



Joint Congress of  
the 9<sup>th</sup> International Water Industry Conference  
and the 4<sup>th</sup> WaterEnergyNexus Conference

# IWIC-WEN 2023

The Arc  
Water Cultural Center in Daegu

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- Journal of Environmental Chemical Engineering (Elsevier)
- Science of The Total Environment (Elsevier)
- Water Environment Research (Wiley)

## TUESDAY, 5 DECEMBER 2023

Time	SKY 17, Global Plaza, Kyungpook National University
18:30-20:00	Welcome Reception

## WEDNESDAY, 6 DECEMBER 2023

Time	Grand Ballroom B
10:00-11:20	KIWW Opening

Time	Room 324
11:30-11:50	Opening Remarks
11:50-12:20	<b>PL1</b> Lead service line water pipe replacements initiative in USA Nasrin Kashefi, NSF, USA Chair: Kwang-Ho Choo, Kyungpook National University, Korea
12:20-12:50	<b>PL2</b> Electrochemical recovery of phosphorus from wastewater sludge Zhen He, Washington University in St. Louis, USA Chair: Kwang-Ho Choo, Kyungpook National University, Korea

12:50-14:15	Lunch & Poster
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Time	Room 324
14:15-15:45	<b>TS 1-1</b> Membrane technologies for water treatment Chair: Hyun-Suk Oh, Seoul National University of Science and Technology, Korea
14:15-14:45	<b>KEYNOTE</b> <b>Quorum quenching in anaerobic membrane bioreactors for biofouling control –system configuration, membrane selection and genetic insights</b> Yeyuan Xiao, Shantou University, China
14:45-15:05	<b>Self-assembled coatings for repairing polyamide layers and their applications for lithium-magnesium separation</b> Miao Tian, Northwestern Polytechnical University, China
15:05-15:25	<b>Cluster-forming artificial water channels: a new type of bioinspired water channels to overcome permeability-selectivity tradeoffs in desalination membranes</b> Woochul Song, Pohang University of Science and Technology, Korea
15:25-15:45	<b>Silk derivative-coated polyamide thin-film composite membranes with anti-scaling properties</b> Jaewoo Lee, Jeonbuk National University, Korea

Time	Room 323A
14:15-15:45	<b>TS 1-2</b> Leading-edge technologies for wastewater analysis and treatment Chair : Pyung-Kyu Park, Hanyang University, Korea
14:15-14:35	<b>Oil adsorbents and membrane technologies for industrial wastewater reuse</b> Sanghyun Jeong, Pusan National University, Korea
14:35-14:55	<b>Wastewater-based epidemiology for COVID-19 and other infectious diseases</b> Masaaki Kitajima, Hokkaido University, Japan

- 14:55-15:15 **Exploring a novel means for microbial control in water: the effects of high-frequency, low-intensity alternating electric fields on activated sludge characteristics**  
Tobino Tomohiro, The University of Tokyo, Japan
- 15:15-15:35 **Biodegradation of petroleum-based biodegradable plastics in aquatic environment along plastic pollution pathways**  
Jaewook Myung, Korea Advanced Institute of Science and Technology, Korea
- 15:35-15:45 **Discussion**

Time	Room 323B
14:15-15:45	<b>TS 1-3 Circular economy and water management</b> Chair : Demetris Francis Lekkas, University of the Aegean, Greece
14:15-14:45	<b>KEYNOTE</b> <b>Water-energy-food-ecosystems (WEFE) nexus: An assessment of policy integration stepping to improve water governance</b> Maria Papadopoulou, Natural Environment and Climate Change Agency, Greece
14:45-15:05	<b>Proposing smart application to boost circularity</b> Antonis Zorpas, Open University of Cyprus, Cyprus
15:05-15:25	<b>Understanding water consumption related to food waste in hotels</b> Eleftheria Klontza, University of the Aegean, Greece
15:25-15:45	<b>Food industry wastewater valorization for microalgae biomass production</b> Demetris Francis Lekkas, University of the Aegean, Greece
15:45-16:05	<b>Coffee Break</b>

