Central University of Technology, Free State

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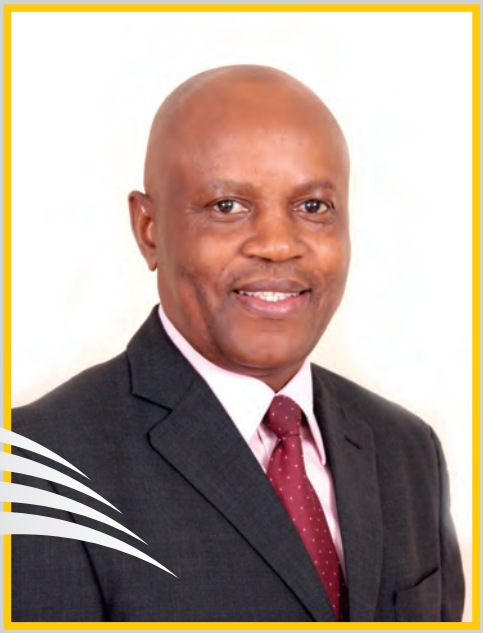
2023 NRF RATED RESEARCHERS

National Research Foundation

Table of Contents

Foreword



Prof Alfred B. Ngowi
Deputy Vice-Chancellor:
Research Innovation and Engagement

According to the National Research Foundation, the NRF RATING is a national indicator of research excellence to the advantage of a faculty and a university. The rating identifies researchers who count among the leaders in their fields of expertise and gives recognition to those who constantly produce high quality research outputs. Moreover, it is a benchmarking system according to which the highest standards in an extensive network of South African and international peer reviewers are identified. Ratings are based on the quality and impact of recent research outputs.

A successful rating allows a researcher the option of applying for incentive funding from the NRF, the amount of which is directly proportional to their rating.

The Central University of Technology, Free State takes pride in its twenty-one NRF rated researchers. Through their research in multiple disciplines, they showcase the scope of research at the university.

This research is reflective of creating new knowledge, problem-based and solution-seeking outputs. Rated researchers apply multi-, inter-, and transdisciplinary research methodologies and approaches to their research. Especially characteristic of the research at the CUT is its engagement with business, industry and society, and research outputs have the ultimate aim of changing society, with equal access to the results offered by the research.

The rated researchers of the CUT are role models and mentors to students and junior academic staff who are involved in research. It is through learning from colleagues who have been able to meet the criteria of rating in the same academic environment, that the CUT can facilitate succession to the next generation of rated researchers.

I would like to extend my wholehearted support to the rated researchers on behalf of the university's research community.

Profile of Rated Researchers

The NRF Rated Researchers Programme is a(n) (inter)national programme evaluating researchers' impact on their research environment as independently reviewed by their peers. The NRF rating system is a key driver in the NRF's aim to build a globally competitive science system in South Africa.

The ratings that are awarded fall within the following categories:

A - Leading international researchers

B - Internationally acclaimed researchers

C - Established researchers

P - Prestigious Awards

Y - Promising young researchers

The rating of individuals is based primarily on the quality and impact of their research outputs over the past eight years, taking into consideration evaluations made by local and international peers.

The Central University of Technology, Free State takes pride in its twenty-one NRF rated researchers. Through their research in multiple disciplines, they showcase the scope of research at the university.

The rated researchers are:

- Prof. Deon de Beer
- Dr Chika Chukwuma
- Prof. Willie du Preez
- Prof. Fidelis Emuze
- Prof. Jaco Gericke
- Prof. Desiré Kokt
- Prof. Kanzumba Kusakana
- Prof. Laetus Lategan
- Prof. Rykers Lues
- Prof. Tshepiso Makhafola
- Prof. Solomon Makola
- Prof. Muthoni Masinde
- Prof. Jonas Mochane
- Prof. Alfred Ngowi
- Prof. Saheed Oke
- Prof. Patient Rambe
- Prof. James Swart
- Prof. Freda van der Walt
- Prof. Herman Vermaak
- Prof. Ihar Yadroitsau
- Dr Ina Yadroitsava

Professor Deon J. de Beer

NRF Rating: C1

Additive manufacturing (AM)

AM innovation

AM commercialisation

Industrial competitiveness

AM applications in industry

Full professor, and Research Chair in Medical Product Development through Additive Manufacturing associated with the Department of Mechanical Engineering, the Centre for Rapid Prototyping and Manufacturing (CRPM), and the Product Development Technology Station (PDTS)

Prof. De Beer's focus is on new grants to co-fund innovative AM applications for both the CRPM and the PDTS. A partnership with Aston and Loughborough universities in the UK under the British Council's Innovation for African Universities programme, a GIZ grant and a EUREKA grant with an international partner were some highlights for the year.

Research activities

Following from the successful completion of the SAIS project with the University of Botswana and Botswana Institute for Technology, Research and Innovation, Prof. De Beer was invited to the SAIS programme evaluation in Windhoek. THESA and the Irish Embassy in SA funded a study visit to Ireland to establish a North-South Biomedical cluster.

Recent research publications

Dzogbewu, TC & De Beer, DJ. 2023. Powder Bed Fusion of Multimaterials. *Journal of Manufacturing and Materials Processing* 7 (1), 15.

Du Preez, S, Du Plessis, J, Fourie, J, Du Preez, W & De Beer, D. 2022. Laagvervaardiging en beroepsgesondheid in Suid-Afrika: 'n Literatuurstudie. *Suid-Afrikaanse Tydskrif vir Natuurswetenskap en Tegnologie* 41 (1).

Abisuga, OA & De Beer, DJ. 2022. A systematic literature review and prospects for Additive Manufacturing in the Creative Industries. *Additive manufacturing, Modelling Systems and 3D Prototyping*. AFHE International.

Dzogbewu, TC, Amoah, N, Fianko, SK, Afrifa, S & De Beer, D. 2022. Additive manufacturing towards product production: A bibliometric analysis. *Manufacturing Review* 9, 1.

Doctor Chika I. Chukwuma

NRF Rating: C2

- Functional foods
- Diabetes
- Oxidative stress
- Medicinal plants
- Pharmacology

Researcher, Centre for Quality of Health and Living (CQHL), Faculty of Health and Environmental Sciences

Dr Chukwuma is a biochemist by profession, specialising in antidiabetic and antioxidant functional foods. He is conducting research on the potential medicinal relevance of functional foods in the management of diabetes and oxidative stress. He has completed 3 master's and 2 doctoral supervisions under his research domains.

Research activities

Dr Chukwuma is currently conducting research on the antidiabetic and antioxidative potentials of medicinal plants, mineral complexes and fruit wastes. His research also focuses on the development of functional beverage(s) for improving oxidative and metabolic health using phytochemicals from fruit wastes.

