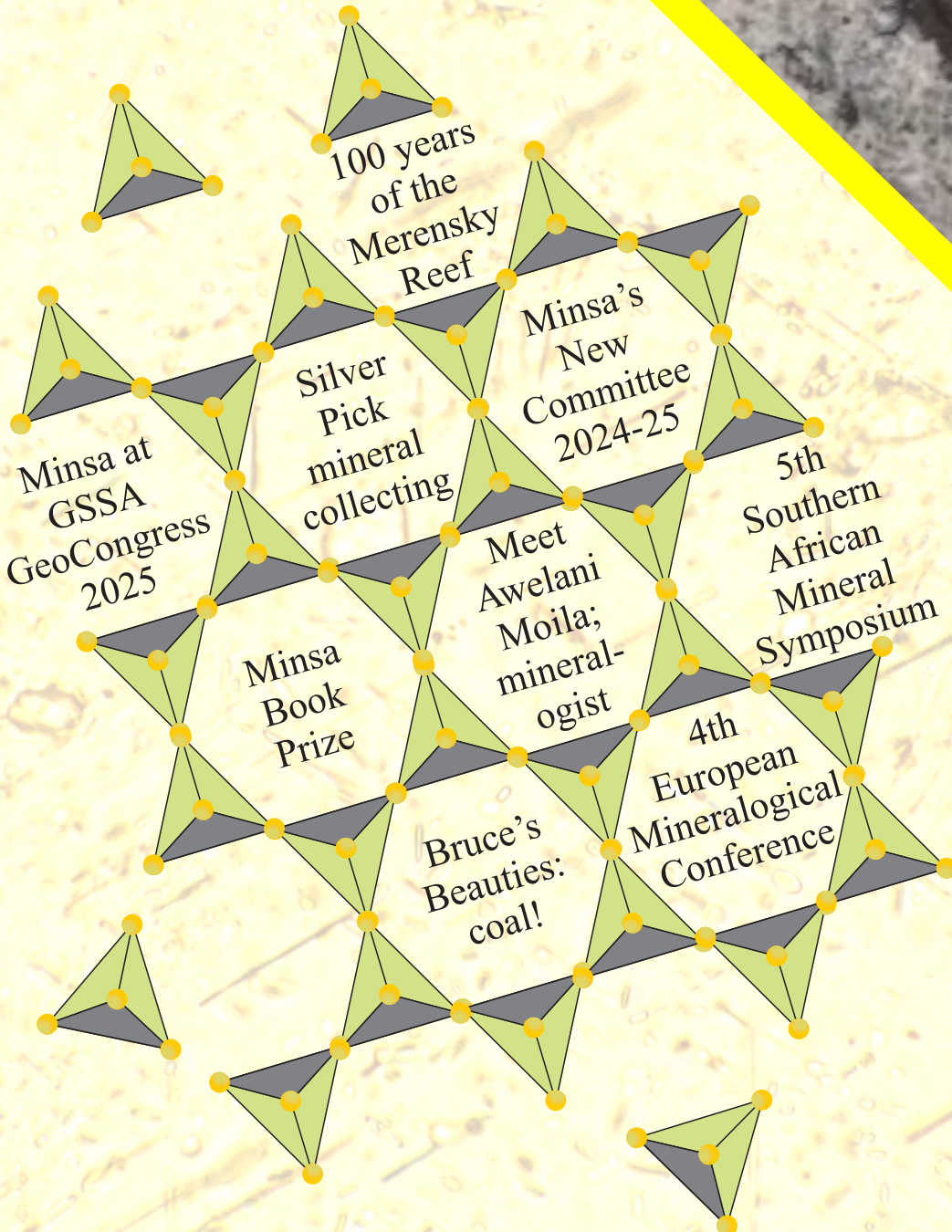


the Geode  
the Geode



# The GEODE

Minsa  
Newsletter  
Volume 11  
No. 3  
September  
2024



website: [www.gssa.org.za/Minsa](http://www.gssa.org.za/Minsa)  
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# the Geode the Geode

NEWSLETTER

Volume 11 No. 3  
September 2024

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## The Editor's Site

Greetings all, as 2024 whips along, its momentum, like geological processes, unphased by national elections, service delivery issues, and global climate change. In this issue of our year of minerals and energy, and in commemoration of our approximately 10<sup>th</sup> year of Minsa magazine production, we feature some coal (Bruce Cairncross' surprising choice for "Bruce's Beauties"), and some phosphate (the Editor's somewhat arb choice for the crossword). Preceding all that, Minsa is pleased to announce its new organising committee for the next 12 months, featuring Petra Dinham as first time chair. Thanks to Sara Turnbull and last year's committee for all their efforts! Minsa is also pleased to announce its 2024 Minsa book prize winner as Llelani Coetzer of the University of Stellenbosch, who will hopefully be going from strength to strength in her ongoing studies.



*The Editor takes his show on the road.*

Minsa committee members have been quite busy this year participating in and running conferences, with more lined up for next year. Accounts from this quarter's European Mineralogical Conference in Dublin, the Centenary of the Merensky Reef conference in the outskirts of Rustenburg (NW Province, RS of A), and the 5<sup>th</sup> Southern African Minerals Symposium are all featured. Next year looks to be even busier, with a strong presence at the GSSA GeoCongress planned, among other things.

We meet Awelani Veronica Moila, formerly of Mintek, SGS, and UP, and now an Independent Mineralogist, in our "Meet a Mineralogist" feature. Her story is particularly interesting as one would normally associate professional mineralogists with institutions or companies housing big laboratories, and not as self-employed. Fortuitously compensating for Bruce's choice of coal noted earlier, we have provided balance through Peter Rosewarne's contribution on mineral collecting, featuring numerous and quite spectacular southern African-derived gemstones (mostly) from his personal collection.

On behalf of Minsa, all the best 'til the next time.

*Steve Prevec*

## Chair's Column



*Your 2024-2025 Minsa Chair, Petra Dinham.*

Dear Readers,

I am looking forward to collaborating with a very enthusiastic committee in the coming year, after doffing my 'worn out' secretarial hat. The 45<sup>th</sup> Minsa

Committee is committed to bringing to fruition many of the initiatives we started planning for during the previous term, as well as trying some exciting new ideas. Of course, our Minsa 'stalwart' events remain on the calendar, some with a new twist.

The Committee strives to make Minsa an inclusive association, with some appeal to each and everyone of you, our members. Please support and engage with us - we would love to hear from you.

Let's keep Minsa punching above its weight!

Regards,

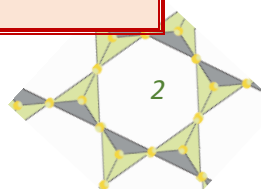
Petra Dinham

## *Minsa News*



### Upcoming activities of interest

- Minsa/GSSA Analytical Techniques for Geoscience Symposium. 14-15 Oct., hosted at Mintek.
- MEI - Process Mineralogy '24. 11-13 Nov., Cape Town.
- Mintek@90 conference: Gearing the industry for a sustainable mineral future. 11-12 Nov., Sandton Convention Centre.
- IMSG conference, 19-22 Jan. 2025 (Stellenbosch University)
- 100 Years of the discovery of the Namaqualand Diamonds, 11-20 March 2025.
- GSSA Geocongress: 24-27 June 2025, University of the Free State, Bloemfontein.



