

November 2014



# Faculty of Science NEWSLETTER

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**The Faculty of Science reflects with pride  
on the achievements of their staff and  
students.**

# UJ Natural Sciences rank 4th in South Africa

The Faculty of Science ranks fourth in South Africa, following UCT, WITS and Stellenbosch, according to the latest QS Quacquarelli Symonds rankings released on 16 September 2014.

This puts UJ Natural Sciences firmly in the league of international universities such as Université du Québec in Canada, Universität Ulm in Germany, University of Gothenburg in Sweden, Universidade Federal do Rio Grande Do Sul in Brazil and the Indian Institute of Technology Roorkee (IITR).

The Faculty and all the Departments celebrated this outstanding achievement on Friday 19 September 2014.



**Faculty Office**



**Academy of Computer Science and Software Engineering**



**Applied Chemistry**



**Applied Physics and Engineering Mathematics**



**Biochemistry**



**Botany**





**Biotechnology & Food Technology**



**Chemistry**



**Geography, Environmental Management & Energy Studies**



**Geology**



**Physics**



**Zoology**



**Statistics**



**Pure & Applied Mathematics**

## SIX STAFF MEMBERS RETIRE: 194 YEARS OF COLLECTIVE SERVICE

It is with a warm, but sad heart that the Faculty says goodbye to six staff members retiring after a total of 194 years working at the University. We trust that they have a peaceful retirement.



**Prof Charles Villet** from the Department of Pure & Applied Mathematics retires after 38 years. Prof Villet was the HOD of the Department of Applied Mathematics before it merged with the Department of Mathematics.



**Mrs Esme Enslin** from the Department of Geography, Environmental Management & Energy Studies retires after 27 years.



**Mrs Elmarie Kirchner** from the Department of Applied Physics & Engineering Mathematics retires after 33 years.



**Mr Rene Buker** from Glass blowing in the Faculty retires after 40 years and 5 months service.



**Mrs Karien vd Berg** from the Dean's Office retires after 19 years in the Dean's Office.



**Mr Solomon Kwapa** (Switch) from the Department of Zoology retires after 36 years.





# Physicist's project opens a new research field

## Contiguous 3d and 4f magnetism: Strongly correlated 3d electrons in YbFe<sub>2</sub>Al<sub>10</sub>

Accepted to *Physical Review Letters*, 15 October 2014

P. Khuntia<sup>1</sup>, P. Peratheepan<sup>2,3</sup>,  
A. Strydom<sup>1,2</sup>, Y. Utsumi<sup>1</sup>, K.-T. Ko<sup>4</sup>,  
K.-D. Tsuei<sup>5</sup>, L. H. Tjeng<sup>1</sup>, F. Steglich<sup>1</sup>, and  
M. Baenitz<sup>1</sup>

1. Max Planck Institute for Chemical Physics of Solids, Nöthnitzerstr 40, Dresden 01187, Germany
2. Highly Correlated Matter Research Group, Physics Department, University of Johannesburg, PO Box 524, Auckland Park 2006, South Africa
3. Department of Physics, Eastern University, Vantharumoolai, Chenkalady 30350, Sri Lanka
4. Max Planck POSTECH Centre for Complex Phase Materials, 01187 Dresden, Germany and Pohang, 790-784, Korea
5. National Synchrotron Radiation Research Centre, 101 Hsin-Ann Road, Hsinchu 30077, Taiwan



Prof Andre Strydom

## Stirred, shaken, and fortified... in a half full glass.

A project initiated by André Strydom, Professor of Physics and leader of the Group on Highly Correlated Matter in the Faculty of Science at UJ, has produced fascinating new results in fundamental magnetism. The work is recognized to have opened a new research field and has been accepted for publication on October 15 in *Physical Review Letters*, flagship journal of the *American Physical Society*.

The work is a continuation of a project which Prof Strydom started in UJ Physics in 2008 on 1:2:10 structured rare-earth based ternary intermetallic compounds. His original 2009 paper is listed as the 5-year most highly cited work of the European journal *Physica B: Condensed Matter* of Elsevier Science Publishers (<http://www.journals.elsevier.com/physica-b-condensed-matter/most-cited-articles/>).

The most recent chapter in this research is a sequel to the PhD studies of P. Peratheepan, a former student of Prof Strydom at UJ Physics and now Head of the Physics Department at the Eastern University of Sri Lanka. As a project which profited from a comprehensive investigative

approach through joint research and international team work, the published work partners UJ with research institutes of the highest calibre in Germany, Taiwan, and Korea.

