

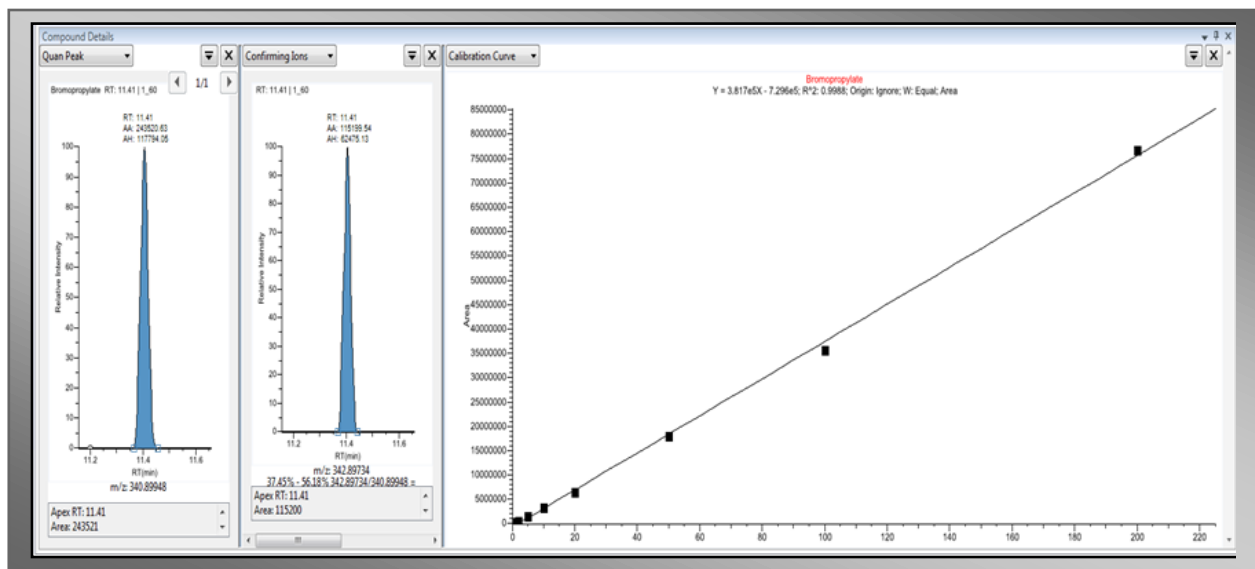


## First Impressions – Orbitrap-Based GC-MS

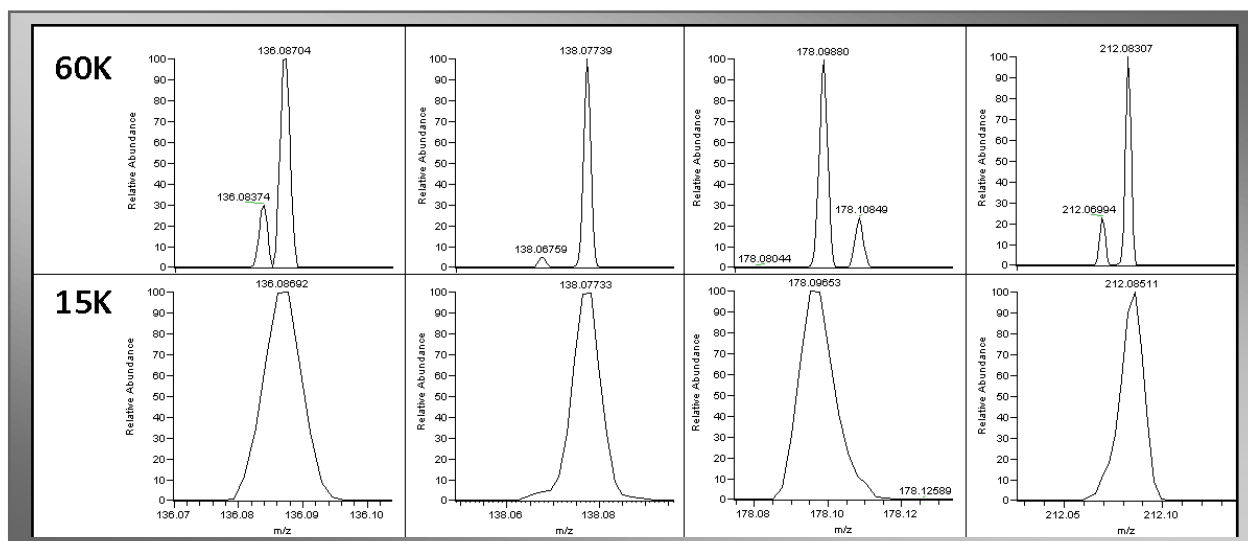
In our last update, we provided some indication of the performance we expect from a GC-MS system based on Orbitrap technology when looking at pesticide compounds. But to get an idea whether this technology is suitable for pesticide residue analysis, especially in the area of screening, quantitation, and identification, we needed to show it to a pesticides expert.

In September, we invited Richard Fussell, an investigator from Food and Environment Research Agency (FERA) in the UK who has more than 20 years experience in this field, to spend some time running samples with us.

We analyzed a lot of samples, looking at complex matrices like green tea and cold-pressed orange oil, to put system selectivity to the test. In addition, we performed some quantitative experiments in apple matrix extracted using the QuEChERS methodology. Below, you can find a snapshot of some of these data. We expect to publish these results in more detail at a later date. Also below, you can read some of Richard's first impressions based on his experience with the system.



Example 1. Bromopropylate extracted ions (Instrument set to 60,000 RP) at 1 ppb. A calibration curve is also shown.



Example 2. Terbuthylazine ions at 100 ppb combined with ions from a coeluting orange oil matrix compound. These ions are resolved at 60K (top) but unresolved at 15K (bottom). When searched against the NIST library, the deconvoluted terbuthylazine spectra resulted in a search index score of 834 at 60K, as compared to 731 at 15K.

“I can only say that I was extremely impressed with the overall performance of the system. It was remarkably easy to set-up and calibrate, and the results were astounding. The realisation that the instrument could acquire data at 60,000 RP with incredibly stable mass accuracy, and with sufficient data points to provide excellent detection limits, very good precision (without internal calibration), and good linear dynamic range (and hence good quantification), with virtually no chemical interferences, is a dream. It is exactly what pesticide residue chemists need; the capability to undertake screening, detection, quantification, and identification of pesticides, in compliance with SANCO guidelines, in complex matrices in a single analysis.”

~ Richard Fussell (FERA, UK)

To read previous updates or to register for future updates, if you have not already done so, please visit <http://thermoscientific.com/hramgcms>.

Best regards,

Thermo Scientific GC-Orbitrap Team

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