## **Minsa Committee 2024-2025**

**Chair:** Mrs Petra Dinham (Independent)

**Vice Chair:** Mrs Lethu Dubazana (Anglo American)

**Treasurer:** Ms Jeanette Dykstra (Univ. of Pretoria)

**Secretary:** Mrs Musarrat Safi (Council for Geoscience)

**Communications:** Prof. Bertus Smith (Univ. of Jo'burg)

**Youth & Development:** Dr Bavisha Koovarjee (Univ. of Cape Town)

**Without Portfolio:** Mr Igor Tonžetić (UP/Wits)

## **Co-opted committee 2024/2025**

Dr Sarah Glynn (Wits Univ.)

Ms Sara Turnbull (SRK)

Dr Deshenthree Chetty (Mintek)

Dr Sabine Verryn (XRD Analytical & Consulting cc)

Prof. Steve Prevec (Rhodes University)

Dr Bjorn von der Heyden (Stellenbosch University)

Prof. Frederick Roelofse (Univ. of the Free State)

Mr Matome Ernest Moitsi (Univ. of the Free State)

Dr Craig Smith (GSSA)

## **IMA Representatives**

*IMA Councillor:* Dr Desh Chetty (Mintek)

*The IMA commission on Gem Materials (IMA-CGM):*

Prof. Frederick Roelofse (Univ. of the Free State)

*The IMA commission on Museums (IMA-CM):*

Prof. Bruce Cairncross (Univ. of Johannesburg)

*The IMA commission on New Minerals Nomenclature and Classification (IMA-CNMNC):* Dr Maria

Antanasova (MTGeo Minerals Analysis Consulting)

*The IMA commission on Ore Mineralogy (IMA-COM):*

Mr Igor Tonžetić (UP/Wits)

*The IMA commission on Applied Mineralogy (IMA-CAM):* Dr Deshenthree Chetty (Mintek)

*The IMA commission on the Physics of Minerals (IMA-CPM):* VACANT

## **The Minsa 2024 Book Prize**

Minsa is proud to announce that **Ms Llelani Coetzer** (University of Stellenbosch) was awarded the 2024 Minsa Book Prize for her BSc Honours Earth Sciences thesis completed in 2023. Her exceptional thesis was entitled ***Metamorphic conditions in the plumbing systems and possibly the source of the Darling Batholith within the southernmost Pan-African Saldania Belt.***



*Llelani, 'unwinding'. (photo courtesy L. Coetzer).*

The Minsa Book prize comprises a R2000 cash component, and a book. We look forward to meeting Llelani during GeoCongress 2025 at the University of the Free State in June next year. We hope to present the book to her during one of the presentations of the Applied Mineralogy Session.

Our congratulations to Llelani!

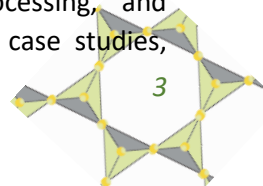
## **GSSA Geocongress 2025 Sessions of Mineralogical Interest:**

The following sessions have been proposed by Minsa Council members, and those of you with mineralogical research of relevance are invited to contribute:

### **Applied Mineralogy: Providing Practical Solutions to Research and Industry**

**Session convenor:** *Dr Bertus Smith (University of Johannesburg)*

This session aims to highlight the role applied mineralogy plays in solving problems in research and industry. These can include challenges related to geology, ore modeling, mineral processing, and environmental matters. In addition to case studies,



submissions focusing on advanced methodologies in applied mineralogy are also welcome.

## Petrogenesis and Metallogenesis of Layered Intrusions

**Session convenors: Freddie Roelofse (Univ. of the Free State), Rais Latypov (Wits University), Steve Prevec (Rhodes University)**

This session will focus on advances in the field of layered intrusion research, looking not only at the petrogenesis of layered intrusions, but also the processes responsible for the formation of world-class ore deposits hosted within layered intrusions. The session chairs hope to receive a good mix of contributions from academics, students and practicing geologists and envisage a strong focus on the Bushveld Complex.

## Bolides, Impacts and Shock Phenomena

**Session convenor: Steve Prevec (Rhodes University)**

Relevant topics to include (but not restricted to): Impact structures and their evolution (could include impact processes themselves, or post-impact geological histories) Solar system materials; meteorites, asteroids, nearby planets (sources of meteorites, among other things); what can they tell us about early Earth evolution? Catastrophism or punctuated uniformitarianism: impact structures and their global influences, including extinctions, climate change, ash distributions, etc. Shocked minerals: what do they prove, and how are they useful? Other impact phenomena: pseudotachylites, breccias, suevites, impact melts, shattercones, and what they can and cannot tell us about impacts. Primitive igneous materials associated with impact structures: evidence of mantle melts, crustal melts or meteorites, and what are the implications for impact processes? Impact structures as potential hosts or influences for economic mineralisation.

Note that early-bird registration has already opened (as of Sept. 9), but most important deadlines are around 31 March 2025. More information is available on the conference website at <https://geocongress2025.org.za/>.

## Minsa Members on the Move (mobile elements?)

### Conferences:

In August, **Desh Chetty** attended the 4<sup>th</sup> **European Mineralogical Conference** 2024, hosted at Trinity College Dublin. More on this below (pg. 5).

Slightly later in August, Freddie Roelofse attended the **100 years of the Merensky Reef** anniversary conference of the GSSA at Hunter's Rest, near Rustenburg. See below (pg. 6) for more.

Later still in August, **Musarrat Safi** attended the **37<sup>th</sup> IGC** in BEXCO, Busan, Korea.

More Minsa members than you can shake a stick at participated in **The 5<sup>th</sup> Southern African Mineral Symposium** in September, which was actually run as a Minsa event. More on this (pg. 7) below, as well.

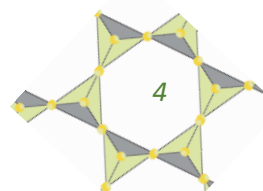
### IUGS Heritage Sites

Since 2022 the IUGS Executive Committee has ratified 200 IUGS Geological Heritage Sites. The First 100 were announced during the IUGS 60<sup>th</sup> anniversary event in Zumaia (Basque Coast UNESCO Global Geopark, Spain). The Second 100 were announced during the 37<sup>th</sup> International Geological Congress in August 2024 in Busan (Republic of Korea).

IUGS recognition of Geological Heritage Sites gives visibility to these sites. It identifies them as being of the highest scientific value. They are sites that served to develop the science of geology, particularly its early history. They are the world's best demonstrations of geologic features and processes. They are the sites of fabulous discoveries of the Earth and its history.

Two South African sites made it into the Second 100, and 2 of our Minsa members were involved! **Professor Bruce Cairncross** (University of Johannesburg, RSA) nominated the Kalahari Manganese Field. This contribution was chosen as the entry 176 in the "Mineralogy Category". Congratulations Bruce!

[https://iugs-geoheritage.org/geoheritage\\_sites/the-kalahari-manganese-field/](https://iugs-geoheritage.org/geoheritage_sites/the-kalahari-manganese-field/)



The second South African site selected was the Vredefort Dome; as entry 197 in the “Impact and extraterrestrial rocks category.” Minsa’s **Professor Uwe Reimold** (University of Brasilia, Brazil) was a co-author of this contribution. Congratulations Uwe!

[https://iugs-geoheritage.org/geoheritage\\_sites/vredefort-dome/](https://iugs-geoheritage.org/geoheritage_sites/vredefort-dome/)

*Contributed (mostly) by Petra Dinham.*

## Fourth European Mineralogical Conference, Dublin (Ireland)

The fourth European Mineralogical conference, EMC2024, took place in Dublin from 18-23 August. Desh Chetty attended, not least for the reasons of:

1. meeting her fellow IMA councillors in person,
2. a first visit to the Emerald Isle, and
3. the offer of a conference field trip to the bucket list destination of Giant’s Causeway.

