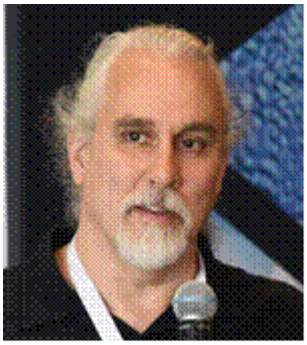
FLEET ARC CENTRE OF EXCELLENCE IN FUTURE LOW-ENERGY ELECTRONICS TECHNOLOGIES

FLEET News: November 2019



FLEET takes seriously its shared responsibility to engage the Australian public with science, and makes considerable efforts to engage with school students – Australia's future scientists!

This month, Centre members have continued to reach out to students, as well as engaging with policymakers and industry leaders via shared events with local MPs, the wonderful Science Meets Parliament event, and lab visits.

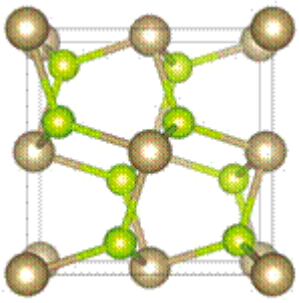
This edition of FLEET News also describes new spintronics research from Monash University and a couple of UNSW podcasts which explain the rationale behind FLEET's research in that area.

Regards,
Prof Michael Fuhrer
Director, FLEET

Catch up on previous editions of FLEET News

In this edition:

New spin directions in pyrite



A Monash University study revealing new spin textures in pyrite could unlock these materials' potential in future spintronics devices. The study provides new insights and opportunities for selective spin control in topological spintronics devices. Read more online.

Workshops: AIP and annual workshop

FLEET is a sponsor of the 2019 AIP Summer meeting (next week at RMIT in Melbourne) and has a booth at the preceding Job Fair.

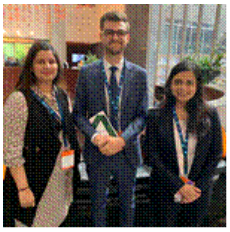
The program is out for FLEET's annual workshop in Lorne Victoria (still subject to some changes).

Developing future leaders

Seven FLEET women were successful in securing partial scholarships to participate in the Leading Edge training program (Women and Leadership Australia), an initiative aimed at developing the next generation of science leaders, and fostering equity and diversity in STEM. FLEET has provided additional funding in order to allow all seven to fully participate. Read more about the scholarship, and meet the seven successful applicants, online.

Matt Davis discussing future science with future scientists

FLEET's Matt Davis (node leader University of Queensland) discussed the future of science with some of Australia's future scientists this month at Ipswich State High School, with local MP Shayne Neumann and James Rasmussen of Origin Energy.



Science meets Parliament

FLEET had a team of three young researchers at Science meets Parliament this month, talking to parliamentarians and other scientists from around the country, and learning the art of the pitch. FLEET's team were: Hareem Khan (RMIT), Oliver Stockdale (UQ) and Semonti Bhattacharyya (Monash).

Materials Forum leader tours

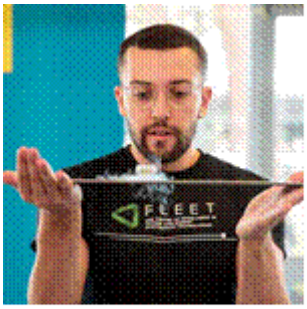
World Materials Forum VC Victoire de Margerie toured the STM labs at Monash this month, following on from her attendance at a graphene conference in Melbourne: a great opportunity to introduce a global materials leader to FLEET's 2D materials imaging.

Leading 1%

Congratulations to Kourosh Kalantar-zadeh (UNSW/RMIT) and Qiaoliang Bao (Monash) who were both named in the top 1% in their fields in the 2019 Clarivate highly-cited researchers list, announced this month. Read more about the awards.

Australian research continues to impress, tripling in the last six years.

L'Oreal Girls in Science



FLEET's Zhanning Wang, Yonatan Ashlea Alava, Matt Rendell and Karina Hudson (UNSW) were involved in the L'Oréal Girls in Science Forum at UNSW this month, introducing some of the 300 attending future scientists to quantum-material physics via FLEET's Mobius superconductor track.

Sam Bladwell speaks about spin

Listen to FLEET PhD Sam Bladwell (UNSW) talk about spintronics and valley technology, and the background issue of ICT energy use, on the Diffusion Science Radio, which is broadcast around Australia on over 20 community radio stations.

