

Faculty Newsletter



Message from the Dean

What a pleasure to see articles in the EBE newsletter on our innovative and creative students and alumni who are developing solutions to assist with the COVID pandemic. John Coetzee in the School of Architecture, Planning & Geomatics continues to 3D print devices to help stop the spreading of the virus. His latest is a device to open doors. You can order them from John for R50.00.

There is a group of young, energetic academics who are driving a project to develop a "Maker's Space" where staff and students can transform their ideas into prototypes and IP, and ultimately take them into production. The proposed name for the space is "Menzi", which fortuitously means "maker" in isiXhosa.

We have received a generous donation of R1 million towards the project from one of our alumni, and we are working with the Development Office to raise an additional R1,9 million which will allow for Phase 2 of the project to be completed.

It is exciting to see the first group of researchers and postgraduate students back on campus. Thank you to everyone who has worked tirelessly to ensure that the buildings are COVID compliant, and that all the PPE requirements are available.

Please do take care and keep safe. Reach out to colleagues and friends, and if you are struggling, please see page 10 for details on what ICAS can offer you and your family.

German-African Innovation Incentive Award

The Federal Ministry of Education & Research in Germany put out a call for the German-African Innovation Incentive Award (GAIIA)2020 and has awarded six scientists from Africa (Ghana, Morocco, South Africa, Tunis and Uganda) and their German cooperation partners. The projects are funded with prize money of €150 000, and work on the projects started on 1 June 2020.

Professor Jochen Petersen from the Department of Chemical Engineering is one of the GAIIA award winners, together with his partner Professor Friedrich from RWTH Aachen University. Their project VaReeWA is the

development of a combined thermal pre-treatment and hydrometallurgical process route for Value Recovery from e-Waste through small-scale recyclers in Africa.

With the award, the Federal Ministry of Education & Research honours outstanding researchers from Africa who, based on their research achievements, develop innovative solutions that are adapted to the needs of the African continent and improve people's living conditions. German-African partnerships are an essential success factor in this context. The innovative projects develop sustainable



solutions in the fields of health care, sustainable use of resources, renewable energies and communication technologies for the inclusion of deaf people.

Read the article on [UCT News](#)

Low carbon footprint for virtual meeting

In April, the Intergovernmental Panel on Climate Change (IPCC) was to meet in Ecuador, but owing to the COVID-19 pandemic, the meeting was cancelled. Instead, the first virtual Lead Author Meeting (LAM) was held, where over 270 experts from 65 countries came together online to continue working on their contribution to the Sixth Amendment Report.

Part of Professor Harald Winkler's research is contributing to the IPCC, which assesses the state of knowledge on climate change every few years. He said, "It was the first LAM by Zoom, and I found it mostly worked well, with creativity and focus on the substance and use of technologies."

The chapter which Professor Winkler is co-editing is titled "Mitigation and development pathways in the near- and medium-term." "It was possible to have conceptual discussions among our chapter team which consisted of 18 experts, on complex concepts," Winkler said. "For example, what a development pathway is; and how that might relate to accelerating mitigation." In other words, how to both reduce carbon emissions faster and eventually to net-zero *and* meet multiple development goals. Professor Winkler and his co-editor, Franck

Lecocq from CIRED in Paris, facilitated a breakout-group with 63 participants on these questions. One of the team members facilitated another group on Just Transitions.



"The creative response of the community in the IPCC of undertaking collaborative writing was amazing," Winkler said. "On process, I learned how to zoom a lot! Found it more exhausting without the buzz of an in-person meeting, but some good aspects. Notably that Dimakatso Sebothoma, a master's student in EBE and working part-time as my research assistant for IPCC, was able to join the virtual LAM, which would not have been the case if it had been in-person."

"Taking part in the first IPCC virtual Lead Author Meeting was informative, and the sessions were

well organised. I noted the high level of commitment from the chapter team members that was very exciting and encouraging. I feel this opportunity prepared me well for virtual meetings and online working," Sebothoma said.

Winkler added that a significant



positive was the meeting was lower-carbon (not zero-carbon, virtual meetings have a carbon footprint too). The IPCC has been talking for years about being lower-carbon, until now through off-setting emissions for flights. It took the COVID crisis to get us not to fly at all. In future IPCC cycles, I think two in-person LAMs and two virtual LAMs would be a good combination. That would cut emissions by a bit less than half.

