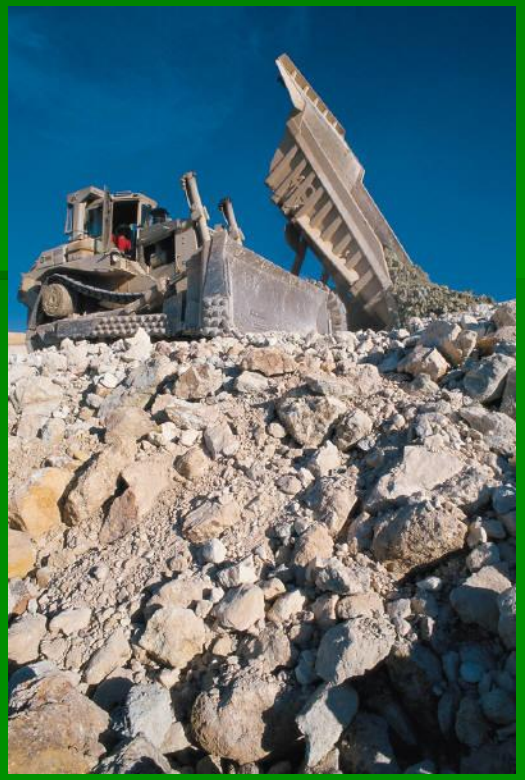
Rock Notes

Igneous Rock



Igneous Rocks

- Formed from molten rock as it cools and hardens
  - Magma: molten rock below earth's surface
  - Lava: molten rock on the surface
- Distinguished by their texture

What do you think I mean by texture?

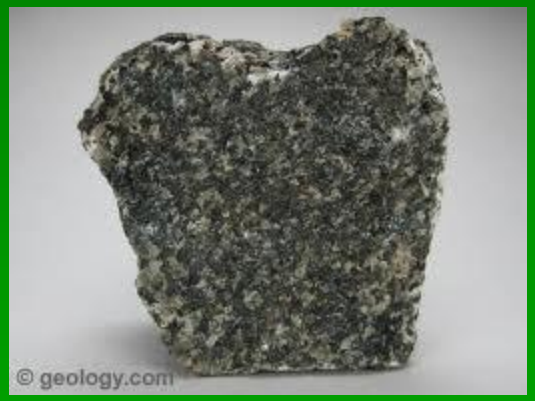
- Texture in geology means the size, shape and arrangement of the mineral crystals

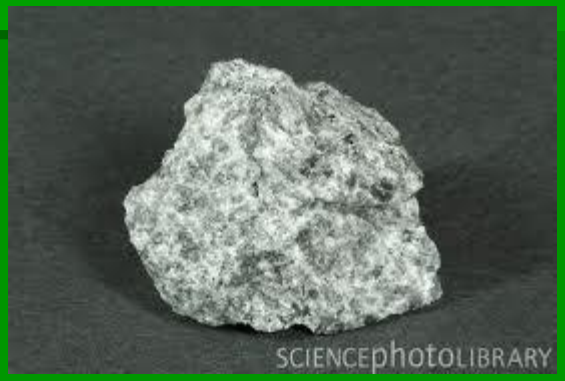
Two Types

- Intrusive
- Extrusive

- Intrusive
  - big crystals
  - formed from magma
  - As the rock slowly cools the crystals have more time to form.

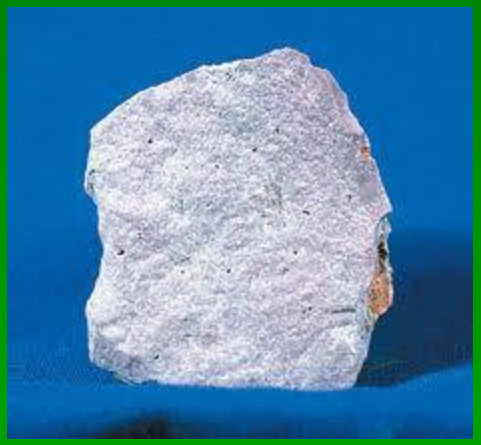
Examples!