Recent research publications

Ramorobi, LM, Matowane, GR, Mashele, SS, Swain, SS, Makhafola, TJ, Mfengwana, PH & Chukwuma, CI. 2022. Zinc(II) – Syringic acid complexation synergistically exerts antioxidant action and modulates glucose uptake and utilization in L-6 myotubes and rat muscle tissue. *Biomedicine & Pharmacotherapy,* 154: 113600. https://doi.org/10.1016/j.biopha.2022.113600

Matowane, GR, Ramorobi, LM, Mashele, SS, Bonnet, SL, Noreljaleel, AEM, Swain, SS, Makhafola, TJ & Chukwuma, CI. 2022. Complexation potentiated promising anti-diabetic and anti-oxidative synergism between ZN(ii) and ferulic acid: A multimode study. *Diabetic Medicine,* 39(9): e14905. https://doi.org/10.1111/dme.14905

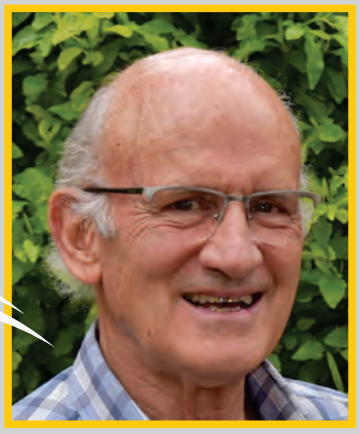
Chukwuma, CI, Izu, GO, Chukwuma, MS, Samson, MS, Makhafola, TJ & Erukainure OL. 2021. A review on the medicinal potential, toxicology, and phytochemistry of litchi fruit peel and seed. *Journal of Food Biochemistry,* 45(12), e13997. https://doi.org/10.1111/jfbc.13997

Chukwuma, CI, Mashele, SS & Akuru, EA. 2020. Evaluation of the in vitro *a*-amylase inhibitory, antiglycation, and antioxidant properties of Punica Granatum L. (Pomegranate) fruit peel acetone extract and its effect on glucose uptake and oxidative stress in hepatocytes. *Journal of Food Biochemistry,* 44(5): e13175. https://doi.org/10.1111/jfbc.13175

Chukwuma, CI, Mashele, SS, Eze, KC, Matowane, RG, Islam, MS, Bonnet, SS, Noreljaleel, AEM & Ramorobi LM. 2020. A comprehensive review on zinc(II) complexes as antidiabetic agents: The advances, scientific gaps and prospects. *Pharmacological Research,* 155: 104744. https://doi.org/10.1016/j.phrs.2020.104744

Professor Willie B. du Preez

NRF Rating: C2



Metal additive manufacturing

Titanium alloys

Process qualification

Platinum group metals

Medical implants

Visiting Professor in the Faculty of Engineering, Built Environment and Information Technology

Prof. Du Preez's research on metal additive manufacturing is aimed at producing outputs and generating data for the qualification of titanium-based aerospace and renewable energy products. His work on additive manufacturing of platinum group metals is similarly aligned. These should contribute to improved international competitiveness of South African manufacturing companies.

Research activities

- Redesign and characterisation, as well as performance assessment, of a nose wheel fork of a light aircraft for production in Ti6Al4V (ELI) by laser powder bed fusion
- Plasma pheroidization and reconditioning of powders for metal additive manufacturing
- Modelling melt pool characteristics to predict process parameters for selective laser melting of titanium alloys
- Metal additive manufacturing of Ti6Al4V from blended elemental powders
- High velocity impact properties of as-built and heat-treated Ti-6Al-4V (ELI) specimens built through direct metal laser sintering
- Development of a small- to medium-load-bearing resorbable, bone-regenerating scaffold using additive manufacturing
- Development of a numerical modelling design method for the local production of artificial tri-leaflet heart valves with hydrodynamic performance similar to native valves

Recent research publications

Dzogbewu, TC & Du Preez, WB. 2022. In situ alloying of Ti10Mo fused tracks and layers via laser powder bed fusion. *Manufacturing Review*, 9(23). https://doi.org/10.1051/mfreview/2022022

Moleko, TC, Maringa, M & Du Preez, WB. 2022. Fractography and Microstructural Analysis of As-Built and Stress Relieved DMLS Ti6Al4V (ELI) Plates Subjected to High Velocity Impact. *Advances in Materials Science and Engineering*, Volume 2022, Article ID 9008244, 14 pages. https://doi.org/10.1155/2022/9008244

Muiruri, A, Maringa, M & Du Preez, WB. 2022. Quasi-Static Mechanical Properties of Post-Processed Laser Powder Bed Fusion Ti6Al4V(ELI) Parts under Compressive Loading. *Applied Sciences*, 12, 9552. https://doi.org/10.3390/app12199552

Van Rhijn, T, Du Preez, W, Maringa, M & Kouprianoff, D. 2023. An Investigation into the Optimization of the Selective Laser Melting Process Parameters for Ti6Al4V Through Numerical Modelling. *JOM* Vol 75, No 3. https://doi.org/10.1007/s11837-022-05608-2

Muiruri, A, Maringa, M & Du Preez, W. 2022. A Theoretical Model of The Flow Properties of Postprocessed Direct Metal Laser Sintering Ti6Al4V(ELI). *Advances in Materials Science and Engineering*, Volume 2022, Article ID 4048913, 12 pages. https://doi.org/10.1155/2022/4048913

Ramosena, LA, Dzogbewu, TC & Du Preez, W. 2022. Direct Metal Laser Sintering of the Ti6Al4V alloy from a powder blend. *Materials* 15, 8193. https://doi.org/10.3390/ma15228193

Professor Fidelis Emuze

NRF Rating: C3

Heath

Safety

Wellbeing

Construction

Sustainability

Full professor in the Department of Built Environment

Through individual research and supervision of studies, advances were made on many fronts in several subject areas, including lean construction, health and safety, and sustainability. Three book contracts were signed with Taylor and Francis. One of the books has now been published, titled: *Moving the Construction Safety Climate Forward in Developing Countries*, https://www.taylorfrancis.com/books/mono/10.1201/9781003361640/moving-construction-safety-climate-forward-developing-countries-tchad-jatau-fidelis-emuze-john-smallwood.

Research activities

The NRF-funded research project on *stopping drift to failure* continued into its second year with additional student involvement at the postgraduate diploma in construction level. The results of the data collected on the study in 2021 were published in international journals in 2022.

Recent research publications

Mollo, LG, Emuze, F & Smallwood, J. 2022. Management impact on human errors on construction sites. *Journal of Construction*, Vol 15(2), pp. 39-51. ISSN: 1366-4387.

Moyo, T, Crafford, G & Emuze, F. 2022. Significant decent work objectives for monitoring construction workers' productivity performance in Zimbabwe. *The Journal of Construction in Developing Countries*, 27(1), 95-110. ISSN: 1823-6499.

Emuze, FA. 2022. Addressing violations of safe work procedures in South African construction. *Proceedings of the Institution of Civil Engineers – Management, Procurement and Law.* https://doi.org/10.1680/jmapl.22.00010 ISSN 1751-4304

Emuze, FA. 2022. Operational analysis for controlling safety violations on construction sites in South Africa. *Proceedings of the Institution of Civil Engineers – Forensic Engineering.* https://doi.org/10.1680/jfoen.22.00015. ISSN 2043-9903

Moyo, T, Crafford, G & Emuze, F. 2022. Sustainability learning for improved safe work environments for construction semi-skilled workers in Zimbabwe. *Built Environment Project and Asset Management*, 12(6), pp. 940-955. DOI 10.1108/BEPAM-02-2022-0024. ISSN: 2044-124X

Professor O. Jaco Gericke

NRF Rating:C2

Hydrology

Design rainfall estimation

Design flood estimation

Flood risk assessment

Catchment response time

Associate Professor and Head of Department: Civil Engineering

Prof. Gericke is an experienced professional engineer, currently appointed as an Associate Professor and Head of Department in the Department of Civil Engineering at the Central University of Technology, Free State (CUT), South Africa. He obtained a PhD Eng. (Agriculture) degree in 2016 from the University of KwaZulu-Natal (UKZN), South Africa, supplemented by more than 25 years' professional and academic experience, mainly in the fields of hydrology, water resources management, and river hydraulics.

