**Expression of Interest (EOI) for ICSS Research Project - 2022**

-- ***Please remove below Instruction note before submitting*** --

This EOI proposal template is designed as the ‘pre-submission’ of a grant application for ICSS Research Project to be funded by HBIS grant via ICSS. The outcome of EOIs assessment is expected to be announced early May 2022. The selected EOIs will be invited for submitting a full project proposal by 2 May 2022.

The applicants may need to complete the [UQ Funding Application Coversheet](https://research.uq.edu.au/files/51376/UQ_funding-application-coversheet.dotx) and have it approved by their Head of School. Please consult your School or Institution for further advice about this requirement.

The EOI proposal, including table(s) and figure(s) if applicable, should be limited in 2 ~ 3 **A4 pages** in total. Please prepare your EOI using this template including the headlines below:

**1. Title of project**:

**2. Investigator(s)**:

**3.** **Proposed research team and partners** (if applicable):

**4.** **List of deliverables/outcome(s) or potential breakthroughs** of the project:

**5.** **Summary of the capacity of research team and facilities** to achieve the outcomes listed in item 4 (providing key references as evidence, if applicable):

**6.** **Briefing the proposed methodology** for the project:

**7.** **Proposed training plan for students, research fellows and/or engineers associated the project** (List people/groups across the Centre and beyond):

**8.** **Proposed budget** (List personnel, (minor) equipment, project cost, etc. as estimates at this stage, considering the required grant for the project to be limited to ~$150K per year over 3 years):

**9.** **Proposed approach to apply leverage funding, such as ARC Linkage** **application with extended research scope**:

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**Please refer the Call-for-EOI guidelines and consider below prioritized projects:**

1. Development of low-carbon and hydrogen metallurgical technologies, specially

* low-cost hydrogen production technology
* Mechanism of hydrogen-rich gas-based shaft furnace reduction of iron oxide
* Industrial scale modelling and numerical simulation of material flow and energy flow of hydrogen-based shaft furnace
* Fundamental understanding and key technology to address the problems of heat balance and gas utilization efficiency in hydrogen-based shaft furnace

1. Intelligent and automatic iron and steel metallurgical process, including associated intelligent algorithm and sensor technology, specially

* On-line real-time temperature measurement of high-temperature molten metal
* On-line composition analysis of high-temperature molten metal
* Rapid analysis of multicomponent slag composition
* Three-dimensional characterization of steel internal defects

1. Development of advanced metal materials and associated manufacturing technologies, including

* Hydrogen storage materials
* High-temperature resistance alloy
* High corrosion resistance offshore steel
* Additive and/green manufacturing technology

1. Utilisation of low-grade and waste resources (e.g. low-grade ore, slag and CO2)
2. Advanced energy saving and environment improvement technology for steel industry.