

Faculty Newsletter

Message from the Dean

Welcome back after a long break. I trust that those of you who followed the World Cup soccer enjoyed the tremendous spirit and atmosphere that was created. I know it has been a distracting time for many of us and it is now time for us to focus on the semester ahead.

With the recent focus on the BP Deepwater Horizon disaster in the Gulf of Mexico, the issues of risk management and safety have again been highlighted as critical priorities.

As a Faculty we provide a good technical foundation of safety within our disciplines, but what is also required now is to create an added positive and appreciative mindset towards safety.

The semester kicks off with Safety Week and on Wednesday 28 July a guest speaker will be giving a talk to the Faculty at 13h00 in Lecture Theatre 2A in the Leslie Social Science

Building. Please diarise the date and time. Information on the talk will be sent to staff closer to the time. Each department has once again been asked to organise a safety programme for the students.

On 24, 25 and 26 August, HIV/AIDS testing will be taking place in Jameson Hall. I will be going with representatives from the student councils to be tested on 25 August. I would like to encourage staff and students to make use of this opportunity to know their status.

The annual wellness week will be taking place in the Faculty from 28 to 30 September. The wellness week is for the common "lifestyle" diseases and makes provision for early detection. Information on the times and venues will be sent to staff closer to the time.

On 27 August I will be hosting the annual Western Cape Industry breakfast. This is an opportunity to update the

industry on the Faculty and to network with our industry partners.

I would like to remind you that the closing date for undergraduate applications has been moved forward to 30 September 2010.

I wish you a wonderful and productive second semester.

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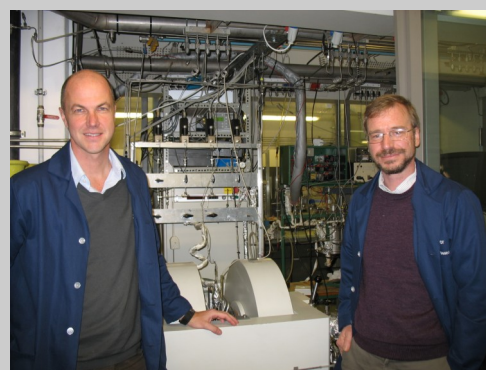
A partnership between Sasol and the Centre for Catalysis Research has yielded the invention of a device that will add great value to research in a variety of fields, including nano-technology.

The device, called a *Magnetometer*, is fully computer-controlled and is the first of its kind in the world. The research team, consisting of Professors Michael Claeys and Eric van Steen from the Department of Chemical Engineering and Jan van de Loosdrecht and Kobus Visagie of Sasol Technology, filed a joint international application to patent this product.

The Magnetometer enables scientists to examine ferro-metallic catalysts "in situ." Catalysts such as Cobalt are used in the production of a variety of fuels and play a key role in terms of product performance. The device uses a large electromagnet to magnetize the catalyst, which is placed in a small reactor in which industrial conditions with high pressure and temperature can be realised.

The purpose of this area of research is to examine the physical changes that catalysts undergo during process situations which have an effect on catalyst performance. The Magnetometer exploits the magnetic properties of these catalysts to obtain the required information.

The development of the magnetometer presents a fine example of successful collaboration between industry and academic partners.



Professors Michael Claeys and Eric Van Steen
with the Magnetometer

HY/SA at the World Hydrogen Energy Conference

In May, Professor Jack Fletcher and Dr Rein Weber from the Department of Chemical Engineering attended the 18th World Hydrogen Energy Conference in Essen, Germany. At the conference the South African hydrogen and fuel cell technologies initiative was introduced to the international community. The delegates included members from the three National Flagship Projects in Hydrogen and Fuel Cell Technologies (*HySA*) Centres of Competence., *HySA/Catalysis* (UCT and Mintek), *HySA/Systems* (UWC) and *HySA/Infrastructure* (NWU and CSIR), as well as a representative from the Department of Science and Technology.

The exhibition was well received and numerous inquiries were made by other conference delegates regarding South Africa's initiative in hydrogen and fuel cell technologies.



Professor Jack Fletcher hard at work at the HY/SA exhibition

NEW INSTRUMENTS TO KEEP STUDENTS ON CUTTING EDGE

On Tuesday 15 June, the Department of Chemical Engineering held an event to celebrate the acquisition of two new sophisticated analytical instruments which will allow researchers and students to enhance significantly their capacity to sustain the world-class research they are carrying out in different industries such as mineral processing, chemical and petrochemical processing, bio-sciences, forensic sciences and viticulture.

