

IWA Specialist Group on Membrane Technology

NEWSLETTER



January 2024

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MESSAGE FROM CHAIR

Dear colleagues and friends,

I'm thrilled to introduce you to the latest newsletter from the International Water Association Membrane Technology Specialist Group (MTSG). As the Chair of MTSG, I'm honoured to bring you the exciting developments in the world of water treatment through membrane technology. Membrane technology is at the forefront of advanced water and wastewater treatment processes, offering a key solution for safeguarding public health, ensuring water sustainability and driving innovation in water treatment. Membranes act as an absolute barrier, assuring the safety of drinking water. As we navigate an era of rapid global population growth and rising industrial demands, the exchange of knowledge and collaboration among experts is essential. Membrane technologies play a pivotal role in providing sustainable solutions for drinking water, desalination and the reuse of municipal and industrial effluent. Our specialist group is dedicated to four core missions: advancing knowledge, educating, bridging research with practice and innovating new membrane processes. We invite new members who share our passion for advanced treatment technologies and a commitment to water safety. Your interest and support are greatly appreciated, and together, we can make a significant impact on water treatment and work towards a sustainable future for all.

Warm regards,

Prof. How Yong Ng

Chair, Membrane Technology Specialist Group (MTSG)

International Water Association (IWA)



NEWLY APPOINTED MEMBERS

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NEWLY APPOINTED MEMBERS

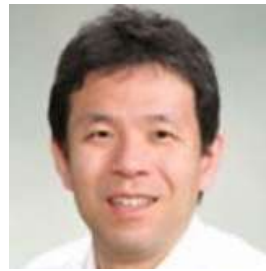
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MEETING HIGHLIGHTS

10th IWA Membrane Technology Conference & Exhibition on July 23-26, 2023 in St. Louis, USA

The 10th IWA Membrane Technology Conference & Exhibition (IWA-MTC) for Water and Wastewater Treatment and Reuse took place from July 23 to July 26, 2023, at Washington University in St. Louis, USA. The conference continued the legacy of previous IWA membrane conferences held in Tokyo (Japan) in 1999, Tel-Aviv (Israel) in 2001, Seoul (Korea) in 2004, Harrogate (UK) in 2007, Beijing (China) in 2009, Aachen (Germany) in 2011, Toronto (Canada) in 2013, Singapore in 2017 and Toulouse (France) in 2019.

A pre-workshop titled "Workshop in Membrane Biofouling: Engineering Biofilms Below the 'Threshold of Interference'" took place in the afternoon of the first day of conference. Led by Prof. Johannes Vrouwenvelder, Prof. Moshe Herzberg, Prof. Virender Sharma, A/Prof. Pierre Le Clech, A/Prof. Sui Zhang and Dr. Peter Desmond, the workshop aimed to highlight key knowledge gaps and operational challenges related to membrane biofouling.

The opening ceremony, held on the morning of the 24th at Whitaker Hall, featured welcome addresses from Co-chairs, Prof. Zhen (Jason) He (Washington University in St. Louis) and Prof. Baoxia Mi (University of California Berkeley). Following the opening ceremony, Prof. Menachem Elimelech delivered a plenary talk titled "The Physical Basis of Water Transport in Reverse Osmosis Membranes: Solution-Diffusion or Pore-Flow Mechanism?". Prof. Masaru Kurihara then presented a plenary talk titled "Current Status and Future Trend of Seawater Desalination on Membrane Technology and Biotechnology as Sustainable Green Desalination in the 21st Century". Subsequently, four parallel oral sessions took place over three days, featuring a total of 135 oral presentations. Poster sessions took place after lunch on the 24th and 25th, involving 26 presenters. An active network was established during lunch and gala dinner, connecting 192 attendees from 30 countries and fostering vibrant discussions beyond academic presentations.

On the final day of the conference, Dr. Pierre Côté delivered a plenary talk on "The Birth and Growth of a Few Successful Inventions" while Dr. Miriam Balaban shared her insights into her lifelong journey in membrane research, reflecting on her role as an editor for academic journals such as Desalination, Desalination and Water Treatment and Symbiosis. The conference was finalized with a closing ceremony and the announcement of the upcoming 11th IWA-MTC 2025 conference, scheduled to take place in Daegu, South Korea, in 2025.



2023 IWA MEMBRANE TECHNOLOGY AWARD

Menachem Elimelech Received the Prestigious Award

The prestigious 2023 IWA Membrane Technology Award was presented to Professor Menachem Elimelech of Yale University during the Gala Dinner of the 10th IWA Membrane Technology Conference in St. Louis, Missouri, USA on 25 July 2023.

