

geobulletin

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VOLUME 66 NO. 1

news

Geology for society
Geological Hot Pot
Prehnite
GSSA Fossils by Firelight



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Geological Society of South Africa

Front cover photo:

One of the most aesthetic prehnite specimens from Sandaré, Kayes Region, Mali, 17 cm. The minor dark green crystals are epidote.
(Photo: Bruce Cairncross ©)



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guest editorial



Humbulani
Rejune
Mundalamo

Geology for Society: mine waste/sites as a resource

Geology has been considered or looked at as a science discipline that deals with the study and understanding of the Earth and its processes, which include present and future processes. More attention has been paid to the economic point of view that South Africa is a proudly rich country in terms of mineral resources. In line with all this, a great number of geologists have been produced right here in South Africa and they have played and have been playing a major role in this regard since way back during the era of great scientists, such as Prof. Alexander du Toit and many more. Its high time we looked to the other side of the coin on how geology is of importance in terms of the multi-disciplinarity point of view, more especially with respect to society. Not only multidisciplinary but also multi-interaction and multi-beneficial, and collaboration should be seriously looked at or seriously engaged with.

Looking at the geology of South Africa, what an amazingly crafted heritage we possess—yes indeed South Africa, the world in one country, so blessed with so many great unique geological escarpments or terrains, enormous mineral resources, crafted crystal formations, ancient outcrops, craters, domes, etc.—really, a country destined for tourists. However, South Africa has been facing a challenge in mine rehabilitation as there are so many historical mines and geological sites that are not rehabilitated and protected. Using such a great opportunity of such a geo-attractive country, we should then make it more beneficial to its inhabitants.

As geologists, let us use this great gift—our knowledge and skills—to interexchange with society and take note of environmental aspects,

especially minimising environmental impacts. This can be done in several ways, such as identification and documentation of all the known and newly identified geological heritage sites, geological terrains, and geological artefacts in all parts of the country; historically, physically and chemically characterising all the sites for documentation while involving community members, especially new generations of future geologists and involving elders for their indigenous knowledge; identification and documentation of all the sites being used as small-, medium- or large-scale geological heritage areas, parks, and sites that could attract both local and international tourists. Historical mines should also be maintained as attractive geological sites for teaching and training purposes.

We should encourage the youth to be engaged in this field—their participation in such activities will draw their attention, thus geology will be the future of the country. For example, research activities involving collaboration with local communities are going on to develop small museums that entail geological mapping and displays of different rock types within the area. The schools and communities will use such facilities to familiarise themselves with the geology within the area and its importance and the role they as society could play in this regard. The benefits will not only be to the community in question, but through development, could be tourist attractions.

Environmental impacts due to geological hazards, for example historical mining, could lead to negative impacts to both the environment and society. Mine waste from the historic mines, together with historical shafts and openings, can be of detriment to both society and the environment. Investigation into turning the historical mines into training centres, as well as geoparks, should be looked into,

thus creating knowledge, awareness and use as a tourist destination.

Whereas it is generally agreed that mining has to continue for the benefit of human development, what is often forgotten or overlooked is the devastating effect of mining on the environment and human health. In the past, there was a lack of regulatory frameworks to protect the environment and human life from such effects. But later, the need to enact environmental laws became apparent, although enforcement of such laws remains elusive. It was not until recently that through the efforts of the world body, the United Nations, governments realised the damage caused by mining activities, hence Agenda 21.

Broadly speaking, mine waste encompasses rock dumps, tailings dams and acid mine water. Mine tailings are fine material from the processing plant that include cyanide, uranium, and mercury from artisanal gold processing. Tailings dams accumulate heavy metals that were uneconomic to extract, but that are leached for many years after mining has ceased. Gold is generally associated with sulphide minerals that in the presence of water and oxygen result in acid mine drainage (AMD). The nature of tailings material depends on the mineralogical characteristics of the ore and the physical and chemical procedures used to separate valuable minerals.

Acid mine drainage impacts on the environment and human health. For example, it pollutes surface and groundwater, destroys aquatic habitats and disturbs their life cycle, and contaminates soil, thus toxic metals enter the food chain. Exposure of such metals like lead to humans may result in heart disease, abnormalities in children, testicular atrophy, anaemia, interstitial nephritis, and they may be carcinogenic. During heavy rains, overtopping of tailings dams can result in failure and overflow. This can be disastrous, especially in such cases where the impoundment facility is close to a mine town or settlement. A typical example is

what happened at the Merriespruit tailings dam in South Africa. The disaster resulted in 17 deaths as the 600,000 m³ tailings flowed into the town. The dangers of tailings dams in general and acid mine drainage in particular should be communicated to rural communities where the bulk of the abandoned tailings dams are located.

In South Africa, for example, there are about 6,000 abandoned mines and the cost of their rehabilitation is running into billions of dollars. Most of the tailings dams are due to gold mining, especially within the Witwatersrand Basin.

A study of AMD in the Witwatersrand Basin revealed that the flow of oxygen in the tailings dams is controlled by secondary porosity, and the average oxidised zone is 2.4 m. Consequently, there is a serious need to develop strategies for converting gold mine tailings from mine waste to a resource. One strategy for dealing with this is to evaluate their economic potential so as to reprocess gold and uranium, while undertaking purification of acid mine water and rehabilitating such sites by relocating the residue to more suitable sites, with well-engineered impoundment facilities. Typical acid mine water, containing high levels of dissolved heavy metals and sulphates with low alkalinity, can also be treated to meet water quality standards. Such acidic water is currently being treated at the Kromdraai treatment plant in the West Rand to produce a zero-brine solution. Current research has also established the use of tailings as construction material, for example for production of bricks, for aggregates and for gravel that is used for road construction, etc. Phytomining and phytoremediation are techniques that are gaining momentum in the re-mining and rehabilitation of mine waste. Consequently, mine waste should be characterised and thereafter recommended for reuse so as to reduce and/or eliminate environmental hazards. At this stage of 4th industrial revolution, upcoming geologists should be encouraged to focus more on a machine-learning approach that is useful for solving all such



environmental impacts. In conclusion, geology as a discipline should always be interlinked with the economy, environmental management and the society, and this will take us forward as a country.

Let us not forget how geologists and the society are of importance for the future: they can debate and resolve issues surrounding clean environments,

urban planning and development, national security, global climate change, and the use and management of natural resources.

Dr Humbulani Rejune Mundalamo

Department of Earth Sciences, University of Venda

executive manager's



I am pleased to report that Geocongress was very successful, with over 400 delegates attending the in-person event at Stellenbosch University from January 10–13. 74 delegates attended online. The 370 abstracts submitted were far in excess of what was expected, requiring four parallel sessions. Four workshops and three field trips were on offer. One of the trips was an afternoon at a wine estate, while two others examined the Saldanian of the West Coast, and the Overberg geology. The lecture halls in the recently built Jan Mouton Learning Centre were very good, with excellent seating and projection facilities. Centeq Events was the conference organiser, and they made certain that everything ran smoothly. Many thanks to Crystal and her team for delivering a superb event. A vote of thanks is due to the members of the organising committee, chaired by Bjorn Von der Heyden. Thank you also to the sponsors and exhibitors who supported the meeting.

As the attendance numbers above indicate, the in-person option was favoured over online, but the online option allowed participation of overseas delegates who would not otherwise have attended. We believe there is a post-pandemic rebound in face-to-face conference attendance; people want to get out and network. If savings in time and costs are important, remote participation is a viable alternative.

The conference program and abstracts were digital, accessible via a smart phone application



corner
Craig Smith

constructed by Centeq, eliminating the need for printing. The abstracts will be made available on the GSSA website shortly.

The theme of the meeting—The Next 125 Years of Earth Science—celebrates 125 years since the founding of the GSSA as well as the establishment of the Geology Department at Stellenbosch. These anniversaries strictly speaking applied in 2020, but the pandemic forced postponement to 2023.

Mining Indaba was staged in Cape Town in early February, and it seemed to be a lower key affair compared to pre-COVID days, as indicated by the minimal amount of press coverage. There seems to have been little in the way of new initiatives or policies on offer. Certainly, the Transnet capacity constraints are approaching the severity of Eskom's electricity shortfalls in limiting mining output, with no long-term solutions in sight.

The SONA address with lots of pomp and ceremony immediately followed Indaba. There were no new strategies offered to the perpetual loadshedding in the President’s State of the Nation address, except for the creation of yet another cabinet post—which other involved ministers seem to regard as a glorified project manager—and the declaration of a State of Emergency. It would be very interesting to compare black-out periods in Kyiv with those of Johannesburg and Cape Town; who has the most energy available for its citizens?

I have finally lost all hope of Eskom doing better in the coming years, and the Smiths have taken the plunge with solar. It has turned out to be an interesting journey, rather more complicated and more expensive than implied by the President in his address to the nation. Good luck in finding a competent installer (everyone with a bakkie is going to become a solar installation ‘expert’). If you think you know what your mains board is all about, forget it. And for those of you who are on

pre-paid electricity meters, you might discover that your old meter has been ticking over whether or not you are drawing any power. Double the installation time from what you are told (even with a reputable contractor). Watch out for phrases like ‘Gosh, I’ve never seen that before...’. So far, our system is working, sort of. There is more day-to-day management required of solar power. Our system comes with a programmable app that allows me to monitor the system from anywhere in the world, among other capabilities. It’s pretty exhausting stuff; I’m headed to the beach to catch some rays. In conclusion, spare a thought for the earthquake victims of southern Turkey and northern Syria. This was probably the biggest seismic event in that region for over a century. The casualties—dead and injured—are very high, undoubtedly exacerbated by the shallow epicentre, severe aftershocks, and poor or ignored building codes.

Craig Smith



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president's column



Tania Marshall

The membership of the GSSA encompasses numerous industry sectors from mining, manufacturing, finance, legal, investment to social development and even various government departments. The GSSA tries to provide a scientific and professional home for all its members.

As the oldest and largest society of its kind in Africa, which is highly respected worldwide, GSSA members can enjoy the benefits of an affiliation with the society. Various membership packages exist and have been structured to accommodate all who have an interest in the earth and geo-sciences—please look at the different options available below and select the one most appropriate for you and your colleagues.

Please all note the new category of CORPORATE MEMBERSHIP WITH CHARTERED STATUS. One of the primary reasons for the existence of the GSSA as a professional body is to promote the activities of

Competent Persons (including Competent Valuers and Qualified Reserves Evaluators). Current advances in the Public Reporting of Exploration Results, Mineral Resources and Mineral Reserves space have prompted professional organisations globally to reassess their requirements for members using their professional designations to sign off on public reports (as defined in all the CRIRSCO-based Mineral Reporting Codes). The GSSA, as a recognised professional organisation (RPO) and member of the Global Geoscience Professionalism Group (GGPG), understands the importance of reciprocity for our members.

In order to be in step with the global Competent Persons community, the GSSA has created a new category for those of our Members/Fellows who wish to use their GSSA membership to sign off on Public Reports—the Chartered Status. This category of membership has been live since 1 March 2023—get your applications in early.

Tania Marshall



Corporate Membership



Corporate Membership with Chartered Status



Student Membership



Institutional Membership



Affiliate Membership





Corporate Membership

CORPORATE (INDIVIDUAL) MEMBERSHIP OF THE GEOLOGICAL SOCIETY OF SOUTH AFRICA (GSSA)



The Geological Society of South Africa (GSSA) has members active in numerous industry sectors ranging from mining, manufacturing, finance, investment to social development. Government and Academia also employ many of our members. The GSSA has consistently hosted amongst its ranks captains of industry, academics, practicing geologists, students and geoscience enthusiasts. The GSSA has a history of more than 125 years as the home of professionals and specialists with a commitment to the geosciences in all its forms.

The need for every geoscience professional to improve is imperative to keep up with the rapid changes in science and industry. A deep association between professionals and the GSSA has, throughout the years, proven to be effective in supporting internationally respected geoscientists.

