



High Touch High Tech[®]

Science Experiences That Come To You

Salty Snowflakes!

Ingredients & Supplies:

- 9 oz. plastic cup
- 1/3 cup hot water (*ask an adult to help*)
- Craft stick
- Epsom salt
- Spoon
- Food coloring
- 1/2 Pipe cleaner (chenille stick)
- 2 Paper clips

Instructions:

First, ask an adult to help you heat up 1/3 cup of water. Carefully, pour the hot water into the 9 oz plastic cup.

Take a big spoonful of Epsom salt and dump it into your cup of hot water. Use your craft stick to stir the salt into the water until it is dissolved. If all of the salt has dissolved then add another spoonful of salt into the water and stir some more. Continue adding salt into the cup until the water can no longer dissolve it all – this is what scientists call a “super saturated solution”. At this point you may see salt begin to collect at the bottom of the cup. This is a good sign that your water is “saturated” with salt.

Now, carefully add 1 - 2 drops of food coloring into the cup of water. If you add too much food color, the solution will be too dark to watch your crystals grow.

Next, attach the 2 paper clips to one end of the pipe cleaner. Wrap the other end of the pipe cleaner around the middle of the craft stick. Carefully place the craft stick on the rim of the cup and allow the paper clips to hang down into the water just barely touching the bottom of the cup. (Wrap the pipe cleaner around the craft stick a few extra times, if necessary, to achieve the right length).

Put your cup in a warm place where it won't be disturbed. (In the sun or in the window are two great places.)

Now you just have to wait for the water to evaporate! Watch as your salt crystal takes form!

You have created your very own salty snowflake. Great Job!



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The Science Behind It:

Have you ever tried to catch a snowflake when it falls? Can you see it up-close? It melts so fast! Well, if you could look at the snowflake before it melted, you would see a neatly formed pattern of ice that was very organized and symmetrical. That beautiful formation is called a crystal. Crystals are very amazing natural formations. We usually think of crystals in rocks, such as a Quartz Crystal. Through a process called *crystallization*, crystals can form in elements other than rocks.

Crystallization always occurs in a liquid, such as water or magma (hot liquid rocks). For example, have you poured sugar into a liquid and watched the sugar disappear? The sugar dissolves into the liquid. This creates a *solution*. This means that the tiny sugar molecules link with the tiny water molecules and make one liquid solution. But, if you keep pouring sugar into the water, the molecules get crowded. Pretty soon there are too many sugar molecules in the water so they can't find any water molecules to link with. Therefore, the sugar molecules can't dissolve.

Evaporation is another natural process. This is when liquid water heats up and goes into the air. If we heat up our sugar water solution, the evaporation process begins. The water molecules evaporate and leave the sugar molecules behind. The sugar molecules are left alone! Therefore, they get in a line and grab onto other sugar molecules. These linking sugar molecules form a crystal!

In the crystallization process, the sugar molecules are the **solute**, the water is the **solvent**, and together they are called a **solution**. Quartz crystals, the pretty white rock crystals, were formed when liquid magma cooled and the water evaporated out of the magma leaving behind rock molecules that linked and formed crystals.

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