

## MULTI-REFLECTING HIGH RESOLUTION TOF MS COUPLED WITH FAST LC AND GC IN PESTICIDE RESIDUES ANALYSIS

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Traditional scanning mass spectrometers such as quadrupoles or ion traps always face a compromise between speed, mass resolution and mass range. On the other hand, time-of-flight MS technology is more versatile and has been experiencing growing tendency in recent years. Until recent, two types of TOF MS were available in the market, utilizing EITHER (moderately) high mass resolution and accuracy OR high acquisition rates.

Recently introduced LECO Folded Flight Path™ (FFP™) technology combines unprecedently high acquisition rates with ultra high mass resolution (up to 100,000 FWHM) and mass accuracy (<1 ppm) uncommon for time-of-flight instruments. Key to the FFP technology are the two opposing, high precision rectangular gridless ion mirrors and an array of gridless periodic focusing elements separating them. The FFP system permits a long flight path in a compact design (up to 64 reflections corresponding to 40 m flight path). The gridless design permits high ion transmission through the FFP flight tube resulting in high sensitivity and minimal signal loss with increasing resolving power.

A novel data acquisition system enables the processing of large data quantities, while maintaining a high in-spectrum dynamic range (> 4 orders) and a high speed of data collection (up to 200 Hz written to disc).

In this contribution, targeted and non-targeted screening of pesticides in complex food matrices will be presented. Method performance data such as limits of detection, linearity, as well as system robustness to matrix load will be discussed.