

## DR. NANDI MALUMBAZO

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Date of Birth: [REDACTED]

Postal Address: [REDACTED]

Contact No: [REDACTED]

Email: [REDACTED]

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### EDUCATION:

#### DEGREES

- PhD (Chem. Eng.) in Coal Science, School of Chemical and Metallurgical Engineering, 2008 - 2010, University of Witwatersrand. (Sasol Funded Project)
- MSc in Synthesis Organic Chemistry, 2007-2008, University of the Western Cape (Sasol funded project).

### BOARD MEMBERSHIPS:

- South African National Accreditation System (SANAS) Non-Executive Director – **1<sup>st</sup> July 2025 to current.**
- National Nuclear Regulator (NNR) Non-Executive Director – **September 2023 – current** (Chairperson of the Nuclear Safety Technical Committee and a member of the HRR Committee).
- Energy and Water SETA (EWSETA) Non-Executive Director (Chairperson of the Governance and Strategy Committee and a member of the EXCO) – **April 2020 to 31<sup>st</sup> March 2025.**

### GOVERNMENT TECHNICAL COMMITTEE MEMBERSHIPS:

- Chairperson of the SABS Technical Committee 0323 Circular Economy – **August 2022 – current.**
- Member of South African Energy Engineers Congregation – **January 2022 – current.**
- SABS Technical Committee Member of 0265 Carbon Dioxide Capture, Transport and Geological Storage – **2020 to current.**

### ENERGY POLICY NATIONAL INVOLVEMENT:

- Consultancy (SAWEA): Assessment of wind energy allocation in the Draft IRP 2025.
- Consultancy (SANEDI): Comparison of the Draft IRP 2024/2025 vs Gas Master Plan – Oct 2024 to March 2025.
- Fossil Fuel Foundation Response to the draft IRP 2018, 26 October 2018, <http://www.engineeringnews.co.za/article/fossil-fuel-foundation-sees-clean-coal-asa-solution-for-south-africa-2018-10-29>  
<http://www.engineeringnews.co.za/article/fossil-fuel-foundation-sees-clean-coal-asa-solution-for-south-africa-2018-10-29>.

**RESEARCH/CORPORATE WORK EXPERIENCE:**

**WITS BUSINESS SCHOOL (AFRICAN ENERGY LEADERSHIP CENTRE):** Sessional Senior Lecturer – Jan 2022 to current.

- Teaching of Energy Policy and Regulation to Post Graduate Diploma and Master of Management in Energy Leadership (MMEL) students.
- Teaching short courses on Energy Policy and Regulation to Municipalities.

**UNIVERSITY OF WITWATERSRAND:** Senior Lecturer and Researcher in Clean Coal Technology at the School of Chemical and Metallurgical Engineering. **March 2020 to current**

- Conduct research and development on Clean Coal Technology.
- Teaching postgraduate short courses on coal science.
- Member of the Research Committee for the School of Chemical and Metallurgical Engineering.

**COUNCIL FOR GEOSCIENCE:** Chief Scientist / Coal Laboratory Section Head - **April 2012 to February 2020**

- Established and managing a Coal Laboratory for research and commercial purpose.
- Propose, implement, and manage coal-to-energy research projects.  
Project Management of:
  - Determination of Uranium concentration on Springbok Flats, its extraction from coal and how it can be used for energy generation.
  - Resource assessment of Coal bed methane in South Africa.
- Provide commercial geoscience services to the coal sector and conduct applied geoscience investigations on a commercial basis at local, provincial, and national levels within a business sector.
- Conduct and/or support original research in the country's coal geological resources, such as coal resource and quality assessment & and its potential uses.
- Define and map the distribution of coal deposits and their characterization.
- Delineate the availability of coal resources for possible mining and exploration.

**COUNCIL FOR GEOSCIENCE:** Shale Gas Project Manager - **July 2015 to November 2016.**

- Project Management - Overseeing the Shale gas project tasks, i.e. Geological Mapping, Geophysics, Environmental and Hydrogeology, Seismology, and Gas and Geochemical analysis.  
Stakeholder engagement – Beaufort West Municipality, Department of Mineral Resources, PASA, PetroSA, Department of Energy, Department of Water and Sanitation and Department of Environmental Affairs.
- Providing Technical support to Department of Mineral Resources for the Director General (DG) Hydraulic Fracking Committee.

