The 14th IWA Leading Edge Conference on Water and Wastewater Technologies

the international water association

Innovative technology solutions to address challenges at the water-energy-food interface

Advance Programme & Invitation to Register

29 MAY – 2 JUNE 2017
FLORIANÓPOLIS, BRAZIL

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INVITATION FROM THE IWA PRESIDENT

The 14th IWA Leading Edge Conference on Water and Wastewater Technologies is designed to be the place where new ideas are introduced and the opportunity is provided to interact with the "best of the best". This is the IWA conference where a new insight into how pioneering science, technological innovation and leading practices shape the major transformation in water management that is underway.

Year after year, leading researchers can meet and discuss breakthroughs, but also new challenges for the water and wastewater communities. LET is an IWA "think tank" to develop solutions to these challenges, and combines the ideas and results of leading scientists with water industry practitioners, connecting the global with the local.

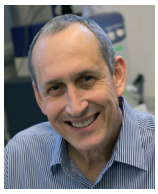
The 2016 LET took place in Jerez, Spain – after 2015 in Hong Kong and 2014 in Abu Dhabi – complementing the technological approaches of urban water management between megacities, smaller towns and rural environments, driven by the diversity of climatic conditions and the natural and human Environments.

Florianópolis is the city selected to provide the bridge towards the Americas, and to attract experts from the region, which is facing great water challenges. It showcases the integration of water between agriculture and cities.

It is a good place to measure the progress of knowledge and advanced technologies on topics such as resource recovery, control of micropollutants and pathogens of emerging concern, anaerobic technologies, materials and membrane granular processes. But it is also the place to move and try new routes. Decentralized technologies could be the right solutions for green fields and developing countries, and green-blue infrastructure another way to combine and optimize hard technologies and soft ones. Come and have a taste of 14th LET 2017. Florianópolis is waiting for you and your leapfrog ideas.

Diane D'Arras
IWA President

INVITATION FROM THE CHAIRMAN OF THE PROGRAMME COMMITTEE



Ensuring access to safe, inexpensive and reliable sources of water in a food- and energy-constrained world is one of the greatest global challenges of this century. Accordingly, the beneficial impact that technological innovation can have in controlling water pollution, recovering resources from used water, and making clean water more accessible to more people cannot be overstated.

On behalf of the Programme Committee, I invite researchers and practitioners worldwide to register for the 14th LET conference in the "Magic Island" of Florianópolis, Brazil. Your participation – as presenters and delegates – will ensure that LET maintains its hallmarks: the highest quality for a technical content that reflects scientific rigor and societal relevance (r2), and the greatest opportunity for networking.

The programme will be organized by themes, which are described in this brochure. The Programme Committee is inviting recognized world leaders to anchor each theme, and it seeks additional platform speakers, workshop leaders, and poster presenters to complement the invited speakers. All abstracts are peer reviewed to ensure high quality and thematic consistency. Indeed, the programme will feature only the "best of the best". I encourage your participation and look forward to welcoming you to beautiful Florianópolis.

Pedro Álvarez
Chair of the Programme Committee
Rice Universtity, United States

INVITATION FROM THE CHAIRMAN OF THE ORGANISING COMMITTEE

Brazil is a country of continental dimensions having many natural resources, known for its great biodiversity and possessor of the largest springs in the world of surface and underground freshwater. Much of its economy comes from the extractive industry, having an important base industrial park and a transformation industry in development. Its environmental protection laws are restrictive, however, and it suffers from lack of supervision and resources for implementing advanced technologies to promote adequate control. With technological advancement, more efficient and lower-cost alternatives are being made available on the market, enabling Brazil to develop the management of its wastewater systems and treatment.

Being a developing country and possessing natural attributes that must be preserved, there are numerous business opportunities in the environmental area. Brazil has a large number of professionals who work directly with topics related to water and wastewater treatment issues, involving scientists, professionals from public and private companies, as well as consulting and national and multinational engineering companies, creating a very opportune time to host LET in 2017 in Florianópolis, in order to stimulate and create an environment for discussion of new technologies most suitable for application.

Participants will find in Florianópolis not only an environment with high-level technical discussions, but also a city with many natural and cultural resources, bringing a unique experience both professionally and personally.

Hugo Moreira Soares
Chair of the Organising Committee
Universidade Federal de Santa Catarina, Brazil

CONFERENCE TOPICS

Advanced anaerobic technologies.

