



29th International Applied Geochemistry Symposium IAGS2022

Facing the challenges of today using applied geochemistry

Sunday October 23rd – Friday October 28th, 2022

Viña del Mar, Chile

Third Circular

IAGS2022 is held in memory of Professor Dr. Peter Winterburn (1962 – 2019)

The **Local Organizing Committee (LOC)**, the **Association of Applied Geochemists (AAG)** and the **Sociedad Geológica de Chile (SGCh)** are proud to announce the **29th International Applied Geochemistry Symposium, IAGS2022 Viña del Mar, Chile**.

The 29th IAGS was originally scheduled to take place in Viña del Mar in November 2020. However, in view of the worldwide coronavirus pandemic, the LOC, in accordance with the AAG and SGCh decided to postpone the event until October 2022, aiming for a face-to-face meeting, and potentially holding a hybrid mode with live streaming for online participants.

IAGS2022 is organized by the **Local Organizing Committee (LOC)** and the **Technical Committee (TC)**.

The **LOC** is constituted by Dr. Brian Townley, President (Universidad de Chile), Dr. Joseline Tapia, Vice-President (Universidad Católica del Norte), and LOC members MSc. Germán Ojeda, Treasurer (Antofagasta Minerals), Dr. Pamela Castillo (Universidad de Concepción), Dr. Paula Ramírez (Flow Hydro Consulting), MSc. Fernando López (BHP Minerals), MSc. Sofía López (ICASS, France), MSc. Carolina Soto (WSP), Dr.(c) McLean Trott (GoldSpot Discoveries Corp., Canada), MSc. Catalina Siebert (Geológica SpA), Dr. María Isabel Varas-Reus (Universität Tübingen, Germany) and Dr. Carmina Jorquera, Chair of the Technical Committee (Teck Resources Ltd.).

The **Technical Committee (TC)** is constituted by renowned researchers and individuals of the industry and academia.

Dates and Venue

IAGS2022 will be inaugurated on Sunday October 23rd, 2022. The Scientific Program will be carried out between Monday October 24th and Friday October 28th, 2022.



The venue of IAGS2022 is the **Enjoy Convention Center**, located in the city of **Viña del Mar in Chile**. Also known as the Garden City, Viña del Mar is located 120 km northwest of the capital city of Chile, Santiago. The city is a well-known tourist destination, famous for its beaches, the neighbouring world heritage city of Valparaiso and abundant parks. The city lies west of the coastal cordillera in which wineries thrive among the valleys, together with other productive activities that include gold and base metal mining. The location of Viña del Mar provides easy access and represents a great starting point for pre- and post-conference activities, including field trips and social or tourist activities.

Furthermore, Chile is an easily accessed country. Its international airport "Arturo Merino Benitez" (SCL) is well connected worldwide, and most nationalities do not require an entry visa. The official language of Chile is Spanish, but the official language for IAGS2022 is English.

More information on the venue and travelling tips, including all necessary details in reference to COVID 19, will be available on our website in due course.

Official Language

The official language of the IAGS2022 is English. Presentations will be in English, and abstracts must be submitted in this language.

Scientific Program

The Scientific Program of IAGS2022 is composed of invited keynote lectures, oral and poster presentations to be submitted by the international geoscientific community to one of nine Technical Sessions.

Each Technical Session will be supported by the corresponding Chair in addition to one, or more, of the LOC members.

Technical Sessions

Session 1: Exploration geochemistry: present and future challenges

Chair: Carmina Jorquera, Teck Resources Ltd.

Description: This thematic session will be focused on, and open to studies related to the use of geochemistry for exploration. It will cover traditional techniques based on stream sediment, soil, rock chip sampling, litho-geochemistry, as well as more innovative techniques oriented to exploration in areas of transported overburden, partial extractions, biogeochemistry, mineral chemistry, hydrogeochemistry and any other novel uses of geochemistry applied to mineral exploration (at any scale). Geochemistry has been a long standing and traditional tool in mining exploration, in which advancing improvements of analytical techniques allow for new and novel opportunities to face the increasing challenges of exploration. Combination of geochemical exploration techniques with any other tools such as geophysics and mineral spectroscopy determinations is encouraged within an integrated geological framework.



