水環境国際招聘賞（いであ招聘賞）（JSWE-IDEA Water Environment International Exchange Award）授賞に関して

本会では，水環境分野の国際交流・国際協力の促進を目的として，いであ株式会社からのご出捐により，水環境国際招聘賞と水環境国際活動賞を設けております。水環境国際招聘賞は本会年会で研究発表を行う海外在住外国人会員に対して，来日費用等の助成を行う制度です。4年ぶりの対面開催となった第57回年会では，中国，韓国，アイルランド，オーストラリア，マレーシアから各1名を招聘し，年会会場（愛媛大学）にて研究発表を行っていただきました。そこで，受賞者に研究内容や抱負等についてご執筆いただきましたのでご紹介します。なお，今年度の水環境国際招聘賞の募集案内は秋頃に本誌会告に掲載する予定です。

（水環境国際活動賞・招聘賞選考委員会）

JSWE-IDEA Water Environment International Exchange Award

Associate Professor, Universiti Teknologi Malaysia
Norhayati Abdullah, PhD

My heartiest gratitude and thanks to Japan Society on Water Environment (JSWE) Committees on Overseas Member Invitation Program for giving me the honor of JSWE-IDEA Water Environment International Exchange Award for the 57th JSWE Annual Conference at Ehime University, recently.

As the Associate Director of Universiti Teknologi Malaysia (UTM) International Kuala Lumpur and Associate Professor of Environmental Engineering at Malaysia-Japan International Institute of Technology (MJIIT), this is truly a priceless opportunity to reconnect with friends and mentors in Japan after much anticipation throughout the pandemic.

Adherence to my experiences in Japan, I completed my tenure as a Guest Scholar at the Graduate School of Advanced Integrated Studies in Human Survivability (Shishu-kan), Kyoto University, Japan in January 2019 focusing on environmental psychology, translating engineering practices for prospering lives. This year, as part of my involvement in the Asia-Oceania Five Universities Alliance (AOFUA), international staff and students within the alliance benefited from the distillation of intrinsic values by manifesting cooperative programs and activities while simultaneously ensuring a sustainable approach that supports global prominence of universities. In this regard, I applaud JSWE for illustrating unwavering efforts for internationalization by ensuring ongoing research activities and knowledge transfer which is ignited through the JSWE-IDEA Water Environment International Exchange Award. The award holds a special recognition in my heart for it has increased the visibility of my research on wastewater treatment while simultaneously enhancing professional networking within the sector.

Since joining UTM in 2008, I have been involved in various wastewater treatment studies. For JSWE, we investigated the treatment of restaurant wastewater using microalgae. The rapid growth of restaurants due to the changing lifestyle of people has implicated a negative impact on environmental sustainability due to the generation of restaurant wastewater (RWW). This study aims to provide an insight of potential treatment technologies featuring a simple, economic, and efficient approach for the treatment of restaurant wastewater containing FOG. This study also aims to evaluate the potential of freshwater microalgae *Chlorella vulgaris* in the treatment of RWW containing FOG and other pollutants by optimizing different biotic and abiotic conditions of cultivation (i.e., pH, temperature, light intensity etc).

This will not be my last participation at the JSWE-IDEA annual conference. Looking forward to share and exchange research experiences with distinguished experts, academia and students. As a Fulbright US-ASEAN Visiting Scholar and L'Oreal-UNESCO for Women in Science Award recipient, I wish to also share my experiences being involved in the water sector at global level. Looking forward to contribute to the forthcoming programs and activities under the auspices of JSWE, innovating solutions, prospering lives.

JSWE-IDEA Water Environment International Exchange Award

Associate Professor, Civil Engineering, School of Civil and Mechanical Engineering,
Curtin University, Australia
A. H. M. Faisal Anwar

It's my great pleasure to attend 57th JSWE Annual Conference at Ehime University, Matsuyama from March 15–17, 2023 and I feel honored receiving the JSWE-IDEA International Exchange Award. I would like to sincerely thank the organizing committee for inviting me to attend JSWE 2023.

I obtained my Bachelor and Master degree from Bangladesh University of Engineering and Technology (BUET) and completed my Doctoral degree at Nagoya University Japan in 2000. After 4 years of working at BUET after my PhD, I came back to Nagoya University again under JSPS postdoctoral fellowship in 2004–2006. Later in 2007, I moved to Australia and since then I am working as teaching and research academic at Curtin University, Perth Western Australia. As a teacher, I received PVC Teaching Excellence Award 2011, Curtin Excellence in Teaching Award 2012 and a National Citation Award 2013 for outstanding contribution to student learning from the Office of Learning and Teaching, Australian Government. My teaching area is water and environmental engineering but my research interests include urban hydrology, water and soil pollution, stormwater treatment and management, green infrastructures and climate change.

