

Postdoctoral Fellow – Methane Bioreactor Development and Technology Translation

University of Utah & University of Washington
Locations: Seattle, WA and Salt Lake City, UT

About the Opportunity

We are recruiting a postdoctoral fellow to accelerate **low-concentration methane capture and conversion** by pairing rigorous science with real-world translation. The position will be jointly mentored by Swomitra (Bobby) Mohanty (Chemical Engineering, Utah), Jessica Swanson (Chemistry, Utah) and Mary Lidstrom (Chemical Engineering and Microbiology, UW).

The fellow will receive training in bioreactor design (Mohanty), molecular biophysics (Swanson), methanotroph physiology, and metabolic engineering (Lidstrom) with the **goal of developing continuous methane-fed bioreactors** and generating quantitative performance data relevant to scale-up and real-world application.

The position includes participation in technology translation activities, including the customer discovery and early-stage commercialization strategy.

Position Structure

This fellowship is structured as a progression from biological understanding to engineered systems, with technology translation integrated throughout. The project will be collaboratively scoped, with emphasis on delivering a functional continuous reactor platform.

Phase 1 – Biological & Process Foundation (University of Washington, Seattle)

During the first phase, the fellow will develop a working understanding of methanotrophic systems sufficient to inform reactor design. The focus will be on identifying key biological and transport constraints that influence system performance. These insights will guide subsequent reactor development.

Phase 2 – Continuous Bioreactor Development (University of Utah, Salt Lake City)

In the second phase, the focus shifts to translating biological insights into working reactor systems. The fellow will play a central role in the design and operation of continuous methane-fed bioreactors, working closely with engineering collaborators, including Dr. Mohanty's group. Foci will include gas-liquid mass transfer, reactor configurations, and process control and stability. The fellow will use performance data to guide system improvement and inform early-stage scale-up.

This phase is the primary focus of the appointment, with the goal of delivering a functioning continuous reactor platform and understanding its key performance limitations.

Phase 3 – Technology Translation Exposure

In parallel with technical work, the fellow will gain experience in technology translation and early-stage commercialization, including participation in the NSF I-Corps program. These activities provide insight into how emerging technologies are evaluated and positioned for real-world deployment. Participation is structured, supported, and complementary to the core technical work.

Role and Responsibilities

The fellow will contribute to the development of biological methane systems through a combination of experimental work, reactor development, and collaborative integration across disciplines.

Core contributions include:

- Designing and executing experiments in methanotroph cultivation and characterization
- Contributing to the development and operation of continuous bioreactor systems
- Analyzing system performance to identify biological and engineering bottlenecks
- Working collaboratively with researchers in biology, modeling, and engineering
- Documenting findings through publications, reports, and presentations

The fellow will also participate in structured technology translation activities as part of the broader project.

Required Qualifications

- PhD in Biomolecular Sciences, Chemical Engineering, Bioengineering, Microbiology, or a related field
- Experimental experience in areas such as microbial systems, bioreactor operation, bioprocessing, or transport phenomena
- Strong interest in integrating biology with engineered systems
- Ability to work in a hands-on, collaborative, interdisciplinary environment
- Strong written and verbal communication skills

Preferred Qualifications

- Experience with gas fermentation or gas-liquid bioreactors
- Familiarity with methanotrophs or C1 metabolism
- Exposure to process design or scale-up considerations
- Interest in technology translation or applied research environments

Compensation & Benefits

- Salary: \$62,000 – \$75,000/year, commensurate with experience
- Full benefits through the University of Utah

Work Environment & Expectations

This is a one to two-year appointment with potential extension and semi-annual progress reviews, structured across both institutions. The fellow will spend a few weeks to months at the University of Washington (Seattle) and the remainder of the time at the University of Utah (Salt Lake City). The position provides access to cross-institutional facilities and resources supporting technology development, translation and commercialization.

Why This Position is Unique

This position sits at the interface of biology and engineered systems. The fellow will gain hands-on experience building and testing reactor systems while developing skills in scale-up, performance optimization, and technology translation.

The work also targets real world solutions to methane mitigation and resource utilization—an area of immediate climate relevance—with opportunities spanning academic research, engineering development, and early-stage deployment.

How to Apply

Please email Professors Mohanty and Swanson at **swomitra .at. chemeng.utah.edu** and **j.swanson .at. utah.edu** with the subject line:

“Postdoc Application – [Your Name]”

Include:

- CV/resume
- Cover letter describing your interest and career goals
- Contact information for two references