



## SCIENCE BUSINESS SOCIETY DIALOGUE CONFERENCE

Linking Science, Society, Business  
and Policy for the Sustainable Use of  
Abandoned Mines in the SADC Region

## PROGRAMME

28 – 30 November 2017  
Indaba Hotel, Johannesburg,  
Gauteng, South Africa



science  
& technology

Department:  
Science and Technology  
REPUBLIC OF SOUTH AFRICA



Leopoldina  
Nationale Akademie  
der Wissenschaftler



**CONFERENCE PROGRAMME****28 NOVEMBER 2017****DAY ONE****09:00 – 10:00 REGISTRATION AND TEA****SESSION I: OPENING AND INTRODUCTION****Facilitator: Prof Roseanne Diab, Executive Officer, Academy of Science of South Africa (ASSAf)**

	Opening and Welcome Remarks
<b>10:00 – 10:15</b>	<ol style="list-style-type: none"> <li><b>Prof Brenda Wingfield</b>, Vice-President, ASSAf</li> <li><b>Prof Volker ter Meulen</b>, Immediate Past-President, Leopoldina, Germany</li> <li><b>Prof Dan Kgwadi</b>, Vice-Chancellor, North-West University, South Africa</li> </ol>
<b>10:15 – 10:35</b>	<i>Strengthening Mining Policies and Research in the SADC Region</i> <b>Mr Andries Moatshe</b> , Acting Deputy Director-General for Mineral Policy and Promotion, Department of Mineral Resources, South Africa
<b>10:35 – 10:55</b>	<i>Strengthening Mining Policies and Research in the SADC Region</i> <b>Mr Nikisi Lesufi</b> , Senior Executive, Chamber of Mines of South Africa
<b>10:55 – 11:15</b>	<i>Responsibilities of the Competence Centre Mineral Resources – Business Considerations on Both Sides</i> <b>Mr René Zarske</b> , Head of Competence Centre for Mineral Resources, Southern African-German Chamber of Commerce and Industry, South Africa
<b>11:15 – 11:35</b>	<i>Strengthening Collaboration between R&amp;D and Industry</i> <b>Mr Bernd Oellermann</b> , Director, Department of Trade and Industry, South Africa
<b>11:35 – 12:30</b>	<b>Questions &amp; Answers</b>

**12:30 – 13:30 LUNCH****KEYNOTE ADDRESSES****Facilitator: Dr Christiane Diehl, Deputy Director, International Relations, Leopoldina**

<b>13:30 – 13:45</b>	<i>Why this Conference?</i> <b>Prof Frank Winde</b> , Head of Mine Water Re-Search Group, North-West University, South Africa
<b>13:45 – 14:00</b>	<i>How Mining Can and should be a Benefit to Investors, Workers, Local Communities and Host Nations</i> <b>Mr Bobby Godsell</b> , Director, Industrial Development Corporation, South Africa
<b>14:00 – 14:20</b>	<i>Cleaning Up After Mines Long Gone: Understanding the Complex Dimensions for Inclusive Development</i> <b>Dr Shingirai Mutanga</b> , Senior Research Specialist and MISTRA Fellow, Human Science Research Council (HSRC), South Africa
<b>14:20 – 14:40</b>	<i>An Innovative Approach to Socio-Economic Closure on the West Rand of Johannesburg</i> <b>Mr Grant Stuart</b> , Senior Vice-President: Environment, Sibanye Gold, South Africa
<b>14:40 – 15:00</b>	<i>Mine Legacy Sites: A Brief Global Overview on Remediative Approaches to Date</i> <b>Prof Christian Wolkersdorfer</b> , SARChI Chair, Tshwane University of Technology, South Africa
<b>15:00 – 15:30</b>	<b>Questions &amp; Answers</b>
<b>15:30 – 17:00</b>	<b>EXHIBITION AND TEA BREAK</b>

#### OFFICIAL OPENING DINNER

Facilitator: Mr Stanley Maphosa, Liaison Manager, ASSAf

17:30 – 18:30 Welcome Drinks

18:30 – 18:40 Welcome - Mr Stanley Maphosa, Liaison Manager, ASSAf

#### Keynote Address

18:40 – 19:00 *Sustainable Post-Closure Development – Is it Achievable?*

Mr Pieter Scholtz, Aurecon Mining – Sustainability Lead and Mine Closure, South Africa

19:00 Dinner

20:20 Closing Remarks

22:00 Departure

29 NOVEMBER 2017

## DAY TWO

08:00 – 09:00 REGISTRATION

#### SESSION II: THE CHALLENGE OF MINING LEGACY SITES

Facilitator: Prof May Hermanus, Executive Director, Council for Scientific and Industrial Research (CSIR), South Africa

*Environmental Health Impacts of Mining in Africa*

09:00 – 09:20 Prof Theophilus Clavell Davies, Professor, Department of Geology, University of Nigeria, Nsukka, Nigeria

*The Legacy of Mining – Results of a Survey on Abandoned Mines in South Africa*

09:20 – 09:40 Dr Henk Coetzee, Specialist Scientist, Council for Geoscience, South Africa

*The Legacy of Mining: Perspectives on Past Practice and Future Options – A Community-Centred View from South Africa*

09:40 – 10:00 Mr David van Wyk, Lead Researcher, Bench Marks Foundation, South Africa

Panel Debate: *The Challenge of Mining Legacy*

**Moderator:** Prof May Hermanus, Executive Director, CSIR, South Africa

**Panelists:**

10:00 – 10:45

1. Mr Marius Keet, Acting Provincial Head, Department of Water and Sanitation, South Africa
2. Prof Theophilus Clavell Davies, Professor, Department of Geology, University of Nigeria, Nsukka, Nigeria
3. Mr David van Wyk, Lead Researcher, Bench Marks Foundation, South Africa
4. Dr Henk Coetzee, Specialist Scientist, Council for Geoscience, South Africa

10:45 – 11:15 TEA BREAK

**CONFERENCE PROGRAMME****DAY TWO CONTINUED****SESSION III: REMEDIATION EXPERIENCES I****Facilitator: Prof Theophilus Clavell Davies, Department of Geology, University of Nigeria, Nsukka, Nigeria**

<b>11:15 – 11:45</b>	<i>SADC Perspective on Abandoned Mines</i> <b>Dr Jewette Masinja</b> , Operating Unit Coordinator, University of Zambia, Zambia
<b>11:45 – 12:15</b>	<i>Experience in Mine Remediation Case Study Germany: Uranium Mining</i> <b>Dr Michael Paul</b> , Division Head, WISMUT GmbH, Germany
<b>12:15 – 12:45</b>	<i>Case Study Germany: Hard Coal Mining</i> <b>Dr Boris Dombrowski</b> , DMT GmbH & Co. KG, Germany
<b>12:45 – 13:45</b>	<b>LUNCH</b>