Membership of Professional/Voluntary Associations such as the GSSA is one of the primary ways of identifying whether a person is a reliable professional to engage with.

The GSSA Corporate Membership has been structured to accommodate members who are at different levels in their careers as well as with different scope of interest, to advance them in academic, government and industry circles and to support their professional development. It is available to practicing earth scientists who have obtained a first university degree or equivalent earth science training, full time university or university of technology students; and enthusiasts. Further benefits of GSSA membership are provided below.





Corporate Membership

National and International Recognition

- The GSSA establishes relationships with other professional organisations such as the SAIMM, SAGA, SAIEG, GSA, AAPG and others
- The GSSA establishes and maintains the RPO status of the geoscience fraternity on behalf of the members. This Recognition of Professional Organisation reciprocity enables members of GSSA to more easily operate in foreign jurisdictions

Status and Reputation

- Recognition of GSSA courses for continuing professional development (CPD)
- Full membership (with Chartered Status) of the Society will also assist in recognition as a Competent Persons / Competent Valuers in terms of the SAMREC and SAMVAL codes
- The GSSA is the Voluntary Association (VA) for geology and earth science within the South African Council for Natural and Scientific Professions (SACNASP), with a GSSA representative on the SACNASP Council

Professional Development

- Members are bound by a Code of Ethics and Professional Conduct
- Access conferences, workshops and courses run by the GSSA at a reduced rate
- Access conferences, workshops and courses run by related earth sciences organisations at a reduced rate
- Members may apply for research funding through the GSSA REI fund
- Participation in the activities of local branches or specialist divisions
- Receive updates on requirements for reporting in terms of SAMCODES
- Members are alerted to legislation affecting geoscientists
- Access to vacancy alerts
- Access to the GSSA/SACNASP Candidate Mentorship Programmes

Advocacy

- The GSSA acts as an advocacy group on behalf of its members, often commenting on the various issues that may in the short or long term affect the entire profession.



Corporate Membership

Business Benefits

- Professional relationships and networks
 - Up to date briefing on the latest news affecting members
-

Resource Support

- Receive the prestigious South African Journal of Geology (SAJG), the quarterly Geobulletin and a monthly Newsletter
 - Free access to the online SAJG archive through GeoScience World and SABINET
 - Quick access to resources and other mining and geoscientific organisations
 - Quick access to articles and websites of interest to professionals
-

Additional Benefits

- Monitor professional status
 - Email alerts
 - Non-professional (Affiliate) membership status for those interested in the earth sciences but who are not practicing geoscientists
 - Up to date briefing on recent and upcoming events
 - Information on various survey results, nationally and internationally
 - Invitation to functions
-





Corporate Membership
with Chartered Status

GSSA Members/Fellows Chartered Status

What is Chartered Status of the GSSA

- The GSSA, in recognition of international developments, has created the Chartered status of Member/Fellow, to cater for the specific challenges of Competent Persons. Accreditation through the GSSA Chartered programme has been designed to provide increased access to international reciprocity through the RPO process.
- Chartered status is a requirement for Members/Fellows of the GSSA who wish to use their GSSA membership to sign off as **Competent Persons*** (or Lead Competent Person), **Competent Valuers** or **Qualified Reserves Estimator on Public Reports⁺** (as defined in the SAMCODES or any other CRIRSCO code).
 - This also includes academics and/or members of State/Ministerial organisations who are Members/Fellows of the GSSA and who may wish to sign off as a CP (even for a single document).
- This status is also applicable to individuals wishing to use their GSSA membership to sign off as **Qualified Experts** on UNFC Qualified Assessments (as defined in the UNECE Expert Group on Resource Management Guidance Note on Competency Requirements for the Estimation, Classification and Management of Resources, 25-29 April 2022)
- Chartered status in no way affects those individuals signing off on any public document using their SACNASP (or any other statutory) registration.
- Only Chartered status will be acceptable for signoff under all applicable local, regional and international Public Reporting jurisdictions (subject to prevailing code/exchange requirements).
 - *Such requirements are the personal responsibility of the individual CP/CV/QRE to check before accepting an assignment to compile a public document for that jurisdiction.*



Competent Person*

Clause 7 of the SAMREC Code notes that “Documentation detailing Exploration Results, Mineral Resources and Mineral Reserves from which a Public Report is prepared must be prepared by, or under the direction of, and signed by a Competent Person.” Clause 9 indicates that a Competent Person is someone who is, *[inter alia]*, a Member/Fellow of the GSSA. The GSSA, has determined that only Members/Fellows with Chartered status may be considered as Competent Persons

- This is the only category of Member/Fellow that has been applied for Recognised Professional Organisation (RPO) reciprocity with other CRIRSCO organisations.
- **It is also the only category of membership valid for compilation of public documents for the Johannesburg Stock Exchange as from 1 April 2024**

**Similar clauses appear in SAMVAL and SAMOG with respect to the Competent Valuator (CV) and the Qualified Reserves Estimator (QRE). In this document, the term Competent Person (CP) is used to reference all such individuals. It does not, however, include Technical Experts as defined in the SAMREC Code.*

Public Reports⁺

According to SAMREC Code Clause 3, Public Reports are defined as “... reports prepared for the purpose of informing investors or potential investors and their advisers on Exploration Results, Mineral Resources or Mineral Reserves. They include, but are not limited to, annual and quarterly company reports, press releases, information memoranda, technical papers, website postings and



Corporate Membership
with Chartered Status

public presentations.” Such Public Reports may be in printed or electronic media (including social media) and will include JSE circulars, reports as required by the Companies Act and reports for other regulatory authorities or as required by law.

Public Reporting refers to any documentation which may find its way into the public domain. It refers not only to reporting or documentation by companies listed on a Securities Exchange, but also includes documents compiled by/for private companies or individuals and or statutory purposes.

Why apply for Chartered Status?

GSSA Members/Fellows with Chartered status make a significant contribution to the global mining community as Competent Persons. In addition to academic and technical excellence, they also demonstrate ongoing commitment to professionalism and ethics. As such, they are highly valued by employers, clients and the wider minerals community. senior



Professional Excellence

- The Chartered status represents a superior level of professionalism and ethics.
- Employers and clients alike demand excellence, enhancing employment opportunities, locally and abroad.



International Relevance

- The GSSA is one of the sponsors of the SAMCODES (which includes the SAMREC and SAMVAL Codes).
- International reciprocity is vitally important for Geoscientists working in the global space.



Global Best Practice

- More and more obligations are being placed on Competent Persons globally.
- Accreditation through the GSSA will provide increased access to international reciprocity through the RPO process.

Chartered Status Requirements

The GSSA Bylaws have been updated to reflect the requirements of Chartered status (see Bylaw 1.7 for details). In summary, the Member/Fellow with Chartered status must:

1. Be a current Corporate or Retired member in good standing of the GSSA (Chartered status is not applicable to Student, Affiliate or Institutional members).
2. Have an applicable geoscience/earth science, four-year degree or equivalent.
3. Have a minimum of FIVE years practical (post-Graduate) experience in the commodity, deposit type and/or style of mineralisation and activity that they wish to sign off on, of which at least TWO years must be in a role requiring exercise of professional judgement.
4. Submit to the GSSA Code of Ethics and the Complaints & Disciplinary procedure. It is expected that the applicant will attend at least one Professionalism/Ethics course in a five-year CPD cycle)





Corporate Membership
with Chartered Status

5. Demonstrate annual compliance with a GSSA approved CPD programme for at least the past five years.
6. Must be conversant with the SAMCODES. It is expected that the applicant will attend at least one SAMCODE/Other training Course in a five-year CPD cycle (through the SAMCODES Standards Committee or through any other reputable training organisation)
7. Be prepared to list their name and experience on the GSSA website as a matter of public record (in a format prescribed by the GSSA on the Competent Person's Information Form ("CPIF")), which information must be kept current and updated by the member.
8. Be able to list three sponsors/references who must be able to testify as to the applicant's qualifications, experience, professionalism and ethical standing.
9. Satisfy Council (or any subcommittee elected by Council) that he/she is a fit and proper person to become a Chartered Member or Fellow of the Society. Council shall be satisfied that the training, experience, degree of responsibility and ethical standing of the applicant justify such Chartered status.

Revert to Member

- If the Member/Fellow wishes to relinquish their Chartered status, they may do so by informing the GSSA of their intention in writing.
- Alternatively, every FIVE years the Chartered status will lapse by default and can only be reinstated through the renewal application process.

Applications/Renewals

Chartership will be considered by Council on receipt of **applications**.

Accreditation will be reviewed every FIVE years by Council on receipt of **renewal applications**.

Application process

- Application form must be completed in full and accompanied by
 - Fully completed and signed CPIF
 - Proof of payment of fees (annual membership fees)
 - Current GSSA/SACNASP/Other Certificate of CPD compliance
 - Full Curriculum Vitae (current)
 - Three sponsor/reference forms completed and signed.
- The application and all forms must be sent to info@gssa.org.za with the subject heading *Chartered Membership Application*
- The application will be considered by a subcommittee appointed by Council for this express purpose. The sub-committee will be chaired by the GSSA immediate Past President and will comprise a maximum of five individuals being:
 - GSSA leadership of SSC (Chair and/or Vice Chair and/or Immediate Past Chair)
 - The GSSA representative on the SSC
 - SAMREC Chair/deputy,
 - Chair of relevant Readers Panel,
 - Additional Fellows (Chartered preferred) may be co-opted as required.
- The Chartered Sub-committee ("CSC") will consider all applications and propose ratification to Council at the next sitting of Council.
 - All completed applications must be received by the GSSA secretariat at least 30 calendar days prior to the next Council meeting to be considered for that sitting – note that Council only sits every alternative month in January, March, May, July, September and November).



Corporate Membership
with Chartered Status

- The CSC will consider all applications and report to Council within 10 working days
- The CSC and/or Council (in their sole discretion) may request further information from the applicant and/or may request an interview with the applicant.
- On ratification of the application by Council, a Certificate of Chartered Membership will be issued to the applicant.
- If the application has not been successful, the applicant will be instructed to review the application and submit additional information to the satisfaction of the CSC and Council.
- If the applicant is not satisfied with the decisions of Council, they may appeal. The appeal will be handled by MANCO, whose decision will be final.
- Once the applicant has been issued a Certificate of Chartered status, all of these documents will reflect on the Member/Fellow public profile on the website and will be visible and downloadable to all.
- **Every FIVE years, the Chartered Member must renew their accreditation through the renewal process.**
- In the January of the year of renewal, all Chartered information will be removed from the website. In order to have the membership information appear, it will be necessary for the member to renew their accreditation.
 - Submit a completed and signed Renewal Application form to info@gssa.org.za with the subject heading *Chartered Membership Renewal*
- The Renewal form must be completed in full and accompanied by
 - Fully completed and signed CPIF
 - Proof of payment of GSSA annual fees
 - Current GSSA/SACNASP/Other Certificate of CPD compliance
 - Full Curriculum Vitae (current)
 - Additional sponsor/reference forms (as required) completed and signed (Current sponsors/references should simply sign the CPIF - which would imply that they are still happy to be classified as references/sponsors. If they are not able to sign the renewal, then new references must be requested by the applicant.
- The renewal will be considered by the CSC and be ratified by Council at the next appropriate council meeting (all completed renewal applications must be received by the GSSA secretariat at least 30 calendar days prior to the next council meeting to be considered for that sitting – note that Council only sits every alternative month in January, March, May, July, September and November).
 - The CSC and/or Council (in their sole discretion) may request further information from the applicant and/or may request an interview with the applicant.
- On ratification of the renewal application, an updated Certificate of Chartered Membership will be issued to the applicant.
- If the application has not been successful, the applicant will be instructed to review the application and submit additional information to the satisfaction of Council.
- If the applicant is not satisfied with the decisions of Council, they may appeal. The appeal will be handled by MANCO, whose decision will be final.
- Once the applicant has been issued a Certificate of Chartered status, all of these documents will reflect on the Member/Fellows public profile on the website and will be visible/downloadable to all.





