SHUBHAM GUPTA 180749   **SEC-3, GROUP-3**
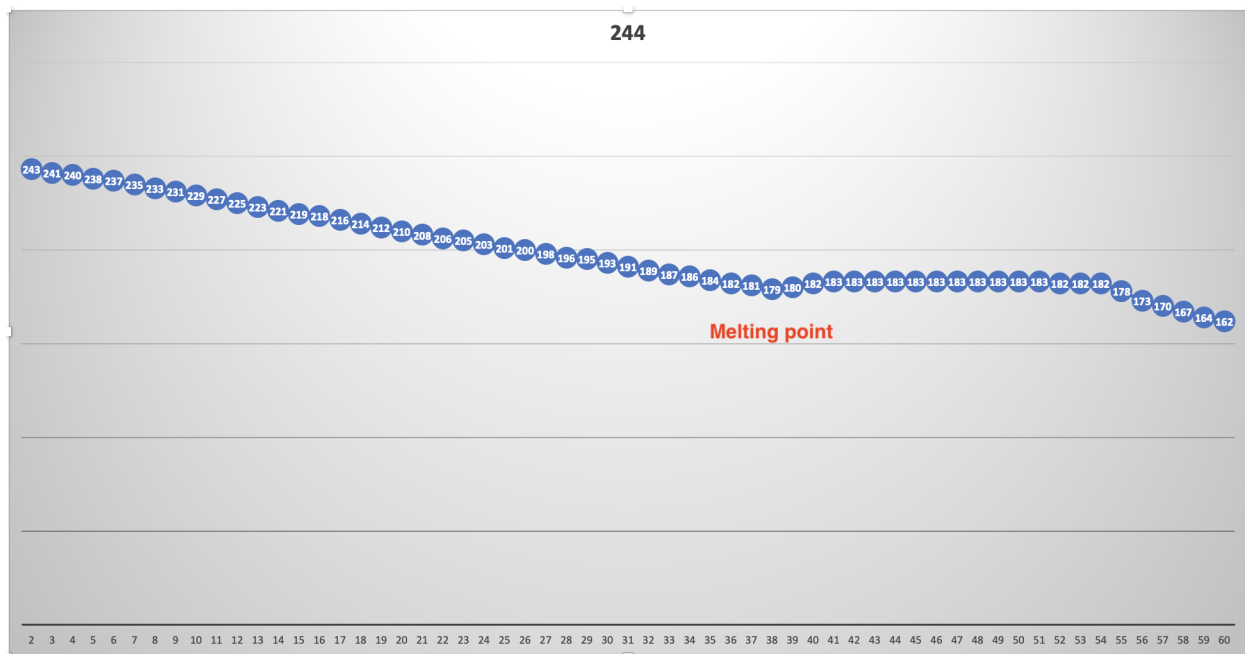
Assignment 4

Experiment-1: Plot the cooling curve for a Pb-Sn alloy and determine the melting point of the alloy.

The x-axis is time in seconds
The y-axis is the temperature in $^{\circ}$C

On analysing the cooling plot of the alloy the melting point comes out to be 179 $^{\circ}$C which occurs at 38 seconds.

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Experiment-2: Determine the coefficient of thermal expansion of aluminium.

Since the change of length of a solid in one dimension is proportional to the surrounding temperature of the solid, which on equating gives us a constant which is called the coefficient of thermal expansion.

To determine the coefficient of thermal expansion we need to plot the change in length vs temperature. In our case, we are given data for an aluminium cylinder with a 4 mm diameter and an initial length of 33mm. The slope of this plot will give us the required coefficient of thermal expansion.

The slope comes out to be 2.99 * 10^{-5} m/ (m$^{\circ}$C).

Chart Title
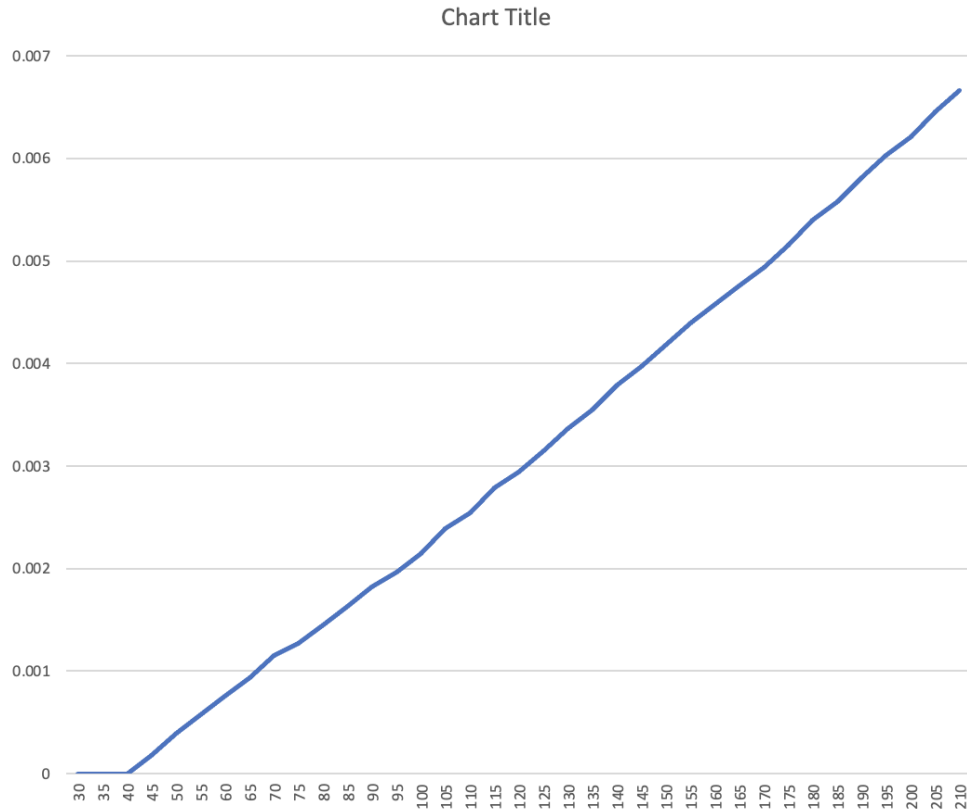
The x-axis is the temperature in $°C$

The y-axis is $\dfrac{\Delta L}{L}$

Error analysis:
The actual value of the coefficient of thermal expansion of aluminium = 24 * 10^{-6} m/ (m$°C$)
The practical value of the coefficient of thermal expansion of aluminium = 2.99 * 10^{-5} m/ (m$°C$)

The error comes to be 24.5%.