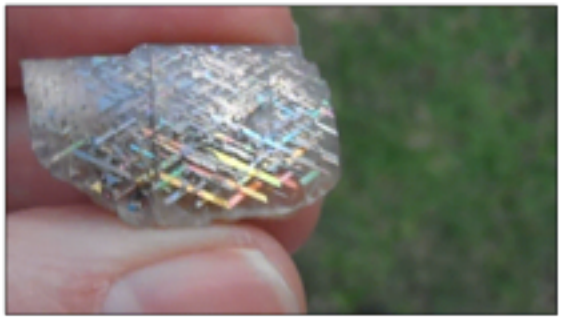
What is a mineral?

- Forms in nature
- Solid
- Definite chemical makeup
- Crystal structure
- Inorganic



Mineral Formation

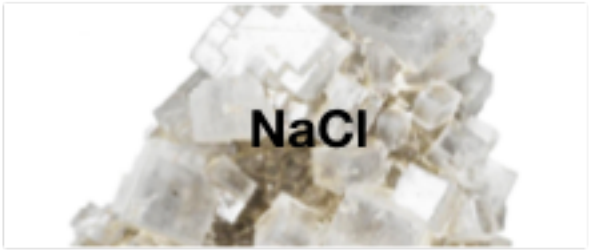
Minerals are formed by natural processes:

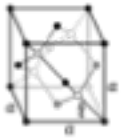
1. When water evaporates
2. When molten rock cools
3. Under high pressure and temperature

Chemical Makeup

Each mineral consists of specific combinations of elements.

- Some minerals have just one element. Ex. gold
- Some minerals are compounds. Ex. halite

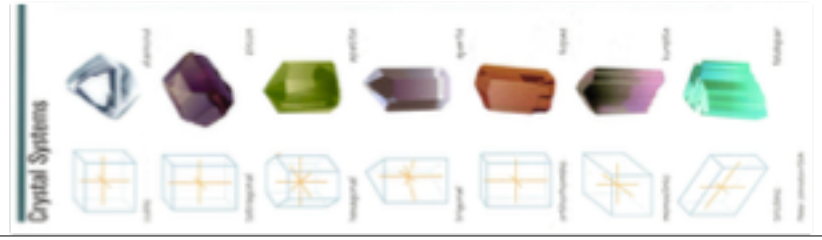




Crystal Structure

- Crystals - solids in which atoms are arranged in an orderly, repeating, 3D pattern
- Each mineral has its own type of crystal structure that determines its properties.

Diamond and graphite are both made of carbon, but their crystal structures are very different.



Color

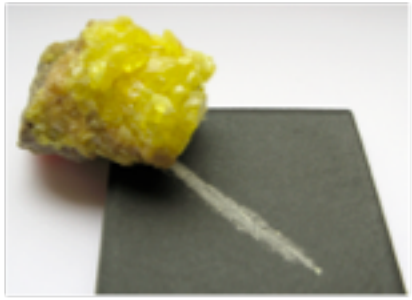
Some minerals have many different colors, but most have a limited color range.

Factors that determine a mineral's color:

1. Tiny amounts of a different element that's not part of its chemical makeup
2. Exposure to the atmosphere or water
3. Defects in its crystal structure

Streak

- The color of the powder left behind when a mineral is scratched across a surface is its **streak**.
- The streak does not always match the color of the mineral.
- Some minerals have no streak because they are harder than the streak plate (7 or higher)



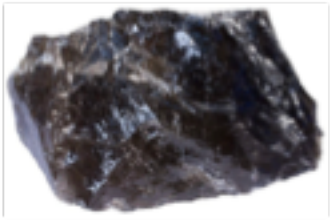
Luster

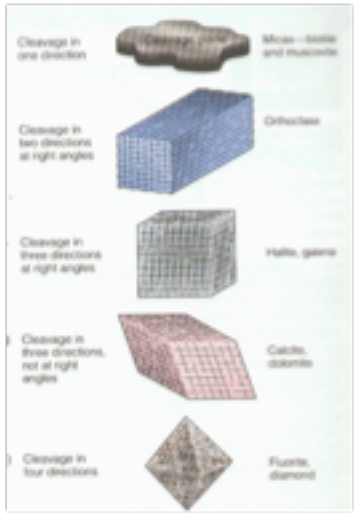
The way light reflects off a mineral's surface is its **luster**.

- Metallic
- Nonmetallic
dull, earthy, glassy, pearly, waxy, greasy

Cleavage / Fracture

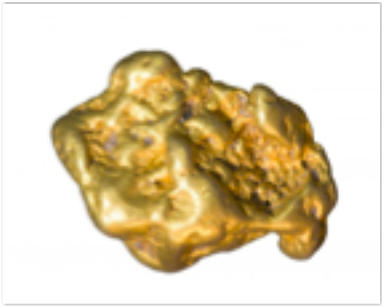
- Cleavage - the tendency of a mineral to break along flat surfaces
- Fracture - the tendency of a mineral to break into irregular pieces





Density

- Density: the amount of mass in a certain volume
- Gold and pyrite look similar, but have different densities.



Hardness

- The resistance to being scratched is a mineral's **hardness**.
- If a mineral scratches another, that mineral is harder than the one it scratches.
- If a mineral gets scratched, that mineral is softer than the mineral that scratched it.

Special Properties

Magnetic

Radioactive

Reacts With Hydrochloric Acid

Optical

Fluorescent