Desalination and Water Treatment

Contents
Volume 52/4–6

Special issue devoted to the Fifth Annual International Conference on Challenges in Environmental Science and Engineering—CESE 2012
Melbourne, Australia, 9–13 September 2012

Editorial
H.K. Shon (Sydney, Australia), L.D. Nghiem (Wollongong, Australia), S. Kim (Busan, Korea), C. Chiemchaisri (Bangkok, Thailand), V. Aravinthan (Toowoomba, Australia), J. Virkutyte (Cincinnati, OH, USA), L. Shu and V. Jegatheesan (Waurn Ponds, Australia) .......................................................... 555

A preliminary study on the volume reduction of pre-treatment sludge in seawater desalination by forward osmosis
S. Liyanaarachchi, V. Jegatheesan, L. Shu (Waurn Ponds), S. Muthukumaran (Melbourne) and K. Baskaran (Waurn Ponds, Australia) .......................................................... 556

Flux behavior and membrane fouling in pressure-assisted forward osmosis
T. Yun, Y.-J. Kim, S. Lee, S. Hong (Seoul) and G.I. Kim (Gyeonggi-Do, Korea) .......................................................... 564

Removal of dissolved organics from produced water by forward osmosis
R.M. Abousnina and L.D. Nghiem (Wollongong, Australia) .......................................................... 570

Osmotic pressure-driven backwash in a pilot-scale reverse osmosis plant
S. Kim (Busan, Korea) ................................................................................................................. 580

Factors governing the rejection of trace organic contaminants by nanofiltration and reverse osmosis membranes
H.Q. Dang, L.D. Nghiem and W.E. Price (Wollongong, Australia) .......................................................... 589

Performance of reverse osmosis (RO) for water recovery from permeates of membrane bio-reactor (MBR)
S.R. Pandey, V. Jegatheesan, K. Baskaran, L. Shu (Geelong) and S. Muthukumaran (Melbourne, Australia) .......................................................... 600

Effects of transmembrane pressure and ozonation on the reduction of ceramic membrane fouling during water reclamation
W. Lee (Gumi), H.-W. Lee (Deajeon and Goyang), J.-S. Choi and H.J. Oh (Goyang, Korea) .......................................................... 612

The effect of polymer concentration and additives of cast solution on performance of polyethersulfone/sulfonated polysulfone blend nanofiltration membranes
F. Ma, H. Ye, Y.-Z. Zhang, X.-L. Ding, L.-G. Lin, L. Zhao and H. Li (Tianjin, China) .......................................................... 618

Development of nanofiltration membrane separation prediction system for binary salt solutions
N. Ali, N.M. Sidek and I. Abdullah (Kuala Terengganu, Malaysia) .......................................................... 626

Effects of organic and colloidal fouling on the rejection of two pharmaceutically active compounds (PhACs) by nanofiltration processes: role of membrane foulants
L.D. Nghiem and C. Ependidller (Wollongong, Australia) .......................................................... 633

Removal of ametryn through nanofiltration and reverse osmosis
T. Shurvell, G. Keir, V. Jegatheesan, L. Shu and L. Farago (Geelong, Australia) .......................................................... 643

Comparison of fouling mechanisms in low-pressure membrane (MF/UF) filtration of secondary effluent
S. Muthukumaran (Melbourne), J.V. Jegatheesan and K. Baskaran (Geelong, Australia) .......................................................... 650

Development of a new poly silicate ferric coagulant and its application to coagulation-membrane filtration hybrid system in wastewater treatment
F. Nateghi, H.K. Shon and H. Khabbaz (Sydney, Australia) .......................................................... 663

Comparison of the performance of ceramic microfiltration and ultrafiltration membranes in the reclamation and reuse of secondary wastewater
S. Muthukumaran (Melbourne) and K. Baskaran (Geelong, Australia) .......................................................... 670

Improving urban run-off quality using iron oxide nanoparticles with magnetic field
M. Khiahdani (Hajian) (Joondalup, Australia, and Isfahan, Iran), M. Foroughi and M.M. Amin (Isfahan, Iran) .......................................................... 678

Treatment of high copper-containing wastewater by producing magnetic material
J.-Y. Wu, W.-S. Chen (Tainan), F.-C. Chang (Nan-Tou) and M.-S. Tsai (Taipei, Taiwan) .......................................................... 683

