

**Welcome to the
Graduation Ceremony
of the
University of Johannesburg
10 June 2015 at 17:00**

**Welkom by die
Gradeplegtigheid
van die
Universiteit van Johannesburg
10 Junie 2015 om 17:00**

**Le a Amogelwa
Moletlong wa Dikapešo wa
Yunibesithi ya Johannesburg
10 Phupu 2015 ka 17:00**

**Niyamukelwa
eMcimbini wokweThweswa kweZiqu
weNyuvesi yaseJohannesburg
10 kuNhangulana 2015 ngele-17:00**

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 IL Rensburg
BPharm (Rhodes), MA, PhD (Stanford USA)

DEPUTY VICE-CHANCELLOR: ACADEMIC

Prof A Parekh
BA, BA Hons, MA (UDW), MA (Kansas USA), DPhil (UDW)

DEPUTY VICE-CHANCELLOR: RESEARCH, POSTGRADUATE STUDIES AND LIBRARY

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

REGISTRAR

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

DEPUTY VICE-CHANCELLOR: FINANCE

Mr J van Schoor
BCom, BCom Hons (RAU), CA (SA)

DEPUTY VICE-CHANCELLOR: STRATEGIC SERVICES

Mrs ME Letlape
BSc (UFH)

DEPUTY VICE-CHANCELLOR: INTERNATIONALISATION, ADVANCEMENT AND STUDENT AFFAIRS

(vacant)

SENIOR EXECUTIVE DIRECTOR: VICE-CHANCELLOR'S OFFICE

Ms KC Mketi
BA (Bophut), BA Hons (RAU), MBL (Unisa)

EXECUTIVE DEANS

FACULTY OF ART, DESIGN AND ARCHITECTURE

Prof F Freschi
BA (Wits), BA Hons (UCT), PhD (Wits)

FACULTY OF ECONOMIC AND FINANCIAL SCIENCES

Prof A Dempsey
BCom, BCom Hons, MCom (RAU), CA (SA)

FACULTY OF EDUCATION

Prof SJ Gravett
BA, HEd (PU for CHE), BEd, MEd, DEd (RAU)

FACULTY OF ENGINEERING AND THE BUILT ENVIRONMENT

Prof S Sinha
BEng, MEng, PhD (UP)

FACULTY OF HEALTH SCIENCES

Prof A Swart
NDip, NHDip (TWR), BEd, MEd (RAU), DTech (TWR)

FACULTY OF HUMANITIES

Prof AB Broadbent
BA, BA Hons, MPhil, PhD (Cantab)

FACULTY OF LAW

Prof PH O'Brien
BCom, LLB, LLM, LLD (RAU)

FACULTY OF MANAGEMENT

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

FACULTY OF SCIENCE

Prof D Meyer
BSc, BSc Hons, MSc (RAU), PhD (University of California, Davis)

MEMBERS OF COUNCIL

CHAIRPERSON

Prof RD Marcus

DEPUTY CHAIRPERSON

Mr MS Teke

MEMBERS

Prof H Abrahamse

Mr FM Baleni

Prof IC Burger

Mr JP Burger

Mr D Bvuma

Ms TA Chaka

Mr TJ Dikgole

Mr CR Gebhardt

Prof D Hildebrandt

Mr G Khosa

Prof C Landsberg

Dr DSS Lushaba

Mr DM Manganye

Dr J Manyaka

Ms K Maroga (invitee)

Ms BJ Memela-Khambula

Dr P Mjwara

Mr M Mkhonta

Mr A Mohammadali-Haji

Mrs K Mokhobo-Amegashie

Mr MJN Njeke

Prof A Parekh

Mr K Rammutla

Prof IL Rensburg

Dr WP Rowland

Mr KB Sibiya

Mr K Thomas

Mr J van Schoor

Mr M White

PRESIDENT OF CONVOCATION

Mr M Mkhonto

Programme

Wednesday, 10 June 2015 at 17:00

To ensure good order during the ceremony all those present are requested to leave the Auditorium only after the ceremony has been concluded.

The academic procession enters the Auditorium and the members of the procession take their seats on the stage.

The choir sings Gaudeamus Igitur (or a CD is played) while those present remain standing.

The Chancellor constitutes the congregation.

Choir.

Welcome.

The relevant Executive Dean presents the candidates to the Chancellor for the conferment of a degree/diploma/certificate.

Singing of the National Anthem.

The Chancellor dissolves the congregation.

The academic procession leaves the Auditorium while those present remain standing.

Lenaneo

Laboraro, 10 Phupu 2015 ka 17:00

Go kgonthiša gore dilo di sepela ka tshwanelo nakong ya moletlo, bohle bao ba tilego moletlong ba kgopelwa go tšwa ka Holong ya kopano feela ka morago ga ge moletlo o phethilwe.

Sehlopha sa dirutegi se tsena ka Holong ya kopano gomme maloko a sehlopha se a dula ditulong tša ona sefaleng.

Khwaere e opela Gaudeamus Igitur (goba CD e tlo bapalwa) mola bao ba lego gona ba tšwela pele go ema.

Mokhanseliri o kopanya phuthego.

Khwaere.

Dikamogelo.

Hlogophethiši ya maleba ya lefapha e hlagiša dialoga go Mokhanseliri gore di newe tikrii/diploma/setifikeiti.

Go opelwa ga Koša ya Setšhaba.

Mokhanseliri o phatlalatša phuthego.

Sehlopha sa dirutegi se tšwa ka Holong ya kopano mola bao ba lego gona ba tšwela pele go ema.

Program

Woensdag, 10 Junie 2015 om 17:00

Ter wille van die ordelike verloop van die plegtigheid
word alle aanwesiges vriendelik versoek
om die Ouditorium nie voor die einde van die plegtigheid te verlaat nie.

Die akademiese proses kom die Ouditorium binne en neem op die verhoog plaas.
Die koor sing Gaudeamus Igitur (of 'n CD word gespeel) terwyl die aanwesiges staan.

Die Kanselier stel die kongregasie saam.

Koor.

Verwelkoming.

Die betrokke uitvoerende dekaan stel die kandidate aan die Kanselier voor vir die
toekenning van 'n graad/diploma/sertifikaat.

Sing van die volkslied.

Die Kanselier ontbind die kongregasie.

Terwyl die aanwesiges bly staan, verlaat die akademiese proses die Ouditorium.

Uhlelo

uLwesithathu, 10 kuNhlangulana 2015 ngele-17:00

Ukuze kuqinisekwe ukuthi konke kuhamba kahle ngesikhathi somcimbi, bonke abakhona
bacelwa ukuba baphume eHholweni kuphela lapho umcimbi usuphuthuliwe.

Udwendwe lezifundiswa lungena ehholweni bese amalungu odwendwe ahlala phansi
esiteji.

Ikwaya icula i-Gaudeamus Igitur (noma kudlalwa iCD) ngalenkathi labo abakhona
besamile.

UShansela uhlanganisa ibandla.

Ikwaya.

Ukwamukelwa.

Izinhloko Eziyiziphathimandla ezithintekayo zethula abafundi kuShansela weNyuvesi
ukuze bathole idigiri/idiploma/isitifiketi.

Kukulwa iHubo Lesizwe.

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!

