

# THE VICTORIAN GEOLOGIST

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October 2015

THE GEOLOGICAL SOCIETY OF AUSTRALIA

Victoria Division

General Meeting

**Thursday 29th October at 6:15 p.m.**

## **Geochemical 'fingerprinting' of silcrete sources**

**Rebekah Kurpiel**

**PhD candidate, La Trobe University**

**Fritz Loewe Theatre, School of Earth Sciences, University of Melbourne**

Talk will be preceded by drinks from 5:30 pm in the 4th floor tearoom, cost \$2.

Silcrete is one of the most commonly used raw materials for stone tool production. Its ubiquity in the archaeological records of both Australia and South Africa has sparked considerable interest in developing techniques that can be used to trace its geographic origin. However, the highly variable physical and chemical properties of silcrete means that artefacts made from this raw material have proved difficult to provenance. This talk will report on the results of a recent geochemical study of silcrete sources in the Lake Mungo region, which has successfully distinguished between silcrete sources on the basis of their geochemical composition. It will also discuss some possible future directions for silcrete sourcing, with a particular focus on how we might address the need for archaeologists to apply methods that are non-destructive.

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**THE 2015 SELWYN MEDALLIST**

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**Ian Cartwright**

The 2015 **Selwyn Medal** has been awarded to **Ian Cartwright** for his significant contributions to the Victorian geological community and to the understanding of groundwater flow and behaviour in Australian settings. Ian will be accepting the award at the October meeting as he was unfortunately unable to attend last month's Selwyn lecture.



*Professor Ian Cartwright,  
School of Earth,  
Atmosphere and  
Environment*

Following the completion of his Ph.D. at Aberystwyth University, UK, in 1986, Ian joined the School of Geosciences, Monash University, in 1990 to study high temperature fluid systems in metamorphic rocks, later shifting his focus to low temperature groundwaters.

When rigorous hydrochemical research was largely in its infancy, Ian responded to a series of pure and applied research challenges in natural groundwater systems by applying combinations of major and trace element geochemistry and stable and radiogenic isotope geochemistry. His research has provided insight into a wide range of hydrogeological processes including regional aquifer flow, groundwater sustainability, groundwater residence times, inter-aquifer mixing and groundwater-surface water interaction. In particular, his research has contributed to the hydrogeochemical understanding of the Murray, Otway and Gippsland Basins.

Ian's research has important implications for understanding major environmental issues, notably the causes and timescales of dryland salinity development, the development of acid soils, and has provided a basis for better assessing the impact of groundwater contamination.

Ian is internationally recognised for his contribution in the hydrological community. He is currently President of the International Association of Geochemistry (IAGC), an editor for Applied Geochemistry, and was recently an editor for Hydrogeology Journal (2007-2010). In this respect he is a highly respected scientist and is often requested to provide advice and feedback by Victorian Catchment Management Authorities. For instance, his research supported by Mallee Water on the stability of fresh groundwater lenses adjacent to the River Murray has helped assess the threats to these lenses posed by land clearing, irrigation, and climate change. His recent research on groundwater-surface water interactions has improved our understanding of the water balance in catchments and provided protection of groundwater-dependant ecosystems by Melbourne Water and Goulburn Murray Water.

**Congratulations Ian!!!**

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**STUDENT SPONSORSHIP**

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**Kieran Iles**

School of Earth Sciences  
The University of Melbourne

Last month I attended the 8th Hutton Symposium on Granites and Related Rocks, with the assistance of a GSAV Student Research Scholarship. The Hutton Symposium is the most important and traditional international meeting on granite magmatism, and, only being run every four years, was a rare opportunity to present my research at a conference specifically related my research area.

The 8th Hutton was held in Brazil, with the symposium held in Florianopolis, on the island of Santa Caterina, and pre-, mid- and post-conference field trips held across various parts of the country. I attended a pre-conference trip (14-18th September), examining tonalite-trondhjemite-granodiorite (TTG) gneisses, migmatites, potassic granites, banded iron formations and greenstone belts (of mostly Archaean to Proterozoic age) around the state of Minas Gerais.



