# 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 Experimental Nuclear/X-ray Physics |
| Job Reference | 97483 |
| Tenure | Specified Term of 3 years  Full-time |
| Salary Range | AU$93,267 to AU$105,517 pa (pro-rata for part-time)  plus up to 15.4% superannuation |
| Location(s) | Lucas Heights, NSW |
| Relocation Assistance | Will be provided to the successful candidate if required |
| Applications are open to | All Candidates |
| Position reports to the | Team Leader, X-ray Science |
| Client Focus – Internal | 66% |
| Client Focus – External | 34% |
| Number of Direct Reports | 0 |
| Enquire about this job | Contact Yves Van Haarlem via email at yves.vanhaarlem@csiro.au or phone +61 2 9710 6789 |
| 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 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).

**Child Safety**

CSIRO is committed to the safety and wellbeing of all children and young people involved in our activities and programs. View our [Child Safe Policy](https://www.csiro.au/en/about/policies/child-safe-policy).

### 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.**

We are seeking a dynamic early career nuclear CERC Fellow to spearhead advancements in nuclear-based methods for real time analysis, including neutron or high energy X-ray activation.

The CERC Fellow will form part of the X-ray Technologies group based in Lucas Heights (southern end of Sydney), NSW, Australia. The X-ray technology group is part of the CSIRO Mineral Resource Business Unit and we are world leaders in the development and commercialisation of technologies that enable the assessment of elemental and mineralogical composition of ore in real-time or near real time. In the recent past we have commercialised an on-line gold analysis system (https://www.gekkos.com/solutions/olga).

The CERC Fellow will have the opportunity to work on and be involved in the following:

* Innovation: pursuing new ideas and methodologies within the realm of real-time nuclear-based sensing technology, driving scientific and technological progress.
* Sensor Development: designing and refining industrial prototype systems in collaboration with electrical and mechanical engineers.
* Experiments: coordinating and executing experimental procedures, ensuring rigor and precision in data collection and analysis.
* Playing a leading role in the execution of technology trials.
* Communication and Collaboration: Effectively communicating findings and insights, both internally and externally, fostering collaboration with industry partners and stakeholders.

### Duties and Key Result Areas

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

* + Appropriate existing experimental methods, and create new ones, to measure elemental concentrations using nuclear methods in bulk samples.
  + Wield knowledge and experience to formulate ideas for new in-situ assay techniques.
  + Run Monte Carlo simulations to test ideas and/or validate experiments.
  + Organise all facets of experiments to further an idea; this includes procurement of hardware, setting up equipment such as X-ray or other sources, radiation detectors and using computer programming to run the experiments and collect data.
  + Analyse experimental data and communicate outcomes.
  + Collaborate with engineers to design industrial analyser prototypes for testing in industry.
  + Prepare and organise technology field trials in Australia and overseas.
  + Maintain safe working practices when working with hazardous materials.
  + Communicate openly, effectively and respectfully with all staff, clients and suppliers in the interests of good business practice, collaboration and enhancement of CSIRO’s reputation.
  + 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.
  + Carry out original, creative, 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.
  + 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 Making Safety Personal 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 nuclear physics, or physical sciences or engineering.

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

1. Good theoretical understanding of physics concepts particularly in the areas of nuclear and/or X-ray physics.
2. Demonstrated excellent experimental skills involving spectroscopy measurement hardware.
3. Familiarity with Python or other programming/scripting languages.
4. Good communication and interpersonal skills, including working constructively with research scientists, engineers, support staff and/or client personnel.
5. Demonstrated ability to undertake original, creative and innovative research by generating and pursuing novel ideas and solutions to scientific research problems.
6. A demonstrated publication history of authorship on scientific papers in peer reviewed journals and/or reports, grant applications or inventorship on patent applications
7. 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.

## **Desirable**

1. Experience with nuclear or high energy X-ray sources.
2. Any experience with Photo-multiplier tubes, silicon drift detectors, X-ray tubes, scintillators, signal processing.
3. General electronics knowledge

## **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 ($93,267). 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 is subject to provision of a pre-employment background check and may be subject to 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.
* The successful candidate will be required to obtain and maintain an ANSTO security clearance.
* 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/postdoctoral-fellowships).

## **About CSIRO**

We solve the greatest challenges through innovative science and technology. Visit [CSIRO Online](http://www.csiro.au/) and [Minerals](https://www.csiro.au/en/work-with-us/industries/mining-resources?start=0&count=12) 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