# Henry Royce Institute Conference

*Unlocking UK economic growth through materials innovation*

3 - 4 September 2025

## Next-generation electronics, telecommunications and sensors

***Driving the future of high-performance connectivity and computing***

**4th September 2025 | Nancy Rothwell Building, Manchester**

**The rapid growth of information and communication technologies (ICT), driven by advancements in wireless technologies now accounts for nearly 10% of global energy consumption. As the demand for greater computing power intensifies, reducing energy consumption has become a critical priority.**

**In this session, experts will explore the latest breakthroughs, from cutting-edge quantum materials to metamaterials and other innovative solutions, aimed at enhancing energy efficiency and connectivity in the ICT sector.**

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**Final Programme TBC (11.20AM-4PM).**

**11.20 From EEG sensors to MIR metasurfaces: the exciting range of applications of graphene on cubic silicon carbide**
*Francesca Iacopi, Imec Fellow, FIEEE*

11.50 Title TBC
*John Tingay, CTO - Paragraf*

12.10 **Graphene-based adaptive thermal management for space and defence**
*Coskun Kocabas, Founder and CSO - SmartIR*

12.30 Title TBC
*Carl Nayor, Programme Director - Intel Labs (TBC)*

***Lunch (1-2pm)***

2.00 Title TBC - Imaging and Characterisation
Rachel Oliver, *Professor of Materials Science - University of Cambridge*
*CSO & Co-Founder - Porotech*

**2.45 High-performance display technologies using cubic gallium nitride microLEDs**
Lata Sahonta, co-founder and project manager - Kubos Semiconductors.

**3.05 Ultra-wide bandgap semiconductors to next-generation transparent conductive oxides: material innovation at CISM Swansea**
Saptarsi Gosh, Centre for Integrative Semiconductor Materials Swansea University

**3.25 Flexible Futures: Next-Generation Electronics and IoT Sensors built on advanced materials**
Richard Price, CTO and co-founder - PragmatIC Semi

3.45 *Closing remarks*

*4.00 End of the day*

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**Bios**

**Prof. Rachel Oliver FREng**
***Professor of Materials Science - University of Cambridge***
***Porotech, CSO & Co-Founder***

**Rachel Oliver** is a Professor in Materials Science at the Department of Materials Science, University of Cambridge and a fellow of Robinson College, Cambridge. She is also the Director of the Cambridge Centre for Gallium Nitride (GaN). She has led several EPSRC and ERC grants including large international collaborations and industry-funded projects. She is a member of the UKNC management committee and the Internal Strategy Committee of the National III-V Centre. Rachel is also CSO & Co-Founder of Porotech, a spin out company from the University of Cambridge that develops and offers microLED technology for displays, light engines and AR applications. Rachel has been named one of the Top 50 Women in Engineering 2020 and being recognised for her work on sustainable lighting based on nitride light emitting diodes (LEDs).

**Dr. John Tingay CEng, BEng, FIMechE**
***Paragraf, CTO***

As CTO of Paragraf, **John** has driven innovation in graphene electronics using the company's proprietary deposition process allowing scalable semiconductor methods. Working with academic and commercial partners he has translated proof of concept devices to designs capable of mass production.

Prior to joining Paragraf, John has led the development of capital equipment for the semiconductor and electronics industries for over two decades across wide-ranging technology areas from front end semiconductor processes to wafer level packaging applications.

In these positions John has been responsible for bringing novel technologies and processes to the industry and supporting the introduction of products by top tier consumer electronics companies and the well known semiconductor organisations.

John has held Non-Executive positions in high technology companies in semiconductor and advanced imaging markets with experience of the business and technology acquisition process from a multinational corporate viewpoint.

Starting his career in consulting engineering, John has also worked in the development of systems for particle accelerators and synchrotron physics.

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**Dr Richard Price**
***PragmatIC, CTO and co-founder***

**Dr Richard Price** is co-founder and Chief Technology Officer at Pragmatic Semiconductor, a leading UK deep tech company pioneering ultra-low-cost flexible electronics (FlexICs). He has over 25 years' experience in advanced materials and process innovation, with a PhD in Chemistry from Durham University and also serves as Non-executive Director at Royce. Richard is named on more than 30 patent families and has led numerous successful R&D programmes. Pragmatic has secured over £300 million in investment to scale its groundbreaking technology, including a £180Mn Series-D round in Dec-23 co-led by the National Wealth Fund and M&G Catalyst.

