# Position Description

## Research Scientist/Engineer – CSOF5

The following information is for applicants

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| Advertised Job Title**:** | Research Scientist - Materials Science/Engineering |
| Job Reference: | 60555 |
| 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: | 50% |
| Percentage of Client Focus - External: | 50% |
| Reports to the: | Team Leader |
| Number of Direct Reports: | 0 |
| Name and Contact Details For Applicant Enquiries | Dr Robert Wilson via email [Robert.Wilson@csiro.au](mailto:Robert.Wilson@csiro.au) and  Dr Daniel Liang via email [Daniel.Liang@csiro.au](mailto:Daniel.Liang@csiro.au)  *Please do not email your application to Dr Wilson or Dr Liang. Applications received via this method will not be considered by the selection panel.* |
| Contact Details For Applying | Call 1300 984 220 or email [careers.online@csiro.au](mailto:careers.online@csiro.au). |
| 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 |

## Role Overview:

The role of Research Scientist Staff in CSIRO is to conduct innovative research leading to scientific achievements that are aligned with CSIRO’s strategies. You may be engaged in scientific activity ranging from fundamental research to the investigation of specific industry or community problems. You will have the opportunity to build and maintain networks, play a lead role in securing project funds, provide scientific leadership and pursue new ideas and approaches that create new concepts.

CSIRO Manufacturing is expanding into new research areas of metal-based composite materials that can exhibit structural properties superior to metal materials, and also possess functional properties that can be utilised for a variety of advanced applications, including: sensing, thermal management, radiation shielding and embedded intelligence within Additively Manufactured structures, among others.

The Research Scientist – Materials Science/Engineering will be part of the Metal Industries program and will take a leading role in this new R&D field. This role will enable the science which underpins these functional materials to be developed and will contribute to the generation of experimental datasets. The incumbent will work across engineering and scientific disciplines in a collaborative manner within CSIRO to deliver immediate and long-term impact to current and emerging Australian industries.

## Duties and Key Result Areas:

* Form systematic experimental plans and design composite structures consisting of metal foils, metal hydrides, *in situ* formed carbon networks, binders, etc.
* Explore, establish and combine the multiple processing technologies for fabricating the composite structures, e.g. solidification, solid-state forming at elevated temperature, plasma materials conversion, metal hydride forming, etc.
* Conduct absorption and desorption of hydrogen in metal-based materials to establish the dependence of the hydrogen loading on microstructures and processing conditions.
* Characterisation of the materials by a range of analytical technics such as optical microscopy and spectroscopy, electron microscopy (SEM, TEM), X-ray diffraction, thermal analysis (DTA, DSC), customising infrared thermal data acquisition systems and chemical analysis.
* Mechanical property testing at ambient and elevated temperatures, including tensile, fatigue and wear properties when needed.
* Develop correlations between microstructures, processing, properties and the materials working environment.
* Demonstrate leadership skills, initiative, and creativity, in particular the capacity to formulate original ideas and concepts
* Liaise with clients, giving presentations and preparation of reports, taking personal responsibility for client satisfaction.
* Under limited direction, assist in the planning and preparation of research proposals and carry out research investigations, requiring originality, creativity and innovation.
* Implement thorough research planning and experimental design protocols, taking ownership of results and outcomes, addressing problems promptly and in a constructive manner.
* Assist in the supervision and/or training of others to ensure experiments are conducted in accordance with the research requirements.
* Contribute to the body of knowledge through preparation of scientific journal publications.
* Draw on professional expertise, knowledge of other disciplines and research experience, recognise opportunities for innovation and generate new theoretical perspectives by pursuing new ideas/approaches and networking with scientific colleagues across a range of disciplines.
* 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, regionally dispersed research team, and business unit to carry out tasks in support of CSIRO’s scientific objectives.
* 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.

## 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: Plans, sets and works to meet challenging standards and goals for self and/or others. Recognises where endeavours will make the most impact or difference, decides on desired outcome and sets realistic goals to reach this target.**
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 PhD degree (or equivalent research experience) in Materials Science/Engineering or related discipline coupled with experience in some or all of the following: metal composite or structural materials, microstructure and property evaluation/analysis, materials fabrication, phase transformation, heat transfer and thermal analysis.
2. Technical and scientific knowledge of developing metal-based materials and their fabrication processes (especially light metal materials) and an understanding of the relationships between composition, processing, material properties and performance (for example: phase transformation, chemical structure, heat transfer, etc.).
3. A demonstrated understanding of the correlation between microstructures, processing, properties and working environment coupled with proven experience in tensile testing as well as function materials testing at room and elevated temperatures.
4. A history of customising, or understanding of, data acquisition systems, analysing thermal data, and processing data into the formats that analytical and statistical modelling can utilise.
5. Proficiency in a range of materials characterisation and chemical analysis techniques. For example, optical microscopy and spectroscopy, electron microscopy, chemical analysis, X-ray diffraction and thermal testing (DTA, DSC).
6. Demonstrated ability in systematic planning, designing and conducting experiments, as evidenced by a hands-on experience.
7. A track record or capability in collaboration, initiation and creativity for the generation of new ideas, as well as experience in resource planning, time management, and/or reporting.

## Desirable Criteria:

1. Experience supporting modelling and simulation experts for developing material property models.
2. Knowledge or experience in metal powders, additive manufacturing / metal 3D printing.

## About CSIRO:

We imagine. We collaborate. We innovate. To find out more visit us [online](http://www.csiro.au/)!

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