Time	Room 324
16:05-17:35	<b>TS 2-1 Navigating the oasis: UAE's innovations in water sustainability</b> Chair : Shadi Wajih Hasan, Center for Membranes and Advanced Water Technology, UAE
16:05-16:15	<b>Welcoming - Introduction to CMAT Research Activities</b> Shadi Wajih Hasan, Center for Membranes and Advanced Water Technology, UAE
16:15-16:35	<b>Functionalized 2D material enabled high-performance mixed matrix membranes for water treatment</b> Mahendra Kumar, Khalifa University, UAE
16:35-16:55	<b>Comparison of qPCR and metagenomic sequencing methods for quantifying antibiotic resistance genes in wastewater</b> Ahmed Yousef, Khalifa University, UAE
16:55-17:15	<b>A seed for water: recent advances on bio-based activated carbon in water treatment</b> Naeema Al Darmaki, United Arab Emirates University, UAE
17:15-17:35	<b>Recent advances in electrospun nanofiber-based forward osmosis membranes for desalination and wastewater treatment: future research recommendations</b> Parashuram Kallem, Abu Dhabi University, UAE



Time	Room 323A
16:05-17:35	<b>TS 2-2 Sustainable environmental technology for a better future: innovative technologies in water treatment and water resource management</b> Chair : Sungyun Lee, Kyungpook National University, Korea

- 16:05-16:20 **Chitosan based nanocomposites for carbon neutrality in water treatment**  
Fitri Khoerunnisa, Indonesia University of Education, Indonesia
- 16:20-16:35 **Investigation into biologically mediated flocculation of the microalgae- and clay-containing suspension in the eutrophic water condition**  
Byung Joon Lee, Kyungpook National University, Korea
- 16:35-16:50 **Combination of H2O2-producing microbial desalination cells and UV/H2O2 advanced oxidation process: water salinity reduction and microbial inactivation**  
Euntae Yang, Gyeongsang National University, Korea
- 16:50-17:05 **Colloidal zeolites as antioxidant additives for lubricant oil**  
Eng-Pho Ng, University of Sains Malaysia, Malaysia
- 17:05-17:20 **Application of machine learning for forward osmosis membrane technology**  
Mita Nurhayati, Kyungpook National University, Korea
- 17:20-17:35 **Discussion**

Time	Room 323B
16:05-17:35	<b>TS 2-3 Wastewater analysis and treatment</b> Chair : Sungyup Jung, Kyungpook National University, Korea

- 16:05-16:20 **Design and applications of MOF-derived hierarchical materials for catalytic wastewater treatments**  
Kun-Yi Andrew Lin, Chung Hsing University, Taiwan
- 16:20-16:35 **Roles of microbiome for energy neutral wastewater treatment**  
Hyokwan Bae, UNIST, Korea
- 16:35-16:50 **Cycling of phosphorus from wastewater to fertilizer using calcium-rich organic waste**  
Seong-Jik Park, Hankyong National University, Korea
- 16:50-17:05 **Case studies using biomolecules analysis from different aquatic organisms and samples**  
Tae-Yong Jeong, Hankuk University of Foreign Studies, Korea
- 17:05-17:20 **Wastewater utilization in the microalgal industry: necessity and approaches**  
Wonkun Park, Konkuk University, Korea
- 17:20-17:35 **Discussion**

17:35-18:30	<b>Poster Session (Room 324B)</b>
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Time	Grand Ballroom B
19:00-21:00	<b>KIWW Welcome Dinner</b>

