

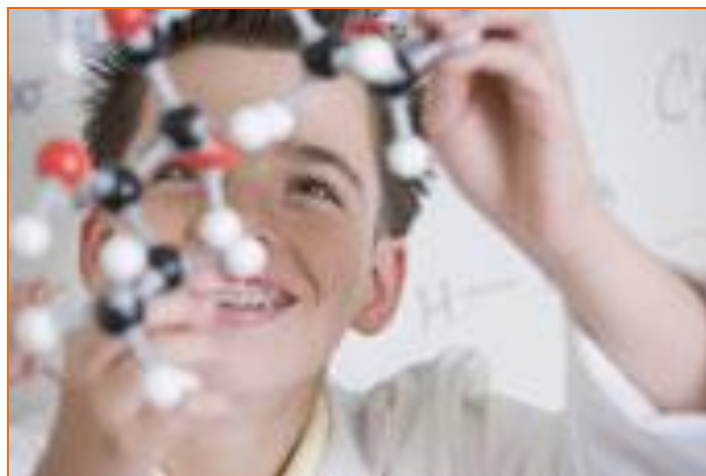


Introduction to mass spectrometry and peptide mass fingerprint

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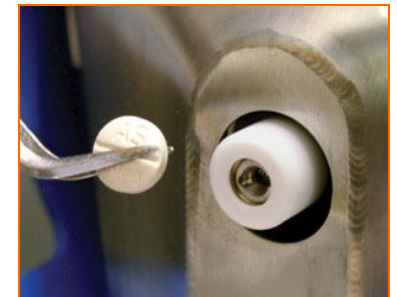
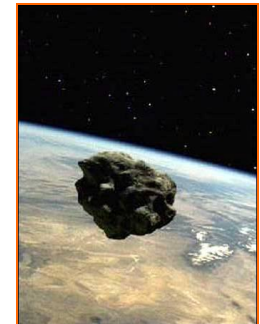
What is mass spectrometry?

- Mass spectrometry is a powerful analytical technique that is used to identify unknown compounds, to quantify known compounds, and to elucidate the structure and chemical properties of molecules.
- Determine the mass of a molecule by measuring the mass/charge (m/z) of its ion