Co-Chairs: Carlos Chernicharo and Juan M. Lema

Anaerobic digestion (AD) is a very powerful technology not only for an efficient waste and wastewater treatment but also for resource recovery. The session will address several topics: Integration of Anaerobic Digestion units with novel technologies such as anammox-based reactors, Bioelectrochemical systems or Pre-concentration strategies using physico-chemical or biological units; Processes considering the use of combined C/N/S cycles; Efficient AD reactors with enhanced biomass retention; Technologies for recovery or abatement of methane from effluents to reduce environmental impacts, namely in municipal wastewater plants; and Upgrading of biogas to biomethane to facilitate energy recovery.

Advanced treatment materials and multifunctional membranes.

Co-Chairs: Pedro Alvarez and Wei Chen

Novel materials are making significant improvements in the way we treat water, wastewater and solid waste. Nanotechnology utilizes materials at the nanometer scale, whose unique properties enable novel functions. It has been actively pursued for various applications in water and wastewater treatment including adsorption, catalysis, membrane separation and sensing. In addition, advances in membrane materials continue to bring innovation in membrane processes, whose application is becoming increasingly common in water and wastewater treatment systems of different scales. This session will address the development and application of such advanced materials to enable a paradigm shift of treatment from the current chemical- and energy-intensive processes to high efficiency, physical and catalytic processes that minimize chemical and energy use as well as waste production.

Applying advanced microbiology/genetics tools.

Co-Chairs: Tom Curtis and Trina McMahon

Microorganisms are key features of water and wastewater systems. Great advances have been made in the application of molecular tools to detect specific organisms and to disentangle how microbial communities assemble and interact. This session will feature outstanding examples of modern tools and approaches while emphasizing how they can be used to understand, predict and control engineered microbial ecosystems. Examples of such tools and approaches include the application of next-generation sequencing for metagenomic or metatranscriptomic analyses, powerful microscopy methods combined with stable isotope labeling, and metabolic flux modeling. Systems of interest include drinking water treatment systems, drinking water distribution systems, wastewater treatment systems, resource recovery systems and aquaculture systems.

Green-blue infrastructure to enhance urban water management.

Co-Chairs: Nilo de Oliveira Nascimento and Wolfgang Rauch

Blue-green infrastructure refers to approaches to integrate planning and management of urban space with water infrastructure. Such blue-green networks are multi-objective territorial structures aiming to promote biodiversity, reduce natural risks, and their impacts and create opportunities for leisure and sport activities, social cohesion and income generation, among other functions. This session will address challenges and opportunities arising from such an integrated approach and share experiences of first implementations – especially in (but not limited to) the context of South American metropolitan areas.

Innovative biofilm and granular processes.

Co-Chairs: Rejane Costa and Mark van Loosdrecht

Novel biofilm processes (e.g. MBBR, MABR) and aerobic, anammox and anaerobic granular sludge processes are under development or implementation, all leading to significant reduction of footprint and energy usage. This session aims to create an overview of the process engineering developments of such processes and illustrate this array of innovative technologies.

Innovative decentralized technologies for developing countries.

Co-Chairs: Jurg Keller and Doulaye Kone

Given the major challenges of implementing large-scale centralised technology solutions in many developing areas worldwide, particularly in the fast growing mega-cities, the need for novel, small-scale and/or decentralised technologies is clearly growing. This session will specifically look for such innovative ideas and solutions that can be applied from single-household to neighbourhood or precinct scales, for both safe water supply and sanitation systems. Also, examples of innovative non-sewered sanitation systems and solutions that may combine decentralised technology innovations within (partly) centralised systems will be explored.

Resource recovery.

Co-Chairs: Bruce Rittmann and Marcelo Zaiat

Wastewater can become a source of value and economic gain if its treatment is re-oriented to emphasize the recovery of water, energy, nutrients and, in some cases, other materials. This session focuses on emerging processes and systems of processes whose primary goal is recovering the resources present in “used water”. Examples include direct anaerobic treatment to give a net energy output, nitrogen and phosphorus separation and concentration to provide high-value fertilizer feedstock, water reclamation for beneficial use, and recovery of other materials, such as metals and fiber.

Technologies for control of micropollutants and pathogens of emerging concern.

Co-Chairs: Marcia Dezotti and Amy Pruden

Water quality is threatened by chemical micro-pollutants of emerging concern, such as pharmaceuticals, personal care products, or endocrine disruptors, and by emerging pathogenic microorganisms, including chlorine- and UV-resistant viruses and protozoa, and antibiotic-resistant bacteria. Although there is still a lack of quantitative data on their effects on ecological and physiological processes, especially on human health, the detection of those contaminants in natural waters and wastewater treatment plant effluents raises concerns about the efficiency of current treatment processes. This session focusses on innovative technologies for the control of emerging contaminants in water and wastewater.

