Preliminary Program
(September 4, 2013)

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

Dr. Norman Li
NL Chemical Technology, Inc., USA

ECI
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 – info@engconfintl.org
Sunday, September 29, 2013

16:30 – 18:30  Conference check-in

18:30 – 20:30  Welcome Reception & Dinner
Monday, September 30, 2013

07:30 – 08:30 Breakfast

08:30 – 09:00 Welcome and Opening Remarks

Session I: Membrane Engineering for Process Intensification

09:00 – 09:30 Structure/property relationships in polymer membranes for water purification and power generation
Don Paul, The University of Texas at Austin, USA

09:30 – 10:00 Thermally rearranged polymer membranes for water application
Young Moo Lee, Hanyang University, Korea

10:00 – 10:30 Fouling in membranes probed by constant flux and constant transmembrane pressure crossflow permeation studies
Benny Freeman, The University of Texas at Austin, USA

10:30 – 11:00 Coffee break

11:00 – 11:30 Fractionation of electrolytes and neutral organics for water reuse in sustainable biomass processes: membrane evaluations
John Pellegrino, University of Colorado at Boulder, USA

11:30 – 12:00 The impact of membrane engineering for a new industrial development
Enrico Drioli, University of Calabria, Italy

12:00 – 12:30 Reverse Osmosis (RO) and Ion Exchange (IX) nexus: characterization and performance enhancement of ro processes through ix fundamentals
Arup K. Sengupta, Lehigh University, USA

12:30 – 12:45 Group photo

12:45 – 14:00 Lunch

Session II: Membrane Engineering in Desalination and Water Treatment

15:30 – 16:00 Inorganic micropollutants in reverse osmosis permeates: Focus on arsenic and fluoride
Bart Van der Bruggen, Catholic University of Leuven, Belgium

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, Institut Europeen Des Membranes, 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

18:30 – 19:30 Poster Session
19:30 – 21:00  Dinner
Tuesday, October 1, 2013

**Session III: Membrane development for water treatment**

8:30 – 9:00  
**Hydrophobic fluoropolymers for membrane contactors**  
A. Sanguineti, V. Arcella, Solvay Specialty Polymers, Italy

9:00 – 9:30  
**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

9:30 – 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  
**Testing and performance evaluation of a multi-stage solar still coupled with point focus Fresnel lens for seawater/brackish water desalination**  
Obaid Younas, The Petroleum Institute, United Arab Emirates

11:30 – 12:00  
**High Efficiency Reverse Osmosis treatment of borehole water for power generation plant: an example of process intensification with the use of the membranes**  
Pasquale Punzo, Ivan Saracino, Artes Ingegneria SpA, Italy

12:00 – 12:30  
**Novel approach to desalination: manipulated forward osmosis**  
Maryam Aryafar, University of Surrey, United Kingdom

12:30 – 13:00  
**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

08:30 – 09:00 Membrane bioreactors
Lidietta Giorno, Institute on Membrane Technology (ITM-CNR), Italy

09:00 – 09:30 Novel hybrid osmotic MBR: Simultaneous tailored direct potable and non-potable reuse
Tzahi Cath, Colorado School of Mines, USA

09:30 – 10:00 Ion exchange membrane bioreactors for treatment of groundwater highly contaminated with perchlorate
Shalom Fox, Ben Gurion University, Israel

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 Modeling of an adaptive control of batch electrodialysis cell for an energy efficient desalination with minimum operation time
Jogi Ganesh Dattatreya Tadimeti, Department of Polymer and Process Engineering, India

12:00 – 12:30 Mathematical modeling of the separation of pharmaceuticals from wastewater by polymeric membranes
Bizhan Honarvar, University of Islamic Azad University, Iran

12:30 – 13:00 Macrohomogeneous approach to mathematical modelling of the electrodialysis unit for water desalination
Karel Bouzek, Institute of Chemical Technology, Prague, Czech Republic

13:00 – 14:30 Lunch

Session VI: Membrane contactors and new desalination technologies

15:30 – 16:00 Desalination by vacuum membrane distillation: The role of cleaning on the permeate conductivity
Alessandra Criscuoli, Institute on Membrane Technology (ITM-CNR), Italy

16:00 – 16:30 Desalination by nano-fibrous membranes prepared for membrane distillation under different electro-spinning conditions: experimental and theoretical studies
Mohamed Khayet, University Complutense of Madrid, Spain

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
<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
<th>Details</th>
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<tbody>
<tr>
<td>17:30 – 18:00</td>
<td>TBA</td>
<td>Efrem Curcio, University of Calabria, Italy</td>
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<tr>
<td>19:00</td>
<td>Dinner</td>
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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

08:30 – 09:00  SeaHERO Projects and rhamnolipid utilized biofouling reduction in membrane-based desalination
In S. Kim, Gwangju Institute of Science and Technology, Korea

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

09:30 – 10:00  The pursuit of ultimate membrane technology and the progress of future essential membrane technology
Masaru Kurihara

10:00 – 10:30  Energy analysis of a thermal desalination plant in Saudi Arabia
Fahad Saleh Al-Mubaddel, King Saud University, Saudi Arabia

10:30 – 11:00  Coffee break

11:00 – 11:30  Electrodialysis of 2-6 % NaCl solutions and water recovery analysis
Shingjiang Jessie Lue, Chang Gung University, Taiwan

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

12:30 – 13:00  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

13:00 – 14:30  Lunch and departures