Removal of copper (II) ions from aqueous solutions onto chitosan/carbon nanotubes composite sorbent
S.R. Popuri, R. Frederick (St. Michael, Barbados), C.-Y. Chang (Tainan, Taiwan), S.-S. Fang (Nantou, Taiwan), C.-C. Wang (Yung-Kang, Taiwan) and L.-C. Lee (Taichung, Taiwan) .......................................................... 691
Dechlorination of tetrachloroethylene in water using stabilized nanoscale iron and palladized iron particles
S.-S. Chen, Y.-C. Huang, J.-Y. Lin and M.-H. Lin (Pingtung, Taiwan) .......................................................... 702

Development of a novel process for arsenic(V) removal from water using Fe-etrtingite

A prototype IT/BF-MBR (inclined tube/biofilm-membrane bioreactor) for high-rise building wastewater recycling
C. Ratanatamskul, N. Sukusienig (Bangkok, Thailand) and K. Yamamoto (Tokyo, Japan) .............................. 719

Nutrient removal of nursery and municipal wastewater using Chlorella vulgaris microalgae for lipid extraction
V. Aravintan, N. Story and T. Yusaf (Toowoomba, Australia) ............................................................... 727

Simultaneous removal of nitrate, phosphate, and fluoride using a ZVI-packed bed electrolytic cell

Nitrogen budget and effluent nitrogen components in aquaponics recirculation system
A. Endut, A. Jusoh and N. Ali (Kuala Terengganu, Malaysia) ................................................................. 744

Ammonia nitrogen removal from aqueous solution using functionalized zeolite columns
H. Wang, H. Gui (Kunming, China), W. Yang, D. Li (Geelong, Australia), W. Tan, M. Yang (Kunming, China) and C.J. Barrow (Geelong, Australia) ................................................................. 753

Capacitive deionization (CDI) for removal of phosphate from aqueous solution
G.-H. Huang (Hsinchu), T.-C. Chen (Tainan), S.-F. Hsu (Hsinchu), Y.-H. Huang (Tainan) and S.-H. Chuang (Taichung, Taiwan) ............................................................... 759

Novel effective waste iron oxide-cored magnetic adsorbent for phosphate adsorption
T.C. Chen (Tainan), G.-H. Huang (Hsinchu), C.-H. Liu, C.-S. Chen (Tainan), S.-H. Chuang (Taichung) and Y.-H. Huang (Taichan, Taiwan) ................................................................. 766

Removal of phosphate from water using raw and activated laterite: batch and column studies
L. Zhang, W. Wu, J. Liu, Q. Zhou, J. Luo, J. Zhang and X. Wang (Shanghai, China) ........................................ 775

Modelling of phosphorus removal by ion-exchange resin (Purolite FerrIX A33E) in fixed-bed column experiments
T. Nur (Sydney, Australia), W.G. Shim (Gwangju, Korea), M.A.H. Johir, S. Vigneswaran and J. Kandasamy (Sydney, Australia) ................................................................. 784

Effective phosphate uptake and inhibition on M. aeruginoa by Friedel-based adsorbent
J. Zhao, Y. Dai, Y. Lu, X. Ruan, G. Qian and Y. Xu (Shanghai, China) .......................................................... 791

Effect of nitrate on the degradation of bisphenol A by UV/H2O2 and ozone/H2O2 oxidation in aqueous solution

Reactivity of different cement minerals in presence of Fe(II) for reducing trichloroethylene

Study on coupling with catalytic wet air oxidation and membrane separation in the treatment of cationic red GTL
X.-y. Li, Y. Xu and D.-z. Sun (Beijing, China) ................................................................. 816

Degradation of di-n-butyl phthalate in aqueous solution by the O3/UV process
L. Wang (Tianjin, China), G.Y. Fu (Statesboro, GA, USA), B. Zhao, Z. Zhang, X. Guo and H. Zhang (Tianjin, China) ................................................................. 824

Decolorization of C.I. Reactive Red 2 by UV/TiO2/PAC and visible light/TiO2/PAC systems
C.-Y. Kuo (Yulin), C.-H. Wu and S.-T. Chen (Kaohsiung, Taiwan) ........................................................ 834

Performance of cabbage and cauliflower wastes for heavy metals removal
M.A. Hossain, H.H. Ngo, W.S. Guo, T.V. Nguyen and S. Vigneswaran (Sydney, Australia) ......................... 844

Removal of pesticide in agricultural runoff using granular-activated carbon: a simulation study using a fixed-bed column approach
A. Jusoh, S.S. Lam, W.J.H. Hartini and N. Ali (Kuala Terengganu, Malaysia) ........................................... 861

Photosorption of specific organic compounds from titanium dioxide particles in aqueous media
M. Shahid, I.E. Saliby, A. McDonagh (Sydney, Australia), J.-H. Kim (Gwangju, Korea) and H.K. Shon (Sydney, Australia) ................................................................. 867