Corporate Membership with Chartered Status

Sponsor/Reference requirements

- Sponsors/references should be familiar with and be able to substantiate the applicant's qualifications and experience.
- Sponsors/references will be asked to provide a detailed peer review to confirm the competency of the applicant.
- Sponsors/references should be GSSA Chartered Members/Fellows (or similar from other relevant organisations).
- If this is not possible, sponsors/references should be, in order of preference:
 - Fellows of the GSSA (or from other relevant organisations)
 - Professionals who are of comparable standing, and who are in a position to assess the applicant's work in the discipline of accreditation which is being sought.
- Ideally at least one sponsor/reference should be a CP/CV in the discipline being applied for.
- Only one sponsor should be from the current employer, except where the applicant has only had one employer. In this case two sponsors can be from the same employer, preferably from different stages of the applicant's career.
- The other one/two sponsors should be:
 - From other organisations, clients, mentors, previous employers or former employees of the current employer; and/or
 - From different stages of the applicant's career.

Cost of application

- There will be **NO additional charge** for application/renewal of Chartered Status of members in good standing.
- Normal Member/Fellow/Retired fees as determined annually by the GSSA will, however, continue to apply.



Student Membership





The GSSA is a non-profit, voluntary association of earth scientists active in southern Africa, formed in 1895, with a focus on geology and wider earth sciences in Africa

THE BENEFITS OF BEING A STUDENT MEMBER OF THE GSSA

cherish
promote
prosper



Student Membership

WHO WE ARE

• LEARNED/SCIENTIFIC SOCIETY

- Promote the study and awareness of geoscience, particularly in Africa
- Provide a scientific forum for the publication and dissemination of scientific research in African earth science
- Provide the general public with earth science information,
- Promote the documentation and preservation of important geological sites for the benefit of broader society

• PROFESSIONAL SOCIETY

- Promote professional interests and professional development
- Assist and inform interested parties, including financial institutions on policy regarding Public Reporting practices (SAMCODES)
- Provide a professional code of ethics and disciplinary procedures
- Represent its members at the statutory registration authority (SACNASP)
- Inform and influence government policy

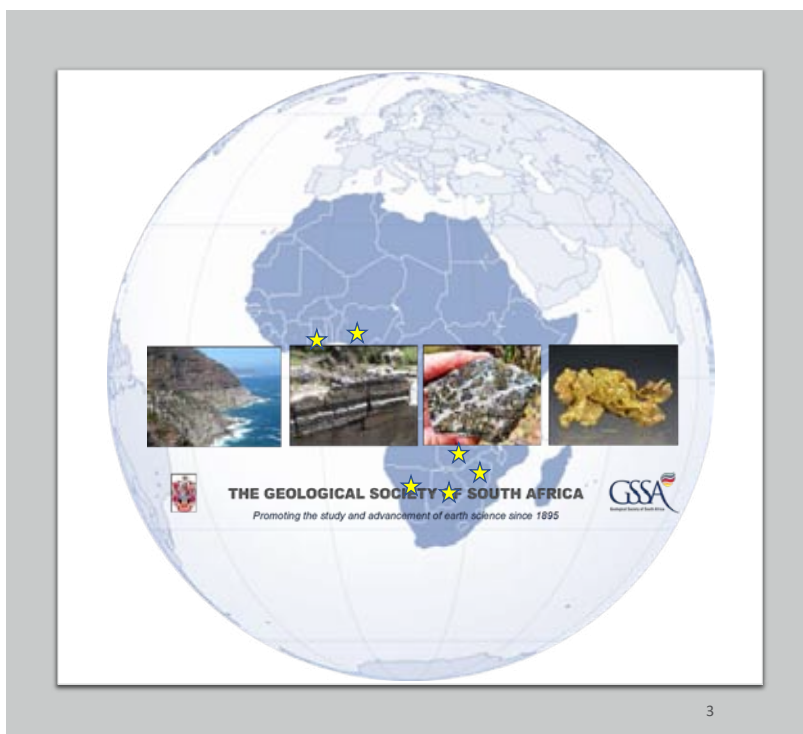


• LOCAL ALLIANCES

- FFF (Fossil Fuel Foundation)
- GASA (Geostatistical Association of SA)
- SAGA (South African Geophysical Association)
- SAIEG (South African Institute of Engineering & Environmental Geology)
- SAIMM (Southern African Institute of Mining and Metallurgy)
- WiMSA (Women in Mining South Africa)

• REGIONAL ALLIANCES

- BGA (Botswana Geosciences Association)
- GSAfr (Geological Society of Africa)
- GSNam (Geological Society of Namibia)
- WAIMM (West African Institute of Mining, Metallurgy and Petroleum)
- GSZam (Geological Society of Zambia)
- GSZim (Geological Society of Zimbabwe)



3





Student Membership

OUR STAKEHOLDERS

Academia	Next Generation	Exploration	Mining	Public	ESG Practitioners	Regulatory	Consultants
Teaching Research Curricula	Employability Employment Mentorship	Senior vs Junior companies Small-scale miners	Established commodities Future minerals	Geoheritage Geotourism General knowledge	Green economy vs economic development	SACNASP CGS DMRE JSE	Geologists Hydrogeologists Geophysicists

Geological Society of South Africa

4



Professional Code of Ethics

- Professional norms and behaviours backed by a robust Complaints process



Continuing Professional Development

- Members can choose to record CPD credits on either GSSA or SACNASP website and be mutually recognised.



Technical/Scientific Meetings

- Live and recorded events to learn at your convenience.
- Looking for new ways to present events (hybrid?).
- Networking events coming soon



Branches & Divisions

- Support for wide-ranging interests

Geobulletin/Newsletter

- Know what is happening in the geoscience universe



REI Fund

- Access to funds for research activities

SA Journal of Geology

- Internationally recognised and accredited journal
- Journal archives back to 1895
- Relationship with Geoscience World

Recognised Professional Organisation

- Training & support for Competent Persons.
- Associated with CRIRSCO and IMVAL.
- Promotes international reciprocity

Mentorship Opportunities

- Opportunities for personal growth and also to give back

International/Regional/Local Alliances

- Founder member of Global Geoscience Professionalism Group.
- Numerous sister organisations and relationships with other regional and international geoscience organisations.

Benefits of GSSA membership – providing you with a professional home



Student Membership

STUDENT MEMBERSHIP BENEFITS

Student Membership is FREE

50% discount on all publications

Reduced Rates (often FREE) for virtual, contact and hybrid events

Opportunities for funding research costs through REI Fund

Automatic inclusion in the Young Professionals Division of the GSSA

Fulltime MSc and PhD Students retain (FREE) student membership status

Easy transition to full corporate membership on graduation (only one reference required)

No membership costs for one full year on transfer to full membership.

Preferential access to limited mentorship opportunities through the SACNASP Candidate Mentoring Programme



CONTACT INFO@GSSA.ORG.ZA
FOR MEMBERSHIP FORMS

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INSTITUTIONAL MEMBERSHIP OF THE GEOLOGICAL SOCIETY OF SOUTH AFRICA (GSSA)

Institutional Membership of the GSSA signals high level corporate support of the principles and activities embodied by the GSSA. As an Institutional Member your company becomes a part of the most influential and respected geosciences association in South Africa, with its links around the world. Institutional Membership enhances your company's standing with the professional geoscientists essential to your business, demonstrating:

- Your company's extended commitment to maintaining professional standards and ongoing accountability.
- To staff, clients and stakeholders that your company is bound by the Code of Professional Ethics.
- Your support for the development of internal skills through the GSSA Continuous Professional Development (CPD) Programme, which is linked to SACNASP.
- Your company's credibility with clients and staff.

GSSA Institutional Membership is available to any company that has an interest in supporting the earth sciences.

Specific benefits include:

1. Acknowledgment	Public acknowledgement of support through the Annual Report, Geo Bulletin/Newsletter and the GSSA website
	Invitation to the GSSA AGM. Acknowledgement in programme book
2. Subscriptions	Receipt of (digital) Geobulletin (quarterly) and Newsletters (monthly)
	Subscription to South African Journal of Geology (digital)
3. Website Listing	Inclusion on the Institutional Members directory on the GSSA website (all copy to be provided by Company):
	<ul style="list-style-type: none"> • company logo, with hyperlink to company website, • company details and contact information • brief description of company and product lines
4. Advertising	Advertorial (at no charge) in the Geobulletin (½ page annually). All copy to be supplied by the Company.
	Opportunity to write feature articles for the Geobulletin
5. Careers / Vacancies	Free link from GSSA website to Company job website
	Loading of vacancies for free on the website for 30 days or until filled (copy to be supplied by Company).
6. Conferencing	Preferential booking for events
	Preferential sponsorship opportunities
7. Access to MANCO	Opportunities to address MANCO directly on specific relevant issues
8. Discount	25% discount on exhibition space at DPP events, contact & online
	25% discount on advertising at DPP events, contact & online
	10% discounts at the GSSA Bookshop
	10% discount on Annual/Event sponsorship
	Member rates for all employees at GSSA events



Affiliate Membership

AFFILIATE MEMBERSHIP OF THE GEOLOGICAL SOCIETY OF SOUTH AFRICA (GSSA)

Persons who do not satisfy the requirements of the GSSA for election to another class of membership, and who do not practise as geologists or other earth scientists, may apply for AFFILIATE membership. Affiliates may be:

- Degreed individuals who are not geoscience specialists and who do not practice in the geoscience sphere, but who have a keen interest in geoscience.
- General public who have an interest in geoscience and who wish to associate with specialists in the field.

NOTE: *Geoscience graduates with a 3+ year degree are not permitted to register in the Affiliate category – they must register in the Corporate Member category. Affiliate membership is strictly for non-geoscientists or members of the general public.*

The benefits of being an Affiliate Member of the GSSA include:

- Member rates for technical/scientific meetings, conferences and other events of your choosing.
- Access to specialist Branch/Division activities at Member rates.
- Receipt of the Geobulletin (quarterly) and Newsletter (monthly), to keep up with what is happening in the local geoscience universe.



professional affairs



Get to know the GSSA: portfolio VPs



Meetings and DPP
Joshua Kilani

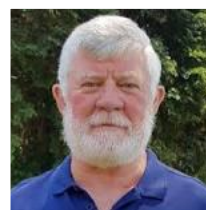


Membership & Transformation
Dumisani Sibiya

Professional Affairs
Noleen Pauls



Academic Affairs
Steve McCourt



Branches and Divisions
Masibulele Zintwana

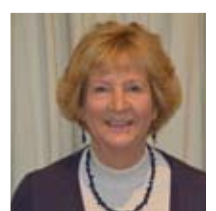


Finance
Thomas Molelengoane

Networking & Communication
George Henry



Fellows Committee
Judith Kinnaird



Portfolio chairs

Mentorship Picnic

In February, the SACNASP/GSSA mentors and mentees got to network at the first mentorship picnic hosted by the Walter Sisulu National Botanical Garden. The mentorship programme, in collaboration with SACNASP, has been running since July 2020. To date, 35 mentees have been paired

with mentors from the industry. Our mentees also have access to GSSA and SACNASP courses, mentoring workshops with coaches like Mark Turpin and Briony Liber, field trips and networking opportunities like the picnic.



SANBI 
Biodiversity for Life
South African National Biodiversity Institute

WALTER SISULU
National Botanical Garden

branch news

Northern Cape Branch

The Northern Cape Branch of the Geological Society of South Africa continues to strive in creating awareness and opportunity in the province and combining all stakeholders and interested parties together in participation of the growth and understanding of geological deposits through networking and skill development.

This year started off with the new committee member's strategy meetings for the year 2023, with events listed below.

We would like to thank all our members, sponsors and interested parties for supporting us in making this happen. We look forward to a great year ahead.

