Recent Developments in Micro Ion Trap Mass Spectrometry

Jeremy Moxom, William B. Whitten, Peter T. A. Reilly and J. Michael Ramsey

Oak Ridge National Laboratory, Oak Ridge, TN

A miniature cylindrical ion trap mass spectrometer, with an internal diameter of 1 mm, has been developed and characterized. The device is operated in the mass selective instability mode and ions with m/z in the range 28 to 131 Da have been trapped and detected. Spectra for Xe^+ have been obtained with a He buffer gas at pressures up to 10^{-1} mbar.

Ionization is achieved using 70 eV electrons from a W filament, which pass through the end caps of the trap and the ions are detected using a 5 mm square micro channel plate detector. The trap is typically operated at 6 Mhz, and a combination of r.f. and dc voltages are applied to the ring electrode, with the end caps grounded. The stability diagram for the trap has been mapped out and different scan modes have been investigated. Details will be presented at the meeting.