



## POSITION DESCRIPTION

School of Physics  
Faculty of Science

Aboriginal & Torres Strait Islander applicants are strongly encouraged to apply

### Research Fellow in Diamond Electrodes for Bimodal Cellular Control

<b>POSITION NO</b>	0051992
<b>CLASSIFICATION</b>	Level A
<b>SALARY</b>	\$73,669 - \$99,964 pa (PhD entry level - \$93,130 pa)
<b>SUPERANNUATION</b>	Employer contribution of 9.5%
<b>WORKING HOURS</b>	Full-time
<b>BASIS OF EMPLOYMENT</b>	Fixed-term for 2-years
<b>OTHER BENEFITS</b>	<a href="https://about.unimelb.edu.au/careers/staff-benefits">https://about.unimelb.edu.au/careers/staff-benefits</a>
<b>HOW TO APPLY</b>	Online applications are preferred. Go to <a href="http://about.unimelb.edu.au/careers">http://about.unimelb.edu.au/careers</a> , select the relevant option ('Current Opportunities' or 'Jobs available to current staff'), then find the position by title or number.
<b>CONTACT FOR ENQUIRIES ONLY</b>	Professor Steven Prawer Tel +61 3 8344 5460 Email <a href="mailto:s.prawer@unimelb.edu.au">s.prawer@unimelb.edu.au</a>  <i>Please do not send your application to this contact</i>

For information about working for the University of Melbourne, visit our website:  
[about.unimelb.edu.au/careers](http://about.unimelb.edu.au/careers)

## ***Acknowledgement of Country***

The University of Melbourne acknowledges the Traditional Owners of country throughout Australia. The University recognises the unique place held by Aboriginal and Torres Strait Islander peoples as the original custodians of country and their continued connection to the land, waterways, songlines and culture. The University respects all Aboriginal and Torres Strait Islander People and warmly embrace those students, staff, Elders and collaborators who identify as First Nations.

## ***Position Summary***

The Research Fellow will undertake the development of a new tool for investigating intercellular communication. Currently, techniques for probing cellular functions are either well-suited to controlling a limited number of individual inputs or a large number of complete cells. This project aims to address these limitations by utilising cutting edge fabrication techniques to create an optically controlled nanoscale array of diamond electrodes, capable of modulating a large number of single cellular inputs with precision. The technology will allow the Research Fellow to manipulate cellular processes with more control than ever before, potentially gaining insights useful for understanding brain function, memory formation, or cell death.

The objectives of the project are:

- Fabrication and characterization of nanocrystalline diamond electrodes on diamond nanopillars with various surface terminations for charge-coupled and charge-injecting modalities; and
- Use of these electrodes to investigate optically driven chemically and electrically mediated neuromodulation in brain slices and cell cultures.

This position will report to the Chief Investigator and be located within the School of Physics at the Parkville campus.

## ***1. Key Responsibilities***

### **1.1 RESEARCH AND TRAINING**

The position description should be read alongside Academic Career Benchmarks and Indicators.

You are expected to significantly contribute towards the research effort of the team and to develop your research expertise with an increasing degree of autonomy.

You will take overall responsibility for meeting the objectives of the ARC Discovery Grant.

Specific responsibilities include:

- ▶ In collaboration with other researchers fabricate and characterize the diamond array devices.
- ▶ Design and conduct neurophysiological experiments to assess the performance of the device.
- ▶ Liaising with other members of the group and with local, national and international collaborators.

- ▶ Under the guidance and support of Senior Academic staff, prepare data for publication in high impact international journals and making presentations to the scientific community.
- ▶ Assisting in the supervision of Honours and Higher Degree research students.
- ▶ Assist and actively contribute, under the guidance of Senior Academics to the preparation of research proposal submissions to external funding bodies.
- ▶ Identifying and applying for future research funding opportunities.
- ▶ Undertake administrative functions and obligations primarily connected with the area of research.

## 1.2 TEACHING AND LEARNING

- ▶ Contribute to and assist in the co-supervision, mentoring and training of postgraduate or research higher degree students.

## 1.3 LEADERSHIP AND SERVICE

- ▶ Actively contribute to the research culture of the School of Physics and of the research group by attendance and active participation in meetings and seminars associated with the research work of the project, as well as School meetings and seminars.
- ▶ Effective demonstration and promotion of University values including diversity and inclusion and high standards of ethics and integrity.
- ▶ Actively contribute to School activities such as Open day to promote student engagement.

