



# ALUMNI UPDATE

## Message from the Dean

July 2021

What a rollercoaster ride the past 18 months have been. In March 2020, we had two weeks to prepare to go fully online. Our staff worked around the clock and quickly adapted to remote teaching and delivering their lectures online. It has been an enormous learning curve for us all. I am so proud to be part of this faculty and grateful for all the staff's dedication and hard work.

COVID-19 allowed the faculty to rethink how we teach. It has given us a rare chance for departments to pilot an innovative new educational model. One of the weaknesses we identified in last year's online teaching was the assessment of courses. Our faculty offers professional degrees and, without proper assessment, our degrees would not be professionally accredited. All our students were advised that they needed to be in Cape

Town this year to attend face-to-face tutorials, project sessions, and various lectures, all held under strict COVID protocol.

Our new educational model uses blended learning and the "flipped classroom" concept: while one bubble is on campus, engaging in low density, active learning activities and feedback in the "EBE Home Rooms", the other bubbles will be doing online learning through lectures and other online activities.

Piloting this model in 2021 under the extreme conditions of low-density, physically distanced learning as imposed by COVID offers us a unique opportunity. We have learnt many lessons and will continue to adapt and improve our teaching. When challenging conditions dictate that we can no longer do what we have done



before, then we innovate – this is exactly the skill set that we see as our faculty core.

We are so grateful to the alumni who volunteer their time to be members of the Faculty Advisory Board, guest lecturers, donors, mentors to our students, and so much more. We could not do it without your support. Thank you.

## A-rating for Professor Michael Claeys



Professor Michael Claeys, director of the DSI-NRF Centre of Excellence in Catalysis in the Department of Chemical Engineering, received his NRF A-rating. The National Research Foundation's (NRF) rating system is a key driver in their aim to build a globally competitive science system in South Africa. A-ratings are awarded to researchers acknowledged as leading international scholars in their fields.

Professor Claeys' research focuses primarily on catalysis for energy applications, including the Fischer-Tropsch process, a technology which lies at the heart of South Africa's synthetic fuels and chemicals industry and one that is playing an increasingly important role worldwide in the production of green future fuels and chemicals from sustainable resources such as CO<sub>2</sub> and hydrogen. [Read more](#)

## Chemical Engineering's centenary

Participating in multi-, inter- and transdisciplinary research, and pursuing technologies that will serve South Africa and the international community well, is “critical” as the Department of Chemical Engineering transitions beyond its 100th year.

This is according to Professor Aubrey Mainza, the head of the Department of Chemical Engineering who delivered these sentiments during the department’s centenary celebrations on Tuesday, 8 December 2020.

The historic event joined staff (past and present), including Deputy Vice-Chancellor for Research and Internationalisation Professor Sue Harrison, students, alumni, and the department’s external partners during an event at the UCT Graduate School of Business. The event was also live streamed.

“The ethos of the department, developed over the last 100 years, serves as a reminder of the hard work put in by our predecessors to make sure that we have the department that we have today,” he said.

“But it also signals the work that those in the department need to do to contribute to towards [achieving] a prosperous department in the future.”

### Achieving success

Chemical Engineering’s longest serving academic, Emeritus



Professor Aubrey Mainza, head of department, and Sarojini Pillay, departmental manager

Professor Cyril O’Connor, who has notched up 40 years of service at UCT, said that the key to the department’s success is reflected in its “outstanding research-led teaching culture”.

Research-led teaching, he explained, refers to academics who are actively engaged in some form of research in order to contribute effectively to good teaching. When academics are involved in research-led teaching, it means that they also develop “enquiring minds” – this helps to ensure that their students are “beneficiaries” of cutting-edge concepts in the subjects they are taught.

[Read More](#)



*In marking the centenary of this remarkable Department, we celebrate those who have formed and contributed to its strength over the many years. There are many standout names of academics and leaders in its history who excel(led) and these are remembered and celebrated in the book titled [A Century of Chemical Engineering at UCT](#), edited by Emeritus Professor Jim Petrie and Professor Jenni Case.*

## UCT's first-ever Google Research Scholar Programme recipients

Two researchers from the University of Cape Town's (UCT) Faculty of Engineering & the Built Environment (EBE) have become the institution's first-ever recipients of search engine giant Google's Research Scholar Programme.

