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REPUBLIC OF SOUTH AFRICA



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NEWSLETTER

JULY 3
2024

Welcome Message from the CoE Director Prof Nikki Wagner



We have passed the mid-year solstice, and hopefully we will begin to note the lengthening of the day-light hours, even as we progress into the coldest parts of the South African winter. During the winter university recess periods, many academic staff and students undertake field work. Here in the Highveld, we are blessed with an abundance of sunshine, and, as long as a cold wind doesn't blow, field work is enjoyable; hoping our coastal colleagues are also staying warm.

It is my pleasure to share the 3rd DSI-NRF CIMERA Newsletter. The extensive list of publications this year is impressive. We do track the number of student first authors, which we will report in the 2024 Annual Progress Report. The DSI-NRF CIMERA team (Lizzie, Khanya, Judith, and myself) had the privilege to visit the CIMERA collaborators at UFS and UKZN, followed by a trip to the Cape-based departments at UCT, UWC, and US. Geoscience education and research are flourishing in these departments, and I was impressed by the enthusiasm of the CIMERA funded students and the specific focus areas of each department. It is my opinion that each geology department should have a strength, thus providing students with options in geoscience research. We are looking forward to our visits to the two Limpopo based geology departments (UL and UV) in August, followed by visits to RU, UFH, and UP later in the year.

The recording from our annual online stakeholder engagement is available on our webpage: <https://cimera.co.za/stakeholder-engagement-session-2024/>. Please do view to gain further insight into our past and future plans.

Our collaboration under Exp4Pred with Helmholtz Institute Freiberg for Resource Technology (HIF) grows from strength to strength. With our German colleagues recently visiting South Africa for field work and presented two short symposia, both hosted at Wits. Further courses will be offered during the year, freely available to the CIMERA community.

I look forward to engaging with you all at our Annual Research Colloquium in November. We are planning a full schedule, including the evening braai and networking as well as a soft skills day for the students. Please do continue to send images and bragging information to Khanya.

Stay warm,
Nikki.

IMPORTANT ANNOUNCEMENTS

Prof Sue Webb — CoE Co-Director



Prof Susan Webb is an Associate Professor of geophysics in the School of Geosciences at the University of the Witwatersrand and has a passion for creating opportunities. Her curiosity driven research examines fundamental global geophysical problems to develop applied solutions for scientific challenges. She forged her unique perspective by gaining geophysics degrees in three different countries (USA, Canada, and South Africa) and from studying the Earth from its core to near-surface resources with collaborative, international groups and students. Her well-known, innovative research on the Bushveld Complex demonstrates broad connectivity between the Bushveld limbs and has facilitated projects for numerous graduate students.

Her international School experience mirrors her passions; she was a founding committee member of the Society of Exploration Geophysicists (SEG) Geoscientists without Borders (GWB) that set up the this highly successful international humanitarian program. She has also served on the executive committee of the SEG as second vice president. Election to the board of directors of the American Geophysical Union as the International Secretary saw her serving for 6 years facilitating an international perspective across all aspects of AGU business. She is currently serving on the Board of Directors of the SEG Foundation. She invests her time locally, serving on the governing committee of the South African Geophysical Association (SAGA).

Prof Webb developed the AfricaArray Geophysics

Field School out of a need for linkages within Africa, the USA and a dire need for practical hands on training. This program attracts support from international sponsors since formal establishment in 2005. The evolving field school is developing new engagements with industry and encouraging entrepreneurial opportunities. This field school has spawned similar opportunities in Kenya, Cameroon, Ghana and Egypt and enabled many of the participants to progress to better employment opportunities. Long-term links with the participants from the US and within Africa have ensured a widespread international network for South African students to rely on.

With a passion for education that is internationally recognized, and as the inaugural awardee of the SEG's "Outstanding Educator" award, Prof

Webb was also selected as the SEG's Honorary lecturer for Africa and the Middle East, lecturing throughout the region for 6 months and forging new connections with Middle East and African colleagues. She is featured in the 2020 book "Mentoring and Sponsoring: Keys to Success" by Maria Capello and Eve Sprunt. She continues to develop new opportunities for students in conjunction with the African component of the Next Generation Explorers Award!

She is currently a PI on the ICDP Bushveld Complex Drilling Project (BVDP).

We welcome Prof. Webb as the Acting Co – Director of DSI-NRF CIMERA and look forward to a vibrant future.

INTRODUCTION OF A NEW FOCUS AREA

In addition to the nine focus areas under the CIMERA research umbrella, the CoE has introduced a tenth focus area: **Innovative Techniques for Geosciences**.

