

Compact and Rugged Multipurpose TOF

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We have developed a relatively compact (10" x 10" x 2.5") time-of-flight mass spectrometer (TOF) for a wide range of applications, especially in harsh environments. The instrument has a resolving power of $m/\Delta m = 800$ FWHM, and a sensitivity of 10 ppm in one second. The instrument can analyze gases and existing ions. E.g. it can monitor gas composition and detect process failures within a one-second time range. We have developed a version with higher ion energies for very rapid sampling (90 kHz) and higher resolution ($m/\Delta m = 1500$).

The instrument is being developed for NASA, for real-time monitoring of exhausts during take off. It will have to withstand high vibration levels and shock waves.

The instrument can also be used for other applications. For example, we have used it for plasma and gas analysis in a reactive ion etching process chamber. We also use the instrument as part of our MALDI-Mobility/TOF [1]. We plan to build an ESI-TOF version and eventually a GC-TOF.

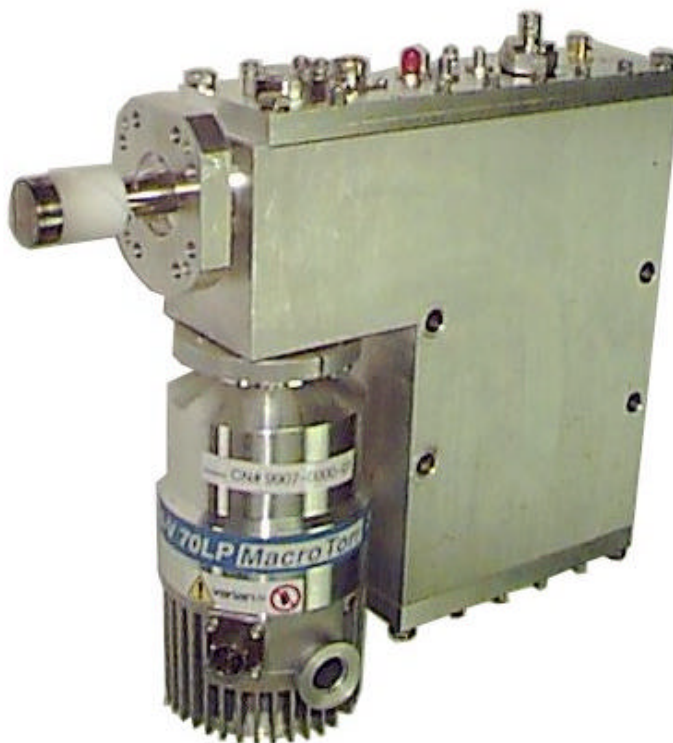


Figure: Compact Plasma-TOF with plasma extraction optics and turbo pump.

[1] Combining MALDI with IMS and O-TOF MS to analyze biological samples, K. Fuhrer; M. Gonin; A. Schultz; K. Gillig; D. Russell; Proceedings of the 47th ASMS conference (1999).