Experiment

The Drinks Can

Instructions

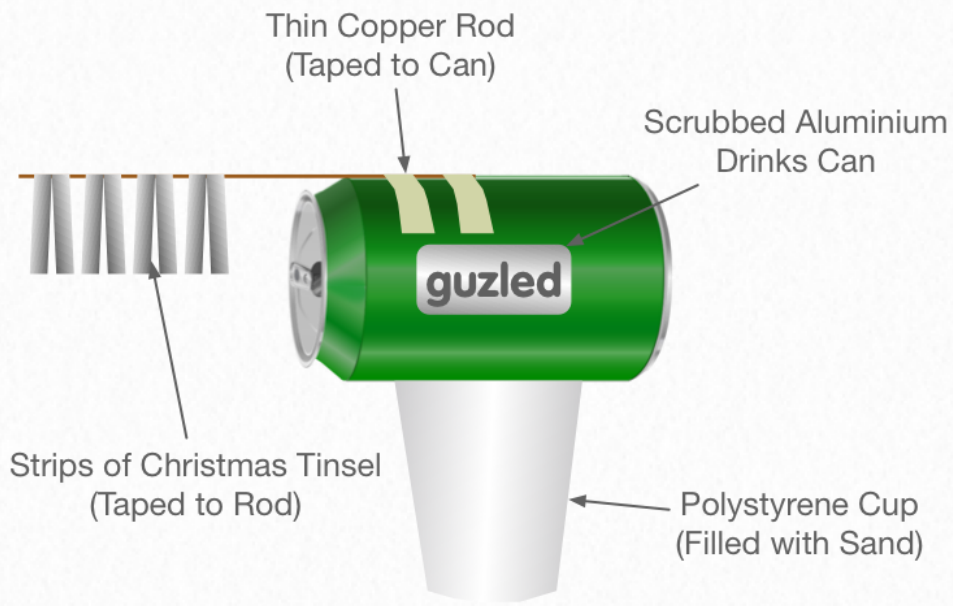
1. Read the document.
2. Complete the experiment and answer the questions.

Aim

To prove the phenomenon of the photoelectric effect. The experiment will show that UV light expels electrons from the surface of an aluminium surface, but visible light does not.

Apparatus Needed	
Aluminium drinks can	Sticky tape
Stiff copper wire	Tinsel
Styrofoam/ plastic cup	UV lamp
Balloons	Sand
Sandpaper	Wool (i.e. carpet section or jumpers)

Diagram



Method

1. Attach the copper wire to the metal drinks can using the sticky tape.
2. Tape the tinsel to the copper wire.
3. Place sand into the bottom of the polystyrene cup.
4. Use the sandpaper to make the metal can clean and shiny (by removing any oxides). Place the can on top of the cup. You may need to cut the cup to ensure stability of the can on top of the cup.
5. Charge the inflated balloon by rubbing them against wool sweater or carpet sections.
6. Touch the balloon against the tinsel to transfer the charge causing the strands to repel each other.
7. Place the shiny surface of the aluminium can in direct visible light. Record any observations.
8. Shine the UV lamp onto the shiny surface of the aluminium can and record any observations.

Experiment Continued

Questions

1. Did the tinsel have any reaction to the shiny can being placed in direct visible light? Explain.

2. Explain the reaction of the tinsel when the can is placed under UV light.?

3. Explain why the cup was made of polystyrene?

4. Explain why a thin copper rod was used to link the aluminium can and the tinsel?

5. What would you expect to happen if infrared radiation was used instead of UV radiation?