

Technology for Bioelectronic Medicine

George Malliaras

Prince Philip Professor of Technology
University of Cambridge

Date: Friday, March 15, 2024

Time: 2:00pm – 3:30pm

EEB 132

Refreshments will be served

Abstract: Neurological conditions affect one in six people, imposing significant health, economic and societal burden. Bioelectronic medicine aims to restore or replace neurological function with the help of implantable electronic devices. Unfortunately, significant technological limitations prohibit these devices from reaching patients at scale, as implants are bulky, require invasive implantation procedures, elicit a pronounced foreign body response, and show poor treatment specificity and off-target effects. Over the past decade, new devices made using methods from microelectronics industry have been shown to overcome these limitations. Recent literature provides powerful demonstrations of thin film implants that are miniaturised, ultra-conformal, stretchable, multiplexed, integrated with different sensors and actuators, bioresorbable, and minimally invasive. I will discuss the state-of-the-art of these new technologies and the barriers that need to be overcome to reach patients at scale.



Biography: George Malliaras is the Prince Philip Professor of Technology at the University of Cambridge. He leads the Bioelectronics Laboratory, an interdisciplinary group of scientists, engineers and clinicians who translate advances in electronics to better tools for healthcare. George received a BS from the Aristotle University, Greece, a PhD from the University of Groningen, the Netherlands, and did a postdoc at the IBM Almaden Research Center, USA. Before joining Cambridge, he was a faculty member at Cornell University in the USA, where he also served as the Director of the Cornell NanoScale Facility, and at the School of Mines of St. Etienne in France. His research has been recognized with awards from the European Academy of Sciences (Blaise Pascal Medal), the Materials Research Society (Mid-Career Researcher Award), the New York Academy of Sciences (Blavatnik Award for Young Scientists), the US National Science Foundation (Faculty Early Career Development Award), and DuPont (Young Professor Award). He was awarded an Honorary Doctorate from the University of Linköping (Sweden), elected

Fellow of the Materials Research Society and of the Royal Society of Chemistry, and is a member of the Academia Europaea and of the European Academy of Sciences. He serves as a Deputy Editor of Science Advances.