Multiple Resonance Ejection at Arbitrary Frequencies in an Ion Trap

A new mass analysis method utilizes ion trap optimization and multiple excitation frequencies to improve mass spectrometry resolution by an order of magnitude for highly-specific trace analysis and commercial use.

Modern mass analysis technologies have allowed for powerful new insight into molecular systems using mass spectrometry. In recently years, further advances were made to analyzer design, generating a group of highly effective mass analysis choices. When examining the utility of different mass analyzers toward analysis of a specific sample, multiple factors must be considered. However, despite this wide range of available choices, current mass analysis technologies still have room for improvement. More specific designs can be made to focus on analysis of unique samples, opening even more gateways into molecular systems.

Researchers at Purdue University have developed a method of mass analysis that uses an ion trap at its optimum operating points. Multiple frequencies excite ions for mass analysis, improving the resolution of ion traps by a factor of three. This method can be further applied to standard resonance ejection scan mode most often used to record ion trap mass spectra. Compared to commercial systems, this technology improves mass analysis resolution by an order of magnitude. Marketability of this method provides a more effective solution for trace and highly-specific mass spectrometry analysis.

Advantages:

-High resolution

-Substitute for resonance ejection

Potential Applications:

-Trace chemical and biochemical analysis

-Commercialization

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Category

Biotechnology & Life Sciences/Biomarker Discovery & Diagnostics

Biotechnology & Life Sciences/Analytical & Diagnostic Instrumentation

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