

January 2018 NEWSLETTER

# BUILDING A MEMBRANE COMMUNITY NEWS AND EVENTS IN AUSTRALASIA



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## About MSA

The Society aims to represent and promote the activities in membrane science and technology both in the research and industrial sectors.

### Our Vision

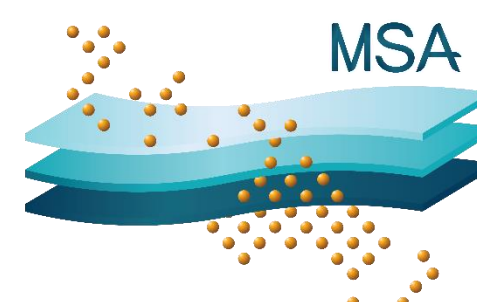
- To be the nexus of membrane science and technology activity in the Australasia region;
- To promote collaborative engagements across the community to disseminate membrane technology to end users;
- To capture current research and industry involvement and highlight future trends.

### Our Mission

The MSA is to represent Membrane Science and Technology in Australasia realising that this will be aligned with societal needs.

This will be achieved by:

- providing an open forum for transferring and sharing technologies as well as capabilities within the members, industries and high education organizations;
- supporting multidisciplinary networking events;
- providing leadership and mentorship in membrane science for the Australasian membrane community;
- promoting opportunities for young members;
- and enabling wider understanding of the membrane technologies for public interest.



## Message from MSA President

### PROFESSOR AMANDA V ELLIS, FRACI

ARC FUTURE FELLOW

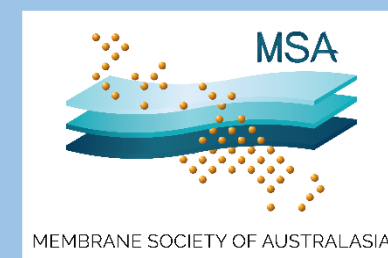
SCHOOL OF CHEMICAL AND BIOMEDICAL ENGINEERING

BUILDING 165, ROOM 3.21A

MELBOURNE SCHOOL OF ENGINEERING

THE UNIVERSITY OF MELBOURNE, VICTORIA 3010 AUSTRALIA

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The last 6 months has seen a busy year for the MSA with a number of big changes and a flurry of new activities to highlight in the January 2018 Newsletter issue. We have recently held a highly successful ECR workshop at Macquarie University (5-6 Feb 2018) with over 50 participants. In Dec 2017 the MSA Board and honorary members undertook a strategic retreat in the Blue Mountains to forge discussions on the future direction of the MSA.



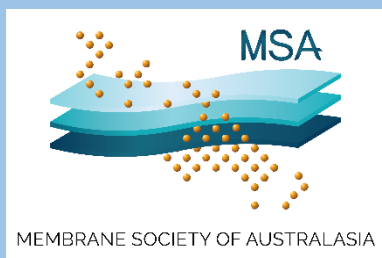
MSA 2017 retreat – Blue Mountains, from Left to Right; Ken Morison, Xiwang Zhang, Aaron Thornton, Tony Fane, Colin Scholes, Amanda Ellis, Anita Hill, Ludo Dumée, David Wang, Stefan Smith, Hans Coster. Photo taken by Hokyong Shon.

A great deal was discussed, and proposed, and so the next 1-2 years are going to see some exciting changes for the membership. A few examples of what we have been, or are currently, working on are:

- A new logo for the society
- A new website and membership registration process
- A new Distinguished lecture series
- AMS 11 Brisbane (2-6 July 2018)
- IMSTEC (Jan/Feb Sydney 2019)
- A call for nominations of 14 MSA Board positions, to be announced shortly
- The establishment of sub-committees

All this makes for a dynamic society and I encourage anyone who is interested in being involved with the MSA on a much deeper level to nominate for a position on the Board.

We are involved in a broad range of conferences moving forwards and developing workshops, and a Distinguished lecture series for prominent international membrane leaders. This is an exciting time to be involved in membrane science and technologies. Being part of the MSA gives the members opportunities to join our mentorship program and network both Nationally and Internationally, I encourage you to take advantages of these opportunities and get involved!



## 11<sup>th</sup> Conference of the Aseanian Membrane



Prof. Mikel Duke  
Victoria University  
Conference Chair



Dr Simon Smart  
The University of Queensland  
Conference Chair

We are pleased to announce the 11<sup>th</sup> conference of the Aseanian Membrane Society (AMS11) to be held from the 3<sup>rd</sup> to 6<sup>th</sup> of July in 2018 in Brisbane, Australia. The AMS conferences are organised every year in rotation with the member countries, except during the years of the International Congress on Membranes and Membrane Processes (ICOM).

