



Fernbank Science Center

Title: IT'S CRYSTAL CLEAR!
Level: 2nd Year
Location: Bird Room Annex

Type: Single Visit
Length: 90 minutes
Limit: One Class

Program Description

Crystals have many uses. Most of us think of diamonds when we think of crystals, but sugar and salt are crystals, too. In this chemistry program we will present the many uses of crystals in our world, and will provide 2nd graders with a chance to closely look at the unique patterns and arrangements of crystals. In addition, students will be able to participate in hands-on activities in a science lab setting.

Georgia Performance Standards of Excellence

S2P1. Obtain, evaluate, and communicate information about the properties of matter and changes that occur in objects.

- a. Ask questions to describe and classify different objects according to their physical properties. (Clarification statement: Examples of physical properties could include color, mass, length, texture, hardness, strength, absorbency, and flexibility.)
 - b. Construct an explanation for how structures made from small pieces (linking cubes, building blocks) can be disassembled and then rearranged to make new and different structures.
 - c. Provide evidence from observations to construct an explanation that some changes in matter caused by heating or cooling can be reversed and some changes are irreversible. (Clarification statement: Changes in matter could include heating or freezing of water, baking a cake, boiling an egg.)
- 1) M2G2 (c) recognize the (plane) shapes of the faces of a geometric solid and count the number of faces of each type;

The students will be able to:

- 2) identify the three common states of matter as solid, liquid, or gas;
- 3) use ordinary hand tools and instruments to construct, measure, and look at objects;
- 4) describe and compare things in terms of number, shape, texture, size, weight, and color
- 5) identify the characteristics of a crystal and develop an awareness of the many crystals present in our daily life.

Vocabulary

| | | | |
|----------|-----------|-----------------|----------|
| crystal | evaporate | saturate | dissolve |
| solid | liquid | gas | |
| patterns | solution | magnifying lens | |

Pre-Visit Activities

- 1) Review and discuss what students already know about crystals and the vocabulary

Post-Visit Activities

4238 It's Crystal Clear Post-Activity

Resources: Sarquis, Jerry; Sarquis, Mickey; Williams, John. Teaching Chemistry with Toys. (Terrific Science Press, 1995).

4238 It's Crystal Clear Post-Activity

Students can observe the same crystal shapes studied in today's class but vary the concentrations of some of the solutions.

Make the following solutions:

| Solution # | Amount of Solid Crystal | Amount of Hot Water |
|-------------------|--------------------------------|----------------------------|
| 1 | 1 spoonful of alum | 4 spoonfuls of water |
| 2 | 2 spoonfuls of alum | 4 spoonfuls of water |
| 3 | 3 spoonfuls of alum | 4 spoonfuls of water |
| 4 | 4 spoonfuls of alum | 4 spoonfuls of water |

Label the containers that are used for the solutions.

Use paintbrush or cotton swabs for each solution.

Have the students divide a piece of paper into quarters by folding the paper in half lengthwise and then in half widthwise.

Have students number the quadrants 1-4 for each of the solutions they will test on the paper.

Using a different brush for each solution, have students draw a picture in each of the four sections of the paper.

Allow the papers to dry without disturbing them for about 20 minutes.

Let students observe the different crystal formations based on the concentrations of the solutions.

Have the students compare and write about the different crystals. Conclude which concentration is the best for making the biggest crystals.

Students can also draw the shapes of the crystals and label what type of geometric shape it is.