

Program

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

An ECI Conference Series

September 29 – October 3, 2013

Cetraro (Calabria), Italy

Conference Chairs

Professor **Enrico Drioli**

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Sunday, September 29, 2013

16:30 - 18:30 Conference check-in
18:30 - 20:30 Welcome Reception & Dinner

NOTES

- Technical Sessions will be held in the Conference Building.
- Poster Sessions will be held in Conference Building.
- Audiotaping, videotaping and photography of presentations are prohibited.
- Speakers – Please leave at least 3-5 minutes for questions and discussion.
- Please do not smoke at any conference functions.
- Turn your cellular telephones to vibrate or off during technical sessions.
- Be sure to check your contact information on the Participant List in this program and make any corrections to your name/contact information online. A corrected copy will be sent to all participants after the conference.

Monday, September 30, 2013

07:30 – 08:30 Breakfast

09:00 – 09:30 Welcome and Opening Remarks

Session I: Membrane Engineering for Process Intensification

09:30 – 10:00 **Structure/property relationships in polymer membranes for water purification and power generation**

Don Paul, The University of Texas at Austin, USA

10:00 – 10:30 **Thermally rearranged polymer membranes for water application**

Young Moo Lee, Hanyang University, Korea

10:30 – 11:00 Coffee break

11:00 – 11:30 **Fouling in membranes probed by constant flux and constant transmembrane pressure crossflow permeation studies**

Benny Freeman, The University of Texas at Austin, USA

11:30 – 12:00 **Fractionation of electrolytes and neutral organics for water reuse in sustainable biomass processes: membrane evaluations**

John Pellegrino, University of Colorado at Boulder, USA

12:00 – 12:30 **The impact of membrane engineering for a new industrial development**

Enrico Drioli, University of Calabria, Italy

12:30 – 12:45 Group photo

12:45 – 14:00 Lunch

Session II: Membrane Engineering in Desalination and Water Treatment

15:30 – 16:00 **Reverse Osmosis (RO) and Ion Exchange (IX) nexus: Characterization and performance enhancement of RO processes through IX fundamentals**

Arup K. Sengupta, Lehigh University, USA

16:00 – 16:30 **Microstructured spacers for submerged membrane filtration systems**

Matthias Wessling, RWTH Aachen University, Germany

16:30 – 17:00 **New module design development for membrane distillation**

Bart Nelemans, Aquastill, The Netherlands

17:00 – 17:30 **Multifunctional ceramic membranes for water desalination and water reuse**

André Ayral, The European Membranes Institute, France

17:30 – 18:00 **NAWADES: Research towards new filter technology for long-life and antifouling filters to be used in reverse osmosis**

Christiane Chaumette, Fraunhofer IGB, Germany

18:30 - 19:30 Poster Session

19:30 – 21:00 Dinner

Tuesday, October 1, 2013

Session III: Membrane development for water treatment

09:00 – 09:30

Fluoropolymers for Membrane Applications

Aldo Sanguineti, V. Arcella, Solvay Specialty Polymers, Italy

09:30 – 10:00

Synthesis and characterization of poly(ethylene oxide)-poly(arylene ether sulfone) based segmented polyurethanes for water purification

Judy Riffle, Virginia Tech University, USA

10:00 – 10:30

Optimization of morphology and performance of PVDF hollow fiber membranes for seawater desalination via VMD

Alberto Figoli, Institute on Membrane Technology (ITM-CNR), Italy

10:30 - 11:00

Coffee break

Session IV: Progress in thermal desalination and water purification processes

11:00 – 11:30

Inorganic micropollutants in RO permeates: focus on arsenic and fluoride

Bart Van der Bruggen, Catholic University of Leuven, Belgium

11:30 – 12:00

Thermosetting networks derived from telechelic amino disulfonated poly(arylene ethers) membranes for water purification via reverse osmosis or pressure retardant osmosis (PRO)

James E. McGrath, Virginia Tech University, USA

12:00 – 12:30

Scaling of RO-membranes in desalination of wastewater and the effect of organic matter on calcium mineralization explored by SANS

