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Ion Mobility Spectrometry - Mass Spectrometry

Learn more about your molecule

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The ion mobility spectrometry (IMS) – mass spectrometry (MS) instrument concept was first introduced in the 1970s; where the MS was a detector for the IMS. IMS-MS was built up in the 1990s; where the IMS was a pre-separator for MS and a probe of the 3D structure of gas phase ions. High-Performance IMS (HPIMS) enables greater ion mobility resolving power with peak separation comparable to HPLC, but uses an ion’s size-to-charge ratio (Ω/z) for the IMS analysis. Today, an ion mobility – mass plot (Ω/z-m/z) reveals molecular structure, chemical classes, protein and peptide conformation, etc.. IMS-MS is such a powerful technology that it resolves the separation problems that cannot be addressed by MS alone, playing a key role for distinguishing isobaric ions in MS. It is also an alternative for when HPLC-based separation is not effective. Our recent development combining high resolution ion mobility separation with high resolution mass separation offers high orthogonal resolving power gas phase molecular identification. The future IMS-MS system may enter common labs for routine analysis.