# Position Details

## CSIRO Early Research Career (CERC) Postdoctoral Fellowship– CSOF4

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| The following information is for applicants | |
| Advertised Job Title | CSIRO Postdoctoral Fellowship in Next generation materials for hydrogen permeation |
| Job Reference | 76684 |
| Tenure | Specified Term of 3 years  Full-time |
| Salary Range | AU$ 88,163 to AU$ 96,573 pa (pro-rata for part-time) + up to 15.4% superannuation |
| Location(s) | Brisbane, QLD |
| Relocation Assistance | Will be provided to the successful candidate if required |
| Applications are open to | * Australian/New Zealand Citizens and Australian Permanent Residents * Australian temporary residents who are currently residing in Australia (visa sponsorship may be provided to eligible candidates) |
| Position reports to the | Team Leader Hydrogen & Gasification Materials |
| Client Focus – Internal | 60% |
| Client Focus – External | 40% |
| Number of Direct Reports | 0 |
| Enquire about this job | Liezl Schoeman [Liezl.schoeman@csiro.au](mailto:Liezl.schoeman@csiro.au) +61406136369 |
| How to apply | Apply online at <https://jobs.csiro.au/>  Internal applicants please apply via **Jobs Central**  If you experience difficulties when applying, please email [careers.online@csiro.au](mailto:careers.online@csiro.au) or call 1300 984 220. |

### Role Overview

**CSIRO Early Research Career (CERC) Postdoctoral Fellowships** provide opportunities to scientists and engineers who have completed their doctorate and have less than three years relevant postdoctoral work experience. Successful applicants will work with leaders in the field of science and receive personal development and learning opportunities. These fellowships aim to develop the next generation of future leaders of the innovation system through:

* A differentiated career development program to deliver capability excellence and breadth across all facets of the national innovation system.
* Research training via strategic research and development projects with a clear focus that will deliver real impact through science and engineering excellence;
* An innovative culture supporting the development and demonstration of original thinking and expertise leading to peer-recognition; and
* Opportunities to develop skills and experience in collaborative research teams to effectively work within national and global multi/transdisciplinary and multi-stakeholder environments.

CERC Postdoctoral Fellows **are appointed for three years or part time equivalent.**

As part of our effort on low emission carbon technologies, we seek an enthusiastic and motivated scientist with Ph.D. degree in Metallurgy, Electrochemistry, Materials Science, Physics or Chemical Engineering for a three-year Postdoctoral Fellowship. The successful applicant will have a sound working knowledge of metallurgy, electrochemical techniques, procedures and laboratory instrumentation, and have a reasonable understanding of hydrogen permeation / storage materials, including gas safety procedures.

The Postdoctoral Fellow is sought to work with a dedicated and experienced Metal Membrane Technologies Team, to research and develop next generation materials for optimised hydrogen permeation and separation efficiencies with a focus on understanding hydrogen permeation and diffusion phenomena and mechanisms through metallic crystal lattices. The Postdoctoral Fellow will take a leading role to research, evaluate and develop materials for hydrogen gas separation and permeation.

### Duties and Key Result Areas:

Based at CSIRO Energy Technology’s Pullenvale laboratory, the Postdoctoral Fellow will conduct research on materials related to high purity hydrogen.

Duties will include:

* Selection of suitable materials and metallic coatings for hydrogen permeation, understanding relationship between intermetallic lattice structure / microstructure, surface area and permeation/flux/separation efficiency/hydrogen purity from hydrogen gas mixtures produced from ammonia/steam methane reforming/LOHC or other sources.
* Investigations on the effect of different types of carbon and gaseous impurities on the permeation reaction to establish relationships with surface parameters and performance
* Design, development, evaluation and construction of test fixtures / rigs to evaluate hydrogen gas permeation and optimise operating regime.
* Materials characterisation (XRD, SEM, TEM, DTA/TGA, surface area, etc.) to characterise and relate surface defects, coating thickness, crystal structure, microstructure to hydrogen gas permeation performance.
* Carry out data acquisition, analysis, interpretation and post-mortem analysis of permeation tests and membrane materials.
* Contribute to the effective functioning of a research team and help deliver upon team’s objectives.
* Communicate research outcomes in both oral and written form including presentations to a variety of audiences, reports and peer reviewed scientific publications.
* Adhere to CSIRO requirements for information security, HS&E and EEO in accordance with the CSIRO Code of Conduct.
* Work with other team members and provide support and/or supervision of junior staff or students, etc.
* Produce high quality scientific and technical outputs including journal articles, conference papers and presentations, patents and technical reports.
* Develop innovative concepts and ideas for further research.
* Regularly review relevant literature and patents.
* Contribute to the effective functioning of the research team and help deliver upon CSIRO’s organisational objectives.
* Participate in CSIRO’s postdoctoral training program.

Under the direction of senior research scientists and engineers, CERC Postdoctoral Fellows:

* + Carry out innovative, impactful research of strategic importance to CSIRO that will, where possible, lead to novel and important scientific outcomes.
  + Recognise and exploit opportunities for innovation and the generation of new theoretical perspectives, and progress opportunities for the further development or creation of new lines of research
  + Utilise design thinking methodology to plan and prepare research proposals, and apply non-academic impact methodology to research projects
  + Carry out research investigations requiring originality, creativity and innovation
  + Record, manage, and analyse data/information using relevant domain data science techniques.
  + Proactively undertake development to grow effective researcher capabilities to support career goals.
  + Adhere to the spirit and practice of CSIRO’s Code of Conduct, Health, Safety and Environment procedures and policy, Diversity initiatives and Making Safety Personal goals.
* Other duties as directed.

