

Electromagnetic Energy



Investigation Data Sheet

Isolate Infrared Waves

Electromagnetic energy includes invisible high-energy radiation, visible light and invisible lower-energy infrared waves. Sixty percent of energy from the Sun arrives in the form of infrared energy.

Objective

Prove that a light bulb radiates both light and infrared waves by separating the two forms of energy.

Materials

- a light bulb and lamp
- a thermometer
- a petri dish
- some books to hold the petri dish over the thermometer
- some water

Safety Notice: All applicable laboratory safety rules must be followed. Students should not perform any experimental activity without the teacher's supervision and express permission. Students must follow safety guidelines and wear appropriate protective gear.

Part One

1. Lay the thermometer flat on the table.
2. Build a stand out of books to hold the petri dish next to the thermometer.
3. Note the room temperature and then switch on the lamp.
4. Adjust the lamp so it is just a few inches above the petri dish.
5. Observe and record the temperature reading on the thermometer every few minutes.
6. When the temperature stops rising and remains constant, make a note of it.

Part Two

7. Pour a thin layer of water into the petri dish.
8. Make sure the lamp is in exactly the same position as it had been during the first part of the experiment and repeat the process. Make a prediction about the infrared waves. Will they travel through the water with the visible light energy?

9. Observe and record the temperature at similar intervals as you did in Part 1.

Conclusions

- Where there any differences in temperature readings? Why or why not?

- What did the water do in part 2?

	Part 1 — no water	Part 1 — water
Elapsed time (min)		