

**FLEET News: May 2023**

It's an honour to be inducted as an AAS Fellow, announced last week, and to see the impact of our group's research, and more broadly, the vision that has become FLEET, being recognized by the Academy. Alex Hamilton's new ARC Industry Fellowship also indicates recognition of the value of FLEET research to Australian science and industry.



Congratulations to Torben Daeneke, who has become a Centre CI. Read on below for more about this, Fellowships, negative mass, and other Centre news.

Michael Fuhrer  
Director, FLEET

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**In this edition of FLEET News:**

- **Academy of Science Fellow Michael Fuhrer** (Monash)
- **Alex Hamilton industry fellow** (UNSW)
- **New CI Torben Daeneke** (RMIT)
- **Negative mass in excitons** (ANU)
- **Matthias Wurdack Schmidt Fellow** (ANU)
- **Farewell Nicci** (RMIT)
- **Mitko Oldfield wins first 3MT challenge** (Monash)
- **Schools outreach** (Monash)
- **Energy diplomat visit** (UNSW)
- **FLEET ECR authors this month**
- **Conferences, past talks and opportunities**

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**Michael Fuhrer Academy of Science Fellow**

FLEET Director Michael Fuhrer (Monash) has been named an Australian Academy of Science Fellow, joining FLEET's Jo Etheridge (Monash, 2019), Catherine Stampfl (Sydney, 2019) and Susan Coppersmith (UNSW, 2021). [Read more online.](#)



## Alex Hamilton Industry Fellow

Congratulations to FLEET Deputy Director Alexander Hamilton UNSW who has been named an Australian Research Council Industry Laureate Fellow. [Read more online](#) about the new Fellowships and partnership with Diraq, unleashing the combined power of electrons and holes for quantum computing.



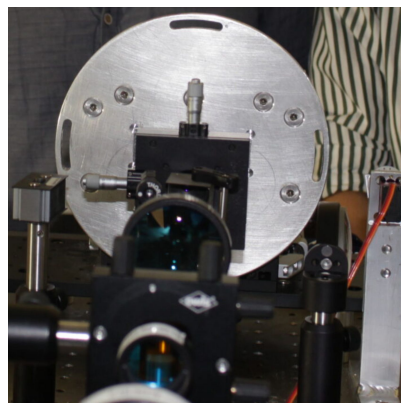
## New CI Torben Daeneke

FLEET is pleased to announce that Dr Torben Daeneke is now a Chief Investigator in FLEET. As a Scientific Associate Investigator in FLEET (RMIT node) since the outset of the Centre, Torben and has been a prodigious contributor to FLEET's research effort as well as FLEET's governance and industry relations efforts. [Read more online](#).



## Negative mass in excitons at ANU

Under certain conditions the dispersion of exciton polaritons is inverted – equating to a negative mass. The cause turns out to be losses due to interactions between exciton-polaritons and phonons in the atomically-thin semiconductor. [Read more online](#).



## Schmidt fellowship to Matthias Wurdack

Congratulations to Dr Matthias Wurdack (FLEET/ANU), who has received a Schmidt Science Fellowship to develop artificial retinas. [Read more online](#).



## Farewell Nicci

We bid a sad goodbye this month to Nicci Coad (RMIT), who is leaving FLEET to join the new ARC Centre of Excellence in Optical Microcombs for Breakthrough Science (COMBS). Thanks Nicci for all your amazing work supporting FLEET members in the last five years!



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## Mitko on stage

Congratulations to Mitko Oldfield whose tale of smooshing light and matter together to stop the world burning was the 3MT (Three Minute Thesis) winner for Monash University School of Physics and Astronomy, and now goes into the next (Faculty of Science) round next week – onwards and upwards without resistance.



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## Schools outreach

*"One student told me she'd not previously considered science as a career, as it all seemed too hard for her, but she was excited now by what she had achieved and learnt during the class."*

A recent outreach day at Mater Christi College Belgrave took 250 students through FLEET workshops on catapults, graphite circuits and optics, with one student telling FLEET/Monash volunteer Grace Causer (catapults) the day had inspired her to consider science as a career.