LET2017 CONFERENCE PROGRAMME

Monday, 29 May 2017
Workshops

11:30	Registration opens	
13:00- 17:00	**Workshop 1:** Bringing Leading Edge Technology to the Market - A path of Innovation	**Workshop 2:** Virtual Sugarcane Biorefinery (VSB)
18:00	**Welcome Reception and Brazilian Night**	

Workshops details:

Workshop: Bringing Leading Edge Technology to the Market - A path of Innovation

Organiser: BlueTech Research

Objective: One of the biggest challenges facing the water industry is to bring new technologies fully into the market place where they can be applied full-scale. Many effective appearing ideas spring out of bench-scale research but often never make it to market because the innovation process lacks many of the full-scale engineering and operational aspects. The process involves integrating many diverse resources and disciplines. This workshop will bring together successful innovators and technology companies for an exciting and insightful discussion on challenges and ways to improve bringing new technology to the market place.

Topics: The workshop will contain modules prepared by BlueTech Research covering the following areas:

1. Key success factors and failure nodes that are linked bringing leading edge technology to market
2. Analysis of timelines required to commercialise a technology and move through the market adoption curve
3. Case studies of different types of innovation in water
4. Workshop discussion with participants looking at some of the next waves of innovation

Guest speakers will also include Sembcorp, who will describe their work in setting up the Nanjing technology incubator in China to support technology transfer into the Chinese marketplace.

Workshop 2: Wastewater Treatment of Bioethanol industry

Organiser: Marcelo Zaiat and Hugo Moreira Soares

Objective: This workshop intends to present an overview of the byproducts generated in an ethanol biorefinery, mainly focusing the vinasse from sugarcane, and the potential to recover energy and value-added products by the application of anaerobic biotechnology.
It is expected that participants will get a broad view of the productive process of bioethanol from sugarcane and other lignocelluloses sources with the characterization of the main byproducts generated, and of the role of anaerobic biotechnology for the energetic integration of the process.

Topics:

1. **The industry of bioethanol from sugarcane in Brazil**
   Overview of the current production of sugar and ethanol in Brazil, description of the production process and energy potential of a sugarcane biorefinery.

2. **Byproducts generated in bioethanol production**
   General description of the byproducts with the alternatives applied for bagasse, straw and vinasse. The focus will be on the characterization of vinasse as a more abundant and problematic waste.

3. **Potential application of anaerobic biotechnology for product and energy recovery from vinasse**
   Alternatives for anaerobic processing of vinasse, generation of biogas (hydrogen and methane), generation of biofertilizer and other value-added products.

4. **The Sugarcane Virtual Biorefinery (SVB) and its potential use to evaluate scenarios for energy utilization from vinasse**
   Presentation of the SVB tool and scenario simulations for anaerobic biodigestion of vinasse, environmental and economic balances, with energy integration of the process, including 1G2G ethanol.

Tuesday, 30 May 2017
Plenary Session

8:00 — Registration opens

9:00 — Opening Ceremony

9:30 - 10:15

Advancing NGS Technologies for Investigating Engineered Water Systems
Joan Rose
Michigan State University, United States

Prof. Dr. Joan Rose is currently a Professor at Michigan State University, and holds the Homer Nowlin Chair in Water Research. She serves as the Co-Director of the Center for Advancing Microbial Risk Assessment which addresses evidence-based risk assessments for management of waterborne pathogens. Dr. Rose is an international expert in water microbiology, water quality and public health safety, and has published more than 300 manuscripts. For more than 20 years she has been involved in drinking water investigations of waterborne outbreaks and is well known for her work on the waterborne outbreak of *Cryptosporidium* in Milwaukee. Her work addresses the monitoring of bacteria, protozoa and viruses in polluted recreational and drinking water using conventional and advanced techniques. Dr. Rose recently won the Stockholm Water Prize and is a member of the US National Academy of Engineers. She is a member of the Great Lakes Science Advisory Board for the EPA. She is currently a member of the National Academy of Sciences Board on Environmental Sciences and Toxicology. She is a Fellow of the IWA and Vice Chair of the US National Committee for IWA. Dr. Rose earned her Ph.D. in microbiology from the University of Arizona, Tucson.

