



3RD INTERNATIONAL CONFERENCE ON DESALINATION USING MEMBRANE TECHNOLOGY



2-5 APRIL
2017
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Oral Programme

Sunday 2 April 2017

13:00-15:00	Registration Room: New Exhibition Area Foyer
<i>Room</i>	Jeronimo Saavedra
13:00-15:30	Author Workshop Mr Dean Eastbury, Elsevier Ltd, Oxford, UK Professor Nidal Hilal, Swansea University, UK
15:30-16:00	Welcome and Introduction – Nidal Hilal
16:00-16:45	[PLN01] The history of desalination in Canary Islands A.G. Gotor, <i>University of Las Palmas de Gran Canaria, Spain</i>
16:45-17:30	[PLN02] Desalination using membranes - developments and challenges A.G. Fane*, R. Wang, T.H. Chong, <i>Nanyang Technological University, Singapore</i>
<i>Room</i>	New Exhibition Area
17:30-18:30	Welcome drinks reception

Monday 3 April 2017

<i>Room</i>			
08:30-09:15	[PLN03] Next-generation membrane materials for energy efficient desalination M. Elimelech, <i>Yale University, USA</i>		
<i>Session Chair</i>	Amy Childress		
<i>Room</i>	Jeronimo Saavedra	Gran Canaria	Tenerife
09:15-10:45	Session A1: Reverse Osmosis	Session B1: Forward Osmosis	Session C1: Membrane Fouling
<i>Session Chair</i>	<i>Rafael Semiat</i>	<i>Nick Hankins</i>	<i>Raed Hashaikeh</i>
09:15-09:45	[KYN01] Self-adaptive RO desalination: Advances and challenges Y. Cohen, <i>University of California Los Angeles, USA</i>	[KYN02] Potable reuse and desalination with engineered osmosis systems A. Childress, <i>University of Southern California, USA</i>	[KYN03] Algal blooms and seawater reverse osmosis systems N. Dhakal ^{1,2} , S. Salinas ¹ , L.O. Villacorte ³ , J.C. Schippers ¹ , M.D. Kennedy ^{*1,4}



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¹UNESCO-IHE Institute for Water Education, The Netherlands, ²Wetsus Centre of excellence for sustainable water technology, The Netherlands, ³FMC Technologies, The Netherlands, ⁴TU Delft, The Netherlands

09:45-10:00	<p>[OA01] Performance analysis of a full-scale SWRO desalination plant. Five years of operation A. Ramos-Martín, A. Ruiz-García, F.A. Leon*, <i>University of Las Palmas de Gran Canaria, Spain</i></p>	<p>[OB01] Preparation of low fouling cellulose acetate/dopamine modified HNT nanocomposite membranes for forward osmosis application R. Kumar*, M. Salman, J. Samuel, M. Al-Rughaib, <i>Kuwait Institute for Scientific Research, Kuwait</i></p>	<p>[OC01] Effect of polysaccharides on membrane scaling by calcium sulfate during desalination A. Karanasiou, A.J. Karabelas*, <i>Centre for Research and Technology - Hellas, Greece</i></p>
10:00-10:15	<p>[OA02] In-situ studies of thin-film composite reverse osmosis membranes with small-angle neutron scattering during the process of desalination D. Schwahn*¹, R. Kasher², V. Pipich³, Y. Oren², ¹<i>Technische Universität München (TUM), Germany</i>, ²<i>Ben-Gurion University of the Negev, Israel</i>, ³<i>Jülich Centre for Neutron Science JCNS-FRM II, Germany</i></p>	<p>[OB02] Fabrication of high performance thin film composite membranes for forward osmosis treatment of SAGD water B. Khorshidi*¹, A. Bhinder¹, T. Thundat¹, D. Pernitsky², M. Sadrzadeh¹, ¹<i>University of Alberta, Canada</i>, ²<i>Suncor Energy Inc., Canada</i></p>	<p>[OC02] The influence of organic matter composition on biofilm growth in reverse osmosis using Optical Coherence Tomography S. Park*, Y. Ahn, W. Jung, K. Cho, <i>Ulsan National Institute of Science and Technology, Republic of Korea</i></p>
10:15-10:30	<p>[OA03] A pilot study on ultrapure water (UPW) production: Synergetic effect of pretreatment stages to achieve higher performance in reverse osmosis (RO) H. Lee*¹, Y. Jin¹, Y. Kim², D. Han², S. Yoon², S. Hong¹, ¹<i>Korea University, Republic of Korea</i>, ²<i>ABSfil, Republic of Korea</i></p>	<p>[OB03] Combining seawater desalination and water reuse through the osmotic membrane bioreactor (OMBR): A pilot scale study G. Blandin*¹, C. Gautier¹, M. Sauchelli Toran², W. Gernjak^{2,3}, I. Rodriguez-Roda^{1,2}, J. Comas^{1,2}, ¹<i>Iequia, Spain</i>, ²<i>ICRA, Spain</i>, ³<i>ICREA, Spain</i></p>	<p>[OC03] Optical coherence tomography (OCT) for in-situ fouling investigation in different membrane configurations L. Fortunato*, T. Leiknes, <i>King Abdullah University of Science and Technology (KAUST), Saudi Arabia</i></p>
10:30-10:45	<p>[OA04] A new fouling-resistant mixed matrix membrane for water desalination I.H. Aljundi*, A. Khan, <i>King Fahd University, Saudi</i></p>	<p>[OB04] Forward Osmosis Aquaporin Inside™ hollow fiber membranes for industrial water re-use S. Braekvelt¹, M.S. Camilleri-Rumbau*¹, J. Vogel¹, K.</p>	<p>[OC04] Bacterial Biofilm formation on different commercially available ion exchange membrane S. Pandit*¹, M. Herzberg¹, Y. Oren¹, M.</p>



