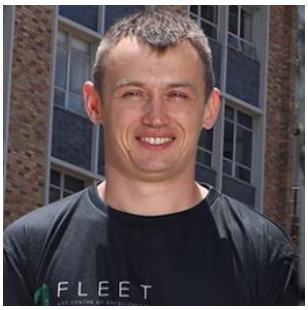
FLEET

ARC CENTRE OF EXCELLENCE IN FUTURE LOW-ENERGY ELECTRONICS TECHNOLOGIES

FLEET News: March 2024



Hot off the press this month we present FLEET's 2023 annual report, and **a case study** sharing FLEET alums' and members' experiences of their development within the Centre, along with another FLEET alumni interview.

Also, liquid-metal transfer and 2D printing, industry-science hackathon success, Our COO Tich-Lam Nguyen in the news describing Centre equity efforts, and the FLEET Landing event in May.

Regards,
Oleh Klochan
FLEET Deputy Education Chair

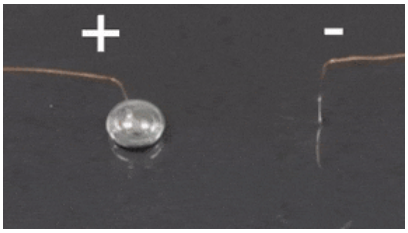
In this edition of FLEET News:

FLEET 'landing' event

The FLEET 'Landing' event in May will be a three-hour celebration of FLEET's impact and legacy, networking, and a science showcase featuring outreach demonstrations and translation-focussed scientific posters.

Liquid metal UOW

A new study led by Yahua He and Xiaolin Wang at UOW has demonstrated liquid-metal transfer from an anode to a cathode without short circuiting, utilising a screen effect caused by hydrogen bubbles at the ultra-thin surface oxide layer. Read the UOW article **here**, and watch the video of the mechanism in motion **here**.



Read the FLEET annual report!

As well as a year of significant progress toward key research milestones, FLEET's 2023 annual report describes efforts to ensure FLEET's research capacity, far-reaching network and alums educated and trained will continue to make a positive impact "beyond FLEET." **Read the report online.**

Case study: FLEET alums and members value 'soft' skills and community

It's not just technical and scientific skills that set up FLEET graduates for future career success. FLEET alums perceive their most important skills gained at FLEET to be transferable or professional skills such as communication, networking, translation and collaboration, and a broad understanding of the research ecosystem. And these highly-valued transferable skills were enabled by a sense of community, a strong support network, and a sense of belonging or common purpose. **Read the case study for more survey comments**.

2D liquid-metal printing of future electronics

Mohammad Bagher Ghasemian (now at the University of Sydney) led a collaboration of Australia's materials expertise, developing a new liquid-metal printing technique to reduce costs in manufacturing future semiconductors, memory chips and more. **Read more online**.

Better Futures Industry Challenge

35 intrepid Researchers from five COEs gathered this month for the inaugural Better Futures Innovation Challenge to focus on a nominated critical industry challenges.

Of the seven innovative proposals developed, three each receive $5000 funding to take their proposal to the next step. **Read more about the event and what happens now**.

Ten FLEET and associated participants were spread across four different teams:

- **Thermal transformers** Two-layer thermoelectric, thermally active building materials that can heat or cool buildings (Kyle Boschen)
- **LabSafe** Smarter inventory-tracking and risk-management systems for labs (Michael Harvey and Andrew Groszek).
- **Quantum Earthquake Detector** (QED!) An inexpensive, robust, sensitive seismometer utilising quantum tunnelling (Julian Ceddia, Kyle Portwin and Errol Hunt) - shortlisted
- **Quantum Tech Educational Unit** Quantum education kits for the masses (Jonathan Tollerud, Daniel McEwen, Sangeet Kumar, and Mitch Conway).

Tich-Lam describes FLEET equity in The Age/SMH

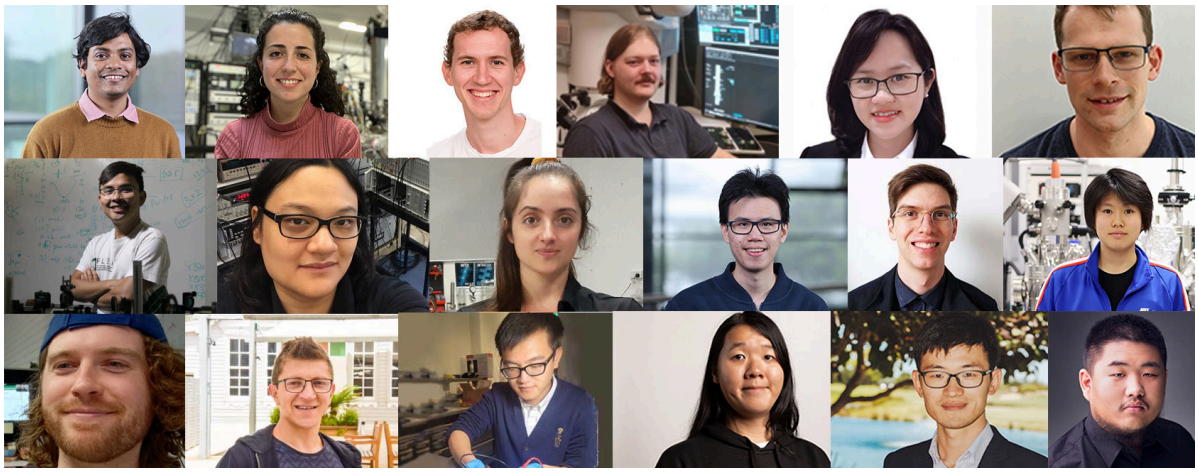
"Having a workplace that is diverse and equitable is in the best interests of everybody" FLEET COO Tich-Lam Nguyen described the success of the Women in FLEET Fellowships initiative in a STEM equity feature article in *The Age / Sydney Morning Herald* this week. **Read the article here**.