The two recipients are Associate Professor Amir Patel and Dr Mohohlo Tsoeu, both from the Department of Electrical Engineering and its newly formed African Robotics Unit. They are also the only Africans in the programme's 2021 cohort.



The programme aims to support early-career researchers who are pursuing research in fields relevant to Google. It provides “unrestricted gifts to support research at institutions ... and is focused on funding world-class research”.

To be eligible for the programme, an entrant's research must be in computer science and related fields. Associate Professor Patel has been accepted in the Machine Perception category and Dr Tsoeu in the Natural Language Processing category.

“It feels amazing to be recognised by Google, one of the largest tech companies in the world. It is also exciting and encouraging for us to be mentioned among some of the world's top universities in the field of robotics and artificial intelligence,” said Patel. [Read more](#)

## Emerging talent

**Chelsea Tucker, a PhD researcher in the Department of Chemical Engineering was recently named one of 10 Emerging Talent winners in the international Falling Walls Lab competition. Her entry, “Breaking the wall of energy insecurity in Africa”, is based on the Decentralised Diesel system she designed for her PhD.**

[Falling Walls Lab](#) is an international forum for outstanding young innovators and creative thinkers in science, technology, medicine and other fields. The link is to the Berlin Wall, which fell in 1989 after separating East and West Berlin for nearly 28 years. The platform allows young innovators to introduce their “breaking walls” ideas to the public.

Tucker's modular, off-grid waste-to-fuel Decentralised Diesel system produces diesel and electricity from organic waste: food waste, farm waste and even sewage. This means that off-grid communities can use their own unwanted waste to



generate all their energy requirements, which is good news for remote, energy-scarce regions of sub-Saharan Africa and beyond.

[Read More](#)



## Silver medal awarded by Royal Aeronautical Society

The Royal Aeronautical Society recently conferred a silver medal on the University of Cape Town's Aircraft Fuel Tank Component Design team for the application of their research work in computational fluid dynamics (CFD).

The Royal Aeronautical Society is a British professional institution founded in 1866, making it the oldest [aeronautical](#) society in the world. The society confers a silver medal annually on multidisciplinary teams who have made "major contributions to the advancement of aerospace art, science and engineering".

This year the society awarded a silver medal to the Aircraft Fuel Tank Component Design team in UCT's Department of Mechanical Engineering for the application of their novel Elemental® CFD software.

"It is a great honour to be recognised in this way by the UK Royal Aeronautical Society, a society which was established over 150 years ago! Definitely a career highlight that UCT is seen here as making such a major contribution to society," said Professor Arnaud Malan, who holds the South African Research Chair in Industrial

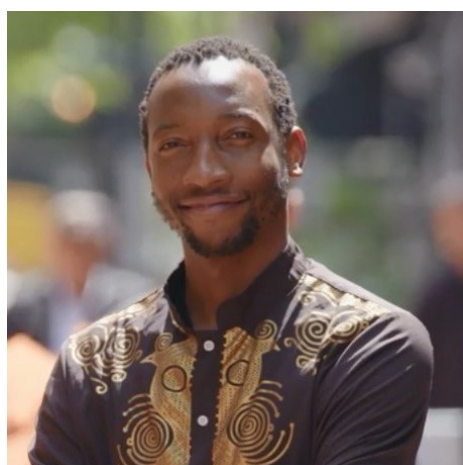


*Dr Leon Malan, Niran Ilangakoon, Dr Bevan Jones and Professor Arnaud Malan*

Computational Fluid Dynamics.

