



# Graduation Programme

**The Future. Reimagined.**



**Welcome to the  
Graduation Ceremony of the  
University of Johannesburg  
12 May 2020 at 17:00**

**Welkom by die  
Gradeplegtigheid van die  
Universiteit van Johannesburg  
12 Mei 2020 om 17:00**

**Le a Amogelwa  
Moletlong wa Dikapešo wa  
Yunibesithi ya Johannesburg  
12 Mopitlo 2020 ka 17:00**

**Niyamukelwa  
eMcimbini wokweThweswa kweZiqu  
weNyuvesi yaseJohannesburg  
12 kuNhlaba 2020 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 T Marwala  
BS Eng (Case Western Reserve USA), MEng (UP), PhD (Cambridge UK)

### **DEPUTY VICE-CHANCELLOR ACADEMIC**

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

### **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**

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

## **GENERAL COUNSEL**

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

## **SENIOR EXECUTIVE DIRECTOR IN THE VICE-CHANCELLOR'S OFFICE**

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

## **EXECUTIVE DEANS**

### **COLLEGE OF BUSINESS AND ECONOMICS**

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

### **FACULTY OF ART, DESIGN AND ARCHITECTURE**

Ms A Breytenbach (Acting)  
BArch (Pret), MBA (UJ)

### **FACULTY OF EDUCATION**

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

### **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 (Acting)  
BA, BA Hons, MA, PhD (University of Manchester, UK)

## **FACULTY OF LAW**

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

## **FACULTY OF SCIENCE**

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

## **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  
Prof T Marwala  
Ms Z Matlala  
Prof A Parekh  
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!

# QUALIFICATIONS

## 1. National Diploma (NDip)

**Allogho Allogho**, Ibrahim (Engineering: Chemical)  
**Egbujo**, Chidera Udoka (Engineering: Chemical)  
**Kekana**, Thato Joseph (Engineering: Chemical)  
**Khupari**, Thapelo Andrias Marks (Engineering: Chemical)  
**Magadlela**, Baorapetse Innocentia (Engineering: Chemical)  
**Malemela**, Molebogeng (Engineering: Chemical)  
**Mamabolo**, Tumisang Amenda (Engineering: Chemical)  
**Mkhabela**, Siphon Wandile (Engineering: Chemical)  
**Msimang**, Nkosingiphile Busisiwe (Engineering: Chemical)  
**Mukiza**, Jimmy Nkuriza (Engineering: Chemical)  
**Muthavhine**, Talifhani (Engineering: Chemical)  
**Pedro**, Makaia Matondo (Engineering: Chemical)  
**Pillay**, Thashna (Engineering: Chemical)  
**Ramlakhan**, Shauhil (Engineering: Chemical)  
**Rikhotso**, Social Azael (Engineering: Chemical)  
**Santiago**, Gleide Luisa Torres (Engineering: Chemical)  
**Shabalala**, Nhlakanipho (Engineering: Chemical)

## 2. Bachelor of Technology (BEng Tech)

**Buthelezi**, Enhle Nobuhle (Chemical Engineering)  
**Dlamini**, Bongani Kenneth (Chemical Engineering)  
**Dube**, Nolwazi Patricia (Chemical Engineering)

**Kapa**, Sewela Irene (Chemical Engineering)  
**Lekoane**, Seketu Ezekiel (Chemical Engineering)  
**Makani**, Ivine (Chemical Engineering)  
**Mamburu**, Mbavhalelo Tshimangadzo Erling (Chemical Engineering)  
**Mampane**, Dimakatso Mohwele Yvonne (Chemical Engineering)  
**Maseko**, Lungelo Cedusizi (Chemical Engineering)  
**Mathabatha**, Teddy Ireen Kantoro (Chemical Engineering)  
**Matholisa**, Lebohang Emely (Chemical Engineering)  
**Mdongwane**, Tibi Andries (Chemical Engineering)  
**Molefe**, Mmakgotso Dimpho (Chemical Engineering)  
**Monyela**, Maria Thabang (Chemical Engineering)  
**Ndaidza**, Johannes (Chemical Engineering)  
**Nhambe**, Piter (Chemical Engineering)  
**Sebapola**, Plaatjie John Katileho (Chemical Engineering)  
**Senosha**, Maphuti Pinkie (Chemical Engineering)  
**Sibanda**, Nobubelo Sinentobeko (Chemical Engineering)  
**Sibindani**, Mitchell Rutendo (Chemical Engineering)  
**Taole**, Rahabbah Thakane (Chemical Engineering)  
**Tladi**, Motlatso Ramadimetse Sinah (Chemical Engineering)  
**Xulu**, Lindokuhle Moses (Chemical Engineering)  
**Zondo**, Mondli (Chemical Engineering)

