

News

Faculty of Science Newsletter

Congratulations Graduates!

The Faculty of Science graduation took place on the 19th of April 2018, as our faculty celebrated the graduation of 800 Science graduands, an 8.3% increase on the number of Science Faculty graduates, from our 2017 April graduation ceremonies. This year's graduation ceremony was indeed a momentous occasion, as the University hosted its first April graduation ceremony as Nelson Mandela University, in the centenary year of Nelson Mandela. This year, the executive Dean of Science, Prof Azwinndini Muronga read the names of our candidates as the Faculty of Science awarded 28 Masters Degrees and 24 Doctoral qualifications. The ceremonies were filled with joyous cries, ululations and shouts from proud family members and friends in the audience as the graduates crossed the stage. Graduation still remains one of the most exciting and inspiring events at Nelson Mandela University, and we at the Faculty of Science would like to congratulate all our graduates on their achievements. We will you all the best for the future, onward and upwards!



A Word from the Dean

Another successful and eventful term at the Science Faculty draws to a close. The second term was an incredibly historic one as the university inaugurated its first female Chancellor, Dr Geraldine Fraser-Moleketi. This was then followed by graduation season where we celebrated our students and their achievement. Our faculty staff members were also doing great things and making the science faculty proud and are currently hard at work preparing students for exams. The third term is set to bring about the main event of the faculty, National Science Week, and 2018, the team is commemorating the centenary of Mandela by taking National Science Week to Mvezo, the birth place of Mandela.

Once again, I would like to encourage everyone in the faculty to share their stories with us so they too may inspire us. Best of luck for the exams



Dean of Science
Prof Azwinndini Muronga

National Science Week 2018

Road to Mvezo



National Science Week is an annual initiative of the department of Science and Technology (DST) together with the South African Agency for Science and Technology Advancement (SAASTA). National Science Week is a nationwide celebration of science, with the primary goal of contributing to the development of a society that is knowledgeable about science, critically engaged and scientifically literate! The countrywide celebration of science is coordinated by NRF/SAASTA and takes place simultaneously at various sites, on all 9 provinces. This year Nelson Mandela University will be participating in National Science Week by hosting events in Port Elizabeth, George and Mvezo.

Each year a new theme is chosen and hosts are expected to organize activities around the overarching theme. This year, the theme for the National Science Week 2018 is *“Deepening Our Democracy through Science”*. This theme has great significance to our institution, as 2018 marks the centenary celebration of the birth of our country’s greatest leader and the icon after whom our institution is named, Nelson Mandela.

As a tradition that started last year, the Faculty of Science is organizing Pre National Science Week activities under the theme *“Road to Mvezo.”* The activities will culminate the Faculty of Science and the Nelson Mandela University travelling to Mvezo during the focus week. The activities hosted during the pre-launch and focus week of National Science Week, will be hosted under the themes of Science Education, Communication and Outreach; Discovery at the Frontiers of Science; Indigenous Knowledge Systems; From Basic Science to Technology and its Application; Science and the Future and Art meets Science.

This year National Science Week festivities will take place between the 28th of July 2018 and 4th of August 2018. Nelson Mandela University’s prelaunch activities will kick start on the 18th of July, on the centenary celebration of Nelson Mandela, with a symposium on this year’s National Science Week theme of *“Deepening our Democracy through Science”*.

During Pre-Launch, the University will be hosting events aimed at school learners including a chemistry show, a rocket build, a workshop on indigenous knowledge systems and a tour of InnoVenton (Nelson Mandela University’s Institute for Chemical Technology). The faculty will be hosting a public lecture on *“Richard Feynman at 100 - A celebration of a curious mind, a celebration of science.”*

A symposium will also be hosted on *“The Fourth Industrial Revolution, Data Science and Artificial Intelligence”* and a seminar on *“Large Scale Science Facilities in South Africa.”*

In our quest to celebrate the centenary of Nelson Mandela, The Faculty of Science, will be traveling to Mvezo, Mandela’s birthplace, as part of our focus week activities in collaboration with the Nelson Mandela School of Science and Technology, the Mvezo Kom Khule community and the Royal Council. The Science Faculty will be hosting activities at the Nelson Mandela School of Science and Technology, which will include STEMI activities such as rocket launch, chemistry show, role modelling talks by Nelson Mandela University science students and a computer coding boot camp. The celebration of science is expected to attract learners from the surrounding schools, media, and public and policy makers. The Faculty of Science will also be joined by invited exhibitors from the Eastern Cape and nationally.