The IWA MTSG Membrane Technology Award is given to a member of the IWA MTSG in recognition of their exceptional contribution to Research, Education and Dissemination of Membrane Technology over the World. This award was initiated by IWA MTSG in 2009, and previous awardees include Prof. Kazuo Yamamoto (2009), Prof. Roger Ben Aim (2011), Prof. Anthony G Fane (2013), Prof. Chung-Hak Lee (2017) and Prof. Miriam Balaban (2019).

The IWA Membrane Technology Award 2023 was given to Prof. Elimelech in recognition of “his unprecedented and pioneering contributions to Novel Membrane Processes for Water Reuse and Desalination”. Menachem Elimelech is the Sterling Professor of Chemical and Environmental Engineering at Yale University. His academic journey began with a B.S. and M.S. degrees from the Hebrew University of Jerusalem, followed by a Ph.D. in Environmental Engineering from Johns Hopkins University. He started his career at UCLA where he was a professor and vice chair of the Department of Civil and Environmental Engineering before joining Yale University in 1998. At Yale, he founded the Environmental Engineering Program, which has grown to become one of the most respected programs in the United States.

Prof. Elimelech’s research focuses on vital areas in environmental engineering, with a special interest in membrane technologies at the water-energy nexus. His contributions include energy-efficient desalination and wastewater reuse through membrane-based processes, advanced materials for membrane separations and water decontamination, and environmental applications of nanomaterials. He has authored over 500 refereed journal publications, including invited review articles in Science and Nature, and is a co-author of the book Particle Deposition and Aggregation (1995). He is a Clarivate (Web of Science) Highly Cited Researcher.

Prof. Elimelech has received numerous major awards in recognition of his research. Notable among these are the Eni Award for Protection of the Environment in 2015, the Clarke Prize for excellence in water research in 2005, and election to the National Academy of Engineering in 2006, the Chinese Academy of Engineering in 2017, the Australian Academy of Technology and Engineering in 2021, the Canadian Academy of Engineering in 2022, and the National Academy of Engineering of Korea in 2022.



Prof. Xia Huang (*left*), the Immediate Past Chair of IWA MTSG, and Prof. How Yong Ng (*right*), Chair of IWA MTSG, presenting the award to Prof. Menachem Elimelech.

Over the years, Prof. Elimelech has advised 49 Ph.D. students and 45 postdoctoral researchers, many of whom hold leading positions in academia and industry. In recognition of his excellence and dedication in teaching and mentoring, he received the W.M. Keck Foundation Engineering Teaching Excellence Award in 1994, the Yale University Graduate Mentoring Award in 2004, and the Yale University Postdoctoral Mentoring Prize in 2012.

Further information of Professor Menachem Elimelech can be found at <https://elimelechlab.yale.edu/menachem-elimelech>

HIGHLIGHTS OF INDUSTRY NEWS

Aqua Membranes collaborates with Micron Technology to reduce RO membrane power consumption.

In September 2023, Aqua Membranes unveiled initial findings from an ongoing pilot initiative with Micron Technology, Inc, a major player in memory chip manufacturing, showcasing the performance of Aqua Membranes' innovative Printed Spacer Technology[®]. The collaborative effort demonstrated a noteworthy 20% decrease in the overall energy consumption of systems compared to conventional reverse osmosis (RO) membranes utilizing traditional mesh elements. This achievement was realized after a continuous 4-month evaluation period. One key metric showcasing the effectiveness of the Printed Spacer Technology was the significant enhancement in the feed-to-reject pressure drop (dP), a crucial measure for assessing water fouling in RO applications. The traditional mesh setup averaged a pressure drop of 6.03 pounds per square inch (PSI), whereas the employment of printed spacers remarkably reduced this to an average of 0.6 PSI. Micron expressed its intentions to further assess the efficacy of the Printed Spacer Technology across various RO applications and compare its performance against other membranes available in the market for integration into their full-scale systems. Building on the success of the Boise pilot, Micron is actively considering the incorporation of Aqua Membranes' Printed Spacer Technology elements in its high-capacity fabs, including the planned facility in Clay, New York.

Homepage: <https://aquamembranes.com/>

Singapore startup and researchers make clean water more affordable for developing nations

