



The University of Sydney

Chemical and Biomolecular
Engineering Foundation

Chemical and Biomolecular Engineering Foundation

**“Fundamentals of
Membrane Technology;
applications, capabilities, limitations”**

**Selecting a system
appropriate to your needs**

Professional Development Course

Building J01
University of Sydney
Sydney NSW 2006
Australia
Tel +61 2 9351 5284
Fax +61 2 9351 2854
Email: s.bregu@usyd.edu.au
www.usyd.edu.au/foundation

A one day course addressing a number of aspects on Membrane Technology for water recycling and treatment systems.

The course is aimed at those in industry who now have to examine water recycling options for large and small scale commercial, industrial and residential complexes, for industrial situations, as well as central and local government agencies, including municipalities and shires. In these areas it is now necessary to seriously examine the impact of increasing demand for water in light of both economic factors (including the predicted price rises of water in the future) and of the environmental and sustainability issues related to water usage.

Presented by:	Professor Tony Fane Director, Singapore Membrane Technology Centre
Date and time:	November 25, 2009 9.00 am registration for 9.30 am start, to 5.00 pm
Location:	The Holme Building Science Road, The University of Sydney, NSW Parking available at the university by requesting Parking Voucher from the Foundation – Extra parking is available at the New Law Building
Registration fee:	\$1,265.00 (inclusive of GST) \$1,100.00 (inclusive of GST) for members of the Foundation

Who should attend

The course is principally aimed at professionals who will have to make decisions on technologies to be considered for water re-use and waste water treatment in various situations. It is aimed at architects, engineers, design consultants and building contractors, building and industrial operations managers (eg. Strata Title managers) and technical people now having to deal with water recycling, purification and water treatment technologies.

Course objective

This course is a one day course aimed at giving people who work in areas where water recycling is of increasing importance. It will provide a greater understanding of the workings of membrane technologies, thus setting the basis for making judgements on options available that are relevant to particular applications.

At the end of the course participants will have

- ❖ An understanding of membranes fundamentals
- ❖ An appreciation of various types of membrane processes and their applications
- ❖ An understanding of the limitations of membrane technology for specific applications
- ❖ Insight into operational requirements for successful implementation of membrane-based solutions.

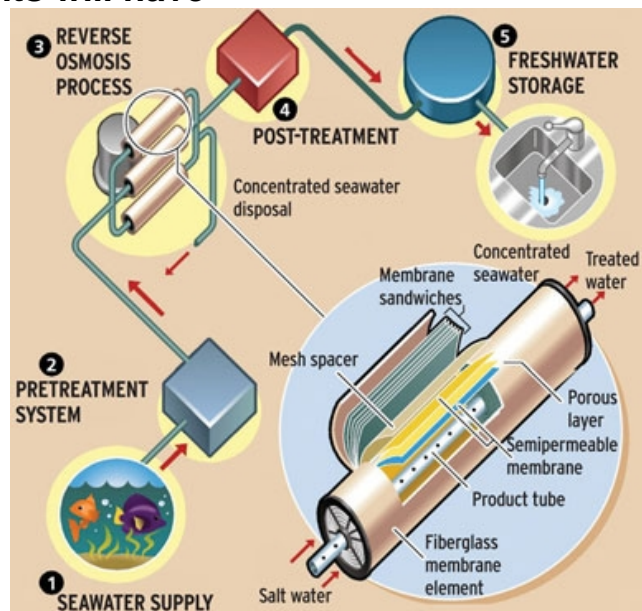
Course outline

The basics

- ❖ Introduction to membranes and membrane processes
 - Membrane types and manufacture
 - Membrane process family
 - Factors affecting performance of membranes
- ❖ Membrane modules, systems and operational issues
 - Components of a membrane plant
 - Membrane module design and characteristics
 - Membrane systems
 - Operating strategies (cross flow vs deadend)

Applications

- ❖ Overview of membrane and water cycle
 - Membranes and Water Treatment
- ❖ Membrane Bioreactors
- ❖ Desalination
- ❖ Reclamation, reuse and other applications
- ❖ Examples and Case Studies by industry (Details to follow)



Rationale for the Course

Water is now seen as a resource which is becoming scarcer than ever before, especially in view of increasing demand, and of the quality issues associated with it. Simultaneously, environmental impact regulations are imposing increasingly strict limitations on acceptable levels of contaminants in waste water.

