



North Dakota Water Resources Research Institute (**NDWRRI**) Seminar Series

## **Exploring the Biodegradation of PFAS: Current Understanding, Challenges, and Early Research Insights**

**Odunola Odofin, University of North Dakota**

Date and Time: Mon. 08/25/2025

3:30 - 4:30 PM (CDT)

Via Zoom, Meeting ID: 995 0056 5246 Passcode: 920171

<https://ndsu.zoom.us/j/99500565246>



### **Abstract:**

Per- and polyfluoroalkyl substances (PFAS), often called “forever chemicals”, are a class of highly persistent environmental contaminants increasingly detected in drinking water, groundwater, and wastewater worldwide. Their resistance to degradation due to their exceptionally strong carbon–fluorine bonds, makes them difficult to degrade using conventional treatment methods. Physical and chemical approaches are often costly, energy-intensive, and challenging to scale sustainably. As a result, biological strategies such as microbial, algal, and enzymatic degradation are gaining attention for their potential as lower-cost, environmentally friendly alternatives. However, important questions remain about their mechanisms, effectiveness, and reproducibility in real-world applications.

This seminar will provide a broad overview of current knowledge in PFAS biodegradation, highlight emerging trends in biological treatment, and discuss key challenges. Special focus will be given to issues such as concentration thresholds, degradation times, and variability in experimental design, which make it difficult to compare outcomes across studies. Preliminary observations from laboratory experiments using microalgae will be shared, alongside plans for enzyme-based trials. Altogether, this presentation aims to encourage critical discussion around the promise and limitations of biological approaches for PFAS remediation in water systems.

### **Speaker biography:**

Odunola Odofin is currently pursuing her Ph.D. in Chemical Engineering at the University of North Dakota, where her research focuses on developing sustainable strategies aimed at the removal of per- and polyfluoroalkyl substances (PFAS) in water. She is a recipient of the 2024 North Dakota Water Resources Research Institute Fellowship. Earlier this year, she earned the Excellent Presentation Award at the ACS Red River Valley Conference which included funding to present her work at the ACS Fall 2025 National Meeting.

Growing up in a small town in Nigeria, where access to clean water was not always guaranteed, Odunola is driven by the belief that scientific innovation should be practical, inclusive, and globally impactful. Her work aligns with the United Nations Sustainable Development Goal 6: Clean Water and Sanitation, reflecting her dedication to advancing global water safety and environmental health.

Outside the lab, she enjoys traveling, meeting new people, exploring diverse cultures, and learning new languages. She is deeply passionate about environmental sustainability, and giving back to the community, with a lifelong and personal vision that one day everyone in the world will have access to safe, clean water.