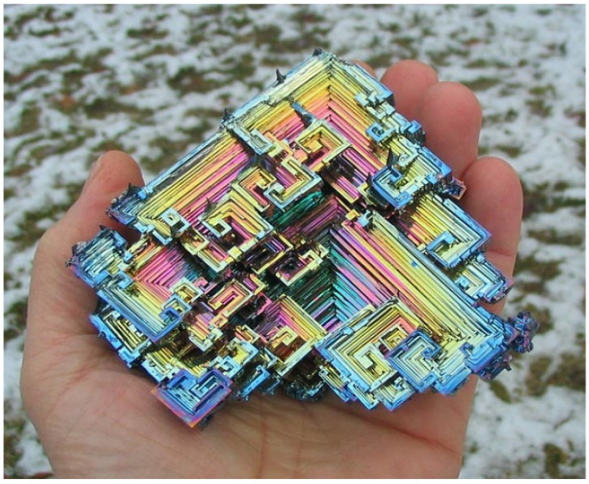
Minerals and Rocks



What is a mineral

A naturally occuring solid that can form by inorganic processes and that has a crystal structure and a definate chemical composition.

Charcteristics of all minerals:

Naturally Occuring

Solid

Crystal Structure

Forms by inorganic Processes

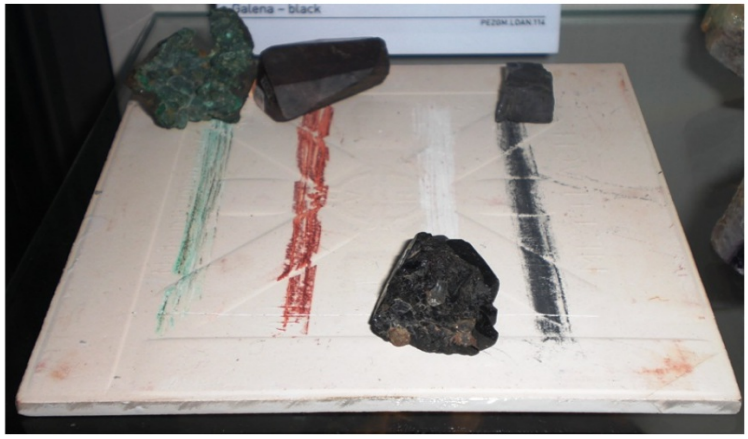
Definate Chemical Composition

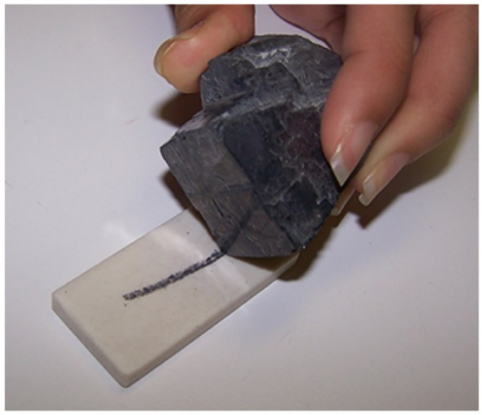
How are minerals identified?

Minerals have specific properties that can be used to identify them.

Colour

Streak





Luster


Metallic Lusters
Copper
Silver
Gold
Iron
Nonmetallic Lusters
Pearly
Vitreous
Resinous
Silky
Greasy
Adamantine
Dull
Waxy


Metallic
bright, reflective
Submetallic
dull, reflective
Nonmetallic
Vitreous
glassy, brilliant
Silky
fibrous
Resinous
plastic
Waxy
greasy, oily
Pearly
creamy
Earthy
rough, dull

