

The Power of Chemicals

Try these activities to demonstrate the power of chemicals and their reactions in nature.

SCIENCE
WEEK

9-16 NOVEMBER 2014

THE
POWER
OF SCIENCE

THE POWER OF OSMOSIS

YOU WILL NEED

Two “naked” eggs from the previous experiment (The Effect of Acid on Calcium Compounds), clear sugar syrup, water, glass containers. (To prepare sugar syrup - dissolve 250g sugar in 250ml water, boil, cool).

BASIC INSTRUCTIONS

Feel free to experiment!

1. Add water to one container and add sugar syrup to the other container.
2. Gently lower one shell-less egg into each liquid.
3. Observe.
4. Leave overnight, or for up to 48 hours.
5. Observe what happens to each egg.
6. Remove each egg from their respective solutions and describe their appearance.



INVESTIGATE

- Repeat the experiment but this time measure everything very exactly - volumes and mass of everything.
- Could you reverse the shrinking of the egg you removed from the sugar syrup?
- Being aware to contain any possible mess, open the eggs and observe and describe the contents and the membranes of each egg - note any similarities and differences between them

WHAT IS HAPPENING?

- The sugar solution is much denser than the egg, so the egg floats on the sugar solution.
- The water is less dense than the egg, so the egg sinks in the water.
- The membrane surrounding the egg is selectively permeable - that means it allows water molecules to pass through it, but not sugar molecules.
- The water in the glass is more dilute than the liquid contents of the egg. A special movement called OSMOSIS takes place - the water moves from the dilute solution in the glass, through the selectively permeable egg membrane, into the egg. This is why the egg swells up.
- The sugar solution in the glass is more concentrated than the liquid contents of the egg. The OSMOSIS takes place here also, but this time the water moves out from the dilute egg, across the selectively permeable membrane, into the sugar solution. This means the egg shrinks in volume, and the membrane shrivels.
- This osmosis (movement of water) is very very important in living organisms.

THE POWER OF OSMOSIS CONTINUED

EXPLORE MORE...

Decorative acid etching of eggshells is a very delicate art form - have a look at a variety by entering the words '*acid etched eggshell carvings*' in Google Images.

The Sci Guys have a great version, explaining all the processes happening here, at <https://www.youtube.com/watch?v=SrON0nEEWmo>