### 3. **Baccalaureus Technologiae (BTech)**

**Aboubakar**, Ahmat Oumar (Engineering: Chemical)  
**Baard**, Qoliswa (Engineering: Chemical)  
**Baloyi**, Mikateko (Engineering: Chemical)  
**Bapela**, Nomfundo Yolanda (Engineering: Chemical)  
**Bongwe**, Elelwani Jasmine (Engineering: Chemical)  
**Chauke**, Frengeline (Engineering: Chemical)



**Djetkeu Ngibu**, Geraldine (Engineering: Chemical)  
**Dlamini**, Tembuso Bongekile (Engineering: Chemical)  
**Franks**, Jermaine Jordache (Engineering: Chemical)  
**Gaothaelwe**, Dineo Khumo (Engineering: Chemical)  
**Gegana**, Yolanda Thobile (Engineering: Chemical)  
**Ghotu Kouam**, Daniele (Engineering: Chemical)  
**Gutsa**, Tatenda Maxwell (Engineering: Chemical)  
**Heeraman**, Yashna (Engineering: Chemical)  
**Joel**, Tokelo Stephen (Engineering: Chemical)  
**Kazadi**, Mukeba Luxclen (Engineering: Chemical)  
**Letlhabula**, Sebetlela (Engineering: Chemical)  
**Mabetoa**, Tobola Shane (Engineering: Chemical)  
**Mahlalela**, Xolani Robert (Engineering: Chemical)  
**Makwelo**, Thabo Collen (Engineering: Chemical)  
**Mango**, Pfuluwani Agreement (Engineering: Chemical)  
**Maponya**, Kabelo (Engineering: Chemical)  
**Mathibela**, Makgatswi Cathol (Engineering: Chemical)  
**Miya**, Nthabiseng Desiree (Engineering: Chemical)  
**Mkhize**, Hlobile Charmaine (Engineering: Chemical)  
**Mngadi**, David Khombokwakhe (Engineering: Chemical)  
**Mnisi**, Nobuhle Fortunate (Engineering: Chemical)  
**Mongwe**, Regionald (Engineering: Chemical)  
**Mothapo**, Sekitla Rebecca (Engineering: Chemical)  
**Mothibi**, James Thabang (Engineering: Chemical)  
**Motswadi**, Keneilwe Boitumelo (Engineering: Chemical)  
**Mthombeni**, Isabella Prudence (Engineering: Chemical)  
**Mukhari**, Denzel Mahamba (Engineering: Chemical)  
**Mukona**, Bradley (Engineering: Chemical)  
**Mululu**, Alimasi Scott (Engineering: Chemical)  
**Ndlovu**, Elizabeth Kamogelo (Engineering: Chemical)  
**Ndwamato**, Zwonaka (Engineering: Chemical)

**Neuvhirwa**, Tshifhiwa Merlyn (Engineering: Chemical)  
**Ngobeni**, Makungu (Engineering: Chemical)  
**Ngwenya**, Bongumenzi (Engineering: Chemical)  
**Ntobeng**, Mmataseleng Getrude (Engineering: Chemical)  
**Ntuli**, Nontobeko Precious (Engineering: Chemical)  
**Ntuli**, Thuli (Engineering: Chemical)  
**Osman**, Mohammed Hoosen (Engineering: Chemical)  
**Ramabi**, Kelebogile (Engineering: Chemical)  
**Ramarope**, Selaki Ivy (Engineering: Chemical)  
**Ramatha**, Fulufhelo (Engineering: Chemical)  
**Rihlapfu**, Lucas (Engineering: Chemical)  
**Sekubala**, Thabo Bushy (Engineering: Chemical)  
**Simango**, Pfano (Engineering: Chemical)  
**Tivane**, Amelia (Engineering: Chemical)  
**Tsasanyane**, Nthabeleng Juliemae (Engineering: Chemical)  
**Tseta**, Thendo (Engineering: Chemical)  
**Tshipu**, Lesego (Engineering: Chemical)  
**Tshomane**, Neo (Engineering: Chemical)  
**Tsotetsi**, Thabang Nelson (Engineering: Chemical)  
**Zulu**, Sithembiso Ntuthuko (Engineering: Chemical)