Loni Gallant

NC Branch Chairperson

Northern Cape Branch 2023 Events:

- West Coast Diamonds Event, Port Nolloth – 5th & 6th May 2023

Online Talks:

- Dr Karsten Zimmermann: DMT Safeguard LiDAR 4D permanent slope monitoring – 23rd March 2023
- Dr Hakan Arden: Coal and its Future – April 2023 (TBC)

Keep an eye out for future Northern Cape Branch 2023 Events.

Contact: admin.nc@gssa.org.za. For the Northern Cape Branch free membership registration link [click here](#).



**WEST COAST DIAMONDS
EVENT & EXCURSION**
PORT NOLLOTH
5TH & 6TH MAY 2023

**EVENT DETAILS AND
PROGRAMME TO FOLLOW**

**CONTACT US ON:
admin.nc@gssa.org.za**

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INDEX
HEALTHY SUBSIDIARY SOLUTIONS

REFLEX

Lizard Geological Services

the geological hot pot

This issue's article is prefaced by a book recommendation and the reason why. I was catching up on news during a chitchat with my good friend Sharad Master, who many of you may know, a couple of weeks ago when he mentioned a book that he was busy reading. It is "Calling Bullshit – The Art of Skepticism in a Data-driven World" by Carl T. Bergstrom and Jevan D. West, published in 2021. The day after our chat, I was shopping at the Glen Mall when I noticed the Estoril Books sale in front of the Pick 'n Pay. Piles of books were laid out on trestle tables, and I naturally began to browse, being a bibliophile. As I scanned the rows of book titles, you can guess that I spotted the above-mentioned book! It is a thin paperback, and the only copy among hundreds of others. How's that for co-incidence? I bought the book, and can definitely recommend it to those of us who are so overwhelmed with news/fake news, data, information, etc. that we don't know what

to believe anymore. The authors explain what they mean by "bullshit" and how to recognise and deal with it when encountered. The examples they give are mainly real, and the book is easy to read, although a bit academic in places. With tongue-in-cheek, I suggest that the book is a must-read for those people who are thinking of investing in junior exploration companies!

So back to the hard rocks. The Karoo Large Igneous Province (LIP) was formed around 200 million years ago when huge volumes of basaltic lava erupted over much of southern Africa towards the end of Karoo sedimentation. These lavas buttress the Drakensberg Mountains in South Africa and Lesotho and occur as far north as Zimbabwe and Zambia. So what controlled the eruption of the Karoo LIP, and its timing? A team of geoscientists from Trinity College in Dublin, Ireland, conducted a multi-disciplinary study on Mesozoic mudrocks



Victoria Falls, Zimbabwe. The bedrock is Karoo-age basalt.



from a borehole in Wales. They discovered that a major disruption to the Earth's climatic and environmental systems was linked to the onset of the Karoo-age volcanic activity. A surprise result

was that they managed to determine that the LIP initiated during a slow-down in the movement of the tectonic plates that comprise the Earth's crust. A short summary of the research is given in [SciTech Daily](#). The paper is in *Science Advances*, an open access journal.

I am not sure if Bruce Cairncross has written an article on fluorite for *Geobulletin*, but I think [this article in Nature](#), which covers a bit of the historical aspects of the mineral, is worth reading.

All of us are aware of the shocking images of the landslides that occurred in KwaZulu-Natal last year after heavy rains. These disasters, when humans are affected, are a common occurrence in nature, and scientific studies on how they "work" will help mitigate landslide problems in the future. A team led by Douglas Jerolmack and Paulo Arratia of the University of Pennsylvania studied the mudflow that swamped parts of the town of Montecito in southern California in 2018. The mudflows are a mixture of watery mud and sandy sediment in which an unsorted hotchpotch of pebbles, cobbles and boulders are embedded. They can reach high speeds once they start flowing down a slope, and cause damage to anything in their way. The research

Hand specimens of green and colourless fluorite at the Okorusu mine in central Namibia.





A debris flow, sandier than a mudflow, in the Khan River in central Namibia.

team studied the physical properties of the samples they collected, and then did computer modelling of their measurements. They concluded that the rheology of the mudflow was the important factor determining its behaviour, as is reported [here in SciTech Daily](#).

You have to agree with me that elephants are one of our favourite animals, if not *the* favourite. Baby elephants are especially appealing to all of us, not just to kids. Now scientists from Saint Louis University in America, who are conducting long-

term studies on elephants (lucky them!), have discovered that the animals are an important, if not crucial, component in the maintenance of rain forest ecology. Their paper has been published in the *Proceedings of the National Academy of Sciences*, and a good summary is presented [here](#). The elephants preferentially eat the rain forest trees that store less carbon than the high-carbon density trees. We can only hope that these majestic animals are not hunted or poached to extinction by uncaring humans.



Elephant in the Kruger National Park. The writer heard an elephant in the rain forests of Gabon during gold exploration there in 1996 but was not able to photograph one.





The entrance to one of the circular enclosures at Great Zimbabwe.

I visited Zimbabwe in 1986 together with Sharad and another good friend, Gregor Borg, who was also doing his doctoral studies at Wits. We were there to visit a few gold mines, including the Vubachikwe Mine near Bulawayo. That visit resulted in my name appearing in print in *Economic Geology* for the first and only time, but that is a story for another day. We managed to visit Great Zimbabwe and admired the awesome ruins. Although there has been much debate about who constructed the amazing structures, there is no doubt that local African people did it. Recent research has discovered a sophisticated water conservation system that the people used to mitigate against drought, as reported in [this article in ScienceAlert](#). Nevertheless, the once-thriving Great Zimbabwe was abandoned by the 16th Century for a number of reasons that probably included climate change, despite their sophisticated water-conservation system.

Maps of all sorts have always held a fascination for me. From ordinary school atlases to historical

maps of Africa and other parts of the world, and city street maps, not to mention geological maps, perusing them transports you away from your dreary office into a whole new, exciting world. Now two researchers in Ireland and India have taken cartography to another level and calculated the longest straight-line distance between two points on Earth, on land and by sea. This fun article can be read [here](#). They also mention that the world's longest stretch of dead-straight road, 256 km long, is in Saudi Arabia. Imagine trying to stay awake driving along it at 120 km/hr!

Tagging on here are the tectonic plate reconstruction maps that are now widely available on the internet. One that I found particularly interesting is available [here](#). To a geologist, this is much more fun watching than *Sevende Laan*.

A good hot pot at a party can be a benefit to our health and well-being. If you don't believe me, have a look at [this article in SciTech Daily](#). It has been scientifically proven that we should celebrate our achievements because it helps social bonding and generally makes us feel good. At our party we should serve a good portion of fermented foods because they may help to lower our stress levels, as explained [here](#).

Eat healthy is the take-home message, and drink in moderation a corollary, especially beer. Now can you improve on a good thing? Well, Johan Thevelein, a molecular biologist at the Katholieke Universiteit Leuven in Belgium and his team have studied the yeast that gives beer a pleasant banana-like flavour during brewing. They identified the gene responsible for producing the flavourant and suggest that it can be used to tweak strains of yeast to produce better beer. Let's drink to that [here!](#)

For our wine-lovers, [here](#) is a sobering article about how climate change is affecting the chemistry and hence quality of wine. The droughts in northern California in the past few years resulted in severe wildfires that had a devastating effect on the residents and the surrounding farmlands. In



Vineyard in the Nuy Valley, Western Cape Province.



Multi-purpose image: pu-erh tea compressed into a flat cake with the usual suspects.

particular, the wildfire smoke tainted the vineyards and resulted in unpalatable wines being produced from the contaminated grapes. One hopes that similar ecological conditions do not occur in our country any time soon...

What better way to end a party than to have a few blocks of delicious chocolate followed by a cup or two of black tea to cleanse the palate? Trust scientists to research why chocolate tastes so good, as summarised in [this article in SciTech Daily](#). I am

not sure if this is Nobel Prize-winning research, but it certainly sounds like good fun to carry out! And the health benefits of black tea have certainly not escaped the attention of our diligent food and health scientists, as in [this summary](#). The flavonoids in black tea are most probably (see first paragraph) good for our cardiovascular health, and a cup of pu-erh a day may keep the doctor away. Cheers!

George Henry



8th SGA-IUGS-SEG-UNESCO Short Course on African Metallogeny

9 – 13 October 2023
Johannesburg, South Africa

The role of Energy

This short course on energy transition in Africa and uranium methodological approaches will be presented. We will visit mines and deployment of renewable energy.

The energy transition makes news headlines in party conversations and society really understand requirements to meet targets set by political leaders.

Southern Africa is heavily dependent on fossil fuels, specifically coal, as its primary energy source. Southern Africa also has a rich endowment of mineral commodities for the energy transition, including vanadium, PGE's, manganese, cobalt, CRMs, etc. Africa's southern Africa is characterized by frequent electricity outages, which is causing many industries to expand their portfolios. Wind, solar, hydropower, tidal and geothermal potentially have a role to play in the energy transition.

Image: www.globalnewsart.com/

ORGANIZERS: Society of Economic Geologists and Energy Resources





Role of Mineral Wealth in the Energy Transition – Southern Africa

The course will address the broader context of the achievability of the transition by considering the available mineral resources in southern Africa, unpacking the role that southern Africa can play. New concepts and approaches for sustainable and energy-efficient mining and ore processing will be presented.

Mines are actively involved in broadening their energy mix by the rapid adoption of cleaner, renewable energy.

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The role of Mineral Wealth in the Energy Transition – Southern Africa

TOPICS

- Materials, including Li, Co, Cu, Ni, Mn, Al, phosphates and graphite, required for the energy transition
- Environmental Social Governance
- Energy transition in southern Africa
- The use of cleaner energy technologies in mines
- Digital mining / simulated mining in the context of the energy transition
- Vanadium and redox batteries
- Platinum Group Elements and their role in clean energy
- Rare Earth Elements in permanent magnets
- Geothermal energy and its potential role in the energy supply of southern Africa
- Repurposing of South Africa’s power stations
- Mining and processing challenges associated with clean-energy minerals
- Progress in meeting southern Africa’s decarbonisation targets

Venue

The five-day short course will be hosted by DSI-NRF CIMERA at the University of Johannesburg, South Africa, from 9th to 13th of October 2023.

The short course is composed of 2½-days lectures and evening events, followed by 2½-days field excursions to mine sites that have implemented renewable sustainable energies and sustainable mining equipment.

Participants must arrive on Sunday 8th of October in Johannesburg.

mineral scene

Prehnite

Prehnite, $\text{Ca}_2\text{Al}_2\text{Si}_3\text{O}_{10}(\text{OH})_2$, has the distinction of being the first mineral species to be named after a person, Hendrik (von) Prehn, Governor of the Cape of Good Hope from 1179–1780.¹ The type-locality of prehnite is given as Cradock in the Eastern Cape, and any internet search will state this, yet this is questionable, as discussed here²: *“The discovery and naming of prehnite has generated considerable debate and controversy, firstly as to exactly where the mineral was first discovered and by whom.”*³ Haüy⁴ was of the opinion that von Prehn did not discover the Cape of Good Hope specimens but rather a certain citizen de Rochon, in 1774, who was in the Cape of Good Hope at the same time as von Prehn.”