**SESSION IV: REMEDIATION EXPERIENCES II****Facilitator: Prof Christian Wolkersdorfer, SARChI Chair, Tshwane University of Technology, South Africa**

<b>13:45 – 14:05</b>	<i>Remediating Mining Legacy Sites – International Experiences and Lessons Learned by the IAEA</i> <b>Mr Horst Monken-Fernandes</b> , Engineer, International Atomic Energy Agency, Austria
<b>14:05 – 14:25</b>	<i>Remediating Mining Legacy Sites: Chilean Tailing Bodies – Structural Understanding, Water Behaviour and the Option of Selective Recovery</i> <b>Dr Nils Hoth</b> , TU Bergakademie Freiberg, (University of Resources), Germany
<b>14:25 – 14:45</b>	<i>Remediating Mining Legacy Sites: Case Study China</i> <b>Prof Qingshan Zhu</b> , Institute of Process Engineering, Chinese Academy of Sciences, China
	Panel Debate: <i>Remediation Experiences</i> <b>Moderator: Prof Christian Wolkersdorfer</b> , SARChI Chair, Tshwane University of Technology, South Africa <b>Panelists:</b>
<b>14:45 – 15:30</b>	1. <b>Dr Jewette Masinja</b> , Operating Unit Coordinator, University of Zambia, Zambia 2. <b>Dr Michael Paul</b> , Division Head, WISMUT GmbH, Germany 3. <b>Dr Nils Hoth</b> , TU Bergakademie Freiberg, (University of Resources), Germany 4. <b>Dr Boris Dombrowski</b> , DMT GmbH & Co. KG, Germany 5. <b>Prof Qingshan Zhu</b> , Institute of Process Engineering, Chinese Academy of Sciences, China
<b>15:30 – 16:00</b>	<b>TEA BREAK</b>

**SESSION V: UNDERGROUND PUMPED HYDRO ELECTRIC STORAGE (UPHES) TECHNOLOGY I****Facilitator: Mr Ewald Erasmus, Director, Geotech, South Africa**

<b>16:00 – 16:30</b>	<i>UPHES Feasibility: Case Study South Africa</i> <b>Prof Frank Winde</b> , Head of Mine Water Re-Search Group, North-West University, South Africa
<b>16:30 – 17:00</b>	<i>Implementing Pumped Hydro Energy Storage at an Open Pit Gold Mine: A Pilot Project from Australia</i> <b>Mr Simon Kidston</b> , Executive Director, Genex Power Limited, Australia
<b>17:00 – 17:30</b>	<i>UPHES Feasibility: Case Study Finland</i> <b>Mr Ernst Zeller</b> , Regional Director, Pöyry Energy GmbH, Austria
<b>17:30 – 17:35</b>	<b>Close of Day</b> <b>Mr Ewald Erasmus</b> , Director, Geotech, South Africa

## 30 NOVEMBER 2017

# DAY THREE

08:00 – 08:30 REGISTRATION

### SESSION VI: UPHES TECHNOLOGY II

Facilitator: Dr Klaus Krüger, Head of Plant & Product Safety and Innovation Management,  
Voith Hydro Holding GmbH & Co. KG, Germany

08:30 – 09:00 *UPHES Feasibility: Case Study Germany – Ore Mines (EFZN Study)*  
**Prof Uwe Düsterloh**, Clausthal University of Technology, Germany

09:00 – 09:30 *UPHES Feasibility: Case Study Germany – Hard Coal Mines*  
**Prof André Niemann**, University of Duisburg-Essen, Germany

09:30 – 10:00 *Harvesting Geothermal Heat from Mine Water – A Pilot Project from Germany*  
**Dr Nils Penczek**, Ruhr University Bochum, Germany

10:00 – 10:30 TEA BREAK

Panel Debate: *UPHES*

**Prof Frank Winde**, Head of Mine Water Re-Search Group, North-West University, South Africa

**Panelists:**

10:30 – 11:30

1. **Dr Nils Penczek**, Ruhr University Bochum, Germany
2. **Prof André Niemann**, University of Duisburg-Essen, Germany
3. **Mr Ernst Zeller**, Director, Pöyry, Austria
4. **Prof Uwe Düsterloh**, Executive Director, Clausthal University of Technology, Germany
5. **Mr Simon Kidston**, Genex, Australia
6. **Mr Ross Wilson**, Director, BBE Group, South Africa

### SESSION VII: OTHER INNOVATIVE APPROACHES

Facilitator: Prof Mwakio Tole, Deputy Vice-Chancellor, Pwani University, Kenya

11:30 – 11:50 *Geothermal AMD Treatment*  
**Dr Thakane Ntholi**, Researcher, Council for Geoscience, South Africa

11:50 – 12:10 *Recovery and Reprocessing of Mine Tailings – Experiences from Germany*  
**Prof Tobias Elwert**, Clausthal University of Technology, Germany

12:10 – 12:30 *Resource Extraction from Mine Waste Water*  
**Mr Hans-Jürgen Friedrich**, Fraunhofer Institute, Germany

12:30 – 13:45 LUNCH

### SESSION VIII: MINING LEGACY: LEGAL AND SOCIAL ASPECTS

Facilitator: Dr Shan Holmes, Consultant, Real Search, South Africa

13:45 – 14:05 *Peering at Mine Closure through the Lens of Company Law*  
**Prof Tracy-Lynn Humby**, University of the Witwatersrand, South Africa

14:05 – 14:25 *Making Illegal Mining – Legal? The Case of South Africa*  
**Ms Pontsho Ledwaba**, University of the Witwatersrand, South Africa

**DAY THREE CONTINUED**

<b>14:25 – 14:45</b>	<p><i>Mining-Affected Communities: Risks, Expectations and Opportunities</i>  <b>Ms Mariette Liefferink</b>, CEO, Federation for a Sustainable Environment, South Africa</p>
<b>14:45 – 15:30</b>	<p>Panel Debate: <i>Social and Legal Aspects of Mine Closure</i>  <b>Moderator: Prof Mwakio Tole</b>, Deputy Vice-Chancellor, Pwani University, Kenya  <b>Panelists:</b>                      1. <b>Prof Tracy-Lynn Humby</b>, University of the Witwatersrand, South Africa                      2. <b>Ms Mariette Liefferink</b>, CEO, Federation for a Sustainable Environment, South Africa                      3. <b>Ms Pontsho Ledwaba</b>, University of the Witwatersrand, South Africa                      4. <b>Dr Shan Holmes</b>, Consultant, Real Search, South Africa</p>
<b>15:30 – 16:00</b>	<b>TEA BREAK</b>