Australia in particular needs to become more aware of how water is used by all consumers, and what options may need to be considered to ensure that it continue to be available with sustainability of delivery and quality levels as major considerations.

Experts in the field are now realising the importance of planning for future water needs, and in so doing are looking at all the technological options available.

The importance of purification, recycling and waste water treatment is now recognised at all levels. In the single household customers are installing water purifiers in their home, and recycling water to an extent never previously attempted, or even considered. In large commercial and residential properties dual water reticulation systems are specifically designed for implementation into the complexes.

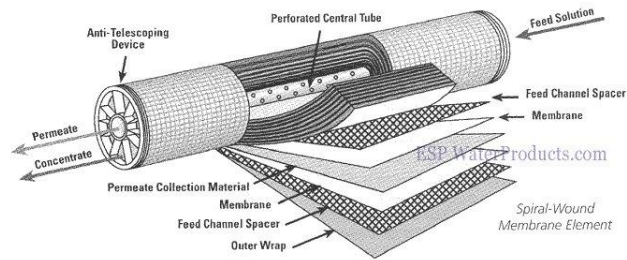


In small and large industrial operations and infrastructures, and in large complex community systems, including cities and states, recycling and potable water production facilities are being developed and implemented on a large scale.



At this time managers at all levels are having to look at how their organisations are dealing with water, and make provisions for future sustainability of water availability. They have to understand what is happening and make decisions on how to proceed in their future planning phases. In particular they need to consult with experts in water recycling and treatment to understand how technologies might apply to their particular situation.

Membrane Technology is used in many water treatment systems, and understanding the fundamentals of Membrane Technology will assist people to examine and select systems that might be appropriate for their particular situations.



This course gives an insight into membrane technology, explains the different types of membrane processes, and looks at current applications, capabilities and limitations of the technology. It will also give a brief overview about studies currently taking place in the water treatment industry. The course will also present case studies and equipment available in the market place.

About the course leader



Professor Tony Fane

Professor Tony Fane is a Chemical Engineer with a PhD from Imperial College, London. He has been working on membranes since 1973 when he joined the University of New South Wales, in Sydney, Australia. His current interests are in membranes applied to environmental applications and the water cycle, with a focus on the sustainability aspects of membrane technology, including membrane bioreactors and reuse.

He is a former Director of the UNESCO Centre for Membrane Science and Technology at UNSW where he continues to work with colleagues.

From 2002 to 2006 he was Temasek Professor at Nanyang Technological University, Singapore with a programme in Membrane Technology for Sustainable Water. He is currently Director of the Singapore Membrane Technology Centre at NTU.

He is on the Editorial Boards of the Journal of Membrane Science (a former editor from 1992 to 2005) and Desalination. He is a Fellow of the Australian Academy of Technological Sciences and Engineering, a recipient of the Centenary Medal in 2002 for services to Chemical Engineering and the Environment and an Honorary life member of the European Membrane Society. He is also the Patron of the Membrane Society of Australia.

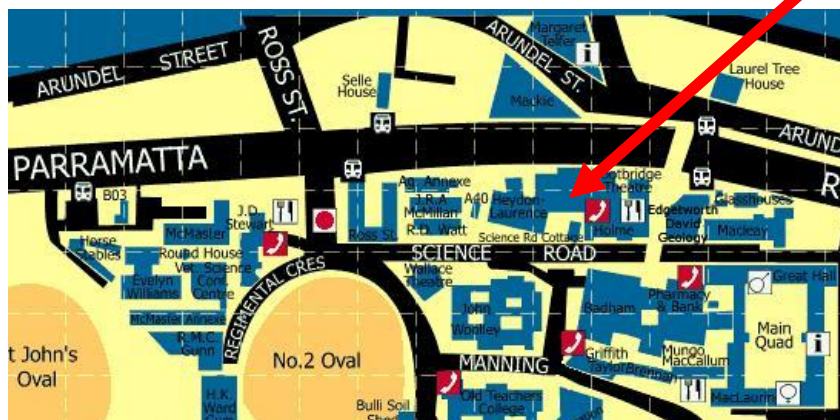
The course provides...