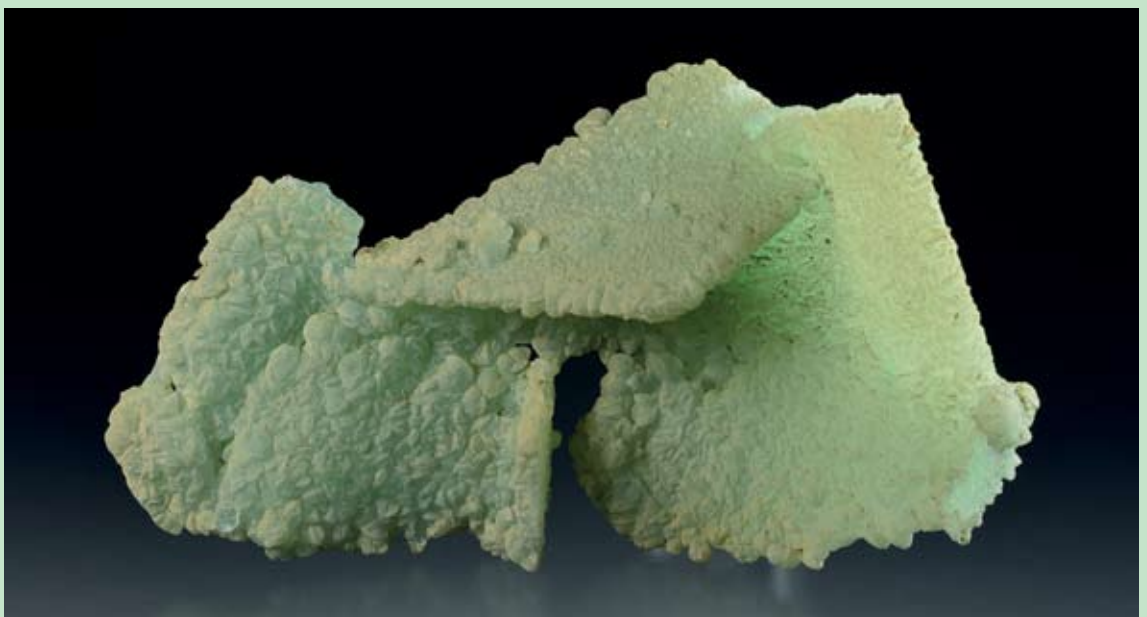
Prehnite crystallises in the orthorhombic system, has a hardness of 6 to 6.5, specific gravity of 2.9 to 2.95, a white streak, and a vitreous to pearly lustre. It occurs as beautiful, spherical, crystal aggregates, commonly a vibrant light green to apple-green. Setting aside the apparent discrepancy regarding who first discovered prehnite, it is a relatively common low-grade metamorphic/secondary mineral found most commonly in mafic and ultramafic volcanics and their plutonic and intrusive equivalents.

Some of the most common southern African host rocks containing prehnite are the Jurassic-aged Karoo dolerites, and it is one of these that

Clusters of prehnite from the Beaufort West district, South Africa, 15.2 cm. (Photo: Bruce Cairncross ©)



Flattened plates of interlocking prehnite from Zoetwater, Calvinia district, South Africa, 22.5 cm. (Photo: Bruce Cairncross ©)





Orange prehnite on white calcite, with minor red ferroan inesite, N'Chwaning II mine, Kalahari manganese field, South Africa, 5.1 cm. (Photo: Bruce Cairncross ©)



Prehnite on quartz from the Goboboseb Mountains, Namibia. Field of view is 5.2 cm. (Photo: Bruce Cairncross ©)



Well-crystalline prehnite crystals associated with small white hydroxyapophyllite-(K), from Marlin Norite Quarry, Belfast district, South Africa. Field of view is 6 cm. (Photo: Bruce Cairncross ©)



produced the original material, albeit not from the Cradock district, but most likely elsewhere in the Karoo. Dolerite outcrops extensively in the Cradock district and the historic gold mine at Bekkerskloof exploited gold associated with one of these dolerites, together with significant amounts of prehnite. However, elsewhere in the Karoo, including areas surrounding Middelburg, Beaufort

West, Richmond, Fraserburg, and most likely other localities, dolerite host veins of prehnite. A famous deposit at Zoetwater, near Calvinia, produced prehnite during the exploitation of optical-grade calcite. These specimens are unique in their habit, forming so-called “angel wing” flattened crystals that appear to be either pseudomorphic in origin or formed in intersecting joints and fractures.

A vug partially lined by crystalline prehnite; Vametco mine, Brits district, South Africa. Field of view is 4 cm. (Photo: Bruce Cairncross ©)





Prehnite on quartz; Premier diamond mine, South Africa. Field of view is 1.8 cm. (Photo: Bruce Cairncross ©)

An anomalous orange prehnite was discovered at the N'Chwaning II mine in the Kalahari manganese field. The colouration is caused by traces of manganese in the crystal structure.⁵

Perhaps the most well-known prehnite locality in southern Africa, at least amongst mineral collectors and museum curators, is the Goboboseb Mountains west of the Brandberg in Namibia.⁶ Amygdales and geodes in the mafic lavas contain vibrant green prehnite, often associated with quartz, amethyst, calcite and secondary zeolites. The prehnite forms characteristic whorls and semi-circular aggregates up to 10 cm in diameter.

Other sources of prehnite in South Africa include the Bushveld Complex, and some kimberlites, examples of which are shown here. In recent years, another African country has produced a prodigious amount of prehnite and a world-class specimen is shown here, from Mali.⁷

Bruce Cairncross

Department of Geology, University of Johannesburg
(brucec@uj.ac.za)

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One of the most aesthetic prehnite specimens from Sandaré, Kayes Region, Mali, 17 cm. The minor dark green crystals are epidote. (Photo: Bruce Cairncross ©)

obituary

Nicolas Johannes Beukes 25 August 1945 to 9 January 2023

Professor Nicolas Johannes Beukes, or Prof. Nic as we all knew him, unfortunately passed away the evening of 9 January 2023 after a brief illness. He is survived by his wife, Tiekie, his children, Jacqui, Brian, Marni and Thys, as well as their partners and six grandchildren. After an academic career that spanned more than 50 years, Prof. Nic has a record that speaks for itself and a list of achievements so long it would be hard to list them all here. Some of these include:

- Being an NRF A1-rated researcher for many years
- 187 publications, 11,006 citations and an h-index of 56 on Scopus (and likely still to grow posthumously)
- Receiving the Draper medal and the Jubilee medal from the Geological Society of South Africa
- Spearheading numerous international drilling projects funded by, among others, the Agouron Institute and the International Continental Drilling Program (ICDP)
- Playing critical roles in establishing the Palaeoproterozoic Mineralisation (PPM) Research Group at UJ as well as the DSI-NRF Centre of Excellence in Integrated Mineral and

Nicolas Johannes Beukes †



Resource Analysis (CIMERA), both still running today

- Being elected to the National Academy of Sciences in the USA
- Receiving a lifetime achievement award from the National Science and Technology Forum

I am sure I missed quite a few on that list. However, as impressive as his list of achievements are, it does not fully convey the man Prof. Nic was, and what he meant at a personal level to his family, colleagues,

Nic, Bertus Smith and Michael Bau.



students, research collaborators and society in general. What stood out, other than his incredible ability as a geologist, was his humility and kindness, which translated into a strong belief in people, investing his time and resources in them and giving them a place in the sun.

For me, personally, he had a massive influence on my life over the 23 years I had the privilege of knowing him as my lecturer, supervisor, mentor, colleague, and friend. I was lucky enough to have him as the first face I ever saw in a Geology lecture, calmly explaining the basics of geology to me as the old slide projector hummed and clicked away. He gave me the Honours assignment that finally made me realise I want to become a geoscience researcher and also mentored me on my Honours presentation on the gold in the Witwatersrand (spoiler alert: he was a placerist). He took me in as a Master's student, funding me for six months out of his own research expenses while I applied for other funding. He took me to geological field sites, making the significance of what we were looking at come to life. He introduced me to highly skilled international geoscientists that I still collaborate with up to this day. Up to a month before his passing, he still co-authored papers with me, always sending back the same comment: *"This could use another stratigraphic column or two"*. But, most importantly, he shared himself with me as not just a scientist, but also a friend. I will miss him dearly and fondly remember him for the rest of my days. Although I feel a deep sense of loss, his influence on me will never be lost.

My colleagues at UJ and I therefore thought it would be most appropriate that his obituary be a collection of messages, stories and photos from across the international science and geological community, as this could provide a window into who Prof. Nic was as both a scientist and a human being.

Bertus Smith

Department of Geology, University of Johannesburg

A compilation of many tributes and accolades from South Africa and from around the world...

Compiled by Bruce Cairncross

It is with a heavy heart that I have to say goodbye to a lifelong friend of more than 70 years. We were born three months apart in Harrismith, went to school together, and attended the University of the Free State (Kovsies) together where we studied Geology and Chemistry as main subjects. We both got employed by the then Geological Survey of South Africa and then worked together for 51 years at RAU/UJ's Geology Department. During that time, we built a "double" house together on plot 40, Poortview, where we each raised four children. We shared the house until a few months ago, although Wilna and I later moved to Parys in the Free State.



At RAU in 1971–1973, we shared an office together at the temporary campus that was previously the head office of the old SA Brewery near Wits University. The department of Geology then consisted of Prof. Willem van Biljon (Chairman), Dr Wilhelm Verwoerd (Senior Lecturer), and me and Nic as young lecturers. Roundabout 1974,

A 1970 photo of the Geology Department staff at RAU.

Back, left to right: Nic Beukes, Willem van Biljon, Wilhelm Verwoerd. Front: Koot Bench.



A reunion photo of all the Geology Heads of Department at RAU/ UJ in the UJ Geology Department Reading Room, November 2012.

Left to right, front: Chris Roering (1984–1994), Willem van Biljon (1967–1983), Nic Beukes (1998–2002); back: Bruce Cairncross (2003–2014), Dirk van Reenen (1995–1997) and Harry Brown (ex-TWR 2007–2017).



Chris Roering replaced Wilhelm Verwoerd as senior lecturer.

In their early years, young lecturers had respect for senior lecturers. Wilhelm Verwoerd rarely visited us in our shared office because it was usually filled with clouds of smoke as we both, in those days, smoked a pipe. One fine morning, however, Wilhelm walked into our office and placed two first-year exam papers in front of us with the instruction that we had one hour to answer the questions. The subject of the paper was physical crystallography, a difficult subject that caused first years to fail like flies. The highly intelligent Dr Verwoerd could not understand why the first-year students complained to Prof. Van Biljon that the paper was too difficult. He wanted to test this on us, given the fact that we last studied this topic at University years ago. If I remember correctly, Nic passed comfortably and I merely scraped through on my nerves.

Nic was an extremely talented earth scientist who enjoyed international recognition for his research. In fact, he continued this research until the very day he passed away. The UJ Geology Department and the national and international geological community will not forget Nic Beukes' great contribution to geology and important role in the success of this department.

I will always have only the best memories of the ups and downs that I, Nic and Wilna went through by building a house together with our meagre salaries, and the role we were able to play with Chris Roering and Willem van Biljon in building an international department to establish at UJ.

Rest in peace my friend Nic.



Dirk van Reenen
Department of Geology,
University of Johannesburg

Prof. Nicolas Beukes was an incredibly productive and inspirational member of the University of Johannesburg and Rand Afrikaans University community since 1969. He was appointed full professor in 1986 and served as Chairperson of the Geology Department for the period 1998 to 2002.

He was Director of the Palaeoproterozoic Mineralisation Research Group (PPM) from 1997 to 2013, and later he was the Co-director of the DSI-NRF Centre of Excellence of Integrated Mineral and Energy Resource Analysis (CIMERA). Nic was a field geologist with a focus on sedimentology and stratigraphy. He gained international recognition for his research on Neoproterozoic carbonate platform deposits and the origin of Precambrian



CIMERA with Judith Kinnaird and Minister of Education Naledi Pandor.

iron formations, banded iron formation-hosted ore and sedimentary manganese deposits.

His research had a considerable impact on our understanding of the nature of the surface environments on the early Earth, which includes the history of atmospheric oxygen and climate change 3200 to 1600 billion years ago. He was an A1-rated scientist by the National Research Foundation and received the Jubilee Medal (twice) and Draper medal, from the Geological Society of South Africa.