Hardness

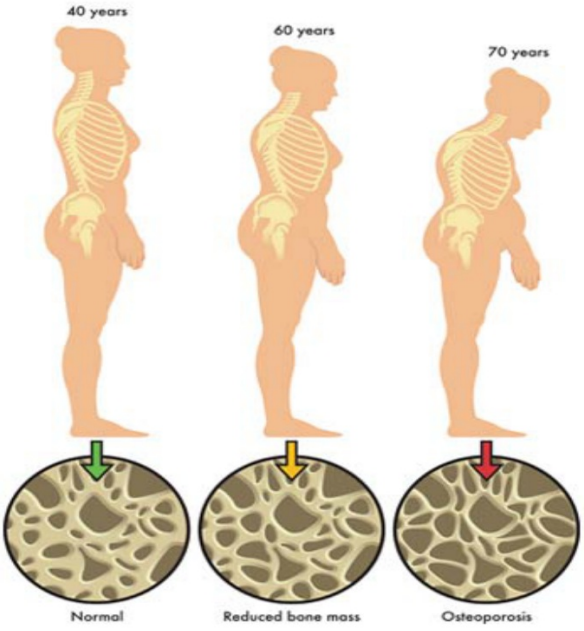

1 TALC
2 GYPSUM
3 CALCITE
4 FLOURITE
5 APATITE
6 FELDSPAR
7 QUARTZ
8 TOPAZ
9 CORUNDUM
10 DIAMOND


TALC 1
GYPSUM 2
CALCITE 3
FLUORITE 4
APATITE 5
FELDSPAR 6
QUARTZ 7
TOPAZ 8
CORUNDUM 9
DIAMOND 10

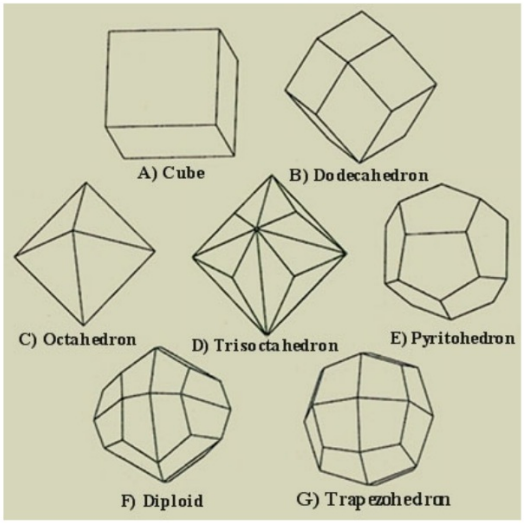
Density

Mass

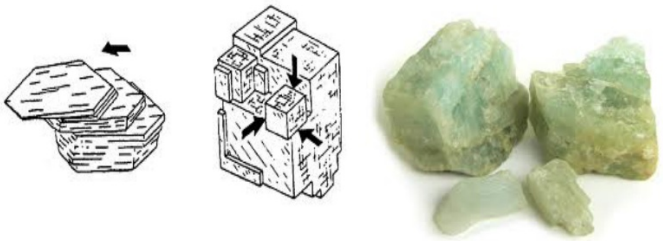
Volume

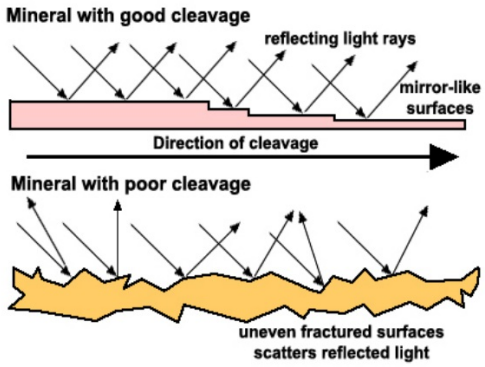


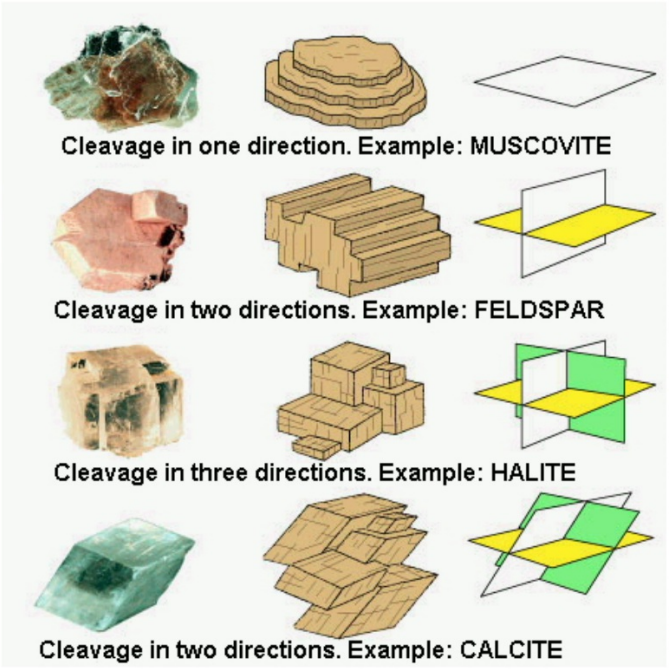
Crystal Structure

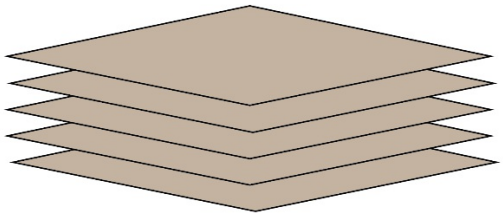


Cleavage and Fracture









Special Properties

1. Fluorescence

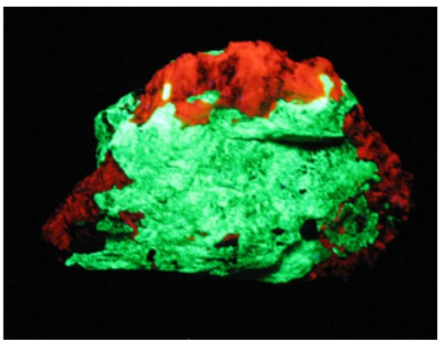
2. Magnetism

3. Chemical Reaction

4. Taste

5. Optical properties

6. Radioactivity



Geode

Crystallisation - Process by which atoms are arranged to form a material that has a crystal structure.

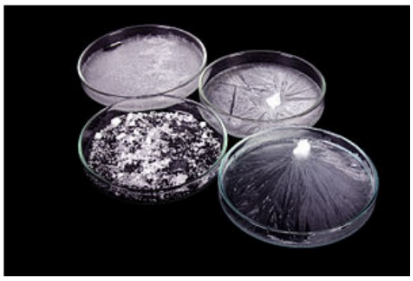
Minerals form in 3 ways:

1. From organic processes

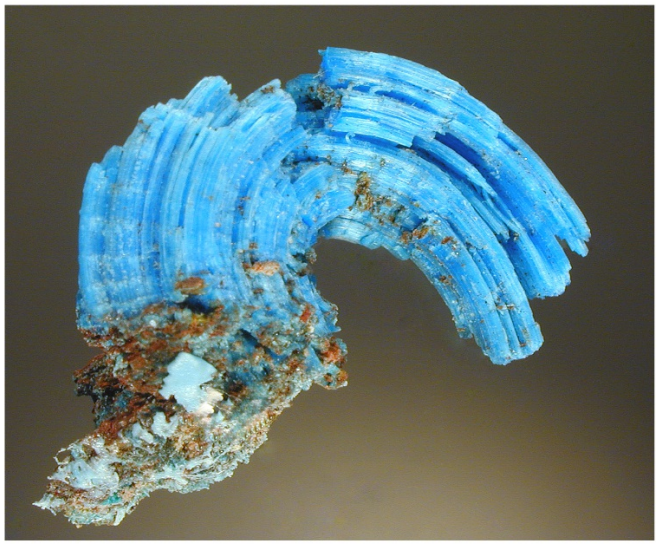
2. Materials dissolved into solution

3. Magma and lava cooling

Organic Minerals



Minerals formed from solution



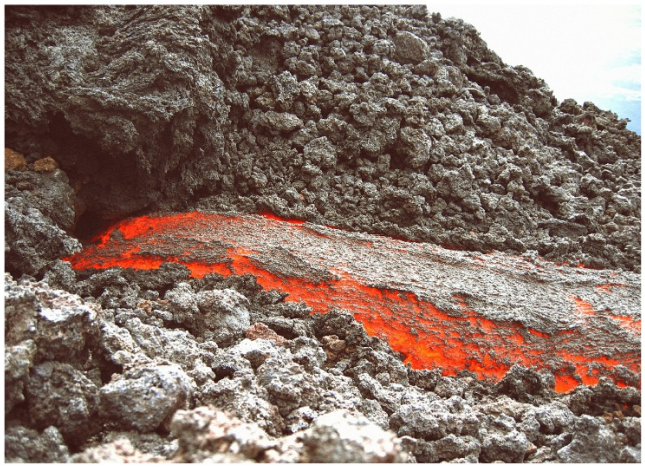
Minerals formed by evaporation

Minerals from hot water solutions

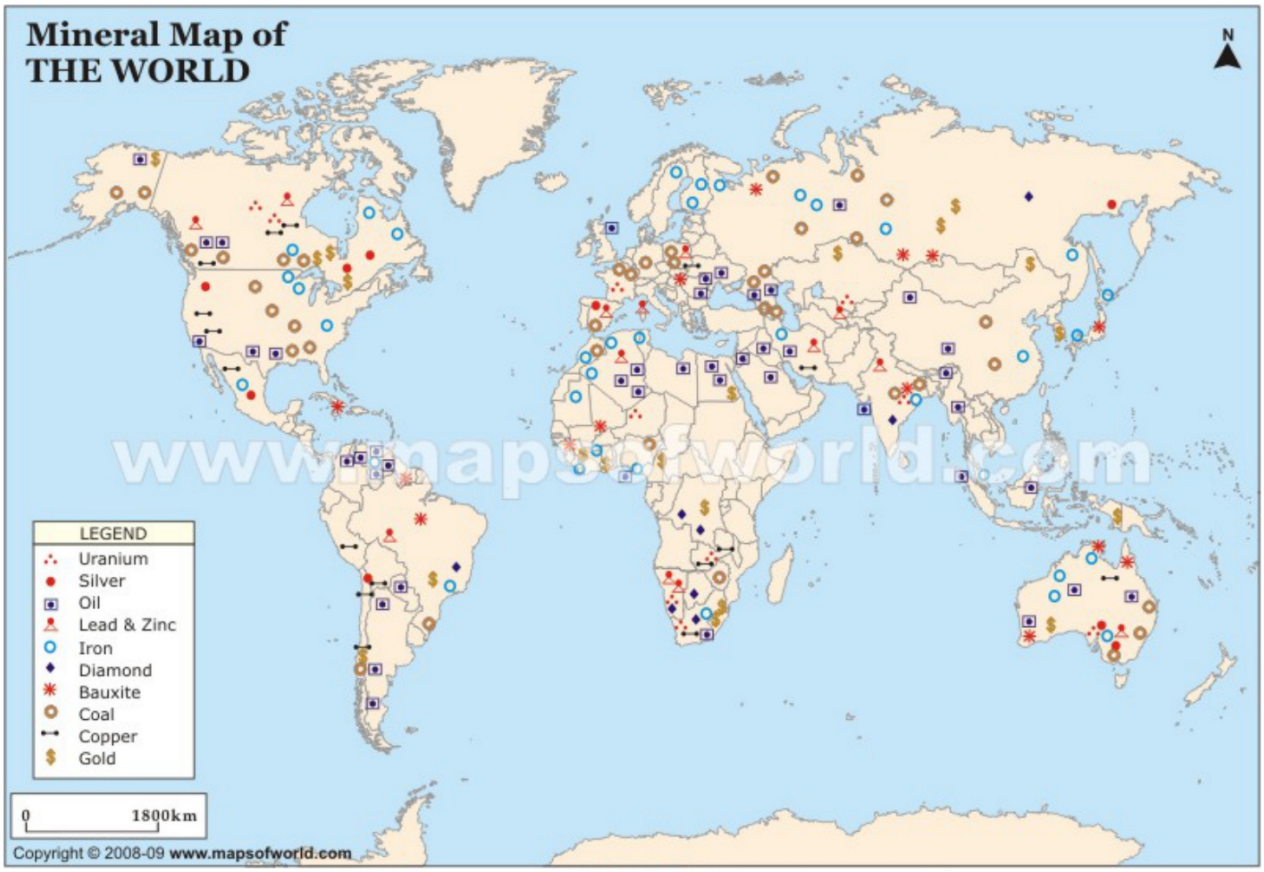
Minerals from magma and lava

Magma

Lava



Where minerals are found



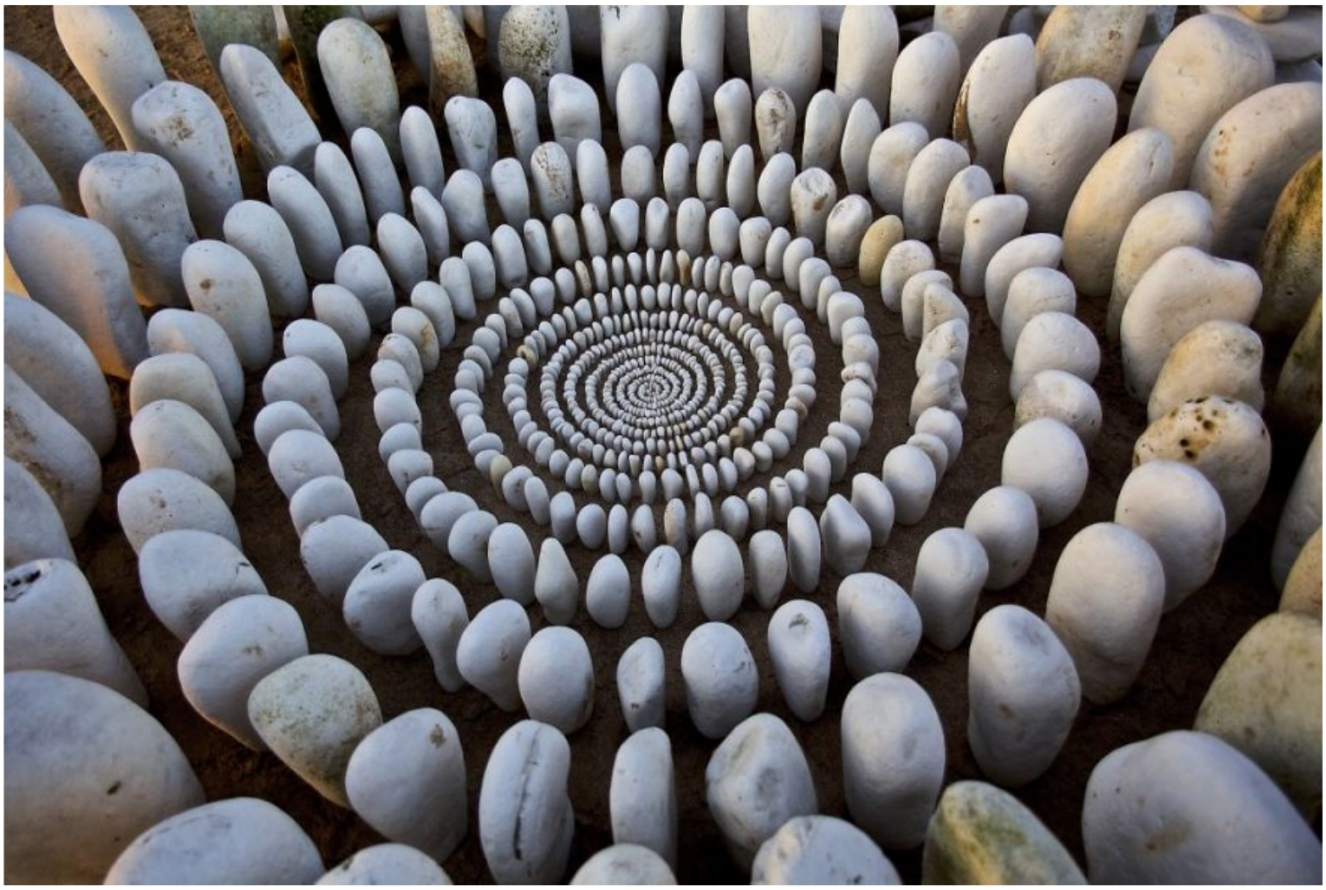
Mineral Questions:

1. Describe the distribution of Iron.

2. Infer why copper is distributed throughout the world?

3. Explain how a knowledge of mineral location and formation is useful for someone working in the mining industry.

Rocks

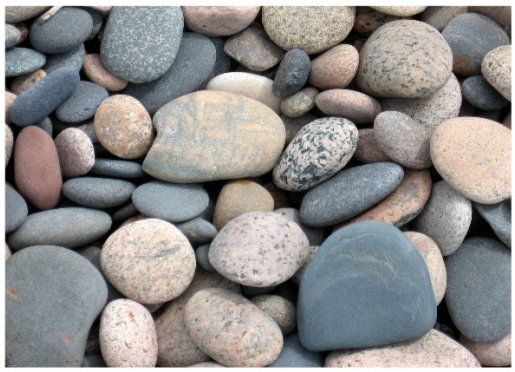


Classifying Rocks

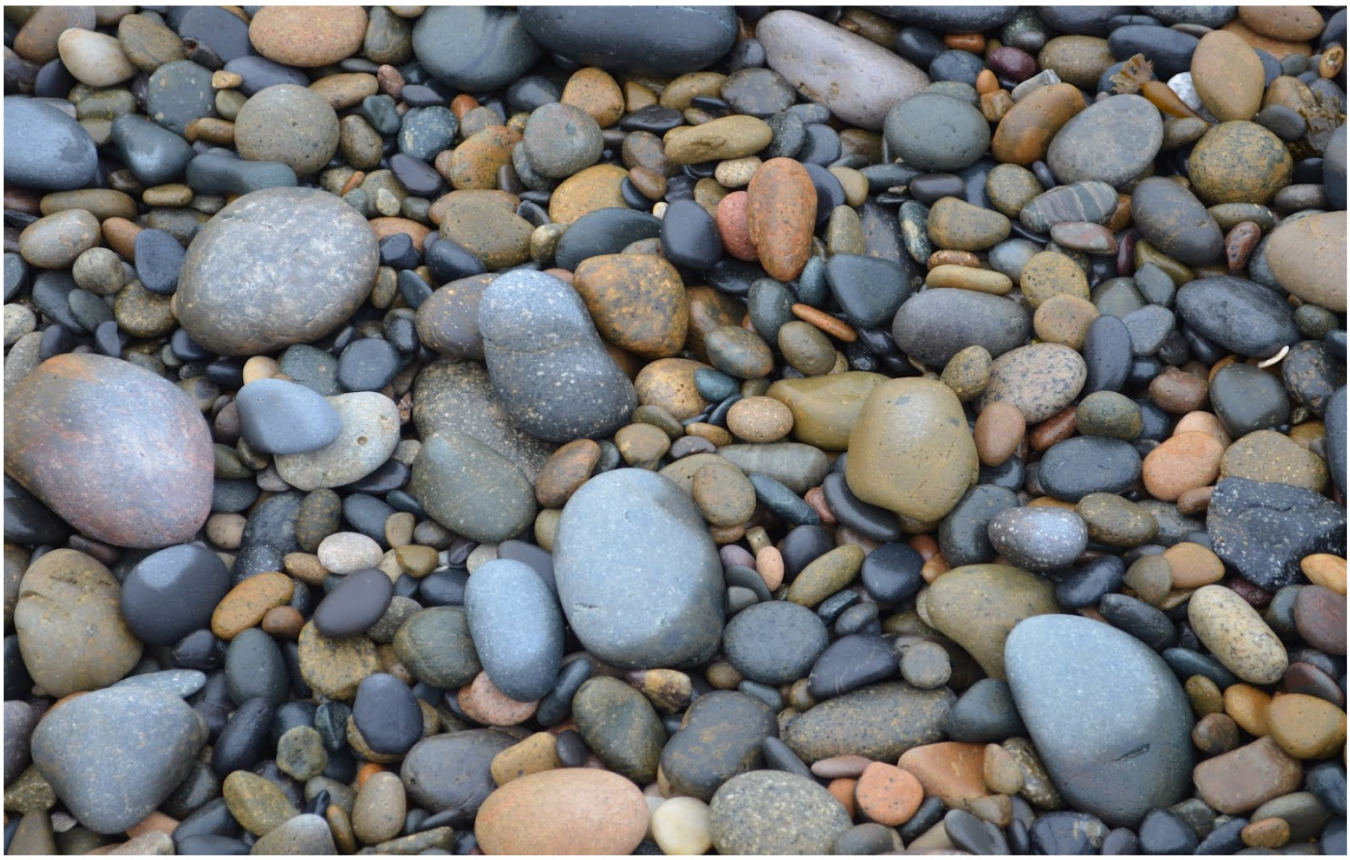
1. Mineral Composition

2. Colour

3. Texture - size, shape, pattern