SAICE President-elect



Professor Marianne Vanderschuren has been elected as president-elect of the South African Institution of Civil Engineering (SAICE) for 2021. She is presently one of the Vice-Presidents.

On 2 July she was a part of an international webinar series which was organised by the International Network for Transport and Accessibility in Low Income Communities. The webinar was on Researching Transport Inequalities in Global South Cities, and Marianne's talk was titled "Transport in Cape Town—How do informal settlements compare." You can listen to the webinar series [here](#)

First African to receive international medal



Honorary Professor Peter Martinez has received the 2020 Frank J Malina Astronautics medal from the

International Astronautical Federation. The award has been presented annually since 1986 to educators who have demonstrated excellence in taking the fullest advantage of the resources available to them to promote the study of astronauts and related space sciences. This is the first time that someone from Africa has received the medal.

Professor Martinez was appointed from 2014 to 2018 to coordinate the space studies programme in the Department of

Electrical Engineering. The MPhil in Space Studies programme provides a broad, multidisciplinary introduction to the space sector, together with in-depth research on a topic of interest to each participant. Martinez is now an honorary professor and continues to assist with the supervision of space studies students. From 1 October 2018, he was appointed as the Executive Director of the Secure World Foundation in the USA.

Academia and industry working together

PPE is critical to COVID-19 management and treatment. However, in sub-Saharan Africa, availability of appropriate PPE and the significant cost of single-use items is a major challenge.

To help address this issue, researchers from the UCT Chemical Engineering Department and the UCT Faculty of Health Sciences, as well as Cape Catalytix (Pty) Ltd, are working together to develop an N95 mask decontamination device which will allow re-use of the N95 masks.

The self-contained system will use vapourised hydrogen peroxide for the decontamination process and will be made from readily and inexpensively available components. The first design will have a working volume of approximately 100L and be able to treat 40-50 masks per cycle. It is aimed at South African medical facilities dealing with COVID-19 infections. Larger installations for emergency COVID-19 field hospitals, for example, are envisaged to follow.



Pictured are Darryn Stevens, Aviwe Poswayo and Uthmaan Basardien (all of Cape Catalytix) with the V2 prototype. The other team members are Prof K Dheda (Pulmonology), A/Prof S Sivarasu (Biomedical Engineering), J le Roux (FHS), Prof M Claeys (CHE), Prof J Fletcher (CHE) and S Roberts (Cape Catalytix)

Empowering a new generation of leaders

Carol Ngwenya, a PhD student in CeBER in the Department of Chemical Engineering, was one of three EBE students who were selected to attend the Open Africa Power programme in February 2020. The programme is founded by the Enel Group Foundation and was hosted at the Graduate School of Business. It is a unique academic programme to empower a new generation of leaders to drive Africa's energy transition.

The foundation screened seven hundred and fifty applications from 41 different African countries. Only 61 candidates from 16 countries were successfully selected. More than two-fifths of the participants

were women, confirming the initiative's focus on gender as well as international diversity, and providing a concrete demonstration of African women's emerging role in the clean-energy transition.

Carol said, "It was a very insightful week of stimulating discussions on sustainable energy for all and regulation of the SDG7. We were trained by local and international academic leaders including Anton Eberhard, Emeritus Professor and Director of the Power Future Lab at the UCT GSB, who gave an opening lecture on Power sector reform and regulation. In addition to Enel Foundation researchers and Enel Group experts, including Enel Green



Power South Africa Country Manager Bill Price, other speakers from the African Development Bank, and the International Renewable Energy Association gave very captivating lectures.

The world in turmoil

Professor Alphose Zingoni recently wrote an article which was published on News24 about lessons for South Africa, particularly our youth, following recent events in the United States precipitated by George Floyd's killing.

The responsibility of changing the world rests on the shoulders of all of us, but more so on the shoulders of young people, who are the future of the world.