IsiZulu

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

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

QUALIFICATIONS

1. National Diploma (NDip):

Baloyi, Rito (Biotechnology)
Cele, Ntando Siphesihle (Biotechnology)
Dee, Julie Vuyelwa (Food Technology)
Dibakoane, Rithabile Dinah (Biotechnology)
Dlamini, Simphiwe (Biotechnology)
Khan, Irshaad Ahmed (Biotechnology)
Khoadi, Katlego (Biotechnology)
Kumalo, Thembi Naledi Philadelphia (Biotechnology)
Lekoma, Emmanuel Ofentse (Biotechnology)
Lion, Mpho Portia (Food Technology)
Makamo, Andy (Food Technology)
Makgabutlane, Boitumelo (Analytical Chemistry)
Makrwele, Amanda Monica (Food Technology)
Maleka, Mampholo Percy (Biotechnology)
Maluleke, Xihlamariso (Biotechnology)
Maseko, Nkululeko (Food Technology)
Masipa, Montse Ignatius Sefako (Biotechnology)
Mbeje, Richman Siyabonga (Food Technology)
Mojela, Mmatsoku Ignitius (Analytical Chemistry)
Mokgonyana, Jeanett Maphuti (Food Technology)
Mokubedi, Sharon Maphala (Biotechnology)
Molepo, Mankitane Iloria (Analytical Chemistry)
Moothai, Tshepo Khotso (Biotechnology)
Morapi, Freddy Phuti (Food Technology)
Morare, Rebotiloe Fridah (Biotechnology)
Mthethwa, Londiwe Lorraine (Food Technology)
Mufamadi, Shumani (Biotechnology)
Mungulwe, Sanie Mosotho (Biotechnology)
Naidoo, Channay (Biotechnology)
Ncwandule, Pfunani Makhanani (Food Technology)
Ngalo, Wandile Mqondisi (Food Technology)
Ntuli, Siphamandla Sandile (Biotechnology)
Nxumalo, Katleho Masentle (Analytical Chemistry)
Osiile, Onthatile Charity (Analytical Chemistry)
Phago, Mokgaetsi Jessica Degrecia (Analytical Chemistry)
Pillay, Denardo (Biotechnology)
Quimbine, Doctor Mandlaenkosi (Biotechnology)
Seshabela, Charlotte Bonisiwe (Analytical Chemistry)

Tshabalala, Mbali (Food Technology)
Tshinesa, Itani Percy (Biotechnology)
Tshwale, Khomotso Bellina (Analytical Chemistry)

2. Bachelor of Technology (BTech):

Masoko, Katlego Samson (Biotechnology)
Ngema, Zandile Glendia (Biotechnology)
Tshabalala, Minah Mevasani (Biotechnology)
Webb, Mbali Lomalangeni (Biotechnology)

3. Bachelor of Science (BSc):

Badise, Rorisang Rodney (Computer Science and Informatics)
Baloyi, Brain Kabelo (Life and Environmental Sciences with Specialisation in Environmental Management and Geology)
Chepape, Ngokoana Rosemary (Physical Sciences with specialisation in Geology and Chemistry)
Dambaza, Everswick (Computer Science and Informatics)
Daumas, Tshenolo Thato Eustacia (Mathematical Sciences with specialisation in Applied Mathematics and Mathematics)
Dlanga, Zezethu Precious (Computer Science and Informatics)
Heri Pendeza, Noella (Life and Environmental Sciences with specialisation in Human Physiology and Psychology)
Khoza, Tebogo Magudu (Life and Environmental Sciences with specialisation in Zoology and Biochemistry)
Konopi, Ofentse Modisaotsile (Life and Environmental Sciences with specialisation in Environmental Management and Geology)
Kunene, Dennis Tizifa (Information Technology)
Lebelo, Khutso (Computer Science and Informatics)
Mabiza, Tshegofatjo Raisibe (Life and Environmental Sciences with Specialisation in Environmental Management and Geology)
Machweu, Makobo Nomsa (Life and Environmental Sciences with specialisation in Human Physiology and Psychology)
Madia, Elekanyani (Mathematical Sciences with specialisation in Applied Mathematics and Mathematics)
Makaota, Ntshiowa Ayanda (Physical Sciences with specialisation in Biochemistry and Chemistry)
Manamela, Mokgadi Anna (Information Technology)
Mashele, Machel Amorah (Computer Science and Informatics)
Matheolane, Omphile Kagiso (Computer Science and Informatics)
Matlala, Anthoneth Mabogoshi (Life and Environmental Sciences with Specialisation in Geography and Geology)
Mnguni, Ziyanda Monde Nkzenhle Gold (Computer Science and Informatics)
Modise, Sello Christopher (Computer Science and Informatics)

Moeta, Mahlatse Daniel (Computer Science and Informatics)

Molope, Mmakgwara Irene (Life and Environmental Sciences with specialisation in Human Physiology and Biochemistry)

Monei, Nthati Lillian (Environmental Management and Geology)

Mongoai, Katlego (Mathematical Sciences with specialisation in Mathematics and Computer Science)

Motaung, Makhosazane Ntuthuko (Life and Environmental Sciences with Specialisation in Geography and Geology)

Mthimkhulu, Malibongwe Mboneni (Mathematical Sciences with specialisation in Mathematics and Economics with Financial Orientation)

Mudau, Fhumulani (Life and Environmental Sciences with Specialisation in Geography and Geology)

Mukwevho, Constance Katlego (Life and Environmental Sciences with specialisation in Geography and Geology)

Muzenda, Charles (Physical Sciences with specialisation in Biochemistry and Chemistry)

Nagel, Dylonn Nagel (Information Technology)

Naicker, Simone (Life and Environmental Science with specialisation in Geography and Environmental Management)

Ncube, Mpumelelo Johannes (Computer Science and Informatics)

Ndukuya, Lindokuhle Shane (Life and Environmental Sciences with specialisation in Geography and Environmental Sciences)

Nekhavhambe, Gudani (Computer Science and Informatics)

Nemahagala, Murendeni Harvy (Physical Sciences with specialisation in Geology and Mathematics)

Ngwenya, Amukelani Elijah (Information Technology)

Nonyukela, Nothemba Patience (Physical Sciences with specialisation in Biochemistry and Chemistry)

Polo, Mokhele Clinton (Information Technology)

Putini, Hlumela (Computer Science and Informatics)

Ramanugu, Mulalo (Information Technology)

Ramoshaba, Matome Victor (Mathematical Sciences with specialisation in Applied Mathematics and Mathematics)

Seroka, Khotso Lebohang (Life and Environmental Sciences with specialisation in Zoology and Environmental Management)

Shaku, Steve Lesibana (Mathematical Sciences with specialisation in Applied Mathematics and Mathematics)

Shipakule, Amukelani Felicia (Information Technology)

Shondlani, Vonani Evidence (Mathematical Sciences with specialisation in Applied Mathematics and Computer Science)

Shondlani, Xichavo Goodness (Mathematical Sciences with specialisation in Mathematics and Economics with Financial Orientation)

Sibiya, Thuso (Natural and Environmental Sciences with endorsement Geology and Geography)

Simenti, Tebatso Jane (Life and Environmental Sciences with specialisation in Geography and Environmental Management)

Singh, Christopher (Information Technology)

Steyn, Estelle (Physical Sciences with specialisation in Physics and Mathematics)
Taitai, Luthando (Computer Science and Informatics)
Tshivhase, Fhumulani (Mathematical Sciences with specialisation in Applied Mathematics and Mathematics)
Vilane, Vusi (Computer Science and Informatics)
Willems, Joshua (Information Technology)
Yousseu Tchaleu, Boriane (Computer Science and Informatics)
Zitha, Anthea Thabile (Life and Environmental Sciences with specialisation in Biochemistry and Psychology)

4. Bachelor of Arts Honours (BA Hons):

Sibanda, Wishes (Geography)

