Graduation Programme

The Future. Reimagined.

UNIVERSITY OF JOHANNESBURG

Dear UJ Graduates

Your journey to this point has been an important lesson in leadership. As I have iterated often, learning, knowledge and leadership are an essential mix and those who do not know, cannot lead. Our objective has been to empower you as leaders who are primed to face the challenges of the 4IR and explore the opportunities that this new era presents both locally and internationally. This is an exciting adventure, let me assure you that the world you are entering is abundant with opportunities, and of course, challenges.

This graduation is rather special. Though we still find ourselves in a strange setting, still fighting an invisible and relatively unknown threat and still gripped with a sense of uncertainty, there does seem to be a glimmer of hope on the horizon. This represents our first cohort of in-person graduations in two years. As we celebrate your attainment of a major milestone, we are cognisant of the sheer resilience you have demonstrated against a tumultuous context – one defined by loss, anguish and seismic shifts in the way we live and work. A graduation ceremony is an important precursor to the next chapter of your lives. It is warming to be able to celebrate this achievement today with you in person as opposed to the digital modes that have defined much of the pandemic so far.

I want to take this opportunity to remind you that as a graduate, you join a small elite in our country. This is really something to celebrate. Though the odds seemed stacked against you, you persevered and not have the potential to address some of the greatest scourges of our time. You have chosen well – a qualification from UJ will hold you in good stead!

UJ has grown into a world-class, internationally recognised university with more than 50 000 students registered. Our global stature and academic depth and footprints are acknowledged by reputable higher education ranking systems in the world. You emerge today as the world including us in South Africa, is in a period of deep change. UJ is leading the charge in the Fourth Industrial Revolution (4IR) and creating a cohort of graduates who are agile, curious and able to be active participants in a technology driven and digital environment.

At UJ, you have encountered some of the finest South African and international academic minds. You have participated in technology-rich learning, which compares favourably to the very best in global higher education.

We welcome you as a new member of the global UJ alumni community where you will join a worldwide body of professionals, many of whom are leaders in their fields. I encourage you to join the UJ Alumni Network and become an active member of the University Convocation. By staying actively engaged with UJ, you can make a real contribution to our academic projects and to those who will study at UJ after you.

It is exciting to once again commence this time-honoured tradition. Congratulations on this inspiring achievement and the best of luck with your next chapter!

Prof Tshilidzi Marwala
Vice-Chancellor and Principal
University of Johannesburg

Welcome to the
Graduation Ceremony of the
University of Johannesburg
19 May 2022 at 09:30

Welkom by die
Gradeplegtigheid van die
Universiteit van Johannesburg
19 Mei 2022 om 09:30

Le a Amogelwa
Moletlong wa Dikapešo wa
Yunibesithi ya Johannesburg
19 Mopitlo 2022 ka 09:30

Niyamukelwa
eMcimbini wokweThweswa kweZiqu
weNyuvesi yaseJohannesburg
19 kuNhlaba 2022 ngele-09:30

UNIVERSITY OF JOHANNESBURG

CHANCELLOR

Prof NS Ndebele
BA (Lesotho), MA (Cambridge UK), PhD (Denver USA)

SENIOR OFFICE-BEARERS OF THE UNIVERSITY

VICE-CHANCELLOR AND PRINCIPAL

Prof T Marwala
BS Eng (Case Western Reserve USA), MEng (UP), PhD (Cambridge UK)

DEPUTY VICE-CHANCELLOR ACADEMIC

Prof LG Mpedi
B Juris, LLB (Vista), LLM (RAU), LLD (UJ)

DEPUTY VICE-CHANCELLOR: RESEARCH AND INTERNATIONALISATION

Prof S Sinha
BEng, MEng, PhD (UP)

REGISTRAR

Prof IC Burger
BA, HEd, BA Hons, MA, PhD (RAU)

CHIEF FINANCIAL OFFICER

Ms N Mamorare
BCom (Rhodes), BCom Hons (UKZN), CA (SA)

CHIEF OPERATING OFFICER

Dr M Ralephata
BSc Eng (Wits), MBA (UOVS), MSc (Heriot-Watt), DBA (Heriot-Watt)

SENIOR EXECUTIVE DIRECTOR

Dr N Vukuza
BA (Fort Hare), BA Hons (Rhodes), DTE (UNISA), MA (Wits),
PhD (Stellenbosch)

GENERAL COUNSEL

Mr D Pretorius
BCom, LLB, LLM (NWU)

EXECUTIVE DEANS

COLLEGE OF BUSINESS AND ECONOMICS

Prof D van Lill
BSc, BSc Hons, MSc, PhD (US)

FACULTY OF ART, DESIGN AND ARCHITECTURE

Prof S Laurent
BFA (l'Ecole Boulle, Paris), MFA (ENS, Paris-Saclay),
MPhil, PhD (Université Panthéon-Sorbonne, Paris),

FACULTY OF EDUCATION

Prof N Petersen
BA Ed (UNISA), BEd Hons (RAU), MEd (RAU), DEd (UJ)

FACULTY OF ENGINEERING AND THE BUILT ENVIRONMENT

Prof DJ Mashao
BSc Eng (UCT), MSc Eng (UCT), MSc AM (Brown, USA), PhD (Brown, USA)

FACULTY OF HEALTH SCIENCES

Prof S Khan
BSc, BSc Hons, MSc, PhD (UWC)

FACULTY OF HUMANITIES

Prof K Naidoo
BA, BA Hons, MA, PhD (University of Manchester, UK)

FACULTY OF LAW

Prof W Domingo
B SoSc (UCT), LLB (UWC), LLM (Columbia, USA),
SJD (Winsconsin-Madison, USA)

FACULTY OF SCIENCE

Prof D Meyer
BSc, BSc Hons, MSc (RAU), PhD (California USA)

DEAN

JOHANNESBURG BUSINESS SCHOOL

Prof R Carolissen
MSc (UWC), MBA (SUN), MCom (NWU), PhD (UWC)

MEMBERS OF COUNCIL

CHAIRPERSON

Mr MS Teke

DEPUTY CHAIRPERSON

Dr Y Ndema

MEMBERS

Prof H Abrahamse
Mr FM Baleni
Ms S Dlamini
Ms K Gugushe
Prof D Hildebrandt
Ms X Kakana
Mr G Khosa
Mr M Khoza
Ms K Khumalo
Ms B Madikizela
Mr M Mahlasela
Mr M Manana
Prof T Marwala
Prof LG Mpedi
Ms N Molope
Ms Z Mthembu
Dr WP Rowland
Prof A Strydom
Ms C Tshilande

PRESIDENT OF CONVOCATION

Prof BM Diale

Gaudeamus Igitur

Gaudeamus igitur,
Juvenes dum sumus;
Post iucundum iuventutem,
Post molestam senectutem
Nos habebit humus.
Vivat academia,
Vivant professores,
Vivat membrum quodlibet,
Vivat membra quaelibet;
Semper sint in flore!

English

Let us rejoice, therefore,
While we are young.
After a pleasant youth
After a troubling old age
The earth will have us.

Long live the academy!
Long live the professors!
Long live each student;
Long live the whole fraternity;
For ever may they flourish!

Sesotho sa Leboa

Ka gona, a re thabeng,
Re sa le ba bafsa.
Ka morago ga bofsa bjo bo bose
Ka morago ga go tšofala mo go nago le mathata
Lefase le tla ba le rena.

Phela thuto phela!
Phelang diprofesa phelang!
Phelang baithuti phelang;
Phela kagišano ka botlalo phela;
O ka re ba ka phela gabotse goyagoile!

Afrikaans

Laat ons dan vrolik wees,
Terwyl ons jonk is;
Na ’n aangename jeug.
Na ’n onaangename oudag,
Sal die aarde ons hou.

Lank lewe die universiteit,
Lank lewe die professore,
Lank lewe elke student,
Lank lewe al die studente,
Mag hulle vir ewig hul jeug behou!

Zulu

Ngakho, masithokoze
Sisebasha nje.
Emva kobumnandi bobusha
Emva kwezinkinga zobudala
Umhlaba uzosithatha.

Phambili ngemfundo!
Phambili boSolwazi!
Phambili nakuwe mfundi;
Phambili ngenhlangano yonke;
Maziqhubeke ngonaphakade!

