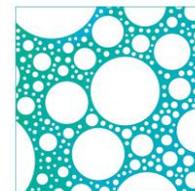


# Australasian Colloid and Interface Society

Web: <http://acis.wildapricot.org>; E-mail: [acis.enquiries@gmail.com](mailto:acis.enquiries@gmail.com)



## ACIS Newsletter – Issue 18, July 2019

### Welcome

Dear members,

Welcome to our 18<sup>th</sup> issue of ACIS News! We produce a quarterly newsletter - sent around in March, June, October, and December - to keep ACIS members informed of our initiatives and for members to directly communicate with our Society. We publish job announcements, meetings of interests to our society, career development opportunities and any exciting research that you would like to share with us. To keep you up to date with the on-goings in our colloids society, please send your suggestions and items for the next newsletter to [boonmian.teo@monash.edu](mailto:boonmian.teo@monash.edu).

### News

#### Australian Colloid and Surface Science Student Conference

ACIS is pleased to announce that the 32<sup>nd</sup> Australian Colloid and Surface Science Student Conference will be held at Gippsland Campus of Federation University, in Churchill, Victoria (a 2 hour drive East from Melbourne CBD).

**Tuesday 28<sup>th</sup> January to Friday 31<sup>st</sup> January 2018**

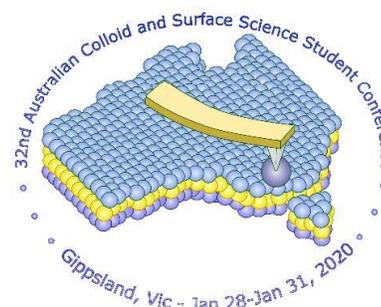
The conference will be hosted by RMIT University. Conference organisers are Gary Bryant, Tamar Greaves, Charlotte Conn, James Chapman, Aaron Elbourne, and Russell Crawford.

The ACSSSC provides postgraduate students working on colloid and surface science with an opportunity to present and discuss their research in an informal, supportive and friendly atmosphere. It is also an excellent opportunity for researchers and academics to exchange the latest updates in research in an informal atmosphere, and provides excellent networking opportunities for all. Additionally, this meeting will incorporate for the first time an ECR session, in conjunction with the UK colloids group.

**We anticipate a careers session, focused workshops, some high-profile international visitors, and a host of recreational activities.**

Please put the date in your calendars now, and we look forward to seeing you in the summer!

PhD students: if you'd like to be involved in organising the conference, we are finalising the student team. Please email [gary.bryant@rmit.edu.au](mailto:gary.bryant@rmit.edu.au) if you'd like to be a part of making it all happen!

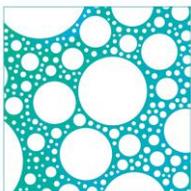


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#### The UK Early Career Colloid Meeting Bursary

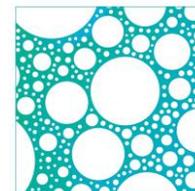
The 2019 UK Early Career Colloid meeting (ECCo2019) will be held at the University of Loughborough, UK on the 16<sup>th</sup>-17<sup>th</sup> September 2019. The meeting aims to bring together researchers from academia and industry within 10 years of their first appointment. ACIS is continuing its support for an Australasian Early Career Researcher in the colloid and interface community to attend this meeting to take advantage of this international networking opportunity. The bursary supports the travel and registration costs (up to \$2500) of a very early career researcher (0-5 years since PhD conferral) who may not have had substantial opportunity to attend international meetings. To gain maximum advantage from the attendance it is expected that the bursary recipient will also visit a local laboratory (UK) in conjunction with attending the ECCo2019.

Meeting website: <http://www.rsc.org/events/detail/39517/early-career-colloid-meeting-2019>



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## The UK Early Career Colloid Meeting Bursary (continued)

### Key Dates:

Application deadline: 15<sup>th</sup> of July 2019

Decision: 30<sup>th</sup> of July 2019. The recipient will be notified by email and announced in the ACIS newsletter.

