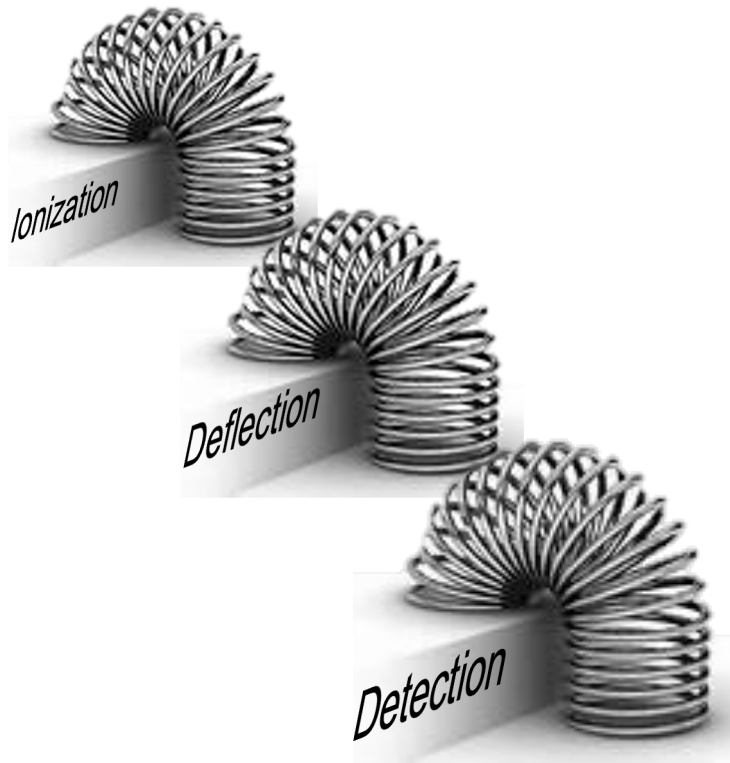
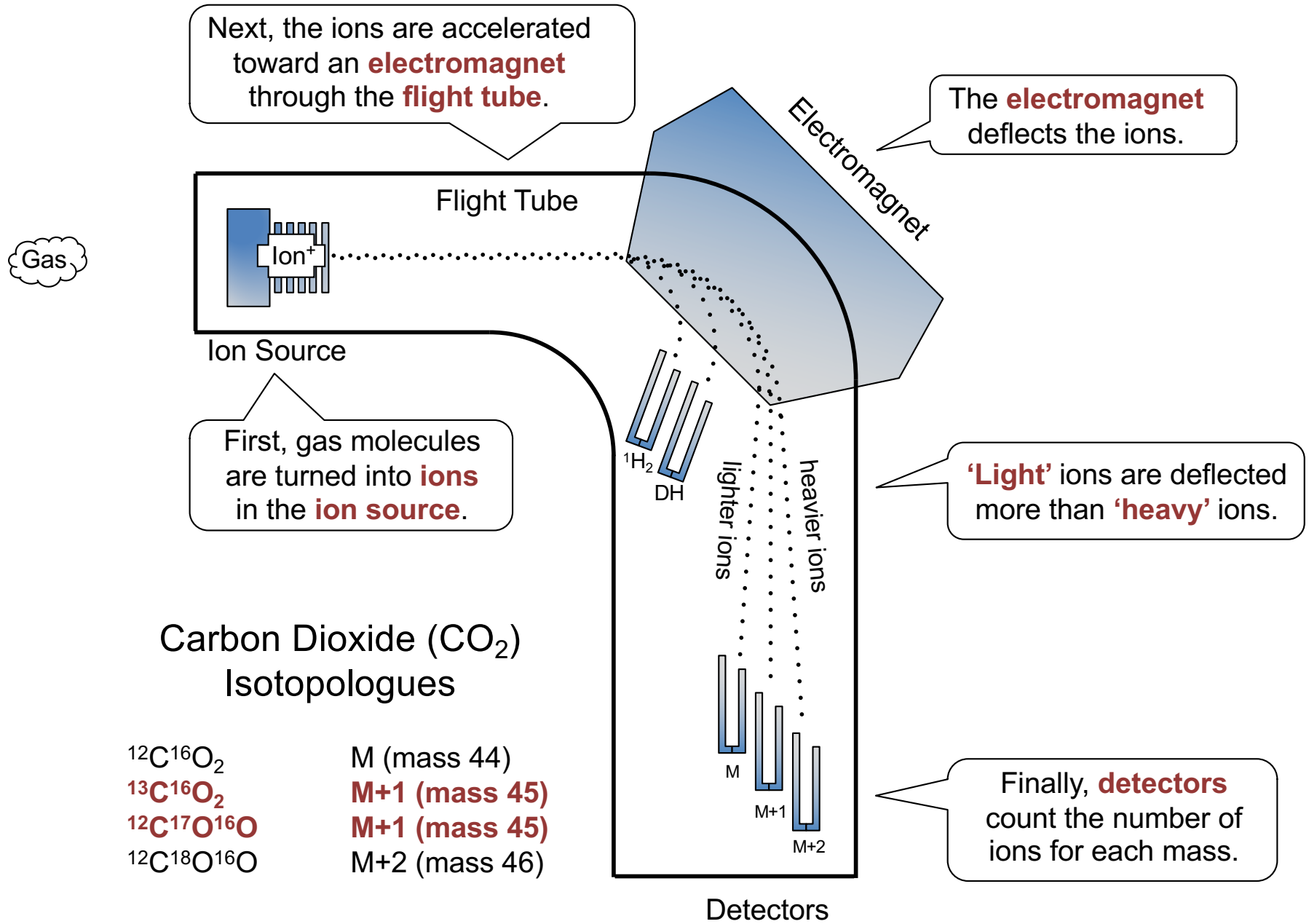