5. Baccalaureus Scientiae Cum Honoribus (BSc Hons):

Botha, Louis Adriaan (Geography)
Carneiro, Rogerio Dean (Zoology)
De Agrela, Dean John (Information Technology)
Drost, Eduard Frans (Zoology)
Dube, Nomsa Basetsana (Zoology)
Fouda Mbanga, Bienvenu Gael (Chemistry)
Gangat, Riyaz (Energy Studies)
Geldenduys, Jaco (Zoology)
Homann, Jonathan Michael (Applied Mathematics)
Kehiloe, Kesolofetse (Biochemistry)
Khumalo, Nolwazi Innocentia (Energy Studies)
Kubeka, Sibusiso (Informatics)
Le Roux, Cecelia (Mathematics) **(with distinction)**
Mabaso, Thembeke (Chemistry)
Mafanya, Madodomzi (Geography)
Magwebu, Mzoxolo Patrick (Energy Studies)
Makatu, Muvhuso Desmond (Energy Studies)
Makwela, Tshepo Wilson (Applied Mathematics)
Marageni, Manoka (Chemistry)
Mathabatha, Kabelo (Energy Studies)
Mkhize, Siphumelele (Geography)
Mkhize, Zama (Energy Studies)
Mkhonto, Njabulo Nkosana (Information Technology)
Mothogoane, Lebidike Neo (Applied Mathematics)
Mudau, Tshilidzi Gustuv (Computer Science)
Mugodi, Funanani (Energy Studies)
Mushawemhuka, William John (Geography)
Nasima, Gideon Emmanuel (Energy Studies)
Ngubane, Sindisiwe Pearl (Energy Studies)

Odendaal, Gert Jacobus (Information Technology) (with distinction)
Ramphinwa, Zwannda Marvin (Energy Studies)
Rebombo, Dimakatso Johannes (Informatics)
Sefoka, Sepheu Ronald (Energy Studies)
Toure, Cheick Kader (Mathematics) (with distinction)
Varty, Russell Stephen (Energy Studies) (with distinction)
Vermeulen, Paul Louw (Energy Studies) (with distinction)
Zondo, Thabani (Energy Studies)

6. Magister Technologiae (MTech):

Matshaya, Thabo James (Chemistry)

Dissertation: Cationic cyclodextrin/Alginate chitosan nanoparticles as 5-Fluorouracil drug delivery system and effect of nanoparticles on the interfacial properties of phosphatidylcholine monolayers as model of cell membrane.

Supervisor: Prof RWM Krause

Co-supervisor: Dr DT Ndinteh

Msomi, Phumlani Fortune (Chemistry)

Dissertation: Electrospun nanofiber membranes decorated with silver nanoparticles for fouling control.

Supervisor: Dr EN Nxumalo

Co-supervisor: Prof SD Mhlanga

Co-supervisor: Dr SM Musyoka

7. Master of Arts (MA):

Kambule, Njabulo (Environmental Management)

Minor Dissertation: A survey on the state of Energy Efficiency adoption and related challenges amongst selected Manufacturing SMMEs in the Booyens area of Johannesburg.

Supervisor: Dr IT Rampedi

8. Master of Commerce (MCom):

Mavee, Sheu Menete Alexandre (Informatics) (with distinction)

Dissertation: Smart Grid Critical Information Infrastructure Protection through multi-agency.

Supervisor: Prof EM Ehlers

Co-supervisor: Dr WS Leung

9. Master of Philosophy (MPhil):

Oluwaleye, Olakunle (Energy Studies)

Dissertation: Neutron transport in a complex geometry and materials arrangement.

Supervisor: Prof SH Connell

Co-supervisor: Dr R Prinsloo (NECSA)

10. Magister Scientiae/Master's Degree (MSc):

Bingwa, Ndzondelelo Siggibo (Chemistry) **(with distinction)**

Dissertation: Application of well-defined nanoparticles as catalysts for kinetic studies of model reactions, and their immobilization on mesoporous SBA-15 for olefin oxidation.

Supervisor: Prof R Meijboom

Blauw, Frans Frederik (Information Technology) **(with distinction)**

Dissertation: Beatrix: A Model for Multi-Modal and Fine-Grained Authentication for Online Banking.

Supervisor: Prof SH von Solms

Botlhoko, Orebotse Joseph (Nanoscience)

Minor Dissertation: Preparation characterization and properties of bionanohybrids based on biocompatible poly(glycolic acid)/polylactide blends and carbon nanotubes - towards orthopaedic applications.

Supervisor: Dr J Ramontja

Co-supervisor: Prof S Sinha Ray

Co-supervisor: Prof JC Ngila

Clayton, Alexandra Fae (Environmental Management) **(with distinction)**

Minor Dissertation: Integrated reporting vs sustainability reporting in South Africa: An analysis of the transition into a new era of corporate reporting.

Supervisor: Dr JM Rogerson

Co-supervisor: Dr IT Rampedi

Edwards, Claire Michelle (Zoology) **(with distinction)**

Dissertation: Bioaccumulation of organochlorine pesticides and biomarker responses in *Hydrocynus vittatus* and *Synodontis zambezensis* from the Lower Phongolo River and Floodplain, KwaZulu-Natal, South Africa.

Supervisor: Prof JHJ van Vuren

Co-supervisor: Prof V Wepener (North-West University)

Fourie, Jacomina Christina (Aquatic Health)

Minor Dissertation: Sub-quaternary catchment impacts of afforestation on the ecological reserve.

Supervisor: Prof JHJ van Vuren

Co-supervisor: Dr W Vlok (BioAssets)

Gumbi, Nozipho Nonsikelelo (Nanoscience) (with distinction)

Dissertation: D Fabrication of nanosilver/carbon nanotube polyamide thin film composite membranes for water treatment.

Supervisor: Dr EN Nxumalo

Co-supervisor: Prof SD Mhlanga

Jacobs, Christoff Jan (Computer Science)

Dissertation: A Prototype to Improve the Security and Integrity of Mobile Banking.

Supervisor: Prof SH von Solms

James, Tanyn Erin (Zoology)

Dissertation: Application of species sensitivity distributions in assessing the aquatic toxicity hazard of nano-gold.

Supervisor: Prof V Wepener

Co-supervisor: Prof JHJ van Vuren

Jenkins, Siobhan Renee (Biochemistry) (with distinction)

Dissertation: Insights into the mechanism of drug action of a novel silver(I) chemotherapeutic against a malignant melanoma cell line.

Supervisor: Prof MJ Cronjé

Co-supervisor: Prof R Meijboom

Joubert, George Erhardt (Aquatic Health)

Minor Dissertation: The use of artificial mussels and transplanted *Perna Perna* as indicators of metal exposure and effect in harbours in KwaZulu-Natal.

Supervisor: Prof V Wepener

Co-supervisor: Dr JC van Dyk

Kindler, Dale Herman (Aquatic Health)

Minor Dissertation: An assessment of the reproductive biology of the Marico barb *Barbus motebensis* (Steindachner 1894) from the upper Groot Marico catchment.

Supervisor: Prof GM Wagenaar

Co-supervisor: Dr O Weyl (South African Institute of Aquatic Biodiversity)

Kruger, Leandra (Aquatic Health)

Minor Dissertation: An assessment of the effects of small-scale farming on macro-invertebrate and diatom community structure in the Vhembe District, Limpopo.

Supervisor: Prof V Wepener

Co-supervisor: Dr S Bollmohr

Louw, Candice (Computer Science) (with distinction)

Dissertation: Modelling Personally Identifiable Information leakage that occurs through the use of Online Social Networks.

Supervisor: Prof SH von Solms

Louw, Edwynn Walter (Environmental Management)

Minor Dissertation: Assessing the effectiveness of current biodiversity offset strategies in South Africa: A case study on current perceptions and views in the mining industry.

