



Doctor Bruce Young
SENIOR LECTURER

Professional Summary

I am an experienced chemical engineering and business development professional with 29 years' experience at Sasol. Prior to Sasol I was a chemical engineering academic at the University of the Witwatersrand. I have participated in the commercialization of a number of novel processes in the chemicals area as well as the Oryx gas to liquids (GTL) plant in Qatar. I have experience in technology, group strategy, business development and mergers and acquisitions. I have played a significant role in the nurturing and development of a number of chemical value adding businesses.

Skills

Business development and strategy professional with good understanding of the global energy and petrochemical landscape. Significant experience and skills associated with identifying, initiating and nurturing new business opportunities.

Work History

Lecturer and Senior Lecturer

University Of the Witwatersrand – Johannesburg 01/1985 to 10/1991

I performed research for my own higher degrees as well as supervising the Masters degrees of seven students and one PhD student. This research covered a wide variety of different topics and resulted in over twenty publications in international refereed journals. I started with a full teaching load in 1988. I lectured courses to second, third and fourth year students.

Chief Process Engineer (final title)

Sasol Technology – Johannesburg 11/1991 to 08/1999

This involved preliminary conceptual evaluation and screening of project opportunities as well as the evaluation of the market potential for projects. The process technology was then developed either by procuring licensed technology or by developing in house technology in collaboration with Sasol Technology R&D. Conceptual design packages were prepared and costed. This was followed by detailed evaluation of the project economics and preparation of a business plan to obtain board approval for projects. Once a project was approved basic and detailed engineering contractors were selected. We were then involved with commissioning support as well as ongoing technical support to ensure plants operated as designed.

Concept Development & Technology Manager Alpha Olefins and O&S

Sasol Technology – Johannesburg 08/1999 to 05/2003

I managed a group of 12 chemical engineers who were responsible for the conceptual development of projects relevant to the Alpha Olefins and subsequently the Olefins and Surfactants businesses. With the \$1.3 billion Sasol acquisition of Condea in 2001 I was part of the integration team focusing on the technology stream.

Manager: Technology Management

Sasol Technology – Johannesburg 06/2003 to 04/2006

This involved the management of a group of 12 graduate professionals including the Technology Managers covering the key business units of the Sasol group. We were accountable for the facilitation of technology strategy development and implementation across all key focus areas. This also involved key technology partner relationship management and technology transfer encompassing sponsored R&D, joint development and collaboration and packaging of technology solutions. We were also responsible for intellectual property and technology agreement management including the patent portfolio budgetary accountability for the Sasol patent portfolio of about 500 patents. We were responsible for technology related contracts including license agreements.

Manager: Technology Licensing

Sasol Technology – Johannesburg 05/2006 to 06/2008

This involved the establishment and growth of a new function within Sasol Technology consisting of a group of 13 graduate professionals. The technologies offered for license included the Sasol Fischer Tropsch Gas to Liquids (GTL) and Coal to Liquids (CTL) technologies as well as the Sasol-Lurgi joint venture which licensed coal gasification technology. The group was responsible for the compilation, development, support and implementation of licensable technology packages. This included proprietary equipment design, supply and support as well as proprietary catalyst supply. We were responsible for the sales, negotiation, conclusion and support of license agreement packages. During this time the \$1.3

billion Oryx GTL plant was commissioned and our team led the intensive effort together with R&D to get the plant to operate reliably at design capacity. We also established governance and systems associated with a professionally operated licensing business.

In 2006 I was requested to assist with the O&S disinvestment process leading the technology stream for Sasol.

Chemical Cluster Growth Manager

Sasol Group Strategy & Planning – Johannesburg 07/2008 to 06/2014

I was appointed to Group Strategy to represent the Sasol chemical businesses as well as initially also reporting to Reiner Groh the Group Executive Committee member for chemicals within Sasol. My task was to work with my chemical business colleagues and Sasol Technology colleagues to revitalise the chemical strategy and growth objectives within the Sasol portfolio. My group strategy duties involved coordinating, formulating, and compiling Sasol chemical cluster strategy documents for the annual Sasol strategy cycle. I was also requested to assist with the Sasol Technology stream for project Phoenix to restructure the Sasol Group to reduce fixed costs by R3 billion per annum. I also represented the Sasol chemical businesses on Project Olympus which was the long term strategy formulation initiative for Sasol.