The conference was held in the historic Trinity College and comprised four days of talks covering 32 session topics, two dedicated poster sessions, a field trip day, four plenaries and one public lecture, as well as awards ceremonies of the Mineralogical Society of UK and Ireland, the French, Spanish and German Mineralogical Societies, the European Mineralogical Union, and the IMA. The conference dinner was held at the Croke Park stadium and featured delicious Irish fare and traditional music. A separate dinner was also held to honour Prof Edward Grew on the occasion of his 80<sup>th</sup> birthday this year, for which a special technical session was convened at the conference.

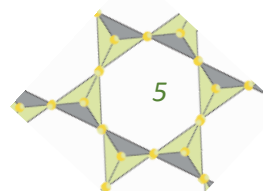
IMA business and commission meetings were held, showing four of the six commissions: COM, CPM, CM and CNMNC, to be alive and kicking. The new IMA council was also constituted, with Eiji Ohtani (Japan) as the new president, Nancy Ross (USA) as vice president, Hiroaki Ofuji (Japan) as secretary, Travis Olds (USA) as treasurer, and Michele Zema (Italy) as communications officer. Other members of council include Hans-Peter Schertl (Germany) as immediate past president, Xianci Lu as second vice president, and Ross Angel (Italy), Desh Chetty (RSA), Shaunna Morrison (USA), Vincent van Hinsberg (Canada) and Ecaración Ruiz Agudo (Spain) as councillors.



*Members of IMA council and national representatives at the EMC conference.*

The field trip to Giant’s Causeway was a rainy and muddy affair, which made for slippery conditions traipsing across the tops of the stunning basalt columns. Consequently, as least two injuries were encountered on the day, one by a tourist with a broken arm, and another by a conference participant, with a broken nose and jaw. No wonder we were given a risk assessment, health and safety policy, and field checklists to go through, in addition to our indemnity forms to sign, prior to the trip. The perfect photo opportunity was not possible, as the site was swarming with tourists despite the rain, although Desh got her picture at the base of an outcrop called the Giant’s Organ in the area (see below for the giant organ).

The trip to Ireland (and Northern Ireland for said bucket list visit) was well-worth the last-minute visa debacle this participant endured, following the Springboks beating Ireland in the rugby back in July (now was there a link between the rugby win and the sudden change in SA entry requirements, or not??). Kudos to Kevin Murphy of the Mineralogical Society of the UK and Ireland, and the other members of the conference organising team, for a thoroughly enjoyable experience.





*Desh at the base of the Giant's Organ (the type you play Dracula's Song on, not a body part) outcrop at Giant's Causeway, N. Ireland.*

*Contributed (and photos courtesy of) Desh Chetty.*

## Merensky Reef Centenary Conference

The Merensky Reef Centenary Conference, arranged under the auspices of the Geological Society of South Africa, took place on 20 and 21 August 2024, at Hunters Rest near Rustenburg. The conference was attended by ~180 national and international delegates with representation both from academia and the mining industry. The 2-day conference was formally opened by the chair of the organising committee, Chane de Jager, who welcomed delegates to the tranquil venue at the foothills of the Magaliesberg Mountains, before passing formalities on to Rais Latypov, the chair of the scientific committee and the first session of the conference. The first plenary talk, titled "Dr Hans Merensky –giving back a fraction of what it gave to me", was jointly presented by Chris Pienaar, representing the Hans Merensky Foundation, and Martin Clark of the University of the Free State. The speakers shared aspects of the life and times of Hans

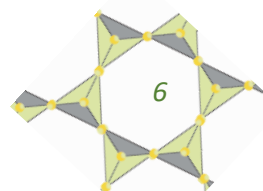
Merensky, including aspects related to his own hardships and misfortunes, his philanthropic activities and some geological discoveries for which he is lesser known.

The remainder of the first day of the conference saw 3 additional plenary / keynote talks, presented by Rais Latypov, Stephen Barnes (CSIRO Mineral Resources) and Alan Boudreau (Duke University), along with 14 normal talks, mostly focused on more academic aspects of the Bushveld Complex and layered intrusions in general. The day was concluded with an outdoor poster session and cocktail evening held in the boma, where 39 posters were presented. Diehards were regaled by Australian and Russian folk music around the campfire, with vocals led by Stephen Barnes and Rais Latypov, with Willem Kruger on the accordion.

The second day of the conference saw plenary / keynote talks presented by Ken Lomborg (Pivot Mining Consultants), Jaco Vermeulen (Impala Bafokeng Platinum), Tim Dunnett (Ivanhoe Mines), Musa Manzi and Glen Nwaila (both from the University of the Witwatersrand), along with 15 normal talks, many of which were presented by professionals from the mining industry.

The conference was preceded by a 4-day fieldtrip to the Eastern Bushveld Complex, led by Roger Scoon and attended by 41 delegates, 20 of which came from abroad, and a 1-day workshop on magmatic sulphide deposits and chromitite genesis, jointly presented by Stephen Barnes and Rais Latypov. The workshop, which also took place at Hunters Rest, was attended by 73 delegates. Two post-conference fieldtrips concluded the conference. The first to Impala Bafokeng, took place on 22 August and was attended by 22 delegates, and the second to Tharisa Mine, took place on 23 August and was attended by 18 delegates.

Those that could not attend the conference are encouraged to download the abstract volume, which is freely available on the GSSA website, and to look out for the special issue of the South African Journal of Geology in commemoration of the centenary of the discovery of the Merensky Reef, which should see the light of day in 2025.





The boma where the poster session took place, with the beautiful Magaliesberg Mountains in the distance.



Delegates of the Merensky Reef Centenary Conference. Chair of the scientific committee, Rais Latypov, and chair of the organising committee, Chane de Jager, to be seen in front of the poster on the left (Photo supplied: Sofia Chistyakova).



Music around the campfire, with world-renowned expert on magmatic sulphide deposits, Stephen Barnes, on the guitar and UKZN lecturer and former Wits post-doc, Willem Kruger, on the accordion. Click [here](#) for suggested audio accompaniment.



Conference scientific committee. From left to right: Frederick Roelofse (UFS), Martin Klausen (SUN), Rais Latypov and Sofia Chistyakova (Wits). Absent: Steve Prevec (RU) (Photo supplied: Sofia Chistyakova).

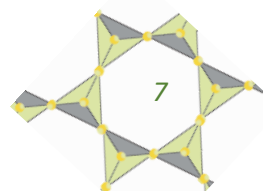
Contributed by Freddie Roelofse



Attendees of the pre-conference workshop on magmatic sulphide deposits and chromitite genesis (Photo supplied: Sofia Chistyakova).

## The 5<sup>th</sup> Southern African Mineral Symposium

This symposium was hosted by Minsa on Saturday 7<sup>th</sup> September 2024 in the Origins Centre at the University of the Witwatersrand. The first of its kind took place in September 1975, followed by three subsequent symposia in the intervening years. The symposia aim to get professional and amateur mineral and gem enthusiasts together, and to promote mineral activities in southern Africa. The 5<sup>th</sup> Symposium certainly achieved these objectives and was an enjoyable day for all concerned.







*Wirsam’s visually enhanced binocular microscope.*

The sixty-two delegates who attended were treated to thirteen presentations from nine speakers, a high-quality collection of abstracts and delicious refreshments. Registration was easily affordable due to the support of Minsa and eleven other sponsors. Dealers and traders manned tables between sessions and a selection of minerals, semi-precious gemstones, books, journals, teaching aids and memorabilia were available. A binocular microscope with a screen on loan from Wirsam Scientific could be used to view samples.

