

The impact of kiwi fruit addition to waste activated sludge on improving biogas production in anaerobic digestion

Industrial and municipal wastewater treatment plants produce large amounts of waste activated sludge that may be anaerobically digested prior to dewatering and final disposal. Anaerobic digestion (AD) consists of a series of biological processes in which microorganisms break down biodegradable material in the absence of oxygen to reduce solids and produce bioenergy. Hydrolysis is often a limiting step in anaerobic digestion of waste streams with large fractions of solid-form organic matter. In this work we are interested in using enzymatic pretreatment to improve the hydrolysis of biological sludge, and boost the production of biogas via enzymatic treatment. Kiwi fruit, rich in actinidin, is used to tenderize meat and assist with protein digestion in humans. This project will consist of evaluating the effects of pretreating waste sludge (municipal and industrial) with kiwi fruit waste on improving hydrolysis and biogas production in the AD process. The successful candidate will be in charge of conducting BMP tests (biomethane potential test), monitoring biogas production and biosolids reduction, in addition to evaluating enzymatic activity of kiwi.

Interested M..Eng applicants can contact Dr. Yaldah Azimi for further information and for an opportunity to interview at yaldah.azimi@utoronto.ca