

Faculty Newsletter

Message from the Dean

I have used up all my words of expressing sincere appreciation to EBE staff over the past few weeks! Your commitment and perseverance during these difficult times has been truly remarkable. I cannot thank you enough for all the ongoing support and input I have received over the past month. You would have received all the recent updates from the Dean's Desk emails so I will not go into details of what is happening. I will continue to send them out on a regular basis.

It has been very rewarding to

receive supportive emails from many of our parents, alumni and industry partners. Unfortunately, there is also a fall-out with some of our donors, bursary companies, parents and alumni. Professor Brandon Collier-Reed is busy putting together an email to the applicants we have made offers to for 2017. We want to assure them that the EBE faculty is still the place to be in 2017.

During these difficult times, it is still important to celebrate our achievements and this is what the



newsletter does. Congratulations to everyone featured. Thanks for making EBE a great place.

African Development Bank grant to make mining work for sustainable development

The African Development Bank, headquartered in Abidjan, has made a R4,2 million grant from its Middle Income Country Technical Assistant fund to the South African government, for a UCT-led operation to develop skills and knowledge on the tricky questions of mining and sustainable development. The aim is to help turn the minerals extraction and beneficiation industries into a force for sustainable development in the country, and ultimately on the continent.

South Africa's minerals industry has a critical role in the sustainable or unsustainable development of the country. Historically, this industry colluded with the Apartheid state, exploited workers and impacted negatively on environments on which communities depended for their livelihoods. Today, the sector is regulated under modern mining and environmental laws. But industry, government and impacted communities need management and leaders with new skills sets to operate within these laws, and turn potential wealth into a positive force for develop-



Mine under development: The country's largest underground platinum mine being developed in the midst of several villages in the Mokgalakwena local municipality. How will it contribute towards sustainable development in this area? (Photograph credits: Ivanhoe Mines)

ment.

This is where UCT's interdisciplinary MPhil programme specialising in sustainable mineral resource development, running since 2014, comes into play. The grant makes use of the infrastructure established by the programme, with three distinct goals: 1) enabling more candidates to attend the programme's short courses; 2) funding internships to support capacity-building through acquisition of field and practical knowledge; 3) generating knowledge,

though research, on the interpretation of the sustainable development goals in the minerals industry.

Whilst this grant focuses on South Africa, it also signals the Bank's intention to take skills and knowledge for sustainable development on the continent as a whole more seriously. It is doing so by engaging with the "Education for Sustainable Development in Africa" consortium, a network of eight African universities and the United Nations University in Tokyo, of which UCT is a founding member. This grant thus also enables UCT to live up to its strategic goal of being an academic meeting point of African and international knowledge networks.

The operation was formally launched by means of a video conference on Friday, 14 October 2016, hosted and facilitated by Mr Etienne Porgo, manager of the Bank's education team, Abidjan, and attended by AfDB staff in the Pretoria office and Ms Nandi Mkunqwana representing the National Treasury, as well as the UCT team.

Launch of Future Water

On Thursday 8 September, the launch of Future Water took place, with government officials, NGO members, industrialists and academics attending. The minister of Water Affairs and Sanitation, Nomvula Mokonyane, and the director general of the Department of Science and Technology, Dr Phil Mjwara, were guest speakers and addressed the need for research to inform policy work.

The institute aims to address water sources, governance and policy, and modes of use within its four planned areas of cross-cutting research.

Professor Sue Harrison of the Department of Chemical Engineering, and director of Future Water, outlined the following thematic areas: New taps (new water resources), Blue-green infrastructure (water sensitive management), Adapting to change (building resilience/governance) and Maximising value (maximising value from minimum resources).

Through these approaches, the Future Water team hopes to expand existing water resources, encourage water sensitivity and efficiency, maximise the productivity of resources, and address health and nutrition through technological solutions,



Professor Alison Lewis, Professor Sue Harrison, Dr Max Price and Minister Nomvula Mokonyane

sociological perspectives and governance.

Intricately linked as it is to food, energy, human and environmental health, economic development and political instability, water is the top long-term global risk, Harrison explains.

Recognising the importance of the interdisciplinary approach in tackling a number of South Africa's current challenges, UCT has set out to nurture its interdisciplinary research. The Future Water research institute was

one of the five winning proposals that responded to the university-wide call.

Future Water is built on UCT's substantial research footprint in water and the many kinds of work that are being done on water. The institute was established to allow a much greater impact of this water-focused research to be realised, producing something greater than the sum of its parts.

Full story found [here](#)



UCT brewing team does it again

Congratulations to the UCT brewing team, who took the top three places in the annual SAB Intersivity Beer Brewing Challenge which was held on 10 September at the SAB Cyril Ramaphosa World of Learning in Kyalami. They were competing against 14 other higher-education institutions.

The team, led by Catherine Edward and including Alex Opitz, Brian Willis, Bronwyn White and Rob Huddy, took the top positions in the three categories of 1) cider, 2) winter warmer, 3) lager, as well as the most important category of “Best in show”. The group fall under CEBER, a research group led by Professor Sue Harrison, who said, “They wowed the judges with their attention to sustainability issues through both their water-reduction initiatives and their waste-grain management, with a variety of uses being explored for the latter – mushroom cultivation, bokashi bins and soil fabrication.”

