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Brief Summary

The Fraser Zone is located in southern Western Australia. It is a unique and complex litho-tectonic unit of the Albany-Fraser Orogen, a Proterozoic orogeny and re-worked margin of the Archean Yilgarn Craton. The area has seen a significant increase in exploration activity for magmatic sulphide ores since the discovery of the Nova-Bollinger Ni-Cu-Co deposit in 2012. Sulphides are intersected in most of the exploration drillholes across the Fraser Zone, yet whether these sulphides represent the footprint of a bigger, economic mineral system (that warrants further investment in more drilling) is unclear. Alteration is notoriously subtle; the rocks are metamorphosed to amphibolite-granulite facies and the bedrock is covered by a < 150m thick regolith.

My research objective is a quantitative understanding of the processes that control the contained metal grade of the magmatic sulphide mineralisation using a combination of sulphur isotopes and trace element ratios to build a process-based model to explain metal tenor at different localities across the Fraser Zone. I will develop tools to recognise the presence of mineralisation from indirect, geochemical evidence that are applicable to exploration efforts across the Fraser Zone and at craton margins worldwide. This research is co-funded by the Minerals Research Institute of Western Australia, the Geological Survey of Western Australia, and industry bodies the Creasy Group and Independence Group plc.

Education: MSci Geology, Imperial College London (Royal School of Mines)

Research Interests: Ore Deposit Geochemistry, Exploration Geochemistry, Mineral Systems, Economic Geology

Thesis Title: Controls on Mineralisation Derived from Sulphur Isotopes and Trace Element Distributions in the Fraser Zone, Western Australia

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