SSEAC Masterclass

Water scarcity, variability, and uncertainty are becoming more prominent even as we strive for a carbon neutral future. An integrated and proactive approach is needed to find optimum solutions in the water energy nexus.

The University of Sydney is bringing together leading researchers and practitioners throughout South East Asia for a one-day Masterclass on Membranes for Sustainable Energy and Water Production.

This Masterclass will investigate the energy and water issues in Australia and Southeast Asia countries and the emerging innovations and disruptive membrane technologies to meet these challenges.

The Masterclass will provide young researchers, experts and industry leaders networking and collaboration opportunities in addition to state-of-the-art approaches and knowledge.

Masterclass Topics
- Membranes for Energy Harvesting (osmotic processes, forward osmosis, reverse electrodialysis)
- Membranes for Water Production and Reuse (osmotic processes, electrodialysis)
- Emerging Membrane Technology (industry challenges and opportunities)

Registration (online link)
Deadline: 17 November 2017
Fee: $415 AUD + Dinner Networking
Fee: $295 AUD* (Masterclass Day only)
*Registration fee is waived for all University of Sydney academics and students.
Sustainable Membrane Processes for Synergistic Energy and Water Applications
27 November 2017

Course Outcomes
By the end of the course participants will:
- Know the principles that govern pressure retarded osmosis and electrodialysis
- Understand theoretical considerations and operating parameters in membrane processes
- Understand the current technology limits
- Gain insight into the innovative solutions, disruptive technology and latest research development in membrane processes for using salinity gradients for energy harvesting, water recovery, recycling and reuse.

Chair
Professor Dianne Wiley

Organising Committee
Dr Annalisa Contos
Dr David Wang (Secretary)
Dr John Kavanagh
Dr Qianhong She

Invited Speakers
Anthony Fane, UNSW, Australia
Balbir Singh, UTP, Malaysia
Jia Wei Chew, NTU, Singapore
Muhammad Roil Bilad, UTP, Malaysia
Muthia Elma, LMU, Indonesia
Rong Wang, NTU, Singapore
Rhett Butler, SkyJuice™ Foundation, Australia
Shuaifei Zhao, MQ, Australia
Xiwang Zhang, MonashU, Australia
Zuhairi Baharudin, UTP, Malaysia
Zulkifli Merican, UTP, Malaysia

Organiser
School of Chemical and Biomolecular Engineering
Faculty of Engineering and Information Technologies,
The University of Sydney

Sponsor
Sydney South East Asia Centre
Professor Dianne Wiley

Professor Dianne Wiley is recognised as a world-leader in the development of membrane systems for wastewater treatment and other applications, and in the assessment of carbon capture and storage technologies. She is currently the Head of the School of Chemical and Biomolecular Engineering, the University of Sydney. Her current role focuses on guiding the school’s overall research program and helping to communicate its results to the research community, industry and the broader public. One of Professor Wiley’s primary research areas is helping industry to understand at a fundamental level how to design and operate the next generation of membrane systems for different applications, including wastewater treatment, dairy processing and minerals recovery. In 2007, she was named as one of Engineers Australia’s 25 most influential female engineers.

Adjunct Associate Professor Rhet Butler

Rhett is a leading authority on membrane filtration technologies and a passionate advocate for affordable technical solutions to meet the global challenges of the millennium and sustainable development goals. He has been a pioneer in cost low water solutions for developing countries since 1996. Rhett is the founder and CEO of the SkyJuice Foundation. He is a professional mechanical engineer, as well as a social entrepreneur and public speaker. Rhett has over 30 years senior management and strategy experience in the global water industry as well as significant exposure in manufacturing and small business. He is a member of the Australian Institute of Company Directors and an Adjunct Associate Professor at the University of Sydney.