Research activities

Prof. Gericke represented the CUT at the Water Research Commission (WRC) and the South African National Committee of Large Dams (SANCOLD) to contribute towards the implementation of the National Flood Studies Programme (NFSP). Currently involved with two research projects funded by the WRC.

Recent research publications

Gericke, OJ & Williams, VH. 2023. Could a one-size-fits-all approach apply to the extension of stage-discharge relationships at flow-gauging weirs? *Journal of the South African Institution of Civil Engineering* 65(2): 17–27, e1568. DOI: 10.17159/2309-8775/2023/v65n2a3

Gericke, OJ. 2021. Assessment of at-site design flood estimation methods using an improved event-based design flood estimation tool. *Journal of Flood Risk Management*. e12710. DOI: 10.1111/jfr3.12710

Allnutt, CE, Gericke, OJ & Pietersen, JPJ. 2020. Estimation of time parameter proportionality ratios in large catchments: case study of the Modder-Riet River Catchment, South Africa. *Journal of Flood Risk Management* 13: e12628. DOI: 10.1111/jfr3.12628

Gericke OJ & Pietersen JPJ. 2020. Estimation of areal reduction factors using daily rainfall data and a geographically centred approach. *Journal of the South African Institution of Civil Engineering* 62(4): 20–31. DOI: 10.17159/2309-8775/2020/v62n4a3

Gericke, OJ. 2019. GIS applications to investigate the linkage between geomorphological catchment characteristics and response time: a case study in four climatological regions, South Africa. *Water* 2019 11(5): 1072. DOI: 10.3390/w11051072

Professor Desiré Kokt

NRF Rating: C3

Human resource management

Organisational behaviour

Organisational culture

HR issues in the context of 4IR

Applied research

Full professor in the Department of Business Management

Deseré Kokt is Professor of Human Resource Management at the Central University of Technology, Free State (CUT). Her research centres on human resource issues in a variety of industries. She also has a special interest in Fourth Industrial Revolution (4IR) technologies and their potential impact on the future of human resource management.

Research activities

Workplace spirituality in the context of practical theology was conceptualised in an article as well as the impact of psychology contract and psychological capital on employee commitment. Remote and hybrid work in times of crises and its implications for employee development were reported upon in the African context.

Recent research publications

Kokt, D & Solomons, JE. 2021. The effect of work-integrated learning on the job satisfaction and motivation of hospitality alumni. *Journal for New Generation Sciences,* 19(1): 38-49.

Seqhobane, M & Kokt, D. 2021. How do job characteristics influence the motivation of millennial hospitality employees? *South African Journal for Human Resources Management*, 19(0): 1-9.

Kokt, D & Mphirime, BG. 2022. Invigorating the hospitality industry: What is the impact of psychological contract and psychological capital on employee commitment? *Acta Commercii,* 22(1): 1-11.

Lategan, LOK & Kokt, D. 2022. Workplace spirituality: The fifth gospel for the modern workplace? *KOERS – Bulletin for Christian Scholarship*, 78(1): 1-13.

Kokt, D & Chipunza, C. 2022. Remote and hybrid working during crisis – implications for employee development in Africa. In Dias, D. *People Management - Highlighting Futures.* IntechOpen, London. Available from: Remote and Hybrid Working during Crisis: Challenges and Implications for Employee Development in Africa | IntechOpen

Professor Kanzumba Kusakana

NRF Rating: C2

Electrical Engineering

Renewable energy

Energy storage

Energy management

Optimisation

Full professor in the Department of Electrical, Electronic and Computer Engineering

Prof. Kusakana has over 300 publications in journals, conference proceedings and book chapters. His current research looks at small scale renewable power generation as well as optimal energy management. He is an associate editor for the IET Renewable Power Generation and for the Journal of Energy Storage, and has a H-index of 31. He is a senior member of SAIEE; a Professional Engineer registered with ECSA; a member of the AEE; and a member of the SAEEC.

Research activities

Prof. Kusakana published more than 20 journal articles, and 2 master's and 5 doctoral students graduated under his supervision since 2022. He assisted the NRF with assessment of funding applications, rating applications and flagship reviews.

Recent research publications

Kusakana, K & Tangwe, S. 2022. Evaluating thermal dynamics of air to water heat pump due to stratification: Experiment and modelling. *Energy Reports* 8: 1118-1125.

Gaonwe, TP, Hohne, PA & Kusakana, K. 2022. Optimal energy management of a solar-assisted heat pump water heating system with a storage system. *Journal of Energy Storage* 56: 105885.

Siecker, J, Kusakana, K & Numbi, BP. 2022. Optimal heat recovery during polymer electrolyte membrane electrolysis. *International Journal of Hydrogen Energy* 47, no. 76: 32692-32706.

Ayamolowo, OJ, Manditereza, P & Kusakana, K. An overview of inertia requirement in modern renewable energy sourced grid: challenges and way forward. *Journal of Electrical Systems and Information Technology* 9, no. 1 (2022): 11.

Shirinda, K & Kusakana, K. 2022. A review of hybrid energy storage systems in renewable energy applications. *International Journal of Smart Grid and Clean Energy* 11, no. 2.

Professor Laetus O.K. Lategan

NRF Rating: C3

Public health

Community health

Healthcare

Medical ethics

Vulnerable groups

Research Professor in the Office of the DVC: Research, Innovation and Engagement

The World Health Organisation's (2015) statistics suggest that the world population older than 60 years will nearly double by 2050. Geriatric people's vulnerability will increase mainly because of social determinants. It is generally accepted that social determinants, and not physical factors only, contribute to health, either positively or negatively.

Research activities

Prof. Lategan focused on the design of a public health ethics framework for the geriatric community. The research was based on a study completed in 2021. The research confirmed the absence of a public health ethics framework for geriatric community care in South Africa, at both conceptual and implementation levels.

Recent research publications

Lategan, LOK, Van Zyl, GJ & Kruger WH. 2022. Building blocks for a public health ethics framework for the geriatric community. *South African Family Practice*. 64(1), a5414. https://doi.org/10.4102/safp. v64i1.5414

Lategan LOK, Van Zyl GJ & Kruger WH. 2022. What is public health ethics for the geriatric community? *Health SA Gesondheid* 27(0), a1824. https://doi.org/10.4102/hsag.v27i0.1824

Lategan, LOK & Kokt, D. 2022. Workplace spirituality: The fifth gospel for the modern workplace? *KOERS — Bulletin for Christian Scholarship*, 87(1). Available at: https://doi. org/10.19108/KOERS.87.1.2535

Lategan, LOK. 2022. Ageing – a growing (health) challenge with ethical consequences. Advice from the World Health Organization. *TCW* 58(2): 143-164. https://pubs.ufs.ac.za/index.php/tcw/

Lategan, LOK. 2022. Die etiek van geriatriese versorging: Is daar genoeg riglyne beskikbaar vir die publieke gesondheidsorg? *TCW* 58(4): 123-147. https://pubs.ufs.ac.za/index.php/tcw/

Professor J. F. Rykers Lues

NRF Rating: C3

Food safety culture

Food waste and sustainability

Food microbiology

Novel product development

Vulnerable food environments

Director of the Centre for Applied food Sustainability and Biotechnology, Faculty of Health and Environmental Sciences

Prof. JFR Lues specialises in the field of food safety culture (FSC), which refers to the shared values, beliefs, and attitudes that shape the behaviours and decision-making of individuals and organisations with regard to food safety. A positive food safety culture is key to reducing the incidence of foodborne illness and ensuring the safety of the food supply.

Research activities

Prof. Lues presented papers and lectures on the topic of food safety culture to academia and industry, nationally and abroad, authored publications, and supervised master's and doctoral students. He served on committees establishing national safety regulations and specifications for foods and participated on legal advisory teams. He is further involved in various innovation and commercialisation projects.

Recent research publications

Manyi-Loh, CE, Okoh, AI & Lues, R. 2022. Prevalence of multidrug resistant bacteria (enteropathogens) recovered from a blend of pig manure and pine wood saw dust during anaerobic co-digestion in a steel biodigester. *International Journal of Environmental Research and Public Health* (ijerph 1829378). (Accepted)

Manyi-Loh, CE, Okoh, AI & Lues, R. 2022. Antibiotic resistance in Listeria monocytogenes isolates recovered from anaerobic co-digestion sludge in a single stage steel bio-digester: Implications in antimicrobial stewardship. *Microorganisms*, 11(3):725. doi: 10.3390/microorganisms11030725

Theisinger SM & De Smidt O & Lues JFR. 2021. Categorisation of culturable bioaerosols in a fruit juice manufacturing facility. *Plos One*, 16(4): e0242969. https://doi.org/10.1371/journal.pone.0242969.

Anelich, L, Lues, JFR, Farber, J & Parreira, V. 2020. SARS-CoV-2 and Risk to Food Safety. *Frontiers in Nutrition*, https://doi.org/10.3389/fnut.2020.580551

Nkhebenyane, J & Lues, JFR. (2020). The Knowledge, Attitude and Practices of Food Handlers in Central SA hospices. *Journal of Food Science and Nutrition*, 8:2598–2607. https://doi.org/10.1002/fsn3.1499

Professor Tshepiso J. Makhafola

NRF Rating: Y2

Ethnopharmacology

Molecular Biology

Cancer Biology

In vitro cytotoxicity

In vitro genotoxicity

Associate professor in the Department of Health Sciences and Assistant Dean: Research Innovation and Engagement in the Faculty of Health and Environmental Sciences

Prof. Makhafola's research focuses on investigating plant extracts and phytocompounds for their ability to delay different carcinogenic processes, including suppression, reduction or inversion of carcinogenesis. The main aim is to discover lead compounds that can be developed as cancer chemoprevention and cancer chemotherapeutic agents by investigating the antihepatocarcinogenic and antinephrocarcinogenic effects of selected South African medicinal plants against mycotoxin (Aflatoxin B1, Ochratoxin A and Fumonisin) carcinogenesis. Fifty South African plant species have been identified with antioxidant, antifungal, antimycototic and antimycotoxigenic activities. In addition, ten plant species showed hepatoprotective effects against mycotoxin induced toxicity. The research is ongoing to evaluate the nephroprotective effects of some plant species. Additionally, through a collaborative project at the ARC-OVI, an additional thirty plants were assayed for their antimutagenic effects against aflatoxin B1, using various *in vitro* genotoxicity assays. Plant extracts with high anticarcinogenic activity (in representative cell lines, i.e., hepatocytes and kidney cells) will be selected for isolation of active compounds and possible future *in vivo* studies.

Recent research publications

Van Dyk, H, Jacobs, FJF, Kroon, RE, Makhafola, TJ & Brink, A. 2023. Characterisation, structural investigations, and biological activity of substituted salicylidene-based compounds. *Journal of Molecular Structure*, 1276, 134737.

Mfotie Njoya, E, Maza, HLD, Swain, SS, Chukwuma, CI, Mkounga, P, Nguekeu Mba, YM, Mashele, SS, Makhafola, TJ & McGaw LJ. 2023. Natural Compounds Isolated from African Mistletoes (Loranthaceae) Exert Anti-Inflammatory and Acetylcholinesterase Inhibitory Potentials: In Vitro and In Silico Studies. *Applied Sciences*. 2023; 13(4):2606. https://doi.org/10.3390/app13042606

Ramorobi, LM, Matowane, GR, Mashele, SS, Erukainure, OL, Makhafola, TJ & Chukwuma, CI. 2023. Therapeutic Antidiabetic and Antioxidative Synergism of Zn(II)-Syringic Acid Complexation. *Rev. Bras. Farmacogn*. https://doi.org/10.1007/s43450-023-00363-0

Matowane, GR, Ramorobi, LM, Mashele, SS, Bonnet, SL, Noreljaleel, AEM, Swain, SS, Makhafola, TJ & Chukwuma, CI. 2023. Novel Caffeic Acid-Zinc Acetate Complex: Studies on Promising Antidiabetic and Antioxidative Synergism Through Complexation. *Medicinal Chemistry*, Volume 19, Number 2, pp. 147-162(16).

Molele, PK, Makhafola, TJ & Mongalo, NI. 2023 GC-ToF-MS based phytochemical analysis and anti-mycotoxigenic activity of South African medicinal plants, Mystroxylon aethiopicum (Thunb.) Loes. and Spirostachys africana Sond. *South African Journal of Botany*, 153 (2023): 11À20.

Professor Solomon Makola

NRF Rating: C3

Logotherapy

Integral spirituality

Positive psychology

Forgiveness research

Student success

CUT Campus Director (Welkom Campus) and Research Associate in the Faculty of Humanities.

Prof. Makola's research work enables him to play an active role in the mainstream media. Over the past twenty years he has presented more than 1 000 psycho-educational talks on a national radio station, *LESEDI FM,* under SABC Education. During his talks, he educates listeners about different psychological conditions (sessions are conducted in South Sotho). In this way, Prof. Makola plays an active role in enlightening African communities about various psychological matters. For this contribution, the Psychological Society of South Africa honoured him with the PsySSA Award for Best Practice. This award is presented to a practitioner who has made a significant impact in his community through facilitating the healthy functioning of persons and communities.

Research activities

Prof. Makola is currently leading a community engaged research project in the field of Forgiveness, which is specifically aimed at 'Assisting youth to heal a hurt left by absent fathers.' He is a Research Fellow in the Faculty of Humanities, where he serves as supervisor to postgraduate students, and mentor to postdoctoral fellows.

Recent research publications

Makola, S. 2016. *Find Meaning, Stop Wondering! Assisting Youth to Find Meaning and Achieve Success in their Studies* (Book: Unisa Press)

Makola, S. 2017. *Pimp the Pain: Purpose Inspired Dialogues* (Book: Unisa Press)

Makola, S. 2021. *Seventy Women and One Man: Meetings with remarkable women.* (Book: New Voices).

Schlebusch, G, Makola, S & Ndlovu, M. 2022. Positive Learner Discipline for Public Secondary Schools. *International Journal of Innovation, Creativity and Change,* 16 (1).

Schlebusch, G, Makola, S & Ndlovu, M. 2022. Learner Indiscipline in Public Secondary Schools. *International Journal of Innovation, Creativity and Change,* 16 (1).

Professor Muthoni Masinde

NRF Rating: C2

Machine learning

Internet of Things

Climate change

Drought prediction

Small-scale farmers

Full professor in the Department of Information Technology

Prof. Masinde made notable strides in Machine Learning and Internet of Things, incorporating Indigenous Knowledge in solutions for small-scale farmers. Key developments include ML-CROP for optimising crop production, NLP for IsiZulu translation, and a predictive model for Malaria in Vhembe district using climate data and IK.

Research activities

As the General Chair of the EAI AFRICATEK 2022 Conference, Masinde set the theme around 4IR (Fourth Industrial Revolution). She also led the successful second year of the Integrated Climate-driven Multi-Hazard Early Warning System (ICMHEWS) externally funded (by GoF) collaborative (with SAWS and UKZN) project. She authored/co-authored four articles, one book chapter, and two conference papers. Additionally, she delivered three keynote speeches, including one at the UNESCO Southern Africa sub-Regional Forum on AI (artificial intelligence).

Recent research publications

Phoobane, P, Masinde, M & Mabhaudhi, T. 2022. Predicting Infectious Diseases: A Bibliometric Review on Africa. *International Journal of Environmental Research and Public Health*, 19(3), p.1893.

Masinde, M & Atlhopheng, JR. 2022. Are Africans adapting well to climate change? In: Moseley, WG & Otiso, KM (eds.). 2022. *Debating African Issues: Conversations Under the Palaver Tree* (1st ed.). Routledge.

Masinde, M, Phoobane, P & Brown, J. 2022. Mkulima Platform: An Inclusive Business Platform Ecosystem that Integrates African Small-Scale Farmers into Agricultural Value Chain. In: Sheikh, YH, Rai, IA & Bakar, AD, (eds). e-Infrastructure and e-Services for Developing Countries. AFRICOMM 2021. Lecture Notes of the Institute for Computer Sciences, Social Informatics and Telecommunications Engineering, vol 443. Springer, Cham. https://doi.org/10.1007/978-3-031-06374-9_26

Nyetanyane, J & Masinde, M., 2022. Development of English-isiZulu Language Translator to Bridge Language Barrier Between EWS and Bantu Language Speaking Farmers. Case of Swayimane, KwazuluNatal, South Africa. In 2022 IST-Africa Conference (IST-Africa) (pp. 1-11). IEEE.

Adeola, OM, Masinde, M, Botai, JO, Adeola, AM & Botai, CM. An Analysis of Precipitation Extreme Events Based on the SPI and EDI Values in the Free State Province, South Africa. *Water 2021*, 13, 3058. https://doi.org/10.3390/w13213058

Professor M. Jonas Mochane

NRF Rating: Y2 rating

Green polymer composites

Natural fibres

Polymer composites and polymer blends

Natural fibre/polymer composites

Natural fibre hybrid polymer composites

Associate Professor in the Department of Life Sciences

Prof. Mochane uses various reinforcing fillers incorporated into polymer matrices in order to improve the properties of polymers for advanced applications. Fillers such as boron nitride and carbon nanotubes are added into the polymer/paraffin wax blends with the idea of improving properties such as the thermal conductivity, mechanical properties, and thermal stability. Furthermore, natural fibre hybrid biopolymer(s) projects are done with the purpose of producing multifunctional materials for advanced applications.

Research activities

- The use of coal fly ash as a reinforcing filler in biopolymer matrices
- A comparison of various clay nanoparticles for wastewater treatment
- The preparation of natural fibre hybrid biopolymer composites for advanced applications
- A possible use of phytic acid as an environmentally friendly flame-retardant filler for natural fibre/biopolymer composites

Recent research publications

Mochane, MJ, Motloung, MT, Mokhena, TC & Mofokeng, TG. 2022. Morphology and photocatalytic activity of zinc oxide reinforced polymer composites: A mini review. *Catalysts*, 12(11): 1439. https://doi.org/10.3390/catal12111439

Mokoena, TE, Mochane, MJ, Mokhena TC & Motloung, MT. 2022. The effect of boron nitride, carbon nanotubes, and their synergy on the properties of LLDPE and LLDPE/wax blend. *Polymer Engineering and Science* 2022: early view: 1-14. DOI: https://doi.org/10.1002/pen.26094

Jafta, N, Mochane, MJ, Mokhena, TC & Lebelo, K. 2022. Effect of sodium lauryl sulfate (SLS)/carbon nanotubes on the properties of cellulose membrane isolated from maize stalk. *Cellulose Chemistry and Technology*, 56(5-6): 549-558. DOI: https://doi.org/10.35812/CelluloseChemTechnol.2022.56.47

Mokhena, TC, Sadiku, ER, Ray, SS, Mochane, MJ, Matabola, P & Motloung, P. 2022. Flame Retardancy Efficacy of Phytic Acid: an overview. *Journal of Applied Polymer Science*, e52495 (early view). DOI: 10.1002/app.52495

Kaleni, A, Magagula, S, Motloung, MT, Mochane, MJ and Mokhena, TC. 2022. Preparation and characterization of coal fly ash reinforced polymer composites: an overview. *eXpress Polymer Letters*, 16:735-759. DOI: 10.3144/expresspolymlett.2022.54

Professor Alfred B. Ngowi

NRF Rating: C2

Circular economy

Artificial intelligence

Fourth Industrial Revolution

Stakeholder engagement

Sustainability

Full professor in the Department of the Built Environment and Deputy Vice- Chancellor: Research, Innovation and Engagement

Prof. Ngowi carries out research on the circular economy (CE), aimed at using Fourth Industrial Revolution (4IR) technologies, particularly artificial intelligence (AI), to ensure that materials extracted from the earth to make products were extracted with the minimum impact on the environment and remained in circulation for a long period of time, while been reused or repurposed, to bring about sustainability.

Research activities

Prof. Ngowi surveyed stakeholders of projects that have approached their projects using the Circular Economy (CE) Model as opposed to the Linear Economic Model, and determined that while these stakeholders had faced challenges in adopting the CE approach previously, the 4IR technologies, particularly Artificial Intelligence, has enabled them to implement this approach.

Recent research publications

Agbehadji, IE, Abayomi, A, Mutanga, MB, Awuzie, BO & Ngowi, AB. 2022. Bio-inspired Search Approach Cross-Domain Location Mapping for Smart Mobile Service System. *Journal of Computer Science*, 18(4): 281.296.

Agbehadji, IE, Millham, RC, Awuzie, BO & Ngowi, AB. 2022. Stakeholder's Perspective of Digital Technologies and Platforms Towards Smart Campus Transition: Challenges and Prospects. *Informatics and Intelligent Applications*, Springer Nature Switzerland AG.

Awuzie, B, Ngowi, AB, Omotayo, T, Obi, L & Akotia, J. 2021. Facilitating Successful Smart Campus Transitions: A Systems Thinking-SWOT Analysis Approach. *Appl. Sci.* 11(5), 2044.

Ramakrishna, S, Ngowi, AB & Awuzie, BO. 2020. Guest Editorial: Construction 4.0 and Circular Economy. *Built Environment Project and Asset Management,* Volume 10.4, pp 485-489.

Ramakrishna, S, Ngowi, AB, De Jager, H & Awuzie, B. 2020. Emerging Industrial Revolution: Symbiosis of Industry 4.0 and Circular Economy: The Role of Universities. *Science, Technology and Society*.

Professor Saheed A. Oke

NRF Rating: Y2

Environmental sustainability

Water vulnerability

Water security

Urban development impact

Pollution and emerging contaminant

Associate Professor in the Department of Civil Engineering

Prof. Oke started a new project with the Water Research Commission (WRC) on emerging contaminants. He won the University Vice Chancellor's Research Award for Mid-Career Researcher for 2022. He acted as a guest editor for the journal *Frontiers in Water*. He gave three (3) keynote presentations at scientific conferences and a webinar on water and environment-related topics. He was an invited reviewer for NRF Rating and Thuthuka funding applications.

Research activities

Prof. Oke's research activities include the submission of three reports to the Water Research Commission, and keynote presentations on groundwater vulnerability and resilience of urban water. He attended research conferences and presented three keynotes speeches as invited speaker. He contributed to the City Resilience Program of the Mangaung Municipality Airport Development Node Project. He examined externally two PhD and three master's dissertations across the SADC region.

Recent research publications

Quandt, A, O'Shea, B, Oke, SA & Ololade, O. 2022. Policy intervention to address water security impacted by climate change: Adaptation strategies of three case studies across different geographic regions. *Frontiers in Waters* 4:935422. http//:doi:10.3389/frwa.2022.935422

Senbore, S, Oke, S, Malebo, N & Ololade, O. 2022. Guidelines on Assessment of Urban Development Impact on Water Security and Environmental Sustainability. In: Naddeo, V, Choo, KH & Ksibi, M. (eds) *Water-Energy-Nexus in the Ecological Transition. Advances in Science, Technology & Innovation.* Springer, Cham. https://doi.org/10.1007/978-3-031-00808-5_28 ; https://link.springer.com/chapter/10.1007/978-3-031-00808-5_28

Mugudamani, I, Oke, SA & Gumede TP. 2022. Influence of urban informal settlement on trace element accumulation in road dust and their possible health implications in Ekurhuleni Metropolitan Municipality, South Africa. *Toxics*, 10, 253. https://doi.org/10.3390/toxics10050253

Vukeya, LR, Mokotjomela, TM, Malebo, NJ & Oke SA. 2022. Seed dispersal phenology of encroaching woody species in the Free State National Botanical Garden, South Africa. *African Journal of Ecology*, 00, 1-13. https://doi/10.1111/aje.13013

Mugudamani, I, Oke, SA & Gumede, TP. 2022. Heavy metals pollution and public health: A review of heavy metals pollution, health implications, and methods potentially used for pollution assessment. In *Trace Metals Sources, Applications and Environmental Implication*. Nova Science Publisher, pp 63-88. https://novapublishers.com/shop/trace-metals-sources-applications-and-environmental-implications/

Professor Patient Rambe

NRF Rating: C2

Financial technology and innovations

Digital innovations and entrepreneurial ecosystems

New start-ups and incubation ecosystems

Emerging technologies

Digital platforms and technologies

Full professor in Office of the Dean in the Faculty of Management Sciences

Prof. Rambe's research targets the effects of emerging technologies on business continuity behaviours such as new venture creation, financial technology (fintech), business incubation and acceleration. He also explores the interface between digital technologies, business innovations, innovation and entrepreneurial ecosystems and small ventures.

Research activities

Prof. Rambe co-edited a book titled: *Entrepreneurship and small business development in Africa: A multidisciplinary perspective,* published by Taylor and Francis. He also co-authored, with B Maime, a book chapter that appears in this book, titled: *4IR Technologies on venture creation and technology commercialisation: Insights and exemplars from an emerging economy context*. Furthermore, he graduated with a second PhD titled: Factors affecting the technology entrepreneurship of university-incubated firms.

Recent research publications

Rambe, P & Khaola, P. 2022. The impact of innovation on agribusiness competitiveness: the mediating role of technology transfer and productivity. *European Journal of Innovation Management*, 25(3), 741-773 (Emerald Publishing listed).

Musiiwa, D, Khaola, P & Rambe, P. 2022. The influence of social media usage and student citizenship behaviour on academic performance. *International Journal of Management Education*, 20(2), https://doi.org/10.1016/j.ijme.2022.100625 (Elsevier listed).

Rambe, P, Mbeo, M & Meda, L. 2022. Using technology-organisational-environment framework to explore research innovation strategies and academic resistance to research productivity at a University of Technology, *The International Journal of Learning in Higher Education*, 30(2), 29-45.

Rambe, P, Mpiti, N & Khaola, P. 2022. Technology acquisition and the hair salon performance: The explanatory roles of HR practices. *SA Journal of Human Resource Management*, 20, a1822. https://doi.org/10.4102/sajhrm.v20i0.18222021

Dakora, E & Rambe, P. 2022. The digital transformation of food and grocery retailing under the Covid-19 pandemic: A case of major South African retailers. *Retail and Marketing Review*, 18(1), 59-75.

Professor A. James Swart

NRF Rating: C2

Engineering education development

Student engagement

Energy monitoring

Solar energy applications

Informetrics

Associate Professor in the Department of Electrical, Electronic and Computer Engineering

Prof. Swart focuses on Engineering Education Development, and more specifically on his teaching practice where he advocates the use of educational technologies to promote student engagement. A second branch of his research relates to the field of Electrical Engineering, with special focus on energy monitoring of small-scale solar modules for rural applications.

Research activities

Prof. Swart published seven journal articles since 2022. Four of these focused on the use of an LMS and on improving student preparedness to enter Engineering. Two focused on energy monitoring and on a lightning protection system. The last article relates to Informetrics, where key differences between Research Gate and Google Scholar were highlighted.

Recent research publications

Swart, AJ & Hertzog, PE. 2022. Access to a learning management system by full-time and part-time students reveals notable differences. *World Transactions on Engineering and Technology Education, 20*(1), 66-70.

Swart, AJ & Delport, D. 2022. Improving Student Preparedness to Study Engineering: A Case Study in South Africa. *International Journal of Engineering Education*, 38(4), 1151-1158.

Swart, AJ. 2022. Metric Comparison Between Google Scholar And Research Gate For Engineering Academics. *Webology,* 19(3), 1025-1036.

Havenga, M & Swart, AJ. 2022. Preparing first-year engineering students for cooperation in real-world projects. *European Journal of Engineering Education,* 47(4), 558-576.

Keyser, J, Swart, A & Hertzog, P. 2022. Investigating the Current and Potential Distribution of Lightning on a Building to Determine Adequate Protective Measures. *NeuroQuantology,* 20(10), 9724-9730.

Professor Freda van der Walt

NRF Rating: C3

Mental health and well-being

Organisational behaviour

Workplace spirituality

Leadership and culture

Workplace diversity

Full professor in the Department of Business Management

Prof. Van der Walt conducted research in two pivotal domains: organisational behaviour and teaching and learning. Her research explored critical topics such as workplace diversity, spirituality and well-being, along with online learning. Through her research projects, Prof. Van der Walt made noteworthy contributions to the fields of organisational behaviour and teaching and learning, advancing knowledge, and fostering understanding. Her dedication to producing high-quality academic research serves as a testament to her unwavering commitment to the academic profession.

Research activities

Prof. Van der Walt's work was published in prestigious academic journals and books, expanding the boundaries of knowledge and providing valuable insights. She actively disseminated her research findings at multiple academic conferences, engaging with the scholarly community. Prof. Van der Walt currently mentors and collaborates with postgraduate students and peers, fostering a collaborative research environment. Her guidance and expertise have been instrumental in supporting students and emerging researchers as they develop their own research skills. Prof. Van der Walt also serves as a peer reviewer for esteemed academic journals and conferences, and guest assistant editor for an international journal. Additionally, she plays an active role as external examiner for various higher education institutions, ensuring the quality and rigour of academic research.