Presentation content was of widespread interest – from meteorites to micro-mounts, from pigments to prehnite, from touch to taste, and from sample preparation to sample preservation!

Bruce Cairncross described type minerals from the Kalahari Manganese Field and details on the Postmasburg Manganese Field. Later he described inconsistencies surrounding the historical naming and type locality of prehnite. Marlina Elburg showed how it is done nowadays, as in the naming of pilanesbergite.

Ronnie McKenzie caused much hilarity with his talk about meteorites and “meteorwrongs”, not to mention Russian meteorite samples guaranteed to be fakes! He also provided delegates with very popular carbide lamps and pieces of chondrite.

Sara Turnbull gave an eye-opening account of ruby prospecting in Mozambique, and Lesley Andrews saw slag minerals in a new (and prettier) light.



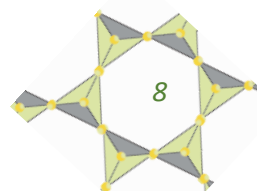
*“Team Cairncross”.*

Salomé le Roux talked about the analysis of old pigments using new techniques, Sabine Verryn explained XRD techniques and when to scratch a sample from the back of gems to avoid wholesale crushing (especially with rubies)! Jaco Delpoort revealed that Selfrag splitting can separate mineral phases cleanly, and Igor Tonžetić showed images which proved that a SEM copes well down to nanometre scales. Igor also talked about mineral identification using all five senses.

Finally, Peter Rosewarne, who could not attend, submitted a very picturesque abstract, but his talk was beset by technical problems. (see article pg. 13 of this magazine to get caught up!).



*The imposing “Tapestry Room” in the Wits Origins Centre.*



All-in-all this was a very enjoyable day, thanks to the organising committee, and the enthusiastic assistance of the Origins Centre staff.

*Contributed (and all photos courtesy of) Lesley Andrews*

### Minsa at the Wits Geosciences, Mining Engineering & Metallurgy career day



*From right to left: 2023-2024 chairperson Sara Turnbull, Sarah Glynn, and Youth and Development portfolio lead Bavisha Koovarjee at the career day.*

On the 24<sup>th</sup> of August, representatives from MINSAs took part in the career day hosted by Bridge the Gap, RocSoc and WSGS. The event was well attended by many undergraduate students, and our outgoing chairperson Sara Turnbull gave a fantastic talk on what it means to be an exploration geologist in addition to what it means to be a part of MINSAs. On behalf of MINSAs, welcome to our new student members!

### Great Earth Science moments in Blues Music

*Robert Johnson lyrics (1936/7 recordings), from our physical geography desk:*

“Brooks run to the ocean, ocean runs to the sea” (“Walkin’ Blues”); First phrase acceptable, and ‘brook’ is sometimes replaced by ‘river’; second is highly questionable. Oceans are deeper and larger than seas, according to conventional usage.

### Articles

#### Meet a Mineralogist

**Name: Awelani Veronica Moila**

*Affiliation: Senior Mineralogist, Independent Consultant*



My background is geology, mineralogy and metallurgy, I hold a B.Sc. (Hons) Degree in Geology and a Master’s degree in Extractive Metallurgy. I began my career at Mintek as a mineralogy bursar, and in 2008 I joined Mintek’s mineralogy Division as a Mineralogy Scientist in Training. I worked in different levels of mineralogy from trainee to Senior Mineralogist, offering a strong base experience of project management of multi-disciplinary mining, metallurgy, and R&D projects.

Around mid-2019, I joined SGS in their Minerals and Metals department as a Senior mineralogist whereby I continued to demonstrate my proven track record of strong technical experience in mineralogy-related projects that entailed mineral processing, process development and optimisation of multi-complex commodities and client consultation.

At the beginning of 2023, I joined the Geology Department at the University of Pretoria, as Head Technical Assistant for the XRD/XRF Facility. My main



focus was to provide XRD analytical support and to transfer XRD skills and knowledge to the University of Pretoria undergraduate and postgraduate students. After 15 months of being at the University of Pretoria, I decided to leave the institution and focus on consulting as Senior Mineralogist, and to lead mineralogy project as a reliable and self-sufficient project leader, capable of managing various project resources.

### What is your favourite mineral, and why?

My favourite mineral is Azurite, when I first heard the name, I immediately had ideas of how it looks like. The name alone caught my attention, and if I had a daughter, I would have named her Azurite \*chuckles\*.

### What is your most funny or memorable field- or lab-work experience?

It was when I was working with my former mineralogist colleague/friend. We used to stay at the office till late, working on multiple copper projects that we were working on together. We would often stay till late and compose songs of minerals we had identified. There was one song we came up with based on the abundance of that mineral (chrysocolla) in that project "you give me Chrysocolla". It was the funniest thing ever that we use to do, but it worked for those long late working hours. We still laugh and joke about that till today...

### What is the most exciting aspect of mineralogy for you?

That every project is unique and has its own challenges; when it comes to mineralogy project, you are less likely to get a simple project. Mineralogy projects are basically a challenge that keeps on giving more mineralogy lessons. With each project you learn something new or different.

### What motivates you to go to work every day?

Knowing that the work that I am doing has a potentially of creating employment or saving jobs or aid in maximising the life span of a mine or production in some community or mining town.

### What is the most exciting project you have worked on?

I worked on a complex lithium project, which really demonstrated the significance of carrying out mineralogy beforehand.

### What advice would you give your younger self, when you were just starting out in the industry?

You don't have to be your absolute best every day and that it is okay to not know everything. In fact, it's impossible to be your absolute best all day and every day and it is a recipe of anxiety and unnecessary stress. But if you keep working smart, by pacing yourself and sharpening your skills and continuing to learn and expanding your knowledge, chances are this combination of traits will get you very far in life.

### What route did you take to become a mineralogist?

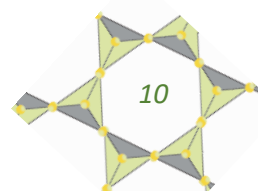
I studied geology and when I was in second year, I knew that exploration geology was not for me, I immediately switched. I started researching on companies that were into minerals and metallurgy, Mintek was the first company I came across. When I was in my third year, I applied at Mintek to do my Vacation work and that was the beginning of my passion for mineralogy...

*"Interviewed" by Jeanette Dykstra*

### Think all the good stuff has already been found? Think again.

In August, [it was announced](#) that the world's second largest diamond has been found, in Botswana. At 2,492 carats (almost 500 g), it is second only to the Cullinan (3,106 carats).

It was identified using X-ray scanning, before it would otherwise have been broken into bits during rock crushing.