Atera Water, in collaboration with scientists from Nanyang Technological University, Singapore (NTU Singapore), and the Singapore Institute of Technology (SIT), has pioneered an innovative, cost-effective membrane-based water filtration system for large-scale clean water production. The breakthrough system introduces a nanocomposite membrane named Clarity, crafted from specialized nanoparticles combined with economical polymers like polypropylene (PP) commonly found in plastic grocery bags. This novel membrane boasts only half the carbon footprint of traditional water treatment plants. Distinguished by its enhanced strength, estimated to be 2–3 times more robust than other PP membranes available, Clarity has been integrated into a water treatment system called TeraStream, a collaborative effort between SIT and Atera Water. During its successful pilot phase in Vietnam from March to August 2023, TeraStream showcased its capabilities and will now be implemented in a substantial 10,000m³/day water treatment facility located in Ha Tinh Province, Vietnam. This deployment will generate an impressive amount of clean drinking water

equivalent to four Olympic-sized swimming pools daily. TeraStream's key advantages lie in its ability to operate efficiently at low and consistent water pressure levels, potentially reducing chemical and electrical consumption by up to 90% compared to conventional systems. Additionally, it boasts the environmental benefit of producing no sludge, potentially saving up to 3,000 tons of carbon annually. Positioned as a Singapore-made product, TeraStream will be manufactured in Atera Water's facility in Jurong and is slated for global export, showcasing its potential to revolutionize water treatment practices worldwide.

Homepage: <https://www.aterawater.com/>

Unlocking Innovation: Engineers Utilize Multi-Bore Filtration Membrane Technology to Save Lives

In a groundbreaking pursuit of life-saving water solutions, a team of young engineers from the social enterprise Wateroam is leading the charge in utilizing multi-bore membrane filtration technology for emergency water filters. Their flagship system, the ROAMfilter, stands as a testament to engineering brilliance, employing this innovative technology to purify water swiftly and efficiently in disaster zones and remote areas and saving lives every day.

The ROAMfilter's key features, such as rapid water purification and sustainable solutions, contribute to its success in addressing challenges posed by damaged or unavailable traditional infrastructure. With over 250,000 lives impacted and a growing reach, Wateroam's technology serves as a beacon of hope for communities facing water scarcity and contamination.

Wateroam envisions a future where clean water is a fundamental right rather than a luxury. The integration of multi-bore filtration membrane technology in portable, decentralized systems marks a paradigm shift in how we approach water purification in critical situations.

As Wateroam continues to touch more lives, the durability of their technology addresses unique challenges in disaster zones. Their ultimate goal is to create a world where clean water is accessible to all, and Wateroam's innovation is at the forefront of this transformative journey, making a real-world impact.

Homepage: <https://www.wateroam.com/>

HIGHLIGHTS OF MEMBRANE RESEARCH CENTRES FOR WATER APPLICATIONS

1. Singapore Membrane Technology Centre (SMTC), Singapore

Established in 2008 within the Nanyang Environment and Water Research Institute (NEWRI) at Nanyang Technological University (NTU), the Singapore Membrane Technology Centre (SMTC) has been at the forefront of advancing membrane technology. With a mission encompassing Research & Development, Education & Training and Industry & Application, SMTC serves as a dynamic hub linking research with industry and the international community. The centre focuses on producing PhDs and researchers specialized in membrane technology while acting as an incubator for innovative membrane solutions.

Led by Director Prof. Wang Rong, Deputy Director A/Prof. Chong Tzyy Haur and Asst/Prof. She Qianhong, SMTC's research areas span novel membranes, enhanced module and system design, fouling control and sensors, as well as novel membrane bioreactors (MBRs), reflecting a commitment to cutting-edge

advancements and practical applications in the field. The other SMTC family members include around 40 Research Fellows/Research Associates/Research Assistants and around 40 Ph.D. Students, and several Visiting Professors/Researchers and around 30 NTU Faculty members from 7 Schools of NTU.

SMTC has a dedicated laboratory of 1,000 m², equipped with state-of-the-art research facilities and supported by advanced analytical instruments to enable high-quality membrane research, including: field emission scanning electron microscopy, atomic force microscopy, Fourier-transform infrared microscopy, surface potential analyzer, porometer, liquid chromatography-organic carbon detector, electrical impedance spectroscopy, ultrasonic time-domain reflectometry, optical coherence tomography, etc.

Homepage: <https://www.ntu.edu.sg/newri/research-focus/membrane-technology>



2. Research Center for Membrane and Film Technology, Japan

The Center for Membrane and Film Technology was established in April 2007 under the administration of the Graduate School of Engineering at Kobe University. It is the first large-scale faculty-driven membrane center in Japan. The center aims to form a global network for education and research in the field of membrane and film technology. The center director is Prof. Hideto Matsuyama and the deputy director is Prof. Atsunori Mori.

The center is divided into 7 divisions including, Water Treatment Membrane Division, Gas Separation, Gas Barrier Membrane Division, Functional Thin Film Division, Bio-Process Membrane Synthesis Division, International Joint Research Promotion Division and Commercialization Promotion Division. In the Water Treatment Membrane Division, Hiroshi Onishi (Prof., Division head), Ikko Ihara (Prof.), Hideto Matsuyama (Prof.), Gen Yoshida (Asst. Prof.), Kecheng Guan (Asst. Prof.), Zhaohuan Mai (Asst. Prof.) and Mengyang Hu (Asst. Prof.) are included. The Water Treatment Membrane Division focuses on the development and industrialization of separation membranes for water treatment, including applications in wastewater treatment, seawater desalination and industrial drainage percolation. Membrane fouling, where organic and inorganic particles accumulate on the membrane's surface, is a significant challenge in water management using separation membranes.

