



International
Water Association

Leading-Edge
Technology

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Advance Programme and Invitation to Register

7th IWA Leading-Edge Conference
on Water and Wastewater
Technologies

Supporting publication:



LEADING-EDGE



**2-4 June 2010
Arizona Biltmore
Phoenix (AZ), USA**

www.let2010.org



Invitation from the chairman of the programme committee

Ensuring access to inexpensive and safe sources of water is one of the greatest global challenges of this century, and the beneficial impact that emerging technologies can have in making clean water more accessible to more people cannot be overstated.

On behalf of the Programme Committee, I invite researchers and practitioners worldwide to come to LET10 in Phoenix. Your participation – as presenters and delegates – will ensure that LET maintains its hallmarks: the highest quality for a technical content that reflects rigor and relevance, and the greatest opportunity for networking. Similar to LET07 in Singapore, the programme will be organized by themes, which are described in this Call.

The Programme Committee is inviting recognized world leaders to anchor each theme, has complemented them with additional platform speakers and poster presenters from the submissions received. All abstracts have been peer reviewed to ensure high quality and thematic consistency. Indeed, the programme features only the “best of the best.”



Pedro Alvarez,
*Chairman,
Programme
Committee*

I encourage your participation and look forward to welcoming you to Phoenix.

Invitation from the chairman of the organising committee

On behalf of the Organising Committee, I would like to invite water professionals around the world to attend IWA's Leading Edge Technology Conference. The conference, which is in the United States for the first time, is being held at the Arizona Biltmore Resorts located at the heart of the City of Phoenix, Arizona.

The conference program will attract leading water researchers. Parallel tracks offering a wide range of multidisciplinary presentations will provide ample opportunities to learn and network with professionals in your fields of interest. Technical tours are also being planned to demonstrate local applications of advanced water, wastewater, and reclamation technologies. In addition, the conference facility offers enjoyable recreational opportunities, including golfing, hiking, and biking in the sunny Southwestern United States.

The Grand Canyon, one of the world famous natural wonders, is only a few hours away by car, so planning a visit either before or after the LET conference is simple. I look forward to seeing you at the conference where you can learn about the leading edge of your profession while enjoying the beautiful Southwestern United States.



Zaid K. Chowdhury,
*Chairman,
Organising
Committee*

Invitation from the conference president

I invite researchers and practitioners to the first Leading Edge Technology Conference held in the Americas. The seventh LET conference will be held in Phoenix, Arizona, which is the home of Arizona State University, where I am a professor. Thus, you will be my guest, and I am thrilled to welcome you. Because Phoenix is located in the Sonoran Desert, water is on everyone's mind and in everyone's agenda. We cannot afford to waste any water, and we must use and reuse waters that need important quality improvements. Therefore, the water and wastewater utilities are among the most advanced in the United States.

The LET is organized around leading-edge themes, and the Programme Committee is inviting recognized world leaders to anchor each theme. Besides the stellar technical program, LET10 will have technical field trips to see some of the technology in action, as well as two pre-conference workshops. The venue for LET10 is the spectacular Arizona Biltmore Resort.

The Arizona Biltmore was largely designed by one of the world's most famous architects, Frank Lloyd Wright. The Biltmore is beautiful and distinctly “Arizona.” You will enjoy the special place, along with the special programme. I also suggest that you will come a few days early or stay a few days extra to see some of the special sights of Arizona, such as the Grand Canyon and Sedona.



Bruce E. Rittmann,
*Conference
President*

Invitation from the IWA president

IWA introduced its Leading-Edge conference series on water and wastewater treatment technologies in response to the need to highlight the most significant advances in these fields. It covered technologies ranging from those just emerging from the laboratory to those just making their way to full commercial applications.

The 2010 edition of the LET conference will see its scope expand from its traditional focus on treatment technologies to include technologies that minimise the impact that the water sector has in climate change, resource recovery – such as water reuse and nutrient recovery – and advancements in membrane materials.

For the first time, the Leading-Edge Technologies Conference will be organised in the United States of America and will provide a unique opportunity to hear from those who are leading in these fields, to network with colleagues and



David Garman,
*President
International
Water
Association*

to identify cross-over topics where developments in treatment technologies are interchangeable between water and wastewater. This Leading-Edge conference is an important and vital event.

I do hope that you will be able to join us to exchange experiences in a rapidly developing field worldwide.

Delegates Registration Fees

The conference fee covers attendance at the main sessions, workshops, morning and afternoon coffees/teas, lunches, welcome cocktail reception, conference dinner, programme and information pack.

CATEGORIES

	Early Bird Rate	Normal Rate
IWA Member	US\$ 650	US\$ 850
Non Member	US\$ 800	US\$ 1,000
IWA Student/	US\$ 450	US\$ 450
IWA Low Income Country		

Payment: Registration and accompanying person fees must be paid in American Dollars (US\$) in advance at the time of registration. The above prices are inclusive of the prevailing Goods & Services Tax (GST).

Confirmation: The organising Committee of LET2010 will confirm registration upon receipt of the registration form and payment. No processing of registration will take place before all fees have been received.