[Read more online.](#)



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## Energy diplomat visiting labs at UNSW

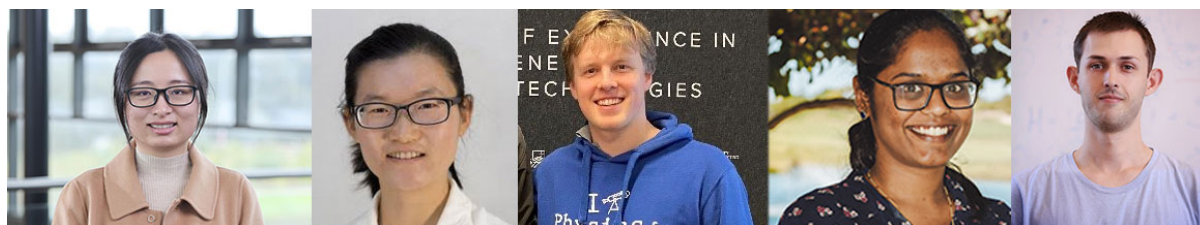
Alex Hamilton and FLEET's team at UNSW were pleased this month to host Bangladesh Energy Advisor Dr Tawfiq-e-Elahi Chowdhury, who was shown the QED Groups facilities and labs with team members explaining their role in the search for new materials and technologies towards a sustainable future for electronics. [Read more online.](#)



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## FLEET ECRs publishing in May

Congratulations to our early-career researchers who were first, second or third authors on papers published this month: Baoyue Zhang, Hong Liu, Matthew Gebert, Vivasha Govinden and Zeb Krix.





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## Catch up on past talks

FLEET seminars and talks are available to catch up on YouTube:

- Stefan Maier (Monash) **In a tight spot: what to do with light in small spaces**
- Abdulhakim Bake (UOW) **Engineered order-disorder transition at surface of topological insulators manipulating electronic properties**
- Andrey Chubukov (U Minnesota) **Twists and turns of superconductivity from a repulsive interaction**
- Yuerui Larry Lu (ANU) **Enhanced interactions of interlayer excitons in free-standing hetero-bilayers**
- Peggy Zhang (UNSW) **Stability of ferroelectric bubble domains**

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## Grants and opportunities

**veski inspiring women STEM side-by-side program** provides work and networking opportunities for mid-career women in STEM. Deadline **12 June**.

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+).

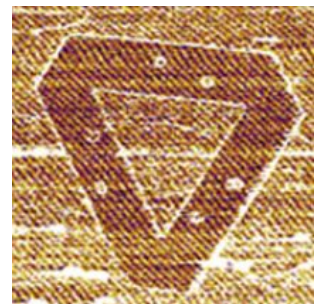
For ongoing outreach/development opportunities see **In2science** mentoring, and **CSIRO STEM Professionals in Schools**.

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

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## Previous news

**Nanoscale patterning engineering of advanced conducting materials** A new ANSTO-led technique engineers nanoscale conducting channels by 'drawing' topological edge state patterns on the surface of a material using ion-beam irradiation. With potential for advanced scalable electronic circuitry, researchers used ion implantation and lithography to create patterns of topological surface edge states on a topological material, making the surface edges conductive while the bulk layer beneath remained an insulator. **Read more online.**



**Can a solid be a supersolid?** A collaboration of UNSW and European physicists predict that layered electronic 2D semiconductors can host a curious quantum phase of matter called the supersolid. This counterintuitive quantum material simultaneously forms a rigid crystal, and yet at the same time allows particles to flow without friction, with all the particles belong to the same single quantum state. **Read more online.**

**Mind-controlled' robots** FLEET AI Francesca Iacopi and her TMOS colleagues have used 3D-surface graphene patterning to create new 'dry' (non sticky) sensors that can read brain activity, potentially allowing brain waves to control an external device, such as a prosthetic limb, robot or even a video game. [Read more online.](#)



**Read the ARC review** A recent comprehensive review of the Australian Research Council provides interesting reading, including case studies demonstrating the outcomes of long-term basic and applied research, such as quantum technologies. [Read the review online.](#)

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## 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.