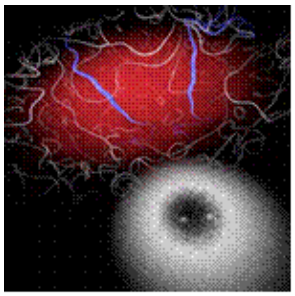
- spintronics
- low-energy electronics

Getting found on Linkedin

Science involves collaboration – and a Linkedin profile is an effective and easy way to "get found" by possible collaborators (or students). In fact, FLEET's Kourosh Kalantar-zadeh recently rated in Australia's top 12 most viewed profiles, one of only three scientists on that list.

Spontaneous coherence & collective quantum phenomena

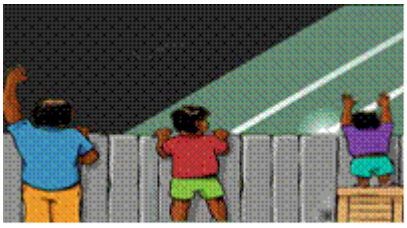
How do quantum systems reach equilibrium, and what happens if they don't?



Summer School 13-24 January 2020 This year's Canberra Physics Summer School will explore Bose-Einstein condensates, superfluids, excitons, and other spontaneous collective quantum phenomena at the ANU, targeting Australian-NZ postgrads, senior undergrads and ECRs.

ICSCE10 Conference 28-31 January in Melbourne Poster submissions are still open for the 10th International Conference on Spontaneous Coherence in Excitonic Systems in Melbourne at the end of January. meet the speakers | register

Equity survey engagement

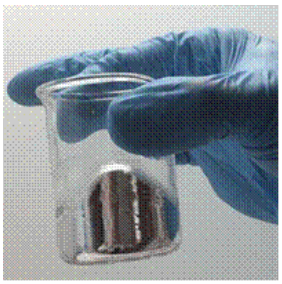


We had a great response rate for FLEET's Equity & Diversity survey: 53%, a significant improvement on last year. This new survey showed that:

- ~90% of members are aware of opportunities FLEET provides to help balance work and family
- ~90% agree FLEET values equity and diversity
- >80% say their workplace is inclusive and respectful

Previous news

Controlling individual molecules in 2D, quantum-dot nanoarray A Monash Uni Science study out this month demonstrates quantum-dot arrays an order of magnitude better than conventional inorganic systems. “We would be able to achieve densities tens of times larger than state-of-the-art, top-down synthesised inorganic systems," explains lead author, FLEET's Dhaneesh Kumar. Read more online.



Liquid metal applications in carbon capture, filtration Kourosh Kalantar-Zadeh (UNSW , RMIT University) has led a new study using liquid metals as catalysts, with exciting applications in carbon capture and water filtration. Read more about the new study online.

Why students stand in front of lasers “It’s pretty surreal being at the pointy end of an almost kilometre-long laser” FLEET PhD student Oliver Paull (UNSW) describes his XFEL experiments at near Osaka, Japan, using a facility trillions of times brighter than the Sun. Read Oliver's article online.

New PI: Mingliang Tian FLEET extends a warm welcome to Professor Mingliang Tian, who joins the Centre as a new Partner Investigator. Professor Tian is vice-director of the Chinese Academy of Science’s High Magnetic Field Laboratory in Anhui province, China, which becomes a new partner organisation for FLEET. Read more online.

Topological funding Congratulations to FLEET's Dimi Culcer whose ARC Future Fellowship proposal was funded in this year’s round, announced this month. We are looking forward to seeing more exciting spin-torque and topological electronics work coming from Dimi and his team at UNSW.

Events coming up

- **Cavity QED seminar (Allan MacDonald) 2 Dec, Monash**
- **ANSTO User Meeting 2-3 Dec, Macquarie University NSW**
- **IONS-KOALA** 2-6 Dec, **Dunedin NZ**
- **AIP Summer Meeting 3-6 Dec, RMIT**
- **FLEET Annual Workshop 8-11 Dec, Lorne**
- **Aust/NZ Conference on Optics and Photonics** 8-12 Dec, RMIT **Melbourne**
- **Canberra Summer school 13-24 Jan, ANU**
- **ICSCE10 28-31 Jan, Melbourne**

Participating organisations

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

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.