Dietmar Schwahn, Technical University at Munich, Germany

13:30

Sightseeing and visit to University of Calabria and ITM-CNR (boxed lunch)

19:30

Dinner at Hotel San Michele

Wednesday, October 2, 2013

07:30 – 08:30 Breakfast

Session V: Wastewater treatment and reuse

09:00 – 09:30 **Membrane bioreactors in integrated membrane systems vegetative water treatment and co-products valorization**

Lidietta Giorno, Institute on Membrane Technology (ITM-CNR), Italy

09:30 – 10:00 **Novel hybrid osmotic MBR: Simultaneous tailored direct potable and non-potable reuse**

Ryan Holloway, Colorado School of Mines, USA

10:00 – 10:30 **Valorisation of agro-food wastewaters by integrated membrane operations**

Alfredo Cassano, Institute on Membrane Technology ITM-CNR, Italy

10:30 - 11:00 Coffee break

11:00 – 11:30 **Towards advanced engineering model of nanofiltration: mastering multi-ion interactions via equilibrium and non-equilibrium electric fields**

Andriy Yaroshchuk, ICREA and Polytechnic University of Catalonia, Spain

11:30 – 12:00 **Macrohomoogeneous approach to mathematical modelling of the electro dialysis unit for water desalination**

Karel Bouzek, Institute of Chemical Technology, Prague, Czech Republic

12:00 – 12:30 **Ion exchange membrane bioreactors for treatment of groundwater highly contaminated with perchlorate**

Shalom Fox, Ben Gurion University, Israel

12:30 – 13:00 **Electrodialysis of 2-6 % NaCl solutions and water recovery analysis**

Shingjiang Jessie Lue, Chang Gung University, Taiwan

13:00 – 14:30 Lunch

Session VI: Membrane contactors and new desalination technologies

16:00 – 16:30 **Desalination by vacuum membrane distillation: The role of cleaning on the permeate conductivity**

Alessandra Criscuoli, Institute on Membrane Technology (ITM-CNR), Italy

16:30 – 17:00 **Theoretical and practical consideration on membrane distillation for sea- and brackish water desalination**

Joachim Koschikowski, Fraunhofer Institute for Solar Energy Systems, Germany

17:00 – 17:30 **Membrane distillation technique for the humidification and fresh water production in a brackish/sea water greenhouse**

Hacene Mahmoudi, University of Chlef, Algeria

17:30 – 18:00 **Nucleation at polymer interfaces: the role of molecular interactions**

Efrem Curcio, University of Calabria, Italy

19:00 Dinner

Thursday, October 3, 2013

07:30 – 08:30 Breakfast

Session VII: Worldwide Efforts for the Improvement of Water Problem: The Japan, China, Korea, Singapore projects in the field

09:00 – 09:30 **SeaHERO Projects and rhamnolipid utilized biofouling reduction in membrane-based desalination**
Sung-Jo Kim, Gwangju Institute of Science and Technology, Korea

09:30 – 10:00 **Characterization of TFC desalination membranes using nano-transmission x-ray microscope (NTXM) and positron annihilation spectroscopy (PAS)**
Kuo-Lun Tung, National Taiwan University, Taiwan

10:00 – 10:30 **The pursuit of ultimate membrane technology and the progress of future essential membrane technology**
Masaru Kurihara, Toray Industries, Inc., Japan

10:30 - 11:00 Coffee break

11:00 – 11:30 **Effect of pH and oxygen back-flushing in hybrid water treatment of tubular ceramic mf and pes beads loaded with TiO₂ photocatalyst**
Jin Yong Park, Hallym University, Korea

11:30 – 12:00 **A novel thermodynamic charge sensor for probing osmotic draw solutions**
Albert Philipse, Utrecht University, The Netherlands

12:00 – 12:30 **Probing membranes and interfaces properties by impedance spectroscopy**
Enrica Fontananova, The Institute on Membrane Technology (ITM-CNR), Italy

13:00 – 14:30 Lunch and departures