

STUDENT 6

DRUG ANALYSIS: TOWARDS PERFECTION WITH INNOVATIVE MS SOLUTIONS

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Since the first attempts to couple packed GC columns with mass spectrometers in the 1950s, the hyphenated gas chromatography / mass spectrometry instrument (GC-MS) remains the workhorse in today's analytical laboratories for drug analysis. Despite the availability of instrumental configurations based on various ionization modes (e.g. chemical ionization) and MS technologies (e.g. tandem MS), full-scan electron impact (EI) GC-MS is still, by far, the most common ionization mode used that permits the construction of large mass spectral libraries for useful references.

Over the past decade, advances in GC, in particular fast GC methods and most especially comprehensive two-dimensional GC (GC×GC), have placed growing demands for faster data acquisition whilst maintaining a sufficiently wide mass range sampling protocol. The attainment of fast data acquisition for rapid chromatographic peak elution has been realized in recent years with the renaissance of non-scanning time-of-flight MS, as well as the capability of improved electronics to boost mass acquisition rates in benchtop quadrupole MS.

An up-to-date view of state-of-the-art GC×GC-(EI)MS solutions for drug analysis will be presented, which includes discussions and applications in drug screening for forensic and toxicological applications[1,2], illicit drugs and toxic alkaloids profiling.

References:

- [1] S.M. Song, P. Marriott, A. Kotsos, O.H. Drummer, P. Wynne, *Forensic Sci. Int.* 143 (2004) 87.
- [2] S.M. Song, P. Marriott, P. Wynne, *J. Chromatogr. A*, (2004) In Press.