Isotope Ratio Mass Spectrometers (IRMS)

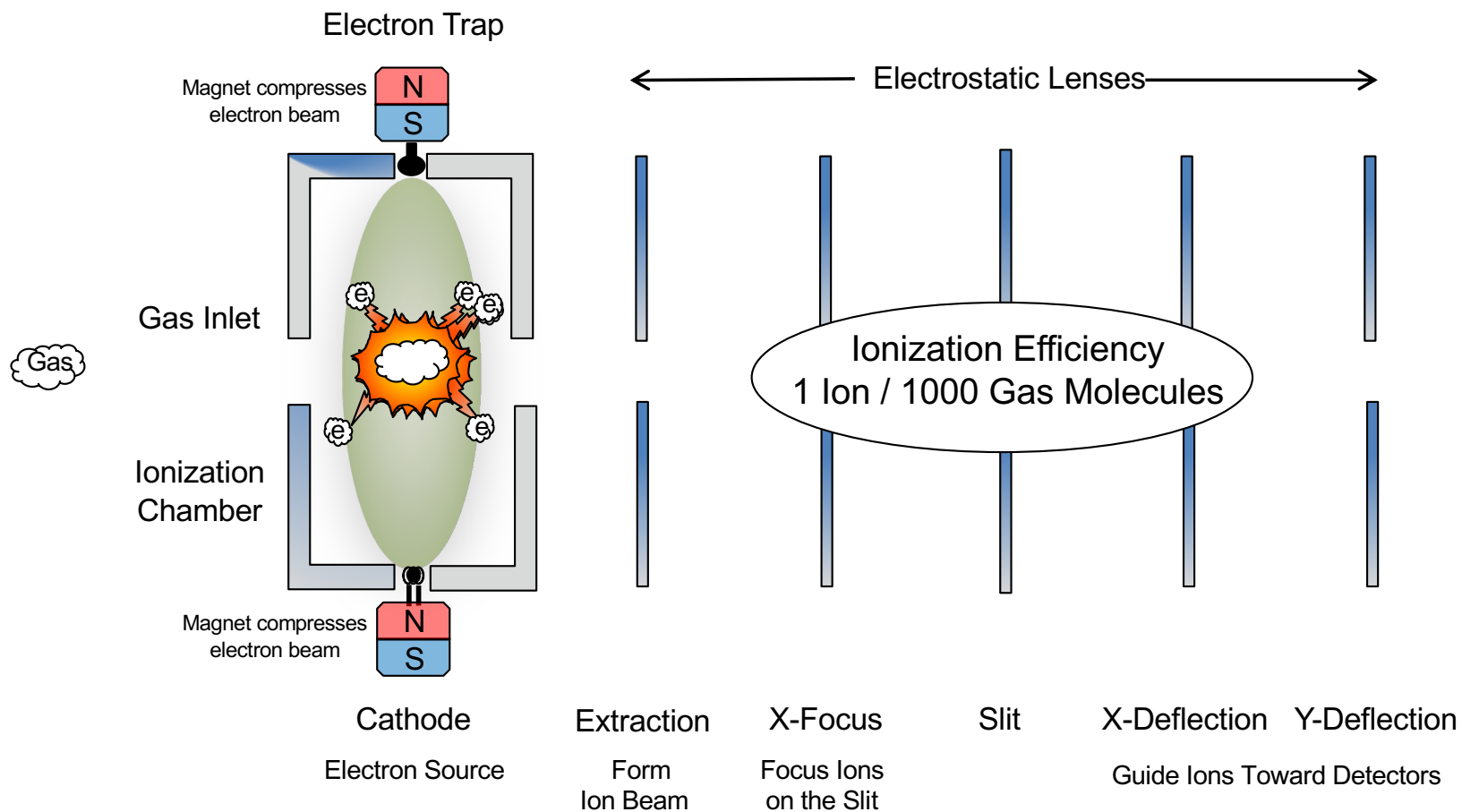


- ▶ Make the Ions
- ▶ Separate the Ions
- ▶ Count the Ions