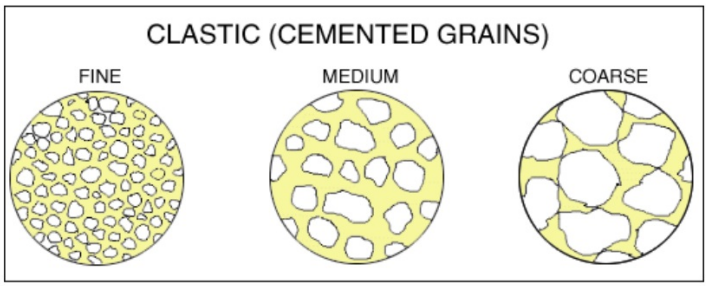


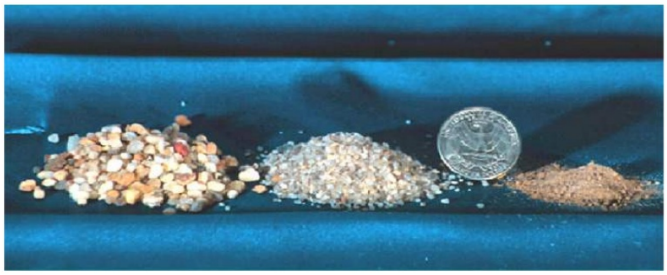
Composition and Colour

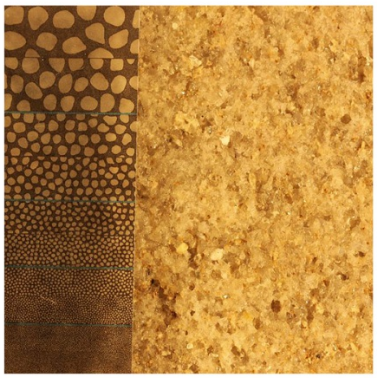


Texture

Grain Size - fine, coarse, no visible

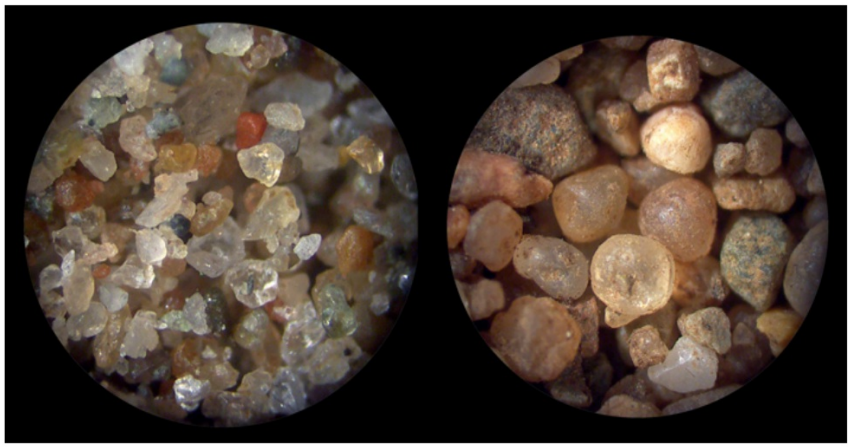


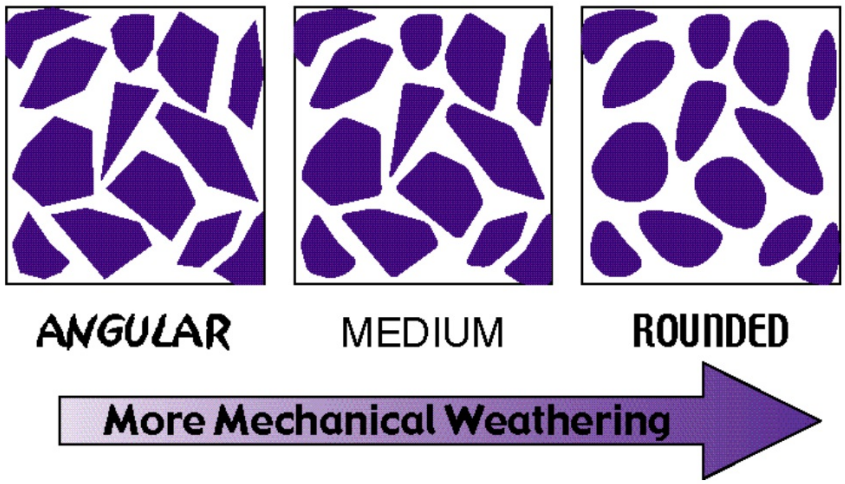




Texture

Grain Shape - round, jagged





Texture

Grain Pattern - Non band, banded