Following the success of the 10<sup>th</sup> AMS conference in Japan in 2016, we hope to bring you another exciting event in Australia in 2018. The AMS conferences attract leading scientists and engineers, not only from Asia and Oceania, but also around the world, to share their latest innovative work on membrane science and technology.

### Full list of Conference topics:

- 1 Gas separation
- 2 Pervaporation and membrane distillation
- 3 MF and UF membranes
- 4 NF, RO and FO membranes
- 5 Electrically enhanced membrane operations
- 6 Membrane bioreactors
- 7 Membrane fouling
- 8 Water and waste water treatment
- 9 Wine, food and dairy application
- 10 Application in mining industry and agriculture
- 11 Membranes for energy conversion and storage
- 12 Bioinspired membranes and novel membrane materials
- 13 Process integration
- 14 Resource recovery

On behalf of the organising committee, we look forward to welcoming you to AMS11, and hope you can also take some time to explore Brisbane and its beautiful nearby places including the world famous Gold Coast and Sunshine Coast.

### Key information:

**Dates:** 3 – 6 July 2018

**Location:** Rydges Southbank Hotel, Brisbane, Australia

**Registration:** Early bird before 30 March 2018. Closes at beginning of conference.

**Abstract submission:** Expired.

**More information:** <https://www.ams11.com.au/>

## ARC Funding Success

### Discovery Early Career Researcher Award (DECRA)

**Dr Ludovic Dumeé**

**Development of two-dimensional nano-porous membranes.**

This project aims to develop new desalination membranes able to selectively remove contaminants from liquid effluents with greater cost efficiency and lower environmental footprint. It aims to do this by forming hierarchical membranes, where nano-scale pores generated across nano-porous two-dimensional materials are seeded with highly selective micro-porous crystals. These membranes will reduce the cost of desalination, developing new markets beyond the sole field of water desalination, in resource, solvent recovery and protein fractionation.

### Discovery Project

**Dr Huacheng Zhang; Dr Xinyi Zhang; Dr Aaron Thornton; Professor Benny Freeman**

**Engineered ion channels for selective and switchable ion conduction**

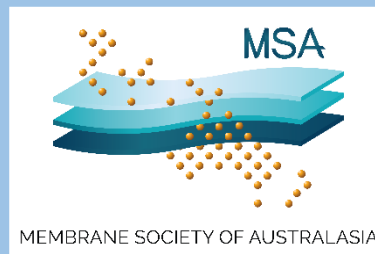
This project aims to develop an innovative bio-inspired approach for fabricating angstrom-sized ion-channel membranes with specific ion selectivity, high ion conductivity and efficient gating function comparable to biological ion channels. Engineering of artificial channels with ion-channel-like shapes, ion selectivity filters and functional gates is expected to bring high-efficiency technologies to applications such as membrane separation and energy conversion. This project has potential to result in new knowledge of biomimetic design of artificial ion-channel membranes and directly benefit manufacturing industry for Australia.

### Discovery Project

**Professor Vicki Chen; Associate Professor Deanna D'Alessandro**

**Putting metal organic frameworks to work at interfaces.**

This project aims to develop new strategies to better synthesize ultrathin Metal-organic framework (MOF) membranes by nano-structured and chemically functionalized substrates. MOF materials have enormous potential due to the extraordinary structural and chemical diversity of these crystalline microporous materials and their potential applications in gas storage, separation, catalysis and sensing. However, a major challenge is fabricating thin robust MOF films or patterns on porous, flexible, and nonporous substrates, quickly and easily in order to construct useful devices. The project will grow ultrathin layers of molecular sieving and electroactive MOFs to produce technology platforms for large scale device manufacturing.



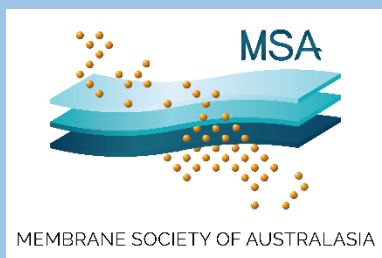
ARC-DECRA Fellow  
Institute for Frontier Materials  
Deakin University



Senior Research Scientist  
Future Industries  
CSIRO Materials Science and  
Engineering



Head of School  
School of Chemical Engineering  
The University of New South Wales



Prof Huanting Wang (Chair) hosted the opening ceremony.