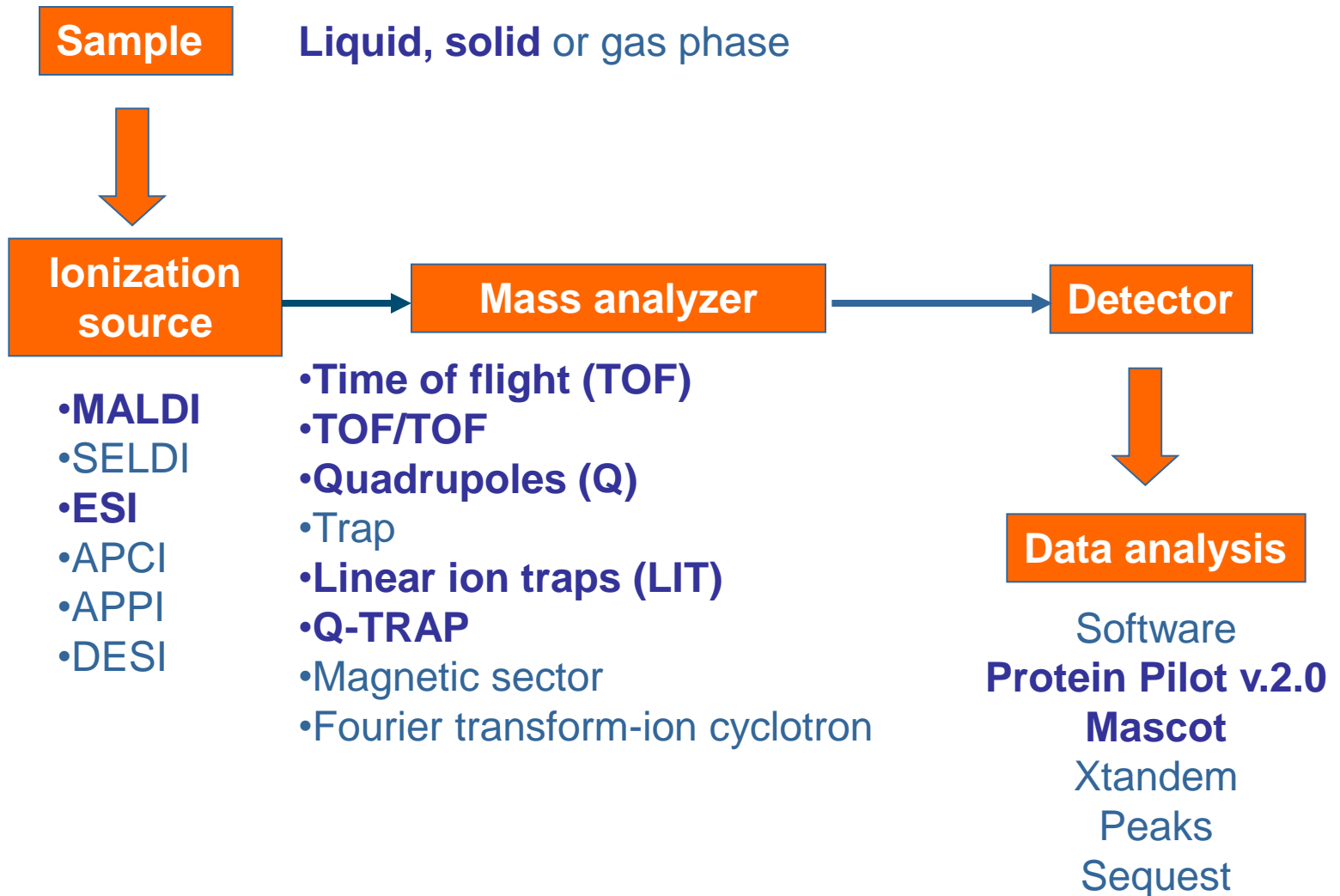


Did you know that mass spectrometry is used to...

1. Detect and identify the use of steroids in athletes
2. Monitor the breath of patients by anesthesiologists during surgery
3. Determine the composition of molecular species found in space
4. Locate oil deposits by measuring petroleum precursors in rock
5. Monitor fermentation processes for the biotechnology industry
6. Detect dioxins in contaminated fish
7. Determine gene damage from environmental causes