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	<i>Arabia</i>	Trzaskus ¹ , M. Friis Andersen ¹ , C. Helix-Nielsen ^{1,2} , ¹ Aquaporin A/S, Denmark, ² DTU Environment, Denmark	Mauter ² , ¹ Ben-Gurion University of the Negev, Israel, ² Carnegie Mellon University, USA
10:45-11:15	Refreshments Room: <i>New Exhibition Area</i>		
11:15-12:15	Session A2: Reverse Osmosis	Session B2: Forward Osmosis	Session C2: Membrane Fouling
<i>Session Chair</i>	<i>Marty Peery</i>	<i>Jaeweon Cho</i>	<i>Maria Kennedy</i>
11:15-11:30	[OA05] Development of high-performance reverse osmosis membranes for energy-efficient desalination H. Shimura*, T. Ogawa, T. Sasaki, M. Kimura, <i>Toray Industries, Inc., Japan</i>	[OB05] Graphene derivatives with tailored surface chemistry for nanocomposite FO membranes S. Morales-Torres*, L.M. Pastrana-Martínez, J.L. Figueiredo, A.M.T. Silva, <i>University of Porto, Portugal</i>	[OC05] Retrofitting and enlargement of the 10,000 m³/day Bocabarranco SWRO desalination plant - Gran Canaria Island C.J. Santana Delgado*, J.C. González Bauzá ¹ , J.A. de la Fuente ¹ , B. Peñate Suárez ¹ , ¹ Consejo Insular de Aguas de Gran Canaria (CIAGC), Spain, ² Elmasa Tecnología del Agua, Spain, ³ Canary Islands Institute of Technology (ITC), Spain
11:30-11:45	[OA06] Novel approach for effectiveness prediction of feed spacer configurations for RO modules O. Kaviani-pour*, G.D. Ingram, H.B. Vuthaluru, <i>Curtin University, Australia</i>	[OB06] Spiral wound forward osmosis membrane module arrangement in forward osmosis-reverse osmosis hybrid system: Experimental and simulation study J.E. Kim, S. Phuntsho, H.K. Shon*, <i>University of Technology Sydney, Australia</i>	[OC06] Novel polydopamine chemistry based methodology for advanced nanofiltration membranes H. Qiblawey*, T. Wang, <i>Qatar University, Qatar</i>
11:45-12:00	[OA07] The tolerance of a thin-film composite polyamide reverse osmosis membrane to hydrogen peroxide exposure R.L. Ling* ¹ , J.P.C. Chen ¹ , M.R. Reinhard ² , ¹ National University of Singapore, Singapore, ² Stanford University, USA	[OB07] Forward osmosis applied during concentration of biogas digestates using hide preservation effluents from tannery industry as draw solution M.S. Camilleri-Rumbau* ¹ , J.L. Soler-Cabezas ² , K.V. Christensen ¹ , B. Norddahl ¹ , J.A. Mendoza-Roca ² , M.C. Vincent-Vela ² , ¹ University Of Southern Denmark, Denmark, ² Universitat Politecnica De Valencia, Spain	[OC07] Coating and laminating technologies for the production of filtration membranes A. Glawe, <i>KROENERT GmbH & Co KG, Germany</i>
12:00-12:15	[OA08] The effects of acidification and de-carbonization of feed seawater in reverse osmosis desalination on biofouling phenomenon	[OB08] A novel forward osmosis regeneration method using thermal energy from a solar pond A. Abbassi Monjezi*, A.N. Campbell, <i>University of</i>	[OC08] Superhydrophobic electrospun membrane for heavy metals removal by air gap Membrane Distillation (AGMD)



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	N. Harlev ^{*1} , O. Lahav ² , M. Herzberg ¹ , ¹ Ben Gurion University of the Negev, Israel, ² Technion - Israel Institute of Technology, Israel	Surrey, UK	H. Attia*, C. Wright, N. Hilal, Swansea University, UK
12:15-13:00	Lunch Room: <i>San Borondón Room</i>		
13:00-14:00	Poster session 1 Room: <i>New Exhibition Area</i>		
14:00-15:30	Session A3: Reverse Osmosis	Session B3: Forward Osmosis	Session C3: New Membrane Types
<i>Session Chair</i>	<i>Antonio Casanas</i>	<i>Yoram Cohen</i>	<i>Anastatios Karabelas</i>
14:00-14:30	[KYN04] Understanding organic fouling in membrane water-treatment processes: Progress and research priorities A. J. Karabelas, <i>Centre for Research and Technology - Hellas [CERTH], Greece</i>	[KYN05] Boron removal from seawater N. Kabay, <i>Ege University, Turkey</i>	[KYN06] Reverse osmosis and nano-filtration membranes for water re-use M. Peery ^{*1} , T. Arrowood ¹ , Y. Cheng ² , V. Garcia-Molina ³ , A. Gorenflo ⁴ , ¹ Dow Water and Process Solutions, USA, ² Dow Water and Process Solutions, China, ³ Dow Water and Process Solutions, Spain, ⁴ Dow Water and Process Solutions, Germany
14:30-14:45	[OA09] Efficiency analysis and evaluation of energy recovery devices in the Canary Islands SWRO desalination plants - a technical review S. Arenas Urrea ^{*1} , B. Peñate Suárez ^{1,2} , J.A. de la Fuente Bencomo ^{1,2} , F. Díaz Reyes ¹ , ¹ Universidad de Las Palmas de Gran Canaria, Spain, ² Canary Islands Institute of Technology, Spain	[OB09] Modelling forward osmosis process for activated sludge concentration by using a residual brine from stuffed olive industry as draw solution M.R. Santos Sousa*, J. Lora-García, M. López-Péres, <i>Universitat Politècnica de València (UPV), Spain</i>	[OC09] Development of thin film composite polyamide membrane on alumina support with customized thickness A. Amelio ^{*1} , M. Sangermano ¹ , R. Kasher ² , R. Bernstein ² , A. Tiraferri ¹ , ¹ Politecnico di Torino, Italy, ² Ben-Gurion University of the Negev, Israel
14:45-15:00	[OA10] In-situ Monitoring fouling processes in RO Membranes: Distinguishing between biofouling and inorganic fouling using Electrical Impedance Spectroscopy H.G.L. Coster ^{*1} , J.S. Ho ² , L.N. Nuang ² , A.G. Fane ² , ¹ University of Sydney, Australia, ² Nanyang Technological University, Singapore	[OB10] Ultra-high salinity Pressure Retarded Osmosis (pro) processes and economics for scale-up applications S. Sarp, <i>Qatar Environment and Energy Research Institute, Hamad Bin Khalifa University, Qatar</i>	[OC10] Enhancing the performance of polyethylene based anion exchange membranes using nanomaterials for desalination of water by electrodialysis C. Fernandez-Gonzalez ^{*1,3} , J. Kanavagh ² , H. Coster ² , A. Dominguez-Ramos ¹ , R. Ibáñez ¹ , Y. Chen ³ , A. Irabien ¹ , ¹ Universidad de Cantabria, Spain, ² Georgia Institute of Technology, USA, ³ The University of Sydney, Australia
15:00-15:15	[OA11]	[OB11]	[OC11]



