



16TH BIENNIAL MEETING
SGA 2022

THIRD CIRCULAR



VIRTUAL EVENT • 28 – 31 March 2022 • www.sga2022.org
HOSTED BY ROTORUA, NEW ZEALAND

THE CRITICAL ROLE OF MINERALS IN THE CARBON-NEUTRAL FUTURE

Invitation

Welcome to the 16th Biennial Meeting of the Society for Geology Applied to Mineral Deposits (SGA) which will take place 28-31 March 2022 in a virtual conference format. The meeting will feature presentations related to the theme ***The critical role of minerals in the carbon-neutral future*** and other topics on mineral deposit research, exploration, sustainable development, and environmental and social aspects related to mineral deposits.

The oral and poster presentation sessions, pre- and post-conference short courses and online social events will provide a comprehensive programme of interest to delegates from the minerals industry, universities, research organisations, consulting organisations, service providers and governments.

The conference is organised by SGA with support from professionals in universities, research organisations, minerals industry, government, and service providers.

Programme

The programme will include oral presentation sessions (pre-recorded, streamed and available on-demand), a virtual poster gallery (with video introductions), live discussion sessions and forums, virtual networking opportunities, and pre- and post-conference short courses.

Trade Exhibition

The Trade Exhibition provides a forum for companies and organisations to exhibit their products and services. The exhibition will be run in a virtual format and feature videos and downloads, as well as facilities for person to person discussions.

Students

Students are warmly invited to present their research results at the 16th SGA Biennial Meeting which offers a great opportunity to interact with leading scientists, other young researchers and industry in an informal environment. Incentives include discounts, prizes and opportunity for SGA student members to apply for grants to offset the costs of conference registration.

SPONSORS

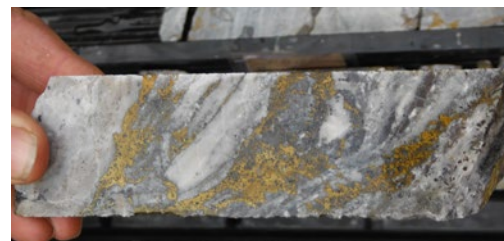
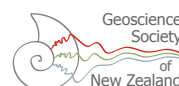
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Chalcopyrite in drill core, Lala IOCG deposit, SW China. Lithium and REE are typically the first elements we think of as critical to achieving a carbon neutral future, but more mundane elements such as Cu, Ni and Co also feature high on national lists of critical materials.

Virtual Conference Format

The 16th SGA Biennial Meeting will have a virtual format with the programme designed for maximum engagement for all international time zones.

Advantages of a virtual conference:

- ✓ Low registration fees.
- ✓ No travel costs or travel time commitment.
- ✓ Pre-recorded presentations available for viewing on-demand before and after the scheduled session time in the conference programme.
- ✓ All presentations can be viewed without missing any due to concurrent session time clashes.
- ✓ Quick, informal, group networking sessions to meet other delegates.
- ✓ The ability to connect directly with other delegates via text, audio, or video call.
- ✓ Presentations and posters accessible on the virtual conference platform for one month after the meeting.

KEY DATES

9 November 2021
Online registration open

1 February 2022
Deadline for early bird registration

28 March 2022
16th SGA Biennial Meeting



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TECHNICAL PROGRAMME

The technical programme will have plenary sessions, several concurrent streaming sessions, discussion sessions, and a separate virtual poster gallery. The main theme for the conference is ***The Critical Role of Minerals in the Carbon Neutral Future*** and several sessions are devoted to this theme. Additionally, there are sessions on a wide range of other topics related to mineral deposit research, exploration, sustainable development and environmental and social aspects related to mineral deposits. The table below lists the topic themes and component sessions that encapsulate more than 400 abstract and paper submissions received for presentation.

Broad theme	Sub-theme	Component sessions
Mineral resources for the carbon neutral future	Critical metals including rare earth elements (REE)	Pegmatite-related critical metal deposits
		Peralkaline and carbonatite magmatism and related critical metal mineralisation
		Critical metals and base-metal ore deposits: discovery to recovery
		Supergene REE enrichment and ore deposits
		Unconventional sources of critical metals
		Enrichment mechanisms and processes of critical metal deposits
Specific mineral systems	Hydrothermal mineral systems	Intermediate and low sulphidation epithermal deposits
		Hot spring deposits and epithermal environments
		Porphyry and high sulphidation epithermal deposits
		Iron oxide copper gold (IOCG) deposits
		Gold in metamorphic terranes — new research approaches, new models, and new target areas
		VMS Systems: modern and ancient
		Distal signatures and vectors toward mineralisation in carbonate rocks: porphyry, skarn, vein, and replacement deposits
		Sediment hosted and stratiform ore deposits
		Antimony and related elements mineralisation: magmatism, fluids and sediments
		Uranium mineral systems and exploration methods
	Magmatic mineral systems	Metallogenic processes within mafic-ultramafic magmatic systems
		Magmatic and hydrothermal deposits related to felsic rocks
	Placer deposits	Placer deposits
	Non-metallic and industrial minerals	Non-metallic and industrial minerals
Regional	New Zealand metallogenesis and mineral deposits	
	Metallogeny of Central Tethyan Belt	
Ore-forming processes	Ore-forming processes	
Geometallurgy	Complex orebodies - unlocking future resources through orebody knowledge and geometallurgy	
New research and exploration developments	Spatial data analysis for mineral exploration	
	Data-driven geoscience: machine learning and multivariate data analysis	
	Mineral vectors towards ore deposits: advances, applications and novel methods	
	Automated 3D geological modelling - new methods and applications	
	Geochemical anomaly classification and modelling in mineral exploration	
	Mineral exploration in weathered and covered terrains	
	Trace elements in minerals: where do we stand on the road between the holy grail and a can of worms?	
	Enabling a sustainable future	
Sustainable mining and environmental issues	Trajectories of sustainable development for mining territories	
	Innovation for enhancing sustainability in mining	
	Secondary prospectivity of mine waste: from metals to construction materials	
	Development geosciences and mineral resources for society	
Social performance and acceptance	The future of the minerals industry; essential for modern lifestyles and climate change mitigation or environmentally and socially problematic?	