#### 4. **Magister Ingenieriae (MIng) - Master of Engineering (MEng)**

**Arthur**, Warren Michael (Mechanical Engineering)

**Dissertation:** Characterisation of concentrating Solar Optics by Light field methods

**Supervisor:** Prof Al Nel

**Dlamini**, Lindokuhle Vulindlela (Electrical and Electronic Engineering)

**Dissertation:** Adaptive overcurrent protection application for a micro-grid power system in South Africa

**Supervisor:** Dr AN Hasan

**Jivan, Krishna Prakash** (Engineering Management) **(with distinction)**  
**Minor Dissertation:** Influence of organisational culture in adoption of Agile  
**Supervisor:** Prof AL Marnewick  
**Co-Supervisor:** Mr N Joseph

**Lediga, Refilwe Mahlatse** (Civil Engineering)  
**Dissertation:** The applications of 3D printing using cement – based material with special reference to optimum mix design using locally sourced materials.  
**Supervisor:** Mr. D Kruger

**Letlala, Shadrack Kagiso** (Engineering Management)  
**Minor Dissertation:** The impact of industry 4.0 on the railway industry  
**Supervisor:** Prof JHC Pretorius  
**Co-Supervisor:** Mr B Makhanya

**Makhateng, Don Morena** (Engineering Management)  
**Minor Dissertation:** The effectiveness of managing the process lifecycle of medium and low voltage equipment in building services  
**Supervisor:** Prof JHC Pretorius

**Makondo, Tinyiko Eric** (Engineering Management)  
**Minor Dissertation:** Root cause analysis of the unpremeditated failure of induced draft fan motor during commissioning  
**Supervisor:** Prof JHC Pretorius

**Masher, Reginald Leonard** (Electrical and Electronic Engineering)  
**Dissertation:** Accurately scaled 3-D scene reconstruction using a moving monocular camera and a single-point depth sensor  
**Supervisor:** Prof AL Nel

**Matsaung, Mpho** (Engineering Management)  
**Minor Dissertation:** Strategy for improvement of maintenance management of railway track assets  
**Supervisor:** Prof JHC Pretorius  
**Co-Supervisor:** Dr. A Wessels