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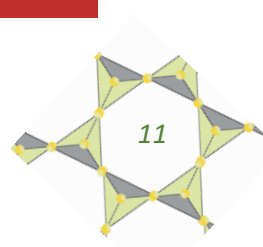
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# ATTENTION



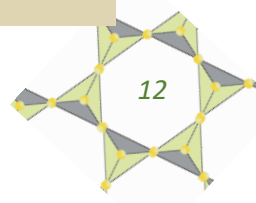
## POSTGRADS, PROFESSIONALS, ACADEMICS AND FRIENDS OF THE EARTH SCIENCE

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## Reminiscences of a silver pick mineral collector: a southern African perspective

Peter Rosewarne

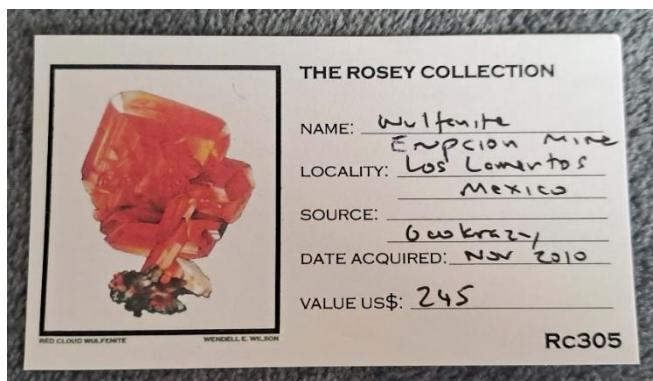
[prosewarne40@gmail.com](mailto:prosewarne40@gmail.com)

### Introduction

This article is based on a presentation I submitted for the 5<sup>TH</sup> Southern African Mineral Symposium organized by Minsa on 7 September 2024 at Wits University. I was unable to present the paper in person, being in Chile presenting at an international water conference. I therefore did a voice-over on the Power Point presentation which worked in advance, but apparently didn't on the day. Minsa then kindly offered me the opportunity to write up the presentation as an article; hopefully the text won't disappear this time!

Seeing as this is supposed to be about reminiscences, here is a brief background to my mineral interest and collecting hobby:

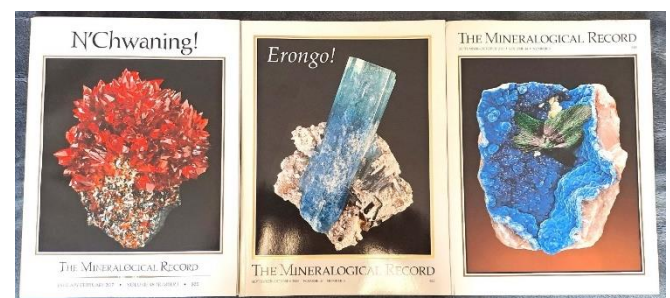
- Geology "O" and "A" levels at school in the UK in 1960s;
- Graduate with BSc (Hons) in Geology, London University 1974;
- Emigrate to South Africa in 1975 to join the then Geological Survey (the only job offer I received);
- Geological mapping in the Karoo, then change to the groundwater field in 1976;
- Start buying mineral specimens on the Internet in 2007 (SAR/US\$ 7:1!), subscribe to The Mineralogical Record, join Cape Town Gem and Mineral Club (the Club); and
- The Rosey Collection is born!



As I'm sure you all know, "silver pick" refers to a collector who buys specimens rather than self-collects

them. I started out initially with a "shotgun" approach to buying and ended up with some puzzling choices, such as cylindrite, gerdorfsite, babingtonite and jarosite. My favourites are garnet, tourmaline, wulfenite, smithsonite, fluorite, diopside and pyromorphite, and my collection had >1000 pieces at one stage. I then had a 'brain-fade' in 2016 and sold off about 50 top pieces to Crystal Classics, and I still have seller's remorse for many of those pieces. My collecting is now back under control and I'm taking it one specimen at a time in rehab ☺.

As you all know, southern Africa, and specifically South Africa and Namibia, is host to some of the world's iconic and most important mineral deposits. The Kalahari Manganese Field (KMF) is host to the largest land-based deposits of *manganese*; the Bushveld Igneous Complex is host to the world's largest deposits of *platinum* group minerals, duplicated on a smaller scale by the Great Dyke of Zimbabwe; the Witwatersrand goldfields are (or were) host to the world's largest deposits of *gold* and the Tsumeb Mine in Namibia is the most prolific mineral site in the world in terms of total species and type species (see **Tsumeb Mine** below). However, of these localities, only the KMF and Tsumeb have produced collector-quality specimens in any number. The Mineralogical Record has devoted whole issues to e.g. Tsumeb (1977) and The N'Chwaning Mines (2017), while Kaokoveld (2013, what a cover photograph! See below), Okorusu (2018), Erongo (2006) and Messina Quartz (2016) get articles and no doubt I've missed some others. The images below are courtesy of The Mineralogical Record.



We'll start with South Africa then Namibia and then, very briefly, Malawi and Zimbabwe. Some scenic locality shots are interspersed with those of minerals. Some of the specimens shown are no longer in the Rosey Collection.

## South Africa

### Kalahari Manganese Field

I used to have an extensive collection of KMF minerals such as *ettringite*, *sturmanite*, *inesite*, *hematite*, *olmiite*, *manganovesuvianite*, *hausmanite*, *bixbyite* and *andradite* but, sadly, they have all gone. Not only gone but I don't have any photographic records apart from the three featured below. This first is a killer cabinet-size piece with hematite crystals coated with a dusting of fine red andradite crystals. Talk about seller's remorse! This and the one below it might be from the big finds of 1988.



*Andradite on hematite, Wessels Mine, 12 x 7 x 4 cm.*



*Mirror-faced hematite crystals on hematite.*



*Rhodocrosite crystal points.*



*A large, cabinet-sized, heavy specimen of inesite, a hydrous calcium manganese silicate, that I bought at a Club open day, but it didn't last long in my collection because it was too big for my straightened circumstances space-wise since downsizing our accommodation, and Graham was kind enough to take it off my hands.*

### Beaufort West

I started my work career in South Africa as a geologist doing regional mapping in the Merveville/Beaufort West area in 1975. Just my luck to be posted to one of the two 'dry' towns in South Africa! I don't know the exact location where the prehnite shown below comes from apart from "Beaufort West" but like to think it may come from the quarry by the side of the N14 where it branches off from the N1 just outside of the Three Sisters Shell garage. I tried to get into this quarry years ago and after throwing my geological hammer over the locked gate proceeded to get stuck on top of the gate. I was hoping to find some prehnite in the exposed faces of this dolerite road metal quarry but only managed to get cuts and scrapes on my hands,



some tears in my clothes and to lose a geological hammer. Luckily I still had my silver pick!



*Botryoidal Prehnite 10 x 10 x 5 cm.*

**Riemvasmaak**

A large find of the fluorites shown below was made in diggings at this small settlement on the Orange River in 2006. I remember visiting The House of Gems in Windhoek in 2008 and seeing a stunning batch of these fluorites drying after being treated with hydrofluoric acid but unfortunately not yet ready for sale.



*Riemvasmaak fluorite on quartz.*

**Namibia**

**Tsumeb Mine**

It is worth pausing here to repeat some statistics from the Tsumeb II book:

- There are 242 known species plus 38 still unknown;
- Of the 52 minerals discovered, 40 are known only from this site;

- 65 species show the best crystals known from any deposit; and
- 105 minerals qualify for the World's "best of" for the species.

Quite a CV? One of the iconic minerals from this mine is the copper silicate, diopside. There are a few dings on the example below, that's why I could afford it, but it's still a very nice piece.



*Diopside, 15 x 8 x 5.5 cm.*



*Cuprian smithsonite crystals on calcite, 5 x 6.5 cm.*



Above, a very poor photograph of some very fine smithsonites, pink cobaltian, green cuprian and yellow cadmium, also long gone (2016).



The world's best mimetite crystals were found at Tsumeb in 1971. A more modest example is shown below, with a *vug* of acicular yellow-orange crystals.



I wish the *azurite* specimen shown below was actual size, but I have to confess that it's only a miniature 😊.



I visited this mine on the way to Skorpion Mine, long after the famous 1989 finds of yellow and orange *barite* ( $\text{BaSO}_4$ ). Two different crystal habits are shown in Figures A and B below, thick bladed and a sort of 'saccharine', respectively. The specimen in B was bought at a Club open day.



A. Barite, 11 x 8 x 5 cm.



B. Barite, 11.5 x 4.5 x 4 cm.

### Skorpion Mine



The Skorpion zinc deposit, located about 15 km north of Rosh Pinah, had been discovered in the early 1990s but couldn't be exploited because a method of extracting the zinc from the complex, *sauconite*, *tarbutite* (a hydrated zinc phosphate), *skorpionite*, *fluorapatite*, *hydrozincite*, *hemimorphite* and

smithsonite ore had not been developed. This was rectified by Anglo American Corporation and the first zinc was produced in 2003. The ore was so rich that the capital costs of developing the mine were apparently paid off within a few years. The early pit is shown above.

### Skorpion Mine Open Pit: Early Days

I did groundwater consulting work for the mine between 2007 and 2012 and found that, despite the aridity on surface, the pit straddled the Valley Fault Zone, a regional zone of faulting and deep regional groundwater circulation (there is basically zero local recharge). I vividly remember walking over fresh exposures of tarbuttite after a recent blast on my first site visit. It was hard to concentrate on what I was supposed to be doing rather than dropping to my knees and prizing off pieces of tarbuttite. The image below shows what I mean.



*Tarbuttite, in-situ* (© Bode, 2014).

This is one of the few instances when I have done some self-collecting. I remember my car being searched at the border on the Namibian side and some environmental inspector berating me about stealing Namibia's heritage when he found some tarbuttite specimens in my boot. It was only when I showed him my project file and mine correspondence that he relented and let me through. Some Skorpion specimens are shown here.



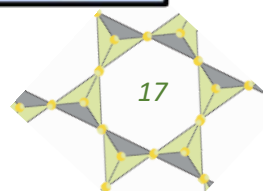
*Massive tarbuttite.*



*Smithsonite, 7 x 7 x 5 cm.*

### Okorusu Mine

Two examples of fairly typical green fluorites ( $\text{CaF}_2$ ) from this locality are shown below, the upper one with modified cubes with dark phantoms.





Fluorite from the Okoruso Mine.



Rare yellow fluorite cubes with purple corners.

**Onganja Mine**

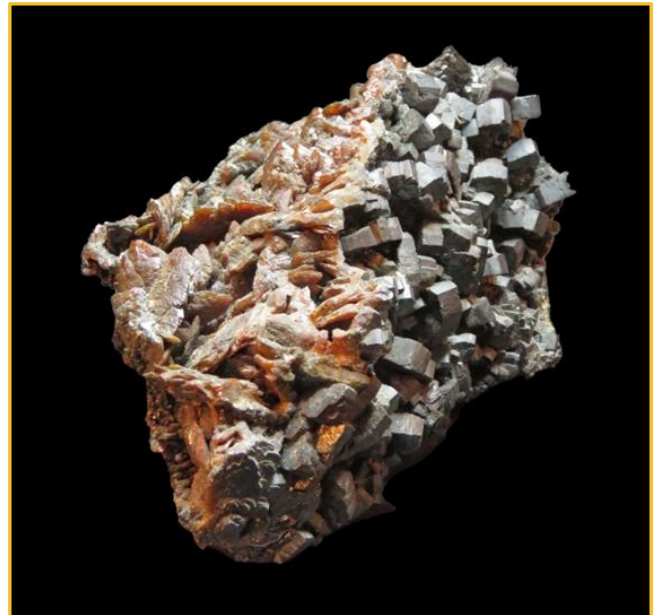
Malachite-coated modified octahedra of gemmy cuprite (CuO) were found in one pocket at this mine in 1973. Some 2000 specimens were recovered ranging from the miniatures below to crystals up to 14 cm. This level of the mine is now flooded and long closed.

Malachite, coating cuboctahedral cuprite (miniatures)



**Berg Aukus Mine**

This mine is famous for the large number of 'best of descloizite (lead-zinc vanadinite) specimens. The image below is of a fairly unique cabinet-size specimen showing two generations/forms of descloizite crystals; one side has light brown arrowhead crystals and the other dark grey cogwheel crystals. I don't have any photographs of the nice smithsonites I had from this mine.



Descloizite.

**Erongo Mountains**

The two specimens shown below show the quality of specimen that you can find at Club open days.



The main schorl crystal above is 13 cm tall and 8 cm across. These are found in miarolitic cavities in the host

*granite*. I'll stick my neck out and say that this specimen is up there with the best of them.



Yellow muscovite, colour-zoned green fluorite and black schorl fronted by a perfect hexagonal schorl crystal. The piece is 12 cm tall and is a beauty.



Colourless *beryl* is called *goshenite* and a nice example is shown here. (7 x 5 x 3.5 cm).

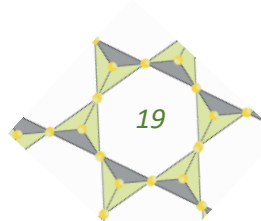
### **Karibib**

The Karibib-Usakos area is known for its gem and specimen-grade *tourmalines* (complex *boro-silicates*), which occur in *tin-lithium-beryllium pegmatites*. Green,

blue and red varieties occur and so-called watermelon *tourmalines*.



The nice combo above is 5 cm tall. The *indicolite* crystal below nearly made it into the Rosey Collection and was gem quality but wasn't terminated and was a tad too expensive.



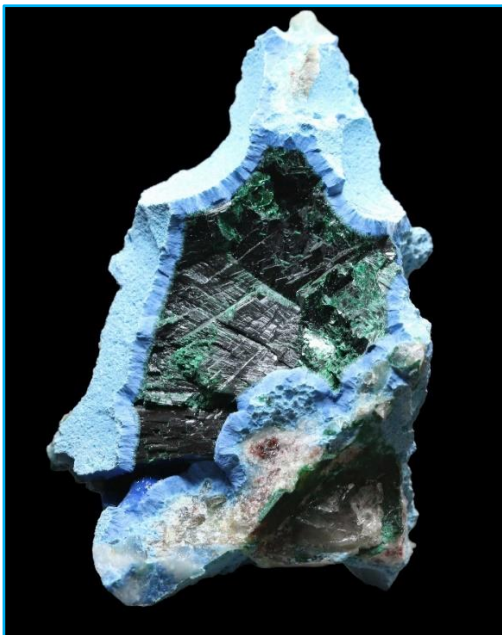
### Gross Brukkaros

This unlikely mineral occurrence is an ancient volcano in the Keetmanshoop District of southern Namibia. *Barite* crystals occur in veins and the intergrown crystals below are gemmy, orthorhombic prisms with pyramids, very similar to *topaz* in habit, and 4 cm tall.



### Kaokoveld

Attractive combinations of blue shattukite crusts enclosing dark green primary malachite come from the Kaokoveld area and a typical example is below.



*Malachite in shattukite.*

### Mount Malosa

The granite pegmatites of the Mount Malosa area are best known for collector-quality crystals of the sodic *pyroxene*, *aegirine*. By way of a change, the image below shows a specimen of blocky black, striated prismatic crystals of the equivalent but rarer sodic *amphibole*, *arfvedsonite*, on a bed of alkali *feldspar* crystals.



Arfvedsonite on feldspar, 9.5 x 6 x 5 cm.

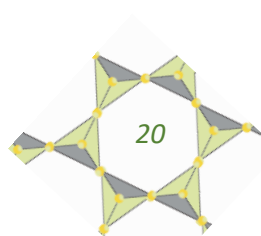
### Zimbabwe

#### Novello Claims

Beautiful *chrysoberyl* ( $\text{BeAl}_2\text{O}_4$ ) crystals come from the Novello Claims near Masvingo, in *serpentinised peridotite*. A good example is shown here.