Removal of oxidized sulfur compounds using different types of activated carbon, aluminum oxide, and chitosan-coated bentonite
M.-C. Lu (Tainan, Taiwan), M.L. Agripa (Quezon City, Philippines), M.-W. Wan (Tainan, Taiwan) and M.L.P. Dalida (Quezon City, Philippines) ................................................................. 873

Adsorption property of direct red brown onto acid-thermal-modified sepiolite and optimization of adsorption conditions using Box-Behnken response surface methodology
C.-y. Su, W.-g. Li, X.-z. Liu and L. Zhang (Harbin, China) ................................................................. 880

Solidification/stabilization of heavy metals in tannery sludge char with various binders
S. Oh, R. Bade, F. Li and W.S. Shin (Daegu, Korea) ................................................................................ 889

Electrochemical reduction of trichloroethylene using zero-valent iron bipolar packed-bed electrodes

Characterization of sludge generated by electrocoagulation for the removal of heavy metals
D.-G. Kim, R.J.S. Palacios and S.-O. Ko (Gyeonggi-do, Korea) ............................................................ 909
Effect of operating parameters on triclosan degradation by Fenton's reagents combined with an electrochemical system
T. Methatham (Khon Kaen, Thailand), M.-C. Lu (Tainan, Taiwan) and C. Ratanaatamskul (Bangkok, Thailand) ..... 920
Simultaneous removal of odourous and organic compounds in septic tanks using an electrolytic oxidation system
J.-S. Kim, Y.-K. Nam (Seoul), J. Yu (Suwon) and J. Song (Seoul, Korea) ............................................... 929
Effects of operating loading rate and operating temperature on power generation from cassava wastewater
by a single-chamber microbial fuel cell
N. Prasertsung and C. Ratanaatamskul (Bangkok, Thailand) .................................................................. 937
Coal seam gas water as a medium to grow Dunaliella tertiolecta microalgae for lipid extraction
V. Aravindhan and D. Harrington (Toowoomba, Australia) ............................................................... 947
Climate adaptation research on the energy-saving design of gymnasiums in cold regions
Lingling Li and Naihua Yue (Harbin, China) ..................................................................................... 959
The impact caused by tap water recharge on groundwater quality
H.-m. Wang, Y. Wang, X. Jiao, J.-Z. Li and G.-r. Qian (Shanghai, China) ............................................. 968
Effects of advanced treatments using granular activated carbon adsorption with ozoneation and ultrafiltration on chlorine decay
Y. Kim, J. Kweon (Seoul), D. Kim (Gyeonggi-do) and C. Lee (Ulsan, Korea) ........................................ 976
Removal of turbidity from water by dissolved air flotation and conventional sedimentation systems
using poly aluminium chloride as coagulant
M. Khiaadani (Hajian) (Jooladal, Australia, and Isfahan, Iran), R. Kolvand (Ilam, Iran),
M. Ahooghlandari (Jooladal, Australia) and M. Mohajer (Isfahan, Iran) ........................................... 985
Pilot study on the removal of TOC, THMs, and HAAAs in drinking water using ozone/UV–BAC
V.N. Trang, N.P. Dan, L.D. Phuong and B.X. Thanh (Ho Chi Minh City, Vietnam) ............................. 990
Adsorption of 2-methylisoborneol and geosmin from water onto thermally modified attapulgite
C. Ma (Harbin, China, and Delft, The Netherlands), X. Zuo (Wuhan, China), W. Shi (Harbin, China),
S. Yu (Harbin, China, and Delft, The Netherlands), S. Han (Henan, China), S.G.J. Heijman
and L.C. Rietveld (Delft, The Netherlands) ...................................................................................... 999
Removal of algae and turbidity by floating sand and sand filtration
D.-Y. Kwon, J.-H. Kwon and G.-J. Jo (Gyeongnam, Korea) .............................................................. 1007
Performance of the unified clarifier packed with filter media (UC-FM) as a preliminary water treatment step
D.-Y. Kwon (Gyeongnam, Korea) ......................................................................................................... 1014
Characterization and theoretical analysis of isoporous cycloaliphatic polyurethane membrane for water treatment
Effect of flux fluctuation on the fouling in membrane water treatment system for smart water grid
S. Kim (Busan), J.-L. Lim (Daejeon), J.-Y. Park (Seoul) and J.-O. Kim (Gangwon-do, Korea) ............... 1028
Treatment of high turbidity water through plain and coagulated up-flow roughing filter
G. Hasnain and Z. Khan (Islamabad, Pakistan) ................................................................................... 1035
A study on the optimal tank design and feed type to the growth of marble goby