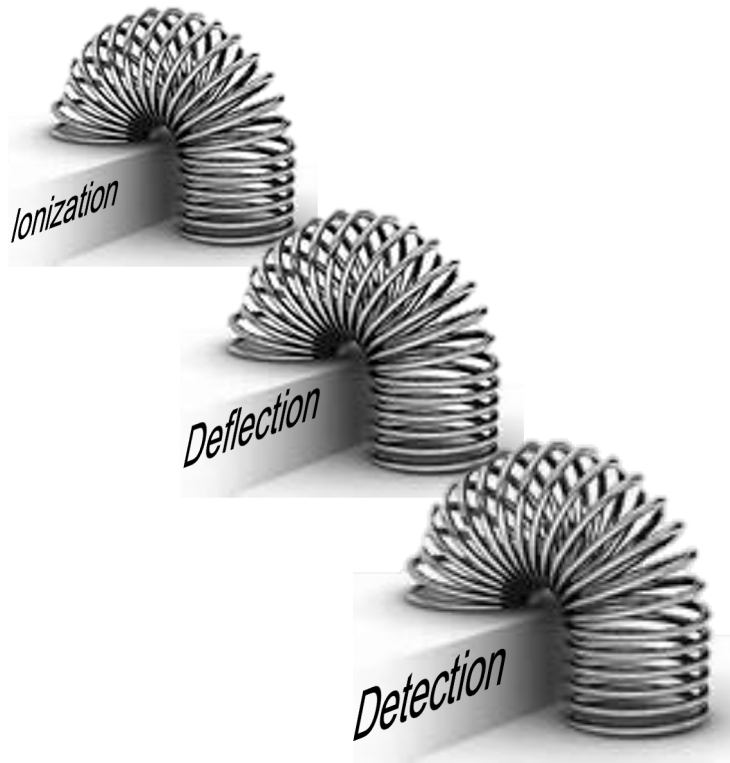
IRMS: The Basics



Ionization: Electron Impact Source



Isotope Ratio Mass Spectrometers (IRMS)

