

HDR PROJECT SUMMARY

CHARACTERISATION OF MACROSCOPIC SALT INCLUSIONS TO DE-RISK SALT CAVERN SITE SELECTION

HDR PROJECT DESCRIPTION

Macroscopic diapiric inclusions range in size from centimetres to kilometres that are, at present, contained within a salt formation or diapir and can be composed of any rock lithology. Unravelling complex stratigraphic and structural relationships within salt formations and diapirs will aid in developing a better understanding of the viability of economic hydrogen fuel storage that would be suitable for heavy industry. For large-scale storage of hydrogen, the cheapest and safest option is underground in salt caverns. To establish the best location for a salt cavern, it is imperative to identify and de-risk macroscopic inclusions. This project aligns with HILT CRC's Output 1.01 (Decarbonise production of green iron products from magnetite ore), 2.01 (Technology and Methods to manage variable sources of renewable electrical energy within a process), and 3.03 (Community Engagement and Sustainability Leadership).

PROJECT OBJECTIVES

The primary objective of this project is to characterise outcrop and subsurface datasets from the Flinders Ranges, South Australia as analogues to de-risk salt cavern site selections in areas with limited or poor data quality. The learnings and outcomes from this project will provide industry partners with geologically favourable locations to store hydrogen in heterolithic and structurally complex salt formations and diapirs.

PROJECT SCOPE

The scope of this project will include traditional field research, drone data acquisition, core descriptions and sampling, subsurface dataset interpretation of seismic reflection data, gravity, and magnetics of Flinders Ranges diapirs.

QUALIFICATIONS AND EXPERIENCE

Candidates are required to have:

- A strong foundation in sedimentology and stratigraphy, or structural geology.
- An interest in undertaking a multi-faceted PhD research program, including sedimentology and structural geology, outcrop fieldwork in the Flinders Ranges, South Australia, laboratory analyses and interpretation of seismic reflection, gravity, and magnetic data. Prior research experience should include one or more of these.
- Interest in undertaking applied research, with collaborative Aboriginal and government engagement, and the opportunity to engage with industry sponsors.

To determine your eligibility for studying at The University of Adelaide visit: adelaide.edu.au/graduate-research

For further enquiries and more details, please contact Dr Rachele Kernen:

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PRIMARY UNIVERSITY SUPERVISOR

- Dr Rachele Kernen,
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CO-SUPERVISOR

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PROJECT PARTNER

- The University of Adelaide

PROJECT TYPE

- PhD

DATE ADVERTISED

- Monday 30 October 2023

HILT CRC POSTGRADUATE PROGRAM

Are you interested in receiving training from world-leading researchers, whilst working with industry partners on real-world problems?

Join the HILT CRC postgraduate program for a research career in de-risking decarbonisation for heavy industry.

Through engagement with industry and universities we are committed to training the heavy industry workforce of the future through practical, demand driven research projects with world-leading teams and facilities.

We offer Higher Degrees by Research (HDR) through a PhD or Masters qualification for up to 3.5 years duration, providing you with the opportunity to acquire world-leading training in a field of growing demand to take your engineering career further.

By joining our postgraduate research program, you will work on real industry problems and challenges with the potential for immediate high-impact practical results to decarbonise heavy industry.

When undertaking a research degree with us, you will also gain:

Expert knowledge – designed specifically for the heavy industry sector and draws on your foundation of engineering knowledge by developing further skills tailored to transitioning the steel, iron, alumina and cement industries to reduce heavy industry's carbon emissions.

Invaluable networking opportunities and professional development – benefit from opportunities to collaborate and network with multiple industries and research experts and teams via participating in the HILT CRC specialised webinars, yearly conferences, and master classes.

Career outcomes – linked with industry and government, you will gain hands on industry experience to help you develop the skills required to operate in a new low-carbon economy, become an expert in your field, and enhance your employability.

A platform for communicating your findings – your research findings may be presented at industry conferences, published, commercialised and in turn, create a positive impact on society.

Financial Support and Scholarships

We can provide full, co-funded or top-up scholarships to eligible postgraduate students (Higher Degree by Research students at both Master and PhD levels) across our three research programs at our partner universities. The distribution of funding is at the discretion of the principal (main) supervisor of the project and may be used for student stipend, costs associated with the research project or other expenditure related to the project.

Any student interested in undertaking a postgraduate scholarship is encouraged to review the [Scholarship Guidelines](#) and complete the [HDR Scholarships Application Form](#). Details for how to apply for postgraduate scholarships are included in the guidelines.

How to Apply

All HILT CRC prospective postgraduate students are required to enrol in their degree through their host institution as per the normal university application process. Therefore, students need to meet the requirements stipulated by the host university to enrol (e.g. appropriate Honours or Masters degree).

Further Information

For more details about the postgraduate research opportunities and projects, and financial support with HILT CRC, contact us at hdr@hiltcrc.com.au