

# MEET FLEET

Translational showcase:  
where  
innovation and quantum  
intersect with industry

20 Oct 2023  
2-5 PM

LEIGHTON HALL,  
SCIENTIA BUILDING  
UNSW SYDNEY



Discover a range of scientific  
know-how



Hear from successful industry  
- science partnerships



Build networks



Navigate funding and  
support programs

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- [FLEET.org.au/industry](https://FLEET.org.au/industry)
- [contact@FLEET.org.au](mailto:contact@FLEET.org.au)
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ARC CENTRE OF EXCELLENCE IN  
FUTURE LOW-ENERGY  
ELECTRONICS TECHNOLOGIES

# ABOUT FLEET

The ARC Centre of Excellence in **Future Low-Energy Electronics Technologies (FLEET)** is developing electronic devices that operate at ultra-low energy, enabling revolutionary new technologies to drive future electronics and computing, while meeting society's demand for reduced energy consumption.

FLEET addresses a grand challenge: reducing the energy used in information and communication technology (ICT), which already accounts for up to 8% of the electricity use on Earth and is doubling every 10 years. FLEET's solution is a new generation of ultra-low energy electronics that will allow computing to continue to grow.

FLEET is a collaboration of more than 100 researchers at seven Australian universities and 18 Australian and international science organisations. FLEET is linking a highly interdisciplinary team of high-profile Australian and international researchers in atomic physics, condensed matter physics, materials science, electronics, nanofabrication and atomically thin materials. For more information, please visit [FLEET.org.au](https://www.fleet.org.au)

## PURPOSE

The **MEET FLEET's** industry engagement event showcases the Centre's research capabilities in the realms of quantum and electronic materials and systems, including but not limited to quantum optics, semiconductor and superconducting devices, sensing, AI, high-tech/deep-tech materials and computing software/hardware of innovative electronics technologies.

Meet FLEET aspires to foster academia-industry partnerships and explore the potential for joint research and development programs, new product innovation and collaborative intellectual property generation.

# PROGRAM

TIME	PROGRAM DETAILS
2:00 PM	<b>Budyeri kamaru!</b> MC Tich-Lam Nguyen, FLEET Chief Operating Officer Welcome from UNSW Host
2:05 PM	<b>Presentation:</b> FLEET capabilities Alex Hamilton, FLEET Deputy Director
2:20 PM	<b>Panel discussion – Innovation agents</b> Hugh Durrant-Whyte, NSW Office of the Chief Scientist & Engineer Fiona Broussard, Monash Julie Wheway, DISR Laura Droessler-Dansie, UNSW
3:00 PM	<b>Panel Discussion – Science-in-industry veterans</b> Kavan Modi, Quantum for NSW Biliana Rajevic, Quantum Brilliance Chris Vale, CSIRO Quantum Andrew Dzurak, Diraq Alan Kobussen, Rio Tinto Exploration
3:45 PM	Poster session Networking
5:00 PM	Event concludes



**MC & PANEL FACILITATOR: Dr Tich-Lam Nguyen** is Chief Operating Officer for FLEET and manages the Centre's operations and its business team. She's responsible for the Centre's financial and operational effectiveness and the oversight of activities contributing to the development and delivery of its strategic goals. Tich-Lam brings a dynamic approach to higher education and research management, guided by the mantra of making small differences, and she is driven by her passion for innovative collaboration to create impactful opportunities.

With over a decade of experience in the higher education sector, Tich-Lam has adeptly served as a research centre manager for the Monash Centre for Atomically Thin Materials and researcher in nanoscience and nanotechnology at the University of Melbourne. Holding a PhD in chemistry from RMIT University and a Master of Management from Melbourne Business School, she brings extensive knowledge in navigating the complex interdisciplinary landscape.

**E: [COO@fleet.org.au](mailto:COO@fleet.org.au).**

**SPEAKER: Scientia Professor Alex Hamilton** has contributed significantly to the understanding of electronic conduction in two-dimensional and nanoscale transistors, and is a leading expert on the study of holes in semiconductor nanostructures.

His work has been recognised through multiple Australian scientific prizes, an ARC Industry Laureate Fellowship, an Australian Professorial Fellowship, an ARC Outstanding Researcher Award, a UNSW Scientia Professorship and election as a Fellow of the American Physical Society.

He leads FLEET's topological materials research theme where he directs the program on artificially engineered topological materials. Additionally, Alex works in the Centre's exciton superfluids research theme to realise bilayer exciton transistors at room temperature and within the nanodevice fabrication enabling technology theme.

# PANEL: INNOVATION AGENTS

This panel brings together key enablers of industry-academia collaborations, including university and government agency representatives. The discussion will cover a range of topics including business development support provided by universities and government agencies, the diverse collaboration mechanisms at play, various engagement models employed, the spectrum of funding opportunities and grant schemes accessible to foster these partnerships, and the potential government funding support that can catalyse innovative collaborations between the academic and industrial sectors.