The challenge forms part of SAB’s efforts to assist universities in developing microbreweries that serve as valuable teaching aids for students involved in microbiology, chemical technology and engineering programmes.

Each year, students from universities around the country brew, ferment, condition and package their beers, before presenting these to a panel of independent and accredited craft beer tasters at the Beer Brewing Challenge. The challenge aims to encourage responsible beer appreciation among students and to introduce prospective SAB employees to the business. In addition to this, SAB uses the initiative to help create a culture of beer in South Africa.

According to Petr Vesely, SAB’s chief brewer, “South Africa’s innovative and energetic tertiary student fraternity has an important part to play in our drive to build a strong culture and passion for beer in our country as there has been established in other parts of the world. It is in the halls of these institutions, where experimentation is key to academic success, that the foundation of a strong industry can be developed.



Catherine Edward, Brian Willis, Eric Van Steen (HOD Chemical Engineering), Bronwyn White, Alex Opitz and Rob Huddy

“Providing students with the expert knowledge and skills in beer brewing by means of the SAB Intersivity Brewing Challenge will ensure that quality is never compromised and that South African craft beer products compete with the very best in the world.”

Students’ products were judged according to the following categories: best brew, best lager, best cider, best specialty beer, best pilsener light, best winter warmer, best label design and the best spirit.

The University of Cape Town maintained the top spot with its Dunkel Breaking My Heart. The team’s winning brew was noted by judges as having a “simple style with a clean lager flavour and the correct balance of hops. They used good brewing procedures for a style that requires precision in brewing technique.”

Information from the Intersivity SAB web page.

Successful architecture accreditation visit

In early September, the School of Architecture, Planning & Geomatics hosted a validation panel from the South African Council for Architectural Profession (SACAP) and the Commonwealth Association of Architects (CAA). An enormous amount of work goes into preparing for these validation visits and the PASS and academic staff in the School did a great job in ensuring that all the necessary information was ready for the visit.

SACAP and CAA gave continued unconditional validation to all three architecture programmes, BAS, BAS(Hons) and MArch (Prof) with the next validation visit scheduled for September 2021.

The head of the School, Professor Tomà Berlanda, said, “It goes without saying that this is an important recognition of all the work of both staff and students, and I’m happy to celebrate it with them.”

Prestigious award for research on geomagnetic storms

The Open Philanthropy Project has awarded a grant of \$493 425 to Emeritus Professor Trevor Gaunt from the Department of Electrical Engineering at the University of Cape Town. The grant is awarded over three years and is for research into the potential risks that geomagnetic storms could pose to the electric power system.

The Open Philanthropy Project investigated geomagnetic storms in 2014 and 2015 as part of their interest in global catastrophic risks. In their summary the researchers said geomagnetic storms were caused by cataclysms on the sun, which fling magnetically charged matter toward earth. The collisions can rattle earth's magnetic field, sending power surges through electrical grids. The high-speed particles can also take out satellites critical for communication and navigation. The main fear is that an extreme storm would so damage electrical grids as to black out power on a continental scale for months, even years. The toll of such a disaster would be tallied in economic terms, presumably in the trillions of dollars. It would also be measured in lives lost, since all the essential infrastructure of civilisation, from food transport to law enforcement, now depends on being able to plug things in and turn them on.

The Open Philanthropy Project said that Professor Gaunt was one of the better and more experienced researchers in the field. He is one of the few researchers working on these



UCT doctoral students Les Borrill (left) and Hilary Chisepo (right) test model transformers to confirm the results of their simulations.

topics who is not employed by industry.

Professor Gaunt said, "The problems exist in a multidisciplinary system of space science, power system and transformer engineering and energy economics which will provide an interesting learning environment. The grant enables us to award bursaries to three doctoral and six master's students starting in 2017, and five more master's students in 2018." He added that developing decision-making support for the electricity utilities of many countries brought great opportunities for international collaboration and experience for the students.

Young Author Award for PhD candidate

Jestos Taguta, a PhD candidate in the Centre for Minerals Research, was awarded one of ten young author awards at the recent XXVIII International Mineral Processing Congress. This prestigious award is given for the most outstanding papers presented at one of the foremost mineral processing congresses, where the main author must be younger than 35 years old. The winners were honoured at the IMPC banquet held in Quebec City on 14 September 2016. Jestos' paper was entitled "Relating enthalpies of adsorption of thiol collectors on base metal sulfide minerals to their floatability" and was based on the work that he completed for his MSc, which was awarded in 2015.



Prof Jim Finch, Chairman of the IMPC organising committee; Dr Belinda McFadzean, PhD supervisor; Jestos Taguta, winner of Young Author Award; Prof Cyril O'Connor, Chairman of the IMPC Council.

UCT Planning graduate receives top international award

Adam van Heerden from the School of Architecture, Planning & Geomatics at UCT has won the Student Award at the 2016 [Royal Town Planning Institute's \(RTPI\) Awards for Research Excellence](#). The RTPI is the UK's leading planning body for spatial, sustainable and inclusive planning and is the largest planning institute in Europe.

Adam graduated from UCT in 2015 with a Master of City & Regional Planning degree and his winning dissertation was entitled *Valuing Waste and Wasting Value: Rethinking Planning with Informality by learning from "Skarrelers" in Cape Town's Southern Suburbs*.

