

2026 AZ Water Association Research Symposium
Beyond Efficiency: Transforming Water Systems with AI, Sensing Technologies, and High-Performance Treatment

October 23, 2026, 8:30 a.m. – 4:00 p.m.
Gateway Community College, Copper Room, Phoenix, AZ 85034

Symposium Program
(6.5 PDHs are available for people attending the full program)

8:30 AM – Registration/Coffee

8:50 AM – Welcome – Introduction of Theme – Rain Richard PhD, AZ Water Research Committee Chair

9:00 AM – Keynote Speech – Commissioner Lea Marquez Peterson from the Arizona Corporation Commission

Session 1 – Artificial Intelligence Readiness (9:30 AM – 10:40 AM)

Time	Speaker	Title and Description
9:35 AM	Tiezheng Tong (ASU)	The Applications of Artificial Intelligence to Selective Membrane Separation for Water Purification Artificial intelligence (AI) has been increasingly employed to predict and enhance the performance of selective membrane separation for water and wastewater treatment. In this presentation, we apply explainable AI to investigate the knowledge of AI models on the mechanisms of solute transport across membranes in nanofiltration and reverse osmosis. We demonstrate the capability of AI models to capture the roles of size exclusion and electrostatic interaction in regulating micropollutant and ion rejection. We also reveal that AI models are able to unveil the influence of chemical structure on membrane removal of per- and polyfluoroalkyl substances (PFAS), with the findings consistent with molecular mechanisms uncovered by molecular dynamics simulations. We further introduce the first AI-driven conversational agent tailored to membrane selection and design for PFAS removal. Our work provides a framework for more reliable, explainable, and interactive AI application for water purification.
9:55 AM	Rebekah Eggers (H&S)	Beyond the Pilot: Creating the Data Foundation for Utility AI A practical path toward utility AI readiness will be presented through project experience with Arizona utilities. Emphasis will be placed on strengthening data foundations, modernizing information management, and enabling advanced analytics, with key lessons and outcomes highlighted to support scalable, data-driven decision-making.
10:15 AM	Kirshna Rajan (MaterialsIn)	Mapping the Unknown: AI-Driven Exploration for Emergent PFAS and Resilient Water Treatment Water utilities can't practically evaluate the vast, growing universe of PFAS compounds one by one. This presentation shows how AI and materials informatics—developed by the startup materialsIN—can classify thousands of PFAS by structure and predict behavior patterns even with sparse data, and extend that to guide treatment strategies like destruction and membrane separation. The result is a more scalable, adaptive approach to emerging PFAS challenges.

Session 2 – Advanced Water Purification Treatment Technologies (10:40 AM – 12:00 PM)

Time	Speaker	Title and Description
10:40 AM to 12:00 PM	City of Phoenix – Clayton Freed City of Scottsdale – David Walby UA Tucson Water	Moderator Kerri Hickenbottom, PhD from University of Arizona Associate Professor of Chemical and Environmental Engineering Panel discussion on the state of AWP at AZ utilities, current relatable university research and the effect on industrial application.

Lunch – Poster Pitch, and Scoring (12:00 PM – 1:15 PM)

Session 3 – Process Intensification and Monitoring (1:15 PM – 3:00 PM)

Time	Speaker	Title and Description
1:15 PM	Kerry Hamilton, PhD (ASU) and Matt Frasier PhD (ASU)	Modeling the risks of aerosols from cooling towers and misters: use of chemical tracers for tracking plumes The presentation will cover modeling the fate and transport of water aerosols from devices such as misters and cooling towers. A new cooling tower risk model is proposed for the pathogen <i>Legionella pneumophila</i> that accounts for aerosol size during transport and impacts on exposure and infection risks. This information will form the basis of an improved cooling tower outbreak tracking workflow in partnership with New York State Department of Health.
1:35 PM	Lauren Takich (Entex) and Al Wood (Global Water Resources)	Fixed, moving, or somewhere in between? Hybrid fixed-film media for biological nutrient removal - A full scale application at PVUC campus 2 WRF, Maricopa AZ. WavTex is a hybrid fixed-film technology that bridges the gap between traditional fixed and moving media systems, combining media retention with increased movement and contact between the biofilm and bulk liquid. This presentation will review the technology, its key design and operational benefits, and its application at the PVUC Campus 2 WRF, where four WavTex modules were installed in the aerobic stage of an existing MLE process. The presentation will examine system operation and available performance data, with a focus on nitrification and denitrification within the upgraded process.
1:55 PM	Riley Murnane, PE (Moleaer)	Mapping the Unknown: AI-Driven Exploration for Emergent PFAS and Resilient Water Treatment Surfactants, fats, oils, and grease (FOG), and quaternary ammonium compounds (QACs) are common inhibitory compounds in wastewater influent that have slowly stolen treatment capacity. As water conservation drives per capita flows down, their concentrations climb. The result is a slow derating of treatment performance that rarely shows up in routine monitoring: suppressed oxygen transfer efficiency, chronic foaming, and inhibited nitrification and digestion. This presentation examines how these compounds have quietly derated treatment capacity and eroded operational resilience, and reviews mitigation measures Arizona utilities can weigh as they prepare for an Advanced Water Purification (AWP) future.
Break (2:15 PM – 2:25 PM)		
2:25 PM	Crystal M. Hepp, PhD NAU	Wastewater surveillance of viruses (West Nile - informatics) Associate Professor of Informatics, School of Informatics, Computing, and Cyber Systems Northern Arizona University Director of One Health Sciences, Health Observatory, Arizona State University
2:40	Ruijie Zeng (ASU)	Identifying Unpermitted Wastewater Treatment Facility (OWTF) in Rural Arizona for Environmental Health Incomplete and inconsistent inventories of onsite unpermitted wastewater treatment facility (OWTF, e.g., cesspools and septic tanks) limit their use in environmental impact assessment and water quality management. This study aims at developing a data-driven method to identify OWTF locations in rural Arizona. Publicly accessible datasets, including land parcel records, public water system information, sewer coverage and real estate records, are collected and fed into a decision-tree workflow to identify the locations of OWTF. OWTF inventories (e.g., OWTF permits) from regulation agency (i.e., Arizona Department of Environmental Quality) are used to validate the detection method. The spatial explicit OWTF estimation is further evaluated with lumped HUC12-scale septic-density product and government agency's permit records. The detected OWTF land parcels are categorized into different priorities depending on potential impacts on public health and water quality, which highlights the rural communities with high environmental risk due to OWTF. The framework provides a transparent, reproducible and scalable approach to identify regional scale OWTF location to fill OWTF inventory information gap and support water-quality regulations and managements in rural areas.

3:00 PM – Scholarship and Poster Winner – Sunny Natekar, PhD

3:15 PM – Closing Remarks – Rain Richard, PhD