FLEET

ARC CENTRE OF EXCELLENCE IN FUTURE LOW-ENERGY ELECTRONICS TECHNOLOGIES

FLEET News: September 2022

Congratulations are in order this month for several of our members: Sumeet Walia (Eureka Prize), Julie Karel (Young Tall Poppy), Mark Edmonds (ARC Future Fellowship) and Jesper Levensen (promotion to Associate Professor).

Michael Fuhrer
Director, FLEET

In this edition of FLEET News:

FLEET Translation Program: automating STM tip-shaping

Monash PhD candidate Julian Ceddia has been awarded FTP funding to develop automation of STMs based on previous work from the group of his supervisor, Agustin Schiffrin. Automating of the 'boring' tip-shaping of STMs frees up operators' time to concentrate on science. FTP-funded development of tip-shaping automation software will be the first step in taking their project towards commercialisation. **Read more online**.

Eureka Prize for Sumeet Walia

Congratulations to RMIT's Sumeet Walia, who was awarded the 2022 Eureka Prize for Emerging Leader in Science this month in Sydney. A passionate advocate for diversity and

Eureka Prize for Sumeet Walia

Congratulations to RMIT's Sumeet Walia, who was awarded the 2022 Eureka Prize for Emerging Leader in Science this month in Sydney. A passionate advocate for diversity and inclusion in STEM, Sumeet's research includes artificial vision technologies, smart window sensors and infection-prevention platforms. FLEET is extremely lucky to have Sumeet as our new Chair of Industry Relations.

Congratulations Julie Karel

FLEET's Julie Karel (Monash) has received a Victorian 2022 Young Tall Poppy Science Award, recognising her research in functional amorphous materials for future ultra-low energy electronics, and in science outreach. **Read more about Julie's award, research and outreach efforts online**.

From Japanese baskets to next-generation electronics

Congratulations to FLEET AI Mark Edmonds (Monash University) who has received an ARC Future Fellowship announced this month towards further study of 2D kagome materials—named after starlike Japanese *kagome* baskets—for faster, more energy-efficient future electronics. **Read more about the project online**.

Jesper Levinsen promotion

FLEET Associate Investigator Jesper Levinsen (Monash School of Physics and Astronomy) has been recognised by the Faculty of Science, as he is prompted to Associate Professor. **Read more online**.

Industry news: quantum and semiconductors

Science Minister Ed Husic this month announced a new advisory committee to drive Australia's National Quantum Strategy, to be chaired by Australia's Chief Scientist Cathy Foley. The coordination of quantum capability across research, industry and government will include access to the $1bn 'critical technologies fund'. **Read more online**.

Meanwhile in a proposal for an Australian semiconductor 'moonshot' the Australian Strategic Policy Institute proposes to stimulate A$5bn of semiconductor manufacturing activity through A$1.5bn government investment and incentives – mirroring the US's recent '**CHIPS**' and 'FABS' Acts . **Read the ASPI briefing online**.

ECR authors in September

Congratulations to our early-career researchers who were first, second or third authors on papers published this month: Baoyue Zhang, Benjamin Lowe, Cooper Finnigan, Daniel Sando, Dhaneesh Gopalakrishnan, Eliezer Estrecho, Emma Laird, Harley Scammell, Marina Castelli, Matthias Wurdack, Qingdong Ou, Tinghe Yun and Turki Alkathiri. See more in **FLEET publications**.

Conferences

The Recent Progress of Graphene and Two-Dimensional Materials Research conference (RPGR2022), to be held in Taipei, Taiwan **13-17 November 2022** will cover the latest developments in graphene and other 2D crystals, and enhance 2D physics, material science and devices.

The 2022 Gordon Godfrey workshop on spins, topology and strong electron correlations will be held **21-25 November** at UNSW. An informal poster session for students and ECRs allows for very easy submission: all that's needed is a poster title, which is simply entered into the online registration form.

