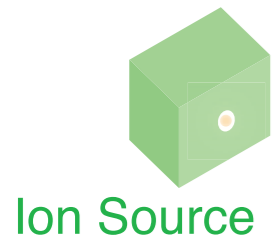


infiTOF

Hi-Resolution & Compact TOF-MS

The "infiTOF" is a high resolution and compact time-of-flight (TOF) mass spectrometer which introduced the "multi-turn TOF (MULTUM) technology" developed by Osaka University. The mass resolution of a TOF mass spectrometer is directly proportional to its total flight path length. In the multi-turn TOF mass spectrometers, ions are stored in a fixed orbit within electrostatic sectors and allowed to propagate the said orbit numerous times. With each successive orbit the flight path is correspondingly increasing and mass resolution increases according to the number of ion cycles.

What is multi-turn TOF mass spectrometer (MULTUM)



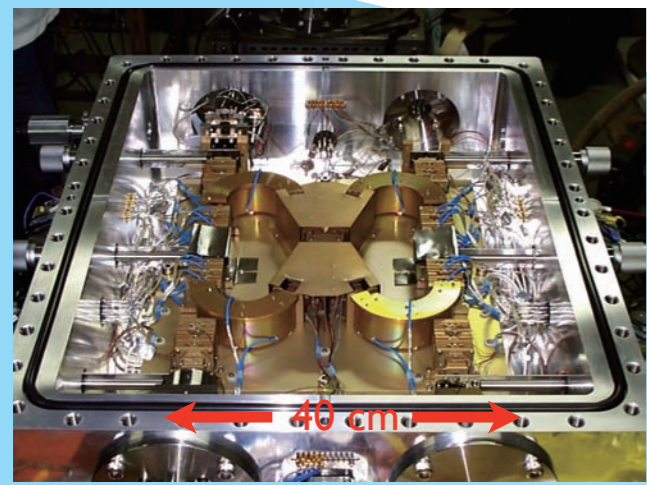
Ion Source

The mass resolution of a TOF mass spectrometer is directly proportional to its total flight path length. In order to obtain long flight path, it is necessary to place the ions in a closed orbit and to pass the ions around the same orbit many times. This type of multi-turn TOF mass spectrometers has been developed at Osaka University. Mass resolution greater than 350,000 was achieved after 500 cycles.

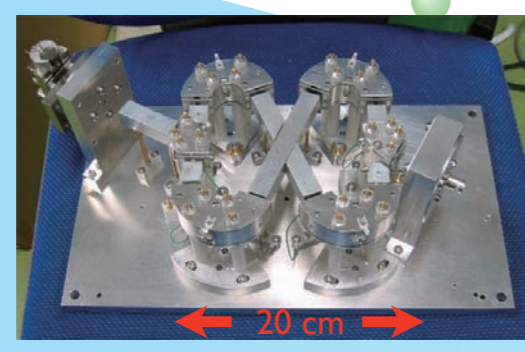
M. Toyoda, D. Okumura, M. Ishihara and I. Katakuse, J. Mass Spectrom., 38 (2003), 1125-1142.

