

BUBBLE & FIZZ

WEEK 9: ROCKS AND MINERALS

EVER WONDER . . . HOW ROCKS AND MINERALS ARE DIFFERENT?



What we learned this week:

- ◆ A mineral is a naturally-occurring solid with a unique chemical makeup and structure. Rocks are combinations of minerals.
- ◆ There are 3 types of rock: igneous, sedimentary, and metamorphic.
- ◆ Earth's rocks are constantly being changed in the "rock cycle."

Today's Experiments

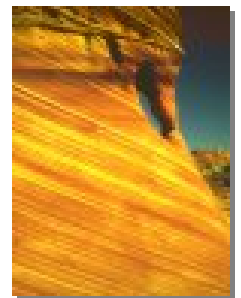
1. Examine rocks and minerals.
2. Create a fossil in a rock.
3. Experiment with taking core samples.

Did you know?

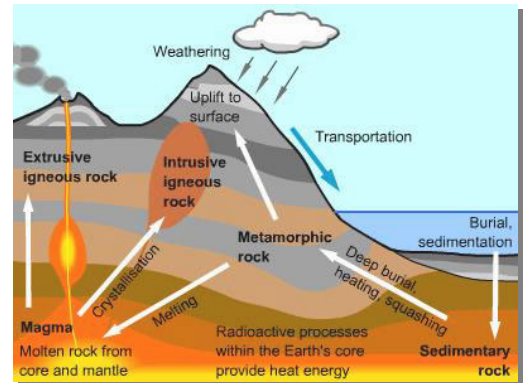


- ◆ A mineral is a naturally-occurring solid with a unique chemical makeup and structure. Minerals include everything in the world that is not classified as a plant or animal. There are about 4000 known minerals. Examples include salt, quartz, gold and copper. All of the samples in the picture to the left are minerals. Rocks are combinations of minerals – much like cookies are combinations of eggs, butter, sugar, etc. Granite, for example, is a rock composed of quartz, feldspar, mica, and hornblende.

- ◆ We classify rocks according to how they were made. There are three different types of rock: igneous, sedimentary, and metamorphic.
- ◆ Igneous rocks are sometimes called "fire rocks" because they are formed by intense heat. Sometimes magma (molten rock) slowly cools underground and forms igneous rocks underground, or volcanoes spew lava (also molten rock), which then cools and forms igneous rocks above ground. Examples of igneous rocks are granite and pumice.
- ◆ Sedimentary rocks are formed from little pieces of rock that get broken down by wind and water. This "sediment" gets washed downstream and deposited on the bottoms of rivers and lakes. More and more layers of sediment are deposited on top of each other until the bottom layers get pressed from all the weight into rocks. Examples of sedimentary rocks are sandstone (pictured at left) and limestone.
- ◆ Metamorphic rocks are igneous or sedimentary rocks that have been "morphed" (changed) by lots of heat and pressure into a different kind of rock. An example of metamorphic rock is marble (pictured at right).
- ◆ One way to find out about the layers of mud and rock that exist underground in a particular spot is to take a core sample. When scientists take a core sample, a narrow hole is drilled down into the earth and a sample of many layers is pulled up. This sample shows what layers of rock, sand and possibly even fossils are underneath a particular spot.



- ◆ Fossils are the preserved remains of plants and animals that lived in the past. Most fossils are found in sedimentary rock. In class today, we made an impression of a shell in clay – much like shells or animal bones press into soft mud to make a fossil. If we had allowed the pressed-in clay to harden, we would have called that a “mold fossil.” By adding some plaster of Paris to our impression, we made a “cast fossil.”
- ◆ The “rock cycle” refers to how the earth’s rocks are constantly being changed. For example, an igneous rock may get worn down by wind and water and mix with particles from other rocks to form sedimentary rocks. Then these sedimentary rocks may get buried by an earthquake and undergo tremendous heat and pressure that changes them into metamorphic rocks. This metamorphic rock may then melt under intense heat into magma, which is then spewed out of a volcano and cooled into igneous rock – and so continues the rock cycle.
- ◆ Humans prize many rocks and minerals for their beauty. For example, we often use polished granite for countertops and polished marble for floors. We also use polished minerals like diamonds, rubies, and sapphires to make jewelry, crowns and other treasures. Minerals “in the rough” look like plain old rocks until they are polished. Various methods of “mining” are used to remove these rough rocks and minerals from the ground. Mining methods include digging tunnels – or blowing up entire mountain tops!



Amazing Scientist



Florence Bascom, Ph.D. (1862-1945). Dr. Bascom was a geologist (a scientist who studies rocks) and an expert in crystals and minerals. In fact, she was the second woman in the United States to receive a Ph.D. in geology and the first woman hired by the U.S. Geological Survey. Dr. Bascom studied the Piedmont Mountains extensively and helped other scientists understand how mountains are built.

Curiosity @ Home

Start a rock collection! This week at home, start a rock collection starting with the rocks you received in class today. Look for rocks that are different in color, texture and composition. Be sure to wash off your rocks so that the colors are clearly visible. If you’re lucky enough to have a rock tumbler, polishing your rocks will make them show their colors and mineral “ingredients” much more clearly.

Word Scramble

Can you unscramble these words from today’s class?

ISONEUG

_____ (sometimes called “fire rock”)

SOSLIF

_____ (the preserved remains of past plants and animals)

BELRAM

_____ (a kind of metamorphic rock)

REALNIM

_____ (a naturally-occurring solid with a unique chemical makeup)