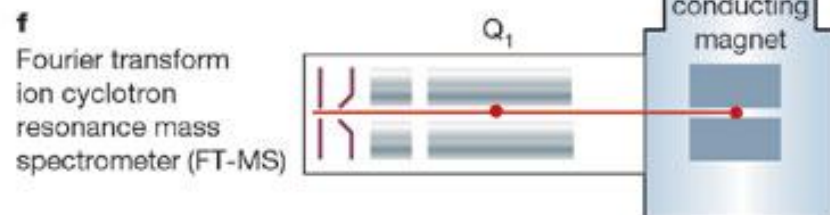
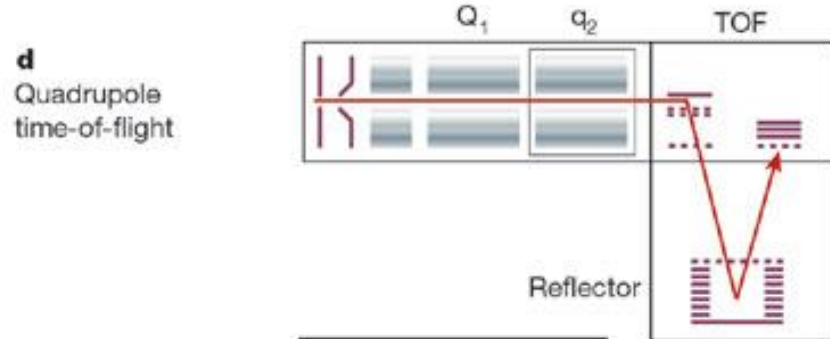
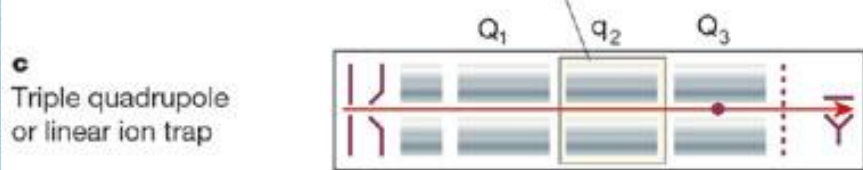
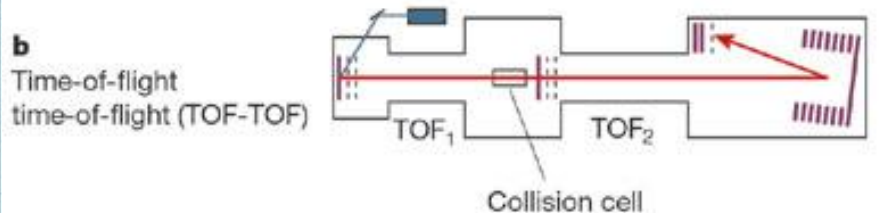
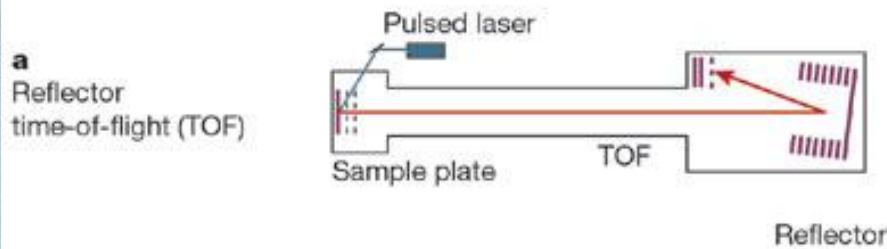
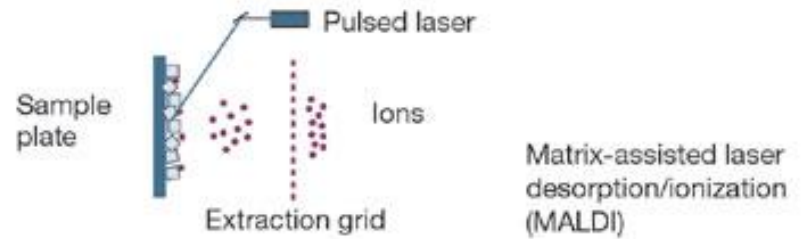
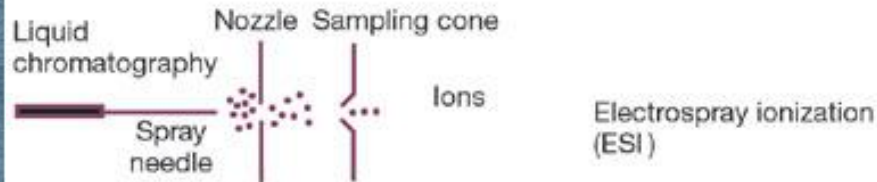