Awards

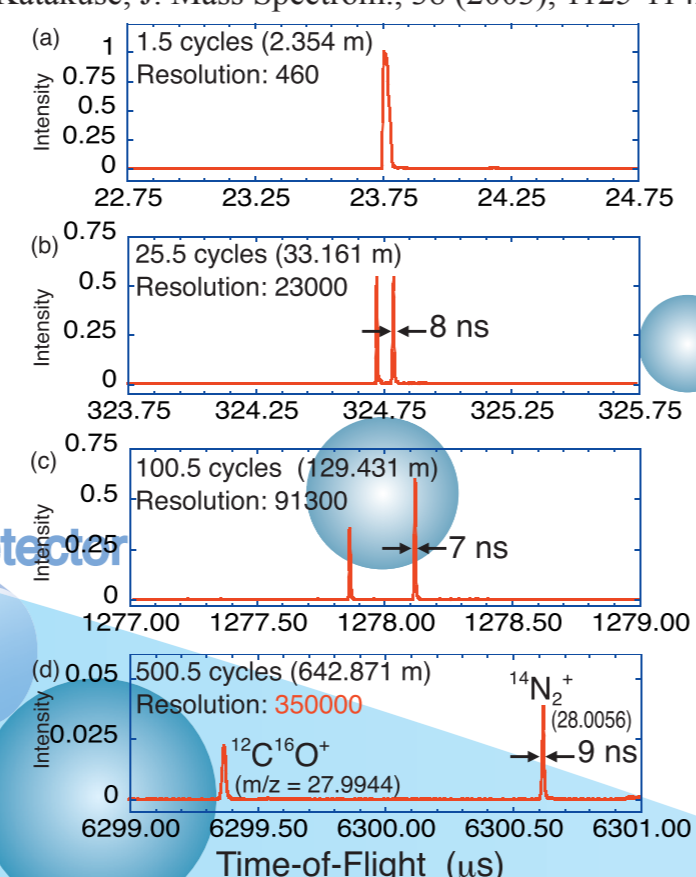
- 2002 Mass Spectrometry Society of Japan RESEARCH AWARD
- International Mass Spectrometry Society CURT BRUNNÉE AWARD
- Young Scientists' Prize, the Commendation for Science and Technology by the Minister of Education, Culture, Sports, Science and Technology
- PITTCON 2010 Editors' Bronze Award



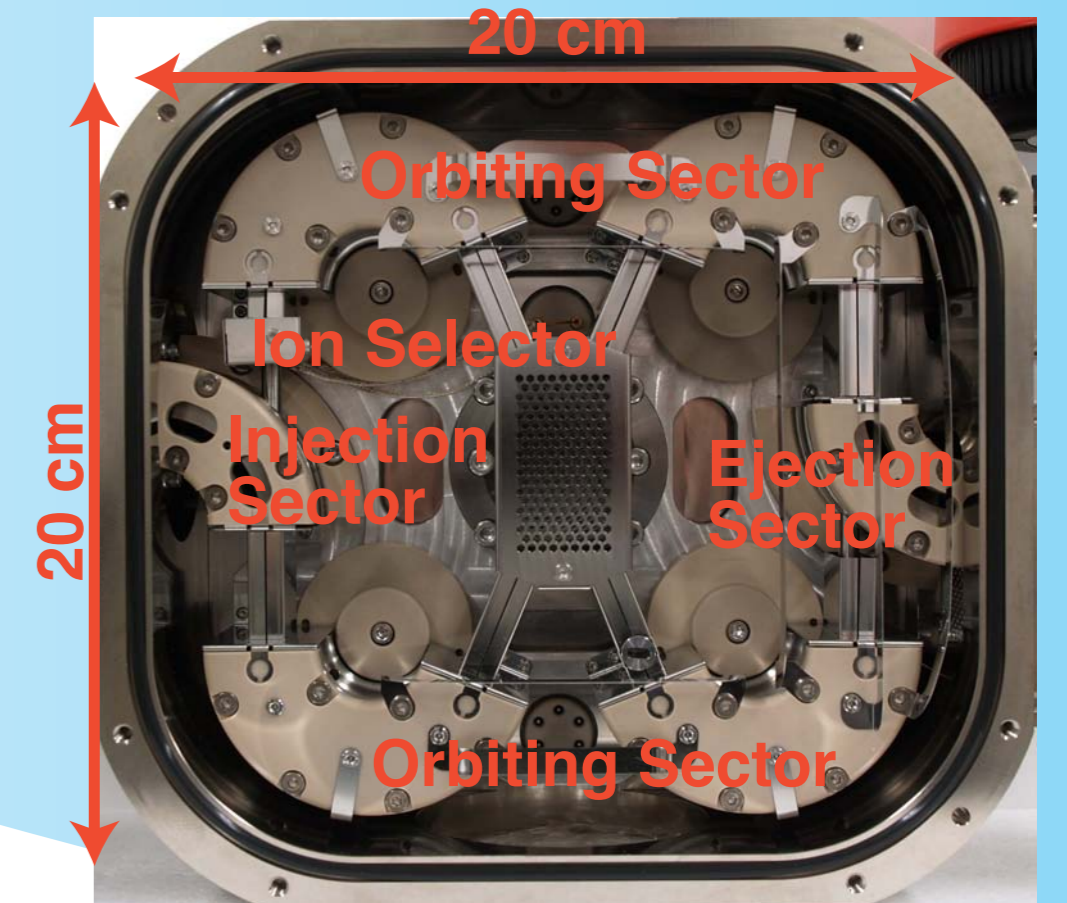
"MULTUM Linear plus"



