

RESEARCH FELLOW – OPTICAL WEARABLE BIOSENSORS

DEPARTMENT/UNIT	Drug Delivery, disposition and Dynamics
FACULTY/DIVISION	Pharmacy and Pharmaceutical Sciences
CLASSIFICATION	Level A
DESIGNATED CAMPUS OR LOCATION	Clayton campus

ORGANISATIONAL CONTEXT

At [Monash](#), work feels different. There's a sense of belonging, from contributing to something groundbreaking – a place where great things happen. You know you're part of something special and purposeful because, like Monash, your ambitions drive you to make change.

We have a clear purpose to deliver ground-breaking intensive research; a world-class education; a global ecosystem of enterprise – and we activate these to address some of the [challenges](#) of the age, Climate Change, Thriving Communities and Geopolitical Security.

We welcome and value difference and [diversity](#). When you come to work, you can be yourself, be a change-maker and develop your career in exciting ways with curious, energetic, inspiring and committed people and teams driven to make an impact – just like you.

Together with our [commitment to academic freedom](#), you will have access to quality research facilities, infrastructure, world class teaching spaces, and international collaboration opportunities.

We champion an [inclusive workplace culture](#) for our staff regardless of ethnicity or cultural background. We have also worked to improve [gender equality](#) for more than 30 years. Join the pursuit of our purpose to build a better future for ourselves and our communities – [#Changelt](#) with us.

The **Faculty of Pharmacy and Pharmaceutical Sciences** is dynamic, innovative and ambitious, engaging in world-class research and being a leading education provider for over 130 years. Our key research initiative is the Monash Institute of Pharmaceutical Sciences, in which we engage some of the best equipped and most experienced pharmaceutical scientists and medicine experts in

Australia. Notably for the past 3 years Monash has been ranked in the top 3 institutions in the world for Pharmacy and Pharmacology, and in 2022 is World number 1 in QS World University Rankings by Subject. From a teaching perspective, our education curriculum - comprised of undergraduate, postgraduate and higher degrees by research programs - is purpose designed for the study of pharmacy and pharmaceutical sciences and taught by discipline experts. Our premises are located in 'the Parkville Strip', Australia's premiere health and biomedical precinct, and offer world-class teaching facilities and research laboratories to our students and staff. To learn more about the Faculty, please visit our website: www.monash.edu/pharm.

The [Monash Institute of Pharmaceutical Sciences \(MIPS\)](#) integrates research from five fundamental research themes to identify, develop, optimise and deliver new drug treatments – ultimately translating basic research into clinical trials. The areas of research strength of the five themes at MIPS are [Drug Delivery, Disposition and Dynamics](#), [Drug Candidate Optimisation](#), [Drug Discovery Biology](#), [Medicinal Chemistry](#) and [Medicine Use and Safety](#).

MIPS is Australia's largest, most experienced and successful group of pharmaceutical scientists. Over 250 staff and 250 PhD students undertake and support basic and translational drug discovery, drug delivery and drug development research in new, state-of-the-art laboratories on Monash's Parkville campus. MIPS was established in 2008 and builds upon the ground-breaking research activities of the Victorian College of Pharmacy, Monash University, developers of the Relenza flu treatment. Our internationally recognised institute strives to conduct the most insightful science in our field by the best researchers and research students in world-class facilities. Our contemporary and collaborative organisational structure enables our research to occur where our core scientific disciplines meet. Collaboration at these disciplinary interfaces is expected to transform medicine design and development outcomes. Evidence of the success of this approach is apparent in our rapidly expanding [drug discovery pipeline](#), powered via University spin outs, licence deals and industry collaborations.

Our research activities are backed by access to major research infrastructure, organised into readily accessible [research platforms](#) on site at MIPS and also via the broader Monash University platform network.

