# 16th SGA BIENNIAL MEETING
# KEYNOTE SPEAKER

**In concurrent session:** ***Trace elements in minerals: where do we stand on the road between the holy grail and a can of worms?***


## Nigel Cook

School of Civil, Environmental and Mining Engineering, University of Adelaide, Adelaide, South Australia


## Trace elements in minerals: where do we stand on the road between the Holy Grail and a can of worms?


Accelerating advances in analytical technologies enable study of trace elements in minerals at ever improving sensitivity and spatial resolutions. Trace element concentration data are increasingly used to support petrogenetic interpretations, constraining ore-forming conditions, and development of distribution models for potentially valuable minor ore components. Although many datasets for minerals from mineral deposits of different types have been published, there is a growing recognition that without ultra-careful multi-technique characterisation of the analysed material, interpretations of the observed trace element patterns may be questionable. Nanoscale studies have shown that commonly held assumptions about the state of elements in minerals do not always hold true and that fluid-assisted reaction may drive nano- to micron-scale trace element remobilisation.


***Nigel's keynote lecture at SGA 2022 is sponsored by IAGOD.***

## Nigel Cook

Nigel Cook is a mineralogist-geologist with research interests in complex ore deposits, sulphide mineralogy, geochemistry, and mineral processing. He obtained his PhD from the University of London (U.K.) in 1988. He has worked in Canada, Germany, and Norway before joining The University of Adelaide in 2009.

Nigel's research career has been at the interface of mineralogy, geochemistry, and mineral processing with extensive transdisciplinary collaborations across sciences and engineering disciplines. He was Director of the Australian Research Council Hub for Australian Copper-Uranium (2015-2020) and is currently Director of the Industry Consortium 'Unlocking Complex Resources through Lean Processing', a research program designed to integrate the entire mining value chain by using machine learning, sensors, and data analytics. His current research focuses on the mineralogical characterisation of complex ore deposits. This includes tracking critical minerals through comminution-flotation-smelting and electrorefining at Olympic Dam, South Australia.

Nigel is Past President of the International Association on the Genesis of Ore Deposits (IAGOD) and was Editor-in-Chief of Ore Geology Reviews between 2003 and 2011. In 2018, he was awarded the prestigious Kutina-Smirnov Medal "in recognition of his outstanding contributions to the field of economic geology". Nigel's keynote lecture at SGA 2022 is sponsored by IAGOD.