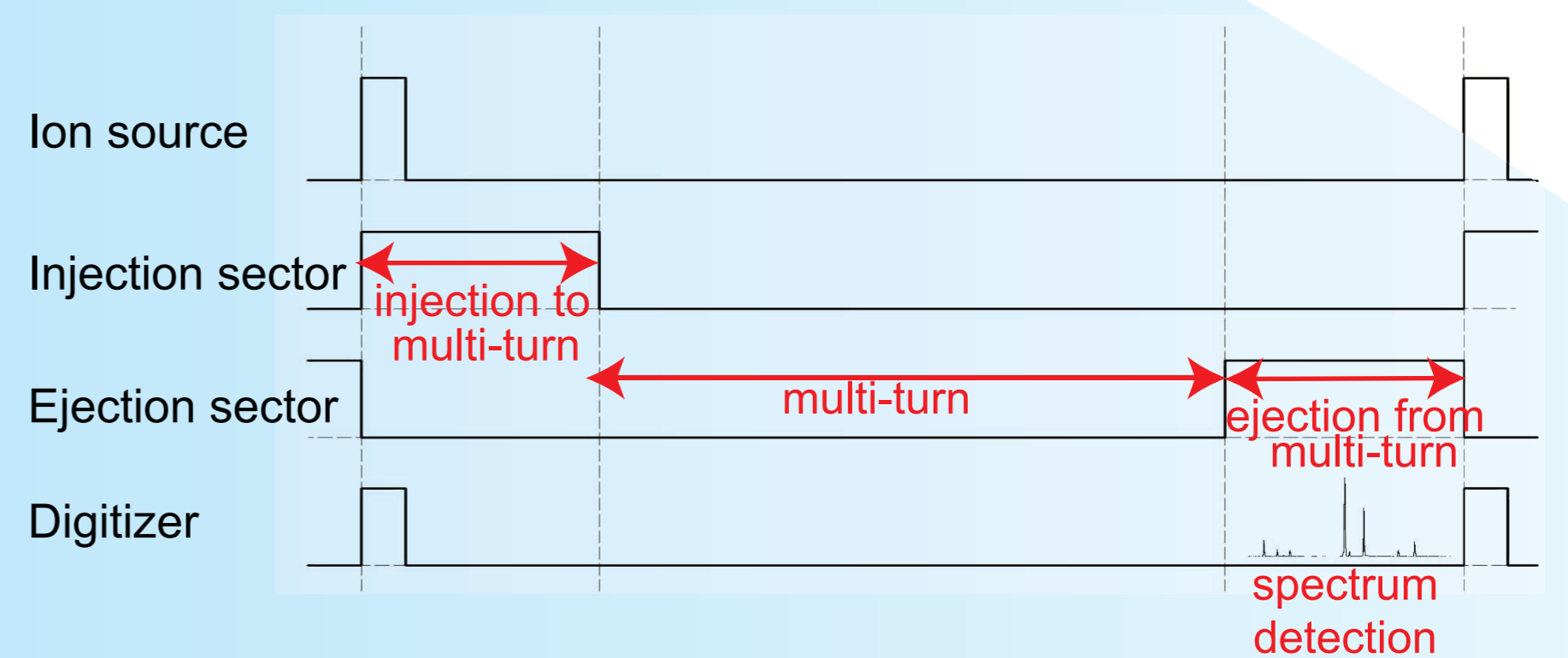