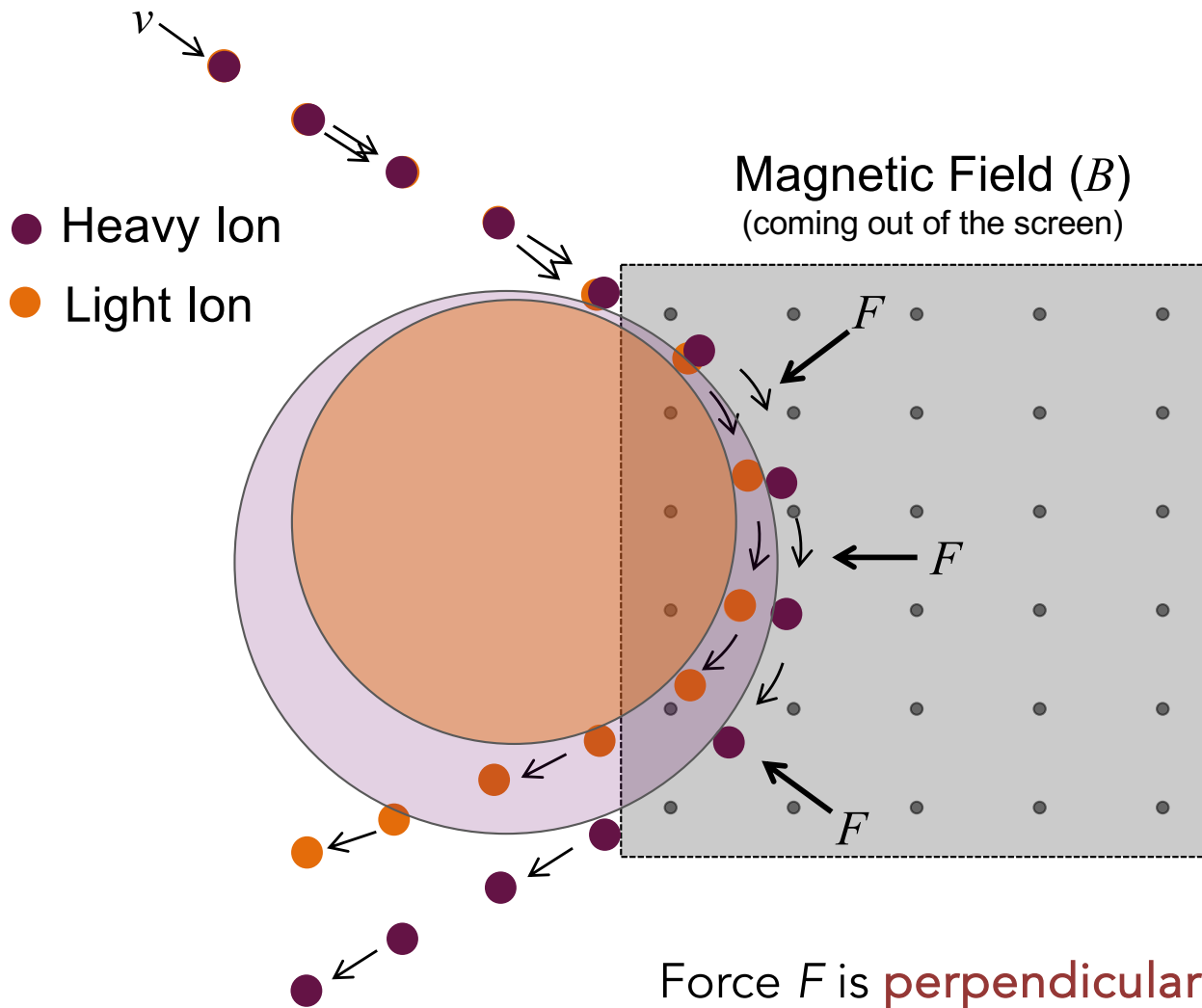


▶ Make the Ions

▶ Separate the Ions

▶ Count the Ions

Ion Deflection: Electromagnet



$$\frac{m}{Z} = k r^2$$

Isotope Ratio Mass Spectrometers (IRMS)