Famelab

Mrs Pulleng Moleko-Boyce at the FamelabSA Competition



Pulleng Moleko-Boyce, currently a PhD (Chemistry) candidate in the Science Faculty, competed in the Famelab South Africa: Talking Science competition. FamelabSA is an international competition that is looking for one winner to represent South Africa at the Cheltenham Science Festival in the UK (United Kingdom). In this competition, young scientists present and explain a scientific concept to a general audience in three minutes. Pulleng presented on a concept that focuses on *“recycling of precious metals from secondary sources”* due to the importance of these metals and their high yields from processing products that can be mined in the cities compared with processing low grade mineral ores. She won the first round of the competition that was held on the 12 of April 2018 and represented Nelson Mandela University at the national semi-finals where she was one of the top 8 national finalists on the 9th of May 2018. She unfortunately did not make the top spot but did very well up to the final round of presentations.

Chemistry

Nelson Mandela University, Department of Chemistry, hosted its 2018 Academic Awards Ceremony

The Department of Chemistry held its annual academic awards ceremony to recognize the efforts of our accomplished graduates. The event took place at the Alumni Relations Center, North Campus, on Thursday, 19 April 2018. In attendance was staff from the Department of Chemistry, students nominated for the Excellence Awards and their guests. The Master of Ceremony, Mr Nehemiah Latolla, a second year PhD Chemistry student at the Nelson Mandela University, offered an awe inspiring opening remarks to the Chemistry Excellence Awards, in recognition of the class of 2017.

“To contextualise this prestigious event, I would like to share a quotation by our namesake; Pres Nelson Mandela said, “Education is the great engine of personal development. It is through education that the daughter of a peasant can become a doctor, that the son of a mineworker can become the head of the mine that a child of farm workers can become the president of a great nation. It is what we make out of what we have, not what we are given, that separates one person from another.”



The Director of the School of Biomolecular and Chemical Science, Prof. Gill Dealtry, gave heartwarming, witty, welcoming remarks. She emphasized the importance of these awards, the recognition of excellence as well as the teamwork displayed by colleagues in the Department of Chemistry and InnoVenton. The Head of Department, Prof. Zenixole Tshentu, congratulated the awardees for their commitment to excellence. On excellence, Prof Zenixole Tshentu remarked that according to Vince Lombardi “Perfection is not attainable, but if we chase perfection, we can catch excellence”. Rather than striving to get everything just right, strive to excel in your own way. Aristotle said, “Excellence is a habit.” Prof Tshentu said, “in addition, excellence is made continuous by the need to continue a process such that the experience is achieved all over again”. In his final comments, he encouraged the awardees to continue to shine everywhere they go.

The Department of Chemistry had 139 students awarded diplomas and degrees in the graduation ceremony that took place on the 19 April 2018 for various qualifications;

- BSc with Chemistry major (24 students),
- BSc Hons in Chemistry (8 students, graduated in December 2017),
- Diploma in Analytical Chemistry (39 students),
- Advanced Diploma in Analytical Chemistry (3 students),
- Diploma in Polymer Technology (9 students),
- Diploma in Chemical Process Technology (27 students),
- Bachelor of Technology in Chemistry (2 students),
- BSc Honours in Formulation Science (4 students),
- Master degrees (2 MTech, 1 MSc Nanoscience and 8 MSc in Chemistry) and
- PhDs in Chemistry (4 students).

Prof ZenixoleTshentu thanked both academic and support staff for their input in the academic project as well as the coordinators of programmes for their sterling work to ensure the smooth delivery of the academic programme. The Department of Chemistry is also proud to be associated with the Centre for Rubber Science and Technology (Dr Percy Hlangothi as director), InnoVenton (Dr Gary Dugmore as director), uYilo (Prof Ernst Ferg as director) and DST/NRF SARChI in Microfluidic Bio/Chemical Processing occupied by Prof Paul Watts. These associations continue to make a significant contribution towards the success of our department.

The awards were presented to the Top Students who obtained the highest marks, with distinctions. The Merit Certificates were awarded to:

- Best student for Diploma in Analytical Chemistry (Miss Nicole Naidoo)
- Best student for Diploma in Chemical Process Technology (Miss Nosibusiso Jokani)
- Best student for BSc Honours in Chemistry (Mr Jordan Slabbert)
- Best student for BSc Honours in Formulation Science (Mr Siyabonga Shoba)
- Best student for MSc in Chemistry (Mr Tendai Dembaremba)

The vote of thanks was done by Prof Paul Watts who thanked the organizers, Mr Jay Skuman, Ms Zimkitha Dyan, Ms Ayanda Mlaza and Ms Anita Noah for the splendid work done towards this event. He also thanked the parents for their sacrifice given the conditions around financing education in South Africa.

Once again congratulations to our Top Student Award winners!

In the News

Cellphone game leads to degree: App helped student achieve BSc



NELSON Mandela University graduate Yanga Nkholha pursued a career in computing science before he had even seen or used a PC. He graduated with a BSc degree in computer science from Nelson Mandela University on Thursday.