The 10th International Conference on Advanced Materials & Nanotechnology (AMN10) will be held in Rotorua, New Zealand, **6-10 February 2023**. This meeting is sponsored by FLEET partner organisation the MacDiarmid Institute and covers a broad variety of topics in nanotechology and materials science. To receive updates and advise your intent to attend, please **register your interest** online.

Wagga Wagga Annual Condensed Matter and Materials Meeting The long-running Wagga conference is back **7-10 February 2023**. Low-cost conference for the Australian condensed matter fraternity, particularly good for research students to present their work.

Quantum Australia Conference and Careers Fair in Sydney **21-23 February** will explore what's required to build a quantum economy, with Australian and international leaders and experts, and careers fair providing a platform for potential employers to engage with emerging quantum talent (and vice versa).

Catch up on past talks

If you missed any recent FLEET seminars or other talks you can catch up on YouTube:

- Rafael Fernandes (Minnesota) **Intertwined electronic phases in quantum materials**
- Igor Aharonovich (UTS, TMOS) **Quantum nanophotonics with hBN**
- Sergei Frolov (Pittsburgh) **Superconductors and semiconductors, nanowires and majorana modes**
- Eli Estrecho,(ANU) **Non-Hermitian topology in exciton polariton systems**
- ECR working group: **Academia and beyond Q&A videos**

Grants and opportunities

The Victorian government will provide $100 million in pre-seed investment funding to the five state universities over five years to support research commercialisation, with university startups and spinouts to receive up to $1 million each.

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.

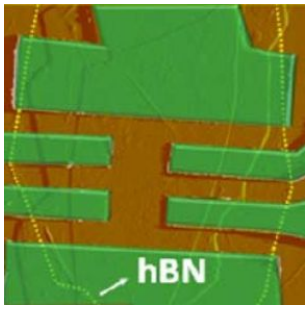
Nano Letters and ACS's new Seed Grants competition will provide US$2500 for high-risk, high-reward nano' research proposal ideas from later-stage graduate students (third year+).

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

Interested in an **industry internship**? See active positions at **APR Interns**.

Previous news

Manipulating interlayer magnetic coupling for future spintronics
The first electric control of exchange-bias effect, led by FLEET Research Fellow Sultan Albarakati (RMIT), provides a promising platform for future energy-efficient, beyond-CMOS spintronics. Scalable, energy-efficient spin-orbit logic is enabled at structure interface between antiferromagnetic and ferromagnetic materials. **Read more online**.



FLEET Translation Program: funding approved Swinburne/RMIT PhD candidates Mitch Conway, Abby Goff, and Jack Muir will use $31,000 funding from the FLEET Translation Program to present a 'catalogue' of prefabricated, high-quality 2D TMDs and heterostructures for purchase on a novel online sales platform, with a series of optical characterisations, providing customers with confidence that what you see is what you get. **Read more online**.

National Science Quiz Over 200 in-person audience members and more than 400 online contestants competed in this month's National Science Quiz, co-presented by FLEET with a collaboration of nine research organisations. **Read more online**.

Congratulations Nikhil Congratulations to FLEET CI Nikhil Medhekar at Monash University, who has been promoted to full Professor of Materials Science and Engineering. **Read more online**.

Atomic! The heart of glass So what makes glass behave differently from a crystal? A nice explainer article at ANSTO looks at the strange atomic structure of glassy materials, and studies led by FLEET's Julie Karel (Monash) and David Cortie (ANSTO/UOW) using an array of spectroscopic and diffraction techniques to investigate useful properties in future electronics such as superconducting circuits. **Read more at ANSTO**.

New FLEET Industry Relations Chair We're pleased to report that FLEET AI, Sumeet Walia at RMIT has been nominated by the FLEET Executive Committee to chair the Industry Relations Committee from Aug 2022. Thanks to Torben Daeneke for his leadership in the past two years as Chair of the IR committee.

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

Australian Government
Australian Research Council