**Development of Virtual lab :Round 3 -Lab Manual - Template (Worksheet)**

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| **Name of Faculty:** Dr. Anurag Chauhan  **Institute:**Rajkiya Engineering College, Banda  **Email ID** (as submitted in the registration form)**:**anurag.chauhan36@gmail.com  **Discipline to which the Lab belongs:**Chemistry  **Name of the Lab:**Basics of Chemistry  **Name of experiment:Verification of JJ Thomson’s Experiment**  (only one Experiment per worksheet)**:**  **Kindly Refer these documents before filling the worksheet**   1. **Coursework (MOOC ) on Pedagogy , Storyboard , Lab Manual :** [**http://bit.ly/Vlabs-MOOC**](http://bit.ly/Vlabs-MOOC) 2. **Additional Documentation booklet for reference.** [**http://vlabs.iitb.ac.in/vlabs-dev/document.php**](http://vlabs.iitb.ac.in/vlabs-dev/document.php) 3. **Sample Git Repository. :** |

**Round 2**

1. **Aim and Objective**

Verification of mass ratio by using JJ Thomson's experiment

1. **Theory**

When the sample is introduced between the charge plates, current flows and the atom get broken down into charges, in the form of cathode rays.

From maxwell's theory, we know that charged particles could be diflected in a magnetic field

F(electrical) = e\*E

F(magnetic) = -evB

In the inital condition when no deflection observed, total force on the elctron will be zero

F(electrical)+F(magnetic)=0

e\*E - e\*v\*B = 0

v=E/B

There is only electric field in the y-direction that is F(electrical)=e\*E and no force in x-direction. Since in y-direction

y=1/2\*a\*t^2

a=F/m=E\*e/m

So, y=1/2\*e\*E\*t^2m

Since, we know that x=vt

e/m=2\*y\*E/x^2\*B^2

Using the experimental apparatus, thomson was able to determine charge to mass ratio which is 1.75\*10^-11 C/Kg.

1. **Procedure**

Enter the value of E and B (E/B=v).

2. Click the submit button.

3. Observe the value of y,....,e/m.

4. Charge to mass ratio calculated after simulation.

5.Repeat the experiment and observe the value of e/m.

**4.Pre test Assessments** *(Highlight the correct option with bold text)*

1. What is the expression of the electric force on electron when it enters in a electric field
   1. **F=eE (correct answer)**
   2. F=ev
   3. F=eB
   4. F=be

5. **Post test Assessments**

1. What is the value of e/m?
   1. 1.75\*10^11 C/Kg
   2. 1.75\*10^11 CKg
   3. 1.75\*10^11 Kg
   4. 1.75\*10^11 C

**6. References:**