Recent research publications

Van der Walt, F. 2022. The role of spirituality in ethical decision-making during projects. In: N. Garg (ed). *Handbook of Research on Integrating Spirituality in Modern Workplaces*. IGI Global.

Van der Walt, F & Nkoyi, A. 2022. Students' learning styles and perceptions of online learning: Exploring a multi-modal approach to teaching and learning. In: *Higher education in the face of a global pandemic.* E.T. Woldegiorgis & P. Jonck (eds). Brill.

Tshisa, N & Van der Walt, F. 2022. Emotional well-being of black African queer employees in the workplace. *South African Journal of Human Resource Management, 20*(0), a2043. https://doi.org/10.4102/sajhrm.v20i0.2043

Fitong, GK, Naong, NM, Van der Walt, F & Dzansi, L. 2022. Investigating the relationship between selected organisational factors and women's skills development aspirations and career progression: A South African case study. *South African Journal of Human Resource Management,* 20(2), a1958. https://doi.org/10.4102/sajhrm.v20i0.1958

Likhi, MMP & Van der Walt, F. 2021. The influence of perceived cultural intelligence of school principals on job satisfaction and trust. *Management Dynamics, 30*(2): 15-30.

Professor Herman Vermaak

NRF Rating: C3

Advanced manufacturing systems

Smart manufacturing

Human-machine interaction

Automated systems

Digital twin

Dean: Faculty of Engineering, Built Environment and Information Technology

The Fourth Industrial Revolution places different rapidly advancing technologies like the Internet of Things (IoT), Internet of Services (IoS), Internet of Everything (IoE) and Cyber Physical Systems (CPS) at the centre of developing autonomous manufacturing systems. It is concerned with the machines or factory working seamlessly to increase productivity and efficiency and therefore the research has set out to establish what could classify as SMART manufacturing and Cloud manufacturing. The development of these systems within the environment of Industry 4.0 expects significant changes in tasks and demands on the human in the manufacturing process and recognises that humans and machines are homogeneous parts of a larger diverse body consisting of collaborative and autonomous components.

Research activities

Prof. Vermaak conducts research projects which cover Smart Manufacturing within the environment of Industry 4.0 and investigates a range of fields that include, but are not limited to: Advance Manufacturing Systems, Smart Manufacturing Systems, Human-Machine Collaboration, Digital Twins and the utilisation of Blockchain technology.

Recent research publications

Coetzer, J, Kuriakose, RB, Vermaak, HJ & Nel, G. 2022. Using a Single Group Experimental Study to Underpin the Importance of Human-in-the-Loop in a Smart Manufacturing Environment. *Advances in Intelligent Systems and Computing*. ISSN:2194-5357,2021. https://doi.org/10.1007/978-981-16-4538-9

Gericke, GA, Kuriakose, RB, Vermaak, HJ & Madsen O. 2022. *Developing an Improved Software Architecture Framework for Smart Manufacturing. Lecture Notes on Data Engineering and Communications Technologies 114*, https://doi.org/10.1007/978-981-16-9416-5_7

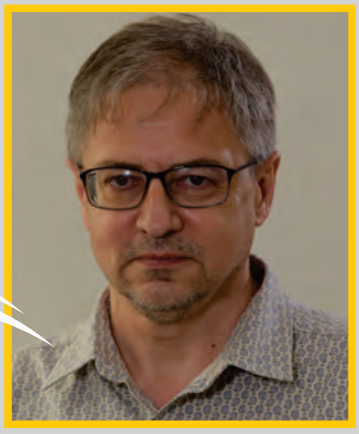
Gericke, GA, Kuriakose, RB, Vermaak, HJ & Madsen, O. 2022. Creating a Decentralized Communication Protocol for SMART Manufacturing Units within Industry 4.0. *Lecture Notes in Network Systems 288*. ISSN: 2367-3370,2022. https://doi.org/10.1007/978-981-16-5120-5_55

Mokalusi, OL, Kuriakose, RB & Vermaak, HJ. 2022. Exploring the means and benefits of including Blockchain smart contracts to a smart manufacturing environment: Water bottling plant case study. *Lecture Notes in Network Systems 334*. ISSN: 2367-3370. https://doi.org/10.1007/978-981-16-6369-7_27

Mokalusi, OL, Kuriakose, RB & Vermaak, HJ. 2022. Factors Influencing the Selection of a Blockchain Platform for Incorporating Data Provenance into Smart Contracts. *Lecture Notes in Network Systems 464*. ISSN: 2367-3370. https://doi.org/10.1007/978-981-19-2394-4_47

Professor Ihar Yadroitsau (Igor Yadroitsev)

NRF Rating: B2



Additive manufacturing

Laser powder bed fusion

Optimisation and quality

Mechanical properties

Metals and plastics

Visiting professor in the Department of Mechanical and Mechatronic Engineering at the Faculty of Engineering, Built Environment and Information Technology

Prof. Yadroitsau is a full professor with over 30 years of academic experience in manufacturing, engineering and technology. He was NRF Research Chair in Medical Product Development through Additive Manufacturing at CUT from 2015 to 2021. Prof. Yadroitsau is a co-author of more than 200 papers on laser materials processing, additive manufacturing, laser matter interaction and laser metal additive manufacturing.

Research activities

Current research interests include biomedical applications of additive manufacturing (AM); advanced implants by AM; programming and optimising of laser powder bed fusion (L-PBF) process; investigation of microstructure of samples manufactured by L-PBF and post-processing of as-built parts; influence of process-parameters on mechanical characteristics; synthesis of functionally graded and multi-materials by AM; in-line monitoring systems; and physical aspects of laser-matter interaction. Prof. Yadroitsau is a promoter and supervisor of doctoral and master's students at CUT.

Recent research publications

Yadroitsev, I, Yadroitsava, I, Du Plessis, A & MacDonald, E (eds). 2021. *Fundamentals of Laser Powder Bed Fusion of Metals,* 1st Edition. Elsevier. ISBN: 978-0-12-824090-8, 676p. https://doi.org/10.1016/C2020-0-012004

Yadroitsev, I, Yadroitsava, I & Du Plessis, A. 2021. Basics of laser powder bed fusion. In: *Fundamentals of Laser Powder Bed Fusion of Metals*, 1st Edition. Yadroitsev, I, Yadroitsava, I, Du Plessis, A & MacDonald, E (eds). Elsevier. pp.15-38. https://doi.org/10.1016/B978-0-12-824090-8.00024-X

Yadroitsev, I & Yadroitsava, I. 2021. A step-by-step guide to the L-PBF process. In: *Fundamentals of Laser Powder Bed Fusion of Metals*, 1st Edition. Yadroitsev, I, Yadroitsava, I, Du Plessis, A & MacDonald, E (eds). Elsevier. pp.39-78. https://doi.org/10.1016/B978-0-12-824090-8.00026-3

Vilardell, AM, Yadroitsava, I, Wolf, WKC, Du Plessis, A, Tshibalanganda, M, Kouprianoff, DP, Garcia-Giralt, N, Kobashi, M & Yadroitsev, I. 2022. Laser powder bed fusion of polyamide-composite for antibacterial applications: characterization and properties. *Materials Today Communications*, 31, p. 103727. https://doi.org/10.1016/j.mtcomm.2022.103727

Shange, M, Yadroitsava, I, Du Plessis, A & Yadroitsev, I. 2022. Roughness and near-surface porosity of unsupported overhangs produced by high-speed laser powder bed fusion. *3D Printing and Additive Manufacturing*, 9 (4), pp. 288-300. https://doi.org/10.1089/3dp.2020.0097

Doctor Ina Yadroitsava

NRF Rating: C2

Additive manufacturing

Laser powder bed fusion

Advanced materials

Mechanical properties

Numerical simulations

Adjunct professor in the Department of Mechanical and Mechatronic Engineering at the Faculty of Engineering, Built Environment and Information Technology

Dr Yadroitsava (M.S., Ph.D.) is a researcher with over 30 years of academic experience in physical, mathematical, computer and life sciences. She is co-author of more than 100 papers on laser powder-based fusion, optimisation process-parameters and material characterisation, bio-medical applications and antibacterial properties of advanced additively manufactured materials.

