# Position Description

## CSIRO Early Research Career (CERC) Postdoctoral Fellowship– CSOF4

The following information is for applicants

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| Advertised job title**:** | CSIRO Postdoctoral Fellowship in Robotic Additive Manufacturing |
| Job reference: | 61480 |
| Relocation assistance**:** | Will be provided to the successful candidate if required. |
| Applications are open to: | Australian Citizens Only  Australian/New Zealand Citizens and Australian Permanent Residents Only   * All Candidates |
| Percentage of client focus - internal: | 80% |
| Percentage of client focus - external: | 20% |
| Reports to the: | Team Leader |
| Number of direct reports: | 0 |
| 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 |
| Contact details to discuss this position: | Dr Menghe Miao: [menghe.miao@csiro.au](mailto:menghe.miao@csiro.au)  Please do not email your application directly to Dr Miao. Applications received via this method will not be considered by the selection panel. |
| If you have difficulty applying, please contact: | Call 1300 984 220 or email [csiro.online@csiro.au](mailto:careers.online@csiro.au) between 8.30 am and 5:00 pm Australian east coast time. |

## Role Overview:

**CSIRO Early Research Career (CERC) Postdoctoral Fellowships** provide opportunities to scientists and engineers who have completed their doctorate and have less than three years relevant postdoctoral work 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 Postdoctoral Fellows **are appointed for three years or part time equivalent.**

CSIRO Manufacturing is looking for a CERC Postdoctoral Fellow to conduct research in additive manufacturing of fibre-reinforced composite structures. The postdoctoral fellow will be working with a CSIRO multidisciplinary team of experts in mechatronics, robotic engineering, computational modelling, and composite materials science and processing technology.

The postdoctoral fellow will be based at CSIRO’s Fibre Innovation and Composites facility in Geelong, co-located with Deakin University‘s Additive Manufacturing Laboratories, the Carbon Nexus facility, and some of Australia’s most innovative manufacturing start-up companies, providing a wide range of laboratory facilities and opportunities for the postdoctoral fellow to collaborate and develop new ideas and skills.

## Duties and Key Result Areas:

* Under the direction of senior research scientists and engineers, the CERC Postdoctoral Fellow will:
  + Carry out innovative, impactful research of strategic importance to CSIRO that will, where possible, lead to novel and important scientific outcomes.
  + Develop additive manufacturing technology forfibre-reinforced composite structures, from concept to prototype machine*.*
  + Develop methods and software for control of prototype machines and for generation of mechanical models of composite parts.
  + Produce composite parts for demonstration and develop appropriate test protocols.
  + 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.
  + Carry out research investigations requiring originality, creativity and innovation.
  + 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 plans and policies, Diversity initiatives and Zero Harm goals.
* Other duties as directed.

**The CERC Postdoctoral Fellow learning and development program**is developed between the CERC Postdoctoral Fellow and their CSIRO supervisor. 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 mechatronics, mechanical engineering, electrical/electronic engineering, or digital/additive manufacturing.**

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

1. **Evidence of advanced programming skills and software design in languages or platforms relevant for motion control, e.g., C/C++, Python, MATLAB, ROS and MoveIt.**
2. **Experience in implementing path planning for robot manipulators, including simulation and control.**
3. **Demonstrated experience in applying multidisciplinary engineering methods to the development of automated machines or processes.**
4. **Knowledge of fibre-reinforced composite material structure and engineering.**
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. **A sound history of publication in peer reviewed journals and/or authorship of scientific papers, reports, grant applications or patents.**
7. A record of science innovation and creativity, including the ability & willingness to incorporate novel ideas and approaches into scientific investigations.

## Desirable Criteria:

1. Demonstrated ability to integrate COTS components to develop complex robotic systems.
2. Familiarity with force/impedance control of manipulators.
3. Knowledge of machine vision and modelling/control of flexible objects (such as fibres and fabrics).
4. Knowledge of geometrical and mechanical modelling.
5. Remain productive, positive and resilient in complex, ambiguous and/or uncertain environments.
6. **The ability to work effectively as part of a multi-disciplinary, potentially regionally dispersed research team, plus the motivation and discipline to carry out autonomous research.**

To be appointed as a CERC 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 $82,450Upon 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:

N/A

**Our value proposition**

We want CERC Postdoc 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.

CSIRO Early Research Career (CERC) Postdoctoral Fellow Experience Employee Value Proposition (EVP). Find out more! <https://www.csiro.au/en/careers/postdoctoral-fellowships>

## About CSIRO:

At CSIRO we solve the greatest challenges through innovative science and technology. See more [online](http://www.csiro.au/)!

Find out more about CSIRO [Manufacturing](https://www.csiro.au/en/Research/MF)