

# How the UK can Compete in the Global Semiconductor Race

**29<sup>th</sup> March 2023 Webinar on Zoom from 2pm to 4pm**

**Dear Colleagues,**

On behalf of the UK Centre of Power Electronics, I would like to invite you to this exciting webinar on UK power electronic and microelectronic semiconductor devices and materials. We are joined by two distinguished Professors, both veterans of UK academic and industrial research in semiconductors. Please see the speaker abstracts and bio below.

If you would like to attend, please register in advance for this webinar:

[https://bristol-ac-uk.zoom.us/webinar/register/WN\\_-zJrXNOETqqMs57SBMfJqQ](https://bristol-ac-uk.zoom.us/webinar/register/WN_-zJrXNOETqqMs57SBMfJqQ) .

**Prof Layi Alatise**

**University of Warwick and UK Centre of Power Electronics**

**Abstract:** Semiconductors are the backbone of modern technology. Whether it is the internet-of-things revolution or the drive for the net zero energy paradigm, semiconductors are the underpinning enabler upon which most technologies rest. Often invisible when technology supply chains are unperturbed, they can grind modern industry to a halt when they are in insufficient supply. Semiconductors come in 2 flavours. They can be nanoelectronic/microelectronic devices for VLSI systems in information and communication technologies where the state-of-the-art devices have physical dimensions down to tens of nanometers. Or they can be power electronic devices capable of processing electrical power from a few watts needed for handheld electronic gadgets to hundreds of kilowatts for electric vehicle drivetrains to a few gigawatts needed for interconnecting entire national power systems or multi gigawatt windfarms. In this CPE webinar, we are joined by two distinguished professors each specializing in semiconductors for microelectronics and power electronics. They will give a lecture on the state-of-the-art as well as commentary on how the UK can compete in the global semiconductor race currently dominated by Far east Asia and USA. We have **Prof Anthony O'Neill** from Newcastle University whose expertise is in the nanoelectronic/microelectronic devices and **Prof Phil Mawby** from the University of Warwick, whose expertise is in Power Electronic devices.



**Anthony O'Neill** is Siemens Professor of Microelectronics at Newcastle University, having joined in 1986 from Plessey Research (Caswell) Ltd. He is well known for pioneering work in strained silicon, which improves CMOS electronics performance without shrinking dimensions. It's still used in most electronic systems today, from smartphones to server farms. Since then he has researched microchip reliability, silicon nanowires, negative capacitance to reduce subthreshold slope in MOSFETs, improving metal semiconductor contacts and more recently returned to SiC devices, re-engineering MOSFET gate stacks to improve electrical performance and reliability. He has held visiting appointments at MIT, EPFL, Monash University and Atmel Corp.



**Philip A. Mawby** (Senior Member, IEEE) received the B.Sc. and Ph.D. degrees in electronic and electrical engineering from the University of Leeds, Leeds, U.K., in 1983 and 1987, respectively. His Ph.D. degree was focused on GaAs/AlGaAs heterojunction bipolar transistors for high-power radio frequency applications at the GEC Hirst Research Centre, Wembley, U.K. In 2005, he joined The University of Warwick, Coventry, U.K., as the Chair of power electronics. He was also with the University of Wales, Swansea, U.K., for 19 years, and held the Royal Academy of Engineering Chair for power electronics, where he established the Power Electronics Design Centre. He has been internationally recognized in the areas of power electronics and power device research. He was also involved in the development of device simulation algorithms, as well as optoelectronic and quantum-based device structures. He has authored or co-authored more than 200 journal articles and conference papers. His current research interests include materials for new power devices, modelling of power devices, and circuits., Prof Mawby is a fellow of the Institution of Engineering and Technology (IET), U.K., and a fellow of the Institute of Physics