

Experimental report h7

Business



Experimental Report Aim The objective of the laboratory report was to determine the thermal expansion coefficient of copper and other materials by measuring the relative change in length of bars of the materials as a function of temperature.

Introduction The average coefficient of thermal expansion α over a temperature interval ΔT is given by
$$\alpha = \frac{\Delta L}{L_0 \Delta T}$$
 Where L_0 is the length at some initial temperature, and ΔL is the change in length corresponding to a change in temperature ΔT . Therefore the thermal expansion coefficient can be determined from the slope of a graph of the relative change in length $\frac{\Delta L}{L_0}$ versus temperature change ΔT .

Experimental Method 1 . A small amount of water was placed in the copper “kettle” (there was enough water so it did not take all day for it to boil, and not too little so it would have boiled dry). The “kettle” was placed on the tripod with an asbestos mat and heated with the bunsen burner. 2.

The rest of the apparatus was set up as shown below. kettle test material bunsen burner Figure 1 . Apparatus showing the set up and items used for the experiment. 3. The dial gauge was observed to understand how to read it.

The initial length L_0 was marked on the apparatus, and the room temperature. When the water boiled the temperature of the bar was noted with the thermocouple thermometer and the dial gauge reading was also noted