**Dr. Sumanlata Sahonta**
***Co-Founder, Kubos Semiconductors***

**Lata Sahonta** is co-founder and project manager of Kubos Semiconductors, a startup developing high-efficiency light-emitting devices for the display and communications markets based on novel proprietary material technology, cubic gallium nitride. Lata spun out Kubos whilst undertaking postdoctoral research at the Department of Materials Science and Metallurgy at the University of Cambridge, and later played a key role in setting up the Henry Royce Institute facilities at the University of Cambridge through their role as Project Manager. Lata continues to work closely with the Henry Royce Institute and with the University of Cambridge's Energy Materials networks.

**Prof. Francesca Iacopi, Imec Fellow, FIEEE**
***Director of Semiconductor R&D site at Purdue University, Imec USA***
***Adjunct Prof. University of Technology Sydney, Faculty of Engineering and IT***
***Adjunct Prof. Elmore Family School of Electrical and Computing Engineering, Purdue University***

**Prof. Francesca Iacopi** is an IEEE Fellow with over 20 years' industrial and academic research expertise in semiconductor technologies spanning interconnects, CMOS devices and packaging. Her research focuses on the translation of basic scientific advances in nanomaterials and novel device concepts into implementable integrated technologies. She is known for her seminal work on the integration of porous dielectrics in on-chip interconnects, and for the invention of the alloy -mediated epitaxial graphene platform on SiC on silicon wafers. She was recipient of an MRS Gold Graduate Student Award (2003), an Australian Research Council Future Fellowship (2012), a Global Innovation Award in Washington DC (2014) and was listed among the most innovative engineers by Engineers Australia (2018). Francesca is an IEEE EDS Distinguished Lecturer and serves regularly in technical and strategic committees for IEEE and the Materials Research Society. She is an Elected Member to the IEEE EDS Board of Governors (2021, 2024) and serves in the Editorial Advisory Board for ACS Applied Nanomaterials, and the IEEE The Institute magazine. She is also the inaugural Editor-in-Chief of the IEEE Trans. on Materials for Electron Devices (IEEE T-MAT). In 2024, she has left her tenured professorship at the University of Technology Sydney, to join

Imec USA in the role of Director of the Imec Indiana R&D Center based at Purdue University, IN, USA.

**Prof. Coskun Kocabas**
***Founder and CSO SmartIR***
***Professor of 2D Device Materials, Materials Engineering - The University of Manchester***

**Prof. Coskun Kocabas** is the Founder and Chief Scientific Officer (CSO) of SmartIR and a Professor of 2D Device Materials at the University of Manchester. He earned his PhD in Physics from the University of Illinois at Urbana-Champaign in 2007 and completed postdoctoral research at Harvard University. Prior to joining Manchester in 2017, he held faculty positions at Bilkent University in Turkey. He is also a core academic at the National Graphene Institute.

Prof. Kocabas is a globally recognized expert in graphene-based optoelectronics, with more than two decades of experience in the design and fabrication of electronic and photonic devices using 2D materials. He has authored over 80 scientific publications and holds multiple patents. His pioneering work has been supported by major European funding programs, including ERC Consolidator and PoC Grants, and EIC Transition and Accelerator projects.

At SmartIR, he leads scientific innovation, oversees the development of advanced thermal technologies, and directs the company's IP and R&D strategy. His work bridges fundamental research and commercial application, with a focus on disruptive materials solutions for aerospace, defence, and energy sectors.

**Dr Saptarsi Ghosh**
***Lecturer Electronic and Electrical Engineering. Centre for Integrative Semiconductor Materials Swansea University***

**Dr Saptarsi Ghosh** is a lecturer in the Electronic and Electrical Engineering department, and he joined Swansea University in early 2024. Prior to this lectureship, he was a Postdoctoral researcher at the University of Cambridge and completed his PhD from the Indian Institute of Technology (IIT) Kharagpur.

His current research is at the crossroads of electrical engineering and applied physics with two technological objectives - i) leapfrogging the energy efficiency of modern power electronics and ii) realising devices for transformative quantum 2.0 applications. To achieve these, a particular focus is on low-dimensional devices of the gallium nitride (GaN) and gallium oxide (Ga2O3) family of wide bandgap semiconductors. With state-of-art tools in epitaxial growth, material and electrical characterisation, and lithography, his group aims to optimise their large-scale growth, understand the role of non-idealities (such as defects) on macroscopic device performance, and apply physics-based principles to device engineering.

Primarily based in the Centre of Integrative Semiconductor Materials (CISM) at the Bay campus, his research strongly benefits from the experimental capabilities of this £50 M centre

operating since 2023. In addition to the strong connections within the local South Wales semiconductor cluster, he has active academic collaborators distributed in the UK and India.

Dr Ghosh has been a member of the global society of the Institute of Electrical and Electronics Engineers (IEEE) since 2014 and currently serves as a peer-reviewer of several top-tier journals.