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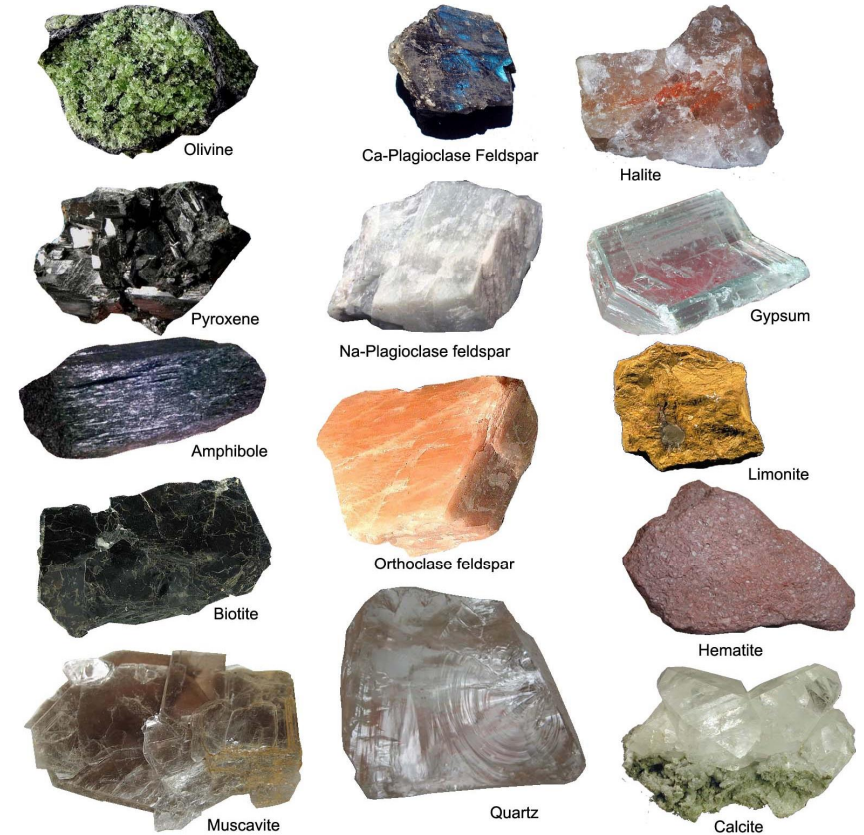
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ROCKS & MINERALS

CHAPTER 9

MINERALS

- “ A mineral is a natural, nonliving solid with a definite chemical structure.
- “ Earth's crust contains more than 4,000 kinds of minerals; only about 2 dozen are common.
- “ Gemstones such as diamonds, emeralds, and rubies are minerals.
- “ Pure gold, silver, copper, etc. are minerals.



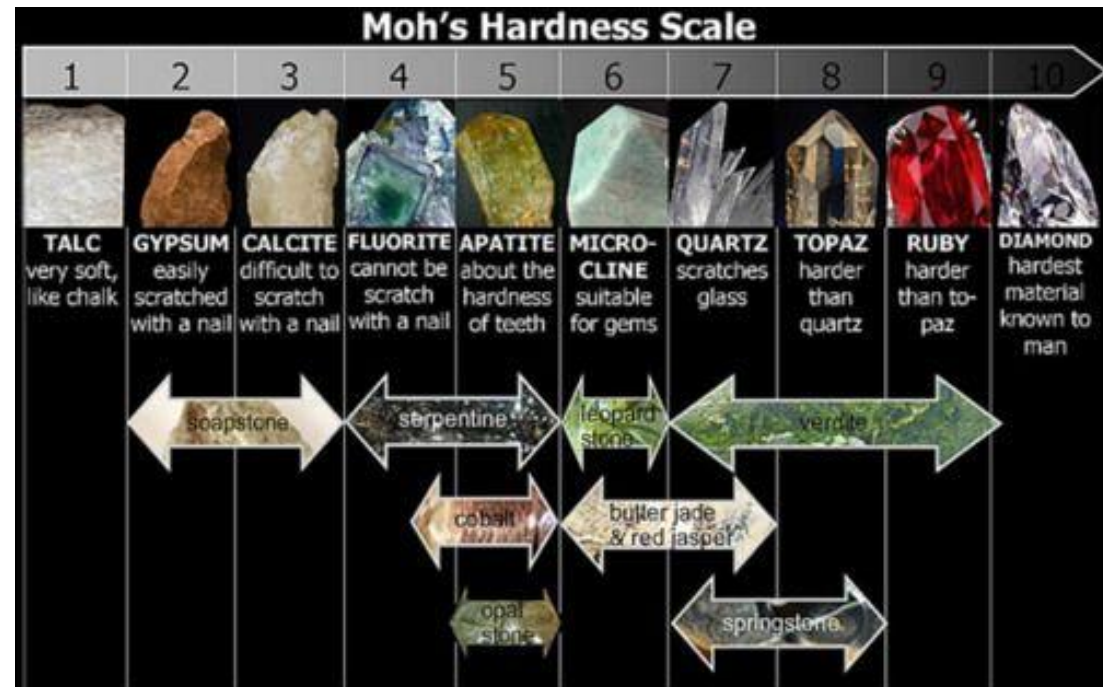
MINERALS

- “ Each kind of mineral has its own unique chemical structure. Differences among minerals result from the way the particles of each mineral are arranged.
- “ Minerals are made up of crystals.
- “ The particles of crystals are arranged in a particular, repeating pattern.
- “ This pattern is reflected in the shape of the crystal.