The center's research addresses the membrane biofouling issue, a significant challenge in water management using separation membranes and covers various topics, including the development of novel water treatment processes based on forward osmosis, energy conversion, recycling of animal and food biomass using separation technologies and molecule-scale characterization methods at liquid-solid interfaces.

Homepage: <https://www.research.kobe-u.ac.jp/eng-membrane/center/en/>



3. The Institute on Membrane Technology (ITM), Italy

The Institute on Membrane Technology (ITM) is a prominent research organization established by the National Research Council (CNR) to advance membrane science and technology at both national and international levels. Dott. Alberto Figoli serves as the director of the institute. ITM operates from its main headquarters and laboratories located within the University of Calabria in Rende (Cosenza), with an additional research unit in Padova.

The institute boasts a team of more than 100 researchers including 30 permanent staff, 37 research contracts, 4 associated professors, 8 Ph.D. students, 39 foreign visiting scientists, 14 master students, and 12 trainees. ITM's multidisciplinary approach incorporates expertise in chemical engineering, process engineering, chemistry, biological science, food science, material science, and physics.

ITM's primary research activities encompass the synthesis of artificial membranes with catalytic and transport properties, molecular separations, membranes in artificial organs and biotechnologies, catalytic materials and membranes for hydrogen fuel cells, materials for hydrogen production, purification, and storage, catalysts for fine chemical production, oxidation of organic composites, high-tech industrial processes, prototype development, and technological transfer of advanced membrane operations.

The institute is actively engaged in numerous national and international research projects. Biennial Bilateral Agreements on Scientific and Technological Cooperation, covering different aspects of membrane science and technology, have been established between ITM and counterpart Research Councils abroad. These agreements primarily aim to facilitate collaborative initiatives, supporting researcher mobility and staff exchanges for both short- and long-term training periods. Currently, agreements are in effect with South Korea, India, China, the Czech Republic, Poland, Brazil, Portugal, Taiwan, and Israel.

Homepage: <https://www.itm.cnr.it/index.php/en/>



4. Advancing Global Solutions: İTÜ MEMTEK's Trailblazing Journey in Membrane Science and Technology

In a world challenged by rapid population growth, urban sprawl, and the escalating impact of global warming, the availability of vital resources faces an alarming depletion. Turkey stands among the countries grappling with water scarcity, necessitating urgent measures and advanced technologies for sustainable water management. Among these, water reuse and desalination technologies emerge as crucial avenues for securing alternative water resources. At the heart of these solutions lie membrane processes, epitomizing innovation and promise for the future.

Founded in 2010 under the leadership of Professor Dr. Ismail Koyuncu and now helmed by Professor Dr. Dincer Topacık, the National Research Center on Membrane Technologies (MEMTEK) at Istanbul Technical University (İTÜ) has been a beacon of hope and advancement. Supported by the Turkish Republic State Planning Organization and Istanbul Technical University, MEMTEK develops cutting-edge membranes, modules, and processes, thereby providing a platform for researchers to contribute to global advancements in membrane science and technology.

MEMTEK's journey, marked by pivotal milestones, commenced with the completion of its construction in 2011 and the establishment of its full infrastructure in 2012. A significant moment arrived on the 22nd of May 2013 with the official inauguration by the former Minister of Forestry and Water Affairs.

Embarking on a mission to be a global leader, MEMTEK envisions pioneering research and innovation in membrane production, module development, and process enhancement. This vision transcends borders, aiming to develop new technologies through comprehensive research projects and provide indispensable technical knowledge to various industries while fostering a generation of proficient researchers and scientists.

MEMTEK's contributions span an array of groundbreaking achievements and ongoing projects. From introducing Turkey's first pilot-scale hollow fiber membranes to the development of commercial reverse osmosis (RO), ultrafiltration (UF), and high-efficiency forward osmosis membranes, MEMTEK's relentless pursuit of excellence resonates. Ongoing ventures, including intelligent prototype blood oxygenators, smart water management in future cities, producing biocatalytic membranes and monitoring viral presence in wastewater during the COVID-19 pandemic, exhibit its commitment to impactful, forward-thinking solutions.