Cancellation: A 25% administrative charge will be made for all cancellations prior to 15 April 2010. **No refund will be made for all cancellations after 15 April 2010.** Refunds must be applied for in writing and will be settled after the conference.

How to register

Please register via the website www.let2010.org. Alternatively, please complete the conference registration form and email to connie@mcsources.net or fax to +1 480 990 1889. Delegates are encouraged to register early as seats are limited.

Early Bird Discount: Registrations confirmed and paid before 15 March 2010.

Visa

To obtain a visa, the US consulate generally require at least six month validity of the passport. The requirement may vary and you should check with the local consulate office to you for information on visa application and submission procedures, list of documents required, application fees payable and to obtain visa application forms. The visa application process can take up to 2 months; so it is important that you start your application as soon as possible to ensure you receive your visa in time for travel to IWA-LET2010. When registering, overseas delegates should request a visa letter that can be used to accompany their application for a "Tourist Visa for Business Purposes" to attend the conference. The visa letter will be sent upon receipt of the registration fee. Citizens of a Visa Waiver Programme Country should submit an Electronic System for Travel Authorization at least 72h before departure.

Invitation Letter

IWA will send a letter of invitation after the participant has been registered for this conference and the registration fee has been received. This is not a commitment on the part of the organizers to provide financial support.

Delegates Accommodation

Official Hotel :

The official hotel for the conference is:

Arizona Biltmore

Website: www.arizonabiltmore.com

The following rates are applicable for the conference from 30 May - 6 June 2010. Please select 3 options for hotel accommodations. We will do our best to accommodate your first option but availability is limited at each hotel. Booking for hotel rooms are to be done via your registration form.

Room charges are as follows:

Room Category	Single occupancy	Double occupancy
Hotel		
Arizona Biltmore Resort & Spa	US\$ 189	US\$ 189
Embassy Suites	US\$ 114	US\$ 114
Homewood Suites	US\$ 119	US\$ 119
Hilton Garden Inn	US\$ 129	US\$ 129

Hotel reservations are due 1 May 2010. After that date, rooms at the above rates may not be available. The above rates are in US dollars and are exclusive of applicable state and local taxes.

Method of Payment

- Credit Card: To guarantee a reservation, please indicate your credit card number, expiration date and details of card holder on the registration form.
- Check: The first night deposit is required. The deposit will be deducted from your final hotel bill.

We reserve the right to cancel your hotel reservation if we have not received payment by 1 May 2010.

Hotel Cancellation Prior to April 1, 2010

Refund deposit Prior to 1 May 2010
 20% of room rate Prior to 15 May 2010
 50% of room rate Prior to 25 May 2010
 80% of room rate 25 May – 1 June 2010
 100% of room rate Late and non-arrivals
 100% of total amount of reservation



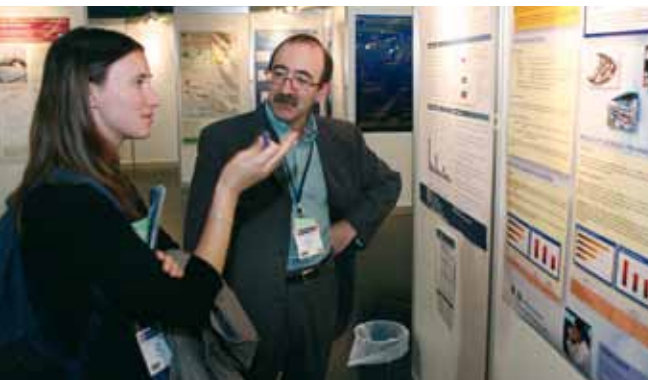
All Sessions and presentations of this programme are subject to change

Tuesday 1 June 2010

12:00	Registration
13:00	Technical Tours and Biological Drinking Water Treatment Workshop
18:00	Welcome Reception

Wednesday 2 June 2010

8:00	Registration
09:00-09:45	Opening Session Chair: B. Rittmann Welcome from IWA Welcome from Pedro Alvarez, LET2010 Programme Committee Chair Welcome from Zaid Chowdhury, LET2010 Organising Committee Chair
09:45-10:00	Coffee
10:00-12:00	Transforming Paradigms for Sustainable Water Chair: P. Alvarez Co-Chair: D. Owen
10:00	Integrating Technology and an Integrated Water Company Roelof Kruize, Waternet, Netherlands
10:45	Earth Systems Engineering and Water Brad Allenby, Arizona State University, USA
11:30	Wastewater Treatment and Greenhouse Gas Emissions Jurg Keller and Zhiguo Yuan, University of Queensland, Australia
12:15-13:30	Lunch
13:30-15:30	Emerging Science and Technologies for Water Chair: J. Clement
13:30	Advanced Membrane Technologies for Sustainable Water Supply Menachen Elimelech, Yale University, USA
14:00	Major Advancements with New Technology for Water Treatment Peer Kamp, PWN, Netherlands
14:30	Seawater as an Alternative Water Resource G.H. Chen, The Hong Kong University of Science & Technology, Hong Kong
15:00	Making Water Work for Us to Generate Enough Renewable Energy Bruce Rittmann, Arizona State University, USA
17:00-19:00	Poster & Exhibition Session