Mass spectrometer



Schematics of Mass Spectrometers

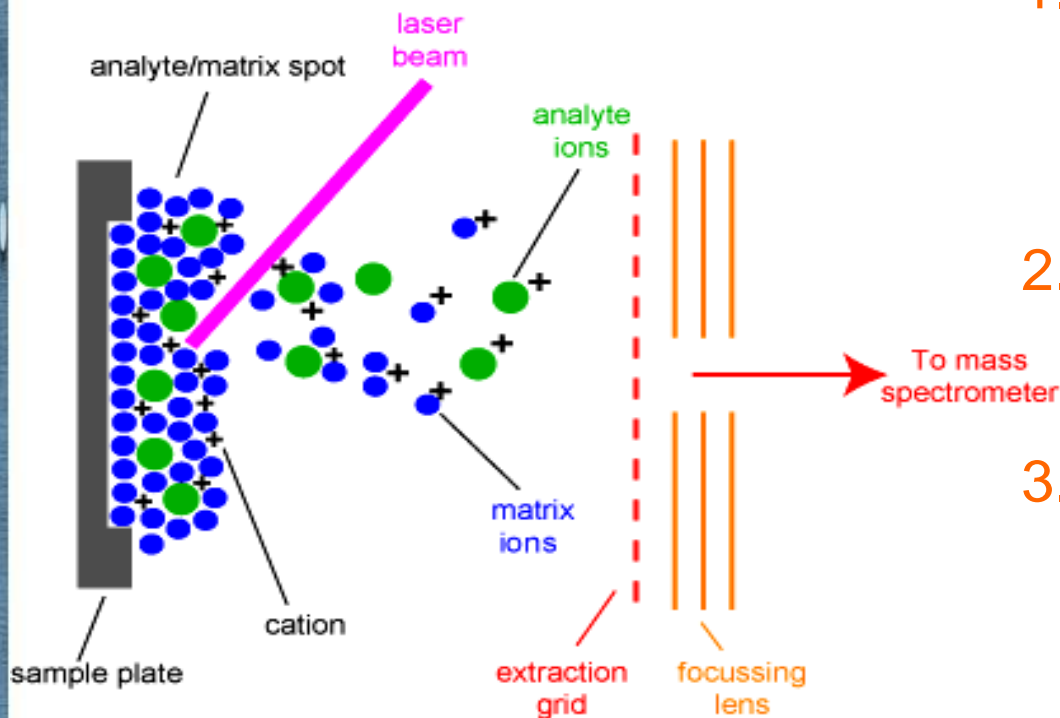
Ion source — Mass analyser — Detector



1. MALDI-TOF



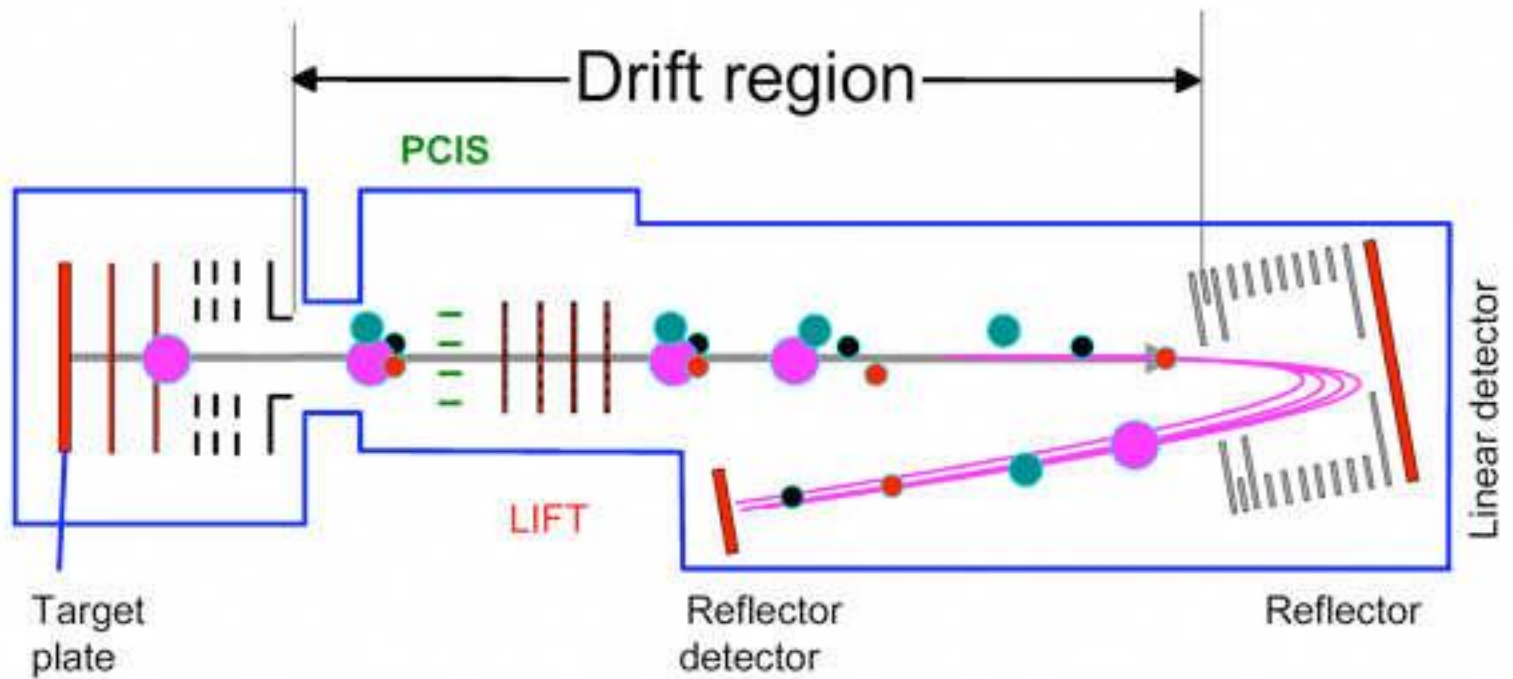
Matrix assisted laser desorption/ionization (MALDI)



