Easy Crystal Experiments You Can Share With Your Kids

By Aurora Lipper, Supercharged Science

Crystals are formed with atoms line up in patterns and solidify. There are crystals everywhere – in the form of salt, sugar, sand, diamonds, quartz… and more!

When making crystals, there is a very special kind of solution to make. It's called a "super saturated solid solution". What does that mean? Here's an example: If you constantly add salt by the spoonful to a cup of water, you'll reach a point where the salt doesn't disappear (dissolve) anymore and forms a lump at the bottom of the glass.

The point at which it begins to form a lump is just past the point of being a saturated solution. If you heat up the saltwater, the lump disappears. You can now add more and more salt, until it can't take anymore salt (you'll see another lump starting to form at the bottom). This is now a super saturated solid solution. Mix in a bit of water to make the lump disappear. Your solution is ready for making crystals. But how?

If you add something for the crystals to cling to, like a rock or a stick, crystals can now grow. If you "seed" the object (coat it with the stuff you formed the solution with, like salt or sugar), they will start forming faster.

TIP: If you keep the solution in a warm place, crystals will grow faster.

If you have too much salt (or other solid) mixed in, your solution will crystallize all at the same time and you'll get a huge rock that you can't pull out of the jar. If you have too little salt, then you'll wait forever for crystals to grow. Finding the right amount to mix in takes time and patience.

Geodes A geode is a crystallized mineral deposit, and are usually very dull and ordinary-looking on the outside, until you crack them open! An eggshell is going to be used to simulate a gas bubble found in flowing lava. By dissolving alum in water (real life uses minerals dissolved in ground water) and placing it into your eggshell (in real life, it’s a gas bubble pocket), you will be left with a geode. (Note: these crystals are not for eating, just looking.)

Making the Geode Make sure your eggshells are clean. Fill a small cup with warm water and dissolve as much alum in the water as you can to make a saturated solution (meaning that if you add any more alum, it will only fall to the bottom and not dissolve). Fill the eggshells with the solution and set aside. Observe as the solution evaporates over the next few days. When the solution has completely evaporated, you will have a homemade geode. If no crystals formed, then you had too much water and not enough alum in your solution.

Gemstones Fill a clean glass jar with saturated solution made above and leave it for two days. Strain it and save the water for later. Keep the crystals!

String Crystals Fill another glass jar with spare saturated solution, and suspend a crystal (from experiment above) with string from the jar lid. Lower it into the solution and wait several days. (Seed the string for quicker growth.)

Rock Candy We're going to take advantage of the process of crystallization to make candy. You are going to make a super saturated solution of sugar and use it to grow your own homemade sugar candy crystals. A super saturated solution is one that has as much sugar dissolved in the water as possible. (If we didn't heat the water, we'd wind up with only a saturated solution.)

Making Rock Candy Boil three cups of water in a large pot on the stove. Add eight cups of sugar, one cup at a time, slowly stirring as you go. The liquid should be thick and yellowish. Turn off the heat and let it sit for four hours (or until the temperature is below 120 degrees F). Pour the sugar water solution into clean glass jars and add a couple drops of food coloring (for colored crystals). Tie a string to a skewer, resting the skewer horizontally across the jar mouth.

Jelly Crystals This water jelly crystal (found in the gardening section of your hardware store, usually called "Soil Moist") will grow over 300 times its own size when hydrated (adding water). Fill each cup half full of water. Add a few drops of food coloring and stir. Add a handful of crystals and let stand 20 minutes. Squish them with your hands! Combine several different colors (in layers) in a empty water bottle and watch the colors melt into each other (try layering blue, yellow, and red and watch orange and green appear out of nowhere!) Make a huge rainbow wand using a plastic fluorescent tube

casing (from the hardware store – they come in 4 to 8' sections!) with stoppers glued to the ends. To reuse crystals, lay on a paper towel and let dry (they may stain beneath the towel, so add a layer of foil) over a few days.

Salt Stalactites Make a saturated solution from warm water and Epsom salts. (Add enough salt so that if you add more, it will not dissolve further.) Fill two empty glass jars with the salt solution. Space the jars a foot apart on a layer of foil or on a cookie sheet. Suspend a piece of yarn or string from one jar to the other. Wait impatiently for about three days. A stalactite should form from the middle of the string!

Since 1996, Aurora Lipper has been helping families learn science. As a pilot, astronomer, mechanical engineer and university instructor, Aurora can transform toilet paper tubes into real working radios and make laser light shows from Tupperware.

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