

November 2015

FACULTY OF SCIENCE NEWSLETTER

The Faculty of Science reflects with pride on the achievements of their staff and students. During these past months the staff and students once again excelled in various fields. A research article of Prof Andre Strydom featured in the highly rated *Scientific Reports*. The Department of Chemistry recently celebrated the 80th birthday of Prof Cedric Wahl Holzapfel with a one day symposium held in his honour.

Prof Andre Strydom has been elected as a member of the Academy of Science of South Africa (ASSAf). Prof Bruce Cairncross, along with a co-author, produced a new international book that was launched at a Library event.

An inaugural lecture was delivered by Prof Giovanni Hearne; the top achievers in the Faculty were honoured; the Faculty participated in Science Week; international congresses were organised and attended by lecturers; top researchers in the Faculty were celebrated, nine doctoral and 25 Masters degrees were awarded, academics were elected to committees and international and local colleagues visited departments in the Faculty.

We trust that you will enjoy this Newsletter and join us in congratulating all staff members and students mentioned in this edition.

THIS ISSUE FEATURES:

- The 80th birthday celebration of Prof Cedric Wahl Holzapfel
- Research accomplishments
- The launch of a new book
- Graduations
- Awards received
- IT Projects Day: Art, Creativity, Innovation – Development
- Elections to committees
- Community Engagement initiatives
- A Saturday school hosted in a small town
- Conferences
- Accomplishments in the Faculty and lastly
- New appointments in the Faculty





Prof Holzapfel with ex-colleagues: Mr F Scott; Prof GJ Kruger, Prof CW Holzapfel, Prof RR Arndt; Prof S Lotz and Prof HG Raubenheimer.

THE FACULTY SALUTES PROF HOLZAPFEL ON HIS 80TH BIRTHDAY

The Department of Chemistry recently celebrated the 80th birthday of Prof Cedric Wahl Holzapfel with a one day symposium held in his honour. Prof James Darkwa, current Head of the Department, wanted to draw attention to the valuable contribution that Prof Holzapfel makes to the Department on an ongoing basis. Just under a 100 people attended and they were treated to a wide range of presenters, ranging from contemporaries of Prof Holzapfel to his current postdoctoral student. We were fortunate in having Prof Reinhardt Arndt, the first Head of the Department of Chemistry at the symposium, as well as a number of previous HOD's and top researchers in the field of organometallic chemistry, microbiology, catalysis and gold chemistry. The registrar, Prof Kinta Burger, also graced us with her presence.

Prof Holzapfel was appointed as Professor at the newly founded Randse Afrikaanse Universiteit in 1970, a position he held until his retirement in 2002. He was not only involved in various managerial activities at

the institution, but also in the teaching and training of undergraduate and postgraduate students. His belief that to be a successful scientist you need to integrate theoretical, technical, ethical and economic aspects was illustrated in the strong collaborations he forged with the Chemical Industry. This perspective contributed to the moulding of 35 MSc and 34 PhD students that completed their degrees under his guidance. He also collaborated with the Universities of London and Tel Aviv. Collaboration with the Cancer Research Institute of the National Institute of Health in Washington played a critical role in the development of synthetic methodology in the Department.

He was directly involved with the activities of the South African Chemical Institute, serving as Assistant Editor of the Journal of the South African Chemical Institute. He was also a member of various committees that organised national and international conferences. Prof Holzapfel had formal ties with SASOL, AECI

and the CSIR as chemical advisor, a role that enabled him to act as mentor for scientists at these institutions.

Since his retirement in 2002 he has been involved in the Department of Chemistry, where he not only still teaches honours courses, but also acts as a mentor of staff and students alike. He is currently supervising a masters student, a doctoral student and also has a postdoctoral fellow in his group. He is held in high regard by his peers as well as ex-students and is consulted daily by both corporate companies and confused postgraduate students. He still acts as an official consultant for Sasol. He made a huge contribution to the chemical industry by delivering excellent organic synthetic chemists that currently form the nucleus of various research and industrial companies, and also are on the management of various companies. His passion for life and continued interest in chemistry is an inspiration to all the people that he comes across daily.

All of these characteristics were pointed out repeatedly during the symposium by the participants. One of his ex-students, Dr Gerhard Engelbrecht, who is an equity analyst, explained why it has always been about more than chemistry. He reminded us that chemistry requires a clear logic, problem solving abilities, perseverance and in many instances a lot of hard work and continuous learning. These are skills that find application in many areas outside chemistry. Dr Engelbrecht said that Prof Holzapfel taught him not to be afraid of the unknown, always being very excited about being the first person to try a new reaction, no matter how extreme it may seem. Also to never give up, always to try a different approach, be innovative. Report writing is another skill that students learnt at the desk of Prof Holzapfel that they always use to great advantage. All the participants however agreed that the most outstanding characteristic of Prof Holzapfel is his passion, not only for chemistry, although that is phenomenal, but for life in general.

Prof Holzapfel thanked the University Management for enabling him to still make a contribution by allowing him access to facilities and allowing him to carry on with his research and to supervise students. The Department of Chemistry believes that this is a model that can be applied more widely, given the rich rewards that the institution is reaping from this example.

May we have the privilege to experience your passion for many years to come, Prof Holzapfel, we salute you!