Within MEMTEK, a national and international symposium is organized biennially. The 7th MEMTEK International Symposium on Membrane Technologies and Applications took place from October 17 to 19, 2023, in Istanbul, Turkey. MEMTEK 2023 brought together researchers, professionals, engineers, and companies to shed light on the current state and future prospects of membrane manufacturing and membrane treatment technologies. The symposium aimed to facilitate the exchange of knowledge on emerging issues and technologies in membrane technologies.

The themes covered a wide range, from novel material approaches to life-cycle analysis of manufacturing and application processes. With over 310 attendees participating in the conference sessions, contributions came from 17 countries. The event featured 72 oral presentations, 33 poster presentations, and 5 plenary lectures. Specially invited keynote speakers, including Prof. Harsha Ratnaweera from the Norwegian University of Life Sciences, Prof. How Yong NG from the National University of Singapore, Prof. Mihail BARBOIU from Institut Européen des Membranes, University of Montpellier, and Prof. Volodymyr V. TARABARA from Michigan State University, shared their experiences with all participants. The symposium successfully fostered a collaborative environment for the global membrane community to discuss and advance membrane technologies.

As MEMTEK continues its strides towards excellence, its relentless pursuit of innovation and commitment to addressing global challenges through membrane technologies underscore its indispensable role in shaping a sustainable future. Its comprehensive research, pivotal projects, and contributions undoubtedly position it as a global leader in membrane science and technology.

Homepage: <https://mem-tek.org/>

ACHIEVEMENTS OF PROF KWANG-HO CHOO FOR WATER RESEARCH

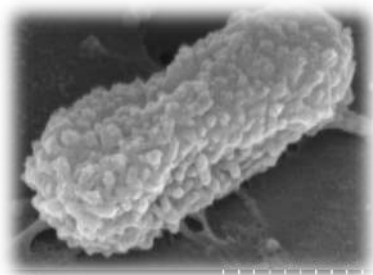


I have been dedicated to studying membranes for water and wastewater treatment since 1990, starting during my graduate school years. Over this extensive journey, my research has focused on developing innovative membrane technologies to address membrane fouling issues in water and wastewater treatment applications.

In our pursuit of efficient antifouling strategies, our research group has explored four distinct and innovative approaches. Our initial endeavour involved the integration of iron oxide particle adsorbents with membranes. This strategy effectively removed organic foulants before they could adhere to the membrane surface. However, recovering and regenerating used adsorbents emerged as a significant obstacle. To overcome this, our group pioneered a novel technique for creating iron oxide granules by binding ferric ions onto cationic polymeric media and facilitating the hydrolysis of ferric ions to form ferrihydrite. The nano-sized iron oxide (ferrihydrite) formed on the polymeric media resolved the issue of recovering used adsorbents, and exhausted iron oxide granules were successfully regenerated when immersed in alkali solutions.

Our second approach in fouling control and contaminant removal involved the utilization of photocatalysts in conjunction with membranes. Photocatalysts, such as TiO_2 , proved effective in degrading organic contaminants by generating hydroxyl and superoxide radicals during photocatalysis. While these photocatalytic materials can regenerate themselves through surface reactions, the requirement for light irradiation onto photo catalysts or photocatalytic membranes, along with the substantial energy consumption, posed challenges for practical applications.

To address these issues, our research group embarked on a novel alternative, focusing on developing electrocatalytic membranes. These membranes employ electrochemical reactions at the surface, including electrooxidation, electrophoresis and electrostatic repulsion, to self-control membrane fouling. Electrochemical membrane filtration systems, exemplified by our recent accomplishment in fabricating layered electrocatalytic microfilters, offer multifunctionalities such as permeability, selectivity and reactivity. These microfilters, composed of composite electrocatalysts loaded on metal oxide interlayers atop a metal mesh, enable the simultaneous removal of particulates and dissolved hazardous substances, all while mitigating fouling.



The immobilization of QQ bacteria on a membrane enhances its anti-biofouling efficacy. Source: *Journal of Membrane Science*. 641 (2022) 119895.

Furthermore, our research group's significant focus in the realm of antifouling research involves the development of biologically active antifouling membranes. These membranes are designed to prevent membrane biofouling, often caused by microbial signalling. We have successfully immobilized live bacterial cells with quorum quenching capability, yielding positive results in fouling mitigation within aerobic and anaerobic membrane bioreactors. For more information on this research, please refer to the link: <https://youtu.be/uG9-APYmk7c>.

In summary, our research group remains committed to resolving membrane fouling challenges through abiotic and biotic strategies. Our ultimate goal is to contribute to the advancement of next-generation membrane technologies for water, a critical and invaluable resource for our lives and the well-being of our planet.