The QEMSCAN instrument enables researchers to fully characterize mineral ores being treated in mineral processing concentrators and is the first of its kind in the Western Cape. Valued in excess of R6m, the platform was donated by Anglo Platinum. The additional cost of about R1m to purchase accessories and commission the instrument was paid from equal grants from the University Equipment Committee and the Centre for Minerals Research.

The High Resolution Scanning Electron Microscope was sponsored by Sasol Technology (R1.6m) and the Wolfson Foundation (R2.9m) with the remainder being funded by the University Equipment Committee.



Seen at the event, Francis Petersen, Max Price, Danie Visser, Cyril O'Connor and Megan Becker seated.

FAN PARK WITH A DIFFERENCE

The Department of Chemical Engineering created a FanPark with a difference in their tea room for the duration of the 2010 FIFA World Cup. Staff and students in the department are able to enjoy the games live on a high-definition TV screen that is powered by a hydrogen fuel cell, which splits hydrogen atoms into electrons and protons. The protons pass through a polymer electrolyte membrane, while the electrons form an external electricity circuit that powers the TV before recombining with the protons and oxygen, forming clean water as its only 'waste' product.

This initiative saved the department from power failure on 15 June. The three-hour blackout went unnoticed by those watching in ChemEng, thanks to the hydrogen fuel cell. This attracted a lot of media coverage.



Our Strong Scholarship on Matters of Sustainable Development at UCT

A summary of some of the lectures and seminars held at UCT from 18 March to 14 May 2010

Having recently embarked on a doctoral degree in sustainable urban development, I found it extremely pleasing to observe the rich offering of seminars around the UCT campus on matters of climate, development and sustainability. My supervisor and I thought it might be interesting to briefly document UCT's scholarship in this regard by means of a summary of seminars offered over a recent two-month period.

Let us start with a seminar and discussion in the Kramer Law building on 18 March, in which Prof Philander (Atmospheric and Oceanic Sciences, UCT), Prof Scolson and Mr Fakir illustrated exactly *How Global Warming is Paralysing and Polarising*. On the previous day Dr Hansen, a researcher for the Climate Change Citylab for the African Centre for Cities (ACC) had given a lunchtime seminar about the scale, the scope and the sectors involved in achieving a *Low Carbon Economy in Cape Town*. One day later, the Centre for Renewable and Sustainable Energy Studies (CRESES) at Stellenbosch held their monthly seminar at UCT's Department of Chemical Engineering. The speakers, Prof Harrison (Chemical Engineering, UCT) and Dr Gray (Sr. VP & Chief Technology Officer at Qteros in the field of Biofuels) provided insight into *Biodiesel* as a future energy source.

In the following week, IAPO held a township tour in conjunction with SHAWCO

to create awareness of the structure of informal settlements in Cape Town and our research team used this as an opportunity to find a potential site to work at.



On 21 April, the Dean of the Faculty of Engineering & the Built Environment, Professor Petersen, launched the *EBE Initiative for Public Good*, which embodied the engineers' role in being the custodians of our resources. Speakers included A/Professor von Blottnitz (Chemical Engineering, UCT) on the township catering project, A/Professor Rivett (Civil Engineering, UCT) and Engineers without Borders (UCT chapter), following a welcome from Professor Visser (DVC, UCT). One week later, there was an urban ecology seminar from the ACC on *Air Quality in Cape Town*, where the City of Cape Town came to present to academics. The following week, the Energy Research Centre (ERC) at UCT ran a one-week academic seminar programme. Two of the most interesting talks were by Mr Reyes about *Carbon Trading: How it Works and Why it Fails* and by Max Edkins on *Renewable energy in South Africa* (ERC). In that same week the Green Campus Initiative (GCI) procured a speaker, Mr

Mantlena from the South African National Biodiversity Institute, to speak about a *Profile of Biodiversity in the UNFCCC Negotiations* over lunchtime in Leslie Social Sciences. Also in that week, the African Climate and Development Initiative hosted A/Professor Winkler in a seminar on the *Mitigation of Carbon Emissions* with a particular focus on South Africa's commitments after Copenhagen. The following week saw a delegation from the Indian Institute for Human Settlements visiting the ACC, who held a few seminars on the *Challenges and Critical Questions of Urbanisation* of South Africa in the week ending 14 May.

