# Postdoctoral Fellowship – CSOF4

Role summary for potential applicants

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| Advertised Job Title**:** | Postdoctoral Fellowship Future Science Platforms in Microbattery development |
| Reference Number**:** | 39496 |
| Classification**:** | CSOF4 |
| Salary Range: | AU $78,479k to AU $88,787k plus up to 15.4% superannuation |
| Location**:** | Clayton, VIC |
| Tenure: | Specified term of 3 years |
| Relocation assistance**:** | Will be provided to the successful candidate if required. |
| Applications are open to: | Australian Citizens Only  Australian Citizens and Permanent Residents Only   * All Candidates |
| Functional Area**:** | Research Scientist/Engineer |
| % Client Focus - Internal: | 70% |
| % Client Focus - External: | 30% |
| Number of direct reports: | 0 |
| Reports to the: | Team Leader – Electrochemical Processing |

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| **Role Overview:** |
| **Postdoctoral Fellowships** at CSIRO provide opportunities to scientists and engineers, who have completed their doctorate and have less than three years relevant postdoctoral work experience. These fellowships will help launch their careers, provide experience that will enhance their career prospects, and facilitate the recruitment and development of potential leaders for CSIRO.  Postdoctoral Fellows **are appointed for up to 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 with the possibility of novel and important scientific outcomes. They present the findings in appropriate publications and at conferences.  CSIRO has recently established a new 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. |

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| **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. * Work within the Electrochemical Processing Team and contribute to the microbattery component of the FSP project. Tasks will include:   + Develop, synthesise and evaluate novel electrolyte systems.   + Reproducibly integrate these electrolytes with the electrode components of the microbattery.   + 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. * Undertake appropriate training and development programs developed by CSIRO. * Other duties as directed.   ***CSIRO’s postdoctoral training program***is developed between the Postdoctoral Fellow and a CSIRO scientist. 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> |

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| **Selection Criteria:** |
| *Under CSIRO policy only those who meet all essential criteria can be appointed*  ***Pre-Requisites:***   1. **Education/Qualifications:** A doctorate (or will shortly satisfy the requirements of a PhD) in a relevant discipline area, such as electrochemistry, electroanalytical chemistry, electrochemical engineering, material chemistry and synthetic chemistry.   ***Please note:*** *To be eligible for this role you must have* ***no more than 3 years*** *of relevant postdoctoral experience.*   1. **Communication:  High level written and oral communication skills with the ability to represent the research team effectively internally and externally, including at national and international conferences.** 2. **Behaviours:**A history of professional and respectful behaviours and attitudes in a collaborative environment.   ***Essential Criteria:***   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 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.   **CSIRO is a values based organisation. You will need to demonstrate behaviours aligned to our values of:**   1. Integrity of Excellent Science 2. Trust & Respect 3. Creative Spirit 4. Delivering on Commitments 5. Health, Safety & Sustainability   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 $78,479.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.  ***Other special requirements:***  *Appointment to this role may be subject to conditions including security/medical/character clearance requirements. Applicants who are not Australian Citizens or Permanent Residents may be required to undergo additional security clearance processes; which may include medical examinations and an international standardised test of English language proficiency (i.e. IELTS test).-* [*http://www.ielts.org/default.aspx*](http://www.ielts.org/default.aspx) |

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| **Other Information:** |
| **How to Apply**  Please apply for this position online at [www.csiro.au/careers](http://www.csiro.au/careers). You may be asked to provide additional information (online) relevant to the selection criteria. If so, then responding will enhance your application so please take the time to provide relevant succinct answers. Applicants who do not provide the information when requested may not be considered.  If you experience difficulties applying online call 1300 984 220 and someone will be able to assist you. Outside business hours please email: [careers.online@csiro.au](mailto:careers.online@csiro.au).  **Referees**: If you do not already have the names and contact details of two previous supervisors or academic/ professional referees included in your resume/CV please add these before uploading your CV.  **Contact:** If after reading the selection documentation you require further information please contact:  Dr Theo Rodopoulosvia email: [theo.rodopoulos@csiro.au](mailto:theo.rodopoulos@csiro.au) or phone: +61 3 9545 8713  Please do not email your application directly to Dr Rodopoulos. Applications received via this method will not be considered.  **About CSIRO**  Australia is founding its future on science and innovation. Its national science agency, the Commonwealth Scientific and Industrial Research Organisation (CSIRO) is a powerhouse of ideas, technologies and skills for building prosperity, growth, health and sustainability. It serves governments, industries, business and communities across the nation.  Find out more! [www.csiro.au](http://www.csiro.au).  **CSIRO Mineral Resources**  CSIRO Mineral Resources works with industry to grow Australia’s resource base, increase productivity and drive environmental performance. We also provide critical scientific analysis that underpins a growing national dialogue on how resources impact society and the environment.  Find out more: <http://www.csiro.au/en/Research/MRF> |