**SESSION IX: LESSONS LEARNED**  
**Facilitator: Prof Frank Winde, Head of Mine Water Re-Search Group, North-West University, South Africa**

<b>16:00 – 16:15</b>	<p><i>Wrap-Up of Conference</i>  <b>Prof Frank Winde</b>, Head of Mine Water Re-Search Group, North-West University, South Africa</p>
<b>16:15 – 16:25</b>	<p><i>Presentation and Endorsement of Conference Statement</i>  <b>Dr Siyavuya Bulani</b>, Senior Liaison Officer, ASSAf</p>
<b>16:25 – 16:35</b>	<p><i>Vote of Thanks</i>  <b>Prof Volker ter Meulen</b>, Immediate Past-President, Leopoldina  <b>Mr Stanley Maphosa</b>, Liaison Manager, ASSAf</p>

# BIOGRAPHIES

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**Siyavuya Bulani** is the Senior Liaison Officer at ASSAf and is in charge of the Academy's Overseas Collaborations sub-programme. He is responsible for the academy's bilateral agreements with other overseas academies of science, builds new and maintains existing overseas partnerships, and is the contact person for all overseas collaboration activities and engagements. He is involved in business development (resource mobilisation) in six overseas continents to support other international liaison sub-programmes and ASSAf programmes. He previously worked at the CSIR and the Agricultural Research Council (ARC) as a researcher. Siyavuya holds a PhD in biotechnology from the University of the Free State.

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**Theophilus Clavell Davies** is a Chartered Geologist who currently holds the position of Visiting Professor of Medical Geology at the University of Nigeria at Nsukka. His teaching and research activities encompass three main themes: combating environmental health impacts of mining in Africa; isolating and obviating the effects of climate change on human health in African megacities, and improvement of ethical standards in African geoscience practice. His work includes field and laboratory studies, and has led to a wide range of publications (over 200), including editorship of five special issues of high-impact journals. Before joining the department at Nsukka, he was a Research Professor at the Faculty of

Natural Sciences of the Mangosuthu University of Technology in South Africa.

He is the recipient of several distinguished fellowships and research awards, including the prestigious Alexander von Humboldt Foundation Fellowship of Germany and the 2014 NMGS Shell Petroleum Award. He holds (or has held) executive positions in a number of international geoscientific steering committees such as: Member of the Governing Council and Board of Trustees of the Geological Society of London (1996 - 2000); Member of the Scientific Board of the UNESCO International Centre for Global-Scale Geochemistry (2016 - 2021), Regional Councillor for Africa of the Association of Applied Geochemists (2006 - Present) and Councillor for Geoscience of the International Medical Geology Association (2011 - 2015).

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**Henk Coetzee** works as a Specialist Scientist at the Council for Geoscience. He holds a PhD in geophysics from the University of the Witwatersrand and specialises in the study and assessment of the environmental impacts of mining, focusing on interdisciplinary studies including diverse techniques such as geochemistry, geophysics and remote sensing. In recent years he has played a key role in the development of a national strategy for the management of impacts due to derelict and ownerless mines in South Africa, the proposal of regional closure strategies for the Witwatersrand Gold Fields and the Team of Experts' Report to the Inter-Ministerial Committee on Acid Mine Drainage.

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**Roseanne Diab** is the Executive Officer of ASSAf and Professor Emeritus in the School of Environmental Sciences, University of KwaZulu-Natal. She is a Fellow of the university, the South African Geographical Society, the Academy of Sciences for the Developing World (TWAS) and a Member of ASSAf. She has served on numerous international committees such as the International Ozone Commission (IOC), the Commission on Atmospheric Chemistry and Global Pollution (CACGP) and the SPARC (Stratospheric Processes and their Role in Climate) Steering Group. She is active in the Organisation for Women Scientists in the Developing World (OWSD) and serves on the Gender Advisory Board to TWAS.



**Christiane Diehl** is Deputy Head of International Relations at the German National Academy of Sciences Leopoldina. In this role, she is responsible for the long-standing collaboration between Leopoldina and the Network of African Science Academies (NASAC). She is the Executive Director of the Network of European Science Academies, EASAC, the Secretariat of which is hosted by the Leopoldina. EASAC brings together the National Science Academies of the European Union (EU) Member States, Norway and Switzerland. Jointly, these academies provide science-based policy advice to the institutions of the EU. She did her MA at the University of Mainz and her doctorate

at Oxford University (Oriol College) with a thesis in meta-ethics. She has worked in the United Kingdom and Germany, in academia and the public sector, with an emphasis on science communication.



**Uwe Düsterloh** completed his PhD in 1993 at the Institute of Mining, Department of Rock Mechanics at the Clausthal University of Technology. He has served in many positions including Chair for Waste Disposal Technologies and Geomechanics at Clausthal University of Technology. In 2017, he was appointed as teaching and research leader in the field of rock mechanics with special respect to sustainability and efficient utilisation of raw materials.



**Tobias Elwert** studied environmental protection technologies at the Clausthal University of Technology, from which he obtained the Diplom-Ingenieur degree in March 2009. From September 2008 until mid-November 2009, he worked for the P.C.S. Pollution Control Service GmbH in Hamburg in the fields of biological and chemical waste water and sludge treatment before joining the Department of Mineral and Waste processing of Clausthal University as Research Associate, where he completed his doctorate in 2015 with a dissertation on hydrometallurgical recycling of NdFeB magnets.

Since October 2016, he has been a Professor for hydrometallurgy and Co-head of the Department of Mineral and Waste Processing at Clausthal University of Technology and a Visiting Professor for recycling of non-ferrous metals at Qingdao University, China. Currently, his research focuses on recycling of components from (hybrid) electric vehicles (batteries, electric drive motors, power electronics) and NdFeB magnets, as well as the production of rare earth elements from tailings and placer deposits. He is Chairman of the scientific committee of the European Mineral Processing & Recycling Conference 2018 organised by GDMB (Society of Metallurgists and Miners) and Head of the GDMB expert committee Mineral Processing & Recycling.



**Ewald Erasmus** is a geologist, geochemist and geo-hydrologist. He has worked as an exploration geologist covering most of the southern African countries, Gold Fields of SA (GFSA) and BP metal exploration, specializing in structural and economic geology, including target generation, of Archean and base metal deposits. His work has covered geotechnical, which involved GFSA mine dewatering-related investigations and remediation of dolomite-related instabilities (sinkholes dolines, etc.) on the Far West Rand gold mining area in South Africa and was geotechnical advisor to the government overseeing body (SCTC).