Prof Choo with his research team members

NEWS OF FORTHCOMING EVENTS

7th IWA-Regional Membrane Technology Conference (IWA-RMTC 2024)

Palermo, Italy | 18-21 June 2024

<https://icwrr2024.org/>

The IWA-RMTC 2024 conference will be jointly organized with the ICWRR2024, marking the culmination of a 4-year EU project on water smart solutions. Eminent Water Reuse experts will facilitate multidisciplinary collaboration and dialogue. This event will serve as a platform for scientists, professionals and academia to discuss membrane technology, resource recovery and related topics. Attendees will also have the opportunity to explore Italy's diverse cultural and culinary traditions while in Palermo. The conference will cover various subjects, including novel membrane materials, water treatment, resource recovery and energy recovery, making it a comprehensive forum for those interested in these areas.

IWA World Water Congress & Exhibition

Toronto, Canada | 11-15 August 2024

<https://worldwatercongress.org/>

The IWA World Water Congress & Exhibition unites water professionals worldwide, focusing on the comprehensive water cycle. With a regional emphasis, it attracts leaders and thought innovators, fostering innovation, networking and collaboration. Hosted by the International Water Association, it's the premier global event for water solutions.

Water in Industry 2024

Nanjing, China | 23-27 September 2024

<https://www.iwa-win.org/>

Effectively managing industrial water resources is vital for sustainable economic growth and environmental preservation. In addressing issues such as hazardous organics, salinity, energy consumption and reducing carbon emissions, collaboration between researchers and engineers is essential for pioneering solutions. The IWA Conference "Water in Industry" tackles these challenges, encompassing areas like pre-membrane treatment, alternative water sources, desalination, energy conservation and wastewater control. This event highlights the importance of efficient industrial water management, facilitating innovative research to foster a more sustainable and eco-friendly approach.

IWA 14th Specialized Conference on the Design, Operation and Economics of Large Wastewater Treatment Plants, Budapest 2024

Hungary, Budapest | 9-12 September 2024

<https://lwwtp2024.org/>

The Large Wastewater Treatment Plants (LWWTP) conferences, organized by IWA specialist groups, have a rich tradition dating back to their inception in Vienna. Held every four years in Vienna, Budapest and Prague since 1987, the upcoming 14th conference will delve into various aspects of large wastewater treatment plant design, operation and economic considerations. Topics will also include research and technology for nutrient removal and recovery, bridging operators, designers and consultants with researchers, educators and LCA specialists. A notable focus will be on engaging young water professionals, providing a platform for idea exchange and practical experience sharing, spanning from plant design to wastewater management in "Cities of the Future".

IWA Young Water Professionals China Chapter Annual Meeting 2023 Successfully Concluded in Beijing

The IWA Young Water Professionals China Chapter (IWA YWP China) orchestrated a highly successful annual meeting in Beijing on 22-24 September 2023, marking its 11th anniversary. The event attracted participation from over 150 members in the country, with co-hosts including Peking University and Tsinghua University. During the event, IWA Executive Director Kala Vairavamoorthy conveyed warm congratulations for this significant milestone through a video address. IWA President, Tom Mollenkopf and Chair of IWA YWP Steering Committee, Jacob Kwasi Amengor, also extended their congratulations to IWA YWP China on its 11th anniversary. Prof. Jinren Ni, an academician of the Chinese Academy of Sciences and Prof. Can Wang from Tsinghua University, representing the organisers, delivered welcome speeches. The opening address was moderated by Prof. Sitong Liu, former chair of IWA YWP China. Prof. Xiaoyuan Zhang, Chair of IWA YWP China, highlighted the eleven-year journey of IWA YWP China.

Themed '**Opportunities and Challenges of Water Technology Under the Background of New Engineering**', this meeting placed emphasis on interdisciplinary facets within the water sector, the advancement of emerging women professionals, industry-academia collaboration and strategies for enhancing international cooperation through IWA's platform. Keynote addresses were delivered by Prof. Jiuhui Qu, an academician of the Chinese Academy of Engineering and Ms. Jing Yang, Director of Department of Engineering and Materials, National Natural Science Foundation of China.

IWA unveils hosts for 2028 and 2030 World Water Congress & Exhibition

The IWA is delighted to unveil the chosen locations for the 2028 and 2030 editions of the IWA World Water Congress & Exhibition. Following the meetings of the IWA Board on September 14-15 and the IWA Governing Assembly on September 16 in Bordeaux, France, IWA is pleased to announce that Kuching, Malaysia has been selected as the location for the 2028 IWA World Water Congress & Exhibition and São Paulo, Brazil as the location for the 2030 edition. Outstanding proposals supported by high-level delegations were received from both candidates, with the Malaysian bid led by the Malaysian Water Association and the Brazilian bid led by ABES – the Brazilian Association of Sanitary and Environmental Engineering. The IWA World Water Congress & Exhibition is a global event covering the full water cycle, attracting thousands of leading professionals and companies from across the water sector. The event provides a platform to build new insights into how pioneering science, technological innovation and leading practices shape water management worldwide. With the biennial event moving from location to location, each edition offers an opportunity to highlight regional issues and expertise and to strengthen connections within and beyond the region.

