



Crystal Chemistry

Have you ever taken a close look at a snowflake before it melts? What do you notice? In this experiment, we are going to zoom in on snowflakes. You will learn more about why snowflakes have unique shapes, and with the help of an adult, you will complete a chemistry experiment to create your own crystallized creation.



Fun Facts/Information:

- Snowflakes are water crystals that form in clouds when water freezes around a tiny piece of pollen or dust.
- Every snowflake has six sides because water molecules tend to freeze in groups of six, creating a hexagonal (six-sided) shape.
- Crystals can also form on the Earth when minerals are present in bodies of water. This happens when water becomes completely full, or oversaturated, with substances like salt, silver, or zinc—so much that it can't hold any more. All those extra substances come together and turn into crystals!

Learning Objectives:

- Students will model the effects of an oversaturated solution.



Materials:

- 2 pipe cleaners
- Scissors
- Clear glass, mug or heat-resistant Mason jar
- Measuring cup
- Tablespoon
- Hot water
- Borax
- Pencil

Procedure:

Safety Considerations

- Adult supervision is essential for working with hot water.
- Avoid ingestion - don't eat or drink near the experiment.
- Wash hands thoroughly after handling Borax powder and/or crystals.
 - Wear gloves if you have sensitive skin.
- For preschool or early elementary kids, consider safer crystal alternatives to Borax:
 - Baking soda
 - Salt crystals

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Procedure:**1. Create your snowflake.**

- Create your snowflake design using one of the pipe cleaners
- One strategy is to cut the pipe cleaner into 2-inch pieces and secure them in an “X” shape.
- Use the other pipe cleaner to secure your snowflake design to your pencil so that it hangs like an ornament.

2. Prepare your solution.

- Have your adult at home boil 2 cups of water and pour it into a clear glass, mug, or mason jar.
- Add 6 tablespoons of borax and stir.

3. Grow your snowflake

- Rest the pencil on top of your glass so that your snowflake is completely submerged in the solution.
- Let the snowflake sit for 18-24 hours and watch your “snow crystals” grow.
- After 24 hours, rinse the snowflake with water and let dry.
- Enjoy decorating with your new crystal creation!

Discussion Questions:

- Make observations about the solution before, during, and after the experiment. A solution is a mixture of two or more substances. Were there any signs that the solution was oversaturated or overfull with borax?

Extensions:**DIY Rock Candy**

- Repeat the experiment using sugar instead of borax to make a fun, edible crystal candy creation!

For more activities, please visit us at www.alcosan.org/educational-activities.

