

## Challenges and Methods of Analysis of Forever Chemicals (PFAS)

Harald Ritchie<sup>1</sup>, Stephanie Schuster<sup>1</sup>, Charles Powley<sup>2</sup>

Advanced Materials Technology

Per- and polyfluoroalkyl substances (PFAS) are human-made fluorinated compounds that contain carbon-fluorine bonds. With desirable properties such as resistance to heat, stains, and water, they were and some continue to be, used for consumer products such as food packaging, nonstick cookware, food processing equipment, cleaning products, fire-fighting foams, paints, and stain- and water-resistant fabrics and carpeting. These compounds do not break down easily due to the presence of the strong carbon-fluorine bonds, which has earned them the nickname “forever chemicals.” There are thousands of PFAS compounds - as some were banned others were created to replace them. At this point, PFAS are found everywhere and have entered water supplies. Another issue with PFAS is that only certain compounds have been extensively studied for their impact on human health. Currently, there is worldwide concern about the presence of PFAS in the environment. The advances in liquid chromatography-tandem mass spectrometry (LC-MS/MS) have given us tools for a deeper understanding of these ubiquitous compounds. The use of LC-MS/MS with superficially porous particle (SPP) columns of solid silica core with a porous silica shell offers advantages over fully porous particle columns in terms of analysis speed and resolution. PFAS analysis using SPP columns will be highlighted in this presentation. Matrices such as well water, bottled water, and soil will be included for a variety of PFAS analysis examples.

Presenter for Applica: Dr. Harald Ritchie, Director of Business & Market Development, Advanced Materials Technology

1. Harald Ritchie, Ph.D., Director of Business & Market Development, Advanced Materials Technology, Delaware, USA
2. Stephanie Schuster, Ph.D., Senior Technical Support Scientist, Advanced Materials Technology, Delaware, USA
3. Charles R. Powley Ph.D., Chief Scientist, STRIDE Center for PFAS Solutions, Delaware, USA