# Newsletter
of the
# International Association of GeoChemistry

Number 80, July 2024


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## The 3rd IAGC International Conference (IAGC-3)

The 3rd IAGC International Conference will be held in Cagliari, Italy from 16 – 21 June, 2025. This meeting will include the 18th Water-Rock Interaction Working Group Meeting (WRI-18), the 15th Applied Isotope Geochemistry Working Group Meeting (AIG-15), Urban Geochemistry sessions, and celebration of the 20th Anniversary of *Elements* Magazine.



The planning has commenced! Members of the organizing committee for IAGC-3 (WRI-18 and AIG-15) convened from June 19 to June 21 to discuss the conference program, sessions, mid-conference field trips, and post-conference field trips. During the visit, the committee toured the University of Cagliari, the primary venue for the conference activities, the Montevecchio Mine, one of the planned mid-conference field trips, and the Museo Archeologico di Cagliari.


City of Cagliari, Italy



Members of the organizing committee meet to plan conference details

**Abstract submissions and registration will open on September 1. Visit the IAGC-3 website to learn more!**

## 2025 PhD Student Research Grant Applications

We receive great interest in our Elsevier/IAGC PhD Student Research Grants each year, and they have become a high-profile recruiting tool for the organization.

**We will post instructions for applying for the 2025 PhD Student Research Grant program on 1 October, 2024.**

Applications will be due on **1 December**. We encourage all to apply! Keep an eye on our website and X for the announcement.

## Call for Applications: Co-Executive Editor for *Applied Geochemistry* Journal

The IAGC is looking for an engaged and accomplished scientist in geochemistry or a related field to join the Elsevier *Applied Geochemistry* Editorial board.

**Position:** Co-Executive Editor
**Journal:** *Applied Geochemistry*
**Application Deadline:** October 31, 2024
**Start Date:** January 1, 2025
**Term:** Three years, renewable

**View the Call for Application details including position roles and responsibilities, qualifications, and application process.**

This role offers a unique opportunity to shape the future of *Applied Geochemistry*, influence geochemical research, and disseminate groundbreaking discoveries. The overlap period with the current Executive Editor ensures a smooth transition and shared learning experience.

We encourage all qualified individuals to apply and contribute to shaping the future of our journal. The IAGC is committed to both gender and geographic diversity. We look forward to receiving your application.




Learn more about the *Applied Geochemistry* on the Journal's web page.

# 2024 IAGC Awards

We are pleased to announce our Society Awards! Congratulations to the recipients and thank you for your service to the IAGC and the geochemical community!

## Harmon Distinguished Service Award



**Berry Lyons** is a professor and Distinguished University Scholar in the School of Earth Sciences at The Ohio State University. Lyons and his research group currently conduct research on four specific topics: (1) the biogeochemistry of Antarctic terrestrial/aquatic ecosystems and how they respond to climate change, (2) the impact of urbanization, suburbanization, and agricultural management practices on water quality, (3) the role of hydrologic variations, climate change, and anthropogenic activities on the aquatic biogeochemistry of peatlands, and (4) environmental sustainability research and education. He is a former Director of the Byrd Polar Climate and Research Center, and of the School of Earth Sciences at Ohio State. He has been the lead investigator of the McMurdo Dry Valleys Long Term Ecological Research program. He is also a former F.E. Ingerson, Lecturer and a Fulbright Research Scholar at University Galway, Ireland. Lyons has a long history of service in the Earth Sciences, including his engagement in the IAGC as Treasurer of IAGC since 2008.

## Kharaka Award



**Kamel Zouari** is a professor at the University of Sfax, Tunisia and is head of the Laboratory of Radio-Analysis and Environment (LRAE) at ENIS in Tunisia. From 1986-1988 Dr. Zouari was a researcher in the laboratory of Isotope Hydrology of Paris South-Orsay University, where received his PhD (1988). His research focus is on isotope hydrology and water resources. Since 1995 he has worked with the International Atomic Energy Agency in Vienna, and he has collaborated as an international expert with the Arab Atomic Energy Agency since January 2002. Dr. Zouari has completed more than 150 expert missions with the IAEA to several African and Middle Eastern countries and has acted as the National Coordinator of G@GPS (Groundwater@GlobalPaleoclimate Signals) international project since 2010.

