# 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 Applied Optics Sensing for Water Quality Monitoring |
| Job Reference | 81860 |
| Tenure | Specified Term of 3 years  Full-time |
| Salary Range | AU$89,926 to AU$98,504 pa + up to 15.4% superannuation |
| Location(s) | Adelaide, SA  (Brisbane or Hobart considered) |
| 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) |
| Position reports to the | Senior Research Scientist |
| Client Focus – Internal | 100% |
| Client Focus – External | 0% |
| Number of Direct Reports | 1 |
| Enquire about this job | Contact Tim Malthus via email at tim.malthus@csiro.au or phone +61 4 29 071 760 |
| 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. |

**Acknowledgement of Country**

CSIRO acknowledges the Traditional Owners of the land, sea and waters, of the area 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 full-time or equivalent.**

This CSIRO Early Research Career (CERC) Fellow will be involved with the investigation of low-cost optical sensors for water quality IOT networks. The proposed research has the potential to significantly drive the development of cheaper sensor technologies for a range of water quality parameters to realise the goal of widespread and scalable water quality monitoring via the Internet of Things (IOT). The outcomes are considerable, including the potential to realise scalable, autonomous sensing of global aquatic ecosystems ultimately for improved management and decision making. Outcomes will also align with the strategic goals of the joint CSIRO/SmartSAT CRC AquaWatch Australia Mission where a geographically dispersed in situ sensor network is a key pillar of its proposal.

Although affiliated with Oceans and Atmosphere, the CERC Fellow will work within CSIRO’s fast-growing Laboratory for Satellite Optics, located in Adelaide, part of CSIRO Manufacturing, which specialises in optical design for remote and in situ detection of water quality parameters and other environmental parameters. The Fellow will also work with staff across our Mineral Resources and Land and Water Divisions.

This work brings together optical design and instrumentation, data analytics, engineering, biofouling technologies and autonomous, IoT-based water quality sensing; it will bring you into collaboration with a range of scientists, engineers, and will involve testing of prototype designs under field conditions.

This work is supported by CSIRO’s Autonomous Sensing Future Science Platform, which aims to accelerate the generation of new tools to enable growth of digital decision making within domains; combining fundamental sensor research with autonomous engineering solutions to provide new advanced sensing and platform technologies for the environmental monitoring, health monitoring, mining, agriculture, and manufacturing domains.

**Duties/Key Result Areas:**

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

* Design and test customised optical solutions for a range of water quality parameters, investigate diverse approaches to retrieve specific parameters of interest from their signals and evaluate the potential of each approach for national scale sensing networks, and commercialisation pathways.
* Engage with water quality experts and stakeholders to determine needs and evaluate suitability of specific approaches to address these problems.
* Work collaboratively as part of a multi-disciplinary, often regionally dispersed research team, and business unit to carry out tasks in support of CSIRO’s scientific objectives.
* Plan and prepare research proposals, and apply non-academic, industry-oriented impact methodology to research projects.
* Proactively undertake development to grow effective researcher capabilities to support career goals.
* Produce high quality scientific papers suitable for publication in high quality journals.
* Adhere to the spirit and practice of CSIRO’s Code of Conduct, Health, Safety and Environment plans and policies, Diversity initiatives and Zero Harm goals.
* Communicate openly, effectively and respectfully with all staff, clients and partners in the interests of good business practice, collaboration and enhancement of CSIRO’s reputation.
* Other duties as directed.

[The CERC Fellow learning, development and training program](http://www.csiro.au/en/Careers/Student-and-graduate-programs/Postdoctoral-fellowships)is 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

## **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). The doctorate must be in a relevant discipline area, such as physics, engineering, or environmental research, or other fields of research closely related to the project. Other discipline areas may be considered if the candidate fully understands optical environmental sensing.

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

1. Expertise in light and optical detection based on experimental work in physics, photonics, or related field
2. Strong mathematical background in data analysis.
3. Current Australian drivers’ licence or the ability to obtain one.
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 operating and analysing data from water quality sensors.
2. Experience designing and building optical instrumentation.
3. Experience programming devices for remote/autonomous operation.

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 (AU$87,068). 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 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. 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

Find out more about CSIRO [Oceans and Atmosphere](https://www.csiro.au/en/about/people/business-units/Oceans-and-Atmosphere)

Find out more about CSIRO [Manufacturing](https://www.csiro.au/en/about/people/business-units/Manufacturing)