This focus area supports projects emphasizing innovation and technology as applied to geosciences, including the fields of exploration, extraction, ore processing, mineral analysis, machine learning, and artificial intelligence.



DSI-NRF CIMERA PEER-REVIEWED JOURNAL PUBLICATIONS

We are excited to share some of the incredible research coming out of our academic cohort. Our researchers are constantly pushing the boundaries of knowledge in mineral and energy resource analysis. These publications showcase the depth and breadth of expertise within our Centre.

The list of publications below covers publications from the month of May to June 2024:

Focus Area 1: Mantle and crustal processes, and associated Metallogenesis, including kimberlites

The Lanseria palaeosol: Implications for palaeoweathering and terrestrial life at 2.6 Ga on the Kaapvaal Craton, <https://doi.org/10.1016/j.precamres.2024.107352>

Zircon U-Pb and Lu-Hf isotopes reveal the crustal evolution of the SW Angolan Shield (Congo Craton), <https://doi.org/10.1016/j.gr.2024.03.010>

The Where of Mineral Names: Khorixasite, Mesopotamia, Khorixas, Kunene Region, Namibia, <https://doi.org/10.1080/00357529.2024.2303960>

The petrogenesis of orbicular granites in the Diana's Pool area, Zimbabwe, <https://doi.org/10.25131/sajg.127.0021>

Focus Area 2: Metallogeny and Paleogeographic Implications of Layered Igneous Complexes (LICs) and Large Igneous Provinces (LIPs)

Melt infiltration in a crystal mush and pegmatoid formation in the platiniferous Merensky Reef, Bushveld Complex, South Africa, <https://link.springer.com/article/10.1007/s00126-024-01278-z>

Neoproterozoic lavas of the Ventersdorp Large Igneous Province, South Africa: Sr-Nd-Hf isotopic and trace element evidence for a long-lived plume beneath a stationary African continent. <https://doi.org/10.1016/j.earscirev.2024.104752>

Focus Area 3: Gold Metallogenesis and Metallurgy

Characterizing low-grade refractory gold ores using automated mineralogy coupled with LA ICP-MS. <https://doi.org/10.1016/j.mineng.2024.108674>

Factors responsible for Witwatersrand gold mineralisation, <https://doi.org/10.25131/sajg.127.0023>

Focus Area 4: Manganese and Iron Ore Deposits

Mineralogy and mineral paragenesis of the Palaeoproterozoic manganese ores of the Avontuur deposit of the Kalahari Manganese Field, South Africa, <https://doi.org/10.25131/sajg.127.0016>

Focus Area 5: Critical Raw Materials

Characterisation of rare earth element-bearing mineral phases present in South African coal ash using Mineral Liberation analysis, <https://doi.org/10.1016/j.fuel.2024.131661>

A systematic framework for compilation of critical raw material lists and their importance for South Africa, <https://doi.org/10.1016/j.resourpol.2024.105045>

Focus Area 6: Base Metals

The processing behaviour of the sphalerites from the Big Syncline deposit, South Africa, <https://doi.org/10.25131/sajg.127.0018>

Focus Area 7: Energy Resources

Raman Spectroscopy for the characterization of the macromolecular structure of Highveld coals (South Africa), <https://doi.org/10.1016/j.coal.2024.104531>

Graphitization: Microstructural and microtextural transformations of residual char from international coal combustion ash, <https://doi.org/10.1016/j.coal.2024.104470>

Hydraulic Fracturing Potential of Tight Gas Reservoirs: A Case Study from a Gas Field in the Bredasdorp Basin, South Africa, <https://doi.org/10.1016/j.jgsce.2024.205364>

