

# **LC+LC- and GC+GC-IMS-qTOF-MS as a potential tool in non-target analysis**

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A two-dimensional chromatography method (LC+LC and GC+GC) was developed and coupled to an ion mobility-high resolution mass spectrometer. This approach works as a continuous multiheart-cutting system, using a long modulation time of four minutes (LC+LC) or 20 s (GC+GC), which allows the complete transfer of most of the first dimension peaks to the second dimension column without fractionation, in comparison to comprehensive two-dimensional chromatography (LCxLC or GCxGC). Hence, it is possible to look at the data from a 2D analysis in a simple 1D chromatogram, which simplifies the data handling even when IMS as a third and MS as a fourth dimension are introduced. The analysis of a plant extract from *Ginkgo biloba* with LC+LC-IM-qTOF-MS shows the separation power of this four dimensional separation method with a calculated total peak capacity of more than 8700. Furthermore, the advantage of ion mobility for characterizing unknown compounds by their collision cross section (CCS) and accurate mass in a non-target approach is shown for different matrices like plant extracts and coffee.