

# **Ion Mobility-Mass Spectrometry**

## **Abstract**

Ion mobility offers complementarity to existing analytical methods as it involves millisecond-timescale separations of gas phase ions according to their structure and not only their mass. In combination with mass spectrometry, IM-MS has emerged in the last 10 years as a next generation technology that can be applied to very diverse analytical applications. This short course will introduce the basics of IM theory and the derivation of collision cross section (CCS) from IM-MS measurements, for which a rigorous metrological perspective will be presented. The principles of the most important instrumental combinations of different IM-MS technologies will be introduced, and application examples from diverse application fields (e.g., food, metabolomics, environmental analysis) shown to highlight how IM-MS can be successfully applied in analytical methods.

### **Biography Tim Causon**

Associate Professor at Institute of Analytical Chemistry, University of Natural Resources and Life Sciences, Vienna (Austria). His main areas of research are liquid chromatography, molecular mass spectrometry, and ion mobility-mass spectrometry (IM-MS) for diverse analytical method development questions and studies of ion chemistry. Current research topics include the integration of mass spectrometry for biotechnology processes, analysis of local and traditionally produced wines, and rigorous intercomparison of data generated from different IM-MS platforms.

### **Biography Stephan Hann**

Full Professor and Head of the Institute of Analytical Chemistry, University of Natural Resources and Life Sciences, Vienna (Austria). His research encompasses the development and application of analytical methods in mass spectrometry-based metabolomics and ultra-trace analysis applied to a broad range of research topics including biotechnology, environmental and food sciences. A strong focus in his research is placed on metrology including robust estimations of the uncertainty of measurement for IM-derived ion collision cross sections (CCS).