

EPSC 221: GENERAL GEOLOGY

*Lab 2:
Igneous Rocks*

Igneous Rocks—Definitions

- Geologists organize rocks based on:
 - COMPOSITION
 - TEXTURE
 - mineralogy



Igneous Rocks—Texture

- **Texture** is controlled by:
 - cooling time
 - nucleation opportunity
- *Phaneritic* = coarse grain
- *Aphanitic* = fine grain



Phaneritic



Aphanitic

Igneous Rocks—Texture

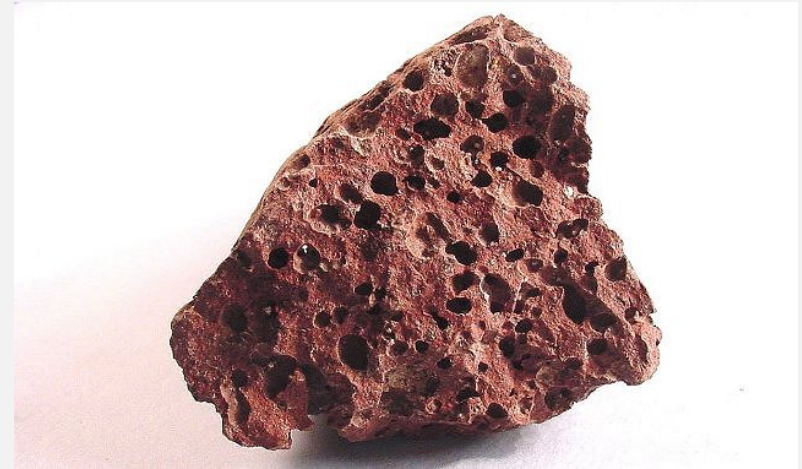
- If the crystals vary in size severely, the texture is *Porphyritic*
 - *phenocrysts*
 - *ground mass*



Porphyritic

Igneous Rocks—Texture

- *Vesicular* textures indicate a bubbly magma



Vesicular

Igneous Rocks—Texture

- *Glassy* textures indicate an incredibly rapid cooling
 - *ground mass*



Glassy

Igneous Rocks—Texture

- *Fragmental* textures
 - pyroclastic flows
 - ash deposits
- welded together by heat



Fragmental

Igneous Rocks—Composition



Ultramafic
peridotite



Mafic
gabbro



Intermediate
diorite



Felsic
rhyolite

- based on silica content (composition)
- can be roughly determined by color

Igneous Rocks—Composition

Important Minerals

Potassium Feldspar



Plagioclase Feldspar



Olivine



Pyroxene



Micas

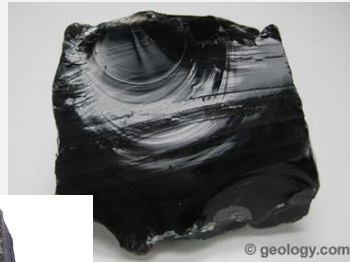


Quartz



Amphibole

Igneous Rocks—Setting



Volcanic/Extrusive

Plutonic/Intrusive