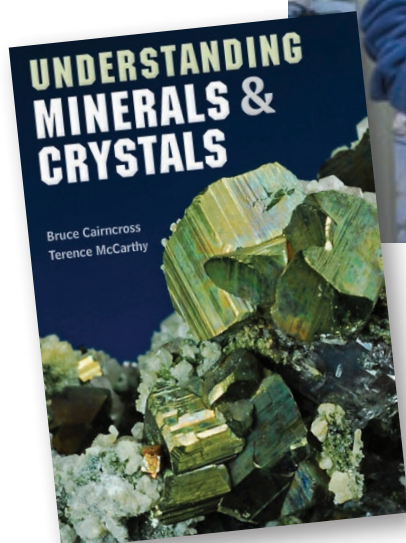
RESEARCH ARTICLE PUBLISHED IN SCIENTIFIC REPORTS



The Faculty of Science is proud to announce that a research article, *Unconventional superconductivity in $Y_5Rh_6Sn_{18}$ probed by muon spin relaxation*, co-authored by Prof André M Strydom, Research Professor in the Department of Physics, was published in *Scientific Reports*. This is an online journal from the *Nature Publishing Group*, which publishes primary research from all areas of the natural and clinical sciences.

Unconventional superconductivity in $Y_5Rh_6Sn_{18}$ probed by muon spin relaxation

Below the critical temperature in a superconductor, electrons dramatically start to conduct electrical current with apparent zero resistance. This is one of the most intensively studied phenomena in science and it remains an enigmatic observation in matter more than 100 years after its discovery. When a conventional superconductor is cooled to temperatures close to the absolute zero of temperature, it acquires the state of perfect diamagnetism: the material completely expels incoming magnetic flux by screening magnetic fields from the internal volume of the superconductor. In our traditional understanding of superconductors this perfect shielding of magnetic fields, -instead of testing for the loss of electrical resistivity, is the definitive test of superconductivity. Muon spin resonance is an extremely sensitive probe of magnetism and magnetic fields in matter and this was one of the methods chosen by the authors of this work in *Scientific Reports* with which to study the new intermetallic superconductor $Y_5Rh_6Sn_{18}$. A double surprise awaited the experimenters when they found a magnetic field arising just inside the superconducting phase of this compound. Intuitively, it was completely unexpected because of magnetic fields and superconductivity being mutually exclusive due to the screening effect. But, considering the fact that none of the three elements in this tetragonal intermetallic compound are themselves chemical elements that produce magnetic fields, the finding of a spontaneously arising magnetic field is even more deeply sinister. A superconducting ground state that supports magnetic fields presents a rare case of broken time-reversal symmetry states that have also been proposed in the high-temperature class of superconductors. Mixed-symmetry states may produce spontaneous currents and magnetic moments. Studies into materials exhibiting these fascinating properties is a frontier subject in contemporary condensed matter physics.



Professors Terence McCarthy and Bruce Cairncross holding a copy of their new book *Understanding Minerals & Crystals*.

UNDERSTANDING MINERALS & CRYSTALS: A NEW BOOK TO EXPLAIN THE SCIENCE BEHIND MINERALOGY

Prof Bruce Cairncross, HOD of the Department of Geology, has produced a new book *Understanding Minerals &*

Crystals co-authored with Prof Terence McCarthy, Emeritus Professor in the School of Geosciences at Wits University. It is published by Penguin Random House Struik Nature. This is the ninth book dealing with minerals that Prof Cairncross has written. There are many mineral books on the market, so why yet another?

Mineral books generally fall into two distinct categories: those consisting of glossy photographs of museum-quality specimens with a brief description on properties and occurrence, which are aimed largely at mineral collectors; and text books intended for senior university undergraduate and post-graduate students and researchers. These are printed on buff paper and are mostly dull and drab, and quite frankly, difficult for most laypersons to understand. There was therefore a need for a book between these two extremes - a book that explains the science behind mineralogy in relatively simple language, but at the same time looks attractive and has appeal to a wider audience.

The authors believe that various groups of people would be interested in such a book. Newcomers to mineral collecting and especially those newcomers who wish to know what minerals are, how they form, why they differ in their physical properties and how they should go about identifying them would find the book useful. Students enrolled for introductory mineralogy courses at universities across the world will find the book especially useful. The book will also appeal to experienced collectors who wish to know more about the theory behind mineral formation. Because the book will be designed in a style that makes it accessible and engaging, it will also appeal to the interested layman.

The text is divided into three sections. The first section covers the key chemical principles that underpin minerals and will introduce basic concepts of crystallography; the second section describes and illustrates more than 100 carefully selected minerals; and the third section discusses the physical properties of minerals and how these properties are used in hand-specimen mineral identification. This section includes a mineral identification key.



SPRING GRADUATION 2016

The Faculty of Science celebrated the award of nine Doctoral degrees and 25 Master degrees at the Spring Graduation Ceremony on 12 October 2015.

THE PHD DEGREE WAS CONFERRED ON THE FOLLOWING STUDENTS:



Dr Cele, Hastings Mthobisi (Chemistry).



Dr De Kock, Luéta-Ann (Chemistry).



Dr Gerber, Ruan Jan-Izak Lodewyk (Zoology).



Dr Makonese, Tafadzwa (Energy Studies).