Supervisor: Dr JM Rogerson

Co-supervisor: Dr IT Rampedi

Lynch, Lloyd Patrick (Zoology) **(with distinction)**

Dissertation: Metal accumulation in *Labeo capensis* Smith, 1841 and the potential use of *Argulus japonicus* Thiele, 1900 as a sentinel for metal accumulation from the Vaal Dam, South Africa.

Supervisor: Prof A Avenant-Oldewage

Mabude, Masiye Ngomaxhanga (Nanoscience)

Minor Dissertation: Investigation of the synergetic antioxidant effects of gold nanoparticles capped with aqueous soybean extracts.

Supervisor: Prof SB Mishra

Manyelo, Tlou Sinah (Botany)

Dissertation: Phylogenetic studies of the type section of the genus *Rhynchosia* (Phaseoleae, Fabaceae).

Supervisor: Prof A Moteetee

Co-supervisor: Dr S Boatwright (University of the Western Cape)

Mdletshe, Thembinkosi Senzo (Nanoscience)

Minor Dissertation: The influence of silicon carbide (SiC) nanoparticles on the thermal, mechanical and biodegradation properties of poly(caprolactone) (PCL) for packaging applications.

Supervisor: Prof SB Mishra

Milaras, Miltiadies (Geography)

Dissertation: The Judicious Use of Environmental Sustainability Indicators in Support of Mine Closure in South Africa.

Supervisor: Prof F Ahmed

Mkhonto, Mary Tsono (Zoology)

Dissertation: Bioaccumulation of pesticides and biomarker responses in *Oreochromis mossambicus* (Peters, 1852) and *Clarias gariepinus* (Burchell, 1822) from the Phongolo River and Floodplain, KwaZulu-Natal, South Africa.

Supervisor: Prof JHJ van Vuren

Co-supervisor: Prof NJ Smit

Moeti, Lerato Petunia (Chemistry)

Dissertation: Pyrazole and pyrazolyethylamine nickel(II) and palladium(II) complexes as catalysts for olefin oligomerization and Friedel-Crafts reactions.

Supervisor: Prof J Darkwa

Motshegoa, Bosupeng Johanna (Environmental Management)

Minor Dissertation: Levels of organic and inorganic compounds in the muscle of *Clarias gariepinus* and *Cyprinus carpio* from the three dams in the North-West Province, South Africa and the associated risk for human consumption.

Supervisor: Prof GM Wagenaar

Mphanje, Kelebohile (Chemistry)

Dissertation: Polymeric Nitrogen Donor Macro(meso)porous sorption materials for selected transition materials.

Supervisor: Dr O Zinyemba

Co-supervisor: Prof J Darkwa

Nel, Trevor Jon (Information Technology) **(with distinction)**

Dissertation: Complex adaptive system simulation of cellular network subscriber behaviour.

Supervisor: Prof EM Ehlers

Neswiswi, Tinyiko Idah (Aquatic Health)

Minor Dissertation: Water Quality Comparisons of the Pongola System, Past to Present.

Supervisor: Dr R Greenfield

Co-supervisor: Prof V Wepener (North-West University)

Nibamureke, Uwineza Marie Clementine (Aquatic Health)

Minor Dissertation: Fish histopathology as a tool to assess the health status of freshwater fish species in the Albasini Dam, Limpopo Province, South Africa.

Supervisor: Prof GM Wagenaar

Osmond, Steven John (Zoology) **(with distinction)**

Dissertation: A tiered approach to determining the risk of viticulture to associated aquatic ecosystems.

Supervisor: Prof V Wepener

Co-supervisor: Dr S Bollmohr

Raleie, Naledi (Nanoscience)

Minor Dissertation: The effect of surface-functionalized graphene oxide on morphology, mechanical properties, thermo-mechanical and crystallinity of PLA towards orthopaedic applications.

Supervisor: Dr J Ramontja

Co-supervisor: Prof XY Mbianda

Co-supervisor: Prof S Sinha Ray

Sekoto, Nnini Pamela (Chemistry)

Dissertation: Alkylation of toluene by higher olefins using (pyrazolyl)pyridine nickel complexes as precatalysts.

Supervisor: Prof J Darkwa

Singh, Prasheen (Aquatic Health) (with distinction)

Dissertation: The assessment of sediment contamination in an acid mine drainage impacted river in Gauteng (South Africa) using three sediment bioassays.

Supervisor: Dr A Nel

Co-supervisor: Dr JF Durand

Smith, Gregory Stuart (Computer Science)

Dissertation: Physical layer authentication for passive RFID tags.

Supervisor: Prof M Coetzee

Thatyana, Maxwell (Nanoscience)

Minor Dissertation: Polyethersulfone membrane embedded with Fe/Ni nanoparticles decorated-CNTs for degradation of brominated organics in ground water and water streams.

Supervisor: Prof JC Ngila

Co-supervisor: Dr K Sikwivhilu (MINTEK)

Thipe, Velaphi Clement (Nanoscience)

Minor Dissertation: Optimization of the antifungal activity of several antifungal agents using gold nanoparticles (AuNPs) synthesized through green chemistry.

Supervisor: Dr PB Njobeh

Co-supervisor: Prof SD Mhlanga

Turnbull, Sara Jane (Geology)

Dissertation: Petrography, mineral chemistry and Ar-Ar isotope characteristics of the ledig lujavrites, on the SW edge of the Pilansberg Complex.

Supervisor: Prof JD Kramers

Unterslak, Laura (Information Technology)

Dissertation: A model to facilitate affect detection analysis.

Supervisor: Prof EM Ehlers

Van Niekerk, Jan Hendrik (Computer Science)

Dissertation: An Immunological Inspired Multi Agent System for ensuring Critical Information Infrastructure Protection.

Supervisor: Prof EM Ehlers

Vermeulen, Johan Frederick (Geography)

Dissertation: An Investigation of the Potential Application of Multi- and Hyperspectral Remote Sensing for the Spectral Characterisation of Maize and Related Weeds in the Free State Province of South Africa.

Supervisor: Prof F Ahmed

Wylie, Donna Kim (Geography)

Dissertation: Assessing the quality of Basic Assessment Reports and the associated perspectives of environmental assessment practitioners, conducted within protected areas of the Mpumalanga Province of South Africa.

Supervisor: Dr IT Rampedi

11. Philosophiae Doctor (PhD):

Agorku, Eric Selorm (Chemistry)

Thesis: Metal and non-metal doped semiconductor photocatalysts for water treatment.

Supervisor: Prof AK Mishra

Co-supervisor: Prof BB Mamba (UNISA)

Co-supervisor: Prof AC Pandey (University of Allahabad, India)

Booyens, Irma (Geography)

Thesis: Innovation and Networking in Tourism for the Competitiveness of the Western Cape regional tourism economy.

Supervisor: Prof CM Rogerson (Faculty of Management)

Daru, Barnabas Haruna (Botany)

Thesis: An evaluation of the phylogenetic diversity of trees in southern Africa.

Supervisor: Prof M van der Bank

Co-supervisor: Dr TJ Davies (McGill University, Canada)

Dlamini, Phumlani Goodwill (Applied Mathematics)

Thesis: On spectral relaxation and compact finite difference schemes for ordinary and partial differential equations.

Supervisor: Dr M Khumalo

Co-supervisor: Prof SS Motsa (University of KwaZulu-Natal)

Ferreira, Eloise (Biochemistry)

Thesis: Silver(I) phosphine compounds selectively induce apoptosis in MCF-7 breast cancer cells.

Supervisor: Prof MJ Cronjé

Co-supervisor: Prof R Meijboom

Horne, Tamarisk Kerry (Biochemistry)

Thesis: Aspects of novel *metallo*-porphyrazine derivatives bearing carbohydrate moieties for the establishment of PDT in cancer.