In addition to his involvement with international agencies, Dr. Zouari founded the LRAE multidisciplinary laboratory. LRAE research spans across different specialties involving the application of geochemical tracers in geologic and water resources investigations. It consists of approximately 45 members: teachers, researchers, engineers, and technicians. It is also the only laboratory in Tunisia that offers isotopes analysis of water samples ($^{18}O/^{2}H$, $^{3}H$ $^{13}C$ and $^{14}C$). Dr. Zouari has been a supervisor of numerous PhD theses (30 PhD defended) in isotope hydrology and geochemistry. His group research activities focus on supporting Integrated Resources Management (IWRM) through the characterization of surface and groundwater resources in Tunisia. Their

research investigates water quality issues and assesses aquifer's vulnerability to natural and human-induced pollution. The research activities results are published in more than 130 articles and scientific paper in peer reviewed journals focusing on groundwater geochemistry, geology, and hydrogeology.

## IAGC Fellows



**Rosa Cidu** is a full professor at the University of Cagliari (Faculty of Sciences), Italy. She teaches Geochemistry, and Hydrogeochemistry courses, and served as tutor for several MD and PhD theses. Her relevant academic positions were coordinator of MD in Geological Sciences (2014-2018), coordinator of the PhD in Earth Science (2009-2012) and Director of the Department of Chemical and Geological Sciences (2018-2021). As an Invited Professor, she attended short courses devoted to promote the potential application of hydrogeochemical methods in environmental issues (Univesidad Bahia, Brazil; Universidad Nacional de Cuyo, Argentina; Universidad Catolica del Norte, Cile; Universit Mohammed V Rabat, Morocco; Ecole Polytechnique Federal de Lausanne, Swiss; Jena University, Germany). She has contributed to organizing international symposia, such as the 10th Water Rock Interaction Conference (WRI-10) in 2001 and the Water in Mining Environments in 2007. Prof. Cidu was an editor of conference proceedings, special issues, and Associated Editor of Mine Water and the Environment, and she serves several international journals as a reviewer. She is member of the Societies IAGC, AAG, SOGEI, SIMP, and an elected member of the Executive Council of the International Mine Water Association.

Her research activity was carried out within national and international research programs, devoted to water-rock interaction studies in geothermal prospecting, hydrogeochemical gold prospecting, and environmental impact of mining on the aquatic system in collaboration with researchers from Europe, USA, Morocco and South America. She assessed analytical methods for the determination of trace and ultra trace elements in different aqueous fractions, also investigating the influence of analytical errors on the interpretation of hydrogeochemical data. Many studies were devoted to the understanding of geochemical processes affecting the mobility and fate of harmful and toxic elements (e.g. REE, Hg, Cd, Pb, As, Sb, U) in river water and groundwater, with special attention to areas interested by active and past mining. Environmental issues related to the degradation of water quality as compared to background values, and the potential sources of nitrate contamination received attention recently. She published several full papers in peer-review journals and books, together with many short papers in conference proceedings.



**Carol Ptacek** earned a PhD degree (1992) in Aqueous Geochemistry from the Department of Earth and Environmental Sciences, University of Waterloo, Waterloo, Ontario, Canada. After graduating, she worked as a Research Scientist at the National Water Research Institute, Environment Canada, in Burlington, Ontario where she advanced to Section Head for

Groundwater Quality and Remediation in 2004. In 2006, she joined the Department of Earth and Environmental Sciences at the University of Waterloo as Professor of Environmental Geochemistry and Contaminant Hydrogeology. She is holds a University Research Chair in Environmental Earth Sciences.

Dr. Ptacek's research focuses on developing and implementing improved management strategies for minimizing contaminant release from mine wastes and industrial sites. Her research program integrates laboratory experimentation, field-based measurements, and utilizes a wide range of analytical techniques, including synchrotron-based spectroscopy and electrospray tandem mass spectroscopy. Highlights of her career include detailed studies to address the long-term release of metal(loids) from mine sites, co-development of the permeable reactive barrier technology for passively removing contaminants in subsurface environments, the use of biochar for remediation of mercury-contaminated sites, and application of emerging contaminants as tracers of solute transport in aquifers and aquatic systems. More than 20 of her co-authored articles appear in the IAGC journal Applied Geochemistry.