Professor Rong Wang

Dr Rong Wang specialises in novel membrane preparation and characterization for water and wastewater treatment, liquid purification and gas separation, and in development of novel hybrid membrane systems and process simulation. She has over 25 years research and development experience and is currently a Professor and Chair in the School of Civil and Environmental Engineering, Nanyang Technological University, Singapore. Dr Wang has over 200 SCI tracked journal publication. She is Editor of Journal of Membrane Science and on the editorial board of Desalination. Dr Wang was a co-recipient of the Minister for National Development R&D Award (Merit) 2013 in Singapore. She was featured among the top 25 leading water researchers globally by Lux Research 2013. In 2016, Dr Wang won a prestigious award, “the Alternative Water Resources Prize” under the Prince Sultan Bin Abdulaziz International Prize for Water (PSIPW) 2016.

Professor Anthony Fane

Professor Tony Fane is a world-leading expert on membrane science and technology. A Chemical Engineer with a PhD from Imperial College London, he has been working on membranes since 1973. Since 2008 he has been the Founding Director, Director-Mentor, and Visiting Professor of the Singapore Membrane Technology Centre (SMTC) at NTU in Singapore. He is a Fellow of the Australian Academy of Technological Science and Engineering, and a recipient of the Centenary Medal in 2002 for services to Chemical Engineering and the Environment. In 2013 he received the International Water Association's Membrane Technology Award for ‘pioneering contributions in membrane technology’. Professor Fane is on the Advisory Board of the Journal of Membrane Science, the Editorial Board of Desalination, an Honorary life member of the European Membrane Society, and Patron of the Membrane Society of Australia.

Professor Xiwang Zhang

Professor Xiwang Zhang’s research focuses on high performance membranes and functional materials for water and wastewater treatment. He is a Professor in the Department of Chemical Engineering at the Monash University and Director of the ARC Research Hub for Energy-efficient Separation with total funding worth over 10M from the Australian Research Council, the industry partners and participating universities. He obtained his MEng in Environmental Engineering at the Xi’an University of Architecture and Technology (China) in 2003, and his PhD from Research Centre of Eco-Environmental Sciences, Chinese Academy of Science (2006). Professor Zhang was awarded a prestigious ARC Australian Research Fellowship in 2010 and the prestigious Larkins Fellowship in 2012.
## Preliminary Schedule

<table>
<thead>
<tr>
<th>Time</th>
<th>Title</th>
<th>Speakers</th>
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<tbody>
<tr>
<td>8.30am</td>
<td>Registration</td>
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<tr>
<td>9.00am</td>
<td><strong>SSEAC Masterclass</strong> (Chair: Dr John Kavanagh)</td>
<td>Prof. Dianne Wiley&lt;br&gt;Prof. Michele Ford&lt;br&gt;Adjunct Associate Professor Rhett Butler</td>
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<td></td>
<td>- Welcome and opening address. School research overview and workshop themes.</td>
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<td>- SSEAC sustainable development goals, contextual challenges in SEA.</td>
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<td>- Global challenges and niche opportunities for the membrane sector</td>
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<td>10.00am</td>
<td>Morning tea</td>
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<tr>
<td>10.20am</td>
<td><strong>Membranes for Energy Harvesting</strong> (Chair: Dr Qianhong She)</td>
<td>Prof. Rong Wang&lt;br&gt;Prof. Xiwang Zhang&lt;br&gt;Dr John Kavanagh&lt;br&gt;Dr Jia Wei Chew</td>
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<td>12.00pm</td>
<td>Lunch</td>
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<tr>
<td>1.00pm</td>
<td><strong>Membranes for Water Production and Reuse</strong> (Chair: Dr David Wang)</td>
<td>Prof. Tony Fane&lt;br&gt;Prof. Hans Coster&lt;br&gt;Dr Muhammad Bilad&lt;br&gt;Dr Zulkifli Merican&lt;br&gt;Dr Muthia Elma&lt;br&gt;Dr Shuaifei Zhao</td>
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<td>3.20pm</td>
<td>Afternoon tea</td>
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<tr>
<td>3.40pm</td>
<td><strong>Industry Opportunities and Challenges</strong> (Chair: Dr Annalisa Contos)</td>
<td>Facilitated discussion</td>
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<td>5.00pm</td>
<td>Program close</td>
<td>Dr Annalisa Contos</td>
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