He has established the Environmental Geology Unit at GFSA, in charge of all the environmental-related mining operations of GFSA in RSA and operations in the rest of the world, with the emphasis on ground and surface water pollution monitoring/minimisation/remediation. He also works as a private consultant. He has, in collaboration with the Mine Water Re-Search Group of the North-West University, undertaken a number of research-related economic projects, predominantly water-related, but with a strong multi-disciplinary requirement.



**Hans-Jürgen Friedrich** completed his studies in Technical Electrochemistry at Dresden Technical University and is the Head of the Technical Electrolysis and Deep Geothermics group at Fraunhofer-IKTS, Dresden. He has worked as a scientific co-worker at the Nuclear Research Centre Rossendorf. He joined VKTA Dresden-Rossendorf and served as the Head of the applied electrochemistry group. His research interest include membrane-based electrochemical water treatment processes for mine and process waters; electrochemical incineration processes; scaling, corrosion and water treatment in deep geothermal systems; recycling/winning of rare metals; and, treatment of radioactive wastes, radiotracer applications.

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**Bobby Godsell** worked for 34 years as an executive in the Anglo American group of companies. For 12 of these, he was CEO of Anglo's gold mining interests, in the form of AngloGold Ashanti. He has also worked in government bodies, spending five years as a member of the National Planning Commission and a turbulent 15 months chairing the board of ESKOM. He is currently a Director at the Industrial Development Corporation and chairs the board of the London-listed Russian gold mining company, Polymetal. With James Motlatsi, founding President of the National Union of Mineworkers, he co-chairs the active citizens NGO, Citizens ZA.

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**May Hermanus** is the Executive Director of the Natural Resources and Environment (NRE) at the CSIR. This directorate includes research programmes which address climate change, integrated water management, waste management, biodiversity, the green economy and mineral resources. Acid mine drainage and post mining landscapes and mining extraction R&D are among the areas of work of relevance to the minerals sector. Her role at the CSIR involves mainly strategic and managerial responsibilities but she continues to work on mine health and safety, and supports the work of the Centre for Sustainability in Mining and Industry (CSMI) in a visiting capacity. She was formally the Director of the CSMI. At

the CSMI, she oversaw and participated in projects leading to the completion a series of Masters' level courses on safety, health, environment and sustainable development, as well as series of courses for health, safety and environmental regulators; and worked on research projects pertaining to sustainable development, mine closure, regulation and stakeholder engagement.

Her interest in sustainable development stems from long-standing involvement, since 1982, in occupational health and safety and social issues. She has worked in the NGO, trade union, private and public sectors in South Africa, and in international labour organisation forums. She is a former Chief Inspector of Mines for South Africa. She currently serves on the boards of Aveng (Pty, Ltd) and the Responsible Mining Foundation, and on the advisory board of the Society, Work and Development Institute at the University of the Witwatersrand. She chaired AngloGold Ashanti's Bokamoso Trust from inception to conclusion in 2015 and has served on a number of other boards in the past. She has a BSc geology from the University of Cape Town and an MSc (Eng) in physical metallurgy from the University of the Witwatersrand. Currently she is registered for a PhD. She is a Takemi Fellow at the Harvard School of Public Health and a Fellow of the Southern African Institute of Mining and Metallurgy (SAIMM).



**Shan Holmes** has managed an environmental development and sustainability consultancy for over 20 years. The work is focused on applied research, project implementation and policy and legal analysis in all spheres of environmental and biological sciences work. Contracts involve the business, regulatory and international community in environmental development and sustainable natural resource management. Current contracts include community issues in environmental and public consultation and planning, mining legacy waste, wetlands retention and remediation, and conservation in declared protected areas. Examples of some of the work she has been involved in includes the analysis of

environmental laws and regulations in South Africa and international legislation and regulation concerning air and water quality, land remediation, biodiversity, global climate change, and waste management. Sector experience includes agriculture, nature conservation, tourism, and resource management and remediation in the chemicals, refining, fuels, mining, energy, and water sectors.

She is directly involved in projects and businesses in waste re-use and processing in agriculture, manufacturing and energy production; wetlands remediation; and, water management in urban and rural areas with respect to water use sector allotment, water quality, water re-use and water licence requirements.



**Nils Hoth** is the Leader of the teaching and research field, mine water and dewatering technologies at the Department of Mining and Special Civil Construction, TU Bergakademie Freiberg (Germany). His research interest include hydrogeochemical and hydraulic processes in mining dumps and heaps (field/ laboratory investigations, modelling of the processes); water treatment and the question of recoverable valuable and industrial-strategic elements from mine waters and tailing materials; biogeochemical processes in mining dumps and related to CO<sub>2</sub>-sequestration in the deep subsurface; and, coupled reactive transport modelling. He completed his PhD in 2003 at TU Bergakademie Freiberg

working on geofluids technology. He has worked on different research projects related to hydrogeochemical/ hydraulic processes in mining dumps at TUBAF Department of Geofluid dynamics.



**Tracy-Lynn Humby** is a Professor of Law at the School of Law, University of the Witwatersrand where her research and teaching interests have centred on mining, environment, sustainability and development for more than ten years. She has published some 40 academic articles in her areas of interest and was the lead editor of Climate Change Law and Governance in South Africa (2016). She actively supports the work of non-governmental organisations seeking to advance environmental justice in the mining industry and is a non-executive member of the Centre for Environmental Rights. She is currently working on a monograph entitled, “State Governance of Mining and Environment”, to be published by Edward Elgar in 2018.



**Marius Keet** is the Chief Director for Mine Water and Water Quality Management in the Department of Water Sanitation, National Office, Pretoria. With a National Higher Diploma in Chemistry, he began his career in the Department more than 40 years ago when he dealt with bulk water infrastructure. He was subsequently tasked to lead water quality management in the Upper Vaal River catchment area, and since 2010, has concentrated his expertise towards mine water management. More recently, his portfolio was expanded to provide oversight on the broader water quality management topics across the country.

As a seasoned and experienced water sector professional, he provides high-level, strategic guidance in terms of policy, legislation and project implementation. He is the Co-chair of the government Task Team on Mine Closure and Water Management, and serves as the government-linked Chair on the Mine Water Coordinating Body, an initiative of the Strategic Water Partners’ Network.



**Dan Kgwadi** has been the Vice-Chancellor and Principal of the North-West University (NWU) since April 2014. Prior to this appointment he was Rector of the Mafikeng campus of the NWU for ten years. As Vice-Chancellor he has championed the move to a unitary university, as embodied in a new strategy and structure.