FACULTY OF ART, DESIGN AND ARCHITECTURE
QUALIFICATIONS

1. Magister Technologiae: Fine Art

Kwinana, Athenkosi
Dissertation: Reimagining Albus: A critical and visual response to Albinism in contemporary South African art.
Supervisor: Mr V Nanackchand
Co-Supervisor: Dr TMP Monoa
Co-Supervisor: Prof KS Berman

Ras, Nico **(with distinction)**
Dissertation: Exploring fluid Afrikaner identity through fugitive printmaking processes: A practice-led approach.
Supervisor: Prof KS Berman
Co-Supervisor: Mr GC Froud

2. Master of Arts (MA): Design

Haupt, Diandra
Dissertation: Integrating Zero-Waste pattern making for sustainable fashion design.
Supervisor: Prof DN Smal

Khan, Ilhaam
Dissertation: The allure of disability: a rhetorical analysis of three Youtube™ advertisements.
Supervisor: Dr M Groenewald

Wessels, Wessel
Dissertation: The human-centred design of an assistive swimming device to support water safety training.
Supervisor: Ms AM Moseley

Zulu, Zinhle Cassandra
Dissertation: Developing an illustrated business information resource for inland kraal fishers: A community engagement project.
Supervisor: Dr A Haese

Special Award
Faculty of Art, Design and Architecture

3. Chancellors Medal for the Most Meritorious Masters' Study for 2021

Hobbs, Jason Richard
Master of Arts (MA): Design **(with distinction)**

FACULTY OF SCIENCE
QUALIFICATIONS

4. Diploma (Dip)

Buthelezi, Nothando Nokwanda (Analytical Chemistry)
Chagi, Vuyokazi (Analytical Chemistry)
Diako, Palesa (Analytical Chemistry)
Lubisi, Khomotso Leenage Penelope (Biotechnology)
Mabena, Sphiwe (Biotechnology)
Mabokela, Mmathapelo Welhemina (Biotechnology)
Macebele, Nhlavutelo Michelle (Analytical Chemistry)
Macheru, Koketso (Biotechnology)
Madikizela, Ongeziwe (Analytical Chemistry)
Magagula, Mitchell Mbali (Analytical Chemistry)
Mahlangu, Khulekani (Analytical Chemistry)
Malatji, Kabelo (Biotechnology)
Maphophe, Akani (Analytical Chemistry)
Mashaba, Pleasure (Analytical Chemistry)
Mashabela, Brucelee (Biotechnology)
Mathebula, Khensani Sibongile (Biotechnology)
Mavimbela, Njabulo Sinethemba (Biotechnology)
Mayaba, Nosipho Desdemona (Analytical Chemistry)
Mkwanazi, Thapelo Siphesihle (Food Technology)
Mogoane, Lesego (Analytical Chemistry)
Mokoena, Mosa Sylvia (Biotechnology)
Mokwena, Xolani (Biotechnology)
Monisse, Samantha (Biotechnology)

Moropa, Koketso Desiree (Analytical Chemistry)
Mothoto, Lehlogonolo (Analytical Chemistry)
Mthenjana, Luyanda Siphamandla (Biotechnology)
Mtyenene, Asnat (Analytical Chemistry)
Mucanse, Hlengiwe Lydia (Biotechnology)
Mukundji, Kabasele Rachel (Analytical Chemistry)
Ndlovu, Lizwe Siboniseni (Analytical Chemistry)
Ngoepe, Ramadumetja Asina (Biotechnology)
Ngwenya, Dineo (Analytical Chemistry)
Nhlapo, Nqobile Nhlanhla (Biotechnology)
Rapakgadi, Willie Mawelewele (Biotechnology)
Segola, Karabo Keabetswe (Biotechnology)
Selepe, Morodi Daniel (Analytical Chemistry)
Shongwe, Lydia (Analytical Chemistry)
Tsheole, Dinah (Analytical Chemistry)
Zuma, Esme (Food Technology)

5. National Diploma (N Dip)

Maakamedi, Sello Desmond (Biotechnology)
Mabuza, Nelisiwe (Biotechnology)
Malesa, Sedsane Beatrice (Food Technology)
Mbhombi, Nsovo Hillarian (Analytical Chemistry)
Molekwa, Mirriam Kgothatso (Biotechnology)
Msiza, Thloloselo Kgothatso Mohlabane (Biotechnology)
Ndzekeli, Phumelele (Analytical Chemistry)
Ringane, Gontse (Analytical Chemistry)
Segoale, Melidson Mphela (Analytical Chemistry)
Tjege, Pheladi Agreeneth (Biotechnology)

6. Bachelor of Science (BSc)

Bulunga, Bongani (Computer Science and Informatics)
Chouhan, Jaanki (Chemistry and Mathematics)
Dludlu, Nomcebo Nonjabulo Busi (Applied Mathematics and Computer Science)
Gaborone, Odirile Gaoretelelwe (Chemistry and Mathematics)
Madlala, Nkcubeko (Mathematics and Mathematical Statistics)
Magagula, Siyabonga Banele (Information Technology)
Maluleke, Hlengiwe (Actuarial Science)
Mashiloane, Lerato (Mathematics and Computer Science)
Mathebula, Humphrey (Applied Mathematics and Computer Science)
Mdlongwa, Lungile Nomalanga Enat (Actuarial Science)
Memela, Nduduzo Laurance (Human Physiology and Biochemistry)
Mhlongo, Lesego (Computer Science and Informatics)
Mkhomazi, Sabelo Candrice (Computer Science and Informatics)
Modisakeng, Musa Keamogetswe (Applied Mathematics and Mathematics)
Moloto, Lodwin Mmaphuti (Mathematics and Computer Science)
Netshiheni, Gudani (Applied Mathematics and Mathematical Statistics)
Ramatja, Mosa (Applied Mathematics and Mathematics)
Sithole, Reason Sincobile (Computer Science and Informatics)

Waja, Yousha (Information Technology)
Ziqubu, Ayanda (Mathematics and Economics with Financial Orientation)
Zweni, Tabisile (Applied Mathematics and Mathematical Statistics)

7. Bachelor of Arts Hons (BA Hons)

Hlatshwayo, Sphamandla Nicol (Geography)

8. Bachelor of Science Hons (BSc Hons)

Jali, Esther Nomalizo Anele (Energy Studies)
Kgabo, Paris (Biochemistry)
Makola, Asmeralda (Chemistry)
Mjandana, Zandile (Energy Studies)
Pillay, Keshnie (Computer Science)

Special Award

Faculty of Science

9. Faculty Prize for the Best Honours graduate for 2021

Bhaiyat, Humairaa Yacoob
Bachelor of Science Honours (BSc Hons): Information Technology **(with distinction)**

10. Master of Philosophy (MPhil)

Mahlangu, Maboku Abner (Energy Studies)
Dissertation: The Mining Sector's response to the National Climate Change Response Policy (NCCRP) (2011-2020)
Supervisor: Dr NE Kambule

Mohabir, Viaksha (Energy studies)
Dissertation: The Efficacy of the Municipal Energy Efficiency and Demand Side Management Programme (2014/2015 to 2017/2018)
Supervisor: Dr NE Kambule

11. Master of Science (MSc)

Adelusi, Oluwasola Abayomi (Biotechnology) **(with distinction**)
Dissertation: Incidence of fungi and mycotoxins in dairy cattle feed from selected smallholder farms in South Africa
Supervisor: Prof PB Njobeh

Crowhurst, Erin Tayla (Zoology)
Dissertation: The spatial genetic structure of *Elephantulus rupestris*
Supervisor: Prof B Jansen van Vuuren
Co-Supervisor: Prof PR Teske
Co-Supervisor: Dr S Hoffman

Dambuza, Siphesihle Unam (Environmental Management)
Minor Dissertation: An Evaluation of Selected Corporate Sustainability Reports For Mining Companies Listed On The Johannesburg Securities Exchange
Supervisor: Prof IT Rampedi

Dlamini, Lindelwa Nonjabulo (Environmental Management)
Minor Dissertation: Investigating sustainability practices in the South African construction industry: Case study of the Belhar Housing Development Project in the Western Cape Province of South Africa
Supervisor: Prof K Yessoufou

Durieux, Dylan John (Applied Mathematics) **(with distinction)**
Dissertation: Spin Coherent States, Spin Hamilton Operators, Canonical Coherent States, Bose Operators and Applications
Supervisor: Prof WH Steeb
Co-Supervisor: Dr G Braatvedt

Farrukh, Wardah (Computer Science)
Dissertation: Lip Print Based Authentication in Physical Access Control Environment
Supervisor: Prof D van der Haar

Grant, Donovan (Zoology)
Dissertation: An assessment of vanadium pentoxide toxicity, after chronic exposure, in *Danio rerio and Oreochromis mossambicus*
Supervisor: Prof R Greenfield

Gumbo, Nyasha (Botany)
Dissertation: Utilization of post-harvest chemical treatments for extending shelf-life of selected South African potato cultivars
Supervisor: Dr NZ Ngobese
Co-Supervisor: Prof LS Magwaza (UKZN)

Hansragh, Thishan (Mathematical Statistics) **(with distinction)**
Dissertation: Hedging Options with Transaction Costs Using Stochastic Control and Machine Learning
Supervisor: Dr J van Appel
Co-Supervisor: Prof TA McWalter (UCT)