Origin:

Igneous

Metamorphic

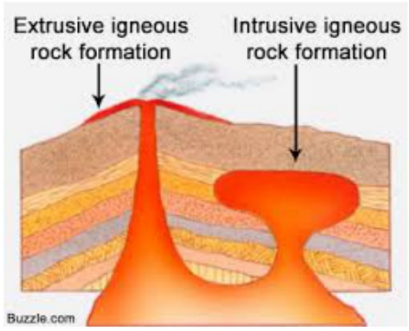
Sedimentary

Igneous Rocks

Igneous rocks are classified by origin, texture and mineral composition.

Intrusive

Extrusive



Obsidian

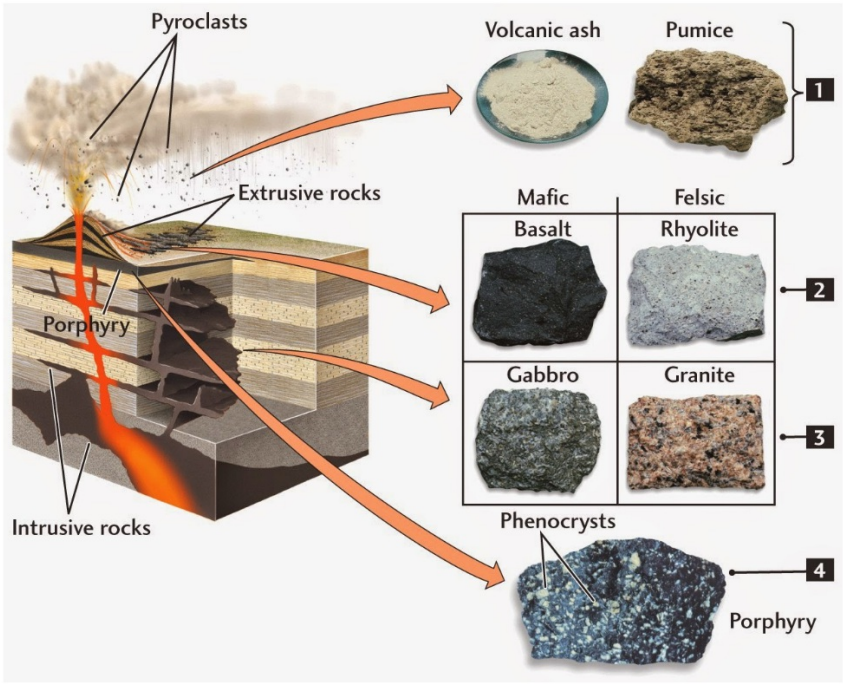
Extrusive

Extruded- Forced out

Diorite

Intrusive

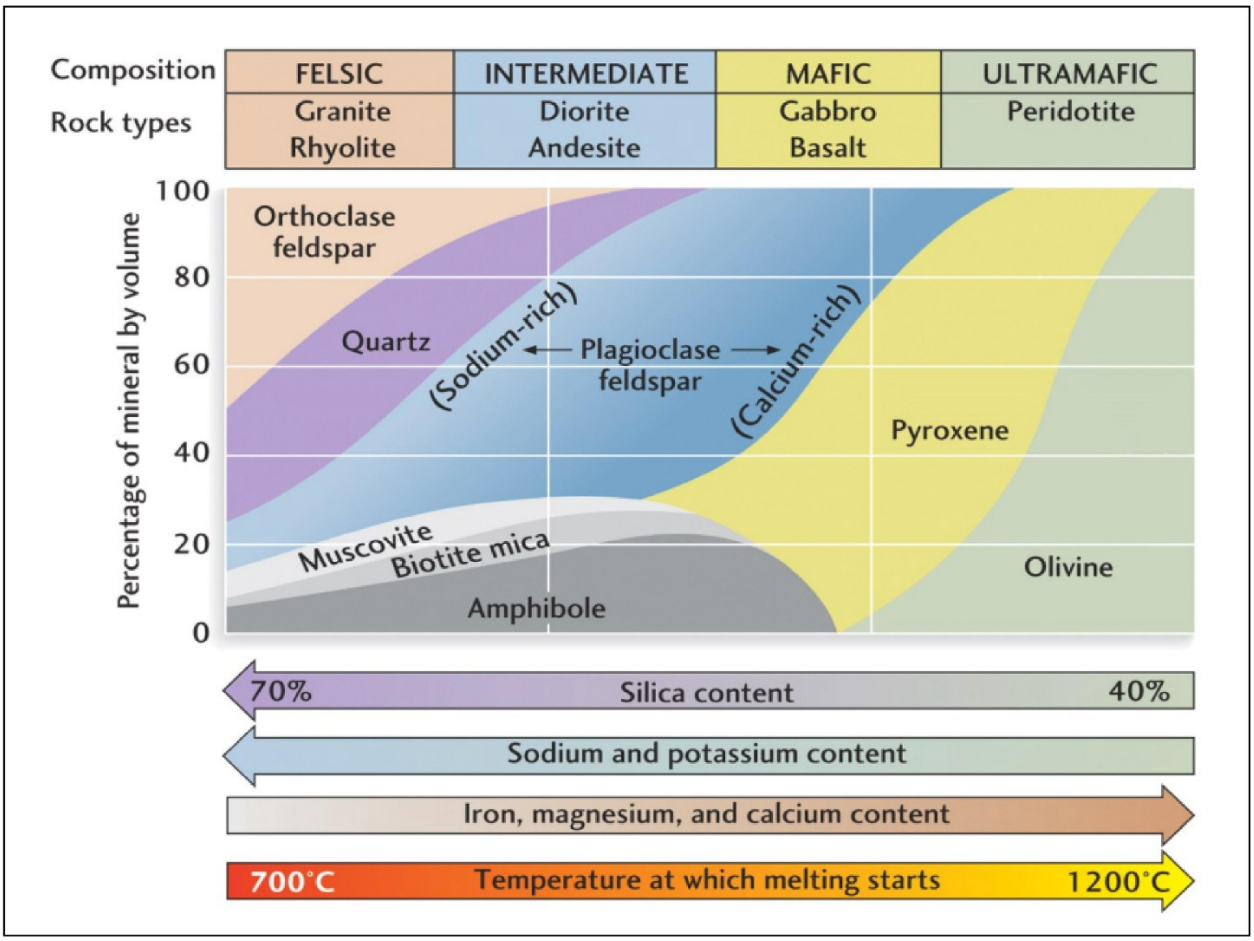
Think: Intrusions!



