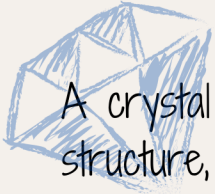


The question:

What is a crystal?

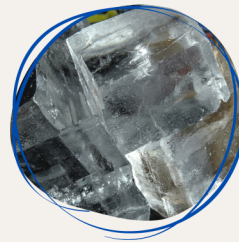
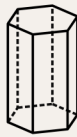


A crystal is the solid structure of a mineral. For a crystal to be of good size and structure, it needs the right conditions. These conditions include time, location, and temperature. Different minerals will form different shapes and colours of crystals.

A mineral is a naturally forming inorganic solid made of one type of molecule. Two common examples are quartz (SiO_4) and salt (NaCl).



Quartz (SiO_4) has a hexagonal crystal structure.



Salt (NaCl) has an isometric crystal structure.



Crystals will always try to form in a shape that is the most simple and secure. Just like you will hold your friend's hand when you walk but you won't try to walk while holding their knee. These shapes often reflect the shape of the molecules themselves.

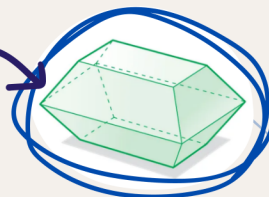
White sugar or sucrose ($\text{C}_{12}\text{H}_{22}\text{O}_{11}$) is another crystal we see every day. And even though we can buy sugar in cubes, their natural crystal is actually a slightly different shape.



Sugar cubes and granules.



Sugar crystals.

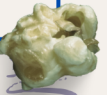


Sugar has what is called a monoclinic crystal system.



Let's try!

Dear adults: This recipe should be able to make at least 4 rock candy sticks. The left over syrup can also be poured over popcorn and baked at 300C for 15-20 minutes to make candy popcorn.



Create your own crystals and watch how they grow into a beautiful (and edible!) natural formation.

You will need:

- a 500mL mason jar
- candy stick or string
- tinfoil, tape, clothespin, etc, to hold stick or string in jar without touching the sides or bottom
- 2 cups water
- 6 cups sugar
- 3-4 drops food colouring (optional)
- candy flavouring to taste (optional)

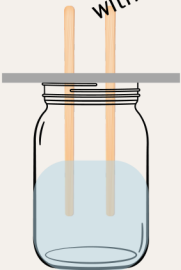


Instructions:

1. Wash out your mason jar very well and make sure you get all the soap out.
2. Soak your candy stick or string in water then roll in white sugar. This will act as a starting point for your crystals.
3. (With an adult!) Put 2 cups of water and 3 cups of sugar into a solid pot. Turn the heat to boil until the sugar disappears, then turn to half heat and simmer for ten minutes. Remove from heat and add your colouring and flavour, if desired. Allow to cool.
4. Carefully pour your sugar syrup into your jar.
5. Add your stick or string. The stick should not touch any part of the jar inside the syrup. (You can put more than one stick a jar, so long as they aren't touching each other or the jar. Leave about 1 inch in between or crystals may grow together.)
6. Place your jar in a cool place where it won't be knocked over, and cover to prevent dust.
7. It should start showing crystals after one day. If it doesn't, heat your syrup and add more sugar.



Pushed through tinfoil and secured with tape



After a week, you should have rock candy that's ready to eat! Be sure to enjoy the beautiful crystal clusters with your eyes before you enjoy it with your mouth.