This research involved genuine engagement with a highly marginalised subset – a group of homeless “waste pickers / skarrelers” in Cape Town, who eke out a survival on the margins of prime urban spaces by either selling or re-using discarded waste material with value. Emphasis was placed on learning from research participants and planning “with” informality rather than “for” it, while exploring the multiple and complex variety of ways in which skarrelers' actions and movements are circumscribed, consequently impacting their abilities to transcend current living conditions. At the heart of this enquiry lay questioning the assumed value that models of participatory planning could contribute to both process and outcome, with findings suggesting that



Photograph supplied by Adam van Heerden

these particular values and desires may in fact be less universally applicable than planners have previously considered. Equally important, however, was the finding that an ethic of care and justice may in fact be more broadly applicable base values when engaging and mobilising marginalised groups around public planning agendas.

“Being recognised for this research on the international stage validates the midnight oil burned, and the longer-term psychological investment that one makes when undertaking social research with a highly marginalised group such as this. But, importantly, it's exciting for planning as a profession, because it demonstrates a recognition among top professionals in our industry of the need for alternative approaches to planning in the South, as well as for planning with marginalised groups in the North. This humbles the profession

into learning from the communities they plan with, adopting a truly relational approach,” said Adam, who is currently living in Amsterdam.

His supervisor, Associate Professor Tanja Winkler, said, “This international award demonstrates a recognition of the need for alternative approaches to planning in, and from, Southern contexts. Adam's research challenges mainstream and taken-for-granted approaches of participatory planning by learning from communities who are marginalised.”

The [Awards for Research Excellence](#) are run by the RTPI to recognise and promote high-quality, impactful spatial planning research from RTPI-accredited planning schools, and planning consultancies around the world. Dr Michael Harris, RTPI's Head of Research, said: “The winners and highly commended entries have demonstrated how academic researchers can positively reach out to practitioners and policymakers with insights and findings to inform and influence their work. I am pleased these awards have been able to celebrate such impactful, high-quality research again this year.”

Kate Hogarth, the other UCT finalist, received a commendation from the judges for her dissertation entitled *Leveraging the Private Sector to Enable the Delivery of Well-located Affordable Housing in Cape Town*.

Invitation to write for Nature



Professor Michael Claeys from the Centre for Catalysis Research was invited to write a News & Views article for Nature. This does certainly not happen every day. The article has appeared now and can be viewed under the following [link](#).

In these articles international experts are asked to comment on specific Nature publications, to put these in context with other work and to share their views on current and future trends regarding the reviewed topic. In this specific case Michael was contacted because of his expertise in the field of synthesis gas conversion, which is also a key programme of the DST-NRF Centre of Excellence in Catalysis, c*change (www.cchange.ac.za), of which Michael is the Director.

UCT radar students in Karoo Radar Experiment

In September, Peralex conducted a comprehensive trial deployment of their Passive Coherent Location (PCL) radar in the Karoo. UCT and Peralex have a strong collaboration on PCL technology stretching back some years. Two of our Peralex-sponsored radar master's students, Motlatsi Setsubi and Michael Malape, are instrumental to our PCL activities and have recently spent two weeks in the Karoo as part of the team of experimenters.

The PCL trials emerged in response to a problem experienced by the South African Square Kilometre Array (SKA). The large SKA radio telescopes are very susceptible to Radio Frequency Interference (RFI) and Electromagnetic Interference (EMI) and great effort is required to protect the extremely sensitive instrumentation from damage. The SKA radio telescope receivers such as KAT-7, and eventually MeerKAT, are located in the Karoo region. Engineering teams are regularly deployed to detect, identify, locate and where possible mitigate sources of EMI and RFI.



Michael Malape (left) and Motlatsi Setsubi (right) with supervisor Daniel O'Hagan during their recent PCL radar experiments in the Karoo with Peralex and the SKA.

In September 2016, the SKA in partnership with Peralex and the University of Cape Town undertook an experiment in the Karoo. The experiment centred around the use of a sensing technology known as Passive Coherent Location radar to detect aircraft in the vicinity of the radio telescope reserve. Of particular concern to the SKA are aircraft carrying Distance Measuring Equipment (DME) transponders that can severely damage radio telescope receivers. PCL, unlike active radar, does not transmit its own beacon signal, so doesn't contribute an additional source of interference. Rather, it utilises pre-existing infrastructure, such as FM radio transmissions, to illuminate objects. PCL is, therefore, an attractive surveillance solution in locations and situations where EMI and RFI must be strictly controlled.

Motlatsi Setsubi and Michael Malape commenced their master's in February 2016.

SATNAC 2016 CONFERENCE: Best Paper Award



Jeremiah Mutungi, a master's student from the Communications Research Group in the department of Electrical Engineering, received an award for one of the best three papers at the 19th Annual Southern African Telecommunica-

tion Networks and Applications Conference (SATNAC) held from 4 to 7 September 2016 at Fancourt in George, Western Cape. SATNAC is the continent's leading ICT conference and draws more than 400 delegates every year.

His paper, "A Source-Destination based Dynamic Pricing Scheme to increase Resource Utilization in Mobile Wireless Networks", was among more than 100 research papers presented at the conference and was judged best paper by an anonymous panel. It presented a novel pricing algorithm for mobile networks, which considers resource utilisation in both the call-originating

and the destination cells to compute the dynamic price to be charged for a voice-service request. This algorithm makes it possible to offer low calling prices during the under-utilized off-peak periods, therefore incentivising users to increase their resource utilisation. It also reduces congestion during the over-utilised peak periods by encouraging users to time-shift their non-sensitive traffic to off-peak periods.