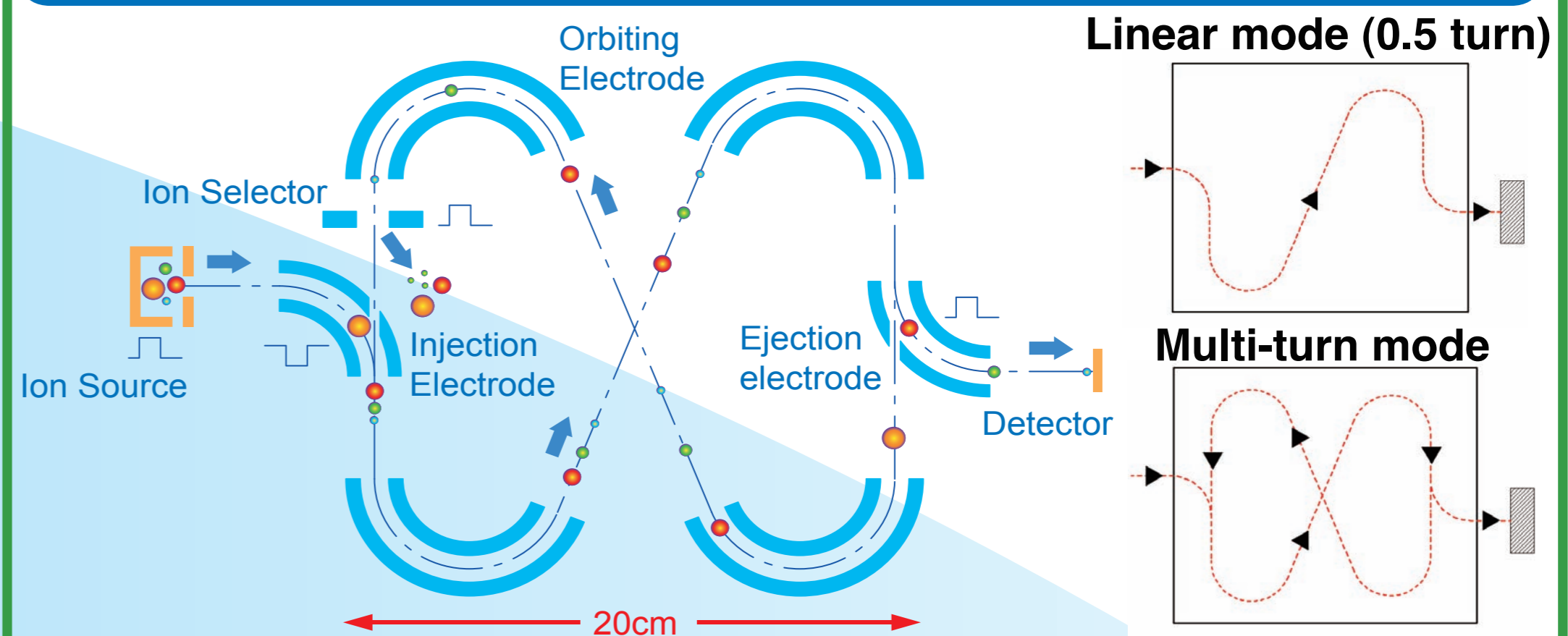
"MULTUM-S"



