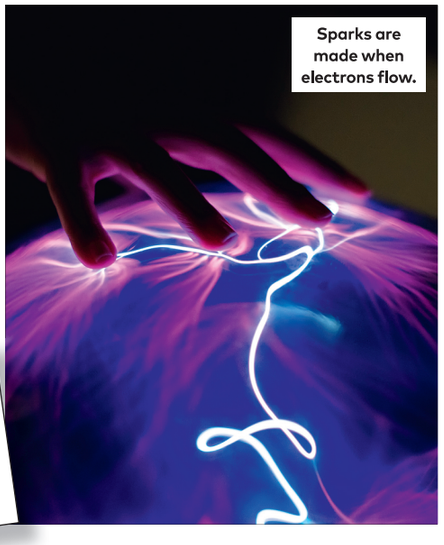
Create a lightni

No need to be a storm chaser, experiment with static electricity to generate your own lightning bolt.

What you need

- Pen
- Ruler
- 1 polystyrene plate or food box (we reused an old takeaway box)
- Scissors
- Masking tape
- 1 disposable aluminium pie tin
- Glass jar or tumbler

TOP TIP
Turn out the light before you touch the glass jar. This makes it easier to see the spark.


Sparks are made when electrons flow.

How does it work?

This experiment lets you play with static electricity. The metal tin is a conductor (something that lets electricity pass through it) and the polystyrene box is an insulator (something that doesn't let electricity pass through it).

When you rub the polystyrene across your hair, you strip off some electrons (negatively charged particles) from atoms in your hair and transfer them to the surface of the box. Because polystyrene is an insulator, electrons cannot move, so a static charge (an electrical charge that doesn't flow) builds up on the box. When you put the pie tin on the polystyrene, these electrons transfer to the tin's surface. The polystyrene handle stops the electrons from flowing into your hand when you pick it up.

Glass is another good insulator, but your skin is a conductor (because it is moist). When you touch the glass, electrons flow towards your fingers. You'll see this as a small flash accompanied by a crackling sound. See if you can collect more charge by rubbing the box with a wool jumper or a sock.

MEET THE ELEMENTS
In this experiment you use the element aluminium to collect electrical charge.

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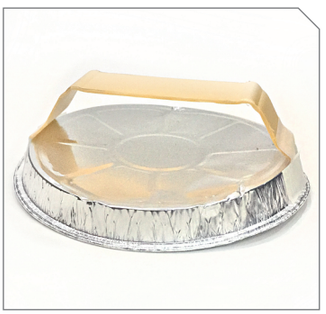
Al
Aluminium

1 Use a pen and a ruler to mark out a 10-centimetre strip across one half of the polystyrene box. Cut this out.



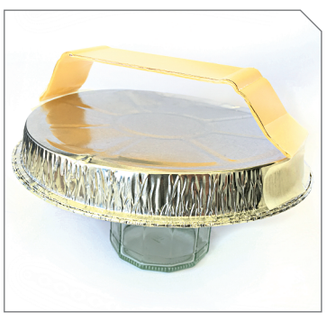
2 Using masking tape, stick the polystyrene strip to the back of the aluminium tin to make a handle.

3 Place the glass jar or tumbler the right way up on the table.

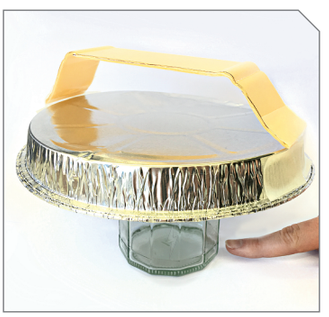
4 Take the other half of the polystyrene box and rub it across the top of your head for two minutes.

5 Place the polystyrene box on the table with the side that you rubbed across your head facing up.

6 Holding the handle, put the pie tin on the box for 15 seconds. Build up more charge by repeating steps 4–6.



7 Pick up the pie tin by its handle and carefully place it on top of the glass jar or tumbler.



8 Now using one finger, touch the outside of the jar or tumbler. You will see a small lightning bolt inside the jar and hear a crackle.

We would love to see pictures of your lab experiments. Please send your images to scienceandnature@dennis.co.uk

ing bolt in a jar

LIGHTNING POWER

Around the world, there are more than 3,000,000 flashes of lightning every day. That's about 44 strikes every second.