Abstract submission deadline: 12<sup>th</sup> of August 2019

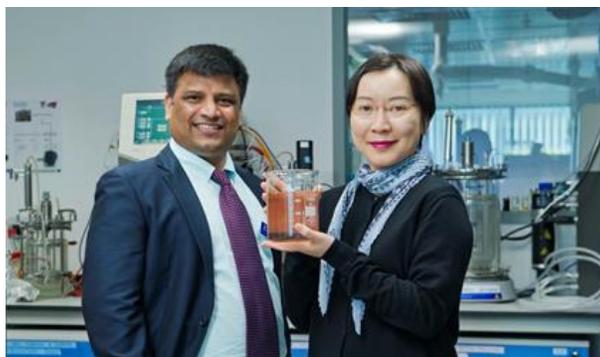
### Further Information:

Applications or requests for further information should be addressed to Prof. Gunther Andersson, Chair of the Awards Committee of ACIS: [Gunther.andersson@flinders.edu.au](mailto:Gunther.andersson@flinders.edu.au)

Eligibility requirements for the bursary are available with the application form.

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## Congratulations on a 2<sup>nd</sup> round of Gates Foundation Grant Funding



Carol Sze Ki Lin of the City University of Hong Kong and Srinivas Mettu of the University of Melbourne in Australia will develop a new, low-cost bioreactor system to mimic the human gut and facilitate simultaneous growth of multiple bacterial strains with diverse growth requirements. A healthy mixture of bacteria in the human gut is essential to overall health, and live biotherapeutics could be used to restore this population in infants whose gut microbiota has been damaged by malnutrition. Manufacture of these therapeutics is difficult and expensive: the human gut contains multiple strains of bacteria with diverse environmental and nutritional

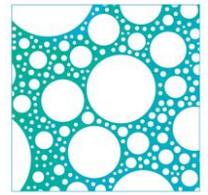
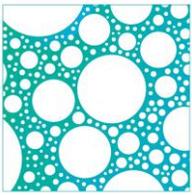
growth requirements, and designing a bioreactor to accommodate such variation is difficult. They will create stratified growth zones within one reactor based on immobilization of the bacteria on a low-cost, biodegradable plant-based cellulose hydrogel. They will alter the porosity and surface chemistry of the hydrogel to create variations in pH and oxygen and nutrient levels within the reactor to simulate the human gut from stomach to rectum. This will facilitate the simultaneous growth of ten bacterial strains with diverse growth requirements, first in a lab setting and later on a commercial scale.

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## Australian Centre for Neutron Scattering and Australian Synchrotron Proposals

The ANSTO proposal rounds for the Australian Centre for Neutron Scattering and the Australian Synchrotron are currently open for beamtime in the first part of 2020. These rounds close in September 2019 (please look at the websites below for the exact dates and details). This leave you time to write a great proposal and hopefully get some beamtime to gain some fantastic experimental results.

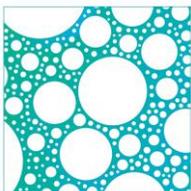
- Further information for the Australian Centre for Neutron Scattering proposal deadlines can be found [here](#).
- Further information for the Australian Synchrotron proposal deadlines can be found [here](#).



## Research Highlight – Metal-organic frameworks

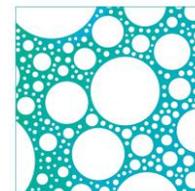
MOFs – or Metal-organic frameworks - are incredibly versatile and super porous nanomaterials that can be used to store, separate, release or protect almost anything and predicted to be the defining material of the 21st century. In our lab (MNRL, Micro/NanoPhysics Research Laboratory), Drs Heba Ahmed and Amgad Rezk, together with Professor Leslie Yeo and through the utilisation of megahertz (MHz) frequency surface acoustic waves (SAWs), nanometre-order vibrations that can be generated along the surface of a piezoelectric material, coupled to a liquid drop containing the MOF precursors, were able to create highly-oriented free-standing MOFs within only few minutes. This is in stark contrast with other methods taking days to form these ordered layers. Even more significantly, our acoustically-driven synthesis method, has completely eliminated the compulsory energy intensive post-treatment ‘activation’ process to remove residual solvent blocking these porous structures. Interestingly, by modulating the vibrational patterns of the acoustic fields and their accompanying evanescent electric fields, from vertical (out-of-plane, relative to the piezoelectric surface) to horizontal (in-plane), we were able control the dominant oriented planes from the out-of-plane {222} plane to the in-plane {200}, all without any anchoring surface molecules. Considering the low cost of the piezoelectric chip (~1 USD) and the associated low power consumption, we envisage this fast and environmentally friendly platform to be widely applied for scalable production of exciting new classes of next generation materials. The work has been published in [Nature Communications](#) and received significant online attention, been highlighted on [RMIT's website](#) and many media outlets, leading to be currently in the top 5% of *all research outputs* scored by [Altmetric](#) for online attention.





