Molecular Ionization Desorption Analysis Source (MIDAS) for Mass Spectrometry

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Introduction
The Molecular Ionization Desorption Analysis Source (MIDAS) is a Desorption Atmospheric Pressure Chemical Ionization (DAPCI) type ionization and sampling platform. MIDAS is easy to use, versatile platform for the analysis of a variety of samples from different surfaces. MIDAS is computer controlled which allows for automated high throughput sample screening using interchangeable sample plates. MIDAS is controlled completely independently of the mass spectrometer and so can be used on a variety of mass spectrometers with atmospheric pressure inlet.

MIDAS Construction

5 Applications

Applications of the MIDAS are outlined in this section. One important class of applications is the analysis of fingerprints. These are discussed in detail later in this document. Other applications include the analysis of illicit drugs, the detection of counterfeit drugs, and the analysis of organic compounds on surfaces.

Software

Quantitative performance of the device was determined using a calibration curve of caffeine spotted on a normal phase TLC plate. Sample concentration ranged from 96-99.9% inlet. The plate was developed along the short axis to improve local sample concentration and improve response.

High Throughput Screening

Analysis of 15 individual samples of onatramine, 30 (60%) using the larger 96 well plate. Sampled continuously without use of the gas valve. A sample is run through the EIC as the tray is moved to the next spot. All Acetaminophen is detected primarily as a protonated form. a peak is observed for the larger 96 well plate on MIDAS

Conclusion
MIDAS represents a useful tool for mass spectrometry and general analytical chemistry. This tool allows for rapid analysis of a samples with automated analysis capability. The use of interchangeable sampling plates provides the ability to quickly change between different experiments. External controls allow the MIDAS to be used on a variety of instrumentation with minimal adaptation.