

Mass Spectroscopy

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1 Introduction

What is Mass Spectroscopy? It's a technique to separate components of a sample by their mass. In order to understand Mass Spectroscopy fully there are terms needed to be understood. It is used as an analytical tool for measuring mass-to-charge ratio. This technique is used to recognize unknown components of a sample by molecular weight determination.

Spectroscopy: A technique that uses the interaction of energy with a sample to perform an analysis.

Spectrum: The data that is obtained from spectroscopy is called a spectrum. A spectrum is a plot of the intensity of energy detected versus the wavelength (or mass or momentum or frequency, etc.) of the energy.

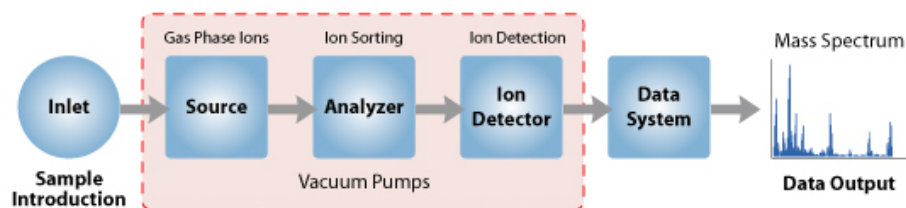


Figure 1: Components of a Mass Spectrometer [1]

2 information obtained by this technique

Information obtained by this technique are about atomic and molecular energy levels, molecular geometries, chemical bonds, interactions of molecules. In addition of all of these, Mass spectroscopy can be used to measure the amount of a material in a sample.

3 Physical principles

The tool used in mass spectroscopy is mass spectrometer. It measures masses and relative concentrations of atoms and molecules. Also it makes use of the basic magnetic force on a moving charged particle. Before particles move into the mass spectrometer region they need to be ionized, pass through velocity selector.

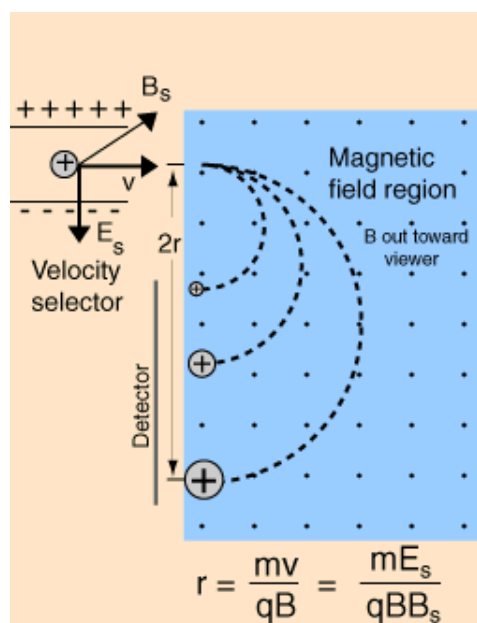


Figure 2: Mass spectrometer region and its relevant formula

References

- [1] Mass spectrometry: Introduction, principle of mass spectrometry, components of mass spectrometer, applications.