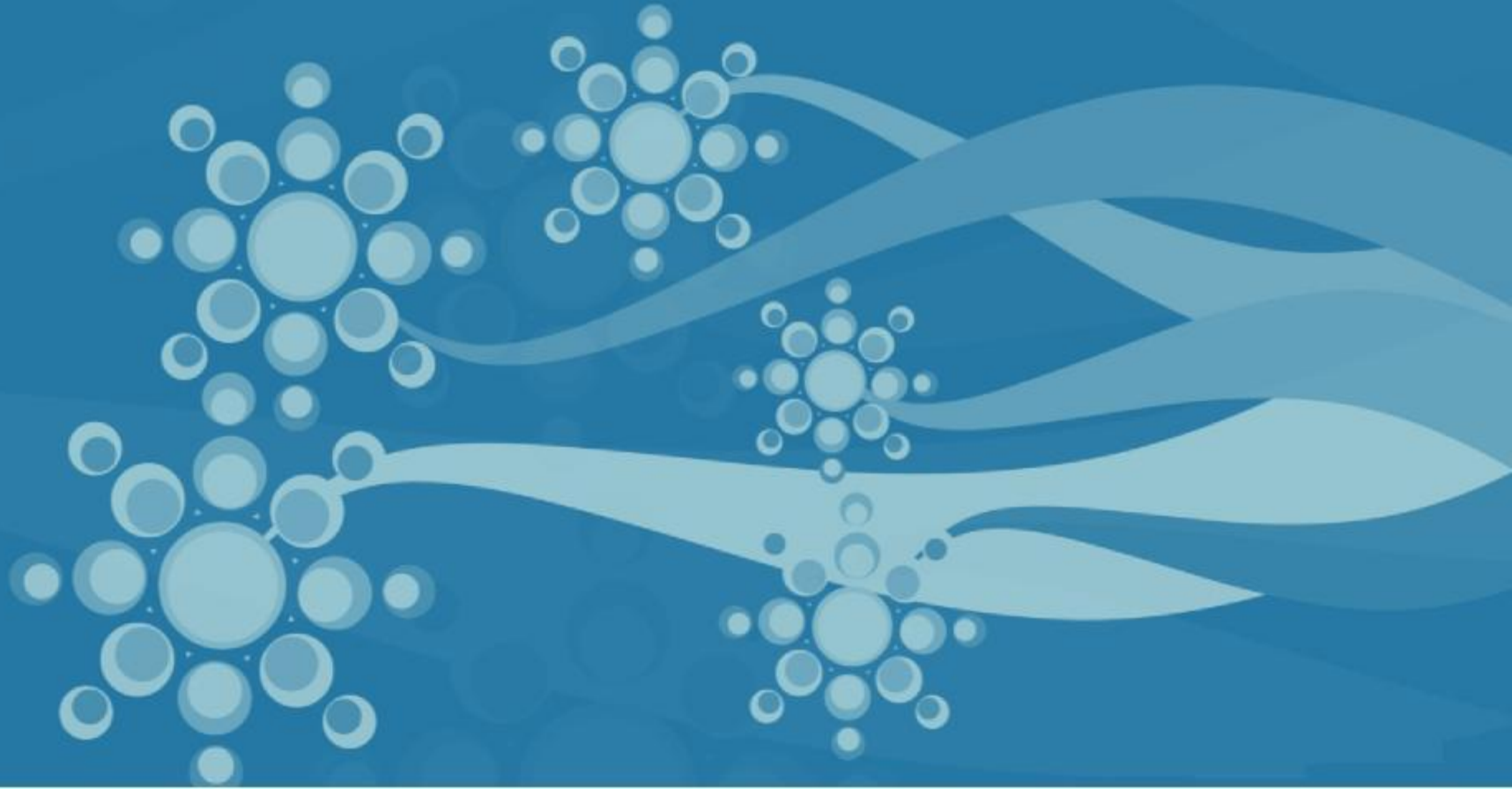
1. Sample (A) is mixed with excess matrix (M) and dried on a MALDI plate.
2. Laser flash ionizes matrix molecules.
3. Sample molecules are ionized by proton transfer from matrix:



Time of flight TOF



Protein identification by peptide mass fingerprinting (PMF) using a MALDI-TOF



PMF = Peptide Mass Fingerprinting

