



## Tronox donation to boost UNIZULU teaching and learning and research activities

THE Department of Chemistry at the University of Zululand (UNIZULU) is in a celebratory mood after receiving a generous donation of two automatic fluxes worth more than R2 million from Tronox KZN Sands in January 2019.

The machines, which were donated as a result of Tronox's initiative to support local previously disadvantaged universities, have a great potential to aid in the teaching and learning as well as research activities of the Department of Chemistry.

The first instrument, LECO CS-200, is a Carbon/Sulfur analyser that is suitable for the analysis of inorganic materials such as steel, cast iron, refractory metals and ceramics. The second one is Katanax, an electric furnace or fusion machine used to prepare fused beads for XRF analysis. Fused beads provide ideal homogeneous representation of samples (typically ceramics, rocks, ores and cement). They are produced by mixing a flux with a sample that has been finely ground and then heated up at a temperature between 1000 and 1200 degrees Celsius in a crucible. The sample dissolves in the flux and is then cast into a mould.

Professor Tshwafo Motaung, Head of the Department of Chemistry said: "These fluxes will inspire and benefit all students, from undergraduate to postgraduate level. They could be used for teaching and learning and are also ideal for research done by desiring material scientists."



One of two machines donated by Tronox KZN Sands, the Katanax is set to assist aspiring material scientists with their research and course work.

In line with the National Development Plan and in the interest of the Fourth Industrial Revolution, the Chemistry Department has seen the need to sign a Memorandum of Understanding (MOU) with Tronox KZN Sands. The collaboration will place UNIZULU amongst institutions who are effectively preparing the current generation for the next technological phase through

relevant research and developments. Prof Motaung said after the signing of the MOU, there will be discussions on how to align research conducted in the university with the Tronox strategy to help tackle the company challenges.

The Dean of the Faculty of Science and Agriculture Prof Nokuthula Kunene congratulated the Chemistry Department

for its decision to forge a relationship with Tronox KZN Sands. She highlighted that enhancing the graduate attributes of students is the "most important part of the Faculty of Science and Agriculture strategy". Collaborations between the institution and industries thus help build highly skilled graduates who are ready to tackle industrial challenges immediately after graduation.

## The sky's the limit for Mungodla

WHEN Sarah Mungodla, a 26-year old University of Zululand (UNIZULU) master's graduand, decided to study chemistry after high school, she was intent on developing a cure for HIV but her dream died soon after discovering the intriguing field of energy.

After obtaining her undergraduate degree at the University of Free State, Mungodla took a decision to enrol for her master's degree in the Department of Chemistry at UNIZULU where she knew she would get unwavering guidance regarding conducting energy-related research as she had previously learnt that Professor Tshwafo Motaung, who heads the Chemistry Department, shared a similar love for energy.

In hindsight, the Bloemfontein-born young lady said she does not have regrets about her decision as in her two years of studying at UNIZULU, she has gained invaluable knowledge about her field while also discovering so much about her capabilities.

In the midst of the electricity crisis in the country, Mungodla chose to do her dissertation on the "technical and economic feasibility of setting up an anaerobic digester at the Empangeni Waste Water Treatment Plant". Anaerobic digestion is widely used as a renewable energy source. The process results in the production of a biogas which can be used as fuel or to generate electricity. With uMhlathuze Municipality owning over seven waste water treatment plants, Mungodla thus sought to discover the technical and economic viability of establishing an anaerobic digestion system to help the municipality alleviate its electricity costs.

The project was done in collaboration with the National Centre for Renewable Energy and Sustainable Studies at Stellenbosch University and Peter Ocholla from the UNIZULU Hydrology Department. Using data obtained from the municipality, Mungodla employed mathematical, statistical and other models to predict the impact of setting up the biogas digester. The results attained at the end of her project in November 2018 indicated that while it was technically possible to set up the biogas digester, there were a number of variables the municipality had to consider to make it economically feasible.

"The study showed that annually, the municipality can save approximately R3 286 961 by using a Combined Heat and Power (CHP) generator on weekdays during peak hours. There are also lifestyle benefits of using biogas generated electricity such as reduced carbon footprint as less coal would be used to generate electricity. With more green energy produced, the demand for Eskom's coal-powered electricity would be less, thus resulting in a decrease in tariffs," Mungodla said.

According to Dr Linda Linganiso, Mungodla's supervisor, the country has vast untapped capacity to drive renewable energy projects. "Such projects could help South Africa meet the target set out in the National Development Plan, which calls for the procurement of 'at least 20 000MW of renewable electricity by 2030' and the decommissioning of 11 000MW



Bloemfontein-born Sarah Mungodla, a UNIZULU master's graduand, is ready to take the South African energy sector by storm.

of ageing coal-fired power stations," Dr Linganiso added.

Furthermore, the academic said she was thoroughly proud of Mungodla's performance throughout her two years of studying. "Sarah is not scared of complicated projects, no matter how difficult the project may seem, she approaches it head-on. The more difficult the project seems, the more interesting it becomes to her. She has juggled to balance research work, raising funds and innovation at the same time while she was doing her MSc at UNIZULU," said Dr Linganiso.