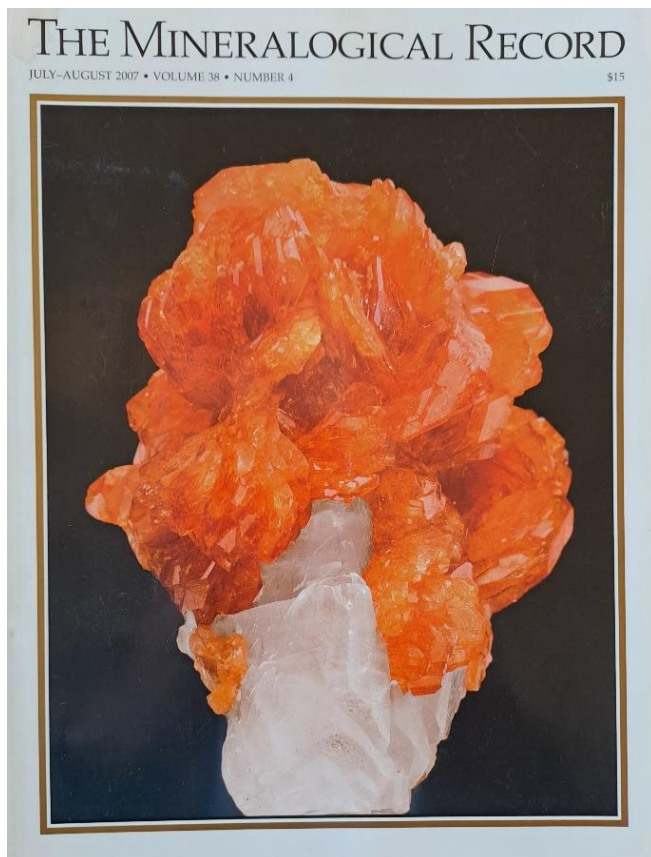
*Chrysoberyl, Novello Claims, Zimbabwe. 6 x 6 x 2 cm.*



### Concluding Remarks

Well, that's 17 years, lots of specimens and a shedload of money in 16 pages - and lots of seller's remorse along the way! If I still had all of the southern African specimens mentioned herein, plus the aquamarines, garnets, 'alien' fluorite, *cerussite*, *wulfenite*, azurite, diopside since sold it would be one hell of a collection but there you go. However, two of the main gaps would still be, *inter alia*, killer N'Chwaning rhodochrosite and Tsumeb azurite specimens but they were always way out of my league price-wise. Meanwhile, it's back to drooling through the Desmond Sacco Collection book, again...

And, as a fitting postscript, Rob Smith recently gave me some duplicate Mineralogical Record issues that he had from before when I started subscribing and Lo! Volume 38 No. 4 of July-August 2007 had *tinzenite* ( $\text{Ca}_2\text{Mn}^{2+}_4\text{Al}_4[\text{B}_2\text{Si}_8\text{O}_{30}](\text{OH})_2$ ) from the Wessels Mine, KMF, on the front cover.



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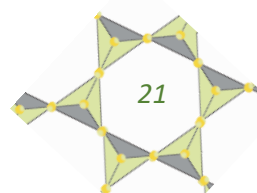
The Mineralogical Association of South Africa (Minsa) is collating **geological, mineralogical and geomorphological words** from South Africa's various national languages. It is hoped that this repository of terms will serve as a valuable resource as we continue to endeavour to make our field available to a broader and more inclusive array of South Africans.

Should you be familiar with the non-English version of geological words, please could we ask your assistance in completing the short survey (as many times as necessary) so that we can compile this knowledge. The link to the form is found here: [Link to Form](#)

Additionally, should any student be interested in championing the compilation in a specific home language, please send a short cover brief (1/2 page) to Dr Bjorn von der Heyden (bvon@sun.ac.za), clearly indicating your interest and the language in which you are proficient and would like to champion. **Service will be paid at student rates on an hourly basis.**

*Many thanks,*

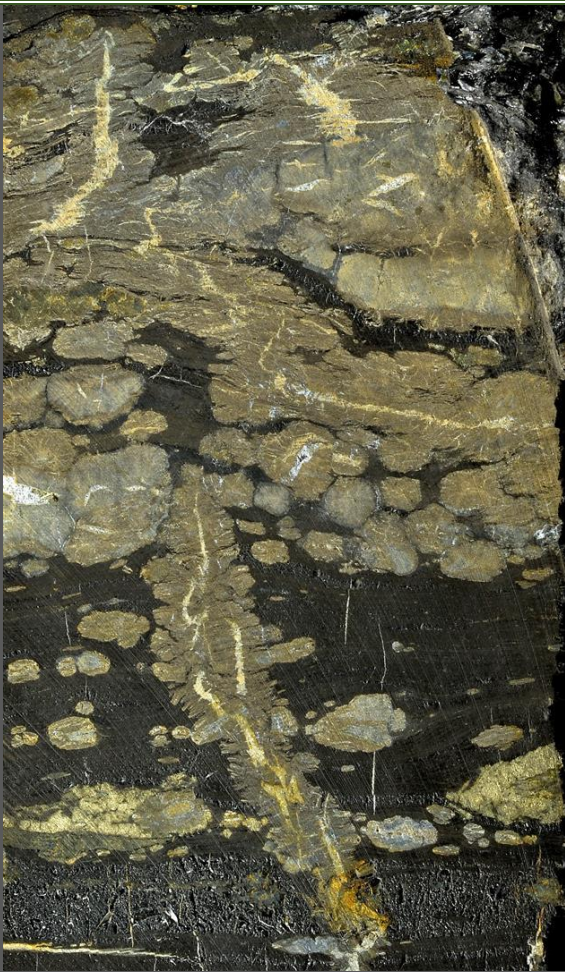
*The Mineralogical Association of South Africa*



## Other Gems

### Bruce's Beauties: Coal (!)

The Editor-in-Chief informed me that the theme of this year's issues is loosely based on energy, so I decided to think a bit laterally and beyond large well-crystallized mineral specimens, and feature coal. For most mineral aficionados, coal is about as far removed from collectable material as collecting bricks. However, some of the secondary, diagenetic minerals such as pyrite, siderite, and calcite occasionally form interesting textures and fabrics within coal seams and these are featured here. All examples come from the Springbok Flats coalfield and are illustrated in [Dr Valerie Nxumalo's PhD thesis \(click here\)](#). All figures are of flat surfaces of sawn borehole core, and the field of view in each is approximately 4 cm across the horizontal.