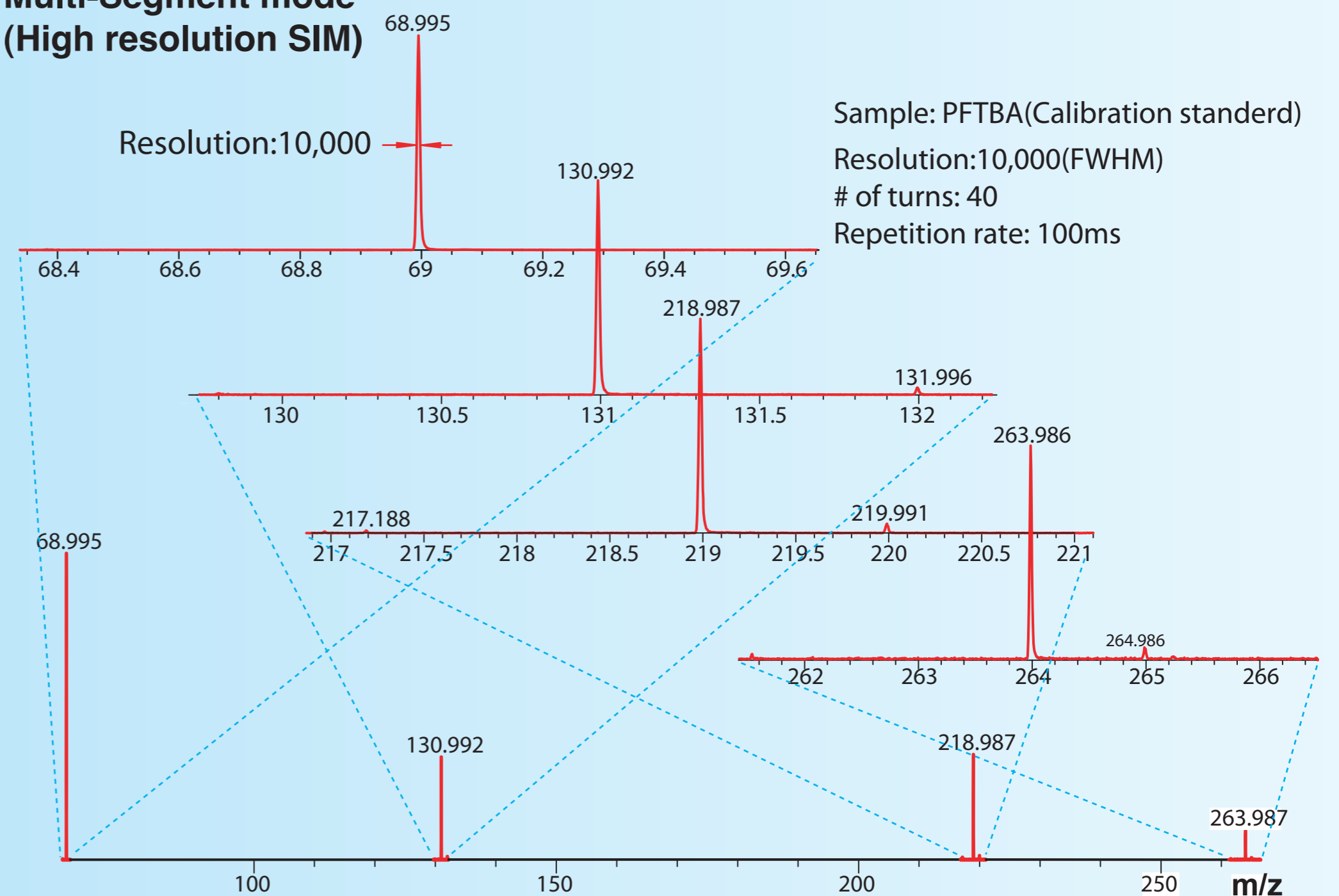
Inside of "infiTOF"