Hassen, Muhammad Ismail (Mathematics) **(with distinction)**
Dissertation: Spectral Continuity in Banach Algebras
Supervisor: Prof R Brits
Co-Supervisor: Dr F Schulz

Hlangwani, Edwin (Biotechnology) **(with distinction)**
Dissertation: Response surface methodology and artificial neural networks bioprocessing approach for *umqombothi* (South African traditional beverage) and investigation of its composition
Supervisor: Prof OA Adebo
Co-Supervisor: Prof W Doorsamy (Institute of Intelligent Systems)

Javu, Lazola (Physics)
Dissertation: Validating Clear Sky Irradiance Models in Different parts of South Africa
Supervisor: Prof H Winkler
Co-Supervisor: Dr K Roro (CSIR)

Jogwe, Simangele (Computer Science) **(with distinction)**
Dissertation: The compliance of Internet of Things devices with the POPI Act
Supervisor: Prof M Coetzee

Kah, Glory (Biotechnology) **(with distinction)**
Dissertation: Green synthesis of silver nanoparticles using plant extracts and their effects on fungi and their mycotoxins
Supervisor: Prof PB Njobeh

Kgoedi, Godfrey (Mathematical Statistics)
Dissertation: Measuring the effectiveness of outlier detection techniques in cluster analysis
Supervisor: Ms E Smit
Co-Supervisor: Dr YA Shiferaw

Khumalo, Mothusi Cornelius (Biotechnology)
Dissertation: Shining a light on the capping proteins involved in the biogenesis of gold nanoparticles by *Enterobacter* sp. Pb204
Supervisor: Prof K Kondiah
Co-Supervisor: Mr L Alagiozoglou

Kwinana, Reginald Nkululeko (Applied Mathematics)
Dissertation: A numerical study of fourth-order nonlinear degenerate diffusion equation using compact finite differences
Supervisor: Dr P Dlamini
Co-Supervisor: Prof E Momoniat

Lekena, Nkhahleng (Chemistry) **(with distinction)**
Dissertation: Modification of ultrafiltration membranes composed of ZIF-8@f-GO nanocomposites for improvement of water purification performance
Supervisor: Prof RM Moutloali
Co-Supervisor: Dr TA Makhetha

Liebenberg, Keziah Elizabeth (Chemistry)
Dissertation: Recovery of selected precious metals from e-waste using fabricated mesoporous polyacrylonitrile (PAN) and poly(4-vinylprydine) (P4VP) monoliths
Supervisor: Dr O Zinyemba
Co-Supervisor: Dr AA Ambushe

Mabasa, Jackie Lesetja (Chemistry)
Dissertation: The design, synthesis and anti-plasmodial evaluation of sulfoximine-isoxazole fused hybrids
Supervisor: Prof HH Kinfe
Co-Supervisor: Dr PT Moshapo

Maduenyane, Mpho (Zoology) **(with distinction)**
Dissertation: Aspects of the morphology, taxonomy and pathology of *Macrogyrodactylus congolensis* (Prudhoe, 1957) infecting *Clarias gariepinus* (Burchell, 1822) in a research aquarium, University of Johannesburg, South Africa
Supervisor: Prof A Oldewage
Co-Supervisor: Dr QM Dos Santos

Mafika, Andisiwe (Chemistry) **(with distinction)**
Dissertation: Selective adsorption of hexane isomers using hybrid 2D metal organic frameworks (MOFs)/3-tertbutyl-polybenzimidazole (PBI-BuI) membranes
Supervisor: Dr B Vatsha
Co-Supervisor: Dr V Smith (Rhodes University)
Co-Supervisor: Prof C Arderne

Magara, Eddington (Computer Science) **(with distinction)**
Dissertation: A branchless banking multi-agent system to facilitate online-offline capabilities with consideration to the fourth industrial revolution
Supervisor: Prof EM Ehlers

Maleke, Mpho Sebabiki (Food Technology)
Dissertation: Effect of fermentation conditions (time and temperature) on the physicochemical, bacteria community and nutritional composition of amasi (a southern African fermented dairy product)
Supervisor: Prof OA Adebo
Co-Supervisor: Dr M Adefisoye
Co-Supervisor: Prof W Doorsamy (Institute of Intelligent Systems)

Mallu, Sufiyan Arif (Mathematics) **(with distinction)**
Dissertation: Proximity and remoteness in Graphs
Supervisor: Prof P Dankelmann
Co-Supervisor: Dr S Mafunda

Malomane, Mosibudi Thabiki (Biotechnology)
Dissertation: A genetically engineered E. *coli* strain overexpressing insecticidal toxin complex protein tccZ and its larvicidal activity
Supervisor: Dr MH Serepa-Dlamini
Co-Supervisor: Prof K Kondiah

Mamba, Nosisa (Chemistry) **(with distinction)**
Dissertation: Photocatalytic Fe_3O4/SiO_2@g-C_3N_4 nanocomposites incorporated into ultrafiltration membranes for the removal and degradation of pollutants in groundwater
Supervisor: Prof RM Moutloali
Co-Supervisor: Dr BS Mbuli

Mampane, Trevor Thabang Philliph (Chemistry)
Dissertation: Synthesis of nanosorbents from coal fly ash for the uptake of Fe(III) in acid mine drainage and the reuse of the spent nanosorbent in the photocatalytic degradation of ciproflaxin
Supervisor: Prof K Pillay
Co-Supervisor: Dr E Prabakaran

Mandiwana, Lebogang Evelyn (Chemistry)
Dissertation: Modified metal oxide based adsorbent for the removal of dye from wastewater
Supervisor: Prof PN Nomngongo
Co-Supervisor: Dr D Ramutshatsha-Makhwedzha

Maphalla, Lidiay Lendewe (Biotechnology)
Dissertation: Functionalisation of green synthesised gold nanoparticles (AuNPs) with biotinylated polyclonal specific antibodies and its application in an immunoassay for the detection of waterborne *Escherichia coli*
Supervisor: Prof K Kondiah
Co-Supervisor: Dr D Reddy (WITS)

Mashazi, Thandeka Privillage (Environmental Management)
Minor Dissertation: *Conveying scientific results through art: The case of the Kaalspruit*
Supervisor: Dr LS Modley
Co-Supervisor: Mr P Jacobs (UJ Arts & Culture)
Co-Supervisor: Prof IT Rampedi

Mashiane, Neithel (Geology)
Dissertation: Rare Earth Element prospectivity of the Upper Zone of the Rustenburg Layered Suite, eastern Bushveld
Supervisor: Prof MA Elburg
Co-Supervisor: Dr AY Billay (Council for Geoscience)

Mataha, Lawrence (Botany)
Dissertation: Medicinal ethnobotany of the Modjadji area of the Limpopo Province, South Africa
Supervisor: Prof B-E van Wyk

Mkhonazi, Blessing Danisile (Chemistry) **(with distinction)**
Dissertation: Reductive Aminocarbonylation of Aryl Halides with Nitroarenes
Supervisor: Dr PT Moshapo

Mlalazi, Tumelo (Applied Mathematics)
Dissertation: A joint model for HIV/AIDS and Diabetes and the associated complications
Supervisor: Prof F Nyabadza

Motloung, Lucia Mathuto (Aquatic Health)
Minor Dissertation: An assessment of restoration efficacy: hydrological, geomorphological and vegetative responses to restoration measures at the Colbyn Valley Wetland Nature Reserve
Supervisor: Prof R Greenfield
Co-Supervisor: Dr PL Grundling (UFS)

Mouton, Carene (Geology)
Dissertation: The effect of host rock on platinum group and base metal sulphide mineralization and their mineral processing characteristics in the Merensky Reef, Western Limb of the Bushveld Complex, South Africa
Supervisor: Prof AJB Smith
Co-Supervisor: Prof KS Viljoen

Mphahlele, Ipoteng Justice (Chemistry) **(with distinction)**
Dissertation: Photodegradation of Personal Care Products (PCPs) with modified Transition Metal Dichalcogenides (TMDCs) nanomaterials in water
Supervisor: Prof LN Dlamini
Co-Supervisor: Prof SP Malinga

Mudau, Khuliso Hope (Environmental Management)
Minor Dissertation: Predicting future trends of concentrations of various criteria pollutants within the Vaal Triangle Airshed Priority Area, South Africa
Supervisor: Prof K Yessoufou

Mulaudzi, Precious Earldom (Biochemistry) (**with distinction)**
Dissertation: The elucidation of the methylation status of ToCSV and the identification of microRNAs in susceptible and resistant tomato lines
Supervisor: Dr F Allie
Co-Supervisor: Dr I Mwaba

Nndwammbi, Andani Alice Tshifhiwa (Biochemistry)
Dissertation: Evaluating Iso-Mukaadial Acetate and it' derivatives as Plasmodium falciparum Hsp90 inhibitors
Supervisor: Dr MBC Simelane
Co-Supervisor: Dr OJ Pooe (UKZN)

