# Position Description

## Postdoctoral Fellowship– CSOF4

The following information is for applicants

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| Advertised Job Title**:** | Postdoctoral Fellowship for Microbattery Development |
| Job Reference: | 60058 |
| Relocation Assistance**:** | Will be provided to the successful candidate if required. |
| Applications Are Open To: | All Candidates |
| Percentage of Client Focus - Internal: | 70% |
| Percentage of Client Focus - External: | 30% |
| Reports to the: | Team Leader – Electrochemical Processing |
| Number of Direct Reports: | 0  |
| Name and Contact Details For Applicant Enquiries: | Dr Theo RodopoulosEmail: theo.rodopoulos@csiro.au or Phone: +61 3 9545 8713 |
| Contact Details For Applying: | Call 1300 984 220 or email csiro.online@csiro.au  |
| How to Apply: | Please apply online at [jobs.csiro.au](https://jobs.csiro.au/) and enter the requisition number**.** Internal applicants please apply via ‘Jobs Central’ through the ‘People Hub’ icon Please do not email your application directly to Dr Rodopoulos.   Applications received via this method will not be considered by the selection panel. |

## Role Overview:

A Postdoctoral Fellowship at CSIRO is intended to provide young scientists, who have completed their doctorate and have less than three years relevant postdoctoral work experience, with an opportunity to enhance their research skills and gain experiences so that they are better able to pursue a career in science within CSIRO or beyond. These fellowships are also vital for developing capability for the nation and facilitate the recruitment and development of potential science leaders within CSIRO or beyond.

Postdoctoral Fellows are appointed for up to a maximum of three years and will work closely with a leading Research Scientist or Engineer in their respective field. They carry out innovative, impactful research of strategic importance to CSIRO and the nation with the possibility of novel and important scientific outcomes. They present the findings in appropriate publications and at relevant conferences.

CSIRO has recently established a Future Science Platform (FSP) to develop a standardized, scalable sensor platform. The FSP aims to use this platform in wearable, ingestible and implantable applications for real-time health monitoring. Such a platform will also find use in a wide variety of other applications as well. More specifically, the project is a coordinated approach to develop what all sensing platforms must have: a power source, a programmable micro-chip (or microcontroller) and a memory, a telemetry gateway and software addressing specific needs (e.g., data privacy, security).

The Electrochemical Processing team in CSIRO Mineral Resources is focussed on developing the power source for this sensor platform. More specifically, it is developing innovative microbatteries that have the potential to deliver the necessary energy requirements to drive miniaturised sensors coupled with telemetry. Microbatteries can overcome the problem of diminishing energy storage capacity for a reduced housing space by exploiting the use of complex (nano)architectured electrodes to increase energy storage capacity per unit volume while maintaining a small footprint area. The nature of the battery design introduces some key research challenges which includes:

• Sophisticated fabrication strategies are required to integrate (thin, conformal and contiguous films) of each of the battery materials into a complex battery architecture.

• Development and application of the essential electrolyte technology to suit compositional and geometrical properties of the electrodes.

• The microbattery manufacturing process must be compatible with the integrated circuit technology

The Postdoctoral Fellow will join CSIRO Mineral Resources and work with our collaborators in CSIRO Energy, Manufacturing and Data61 to deliver microbatteries by executing the agreed battery design strategy. The successful candidate will work as part of a multi-disciplinary team comprised of electrochemists, synthetic chemists, modellers and engineers to help with project delivery. We are therefore seeking to recruit a scientist with multi-disciplinary skills (electrochemistry, synthetic chemistry and materials chemistry) to conduct cutting-edge research.

