16th SGA BIENNIAL MEETING
KEYNOTE SPEAKER

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Pining for an anomaly: Vectoring towards mineralisation using biogeochemistry

The value of regional geochemical mapping is well established in mineral exploration. The use of vegetation as the primary sampling media at the regional scale has, however, rarely been evaluated. A series of deposit and regional scale biogeochemical studies has recently been conducted in the highly mineralized Cobar Basin of NSW, other parts of the Lachlan Fold Belt and Broken Hill Block, and in Cyprus. Sampling has generally focused on species of Pinus based on their capacity to take up a wide range of metals without causing toxicity to the plants. The studies have included comparisons between laboratory-based element analysis methods and portable XRF. Strong biogeochemical responses have been found in pine needles over a range of deposit types (Au, Cu-Pb-Zn, Ni-Co) with otherwise low background values. Coherent zones with multi-element anomalous biogeochemical values are observed in areas where mineralization is buried under transported cover up to 10 m in depth. This includes both the main ore-related elements and other mineralization related elements including W, As, Re and REEs. With the pines the only element for which responses are typically subdued is Cu, indicating strong controls on uptake. Biogeochemical sampling is rapid and the sample preparation requirements similar to regolith materials such as soils and stream sediments.

David's keynote lecture at SGA 2022 is sponsored by AAG.

David Cohen

David Cohen has over 35 years' experience in exploration and environmental geochemistry in Australia, Europe, Asia, the Middle East and North America. He completed an MSc at Queen's (Canada) and a PhD at UNSW where he eventually headed the School of Biological, Earth and Environmental Sciences and subsequently President of the Academic Board. His research interests span regional geochemical mapping programs to analytical techniques and data processing methods, including completion of the Soil Geochemical Atlas of Cyprus. He has led various studies on the use of biogeochemistry in mineral exploration and is normally armed with a portable XRF, secateurs and a chain saw in the field. He has published over 80 papers and major reports, and been a technical consultant to various exploration companies and government departments. He is a member of the science advisory committee of the MinEx Cooperative Research Centre. David is President of the Australian Geoscience Council, a fellow of the Royal Society of New South Wales and was the 2013 AusIMM visiting lecturer to New Zealand. David is a Past-President and the 2017 silver medal recipient of the Association of Applied Geochemists which is supporting his keynote address at SGA 2022.