[Read more](#)

## UCT researchers develop smaller, cheaper wireless endoscope to improve health equity



**A 2011 Electromechanical graduate, Mkhokheli Ncube, in collaboration with Professor John Lazarus, Head of Urology at UCT, developed a low-cost wireless endoscope camera that could help bring minimal-access surgery to resource-**

**constrained environments. Mkhokheli did a MSc in biomedical engineering and is currently working as a mechanical designer at Philips in the Netherlands.**

Weighing in at a mere 184 grams and costing only USD 230, the device prototype is much more mobile and affordable than its heavyweight wired counterparts that carry production price tags of as much as USD 28 000.

Battery-operated and comprising a 3.7millimetre tube camera and LED illumination, the camera is capable of delivering high-definition (1280 × 720 pixels) video at 30 frames per second. This is transmitted wirelessly in near-real time via USB 2.0 interface with a Raspberry Pi Zero W miniature single-board computer module. The system is powered by a 1200mAh lithium polymer battery that lasts for over two hours.

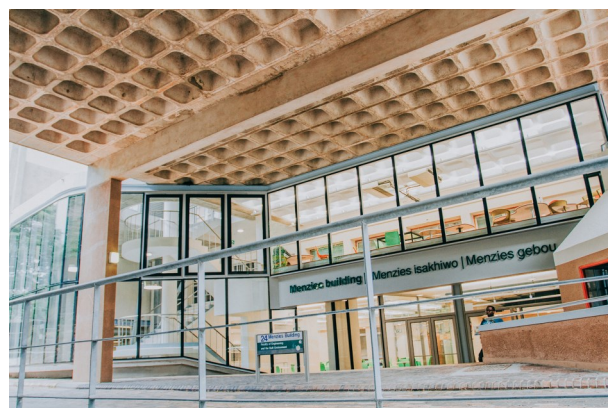
Read more at [UCT News](#)

## Creating a ‘makers’ space for disruptive ideas

In Africa and beyond, there are many social, environmental and economic development challenges requiring urgent, creative solutions. In this environment, universities must act as catalysts to enable the development of innovative ideas by students and researchers into useful products, while at the same time encouraging entrepreneurship and increasing employability among graduates.

While the value of design thinking and processes is understood at UCT, at present there are not enough dedicated laboratory spaces to meet the needs of students and researchers wanting to prototype their ideas. This hurdle in creating tangible societal impact was identified by UCT’s Future Think Tank and resulted in closer investigation of entrepreneurship and innovation within the UCT community. Out of these discussions, the vision of a makerspace championed by the Faculty of Engineering & the Built Environment and open to the whole UCT community was formed. The Menzi (Xhosa word for maker) Design Laboratory project was born.

The vision of the Menzi Lab is to provide a world class design and workshop infrastructure – a makerspace – in which ideas from UCT staff and students, addressing the needs of African societies, can become reality. It is by no means the intention to create ‘just another EBE workshop’ in which staff and students work on their day-to-day curriculum aligned projects, but rather a trans-disciplinary space in which disruptive ideas are nurtured and brought to a prototype stage, with support from UCT experts, the UCT Design School and IP and commercialisation specialists from the Research



Contracts & Innovation office. We want to facilitate the creation of products and IP which have direct impact and market potential.

We have already secured a R1 million donation from one of our alumni towards the first phase of the project, and the refurbishment of the physical space that will host the lab is currently under way in preparation for its use.

At this stage we are seeking strategic partners who support the operation of the first phase of the Menzi Design Lab, both through financial contributions as we look to raise an additional R1.9 million and through interactions with idea bearers in the form of workshops and presentations. We would love to establish mutually beneficial long-term partnerships even beyond the first phase of the project.

If you are interested and want to find out more, please contact [A/Professor Nico Fischer](#)

## Professor Windapo awarded ‘science Oscar’



**In recognition of her outstanding contribution to the development of research capacity in the field of engineering, Associate Professor Abimbola Windapo from the Department of Construction Economics and Management was one of the recipients of a prestigious National Science and Technology Forum (NSTF)–South32 award.**

Also known as the ‘science Oscars’ of South Africa, the NSTF–South32 Awards were established in 1998 to recognise outstanding contributions to science, engineering, technology and innovation by professionals, teams and organisations in South Africa.