In the study, a fascinating and unexpected interplay between electrons of two different energies and quantum mechanical states has been discovered. Traditionally, electrons pervade a metal freely in a manner described as itinerant or delocalized. This microscopic behaviour of electrons is responsible for macroscopic attributes of metals such as good electrical and thermal conductivity and metallic lustre. In the element Fe, electrons occupying the spatially extended 3d atomic shell are responsible for its magnetic properties. By contrast, in chemical elements known as the lanthanide elements the magnetic electrons are found in the semi-filled 4f shell. These are confined to a volume much closer to the nucleus and this type of electron produces, by contrast, the localized form of magnetism. The borderline between local and itinerant magnetism has become a source of intense activity in condensed matter physics due to an astounding variety of new physical

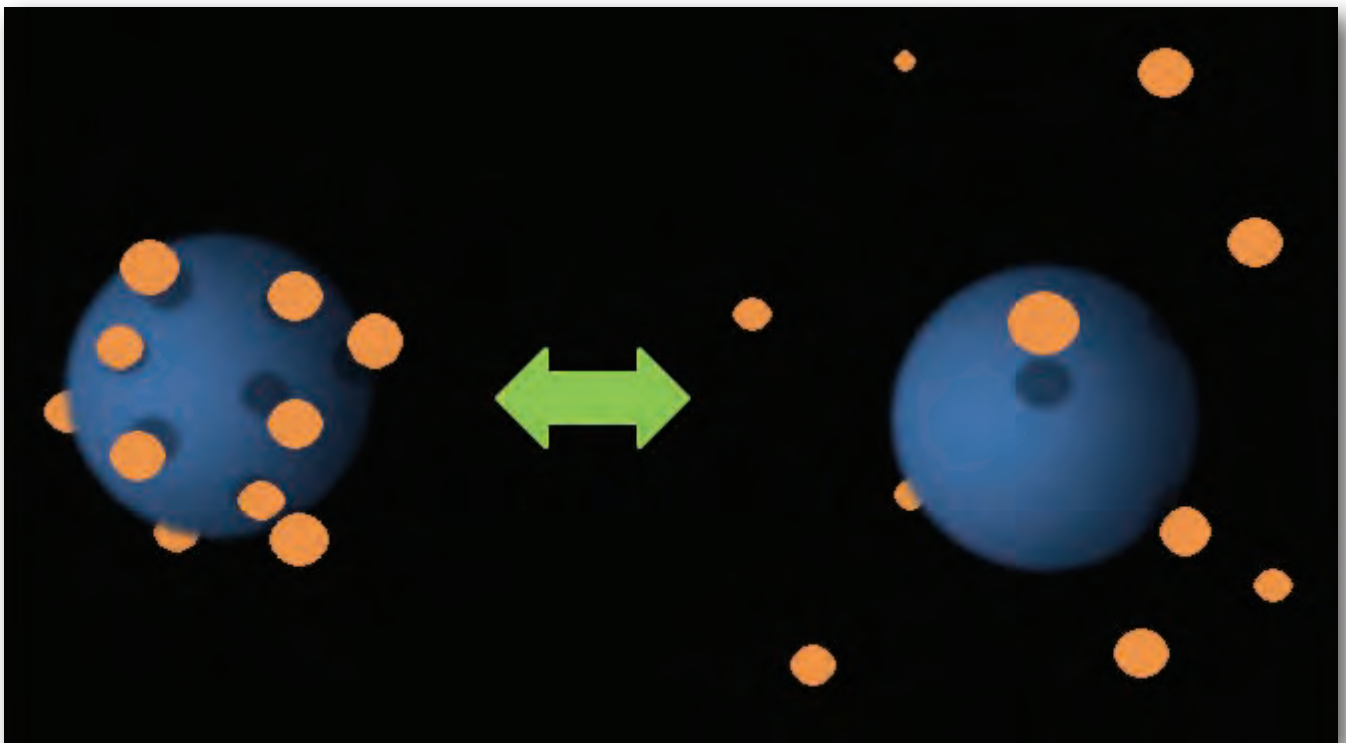
properties and unpredictable elementary particle behaviour found at this juncture. Announcements of new discoveries and exotic phenomena continue unabatedly in this physics hot topic. The discovery accompanying this paper questions some of our most basic theories of metals.

In studies that Prof Strydom conducted with collaborators at the Max Planck Institute in Dresden during 2012/2013, surprising behaviour was found at the confluence where wave functions of these two types of electrons come into contact with each other in the same metal. An extraordinary temperature-driven evolution among the two opposing kinds of magnetism was found. But, says Prof Strydom, 'Understanding the entangled behaviour proved to be very difficult and demanded a multi-parameter approach'.

'Most unexpected in our studies was the transporting of one type of magnetism, namely

the local-moment magnetism on the ytterbium ions with spin- and orbital forms of magnetism, into the spin-only type of magnetism on the Fe atoms. At very low temperatures, we found hints that a highly correlated state develops among the 3d electrons of Fe. This state develops spontaneously when Coulomb repulsion energy among quasi-localized electrons exceed their thermal kinetic energy. In our surveys of the very low temperature properties of matter we came across collective behaviour, and a way in which the electrons seem to act in union but in ways which defy some of our most well-founded concepts of metals.'

