

Micrometry

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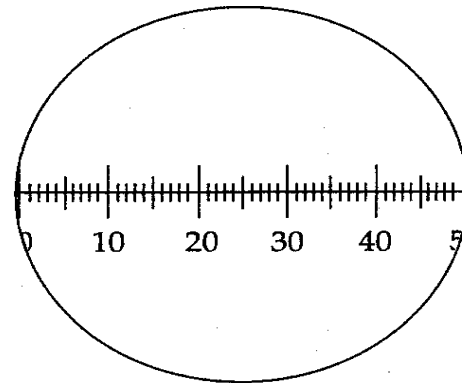
It is a technique used to measure the size of microscopic objects

➤ **Principle:**

Calibration of the ocular micrometer using the Stage micrometer

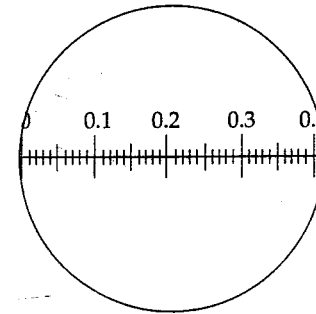
Ocular Micrometer

The ocular micrometer is a glass disc with 100 equal divisions or lines on it but with no absolute value and it is placed in the ocular of the microscope. So we have to calibrate the ocular micrometer but how??



Stage micrometer

- It is used to calibrate the ocular micrometer.
- Stage micrometer looks like a microscope slide but has a standard scale etched into it. The smallest divisions are 0.01 mm in length. It is just like a tiny ruler!
- $0.01 \text{ mm} = 10 \text{ micrometers}$



Micrometry

Materials:

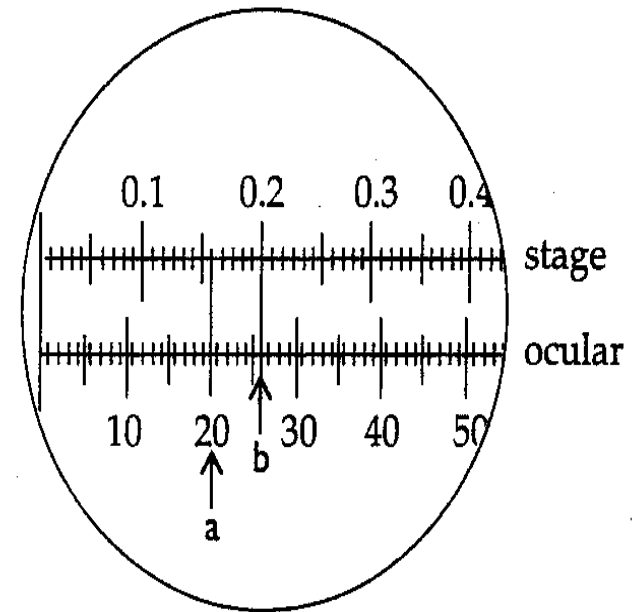
1- light microscope (LM) .

2- ocular micrometer

3- stage micrometer

Procedure

- 1- we place the ocular micrometer in the right ocular lens of the LM .
- 2- we place the stage micrometer on the stage of the LM .
- 3- we look into the ocular and focus on the stage micrometer at low power. We move the stage micrometer so that both the ocular and stage micrometer parallel to each other.

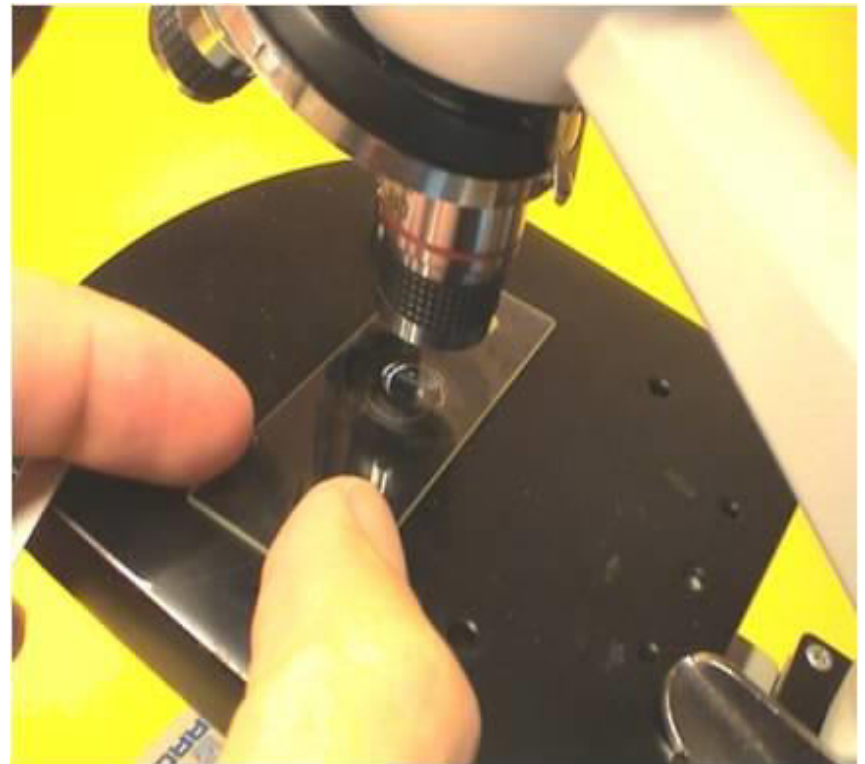


Procedure

Step 1



Step 2



How to Calibrate??