Tuition, handouts, reference textbook, lunch, morning and afternoon teas.

We look forward to your company taking this opportunity to become a stakeholder in the "Fundamental of Membrane Technology: applications, capabilities, limitations" professional development course.

For information on the Foundation, as well as on the Course please contact Skender Bregu, Foundation Executive Officer
tel: + 61 2 9351 5284 - fax + 61 2 9351 2854 - email s.bregu@usyd.edu.au

Workshop Venue:



Discounts for Courses and Conferences/Symposia

Discounts for Foundation events will be allowed as follows:

Early Bird Discounts: \$100 if registration is received 15 days prior to the event

Company Member discounts:

Participants who are registered by a Foundation Governor Member company are entitled to a discount of 20% of the registration fee. Participants who are registered by a Foundation Council Member company are entitled to a discount of 15% of the registration fee. Participants who are registered by a Foundation Corporate Member company are entitled to a discount of 10% of the registration fee.

Company non-members:

Companies may become members of the Foundation and are eligible for the discounts by paying the Membership Fee discounted by 25% if membership is sought in the first half of the financial year, or by 50% if in the second half of the year.

Companies that register 3 or more members are entitled to a further discount of 10%.

Individuals: Participants may register individually if they are not sponsored by a company/organisation. Fellow Members of the Foundation are entitled to a discount of \$75. Non-members become Fellow Members by registering, but are not entitled to the discount.

Conditions of Registration

Cancellations: If you are unable to attend, a substitute participant is welcome at no extra charge. Where no substitute is available, an administrative fee of 10% of the Registration Fee or of \$150 – whichever is the greater – (plus GST) will be deducted from your registration fee for cancellations received by the Foundation Executive Officer in writing at least 14 days prior to the event. A 50% refund will be given if cancellations are received in writing between 14 and 7 days prior to the event. Thereafter no refunds will be made.

Our Privacy Policy: By registering for this event, relevant details will be held on a database by the Foundation and the Executive Officer. Participant details may be printed on name badges and place cards, and lists may be provided to all participants (name, position and organisation/company only). If you do not wish your information to be used in this manner, please advise the Foundation Executive Officer. Participants' feedback comments may be quoted, and include the name of the participants and their affiliations, in future course material for marketing purposes; again, please advise the Foundation Executive Officer if you do not wish that this occur. Information on the Foundation and on its events may at times be forwarded to you; if you do not wish to receive further mailings please advise the Foundation Executive Officer.

Changes to the Event: The Foundation may need to make changes to the time and/or location of the event and reserves the right to do so by informing you in writing as soon as the need for such changes are noted. The Foundation also reserves the right to cancel the event in which case full refunds will be made. The Foundation may also need to alter the program of the event prior to or during the event and reserves the right to do so without notice.

Registration and method of payment – See form attached

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Training Course**

**Professional Development Course
May 8, 2009**

Please complete details below and return with fee to:

**Skender Bregu
Chemical & Biomolecular Engineering Foundation
Chemical Engineering Building J01
The University of Sydney NSW 2006
Phone (02) 9351 5284
Fax (02) 9351 2854
Email: s.bregu@usyd.edu.au**

Surname First Name

Title/Position

Organisation

Address

Phone No Fax No Mobile

Email address

Payment Details:

▶ Cheque for \$ made payable to **The University of Sydney** is attached

Or

▶ Credit Card: Mastercard Bankcard Visa Amex Diners

Cardholders Name (Please print):

Card No.:

ID Number (Amex only) Exp. date / Amount: \$

Cardholder's Signature: