

Physics Report

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Mass Spectroscopy

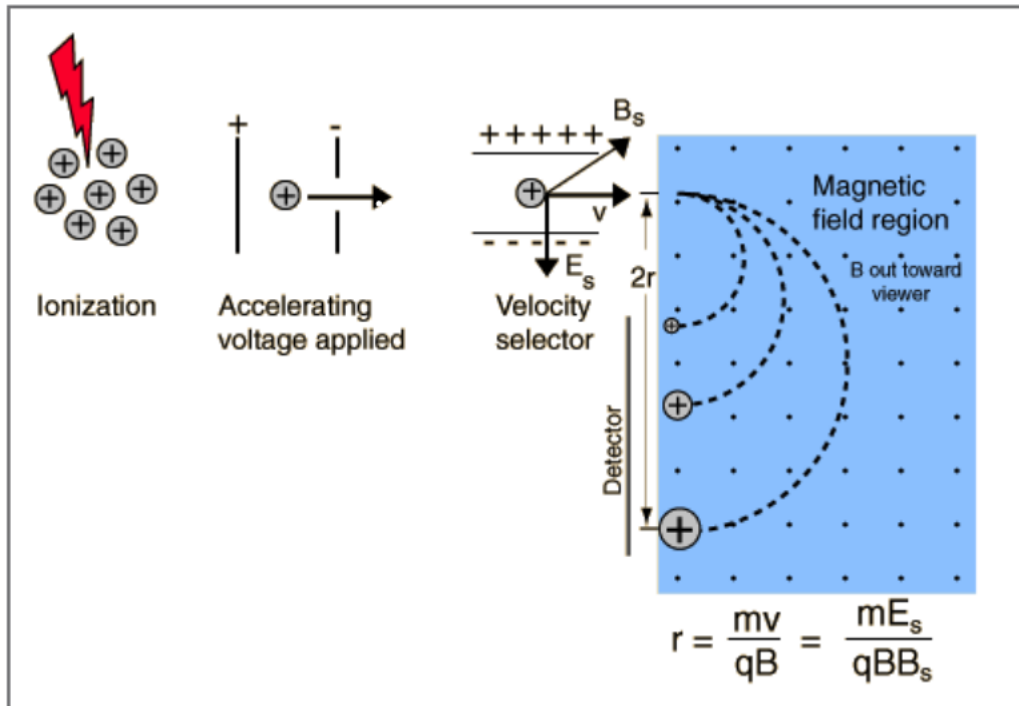


Figure 1: The mass spectrometer is an instrument which can measure the masses and relative concentrations of atoms and molecules. It makes use of the basic magnetic force on a moving charged particle.

After ionization, acceleration and selection of single velocity particles, the ions move into a mass spectrometer region where the radius of the path and thus the position on the detector is a function of mass.

Circular Path From Magnetic Field

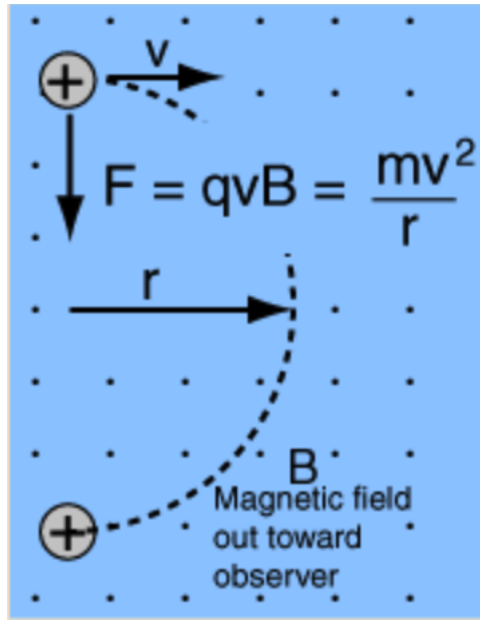


Figure 2: If a charge moves into a magnetic field with direction perpendicular to the field, it will follow a circular path. The magnetic force, being perpendicular to the velocity, provides the centripetal force

Velocity Selector

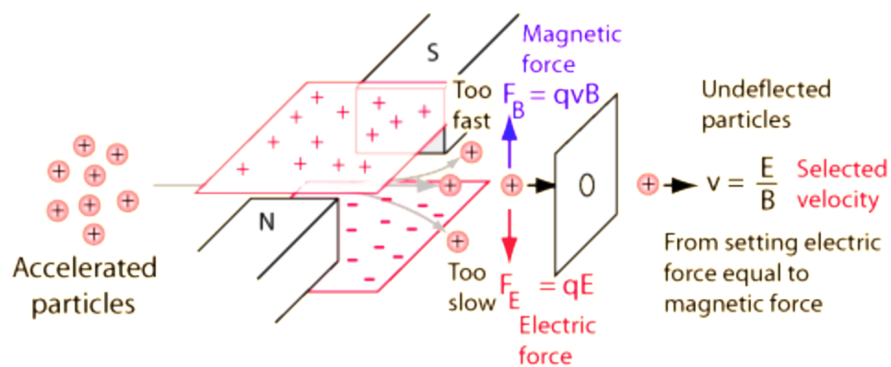


Figure 3: A velocity selector is used with mass spectrometers to select only charged particles with a specific velocity for analysis. It makes use of a geometry where opposing electric and magnetic forces match for a specific particle speed. It therefore lets through undeflected only those particles with the selected velocity.