

From Contamination to Compliance: Understanding the PFAS Risks, Regulations, and Remediation Strategies

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Dr. Aich leads the *Aich Laboratory for Environmental Nanotechnology and Sustainability (#AichLENS)*, with the overarching goal of designing safer and intelligent materials and processes for water treatment and resource recovery.

His research interests leverage expertise in environmental engineering, chemical engineering, and materials sciences, focusing on four main areas:

1. Advanced (Nano)materials and Processes for PFAS Remediation and Water Treatment/Reuse

A primary focus is the mitigation of per- and polyfluoroalkyl substances (PFAS)—often called "forever chemicals"—using nanotechnology. His work involves developing novel carbon-metallic nanohybrids and carbon-metal-based reactive nano-catalysts that can extract and destroy PFAS from water by breaking the strong carbon-fluorine bonds.

2. Additive Manufacturing or 3D Printing for Water Treatment

He explores the use of 3D printing to create unique filtration devices and catalytic reactor systems, such as 3D printed graphene-biopolymer aerogels, for efficient contaminant removal.

3. Sustainable Design of Nanocomposite Membranes

Developing advanced membranes for water treatment and resource recovery.

4. Data-driven (Nano)material Discovery

Utilizing data science approaches for environmental remediation and separations.

Key Accomplishments and Awards

- National Science Foundation (NSF) CAREER Award (2022).
- American Academy of Environmental Engineers and Scientists (AAEES) 40 Under 40 Recognition (2023).
- Sustainable Nanotechnology Organization (SNO) Emerging Investigator Award (2019).

80+ Publications; 2 Patents

Date: Saturday, December 6th, 2025

Time: 12:00 PM - 1:30 PM

Venue: Room 510, IWFM, BUET