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## Available Opportunities

### Opportunities at ARC Centre of Excellence in Exciton Science

The ARC Centre of Excellence in Exciton Science (ACEEx) is funded by the Australian Research Council from 2017-2023. ACEEx brings together researchers from chemistry, physics, maths, and materials science to create new materials for advanced optical and energy applications, including next generation solar cells, LEDs, sensors and responsive optical materials.

ACEEx is currently seeking the following Post Doctoral researchers and PhD students in Melbourne and Sydney. More information at <https://excitonscience.com/>

#### Prof Jared Cole, RMIT University

["TCQP Women in Exciton Science Research Fellowship"](#) - closes 7 July 2019

["Research Fellow, Dynamics Excitons"](#) - closes 14 July 2019

#### Prof Paul Mulvaney, University of Melbourne

[PhD in Upconverter Spectroscopy Stipend](#) - available now

[PhD in AFM Based Nanomechanical Sensing](#) - closes 24 July

#### Dr Girish Lakhwani, University of Sydney

[Postgraduate Research Scholarship in Organic Electronics](#) - closes 30 June 2019

[Postgraduate Research Scholarship in Optical Spectroscopy](#) - closes 30 September 2019

#### Prof Tim Schmidt, University of New South Wales

[Scientia PhD Scholarship in A New Approach to the Electronic Structure of Molecules](#) - closes 12 July 2019

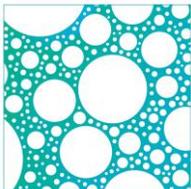
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### Opportunities for PhD students

We are seeking highly motivated PhD students to work on an ARC funded project. It is applicable to those wishing to work on the cutting-edge research of scalable and controllable nanomaterial assembly and deposition. During this PhD programme, the candidate will gain intensive knowledge in nanomaterials, nanotechnology and surface fabrication through hands-on experiments as well as collaborations with international experts.

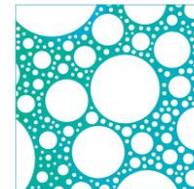
The details can be found at <https://www.rmit.edu.au/students/student-essentials/information-for/research-candidates/enriching-your-candidature/grants-and-scholarships/2019/postgraduate-by-research/advanced-nanomaterials>

If you are interested, please contact Dr Lei Bao via [lei.bao@rmit.edu.au](mailto:lei.bao@rmit.edu.au).



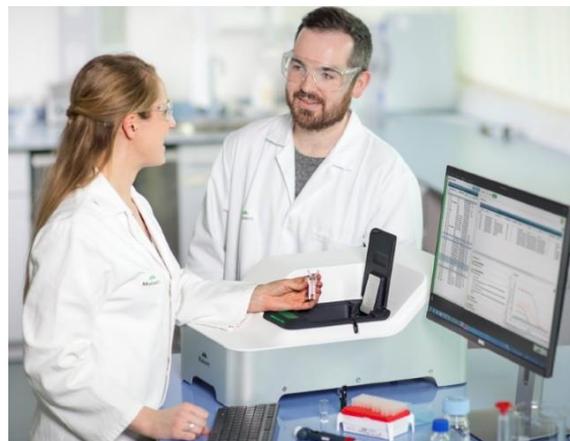
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## Malvern Zetasizer: an essential analytical tool for colloid and interfacial science

For over two decades, the Malvern Zetasizer range has been key in delivering value in the improvement of product quality and stability of a wide range of particles and materials including colloidal and emulsion formulations. Using Dynamic Light Scattering (DLS), the Zetasizer offers an easy-to use, highly flexible sizing method which is rapid, accurate and repeatable. It requires only small volumes of sample for analysis, and is non-destructive. Patented Non-Invasive Back-Scatter (NIBS) technology, combines back-scatter detection with variable measurement positioning to significantly increase the range of sample concentration and size that can be measured, compared to conventional DLS.