10:15 - 10:45 — Morning Tea/Coffee

10:45 - 11:30

Urban wastewater treatment in Brazil: status, perspectives, challenges
Marcos von Sperling
Federal University of Minas Gerais, Brazil

Prof. Marcos von Sperling works in the Department of Sanitary and Environmental Engineering of the Federal University of Minas Gerais, Brazil. Marcos is a civil engineer, having worked in the field of wastewater treatment for more than 35 years. He obtained his PhD in Environmental Engineering at Imperial College London. Professor von Sperling is an IWA Fellow and was Chair of the IWA Specialist Group on Wastewater Pond Technology. Marcos also serves as Editor of the IWA *Journal of Water, Sanitation and Hygiene for Development* and author of many journal papers and five books published by IWA.

11:30 - 12:15

Irruption of digital technologies in water management operations : value creation and perspectives
Carlos Campos
SUEZ, France

Dr. Carlos Campos has been with SUEZ since 1999. He is currently the Chief Operating Officer of Suez Advanced Solutions, a business line with the remit of proposing new services with innovative technologies and business models to clients in the municipal, industrial, and irrigation markets. He manages a worldwide network of service delivery platforms and "Technologies factories" in charge of the management of the portfolio Offering, and its evolution through both in-company developments and M&A. Service Lines include Smart Water (including Smart metering), Revenue Management, Smart Building, Environmental Quality Monitoring, and Asset Perfomance (including Wells, Water Networks, and Sewers). Carlos former responsibilities within SUEZ included Senior VP Research and Innovation, General Manager for the SUEZ Technical and Research Network, and Senior VP of Environmental Technologies businesses within SUEZ water Spain (formerly Aqualogy).

12:15 - 13:15 — Lunch

13:15 - 14:00

Utility Leadership: the Missing Link for Water Technology Innovation
Jonathan Clement
PWN Technologies, The Netherlands

Jonathan Clement worked at Black & Veatch for 18 years, most recently as a Global Technology Leader, prior to joining PWNT. His experience covers 10 years in the United States where he worked on advanced water technology projects with large water utilities. He was the principal investigator and co-investigator of 10 water research foundation (WRF) projects. He has won awards for innovation from the International Water Association (IWA) and published many articles in the area of distribution and water quality. Jonathan Clement has also worked for nearly a decade in Southeast Asia and Australia on advanced water technology projects including membranes and reuse. He has been a IWA fellow since 2012. He is the founder of the IWA's Leading Edge Water Technology Conference and was the Chairman for the first 6 years. In 2013 he received a special award for outstanding leadership for this. Since 2004 he has focused on expanding and improving the application of ceramic membranes for drinking water treatment.

14:00 - 14:45

Advanced Solution for Wastewater Reuse: Directional Transformation and Deep Removal of Low Dose Hazardous Organic Compounds
Aijie Wang
Harbin Institute of Technology, China

Prof. Aijie Wang of Harbin Institute of Technology (HIT), and Professor of Eco-environmental Sciences, Chinese Academy of Sciences, P.R. China. Her research interests cover bio-based technology for heavily polluted industrial wastewater treatment and resources recovery from waste (water)/biosolids. A well-recognized feature of her research is the effective integration of fundamental (interdisciplinary) and practically applicable research. Her work on anaerobic acidogensis of recalcitrant organic compounds based on the concept of biological phase separation have been proved to bring substantial benefits to the Chinese industries (e.g. Pharmaceutical Industry, Chemical Engineering Industry), which suffer from heavy pollution long. Her latest research on the electrochemically assisted anaerobic wastewater treatment significantly accelerates the reductive detoxification, decolorization and dehalogenation of refractory pollutants, as well as facilitates their deep removal from wastewater, which has been indicated by various application cases and got wide interests from industry in this technology. She was awarded as Distinguished Professor of Yangtze River Scholar by Ministry of Education in 2011. She received the National Outstanding Youth Science Fund Award in 2012, the Youth Science and Technology Innovation Talent Award in 2013 and the Ten-thousand People Program: Leading Talent Award in 2016. In 2015, she was awarded as a member of the IWA Fellows.

14:45 - 15:15 — **Afternoon Tea/Coffee**

15:15 - 16:00

Challenges in Anaerobic Treatment: addressing constraints
Jules van Lier
Delft University of Technology, The Netherlands

Prof. Dr. Ir. Jules van Lier is full professor in "Wastewater Treatment / Environmental Engineering" at the Section of Sanitary Engineering of Delft University of Technology, with a 0.2 fte seconded position at Unesco-IHE, Delft. He received both his MSc and PhD from Wageningen University, The Netherlands, and specializes in anaerobic treatment technology. He has (co-)published over 200 papers in peer-reviewed journals and over 350 publications in conference proceedings and scientific books. Research projects are focused on closing water cycles in industries and sewage water recovery for irrigated agriculture. Jules van Lier chaired the IWA Anaerobic Digestion Specialist Group between 2001 and 2009 and is an associated editor of *Water Science & Technology*. In 2011 he became a nominated member of the IWA Fellows programme.