The **Melbourne Centre for Nanofabrication (MCN)** with Monash University is the centrepiece of the Australian National Fabrication Facility's Victorian node (ANFF-VIC). The MCN is a multi-institutional joint venture operated by Monash designed to fill the gap in Australia for open access, multi-scale fabrication infrastructure, MCN provides the means to design, fabricate and test complex micro and nanoscience-based devices using an array of state-of-the-art tools and expert engineers.

POSITION PURPOSE

The Research Fellow is expected to contribute to an Australian Research Council (ARC) funded Laureate program on wearable biosensors. The aim is to gain a deep understanding of the interface between nanostructured-silicon-based nanomaterials and biological systems, to develop a new generation of biosensor technologies applied on and in the body. Using innovative nanofabrication techniques, the team will integrate porous silicon nanomaterials with highly controllable optical and electrochemical properties into wearable and implantable biosensors for detecting bioanalytes directly continuously in interstitial fluid, sweat, and blood; critically, they will be capable of long-term monitoring. The outcomes are expected to enable development of downstream applications across medical diagnostics, sports sciences, workplace testing as well as defence and space technologies.

Working under broad direction, the Research Fellow will develop photonic wearable biosensors based on porous silicon. The Research Fellow will perform a range of research-related activities, including administrative and operational responsibilities, to support the delivery of this research program outcomes.

Reporting Line: The position reports to the ARC Laureate Fellow

Supervisory Responsibilities: Not applicable

Financial Delegation: Not applicable

Budgetary Responsibilities: Not applicable

KEY RESPONSIBILITIES

Specific duties required of a Level A research-only academic may include:

1. The conduct of research under limited supervision either as a member of a team or, where appropriate, independently and the production or contribution to the production of conference and seminar papers and publications from that research
2. Develop porous silicon reflectors as optical transducers for wearable biosensors
3. Perform biosensor experiments and in vitro and in vivo
4. Involvement in professional activities including, subject to availability of funds, attendance at conferences and seminars in the field of expertise
5. Limited administrative functions primarily connected with the area of research of the academic
6. Development of a limited amount of research-related material for teaching or other purposes with appropriate guidance from other staff
7. Occasional contributions to teaching in relation to their research project(s)
8. Experimental design and operation of advanced laboratory and technical equipment or conduct of advanced research procedures
9. Attendance at meetings associated with research or the work of the organisational unit to which the research is connected and/or at departmental, school and/or faculty meetings and/or membership of a limited number of committees
10. Advice within the field of the staff member's research to postgraduate students
11. Other duties as directed from time to time

KEY SELECTION CRITERIA

Education/Qualifications

1. The appointee will have:
 - A doctoral qualification in materials science, analytical chemistry or a related discipline or a closely related field.

Knowledge and Skills

2. Strong evidence of previous research experience in fabrication of porous silicon reflectors
3. Expertise in performing biosensor experiments
4. Demonstrated analytical and manuscript preparation skills
5. Ability to solve complex problems by using discretion, innovation and the exercise diagnostic skills and/or expertise
6. Well-developed planning and organisational skills, with the ability to prioritise multiple tasks and set and meet deadlines
7. Excellent written communication and verbal communication skills with proven ability to produce clear, succinct reports and documents
8. A demonstrated awareness of the principles of confidentiality, privacy and information handling

9. A demonstrated capacity to work in a collegiate manner with other staff in the workplace
10. Demonstrated computer literacy and proficiency in the production of high-level work using software such as Microsoft Office applications and specified University software programs, with the capability and willingness to learn new packages as appropriate

OTHER JOB RELATED INFORMATION

- Travel to other campuses of the University may be required
- There may be a requirement to work additional hours from time to time
- There may be peak periods of work during which taking of leave may be restricted

GOVERNANCE

Monash University expects staff to appropriately balance risk and reward in a manner that is sustainable to its long-term future, contribute to a culture of honesty and integrity, and provide an environment that is safe, secure and inclusive. Ensure you are aware of and adhere to University policies relevant to the duties undertaken and the values of the University. This is a standard which the University sees as the benchmark for all of its activities in Australia and internationally.