PFAST Network (Per- and Polyfluoroalkyl Substance Testing Network)

Meet Team 3: PFAS removal performance testing

Orlando Coronell, Ph.D., co-lead, is an Associate Professor of Environmental Sciences and Engineering at UNC Chapel Hill. His research focuses on membrane technologies for water purification and energy generation and storage using salinity gradients.

Mei Sun, Ph.D., co-lead, is an Assistant Professor of Civil and Environmental Engineering at UNC Charlotte. Her research focuses on the occurrence and removal of emerging contaminants. She helped reveal the presence of PFASs in drinking water sourced from the Cape Fear River (CFR).

Detlef Knappe, Ph.D., co-investigator, is a Professor of Civil, Construction, and Environmental Engineering at NC State University. His research focuses on source water protection by identifying contaminants through targeted and non-targeted analyses and on the development of treatment approaches for the removal of unregulated contaminants.

Frank Leibfarth, Ph.D., co-investigator, is an Assistant Professor of Chemistry at UNC Chapel Hill. His research focuses on developing chemical methods for the synthesis of new materials for sustainability and human health, with a research track on bio-renewable fluorinated polymers.

Heather Stapleton, Ph.D., co-investigator, is an Associate Professor of Environmental Chemistry and Exposure Science at Duke University. Her research focuses on identifying chemical additives in consumer products and measuring contaminant personal exposures in the general population.

Vivek Pulikkal, Graduate student at UNC Charlotte, electrochemical degradation

Zachary Hopkins, Graduate student at NC State, laboratory experiments

Elango Kumarasamy, Ph.D., Postdoc at UNC Chapel Hill, synthesis and batch testing of fluorogels

Robert Johnson, Graduate student at UNC Chapel Hill, rheology

Kasia Grzebyk, Graduate student at UNC Chapel Hill, membrane testing

Nicholas Herkert, Postdoc at Duke, recruitment, sample extraction and preparation

Sharon Zhang, Research Associate at Duke, mass spec analysis

Kate Hoffman, Ph.D., Research Professor at Duke, epidemiology and statistical analysis

Yen-Ling Liu, Ph.D., Postdoc at UNC-Charlotte, ionic exchange treatment

Team Objective:

To address the mandate of NC Senate Bill 99, the overall goal of Team 3 is to identify optimum technologies for removing both legacy and emerging PFASs from contaminated surface and ground waters in NC as well as from finished drinking water. Specific aims include:

- Characterize PFAS removal from drinking water sources by a wide range of commercially available activated carbons, ion exchange (IX) resins, and high-pressure membrane filters
- Characterize PFAS removal by electrochemical oxidation from waste streams generated during resin regeneration and membrane filtration
- Characterize the efficacy of in-home filters used at NC homes for removing PFASs from tap water
- Synthesize and optimize modified membrane and novel IX resin materials for PFAS removal