Exploring Salts - Mysterious Crystals
Adapted from GEMS for the SEM
Teachers' Guide

Suggested Grade 4-9

Objectives:

- Select instruments to make observations and/or organize observations of an event, or organism (S4-2.)
- Evaluate a simple procedure to carry out an exploration (S4-6.)
- Demonstrate an understanding of safe use of materials and/or devices in science activities (S6-2.)
- Evaluate conclusions based on scientific data (S6-5.)
- Demonstrate an understanding of the use of measuring devices and report data in appropriate units (S9-4.)
- Collect data, create a table, picture graph, bar graph, circle graph or line graph, and use them to solve application problems (M6-21, M12-5.)

Strategies:

- Students will view different specimens of salt using five different magnifying devices. Salt suggestions – table salt, rock salt, sea salt, salt substitute, alum, boric acid, and Epsom salt.
- Students will make observations about the crystal structure of each specimen.
- Students will compare/contrast their observations of various specimens two ways –
  1) How does each sample differ using the various magnifying devices?
  2) How does each specimen differ from the other specimens using a particular device?
- Students will create a table that demonstrates their understanding of the similarities and differences in the salt samples.
- Students will explore crystal formation through the creation of an Epsom salt suncatcher.
- Students will explore the change in crystal formation between Epsom salt and Epsom salt that has been heated in water and allowed to reform.

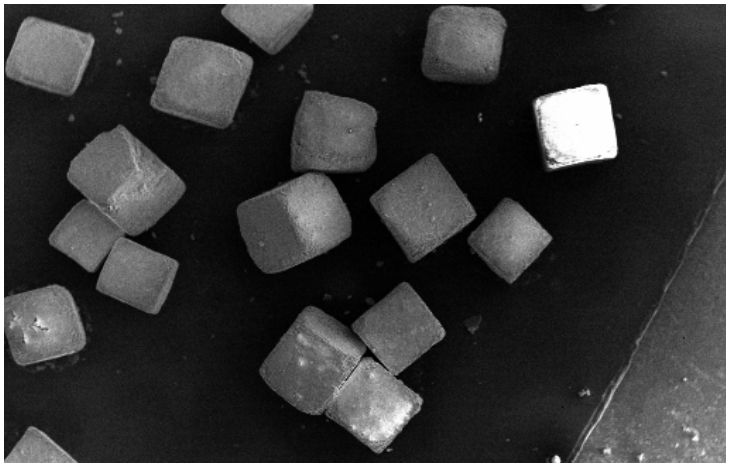

Table Salt

Exploring Salts - Suncatcher
Make a salt crystal suncatcher!

Class materials:
- Liquid detergent
- Hot plate
- Pot
- Epsom salt and water solution
- Spoon

Each student will need:
- a clear plastic lid
- permanent makers, various colors
- needle
- fishing line, 18”

- Students should carefully thread a needle with the fishing line and gently push the need through the edge of their plastic lid.
- Tie the fishing line in a loop.
- Place a small piece of tape on the outside of the lid, over the hole made by the needle. You will be removing the tape later. Don’t let the tape extend onto the lid surface.
- Each student should color the OUTSIDE of their clear plastic lid with permanent makers. Encourage creativity in design.
- Coat the inside of the lid with a drop of liquid detergent. (This breaks the surface tension of the salt solution and allows the solution to spread out and not bead up.)
- Place a spoonful or two of the hot Epsom salt solution in the lid.
- Swirl the solution to cover the inside of the lid.
- Let it dry without moving the lid.
- Have students observe the formation of the crystals on their suncatcher with a hand lens.
- When the salt solution dries completely, carefully remove the tape from the edge.

Students should detect a difference between the Epsom salt crystals they observed in the lab and the ones found on their suncatcher. Heating the salt in water results in a change in crystal shape.