



## SUPER POWER: Chromatography!

# CHROMATOGRAPHY LAB

LAB NOTES...

BUILD TIME  
**20**  
MINS

## CHROMATOGRAPHY

is the science of separating out different parts of a mixture. In this experiment, you are separating out the different colours that make up some pens. The ink in your pens are made up of mixtures of different colours in different combinations, and dark colours like black ink are made of lots of colours all mixed together.

In this experiment, wetting the paper towel wet caused something called wicking where the water travelled up the paper. As the water reached the inks it carried them up the paper too, separating them along the way so we can see them.

### TO MAKE YOUR CHROMATOGRAPHY LAB...

1. Watch Nanogirl making her chromatography lab!
2. Make a paper straw by rolling and taping a strip of paper around a pencil then cut two 3cm segments.
3. Take your box and stand it upright. If it has a lid, open the lid and if you are using a cereal box, cut open one of the big sides so you can see inside.
4. Trim the skewer so it fits inside the box horizontally.
5. Use a skewer to make a hole in the middle of one long side of the box about 1 cm down from the top.
6. Use the straight end of the skewer to draw a line inside the box in line with the hole.
7. Cut 2 m of string and find the middle.
8. Thread the middle of the string through the hole you made in the side of the box then through both straw segments. Tie a large knot in the middle of the string so they don't slide out.
9. Tape the straw segments at either end of the line you drew at the top of the box, leave about a 1cm space from the sides.
10. Cut the string at the knot, take one end of the string and tie to one end of the skewer.
11. Pull the other string piece through one straw and tie to the other end of the skewer.
12. Stand the box upright and make sure that the skewer is level by adjusting the string. Fix the string to the skewer with blu-tack once in place and tie a knot at the end of the string outside of the box.
13. Push a piece of leftover skewer through the side of the box several centimetres underneath the hole for the string.
14. Secure in place with some blue tack - this will act as a peg that you can loop the extra string around to hold it in place.
15. Cut some strips of absorbent paper. Draw and colour in a large spot close to one end, using a different felt tip pen on each one.
16. Fill a shallow container with water and place inside the box underneath the hanging skewer.
17. Hang the colored in sheets from the skewer using paper clips.
18. Using the string outside the box, slowly lower the skewer down so that the end of the strips just touch the water.
19. After two seconds raise the strips back up again by pulling on the string outside the box and securing on the peg.
20. Wait 5 minutes, then take a look at your samples!

### YOU WILL NEED

- Box (e.g. shoebox, cereal box) .....
- Kitchen paper .....
- Felt tip pens .....
- 2 x Paper clips .....
- Scissors .....
- Skewer .....
- Blue tack .....
- Pencil .....
- String.....
- Small containers for water .....
- Water .....

Try this with different coloured pens. Which colours can you see making up different inks? Are you surprised by any of them?

**Does this work with a permanent marker? Why do you think this is?**

Smaller molecules can travel further and faster than larger molecules. Which colours travel farthest up the paper, and which ones separate out first? What does this tell you about the size of the molecules?