## **PANELISTS:**

Hugh Durrant-Whyte, NSW Office of the Chief Scientist & Engineer

Fiona Broussard, Monash

Julie Wheway, DISR

Laura Droessler-Dansie, UNSW

# PANEL:

## SCIENCE-IN-INDUSTRY VETERANS

This panel features those who have navigated the complex landscape of academia-industry collaboration, providing valuable insights gained from their experiences. They will share lessons learned from academia-industry partnerships, the inherent opportunities, and the barriers that often accompany such engagements. Additionally, the panel will explore the growing need for a quantum-trained workforce, pinpointing opportunities for developing such talent and exploring what resources are available to ensure a continuous and thriving pipeline of collaborative initiatives.

### **PANELISTS:**

Kavan Modi, Quantum for NSW

Biliana Rajevic, Quantum Brilliance

Chris Vale, CSIRO

Andrew Dzurak, Diraq

Alan Kobussen, Rio Tinto Exploration



**PANELIST: Fiona Broussard** connects researchers with industry and government to build partnerships and collaborative opportunities critical for research impact and technology translation in her role as a business development leader at Monash University. With a background in R&D within the chemical manufacturing industry, coupled with two decades of commercial experience in the innovation space, Fiona brings a deep understanding of the Australian and global research landscape. Her STEM research business experience spans a range of organisations, including CSIRO, a MedTech start-up, Cooperative Research Centres and Australia's great universities.

She has a Bachelor of Science with First Class Honours in chemistry from Monash University and an MBA from Melbourne Business School. Every day is different working with the bright minds in STEM at Monash's Faculty of Science and Fiona thoroughly enjoys working across the diversity of STEM disciplines to drive a research pipeline filled with interesting and innovative research endeavours.



**PANELIST: Professor Andrew Dzurak** is an innovator and entrepreneur in the global quantum technologies ecosystem, leading teams in both industry and academia. He is CEO & Founder of Diraq, a full-stack quantum computing company employing the silicon CMOS qubits developed by his team at UNSW Sydney over the past two decades. Diraq officially launched in May 2022. Prior to founding Diraq, he was the foundational Director (2007-2022) of ANFF-NSW.

Andrew, with colleague Andrea Morello, demonstrated the world's first silicon quantum bits (qubits) in 2012, and over the past decade has developed a naturally scalable qubit technology by reconfiguring the ubiquitous CMOS transistors that make up all of today's silicon processor chips. This CMOS qubit technology underpins Diraq, which aims to redefine scalable quantum computing and bring practical commercial applications to the world via billions of qubits on a single chip, compared to the hundreds of qubits that exist today.



**PANELIST: Dr Alan Kobussen** is currently Senior Manager Technology Development at Rio Tinto Exploration. Alan earned a Bachelor of Science and a Masters of Science in Geology and Geophysics from the University of Wisconsin-Madison before moving to Australia and completing a PhD in Earth and Planetary Science at Macquarie University in 2010. He joined Rio Tinto Exploration (RTX) in 2011 as a geochemist focussed on the development of new techniques for diamond exploration.

He has held both technical and operational roles in the business but primarily has been in technique and technology development related to the discovery of mineral deposits. In his current role as Senior Manager of Technology Development with RTX in Melbourne, he is responsible for the early identification and collaborative development of new technologies that have the potential for disruption in the minerals exploration industry.

**PANELIST: Laura Droessler-Dansie** is currently a senior Business Development and Commercialisation Manager, University of New South Wales Sydney. Laura is an experienced technology transfer professional, having worked in university and entrepreneurship settings at UNSW in Australia and the University of Oxford in the UK, as well as on overseas development programmes via the UK Newton Fund in collaboration with the Royal Academy of Engineering.

As Senior Business Development and Commercialisation Manager, she leads a team within UNSW Knowledge Exchange supporting collaboration and translational activities in the Physical Sciences.





**PANELIST: Professor Hugh Durrant-Whyte** is the NSW Chief Scientist & Engineer and Commissioner of the Natural Resources Commission. His previous roles include Chief Scientific Advisor to the UK Ministry of Defence (2016-2018), CEO of National ICT Australia, NICTA (2010-2014), Professor and ARC Federation Fellow at the University of Sydney (2002-2010) and Director of the ARC Centre of Excellence for Autonomous Systems and of the Australian Centre for Field Robotics (1995-2010).

Hugh is a world-leading authority on machine learning and robotics, and applications in areas including cargo handling, mining and defence. He has published over 300 research papers, graduated over 70 PhD students, and has won numerous awards and prizes for his work, including being named 2010 NSW Scientist of the Year and 2008 Engineers Australia NSW Engineer of the Year.

In his career, he has worked with many major companies and has co-founded three successful start-up companies. He is particularly well known for his work with Patrick in delivering the automated container terminals in Brisbane and Port Botany, and for his work with Rio Tinto in pioneering and delivering the automated "Mine of the Future".

He is an honorary Fellow of Engineers Australia, a Fellow of the IEEE, a Fellow of the Royal Academy of Engineering, a Fellow of the Australian Academy of Science, and a Fellow of the Royal Society of London.