## Vernadsky Medal



**Ramon Aravena** is currently an Emeritus and Adjunct professor in the Department of Earth and Environmental Sciences at the University of Waterloo. He has dedicated over thirty-five years of his professional life to advancing the field of geochemistry, particularly in the application of isotope and geochemical techniques in hydrogeology. Prof. Aravena's extensive career in academia has included teaching isotope hydrology and geochemistry courses at the University of Waterloo, as well as teaching courses on isotope hydrology in Latin America through collaborations with the International Atomic Energy Agency, in the USA under the umbrella of the National Ground Water Association, and in Europe through collaboration with European Universities. Prof. Aravena was part of the expert pool of the International Atomic Energy Agency, Vienna, Austria, for their projects worldwide.

Beyond his academic endeavors, Prof. Aravena has made significant contributions to geochemical research. His work has focused on ground water resources and ground water contamination stemming from agricultural, urban, mining, and industrial activities, with numerous studies conducted in Latin America, Canada, the United States, and Europe. His expertise in applying isotopic techniques to fingerprint and evaluate the sources and fate of contaminants in groundwater has had a profound impact on our understanding of environmental issues. During his career he developed research collaboration with international Universities including the University of Barcelona, Spain, La Sapienza University, the Politecnico of Milan and University of Campania Luigi Vanvitelli, Italy, the University of Sao Paulo, Brazil, the University of Neuchatel, Switzerland, the University of La Plata, Argentina and the University of Concepcion, the Catholic University and the University La Serena, Chile. Prof. Aravena's publication record is a testament to his dedication to advancing the field. He has authored or co-authored almost 200 referee publications, more than 70 technical papers, and 11 book chapters. Notably, he played a pioneering role in the development of Compound Isotope Analysis (CSIA) and co-edited the influential book "Environmental Isotopes in Biodegradation and Bioremediation" in 2009. His publication record resulted in a

number of citations of 18,380 and an H-index of 78 and an i10-index of 188 (Google Scholar).

In addition to his research and teaching commitments, Prof. Aravena has served as a reviewer for major North American and European funding agencies and esteemed groundwater journals, including Water Resources Research, Ground Water, Journal of Hydrology, Journal of Contaminant Hydrology, Environmental Science & Technology, Organic Geochemistry, and Geochimica Cosmochimica Acta. His peer review contributions have helped maintain the rigor and quality of research in the field.

## Jin Jingfu Award



**Meret Aeppli** is a tenure track assistant professor at EPFL, Switzerland, where she leads the Soil Biogeochemistry Laboratory. Her group aims to elucidate the fundamental processes and mechanisms that govern the biogeochemical cycling of carbon and other elements in soils. To this end, Meret and her group are developing novel tools and concepts to unveil the underlying drivers of element cycling, including electron transfer reactions and energy transformations. Before joining EPFL, Meret was a postdoctoral fellow at Stanford University, United States, from 2019 to 2022 where she investigated biogeochemical controls on carbon turnover in soils and sediments. She holds a Bachelor's and a Master's degree in Environmental Sciences from ETH Zurich, Switzerland, and obtained her PhD from ETH Zurich in 2019.

## Ebelmen Award



**Yao Du** was born in China in 1989 and earned his PhD from the China University of Geosciences (Wuhan) in 2017. He has been actively involved in studying the sources and fate of geogenic nitrogen and phosphorus compounds in groundwater and their impact on lake eutrophication in recent years. He proposed novel genetic models of high ammonium and high phosphorus groundwater, and thus greatly advanced our knowledge about the hydrogeochemical behavior of nitrogen and phosphorus in groundwater systems. He successfully identified the spatial variability and controlling factors of nitrogen and phosphorus loads via groundwater discharge into lakes at different scales and developed the quantitative evaluation methods. His work highlighted the critical importance of quantitatively characterizing lacustrine groundwater discharge for protection and restoration of lake ecological environment. He has published 34 papers as the first or corresponding author in international peer-reviewed journals, including 8 papers in top journals such as Environmental Science & Technology, Water Research, and Water Resources Research, and 3 papers in the official journal of the IAGC, Applied Geochemistry.