Odetayo, Temitayo Damilola (Botany) **(with distinction)**
Dissertation: Development of nanoparticle-enriched edible coatings to improve fruit quality and extend the shelf life of Cavendish bananas
Supervisor: Dr NZ Ngobese
Co-Supervisor: Prof S Tesfay (UKZN)

Ogwok, Daniel (Computer Science) **(with distinction)**
Dissertation: Multi-Agent Image Recognition System for Mathematical Expressions appearing in Natural Images
Supervisor: Prof EM Ehlers

Pant, Divya (Chemistry) **(with distinction)**
Dissertation: Effects of Various Bridges on Linear and Nonlinear Optical Properties of Some Push-Pull Type of Organic Molecules: A Theoretical Insight Using Two-State Model
Supervisor: Dr S Sitha

Ramalwa, Major (Biochemistry)
Dissertation: A metabolomics study to characterize the chemical intercommunication between *Bacillus* strains and maize plants
Supervisor: Dr F Tugizimana
Co-Supervisor: Dr MI Mhlongo
Co-Supervisor: Dr LJ Sitole

Richards, Patrick Kyle (Geology)
Dissertation: Petrographical, Mineralogical and Geochemical characterisation of the Leinster Deposit, Kalahari Manganese Field, South Africa
Supervisor: Dr C Vorster
Co-Supervisor: Prof AJB Smith
Co-Supervisor: Dr L Blignaut
Co-Supervisor: Dr NA Vafeas (University College Dublin, Ireland)

Rubengo, Farai Desire (Physics)
Dissertation: Magnetic and Structural Characterization of Doped Chromite Nano-Particles
Supervisor: Prof CJ Sheppard
Co-Supervisor: Prof ARE Prinsloo

Sefage, Amanda Percy (Physics)
Dissertation: The Effect of Ce^{3+} on the Luminescence Properties of the $ABPO_4$ (A = Na, B = Mg, Ca, Sr, and Ba) Using the Solid State Reaction Method
Supervisor: Dr L Reddy
Co-Supervisor: Prof MA Mamo
Co-Supervisor: Dr B Avula

Seleka, Zinhle (Biochemistry)
Dissertation: Computational approaches to identify transcriptomic and epigenomic signatures of latent TB in HIV patients
Supervisor: Dr G Koorsen

Selelo, Tshiamo Malebogo (Nanoscience)
Minor Dissertation: Development of active packaging material using hybrid biopolymer nanocomposites
Supervisor: Prof J Ramontja
Co-Supervisor: Dr OJ Botlhoko (CSIR)
Co-Supervisor: Prof C Zvinowanda

Spijkerman, Ruan (Information Technology) **(with distinction)**
Dissertation: Immune Inspired Face Recognition utilizing Anomaly Detection and Symbiotic Agents
Supervisor: Prof EM Ehlers

Thomas, Penelope Clara (Computer Science) **(with distinction)**
Dissertation: Actor-oriented self-organising maps
Supervisor: Prof DA Coulter

Tibini, Siyabonga (Botany)
Dissertation: Taxonomic studies and Systematics of the subtribe Phaseolinae (Phaseoleae, Fabaceae) in Southern Africa
Supervisor: Prof A Moteetee
Co-Supervisor: Prof M van der Bank

Van Rayne, Kiana Kirsty (Botany)
Dissertation: Characterisation of nutritional and functional properties of *Strychnos madagascariensis* (black monkey orange) seeds during fruit ripening
Supervisor: Dr NZ Ngobese
Co-Supervisor: Prof OA Adebo
Co-Supervisor: Dr OC Wokadala (University of Mpumalanga)

Wessels, Steven Martyn (Computer Science)
Dissertation: An optimized convolutional neural network based deep learning model for malignant tumour detection in medical imaging
Supervisor: Prof D van der Haar

Wessels, Francois Jacobus (Mathematics) **(with distinction)**
Dissertation: The spectral Topology in Rings
Supervisor: Dr A Swartz
Co-Supervisor: Prof H Raubenheimer

Special Awards

Faculty of Science

12. Southern Africa Association for the Advancement of Science (S2A3) Medal

Kitoga, Lungele Steve
Magister Scientiae (MSc): Geology **(with distinction)**

13. Chancellor's Medal for the Most Meritorious Master's Study for 2021

Chrysostomou, Anna
Magister Scientiae (MSc): Physics **(with distinction)**

14. Doctor of Technology (DTech)

Changwa, Rumbidzai (Food Technology)
Thesis: Multi-mycotoxin contamination and associated dietary exposure in smallholder dairy farming systems of South Africa
Supervisor: Prof PB Njobeh
Co-Supervisor: Dr N Malan (College of Business and Economics)
Co-Supervisor: Dr F Nherera-Chokuda (National Emergent Red Meat Producers' Organisation)

Maclean, Kevin (Biotechnology)
Thesis: Molecular characterization of prevalent *Pseudomonas aeruginosa* isolated from SCUBA Divers with Otitis Externa (Swimmer's Ear) and Recreational Waters in Sodwana Bay, KwaZulu Natal in South Africa
Supervisor: Prof E Green

Odukoya, Julianah Olayemi (Food Technology)
Thesis: Efficacy of selected processing techniques in mitigating mycotoxin contamination of maize and sorghum products in sub-Saharan Africa
Supervisor: Prof PB Njobeh
Co-Supervisor: Prof S de Saeger (Ghent University, Belgium)
Co-Supervisor: Dr M de Boevre (Ghent University, Belgium)
Co-Supervisor: Prof G Adegoke (University of Ibadan, Nigeria)

15. Philosophiae Doctor (PhD)

Adegunloye, Ajibola Vincent (Chemistry)
Thesis: Synthesis of organic-inorganic hybrids for the electrocatalytic detection of biologically active molecules
Supervisor: Dr O Zinyemba
Co-Supervisor: Prof K Mallick

Akinbile, Joseph Babatunde (Chemistry)
Thesis: Evaluation of cyanogen-rich cassava (*Manihot esculenta*) and acacia (*Acacia sieberiana*) efficacies for phytomining of nickel, palladium and platinum and applications of recovered bio-ores in catalytic reactions
Supervisor: Dr AA Ambushe
Co-Supervisor: Dr BCE Makhubela

Alimi, Afolakemi Abibat (Botany)
Thesis: Mycorrhizal status of leguminous plants (Fabaceae) growing in South African grassland biome
Supervisor: Prof AN Moteetee
Co-Supervisor: Prof R Adeleke (NWU)

Anusionwu, Chioma Grace (Chemistry)
Thesis: Synthesis, characterization and in vitro evaluation of hybrid compounds containing ferrocene and nitrogen containing bisphosphonates
Supervisor: Prof XY Mbianda
Co-Supervisor: Prof B Aderibigbe (UFH)

Babikir, Ammar Abdalrhman Ibrahim (Mathematics)
Thesis: Domination versus independent domination and total domination in regular graphs and claw free graphs
Supervisor: Prof MA Henning

Chauke, Nyiko Maurice (Chemistry)
Thesis: Roles of functionalized zeolite on the substrate and selective layer of thin film composite membranes for salt removal
Supervisor: Prof J Ramontja
Co-Supervisor: Prof RM Moutloali

Darla, Nagasuneetha (Chemistry)
Thesis: Reaction mechanism studies for possible interstellar formation of Formamide: A computational Study
Supervisor: Dr S Sitha

Gevera, Patrick Kirita (Geology)
Thesis: Naturally occurring potentially harmful elements in the Makueni County environment, South-Eastern Kenya: health implications and community awareness
Supervisor: Prof H Mouri
Co-Supervisor: Dr P Gikuma-Njuru (South Eastern Kenya University, Kenya)
Co-Supervisor: Prof K Dowling (Royale Melbourne Institute of Technology, Australia)
Co-Supervisor: Dr M Cave (British Geological Survey, UK)

Kaisara, Tefa (Applied Mathematics)
Thesis: Modelling the potential impact of HIV policy changes in Botswana: Insights from mathematical models
Supervisor: Prof F Nyabadza

Letsoalo, Mokgehle Refiloe (Chemistry)
Thesis: Quantitative speciation of selected toxic elements in water and sediments and fabrication of ion-imprinted polymer sensors to detect toxic elements in water
Supervisor: Dr AA Ambushe
Co-Supervisor: Prof MA Mamo

Lukoto, Tshikhudo (Mathematics)
Thesis: Perturbation ideals of (semi)regularities in Banach algebras
Supervisor: Prof H Raubenheimer
Co-Supervisor: Dr A Swartz

Matebese, Funeka (Chemistry)
Thesis: Fabrication of novel nanocomposites as modifiers in polyethersulfone UF/NF membranes for greywater reclamation
Supervisor: Prof RM Moutloali

Matsebula, Lunga Masiza (Applied Mathematics)
Thesis: Mathematical models for the coinfection dynamics of Cholera and Typhoid
Supervisor: Prof F Nyabadza