## Duties and Key Result Areas:

* Under the direction of senior research scientists, carry out innovative, impactful research of strategic importance to CSIRO that will, where possible, lead to novel and important scientific outcomes.
* Your primary responsibility is to work within the Electrochemical Processing Team and contribute to the development of the microbattery component of the sensor platform. Tasks will include:
	+ Develop, synthesise and evaluate novel electrolyte systems
	+ Develop electrode components suitable for integration onto the microstructure scaffold and integration with preferred electrolyte system
	+ Integrate all battery materials and demonstrate a functioning device
	+ Assist with the design, development, fabrication and testing of microbattery prototypes.
* Work collaboratively with colleagues within the multi-disciplinary research team, the business unit and across CSIRO to deliver project objectives.
* Carry out tasks in a timely manner under limited direction in support of scientific research.
* Participate in project planning, experimental design, scheduling and completion of projects.
* Adapt and/or develop original experimental methods/equipment/software/concepts/ideas in support of existing and further research. Provide critical feedback on all aspects of the project in order to improve outcomes.
* Contribute to the development of innovative concepts and ideas for further research.
* Prepare conference papers and posters and present them at appropriate conferences and forums as agreed with your supervisor and project leader.
* Produce high quality scientific papers suitable for publication in high quality journals and contribute to the preparation of any patents that arise from the research.
* Undertake regular reviews of relevant literature and patents.
* Contribute to the effective functioning of the Electrochemical Processing Team and the project team and help deliver CSIRO’s organisational objectives and plans.
* Communicate effectively and respectfully with all staff, clients and suppliers in the interests of good business practice, collaboration and enhancement of CSIRO’s reputation.
* Adhere to the spirit and practice of CSIRO’s Values, Health, Safety and Environment plans and policies, Diversity initiatives and Zero Harm goals.
* Other duties as directed.

**CSIRO’s postdoctoral training program**is developed between the Postdoctoral Fellow and a CSIRO scientist or engineer. 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

<http://www.csiro.au/en/Careers/Student-and-graduate-programs/Postdoctoral-fellowships>

## CSIRO Competencies:

1. **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.**
2. **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.**
3. **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.**
4. **Judgement and Problem Solving:** Investigates underlying issues of complex and ill-defined problems and develops appropriate response by adapting/creating and testing alternative solutions.
5. **Independence: Recognise and makes immediate changes to improve performance (faster, better, lower cost, more efficiently, better quality, improved client satisfaction).**
6. **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:

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

1. A doctorate (or will shortly satisfy the requirements of a PhD) in a relevant discipline area, such as electrochemistry, electroanalytical chemistry, electrochemical engineering, and material chemistry.

***Please note:*** *To be eligible for this role you must have* ***no more than 4 years*** *of relevant postdoctoral experience.*

1. Sound knowledge of electrochemical science, including its practice in a research environment and applications such as battery technologies.
2. A good working knowledge of material requirements for electrochemical applications.
3. Sound knowledge and research experience in modern laboratory methodologies, including materials synthesis and characterization (e.g. SEM, XRD, synchrotron-based measurements and spectroscopy).
4. Demonstrated ability to conduct challenging experiments, solve complex experimental problems and cope with ambiguity or situations that lack clarity.
5. **The ability to work effectively as part of a multi-disciplinary, regionally dispersed research team, plus the motivation and discipline to carry out autonomous research while contributing to overall team performance.**
6. Demonstrated ability to analyse information and make independent, correct and timely decisions related to a defined element of the work of the project team
7. A record of science innovation and creativity, plus the ability and willingness to incorporate novel ideas and approaches into scientific investigations. Track record of adapting, creating and testing alternative solutions (e.g. transformation and application of materials).
8. Evidence of strong oral and written communication skills, including the ability to publish the results of scientific research in scientific journals.
9. Demonstrated ability to seek and consider the ideas and opinions of others from within and outside the team to help form decisions, plans or actions.
10. Demonstrated ability to recognise and make immediate changes to improve performance.

**Desirable Criteria:**

1. Previous experience with battery development and testing.
2. Knowledge of electrolytes and materials relevant for electrochemical applications.
3. Experience with or knowledge of the commercialization of technology.

To be appointed as a 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 (AU$82,450)*.* 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 security/national police/medical/character clearance requirements. Applicants who are not Australian Citizens or Permanent Residents 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/>

## About CSIRO:

We imagine. We collaborate. We innovate. To find out more visit us [online](http://www.csiro.au/)!

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