedstocks.

Aim of the Internship

1. Establish standardized, reproducible protocols for small-scale fermentation systems.
2. Conduct a proof-of-concept study comparing SHF and SSF using defined sugars and aquatic biomass.
3. Quantify fermentation kinetics and ethanol yields across media and hydrolysates using standard microbial strains to validate protocol robustness.

Requirements

- **Background:** Strong background in microbiology, biotechnology, or bioprocess engineering
- **Core Skills:** Aseptic techniques, microbial cultivation, and standard lab analytics
- **Documentation:** Strong record-keeping and ability to write clear, actionable SOPs
- **Mindset:** Independent, organized, detail-oriented, and proactive in the lab

Application Process

Please send your application documents, i.e. a CV, current transcript, and cover letter, to **Eric Kariuki, MSc.** (gathirwa.kariuki@tum.de). Feel free to reach out with any questions regarding this role.

If you are ready to apply your laboratory skills to establish actionable bioprocess methodologies, we look forward to your application

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