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	<p>Membrane fouling control of reverse osmosis plant using machine learning model based membrane fouling and performance prediction algorithm S.J. Lim*, K. Jeong, J.H. Kim, <i>Gwangju Institute of Science and Technology, Republic of Korea</i></p>	<p>Graphene based materials as novel membranes for water desalination and boric acid separation G. Cicero*¹, F. Risplendi¹, J.C. Grossman², L. Lin³ ¹<i>Politecnico di Torino, Italy</i>, ²<i>MIT, USA</i>, ³<i>Ohio State University, USA</i></p>	<p>Recent achievements in the zeta potential analysis of NF and RO membranes T. Luxbacher*¹, T.Y. Cath², A.E. Yaroshchuk³, ¹<i>Anton Paar GmbH, Austria</i>, ²<i>Colorado School of Mines, USA</i>, ³<i>Polytechnic University of Catalonia, Spain</i></p>
15:15-15:30	<p>[OA12] Poly (vinyl alcohol) as a stand-alone reverse osmosis membrane: Performance enhancement and biofouling mitigation W. Falath*^{1,2}, A. Sabir^{1,3}, K. Jacob¹, ¹<i>Georgia Institute of Technology, USA</i>, ²<i>King Fahd University of Petroleum and Minerals, Saudi Arabia</i>, ³<i>University of the Punjab, Pakistan</i></p>	<p>[OB12] Development of a new performance index for pressure-retarded osmosis-basis hybrid processes S.H. Chae*¹, J.H. Kim², Y.M. Kim³, J.H. Kim¹, ¹<i>GIST, Republic of Korea</i>, ²<i>K-water Research Institute, Republic of Korea</i>, ³<i>KRICT, Republic of Korea</i></p>	<p>[OC12] Flakes self-assembly and fast water transport in nano-porous graphene membranes for desalination A. Montessori¹, P. Prestininzi*¹, M. Sega², S. Succi³, ¹<i>University of Rome Roma Tre, Italy</i>, ²<i>University of Vienna, Austria</i>, ³<i>National Research Council, Italy</i></p>
15:30-16:00	Refreshments Room: <i>New Exhibition Area</i>		
16:00-17:00	Session A4: Reverse Osmosis	Session B4: Hybrid Systems	Session C4: New Membrane Types
<i>Session Chair</i>	<i>Fauzi Ismail</i>	<i>Antonio Casanas</i>	<i>Noredine Ghaffour</i>
16:00-16:15	<p>[OA13] Assessing biofouling in seawater reverse osmosis systems: Method development and applications A. Abushaban*¹, S. Salinas-Rodriguez¹, S. Mondal², S. Goueli^{2,3}, J. Schippers¹, M. Kennedy^{1,4}, ¹<i>UNESCO-IE, The Netherlands</i>, ²<i>Promega, USA</i>, ³<i>University of Wisconsin, USA</i>, ⁴<i>TU Delft, The Netherlands</i></p>	<p>[OB13] Microbial Desalination for Low Energy Drinking Water A.M.M. Alhadidi, <i>Fujifilm Manufacturing Europe B.V., The Netherlands</i></p>	<p>[OC13] Performance and fouling behaviour analysis of zwitterionic silane coated polyamide thin film composite reverse osmosis membrane F. Saffarimiandoab^{1,2}, S. Erkoç Ilter³, S. Guclu^{1,2}, J. Sharabati^{1,2}, C. Eris^{1,2}, D.Y. Imer^{1,2}, S. Unal³, Y. Menceloglu³, I. Ozturk^{1,2}, I. Koyuncu*^{1,2}, ¹<i>Istanbul Technical University, Turkey</i>, ²<i>Turkish National Research Center on Membrane Technologies, Turkey</i>, ³<i>Sabancı University, Turkey</i></p>
16:15-16:30	<p>[OA14] Current trends and future prospects of sea water reverse osmosis desalination: An update G. López-Lara*¹, L. García-Rodríguez², B. Peñate³, ¹<i>Technological Corporation of Andalusia, Spain</i>, ²<i>University of Seville, Spain</i>, ³<i>Canary Islands Institute of Technology, Spain</i></p>	<p>[OB14] Preparation and characterization of hydrophilic surface modification macromolecule modified poly (ethersulfone) photocatalytic membrane for phenol removal N.E. Salim¹, J. Jaafar*¹, A.F. Ismail¹, M.H.D. Othman¹, M.A. Rahman¹, N. Yusof¹, M. Qtaishat², T. Matsuura³,</p>	<p>[OC14] Parametric study on the stability of indium tin oxide nanoparticles in organic solvent as a prerequisite for synthesizing defect-free thin film nanocomposite membranes Z. Almansoori*, B. Khorshidi, M. Sadrzadeh, B. Sadri, <i>University of Alberta, Canada</i></p>