He holds the degrees BSc (Physics and Chemistry), University of Bophuthatswana, RSA; MSc (Physics), Ball State University, USA; MPhil (Environmental Law and Management), University of the North, RSA; PhD (Physics Education), PU for CHE, RSA; PhD (Management) (honoris causa), Hanseo University, South Korea).

His career started as a physics teacher. He also taught physics at the former University of North-West, heading this department as well as the Physics Department at the Vaal University of Technology. He then served as a senior manager/assessment coordinator at the National Nuclear Regulator. He has been a member of numerous professional bodies and chaired the education sub-group of the South African Institute of Physics (SAIP). He is a member of the Umalusi Council, and served as chairperson of the Assessment Standard Committee.

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**Simon Kidston** has an investment banking background with more than 25 years global experience with groups such as Macquarie Bank, HSBC and Helmsec Global Capital. He is a co-founder and Executive Director of Genex Power, and has responsibility for project finance and business development. He was involved in the funding arrangements for Stage 1 of the Kidston Renewable Energy Hub (50MW Kidston Solar Project), and is now engaged with banks and potential equity partners for Stage 2 (Integrated 250 MW Kidston Pumped Storage Hydro and 270MW Solar). He has a Bachelor of Commerce degree from Griffith University, a Graduate Diploma in Applied Finance and Investment from the Securities Institute of Australia and is a Member of the Australian Institute of Company Directors.

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**Klaus Krueger** is Head of Plant & Product Safety and Innovation Management at the Corporate Technology of Voith Hydro Holding in Heidenheim. He studied electrical engineering at the Technical University of Karlsruhe (Germany) and graduated 1987 and completed his doctorate degree (equivalent to PhD) in 1991. He gained his professional experience in several national and international thermal and hydro power plant projects and in different management positions. Among his tasks, he is actively supporting scientific studies for pumped storage expansion worldwide in cooperation with universities.

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**Pontsho Ledwaba** is the Programme Manager for the Artisanal and Small-Scale Mining (ASM) Research Programme at the Centre for Sustainability in Mining and Industry (CSMI) at the University of the Witwatersrand. She holds a Masters degree in mining engineering from the University of the Witwatersrand and is currently pursuing her doctoral studies on the impact of institutional frameworks on the development of the ASM sector and its contribution to local socio-economic development.



**Nikisi Lesufi** is a Senior Executive at the Chamber of Mines of South Africa. He completed the BPharm degree at the then University of the North (now University of Limpopo), has a BSc (Hons) from the University of Leicester and an MSc from the University College London, University of London. He lectured at the University of the North and served the Department of Water Affairs and Forestry (DWAF) in various capacities (Deputy Director: Water Quality, Director: Water Resources Management and Head of the regional office of DWAF in the Free State).

He joined the Chamber of Mines in February 2002 as the Chamber's Environmental Adviser, and in 2008 he was promoted to the position of Senior Executive: Environment, Health and Legacies. He is a former non-executive director on the board of the National Nuclear Regulator, a Trustee of the Fossil Foundation of Southern Africa, former member of the Management Committee of the Water Institute of Southern Africa (Mine Water Division), former member of Environmental Advisory Board of Limpopo, and the Premier of Limpopo's Employment Growth and Development Advisory Council, and he is Patron and Trustee of the Tembisa Child and Family Welfare Society.



**Mariette Lieferrink** is the Chief Executive Officer at the Federation for a Sustainable Environment. Mariette was ranked as one of the 100 most influential people in Africa's Mining Industry (MiningMX 2013 - "Rainmakers and Potstirrers"). She is a member of more than a dozen governmental project and study steering committees, boards, task teams, teams of experts, management and executive committees including the South African Human Rights Commission's Section 5 Advisory Committees on Acid Mine Drainage and Unregulated Artisanal Mining.

She has received numerous awards and prizes such as The Sustainability Leadership Award - 11th; WESSA: Lifetime Achiever Conservation Award (2016); The Rotary Foundation of Rotary International: Paul Harris Fellow (2015); SAB Environmentalist of the Year; Exemplary Service Award: The Federation of Southern African Flyfishers (2012); External Moderator: University of Johannesburg; Reviewer of Academic Papers: North-West University; and, Associate of the Research Niche for the Cultural Dynamics of Water (CuDyWat) at North-West University (Vaal).



**Stanley Maphosa** is the International Liaison Manager of ASSAf. Leading a team of six high-level professional staff, he is responsible for strategic partnerships with global science networks, overseas collaborations and African collaborations, gender in science technology and innovation, as well as young scientist liaison. His role is to develop relations with science academies at bilateral levels, as well as multilateral organisations that have a science interest. He is involved in science diplomacy, internationalisation of science, science advice and science communication. Besides hosting of The World Academy of Sciences Regional Office of sub-Saharan Africa (TWAS ROSSA), his team is also responsible for the hosting

of the South African National Chapter of the Organisation for Women in Science for the Developing World (OWSD), the South African Young Academy of Science (SAYAS) and the International Council for Science Regional Office for Africa (ICSU ROA).

He previously worked for 12 years at World Vision International in Southern Africa, from grassroots to senior management level. Before that, he was a school teacher for ten years, a lecturer in journalism and producer of a Christian youth radio programme. Registered for a PhD in social sciences, he holds a Masters degree in development studies, post-graduate diploma in humanitarian assistance, Honours degree in development studies, Bachelor of Arts in English and communication studies and a diploma in primary education from various universities.



**Jewette Masinja** holds a PhD in mineral processing from the University of Queensland in Australia (1994), and a BSc (Hons) in Minerals Engineering from the University of Birmingham, UK (1984). He has over 33 years of postgraduate experience. In the process he has gained consolidated knowledge of mining policy and regulatory analysis. In 1996, under contract to the World Bank, he wrote the current subsisting Mines and Minerals (Environmental) Regulations, and the Environmental Protection Fund Regulations, which are on the statute books of the government of Zambia. He worked as a Permanent Secretary in the government of the Republic of Zambia for four years. He then held the

position of CEO of the Tobacco Association of Zambia for about two and a half years, and subsequently established a consulting company, providing management, mining, environment, agriculture and natural resources consulting services to the mining industry, and beyond. He still remains CEO of this company to date.

In this role he has undertaken and managed a number of large environmental impact assessments, such as that leading to the establishment of the 1.5 million tonnes per annum (USD410 million) Dangote cement complex in Zambia, as well as securing environmental impact assessment approvals for over 700 and 300 communication cell towers from Zambian authorities, for MTN and Airtel respectively. He is currently a Technical Advisor to the government of Namibia, where he oversaw an environmental, occupational and community health audit of a mineral processing facility, working with a team of over 40 personnel. This audit led to a private sector investment of over USD400 million into the facility, and this has since helped underpin the future of a town in the northern part of the country. He has provided consultancy services to the UNDP and a number of NGOs on policy and legislation, such as Oxfam, Southern Africa Resource Watch (SARW), and The Nature Conservancy.

