# 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 Metal Structures for Air Breathing Electrodes |
| Job Reference | 92271 |
| Tenure | Specified Term of 3 years Full-time  |
| Salary Range | AU$92,624 to AU$101,459 pa + up to 15.4% superannuation |
| Location(s) | Clayton, VIC |
| Relocation Assistance | Will be provided to the successful candidate if required |
| Applications are open to | All Candidates (incl. Internationals) |
| Position reports to the | Project and Team Leaders |
| Client Focus – Internal | 100% |
| Client Focus – External | 0% |
| Number of Direct Reports | 0 |
| Enquire about this job | Contact Adam Best via email at Adam.Best@csiro.au  |
| 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 or call 1300 984 220. |

**Acknowledgement of Country**

CSIRO acknowledges the Traditional Owners of the land, sea and waters, of the areas that we live and work on across Australia. We acknowledge their continuing connection to their culture and pay our respects to their Elders past and present. View our [vision towards reconciliation](https://www.csiro.au/en/about/Indigenous-engagement/Reconciliation-Action-Plan).

### Role Overview

**CSIRO Early Research Career (CERC) Fellowships** provide opportunities to scientists and engineers who have completed their doctorate and have less than three years relevant research experience. 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 Fellows **are appointed for three years or full time equivalent.**

CSIRO has over 40 years of experience in the development and application of energy storage devices. We are now beginning to explore the next generation of energy storage devices as part of our recently launched Future Science Platform: Revolutionary Energy Storage Systems (RESS FSP). The RESS FSP is designed to tackle the biggest challenges and we are seeking to explore air-breathing electrodes for the next generation of high energy metal-air batteries.

We have an opportunity for a postdoctoral researcher to join our FSP team that is exploring several different aspects of air-breathing cathodes. The successful candidate will have demonstrated expertise in metals and metal alloys, and a strong working knowledge of electrochemistry, preferably with some experience with batteries or other electrochemical devices. You will work with a diverse team of researchers to design and develop different metal-based substrates to conduct oxygen electrochemistry. You will be responsible for the conceptualisation and development of these materials including the fabrication of electrodes, undertaking fundamental electrochemical studies and characterisation using a range of different methods. You will then report on these activities to both internal and external stakeholders.

### Duties and Key Result Areas

Under the direction of senior research scientists and engineers, this CERC Fellow will:

* + Review and summarise the state-of-the-art of metals and alloys for air-breathing electrodes.
	+ Develop and characterise metal electrodes for air breathing cathodes incl. new metals and / or alloys and fabrication procedures via techniques such as 3D printing,
	+ Understand oxygen electrochemistry in contact with these metals and structures, detailing issues relating to interfaces and other phenomena.
	+ Collect and report data from electrochemical tests, such as battery cycling, cyclic voltammetry and impedance spectroscopy. Be familiar and capable in the use of other characterisation methods, i.e. UV/Vis, Raman and FT-IR Spectroscopy, X-ray Photoelectron Spectroscopy, SEM and others appropriate for batteries and components thereof.
	+ Contribute to the authorship of technical reports and preparation of academic publications.
	+ Keep equipment operational by co-ordinating maintenance and repair of services within the laboratory.
	+ Communicate effectively and respectfully with all staff, clients and suppliers in the interests of good business practice, collaboration and enhancement of CSIRO’s reputation.
	+ Work as part of a multi-disciplinary, often regionally dispersed research team, to carry out tasks under limited direction in support of scientific research.
	+ Work collaboratively with colleagues within your team, the business unit and across CSIRO, to reach objectives.
	+ Allocate activities, direct tasks and manage resources to meet objectives.
	+ Foster open communication, provide on-the-job training to both support and research colleagues, as required.
	+ Adapt and/or develop original experimental methods / equipment / concepts / ideas in support of existing and further research.

Under the direction of senior research scientists and engineers, this CERC Fellow will:

* + 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 Zero Harm goals.
* Other duties as directed.

The CERC Fellow learning, development and training programis developed between the CERC Fellow and their CSIRO supervisor. The program will focus on enhancing the Fellow’s 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

## **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 Material Science/Engineering or related discipline, coupled with experience in some or all of the following: materials design and fabrication methods, microstructure and property evaluation, and electrochemistry.

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

1. An understanding of the relationships between material composition, processing, properties, electrochemical performance, and working environments.
2. Technical and scientific experience or knowledge of functional materials development, computational modelling, and/or structural designing.
3. Experience in electrochemical testing and evaluation of functional properties, and proficiency in a range of materials characterisation and chemical analysis techniques.
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. Experience in development of air breathing electrodes for metal-air batteries.
2. Experience in development of metals and alloy materials and their innovative structures.
3. 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.

## **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.

To be appointed as a CERC Fellow within CSIRO, candidates are required to have **submitted** their doctoral thesis 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 ($89,680). 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 Clearance or equivalent. Please note that individuals 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 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.

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

## **About CSIRO**

We solve the greatest challenges through innovative science and technology. Visit [CSIRO Online](http://www.csiro.au/) and [Manufacturing](https://www.csiro.au/en/Research/MF%22%20%5Co%20%22Manufacturing-%20CSIRO%20Website) for more information.

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

* People First
* Further Together
* Making it Real
* Trusted