

EuroMed 2008 - Desalination for Clean Water and Energy
Cooperation among Mediterranean Countries of Europe and the MENA Region
9-13 November 2008, King Hussein Bin Talal Convention Center, Dead Sea, Jordan

Under the patronage of HRH Prince Feisal bin Al Hussein

Programme

Monday morning 10 November

9.00–10.00 Opening ceremony

Royal Anthem

Verses from the Holy Koran

Mousa Mohsen, The Hashemite University

Lute Broens, *President European Desalination Society*

Miriam Balaban, *Secretary General, European Desalination Society*

Wajih Owais, *President, Jordan University of Science and Technology*

Raed Abu Saud, *Minister of Water and Irrigation, Jordan*

HRH Prince Feisal bin Al Hussein

10.00–10.45 Opening of exhibit Coffee

10.45–12.45 Keynote presentations

Red Sea–Dead Sea conveyance project

*Mousa Jamaani, Secretary General, Jordan Valley Authority,
Head of the Red-Dead Sea Project*

Michael Beyth, Geological Institute, Israel

Regional water shortage and the needs for regional cooperation
to tackle the problem

Shimon Tal, Former Israel Water Commissioner

Fadel Kawash, Head of Palestinian Negotiating Team

Climate change and water desalination in MENA —

World Bank involvement

Khairy Al-Jamal, World Bank

Assessment of the world fresh water resources through
energy requirements in desalination technologies

*A. Martínez-Gracia, J. Uche, A.A. Bayod, C. Rubio,
University of Zaragoza, Spain*

Monday evening

19.30 Keynote presentations

The ProDes methodology for renewable energy systems in desalination

Michael Papapetrou, Christian Epp, Germany

SWRO energy consumption: past, present and future

Rick Stover, USA

Desalination technologies and research – Challenges and opportunities and emerging
applications

Roya Sheikholeslami (UK)