He is currently part of the team working on the development of the African Mining Vision Governance Framework. He joined the University of Zambia in 2008 as a lecturer in the School of Mines, where to date, he teaches undergraduate and postgraduate students. Of note is that he is currently the University of Zambia (UNZA) coordinator of a postgraduate course on Sustainable Mineral Resources Development. He is also the coordinator of the United Nations University Institute of Natural Resources in Africa – the Mineral Resources Unit based at the University of Zambia. He supervises postgraduate students, and has been an external examiner at both Master and PhD level. He has an interest in environmental management in general, and in the mining industry in particular.



**Rantsadi Andries Moatshe** holds a Masters degree from the University of the Free State. He has 33 years of experience, having worked in both the public and private sectors. He worked as the National Director: Waste Management with the Department of Environmental Affairs; General Manager: Industrial Ecology with Lafarge Industries South Africa and was appointed Chief Director: Mine Environmental Management. He is currently acting Deputy Director-General: Mineral Policy and Promotion with the Department of Mineral Resources.



**Horst Monken-Fernandes** is, since 2006, an environmental remediation specialist at the Waste Technology Section (WTS) of the International Atomic Energy Agency (IAEA). In this capacity he is in charge of assisting IAEA member states in moving forward their remediation projects in a safe and cost-effective way. He is the Technical Officer of various national, regional and inter-regional technical cooperation projects; he is also the Scientific Secretary of the Network of Environmental Management and Remediation and in charge of the production of different technical reports. He has been the coordinator of complex review missions of the IAEA, e.g. Remediation of Off-Site Areas in Japan Affected by the Fukushima >>

>> Accident and liaises with multilateral organisations like the Nuclear Energy Agency-Organisation for Economic Cooperation and Development (NEA-OECD), European Commission (EC), European Bank for Reconstruction and Development (EBRD) and the World Bank (WB).

Prior to this, he worked for the Institute of Radiation Protection and Dosimetry (IRD) where he has been the Head of the Environmental Impact Assessment Section. In this capacity he was in charge of technical and scientific support to the Nuclear Regulatory Authority (the Brazilian Nuclear Energy Commission - CNEN) on the licensing of nuclear installations in the country. He was also a researcher at the institute lecturing and advising MSc and DSc thesis in the post-graduation programme of the institute and working in cooperation with other programmes of Brazilian universities. His research area was in the field of environmental geochemistry and environmental impacts and remediation of uranium and non-uranium (NORM) mining operations. He has several scientific papers published in international peer-reviewed scientific journals and contributions to conference and symposia proceedings. He is a chemical engineer by training and completed his PhD in environmental geochemistry at the Fluminense Federal University in Rio de Janeiro. He undertook his postdoctoral studies at the University of Central Florida investigating the use of Fe VI (ferrate) to oxidize sulfidic mill tailings as a remedial option to reduce acid drainage generation.



**Shingirirai Mutanga** is a well-established researcher in the fields of multi-disciplinary research, applied geographic information systems (GIS), remote sensing & systems analysis. Currently, he is working as a research specialist at the HSRC, under the Africa Institute of South Africa's (AISA) Science & Technology Programme. His work experience spans from government, private sector, and academia. He holds a PhD in industrial systems engineering from the University of Pretoria, South Africa. He holds an MSc in geo-information science and earth observation for environmental modelling and management, obtained from a consortium of four universities (Southampton (UK), Lund (Sweden),

Warsaw (Poland) and ITC (Netherlands)) and an Honours degree in geography and environmental science from Midlands University, Zimbabwe.

He has published extensively in both national and international accredited journals, policy analysis reports, books and conference proceedings. Among his recent publications are the edited books "Africa in a Changing Global Environment" and "Management and Mitigation of Acid Mine Drainage (AMD) in South Africa: Input for Mineral Beneficiation in Africa". His research interest is modelling a wide range of global environmental issues in particular energy, water and climate change. He is also a senior research associate with the University of Johannesburg (UJ) and is supervising Masters students at UJ, UFS and the University of South Africa.



**André Niemann** is a Professor of Hydraulic Engineering and Water Resources Management at the University of Duisburg-Essen, Germany. He completed his doctoral studies at the Institute of Urban Water and Waste Management, University of Essen. His thesis focused on the Impact of Combined Sewer Overflows on the Hyporheic Zone of Small Urban Rivers. He has received many honours including being a board member of the Association of Engineers for Water Resources Management, Waste Managers and Melioration. His research interest include hydraulic engineering and water resources management, sustainable urban water management, global water problems,

hydromorphology and morphodynamics of rivers, river rehabilitation, fish migration concepts, water quality modelling and management, including mass flow balancing, sustainable hydropower solutions.



**Thakane Ntholi** recently earned a PhD (Geology) from Nelson Mandela University under the mentorship of Prof Maarten de Wit. Her research focused on evaluating the technical and economic viability of PUMPS, a system designed for the in-situ remediation of acid mine water. This work was a continuation of her MSc research during which she conceptualised the system and established proof of concept. She obtained her MSc (Geology) in 2012 from the University of Cape Town where she also did her BSc Hons (Geology) and BSc majoring in geology and chemistry. She is an alumna of the South African Young Scientist Summer Programme (SA-YSSP), a member of the Golden Key

society and a beneficiary of the Inkaba ye Afrika Scholarship. She is currently employed at the Council for Geoscience where her key focus is the improvement and implementation of passive treatment systems for acid mine drainage.

She also carries out life cycle assessments for various treatment options that are being considered for active or passive treatment of acid mine drainage. Her research interests include the water-energy-environment nexus (particularly in mining); geo-engineering solutions for anthropogenic earth systems challenges; and earth stewardship in general. Other interests include bridging the gap between scientists and stakeholders, particularly policymakers, through improved science communication. For this reason she has been involved in multiple activities such as Science Slam and Fame-Lab as a participant, coach and judge.



**Bernd Oellermann** is a Director in the Regional Industrial Clusters unit of the Special Economic Zones and Economic Transformation division of the Department of Trade and Industry (the dti). The unit is responsible for revitalisation of government-owned industrial parks in South Africa and for the development of clusters. This work also involves the development of an industrial park framework that addresses investment promotion, governance, financing, sustainability, operations, infrastructure, shared services and stakeholder management for example. This is built on international practice in science, technology and industrial parks and zones. He has contributed significantly towards the

development of the Musina Special Economic Zone and others in South Africa which included a master planning framework and regulations.