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		F. Aziz ¹ , W.N.W. Salleh ¹ , ¹ Universiti Teknologi Malaysia, Malaysia, ² University of Jordan, Jordan, ³ University of Ottawa, Canada	
16:30-16:45	[OA15] Surface modification of thin film composite membranes for fouling reduction and enhanced chlorine stability J. Meier-Haack* ^{1,3} , C. Langner ¹ , K. Schlenstedt ¹ , M. Abdel Rehim ² , ¹ Leibniz Institute of Polymer Research Dresden, Germany, ² National Research Center, Egypt	[OB15] Hybrid MBR-PAC process for wastewater treatment N. Ran*, B. Freger, J. Gilron, M. Herzberg, Ben Gurion University of the Negev, Israel	[OC15] Comparison of fouling behaviors of hydrophobic microporous membranes in pressure-driven and temperature-driven separation processes Y. Ko, Y. Choi, S. Lee*, Kookmin University, Republic of Korea
16:45-17:00	[OA16] Biofouling in capillary and spiral wound membranes facilitated by marine algal blooms L.O. Villacorte* ^{1,3} , Z. Nyambi ¹ , H.N. Calix-Ponce ¹ , V. Kesseilius ² , Y. Ekowati ¹ , J.C. Schippers ¹ , M.D. Kennedy ^{1,4} , ¹ UNESCO-IHE Institute for Water Education, The Netherlands, ² Wetsus Center of Excellence for Sustainable Water Technology, The Netherlands, ³ Grundfos Holdings A/S, Denmark, ⁴ Delft University of Technology, The Netherlands	[OB16] Pilot-scale evaluation of energy consumption in FO-RO process treating wastewater from coal power plant B.G. Choi, M. Zhan*, S.K. Hong, Korea University, Republic of Korea	[OC16] Performance and fouling studies of the pilot direct contact membrane distillation used for the treatment of reverse osmosis reject brine S. Mansour*, H. Arafat, S. Hasan, Masdar institute of science and technology, United Arab Emirates
17:00	End of Day 2 – Remove posters from session 1		
Tuesday 4 April 2017			
Room	Jerónimo Saavedra		
08:30-09:15	[PLN04] The impact of new brines treatments in sea water desalination costs E. Drioli* ^{1,2} , F. Macedonio ¹ , ¹ Institute on Membrane Technology (ITM-CNR), Italy, ² University of Calabria, Italy		
Session Chair	Mikel Duke		

Room	Jerónimo Saavedra	Gran Canaria	Tenerife
09:15-10:45	Session A5: Energy and Sustainability	Session B5: Membrane Distillation	Session C5: Membranes (MF/UF/NF)
Session Chair	Jaeweon Cho	Mohamed Qtaishat	Domingo Zarzo



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09:15-09:45	<p>[KYN07] Environmental and energy issues in water treatment processes R. Semiat, <i>Technion - Israel Institute of Technology, Israel</i></p>	<p>[KYN08] TBC</p>	<p>[KYN09] Electrically conductive nanofibers for membranes fabrication and fouling prevention R. Hashaikeh, <i>Masdar Institute, United Arab Emirates</i></p>
09:45-10:00	<p>[OA17] Low-grade heat driven pump for membrane desalination M. Glushenkov¹, R. Bhosale², P. Sutar², G. Takalkar², A. Kronberg*¹, ¹<i>Encontech B.V., The Netherlands</i>, ²<i>Qatar University, Qatar</i></p>	<p>[OB17] Sustainable membrane distillation coupled with solar pond K. Rahaoui*¹, L.C. Ding¹, L.P. Tan¹, W. Mediouri², F. Mahmoudi¹, K. Nakoa¹, A. Akbarzadeh¹, ¹<i>Royal Melbourne Institute of Technology, Australia</i>, ²<i>ENSAIT, France</i></p>	<p>[OC17] Concentration of inorganic salts in the permeate during nano- or ultrafiltration promoted by water-soluble polyelectrolytes in the feed solution P. Prokopovich¹, V. Starov*², R. Holdich², ¹<i>Cardiff University, UK</i>, ²<i>Loughborough University, UK</i></p>
10:00-10:15	<p>[OA18] Powering a BMED process for the production of HCl and NaOH from brines using a photovoltaic solar simulator M. Herrero*, A. Dominguez-Ramos, R. Ibañez, A. Irabien, <i>Universidad de Cantabria, Spain</i></p>	<p>[OB18] Desalination and removal of organic micropollutants and microorganisms by membrane distillation T.L.S. Silva, S. Morales-Torres*, C.M.P. Esteves, A.R. Ribeiro, O.P. Nunes, J.L. Figueiredo, A.M.T. Silva, <i>Universidade do Porto, Portugal</i></p>	<p>[OC18] Incorporation of meso-porous/micro-micro-porous material on ceramic membrane for salt removal application M. A Rahman*, M.H.D. Othman, A.F. Ismail, J. Jaafar, <i>Universiti Teknologi Malaysia, Malaysia</i></p>
10:15-10:30	<p>[OA19] Thermodynamic and economic analysis of a seawater reverse osmosis desalination plant integrated with a combined cycle natural gas power plant in Texas A.S. Reimers*, M.E. Webber, <i>The University of Texas at Austin, USA</i></p>	<p>[OB19] Impact of gas recharging on wetting control in membrane distillation for the concentration of highly saline brines M. Rezaei*, W. Samhaber, <i>Johannes Kepler University Linz, Austria</i></p>	<p>[OC19] Pilot-scale comparison of UF membranes for direct seawater filtration in SWRO desalination Y. Poussade¹, D. BAAKLINI², F. VERGNOLLE², N. PITT³, A. GAID¹, E. Wittmann*¹, ¹<i>Veolia Environnement, France</i>, ²<i>VERI, France</i>, ³<i>SIDEM, France</i></p>
10:30-10:45	<p>[OA20] The energy-water nexus: A decentralised solar system for water desalination R. Fornarelli*, P.A. Bahri, M. Anda, G. Ho, F. Shahnia, A. Arefi, <i>Murdoch University, Australia</i></p>	<p>[OB20] Low cost hydrophobic kaolin hollow fibre membranes for arsenic removal via direct contact membrane distillation S.K. Hubadillah, M.H.D. Othman*, A.F. Ismail, M.A. Rahman, J. Jaafar, M.T. Salleh, B.C. Ng, <i>Advanced Membrane Technology Research Centre (AMTEC), Universiti Teknologi Malaysia, Malaysia</i></p>	<p>[OC20] Application of micellar-enhanced ultrafiltration in the pre-treatment of seawater for boron removal F. Tortora¹, V. Innocenzi¹, M. Prisciandaro*¹, F. Veglio¹, V. Piemonte², M. Capocelli², ¹<i>University of L'Aquila, Italy</i>, ²<i>University Campus BioMedico of Rome, Italy</i></p>