Posters will be available throughout

EuroMed 2008 – Desalination for Clean Water and Energy

9–13 November 2008, Dead Sea, Jordan

Technical sessions

Monday afternoon

10 November 2008

14.00–15.30 Chairpersons	Session 1 Dead Sea <i>Shimon Tal, Mousa Mohsen</i>	Session 2 Biofouling <i>Jan C. Schippers, Maria D. Kennedy</i>	Session 3 Combination/Integrated approach <i>Paul Buijs, Jürgen Kern</i>	Session 4 Removal <i>Marian Turek, Bechir Hamrouni</i>
14.00–14.30	371 Effect of recent technological developments on SWRO incorporated in Red-Dead Project <i>Pinhas Glueckstern, Menahem Priel</i>	412 Early warning of biofouling in spiral wound nanofiltration and reverse osmosis membranes <i>J.S. Vrouwenvelder, M.C.M. van Loosdrecht, J.C. Kruithof</i>	377 Industrial water demand requires a tailor made solution: an integrated membrane system case study <i>Paul Buijs, Leen Goethals, Tom Vanlerberghe, Wim Jacobs</i>	321 Removal of silica and boron from brackish water by coagulation-flocculation pre-treatment <i>W. Bouguerra, B. Hamrouni, M. Dhahbi</i>
14.30–15.00	331 The first two years of operation of Wadi Ma'in, the largest reverse osmosis plant in the Dead Sea area <i>Marc Pétry, Véronique Bonnelye, Barry Hess, Riyad Nassar, Aziz Yassin</i>	103 Use of DBNPA to control biofouling in RO systems <i>Ute Bertheas, Katariina Majamaa, Antonio Arzu, Ralph Pahnke</i>	232 Polygeneration plants to supply energy and desalted water in hotels located at the Spanish coast <i>C. Rubio, J. Uche, A. Martinez</i>	320 Boron removal by membrane processes <i>Amine Mnif, B. Hamrouni, M. Dhahbi</i>
15.00–15.30		458 Phosphate limitation in reverse osmosis: an option to control biofouling? <i>Judith D. Jacobson, Maria D. Kennedy, Gary Amy, Jan C. Schippers</i>	278 Integrated solar power, water and chill production: SOLWATER <i>Jürgen Kern, Jürgen Scharfe, Franz Trieb</i>	216 Boron removal from dual-staged seawater nanofiltration permeate by electrodialysis <i>Marian Turek, Piotr Dydo, Barbara Bandura-Zalska</i>
15.30–16.00	Coffee break			
16.00–18.00 Chairpersons	Session 5 Regional <i>Ali Redha Hussain, Miriam Balaban</i>	Session 6 Scaling / RO <i>Ursula Annunziata, Jan C. Schippers</i>	Session 7 Case studies <i>Thomas M. Missimer, Craig Bartels</i>	Session 8 Removal/Fouling <i>Véronique Bonnelye, A.H. Konsowa</i>
16.00–16.30	272 Appraisal of institutional and policy framework conditions for the use of autonomous desalination units in Jordan <i>M. Saidam, C. Epp, M. Papapetrou</i>	161 Experimental investigation of scaling control by a non-phosphorous polymer: polyaspartic acid <i>A. Martinod, A. Neville, M. Euvrard</i>	375 Water supply development for a new 17.5 MGD (66,200 m ³ /d) brackish-water RO facility for the City of Hialeah, Florida <i>T.M. Missimer, W.S. Manahan, R.G. Maliva, W. Guo, L. Furland, T. Champlin</i>	167 Degremont largest nanofiltration plant: NOM removal on VEGI 2000 <i>Amandine Tinghir, Véronique Bonnelye, Philippe Masereel</i>
16.30–17.00	411 Strategies for addressing climate change and water scarcity on Cyprus <i>Manfred A. Lange, Tasos Anastasiou</i>	443 Will calcium carbonate really scale in seawater reverse osmosis? <i>T. Waly, S. Saleh, M.D. Kennedy, G.J. Witkamp, G. Amy, J.C. Schippers</i>	236 Fujairah SWRO — management of membrane replacement <i>S.S. Mitra, Mahabir Kumar Sharma, Stefan Rybar, Craig Bartels, Larry Pelegrin</i>	453 Bromate removal from water using granular activated carbon in a batch recycle <i>A.H. Konsowa</i>
17.00–17.30	95 Seawater desalination in Algeria <i>Mohamed Bessenasse, Ahmed Kettab</i>	49 Synchrotron X-ray diffraction: in situ study of CaCO ₃ formation and inhibition by a green polymer (PMA) <i>Aurelie Martinod, Anne Neville, Ken Sorbie</i>	196 Engineering design of Skikda seawater desalination plant <i>Tomás Fanjul, Fernando Fernández Iglesias, Rodrigo Segovia, Jorge Salas</i>	356 Surface modification of nanofiltration membrane for reduction of membrane fouling <i>Mazrul N. Abu Seman, Daniel Johnson, Abdul W. Muhammad, Nidal Hilal</i>
17.30–18.00	92 The challenge of capacity building strategies and perspectives for desalination for sustainable water use in MENA <i>Noreddine Ghaffour</i>		288 Study of the pretreatment of seawater by coagulation - flocculation case study of the Corso desalination plant (Algiers) <i>D. Abdessemed, S. Hamouni, G. Nezzal</i>	
18.00–18.30	Coffee break and poster session			