# Elsevier PhD Student Research Grant Winners

The IAGC is happy to announce the recipients of the 2024 Student Research Grants, sponsored by Elsevier and the IAGC. This is a very competitive award. The success of these grantees demonstrates the extremely high quality of their research. Congratulations to our grantees!

**Jaydee Edwards** – *Characterization of Tire- and Road-Wear Particles in the Environment*



Jaydee Edwards is a PhD Candidate in the Department of Earth and Environmental Science at the University of Pennsylvania. She graduated from John Brown University with a Bachelor of Science in Chemistry in 2020. After graduation, she made the leap to Earth and Environmental Science and began studying emerging contaminants and pollutants, particularly, tire- and road-wear particles (TRWPs). Her dissertation research focuses on utilizing instrumentation like SEM-EDX, XRD, ICP-OES/MS, and LC/GC-MS for the comprehensive characterization of environmentally collected TRWPs, the road dust matrix of the TRWPs, and stormwater runoff in Philadelphia. Through improving TRWP characterization (both mineralogically and chemically), she hopes this research will support better understanding of the transport and fate of TRWPs throughout our environment.

**Victoria Nogu s** - *Atmospheric conditions in southern South Am rica during the last glacial period: Inferences from Pampean loess deposits*



Victoria Nogu s obtained her degree in Geology from the University of Buenos Aires, Argentina. She is currently a PhD Geology student at the National University of C rdoba, Argentina with Dr. Diego Gaiero and Dr. Nicol s Cosentino as her advisors. She enjoys fieldwork, collecting samples, and performing numerical modeling with the aim of deciphering the processes that affect the Earth at a global-to-regional scales. Early in her career she was part of a research group studying active volcanoes, and she is a co-author of papers published in the field of the chemistry of volcanic fluids. She is now pursuing her PhD thesis in a research group that investigates South American loess deposits as a paleoclimate record. The aim of the project is to use loess properties as proxies of the atmospheric conditions that controlled the regional dust cycle during the last glacial period (~70-12 ka BP). As part of her PhD dissertation, Victoria will analyze the intensity of the weathering processes that affect loess deposits with elemental analysis (ICP-OES, ICP-MS)/M ssbauer Spectroscopy/XPS. She will apply laboratory techniques to analyze the Fe-bearing phases in the deposits and to quantify iron availability in paleo-dust through leachate experiments.

**Alpa Rajput** - *Occurrence, distribution, transport and fate of pharmaceutically active compounds (PhACs) in mid-Himalayan ecosystem*



Alpa Rajput is a PhD scholar in the School of Civil and Environmental Engineering at the Indian Institute of Technology Mandi (IIT Mandi) in Himachal Pradesh India. Her dissertation research focuses on studying the occurrence and movement of pharmaceutically active compounds (PhACs) in the water, soil, and sediments of the mid-Himalayan ecosystem. As a recipient of IAGC Student Research Grant 2024, she will focus on investigating interactions of PhACs with natural organic matter (NOM) and geological material through field and laboratory experiments.

**Jessica Rush** - *The Viability of Excitation Emission Matrices as a Proxy for Solid-Phase Redox-Active Organic Matter in Peatlands*



Jessica Rush received her B.S. in Biological Sciences and B.A. in Spanish from Chapman University in 2018. She is now a PhD candidate in the Department of Ecology and Evolutionary Biology and Cooperative Institute for Research in Environmental Sciences at the University of Colorado, Boulder. Her research focuses on understanding redox processes in northern peatland ecosystems that are sensitive to global climate change. The goal of her dissertation research is to better characterize redox-active carbon molecules, traditionally referred to as "humics", and understand how they govern carbon greenhouse gas production in peatland ecosystems. She uses a variety of techniques to understand the reduction of these molecules, including excitation-emission matrix fluorescence spectroscopy and mass spectrometry.

