FLEET News

Welcome to FLEET News. This month we bring a selection of research news from around the Centre – much of it pre-dating the official start date, proving that great science does not wait for ink to dry.

FLEET's 2017 Annual Report is out, and is generating buzz – we've already had a few calls from people interested to visit us and learn more about what we're doing. Hopefully by now you've had the chance to read the Report – the first comprehensive telling of the Centre's story. See online link below.

Congratulations to FLEET CI Qiaoliang Bao (Monash), whose nanotechnology expertise has been recognised by an ANFF-VIC Technical Fellowship. More on this below.

Read on for notes on research, interviews, and the international 2D materials workshop FLEET is bringing to Australia in December.

Regards,
Michael Fuhrer
Director
ARC Centre of Excellence in Future Low-Energy Electronics Technologies

Catch up on previous editions of FLEET News

Interactions within quantum batteries are key to their charge advantage

Theoretical studies at Monash University bring us a step closer to realistic 'quantum batteries', which depend on the energy difference offered by different quantum states and offer potential for vastly better thermodynamic efficiency, and ultra-fast charging time. The study, co-led by FLEET's Meera Parish (pictured) and Jesper Levinsen, showed that interacting quantum batteries charge faster than isolated batteries.

Introducing FLEET to the local MP

Melbourne MP and Greens Science/Energy spokesperson Adam Bandt visited FLEET's labs at RMIT last week, learning about ICT energy consumption and the 2D materials underpinning FLEET's search for alternative, low-energy electronics.

Qiaoliang Bao a champion of Australian nanotech

FLEET-nano collaboration recognised: Congratulations to Qiaoliang Bao, 2018 MCN Technology Fellow

FLEET CI Qiaoliang Bao (Monash Engineering, right) works at the nanoscale, trapping photons in 2D materials, where high binding energies create a superfluid, working towards ultra-low energy superfluid transistors.

Such work requires access to the best nanofabrication and characterisation facilities, and Qiaoliang works closely with the Melbourne Centre for Nanofabrication (MCN).

This close and fruitful collaboration has recently been recognised with Qiaoliang appointed a 2018 ANFF-VIC Technology Fellow.

News from around the Centre

Torben talks liquid metal FLEET AI Torben Daeneke (right) Radio Adelaide interview covered why 2D materials are key to ultra-low energy electronics, new advances in 2D deposition, the end of Moore's Law and the massive amount of energy now being used in computing around the world.
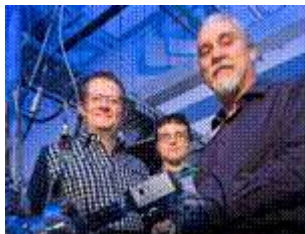
Switching conduction mode: a step towards topological transistors An applied electric field used to switch the electronic conduction mode of a topological material represents the first successful, simple, thin-film transistor made from a topological semimetal and the first transistor made from Na3Bi.

Micro-branding at UNSW/Monash Innovative researchers have created a couple of unique and interesting branding displays for the Centre. FLEET PhD student Fan Ji developed this micro-sized logo (top) at UNSW. While FLEET affiliate Marina Castelli creating this nano-scale logo (lower) comprising just 42 atoms.

More news:

- Fulbright Scholarship for FLEET postdoc Harley Scammell
- Electronically smooth material measured at Monash
- First Women in FLEET scholarship recipient
- 10-year-old spin mystery resolved at UNSW
- Older news

Events

FLEET is co-sponsoring Physics in the Pub in Melbourne, 11 May, proof that physics ain't boring, that researchers are humans, and that Friday nights in Melbourne are crackingly intelligent fun.

At a FLEET research seminar, Amadeo Vázquez de Parga (IMDEA-Nanociencia) will discuss new methods to control graphene's electronic, optical, or magnetic properties. Monash University, 8 May.

Annual Report

Hopefully by now you've had the chance to read FLEET's 2017 Annual Report – the first comprehensive telling of the Centre's story, available at FLEET.org.au/annual-reports. Feedback is welcomed.
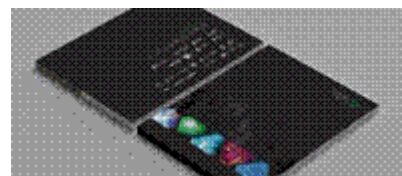
Hosting international 2D materials conference

This year FLEET will bring the International Conference on 2D Materials and Technologies to Australia for the first time.

The conference will cover graphene, transition metal dichalcogenides, black phosphorus, topological insulators, perovskites, MX3 and other new forms of 2D materials, as well as developing applications in electronics, photonics, optoelectronics, catalysis, bio-medical, environmental and energy.

- FLEETorg.au/ICON2Dmat
- Melbourne, Victoria
- 10-13 December 2018

Prizes and opportunities

Australian Nanotechnology Network (ANN) funding for members to travel to Australian National Fabrication Facility nodes. Open for postgraduate nanotech students and ECRs currently studying/working in Australia who are members of ANN
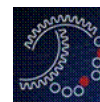
The Melbourne Centre of Nanofabrication and ANFF Victoria are seeking Masters or PhD interns to be partnered with industry clients to work on 2-6 month internship projects.

Other prize nominations still open:

- Australian Academy of Science honorific awards (1 May) ECR, MCR and career
- Eureka Prizes, eg Use of technology, ECR, Scientific research (fundamental), Emerging leader, Leadership, Mentor, Interdisciplinary (closes 4 May).

Most people who nominate for a prize say they did it after encouragement from peers and supervisors.

Building resources for women in science

We need more women at the public face of science. 500 Women Scientists is a database of female scientists accessible for media, conferences, policy makers etc. In Victoria you'll find a similar resource at Here she is. Let us know any others.

Nature has instigated two new annual awards to recognise women in research: an individual awards for ECRs, and an awards for individual or organisation driving girls or young women to engage with science. Deadline 11 June. Details online.

Help spread the news

If you're on Facebook, Twitter or Linkedin, we would love it if you followed our accounts and shared our posts, particularly with other colleagues in the field. If a friend or colleague might be interested in our news, click here to send them an invite. Or let us know and we'll invite them.

If you have been forwarded this email, you can subscribe to future editions by clicking here.

Catch up on previous editions online.

Participating organisations

FLEET's participating nodes are: the Australian National University, Monash University, RMIT University, Swinburne University of Technology, the University of New South Wales, the University of Queensland and the University of Wollongong.

FLEET is: The Australian Research Council Centre of Excellence in Future Low-Energy Electronics Technologies.