

Exercise 107: VISCOSITY

Keywords: Viscosity (coefficient of viscosity); viscosimeter; linear regression; standard deviation.

The exercise aims at determining coefficient of viscosity.

Measurements:

1. At the initial temperature: Use the viscosimeter to measure the time it takes for the ball to fall down the tube. Redo the measurements at least once.
2. Repeat the measurement for the temperatures up to 40 deg. Celsius with the step of 3 degrees.

Report:

1. Calculate the viscosimeter constant K from the relation: $\eta = K(d_k - d_e)t$ where d_k is the density of the ball equal to $(8150 \pm 10 \frac{kg}{m^3})$, d_e is the density of the liquid (glycerine) equal to $1,494 Pa \cdot s$.
2. Calculate the coefficient of viscosity η for each temperature.
3. Plot the coefficient of viscosity as a function of temperature.
4. Summarise the results.