16:00 - 16:45

Environmental causes for the emergence of diseases: precipitation and temperature
Paolo Zanotto
University of Sao Paulo, Brazil

Prof. Paolo Zanotto, graduated in biology from the Universidade de São Paulo (1981), gained a Masters degree in Molecular Virology from the University of Florida (1990), and a doctorate from the NERC Institute of Virology & Biochemistry, University of Oxford (1995). Has experience in microbiology, focusing on virology, and he acts in the following subjects: molecular biology, evolution, emergence and epidemiology of viruses.

16:45 - 18:00 — **Poster reception session / Innovation Forum**

Wed, 31 May 2017
Technical Sessions

	Room 1	Room 2
	SESSION 1: INNOVATIVE BIOFILM AND GRANULAR PROCESSES **Co-Chairs:** Rejane Costa, Mark van Loosdrecht	**SESSION 2: GREEN-BLUE INFRASTRUCTURE TO ENHANCE URBAN WATER MANAGEMENT** **Co-Chairs:** Nilo de Oliveira Nascimento, Wolfgang Rauch
08:30	**Keynote (1): From failures to successful granular sludge process: Hints for real wastewater treatment under coastal warm climate** Lorena Guimarães and David Weissbrodt, Federal University of Santa Catarina (UFSC) (Brazil)	**Keynote (1): From a blue and green vision to hard infrastructure - An interdisciplinary approach to planning and design of multi-functional spaces** Christian Urich, Monash University, Melbourne (Australia)
09:00	**Formation Of Aerobic Granular Sludge During The Treatment Of Industrial Chemical Wastewater** Michel Caluwé, University of Antwerp (Belgium)	**Transforming Sao Paulo Through Green Blue Infrastructure, The Pilot Project Of The Jaguare Creek** Taícia Helena, Negrin Marques, University of Sao Paulo - USP (Brazil)