The above showcase only a few of the proceedings going on across campus on matters of environmental and sustainability scholarship at UCT over an eight-week period. All in all, we counted over 20 seminars on these topics. It appears that UCT has real research strengths in this sphere and can make many opportunities available not only to interested scholars but also to colleagues in practice. All interested parties are encouraged to attend this rich and diverse collection of seminars and discussions in the future.

The article is written by Linus Naik, a postgraduate student working with Associate Professor Harro Von Blottnitz in the Environmental & Process Systems Engineering Research Group in the Department of Chemical Engineering

SOUP TAX DAY



On May 7, the *Mail & Guardian* challenged all companies and individuals to hold a Soup Tax Day, by bringing a packet of soup to the office. An email went out to all staff and we were delighted at the response. We managed to get a box full of soup packets which the *Mail & Guardian* delivered to needy charities.

Thank you to all who contributed to Soup Tax Day. You brought a little warmth and hope into the children's lives.

TEA WITH THE MAYOR

On Monday 7 June, the Cape Town Mayor, Dan Plato, took time out to present the City of Cape Town Corporation Medals to our top engineering students.

The Mayor said: "UCT is a great friend of the city and we value the partnership. I am pleased to be able to award these medals to these outstanding students."

The students, partners, parents and staff attended the event. Mallin Moolman received the silver medal for the best third-year engineering student in 2009. Simon, Scott, Alister Inglesby, Bruh Ayele, Jason Voorneveld and Joshua Brodrick received the silver gilt medals for being the best final-year engineering students in their departments.

Hebert Nyakunhwa was awarded the bronze medal for the best second-year engineering student and Jakobus Lowe received a silver gilt medal, but both were unable to attend the event.

Mike Marsden, the Executive Director for Transport, Roads and Major Projects, said: "These medals acknowledge the students and the high academic standards they have achieved. We hope that some of them will join the City and help us develop our country."



Professor Francis Petersen, Bruh Ayele, Jason Voorneveld, Alister Inglesby, Mallin Moolman, the Mayor, Dan Plato, Joshua Brodrick, Simon Scott and Mike Marsden.

The Dean said that the University greatly appreciate the relationship with the City and in particular the contribution that Mike Marsden made by being a member of various Advisory Boards in the Faculty.

He added: "Celebrating success is as important as obtaining the qualification. We treasure this occasion."

Professors Barry Downing, Jack Fletcher, Chris Redelinghuys and Alphose Zingoni attended the event.

OFF TO ATLANTA



Thembisa Msuseni from Construction Economics and Tswani Tladi from Civil Engineering

In 2009, the LEAD Global programme came to South Africa for the first time and a total of 180 students (48 from the U.S. and 132 from South Africa) ages 15 and 16, participated in the programme. 50 learners from diverse areas around Cape Town took part in the intensive 10-day programme at UCT to attract them to studies and careers in commerce, engineering and science.

The programme was such a huge success that LEAD was very excited about returning to South Africa in 2010. However, due to the World Cup and no accommodation being available, LEAD Global took 25 learners from the Western Cape to Atlanta to participate in the programme there. Thembisa and Tswani accompanied the learners and assisted the programme coordinators. Neither of them had travelled overseas before. They were selected due to the dedication and professionalism that they showed in the programme last year. Students we can be proud of.

WALKING THE TALK

CEM staff decided to walk in the footsteps of their first-year students and participated in a one-day "Do-it day" with the Niall Mellon Township Trust in Wallacedene.

The Trust annually hosts the first-year students for a week, teaching them the meaning of back-breaking work. Staff and their families participated in the day and got their hands really dirty.



HOD Keith Cattell hard at work

OUTREACH

Zithulele Rainwater Harvesting

EWB UCT has partnered with SHAWCO Health and over the June vacation will be developing and installing rainwater harvesting devices at a rural hospital in the Eastern Cape. SHAWCO Health makes annual trips with medical students to run clinics at the hospital as well as in the surrounding area and, in response to a request from the hospital, has partnered with EWB UCT to provide a back-up water supply system. While the hospital has a piped connection, this connection is intermittent and the water can at times be muddy when it is working.



Zithulele Hospital

EWB UCT has established a team that will investigate treatment and storage solutions and will then travel with the student doctors from 26 June to 5 July and install the device.

At the hospital's request, EWB UCT will also build a children's play area and will assist with simple repair work in the wards. It is hoped that this will be the start of a long relationship not only between EWB UCT and SHAWCO Health, but directly with Zithulele Hospital as well. EWB is grateful for the sponsorship from Grand West Casino.

