

**PhD position in the Department of Process Engineering, University of Stellenbosch, South Africa**

**Title: Optimisation and scale-up of anaerobic digestion for the production of biogas from piggery wastes.**

**Start Date: July 2020 or January 2021**

The Bioenergy research group offers a diverse and multidisciplinary approach for research and training. The research interest is focused on developing sustainable technologies for converting biomass and waste into valuable products.

**Problem statement:** Anaerobic digestion has gained significant attention in recent years for waste management and bioenergy production from diverse feedstocks. AD can help to minimise greenhouse gases emissions through biogas production as an alternative to fossil fuels, reduction of deforestation with the use of firewood in developing countries such as South Africa, sustainable waste management options to discourage landfilling of organic wastes and improvement in soil fertility with the application of the resulting digestate. Despite the merits above, the anaerobic digestion of cellulosic wastes is faced with several limitations of poor hydrolytic efficiency, stability, and overall low biogas yields. This study will investigate the optimisation and scale-up of anaerobic digestion for biogas production from piggery and lignocellulosic wastes. This will include aspects of co-digestion with lignocelluloses and fruit wastes, the use of two-stage AD processes, and the application of micro aeration to improve lignocellulose hydrolysis and conversion. The Ph.D. candidate will learn a variety of innovative techniques to answer the question of the impact of co-digestion and micro aeration on the performance of AD, particularly during the rate-limiting stage of hydrolysis. It is expected that the outcome of this project could offer an efficient and robust technique for the conversion of lignocellulosic wastes through AD technology.

**Details:**

The project will commence immediately (July 2020) or January 2020, and run for a full-time studentship of 3 years. The project will include a competitive bursary for the entire duration of the project.

**Eligibility criteria:**

A master's degree in Microbiology/Biochemistry/Chemical Engineering or a related relevant field.

Excellent spoken and written communication skills.

Prior laboratory experience in fermentation technology is preferred but not required.

**Application Requirements:**

Interested applicants should submit a cover letter including motivation for the position, curriculum vitae (CV), copies of their academic transcripts, copies of degree certificates, copy of South African identity document, and contact details of two academic references.

Applications should be sent to Professor Johann Gorgens ([jgorgens@sun.ac.za](mailto:jgorgens@sun.ac.za)), Department of Process Engineering, University Of Stellenbosch, South Africa.

Shortlisted applicants will be asked to interview online/via telephone.