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Technical sessions

Tuesday morning

11 November 2008

9.00–11.00 Chairpersons	Session 9 Economics <i>Corrado Sommariva, Borja Blanco</i>	Session 10 Concentrates/Environment <i>Sabine Lattemann, Federica Alberti</i>	Session 11 Optimizing RO <i>Craig Bartels, Mark Wilf</i>	Session 12 Renewable <i>Fawzi Banat, Michael Papapetrou</i>
9.00–9.30	347 Desalination industry and prequalification criteria: An analysis of the effects on market segmentation <i>Corrado Sommariva</i>	194 UNEP resource and guidance manual for environmental impact assessment of desalination projects <i>Sabine Lattemann, Habib N. El-Habr</i>	105 Optimization of membrane performance in seawater desalination systems <i>Mark Wilf</i>	362 A strategy for the introduction of desalination powered by renewable energy in Jordan <i>Hazim Qiblawey, Michael Papapetrou, Fawzi Banat</i>
9.30–10.00	338 Economic feasibility of grid-connected PV–RO and PV–MVC small desalination units for remote areas in The United Arab Emirates — A comparative study <i>A.M. Helal, S.A. Al Malek, E.M. Al Hammadi, H.A. Al-Thani</i>	427 Dispersion of brine discharges from seawater reverse osmosis desalination plants <i>Y. Fernández-Torquemada, J.M. González-Correa, A. Loya, L.M. Ferrero, M. Díaz-Valdés, J.L. Sánchez-Lizaso</i>	148 Cost savings by novel seawater reverse osmosis elements and design concepts <i>Verónica García-Molina, Markus Busch, Peter Sehn</i>	160 Most suitable technologies for desalination powered by renewable energies <i>V. Hernández Buendía, A. Riaza Frutos, A. Buenaventura Pouyfaucón, B. Peñate Suárez, V. Subiela Ortín, et al.</i>
10.00–10.30	75 Economic evaluation of a small RO unit powered by PV installed in Hartha village in Jordan <i>F. Banat, H. Qiblawey, Q. Al-Nasser</i>	311 Salt production from brine of desalination plant discharge <i>Federica Alberti, Nicola Mosto, Corrado Sommariva</i>	159 Optimum RO system design with high area spiral wound elements <i>Craig Bartels, Masahiko Hirose, Stefan Rybar, Rich Franks</i>	473 Canary Islands Institute of Technology: More than 10 years of experience in desalination with renewable energies <i>Vicente J. Subiela, Juan A. de la Fuente, Gonzalo Piernavieja, Baltasar Peñate</i>
10.30–11.00		449 Oil spill modeling at Shuweihat Power and Desalination Plant <i>Khaled A. Mohamed</i>	227 Optimal operation of reverse osmosis plants based on advanced control <i>Adrian Gambier, Andrea Wellenreuther, Essameddin Badreddin</i>	121 A wave energy driven RO stand-alone desalination system: initial design and testing <i>Davide Magagna, Gerald Muller</i>
11.00–11.30	Coffee break			
11.30–13.00 Chairpersons	Session 13 Scaling / Distillation <i>Heike Glade, Lute Broens</i>	Session 14 Water purification and reuse <i>Menahem Priel, Noreddine Ghaffour</i>	Session 15 MBR <i>Moshe Herzberg, Harry Futselaar</i>	Session 16 Solar <i>Rami Messalem, Fawzi Banat</i>
11.30–12.00	238 Effects of the wetting rate on scale formation in multiple-effect distillers <i>Heike Glade, Sümer Cetinkaya, Stefan Will, Stephan Nied, Gregor Schürmann</i>	372 Optimization of wastewater desalination <i>M. Priel, E. Gelman, P. Glueckstern, A. Balkwill, I. David, R. Arviv</i>	118 AirLift MBR for municipal wastewater treatment: out of the box performance <i>Harry Futselaar, Rob Borgerink, Henk Schonewille, Rick Rosberg</i>	277 Solar-driven desalination with reverse osmosis: the state of the art <i>Andrea Ghermandi, Rami Messalem</i>
12.00–12.30	122 Numerical simulation of scale deposits in membrane and distillation desalination processes (25–120°C) <i>M. Azaroual, L. Andre, A. Lassin, Ch. Kervevan</i>	193 Novel pilot plant scale graywater treatment system using titanium ball, membrane and advanced oxidation process <i>J. Kim, I. Song, J. Jong, S. Lee, P. Kim, M. Lee, Y. Choung</i>	209 Behaviour of a pilot scale MBR in the treatment of municipal wastewater with industrial effluents contributions. A case study <i>J.A. Mendoza-Roca, A. Bes-Piá, F.J. Martínez-Francisco, T. Montoya, J. Lora-García</i>	191 A review and comparison of solar distillation Part 1. Direct type systems <i>Hikmet S. Aybar, Hossein Assefi</i>
12.30–13.00	484 Scale reduction and advances in desalination systems with innovative MED plants using titanium plate evaporators <i>Steen Rosenbom</i>	467 Experimental and calculated breakthrough behavior in water purification by fixed bed activated carbon <i>G. Di Giacomo, L. Taglieri</i>	476 Hybrid growth membrane bioreactor (HG-MBR): The indirect impact of sludge retention time on membrane fouling <i>Wang Ying, Fei Yang, Amos Bick, Moshe Herzberg, Gideon Oron</i>	201 Concentrating solar power driven desalination for communities in Israel and Jordan (CSPD-COMISJO) <i>H. Adas, F. Alawneh, S. Batayneh, N. Geuder, A. Ghermandi, H. Glade, K. Hennecke, T. Hirsch, M. Kabariti, C. Hoyer-Klick, A. Kudish, et al.</i>
13.00–14.00	Lunch			

