Editorial: Cutting-edge technology and systems for water treatment and reuse

Water treatment and reuse is the key strategy to address the problems of water shortages. To facilitate communication and application of technology and research in water reclamation, the National Conference on Water Treatment and Reuse of China has been held annually from 2017 by the Committee of Water Treatment and Reuse, Chinese Society for Environmental Sciences.

The theme of the 4th conference was water eco-nexus and water environment remediation. The conference, held from July 31st to August 2nd in 2020, brought together researchers working in different areas related to water treatment and reuse from China, Singapore, Japan, Ireland and many other countries and regions. More than 15,000 researchers from universities, institutes and companies attended the virtual conference online.

The conference covered 15 main topics:

1. Physical separation theory and technologies
2. Chemical transformation theory and technologies
3. Biological purification theory and technologies
4. Natural treatment theory and technologies
5. Water treatment theory and technology based on microalgae
6. Disinfection and microbial risk control
7. Reclaimed water storage and reuse
8. UV treatment theory and technologies
9. Standards and policy for water quality control and water resource management
10. Urban water system and water recycling
11. Industrial water system and water recycling
12. Rural water system and water recycling
13. Pollution control and utilization of rainwater runoff
14. Yellow River basin water environment remediation
15. Desalination technology and processes

In this special issue of *Water Reuse*, 15 papers that focus on cutting-edge technology and systems for water treatment and reuse, were selected among papers presented at the 4th National Conference on Water Treatment and Reuse of China. This special issue is sponsored by CSCEC Scimee Sci. & Tech. Co., Ltd to cover the article processing charges. The 15 papers can be subdivided into three main topics.

The first five articles are in the fields of desalination technology and processes. Bai *et al.* (2021) analyze the fouling mechanism of ultrafiltration membrane caused by denitrification filter effluent during ozonation. Zhang *et al.* (2021) investigate the fouling characteristic of natural organic matter in capacitive deionization. Yu *et al.* (2021) focus on micro-coagulation as pretreatment to improve the performance of a UF-RO system treating the effluent from a coastal municipal wastewater treatment plant. Tong *et al.* (2021) present a review on advances in capacitive deionization technology for water recycling. Luo *et al.* (2021) reveal the adverse effects of chlorine disinfection on biofouling of a pilot-scale reverse osmosis system and identify the key chlorine-resistant bacteria causing membrane fouling.

Further, six articles are related to physical and chemical treatment technology and process of non-conventional water resources. Qiao *et al.* (2021) study the removal efficiencies and mechanism of aniline degradation by peroxydisulfate activated with magnetic Fe-Mn oxides composite. Schnabel *et al.* (2021) investigate photocatalytic degradation of hydrocarbons and methylene blue using floatable titanium dioxide catalysts in contaminated water. Yao *et al.* (2021) focus on the application of integrated dissolved ozone flotation process in a centralised fracturing wastewater treatment plant. Lin *et al.* (2021) present a study on the adsorption characteristics and influencing factors of antibiotics in wastewater by iron-rich farmland soil for the safe reuse of livestock wastewater in farmland. Wang *et al.* (2021a) provide a feeding preparation strategy for the supercritical water oxidation system disposing liquid hazardous wastes from various industrial manufactures. Lu *et al.* (2021) investigate the degradation of 1,4-dioxane using a pulsed switching peroxi-coagulation process.

Lastly, four studies deal with problems concerning biological and natural treatment technology and process of non-conventional water resources. Xin *et al.* (2021) present a study on the behavioral shifts of constructed wetland when the

doi: 10.2166/wrd.2021.001

treated water was changed from domestic wastewater to mariculture wastewater. Wang *et al.* (2021b) investigate copper removal from semiconductor chemical mechanical planarization wastewater in the presence of nano-SiO_2 through biosorption. Liu *et al.* (2021) study *Chlorella* growth, photosynthetic pigments and high-valued products accumulation in coastal saline-alkali leachate. Wang & Tian (2021) investigate seasonal variations of pollutants removal and microbial activity in integrated constructed wetland–microbial fuel cell systems.

This special issue deals with various problems and investigates different treatment technologies concerning water reuse. In response to the challenges of severe water shortages and the deterioration of water quality, the focus on cutting-edge technology and systems for water treatment and reuse is fast-growing worldwide. Progress is needed to provide high quality reclaimed water, minimize the risks to environment and human health, and support use of non-conventional water resources.

