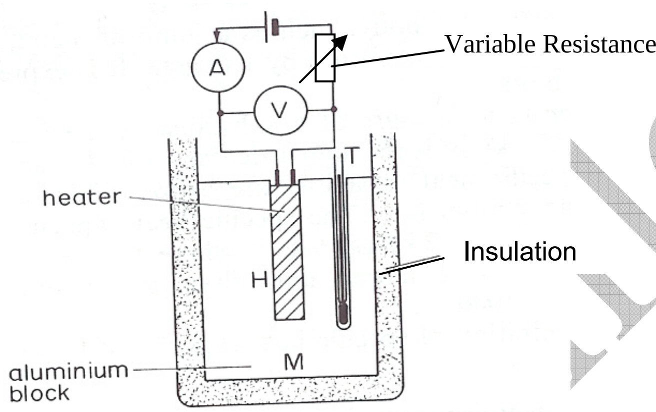
Measurement of Specific Heat Capacity

Specific Heat Capacity of Solid by Electrical Method.



The Figure shows a simple form of laboratory apparatus. M is a thick solid block of metal such as Aluminium, with an electric heater element H completely inside a deep hole bored into the metal and a thermometer T inside another deep hole. Both Heater and Thermometer must make good thermal contact with the block. An insulating jacket J is placed round the metal.

The initial temperature Θ_1 is measured. Then the apparatus is heated for a time interval t at constant V and I.

The final temperature Θ_2 is measured simultaneously with switching off the electrical supply.

Theory:

Electrical energy supplied = Heat absorbed by the system

$$VIt = m c \Delta\Theta$$

Thus

$$\frac{VIt}{m \Delta\Theta} = c$$

Precautions:

1. During the experiment V and I should be kept constant.
2. Repeating the procedure would reduce experimental errors.
3. Good thermal insulation for heater and Thermometer could be enhanced if both are smeared with petroleum jelly.