



Crystal Creations

In 2000, two brothers were drilling for lead and silver in a mine near Chihuahua, Mexico. As they broke through a wall of bedrock about 1,000 feet underground, they were stunned to discover a cave sparkling with enormous crystals.

This cave is home to the world's largest known crystals. The air inside is a steamy 120° F, heated by magma about a mile below the cave floor. Geologists estimate that the crystals began growing 500,000 years ago when the cave was filled with boiling-hot, mineral-rich water. Over time the magma cooled, allowing the calcium, oxygen, and sulfur in the water to bond into selenite crystals.

Crystals form when cooling temperatures allow the molecules or atoms in a solution (such as water) to bond into a repeating pattern. For example, when water molecules are heated, they boil—moving faster and spreading apart. However, as water freezes, the molecules slow down and move closer together. There is less room for the minerals within the water (including hydrogen and oxygen), and they begin to push together, stacking on top of each other to create ice crystals.

Follow these steps to observe how water, minerals, and heat work together to create crystals.

You will need: a white pipe cleaner, a wide bowl or jar, 2 cups boiling water, borax laundry soap (available at grocery stores), food coloring (optional)

What to do:


1. Cut a white pipe cleaner into three pieces. Twist them together in the middle to create a six-pronged snowflake.
2. Fill the bowl or jar with boiling water. (Be careful!)
3. Add six tablespoons of borax powder and stir until the powder is dissolved.
4. Add a drop of food coloring to the water to give the snowflake some color.
5. Place the pipe cleaner into the solution and leave it overnight.
6. Observe the way that the molecules in the borax powder bonded overnight to form crystals in the cooling water.

What's Inside a Borax Snowflake?


($B^4O^7Na^2 \cdot 10H^2O$.)

B	5
	
BORON	


What is it?
A brown powder;
black crystals

O	8
	
OXYGEN	

What is it?
A colorless,
odorless gas

Na	11
	
SODIUM	

What is it?
A silvery-gray
metal

H	1
	
HYDROGEN	

What is it?
A colorless,
odorless gas

See terms you don't know? Look them up!



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