He was an Honorary Fellow of the Geological Society of America. “Prof. Nic”, as he was affectionately known by colleagues and students, trained more than 40 MSc and 14 PhD students (including five current staff members in the Geology Department) and authored or co-authored more than 186 research papers. His collaboration and close contact with industry is reflected by more than 100 technical reports.

In 2021, he was the first person from South Africa to be elected as a member of the National Academy of Sciences of the United States of America.



Nic Receiving the Draper Medal from the Geological Society of South Africa.

His passing leaves a gaping hole in our community and our hearts. He will be sorely missed by everyone whose lives he touched and influenced, but his scientific body of work will continue to inspire geoscientists long into the future.

On behalf of the Executive Management and the wider university community, we wish to convey our heartfelt condolences to the family and friends of Prof. Beukes.



Deborah Meyer

Dean of Science, University of Johannesburg

Nic was employed at Rand Afrikaans University (RAU), now the University of Johannesburg (UJ), for 54 years(!). I was his colleague for 34 of those



Nic explaining the intricacies of geology to potential students.



years, and we were friends even before that. This remarkable longevity meant that Nic educated many hundreds of young undergraduate students, and then years later, had that rare experience of teaching their children as well! Furthermore, many of his postgraduate MSc and PhD students went on to become champions of industry, specialists in their own right, and even top academics.

I would like to acknowledge the important role Nic played in kick-starting my own professional career. He was 100% responsible for my academic career at RAU/UJ, and how this happened is a reflection of the type of person he was, and it highlights the gift and insight he had in seeing the potential in people that sometimes they themselves did not even know they had.

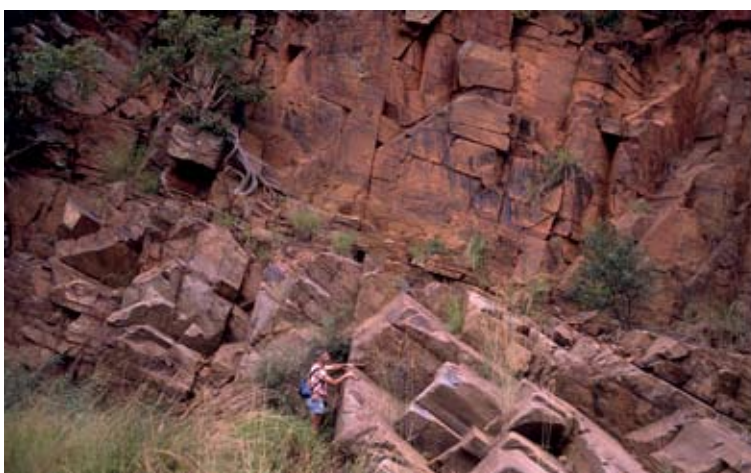
In 1989, I was a post-doc at Wits University, and one Thursday, after the weekly Geology Colloquium, we were standing around having drinks and snacks, and Nic came up to me and asked why I hadn't applied for the post they were advertising at RAU. I had, in fact, recently applied for a position at one of the mining houses and just received their offer, but had not yet accepted it. He said to me, no, you'll do much better in academia. So I replied that I'd think about it. He

then said the problem was, applications closed on Friday, the next day. So I said, it's obviously too late, let's just leave it then (this was before the days of email, WhatsApp, etc). Again he replied "No, go to your office and get a hard-copy of your CV and I will hand it in for you at RAU tomorrow". I did that, and he suggested to delay accepting my industry offer and to wait and see what happened. So he personally delivered my application to RAU HR the next day. The result was I got shortlisted, went for the interview and got the job, and have been at RAU/UJ ever since. Without Nic's foresight and prompting, my life would have taken a very different path. And I'm not unique in that respect. There are several academic, technical and support staff in our department, who would not be at UJ without Nic seeing their potential and being instrumental in getting them appointed.

My second memory relates to working with Nic in the field, for which he was well known.

Just a few months after joining RAU, He came into my office and casually suggested: "Why don't we go and have a look at those sedimentary rocks of the Pongola Supergroup in northern Natal". I replied I'd never worked on these. He reasoned, maybe so, but that I'd done my post-doc on the Witwatersrand

rocks and I knew that geology. His idea was to revisit a previous notion that the Pongola sedimentary strata were once considered equivalent to the Witwatersrand succession, but now were separated from these because modern age dating had shown them to be older than the Wits. So he said, let's go and see if we can recognise some of the so-called Wits marker beds in the Pongola succession. Now one of the best places to do some of this work is along the Bivane River gorge that exposes about 3,500 m of the succession. We'd start down in the river valley at the base of the sequence, record the section for a few 1,000 m along the river, and then traverse up out of the valley ending on top of the cliffs. Realising we would need a full day to do this, the big logistical challenge was this: if we drove our vehicle to the bridge at bottom of the valley, left it, measured the profile and ended on top of the gorge, we'd then have to trek all the way back down again to the vehicle. That would be impossible at night. No problem, said Nic, we can drive through the veld, park at the top of the gorge, clamber down the cliff face, walk along the river to the start of the section, turn around and off we'd



go, ending the day back at the vehicle. Typically he casually remarked: "Let's just walk down there, and then we come back up". I should mention that this terrain is extremely challenging and that week in March, there was a heatwave. By the time we'd got down to the river, it was already over 30 °C. It was difficult work that day, and exhausting in the sweltering heat. Yet, towards the end of the day, in the fast-fading light, with my water bottle long depleted, and trying desperately to keep up and finish before dark, there was Nic, onwards and upwards, same pace, as if we'd just started.

Nic examining Mozaan Group quartzites in the Bivane River gorge, 1990.



With his beloved iron formations.



Nic sitting on a mountaintop in southern Zimbabwe.



On a more global level, Nic was an international leader, known, respected and commended, with many awards and honours bestowed upon him. His collaboration with other leading scientists reads like a who's who in the earth sciences. There are at least three good reasons for Nic's reputation:

Firstly, in fields of sedimentology and stratigraphy, you don't get reliable data without doing outstanding fieldwork, and, in my opinion, Nic was one of the best field geologists this country has produced. His field notebooks are meticulous, he kept them all. His energy in the field was unbounded, and his knowledge of such a wide spectrum of southern African geology was extraordinary. From the ancient Archaean rocks at Barberton, Pongola, the Witwatersrand, to the Waterberg, the Transvaal Succession, the Karoo Supergroup rocks, and even modern surficial deposits: he could converse on any of these because he had seen them all! It was also this expertise that brought a steady stream of international collaborators and students to South Africa to work with him in the field.

Secondly, in geology (science) you tend to get the experts who are usually either "splitters", or "lumpers". The former spend most of their career focusing mainly on the minute details, while the latter are those who see, or attempt to see, the

"big picture". Nic was both. For example, he could spend hours examining borehole core, millimetre by millimetre, but then could also put everything together into a major interpretive work.

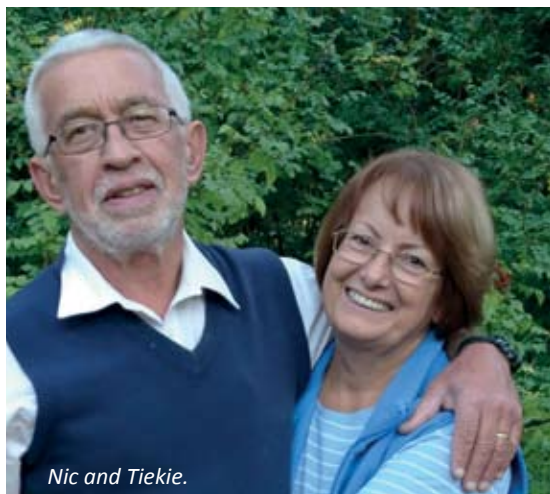
Thirdly, and this is perhaps even more important, he was a multifaceted economic geologist. Coupled with his broad knowledge of southern African geology, he was the world-leader on manganese and iron ore, and an expert on the Witwatersrand gold, asbestos, lead-zinc deposits, surficial deposits, and even coal. To my knowledge, he was the first academic to supervise an MSc in coal geology on the Waterberg Coalfield while the rest of us were still dabbling in the main Karoo basin.

Finally, and most importantly, let us not just celebrate Nic's life as a geologist. His most important attribute was his devotion to family. He was a husband, father and grandfather. He thrived on his family, with even more commitment, and passion, than he did for his work. We all miss an extraordinary colleague and friend.



Bruce Cairncross

*Department of Geology,
University of Johannesburg*



Nic and Tiekie.

Professor Nicolas Johannes Beukes—or Prof. Nic as most of his students prefer to call him affectionately—was without any doubt a great geoscientist. He has left us with an extensive record of research on many different topics, including South African stratigraphy and landscape evolution, Precambrian sedimentary successions and environments, and the origin of sediment-hosted ore deposits of iron, manganese, base metals, gold and uranium, to only name a few. The principal fundament for his prolific scientific impact has been his spectacular ability to extract an internally consistent geological history even from a rather small set of available (field- and lab-based) observations.

Prof. Nic and I met for the first time in March 1992, when I joined the Department of Geology of the then Rand Afrikaans University as a young guest student from Germany. He had invited me to study the mineralogy and geochemistry of high-grade manganese ores of the Kalahari manganese field for my MSc degree. My first direct encounter with him, his wife Tiekie and their four children was at their home, as they had invited me for an afternoon braai. From this first meeting developed a close and lasting relationship that led us to do joint fieldwork and research across Africa, the Americas, Asia and



Nic and Jens doing field work on the Ghaap Plateau, 1992.

Europe. During the required travel time, journeying sometimes by car, train or airplane, we had ample opportunity for extended discussions. While these discussions would, of course, usually centre on scientific questions, our conversations also turned to many other issues. Two of the lasting outcomes of such discussions are the PPM Research Group and Spectrum, the central analytical facility of the Faculty of Sciences, both at the University of Johannesburg.

The opportunity to interact so closely and extensively with Prof. Nic had a profound influence on my life. I am keenly aware that the metaphor of someone “standing on the shoulders of giants” certainly applies to my career and the collaboration with Prof. Nic.

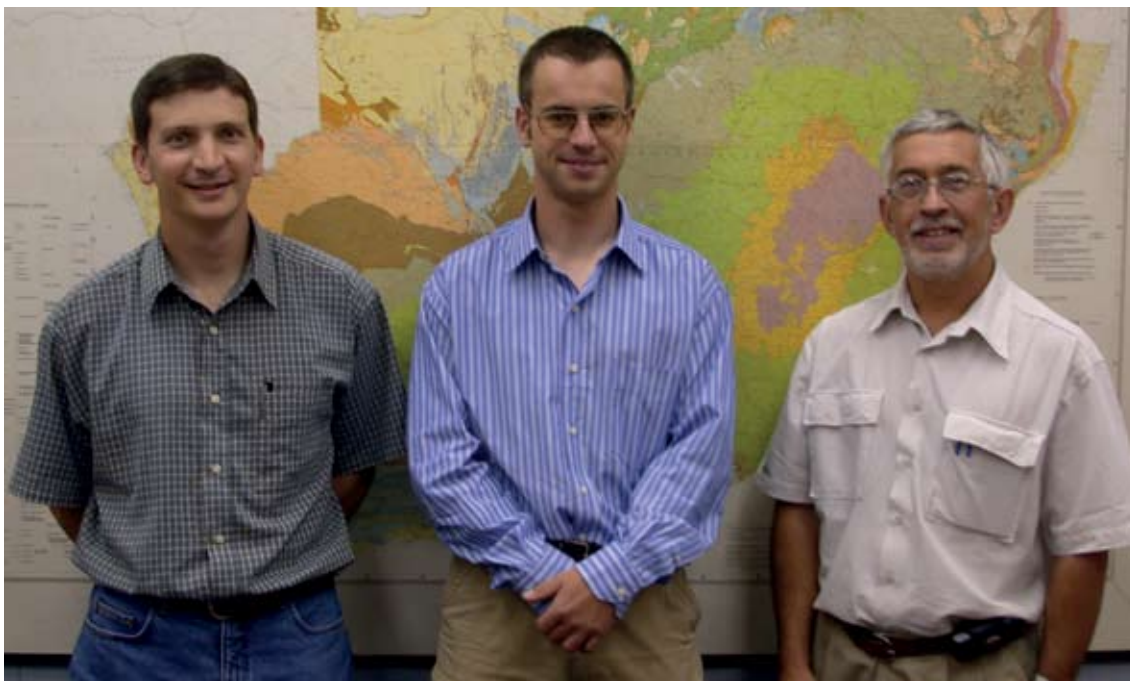
While I do very well appreciate the excellence of Prof. Nic’s research—and while I am convinced that



Planting a tree in the Hospet Iron Ore District, India, 2003.



