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Trace element deportment – knowledge is power

Over the past century, mankind's appetite for metallic resources from mineral deposits has grown dramatically, in step with technology and population growth. Under the foreboding clouds of a changing global climate, governments across the globe have pledged to reduce CO_2 emissions and transition toward a carbon-neutral future. The road to this carbon-neutral world will be paved by metals that need to be extracted from mineral deposits that are largely yet to be found or developed. The demand for metals like Cu and Co in the great electrification must also drive innovation in the minerals industry to increase not just discovery, but also recovery. Many critical metals occur as trace elements in ore deposits for other major commodities, but these trace elements are not typically recovered. Characterizing the occurrence of critical metals early in project studies facilitates recovery options for these commodities to be considered during metallurgical circuit design. Just as society had embraced recycling, and now many consider it abhorrent to put aluminium cans or glass into landfill, so the minerals industry and its stakeholders should object to critical metals languishing in tailings dams or waste dumps. Waste materials of the past are now considered deposits of the future with reprocessing becoming increasingly feasible for many sites. Never before has it been so important to break down silos and have geologists and metallurgists work together to solve a global critical metal supply issue and increase the range of metals recovered from ore deposits. A robust approach to geological characterisation that reveals discrete populations of mineralogy, texture and trace element deportment is the cornerstone of future recovery opportunities and success.

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Dr Angela Escolme is currently a Senior Lecturer in Geology and Geometallurgy at the Centre for Ore Deposits and Earth Sciences (CODES), University of Tasmania, Australia. Her research activities at CODES over the past five years have been centred around developing new approaches to ore deposit characterization for improved geometallurgical domaining and predictions of processing performance, as well as advancing our understanding of ore deposits. She enjoys working closely with the minerals industry to find innovative solutions to real world problems. Prior to completing her Ph.D. at the University of Tasmania in 2016, Angela spent four years working in regional, near-mine and underground gold exploration in Western Australia. She also holds a Master of Earth Sciences degree from the University of Manchester, UK.