This strongly correlated state among 3d electrons is highly unusual and an emergent field of condensed matter physics. The work is expected to stimulate new directions in research that will explore how different types of atomic magnetism can work together, or compete.



# Awards 2014



## Top Achievers Award Ceremony

Top Achievers within the Faculty flocked together at the Faculty's recent prize giving ceremony. The Faculty acknowledged excellent academic performance (first semester) and certificates were given to the top achievers at the function. The criteria for a top achiever in Science is a minimum of 75% overall.

Ms DB Stevenson is the Top Achiever in the Faculty of Science as well as in the University for the first semester 2014.

Ms Stevenson

## Overall Top Achievers in Diploma and Degree Programmes



Front from left to right: Prof Betsie Jonck, HOD Pure and Applied Mathematic; Prof Elize Ehlers, HOD Academy of Computer Science and Software Engineering; Prof Annemarie Oldewage, Acting Executive Dean; Prof Annah Moteetee, Vice-Dean; Mr Erick van Zyl, HOD Biotechnology and Food Technology  
Back: KM Myers, SB Ngwenya; ZD Mnizi; DB Stevenson; R Swanepoel

### Top Achiever in a diploma programme

Miss SB Ngwenya: 82.75 (Food Technology)

Ms ZD Mnizi: 82.75 (Food Technology)

### Top Achiever in First Year degree programme

Miss DB Stevenson 89.5 (Mathematical Sciences)

### Top Achiever in Second Year degree programme

Mr R Swanepoel 86 (Information Technology)

### Top Achiever in Third Year degree programme

Mr KM Myers 88.7 (Mathematical Sciences)



# Top Achievers in the Faculty

## FIRST YEAR

### First Year diploma studies in Analytical Chemistry

Mr SL Motsai  
Miss L Mogole  
Mr MG Molefe  
Mr MD Matsobane  
Mr M Mabusela  
Mr KP Mawede  
Ms NE Khoza  
Ms N Malangabi  
Mr K Ntanzi  
Mr OK Motingwe

### First Year diploma studies in Food Technology

Miss SB Ngwenya  
Ms ZD Mnizi  
Ms K Modike

### First Year diploma studies in Biotechnology

Ms MP Maela  
Ms N Nkosi  
Ms A Moraila  
Ms A Dhlamini  
Ms RM Phoko  
Ms PM Mpange  
Ms SM Tebele

### First Year BSc degree studies in Information Technology

Miss M Fourie  
Mr KR Lautenbach  
Mr W Taljaard  
Mr MN Sagming  
Mr JL Gibson  
Mr MJ Lekalakala  
Ms J Byun  
Ms GG Namazzi  
Mr MM Mogorosi  
Mr SN Ndlovu  
Mr MS Sigauke

### First Year BSc degree studies in Life and Environmental Sciences

Miss JM Rajewicz

### First Year BSc degree studies in Mathematical Sciences

Miss DB Stevenson  
Ms WS Johnson  
Miss TL Molefe

## SECOND YEAR

### Second Year diploma studies in Analytical Chemistry

Ms LO Thusi

### Second Year diploma studies in Biotechnology

Miss RG Makibi

### Second Year BSc degree studies in Information Technology

Mr R Swanepoel  
Mr CNF Obodoekwe  
Ms KC Binyange  
Mr MJ Brooke  
Mr VE Ngwenya

### Second Year BSc degree studies in Life and Environmental Sciences

Miss RJ Ormond  
Ms S van Dijl  
Ms HL Lu  
Miss JP Bullock  
Ms SM Heri  
Mr LC Carlsen  
Ms MJK Murch  
Mr A van Dam

### Second Year BSc degree studies in Mathematical Sciences

Mr KR McAllister

### Second Year BSc degree studies in Physical Sciences

Ms BL Davids

## THIRD YEAR

### Third Year diploma studies in Analytical Chemistry

Ms LL Majola  
Ms B Makgabutlane  
Ms CB Seshabela

### Third Year BSc degree studies in Information Technology

Mr KP Downs  
Mr S Cronjé  
Mr S Olivier

### Third Year BSc degree studies in Life and Environmental Sciences

Ms M Ferreira  
Ms PA Moyosvi  
Ms T Ollewagen  
Ms N Peerbhai  
Ms TF Nekhavhambe  
Mr CA Payne  
Ms M Gonsalves  
Ms CR Mareya  
Ms A Nagar  
Mr JE Brough  
Ms VT Shabalala  
Ms S Bhagwan

### Third Year BSc degree studies in Mathematical Sciences

Mr AC Mnyakeni

### Third Year BSc degree studies in Physical Sciences

Mr KM Myers  
Mr ES Hassal  
Mr M Chizema  
Mr K Sithole  
Miss B van der Walt  
Ms S Mapukata



Top Achievers and HOD's, Dean and Vice Dean





Lesego Modiamo from Pro Arte High School in Pretoria and his mother, Ms Dorothy Phasha, attended the prestigious UJ Orange Carpet cocktail function for top learners. Candidates qualify for the Orange Carpet benefits if they obtain 80% and above in all their subjects at the end of Grade 11 and Grade 12.