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10:45-11:15 Refreshments | Room: *New Exhibition Area*

11:15-12:15	Session A6: Energy and Sustainability	Session B6: Membrane Distillation	Session C6 Membranes (MF/UF/NF)
<i>Session Chair</i>	<i>Sarper Sarp</i>	<i>Antonio Gomes Gotor</i>	<i>Victor Starov</i>
11:15-11:30	<p>[OA21] Economic analysis of the medium scale swro desalination driven by wind energy. Case study for Lanzarote and Fuerteventura islands for agriculture purposes S. Suárez García^{*1}, B. Peñate Suárez¹, L. García-Rodríguez², ¹<i>Instituto Tecnológico De Canarias, Spain</i>, ²<i>University Of Seville, Spain</i></p>	<p>[OB21] Asymmetric temperature and concentration polarization of hydro-phobic/philic membranes in desalination by DCMD M.R. Qtaishat, <i>The University of Jordan, Jordan</i></p>	<p>[OC21] Photocatalytic disinfection of PES membranes M. Al-Abri[*], B. Al-Ghafri, P. Sathe, T. Bora, S. Dobretsov <i>Sultan Qaboos University, Oman</i></p>
11:30-11:45	<p>[OA22] Reverse osmosis desalination driven by photovoltaic solar cells and wind turbine for remote areas and rural communities A. Abbassi Monjezi[*], M.H. Shaheed, R. Vepa, <i>Queen Mary University of London, UK</i></p>	<p>[OB22] Numerical modelling of the heat and mass transfer in a flat-sheet air-gap membrane distillation module K. Cramer^{*1}, B. Niceno^{2,3}, H-M. Prasser^{2,3}, S. Leyer¹, ¹<i>Université du Luxembourg, Luxembourg</i>, ²<i>Paul Scherrer Institute, Switzerland</i>, ³<i>Swiss Federal Institute of Technology Zürich (ETHZ), Switzerland</i></p>	<p>[OC22] A novel ultrafiltration membrane cleaning method using carbon dioxide N. Ghaffour[*], M. Al-Ghamdi, <i>KAUST, Saudi Arabia</i></p>
11:45-12:00	<p>[OA23] Selection of the diluate spacer for electro dialysis reversal river water desalination system M. Turek[*], E. Laskowska, K. Mitko, M. Slowik, P. Dydo, A. Jakobik-Kolon, <i>Silesian University of Technology, Poland</i></p>	<p>[OB23] Computational and experimental study for the desalination of industrial grade spent ion exchange regenerant using direct contact membrane distillation M.S. Osman, <i>Council for Scientific and Industrial Research, South Africa</i></p>	<p>[OC23] Development of oxidant-resistant polymeric polyvinylidene fluoride (PVDF) membranes with nanoparticles inclusion for catalytic degradation of organic contaminants A. Alpatova[*], N. Ghaffour, <i>King Abdullah University of Science and Technology, Saudi Arabia</i></p>
12:00-12:15	<p>[OA24] Water desalination by pervaporation – comparison of energy consumption W.L. Kaminski[*], J. Marszalek, E.T. Tomczak, <i>Lodz University of Technology, Poland</i></p>	<p>[OB24] New method for determining membrane mass transfer coefficient and evaluating temperature polarization effect in vacuum membrane distillation A.S. Alsaadi[*], J. Lee, A. Alpatova, N. Ghaffour, <i>KAUST, Saudi Arabia</i></p>	<p>[OC24] Balancing permselectivity and conductivity in ion exchange membranes M.B. Kristensen^{*1}, J. Catalano¹, M. Tedesco², A. Bentien¹, ¹<i>Aarhus University, Denmark</i>, ²<i>Wetsus, The Netherlands</i></p>
12:15-13:00	Lunch Room: <i>San Borondón Room</i>		



