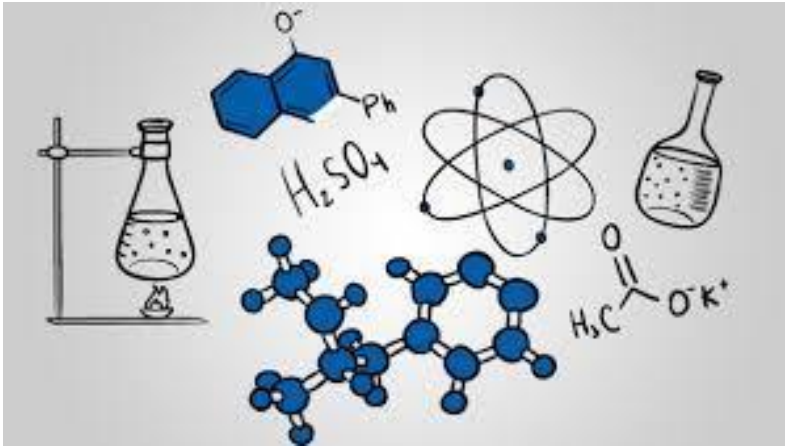
Invisible Ink Experiment

Purpose

Explore the world of chemistry and learn about the composition of paper and how heat affects it!



Materials

- Paper
- Baking soda
- Source of heat
- Water
- Cotton Swab

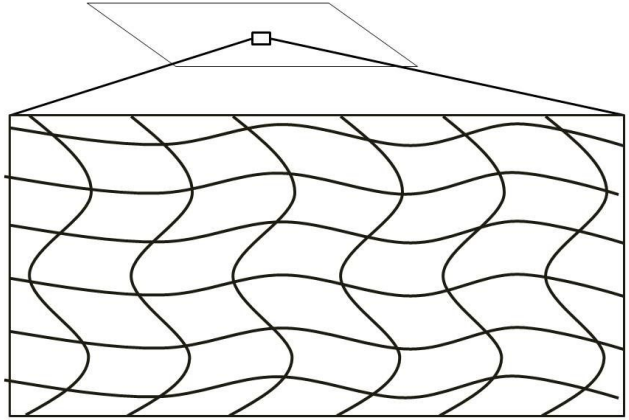
Predictions?

How it works

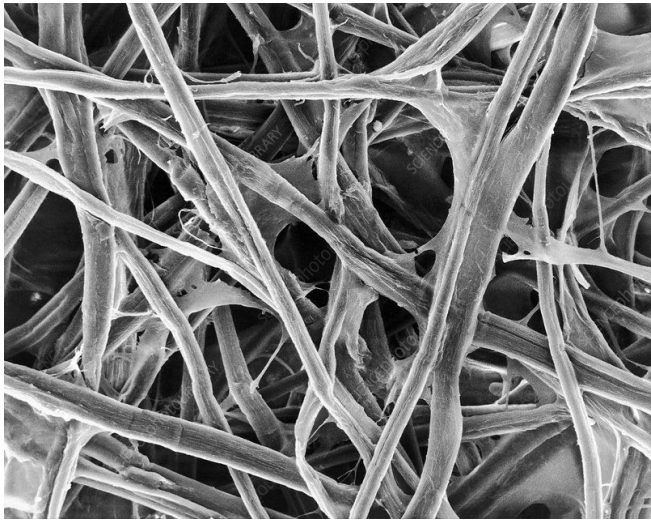
Paper is made of **cellulose fibers**!

These are like a bunch of very long, thin ropes all bundled together to form a sheet

Cellulose fibers are found in all kinds of plants and plant products: leaves, cloth, wood, and paper!



If we could look very close up at a piece of paper, we would see very long strands of sugar molecules. These long strings are called cellulose, and they are pressed together to form the sheet of paper.

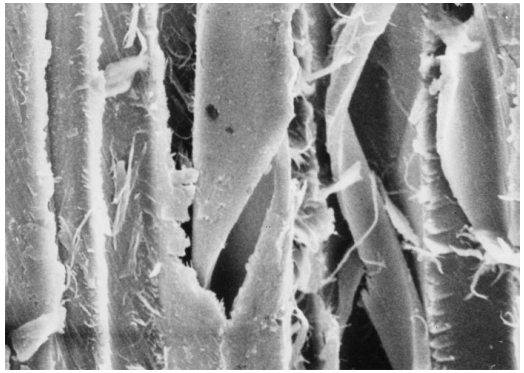


How it works

In our invisible ink, we will use a solution of **baking soda**.

Baking soda is a **base**- a type of chemical with special properties. Bases can sometimes damage other materials, including cellulose fibers!

When you add the baking soda solution to paper, it breaks apart cellulose fibers and creates shorter, exposed ends only in the areas you wrote on.



Cellulose fibers with damaged, shortened ends

Then, when you heat up the paper, those broken ends will burn faster and turn brown before the rest of the paper, allowing you to see the secret message!

Questions

Why does this invisible ink work?

Why do we heat the paper?

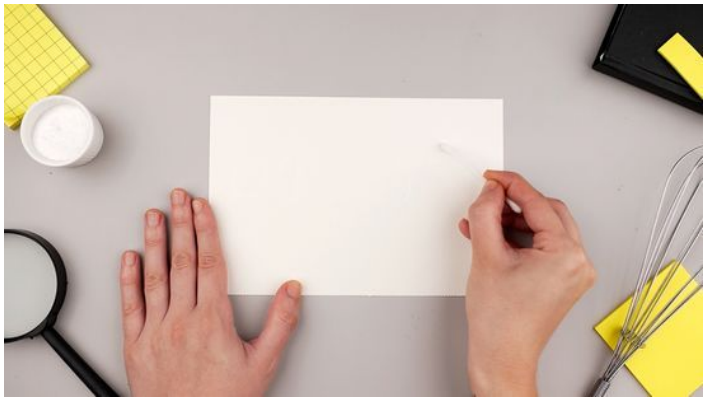
Let’s start the experiment!

1. Add a spoon of baking soda into the bowl and then add enough water until the baking soda has dissolved.

2. Mix the baking soda and water with a spoon.

3. Dip the cotton bud into the baking soda solution and write any message on a white piece of paper.

4. Wait for the baking soda solution to dry (5-10 minutes) until it becomes completely invisible.



5. Once you are ready to read your secret message, heat your paper by holding a light bulb close to the paper or using a hair straightener (we will help with the heating part!)