Thursday 3 June 2010

08:30-10:00	Maximizing Recovery of Resources from Wastewater Chairs: L. Raskin & J. Keller	New Materials and Technologies for Membrane Processes Chairs: G. Galjaard & L. Broens
08:30	The Pursuit of Sustainable Water and Wastewater Systems: The Role of Wastewater as a Renewable Resource Nancy Love, University of Michigan (USA)	Block Copolymer Membranes Ed Cussler, University of Minnesota (USA)
09:00	Scaling up Hydrogen Production in Microbial Electrolysis Cells- Laboratory and Field Tests B. E. Logan, R. Cusick, M. D. Merrill, S. Cheng, B. Bryan, D. S. Parker (USA)	Novel Structural, Interfacial and Separation Properties of Polyaniline PolySulphon Composite Membranes G.R. Guillen (USA)
09:15	Caustic Soda and Hydrogen Peroxide: Bulk Chemicals Produced from Wastewater Organics R. A. Rozendal, K. Rabaey, J. Keller (Australia)	Simulation of Particle Capture in a Microfiltration Membrane Q. Derek (France)
09:30	Discussion	Discussion
10:00-10:30	Coffee	
10:30	Peak Phosphorus Issue and Overall Nutrient Recovery Needs in Urban Water Cycle Stuart White, University of Technology Sydney (Australia)	Reverse Osmosis Desalination> Surface Nano Structured Membranes Yoram Cohen (USA)
11:00	Complete Nutrient Recovery from Source-Separated Urine K. M Udert, M. Waechter (Switzerland)	Synthesis of Hierarchical Ag Nanorods-TiO₂ Nanofiber Membrane for Water Purification L. Liu, Z. Liu (Singapore)
11:15	Eco-engineering of a Mixed Microbial Culture to Maximise Polyhydroxyalkanoate (PHA) Production from a Surplus Feedstock: Sugar Molasses M, Albuquerque, S.Concas, M. A. Reis (Portugal)	Membrane Chemical Reactor Utilisation of Nano Ti2O Particles for Advanced Water Treatment B. Jefferson (UK)
11:30	Discussion	Discussion
12:00-13:00	Lunch	
13:00-14:30	Minimising the Greenhouse Gas Footprint Chairs: K. Chandran & M. van Loosdrecht	The new Science and Technology for Water Reuse Chairs: C. Wallis-Lage & P. Gislette
13:00	Saline Sewage Treatment and Urine Separation - Some Opportunities for Improved Sustainability of Urban Wastewater Treatment Systems George Ekama, University of Cape Town Rondebosch (South Africa)	Trials overcome Tribulations: Innovation & Demonstration for a 700 MLD capacity Advanced Tertiary Treatment Plant Mr Chris Williams, Melbourne Water (Australia)
13:30	Wastewater as a Source of Energy - Can Wastewater Treatment Plants Be Operated Energetically Self Sufficient?. A. Meda, P. Cornel (Germany)	Synergistic Adsorption-Photodegradation of Recalcitrant Contaminants with Bi-functional N-TiO₂/AC Composite: Potential for Water Reclamation Using Solar Irradiation P.S. Yap, T.T. Lim, M. Lim, M. Srinivasan (Singapore)
13:45	Minimising Overall Greenhouse Gas Emissions in Wastewater Treatment Plants by implementing Automatic Control Strategies L. Coromines, X.Flores, L. Snip, P.A. Vanrolleghem (Canada)	Impact of Nitrification-Denitrification on Reclaimed Water Disinfection F. Soroushian, Z. Erdal, V. Shyamasundarl, G. Tchobanoglous (USA)
14:00	Discussion	Discussion
14:30-15:00	Coffee	
15:00	Clean Water vs. Clean Air? Assessing BNR Contributions to Climate Change Linda Sohl, NASA Goddard Institute for Space Studies (USA)	Applying Leading-Edge Technologies: Beenyup Groundwater Replenishment Project Keith Cadee, Water Corporation (Australia)
15:30	Nitrous Oxide Emissions from Wastewater Treatment Plants - Improving the Quality of Measuring Data Y. Schneider, M. Beier, K.-H. Rosenwinkel (Germany)	Eliminating Antimicrobial Activity: Impact of Indirect/ Direct Water Reuse Organic Matter Matrices L. Blaney, D. F. Lawler, L. E. Katz (USA)
15:45	N₂O Emission Versus Optimization of Nitrogen Removal and Energy Consumption in Municipal WWTP - Evaluation on Global Warming and Eutrophication with Simplified LCIA H. Siegrist, A. Joss, P. Wunderlin (Switzerland)	Analytical Evidence of Unplanned /Unintentional Indirect Potable Reuse G. Amy, S. Krasner, P. Westerhoff, J. Drewes, M. Jekel, J. P. Croue (Saudi Arabia)
16:00	Discussion	Discussion
19:00	Conference Dinner	