### Pushing the limits of DLS with the new Malvern Zetasizer Pro and Ultra

Built on the market-leading Zetasizer Nano range, the new Zetasizer Pro and Ultra systems from Malvern Panalytical are the latest iteration of the Zetasizer series. Several unique and powerful capabilities have been integrated in the new Zetasizer range, including:

- *Adaptive Correlation to characterise aggregated material*  
By using statistical analysis and optimised data collection, Adaptive Correlation helps to improve the repeatability of DLS particle size measurements and the ability to measure primary particle sizes separately to rare amounts of aggregated material. These improvements mean that faster, higher precision measurements may be achieved with less need for filtering of samples and dispersants.
- *Multi-Angle Dynamic Light Scattering (MADLS®) for size and concentration analysis*  
A key differentiator of the Zetasizer Ultra is its patented MADLS technology, which automates multiple-angle size measurements, providing higher resolution and more complete particle size distributions. MADLS also enables calibration-free particle concentration analysis, resolving the individual concentrations of different size populations. The new disposable capillary sizing cell provides non-destructive, low volume (3µl) analysis, extending the upper range to 10µm and delivering high-quality data while reducing cost.
- *Deep learning for simple method design and reliable, high quality data*  
The Zetasizer Pro and Ultra systems are controlled by groundbreaking ZS Xplorer software, introducing new sample-centric workflows, which make method design and data analysis more straightforward for both new and experienced users. This intelligent network provides feedback on results and offers clear advice on how data may be improved if required.

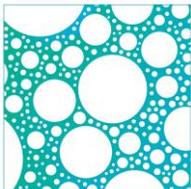
If you would like further information or a free demonstration using the New Zetasizer Ultra, please contact us:

ATA Scientific Pty Ltd

+61 2 9541 3500

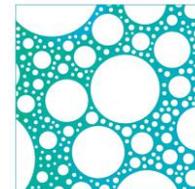
[enquiries@atascientific.com.au](mailto:enquiries@atascientific.com.au)

[www.atascientific.com.au](http://www.atascientific.com.au)



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## Activities

### Join our Awards, Communications, Conferences and Events Committees

ACIS needs its members to be actively engaged. Please let us know if you would like to be involved in the committees that will run the activities of the Society: *Awards; Communications; Conferences and Events*. Or if you would like to propose other activities we should be running. **We especially invite students and early-career researchers to become involved.** Please email your interest to [acis@colloid-oz.org.au](mailto:acis@colloid-oz.org.au).

### Visiting Scientist Register

Are you planning to host a visit by an outstanding scientist in the colloid and interface field? Why not let ACIS members know about the visit? We aim to keep track of visiting scientists, to facilitate their introduction to the Australasian scientific community. Please email details of the visit to [acis@colloid-oz.org.au](mailto:acis@colloid-oz.org.au).

### ACIS Membership

Please encourage your colleagues, students and industrial partners working in the field of colloids and interface to join us. General membership is \$100 per annum. The membership year is from 1st July each year. Memberships paid after this date are valid until 30<sup>th</sup> June of the following year. More information is available on our website <http://colloid-oz.org.au/>.



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## Use our LinkedIn Group to tell people your news

ACIS is now present on LinkedIn. Please join our LinkedIn group and post discussion items on job ads, conference calls, and interesting facts about the wonderful world of colloid and surface science.

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The Newsletter team is:

Boon Teo – [boonmian.teo@monash.edu](mailto:boonmian.teo@monash.edu)

Christine Browne – [christine.browne@monash.edu](mailto:christine.browne@monash.edu)