## IBMM2018 & IEESep2018 Conference Recap

The 1<sup>st</sup> International Conference on Bio-inspired Materials and Membranes (IBMM2018) and the 1<sup>st</sup> International Conference on Energy-efficient Separation (iEESep2018) was successfully held in Pullman Albert Park, Melbourne from 23 – 27 January 2018. Prof Marc Parlange (Provost and Senior Vice-President of Monash University) delivered his welcome speech at the opening ceremony.

The organiser of the two conferences, Australian Research Council Research Hub for Energy-efficient Separation (ARC-EESEP), hosted 157 participants and aimed to review and discuss the recent research progress and future direction of two vital research topics - bio-inspired materials and membranes. Bio-inspired materials are the focus of an emerging research topic, which aims to develop high-performance functional materials by learning from nature.

In the last a few years the applications of bio-inspired materials in membranes has increased significantly. Within this context, the two conferences together provided the perfect opportunity to gather experts from both research fields - including academic and industry partners - to exchange innovative ideas and experience in developing advanced materials and membranes for energy-efficient separation.

Professor Huanting Wang (Chair) and Professor Xiwang Zhang (Co-Chair), along with their organising committee, created a scientific program which aimed to provide researchers tangible benefits and collaboration opportunities, thereby stimulating research in the development of new bio-inspired materials and membranes. The participants of the conference were greatly benefited from the five plenary, 25 keynote and 15 invited speakers' talks.

An important element of the conferences was the opportunity for students to present their research in a supportive environment, which included mentors, future collaborators and leaders of their fields. Students were encouraged to present a poster or enter the 3MT competition, with awards given to the top three in each category.

Congratulations to 3MT award winners:

- 1<sup>st</sup> - Van Huy Tran (University of Technology Sydney)
- 2<sup>nd</sup> - Wang Zhao (Monash University)
- 3<sup>rd</sup> - Yun Xia (Monash University)

Congratulations to best poster award winners:

- 1<sup>st</sup> - James Maina (Deakin University)
- 2<sup>nd</sup> - Yuqi Wang (Monash University)
- 3<sup>rd</sup> - Yun Lu (Monash University)

## IBMM2018 & IEESep2018 Conference Recap

Some highlights and activities:

Plenary speakers included:

- **Professor Tony Fane** (UNESCO Centre for Membrane Science and Technology at UNSW, Australia), *Bioinspired membrane engineering for water applications*
- **Prof Lei Jiang** (ICCAS, and Dean of School of Chemistry and Environment, Beijing University of Aeronautics and Astronautics, China and Department of Chemical Engineering, Monash University, Australia), *Smart interfacial materials from super-wettability to binary cooperative complementary systems*
- **Prof Liang-Yin Chu** (School of Chemical Engineering, Sichuan University, China), *Bioinspired smart gating membranes*
- **Dr Anita Hill** (Future Industries, CSIRO, Australia), *Architecturing nanospace for highly efficient gas separations*
- **Prof Dongyuan Zhao**, (Department of Chemistry, Laboratory of Advanced Materials and Collaborative Innovation Center of Chemistry for Energy Materials, Fudan University, China and Department of Chemical Engineering, Monash University, Australia), *Functional mesoporous nanomaterials: fabrication and enhanced bioapplications*

The plenary talks of the conference have been uploaded on <https://www.arc-eesep.com/>.

**Early Career Researcher Workshop** was held on the first day of conference to help the young researcher to further develop their skills or in search of opportunities in the academia and industry.

A tour of Monash Campus and the Australian Synchrotron was organised to tie up Australian leading research institutions with the international research community and enable further collaborations.

The conference dinner was held at the Crown Towers to officially close the conference in style with amazing Jazz and food.

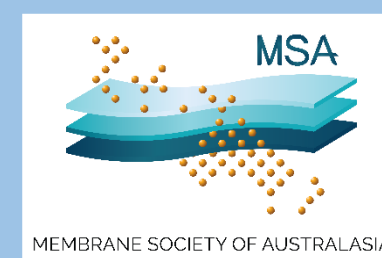
We would like to thank the sponsors,

**Platinum:** Australian Research Council, ARC Research Hub of Energy-efficient Separation, Monash University, and 2D Water

**Gold:** Membrane Society of Australasia

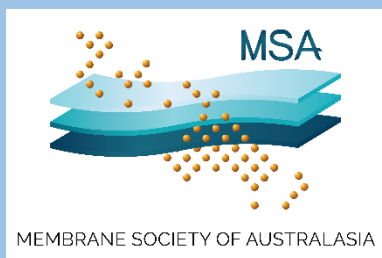
**Silver:** FB Rice and CSIRO MOFWORX.