## Graduation Ceremony 23 September 2014

The Faculty of Science celebrated the award of sixteen Doctoral degrees at its Graduation Ceremony in September 2014. Six of the PhD candidates are staff members in the Faculty of Science.

### Philosophiae Doctor (PhD)

Adokoh, Christian Kweku PhD in Chemistry  
 Supervisor: Prof J Darkwa  
 Co-supervisor: Prof HH Kinfe

Byth-Illing, Heather-Anne PhD in Biochemistry  
 Supervisor: Prof L Bornman

Coulter, Duncan Anthony PhD in Computer Science  
 Supervisor: Prof EM Ehlers

Djuidje Fotsing, Marthe Carine PhD in Chemistry  
 Supervisor: Prof XY Mbianda  
 Co-supervisor: Prof N Coville (University of the Witwatersrand)

Malwela, Thomas PhD in Chemistry  
 Supervisor: Prof S Sinha Ray

Matsaunyane, Lerato Bame Tsalaemang PhD in Biochemistry  
 Supervisor: Prof IA Dubery  
 Co-supervisor: Dr D Oelofse (ARC - Agricultural Research Council-Institute for Vegetable and ornamental plants, Pretoria)

Mubiwa, Brian PhD in Energy Studies  
 Supervisor: Prof HJ Annegarn  
 Co-supervisor: Mr M Mokonyama (CSIR)

Nongwe Beas, Isaac PhD in Chemistry  
 Supervisor: Prof R Meijboom  
 Co-supervisor: Prof NJ Coville (University of the Witwatersrand)

Roux, Francois PhD in Zoology  
 Supervisor: Prof GM Wagenaar  
 Co-supervisor: Prof GJ Steyn (Ecodynamics)

Siwe Noundou, Xavier PhD in Chemistry  
 Supervisor: Prof RWM Krause





Graduation Ceremony 23 September 2014

Co-supervisor: Prof JT Mbafor (University of Yaoundé, Cameroon)

Smith, Albertus Johannes Basson PhD in Geology  
 Supervisor: Prof J Gutzmer (Helmholtz Institute Freiberg for Resource Technology, Germany)  
 Co-supervisor: Prof KS Viljoen

Sondezi, Buyisiwe Mavis PhD in Physics  
 Supervisor: Prof AM Strydom

Van der Haar, Dustin Terence PhD in Computer Science  
 Supervisor: Prof SH von Solms

Van der Walt, Frederik Christoffel PhD in Mathematical Statistics

Supervisor: Prof F Lombard

Veerasamy, Namosha PhD in Computer Science  
 Supervisor: Prof MM Grobler  
 Co-supervisor: Prof SH von Solms

Yankey, Margaret PhD in Chemistry  
 Supervisor: Prof J Darkwa

## FACULTY OF SCIENCE AWARDS



Prof Annemarie Oldewage, Acting Dean of the Faculty; Mrs Lianie Döman; Prof B-E van Wyk & Dr Jayne Rogerson

The Faculty of Science awards each year prizes for the highest research output produced in the previous year – one to an academic staff member appointed on the level of Associate Professor or Professor and one to an academic staff member appointed on the level of Lecturer or Senior Lecturer, the Faculty award for Teaching Excellence and the Faculty award for service beyond the normal call of duty.

### THE RECIPIENTS OF THE FACULTY AWARDS ARE:

**Professor B-E van Wyk**, Professor in the Department of Botany, received the Faculty award for publication output at Professorial level.

Professor Van Wyk joined the UJ (RAU at the time) in 1985. He has an enviable international reputation in plant taxonomy, ethnobotany and indigenous plant use and he was recently awarded a NRF Research Chair in this field.

He is an enthusiastic, tireless and gifted worker with an average of more than 10 journal papers per year over the past 28 years (in total more than 300) and received this award to recognize his output in 2013 of 10.81 publication units, the highest in the Faculty.

**Dr Jayne Rogerson**, Senior Lecturer in the Department of Geography, Environmental Management & Energy Studies, received the Faculty award for publication output at Lecturer/Senior Lecturer level.

Evidence of her dedication is this award which is given on the basis of Dr Rogerson's output in 2013 of 8.66 publication units.