Guest Editors

Peng-Kang Jin

School of Environmental and Municipal Engineering, Xi'an University of Architecture and Technology, Shaanxi, China

Ying-Xue Sun

School of Ecology and Environment, Beijing Technology and Business University, Beijing, China

Can Wang

School of Environmental Science and Engineering, Tianjin University, Tianjin, China

Huang Huang

School of Environmental Science and Engineering, Sun Yat-Sen University, Guangdong, China

Yin-Hu Wu IWA

School of Environment, Tsinghua University, Beijing, China

REFERENCES

Bai, Y., Wu, Y.-H., Tong, X., Wang, Y.-H., Ikuno, N., Wang, W., Shi, Y.-L. & Hu, H.-Y. 2021 Revealing the membrane fouling mechanism caused by the denitrification filter effluent during ozonation by model assessment. *Water Reuse* **11** (2), 149–159.

Lin, L., Hu, X., Liang, J., Huang, Z., Yu, G. & Chong, Y. 2021 Adsorption of tylosin in wastewater by iron-rich farmland soil and the effect of iron reduction and common cations. *Water Reuse* **11** (2), 248–256.

Liu, X.-y., Hong, Y. & Gu, W.-p. 2021 Influence of light quality on *Chlorella* growth, photosynthetic pigments and high-valued products accumulation in coastal saline-alkali leachate. *Water Reuse* **11** (2), 301–311.

Lu, Y., Shi, H., Yao, J., Liu, G., Luo, H. & Zhang, R. 2021 1,4-dioxane degradation using a pulsed switching peroxi-coagulation process. *Water Reuse* **11** (2), 268–278.

Luo, L.-W., Wu, Y.-H., Wang, Y.-H., Tong, X., Bai, Y., Chen, G.-Q., Wang, H.-B., Ikuno, N. & Hu, H.-Y. 2021 Aggravated biofouling caused by chlorine disinfection in a pilot-scale reverse osmosis treatment system of municipal wastewater. *Water Reuse* **11** (2), 201–211.

Qiao, L., Shi, Y., Cheng, Q., Liu, B. & Liu, J. 2021 The removal efficiencies and mechanism of aniline degradation by peroxydisulfate activated with magnetic Fe-Mn oxides composite. *Water Reuse* **11** (2), 212–223.

Schnabel, T., Jautzus, N., Mehling, S., Springer, C. & Londong, J. 2021 Photocatalytic degradation of hydrocarbons and methylene blue using floatable titanium dioxide catalysts in contaminated water. *Water Reuse* **11** (2), 224–235.

Tong, Y., Zhou, S., Zhou, J., Zhang, G., Li, X., Zhao, C. & Liu, P. 2021 Advances in efficient desalination technology of capacitive deionization for water recycling. *Water Reuse* **11** (2), 189–200.

Wang, X. & Tian, Y. 2021 Seasonal variations of pollutants removal and microbial activity in integrated constructed wetland–microbial fuel cell systems. *Water Reuse* **11** (2), 312–327.

Wang, B., Lu, M., Zhao, L., Zhang, Z., Zhao, Y. & Qin, S. 2021a Feeding preparation strategy for the supercritical water oxidation (SCWO) system for disposing of liquid hazardous waste. *Water Reuse* **11** (2), 257–267.

Wang, X., Buer, G., Fan, W., Gao, L. & Huo, M. 2021b Copper removal from semiconductor CMP wastewater in the presence of nano-SiO_2 through biosorption. *Water Reuse* **11** (2), 289–300.

Xin, Y., Liu, L., Wei, L., Huang, X. & Liu, C. 2021 Recycling of rural abandoned constructed wetlands: mariculture wastewater treatment. *Water Reuse* **11** (2), 279–288.

Yao, Z., Jin, X., Liang, J., Wang, R., Jin, P., Li, G., Yao, L. & Wang, Z. 2021 Application of an integrated dissolved ozone flotation process in centralised fracturing wastewater treatment plant. *Water Reuse* **11** (2), 236–247.

Yu, T., Xu, C., Chen, F., Yin, H., Sun, H., Cheng, L. & Bi, X. 2021 Microcoagulation improved the performance of the UF–RO system treating the effluent from a coastal municipal wastewater treatment plant: a pilot-scale study. *Water Reuse* **11** (2), 177–188.

Zhang, H., Tian, J., Hao, X., Liu, D. & Cui, F. 2021 Investigations on the fouling characteristic of humic acid and alginate sodium in capacitive deionization. *Water Reuse* **11** (2), 160–176.