**Musengi, Tawandah** (Engineering Management)

**Minor Dissertation:** Impact of total productive maintenance in manufacturing on overall equipment effectiveness

**Supervisor:** Prof A Marnewick

**Co-Supervisor:** M Malatji

**Olotu, Olufunsho Oladipo** (Mechanical Engineering) **(with distinction)**

**Dissertation:** A two-dimensional simulation of atomic layer deposition process on substrate trenches

**Supervisor:** Prof TC Jen

**Co-Supervisor:** Prof PA Olubambi

**Seeme, Lebogang Reginald** (Engineering Management)

**Minor Dissertation:** Human factors consideration in the automation design of a safety- critical installation

**Supervisor:** Prof L Erasmus

**Co-Supervisor:** Prof JHC Pretorius

## 5. Master of Sustainable Urban Planning and Development

**Khumalo, Thandekile Nqobile** (Sustainable Urban Planning and Development) **(with distinction)**

**Minor Dissertation:** Comparative assessment of effectiveness of BRT systems of Johannesburg and Tshwane.

**Supervisor:** Mr A Ogra

**Co-Supervisor:** Mr E Makoni

**Lekalakala, Phemy Mankgokgoetsi** (Sustainable Urban Planning and Development)

**Minor Dissertation:** The Effects of Urbanisation on housing backlog in Johannesburg City

**Supervisor:** Mr GO Onatu

**Maruve**, Pepukai Perpetua (Masters in Sustainable Urban Planning and Development)

**Minor Dissertation:** The importance of effective water infrastructure management in Harare, Zimbabwe

**Supervisor:** Prof W Musakwa

**Co-Supervisor:** Prof T Gumbo

**Mathebula**, Fanyane Craig (Sustainable Urban Planning and Development)

**Minor Dissertation:** Housing sustainability in Mining communities: A case of Govan Mbeki municipality

**Supervisor:** Mr GO Onatu

**Mindila Eveve**, Perside (Sustainable Urban Planning and Development)

**Minor Dissertation:** Smart city applications in Libreville, Gabon

**Supervisor:** Prof W Musakwa

**Co-Supervisor:** Prof T Gumbo

**Moroaswi**, Lebogang Stephinah (Sustainable Urban Planning and Development)

**Minor Dissertation:** Assessing the sustainability of housing projects in Germiston

**Supervisor:** Mr ZE Mbiza

**Co-Supervisor:** Prof T Gumbo

**Neves**, Johnny Warren (Sustainable Urban Planning and Development)

**Minor Dissertation:** Assessing the institutional readiness of long-term planning in municipalities

**Supervisor:** Mr. EN Makoni

**Ntsanwisi**, Musa Casper (Masters in Sustainable Urban Planning and Development)

**Minor Dissertation:** An assessment of Urban Expansion on a Wetland Ecosystem in Johannesburg

**Supervisor:** Mr EN Makoni

## 6. **Magister Philosophiae (MPhil)**

**Bandezi**, Ncebakazi Assah (Engineering Management) (**with distinction**)

**Minor Dissertation:** Using communication to mitigate the challenges of outsourced projects

**Supervisor:** Prof AL Marnewick

**Bhembe**, Crosby Thabiso (Engineering Management)

**Minor Dissertation:** Improving the East Rand waste water purification processes and systems

**Supervisor:** Prof A Telukdarie

**Dube**, Joseph (Engineering Management)

**Minor Dissertation:** A framework for delivering projects on target in the gas industry in South Africa

**Supervisor:** Dr BW Botha

**Ford**, Duncan Derrick (Electrical and Electronic Engineering) (**with distinction**)

**Dissertation:** Impact of photovoltaic plants on voltage sag

**Supervisor:** Dr EN Mbuli

**Co-Supervisor:** Prof JHC Pretorius

**Lubisi**, Silence Masoyi (Engineering Management)

**Minor Dissertation:** The assessment of the effectiveness of treatment methods on eucalyptus grandis yielding pencil propos

**Supervisor:** Prof A Telukdarie

**Mageza, Kulani (Engineering Management)**

**Minor Dissertation:** Technology transfer to the rural aluminium foundry in Limpopo

**Supervisor:** Prof AF Mulaba-Bafubiandi

**Co-Supervisor:** Prof JHC Pretorius

**Masha, Ditebogo Fatima (Electrical and Electronic Engineering)**

**Dissertation:** Proprioceptive terrain classification of tracked ground vehicles using wheel slip estimates

**Supervisor:** Prof B Twala

**Munzhelele, Fulufhelo Elelwani (Engineering Management)**

**Minor Dissertation:** An investigation into the improvement of maintenance quality in a production plant through the use of reliability management

**Supervisor:** Dr A Maneschijn

**Co-Supervisor:** Prof JHC Pretorius

**Ngunyule, Sipho (Engineering Management)**

**Minor Dissertation:** Management and control of inventory in Denel Land Systems

**Supervisor:** Dr H Nel

**Co-Supervisor:** Mr B Makhanya

**Pasipanodya, Nhamo Cyprian (Civil Engineering)**

**Dissertation:** Application of a dynamic water balance model to evaluate possible interventions to improve water security in Kgetlengrivier local Municipality

**Supervisor:** Dr WR Nyabeze

**Rapiya, Xolela Luzuko (Engineering Management)**

**Minor Dissertation:** The importance of understanding the market before introducing a new product: A case study

**Supervisor:** Prof JHC Pretorius

**Co-Supervisor:** H Malik

**Shihlomule, Charles** (Engineering Management)

**Minor Dissertation:** Factors affecting the reliability of traction substations at Transnet Freight Rail

**Supervisor:** Prof J Meyer

**Shirinda, Vukosi** (Engineering Management)

**Minor Dissertation:** Impact of risk management in construction projects

**Supervisor:** Dr. H Nel

**Simelane, Nondumiso Patricia** (Electrical and Electronic Engineering)  
**(with distinction)**

**Dissertation:** Impact of inverter side PV plants on HVDC commutation failures

**Supervisor:** Dr EN Mbuli

**Co-Supervisor:** Prof JHC Pretorius

## 7. Doctor Ingeneriae (DIng)

**Mabaso, Matsilele Aubrey** (Electrical and Electronic Engineering)

**Thesis:** Automation approach for Spot detection in Microscopy Imaging based on image processing and Statistical Analysis

