# Postdoctoral Fellowship – CSOF4

Role summary for potential applicants

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| Advertised Job Title**:** | Postdoctoral Fellowship in Modelling of Metallic Microstructure  |
| Reference Number**:** | 18225 |
| Classification**:** | CSOF4 |
| Salary Range: | AU $78K to AU $88K plus up to 15.4% superannuation |
| Location**:** | Melbourne (Clayton), VIC |
| Tenure: | Specified Term of 3 years  |
| Relocation assistance**:** | Will be provided to the successful candidate if required. |
| Applications are open to: | * All Candidates
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| Functional Area**:** | Research Scientist / Engineer - Postdoc |
| % Client Focus - Internal: | 90% |
| % Client Focus - External: | 10% |
| Reports to the: | Team Leader, Materials and Process Modelling |
| Number of Direct Reports: | 0 |

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| **Role Overview:** |
| **Postdoctoral Fellowships** at CSIRO provide opportunities to scientists and engineers, who have completed their doctorate and have less than three years relevant postdoctoral work experience. These fellowships will help launch their careers, provide experience that will enhance their career prospects, and facilitate the recruitment and development of potential leaders for CSIRO. Postdoctoral Fellows **are appointed for up to three years** and will work closely with a leading Research Scientist or Engineer in their respective field. They carry out innovative, impactful research of strategic importance to CSIRO with the possibility of novel and important scientific outcomes. They present the findings in appropriate publications and at conferences.The Postdoctoral Fellow will develop computational models of the changes in microstructure and related properties that occur in metallic additive manufacturing. The approaches will be suitable for the rapid and repeated heating and cooling cycles that occur in the additive manufacturing process, and to the titanium and aluminium alloys that are of most interest. The Postdoctoral Fellow will work closely with CSIRO's experimental team and collaborators, benchmarking the microstructure and property model against detailed measurements. |

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| **Duties and Key Result Areas:** |
| * Develop computational models of the changes in microstructure and related properties that occur in metallic additive manufacturing.
* Work closely with experimentalists to benchmark the microstructure and property models against measurements.
* Work with other members of the modelling team to integrate the microstructure and property models with models of other aspects of additive manufacturing processes.
* Under the direction of senior research scientists, carry out innovative research leading to important new scientific results.
* Produce high quality scientific and/or engineering papers suitable for publication in quality journals, for client reports and granting of patents.
* Prepare appropriate conference papers and present those at conferences as agreed with your supervisor.
* Contribute to the development of innovative concepts and ideas for further research.
* Make a contribution to the effective functioning of the research team and help deliver CSIRO’s organisational objectives and plans.
* Work collaboratively with colleagues within your team, the business unit and across CSIRO.
* Communicate effectively and respectfully with all staff, clients and suppliers in the interests of good business practice, collaboration and enhancement of CSIRO’s reputation.
* Adhere to the spirit and practice of CSIRO’s Values, Health, Safety and Environment plans and policies, Diversity initiatives and Zero Harm goals.
* Undertake an appropriate training and development program developed by CSIRO.
* Other duties as directed.

***CSIRO’s postdoctoral training program***is developed between the Postdoctoral Fellow and a CSIRO scientist. 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> |

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| **Selection Criteria:** |
| *Under CSIRO policy only those who meet all essential criteria can be appointed****Pre-Requisites:***1. **Education/Qualifications:** A doctorate (or will shortly satisfy the requirements of a PhD) in a relevant discipline area, such as materials science or engineering*.*

***Please note:*** *To be eligible for this role you must have* ***no more than 3 years*** *of relevant postdoctoral experience.*1. **Communication: High level written and oral communication skills with the ability to represent the research team effectively internally and externally, including at national and international conferences.**
2. **Publications: A record of publications in quality, peer reviewed journals.**
3. **Collaboration:** A history of professional and respectful behaviours and attitudes in a collaborative environment.

***Essential Criteria:***1. Strong track record of research in computational modelling of microstructure evolution in metallic systems during solidification, preferably in titanium and/or aluminium alloys under non-equilibrium conditions.
2. A basic understanding of the different methods (e.g. phase field method, classical sharp interface method, etc.) available to model microstructure evolution.
3. Demonstrated experience in computer programming in a high-level language.
4. **The ability to work effectively as part of a multi-disciplinary, regionally dispersed research team, plus the motivation and discipline to carry out autonomous research.**
5. A record of science innovation and creativity, plus the ability & willingness to incorporate novel ideas and approaches into scientific investigations.

**Desirable Criteria:**1. An understanding of alloy microstructures and the relationships between microstructures and properties (in particular mechanical properties), and the ability to interpret microstructures using micrographs.
2. A basic understanding of metal additive manufacturing processes (e.g. electron beam, selective laser melting) and systems (e.g. powder bed, blown powder).

**CSIRO is a values based organisation. You will need to demonstrate behaviours aligned to our values of:*** Integrity of Excellent Science
* Trust & Respect
* Creative Spirit
* Delivering on Commitments
* Health, Safety & Sustainability

To be appointed as a 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 CSOF4-1 AU $78,479*.* 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. |

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| **Other Information:** |
| **How to Apply**Please apply for this position online at [www.csiro.au/careers](http://www.csiro.au/careers). You may be asked to provide additional information (online) relevant to the selection criteria. If so, then responding will enhance your application so please take the time to provide relevant succinct answers. Applicants who do not provide the information when requested may not be considered.If you experience difficulties applying online call 1300 984 220 and someone will be able to assist you. Outside business hours please email: csiro-careers@csiro.au. **Referees**: If you do not already have the names and contact details of two previous supervisors or academic/ professional referees included in your resume/CV please add these before uploading your CV.**Contact:** If after reading the selection documentation you require further information please contact: Dr Tony Murphyvia email: tony.murphy@csiro.au or phone: +61 2 9413 7150Please do not email your application directly to Dr Murphy. Applications received via this method will not be considered.**About CSIRO**Australia is founding its future on science and innovation. Its national science agency, the Commonwealth Scientific and Industrial Research Organisation (CSIRO) is a powerhouse of ideas, technologies and skills for building prosperity, growth, health and sustainability. It serves governments, industries, business and communities across the nation. Find out more! [www.csiro.au](http://www.csiro.au). **CSIRO Manufacturing** This Business Unit delivers scientific and engineering innovations to transition Australian manufacturing, creating the jobs of the future, export growth and increasing the value of the sector.**What CSIRO offers you**The Postdoctoral Fellow will join an excellent research team with a strong reputation in modelling of metal processes, and be part of a large effort to develop computational models of metal additive manufacturing. Access to excellent computational facilities, including several computational clusters, is provided. The team works closely with CSIRO’s Lab 22, which has several state-of-the-art additive manufacturing machines. CSIRO’s Clayton site is co-located with Monash University, and is 23 km from the centre of Melbourne, which has been ranked the world’s most liveable city. |