



## FLEET News: January 2023

Happy new year everyone! Read on to find out what some of our members and alums have been up to.

Michael Fuhrer  
Director, FLEET



### In this edition of FLEET News:

- **FLEET seminar: Yuerui Lu (ANU)**
- **Turning up the heat on thermoelectrics: FLEET translation (UOW, Monash)**
- **Congratulations Oliver Paull (UNSW)**
- **FLEET alum Sam Bladwell, scientific editor (ex UNSW)**
- **Rethinking Australia's semiconductor future**
- **Congratulations to FLEET ECR authors this month**
- **Conferences, past talks and opportunities**

## FLEET seminar: Interlayer excitons in free-standing heterobilayers

In the first FLEET seminar for 2023, Yuerui (Larry) Lu from the ANU will discuss strong, long-range dipole-dipole interactions between interlayer excitons in hetero-bilayers. Join us 11AM 15 February: [link online](#).

### FLEET SEMINAR

#### Enhanced Interactions of Interlayer Excitons in Free-standing Hetero-bilayers

Prof. Yuerui (Larry) Lu, ANU

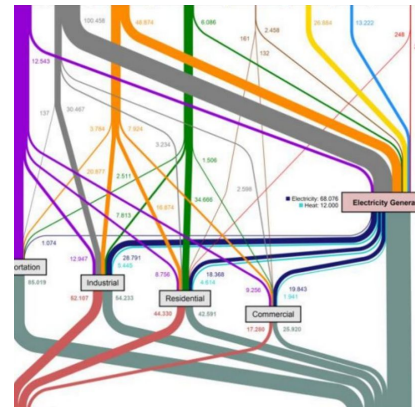


Wednesday 15 February 2023  
11:00 AM AEDT

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## Turning up the heat on thermoelectrics: FLEET translation program

FLEET funding is supporting the next step in possible translation of thermoelectrics research towards commercialisation in future generators, electronics, vehicles, human-wearable and environmental sensors, and smart electronics, in a project led by David Cortie (ANSTO), Julie Karel (Monash) and Xiaolin Wang (UOW). [Read more online.](#)



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## Congratulations Oliver Paul

FLEET / UNSW PhD graduate Oliver Paul (from Nagy's group) has been awarded a UNSW Dean's Award for Outstanding PhD Theses in recognition of his thesis *Physical properties of epitaxial BFO thin film heterostructures on high-index oxide substrates*. Congratulations Oliver!



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## FLEET alum Sam Bladwell, science editor

From theoretical physicist at FLEET/UNSW, to science editor at Nature... read Sam Bladwell's recounting of the novel experience of launching a new career in the midst of covid, and what it's like to edit scientific papers at Nature Communications. [Story on FLEET.](#)



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## Rethinking Australia's silicon future

Australian Chief Scientist Cathy Foley shares her thoughts on a national semiconductor plan, and the nation's existing strengths in semiconductors and photonics. [Read the article online](#)

Or if you'd rather listen than read, [check out this AU Manufacturing interview](#) with Steve Duvall (ex Silanna).



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## FLEET ECRs publishing in December/January

Congratulations to our early-career researchers who were first, second or third authors on papers published this month (and the end of last month, after the previous newsletter): Adam O'Neill, Aydin Keser, Cam Phu Nguyen, Hien Thi Dieu Nguyen, Jack Engdahl, and Peggy Schoenherr. See more in [FLEET publications](#).



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## Conferences

**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 nanotechnology and materials science.



**Wagga Wagga Annual Condensed Matter and Materials Meeting**  
The low-cost, friendly Wagga conference is back **7-10 February 2023**, bringing Australia's condensed matter fraternity together – particularly good for research students to present their work and meet colleagues from other institutions (including potential future employers!)