As if the COVID-19 pandemic was not enough, the world recently witnessed the killing of George Floyd, a 46-year-old unarmed black man, at the hands of white police officers in the city of Minneapolis in the USA. The event, which happened on 25 May 2020, precipitated widespread protests across major cities in the US and across the world, as people from all walks of life united and marched in condemnation of this act of racism

and outright violation of human rights.

Here, at home, there have been incidences of heavy-handedness by the police and the army in enforcing the regulations of the COVID-19 lockdown. In this contribution, we will only focus on the issues relating to racism.

There are lessons that we, as a country, can learn from the events in the USA, especially our younger generation, whose responsibility it is to ensure a better future for all citizens - a future that fulfils the dream of the American Civil Rights leader Dr Martin Luther King Jr - namely a world in which our children "will not be judged by the colour of their skin, but by the content of their character".

In dark moments such as these, we can draw hope from the words of former SA President Nelson Mandela: "No one is born hating



another person because of the colour of his skin, or his background, or his religion."

The first statement acknowledges that something is very wrong in society (and hence needs to be fixed), while the other implies that human prejudice is not irreversible and can be cured through preaching the message of love of fellow human beings.

The full article can be read [here](#)

Obituary: Emeritus Professor Mike De Kock (1933-2020)

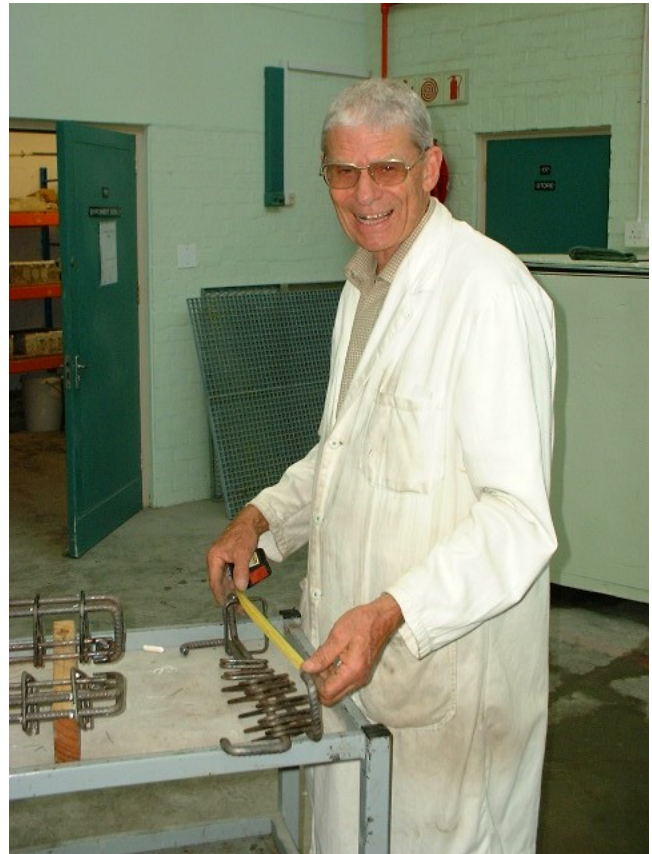
Emeritus Prof Mike (MO) De Kock passed away peacefully at his home in Rondebosch on Wednesday 24 June 2020. Over a period spanning five decades, Mike played a key role in the education and development of many students in the Civil Engineering Department at the University of Cape Town. He is fondly remembered by former students, colleagues and the wider civil engineering community.

Mike was born in Montagu on 10 September 1933. This is where he started his schooling before going on to study civil engineering at the University of Cape Town in 1951. He took a keen interest in all the subjects and excelled in his studies, graduating with distinctions and the class medal in 1954.

Mike stayed on at UCT after his studies, starting as a Junior Lecturer in the Department of Civil Engineering in 1955. He spent the rest of his career at UCT - dedicated to the teaching and learning of many generations of civil engineering students. He only took occasional breaks from academia to gain practical experience and sharpen his engineering skills: he worked briefly as a Researcher for the CSIR Road Research Laboratory (1960), and as a Bridge Engineer for Ninham Shand (1969 and 1976).