## THURSDAY, 7 DECEMBER 2023

Time	Room 324
09:00-10:30	<b>TS 3-1 Wastewater treatment and nutrient removal &amp; recovery (from research to application)</b> Chair : Pongsak (Lek) Noophan, Kasetsart University, Thailand
09:00-09:30	<b>KEYNOTE</b> <b>4R approach to sustainable nitrogen cycle</b> Satoshi Okabe, Hokkaido University, Japan
09:30-09:50	<b>Anaerobic membrane bioreactor as the core technology for future decentralized wastewater treatment plants</b> Peiyong Hong, King Abdullah University of Science and Technology, Saudi Arabia
09:50-10:10	<b>Partial nitrification and anammox processes with attached-growth media in WW from BNR laboratory-to full-scales</b> Pongsak (Lek) Noophan, Kasetsart University, Thailand
10:10-10:30	<b>Integrated approaches in bioponics and aquaponics systems: nutrient recovery, microbial dynamics, and environmental implications for sustainable agriculture</b> Sumeth Wongkiew, Chulalongkorn University, Thailand
Time	Room 323A
09:00-10:30	<b>TS 3-2 Greenhouse gases and green energy gases from water media</b> Chair : Vincenzo Naddeo, University of Salerno, Italy
09:00-09:20	<b>Bioelectrochemical leach bed reactor (BLBR) for enhanced methane production from food waste</b> Katakojwala Ranaprathap, Korea Institute of Energy Technology, Korea
09:20-09:40	<b>Evaluation and development of oxygen-enriched carbon dots using green synthesis for solar fuel production and its possible application for water treatment</b> Do-yeon Lee, Yonsei University, Korea
09:40-10:30	<b>Discussion</b>
Time	Room 323B
09:00-10:30	<b>TS 3-3 Bio-electro-photocatalytic techniques for water and wastewater</b> Chair : Zarra Tiziano, University of Salerno, Italy
09:00-09:30	<b>KEYNOTE</b> <b>Reciprocating membranes with quenching microbial signaling minimizes membrane fouling and energy consumption</b> Kwang-Ho Choo, Kyungpook National University, Korea
09:30-09:45	<b>Integrated moving bed biofilm reactor (MBBR) and algal membrane PhotoBioReactor (aMPBR) to achieve the carbon neutrality in wastewater treatment plants</b> Zarra Tiziano, University of salerno, Italy
09:45-10:00	<b>Electrocatalytic nanowire membranes for enhanced fouling mitigation in membrane bioreactors</b> Hyeona Park, Kyungpook National University, Korea
10:00-10:15	<b>Study the treatment of seafood processing wastewater using anaerobic membrane bioreactor (AnMBR)</b> Tran Le Luu, Vietnamese German University, Vietnam
10:15-10:30	<b>Q&amp;A</b>
10:30-10:50	<b>Coffee Break</b>

Time	Room 324
10:50-12:20	<b>TS 4-1 Wastewater treatments: from waste to resource</b> Chair : Chi-Wang Li, Tamkang University, Taiwan
10:50-11:20	<b>Potable wastewater reuse in the circular economy and carbon neutrality era</b> Paolo Roccaro, University of Catania, Italy
11:20-11:50	<b>Green production of nanoscale zero-valent iron (nZVI) for complete nitrogen removal</b> Chi-Wang Li, Tamkang University, Taiwan
11:50-12:05	<b>Greening greywater: optimizing anaerobic biomethane generation via electrochemical methods</b> Smruti Ranjan Dash, Inha University, Korea
12:05-12:20	<b>Discussion</b>
Time	Room 323A
10:50-12:20	<b>TS 4-2 Advances in water oxidation and disinfection technologies</b> Chair : Yunho Lee, Gwangju Institute of Science and Technology, Korea
10:50-11:15	<b>KEYNOTE</b> <b>Facilitated Prediction of Micropollutant Degradation by UV-AOPs in Water via Combination of Model Simulation with Portable Measurement</b> Zhimin (George) Qiang, Research Center for Eco-Environmental Sciences, Chinese Academy of Sciences, China
11:15-11:40	<b>Disinfection of waterborne viruses: kinetics, inactivation mechanisms, and implications for water treatment</b> Shotaro Torii, The University of Tokyo, Japan
11:40-12:00	<b>Persulfate activation as the potential technical option for carbon-neutral oxidative water treatment</b> Jaesang Lee, Korea University, Korea
12:00-12:20	<b>Copper-based redox systems for microbial inactivation</b> Changha Lee, Seoul National University, Korea
Time	Room 323B
10:50-12:20	<b>TS 4-3 Deionization and metal removal from diverse water sources</b> Chair : Yong-Ha Kim, Louisiana State University, Korea
10:50-11:10	<b>Desalination using polymeric membrane incorporating functionalized copper oxide nanoparticles</b> Ahmad Saud Jawed, Khalifa University of Science and Technology, UAE
11:10-11:30	<b>A novel functionalized multiwalled carbon nanotubes embedded in PVDF polymeric membranes for efficient photothermal membrane distillation</b> Lobna Nassar, Khalifa University, UAE
11:30-11:50	<b>Effective removal of iron and manganese from groundwater using regenerable iron oxide-coated beads</b> Jinwoo Kim, Kyungpook National University, Korea
11:50-12:10	<b>Long-term operation of capacitive deionization for desalination and treatment of radioactive water</b> Yong-Ha Kim, Louisiana State University, Korea
12:10-12:20	<b>Discussion</b>
12:20-13:30	<b>Lunch &amp; Poster</b>

