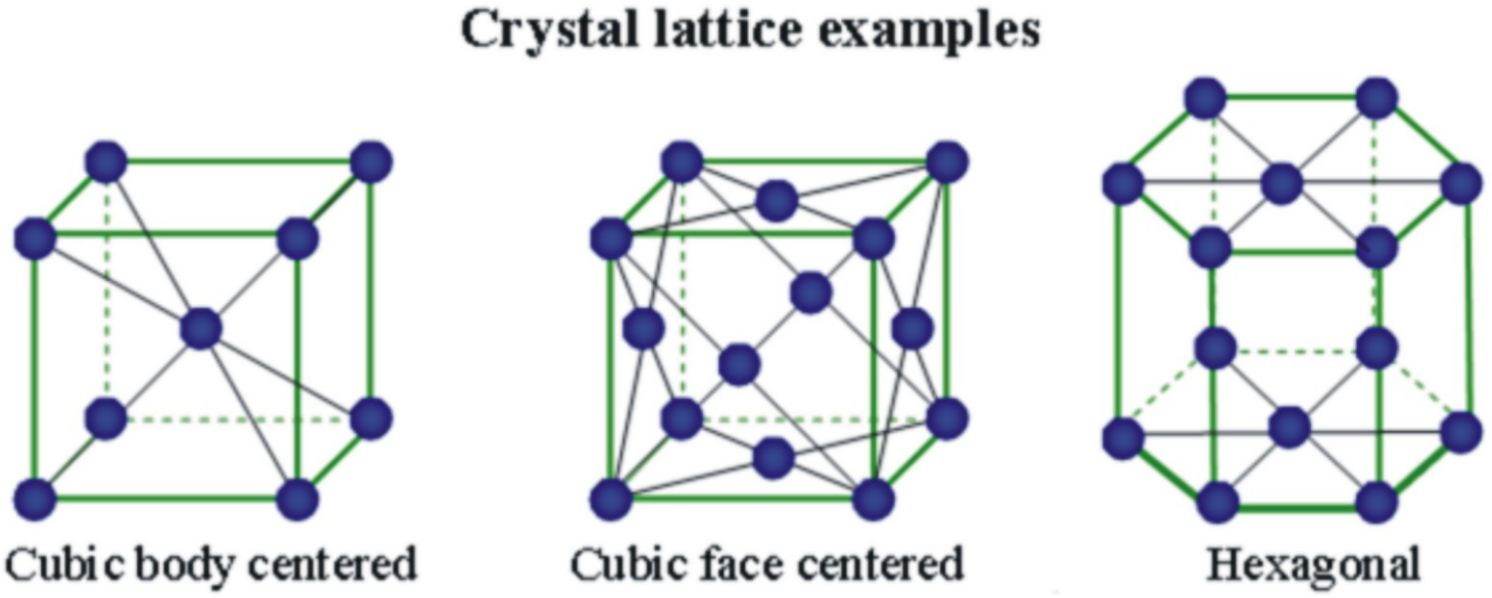
Cycle 1 Week 19 – Crystals

Introduction

This week we are going to learn about something beautiful that God made – crystals!

The definition of a crystal: Crystals are solids that form by an orderly, repeated pattern of molecules connecting together. A crystal's molecules are repeated in exactly the same pattern over and over throughout the entire material.

The shape of the resulting crystal - such as a cube, hexagon or tube - mirrors the internal arrangement of the atoms.



As crystals grow, differences in temperature and chemical composition cause fascinating variations.

Experiment / Demonstration

Crystals occur naturally all the time, but today we are going to make our own crystals!

(Show materials we will be using – <u>be sure to tell them that Borax is a mineral!)</u>

-Cut your pipecleaner, and tie it to the pencil – show that it will not touch bottom of jar

-Pour boiling water into jar over pipecleaner – REMOVE pipecleaner

-Add Borax & food coloring and stir until dissolved

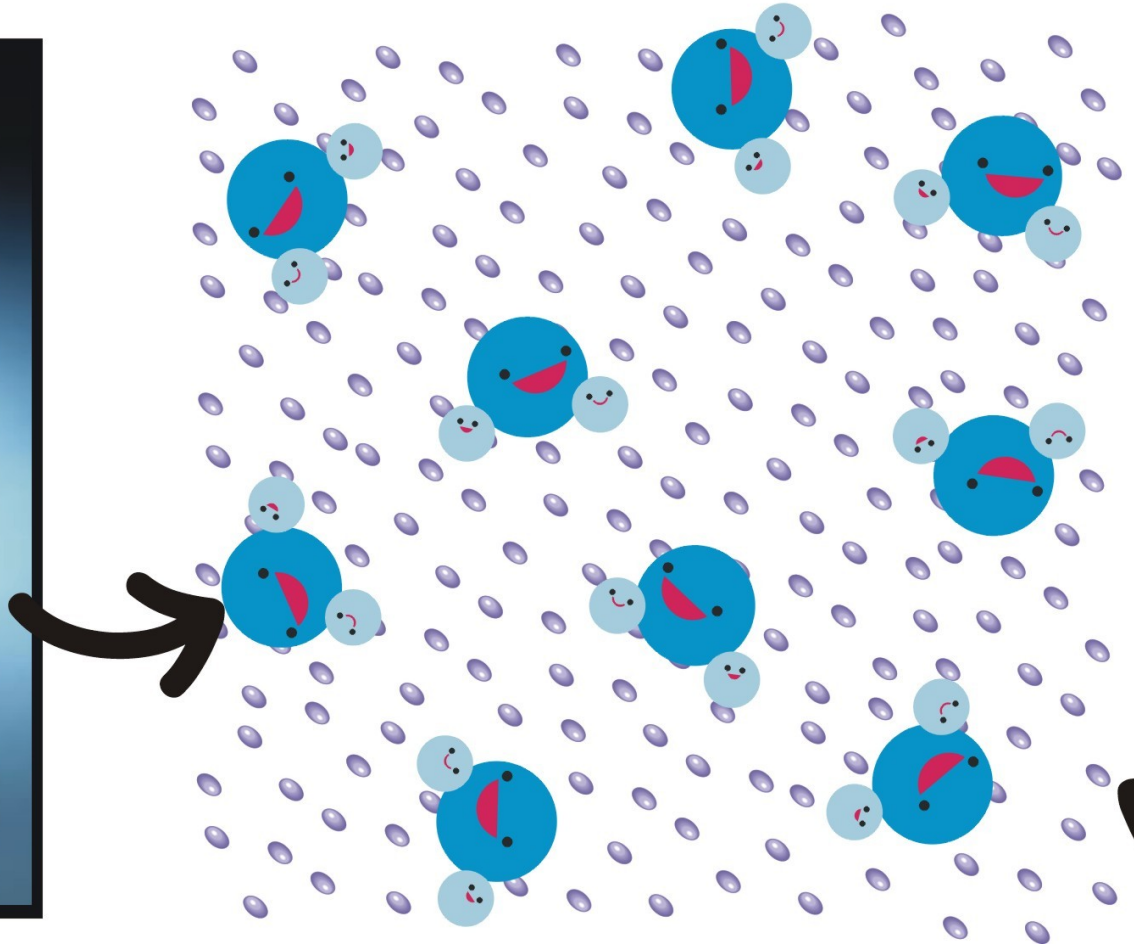
-Put pipecleaner back in jar and set aside