At x 10 objective Calculation:

Stage micrometer Division

20

40

60

120

Ocular micrometer Division

20

40

60

120

➤ 120 ocular divisions = 120 stage division

(1 stage division = 10 micrometer)

Therefore 120 stage divisions = 1200 μm

➤ 120 ocular divisions = 1200 μm

➤ 1 ocular division (at x 10) = $1200 / 120$
= 10 μm

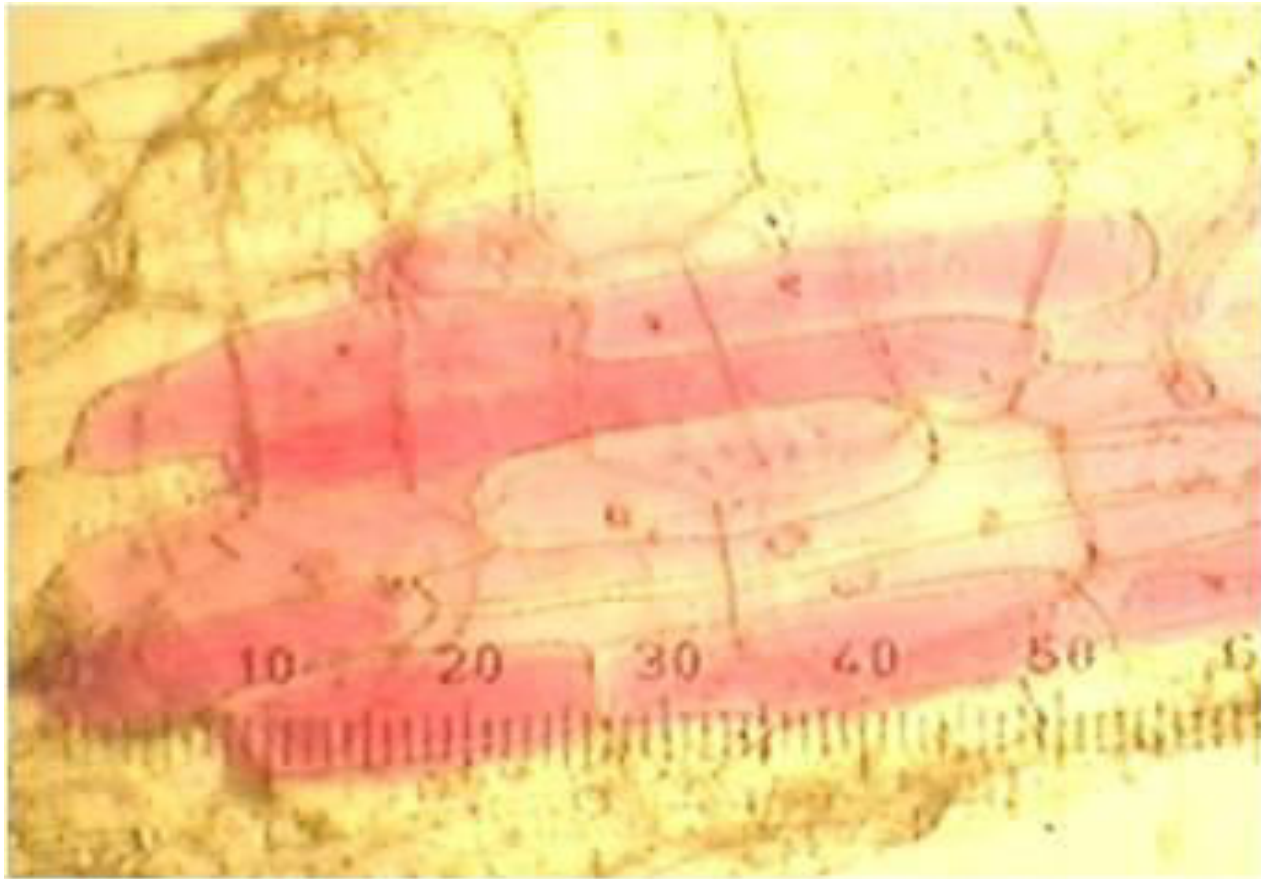
Similar calibration can be performed with the x 40 and x 100

Result should be as follows :

1 ocular division at x 40 = 2.5 um

1 ocular division at x 100= 1 um

Now you can use the microscope to observe and measure things



- **Note:**

- If you change microscopes, the calibration process must be done again for each of the objective lenses that you are using.

- **Why?**

- Because the magnification is different on different microscopes.