The next IBMM will be held in Sichuan, China in 2020. See you all there!



Prof Xiwang Zhang (Co-Chair & Director of ARC-EESEP) introduced the ARC Research Hub of Energy-efficient Separation.





Dr Shuaifei Zhao (co-Chair of the event) gave the closing speech.

## Early Career Researcher Symposium Highlights

The 5<sup>th</sup> MSA ECR symposium was successfully held at Macquarie University from the 4-6 February 2018. Prof. Barbara Messerle delivered her welcome speech at the opening ceremony. 14 senior membrane scientists from Victoria, Western Australia and Sydney regions provided excellent mentorship throughout the symposium to the next generation of membrane researchers.

The Membrane Society of Australia (MSA), in association with the Department of Environmental Science and Energy and Environmental Contaminants Research Centre at Macquarie University, hosted 67 participants at the early career researcher (ECR) symposium. The symposium was focused on fundamental and applied membrane science in engineering and technology across the areas of water treatment, gas separation, food and chemical processing ranging from materials development through to end use applications.

Dr Shuaifei Zhao (Co-Chair) and Dr Stefan Smith (Co-Chair), along with their organising committee, created a forum for young and emerging membrane scientists and engineers to share their latest innovative work on membrane science and technology and to receive mentorship from senior membrane scientists. Over 50 ECR participants greatly benefitted from the 14 invited speakers' talks. 18 oral and 9 post presentations were presented by ECR's at the symposium and awards were given to 3 outstanding presentations (further info on next page).

The symposium website can be found via: <https://www.msaecr18.com/>  
The next MSA ECR symposium will be held in Melbourne in 2019



Participant group photo on the second day.

## Early Career Researcher Symposium Highlights

Some highlights and activities:

Plenary and keynote speakers included:

- **Prof. Tony Fane** (UNESCO Centre for Membrane Science and Technology at UNSW, Australia): “Membranes - Past and Future”.
- **Prof. Vicki Chen** (UNSW): “Engineering New Nanocomposite Membranes for Gas Separation”.
- **Prof. Hokyong Shon** (UTS): “Application of Membrane Technology for Desalination and Water Treatment”.
- **Prof. Sandra Kentish** (University of Melbourne): “Novel Approaches to Dairy Processing”.
- **Dr Paul Feron** (CSIRO): “Water production through CO<sub>2</sub> capture”.
- **Prof. Amanda Ellis** (University of Melbourne): “The future is membranes”.
- **Prof. Shaomin Liu** (Curtin University): “Nickel hollow fibre membranes for hydrogen production from high temperature reforming reactions”.
- **Prof. Huanting Wang** (Monash University): “Metal-organic framework membranes: From gas separation to ion selection”.
- **A/Prof. Pierre Le-Clech** (UNSW): “Tools for improving the use of membranes in the industry”.
- **Prof. Long Nghiem** (UTS): “Recent development of membrane distillation for low carbon desalination and brine mining”.

**Two Early Career Researcher Workshops** on proposal writing and career development were held to help develop ECR skills in writing grants and pursuing career opportunities in both academia and industry.

The conference dinner was held at the Ranch Hotel.

Congratulations to 4 minute presentation award winners:

- 1<sup>st</sup> - Gloria M Gonsalve-Bravo (University of Queensland)
- Highly Commended - Mahdi Moshref-Javadi (Monash University)

Congratulations to best poster award winner:

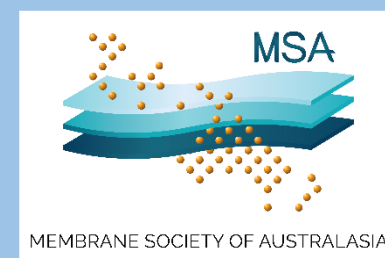
- Anbharasi Vanangamudi (Victoria University)

The ECR Symposium would not be possible without the strong supports of the sponsors,

