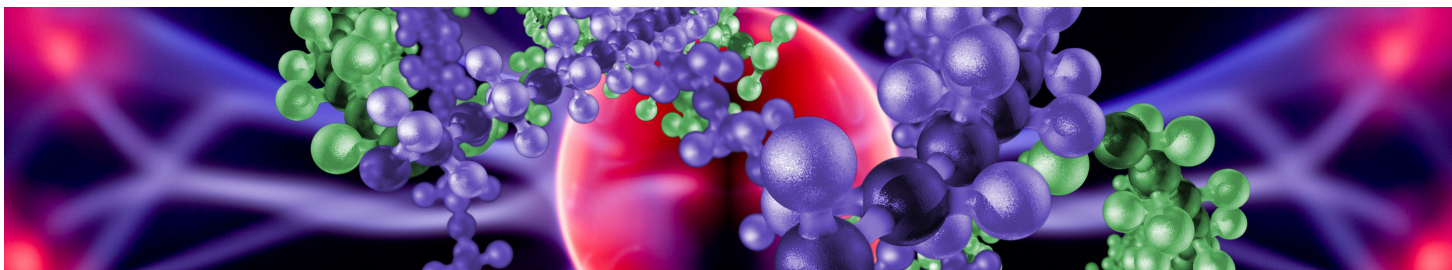


Microscale Ion Trap Mass Spectrometer



UT-B ID 199900683

Technology Summary

The invention described here is an ion trap mass spectrometer with critical dimensions less than 1 millimeter—the first use of a submillimeter ion trap for mass spectrometric chemical analysis. Microfabricated devices for chemical analysis have attracted much interest; however, up until now poor performance has hindered their broader application. Using this ion trap, we have demonstrated the possibility of performing mass spectrometry with submillimeter ion traps and determined the range of operating conditions for optimal performance. The subject ion trap can be formed from three sandwiched electrodes with cylindrical symmetry about an axis. The electrodes consist of a central ring electrode and two end cap electrodes that together form a partially enclosed cavity. When appropriate AC and DC voltages are applied to the three electrodes, ions can be trapped and mass analyzed. This ion trap can be machined by conventional methods and integrated with other microscale instruments.

Patents

J. Michael Ramsey, William B. Whitten, and Oleg Kornienko.
Microscale Ion Trap Mass Spectrometer, U.S. Patent
US 6,469,298 B1, issued October 22, 2002.

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