**Dionysios Stamatis** - *Deciphering the PCP effect on stalagmites from Crevice Cave, Missouri using calcium isotope and trace element analyses*



Dionysios Stamatis holds a BSc in Geology and an MSc in Geosciences from the University of Patras, Greece. He is currently a second-year PhD student in the Earth and Environmental Science Department at the University of Iowa, USA. His research focuses on unravelling temperature and precipitation patterns during past interglacial periods. To achieve this, he employs a range of analytical techniques, including measuring δ18O, δ13C, δ44Ca, trace elements, Dual-Clumped Isotopes, and TEX86 in speleothems. His aim is to illuminate the hydroclimate dynamics of the Midcontinental USA during periods resembling projected future climate conditions.

**B rbara Zambelli Azevedo** - *Socio-hydrogeological assessment of MnP occurrence in GW*



B rbara Zambelli Azevedo is a Brazilian hydrogeologist with a speleology background. She holds a BSc in Geological Engineering (Federal University of Ouro Preto, Brazil / University College Cork, Ireland) and a MSc in Groundwater Management (Technical Mining University of Freiberg, Germany). Barbara is very interested in interdisciplinary and applied research, being engaged with geoethics and science communication. Since 2022, she has been part of the Socio-hydrogeology Network (IAH) as Task Team Leader for Gender and Groundwater. Her PhD at the University of Pisa (Italy) is part of the PlasticUnderground Project, funded under the Marie Skłodowska-Curie Actions. Her research aims to understand the impact of microplastic (MPs) contamination in groundwater and assess the risk perception of such pollution on local communities. Her project includes the development of a stakeholder analysis and public engagement of groundwater users focused on MPs pollution. It also includes the development of a groundwater quality monitoring program to assess the occurrence of MPs at catchment scale, including sampling and measurement of major and trace elements, stable isotopes, emerging contaminants, and MPs analysis. The results will be used to develop an integrated analysis of risk perception on the actual presence of microplastics in groundwater in highly stressed aquifers.

## IAGC-*Applied Geochemistry* Emerging Investigators



**Mang Lin** is a Professor in the State Key Laboratory of Isotope Geochemistry at Guangzhou Institute of Geochemistry, Chinese Academy of Sciences (GIGCAS). He holds a Ph.D. in Chemistry from University of California San Diego and M.Sc. and B.Sc. in Environmental Sciences from Sun Yat-Sen University. Prior to joining GIGCAS, he was a JSPS postdoc fellow at Tokyo Institute of Technology. Lin's expertise and research interests are in analytical and physical chemistry related to multiple oxygen and sulfur isotope systematics and their applications in Earth and planetary sciences. He received the D.F. Hou award, CIFAR Global Scholar, and NSFC award of distinguished young scientists. His recent paper entitled "40 years of theoretical advances in mass-independent oxygen isotope effects and applications in atmospheric chemistry: A critical review and perspectives" was published in the special issue "Atmospheric Geochemistry" of Applied Geochemistry, selected as the Editor's choice, and featured together with the Emerging Investigator Series. Congratulations Dr. Lin!

Lin, M., Theimens, M. H. (2024). 40 years of theoretical advances in mass-independent oxygen isotope effects and applications in atmospheric chemistry: A critical review and perspectives, Applied Geochemistry. 161, 105860. https://doi.org/10.1016/j.apgeochem.2023.105860



**Shohei Hattori** is a Tenured Associate Professor at the International Center for Isotope Effects Research Center (ICIER), Nanjing University, China. He is Japanese and earned his Ph.D. from the Tokyo Institute of Technology (Tokyo Tech), Japan. Before joining Nanjing University, he served as an Assistant Professor at Tokyo Tech from 2013 to 2021. Shohei is an Isotope Geochemist with a broad interest in various topics within Environmental Geochemistry, including atmospheric chemistry, biogeochemistry, and cryosphere sciences. His motivation extends beyond specific "spheres" (such as the atmosphere, biosphere, cryosphere, etc.) and "phases" (gas, liquid, and solid phases) to encompass the Earth system. His original research paper, titled “Latitudinal difference in sulfate formation from methanosulfonate oxidation in Antarctic snow imprinted on $^{17}O$-excess signature” was published in Applied Geochemistry. This paper is featured in the Emerging Investigator Series and has been selected as the Editor’s Choice. Congratulations Dr. Hattori!