Operation of "infiTOF"

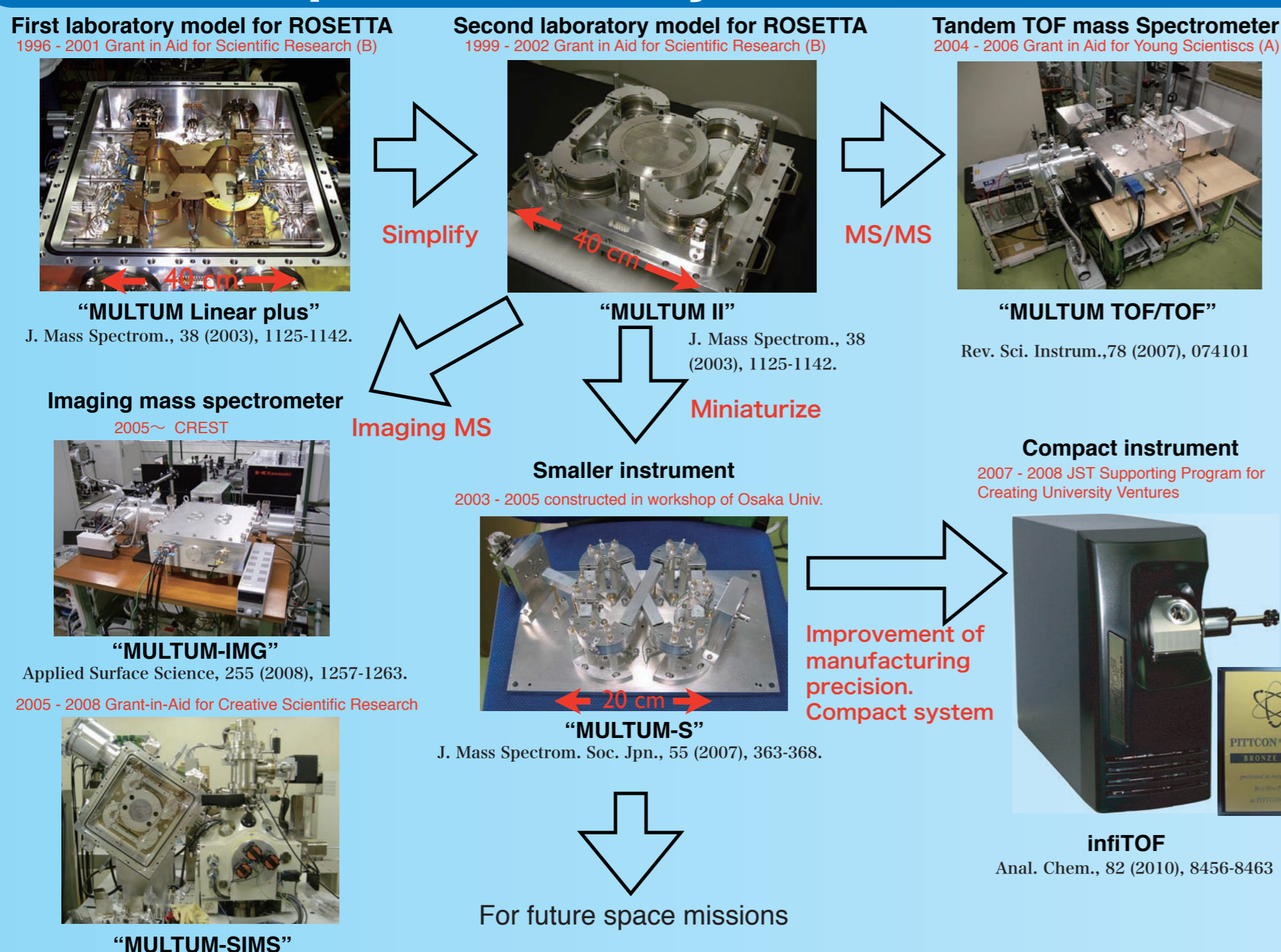


Multi-Segment mode (High resolution SIM)



This is actual data acquired in segment mode at 10,000 resolution. Mass range of each segment is narrow but this is a perfect application for monitoring known peaks. In addition file size is kept very small.

