

North Dakota Water Resources Research Institute (NDWRRRI) Seminar Series

Water Treatment to Address Critical Global Challenges in “the Anthropocene Epoch”

Presenter: Dr. Onur G. Apul, Penn State

Date: Monday, March 23, 2026
Time: 3:30–4:30 PM (CST)
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Abstract

Science fiction fans of the 20th century may be disappointed because flying cars did not replace automobiles or talking robots are not our loyal butlers. But we are fully immersed in extremely sophisticated technologies in our daily lives. These technologies allow us to send video messages from our seats in an airplane over 35,000 feet flying above the Atlantic Ocean. We can cure diseases that were deadly 30 years ago or develop vaccines within months. We use highly precise gene editing tools. James Webb Space Telescope is performing high resolution and sensitive visualization of objects from the edge of the universe. The list can go on and on. However, when it comes to securing our access to safe drinking water, the technologies, and materials we rely on are outdated and inefficient. In this presentation, I will focus on recent technological advances for the water treatment industry, which aspire to contribute to efficient, safe, and sustainable water treatment in the “Anthropocene epoch”. Specifically, I will discuss: (i) thermal regeneration of PFAS-laden granular activated carbons to break the forever PFAS cycle, (ii) application of nanobubbles in water treatment.

Speaker biography

Onur Apul is an Assoc. Prof. of Environmental Engineering at Penn State. He earned his Ph.D. in 2014 in Environmental Engineering at Clemson University. In 2023, Dr. Apul received the Maine College of Engineering and Early Career Research Award and in 2021 he received the Emerging Investigator Award by Sustainable Nanotechnology Organization. His work focuses on intermolecular interactions between organic compounds and nano-scale interphases. So far, his research is backed by NSF, NASA, USGS and other sponsors. He has published more than 100 peer-reviewed journal articles and submitted 6 patent applications to date. He has given more than 100 presentations including invited keynote lectures and invited talks at national and international meetings. He is an associate editor of Water Research and a member of Association of Environmental Engineering and Science Professors.