Because of the limited permeable surfaces in the urban areas, storm runoff carries significant pollutant loads and increases the risk of urban flooding. Gray infrastructures were previously used for stormwater management but they do not treat the stormwater and increase the risk of urban flooding. Recently green infrastructure (GI) has been introduced in many countries to enhance the infiltration and maintain the ecological balance. Many of these GIs are within the best management practices (BMPs) known as Water Sensitive Urban Design (WSUD) in Australia which includes grassed swales, rain garden, vegetated filter strips, bio-retention ponds, catch basin inserts and floating treatment wetland. We are developing methods to use green media for treating the stormwater which include saw-dust, wood chips, wood shavings, biochar, sandy loam and alum sludge. My oral presentation on treating the water using alum sludge and biochar received the WET Excellent Presentation Award at the Water and Environment Technology conference in July 2019 (WET2019). Later I received the JSPS invitational fellowship 2020 to work with Professor Hiroaki Furumai at the University of Tokyo. But due to the COVID19 pandemic, the fellowship was delayed to 2022 where I worked at Chuo University, Japan for the research project "*Floating wetlands as green infrastructure for sustainable urban water management*". This fellowship provided me the opportunity to meet many researchers from Japanese industry and professional organizations and visit different GIs installed in different places in Japan such as Mito city, Kashiwa city, Setagaya city, Kawasaki city and Yokohama city. Currently we are investigating Floating Treatment Wetland (FTW) which uses hydroponic system consisting of mats/mesh and macrophytes. FTW is a hybrid system between ponds and wetlands, hydraulically similar to stormwater detention pond but provides similar treatment processes as wetland. Plant roots are the main components in FTW that provides larger surface area removing the pollutants by plant uptake. Biofilm developed at different parts of FTW plays the key role for pollutant uptake which needs further investigation.

Finally I would like to express my gratitude to JSWE for organizing the conference and providing the opportunities to continue further collaboration.

JSWE-IDEA Water Environment International Exchange Award

Associate Professor, School of Civil Engineering, Sun Yat-sen University
Kai He

I am profoundly honored and grateful to have been invited to the 57th JSWE Annual Conference in Matsuyama, Ehime, from March 15–17, 2023. I would like to express my heartfelt thanks to the Committee on Overseas Member Invitation Program and the Awards Committee of the Japan Society on Water Environment for bestowing upon me the JSWE-IDEA Water Environment International Exchange Award for the 57th JSWE Annual Conference. I deeply appreciate the attention and support provided by the JSWE organizing committee.

I obtained my B.S. at Nankai University and M.S. at Tsinghua University in China, followed by a Doctoral degree at Kyoto University in Japan. Subsequently, I pursued postdoctoral and assistant professor positions at Kyoto University. Since 2021, I have been working at Sun Yat-sen University. My research areas include wastewater reclamation, pharmaceuticals and personal care products, and disinfection by-products in water treatment processes. In 2022, I participated in the Intergovernmental International Science and Technology Innovation Cooperation National Key R&D Program hosted by Tsinghua University and KUBOTA Corporation. This research project supported the development of high-efficiency treatment technology for emerging pollutants in reclaimed water and cooperative research between China and Japan. At this conference, we presented research entitled "Behaviors of Carbamazepine and its Related Metabolites in the Wastewater Treatment Plants for Reclamation."

As is widely known, pharmaceuticals have been detected in aquatic ecosystems due to their daily consumption and discharge into sewage systems. Carbamazepine (CBZ) is known to have a low removal rate during wastewater treatment processes. Furthermore, studies on CBZ metabolites in wastewater are limited. In this presentation, we investigated the occurrence of CBZ and its metabolites in wastewater treatment plants (WWTPs). LC-MS/MS quantitatively determined each target substance after concentration and purification of each sample by solid-phase extraction using HLB cartridges. We found that the concentrations of CBZ metabolites in wastewater were higher than those of its parent compound, CBZ. Moreover, different proportions of metabolites (CBZ-2OH, CBZ-3OH, and CBZ-Ep) were observed at different WWTPs. The formation of CBZ metabolites could be attributed to the metabolism pathway of CBZ in the human body. These results clearly illustrate the need to identify and, more importantly, to quantify possible metabolites of micropollutants in future wastewater studies.

The pandemic has significantly affected international exchanges, marking this event as my first international exchange endeavor at Sun Yat-sen University. Throughout the conference, I had the opportunity to connect with numerous exceptional researchers and establish new friendships. I would like to express my appreciation to the Japan Society on Water Environment for facilitating these invaluable international exchanges. Going forward, we aim to sustain and strengthen long-term collaborations and communication.