This year, 141 award nominations were received by the NSTF. [Read more](#)

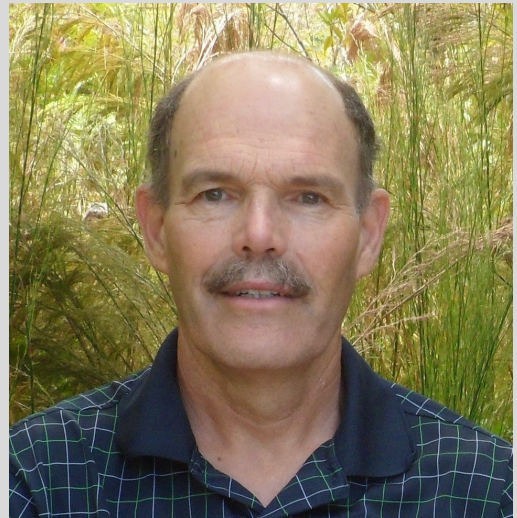
## Generous bequest for civil engineering

Dr Kenneth Been, a UCT civil engineering graduate, passed away on Vancouver Island in 2017. In his will, he left a generous bequest to support postgraduate bursaries in the Department of Civil Engineering.

Ken graduated from UCT in 1976 and proceeded to Oxford University on a Rhodes Scholarship. Over the years he became renowned for his innovation in geotechnical engineering and his leadership work in understanding the fundamentals of soil behaviour and his development of the state parameter, which is used today throughout the world. “The impacts of his work are highly significant, timely and relevant to academia, the state-of-practice and state-of-the-art.” The Canadian Geotechnical Society published [an article](#) about the impact Ken had on the industry, as his career took him across Canada, the USA, the UK and Europe.

Ken is survived by his wife, Fiona, and sons Daniel and Steven.

Professor Pilate Moyo, the Head of the Department of Civil Engineering, said, “We are extremely grateful for the generous bequest from the Been family. It comes at a time when funding for postgraduate studies has been cut, and is getting harder to find. We have exciting postgraduate programmes in the department which all play a vital role in developing the skills necessary for success in a knowledge-driven economy, both locally and internationally. It is great to see our alumni supporting the department.”



## Successful Klaus Jurgen Bathe graduate

Launched in 2014, the [Klaus Jurgen Bathe \(KJB\) Leadership Programme](#) aims to produce graduates with outstanding leadership qualities and a strong sense of social justice who will play significant roles in business, government, industry and civil society in South Africa and on the African continent. It was made possible through a generous donation by UCT alumnus and MIT engineering professor Klaus-Jürgen Bathe. To date, many UCT students have benefited.

One of the 2019 recipients of the KJB Scholarship, Callum Tilbury, graduated in 2020 with a first in Electrical and Computer Engineering. Callum has been accepted into the University of Edinburgh and will be starting an MSc in Artificial Intelligence in September 2021. Professor Alphose Zingoni, director for the programme said, “It is good to see KJB scholars pursuing their potential at some of the top institutions in the world.”



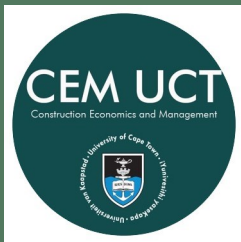


## News in brief



Interim Director for Future Water Dr Kirsty Carden has been awarded a Senior Fellow Membership of the Water Institute of South Africa (WISA). The award is for the dedication and support that Dr Carden has shown WISA and the Water Sector throughout her career.

Dan Naidoo, WISA Board Chair, said, "This exceptional honour is not bestowed lightly and takes into account the consistency of support that you have shown WISA over a large number of years. It is, however, not restricted to support for WISA, but also takes note of the contributions you have made to the enhancement of the Water Sector overall and the esteem that your actions have brought to the stature of the South African water industry."



The Department of Construction Economics and Management at the University of Cape Town was selected by the International Real Estate Society (IRES) Board of Directors to receive the 2021 IRES Corporate Leadership Award. The

award is given for outstanding leadership at the international level in support of real estate research and education and in recognition of the Department's support of the African Real Estate Society.