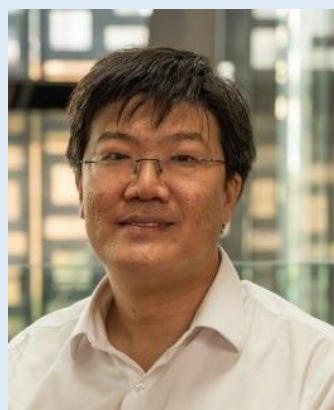
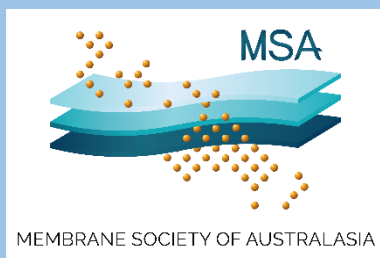
**Platinum:** Macquarie University, Australian Nanotechnology Network

**Silver:** University of Technology Sydney and InstrumentWorks

**Bronze:** CSIRO and Deakin University



Dr Stefan Smith (co-chair of the event) talked about his career at CSIRO.



## PROF. HOKYONG SHON

ARC Future Fellow

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in Water and Wastewater  
Associate Professor in School of Civil and  
Environmental Engineering  
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<http://www.uts.edu.au/staff/hokyong.shon-1>



## PROF. GREGORY LESLIE

School of Chemical Engineering  
Faculty of Engineering  
University of New South Wales  
Sydney, NSW 2052  
Australia  
T: +61 2 9385 6092

## MSA Funding Support Programs

### MSA Workshop Funding Support Program 2017 Call for Proposals and Applications

The MSA Funding Support Program provides funding support to membrane-related events such as workshops and symposia that are held in Australasia.

#### Who can apply for the MSA workshop support program?

All MSA members can apply for funding support from the MSA.

#### How to apply?

The application form must be submitted to the MSA at your earliest time before the date of the event. Please advise the MSA as soon as possible of any planned event so that we can consider it for budgeting. The chances of success are likely to be improved by an early application. The outcome of the application will be announced approximately 1 month after the submission of the application.

#### Contact us

For further information, contact the program coordinator, Prof. Hokyong Shon, at the following email address:

[Hokyong.Shon-1@uts.edu.au](mailto:Hokyong.Shon-1@uts.edu.au)

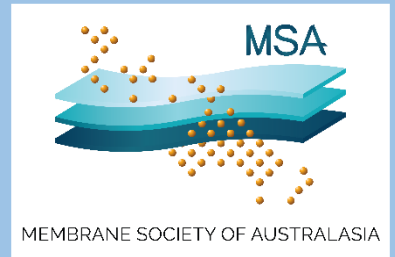
### MSA Travel Award Program

MSA periodically sponsors students and ECRs, who are members of MSA, to attend international conferences and to support their travel and attendance costs. Details of travel award application on each conference will be announced to MSA members several months before the deadline of its abstract submission. The recipients will receive the cash prize into their project or travel account.

#### Contact Program Coordinator:

Prof. Greg Leslie ([award@membrane-australasia.org](mailto:award@membrane-australasia.org))

## MSA Affiliations



One of the core aims of the Membrane Society of Australia (MSA) is to capture current research and industry involvement and highlight future trends. We are thus proud to have affiliations globally across industry and academia. As members of MSA, our linked organisations are a prime source to keep up to date with the latest developments in the membrane field. They also provide good information on the use of membranes in industrial settings.

For our early career researchers, keeping a regular eye on our affiliates web pages can provide you with benefits for advancing your career. Researchers and industry representatives from our affiliates account for a large portion of conference attendees. Getting to know their background can give you confidence to engage the people at the forefront of membrane technology to talk about their work and discuss your research – the fundamental building blocks of building collaboration. Further, the global research community is well connected. Keeping up to date and in touch with members of other societies keeps this connectivity strong and will open up career prospects. On the latter point, job opportunities are often posted on our affiliates web pages.

Below are MSA's key affiliates:

- European Membrane Society (EMS)
- North American Membrane Society (NAMS)
- African Membrane Society (AMS)
- Dutch Membrane Society (NMG)
- The Membrane Society of Japan
- Indian Membrane Society
- Aseanian Membrane Society (AMS)
- R&D Centre for Membrane Technology at Chung Yuan University in Taiwan
- Global Water Intelligence: A monthly magazine on the international water industry
- DesalData.com: An interactive database containing information on over 10,000 desalination plants
- Water Desalination Report: A weekly newsletter on the desalination and water reuse industry. Edited by Tom Pankratz, the board member of this IDA.

