

# Advances in Science and Engineering for Brackish Water and Seawater Desalination

**May 8-12, 2010**

**Grand Hotel Michele, Cetraro (Calabria), Italy**

## Conference Chairs

**Prof. Enrico Drioli**

**Institute on Membrane Technology (ITM-CNR)  
University of Calabria, Italy**

**Dr. Norman Li**

**NL Chemical Technology, Inc., USA**



## **EXTENDED ABSTRACTS**



**Engineering Conferences International**

**32 Broadway, Suite 314 - New York, NY 10004, USA**

**Phone: 1 - 212 - 514 - 6760, Fax: 1 - 212 - 514 - 6030**

**[www.engconfintl.org](http://www.engconfintl.org) – [info@engconfintl.org](mailto:info@engconfintl.org)**

Engineering Conferences International (ECI) is a not - for - profit global engineering conferences program, originally established in 1962, that provides opportunities for the exploration of problems and issues of concern to engineers and scientists from many disciplines.

#### ECI BOARD MEMBERS

Barry Buckland, President

Peter Gray

Allen I. Laskin

Raymond McCabe

David Robinson

Jules Routbort

Williams Sachs

Eugene Schaefer

P. Somasundaran

Chair of ECI Conferences Committee: William Sachs

ECI Technical Liaison for this conference: Norman Li

ECI Director: Barbara K. Hickernell

ECI Associate Director: Kevin M. Korpics

LOCAL ORGANIZING COMMITTEE

Enrico Drioli, University of Calabria, ITM-CNR

Gianluca Di Profio, ITM-CNR

Maria A. Liberti, ITM-CNR

## **Saturday, May 8, 2010**

- 9:00 – 14:00            Guided tour along the Tyrrhenian coast
- 16:30 – 18:00            Conference check-in
- 18:00 – 19:30            Welcome reception
- 19:30 – 21:30            Dinner

## **Sunday, May 9, 2010**

- 07:30 – 08:30            Breakfast
- 09:00 – 09:30            Welcoming Remarks and Opening of the Conference**  
Prof. Enrico Drioli and Dr. Norman Li
- 09:30 – 10:30            *Plenary Lecture – Andrzej Stankiewicz: Fundamental Concepts of Process Intensification: An Opportunity for Water Desalination?*  
Chairpersons: E. Drioli – N. Li
- 10:30 – 11:00            Coffee Break
- 11:00 – 12:30            Session I: Membrane Engineering for Process Intensification**  
Chairpersons: A. Stankiewicz - N. Li
- 11:00 – 11:30            Enrico Drioli: *Membrane systems for possible solutions to water stress*
- 11:30 – 12:00            Kathrin Ronzheimer: *The Future of Membranes in Water and Wastewater Technology*
- 12:00 – 12:30            Albert S. Kim: *Application of Econophysics and Econometrics to Membrane Filtration*
- 13:00 – 15:00            Lunch
- 15:30 – 17:30            Session II: Membrane Engineering in Desalination and Water Treatment I**  
Chairpersons: A. Criscuoli - M. Kurihara
- 15:30 – 16:00            Antoine Kemperman: *Bubbles in Spacers – A Means to Intensify Mass Transport and Avoid Fouling*
- 16:00 – 16:30            Pierre Aimar: *Ageing of reverse osmosis membranes*
- 16:30 – 17:00            Corinne Cabassud: *Membrane distillation for seawater desalination*
- 17:00 – 17:30            Linda Zou: *Development of porous carbon electrodes for capacitive desalination of brackish water*

**17:30 – 19:00**      **Poster Session A**

19:30 – 21:30      Dinner

**Monday, May 10, 2010**

07:30 – 08:30      Breakfast

**09:00 – 10:30**      **Session III: Membrane Engineering in Desalination and Water Treatment II**  
Chairpersons: *D. R. Paul - B. Freeman*

09:00 – 09:30      Bart van der Bruggen: *Improved membrane structures for seawater desalination by studying the influence of sublayers*