*Granite outcrop along the coast of Santa Caterina, Brazil.*



*TTG banded gneiss at a quarry near Ouro Preto, Minas Gerais.*

The symposium (20-25th September) featured keynote lectures in the mornings, a Young Researchers' Forum, poster sessions in the afternoons, and included a one day mid-conference field trip to visit granites around the island. I presented some of the findings of my ongoing Ph.D. work in the Young Researchers' Forum and in a poster, entitled "Isotopic disequilibrium in granites: implications for the melting process and petrogenetic models". It was an very enjoyable and informative meeting, which I am grateful to have been able to attend with the assistance of the Geological Society of Australia, Victoria Division.

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## STUDENT CONFERENCE

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## THE 28<sup>TH</sup> ANNUAL VICTORIAN UNIVERSITIES EARTH AND ENVIRONMENTAL SCIENCES CONFERENCE

Wednesday 4th November 2015  
University of Melbourne  
School of Earth Sciences

The abstract submission deadline is past, but **Registration is open until 5pm, Friday 23rd October**, and attendance is **FREE**.

Location: McCoy Building, corner of Swanston and Elgin Sts, Carlton.

Please visit the webstie [earthsci.unimelb.edu.au/vueesc](http://earthsci.unimelb.edu.au/vueesc) for more information.

Note: The D.E. Thomas Medal and the Frank Canavan Award will be announced at the end of the conference.

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## REVIEW OF THE SEPTEMBER MEETING

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Last month we heard Robbie Rowe from UNCOVER give an informative and timely talk on this unfunded initiative to improve exploration performance under post mineralization cover. He articulated the issues leading to the decline in discoveries of Tier 1 greenfield mineral deposits over the past 20 years. He then expanded on a roadmap to improve minerals exploration by using an integrated strategy for research and data collection/compilation into the future.

The increasing divergence between growing total exploration expenditure and falling discovery rate since 1980 is keeping many exploration managers up at night. Robbie advocates that the broad Australian exploration community should work towards a common goal to apply a highly focused mineral systems approach to extend understanding of mineral system signatures into camps and provinces to begin to close this gap.

The four broad themes that came out of UNCOVER were: Characterising the cover, Investigating Australia's lithospheric architecture, Resolving the 4D geodynamic and metallogenic evolution of Australia, and Characterising and detecting the distal footprints of ore deposits. The AMIRA Roadmap for Exploration Under Cover expanded these to include Risk/Reward for Covered Economic Resources, and Research, Education and Training. The challenge now is how to turn these vision and ideas into tangible results. If you would like to know more about UNCOVER and the AMIRA Roadmap for Exploration Under Cover please, refer to both the presentation and video that will be posted on the GSAV website.

*Michelle Grosser and Adele Seymon*



## AUSTRALIAN EARTH SCIENCES CONVENTION NEWS



Uncover Earth's Past to  
Discover Our Future

26 - 30 June 2016 – Adelaide Convention Centre

[aesc2016.gsa.org.au](http://aesc2016.gsa.org.au)

### Call for AESC theme and session suggestions

An exciting series of themes, symposia, fieldtrips and workshops is being put together by the AESC 2016 Organising Committee.



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A preliminary taste of what is to come and who to contact if you want to make suggestions is outlined below.