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Technical sessions

Tuesday afternoon

11 November 2008

14.00–15.30 Chairpersons	Session 17 Concentrates/Environment <i>Nidal Hilal, Roya Sheikholeslami</i>	Session 18 Pretreatment <i>Lute Broens, Claus Mertes</i>	Session 19 MBR/Forward osmosis <i>Mark Wilf, S.C. Low</i>	Session 20 Renewable (PV) <i>Omar Badran, Manfred Lange</i>
14.00–14.30	421 Hybrid process for high-recovery from desalination brines <i>J. Gilron, E. Korngold, R. Messalem, N. Daltrophe, M. Waisman, Y. Volkman, Y. Oren</i>	39 A pilot-scale comparison between granular media filtration and low-pressure membrane filtration for seawater pretreatment <i>P.-J. Remize, J.-F. Laroche, J. Leparç, J.-C. Schrotter</i>	79 A vibration MBR — test results from a sewer system <i>S.C. Low, K.T. Cheong, K.K. Tan, Doreen Lim</i>	394 Co-generation of electrical power and desalinated water through concentrating solar power in Cyprus <i>Anastasios Anastasiou, A. Manfred Lange</i>
14.30–15.00	217 Nanofiltration pretreatment in an integrated seawater desalination system <i>Marian Turek, Marzena Chorażewska</i>	332 MFI-UF constant pressure at high ionic strength conditions <i>Sergio G. Salinas Rodríguez, Badar Al-Rabaani, Maria D. Kennedy, Gary L. Amy, Jan C. Schippers</i>	80 Preliminary studies of seawater desalination using forward osmosis <i>S.C. Low, Y.H. Liu</i>	35 Laboratory setup for water purification using household PV-driven reverse osmosis unit <i>Fawzi Banat, Hazim Qiblawey, Qais Al-Naser</i>
15.00–15.30	312 Plant footprint minimization in desalination <i>Federica Alberti, Nicola Mosto, Corrado Sommariva</i>	457 Measuring dissolved transparent exopolymer particles (TEP) as indicator of the biofouling potential of RO feedwater <i>Loreen O. Villacorte, Maria D. Kennedy, Gary Amy, Jan C. Schippers</i>	370 Application of forward osmosis in pretreatment of seawater for small reverse osmosis desalination units <i>O.A. Bamaga, A. Yokochi, E.G. Beaudry</i>	279 Design considerations and feasibility of solar desalination for agricultural application in the Arava Valley, Israel <i>Andrea Ghermandi, Rami Messalem</i>
15.30–16.00	Coffee break			
16.00–17.30 Chairpersons	Session 21 Distillation <i>Heike Glade, Aiman Eid Al-Rawajfeh</i>	Session 22 Pretreatment <i>Gyula N. Vatai, Jack Gilron</i>	Session 23 Restoration <i>Paul Buijs, Stephen Chesters</i>	Session 24 Renewable <i>Manfred Lange, Fawzi Banat</i>
16.00–16.30	410 The analysis of a triple effects low-temperature distillation desalination process <i>Lixi Zhang, Guangping Cheng, Guiqiu Liu, Hefei Zhang</i>	459 Optimization of inline coagulation in integrated membrane systems: a study of FeCl ₃ <i>S. Assiyeh Alizadeh Tabatabai, Sigfried I. Gaulinger, Maria D. Kennedy, Gary L. Amy, Jan C. Schippers</i>	406 Restoring membrane rejection after chlorination damage: a long term solution <i>Paul J. Buijs, Jan C. Schippers, Koos J. Baas</i>	233 Photovoltaic system for brackish water desalination by electro dialysis and electricity generation <i>A.A. Bayod-Rújula, A. Martínez-Gracia</i>
16.30–17.00	487 Combined water and power plant (CWPP) – a novel desalination technology <i>Fazle Mahub, M.N.A Hawlader, A.S. Mujumdar</i>	119 Dynamic control of the UF process for RO pre-treatment: coagulant optimisation <i>Harry Futselaar, Frederik Spengelink, Bastiaan Blankert</i>	401 Cleaning clay from fouled membranes <i>M.W. Armstrong, S. Gallego, S.P. Chesters</i>	234 Small scale reverse osmosis brackish water desalting system combined with greenhouse application for use in remote communities of arid zone <i>A.K. Hossain, P.A. Davies</i>
17.00–17.30		58 Ultrafiltration of oil-in-water emulsion: Comparison of ceramic and polymeric membranes <i>Gyula N. Vatai, Darko M. Krstic, András K. Koris, Igor L. Gáspár, Miodrag N. Tekic</i>	210 Ultrafiltration membrane cleaning with different chemical solutions after treating surface water <i>J.M. Arnal, B. García-Fayos, M. Sancho, G. Verdú</i>	