Links to their web pages can be found on the MSA website:

<https://www.membrane-australasia.org/>

## 2018 Key Membrane Events

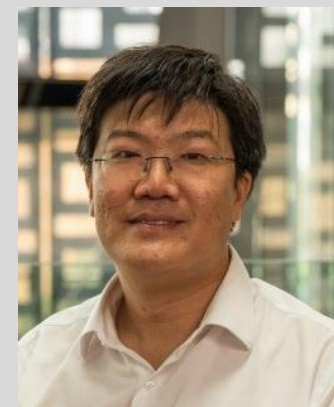
PAST EVENT	DATE	YEAR
SSEAC Membrane Masterclass and Workshop University of Sydney, Australia	27 Nov	2017
Water, Membrane, Environment & Energy Expo Bangkok, Thailand	14–16 Dec	
1 <sup>st</sup> International Conference on Bio-inspired Material and Membrane (IBMM2018) & 1 <sup>st</sup> International Conference on Energy-efficient Separation (IEESep2018) Monash University, Australia	23-27 Jan	2018
International Conference on Nanoscience and Nanotechnology University of Wollongong, Australia	29 Jan – 2 Feb	
5 <sup>th</sup> MSA Early Career Researcher Symposium Macquarie University, Australia	5-6 Feb	
CURRENT EVENT	DATE	ABSTRACT DEADLINE
27 <sup>th</sup> Annual Meeting North American Membrane Society Lexington, Kentucky, USA <a href="http://www.membranes.org/2018/index.html">www.membranes.org/2018/index.html</a>	9-13 Jun	15 Mar
15 <sup>th</sup> International Conference on Inorganic Membranes Dresden, Germany <a href="http://www.icim2018.com">www.icim2018.com</a>	18-22 Jun	Expired
1 <sup>st</sup> Cutting Edge Symposium on the Current and Future Challenges of Energy Efficient Separation Palm Cove, Australia <a href="http://www.cfcees2018.org/">http://www.cfcees2018.org/</a>	27-29 Jun	20 Apr
11 <sup>th</sup> Conference of Aseanian Membrane Society Brisbane, Australia <a href="http://www.ams11.com.au">www.ams11.com.au</a>	3-6 Jul	Expired
Euromembrane 2018 Valencia, Spain <a href="http://euromembrane2018.org">http://euromembrane2018.org</a>	9-13 Jul	Expired
2 <sup>nd</sup> African Membrane Society International Congress Johannesburg, South Africa <a href="http://www.sam-ptf.com/safrica/index.html">http://www.sam-ptf.com/safrica/index.html</a>	29 Jul – 1 Aug	31 Mar
6 <sup>th</sup> IWA Regional Conference on Membrane Technology Gujrat, India <a href="http://www.indianmembranesociety.com">http://www.indianmembranesociety.com</a> <a href="http://www.iwa-rmtc2018.in/">http://www.iwa-rmtc2018.in/</a>	10-12 Dec	31 Jul

# THANK YOU

We wish to thank the Newsletter Taskforce and Dr Ben Ballinger for their outstanding contributions to the assembly of news content for the January 2018 Newsletter.



**Amanda Ellis**



**Hokyong Shon**



**Stefan Smith**



**Ludovic Dumée**



**David Wang**



**Aaron Thornton**



**Greg Leslie**



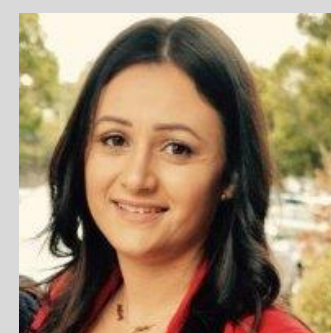
**Xiwang Zhang**



**Peter Macintosh**



**Ken Morison**



**Pamela El'Jbeily**

### Board Members

**Chair**– Amanda Ellis, UMelb

**Vice Chair**– Hokyong Shon, UTS

**Secretary**– Stefan Smith, CSIRO

**Treasurer**– Ludovic Dumée, DeakinU

**Newsletter Editor**– David Wang, USYD

**Board** – Aaron Thornton, CSIRO

**Travel Awards Coord.**– Greg Leslie, UNSW

**Industry Rep.**–Xiwang Zhang, MonashU

### Strategic Relations

Peter Macintosh, Consultant

Ken Morison, UCantebury

Pamela El'Jbeily, IXOM