Chapter 4
Igneous (Fire) Rocks

It’s all about Magma...
Magma = molten minerals
Formation of Magmas

Figure 4.25
Bowen’s reaction series

Figure 4.23
Rocks = assemblage of minerals
Two Possible Histories

Intrusive

Extrusive
Igneous textures

- Phaneritic
- Aphanitic
- Glassy
Phaneritic texture

B. Phanerite

Figure 4.3 B
Aphanitic texture

A. Aphanitic

Figure 4.3 A
Glassy Obsidian
Other igneous textures

- Porphyritic texture

- Pegmatitic texture
**Intrusives**
Texture and Chemistry

- **Granite**
- **Diorite**
- **Gabbro**

- **Felsic**
  - Quartz

- **Intermediate**
  - No Quartz

- **Mafic**

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Granite

Figure 4.9 A
Diorite

Figure 4.14
Gabbro

B. Gabbro

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# Extrusives

**Texture and Chemistry**

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<th>Andesite</th>
<th>Basalt</th>
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Rhyolite

Figure 4.9 B

B. Rhyolite

Close up
Andesite

Figure 4.13

A. Andesite porphyry

B. Close up
Basalt

Figure 4.15 A
Igneous compositions

- Other
  - Obsidian
  - Pumice
Igneous Rock Chart

- Granite
- Rhyolite
- Diorite
- Andesite
- Gabbro
- Basalt

- Felsic Quartz
- Intermediate No Quartz
- Mafic No Quartz
Importance of Igneous Rocks