Jeremiah co-authored the paper with his supervisor, Associate Professor Falowo.

Polar Engineering: A research cruise into the Marginal Ice Zone - Antarctica

At the beginning of this year the UCT Sea Ice Research Group was formed by Assoc. Prof Marcello Vichi (Dept. of Oceanography), Assoc. Prof Isabelle Ansorge (Dept. of Oceanography), Dr Keith MacHutcheon (Civil Engineering) and Dr Sebastian Skatulla (Civil Engineering).

On 15 July 2016, members of the UCT Sea Ice research team embarked on a two-week-long research cruise from Cape Town along longitude 0° to the Marginal Ice Zone (MIZ) of Antarctica on board the SA Agulhas II. The team comprised the ice analyst Trond Roberston (Norwegian Ice Service), three members of the Department of Civil Engineering, namely, Dr Keith MacHutcheon (Lead Scientist), and the MSc students Emmanuel Omatuku Ngongo and Devin Dollery and, from the Department of Oceanography Emeline Cadier and two BSc Honours students, Ehlke de Jong, Casey Lyttle and Chloe Blyth.

The SA Agulhas II makes regular trips to the Antarctic in summer to service and replenish South Arica's permanent base on the continent, but, to date, there have been only two trips to the continent in winter. Both of the aforementioned trips have been hugely successful within their very limited scopes, and they have afforded us the opportunity of finding out just how little we know from both an Oceanographic and Engineering point of view about the very significant seasonal variations that occur in the Antarctic sea-ice domain, significantly impacting on the metocean conditions of the Southern Ocean in terms of the atmospheric and oceanic circulation. The objectives of the cruise were:

- Study of the sea ice structure and morphology in the MIZ by means of observation;
- To collect frazil and pancake ice in the MIZ for analysis;
- To determine the physical properties of the collected frazil and pancake ice;
- To store some of the pancake ice



Fig 1: Basket lifting a pancake ice from the sea water



Sea Ice Team on board the SA Agulhas II in the Marginal Ice Zone of Antarctica. Left to right: Emmanuel Omatuku Ngongo, Dr Keith MacHutcheon, Devin Dollery

for the testing of mechanical properties in the Civil Engineering laboratory at UCT.

On 21 July 2016, the vessel reached the MIZ at night. The collection of ice was started shortly after the vessel stopped at latitude $+0.12^{\circ}$ longitude -58.84° for a period of two and a half hours. Seven pancake ice samples were collected using lifting baskets. The latter were lowered into the water between pancakes, and the pancakes were then lifted to be unloaded on the vessel deck. Frazil ice was collected by the Sea Ice team operating on a personnel platform suspended from a vessel crane using sampling tubes (Figs. 1 and 2).

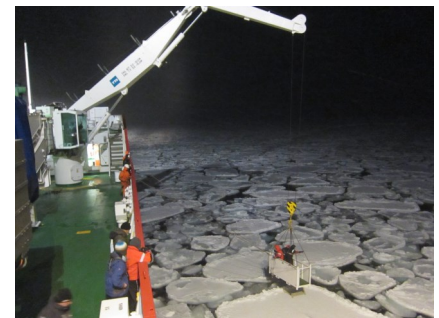


Fig 2: Sea Ice team collecting frazil ice from a personnel platform

After the ice collection, the vessel returned to Cape Town, with the collected ice stored in the vessel cold room at -4° C. While crossing the Southern Antarctic ocean, the salinity of the frazil ice, as well as the temperature, salinity and density of about 80% of the collected pancakes, was measured. The remaining pancakes were then stored for mechanical testing at UCT.

The end of this cruise was marked on 28 July 2016 when the vessel reached Cape Town. This cruise met all the set objectives and paved the way to an interdisciplinary collaboration between Civil Engineering and Oceanography on sea-ice research.

First Faraday Discussion held in Africa

[c*change](#), the DST-NRF Centre of Excellence in Catalysis hosted in the Department of Chemical Engineering, is organising the first ever Faraday Discussions event on the African Continent, to be held in January 2017.

Faraday Discussions, a conference series promoted by the [Royal Society of](#)



[Chemistry](#), are held in a unique format to the scientific community. Focusing on topics from physical chemistry, chemical physics and biophysical chemistry, oral presentations are given by both invited speakers of high international standing and speakers selected from submitted abstracts. In contrast to other scientific conferences, all speak-

ers have to submit a novel research paper which is peer-reviewed and distributed to all delegates before the meeting. At the meeting itself speakers have only five minutes to present the core findings and conclusions of their paper before it is opened for an extended discussion which is recorded in detail and subsequently published along the paper in the journal *Faraday Discussions* (IF 4.606).