Mike became a Lecturer, then Senior Lecturer and finally an Associate Professor in civil engineering until he retired in 1998. Mike was persuaded to become Head of the Department of Civil Engineering at UCT from 1992 to 1998, a position he reluctantly accepted but undertook with characteristic vigour, passion and energy. Retirement did not slow him down, and Mike remained active in teaching and academic contributions to the department for many years as emeritus associate professor until 2013 at the age of 80.

Mike was an extremely versatile and multi-skilled academic and engineer. He was fascinated by all aspects of civil engineering and was comfortable teaching almost any subject with passion and enthusiasm that spilled over to his students - and directed their interests and later specialisation in various disciplines within civil engineering. He made sure that subjects were taught and learned as hands-on engineering practice with a sound theoretical background, rather than theory-driven. This was demonstrated by his keenness and



ability to make models and devise practicals to ensure students interacted and learned to love their subjects. Mike's use of a Weetbix biscuit and straightened paperclips to introduce students to the study of reinforced concrete is legendary – just an example of many innovations and improvisations to enhance student learning.

Ever humble and never satisfied with “just good enough”, Mike would make copious notes of what to do, how to improve lectures, tutorials and practicals. He would share this with colleagues and implement them the next time. Many students tell stories of their fondness for, and appreciation of, his teaching and the impact he made on their choices of specialisation after completing their studies. His total commitment to the education of his students was rewarded with UCT's Distinguished Teacher Award in 1989.

Written by A/Professor Nic Marais

A/Prof Windapo receives a NSTF award

This year, two out of the six UCT finalists for the National Science and Technology Forum (NSTF) awards were from EBE. Well done to A/Professor Jenny Broadhurst and to A/Professor Abimbola Windapo.

At a live streamed gala event held on Thursday 30 July, A/Professor Abimbola Windapo was announced as the winner of the NSTF-South32 Engineering Research Capacity Development Award. A/Prof Windapo received the award for her research of construction business & management that confronts the problems of poor project and organisation performance from a practice perspective.

Winner of the Engineering Research Capacity Development Award

Associate Professor Abimbola Windapo, Department of Construction Economics and Management.

A/Prof Windapo is a construction business and management researcher who confronts the problems of poor project and organisation performance from a practice perspective.



Her work started in South Africa in response to the high failure rates of many construction companies, the construction industry's poor health and safety records and the need to adopt sustainable construction techniques in line with the United Nations Sustainability Development Goals.

Over the past nine years, A/Prof Windapo has demonstrated that the construction techniques used by industry stakeholders are not aligned with sustainable principles, which contributes to the general underperformance of construction projects.

Her research has uncovered that construction companies will only comply with building, environmental, health and safety regulations if there are economic benefits attached, and that product and geographical diversification of the construction industry has produced sustainable growth and development of construction companies.

Finalist for the W Kambule-NSTF Award



A/Professor Jennifer Broadhurst, Department of Chemical Engineering.

Using interdisciplinary and transdisciplinary approaches, Prof

Broadhurst's research focuses on the characterisation and management of mine waste and water, as well as their associated long-term environmental impacts and adverse effects on surrounding communities.

She has made valuable contributions to recovery and waste re-purposing; mitigation of acid mine drainage; measuring and monitoring health risks related to mine dust; and the development of post-closure economic opportunities. Her work is aimed at supporting the environmentally and socially responsible extraction and primary development of South Africa's mineral resources.

Since joining the UCT chemical engineering department in 2001, Broadhurst has been involved in research and capacity-development activities relating to the environmental and sustainability issues associated with coal-based power generation and primary metal production.

Broadhurst holds the interim Department of Science and Technology/National Research Foundation South African Research Chair (SARChI) in bioprocess engineering.

Architecture virtual open day

On Saturday 27 June, the School of Architecture, Planning & Geomatics hosted a virtual online open day for learners interested in architecture. It was the first virtual open day to be held at UCT, and over 200 people joined the event.

Clint Abrahams, an architecture lecturer, coordinated the open day with help from colleagues in the school. The programme included an introduction to the School by Dr Philippa Tumubweinee, followed by Janine Meyer, who explained all the admission requirements. Henk Lourens from the Cape Institute of Architects introduced their website, which is full of useful information

for learners wishing to find out more on careers in architecture. Thuto Vilikazi, a first-year student, together with Buhle Mathole, a lecturer, spoke about what happens in first year. James Tuft, a student, talked about the Pixel exhibition which the first years did in 2019. Mike Louw, a senior lecturer in the school, presented the Team Mahali project, which involved UCT architect students and Stellenbosch University students designing and constructing an affordable and innovative net-zero-energy house.