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13:00-14:00	Poster session 2 Room: New Exhibition Area		
14:00-15:30	Session A7: Pre-treatment and Post-treatment	Session B7: Membrane Distillation	Session C7: Membranes (MF/UF/NF)
<i>Session Chair</i>	<i>Noreddine Ghaffour</i>	<i>Nalan Kabay</i>	<i>Mohammed Al Abri</i>
14:00-14:30	[KYN10] Desalination and energy consumption. What can we expect in the near future? D.Z. Martinez, <i>AEDyR, Spain</i>	[KYN11] Membrane fouling during desalination and its mitigation strategies A.F. Ismail*, W.J. Lau, M.H.D. Othman, P.S. Goh, <i>Universiti Teknologi Malaysia, Malaysia</i>	[KYN12] Aquatic surface chemistry of membrane fouling for desalination, focusing application J. Cho, <i>UNIST, Republic of Korea</i>
14:30-14:45	[OA25] Solar UV pre-treatment for biofouling control in desalination processes with thin film composite membranes B. Skibinski*, E. Bodner, N. Siebrath, L. Klesse, P. Hua, K. Zoschke, <i>Technische Universität Dresden, Germany</i>	[OB25] Performance improvement of hollow fiber-based Permeate Gap Membrane Distillation (PGMD) L. Gao ^{*1,2} , J. Zhang ¹ , S.R. Gray ¹ , J.D. Li ¹ , ¹ <i>Victoria University, Australia</i> , ² <i>South East Water Corporation, Australia</i>	[OC25] Envisaging of the electrostatic transport of organic foulants, based on the equilibrium constant, pKa, of membrane surface H.J. Rho ^{*1} , K.M. Chon ² , J.W. Cho ¹ , ¹ <i>UNIST, Republic of Korea</i> , ² <i>JGRC, Republic of Korea</i>
14:45-15:00	[OA26] Fouling on reverse osmosis membranes treating secondary effluents with and without biofiltration pre-treatment N. Siebrath ^{*1} , S. Huang ¹ , C.E. Mandya Ravishankar ¹ , W. Uhl ² , ¹ <i>Technische Universität Dresden, Germany</i> , ² <i>Norwegian Institute for Water Research, Norway</i>	[OB26] Performance evaluation of water gap membrane distillation and air gap membrane distillation using hollow fiber membranes L. Francis ¹ , ¹ <i>Hamad Bin Khalifa University (HBKU), Qatar</i> , ² <i>King Abdullah University of Science and Technology (KAUST), Saudi Arabia</i>	[OC26] Fabrication and characterization of temperature and pH resistant TFN membranes embedded with halloysite nanotubes for dye rejection T. Ormanci; Acar ^{*1,2} , F. Celebi ^{2,3} , T. Turken ^{2,3} , D.Y. Imer ^{2,3} , A. Altas ⁴ , Y.Z. Menciloglu ⁵ , S. Unal ⁵ , I. Demir ² , I. Koyuncu ^{2,3} , ¹ <i>Istanbul University, Turkey</i> , ² <i>National Research Center on Membrane Technologies, Turkey</i> , ³ <i>Istanbul Technical University, Turkey</i> , ⁴ <i>ESAN, Turkey</i> , ⁵ <i>Sabanci University, Turkey</i>
15:00-15:15	[OA27] Seawater industrial cooling tower pilot study on alternative oxidants for biofouling control M. Albloushi*, T. Leiknes, <i>King Abdullah University of Science and Technology, Saudi Arabia</i>	[OB27] Shale gas flowback water desalination: Multistage membrane distillation considering different configurations and heat integration A. Carrero-Parreño*, V.C. Onishi, R. Ruiz-Femenia, R. Salcedo-Díaz, J.A. Caballero, J.A. Reyes-Labarta, <i>University of Alicante, Spain</i>	[OC27] Hybrid nanostructure materials impregnated in TFN membrane for produced water treatment S. Al Aani*, C.J. Wright, N. Hilal, <i>Swansea University, UK</i>
15:15-15:30	[OA28]	[OB28]	[OC28]