**Supervisor:** Prof B Twala

**Co-Supervisor:** Dr DY Withey

**Motepe, Sibonelo Cobry** (Electrical and Electronic Engineering)

**Thesis:** Efficient use of deep learning and machine learning for load forecasting in the South African power distribution networks

**Supervisor:** Dr AN Hasan

**Co-Supervisor:** Prof B Twala and Prof R Stopforth

**Nkwari, Patrick Kibambe Mashoko** (Electrical and Electronic Engineering)

**Thesis:** Behind-wall target detection using Micro-Doppler effects

**Supervisor:** Prof S Sinha

**Co-Supervisor:** Prof HC Ferreira



## 8. Doctor Philosophiae (DPhil)

**Naghizadeh, Abdolhossein** (Civil Engineering)

**Thesis:** Mix design and alkali resistance of fly ash geopolymers binders

**Supervisor:** Prof SO Ekelu

**Okae Adow, Michael Afari-Ahwire** (Civil Engineering)

**Thesis:** Health and safety performance management mode for the Ghanaian industry

**Supervisor:** Prof CO Aigbavboa

**Co-Supervisor:** Prof WD Thwala

## 9. Doctor of Philosophy (PhD)

**Aigbavboa, Solomon Ohiole** (Operations Management)

**Thesis:** Pharmaceutical supply chains in Nigeria: A framework for outsourcing outbound value chains

**Supervisor:** Prof C Mbohwa

**Awotunde, Mary Ajimegoh** (Metallurgical Engineering)

**Thesis:** Microstructural characterisation and mechanical properties of carbon nanotube reinforced Nickel Aluminide composites

**Supervisor:** Prof PA Olubambi

**Co-Supervisor:** Dr MB Shongwe

**Kafodya, Innocent** (Civil Engineering)

**Thesis:** Moisture-induced static and cyclic properties of sisal fiber reinforced soil for resilient earthen construction

**Supervisor:** Prof FN Okonta

**Okoro, Awwersuoghene Moses** (Metallurgical Engineering)

**Thesis:** Spark plasma sintering of multiwall carbon nanotubes reinforced titanium-aluminium-vanadium alloy based nanocomposites

**Supervisor:** Prof PA Olubambi

**Co-Supervisor:** Dr R Machaka

**Roy, Tanmoy** (Electrical and Electronic Engineering)

**Thesis:** Detecting emotions from speech using Machine Learning Techniques

**Supervisor:** Prof TM Marwala

**Co-Supervisor:** Prof SC Chakraverty

**Mabaso, Matsilele Aubrey (PhD)**

Matsilele completed his BScHons degree with distinction in 2010 specialising in Mathematical Statistics at the University of Limpopo, and joined the CSIR in 2011 under a studentship programme; where he completed his Master's degree with distinction in Electrical and Electronic Engineering at the University of Johannesburg. After completing his master's degree, he proceeded with his PhD in the Electrical and Electronic Engineering at the University of Johannesburg. During his PhD studies, he took on a role as a visiting research scientist at the Institute Pasteur in Paris with the focus of the development of advanced image processing algorithms for fluorescence microscopy images. After the initial submission of his PhD, he took on the role of a research scientist in the Robotics division at the CSIR, where he focused on the development of advanced algorithms in computer vision. His research resulted in three book chapters, one journal paper and five conference papers.

This research work covers the development of automated methods for extracting quantitative measurements from microscopy images; thus, enabling the detection of spots resulting from different experimental conditions. The major contributions are twofold, firstly in the development of a framework for producing synthetic images with realistic background and reliable ground truth; secondly, a novel deep learning method capable of detecting spots in the presence of high levels of noise and high spot density, and with high accuracy in the presence of inhomogeneity in the background. This system will improve detecting and counting of spots. His research resulted in three book chapters, one journal paper and five conference papers.

