



SIEF supports John Stocker Postdoctoral Fellow studying unconventional hydrocarbon-related precious metal ores

the challenge National economies depend on reliable supplies of industrially-relevant metals. The occurrence of precious, rare, and base metal ore associated with organic-rich black shales in the Yangtze Platform in southern China offers an opportunity to study three fundamental problems in geoscience: the origin of ore deposits in sedimentary basins; the role of organic matter in the concentration of metals; and the origin of the Early Cambrian explosion of multicellular life.

the response A SIEF John Stocker Postdoctoral Fellowship supported Dr Anais Pages to investigate Cambrian age black shales in South China, showing for the first time that giant sulphur microorganisms may be responsible for creating incredibly complex polymetallic structures. For comparison, Dr Pages also investigated sediments of similar age from the Georgina Basin in central Australia using inorganic and organic geochemistry to find correlations between increased concentrations of oxidation-sensitive metals in black shales to significant extinction events during the Cambrian period.

the collaboration Dr Pages was supervised by Dr Steven Barnes at the CSIRO, and the research was a collaboration among several innovative research teams. CSIRO provided expertise in new technologies to study ore deposits; Curtin University of Technology provided world-class laboratory facilities for organic geochemistry research; and the University of Kiel and Guiyang Institute of Geochemistry in China contributed international expertise.

the impact The outcomes of this project will have important projected impacts, including:

- Enabling improved mineral exploration and extraction across Australian basins and across continents by developing new methods of refining global stratigraphic correlations; thereby increasing potential metal ore finds and future mining yields.
- Raising the profile of Australian biogeochemical research.
- Supporting the career development of Dr Anais Pages, a promising early career researcher, to develop research skills in organic geochemistry; and providing training opportunities in science communication and publishing. Dr Pages has been awarded the CSIRO John Philip Award for the Promotion of Excellence in Young Scientists, the CSIRO Mineral Resources Award for Science Achievement – Early Career Scientist, and the Best Poster Presentation Award at the 2016 Geofluid Conference. She was also selected for the 2018 Homeward Bound leadership program for women in STEM.

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What is SIEF?

Spanning a history of over 90 years, the Science and Industry Endowment Fund (SIEF) provides grants to science and scientists for the purposes of assisting Australian industry, furthering the interests of the Australian community and contributing to the achievement of Australian national objectives. This unique and esteemed funding arrangement received a substantial gift from CSIRO made possible from proceeds of its fast wireless local area network (WLAN) technology, facilitating the rejuvenated Fund to be a mechanism for significant support of science in Australia.