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。第53回年会には中国から3名，韓国から1名を招聘し，研究発表を行っていただきました。発表を終えて帰国された受賞者に参加報告を書いて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夏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, Department of Civil and Environmental Engineering,
Korea Advanced Institute of Science and Technology（韓國科學技術院，副教授）
Seoktae KANG（姜錫泰）

First of all, I would like to express my special thanks to JSWE-IDEA committee for awarding me this great honor in 53rd annual conference held in Yamanashi from March 7–9, 2019. It was a great memory to meet many colleagues and discuss on mutual interests.

I completed my Ph.D. at KAIST（Korea Advanced Institute of Science and Technology）in the department of Civil and Environmental Engineering. Then, I continued the study on nanomaterials and membrane filtration at Yale University as a post-doctoral associate. Since I joined KAIST, I have been on expanding knowledge in the area of separation processes including adsorption and membrane filtration for the safe and sustainable water production. My research is largely concerned with overcoming economic and technological barriers of existing adsorption and membrane separation technologies with the aid of state-of-art analytical and modeling tools. I has also tried to merge emerging nanotechnologies with separation processes, and firstly proved the antibacterial activity of carbon nanotubes（CNTs）in the aquatic environment. My recent research topics are the hybrid ceramic nanofiltration membrane for water and wastewater treatment, novel electrochemical systems for CO_2 conversion, environmental applications and implications of nanomaterials, colloidal and microbial interactions with solid surfaces for biofouling control of membrane processes.

In this conference, I talked about the application of conductive hollow-fiber membrane（CHM）made with multi-walled carbon nanotubes（MWNTs）for the novel electrochemical oxidation system. During the typical electrochemical oxidation process, the diffusive transport of contaminants are significantly limited due to the very small concentration gradient of emerging contaminants（ECs）between bulk solution and electrode surfaces. Here, I tried to overcome the diffusional limitation of ECs to anodic electrode by the convective transport using permeation flow into pores of CHM for rapid and efficient electrochemical oxidation of ECs.

The CHM prepared by typical phase inversion and template elimination methods was highly porous（39.5 LMH/bar）and electrically conductive（57.5 S cm^{-1}）. In the typical electrochemical operation, three ECs（bisphenol A, dichlofenac, sulfamethoxazole）were completely oxidized regardless of hydraulic retention times from 2.5 minutes to 40 minutes in convective flow operation using CHM, while conventional operation showed less than 50% of removal at short HRTs. Overall, the novel CHM process enabled a higher energy efficiency（>60%）than conventional electrochemical oxidation（<20%）. As for the future study, I will try to scale up the CHM reactor for the field application.

I really enjoyed several presentations including UV-LED for biocidal applications, novel treatment technologies of ECS, and environmental educations for developing countries. I believe that JSWE continue to contribute to future collaboration, and thank professors and students of JSWE again for their dedication on the research and organizing the conference.

JSWE-IDEA Water Environment International Exchange Award

Professor, School of Ecological and Environmental Sciences,
East China Normal University（華東師範大学，教授）
Xueqin Lu（陆雪琴）

I am very pleased to be invited to attend the 53rd Annual Conference of Japan Society on Water Environment（JSWE）held from March 07–09, 2019 in Yamanashi, Japan. I would like to thank JSWE committee for providing me this great opportunity to attend this wonderful conference, to visit such beautiful city, Kofu, and to meet so many researchers in different research areas, from different countries. I also want to say thank you to the award committee to award me the JSWE-IDEA Water Environment International Exchange Award, and it is indeed a great honor to win this Award.

I got my Ph.D. in Tohoku University. My deepest gratitude goes first and foremost to my supervisor, Prof. Yu-You LI, for guidance through my graduate program and career. I would also like to thank Prof. Kaiqin Xu and Dr. Takuro Kobayashi for supporting my research in National Institute for Environmental Studies. I think what I have learned from Prof. LI, Prof. Xu and Dr. Kobayashi is not only about my study but also include how to propose and solve problems during my further study and life. In Jul. 2016, I was awarded "JSPS Postdoctoral Fellowship for Foreign Researchers" by the Japan Society for the Promotion of Sciences（JSPS）, and worked as the Postdoctoral research fellow in Tohoku University for Environmental Studies, Japan till Sep. 2018. After Finished JSPS program, I joined in East China Normal University in 2018.

In the conference, I gave a presentation regrading "Development and spatial microstructure variation of membrane foulants in a Hollow Fiber Anaerobic Membrane Bioreactor for milk waste and sewage sludge co-treatment". As we know, the continuous consumption of fossil fuels has caused energy crisis. And this issues thus promotes research into the development of new technologies for renewable energy recovery from different kinds of bio-wastes, like sewage sludge and milk waste. Anaerobic membrane bioreactor（AnMBR）has been given much attention by researchers due to its highly efficient degradation of organics and its direct use the permeate with high nitrogen and phosphorus for irrigation. Up to now, most of the studies related to AnMBR have focused on different kind of wastewater, while a few are related to high-strength milk waste and sewage sludge. Therefore, a hollow fiber type submerged AnMBR（HF-AnMBR）was set up for the methanogenic degradation of milk waste and sewage sludge. The results showed that milk waste and sewage sludge–fed HF-AnMBR could operate stably for around 120 d with the biogas production rate approaching 2.5 ± 0.3 L L^{-1} d^{-1} at optimal OLR 6 g-COD L^{-1} d^{-1} and membrane operation performance analysis through membrane fouling revealed that cake layer fouling was the main contribution to the total fouling（70.4%）.