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SHORT COURSES AND WORKSHOPS

PRE-CONFERENCE

Predictive geometallurgy

1-day presented twice (24 and 25 March) by Jens Gutzmer, Jose da Assuncao Godinho, Max Frenzel, Lucas Pereira, Raimon Tolosana Delgado (all of Helmholtz Institute Freiberg for Resource Technology), Richard Taylor (ZEISS) and Marek Dosbaba (TESCAN)

Geometallurgy aims to optimise the mineral value chain based on a spatially resolved, precise and quantitative understanding of the geology and mineralogy of the ores. Predictive geometallurgy goes beyond this current status by introducing forecasting models of the behaviour of ores through beneficiation and taking into account the mineral and operational economics.

Exploration geochemistry: applying the fundamentals (AAG)

1-day (27 March), presented by David Cohen (University of NSW) and Dennis Arne (Telemark Consultants)

The basic geochemical concepts of element distribution, geochemical processes and relationships at various scales will be introduced and combined with sampling theory and practices to provide a model-based geochemical exploration workshop. Sampling strategies, sample types, and key analytical methodologies will be discussed, leading into multi-element strategies for data interpretation and target selection.

Fundamentals of spectral reflectance for mineral exploration and mining

2-days (26-27 March), presented by Jonathan Cloutier and Lejun Zhang (CODES, UTas), and Jessica Stromberg and Carsten Laukamp (CSIRO)

Spectral reflectance can provide accurate mineralogical identification and mineral chemistry information that can be used to inform exploration and mining programs. This workshop covers the fundamentals and applications of reflectance spectroscopy from the visible (350 nm) to the thermal infrared (15,000 nm). It will focus on integration with other geological datasets (e.g. geology, geochemistry) to produce integrated parameters related to alteration and mineralising processes.

REGISTRATION

The registration fee includes access to all technical sessions, the virtual exhibition plus all virtual social and networking events. Registration for short courses and workshops requires additional payment of fees specific to the course (see www.sga2022.org for details). Registration fees are in NZ dollars and include GST where applicable.

Registration category	Early bird \$NZ	Standard \$NZ
Member*	350.00	490.00
Non-member	550.00	725.00
Student member*	135.00	155.00
Student non-member	160.00	180.00
Retired or non-working member*	145.00	175.00
Retired or non-working, non-member	175.00	195.00

* Member includes membership of SGA and our cosponsors: Association of Applied Geochemists, Australian Institute of Geoscientists, AusIMM, Geological Society of Australia, Geoscience Society of New Zealand, International Association on the Genesis of Ore Deposits, and Society of Economic Geologists.

POST CONFERENCE

Geology, genesis and exploration of epithermal ore deposits

1-day (1 April), presented by Stuart Simmons (Hot Solutions)

Epithermal deposits host substantial resources of gold and silver that are often blind to the surface and that are sometimes very high grade. This course covers their geological setting and ore-forming processes, and the exploration methods that enable their discovery. Emphasis is placed on interpreting hydrothermal alteration patterns to understand the depth-level of exposure and proximity to upflow zones in which epithermal deposits form.

An introduction to machine learning and multivariate data analysis

1-day (1 April), presented by Michael Gazley (RSCMME), Shawn Hood (GoldSpot) and Matt Cracknell (UTas)

This course provides geologists with the understanding to ask what kind of data analytics is best-suited to their problem, and to demystify this growing field by providing the tools for them to conduct their own simple data analytics. Key concepts discussed include: 1.) Mineral exploration and mineral deposits are often data-rich environments; and 2.) Data-driven geoscience can be an effective method of resource discovery and mineral deposit modelling.

Learn to Leapfrog - model your geochemical data

2-days (1-2 April), presented by Dale Sims (Dale Sims Consulting)

This course teaches the basics of applying Seequent's Leapfrog 3D modelling software to geochemical datasets to better understand elemental distributions, trends, relationships and geological controls for enhanced geoscientific understanding and exploration opportunity.

Porphyry and high sulphidation epithermal deposits – origins, settings, characteristics and exploration

2-days (1-2 April), presented by David Cooke (UTas) and Lejun Zhang (Utas)

This course provides participants with a detailed overview of mineralisation and alteration associated with porphyry Cu (\pm Au \pm Mo) and high sulphidation Cu-Au deposits. Case studies from around the Pacific Rim will be used to highlight the key geological elements of these magmatic-hydrothermal systems that inform genetic models and aid mineral exploration.



Epithermal laminated quartz vein, Golden Cross.