

TITLE: Fast Crystallization

TOPIC: Mineral crystallization

GRADE LEVEL: Secondary, Intermediate

CONTENT STANDARD: Earth and Space Science

CONTENT OBJECTIVE: Observe mineral growth processes

TIME REQUIRED: Full period

MATERIALS NEEDED:

- Magnesium sulfate
- Aluminum-potassium sulfate
- Copper sulfate
- Sodium chloride
- Glass slides
- Droppers
- Microscope for each group of students
- Rubbing alcohol

DIRECTIONS FOR INSTRUCTION/ACTIVITY:

Prepare super-saturated solutions for each of the salts listed. To make the super-saturated solution, heat distilled water in an Erlenmeyer flask (do not boil). Add the salt and agitate until completely dissolved. Continue adding salt until no more will dissolve. Cool each solution completely. When the solution is cooled, you will have a saturated solution. See student worksheet for student directions.

EVALUATION: Have students draw crystals and answer questions.

LESSON PLAN AUTHOR & CONTACT INFO:

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Fast Crystallization

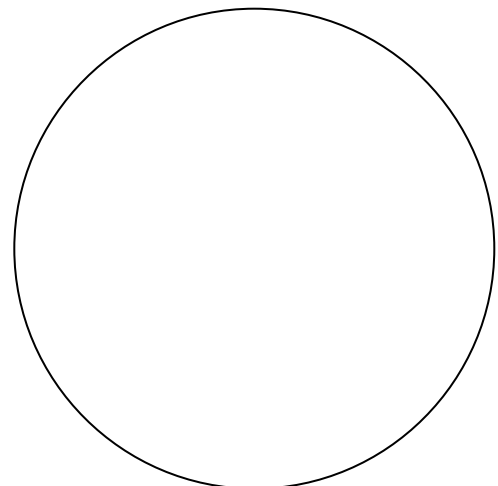
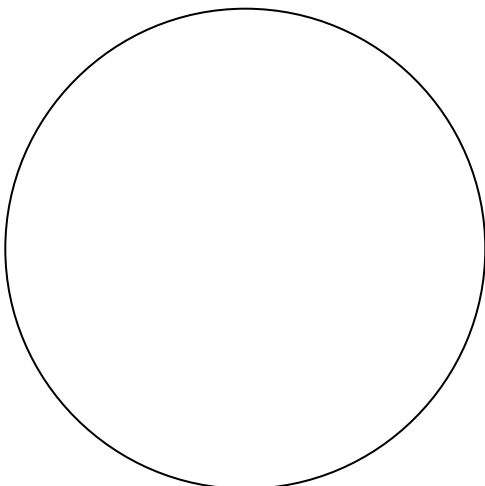
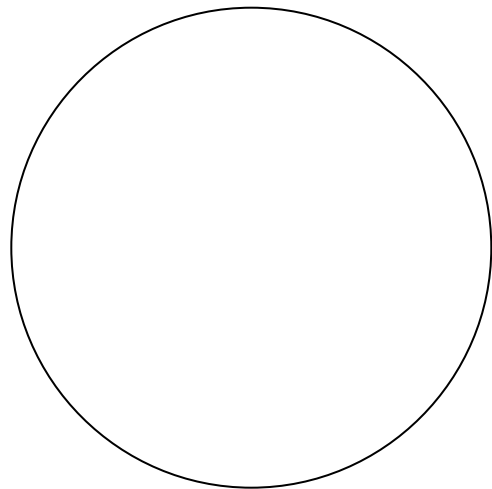
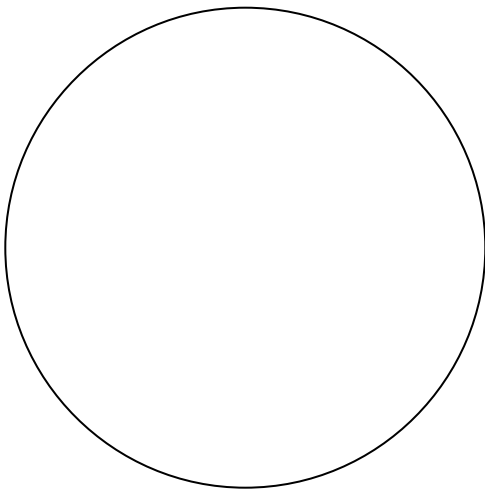
Crystal growth can be observed under magnification in the following procedure.

MATERIALS: Your teacher will provide you with a saturated solution of each of the following salts:

magnesium sulfate
aluminum-potassium sulfate
copper sulfate
sodium chloride

PROCEDURE: For each solution:

1. Drop 1 or 2 drops on a glass slide (label each slide appropriately)
2. Add 1 drop of alcohol to drop vapor pressure if there is a problem with evaporation
3. Observe on low magnification, how the crystals grow.
4. In the circles provided below, draw what you see. Be sure that you label your drawing with the name of the salt that is in solution.



5. In a paragraph or two, describe the sequence of events as the crystals grow.

Answer the following questions after observing crystals grow under magnification. Use white lined paper and complete sentences.

1. In a paragraph or two, describe how the crystals grow. Include a discussion on time and development of the crystalline form.
2. Do all the crystals have the same shape? Describe how the crystals are similar or different.
3. Does the chemical formula influence the shape of the crystals formed?
4. Are you seeing growth surfaces or cleavage surfaces?
5. What is the definition of a mineral?
6. In nature, minerals are found in both massive and crystalline form. Which form did you observe?
7. Is a pearl a mineral? Why or why not?