Hattori, S., Ishino, S., Suzuki, N., Nakazawa, F., Oyabu, I., Tsutaki, S., Hirabayashi, M., Noro, K., Takenaka, N., Kawamura, K., Yoshida, N., Motoyama, H., Latitudinal difference in sulfate formation from methanesulfonate oxidation in Antarctic snow imprinted on $^{17}O$-excess signature, Applied Geochemistry. 162, 10590. https://doi.org/10.1016/j.apgeochem.2024.105901

## In Loving Memory of Steven Banwart

In 2023 the IAGC lost a wonderful friend, scientist, colleague, and, GES Working Group Chair, and Council member. A Remembrance Article has been published in *Applied Geochemistry*.



Our hearts are heavy as we come together to honor the memory of our cherished friend and colleague, Steven Banwart, affectionately known as "Barney" to many of us. It is with deep sorrow that we share the heartbreaking news of his passing on December 30th due to a massive cerebral hemorrhage stroke. Steve's departure has left an irreplaceable void in our lives, but as we gather to celebrate his extraordinary life, let us also reflect on the enduring legacy he leaves behind.

Steve was not just a scientist; he was a beacon of inspiration in the world of scientific discovery. He dedicated nearly three decades of his life to the development of the "critical zone" concept, leaving an indelible mark on the British, European, and global critical zone communities. His roles as Dean for Global Development, Director of the Global Food and Environment Institute, and Leadership Chair in Integrating Soil/Agriculture/Water Research at the University of Leeds underscore his commitment to groundbreaking research.

Among his many accomplishments, Steve's leadership as the Principal Investigator of the European SoilTrec project from 2009 to 2014 stands as a testament to his visionary spirit. This project played a pivotal role in uniting the European critical zone community and set the stage for similar initiatives worldwide. Steve's unwavering dedication and passionate advocacy for an integrative scientific vision enriched our understanding of the critical zone.

Yet, Steve's greatness extended far beyond his scientific achievements. He was a compassionate and empathetic human being, always lending a listening ear to his colleagues. His authentic concern for others, coupled with his unwavering belief in the significance of critical zone research, made him a beloved figure in our scientific community.

Steve's commitment transcended the confines of the laboratory. He actively contributed to the IAGC community as the Chair of the GES working group and served on the council since 2012. His tireless efforts in promoting our association's mission exemplified his dedication to advancing our shared goals.

For many of us, our connection with Steve extended beyond the boundaries of science. His infectious spirit and camaraderie endeared him to us as not just a colleague but a cherished friend. Steven was not only a friend but a guiding light who helped us navigate the complexities of life and science. Though his absence leaves a void that cannot be filled, his legacy will forever inspire us. In his memory, we pledge to carry forward his important research and uphold the values he cherished. While we mourn his passing, we find solace in knowing that his spirit lives on in the hearts and minds of all who had the privilege of knowing him.

As we grieve the loss of this exceptional individual, our hearts reach out to his family during this difficult time. We share in their sorrow and offer our deepest sympathies.

To Steve's family, we extend our heartfelt condolences. Rest in peace, dear friend.

## Research News

The following research news was submitted by Dr. Henrick Drake, who received a 2023 Excellence in Review Award.

### New pieces discovered in the cradle of life puzzle

A new research study unravels key findings about the earliest life forms on Earth. In rock samples from Barberton, Republic of South Africa, the researchers were able to find evidence of an unprecedented diverse biological carbon cycle, established at 3.42 billion years ago. This proves that already at these ancient times, the ecosystems hosted complex microbial communities.

Microorganisms represent the earliest life forms on our planet. Evidence to reconstruct early life on Earth is scarce and often highly disputed. It is still not clear when and where life emerged and when early microbial communities diversified.

An international research team led by the Linnaeus university, Sweden and University of G ttingen, Germany reports new puzzle pieces to assess early ecosystem diversity. The scientists investigated 3.42-billion-year-old rocks from the Barberton greenstone belt, Republic of South Africa, and were able to unravel different metabolisms involved in an ancient biological carbon cycle.