## 1.4 OTHER DUTIES

- ▶ Undertake administration primarily relating to the activities of the role and area of research.
- ▶ Perform other tasks as requested by the supervisor or the Head of School.
- ▶ Actively participate in the University Professional Development Framework.
- ▶ Ensure an up-to-date record of University compliance courses, such as, but not limited to, Appropriate Workplace Behaviour, PDF for Staff, OH&S training courses.
- ▶ Occupational Health and Safety (OH&S) and Environmental Health and Safety.
- ▶ Contribute to the research culture of the School of Physics and the research group by attendance and active participation in meetings and seminars associated with the research work of the project, as well as School meetings and seminars.
- ▶ Undertake professional development activities, within the allowed parameters of the ARC guidelines and through mutual agreement with your supervisor.

## 2. Selection Criteria

### 2.1 ESSENTIAL

- ▶ A PhD and/or near completion or equivalent in neuroscience, biomedical engineering, biomaterials, materials science/engineering, physics, or a related discipline.

- ▶ Demonstrated ability to work in collaborative environment, but also independently on specific problems and outcomes including the ability to work to a schedule and meet pre-agreed deadlines.
- ▶ Demonstrated ability to conduct world standard research and bring that research to publication in international peer-reviewed journals relative to opportunity.
- ▶ Highly developed interpersonal skills and the ability to work across discipline boundaries.
- ▶ Demonstrated ability to work with people from diverse cultural backgrounds.
- ▶ High level conceptual analytical and problem-solving skills.
- ▶ Excellent oral and written communication skills in the English language.
- ▶ Laboratory experience in cell culture and/or neurophysiology, such as patch clamping or calcium imaging.
- ▶ Experience in assisting with supervision of students undertaking higher degree research projects.

## 2.2 DESIRABLE

- ▶ Demonstrated expertise on a range of microfabrication techniques such as chemical vapour deposition, photolithography, and reactive ion etching and laser ablation under limited supervision.
- ▶ Experience or knowledge in optical neural modulation.
- ▶ Demonstrated experience in microfabrication and synthetic diamond processing such as growth, polishing, cutting and brazing.
- ▶ Experience in the preparation of research proposal submissions to external funding bodies.

## 3. *Equal Opportunity, Diversity and Inclusion*

The University is an equal opportunity employer and is committed to providing a workplace free from all forms of unlawful discrimination, harassment, bullying, vilification and victimisation. The University makes decisions on employment, promotion and reward on the basis of merit.

The University is committed to all aspects of equal opportunity, diversity and inclusion in the workplace and to providing all staff, students, contractors, honorary appointees, volunteers and visitors with a safe, respectful and rewarding environment free from all forms of unlawful discrimination, harassment, vilification and victimisation. This commitment is set out in the University's People Strategy 2015-2020 and policies that address diversity and inclusion, equal employment opportunity, discrimination, sexual harassment, bullying and appropriate workplace behaviour. All staff are required to comply with all University policies.

The University values diversity because we recognise that the differences in our people's age, race, ethnicity, culture, gender, nationality, sexual orientation, physical ability and background bring richness to our work environment. Consequently, the People Strategy sets out the strategic aim to drive diversity and inclusion across the University to create an environment where the compounding benefits of a diverse workforce are recognised as vital in our continuous desire to strive for excellence and reach the targets of Growing Esteem.

## **4. Occupational Health and Safety (OHS)**

All staff are required to take reasonable care for their own health and safety and that of other personnel who may be affected by their conduct.

OHS responsibilities applicable to positions are published at:

<http://safety.unimelb.edu.au/topics/responsibilities/>

These include general staff responsibilities and those additional responsibilities that apply for Managers and Supervisors and other Personnel.

## **5. Other Information**

### **5.1 SCHOOL OF PHYSICS**

[www.physics.unimelb.edu.au/](http://www.physics.unimelb.edu.au/)

The University of Melbourne's School of Physics is one of Australia's leading Physics Schools. It has achieved this status through the high quality of its research and teaching programs. The School offers a wide range of physics subjects to undergraduate and postgraduate students, and performs research in the following areas: Astrophysics, Atomic, Molecular and Optical Physics, Experimental Condensed Matter Physics, Experimental Particle Physics, Materials Science, Physical Biosciences, Theoretical Condensed Matter Physics and Theoretical Particle Physics.

The School of Physics hosts the following ARC Centre of Excellence groups:

- ▶ ARC Centre of Excellence for Transformative Meta-Optical Systems (TMOS)
- ▶ ARC Centre of Excellence for Dark Matter Particle Physics
- ▶ ARC Centre of Excellence for Gravitational Wave Discovery
- ▶ ARC Centre of Excellence in All Sky Astrophysics
- ▶ ARC Centre of Excellence for Quantum Computation and Communication Technology (CQC<sup>2</sup>T)

The School also plays a major role in the Australian Synchrotron research program, and in the development of the Stawell Underground Physics Laboratory.

