

# 213 – Rocks and the Rock Cycle

# Minerals make Rocks

- Minerals are the building blocks for all rocks.
- For instance, the minerals that make granite are...
  - Feldspar
  - Mica and/or Hornblend
  - Quartz



# The Common Rock-forming Minerals

## Earth's Crust

Primarily **Si & O** followed in abundance by Fe, Mg, Ca, Na, K, etc.

## Dark-colored silicates (mantle and oceanic crust)

**Olivine** (Si, O, Fe, Mg)

**Pyroxene** (Si, O, Fe, Mg, Ca)

**Amphibole** (Si, O, Fe, Mg)

## Light-colored silicates (crust, esp. continental crust)

**Quartz** (SiO<sub>2</sub>) - Hard, transparent

**Feldspar** (Si, O, Al, K, Na, Ca) - Hard, white, gray, pink

**Clay** (Mostly come from weathering feldspar)

**Calcite** (CaCO<sub>3</sub>, shells) Limestone - Used for cement

**Granite  
(Rock)**



Most rocks are aggregates of two or more minerals. Shown here is a hand sample of the igneous rock granite and three of its major constituent minerals.



**Quartz  
(Mineral)**



**Hornblende  
(Mineral)**



**Feldspar  
(Mineral)**

# Igneous

- Magma or lava cools and solidifies



# Sedimentary

1. Weathering: wind, water, or ice breaks a rock down into sediment
2. Erosion: sediment carried away elsewhere
3. Compaction: sediment buried under more sediment, pressed together
4. Cementation: water evaporates, leave crystals of dissolved minerals behind to 'glue' sediment together



# Metamorphic



Existing rock undergoes heat and pressure, chemical change makes new rock -

**It doesn't melt!**



## IDENTIFYING ROCKS

## IGNEOUS FEATURES

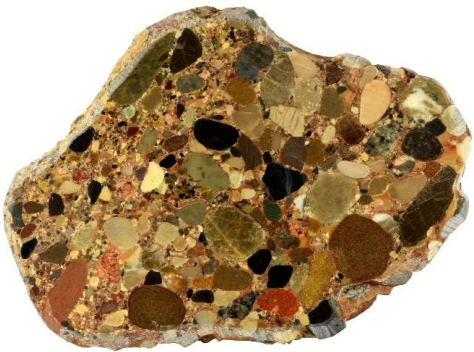
- Extrusive: from lava, cooled on surface quickly
  - Small or no crystals, can't tell minerals apart
- Intrusive: from magma, cooled slowly underground
  - Big crystals, can tell minerals apart





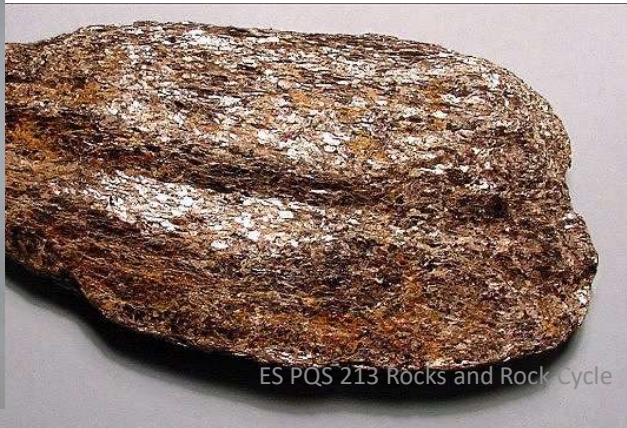
# Sedimentary Features

- Clastic: made from other rocks / pebbles / sand
- Chemical: minerals dissolved in water, water evaporated, minerals crystallized
- Organic: made from once-living things



# Metamorphic Features

- Foliated: has stripes, or all minerals are lined up
- Non-foliated: no stripes, minerals not lined up



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# Rock Cycle Game

Transforming through the stages of a  
“Rock”-Star Life!

