



Post-doctorate fellowship available on the investigation of faecal sludge drying, at the Pollution Research Group, University of KwaZulu-Natal (Durban, South Africa)

Context

According to the World Health Organization, 2 billions of people in the world lack of a proper sanitation service in the world. Since 2011, the Bill & Melinda Gates Foundation (BMGF), through the Water, Sanitation & Hygiene department, have initiated programs such as “Reinvent The Toilet Challenge” and “Omni-Ingestor”, in order to develop transformative technologies that can be applied to solve the lack of adequate sanitation, that affects particularly the develop countries. Several transformative technologies developed by the BMGF grantees are based on the treatment of the faecal matter through thermochemical processes such as combustion, gasification and pyrolysis. Drying is a very important step in the thermochemical processes as it leads to lower moisture content, which is suitable for the use of faecal sludge as a biofuel or the production of bio-char. Besides, drying usually also enables pasteurization of the material, which allows to handle the faecal matter with limited risk and opens the possibility of reuse in agriculture. Drying of faecal matter is a relative new topic with only a few publications readily available in literature. There is then a need of data and understanding on the drying of faecal sludge which could facilitate the development and optimization of drying technologies.

The Pollution Research Group (PRG), located at the University of KwaZulu-Natal (UKZN, in Durban, South Africa, has been granted by the BMGF in order to investigate the drying characteristics of faecal sludge. The project aims at providing useful data and knowledge to the sanitation practitioners, leading to the development of guidelines of best practices which could be the starting point for an engineering handbook for drying. The first phase of the project will consist in drawing the landscape of faecal sludge drying in order to identify the gaps and select the areas of more interest with respect to the application. In the second phase, investigation on faecal sludge drying will be performed based on the scope of the research defined in the landscape study.

The research project will be done in collaboration with Swansea University and Cranfield University. This partnership combines complementary expertise of the three involved institutions: expertise in the faecal

sludge characterization at PRG; expertise in material science characterization in Swansea University; expertise in the thermochemical conversion of faecal sludge in Cranfield University.

Description of the position

- Missions: assist with the landscape study and to lead the experimental work.
- Main location at the PRG, UKZN (Durban, South Africa)
- Travels to the United Kingdom (Swansea, Cranfield), with possible stays of some weeks for the experimental work
- Starting date: January – February 2017
- Duration: 12 - 15 months
- Preferred profile for the position:
 - Degree in chemical engineering or material science
 - PhD in drying, thermochemical process or catalysis
 - Skills in data treatment, analysis and writing
 - Autonomous and taste for research
- Annual package including:
 - Annual salary between R 200,000 and R 250,000 according to the experience of the candidate (equivalent to approximately USD 15,000 and USD 19,000 respectively on the 26/01/2017)
 - Airplane tickets to South Africa and VISA fees
 - Healthcare

Contact

Dr. Santiago Septien Stringel – septiens@ukzn.ac.za

Pr. Chris Buckley – buckley@ukzn.ac.za

Ms. Susan Mercer – mercerc@ukzn.ac.za