Supervisor: Prof MJ Cronjé

Jordaan, Lodiwikus Johannes (Aquatic Health)

Thesis: Determining the role of catchment geochemistry on the chemistry of water, sediment and fish from impoundments within selected large catchments in South Africa.

Supervisor: Prof V Wepener

Co-supervisor: Prof JM Huizenga (North-West University)

Kimemia, David Kimani (Environmental Management)

Thesis: Transition to Clean Household Energy in South Africa: Safety, Health and Low Carbon.

Supervisor: Prof HJ Annegarn

Lee, Claire Alexandra (Physics)

Thesis: Measurement of track-based missing transverse momentum in proton-proton collisions at $\sqrt{s} = 8$ TeV centre-of-mass energy with the ATLAS detector.

Supervisor: Prof SH Connell

Co-supervisor: Prof K Assamagan (Brookhaven National Laboratory, USA)

Co-supervisor: Dr R Mazini (Academia Sinica, Taiwan)

Lukhele, Lungile Patricia (Chemistry)

Thesis: Toxicity of double-walled carbon nanotubes to algae, macro-invertebrates and fish.

Supervisor: Prof BB Mamba

Co-supervisor: Prof V Wepener (North-West University)

Co-supervisor: Dr N Musee (CSIR)

Marcon, Alister Justin (Mathematics)

Thesis: Semitotal Domination in Graphs.

Supervisor: Prof MA Henning

Marcon, Sinclair Antony (Mathematics)

Thesis: Disjunctive Domination in Graphs.

Supervisor: Prof MA Henning

Maré, Leonie Pauline (Geology)

Thesis: Geothermal history of the Karoo Basin in South Africa inferred from magnetic studies.

Supervisor: Prof MO de Kock

Co-supervisor: Prof B Cairncross

Co-supervisor: Prof H Mouri

Muhire, Innocent (Environmental Management)

Thesis: Climate change and Variability and their Impacts on the Yields of Major Food Crops in Rwanda.

Supervisor: Prof F Ahmed

Naicker, Viroshan (Mathematics)

Thesis: Disjunctive Total Domination in Graphs

Supervisor: Prof MA Henning

Obuah, Collins (Chemistry)

Thesis: Ferrocenylpyrazolyl nickel(II) and palladium(II) complexes as pre-catalysts for ethylene and higher α -olefins reactions.

Supervisor: Prof J Darkwa

Robinson, Claudette (Mathematics)

Thesis: Algebraic methods for hybrid logics.

Supervisor: Prof WE Conradie

Co-supervisor: Prof CJ van Alten (University of the Witwatersrand)

Vunain, Ephraim (Chemistry)

Thesis: Nano-space confinement of pre-selective catalysts for hydroformylation of 1-octene.

Supervisor: Prof R Meijboom

Co-supervisor: Dr K Jalama (Department of Chemical Engineering)



Agorku, Eric Selorm (PhD)

Eric Selorm Agorku was born and raised in Ghana. In 1997 he obtained his West Africa Examination Council (WAEC) certificate from the Technology Secondary School. He worked with the Ghana Agro-Food Company in Tema for two years as a sanitation officer before joining Kwame Nkrumah University of Science and Technology (KNUST) in 1999. He obtained a BSc Honours degree in Chemistry in 2003. He did his National Service in the department of chemistry at KNUST in 2004 and was appointed a teaching assistant by the same university. In 2004, Eric joined KNUST to complete an MSc degree in inorganic chemistry and graduated in 2006. During his postgraduate studies, Mr Agorku tutored undergraduate students and assisted graduate students with their research projects. In 2007, Mr Agorku was appointed as a lecturer in the department of chemistry (KNUST) where he taught inorganic, bioinorganic, analytical and environmental chemistry. He also supervised undergraduate projects. He enrolled for a doctorate programme in chemistry at the University of Johannesburg in 2002.

Mr Agorku's research involved the synthesis of visible-light active photocatalysts for the removal of toxic organic compounds in water. Photocatalysis has provided a simple, effective and cheap technique for water treatment. Research to constantly improve semiconductor performance in the visible light region and to develop new protocols in photocatalysis is ongoing. This work contributes to the field of semiconductor photocatalyst development by exploring the applicability of metals (Pd, Co, Gd, Eu) and nonmetals (C, N, S, reduced graphene oxide) doped with ZrO_2 , TiO_2 , SiO_2 and ZnS as an effective visible-light active photocatalysts for the removal of toxic organic dyes in water. In general, the materials were effective in the degradation of organic dyes under simulated solar light. The candidate's work has produced six publications in international peer-reviewed journals and has been presented at both local and international conferences.

Supervisor: Prof AK Mishra

Co-supervisor: Prof BB Mamba (UNISA)

Co-supervisor: Prof AC Pandey (University of Allahabad, India)



Booyens, Irma (PhD)

Irma Booyens (née Wilkinson) matriculated from Hoërskool Sand du Plessis in Bloemfontein. In 2000 she obtained a B.Com degree in Tourism Management and in 2002 she obtained a Post-Graduate Certificate in Education, both from the University of Pretoria. Mrs Booyens taught at various schools and colleges in South Africa and the United Kingdom. In 2008 she obtained a Master's degree in Development Studies, *cum laude*, from the University of the Free State. Whilst working towards her Master's degree, Mrs Booyens was employed as a development economist, and later took up a research post at the Human Science Research Council where she received the Young Researcher Excellence Award in 2010. She enrolled for her PhD in 2011 and was awarded an NRF Scarce Skills Doctoral Scholarship in 2012. She is currently employed as a Post-Doctoral Research Fellow by the School of Tourism & Hospitality at the University of Johannesburg.

Mrs Booyens' thesis interrogates innovation and networking activities by tourism firms in the Western Cape. Innovation in tourism is determined to be widespread in the Western Cape tourism economy. The incremental nature of innovation, however, is an outstanding feature. It is established that tourism networking linkages in the Western Cape are overwhelmingly dense, local and loose; and not necessarily beneficial for innovation purposes. Creative tourism in Cape Town is also examined. This research makes significant evidence-based contributions to international tourism scholarship, innovation studies, and regional policy debates. Policy support for firm level innovation by tourism firms is recommended, along with a focus on strategic external knowledge for local learning. A re-evaluation of the appropriateness of techno-scientific approaches is further recommended. This investigation suggests the recognition of tourism as a core competency for regional competitiveness. The candidate has published four peer-reviewed journal articles, and presented at one local and two international conferences whilst pursuing her PhD.

Supervisor: Prof CM Rogerson (Faculty of Management)



Daru, Barnabas Haruna (PhD)

Barnabas Daru was born in 1983 in Kerang, Nigeria. He completed his secondary education at the Science School Kuru in 2001. He obtained a BSc Honours degree in Zoology at the University of Jos Nigeria in 2007. He joined the University of Johannesburg in 2010, and in 2012 obtained an MSc degree in Botany. Barnabas is currently employed as a lecturer at the University of Pretoria.

Mr Daru's PhD thesis presents the first evaluation of tree diversity in southern Africa using a phylogenetic approach. First, he mapped and contrasted regional hotspots of species richness and phylogenetic diversity, and showed that the different hotspots did not overlap, but captured different conservation currencies. Second, he revisited biomes delimitation using a method that captures evolutionary relationships between biomes as opposed to traditional classification schemes that only capture taxonomic information. The Fynbos stands out as the most evolutionarily distinct biome. Interestingly, he identified two "new" biomes with distinct evolutionary histories that have been overlooked by traditional methods. Third, he used this phylogenetic regionalisation of biomes to investigate their origins, and showed that the first appearance of the major biome types could be related to evolutionary splits in the mid-Cretaceous periods. The differentiation of present-day biomes including the Fynbos, Grassland, and Savanna, occurred from ~20 Ma to present. The scientific significance of these findings have been published in several international peer-reviewed journals with an impact factor of five and above and has been presented at national and international conferences.