Focus Area 9: Geology for Society

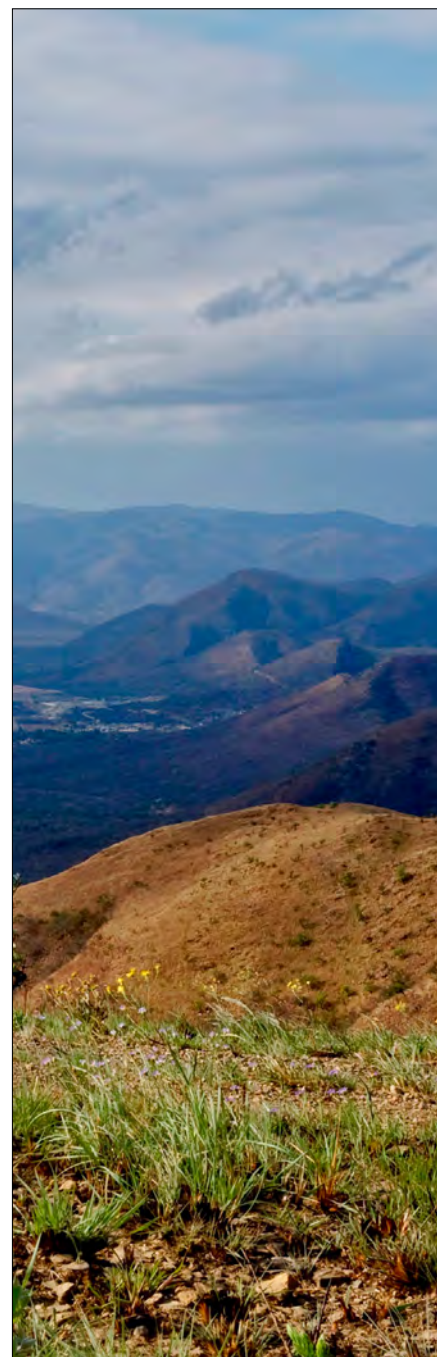
Operational Report about drilling in the Moodies Group of the Barberton Greenstone Belt (BASE – Barberton Archean Surface Environments), DOI: <https://doi.org/10.48440/ICDP.5069.001>

Explanatory Remarks on the Operational Dataset about Drilling in the Moodies Group of the Barberton Greenstone Belt (BASE – Barberton Archean Surface Environments),

DOI: <https://doi.org/10.48440/ICDP.5069.002>

Events

Upcoming Events



ANNUAL RESEARCH COLLOQUIUM

**The DSI-NRF CIMERA
Annual Research Colloquium 2024
is coming in November!**

Get ready to experience a dynamic convergence of geological knowledge.

Join us as our students and researchers showcase their expertise on ongoing, impactful, economic geology projects.

Don't miss this invaluable opportunity to expand your research network, exchange geoscientific knowledge, and connect with academic and industry experts.

Mark your calendars and stay tuned for more updates and registration details!

Website link: <https://cimera.co.za/event/dsi-nrf-cimera-annual-research-colloquium24/>

CALL FOR ABSTRACTS

DSI-NRF CIMERA Annual Research COLLOQUIUM'24

INVITATION

DSI-NRF CIMERA Annual Research Colloquium enables postgraduates, post doctorates, and research associates to present their findings; students to network; and industry to gain a window-shop idea of research within our CoE. The event will be in hybrid format. CIMERA students and academics are expected to present in-person. Online guest attendance will be available but in-person attendance is strongly preferred.

Registration link: <https://forms.gle/JNjizMArffBzkaqo6>

Word template for the abstract: <https://cimera.co.za/event/dsi-nrf-cimera-annual-research-colloquium24/>

Event Date: **25 & 26 November 2024.**

A hybrid event hosted at the
Johannesburg Business School (JBS) Auditorium.

Queries: kmatiwane@uj.ac.za

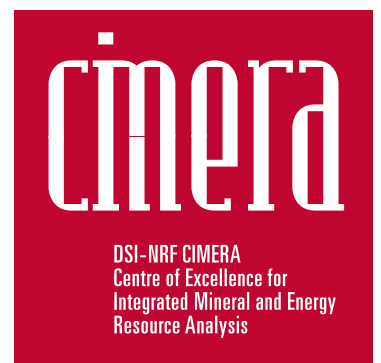
Networking Event: **Monday 25 November 2024, 17:00 – 19:00, JBS Foyer & Terrace.**

Students: Science Soft Skills Workshop (in-person):

Tuesday 26 November 2024 (and possibly 27 November 2024, tbc).

Academics: ICDP Brainstorming Workshop (in-person):

Tuesday 26 November 2024.



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TIMELINES

Call for abstracts opens	8 July 2024
Call for abstracts closes	28 August 2024
Registration opens	12 September 2024
Registration closes	18 November 2024
Notification of acceptance and preliminary programme	12 September 2024
Publish preliminary programme	20 September 2024
Final programme	1 November 2024
Colloquium commences	25 November 2024
Networking evening event	25 November 2024
Colloquium closes	26 November 2024
AFTERNOON WORKSHOPS:	
Students: Science Soft Skills Workshop (in-person)	26 November 2024 (and possibly 27 November, tbc)
Academics: ICDP Brainstorming Workshop (in-person)	26 November 2024

Prizes for best presentation and poster.