Analyses of well-preserved carbonaceous matter and associated mineral phases revealed geochemical fingerprints of photoautotrophs, autotrophic sulfate reducers, and likely methane and/or acetate producing and consuming microbes. This spectacular finding highlights

that ecosystems hosted complex microbial communities already at these times.

“Our study opens a rare window into early ecosystems on Earth. We did not expect to find traces of so many different metabolisms. It was like finding the needle in the haystack”, says Dr. Manuel Reinhardt, University of G ttingen/Linnaeus university, and first author of the study.

A highlight of the study is the combination of macro- and micro-scale techniques to robustly identify indigenous biosignatures in the rocks.

“In early life science, it is crucial to have supporting evidence from various angles to clearly identify indigenous biological traces”, Dr. Reinhardt adds.

“The identification of carbonaceous particles in primary pyrite crystals and the direct micro-analysis of carbon and sulfur isotopes on these materials provided us a rare opportunity to identify different microbial metabolisms in these ancient systems”, explains Dr. Henrik Drake, Linnaeus university, senior author of the study.

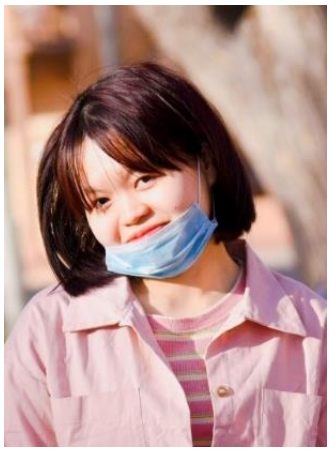
The study was published in Precambrian Research in January 2024 along with a press release: https://doi.org/10.1016/j.precamres.2024.107289

## Elsevier IAGC Student Research Grant Updates

Thank you to all IAGC members who help spread the word about our Student Research Grant opportunities and contribute funds to support student research. In 2025 we will continue to support five PhD student proposals, plus an additional proposal from a low- or middle-income country.

## Catching up with Previous Student Research Grant Recipients

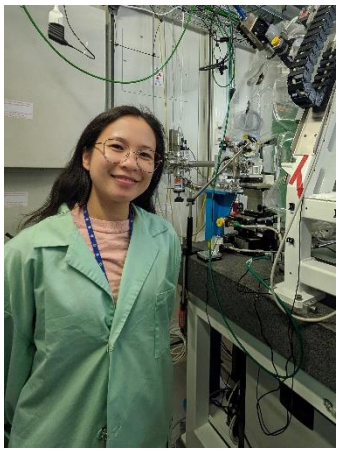
**Soisiri Charin** - *Improving the understanding of the subseafloor hydrothermal system using stable potassium isotopes*, 2023



I was a recipient of the IAGC PhD Research Grant in 2023. The proposal involved improving the understanding of marine hydrothermal systems through the use of stable potassium isotopes. The ultimate goals of my PhD project include understanding the potassium isotopic and elemental fluxes among seawater, oceanic crust, and hydrothermally altered materials and obtain more useful information regarding the K marine cycles and their impact of marine environments. It has been widely known that studying the water-rock interactions between seawater and oceanic units can serve as a proxy to delve into the nature of mid-ocean ridge and their respective elemental transport. Recent advancement of MC-ICP-MS has offered the opportunity to use stable potassium isotopes ($\delta^{41}K$) system as a tool for geochemical processes. However, the lack of unambiguous geochemical parameters acquired through sets of experiments has hindered the full application of potassium isotopes ($\delta^{41}K$) system. Hence, my PhD proposal focused specifically on conducting hydrothermal experiments and analyzing for the K isotope compositions of these samples obtained from controlled system. The grant had allowed me to acquire more analytical tools and chemical reagents necessary to continue my research. We have obtained more K isotope

measurements from experimental basalts and fluid reactants that allow us to quantify the potassium isotope fractionation at elevated temperature. This finding will shed light on the K isotope exchange during high-temperature hydrothermal reactions that have not yet been fully constrained.

