COSMIC
CBRNE Detection in Containers

SEADM´sGC-DMA-F-DMA analysis for Explosive Detection (First Stage)

Introduction

SEADM DMA-F-DMA vapour technology combines two DMAs with an Ion Fragmentor (F), mimicking the operation of current systems of triple quadrupole mass spectrometers (MS) at substantially reduced volume and price.

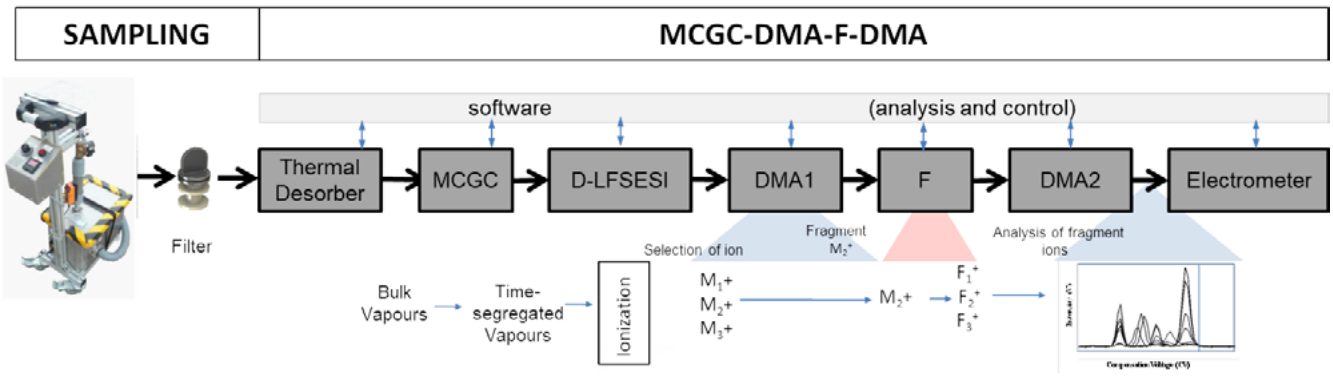
System Architecture

Two differential mobility analysers (DMAs) acting as narrow band mobility filters are coupled in series, with a thermal fragmentation cell placed in between, such that parent ions selected in DMA1 are fragmented in the cell at atmospheric pressure, and their product ions are analysed on DMA2.

A key feature of the tandem DMA is the short residence time (~0.2 ms) of ions in the analyser, compared to tens of milliseconds in drift tube ion mobility spectrometers (IMS). Ion fragmentation within the analyser and associated mobility tails are therefore negligible for a DMA but not necessarily so in conventional IMS.

The presented technology has demonstrated Limits of Detection in the order of 1 pg for TNT for atmospheric samples of 500 L of air.

Benefits of Explosive Detection by GC-DMA-F-DMA analysis:



- Fast and reliable detection of explosive threats in shipping containers.
- Cost-benefit compared to other commercial solutions.

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