Image: Banded Iron Formation at Kuruman Kop (UJ Honours students), Northern Cape Province, South Africa. George Henry.

2nd Coal Research Symposium — 30 August 2024

We are excited to invite you to the **2nd Research Symposium: Critical Raw Materials in Coal, Ash, and Related Products** with a specific focus on **Rare Earth Elements (REEs) under our F**. Building upon the success of the inaugural Coal Symposium in 2023, this event aims to bring together researchers, academics, and industry representatives to foster collaboration and discussion on this crucial topic.

For more information, contact our Marketing and Events Coordinator, Khanya Matiwane, at kmatiwane@uj.ac.za

SYMPOSIUM DETAILS:

DATE: Friday 30 August 2024

THEME: Critical Raw Materials in Coal, Ash, and Related Products with a Focus on Rare Earth Elements

VENUE: Johannesburg Business School Auditorium

We encourage you to:

- Submit abstracts for presentations related to the symposium theme. (Details on submission procedures will follow in a separate email and flyer on our social media platforms.)
- Register your attendance to secure your spot at the event. (Click on the link to register for the Research symposium: <https://forms.gle/17HXXWN6KUv3wTo19>)



CALL FOR ABSTRACTS AND REGISTRATION 2ND RESEARCH SYMPOSIUM ■ 30 August 2024

cimera

DSI-NRF CIMERA
Centre of Excellence for
Integrated Mineral and Energy
Resource Analysis

Critical Raw Materials in coal, ash,
and related products, with a specific
focus on rare earth elements.



Prof Nikki Wagner and Dr Nandi Malumbazo would like to invite you to a research symposium bringing students, academics, and other interested parties together to continue the discussion on research CRM's and REE's at South African and other research entities.

DATE ■ **Friday 30 August 2024**

VENUE ■ **University of Johannesburg**, JBS Park, 69 Kingsway Avenue, Auckland Park, Johannesburg.

HOSTS & SPONSORS ■ **DSI-NRF CIMERA**, Department of Geology (University of Johannesburg), and the **School of Chemical and Metallurgical Engineering** (University of the Witwatersrand).

COSTS ■ **No cost**, but registration is required.

FORMAT ■ **In-person preferred**. Hybrid participation is possible for attendees.

All presenters are required to attend in-person.

CONTACT ■ Khanya Matiwane at kmatiwane@uj.ac.za for more information and abstract submission.

DATES

Call for abstracts is open.

Abstracts close on 31 July 2024.

Registration is open and closes on 26 August 2024.

Registration link ■ <https://forms.gle/oawrxZxx61SeUa5t7>

Preliminary program available 1 August 2024

ABSTRACT SUBMISSION – 500 words.

Submit abstracts to kmatiwane@uj.ac.za – attention Khanya – with “Research Symposium Abstract Submission” in the subject line.

DSI-NRF CIMERA 10th Anniversary 2024

On 5 April 2024, we marked a decade of research excellence at the DSI-NRF CIMERA 10th Anniversary Celebration held at the Johannesburg Business School.

Our esteemed guests were welcomed by the CoE's Director, Prof Nikki Wagner, from the University of Johannesburg, and the evening was expertly facilitated by the newly appointed incoming Co-Director, Prof Susan Webb (University of the Witwatersrand). The current Co-Director, Prof Judith Kinnaird (University of the Witwatersrand), provided an exciting look back at CIMERA's incredible journey.

Toasting our ten years of excellence in geology research excellence, Mr Frank Mazibuko, representing the National Research Foundation of South Africa (NRF), delivered a heartfelt speech and well wishes for CIMERA's future endeavours.

DSI-NRF CIMERA 10th Anniversary Gallery images: <https://cimera.co.za/2024-gallery/dsi-nrf-cimera-10th-anniversary/>



Above: DSI-NRF CIMERA Team – Ms Zintle Daraza, Ms Viwe Koti, Dr George Henry, Prof Susan Webb, Prof Judith Kinnaird, Ms Lizzie Tau, Prof Nikki Wagner, and Ms Khanya Matiwane

Below: Prof Judith Kinnaird and Anniversary Delegates



DSI-NRF CIMERA: Annual Stakeholder Engagement Session 2024

The DSI-NRF CIMERA Centre of Excellence in Mineral and Energy Resource Analysis (CIMERA) hosted its annual Stakeholder Engagement Session on the 9th of May 2024. This session provided a valuable platform for CIMERA to connect with its stakeholders and share updates on its activities.

