Mass Spectroscopy

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1 Introduction

Mass spectrometry (MS) is an analytical chemistry technique that helps identify the amount and type of chemicals present in a sample by measuring the mass-to-charge ratio and abundance of gas-phase ions.

2 Explanation

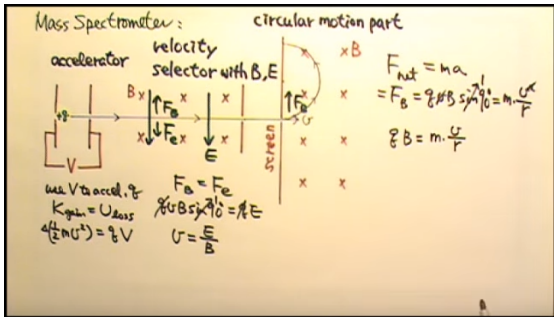

Figure 1: Mass Spectroscopy

The formulas we used in this case are:

$$Fb = qVB$$

$$Fe = qE$$

$$Fnet = ma$$

We can see from picture that a positive charge come from circuit. It can be considered as current. and the space that current passed has B field. The direction of B field is going inside. By the way the direction of current is not changed. That means the forces are balanced. Balanced force are electric force and B field force.

$$Fb = Fe$$
$$qVB = qE$$
$$VB = E$$

The second part is the current go into screen. There is no electric force working for current. Therefore direction of current will be changing. Because there is not force working on the current beside B filed force.

$$ma = qVB$$
$$\frac{mV^2}{R} = qVB$$
$$\frac{mV}{R} = qB$$
$$R = \frac{mv}{qB}$$

So that we can calculate the the radius of the motion of charge orbit. Also we can get:

$$qB = \frac{mV}{B}$$

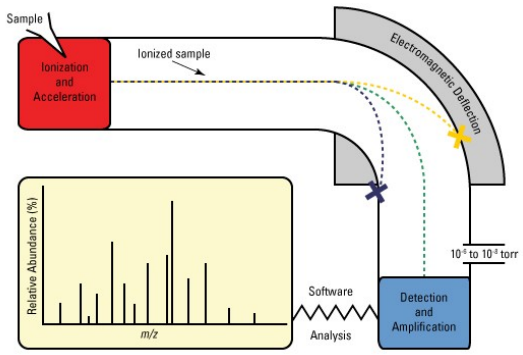

Figure 2: Mass Spectroscopy

3 Conclusion

To be honest these two figures are exactly same. The difference between figures is only the directions of current. The first one focus on the describe the motion of Mass Spectroscopy. The second one is the application for Mass Spectroscopy.