Focusing on the topic of Catalysis for Fuels, leading scientists will meet in Cape Town from 24 to 26 January to discuss the newest developments in the field of catalyst design for synthetic fuels, hydrocarbon conversion, novel photocatalysts and insights from theory. The scientific committee consists of researchers from c*change (Prof N. Coville (WITS), Prof E. van Steen and Dr N. Fischer (UCT)) as well as international researchers and is chaired by Prof G. Hutchings FRS (Cardiff University and scientific advisor to c*change). Invited speakers at the event include eminent



researchers such as Prof Nora de Leeuw (University College London), Prof Matt Neurock (University of Minnesota), Prof Ding Ma (Peking University), Prof Unni Olsbye (University of Oslo), Prof Avelino Corma (University of Valencia), Dr Philip Gibson (SASOL), Prof Kazunari Domen (University of Tokyo), Prof Can Li (Dalian Institute of Chemical Physics) and Prof Michael Claeys (Director of c*change, University of Cape Town). While the deadline for the submissions of oral abstracts has passed, the submission for poster abstracts only closes on 31 October 2016.

Both c*change and the [Catalysis Society of South Africa](#) have made special bursaries available for postgraduate and postdoctoral fellows at South African HEIs to attend this prestigious once in a lifetime opportunity.

More information on the event as well as the draft programme can be found on the website of the [Royal Society of Chemistry](#).

Water Distribution Systems Group host eminent visitors

On 21 September, Future Water hosted a one-day workshop with Professor Joby Boxall and Dr Vanessa Speight of the University of Sheffield to explore collaborative research opportunities and ways to access UK funding. The UK research councils are moving towards funding research in developing countries over the next five years. An amount of £1.5 billion is to be awarded over this period, much of it for multidisciplinary research in key areas of water, food, energy, health, and cities.

This research will require partners in developing countries, who will probably also be able to access some of this funding. Representatives from UCT, City of Cape Town, municipalities, government,



Professors Haman and Todini, Dr Speight, Professor Boxall, Thando Matshaya, Ana Sofijanic, Professor Kobus Van Zyl and Sahil Teeluckdharry

WRC, NGOs and other universities attended the workshop

Professor Boxall and Dr Speight are part of the [Pennine Water Group](#) at Sheffield University. This is the largest urban water research group in the UK and they are very well positioned in the UK for this initiative with projects

such as [Twenty65](#), which focuses on grand challenges in the water sector.

On 22 September, Professor Kobus Van Zyl hosted a number of the delegates from the workshop. Professor Ezio Todini (University of Bologna), Professor Yskandar Haman (Tshwane University of Technology), and Professor Joby Boxall and Dr Vanessa Speight (University of Sheffield) spent the morning in the Water Lab. Professor Todini is the author of the Global Gradient Method used in pipe network simulation software internationally.

Two final year students, Ana Sofijanic and Thando Matshaya, and Sahil Teeluckdharry, a master's student, presented their projects to them. They also had the opportunity to experience the Aqualibrium equipment and see how it works.

Ad-hom promotions

Congratulations to all the staff who received their ad-hominem promotions. It is no small achievement to get promoted at UCT.

Lecture to Senior Lecturer:	Mr Michael Louw (Architecture, Planning & Geomatics)
	Dr Amir Patel (Electrical Engineering)
Research Officer to Senior Research Officer:	Dr Britta Rennkamp (Energy Research Centre)
	Dr Mercy Brown-Luthango (African Centre for Cities)
Chief Research Officer to Associate Professor:	Dr Jennifer Broadhurst (Minerals to Metals)
Senior Lecturer to Associate Professor:	Dr Nancy Odendaal (Architecture, Planning & Geomatics)
	Dr Niyi Isafiade (Chemical Engineering)
	Dr Manya Mooya (Construction Economics & Management)
	Dr Sunetra Chowdhury (Electrical Engineering)
Associate Professor to full Professor:	Associate Professor Hans Beushausen (Civil Engineering)

Faculty Research Awards for EBE staff

EBE faculty staff were awarded Faculty Research awards by Professor Mamokgethi Phakeng (incoming Deputy Vice-Chancellor) at a Faculty Board held on 12 September 2016. The awards are aimed at encouraging staff to publish their research work.

Departmental Research awards (R10 000 each) for the most prolific publisher in the preceding year.

APG	Professor Edgar Pieterse
Chemical Engineering	Professor Sue Harrison
CEM	Professor Paul Bowen
Civil Engineering	Professor Alphose Zingoni
Electrical Engineering	Professor Pragasen Pillay
Mechanical Engineering	Professor Tunde Bello-Ochende

EBE Research awards (R30 000 each) for the most prolific publisher in EBE in the preceding year drawn from the ranks of lecturer and research officer, and senior lecturer and senior research officer.

Mrs Jenny Wiese – Chemical Engineering
Dr Amit Mishra – Electrical Engineering

EBE Professorial Research Award (R40 000) to the researcher showing the best ranked profile over a five-year period.

Professor Sue Harrison



Professor Sue Harrison and Professor Phakeng



Professor Tunde Bello-Ochende



A/Professor Amit Mishra

Welcome to new staff

Mr Kaveer Singh joined the Division of Goematics on 1 July as a lecturer.

Mr Malibongwe Manono joined the Department of Chemical Engineering on 1 July as a lecturer.

Mr Heinrich Christians joined the Department of Mechanical Engineering on 1 August as a Senior Technical Officer.

Ms Elaine Govender joined the Department of Chemical Engineering on 1 September as a lecturer.

Ms Bianca Cleenwerck became a permanent member of staff in the faculty office from September. She is the postgraduate administrative assistant.

Ms Lisa Williams joined the faculty office in September as a postgraduate administrative assistant.

