

Recrystallization test, 24-hour method

Can you identify the unknown crystal by the way it looks when it recrystallizes?

Procedure

1. Rinse each large clear plastic cup with water to remove any remaining crystal. Dry each with a paper towel.
2. Carefully pour the solution from each small cup into its corresponding large clear plastic cup.
3. Allow the solutions to sit overnight.
4. Use a magnifier to observe the crystals from the top and bottom of the cup. Compare the crystals in each cup.



1. What do you think is the identity of the unknown?

2. What evidence do you have to support your conclusion?

Recrystallization in nature

Recrystallization doesn't only happen in a cup. Stalactites and stalagmites in caves are another example of recrystallization. *Stalactites* form at the ceiling of the cave and point down. *Stalagmites* form on the floor of the cave directly beneath stalactites and point up.

Water that is slightly acidic seeps through tiny cracks in the ceiling of the cave and dissolves some of the limestone rock. If the drop of water hangs from the ceiling long enough, the water evaporates and the limestone recrystallizes. If this happens over and over again for hundreds of thousands of years, a stalactite is formed.

3. Why do you think stalagmites form directly underneath stalactites?

Activity 2.4

Recrystallization test—24-hour method (*continued*)

Salt and kosher salt are both made of sodium chloride. The reason the crystals look different has to do with the way they are processed. Regular salt and kosher salt are both made by allowing salt water to evaporate. But the solution used to make kosher salt is constantly raked while the water is evaporating. This interferes with the way the crystals would ordinarily develop, causing them to come together in an irregular way. In this super-magnified view of a piece of kosher salt, you can recognize the cubic shape you ordinarily see in a single crystal of table salt.

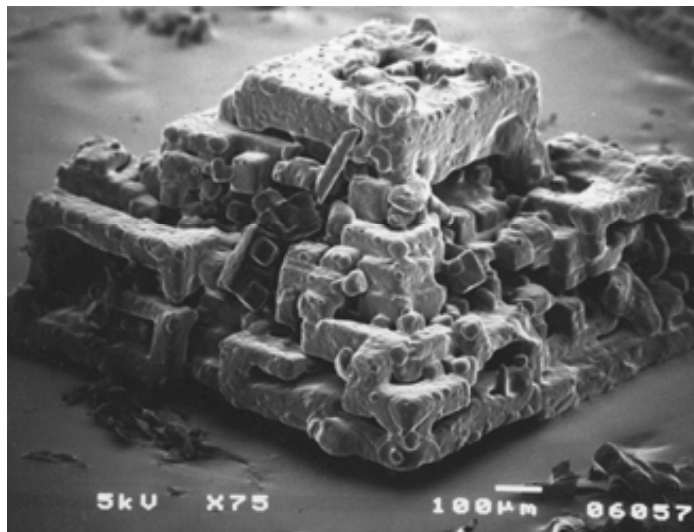


Photo courtesy of the the Museum of Science, Boston.

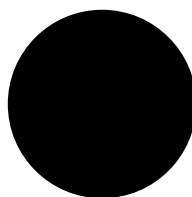
Recrystallization test—same-day method



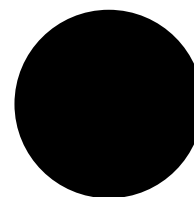
Can you identify the unknown crystal by the way it looks when it recrystallizes?

Procedure

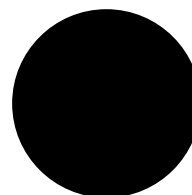
1. Although the circles are already black, use a black permanent marker to completely cover each circle with a layer of marker.
2. Dip a cotton swab into one of the solutions. Apply the solution in a circular motion to its labeled area on the activity sheet. Repeat until as much of the circle is covered with water as possible.
3. Using clean swabs, repeat Step 2 for the other four solutions. Set the paper aside and check it in about an hour. If not much crystal has formed; check it again in another hour.



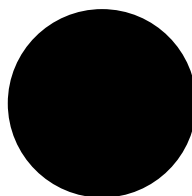
Salt



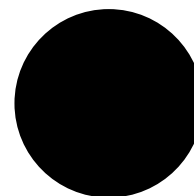
Epsom salt



Unknown



MSG



Sugar

Compare the unknown to the other crystals

1. What do you think is the identity of the unknown? _____
2. What evidence do you have to support your conclusion?

Student activity sheet
Activity 2.4

Name: _____

Recrystallization test—same-day method (*continued*)

Recrystallization in nature

Recrystallization doesn't only happen on paper. Stalactites and stalagmites in caves are another example of recrystallization. *Stalactites* form at the ceiling of the cave and point down. *Stalagmites* form on the floor of the cave directly beneath stalactites and point up.

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3. Why do you think stalagmites form directly underneath stalactites?

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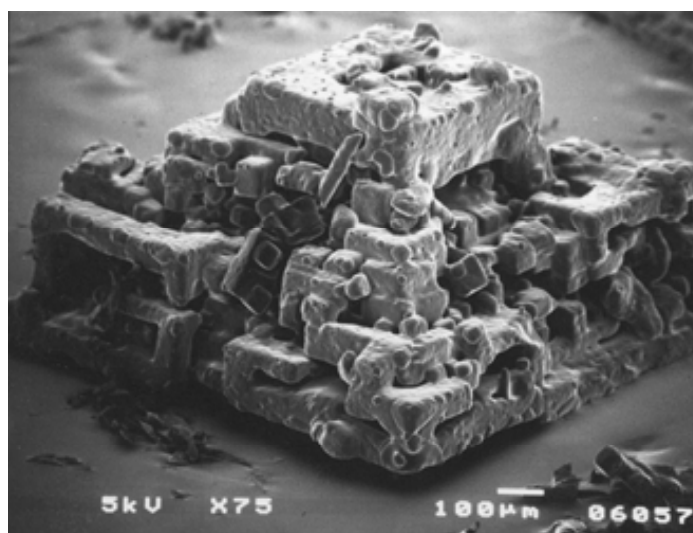


Photo courtesy of the the Museum of Science, Boston.