

Jack Sullivan, University of North Carolina Wilmington, Wilmington, North Carolina, USA for his project: *Unveiling Dark PFAS: Quantifying Perfluoroalkyl Sulfonyl Fluorides in Environmental Samples*

I am a Master of Geoscience student at the University of North Carolina Wilmington, working with Dr. Ralph Mead and Dr. Paul Wojtal. Our lab focuses on the environmental fate, transport, and occurrence of anthropogenic compounds. Per- and polyfluoroalkyl substances (PFAS) are the main compounds of focus in our lab. PFAS are harmful because they increase the risk of cancer and act as endocrine and immunological disruptors, posing a threat to public health. These compounds show varied behavior in the environment depending on the compound and environmental variables; therefore, understanding the biogeochemical cycling of these anthropogenic compounds may improve the regulation and monitoring of emerging contaminants.

My research focuses on a subclass of PFAS, known as per- and polyfluoroalkyl sulfonyl fluorides (PFASF). These compounds represent a part of a potential reservoir of “Dark PFAS” that are not amenable to typical LC-MS/MS methods and thus remain outside of traditional workflows. These “Dark PFAS” are important to understand as they may degrade into the corresponding acidic end product. This means there may be a hidden reservoir of undetected PFAS that slowly transforms to currently regulated PFAS. Reports from the North Carolina Department of Environmental Quality report emissions of PFASF; however, environmental occurrence in waters and soils remains unknown in the United States. My research investigates the stability of PFASF at varied pH and matrices as well as its detection in environmental samples. Thanks to the Lipman Research Fund, the results of this research have an impact on public health and on our understanding of the biogeochemical cycling of anthropogenic contaminants.