Session 2: New field portable technologies: improving the analysis and turnaround times in exploration

Chair: Andrew Menzies, Bruker Nano GmbH

Description: The traditional use of geochemistry and mineralogy in mining exploration has evolved over time together with analytical capabilities, however the application of results has always been dependent on the turnaround time and sample processing capacity of internal or commercial laboratories. Consequently, this can have an impact on the timely evaluation of exploration projects and can undermine the ability for quick decisions in the field. The advent and continual development of field portable technologies and their application to direct on-site analytical determinations has provided exploration geologists with a multiplicity of tools to assist quick decision making. This thematic session will focus on data quality and case studies of applications of field portable technologies in mining exploration, such as portable XRF, LIBS, XRD, spectroscopy, and any other on-site field geochemical analytical technologies.

Session 3: Big-data: squeezing multi-element geochemical data by means of data science and self-learning techniques

Chair: Álvaro Egaña, Universidad de Chile, Chile

Description: The use of multi element geochemistry in the mining industry, coupled with geological, mineral, geophysical and spectroscopy data, from exploration to resource and reserve estimates, and applications of multi element geochemistry to quantitative mineral characterization among many other uses, generates ever increasing amounts of information, in which data processing by Big-data science techniques offers novel and very powerful opportunities to perform data integration, multivariate analysis, data modelling and interpretation. This thematic session will focus on and welcome studies related to the use of data science, machine learning, statistical learning or deep learning techniques in the mineral industry, with particular attention to those associated with maximizing the use of multi-element geochemical data integrated with other sources of information.

Session 4: Geochemistry applied to mineral characterization for geological, geometallurgical and resource modelling

Chair: Brian Townley, Universidad de Chile, Chile

Description: This thematic session is oriented to studies that evaluate the value of multi-element geochemistry as a tool for semi-quantitative to quantitative bulk mineral characterization in geological, resource and geo-metallurgical modelling of ore deposits, applied to the characterization of lithology, hydrothermal / supergene alteration types and intensities, as well as mineralization. This session will be focused on applications that permit numerical classification techniques for mineral characterization in ore deposits which are based on multi-element geochemistry and/or spectroscopy-based technologies, allowing for semi-quantitative to quantitative high-resolution modelling of key aspects of



lithology, hydrothermal alteration, and mineralization. It will also offer insights to applications that may be cross-referenced to metallurgical test samples and therefore to geo-metallurgical properties of rocks and predictive modelling.

Session 5: Environmental geochemistry: closing the gap for sustainable mining and development / Mine Tailing Revalorization (Unesco-IGCP682)

Chair: Manuel Caraballo, Universidad de Huelva, Spain

Description: Increasing awareness and regulations on environmental impacts and mitigation in the mining industry, within the framework of sustainable mining, have placed important emphasis on the necessity of an integral understanding of chemical and physical stability of mine waste as well as the direct environmental impacts of mining operations. This thematic session will focus on the use of geochemistry applied to environmental studies that provide a deep understanding of the behavior and impacts of mining waste products, and hence the necessary knowledge to determine efficient mitigation and control protocols. This session will include a specific special sub-session sponsored by the Unesco-IGCP682 project of mine tailing revalorization, focused on reprocessing of old and present tailing deposits for the recovery of elements / minerals of economic interest, within a framework of circular economy and sustainability. Studies on the applicability of environmental geochemistry to other impacts of the mining industry as well as other studies that provide useful applications to the mining industry are also welcomed.