Dr Mhlanga, Nikiwe Queeneth (Chemistry).



Dr Mamba, Gcina (Chemistry).



Dr Noh, Ji-Hyang (Chemistry).



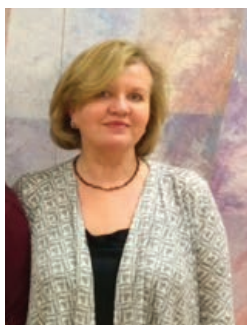
Dr Nyoni, Hlengilizwe (Chemistry).



Dr Thwala, Melusi (Zoology).



Prof Henning.



Dr Rogerson.



Paulos Molefe.



Dr Charmaine Arderne.



Dr Andrew Craig.

Faculty of Science Awards

Each year the Faculty of Science awards 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. This award was made by the Executive Dean, Prof Debra Meyer at the Faculty Year End function on 23 October 2015.

THE RECIPIENTS OF THE FACULTY AWARDS FOR THE HIGHEST RESEARCH OUTPUT:

Prof Mike Henning, Professor in the Department of Pure & Applied Mathematics, received the Faculty award for publication output at Professorial level.

Prof Henning received this award to recognize his output in 2014 of 10.59 publication units, the highest in the Faculty. Prof Henning is regarded as a world-leader in domination theory in graphs.

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 2014 of 6.34 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.

The Faculty also acknowledged the outstanding contribution of three lecturers in Teaching and Learning. This year the award was aimed at first year lecturers who teach large classes.

Paulos Molefe has been teaching Physics in the 4 year extended programme with much enthusiasm. He is a passionate lecturer who accommodates students but expect his students to work hard. Paulos is a scholar and has published on his teaching and is currently busy with his PhD in Physics Education. Paulos serves as role model to our first year students.

Dr Charmaine Arderne is one of the role model lecturers in the Faculty. Her innovation with technology and use of initiatives to assist students with laboratory and theoretical components in Chemistry needs to be acknowledged. Charmaine has excellent feedback from students and she motivates students to work hard and continue in Chemistry. Charmaine has an excellent repertoire with students and cares beyond the lecture hall. She manages the tutors with care and has good relationships with senior students and colleagues.

Dr Andrew Craig is one of our new colleagues bringing fresh thoughts to the Faculty and specifically the Department of Pure & Applied Mathematics. He cares and builds relationships with students by assisting and going beyond the call of duty – teaching on Saturdays, and leading tutors and the first year lecturing team to make Mathematics accessible to all. He is interested in students and inspires students as a role model while making quality contributions towards student learning across Faculty borders.



Front: Ms SM Heri; Miss DB Stevenson; Prof Debra Meyer, Executive Dean, Faculty of Science; Ms MP Maela.
Back: Mr GM Riley; Mr LJ Lamola.

TOP ACHIEVERS IN SCIENCE HONOURER AT AWARD CEREMONY

Excellent academic performance (first semester) was acknowledged and certificates were given to the top achievers at the Top Achievers Award Ceremony. The criteria for a top achiever in Science are a minimum of 75% average and no module mark less than 60%.

OVERALL TOP ACHIEVERS

Top Achiever in a Diploma programme

Ms MP Maela (Biotechnology)

Top Achiever in First Year degree programme

Miss AP Guimaraes (Life and Environmental Science) ABSENT

Top Achiever in Second Year degree programme

Miss DB Stevenson (Mathematical Science)

Top Achiever in Third Year degree programme

Mr GM Riley (Life and Environmental Science)

Top Achiever in Fourth Year degree programme

Ms SM Heri (Life and Environmental Science)

Mr LJ Lamola (Physical Science)

TOP GEOGRAPHY STUDENTS ACKNOWLEDGED AT FUNCTION

The Department of Geography, Environmental Management & Energy Studies recognised the excellent academic achievements of 36 of their undergraduate students during a top students function. Most of these students obtained marks ranging from 75% and higher for their first semester exams.

Mr Meintjies received top marks in two modules, namely: Geography 1A as well as Environmental Management 2A.



Mr Meintjies is being congratulated on the photo by the two lecturers who teach the modules he passed with distinctions. On the right is Ms Alexander Clayton and on his left is Dr Clare Kelso holding another Merit Certificate.



Top Geography 2A.



Top Geography 1A and lecturers. All the students received 75% and above.



Top Geography 3A students and lecturers.



Environmental Management 3A students.



Connecting NPOs with potential donors or enabling transparency and accountability in the South African public sector – this and more showcased the art of accomplishment at the Academy of Computer Science and Software Engineering's 29th annual Projects Day.

Third year and honours level students once more presented live demonstrations of what they have achieved during the year and demonstrating that software development truly is an art form filled with creativity and innovation.

An Alumni Breakfast, hosted by the Academy's Alumni Affinity Group, kicked off the day for 50 of the Academy's alumni, staff and guests. The profits of this breakfast are going toward bursaries for the Academy's students. Keynote speakers Prof Marijke Coetzee; Dr Duncan Coulter and Dr Jaco van Niekerk enlightened the audience on topics ranging from the storage of medical records on the cloud, privacy and privilege.

Academy Alumni, members of industry, research institutions and academics gave up their day to serve as adjudicators, with 56 judges, from over 30 organisations, evaluating over 50 third year and honours projects on display.

