

Become a Secret Detective Using science!

Below are two experiments, the first will enable you to write a secret message to a friend using homemade invisible ink. The second experiment will show you how to identify fingerprints around your home or classroom.

Experiment 1- invisible ink.

Equipment needed.
A lemon
A bowl
A paint brush
A white piece of paper
Use of an oven

Method

1. Squeeze the juice of the lemon into the bowl.
2. Dip the paint brush into the lemon juice and draw/write your secret message on the paper.
3. Let it dry.
4. Give the paper to your friend and ask them to put the paper in an oven heated to 150°C.
5. Ask your friend to bake the paper for 10 minutes.
6. Can your friend read your message? What did you write?

How it works.

When the lemon juice dries it looks invisible. But when the juice is heated in the oven it reacts with the heat and oxygen and turns brown. Lemon juice naturally reacts with oxygen to turn brown over time, but heating it speeds this process up.

Experiment 2 – Looking for fingerprints.

Equipment needed.
A glass
A plate
Talcum powder (or any fine powder such as chalk, cornflour)
A paint brush
Sticky tape
A dark piece of paper/card.

Method.

1. Press your thumb or finger onto the glass (an unwashed hand works best).
2. Put some talcum powder onto the plate.
3. Dip the brush into the powder and then carefully dust it over the glass.
4. Tap or blow any excess powder off the glass.
5. Place some sticky tape over the fingerprint on the glass, then peel away.
6. Press the tape onto the piece of paper, then carefully remove it.
7. What do you see?
8. See if you can find fingerprints around your home or classroom, by repeating the process on tables, windows or other hard surfaces.

How it works.

People leave fingerprints on all kinds of surfaces without realising it. The skin on our fingers is made up of a pattern of ridges, covered by sweat and oils from our bodies. These ridges leave an oily mark on surfaces, which the talcum powder sticks to. The print can then be transferred to paper to be looked at.