# Position Details

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

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| The following information is for applicants | |
| Advertised Job Title | CSIRO Engineering Fellowship in Wearable Respiratory Devices |
| Job Reference | 86883 |
| Tenure | Specified Term of 3 years  Full-time or Part-time |
| Salary Range | AU$89,926 to AU$98,504 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, * Australian Permanent Residents and * Australian temporary residents currently residing in Australia (visa sponsorship may be provided to eligible onshore candidates) |
| Position reports to the | Team leader, Dr Cara Doherty |
| Client Focus – Internal | 80% |
| Client Focus – External | 20% |
| Number of Direct Reports | 0 |
| Enquire about this job | Contact Professor Matthew Hill via email at matthew.hill@csiro.au or phone +61 6 9545 2841 |
| 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

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

The CSIRO Applied Porous Materials and Automation and Sensing Teams are together seeking an early career researcher looking to jumpstart their career with a background in electrical or chemical engineering to join the team. This team has a rich array of fundamental and applied projects underway and is seeking to appoint an Engineering Fellow who can not only deliver the project at hand but be open to developing leadership skills.

5 % of the world’s population experience a form of Chronic Obstructive Pulmonary Disease (COPD). Examples include emphysema and chronic bronchitis, and almost all smokers have a form of COPD. Patients with more severe forms of COPD require higher levels of oxygen to breathe. Initially this came from gas cylinders, but in recent years, personal oxygen concentrator devices (POCs) have emerged.

Recently, the team were very fortunate to discover a new adsorbent material derived from a metal organic framework (MOF) that can directly adsorb oxygen, reversibly. This allows the present game changing engineering opportunity - how can this material be best utilised in the real world? Individuals have widely varying oxygen uptake requirements according to their individual limitations, or their present activity level. Whilst this new adsorbent breaks open the energy demands, it is not of use unless a smart engineer can identify the processes required to turn this potential into a device. For example, present POCs operate only for a few hours, and are of a significant size. The successful applicant will be challenged to embody this new material in such a way that a new POC is no larger than a phone, clipped to a belt, and lasts 24 hours. Key researchers from CSIRO linked to this project are Matthew Hill and Andrew Tulloh.

The Applied Porous Materials and Automation and Sensing Teams are proudly a diverse group of members and strongly encourage applications from everyone.

### Duties and Key Result Areas

Under the direction of senior research scientists and engineers, this CERC Fellow will:

* + Prepare a proof-of-concept oxygen concentrator capable of delivering performance data requisite for design a full-scale prototype.
  + Explore control systems capable of responding to the behaviour of the user.
  + Develop a smart personal oxygen concentrator with minimised energy usage and optimal ergonomics.
  + Carry out innovative, impactful research of strategic importance to CSIRO that will, where possible, lead to novel and important scientific outcomes.
  + 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 procedures and policy, Diversity initiatives and Zero Harm goals.
* Other duties as directed.

The CERC Fellow learning, development and training programis developed between the CERC Fellow and their CSIRO supervisor. The program will focus on enhancing the Fellow’s 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

## **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) OR hold an engineering degree plus a Master of Science (MSc) or Master of Engineering (MEng) qualifications (or will shortly satisfy the requirements of a masters) plus equivalent levels of original and significant contributions to research and development to that expected of someone of a new PhD graduate. The doctorate or masters must be in a relevant discipline area, such as Electrical or Chemical Engineering.

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

1. Demonstrated experience with automated control systems.
2. Demonstrated experience with gas handling devices.
3. Demonstrated experience with protype design, construction and commissioning phases including HAZOP processes.
4. 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.
5. A sound history of publication in peer reviewed journals and/or authorship of scientific papers, reports, grant applications or patents.
6. A record of science innovation and creativity, including the ability & willingness to incorporate novel ideas and approaches into scientific investigations.

## **Desirable**

1. A track record of engaging with industry partners to develop and meeting technical milestones.
2. Strong capability to present findings verbally in a persuasive fashion.
3. Remain productive, positive and resilient in complex, ambiguous and/or uncertain environments.
4. **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.**

## **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.

To be appointed to this CERC Fellowship role within CSIRO, candidates will be expected to commence employment by 31 January 2023. Candidates are also required to have **submitted** their doctoral or master thesis at the time of commencement, as a minimum requirement, if PhD or masters conferment has not been obtained. If a candidate has submitted, but their PhD or masters has not yet been formally attained, the starting salary will be CSOF4-1 ($87,068). Upon CSIRO receiving written confirmation that the PhD or masters 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 if relevant:

* 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.
* 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/)
* If you have any queries regarding finalising the Duties and Key Result Areas or the Special Requirements for this position, please consult with In-business HR or the Talent Acquisition Team.

**Our value proposition**

We want CERC 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) 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. Visit [CSIRO Online](http://www.csiro.au/).

[Manufacturing](https://www.csiro.au/en/Research/MF" \o "Manufacturing- CSIRO Website)

[Space and Astronomy](https://www.csiro.au/en/about/people/business-units/Space-and-Astronomy)

[Energy](https://www.csiro.au/en/Research/EF)

[Health and Biosecurity](https://www.csiro.au/en/Research/BF)

for more information.

CSIRO is a values-based organisation.  In your application and at interview you will need to demonstrate behaviours aligned to our values of:

* People First
* Further Together
* Making it Real
* Trusted