If you missed the session, click on the link below to watch the video of the session. Link: <https://cimera.co.za/stakeholder-engagement-session-2024/>

DSI-NRF CIMERA strengthens collaborations with South African universities

The DSI-NRF CIMERA recently embarked on a series of university tours to its partner universities in South Africa. These visits aim to reinforce ongoing collaboration.

University of the Free State (UFS) – 15 April 2024

The tour kicked off at the University of Free State Geology Department in Bloemfontein. Prof Nikki Wagner, CIMERA Director, presented the Centre's objectives, followed by discussions on potential partnerships under the collaborative agreement. Prof Judith Kinnaird, Co-Director, delivered a public lecture on Critical Metals for Clean Energy, attracting students and faculty members. The UFS Geology Head of Department, Prof Bisrat Yibas,

gave an informative presentation on ongoing projects and initiatives within the department. UFS academics, Dr Jarlen Keet, Justine Magson (also a CIMERA-funded PhD candidate), and Dr Martin Clark, presented a brief overview of their research work, and a CIMERA-funded MSc student, Mr Johannes Moraka Malebati, presented his research work. The visit concluded with a tour of the department's facilities.

View the University of Free State Geology Department facilities: <https://www.ufs.ac.za/natagri/departments-anddivisions/geology-home/research-and-publications/analytical-facilities>

UFS university tour images: <https://cimera.co.za/2024-gallery/university-of-free-state-university-tour/>



Dr Robert Muir, Prof Frederick Roelofse, Dr Martin Clark, Dr Jarlen Keet, Prof Nikki Wagner, Dr Megan Welman-Purchase, Prof Bisrat Yibas, Prof Judith Kinnaird and Mr Johannes Malebati



University of KwaZulu-Natal (UKZN) – 16 April 2024

The team continued to the UKZN Geology Department in Durban Westville, where they were welcomed by department staff, including CIMERA-affiliated academics, Dr Lauren Hoyer and Prof Andrew Green. The visit featured research presentations by Prof Andrew Green, Dr Lauren Hoyer, and Dr Willem Kruger, who shed light on the research undertaken within the department, from marine geology to paleomagnetism. Ms Nthabeleng Ramotholo, a CIMERA-funded MSc student, presented her research proposal on ‘The Metallogeny of the Mafic-ultramafic Sithilo Complex, Tugela Terrane, Natal, Metamorphic Province.’ Prof Wagner provided an update on CIMERA’s progress, and Prof Kinnaird delivered a well-attended public lecture on ‘Battery Metals from Africa.’ The focus on continued collaboration was emphasised under the existing Memorandum of Agreement.

UKZN Gallery images: <https://cimera.co.za/2024-gallery/university-of-kwazulu-natal-university-tour/>



Prof Nikki Wagner, Dr Lauren Hoyer, Prof Andrew Green, Ms Lizzie Tau, Ms Nthabeleng Ramotholo, Prof Judith Kinnaird and Ms Palesa Leuta



Dr Lauren Hoyer and UKZN students



Prof Andrew Green and UKZN Students

University of Cape Town (UCT) and University of the Western Cape (UWC) – 22 April 2024

The itinerary included visits to both UCT and UWC Geology departments. Dr Geoffrey Howarth at UCT welcomed the team and provided updates on current CIMERA-funded projects. Prof Wagner presented the Centre’s history and plans, followed by research showcases from affiliated students. CIMERA-funded students, Merrily Tau (PhD) and Danielle Visagie (MSc) presented on the ‘Applicability of AI-in-olivine thermometry in diamond exploration’, and ‘Automatic Earthquake detection via Machine Learning in Leeu Gamka, Karoo, and implications for shale gas extraction’, respectively. CIMERA alumni, Benjamin Whitehead, presented on ‘Rayleigh wave group-velocity maps from ambient noise tomography near Leeu Gamka, Karoo, South Africa’, and Dr Sarah Burness on ‘Mineral Processing’. UCT gallery images: <https://cimera.co.za/2024-gallery/university-of-cape-town-university-tour/>



UCT: Benjamin Whitehead , Danielle Visagie, Merrily Tau, Sarah Burness, Dr Geoffrey Howarth, Ms Khanya Matiwane, Ms Lizzie Tau, Prof Judith Kinnaird and Prof Nikki Wagner



Dr Sarah Burness (UCT)



