**PRESS RELEASE**
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## CHIETA and VUT Aim to Position SA as Leader in Fuel Cell Innovation

Commercially used conventional membranes for fuel cell applications are expensive and reduce fuel cell performance. Funding provided by the Chemical Industry Sector Education and Training Authority (CHIETA) to Vaal University of Technology (VUT) in 2021 has made a project possible to research, develop and ultimately manufacture low-cost membranes for use in fuel cell engines.

"Given its rich platinum reserves and extensive focus on developing a hydrogen economy, South Africa is well positioned to capitalise on the many benefits associated with the production of hydrogen fuel cells for use in motor vehicles," comments Yershen Pillay, CEO for CHIETA, "and the country possesses a wealth of research talent that can position it as a leader in fuel innovation."

However, developing low-cost polymeric membranes with high ionic conductivity for energy applications is still a research challenge in fuel cell technology.

Whilst chitosan presents as a viable low-cost biopolymer that can be obtained from fishery waste, with low-fuel (methanol) crossover and good film forming ability, therefore offering a potential substitute to conventional membranes, because of its low proton conductivity, poor mechanical stability and tendency towards brittleness at room temperature, modification is required to improve its i conductivity and flexibility.

It is here that 19 chemical engineering students from VUT have been conducting research on modifying chitosan and innovating a membrane that offers good proton transport, better mechanical and chemical properties, and high resistance to fuel leakage. The developed membrane will be used to fabricate the fuel cell stack with all the components in the unit for electricity generation.
"The funding provided by CHIETA for this research has directly benefited 19 chemical engineering students at VUT, of which three are master's students and one is a PhD candidate," comments Dr Dan Mokoena, Acting Vice Chancellor and Principal for VUT.

"The programme responds directly to national and VUT development plans, this being to create knowledge and human capacity development, as well as to support previously disadvantaged students who are eager to progress with and advance their studies," adds Dr Mokoena.

One of the master's students, Reneilwe Matsama, whose dissertation topic: 'development and assessment of chitosan membrane encapsulated with a platinum/ruthenium catalyst for fuel cell applications' was able to develop the membrane at a small cost of commercially sold membranes. Her findings are currently undergoing the assessment process and she is intent on progressing to PhD studies that will focus on evolving the quality of the membrane.

CHIETA believes that, now more than ever, it is important to support and partner with education institutions and talented researchers to drive South Africa's research development agenda to capacitate a new generation of talent that can contribute to developing green energy solutions that are key to the reduction of greenhouse gases that contribute extensively to climate change.

"We will continue to fund more of these type of initiatives as they contribute to the increase in the body of knowledge within the energy space, that has become a priority area in South Africa. CHIETA and VUT have committed to establish a Centre for Fuel Cell Technologies in the Vaal," adds Pillay. "CHIETA and VUT are currently investigating collaborations for further post-graduate funding support, and we look forward to equally beneficial partnerships in the future."

**ENDS**

For media-related queries, interviews and images please contact gnyathi@chieta.org.za or call 011 6287000.

**About CHIETA**

The Chemical Industries Education and Training Authority (CHIETA) is a statutory body that was established by the Skills Development Act in 1998. CHIETA's role in the sector is to facilitate skills development, as well as ensure that skills needs are identified and addressed through various training initiatives in the chemical and manufacturing industries.