**Supervisor:** Prof B Twala

**Co-Supervisor:** Dr DW Withey

**Motepe, Sibonelo Cobry (DIng)**

Sibonelo Motepe was born in Qwa-Qwa, in the Eastern Free State. He was in the top 100 in the Free State Province matric class of 2005. He then went to study for a Bachelor of Science in Electrical Engineering degree at the University of KwaZulu-Natal, which he completed in 2010. In 2011, he started to work at the global steel manufacturing giant ArcelorMittal as a trainee engineer, at their Newcastle plant. In 2012, while still working, he started with his Master of Science in Mechanical Engineering degree focusing on mechatronics. He went on to complete his master's full time, which he completed in 2013. Sibonelo then joined Eskom as power systems network optimisation engineer. In 2015, he started his Doctoral studies in Electrical and Electronics Engineering at the University of Johannesburg while still working for Eskom, to gain experience in Power Systems Engineering. This experience allowed Sibonelo to get registered with the Engineering Council of South Africa as a Professional Engineer.

The focus of his research was the application of Machine and Deep Learning techniques in forecasting South African electrical power distribution network loads. His work introduced a unique load forecasting system using state-of-the-art machine learning and deep learning techniques for power distribution networks with different customer types. This system allowed a great improvement of maintenance power outages scheduling in distribution networks to reduce customer downtime during plant maintenance. The research also introduced deep learning in South African load forecasting, which also improved the accuracy of the load forecasts from the techniques' ability to take advantage of big data to improve performance. A novel AI-based process was also introduced to determine power systems' data integrity. This process significantly reduced the time required to analyse data integrity by engineers. This research work involved collaborating with Eskom to identify improvements in the power grid system. The research led to the publication of eight peer-reviewed papers (three in reputable international journals and five in international conference proceedings).

**Supervisor:** Dr AN Hasan

**Co-Supervisors:** Prof B Twala and Prof R Stopforth

**Nkwari, Patrick Kibambe Mashoko (PhD)**

Patrick Kibambe Mashoko Nkwari was born in the Democratic Republic of Congo (DRC). He received his Diplome d'Etat at the Technical Institute Salama (Lubumbashi, DRC) in electrical industrial studies in 2001. Thereafter, he received the Bachelor of Science engineering degree in industrial electronic engineering from the University of Lubumbashi in the DRC. He moved to the University of Johannesburg (UJ), South Africa in 2013, where he pursued his master's study in wireless sensor networks. He received his MEng degree in electrical and electronic engineering from UJ in 2015 with distinction. In the same year, he started his doctoral studies at UJ. He conducted his research through the Centre for Telecommunications, Faculty of Engineering and the Built Environment, UJ. His research was sponsored by the Global Excellence and Stature (GES) Master's and Doctoral Scholarships. Before and while he was at UJ, he gained industrial experience in embedded software programming, wireless protocol and robotics.

In his doctoral research, the candidate focused on detecting the motion of a person behind a wall and in the presence of household appliances. He used a frequency modulated continuous wave radar to detect the micro-motion of a person. This research has great importance for security reasons in law enforcement and search-and-rescue missions because the system can detect targets even when obstructed. The candidate proposed a novel method to extract human micro-Doppler signals in the presence of a fan. This method can be used in cases where two micro-Doppler signals overlap. Besides that, the antenna used in the experiment was made in the laboratory. Furthermore, a printed circuit board was designed and tested for radar signal generation. The research yielded one published and one submitted peer-reviewed journal article.

**Supervisor:** Prof S Sinha

**Co-Supervisor:** Prof HC Ferreira (late)

**Naghizadeh, Abdolhossein (PhD)**

Abdolhossein Naghizadeh obtained a BSc degree in Civil Engineering in 2002 and an MSc degree in Structural Engineering with distinction, from Islamic Azad University in Iran. He worked in the industry as a Professional Engineer, and conducted the design and construction of several national projects. In 2015, he commenced a PhD study on geopolymers at the University of Johannesburg. His experimental research has hitherto led to six publications comprising four manuscripts published in leading international journals and two peer-reviewed conference articles. He also served as a part-time lecturer and supervised undergraduate and postgraduate students during his doctoral study.

Production of the conventional Portland cements used in engineering construction, significantly contributes to carbon-dioxide emissions in the atmosphere and to associated climate change worldwide. The candidate's doctoral thesis focused on development and advancement of a new type of binders, the fly ash geopolymer cements, as future alternatives with low carbon emissions. Among other aspects, the experimental research intensely delved into mix design, being one of the crucial engineering challenges hampering large-scale industrial utilisation of the emerging geopolymer cements and concretes. Originality and interdisciplinary context employed in the research were exceptional. By intertwining material science and chemistry, with mathematical formulations, then framing the material system through engineering physical measurements, an original and new comprehensive scientific method for mix design of geopolymer cementitious systems, was developed. Evidently, the rigorous and industrious personal engagement of the candidate with the research topic was remarkable, as reflected in the exceptional quality of the thesis.

