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Editorial: Advanced Treatment Technologies for Drinking Water

INTRODUCTION

In the past century, conventional drinking water treatment technologies such as coagulation, sedimentation, and chlorine disinfection have played an important role in drinking water treatment. However, global drivers associated with population growth, demographic shifts, and climate change place increasing stresses on fresh and sustainable water supplies. The current challenges also include the combined pollution of water resources, the existence of novel pollutants in the water, and obsolescence of the traditional water treatment facilities. Thus, innovative technologies are urgently needed for drinking water treatment to ensure public health and ecological safety. And it has become the consensus of the water industry to improve the technology system for drinking water supply and apply the advanced water treatment process. Under this background, there is a need to understand the development trends of global drinking water advanced treatment using science and technology and to promote technological innovation based on actual needs of water quality safety. At present, the integration of advanced drinking water treatment technology with some emerging technologies such as internet of things, big data, AI, new materials, and biotechnology are increasingly common, and water supply technologies are developing towards intelligence and environmental friendliness.

OVERVIEW OF THE SPECIAL ISSUE

This special issue on Advanced Treatment Technologies for Drinking Water introduces several current hotspots in this field including emerging contaminants control, membrane and advanced oxidation technology, emerging water purification technology, and new water disinfection process and the by-product control. In addition, some new development trends in advanced treatment technology for drinking water are summarized. We did notice that the cooperation of the authors from different countries contributed to the same paper. This special issue may provide useful information for the development of new technologies for drinking water industry.

Li'an Hou (China), who is an Academician of the Chinese Academy of Sciences, builds the model of degradation of 2,6-dichloro-1,4-benzoquinone by advanced oxidation with UV, H_2O_2, and O_3 (Pan et al. 2021). Pia Lipp (Germany) provides deacidification through calcium carbonate dosing in combination with ultrafiltration, which is the most popular process all over the world for advanced treatment of drinking water (Morales & Lipp 2021). Cuimin Feng (China) highlights the injury mechanism and the detection method of disinfectant-injured Escherichia coli in the drinking water system (Feng et al. 2021). Ruibao Jia (China) optimizes the parameter of nanofiltration membrane in the treatment of compound-contaminated high-hardness water and analyzes its performance (Li et al. 2021). Anastasios Zouboulis (Greece) assesses the efficiency of heterogeneous and homogeneous catalytic ozonation in micropollutant removal (Psaltou et al. 2021). Cuimin Feng (China) also sheds light on the microbial characterizations of water using tea polyphenols as a disinfectant for effluent treatment after the ultrafiltration process, and this is a novel disinfection manner for drinking water (Wei et al. 2021). Ziming Zhao (China and Canada) investigates the impact of UV on disinfection by-product formation and speciation from post chlorination of algal organic matter (Zhao et al. 2021). And this study provides useful data for the solution of seasonal algae problem control.

Many thanks to the authors for their particularly high-quality papers, which we would like to believe have contributed to the improvement of our scientific knowledge in the field of advanced water treatment technology for drinking water. Furthermore, we would like to express our deepest thanks and gratitude to the reviewers and the IWA Publishing staff who contributed to a successful preparation of this interesting and meaningful special issue.

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