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MOBILion SYSTEMS, INC.

VENDOR SEMINAR:

CCS - Catching Contaminants Speedily: The role of ion mobility in rapid contaminant detection for food and feed safety

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Nicholas J. Birse, Queen's University Belfast, Institute for Global Food Security, School of Biological Sciences, 19 Chlorine Gardens, Belfast, BT9 5DL, Northern Ireland, UK

Per- and polyfluoroalkyl substances (PFAS) are classes of chemicals, numbering almost 5,000 unique compounds, that can be found in a wide variety of products and processes essential to modern life.

These classes of chemicals are widely used as they have desirable properties, such as imparting water or friction resistance, meaning the products and processes for which they're used are extremely wide reaching, from waterproof jackets to frying pans, fire extinguishers to carpets. The desirable properties extend to the long-lasting nature of PFAS compounds, which are extremely resistance to typical types of degradation, such as UV or ozone exposure, or mechanical stress.

The long-lasting nature of PFAS and their inclusion in a wide variety of industrial processes mean the escape of PFAS compounds into the environment was widespread until more recent times and today they can appear with alarming frequency in all types of food and animal feeds.

Testing complex food and feed matrices for PFAS retains the typical food and feed analysis problems of needing relatively slow chromatography to achieve the desired separations required to enable good compound identification, whilst needing rapid speeds to enable the high throughputs essential for good representative sampling.

Ion mobility has been demonstrated in recent years as a way to resolve compounds that cannot otherwise be separated sufficiently through chromatography and/or high-resolution mass spectrometry. Ion mobility works by determining a third dimension, the collisional cross section (CCS) value of an analyte, rather than just retention time and/or accurate mass.

In this workshop, MOBILion's high resolution ion mobility MOBIE platform for the Agilent 6545, 6545XT and 6546 mass spectrometers will be presented and its use in a rapid untargeted workflow focusing on the detection of PFAS in food and feed matrices will be discussed, with key considerations on the experimental design and method optimization requirements needed to both improve speed of analysis and/or achieve separation of analytes that are difficult or impossible to separate without the use of an ion mobility enabled mass spectrometer.