Mkhatshwa, Sindile Francisca (Geology)
Thesis: A geometallurgical characterization of uranium mineralization in the A1, A5, E9EC and UE1A reefs at Sibanye-Stillwater's Cooke operations, Randfontein Estates, South Africa
Supervisor: Prof KS Viljoen
Co-Supervisor: Prof AJB Smith
Co-Supervisor: Dr BM Guy

Mngadi, Sihle Vitalis (Chemistry)
Thesis: Evaluation of heavy metals bioaccumulation and mobility from environmental samples collected from mine dumps
Supervisor: Prof PN Nomngongo
Co-Supervisor: Prof S Moja (Council of Geosciences)

Nunoo, Samuel (Geology)
Thesis: Origin and age of gold mineralization in NW Ghana - a case study of selected gold deposits from the Julie and Wa-Lawra belts
Supervisor: Prof A Hofmann

Offor, Benedict Chikwado (Biochemistry)
Thesis: Omics strategies in the identification of interacting proteins and metabolites in LPS-induced defence responses in *Arabidopsis thaliana* mutant lines
Supervisor: Prof LA Piater
Co-Supervisor: Prof IA Dubery
Co-Supervisor: Dr MI Mhlongo

Olaniyan, Oluwayemisi Dorcas (Botany)
Thesis: Systematics of the subfamily Thymelaeoideae (Thymelaeaceae) in Southern Africa
Supervisor: Prof M van der Bank
Co-Supervisor: Prof JS Boatwright (UWC)
Co-Supervisor: Dr A Magee (SANBI)

Onisuru, Oluwatayo Racheal (Chemistry)
Thesis: Gold, Palladium and Mesoporous Oxide- based Nanocatalysts for Redox Processes and Sustainable Catalysis: Synthesis and Catalytic Evaluation
Supervisor: Prof R Meijboom

Oseghale, Charles Ojiefoh (Chemistry)
Thesis: Novel heterogeneous catalyst design based on supported Au and Pd for carbonylative and oxidative transformations
Supervisor: Prof R Meijboom

Pretorius, Estherna (Botany)
Thesis: Authentication of selected herbal medicines using DNA barcoding and chemical profiling
Supervisor: Prof M van der Bank
Co-Supervisor: Prof AM Viljoen (TUT)

Selahle, Shirley Kholofelo (Chemistry)
Thesis: Design of nanostructured material for sorbent based microextraction combined with chromatographic techniques for analysis of emerging pollutants in water
Supervisor: Prof PN Nomngongo

Shozi, Zekhaya Benard (Mathematics)
Thesis: Characterizations of graphs with given maximum degree and smallest possible matching number
Supervisor: Prof MA Henning

Webster, Heather Joy (Zoology)
Thesis: A non-invasive approach to assess species diversity in aquatic environments
Supervisor: Prof B Jansen van Vuuren
Co-Supervisor: Prof PR Teske
Co-Supervisor: Prof C van Dyk

Changwa, Rumbidzai (DTech)

Ms Changwa was born and raised in Bulawayo, Zimbabwe. She holds a BSc degree in Food Science from the University of Namibia obtained in 2012. She obtained an MSc degree in Food Technology at the University of Johannesburg following which, she was awarded the Global Excellence Scholarship to pursue her Doctoral studies in 2018. While pursuing her doctoral studies, she also received the Global Minds and MYTOX-SOUTH Traineeship Award for a research training programme under Prof. S. De Saeger at the Centre of Excellence in Mycotoxicology and Public Health, Ghent University, Belgium.

Ms Changwa worked on smallholder dairy farming chains on multi-mycotoxin contamination of feeds, dietary animal exposure and farmers' awareness and practice. Results showed high multi-mycotoxin contamination of feeds and revealed potentially problematic exposure to mycotoxins, with the potential use of bottom-up approaches towards investigating animal health, risk assessments on management and mitigation. Results further illuminate need for advancing awareness programs towards limiting mycotoxin contamination. This work resulted in one international peer-reviewed journal article, with another under review.

Supervisor: Prof PB Njobeh
Co-Supervisor: Dr N Malan (College of Business and Economics)
Co-Supervisor: Dr F Nherera-Chokuda (National Emergent Red Meat Producers' Organisation)

Maclean, Kevin (D Tech)

Mr. Maclean holds an M-tech in Microbiology from the University of Johannesburg. He enrolled for a D Tech at the University of Johannesburg in February 2018. He has been a full time Senior Lecturer in the Department of Biotechnology and Food Technology since 1985.

In his doctoral study, Mr. Maclean investigated *Pseudomonas aeruginosa* that infected professional SCUBA divers and characterized the organisms from Sodwana Bay, Kwazulu Natal in South Africa. He also delineated the susceptibility profiles of the isolates to several drugs. The results revealed novel molecular traits of *Pseudomonas aeruginosa* in this geographical area and resistance to several antibiotics used by medical practitioners in Sodwana Bay. The candidate has presented his work at local and international conferences and has published one peer reviewed journal article and has another ready to be published.

Supervisor: Prof E Green

Odukoya, Julianah Olayemi (DTech)

Ms Odukoya was born in Ibadan, Nigeria, where she obtained her Bachelor's degree in Food Science and Technology from the Federal University of Agriculture, Abeokuta in 2010 and a Master's degree in Food Technology at the University of Ibadan in 2014. Ms Odukoya enrolled for a Joint PhD programme at the University of Johannesburg, and Ghent University (Belgium) in 2018 during which time, she received the South African NRF-TWAS African Renaissance Doctoral Scholarship and the NRF-LEAP AGRI MYCOSAFE-SOUTH student funding. She also received the Michigan State University, USA, first prize for the best video on "Mycotoxins and Best Practices" and AGNES-PAWS mobility grant. Ms Odukoya is happily married and blessed with two children.

Ms Odukoya investigated the efficacy of selected processing techniques in mitigating mycotoxin contamination of cereals in sub–Saharan Africa. Findings revealed the potential of processing techniques to overcome mycotoxin contamination. The work also established the suitability of ammoniation to mitigate mycotoxins in animal feeds, and that effective implementation of improved processing techniques, including nixtamalization, would contribute to achieving at least six of the United Nation's sustainable development goals. Ms Odukoya's work resulted in two journal publications and oral presentations at conferences.

Supervisor: Prof PB Njobeh
Co-supervisor: Prof S de Saeger (Ghent University, Belgium)
Co-supervisor: Prof M de Boevre (Ghent University, Belgium)
Co-supervisor: Prof G Adegoke (University of Ibadan, Nigeria)

Adegunloye, Ajibola Vincent (PhD)

Mr Ajibola Vincent Adegunloye was born in Nigeria in 1989. He completed his B. Tech and M. Tech. Degrees through the Federal University of Technology, Akure, in 2012 and 2017, respectively. He was awarded an NRF-TWAS Doctorate Fellowship in 2018 and enrolled for a PhD programme at the Department of Chemical Sciences, University of Johannesburg.

During his doctoral study, Mr Adegunloye designed organic-inorganic hybrid materials as catalysts for the electrochemical recognition of biologically active molecules. The microscopic, optical, and surface properties of the hybrid materials were elucidated using different analytical techniques. The hybrid material-based devices showed excellent potential for detecting neurotransmitters with a promising capacity for diagnosing various neurological disorders such as Parkinson's disease.
Mr Ajibola has published two scientific articles from his work in international peer-reviewed journals.

Supervisor: Dr O Zinyemba
Co-Supervisor: Prof K Mallick

Akinbile, Joseph Babatunde (PhD)

Mr Akinbile was born in Osun State, Southwest Nigeria. He holds an MSc in Analytical Chemistry from the University of Lagos, Nigeria, completed in 2014. He enrolled for a PhD in Chemistry at the University of Johannesburg in 2018.

In his doctoral study, Mr Akinbile assessed cyanogen-rich plants like cassava (*Manihot esculenta*) and acacia (*Acacia sieberiana*) for phytoextraction of valuable metals such as nickel, palladium and platinum. He used recovered bio-ores in the hydrogenation reactions such as the transformation of CO_2 to value added chemicals like formate and catalytic hydrogenation of furfural to biofuels like furfuryl alcohol. In all the tested reactions, the green catalysts demonstrated outstanding performance eliminating the necessity associated with environmentally toxic protocols of traditional catalyst synthesis in the laboratory. This study demonstrated for the first time the use of plant-based technology called phytomining, on a pilot scale, to complement the existing traditional mining techniques as largely being practiced in South Africa which involves reclaimed metals generally considered wastes and applied the recovered bio-ores in catalysis technologies. The candidate presented his work at a national conference and has published three peer reviewed articles in international journals.