- Earth's Environment** — Past to Present
- Tectonics of the Earth and Other Planets** — Craton and Continental Formation and Evolution, Ocean Plate Tectonics, Plate Margin and Plate Interior Tectonism
- Deep Earth Geodynamics** — Core, Asthenosphere and Lithosphere Dynamics, Coupling the Dynamic Deep Earth with Surface Tectonics
- Mineral Endowment** — Formation and Exploration of Mineral Deposits, their Tectonic and Geochemical Environment and Significance
- Geoscience for Society** — Geotourism, Education, Integration and Translation of Earth Sciences for Societal Benefit, Open the Gate, Geoscience and Community Engagement
- The Earth Science of Energy** — From Hydrocarbons to Hot Rocks

### Committee

#### GENERAL ENQUIRIES:

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#### POSTER ENQUIRIES:

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**PHOTO:** Pleistocene sediments of the Hindmarsh Clay (red) and unconformably overlying Bridgewater Formation (white) in cliff exposures at Balgowan, Yorke Peninsula, South Australia. Photo courtesy of Caroline Forbes

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**STUDENT FUNDING OPPORTUNITIES**

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## **Geological Society of Australia (Victoria Division) Student Research Scholarships**

The scholarship is valued at up to \$500 for travel within Australia and \$700 for travel outside of Australia. The number of and value of the scholarships awarded each year is made at the discretion of the GSA(Vic) committee.

Funding will not be granted retrospectively and applicants are asked to submit forms no later than 6 weeks prior to their trip to give the committee time to consider the application.



### **Eligibility**

Applicants must be members of the GSA and enrolled in a full-time degree at a Victorian Tertiary institution and undertaking research in Geology. The scholarship will be awarded to assist with conference travel for honours and postgraduate students, who are presenting (either poster or talk) at the conference.

Honours and postgraduate students that receive this scholarship will be required to submit a report for publication in 'The Victorian Geologist' newsletter following to their trip. A presentation may also be requested by the committee, which will consist of a short 10-15 minute presentation prior to the monthly seminar.

Students who have previously received a GSAV research scholarship are not eligible. Scholarships and bursaries from other sources are acceptable.

Applications forms can be scanned and emailed to: [secretary@vic.gsa.org.au](mailto:secretary@vic.gsa.org.au)

or mailed to:

Geology Research Scholarships Victoria  
Geological Society of Australia (Victoria Division)  
GPO Box 2355  
Melbourne VIC 3001

More information can be found by contacting Barbara Wagstaff ([wagstaff@unimelb.edu.au](mailto:wagstaff@unimelb.edu.au))

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### **Something interesting to share? Want to see your name in print?**

Don't be bashful, contribute to the GSA(V) monthly newsletter!

If there are any events, happenings, news, or views that would be of interest to the membership, please send your details and information to Kieran Iles at [kiles@student.unimelb.edu.au](mailto:kiles@student.unimelb.edu.au)

**We'd be glad to hear from you**

## FORTHCOMING SEMINARS AND EVENTS

to be presented at  
GSA (Victoria Division) meetings

Note: unless otherwise indicated, all 2015 talks will be held in the Fritz Loewe Theatre, Earth Sciences Building, University of Melbourne.

October 29th:

**Monthly Meeting:** Rebekah Kurpiel

Using geochemistry to trace silcrete sources for stone tool manufacture in the Lake Mungo region

November 4th:

**Victorian Universities Earth and Environmental Sciences Conference**

Student conference (see [www.earthsci.unimelb.edu.au/vueesc](http://www.earthsci.unimelb.edu.au/vueesc))

November 26th:

**Monthly Meeting:** Helen Green

Dating Aboriginal Rock Art

Please welcome our newest members



Visit the GSAV on [www.gsavic.org](http://www.gsavic.org) or the GSA on [www.gsa.org.au](http://www.gsa.org.au)  
• Renewing your GSA membership is easy - it can now be done online. •

### CONSIDER CONTRIBUTING TO TAG!

It is member contributions which make TAG a member magazine – please keep the contributions coming and assist with informing all of the membership (not just your Division) about your activities.

Please send your news to: [tag@gsa.org.au](mailto:tag@gsa.org.au)



## GSA (VICTORIA DIVISION) COMMITTEE

Please address all correspondence to the GSA Victoria Division  
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## OTHER CONTACTS

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## Newsletter deadline:

First Friday of the month except Dec & Jan  
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Print Post No. PP381827/0025  
Registered Publication No. VBH 2135

If undelivered return to:  
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PRINT POST APPROVED