

Abstract Submitted
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Analysis of complex mixtures using a new, high resolution Trapped Ion Mobility Spectrometer – Mass Spectrometer¹ FRANCISCO FERNANDEZ-LIMA, Texas A&M University, CHRISTOPHER THOMPSON, DESMOND KAPLAN, MELVIN PARK, Bruker Daltonics — Over the last decade, a variety of new types of Ion Mobility Spectrometry (IMS) analyzers have been developed (e.g., periodic focusing DC ion guide, segmented quadrupole drift cell, multistage IMS, field asymmetric IMS and transient wave ion guide). High resolution IMS ($R > 50$) has been mainly restricted to long IMS cells (1-2 m), where ions are separated based on size-to-charge ratio as they are pushed by an electric field through a stationary bath gas. In the present work we describe a Trapped Ion Mobility Spectrometer (TIMS) and its applications. In as much as TIMS uses an electric field to hold ions stationary in a moving bath gas, it represents a paradigm shift in mobility analysis. This results in an analyzer capable of high resolution mobility separations ($R > 80$) in a compact (< 10 cm), low voltage (< 300 V) design. Hybridization with a mass analyser (TIMS-MS) provides versatility for the analysis, separation and structural characterization of a variety of chemical compounds with increasing complexity. In particular, examples of TIMS – MS separation for complex biological and heteroatom hydrocarbons will be shown.

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