Supervisor: Prof M van der Bank

Co-supervisor: Dr TJ Davies (McGill University, Canada)



Dlamini, Phumlani Goodwill (PhD)

Phumlani Goodwill Dlamini was born and raised in Manzini, Swaziland. He matriculated in 2003 and then enrolled at the University of Swaziland for a four year BSc degree majoring in Mathematics and Physics. He passed with a first class and obtained an award for the most outstanding student at that University in 2008. In 2010 he enrolled for an MSc degree in Applied Mathematics at the University of Johannesburg and graduated *cum laude*. He then enrolled for a PhD at the same institution.

Mr Dlamini's research focused on solving highly nonlinear differential equations. A Gauss-Seidel approach for solving systems of linear algebraic equations was extended to systems of differential equations. The nonlinear differential equations were first linearized and the linearized schemes were then solved using the highly accurate spectral method as well as the sixth-order compact finite difference scheme. This approach was tested on a number of chaotic and hyperchaotic systems of ordinary differential equations. Computing solutions for chaotic and hyperchaotic systems is a very challenging task because they are very complex and characterized by rapidly changing solutions. The approach was also extended to partial differential equations modelling unsteady boundary layer flow problems. The spectral method and compact finite difference schemes were used for the space variables and a Crank-Nicolson scheme was used for the time variables. This approach produced highly accurate results in the applications considered. The work has been presented at both local and international conferences and has resulted in six publications in international peer-reviewed journals.

Supervisor: Dr M Khumalo

Co-supervisor: Prof SS Motsa (University of KwaZulu-Natal)



Ferreira, Eloise (PhD)

Eloise Ferreira matriculated in 2002. She then joined the University of Johannesburg, obtaining her BSc degree, *cum laude*, in 2005 a BSc Honours degree, *cum laude*, in 2006 and an MSc degree, *cum laude*, in 2009. She received numerous awards including the Golden Key award and prizes for the best third year student, best Honours student and best Master's student in Biochemistry. Eloise worked as a demonstrator, part-time lecturer for undergraduates and co-supervised several honours students during their research projects in the Department of Biochemistry. She is married to Freddie and they have a daughter, Kahlan. Eloise currently holds a Post-Doctoral Fellowship at the University of the Witwatersrand where she studies cancer and Alzheimer's therapeutics.

Eloise Ferreira's doctoral thesis investigated the application of tertiary phosphine complexes of silver(I) as anticancer drugs. The effect of these complexes was examined on MCF-7 breast cancer cells and the cell death pathway following exposure, thoroughly explored. The candidate's work demonstrated that the silver(I) compounds caused a significant decrease in viability of the MCF-7 cells, accompanied by cell cycle arrest, alterations in cell morphology and the appearance of biochemical characteristics of apoptotic cell death. Indeed, both the intrinsic and extrinsic apoptotic pathways were activated as indicated by *in situ* activity levels and cleavage of accumulated Caspase proteins, known to be essential role players in effecting apoptotic cell death. Changes in expression levels of pro- and anti-apoptotic genes, quantified by PCRArray™ analyses, supports this conclusion. Surprisingly, these compounds resulted in both p53-dependent and -independent gene expression. Furthermore, the non-toxic effect of these complexes on non-cancerous human embryonic kidney and fibroblast cell lines confirmed selectivity for cancer cells. These findings resulted in the international patenting of these compounds, and accompanying animal studies supports the likelihood of a new, novel class of chemotherapeutic agents for the treatment of breast cancer.

Supervisor: Prof MJ Cronjé

Co-supervisor: Prof R Meijboom



Horne, Tamarisk Kerry (PhD)

Tamarisk Kerry Horne matriculated in 2000 from General Smuts High School, receiving awards for Mathematics, Science and Biology. She obtained a BSc degree in 2003 and a BSc Honours degree in 2004 both from the Rand Afrikaans University. She received top achiever awards for best Biochemistry student. She went on to obtain her MSc degree in the field of cancer therapeutic research (Biochemistry) in 2008 which yielded two publications in peer reviewed journals. One of these was placed within the top 25 articles published by the journal, *Photodiagnosis and Photodynamic Therapy*, in 2012.

Ms Horne's PhD thesis reports on several therapeutic aspects of novel carbohydrate-ligated zinc-porphyrazine photosensitizers in Photodynamic Therapy, a promising branch of cancer therapy research. This work aimed to establish both a viable solubilization and administering method for the photosensitizers and their optimal therapeutic conditions for the treatment of a breast cancer culture model. Her findings revealed the broad scale cellular damage of critical gene, protein and organelle systems indicating photodynamic therapy with these photosensitizers cripple multiple components required for cancer cell function. The work went on to prove that this damage culminates in efficient cancer cell death with no tissue recovery. Furthermore, a comparison of therapeutic conditions between breast, skin, lung and oesophageal cancer models also revealed their broad spectrum application to multiple cancer types. Collectively, the significance of this research demonstrates a promising role for photodynamic therapy with these photosensitizers for overcoming cancer survival regardless of the tissue type being treated or phenotypic resistance profiles they display. Her work has been presented at several international conferences, was published internationally and she has been invited to submit a review article to a Special Issue of the *International Journal of Molecular Sciences* entitled "Advances in Photodynamic Therapy".

Supervisor: Prof MJ Cronjé



Jordaan, Lodiwikus Johannes (PhD)

Lodiwikus Johannes Jordaan was born in 1966 in Boksburg and matriculated in 1983 from Eben Dönges High School in Cape Town. He has two daughters named, Nadia and Tessa. In 1986 he obtained his BSc degree and in 1987 he obtained his Honours degree in Geology both at the University of Stellenbosch. After obtaining a Master's degree in Geology, *cum laude*, in 1990 he started his professional career at the Council for Geoscience in Pretoria. In 1996 he became the head of the stable isotope and analytical chemistry sections. His career focussed on the analyses of geological and environmental materials and in 2011 he registered for a PhD in Aquatic Health at the University of Johannesburg.

The candidate's research focussed on the influence of catchment geochemistry on the chemistry of water, sediment and fish from impoundments within large catchments. The candidate studied the path of chemical elements from the upper regions of four large South African catchments from erosion, dissolution and transport by rivers, through the dispersion and deposition in lakes and the eventual uptake by resident fish, with the aim of identifying chemical parameters that best distinguish between fish, lake water and lake sediments. During the study he recorded a clear correlation between the chemical composition of various fish tissue types and lake water using strontium isotope ratios as well as several elemental ratios. A chemical database was created which facilitated the development of a forensic tool to validate fish caught during major inland fishing tournaments. The method was used successfully in a legal action to establish a link between a tournament winning fish and a specific lake. The candidate has presented his work at several local conferences. One paper has been published and three more have been submitted for publication in peer-reviewed journals.

Supervisor: Prof V Wepener

Co-supervisor: Prof JM Huizenga (North-West University)



Kimemia, David Kimani (PhD)

David Kimemia was born and raised in Kenya. He attended Nakuru High School and graduated with an A-Level Certificate in 1985. He joined Moi University in 1987 and obtained a BSc degree in Wood Science and Technology in 1990. In 2007, he joined the University of Fort Hare to read for a BSc Honours degree in Geography, awarded in 2008. Mr Kimemia registered at the University of Johannesburg in 2009 to read for an MSc degree in Environmental Management, which he obtained in 2010. He enrolled for a doctorate programme in Environmental Management at the University of Johannesburg in 2011, associated with the Sustainable energy Technology and Research (SeTAR) Centre of the University. Mr Kimemia has represented the SeTAR Centre at local and international meetings in the Netherlands, Austria and Kenya. During his postgraduate studies, Mr Kimemia tutored undergraduate students and assisted graduate students with their research projects.