-Ask students what they think will happen

-Show your "Ta-Da" Borax crystals

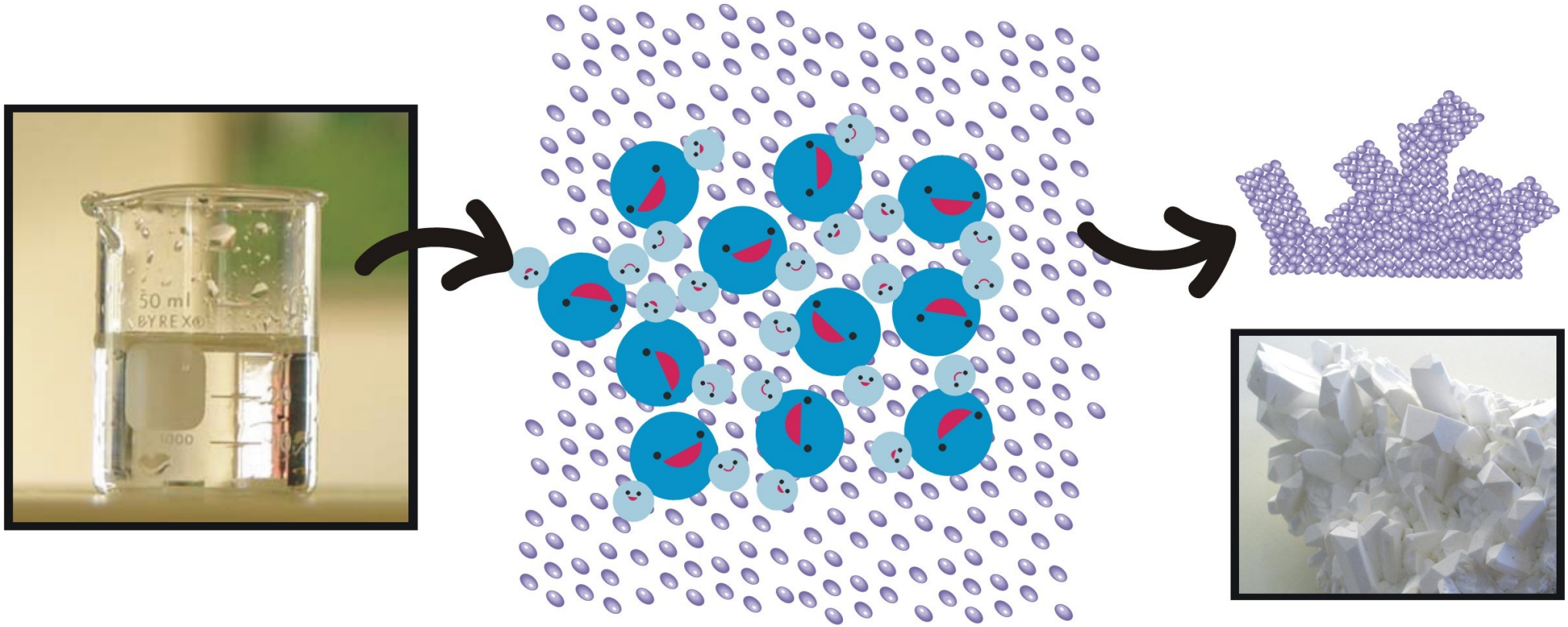
Why do the borax crystals grow in the jar?

Hot water holds more borax crystals than **cold water**. That's because heated water molecules move farther apart, making room for more of the borax crystals to dissolve.



When the water cools & evaporates

When no more of the solution can be dissolved, you have reached **saturation**. As this solution cools, the water molecules move closer together again. Now there's less room for the solution to hold onto as much of the dissolved borax. Crystals begin to form and build on one another as the water lets go of the excess and evaporates.



Conclusion

When we grow crystals we are separating all the molecules into little units in the water and letting them fall naturally into place in a repeating pattern as the water evaporates. Here are some images of crystals under a microscope – TAKE A LOOK AT THOSE PATTERNS!