



ARC CENTRE OF EXCELLENCE IN
FUTURE LOW-ENERGY
ELECTRONICS TECHNOLOGIES

FLEET News

FLEET's 2nd Annual Report is out! See below for the online link, and let us know what you think.

We also welcome a number of new members this month, who we hope to introduce in more detail in future newsletters.

You'll also find in this newsletter a description of artificial graphene research at UNSW, recognition of Meera Parish's outstanding work as a referee, and more news from around the Centre.



Regards,

Michael Fuhrer

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

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Introducing FLEET's 2nd annual report

We're pleased to present hot-off-the-press FLEET 2018 Annual Report. Please enjoy it online at [FLEET.org.au/annual-reports](https://fleet.org.au/annual-reports)

Feedback is welcomed.

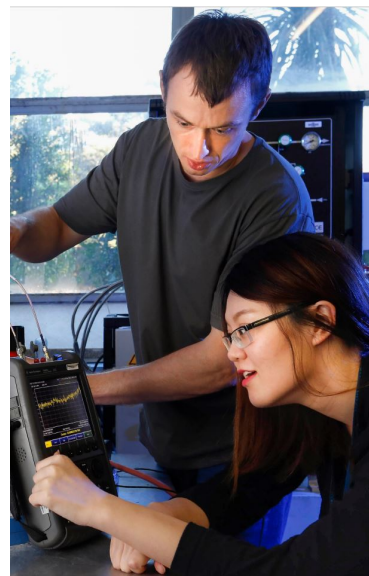


I can't believe it's not graphene

Nano-engineering of artificial analogs of graphene at UNSW gets a boost with a new atomic-deposition facility.

Oleh Klochan describes the new facility as like "driving a brand new Maserati." The creation of synthetic, defect-free periodic lattices in conventional materials that successfully mimic graphene or topological insulators requires precise and accurate positioning of the lattice sites with a nanometre resolution.

Read more about the new facility and FLEET's artificial graphene research program at UNSW [online](#).



Meera Parish receives peer-review award

The efforts of referees maintains the high standards of published physics, and helps authors improve their writing.

FLEET's Meera Parish (Monash University) has been named a 2019 Outstanding Referee by the influential American Physical Society (APS), the only one in Australia.

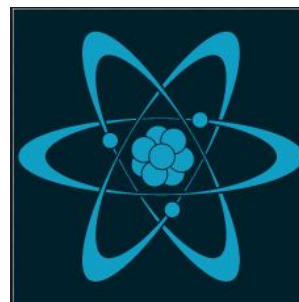
APS Outstanding Referees are recognised for the outstanding service they perform for the physics community in the assessment of manuscripts submitted to Physical Review journals.

[Read more online.](#)



Carlos Kuhn: supercool guest editor

It's been said that we are in the middle of the 'third quantum revolution', with ultracold quantum gases playing a crucial role in the control of macroscopic quantum systems and application of quantum technology.



FLEET's Carlos Kuhn (Swinburne University) will be guest editor of a special ultracold quantum gases issue of the open-access journal *Atoms*.

If you have ultracold quantum gases results to share, the deadline is 1 July. [See more online.](#)

Lindau team confirmed

Three FLEET researchers have been confirmed in the ten-member team of early-career Australian scientists representing Australia at the annual Lindau Nobel Laureate Meeting this year in Lindau, Germany (June-July).

Congratulations to:

- Eliezier (Eli) Estrecho ANU
- Hareem Khan (shown, right) RMIT
- Matthew (Matt) Reeves UQ



[Read more online.](#)

Excitonic systems conference, Melbourne 2020

- [Confirmed speakers](#)
- [Call for abstracts](#)
- [Arts Centre Melbourne](#)

Abstracts are now being taken for the **10th International Conference on Spontaneous Coherence in Excitonic Systems (ICSCE10)** in Melbourne 28-31 Jan 2020.

FLEET will host this major conference, which is co-chaired by Elena Ostrovskaya.



Equity resources

Equity resources

At FLEET's annual workshop last year Elena cited a University of Canberra report regarding workplace equity that found a 'backlash' against workplace interventions addressing gender equity. The report can be found [here](#), as well as an [interesting analysis here](#).

We are going to include regular equity updates and resources in future newsletters. Feedback and suggestions are welcome! We'll include useful a broad range of resources, reports, and articles (peer-reviewed journals and elsewhere).

Women in science in the media

Recognising the need to improve the diversity of expert talent and spokespeople across news programming, the ABC is seeking women in science as new subject matter experts. [Register via online form](#).

"If you have never participated in a media interview or written an op-ed before and feel nervous or unsure, please don't be discouraged from nominating.

"The ABC says it is deliberately looking for fresh, diverse voices and perspectives from women of all backgrounds and ages to add to our talent pool, so be bold and put up your hand!"

*—Rhiannon Hobbins
50:50 Lead, ABC News*



Useful reading

[Beware of plausible predictions of fantasy materials](#) is a nice, non-technical explanation of challenges in the search for new materials by Alex Zunger at the University of Colorado. (And also features a cameo by FLEET's James Collins).

[How did Australia come to develop such surprising strength in quantum technology?](#) Great article summarising the Australian quantum landscape, including the ARC COEs EQUUS, Quantum Computing, Exciton Science and FLEET.

[Three research challenges to solve for 2D materials in future electronics](#) is an interesting summary of 2D research from the Taiwan Semiconductor Manufacturing Company.



