

Igneous Rocks – Lava Flows at Parashant

Geological Adventures at Parashant *Lesson 3*



Objectives

- Igneous rocks cool and crystallize from magma.
- The composition of the magma determines the chemical and physical properties of igneous rocks.
- The distribution and thickness of lava depends upon
 - the volume erupted,
 - the topography of the land,
 - the composition of the magma.



Materials and Set Up



FIGURE 1 Clay model showing small lava flow and large lava flow. Have students level the top of the model by gently pressing down on it with a flat object, like a textbook. Drop soap towards one end.

Table 1. Sorting Igneous Rocks by Texture

Texture	Igneous Rocks
Coarse (crystals > 1mm)	
Fine (crystals < 1mm)	
Mixed (fine and coarse)	
Other (describe)	



Table 2. Sorting Igneous Rocks by Color (Chemical Composition)

Color	Igneous Rocks
Dark (mostly dark minerals or overall dark color)	
Intermediate (mixed light and dark)	
Light (mostly light minerals or overall light color)	



Table 3. Classifying Igneous Rocks by Texture and Color

Texture	Color		
	Light	Intermediate	Dark
Fine			
Coarse			
Mixed			
Glassy			
Holes			
Other (describe):			



Table 4. Basic Classification Scheme for Igneous Rocks

Texture	Composition			
	Felsic	Intermediate	Mafic	Ultramafic
Coarse	Granite	Diorite	Diabase Gabbro	Peridotite
Fine	Rhyolite	Andesite	Basalt	
Porphyritic Coarse – Fine	Porphyritic - Granite Porphyritic Rhyolite	Porphyritic – Diorite Porphyritic – Andesite	Porphyritic - Gabbro Porphyritic - Basalt	Porphyritic – Peridotite --
Vesicular	Pumice	Pumice	Vesicular Basalt Scoria	--
Glassy	Obsidian	--	--	--
Fragmental	Tuff (ash) Volcanic breccia	Tuff (ash) Volcanic breccia	--	
Color Index (% dark minerals)	0-15	20-40	50-60	95-100



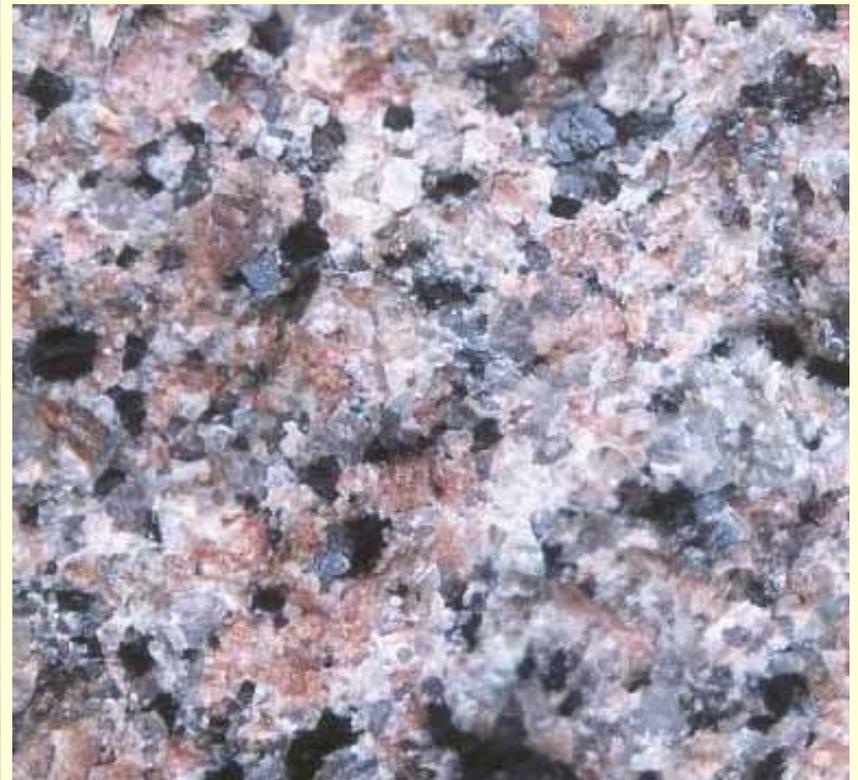


FIGURE 3.1 Left: Basalt, Black Rock Mountain at Parashant. Right: Granite, location unknown (credit: R.A. Busch).





FIGURE 3.2 Eroded cinder cone and lava flow (horizontal ledge in foreground) at Parashant.





FIGURE 3.3 Two different intrusive igneous rocks. The darker granodiorite formed first and was intruded by magma of a different chemical composition, which cooled to form the light-colored pegmatite (credit: Larry Fellows).





FIGURE 3.4 This igneous intrusion is a volcanic neck - the remains of a conduit that fed a volcano near Pakoon Springs at Parashant.





FIGURE 3.5 Eruption of basaltic lava near Mt. Trumbull at Parashant some 1,000 years ago produced the Little Springs flow (credit: D. Mosby).





FIGURE 3.6. How many of the volcanic centers at Parashant can you find in this photo? (credit: D. Mosby)