20.00 Gala Dinner

Sidney Loeb Award

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Technical sessions

Wednesday morning

12 November 2008

9.00–11.00 Chairpersons	Session 25 Energy saving/Recovery <i>Rick Stover, Erineos Koutsakos</i>	Session 26 UF pretreatment / SWRO <i>Markus Busch, Thomas Peters</i>	Session 27 Electrodialysis/Electrodeionization <i>Yoram Oren, Gerald Pourcelly</i>	Session 28 Modelling/RO <i>Oliver Lex, Ursula Annunziata</i>
9.00–9.30	74 More water – less energy and reduced CO ₂ emissions - Larnaca desalination plant <i>Erineos Koutsakos, David Moxey</i>	237 IMS SWRO Kindasa — two years of operational experience <i>Aziz H. Gulamhusein, A.S. Al Sheikh Khalil, Ibrahim A. Fatah, Roman Boda, Stefan Rybar</i>	448 Electromembrane processes for water desalination. State-of-the art and new trends <i>Gerald Pourcelly, Philippe Sistat, Patrice Huguet, Stella Lacour</i>	185 Modeling the impact of using multi-port RO pressure vessels in seawater reverse osmosis desalination plants using special simulation software <i>M. Verhuelsdonk, T. Attenborough, O. Lex, T. Altmann</i>
9.30–10.00	109 Titan PX-1200 energy recovery device — test results from the Inima Los Cabos Mexico seawater RO facility <i>Rick Stover, Jeremy Martin</i>	147 Integrated ultrafiltration and reverse osmosis membrane system for seawater desalination – 1000 days field experience with DOW™ UF and FILMTEC™ technology in the WangTan DaTang power plant <i>Markus Busch, Robert Chu, Udo Kolbe, et.al.</i>	214 Brackish water desalination in RO – single pass EDR system <i>Marian Turek, Joanna Was, Piotr Dydo</i>	386 Modelling of desalination units based on humidification-dehumidification cycle <i>Naser Nawayseh</i>
10.00–10.30	383 Application of salinity gradient power for brines disposal and energy utilisation <i>M. Ahmad, P. Williams, H. Al-Jabli</i>	104 Long-term operating experience of Seaguard UF as pretreatment to SWRO in the Mediterranean region <i>Frans Knops, Rick te Lintelo</i>	348 Reduction of H ⁺ (OH ⁻) ions generation at anion-exchange membrane in electrodialysis <i>N.D. Pismenskaya, E.I. Belova, V.V. Nikonenko, V.I. Zabolotsky, G.Yu. Lopatkova, Yu.N. Karzhavin, C. Larchet</i>	492 Characterization and pilot plant studies of nanofiltration membranes for RO desalination pre-treatment <i>Anna Llansana, Anna Canal, Enrique Ferrero, Vanesa Ayala, Jorge J. Malfeito</i>
10.30–11.00		477 Pre-treatment upstream of membranes <i>Rena Berman, Osman Sandikcioglu</i>	197 Depuradora del Baix Llobregat, S.A. awards the construction of the plant with the greatest world production capacity with RED. technology for regenerated water to the UTE (temporary consortium) formed by the companies Befesa and ACSA <i>J. Segarra Horadada, et.al.</i>	
11.00–11.30	Coffee break			
11.30–13.00 Chairpersons	Session 29 Membrane distillation/Biofouling <i>S. Al Obaidani, Seunghyun Kim</i>	Session 30 Pretreatment SWRO <i>Thomas Peters, Markus Busch</i>	Session 31 Electrodialysis / RO <i>Mark Wilf, S.C. Low</i>	Session 32 Renewable <i>P.A. Davies, Jürgen Kern</i>
11.30–12.00	166 The role of membrane distillation/ crystallization technologies in the integrated membrane system for seawater desalination <i>S. Al Obaidani, E. Curcio, E. Drioli</i>	452 Seawater intake and partial pre-treatment with Neodren — results from investigation and long-term operation <i>Thomas Peters, Domènec Pintó</i>	486 Influence of the chosen process parameters on the efficiency of seawater desalination by reverse osmosis - pilot plant results at Urla Bay seashore <i>Wojciech Kujawski</i>	324 Concentrating solar power for seawater desalination — Results of the AQUA-CSP project <i>Franz Trieb</i>
12.00–12.30	420 Seawater biofouling of membrane distillation membranes <i>M. Krivorot, A. Kushmaro, Y. Oren, J. Gilron</i>	228 Pre-treatment pilot test for Qingdao SWDP <i>Abel Rianza Frutos, Jorge Salas, Francisco J. Bernaola, Jan Soons, Pedro Almagro</i>	91 RO-EDI: state of the art of water purification <i>Hossein Haghparast, Manouchehr Nouzari, Masoud Rohani</i>	429 A study of a water desalination unit using solar energy <i>Khalifa Zhani, Habib Ben Bacha, Tarek Damak</i>
12.30–13.00	247 Biofilm formation in reverse osmosis membrane systems using confocal laser scanning microscopy <i>W. Lee, J. Kim, J. Yoon, Seunghyun Kim, Jeyong Yoon, Chang Hoon Ahn</i>	111 Pre-treatment optimisation of SWRO membrane desalination under tropical conditions <i>R.J. Xie, E.K. Tan, S.K. Lim, E. Haw, C.P. Chiew, A. Sivaraman, A.N. Puah, Y.H. Lau, C.P. Teo</i>	491 Electrocoagulation process for improving the quality of effluents <i>Khalid Bani-Melhem, Maria Elektorowicz</i>	

