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Experiment #040605-01

“Growing Chrome Alum or Mixed Alum Crystals”

Using the following formula you can grow deep purple or lavender cubic crystals of chrome alum, potassium chromium sulphate dodecahydrate. In addition, you can grow clear crystals around the purple crystals, yielding a sparkling crystal with a purple core.

1. The growing solution will consist of a chromium alum solution mixed with an ordinary alum solution. Make a chromium alum solution by mixing 60 g of potassium chromium sulfate in 100 ml of hot, not boiling, water (or 600 g chromium alum per liter of water).

2. In a separate container, prepare a saturated solution of ordinary alum, ammonium aluminum sulfate, by stirring about 1 ounce of alum into about a ½ cup of warm water until no more will dissolve.

3. To make mixed alum crystals mix the two solutions in any proportion that you like. The more deeply colored solutions will produce darker crystals, but it will also be harder to monitor crystal growth.

4. Grow a seed crystal using this solution, then tie it to a string and suspend the crystal in the remaining mixture.

5. Loosely cover the container with a coffee filter or paper towel. At room temperature (~25°C), the crystal can be grown via slow evaporation for as little time as a few days or as long as a few months.

6. To grow a clear crystal over a colored core of this or any other colored alum, simply remove the crystal from the growing solution, allow it to dry, and then re-immerses it in a saturated solution of ordinary alum. Continue growth for as long as desired.

Tips:

1. A saturated solution of pure chrome alum will grow darker crystals, but the solution will be too dark to see through. Feel free to increase the concentration of chrome alum, but be aware that the solution becomes deeply colored.

2. Notice that the chrome alum solution is a dark blue-green, but the crystals are purple!

What You Need:

1. Potassium chromium sulfate (chromium alum)
2. Ammonium aluminum sulfate (alum)
3. Pure water
4. Clear glass jar or glass beaker
5. Cotton or nylon sewing thread
6. coffee filter or paper towel
7. pencil, knife, or stick (to suspend string)
8. spoon or stirring rod