



**UNSW**  
SYDNEY



## Multi-Optrode Arrays (MOAs)

### Development and biological assessment of optical-electrode 'optrode' transducers for recording electrical activity in the body.

#### Competitive advantage

- Multi-disciplinary team working at the interface of biology and engineering
- A patent portfolio covering industrial and biomedical aspects of technology

#### Impact

- MOAs overcome the limitation of current recording systems by using light to carry bioelectric signals. This work will lead to the next generation of brain-computer interfaces.
- It enables high-density, high channel count recording from neural and cardiac tissue
- Application for brain-machine interfacing and prostheses
- Application for cardiac diagnostic systems
- The underlying technology of MOAs can also be applied in acoustic sensing networks to have many applications including:
  - Ocean monitoring (distributed sonars)
  - Mineral prospection (geoseismic exploration)
  - Environmental protection (leak detection in water distribution networks)

#### Successful applications

- Demonstrated ability to map electrical activation in hearts in animal models
- Demonstrated ability to record peripheral nerve responses in animal models

#### Capabilities and facilities

- Biomedical microfabrication facility
- A range of electrophysiology, animal surgery, and microscopy setups for biological assessment of technology
- Access to engineers and infrastructure at the Australian National Fabrication Facility

#### Our partners

- Zedelef Ltd

### More Information

Scientia Professor Nigel H. Lovell

Graduate School of Biomedical Engineering

T: +61 2 9385 3922  
E: [n.lovell@unsw.edu.au](mailto:n.lovell@unsw.edu.au)

Professor Francois Ladouceur

School of Electrical Engineering and Telecommunications

T: +61 2 9385 5304  
E: [f.ladouceur@unsw.edu.au](mailto:f.ladouceur@unsw.edu.au)

UNSW Knowledge Exchange

[knowledge.exchange@unsw.edu.au](mailto:knowledge.exchange@unsw.edu.au)

[www.capabilities.unsw.edu.au](http://www.capabilities.unsw.edu.au)

+61 (2) 9385 5008