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	<p>Integrated treatment of acid mine drainage using BOF slag and reverse osmosis (RO): Implication for the production of drinking water V. Masindi^{1,2}, M.S. Osman^{*1}, ¹Hydraulic Infrastructure Engineering (HIE), South Africa, ²University of South Africa (UNISA), South Africa</p>	<p>Performance study of a cooling device coupled to a membrane distillation unit P. Byrne^{*1}, A.T. Diaby^{1,2}, P. Loulergue¹, B. Balannec¹, A. Szymczyk¹, T. Maré¹, O. Sow², ¹University de Rennes 1, France, ²Université Cheikh Anta Diop, Senegal</p>	<p>Pilot-case study- cooling tower blow down reuse comparing electro dialysis reversal and nanofiltration treatment J. Trampé^{*1}, E. Koper¹, C.K. Groot^{2,3}, G. Zijlma², W.B.P. van den Broek¹, P. Vollaard^{1,3}, T. Steenbakker³, ¹Evides Industriewater, The Netherlands, ²Dow Benelux, The Netherlands, ³HZ University of Applied Sciences, The Netherlands</p>
15:30-16:00	Refreshments Room: <i>New Exhibition Area</i>		
16:00-17:00	Session A8: Pre-treatment and Post-treatment	Session B8: Membrane Distillation	Session C8: Membranes (MF/UF/NF)
Session Chair	<i>H. K. Shon</i>	<i>Shadi Wajih Hasan</i>	<i>S. K. Hong</i>
16:00-16:15	<p>[OA29] Electrochemical disinfection by an innovative ion exchange membrane technology R. Sandín^{*1}, V. Monsalvo¹, J. Vázquez¹, C. Westarp², G. Charpy², F. Rogalla¹, ¹FCC Aqualia, Spain, ²Ceram Hyd, France</p>	<p>[OB29] Novel membrane distillation insights B.J. Nelemans, <i>Aquastill, The Netherlands</i></p>	<p>[OC29] Permeate gap membrane distillation technology for sustainable seawater desalination F. Mahmoudi, S. Dehghani, G. Moazami, K. Rahaoui*, A. Date, A. Akbarzadeh, <i>RMIT University, Australia</i></p>
16:15-16:30	<p>[OA30] Pilot-scale study of the advanced Fenton process for reverse osmosis pre-treatment of silica containing brackish water in Saudi Arabia M. Aljohani, F. Djouider*, <i>King Abdulaziz University, Saudi Arabia</i></p>	<p>[OB30] Modeling spiral-wound commercial modules for applications of membrane distillation G. Zaragoza^{*1}, A. Ruiz-Aguirre², J.A. Andrés-Mañas¹, P.A. Davies³, ¹CIEMAT - Plataforma Solar de Almería, Spain, ²Universidad de Almería - CIESOL, Spain, ³Sustainable Environment Research Group, School of Engineering and Applied Science, Aston University, UK</p>	<p>[OC30] Superhydrophobic PTFE coated polyvinylidene fluoride-co-hexafluoropropylene (PVDF-HFP) electrospun membranes for direct contact membrane distillation R.H. Hashaikeh*, B.S. Lalia, I. Janajreh, <i>Masdar Institute of Science and Technology, United Arab Emirates</i></p>
16:30-16:45	<p>[OA31] Decanter centrifuge/microfiltration units for removing sand/silt from seawater Y. Al-Wazzan*, M. Ahmad, M. AL-Tabtabaei, A. AL-Mesri, <i>Kuwait Institute for Scientific Research, Kuwait</i></p>	<p>[OB31] Surface modified electrospun membrane with PVDF-co-PDMS microspheres for membrane distillation E.J. Lee, A. Kyoungjin AN*, <i>City University of Hong Kong, Hong Kong</i></p>	<p>[OC31] Nanofiltration for calcium /sodium separation. Application to reverse osmosis concentrates P. Diaz, J.A. Otero, R. Ibáñez*, <i>Universidad de Cantabria, Spain</i></p>
16:45-17:00	<p>[OA32] Subsurface intake systems: An efficient way to improve raw seawater quality at SWRO systems</p>	<p>[OB32] A study of reverse osmosis brine treatment by direct contact membrane distillation</p>	<p>[OC32] Co-axial nanofiber membranes for seawater desalination by membrane distillation</p>



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	along Western Coast of Saudi Arabia A. H.A.Dehwah* ¹ , K. Choon Ng ¹ , T. M. Missimer ² , ¹ King Abdullah University of Science and Technology (KAUST), Saudi Arabia, ² U. A. Whitaker College of Engineering, Florida Gulf Coast University, USA	Z. Yan*, H. Yang, F. Qu, H. Liang, G. Li, Harbin Institute of Technology, China	Y.C. Woo ¹ , M. Yao ¹ , L. Tijing ¹ , J-S. Choi ² , H.K. Shon* ¹ ¹ University of Technology Sydney, Australia, ² Korea Institute of Civil Engineering and Building Technology (KICT), Republic of Korea
17:00	End of Day 3 The coach will depart the conference centre for the Gala Dinner at 18:30		
18:30-22:00	Conference Dinner <i>Hotel Santa Catalina, Las Palmas, Spain</i>		
Wednesday 5 April 2017			
<i>Room</i>	<i>Jeronimo Saavedra</i>		
08:30-09:15	[PLN05] Evolution of desalination systems in Spain <i>J.M. Sanchez, AEDyR, Spain</i>		
<i>Session Chair</i>	Raphael Semiat		

<i>Room</i>	<i>Jeronimo Saavedra</i>	<i>Gran Canaria</i>	<i>Tenerife</i>
09:15-10:45	Session A9: Brine/Concentrate Disposal and Waste management	Session B9: Electrodialysis	Session C9: Modelling
<i>Session Chair</i>	<i>Sarper Sarp</i>	<i>Noredine Ghaffour</i>	<i>Fauzi Ismail</i>
09:15-09:45	[KYN13] Desalination for agriculture: Innovative technology approaches for water supply and nutrient recovery <i>M. Duke, Victoria University, Australia</i>	[KYN14] Effective feed water pre-treatment and membrane fouling mitigation for lower energy consumption in RO desalination plants <i>N. Hankins, The University of Oxford, UK</i>	[KYN15] Thin film composite membrane for water desalination- recent developments and future potential <i>T. Matsuura, University of Ottawa, Canada</i>
09:45-10:00	[OA33] Separation of Antiscalants from Reverse Osmosis Concentrate Using Nanofiltration	[OB33] Mass transport enhancement by local flow redistribution in electrodialysis	[OC33] A simple modeling approach for forward osmosis membrane elements to design a real-scale system



