



Make your own Snow



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Make your own Snow!

In this activity we will learn about snow and make our own. Snow is made of crystals containing one oxygen and two hydrogen atoms and is a solid form of water. In solid form, there are 17 polymorphs of ice.

So, what is polymorphism? Let us imagine we have a crystal made up of smaller molecules A and B. If molecules A and B can be arranged in different repeating patterns inside our crystal this is called polymorphism and although the crystals contain the same molecules the different arrangements of the molecules can mean the crystals have different properties. Ice is a compound that exhibits polymorphism because solid water molecules can arrange themselves in at least 17 different ways in a crystal. This is why sometimes ice crystals look like a snowflake or a needle. In this activity, we will make our own snow to better understand how water becomes a crystal.

What you will need

Ingredients:

Make your own snow toolkit.

Utensils/tools:

- Cup of water
- Scissors
- Spoon (1)
- Disposable gloves
- A clean surface to work on

You can download and print the activity worksheet or follow along on a device. You will need internet access to watch the video of the results.

Learning Outcomes

In this activity, you will:

- Learn about properties of solid water.
- Learn about polymorphism.

Recommended Age

This activity is suitable for ages 10+ years with adult supervision and guidance.

Health & Safety

These activities are carried out at your own risk. Please read these health and safety guidelines to reduce risks.

- Any access to the internet for minors should be done under adult supervision.
- A kit with sodium polyacrylate is needed and a pair of scissors is used. This should be done with adult supervision.
- Clean the surface before and after use.

Steps

Follow the instructions in the toolkit.

Explanation

In this activity, we made our own snow using sodium polyacrylate and water. Sodium polyacrylate is a polymer that can absorb more than 100 times its mass in water. A polymer is made of small repeating units of molecules to form a long chain. In this experiment, our polymer chain is made of acrylic acid joined together. In the dry powder form of the polymer, the positively charged sodium ions are bound to the negatively charged acrylate ions. When we add water, the acrylate ion prefers to bind to the hydrogen atoms from the water and starts to unravel the chains and a gel-like substance is formed. However, in this form of sodium polyacrylate with more links in the chain, as we add water, the powder swells up and packs tighter to form a substance like snow instead of a gel.