# 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 Highly Selective Biomimetic Separation Membranes  |
| Job Reference | 90600 |
| Tenure | Specified Term of 3 years Full-time  |
| Salary Range | AU$92,624 to AU$101,459 pa (pro-rata for part-time) + up to 15.4% superannuation |
| Location(s) | Clayton, Victoria |
| Relocation Assistance | Will be provided to the successful candidate if required |
| Applications are open to | * Australian/New Zealand Citizens,
* Australian Permanent Residents and
* Australian temporary residents currently residing in Australia (visa sponsorship may be provided to eligible onshore candidates)
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| Position reports to the | Team leader |
| Client Focus – Internal | 80% |
| Client Focus – External | 20% |
| Number of Direct Reports | 0 |
| Enquire about this job | Contact Zongli Xie via email at zongli.xie@csiro.au, phone +61 3 9545 2938; or  Cathryn O’Sullivan via email cathryn.o'sullivan@csiro.au, phone +617 3214 2346.  |
| 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.**

The CERC Fellow will research and implement new approaches to create novel membrane separation technology that enables the harvesting of target resources from nutrient rich liquid waste. The project aims to intelligently combine biomimetic concepts and molecular engineering along with adopting the easy processing and scalability of conventional polymeric membranes to create intrinsic selective mechanisms for energy efficient separation and harvesting of clean water and nutrients from wastewater. The project will include designing the membrane synthesis technique with embedded protein structures for flat sheet and/or hollow fibre membranes, establishing method for membrane module assembly, and ultimately building a prototype system to explore the applications to harvest high value resources from agri-food wastewater and beyond.

### Duties and Key Result Areas

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

* + Develop and optimise the scalable membrane fabrication technique for novel biomimetic selective channel embedded membranes to maximise the membrane separation performance for targeted separation.
	+ Fabricate the spiral wound or hollow fibre membrane module and design a prototype membrane system for membrane performance evaluation using real industrial wastewater.
	+ Undertake regular reviews of relevant literature and patents.
	+ Produce high quality scientific and/or engineering papers suitable for publication in high impact journals, documents for client reports and patent applications.
	+ Present work to a wide variety of audiences and actively engaging in outreach activities and contribute to the development of innovative concepts and ideas for further research.
	+ Undertake experimental research activities and supervise/train students and junior staff to ensure experiments are established in accordance with research design. Address problems promptly and in a constructive manner.
	+ Working effectively as an integral member of a multi-disciplinary and multi-party research team, to undertake both independent and collaborative scientific investigations and carry out tasks under the supervision team and more senior researchers in support of CSIRO’s scientific objectives.
	+ Carry out innovative, impactful research of strategic importance to CSIRO that will, where possible, lead to novel and important scientific outcomes.
	+ Carry out research investigations requiring originality, creativity and innovation
	+ Utilise design thinking methodology to plan and prepare research proposals, and apply non-academic impact methodology to research projects
	+ 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). The doctorate must be in a relevant discipline area, such as materials science/engineering, chemical engineering or chemistry.

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

1. Strong track record of experimental research in membrane materials and technology for desalination, wastewater treatment, and/or resource recovery.
2. Demonstrated strong experience in the common membrane synthesis technique (e.g. phase inversion, interfacial polymerisation, spin coating, solution casting), characterisation and testing of polymeric membranes, preferably for nanofiltration, RO and FO membranes.
3. Demonstrated ability to undertake original, creative and innovative research by generating and pursuing novel ideas and solutions to scientific research problems, including the ability & willingness to incorporate novel ideas and approaches into scientific investigations.
4. A strong publication history in peer reviewed journals and/or authorship of scientific papers, reports, grant applications or patents.
5. 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.
6. Sound experiences to work hands-on in laboratory conditions adhering to Safety and Environment procedures.

## **Desirable**

1. Knowledge and/or experience in scale up flat sheet and/or hollow fibre membrane fabrication, module assembly for both spiral wound and hollow fibre.
2. Strong knowledge of polymer chemistry and experience in membrane surface modification technique, characterisation and membrane transport mechanism study.
3. Knowledge and/or experience in modelling for molecular transport and membrane process.
4. Remain productive, positive and resilient in complex, ambiguous and/or uncertain environments.
5. Demonstrated ability to work effectively as part of a multi-disciplinary, multi-party, regionally dispersed research team, plus the motivation and discipline to carry out both autonomous and collaborative 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 to this CERC Fellowship role within CSIRO, candidates will be expected to commence employment by 31 January 2023. Candidates are also 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