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	H. Susanto*, M.N. Dewi, H.I. Ilma, T. Istirokhatun, <i>Diponegoro University, Indonesia</i>	S. Choi* ¹ , B. Kim ¹ , V.S. Pham ² , J. Han ¹ , ¹ <i>Massachusetts Institute of Technology, USA</i> , ² <i>Hanoi University of Science and Technology, Viet Nam</i>	J. Jeon ¹ , J. Jung ¹ , J.Y. Choi ² , S. Kim* ¹ , ¹ <i>Pukyong National University, Republic of Korea</i> , ² <i>Hyorim Industries, Inc., Republic of Korea</i>
10:00-10:15	[OA34] Techno-economic feasibility analysis for minor elements valorization from SWRO concentrates P. Ortiz-Albo, S. Torres-Ortega, M. González-Prieto, M. Herrero, R. Ibáñez*, <i>Universidad de Cantabria, Spain</i>	[OB34] Membrane selection for treatment of bio-refinery wastewaters using electrodialysis A.Y.A. Luiz*, E. Spencer, D.D. McClure, H.G.L. Coster, G.W. Barton, J.M. Kavanagh, <i>The University of Sydney, Australia</i>	[OC34] Computational study of water desalination using nanosheet zeolites S.H. Jamali* ¹ , T.J.H. Vlugt ¹ , L.C. Lin ² , ¹ <i>Delft University of Technology, The Netherlands</i> , ² <i>The Ohio State University, USA</i>
10:15-10:30		[OB35] Studies conducted to show potential use of membrane distillation on board cruise vessels D. Amaya-Vías*, J.A. López-Ramírez, E. Nebot, <i>University of Cadiz, Spain</i>	[OC35] A computational tool for designing BWRO systems with spiral wound modules A. Ruiz-García*, I. Nuez, <i>University of Las Palmas de Gran Canaria, Spain</i>
10:30-10:45		[OB36] Electrodialysis reversal in potable water treatment - removal of emerging contaminants and disinfection byproduct precursors W. Gernjak* ^{1,2} , M.J. Farré ¹ , S. Gabarrón ¹ , F. Valero ³ , P. Emiliano ³ , A. Barceló ³ , M. Sauchelli ¹ , O. Gutierrez ¹ , M. Petrovic ^{1,2} , I. Rodríguez-Roda ^{1,4} , ¹ <i>Catalan Institute for Water Research (ICRA), Spain</i> , ² <i>Catalan Institute for Research and Advanced Studies (ICREA), Spain</i> , ³ <i>ATLL Concessionaria de la Generalitat de Catalunya S.A., Spain</i> , ⁴ <i>University of Girona, Spain</i>	
10:45-11:15	Refreshments Room: <i>New Exhibition Area</i>		
11:15-12:15	Session A10: Case Studies	Session B10: Novel Membrane Systems and Configuration	Session C10: Other Technologies
<i>Session Chair</i>	<i>S. K. Hong</i>	<i>Antonio Casanas</i>	<i>Nick Hankins</i>
11:15-11:30	[OA37] A brief review of environmental impacts of desalinations plants: Case studies of Gran Canaria	[OB37] Zeolite membranes for the adsorption driven enrichment of water from humid gas streams	[OC37] New approach to desalinate salt water via polyelectrolyte hydrogels - effect of network



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	island J.J. Sathwani Alonso*, N. Melián-Martel, <i>University of Las Palmas de Gran Canaria, Spain</i>	J. Wang, A. Wotzka, R. Dragomirova, M. Stoehr, S. Wohlrab*, <i>Leibniz Institute for Catalysis, Germany</i>	topology L. Arens*, J. Höpfner, M. Wilhelm, <i>Karlsruhe Institute of Technology, Germany</i>
11:30-11:45	[OA38] Status and prospects of desalination in North East Brazil - seawater and brackish water desalination M.C. Martí-Calatayud ^{*1} , K. Borges França ² , C. Kazner ¹ , S. Yüce ¹ , S. Montenegro ³ , C. de Oliveira Galvão ² , M. Wessling ¹ , ¹ <i>Chemical Process Engineering (AVT.CVT), RWTH Aachen University, Germany,</i> ² <i>UFCEG, Universidade Federal de Campina Grande, Brazil,</i> ³ <i>UFPE, Universidade Federal de Pernambuco, Brazil</i>	[OB38] Evaluation of QQ Bacteria isolated from marine, pond, saltern and landfill leachate for biofouling control in MBR B. Yavuzturk Gul ^{1,2} , D. Imer ^{*1,2} , P. Park ³ , I. Koyuncu ^{1,2} ¹ <i>Istanbul Technical University, Turkey,</i> ² <i>Prof. Dr. Dincer Topacik National Research Center on Membrane Technologies (MEM-TEK), Turkey,</i> ³ <i>Yonsei University, Republic of Korea</i>	[OC38] Desalination using ion exchange multi-stage fluidization M. Naim ¹ , A. Moneer ² , M. Elewa ³ , A. El-Shafei ^{*1} , ¹ <i>Alexandria University, Egypt,</i> ² <i>National Institute of Oceanography and Fisheries, Egypt,</i> ³ <i>Arab Academy for Science, Technology and Maritime Transport, Egypt</i>
11:45-12:00	[OA39] Optimizing antiscalant consumption in a sea water desalination plant, reduce OPEX and environmental impact M. Hesampour ^{*1} , G. Fiorenza ² , V. Vuori ¹ , A. Gaitheiro Vallés ³ , ¹ <i>Kemira Oyj, Finland,</i> ² <i>Kemira, Spain,</i> ³ <i>Ascanio Quimica, Spain</i>	[OB39] Dynamic properties of water molecules intercalated between graphene sheets: A model of desalination using stacked graphene-based membrane O.S. Lee, <i>QEERI, Hamad Bin Khalifa University, Qatar</i>	[OC39] Electrically cross-flow filtration system for fouling mitigation H.S. Abid ^{*1} , F.E. Ahmed ² , B.S. Lilia ² , P. Bertoncello ¹ , R. Hashikeh ² , N. Hilal ¹ , ¹ <i>Swansea University, UK,</i> ² <i>Masdar Institute of Science and Technology, United Arab Emirates</i>
12:00-12:15	Closing remarks (if any)		
12:15	Close of conference		