Senior Manager: Strategy

Base Chemicals Business – Johannesburg 07/2014 – 03/2018

In the new Sasol structure I was responsible for strategy formulation and implementation for the Sasol base chemicals business which includes the polymers, nitrogen and solvents businesses with a turnover exceeding R40 billion pa.

Senior Manager: Business Development

Base Chemicals Business – Johannesburg 04/2014 – 03/2021

Responsible for business unit optimization and maximization of value in the solvents business including mining chemicals. Responsible for chemical business liaison with government in the regulatory, compliance and strategic spheres. Chemicals representative on the Sasol clean fuels 2 program. Team member on downstream polypropylene development project with government. Business unit representative on the sale of the Sasol cyanide business.

Education

Bsc Eng. (Chemical) with distinction

1983 - **University of the Witwatersrand** - Johannesburg

- Top 5 % of class
- Co-recipient of the J. Levinsohn prize for the best final year student
- Recipient of Gencor Scholarship

1985 - **MSc (Chemical Engineering)** University of the Witwatersrand - Johannesburg

1989 - **PhD (Chemical Engineering)** University of the Witwatersrand - Johannesburg



Dr Nandi Malumbazo's

Dr Malumbazo's remarkable academic achievements have established her as a valuable and respected mind in the mining and energy academic spheres. After she graduated her PhD in 2011, she was immediately employed by CSIR as a Researcher at the Material Science and Manufacturing under Energy and Processes Unit.

With in-depth scientific research background, Dr Malumbazo has also spent nine (9) years as a Chief Scientist at the Council for Geoscience where she has established a Coal Laboratory for both commercial and research purposes. During her tenure at the Council for Geoscience, she led various MTEF projects as a Project Manager for

a Small Scale Mining Programme on the Economic evaluation of abandoned Coal Mines as well as the Shale Gas Karoo Drilling project.

Dr Nandi Malumbazo is a Coal Scientists with more than a decade of experience in the coal research to energy sector. She is currently holding a position as a Senior Lecturer and Researcher on Clean Coal Technology at the School of Chemical and Metallurgical Engineering, University of Witwatersrand. Her research interests are centered on different energy topics and has a keen interest on the “Use of Coal resources beyond Power Generation”, “Just Energy Transition”, “Storage of Carbon Dioxide in Sandstones”, “Shale gas resource exploration in the Karoo” and “Coal-bed Methane potential in South Africa”. She is also a board member at Energy and Water SETA. In addition, Dr Malumbazo holds various technical advisory membership positions such as the SABS/TC Carbon Capture and Storage Standard Formulation Committee and the Council for Geoscience Carbon Capture and Storage Pilot Scale Injection Project.

She also plays an active role in influencing the energy policy sector through ongoing engagements and involvement in several government and industry platforms. Her ambition is to be an anchor and evidence-based advisor for the public sector as well as the energy industry to make well informed decisions about energy resources of the country.



Diane Hildebrandt

Diane Hildebrandt is currently the Distinguished Professor for Future Energy at the University of the Witwatersrand, Johannesburg. She is the Director of the International Joint Research Laboratory of New Energy at the Hebei University of Science and Technology and the Director of the Keqiao Green Energy Materials Joint Laboratory, Zhejiang College of Zhejiang University of Technology, both in situated in China. Diane Hildebrandt obtained her B.Sc., M.Sc. and Ph.D. from the University of the Witwatersrand. She has authored or co-authored over 210 scientific papers, including an invited paper in *Science*, and has supervised over 100 postgraduate students. She has been a plenary speaker or invited speaker at numerous local and international conferences.