In the wake of the water crisis in Cape Town, Dr Linganiso said Sarah came up with the idea of developing a prototype for a waterless toilet system, which she tried while simultaneously working on her master's project. She then negotiated for R500 000 funding from the Department of Economic Development, Tourism and Environmental Affairs (EDTEA) which was received. Mungodla will be developing a prototype from March 2019.

Mungodla's achievements do not end there. She recently attended a two-week training in the United Kingdom, where she learned about the commercialisation of innovation. Her trip was funded by the Technology Innovation Agency. She has also published six research articles and two book chapters.

The past two years have revealed a side Mungodla did not know about herself before. After securing the EDTEA funding, she is confident she can source funds for others who may have green and smart technologies that will help the South African economy. That's the kind of area she wants to venture into in the near future. For starters, she will assist her father who makes bricks using coal ashes to apply for funding.

## Dates for UNIZULU graduation ceremonies changed due to general elections

GRADUATION ceremonies all over the world are occasions for acknowledging and celebrating achievements and success. They are formal occasions with a festive air and cross cultural and national barriers. The auspicious events mark years of student determination and reflect the great strides students take to earn their qualifications.

Due to the National Elections date which was announced by the President of the Republic of South Africa Cyril Ramaphosa, there will be a slight adjustment to the Graduation Ceremonies at UNIZULU. Initially, they were scheduled to be staged from May 6 to May 10, 2019 however, they will now take place between May 13 and May 17, 2019. The venue remains the gigantic King Bhekuzulu Hall which was named after the late King Cyprian Bhekuzulu ka Solomon, the father of the reigning monarch His

Majesty King Goodwill Zwelithini. The university urges the graduands, their parents, families and guardians to readjust their plans accordingly.

The university wishes to emphasise to graduands that their association with the University of Zululand need not end on their graduation day. All graduands are urged to enrol for postgraduate courses as learning is a lifelong journey. Furthermore, graduands are encouraged to become active and enthusiastic members of the UNIZULU Alumni Association. In so doing, they will join a long and elite list of alumni who have walked through the gates of this great institution and graduated. Our Chancellor Honourable Judge Raymond Zondo is a product of this institution. The late Tata Madiba was awarded an honorary doctorate by this university on May 30, 1998.

Herewith the 2019 Revised Graduation Schedule – MAY 13-MAY 17 2019			
Mon 13	GRADUATION CEREMONY	(i)	Morning Session: Education Afternoon Session: Education
Tues 14	GRADUATION CEREMONY	(i)	Morning Session: Education Afternoon Session: Arts
Wed 15	GRADUATION CEREMONY	(i)	Morning Session: Arts Afternoon Session: Arts
Thurs 16	GRADUATION CEREMONY	(i)	Morning Session: CAL Afternoon Session: CAL
Fri 17	GRADUATION CEREMONY	(i)	Morning Session: Sci & Agric Afternoon Session: Sci & Agric



## UNIZULU plays a part in preparing high school learners for higher education

The University of Zululand (UNIZULU) is currently implementing its annual outreach programme which aims to better prepare high school learners in the KwaZulu-Natal region for the higher education environment.

The comprehensive programme entails forging a close partnership with the provincial Department of Education, high school principals and educators with an overall focus of offering career guidance to learners to ensure a brighter future for them. To execute the latter, the Student Recruitment unit plans strategic visits to high schools around the region where it holds detailed information sessions with pupils, paying specific attention to grade 9 learners who require both career and subject-choice guidance. The unit also ensures to attend and organise sem-

inars for Life Orientation, Mathematics and Science teachers. The interventions ultimately result in a mutually beneficial partnership where the learners gain exposure to an array of career options available while the university manages to attract a new cohort of undergraduate and postgraduate students.

The Student Recruitment unit has visited high schools in Esikhawini, Port Shepstone, Durban and Bergville so far.

Nompilo Dlamini, Public Relations Officer, said she was thoroughly happy with the outcome of the visits taken thus far. "On the 9th February, in collaboration with the Faculty of Education at UNIZULU, we attended a careers day that was hosted by the Bergville Community Builders in partnership with the UThukela Department of Education and

UKhahlamba Municipality. The event was a success. It was attended by 18 schools with approximately 1500 grade 11 and 12 learners who had direct interaction with experts from twelve exhibiting companies which included Eskom, Wits University, Nestle, the South African Weather Service and the Aviation Academy to name a few," Dlamini said.

She added that greater impact was made during the exhibition held at the Ugu and Sport Leisure in Gamalakhe. Over 24 schools and close to 3000 learners were in attendance. Important information regarding career paths to follow post-matric was imparted to the learners, much to their delight.

The outreach programme involves more strategic visits for the year.



Professor Mncedisi Maphalala (second from right), Dean of the Faculty of Education, engages a pupil during one of UNIZULU's high school visits.

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