# 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 “Functional composites with tuneable electrostatic properties” |
| Job Reference | 71625 |
| Tenure | Specified Term of 3 years  Full-time |
| Salary Range | AU$86,434 to AU$94,679 pa (pro-rata for part-time)  + up to 15.4% superannuation |
| Location(s) | Clayton, VIC |
| Relocation Assistance | Will be provided to the successful candidate if required |
| Applications are open to | * Australian/New Zealand Citizens and Australian Permanent Residents * Australian temporary residents currently residing in Australia (visa sponsorship may be provided to eligible candidates) |
| Position reports to the | Project Leader and Team Leader |
| Client Focus – Internal | 90% |
| Client Focus – External | 10% |
| Number of Direct Reports | 0 |
| Enquire about this job | Contact Dr Adrian Trinchi via email: Adrian.Trinchi@csiro.au or phone: +61 3 9545 2747, or Dr Antonella Sola via email: Antonella.Sola@csiro.au or phone: +61 3 9545 2158.  *Please do not email your application directly to either of the above contact individuals. Applications received via this method will not be considered by the selection panel.* |
| 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.  **IMPORTANT:** In your application, please include **two** documents only, as per the following:  Document 1: your CV.  Document 2: an introductory cover letter highlighting your interest in the role and must include on subsequent pages a succinct address to each of the **essential selection criteria** and, wherever applicable, of the **desirable selection criteria** described below in this position description. *Applications that do not provide an address to each selection criterion will not be considered.* You will also be required to respond to some screening questions. |
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### 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.**

The Postdoctoral Fellow will take a leading role in developing a new capability for producing hybrid composite materials with tuneable electrostatic properties. The new polymer-matrix composites will possess the electrostatic properties required of them in specific end-use applications and will store sufficient charge for a sufficient period of time. Also, the electrostatic materials will be easily 3D printed into customised geometries and exposed to different processing techniques, which makes the Fellow very adaptable to explore a broad range of approaches.

The Fellow will first establish a set of system design rules for understanding the physicochemical interactions and processing conditions that will facilitate the generation and storage of the desired electrostatic properties. Next, the Fellow will manage the fabrication of a series of model material systems and investigate their performance in different settings. The Fellow will engage with potential end-users and industrial partners from the project’s onset, particularly in biomedical, defence, aerospace and other key priority sectors for the Australian manufacturing industry.

It is expected the successful Candidate will contribute to the development of intellectual property in the area in terms of patents and know-how, and will publish aspects of the research in high quality peer reviewed journals.

### Duties and Key Result Areas:

In this role, the successful candidate will:

* Complete a roadmap to set the basis of a general understanding of the inter-material relations in electrostatic hybrid composites (metal, ceramic, polymer) and of their effect on the material performance and its manufacture.
* Identify relevant experimental approaches to quantify the amount of charge and its lifetime in electrostatic materials and composites.
* Independently carry out scientific activities involving design, synthesis, production and testing of the new hybrid composite materials and parts.
* Develop protocols and procedures to make these formulations 3D printable.
* Evaluate large-scale processing routes such as compression moulding and electrospinning, or others.
* Carry out chemical handling and processing operation (under controlled atmosphere, where required).
* Undertake characterisation of the electrostatic composite materials and developed components using appropriate experimental equipment (including but not limited to electrostatic metres, optical microscopes, electron microscopes, mechanical testing machines, rheological measurements, X-ray diffractometer -XRD-, differential scanning calorimeter -DSC- and thermo-gravimetric analyser -TGA-).
* Develop/construct custom experimental setups and systems.
* Maintain and develop safe operation of key laboratory equipment in the polymers, ceramics and light metals areas, including ultra-low-oxygen glove box systems.
* Assist with general technical aspects, including maintenance of laboratory and working environment.
* Prepare Safe Work Instructions (SWIs), Activity Risk Assessments (ARAs) and preventive maintenance schedules for safe operation of laboratory equipment.
* Engage with Australian manufacturing companies, international industrial partners, and academic research centres on-shore and abroad.

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

* Carry out original, innovative, impactful research of strategic importance to CSIRO that will, where possible, lead to novel and important scientific outcomes.
* 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.
* Complete other duties as directed.

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

## **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) in a relevant discipline area, such as materials science, materials engineering, chemical engineering, physics etc.

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. Track record in the development, fabrication and characterisation of functional composite materials, with a focus on electrostatic materials.
2. Practical knowledge of additive manufacturing, preferably Fused Deposition Modelling / Fused Filament Fabrication
3. Practical knowledge of polymer-based processing techniques (for instance extrusion and electrospinning).
4. Interpretation of materials characterisation experiments to verify the correspondence of the material’s performance to its design criteria (including but not limited to optical and electron microscopy, DSC, DMA, TGA, rheology, XRD, mechanical testing, filtration testing).
5. Demonstrated ability to operate key equipment and where necessary develop custom processes, as well as to maintain the healthy operation of the laboratory environment in a multi-material process setting.
6. High level written and oral communication skills and a sound history of publication in peer reviewed journals and/or authorship of scientific papers, reports, grant applications or patents.

## **Desirable:**

1. Ability to handle both ceramic and metallic particles and fillers.
2. Nano and micro particle synthesis and/or functionalisation.
3. Authorship of patents.

To be appointed as a CERC Postdoctoral Fellow within CSIRO, candidates will be expected to commence employment by June/July 2021. Candidates are also 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 ($83,687). 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.

Include:

* 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 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 [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 [Manufacturing](https://www.csiro.au/en/Research/MF)