

Mass Spectrometry

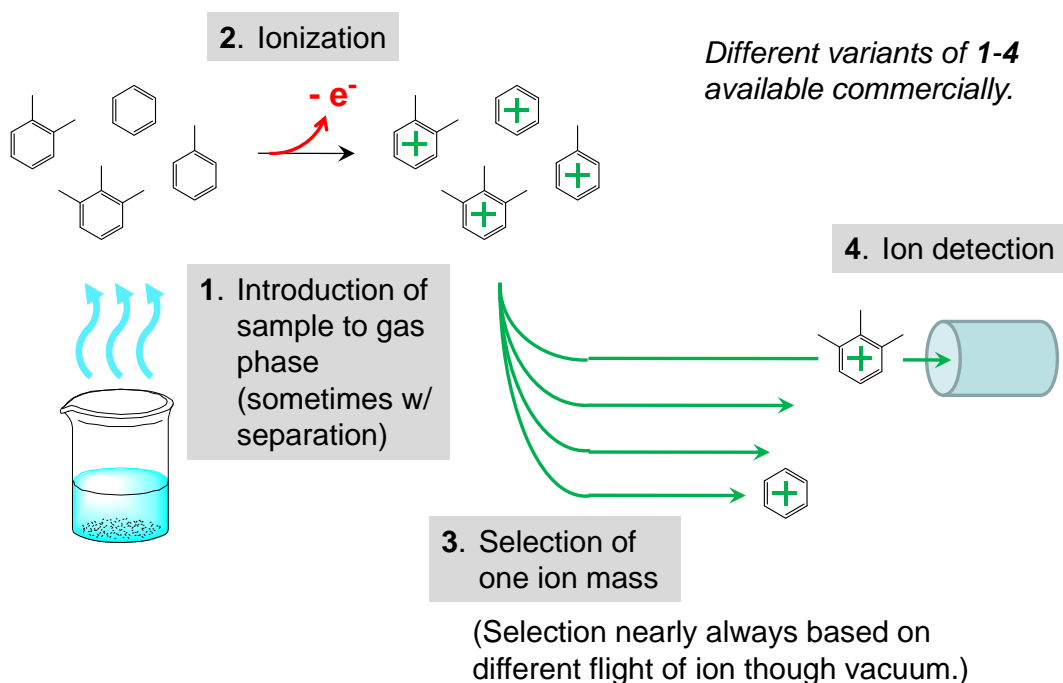
Features:

- Used to determine mass of molecules
- Can also identify presence of a mass in a complex mixture
- Sensitive enough for trace analysis

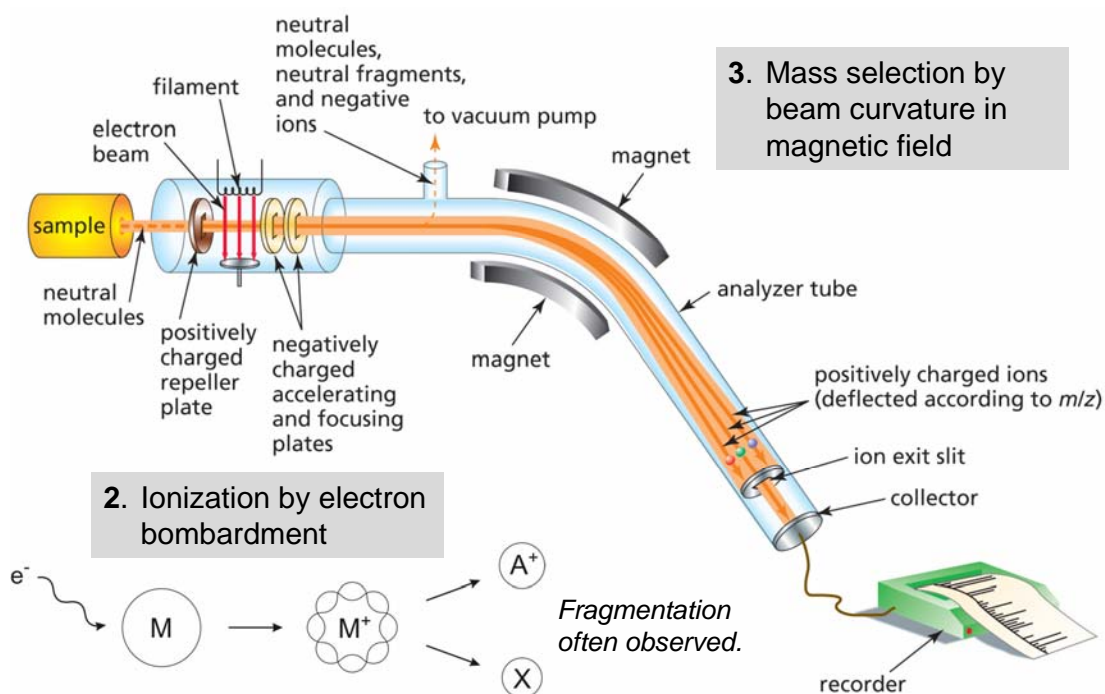
Requirements:

