
A NOVEL ATMOSPHERIC PRESSURE GC SOURCE: EXTENDING THE CAPABILITIES OF LC/MS/MS TECHNOLOGIES FOR FOOD AND ENVIRONMENTAL ANALYSIS

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In food and environmental analysis there has been a rapid move towards the utilization of liquid chromatography-mass spectrometry (LC/MS) with atmospheric pressure ionization techniques although gas chromatography coupled to MS and other detectors is still the only option for a significant number of analyses. Atmospheric Pressure ionisation has primarily been used to interface a mass spectrometer with liquid chromatography, but it is also a powerful ionisation method that can be applied to gas chromatography. A novel atmospheric pressure ion source for tandem quadrupole and quadrupole time-of-flight LC/MS/MS instruments will be described, this allows laboratories to switch rapidly between LC and GC applications to analyse volatile and semi-volatile compounds of low and intermediate polarity traditionally analysed by dedicated vacuum GC/MS instruments.

Ionisation of a GC eluent at atmospheric pressure is a softer process, giving molecular weight information for compounds which are extensively fragmented in traditional Electron Impact (EI) GC/MS. In-source or MS/MS fragmentation can be induced to give fragmentation information for structural elucidation purposes. GC separations can be optimized as the carrier gas flow and column dimensions are not limited by the pumping capacity of the MS.

Examples related to food and environmental samples will be shown of mass spectra of 'difficult' EI compounds illustrating the advantage of the softer ionization process and of the improvement in separation that can be achieved with the column eluting at atmospheric pressure rather than in a vacuum.

Atmospheric pressure GC source for tandem quadrupole and quadrupole time-of-flight LC/MS/MS instruments will be described as a powerful ionisation method.