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Rectilinear Ion Trap and Its Arrays

A cost-effective, miniaturized rectilinear ion trap offers a simple, high-capacity solution for universal and sensitive chemical analysis in mass spectrometry applications.

Current ion trap mass spectrometers are mechanically complex, making them expensive, and hence, not suitable for field use. They have many known deficiencies including limits on the number of ions that can be trapped and low efficiencies for external ion injection.

Purdue University researchers have developed a new trap design, which addresses these problems as well as provide additional advantages. This technology incorporates a new geometry for the ion trap, referred to as a rectilinear ion trap, which can be used for universal and sensitive analysis of chemical compounds. This novel design allows the trapping of gas-phase ions in a simple geometrical configuration with a high trapping capacity at a low cost. This device is easily constructed and serves both as an ion storage device and a mass spectrometer. In the latter application, it can be used in both the destructive and non-destructive detection modes. It also serves as a tandem mass spectrometer with high chemical specificity. Arrays composed of multiple traps allow for high sensitivity, selectivity, and analyte throughput.

Advantages:

-Larger ion trapping capacity than conventional ion traps

-Easily constructed due to its simple geometry

-Can be produced in a miniaturized form for field use

-Achieves high detection sensitivity using simple control electronics

Potential Applications:

-Mass Spectrometry

-Ion Traps

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Category

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