JSWE-IDEA Water Environment International Exchange Award

Professor, School of Chemical and Biological Engineering
Seoul National University
Changha Lee

I would like to express my sincere gratitude and appreciation to the Japan Society on Water Environment (JSWE) for giving me the opportunity to present my research and receive the JSWE-IDEA Water Environment International Exchange Award at the 57th Annual Conference of JSWE. It was a great honor for me to be the awardee.

Briefly introducing my background, I received B.S. and Ph.D. degrees in Chemical and Biological Engineering from Seoul National University in Korea in 2001 and 2007, respectively. During my Ph.D. studies, I also worked as a visiting scientist at the Swiss Federal Institute of Aquatic Science and Technology (EAWAG) from 2005 to 2006. After graduation, I moved to the University of California, Berkeley, and worked as a postdoctoral fellow at the Department of Civil and Environmental Engineering from 2007 to 2009. Then, I moved back to Korea and worked as an assistant/associate/full professor at the School of Urban and Environmental Engineering, Ulsan National Institute of Science and Technology (UNIST) from 2009 to 2018. Currently, I am a full professor at the School of Chemical and Biological Engineering, Seoul National University. My research interests include various subjects related to water chemistry and physical/chemical processes for water and wastewater treatment.

During the conference, I gave a talk about "Prediction of Micropollutant Abatement during Ozonation". Ozonation is an effective process for the degradation of organic contaminants and the inactivation of pathogenic microorganisms. Recently, ozonation has focused more on the oxidation of micropollutants (MPs), such as pharmaceuticals and personal care products, in drinking water and secondary wastewater. The oxidation of MPs by ozonation proceeds via reactions with molecular ozone and hydroxyl radical. To predict MP abatement during ozonation, a model that can accurately predict oxidant exposures needs to be developed.

My presentation demonstrated the development of empirical models that can predict MP abatement during ozonation. Our initial model using response surface methodology (RSM) successfully predicted MP abatement in the water source used to create the model, with the ozone dose and water quality parameters as input variables. However, when applied to other natural waters, this RSM model did not show high accuracy due to the different characteristics of organic substances. In order to develop prediction models that are applicable to a wide range of water types, fluorescence excitation-emission matrix (FEEM) data were considered as additional input variables to characterize organic substances in water samples. Additionally, machine learning techniques based on different algorithms were employed to accommodate the enormous number of FEEM data points into the model. The created machine learning models using high-resolution FEEM data offered more accurate predictions by better calculating the complex nonlinear relationship between organic characteristics and oxidant exposures. Future studies will focus on further improvements of the prediction models for field application.

With the end of the COVID-19 pandemic, I look forward to closer research collaboration between Korea and Japan in the field of water environment in the future.

JSWE-IDEA Water Environment International Exchange Award

Trinity College Dublin
Liwen Xiao

Thank you to the Japan Society on Water Environment for this honour and for giving me the JSWE-IDEA International Invitation Award. I very much appreciate it. I hope that through this award we can further strengthen our collaborations with researchers in JSWE and make our contribution to the protection of the water environment.

I am an associate professor in the School of Engineering at Trinity College Dublin. I got my bachelor degree at Tsinghua University and PhD degree at the National University of Ireland, Galway. My research interest focuses on fuel cells, sustainable treatment of water, and emerging contaminants (microplastics, antibiotics) detection and removal.

In this conference, we presented our findings on the release of microplastics from daily use plastic produtcs. Since the 1950s, 8300 million metric tons (Mt) of virgin plastics have been produced[1]. Plastics can release polymer microparticles (PMPs) such as microplastics (MPs) and additives particles in a water environment. MPs are now a global concern due to their ubiquity in the environment and potential risks to human health[2]. There is growing evidence of humans being exposed to MPs[3]. Household plastic products have been identified as local and immediate source of extremely high quantities of MPs[4]. In the European Union (EU), around 100 million PP-based electric kettles are in use, accounting for 60% of all kettles in the EU[5]. PP-based baby-feeding-bottles (BFB) account for 82.5% of the global BFB market share[6]. In our studies, 3 representative PP-kettles and 10 PP-BFBs products were selected, and the microparticles (MPs and additives) release was assessed by mimicking their daily use scenarios. Renishaw InVia Raman spectrometer equipped with a 532nm laser (Coherent Inc.), a cooled charge-coupled device (CCD) and a 100x microscope (NT-MDT) was applied to determine the chemical composition of the PMPs. The PMPs of more than 10 million per litre of water were released from the three kettles in the first few boils. However, the PMPs release levels were reduced to 1–10 million per litre after 50 boils[6]. Between 0.1 to 15 million PMPs per litre of water were released from 10 BFBs[7]. Further studies found that alcohol treatment could help separate MPs and additives of PMPs[8]. The findings of our studies indicated that daily used plastic products are significant MPs sources.

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