"When I was in Grade 9, I was playing chess on my mother's cellphone, and after losing a game I was curious about how computers worked," he said.

"I then did a bit of research about what I had to study in order to learn about computers. "At first I was going to go for IT, but I later found out about computing science, and I went for it." A part of the research that guided his decision was

through an application designed by Melissa van der Merwe, who was working on her doctorate in computing sciences at the time. "The app – which I started as a side project – worked as a bot on Mxit," Van der Merwe said.

"It had two main parts, which consisted of a glossary that allowed users to look up computer-related terms, and a career guidance section explaining different careers. "Many people didn't realise how many career paths there were, and [we hoped] to show people there was more to it than programming and get them interested."

This certainly worked in Nkholha's case.

"I came across the app and I read about the different careers," he said.

"It helped me a great deal."

Still, it was hard to adjust at university initially.

"I had no exposure to computers at all, so I had to learn everything: how to log in, work with Word and Excel, how to code, and everything else I had to know.

"After the first semester I had an idea of how things were done and how to manage my time, and things got better."

Nkholha, who now lives in Cape Town, said his passion lay in programming.

"I think it's really cool that you can see a real-world problem and just write some lines of code to solve it.

"Take the Cape Town water crisis – one could write a programme (someone has probably done it already) to help them monitor their daily water usage."

Van der Merwe said she was awed to know her project had reached someone.

"The goal was to help people, and now he has his whole career ahead of him. Who knows what he might do? He could be the next Bill Gates." Associate Professor of computing sciences, Professor Jean Greyling, said: "Yanga's story highlights the plight of thousands of learners from mainly rural schools who have very limited access to career-awareness opportunities, as well as guidance regarding further studies.

"We are very excited his story ended in him obtaining a degree, realising that a project we worked on seven years ago had this positive impact on his life. As a department we are passionate about reaching learners across the province."

Nkholha said he hoped to create software programmes that helped people.

"Ultimately, I'd like to take what I've learnt thus far and what I'm still to learn and maybe teach other kids from back home."

Competition Undergraduate Awards

Prof Muronga, Executive Dean of the Faculty of Science, would like to extend an invitation to all 2nd year, 3rd year and Honours students to submit projects for the 2018 Undergraduate Awards.

The Undergraduate Awards is the world's leading undergraduate awards programme, which recognizes top undergraduate work, shares this work with a global audience and connects students across cultures and disciplines.

3rd Year students may submit 2nd Year projects and Honours students may submit 3rd year projects.

Projects must have the following criteria:

- 12 000 words max
- A-grade or higher
- Submit up to 3 projects



The categories for projects are as follows:

- Chemical and Pharmaceutical Sciences
- Computer Sciences
- Earth and Environmental Sciences
- Life Sciences
- Mathematics and Physics

Winners and highly commended entrants will get the opportunity to attend the Awards Ceremony in Dublin, Ireland as well as:

- A Gold Medal and a Certificate of Recognition.
- Publication of their winning submission on

The Undergraduate Library.

- A profile of their work published in The Undergraduate Journal.
- Access to the UA Alumni Portal.

If you would like to enter, please register on the Undergraduate Awards website on the following link:

<http://www.undergraduateawards.com/>

SUBMISSION DEADLINE 12 JUNE 2018

Achievement

Professor Winston Trollope - Henry Wright Lifetime Achievement Award



Each year, the Association of Fire Ecology (AFE) honors career achievements in fire ecology and management by invoking the pioneers and early advocates in our field. The Harold Biswell, Herbert Stoddard, and Henry Wright Lifetime Achievement Awards are presented to individuals who have made a significant contribution to fire ecology and management in the western, eastern, and midsection of the United States or internationally. Professor Trollope has been identified as one of the individuals who have inspired and mentored a generation of fire ecologists and is therefore awarded the Henry Wright Lifetime Achievement Awards. This prestigious award will be presented to him at the Fire Continuum Conference in Missoula, Montana at the evening event in Caras Park on May 23, 2018 (www.fireecology.org).

Professor Winston Trollope is a research associate of the SNR – George Campus. He is also a born and bred South African and grew up in the Eastern Cape. He was awarded a BSc Agric. (1962), MSc Agric. (1971) and PhD (1984) majoring in Rangeland Science at the University of Natal in Pietermaritzburg. The Prestige Award from the GSSA is a highlight in his career as it is not awarded very often and the Merit Award from the International Fire Community in Korea was extra special and very humbling. It was signed by representatives from the Global Fire Network from all continents. To quote “it expressed recognition of pioneering scientific work in fire ecology and fire management in savanna ecosystems of Africa and globally. Collectively we appreciate your role as an engine of development and inspiration. Your advice and prescription to use fire wisely for the benefit of ecosystems and humankind has been leading”. He always attributes his inspiration for fire ecology to Dr Ed Komarek and Professor John Phillips and the influence the 11th Tall Timbers Fire Ecology Conference in Tallahassee, Florida in 1971 had on his commitment to fire behaviour research. The opportunity to work in the Kruger National Park during his sabbatical leaves in 1982, 1987, 1992, 1998 on the experimental burn Plots, with Andre Potgieter, also led to greater insight into fire behaviour.

