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Extraction Spray for Direct Mass Spectrometry Analysis of Raw Samples

A novel device and method significantly improves mass spectrometry sensitivity for direct analysis of raw samples through consistent spray ionization, applicable to diagnostics and detection of food additives.

Mass spectrometry is a critical component of modern chemical analysis. Recently, emphasis has been placed on developing mass spectrometry techniques that allow raw samples to be analyzed on-demand. The procedure can be used in many applications such as blood diagnostics for pharmaceutical or illicit drug metabolites and the detection of harmful food additives. Current techniques involve depositing a sample on a paper substrate and eluting the analyte with a fast drying solvent prior to ionization. Some significant problems with this method include inconsistent spray due to the solvent rapidly drying on the paper and low sensitivity on smaller model mass spectrometers because of incomplete analyte solvation.

Researchers at Purdue University have developed a novel device and method of performing mass spectrometry on raw samples. This method combines fast extraction of the analyte from a complex sample matrix on a paper substrate and subsequent spray ionization through a device with consistent spray flow. The consistent flow of sample through this process allows realization of improved sensitivity on a wide variety of mass spectrometers.

Advantages:

-Direct analysis of raw samples

-Improved spray ionization method

-Compatible with a wide variety of mass spectrometers

Potential Applications:

-Mass spectrometry

-Blood diagnostics

Technology ID

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Category

Agriculture, Nutrition, & AgTech/Food Safety & Traceability
Biotechnology & Life Sciences/Biomarker Discovery & Diagnostics
Biotechnology & Life Sciences/Analytical & Diagnostic Instrumentation

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View online

-Detection of harmful food additives

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Intellectual Property:

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Keywords: Mass spectrometry, novel device, raw samples, blood diagnostics, drug metabolites, harmful food additives, sample matrix, spray ionization, consistent spray flow, improved sensitivity