Mr Bradley Oaker joined the Department of Mechanical Engineering in October as the General Manager—EPPEI Consortium

CONGRATULATIONS



Congratulations to Rene Nsanzubuhoro and his wife, Xochiwe on the birth of their baby daughter Bella Mahoro (meaning Beautiful Peace in Kinyarwanda). Bella was born on 8 August 2016. Rene is a PhD student in the Department of Civil Engineering

Young Engineers Leadership Day



Rene Nsanzubuhoro, a civil engineering PhD student, was nominated to attend the Young Engineers Leadership Day on 12 September in London. The day is host-

ed by the Royal Academy of Engineering and coincides with the Engineering a Better World conference.

The Young Engineers Leadership Day provided an opportunity for the top engineering students, early career engineers, and young people at the interface of engineering and international development to share ideas, build international connections with other engineering leaders of the future and learn how they can contribute to achieving the Sustainable Development Goals.

“The weather in London was remarkably warm for September and I felt very welcome for what was a remarkable event,” said Rene. “70 young engineers from across the globe were gathered for an intense day of design thinking around developing world challenges, where our individual personalities and life experiences were as important as our technical

abilities.”

The main event was the Tuesday meeting. It was themed “Engineering a Better Future” and had drawn some highly influential speakers from across the world.

“Overall, it was an amazing experience and I felt very privileged to have been able to attend. I would like to thank the South African Academy of Engineering for nominating me, and for the generous sponsorship from the Royal Academy of Engineers,” he added.

While at the conference, Rene learnt about the [Queen Elizabeth Prize](#) and its work internationally to advocate for the engineering industry. If anyone is interested in getting involved in this organisation, which includes a lot of career development and support, contact them to become a [QEP Ambassador](#).

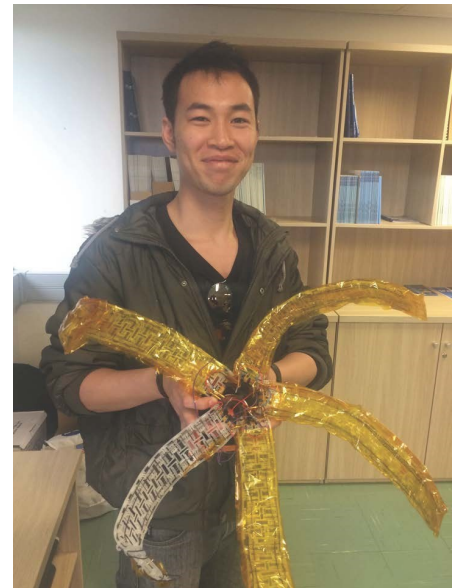
SpaceLab student scoops prizes at International Astronautical Congress 2016

SpaceLab master's student Wei-Yu Louis Feng received awards at the Space Generation Advisory Congress and International Astronautical Congress 2016 (IAC 2016), both held in Guadalajara, Mexico in late September 2016. His first award was a scholarship to attend the SSPI Satellite Futures Workshop. He then went on to win the first prize in the IAF International Student Workshop during the IAC 2016 for his presentation on his master's research project.

As more countries become space-faring nations, the Earth's space environment is becoming increasingly congested. Once satellites are no longer functional, they join the growing population of debris in outer space. These debris objects pose a huge risk to operational satellites and human space flight. Unless measures are implemented to reduce the debris population in Earth orbit, the increase in debris from a cascade of collisions could render the Earth's orbital environment unsafe for

satellites and human spaceflight.

Several international studies have concluded that remediation of space debris will be required in future. This means that debris objects have to be captured and removed from orbits where they pose a risk to space activities. However, capturing an object in outer space is a complex problem, especially if the object was not originally designed with this in mind, or if the object is a fragment of a larger satellite or rocket body. Many researchers are working on ways to capture non-cooperating objects in space, where the risk of inadvertently bumping, but not capturing, the target object is high. Feng's research concentrates on the use of shape memory alloys to define a capture volume with a series of "tentacles" which can envelop the target object, with little or no risk of bumping it into another orbit. His prototype device, aptly named MEDUSA, is exploring a novel concept in debris capture. After



Wei-Yu Louis Feng

winning his award at the IAC 2016, Feng moved to the Institute for Space Systems and the University of Stuttgart, where he will further develop his concept before returning to South Africa in early 2017 to complete his master's thesis.

New President for SAAM



Congratulations to Dr Sebastian Skatulla on his appointment as President of the South African Association for Theoretical and Applied Mechanics (SAAM). The Association was established in 1994 to promote the unity and serve the

interests of mechanics and the mechanics community in South Africa. The Association encourages and promotes activities which will enhance the development of expertise in mechanics in this country. It is recognised nationally and internationally as a representative of the mechanics community in South Africa.

New member elected to the Academy of Science



Congratulations to Professor Harald Winkler, who has been elected as a member of the Academy of Science of South Africa (ASSAf). The academy was inaugurated in May 1996 by the former President of South Africa and patron of the Academy, Nelson Mandela. It was

formed in response to the need for an academy of science congruent with the dawn of democracy in South Africa - activist in its mission of using science for the benefit of society. The core function of any national science academy is to honour and recognise the country's most outstanding and celebrated scholars by electing them to membership of the Academy.

SEMC 2016 International Conference

The Sixth International Conference on Structural Engineering, Mechanics and Computation (SEMC 2016) took place from 5 to 7 September 2016. Prof. Alphose Zingoni, founder and chair of the conference, said, "The conference aims to bring together academics, researchers and practitioners from around the world in the fields of structural engineering, computational mechanics and related disciplines, to review recent achievements in the advancement of knowledge and understanding in these areas, share the latest developments, and address the challenges that the present and the future pose".