**Ruth Esther Delina** - *Chromium release and sequestration in mining-impacted iron-rich tropical soils and sediments: Insights from Philippine nickel laterite mine areas,* 2022



The IAGC Grant I received in 2022 helped support the experimental and analytical costs for my PhD research. I am currently investigating the fate of Cr in Ni laterite mining areas in the Philippines. Prior to this study, the potential leaching of toxic hexavalent Cr, Cr(VI), from Ni laterite mine wastes or tailings have not been critically evaluated. Through trace element analysis, atomic-scale investigations, coupled with an optimized Cr sequential extraction procedure that we recently described in Environmental Science & Technology[1], we were able to show that Cr is immobilized by poorly soluble iron oxides in the mine tailings. The mineral incorporation of Cr keeps the Cr(VI) levels in reacting waters up to five times lower compared to the World Health Organization limit (50 µg $L^{-1}$). These findings, currently under review for publication, enables us to predict the long-term behavior of Cr in Ni laterite mining areas worldwide. Further fluid-rock interaction experiments to simulate Cr transformation pathways were conducted in collaboration with the British Geological Survey, and we are currently working on the manuscript for publication. Following this work, I will complete my PhD at the Freie Universit t Berlin and the GFZ German Research Centre for Geosciences, and begin my appointment as an Experimental Geochemist at the British Geological Survey by the end of this year. I am very grateful for the support from the IAGC through the PhD Student Research Grant.

[1] Delina, R.E.G., Perez, J.P.H., Stammeier, J.A., Bazarkina, E.F., and Benning, L.G. 2024. Partitioning and Mobility of Chromium in Iron-Rich Laterites from an Optimized Sequential Extraction Procedure. Environmental Science & Technology, 58, (14), 6391-6401.

# Association News

## Call for Award Nominations

**Nominate your peers and colleagues for 2025 IAGC Awards!**

We encourage IAGC members to nominate peers and colleagues who have been of service and made significant contributions to the advancement of geochemistry or to the Association.

You may nominate colleagues for one or more of the numerous IAGC Awards. The nomination period is open from **1 August, 2024 – 31 December, 2024.**

The IAGC nomination form will be made available on the IAGC Awards webpage on 1 August. Steps to nominate a colleague:

1. Download the nomination form and follow instructions for the award of interest.
2. Email the completed nomination form and additional required documents to a Nomination Committee Member.
3. Copy the IAGC Business Office on your email (BusinessOffice@IAGC-Society.org).

**IAGC Nomination Committee Members**

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## 2025 Award Nominations List

**Ebelmen Award** – bestowed to a geochemist of particular merit and outstanding promise less than 35 years old at the time of nomination.

**The Harmon Distinguished Service Award** - bestowed to a deserving candidate to recognize outstanding service by an IAGC member to the Association or to the geochemical community that greatly exceeds the normal expectations of voluntary service.

**The Kharaka Award** - bestowed to two deserving scientists (which may include senior graduate students) from developing countries. The award consists of a framed certificate plus an IAGC membership and *Applied Geochemistry* subscription for a term of three years.

**Jin Jingfu Lecturer** – bestowed to an early career geochemist who has contributed a single geochemical research topic through one or a series of publications resulting in a measurable impact in her or his discipline. The lecture is to be presented at an IAGC International Conference.

**IAGC Fellow** - bestowed to a scientist who has made significant contributions to the field of geochemistry.

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## Memberships available for geochemists in low- and middle-income countries

We strive to provide free memberships for geochemists from low- and middle-income countries**.** We can also provide assistance if your home country makes it difficult or unduly expensive to pay membership dues to the US. These initiatives are generously supported by member donations. As of the time of publishing of this newsletter, there are **180 complimentary memberships** available! If you know geochemist from a country on the list or otherwise need assistance with the membership fee, email the Business Office for details.

## Charitable Giving

We are thankful to the following members for their generous donations during the 2022-2023 renewal season to support memberships and student research grants for geochemists from low- and middle-income countries:

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## Renew Your Membership for 2025!

Don't forget to renew your IAGC membership for 2025 by January so you don't miss any issues of *Elements* magazine! Our annual membership is $40 for professionals and $15 for students and geochemists from low- and middle-income countries and includes a hard copy subscription to *Elements* magazine as well as online access. Membership also rewards you with lower cost registration rates at IAGC-sponsored working group conferences. Online access to our journal, *Applied Geochemistry*, is also available.

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