Supervisor: Dr AA Ambushe
Co-Supervisor: Dr BCE Makhubela

Alimi, Afolakemi Abibat (PhD)

Afolakemi A. Alimi obtained both BSc and MSc degrees from the Obafemi Awolowo University, Ile-Ife, Nigeria in 2012 and 2015, respectively. Prior to registering for doctoral studies, she worked as an Assistant Lecturer at the Adeyemi College of Education, Ondo and as a Demonstrator in the Department of Botany and Plant Biotechnology, University of Johannesburg. Ms Alimi was awarded a UJ URC International bursary and UJ Merit bursary during her PhD studies. She won the third price for best oral presentation during the Department of Botany and Plant Biotechnology's postgraduate symposium held in November 2021.

Arbuscular mycorrhizal (AM) fungi play a significant role in the adaptation of plants to semi-arid environments. However, no information exists regarding the diversity of AM fungi in indigenous legumes of South Africa. MS Alimi's study is the first to identify the AMF communities in the roots and soils of eleven indigenous legumes from two South African provinces, using morphological and molecular approaches. In addition, the impact of soil environmental factors on the diversity and community composition of AM fungi associated with roots and soils was investigated. Overall, this study provides a valuable contribution to the biodiversity of AM fungi associated with indigenous legumes of South Africa and highlights the roles of soil environmental factors in shaping AMF diversity and community composition of legumes in semi-arid habitats. Two articles emanating from the study have been published in accredited international journals.

Supervisor: Prof AN Moteetee
Co-supervisor: Prof R Adeleke (NWU)

Anusionwu, Chioma Grace (PhD)

Ms. Anusionwu was born in Aba (Nigeria). She holds a BSc in Industrial Chemistry from Abia State University (Uturu), and an MSc in Analytical Chemistry from the University of Ibadan, both in Nigeria. Ms. Anusionwu enrolled for a PhD at the University of Johannesburg in 2017.

In her Doctoral research, Ms. Anusionwu studied the effect of pharmacophoric hybridization in drug formation. She synthesized a library of ferrocenyl bisphosphonate hybrid molecules and evaluated their biological activity *in-vitro*. The results obtained showed that the hybrid compounds have the potential to act as anticancer agents. These hybrid compounds exhibited higher cytotoxicity and antibacterial activity on cancer cell lines and bacterial strains than their parent compounds, the ferrocene and bisphosphonate derivatives. Furthermore, the study revealed that the nature of the linker, alkyl chain length and solubility of the ferrocenyl bisphosphonate hybrid compounds influenced their activity. The candidate's work has been published in two peer-reviewed journals and presented at one international and two local conferences.

Supervisor: Prof XY Mbianda
Co-Supervisor: Prof B Aderibigbe (UFH)

Babikir, Ammar Abdalrhman Ibrahim (PhD)

Ammar Abdalrhman Ibrahim Babikir was born in Atbara, Sudan. He graduated from the University of Al Neelain in Sudan with his BSc honours degrees in industrial mathematics and obtained an MSc in industrial and computational mathematics from the University of Khartoum in Sudan. He obtained an MSc in mathematical sciences from the African Institute for Mathematical Sciences (AIMS) in Cape Town. He has work experience at several academic institutions, including as a lecturer at the University of Al Neelain in Sudan.

The thesis of Mr Babikir presents a study of the three core domination parameters in graphs. A best possible upper bound on the ratio of the independent domination number versus the domination number in regular graphs for small regularity is obtained, and the extremal graphs characterized. Using matching results a tight upper bound on the total domination number of a class of special subcubic graphs is obtained. For the class of connected claw-free cubic graphs, best possible upper bounds are determined on the total domination number in terms of the order of the graph, and on the ratio of the total domination number versus the domination number. The thesis resulted in three publications, in highly ranking scientific journals in graph theory, namely Discrete Mathematics, and Graphs and Combinatorics.

Supervisor: Prof MA Henning

Chauke, Nyiko Maurice (PhD)

Mr Nyiko Chauke was born in Saselamani Village, in Malamulele, Limpopo Province, South Africa, where he matriculated from Shingwedzi High School in 2005. He then proceeded to the University of Limpopo where he enrolled for a BA in 2007 and later for a B.Sc in 2008. In 2012 and 2013, Mr Chauke received a Sasol Inzalo Foundation Fellowships to pursue his B.Sc Hons and M.Sc in Chemistry degrees, respectively, both at the University of Limpopo, Turfloop Campus. In July 2017, Mr Chauke was enrolled for a PhD at the University of Johannesburg.

Clean water remains a scarce commodity in South Africa due to increasing environmental pollution, particularly in rivers & dams. Abundant water resources include brackish underground water and seawater which are not suitable for human consumption due to high salinity. Mr Chauke's doctoral study focused on developing a new set of polymeric membrane composites based on functionalized nanozeolites for desalination. He synthesised different zeolite ZSM-22 nanoadditives, functionalised with 3-aminopropyl-trimethoxysilane for the development of H_2N-ZSM-22/PA@ZSM-22/PES nanocomposite thin-films, which have proven to have high water-flux, anti-fouling and ~80% salt rejection while attaining good hydrophilicity. The candidate has presented his work at local and international conferences, won the Waternet best oral presenter, and engaged in an exchange program between UJ and Nanjing Tech University in China. He has published one peer-reviewed journal article and currently has 2 more manuscripts submitted for publication.

Supervisor: Prof J Ramontja
Co-Supervisor: Prof RM Moutloali

Darla, Nagasuneetha (PhD)

Mrs Darla was born in Cherukupalli, India. She holds an MSc degree in Chemistry from Acharya Nagarjuna University, located in Guntur (India). She registered for a PhD, at the University of Johannesburg, in 2018.

Ms Darla's thesis resorts under one of the important areas of research related to the Origins-of-Life. The work is focused on the computational studies of various reaction paths for the formations of Formamide, believed to be the key prebiotic precursor molecule. A detailed investigation of the many possible routes for the formation of formamide, and possible implications of those reaction pathways in the contexts of laboratory, and drastic interstellar conditions was embarked upon. She published 4 peer reviewed articles related to her PhD thesis in well-known international journals.

Supervisor: Dr S Sitha

Gevera, Patrick Kirita (PhD)

Mr Gevera was born in Nairobi (Kenya) and holds an MSc in Geology from the University of Johannesburg (Cum Laude). He enrolled for a PhD at the same university in 2018.

In his doctoral study, Mr Gevera worked on determining naturally occurring potentially harmful elements (NOPHEs) and their human health implications in the Makueni County, south-eastern Kenya. The geology of the study area consists of metamorphic rocks of the Mozambique Mobile Belt and volcanic rocks of the East African Rift Valley, which are known to host NOPHEs. Little is known on the pathways (drinking water and food sources) of such elements into the human body, health implications and community awareness of risk factors. Mr Gevera used a multidisciplinary approach, incorporating geochemical, mineralogical, hydrogeological, statistical, GIS and public health studies to assess the concentrations of such elements, their spatial distribution and health implications on the population in the region. The thesis resulted in four published peer reviewed journal articles in international journals and two abstracts at international conferences.

Supervisor: Prof H Mouri
Co-Supervisor: Dr P Gikuma-Njuru (South Eastern Kenya University, Kenya)
Co-Supervisor: Prof K Dowling (Royale Melbourne Institute of Technology, Australia)
Co-Supervisor: Dr M Cave (British Geological Survey, UK)

Kaisara, Tefa (PhD)

Ms Kaisara who is from Botswana, holds a double MSc from Johannes Kepler University and the University of Technology Eindhoven. She enrolled for a PhD in Applied Mathematics at the University of Johannesburg in 2019 and is currently a lecturer at Botswana International University of Science and Technology.

In her doctoral study, Ms Kaisara studied the changes in Botswana's HIV/AIDS response and treatment policies using a piece-wise system of differential equations. The policy changes are tracked through the HIV/AIDS prevalence data for the past three decades and fitted to the model. The results show how policy changes affect the trajectory of HIV/AIDS in Botswana. The candidate has presented her work at international conferences and has published one peer reviewed journal article.

Supervisor: Prof F Nyabadza

Letsoalo, Mokgehle Refiloe (PhD)

Ms Letsoalo was born in Polokwane and completed high school at Kgakoa Senior Secondary School. She obtained a BSc degree, a BSc (Hons) and an MSc in Chemistry from the University of Limpopo. Her MSc study sponsored by the Bishop Edward Lekganyane Bursary Fund and the National Research Foundation (NRF) in partnership with Sasol Inzalo Foundation. She enrolled for a PhD in Chemistry at the University of Johannesburg in 2017 and is currently conducting postdoctoral research at Mintek.