Finally, I want to thank JSWE committee once again for offering me this chance to introduce my new research results, and to communicate with Japanese experts. I am very sure that the amazing experience will make great contributions to the future research collaboration and building more solid friendship between Japan and China. I am looking forward to attend JSWE's future conferences.

JSWE-IDEA Water Environment International Exchange Award

Associate Research Fellow, School of Environment,
Tsinghua University（清华大学，副研究員）
WU Yin-Hu（巫寅虎）

I am WU Yin-Hu from School of Environment, Tsinghua University. With the recommendation of the Chinese Society for Environmental Sciences, I was delighted to attend the 53rd Annual Conference of JSWE that was held in Kofu from March 07–09, 2019.

First of all, I would like to thank the Japan Society on Water Environment (JSWE). It is my great honor to receive the (JSWE-IDEA) Water Environment International Exchange Award. I was delighted to attend this conference and to introduce my new research results to the Japanese experts.

I got my doctoral degree in the field of Environmental Science and Technology from Tsinghua University in July 2014. I continued my post-doctoral research in Department of Engineering Science, University of Oxford. In February 2018, I came back to China and got the position as an associate research fellow in School of Environment, Tsinghua University.

My research mainly focuses on the biological risk control of reclaimed water, including the risk of water bloom during landscape usage of reclaimed water and microbial risks during industrial usage of reclaimed water. Biofouling is the main problem during the operation of reverse osmosis (RO) process for wastewater reclamation. Chlorine disinfection is the most commonly-used process to inactivate microorganism in the pretreatment for RO process. Although chlorine disinfection inactivates most bacteria in wastewater, some chlorine-resistant bacteria could still survive and the microbial community structure changes significantly after chlorine disinfection.

In our research, it was found that chlorine disinfection could significantly inactivate the bacteria in wastewater. However, the microbial community structure analysis revealed that the abundance and species number of chlorine-resistant bacteria increased significantly with the increase of chlorine dosage. These remaining bacteria were found to produce more EPS with higher molecular weight, which could be the main cause of severe RO membrane fouling. These findings are contrary to the common sense that chlorine disinfection should be used to prevent the biofouling of RO system. This work could provide novel insight for the design and operation of RO system for wastewater reclamation.

This is my first time to attend the JSWE annual conference. During the conference, I met many distinguished researchers, engineers and students. Their presentations are very interesting and inspiring. We had good communication on specific research studies as well as on cultural exchanges. Kofu is a beautiful and historical city. It is a wonderful place to hold the conference. I think this kind of activities are very import and valuable. The amazing experience will make great contributions to the future research collaboration and build more solid friendship between Japan and China.

I am looking forward to contribute to future activities and communications between Chinese and Japanese societies.

JSWE-IDEA Water Environment International Exchange Award

Associate Professor,
School of Environment, Beijing Normal University（北京師範大学，副教授）
Yu Yang（楊禹）

It is a great honor to be invited to attend the 53th Annual Conference of Japan Society on Water Environment（JSWE）held in Yamanashi University from March 7 to 9, 2019. First of all, I would like to thank the organization committee of the conference for its gracious invitation and support.

I got a doctorate from the University of Tokyo and my supervisor professor is Prof. Takizawa. After that, I back to China and working in Beijing Normal University. My research area mainly targeted in water treatment technologies, especially at membrane related process and membrane fouling control. In this conference, I met many old friends and new friends. We have the opportunity to deeply discuss the related research area.

I introduced our latest research results, entitled Impact of biofouling on pharmaceutically active compounds retention by nanofiltration and reverse osmosis membranes. As we know, pharmaceutically active compounds（PhACs）pose significant environmental health threats because they are physiologically active even at trace concentrations（ng L^{-1} to μg L^{-1}）. Nanofiltration（NF）and reverse osmosis（RO）membrane have been proposed as promising technologies in the removal of PhACs. However, biofouling as most sever fouling changed membrane surface properties and then may influence the rejections. Therefore, investigations of effects of biofouling on permeate flux and PhACs rejections, and mechanisms underlying these effects were important for improving the removal efficiency of membranes. In this study, we clarify the effects of both dead cells and live cells on the biofouling formation process and on the rejections of PhACs. As the increasing degree of PhAC rejection improved with biofouling of NF membrane, effect of live cells on the PhAC rejection became severer through steric exclusion. Dead cells mainly decreased the rejections in the early biofouling stage with higher flux for NF membrane. Then, in the later stage, PhAC rejection declined less or even increased with reduced flux. Therefore, BEOP mechanism was dominant in the early stage whereas the steric exclusion gradually improved in the later stage of biofouling with dead cells. Hence, we conclude that dead cells were found to promote cell regrowth in feed water and increase the total cells and biofilm thickness on membrane surfaces, which led to enhanced BEOP mechanism.

Now, there are many water pollution problems in China require international cooperation to solve. Our research team also cooperated with many institutions in Japan, such as the University of Tokyo, National Institute for Environmental Studies and Kanazawa University and so on. I hope China and Japan can keep the long-term cooperation and communication on the research area, and working together to solve international environmental problem. I also want to contribute to further activities between China and Japan.