The presentations were followed by a Q & A session. A parent wrote and said, "Thank you to the whole



team for such a wonderful and very educating session, even for us the parents."

Celebrating 15 years of UCT's IEEE student branch

The Institute of Electrical and Electronics Engineers (IEEE) is the world's largest technical organisation, with over 420 000 members that come together under a common goal: "Advancing technology for humanity". It has 3000+ student branches, and this year UCT is celebrating 15 years of the UCT IEEE student branch.

Humphrey Chiramba, the 2020 chairperson, wrote an article on what they have achieved over the years.

In 2005, some of the key members were Professor Dlodlo and Professor Chan, who recruited the students into the UCT IEEE student branch. At first, it was centred mainly around postgraduate students, but by 2010, over 150 undergraduate and postgraduate students had signed up. Events were hosted monthly and ranged from current developments, to technical talks and industry partners sharing their

wisdom. IEEE Xtreme, an international programming competition for members, provided an opportunity for senior members of IEEE to interact and mentor students.

Over the years UCT IEEE has run some successful projects in schools, like the IEEE EPICS project, where members worked with high school learners on designing and investigating the use of wind turbines, and installed a 300L solar geyser and 2.4kw panels at a children's home in Nyanga while educating the children on the process. Dr David Oyedokun, a senior lecturer in the Department of Electrical Engineering, and once a student member of UCT IEEE, received an IEEE Gold Achievement Award for inspirational leadership towards successful IEEE EPICS High School Projects, fostering member



2020 IEEE team

engagement and empowering the community.

Humphrey Chiramba said, "Over the years, the membership dropped, but we are working hard to increase the numbers again. The traditional talks and visits to industry remain, but there are now hardware-related events where students team up and work together on implementing their textbook knowledge to find solutions."

Staff

New staff

Dr Megan Cole joined the Future Water Institute as a junior research fellow on 1 June 2020.

Mr James Hepworth joined the Department of Mechanical Engineering as a lecturer on 1 July 2020.

Dr Stephen Paine joined the Department of Electrical Engineering as a lecturer on 1 July 2020.

Dr Tsotsope Ramotsoela joined the Department of Electrical Engineering as a lecturer on 1 May 2020.

Dr Janet Wyngard joined the Department of Electrical Engineering as a lecturer on 1 July 2020.

Resignations

Dr Sylvia Croese, a researcher in the African Centre for Cities, left at the end of April.

Dr Rob Huddy from CeBER in the Department of Chemical Engineering completed his contract at the end of April.

Mrs Claudia Joseph, the undergraduate admin officer in the Department of Electrical Engineering, left at the end of April.

Dr Amos Madhlopa from the Energy Research Centre left in April.

Mrs Shelley Niekerk, the facilities and IT manager in the faculty, left at the end of May.

Dr Mokone Roberts from the Energy Research Centre completed his contract at the end of June.

Mr Zaeem Najaar from the postgraduate section in the Faculty Office will be leaving at the end of July to join the Humanities Faculty.

Congratulations

Congratulations to Candice and Mike Lowin on the birth of the son, Luca David Lowin, who was born on 12 May 2020.



Congratulations to Marijke Fagan-Endres and her husband Chris on the birth of their second daughter, Maya Elisabeth Endres, who was born on 17 June 2020.

Dee Bradshaw Shining Light Floating Trophy

The first Dee Bradshaw Shining Light floating trophies were awarded on 3 June at a Minerals to Metals (MtM) online weekly forum. The awards were to be made at MtM's 2020 Research Day, but owing to lockdown had to be postponed.



Before Professor Bradshaw left, she handed her miner's lantern to A/Professor Megan Becker for safekeeping, along with a mandate to turn the lantern into a postgraduate student award. The lantern has been engraved and will be awarded to postgraduate students in recognition of their academic excellence and leadership. The 2018 recipient is Zaynab Sadan, and the 2019 trophy went to De Waal Hugo.