Session 6: Water and hydrogeochemistry: challenges in exploration, mining, and sustainable development

Chair: Luciano Achurra, Amphos 21 Consulting Chile, Chile

Description: Hydrogeochemical studies provide us with relevant information about water sources and the processes that affect them surficially and underground. The activities associated with the exploitation of metallic and non-metallic mineral deposits can cause changes in the chemistry of rivers and aquifers. Currently, the infiltration of water from tailings storage facilities and mitigation or remediation of sulfate or metals in aquifers is common. Related to this matter, concepts such as monitoring plans on water quality and mining closure plans, which involve a hydrogeochemical component, can condition the environmental approval of large projects. On the other hand, hydrochemical studies on brines, in the salt flats, are becoming increasingly important due to the growing demand of the lithium-associated energy industry, as well as the use of chemical and isotopic techniques in the exploration of deep geothermal systems. These topics and a general water scarcity have led to the current challenges which are focused on efficient water management and the protection of its chemical quality, which is closely related to its management.



In the session, discussions related to these issues are welcome through presentations of applied hydrogeochemical techniques in water studies as well as the use of modelling tools which allow for a better understanding of the processes involved in the water cycle and their implications in the environment.

Session 7: Isotopic geochemistry: new uses in applied geochemistry

Chair: Verónica Oliveros, Universidad de Concepción, Chile

Description: This session will deal with novel methodological approaches of isotopic geochemistry and geochronology in the fields of natural resources, environmental geology, and earth dynamics. Examples of systematic studies and sampling protocols aiming at the discovery of new ore deposits, geochemical anthropic anomalies, paleoclimatic trends or processes and natural risk assessment are welcomed. Applications of new isotopic tools and geochronometers in the Earth Sciences will be also of interest in this session.

Session 8: Linking geology and geochemistry to viticulture and wine

Chair: Pamela Castillo, Universidad de Concepción, Chile

Description: Climate, soil and agricultural management are the main factors that impact yield and grape quality. Geologic studies are important in viticulture since the physical and chemical properties of soils are strongly influenced by lithological, geochemical, and structural characteristics of the soil parent materials. This thematic session welcomes contributions that link diverse areas of geosciences (geology, geochemistry, geomorphology, geophysics, mineralogy, soil sciences, hydrogeology, hydrology, climatology, biogeochemistry, etc.) that influence aspects such as viticultural potential and wine quality, the terroir concept, soil-plant interactions, root system development, water availability, the characterization of viticultural valleys, exploration of new areas apt for viticulture, environmental issues, challenges and impacts of climate change, standardization of methodologies, and technological solutions, among others.

Session 9: Analytical geochemistry technologies and quality assurance / quality control

Chair: Cliff Stanley, Acadia University, Canada

Description: Appropriate sampling, sample preparation, analysis, and data quality assessment and control procedures are essential for the proper exploration, evaluation, and exploitation of mineral deposits as well as for environmental assessments, remediation, monitoring, and related applied research designed to improve these activities. This session invites contributions addressing two themes: (i) presentations that improve our understanding of QAQC procedures, that expand/improve the application of QAQC procedures, or illustrate interesting successes or failures in quality control and (ii)



presentations that illustrate new analytical technologies or applications that can be used to improve the practice of exploration or environmental geochemistry.

Presentations accepted for this session will not involve the use of technologies that remain secret or proprietary; as such procedures cannot be fully evaluated in a scientific manner, preventing an objective assessment of their value and use in exploration and environmental geochemistry applications.

Registration, payment of registration fee and submission of abstracts

The registration, payment of registration fee, submission and revision of abstracts will be done exclusively through the IAGS2022 platform that will be available soon on our website. <https://iags2021.cl/>

We encourage and expect abstracts from members of the geoscientific community worldwide.

Abstracts that had been submitted for the previous date of IAGS will be considered for IAGS2022, unless otherwise informed by the author.

Abstract Guidelines

Abstracts must be submitted to one of the nine Technical Sessions that compose the IAGS2022 Scientific Program.

Title: Maximum 190 characters

Authors: Maximum 100 characters

Affiliations: Maximum 800 characters

Content of the Abstract: Minimum of 1500 characters to a maximum of 2500 characters (may include sub-sections and references directly in the text).

Do not include figures or graphics in the abstract.

Each participant is allowed to submit a maximum of two (02) abstracts as the first (primary) author. There are no restrictions regarding participation as a co-author.