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Wednesday afternoon

13.00 Conference closing

Water Challenges in the MENA Region

Munther Haddadin, Former Minister of Water and Irrigation of Jordan

15.00 Visit to Wadi Zara Ma'in Plant

Water treatment plant near the Dead Sea to treat saline water from three nearby wadis. The Design-Build-Operate project also includes a water conveyance system to transfer water to Amman.

The purposes are to

- increase potable water supplies of Greater Amman and the Dead Sea resort areas by 40%, or 47 million cubic meters on average per year, directly benefiting two million people;
- restore water currently diverted from Zarqa and Mafraq systems into the Amman water system back to those areas, directly benefiting half a million people
- utilize, for potable uses, water currently flowing into the Dead Sea
- boost local economy in the Dead Sea area and create jobs
- Improve health and hygiene conditions by providing safe potable water.

Major interventions:

- Water treatment plant, for a maximum capacity of 55 million cubic meters per year, for the filtration, desalination and disinfection of water collected at Mujib, Zara and Ma'in wadis
- Six pumping stations and a 41-kilometer, 1000 mm high pressure steel pipeline to convey water to the Greater Amman and Dead Sea areas
- Electronically operated control and monitoring system

Beneficiaries: 2.5 million residents of Amman, Zarqa and Northern Governorates.

Uniqueness:

- 1st Design-Build-Operate project of a water system in Jordan
- Use of advanced technology in a water project

Implementing partners:

- Ministry of Water & Irrigation
- Ondeo-Degremont/Morganti
- Black & Veatch Corp.
- Metcalf & Eddy