Mr Kimemia's thesis reports on an investigation into the best pathway to transition low-income urban households in South Africa to modern energy access. The study notes the widespread use of inefficient, risky and polluting energy technologies by residents of low-income settlements. The risk of fires and injury borne by energy-poor households was analysed and shown to correlate with quality of energy used, with paraffin being the most risky fuel. The study notes the use of basic energy for productive services (small businesses) and recommends its further development. The potential for clean energy to transform lives is demonstrated by the evaluation of results of an LPG intervention project in the City of Tshwane. The impact of such energy interventions could be improved through better designed delivery models as recommended to policy makers and project implementers. The candidate has published three papers in peer-reviewed journals and presented at four international conferences.

Supervisor: Prof HJ Annegarn



Lee, Claire Alexandra (PhD)

Claire Lee was born in Johannesburg and matriculated at St Mary's School for Girls. She obtained a BSc degree majoring in Physics and Computational and Applied Mathematics, a BSc Honours degree in Physics and an MSc degree in Experimental High Energy Nuclear Physics from the University of the Witwatersrand. The experimental work for her MSc was performed at the Jefferson Laboratory in the United States of America as a study of sub-threshold production of the J/ψ particle. She then moved to the University of Johannesburg where she did her PhD in Experimental High Energy Particle Physics. The experimental work for her PhD was performed within the ATLAS experiment at the Large Hadron Collider of CERN. On several occasions she has been selected by the ATLAS Collaboration to represent the students, including one occasion when she was a speaker at the celebrations for the 60th anniversary of CERN at UNESCO. Claire Lee has completed the first PhD thesis of a South African student within the ATLAS experiment. She has contributed within the ATLAS Collaboration to the discovery of the Higgs Boson. She is now a Convenor of the group within which she did the main work of her PhD research.

Claire Lee's research has been carried out within the ATLAS Collaboration at the Large Hadron Collider of CERN, the European Organization for Nuclear Research. Her focus, as part of a group within ATLAS, has been the development and study of an important new tool, which can track invisible particles through momentum and energy imbalance within a transverse plane of the ATLAS detector. This kinematic variable, known as MET, is crucial to searches for particulate Dark Matter, Super Symmetry, several exotic decays of the Higgs and indeed, any new physics beyond the Standard Model involving invisible particles. This thesis details the studies, which validate the improved performance and also the applications in various Higgs analyses (or channels of Higgs discovery). As a qualified ATLAS Author she has published numerous papers in peer-reviewed journals based on the research done for her PhD. She is a contributing editor to 9 internal Notes of ATLAS.

Supervisor: Prof SH Connell

Co-supervisor: Dr K Assamagan (Brookhaven National Laboratory, USA)

Co-supervisor: Dr R Mazini (Academia Sinica, Taiwan)



Lukhele, Lungile Patricia (PhD)

Lungile Patricia Lukhele matriculated from St Marks High School, Mbabane, Swaziland in 1998. She enrolled at the University of Swaziland where she obtained a BSc degree in 2003. She worked as a medical scientist at the Mbabane Government Hospital for three years before enrolling for an MSc degree in Chemistry at the University of Johannesburg in 2007. After completing her Masters studies she enrolled for a PhD degree in January 2010.

Ms Lukhele's doctoral research focussed on quantifying the toxicity of double walled carbon nanotubes on three aquatic organisms namely, algae, macro-invertebrates and fish. Acute toxicity tests revealed that double walled carbon nanotubes were more toxic towards macro-invertebrates while fish was less sensitive to double walled carbon nanotubes exposure. Sub-lethal toxicity tests revealed that double walled carbon nanotubes caused significantly high oxidative stress and DNA damage in macro-invertebrates and fish but not in algae. Therefore, the multi-species and multi-tiered i.e. the determination of lethal and sub-lethal effects approach adopted in this study provided comprehensive information on the potential effects of these double walled carbon nanotubes in the aquatic environment. This study has produced a framework for evaluating the toxicity of nanomaterials at low concentration levels in water and the results obtained will prove to be significant for future research when ascertaining and modelling of potential risks associated with other types of engineered nanomaterials and nanoparticles for various applications in nanotechnology. The candidate's work has been published in two international peer-reviewed journals with three other papers currently under review.

Supervisor: Prof BB Mamba

Co-supervisor: Prof V Wepener (North-West University)

Co-supervisor: Dr N Musee (CSIR)



Marcon, Alister Justin (PhD)

Alister Marcon obtained a BSc degree, *cum laude*, in 2009 and an Honours degree, *cum laude*, in 2010 both from the University of Johannesburg. Alister received the top achiever award in Mathematics. In 2012, Alister obtained his Master's degree in Mathematics at the University of Johannesburg focusing his studies on network flows in graph theory.

The thesis studies the semitotal domination parameter. The semitotal domination number is shown to be bounded above by the matching number of a graph. Partition results involving various domination parameters are obtained, and an algorithm computing the semitotal domination number of a tree is presented. The set of vertices that are contained in all, or in no minimum semitotal dominating set of a tree is characterized. An upper bound on the semitotal domination number of a connected claw-free cubic graph in terms of its order is obtained. This thesis has to date resulted in three publications in international peer-reviewed journals, with a further paper currently in the review process.

Supervisor: Prof MA Henning



Marcon, Sinclair Antony (PhD)

Sinclair Marcon obtained a BSc degree *cum laude* from the University of Johannesburg in 2009. He continued his studies at the University of Johannesburg, and in 2010 obtained an Honours degree in Mathematics, also *cum laude*. He was the overall top achiever in the Faculty of Science in 2010. Notably, Sinclair obtained distinctions for all undergraduate and honours modules that he was registered for. In 2012 he obtained his Master's degree in Mathematics at the University of Johannesburg focusing his studies on Markov Chains in graph theory.

The thesis studies the disjunctive domination number in graphs. Minimality results for the more general b -disjunctive domination number are given. The ratio between the domination number and the disjunctive domination number is examined for various families of graphs. An upper bound on the domination number in terms of this parameter for the class of tree is presented and the trees achieving equality in the bound are characterized. The trees where the total domination number and the disjunctive domination number achieve equality are characterized. A characterization of the set of vertices contained in all or in no minimum disjunctive dominating set in a tree is provided. To date this thesis has resulted in two publications in international peer-reviewed journals, with a further two papers currently in the review process.

Supervisor: Prof MA Henning



Maré, Leonie Pauline (PhD)

Leonie Maré (née Bentum) was born in 1969 in Pretoria where she matriculated from the Hoërskool Staatspresident CR Swart in 1986. She subsequently enrolled at the University of Pretoria where she obtained a BSc degree in 1990 and an Honours degree in Exploration Geophysics in 1991. She was employed during 1992 as seismic data processor at Rockplan Pty (Ltd) in Randburg and joined the Geological Survey of South Africa, now the Council for Geoscience, in 1993 as junior geophysicist, where she currently holds the position as Section Head of the Petrophysical Laboratory. In 2001 Leonie enrolled at the University of Pretoria and obtained her MSc degree in Exploration Geophysics in 2004. Leonie enrolled at the University of Johannesburg for her PhD degree in Geology in 2010.