- Molecule must be put in gas phase
(Easiest for small, neutral molecules)

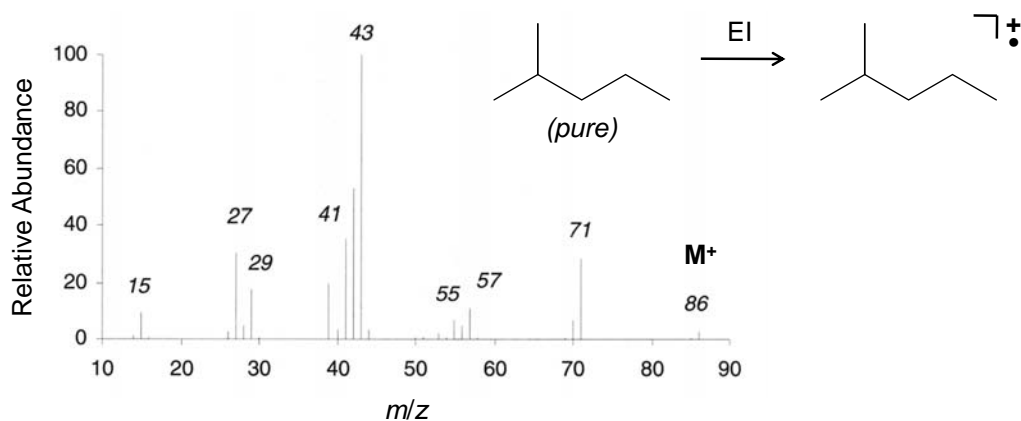
General Characteristics of Mass Spectrometry



A Common Example: Electron Ionization, Magnetic Sector MS



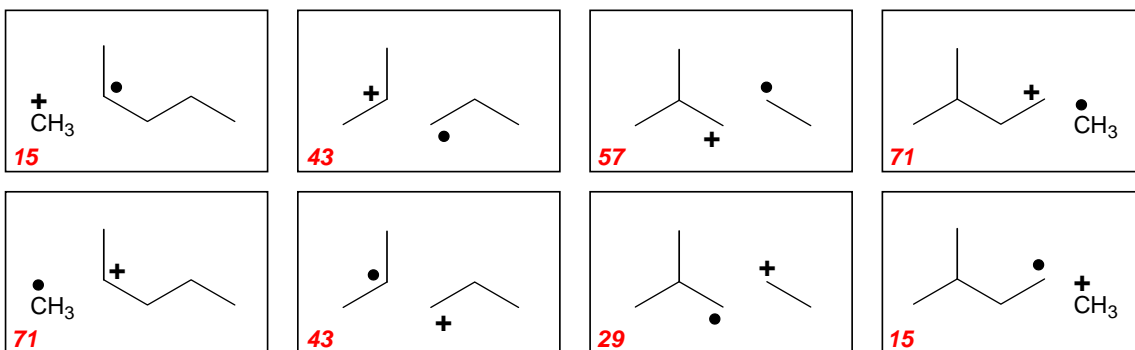
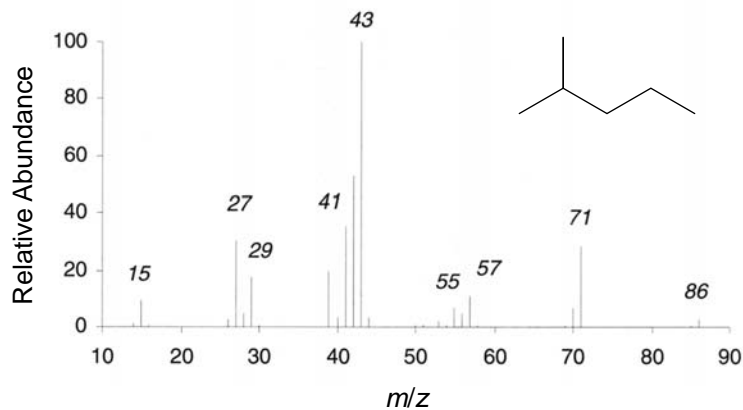
A Mass Spectrum



