# Lab 9

## Calculations

1. Compute the mean values of the balance voltage and the fall time.

For the first oil droplet

Compute the averaged values of the ten oil droplets and put them in Data Table 4-1.

1. Use the following equation to calculate the charges carried by an oil droplet. Show the sample calculation for the first droplet and list all the charges in Table 4-2.

Table. 4-2 the charges and the number of excess electrons on measured droplets

|  |  |  |  |
| --- | --- | --- | --- |
| Oil droplets | Charges  (C) | the number of excess electrons, *n* | Elementary charge  e(C) |
| 1 |  |  |  |
| 2 |  |  |  |
| 3 |  |  |  |
| 4 |  |  |  |
| 5 |  |  |  |
| 6 |  |  |  |
| 7 |  |  |  |
| 8 |  |  |  |
| 9 |  |  |  |
| 10 |  |  |  |
| Averaged | | |  |

1. Compute the number of excess electrons for every droplet. Suppose that the elementary charge *e*=1.602×10-19 C and the number of excess electrons is

(“[ ]” means rounding the quotient to an integer)

Show the sample calculation for the first oil droplet and put all the results in Table 4-2.

1. Compute the elementary charge.

Show the sample calculation for the first oil droplet and put all the results in Table 4-2.

1. Compute the averaged elementary charge. Put the final result in Table 4-2.
2. Compute the relative error of the elementary charge.

(*e*=1.602×10-19 C)