Ms Danielle Visagie



UCT Students and Ms Lizzie Tau and Prof Judith Kinnaird

A similar format was followed at UWC, with Prof Dirk Frei providing historical insights into the department. Dr Jan van Bever Donker and Prof Russell Bailie, along with UWC and CIMERA-affiliated academic staff, warmly welcomed the team. The National Research Foundation’s (NRF) Research Programme Officer, Frank Mazibuko, joined the UWC visit. Dr Monica Oghenekome presented her research work, ‘Integrated Reservoir Characterisation of the Pletmos Basin: Implication for Diagenesis and Reservoir Quality’, and UWC geology students presented their research work as well. UWC Gallery images: <https://cimera.co.za/2024-gallery/university-of-western-cape-university-tour/>



UWC: Dr Matthew Huber, Dr Juergen Reinhardt, Ms Lizzie Tau, Dr Russell Bailie, Dr Charl Cilliers Prof Judith Kinnaird, Dr Monica Enifome, Mr Frank Mazibuko and Prof Nikki Wagner

Stellenbosch University – 23 April 2024

The final stop was the Earth Sciences Department at Stellenbosch University. Dr Bjorn von der Heyden presented an overview of the department, followed by Prof Wagner’s update on CIMERA. CIMERA-affiliated PhD student, Daniel Ferreira, presented a summary of his thesis on ‘The Tantalite Valley Complex and its genesis, metallogensis and prospectivity’. Other Stellenbosch University students within the Department and faculty research presentations provided valuable insights, and Prof Kinnaird delivered another well-received public lecture on ‘Battery Metals from Africa’. The tour concluded with a departmental facilities tour.



Stellenbosch University students and staff member, Daniel Ferreira and Prof Nikki Wagner



Prof Judith Kinnaird



Dr Bjorn von der Heyden

Stellenbosch University Tour Gallery images: <https://cimera.co.za/2024-gallery/university-of-stellenbosch-university-tour/>

The university tours served to strengthen existing collaborations and explore new opportunities for partnerships in geoscience research across South Africa. The focus on student engagement through presentations and public lectures highlights the Centre's commitment to fostering the next generation of researchers in the field. Stay informed about upcoming university visits by following our social media pages and visiting our website.

INDUSTRY EVENTS



Junior Mining Indaba 21-22 May 2024

The CoE Manager, Ms Gobona Lizzie Tau, attended the 2024 Junior Indaba held at the Johannesburg Country Club in Auckland Park. The two-day conference featured presentations from junior and emerging mining companies and investment companies based in South Africa, Botswana, Namibia, and Zimbabwe. The diverse panel discussions touched on topics from ESG and financing to enhancing exploration in southern Africa. Junior mining companies are invited to partner with the DSI-NRF CIMERA for their commodity-specific research needs to improve exploration targeting and ore-body knowledge.

COLLABORATIVE EVENTS

Assembly of Governors (AOG) meeting of the International Continental Drilling Program (ICDP)

Prof Nikki Wagner attended the Assembly of Governors (AOG) meeting of the International Continental Drilling Program (ICDP) as the stand-in South African rep, hosted by the Ministry of Earth Sciences and the Government of India. The ICDP is a non-profit organisation that supports international collaborative scientific drilling projects worldwide. South Africa is a member of the ICDP through the NRF, and currently, we are actively drilling at the ICDP Bushveld Drilling Project.



CIMERA-HIF International Research School: First Consortium Meeting

The DSI-NRF CIMERA and Helmholtz Institute Freiberg for Resource Technology (HIF) in Germany, formally met for the first consortium meeting under their joint International Research School partnership, Exp4Pred. The consortium, including the Steering Committee, programme managers, coordinators, supervisors and PhD students, met at the University of Johannesburg, Auckland Park Bunting Road Campus, on the 13th of June 2024 to discuss the progress of the PhD projects on predictive metallurgy funded under the School.