EWB UCT has also developed a partnership with Abalimi Bezekhaya, which is an urban agriculture organisation which operates several large food gardens in Khayelitsha, Nyanga and the surrounding area. EBE UCT has secured support from a local borehole installation firm and has developed a proposal to install solar borehole pumps and link this to a piped irrigation system. The proposal has been submitted to a few organisations and once funds have been secured the project will be implemented.

The response amongst students has been extremely positive and the possibilities for EWB are enormous. However, there is a limit to what students alone can do, and EWB UCT seeks to work closely with external engineers and other professionals both on projects and in developing institutional capacity. It is envisaged that, by forming close collaborations with a host of external parties as well as with other universities, EWB can grow in both scope and scale.

EWB UCT would like to invite any interested staff members who would like to get involved to contact them at ewbuct@gmail.com

OPEN DAY

Open Day was a great success with tremendous input from all departments. Thank you to everyone who gave up their precious time to be there. It is an important day in our recruitment calendar and the displays and enthusiasm in each department contribute to attracting good, quality students to our Faculty



Girl Eng

Clad in white T-shirts and the now famous pink hard hats, the GirlEng Western Cape Team hosted 60 learners from Grade 10 to Grade 12 at the MTN ScienCentre on 8 May 2010. The day started with an exciting talk from Hema Valabh, the national GirlEng Director and a Process-Engineer at Sasol, who spoke about SAWomEng and how women were the changing face of engineering. Hema is a UCT Chemical Engineering graduate. Various other speakers spoke to the learners, including Roger Wood, who spoke about studying engineering at UCT.



EBE PGSA organising committee: left to right: Yousef Ghorbani, David Wright, Doreen Nabaho, Margaret Lombe, Tracey Van Heerden and Wadzana Madangambe



ERC soccer team. Left to right: Gerard Malefane Leteba, Kudakwashe Nyatsanza, Ruben Engel, Stephen Davis, Sebataolo Rahlao, and Max Edkins.

EBE PGSA SOCCER TOURNAMENT

On Saturday 5 June, 16 enthusiastic six-a-side soccer teams got together to show their ball skills. This is an annual event organised by the EBE PGSA to provide an opportunity for postgraduate students to interact and network with students from other departments. This year it was decided that the event should have a World Cup theme.

The organisation of the event was fantastic, with four games going on simultaneously. Professional refs were employed and no arguing or dirty play was allowed. There was a great engineering turnout with teams registering from many different departments, including: Sasol Fuel Labs, Materials Science, Power Engineering, ERC and RRSg. The teams were encouraged to come in a World Cup theme and the best team were all kitted out in a Spanish kit .

Congratulations to the winning team, 'ESTUDIANTES' ! Each member received a R150 Sportsman's Warehouse voucher and the right to be called the best postgraduate six-a-side football team for the year!

PROJECT FOR THE ENHANCEMENT OF RESEARCH CAPACITY (PERC) AWARDS

PERC refers to a cluster of support activities for academic staff and is part of a University-wide commitment to initiate and foster programmes that develop researchers.

PERC awards grants and, in a second round of applications in April 2010, Professor Ulrike Rivett (Department of Civil

Engineering), and Mr Warren Smit (Research Officer: African Centre for Cities, School of Architecture and Planning), were successful. Their respective projects are:

- *Information technology at the margins: methodological tools for understanding, designing and*

developing context-appropriate digital systems in the global South

Challenging dominant theories of urban health: proposal for the first phase of a research programme on the relationship between the urban environment and health in Cape Town

SEMINARS

Various departments in the Faculty have held interesting seminars in the first semester.

In May the Mineral to Metals Initiative in the Department of Chemical Engineering hosted two seminars.

Making better decisions in a global minerals industry was presented by Professor Jim Joy, who is a Professor of Mining Safety and Director of the Minerals Industry Safety and Health Centre at the University of Queensland.

The relationship between mining companies and the communities around their mines was presented by Associate Professor Ralph Hamann from the Graduate School of Business.

Professor SP Chowdhury and his team from the Department of Electrical Engineering's IEEE-IET, organised two seminars.

The first one held in May was on *Nuclear power—global trends and the South African scenario*. Speakers included Dr Skoda from the Czech Technical University in Prague, who spoke on *Nuclear programmes and nuclear power plants: global trends*. Mr Christo Olivier from Eskom spoke on *Eskom's new build nuclear programme* and Ms Yerishca Mudaly from Eskom spoke on the *PBMR: Overview of technology, current status and future of programme*.