(Oxyeleotris marmorata Bleeker) and reduction of waste in a recirculating aquaponic system
S.S. Lam, N.L. Ma, A. Jusoh and M.A. Ambak (Kuala Terengganu, Malaysia) ...................................... 1044
Improvement of lime softening treatment of secondary effluent by the addition of fly ash
L. Cheng, J. Sun, F. Ni, L. Li, C. Liu and X. Bi (Qingdao, China) ..................................................... 1054
Reuse of briny wastewaters from the pickling process of mustard leaves in marine fish culture
C.-N. Chen, S.-L. Huang (Chiayi), C.-Y. Chang (Tainan) and H.-T. Lai (Chiayi, Taiwan) ..................... 1062
Performance of wetland roof with treating septic tank effluent
B.X. Thanh, P.T.H. Van, N.T. Tin, V.T.D. Hien, N.P. Dan (Ho Chi Minh City, Vietnam)
and T. Kootatep (Pathumthani, Thailand) ............................................................................................ 1070
Effects of porosity on flow of free water surface constructed wetland in a physical model
J.-M. Chyan (Tainan, Taiwan), F.J. Tan (Manila, Philippines), I.-M. Chen, C.-J. Lin (Tainan, Taiwan),
D.B. Senoro (Manila, Philippines) and M.P.C. Luna (Zamboanga City, Philippines) ......................... 1077
Resource reuse of spent pickle acid by mineralization process
J.-Y. Wu, S.-C. Wang, F.-C. Chang, W.-S. Chen (Tainan) and M.-S. Tsai (Taipei, Taiwan) ................. 1086
Development of formaldehyde detection method using onion juice as chromogenic agent
R.M. Ghazi and W.A. Ahmad (Johor, Malaysia) ................................................................................... 1093
Solvent extraction of palladium(II) from acidic chloride solutions
using tri-0ctyldodecyl ammonium chloride (Aliquat 336)
C.-Y. Peng and T.-H. Tsai (Taipei, Taiwan) ......................................................................................... 1101
Economic risk analysis for sustainable urban development: validation of framework
and decision support technique
J. Lai, L. Zhang, C. Duffield and L. Aye (Parkville, Australia) ............................................................. 1109
Risk management of land subsidence in Shanghai
H.-M. Wang, Y. Wang, X. Jiao and G.-R. Qian (Shanghai, China) ................................................................. 1122
The investigation of the bacterial indicators and point sources of pollution for the Nanshih River, Taiwan:
a case study
Y.-T. Chang (ShinLin) and Y.-J. Chang (Taipei, Taiwan) ............................................................................... 1130
The occurrence of quinolone and imidazole antibiotics in rivers in Central Taiwan
W.-N. Lee, A.Y.-C. Lin and X.-H. Wang (Taipei, Taiwan) ........................................................................ 1143
Study of a double subsurface snow-water utilization system for the melting of snow
using the waste heat of urban sewage
B.-x. Xue, L. Wei, C.-h. Zhang, T.-y. Li and H. Xu (Harbin, China) ......................................................... 1153
Soil speciation and residue analysis for decontamination of imidacloprid:
a sustainable resource management model for cotton crop
U. Rafique, S. Nasreen and A. Jadoon (Rawalpindi, Pakistan) ................................................................. 1163
Proposal of procedure to determine metals and metalloids background values in contaminated soils.
Case study of a national interest site in South Italy
M. Blonda and B. Valenzano (Bari, Italy) .................................................................................................. 1171
Analysis of residues of prometryne and acetochlor in soil–water system by solid-phase extraction
and gas chromatography/mass spectrometry
W. Tan, X. Hu, M. Yang (Kunming, China), C.J. Barrow, W. Yang (Geelong, Australia)
and H. Wang (Kunming, China) ........................................................................................................... 1177
Study of the comprehensive landscaping treatment technique of saline–alkali land in Daqing
based on the network of the grading of trapezoidal terrace ditches
B.-x. Xue, Z.-q. Zhao, L. Wei, T.-y. Li and X.-f. Kang (Harbin, China) .................................................... 1183
Variations of model performance between QUAL2K and WASP on a river with high ammonia
and organic matters
P.-K. Tang, Y.-C. Huang, W.-C. Kuo and S.-J. Chen (Pingtung, Taiwan) ............................................. 1193
Grid-connected distributed energy generation system planning and scheduling
W.S. Ho, H.Y. Chin, K.C. Wong, Z.A. Muis and H. Hashim (Johor, Malaysia) ........................................ 1202
Author Index ............................................................................................................................................. 1214