09:15	**Unique Mechanisms Of Pore Formation In MABR Biofilms, And Its Effects On Process Performance** Marcelo Aybar, University of Concepcion (Chile)	**Assessing Of An Urban Watershed Hydrological Response To Rainfall-runoff Events In Different Land Use Scenarios** Deyvid Rosa, Federal University of Minas Gerais (Brazil)
09:30	**Discussions**	**Discussions**
10:00 - 10:30	Morning Tea/Coffee	
10:30	**Keynote (2): Two-stage granular sludge nitritation/ anammox process for mainstream wastewater treatment** Julio Perez, Autonomous University of Barcelona (Spain)	**Keynote (2): Towards Sustainable Urban Drainage Systems Planning - Experiences from Bogotá (Colombia)** Juan Pablo Rodriguez, University of The Andes (Colombia)
11:00	**Sulphate Promoting AGS Granulation And Its Causes** Tianwei Hao, Hong Kong University of Science and Technology, HongKong (China)	**Using Green Stormwater Infrastructure To Reduce Combined Sewer Overflow And Mitigate Runoff Up To 30-year Storm Event In** Nian She, Institute of Construction Engineering for Sponge City, Guangzhou University (Switzerland)
11:15	**Mainstream Partial Nitritation-anammox Process: Granular And Integrated Fixed Film Activated Sludge Systems** Alba Pedrouso, University of Santiago de Compostela (Spain)	**Vulnerability Assessment And Contamination Potential Of Unconfined Aquifer From Compensatory Infiltration Techniques** Jakcemara, Federal University of Santa Catarina (UFSC) (Brazil)
11:30	**Discussions**	**Discussions**
12:00	**Poster Pitch**	**Poster Pitch**
12:15 - 13:15	Lunch	
	SESSION 3: TECHNOLOGIES FOR CONTROL OF MICROPOLLUTANTS AND PATHOGENS OF EMERGING CONCERN **Co-Chairs:** Marcia Dezotti, Amy Pruden	**SESSION 4: ADVANCE ANAEROBIC TECHNOLOGIES** **Co-Chairs:** Carlos Chernicharo, Juan M. Lema
13:15	**Keynote (1): tic-independent Resistance Induction-Role of Environmental Pollutants in Antibiotic Resistance Phenomena** April Gu, Civil and Environmental Engineering, College of Engineering, Northeastern University (United States)	**Keynote (1): Recovery of Critical Metal and Metalloid Resources by Anaerobic Processes** Jim A. Field, University of Arizona (United States)
13:45	**The Cost-Benefit Of Technologies For The Control Of Emerging Contaminants In Water And Wastewater** Tanja Rauch-Williams, Carollo Engineers (United States)	**From Wastewater To Resource Source: AnMBR Technology For Urban Wastewater Treatment** Freddy Durán Pinzón, FCC Aqualia S.A. (Spain)
14:00	**Micropollutants Control And Disinfection In A Fully Integrated Indirect Reuse Management Scheme: Lausanne WWTP** Sylvain Donnaz, Suez Treatment Infrastructure (France)	**Designing Biodigestion Plants For The Treatment Of Sugarcane Vinasse: Impacts Of Phase Separation And Alkalinization** Marcelo Zaiat, Lucas Fuess, University of São Paulo (Brazil)
14:15	**Discussions**	**Discussions**
14:45 - 15:15	Afternoon Tea/Coffee	
15:15	**Keynote (2): Mitigation of micropollutant issue along the water cycle** Sylvie Baig, SUEZ (France)	**Keynote (2): Recovering dissolved methane downstream of anaerobic processes: feasibility, economics and technology selection** Ewan McAdam, Cranfield University (United Kingdom)
15:45	**Efficient Pharmaceutical Removal From Hospital Wastewater By Staged- Moving Bed Biofilm Reactors Followed By Ozonation** Caroline Kragelund, Danish Technological Institute (Denmark)	**Biological Treatment Of Ammonia-Rich Wastewater By Partial Nitrification/ANAMMOX In BioCAST Reactor** Mulligan Catherine N., Concordia University (Canada)
16:00	**The Chemical Structure Of Organic Micropollutants Drives Their Enzymatic Biotransformation In Sewage Treatment Plants** Lorena Gonzalez-Gil, University of Santiago de Compostela (Spain)	**Utilization Of Duckweed (Spriodela Polyrrhiza) For Sewage Treatment And Biogas Production: An Integrated Approach** Rubia Gaur, Doon University (Israel)
16:15	**Discussions**	**Discussions**
16:45	**Poster Pitch**	**Poster Pitch**
17:00	End of Day	

Thursday, 1 June 2017
Technical Sessions

	Room 1	Room 2
	SESSION 5: APPLYING ADVANCED MICROBIOLOGY/ GENETIC TOOLS **Co-Chairs:** Tom Curtis, Trina McMahon	**SESSION 6: INNOVATIVE DECENTRALIZED TECHNOLOGIES FOR DEVELOPING COUNTRIES** **Co-Chairs:** Jurg Keller, Doulaye Kone
08:30	**Keynote (1): Measurement theory and the design of engineered biological communities** Tom Curtis, Newcastle University (United Kingdom)	**Keynote (1): Birthing the Decentralized (Non-Sewered) Sanitation Industry : Status update and Development of Non-sewer Sanitation system (ISO) Standard** Andreas Hauser, TÜV SÜD Asia Pacific Pte. Ltd. (Singapore)
09:00	**Bioenergetics Suggests A Novel Mechanism Of Energy Harvesting In Ammonia Oxidising Bacteria** Rebeca González-Cabaleiro, Newcastle University (United Kingdom)	**Can Microalgae-based Wastewater Treatment Plants Be Energy Self-sufficient?** Fabiana Passos, Federal University of Ouro Preto (Brazil)
09:15	**Phage Diversity In Activated Sludge Reflects The Environmental Differences That Select For Host Bacterial Communities** María Victoria Perez, INGEBI-CONICET (Argentina)	**Sub-critical Wet Oxidation Of Excreta: Performance Review And Treatment Product Quality Evaluation** Niken Wijaya, SCION (New Zealand)
09:30	**Discussions**	**Discussions**
10:00 - 10:30	Morning Tea/Coffee	
10:30	**Biological phosphorus removal through the lens of microbial ecosystems biology** Trina McMahon, University of Wisconsin-Madison College of Engineering (United States)	**Keynote (2): Decentralised nutrient recovery from human excreta: empowering sanitation coverage by creating value on site** Pablo Ledezma, Advanced Water Management Centre (AWMC), The University of Queensland (Australia)
11:00	**Evaluating Neutral Assembly In The Formation Of Water Filters Microbial Communities** Marta Vignola, Newcastle University (United Kingdom)	**Design And Implementation Of Integrated Electrochemical Wastewater Treatment And Recycling Systems For Onsite Sanitation** Clément Cid, Caltech (United States)
11:15	**Diversity And Dynamics Of Bacterial Communities In A Water Supply System** Ana Maria Batista, Federal University of Minas Gerais (Brazil)	**Integration Of Solar Septic Tank And Constructed Wetland For Treatment Of Black Water** Tatchai Pussayanavin, Asian Institute of Technology (Thailand)
11:30	**Discussions**	**Discussions**
12:00	**Poster Pitch**	**Poster Pitch**
12:15 - 13:15	Lunch	
	SESSION 7: RESOURCE RECOVERY **Co-Chairs:** Bruce Rittmann, Marcelo Zaiat	**SESSION 8: ADVANCE TREATMENT MATERIALS AND MULTIFUNCTIONAL MEMBRANES** **Co-Chairs:** Pedro Alvarez, Wei Chen
13:15	**Keynote (1): How to manage microbial communities to recover energy from wastewater systems?** Claudia Etchebehere, Clement Estable Biological Research Institute (Uruguay)	**Keynote (1): Overcoming Implementation Barriers for Nanotechnology in Drinking Water Treatment & A Case Study** Paul Westerhoff, Arizona State University (United States)
13:45	**Impact Of pH On The Product Spectrum Of A Granular Sludge Bioreactor Producing Mainly Odd-numbered Volatile Fatty Acids** Alexander Hendriks, Delft University of Technology (The Netherlands)	**SBR Anaerobic / Aerobic Coupled To Photocatalysis For The treatment Of Azo Dye Direct Red 23** Rubí Casimiro-Chávez, Universidad Autónoma del Estado de Morelos (Mexico)
14:00	**Wastewater Treatment Plants As Biosynthesis Factories For Sustainable Feed Production** Lauren Stadler, Rice University (United States)	**Increasing COD Removal And Energy Efficiency Of An AnMBR By Using The Membrane As Microbial Anode** Sven Kerzenmacher, University of Freiburg (Germany)
14:15	**Discussions**	**Discussions**
14:45 - 15:15	Afternoon Tea/Coffee	