He has furthermore been involved in numerous policy developments in SME development, education, ICT and industrial development during his career with extensive international experience. He has worked in the private sector for most of his career which included running his own company, as management consultant and as project and programme management professional in mining, sustainable development, renewable energy, water, health, agriculture, engineering, R&D, education, ICT and the financial sector. His work spans government, industry and commerce, labour, communities, youth, academia, research and non-profit environments. He has a keen interest in the growth and development of people and the triple-bottom line of sustainable development that addresses social, economic and environmental development in an integrated and sustainable fashion. He is driven by the belief in the restoration of Creation and every person to their original purpose and identity. His approach is systemic and integrated towards working with others to find solutions to the multidimensional challenges faced by the world.



**Michael Paul** holds a diploma in geology and a PhD in mineralogy. He started his professional career in underground U-mining. After joining Wismut GmbH in 1991, which is operating one of the world's largest mine closure and rehabilitation programmes, he has been working for more than 25 years in the remediation business of uranium legacy sites. In 2012, he became both Wismut's Division Head for Engineering & Radiation Protection and Head for Mine Water Management. He also worked in leading positions in numerous mine closure and rehabilitation projects in Europe, Central Asia and Africa. He is Vice-President of the International Mine Water Association (IMWA) and also part-time lecturer

and consultant for the International Atomic Energy Agency (IAEA) with a main focus on know-how transfer. He authored/co-authored more than 100 publications, mostly related to water management and mine flooding, waste rock and tailings remediation.



**Nils Penczek** works as a scientific assistant at the chair of energy systems and energy economics (LEE) of the Ruhr-Universität Bochum. He is involved in the research of renewable systems. He graduated in 2011 with a BSc degree in sales engineering and product management (SEPM) at the Ruhr-Universität Bochum. In 2012, he obtained a MSc degree in SEPM and an additional MSc degree in mechanical engineering. After his studies he joined the chair of energy system and energy economics. He worked in projects analysing the waste heat of industrial areas in Bochum. The objective was to create a link between stakeholder and waste heat potential. He has also been involved in a project to

gas separation membranes for emission-free fossil plants. The thesis "Evaluation of the Stirling Engine using an Industrial Waste Heat Recovery in a Medium Temperature Range" gave him the Dr-Ing degree in 2016. Currently he is working on a team in the project GW-Ruhr. The project examines the existing mining infrastructure and how it can be used in terms of renewable energy generation.



**Pieter Scholtz** is heading up Aurecon's mine closure and minerals processing divisions in Africa. One of his primary drivers is to ensure that Aurecon live their vision of Being an Inspiration for Africa through collaborating with clients to create sustainable industries during the entire mining life cycle - from inception to closure. He has 12 years' experience in the mining industry in operations and projects across Africa. As a professional metallurgical engineer (University of Pretoria) with a qualification in Design Thinking (University of Virginia, USA), he has a knack for integrating systems thinking with multi-disciplinary engineering solutions to unlock innovation and sustainability.



**Grant Stuart** is the Senior Vice-President for the West Rand Tailings Retreatment Project (WRTRP) and Environment within Sibanye. The WRTRP involves the exploitation of the vast quantity of tailings material scattered over the West Rand for the economic extraction of gold and uranium with the intention of establishing a large-scale surface retreatment operation in anticipation of socio-economic closure. The WRTRP is seen as a key component of socio-economic closure. He has been associated with the Randfontein Surface Assets. In 2007, he was the lead on the Uranium Project for Harmony Gold. In this role within Harmony he packaged Harmony's Cooke underground and surface assets

which was to become Rand Uranium. He continued at Rand Uranium as the Executive for Corporate Development, responsible for the planning and execution of a wide range of strategies to ultimately develop Rand Uranium into an independent Uranium (and Gold) company. Gold One acquired Rand Uranium in 2011 and he joined Gold One as the Head of Investor Relations.

In this role he also managed the Joint Venture that was established between Gold Fields and Gold One to review synergies between the surface resources and existing infrastructure on the West Rand. In the beginning of 2017, he was appointed to head up the environmental management function for Sibanye with a specific focus on water and the natural environment in anticipation of a sustainable regional socio-economic closure solution. Prior to joining Harmony, he was a Senior Manager within the strategy and innovation practice at Deloitte. His management consulting spanned ten years over a wide range of industries. He has a BSc in chemistry and chemical sciences and a post-graduate qualification in business administration from Wits Business School.



**Volker ter Meulen** qualified as MD in 1960. He specialised in paediatrics and in clinical virology. In 1975, he became Chairman of the Institute of Virology, University Würzburg, and was Dean of the Faculty of Medicine from 1998 – 2002. He has worked on pathogenic aspects of viral infections, in particular infections of the central nervous system. Nationally and internationally, he has served over the years in advisory committees of government bodies and scientific societies/unions. From 2003 – 2010, he was President of the German Academy of Sciences Leopoldina. Under his leadership, Leopoldina has strengthened its international commitments in different inter-academic councils and was appointed National

Academy of Sciences in 2008. From 2007 – 2010, he was President of the European Academies, Science Advisory Council (EASAC), an association of the National Academies of the European Union. In 2013, he was elected Co-chair of IAP and re-elected in 2016.



**Mwakio Tole** is the Deputy Vice-Chancellor (Administration, Finance and Planning) of Pwani University, and Professor of Environmental Geochemistry, Department of Environmental Sciences, Pwani University (since May 2009). Previously, he held distinguished positions in academia, namely: Acting Deputy Vice-Chancellor (Academic) Kenyatta University (October 2008 – May 2009); Chairman, Department of Environmental Sciences (June 2004 – August 2008); Professor of Environmental Geochemistry, School of Environmental Studies, Moi University (May 1992 – October 2003); Dean, School of Environmental Studies, Moi University (Sept. 1995 – Sept. 1996); Dean, School of Graduate Studies, Moi University

(Aug. 1990 – Oct. 1994); Associate Professor, School of Environmental Studies, Moi University (Feb. 1989 – May 1992); Senior Lecturer, Department of Geology, University of Nairobi (June 1987 – Jan. 1989); Lecturer, Department of Geology, University of Nairobi (Feb. 1982 – June 1987); Graduate Assistant & Research Assistant, Department of Geosciences, Pennsylvania State University, USA (Aug. 1977 – Nov. 1981); Tutorial Fellow, Department of Geology, University of Nairobi (Sept. 1976 – Feb. 1982).

He has, in addition, held a number of honorary positions in boards of governmental and professional organisations. He is a member of the International Water Association; International Association of Hydrological Sciences; Kenya Institute of Environmental Assessment (Co-opted Council Member 2004 – 2007); Eastern Africa Association for Impact Assessment; Geological Society of Kenya; and Institute of Directors (Kenya).