In her doctoral study, Ms Letsoalo developed analytical methods that can be employed for routine synchronous extraction and multi-elemental speciation analysis of selected potentially toxic elements in water and sediments. The efficiency of the methods for accurate environmental monitoring and assessment of selected elements were remarkable when spectroscopic interferences, which could lead to biased results, were corrected. She further developed ion-imprinted polymer fabricated sensors, which present a recent innovation in the development of chemical sensing technology. The exceptional sensitivity and remarkable matrix effect tolerance of the sensors significantly contribute to the environmental monitoring of selected metal ions in real water samples. The candidate has presented her work at two local and one international conferences, published three peer-reviewed articles in international journals, and submitted a patent application for filing.

Supervisor: Dr AA Ambushe
Co-Supervisor: Prof MA Mamo

Lukoto, Tshikhudo (PhD)

Mr Lukoto obtained an MSc in Mathematics from the University of Johannesburg in 2017 and enrolled for a PhD in Mathematics the following year. He is currently employed as a lecturer in Mathematics at the University of Limpopo.

In his thesis Mr Lukoto investigated perturbation ideals of sets in a Banach algebra. This investigation is motivated by an article in 1971 by Lebow and Schechter where they characterised the radical in a Banach algebra as the perturbation ideal of the group of invertible elements. In his thesis Mr Lukoto discovered many new results by identifying sets for which he can calculate the perturbation ideals. These characterisations are intimately related to the famous Zemanek characterisation of the radical in a Banach algebra in the early 1970's. To relate his work to spectral theory, Mr Lukoto classified the sets for which he can calculate the perturbation ideals, as regularities or semiregularlities. The notion of a regularity and a semiregularity appeared in the literature for the first time in the early 2000's by Muller and Mbekhta. Mr Lukoto has published his work as articles in peer reviewed journals.

Supervisor: Prof H Raubenheimer
Co-Supervisor: Dr A Swartz

Matebese, Funeka (PhD)

Funeka Matebese was born in Elliot, Eastern Cape in 1992 and matriculated from Ida High school. She holds a BSc degree in Chemistry and Geology from the University of Fort Hare and was awarded Sasol-Inzalo Foundation together with NRF awards to pursue her Honours and MSc degrees in Chemistry at the University of Fort Hare. In 2019, she enrolled for a PhD at the University of Johannesburg and was awarded DSI/Mintek NIC and NRF bursaries for this purpose.

In her doctoral study, Ms. Matebese developed UiO-66-NH_2@GO and novel UiO-66-NH_2-pSBMA@GO nanofiller materials which were used to modify ultrafiltration membranes. The fabricated membranes were used for greywater reclamation and metal-containing wastewater treatment. The resultant modified membranes exhibited excellent antifouling properties which is ideal for the lifespan of the membranes. The treatment systems were integrated with either an activated carbon filter or flocculation process to ensure high removal efficiency of pollutants. Ms Matebese's work demonstrated that the fabricated UiO-66-NH_2@GO/PES membranes were successful in upgrading greywater quality to within the acceptable non-potable standards. Also, the novel UiO-66-NH_2-pSBMA@GO/PES membranes upgraded the water contaminated with metal ions to within the acceptable discharge limit standards. Thus, the treatment systems were effective and can be adopted for real application. Ms. Matebese published two peer-reviewed journal articles and one manuscript is still under development. She also presented her work at various conferences.

Supervisor: Prof RM Moutloali

Matsebula, Lunga Masiza (PhD)

Mr Matsebula was born in Manzini (Swaziland), and holds an MSc in Applied Mathematics, a BSc Honours in Mathematics, and a BSc in Financial Mathematics and Mathematical Statistics. He enrolled for a PhD at the University of Johannesburg in 2019.

In his doctoral study, Mr Matsebula studied mathematical models for the transmission dynamics of cholera and typhoid fever. He incorporated seasonal fluctuations, fear and hygiene, through mathematical functions, in modeling the dynamics of both infections. The results presented have a huge impact on the management and control of both infections in areas where they both occur simultaneously. The candidate presented his work at an international conference and has published a peer reviewed journal article.

Supervisor: Prof F Nyabadza

Mkhatshwa, Sindile Francisca (PhD)

Ms Mkhatshwa was born in Atteridgevile, Pretoria, and holds an MSc in Geology from the University of Johannesburg, which she obtained in 2012. Following four years of employment as a mine geologist, she enrolled for a PhD at the University of Johannesburg in 2016. She is currently a lecturer in the Department of Geology at the University of Johannesburg.

In her doctoral study, Ms Mkhatshwa assessed the impact of process mineralogy on the recovery of uranium from ores of the Witwatersrand. This was accomplished through a combination of mineral liberation analysis technology and laboratory scale acid leaching. The results demonstrate that a uranium recovery of 80% is possible, despite the abundance of the uranium mineral brannerite in the ore, which is normally very difficult to leach. This can be accomplished at a moderate acid dosage and comparatively low temperature, which represents a significant cost saving in relation to current practice at the mine. The candidate has presented her work at local and international conferences and has published two peer-reviewed articles.

Supervisor: Prof KS Viljoen
Co-supervisor: Prof AJB Smith
Co-supervisor: Dr BM Guy

Mngadi, Sihle Vitalis (PhD)

Mr Mngadi was born in Adams Mission, south of Durban in KwaZulu-Natal province (South Africa), and holds an MSc in Chemistry from University of KwaZulu-Natal. He enrolled for a PhD at the University of Johannesburg in 2018 and is currently working at Rand Water as a Senior Scientist, Analytical Services.

Mr Mngadi's doctoral studies focused on the determination of trace metal concentrations in soil samples collected from two abandoned gold mine tailings (Princess and Struisbult located in the Johannesburg area) and their ecological impacts. The mobility and fractionation of metals were investigated using sequential and single extraction procedures. The findings revealed that the soils contained high concentrations of Pb, V, As, Sb and Se. Uptake of metals by two plant species (Vitiver zezeniods and Cenchrus ciliaris) growing in the mine tailings was investigated. The results showed that the plant species were good hyper accumulators of As, Se and Sb. Also, the uptake of metals by vegetables grown near the mine tailings showed that Pb, As and Sb could potentially cause serious health effects (health risk index (HRI) values > 1). The candidate has presented his work at both local and international conferences and has published two peer reviewed journal articles.

Supervisor: Prof PN Nomngongo
Co-Supervisor: Prof S Moja (Council for Geosciences)

Nunoo, Samuel (PhD)

Samuel Nunoo was born in Abuesi, Western Region (Ghana), and holds an M.Phil. in Geology from the University of Ghana, Legon (Accra). Prior to his PhD, Mr. Nunoo served as a Teaching Assistant at the University of Ghana for three years and for one year as a field geologist for Terra Pangaea Resources Management (Ghana). Mr Nunoo enrolled for a PhD at the University of Johannesburg in 2017 and is currently employed by the University of Ghana as an Assistant Lecturer at the Department of Earth Sciences.

The Palaeoproterozoic greenstone belts of Ghana host large economic gold deposits. Most geological research so far focussed on belts in the south-western part of the country. In his doctoral study, Samuel Nunoo conducted field and analytical work on the volcano-sedimentary rocks of the Julie greenstone belt of north-western Ghana. Using a combination of field mapping, geochemical analysis and zircon U-Pb geochronology, Mr. Nunoo established for the first time a stratigraphic framework of the volcano-sedimentary succession, associated clastic sedimentary rocks and granitoids. His results indicate a similar geological evolution of the Palaeoproterozoic rocks to those in the south of the country and provide new insights into Birimian gold mineralization in Ghana. Mr. Nunoo has presented his work at one international and two national conferences and has published one peer-reviewed journal article.

Supervisor: Prof A Hofmann

Offor, Benedict Chikwado (PhD)

Mr Benedict C. Offor obtained his BSc degree in general Biochemistry from the Imo State University, Owerri, Nigeria. In 2012, he enrolled for non-degree purposes at the University of Johannesburg (UJ). The following year he was admitted into the BSc Hons programme. Thereafter he completed an MSc degree in Biochemistry in 2017. In 2018, Mr Offor was accepted for a PhD degree. He is currently a research assistant in the biochemistry department and will commence as post-doctoral research fellow in the same laboratory later this year.

In his doctoral study, Mr Offor used proteomic and metabolomic strategies for the identification of interacting proteins and metabolites in two LPS-chemotypes-induced defence responses in *Arabidopsis thaliana* wild type and mutant lines. Distinct differences and overlaps were found in 46 LPS-responsive plasma membrane-associated proteins, while metabolite perturbations were seen in 45 metabolites feeding into 4 significant metabolic pathways. The results highlighted the roles of the two LPS chemotypes in the reprogramming of Arabidopsis WT and mutants' proteomes and metabolism into a defensive state, and the possible role of two well-known defence proteins in LPS perception and thus plant defence against pathogenic bacteria. As such, the work generated a wealth of information in monitoring plant biological systems as well as biomarkers in LPS-plant interaction studies towards sustainable crop production. The candidate has published two peer reviewed journal articles, with a third in preparation.