She was awarded the President’s Award by the Foundation for Research and Development and the Distinguished Researcher Award by the University of the Witwatersrand in 1996. In 1997 she became the first engineer to be awarded the Royal Society of South Africa’s Meiring Naude Medal. In 2000 she and a colleague were the first academics to be awarded the Bill Neale-May Gold Medal by the South African Institute of Chemical Engineers. In 2002 she was made a Fellow of the Royal Society of South Africa and also received the Vice Chancellor’s Research Award of the University of the Witwatersrand. In 2003 she was elected as a member of the Academy of Sciences of South Africa. In 2005 she was recognized as a world leader in her area of research when she was awarded an A rating by the National Research Foundation. In 2006 she was elected a Fellow of the Academy of Engineering of South Africa. In 2009 she won the Distinguished Woman Scientist Award from the Department of Science and Technology and the African Union Continental Scientific Award in the category Basic Science, Technology and Innovation. In 2010 she was awarded the ASSAf ‘Science–for–Society’ Gold Medal Award. In 2017, Diane was conferred the NSTF Research and Capacity Development award and she was also was appointed as one of the 100 Foreign Experts to advise Government of Hebei. In addition, Diane was honoured to be chosen for the China National Talent Programme for Foreign experts in 2018 and she is presently the only African to be so honoured. In 2020 she was awarded the Yanzhao Friendship award which recognizes foreign experts who have made outstanding contributions to the economic and social development of the Hebei Province in China.

In 1998 Diane became the first woman in South Africa to be made a full professor of Chemical Engineering when she was appointed as the Unilever Professor of Reaction Engineering at the University of the Witwatersrand. In 2003 she became the first woman professor of Chemical Technology in the Netherlands when she was appointed as a part-time Professor of Process Synthesis at the University of Twente, The Netherlands. She was South African Research Chair of Sustainable Process Engineering and a co-director of the Centre of Material and Process Synthesis (COMPS) at the University of the Witwatersrand, Johannesburg, South Africa from 2005 to 2013. She has worked at the Chamber of Mines, Sasol and the University of Potchefstroom, and has spent a sabbatical at Princeton.

Her research area is the design of energy efficient processes and equipment, with the view to reducing carbon dioxide emissions from chemical processes. She is particularly interested in how she can apply the results of her research to improving the lives of those who do not have access to energy and clean water.

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Google Scholar Profile: <https://scholar.google.com/citations?hl=en&user=OLTYNGOAAAJ>



Dr. Stanley Semelane

I have over 15 years' experience in the energy and climate change sector, this includes among others, hydrocarbon, climate change reporting and renewable energy projects development. I have been involved in supporting development programmes that align with the National Development Plan (NDP). I have unlocked opportunities for SMEs in the renewable energy value chain. This was done by ensuring that government procurement programme incorporates localisation in the renewable energy sector.

My work at DEDEAT created over a billion rand of investment at the Eastern London Industrial Development Zones. I currently work for CSIR as a Research Group Leader: Energy Industry where I am responsible for leading research in renewable energy, energy economics and the impact of the energy transition. This entails analysing various economic impacts on the energy transition pathways, green economy and defining a South African "just energy transition". The energy transition will have an impact on the South African energy policy, industrialisation strategy, technology development, socio-economic development, and job creation. I lead the research group that unpacks how the South African energy future should unfold.

QUALIFICATIONS OBTAINED

Bachelor of commerce in Economics UNIVERSITY OF JOHANNESBURG

Bachelor of Science in Energy studies (honours) UNIVERSITY OF JOHANNESBURG

Master of science in engineering UNIVERSITY OF WITWATERSRAND

DOCTOR OF PHILOSOPHY IN ENERGY STUDIES UNIVERSITY OF JOHANNESBURG



Prof. Lwazi Ngubevana

Lwazi is a chemical engineer, energy executive and academic with extensive global experience in renewable energy, investments, advisory, environment, and water desalination industries. He is registered as a Professional Engineer (Pr.Eng.), with the Engineering Council of South Africa (ECSA) and as a Chartered Engineer (CEng) with the Institution of Chemical Engineers (IChemE), UK. He holds a PhD in Chemical Engineering and an MBA from the University of the Witwatersrand, Johannesburg, where he is now a Professor and Director of the African Energy Leadership Centre (AELC) at Wits Business School.

A prominent speaker on energy matters, thought leader and award winner in the energy industry; Lwazi also has extensive process design, business development, project development and project management experience. He is skilled in project finance, business development and research valorisation. He also has solid experience in policy and legislation, having worked with various government entities on Energy, Water and Environmental Policy development and implementation.

Additionally, Lwazi sits on the Boards of the Southern African Energy Efficiency (SAEE) Confederation, BizzScholar Corp. and the Council for Mineral Technology (Mintek).