



16th SGA BIENNIAL MEETING KEYNOTE SPEAKER



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The critical importance of ‘secondary prospectivity’ in a dynamic global climate

At COP26, global leaders, and indeed prominent figures in the Scientific community, declared that Planet Earth is at crisis point. Unless an international effort is immediately coordinated, then humankind will fail to meet emission reduction targets and destroy the future for generations to come. What was not emphasized was the critical role of mining to facilitate manufacturing of new technologies required to support the inevitable energy transition. Taking copper alone, projections show that a 9-fold increase in quantity will be needed by 2050 with this metal used in electric vehicle (EV) manufacturing. Whilst environmental challenges such as severe air pollution (e.g. New Delhi, India) may be reduced through the international uptake of EVs, increased copper mining will produce billions of tons of additional mining and metallurgical wastes. Risks associated with mine waste are typically geotechnical (e.g. Brumadinho tailings storage failure, 2019) or geoenvironmental (e.g. acid and metalliferous drainage) and cost many millions of dollars to adequately manage using traditional methods.

With increasing global focus on: i) Environmental, Social and Governance (ESG) risks in mining; ii) adoption of circular economy principles; iii) growth of critical metals sectors; and iv) waste reduction across all industries, a new business opportunity to perform ‘secondary prospectivity’ analysis on mine waste is gaining momentum. In Europe, Chile, Canada, Australia and the United States alone, significant efforts by both Government organisations and the mining industry are underway to characterize and determine valorisation options for mine waste. One outcome is identifying mine waste prospects that have the potential to supplement the increasing demand for critical metals (e.g. Co, REEs and In). Looking ahead, an international ‘Mine Waste to Resource’ standard should be developed to enable new opportunities for economic rehabilitation to be identified by a range of stakeholders, therefore helping the global community de-risk existing and future mine wastes.



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Before completing her PhD in 2012 at the Centre for Ore Deposit and Earth Sciences (CODES), Dr Anita Parbhakar-Fox obtained a 1st class MSci (Hons) degree from the Royal School of Mines, Imperial College (University of London), in Environmental Geology (2005).

Professionally, Anita has worked as an environmental consultant (2005-06) and as a research assistant for the AMIRA P843 geometallurgy project (2006-07). She worked part-time as a Junior Research Fellow for the Cooperative Research Centre for Optimising Resource Extraction (CRC ORE; 2011-2012) and then went on to become a postdoctoral research fellow in the Environmental Indicators program (2012-2015). Anita was appointed as a postdoctoral research fellow for the ARC TMVC Research Hub (2015-2019) where she served as the deputy leader of Theme 3 (minimising geoenvironmental risks) and the leader (2016-2018) of Program 2 (Geometallurgy, Geoenvironment and Mining) at CODES.

Currently, Anita is a Group Leader - Mine Waste Transformation through Characterisation (MiWaTCH) at the W.H. Bryan Mining and Geology Research Centre, within the Sustainable Minerals Institute. Anita and her team are undertaking research focussed on mine waste characterisation to improve mine planning and waste management practices. They are working with mining industry, METS sector and government stakeholders. Anita has developed new tests and protocols for improving waste characterisation and is also involved in identifying remediation options for abandoned/ historical mine sites. Most recently, Anita has led industry and government funded projects focused on secondary prospectivity of mine waste to build business cases for economic rehabilitation.