The privilege of being one of the co-ordinators on the ground in the KNP during the Southern African Fire Research Initiative (SAFARI 92) where 60 fire scientists from around the globe and Southern Africa investigated the role of fire in the development of ozone, and the influence of the prevalence of fire in Africa on the ozone hole over the southern Atlantic, was indeed one of many highlights in his career. This amazing international co-operation not only involved research teams investigating fire and its effects and behaviour at ground level, but also had a significant airborne component operating at local, regional and intercontinental levels. Further research in the Kruger from 2008 to 2011 on point vs perimeter ignitions disproved prevailing current hypotheses on pyrodiversity and identified weather parameters as having the most critical influence on fire behaviour and the resulting pyrodiversity.

He developed and refined the use of the Disc Pasture Meter (DPM) for assessing grass fuel loads in extensive rangelands and has adapted the Cottam and Curtis model for assessing the tree and shrub component of the vegetation. The Adapted Point Centered Quarter (APCQ) method of quantifying the woody component of the vegetation along with assessment of the herbaceous layer of the vegetation using DPM measurements and the Point To Tuft Distances (PTTD) plus identification of the various grass species along a transect provides a rapid, reliable, repeatable method of assessing the ecological status of the vegetation. This data provides ecological information which can be fed into a Decision Support System which assists land owners and managers to make informed decisions on prescribed burning and also ecologically sensitive management decisions for both livestock farming and wildlife enterprises. Another achievement is the development of the Best Operating Procedures (BOP's) for using aerial ignitions to construct cost effective Open Ended Fire Breaks (OEFB's) over vast distances, in inaccessible terrain and wildlife areas to prevent the uncontrolled spread of wildfires. Professor Trollope is currently involved along with Dr L D van Essen in investigating the effect of prescribed burning on tick populations. This stems from his work done in the Ngorongoro Crater and Serengeti in Tanzania where 1000 buffalo and 5 rhino died in 2001 ostensibly due to babesiosis caused by high tick populations. Since the annual turnover in the wildlife industry in South Africa exceeds R10 billion per annum, an ecologically acceptable, cost effective, practical method of avoiding extensive use of expensive acaricides to reduce tick populations by using prescribed burning would benefit not only the wildlife industry but also the domestic livestock industry.

Professor Trollope is most gratified and humbled by the Henry Wright Lifetime Achievement award as he personally knew Henry Wright and has a great respect for his pioneering work in fire behaviour. Dr Henry Wright was a doyen of fire behaviour in the 1970's. Professor Trollope attributes his career success to several key friends and associates in South Africa and internationally in the field of fire ecology, at both the scientific and practical application levels. He is currently Research Advisor to Working on Fire International based in Nelspruit, South Africa.

Reasons to be Proud!



Congratulations in order for Dr Hlangothi!

Dr Buyiswa Hlangothi, from the Chemistry Department, is in the running for the prestigious Regional Business Achiever Awards (RBAA) by the Business Women's Association of Port Elizabeth. The RBAA seeks to acknowledge excellence in the business, corporate, professional and social arena annually.

The Awards comprise of six categories – emerging entrepreneur, entrepreneur, social entrepreneur, corporate, professional, and government. An independent panel of judges representing a broad cross-section of the city's leaders in business, government and civil society will select the winners from each of the six categories. Dr Hlangothi is one of three finalists in the Government category.

The official award ceremony is taking place Thursday, 21 June at the Boardwalk Hotel and Convention Centre.

Congratulations to Dr Gaathier Mahed

The Science Faculty would like to extend a huge congratulations to Dr Gaathier Mahed, a lecturer from the Department of Geosciences, who has been nominated for two National Science and Technology Forum (NSTF) awards.

The NSTF Awards was established in 1998 as a collaborative effort to recognise outstanding contributions to science, engineering and technology (SET) and innovation by SET-related professionals and organisations in South Africa. This includes experienced scientists, engineers, innovators, science communicators, engineering capacity builders, and organisational managers/leaders, as well as data and research managers.

Dr Mahed has been nominated for the following awards:

- Emerging Researcher
- Water Research Commission Award



The Science faculty would like to congratulate Dr Mahed, who only recently joined the Science faculty on the 9th of April as a Geosciences lecturer, on this outstanding achievement. Furthermore, we would like to welcome him as the newest member of the Science family and wish him a successful and prosperous journey here.

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