

# Aluminium pie pan electroscope

## Background

This is a simple experiment that students can easily make themselves in a class. It can be used to demonstrate that like charges repel, using electrostatic charges. It can also demonstrate earthing and can be used to test for humidity and the triboelectric series.

## You will need...

- ✓ styrofoam cup
- ✓ styrofoam plate
- ✓ pencil,
- ✓ straw,
- ✓ aluminium pie pan
- ✓ Blu-tack
- ✓ thread,
- ✓ cooking foil
- ✓ balloon,
- ✓ cloth and other materials to test

## Follow these steps

1. Take a sharp pencil and make two holes in the bottom of the Styrofoam cup by gently pushing the pencil through the cup.
2. Place the straw through the holes.
3. Use Blu tack to stick the cup to the centre of the aluminium pan.
4. Adjust the position of the straw so that one end is right above the edge of the pan.

5. Cut a very thin slit in the end of the straw and place a long piece of thread through the slit. Cut the length of the thread so it is just below the pan.
6. Take a small piece of tinfoil and wrap it into a ball around the end of the thread. The ball needs to be light, so don't use too much tinfoil. It also needs to be just touching the edge of the pie pan.
7. Tie a few knots in the thread, above the top of the straw, to hold it in place. Your homemade electroscope is now ready for testing.
8. Create static electricity by rubbing a balloon/cloth on a Styrofoam plate.
9. Quickly place the electroscope on top of the plate, holding only the Styrofoam cup when lifting the electroscope.

## So what happened?

The ball moves away from the edge of the plate.

## What next?

1. Now bring your finger towards the ball. The ball bounces back and forth between your finger and the pan as it charges and discharges.
2. To discharge the electroscope, simply touch the aluminium pie pan with your finger. If left alone it will eventually discharge due to humidity in the room.
3. Try charging different materials and compare the effect on the tinfoil ball to the triboelectric series.

