

Lesson Outline for Teaching

Lesson 3: Sedimentary Rocks

A. Sedimentary Rock Formation

1. Water and air can change the physical or chemical properties of rock.
 - a. This change can cause rock to break apart, to dissolve, or to form new minerals.
 - b. When water travels through rock, some of the elements of the rock can dissolve and be transported to new locations. The sediments eventually are deposited, or laid down, where they can then accumulate in layers.
2. As young layers of sediment are deposited on top of older layers, the weight from the layers of sediment forces out fluids and decreases space between grains during a process called compaction.
3. Compaction can lead to a process called cementation, in which minerals dissolved in water crystallize.

B. Sedimentary Rock Identification

1. Sedimentary rocks are classified by how they form.
2. Clastic rocks form from broken pieces of minerals and rock fragments.
 - a. The broken pieces and fragments are called clasts.
 - b. The size and shape of the clast help determine which agent deposited it.
 - c. Agents with enough energy to move large clasts, such as a fast-flowing river, tend to move large, well-rounded sediment.
 - d. Calm environments, such as the bottom of a lake, tend to have fine sediment.
3. Chemical rocks form when minerals crystallize directly from water.
 - a. Particles can crystallize out of a(n) saturated solution to form minerals.
 - b. Chemical rocks often have a(n) interlocking crystalline texture.
 - c. The crystal structure of a chemical rock is similar to the structure of a(n) intrusive igneous rock.
 - d. A(n) chemical rock is composed of one dominant mineral, but igneous rocks are composed of a variety of minerals.
4. A(n) biochemical rock is a sedimentary rock that is formed by organisms, or it contains the remains of organisms.
 - a. Most of Earth's limestone formed with the help of marine organisms.
 - b. These organisms used dissolved substances in ocean water to form their hard parts.
 - c. After the organisms die, the hard parts of their bodies compact and cement form limestone.
 - d. Much of Earth's limestone is made of carbonate minerals.

Lesson Outline continued

- e. Some biochemical rocks contain silicon and oxygen instead of carbonates.
- f. The energy resource coal is a biochemical rock composed of the remains of plants and animals from prehistoric swamps.

Discussion Question

Chert is a biochemical rock. What can you infer about how chert formed?

Chert forms from hard body parts of dead organisms. These parts are compacted and cemented.