15:15	**Keynote (2): Maximizing the Value of Resoures Recovered from Wastewater** Bruce Rittmann, Arizona State University (United States)	**Keynote (2): Nanophotonics enhanced membrane distillation: potentials and limitations** Qilin Li, Rice University (United States)
15:45	**Removal And Recovery Of Nutrient Without Biology: Understanding The Challenge Of Implementing A New Paradigm** Bruce Jefferson, Cranfield University (United Kingdom)	**Solar Semiconductor Photocatalysis For Advanced Water Treatment: Performance Of Novel Catalysts Activated By Sunlight** Rafaela Marcelino, UFMG (Brazil)
16:00	**Resource Recovery From Acid Mine Drainage Without Chemical Dosing Using Microbial Electrochemical Technologies** Guillermo Pozo, Advanced Water Management Centre, The University of Queensland (Australia)	**Life Cycle Evaluation Of Anaerobic Membrane Bioreactor Co-Management Of Domestic Wastewater And Food Waste** Adam Smith, University of Southern California (United States)
16:15	**Discussions**	**Discussions**
16:45	**Poster Pitch**	**Poster Pitch**
17:00	**End of Day**	
	Closing ceremony	
	Gala Dinner	

Friday , 2 June 2017

Technical Visits (8:00-12:00)

1 Universidade Federal de Santa Catarina Experimental Sites

Visit to two laboratories with experimental sites that have pilot studies, one being at Algae Cultivation Laboratory (LCM) and the other at Contaminated Soil Bioremediation (REMA).

2 Sewage Treatment Decentralised Systems

Two different systems will be visited, one using wetlands and one using Sequencing Batch Reactors (SBR).

PROGRAMME AND ORGANISING COMMITTEE

Programme Committee Core Group

Bruce Rittmann	Arizona State University (United States)
Hugo Moreira Soares	Universidade Federal de Santa Catarina (Brazil)
Jurg Keller	The University of Queensland (Australia)
Mark van Loosdrecht	Delft University of Technology (The Netherlands)
Pedro Alvarez	Rice University (United States)

