Khwarizmi Science Society
Developing a culture of science

KHWARIZMI SCIENCE SOCIETY

خوارزمی سائنس سوسائٹی
پاکستانی معاشرے میں فروغ سائنس کی علمی اور عملی تحریک

Thought-provoking practical physics workshop

فِکر انگیز عملی طبیعیات

Lesson: Understanding Heat Transfer

Some of the first experiments referred to in general science books in grade school are related to the transfer of heat. If we leave a metallic spoon in a pot on the stove, it becomes unbearably hot after a while due to heat conduction. If you have ever boiled water on a stove to make tea, it is an example of heat convection. If you have used a heater to warm yourself up during the winter, it is an example of radiation transfer.

Objectives

In this experiment, we will heat up a body and measure its surface temperature using a thermistor. The heat source and the body are both the tungsten filament bulb in which the tungsten filament acts as the heat source and the bulb itself acts as the body. The resistance of a thermistor varies with temperature. We will be using thermistors with a negative temperature coefficient, which means that its resistance will decrease as the temperature increases.

How to conduct the experiment

Apparatus: Bulb, thermistor

We will measure the surface temperature of the bulb under different conditions.

Exploration Points

1. Restrict to one mode of heat transfer (only conduction, only convection, only radiation).
2. Investigate the same phenomenon by changing the specific heat capacity.
3.

Safety

Be cautious of the hot surfaces and the metallic contacts in-circuit with the 220V mains.