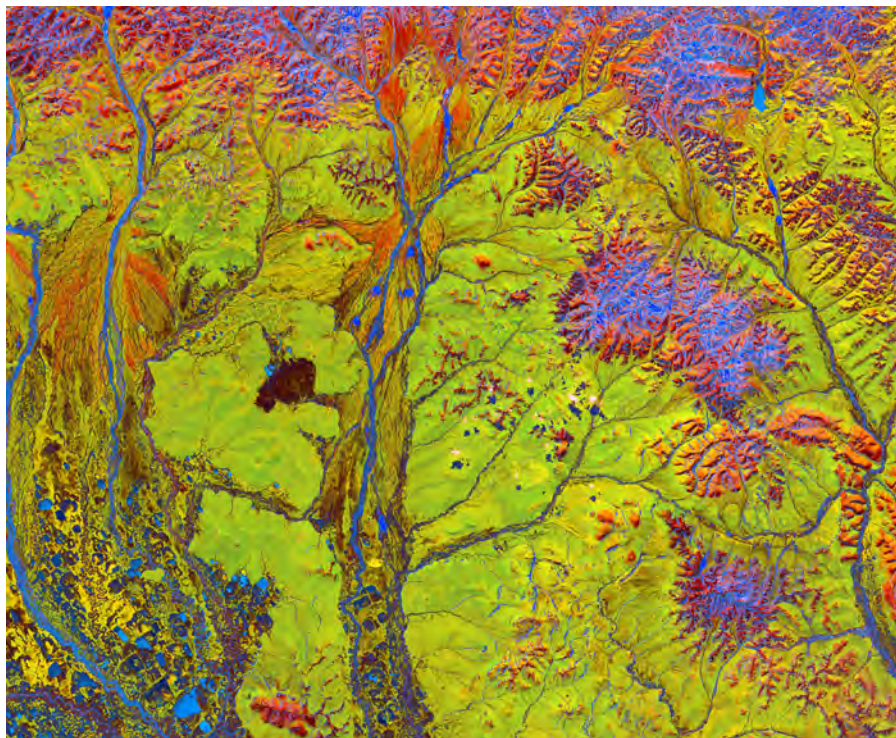
Short Courses under Exp4Pred

Introduction to Predictive Metallurgy

DSI-NRF CIMERA and Helmholtz Institute Freiberg for Resource Technology (HIF), at Helmholtz-Zentrum Dresden-Rossendorf under Exp4Pred, hosted a short course on Predictive Geometallurgy at the University of Witwatersrand School of Geosciences on 10-11 June 2024. The course was well attended and had 18 attendees on day 1 and 14 attendees on day 2.

Dr Raimon Tolosana-Delgado, a Fellow Researcher from the Helmholtz Institute Freiberg for Resource Technology (HIF) at HZDR, started the short course with an introduction to Geometallurgy and discussed the characterisation tools of Geometallurgy. For the second half of the short course on day one, Dr Raimon Tolosana-Delgado discussed the Integrated geomet playground and finished Day 1 with orebody modelling.

On Day 2, Dr Raimon Tolosana-Delgado continued the short course with a session on process modelling methods and particle-based process modelling and wrapped the short course with an engaging discussion with the participants.



Earth Observation Short Course

DSI-NRF CIMERA and Helmholtz Institute Freiberg for Resource Technology collaboratively hosted the Earth Observation course at the University of Witwatersrand on 10-11 June 2024 at the School of Geoscience and seventeen participants attended the short course.

Dr Richard Gloaguen, lead scientist from the Helmholtz Institute Freiberg for Resource Technology (HIF), started the short course with the 'Introduction to Earth Observation' and spoke on data and formats, references (maps/projection), SAR and optical data, and a brief introduction to machine learning. Ms Yuleika Madriz Diaz, Research Engineer at Helmholtz-Zentrum Dresden-Rossendorf (HZDR), gave the 'Introduction to drone magnetics principles, data processing, drone acquisitions and examples of applications'. Dr René Booyesen, Researcher and Project Manager at HIF-HZDR, gave a talk on satellite data and spectroscopy, unpacking spectroscopy, satellite data, and basic processing methods (BR, SAM). We finished Day 1 of the short course with a practical on QGIS, and the participants learned to use QGIS for basic data processing.

Dr Richard Gloaguen resumed Day 2 of the short course with a session on '3D Earth' and focused his talk on three topics, namely GNNS basics, digital Earth, and Photogrammetry. Dr Moritz Kirsch gave the 'Introduction to Hyperspectral Data' focusing on Simaging, Corrections, and Applications, and closed off his talk with Hyperspectral geology applications, unpacking mine-face mapping, drill-core scanning, practical notes on acquisition, processing, and interpretation. We wrapped up the Earth Observation short course with a practical highlighting the compilation and analysis of hyperspectral drill-core data using hycore and the application of hyperspectral scanning for mine-face mapping with hylite.