Friday 4 June 2010

08:30-10:00	Redesigning the Wastewater System Chairs: T. Murakami & G. Daigger	Clean Technologies - Minimising Waste and Optimizing Use of Resources Chairs: J. Clement & A. N. Pua
08:30	Redesigning Wastewater Infrastructure to Improve Resource Efficiency Tove Larsen, Eawag (Switzerland)	Reverse Osmosis - Zero Liquid Discharge AWWARF project Rick Bond, Black & Veatch (USA)
09:00	Life Cycle Assessment of Conventional and Source-Separation Systems for Urban Wastewater Management C. Remy and M. Jekel (Germany)	Water Reuse Treatment & Recovery of RO Brine from Water Reclamation Factories Using Biological Activated Carbon (BAC) and Capacitive Deionisation (CDI) Tao Guihe, PUB (Singapore)
09:15	The Economic Value of Flexibility in Wastewater Infrastructure Planning T. Hug and M. Maurer (Switzerland)	Effect of Water Quality on the Electrochemical Oxidation of Brackish Water Reverse Osmosis Concentrate G. Hurwitz; E. Hoek (USA)
09:30	Discussion	Discussion
10:00-10:30	Coffee	
10:30	Modification of Anaerobic Digestion System Towards Feasible Power Production from the Biogas Hidenari Yasui, Katakayushu University (Japan)	Suspended Ion eXchange (SIX®) for Pre-treatment in Advanced Oxidation and Membrane Water Treatment Systems O. P. Friend-Gray, J. P. Malley (USA)
11:00	A Real Trial of SANI Process for Sludge Minimization and Greenhouse Gas Reduction in Saline Sewage Treatment H. Lu, D.Wu, G. H. Chen, M. C. M. van Loosdrecht, and G. Ekama (China)	Optimization of the Ion Exchange Membrane Bioreactor for Removal of Anionic Micropollutants from Drinking Water Supplies A. R. Ricardo, R. Oliveira, S. Velizarov, J. G. Crespo, M. A.M. Reis (Portugal)
11:15	Integrating Anaerobic Processes Into Wastewater Treatment E. J. McAdams, J. N. Lester, B. Jefferson, and E. Cartmell (UK)	Novel Bacterial Strains Clear Algal Toxins From Drinking Water Linda A Lawton, Robert Gordon University, UK
11:30	Discussion	Discussion
12:00-13:00	Lunch	
13:00-14:30	Minimising Odors and Corrosion in Sewers and Wastewater Treatment Plants Chairs: K. Pagilla & R. Stuetz	Low Energy Desalination Chairs: G. Leslie & G. Amy
13:00	Modeling the Long-term Corrosion of Reinforced Concrete Sewers Robert Melchers, The University of Newcastle (Australia)	Seawater Reverse Osmosis (SWRO) as a Green Technology: The Australian Perspective Greg Leslie, University of New South Wales (Australia)
13:30	Odour and Corrosion Mitigation in the Elanora Catchment Using Model-Based Network Chemical Dosing S. K. Corrie, K. Sharma, S. Sikder, M. Wilson, K. Ziebarth (Australia)	Energy Reduction in Seawater Desalination R. Huehmer, J. Lozier, R. Bergman (USA)
13:45	A Sewer Ventilation Model Applying Conservation of Momentum M. Ward, G. Hamer, A. McDonald, J. Witherspoon, E. Loh, W. Parker (USA)	Optimization of Desalination for Low Energy Bruce Long, Black & Veatch (USA)
14:00	Discussion	Discussion
14:30-15:00	Coffee	
15:00	Biological Treatment of Air Toxics and Odors: Performance and Limits Marc Deshusses, Duke University (USA)	Pressure Retarded Osmosis for Energy Recovery Amy Childress, University of Nevada-Ren (USA)
15:30	A New Tool for Real-Time Odor Management V. Lazarova, E. Senante, V. Guimet, F. Fotoohi, P. Dauthuille (France)	Reversible Cation Exchange-Membrane (RCIX-MEM) Process for Fouling Free and Energy Efficient Desalination of Seawater S. Sarkar, A. K. SenGupta (USA)
15:45	Microbial Structure-Function Analysis of a Full Scale Biotrickling Filter for Treating Municipal WWTP Odors F. de los Reyes III, J. So, M. Johnson, L. D. le Roux (USA)	Low Energy Desalination: Low Dose & Mean Ion Resident Time in Concentrate of Electrodialysis Reversal M. T. Myint, A. Ghassemi, N. Nirmalakhandan (USA)
16:00	Discussion	Discussion
16:30	Coffee	
17:00-18:00	Closing Ceremony	

Poster List: confirmed as of 25 January 2010

A Cost Benefit Study On A New Wastewater Treatment Process Generating Poly-hydroxybutyrate

P. Chakravarty, V. Mhaisalkar, T. Chakrabarti (India)

A Hierarchical Data Visualization and Control System for Water Network Sensors

D. Kroll (USA)

A Multi-Objective Optimization Methodology for the Elucidation of Locality-Specific Sustainability Trade-Offs in Wastewater Treatment Plant Process Selection

J. Guest, S. J. Skerlos, N. G. Love. (USA)

A Novel Technology for on-site Cupric Oxide Recovery from Cupric Chloride Etchant Waste