Nic with Jens Gutzmer and L.L. Coetzee, 2003.



all accolades and honours he did receive during his long career have been utterly well deserved—there are some personal attributes of Prof. Nic that I have always placed particular value on. Firstly, he was an enthusiastic (geo)scientist—it was impossible to escape the positive energy that surrounded him. Secondly, his willingness to share his knowledge freely with anyone, undergraduate students and esteemed international colleagues alike. Thirdly, his modest and unassuming nature, combined with his unwavering commitment to provide support to others even during very difficult times. Last but by no means least, his gift to be an austere mentor who would always furnish honest advice.

It is my personal conviction that the legacy of a leading academic will be carried on by a number of well-educated and enthusiastic scholars. Based on this expectation, I am confident that Prof. Nic will be remembered as a truly great scientist.

My sincere condolences go to Tiekie, his children and grandchildren as they have lost a wonderful husband, father and grandfather.



Jens Gutzmer

Director: Helmholtz-Institute Freiberg for Resource Technology, Freiberg, Germany

I met Nic at Bill's PPRG back in 1984, started joint fieldwork with him in 1986, and hosted his family at Caltech for a year in 1993/1994 (our children played together constantly). We were chased by leopards in Zimbabwe in the mid-1990s, hosted our students in both countries, worked the Agouron Drilling project in the Kalahari in the early 2000s, and helped set up a leading palaeomag lab at the UJ. I am in tears.



Joe Kirschvink

California Institute of Technology, Caltech, USA

This is a tragedy, and I am bereft.

We had expected that he would visit in 2023 to sign the book at the National Academy of Sciences as the first international member from South Africa. Nic is an outstanding friend and colleague. One lasting legacy will be the cores he sited for Agouron. They will continue to produce new knowledge for many years to come.



Roger Everett Summons

Massachusetts Institute of Technology, MIT, USA

This is very tragic news for the geobiology community. He was such an important person to us at the Agouron Institute. It was his knowledge

and experience that convinced us we could fund successful drilling in South Africa. Please extend our sincere condolences to Tiekie and family.



Joan Kobori
The Agouron Institute, USA

I am sorry to hear the sad news. I remember him and his family fondly. The Yamazaki family overlapped with the Beukes family at Caltech, and all the children played together.



Toshi Yamazaki
Atmosphere and Ocean Research Institute, The University of Tokyo, Tokyo

It is indeed sad news to learn of the passing of Nic Beukes. Nic was not only an excellent scientist and student of early Earth History, he was a good friend and a pleasure to work and collaborate with on understanding the Precambrian world. We worked together on the Pongola stromatolites and spent many days together scrambling up and down rocks along the Wit Umfolozi River. He had a great eye for detail and read the rocks like a book. He generously took a group of us on a long field trip to examine glacial deposits in the Pongola in South Africa and Eswatini (Swaziland) and later we visited some of the Wits mines to see diamictites in cores. He shared generously of himself and his

encyclopaedic knowledge of Precambrian geology. He will be missed.



Don Lowe
Stanford University, USA

It is indeed sad news to have lost Nic. He was much admired by everyone in PPRG for his incisive questions and comments; a great contributor.



Jere Lipps
University of California, Berkley, USA

As both a deep thinker and an incredibly nice person, Nic was an inspiration for me about how to be a successful scientist.



Ben Weiss
Massachusetts Institute of Technology, MIT, USA

What a sad, sad event. Nic Beukes was an outstanding field geologist with a unique talent for deciphering the oldest pages of the geological record and finding answers to the most difficult questions of the early Earth history. He has long won world fame as an outstanding specialist on the genesis of the oldest iron and manganese ores, on the evolution of sedimentary basins, the climate, and the atmosphere of the Archaean and Palaeoproterozoic. He generously shared his



Visiting Japan.



knowledge with his colleagues and many students. Nic was a man of big heart. I am grateful to fate for giving me the opportunity to work alongside such a man and learn from him not only in the field of science but in relation to life. Blessed memory, he will be so missed.



Misha Fedonkin

Institute of Geological Sciences of the Russian Academy of Sciences, Moscow

The global geology community will mourn the loss of a great man, and celebrate the amazing contributions he has made. He certainly was a man with an incredible drive, knowledge, and humility, a man who influenced so many of our lives. His contributions to geology have been recognised globally and locally, and he lived his geology right to the end.



Nikki Wagner

Director: CIMERA

On behalf of the Subcommittee on Ediacaran Stratigraphy, we would like to offer our condolences on the passing of Prof. Nic Beukes on Monday 9 January 2023. The always beloved Prof. Beukes was a leader of the Palaeoproterozoic Mineralisation Research Group at the University of Johannesburg and excelled in the study of Precambrian banded iron formations. His multiple contributions include models of the origin of iron and manganese ore deposits and the nature of surface environments on the early Earth. The absence of Prof. Beukes will be felt by the entire geological community, always indebted to this great researcher. Condolences to family and friends.



Marc Laflamme (Chair), **Jim Schiffbauer** (Vice-Chair), and **Lucas Warren** (Secretary)
Subcommittee on Ediacaran Stratigraphy

Very sad news, what an incredible loss for us all! Please pass on condolences to his family from all people around here who worked with him and

profited from his bright mind, and very importantly enjoyed his help and positive mind! Very sad, indeed!



Urs Schaltegger

*Department of Earth Sciences,
University of Geneva*

I am very saddened... I am glad to have met him this past May. He was a great man who built a great Department.



Ilya Bindeman

*Department of Earth Sciences,
University of Oregon*

I heard of the passing of Prof. Nic yesterday and I wanted to pass on my condolences to the department. It came as quite a shock I must say. Prof. Nic was an incredible scientist.

My first real interaction with Prof. Nic was when he gave me 0 for an exam! I was furious. I went to his office and argued for about 40 minutes until he eventually gave me 1 extra mark. It didn't do anything for my overall grade, but it was the satisfaction I was after. For me, that has always been Prof. Nic, completely unwavering in his ethical responsibility to geoscience. I'm glad to have worked with him.



Nick Vafeas

University College Dublin

I just want to send my heartfelt condolences to the department on the loss of such a great man. I can only imagine the shock that everyone is feeling. I knew him since I was 18 years old, and what profound effect he had on my life as a Geologist. His son let me know last night that he had passed away, and it took me over an hour to actually comprehend what he had said.



Lauren Blignaut

Canada

My most recent experience where my respect for Prof. Nic shot through the roof is when we were receiving the UJ community engagement award for the BASE project. While we were trying to take an official picture with him, Prof. Nic asked (more like insisted, because he started walking to the podium) to say a few words (he was the first one to do this at the event while receiving an award). He insisted on doing this to acknowledge the team effort, and my big role in us getting the award. I had quickly gone off the “stage” to take a photo and video of him talking, but he was done by the time I got to the back to film him.



Phumi Mashele

Geologist, Barberton Archaean Surface Environments

I worked on the Barberton drilling project from 2021 to August 2022. Visits from Prof. Nic were always looked forward to. He was hugely helpful and encouraging in all we did. His geological knowledge always came to the fore when we had a tricky situation with the core, which happened a lot! It was good having his steady touch on the admin and finances of the project. His vision and passion for the new annex building in the Barberton Museum will leave a legacy that will give visitors a rare window into the amazing Early Earth history. I am glad that he saw the completed product and was hugely instrumental in guiding us on the samples and posters needed for the display. We

were so privileged to have been able to share this special project with him and will miss him so much. Our thoughts and prayers are with you and Tiekie and your families. May you feel the comforting presence of the Lord in this time of deep sorrow.



Chris Rippon
Barberton



With Phumi at the November 2022 Faculty of Science awards ceremony.

GSSA events 2023

GSSA Events from January 2023 – November 2023 (Preliminary Programme)

Preliminary Date	Event
11-13 January	Geocongress (Stellenbosch university/hybrid)
14 March	CPD workshop (online)
18 April	Advanced Excel Skills for Geoscientists (online) with Marius Swart/Earthlab
2-3 May	Sampling & data management (hybrid)
6-7 May	KZN brittle deformation field trip (KZN north coast) with Prof M Watkeys
16 May	Soft skills for geoscientists (online). Report writing and science communication skills (with Seyens Visual Communications)
TBC (4 x ½ days) + self-study	Drilling methods and techniques in resource exploration (with Colin Rice) (online)
24-27 June	Base metals (hybrid & site visit)
July	Map making (with J van den Berg/Minrom) (contact in Cape Town)
11 July	ESG inquisition feedback (online)
1 August	Introduction to drilling (online)
August	Professionalism and ethics (online)
Sept (2 days?)	Data analytics / machine learning (with Prof G Nwaila/UWWR) (hybrid)
September (4 x ½ days) + self-study	Drilling methods and techniques in resource exploration (with Colin Rice) (online)
October	3D geological modelling (with Dr I Basson/TECT) (hybrid)
October	Mineral economics for geoscientists (hybrid)
15-16	November African Exploration Showcase (online?)