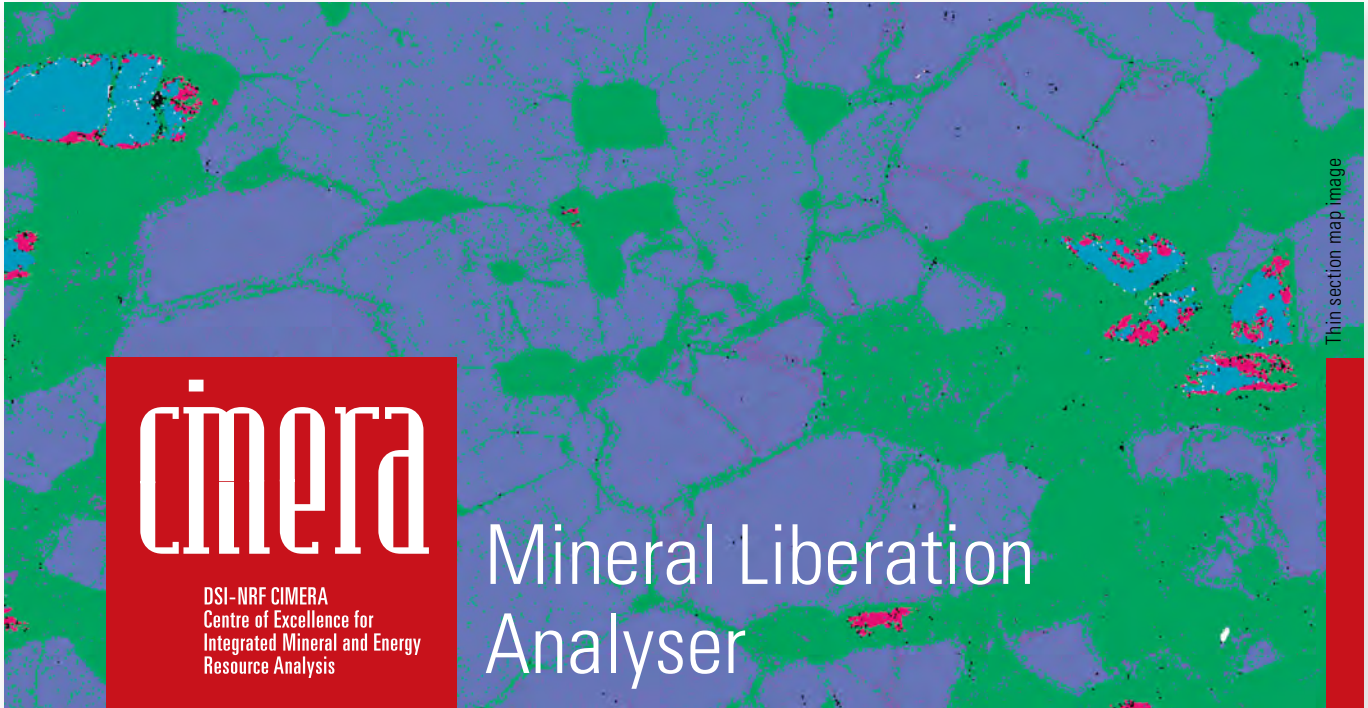


CLOSING REMARKS

We thank our cohort and partners for contributing to the success of our Centre of Excellence. Stay connected and informed about our latest research, funding opportunities, and events by following our social media page.



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Thin section map image

cimera

DSI-NRF CIMERA
Centre of Excellence for
Integrated Mineral and Energy
Resource Analysis

Mineral Liberation Analyser



The **MLA (QUANTA 650 FEG SEM)** is an Automated Scanning Electron Microscope equipped with Energy Dispersive X-ray Spectrometry designed for high-resolution imaging, rapid automated data collection, and mineral phase identification. The data is derived from two-dimensional measurements from the exposed surface of either a standard thin section or a 25/30mm diameter polished section. The ability of unattended analysis on multiple sections leads to a larger throughput of data.

LOCATION: SPECTRA
University of Johannesburg,
Auckland Park Kingsway Campus, C1 Lab 348

SERVICES:
Manual SEM analysis

- High resolution imaging
- Elemental Mapping
- Line mapping
- Single EDS analysis

Automated SEM analysis

- Detailed mapping of geological material (milled or in-situ)
- Determine mineralogical composition

Particle detail:

- Liberation
- Grain Size Distribution
- Mineral Association

SAMPLE TYPES:

- Standard thin section
- Milled material set in resin blocks (25/30mm diameter)

ORE TYPES:

- Fly ash
- Precious metals
- Base metals
- And other commodities

SEVICES AVAILABLE TO: Academia and Industry

ENQUIRIES: Contact gabriellef@uj.ac.za or cimera@uj.ac.za