**Quantum Australia Conference and Careers Fair** in Sydney **21-23 February** will explore building a quantum economy, with Australian and international leaders, and a careers fair providing a platform for potential employers to engage with emerging quantum talent (and vice versa). **FLEET will support in-person attendance for all presenting ECRs/students.**



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## Catch up on past talks

Catch up on past FLEET seminars and talks on YouTube:

- Peggy Zhang (UNSW) **Stability of ferroelectric bubble domains**
- Jennifer Cano (Stony Brook) **Engineering topological phases with a superlattice potential**
- Semonti Bhattacharyya (Leiden) **Dirac fermions at interfaces**
- Rafael Fernandes (Minnesota) **Intertwined electronic phases in quantum materials**

## Grants and opportunities

**NSW's Quantum Computing Commercialisation Fund** targets innovative quantum computing hardware and/or software (Technology Readiness Levels 3 – 7) to support moving up the TRL scale, commercialisation, and encouraging attract large-scale private investment. Applications close **2 Feb**.

**Defence Science Australia** is seeking proposals from industry and academia in quantum communications, for 3 years' funding to develop pilot or full scale demonstrators. Proposals due **20 Feb**.

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**.

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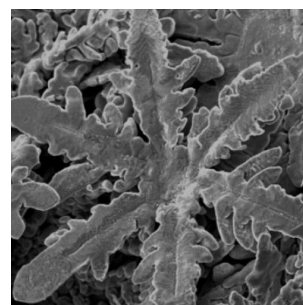
## Previous news

**Shielding 2D materials by adding vibrations to reduce vibration problems** Matt Gebert (Monash) led a study demonstrating a new, counterintuitive way to protect atomically-thin electronics – adding vibrations, to reduce vibrations. By squeezing a thin liquid-gallium droplet, graphene devices are painted with a protective coating of gallium-oxide that can cover centimetre-wide scales, making it potentially applicable for industrial large-scale fabrication. **Read more.**



**Women in Physics lecturer** Hot on the heels of being announced STA Superstar in November, Newcastle theoretical physicist Karen Livesey is the AIP 2023 Women in Physics Lecturer. Watch this space for 2023 tour dates and hear how nano-magnets are applied in cancer treatments, computing and self-repairing paints. **Read more.**

**Let it snow inside liquid metals** New liquid-metal crystal extraction technique produces wide range of intricate-shaped, symmetrical metallic structures. The UNSW-led study of metallic crystals growing in a liquid-metal solvent finds similarities and differences between liquid-metal solvents and more familiar crystal growth in water, whether snowflakes or dissolved substances. **Read more.**



**FLEET alum Charlotte Hurry** (ex FLEET Operations Team) now runs the ARC Industrial Transformation Training Centre OPTIMA, and reports how she built on and augmented previous job skills to prepare. Also, advice on balancing life and work, and her approach to job hunting. **Read more.**

**FLEET translation: extending LED device lifetime with liquid-metal printed oxides** FLEET translation funding is supporting the

**FLEET translation: extending LED device lifetime with liquid-metal printed oxides** FLEET translation funding is supporting the next step in a liquid-metal printing application with significant commercial promise, in a project led by RMIT's Patjaree Aukarasereenont. [Read more.](#)



**Creating a quantum spark in primary students** A FLEET Primary School pilot workshop showed primary students can learn and conceptualize quantum physics and are adept at the Mexican wave. Meanwhile, 155 Hughesdale Primary School students got their first introduction to quantum physics. [Read more.](#)

**Developing research into impact: Idea Factory report** FLEET ECRs joined EQUUS in Queensland last month, learning how to better translate their scientific discoveries to make an impact, with Idea Factory 2022 expanded to develop a wider understanding of research translation, the translation/ commercialisation ecosystem, and learning to consider the impact of your research beyond the confines of academia. [Read more.](#)



**Also read PhD candidate Maedehsadat Mousavi's report** from the following Sunrise Innovation Festival, building on her experiences at the EQUUS-FLEET Idea Factory.

## 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.