Texture

Texture	Felsic (light color)	Intermediate	Mafic (dark color)	Ultramafic
Coarse	Granite	Diorite	Gabbro	Peridotite
Fine	Rhyolite	Andesite	Basalt	
Vesi-cular	Pumice		Scoria	
Glassy	Obsidian			
Minerals Present	QUARTZ K-FELDSPAR NA-PLAG	NA-CA PLAG AMPHIBOLE	CA PLAG PYROXENE	PYROXENE OLIVINE

Mineral Composition



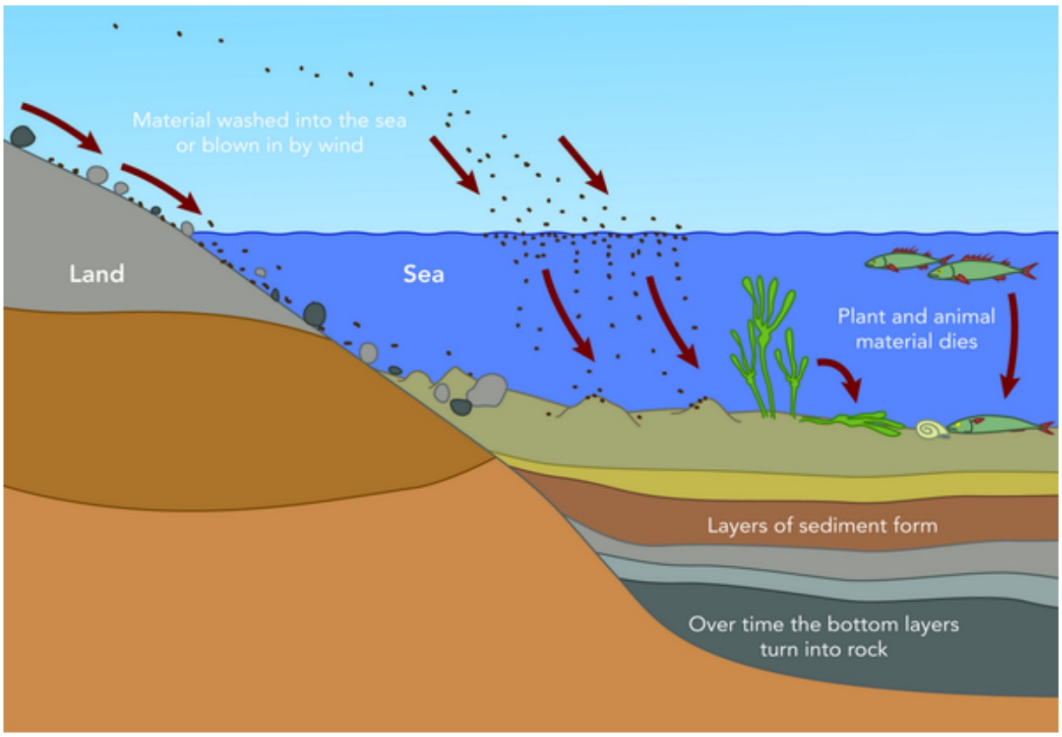
Sedimentary rock Formation

1. Weathering and Erosion

2. Deposition

3. Compaction

4. Cementation



https://www.youtube.com/watch?v=04a_32NuYqs

Clastic Rocks

Rocks formed when rock fragments are squeezed together.

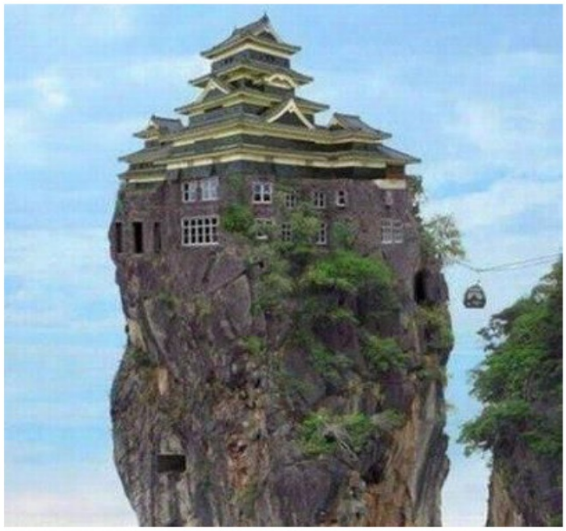
Organic Rocks

Form when the remains of plants and animals are deposited in layers.