Dr Rogerson was a Next Generation Scholar in the Department. In 2013 she was appointed as a lecturer in the Department and in 2014 as a senior lecturer.

**Dr JF Durand**, Senior Lecturer in the Department of Zoology, received the Faculty award for Teaching Excellence. The Faculty is proud of the fact that Dr Durand has also received the VC award for Teaching Excellence in 2014. The Vice-Chancellor's Distinguished Award: Teacher Excellence is aimed at recognising outstanding contributions that individual academics have made to the promotion of teaching excellence and learning effectiveness at the UJ over a sustained period, modelled on best practice and positively influencing students and other colleagues.

Dr Durand joined the UJ (RAU at the time) in 1998. He has shown consistent commitment to high quality teaching over many years and besides his dedication to his

students, has shown a high level of involvement in schools, non-professional groups as well as in public in general.

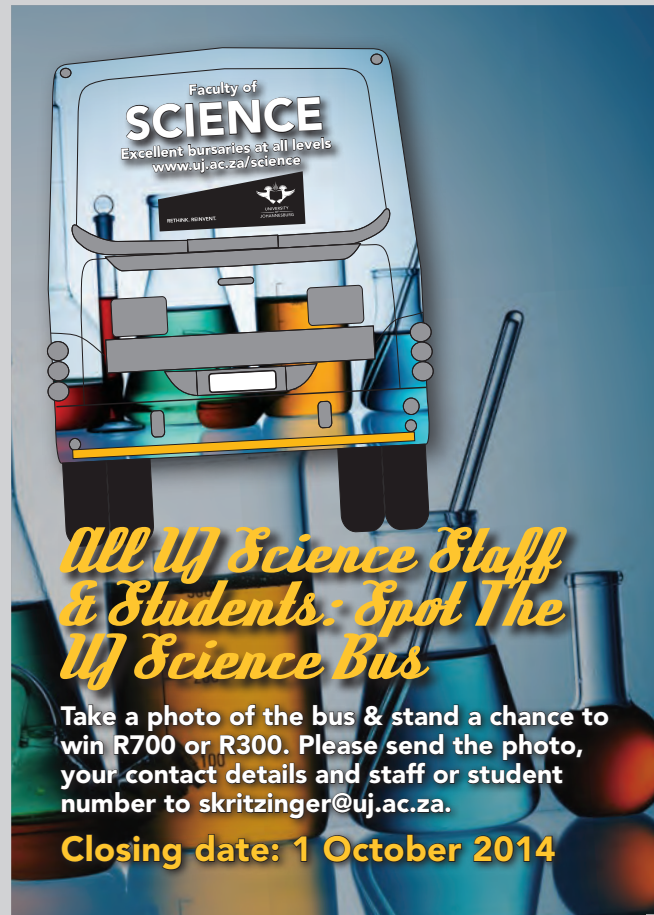
Dr Durand founded the SA Society for Amateur Palaeontologists and in 1996 he was appointed by the Minister of Art, Culture, Science and Technology to the Board of the Foundation for Education, Science and Technology.

He has a broad holistic vision of how his professional discipline relates to the living world and is passionate about getting his message across.

**Mrs Lianie Döman**, Financial & Programme Coordinator in the Department of Physics, received the Faculty award for service beyond the normal call of duty. Mrs Döman is the embodiment of what this award stands for, adding enormous value to our operations, being highly professional, and going to extraordinary lengths to perform (and go beyond) her duties.



Dr Durand



## SPOT THE UJ SCIENCE BUS

**Congratulations to Sandiso Flathele. Sandiso won the first prize of the UJ Science bus competition.**



Prof Annemarie Oldewage, acting Dean of the Faculty with Sandiso Flathele.



# PROJECTS DAY 2014

**The Art of Development; The Art of Accomplishment.**

*Tuning into music generated before your ears, or experiencing a fitness revolution – this and more showcased the art of accomplishment at the Academy of Computer Science and Software Engineering's 28th annual Projects Day.*

The spirit of the art of accomplishment was truly alive with the third year and honours level students who presented live demonstrations of what they have achieved during the year.

Early in the morning an Alumni Breakfast, hosted by the Academy's Alumni Affinity Group, kicked off the day for 80 of the Academy's alumni, staff and guests; the profits of which are going toward bursaries for the Academy's students. Keynote speaker Dave Russell, Technical Evangelist at Microsoft, showed how technology and connectivity are creeping into more aspects of our lives from wearable devices to an Internet-connected fridge.

Academy Alumni, members of industry, research institutions or academics gave up their day to serve as adjudicators,

with 38 judges evaluating over 50 third year and honours projects on display.

Before lunch Dean Garfield, President and CEO of the Information Technology Industry Council in Washington, DC, USA, addressed Projects Day attendants, speaking about the foundation of the Internet as a platform for innovation, and economic and social change.