Time	Room 324
13:30-15:00	<b>TS 5-1 Climate technology: waste/wastewater to X</b> Chairs : Jeonghwan Kim, Inha University, Korea Changsoo Lee, Ulsan National Institute of Science and Technology, Korea

13:30-13:50	<b>Development of a bioelectrochemical CO<sub>2</sub> reduction valuable product (acetic acid) production process</b> Satoshi Okabe, Hokkaido University, Japan
13:50-14:10	<b>Towards closed-loop production of biodegradable plastics from wastewater: using multi-meta-omics and quantum computing analyses to improve VFA to PHA production pathways</b> Po-Heng (Henry) Lee, Imperial College London, United Kingdom
14:10-14:30	<b>A paradigm-shifting, fully-integrated, compact wastewater-to-resource facility for coastal city</b> Di Wu, Ghent University, China
14:30-14:50	<b>Production of medium-chain length polyhydroxyalkanoate from food wastewater</b> Hyung-Sool Lee, KENTECH, Korea
14:50-15:00	<b>Discussion</b>

Time	Room 323A
13:30-15:00	<b>TS 5-2 Sustainable drinking water treatment and management</b> Chair : Tran Le Luu, Vietnamese-German University, Vietnam

13:30-14:00	<b>KEYNOTE</b> <b>Redox flow deionization: a novel approach for water reuse and resource recovery</b> Choonsoo Kim, Kongju National University, Korea
14:00-14:15	<b>Electrochemical lithium recovery from various water sources</b> Seoni Kim, Ewha Womans University, Korea
14:15-14:30	<b>The existing of emerging contaminants compounds and other pollutants in drinking water source in Vietnam</b> Tran Le Luu, Vietnamese-German University, Vietnam
14:30-14:45	<b>Development of integrated FPF(Flash pressurized flotation) for algae removal on drinking water</b> Minsoo Maeng, Dankook University, Korea
14:45-15:00	<b>Capacitive deionization with ag coating to improve performance and ion selectivity</b> Hongsik Yoon, Korea Institute of Machinery & Materials, Korea

Time	Room 323B
13:30-15:00	<b>TS 5-3 Contaminants of emerging concerns in wastewater and seawater</b> Chair : Vincenzo Naddeo, University of Salerno, Italy

13:30-14:00	<b>KEYNOTE</b> <b>Living membrane bioreactors (LMBRs) for the sustainable control of microplastics in wastewater</b> Vincenzo Naddeo, University of Salerno, Italy
14:00-14:15	<b>Application of optimized assays using methylene blue and sodium biphenyl for total PFAS quantification in water</b> Cong-Hau Nguyen, Gwangju Institute of Science and Technology, Korea
14:15-14:30	<b>UV degradation kinetics of 16S rRNA gene of indigenous bacteria: implications for UV reactor validation in WWTP effluents</b> Sujin Shin, Gwangju Institute of Science and Technology, Korea

- 14:30-14:45 **Design of eco-friendly bio membrane for the efficient removal of cationic dye from aqueous solution**  
Sabarish Radoor, Jeonbuk National University, Korea
- 14:45-15:00 **Discussion**

