# Position Details

## Research Scientist/Engineer- CSOF6

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| The following information is for applicants | |
| Advertised Job Title | Senior Quantum Sensor Scientist |
| Job Reference | 88003 |
| Tenure | Specified Term of 3 years  Full-time |
| Salary Range | Attractive salary package on offer |
| Location(s) | Lindfield (Sydney), NSW |
| Relocation Assistance | Will be provided to the successful candidate if required |
| Applications are open to | Australian Citizens Only |
| Position reports to the | Team Leader, Quantum Devices |
| Client Focus – Internal | 20% |
| Client Focus – External | 80% |
| Number of Direct Reports | 0 |
| Enquire about this job | Contact Katie Green via email [katie.green@csiro.au](mailto:katie.green@csiro.au) or phone +61 2 9413 7522 |
| 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).

### Role Overview

The role of Research Scientist/Engineer staff is to conduct innovative research leading to scientific achievements that are aligned with CSIRO’s strategies. The Research Scientist/Engineer may be engaged in scientific activity ranging from fundamental research to the investigation of specific industry or community problems. The Research Scientist/Engineer 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.

The Quantum Devices team uses CSIRO’s world-leading scientific capability in High Temperature Superconducting (HTS) electronic devices, circuits, and sensors to develop advanced magnetometry. The Senior Quantum Sensor Scientist will design, develop and field test superconducting devices. The role involves measuring and characterising the electrical and magnetic properties of these devices in laboratory and field environments. The Senior Quantum Sensor Scientist will be responsible for the design, fabrication, programming and documentation of superconducting quantum sensors in various CSIRO research projects.

### Duties and Key Result Areas

* Apply experience and knowledge of theoretical physics for superconducting sensor design.
* Electrical and magnetic characterisation measurements of experimental sensors, including quantum electronics.
* Under the supervision of more senior researchers, assist in the planning and preparation of research proposals and carry out research investigations, requiring originality, creativity, and innovation.
* Collation, analysis, and interpretation of measurements using statistical analysis. Develop data fitting procedures to analyse array data where needed.
* Contribute to the improvement and development of measurement capability including system design and implementation.
* Understand and utilise theoretical models to help inform HTS junction-based sensors.
* Perform cryogenic electrical transport measurements of superconducting sensors.
* Develop data fitting & analysis procedures where needed and use this to inform future sensor designs.
* Incorporate novel approaches to scientific investigations by adapting and/or developing original concepts and ideas for new, existing, and further research.
* Present results in a meaningful format, prepare reports for clients and/or write scientific papers for publication.
* 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 research team to carry out tasks in support of CSIRO’s scientific objectives.
* Adhere to the spirit and practice of CSIRO’s Values, Code of Conduct, Health, Safety and Environment procedures and policy, Diversity initiatives and Making Safety Personal goals.
* Preparation for and participation in field trials.
* Other duties as directed.

## **Selection Criteria**

#### Essential

*Under CSIRO policy only those who meet all essential criteria can be appointed.*

1. A PhD, or an equivalent combination of qualifications and significant research experience, in a relevant field such as physics or engineering.
2. A sound knowledge of theoretical physics preferably superconductivity and/or condensed matter physics and the ability to creatively apply this to the design of superconducting sensors.
3. Demonstrated experience in undertaking laboratory measurements using electrical characterisation equipment and knowledge of the experimental considerations of electromagnetic measurements.
4. Demonstrated programming skills for control electronics and/or data analysis, in C++, Matlab, Python or similar.
5. Demonstrated capability in planning, organising, and manipulating experimental data including statistical and fitting techniques.
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. Ability to obtain and maintain a security clearance which requires Australian Citizenship.

## **Desirable**

1. Experience in electronics, electronic design, and fabrication.
2. Understanding of analogue/digital electronic signal chains
3. Demonstrated cryogenic experimental measurements skills.
4. Finite Element Analysis and/or Finite Difference Time Domain modelling using sophisticated packages such as COMSOL or CS.

## **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:** Identifies critical stakeholders and influences them via an influential third party, for example through an established network, to gain support for sometimes contentious proposals/ideas.
* **Resource Management/Leadership:** Sets up and maintains effective and efficient work teams and manages performance and resources, to achieve objectives. Chooses appropriate management strategies and communication styles to maintain high levels of motivation and productivity. Gives feedback for development purposes and provides support and direction for improvement.
* **Judgement and Problem Solving:** Anticipates and manages problems in ambiguous situations. Develops and selects an appropriate course of action and provides for contingencies. Evaluates, interprets and integrates complex bodies of information and draws logical conclusions, synthesises proposals and defends options with reasoned arguments.
* **Independence:** Assesses the risk and opportunity of identified strategies, options and actions. Overcomes problems and setbacks in achieving goals. Invariably includes consideration of value-added future impact on bottom line when determining the optimal and efficient use of resources.
* **Adaptability:**Demonstrates flexibility in thinking and adapts to, and manages, the increasing rate of organisational change by adjusting strategies, goal and priorities.

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.

* The successful candidate will be asked to obtain and provide evidence of a National Police Clearance or equivalent. Please note that individuals 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 a security clearance at the Negative Vetting Level 2 (NV2)*.*

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* 1. People First
  2. Further Together
  3. Making it Real
  4. Trusted

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