**PANELIST: Dr Julie Wheway** is the AusIndustry Regional Manager for Sydney. Her role is to provide impartial, trusted guidance to startups and SMEs. She also nurtures partnerships and networks, provides connections, and helps businesses navigate local, state and federal government support and programs.

Prior to joining AusIndustry, Julie was a commercialisation specialist, facilitator, and mentor with over ten years of experience at the interface of research and industry. With a deep understanding of Australia's R&D sector, Julie spent a decade taking new ideas to market by developing and implementing commercialisation strategies for research organisations and innovative businesses across many STEM sectors.

Julie also had a successful 15-year academic career in medical research, was the recipient of the prestigious NHRMC postdoctoral fellowship, and has a PhD in Immunology.



**PANELIST: Professor Kavan Modi** is the director of Quantum for New South Wales (QfNSW), a state-funded centre aimed at exploring the potential benefits of quantum technologies for the people and workforce of NSW. The QfNSW also aims to support the vibrant quantum ecosystem and quantum industry in the state of NSW, as well as help to train the next generation of workforce.

Kavan is also a professor in the School of Physics and Astronomy at Monash University, where his group works with several quantum hardware companies to characterise and control noise in quantum hardware.



**PANELIST: Professor Chris Vale** is Professor of Physics and Director of the Quantum Technologies Future Science Platform at CSIRO. Prior to joining CSIRO he led an experimental research program at Swinburne University of Technology using gases of atoms cooled to nanoKelvin temperatures to study properties and dynamics of many-body quantum systems.

Chris has been a Chief Investigator in two ARC Centres of Excellence – in Future Low-Energy Electronics Technologies (FLEET) and Quantum Atom Optics (ACQAO) – has held an ARC Future Fellowship and several ARC Discovery and Linkage Infrastructure and Equipment projects. He has been actively engaged in the promotion of physics and quantum science through FLEET, the Australian Institute of Physics, conference organisation and public outreach.



**PANELIST: Biliana Rajevic** is the Strategy and Corporate Development Lead at Quantum Brilliance, a full-stack quantum technology company, where she directs strategic corporate and partnership initiatives in Australia and globally. She is also the Co-founder and Director of Quantum Women, a not-for-profit organisation with a vision to see every woman working in quantum technology achieve their full professional potential.








Prior to Quantum Brilliance, Biliana led strategic engagement at QuintessenceLabs, an Australian quantum cyber security company. Prior to that, she led the development and implementation of Sydney Quantum Academy's engagement strategy with technology partners, enterprises, start-ups, and government.

Biliana holds an MBA from the Johnson Graduate School of Management at Cornell University and a BBA degree from Pace University.




# TECHNOLOGIES

TEAM	TECHNOLOGY	WEBPAGE
Julian Ceddia & Agustin Schiffrin, Monash	Scanbot: An STM automation bot	
Gary Beane & Agustin Schiffrin, Monash	Terahertz frequency switching in graphene	
Yoni Ashlea-Alava & Alex Hamilton, UNSW	Ultra-low-noise transistors and quantum devices	
David Cortie, ANSTO/ UOW Julia Karel, Monash	High-performing n-type thermoelectrics based on bulk porous topological insulators	
Mitch Conway (Swinburne) Jack Muir (CSIRO) Abby Goff (JMSS)	Manufacturing advanced quantum materials: Monolayer semiconducting TMDCs	
Julia Karel, Monash David Cortie, ANSTO/ UOW	Topological thermoelectric films with controlled porosity	
Michael Barson, Monash	High-bandwidth vector magnetometry for communication and navigation	

# TECHNOLOGIES

TEAM	TECHNOLOGY	WEBPAGE
Mark Edmonds & Michael Fuhrer, Monash	Towards high-temperature lossless electronics	
Mark Edmonds & Michael Fuhrer, Monash	Next generation low-energy transistors	
Priyank Kumar & Dipan Kundu, UNSW	Safe, affordable and durable zinc-ion batteries	
Maedehsadat Mousavi, UNSW	Supercapacitors: The future of energy storage	
Cheng Tan & Sumeet Walia, RMIT	Visible switching coatings for smart windows	
Torben Daeneke & Patjaree Aukarasereenont, RMIT	Aluminium oxides-based LED encapsulant	
Sudha Mokkalapati, Monash	Automated sensors for stand-off detection of toxic gases	

# TECHNOLOGIES

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Sudha Mokkalapati, Monash	Biosensors for point of care testing	
Zhi Li, UNSW	High-temperature superconducting electronics	
Junedh Mohammed & Francesca Iacopi, UTS	Wearable EEG sensor with epitaxial graphene	
Anton Tadich, ANSTO	The Australian Synchrotron: A materials analysis toolkit	
Reza Asgari, UNSW	Two-dimensional natural hyperbolic materials	
Karen Livesey, U. Newcastle	Solving for the effective properties of electromagnetic composites	

- [FLEET.org.au](http://FLEET.org.au)
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