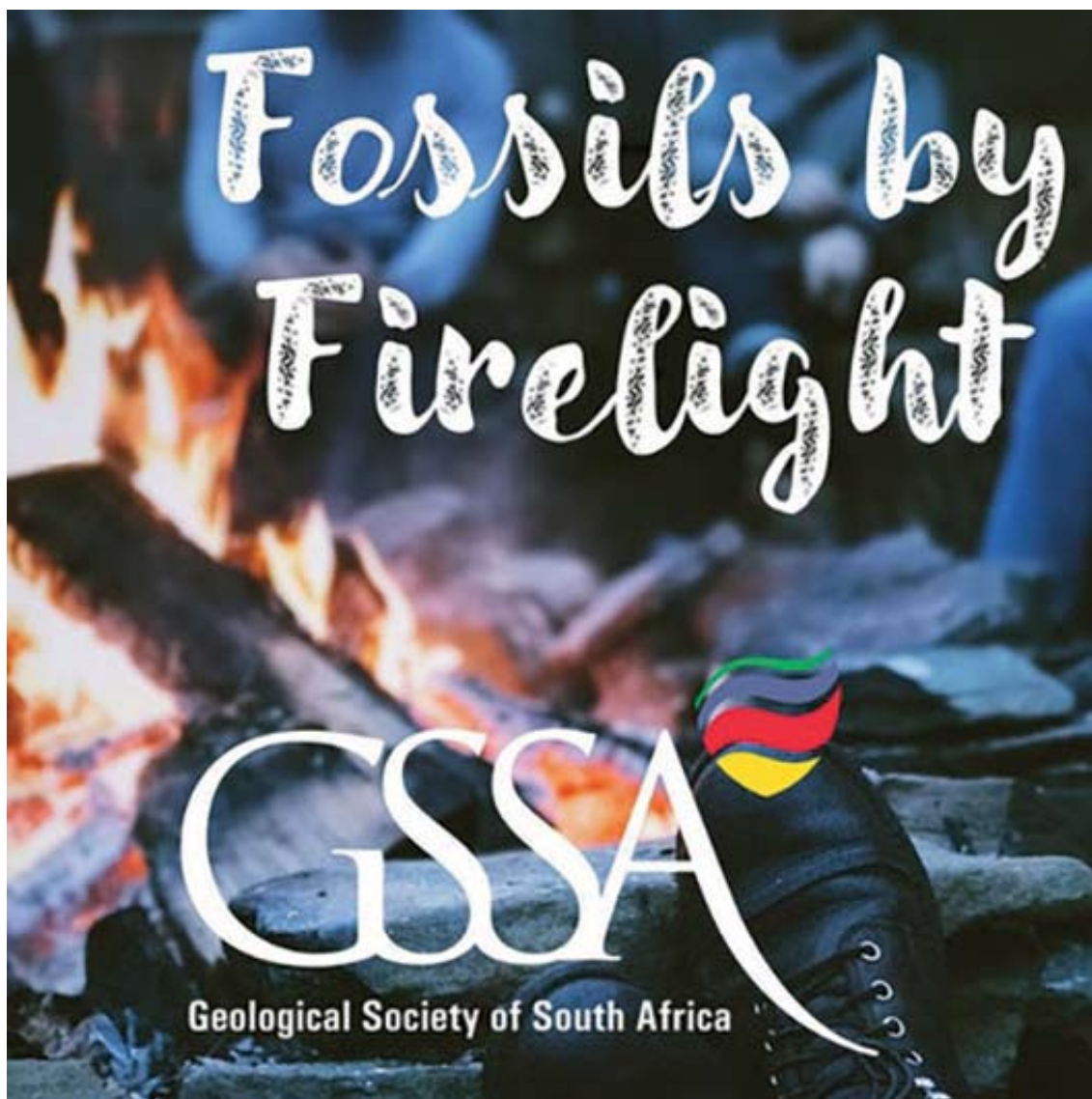
fossils by firelight

GSSA Fossils by Firelight

Have you listened to the GSSA's *Fossils by Firelight* podcasts yet? These are a series of conversations with South Africa's geological legends where they unearth their discoveries, their learnings, memories, interesting stories (and maybe a few tall tales) to chronicle our history and inspire the next generation of geological heroes.

The first three podcasts delve into The Big Five (or Six or Seven) Houses that shaped South African Mining (listen [here](#)), the exciting days of diamond exploration (listen [here](#)) and the golden days of the Witwatersrand (listen [here](#)).

The next episodes in the series will be coming soon.



book prize 2022

Mineralogical Association of South Africa Book Prize 2022

The MINSA Book Prize is awarded annually to either an Honours or Master's dissertation of high merit focused on applied mineralogy (>50% content) completed at a South African university. At the recent Geocongress in Stellenbosch, MINSA had the privilege of awarding its 2022 Book Prize to

Ms. Siyasanga Dyan from Rhodes University for her MSc dissertation titled: "Constraining the role of carbonatite assimilation on spinel stability in oxide ores of the Flatreef, Bushveld Complex, South Africa". The dissertation was completed under the supervision of Prof. Steve Prevec. The award ceremony took place during the Applied Mineralogy session, organised, chaired and sponsored by MINSA, on Friday 13 January 2023.

Ms. Siyasanga Dyan (right) being presented with the 2022 MINSA Book Prize by Igor Tonžetić, 2022/23 MINSA chair, at Geocongress 2023 in Stellenbosch.



publish your paper

Why you should publish your paper in the *South African Journal of Geology*

The South African Journal of Geology is the flagship publication of the Geological Society of South Africa (GSSA). It started life as the Transactions of the GSSA in 1897, a year after the founding of our learned society, and was published together with the Proceedings of the GSSA at the time. In its century-long history, many high-quality, landmark papers about the geology of South Africa and elsewhere in Africa, have been published in it. These papers have received numerous citations in the academic world, and continue to be relevant in scholarly circles, as well as in the mining and exploration industries. Papers submitted to the journal are strictly peer-reviewed to ensure that a high quality is maintained; the review turn-around time is typically 6–8 weeks. Four issues are published each year, and the Editors ensure that every submitted manuscript is processed in good time. The SAJG is accredited with the South African Department of Higher Education and Training, and the authors are thus ensured that they get due recognition for their papers published in it. Its impact factor has been increasing steadily over the past years, and now stands at 1.46. We thus encourage all geoscientists who are conducting research on South African and African geology to publish their results in our society journal.



special issue: SAJG

Special Issue in the *South African Journal of Geology* in honour of Professor Nicolas Johannes Beukes (1945–2023): Invitation to submit an interest to contribute

Prof. Nic Beukes tragically passed away on 9 January 2023. He was a highly regarded South African geoscience researcher in the fields of sedimentology and economic geology with a career spanning more than 50 years. With the blessing of his family, the decision has been made to honour him through a special issue in the *South African Journal of Geology* comprising articles focused on the numerous topics in geoscience he worked on and found interesting. The issue is aimed to be published towards early in 2024. The guest editor panel will comprise Michiel de Kock, Bertus Smith, Clarisa Vorster (all from University of Johannesburg) and Jens Gutzmer (Helmholtz Institute Freiberg for Resource Technology).

With the goal to reflect on the very broad range of research interests and contributions by Prof. Nic Beukes, we invite manuscripts with a geographic focus on southern Africa and centred on the following topics:

- Early Earth (Archaean and Palaeoproterozoic) paleoenvironments
- Sedimentology and provenance studies
- The palaeomagnetic record
- Sedimentary and sediment-hosted ore deposits

Please indicate your interest to contribute (including proposed article title(s), author lists and brief content description(s)) to Bertus Smith (bertuss@uj.ac.za) by 14 April 2023. Once approved, manuscripts will need to be submitted to the allocated guest editor for peer review by 31 August 2023. Please note only contributions for which an interest to contribute was received and approved will be accepted for peer review.

The manuscripts need to be prepared according to the author guidelines of the *South African Journal of Geology*, and will be subjected to the peer review process and all policies as laid out in the Information for Authors of the *South African Journal of Geology* (<https://gssa.pub/sajg/ifora.html>). Please note that due to time constraints, any rejected manuscripts cannot be re-submitted for this special issue.

Michiel de Kock, Jens Gutzmer, Bertus Smith and Clarisa Vorster



Field Excursion to commemorate the Centenary of the discovery of PLATINUM in the Eastern Limb

Key Dates & Accommodation:

Thursday 15 to Sunday 18 August 2024
Gethlane Lodge, Burgersfort

The discovery of economic platinum mineralization by Hans Merensky and his Lydenburg Platinum Syndicate at Mooihoek, on 15th August 1924, is one of the most significant geological and mining events in South Africa. This initiated a “Platinum Rush” which led to discovery of three additional mineralized pipes and the Merensky Reef.



Hans Merensky (1917)

The field excursion will include the following sites (dependent on permissions from mining companies):

- Famous geosites: Dunite Pipes (Driekop Mooihoek, Onverwacht); Merensky Reef, UG1 and UG2 chromitites; Discordant IRUPs
- Underground visit to historical workings on the Merensky Reef at Winnaarshoek
- Cultural sites: Botshabelo Mission (Hans Merensky’ place of birth, in 1871); Battle of Sekhukhune; Tsjate Cultural Centre

Contact Dr R N SCOON or the GSSA for details and an expression of interest. (rnscoon@iafrica.com)



Hans Merensky (3rd from right) and his team panning for platinum at Onverwacht (Photograph from Lehmann, 1955)



The glory hole at Onverwacht, the world’s oldest hard rock platinum mine

FIELD EXCURSION

book

Geological Adventures in the Fairest Cape: Unlocking the secrets of its scenery

BOOK



Council for Geoscience



ENCRYPTED PDF AVAILABLE at the COUNCIL FOR GEOSCIENCE and from the author, John Rogers — johnrogers1944@gmail.com.

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POPULAR GEOSCIENCE SERIES 7

GEOLOGICAL ADVENTURES IN THE FAIREST CAPE: UNLOCKING THE SECRETS OF ITS SCENERY

John Rogers

35IGC LEGACY FUND



35IGC Legacy Fund support; 2023 Call for Grant Applications

The generous support received from sponsors, donors and over 4,000 registered delegates resulted in a financial surplus after the 35th International Geological Congress that was held in Cape Town during 2016. These funds have been invested and are administered by the Board of 35IGC Legacy Fund to ensure that the legacy of this successful event will benefit the South African geoscience community long into the future.

Annual grants are advertised to promote geoheritage projects or activities in support of deserving geoscience students and researchers. An annual thematic focus or dedicated conference support funding will be identified every year. The level of funding available annually for disbursement varies in relation to investment income and the need to maintain or grow capital from which sustainable support can be provided.

2023 call for grant applications

As the world emerges from the COVID-19 pandemic, many geoscientists are resuming their normal work, field-based activities and attending conferences.

Accordingly, the 2023 call for grant applications by 35IGC Legacy Fund is aimed at a broad spectrum of activities across themes that support or promote;

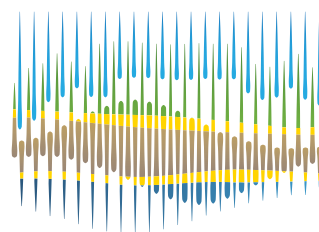
- **Geoheritage, geotourism, geoscience education, geoconservation.**
- **Student support for attending geoscience meetings.**
 - i) The thrust of proposals should be product-focused and applicants must outline how the grant will be utilized to establish a long-term presence that will promote activities associated with any of the themes listed above.
 - ii) Proposals that include additional sources of funds will be favoured.
 - iii) Where proposals aim to create products in support of facilities housed in a national- or provincial park, world heritage site or any other established heritage or tourism-focused facility, the written support of the controlling institution must accompany the application.

As available funds are currently limited, compliance with the above conditions does not guarantee acceptance of any applications submitted. All provisionally successful applications will be reviewed and evaluated by the Management Committee/Board of the 35IGC Legacy Fund and their decision is final.

Applications must be made on the prescribed form (available at <https://35igclegacyfund.org.za>) and submitted to Peter Stiff at pstiff@jpaudit.co.za before 31 May 2023. No late applications will be accepted. The applications will be adjudicated and the outcome announced around the middle of 2023.



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ABSTRACT DEADLINE
EXTENDED
31 March

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NEWS

ONLINE REGISTRATION NOW OPEN

IAH WORLDWIDE GROUNDWATER CONGRESS

"Groundwater: A Matter of Scale"

Online, **early bird registration** is now open at <https://iah2023.org.za/registration/>. Please take advantage of the opportunity to become a member of IAH and benefit from the discounted Congress registration fee to attend the IAH2023 Congress.

IAH Membership: <https://iah.org/join-us>

We are excited to announce that one of our keynote speakers is Professor Seifu Kebede Gurmessa. Seifu is the IAH Vice-President for Africa and has published extensively on global groundwater issues and African Hydrogeology. Dr John Cherry intends to host a special session on the groundwater project showcasing African contributions. The Socio-Hydrogeology Network will hold a special session on "THE CONNECTEDNESS OF GROUNDWATER AND HUMAN SYSTEMS". This session aims at discussing

approaches, techniques and case studies focused on inter- and transdisciplinary assessments of the connections between humans and groundwater at different scales. The Socio-Hydrogeology Network invites abstracts in support of the topic.

This year's congress programme includes 5 Field Excursion options for delegates to select from.

IAH2023 has adapted the traditional format of the congress slightly and the Congress will commence with the Field excursion on Monday, 18 September 2023. The excursion will provide delegates the opportunity to meet new colleagues and catch up with old friends during the excursion before the official congress programme commences on Tuesday, 19 September 2023.

Information on the Congress programme, Field excursions and on becoming a sponsor or booking an exhibition stand, please visit:

 **Programme at a glance**

 **Excursions**

 **Sponsorship & Exhibit**

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IMPORTANT DEADLINES

Online Registration	Now open	Abstract Acceptance confirmed	20 April 2023
Call for Abstracts	Now open	Early Bird Registration deadline	31 May 2023
Abstract submission deadline	31 March 2023	Registration closes	21 August 2023

* For South African delegates only

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