Final acceptance of submitted abstracts will be completed upon positive review by the technical committee and payment of registration.

Workshops (Preliminary Information)

The following workshops are proposed to take place before IAGS2022 and are still subject to confirmation:

1. Fundamentals of geochemical exploration – A Workshop.
2. Quality Control and Quality Assurance Methods in Geochemical Exploration & Resource Assessment.



3. Geology, mineralogy, and geochemistry in viticulture.
4. Stable and radiogenic isotopes in mining exploration.
5. Data science in geochemistry: From exploration to geometallurgy.
6. Hydrogeology and hydrochemistry in the mining industry.

Field Trips (Preliminary Information)

The following field trips are proposed to take place after IAGS2022 and are still subject to confirmation:

1. Tectono-magmatic evolution of Central Chile.
2. Mineral deposits of Northern Chile.
3. Geology and vineyards of Central Chile.
4. Environmentally challenged areas of Central Chile.

Important Dates

- Platform for registration and submission of abstracts opens: December 31st, 2021
- Deadline for abstract submission: May 31st, 2022
- Early Bird Registration Fee: June 30th, 2022
- Standard Registration Fee: July 1st, 2022, until IAGS2022

Registration Categories and Fees

There will be five categories for attendance to IAGS2022:

- **AAG or SGCh delegate:** Registered member of the Association of Applied Geochemist (AAG); and/or Registered member of the Chilean Geological Society (SGCh).
- **Senior AAG or SGCh delegate:** Senior Registered member of the Association of Applied Geochemist (AAG); and/or Senior Registered member of the Chilean Geological Society (SGCh).
- **Non-member delegate:** Symposium registered participant who is not a member of either AAG or SGCh.
- **Student:** A student ^[1] from an undergraduate or graduate program at the time of registration.
- **Accompanying person,** such as a spouse or partner.

^[1] Student rate subject to approval on provision of certification from institution (required).



Table 1. Category, deadline, and pricing of the Registration Fee for IAGS2022.

Category	Deadline	Registration Fee (US\$)	Registration Fee (CLP)
Early bird – AAG / SGCH delegate (*)	Until June 30 th , 2022	620	525.000
Early bird – AAG / SGCH Senior delegate (over 65) (*)	Until June 30 th , 2022	460	390.000
Early bird– non delegate	Until June 30 th , 2022	740	625.000
Early bird – Student	Until June 30 th , 2022	230	195.000
Early Bird – Accompanying Person	Until June 30 th , 2022	230	195.000
Standard – AAG / SGCH delegate (*)	From July 1 st , 2022, until the beginning/during the Symposium	700	590.000
Standard – AAG / SGCH Senior delegate (over 65) (*)	From July 1 st , 2022, until the beginning/during the Symposium	520	438.000
Standard – non delegate	From July 1 st , 2022, until the beginning/during the Symposium	820	690.000
Standard – Student	From July 1 st , 2022, until the beginning/during the Symposium	280	235.000
Standard – Accompanying Person	From July 1 st , 2022, until the beginning/during the Symposium	280	235.000

(*) Membership fees must be up to date at registration time.

Registration fee includes attendance at the opening, closing and all the Technical Sessions (TS), the welcome reception (ice breaker), coffee breaks, lunch box, complementary evening wine and beer, a symposium kit and electronic certificate of attendance.



Registration fee for accompanying persons includes attendance at the opening, closing and welcome reception (ice breaker).

The costs for Symposium AAG Gala Dinner, pre-symposium workshops, post-symposium field trips, social activities or any activity not specified above, and the accompanying person activities are not included in the registration fee.

*Undergraduate Students are subject to approval according to registration requirements.

Kindly note that at present our current website is under construction and will be available soon. <https://iags2021.cl/>. For more information, please contact us via email at contacto.iags2020@gmail.com

We welcome you to IAGS2022 and look forward to meeting you in Viña del Mar, Chile, in October 2022.

Local Organizing Committee (LOC)
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Viña del Mar, Chile