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| CHAPTER 2 | Launch Lab: Crystalline Columns | BLM 2.0.1 |
| HANDOUT | | |

How do stalagmites and stalactites form in caves? Why do crystals of different substances have different shapes? In this activity, you will make some observations and attempt to answer these questions.

Safety Precautions



- Wash your hands when you have completed the investigation.

Materials

- water
- 10 mL graduated cylinder
- burette and stand
- sodium acetate trihydrate crystals
- 100 mL Erlenmeyer flask
- glass plate
- hot plate
- forceps
- balance
- water bottle

Procedure

1. Measure 50 g of sodium acetate trihydrate (sodium ethanoate) and place it in a clean 100 mL Erlenmeyer flask.
2. Add 5 mL of water and heat slowly using a hot plate.
3. Swirl the flask until the solid dissolves. Wash any crystals on the inside of the flask down with a small quantity of water.
4. Pour the solution into a clean, dry burette.
5. Raise the burette as high as it will safely go on the burette stand. Place it on the lab bench with a glass plate directly below the burette.
6. Obtain a relatively large sodium acetate trihydrate crystal. With clean, dry forceps, place the crystal on the glass plate directly under the burette.
7. Gradually turn the burette stopcock until the solution drips out very slowly. There should be from one to three seconds between drops. Adjust the position of the glass plate so the drops fall directly on the crystal.
8. Observe the crystal for 10 min and record your observations. Continue to observe and record your observations every 10 min until the end of the class period.

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Analysis

1. Describe your observations.
2. Is sodium acetate trihydrate an ion or molecular compound?
3. Based on your knowledge of bonding for this type of compound, describe what you think might have been happening as the solution dripped onto the crystal.
4. Why do you think that the crystal on the plate was necessary?
5. Stalagmites and stalactites are formed from calcium carbonate. Based on your observations of the sodium acetate trihydrate, explain how the stalagmites and stalactites could form in caves.
6. Suggest possible reasons why solids made of different compounds might make different-shaped crystals or might not make crystals at all.