Programme Committee Members

Amy Pruden	Virginia Tech (United States)
Carlos Chernicharo	Federal University of Minas Gerais (Brazil)
Doulaye Kone	Gates Foundation (United States)
Juan M. Lema	University of Santiago de Compostela (Spain)
Marcelo Zaiat	Universidade de São Paulo(Brazil)
Márcia Dezotti	Universidade Federal do Rio de Janeiro (Brazil)
Nilo de Oliveira	Nascimento Universidade Federal de Minas Gerais (Brazil)
Rejane Costa	Universidade Federal de Santa Catarina (Brazil)
Tom Curtis	Newcastle University (United Kingdom)
Trina McMahon	University of Wisconsin(United States)
Wei Chen	Nankai University (China)
Wolfgang Rauch	University Innsbruck (Austria)

Organising Committee Members

Eva Estevan	IWA (The Netherlands)
Hong Li	IWA (The Netherlands)
Hugo Moreira Soares	Universidade Federal de Santa Catarina (Brazil)
João Grilo	IWA (The Netherlands)
Rejane Costa	Universidade Federal de Santa Catarina (Brazil)

KEY DATES

20th February 2017: Opening Registration
15th April 2017: Deadline for Early Bird Registration
29th May -2nd June 2017: LET2017 Conference

CONFERENCE VENUE

The 14th Leading Edge Conference on Water and Wastewater Technologies will be hosted at:

Oceania Convention Centre
Rua do Marisco, 550 - Ingleses Centro, Florianópolis

ENQUIRIES

Conference Programme Secretariat
Please contact: let2017@iwahq.org

Registration Secretariat
Please contact: Registrationlet2017@iwahq.org

ORGANISERS & INSTITUTIONAL PARTNERS

The **International Water Association** (IWA) is a global network of water professionals, spanning the continuum between research and practice and covering all facets of the water cycle. Through IWA, members collaborate to promote the development and implementation of innovative and effective approaches to water management.

UNIVERSIDADE FEDERAL DE SANTA CATARINA

The **Universidade Federal de Santa Catarina (UFSC)** is commited to excellence and solidarity towards the construction of a more just and democratic society. The university counts a community of fifty thousand people, including teachers, administrative staff, and students.

SPONSORSHIP OPPORTUNITIES

We partner with some of the water sector's leading companies and organizations and work together for a better water future. Our sponsors and partners benefit from a unique opportunity to connect with thought leaders from within and outside the water sector and to network with over 400 delegates. If you are interested in sponsoring the IWA LET2017 Conference or having a stand in the Exhibition, please contact:

Joao Grilo
Conference Programme Manager, International Water Association
Email: joao.grilo@iwahq.org

DELEGATE REGISTRATION FEES

Registration fees	Early Bird Rate Payment received before 15 April	Normal Rate Payment received before 29 May	On-site Rate Payment received from 29 May
Non-IWA Member	€620	€730	€860
IWA Member	€525	€620	€730
LIC Non-IWA Member	€350	€415	€490
LIC IWA Member	€300	€355	€420
Student	€185	€220	€260
Technical Visit	€20	€20	€20

* Bank fees may be charged by the remitting and/or intermediary bank(s); IWA will not be responsible for any bank fees charged. Please ensure your bank includes all bank fees; if they do not, when you register on-site you will need to pay all the bank fees charged.

Registration Inclusions

- Attendance at all sessions
- Attendance at workshops
- Morning and afternoon coffees/teas
- Lunch
- Welcome Reception & Brazilian night
- Gala Dinner
- Conference bag

Membership

Discounted registration is only applicable for current, paid IWA individual members and employees of IWA corporate members. If you wish to apply for membership and get a registration discount, please go to our website: http://www.iwa-network.org/membership.php

INDIVIDUALS	HIC	LIC
Individual 1 year	€107,00	€54,00
Individual 2 year	€193,00	€97,00
Student/Retired 1 year	€53,00	€38,00
Student/Retired/ 2 year	€95,00	€69,00

Cancellation Policy

Cancellations must be notified in writing to the Conference Secretariat let2017@iwahq.org and confirmed, registrationlet2017@iwahq.org. Telephone cancellations will not be accepted.
Cancellations received before 21 April 2017 will receive a full refund less a €50 administration charge. Refunds will not be issued for cancellations received after 1 May 2017. Substitute delegates will be accepted without charge, but should be notified to the Conference Secretariat.

Visa to Brazil

Delegates from particular countries may require a visa for Brazil. Please check with your travel agent. 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 to travel to IWA-LET2017. http://www.embassy-worldwide.com/country/brazil/

Invitation Letter

You can request for an invitation letter to support your visa application when registering to attend the conference. The invitation letter will be sent after the participant has been registered for this conference and the registration fee has been received in full.

Kindly register early so that you are in time to get your visa approved and issued, before you are due to travel to the conference.