

An Introduction to Geology

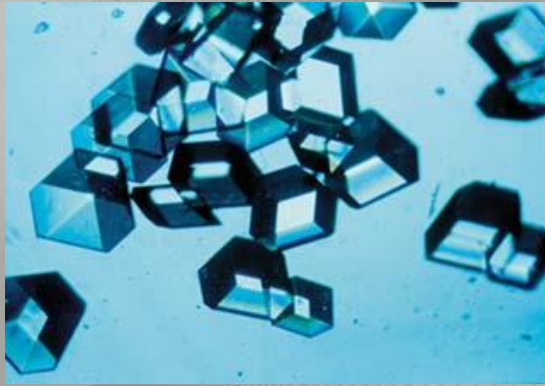


Minerals

- **Minerals** are natural compounds formed through geologic processes.
- They are inorganic substances (they do not contain carbon) and have a crystalline structure.
- The study of minerals is called mineralogy.



Crystal Structures



A **crystal structure** is the orderly arrangement of atoms within a mineral.

Rocks

- Rocks are aggregates of 2 or more minerals.
- Petrology is the study of rocks.
- Rocks can be igneous, sedimentary, or metamorphic.



Igneous Rocks

- **Igneous rocks** are formed when molten rock (**magma**) cools and solidifies, with or without crystallization, either below the surface as **intrusive** (plutonic) rocks or on the surface as **extrusive** (volcanic) rocks.



Granite is an igneous rock

Sedimentary Rock

Sedimentary rock is formed in three main ways:

1. by the deposition of the weathered remains of other rocks (known as ***clastic*** sedimentary rocks)
2. by the deposition of the results of biogenic activity
3. by precipitation from solution



Limestone and shale are both types of sedimentary rock

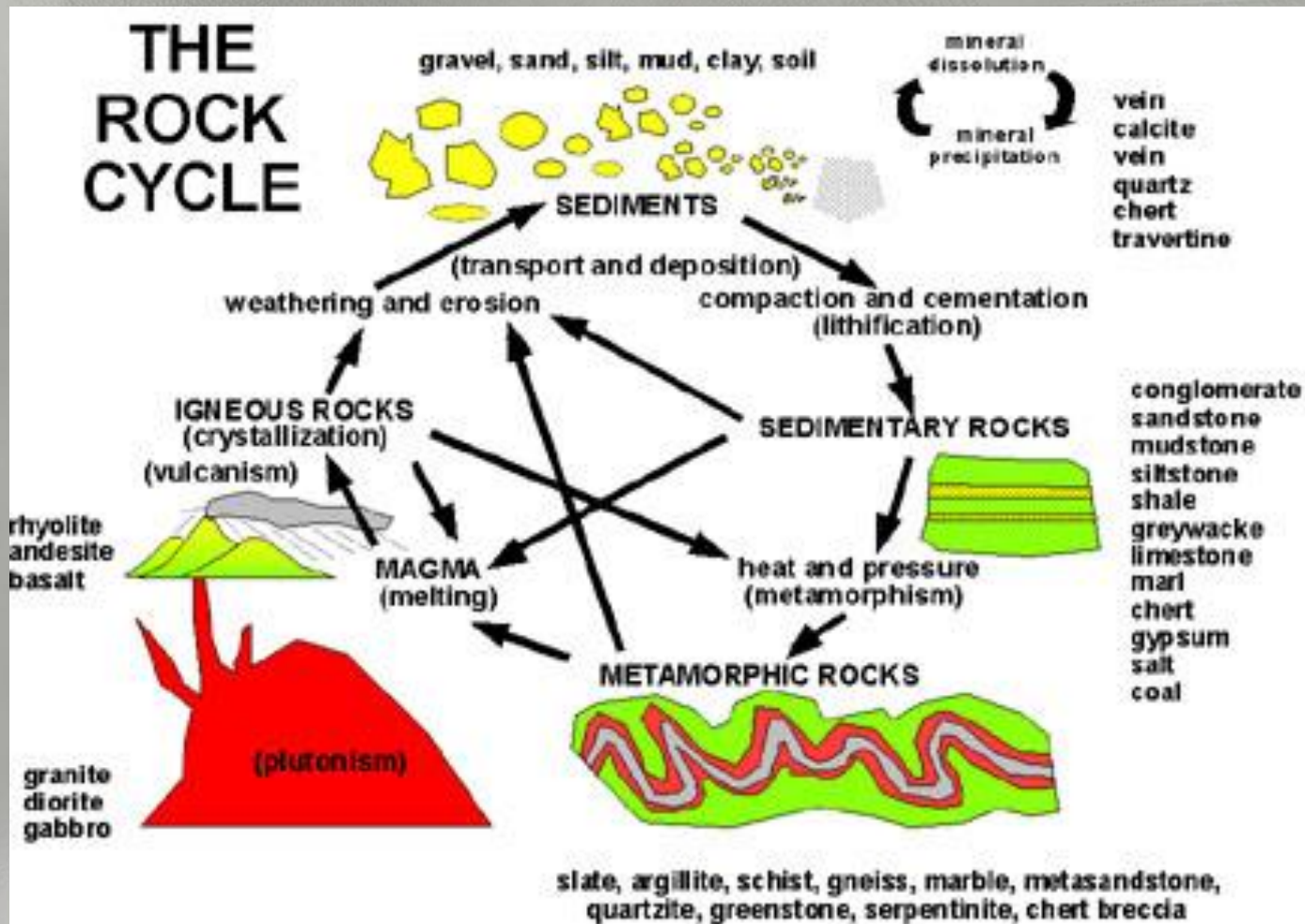
Metamorphic Rock



Slate is a type of metamorphic rock

- **Metamorphic rock** is the result of the transformation of a pre-existing rock type.
- The pre-existing rock type is called the **protolith**.
- Pressure and heat physically and chemically change the protolith.
- Metamorphic means "change in form".

The Rock Cycle



Erosion



- **Erosion** is the displacement of solids (soil, mud, rock, and other particles) because of wind, water, ice, gravity, or living organisms.
- **Bioerosion** is erosion that is the result of humans or other living organisms.
- Deforestation, overgrazing, and road or trail building are human activities that can lead to erosion.

Weathering

- **Weathering** is the process of decomposition and/or disintegration of rocks, soils and their minerals through natural, chemical, and biological processes.