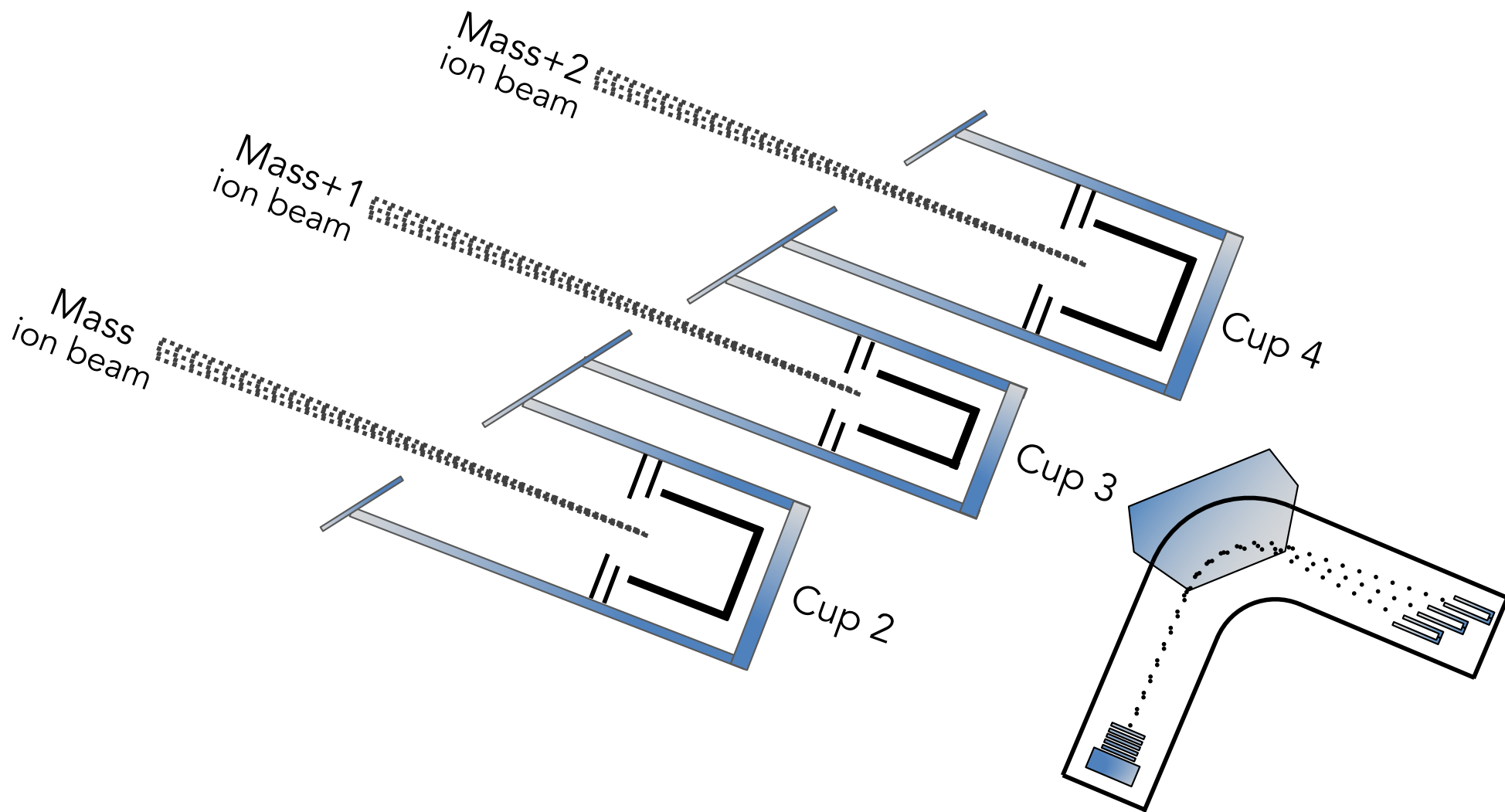


▶ Make the Ions

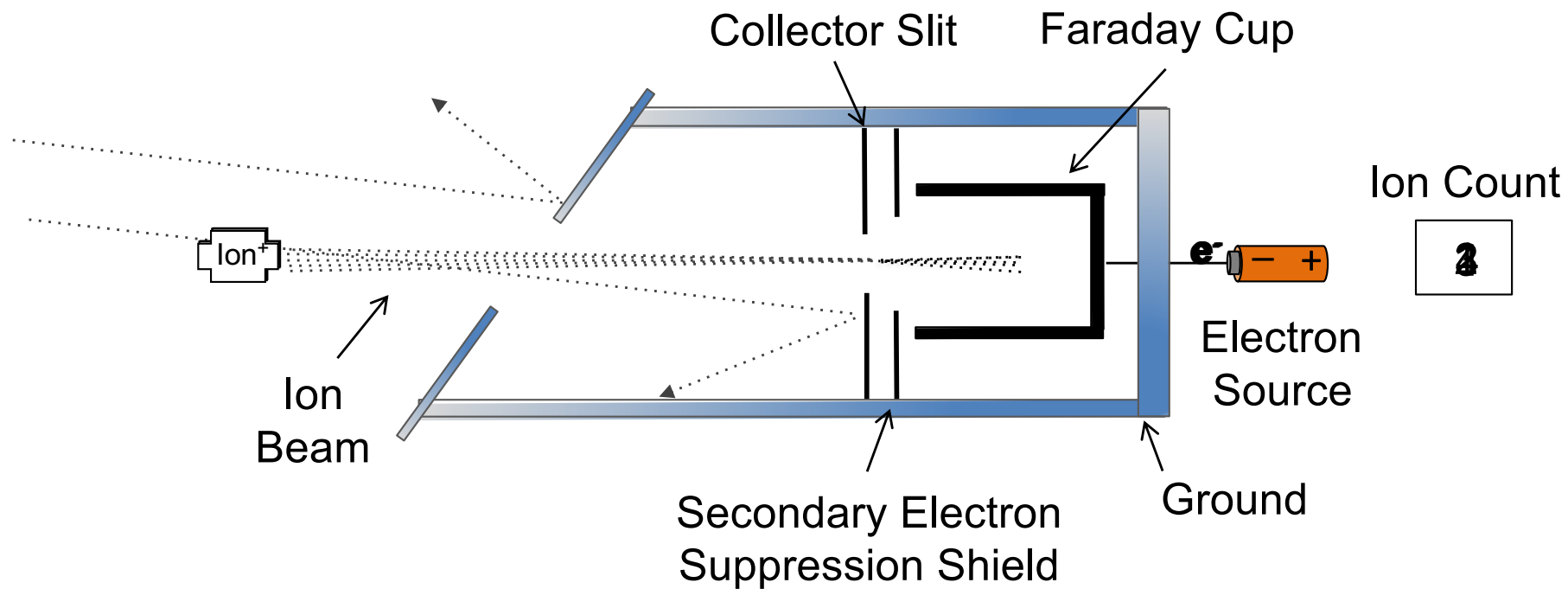
▶ Separate the Ions

▶ Count the Ions

Ion Detection: Faraday Cup Array



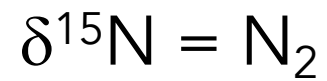
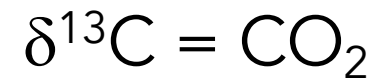
Ion Detection: Faraday Cup



Peripherals: Generate Gas



Elemental Analyzer (EA):
N₂, CO₂, SO₂

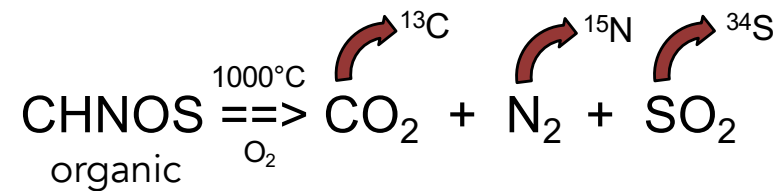


Sample Preparation

Continuous Flow IRMS

Carrier gas (He) pushes the sample gases into the IRMS.
(high throughput, lower precision vs dual-inlet)

Combustion-Reduction (EA-IRMS)



Carbon and Nitrogen Isotope Analysis Elemental Analyzer-IRMS (EA-IRMS)

