

Speaker: **A/Prof David Garrett**
ARC Future Fellow
RMIT University, School of Engineering,
Electrical and Biomedical Engineering



Date: Thursday 4 March 2021

Time: 10.00am – 11:00am Brisbane time
(11:00am – 12:00pm Melbourne time)

Venue: MS Teams – [Click here to join the meeting](#)

Title: **Diamond, Graphene and Carbon fibre as core components in medical Implants**

Abstract

Electronic technology is now sufficiently advanced that we can easily measure bio-electronic signals and deliver biologically relevant stimulus. What we lack is a seamless, permanent, high resolution interface between electronic devices and the human nervous system. Such an interface would enable real-time, high-fidelity recording and replication of neural processes. The focus of this talk, is our continuing effort to supersede the limited suite of neural interface materials, currently approved for human use and thus, greatly enhance the performance of neural interface devices. Pure carbon materials such as graphene, carbon fibre, diamond and nanotubes possess many desirable traits including superior electrochemical properties, low cytotoxicity, small size and high biostability. Carbon materials, however, are extremely difficult to integrate into devices on an industrially viable scale due to their lack of malleability, inability to melt or be moulded, propensity to burn, extreme hardness (in the case of diamond) and a general lack of industrial processes suitable for forming electrical connections with metal components. The research efforts of Assoc/Prof Garrett have focussed on exploring the properties of carbon materials and solving these integration problems.

Biography

Associate Professor David J. Garrett is an electrochemist and biomedical engineer invested in developing high performance electrodes for use inside the body. He currently holds an Australian Research Council Future Fellowship award and leads a research effort at RMIT University. Associate Professor Garrett has a ten-year history of innovation in medical device technology with a focus on novel materials for neural interface applications. David is also a co-founder of Carbon Cybernetics, an Australian spin out company seeking to commercialise a brain implant for monitoring and treating epilepsy.

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ALL WELCOME