T. Kobayashi, K. Kano, T. Suzuki, A. Kobayashi (Japan)

A Numerical Approach for Modeling Carbon and Nitrogen Removal under the Influence of Floc Size Distribution

A. Sobremisana, F. de los Reyes III, J. J. Ducoste (USA)

A Real Trial of a Long-term Non-fouling Membrane Bioreactor for Saline Sewage Treatment

P. Bai, G. H. Chen (Hong Kong)

Abundance and Distribution of Activity of Different Populations in an Advanced IFAS-EBPR-MBR Process

N. Majed, A. Onnis-Hayden, A. Z. Gu (USA)

Advanced Coagulant Dosage System for Simultaneous Nutrients Removal; Phosphorus Removal to Low Concentrations without Inhibiting Denitrification

S. Scherrenberg, W. Menkveld, M. Bechger, J. van der Graaf (The Netherlands)

Advanced Oxidation Piloting to Understand Treatment Performance, Oxidation Byproducts, and Peroxide Quenching

C. Cotton (USA)

Advanced Water Reclamation for Indirect Potable Reuse: Examining Sustainability of Three Different Treatment Schemes

J. C. Lozier, L. Schimmoller (USA)

An Energy Efficient Integrated UASB-MBR Wastewater Treatment Process for Water Reclamation

F. S. Wong, Y. P. Moy, W. Fang, S. Lin (Singapore)

Anaerobic Dechlorination of Trichloroethene with Hydrogen Produced from a Microbial Electrolysis Cell

H. S. Lee, A. G. Delgado, C. I. Torres, R. U. Halden, B. E. Rittmann, R. Krajmalnik-Brown (USA)

Aquacritox Supercritical Water Oxidation Technology for Recovery of Energy and Phosphorus from Sewage Sludge

P. O. Callaghan, J. O. Regan (Ireland)

Balancing Energy, Operating Costs, Greenhouse Gases, and Water Environment through a Process Modeling and ICA Approach

J. Porro (USA)

Best Available Technologies for IPR: Balancing Cost and Carbon Footprint

A. Salveson, J. Bandy, S. Deslauriers (USA)

Biodegradation of a technical mixture nonylphenols by three mixed populations

A. X. Torres-Bojorges, G. Buitron (Mexico)

Biohydrogen Evolution in Bioelectrochemical Cell with Assistance of Phototrophs and Heterotrophs

M. J. Choi, K. J. Chae, K. Y. Kim, F. F. Ajayi, I. S. Kim (Korea)

Bioplastic Production Using Wood Mill Effluents as Feedstock

M. Ben, T. Mato, C. Kennes, M. C. Veiga (Spain)

Biotechnological Removal of Reduced Sulfur Compounds from Waste Gases and Wastewater

A. Gonzalez Sanchez, L. Arellano Garcia, J. Espinosa Marquez, S. Le Borgne, S. Revah (Mexico)

Butanol Production from The Effluent of Hydrogen Fermentation

W. H. Chen, S. Y. Chen, Z. C. Jian (Chinese Taiwan)

Comparison of Advanced Oxidation Processes Selection for Reducing Nanofiltration Fouling

R. Lamsal, R.M. Brookman, M. E. Walsh, G. A. Gagnon (Canada)

Conditioning Films Formed by Algal Biopolymers in Seawater Reverse Osmosis Desalination

D. A. Ladner, J. A. Jurevis, M. M. Clark (USA)

Control of Chlorinous Odor in Drinking Water by Ozonation

S. Phattarapattamawong, Y. Aoki, S. Echigo, S. Itoh (Japan)

Draw Solution Selection for Forward Osmosis Applications

A. Achilli, T. Cath, A. Childress (USA)

Effect of Free Nitrous Acid on Nitrous Oxide Production by a Full-scale Denitrifying Sludge

B. Hill, M. Pijuan, U. Werner, Z. Yuan (Australia)

Effect of Intermediate Tertiary Treatments on the Performance of Low Pressure Membrane Processes for the Reuse of Urban Wastewater

E. Filloux, A. Tazi-Pain, J. P. Croué (USA)

Effect of Natural Organic Matter on Granular Activated Carbon Adsorption of Herbicides

P. Hnatukova, M. Pivokonsky, I. Kopecka, J. Baeumeltova (Czech Republic)

Effect of Non-Precious Metal Catalysts on Electrical Performances of Single Chamber Microbial Fuel Cells

J. Y. Nam, H. W. Kim, C. M. Moon, D. G. Kim, H. S. Shin (Korea)

Effect of pH and Hydraulic Retention Time on Fermentation Product Distribution in Anaerobic Sequencing Batch Reactor

V. Krishnan, B. E. Rittmann, S. W. van Ginkel (USA)

Effect of the Fill Rate in Sequencing Batch Reactors Treating Inhibitory Wastewater

I. Moreno-Andrade (Mexico)

Effects of Ion-Exchange Treatment on Bromate Formation and Oxidation Efficiency During Ozonation

S. Echigo, S. Itoh, A. Niwa (Japan)

Effects of Oxygen Crossover on Microbial Fuel Cell Performance and Microbial Community Structure

