



THE UNIVERSITY
OF BRITISH COLUMBIA

Enhancing energy recovery from wastewater via advanced anaerobic digestion

The Research:

As energy positive wastewater treatment becomes increasingly popular, a higher level of productivity is demanded of existing anaerobic digesters. Common wastewater sludge pre-treatment methods, such as thermal hydrolysis, can allow for higher digester solids loading rates. However, higher solids loading rates can result in free ammonia inhibition. Under such conditions, a change in metabolic pathways can occur, such that acetate is degraded a syntrophic pathway, rather than via aceticlastic methanogenesis. This research will investigate strategies to stimulate the microbial community within anaerobic digesters to cope with higher free ammonia levels, with a focus on syntrophic populations.

Research Tasks:

- Operate laboratory-scale anaerobic digesters treating pre-treated wastewater solids
- Measure kinetics of methane production by the microbial community
- Investigate strategies to overcome ammonia inhibition
- Monitor the microbial community structure using high throughput sequencing

Qualifications:

This multidisciplinary project will utilize skills from environmental engineering as well as microbiology. We are looking for a motivated student interested in cutting-edge research on energy recovery. The following traits are desirable:

- Background in molecular microbiology techniques
- Experience with biological reactors, preferably for wastewater treatment
- Knowledge of wastewater treatment process fundamentals
- Currently a MSc student

Duration: 6 – 9 months

Location: The University of British Columbia, Vancouver, BC, Canada

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