**David van Wyk** completed a BA degree in social sciences from the University of the Witwatersrand, a BA Honours degree in economic history from the University of Zimbabwe and an MA in Southern African literature and language studies from the University of Durban-Westville. He worked at the North West Provincial Government from 1994 to 2004 in various senior positions including Director Executive Council Planning and Policy Support and Director Economic Development and Tourism Project Management. He currently works as a lead Researcher at Bench Marks Foundation.



**Frank Winde** is a Professor at the Vaal Campus of the North-West University (South Africa) where he heads the Mine Water Re-Search Group (MWRG). He also chairs the Commission for Water Sustainability of the International Geographical Union. He obtained his PhD in Halle and his Habilitation in Jena (Germany) and came to South Africa in 1999 with a scholarship of the Excellence Programme of the then Academy of Natural Scientists Leopoldina, now German National Academy of Sciences Leopoldina. Investigating climate controls on aquatic uranium mobility, he worked extensively in mining areas of tropical Australia, South-Eastern Germany, and the Namib Desert of

Namibia. For several years he managed the Re-watering Research Programme of the South African gold mining industry on behalf of the Far West Rand Dolomitic Water Association assessing the effects associated with the flooding of deep-level gold mines.

Together with his colleagues from the MWRG he conducted numerous projects on mining-related risks to health, environment and infrastructure, including the much publicised Winde Report on geotechnical risks posed by rising mine water underneath Johannesburg. He also works with international science organisations, such as UNESCO and WHO, on mining-related impacts on health and environment. Jointly supported by Eskom and the South African mining industry together with colleagues from Germany, he and his team are currently working on assessing the feasibility of using deep-level mines in South Africa for underground pumped hydro energy storage as a means to avoid post-closure water pollution.



**Christian Wolkersdorfer** has 27 years of professional experience. He is a mining and geothermal hydrogeologist specialised on mine water tracer tests, mine water geochemistry and remediation. He holds two research chairs in South Africa and Finland: South African Research Chair for Acid Mine Drainage Treatment at Tshwane University of Technology in Pretoria and Finnish Distinguished Professor for Mine Water Management at Lappeenranta University of Technology in Mikkeli. He has been teaching hydrogeology, mining hydrology, and tracer hydrology at Ludwig-Maximilians-Universität Munich and Bergakademie Freiberg, Germany and within the AEG master course of Tübingen University. He held the

Industrial Research Chair in Mine Water Remediation & Management at Cape Breton University, Nova Scotia, Canada.

He received his Masters degree and PhD from Clausthal University, Germany and habilitated at Bergakademie Freiberg, Germany. A world leader in mine water remediation and management projects, he has conducted and initiated several projects related to mine water and hydrogeology in Canada, Germany, Austria, Slovenia, Brazil, the United Kingdom, South Africa, Finland and Turkey. He is also the Technical Editor for the journal Mine Water and the Environment as well as the President of the International Mine Water Association (IMWA), the Industry-Academia coordinator for the Mine Water Division of WISA (Water Institute of Southern Africa) and he is a member of the Global Alliance. He published and edited 172 papers, books and book chapters in various journals and proceedings about hydrogeology, archaeology and mining related topics.



**Brenda Wingfield** holds the DST-NRF SARCHI Research Chair in Fungal Genomics and is Professor of Genetics at the University of Pretoria (UP). She is a Vice-President of the Academy of Science of South Africa. Wingfield enjoys significant national and international recognition for her work in Molecular Plant Pathology and Fungal Genetics. She has received numerous significant awards for research, including the South African Department of Science and Technology's Distinguished Women in Science Award in 2008, and the African Union Regional Award for Women in Science in 2009. In 2014 the NRF recognised her as an A2-rated scientist. She was the first female researcher to receive the Christiaan Hendrik

Persoon medal from the Southern African Society for Plant Pathology (SASPP) in 2015. In the same year she was awarded the DST-NRF SARCHI Chair in Fungal Genomics. In 2016 she received the Harry Oppenheimer Fellowship Award. She is a programme leader at the DST-NRF Centre for Tree Health Biotechnology. Prof Wingfield was also elected as a Fellow of the African Academy of Sciences (AAS) earlier in 2017.



**René Zarske** heads the Competence Centre Mineral Resources within the Southern African-German Chamber of Commerce and Industry. He is experienced in the international markets and has been working for one of the largest banks in Germany in the world's main financial centres Frankfurt am Main, Hong Kong, Melbourne and Shanghai. He obtained his Master of business at the Bond University in Australia. As a German citizen, he recently worked as a consultant in the finance industry in Cologne. He has overseen various projects in the field of business development and is now well placed in the mining sector.

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**Ernst Zeller** is Regional Director Hydropower at Pöyry Energy GmbH and responsible for the European Market including Turkey and Georgia. He is involved in international project development, strategic acquisitions and project execution of all kind of hydropower plants. He is acting as consultant for hydropower development, expert for project management, economic calculations and international project acquisition including economic and financial evaluations. After his graduation in mechanical engineering at the Technical University Vienna, he joined Verbundplan in 1995 where he could gain international experience in many hydropower countries in Europe, Africa and Asia. Since 2004, he had several positions within Pöyry related to hydropower development and execution of hydropower projects. Since 2008, he is responsible for the whole hydro team in Austria and Europe, acting as Regional Director in Vienna. He and his team are currently involved in project development of several pumped storage project around the world, including Finland, Central Europe, Israel, South East Asia and Australia.

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**Qingshan Zhu** obtained his PhD degree from Tsinghua University, China in 1997. During 1998 - 2000, he worked in the Kyushu National Industrial Research Institute, Japan. From 2000 till 2002, he worked in the Lab of Solid State and Materials Chemistry, Eindhoven University of Technology, the Netherlands. He became a full Professor and has been working in the Institute of Process Engineering, Chinese Academy of Sciences (CAS) since April 2002. He is Deputy Director of the Institute of Process Engineering, CAS, China. He has published over 120 papers in refereed international journals and holds over 60 patents, including 11 PCT patents. He is the council committee member of the Chinese Society of Particuology (2002 - present). He serves as the Deputy Editor-in-Chief of the Journal Process Engineering (2004 - present) and Chinese Journal of Powder Technology, editorial committee member of the Particuology (2003 - present), International Journal of Chemical Engineering (2009 - present), The Journal of Crystallisation Physics and Chemistry (2009 - present) and Iron Steel Vanadium Titanium (2011 - present). His research interests include mineral processing including utilisation of iron ore tailings, process intensification, fluidisation, etc.

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