**Supervisor:** Prof SO Ekolu

**Okae Adow, Michael Afari-Ahwiren (DPhil)**

Afari-Ahwireng Okae Adow Michael, attained his Bachelor of Architectural Technology and Construction Management degree from Vitus Bering University College in Denmark. He later obtained his Master's degree in European Construction Management from University de Cantabria in Spain. Micheal is currently employed as a senior lecturer and the Dean of student affairs at the Accra Technical University in Ghana. He has over twenty years of construction management and teaching experience in his current employment. The candidate has prepared and submitted three journal manuscripts currently under review.

In his research study, the candidate developed a health and safety performance model for the Ghanaian construction industry. Although, awareness and considerable effort concerning best health and safety practices of all stakeholders have increased drastically, the Ghanaian construction industry is still lagging owing to the extreme conservativeness and slow rate of change in the construction industry. The study identified two enablers, namely stakeholders' involvement and the mandatory safety training of employees as contributions to knowledge and to enhance a holistic health and safety performance management. The study has methodical, theoretical and practical contributions that will enhance health and safety practices and management in the Ghanaian and developing countries' construction industry.

**Supervisor:** Prof CO Aigbavboa

**Co-supervisor:** Prof WD Thwala

**Aigbavboa, Solomon Ohiolei (PhD)**

Solomon obtained the BPharm (1990) and MSc Pharmaceutical Chemistry (1995) degrees from the University of Benin and an MBA from the Federal University of Technology, Owerri, Nigeria. He is a pharmacist, a Fellow of the Chartered Institute of Logistics and Transport, Nigeria and of the Chartered Institute of Supply Chain Management, Ghana. He was a lecturer at the University of Benin, Nigeria up to June 1997. From 1997 till date, he has worked in various industries and occupied various senior management positions. Currently, he is the MD/CEO of Flux Logistix Limited in Lagos, Nigeria.

In his research study, the candidate developed a framework for the outsourcing of pharmaceutical outbound value chains in Nigeria. The study investigated the outsourcing of pharmaceutical outbound value chains using a thirteen-factor construct. The Delphi method was used and comprehensive quantitative analysis was done. The results revealed that the identified/studied factors in different degrees influence the pre-selection activities of the outsourcing organisations, the critical risk factors that envelope the entire process and the desired ultimate outcomes and deliverables of the outsourcing decisions. The study provides a valuable contribution and a framework/tool in the outsourcing of outbound value chains for policy and decision makers in the pharmaceutical industry in Nigeria and other emerging economies.

**Supervisor:** Prof Charles Mbohwa



**Awotunde, Mary Ajimegoh (PhD)**

Mary Awotunde obtained a BEng degree in Metallurgical and Materials Engineering with a second class honours upper division from Obafemi Awolowo University, Nigeria and an MEng degree (with distinction) in Industrial Metallurgy and Corrosion Management from the University of Benin, Nigeria in 2015. She registered for her doctoral studies at the Department of Metallurgy, University of Johannesburg, South Africa in 2017. She was funded by the National Research Foundation under the Grantholder-linked scholarship and received a travel grant for a research visit to the Ryerson University, Toronto, Canada. Her research study produced six publications in peer-reviewed journals, one book chapter, and four conference papers.

In the candidate's doctoral research studies, reactive sintering technology was used for developing carbon nanotube (CNT) toughened nickel aluminide composites. The study was targeted at mitigating the brittleness properties of nickel aluminides that often limit its application as structural components in the aerospace industry. Innovative spark plasma sintering technology was utilised to reactively sinter the varying compositional formulations. A combination of characterisation techniques were employed to assess the nanoscale interfacial reactions and structural transformation phenomena of carbon nanotubes and the intermetallic matrix, the toughening mechanisms, and the deformation behaviour of the developed intermetallic composites. The study established the toughening effectiveness of carbon nanotubes and the importance of carefully selecting dispersion and sintering parameters. The developed intermetallic composites possess excellent toughness and are recommended as turbine blades for aerospace applications.

