

Water Treatment Revolution

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Rapid urbanization through the 20th has exerted tremendous pressures on global water resources that are critical for human consumption, agriculture to feed the urban populations, and other urban purposes. Consequently, water-stressed areas are looking for new sources of water to support their populations. Municipal wastewater is increasingly tapped as a water source for both non-potable and potable applications. Meanwhile, municipal wastewater is becoming more complex due to the exponential growth of synthetic chemicals used by both industry and the public. Treating a city's municipal wastewater and drinking water today therefore requires different strategies and technologies than was previously necessary. This session discusses the role that emerging water technologies play in addressing water shortages and source water quality, particularly in urban environments. Within this context, we will explore the different challenges and solutions experienced in Japan and the United States.

Our first speaker, Megan Plumlee of the Orange County Water District, will discuss how advanced technologies facilitate drinking water production for more than 2.5 million residents in the water-constrained area of Orange County California. The second speaker, Keisuke Kuroda, senior scientist at the National Institute for Environmental Studies, will discuss research trends related to the treatability of trace substances and the evaluation of their behavior in the environment, which is indispensable for the reuse of water in Japan. The third speaker, David Jassby, associate professor at UCLA, will discuss how up-and-coming water treatment technologies can treat our increasingly complex wastewaters. The fourth speaker, Takashi Hashimoto, assistant professor at the University of Tokyo, will discuss how to make high-quality drinking water using membrane filtration and Ultrafine bubbles.

Specific questions to be addressed are: What new challenges exist for water treatment in Japan and the U.S., and how do the challenges in the two countries they compare? What advancements in membrane technology facilitate water reclamation? How do potable reuse guidelines and regulations drive technology development? What pollutants do the two countries prioritize in traditional drinking water and wastewater treatment, and how do those differ with direct potable reuse treatment? What are the promising technologies on the horizon for water treatment?