After heated debate and deliberation, the judges were ready to make their final decisions. 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.

Ambitious top first year students in the Academy were the first to grace the awards stage. They were Christopher Pieterse; Mc Arthur Jamela; Thulani Maphanga; Tyler Maclachlan; Aamina Khatib; Bongani Gama, Samuel Molele, Lance Govender and Goodwill Tshekela.

This year the award for the Best Masters Dissertation was awarded to **Mr Sheu Mavee**.



In order to foster the spirit of innovation, the Academy introduced the top of second year projects to Projects Day. The winning team was BITSplease, consisting of Dominique Bastenie, Gloria Namazzi, Jacques Oosthuizen and Kyle Alexander. They built an elite, innovative computer building site with an interactive DIY building interface that provides drag-and-drop, step-by-step functionality allowing users of any age and PC knowledge to build their own custom, dream computer.

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. The chosen top three projects (in no particular order):

Kevin Downs, mentored by Dr Duncan Coulter: Improved search and rescue drones to find objects of interest by means of evolutionary algorithms.

Rhyno Heydenrych, mentored by Dr Wai Sze Leung: Using Voice Stress Analysis, took audio recordings and performed an analysis based on the frequency and pitch to determine whether the speaker is lying or speaking the truth.

Sahil Naran, mentored by Prof Elize Ehlers: Designed an autonomous vehicle goalkeeper that aims to solve problems such as live object tracking and the reduction of mechanical drift.

Mr Jaco Klut from Microsoft served as the head judge for the Third Year Projects. He praised the ever-improving quality of the 29 projects on display, and stated that projects at a university level are perfect for experimentation and innovation. Ultimately he awarded the top three teams:

FIRST PLACE:

Kriterion; consisting Nnaemeka Obodoekwe, Kennedy Sigauke, Vuyane Ngwenya and Rito Vukela, mentored by Kevin Downs. Eprok offers a way to streamline the tender procurement system, improve communication between contractors and the Government and provides project owners a more informative and definitive basis for making decisions on whom to award a tender to.

SECOND PLACE:

Instacode; consisting of Ross Guy, Michael Brooke, Memona Haq and Waseem Nabi, mentored by Sheu Mavee. InstaDO is a collaboration tool used to pull in and collate information from separate, disconnected systems involved in the development process. It enables easier communication and work transparency between different teams, from admins to developers themselves.

THIRD PLACE:

Programmers; consisting of Jacques Du Toit, Thato Nthite, Mpho Makalancheche and Jarryd Wentzel, mentored by Deon Cotterrell. Pinglo is a mobile application that aids an individual in simplifying their use of South Africa's unique public transport system - the minibus taxi. Users who have never used this type of transport will be guided how to do so.

The Academy of Computer Science and Software Engineering was once again applauded for hosting yet another successful day of innovation and creativity. Over 200 students and 13 exhibitors exposed their hard work to the world.



Honours Student Winners

From Left to Right: Dr Duncan Coulter (mentor), Dr Wai Sze Leung (mentor), Dr Jaco van der Merwe (DVT), Mr Sahil Naran, Mr Rhyno Heydenrych, Mr Kevin Downs and Ms Sandi da Cunha (KPMG).



Dynamic Overload – Third Year Project Winners

From Left to Right: Mr Kevin Downs (mentor), Kennedy Sigauke, Rito Vukela, Vuyane Ngwenya, Nnaemeka Obodoekwe and Mr Sheldon Lynn (Entelect.)



InstaCode – Third Year Project Second Place

From Left to Right: Mr Johan Klut (Microsoft), Mr Sheu Mavee (mentor), Ross Guy, Michael Brooke, Memona Haq, Waseem Nabi and Mr Sheldon Lynn (Entelect.)



Programmers – Third Year Project Third Place
From Left to Right: Mr Johan Klut (Microsoft), Mr Deon Cotterrell (mentor), Jacques Du Toit, Jarryd Wentzel, Thato Nthite, Mpho Makalancheche and Mr Sheldon Lynn (Entelect).



Masters Student – Sheu Mavee
From Left to Right: Mr Sheu Mavee and Mr Sidriaan de Villiers (Senior Manager, PWC).



Prof Strydom.

PHYSICIST ELECTED AS A MEMBER OF ASSAF

Prof Andre Strydom from the Department of Physics has been elected as a member of the Academy of Science of South Africa (ASSAf). Prof Strydom will represent UJ on the Department of Higher Education and Training (DHET) publication subsidy evaluation panel.

ASSAf is a self-perpetuating organisation in which new members are elected every year by the full existing membership in order to achieve the goals of the Academy. The key objective of the Academy is to promote and apply scientific thinking in the service of society. The normal criterion for election is significant achievement in the advancement or application of science, and, in addition, Members should be persons who can be expected to assist the Academy in achieving its objectives. ASSAf has 445 Members.

CHEMISTRY ACADEMIC ELECTED AS TWAS YOUNG AFFILIATE

Dr Banothile Makhubela, a Senior Lecturer in the Department of Chemistry, has been elected as a World Academy of Sciences (TWAS) Young Affiliate. The Affiliateship is in recognition of excellent outputs in science and technology by early career scientists from the developing world. It is for a period of five years, beginning 2015. This enables the Young Affiliate to attend TWAS general meetings and conferences and to give feedback on how the Academy can respond to the needs of young scientists in the developing world.

