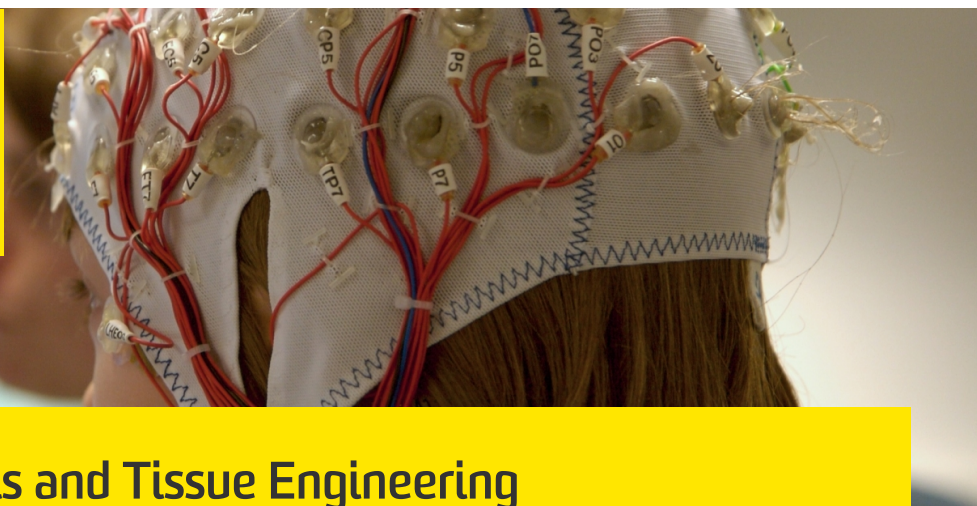




**UNSW**  
SYDNEY



## Bionics, Biomaterials and Tissue Engineering

**Research activities, primarily focused on Bionics, Biomaterials and Tissue Engineering, that involve a wide range of biomedical engineering activities including biomechanics, orthopaedics, laser micro-manufacturing, bioinstrumentation, electronic chip design, wireless sensor networks, advanced microscopy, neurophysiology, electrophysiology, and in vitro and in vivo experimentation.**

### Competitive advantage

- Design and development of novel neural interfacing materials for neural stimulation, and recording electrodes
- Advanced electrode coatings that use cells and photo-active nanomaterials, embedded within conducting polymers and conducting hydrogels, to provide physiological stimulation of excitable tissues at the individual cell level
- Electrode coatings tailored to improve electrical performance while reducing scarring and enabling enhanced device-tissue integration
- Understanding neuro-compatibility; compatibility of new materials with nervous tissues
- Development of 3D mixed cell cultures for evaluating neural responses to technology

### Impact

- Novel electrode coatings significantly improve the performance and lifetime of bionic devices
- Enhanced ability to restore auditory and visual perception
- Improved deep brain stimulators to treat or manage conditions such as Parkinson's disease, Alzheimer's, anxiety and depression

### Successful outcomes

- Patent (9299476)

### Capabilities and facilities

- Materials fabrication, mechanical and electrical characterisation, primary cell culture, biomedical imaging, animal models
- Dedicated facilities for bionic device fabrication and characterisation

### More Information

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