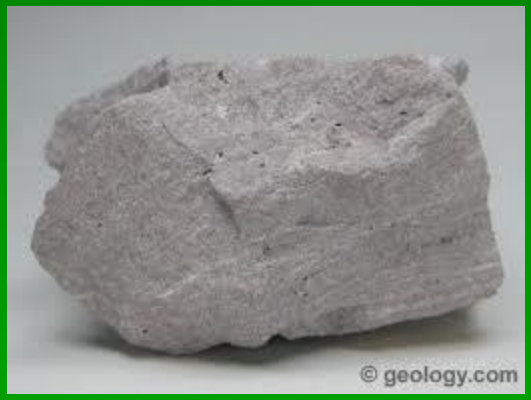




- Extrusive
  - Small crystal
  - Formed from lava
  - As the rock cools quickly the crystals do not have time to form.

Examples!





- Some rocks have a combination of both types.
- How do you think that might happen?

Still Extrusive

- Some rocks cool so quickly that no crystals form.
- Example: obsidian

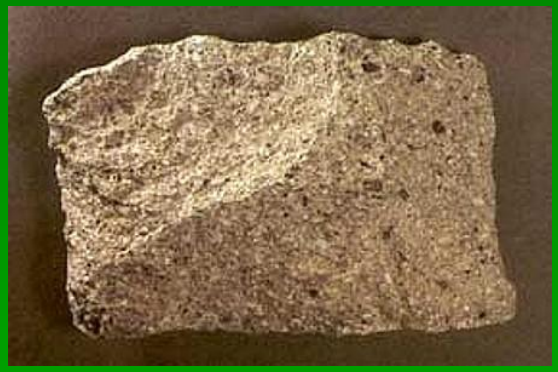
Still Extrusive

- Some cool with air trapped within the material.
- Example: Scoria and Pumice

Basalt

Diabase

Dacite



Gabbro

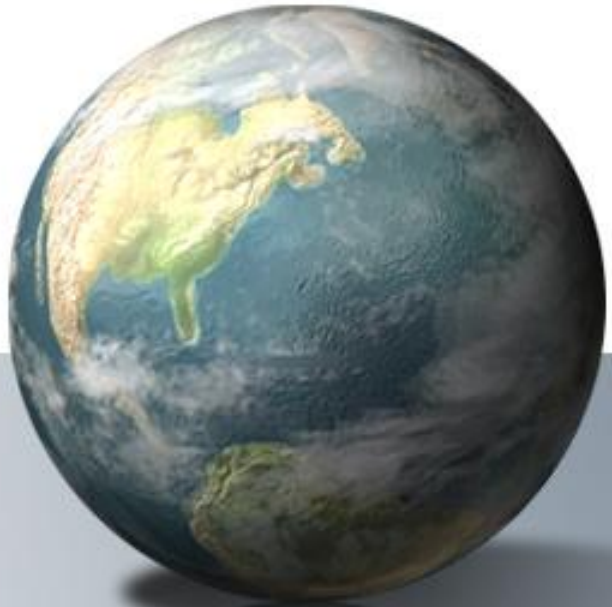
Aplite

Granite

FYI

- Different types of igneous rocks can form from the same magma.
- Minerals sink and change to form different rocks from layer to layer

Metamorphic Rocks



Metamorphic rocks

- Changed by heat and pressure
- Can start off as igneous or sedimentary rocks
- Form deep in the earth’s crust

Why must metamorphic rocks be formed deep within the earth?