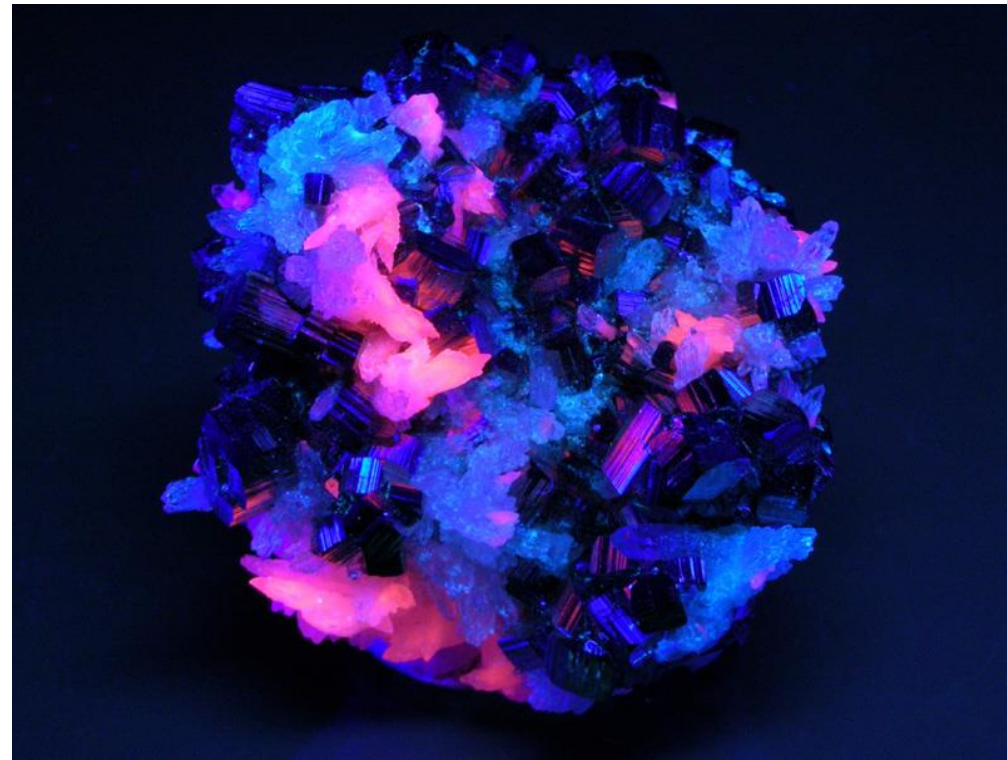
IDENTIFYING MINERALS

- “ Minerals can be identified by many properties.
- “ Moh's Hardness Scale tells the hardness of minerals.
- “ Moh's scale goes from 1 (the softest) to 10 (the hardest).
 - “ Talc (used as baby powder) has a hardness of 1
 - “ Diamond has a hardness of 10



IDENTIFYING MINERALS

- “ Minerals can also be identified by:
 - “ color
 - “ shape of its crystals
 - “ the pattern they form when broken
 - “ luster
 - “ other unusual properties such as magnetism, color under UV light, etc.
- “ Most minerals are not found in pure form; they are usually found in mixed together in rocks.



ROCKS

- “ A rock is a solid, natural material made up of one or more minerals.
- “ Scientists can use a rock's characteristics to determine when and how it was formed.
- “ Rocks constantly change; they break down and the minerals in them are recycled.
- “ The breaking down and building up of rocks is known as the Rock Cycle.



SEDIMENTARY ROCK

- “ Sedimentary rock is made from pieces of rocks and minerals.
- “ The rocks are formed in layers.
- “ The layers can act as a history book, with the oldest layer at the bottom, and the newest layer at the top.
- “ Fossils are found only in sedimentary rock.



IGNEOUS ROCK

- “ Igneous rock forms when magma or lava cools and hardens.
- “ Some igneous rocks are formed on the surface of the Earth (Extrusive)
- “ Others are formed below the surface (Intrusive).
- “ Being extrusive or intrusive gives them different chemical make-ups, and different properties.



METAMORPHIC ROCK

- “ Metamorphic rock forms when heat, pressure or chemical reactions change one type of rock into another type of rock.
- “ Marble is metamorphic rock that is formed from limestone, which is sedimentary rock.



FOSSILS

- “ Fossils can form when an organism is buried in soft mud. Over time, the soft mud changes into a rock, and the imprint of hard parts, such as shells, bones and wood remain in the rock.
- “ Studying fossils can tell us when the rock was formed, when the organism lived, and where it lived.
- “ Studying fossils can also tell us about the climate at the time the organism lived, or even if there was land or water at a certain time period where the fossil was found.