Research activities

Dr Yadroitsava continues her investigations on metal alloys and plastic materials manufactured by laser powder bed fusion. She is a co-promoter and co-supervisor of doctoral and master's students at the CUT. She serves as an editorial board member of Additive Manufacturing Letters (Elsevier) and Scientific Report journals (Springer Nature).

Recent research publications

Vilardell, AM, Yadroitsava, I, Wolf, WKC, Du Plessis, A, Tshibalanganda, M, Kouprianoff, DP, Garcia-Giralt, N, Kobashi, M & Yadroitsev, I. 2022. Laser powder bed fusion of polyamide-composite for antibacterial applications: characterization and properties. *Materials Today Communications*, 31, p. 103727. https://doi.org/10.1016/j.mtcomm.2022.103727

Shange, M, Yadroitsava, I, Du Plessis, A & Yadroitsev, I. 2022. Roughness and near-surface porosity of unsupported overhangs produced by high-speed laser powder bed fusion. *3D Printing and Additive Manufacturing*, 9 (4), pp. 288-300. https://doi.org/10.1089/3dp.2020.0097

Yadroitsev, I, Yadroitsava, I, Du Plessis, A & MacDonald, E (eds). 2021. *Fundamentals of Laser Powder Bed Fusion of Metals*. 1st Edition. Elsevier. ISBN: 978-0-12-824090-8, 676p. https://doi.org/10.1016/C2020-0-01200-4

Yadroitsev, I, Yadroitsava, I & Du Plessis, A. 2021. Basics of laser powder bed fusion. In: *Fundamentals of Laser Powder Bed Fusion of Metals*, 1st Edition. Yadroitsev, I, Yadroitsava, I, Du Plessis, A & MacDonald, E (eds). Elsevier. pp.15-38. https://doi.org/10.1016/B978-0-12-824090-8.00024-X

Yadroitsev, I & Yadroitsava, I. 2021. A step-by-step guide to the L-PBF process. In: *Fundamentals of Laser Powder Bed Fusion of Metals*, 1st Edition. Yadroitsev, I, Yadroitsava, I, Du Plessis, A & MacDonald, E (eds). Elsevier. pp.39-78. https://doi.org/10.1016/B978-0-12-824090-8.00026-3

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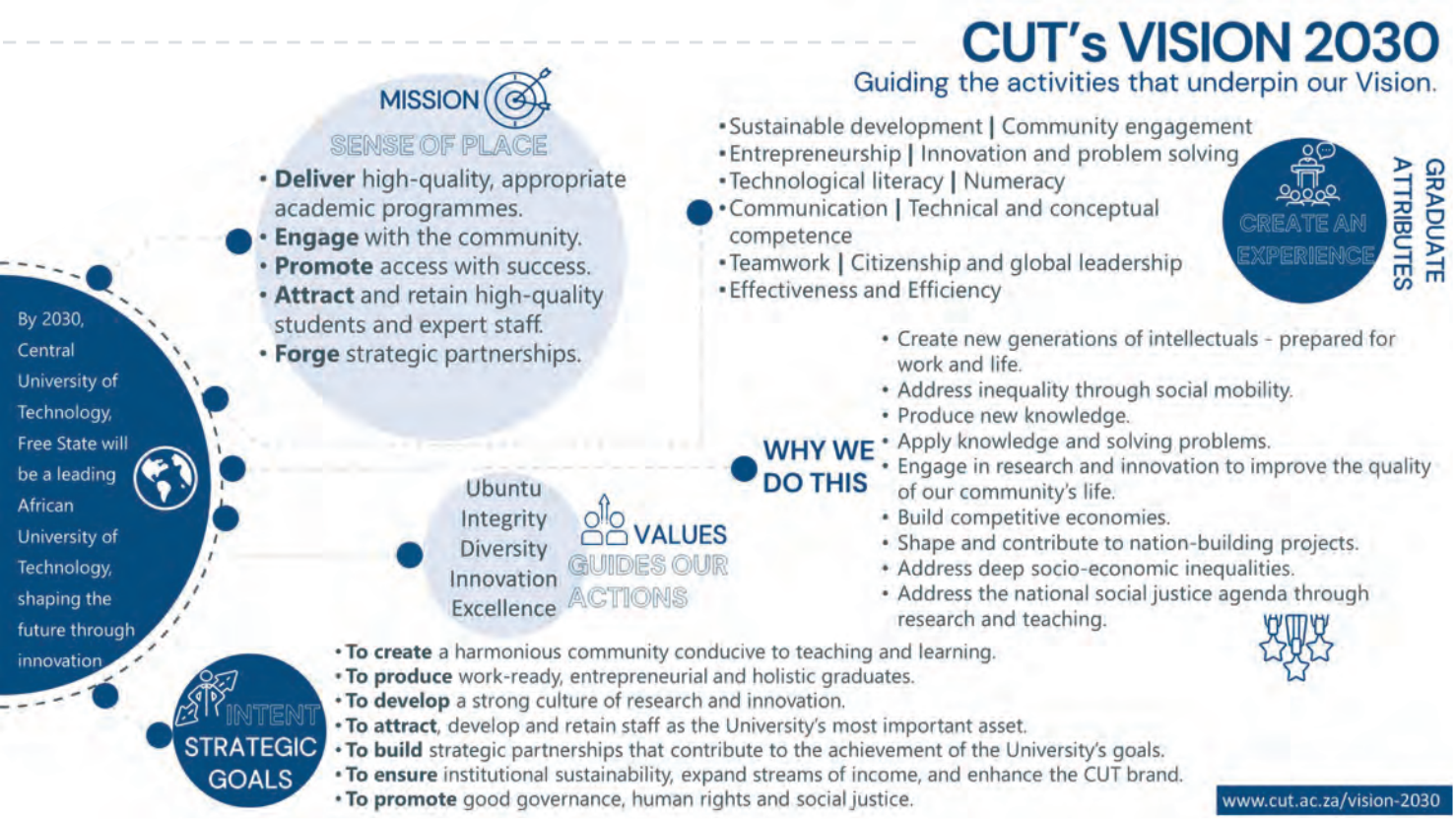

Central University of Technology Free State
For all correspondence:

Private Bag x 20539 or 20 President Brand Street
BLOEMFONTEIN
9300
Republic of South Africa

Visit our website to explore our campuses, access administrative services and links, get quick access to useful information and contact us for information about CUT.

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Bloemfontein Campus
(+27) 51 507-3279

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