

#### **OH4 New API-Qq-TOF technology resulting in ultra-high resolution and mass accuracy whilst maintaining high scan speeds**

Matthias Pelzing<sup>1</sup>, Oliver Raether<sup>2</sup>, Markus Lubeck<sup>2</sup> and Carsten Baessmann<sup>2</sup>

1. Bruker Biosciences, Melbourne, Australia
2. Bruker Daltonik GmbH, Bremen, Germany

high resolution TOF, API-Qq-TOF, new technology

New API-Qq-TOF with ultra-high-resolution and ultra-high mass accuracy at high scan speed

API-Qq-TOFs have been used for a variety of LC-MS/MS applications for a long time, mainly because of the combination of MS/MS capability with mass resolution and mass accuracy. In the last years new detector and digitizer technology enabled a wide intra-spectra dynamic range of more than four orders of magnitude. Accurate mass and preservation of the isotopic pattern made confident automated formula generation in MS and MS/MS possible. However, identifying and quantifying trace compounds based on accurate mass LC/MS in complex matrices requires much higher resolution.

The goal of this work was to improve mass resolution without compromising other performance factors like sensitivity, dynamic range, mass accuracy or scan speed.

As result of the new design, we could improve mass accuracy and mass resolution in MS and MS/MS by factors. In fact, mass accuracy and limit of identification of compounds in trace amounts in complex matrices could be improved dramatically, because of the much higher resolution compared to currently available API-Qq-TOF mass spectrometers.

For metabolite profiling studies this could be also shown for very narrow chromatographic peaks, achievable with an UPLC and CZE because of the possible high acquisition rate of 20 spectra per second.