Following the announcement, Dr Mohmad Asari bin Daud, President of the Malaysian Water Association (MWA), commented: "I am truly humbled for this incredible honour of Malaysia being selected by IWA to host the prestigious World Water Congress & Exhibition in 2028. The Brazilian team also expressed its excitement for São Paulo being selected as the host location for 2030. Marcel Sanches, Secretary-General of ABES, said: "It is an honour for ABES to bring to Brazil one of the most important water events in the world. It will be a unique opportunity to strengthen the role of Brazil and our region on the issue of water, as it will be the first time that an event of this size will be held in Latin America and the Caribbean. It will be seven years of hard work together to promote this achievement, which, we hope, will be a milestone in our country and on the continent."

The LET conference - 19th IWA Leading Edge Conference on Water and Wastewater Technologies

The 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 global conference where new insights into how pioneering science, technological innovation and leading practices shape the major transformation in water management that is underway.

The LET conference is held in a different country every year. Following a successful 20th anniversary edition in the series held in Daegu in 2023, IWA will be hosting its 19th Leading Edge Conference on Water and Wastewater Technologies in 2024 in Essen, Germany. With its rich history and reputation as an environmental hub, Essen promises to be an ideal host for this prestigious event.

The submission deadline for outline papers is 15 December 2023 Programme – [IWA-LET](#)

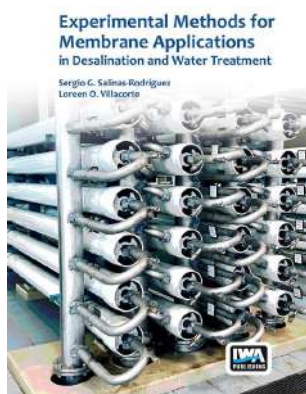
IWA World Water Congress & Exhibition, Toronto, Canada | 11-15 August 2024

The IWA World Water Congress & Exhibition brings together stakeholders and key contacts within the conventional water sector and beyond. It brings together core water sector groups, such as those focused on urban water and urban water services, as well as participants from industry and agriculture, architects and urban planners, soil and groundwater experts and hydrologists, social scientists, the ICT sector, the financial sector, and others.

With a strong representation and contribution from Canada and North America, the IWA Congress & Exhibition is a vital opportunity to learn about the North-Atlantic water challenges and solutions, including through technical site visits. The IWA World Water Congress & Exhibition 2024 follows the resounding success of the 2022 World Water Congress & Exhibition edition held in Copenhagen, Denmark. With a remarkable turnout of nearly 8,900 participants, it was a truly celebrated event.

For comprehensive details, please refer to the link provided below. [IWA World Water Congress & Exhibition – Shaping our water future](#)

Selected Books



[Experimental Methods for Membrane Applications in Desalination and Water Treatment](#)

By Sergio G. Salinas-Rodríguez; Loreen O. Villacorte



[Clean Technologies Toward the Development of a Sustainable Environment and Future: Physicochemical, Biochemical, and Biotechnological approaches](#)

Edited by Pradeep Verma; Maulin P. Shah



[Membrane Based Point-of-Use Drinking Water Treatment Systems](#)

By Pawan Kumar Labhassetwar; Anshul Yadav

Selected Open Access Journal Papers

[Evaluating the performance and membrane fouling of a submerged membrane bioreactor \(MBR\) treating plywood industry wastewater](#)

Guilherme Gavlak; André Aguiar Battistelli; Carlos Raphael Pedroso; Carlos Magno de Sousa Vidal; Kely Viviane de Souza

[Efficient removal of perfluorinated compounds with the polyamide nanofiltration membrane and membrane fouling resistance analysis](#)

Yuyang Wu

[Hydrophobic modification of a PVDF hollow fiber membrane by plasma activation and silane grafting for membrane distillation](#)

Qiaoru Jin; Xue Zhang; Fuzhi Li; Xuan Zhao

[Novel protocol for fouling detection of reverse osmosis membrane based on methylene blue colorimetric method by image processing technique](#)

Hiren Raval; Ritika Sharma; Ashish Srivastava

[Application of ultrafiltration technology in drinking water industry of China: A comprehensive assessment of hybrid membrane processes](#)

Jinjin Jia; Min Rui; Xiaoxiang Cheng; Heng Liang

Special Issue Submission Deadlines Approaching

[Advanced Nanomaterials for Treatment of Wastewater](#)

Relevant topics include **nanoporous polymers** and the advancement of **membranes for treatment of wastewater**.