C. S. Butler, R. Nerenberg (USA)

Elucidating the Role of Ammonia Oxidizing Bacteria versus Heterotrophic Bacteria during the Biotransformation of Microconstituents

W. Khunjar, N. Love, S. Mackintosh, J. Skotnicka-Pitak, M. Celiz, S. Baik, D. Aga, W.F. Harper (USA)

Energy-Efficient Biological Nitrogen Removal Using Hydrogen-Based Membrane Biofilm Reactor and Hydrogen Generated by a Microbial Electrolysis Cell

H. S. Lee, M. C. Ziv-El, B. E. Rittmann (USA)

Enhanced Photocatalytic Oxidation by Anatase Nanotubes for Water Treatment

Y. Wang, X. Zhang, D. D. Sun (Singapore)

Enhancing Nutrient Removal in Municipal Wastewater Treatment Plants by ex-situ Bioaugmentation

D. Peng, L. Yu, Q. Wan, P. Fang, K. i Fan, S. Jing (China)

Experiences on Methane Degradation in Two-phase Partition Bioreactors

S. Revah, J. Rocha-Rios (Mexico)

FLGM – Toll for Upgrade of Separation Process during Water Treatment

M. Pivokonsky, P. Bubakova, P. Hnatukova (Czech Republic)

Fouling Development Monitoring during Seawater Reverse Osmosis Desalination Process

M. Moonkhum (Korea)

Fouling of PVDF Low Pressure Hollow Fiber Membranes for Natural Surface Water Treatment: Membrane Performance Assessment and Surface Characterization

A. H. Nguyen, J. E. Tobiason (USA)

Growth of Micro-algae Using Wastewater for Anaerobic Co-digestion S.

J. Ergas, A. K. Sahu, X. Yuan, M. Wang, A. Kumar, C. Park (USA)

Identification of Effects of Flow Equalization on the Greenhouse Gas Emissions from Wastewater Treatment Plant

A. M. K. Mikola, R. Vahala, J. Rautiainen (Finland)

Improving Process Control by Advanced Error Detection, Using Floating Validation Ranges of Online Measurements

S. S. Rathnaweera (Norway)

Innovative Approach to Centrate Nitrification Accomplishes Multiple Goals - Nitrogen Removal and Odor Control

J. R. Coughenour II, T. Walz, G. Blatchford, J. Phillips, J. Husband (USA)

Inorganic Contaminants in Scales Formed in Drinking Water Distribution Systems: Examination of Occurrence, Release and Effects of Desalinated Water

C. Y. Peng, G. Korshin, A. Frenkel (USA)

Integrative Modeling of Reservoir Management for Drinking Water Production

I. Slavik, B. Skibinski, S. Watzlawik (Germany)

Interactions Between Inorganic Oxide Nanoparticles and Municipal Wastewater Constituents: Implications for Nanoparticle Removal during Biological Wastewater Treatment

R. Sierra-Alvarez, I. Barbero, J. Rottman, M. Rodriguez, A. Luna-Velasco, F. Shadman, J. A. Field (USA)

Kinetics of Ciprofloxacin Degradation by Advanced Oxidation Processes: Effects of Natural Organic Matter Matrices

C. Marron, L. Blaney, D. Lawler, L. Katz (USA)

Largest, High-Rate, Potable Water DAF System In The World - Haworth, NJ WTP

R. Hess (USA)

Lowering Chemical and Energy Usage for Inland Desalination Concentrate Volume Reduction

C. He, M. Gross, B. Kelso, R. Nandan, P. Westerhoff (USA)

Low-level Phosphorus Supplementation Enhances Biofiltration Hydraulic Performance and Treatment Efficiency

C. Lauderdale, J. Brown (USA)

Microalgae Cultivation and Nutrients Removal from Secondary Treated Wastewater Using a Membrane Photobioreactor

K. G. Song, H. S. Oh, K. W. Cho, K. H. Ahn (Korea)

Microbial and Chemical Characterization of Grease Interceptors for Removing Fats, Oils, and Grease (FOG) in Sewer Lines

X. He, M. Carpenter, F. de los Reyes III (USA)

Microfluidic Chip-Integrated Electrochemical Biosensor for Detection of Cyanobacterial Toxin

H. W. Yu, L. Lee, I. S. Kim (Korea)

Novel Osmotically Driven Membrane Processes for Treatment of Impaired Water: Scaling Up Forward Osmosis from Bench to Pilot with Large Membrane Elements

T. Y. Cath, N. T. Hancock, O. S. O. Ogungbenle (USA)

Occurrence and Removal of Biogenic and Engineered Nanomaterials at Wastewater Treatment Plants

P. Westerhoff, G. Song, J. Wang, Y. Wang, A. Kiser (USA)

Optimization of Heavy Metal Removal from Wastewater by Nano-Sized Zero-Valent Iron Using Response Surface Methodological Approach

S. Y. Chen, W. H. Chen, C. J. Shih (Chinese Taiwan)

Optimizing Cathode pH and Cathode Potential for Bioelectrochemical Perchlorate Reduction

