

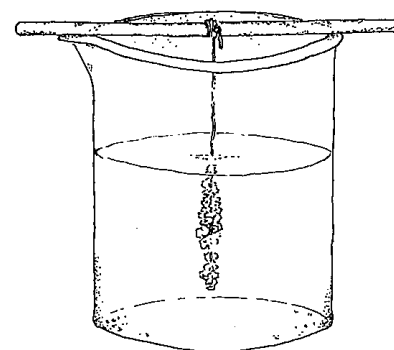
Name: _____

Date: _____

Molecular Crystals: Sugar

Introduction

In a solution, molecules that are dissolved can be revealed by letting the liquid evaporate and also by putting in seed crystals that dissolved molecules can attach to. This process allows us to grow crystals with definite geometric shapes. In this lab, you will grow rock candy crystals from a supersaturated solution of sugar, which will have more sugar dissolved in the water than is normally possible. This lab will take 3-10 days.



Materials

aluminum foil
cane sugar
galvanized washer

string
water

Equipment

beaker tongs
food-safe beaker, 400-mL
hot plate

mason jar
pencil
plastic spoon

Safety Considerations

- In order to safely eat the rock candy formed by this lab, we must use “safe” glassware that has never been touched by any chemicals. **DO NOT USE ANY LAB EQUIPMENT FROM THE LAB DRAWERS. DO NOT CLEAN THIS GLASSWARE WITH ANY BRUSHES FROM THE LAB DRAWERS.**
- Wash your hands thoroughly after completing this lab.

Procedure

1. In a clean, food-safe 400-mL beaker, heat 125-mL of water to a boil and immediately turn off the hot plate.
2. Slowly add cane sugar one spoonful at a time, allowing it to completely dissolve before adding another spoonful. Keep adding sugar until no more dissolves and a small amount remains at the bottom of the beaker (no more than 1 cup total).
3. Before the solution can completely cool down, measure and cut a piece of string that is approximately two-thirds the depth of the mason jar.
4. Tie a small galvanized washer to one end of the string; tie the other end to the middle of a pencil.
5. Using beaker tongs, carefully pour the hot solution into the mason jar.
6. Dip the string in the hot solution to wet it.
7. Dip the wet string into some dry sugar so that a few seed crystals stick to it.
8. Place the string in the jar so that hangs down into the jar but does not touch the bottom.
9. Cover the jar with aluminum foil, label it with your group members’ names using a Sharpie marker, and place it in a safe location.
10. Check on the jar each day to monitor crystal growth and record your observations. Once enough crystals have formed, remove your rock candy and enjoy!

Clean-up

1. Clean the food-safe beaker with soap and your hands, **NOT WITH A BRUSH. IF YOU USE A BRUSH, YOU WILL MAKE THE BEAKER PERMANENTLY UNSAFE FOR FOOD.**

2. Return any extra sugar to the supplies table.
3. Return all equipment to its proper location.
4. Wipe down your lab area and wash your hands before leaving the lab.

Data Table

Day	Observations
0	
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	

Questions

1. Why do you think it was necessary to heat the water in order to make a supersaturated solution?

2. Why is it necessary to add seed crystals to the string?

3. Besides increasing the temperature of the water, what is another way you could make the sugar dissolve faster?

4. Think back to the Layers of Liquids lab. Remember that some liquids would mix together and others would not, depending on the polarity of the molecules. Since sugar dissolves in water, what does that tell you about its polarity?

5. List one way you could change this lab and describe how your results might be different.
