Association of Applied Geochemists

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AAG PRESIDENT 2026-2027: RENGUANG ZUO

Professor Renguang Zuo completed his PhD in mathematical geosciences at the China University of Geosciences (CUG) in 2009. Professor Zuo is currently a full professor at the State Key Laboratory of Geological Processes and Mineral Resources, and the Vice President of the Academic Committee of CUG.

Professor Renguang Zuo became a Fellow of the Association of Applied Geochemists (AAG) in 2016, and has held several positions within AAG including Councillor in 2017–2018, 2019–2020, and 2022–2023, Vice President in 2024–2025, and a member of the editorial board for *Geochemistry: Exploration, Environment, Analysis* (2017–present). He was a Councillor of the International Association for Mathematical Geosciences (IAMG) (2020–2024).

Professor Renguang Zuo has received fellowship status from the Society of Economic Geologists and Geological Society of London. He has been heavily involved in the editorial boards of several SCI-indexed journals, including *Natural Resources Research*, *Computers & Geosciences*, *Ore Geology Reviews*, *Journal of Geochemical Exploration*, *Journal of Earth Science*, and *Applied Geochemistry*.

Professor Renguang Zuo's research mainly focuses on big data analytics, machine learning–based mineral prospectivity mapping (MPM), and geochemical mapping. Professor Zuo has published over 160 peer-reviewed journal papers and 6 books and book chapters. He has been the guest editor of 8 special issues in international high-quality journals. Professor Zuo's publications have been cited more than 11,000 times with an h-index of 60 (according to Google Scholar). Professor Zuo was selected as the IAMG Distinguished Lecturer in 2025, and awarded the AAG Gold Medal in 2023. Professor Zuo also received the inaugural Kharaka Award from the International Association for GeoChemistry in 2015.

AAG VICE-PRESIDENT 2026–2027: ALEXANDER SEYFARTH

Alexander Seyfarth is an X-ray spectroscopist with over 20 years of experience with XRF and XRD. Alexander holds a diploma in mineralogy from the University Giessen in Germany (1996). Starting out as Application Scientist in Germany with Siemens, he was transferred to the U.S. where he is now a proud citizen, still living in the Midwest (Wisconsin). As the resident "geoscientist," he travelled within the Americas to mine sites, cement plants, and quarries, and presented application and theory-based talks at trade shows and conferences for Bruker and Thermo Fisher Scientific in various functions. With a group of other XRF trainers, he continued the XRF course from University of Western Ontario (Canada) and moved it to Hamilton College (USA); expanding it also back to its roots in South Africa. He is an Associated Volunteer Researcher with Colorado School of Mines (USA) as of 2021 for direct XRF core scanning and Hyperspectral Imaging. Since 2017, Alexander is back full-time to the geochemistry world as Global Technical Manager for XRF with SGS Natural Resource Division and active in both SGS internal technical formation, as well as externally with focus on the new and smaller devices such as PXRF and Micro LIBS. His professional interest lies within research, promoting and expanding XRF (and LIBS on solids) within the community, as well as modern gamma activation analysis for gold assaying. His focus for AAG volunteer work would be within the training and education of future geochemists, as well as promoting and establishing best practices for new types of instrumentation, leveraging the extensive contacts to the various instrument vendors. His experience in social media and marketing can be applied to AAG's LinkedIn outreach as well as for promoting AAG on the web.

RECENT ARTICLE PUBLISHED IN *EXPLORE*

The following abstract is for an article that appeared in issue 210 (March 2026) of the *EXPLORE* Newsletter of the AAG.

"Analysis of CO_2 and O_2 in soil gas over faults and fractures and associated with volcanic massive sulphide and porphyry-style mineralization in British Columbia, Canada"

Ray Lett[1], Dave Sacco[2], Cameron Knox[2]

Soil gas over the Mouse Mountain Cu-Au porphyry occurrence, the Mount Milligan Cu-Au deposit, and the Anita Cu-Pb-Zn-Au-Ag VMS mineral property in British Columbia, Canada, was analysed for carbon dioxide (CO_2) and oxygen (O_2). For each survey, soil gas was analysed in real-time after being pumped through a hollow steel tube driven roughly 40 cm depth into the soil. At Mouse Mountain and Mount Milligan, the CO_2 and O_2 concentrations in soil gas were determined with a custom-built measurement system, whereas the commercially available GasLab® Pro Multi-Gas CM 1000 Data Logger™ was used to measure CO_2, O_2, and methane (CH_4) on the Anita property. Duplicate analyses over test sites indicate CO_2 and O_2 values obtained from the two systems are comparable; however, the CM 1000 Data Logger has a higher O_2 detection limit at 100 ppm, as compared to the 10 ppm detection limit for the custom-built system.

Three metrics were calculated for data display and interpretation: ΔCO_2, ΔO_2, and $\Delta CO_2\&O_2$. The ΔCO_2 and ΔO_2 values represent soil gas CO_2 and O_2 concentrations after compensation for atmospheric CO_2 and O_2 levels. Typically, CO_2 in soil gas increases over a fault with an associated decrease in O_2, and therefore, the $\Delta CO_2\&O_2$ is used as a single measure of the total ΔCO_2 and ΔO_2 variability, providing higher contrast anomaly. There is a strong spatial correlation of positive soil gas ΔCO_2, and negative ΔO_2 anomalies with fractures mapped in a bedrock trench at Mount Milligan and with the faults projected from the bedrock geology at Anita.

At Mouse Mountain, fault locations are inferred from the survey results, assuming a spatial relationship between structure and soil gas chemistry. Soil samples were also collected at Mouse Mountain, which underwent a multi-element geochemical analysis with an inductively coupled plasma mass spectrometer following a water leach. Higher water-soluble sulphur levels spatially associated with a $\Delta CO_2\&\Delta O_2$ peak could indicate the release of SO_2, carbon disulphide and carbonyl sulphide from oxidizing, fault-hosted sulphide minerals. The positive relationship suggests that a field analysis of a soil-water leach for SO_4 could be completed in combination with soil gas CO_2 and O_2 measurements to differentiate sulphide mineralized faults from non-mineralized faults. The current research indicates portable CO_2 and O_2 sensors can be effectively used to detect buried structures, and with the addition of other gases, may be able to differentiate mineralized structures.

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The full article of the above can be viewed at: https://www.appliedgeochemists.org/index.php/publications/explore-newsletter.