[**The CERC Postdoctoral Fellow learning and development program**](http://www.csiro.au/en/Careers/Student-and-graduate-programs/Postdoctoral-fellowships)is developed between the CERC Postdoctoral Fellow and their CSIRO supervisor. The program will focus on enhancing the Fellows’ capabilities to the level expected of an independent researcher and will include on-the-job and course-based development encompassing:

* Discipline-specific techniques and protocols
* Professional growth
* Project management
* Communication and influencing skills
* Working and collaborating with others

## **Required Competencies:**

* **Teamwork and Collaboration:** Cooperates with others to achieve organisational objectives and may share team resources in order to do this. Collaborates with other teams as well as industry colleagues.
* **Influence and Communication:** Uses knowledge of other party's priorities and adapts presentations or discussions to appeal to the interests and level of the audience. Anticipates and prepares for others reactions.
* **Resource Management/Leadership:** Allocates activities, directs tasks and manages resources to meet objectives. Provides coaching and on the job training, recognises and supports staff achievements and fosters open communication in the team.
* **Judgement and Problem Solving:** Investigates underlying issues of complex and ill-defined problems and develops appropriate response by adapting/creating and testing alternative solutions.
* **Independence:** Recognise and makes immediate changes to improve performance (faster, better, lower cost, more efficiently, better quality, improved client satisfaction).
* **Adaptability:**Copes with ambiguity or situations that lack clarity. Adapts readily to changing circumstances and new responsibilities (which may include activities outside own preferences) in the interests of achieving team objectives. Recognises the need for and undertakes personal development as a result of changes.

## **Selection Criteria**

#### Essential

*Under CSIRO policy only those who meet all essential criteria can be appointed.*

1. A doctorate (or will shortly satisfy the requirements of a PhD) in a relevant discipline area, such as Metallurgy, Electrochemistry, Materials Science, Physics or Materials/Chemical Engineering.

Please note: To be eligible for this role you must have **no more than 3 years** (or part time equivalent) of postdoctoral research experience.

1. High scientific creativity demonstrated by a track record and capacity to carry out original, independent and innovative research in solving complex problems and introducing new directions and approaches.
2. Sound knowledge and experience working with hydrogen within hydrogen energy applications.
3. Proven understanding of chemical and laboratory equipment handling requirements particularly with respect to Health, Safety and Environment compliance – specifically within the hydrogen space.
4. High level written and oral communication skills with the ability to represent the research team effectively internally and externally, including the presentation of research outcomes at national and international conferences.
5. A sound history of publication in peer reviewed journals and/or authorship of scientific papers, reports, grant applications or patents.
6. A record of science innovation and creativity, including the ability & willingness to incorporate novel ideas and approaches into scientific investigations.

## **Desirable:**

1. Knowledge of hydrogen permeation techniques
2. Reactor design and modelling
3. Remain productive, positive and resilient in complex, ambiguous and/or uncertain environments.
4. **The ability to work effectively as part of a multi-disciplinary, potentially regionally dispersed research team, plus the motivation and discipline to carry out autonomous research.**

To be appointed as a CERC Postdoctoral Fellow within CSIRO, candidates are required to have **submitted** their PhD at the time of commencement, as a minimum requirement, if PhD conferment has not been obtained. If a candidate has submitted, but their PhD has not yet been formally attained, the starting salary will be CSOF4-1 ($85,361). Upon CSIRO receiving written confirmation that the PhD has been awarded (within a six month period from commencement date), the salary will be increased to the negotiated level and the difference will be back-paid to the Officer’s start date.

Special Requirements

Appointment to this role may be subject to conditions including provision of a national police check as well as other security/medical/character clearance requirements.

* The successful candidate will be asked to obtain and provide evidence of a National Police Check or equivalent. Please note that people with criminal records are not automatically deemed ineligible. Each application will be considered on its merits.
* If the successful candidate is not an Australian Citizen or Permanent Resident, they may be required to undergo additional security clearances, which may include medical examinations and an international standardised test of English language proficiency (i.e. IELTS test).- https://ielts.com.au/

**Our value proposition**

We want CERC Postdoc Fellows to join our world class science, engineering and digital teams to solve big, complex problems that make a real difference to the future of Australia and the world.

You'll get to work with some of the most talented minds in their fields, not just in Australia, but in the world. At CSIRO, we spark off each other, learn from each other, trust each other and collaborate closely to achieve more than we could individually.

CSIRO Early Research Career (CERC) Postdoctoral Fellow Experience Employee Value Proposition (EVP). Find out more [here](https://www.csiro.au/en/careers/postdoctoral-fellowships)!

## **About CSIRO:**

We solve the greatest challenges through innovative science and technology. To find out more visit us [online](http://www.csiro.au/)!

CSIRO is a values-based organisation.  In your application and at interview you will need to demonstrate behaviours aligned to our values of:

* 1. People First
  2. Further Together
  3. Making it Real
  4. Trusted

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Find out more about CSIRO [Manufacturing](https://www.csiro.au/en/Research/MF)

Find out more about CSIRO [Mineral Resources](https://www.csiro.au/en/Research/MRF)