Applying comms skills at Berkeley: FLEET alum Bernard Field

"Skills developed doing public science outreach – communicating with a general audience, connecting with scientists in different disciplines, and placing my research within the big picture – are helpful in my continued work in academia." Find out how FLEET alumni Dr Bernard Field (ex Monash) applies communication skills honed in outreach and workshop presentations in his new role as a postdoc at the Berkeley Lab. **Read Bernard's interview online**.

Authors in March

Congratulations to our early-career researchers who were authors on papers published this month: Abhikbrata Sarkar, Amelia Dominguez-Celorrio, Ben Lowe, Caiden Parker, Chi Xuan Trang, Daniel McEwen, Eliezer Estrecho, Elizabeth Marcelina, Iolanda Di Bernardo, Kenneth Choo, Liam Watson, Mengting Zhao, Mitch Conway, Olivier Bleu, Qile Li, Robin Hu, Weiyao Zhao and Zhanning Wang.



AIP / opto-microelectronics conference in December

2nd-6th December 2024: The Australian Institute of Physics Congress, co-located with the Conference on Optoelectronic and Microelectronic Materials and Devices (COMMAD), will be held at the Melbourne Convention Centre.

Abstracts close mid-June. See **AIP-congress.org.au** for further details.

Jobs board

The FLEET “jobs board” at **FLEET.org.au/jobs-board** is a useful resource for people looking for future positions. If you know of any positions of interest, let us know and we’ll add them. Group leaders, we’re happy to list your new positions here too.

Catch up on past talks

Oleg Yazyev (École Polytechnique Fédérale de Lausanne) **In-silico discovery of novel topological materials**

- Shu Ping Lau (Hong Kong Polytechnic) **Ferroelectricity in 2D heterobilayers**
- Michele Governale (MacDiarmid) **Corner states in 2D topological insulators**
- Wendy Rogers (Macquarie) **Understanding researcher values to build better scientific outcomes**
- Miguel Ugeda (Donostia) **Collective electronic states in 2D heavy fermion system**

Grants and opportunities

Main Sequence Ventures (CSIRO's investment arm) deep-tech newsletter features over 40 companies with 300+ jobs on offer. **Sign up for the newsletter** to stay informed.

Physics in the Pub (Sydney, 27 August) nominations are now open.

Applications are open for the **NSW government's MVP Ventures Program**, offering grants of $25–50,000 to start-ups and SMEs to help commercialise highly innovative and new products or processes (TRL 3–9) to help them move along the technology readiness scale and attract investment. Applications close 30 April, with the following round opening 1 July.

For ongoing outreach/development opportunities see **In2science** mentoring, and **CSIRO STEM Professionals in Schools**.

Live Centre stats

Ever wondered how many people have been in FLEET, how many ARC Laureates, Future or DECRA Fellows, collaborative publications or citations? All these stats and more are updated live at **FLEET.org.au/statistics**

Previous news

First FLEET intern Congratulations to Sangeet Sangeet, who is the inaugural intern for the FLEET internship program. Sangeet is currently at ANSTO, working on a collaborative project with AI David Cortie and collaborator Zeljko Pastuovic, performing neutron reflectrometry experiment to study ion-beam modified 2D materials.

Get on-the-job training FLEET funding will cover three more internships, with ANSTO and other opportunities listed at **FLEET.org.au/internships**.

Sue Coppersmith AIP Lecturer Sue Coppersmith (UNSW) will be the 2024 Australian Institute of Physics Women in Physics Lecturer, and will be touring Australia talking to students, public and media about her work studying the physics of complex systems, including glasses, granular materials, bio-materials, magnetism, and quantum computing. Sue's first stop will be the **VicPhysics Girls in Physics Breakfast** in May.

Kirrily Rule UOW Congratulations to FLEET PI and Communications Chair Kirrily Rule (ANSTO), who has been made a full Professor at the University of Wollongong.

Alumni profile: Dhaneesh Kumar "Giving talks to FLEET members helped build my confidence presenting research talks. Practice makes perfect" Dhaneesh Kumar was one of the original cohort of FLEET PhD students when the Centre was launched in 2017. We interviewed Dhaneesh about his career path after leaving FLEET (he completed his PhD in May 2021), and how he has used his technical and collaboration training at FLEET in his new position as a postdoc at the Max-Planck Institute for Solid State Research in Stuttgart. **Read more online**.

Australian Universities Accord report The Australian Universities Accord Final Report made 47 recommendations towards higher, more equitable participation, encouraging innovation, and meeting Australia's future skill needs, including energy, manufacturing, agriculture and public infrastructure. **Read the report online**.

Participating organisations

FLEET is The Australian Research Council Centre of Excellence in Future Low-Energy Electronics Technologies. Read more about our **participating nodes** and **partners** online.

Monash University · UNSW Sydney · Australian National University · RMIT University · Swinburne University of Technology · University of Wollongong Australia · The University of Queensland Australia

Australian Government
Australian Research Council