Supervisor: Prof LA Piater
Co-supervisor: Prof IA Dubery
Co-supervisor: Dr MI Mhlongo

Olaniyan, Oluwayemisi Dorcas (PhD)

Ms. Olaniyan holds a BSc degree in Botany from the University of Agriculture, Nigeria. She obtained her Master of Science degree in Plant Taxonomy at the University of Ibadan, Nigeria. She is particularly interested in the aspect of plant taxonomy that deals with inferring evolutionary history and relationships in plants. She pursued this interest by visiting the African Center for DNA Barcoding (ACDB) at the University of Johannesburg in 2016. She acquired skills in molecular techniques and phylogenetic analyses at ACDB, which enabled her to enroll for her Ph.D. at the University of Johannesburg in 2017. She is a member of the International Association of Plant Taxonomists (IAPT) and the South African Association of Botanists (SAAB).

For her doctoral study, Mrs. Olaniyan has successfully unraveled the complicated relationships among the species of saffron bushes in the stringbark family *Thymelaeaceae*. Southern Africa is the center of diversity for this group of shrubs, comprising over 200 species. The circumscription of the core genus, *Gnidia*, has been especially problematical. Building on previous evolutionary studies, Ms. Olaniyan has at last provided a clear analysis of the situation, using the latest molecular phylogenetic techniques. Her phylogenetic analysis of four plastids, and one nuclear gene region, shows conclusively that the problem genus *Gnidia* comprises several distinct groups of species. Using this knowledge, she has provided the first evidence-based classification for the saffron bushes. This is an essential step in improving our understanding of this group of plants, several of which are of economic and cultural significance. The thesis has resulted in a peer-reviewed publication and presentations at national conferences.

Supervisor: Prof M van der Bank
Co-supervisor: Prof JS Boatwright (UWC)
Co-supervisor: Dr A Magee (SANBI)

Onisuru, Oluwatayo Racheal (PhD)

Ms Onisuru comes from the Southwestern part of Nigeria (Osun state) and obtained her MSc in Environmental Chemistry in Nigeria. She enrolled at the University of Johannesburg in 2018 for doctoral studies in Chemistry.

For her doctoral studies, Ms Onisuru synthesized various nanocatalysts using different methods for various catalytic applications with industrial relevance. Although conventional homogeneous catalysts possess a vast tendency to enhance high conversion and product selectivity in chemical reactions, they present limiting phenomena of recoverability, recyclability, and deactivation at high temperatures. Circumventing these limitations, Ms Onisuru applied her synthesized nanocatalysts in both batch and flow reactions to demonstrate their high operating procedures, easy recoverability, and reusability for redox reactions. Ms Onisuru has presented some of her findings at conferences and has seven peer-reviewed (authored and co-authored) publications to her credit.

Supervisor: Prof R Meijboom

Oseghale, Charles Ojiefoh (PhD)

Charles Oseghale holds BSc and MSc degrees in Chemistry (Distinctions) from the University of Agriculture, Abeokuta, and the University of Ilorin, Nigeria, respectively.

Mr Oseghale's PhD thesis focused on developing novel nanomaterials for large-scale industrial applications, which also included some aspects of digitalization of chemistry in the context of the fourth industrial revolution (4IR), emphasizing general catalysis and 3D printing. Through his research, he designed novel heterogeneous green catalysts (Au and Pd-based) for reactions such as carbonylation, which has been known to proceed via the homogeneous catalytic systems. Notably, the novel findings from his research project have been published with various reputable journals.

Supervisor: Prof R Meijboom

Pretorius, Estherna (PhD)

Ms Pretorius was born in Johannesburg and holds an MSc in Biodiversity and Conservation from the University of Johannesburg. She enrolled for a PhD at UJ in 2016 and is currently a lecturer in the Department of Botany and Plant Biotechnology at UJ.

Ms Pretorius investigated the utility of DNA barcoding and phytochemical profiling techniques to authenticate herbal products – specifically those claimed to contain medicinally relevant species of *Harpagophytum* and *Agathosma.* Following the development of taxon-specific reference DNA barcoding libraries and chemical profiles, a market survey was conducted utilizing these tools to authenticate *Harpagphytum*- and *Agathosma*-containing commercial herbal products. Results indicated that 76% of the devil's claw products (Harpagphytum genus) and 20% of the buchu (Agathosma genus) products tested were substituted with inferior species. Increased substitution can be seen worldwide, and Ms Pretorius's study reiterates that South Africa is not exempted from this trend. The created reference DNA barcode libraries and chemical profiles can serve as the first step in the authentication of raw material before processing begins to assist quality control measures within the herbal industry. The candidate presented her work at local and international conferences and published one peer-reviewed journal article.

Supervisor: Prof M van der Bank
Co-Supervisor: Prof AM Viljoen (TUT)

Selahle, Shirley Kholofelo (PhD)

Shirley Kholofelo Selahle was born and bred in Groblersdal, Limpopo, in a small village named Dennilton and matriculated from Saint Gregory College in 2013. She completed a BSc degree in Chemistry and Applied Chemistry in 2015, followed by a BSc honours degree in Chemistry in 2016 at the University of Venda. She further obtained a Master of Science degree in Chemistry (Cum Laude) from the University of Johannesburg in 2019 and started her PhD journey in the same year.

In her doctoral studies, Ms Selahle explored the application of various porous nanostructured materials in the development of solid phase-based extraction methods. These methods were used for simultaneous extraction and preconcentration of selected emerging organic pollutants in environmental water samples. The developed methods allowed accurate quantification of trace levels of neonicotinoid insecticides (neonics), steroid hormones, poly- and perfluoroalkyl substances (PFAS) in river water samples. The results obtained revealed that the synthesized porous nanocomposites had a potential to be used as adsorbents for monitoring emerging contaminants in water systems. The key findings of this study have resulted in three peer reviewed journal articles, one accepted manuscript and two more under review. The candidate also presented her work at two international conferences and one local conference.

Supervisor: Prof PN Nomngongo

Shozi, Zekhaya Benard (PhD)

Zekhaya Benard Shozi grew up in Empangeni -- Ntambanana (where he was born) in the rural areas of KwaZulu-Natal. He received his primary and secondary education from MaQwabe Primary School and Mningi High School, respectively. He graduated from the University of Zululand with his BSc and BSc honours degrees and obtained his MSc in Mathematical Sciences from Stellenbosch University (in collaboration with the African Institute for Mathematical Sciences). He is currently a lecturer under the New Generation of Academics Programme in the department of Mathematical Sciences at Sol Plaatje University (SPU).

The thesis of Mr Shozi presents a series of results on matchings in graphs. A characterization is provided for the subcubic graphs that achieve equality in the lower bound on the matching number. All graphs with given maximum degree and smallest possible matching number are characterized. These characterizations extend earlier results given by internationally renowned mathematicians from the University of Waterloo, Oxford University, State University of New York, the University of Illinois, and the University of Southern Denmark. The thesis resulted in three publications in highly ranking scientific journals in graph theory, namely the Journal of Graph Theory and Discrete Mathematics.

Supervisor: Prof MA Henning

Webster, Heather Joy (PhD)

Heather Joy Webster grew up in Johannesburg and matriculated from St. Mary's School in 2008. She enrolled at UJ and completed her BSc in 2012 (with Zoology and Human Physiology as her main subjects) and continued with her BSc (Hons) in Zoology (completed in 2014) and MSc in Zoology (completed in 2017).

In her thesis, Ms Webster used a relatively new technique to extract DNA from environmental samples to provide baseline data for an urban (Delta Park) and natural (Telperion Nature Reserve) area. Using metabarcoding, she extracted biological data from more than 10 million raw sequence reads. As expected, many species are classified as introduced in the urban area, while native species dominate in the protected area. Her results further suggested that existing protocols for water quality assessments of freshwater ecosystems, currently based on the diversity and abundance of species within that system, would benefit from eDNA analysis. The candidate has already co-authored a paper from her PhD study that describes a new method and bioinformatics pipeline; she also reported on species diversity using this new approach for one of Johannesburg's largest urban green spaces. Other papers from her work are currently in progress.

Supervisor: Prof B Jansen van Vuuren
Co-Supervisor: Prof PR Teske
Co-Supervisor: Prof C van Dyk

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National Anthem of South Africa

Nkosi sikelel' Afrika
Maluphakanyisw' uphondo lwayo,

Yizwa imithandazo yethu,
Nkosi sikelela, thina lusapho lwayo.

Morena boloka setjhaba sa heso,
O fedise dintwa le matshwenyeho,
O se boloke, O se boloke setjhaba sa heso,
Setjhaba sa South Afrika - South Afrika.

Uit die blou van onse hemel,
Uit die diepte van ons see,
Oor ons ewige gebergtes,
Waar die kranse antwoord gee,

Sounds the call to come together,
And united we shall stand,
Let us live and strive for freedom,
In South Africa our land.