Deputy Vice-Chancellor Prof. Danie Visser welcomed the 400-strong international audience at the opening ceremony on 5 September. This included authors, exhibitors, sponsors and invited guests. A highlight was the presentation of SEMC 2016 Young Researcher Awards for the best 3 papers by principal authors under the age of 35 (as scored by a panel of 12 international experts). The recipients were Ms Laura Marimon Giovannetti (University of Southampton, UK), Mr. Matthias Labusch (University of Duisburg-Essen, Germany), and Mr. Ou Zhao (Imperial College London, UK). The ceremony also saw the presentation of Elsevier's K.J. Bathe Award for the best paper published in *Computers & Structures* in the period 2014 and 2015 by an author below the age of 40. This went to Dr. Marcos Valdebenito of Santa Maria University (Chile).

Over 350 papers were presented in 57 sessions of the Conference, with authors representing some 60 countries from all five

continents. Keynote speakers were Prof. Kim Rasmussen (University of Sydney, Australia), Prof. Adnan Ibrahimbegovic (Universite Technologie Compiègne, France), Prof. Klaus-Jürgen Bathe (MIT, USA), Prof. Amr Elnashai (Pennsylvania State University, USA), Prof. Jian-Fei Chen (Queen's University of Belfast, UK) and Prof. Guido De Roeck (KU Leuven, Belgium). The SEMC 2016 Proceedings comprise 360 peer-reviewed papers. These have been published by CRC Press (Taylor & Francis Group) as a printed book of short versions of the papers (784 pages), and a CD-ROM with the full papers (2,200 pages).



On 15 September, Alphose presented Gwenda Thomas, director of UCT Libraries, with a set of the SEMC 2016 Proceedings for inclusion in the UCT Engineering Library.

Electrical postgrads participate in Dragon Boat regatta



UCT Radar and Space postgraduate students recently took to the high seas of Zandvlei, near Muizenburg, in a pitched battle to win the coveted title of Dragon Boat champion. The teams, aptly named *Radars of the Lost Ark* and *Apollo*, rowed like gladiators. With pride at stake, our dragon boat Titans delivered a rousing performance. Sadly, however, their efforts were no match for the lean athleticism of a group of gym-enthusiasts

from Cape Town.

A Dragon Boat is a long thin wooden boat that accommodates ten rowers sitting shoulder-to-shoulder, with an eleventh crew member perched to the fore, beating a drum. In scenes reminiscent of the *Ben-Hur* movie, our drummer, Ming Gao stirred the crew to action as they skimmed atop the rippled surface of Zandvlei.

The annual Dragon Boat race is organised by the Rotary Club and generates funds for charitable causes. As well as rowers, a large number of supporters attend. The UCT cheerleading team was led by Professor Boje, who was ably assisted by Murgu, O'Hagan and Rumbelow.

Perhaps next year, staff will form a team to test our stamina against the best. The Dragon Boat race is great for team-building, and the event is a nice outing for family and friends. The Department of Electrical Engineering wishes to express our sincere gratitude to the Rotary Club, to Jill Rumbelow in particular, and to all the companies that generously sponsored the teams.

MtM and LEAP Maths and Science school collaboration

Minerals to Metals (MtM) has engaged in a community outreach programme which has seen them collaborate with a class of grade 9 learners at LEAP School in Langa on an electronic-waste recycling project. The collaboration is part of a bigger project on creating value from waste which runs under the MtM signature theme. LEAP Maths and Science Schools provide free student-centred, maths- and science-focused education to economically disadvantaged students from grade 8 to 12. The grade 9 class is required to do a recycling project in their CAPS curriculum, and what better way to do that than through learning about value creation from waste? This collaboration will see the learners get access to Chemical Engineering post-graduate mentors as they carry on with their recycling project. The MtM team has hosted a design-thinking workshop with the assistance of the UCT d-school programme managers and has also gone on to organise a 3D-printing workshop where the learners and their mentors were taught 3D printing and learnt of



MtM students with Leap students during the 3D printing workshop

possible entrepreneurial and product - design opportunities. Learners will be guided by their mentors into adopting the design-thinking approach to problem solving as they tackle their electronic-waste recycling project. The engagement with LEAP School goes way beyond the recycling project; it exposes the

learners to the different career opportunities that they see their mentors build towards and breaks the barriers between some perceptions they have of their communities and possibilities of access to the UCT as a tertiary institution of choice.

UCT SpaceLab and Institute for Space Systems collaboration

The SpaceLab at the University of Cape Town and the Institute of Space Systems (IRS) of the University of Stuttgart have signed an MoU to strengthen and deepen the cooperation in science and education in the field of space sciences and technology between the two institutions.

The main objectives of this collaboration are the exchange of scientific information and experience, and the execution of collaborative research projects and the support of young scientists and new educational opportunities. In the preparatory phase of the MoU during the last few months, many activities within these areas of collaboration have already been assessed, so, their respective implementation was started immediately after the signature of the joint document. With student exchange being one of the prioritised goals of the agreement, the first master's student from



South Africa will go to the Institute of Space Systems in October 2016 and at about the same time the first student from Stuttgart will begin a research stay at the University of Cape Town.