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**CSIR:** Post-Doctoral Fellow / Researcher - Material Science and Manufacturing (Energy and Processes)

**March 2011 to March 2012**

- Knowledge on how coal can be better used to reduce the CO<sub>2</sub> emissions produced during energy production or petrochemical products.
- Gained knowledge on how to operate Fluidized Bed Gasifiers and Pipe reactor combustors.

### ACADEMIC EXPERIENCE:

#### PUBLICATIONS:

**PEER-REVIEWED BOOK PUBLISHED: 1**

**JOURNAL PAPERS PUBLISHED: 12**

**GOOGLE SCHOLAR CITATIONS: 214**

**GOOGLE SCHOLAR H-INDEX: 9**

#### **PEER-REVIEWED BOOK PUBLICATIONS:**

- N. J. Wagner, **N. Malumbazo** and R. M. Falcon. Southern African Coal and Carbon Petrographic Atlas: Definitions and Applications of Organic Petrology, Penguin Publishers, ISBN 9781775845430, Published August 2018.

#### **MOST RECENT PEER-REVIEWED INTERNATIONAL PUBLICATIONS:**

- R. Maphoso, **N. Malumbazo**, B. Vatsha, G. Nwaila. Critical Raw Materials: Characterization and Froth flotation as a Preconcentration technique of Weathered and Non-Weathered Coal Discards from Mpumalanga. Journal of South African Institute of Mining and Metallurgy, Special Issue: Southern African Rare Earths 2<sup>nd</sup> International Conference 2024.
- Rajesh Ramluckun, **Nandi Malumbazo**, Lwazi Ngubevana. A Review of the Energy Policies of the BRICS Countries: The Possibility of Adopting a Just Energy Transition for South Africa, Sustainability, Vol 16 (2), 2024, 703.
- V. Chabalala, N. J. Wagner and **N. Malumbazo**. Application of Organic Petrology and Raman Spectroscopy in Thermal Maturity Determination of the Karoo Basin (RSA) Shale Samples, Vol. 13, 2023, 1199.
- P. Mavhengere, N. Wagner and **N. Malumbazo**. Influences of SO<sub>2</sub> contamination in long term supercritical CO<sub>2</sub> treatment on the physical and structural characteristics of the Zululand Basin caprock and reservoir core samples. Journal of Petroleum Science and Engineering, Vol 215, Part A, 2022, 110554.
- P. Mavhengere, N. Wagner and **N. Malumbazo**. The effects of long-term supercritical CO<sub>2</sub> exposure on Zululand Basin core samples. Energy, Vol 220, 2021, 119806.

## DR. NANDI MALUMBAZO

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- V. P. Chabalala, N. Wagner and **N. Malumbazo**. Geochemistry and organic petrology of the Permian Whitehill Formation, Karoo Basin (RSA) and the Devonian/Carboniferous Shale of the Appalachian Basin (USA). International Journal of Coal Geology, Vol 232, 2020, 103612.

### UNPUBLISHED INDUSTRY REPORTS:

- Xanga, S., **Malumbazo, N.**, Mahlase, B., Mniki, N.C., Toale, R.L., Ndumo, S. Economic Mineral Assessment of Legacy Mine Sites. Council for Geoscience, South Africa. Unpublished Report, 2018.

### MOST RECENT ENERGY CONFERENCE CONTRIBUTIONS:

- **Event Organizer:** CIMERA/WITS Critical Minerals from Coal and its by-products Research Symposium, 30<sup>th</sup> August 2023 and 30<sup>th</sup> of August 2024.
- **Event Organizer:** Centre of Excellence in Financial Services (COEFS) Critical Minerals 1<sup>st</sup> and 2<sup>nd</sup> Masterclass in February 2023 and August 2024.
- **Programme Director:** The Thabo Mbeki Foundation Energy (Response on the Draft IRP 2024) Event, Houghton Hotel, 01 March 2024.
- **Programme Director:** DMRE Investing in Exploration Seminar, Mining Indaba, 06 February 2024.
- **Programme Director:** DMRE MPRDA Review Summit, Indaba Hotel, 13 July 2023.
- **Moderator:** DMRE luncheon session titled “South African Energy Investment Lunch, African Energy Week, 19 October 2022, Cape Town.