[Read more](#)

Associate Professor Dyllon Randall from the Department of Civil Engineering has won the South African Institution of Chemical Engineers (SAChE) 2021 Innovation Award for a project on the development of a fertiliser-producing urinal and urine bio-brick process.



[Read more](#)

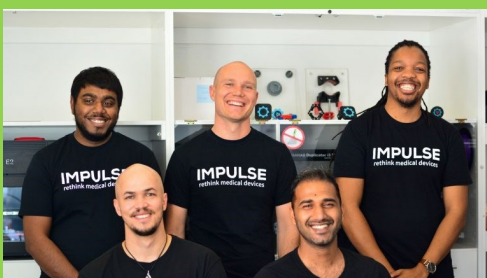
Joanitta Ndawula, a PhD candidate in [CoMSIRU](#), a research group in the Department of Civil Engineering, was elected as the Chair of the newly formed RILEM Youth Council (RYC). She is supported by ten other members from institutions around the world.



RILEM, the International Union of Laboratories and Experts in Construction Materials, Systems and Structures, was founded in 1947 to promote scientific cooperation in construction materials and structures.



Professor Harro Von Blottnitz from the Department of Chemical Engineering was elected as a Fellow of the South African Academy of Engineering. He joins 213 Fellows who are considered thought leaders in their fields.



Impulse Biomedical is another success story of a group of EBE alumni doing great things. Gokul Nair, a 2013 mechanical engineering graduate, is the co-founder of Impulse Biomedical. The other EBE alumni are Munya Matose, BSc Mechatronics in 2012; Seth Thompson, BSc Mechanical Engineering in 2015; and Yasheen Brijlal, a 2012 Electrical Engineering graduate. All four of them went on to complete their MSc in Biomedical Engineering at UCT. Giancarlo Beukes is the other co-founder, who also did his MSc in Biomedical Engineering at UCT. [Read More](#)

## Mail & Guardian Top 200

### Lebogang Diale, 30

2017 Electro-Mechanical graduate  
Co-founder and executive director:  
Gradesmatch

<https://www.gradesmatch.co.za>

Democratising education in South Africa is the task Lebogang Diale has set himself. As the cofounder and executive director of Gradesmatch, an ed-tech company using big data and artificial intelligence to create tools and technologies, Diale is helping young people and their families to make good decisions regarding their careers. His goal is to enable the journey from education to employment or



entrepreneurship so young people can improve their prospects and realise their dreams. Diale completed a business science degree and followed it up with an engineering bachelor's in electro-

mechanical engineering, both from the University of Cape Town. He says his proudest achievement is seeing how Gradesmatch was able to assist thousands of students in 2020, and has grown from supporting 34 students in 2018 to more than 7 000 three years later. He is passionate about solving problems that will have an impact on people's lives for decades to come.

*I want to create a blueprint for the township to transform into the future self it needs to be.*

<https://200youngsouthafricans.co.za/lebogang-diale-30-2021/>

### Athenkosi Nzala, 29

2016 Civil Engineering graduate  
Founder and chief executive  
Limitless Online Learning Solutions

<https://limitlessols.co.za/>

Since graduating with a BSc honours in civil engineering and a masters in educational technology from the University of Cape Town, Athenkosi Nzala has gained years of experience in leadership and development from working with companies like the Mandela Rhodes Foundation, Investec, McKinsey and Company, Young African Leaders Initiative and Pearson South Africa.

Nzala has worked with Engineers Without Borders on the Engineering



for People Design Challenge aimed at delivering a global engineering curriculum that helps graduates make positive social and environmental engineering decisions.

Beyond engineering, Nzala aims to revolutionise the way people learn,

train, collaborate and assess online with Limitless Online Learning Solutions, the e-learning company he founded. "I see myself adding value to the youth not only through entrepreneurship, but through creating platforms for them to receive quality education so they can be empowered to create opportunities for others and themselves."

*Through my scientific research, I endeavour to nurture novel, innovative and translatable research that is locally relevant and globally competitive.*

<https://200youngsouthafricans.co.za/athenkosi-nzala-29-2021/>