



# CHEMISTRY

Sugar Crystals



# STEPS

## 01

### The Field of Chemistry

Learn about chemistry!

## 02

### Careers in Chemistry

What can you do with chemistry?

## 03

### The Science Behind Crystals

## 04

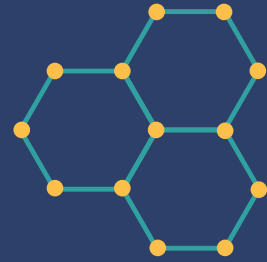
### Activity

A fun chemistry activity!



# CHEMISTRY

a science that deals with the composition,  
structure, and properties of substances and with  
the transformations that they undergo  
-Merriam Webster



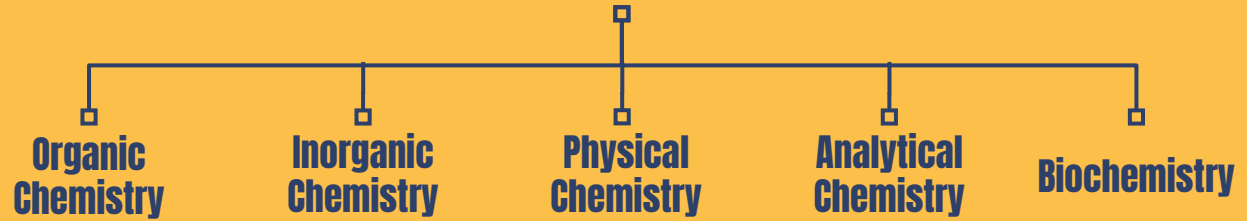
01

# The Field of Chemistry





# Fields of Chemistry



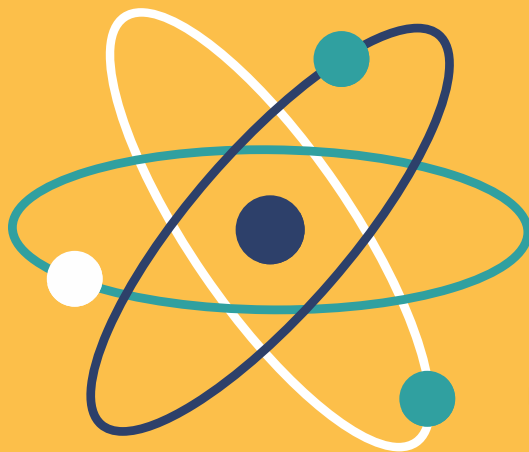
# Classes to Take in High School



**Chemistry**



**AP Chemistry**



**Organic Chemistry**

02

## Careers in Chemistry



# Statistics

**\$109,220**

average salary with a bachelor's degree in chemistry

**47.7%**

of chemistry degree holders are women

**1.1M**

people make up the biology workforce



# Careers in Chemistry



## Forensic Scientist

Forensic scientists search for and analyse forensic materials found at crime scenes, for example blood and other bodily fluids, hair, or non-biological substances such as paint. They are then able to present this evidence for use in legal investigations and courts of law.



## Analytical Chemist

Analytical chemists use their skills and expertise to analyse substances, identify what components are present and in what quantities, as well how these components may behave and react with one another.



## Pharmacologist

Pharmacologists undertake the development and testing of drugs, analysing how they interact with biological systems.

03

# The Science Behind Crystals



# CRYSTALS

Sugar molecules are most stable in a crystalline structure. If you leave a solution of sugar dissolved in water uncovered, the water will evaporate and the solution will become more and more concentrated. As the water molecules disappear, the sugar molecules find each other and join back into crystals.



04

# The Science Behind Crystals



# What Do You Need?

- 1 cup water
- 4 cups sugar
- Mason jars
- String
- Food coloring
- Straws

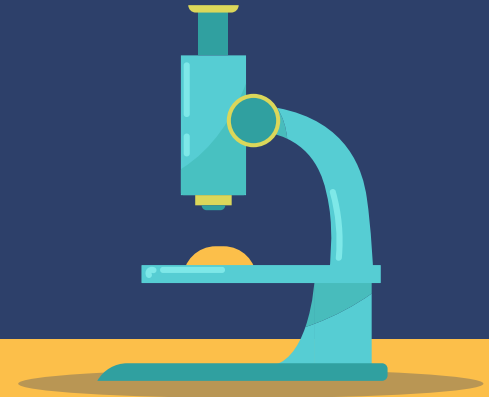
# Steps

1. The day before starting your sugar crystal experiment, cut a piece of string a little longer than your jars. Tie one end of the string to a straw. Tie a knot in the other end. Get the strings wet and coat them in sugar. Let them dry overnight.
2. The following day add four cups of sugar and one cup of water to a saucepan and heat until boiling. This will form your supersaturated solution. Stir until the sugar is dissolved but be careful not to heat the sugar so much that it starts to turn into candy. Keep the temperature right at 210 degrees. Remove the sugar from the heat.
3. Pour your sugar mixture into the jars. Add edible food coloring to each jar.
4. Lower the string into the jar and place the jars in a safe place. Let the sugar crystals form for at least a week.

## What Happened?

Two different methods will contribute to the growth of the crystals on the string. You have created a *supersaturated* solution by first heating a *saturated* sugar solution (a solution in which no more sugar can dissolve at a particular temperature) and then allowing it to cool. A supersaturated solution is unstable—it contains more *solute* (in this case, sugar) than can stay in a liquid form—so the sugar will come out of solution, forming what's called a *precipitate*. This method is called *precipitation*.

The other is *evaporation*—as time passes, the water will evaporate slowly from the solution. As the water evaporates, the solution becomes more saturated and sugar molecules will continue to come out of the solution and collect on the seed crystals on the string. The rock candy crystals grow molecule by molecule. Your finished rock candy will be made up of about a quadrillion (1,000,000,000,000,000) molecules attached to the string.



# THANKS

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