

GEOLOGICAL AND GEOCHEMICAL CONSTRAINTS ON THE ORIGIN & DIAGENETIC HISTORY OF NEOPROTEROZOIC BREAMAR IRONSTONES (SA) BASED ON NEW METAL ISOTOPE (FE, CR) AND REE PROXIES

MINEX CRC PROGRAM 3

Finding Mineral Systems Under Cover

PHD PROJECT

University of Adelaide

PRIMARY SUPERVISOR

Assoc. Prof. Juraj Farkas

e: juraj.farkas@adelaide.edu.au

t: +61 8 8313 6794

CO-SUPERVISORS

Prof. Alan Collins (University of Adelaide), Assoc. Prof. Justin Payne, Prof. David Giles (UniSA), Dr. Erick Ramanaidou (CSIRO)

PARTICIPATING ORGANISATIONS



RESEARCH PROJECT

This project will utilise combination of traditional exploration techniques (mapping, mineral and geochemical/elemental characterization), coupled with novel metal isotope techniques (iron and chromium isotopes), to constrain:

(i) the origin, depositional settings and palaeo-redox conditions,

(ii) diagenetic and post-depositional history of the Neoproterozoic Braemar Iron Formation in South Australia, to

(iii) address key challenges for the future development and de-risked profitable extraction of magnetite iron ore from this unique Fe resource.

Specifically, the acquired geo-spatial mineralogical and geochemical/isotope datasets, will be used to produce 3D interpretative framework and models for the origin of Braemar iron ore formation and associated palaeo-redox conditions, with imprint of post-depositional alteration processes (e.g., fluid rock/interaction models) and their effects on Fe accumulation and distribution, to better predict and characterize the value component (magnetite) in this ancient and economic depositional system.