**Supervisor:** Prof PA Olubambi

**Co-Supervisor:** Dr MB Shongwe

**Kafodya, Innocent (PhD)**

Innocent Kafodya, is a lecturer in the Department of Civil Engineering, University of Malawi, The Polytechnic, Blantyre. He holds an MSc degree in Structural Engineering from Harbin Institute of Technology, China and BScHons degree in Civil Engineering (with distinction) from The Malawi Polytechnic University, Blantyre.

The resilience of natural fibre reinforced earthen structures is governed by mobilised static, cyclic and post-cyclic stresses of the core material and the interfacial tensile debonding stresses at the natural fibre-matrix interface. The candidate modified the conventional energy homogenisation model for the quantification of short fibre composite strain hardening failure stresses, and also modified the conventional shear lag model to accurately predict stress transfer at normal and coated fibre-matrix interface. The candidate then formulated a new constitutive model for nonlinear elastic response of anisotropic fibre reinforced soil subject to dynamic loads. The findings shed new light on the durability and service limit states of our beloved African earthen structures built in low seismic formations and were published in elite geotechnical and computational geomechanics journals.

**Supervisor:** Prof FN Okonta

**Okoro, Avwersuoghene Moses (PhD)**

Avwersuoghene Okoro obtained a BEng [Second Class (Hons) Upper Division] and Master of Engineering (Distinction) degrees in Metallurgical and Materials Engineering from the Federal University of Technology Akure, Nigeria in 2012 and 2016 respectively. He enrolled for a PhD programme in Engineering Metallurgy at the University of Johannesburg in 2017. His doctoral research was funded by the National Research Foundation (NRF-TWAS) and University Global Excellence and Stature Scholarships. From his doctoral research, he has published five articles in ISI/Scopus-indexed journals and four peer-reviewed conference papers.

The candidate's doctoral research focused on the fabrication and characterisation of multiwall carbon nanotubes reinforced titanium-based nanocomposites of improved physical, mechanical and thermal properties using a spark plasma sintering technique. The rationale behind the research was to resolve the application limitations encountered by titanium alloy (Ti6Al4V) in service conditions. He utilised advanced characterisation techniques to understand the dispersibility of the nanotubes in Ti6Al4V matrix, densification mechanisms, phase and microstructural evolutions, and the elastic-plastic behaviours of the fabricated nanocomposites. The study established the optimal process parameters to fabricate advanced MWCNT reinforced titanium-based nanocomposites of superior properties. The synthesised nanocomposites possess high hardness, modulus of elasticity and excellent resistance to wear and plastic deformation. The developed nanocomposites are recommended as structural components in aerospace and automotive industries requiring ultra-lightweight, high strength and load-bearing properties.

**Supervisor:** Prof PA. Olubambi

**Co-supervisor:** Dr R. Machaka

**Roy, Tanmoy (DPhil)**

Tanmoy Roy, an Indian citizen, completed his doctoral studies in the year 2019 under the supervision of Prof Tshilidzi Marwala and Prof Snehashish Chakraverty. Born in a remote Indian village Bokaro, Tanmoy has completed his schooling at a village school named Harinavi High School. He obtained a BSc degree in Economics (Honours) from Calcutta University and later an MSc degree in Information Technology from the Lovely Professional University. He is also a specialist programmer and has worked with notable organisations like SIEMENS as an Associate Consultant before joining the University of Johannesburg as a Research Fellow.

The candidate's thesis, titled "Detecting Emotions from Speech using Machine Learning Techniques", is an effort towards solving the interesting yet tricky problem of identifying the underlying emotions in spoken utterances. He contributes towards the field by proposing a new feature extraction technique for speech emotion recognition. The technique uses the neutral emotional state of the speakers as a reference point for individual speakers and then identifies other emotions around that neutral state. The concept is named *Subjective Emotional Gap Reduction Technique (SEGRT)*, which reduces the subjective gap of the utterances of different speakers. The SEGRT yielded encouraging results with well-known classification techniques. He also proposed a novel algorithm to solve the speech endpoint detection problem. His propositions are well supported by notable publications.

**Supervisor:** Prof TM Marwala

**Co-Supervisor:** Prof SC Chakraverty

See the back cover for the words of the National Anthem.



A word of thanks to the UJ Alumni Office for sponsoring the flower arrangements at the University of Johannesburg graduation ceremonies.

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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.