**15:00-15:20 Coffee Break**

Time	Room 324
15:20-16:50	<b>TS 6-1 Stabilization technology for the remediation of heavy metals contaminated sediment in Andong lake</b> Chair : Won Sik Shin, Kyungpook National University, Korea
15:20-15:35	<b>Stabilization of hydrophobic organic compounds in sediment using alkali-activated rice husk biochar</b> Quynh Thi Ngoc Le, Pusan National University, Korea
15:35-15:50	<b>Acid-base modified activated carbon for heavy metal adsorption</b> Jae-Woo Park, Hanyang University, Korea
15:50-16:05	<b>Assessment of stabilization efficiency of bentonite and iron coated sand in heavy metal contaminated sediment</b> Jae-Young Choi, Korea Institute of Science and Technology, Korea
16:05-16:20	<b>Treatment cation/anion heavy metals contaminated water and magnetic separation using magnetized zeolite</b> Young-Hun Kim, Andong National Univeristy, Korea
16:20-16:35	<b>Effect of sediment organic matter on the effectiveness of in-situ sorbent amendment to stabilize heavy metals in sediment</b> Yongju Choi, Seoul National University, Korea
16:35-16:50	<b>Discussion</b>

Time	Room 323A
15:20-16:50	<b>TS 6-2 Membrane technology for advancing water-energy nexus</b> Chair : Woorchul Song, Pohang University of Science and Technology, Korea
15:20-15:40	<b>Tailoring nanofiltration membrane with asymmetric selectivity for groundwater remediation</b> Wulin Yang, Peking University, China
15:40-16:00	<b>Toward zero liquid discharge treatment of semiconductor wastewaters with a hybrid system integrating forward osmosis and multistage-nanofiltration</b> Chanhee Boo, Korea Advanced Institute of Science and Technology, Korea
16:00-16:20	<b>Biomimetic soft materials from block copolymer self-assembly</b> Chao Lang, South China University of Technology, China
16:20-16:40	<b>Water electrolysis membranes for green hydrogen production</b> Jae Hun Lee, Korea Institute of Energy Research, Korea
16:40-16:50	<b>Discussion</b>



Time	Room 323B
15:20-16:50	<b>TS 6-3 Evaluation and management of diverse water qualities</b> Chair : Paolo Roccaro, University of Catania, Italy
15:20-15:50	<b>KEYNOTE</b> <b>Spectroscopic based approach for DBPs control in drinking water</b> Paolo Roccaro, University of Catania, Italy
15:50-16:10	<b>Assessment and prediction of the elimination of micropollutants during pilot-scale ozonation of municipal wastewater effluent</b> Hyunjin Kim, Gwangju Institute of Science and Technology, Korea
16:10-16:30	<b>Performance of novel sericin doped reduced graphene oxide membrane for forward osmosis based membrane crystallization application</b> Priyamjeet Deka, Indian Institute of Technology Guwahati, India
16:30-16:50	<b>Discussion</b>
16:50-17:10	<b>Coffee Break</b>

Time	Room 324
17:10-17:40	<b>PL3 The situation of water treatment and management in Spain and the use of additional water resources such as harvested stormwater and reclaimed water</b> Daphne Hermosilla Redondo, Polytechnic University of Madrid, Spain Chair: Kwang-Ho Choo, Kyungpook National University, Korea
17:40-18:10	<b>PL4 Current status and future prospect of seawater desalination: digital transformation and brine mining</b> Sang-ho Lee, Kookmin University, Korea Chair: Kwang-Ho Choo, Kyungpook National University, Korea

Time	Room 324
18:10-18:40	<b>Award &amp; Closing Ceremony</b>

## FRIDAY, 8 DECEMBER 2023

Time	Korea Water Cluster & Dalseong Wetland
09:00-12:30	<b>Technical Tour (Korean Water Cluster)</b>
12:30-13:30	<b>Lunch</b>
13:30-16:00	<b>Cultural Tour (Dalseong Wetland &amp; ECO Learning Center)</b>