C. S. Butler, P. Clauwaert, W. Verstraete, R. Nerenberg (USA)

Optimizing Distributed Wastewater Reclamation Capacity in Tucson

G. Woods, D. Eberle, J. Smith, S. E. Davis, K. E. Lansey, R. G. Arnold (USA)

Phosphorus Fractionation and Treatability in Wastewater Effluents

L. Liu, A. Gu, N. Majed, M. Benisch, J. B. Neethling (USA)

Preliminary Aeration of Wastewater in Wastewater Network

V. Mkrtchyan (Armenia)

Prevention Of Struvite Scaling In Digesters In Combination With Phosphorus Removal And Recovery

S. Petzet, L. Tao, P. Cornel (Germany)

Recovery of Rare Metals from Sewage Sludge

T. Murakami, M. Shimada, H. Komatsu (Japan)

Reduced Order Model for Advanced Monitoring and Control of Membrane Bioreactor

V. Prasad, V. Madyastha, V. Mahendrakar (India)

Remediation of Acid Mine Drainage in Sulfate-Reducing Permeable Reactive Barriers Packed with Zero-Valent Iron

A. Luna-Velasco, R. Sierra-Alvarez, B. Howard, J. A. Field (USA)

Removal of CeO₂ and Al₂O₃ Nanoparticles in Semiconductor Manufacturing Effluents during Activated Sludge Treatment

F. Gomez, I. Barbero, M. Rodriguez, A. Luna-Velasco, F. Shadman, J. A. Field, R. Sierra-Alvarez (USA)

Removal of Heavy Metals using Commercial Metal Oxide Nanoparticles

H. Shipley, K. Engates, J. Hu (USA)

Removal of Oxidized Contaminants from High TDS Solutions Using the H₂-Based membrane biofilm reactor (MBfR)

S. W. van Ginkel, B. E. Rittmann (USA)

Strategies for Reducing of N-Nitrosodimethylamine (NDMA) and other Compounds of Potential Concern (CPC's) from the City of Scottsdale Water Campus Product Water

A. Nunez, M. Brown (USA)

Study on the Biosorption Capacity of Organic Matters onto Sludge

J. Yu, W. Liu, L. Xiao, R. Wikramanayake, S. Pradhan, J. Hu (Singapore)

Suggestion of Operating Condition for Rapid mixing process considering Removal efficiency and mitigation of CO₂ emission

K. Daeseung (Korea)

Sulfate Radical Mediated Advanced Oxidation Process for the Removal of Trace Organics in Industrial High Purity Water

J. Feng, D. Arifin, R. Woodling, B. Coulter (Singapore)

The Feasibility Study of Persulfate Oxidation to Regenerate Organic Contaminant-Spent Granular Activated Carbon (GAC)

S. Ko, S. Park, S. G. Huling, E. Kan (USA)

The Role of Homo-Acetogens in Microbial Electrolytic and Fuel Cells

R. Krajmalnik-Brown, P. Parameswaran, C. I. Torres, B. E. Rittmann (USA)

Toxicity Assessment of Emerging Contaminants by Prokaryotic Real-time Gene Expression Analysis

A. Onnis-Hayden, N. Gou, A. Z. Gu (USA)

Ultra High Temperature Sewage Sludge Pyrolysis - an Option for Phosphorus Reuse

N. Miladinovic, H. Siegrist (Switzerland)

Urine Nitrification and Sewer Discharge to Realize In-sewer
Denitrification to Simplify Sewage Treatment in Hong Kong

F. Jiang, Y. Chen, G. H. Chen, M. C. M. van Loosdrecht (Hong Kong)

Use of Chemometric Techniques and Surface Models to Improve the Performance of an Azo Dye Mixture Degradation in a Photo-Fenton-Aerobic System

D. Prato-Garcia, G. Buitron (Mexico)

Utilisation of embedded nano particles for recovery of P from sewage effluent

B. Martin, S. A. Parsons, B. Jefferson (UK)

Wastewater as a Resource: A Unique Approach to Achieving Energy Sustainability

P. M. Sutton, B. E. Rittmann, O. J. Schraa, J. E. Banaszak, P. Togna (USA)

Zero Liquid Discharge Ion Exchange as Membrane Desalination Pretreatment

A. Shroads, W. Ela, K. Lansey (USA)

Technical Visits (Tuesday 1st of June 2010 at 13h)

Central Arizona Project Water Treatment Plant

The City of Scottsdale's Water Campus includes the Central Arizona Project (CAP) Water Treatment Plant. This 70 mgd surface water treatment plant includes a recently commissioned 20 mgd treatment train implementing the latest in technology including Dissolved Air Flotation pretreatment, Membrane Filtration and Granular Activated Carbon contactors to control disinfection by-products. The tour will focus on the new portion of the CAP Water Treatment Plant.