At the evening's Awards Ceremony, Prof Elize Ehlers, Head of the Academy, congratulated all participants on their accomplishments and thanked industry sponsors – DVT, Entelect, KPMG, and PWC – for their generous prize sponsorships that were awarded to the students.



Project day 2014





**Top First Years. From Left to Right: Muziwakhe Sigauke, Gloria Namazzi, Maphatsa Lekalakala, Margaux Fourie, Kyle Lautenbach, Jihyun Byun, Prof Annemarie Oldewage (Acting Dean of Science), Mr Walter Palk (Partner, KPMG), Prof Basie von Solms**

This year saw a tie in the award for Best Masters Dissertation with the prize being awarded to Rossouw de Bruin, Donovan Isherwood and Sean O'Reilly.

For the honours projects, Dr Jaco van der Merwe, from DVT, served as head judge and was astounded by the level of innovation coming from the students. From 23 projects, three were chosen as the top three projects (in no particular order):

**Michele Cullinan**, mentored by Dr Duncan Coulter; Classification of large datasets achieved by boosting weakly trained Support Vector Machines.

**Mark Koorn**, mentored by Dr Wai Sze Leung; Examined how computers could generate backing tracks for budding guitarists based on the chord progression played.

**Aiden Strydom**, mentored by Prof Elize Ehlers; Melodic – an incremental addition to the field of algorithmic music production attempting to rapidly prototype music based on given melodies.

**Prof Buks Louwrens**, from Nedbank, served as the head judge for the Third Year Projects. He awarded the top three projects:

**FIRST PLACE:**

**Dynamic Overload**, consisting of Stefan Cronje, Karabo Moroe, Ryan Nair & Ryno Strydom, mentored by Deon Cotterrell. Hexafit – an interactive and immersive physical development system, breaking the boundaries via the gamification of personal fitness.

**SECOND PLACE:**

**Luminescence**, consisting of Nicholas Combrink, Kevin Downs, Shaun van Wyk & Szymon Welgus, mentored by Frans Blauw. Leaf – a full project management system that is intended to track the progress of development teams within agile software development projects.

**THIRD PLACE:**

**Credit Crunch**, consisting of Mark Bird, Jonathan Hurrell & Christopher Snow, mentored by Sheu Mavee. A multi-purpose, single point management tool allowing vendors to extend credit at a reasonable cost and with minimal effort.

The Academy of Computer Science and Software Engineering was once again applauded for hosting yet another successful Projects Day.

**Please join the Academy again next year on 21 October 2015 to witness more students featuring their accomplishments.**



**Honours Student Winners**

From Left to Right: Dr Jaco van der Merwe (DVT, Head Judge Honours), Aiden Strydom, Michele Cullinan, Dr Duncan Coulter (Mentor), Mark Koorn, Dr Wai Sze Leung (Mentor), Prof Annemarie Oldewage (Acting Dean of Science), Mr Walter Palk (Partner, KPMG)



**Dynamic Overload – Third Year Project Winners**

From Left to Right: Karabo Moroe, Ryan Nair, Ryno Strydom, Stefan Cronje, Deon Cotterrell (Project Mentor), Prof Annemarie Oldewage (Acting Dean of Science), Mr Michael Stichling (Entelect), Prof Buks Louwrens (Nedbank)



**Luminescence – Third Year Project Second Place**

From Left to Right: Shaun van Wyk, Nicholas Combrink, Szymon Welgus, Kevin Downs, Frans Blauw (Project Mentor), Prof Annemarie Oldewage (Acting Dean of Science), Mr Michael Stichling (Entelect)



**Credit Crunch – Third Year Project Third Place**

From Left to Right: Sheu Mavee (Project Mentor), Jonathan Hurrell, Mark Bird, Christopher Snow, Prof Annemarie Oldewage (Acting Dean of Science), Mr Michael Stichling (Entelect)



**Masters Student – Rossouw de Bruin**

From Left to Right: Rossouw de Bruin, Prof Basie von Solms (Supervisor), Mr Sidriaan de Villiers (Senior Manager, PWC), Prof Annemarie Oldewage (Acting Dean of Science)



**Masters Student – Sean O'Reilly**

From Left to Right: Sean O'Reilly, Prof Marijke Coetzee (Supervisor), Prof Basie von Solms, Mr Sidriaan de Villiers (Senior Manager, PWC), Prof Annemarie Oldewage (Acting Dean of Science)





## Botany Cycling for Cycads

The African Centre for DNA Barcoding was one of the co-sponsors of the Green Scorpions during the 94.7 Cycling Race – *Cycling for Cycads*. To build up to this event the DEA has organized a funding event on the 2 November 2014 at Virgin Active, Sandton. All funds raised went towards the DNA Barcoding project for Cycads at UJ.