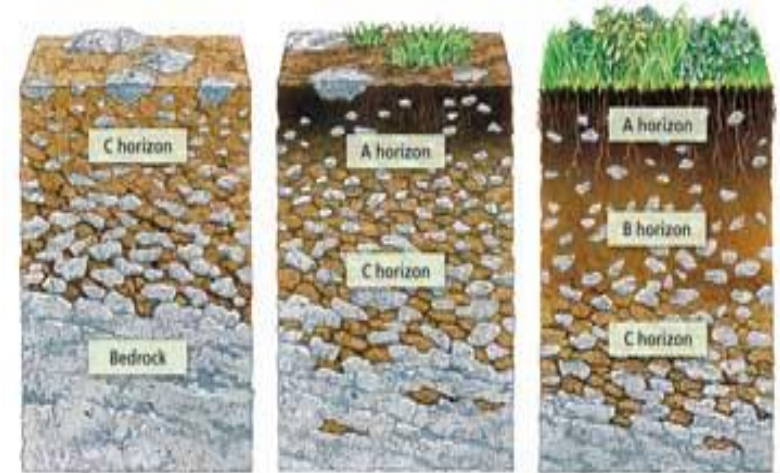
SOIL

- “ Soil is made of weathered rock, air, water, and the remains of living organisms.
- “ Almost all land-dwelling organisms depend on soil for life.
- “ Plants obtain water and minerals from soil, and animals need plants for food.
- “ Insects and many other small animals live in soil.
- “ Certain types of fungi and bacteria live in soil.



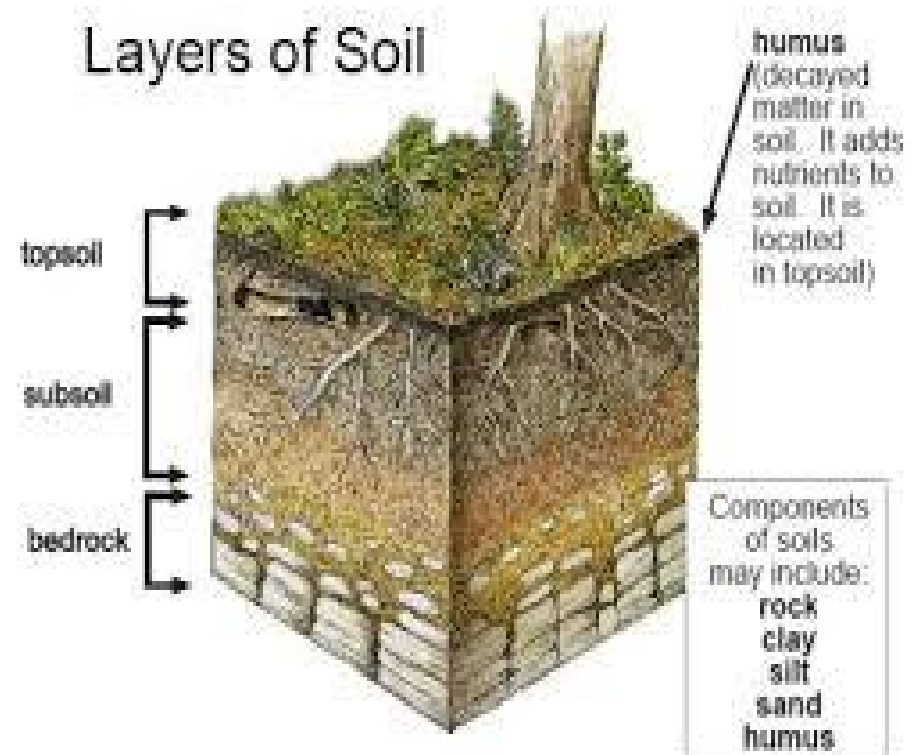
FORMING SOIL

- “ New soil begins to form when exposed rock begins to break down by a process called weathering.
- “ Weathering can occur from frost, drought, changes in temperature, or rainwater.
- “ Weathering breaks down rocks into smaller and smaller pieces.
- “ After some time passes, bacteria and fungi begin to grow in and around the particles.
- “ When these organisms and other organisms die, they decay and add organic matter to the soil.
- “ Organic matter is any substance that is made of living or the remains of living things.



SOIL LAYERS

- “ Soil forms in 3 layers:
- “ Topsoil ó A mixture of small rock, humus, and other organic matter.
 - “ Humus is the dark-colored organic matter formed from decayed plants and animals.
 - “ Topsoil is very rich in nutrients for plants, fungi and bacteria.
- “ Subsoil ó Lighter in color than topsoil.
 - “ Contains minerals that were washed down by rain.
 - “ Has less organic matter than topsoil.
- “ Parent Rock ó Lowest layer, has very little organic matter.



KINDS OF SOILS

- “ Sandy soils have little organic matter. They are large grained and drain quickly.
- “ Loam is an ideal soil for plants. It holds water, drains well, and contains organic matter.
- “ Peat is partly decayed plant material that has been buried and compressed in a swamp.
- “ Humus is dark colored due to high levels of organic matter. It is formed from decayed plants and animals.