New members

Welcome to a number of new Centre members, including:

New PhD students (in most cases, having decided to continue with us after their FLEET Honours projects):

- **Bernard Field** with Agustin Schiffrin (Monash)
- **Oliver Stockdale** with Matt Davis (UQ)

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- **Yik-Kheng Lee** with Jared Cole (RMIT)
- **Zeb Krix** with Oleg Sushkov (UNSW)
- **Mitchell Conway** with Jeff Davis (Swinburne)
- Lina Sang with Xiaolin Wang (UOW)

New research fellows starting 2019:

- **Dr Shao-Yu Chen** with Michael Fuhrer (Monash)
- **Dr Jiong Yang** and **Dr Mohammad Mayyas** with Kourosh Kalantar-zadeh (UNSW)
- **Dr Sam Wilkinson** with Jared Cole (RMIT) - Sam has recently finished his PhD, also with FLEET.

And finally the Operations Team welcomes FLEET new Executive officer: **Dr Charlotte Hurry**, previously with CBNS.

Catchup on FLEET media

Torben Daeneke and **Kourosh Kalantar-zadeh** have both been speaking to media about the recent carbon-capture work. [Listen to the interviews online.](#)



Carlos Kuhn, **Rebecca Orrell-Trigg** and **Meera Parish** spoke to the Royal Society of Victoria last week about ICT energy and FLEET research, with a highly science-engaged audience asking some excellent, probing questions. [Catch the whole talk on Facebook.](#)

More opportunities to do outreach

We want to inspire more kids to study science at secondary level, and inspire more students to study science at uni, and we want to encourage more engagement with science in the wider community.



We've collected some opportunities for scientists to involve themselves in science outreach.

National Science Week is seeking volunteers to help out at public events. Ask **Dianne** for details.

CSIRO is recruiting STEM professionals to act as voluntary supervisors for high school students in the **innovative Virtual Work Experience Program**. Contact Dianne Ruka for details. Also consider the long-running **CSIRO STEM professionals in Schools** program, which takes much of the hassle out of schools outreach, including setting you up with schools.

Assisting young physicists Academics sought to assist Australian students competing in the **International Young Physicists Tournament** as they prepare theoretical and experimental responses to a physics problem. Remote (email, phone) assistance is possible. Contact **Dianne** for details

Pint of Science **Pint of Science** puts scientists on stage to present their research in a casual pub setting. Presenters and volunteers are sought, with events in Melbourne, Sydney, Canberra, Brisbane and Wollongong. [Email the organisers](#).



The Asian Physics Olympiad in Adelaide seeks experienced physicists to help mark theory and practical exams. More information about these volunteer positions is [available online](#). Costs are covered by the ASI (accommodation and food) and FLEET (flights).

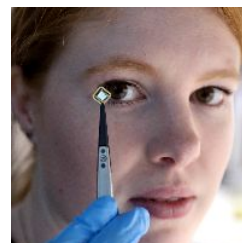
Previous news

Topological defects reviewed Jan Seidel (UNSW) was invited to review current and future work on topological structures and domain walls for *Nature Materials*, covering different types of 'defective' order (ie, topological structures) in materials, and their potential applications in nanotechnology and nanoelectronics. [Read more online](#).



Future materials in Wollongong **An international symposium on future materials** at UOW saw presentations from over 110 speakers, covering functional and energy materials, electronic and optical materials, spintronics, superconductivity, emergent materials physics and chemistry, biomaterials, nanomaterials, interface science and magnetism.

Congratulations to FLEET's **Karina Hudson (UNSW)**, whose PhD thesis describing research into hole spins in semiconductor quantum wires has been accepted.



Matthew Rendell (UNSW) received the prestigious 2019 CSIRO Alumni Physics Scholarship, and will use the scholarship award to visit the QUTech group at TU Delft (Netherlands). [Read more about the Award online](#).

Honours student Bernard Field (Monash) won the Monash University Rodney Turner Prize for Best Honours Thesis in Physics and Astronomy and JJ McNeill Prize for Top Honours Student in Physics.



Events coming up

- **31 Mar-4 Apr ACS National Meeting & Expo**, Orlando US
- **15-16 Apr International Conference on Laser, Optics and Photonics**, Frankfurt, Germany
- **22-26 Apr MRS Spring Meeting & Exhibit**, Phoenix, USA

- 7 May Dr Julie Karel (Engineering Monash) seminar at UNSW
- 3 May Prof Madhu Bhaskaran Oxide (RMIT) based stretchable devices, UNSW
- 13-14 May International Conference on Optics, Lasers & Photonics, Tokyo, Japan
- 20-26 May FLEET stall at Melbourne Knowledge Week, Melbourne
- 13-14 May International conference on optics, lasers & photonics, Tokyo, Japan

Prizes & opportunities

Also see the ABC's [call for women in science](#), described above.



Young Tall Poppy awards recognise early-mid career researchers who have demonstrated excellence in both scientific research and science-communications/outreach. Deadline April 10.

Royal Society of Victoria Physical Sciences prize is open for final-year, PhDs at Victorian universities, with a first prize of \$1000, and runner up \$500. Deadline 31 May.



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.

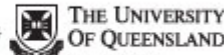
Australian Nanotechnology Network (ANN) funding for members to travel to Australian National Fabrication Facility nodes. Open for postgraduate nanotech students and ECRs currently studying/working in Australia who are members of ANN.



APR provides internship opportunities within Australia for PhD students at various points in their candidature. [See current opportunities online.](#)

Participating organisations

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



Australian Government
Australian Research Council