The candidate undertook the original approach of studying the thermal history of the Karoo Basin of South Africa using magnetic and palaeomagnetic methods. No equivalent investigation has been attempted before at such a broad scale. Reconstruction of the thermal history is essential for evaluating the potential for natural gas and oil generation within sedimentary basins. The results of paleomagnetic tests, variation of magnetic susceptibility and pyrrhotite vs. magnetite geothermometry indicate an elevation of palaeotemperatures of the organic-rich sedimentary rocks to temperatures where hydrocarbons are normally converted into gas. Importantly, it is clear from this study that the greatest thermal effects of intrusions on the sedimentary strata are limited to the contact aureoles of intrusive dolerites, suggesting that there is an, as yet, unquantified potential for shale gas between these intrusions. Furthermore, a lithologically controlled increase in the palaeotemperatures from southwest to northeast across the Karoo basin was observed. The candidate's results were featured on the cover page of the South African Journal of Geology. Results were presented at several meetings, including amongst others, the American Geophysical Union (AGU) Fall Meeting in the USA, the 34th International Geological Congress (IGC) in Australia, and the GeoSynthesis meeting in Cape Town, where the work was awarded a prize for the best research paper in geophysics. The candidate is first author on five publications and co-author on one publication.

Supervisor: Prof MO de Kock

Co-supervisor: Prof B Cairncross

Co-supervisor: Prof H Mouri



Muhire, Innocent (PhD)

Innocent Muhire was born and raised in Rwanda. He attended Rwesero Junior Seminary and obtained an A-Level Certificate in 1997. He joined the Kigali Institute of Education in 1999 and obtained a BA degree in History-Geography and Education in 2004. In 2008 Mr Muhire obtained an MSc degree in Geography from Bangalore University in India. He registered for a PhD degree in Environmental Management at the University of Johannesburg in August 2012.

Mr Muhire's thesis investigated the climate change and variability and their impacts on the yields of major food crops in Rwanda. Using a number of statistical techniques and a geographical information system; spatial-temporal variations were observed in mean temperature, rainfall, number of rainy days and aridity index for the past years while a decline is projected up to 2050. The central plateau of the country might continue to be suitable to most of the food crops under investigation. The study notes positive links between rainfall anomalies during long and short rains and El Niño events, while La Niña was linked to negative rainfall anomalies for the period 1935-1992. During his PhD studies, he published six articles in international peer-reviewed journals with two more in press, and presented at two national and international conferences.

Supervisor: Prof F Ahmed



Naicker, Viroshan (PhD)

Viroshan Naicker obtained a BSc degree in Applied Mathematics, *cum laude*, in 2003 and a BSc Honours degree, also *cum laude*, in 2004 both at the University of KwaZulu-Natal, Howard College Campus. Since then he has studied Applied Mathematics problems in differential equations co-authoring eight journal articles in this area. He obtained an MSc degree in Physics in 2008, and attended Part III of the Mathematical Tripos at Cambridge University in 2009/2010. He is currently a lecturer at Rhodes University.

The thesis considers a new graph invariant called the disjunctive total domination number of a graph, a relaxation of the well-known total domination number. Properties of the parameter are obtained. Upper bounds on the disjunctive total domination number in terms of the order of the graph are established for various classes of graphs including general graphs, claw free graphs, the class of trees, and the class of graphs with minimum degree at least two. A connected graph of order at least 8 is shown to have disjunctive total domination number at most two-thirds its order minus one, while a connected graph of order at least 13 is shown to have disjunctive total domination number at most one-half its order minus one. In both cases, the infinite family of graphs achieving equality in the upper bounds are characterized. To date this thesis has resulted in two publications in international peer-reviewed journals, with a further paper currently in the review process.

Supervisor: Prof MA Henning



Obuah, Collins (PhD)

Collins Obuah completed his secondary school education in 2000 at Adisadel College in Cape Coast, Ghana. In 2006 he obtained a BSc Honours degree in Chemistry. He joined the Department of Chemistry at University of Johannesburg as an MSc student in 2010 under the supervision of Prof James Darkwa and in 2012 obtained his MSc degree *cum laude* and enrolled for a PhD degree in Chemistry. Mr Obuah worked as a tutor and a demonstrator and is currently a Post-Doctoral Fellow in the Department of Chemistry. Mr. Obuah has won several awards including the prestigious South African Chemical Institute's Sasol post graduate medal of excellence in 2014.

Electrophilicity of the metal centre in a catalyst is generally accepted as the source of catalytic activity but no clear measure of electrophilicity has been found that link catalyst activity to electrophilicity. In his PhD project, Mr Obuah, prepared a series of ferrocenylpyrazolyl nickel and palladium complexes and investigated their catalytic ability to convert olefins to industrially useful materials. Through electrochemical and computational modeling experiments, he was able to clearly establish a direct correlation between the electrophilicity of a metal centre and the catalytic activity of a metal complex. This has led to a new way of screening metal complexes as catalysts. The results in this thesis have been presented at several local and overseas conferences, two articles have been published in international peer-reviewed journals, a further article has been submitted and two more are in preparation.

Supervisor: Prof J Darkwa



Robinson, Claudette (PhD)

Claudette Robinson matriculated from Hoërskool Die Adelaar in 2003. In the following year she began her higher education at the University of Johannesburg and obtained a BSc degree, *cum laude*, and a BSc Honours degree in Mathematics also *cum laude*. In 2009 Claudette obtained an MSc degree in Mathematics, *cum laude*, after which she pursued a PhD in Mathematics. During her postgraduate studies she also lectured first and second year mathematics modules. She is currently a part-time lecturer at the University of Johannesburg and is continuing with research in Logic.

The study of modal logic goes back to Aristotle, with his distinction between necessary and contingent propositions. Logic has seen dramatic and sustained development since the early twentieth century when it first started to enjoy the benefits of mathematical methods. Modal logic received a profound impetus with the introduction of possible world's semantics by Kripke in the 1960s and again with the renewed interest in algebraic semantics and techniques in the 1990s. The candidate's work focused on certain extensions of modal logic, known as hybrid logics, which are obtained by introducing syntactic mechanisms which act as names for the worlds or states of the Kripkean semantic paradigm. She conducted pioneering research into algebraic methods for these logics. Her work introduces the notion of hybrid algebras as semantics for hybrid logics and proves very general completeness results with respect to these structures. She goes on to show the usefulness and appropriateness of this semantics by using it to prove a wide variety of new results for a range of hybrid logics, including different finite model properties, correspondence and preservation theorems. A paper based on the thesis has been accepted for publication in international peer-reviewed journal.

Supervisor: Prof WE Conradie

Co-supervisor: Prof CJ van Alten (University of the Witwatersrand)



Vunain, Ephraim (PhD)

Ephraim Vunain was born and raised in Big Babanki, in the North West Region of Cameroon. He matriculated from the Cameroon College of Arts, Science and Technology (CCAST), Bambili in 1989. He subsequently enrolled at the Abubakar Tafawa Balewa University in Nigeria where he obtained a BTech degree in Industrial Chemistry in 1997. In 2011 he obtained an MTech degree in Chemical Technology, *cum laude*, from the University of Johannesburg. In September 2011 he enrolled for a PhD degree in Chemistry at the same institution.

Interest in nanotechnology and mesostructured silica materials has soared in recent years. This new generation of materials offers us endless possibilities in a variety of sectors and applications. Typical characteristics of mesoporous silica materials are high surface area, large pore volume, well-ordered and narrow pore size distribution with adjustable pores between 2 and 50 nm. Incorporation of active sites into these materials is readily achieved by surface functionalization. Ephraim's research area focused on the synthesis and characterization of mesoporous materials as support materials in catalytic processes. The candidate was able to functionalize these materials for other applications such as water purification. Results from these applications showed the promising role of mesoporous molecular sieves in the chemical industry. Parts of this work have been published in leading international peer-reviewed journals and has resulted in one book chapter with two more papers currently under review.

Supervisor: Prof R Meijboom

Co-supervisor: Dr K Jalama (Department of Chemical Engineering)



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