Moreover, several co-supervised student theses have been initiated in areas of common interest to both institutions.

One example is a bachelor's thesis at UCT supporting the cubesat project CAPE lead by the Institute of Space Systems. Here, interfaces between a South African stratospheric balloon and MIRKA2-ICV, a follow-up model of the miniaturised atmospheric entry capsule MIRKA2-RX, successfully flown in March 2016, will be designed and implemented in order to prepare a flight mission on this balloon. This activity involves the Stuttgart student group KSat e.V., with whom the design of the capsule is currently being assessed. The joint mission is planned for spring 2017.

Top paper at National Association for Clean Air conference



In October, Mrs Samantha Keen and Dr Katye Altieri from the Energy Research Centre presented papers at the 2016 National Association for Clean Air conference in Nelspruit. Their papers were on the impacts of air pollution on mortality in the City of Cape Town and nationally in South Africa.

Through their strict peer review process, 30 papers were selected for oral presentations and several abstracts were selected for the poster sessions. The title of Katye's paper was *BenMAP as a Tool for Analysing the Health Benefits of Reductions in Ambient Air Pollution in South Africa*. Samantha's title was *Assessing the Health Benefits of Attaining and Strengthening Ambient Air Quality Standards in Cape Town*.

Congratulations to Samantha on her paper being selected as one of the top 5 at the conference. She has been invited to submit it to the Clean Air Journal.

First-year construction studies students making a difference

Annually, the first-year Construction Studies students take part in a community build during their vacation. Over the past couple of years, the Association of Built Environment Students – a UCT student society, has arranged fundraising campaigns and organised builds at the Athlone School for the Blind with the help of some of the lecturers in the Department of Construction Economics and Management. The school is located in Bellville South in Cape Town and was established in 1927, providing visually impaired children from disadvantaged communities with an education, transport and residency.

The 2016 first-year Construction Studies students' tasks were to develop the playground, upgrade the courtyard and create a new, visually stimulating, play area. The students left campus at 7.30am and had five days of intense work. As part of the build, the students have to create a blog where they diarise their contribution to the build. Below is a "Reflection" from the Red Team, which consisted of: Imaan Andrews, Lisakhanya Bukula, Duane De La Fontaine, Chris Green, Themba Masango, Uzayr Parker, and Chase Dunnett

"The whole first year group had accomplished so much in the short period of five days only. From the vibrant playground, to the picturesque courtyard, and to even a new visually-stimulating play area added, it truly was a successful community build. The transformation was clearly visible and much appreciated by the staff and pupils of the school.

The week was an eye-opening experience for many of us as it was a miniature version of what really happens on site from the builders and building managers point of view. From the very first day, the red team had strong team work qualities which made the build a pleasant experience for us. With a sense of equity and fairness, great communication skills within the group, and a shared load amongst everyone, it was no wonder the red team was victorious.

Although by the Friday afternoon we had all been ex-



hausted and worn out, the exposure of being able to learn by actually being hands-on and applying knowledge that we've learning from books and seeing it really come to life is a truly humbling experience.

The ultimate cherry on top was seeing the kids' gleeful smiles and excitement. Knowing we had made a true difference in their lives is enough validation that the community build was completely worth every second.

The community build was such a spiritually enriching and humbling experience to be a part of. Not often does one have the opportunity to actively participate in improving the day to day lives of those who have less than you. Normally the most that, "we", contribute is money that we never really see the outcome of the donation. I would definitely encourage this outreach initiative to spread across to other faculties."

Mr Klink, the Social Investment Liaison person for the school said, "We trust that we can rely on your continued support of this institution and its learners. It is our wish that the true benefits of your support will be realised in equipping these learners with the necessary skills to live a life of independence with pride and dignity."



Eskom Science Expo held in the Sports Centre. Thanks to all the staff and students who participated as judges. A record number of projects were submitted for judging.



A "thank you to all our mentors" event was held in September with Abbas Jamie as the guest speaker. Abbas is a 1988 UCT civil engineering graduate. Abbas contextualised the importance of mentoring both in the university context and in the workplace and the value it adds when contributing to the development of others.



Prof Harro Von Blottnitz from the Department of Chemical Engineering was involved in a fund raising campaign for his PhD student, Takunda Chitaka, who urgently needed to have her hip replaced. Money was raised from alumni, staff and friends and we are delighted to report that Takunda had her operation on 5 October.



IEEE UCT student society held an event to celebrate Women's month. Five women engineers were the invited guest speakers and panellists. Four of them were UCT alumni. They were, left to right, Shagita Gounden, Wiebeke Touissant, Wandile Ngololo, Lisa Kane and Bongani Mthombeni-Moller.



Samuel Ginsberg and Justin Pead represented the Department of Electrical Engineering at the Makers Faire which was held in the Science Centre in August. It is a gathering of fascinating, curious people who enjoy learning and who love sharing what they can do. Samuel and Justin spent the time engaging with parents and children and showcased many of the interesting gadgets they have in their department.



The first Cape Town alumni lecture series took place in October and four EBE staff and students were the first presenters. Professor Dee Bradshaw (Chemical Engineering) and Professor Ed Boje (Electrical Engineering), Sithembiso Ntlhabane (MSc Minerals to Metals) and Laxmee Sobhee (PhD candidate in civil engineering) gave 15 minutes talks on their exciting research work.