The DNA barcoding of cycads forms part of a bigger National Project – The Barcode of Wildlife Project (collaboration between SANBI, DEA, NPA, SAPS-Forensics, NZG, SAIAB and the Consortium of the Barcode of Life (CBOL) in Washington). The main aim of the project is to build a public database of reference barcode records for traded species and their close relatives and look-alikes, against which the barcode sequences of confiscated material can be compared, with the ultimate goal of using barcoding evidence in a court of law.

Currently, cycads are branded as the most threatened plant species in the world due to removal of species from the wild for private collections, habitat loss and bark harvesting for the medicinal trade. There are 29 species of cycads endemic to South Africa of which 25 are threatened with extinction; ten are critically endangered and at least two endemic species (*Encephalartos nubimontanus*, and *Encephalartos woodii*) are classified as extinct in the wild. South Africa currently has seven cycad species that have fewer than 100 individuals left in the wild (for example *Encephalartos brevifoliolatus*, *Encephalartos inopinus*, *Encephalartos latifrons* (Albany cycad)).

## Biochemistry Metabolomics Research Group received ChromSA Chromatographer of the Year Award

Prof Ian Dubery from the Department of Biochemistry and his Plant Metabolomics Research Group were awarded the *Chromatographer of the Year Award* for 2014.

ChromSA Chromatographer of the Year award for 2014 is awarded to the Metabolomics Research Group of the University of Johannesburg, for their publications of applications of new chromatographic techniques and those relating to established chromatographic technique applications. Their metabolomics research involves both chromatography and mass spectrometry and is focussed on secondary plant metabolites and their importance in disease resistance in plants.

The research team comprises Prof Ian Dubery; Prof Paul Steenkamp; Dr Lizelle Piater; Dr Ntakadzeni Madala; Dr Heino Heyman; Ms Nombuso Ndlovu and Mr Fidele Tugizimana.



Prof Ian Dubery

# Biochemistry

## **Analitika 2014**

A number of staff and students of the Department of Biochemistry attended the Analitika 2014 conference in Parys. The conference was jointly organised by four SACI Divisions, namely; the South African Association for Mass Spectrometry (SAAMS) of which both Prof Ian Dubery from the Department of Biochemistry and Mrs Eve Kroukamp from UJ's Spectrum Central Analytical Facility are members of the National committee; the Chromatography Association of South Africa (ChromSA); the Analytical Division and Thermal Analysis South Africa (ThermSA). The theme for the conference was *Milestones in Measurements*. Several overseas scientists who are widely known to be experts in their field were invited as plenary speakers for the event.

Postgraduate students, Fidele Tugizimana (PhD) and Msizi Mhlongo (MSc) of Prof Ian Dubery were awarded the first and second prizes respectively for their oral contributions in the Mass Spectrometry category. Mrs Kroukamp, PhD candidate at the University of Pretoria with UJ co-supervisor Prof Tadesse Godeto, was awarded second place in the poster presentations under the category of Mass Spectrometry.



Fidele Tugizimana and Prof Ralph Sturgeon from the National Research Council in Canada



Msizi Mhlongo and Prof Ralph Sturgeon from the National Research Council in Canada



Eve Kroukamp being presented her award by Prof Graham Cooks from Purdue University in the USA

# Chemistry

## **Elected to fellowship of the Ghana Academy of Arts and Sciences**

Prof James Darkwa was elected to the Fellowship of the Ghana Academy of Arts and Sciences during the recent General Meeting of Fellows.

The Academy contributes actively to the development of Ghana and Africa in general by examining and addressing crucial issues of development.



Prof James Darkwa





# Geography and Environmental Management

## **Festival of Action for tree planting volunteers**

Shayna-Ann Cuthbertson, a second year Environmental Management student went on a trip to Zambia as a volunteer to plant trees. This mission with Greenpop was to plant indigenous trees and educate people about the environment there. Each year now, this ongoing project of Greenpop is boosted with a Festival of Action where thousands of trees are planted by passionate people from all over the world. This year 3683 trees were planted during the three weeks around areas in Livingstone.

Trees were planted at schools and farms. The students were taught the importance of the environment, how to plant trees and how to take care of the trees. Creating micro-nurseries, map making and building a

solar cooker made out of recycled crisp packets were tasks also taking place on the tree planting days.

In 2012, Greenpop launched *Trees for Zambia*, a reforestation and eco-awareness project which began with a three-week tree planting event and was followed by an ongoing campaign to inspire awareness about deforestation, climate change, tree planting, environmental sustainability and alternative energy sources. Environmental workshops are hosted with school children, farmers and volunteers and many lessons are learned and shared. *Trees for Zambia* is a holistic awareness campaign based on getting people active about making sustainable changes.