Submit your research before **31st January 2024**

[Novel Bioprocesses and Technologies for Water and Wastewater Treatment](#)

Relevant topics include **new materials for membrane synthesis** and preparation for water and wastewater treatment, and **polymer membrane separation technologies**.

Submit your research before **28th February 2024**

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IWA LEARN

The place for learning & professional development in the water sector

Professionals in the water sector require continuous development to be able to stay abreast with the changing environment circumstances. No matter in which stage of your career, IWA provides you with guidance and opportunities to build up the competences required to succeed. This includes a set of tools on how to develop your career, as well as opportunity of professional updating, learning, training and networking.

To learn more, visit the IWA Learn platform: <https://iwa-network.org/iwa-learn/>

The screenshot displays the IWA Learn platform interface. At the top, there are four navigation tabs: SHORT-TERM COURSES, SELF-PACED COURSES, WEBINARS, and WATER MSCS. Below the tabs is a navigation bar with the IWA logo and a menu of links: ABOUT US, AGENDAS, EVENTS, COMMUNITIES, AWARDS, LEARNING, BLOG, MEDIA, RESOURCES, and MEMBERSHIP. The main content area features three course cards:

- Meeting:** User Experiences in Earth Observation for Water Management (On-demand)
- Webinar:** Digital Water Horizons: Leading the Next Wave of Innovation (On-demand)
- Self-paced course:** Component Analysis of UAC, Apparent Losses, Annual Real Losses and Night Flows (Online)

Additionally, a card for "Climate Smart Futures: from Process to Emissions to Planetary Boundaries" (On-demand) is visible, featuring a "Select Language" dropdown menu.

BECOME A MEMBER OF MTSG

The IWA Membrane Technology Specialist Group (MTSG) unites the best experts from around the world specialized in probably the most advanced water and wastewater treatment process – membrane technology. Currently, membranes are the only technology that can provide “absolute” barrier to protect public health when treating water for drinking quality. Membranes have become the most economical technology to desalinate brackish and seawater, and have opened a new era for water reuse as Indirect Potable Reuse (IPR) and Direct Potable Reuse (DPR).

As membrane technologies are relatively new processes, the exchange of information and cross-collaboration between experts, scientists and practitioners is fundamental necessity to develop membrane processes, advance membrane treatment and widely spread knowledge on how to benefit people in all parts of the world by having access to basic as well as in-depth expert knowledge and global experience. As population and industry grow globally, there is an increasing demand in treatment processes, and membrane technologies are playing an important and, in some applications, a vital role to provide right and sound solutions when treating water for drinking purposes, desalination or reuse of municipal or industrial effluent.

The Missions of the MTSG are to advance and promote knowledge on membrane technologies, provide education, share and disseminate experience collected globally, connect research with practice to advance implementation of best research results into practical applications and advance development of new membrane processes and applications for water and wastewater treatment, water reuse, salinity management and desalination.

To fulfil our objectives, the MTSG organises biennial membrane conferences and regional membrane conferences, exchanging information and results on the newest developments and applications between group members around the world, and publish online Newsletter. The next regional membrane conference will take place in Palermo, Italy from 18-21 Jun 2024, and we invite everyone to attend.

The MTSG members are in the forefront of the new technologies and applications development and leaders in developing new membrane applications, such as Forward Osmosis (FO) and Membrane Distillation (MD), which are expected to have significant impact to the water industry.

We welcome new members, who are interested in the most advanced treatment technologies, processes and applications, and who care about safety of our water.

For IWA members, who already have Connect login details, please go to <https://www.iwaconnectplus.org/> and simply click on “Join Group” button on the top right.

For new friends, please register to join IWA by visiting <https://iwa-connect.org/subscribe> and then follow the link above to join the WLSG group.

Connect to the world's leading water professionals

Be part of our network today | www.iwa-connect.org



WRITE TO MTSG

The Newsletter is an opportunity to share information: points of view; policy developments; research; activities and events; worldwide. If you have an interesting project, comments, or are planning a conference or workshop, send it to us, including contact point for more information.

- **Prof. How Yong NG**, Chair
Email: huanghy@bnu.edu.cn
- **Assoc. Prof. Woei Jye LAU**, Chief Editor of MTSG Newsletter
Email: lwoeijye@utm.my

If you would like to present a webinar on MTSG or have an interesting story you would like included in a future Newsletter, then get in contact with us.

Disclaimer: *This is not a journal, but a Newsletter issued by the IWA Specialist Group on ###. Statements made in this Newsletter do not necessarily represent the views of the Specialist Group or those of the IWA. The use of information supplied in the Newsletter is at the sole risk of the user, as the Specialist Group and the IWA do not accept any responsibility or liability.*



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