Chemical Rocks

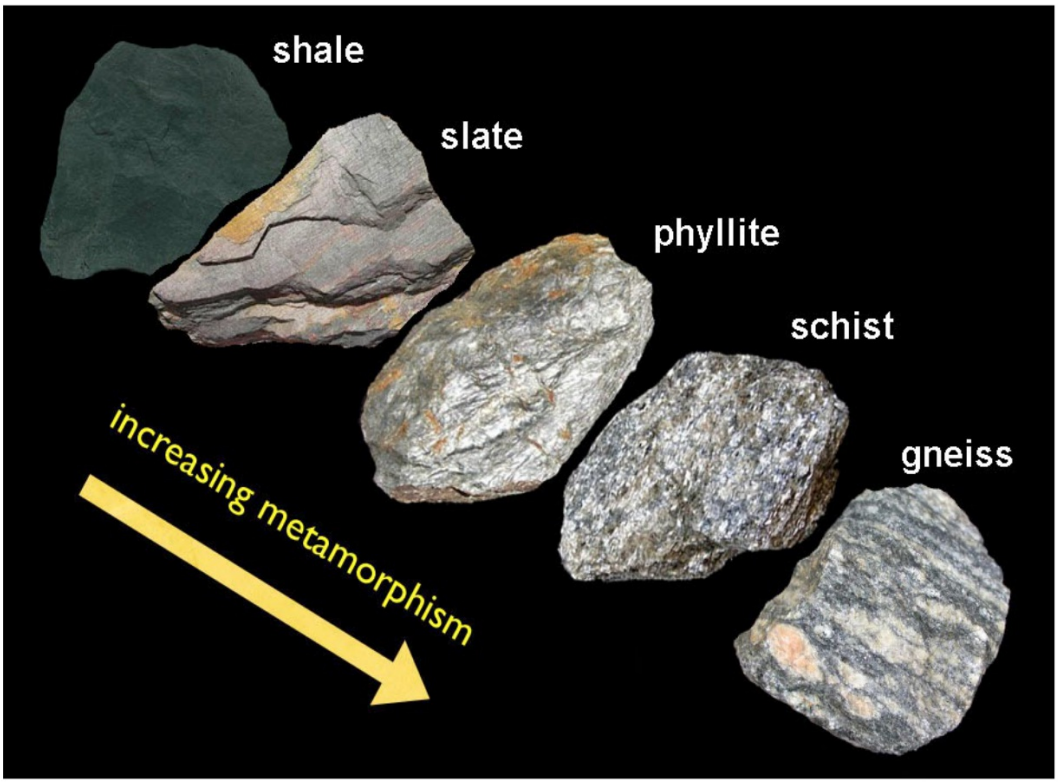
Form when minerlas in a solution crystallise. Or solutions evaporate leaving minerals.

Sedimentary Rock Uses



Metamorphic Rocks

Rocks that form from another rock due to changes in heat or pressure (or both heat and pressure).

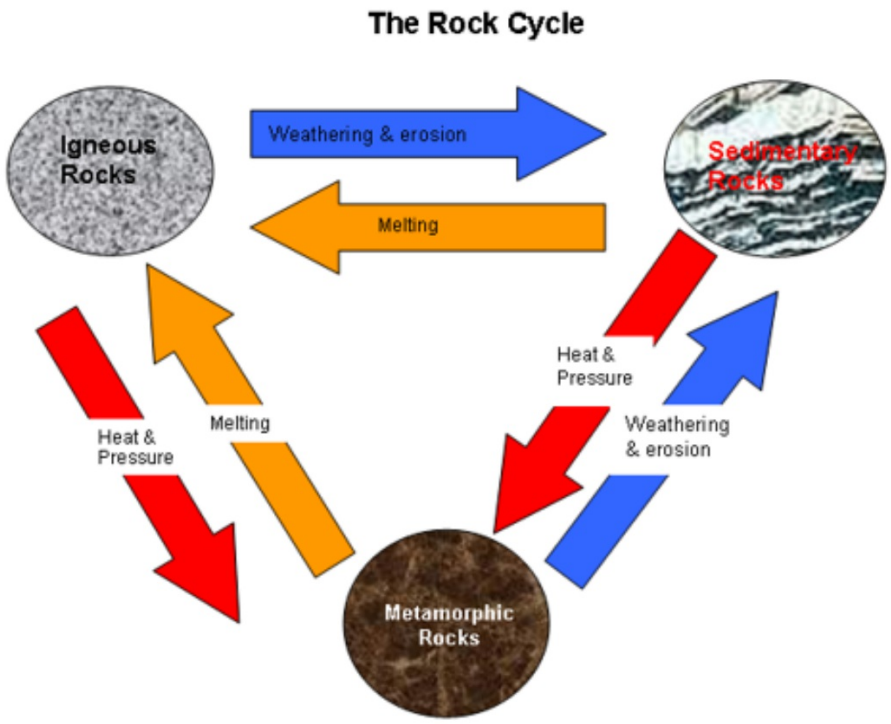


Metamorphic Rocks are classified according to arrangements of grains in the rock.

Foliated Rocks:
Grains arranged in parallel layer or bands.

Non Foliated:
Minerals and grains are arranged randomly.

Metamorphic Rock Uses



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