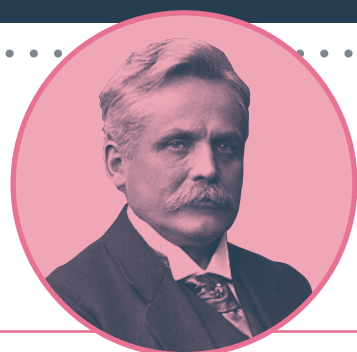


The Evolution of Mass Spectrometry

A journey through time and technology

References

1. Wikimedia Commons, Jeff Dahl
2. Courtesy of Pacific Northwest National Laboratory
3. Wikimedia Commons, JEOL USA

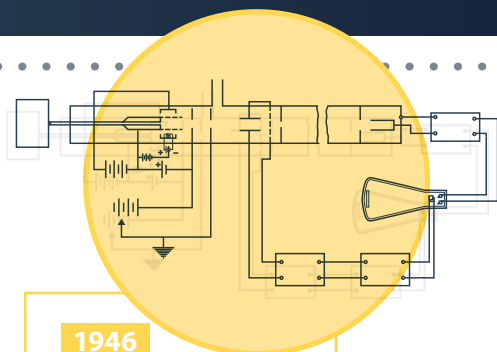


1898

Wilhelm Wien discovers that beams of charged particles are deflected by a magnetic field.

1919

Francis Aston produces a velocity focusing mass spectrograph.



1946

William Stephens reveals the concept of a time-of-flight mass analyzer.

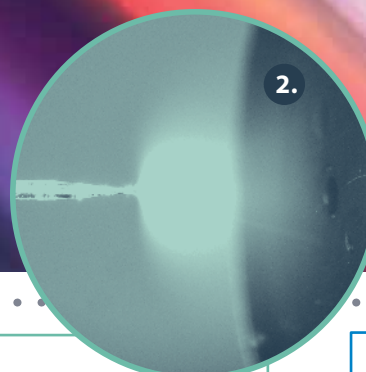


1969

The American Society for Mass Spectrometry (ASMS) is formed.

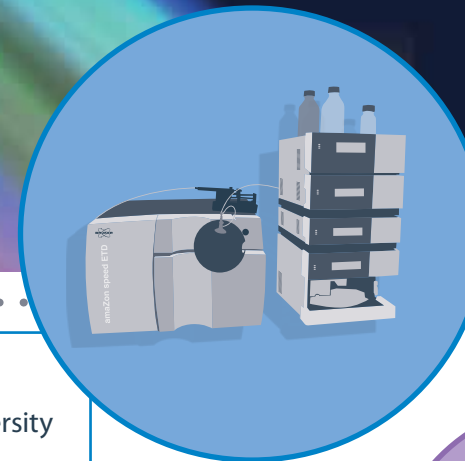
1984

John Bennett Fenn and his team ionize biomolecules using electrospray.



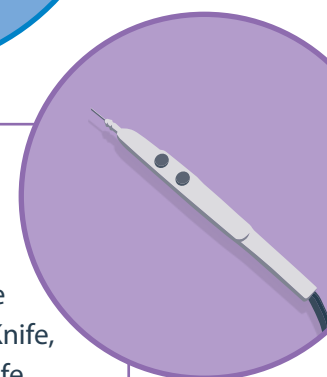
2004

A research group at the University of Virginia, presents electron transfer dissociation (ETD).



2013

Professor Zoltan Takats and his team present the concept of the iKnife, an intelligent knife that can analyze tissue during surgery.



1898

1910

1919

1943

1946

1953

1969

1974

1984

1985

1987

1999

2004

2005

2013

2014



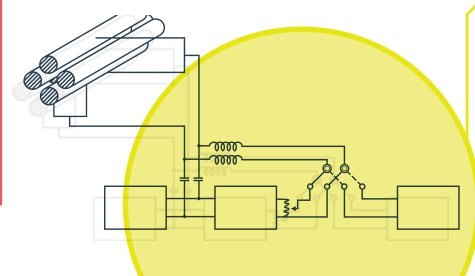
1910

J.J. Thomson separates particles with different mass-to-charge ratios.



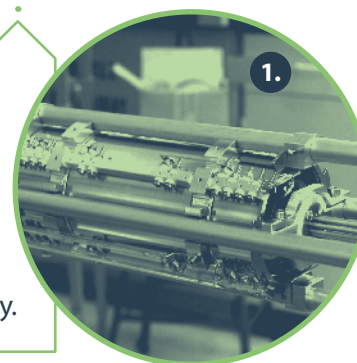
1943

Consolidated Engineering Corporation (CEC) becomes the first organization to successfully market mass spectrometers.



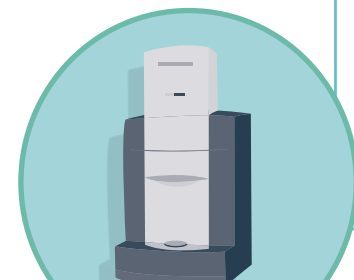
1974

Melvin Comisarow and Alan Marshall present Fourier transform ion cyclotron resonance (FT-ICR) mass spectrometry.



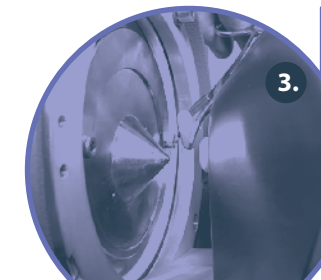
1953

Wolfgang Paul and Helmut Steinwedel present the concept of a quadrupole mass filter.



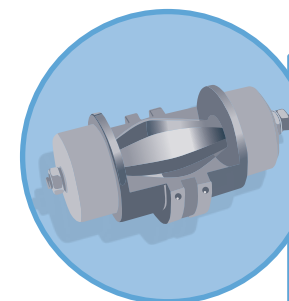
1985

Franz Hillenkamp, Michael Karas, and their colleagues present matrix-assisted laser desorption/ionization (MALDI).



1999

Alexander Makarov presents the concept of the Orbitrap™ mass analyzer at the ASMS annual conference.



2005

Direct Analysis in Real Time (DART) is presented by Robert B. Cody at the January 2005 ASMS Sanibel Conference.

2014

Two separate research groups publish draft maps of the human proteome based on mass spectrometry.