With the help of family, friends, colleagues and lecturers, Shayna-Ann was able to raise the necessary funds which allowed her to volunteer for a week in Zambia

Tree planting - Shayna-Ann target was eighty trees



Dr Solomon Tesfamichael

## **European Space Agency Award presented for best paper**

Dr Solomon Tesfamichael from the Department of Geography, Environmental Management and Energy Studies has been awarded the European Space Agency (ESA) Best Paper Award for his presentation Estimating structural attributes of savannah woody vegetation using small footprint, discrete return LIDAR data. He presented the paper at the 10th International Conference of the African Association for Remote Sensing of the Environment – AARSE 2014.

The best paper was assessed by the Chair of each session and at least two other senior scientists present in the session. Results from all the sessions were moderated by an Awards Committee appointed by the AARSE Executive Council and the AARSE 2014 Local Organising Committee.

### **The Criteria for the ESA Best Paper Award was:**

- Innovative or original content and science quality;
- Clarity of oral presentation, good context, logical presentation of material, conclusions clearly flowing from arguments/data presented, contact with audience;
- Quality of slides – legibility, relevance, balance of text and illustrations.

# Geology

## **Geologist recognized for scholarly achievements**

Prof Fanus Viljoen from the Department of Geology has been elected as a member of the Academy of Science of South Africa (ASSAf).

Through election to membership, ASSAf recognizes the scholarly achievements of the individuals.

ASSAf is the official national Academy of Science and represents the country in the international community of science academies. The key objective of the Academy is to promote and apply scientific thinking in the service of society. Assaf's strengths resides in the quality and diversity of its membership; internationally renowned scholars elected by their peers, who give their time voluntarily in the service of society.



Prof Fanus Viljoen

## **Youngest member on SAAMS**

Eve Kroucamp has been elected onto the national committee of the South African Association for Mass Spectrometry (SAAMS). She is one of the youngest members to have been elected.

The South African Association for Mass Spectrometry (SAAMS) is the mass spectrometry subdivision of the South African Chemical Institute. As a non-profit organization its functions are to coordinate mass spectrometry in Southern Africa and to create and maintain an official body for the mass spectrometry technique interest and application group. SAAMS mediates the presentation of research and development in mass spectrometry, new developments and new instrumentation in mass spectrometry.

The SAAMS target group ranged from students, novel and inexperienced mass spectrometrists to experienced academics and industry based scientists.



Eve Kroucamp



# Zoology

## Postgraduate Symposium

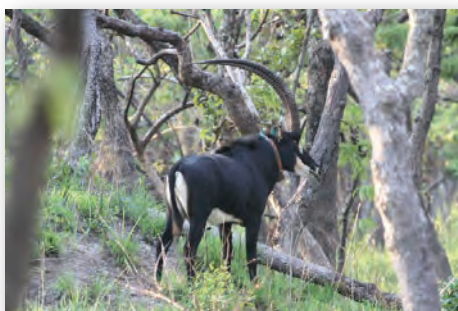
Three of the Honours students in the Department of Zoology presented their research projects at the recent Postgraduate Symposium hosted by the Department of Research and Innovation.

**Eduard Drost** presented work on an investigation into the genetic structure of the Knysna sand goby occurring around the South African coastline. Our coastal waters are divided into four bioregions based mainly on water temperature and ocean currents. Eduard's work indicated that the gobies occurring along the West Coast are distinctly different from those occurring along the South and East coasts; these findings have implications for the management of these fish.

**Heather Webster's** study investigated the effects of farming practises on the genetic diversity in sable antelope. For this, she compared the diversity in wild populations with those occurring on game farms. Not surprisingly, the animals on game farms have somewhat lower genetic diversity most likely as a result of selective breeding by game owners. The

high commercial value of specific sable antelope bulls makes them more desirable for breeding purposes, which skews genetic diversity in populations.

**Mahlogonolo Molefe** presented work on metal accumulation of Mopane worms in the Kruger National Park. The Kruger National Park has recently started a program to sustainably harvest these worms for local community consumption. The question addressed was whether worms accumulated heavy metals as a result of mining activities in the Phalaborwa area or whether worms are safe for human consumption. The results indicated that the worms from the two sites close to Phalaborwa are contaminated with metals and pose a potential risk to human health. The worms collected from the Punda Maria area in the Northern section of the park indicated little potential risk to human health. Two of our students (Heather Webster and Mahlogonolo Molefe) were placed in the top 6 presenters, and Mahlogonolo Molefe received an iPad Mini.



A sable antelope (photo credit to Pedro Vaz Pinto)



A Knysna sand goby (picture taken from [www.ispot.org.za](http://www.ispot.org.za))



Mahlogonolo Molefe, Eduard Drost and Heather Webster



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