09:30 – 10:00      Donald R. Paul: *Water and Salt Transport in Novel Sulfonated Polymer Materials for Desalination Applications*

10:00 – 10:30      Daniell J. Miller: *A Bio-Inspired Surface Modification to Improve Membrane Fouling Resistance*

10:30 – 11:00      Coffee Break

**11:00 – 12:30**      **Session IV: Desalination and the Environment**  
Chairpersons: *R. Semiat - I. Ortiz*

11:00 – 11:30      Raphael Semiat: *Energy aspects in osmotic processes*

11:30 – 12:00      Lianfa Song: *Energy analysis and cost minimization of RO desalination processes*

12:00 – 12:30      Inmaculada M. Ortiz: *Alternative treatments of reverse osmosis concentrates*

13:00 – 15:00      Lunch

**15:00 – 24:00**      **Sightseeing and Visit to the University of Calabria and ITM-CNR**  
**Dinner at Old Rende**

**Tuesday, May 11, 2010**

07:30 – 08:30      Breakfast

**09:00 – 12:30**      **Session V: Membranes for Wastewater Treatment and Reuse**  
Chairpersons: *V. Teplyakov - J. Pellegrino*

09:00 – 09:30      James E. McGrath: *Synthesis and Characterization of Disulfonated Directly Copolymerized Poly(arylene ether) Membranes and Their Application to Water Purification*

09:30 – 10:00      Vladimir Teplyakov: *Hybrid membrane systems for organics recovery from technical wastewater*

- 10:00 – 10:30 John Pellegrino: *Studies of ion fractionation with membranes for water reuse*
- 10:30 – 11:00 Coffee Break
- 11:00 – 11:30 Jan Kincl: *Electrodialysis treatment of industrial wastewaters*
- 11:30 – 12:00 Masaru Kurihara: *High Performance RO Membranes for Seawater Desalination and Wastewater Reclamation based on the Basic and Scientific Investigation*
- 12:00 – 12:30 Rong Wang: *Development of Novel Forward Osmosis Hollow Fiber Membranes*
- 13:00 – 15:00 Lunch
- 15:30 – 17:30** **Session VI: Worldwide Efforts for the Improvement of Water Problem: The MEDINA Project and Other Projects in Progress**  
Chairpersons: *J.-C. Schrotter - C. Gao*
- 15:30 – 16:00 Jean-Christophe Schrotter: *Development of Advanced Membrane Based Solutions for Seawater Desalination*
- 16:00 – 16:30 Graeme K. Pearce: *Desalination or Wastewater Reuse? Technical and Economic Issues Raised by the Mayor of London's Challenge to the Beckton Desalination Plant*
- 16:30 – 17:00 In S. Kim: *Key strategies for low energy of a SWRO desalination plant through SEAHERO R&D program*
- 17:00 – 17:30 Gong Haichen: *Development and strategic of china desalination and membrane technology*
- 19:30 – 21:30 Dinner

**Wednesday, May 12, 2010**

- 07:30 – 08:30 Breakfast
- 09:00 – 12:30** **Session VII: Membrane Contactors and New Desalination Technologies and Strategies**  
Chairpersons: *A. Jansen - B. Van der Bruggen*
- 09:00 – 09:30 Albert E. Jansen: *Memstill® membrane distillation – a future desalination technology*
- 09:30 – 10:00 Efreem Curcio: *Membrane Distillation Operated on Seawater Brines*
- 10:00 – 10:30 Joachim Koschikowski: *Membrane Distillation for Seawater desalination*
- 10:30 – 11:00 Coffee Break
- 11:00 – 11:30 Congjie Gao: *Pretreatment for SWRO*

- 11:30 – 12:00 Rongjing Xie: *Maximum Scaling Potential Assessment for Seawater Reverse Osmosis Membrane Desalination*
- 12:00 – 12:30 Alessandra Criscuoli: *Membrane Distillation in Desalination: Direct Contact vs Vacuum*
- 12:30 Close of conference, lunch and departure