Dr Makhubela has been invited to the 2015 TWAS general assembly and conference which takes place in Vienna, Austria later this year.



Dr Banothile Makhubela.

COMPELLING AND UNIQUE INITIATIVE TO PARTICIPATE IN THE FUTURE LEADERS PROGRAM

Prof H Kinfe from the Department of Chemistry has been selected to attend The Lights and Shadows of Science and Technology 12th Annual Meeting in Kyoto, Japan.

The New York Academy of Sciences has partnered with the Science and Technology in Society to select eight promising early career scientists for their 2015 Future Leaders program. Outstanding young researchers working in Africa, Asia, Europe, and North America will participate in the STS forum and discuss with scientists from around the world how research may provide creative solutions to pressing global issues and help formulate research policy.

The Japan Society for the Promotion of Science will support all travel expenses, hotel accommodations, meals, and forum registration fees.

The STS forum was founded in 2004 with the mission of creating a global network and platform for open discussions to promote progress in science and technology. The forum brings together key leaders from the scientific, political, and business sectors to discuss the promise and complex challenges of science and technology within the globalized world.

Prof Kinfe has also been invited to attend the TWAS general assembly and conference in Vienna, Austria this year as a 2014 Young Affiliate of The World Academy of Science (TWAS).

AFRICAN REPRESENTATIVE APPOINTED TO AQUATIC ANIMAL HEALTH STANDARDS COMMISSION

The World Assembly of Delegates of the World Organization for Animal Health (OIE) has appointed Dr Maxwell Barson (senior lecturer at the University of Zimbabwe, and Visiting academic at UJ) as Africa's representative in the organisation's Aquatic Animal Health Standards Commission (the Aquatic Animals Commission). Dr Barson will hold this position at the commission based in Paris, France for the next three years. The Aquatic Animals Commission has six members who are responsible for meeting twice a year to review and revise the Aquatic Animal Health Code and the Manual of Diagnostic Tests for Aquatic Animals, to ensure that the standards of aquatic animal health worldwide are improved.



Dr Maxwell Barson.

PHD CANDIDATE ELECTED TO EARLY CAREER MEMBERS NETWORK

Fidele Tugizimana (PhD candidate in the Plant Metabolomics Research group, headed by Prof Ian Dubery) in the Department of Biochemistry has been elected to the Early Career Members Network (EMN) committee of the International Metabolomics Society. Seven early career scientists were elected from more than 30 candidates (from different labs/research groups) throughout the world. The appointment is for one year starting October 2015, and renewable for a further one year.

The International Metabolomics Society is dedicated to promoting the growth, use and understanding of metabolomics in life sciences. The Society is devoted to the development of metabolism-based research. Metabolomics is a newly emerging field of omics research concerned with the comprehensive characterization of the small molecule metabolites in biological systems. It can provide an overview of the metabolic status and global biochemical events associated with a cellular or biological system; thus depicting the physiological state of a cell or organism and their dynamic responses to genetic, abiotic and biotic environmental modulation. The International Metabolomics Society was founded in 2004 and now has thousands of members (metabolomics scientists) in more than 40 countries and publishes its own journal: Metabolomics.

The EMN committee is a structure of the International Metabolomics Society and the network aims to provide a forum for metabolomics researchers at the start of their professional career and serve the young scientists of the Metabolomics Society. Aspirations include, but are not limited to: strengthen communication and collaboration, encourage opportunities and invention, support developmental learning and enjoy professional growth.



Fidele Tugizimana.

BEST STUDENT VOLUNTEER CHAMPION

A final year Biotechnology student, Thembi Ntsanwisi was presented with the Best Student Volunteer Champion of 2014 award at the Community Engagement Student Structure Recognition Awards (CERA) for his role in educating youth.

In 2014 Thembi spent a total of 376 hours giving back to the community in various projects, including the UJ Tutoring Project. This life changing project saw learners in several Soweto schools receiving tutoring in a variety of subjects from UJ Community Engagement volunteer students.

The grade 10 – 12 learners from seven schools received tutoring in mathematics; physical sciences; accounting; English; life sciences; and other high school subjects. In 2015 the project expanded to three tutoring centres in Soweto, Diepsloot and Orlando. The Department of Education has already showed interest in the project and is working with the Community Engagement students to see how it can expand.



From left: CE Manager Ms Ernestine Meyer-Adams; best UJ student volunteer Thembi Ntsanwisi; Executive Director: Institutional Advancement Milcho Damianov and Andy Balaram (DFC Liaison Specialist).

NEW POSSIBILITIES IN A TINY TOWN

Dr Manki Sarah Maoela, lecturer in the Department of Applied Chemistry, is the coordinator for the Khula Weekend School (KWS) Limpopo and teaches Physical Science there. She started her academic journey with a BSc Chemistry course. She holds a PhD focusing on Chromatography.

Researcher and colleagues are extending an unusual Saturday school to learners in a small town in Limpopo called Alldays. KWS approach is very different from other initiatives which identify top students to develop. KWS is about finding people who are serious about working hard.

Making the teaching happen at the new KWS Alldays creates a severe schedule for the KWS lecturers. Most Friday afternoons Dr Maoela and three KWS colleagues (two are from UJ) leave Johannesburg at about 16:00 for Alldays, getting there about 22:00. On the Saturday morning they start teaching at 08:30 at the town's high school to 151 learners and stop at 15:30 in the afternoon then driving back to Johannesburg.



Dr Manki Maoela, coordinator of the Alldays branch of Khula Weekend School.



Indigenous Plant Use Forum



Aims of IPUF: to promote the cultural, socio-economic and scientific benefits to be derived from the sustainable use of the southern African flora.

<http://www.ben-erikvanwyk.com/Webpage%20IPUF.html>



UJ prize-winning students (from left to right): Ashton Ruiters, Janneke Nortje and Margaret Hulley.

INTERNATIONAL CONFERENCE ORGANISED BY BOTANY STAFF AND STUDENTS

A joint conference of the international *Society for Economic Botany* (SEB) and the *South African Indigenous Plant Use Forum* (IPUF) was organised and hosted by staff and students of the Department of Botany and Plant Biotechnology.

Clanwilliam in the Western Cape Province was chosen as a venue because this town is also the centre of the rooibos tea industry. Rooibos is internationally well known and arguably South Africa's leading natural product based on an indigenous plant. A special highlight at the welcoming function was a performance by the local Riel dancers from the nearby Wupperthal community, who went on to win the gold medal at the World Championships of Performing Arts in Los Angeles.

The conference was attended by 221 delegates from 23 countries. Included in the programme were 93 lectures; 67 poster presentations; a keynote lecture by an invited guest speaker (Prof Hüsni Baser from Turkey); a product display, two pre-conference excursions; a mid-conference excursion (to study all aspects of the rooibos tea industry, from seedlings to finished product) and a series of workshops on topics such as intellectual property rights; product development and various techniques of ethnobotany.

Prof Dan Moerman received the *Distinguished Economic Botanist* award from SEB for a lifetime of contributions,

including his role as Editor in Chief of the journal *Economic Botany*. The company Afriplex Ltd was awarded the 2015 IPUF Best New Product Award (received by Mr Riaan van Breda).

The annual prize for the best presentation by a young scientist went to Janneke Nortje (UJ), with Marioné Niemandt (US) and Margaret Hulley (UJ) in the second and third places. The best poster award went to Anna-Mari Kok (UP), with Ashton Ruiters (UJ) in the second place and Thanyani Ralulimi and Mary Sibanyoni (both TUT) jointly third.

It was SEB's 56th annual conference (the first to be held on the African continent) and IPUF's 18th annual conference. The local organising committee comprised Prof Ben-Erik van Wyk (IPUF Chairman since 1996); Dr Emmy Reinten (conference organiser and UJ research associate); Mrs Helen Long (UJ, secretariat and treasurer); Ms Gerda de Wet (Rooibos Ltd); Prof Helene de Wet (UniZulu); Mr Thomas Brendler (SEB liaison) and several senior UJ students – Margaret Hulley; Maponya Lelaka; Tommy Mabasa; Janneke Nortje; Ashton Ruiters and Kemi Sobiya. Everyone agreed that the conference was a resounding success and that it provided an opportunity for researchers from all corners of the globe to meet, interact and develop new collaborations around the common theme of Indigenous Plant Use and Economic Botany.

LECTURER AND STUDENTS ATTENDED BARCODE OF LIFE CONFERENCE 2015

Six members of the African Centre for DNA Barcoding (ACDB) attended the 6th International Barcode of Life Conference hosted by the University of Guelph, Canada. The Conference was attended by >500 delegates with 500 accepted abstracts. Members of ACDB presented eight talks, which range from investigating the evolutionary history and ecological mechanisms that underlie community assembly (Bello et al; Davies et al; Maurin et al; Yessoufou and Van der Bank) to species invasion success (Bezeng et al) as well as investigating plant species identification success and product authenticity from the Faraday medicinal market (Lekganyane et al; Ratsoma et al; Shiba et al).

Dorcas Lekganyane, an Honours student in Botany was awarded the first prize for research excellence in a student oral presentation with a talk entitled *Muthi from the wild: A survey of bulbous and perennial herbs traded at Faraday Traditional Medicinal Market in Johannesburg, South Africa using DNA barcoding as an identification tool*.



Dorcas Lekganyane with Paul Hebert, Director Biodiversity Institute of Ontario and Science Director, International Barcode of Life Project.



Members of ACDB that attended the conference: Dorcas Lekganyane; Sanele Shiba; Michelle van der Bank; Francinah Ratsome; Bezeng Simeon Bezeng; Kowiyou Yessoufou.



From the left is Ms Everson Varney (Political Counsellor); Ms Mohau Pheko (The Ambassador); Ms Ncapayi (Prof Oluwafemi student); Prof Oluwafemi and Prof Kodama (his host).

APPLIED CHEMISTRY COLLABORATED WITH INTERNATIONAL COLLEAGUE UNDER SA/JAPAN BILATERAL

Prof Samuel O Oluwafemi travelled to Japan on a research visit to the Graduate School of Biomedical Engineering, Tohoku University (Prof Kodama's Laboratory), under SA/JAPAN bilateral programme.

The South African Ambassador to Japan Ms Mohau Pheko visited Prof Kodama Laboratory during Prof Oluwafemi research visit as part of strengthening the collaboration between the two countries and research group.

Two students of Prof Oluwafemi were awarded Japan Student Services Organization (JASSO) Scholarship, for one year research activities starting October 2015 at the Graduate School of Biomedical Engineering, Tohoku University Sendai, Japan.

UJ RESEARCH ASSOCIATES COLLOQUIUM

Eleven international research associates linked both to the Department of Geography, Environmental Management and Energy Studies in the Faculty of Science and the School of Tourism and Hospitality in the Faculty of Management attended a research colloquium organized by Dr Jayne Rogerson in Geography and Prof Chris Rogerson in Tourism. The UJ associates came from nine different countries, namely England; Botswana; Mauritius; Finland; Canada; New Zealand; Australia; Dubai and the Netherlands.

The colloquium was a mix of in-depth presentations and discussion, leisure time and networking. Each of the associates utilized their research entities to fund their trip. The colloquium was themed around tourism development and a special issue of an ISI journal will be published in 2016 with at least ten of the colloquium presentations resulting in publication units for UJ. The response from the research associates has been very positive and the organizers are looking to host another inter-faculty colloquium in two years time.



From left clockwise: Prof C Paris (Dubai); Prof C Rogerson (UJ); game ranger; Prof M Hall (New Zealand); Dr P Brouder (Canada); Prof J Saarinen (Finland); Dr J Rogerson (UJ); Dr R Nunkoo (Mauritius); Mrs Nunkoo; Mrs Richardson; Dr S Richardson (Australia); Dr G Butler (Australia); Prof B Buscher (Netherlands); Prof K Hannam (England).

SPOTLIGHT ON GEOGRAPHY, CULTURE AND SOCIETY FOR OUR FUTURE EARTH

Staff members from the Department of Geography attended and presented papers at the International Geographical Union (IGU) 2015 conference in Moscow. IGU Moscow 2015 focus is on five main themes: urban environment; polar studies; climate change; global conflicts and regional sustainability. The programme is rooted in principles of diversity and interdisciplinary exchange.

The IGU is one of the world's oldest international researchers' associations. The first International Geographical Congress was held in 1871, and subsequent meetings led to the establishment of the IGU in 1922. Today its members hail from over 90 countries, united in support of geographical research and education. The theme for this year was *Geography, Culture and Society for Our Future Earth*.



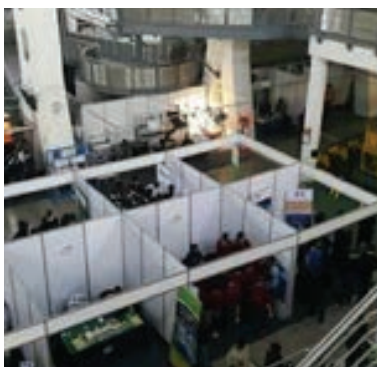
At the back: Mrs Desire Greenberg; Prof Christian Rogerson and Mr Keagan Collins. In the front: Mrs Thea Schoeman and Dr Jayne Rogerson. The photo is in front of the main building, Moscow University.

STUDENTS SHOWCASED THE NOVEL AND EXCITING FOOD PRODUCTS THEY DEVELOPED

The annual SAAFoST student product development day took place in October. Students from UJ, TUT and UP got to showcase the novel and exciting food products that they developed. A panel of fifteen judges from the food industry judged the products on best display, best scientific content and best commercial potential. The best overall UJ product with the best scientific content was developed by Sylvia Mnisi and was a delicious low GI carrot frozen dessert. Katlego Masebe with her convenient canned Bambara seeds was a close second, and her product also got the prize for best commercial potential. Bheki Simelane and his bitter leaf beer had the best display.



Food Technology winners of the SAAFoST student product development day Katlego Masebe, Bheki Dlamini, Dr Suretha de Kock from the Department of Biotechnology and Food Technology and Sylvia Mnisi, the winner of the best overall UJ product.



Dr De Kock and learners.



UJ Soweto Campus.

NATIONAL SCIENCE WEEK 2015

National Science Week, an initiative of the Department of Science and Technology (DST) is a countrywide celebration of science involving various stakeholders and/or role players conducting science-based activities during the week. National Science Week is run in all nine provinces simultaneously at multiple sites per province. The theme for National Science Week 2015 was *Today science, tomorrow's world.*

The UJ Soweto Science Centre planned NSW2015 activities in Soweto (Gauteng), Boydens Observatory Bloemfontein (Free State), Northwest University (Northwest), Tshitavha Hall (Mutale) –Vhembe District (Limpopo), and Makhado Hall (Soutpansberg East) - Vhembe District (Limpopo) alongside Soutpansberg West – Vhembe District (Limpopo).

The Science Centre presented a series of interesting exhibitions, science shows, workshops, public lectures on a wide range of science topics – such as Astronomy, Women in Science, Indigenous Knowledge, Light (2014 is the International Year of Light and Light-based Technologies – IYL2015), Mathematics and Nature, Mathematics and Science for educators workshops.

The Department of Biotechnology and Food Technology was part of educating hundreds of learners about the science all around us at the National Science Week celebration at Sci-Bono. Dr Sue de Kock addressed 150 eager grade 10 learners about *What science hides in our breakfast.*

Focus on Activities and Achievements in the Faculty



Prof Giovanni Hearne from the Department of Physics presented his Inaugural lecture on 19 August: *Window into the Properties of Materials at Extreme Conditions: The Pressure is On.*

POSTGRADUATE STUDENTS EXCELLED ...

Ms Rendani Ramabulana, MSc student in Department of Biochemistry, under the supervision of Dr Edwin Madala, won a best student presentation during the recent ChromSA student symposium held at Wits University.

Ms Mpho Makola, MSc student in Department of Biochemistry under the supervision of Dr Edwin Madala, was awarded a grant by Restek to the amount of \$3000 for her project entailing the study of structure-activity relationship of biologically active geometrical isomers of the anti-HIV metabolite, Isochlorogenic acid A, with LC-MS.

Mr Harold Shiri was awarded the South African Chemical Institute's James Moir Medal, for being the best honours student at the University of Johannesburg. This medal is awarded to the best honours student at a South African University with a final average mark of at least 75%.

... AND LECTURERS

Dr Edwin Madala from the Department of Biochemistry has been elected as the Metabolomics Representative for South Africa on the South African Association for Mass Spectrometry Committee (SAAMS) for the period 2015-2017.



Eve Kroucamp from Spectrum Central Analytical Facility has been re-elected on the South African Association for Mass Spectrometry (SAAMS) national committee and has also been elected as the chairperson of a subcommittee within this national committee over the same period. SAAMS is a non-profit organization which aims to promote and develop Mass Spectrometry within South Africa.



Prof Michelle van der Bank received the 2014/15 reward of Excellence for Outstanding Support to the Environmental Management Inspectorate from the National Department of Environmental Affairs.

NEW STAFF MEMBERS IN THE FACULTY

Mulalo Rabumbulu: Lecturer; Geography, Environmental Management and Energy Studies, APK

Johan Stegmann: Head Technician; Glassblowing Workshop, APK

Thumeka Nakani: Administrative Assistant II; Department of Zoology, APK



Dr Richard Britto, a postdoctoral fellow in the Department of Physics organised a lunar eclipse watching for students. The pictures were taken by Dr Britto with his mobile Nokia C7 (full focus camera) through the 26-mm eyepiece of telescope MEADE ETX125-AT.



Prof Catherine Ngila nominated to join TeamSA Water 2015, an initiative by the Minister of Water and Sanitation, Hon Nomvula Mokonyane, to address the current drought in South Africa, mainly in the four provinces: KZN, North West; Mpumalanga and Limpopo.

Top Left, the Minister with members of TeamSA Water 2015.



Prof Catherine Ngila held a meeting with the Algerian Ambassador, His Excellency Mr Abd-El-Naceur Belaid, at the Embassy of Algeria in Pretoria. This visit was aimed at briefing the Ambassador on the South Africa- Algeria bilateral workshop held in Algiers organized by DST on Nanotechnology for Water and Energy.

Prof Ngila and Algerian Ambassador, His Excellency Mr Abd-El-Naceur Belaid.



The Department of Applied Chemistry represented the Faculty at UJ's Harvest Skills Festival



The Faculty participated in the Open Days organised by the University



From Left to Right: Prof Xavier Mbianda; Ms Umayaval Nithianandan (ENSIACET Toulouse, France); Mr Ronan Brutti (ENSIACET Toulouse, France); Prof Catherine Ngila (HOD Applied Chemistry); Ms Emmanuelle Roques (ENSIACET Toulouse, France); Mr Mehdi Mzoughi (ENSIACET Toulouse, France).

Fourth year Chemical Engineering and Technology French Students from National *Polytechnic* Institute of Toulouse (ENSIACET), France visited the **Department of Applied Chemistry**: Ms Emmanuelle Roques; Ms Umayaval Nithianandan; Ms Céline Bonneaud; Mr Mehdi Mzoughi; Mr Ronan Brutti, have completed their three-month attachment (May – September 2015) in Applied Chemistry Research Laboratories hosted by Prof Catherine Ngila, Prof Xavier Mbianda, Dr Penny Govender and Dr Derek Ndindeh



Dr Solomon Tesfamichael, supervisor of Sithembiso Khumalo, who won best honours human geography presentation and Sameera Ismail who won best environmental masters presentation with her supervisor, Dr Jayne Rogerson. These awards were made at the **Geography Student Conference; Geography in a Changing World** at UNISA Science Campus in Florida. The conference was attended by over 200 delegates and 15 different South African universities.



Left front: Dr Richard Moutloali (Mintek); Dr Sofi Bin-Salamon (Program Manager for Air Force Research Laboratory, US Air Force); Prof Catherine Ngila, Head of Applied Chemistry Department and Dr Sofi Bin-Salamon (Program Manager for Air Force Research Laboratory, US Air Force) with students funded by the DST/Mintek Nanotechnology Innovation Centre

Dr Sofi Bin-Salamon, the Program Manager for Air Force Research Laboratory visited the **Department of Applied Chemistry**. He was hosted by Dr Richard Moutloali of Mintek under Nanotechnology Innovation Centre.



Prof Debra Meyer, Executive Dean of the Faculty and Sihle Dube.

Sihle Dube, a third year IT student, won the Science competition: Spot the Science advertisement on an outside advertising electronic billboard. He received a cheque of R1000.