Pressure

- Where does the pressure come from?
- Exerted by the water and/or layers of rock above
- The pressure causes the minerals to change shape
- Continued pressure will cause the minerals to line up in layers

Heat

- What is the source of heat?
- Magma
- Radioactive decay
- high temperatures bake the rocks
- the heat is not enough to melt the rock but will change the crystal structure of the minerals

Types of Metamorphic Rocks

- Foliated: minerals are arranged in bands or layers
  - appear to be striped
  - different color bands because of the mineral layers.
  - Examples: schist and gneiss

Foliated Metamorphic Rocks

- Schist

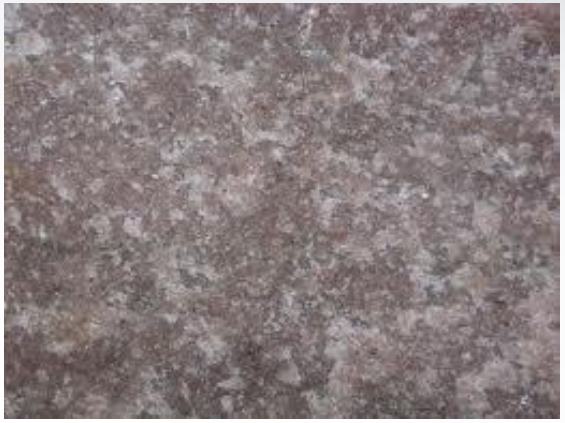
- Gneiss

Non-foliated: do not have mineral bands or layers.

- Formed of one type of crystal that changes form when exposed to heat and or pressure by recrystallizing
- Example: marble, quartzite, hornfel

Non-Foliated Metamorphic Rocks

- Quartzite

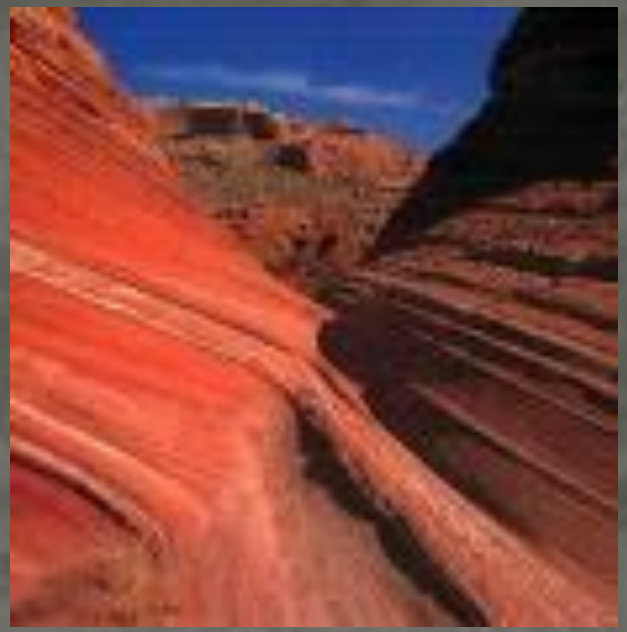


- Marble

Sedimentary Rocks

Sedimentary Rocks

- Existing rocks are weather into fragments (sediments)
- Sediments are moved and eventually deposited in layers
- Sedimentary rock form when sediments are compacted and cemented together



Stratification

- Stratification: look of sediments layered together
- Differ from one another depending on the kind, size and color of their sediment
- Thickness is dependent on the rate of deposition

Law of Superposition

- Rock layer age can be determined by applying the Law of Superposition.
- Younger rock layers lie on top of older layers.
- Fossil found in rock layers can help determine relative age.

Three Types of Sedimentary Rocks

- Clastic
- Chemical
- Organic

Clastic

- Form when rock or mineral fragments (called clasts) stick together
- Examples:

Breccia

Sandstone

Chemical

- Form from solutions of minerals and water
- Rainwater dissolves some of the rock materials as it passes through and then crystallizes out of the sea water solution
- Examples:

Alabaster

Oolite

Organic

- Forms from the remains of animals or plants
- Remains become cemented together to form rocks
- Examples:

Coal

Limestone