Desalination for Clean Water and Energy

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- 1 Treatment of photovoltaic wastewater by bipolar electrocoagulation: Optimization of fluoride removal with aluminum plate electrodes**
N. Drouiche, S. Aoudj, M. Hecini, H. Lounici, N. Mameri, N. Ghaffour, H. Mahmoudi
- 4 Removal of reactive dyes from textile wastewater by electrocoagulation**
El Sayed Z. El Ashtoukhy
- 5 Application of UF/RO system for concentration in toxicity test**
Heng Liang, Jun Nan, Yujie Feng, Zhonglin Chen, Guibai Li
- 6 Optimization of spent filter backwash water (SFBW) recycling by two-stage coagulation**
Weijia Gong, Heng Liang, Wenzhe Li
- 7 The use of ion-exchange membranes for the removal of tin from spent activating solutions**
Montserrat García Gabaldón, Valentín Pérez Herranz, José García Antón, Jose Luis Guiñón Segura
- 11 Case studies on the profitable environmental management "PREMA®" approach in the management of wastewater in SME/SMI and the environmental and economic benefit realized following its application**
Youcef Smaili, Edith Kürzinger
- 12 Silica porous membranes synthesis and characterization**
N. Agoudjil, N. Lamrani, T. Benkacem, A. Larbot
- 16 Powdered activated carbon for fouling reduction of membrane in a pilot-scale recirculating aquaculture system**
V. Jegatheesan, N. Senaratne, C. Steicke, S.H. Kim
- 17 Uranium (VI) sorption onto homoionic sodium smectite suspensions: Experimental and modelling study**
Smain Korichi, Aicha Bensmaili
- 18 An approach to theoretical prediction of permeate flux decline in ultrafiltration**
M.-C. Vincent-Vela, Enrique Bergantiños-Rodríguez, Silvia Álvarez-Blanco, Jaime Lora-García
- 19 Prediction of ultrafiltration permeate flux decline by means of a shear induced diffusion model with empirical estimation of the gel layer concentration**
María-Cinta Vincent-Vela, S. Álvarez-Blanco, J. Lora-García, Enrique Bergantiños-Rodríguez
- 20 Linearization of ultrafiltration models: analysis of experimental data from ultrafiltration tests**
María-Cinta Vincent-Vela, Silvia Álvarez-Blanco, J. Lora-García, E. Bergantiños-Rodríguez
- 21 Estimation of the gel layer concentration in ultrafiltration: Comparison of different methods**
María-Cinta Vincent-Vela, Silvia Álvarez-Blanco, Jaime Lora-García, Enrique Bergantiños-Rodríguez
- 27 Aspects of operating experience of different antiscalants in multi stage flash (MSF) distillers**
N.S. Al-Deffeeri, S. Ghani, M.H. Al-Hajeri
- 37 Simulation studies on a multi-stage distillation with slope-plate falling film evaporation desalination system using solar energy**
Penghui Gao, Hefei Zhang
- 40 Effect of hydrochloric acid on the transport properties of tin through ion-exchange membranes**
M. García Gabaldón, V. Pérez Herranz, J. García Antón, J.L. Guiñón Segura
- 41 On-line LiBr+H₂O estimation for the performance of a water purification process integrated to an absorption heat transformer**
V.M. Velazquez, J.A. Hernández, D. Juárez, J. Siqueiros, S.F. Mussati
- 44 Adsorption of para-chlorophenol on an activated carbon from apricot stones: equilibrium and kinetic studies**
A. Hamitouche, M. Assassi, F. Kaouah, Z. Bendjama
- 53 Modeling of mass transfer in cavity limited by a semi permeable membrane (simulation of spiral wound module)**
Jihaine Ben Nacib, Ridha Chouick, Salah Bouguecha
- 59 Heat and mass transfer in a horizontal pipe absorber for a heat transformer**
D. Juárez-Romero, N. Shah, F. Pliego-Solórzano, J.A. Hernández-Pérez, J. Siqueiros
- 63 Application and optimization in chromium-contaminated wastewater treatment of the reverse osmosis technology**
Mitra Gholami, Hamed Mohammadi, Ahmad Ameri, M. Rahimi
- 68 Effective depth, initial headloss and backwashing criteria as the key factors of burnt oil palm shell (BOPS) granular filtration**
Ahmad Jusoh, A. Nora'ani, A.G. Halim, W.N. Norsani
- 69 The effect of flow rate on water quality parameters and growth of water spinach (*Ipomoea aquatica*) in aquaponics recirculating system**
Azizah Endut, Ahmad Jusoh, Ali Nora'aini, Wan Norsani Wan-Nik, Anuar Hassan
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