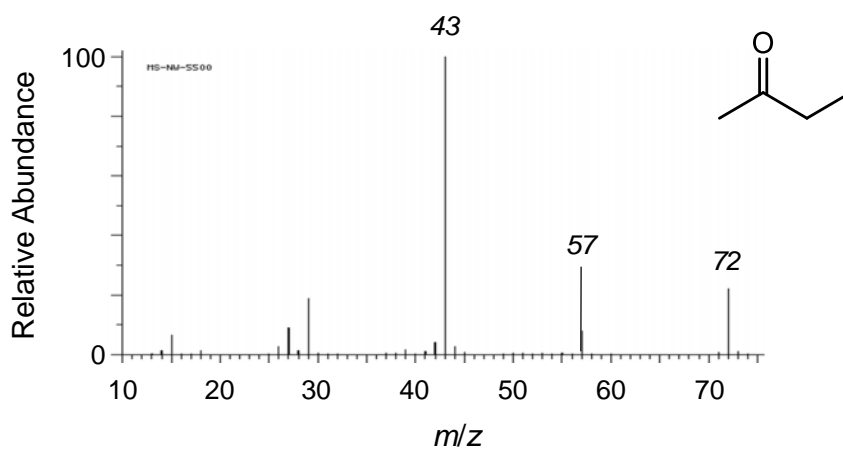
Features of a mass spectrum:

- Horizontal axis is m/z : mass-to-charge ratio
- Highest mass in spectrum is usually “parent” mass (M^+)
- Lower masses are “daughter” fragments

Fragmentation in Mass Spectrometry

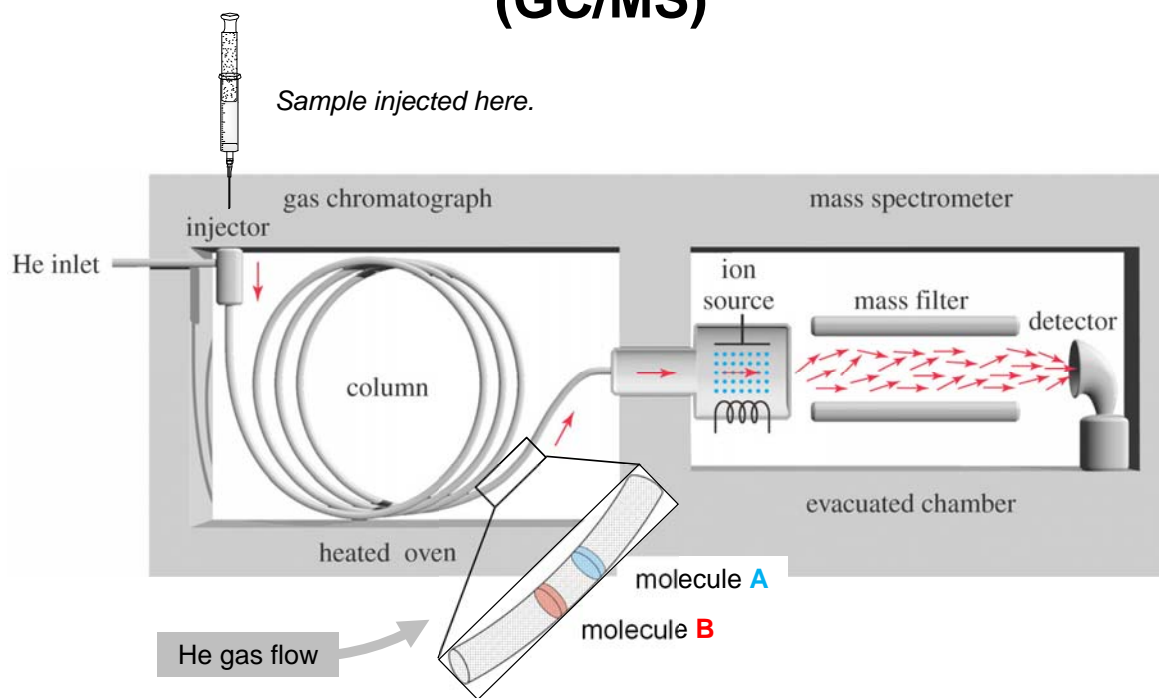


Fragmentation in Mass Spectrometry



How do we explain the fragments observed in this spectrum?

Analyzing Mixtures: Gas Chromatography/Mass Spectrometry (GC/MS)



GC/MS Output

Molecules elute from GC column at different times;

are analyzed by MS separately.