Membrane Treatment Facility at Peoria

Peoria is offering a tour of its 10 million gallon per day (MGD) Butler Drive Water Reclamation Facility. The Butler WRF became the largest membrane bio-reactor (MBR) facility in North America when it started operating in July 2008 and was awarded the 2009 APWA Public Works Environmental Project of the Year. The construction of the plant and offsite infrastructure was the single largest capital project that Peoria has ever initiated, with a total project cost of almost \$135 million. The City commenced this sizeable project to ensure the availability of long term water resources for its citizens. The facility uses state of the art membrane bioreactor technology (MBR) and ultraviolet disinfection to treat wastewater to the highest quality (A+) standards. The treated effluent is recharged back into the groundwater aquifer to provide a long term, renewable water supply. The treated effluent also supplements the use of potable water for landscape irrigation within Peoria to further extend the City's water resources.

Center for Environmental Biotechnology

The tour will visit the Center for Environmental Biotechnology in the Biodesign Institute at Arizona State University. The Center performs leading edge research on microbiological means to improve water quality and to produce renewable bioenergy as methane, hydrogen, electricity, or lipids for transportation fuel. The Center has state-of-the-art capabilities for chemical and molecular-biology analyses, and it has bench-scale reactors systems that include microbial fuel and electrolysis cells, methanogenesis, photobioreactors, and membrane biofilm reactors. The Biodesign Institute is an award-winning and LEED-certified research facility designed to support collaborative research that involves biology to address society's challenges of environmental sustainability and human health.



Image of Central Arizona Project Water Treatment Plant's GAC facility

Workshops (Tuesday 1st of June 2010 at 13h)



Biological Drinking Water Treatment

Recent developments in the drinking water field have made it more attractive for utilities in the United States to consider biological processes to treat their drinking water. Such developments include (1) regulations that limit the formation of disinfection by-products and other emerging contaminants, (2) the application of ozone before filtration for taste, odor, and color control, (3) the increased awareness of how biological activity in distribution systems contributes to disinfectant demand, taste and odor events, and corrosion, (4) the interest in sustainable, green technologies. This workshop aims to share the benefits and potential of biological drinking water treatment with utility

managers, consultants, regulators, and researchers, while considering constraints related to technology implementation. A diverse group of experts with broad, international experience with biological drinking water treatment will discuss their views and respond to questions of workshop moderators and participants.



Social Programmes

Welcome Reception: A cocktail reception will be held on 1 June 2010 from 6pm. This will provide the perfect networking opportunity prior to the conference.

Conference Dinner: A dinner will be held on 3 June 2010 at 7.00pm. Accompanying persons are welcome for a fee of US\$ 150.

Dress Code

Technical Visit: Smart Casual

Cocktail Reception: Smart Casual

Plenary Conference: Business attire

Gala Dinner: Smart Casual

Other occasions: Light comfortable clothing is recommended.

You may wish to bring along a cap for outdoor activities due to the hot weather

Programme Committee

Programme Committee Chair: Pedro Alvarez,
Rice University, USA

Track Leader: Mark van Loosdrecht, TU Delft & KWR
Watercycle Research Institute, The Netherlands

Track Leader: Jonathan Clement, Black & Veatch, The
Netherlands

Conference President: Bruce Rittmann, Arizona State
University, USA

Gary Amy, King Abdullah University of Science and
Technology, Saudi Arabia

Kartik Chandran, Columbia University New York, USA

Zaid Chowdhury, Malcolm Pirnie, USA

Glen Daigger, CH2M Hill, USA

Gilbert Galjaard, PWN Water Supply, The Netherlands

Philippe Gislette, Suez Environment, France

Jurg Keller, University of Queensland, Australia

Greg Leslie, University of New South Wales, Australia

Takao Murakami, Japan Sewage Works Agency, Japan

Krishna Pagilla, Illinois Institute of Technology, USA

Aik Num Puah, PUB, Singapore

Lut Raskin, University of Michigan, USA

Richard Stuetz, University of New South Wales, Australia

Cindy Wallis-Lage, Black & Veatch, USA

Other Relevant Events in USA

Membrane Applications

Anaheim (CA), USA

6-9 June 2010

Website: www.wef.org/Membrane/

General Information

Airport Information

Phoenix Sky Harbor International Airport is located 3 miles south-east of the central business district of the City. The conference hotel is a short taxi ride (less than 10 miles) from the airport. Most major airlines have services to the Phoenix airport with some direct international flights from overseas.

About Phoenix

Phoenix is the United States' sixth-largest city, the city has a population of almost 1.3 million and Greater Phoenix has a population of 2.8 million. Phoenix' elevation is 1,117 feet. Greater Phoenix is in the heart of the Sonoran Desert and covers 2,000 square miles. Maricopa County--where Greater Phoenix is located--covers 9,127 square miles. Phoenix has an average annual rainfall of 7.66 inches, the average annual high temperature is 85 degrees and Phoenix averages 300 sun-filled days a year.

Organising Committee

Organising Committee Chair: Zaid K. Chowdhury,
Malcolm Pirnie

Robert Arnold, University of Arizona

Linda Bezy-Botma, City of Peoria

Marshal Brown, City of Scottsdale

Troy Hays, City of Phoenix

Jim Lozier, CH2MHill

Dan Meyer, Black & Veatch Inc.

David Modeer, Central Arizona Project Inc.

Art Nunez, City of Scottsdale

Graham Symmonds, Global Water Inc.

Adrian Puigarnau, IWA

Paul Westerhoff, Arizona State University

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