Abstract: Repurposing mine tailings using microbial induced calcium carbonate precipitation

The following talk focuses on manufacturing bio-bricks and bio-tiles from copper mine tailings using a natural cementation process called microbial induced calcium carbonate precipitation (MICP).

A/Prof Randall introduces the concept of sustainable sanitation and how human urine can be a source of valuable nutrients for various processes. He specifically focuses on recovering the urea from human urine and shows how this key nitrogen source can be used to drive the MICP process. He then talks about the challenges of using copper mine tailings as aggregate in the MICP process and how these could be overcome to create bio-solids.

The talk ultimately focuses on rethinking 'waste' waste streams as valuable resources and how a subtle shift of our mindset can be used to create sustainable processes.

Associate Professor Dyllon Randall Biography

Dr Randall is an Associate Professor in Water Quality Engineering at the University of Cape Town. His research focuses broadly on resource recovery from wastewaters and more recently, on sustainable sanitation systems. He led the team that grew the world's first bio-brick from human urine in 2018.

He is currently a Future Leaders – African Independent Researcher (FLAIR) Fellow and is a recipient of various awards for his pioneering research work in the water sector.

Abstract: **The technology transfer landscape for waste valorisation**

Transfer of sustainability-related technologies to the mining industry in necessary to reduce the negative impact of mining on the environment and improve the lives of surrounding communities. In this talk Helene-Marie will share insights from her work on technology transfer as it relates to the commercialisation of bio-bricks and bio-tiles.

Helene-marie Stander Biography

Helene-Marie Stander is a PhD student at the University of Cape Town's Minerals to Metals Research Initiative and Centre for Bioprocessing Engineering Research. She is currently doing research on early-stage design, incorporating an understanding of decision making and technology transfer into the stage of design that is often described as an art rather than a science. This she then applies to the valorisation of sulfide-enriched coal waste. Helene-Marie holds a BEng (Chemical Engineering) and MPhil (Business Ethics), both from the University of Pretoria.

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