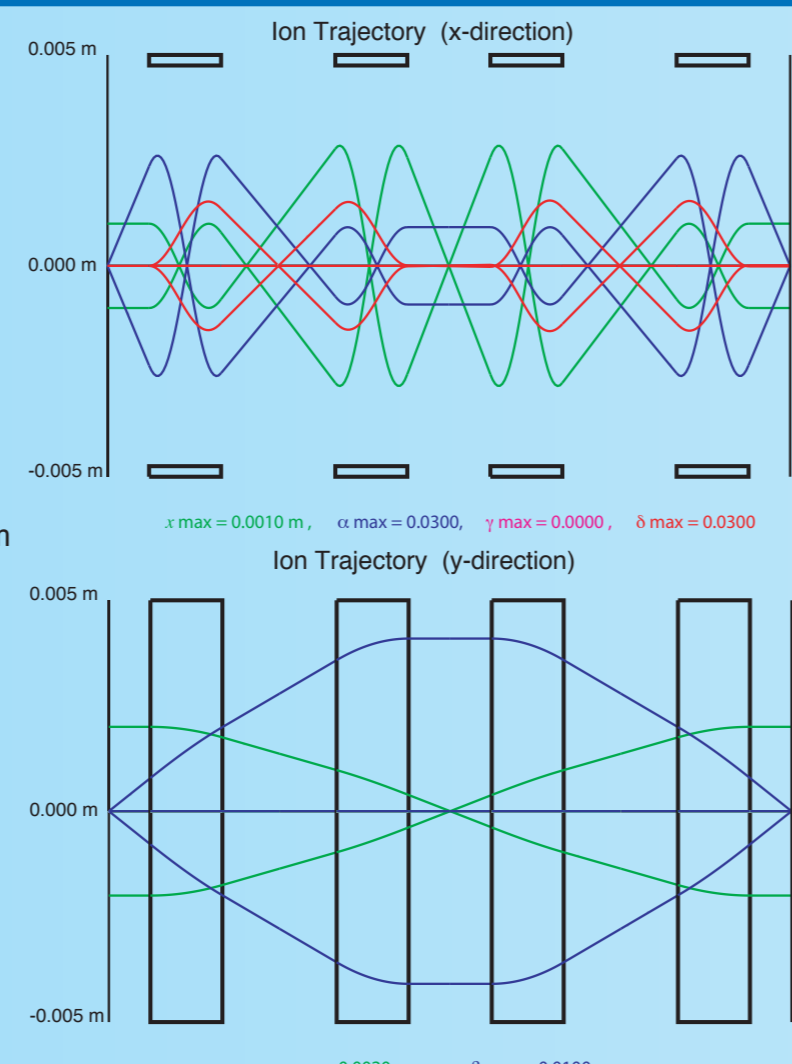
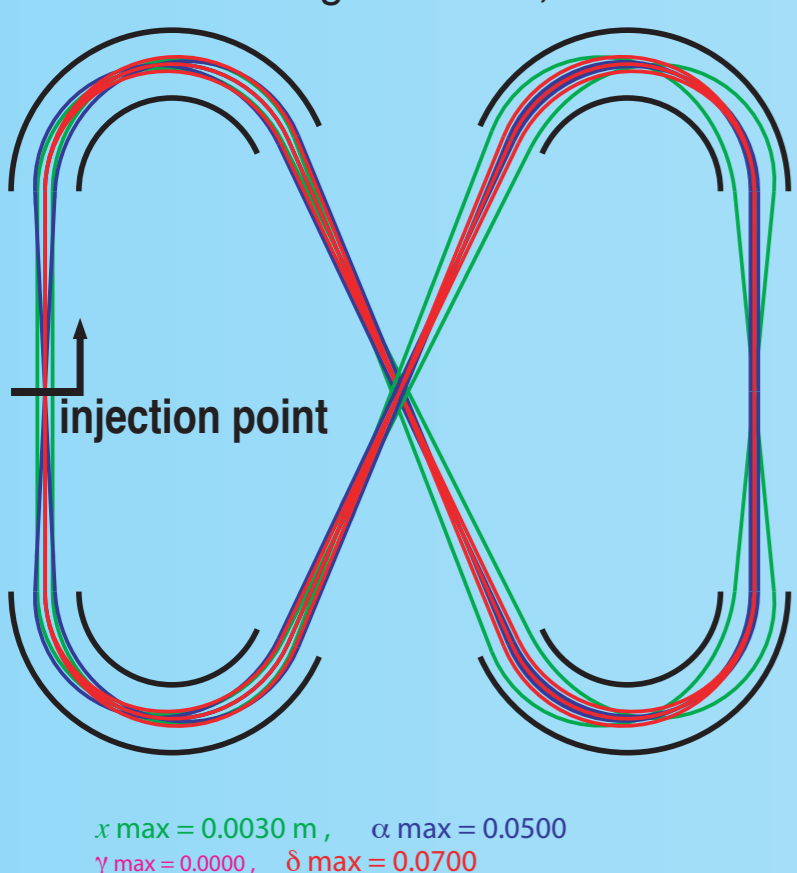
Development History of the MULTUM



Ion Optical System of the MULTUM

Toroidal Electric Sector

Deflection radius : 25 mm,
Deflection angle : 158.3°, C1 = 0.0762



At the injection point, each ion has varying behavior. Flight path of each ion is different, but the key point is, all ions return to exactly the same initial starting condition ("perfect focussing"). Theoretically the optics will never lose any ions during flight when this is the case.