The second seminar was on *Renewable energy in South Africa: initiatives, opportunities, challenges and innovation*. There was an impressive list of speakers: representatives from the Department of Higher Education, NRF, Eskom, and SANERI to name a few, discussed topics ranging from government targets and initiatives for renewable energy in South Africa, supporting research and innovation in the renewable sector, human capacity development priorities, research initiatives and the impact of energy efficiency initiatives and the current economic crisis.

DATES TO REMEMBER

28 July	Safety Day
24—26 Aug	HIV/AIDS testing Jameson Hall
28—30 Sept	Wellness Week
23 Sept	EBE Graduation Ball
30 Sept	Closing date for undergraduate applications

Matching theory and practice in Materials Science

The collaborative work between Professor Gus Hart's group at Brigham Young University, Utah, USA, and the Centre for Materials Engineering was further strengthened by a visit from Professor Hart and four of his postgraduate students during June 2010. The visit was funded by the Materials World Network, which is in turn jointly funded by NSF and NRF.

Professor Hart has published widely on his computational predictions of structures that are thermodynamically stable, and yet are not found in nature. Professor Candy Lang has for a long time been interested in the practical implications of producing these structures and, for the last seven years, her postgraduate students have developed protocols to overcome the restrictions that hinder these structures from forming naturally.

The purpose of the week-long workshop was to help each group gain a more fundamental understanding of the work carried out by the other group, thereby enhancing the information-sharing which has enabled the groups to support each other's work. The really hard work was interspersed with breaks to allow the American visitors to experience the sights of Cape Town. A visit to the penguins at Boulders beach was at the top of their list, and the damp weather did not affect their enthusiasm at all.



Students in the lab after melting a button of platinum in the furnace

Staff news

Farewell and congratulations in the Faculty Office:

The Faculty Office held a function to say farewell to Hilda Leather, who left at the end of June after 15 years at UCT. Hilda will be moving to Mossel Bay, where she and her new family will be embarking on exciting new adventures.

The function was also to congratulate Marlene Hyland on her son Roger's wedding and Estelle Nobin on her daughter Koreene's wedding.



Estelle, Hilda and Marlene

Farewell was said to Mr Mark Wichman, a Senior Technical Officer in the Department of Electrical Engineering, who left at the end of April, and to Mr Mavo Solomon, a Senior Research Officer in the ERC, who left at the end of May.

A warm welcome to:

Mr Lungelo Mbhungu, who joined the Department of Civil Engineering in June as a Senior Technical Officer.

And to Mr Richard Larmour, who joined the ERC in June as a Research Officer

Engagement



Congratulations to Thabi Melamu on her recent engagement to Hope Iyamu.

Thabi works as a Research Officer in the Department of Chemical Engineering. She graduated with her Master's degree from the department in 2007.

Graduation

Congratulations to Lee-Anne Kallam, who graduated from UNISA with a BCom degree in Information Systems. Lee-Anne is the Catalysis Research Finance Manager in the Department of Chemical Engineering.

Christine Olsen said: "The fact that she has done this part-time is incredible and she is certainly an inspiration to us all!"



Lee-Anne seen with her brother Wayne and her mother at her graduation

TRANSFORMATION

On 24 June seven members of the Faculty Transformation Committee visited the Cape Town Holocaust Centre for a day-long workshop where they were encouraged, through exposure to the Holocaust, to confront their own attitudes, beliefs and behaviours regarding prejudice and discrimination. Through engagement with video material, a guided visit to the Holocaust exhibition, and facilitated discussion, the committee members were given an opportunity to understand how systematic and institutionalized hatred, racism and discrimination can eventually lead to genocide, such as that of the Holocaust. Reference to South Africa's Apartheid-era was clearly made and discussed and provided a highly relevant backdrop to appreciating the importance of open discussion, reflective engagement and vigorous debate as regards issues of transformation, on both a personal and an institutional level.

Khuluma Workshops

Khuluma is a response to a call by various structures of the University that identified the need for "creation of open and safe spaces for dialogue and debate on transformation and diversity issues". Its aim is to provide a platform for University staff to focus on many key matters brought forward in the institutional climate surveys and other forums on institutional culture.

There are no scheduled Khuluma Workshops for 2010; the Transformation Office has asked for expressions of interest to attend and will then schedule dates. Staff interested in attending should contact the Transformation Rep in their Department.



From the back: Ernesto Ismail, Rene September, Inge Newman, Khanyo Ngubo, Mary Hilton and Corrinne Shaw. Photographer: Jonathan Marks