Currently some 30 academics, 51 research-only staff, more than 95 postgraduate students and 72 associates supported by 23 professional staff make up the School of Physics. The School additionally hosts 1 Thomas Baker Chair and Melbourne Laureate Professor, 2 ARC Future Fellows and 1 ARC Discovery Early Career Researcher. Skilled technical staff operate, maintain and develop complex instrumentation and equipment to support the teaching and research activities of the School. The School is located in the David Caro building on the Swanston Street boundary of the University campus. The Head of School and majority of the Professional staff are housed on the ground floor of the building to act as the first point of contact for students, staff and visitors.

## 5.2 FACULTY OF SCIENCE

<http://www.science.unimelb.edu.au>

Science at the University of Melbourne is among the most highly ranked Faculties of Science in Australia\*. Science is defined by its research excellence in the physical and life sciences and is at the forefront of research addressing major societal issues from climate change to disease. Our discoveries help build an understanding of the world around us.

We have over 150 years of experience in pioneering scientific thinking and analysis, leading to outstanding teaching and learning and offer a curriculum based on highly relevant research, which empowers our STEM students and graduates to understand and address complexities that impact real world issues and the challenges of tomorrow.

We aspire to engage the broader community with the impact that Science has on our everyday lives. Through the strength of our internships and research project offerings, our students are provided opportunities to engage with industry partners to solve real-world issues.

The Faculty of Science has over 53,000 alumni and is one of the largest faculties in the University comprising seven schools: BioSciences, Chemistry, Earth Sciences, Ecosystem and Forest Sciences, Geography, Mathematics and Statistics, and Physics.

The Faculty is custodian of the Bio21 Molecular Science and Biotechnology Institute, Office for Environmental Programs, Australian Mathematical Sciences Institute (AMSI) and home to numerous Centres.

Science manages more than \$315 million of income per annum, with a staff base in the order of 290 professional staff, and more than 630 academic staff.

We offer a range of undergraduate, honours, graduate and research degrees; enrolling over 9,700 undergraduate and 2,400 graduate students. The Faculty of Science is the custodial Faculty for the BSc (Bachelor of Science). The Faculty of Science is a leader in research, contributing approximately \$80 million in HERDC income per annum. The Faculty of Science is highly research focused, performing strongly in the ARC competitive grants schemes, often out-performing the national average. The Faculty of Science is currently growing its competitiveness and standing in the NHMRC space.

\* *Based on 2018-19 subject rankings by QA and Time Higher Education*

### 5.3 THE UNIVERSITY OF MELBOURNE

Established in 1853, the University of Melbourne is a leading international university with a tradition of excellence in teaching and research. The main campus in Parkville is recognised as the hub of Australia's premier knowledge precinct comprising eight hospitals, many leading research institutes and a wide-range of knowledge-based industries. With outstanding performance in international rankings, the University is at the forefront of higher education in the Asia-Pacific region and the world.

The University employs people of outstanding calibre and offers a unique environment where staff are valued and rewarded.

Further information about working at The University of Melbourne is available at <http://about.unimelb.edu.au/careers>.

### 5.4 ADVANCING MELBOURNE

The University's strategic direction is grounded in its purpose. While its expression may change, our purpose is enduring: to benefit society through the transformative impact of education and research. Together, the vision and purpose inform the focus and scale of our aspirations for the coming decade.

Advancing Melbourne reflects the University's commitment to its people, its place, and its partners. Our aspiration for 2030 is to be known as a world-leading and globally connected Australian university, with our students at the heart of everything we do.

We will offer students a distinctive and outstanding education and experience, preparing them for success as leaders, change agents and global citizens.

We will be recognised locally and globally for our leadership on matters of national and global importance, through outstanding research and scholarship and a commitment to collaboration.

We will be empowered by our sense of place and connections with communities. We will take opportunities to advance both the University and the City of Melbourne in close collaboration and synergy.

We will deliver this through building a brilliant, diverse and vibrant University community, with strong connections to those we serve.

The means for achieving these goals include the development of the University of Melbourne's academic and professional staff and the capabilities needed to support a modern, world-class university. Those means require a commitment to ongoing financial sustainability and an ambitious infrastructure program which will reshape the campus and our contribution to the communities we engage with. This strategy, and the priorities proposed, is centred around five intersecting themes; place, community, education, discovery and global.

### 5.5 GOVERNANCE

The Vice Chancellor is the Chief Executive Officer of the University and responsible to Council for the good management of the University.

Comprehensive information about the University of Melbourne and its governance structure is available at <https://about.unimelb.edu.au/strategy/governance>