IVESTY

# GURU KRIPA ENTERPRISES

**AN ISO 9001:2015 & NSIC CERTIFIED COMPANY**

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# IV-E1004A Thermal Conductivity Of Metal Rod

## Principle and Working:

- The heat conduction occurs due to the temperature difference between different locations of a body. In this setup a one-dimensional temperature gradient along a copper and aluminum rod is investigated. The quantity of heat dQ transported with time dt is a function of the cross-sectional area A and the temperature gradient dT/dx perpendicular to the surface is defined as:

dQ/dt A (dT/dx)

- A is the thermal conductivity of the substance.The electrical conductivity of a metal (Copper & Aluminum) is determined by the resistance R of the rod and its geometric dimensions (I=0.315 m, A = 4.91 x10-4 m2)

$$\sigma = 1/(A.R)$$

## Experiment:

- To determine the heat capacity of the calorimeter.
- To study the thermal conductivity of copper ard aluminum in a constant temperature gradient.
- To determine the electrical conductivity of aluminum and copper by plotting a current-voltage characteristic curve.

## Apparatus Supply:

- Conductivity rod Cu
- Conductivity rod Al
- Calorimeter Vessel
- Calorimeter Vessel with rod holder
- Laboratory jack
- Immersion heater
- Temperature sensor 4Nos.
- Three finger clamp 3Nos
- Support base 2Nos
- Support rod 2Nos.
- Bosshead 5Nos.
- Glass beaker