**Fast GC-TOF MS with soft electron ionisation for high-throughput screening of environmental contaminants**

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The introduction of recent legislation, such as the EU Environmental Liabilities Directive 2004/35/EC, has encouraged the development of precise and robust analytical systems for identifying pollutants. However, the sheer number of toxic compounds which may require monitoring at any given time makes this a challenging prospect.

Conventional quadrupole GC-MS methods often employ selective ion monitoring (SIM) for trace-level detection of target compounds. However, this protocol prevents retrospective searching of data for the latest contaminants of emerging concern. The use of time-of-flight mass spectrometry (TOFMS) can overcome this issue by providing highly sensitive detection whilst acquiring full range mass spectra, to allow both target and unknown identification in a single, rapid analysis.

Nevertheless, trace-level identification may become complicated for compounds which exhibit weak molecular ions and extreme fragmentation. Select-eV ion source technology overcomes this problem by allowing both hard and soft electron ionisation with no inherent loss in sensitivity. Select-eV provides enhanced molecular ions whilst retaining structurally-significant fragment ions, delivering both confident compound identification and lower limits of detection.

This work demonstrates the use of fast GC-TOFMS with Select-eV ionisation for accurate identification of a suite of ultra-trace level environmental contaminants.