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Fast GC add-on for IONICON PTR-TOF instruments

Gas Chromatographic separation now combined with real-time trace gas analysis.

IONICON, the Austrian based, leading manufacturer of PTR-MS real-time trace VOC analyzers, presents an innovative accessory for its successful PTR-TOFMS series:

IONICON PTR-TOF systems are capable of measuring trace gas samples in real-time with a high mass resolving power. The new "fastGC" module adds an optional chemical separation step before the analysis. The module consists of a short GC column with an advanced heating concept for ultra-fast heating and equally fast cooling rates which makes this pre-separation step nearly real-time.

The best of both worlds

"A key advantage of PTR-MS is to see trace concentrations in real-time. Compare to the discrete and time consuming sample analysis in GC-MS, the introduction of PTR-MS back in 1998 has been like the step from one high-resolution picture to a full movie.", says Dr. Alfons Jordan, co-founder of IONICON.

A full PTR-TOF spectrum can be acquired every 100 ms – 18,000 times faster than a typical GC spectrum – and contains several hundred compounds separated according to their chemical composition. Separating compounds with the same composition (isomers) remains, however, the domain of GC.

Now IONICON takes both concepts one step ahead by seamlessly integrating them into one fast solution. The fastGC add-on provides a quick chemical pre-separation step for IONICON PTR-TOF systems.

"A fastGC's spectral run is done in less than one minute! This brings gas chromatographic separation much closer towards real-time analysis and adds another dimension to PTR-TOFMS.", IONICON CEO Lukas Märk points out the benefits.

The fastGC module is integrated with the PTR-TOF and the normal sample gas inlet is utilized. This allows researchers to perform real-time measurements and add fastGC runs at time points of interest for enhanced separation and identification.

Application case study

A recent publication used a prototype of IONICON's fastGC system to analyze head-space samples of wine. Romano and his co-workers could demonstrate several advantages of fastGC-PTR-TOF.

While the high ethanol concentration is separated and does no longer impair the analysis, several isomeric compounds could be resolved, which can be used for an enhanced separation of different wine samples.



Recent peer-reviewed application paper:

A. Romano et al.: "Wine analysis by FastGC proton-transfer reaction-time-of-flight-mass spectrometry", *Int. J. Mass Spectrom.* vol. 369, 81–86, 2014,
<http://dx.doi.org/10.1016/j.ijms.2014.06.006>

IONICON blog post: <http://blog.ionicon.com/2014/12/fastgc-ptr-tof/>
fastGC product website: <http://www.ionicon.com/product/accessories/fastgc>

About IONICON

IONICON Analytik GmbH was successfully commercializing the unique [Proton Transfer Reaction – Mass Spectrometry \(PTR-MS\)](#) technology in 1998 and recently invented the proprietary [Selective Reagent Ionization – Mass Spectrometry \(SRI-MS\)](#) technology.

Over 250 leading scientists, institutions and multinational corporations are among IONICON's customers. They rely on [IONICON instruments for trace gas/VOC analysis](#), delivering results in real-time at one out of a trillion parts (LoD < 1 pptv), without time-consuming sample preparation procedures.

Learn more about IONICON [here](#).

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