### STUDENT SUPERVISION:

#### GRADUATED STUDENTS:

- Rajesh Ramluckun, PhD Project Titled “Just Energy Transition Policy of South Africa”: 2021 – 2025 (**awaiting Dec 2025 graduation**); Registered with the University of Witwatersrand. (Funded by Eskom).
- Xolisa Mnkwanza, MSc Project Titled “Assessment of the Seriti Resources Coal Mine Dumps for Critical Raw Materials”: 2023 - 2025 (**under examination**); Registered with the University of Witwatersrand. (Funded by Seriti Resources).
- Khunjulwa Sigenu, MMEL Project Titled “Assessment of Natural Gas as a Bridging Fuel in the Just Energy Transition”: 2024 - 2025 (**under examination**); Registered with Wits Business School. (Funded by NERSA).

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- Rethabile Maphoso, MSc Project Titled “Extraction of Critical Raw Materials from Anthracite and Bituminous Coals”: 2022 – 2025 (**awaiting Dec 2025 graduation**); Registered with the University of Witwatersrand. (Funded by Wits Mining Institute and MQA).
- Vongani Chabalala, PhD Project Titled “The Application of Organic Petrology to Shale Gas Exploration in South Africa” – 2016 to 2021. **Graduated from the University of Johannesburg.**
- Patience Mavhengere, PhD Project Titled “The effects of impurities in CO<sub>2</sub> Streams on the Physical and Chemical Properties of South African Sandstones Pertaining to Geological Sequestration”: 2015 to 2021, **Graduated from the University of Witwatersrand in July 2022.**
- Mpumelelo Ndhlalose, MSc Project Titled “Extraction of Uranium associated with Springbok flats coal samples”, **Graduated from the University of Witwatersrand 2015.**
- 4<sup>th</sup> Year students: 2020 to current (15 graduated students).

### CURRENT PHD STUDENT SUPERVISION:

- Tapelo Moima, PhD Project Titles “The use of MOFs for CRMs Extraction in Coal Discards”: 2024 – ongoing; Registered with the University of Witwatersrand. (Funded by Seriti Resources).
- Tshiamo Moolele, PhD Project Titled “The geochemical interaction of CO<sub>2</sub> in basalt rock using various water sources for CO<sub>2</sub> sequestration”: 2024 – ongoing; Registered with the University of Witwatersrand. (Funded by the Council for Geoscience).
- Mbali Madikizela, PhD Project Titled “Production of bio-oils from municipal waste treatment sludge”: 2021 – ongoing; Registered with the University of Witwatersrand.
- Nontle Mniki, PhD Project Titled “A detailed investigation into the properties of Coal Dumps at Protea Colliery for potential extraction of Critical Raw Materials: 2019 – ongoing; Registered with University of Johannesburg. (Funded by the Council for Geoscience).

### CURRENT MSC STUDENT SUPERVISION:

- Khangelani Madlavu, MSc Project Titled “Pre-Concentration of CRMs with Froth Flotation”: 2024 – ongoing; Registered with the University of Witwatersrand. (Funded by Seriti Resources).

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**RESEARCH FUND RAISING:**

<b>RESEARCH FUNDING</b>	<b>DURATION</b>
Seriti Resources	June 2023 to May 2027
Wits Mining Institute	2023

**AWARD RECOGNITION:**

- **2023 WOMEN OF STATURE AWARD WINNER** IN SCIENCE AND INNOVATION CATEGORY.
- **ASSOCIATION OF ENERGY ENGINEERS: 2022 SUB-SAHARAN AFRICAN ENERGY DEVELOPMENT AWARD WINNER.**

**REFERENCES:**

**AVAILABLE ON REQUEST**