Megan said, "It was quite fortuitous that we were able to present the awards on 3 June, as we mark the 2nd anniversary of Dee's passing.

Student's smart UVC sanitiser has multiple applications

In response to Professor Amit Mishra's challenge to engineering students to design devices to help counter COVID-19, electrical engineering student Rowyn Naidoo is close to finalising the design of an affordable, smart short-wavelength ultraviolet-C (UVC) light system that disinfects surfaces, the air and large rooms – and even face masks, making them reusable.

In taking up Mishra's challenge, the UCT senior undergraduate student started by looking at his own campus: the now-empty classrooms, lecture halls and other large spaces, expanding on his long-held interest in science and technology.

"I took the route of how we can destroy or inactivate the actual viruses that are around on a large scale, with a view towards getting our campuses and similar spaces functioning normally, but safely," said Naidoo.

UVC light is effective in killing other viruses and micro-organisms in and on our surroundings. It does this by destroying nucleic acids and disrupting their DNA.



Here Naidoo cites research by the IES Photobiology Committee in [a freely available report](#) on germicidal ultraviolet radiation (IES 2020). The report has been welcomed as "a counterpoint to information appearing in social media, the popular press, and in shady sales literature".

Read More at [UCT News](#)

Student's portable hand sanitiser distiller

When the Faculty of Engineering & the Built Environment's Professor Amit Mishra challenged students to come up with ideas to keep COVID-19 at bay, he was glad to see how well developed some of the concepts were. One example is a portable distillation vessel to make hand sanitiser. With sales of alcohol prohibited, the device puts surpluses to good use.

The Corry Team's prototype, which mimics the design of a Grainfather (an all-in-one brewing system), shows how breweries and distilleries can become producers of affordable hand sanitisers at a time of supply shortages.

The use of hand sanitiser has been widely recommended to counter the spread of the outbreak, now a pandemic and global public health emergency, according to the World Health Organization.

Team leader Thabiso Letlala, a chemical engineering student, said South Africa has the fifth highest alcohol consumption rate in the world. The current alcohol ban has resulted in large wine and spirits companies having



the capacity to repurpose their facilities for non-potable [ethanol production](#).

"We could use this [alcohol] to supplement the production of affordable hand sanitisers," Letlala said.

Read more at [UCT News](#)

COVID-19 info for Africa by Africans

Led by two University of Cape Town (UCT) alumni, the Afrikan Research Initiative (ARI) – a continental non-profit research organisation – is dedicated to providing vital epidemiological information about COVID-19 to keep Africans informed about the prevalence and spread of the pandemic.

ARI cofounder Thabo Mabuka, a chemical engineering graduate from UCT's Faculty of Engineering & the Built Environment, said his organisation brings essential information about issues that affect the continent to its people. He described ARI as an information hub created by Africans for Africa.

Since the outbreak of the COVID-19 pandemic, ARI established the COVID-19 Project to map and track the spread of the disease and its burden on the continent. Part of its work is to suggest targeted interventions on how the continent should deal with the virus.

"We started ARI to create a platform that veers from the traditional research model where funding influences research projects on the continent, to a more community propelled online research model," he said.

"We also wanted to meet the growing need for Afrocentric information and data on pertinent issues that



Thabo Mabuka

affect our country and the continent. The coronavirus disease is one such example. We want to show that we are proactive in the research space."

UCT News caught up with Thabo for more information on ARI's COVID-19 Project and the progress the team has made to date.

Read more at [UCT News](#)

Visit the [EBE website](#) for COVID-19 documents, From the Dean's Desk

[UCT COVID-19 updates](#)

[FAQs](#)

Increased ICAS services

While ICAS on-site counselling is suspended for now, the same counsellors are now available to conduct telephonic counselling. You can access these services by:

- Calling toll-free for counselling over the phone: **080 111 39452**
- Sending a please-call-me to: ***134*905#**

Emailing uct@icas.co.za

ICAS recently launched a new online app, [ICAS On-the-Go](#), which allows you to chat live with an ICAS counsellor. The app gives you and your family access to a 24/7/365 Employee Wellness Programme and information to address some of your health and wellness needs.

Connect to [ICAS On-the-Go](#). The code for UCT staff is UNI003.