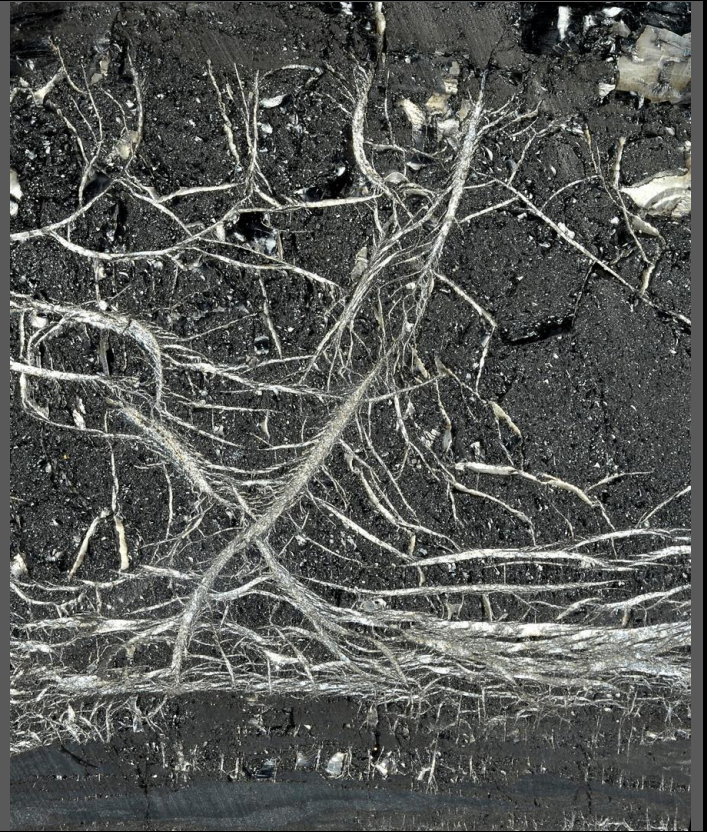
Multiple veins and nodules of pyrite dispersed in amongst coals. Different generations of pyrite are present, some bright yellow and other dull. Bruce Cairncross photo ©.



A complex series of pyrite (bright yellow) and mixture of pyrite/siderite. The vertical vein clearly cross-cuts the earlier formed sulphides and iron carbonate. Bruce Cairncross photo ©.



Highly crenulated pyrite cross-cutting alternating layers of dull and bright coal, the coal having semi-parallel layers and flattened concretions of mixed, dull pyrite/siderite. Bruce Cairncross photo ©.



Calcite cleats form a network of complex veinlets scattered within the coal. There are clearly at least two generations of calcite, with earlier formed material cross-cut by later calcite. Bruce Cairncross photo ©.

Minsa invites its members (and their friends) to contribute submissions for our next issue of the Geode, for December 2024.

**The final issue of 2024 has been designated our 10<sup>th</sup> Anniversary Issue, for what it's worth.**

Submissions can be sent to [minsa@gssa.org.za](mailto:minsa@gssa.org.za) or to [s.prevec@ru.ac.za](mailto:s.prevec@ru.ac.za) and should reach us by November 30<sup>th</sup> 2024

For more info: [minsa@gssa.org.za](mailto:minsa@gssa.org.za)

INVITATION FOR  
SUBMISSIONS TO THE  
NEXT ISSUE OF  
THE GEODE



### Minsa Crossword for September 2024

The theme for this crossword is phosphates, and the mining thereof, in keeping with the 2024 Minsa theme of 'minerals and energy'. Also I recently had a tooth removed. Phosphates are also important host minerals for REE.

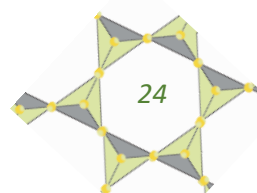
									1		
			1								
	2										
	2		3								
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			3								
4											
			5								

**DOWN:**

1. An unusual one; an ammonium magnesium phosphate, it crystallises in diseased (hence ammonia-producing) urine, appearing as a variety of kidney stones known as triple-phosphates, particularly common in dogs.
2. Hydrated aluminium phosphate, often confused with 3-across, it's colour derives from incorporated Cr<sup>3+</sup>. It is a near-surface precipitate from phosphatic water, and is mined as a gemstone.
3. A hydrated calcium uranyl phosphate, it contains almost 50% U, and has been mined as a U ore. It is found as an oxidation product of U-minerals in granitic pegmatites and hydrothermal ores.
4. An yttrium phosphate, also enriched in other HREE as well as Th and U, it is the one mineral appropriate for radiometric age dating of sedimentary rocks, where it forms during diagenesis, often as coatings on detrital zircon. Also found in pegmatites, but less interestingly.

**ACROSS:**

1. The common LREE (especially Ce) and Th phosphate, it is found in granitic igneous rocks, and is useful as a geochronometer. It has been mined for LREE most prominently in South Africa from Steenkampskraal, in the W Cape, which was the highest grade REE ore in the world, at over 14% REE.
2. Your garden variety phosphate; found in igneous and metamorphic rocks, it is the defining mineral for 5 on the Mohs hardness scale.
3. The hydrous copper-aluminium phosphate prized as a gemstone since antiquity, it arrived in Europe via Türkiye, from whence its name was derived.
4. Hydrated iron phosphate, often found where biomineralised phosphates (bones, including corpses) or fossil shells have reacted with iron in groundwater. So you can, conceivably, get more desriable after death, in the right setting.
5. The main resistant constituent of teeth. It is not, technically, a mineral, but a composite of the hydroxyl-bearing variant of 2-across, plus organic and hydrous components.



**Minsa Crossword solutions for June 2024**

The theme for this crossword was minerals containing lithium, and the mining thereof.

1 S								2 T			
1 A	T	A	C	A	M	3 A		2 R	O	4 S	E
L						M		I		P	
T		5 B				B		P		O	
		R				L		H		D	
	3 P	I	N	K		Y		Y		U	
		N				G		L		M	
	4 L	E	P	I	D	O	L	I	T	E	
						N		T		N	
				5 C	H	I	L	E		E	
						T					
		6 B	A	T	T	E	R	I	E	S	

**DOWN:**

- The ionic compound forming in evaporitic flats which comprise most of the world’s economic deposits of Li, as found in Australia and 5 Across, in particular.
- A Li-Fe phosphate mineral with an olivine structure, it is found as crystalline masses in phosphatic pegmatites. It is reported from deposits in southern Namibia and Madagascar (but surprisingly not from Phalaborwa, it seems).
- A Li-fluorophosphate mineral found in granitic pegmatites and resembles alkali feldspar, containing up to 10 wt.% Li, making it a prospective ore mineral. It is mined from deposits in California (U.S.A.) and from south central France in particular.
- The primary ore mineral of Li, this pyroxene is mined from Li-Ce-Ta (LCT) pegmatites, mainly from Western Australia. The largest known reserve of such deposits is from the southeastern DRC, at the Manono-Kitolo Mine, formerly extracting Sn-Co-Ta (coltan) from 1915-1980s, and Li since 2018.
- The name for concentrated (up to 26 wt.% salinity) aqueous solutions, such as those into which Li and alkali metals may be dissolved and economically extracted, hosted in closed basins.

**ACROSS:**

- The name of the South American desert which hosts the world’s largest reserves of Li, in the form of giant evaporite deposits.
- The colour and/or variety of quartz often found associated with Li-rich pegmatites, although the colour in this case is evidently the result of Ti, Fe or Mn impurities (or possible dumortierite fibres).
- The colour most commonly associated with Li-rich minerals, although by no means universally so.
- The main Li-bearing phyllosilicate mineral, found in granitic pegmatites associated with 4 Down, it is also the primary source for rubidium.
- The nation which produces more than a quarter of the world’s current Li production, 80-90% of which resides in the deposits from 1 Across. (Most of the rest of current production comes from Australia and China).
- Arguably the main current industrial application of Li as a Critical Element, its invention and commercialisation for this purpose (beloved of many current South Africans in particular) resulted in a Nobel Prize in Chemistry in 2019.

Cover images: Upper right: nodular ‘anorthosite’ (leucogabbro), East Bull Lake intrusion, Canada. Lower left background: spinel rods exsolved from plagioclase feldspar in coronitic gabbros, Labrador, Canada. All images c/o S. Prevec.

Contributions for the next issue of the Minsa Geode invited for submission before 30 November, 2024.

